



August 25, 2017

The Honorable Ryan Zinke
Secretary
U.S. Department of the Interior
1849 C Street, NW
Washington, D.C. 20240

Re: Final Programmatic Environmental Impact Statement for Geological & Geophysical Activities on Gulf of Mexico Outer Continental Shelf

Dear Secretary Zinke:

On behalf of the International Association of Geophysical Contractors (“IAGC”) and the American Petroleum Institute (“API”), we write regarding the Bureau of Ocean Energy Management’s (“BOEM”) recently issued Final Programmatic Environmental Impact Statement (“PEIS”) to evaluate the potential environmental effects of multiple geological and geophysical activities on the Gulf of Mexico Outer Continental Shelf (“OCS”). *See* 82 Fed. Reg. 36,418 (Aug. 4, 2017).¹ IAGC and API fully participated in the regulatory process leading to the issuance of the PEIS, and are parties to related pending federal court litigation. The PEIS, and the regulatory processes to which it will be directly applicable, are of paramount importance to the future exploration and production of domestic oil and gas reserves in the Gulf of Mexico.

¹ IAGC is the international trade association representing the industry that provides geophysical services (geophysical data acquisition, processing and interpretation, geophysical information ownership and licensing, and associated services and product providers) to the oil and natural gas industry. IAGC member companies play an integral role in the successful exploration and development of offshore hydrocarbon resources through the acquisition and processing of geophysical data.

API is a national trade association representing over 625 member companies involved in all aspects of the oil and natural gas industry. API’s members include producers, refiners, suppliers, pipeline operators, and marine transporters, as well as service and supply companies that support all segments of the industry. API and its members are dedicated to meeting environmental requirements, while economically developing and supplying energy resources for consumers.

With regret, we are compelled to express our disappointment with certain key aspects of the PEIS. Although BOEM did not acceptably respond to most of the detailed and well-intended comments we submitted on the draft version of the PEIS (“Draft PEIS”), we recognize that the agency has many competing priorities and that no EIS is “perfect” in the eyes of any given stakeholder. Accordingly, we have limited our comments below to three issues of extraordinary importance (without waiving our objections to other aspects of the PEIS). For the reasons discussed below and in our previous comments, a decision to sanction the findings of the PEIS will pose a serious threat to the Secretary’s responsibility under OCSLA to make OCS resources available “for expeditious and orderly development” and “to meet the Nation’s energy needs as rapidly as possible.” 43 U.S.C. §§ 1332(3), 1802(2)(A).

First, BOEM has concluded that the effects of sound from seismic surveys on marine mammals in the Gulf of Mexico are “expected to be moderate.” PEIS at 4-57. We continue to strongly disagree with this conclusion because it has no support in fact, science, or law, and contradicts a wealth of data and agency findings (including BOEM findings) demonstrating that seismic activities have had no detectable adverse impacts on marine mammal populations. BOEM’s unsupported finding ultimately derives from an unlawful “worst case analysis” modeling exercise that BOEM has admitted does not accurately reflect, and substantially overestimates, the expected impacts. This departure from BOEM’s long-held view is also at odds with the agency’s own definition of the term “moderate,” rendering the PEIS’s findings internally contradictory. In Section I below, we emphasize the flaws in BOEM’s approach and present a new technical analysis that further illustrates these flaws.

Second, BOEM’s Preferred Alternative C includes a seasonal closure applicable to coastal waters in the Gulf of Mexico. As explained in Section II below, this proposed closure will inefficiently result in increased survey effort at a substantially higher cost to operators. Moreover, the proposed closure has no demonstrated scientific basis and will not benefit marine mammals, making any perceived speculative benefits of the closure vastly outweighed by the costs. Ultimately, this proposal will impede the ability of the United States to develop areas that likely contain very large quantities of natural gas that can be developed and produced with existing infrastructure.

Third, BOEM’s Preferred Alternative C also includes a “newly introduced” protocol applicable to non-airgun high-resolution geophysical (“HRG”) surveys (≤ 200 kHz). For the reasons described in Section III below, this new protocol presents serious operational and cost concerns, it has not been fully vetted or analyzed, and it is not currently applied consistently (or applied at all) to a wide range of ocean users, including federal agencies.

