DNV·GL

STANDARD

DNVGL-ST-0023:2014-04

Competence of dynamic positioning operators

DNV GL AS

FOREWORD

The standards lay down technical requirements and acceptance criteria to the object in question, e.g. vessels, offshore units and installations.

Any comments may be sent by e-mail to *rules@dnvgl.com*

CHANGES – CURRENT

General

This DNV GL document supersedes and replaces the previous legacy DNV Standard for Certification No. 3.322, October 2013.

Text affected by the main changes in this edition is highlighted in red colour. However, if the changes involve a whole chapter, section or sub-section, normally only the title will be in red colour.

On 12 September 2013, DNV and GL merged to form DNV GL Group. On 25 November 2013 Det Norske Veritas AS became the 100% shareholder of Germanischer Lloyd SE, the parent company of the GL Group, and on 27 November 2013 Det Norske Veritas AS, company registration number 945 748 931, changed its name to DNV GL AS. For further information, see www.dnvgl.com. Any reference in this document to "Det Norske Veritas AS", "Det Norske Veritas", "DNV", "GL", "Germanischer Lloyd SE", "GL Group" or any other legal entity name or trading name presently owned by the DNV GL Group shall therefore also be considered a reference to "DNV GL AS".

Main changes

— This standard has been updated to comply with the DNV GL merger and has been updated with cross references to comply with the new numbering system.

Editorial corrections

In addition to the above stated main changes, editorial corrections may have been made.

CONTENTS

SECTION 1 INTRODUCTION

1.1 Introduction

The standard aims to cover the tasks performed by a dynamic positioning operator (DPO) on board vessels, using various dynamic positioning (DP)-modes and systems. It intends to capture the most important competencies for DPOs for various types of vessel, trade or activity. The standard aims to provide guidance for establishing a competence foundation, to be supplemented by e.g. operational / supplier manuals and system specific details. The standard aims to identify a base set of competencies for dynamic positioning operators.

The revised standard introduces **DP** notations, which are based on the use of combinations of DP-systems / modes for specific operations.

Notation code: AJ/S (Autopos / Joystick) corresponds with the previous version of the standard, focusing on Stationkeeping. Further details regarding the scope and competencies related to the various Notations are captured under [3.2] Structure.

1.2 Scope

The standard identifies a suggested minimum level of knowledge and skills for dynamic positioning operators, responsible for maintaining the vessel's position or keeping it on track while the vessel carries out an assigned operation. This standard can be used in the following ways:

- As a reference to familiarise or assess people in the role of bridge watchkeeping officer, winch operator or deck responsible.
- As a reference for global competence and defining training requirements.
- As a guide to training providers, who are to develop courses according to the requirements of the standard and needs of the industry.
- As a reference document for e.g. certification of personnel.

1.3 Professional profile

The DPO shall operate the DP control systems of the vessel working in a possibly hostile environment and in changing weather conditions, judge whether DP Operations can commence, continue or should be suspended and take immediate action if required. The DPO demonstrates that he is fully competent, using the systems / modes that apply to the applicable notation(s). The DPO demonstrates a holistic view of the vessel's management systems and operations and considers the impact of operating under DP on e.g. security vulnerability as well as from a legislative and regulatory point of view.

If the DPO is responsible for the vessel's integrity and safety when operating under DP as well as manually in case of DP failure, the DPO must be a STCW qualified deck officer.

If the DPO is part of a bridge-team and operates alongside a navigational officer at all times, being a STCW-qualified deck officer is considered best practice and strongly recommended.

1.4 Required performance standard

The performance standard describes how well duties and tasks should be performed, in compliance with all relevant international, national and local regulations and requirements, applicable reporting procedures and operational instructions in the relevant operating area and as required by Bridging Documents.

Other regulations shall be adhered to where applicable and the vessel shall be operated safely without causing damage to life, environment or property.

SECTION 2 TAXONOMY

2.1 General

Taxonomy of the required professional behaviour specifies the level on which the person should be able to operate. It is a hierarchical arrangement, in four (4) levels, of what a person has to master from simple to complex requirements, based on instructional design principles.

For every next level, it is a prerequisite that the preceding level is mastered. The required professional behaviour is expressed by means of a verb.

2.2 Levels of cognition

Each competence requirement can be classed by the level of cognition required to meet the competence requirement.

Level 1: knowledge (K)	To remember or to reproduce on basis of appropriate, previously learned information.
Level 2: understanding (U)	To give meaning to new situations and or new material by recollection and using necessary present information. To give evidence of insight in certain activities.
Level 3: application (A)	To use previously acquired information in new and concrete situations to solve problems that have single or best answers.
Level 4: integration (I)	To separate information into their component parts, to examine such information to develop divergent conclusions by identifying motives or causes, making inferences, and or finding evidence to support generalizations. To creatively apply prior knowledge and skills to produce a new or original whole. To judge the value of material based on personal values or opinions, resulting in an end product, with a given purpose, without real right or wrong answers.

2.3 Professional behaviour verbs

The lists of verbs in the table below are not exhaustive and should be used as guidance only.

Level of cognition	*Relevant action verbs*
Knowledge (K)	Choose, cite, describe, distinguish, find, give example, group, identify, indicate, know, label, list, listen, locate, match, memorise, name, outline, quote, read, recall, recognise, record, recite, relate, repeat, reproduce, retrieve, review, select, show, sort, state, underline, write
Understanding (U)	Account for, annotate, associate, classify, compare, define, describe, discuss, estimate, exemplify, explain, give examples of, give main idea, identify, infer, interpret, observe, outline, paraphrase, recognise, reorganise, report, restate, retell, research, review, summarise, translate
Application (A)	Adapt, apply, arrange, calculate, carry out, change, collect, compute, conclude, construct, demonstrate, dramatise, draw, exhibit, execute, extract, illustrate, implement, include, instruct, interpret, interview, make, manipulate, obtain, operate, paint, practice, prepare, sequence, show, sketch, solve, translate, use
Integration (I)	Analyse, appraise, argue, arrange, assess, attribute, calculate, categorise, check, choose, combine, compare, contrast, criticise, critique, debate, decide, deconstruct, deduce, defend, design, detect, determine, develop, diagram, differentiate, discriminate, dissect, distinguish, evaluate, examine, experiment, find, formulate, group, hypothesise, infer, investigate, integrate, interpret, inspect, inquire, judge, justify, measure, monitor, order, organise, outline, plan, predict, prioritise, probe, question, rank, rate, recommend, reject, relate, research, revise, score, separate, select, sequence, sift, structure, survey, tell why, test, validate, value

SECTION 3 COMPETENCE REQUIREMENTS

3.1 General

Each competence requirement is derived from a task that needs to be performed at some stage in the DP-operation. The competence requirement is stated in objective format to clearly define what has to be done to satisfy the requirements of the competence. At the same time it facilitates the derivation of assessment criteria and the assessments to measure individual competencies.

