

2017 COL INDUSTRY FORUM

PROCEEDINGS DOCUMENT



CONSORTIUM FOR
Ocean Leadership



RIGS TO REALITY

DETERMINING THE FATE OF OFFSHORE OIL PLATFORMS



OCTOBER 25, 2017
J.W. Marriott –
ASAE Conference Center
Washington, D.C.

Dear Forum Participants,

Thank you, again, to everyone who participated in the Consortium for Ocean Leadership's (COL) 2017 Industry Forum – *Rigs to Reality: Determining the Fate of Offshore Oil Platforms*. The Forum was well attended and included professionals and experts representing multiple sectors that are stakeholders in the issues surrounding decommissioning of oil platforms. We took great care in listening to and working with you to accurately capture both the range of views and the areas where general agreement could be reached. These areas of agreement and associated recommendations are laid out in this proceedings document.



Because of the complex enormity of the decommissioning process, science must ground our understanding of the impact of utilizing decommissioned platforms as artificial reefs or other purposes in coastal and deep-water regions. From this science-based understanding of impact (advantageous and/or harmful), decision-makers in all sectors will be equipped with the best-available information to make wise decisions that ensure our ocean remains healthy and productive for all. This is the goal of our work and we, at COL, look forward to working with you as our partner stakeholders on next steps.

The Industry Forum has benefited from the generous sponsorship (and time) of several of our Member Institutions, federal agencies with responsibilities in this area, industry partners and other non-governmental organizations that see the collective benefit of bringing together diverse stakeholders to discuss the use of decommissioned oil platforms and how we can work together to advance the science that guides decision-making in all sectors. Please also join COL in thanking them, again, for their generous support, which allowed us to bring this group together.

Sincerely,

A handwritten signature in blue ink that reads "Jonathan W. White". The signature is fluid and cursive.

Jonathan W. White, RADM, USN (ret.)

*President and CEO
Consortium for Ocean Leadership*



RIGS TO REALITY: DETERMINING THE FATE OF OFFSHORE OIL PLATFORMS

Executive Summary

On October 25, 2017, the Consortium for Ocean Leadership hosted its annual industry forum in Washington, D.C., entitled ***Rigs to Reality: Determining the Fate of Offshore Oil Platforms***. The intent of the forum was to facilitate a cross-sector discussion focused on the science, research, and status of offshore oil and gas platforms (platforms) to be decommissioned, with the goal of collaboratively identifying areas where stakeholder groups present could reach agreement and identify where information or other gaps exist. The forum was unique because the attendees were from a robust cross section of stakeholders invested in the issue of determining the fate of decommissioned offshore oil platforms. In all, the attendees included 120 representatives from over 50 stakeholder institutions representing academia, industry, federal and state government, and the nonprofit sector.

This topic was selected because of the sheer number of oil rigs nearing end-of-life decommissioning and the significant environmental considerations. Additionally, the complex nature of the observations and methodologies required to perform accurate environmental assessments make this a particularly challenging concern.

The geographic areas referenced in the discussions were the Gulf of Mexico, southern California, the North Sea, and to a lesser degree, western Africa and other areas of the world. The technical data and case histories discussed were primarily from the Gulf of Mexico and California.

Forum participants represented a broad cross-section of key stakeholder communities and agreed on the following statements:

1. *There is generally greater biomass and species diversity of marine life in and around both producing and idle submerged offshore platforms. In at least some cases, greater biological production of certain fish species has been demonstrated.*
2. *The advancement of state-of-the-art technologies, including autonomous underwater vehicles (AUVs), remotely operated underwater vehicles (ROVs), and video and ocean sensing systems (including animal telemetry), has enabled and improved environmental monitoring and knowledge of the biological communities in and around platforms.*
3. *The assessment of environmental and social changes and benefits provided by artificial reefs are site specific, rather than regional, and technology to understand and determine these is still evolving.*
4. *The consideration of safe navigation and the long-term stability of the structure are important components of the decision-making process.*
5. *In addition to artificial reefs, there is broad interest in being able to repurpose decommissioned platforms as an alternative to removing them at the end of their use as oil rigs. Alternative uses such as aquaculture structures, ocean observatories, research stations, and environmental monitoring stations all have merit and should be considered, so long as decision makers make science-based decisions.*



Participants also identified several gaps and action items and offer the following recommendations for addressing them:

There is need for wider distribution of available environmental data among stakeholder groups.