For the reasons stated in our detailed comments on the Draft PEIS, we maintain that Alternative A is the only alternative that may be consistent with the best available science,

operational feasibility, and applicable law.² We continue to strongly object to all the other alternatives presented in the PEIS, including BOEM's Preferred Alternative C. Secondly, should BOEM not adopt Alternative A, we may support Alternative C so long as the modifications recommended in this letter are adopted.³

We appreciate your consideration of the following comments. In these comments, we have provided detailed reasons to support our continuing objections regarding these three important issues, and we respectfully request that this information be taken into account as BOEM develops its Record of Decision ("ROD"). We also respectfully request that BOEM reconsider the comments stated in our Draft PEIS Letter, which, as explained below, were not sufficiently addressed by BOEM in the PEIS. Please include this letter (and its attachments) in BOEM's administrative record along with our Draft PEIS Letter.

I. The PEIS arbitrarily and unreasonably overestimates the impacts of seismic survey activities.

In our Draft PEIS Letter, we provided criticism—supported by many pages of detailed technical data and explanation, and legal authorities—of BOEM's approach for modeling the potential impacts of seismic survey activities on marine mammal stocks. Specifically, we criticized BOEM's use of extremely conservative or "precautionary" data values in multiple places within the model used to estimate risk or "takes" that has the consequence of greatly overestimating the number of potential exposures to certain sound levels and thus creating an unrealistic outcome that goes beyond even a conventional "worst-case scenario" as a basis for making impact conclusions. See Draft PEIS Letter § III.B, Attachment A. As explained below, BOEM has failed to address the serious issues with its choice of input values for model used in the PEIS and BOEM's approach is further called into question by a new technical analysis. The overarching problem with BOEM's approach is that it results in an impact finding that is contrary to all impact findings that have ever been made by BOEM or any other agency regarding the potential effects of seismic surveys on marine mammals.

² For easy reference, we have enclosed a copy our Draft PEIS comment letter, dated November 29, 2016 ("Draft PEIS Letter").

³ See *Great Old Broads for Wilderness v. Kimbell*, 709 F.3d 836, 854-55 (9th Cir. 2013) (modified alternative in ROD upheld because all relevant impacts analyzed in National Environmental Policy Act ("NEPA") document); *W. Watersheds Project v. BLM*, 721 F.3d 1264, 1277-78 (10th Cir. 2013) (same); see also PEIS, Appendix M at M-77 ("The PEIS is not the decision document under NEPA. Alternative selection will be provided in the ROD following publication of this Final Programmatic EIS.").

A. The PEIS contains the same take estimation flaws as the Draft PEIS.

Although the take estimates used to support the Draft PEIS were significantly flawed by the choice of exaggerated numbers entered into the model, BOEM transparently disclosed those flaws for the public's benefit. Specifically, BOEM admitted that the Draft PEIS presented an unrealistic worst-case assessment of the potential effects of seismic activities on marine mammals that was purposefully constructed to overestimate impact levels. BOEM explained:

This estimate [of marine mammals exposed to sound] alone does not reflect BOEM's determination of the actual expected physical or behavioral impacts to marine mammals but rather an overly conservative upper limit because none of the mitigations examined in this Programmatic EIS were modeled. Biological significance to marine mammals is left to interpretation by the subject-matter experts.

Draft PEIS at 1-16 (emphasis added). BOEM further stated that the exposure estimates themselves "are based on acoustic and impact models that are, by their nature, conservative and complex" and that "[e]ach of the inputs into the models is purposely developed to be conservative, and this conservativeness accumulates throughout the analysis." *Id.* at 1-19. As a result, the exposure estimates were "higher than BOEM expects would actually occur in a real world environment." *Id.* (emphasis added); *id.* at 1-20 ("This estimate does not reflect an actual expectation that marine mammals will be injured or disturbed. It is an overly conservative estimate.").

BOEM went on to admit that using the exposure predictions based on multiple conservative assumptions as a basis for the effects analysis "requires accepting a worst-case scenario, which ultimately overestimates the numbers of 'take' under the [Marine Mammal Protection Act ("MMPA")] by equating those numbers with the exposures identified in the modeling rather than real world conditions." *Id.* (emphasis added). BOEM summarized these biases in no uncertain terms:

The existing modeling largely does not account for uncertainty in the data inputs and also selects highly conservative data inputs. This bias often produces unrealistically high exposure numbers and "takes" that exponentially increase uncertainty throughout each step of the modeling. The modeling does not incorporate mitigation or risk reduction measures designed to limit exposure. The modeling is an overestimate and should be viewed with that understanding.

Id. at 4-47 (emphases added).

