CheckForPlagiarism.net - Originality Report

Plagiarism Correction Services

Plagiarism Assessment
Test Document.pdf

Paper Details		Result
Date	2014-05-28	
Words	4051 plagiarized words / 5095 total words.	80%
Sources	6 Sources (5 internet sources, 6 publications, 0 excluded)	
Assessment	Very high plagiarized content detected / Grammatical, writing, sentence structure errors detected	
Suggestions	Paper requires plagiarism corrections and full proofreading to reduce writing errors and plagiarism percentage.	

Total Plagiarism Percentage detected in the submitted document

Plagiarism and Grammar Assessment and System Suggestions

Highlighted Text marking plagiarized content in the document

Overview of matches

Marked Text

Study on Offshore Platforms Module: MA0121 Marine Offshore Operations Study on Offshore Platforms Lecturer: Capt Sahwan Due Date: 30 May 2014 Word Count: S/N 1 2 3 Criteria Editorial Formatting Cover Page (3 marks) Abstract (3 marks) TOC (3 marks) Introduction & (3 marks) Titles & sub-titles (3 marks) Font (3 marks) Page numbering (3 marks) Margins (1 Justified) (3 marks) Line Spacing (1.5) (3 marks) Conclusion (3 marks) Quality of Content & References Abstract Content Quality Content Comprehensiveness Harvard Referencing (In-Text & End Ref) Statistics/Tables/Diagrams Analysis Ability to evaluate & analyse given facts Total Max. Marks 30 Marks 35 35 100 1 Study on Offshore Platforms Abstract This paper aims to study the evolution of Offshore Platforms pertinent to technological advancement over the years. Also discussed in this paper, how technological advancements to offshore platforms have aided oil majors to tap into oil reserves that can be found further out into the oceans at a deeper depths. 2 Study on Offshore Platforms Contents Abstract Introduction The First MODU The first offshore drilling unit to implement subsea well control Offshore drilling unit design evolution The tender assist drilling (TAD) unit Growth of offshore drilling units The semisubmersible unit First generation semi units Newer generation semi units The fixed platform units The ship and barge shaped units Technological development of the MODU The fu … on References 3 Study on Offshore Platforms Table of Figures Figure 1- The Breton Rig 20 designed by … to be the first MODU ever built. (moremhod.info 2012) Figure 2- Mr. Charlie, the first purpose-built (June 195 … 40-ft water depth. Retired in late 1986 and now a museum and training rig in Morgan City, Louisiana Figure … (1955) floating oil and gas-drilling MODU that used subsea well control. Retired in 1972. Figure 4- Humble S … and operated by Humble Oil & Gas Refining Co. (now ExxonMobil) in 1957. One of a number of "top secr … s. Courtesy of Exxon-Mobil Development Co. Figure 5- Humble Oil & Gas Refining Co.'s Humble SM-1 … shore California. Courtesy Exxon-Mobil Development Co. Figure 6- With a De Long-type jacking system, the Gus I, built in 1954 and rated for 100-ft water depth, was the forerunner of the modern jackup. Initially, two barges that were eventually joined permanently, but the unit was lost in a storm. Figure 7- Le Tourneaus Scorpion built for Zapata (now Diamond Offshore Drilling I … as an independent-leg jackup. Lost in 1969. Figure 8- Le Tourneaus 116C cantilevered jackup with drill … form. Today's workhorse design of jackups. Courtesy Le Tourneau, Inc. Figure 9- Worlds first semi MO … n 1961/1962 by Shell Oil from a submersible hull. Lost in 1964. Figure 10- Worlds first purpose-bui … ller. Unit could operate as a semi or submersible. Retired in 1992 and scrapped. Courtesy ODECO (now D … Worlds first purpose-built (conversion) semi TAD unit Seahawk. Converted in 1992 from a semi MODU. C … e 12- ODECOs multicolumn second-generation semi Ocean Victory class of