The competence requirements are grouped into functional domains that are further sub-divided into task or subject groups.

Each competence requirement is allocated a level of cognition that can be used to determine the type of assessment required to measure competence.

The competence requirements for DP operations require theoretical knowledge, intellectual and physical skills. Performance needs to be assessed and therefore defined throughout the competence tables.

3.2 Structure

The standard contains 8 Competence Tables.

Table 3-1: General competence requirements – Applicable to all notations

Table 3-2: Additional competence requirements auto positioning / Joystick mode (Stationkeeping)

Table 3-3: Additional competence requirements Approach mode

Table 3-4: Additional competence requirements Weather vane mode

Table 3-5: Additional competence requirements Follow Target mode

Table 3-6: Additional competence requirements Auto Track mode

Table 3-7: Additional competence requirements Submerged Turret modes (STL)

Table 3-8: Additional competence requirements position mooring (**Posmoor**)

Table 3-1 and Table 3-2 contain general competencies and competencies related to stationkeeping. Table 3-1 and Table 3-2 are considered fundamental building blocks for each DPO and are therefore an integral part of each Notation.

Additional competencies are required for the separate notations. These are captured in Table 3-3, Table 3-4, Table 3-5, Table 3-6, Table 3-7 and Table 3-8 and are add-ons for DPOs involved in specific DP-operations. Examples are given for the various Notations.

The notation structure and related tables of competence are illustrated in the table below:

Notation Codes

Notation code	Competent in the use of the following DP-systems	Examples of operations	Applicable competence tables
AJ/S	Autopos, Joystick	Stationkeeping: supply, standby, anchor handling, cruise, well service, accommodation, lifting operations, construction, diving	Table 3-1 – General Table 3-2 – Autopos/joystick
AJ/DPA-WV	Autopos, Joystick, DP-Approach mode, Weather vane	Offshore Loading: shuttle tankers (SPM, OLS, Tandem, FSL, SAL, DSL)	Table 3-1 – General Table 3-2 – Autopos/joystick Table 3-3 – DP approach mode Table 3-4 – Weather vane
AJ/FT-AT	Autopos, Joystick, Follow Target, Auto Track	ROV operations, cable laying, pipe laying, trenching, dredging, rock dumping	Table 3-1 – General Table 3-2 – Autopos/joystick Table 3-5 – Follow target mode Table 3-6 – Auto track mode
AJ/DPA-STL	Autopos, Joystick, DP-Approach mode, STL-Connect, STL-Loading	Submerged Turret Loading Operations	Table 3-1 – General Table 3-2 – Autopos/joystick Table 3-3 – DP approach mode Table 3-7 – STL
AJ/POS	Autopos, Joystick, Anchorhandling, Posmoor, Drilling, Riser management	Drilling Rig, Production Rig: Use of DP while anchored and during drilling / production operations	Table 3-1 – General Table 3-2 – Autopos/joystick Table 3-8 – Position mooring / ATA

3.3 Brief descriptions of the various DP-Modes

Auto positioning and Joystick

The Auto positioning mode is used for the stationkeeping activities, in which a vessel must remain in a defined position allowing specific operations (see examples in Notation Codes above) to be carried out. This is the foundation for Dynamic Positioning. Operating an Independent Joystick System is also considered part of the DPO foundation.

Approach Mode

The Approach mode is a special mode used in connection with offshore loading of shuttle tankers. When a vessel is at an appropriate position from the loading buoy Approach mode can be selected.

The Approach is performed in steps by adjusting the set point radius. The vessel is allowed to rotate on the set point circle in a system selected heading as the wind and wave forces changes. The vessel will maintain a heading towards the loading point. In the Approach Mode the weather vaning principle is used to control the vessels heading and position.

Weather Vane

Weather Vane mode is a special mode used in connection with offshore loading of shuttle tankers. When the vessel has reached a specified distance from the loading point Weather Vane mode is selected. Weather Vane mode will keep the vessel at a given distance from the reference point of the loading buoy, and the Weather Vaning principles are used to control the vessels position and heading.

Follow Target

Follow Target mode is used on multi- purpose offshore vessels performing special operations such as ROV support, Trenching, Ploughing and during supply, delivery and ship to ship operations. The Follow Target mode enables the vessel to automatically follow a moving target and keeps the vessel within a position window relative to the moving target.

Auto Track

The Auto Track mode is e.g. used on multi- purpose offshore vessels equipped to perform special operations such as cable laying, pipe laying or rock dumping and in other operations where there is a need to follow a pre-planned track. The Auto Track mode makes the vessel follow a specified track defined by a set of waypoints

Submerged Turret Modes

STL Connect and STL Loading are special modes used in connection with offshore loading of shuttle tankers using submerged turrets as connectors. The approach is carried out using DP approach mode, which is addressed separately in Table 3-3.

*Position Mooring (**Posmoor**)*

Posmoor is a special operational mode used by mobile offshore drilling units (MODUs) generally referred to as automatic thruster assist (**ATA**) or thruster assisted mooring (**TAM**). A MODU may have class notation for both **DP 3** as well as **Posmoor/ATA** according to requirements from the Norwegian Maritime Authority, NMD-Regulations 10 July 2009 concerning positioning and anchoring systems on mobile offshore units and DNV-OS-E301 Position Mooring.

