OFFSHORE SUPPORT INDUSTRY

November 2020

EXAMINERS REPORT

Question 1.

Students were expected to produce a drawing of a Light Construction vessel and the sketch should provide sufficient detail to demonstrate understanding of the basic structure and equipment incorporated in the vessel.
Features/equipment should include: Helideck, A-frame, subsea cranes, deck cranes/tugger winches, recovery/abandonment winch, ROV stations, moonpools, substantial accommodation and a strengthened and extensive clear deck.
Indicative dimensions should also be provided.

A description of the range of operations could include:
IRM; Cable laying; ROV Support; Survey; Subsea pipeline, umbilical, cable laying – repair & maintenance; Trenching (cutting & jetting); Saturation diving; Subsea module installation & maintenance; Topsides/deck module installation & maintenance; Riser installation; Mooring installation; Transportation of equipment.

Main propulsion and specialised equipment should be listed with an indicative specification/capacity and should include:
AHC Offshore Cranes; Moonpool; ROV's/LARS; A-Frame; Deck strengthening & Skidding systems; Thrusters/Azimuths; Trenching Spread; Helideck; Hospital, Conference/Reception rooms, Project/Survey/ROV areas.

DP class and lifesaving equipment (TEMPSC/FRCs should be described

Additional marks awarded for detail on more specialised/optional fitted equipment such as a Vertical Lay System (VLS) and carousel or reel facility for pipe/cable storage.
Saturation Diving Spread could also be included.

Question 2.

Students should be aware that dedicated ERRV/Stand-by vessels are only a regulatory requirement in NW Europe.
Definition of ERRV – Emergency Response & Rescue Vessel.
Emergency cover for rig evacuation or MOB situation.
Additional functions: FiFi; Oil Spill Response; Shuttle tanker assist; Protection of installation 500m zone; Floating Storage; ROV Operations.
It should be explained that regulation will be primarily within jurisdiction of state where operating.
Specialised equipment should be described: Daughter Craft; FRCs; Scramble nets; Rescue Accommodation (beds/seating); Emergency provisions; Hospital.

Question 3.

<u>Collision with Installation</u>
Working in close proximity to offshore installations with little room for error so maximum attention must be given to ability to maintain position safely alongside installation.

Serious risk if collision does occur: Contact damage; damage/loss of property; pollution; injury or loss of life.
Consequential loss can be very significant. (Installation downtime)
KK and MHHA discussed.
All instances however serious or level of injury must be investigated, cause identified and remedial actions taken.
Investigations could involve owner, charterer and regulatory body.
DP incidents formally recorded in log book and should be forwarded to IMCA for inclusion in DP Accident Database.
Charterer will require results of the incident investigation before vessel will be allowed to operate alongside an installation again.

Unscheduled Dry Docking/Breakdown
Docking or major repair work not arranged in advance to comply with Class requirements.
Examples requiring drydock: Hull damage; fouled/leaking propellers/thrusters; leaking propeller shafts; leaking propeller blade seals; damage to propellers or rudders.
Problem for owners – loss of hire; sourcing available drydock; completing the repair.
Problems for charterers – Replacement vessel; cargo/equipment still onboard.
Communication between owner/charterer – understanding relevant CP clauses.

Heavy Weather
Recognising the need for higher specification vessels in harsh weather environments.
Assuming vessel specification matched to operating environment, most heavy weather problems are associated with operational issues rather than vessel integrity.
Most common integrity issues are those caused by bridge/accommodation windows broken by heavy seas and associated water ingress effecting electrical/electronic equipment – ie loss of power/ steering.
Other issues: Damaged plating; loss/damaged deck equipment etc.
Insurance issues; Replacement vessel; time to effect repairs; early termination of CP.
Good communication between vessel, operator, installation and charterer to ensure proper planning of operations to avoid heavy weather situations.
Releasing vessel to seek shelter.

Question 4.

Students should be able to describe the core requirements of an effective broker and then discuss the more specific roles pertaining to chartering and S&P.

