

PROJECT SHEET

MOHO NORD FPU

TRANSPORTATION, WET TOWING AND STATION KEEPING OF A FLOATING PRODUCTION UNIT (FPU)

BOSKALIS ENERGY SOLUTIONS

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INTRODUCTION

The Moho Nord FPU was built by HHI for end-client Total. It was put into service offshore Congo in the Moho Nord field. Dockwise was contracted for the float-on in Ulsan, South Korea and the subsequent dry-transport and float-off in Port Gentil, Gabon. Boskalis Offshore Transport Services was contracted for the FPU wet tow to offshore Congo and station keeping in the Moho Nord field. The FPU measured 252 x 62 x 140 [m] (L x W x H) and weighed 80,500 [mt] during transportation.

CARGO PARTICULARS

Weight	80,500 t
Length Over All	252.00 m
Width Over All	62.00 m
Total Height	140.00 m
Hull Length	245.00 m
Hull Width	44.00 m
Hull Depth	18.00 m
Cargo Loading Draft	7.80 m

PREPARATION AND OUTFITTING

After 3 years of intense preparation and engineering, the deck outfitting in August 2016 marked the start of the execution phase. The casings of the DW vanguard were re-located onto outriggers in order to have sufficient clearance to load the 44 m wide FPU hull with protrusions.

FEATURES

Client	HHI (Hyundai Heavy Industries)
Operator	TOTAL
Loading location	Ulsan, South Korea
Discharge location	Port Gentil, Gabon / Pointe Noire, Congo
Period	Preparation: July 2013 – July 2016 Execution: August 2016 – November 2016
Vessels	DW Vanguard, Union Manta, Union Bear, Union Lynx, Union Boxer, Union Sovereign, Union Princess. For this project the DW Vanguard casings were re-located onto outriggers.



A Float-off operation at Port Gentil, Gabon. View from stern.

B Float-off operation at Port Gentil, Gabon. View from DW Vanguard bow.

FLOAT-ON KOREA

Medio September, the FPU was floated on the DW Vanguard at Ulsan anchorage. The vessel returned back to the quay-side for seafastening activities and on the 1st of October, the vessel set sail to Gabon. During the voyage, the seafastenings and cribbing wood were carefully monitored by the vessel crew.



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FLOAT-OFF GABON

Mid November 2016 the DW Vanguard arrived in the bay of Port Gentil. Cutting of seafastenings was done in less than 24 hours, as many cutting preparations were done during the last days of the voyage. In the night of 15-16 November the vessel ballasted down to float-off draft. In the afternoon the next day the FPU was successfully floated-off by the Boskalis AHT's Union Bear, Union Lynx and Union Boxer. The DW Vanguard was kept in position by two harbor tugs from Smit Lamnalco, the SL Rima and Lamnalco Weaver. Afterwards the DW Vanguard set sail to Singapore, where she was reinstated.

WET TOW AND STATION KEEPING CONGO

After float-off from the DW Vanguard, the FPU was towed by the Union Manta and Union Lynx from Port Gentil, Gabon to the Moho Nord field, offshore Congo. Upon arrival in Congo, after three days towing, station keeping of the FPU commenced by the Union Manta, Union Bear, Union Lynx and Union Sovereign. The Union Princess was stand-by. After 8 days the hook-up was completed and all AHT's were released from station keeping activities.

TECHNICAL CHALLENGES

Obviously due to their sheer size relative stiffness between cargo and the heavy transport vessel have become an even more crucial aspect to consider as well as the associated cribbing pressures. This initiates the discussion whether the traditionally used wood still poses the best technical and operational solution. Early 2015

Dockwise conducted testing on alternative materials. Also real-time measurements on actual cribbing pressures during a voyage have been performed and compared to the calculated values. For future Cargo's alternative cribbing materials provide a wider range of allowable cribbing pressures in relation to stiffness of cribbing. Operational solutions to achieve a safe loading operation of the FPSO with their hull appendages, such as riser frames, chain tables and mooring hawser equipment, is described for recent projects and how an accurate positioning is achieved on the cribbing support.

225 POB ONBOARD MOHO NORD FPU

Manned transportation of floating facilities is nothing new, but for the Moho Nord FPU project Dockwise has taken the next step in creating the opportunity for manned FPSO up to 225 POB. This facilitated the operators to continue their pre-commissioning programs already upon departure from the yard and safe on project schedule hereby. This started with safety considerations the project team had gone through and how the existing rules and regulations had been interpreted and applied up to the successful application of flag state approval.

CONCLUSION

With several operations and multiple assets following each other in succession, the project team, together with the Client, kept focus till the end. With ample preparation and engineering time, the FPU was successfully loaded and transported to its destination in Gabon, where after towed and successfully installed in the Moho Nord field.

- C** Float-off operation from DW Vanguard, assisted by (f.l.t.r.) Union Lynx, Lamnalco Weaver, Union Boxer, Union Bear and SL Rima

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