3.4 Table 3-1: General - All notations

Table 3-1 Competence requirements – General all notations

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
DP SYSTEMS, EQUIPMENT AND INSTRUMENTS		
1.1	*Systems / elements / components*	
1.1.1	Describe the environment reference system elements' role in the DP System	U
1.1.2	Describe the power generation elements' role in the DP System	U
1.1.3	Describe the power management systems' role in the DP system	U
1.1.4	Describe the position reference systems' role in the DP System	U
1.1.5	Describe the heading reference systems' role in the DP System	U
1.1.6	Describe the thruster and propulsion systems' role in the DP System	U
1.1.7	Describe the role of control elements in a DP System	U
1.1.8	Recognise DP-related vessel systems and technical equipment	U
1.1.9	Describe propulsion, thrusters and rudder types used by DP systems	U
1.1.10	Explain the redundancy requirements for IMO DP Class 1, 2 and 3 (position reference systems (PRS), thrusters, generators, etc.)	U
1.1.11	Describe the different coordinate systems used in DP-operations	U
1.1.12	Identify the different systems that control the thrusters (e.g. manual levers, autopilot, independent joystick, main DP, backup DP, emergency steering)	U
1.1.13	Describe when to use the different thruster control systems	U
1.2	*Failure modes and effects analyses (FMEA)*	
1.2.1	Explain the implications of identified FMEA	I
1.2.2	Describe tests carried out during annual trials	U
1.2.3	Explain the importance of the vessel's FMEA document and the annual trials report for planning emergency drills	U
1.3	*Sensors (General)*	
1.3.1	Explain the working principle and purpose of heading sensors (gyro)	U
1.3.2	Explain the working principle and purpose of wind sensors	U
1.3.3	Explain the working principle and purpose of vertical reference sensors (VRS) / motion reference unit (MRU)	U
1.3.4	Explain the working principle and purpose of other sensors used (ref. Notations)	U
1.4	*Dynamic positioning and position reference systems (PRS) - General*	
1.4.1	Explain the operation method and limitations of the various systems used (e.g. Cyscan, Fanbeam, satellite-based PRS, RADius, Artemis, Tautwire, hydro acoustic systems, RadaScan, INS)	U
1.4.2	Explain the expression "building the model" and its role in dynamic positioning	U
1.4.3	Explain the use and impact of the various gain settings (low, medium, high)	U

Table 3-1 Competence requirements – General all notations (Continued)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
1.4.4	Explain the use and impact of the various acceleration and deceleration factors	U
1.4.5	Explain the gain model function (e.g. quick model, fast learn) and when to use it	U
1.4.6	Explain how the DP-control system uses PRS inputs	U
1.4.7	Explain how the DP-model is weighed towards the PRS in use	U
1.4.8	Explain the possible influence of a vessel's speed when calibrating a PRS and preference of a vessel being stationary (system specific)	U
1.4.9	Explain why 'sea current' or 'sea force' indicated on the DP may be remarkably different from real sea current / sea force	U
1.4.10	Explain the potential risks by using relative and absolute PRS simultaneously when alongside moving objects	U
1.4.11	Explain when to enable additional position reference systems	U
1.5	*DP computers*	
1.5.1	Explain when DP computers should be reset according to vendor and/or procedural recommendations	U
1.5.2	Explain the effect of resetting an OS computer and a controller computer on the vessel's capability	U
1.5.3	Demonstrate how to reset the DP (OS / Controller) computers while remaining in control of the vessel	A
1.5.4	Demonstrate the use of the training functionality in the DP-system on board (if applicable)	A
1.5.5	Verify actuality of updates / upgrades of the DP-system	I
1.6	*Documentation*	
1.6.1	Interpret relevant information / documentation about DP-related systems and technical equipment	I
1.6.2	Interpret vessel's DP operations manual and training manuals	I
1.6.3	Explain the importance of keeping detailed vessel log books documenting all aspects of DP Operations	U
1.6.4	Explain the importance of maintaining personal DP Experience Log Books	U
1.6.5	State where to find the up-to-date applicable rules, regulations and recommendations published for the DP industry	K
ORGANISATION AND COMMUNICATION		
1.7	*Bridge watchkeeping*	
1.7.1	Describe the watchkeeping organisation on board, authority and distribution of tasks amongst the bridge team, when under DP	U
1.7.2	Describe the role, tasks and responsibilities of the DPO, under DP	U
1.7.3	Describe the role, tasks and responsibilities of the responsible person for the bridge watch, under DP	U
1.7.4	Know which bridge team member is in command of the vessel	K
1.7.5	Recognise the importance of minimising distractions for the DPO	U
1.7.6	Demonstrate a continuous awareness of the vessel's status, operation and impact of operating under DP	A
1.7.7	Recognise the importance of an external focus when controlling a vessel close to installations or other objects	U
1.7.8	Recognise situations in which to call the master to the bridge	U
1.7.9	Log DP-related incidents	A
1.8	*Change of DP watch*	
	Handing over	
1.8.1	Prepare a hand-over checklist	A
1.8.2	Transfer vessel's status and DP-details when handing over the watch	U
1.8.3	Provide an update on the ongoing operation and planned operational activities	A
	Taking over	
1.8.4	Review a hand-over checklist	A
1.8.5	Verify vessel's position or movement and status	I
1.8.6	Interpret all necessary information of vessel and operation	I