Core Requirements:

- Understanding fundamental broker/client relationship
- Acting as agent for their client
- Intermediaries between shipowners/charterers and buyers/sellers
- Introduction agency function
- Presenting business to potential clients.
- Negotiation and mediation skills.
- Checking and finalising contract details.
- Following the contract through to completion (post-fixture).
- Building up a data base of clients – Owners and Charterers.
- Proficient at gathering market information.
- General Knowledge and perception of world and local events (economics, government policies, oil prices, war/terrorism, strikes extreme weather, cabotage etc.)

Chartering Market:

Knowledge of the different chartering arrangements – voyage, time, bareboat.
Awareness of current market charter rates.
Technical knowledge of vessel types and their functions.
Technical knowledge of specific vessels/operators/ports and their facilities.
Awareness of vessel certification requirements.
Assisting owners with tenders.
Preparation of Charter Parties and Fixture Notes.

Sale and Purchase Market:

Awareness of current New build and secondhand vessel markets/rates.
Awareness of and ability to advise on vessel design, specification, machinery.
Knowledge of shipyards globally – reputation, order books, competitiveness.
Knowledge of ship financing methods and availability.
Awareness of current payment terms offered by shipyards.
Technical knowledge of vessel types and their functions.
Awareness of limited development of OSV demolition market.
Knowledge of demolition yards globally – no. of vessels processed; rates

Question 5.

Students should have a general understanding of each of the terms/acronyms:

i. <u>Bollard Pull</u>
The measurement of the pulling capacity of a towing vessel (eg. AHTS)
Defined in tonnes.
AHT and AHTS vessels will have BP certificate issued by class
Indication of typical BP for modern high spec AHTS circa 250t +

ii. <u>J - Lay</u>
Type of pipelaying procedure
Pipeline leaves pipelayer in near vertical position.
Reduces bending stress in pipeline
Slower than S- Lay unless deployed by VLS tower.

iii. <u>DP Plot</u>
Defines a vessels station keeping ability when operating on DP
Plot will be based on given environmental and operational conditions
Establishes the maximum weather conditions in which a DP vessel can maintain station and heading within defined tolerances.

iv. <u>Diving Spread</u>
Generally referring to saturation diving systems which will include:

Saturation Chambers
Diving Bells
Bell Launching equipment
Transfer Chambers
Hyperbaric lifeboats/Rescue Chambers
Dive Control Room
Workshop

Gas Control Room
Gas Storage provision
Gas Reclaim System
Compressors and other plant
Life Support Systems and associated equipment
Emergency power and firefighting equipment specific to diving operations
Accommodation for all personnel associated with the diving operations

Depending on the context in which the term is used it could also be considered to include all personnel involved with diving operations – divers and controllers.

v. Christmas Tree
Structure attached above a well head to control the flow of a well
Can be surface mounted on installation or subsea
Subsea trees very complex (don't look like trees!) controlled by umbilicals from surface installation.

vi. MOU
Memoranda of Understanding
Agreement between parties in a formal document
Not legally binding but indicates intention to agree a contract
May define the scope of negotiations without necessary details

vii. SWH (Hs) – Significant Wave Height
Not looking for any complex definition but how it is applied practically within the industry.
Not the maximum wave height – that is typically 1.5 times SWH and infrequent.
Looking for awareness that it is a widely used term within weather forecasting and can be the determining factor for many marine operations such as:
Cargo Ops, Anchor Handling, Pipelaying, survey, heavy lifting, barge towing etc.
Important to recognise that it will feature in workscope parameters and charter parties, and that accurate recording of periods when sea conditions exceed these parameters can be important within a contractual context.
Awareness that during highly weather critical workscopes quality forecasting that will generally be provided through a subscription service would be standard procedure.

Question 6.

Students should be able to show awareness of IMO Conventions and industry standards and distinction between them (statutory/non-statutory).

