MARINE CREW TRAINING AND COMPETENCE - RAISING THE STANDARD

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Abstract: It is indisputable that a competent work force is more productive, operates with reduced risks, shorter down times and fewer injuries. In accepting this fact, Global Marine Systems Limited (Global Marine) recognises that there needs to be specific competencies for each specialist area of submarine cable operations. This has led to the development of a unique and specific set of competencies associated with each specialist role.

These competencies were targeted at 4 main areas that were considered critical and significant in offshore cable maintenance or installation operations, Deck, Cable Engineering, Jointing and Subsea. Each discipline had assigned a number of key competency areas with a subset of competency components. The system was implemented for existing ranks and set the guidelines for new entrants to the business on what they needed to achieve over and above any statutory or academic criteria that they may have already met.

This paper describes the foundations of the Global Marine competencies scheme, associated and bespoke training courses either in use or developed to support the process and the administration and monitoring of the competencies.

1 INTRODUCTION

Within the offshore oil and gas industry there is a well established competence assurance and assessment scheme which is targeted at "safety critical" personnel working within that industry. The principles of this scheme have been adopted and configured to create a formalised competency structure for Cable Engineers, Jointers, Subsea and Deck Officers within Global Marine. Within this paper a sample of the competencies for Cable Engineers Jointers and Deck Officers will be illustrated as these have particularly been constructed with a bias towards the skills required for undertaking submarine cable operations.

2 CABLE ENGINEERING

The Cable Engineering competencies were the first set of cable work specific competencies produced within Global Marine. These were based upon the model already adopted by the Subsea Department which aligned to the IMCA (International Marine Contractor Association) guidelines. The cable engineering competencies have been constructed to specifically cover the business requirements for core cable engineering skills. These are naturally linked to training and considered an integral part of the core cable engineering skills development process. The scheme requires that cable engineers within the fleet provide evidence of competencies completed and have these signed off by a Chief Systems Engineer (Cable) before submitting them to the shore based Management for review, assessment, accreditation and storage with the individual's personal records.

The specific competencies for the cable engineering discipline comprises of a number of core elements associated with the business requirements for undertaking this role. There are a total of 20 key competencies for the Cable Engineering discipline, with each competency comprising of a number of sub-elements which have to be satisfactorily completed and signed off by the Assessor before the competency itself can be credited.

The Cable Engineering competencies are naturally linked to bespoke and cable engineering specific training courses and it follows that certain competencies cannot be gained until formal training has been undertaken in the subject and/or equipment to which the competency relates. A typical example is the Power Feed competency where it states that "Assessment of this competence is complimentary and dependant upon having satisfactorily completed the appropriate Cable Engineering training course for the skills listed". In this case, referring to an internal Global Marine training course on power feed where the objective of the course is to ensure the students are fully aware of the practical and safety aspects of power feed equipment and undertaking power feed operations.

The actual power feed course is split between classroom-taught theory and practical exercises using Global Marine's training school's power feed equipment. Student assessment is undertaken by a combination of written examination to prove an understanding of the theory and practical assessment whereby the Student is able to demonstrate practical operation and understanding of the operation of the PFE equipment.

The course content includes:

- Re-cap of power safety regulations
- Permit to work system
- Theory of power feeding
- Overview of Branching Unit operation.

- Powering configurations

- Powering to a terminal (SEF configuration)

- Powering to a terminal (DEF configuration)

- HV patch panel

- Connecting cable to a CTC

- Operation of the Start Spellman and Power Nova PFE's, SEF and DEF

- Calibration and maintenance of the Start Spellman and Power Nova PFE's

This process of linking specific training to the competencies flows across the whole system. The system has been configured in this way to ensure that the theoretical and practical foundation required by the Students is established and in place before taking on the responsibilities in an operational role. This training helps them to prepare and progress their competencies once they have the opportunity to do so with practical experiences likely to be encountered in the operational environment.

3 JOINTERS

The Jointer competencies are based upon the requirements for qualification and re-qualification as specified by the Universal Joint Consortium. However, over and above this requirement there are additional skills that Jointers are encouraged to develop. The principles of the Global Marine jointing improvement initiative to maintain speed and quality of builds as well as utilizing new technology such as JADE (Jointing Automated Documentation Environment) is all serving to enhance the effectiveness of the process.

Evidence of the impact of these initiatives are starting to become apparent as reported within IPRS39 where it states:-

"In data analyzed for this report, 4 joints were constructed by Global Marine in times that were significantly faster than average. Time savings were achieved in almost every sub-operation and no declared failures were recorded".

"Achieving time savings of this magnitude in combination with zero failure or reduced level of failure indicates that there has been a significant change in the management of shipboard jointing operations".