Table 3-1 Competence requirements – General all notations (Continued)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
1.8.7	Determine the DP-status and recent occurrences which may have an effect on the DP-operation during the watch	I
1.8.8	Check and confirm history log of DP-equipment settings	I
1.8.9	Take over / hand over DP-watch in a formal and clear manner	A
1.9	*Communication and reporting*	
1.9.1	Obtain information and clearance from e.g. installation, port control, vessel traffic system (VTS) on issues important for the safe operation of the vessel under DP	A
1.9.2	Communicate approach / operational plan with bridge team, work site control, ECR, third parties	A
1.9.3	Inform all involved crew, engine control room and other parties on board (if applicable) in sufficient time before arriving or departing the work site	A
1.9.4	Inform and update relevant parties of status of the vessel, changes in reference systems or the DP system and any developing emergency situations	A
1.9.5	Comply with applicable reporting procedures and operational instructions in the operating area and as required by Bridging Documents	A
SAFETY AND RISK REDUCTION		
1.10	*Risk assessment*	
1.10.1	Explain the importance of Risk Assessment	U
1.10.2	Perform a risk assessment	A
1.10.3	Review existing Risk Assessments for a planned DP operation	U
1.10.4	Explain the importance of Safe Job Analyses	U
1.10.5	Review existing Safe Job Analyses reports	U
1.10.6	Explain the importance of toolbox-meetings	U
1.10.7	Conduct a toolbox-meeting	A
1.11	*Incident reporting*	
1.11.1	Report DP incidents in accordance with company policy	A
1.11.2	Describe types of DP incidents that may be reported into the DP Incident Reporting Systems	U
1.11.3	Review incidents / accidents / failures of equipment / personnel performance	A
1.12	*Evaluation*	
1.12.1	Evaluate the DP Operation, including Bridge /Engine team and DP System performance	I
OPERATIONS (GENERAL)		
1.13	*Preparation*	
1.13.1	Review the scope of the planned DP operation	K
1.13.2	Use a DP Capability Plot to determine if DP operation is possible in prevailing conditions	I
1.13.3	Apply vessel / client specific procedures with reference to the DP operation	A
1.13.4	Discuss working position with e.g. installation, port control, VTS	U
1.13.5	Explain the complications, specific challenges and difficulties when operating near floating objects as compared to fixed objects	U
1.13.6	Interpret information about the work location (e.g. water-depth, installations, subsea obstructions)	I
1.13.7	Determine if the working position is acceptable and in accordance with the standing order	A
1.13.8	Analyse external forces which may reduce the position-keeping capability of the vessel (e.g. pipe tension, ice, tides, current, thrusters).	I
1.13.9	Determine a safe working heading	A
1.13.10	Determine safe separation distances, taking into account combined movement when operating alongside an object	I
1.13.11	Complete all tasks on the DP-checklists	A
1.13.12	State applicable go / no go criteria for the DP operation	U

Table 3-1 Competence requirements – General all notations (Continued)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
1.14	*Busbar-settings*	
1.14.1	Determine optimum bus-tie breaker-setting and which engines to use during the operation	I
1.14.2	Explain the relationship between the busbar-setting to be used and the vessel's DP class	K
1.14.3	Determine if both closed and open busbar-setting are approved for operating under the relevant DP-class	A
1.15	*Meteorology*	
1.15.1	Interpret weather forecast	I
1.15.2	Anticipate environmental conditions which may limit the use of DP	I
1.15.3	Assess if the environmental conditions are suitable for DP-operations	I
1.16	*DP setup*	
1.16.1	Describe 'Safe Position' and the factors affecting it	U
1.16.2	Assess the movement of floating installations when determining a safe distance to carry out location setup checks	A
1.16.3	Determine a 'Safe Position' and minimum distances to stabilize the vessel under DP	A
1.16.4	Use correct thruster allocation for a specific operation and weather conditions	A
1.16.5	Ensure the vessel is on DP in accordance with the vessel's class and the vessel's operation manual	A
1.16.6	Carry out a drift-trial	A
1.16.7	Test vessel's manoeuvring capability during prevailing weather conditions	A
1.16.8	Stabilize the vessel under DP	A
1.16.9	Generate a DP Footprint Plot for the vessel	A
1.17	*DP operations*	
1.17.1	Determine if all DP-related vessel systems and technical equipment are up and running	I
1.17.2	Demonstrate the proper use of the systems used on board, including relevant special functions (ref 1.4.1 and Notations)	A
1.17.3	Evaluate availability of various PRS and sensors (gyro, wind, VRS, etc.)	A
1.17.4	Evaluate most appropriate PRS for specific DP-operations	A
1.17.5	Set-up the number of position reference systems required in accordance with the DP class	A
1.17.6	Determine if the quality of PRS-signals is sufficient for safe DP-operations under agreed DP-class	I
1.17.7	Check operational ability and accuracy of the DP-system	I
1.17.8	Switch from navigation bridge to DP bridge and vice versa without losing control of the vessel (alignment of levers and controls)	A
1.18	*Normal completion of a DP operation*	
1.18.1	Identify safe departure route and best vessel heading for departure	U
1.18.2	Recognise external dangers prior to departure	U
1.18.3	Retrieve position reference system equipment from e.g. the installation or seabed (if applicable)	A
1.18.4	Demonstrate moving to a "safe position" in appropriate steps	A
1.18.5	Recover / retract deployed equipment (forward azimuth thruster, HPR, HiPAP if applicable)	A
1.19	*Operating in manual mode*	
1.19.1	Describe advantages/disadvantages of various types of main propulsion, rudders and thrusters with regard to manual manoeuvring	U
1.19.2	Discuss special precautions to be taken due to wind, current, wave height and swell during manual manoeuvring close to installations or other obstructions	U
1.19.3	Manually stop the vessel at a pre-determined position	A
1.19.4	Determine the need to stop the vessel completely before switching to DP control (system specific)	U