Our comments on the Draft PEIS explained in detail why BOEM’s approach was unlawful. Draft PEIS Letter at III.B. Specifically, we explained that the direct and indirect effects evaluated in a NEPA document must be “caused by” the action, and indirect effects must be “reasonably foreseeable” (40 C.F.R. § 1508.8). In contrast, BOEM’s analysis, by its own admission, considered effects that BOEM did not expect to be caused by the proposed action and that BOEM did not believe were reasonably foreseeable. We also explained how BOEM’s approach violated binding precedent, which forbids “worst-case” NEPA analyses because they are “an unproductive and ineffective method of achieving [NEPA’s] goals; one which can breed endless hypothesis and speculation.” 51 Fed. Reg. 15,618 (Apr. 25, 1986); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 354-56 (1989) (U.S. Supreme Court confirming that worst-case analysis is no longer applicable).

In its PEIS, BOEM provides only generalized, non-specific responses to most of our comments and makes no meaningful changes to the PEIS.⁴ For example, our detailed technical comments on the exposure modeling are addressed at pages M-276 through M-309 of Appendix M to the PEIS. As is readily apparent, many of BOEM’s “responses” to those detailed comments (in many cases, paragraphs long) are single sentences implying that the comments have been addressed in revised Section 1.2.5 of the PEIS. However, Section 1.2.5 of the PEIS is very general and does not specifically address any of the detailed technical comments we provided. Most of BOEM’s other responses to our technical comments on the exposure modeling are “canned” generic responses that also fail to address the specific issues we raised.

Making matters worse, apparently due to pressure from the National Marine Fisheries Service (“NMFS”), BOEM has scrubbed the PEIS to eliminate all of its previous disclosures regarding the overly conservative, “worst-case scenario” aspects of its modeling.⁵ In other words, rather than address IAGC and API’s well-supported technical and legal criticism by modifying its modeling analysis to better reflect real-world conditions, BOEM chose to leave the flawed modeling intact and to address the criticism by eliminating its previous disclosures. In contrast to those disclosures, BOEM now states that the “exposure estimates presented in the study and this Programmatic EIS are conservative but reasonable,” even though no changes have been made to the modeling analysis that would justify this re-characterization. PEIS, Appendix

⁴ See 40 C.F.R. § 1502.9(b) (BOEM was required to “indicate the agency’s response to the issues raised” in public comments); *id.* § 1503.4(a) (detailing agency’s obligation to respond to comments on a draft EIS).

⁵ As Appendix M reflects, NMFS made numerous comments criticizing—without supporting information—BOEM’s transparent disclosures regarding the significant assumptions and limitations of the exposure modeling. In an apparent effort to ensure that NMFS would adopt the PEIS, BOEM erased its disclosures from the PEIS and re-characterized the exposure modeling as NMFS requested. BOEM has also apparently included mitigation measures, such as the Coastal Closure, not because the best available information supports those measures but rather to “keep[] with the spirit of the precautionary principle.” PEIS, Appendix M at M-187.

M at M-182. BOEM also removed all references to the words “worst case” from the PEIS without any modification to the modeling assumptions. As BOEM now states:

At this stage, the modeling used the best available data to support assumptions and inputs. For this Programmatic EIS, the existing modeling outputs fully inform the potential range of exposures, with a reasonable margin of conservatism over the 10-year timeframe of this analysis. . . . There were some erroneous occurrences of ‘worst case’ in Appendix D, and they have been removed and/or clarified. Chapter 1.2.5 has been revised to provide clarity on the modeling effort. While the modeling results may be conservative, they are the most credible, science-based information available at this time.

Id. at M-46; *see id.* (“While this analysis required some professional judgement [sic] by the subject-matter experts, the resulting impact conclusions remain credible in light of the available scientific record.”).

The re-characterizations in the PEIS cannot be reconciled with the disclosures BOEM provided in the Draft PEIS. As BOEM admitted in its Draft PEIS, the effects analysis is almost exclusively based upon a modeling exercise that uses a cascading series of conservatively biased assumptions for all uncertain parameter inputs. These assumptions lead to accumulating bias as the cumulative conservative assumptions add up to increasingly unlikely statistical probabilities that are not—as BOEM recognized in the Draft PEIS—representative of real-world conditions. These modeling flaws persist in the PEIS, as do the resulting legal infirmities. The new analysis described below further demonstrates the overly conservative, “worst-case” nature of the PEIS modeling.

B. A new technical analysis emphasizes the flaws in the PEIS exposure modeling.

To further illustrate the problems described in our earlier comments, IAGC and API requested and received permission from both BOEM and NMFS to engage the same contractor that performed the Draft PEIS modeling (JASCO Applied Sciences (“JASCO”)) to run the same model, with the same data, but with certain alterations. While the model contains dozens of variables, and precautionary assumptions were exercised by BOEM and NMFS for a large number of those variables, this new analysis performs minor alterations to only four or five variables to illustrate the dramatic consequences of redundantly applied precaution in a large, complex, multivariate model. We have enclosed a copy of the report documenting this new analysis (the “Model Analysis”).

