

Lowering dynamics of subsea modules in deep water

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ABSTRACT: Recent offshore activities are continuously moving towards deeper and deeper waters with increased problems for all the related above and underwater support activities. The offshore oil industry needs the assurance that reliable installation techniques and equipment will be available in time to carry out the job satisfactorily.

This general trend in underwater offshore applications will not change in the near future and it is foreseeable that it will challenge the capabilities of the existing technologies to positively answer to the demand. For the development of the new ones a better understanding of the design constraints due to ultra-deep water scenario is therefore mandatory. Nowadays main concerns are the capacity of the installation vessels and the dynamics of the system during a lowering/lifting operations in actual sea conditions.

This paper focuses on the dynamics of the steel wire ropes during a lowering operation of subsea modules to the seafloor in ultra deep water. A mathematical model tries to describe the vibration behaviour of the steel wire ropes due to forced crane tip motions. Longitudinal and transverse vibrations will be considered.