early 1970s. Unit shown i … he North Sea in the early 1970s. This design proved structurally very attractive for upgrade to fourth- and fi … 4 Study on Offshore Platforms Figure 13- Deepwater Nautilus, one of the newly built fifth-generation ultrad … ist for its spread-mooring system. Note spread columns for increased VDL and stability. Courtesy Transoc … ness, one of the Ocean Victory class (Fig. 12) second-generation semis upgraded to a fifth-generation unit. Note blister additions to column, deck expansion, and much larger derrick. This semi also did surface BOP work in Malaysia in 2003, along with setting the worlds record self-contained spread-mooring water depth (6,152 ft). Courtesy Diamond Offshore Drilling Inc. Figure 15- Example of highly specialized and site-specific modular fixed-platform rigs used on spars, deepwater fixed platforms, and TLPs. This unit is on a TLP in the GOM. Courtesy Helmerich & Payne Intl. Drilling Co. 5 Study on Offshore Platforms Introduction Offshore drilling began in 1897, just 38 years after Col. Edwin Drake drilled the first well in 1859. H.L. Williams is credited with drilling a well off a wooden pier in the Santa Barbara Channel in California. He used the pier to support a land rig next to an existing field. Five years later, there were 150 offshore wells in the area. By 1921, steel piers were being used in Rincon and Elwood (California) to support land-type drilling rigs. In 1932, a steel-pier island (60 × 90 ft with a 25-ft air gap) was built mile offshore by a small oil company, Indian Petroleum Corp., to support another onshore-type rig. Although the wells failed and the island was destroyed in 1940 by a storm, it was the predecessor of the steel-jacketed platforms of today. The first on-water drilling was born in the swamps of Louisiana in the early 1930s with the use of shallow-draft barges. These barges were rectangular with a narrow slot in the aft end of the barge for the well conductor. Canals were, and still are, dredged so that tugs can mobilize the barges to locations. Later, barges were posted on a lattice steel structure above the barge, allowing them to work in deeper water depths by submerging the barge on the bay bottoms. These barges normally required pilings around them to keep them from being moved off location by strong winds and waves. The first offshore well, defined as, out of sight of land, was started on 9 September, 1947 by a tender assist drilling (TAD) unit owned by Kerr-McGee in 15 ft of water in the Gulf of Mexico (GOM). An ex-World War II (260 × 48-ft) barge serviced the drilling equipment set (DES), which consisted of the drawworks, derrick, and hoisting equipment located on a wooden pile platform. The Breton Rig 20 (Fig. 1), designed by John T. Hayward (who was with Barnsdall Refining Co. at the time), was a large posted submersible barge credited in 1949 with drilling some of the first wells in the open waters of Louisiana. It was different from the Kerr-McGee barge in that all the drilling equipment was on one barge, and it could be towed as a complete unit. The unit, which was a conversion from an inland drilling barge, had two stability pontoons, one on each side of the barge, that hydraulically jacked up and down as the barge was submerged and pumped out. These pontoons provided the necessary stability for this operation. The Breton Rig 20, later known as the Transworld Rig 40, was a major step forward because it eliminated the cost and time required to build a wooden platform to support all or 6 Study on Offshore Platforms some of the offshore-type rig. Although it drilled only in predominantly protected bays in shallow water (less than 20 ft), the Breton Rig 20 may be able to lay a qualified claim as being the first mobile offshore drilling unit

