

CRE's Information Quality Act Alert on NMFS' Proposed Exposure and Take Estimates for Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico

I. INTRODUCTION AND SUMMARY

The National Marine Fisheries Service ("NMFS") has proposed rules under the Marine Mammal Protection Act ("MMPA") for oil and gas geophysical activities in the Gulf of Mexico ("proposed GOM Take Rules").¹ These proposed rules authorize and regulate the number of marine mammal "Takes" that companies are allowed when they look for oil and gas in the GOM.²

NMFS' proposed GOM Take Rules violate the Transparency and Reproducibility requirements of the Information Quality Act ("IQA") because they are based on proprietary models that have never been subject to peer review and the other especially rigorous robust checks required by the IQA and by NMFS' IQA Guidelines.³

NMFS' proposed GOM Take Rules also violate OMB's Information Quality Bulletin for Peer Review because they are, or are based on, "highly influential

¹ NMFS' proposed GOM Take Rules are available at <https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related>.

² The MMPA defines "Take" as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." 16 U.S.C. 1362. There is no evidence of harm to marine mammals after decades of oil and gas exploration in the GOM. See CRE Alert, *infra*, Section II (G).

³ The IQA's Transparency and Reproducibility requirements are explained in NOAA/NMFS IQA Guidelines at https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html. NMFS' non-compliance with IQA Transparency and Reproducibility requirements is discussed in CRE's Alert, *infra*, Sections II (B), (C).

scientific assessments” that have never been peer reviewed in accordance with OMB’s Bulletin. ⁴

NMFS’ proposed GOM Take Rules also violate the OMB Peer Review Bulletin requirement that

“If an agency relies on influential scientific information or a highly influential scientific assessment subject to the requirements of this Bulletin in support of a regulatory action, the agency shall include in the administrative record for that action as certification that explains how the agency has complied with the requirements of this Bulletin and the Information Quality Act. Relevant materials are to be placed in the administrative record.”⁵

NMFS’ proposed GOM Take Rules also violate the IQA and IQA Guidelines’ Accuracy requirement ⁶ because

- The proposed Rules’ estimates of marine mammal exposures and Takes are not supported by real world data;

- The proposed Rules’ exposure and Take estimates are based on proprietary models that have never been peer reviewed and which do not consider the mitigating procedures that NMFS requires to minimize marine mammal exposures;

- The proposed Rules’ exposure and Take estimates are inconsistent with the absence of any harm from decades of oil and gas geophysical operations in the Gulf of Mexico; and

- The proposed Rules’ exposure and Take estimates are not based on the best available information.

NMFS’ proposed GOM Take Rules also violate the IQA because they do not comply with any of Pre-dissemination Review requirements of NOAA/NMFS’ IQA

⁴ OMB’s Information Quality Bulletin for Peer Review is available at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf. NMFS’ non-compliance with OMB’s Bulletin is discussed in CRE’s Alert, *infra*, Section II (C).

⁵ OMB’s Information Quality Bulletin for Peer Review, page 31, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

⁶ The IQA’s Accuracy requirements are explained in NOAA/NMFS IQA Guidelines at https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html. NMFS’ non-compliance with IQA Accuracy requirements is discussed in CRE’s Alert, *infra*, Section II (E).

Guidelines.⁷ NMFS doesn't even mention the IQA in the proposed Rules.

The Appendix to CRE's Alert provides specific examples of NMFS' IQA violations. This Appendix and the Conclusion Section of CRE's Alert state the corrective actions necessary to comply with the IQA and with OMB's Information Quality Bulletin for Peer Review.

These actions include abandoning use of non-transparent, non-reproducible, un-validated and inaccurate models to estimate exposures and Takes. NMFS emphasizes that "use of models for estimating the size of ensonified areas and for developing take estimates is not a requirement of the MMPA incidental take authorization process...."⁸ Line Transect currently generates the best available information about exposures and Takes, and NMFS should use Line Transect until and unless NMFS has models that have been properly peer reviewed and determined to be accurate.

Peer review of NMFS' models should include determining their compliance with the Council for Regulatory Modeling's ("CREM") Guidance on the Development, Evaluation and Application of Environmental Models.⁹ There is compelling precedent for this corrective action because NMFS has already done it for use of the proprietary Acoustic Integration Model ("AIM") in estimating exposures and Takes under the MMPA.¹⁰

⁷ NOAA/NMFS' Pre-dissemination review requirements are available at https://www.cio.noaa.gov/services_programs/info_quality.html and at IQA Guidelines, Part II, https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html. NMFS' non-compliance with IQA Pre-dissemination review requirements is discussed in CRE's Alert, *infra*, Section II (H).

⁸ 82 FR 44565, 44567 col. 1 (Sept. 25, 2017), at <https://www.gpo.gov/fdsys/pkg/FR-2017-09-25/pdf/2017-20362.pdf>.

⁹ The Council for Regulatory Environmental Modeling's Guidance is available at Guidance on the Development, Evaluation, and Application of Environmental Models (EPA 2009) ("CREM Guidance") at <https://www.epa.gov/measurements-modeling/guidance-document-development-evaluation-and-application-environmental-models>.

¹⁰ See, e.g., Summary Report: Review of Acoustic Integration Model, at https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2006/2006_10_13%20Getz%20Acoustic%20integration%20modeling%20AIM%20review%20report.pdf.

II. DISCUSSION

A) Background

NMFS' proposed GOM Take Rules do not apply to oil and gas extraction or production. They only apply to offshore exploration for oil and gas using geophysical surveys. These rules were requested from NMFS by the Bureau of Ocean Energy Management ("BOEM"), which leases offshore tracts for oil and gas operations, and which regulates those operations.