Jointer competencies are illustrated on the screen shot below and as well as tracking development and qualification against certain cable types it also provides the non-technical staff within Fleet Personnel a quick appraisal of staff skills to match against vessel and maintenance zone requirements.
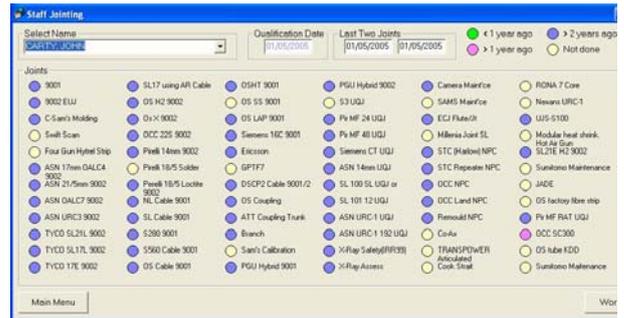
4 DECK OFFICERS

Having established the Cable Engineering requirements it followed that a formalised system for Deck Officers should also be devised to ensure that the skills required by Deck Officers in offshore cable operations are similarly monitored and developed.

A comprehensive set of Deck Officer Competencies were therefore produced based upon the same model as Cable Engineering, and similarly linked to both internal and external training to become a natural part of the core Deck Officer skills development process.

The competencies provide Deck Officers with clear direction on the criteria required to develop through the ranks and gain the necessary skills in cable work required by the business. To compliment this process and in line with Global Marine's continuous improvement philosophy, a cable work training matrix program has been introduced and is operated on board all Company vessels. This allows individuals to take the opportunity to enhance their competency during these training exercises as well as on "live" operations. Competencies are associated with this scheme to identify the practical elements that can be reasonably achieved under exercise conditions and is shown in the chart below.

Example 1

As with Cable Engineering, additionally bespoke training courses are run to support some of the key competencies, such as:-

Survey/Navigation — On board training in use of Navigator[TM]

Operations software — On board training in Navslack[TM], CLARA[TM]

DP system   DP induction and advanced simulator course*

The most recent course introduced is an internally developed DP training course which is an in depth course covering DP theory and operations with a particular emphasis on cable work. The course objective is to introduce and inform participants of the principles of Dynamic Positioning, system redundancy and the practical use of DP in the marine environment and covers the following topics:

1   Environmental Forces.

2   System components & function

3   Defining Position

4   Satellite Positing Systems

5   Tautwire

6   Hydro-acoustics

7   Laser-based, Microwave & UHF position reference systems

8   Kongsberg & Alstom DP Systems

9   DP vessel operations

10 System Components

11 ALSTOM ADP21 Operator Guidance

12 Practical Simulator Exercises

13 Watchkeeping

14 Basic HPR Practical Session –

15 Advantages & Disadvantages of DP -

16 Documentation & Information available onboard –

17 Top Tips - An assortment of practical tips for future DP operators

18 Assessment

There are a total of 30 key competencies for the Deck Officer discipline, covering the progression from 3rd Officer through to Chief Officer as detailed below. Each competency comprises of a number of sub-elements which have to be satisfactorily completed and signed off by the Assessor before the competency itself can be credited.

3rd Officer Competencies	2nd Officer Competence	Chief Officer Competence
No.1 (Company Procedures)	No.11 (Policy & Procedures)	No.21 (Commercial)
No.2 (Maintenance & Stock Management)	No.12 (Health & Safety)	No.22 (Finance)
No.3 (Bridge Admin)	No.13 Use of Bridge Equipment	No.23 (Management skills)
No.4 (Cable loading & stowage)	No.14 (Cable Engineering & Jointing))	No.24 (Operational Planning)
No.5 (Plant loading & stowage)	No.15 (Cable handling machinery)	No.25 (Cable handling)
No.6 (Ropes & Stoppers)	No.16 (Cable Operations Admin)	No.26 (Grappling)
No.7 (Cable working gear)	No.17 (Survey/Navigation)	No.27 (Buoy work)
No.8 (PGU operations)	No.18 (Operations software)	No.28 (Final splice)
No.9 (Deck Maintenance)	No.19 (Acoustic systems)	No.29 (ROV Operations)
No.10 (Small boats)	No.20 (DP system)	No.30 (Plough Operations)

All of the above requirements and associated internal training is specific to the type of operations and business undertaken by Global Marine. This is additional to any training Deck Officers require to achieve statutory requirements for progression through the ranks.

5   ADMINISTRATION

The successful application of a competency scheme requires that the development of all individuals is monitored and encouraged, particularly during exercises and offshore operations. It is the skills and experience of the Senior Officers that are relied upon at these times to ensure that staff maximise their learning experiences while they have the opportunity to with the vessel at sea on operations in a practical cable working environment.

In this respect, the vessel Commanders or Chief Systems Engineers are required to support the competency process by undertaking the role of

Assessors. By virtue of their rank, knowledge and experience these Senior Officers are deemed by the Company to be qualified to assess the competency of any Deck Officer, Cable Engineer or Subsea Engineer during the course of their work and development in their role.