Different colors make distinction between different sources of plagiarized content easy

Scroll down to see type of sources checked through for in-depth and guaranteed plagiarism checking analysis

(MODU). Figure 1- The Breton Rig 20 designed by John T. Hayward in 1949 claim to be the first MODU ever built. (moremhod.info 2012) 7 Study on Offshore Platforms The First MODU The first truly offshore MODU was the Mr. Charlie, designed and constructed from scratch by Ocean Drilling and Exploration Co. (ODECO), Doc Alden J. Laborde. The Mr. Charlie (Fig. 2) was a purpose-built submersible barge built specifically to float on its lower hull to location and, in a sequence of flooding the stern down, ended up resting on the bottom to begin drilling operations. When the Mr. Charlie went to its first location in June 1954, Life magazine wrote about the novel new idea to explore for oil and gas offshore.[5] The Mr. Charlie , rated for 40-ft water depth, set the tone for how most MODUs were built in the Gulf of Mexico (GOM). Usually, an inventor secured investors, in this case Murphy Oil, and then found a customer with a contract to drill for, in this case Shell Oil, allowing bank loans to be obtained to build the unit. Figure 2- Mr. Charlie, the first purpose-built (June 1954) open-water MODU rated for 40-ft water depth. Retired in late 1986 and now a museum and training rig in Morgan City, Louisiana Because the shelf dropped off quickly, and water depths increased rapidly off the shore of California, the approach there was entirely different from that in the GOM. Rigs were installed on surplus World War II ship hulls modified to drill in a floating position compared with sitting a submersible barge on the ocean bottom, as done in the GOM. Oil companies formed partnerships or proceeded independently, 8 Study on Offshore Platforms but MODUs were not designed and constructed by contract drilling companies in California. All design and construction was done in a highly secretive manner with little sharing of knowledge, because technology was thought to give an edge in bidding for state oil and gas leases. Before the leasing of oil and gas rights in 1955, oil companies cored with small rigs cantilevered over the side midship of old World War II barges. These barges did not have well-control equipment or the ability to run a casing program. They could only drill to a designated core depth with the understanding that if they drilled into any oil and/or gas sands, they would stop, set a cement plug, and pull out of the core hole. These core vessels were highly vulnerable to wave action, resulting in significant roll, heave, and pitch, which made them difficult to operate. The first offshore drilling unit to implement subsea well control With leasing from the state of California to explore and produce oil and gas, well control and the ability to run multiple strings of casing became mandatory and required a totally new, unproven technology. The first floating drilling rig to use subsea well control was the Western Explorer (Fig. 3) owned by Chevron, which spudded its first well in 1955 in the Santa Barbara Channel. Others followed quickly, with all of them concerned about the marine environment and technology to allow drilling in rough weather. In 1956, the CUSS 1 was built from another World War II barge. The unit, built by the CUSS group (Continental, Union, Shell, and Superior Oil), was 260 ft long and had a 48-ft beam. The CUSS group eventually evolved into what is now Global Santa Fe. 9 Study on Offshore Platforms Figure 3- Western Explorer, the first (1955) floating oil and gas-drilling MODU that used subsea well control. Retired in 1972. The original designers had no examples or experiences to go by, so novelty and innovation were the course of the day: Torque converters on the drawworks were used as heave-motion compensators Rotaries were gimbaled to compensate for roll and pitch The derrick was placed at midship over a hole in the vessel called a moonpool. Blowout preventers (BOPs) were run on casing to the seafloor Re-entry into the well was through a funnel above a rotating head (riserless drilling is not new Mud pits were placed in the hull with mud pumps Living quarters were added It was an exciting and amazing time, considering that everyone was starting with a blank sheet of paper. Fig. 4 shows the Humble SM-1 drilling barge (204 × 34 × 13 ft) built and owned by Humble Oil and Refining Co. (now ExxonMobil) in 1957. Fig. 5 shows the subsea equipment used to drill the wells. Note that it has no marine riser. The Humble SM-1 drilled 65 wells for a total cost of $11.74/ft, about double the cost of land drilling at the time, in an average water depth of 159 ft and with a maximum well 10 Study on Offshore Platforms depth of 5,000 ft. The unit averaged 8.93 days per well and drilled an average of 324 ft/D. Unfortunately, the unit sank in a storm in 1961 while on loan to another operator.