

**STUDY TITLE:** Offshore Drilling Industry and Rig Construction Market in the Gulf of Mexico

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**SPONSORING OCS REGION:** Gulf of Mexico

**APPLICABLE PLANNING AREA:** Western, Central, Eastern

**FISCAL YEARS OF PROJECT FUNDING:** 2009, 2010, 2011, & 2012

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**COSTS:** FY 2009: \$58,384.87; FY 2010: \$96,027.82; FY 2011: \$97,551.68; FY 2012: \$16,317.63; **CUMULATIVE PROJECT COST:** \$268,282.00

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**KEY WORDS:** Gulf of Mexico; mobile offshore drilling unit (MODU); jackup; semisubmersible; drillship

**BACKGROUND:** Mobile offshore drilling units (MODUs) are marine vessels that drill wells in the earth to discover and produce hydrocarbons. MODUs consist of an ocean-going vessel with all of the systems required to support drilling, including a rig, power systems, pumps and other equipment. Several types of MODUs exist, but three classes - jackups, semisubmersibles, and drillships - comprise the majority of the fleet. Offshore oil production currently represents approximately one-third of global supplies and is expected to account for half of world production by 2015. As offshore production increases in importance, MODUs will play an increasingly critical role in bringing hydrocarbon supply to market.

**OBJECTIVES:** The purpose of this report is to describe the MODU industry and the economic impacts of rig construction in the U.S.

**DESCRIPTION:** In this report we emphasize dayrates in the service market and capital expenditures in the newbuild market because these are primary metrics and basic indicators of the industry. The major players in the service market are described and common business strategies are illustrated. Dayrates in the service market are empirically analyzed and hypotheses regarding dayrate factors are tested. The major shipyards active in the construction market are described along with the geographic

distribution of construction and the status of the market circa early 2011. A brief description of the technical processes of jackup rig construction is provided including design tradeoffs and the drilling equipment installed. The construction costs of jackup rigs in the U.S. are analyzed and the labor, equipment, and material cost components are estimated. Factors that influence capital costs are discussed qualitatively and the newbuild and replacement costs of jackups, semisubmersibles, and drillships are analyzed.

**SIGNIFICANT CONCLUSIONS:** From the analyses in the report, the following conclusions may be drawn:

- Dayrates are the leading indicator of the offshore contract drilling.
- Demand for drilling services is positively associated with oil prices for both jackups and floaters.
- Dayrates increase with increasing oil prices for both jackups and floaters.
- Dayrates and utilization rates are positively correlated, but the strength of the relationship varies over time and across regions.
- Rigs capable of drilling deeper wells, working in greater water depths, or with more advanced station keeping capabilities have higher dayrates than rigs with lower specifications.
- Long-term contracts exhibit higher dayrates than short-term contracts and the relationship is robust throughout the decade suggesting that E&P firms have been willing to pay more to secure drilling capacity.
- After controlling for regional and temporal variation, NOCs pay higher dayrates than IOCs or independents in the jackup market, and pay higher dayrates than independents, but not IOCs, in the floater market.
- Transocean and other large contractors receive higher dayrates than their competitors, but the difference is not significant after controlling for rig specifications.
- Appraisal drilling receives higher dayrates than exploratory or developmental drilling in the floater market, but not in the jackup market. The higher dayrates for appraisal drilling in the floater market may be due to increased risk associated with appraisal drilling.

**STUDY RESULTS:** A rig will transition between inactive states many times throughout its life, and as a rig ages, it will spend an increasing portion of its time cold-stacked. After being cold-stacked for several years, reactivation costs become prohibitive and a rig becomes dead-stacked. Dead-stacked rigs are used for parts before being sold, either for another use or for scrap.

U.S. yards are unlikely to win contracts for jackups employed outside the region due to competition and transport costs.

Dayrates vary over time within and between regions. The strong relationships between oil prices and dayrates and oil prices and the number of working rigs suggests that much of the temporal variation in global average dayrates can be explained by changes in demand due to commodity prices. However, oil prices between regions are highly

correlated and are unlikely to account for observed inter-regional differences. Region specific factors such as prospectivity, and political and environmental conditions lead to inter-regional differences in utilization rates and rig age and technology which leads to inter-regional differences in dayrates. Within a region, dayrate differences are due to contract duration, rig technology and age, and the market conditions at the time the contract was negotiated.

**STUDY PRODUCTS:** Kaiser, M.J., B. Snyder, and A.G. Pulsipher. 2013. The offshore drilling industry and rig construction market 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 2013-0112. pp. 375.

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