Table 3-1 Competence requirements – General all notations (Continued)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
1.19.5	Test vessel's manual manoeuvring capability under prevailing weather conditions in a safe position	I
1.19.6	Demonstrate manual manoeuvring of the vessel under prevailing weather conditions	A
1.19.7	Demonstrate manual station-keeping of the vessel under prevailing weather conditions	A
1.20	*Independent joystick system*	
1.20.1	Explain the fundamental difference between the integrated DP Joystick and the hard wired independent Joystick System	U
1.20.2	Explain the benefits of using independent joystick instead of manual control when losing all DP control functions	U
1.20.3	Switch from DP mode to the independent Joystick System	A
1.20.4	Operate the independent Joystick to maintain position and/or heading in a controlled and safe manner	A
1.20.5	Operate the independent Joystick to change position and/or heading in a controlled and safe manner	A
CONDITION MONITORING		
1.20	*System integrity*	
1.20.1	Monitor position reference systems, sensors and signal quality in anticipation of the possibility of failure causing instant/violent reaction from main engines/thrusters	A
1.20.2	Monitor power output and thrust	A
1.20.3	Monitor thruster efficiency for station-keeping at different headings, drafts and trim, taking corrective action as required	A
1.20.4	Monitor if the DP operating parameters of continuous operating power are not exceeded	A
1.20.5	Recognise DP-related changes in vessel systems and technical equipment	U
1.20.6	Recognise technical issues which may limit or stop DP operations	U
1.21	*Position-keeping*	
1.21.1	Monitor movement of the vessel and changes in the position and heading	A
1.21.2	Monitor movement of the object / installation / target	A
1.21.3	Monitor by various means changes in distance/heading between object and own vessel (if applicable)	A
1.22	*Environmental conditions*	
1.22.1	Recognise changes in environmental conditions	U
1.22.2	Recognise when environmental conditions become critical with reference to station keeping	U
1.22.3	Recognise increased importance of situational awareness when operating close to floating objects	U
1.23	*Alarms and indicators*	
1.23.1	Describe the DP status alert levels on board a DP-vessel	U
1.23.2	Identify the procedures to follow for DP and non-DP alarms	U
1.23.3	Determine and set alarm and warning limits	I
1.23.4	Recognise alarms related to the incorrect operation of the DP-system and maintaining position	U
1.23.5	Acknowledge alarms within time constraints	A
1.23.6	Discuss alarms with engine control room	U
1.23.7	Evaluate the possible consequences of each alarm and possibility to continue the operation	I
1.23.8	Explain 'Consequence Analysis'	U
1.23.9	Analyse the consequence analysis alarm	I
1.23.10	Interpret visual indicators, indicating conditions which may result in malfunction of DP	I
CONTINGENCIES		
1.24	*Emergency awareness*	
1.24.1	Describe vessel-related conditions which may result in aborting the operation	U
1.24.2	Describe external conditions which may result in aborting the operation	U
1.24.3	Describe the risks / challenges of the various control-modes	U

Table 3-1 Competence requirements – General all notations (Continued)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
1.24.4	Recognise limitations of vessel movement when having equipment or divers deployed	U
1.24.5	Explain why manual control should be selected after a full blackout, awaiting the power to be restored	U
1.24.6	Explain the course of action in case the vessel's integrity may be breached while under DP	U
1.25	*Emergency performance*	
1.25.1	Demonstrate actions in case of unstable Position Reference System(s)	I
1.25.2	Demonstrate actions when losing Position Reference System(s)	I
1.25.3	Demonstrate actions if Position Reference System(s) suddenly indicate significant changes in position/ range/bearing data	I
1.25.4	Demonstrate actions in case of error in wind input	I
1.25.5	Demonstrate actions in case of a DP drive-off	I
1.25.6	Demonstrate actions in case of a DP drift-off	I
1.25.7	Demonstrate actions in case of a DP force-off	I
1.25.8	Demonstrate actions in case of one thruster runoff	I
1.25.9	Demonstrate actions in case of error in sensor input	I
1.25.10	Demonstrate actions when losing all DP control functions	I
1.25.11	Demonstrate the proper sequence of actions if experiencing an on board emergency which may influence DP-control during DP-operations	A
1.25.12	Demonstrate the proper sequence of actions if colliding with an installation, nearby objects or vessels during DP-operations	A
1.25.13	Demonstrate the proper sequence of actions, including starting-up procedure, after a full blackout during DP-operations	A
1.25.14	Move the vessel to a safe position in a safe and controlled manner	A

3.5 Table 3-2: Auto positioning - joystick

Table 3-2 Additional competence requirements auto positioning / joystick (Stationkeeping)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
OPERATIONS AUTOPOS / JOYSTICK MODES		
2.1	*Underpinning knowledge and understanding*	
2.1.1	Explain the DP modes 'Autopos', 'Joystick' and 'Mixed mode' Joystick	A
2.2	*Preparation*	
2.2.1	Create a DP approach-plan	A
2.2.2	Verify if a DP approach-plan complies with standing orders	I
2.2.3	Determine a safe approach angle to the destination (e.g. installation)	I
2.2.4	Verify available installed transponders and their location	A
2.2.5	Analyse the effects construction(s) and equipment (e.g. cranes, flare booms etc.) may have on a planned DP operation	I
2.2.6	Confirm heading and position of the object/structure (e.g. floating production storage and offloading unit (FPSO), installation) in case of station keeping alongside	A
2.2.7	Check whether an object/structure is fixed or floating (moving)	A
2.2.8	Assess where the vessel shall be positioned for an operation, considering weather / leeside.	A
2.2.9	List precautions if vessel must be positioned on weather side of an object/installation	K
2.2.10	Identify escape routes for each phase of the operation, taking into account changing environmental conditions, vessel movement, anchor chains/wires, operational issues, etc.	U
2.3	*Operations*	
2.3.1	Control the vessel under joystick and DP, keeping the vessel in the desired position and heading	A
2.3.2	Determine appropriate incremental steps for changing position, e.g. towards a structure.	A
2.3.3	Demonstrate moving towards a structure or object, thereby reducing speed in incremental steps, considering conditions and distance, avoiding overshooting	A
2.3.4	Evaluate consequences of failures in PRS related to Autopos / Joystick	U
2.3.5	Adapt to changes in thruster forces when alongside moving, self-propelled units/vessels	I
2.3.6	Interpret data with reference to mooring arrangements of a floating installation	I
2.3.7	Recognise external influences which may introduce errors or disrupt readings from sensors and PRS	U
2.3.8	Assess the risk of losing targets used by a laser- and microwave based PRS, due to rapid movement of a floating installation or movement and position of cranes and deck equipment	I
2.3.9	Analyse consequences of moving out of position	I
2.3.10	Identify changes in the position and heading of the floating object by various means	U
2.3.11	Anticipate changes due to thruster-use by a self-propelled floating object	I
2.3.12	Determine when to make changes to the position of the vessel	I
2.3.13	Transfer control between manual levers, independent joystick, DP main system, DP backup system and vice versa without losing position and control (alignment of levers and controls)	A
2.4	*Abandoning operation*	
2.4.1	Re-stabilise the DP-system, using other available reference systems or by making adjustments	A
2.4.2	Recognise the consequences of losing a reference system in relation to DP-class status	U
2.4.3	Determine the need for required changes in power and engines due to changing environmental conditions	I
2.4.4	Identify new escape routes based on changes in the mode, vessel alignment or environmental conditions	U

