

Environmental Studies Program: Ongoing Study

Title	Pressure Wave and Acoustic Properties Generated by Explosive Removal of Offshore Structures – II (GM-17-x20)
Administered by	GOM OCS Region
BOEM Contact(s)	Beth Nord (beth.nord@boem.gov)
Procurement Type(s)	Contract
Conducting Organization(s)	Jasco Applied Sciences, Inc.
Total BOEM Cost	\$421,558
Performance Period	FY 2019–2022
Final Report Due	July, 2022
Date Revised	August 31, 2021
PICOC Summary	
<i><u>Problem</u></i>	Improve understanding of water pressure waves and sound generated during explosive removals of oil and gas structures to better understand how the pressure waves and sound impact marine mammals and sea turtles.
<i><u>Intervention</u></i>	Document underwater pressure waves and acoustic properties generated by the detonation of explosives in differing conditions than documented in previous studies and use the data gathered to update the Underwater Calculator so that the “take” harassment impact zones of protected species may be more accurately calculated.
<i><u>Comparison</u></i>	The information will support BSEE’s goal of continuous review and refinement of marine protected species mitigation effectiveness related to underwater detonation, pressure waves and sound exposure and effects.
<i><u>Outcome</u></i>	Determine if under water pressure waves and acoustic properties differ over differing sediment conditions.
<i><u>Context</u></i>	N/A

BOEM Information Need(s): The information will support BSEE’s goal of continuous review and refinement of marine protected species mitigation effectiveness related to underwater detonation, pressure waves and sound exposure and effects. The study results will be used to support recommendations for modifications to mitigation measures, increase BSEE’s and BOEM’s understanding of underwater pressure waves and acoustic properties associated with explosive severance operations for oil and gas structures and impacts on protected species, support NEPA document preparation, and support MMPA and ESA consultation activities.

Background: The study will document underwater pressure waves and acoustic properties generated by the detonation of explosives in the course of oil and gas structure explosive removals. This study is a follow-on to previous studies including Pressure Wave and Acoustic Properties Generated by the Explosive Removal of Offshore Structures (BOEM 2016-019), Water Shock Prediction For Explosive Removal Of Offshore Structures: Underwater Calculator (UWC) Version 2.0 Update Based Upon Field Data, and Technology Assessment and Research (TAR) project, Effect of Depth Below Mudline of Charge

Placement During Explosive Removal of Offshore Structures (EROS) (TAR Project #570). While information has been collected during previous studies, the current study will collect this information over differing site conditions.

Objectives:

- Continuous review and refinement of marine protected species mitigation effectiveness related to underwater detonation, pressure waves and sound exposure and effects.
- Evaluate current mitigation effectiveness and develop data that may be used to conduct updates to the Underwater Calculator, which in turn may result in updates to the “take” harassment impact zones of protected species.

Methods: The study will document underwater pressure waves and acoustic properties generated by the detonation of explosives. In situ data will be collected during explosive detonations associated with oil and gas structure removals in the Gulf of Mexico. The data collected will be synthesized with information gathered during previous studies, BOEM 2016-019 and TAR #570.

Specific Research Question(s): Do underwater pressure waves and acoustic properties generated by the detonation of explosives differ over differing sediment types in the Gulf of Mexico OCS. Are these differences significant enough to change pressure wave and sound propagation, which potentially could result in the modification of “take” harassment impact zones of protected species.

Current Status: The task order for this study was awarded on May 24, 2018. Sampling occurs in conjunction with Industry Schedule explosive structure removals. One data sampling event occurred in 2019, however, after preliminary data analysis it was determined that the data was not adequate potentially due to an equipment failure. No subsequent sampling has occurred. In 2020, offshore work was uncertain due to the pandemic and a decision to reschedule field sampling to 2021 was made by the government. During 2021 two sampling events were identified but were not conducted due to schedule changes. Data collection, data analysis and report preparation for this study remain.

Publications Completed: None.

Affiliated WWW Sites: <https://marinecadastre.gov/espis/#/search/study/100233>.

References:

Technical report:

Barkaszi, M.J., Frankle, A., Martin, J. and Poe, W., 2016. *Pressure wave and acoustic properties generated by the explosive removal of offshore structures in the Gulf of Mexico*. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA> OCS Study BOEM 2016-019. 69 p.

Dzwilewski, P.T. 2014. *Water Shock Prediction For Explosive Removal of Offshore Structures: Underwater Calculator (UWC) Version 2.0 Update Based Upon Field Data*.

Poe, W. T., Adams, C.F., Janda, R., and Kirklewsiki, D., 2009. *Effect of Depth Below Mudline of Charge Placement During Explosive Removal of Offshore Structures (EROS) –final report*. U.S. Dept. of the Interior. Minerals Management Service. Technology Assessment and Research (TAR) Program, Herndon, VA (TAR Project No. 570).