INTRODUCTION TO OFFSHORE PIPELINES AND RISERS pdf

1: Introduction to Offshore Pipeline - Chess Subsea Engineering

Introduction to Offshore Pipelines and Risers PREFACE This lecture note is prepared to introduce how to design and install offshore petroleum pipelines and risers including key considerations, general requirements.

Pipeline shall be assumed empty during towing. Current speed depends on the depth, so current speed at surface will be maximum and it will diminish with depth. The internal lining on straight riser pipe is installed and the whole riser assembly attached with pre-prepared bend is hydrotested. Prior to that, the riser bend is lined separately and joined with the riser pipe by means of flanges. At the offshore site, the pipeline end is aligned and the required spool piece is measured. Measurement of the spool length is to be performed by divers. Divers may align the pipeline using air bags and tuggers. The aligning of the pipeline may be performed with a work barge and davits combining the aligning with the riser setting. After the measurement and alignment work, the offshore vessel then moves on to another location, as the spool can only be prepared onshore due to internal lining requirement. Once ready, the spool piece is then installed offshore using a work barge with a diving spread. The tie-in connections are performed by subsea flanges. The advantage of this method is that it is a simple procedure and does not require large installation equipment. The riser installation can be performed with a work boat or Dynamic Positioning DP vessel with adequate crane capacity to lift the riser into place thereby eliminating the requirement for a work barge. When sufficient length of strings are available, the strings are rolled over onto the trolleys on the launching track, towed towards the beach and welded into one pipeline section up to the required length. Depending on the limitation pull-in capacity, additional pipeline sections may be required to form the total length for installation. The pipeline sections will be connected by flanges, and filtered with pull heads. The pipeline Tow analysis shall be carried out with suitable software. A full 3D finite element model shall be created to simulate the tow of the pipeline string. The analysis shall be carried out based on worst case scenarios that may likely to occur during the phase of the tow. The tow vessel speed can be set approx 4 to 5 knots. As for dynamic analysis, the Trail Winches cable length and tension shall be kept constant , which is the same length used during static analysis, while the tension in the Tow Winch shall be varied. This enables us to determine the maximum tension requirement for the Tow Winch. No clump attachments or contents of the pipeline shall be modeled. Buoyancy Tanks â€" The buoyancy attachments shall be modeled as 3D buoys, simple bodies with just 3 degrees of freedom i. Straps â€" The strapping of the buoyancy attachments to the pipeline shall be modeled as Tethers â€" a mass less connection, linking the pipeline to the buoyancy attachments. Pullhead â€" Pullheads shall be modeled as a 3D bouy. A single pullhead 3D buoy shall be modeled and the pipelines shall be connected to the pullhead. Master link, shackles, etc. Number and Spacing of Required Buoyancy Tank The number of buoyancy tank required is calculated based on the equilibrium forces between total net buoyancy force of tanks and total submerged pipeline weight. The design considerations are as follows: Collapse Check of Buoyancy Tanks The collapse check of the buoyancy tank shall be determine the critical water depth that can result to wall collapse of the empty tanks. The critical water depth shall be be used in the design to determine the required tank wall thickness that the tank can immerse in the water without collapsing. In this scenario Normal lay and surface tow methods are not feasible to be used. It is recommended that the following installation stages are to be follow Lift the spool piece and lower down to the seabed. Divers using the appropriate installation aids to pull the spool piece below the existing pipelines until the spool piece is at the desired position. Diver to connect the spool piece to another spool piece by flange tie-in. Repeat the above for subsequent spool piece at other crossing. The von Mises Stresses reported is the maximum estimated von Mises Stresses over the cross section. The von Mises Stresses is a stress measurement that is often used as a yield criterion. It is a combination of all the components of the stress matrix. The maximum Bending Stresses is the maximum value that the Bending Stress takes anywhere in a section; and this maximum occurs at the extreme fiber on the outline of the bend. The Direct Tensile Stresses is the maximum axial stresses due to wall tension. A positive value indicates tension and a negative value indicates compression. The Tow Winch Tension should be monitored at a constant tension throughout the tow. Powered by Create your own unique website with

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4: Yong Bai,Qiang Bai's Subsea Pipelines and Risers (Ocean Engineering) PDF - Krokodila Books

Pipelines are lifelines of the global oil/gas industry, providing most convenient, eco-friendly, efficient and economical mode of transportation for oil and natural gas from upstream production to downstream refineries, power station, industries, domestic consumers and markets, crossing nations, oceans and continents.

5: PIPELINE AND RISER INSTALLATION

Introduction to offshore pipelines and risers preface this lecture note is prepared to introduce how to design and install offshore petroleum pipelines and risers.

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Flowlines and Risers are important offshore field elements operate through pipeline system. Flowlines convey the crude oil or gas from subsea to riser which connected to offshore platforms [11].

7: OFFSHORE PIPELINES & RISERS (OPR) INC.

19 th INTERNATIONAL SHIP AND OFFSHORE STRUCTURES CONGRESS SEPTEMBER CASCAIS, PORTUGAL VOLUME 2 COMMITTEE V.8 RISERS AND PIPELINES COMMITTEE MANDATE Concern for the structural failure modes of risers and pipelines.

8: Flow Assurance for Offshore Pipeline | Subsea Pipeline Engineering

Protection and storage of bare drilling risers strings both on and offshore can often be an issue, Lankhorst provides solutions for both. Lankhorst Riser Fins Lankhorst has developed a patented riser fin protection system that is designed to protect the bare riser joint and its corresponding auxiliary lines from any form of impact, and guide.

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Welcome to Offshore Pipelines & Risers in October! The Norwegian Petroleum Society (NPF) is once again hosting its traditional two day Offshore Pipelines and Risers conference in Trondheim. The biennial conference has for three decades been the most popular meeting and knowledge-sharing venue for the Norwegian offshore pi.

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