Table 3-2 Additional competence requirements auto positioning / joystick (Stationkeeping)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
2.4.5	Decide to continue, reposition the vessel or suspend the operation, taking into account redundancy requirements	I
2.4.6	Determine the need to disconnect hoses or recover equipment	I
2.4.7	Consider changing to DP joystick, independent joystick or manual levers for manoeuvring when suspending an operation	I
2.4.8	Move to a safe position under full DP using incremental steps	A

3.6 Table 3-3: DP approach mode

Table 3-3 Additional competence requirements DP Approach MODE

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
OPERATIONS APPROACH MODE		
3.1	*Underpinning knowledge and understanding*	
3.1.1	Describe the status change of pre-defined alarm limits when a loading hose (active / inactive) is connected	U
3.1.2	State the required speed and size of steps to enter into the DP Approach dialogue	K
3.1.3	Explain how to change the speed set point according to the step-by-step procedure	U
3.1.4	Explain possible reasons for discontinuing the approach	U
3.1.5	Explain when and how to change the mode to Weather Vane mode for different type of loading systems, with or without a hawser connected	U
3.1.6	Explain the importance for following the step-by-step procedure in detail.	U
3.2	*Preparation*	
3.2.1	Explain which reference systems are to be used for a specific loading buoy	U
3.2.2	Determine the sequence in which the reference systems are to be used	A
3.2.3	Determine when and how to select the Approach mode with reference to the field specific step by step procedure	A
3.2.4	Enter the required speed and size of steps into the DP Approach dialogue	A
3.2.5	Enter set point radius input into the DP Approach dialogue	A
3.3	*Operations*	
3.3.1	Demonstrate moving a vessel from a distance towards the loading point using Approach mode in accordance with the applicable step-by-step field procedure, using the correct steps with the correct speed	A
3.3.2	Anticipate the behaviour of the vessel as a result of changes in environmental conditions during the approach to the loading point	U
3.3.3	Demonstrate the correct use of position reference systems selected for the actual loading buoy in question	A
3.3.4	Demonstrate compensating changes in environmental conditions during approach	A
3.3.5	Demonstrate the ability to follow a step by step procedure in detail	I
3.3.6	Demonstrate changing to Weather Vane mode, with and without a hawser connected	A
3.4	*Abandoning operation*	
3.4.1	Demonstrate the ability to abort the approach in case of a degrading DP system	A

3.7 Table 3-4: Weather vane mode

Table 3-4 Additional competence requirements weather vane mode

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
OPERATIONS WEATHER VANE MODE		
4.1	*Underpinning knowledge and understanding*	
4.1.1	Explain which pre-defined alarm limits are activated when Weather Vane mode is selected	U
4.1.2	Explain the importance of activating extra fore and aft alarm limits in Weather Vane mode	U
4.1.3	Explain the need for activating the hawser sensor if the buoy configuration has a mooring hawser as a part of it before selecting Weather Vane mode	U
4.1.4	Describe the vessel's movement around the loading point while keeping the position at the pre-set limit when the environmental forces change	U
4.1.5	Explain the difference between Emergency Shut Down (ESD)1 and ESD2	U
4.1.6	Explain the difference between position activated shut down (PSAD)1 and PSAD2	U
4.2	*Preparation*	
4.2.1	Recognise if a mooring hawser is part of a buoys' configuration	U
4.2.2	Explain to what extent the actual set point position limits for a specific loading buoy may be adjusted	U
4.3	*Operations*	
4.3.1	Explain which warnings and alarms will appear should the vessel lose position and exceed the pre-defined alarm limits in the DP software	U
4.3.2	Explain which actions to take should the vessel lose position and pass the pre-defined alarm limits in the DP software	U
4.3.3	Determine when to select the Weather Vane mode with reference to the field-specific step by step procedure	A
4.3.4	Demonstrate the ability to change mode to Weather Vane when the vessel is in loading position as defined in the step by step procedure for a specific loading buoy	A
4.3.5	Describe actions when the vessel has connected the loading hose (e.g. commencing offloading according to the specific field procedure)	U
4.3.6	Explain what the consequence analysis software monitors during operations	A
4.3.7	Demonstrate how to activate the consequence analysis software for DP class 2 operations	A
4.3.8	Monitor important parameters on the DP view, such as vessel's position, reference systems quality, power monitoring, thruster output etc.	A
4.3.9	Demonstrate the ability to react correctly to any DP warnings and alarms and take appropriate action upon it	A
4.3.10	Demonstrate the ability to take the right corrective actions in case the DP system is degraded in any way	A
4.3.11	Demonstrate the actions to take should the vessel lose position and exceed the pre-defined alarm limits in the DP software	A
4.4	*Abandoning operation*	
4.4.1	Explain how a normal termination of loading and disconnection must be carried out according to the specific step by step procedure	U
4.4.2	Demonstrate the ability to stop the loading operation in a normal manner, disconnect hose and hawser and depart in accordance with the step by step procedure for the actual field	A
4.4.3	Explain possible reasons for discontinuing the loading operation in Weather Vane mode	U