Recommendation: An increase in collaborative efforts around data access, availability, and validation could raise awareness and promote transparency of the range of data already available, as well as reduce the effort and cost associated with collection of duplicative data.

Utilizing decommissioned platforms for uses other than artificial reefs can be a practical use of a decommissioned platform, but further assessment, both in terms of feasibility and the business model that might support these uses, needs to be done.

Recommendation: Alternative options for decommissioning should continue to be investigated as the science and data collection on environmental impacts continue to evolve and mature.

There is continuing need for enhancing cross-sector dialogue and collaboration around the challenges of decommissioning, to include the standardization, synthesis, and archiving of both existing and new data to inform many aspects of the decommissioning process.

Recommendation: There are several U.S. working groups already established to address specific pieces of the decommissioning process (e.g., the California Interagency Decommissioning Working Group, the Gulf and Atlantic States Marine Fisheries Commissions, etc.), and as such, are well-positioned to play an important role as effective vehicles for enhanced stakeholder discussion and collaboration. For example, groups working on regulatory management issues could create studies that include scientific perspectives to inform decision making and regional considerations.

The state-by-state approach that currently characterizes decommissioning could be greatly improved by using a more regional perspective on the disposition of platforms.

Recommendation: A more systemic and regional vision to decommissioning could allow for interstate planning and implementation of permitting, reefing, and monitoring operations that would benefit an entire region. While this view may require regional planning as a prerequisite, it may also, in the long term, streamline the review, design, and implementation of decision-making processes about individual platforms.

The aggregation and increased concentration of sportfish near platform structures can result in increased catch per unit effort and possibly overfishing.

Recommendation: The regulation of fishing in and around offshore platforms needs to be examined in order to develop best practices that allow fishing in a sustainable manner.



Discussion Overview

Approximately 2,100 active production platforms exist on the Gulf of Mexico Outer Continental Shelf; more than 40 percent of these facilities are over 25 years old. Over the past decade, the offshore energy industry has averaged 130 removals per year in the Gulf, with a total of 532 platforms made into artificial reefs (reefed) as of April 2018. There are 23 offshore platforms on 38 active leases located in federal waters off the coast of southern California. Of these, two are in the beginning stages of decommissioning.

There was agreement that converting decommissioned platforms into artificial reefs results in greater biomass and species diversity than the surrounding area. Greater production of fishes around platforms has been documented in several case studies, which were presented by attending researchers. The presenters described the implementation of innovative observing and advanced monitoring systems that, when combined with refined monitoring strategies, have enhanced our ability to gather more precise and comprehensive data about the character and health of environments in and around platforms and ancillary platform structures during their life cycle.

At the same time, a considerable amount of research was presented showing a high likelihood of adverse impacts from the takes of red snapper by sport fisherman around specific oil platforms in the Gulf of Mexico. The study showed that even if there was increased fish production associated with the oil platform structures, the aggregation of fish around this limited area makes it easier to deplete the resource. The study suggests that fish takes occurring in and around the platforms included in the study may be at levels that are not acceptable for species' sustainability. It was noted that not all reefered platforms in the Gulf of Mexico suffer from high fishing pressure because they are relatively unknown or too far offshore.

While studies in the California region also show significant increase in the biomass and production of fish populations around offshore platforms, fishing in these areas is rare. Thus, targeted impacts such as those seen in some parts of the Gulf were not assessed.

Presentations from state representatives described current practices and considerations of converting oil platforms to artificial reefs, which include safe navigation, long-term structural stability, and provision of ecological benefit. The process of "Rigs to Reefs" is considered well-established in the Gulf of Mexico and thought to be acceptable to the broader stakeholder community in general. Continued monitoring and site-specific determinations with an ecosystem approach are key to the continued use of state reef sites.