The Model Analysis selects four variables to be changed from the values used in the PEIS to values that are more representative of the central or most likely tendency. These four variables are sound source size, marine mammal densities, aversion, and mitigation. The cover

letter included with the Model Analysis explains why each of these variables was chosen. In short, an alternative sound source was chosen because the value used in the PEIS model reflects the extreme upper end of array sizes in the Gulf of Mexico. The Model Analysis uses a real, commonly used array that roughly reflects the mean of the array sizes used in the Gulf. Alternative marine mammal densities were chosen because values used by the PEIS modeling are, in some cases, extremely different than historical values, consistently greater than historical values, and based on an as-yet untested predictive model. The Model Analysis uses density values half-way between the values applied in the PEIS and the densities formally reported by NMFS as a reasonable compromise in the face of scientific uncertainty. Modeling of aversion was chosen because behavioral avoidance or movement away from a sound source is a well-documented and significant factor influencing the number of potential marine mammal exposures, but it is not accounted for in the PEIS modeling. Finally, the application of shutdowns as a mitigation measure was chosen because it is known that this commonly employed mitigation measure likely reduces the number of marine mammal exposures, but the beneficial effects of mitigation were also not accounted for in the PEIS modeling.

Additionally, in a separate and independent JASCO analysis funded by NMFS, the 2016 Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing were applied to the Draft PEIS model to illustrate the difference in model outcome created by changing risk threshold criteria alone. The NOAA 2016 criteria were not used in the Draft PEIS but are applied in the PEIS. JASCO was given permission by NMFS to include the updated threshold criteria with the four updated variables (described above), and those combined results are presented in Tables 15 (for NOAA 2016 sound pressure level [“SPL”]-based thresholds) and 16 (for NOAA 2016 sound exposure level [“SEL”]-based thresholds) in the Model Analysis, which are reproduced below for easy reference.

[Continued on next page]

Table 15. Number individual animals estimated to exceed peak SPL threshold over a decade for all surveys and zones (rounded to nearest integer). The Draft PEIS used 180 dB rms SPL as the threshold for injury, the Final PEIS uses NOAA's Technical Guidance (NMFS 2016).

Species	PEIS		4130 in ³ array, NMFS 2016			
	8000 in ³ , no aversion, PEIS densities		PEIS densities		Alternate densities	
	180 dB SPL	NMFS 2016	No aversion	Aversion	No aversion	Aversion
Cuvier's beaked whales	51655	425	1	0	0	0
Bottlenose dolphins	2743723	22841	436	73	432	73
Bryde's whales	589	32	9	7	2	1
<i>Kogia spp.</i>	30620	29171	13956	8221	6963	4102
Short-finned pilot whales	25182	506	0	1	0	1
Sperm whales	81239	350	8	7	4	3

Table 16. Number individual animals estimated to exceed SEL threshold over a decade for all surveys and zones (rounded to nearest integer). The Draft PEIS used 180 dB rms SPL as the threshold for injury, the Final PEIS uses NOAA's Technical Guidance (NMFS 2016).

Species	PEIS		4130 in ³ array, NMFS 2016			
	8000 in ³ , no aversion, PEIS densities		PEIS densities		Alternate densities	
	180 dB SPL	NMFS 2016	No aversion	Aversion	No aversion	Aversion
Cuvier's beaked whales	51655	1	0	0	0	0
Bottlenose dolphins	2743723	95	0	0	0	0
Bryde's whales	589	152	62	57	11	10
<i>Kogia spp.</i>	30620	108	0	8	0	4
Short-finned pilot whales	25182	0	0	0	0	0
Sperm whales	81239	0	0	0	0	0

The tables above reflect the sequence in which the individual variables are run in the model, making it less easy to see the relative contributions of each variable, but the bottom line is clear: changing only five values to numbers that are only slightly different from those used in the Draft PEIS or PEIS changes the estimated number of Level A takes from tens of thousands or even millions to a few hundred takes, or in many cases zero takes. The respective estimates of bottlenose dolphin takes are especially revealing, and further emphasize the lack of support for the Coastal Closure (as discussed in Section II, below). This simple, partial re-modeling study demonstrates that it is not realistic or appropriate to apply the same logic about precaution and scientific uncertainty to an entire multivariate model as has historically been applied to single, stand-alone variables. For example, if there is uncertainty about the actual population size of *Kogia* in the Gulf of Mexico, it may be appropriate to select a higher number than the best available (Stock Assessment Report) population estimate when addressing a simple single-variable issue, such as fishery bycatch. However, when that precautionary inflation of population data is combined with precaution about behavioral response, mitigation effectiveness, acoustic exposure and hearing risk threshold, the outcome becomes unrealistic due to the mathematical interactions of the inflated values in the model.