[6] At the insistence of insurance underwriters, the American Bureau of Shipping (ABS) wrote and implemented, in 1968, the first independent codes, guidelines, and regulations concerning the design, construction, and inspections of MODU hulls. Figure 4- Humble SM-1, a floating MODU designed and operated by Humble Oil & Gas Refining Co. (now ExxonMobil) in 1957. One of a number of "top secret" drilling units of the mid 1950s. Courtesy of Exxon-Mobil Development Co. 11 Study on Offshore Platforms Figure 5- Humble Oil & Gas Refining Co.'s Humble SM-1 subsea drilling system used offshore California. Courtesy Exxon-Mobil Development Co. Offshore drilling unit design evolution With the Mr. Charlie (bottom founded) and Western Explorer (floating) as the first MODUs, another concept for a MODU showed up in the form of a jackup. This type of unit floated to location on a hull with multiple legs sticking out under the hull. Once on location, the legs were electrically or hydraulically jacked down to the ocean bottom, and then the hull was jacked up out of the water. With this approach, a stable platform was available from which to drill. In World War II, the De Long spud can jacks were installed on barges for construction and/or docks. The De Long-type rigs (Fig. 6) shows an example, the Gus I) were the first jackups built in 1954.[7] Although jackups initially were designed with 6 to 8 legs and then a few with 4 legs, the vast majority of units today have 3 legs. The Gus I was constructed with independent legs. The Le Tourneau Co. built for Zapata Corp. the first lattice-leg jackup, the Scorpion (Fig. 7), which had independent legs with spud cans. To this day, Le Tourneau continues to specialize in lattice-leg-type jackup MODUs. 12 Study on Offshore Platforms Figure 6- With a De Long-type jacking system, the Gus I, built in 1954 and rated for 100-ft water depth, was the forerunner of the modern jackup. Initially, two barges that were eventually joined permanently, but the unit was lost in a storm. Figure 7- Le Tourneaus Scorpion built for Zapata (now Diamond Offshore Drilling Inc.) in 1956 for 80-ft water depth as an independent-leg jackup. Lost in 1969. A major evolution for the jackup design was the introduction of the cantilevered drill-floor substructure (Fig. 8) in the late 1970s and early 1980s. As fixed platforms got bigger, the slot jackups could not swallow or surround the platform with its slot containing the drilling equipment; however, the cantilever 13 Study on Offshore Platforms units could skid the cantilever out over the platform after jacking up next to it. Before the cantilevered substructure, all jackups had slots, usually 50 ft. square, located in the aft end of the hull. During tows, the substructure was skidded to the metacenter of the hull, but during drilling operations, the substructure was skidded aft over the slot. The derrick and/or crown could be skidded port/starboard to reach wells off center just like todays units do. The water depth range for most of the early slot and cantilever designs was from 150 to just over 300 ft. Cantilever drill-floor centers had a reach of 40 to 45 ft aft of the aft hull transom. variable deck load (VDL) ratings were 3,500 to 5,000 kips. In the late 1990s, premium or enhanced jackups were designed and built: They could carry much larger deck loads (7,000 kips) They could drill in deepwater depths (400 ft) They had more capable drilling machinery (7,500-psi high-pressure mud systems and 750-ton hoisting equipment) They had extended cantilever reach (at least 70 ft.) They had larger cantilever load ratings of double or more the earlier units (some 2,500,000 lbm) Figure 8- Le Tourneaus 116C cantilevered jackup with drill floor cantilevered over a fixed platform. Today's workhorse design of jackups. Courtesy Le Tourneau, Inc. 14 Study on Offshore Platforms The tender assist drilling (TAD) unit The TAD concept was used to drill the first offshore out of sight of land well in the world. Initially used as an exploration method, it has evolved into a development tool. The first tenders were shaped like barges, but some are now shaped like ships for better mobilization speeds. Basically, the DES (Drilling Equipment Set) consists of the derrick, hoisting equipment, BOPs, and some mud-cleaning equipment, reducing the required space and weight to be placed on the fixed platform. The rest of the rig is located on the tender hull moored next to the fixed platform, including: Mud pits Mud pumps Power generators Tubulars and casing storage Bulk storage Accommodations Fuel Drill water This approach turned out to be a very cost-effective way to drill from small fixed platforms. Unfortunately, in mild and especially severe weather, the mooring lines could fail, with the hull floating away, as it often did in a GOM norther. Today, most TADs operate in benign or calm environments in the Far East and West Africa. Growth of offshore drilling units Things were off and running in the 1950s, with numerous operators getting into the rig ownership and operation business and new drilling contractors being formed every year. In the early 1960s, Shell Oil saw the need to have a more motion-free floating drilling platform in the deeper, stormier waters of the 15 Study on Offshore Platforms GOM. Shell noticed that submersibles like the Mr. Charlie, now numbering