Related to this, there was consensus that effective planning for the disposition of platforms has been hindered by a singular state-by-state viewpoint in the Gulf of Mexico. It was suggested that a more regional perspective could allow for interstate planning and implementation of permitting, reef placement, and monitoring operations that benefit an entire region. While this view may impose regional planning as a prerequisite, it may also, in the long run, streamline the review and decision-making processes about individual platforms.

There were brief discussions regarding the practices and requirements on the preparation of specific platform components to be permanently left in the water. Current regulations require removal of equipment and any residual hydrocarbons, cleaning and clearing of wastes, and flushing and cutting of pipes. Wells and pipelines left behind must be plugged and physically separated from active pipelines during platform decommissioning. While discussion noted that these present practices are acceptable under guidelines of the Bureau of Safety and Environmental Enforcement (BSEE) and the Bureau of Ocean Energy Management (BOEM), the subject was not fully vetted during the forum.

It was noted that all the offshore oil platforms decommissioned to date have been shallow-water rather than deep-water structures. This is because deep-water drilling and production is a much newer technology, and these systems are just reaching their end of life. Deep-water systems have additional concerns regarding



what to do with the structures that extend to the seabed and well components that are on the seafloor. There are still many unanswered scientific and best practice questions about both removing and leaving structure components on the seabed. Additionally, research has revealed that marine organisms do settle on seabed-based structures in deep water, which raises the consideration of disruption and harm to these communities in the removal process. There was agreement among the group that the impact of deep-water decommissioning needs further research.

Within this discussion of current practices and processes, there was discourse on the financial liability related to the abandonment of platforms in federal and state waters. This topic was not fully vetted in the forum; therefore, continued cross-sector discussion of these issues is recommended.

There was agreement that continued cross-sector stakeholder discussions and collaborations around the full range of technical issues and development of best practices are essential. A specific example of where such cross-sector discussion and collaboration would yield broad benefit is the collection, archiving and distribution of environmental data at platform sites. State-of-the-art sensing and data acquisition systems, as well as the ability to sample over extended timeframes, have enabled collection of very large volumes of data. The group generally agreed that to increase the transparency and trust among the broad range of stakeholders in decommissioning and reefing, these data should be available to the entire stakeholder community. The challenge has been that the awareness and accessibility of the full range of these data is not widely known by the entire community of users and stakeholders. There was also agreement that synthesizing previously collected information and keeping it updated as new information and knowledge is gathered would be especially helpful.

Finally, two presentations addressed the current platform abandonment practices outside of the U.S. One focused on European practices, in which all metal is removed during the decommissioning process. The second presentation suggested that U.S. practices of artificial reef creation are often considered and exercised in geographic areas outside of European waters. The group agreed that the relationships between U.S. and international practices deserve more investigation. There was also agreement that increased international collaboration on decommissioning practices and processes would benefit future U.S. refinement of its own best practices and management plans, which in turn could continue to improve and influence decommissioning activities in developing nations.



Introductory Subject Matter Expert Briefings

The forum opened with selected speakers giving brief overview sessions that presented perspectives held by major stakeholder communities in the decommissioning arena. The speakers are considered experts in their field and willing to share the range of most prominent perspectives held within their community.

The science of reefing

Dr. Larry McKinney, Harte Research Institute for Gulf of Mexico Studies

Dr. McKinney presented an overview of what current science tells us about the impact of producing oil rigs and decommissioned platforms in the marine environment. He emphasized that current science shows that platforms do increase the biomass, overall biological productivity, and diversity in their proximity and also act as aggregators. He discussed what is currently known about reef creation and removal of deep water platforms, as well as the need for more research on the impacts of these practices. Dr. McKinney ended his comments by emphasizing the need to balance biological, environmental, and management considerations and to allow best available science to inform decision making in all three areas.

The state of regulatory issues guiding decommissioning

Mr. Doug Peter, Bureau of Safety and Environmental Enforcement (BSEE)

Focusing on the technical aspects of decommissioning regulations, Mr. Peter spoke from his experience working in the federal sector. His overview included the physical requirements of decommissioning a platform and highlighted decommissioning regulatory requirements. He also noted that new technologies, such as ROVs, have revolutionized how required structural surveys are conducted and what we are able to learn about the state of the platform across its life.