This problem is not unique to the modeling of potential risk to marine mammals from underwater sound. It has been encountered in many complex multivariate models used in other scenarios, such as medicine, weather prediction, and aircraft safety. There are methods for incorporating conservatism or “precaution” due to scientific uncertainty, but they are applied at the end of the modeling exercise, not to every variable used in the modeling. In such cases, the model is run with best available science or measures of central or most likely tendency to arrive at a best estimate of the most likely outcome. In other words, instead of estimating that there will be 51,565 Level A takes of beaked whales over 10 years of seismic survey activity, one would use the more realistic estimate of zero to one take, based on most likely values, and increase that estimate to perhaps 10 or 20 takes to account for uncertainty. There are sophisticated mathematical tools for quantifying the uncertainties in the component variables and deriving a correction factor to apply to the end product.⁶

At present, there is tremendous confusion among advocacy groups, the media, and the public that results from mistakenly assuming that an estimate of, for example, 51,565 Level A beaked whale takes is the actual, most likely expected outcome, when, as demonstrated above, the actual, most likely expected outcome is zero. IAGC and API understand that scientific uncertainty and uncertainty about future survey activities may call for some reasonable amount of “buffering” in the agency’s impact predictions. However, the best practice for handling such uncertainty calls for first estimating the most likely outcome based on the best available science and then making a separate decision about what level of additional “buffering” conservatism is required to account for anticipated uncertainties.

As demonstrated above and in the Model Analysis, an approach that applies conservative changes (in extreme fashion) to every variable used in a multivariate model results in end-product estimates that are, literally, millions of times greater than estimates based on variables that are representative of the average or most likely value. The Model Analysis shows, in plain terms, why BOEM’s original disclosures about the modeling flaws in the Draft PEIS were correct and, correspondingly, why its re-characterizations of that modeling in the PEIS are erroneous.

C. BOEM’s finding that seismic surveys in the Gulf of Mexico may have “moderate” impacts on marine mammals is unprecedented and unsupported.

For over 40 years, the federal government and academic scientists have studied the potential impacts of seismic survey activities on marine mammals, and have concluded that any such potential impacts are insignificant. These findings have been publicly reaffirmed by BOEM

⁶ See, e.g., Gregory K., G. Bibbo, and J.E. Pattison. 2005. A standard approach to measurement uncertainties for scientists and engineers in medicine. *Australas. Phys. Eng. Sci. Med.* 2005 Jun; 28 (2): 131-139. PMID 16060321.

on multiple occasions and are documented in detail in our comments on the Draft PEIS. As BOEM has stated:

To date, there has been no documented scientific evidence of noise from air guns used in geological and geophysical (G&G) seismic activities adversely affecting marine animal populations or coastal communities. This technology has been used for more than 30 years around the world. It is still used in U.S. waters off of the Gulf of Mexico with no known detrimental impact to marine animal populations or to commercial fishing.

In <http://www.boem.gov/BOEM-Science-Note-August-2014/> (*Science Notes*, Aug. 22, 2014); see also Draft PEIS Letter § III.B.3.

Despite this well-established precedent, the PEIS retains the Draft PEIS's flawed conclusion that seismic survey activities in the Gulf of Mexico may have "moderate" effects on marine mammals. For all of the reasons stated in our earlier comments, this finding is unsupported, arbitrary, and not consistent with the best available science. Indeed, this finding is made possible only by applying the unlawful worst-case, overly conservative modeling approach addressed above. This unprecedented impact finding, based on inaccurate modeling that BOEM previously stated does not present the effects that are actually expected, will have tangible, serious, and negative future implications as this PEIS will be used to support BOEM permitting decisions and NMFS incidental take authorizations.⁷

For all of the reasons stated above, we respectfully request that BOEM reconsider the detailed comments we provided on the Draft PEIS, as well as those above, including the Model Analysis, and appropriately modify the modeling and associated impact estimates. Alternatively, if BOEM plans to proceed with the flawed modeling approach, it is imperative that the ROD clearly and accurately disclose all of the modeling assumptions in plain, transparent terms so that the public is made fully aware that the PEIS model produces a worst-case, overly precautionary assessment that does not reflect the impacts that are expected to occur.

