

COUPLED ANALYSIS OF FLOATING PRODUCTION SYSTEMS

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ABSTRACT

Fully coupled global analysis of Floating Production Systems, including the vessel, the mooring system and the riser system is described. Design of the system can be a daunting task, involving more than 1000 load cases for global analysis. The primary driver for the mooring system and for the riser system is motion of the vessel. Vessel motions are driven by environmental forces, but are restrained by forces from the mooring and riser systems. Numerical models and procedures that provide accurate and efficient global modeling of the Floating Production System are presented. Both Time Domain and Frequency Domain procedures are included. The accuracy and efficiency of the procedures are illustrated in an example: a large semi with 16 mooring lines and 20 risers. The procedures provide the accuracy and efficiency for use of fully coupled analysis in design of Floating Production Systems from concept selection to final design, installation and operation.

KEYWORDS: Coupled; Analysis; Mooring; Risers; Dynamic; Vessel; Motion; Floating; Production

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