GLO Marine

HEAVY EQUIPMENT STRUCTURAL ENGINEERING

Telescopic access bridge (gangway) integration

CLIENT CONFIDENTIAL

YEAR 2023

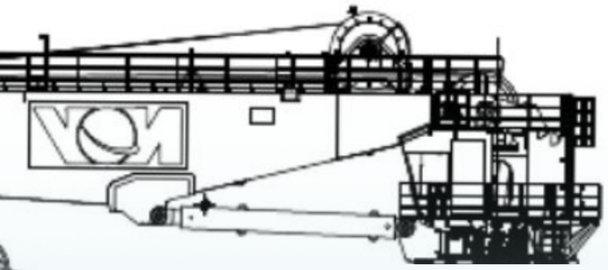
PLATFORM TYPE

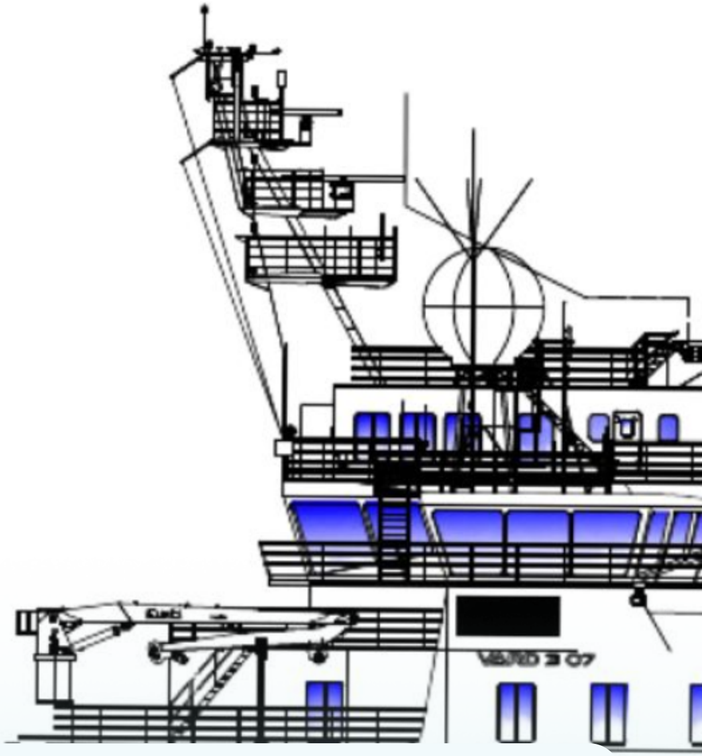
3 OSVs

CLASS

SOW

Engineering work, Class approval, Installation supervision





3

OSVS FLEET

91t

GANGWAY WEIGHT

0

CLASS COMMENTS

1

POINT OF CONTACT FOR ALL PHASES

CLIENT CONTEXT

Commitment to sustainable offshore operations

Our Client is a well renown offshore shipping company with 42 ships in their fleet and 2500 highly skilled employees worldwide.

Their vessels and expertise provide their partners in the offshore energy industry with the operational power, safety and reliability they need to grow everything but their environmental impact.

As one of the earliest adopters of green initiatives, our Client's ambition is to reach their targets of zero emissions and zero incidents.

THE WORK TO BE DONE

Project phases

- FEA assessment of gangway foundation
- Proposal of local reinforcements (if applicable)
- Development of calculation report documenting the FE Analysis
- Development of technical drawing for class approval
- Interaction with Class for final approval

THE CHALLENGE

Managing added loads on existing structure

Our Client is one of the first offshore operators to support the growth of the Offshore Wind sector, thus their current need to equip 3 (three) of their OSVs with telescopic access bridge (TAB) gangways.

The scope of work consisted in identifying the stress levels transmitted by the newly installed telescopic access bridge into the existing hull structure, on the connecting brackets and through compression into the deck stoppers.

In cases where the resulted tensions were close to the material limit, the scope of work was extended to mitigating the stress levels by providing sufficient reinforcements and obtaining final Class approval to enable installations.

Project phases

01. Engineering work

Our structural analysis team used rigid elements connected to the equipment foundation to apply the equivalent forces and moments in order to assess their effect on the connecting brackets, stoppers, and the main deck structure. As a very conservative assumption, all extreme values were considered simultaneously applied on the model. The computed yield utilisation factor for plates and for stiffeners was lower than the permissible factor of 0.8. Given the low levels of calculated stress and considering the urgency of this gangway installation, no further analysis using a finer mesh model was considered necessary. Once the structural analysis was completed, the results were handed over to our design team which translated the information into a structural drawing for Class Approval.

