Analytical Predictions and Field Observations in Lufeng15-1 DPP Jacket Upending and Lowering

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ABSTRACT
LF15-1 jacket overall height is 302 meters, in order to control the stability during jacket upending, with assistance of HLV, the uprighting scheme of flooding without venting is adopted, the compartment flooding water amount could be accurately controlled with pressure gauge equipped on the vent line. This could reduce jacket compartments capacity requirements, to facilitate jacket bulkhead arrangement and make the jacket upending more smooth and controllable. From field observation, the numerical simulation result is highly similar with offshore installation records.

KEY WORDS: large jacket installation; controlled upending; flooding and venting system; field monitoring; compartment pressure.

INTRODUCTION
Lufeng oilfields are located in the east part of South China Sea, which include LF15-1 oilfield, LF22-1 oilfield, LF14-4 oilfield and LF14-8 oilfield. LF15-1 oilfield with 10 production wells and 3 water injection wells is located in about 256 km southeast of Hong Kong, of which the water depth is about 286 m. LF22-1 oilfield with 4 production wells is located in the water depth of about 330 m, oil production utilizes subsea production system. LF14-4 oilfield with 7 production wells and 3 water injection wells is located in about the water depth of about 145 m. LF14-8 oilfield with 5 production wells and 3 water injection wells is located in the water depth of about 139.5 m. In this paper, we only focus on the LF15-1 Drilling Production Platform Jacket.

LF15-1 DPP Jacket is the biggest jacket in Asia, and also the biggest jacket designed, fabricated and installed by COOEC so far. The top of jacket measures 42 meters by 18 meters at EL(+)10.00 meters, while the base of the jacket measures 95 meters by 95 meters at EL (-) 281.00 meters. The overall height of the jacket is approximately 302 meters. LF15-1 jacket fixed platform is configured with eight legs at the deck interface, transitioning to four legs at 11.0 meter below the waterline, and continuing with four legs down to the mudline. The jacket consists of X-bracing schemes used on Row A, Row B, Row 1 and Row 4. There are a total of 13 horizontal framing plans. The jacket support system consists of 12 skirt piles, 3 piles at each of 4 corner legs. The launch weight of the Jacket is 30,200 m-tons, the module operating weight is approximately 17,000 m-tons which was installed by offshore lifting, the east and west module lifting weight are both about 3,500 m-tons. The LF15-1 platform configuration is shown in Figure 1.

Figure 1. LF15-1 Drilling Production Platform