Geophysical surveys rely on the use of sound emitted from ships to identify oil and gas deposits in the ocean floor. In order to estimate Takes, NMFS first estimates the number of marine mammal exposures to this sound and the level of sound they're exposed to.

Exposures are not regulated under the MMPA. Takes are regulated.¹¹ BOEM, which regulates the GOM oil and gas industry, stated in its revised petition to NMFS for GOM Take Rules that

"There are currently no available robust, quantitative models that fully translate exposures to takes at the broader programmatic and aggregate scale that is the subject of this petition."¹²

NMFS uses three proprietary JASCO models to produce the exposure and Take estimates in the proposed GOM Take Rules.¹³

NMFS' exposure estimates are presented in Table 8 of the proposed GOM Take Rules.¹⁴

¹¹ BOEM discusses the difference between exposures and Takes in its Petition to NMFS for Incidental Take Regulations (October 14, 2016), page 93, available at <https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico> (scroll down and link to "Application for Incidental Take Regulations") ("BOEM Petition").

¹² BOEM Petition, pages 93 and 95, available at <https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico> (scroll down and link to "Application for Incidental Take Regulations").

¹³ See, e.g., Gulf of Mexico Acoustic Exposure Model Variable Analysis (JASCO), pages 18-19, at https://www.iagc.org/uploads/4/5/0/7/45074397/api_iagc_gom_analysis_v2.1.pdf. These three proprietary JASCO models will hereinafter be referred to as MONM, AASM, and JASMINE.

¹⁴ 83 FR 29212, 29262 (June 22, 2018), <https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking->

NMFS' Take estimates are presented in Table 9 of the proposed GOM Take Rules.¹⁵

In its proposed GOM Take Rules, NMFS states that its exposure and Take estimates represent what may reasonably be expected to occur in the real world. Paradoxically, NMFS itself admits that it “overestimates the numbers of individuals affected across the year”¹⁶

B) NMFS GOM Exposure and Take Estimates are Disseminations Subject to the IQA's Transparency, Reproducibility, Accuracy, Pre-dissemination Review and Peer Review Requirements

NMFS published its exposure and Take estimates in the Federal Register. Consequently, NMFS has disseminated them under IQA. NMFS will disseminate them again if NMFS publishes them in the Federal Register as final rules.¹⁷

Therefore, NMFS' exposure and Take estimates, and NMFS' publicly disseminated statements about them, must comply with IQA Transparency, Reproducibility and Accuracy requirements.

The National Academy of Sciences, Energy and Medicine (“NAS”) explains that the IQA and IQA Guidelines require agencies, including NMFS, to ensure “that the models used in regulatory proceedings are objective, transparent, and reproducible....”¹⁸ Objectivity includes demonstrating that the ESA Models are accurate and reliable.¹⁹

[and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related](https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related).

¹⁵ 83 FR 29212, 29263 (June 22, 2018),

<https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related>.

¹⁶ 83 FR 29212, 29261 co. 2 (June 22, 2018),

<https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related>.

¹⁷ See, e.g., NOAA/NMFS IQA Guidelines, definition of “Dissemination,” at https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html.

¹⁸ National Academy of Sciences, Models in Environmental Regulatory Decision Making (2007), pages 68-69, at

http://www.nap.edu/download.php?record_id=11972#.

¹⁹ E.g., NOAA /NMFS IQA Guidelines, Part I, “Definitions,” “Objectivity,” at http://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html.

Because they are disseminations, NMFS' proposed GOM Take Rules are also subject to the Pre-dissemination Review requirements of NOAA/NMFS' IQA Guidelines, and to the requirements of OMB' Information Quality Bulletin for Peer Review.²⁰

NMFS' exposure and Take estimates in Tables 8 and 9 of NMFS' proposed GOM Take Rules,²¹ and NMFS' statements that its estimates accurately reflect the real world, violate these IQA requirements for the following and other reasons:

- They are based on proprietary models that violate the IQA's transparency and reproducibility requirements;
- These proprietary models have never been properly peer reviewed to determine whether they've been developed and applied in compliance with EPA's Council for Regulatory Modeling standards;²²
- These proprietary models violate IQA accuracy requirements because NMFS' proprietary models over estimate the actual number of marine mammal exposures and takes; and
- NMFS' proposed GOM Take Rules violate IQA pre-dissemination review requirements and OMB certification requirements.

These violations are discussed in more detail below.

²⁰ For Pre-dissemination Review requirements, see https://www.cio.noaa.gov/services_programs/info_quality.html and NOAA/NMFS IQA Guidelines, Part II, at https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html. For the requirements of OMB's Information Quality Bulletin, see Bulletin pages 7-8, and 31, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

²¹ These Tables are at 83 FR 29212, 29262, 29263 (June 22, 2018), <https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related>.

²² Guidance on the Development, Evaluation, and Application of Environmental Models (EPA 2009) ("CREM Guidance"), <https://www.epa.gov/measurements-modeling/guidance-document-development-evaluation-and-application-environmental-models>.

C) NMFS' Exposure and Take Estimates Violate IQA Transparency and Reproducibility Requirements

NOAA/NMFS' IQA Guidelines explain that Transparency and Reproducibility are crucial:

“Without regard to whether information is influential, NOAA strives for the highest level of transparency about data and methods for all categories of information in all its scientific activities, within ethical, feasibility, cost, and confidentiality constraints. This supports the development of consistently superior products and fosters better value to the public. It also facilitates the reproducibility of such information by qualified third parties.”