IMO not a regulatory body - develops conventions and codes which when ratified are implemented and enforced by the Flag States.
Large number of IMO conventions but the key ones to include are:
SOLAS, MARPOL , STCW and SAR
ISM and ISPS are codes stipulated within SOLAS (Regulations IX and XI respectively).
Detail on these key conventions/codes:

ISM – Mention of the vessels requirement for a valid Safety Management Certificate (SMC) and the vessel operators Document of Compliance (DOC).
Appointment of a DPA.
ISPS – Requirement for vessels to have an approved Ship Security Plan (SSP) and appointment of a Ship Security Officer (SSO) onboard and a Company Security Officer (CSO) ashore.
MARPOL – Highlight the six annexes covering: (I) Oil; (II) Noxious liquids in bulk; (III) Harmful substances in package form; (IV) Sewage; (V) Garbage; (VI) Air pollution – Sox/NOx emissions.
STCW – Safe Manning Documents/Maritime Working Time Directive (MWTD) controlling hours of work.
IMDG Code.
Maritime Labour Convention (MLC) 2006 developed by the lnternational Labour Organisation.
SOLAS has provision for Port State Control where contracting governments can inspect ships (with the power of detention) of other contracting states should they have concerns that the ship and its equipment don't comply with the requirements of international conventions.
Industry standards (non-statutory) such as the Common Marine Inspection Document (CMID) produced by IMCA and the Offshore Vessel Inspection Database (OVID) produced by the OCIMF.
The IMO also has non-mandatory codes for offshore supply vessels (OSV Code) and mobile drilling units (MODU Code).
Understand role of Classification Societies and trading certificates.
Key certificates:

- Safety Construction
- International Loadline
- Safety Equipment
- Safety Radio
- Safe Manning Document

Question 7.

Students should be aware that wind turbine foundation jackets are relatively small in comparison to Oil and Gas structures and are positioned by crane vessel.
Common for a number of jackets to be transported to the field at one time.
Transportation of jackets either by barge or installation vessel.
Awareness of two types of foundation fixing: Piling or suction buckets.
Installation vessels: Monohull; Jack-up; Semi-submersible, Sheer-leg barge.
Suction bucket jacket installation will require OCVs equipped with suction and grouting equipment.
Type of crane vessel will determine requirement for additional support vessels
ie. anchor handlers.
Tower, nacelle and blade installation often by specialised vessel due to height of latest generation of units.
OCV for cable laying operations.
Personnel transport by crew transfer vessels or 'Walk to Work' gangway equipped OCVs.(2)

Question 8.

Students should be able to demonstrate general awareness of the current state of the industry.

NW Europe and China/Far East areas most actively involved in OREIs.

Understand the range of installations: Offshore wind (fixed and floating); Tidal systems; Wave systems

Offshore wind overwhelmingly dominates: –

- Mainly fixed installation up to about 40m water depth.
- Floating installations now appearing extending to deeper waters further offshore.
- Huge increase in turbine output: 2MW to 8MW machines installed.
- Designs for 12MW under construction – 15MW being developed.
- Blade diameters 90m – 200m.
- Fixed installations - Steel jacket construction (similar to O&G).
- Floating installations – Spar and semi-submersible.
    - Spar – 40m draft
    - Semi-subs – 10m draft
- Similar construction techniques to O&G but smaller scale.
- Similar anchoring/mooring arrangements as semi-subs.

Survey vessels/guard vessels undertaking similar roles to O&G.
Construction vessels/heavy lift – similar to O&G.
Some specialist OCVs due to a lot of construction in shallow waters.
Anchoring/mooring systems usually deployed by conventional AHTS.

Tidal and wave systems generally constructed onshore and towed to location and anchored.

Unmanned installations when operational.
No fuel or provisions and little maintenance requirement so much less attendance required in comparison to O&G.
Maintenance crews generally transported by Crew Transfer Vessels (CTV) – small workboats (often catamaran design) making fast transit from shore to location.
Boat Landing Stations (BLS) are specifically designed to interact with shaped fendering arrangements on CTV bows. (System sometimes referred to as ‘surfers’)

Industry generally accepted as working at a much lower operational cost level than O&G.