Industrial perspectives

Mr. Timothy T. Charters, National Ocean Industries Association (NOIA)

Mr. Charters emphasized that, by and large, industry is committed to fulfilling the responsibilities of decommissioning end-of-life platforms and is interested in engaging with federal agencies to meet those requirements. Trade associations like NOIA are interested in partnering with agencies and NGOs to improve the decommissioning process; to ensure, to the best of its ability, that the oil and gas sector is delivering on its responsibilities to decommission platforms; and hopefully, to minimize costs of the decommissioning process. He stressed the importance of having cross-sector collaboration to build trusting relationships and to establish programs and regulations that are underpinned by the best available science.

Perspectives from the NGO community

Mr. Don Kent, Hubbs-SeaWorld Research Institute

Mr. Kent opened his comments by noting that it is challenging to characterize the broad range of diverse NGO community perspectives. To demonstrate that point, he shared a chart he developed that placed the most well-known NGOs working in this sector into quadrants where the x-axis was interest in science and the Y-axis was focus on conservation perspectives. A shared view in California is that not having a single coordinating federal agency in the state has resulted in an overly complex permitting process that puts proper decommissioning at risk.



International repurposing of decommissioned rigs

Mr. Stephen Truchon, Shell Technology Center, Houston

Similar to previous sessions, Mr. Truchon emphasized the importance of cross-sector partnership as a method by which to reach science-based, well-formed decisions. Sharing several examples, he noted that, in many developing countries, decommissioning processes and practices are not well formed, though, at the same time, many developing countries do eventually tend to follow U.S. processes and practices once capacity has been established to do so. Australia and Brazil are two locations with early-stage alternative decommissioning policies, followed by Nigeria and Southeast Asia, which are both in the infancy stages of creating artificial reefs from platforms.

Lessons learned from the international experience

Dr. John Campbell, International Association of Oil & Gas Producers (IOGP)

Dr. Campbell introduced the vast differences that exist in international decommissioning tactics. Europe is somewhat unique in its requirement that all metal placed in the water – the platform and all ancillary structures – must be removed at the time of decommissioning, which precludes turning an abandoned platform into an artificial reef. Many UK conservation groups are beginning to question the validity of the “remove it all” approach, as they are realizing that creating artificial reefs may be a feasible alternative. There may be significant opportunities for future international collaboration around expanding U.S. principles and programs to other nations and regions.



Panel Summaries

The panel sessions included speakers from different sectors who were charged with addressing the panel topic briefly from their sector's perspective. This approach allowed attendees to identify gaps and areas of overlap, as well as to explore differences and possible paths toward agreement.

Characterizing environmental benefits and risks

Mr. Thomas Campbell, Pillsbury Winthrop Shaw Pittman LLP, Moderator

Dr. Milton Love, University of California, Santa Barbara

Dr. Greg Stunz, Harte Research Institute for Gulf of Mexico Studies

Dr. Mark C. Benfield, Louisiana State University

Dr. Jorge Brenner, The Nature Conservancy

During this panel, scientists studying artificial reefs presented peer-reviewed scientific reports that show offshore platforms are as biologically productive as, if not more so than, the adjacent natural habitat. According to best available science, platforms and artificial reefs both produce and attract fish and other marine life off the coast of California and in the Gulf of Mexico. Such platforms add substantial biomass to the ecosystems surrounding and proximal to these geographic areas. It was agreed that platforms also provide a hard substrate for the production and growth of marine corals, sponges, and other marine plants and animals, often in areas where such substrate does not naturally occur.

While resource managers have accumulated sufficient evidence to develop artificial reef programs that promote conversion of offshore platforms to reefs, the panel discussed additional science needs and identified areas for further exploration. Some of these remaining questions involve a better understanding of how the increase in biomass occurs in a specific area through production of “new” populations at the structure or by the attraction of existing populations from natural habitat or other structures. Additional understanding is needed of the relationship between the location of these structures and migratory routes and dispersal and settlement of harmful invasive species.