⁷ The "moderate" finding is also based on a flawed application of the PEIS's impact criteria. "Minor" impacts are defined as "detectable, short term, extensive or localized, but less than severe." PEIS at 4-8. The PEIS states that "[i]mpacts to marine mammals from deep-penetration seismic airgun surveys result in extensive (i.e., affecting large numbers of individuals), short-term but not severe impacts," but erroneously concludes that this is a "moderate" impact when, in fact, this corresponds to the "minor" impact definition. *Id.* at 4-125 (emphases added). Under the PEIS definitions, a non-severe impact is only "moderate" if it is "long lasting" (*id.* at 4-8), but BOEM has concluded, consistent with a wealth of available information, that the impacts of seismic activities are, at most, "short-term." *Id.* at 4-125.

II. Alternative C’s proposed seasonal coastal closure is arbitrary and unsupported, and will have adverse economic and operational consequences.

Alternative C includes a proposed seasonal closure applicable to all seismic activities for all coastal waters in the Gulf of Mexico shoreward of the 20-meter isobath between February 1 and May 31 (“Coastal Closure”). BOEM states that the Coastal Closure is intended to “afford protection to individual members of the bay, sound, and estuary stocks during their calving season, as well as coastal stocks of common bottlenose dolphins, Atlantic spotted dolphins, and individual manatees that may occur in coastal and inshore waters.” PEIS at xvii. However, as explained below, the Coastal Closure is not supported by the best available science, will increase exposure estimates for other marine mammal stocks, and will have significant adverse economic and operational consequences. Moreover, according to BOEM’s own conclusions, all of the additional mitigation measures included in Alternative C would not reduce the overall level of impacts compared to Alternative A.

First, the genesis of the Coastal Closure is a term in the settlement agreement executed among the parties in pending litigation (“Settlement Agreement”).⁸ Although API and IAGC disagree that this nearshore restriction was appropriate or necessary, the rationale for the restriction was in response to coastal bottlenose dolphin strandings and mortalities (*i.e.*, the northern Gulf of Mexico unusual mortality event (“UME”)). However, the UME has since been closed.⁹ Moreover, none of the strandings or deaths in the UME has been attributed to deep penetration seismic survey activities. *See* PEIS at 2-13. Instead, recent research demonstrates that seismic impulses at even higher thresholds fail to induce even temporary threshold shifts in dolphin hearing. *See* Finneran et al. (2015). No relevant scientific evidence supports a further restriction of deep penetration seismic surveys in coastal areas or suggests that such a restriction would result in any meaningful benefit to coastal bottlenose dolphin populations, and no contrary evidence or meaningful response is provided by BOEM in the PEIS.¹⁰

⁸ *See NRDC et al. v. Jewell et al.*, No. 2:10-cv-01882 (E.D. La.) (Dkts. 118-2 and 127-2); *see also id.* at Dkt. 118-2, Section IX (“Intervenor-Defendants do not agree that all of the measures described in paragraph IX.A and IX.B are feasible or appropriate. Intervenor-Defendants shall be free to challenge any such measures should one or more of the Federal Defendants develop and implement them.”); *id.* at Dkt. 127-2, Section G (“The terms of this Stipulation have been agreed to for purposes of compromise. No party concedes by entering into this Stipulation that any of the permit requirements described above are warranted by scientific evidence or should be imposed after the Stay expires, or that these requirements are sufficient to achieve legal compliance or reduce biological risk over the long term.”).

⁹ *See* http://www.nmfs.noaa.gov/pr/health/mmume/cetacean_gulfofmexico.htm.

¹⁰ There are no data to suggest that seismic-generated sound negatively impacts the bottlenose dolphin population in general or the mother-calf pairs in particular, and it is equally, if not more, plausible that the animals are completely unaffected by the sound. Moreover, as

Second, another rationale for the nearshore restriction contained in the Settlement Agreement was that seismic activity is supposedly an additional stressor to an already stressed bottlenose dolphin population in the UME, and that such additional stress may impact dolphin breeding rates. However, there is no evidence that sound from deep penetration seismic surveys contributes in any way to dolphin late-term pregnancy complications or perinatal and postnatal responses that would lead to increased calf mortality, or UMEs. *See* Litz et al. (2014); Venn-Watson et al. (2015).