3.8 Table 3-5: Follow target mode

Table 3-5 Additional competence requirements - follow target mode

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
OPERATIONS FOLLOW TARGET MODE		
5.1	*Underpinning knowledge and understanding*	U
5.1.1	Explain what type of reference systems are used for Follow Target Mode, including the required number of transponders or reflectors	U
5.1.2	Explain the need for an additional fixed reference system such as DGPS / DGNSS or a fixed sea bed transponder during Follow Target / Auto Track operations	U
5.1.3	Describe the equipment required on a moving target, allowing the DP system to monitor its relative position	U
5.1.4	Recognise the effect of size and mass of an object (vessel / ROV) on reaction time under DP	U
5.1.5	Explain how fixed and relative reference systems are used in combination for the Follow Target mode	U
5.1.6	Explain how the fixed and mobile reference systems will position relative to each other	U
5.1.7	Explain why and how multiple transponders or reflectors are used in a follow position and heading operation	U
5.1.8	Explain how the Follow Target SW is used in a follow position and heading operation	U
5.1.9	Explain how to set a reaction radius	U
5.1.10	Explain what happens when a target (e.g. ROV) exceeds a defined reaction radius	U
5.1.11	Explain how the cable is used as a sensor during ploughing or trenching	U
5.1.12	Explain how a trim cube is used as a relative PRS during trenching	U
5.1.13	Explain why the speed set point must have maximum limits, considering differences in size and reaction time between surface vessel and ROV / sub-machine	U
5.1.14	Evaluate the maximum speed set point in Follow Target operations	I
5.1.15	Explain why Follow Target mode with ROV or other sub-sea tools, may be dangerous when operating close to surface structures	U
5.1.16	Describe the importance of communication between the bridge/DPO and the control room for the equipment in use during the operations	U
5.1.17	Explain the importance of maintaining a good weather heading of the vessel in relation to the use of power and thrusters	U
5.1.18	Describe the tasks to be carried out prior to entering Follow Target mode, i.e. launching of the ROV or sub machine	U
5.1.19	Give possible reasons for discontinuing the ROV or sub-machine operation	K
5.2	*Operations*	
5.2.1	Demonstrate Follow Target mode during ship-to-ship operations on the surface	I
5.2.2	Demonstrate actions to minimize the use of thrusters and power output	I
5.2.3	Communicate with the ROV or sub machine control room during the operation in order to optimize the operation	I
5.2.4	Demonstrate the correct use of position reference systems for a Follow Target operation	I
5.2.5	Enter into Follow Target mode, setting the correct parameters (e.g. combination of reference systems, reaction radius, set point speed and heading)	I
5.2.6	Anticipate how the vessel will behave during the Follow Target operation if the environmental forces deteriorate during operation	I
5.2.7	Discontinue the operation in a controlled manner in case of a degrade in the DP system or for other reasons	I

3.9 Table 3-6: Auto track mode

Table 3-6 Additional competence requirements AUTO TRACK MODE

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
OPERATIONS AUTO TRACK MODE		
6.1	*Underpinning knowledge and understanding*	
6.1.1	Explain the function 'DP Auto Track Mode'	U
6.1.2	Explain what type of reference systems are used for an Auto Track operation incl. correct combinations	U
6.1.3	Explain how a track is used in Auto Track mode	U
6.1.4	Explain the tasks for the DPO prior to switching to Auto Track mode	U
6.1.5	Explain in which type of operation tension sensors are required	U
6.1.6	Explain how and in which conditions to offset a track to starboard or port	U
6.1.7	Explain how to select different rotation points (ROT's) based on the type of operation to be performed	U
6.1.8	Explain the difference between the various Auto Track modes (low-speed, move-up and high-speed)	U
6.1.9	Explain the importance of maintaining a good weather heading of the vessel in relation to the use of power and thrusters	U
6.1.10	Describe the importance of communication between the bridge/DPO and the control room for the equipment in use during the operations	U
6.2	*Preparation*	
6.2.1	Enter a pre-planned track into the DP by entering waypoints into a table in the DP software	A
6.2.2	Enter a pre-planned track into the DP directly on the DP view by using the mouse	A
6.2.3	Import a pre-planned track into the DP via a USB stick	A
6.2.4	Prepare a pre-defined track in the DP	A
6.2.5	Define a track in the proper dialogue or directly on the DP view	A
6.2.6	Demonstrate how to save and store tracks for later use	A
6.2.7	Calibrate reference systems	A
6.3	*Operations*	
6.3.1	Explain the requirements of different operations before entering Auto Track mode (e.g. having launched equipment to the sea bed)	U
6.3.2	Explain the importance of tension input into the DP model from sensors placed on a stinger or a crane boom	U
6.3.3	Enter tension input into the DP model in operations where this is required	A
6.3.4	Activate sensors for tension measurement	A
6.3.5	Explain the use of the track offset-functionality on the software for special operations	U
6.3.6	Demonstrate offsetting a track to starboard or port	A
6.3.7	Change parameters like heading, speed and turning radius for each leg of a track	A
6.3.8	Demonstrate having the vessel follow a predefined track in Auto Track mode	A
6.3.9	Select the correct rotation point for the operation to be carried out	I
6.3.10	Communicate with the control room for operation of subsea equipment in a clear manner	A
6.4	*Abandoning operation*	
6.4.1	Explain at which limits to discontinue the Auto Track operation	U

3.10 Table 3-7: Submerged turret modes (STL)

Table 3-7 Additional competence requirements submerged turret modes (STL)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
OPERATIONS STL		
7.1	*Underpinning knowledge and understanding*	
7.1.1	Describe the phases in Submerged Turret Loading operations	U
7.1.2	Explain what is meant by the 'field zero point'	U
7.1.3	Explain why at least one absolute position reference system is required in STL-operations	U
7.1.4	Explain the purpose of transponders on the STL-buoy when not connected to the vessel	U
7.1.5	Explain how transponders on the buoyancy elements of the turret's mooring lines can be used to determine integrity	U
7.1.6	Explain the importance of pre-set ESD alarm limits	U
7.1.7	Explain the use of HPR/HiPAP transponders both for DP positioning and for monitoring purposes	U
7.1.8	Determine when transponders may be activated for position input into the DP	A
7.1.9	Describe the data transponders are supposed to send back to the vessel	U
7.1.10	Activate the various transponders at the appropriate time	A
7.1.11	Interpret data received from transponders	I
7.1.12	Describe actions if incorrect transponder-data is received	U
7.2	*Preparation*	
7.2.1	Interpret the field manual for a specific STL-buoy	I
7.2.2	Determine which reference systems must be used for a specific STL buoy	I
7.2.3	Determine which transponders must be used for monitoring defined parameters for a specified STL buoy	I
7.2.4	Explain the wave height limitations for connecting to and for loading at a STL buoy	U
7.2.5	Show where to find the dialogue for "go to base" and "go to buoy"	A
7.2.6	Demonstrate how to use the "go to base" and "go to buoy" inputs	A
7.3	*Operations*	
	General	
7.3.1	Demonstrate the correct use of position reference systems for the STL buoy in question	A
7.3.2	Determine which system is to be used for DP positioning and which system for monitoring purposes	I
	Approach Mode	
7.3.3	Explain how to use Approach mode to move the vessel towards the field zero point	U
7.3.4	Determine from what distance and to what extent the Approach mode may be used for a specific buoy	I
7.3.5	Give possible reasons for discontinuing the approach to an STL	U
7.3.6	Perform a step-by-step approach of an STL buoy in accordance with the applicable field manual	A
	Connect Mode	
7.3.7	Determine the distance from the field zero point at which the Connect mode shall be activated	I
7.3.8	Change to Connect Mode	A
7.3.9	Determine when the STL buoy is in position and ready to be hoisted into the mating cone	I
7.3.10	Describe the maximum offset limits allowed for hoisting the STL buoy into the mating cone	U
7.3.11	Explain how the depth of the STL buoy can be monitored and which DP view must be selected for this	U
7.3.12	State the maximum tension the winch should apply in the final stage when the buoy is ready to be locked in position	K
7.3.13	Maintain the required amount of tension on the hoisting winch during the final connection	A
7.3.14	Connect to a buoy in Connect Mode in accordance with the applicable field manual	I
	Loading Mode	
7.3.15	Explain the criteria for selecting Loading mode on the DP	U
7.3.16	Switch to Loading mode	A
7.3.17	Explain which alarm will appear if Loading mode is not activated within a set time frame	U