Alternative uses for decommissioned platforms ... or not ...

Mr. Kent Satterlee, III, Kent Satterlee and Associates, LLC, Moderator

Mr. Mark J. Spalding, The Ocean Foundation

Mr. Ted Venker, Coastal Conservation Association

Addressing alternative uses for decommissioned platforms, this panel focused primarily on artificial reefs and offshore research stations, using the Marine Monitoring, Energy, and Environmental Research, Scientific Education and Training (MMEERSET) project as a real-life example of an alternative use. MMEERSET plans to obtain space on an operating platform to support research, education and observation activities in the Gulf, and a feasibility study for MMEERSET is being performed by the Gulf of Mexico Alliance. The panel identified at least one significant unanswered question: Since operation and maintenance costs associated with decommissioned platforms are significant, what is the range of alternative uses that could realistically absorb these basic costs, in addition to the costs of its alternative purpose? More specifically, regarding MMEERSET, would this kind of research station be a good, bad, or equivalent investment in terms of the research output, when compared to research vessels?



Rigs to Reality: Perspectives on converting ocean platforms and subsea infrastructure to alternative uses

Mr. John Seeger, Fieldwood Energy, LLC, Moderator

Mr. Drew Hunger, Morrison Well Services

Mr. Michael McDonough, Louisiana Department of Wildlife & Fisheries

Mr. J. Dale Shively, Texas Parks & Wildlife Department

Dr. Roy Crabtree, NOAA Southeast Regional Office

The Rigs to Reality panel presented and discussed the often-differing views regarding converting platforms to alternative purposes and highlighted the positive contributions of the federal Rigs to Reefs program. As discussed in the prior panel, operating costs can be very high and not all platforms are suitable candidates for alternative uses. Because of this, consideration of reef creation or other uses must be made on a case-by-case basis. The panelists also discussed a possible concern that reefed platforms aggregate fish to specific areas, making it easier for recreational and/or commercial fishing to overfish stock resources. If this is the case, then some artificial reef sites may need additional fisheries management measures to reduce harvest.

Identifying gaps and moving forward

Ms. Jennifer Ewald, BOEM, Moderator

Dr. Larry McKinney, Harte Research Institute for Gulf of Mexico Studies

Mr. Timothy T. Charters, National Ocean Industries Association

Mr. Elmer "Bud" Danenberger, Independent Consultant (formerly Chief of Offshore Regulatory Programs at the Minerals Management Service (MMS), prior to its division into BSEE, BOEM, and the Office of Natural Resources Revenue (ONRR))

Dr. Jorge Brenner, The Nature Conservancy

Overarching discussion focused on reaching cross-sector agreement on identified scientific, information, and policy gaps, as well as a common direction for future cross-sector collaboration around activities that might fill the agreed upon gaps. From a regulatory perspective, there was consensus that establishing ownership, financial responsibility, and clear financial regulatory requirements is paramount in developing reef creation plans.

There was also significant discussion about structures in deep water and their role in enhancing biological activity, as well as how to mitigate anthropogenic pollutants (e.g., corrosion, seepage, drill muds, etc.). Questions remain to be addressed about removal of deep-water structures that have accumulated communities of deep corals and other organisms. The potential for expanding artificial reef programs in deep water is worthy of further study and reefing consideration if these practices provide environmental benefit.



Acknowledgements

COL would like to acknowledge and thank all of the participants for their exceptional contributions that fostered strong discussion during the forum, as well as during the development of this report.

Our very generous sponsors helped make this event possible. We would especially like to thank them, as well as our advisory committee, the panelists and other speakers, and the COL staff who made this event a success. Without the active engagement of each of these groups, the forum would not have been possible.

COL looks forward to continuing our annual Industry Forums as we seek to rally the broad ocean science and technology community around topics that intersect ocean industry, academic research, and federal oversight.