Third, BOEM finds that the Coastal Closure could result in higher exposure numbers for some marine mammal stocks if seismic activity increases outside the closed area. Specifically, PEIS Section 4.2.4.1.1 states that, in zones 1 and 2, all species other than bottlenose dolphins have increased exposure estimates as a result of the Coastal Closure. In zone 3, Atlantic spotted dolphins (among others) show increased exposure estimates, and manatees show little or no change, in response to the Coastal Closure. *Id.* According to BOEM's analyses, the Coastal Closure will increase the potential effects on numerous marine mammal stocks while providing no established benefits to coastal bottlenose dolphins.

Fourth, the Coastal Closure contradicts actions that BOEM has recently taken to incentivize shallow-water Gulf of Mexico prospects. Specifically, BOEM has dramatically lowered the royalty rate for shallow-water production in an effort to improve the economic case for drilling in those areas.¹¹ Thus, on one hand, BOEM is taking action to encourage interest in shallow-water coastal prospects and, on the other hand, BOEM has proposed to enact a seasonal closure in these very areas, which, as explained below, will significantly discourage interest and the ability to identify those prospects. We encourage BOEM to ensure that the forthcoming ROD does not undermine other policy actions that BOEM has already taken.

Finally, the Coastal Closure will have substantial negative economic and operational consequences. There are many unleased blocks within the area covered by the Coastal Closure. Because existing seismic data in these areas is outdated and inadequate to inform decisions regarding future lease sales, the Coastal Closure will impede industry's and BOEM's evaluations of blocks for future lease sales. As addressed below, the Coastal Closure significantly increases the likelihood that an affected deep penetration seismic survey will not be completed within its one-year permit term, thereby increasing the overall number of surveys that will need to be conducted, increasing costs, and decreasing overall efficiency.

(. . . continued)

demonstrated in Section I.B above, modeling of potential acoustic exposures, based on most likely (as opposed to worst-case) assumptions, shows that bottlenose dolphin exposure to seismic sound will be minimal. The fact that these populations may be affected by coastal pollution, vessel traffic in the estuaries, or endemic diseases is not a basis for restricting an activity that has no demonstrated adverse effect.

¹¹ *See* <https://www.boem.gov/note07062017/>.

BOEM incorrectly assumes that the Coastal Closure “is unlikely to affect the total level of survey effort because the survey effort may shift to seasons in which the coastal areas are available for exploration and would likely survey outside these areas during the closed seasons.” PEIS at 4-89, 4-90. The enormous, mostly unexplored area covered by the Coastal Closure requires certain specialized surveys—full azimuth, long offset, deep data seismic. The coastal offshore areas of Louisiana and Eastern Texas, in particular, require very specialized equipment—light ocean bottom nodes and ocean bottom cables.¹² Regular marine streamer crews will not be able to collect complete enough data or achieve the required spatial sampling to be able to adequately image the targeted section. These specialized node and ocean bottom cable crews are not designed for deeper, open-water exploration. Moreover, the vessels used in shallow water are often smaller and have shallower vessel drafts. Such vessels cannot be taken easily or safely into deep open-water environments. In short, the specialized operations required for the areas covered by the Coastal Closure cannot simply be shifted to other areas that do not require the same specialized operations.

Additionally, modern seismic imaging requires an entire aperture to be recorded before imaging can be performed. Essentially, all data for a particular data project must be gathered as a whole before the final steps are performed to create the data image. This means, in many instances, that surveys within the Coastal Closure will be terminated early as a result of the four-month restriction. If crews are able to move to locations outside of the closure area (which will be difficult for the reasons stated above), it is very unlikely that those projects will last for exactly four months, which means that the delays to surveys in the Coastal Closure area are likely to last for much longer than four months (not including the substantial time required for mobilization and demobilization). Moreover, the four closed months are the most operationally productive months in the Gulf of Mexico because the winter storms have ended and the summer tropical storms have not yet begun. Accordingly, the cost to operate in the area covered by the Coastal Closure will be substantially higher than other areas and result in increased and inefficient survey effort overall.¹³

¹² Based on the limited information that is available, it is likely that coastal areas offshore Louisiana and East Texas contain very large quantities of natural gas. For example, just one prospect indicates recoverable reserves exceeding 1 trillion cubic feet. See http://www.offshore-mag.com/articles/print/volume-70/issue-6/Gulf_of_Mexico/davy-jones-a-new-era-for-gom-shelf-exploration.html; http://www.offshore-mag.com/articles/print/volume-70/issue-6/Gulf_of_Mexico/davy-jones-a-new-era-for-gom-shelf-exploration.html. This area is a very prospective area, with infrastructure in place both to bring the gas onshore and to distribute it around the country.