In undertaking this function, the Assessors have the responsibility for being fair, honest and forthright in their assessment of individuals and their competency in cable working skills. The Assessors are tasked with evaluating any of the competencies presented to them and have to be prepared to thoroughly examine the individual's knowledge and understanding of the tasks being assessed. The Assessor has to satisfy themselves of the candidates capability and must look to have the following questions answered before acknowledging competence or otherwise.

1 Has the individual displayed initiative and confidence in competing the task or tasks being assessed?

2 Have you witnessed the individual carrying out the task or tasks and did you feel that they were being carried out safely, effectively and professionally?

3 Have you witnessed the individual applying a pro-active approach to safety in all their work related activities and in particular to the task or tasks they wish to be assessed?

4 Where certain tasks have asked for written submissions have you read these and concluded the individual understands the concepts, theory and technology to be competent at this task?

5 Written submissions are required as supporting evidence for at least two of the incremental parts of each main competency. Have you examined written evidence and signed and dated it, if it is deemed acceptable in demonstrating the individuals understanding?

6 Are you satisfied that the written evidence presented is entirely the work of the candidate and not a duplication of someone else's effort?

6   REVIEW

As part of the competency scheme all returned competencies are reviewed by the respective shore based Manager for the discipline involved. This process is undertaken to ensure that the Assessors apply their judgements in a fair and consistent manner across the fleet.

The Assessor themselves are aware that all competencies and associated evidence will be examined and verified on submission to the Office. During these reviews any inconsistencies may be taken up directly with the Assessor before determining accreditation of the reviewed tasks. This generally follows the form of

any robust QA system to ensure the system is run effectively with appropriate checks and verifications.

7   COMPETENCY TRACKER

All competencies received and reviewed are thereafter filed with the individuals training records. Additionally, the status of each competency is recorded within a database to allow easy access and review of any individual's progress with regard to training and/or competencies. The competency tracker database provides a graphical overview and an accurate up to date status of all offshore staff internal training and competencies.

The main menu of the competency tracker is shown below and provides a list of selections or queries that can be run on the database to present the Assessor, Reviewer or HR functions within the business a quick overview of the individual's capabilities and/or development needs.
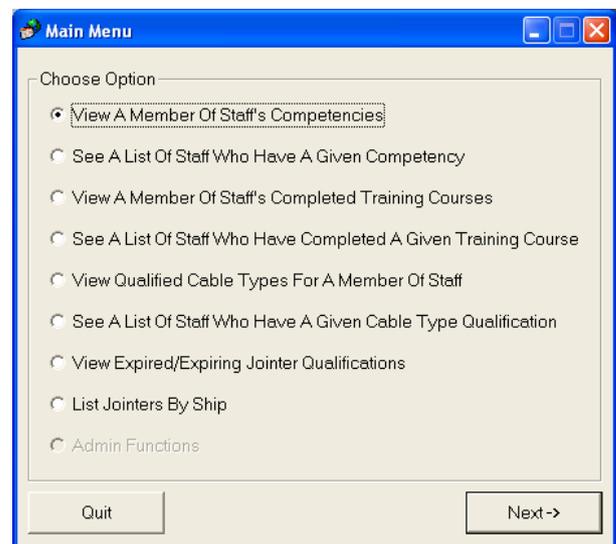
For example, making the fist selection you are then presented with a screen where you can type in the staff name. This immediately presents a "traffic light" type of status display indicating the competencies achieved as indicated below:
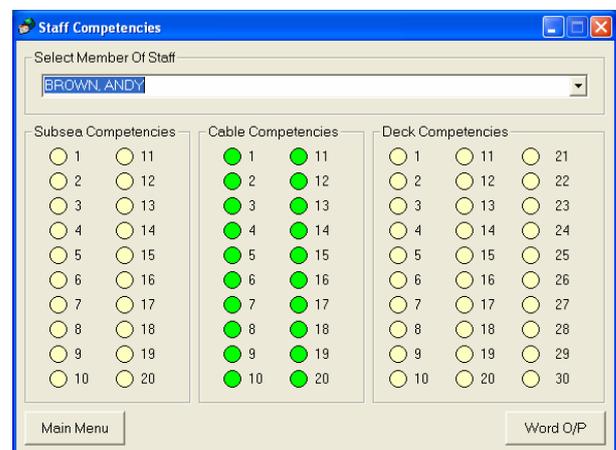
The other menu options provide useful search criteria that can assist in a number of ways, a typical example being the appointment of Jointers to vessels. This is particularly useful for non-technical staff in identifying which Jointers are qualified for specific cable combinations which need to be covered by the vessel within a maintenance zone.

It is also a very useful tool for assisting the decision making process on assignment of acting ranks or future promotions and forms an integral part of the performance review system for offshore staff.

8   CONCLUSION

The investment in training and development of staff competencies in the core operational skills backed up with formal training can only serve to create a stronger more professional work force. A bespoke competency scheme provides the foundations for a clearly defined development path for Junior Officers to follow and aspire to achieve the knowledge, skills and experience of their present leaders.