5 June 2020

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the applications submitted by Rio Grande LNG, LLC (Rio Grande) and Annova LNG Common Infrastructure, LLC (Annova) under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA). The applicants are seeking authorizations to take small numbers of marine mammals by harassment incidental to constructing two separate LNG facilities on opposite sides of the Brownsville Ship Channel (BSC) in Cameron County, Texas, during a one-year period. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 8 May 2020 notice (85 Fed. Reg. 27365) requesting comments on its proposal to issue the authorizations, subject to certain conditions.

Rio Grande would install 10 42-in and 2 48-in steel piles using a vibratory and impact hammer and remove 5 12-in timber piles using a vibratory hammer. Pile-driving and –removal activities would begin on 1 July 2020 and would occur on up to 8 days[1]. Annova would install and remove 16 24-in steel piles and install 4 96-in monopiles. A vibratory and impact hammer would be used to install the piles, while a vibratory hammer would be used to remove the piles. Pile-driving and -removal activities would begin on 1 March 2021 and would occur on up to 16 days.

NMFS preliminarily has determined that, at most, the proposed activities could cause Level B harassment of small numbers of three marine mammal species[2]. NMFS anticipates that any impact on the affected species and stocks would be negligible. NMFS also does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures for both applicants include—

- using a double bubble curtain for sound attenuation during all pile-driving and -removal activities for Rio Grande and during all impact pile-driving activities for Annova and implementing various measures regarding performance standards;

[1] Rio Grande's application stated that pile-driving and -removal activities would occur on 12 days, which included 5 days for removal of the timber piles; however, NMFS indicated that all five timber piles would be removed in one day (85 Fed. Reg. 27368). The Commission notes that NMFS incorrectly specified the number of days as nine in another section of the *Federal Register* notice (85 Fed. Reg. 27366). NMFS should fix that typographical error in the notice of authorization issuance.

[2] The authorizations include takes by Level B harassment for Atlantic spotted dolphins and rough-toothed dolphins, which are typically found further offshore and not expected to occur in the project area.

- ceasing in-water heavy machinery activities if any marine mammal comes within 10 m of the equipment and reducing vessel speed to the minimum level required to maintain steerage and safe working conditions;
- using standard pre-clearance, soft-start, delay, and shut-down procedures;
- requiring at least two protected species observers (PSOs) to monitor the Level A and B harassment zones at each site for 30 minutes before, during, and for 30 minutes after all pile-driving and -removal activities;
- using delay and shut-down procedures if a species for which taking has not been authorized, or for which authorized numbers of takes have been met, approaches or is observed within the Level B harassment zone;
- reporting injured and dead marine mammals to the Office of Protected Resources and the Southeast Marine Mammal Stranding Network and ceasing activities, if appropriate; and
- submitting a draft and final monitoring report to NMFS, including all PSO datasheets and/or raw sightings data.

Source levels for estimating Level A harassment takes

The Commission informally noted that there were various issues with the source levels specified in Tables 1 and 2 of the *Federal Register* notice for Rio Grande and Annova. Specifically—

- The unattenuated source level for impact installation of 42- and 48-in piles based on Austin et al. (2016) is 186.7 dB re 1 μPa^2-sec $_{\text{single-strike (s-s)}}$ at 11 m, not 186.6 dB re 1 μPa^2-sec$_{\text{(s-s)}}$ at 10 m as noted in footnote 2 of Table 1[3].
  - Footnote 2 also should (1) include the full reference for Austin et al. (2016), (2) state that the source level for vibratory pile driving of 42- and 48-in piles is 168.2 dB re 1 µPa at 10 m rather than 168 dB, and (3) specify that the source levels for impact pile driving were 186.7 dB re 1 μPa^2-sec$_{\text{(s-s)}}$ at 11 m, 198.6 dB re 1 $\mu Pa_{\text{root-mean-square (rms)}}$ at 10 m, and 212.5 dB re 1 μPa_{peak} at 11 m rather than what was specified.
- None of the footnotes in Table 2 specified when proxy source levels were used as included in Table 1 or at what distance the source levels were measured.
  - Footnote 1 implied that source levels of 24- and 96-in steel pipe piles were used. Table 1.2-2 in Caltrans (2015) only included source levels for 24-in AZ sheet piles and 72-in pipe piles. Presumably, those source levels were used for 24-in pipe piles and 96-in pipe piles, respectively.
  - Footnote 2 did not specify the unattenuated source levels, as was done for Table 1 when a 7-dB reduction was assumed based on use of a sound attenuation device. The unattenuated source levels for impact pile driving of 24-in piles were 178 dB re 1 μPa^2-sec$_{\text{(s-s)}}$, 194 dB re 1 μPa_{rms}, and 207 dB re 1 μPa_{peak} and 195 dB re 1 μPa^2-sec$_{\text{(s-s)}}$, 205 dB re 1 μPa_{rms}, and 220 dB re 1 μPa_{peak} for 96-in piles—all of which were referenced to 10 m.
- The attenuated source level for impact installation of 24-in piles should be 200 not 207 dB re 1 μPa_{peak} at 10 m in Table 2.

