

STATUS, STRATEGIES, AND COST MANAGEMENT OF OFFSHORE OIL RIG
PLATFORM DECOMMISSIONING AND RIGS-TO-REEFS PROGRAMS IN THE
GULF OF MEXICO: ADDRESSING DECOMMISSIONING CHALLENGES
USING A MULTI-CRITERIA APPROACH

A Dissertation

by

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BS, Michigan State University, 1994
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Texas A&M University-Corpus Christi and is hereby approved.

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ABSTRACT

Financial issues with offshore oil and gas platform decommissioning in the Gulf of Mexico have escalated over the past two years into a substantial problem for the U.S. regulatory agencies, Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environmental Enforcement (BSEE), under the Department of the Interior (DOI). Although oil and gas structural material is required to be removed by the lease contract and domestic and international law, significant delays have occurred due to insufficient decommissioning funds. This manuscript provides a broad overview of the history and background, legal considerations, international perspectives, and financial obligations of offshore oil and gas platform decommissioning in the United States.

Two platform case studies are presented that highlight the complexities of developing decommissioning strategies. A multi-criteria decision analysis (MCDA) model is applied to these scenarios, incorporating both expert and stakeholder views, generating an optimal ‘best option’ decommissioning result. The goal of implementing the MCDA model is to showcase a solution to an often-controversial subject, which allows unlimited inclusion to generate the final result. This dissertation concludes that platforms are unique and must be treated independently.

Encompassing expertise from focus groups and committees with specific knowledge is an innovative approach that has great potential to make the decommissioning process timely, efficient, cost-effective, and beneficial to all stakeholders. This pilot program was successful in terms of expanding upon Fowler et al. 2014, which was the primary goal of the study. This dissertation could be improved by: allowing more experts and stakeholders to participate in an

open forum; allowing stakeholders to determine categories and associated criteria based on how

the platform is perceived before the scoring; and finally, developing a formal expert panel selection review process that would make this concept more unique and adaptable to a variety of situations, which could also include artificial reef managers. This careful selection process is crucial at present to address specific issues regarding the efficient decommissioning of platforms in the Gulf of Mexico. Options moving forward outlined at the conclusion of Chapter 2, as well as methods to increase transparency and stakeholder participation as described in Chapter 3, are recommended as the broad base to address decommissioning challenges in the future.

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INTRODUCTION

The United States relies on the Gulf of Mexico for navigational purposes, boasts some of the most productive fisheries in the world, and is the nation's primary source of offshore oil and gas, encompassing five million acres of habitat and supports a \$20 billion tourism industry.

Offshore energy resource exploration commenced in the Gulf of Mexico in the mid 1940s with President Truman's Proclamation. Within that document, Truman claimed exclusive jurisdiction over the natural resources of the United States Outer Continental Shelf (Truman 1945). Shortly thereafter, the first lease between the oil and gas industry and the U.S. federal government was initiated in 1954. President Truman's decision has led to the Gulf of Mexico's prominent role in the global energy market and to the region becoming the nation's primary source for offshore oil and gas. The Gulf now hosts approximately 3,000 platforms prepped for extraction associated with active leases and nearly 30,000 miles of intricate pipeline that transport minerals to shore (BSEE 2012). Once the energy resources have been extracted, platforms must be removed.

The U.S. and international law require a return to a clean seabed after production and extraction are complete (BOEM 2017). However, the best procedure to carry out this removal obligation has recently disconcerted federal managers and lawmakers. It is extremely expensive to remove platforms and funds for removal are not consistently available. This conundrum has placed the U.S. in a current financial deficit of \$2.3 billion dollars in outstanding decommissioning costs, with a projected total decommissioning amount in the next 10-20 years running upward of \$50 billion (GAO 2015; Lily 2015; Celeta 2017A; Hopper 2017).

Currently, regulatory agencies are collaborating with the oil and gas industry to develop a solution to ease the decommissioning process. Platforms cannot be left in place post-production

as they pose environmental, social, and economic risks. Hurricanes and severe weather occur in the Gulf of Mexico region, enhancing the likelihood of destruction, movement of structural material, and oil spills that could threaten livelihoods along the Gulf Coast. The Deepwater Horizon oil spill in 2010 highlighted the environmental and economic damage that can occur as a result of an underwater blowout (Kostka et al. 2011, Powers et al. 2017, Romero et al. 2017).

This dissertation begins with an overview and background of offshore energy leasing in the Gulf of Mexico, including discussion about the rigs-to-reef programs, legal matters, and international perspectives in Chapter 1. Chapter 2 investigates the delays of structural removal, focusing strictly on how financial issues play a role in the Idle Iron list, generated in 2010. Cooperative relationships shifted following the Idle Iron guidelines, leading to severe tension between operators and the regulatory agencies. A combination of events that led to this hindrance will be addressed in Chapter 2 in an attempt to better describe this problem for the oil and gas industry.

Chapter 2 will also focus on the financial obligations of operators associated with the Idle Iron. Finally, Chapter 3 presents a multi-criteria decision analysis (MCDA) model that is applied to two platforms as case studies in the Gulf of Mexico to offer a solution to this complex decommissioning process. It is recommended that each platform be addressed on a case-by-case basis, which is supported with this model. The MCDA utilizes opinions from experts and stakeholders on defined criteria for each platform to generate a ‘preferred by majority’ result.