almost 30 units, were very motion free afloat compared with monohulls. The idea was to put anchors on a submersible, use some of the California technology for subsea equipment, and convert a submersible to what is now known as a semisubmersible or semi. Thus, in 1961, the submersible Bluewater I (Fig. 9) was converted to a semi amid much technological secrecy. In fact, in the mid-1960s, Shell Oil offered the industry the technology in a school priced at U.S. $100,000 per participant and had lots of takers. Figure 9- Worlds first semi MODU, Bluewater No.1, converted in 1961/1962 by Shell Oil from a submersible hull. Lost in 1964. Then came the Ocean Driller, the first semi built from the keel up (Fig. 10). The Ocean Driller, designed and owned by ODECO, went to work for Texaco in 1963, with the mooring and subsea equipment owned by the operator, as was common in the 1960s. The unit was designed for approximately 300 ft. of water depth, with the model tests of the hull done in Doc Labordes swimming pool. The Ocean Driller could also sit on bottom and act as a submersible, which it did well into the 1980s. 16 Study on Offshore Platforms Figure 10- Worlds first purpose-built (1963) semi MODU, Ocean Driller. Unit could operate as a semi or submersible. Retired in 1992 and scrapped. Courtesy ODECO (now Diamond Offshore Inc.) The semisubmersible unit In 1992, the first semisubmersible (semi) Seahawk TAD (Fig. 11) was converted from an old semi MODU. The semi hull offers superior station keeping and vessel motions compared with ship or barge-shaped hulls: In a semi hull, the wave train can move through the transparent hull without exciting it to heave, roll, and pitch, unlike a mono hull The lower hull of the semi is below the water at a deeper draft. The columns offer a reduced area to excite the hull The work platform or main deck is above all wave action TADs are seeing new use on deepwater production platforms, such as spars, tension leg platforms (TLPs), and deepwater fixed platforms, which operate beyond jackup water depths. 17 Study on Offshore Platforms Figure 11- Worlds first purpose-built (conversion) semi TAD unit Seahawk. Converted in 1992 from a semi MODU. Courtesy Atwood Oceanics. First generation semi units Most of the first-generation units could sit on bottom or drill from the floating position as a hedge against unemployment. The shape and size of the first semis varied widely as designers strived to optimize vessel motion characteristics, rig layout, structural characteristics, VDL, and other considerations. The generation designation of semis is a very loose combination of when the unit was built or significantly upgraded, the water depth rating, and the general overall drilling capability. Newer generation semi units In the early 1970s, a new, second-generation semi was designed and built with newer, more sophisticated mooring and subsea equipment. This design generally was designed for 600-ft water depth, with some extending to greater than 1,000 ft. The Ocean Victory class (Fig. 12) was typical of the units of this era, which concentrated heavily on reducing motions of the platform compared with increased upper-deck VDL rating. Many were built, and, in the middle to late 1980s, a number of third-generation semis were designed and built that could moor and operate in greater than 3,000 ft of 18 Study on Offshore Platforms water depth and more severe environments. Many of the third-generation units were upgraded in the 1990s to even deeper water depth ratings with more capabilities and became fourth-generation units. With a few exceptions, the operating displacement of these units went from 18,000 long tons in the 1970s to more than 40,000 long tons in the 1980s. Figure 12- ODECOs multicolumn second-generation semi Ocean Victory class of early 1970s. Unit shown is the Ocean Voyager, drilling in the North Sea in the early 1970s. This design proved structurally very attractive for upgrade to fourth- and fifth-generation units (see Fig. 14) In the late 1990s, the fifth-generation units, such as the Deepwater Nautilus shown in Fig.13, became even larger (50,000-long-ton displacement) and more capable. These units can operate in extremely harsh environments and in greater than 5,000-ft water depth. Some second- and third-generation semis have been converted, given life extensions to their hulls and upgrades to their drilling equipment so as to be classed as fourth-generation units. Fig. 14 shows a second-generation Ocean Victory class unit (see Fig. 12) that was completely upgraded to a fifth-generation unit capable of mooring and operating in 7,000-ft water depth. Note the addition of column blisters for increased VDL, 50% increase in deck space, and the addition of riser storage and handling. A limited number of third-, fourth-, and fifth-generation semis have dynamic positioning (DP) assist or full-DP station keeping compared with a spread-mooring system. 