

Preface

As recognized in the oil and gas industry, the beginning of the offshore industry was marked by the Kerr-McGee Rig 16's successful oil extraction in Ship Shoal Block 32 in November of 1947. In the following years, tremendous efforts were made both economically and technologically in the development of offshore platform concepts and subsea completion equipment applying devised strategies. It is considered that the offshore industry economic and technological foundation was formed in the GOM by the end of 1950s. Offshore industry development took part globally including the North Sea, the Middle East, the Far East, the Caspian Sea, etc.

Safety and cost-effectiveness have always been the critical issues of the platforms from design to installation. As most of the platforms including fixed platform, GBS, floating structures such as TLP and Semisubmersible have their topsides and substructures fabricated separately, the integration of the two parts, or in other words, the mating of the topsides with the substructures become one of the most vital steps in the platform construction. Up to then, platform integration had used HLCVs (Heavy Lifting Crane Vessel). It was obviously that the capacity of HLCVs could not catch up the pace of the increase of the dimension and weight of the topsides. This is especially true for the integrated topsides design appeared in the 1960s. The HIGHDECK floatover technology was a significant invention in late 1960s and had strong impacts on the offshore installation practice. It was immediately applied to the inshore platform integration for huge platforms including TLP and GBSSs. The technology with evolutionary development includes methodology variations carrying the same name of "floatover" has been widely applied worldwide. It is no longer considered as novel offshore installation approach for installation of various kinds of offshore platform. With lower risk and high cost-effectiveness especially the big cut of the work scope of offshore hookup and commissioning, floatover methodology becomes the favored selection of platform integration.

It can be noticed that the development of the floatover technology continues and goes beyond the offshore platform integration. New equipment including specially designed vessels are also applicable to the platform decommissioning and the offshore renewable energy facility installation. At the same time, the step change

innovations like single vessel floatover using dynamic positioning vessels also appeared.

There have been many literatures, reports, brochures discussing relative topics on the floatover technology. The discussions cover various kinds of details including advantages of the method, the basic concepts, the equipment design, the success and lessons learned, etc. The discussions are often from different angles based on the experiences of the authors.

This book is written for the readers interested in the platform integration operation and the floatover technology basics and application. Their background in the offshore construction is not a requirement, since the depictions of basic concepts of offshore installation projects can be easily followed and comprehended. By presentation of real accomplished platform integration projects and discussion, the concepts of integrated topsides, comparison of installation by crane lifting and by floatover, importance of project management and planning, vital role of engineering in technology development and operation supporting, execution of platform integration, etc. are fully covered. We hope that the readers can have a relatively full picture on the platform integration and floatover technology after reading through this book.

Through the discussions, the following points of views are emphasized besides the technical contents:

- Safety and cost-effectiveness are the most critical factors to be considered in the technology development and project execution plan making.
- Platform integration projects similar to other offshore installation projects need synchronized efforts of the whole project team. A well-established project management team, efficient communication system and a solid quality assurance/quality control system are the keys for the success of the project.
- Engineering plays vital role in the success of the platform integration including the new technology development and supporting to the project management and offshore installation procedure/operation manual development.
- Every platform integration project is different, even for the same platform design. During the installation process, issues appeared have to be promptly addressed with correct solutions. A qualified engineer must have solid engineering background and accumulated experiences and the most important is the capability of handling on-site engineering challenges and providing engineering solutions.
- Offshore EPCI projects generally take a long time period in development and often the involvement of the installation team happens in the late stage of the project. However, to assure the success and the smooth execution of the EPCI, the installation project management team and the engineering supports should be involved in the very early stages.

The discussions on various topics are not evenly distributed in this book. More details are provided on the topics or examples less frequently appeared in the published literature, e.g., the discussion of the mating process of the topsides with

the hull of the TLP Hutton, which is different from the floatover using leg mating units in projects carried out nowadays. In the same token, generally the calculation and analysis details are not included since they can be easily found in published articles.

Most of the photos are from published literatures, presentations, brochures, etc. which can be found in conference proceeding, patent documents and websites. Efforts have been made for the accuracy of the data presented, especially when inconsistency found among articles.

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