“**Transparency** is not defined in the OMB Guidelines, but the Supplementary Information to the OMB Guidelines indicates (p. 8456) that ‘transparency’ is at the heart of the reproducibility standard. The Guidelines state that ‘The purpose of the reproducibility standard is to cultivate a consistent agency commitment to transparency about how analytic results are generated: the specific data used, the various assumptions employed, the specific analytic methods applied, and the statistical procedures employed. If sufficient transparency is achieved on each of these matters, then an analytic result should meet the reproducibility standard.’ In other words, transparency - and ultimately reproducibility - is a matter of showing how you got the results you got.”²³

“**Reproducibility** means that the information is capable of being substantially reproduced, subject to an acceptable degree of imprecision. For information judged to have more (less) important impacts, the degree of imprecision that is tolerated is reduced (increased). With respect to analytic results, ‘capable of being substantially reproduced’ means that independent analysis of the original or supporting data using identical methods would generate similar analytic results, subject to an acceptable degree of imprecision or error.”²⁴

²³ NOAA/NMFS IQA Guidelines at https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html (emphasis in the original).

²⁴ *Id.* (emphasis in the original).

When proprietary models do not allow transparency or reproducibility, but the proprietary models must still be used, then NOAA/NMFS' IQA guidelines require the following:

“Confidential and proprietary data, and other supporting information which cannot be disclosed. Where confidentiality or other considerations preclude full transparency, then especially rigorous robustness checks will be applied. They may take many forms, ranging from the use of outside review panels to the use of an array of specific checks to ensure objectivity. The nature and a description of these checks will be disclosed upon request.”²⁵

Jasco's MONM, AASM and JASMINE models were used to generate NMFS' exposure and Take Estimates for the GOM.²⁶ These models are proprietary.²⁷ NMFS' use of them to estimate exposures and Takes violates the IQA because NMFS did not comply with the IQA requirements for using proprietary models. For example, the JASCO models were not peer reviewed as required by the IQA and by OMB's Information Quality Bulletin for Peer Review.²⁸

This omission is surprising given the fact that NMFS previously commissioned external expert peer review of the Acoustic Integration Model (“AIM”). Like the JASCO models, the AIM model is a proprietary model used to estimate exposures and Takes under the MMPA. As discussed below, NMFS should not continue to use the JASCO models at all, but AIM is solid precedent for at least not using them until and unless NMFS has a positive peer review report on them.²⁹

²⁵ *Id.* (emphasis in the original).

²⁶ Gulf of Mexico Acoustic Exposure Model Variable Analysis (JASCO), pages 18-19, at https://www.iagc.org/uploads/4/5/0/7/45074397/api_iagc_gom_analysis_v2.1.pdf.

²⁷ See, e.g., Draft BOEM PEIS/OEIS, page 2-54, at https://www.nsf.gov/geo/oce/envcomp/peis_marine_seismic_research/draft_peis_with_appendices.pdf; and <http://www.jasco.com/modelling>.

²⁸ OMB's Information Quality Bulletin for Peer Review requires that the proprietary models and much of the rest of NMFS' proposed GOM Take Rules be peer reviewed in accordance with strict procedures because the models and the proposed rules are, or contain, “highly influential scientific assessments.” See, e.g., pages 2, 23-26, and 36, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

²⁹ See Summary Report: Review of Acoustic Integration Model, at https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2006/2006_10_13%20Getz%20Acoustic%20integration%20modeling%20AIM%20review%20report.pdf.

This required peer review should be conducted in accordance with the required procedures for “highly influential scientific assessments in OMB’s Information Quality Bulletin for Peer Review.”³⁰ OMB is reviewing NMFS’ GOM Take Rules because they are “significant” under Executive Order 12866. They are also “highly influential” under the similar criteria in the OMB’s Information Quality Peer Review Bulletin.³¹ NMFS’ using these proprietary models without peer reviewing them violates the OMB Bulletin’s requirements, which are developed under the IQA and which should be considered IQA requirements.

OMB’s Bulletin expressly applies to models.³² Even if the models were not proprietary, OMB’s Peer Review Bulletin requires that NMFS peer review them. The OMB Bulletin states, “To the extent permitted by law, each agency shall conduct peer reviews on all information subject to this Section.”³³

CRE has been raising this proprietary model issue with NMFS for over a decade, with attention to both the AIM model and the JASCO models. Our position has at times conflicted with industry’s and NMFS’.³⁴ In light of the IQA’s transparency and reproducibility requirements, we think that we are clearly right on this issue and consider the GOM Take Rules an important test case of it. NMFS has to comply with the IQA and with the OMB IQA Peer Review Bulletin before NMFS can use these proprietary and highly influential models.

D) NMFS Must Peer Review its Proprietary Models to Determine Their Compliance with CREM Guidance If NMFS Wants to Use Them to Estimate Exposures and Takes

NMFS’ exposure and Take estimates violate the IQA Accuracy requirements because they over estimate GOM exposures and Takes. These models are not transparent or reproducible. They have never been peer reviewed to determine

³⁰ See OMB Peer Review Bulletin, pages 2, 23-26, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

³¹ 83 FR 29212, 29263 (June 22 2018), at <https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related>.

³² OMB Information Quality Bulletin for Peer Review, pages 10,11, and 12, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

³³ OMB Information Quality Bulletin for Peer Review, page 39, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

³⁴ See, e.g., Who’s Right About Seismic Models, at http://www.thecre.com/pdf/20110103_regweek.pdf.

their accuracy, and they violate the precedent set by NMFS' peer review of the AIM Model. There are no real world data showing that NMFS' estimates accurately reflect actual exposures and Takes in the GOM. They are based on models that do not include the effect of mitigation procedures that are required in order to avoid marine mammal exposures. They violate the AIM model precedent.