02. Class approval

Our Project Manager has then submitted the technical drawing to DNV for final approval, which returned stamped approval without comments. This swift collaboration between disciplines, given the urgency of these three different installations, proves once more the importance of coordinating all activities under one roof.

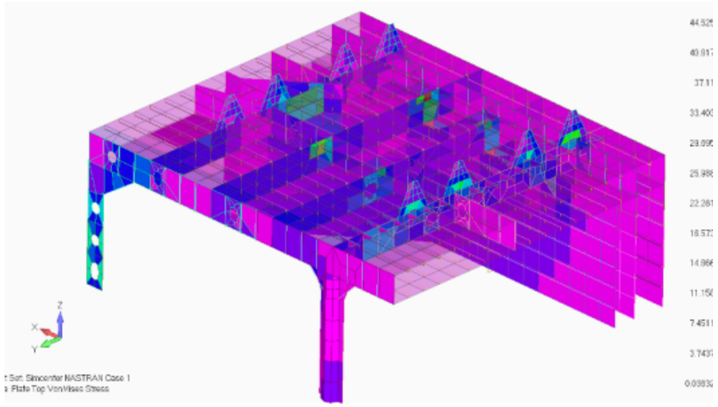
03. Installation supervision

A GLO Marine surveyor has attended the gangway installation in the shipyard to ensure that all structural modifications were carried out as per the DNV approved drawings and within the designated installation window.

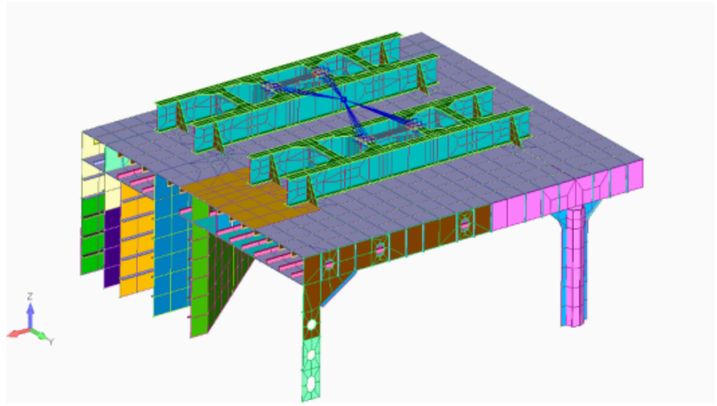
The outcomes

Final results

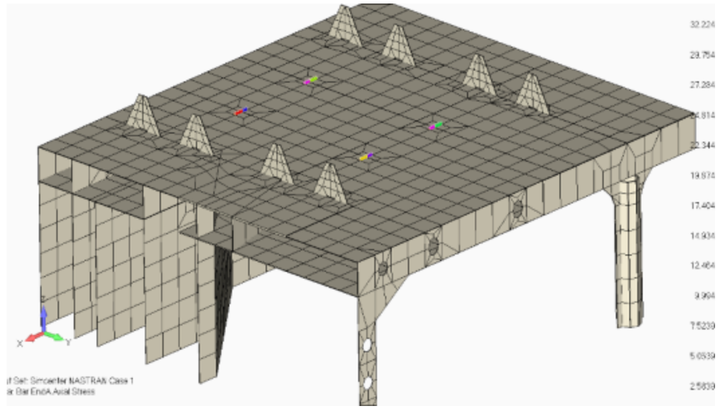
• Three different gangway integrations analysed and Class approved in record time; • Swift collaboration between disciplines allowed faster project delivery; • Successful installation within the designated window achieved. Our client has reached their very ambitious goal to equip their fleet of three OSVs with telescopic access bridge gangways and enhance their involvement in the Offshore Wind industry. They have expressed their extreme satisfaction towards GLO Marine's technical expertise, as well as GLO Marine's capability to deliver results under extreme schedule pressure The existing collaboration will expand to other offshore mobilisation projects such as equipment integrations and addition of new Class notations.



Von Mises stress results in the plate elements, indicating low stress levels well below class acceptance limits with a significant safety margin.



FE model section with quad shell elements, beam elements, lumped mass elements, and rigid connectors, generated using a coarse mesh.



Axial stress results in the deck foundation connection members, showing low stress levels well below class acceptance limits with a significant safety margin.

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