[3] Table 6 in the notice also specified that the measurements were taken at 10 not 11 m from the source.

Taking these issues into account, the Level A harassment zone for impact installation of 42-in piles should be 20.3 rather than 18.5 m and 12.8 rather than 11.6 m for 48-in piles in Table 8. The Commission also informally noted that the number of 96-in piles installed per day should be 1 not 0.5 in Table 6[4] of the notice based on vibratory installation occurring only on the first of two days needed to install the 96-in piles. Tab A.1 in NMFS's user spreadsheet[5] incorporates the number of piles to be installed or removed on a given day for vibratory pile driving and removal[6]. If NMFS had assumed that 0.5 piles would be installed with a vibratory hammer on a given day, the Level A harassment zone would have been smaller than estimated in Table 8. In addition, the Commission noted that the Level A harassment zones for vibratory installation and removal of 24-in piles in Table 8 were miscalculated based on the inputs specified in Table 7 of the *Federal Register* notice.

Although NMFS indicated that it would rectify these issues in the *Federal Register* notice for authorization issuance, these types of issues have been ongoing. The sound levels, distances at which the measurements were taken, and in some cases both metrics have been incorrect for each of the recent authorizations in which NMFS proposed to use source levels from Austin et al. (2016)[7]. In addition to using incorrect source levels based on data specified in the tables within Austin et al. (2016), NMFS has deemed two different sets of source levels[8] from Austin et al. (2016) as best available. For the recent Port of Alaska authorization, NMFS used the average of the median source levels of piles IP1 and IP5 from Austin et al. (2016[9]; see Table 5 on 85 Fed. Reg. 19312). It is unclear how two different source levels can be deemed best available, particularly when they originate from the same underlying data. To improve consistency and appropriateness of proxy source levels, the Commission again recommends that NMFS (1) have its experts in underwater acoustics and bioacoustics review and finalize as soon as possible, its recommended proxy source levels for impact pile driving of the various pile types and sizes, (2) compile and analyze the source level data for vibratory pile driving of the various pile types and sizes in the near term, and (3) ensure action proponents use consistent and appropriate proxy source levels in all future rulemakings and proposed incidental harassment authorizations. If a subset of source level data is currently available (i.e., vibratory pile driving of 24-in steel piles), those data should be reviewed immediately and used—the data should not be ignored until the other vibratory source levels are finalized. If, however, NMFS continues to use source level data from Austin et al. (2016), the Commission recommends that NMFS ensure that the sound level, as well as the distance at which the measurement was taken, is correct and consistent in all future rulemakings and proposed incidental harassment authorizations.

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[4] The Commission further indicated that footnote 1 in Table 6 specified that the source levels were reduced by 7 dB. However, that reduction factor does not apply to vibratory pile installation and removal for Annova—operators are not using a sound attenuation device during those activities.

[5] Including the version that has been available on NMFS's website since 2018, https://www.fisheries.noaa.gov/webdam/download/82835622.

[6] A similar input is used in Tab E.1 for impact pile driving.

[7] See for example the Commission's 12 May 2020, 10 February 2020, and 23 January 2020 letters.

[8] Rio Grande's revised source levels are 186.7 dB re 1 μPa^2-$sec_{(s-s)}$ at 11 m, 198.6 dB re 1 μPa_{rms} at 10 m, and 212.5 dB re 1 μPa_{peak} at 11 m; while Port of Alaska's source levels were 187 dB re 1 μPa^2-sec_{s-s} at 10 m, 200 dB re 1 μPa_{rms} at 10 m, at 10 m, and 215 dB re 1 µPa at 10 $m_{peak.}$

[9] Data, only from pile IP5, were used for Rio Grande's proposed authorization.