NMFS required that the AIM model be peer reviewed in part to determine whether it was properly validated. This determination required the peer review panel to decide whether the AIM model complied with the Guidance on the Development, Evaluation and Application of Environmental Models.³⁵ Before NMFS uses them, the JASCO proprietary models must also be peer reviewed to determine their compliance with this Guidance.

EPA's Council for Regulatory Modeling ("CREM") developed this Guidance. The National Academies of Science, Engineering and Medicine ("NAS") helped CREM develop it.³⁶

The CREM Model Guidance and the NAS Reports constitute the Gold Standard for developing, validating and using regulatory models. They are not limited to EPA. They have already been adopted by other agencies, including NMFS, to evaluate models used to estimate exposures and Takes under the MMPA

NMFS commissioned external peer review to determine whether the AIM model meets the CREM Guidelines, and is therefore properly validated and acceptable for NMFS' use in estimating exposures and Takes under the MMPA. The AIM Peer Review Report explains:

"The three terms of reference [by NOAA] required that the Panel evaluate whether AIM correctly implements the models and data upon which it was based; whether animal movements are adequately simulated; and whether AIM meets the Council for Regulatory Monitoring (CREM) guidelines for model development and evaluation." ³⁷

By contrast, NMFS has never peer reviewed the proprietary JASCO models for validation under the CREM Guidance or under any other validation standards.

³⁵ Guidance on the Development, Evaluation, and Application of Environmental Models (EPA 2009) ("CREM Guidance"), page vii, <https://www.epa.gov/measurements-modeling/guidance-document-development-evaluation-and-application-environmental-models> .

³⁶ See, *e.g.*, NAS, Models in Environmental Regulatory Decision Making (2007), page 2, at http://www.nap.edu/download.php?record_id=11972# .

³⁷ See pages 1, 2-5, Summary Report: Review of Acoustic Integration Model, at https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2006/2006_10_13%20Getz%20Acoustic%20integration%20modeling%20AIM%20review%20report.pdf .

Peer review of these proprietary models is required under the IQA Guidelines and OMB Information Quality Bulletin for Peer Review. Peer review is critical to determine if NMFS' models are accurate as required by the IQA.³⁸ Based on the current record, NMFS' models are not accurate.

E) NMFS' Exposure and Take Estimates Violate IQA Accuracy Requirements Because NMFS' Proprietary Models Over Estimate the Actual Number of Marine Mammal Exposures and Takes

NMFS itself admits that the Models “overestimate the numbers of individuals affected across the year”³⁹

BOEM candidly admits very serious model deficiencies. For example, BOEM states in its revised petition to NOAA for GOM Take Rules that

“There are currently no available robust, quantitative models that fully translate exposures to takes at the broader programmatic and aggregate scale that is the subject of this petition. Notably, BOEM and NMFS are co-funding a research project to develop a model to quantify takes at these aggregate scales, but this model is not available in time for this petition.”

“As noted previously, there are currently no available robust, quantitative models that fully translate exposures to takes at the broader programmatic and aggregate scale that is the subject of this petition. BOEM and NMFS are co-funding a research project to develop a model to quantify takes at these aggregate scales, but this model is not available in time for this petition. This research project seeks to expand a recently developed Risk Assessment Framework (RAF) from the individual project level to analyses of aggregate and chronic effects.”⁴⁰

³⁸ CRE's comments to NMFS on the proposed GOM Take rules, pages 6-8, http://www.thecre.com/forum13/wp-content/uploads/2018/08/Final_Comments_GOM_Take_Rule.pdf, include a detailed discussion of the CREM Guidance.

³⁹ 83 FR 29212, 29261 col. 2 (June 22 2018), at <https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related>.

⁴⁰ BOEM Petition for Incidental Take Regulations (October 14, 2016), pages 93 and 95, available at <https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico> (scroll down and link to “Application for Incidental Take Regulations”).

BOEM's revised petition for Take rules details some of the many flaws and inadequacies in the current exposure/take estimation process, all of which inevitably lead to greatly overestimating exposures/takes.⁴¹

BOEM's Final Programmatic Environmental Impact Statement for GOM seismic emphasizes the inherent limitations in the current process for estimating GOM exposures and Takes:

"This estimate alone does not reflect the actual physical or behavioral impacts to marine mammals...."⁴²

NMFS violates the IQA Objectivity/Accuracy requirement when NMFS states repeatedly and publicly that its proposed exposures and Take estimates accurately represent the number of real-world exposures and Takes in the GOM. Some examples of these NMFS statements are:

1) "NMFS's position is that the results of the modeling effort represent a conservative but reasonable best estimate [of exposures and takes], not a 'worst-case scenario.'"⁴³

2) "We call attention to our own public comments submitted to BOEM following review of the draft [BOEM] PEIS: "[NMFS] disagrees that the PEIS analysis is based on the 'upper limit' of potential marine mammal exposures to sound produced by [survey] activities. The PEIS provides no reasonable justification as to why the exposure estimates [. . .] should be considered as 'conservative upper limits', represent an 'overestimate,' or are 'unrealistically high.' [NMFS] believes that the exposure estimates represent a conservative but reasonable best estimate [. . .]."⁴⁴

3) "[NMFS] disagrees that 'each of the inputs into the models is purposely developed to be conservative.' Although it may be correct that conservativeness accumulates throughout the analysis, BOEM has not adequately described the nature of conservativeness associated with model inputs or to what degree (either quantitatively or qualitatively) such

⁴¹ See, e.g., BOEM Petition for Incidental Take Regulations (October 14, 2016), pages 93 and 95, available at <https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico> (scroll down and link to "Application for Incidental Take Regulations").

⁴² Final Programmatic Environmental Impact Statement, page 1-18, available at <https://www.boem.gov/BOEM-2017-051-v1/> .

