

Environmental Studies Program: Ongoing Study

Title	An Analysis of Seafloor Impacts on the Gulf of Mexico Outer Continental Shelf (OCS) for Adaptive Management Strategies (GM-19-01)
Administered by	GOM OCS Region
BOEM Contact(s)	Scott Sorset (Scott.Sorset@BOEM.gov)
Procurement Type(s)	Contract
Conducting Organization(s)	Booz Allen Hamilton
Total BOEM Cost	\$278,689.96
Performance Period	FY 2019–2022
Final Report Due	06/03/2022
Date Revised	02/01/2021
PICOC Summary	Write one to two sentences for each of the following elements, as appropriate.
<i>Problem</i>	Scale of Impacts to OCS Seafloor Resources
<i>Intervention</i>	A reference manual that documents common industry activities compared to the range, scale, and extent of seafloor impacts. This will be used by reviewers to unify impact assessments.
<i>Comparison</i>	Accuracy and precision of avoidance measures will be variable as compared to having a comprehensive guide of scale and extent of common seafloor impacts
<i>Outcome</i>	A reference tool that will produce more precise mitigation development
<i>Context</i>	Industry activities under BOEM review by the Gulf of Mexico Region

BOEM Information Need(s): The Bureau of Ocean Energy Management (BOEM) manages a complex range of activities across the spectrum of oil and gas infrastructure in the Gulf of Mexico. Many of these regulated and permitted activities have direct impacts to the seafloor. Agency Subject Matter Experts (SMEs) are often left trying to piece together a picture of the scale and extent of seafloor impacts for each post-activity National Environmental Policy Act (NEPA) review they receive. These SMEs are experts in their scientific fields, but none are oilfield engineers with the requisite field experience to know the scale and extent of every industry activity that takes place in the Gulf of Mexico. A guide that provided a scale and context to industry activities under Agency review would assist employees of all experience levels in understanding seafloor impacts to the resource for which they are responsible. Understanding these impacts would assist BOEM by leading to more effective and efficient strategies for protecting natural and cultural resources when doing NEPA and National Historic Preservation Act (NHPA) assessments.

Background: BOEM’s comprehensive site-specific review process for compliance with NEPA and NHPA requires a great deal of practical understanding of general oil- and gas-related industry practices for the completion of the work. Many of the SMEs rely on the experience of others or are required to make “Requests for Information” to the operators which can often slow the permitting process. What is needed is a single, updatable reference guide of industry practices that impact the seafloor. This study will document and explain the various types of seafloor impacts generated by Gulf of Mexico Region

(GOMR) OCS activities in both descriptive and scaled visual reference; an estimated 1–2 pages per impact source. As currently envisioned, this desk reference could easily be expanded to encompass impacts that take place within other regions.

Objectives: The study’s objective is to create a guide explaining how common industry activities impact the seafloor. Such an analysis will expedite BOEM’s mandated assessments under NEPA and NHPA and provide SMEs with understanding sufficient to suggest new mitigations or alternatives to common practices that could reduce harm from seafloor impacts. For example, it was only learned by accident some years ago that pipeline installers could install mid-line buoys to eliminate contact with the seafloor from anchor chains.

Methods: The guide will describe, analyze, and illustrate the various ways common offshore industry activities are completed. In addition to analyzing impacts from the common types of equipment that are utilized, the report will include information like:

1. Four-dimensional (4-D) Seismic Ocean Bottom Cable Node deployment and recovery.
 - Example: What happens if the cable is snagged on a shipwreck or coral outcrop? Are alternative methods available that could reduce these impacts?
2. Various barge types and their anchors.
 - Example: How would you conduct catenary calculations to determine where anchor cables would hit the bottom, and what is a cable’s respective drag distance? Is there an equally effective method that reduces or eliminates the need for the use of anchors?
3. Descriptions of various rigs and the bottom impacts from each.
 - Example: How big is a 4-ton anchor? Would an alternative anchor type, such as a suction pile anchor, provide equivalent control with a smaller impact area?
4. Pipeline laydown and recovery methods and impacts.
 - Example: How many and what size anchors does a Dive Support Vessel use? Could a dynamically positioned vessel be used in shallow water just as effectively?
5. Impacts from platform decommissioning activities.
 - Example: How far past the required area for site clearance do trawlers often go when removing seafloor debris? Is there a more effective trawl method that would minimize the area of seafloor scour?

Specific Research Question(s): What is the specific range, scale, and extent of seafloor impacts from BOEM reviewed industry activities.

Current Status: Deliverables for Geological and Geophysical, Exploration, and Development Activities have been received and accepted. Study is on target for completion in FY 2022.