¹³ Based on calculations from one of our member companies, the cost of shutting down a single crew for the proposed four-month closure season could be in the range of \$7,000,000. Based on those same calculations, lost revenues due to operating around a four-month closure over a 10-year period could range from \$300,000,000 to \$900,000,000.

In sum, for the reasons stated above and in our Draft PEIS Letter, we respectfully request that BOEM not adopt the Coastal Closure in the ROD because any speculative benefit (which is unsubstantiated) is far outweighed by the environmental, operational, and economic costs of mandating the Coastal Closure. The Coastal Closure is not supported by the best available science, it will not benefit marine mammals, it will result in overall increased survey effort at a much higher cost to operators, and it will hamper the ability of the U.S. to develop nationally strategic natural gas reserves.

Alternatively, if BOEM intends to include the Coastal Closure in the ROD, we request that BOEM, at a minimum, clearly state that the Coastal Closure is an optional provision that may be included on a case-by-case basis in future permits or authorizations at the election of the issuing agency. In this event, the ROD should also make clear that agencies may decrease the temporal and geographic scope of the closure if they elect to include the optional Coastal Closure in future permits or authorizations.

III. The “newly introduced” Non-Airgun HRG Survey Protocol presents serious operational and cost concerns, and has not been fully vetted.

BOEM’s Preferred Alternative C includes “newly introduced measures for survey protocols for non-airgun HRG surveys” less than or equal to 200 kHz (the “Non-Airgun HRG Survey Protocol”). PEIS at xi; *see id.* § 4.2.4.1.4. There are serious flaws with this new protocol and, in fact, it is not currently consistently applied (or applied at all) to the wide range of ocean users, including government agencies such as the National Ocean Service, that conduct these types of surveys. When proposing to broadly implement a new protocol, such as the Non-Airgun HRG Survey Protocol, BOEM must evaluate the wide variety of surveys and situations to which it will apply as well as the cost-benefit impacts associated with implementing new mitigation measures. Indeed, the type of equipment, platform types, and overall operational support vary substantially for different non-airgun HRG surveys employed in the oil and gas industry alone. However, none of this variability is evaluated in the PEIS nor is the Non-Airgun HRG Survey Protocol’s application to different survey types and situations. The PEIS also does not consider the fact that many non-airgun HRG surveys are now conducted autonomously, which poses a major implementation impediment.

In addition, the proposed Non-Airgun HRG Survey Protocol presents serious safety and cost concerns, which have not been fully vetted. For example, adding protected species observers (“PSO”) to the smaller vessels used for non-airgun HRG surveys will be challenging, costly to implement, and will present safety risks due to having more people onboard smaller vessels, in which many vessels used are supporting autonomous survey acquisitions. As to costs, we roughly estimate that the PSO portion of the Non-Airgun HRG Survey Protocol will result, at a minimum, in an approximate 5-20% increase in overall cost per individual survey. Unlike large airgun seismic surveys, these HRG surveys can occur as frequently as monthly, compounding the percent increase in cost and resulting in millions of dollars of added cost.

For these reasons, we respectfully request that if BOEM does not select Alternative A in its ROD, it either (i) remove the Non-Airgun HRG (≤ 200 kHz) Survey Protocol from the measures included in Alternative C until the Protocol can be more fully analyzed and vetted, or (ii) clearly state that the Non-Airgun HRG (≤ 200 kHz) Survey Protocol is an optional measure that may be included on a case-by-case basis in future permits or authorizations, pending further analysis and input from the regulated community and the public.

IV. Conclusion.

Again, we maintain that Alternative A is the only reasonable alternative and strongly urge BOEM to adopt Alternative A in the ROD. As a much less preferable, but potentially acceptable alternative, we may support Alternative C so long as the ROD makes all of the modifications stated in this letter. We remain hopeful that our concerns can be acceptably resolved in the forthcoming ROD, and genuinely appreciate your consideration of our comments. Should you have any questions, please do not hesitate to contact Nikki Martin (713.957.5068) or Andy Radford (202.682.8584).

Sincerely,



Nikki Martin
International Association of Geophysical Contractors
President



Andy Radford
American Petroleum Institute
Sr. Policy Advisor – Offshore

Attachments

cc: David Bernhardt, Deputy Interior Secretary
Kate MacGregor, Deputy Assistant Secretary for Land and Minerals
Vincent DeVito, Counselor to the Secretary for Energy Policy
Chairman Rob Bishop, House Committee on Natural Resources
Chairman John Thune, Senate Commerce Committee
Chairman Lisa Murkowski, Senate Energy and Natural Resources Committee