19 Study on Offshore Platforms Figure 13- Deepwater Nautilus, one of the newly built fifth-generation ultradeepwater semis that has DP assist for its spread-mooring system. Note spread columns for increased VDL and stability. Courtesy Transocean Inc. Figure 14- Ocean Baroness, one of the Ocean Victory class (Fig. 12) second-generation semis upgraded to a fifth-generation unit. Note blister additions to column, deck expansion, and much larger derrick. This semi also did surface BOP work in Malaysia in 2003, along with setting the worlds record self-contained spread-mooring water depth (6,152 ft). Courtesy Diamond Offshore Drilling Inc. 20 Study on Offshore Platforms The fixed platform units Fifty years ago, fixed platforms had land rigs placed on them to drill and complete wells. Todays platform rigs have been repackaged so that they: Optimize the rig-up/load-out time Require less space Are lighter Have more drilling capabilities Drilling platform rigs are still common, but todays units look far different from those of 30 or 40 years ago. Conventional platform rigs are usually loaded out with a derrick barge. Some large platforms may have two drilling units on them. To eliminate the costly derrick barge, self-erecting modular rigs have been built for light workovers and for drilling to moderate depths. Larger units that have the capability of a 1-million-lbm hook load have been built that are lightweight, easier to rig up/load out, and self-erecting. The advent of spars and TLPs in deep water, where space and deck load are critical, has generated even a more sophisticated modular deepwater platform rig, which is highly specialized to the structure on which it sits (Fig. 15). These platform rigs: Are not self-erecting Are unique to the structure they are placed on Are generally very light Usually have limited drilling equipment capabilities 21 Study on Offshore Platforms Figure 15- Example of highly specialized and site-specific modular fixed-platform rigs used on spars, deepwater fixed platforms, and TLPs. This unit is on a TLP in the GOM. Courtesy Helmerich & Payne Intl. Drilling Co. By the mid-1960s, the jackup-designed rigs were displacing submersibles in increasing numbers. Jackups had more water depth capability than even the largest submersibles (some could operate in 175-ft water depth), and they did not slide off location in severe weather. From this point on, jackup and semi designs were refined and made larger and more capable from a drilling and environmental standpoint. The ship and barge shaped units Ship and barge-shaped floating MODUs, ,became more popular because of their transit speed and ease in mobilizations, decreased in number as semis and jackups. One exception was the DP drillship, which held location over the wellbore by use of Dynamic Position (DP) thrusters and main screw propulsion rather than a spread-mooring system. The first unit developed in the mid-1960s, although not an oil and gas exploration unit, was the Glomar Challenger, which was designed and owned by Global Marine (now Global 22 Study on Offshore Platforms Santa Fe), and contracted by the National Science Foundation for deep-sea coring around the world. This vessel confirmed the theory of shifting continental plates Following the Glomar Challenger in the late 1960s to early 1970s were a number of first-generation DP oil and gas drillships, such as the Sedco 445 Subsequently, in the middle to late 1970s, the second-generation DP units were developed, such as the Ben Ocean Lancer. The Ben Ocean Lancer was an IHC Holland Dutch design, which also included the French rigs Pelerin and Pelican, which were owned by the French company Foramer (now Pride). These units could drill in up to 2,000- to 3,000-ft water depth, had better station-keeping ability in moderate metocean conditions, and had better overall drilling capabilities DP ships of the late 1990s and early 2000s can operate in greater than 10,000-ft water depth and are two to three times larger than the earlier DP ships, with extremely complex station-keeping and dual-activity drilling systems Dual drilling consists basically of some degree of two complete derricks and drilling systems on one hull, so that simultaneous operations, such as running casing while drilling with the other derrick, can be performed. These units are very expensive to build and operate, but can overcome their cost with supposedly higher efficiency. They should be reviewed for possible use, under the right conditions, as an alternative to standard single-operation units. Examples of such conditions include: Batch drilling a subsea template Large development projects over a template Deepwater short wells Well situations in which more than one operation can benefit the overall plan Technological development of the MODU Over the past 50 years, technology of the offshore drilling units construction has evolved. MODUs earliest construction were introduced in the 1950s. By early 1970s, the number of jackups and semi-submersibles built increased. During 1980s, a number of drilling contractors upgraded rigs built in the 1970s and early 1980s to deepwater depths, more environmentally friendly, and improved drilling 23 Study on Offshore Platforms abilities rather than building new units. The concept was that delivery and cost could be reduced in half compared with building a new rig. Some