⁴³ NMFS' Proposed GOM Take Rules, 83 FR 29259 col. 2 (June 22, 2018), at <https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related> .

⁴⁴ *Id.*

conservativeness ‘accumulates.’ While exposure modeling is inherently complex, complexity does not inherently result in overestimation of exposures [...] **[NMFS] strongly disagrees that the exposure estimates are ‘overly conservative,’ are ‘upper limits,’ or that these estimates are in some way differentiated from what might actually be expected to occur.’**⁴⁵

These NMFS statements are inaccurate. They are contradicted

- by BOEM’s statements and data;⁴⁶
- by industry comments and data;⁴⁷
- by CRE’s comments and data;⁴⁸
- by Protected Species Observer data;⁴⁹
- by the absence of any real-world harm from decades of seismic operations;⁵⁰ and
- by NMFS’ own statement that the Models “overestimate the numbers of individuals affected across the year....”⁵¹

⁴⁵ *Id.* cols 2 & 3 (emphasis added).

⁴⁶ See, *e.g.*, IAGC/API/NOIA comments on Revised Application for Marine Mammal Incidental Take Regulations for Geophysical Surveys in the Gulf of Mexico, at <https://www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico> (click on Public comments and scroll down to Chevron comments, pages 2-3; and to IAGC/API/NOIA comments, pages 8-9). These industry comments quote the BOEM statements and data about the models’ flaws.

⁴⁷ See, *e.g.*, Chevron and IAGC/API/NOIA comments on proposed GOM take rules, at <https://www.regulations.gov/document?D=NOAA-NMFS-2018-0043-0015> and at <https://www.regulations.gov/docketBrowser?rpp=25&so=DESC&sb=commentDueDate&po=0&s=chevron&dct=PS&D=NOAA-NMFS-2018-0043>.

⁴⁸ See, *e.g.*, CRE’s comments on proposed GOM Take Rules, at <http://www.thecre.com/forum13/?p=8476>.

⁴⁹ See, *e.g.*, Chevron comments on proposed GOM Take rules, at <https://www.regulations.gov/docketBrowser?rpp=25&so=DESC&sb=commentDueDate&po=0&s=chevron&dct=PS&D=NOAA-NMFS-2018-0043>.

⁵⁰ See, *e.g.*, CRE, Chevron and IAGC/API/NOIA comments, footnotes 46-49, *supra*.

⁵¹ 83 FR 29212, 29261 col. 2 (June 22 2018), at <https://www.federalregister.gov/documents/2018/06/22/2018-12906/taking-and-importing-marine-mammals-taking-marine-mammals-incident-to-geophysical-surveys-related>.

NMFS statements are also contradicted by BOEM's exposure and Take estimates using Line Transect.

F) Line Transect Provides the Best Available Information on Exposures and Takes Until and Unless NMFS Uses Models that have been Properly Peer Reviewed and Determined to be Accurate and Reliable Under the IQA Guidelines and Under OMB's Information Quality Peer Review Bulletin

Line Transect exposure and Take estimates are "based upon line miles of survey effort, animal density and the calculated zone of influence (ZOI)." ⁵² NOAA describes this Line Transect estimation process as "valid" and "conservative."⁵³

In two recent Federal Register notices, NMFS affirmed use of Line Transect to estimate exposures and Takes under the MMPA. NMFS explains in these FR notices that models are not required to estimate takes.

In 2017, NMFS told the Marine Mammal Commission ("MMC") that "use of models for estimating the size of ensonified areas and for developing take estimates is not a requirement of the MMPA incidental take authorization process...."⁵⁴

In a separate 2018 FR take notice, NMFS repeated:

"The use of models for calculating Level A and Level B harassment zones and for developing take estimates is not a requirement of the MMPA incidental take authorization process."⁵⁵

NMFS explains in these FR notices that the permit applicant's use of Line Transect generated the "best available information" regarding exposures and Takes.⁵⁶

The permit applicant using Line Transect to estimate Takes was Lamont-Doherty Earth Observatory. L-DEO is a part of the Columbia University Earth

⁵² 71 FR 43112, 43121 col. 3 (July 31, 2006), at <https://www.federalregister.gov/documents/2006/07/31/06-6584/small-takes-of-marine-mammals-incident-to-open-water-seismic-operations-in-the-chukchi-sea>.

⁵³ *Id.*

⁵⁴ 82 FR 44565, 44567, col. 1 (Sept. 25, 2017), at <https://www.gpo.gov/fdsys/pkg/FR-2017-09-25/pdf/2017-20362.pdf>.

⁵⁵ 83 FR 27954, 27956 col. 3 (June 15, 2018), at <https://www.gpo.gov/fdsys/pkg/FR-2018-06-15/pdf/2018-12907.pdf>.

⁵⁶ *Id.* at 2795-96; 82 FR 44565, 44567 (Sept. 25, 2017), at <https://www.gpo.gov/fdsys/pkg/FR-2017-09-25/pdf/2017-20362.pdf>.

Observatory, a prestigious and internationally recognized scientific research organization.

