Peer Review Summary Document

(9/25/2019)

Peer Review Plan

https://www.usgs.gov/atom/80847

https://www.fws.gov/r7/informationquality/pdf/Peer_Review_Plan_seismic_manuscript-FINAL.pdf

Title and Authorship of Information Product Disseminated

Seismic survey design and impacts to maternal polar bear dens, By Ryan R. Wilson and George M. Durner.

Peer Reviewers Expertise and Credentials

Peer Reviewer #1: USGS Supervisory Biologist with expertise in wildlife biology and providing research to support wildlife and land managers.

Peer Reviewer #2: USGS Supervisory Geophysicist specializing in seismic survey design and analysis.

Peer Reviewer #3: USGS Supervisory Research Wildlife Biologist specializing in large carnivores (bears) and landscape ecology.

Peer Reviewer #4: A team of three State of Alaska Department of Fish and Game wildlife biologists specializing in wildlife management, biostatistics, and wildlife modeling.

Summary of Peer Reviewer Comments and USGS Response to Peer Reviewer Comments

Each of the reviewers provided specific comments to help improve presentation and readability of the manuscript. The authors incorporated all of these comments and suggested edits.

Peer Reviewer #1: Provided numerous editorial comments to improve clarity and readability of the manuscript, including suggestions about standardizing wording to avoid confusion about “1002 Area,” “Arctic National Wildlife Refuge,” and “Coastal Plain.” The reviewer also asked questions about how the authors portrayed “population-level” effects resulting from seismic surveys in the study area.
The authors accepted all editorial comments suggested and clarified language to reduce any possible confusion about the study area. The authors also revised use of “population-level” to clarify that anticipated impacts are more clearly defined as fitness-level impacts to individual polar bears.

**Peer Reviewer #2:** In addition to editorial comments, reviewer #2 pointed out that “development” has a very specific meaning related to the gas and oil industry and use of the word within the manuscript is not consistent with that meaning. Reviewer #2 also provided comments requesting further information about how seismic operators could use FLIR or other survey methods to identify and avoid denning polar bears.

The authors revised terminology used within the manuscript to match use of “development” by industry. The authors included additional FLIR analysis in the manuscript to address reviewer questions. In addition, the authors incorporated other minor suggestions concerning wording and presentation throughout the manuscript.

**Peer Reviewer #3:** This reviewer stated that the manuscript describes an important study that was well written, well planned and analyzed, and that the conclusions were fully supported by the data. Reviewer #3 provided numerous comments and questions to further improve clarity and presentation of the data. Reviewer #3 pointed out that the linear features depicting denning habitats were not included in the figure. The reviewer also asked specific questions about why den emergence dates were selected from a normal distribution of dates rather than from empirical data.

Failure to include the linear features depicting denning habitats was an oversight and the authors revised the figure to include those details. The authors agreed with the reviewer concerning use of a normal distribution for assigning den emergence dates. The authors have revised the analysis and now use empirical data to assign emergence dates. This modification had only minimal impacts on the results. The authors incorporated other editorial suggestions provided by reviewer #3.

**Peer Reviewer #4:** This team of three reviewers provided a single review with numerous questions and comments on the manuscript. The comments fell into two categories: 1) Comments and concerns about the overall USFWS effects analysis for incidental take of polar bears required by the Marine Mammal Protection Act and Endangered Species Act, and 2) Comments and concerns about what was or was not included in the analysis and manuscript.

Many of the questions and concerns concerning the larger effects analysis and rule-making for incidental take were beyond the scope of this review. The manuscript describes analyses of one component of the analyses and was not intended to present the full suite of rule-making as conducted by USFWS. That process will be managed through a public process with publication in the Federal Register and opportunities for comments through that process. Other comments concerning the narrower scope of the manuscript presented were incorporated by the authors in revising the manuscript.
Dissemination

The approved product will be submitted to the *Journal of Wildlife Management* for publication.