

SPAR RIG DESIGN



Houston, Texas
September, 2001

NAUTILUS CONTRIBUTION: Designer & Project Manager (June to September, 2001)

OBJECTIVE:

Develop cost effective equipment and method of completing and re-working wells on deepwater floating platforms.

PROJECT:

The Principle Engineer at Nautilus was commissioned to develop a drilling rig solution to re-complete and sidetrack wells on Conoco's "Joliet" floating TLWP and complete wells on El Paso's "Prince" TLP. No "light" capacity workover rigs for floating platforms existed in the market. A concept to enable Nabors' identical fleet of 1,000 hp workover rigs to fit and work on these moving platforms was developed. The rigs had to be enhanced to tolerate up to .4g acceleration forces from the motion of the platforms. This needed to be done in a short time period, on a tight budget and for two Operators simultaneously with a "Serial No. 1" concept.



"Prince" TLP

DELIVERABLES:

- ④ **Phase I: Define the Scope of Work (Appraise & Select).**
 - Identify solutions and associated rig cost comparisons.
 - Select the most cost effective solution.
 - Categorize and determine an inventory of required equipment.
- ④ **Phase II: Design Rig Modifications and Analyze Platform Structure Capacity**
 - Design any modifications required. Update rig drawings.
 - Determine total weights, load paths and center of gravities.
 - Analyze and model platform structure with rig loads.
- ④ **Phase III: Fabricate/update modifications and Assemble Rig.**
 - Build adaptors and add any modifications to rig equipment.
 - Assemble and test equipment fit and function.
- ④ **Phase IV: Develop Rig-up Plan & Implement**

RESULTS:

Two Nabors platform rigs were enhanced with a "Dynamic Kit" designed by Nautilus Principal Engineers. Both were mobilized successfully to two different floating platforms simultaneously. The Operators were able to bring on 1st production earlier with cost savings estimated to range from \$500,000 to \$3,000,000, depending on the project.

CONTACT REFERENCE:

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El Paso
"Prince"
TLP



Conoco "Joliet" TLWP



Dynamic Substructure



1,000 hp
platform rig