NMFS has frequently used Line Transect to estimate Takes in IHAs it issues under the MMPA.⁵⁷

BOEM (then “MMS”) used Line Transect to estimate exposures and Takes in its original petition to NMFS for GOM Take Rules. These estimates were explained and supported in an entire chapter of MMS’ Final Programmatic Environmental Assessment, Geological and Geophysical Exploration for Mineral Resources on the Gulf of Mexico Outer Continental Shelf (OCS EIS/EA MMS 2004- 054) (“PEA”).⁵⁸

This PEA, which relies on EISs prepared by the Navy and by L-DEO, explains,

“Recent estimates of the incidental take of marine mammal species routinely utilize, at a minimum, the following factors or data sources, including

- Number of line miles (or line kilometers) traversed;
- Estimated radial distance to the edge of a safety, impact, or exclusion zone; and
- Densities of marine mammals present.”⁵⁹

Thirty-seven pages of data and calculations later, MMS produced the Take estimates in PEA Tables L-8 through L-11. These Take estimates consider various combinations of the MMS-required mitigation provisions that are still required today,⁶⁰ but which are not considered by the proprietary models that NMFS uses for the GOM.⁶¹

⁵⁷ *E.g.*, L-DEO’s Acoustic Calibration & Seismic Testing Program in the Northern Gulf of Mexico, 71 FR 58790, 58802 (Oct. 5, 2006), at <https://www.govinfo.gov/content/pkg/FR-2006-10-05/pdf/E6-16412.pdf> ; GX Seismic Survey in the Chukchi Sea, 71 FR 49418, 49422, 49426 (August 23, 2006), at <https://www.govinfo.gov/content/pkg/FR-2006-08-23/pdf/E6-13970.pdf> ; and Conoco IHA for Chukchi Sea. 71 FR 43112, 43122 (July 31, 2006), at <https://www.govinfo.gov/content/pkg/FR-2006-07-31/pdf/06-6584.pdf>.

⁵⁸ Pages L-3 to L-37, at <https://www.boem.gov/Oil-and-Gas-Energy-Program/GOMR/2004-054.aspx> .

⁵⁹ *Id.*, page L-3.

⁶⁰ *Id.*, pages L-22 to L-31.

⁶¹ These Take estimates are explained in extensive detail in MMS’ PEA, pages L-17 to L-35, at <https://www.boem.gov/Oil-and-Gas-Energy-Program/GOMR/2004-054.aspx> .

BOEM's Line Transect estimates are orders of magnitude smaller than the exposure and Take estimates in NMFS' proposed GOM Take Rules.

NMFS has previously expressed concern that Line Transect was so 'conservative' that it might overestimate takes in some instances. The great difference between GOM exposures and Takes as estimated by Line Transect, and as estimated by NMFS' proprietary models, demonstrates just how inaccurate and exaggerated NMFS' proprietary model estimates are.⁶²

G) NMFS' Exaggerated Exposure and Take Estimates are Impossible to Reconcile with the Absence of Any Evidence of Harm from GOM Geophysical Operations, after decades of GOM Operations

NMFS has presented no real world evidence of any harm caused by oil and gas exploration in the GOM.

NMFS's Regulatory Impact Analysis ("RIA") admits that the proposed GOM Take Rules would have no effect on any marine mammal population:

"The estimated changes in Level A and B harassment from the requirements of the rule do not directly translate into the presence or absence of a given marine mammal population or into changes in population levels...."⁶³

BOEM correctly states with regard to oil and gas geophysical operations in the Gulf of Mexico that

"NTL 2012-JOINT-G02, 'Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program,' minimizes the potential of harm from seismic operations to marine mammals. These mitigations include onboard observers, airgun shut-downs for whales in the exclusion zone, ramp-up procedures, and the use of a minimum sound source. Therefore, no significant cumulative impacts to marine mammals would be expected as a result of the proposed exploration activities when added to the impacts of past, present, or reasonably foreseeable oil and gas development in the area, as well as other ongoing activities in the area. Within the [GOM] CPA, which is directly adjacent to the EPA, there is a long-standing and

⁶² For NOAA's concern that Line Transect may over estimate Takes in some circumstances, see 71 FR 43112, 43121 col. 3 (July 31, 2006), at <https://www.federalregister.gov/documents/2006/07/31/06-6584/small-takes-of-marine-mammals-incident-to-open-water-seismic-operations-in-the-chukchi-sea>.

⁶³ Draft Regulatory Impact Analysis for Proposed Regulation of Geological and Geophysical Activities in the Gulf of Mexico, pages 5-9 and 5-3, at <https://www.regulations.gov/document?D=NOAA-NMFS-2018-0043-0007>.

well-developed OCS Program (more than 50 years); there are no data to suggest that activities from the preexisting OCS Program are significantly impacting marine mammal populations.”⁶⁴

NMFS itself repeatedly explains that “there is no evidence that serious injury, death, or stranding by marine mammals can occur from exposure to [oil and gas] airgun pulses, even in the case of large airgun arrays.”⁶⁵

Line Transect’s lower exposure and take estimates are much more consistent with this real world absence of harm than are NMFS’ inaccurate and inflated proprietary model estimates.

H) NMFS’ Proposed GOM Take Rules violate IQA Pre-dissemination Review Requirements and OMB Certification Requirements

NMFS’ proposed GOM Take Rules do not comply with any of NOAA/NMFS’ IQA Guidelines Pre-dissemination Review requirements.⁶⁶

NMFS’ proposed GOM Take Rules also do not include the record certification required by OMB’s Information Quality Bulletin for Peer Review.⁶⁷

NMFS doesn’t even mention the IQA or OMB’s Peer Review Bulletin in NMFS’ proposed GOM Take rules.

⁶⁴ BOEM, Final EIS for Gulf of Mexico OCS Oil and Gas Eastern Planning Area Lease Sales 225 and 226, page 2-22 (2013), at <https://www.boem.gov/BOEM-2013-200-v1/>.

⁶⁵ E.g., 79 FR 13626, 13635-36 (March 11, 2014), at <https://www.gpo.gov/fdsys/pkg/FR-2014-03-11/pdf/2014-05158.pdf> ; 79 FR 12160, 12166 col. 1 (March 4, 2014), at <https://www.govinfo.gov/content/pkg/FR-2014-03-04/pdf/2014-04770.pdf> ; 75 FR 49710, 49739 co. 1 (Aug. 13, 2010), at <https://www.federalregister.gov/documents/2010/08/13/2010-19950/takes-of-marine-mammals-incidental-to-specified-activities-taking-marine-mammals-incidental-to-open> .