drilling contractors have successfully create their business plan around conversion of previous rigs instead of new build. There is an increased in demand for oil and gas in the mid-1980s but there has only new building of offshore rig in the late 1990s. One drilling contractor, Global Santa Fe, monthly publishes a percentage number related to day rate and cost of building a new unit. A 100% rating means new units can be built profitably; however, the percentage number has lingered in the 40 to 60% range over the last 15 years or so, with spurts into 80%. By its nature, the drilling business is built on optimism for the future that may not always show proper returns on investment in terms of new builds or conversions. High on hope and the future, the contract drilling business has historically not been conservative and has not followed generally accepted rules of investment. In the early 2000s, the average age of the fleet was more than 20 years, with some units more than 30 years old. Few are less than 5 years old. Some have been upgraded and have had life extensions, which means that, with good care and maintenance, the basic hull, if it and/or the rig are not rendered technologically obsolete, may last more than 40 years, as do units in the dredging business. In order not to be Technologically obsolescence , The vessel need to have: 1. Up-to-date features such as: Top drive, Mud-solids control, Pipe handling equipment, etc 2. Optimum power to run the operational equipment smoothly The fleet in 2003 stood at approximately 390 jackups, 170 semisubmersibles, 30 ships (drill barges & drill ships), and 7 submersibles. Fixed-platform rigs number about 50, and TADs number about 25. 24 Study on Offshore Platforms The future of offshore drilling The general opinion is that the offshore industry will continuously grow, pertaining to technical improvements to reduce drilling costs. The industry has demonstrated that it can drill in water depths up to and more than 10,000 ft., and can operate in the most severe environments, but all at a very high cost that can run into hundreds of thousands of dollars per day. Ultra deepwater wells costing more than $50 million are common, and some wells have cost more than $100 million. It is very difficult to justify wells that cost this much given the risks involved in drilling the unknown. The challenge to the offshore industry is to drill safely and economically, which means technology of economics, with safety, environment, security, and personnel health all playing a large role. 25 Study on Offshore Platforms Conclusion In conclusion, through the study of the past and present structural design of common offshore drilling platforms, we can see that there will be more opportunities for operating companies to extract more natural fossil fuels such as oil and gas in particular. The reason behind it is that more offshore drilling units and platforms have the capability to drill into deeper ocean where valuable fossil fuels are buried in. Advancements in offshore technology enable drilling contractors to provide better offshore drilling methods such as DP system of drill ships and barges, for operating companies to efficiently use their capital investment in other stream of petroleum industry such as building refinery plants instead of focusing too much on services such as anchor handling. Therefore, offshore drilling units and platforms as mentioned might not require special services and reduces the time and cost of operating companies in making profitable extractions. 26 Study on Offshore Platforms References 1. 1.0 1.1 Silcox, W.H., et al. 1987. Offshore Operations. In Petroleum Engineering Handbook, second edition. Richardson, Texas: SPE, Chapter 18. 2. Barnes, K.B., and McCaslin, L.S. Jr. 1948. Gulf of Mexico Discovery. Oil & Gas J 47 (March 18): 96. 3. Mobile Rig Register, eighth edition. 2002. Houston, Texas: ODS-Petrodata. 4. Howe, R.J. 1966. The Evolution of Offshore Mobile Drilling Units. Drilling and Production Practice. API-66-120. 5. Laborde, A.J. 1997. My Life and Times. New Orleans, Louisiana: Laborde Print Company. 6. Harris, L.M. 1957. Humble SM-1 Offshore Exploration Vessel, Petroleum Engineering Project Report. Los Angeles, California: Humble Oil and Refining Co., Production Department California Area. 7. 7.0 7.1 Howe, R.J. 1986. Evolution of Offshore Drilling and Production Technology. Presented at the Offshore Technology Conference, Houston, Texas, 5-8 May. OTC-5354-MS. http://dx.doi.org/10.4043/5354-MS. 27

Relevant Sources (Web Matches)

[1] http://petrowiki.org/History_of_offshore_drilling_units (4036 Words, 79.2%)
[2] http://petrowiki.org/PEH%3AOffshore_Drilling_Units (3740 Words, 73.4%)
[3] http://petrowiki.org/MODU_riser_and_mooring_systems (33 Words, 0.6%)
[4] http://www.catrog.com/oil/0462.Atwood-Oceanics-Inc-lists-of-oil-rig-positions-for-general-labor.html (41 Words, 0.8%)
[5] http://fataways.com/rigjob/0046.Atwood-Oceanics-Inc-can-general-labor-work-on-oil-rigs-with-no-ex... (48 Words, 0.9%)

Detected Publications Matches (Database Matches)

JSTOR
Emerald Insight
OnePetro
Elsevier Journals
ScienceDirect Journals
IJPE