The Commission further notes that NMFS proposed to use a source level during vibratory installation of 72-in piles as a proxy for 96-in piles. That source level was based on a 'typical' source level from Caltrans (2015) rather than the 'loudest' source level measurement (170 vs 180 dB re 1 μPa_{rms} at 10 m, respectively; Table I.2-2). In this case[10], the presence of land limits the transmission of sound at Annova's project site beyond an area of 1 km^2. However, that generally is not the case for other action proponents. Since a proxy source level is intended to be sufficiently precautionary when data are lacking for the pile size in question, the loudest source level should have been used for a pile that is more than a third larger than the pile from which the measurement originated. This is particularly important when use of certain source levels appears to set precedent for use by NMFS in future rulemakings and proposed incidental harassment authorizations. Until such time that measurements are available for vibratory installation of 96-in piles, the Commission recommends that NMFS use the loudest source level of 180 dB re 1 μPa_{rms} at 10 m rather than the typical source level of 170 dB re 1 μPa_{rms} at 10 m from Table I.2-2 in Caltrans (2015).

Bubble curtain efficacy

The Commission has commented numerous times on the assumptions used by NMFS regarding the efficacy of bubble curtains. Please review the Commission's most recent 20 April 2020 letter regarding this matter in concert with this letter. Briefly, NMFS has adopted a standard 7-dB source level reduction when bubble curtains are to be used during impact pile driving. Bubble curtains that are placed immediately around the pile do not achieve consistent reductions in sound levels because they cannot attenuate ground-borne sound[11]. Appreciable attenuation is not observed for the sound that resonates through the ground into the far field or for low-frequency sound in general, and a 7-dB source level reduction factor is unsubstantiated by the data currently available. In this case, Rio Grande and Annova have indicated that they plan to deploy a double bubble curtain but they have not specified the distances at which the first and second bubble curtain would be deployed (e.g., 50 and 100 m or 80 and 110 m). If the double bubble curtain is placed in the near field, a 7-dB source level reduction in the far field cannot be assumed. As such, the Commission again recommends that NMFS (1) refrain from using a 7-dB source level reduction factor and (2) consult with acousticians, including those at the University of Washington-Applied Physics Laboratory, regarding the appropriate source level reduction factor to use to minimize near-field (<100 m) and far-field (>100 m) effects on marine mammals[12] *or* use the data NMFS has compiled regarding source level reductions at 10 m for near-field effects and assume no source level reduction for far-field effects for all relevant rulemakings and proposed incidental harassment authorizations.

Mitigation, monitoring, and reporting requirements

In-water heavy machinery activities—NMFS typically indicates that in-water, heavy machinery activities include movement of the barge to the pile location and positioning of the pile on the substrate (e.g., 85 Fed. Reg. 23808). However, the *Federal Register* notice and condition 4(a) in the draft authorizations specified that in-water heavy machinery activities included, as examples, use of barge-mounted excavators, rock armoring, or dredging. The Commission has informally and formally[13]

[10] If the Level A harassment zone were to be revised, it would still be less than the proposed shut-down zone of 20 m.
[11] Bubble curtains also attenuate higher rather than lower frequency sound.
[12] Which also includes Level A harassment in some instances.
[13] See the Commission's 28 April 2020 letter.

noted that in-water heavy machinery activities generally always include movement of a barge to the pile location and positioning of the pile on the substrate. As such, the Commission recommends that NMFS revise its standard condition for ceasing in-water heavy machinery activities to include movement of the barge to the pile location and positioning of the pile on the substrate, as well as the other activity examples, in *all* draft and final incidental take authorizations involving pile driving and removal.

Daylight operations—NMFS indicated that pile installation would occur during daylight hours only in the *Federal Register* notice (85 Fed. Reg. 27366). However, NMFS did not stipulate in the draft authorization that activities must occur during daylight hours only. Those standard conditions have been included in other recently-issued authorizations[14] and in other draft authorizations[15]. It is unclear why NMFS did not include them for the Rio Grande and Annova draft authorizations, particularly since both applicants indicated they would abide by the daylight operational constraints in their applications and the measure would help to ensure that both projects are effecting the least practicable adverse impact on the affected species. The Commission recommends that NMFS include in the final authorizations for Rio Grande and Annova the requirement that work must occur only during daylight hours.