⁶⁶ NOAA/NMFS pre-dissemination review requirements are available at https://www.cio.noaa.gov/services_programs/info_quality.html and at IQA Guidelines, Part II, https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html .

⁶⁷ For this OMB certification requirement, see OMB Information Quality Bulletin for Peer Review, page 31, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf .

III. CORRECTIONS REQUESTED

The Appendix attached to CRE's Alert states in detail specific corrections that are necessary for NMFS' proposed GOM Take Rules to comply with the IQA.

At this point we emphasize that NMFS' exposure and Take estimates are the core of NMFS' proposed GOM Take Rules. Given the many problems with these estimates, the currently proposed rules are non-viable.

Consequently, NMFS should withdraw its proposed GOM Take Rules and propose new rules with estimates based on Line Transect *until such time as NMFS' models are no longer classified as proprietary and are validated.*

In any instance NMFS should peer review its models in accordance with OMB's Peer Review Bulletin requirements for highly influential scientific assessments. This peer review should include determining whether the proposed rules comply with CREM Guidance, and whether NMFS' proposed exposure and Take estimates accurately reflect actual exposures and Takes. This peer review should occur before the proposed rules are promulgated as final and used to regulate.

These corrections are required by the IQA's Accuracy, Transparency and Reproducibility requirements and are also required by OMB's IQA Peer Review Bulletin.⁶⁸ It should be noted that the OMB Peer Review Bulletin's requirements are not limited to proprietary models.⁶⁹

⁶⁸ See, e.g., OMB Peer Review Bulletin, pages 1 and 7, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

⁶⁹ See, e.g., OMB Peer Review Bulletin, page 39 ("To the extent permitted by law, each agency shall conduct peer reviews on all information subject to this Section"), at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

APPENDIX FOR NMFS' IQA AND OMB PEER REVIEW BULLETIN VIOLATIONS AND CORRECTIONS

I. Disseminations that Violate the IQA and OMB's Information Quality Peer Review Bulletin

For the above and other reasons, the following and other disseminations in NMFS' Proposed GOM Take Rules violate the Information Quality Act ("IQA") and NOAA/NMFS' IQA Guidelines,⁷⁰ and OMB Information Quality Bulletin for Peer Review:⁷¹

1) Table 8;⁷²

2) Table 9;⁷³

3) NMFS' statement that "the results of the modeling effort represent a conservative but reasonable best estimate [of exposures and Takes], not a 'worst-case scenario'";⁷⁴

4) NMFS' statement that "We call attention to our own public comments submitted to BOEM following review of the draft [BOEM] PEIS: '[NMFS] disagrees that the PEIS analysis is based on the 'upper limit' of potential marine mammal exposures to sound produced by [survey] activities. The PEIS provides no reasonable justification as to why the exposure estimates [. . .] should be considered as 'conservative upper limits', represent an 'overestimate,' or are 'unrealistically high.' [NMFS] believes that the exposure estimates represent a conservative but reasonable best estimate [. . .]";⁷⁵ and

⁷⁰ NOAA/NMFS IQA Guidelines are at

https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html.

⁷¹ The OMB Information Quality Bulletin for Peer Review is available at

https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

⁷² 83 FR 29212, 29262 (June 22, 2018), at

<https://www.govinfo.gov/content/pkg/FR-2018-06-22/pdf/2018-12906.pdf>.

⁷³ 83 FR 29212, 29263 (June 22, 2018), <https://www.govinfo.gov/content/pkg/FR-2018-06-22/pdf/2018-12906.pdf>.

⁷⁴ 83 FR 29212, 29259 col. 2 (June 22, 2018), at

<https://www.gpo.gov/fdsys/pkg/FR-2018-06-22/pdf/2018-12906.pdf>.

⁷⁵ 83 FR 29212, 29259 col. 2 (June 22, 2018), at

<https://www.gpo.gov/fdsys/pkg/FR-2018-06-22/pdf/2018-12906.pdf>.

5) NMFS' statement that it "disagrees that 'each of the inputs into the models is purposely developed to be conservative.' Although it may be correct that conservativeness accumulates throughout the analysis, BOEM has not adequately described the nature of conservativeness associated with model inputs or to what degree (either quantitatively or qualitatively) such conservativeness 'accumulates.' While exposure modeling is inherently complex, complexity does not inherently result in overestimation of exposures [...] [NMFS] strongly disagrees that the exposure estimates are 'overly conservative,' are 'upper limits,' or that these estimates are in some way differentiated from what might actually be expected to occur."⁷⁶

II. Nature of Violations

For the numbered items above, NMFS' IQA and IQA Guidelines violations, and NMFS' OMB Information Quality Bulletin for Peer Review violations, include:

Number 1: Table 8 violates the Objectivity, Accuracy, Transparency, Utility, and Reproducibility requirements of the IQA and NOAA/NMFS' IQA Guidelines because, *inter alia*,

- Table 8's exposure estimates were produced by proprietary models that have not been subject to the peer reviews and other "especially rigorous" tests required by the IQA and by NOAA/NMFS' IQA Guidelines;
- Table 8's exposure estimates are not transparent and cannot be reproduced because NMFS' models are proprietary;
- Table 8's exposure estimates are based on models that greatly over-estimate actual exposures;
- Table 8's exposure estimates are based on models that have never been properly validated;
- Table 8's exposure estimates are not based on the best available information. Line Transect provides the best available information until and unless NMFS uses IQA compliant and OMB IQA Peer Review Bulletin compliant models; and
- Table 8's exposure estimates are inconsistent with real world evidence including no harm from decades of oil and gas geophysical activities in the Gulf of Mexico.⁷⁷

⁷⁶ 83 FR 29212, 29259 col. 2 (June 22, 2018), at <https://www.gpo.gov/fdsys/pkg/FR-2018-06-22/pdf/2018-12906.pdf>.