The summary concludes chapters one through three and closes with final implications of the MCDA for decommissioning offshore oil and gas platforms. It stresses the broader impacts resulting from this research and can be useful in guiding future federal and state regulatory framework for offshore oil and gas leasing.

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CHAPTER I

OFFSHORE OIL AND GAS DECOMMISSIONING IN THE GULF OF MEXICO: HISTORY, LEGAL ISSUES, AND INTERNATIONAL COLLABORATION

Abstract

Offshore oil and gas decommissioning in the Gulf of Mexico is facing a problem that is unprecedented in scale and cost. Hosting the most offshore infrastructure in the world, the Gulf is the primary supplier of oil and gas for the nation, and plays a significant role in the global market. The management of major fisheries and a billion dollar tourism industry also highlight the importance of efficient decommissioning strategies, leading to a healthy and sustainable landscape for the region on all three fronts. This chapter focuses on the background of the offshore oil and gas industry's presence in the Gulf, leading into a discussion about legal matters in both domestic and international law as they relate to removal requirements. The most recent decommissioning strategies have led to a heightened interest in rigs-to-reefs programs, and various aspects of these initiatives are included. Finally, decommissioning is not only a U.S. problem, but also a problem that the world is also grappling with, as the structural removal count is expected to reach 6500 by 2025. These recent figures and the globalization of energy production make international collaboration a necessity.

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CHAPTER II

THE FINANCES BEHIND OIL AND GAS OFFSHORE STRUCTURAL DECOMMISSIONING IN THE GULF OF MEXICO

Abstract

Offshore oil and gas decommissioning financial issues in the Gulf of Mexico have escalated over the past two years into a substantial problem for the U.S. regulatory agencies BOEM (Bureau of Ocean Energy Management) and BSEE (Bureau of Safety and Environmental Enforcement) under the Department of the Interior. Although oil and gas structural material is required to be removed by the lease contract and U.S. and international law, significant delays have occurred recently due to insufficient decommissioning funds. This chapter takes a closer look at this dilemma.

Beginning with background including leasing and revenue, the discussion moves into the data collection process, incorporating a vast amount of communication with the U.S. federal government to obtain public information. The data that was used for this study is a snapshot of the 2015 structural platform Idle Iron list – a list that was generated initially by the release of the Idle Iron Policy in late 2010. Around this time, BOEM and BSEE realized that industry needed a push to move decommissioning forward, and created a Notice to Lessees (NTL) addressing this issue which is the foundation for the Policy. Although the timelines addressed in this policy gave operators five years to decommission their platforms on active leases that are no longer useful, this list remains active with almost 200 platforms sitting ‘idle’ in Gulf coast waters, threatening the environment, navigational and safety issues.

The research delves into the costs associated with this problem, estimating the bill at almost \$400 million in outstanding decommissioning costs. The alarming caveat to all of this is that the American taxpayer may be on the hook to cover funds if industry does not present a solution (Celata 2017, Lily 2015; Appendix A, B). BOEM and the energy industry have been working closely over the past year to decide on the path forward, after receiving unprecedented backlash when the problem was attempted to be addressed in the fall of 2016 with the release of Notice to Lessees 2016-N01 (Appendix E, H, J). The chapter concludes with a closer look at the operators still struggling with this list, and includes ideas on how to resolve this complex issue.

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CHAPTER III

A PILOT STUDY: APPLYING THE MULTI-CRITERIA DECISION ANALYSIS (MCDA) MODEL TO STRUCTURAL OFFSHORE OIL AND GAS DECOMMISSIONING IN THE GULF OF MEXICO

Abstract

Complex and controversial oil and gas offshore structural decommissioning decisions are currently inhibiting the ability of regulatory agencies to enforce potential removal and financial security policies in the Gulf of Mexico. This chapter focuses on presenting a model approach that integrates both expert and stakeholder views that are often at odds when deciding on the final decommissioning decision for specific platforms. The model is commonly known as a multi-criteria decision analysis, or multi-criteria approach, and weighs opinions in a way that generates a ‘best option’ final result. Although the answer may not be what is ultimately chosen, the model approach has been known to soften the difficult decision-making process between stakeholders with opposing views by making them feel more informed and included in the process.

In this study, the author is expanding the work and research presented in Fowler et al. 2014 by further developing the use of the model in the Gulf of Mexico. Two platform case studies were selected, and nine experts, chosen because of their professional expertise in one of the selected areas of interest, were asked to participate in the areas of environmental, financial, legal, industry, socioeconomic, health and safety. Nine stakeholders were also chosen to participate in the areas of industry, recreational diving, commercial and recreational fishing, environmental organization (NGO), the tourism sector, and homeowners living near the Gulf coast. Experts and stakeholders then ranked criteria related to each platform. Experts ranked

criteria based on decommissioning options (of which there were five) and stakeholders ranked the criteria only. The results were then incorporated into the model.

Both platforms generated ‘complete removal, jacket and deck to shore for scrap’ as the best option for decommissioning. Further analysis determined that experts ranked the financial criteria category first, and legal and health and safety second. Interestingly, stakeholders placed the most importance on the remaining criteria categories: Recreational fishing and diving, socioeconomics, and environmental.

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