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Meeting Agenda

- 8:30 a.m. Welcome remarks** – Jonathan White, Consortium for Ocean Leadership
- 8:45 a.m. Opening remarks** – Kenneth Weiss, The Pulitzer Center on Crisis Reporting
- 9:10 a.m. The science of reefing**

Larry McKinney, Harte Research Institute for Gulf of Mexico Studies
- 9:30 a.m. The state of regulatory issues guiding decommissioning**

Doug Peter, BSEE
- 9:50 a.m. Industrial perspectives**

Timothy T. Charters, NOIA
- 10:10 a.m. Perspectives from the NGO community**

Don Kent, Hubbs-SeaWorld Research Institute
- 10:30 a.m. International repurposing of decommissioned rigs**

Stephen Truchon, Shell Technology Center, Houston
- 10:50 a.m. *Break*
- 11:00 a.m. Characterizing environmental benefits and risks**

Moderator: Thomas Campbell, Pillsbury Winthrop Shaw Pittman LLP
Milton Love, University of California, Santa Barbara
Greg Stunz, Harte Research Institute for Gulf of Mexico Studies
Mark C. Benfield, Louisiana State University
Jorge Brenner, The Nature Conservancy
- 12:00 p.m. *Break to get lunch*
- 12:20 p.m. Alternative uses for decommissioned platforms ... or not ...**

Moderator: Kent Satterlee, III, Kent Satterlee and Associates, LLC
Mark J. Spalding, The Ocean Foundation
Ted Venker, Coastal Conservation Association
- 1:20 p.m. Lessons learned from the international experience**

John Campbell, International Association of Oil & Gas Producers
- 1:40 p.m. Rigs to Reality: Perspectives on converting ocean platforms and subsea infrastructure to alternative uses**

Moderator: John Seeger, Fieldwood Energy, LLC
Drew Hunger, Morrison Well Services
Michael McDonough, Louisiana Department of Wildlife & Fisheries
J. Dale Shively, Texas Parks & Wildlife Department
Roy Crabtree, NOAA Southeast Regional Office
- 3:10 p.m. *Break*
- 3:20 p.m. Identifying gaps and moving forward**

Moderator: Jennifer Ewald, BOEM
Larry McKinney, Harte Research Institute for Gulf of Mexico Studies
Timothy T. Charters, NOIA
Elmer "Bud" Danenberger, Independent Consultant
Jorge Brenner, The Nature Conservancy
- 4:20 p.m. Summary and closing remarks** – Jonathan White, Consortium for Ocean Leadership
- 4:35 p.m. *Meeting adjourns*
- 5:30 p.m. Reception at Toro Toro** – 1300 Eye St N.W., Washington, DC 20005



Appendix

General information related to decommissioning offshore oil platforms

Platforms are facilities that facilitate the extraction and processing of oil and natural gas, different from drilling rigs, which “drill” a well to discover hydrocarbons and bring them to the surface for processing.

There are three general methods for removing and “reefing” a retired structure: **tow-and-place**, **topple-in-place**, and **partial removal**.

1. **Tow-and-place** involves severing the structure from the sea floor using either explosives or mechanical cutting techniques and then towing it to the selected reef for deployment.
2. **Topple-in-place** uses the methods described above to detach the structure from the seabed. The detached structure is then toppled onto its side at its current location.
3. **Partial removal** generally does not use explosives. The top portion of the structure is severed at a permitted navigational depth, typically 85 feet deep, and placed on the sea floor next to the base of the remaining structure.

Permission to create an artificial reef with a decommissioned platform is a multi-agency process that requires compliance with a combination of requirements established by:

- NOAA’s National Artificial Reef Program
- BSEE and BOEM’s Rigs to Reefs Program
- U.S. Army Corps of Engineers
- U.S. Coast Guard

The National Environmental Protection Act (NEPA) is the process by which BOEM assesses and approves the reefing of decommissioned platforms.





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The proceedings document reflects the themes, discussion points and general agreements developed by the stakeholder participants at the COL Industry Forum, Rigs to Reality: Determining the Fate of Offshore Oil Platforms, held on October 25, 2017, in Washington, D.C. This document and the COL-developed recommendations were reviewed by and have the support of the individuals participating in the Forum prior to its publication.

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