⁷⁷ NOAA/NMFS IQA Guidelines are at https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html. The

Number 2: Table 9 violates the Objectivity, Accuracy, Transparency, Utility and Reproducibility requirements of the IQA and NOAA/NMFS' IQA Guidelines because

- Table 9's Take estimates were produced by proprietary models that have not been subject to the peer reviews and other "especially rigorous" tests required by the IQA and by NOAA/NMFS' IQA Guidelines;

- Table 9's Take estimates are not transparent and cannot be reproduced because NMFS' models are proprietary;

- Table 9's Take estimates are based on models that greatly over-estimate actual exposures;

- Table 9's Take estimates are based on models that have never been properly validated;

- Table 9's Take estimates are not based on the best available scientific information. Line Transect provides the best available information until and unless NMFS uses IQA compliant and OMB IQA Peer Review Bulletin compliant models;

- Table 9's Take estimates are inconsistent with real world evidence including no harm from decades of oil and gas geological and geophysical activities in the Gulf of Mexico; and

- There is no accurate and reliable Risk Assessment Framework for converting exposures to Takes.

Numbers 3 through 5: NMFS statements that its proposed GOM Take rules represent a reasonable best case estimate of actual exposures and Takes violate the Objectivity, Accuracy, Transparency, Reproducibility and Utility requirements of the IQA and NOAA/NMFS' IQA Guidelines because

- These NMFS statements are based on proprietary models that have not been subject to the peer reviews and other "especially rigorous" tests required by the IQA and by NOAA/NMFS' IQA Guidelines;

- These NMFS statements are not transparent and cannot be reproduced because NMFS' models are proprietary;

Objectivity/Accuracy/Transparency requirements are in Part II, the definition of "Objectivity." The Utility/Transparency requirements occur throughout the Guidelines, including the Part II discussions of Utility" and "Objectivity." The Reproducibility requirements are in Part II, the definitions of Reproducibility and "Transparency" and in the Part II discussion of "Objectivity."

- These NMFS statements are based on models that greatly over-estimate actual exposures;
- These NMFS statements are based on models that have never been properly validated;
- These NMFS statements are not based on the best available scientific information. Line Transect provides the best available information until and unless NMFS uses IQA and OMB Peer Review Bulletin compliant models;
- These NMFS Statements are inconsistent with real world evidence including no harm from decades of oil and gas geophysical surveys in the Gulf of Mexico; and
- There is no accurate and reliable Risk Assessment Framework for converting exposures to Takes;

Numbers 1-5 violate the IQA and NOAA/NMFS IQA Guidelines requirements of pre-dissemination review and pre-dissemination review certification.⁷⁸

Numbers 1-5 violate OMB's Information Quality Bulletin for Peer Review Bulletin because they are based on models that have not been not peer reviewed in compliance with the Bulletin's requirements for highly influential scientific assessments; and because they do not contain the record certification required by the Bulletin.⁷⁹

III. CRE's Requested Corrections for NMFS' Violations

The following actions are necessary to correct NMFS' violations of the IQA and IQA Guidelines and NMFS' violations of OMB's Information Quality Bulletin for Peer Review Bulletin:

- 1) NMFS withdraw from public dissemination Tables 8 and 9 identified in numbers 1 and 2, above.

⁷⁸ For IQA and IQA Guidelines Pre-dissemination review requirements see, *e.g.*, https://www.cio.noaa.gov/services_programs/prplans/pdfs/04-108-02%20Sec515%20Form%20v2.pdf and

https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html.

⁷⁹ See, *e.g.*, OMB Information Quality Bulletin for Peer Review, pages 31 and 39, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.

2) NMFS withdraw from public dissemination the NMFS' statements identified in Numbers 3-5, above.

3) NMFS use Line Transect to estimate exposures and Takes from GOM Geological and Geophysical exploration until and unless NMFS uses IQA and OMB Peer Review Bulletin compliant models.

4) Before using any models to estimate exposures and Takes, NMFS provide external expert peer review of those models to determine their compliance with CREM Guidance, as NMFS did for the proprietary AIM Take model.⁸⁰

5) The peer review described in Item 4 above, must comply with OMB's Information Quality Bulletin for Peer Review requirements for highly influential scientific assessments.

6) NMFS withdraw NMFS' proposed GOM Take Rules from public dissemination until and unless NMFS complies with pre-dissemination review and record certification requirements for those proposed GOM Take Rules. Any different proposed GOM Take Rules must comply with the same pre-dissemination review and record certification requirements.⁸¹

⁸⁰ The AIM peer review is described in the peer review report at https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2006/2006_10_13%20Getz%20Acoustic%20integration%20modeling%20AIM%20review%20report.pdf.

⁸¹ NOAA/NMFS' pre-dissemination Review requirements are at, *e.g.*, https://www.cio.noaa.gov/services_programs/prplans/pdfs/04-108-02%20Sec515%20Form%20v2.pdf and https://www.cio.noaa.gov/services_programs/IQ_Guidelines_103014.html. OMB Information Quality Bulletin for Peer Review record certification requirements are at page 31, at https://www.cio.noaa.gov/services_programs/pdfs/OMB_Peer_Review_Bulletin_m05-03.pdf.