Location and number of PSOs— The Level B harassment zones during vibratory installation of the 42- and 48-in piles extend to 5.6 km (see Figures 5 and 6 of Rio Grande's application). Condition 5(a) of the draft authorization specified that two PSOs must be deployed, one at the pile-driving site and the other at the eastern edge of the Level B harassment zone. If 75 percent of the authorized take is met *and* two or more piles remain to be installed to complete the project, Rio Grande would be required to position an additional PSO at the western edge of the Level B harassment zone (see condition 4(c) in the draft authorization). However, Piwetz and Whitehead (2019) indicated that dolphins were detected throughout the BSC, both to the east and west of the project area. Based on the presence of dolphins throughout the BSC, the likelihood that dolphins could occur west of the project area when pile-driving and -removal activities begin each day, and the fact that the PSO at the pile-driving site would not be able to see the full extent of the Level B harassment zone to the west of the project site, the Commission recommends that an additional PSO be deployed at the western edge of the Level B harassment zone from the outset of the project to ensure that dolphins entering the Level B harassment zone from either end of the BSC would be detected.

Tally of takes—The requirement to keep a daily running tally of the total Level B harassment takes, including observed and extrapolated takes, was not included in the draft authorizations for either Rio Grande or Annova but such a running tally is necessary to ensure the takes are within authorized limits. It is also necessary to determine when the 75-percent 'trigger' of the authorized take has been met, which would necessitate positioning an additional PSO at the western edge of the Level B harassment zone, as per condition 4(c) of the draft authorizations[16]. The Commission

[14] e.g., see the final authorizations for the Chesapeake Tunnel Joint Venture Project (https://www.fisheries.noaa.gov/webdam/download/104970969) and Alaska Marine Lines, Inc. Lutak Dock Project (https://www.fisheries.noaa.gov/webdam/download/106061721).
[15] e.g., see the Gastineau Historical Channel Society Sentinel Island Moorage Float Project draft authorization (https://www.fisheries.noaa.gov/webdam/download/105647341).
[16] Condition 4(c) of Annova's draft authorization indicates that the deployment of an additional observer is to ensure the authorized take is not exceeded. That clarification should be retained in Annova's final authorization and should be added to condition 4(c) of Rio Grande's final authorization.

recommends that NMFS require Rio Grande and Annova to keep a daily running tally of the total Level B harassment takes, based on both observed and extrapolated takes, to ensure timely implementation of measures to avoid exceeding authorized take limits.

Proposed one-year authorization renewals

The Commission has ongoing concerns regarding NMFS's renewal process, which can be reviewed in its 10 February 2020 letter. Based on those concerns, the Commission again recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated *Federal Register* notice process, which is similarly expeditious and fulfills NMFS's intent to maximize efficiencies. If NMFS continues to propose to issue renewals, the Commission recommends that it (1) stipulate that a renewal is a *one-time opportunity* (a) in all *Federal Register* notices requesting comments on the possibility of a renewal, (b) on its webpage detailing the renewal process, and (c) in all draft and final authorizations that include a term and condition for a renewal and, (2) if NMFS declines to adopt this recommendation, explain fully its rationale for not doing so. The second set of recommendations has been included in numerous Commission letters since December 2019, but the recommendations have yet to be followed. Further, NMFS has not responded to those recommendations in a detailed or accurate manner, despite the directive in section 202(d) of the MMPA that NMFS provide a detailed explanation for not following any of the Commission's recommendations. This issue can be reviewed in its 28 April 2020 letter.

Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,

Peter O Thomas

Peter O. Thomas, Ph.D.,
Executive Director

References

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Caltrans. 2015. Technical guidance for assessment and mitigation of the hydroacoustic effects of pile driving on fish. State of California Department of Transportation, Sacramento, California. 532 pages.

Piwetz, S., and H. Whitehead. 2019. Common bottlenose dolphin field summary for lower Laguna Madre, Texas in winter 2018/summer 2019. Texas Marine Mammal Stranding Network. 14 pages.