Table 3-7 Additional competence requirements submerged turret modes (STL) (Continued)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
7.3.18	Explain the freedom of motion of a vessel in Loading Mode during the STL operation	U
7.3.19	Explain when the damping functions on the DP are to be used	U
7.3.20	Activate the damping functions on the DP in Surge, Sway and Yaw	A
7.3.21	Explain reasons for selecting a mean offset set point radius	U
7.3.22	Select a mean offset set point radius	A
7.3.23	Explain the criteria for stopping and re-starting main engines and thrusters	U
7.3.24	Perform loading while connected to a buoy in Loading Mode	A
7.3.25	Select the correct monitoring pages on the DP view	I
7.4	*Abandoning operation*	
7.4.1	Describe the procedure for disconnection from the STL buoy and how to clear the buoy for departure	U
7.4.2	Disconnect and clear an STL buoy in accordance with the field manual's step by step procedure	I
7.4.3	Explain the dangers when an STL buoy is released in a high sea state	U

3.11 Table 3-8: Position mooring (Posmoor / ATA)

Table 3-8 Additional competence requirements position mooring / ATA

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
OPERATIONS POSMOOR		
8.1	*Underpinning knowledge and understanding*	
8.1.1	Describe a **Posmoor** operation	U
8.2	*Preparation*	
	Setup	
8.2.1	Select the required sensors in Standby mode	I
8.2.2	Select available position reference systems in the correct sequence in Joystick mode	I
8.2.3	Calibrate the reference systems	A
8.2.4	Select the required thrusters and Thruster Allocation mode	A
8.2.5	Test / Prove the thrusters in Joystick mode	A
8.2.6	Set up the parameters as per checklist in Anchor Handling mode	A
	Software and Simulation	
8.2.9	Explain the use of Posmoor/ATA consequence analysis software and the built-in simulator	U
8.2.10	Perform a Posmoor/ATA consequence analysis	A
8.2.12	Use the Posmoor/ATA simulator mode	A
8.2.13	Run the mooring line optimisation software	A
8.2.14	Interpret results from the consequence analysis software, simulations and tension optimisation software	I
8.3	*Operations*	
	In Anchorhandling / Autopos mode	
8.3.1	Select Axis control and set correct Gain setting in Anchor Handling mode	A
8.3.2	Describe the actions required in Joystick mode before changing to Anchor Handling mode	U
8.3.3	Explain which operational parameters must be set up in Anchor Handling mode and why	U
8.3.4	Define the mooring system by setting up sensors and alarms	I
8.3.5	Set up the mooring system's length and tension	I
8.3.6	Set up a Mooring Consequence Analysis and tension optimisation	I
8.3.7	Perform a Quick Setup	A
8.3.8	Explain why Position Mooring mode and the required sensor must be selected while the system is set to Standby mode	U
8.3.9	Describe the factors influencing the sensor selection	U
8.3.10	Recognise apparent faults in the sensors for mooring tension or length	U
8.3.11	Correct faults in the mooring line setup in case of problems with sensors monitoring line length and/or tension	A
	Position Mooring / Automatic thruster assist (ATA) operation	
8.3.12	Perform the operation in accordance with the MODU specific checklist	I
8.3.13	Explain the conditions under which the Posmoor/ATA mode may be changed	U
8.3.14	Verify if all requirements for Posmoor/ATA operations have been fulfilled according to the rules prior to changing mode	A
8.3.15	Explain which operational controls are available when Posmoor/ATA mode has been activated	U
8.3.16	Explain which centre of rotation should be used for the actual Posmoor/ATA operation	U

Table 3-8 Additional competence requirements position mooring / ATA (Continued)

Column 1 shows the ID for the competence *Column 2 is the defined activity for the competence to be preceded by "The DPO shall be able to…"* *Column 3 defines the required level of cognition*		
8.3.17	Explain how the thrusters will be used to bring the MODU back to the equilibrium position in case of a line-break	U
8.3.18	State which parameters must be fulfilled in order to satisfy the rules for operation in Posmoor/ATA mode	K
8.3.19	Use the operational controls available to the DPO in Posmoor/ATA mode at the appropriate moments	I
8.3.20	Update or correct the mooring model if required	I
8.3.21	Explain the criteria for stopping and re-starting main engines and thrusters	U
8.3.22	Demonstrate the ability to select either full positioning in surge, sway and yaw or to select damping functions for the same axis	I
8.3.23	Explain the difference between damping and station-keeping in the different axis, i.e. Surge, Sway and Yaw	U
8.3.24	Activate damping functions	A
8.3.25	Select the correct monitoring pages on the DP view	I
	Automatic line-break detection	
8.3.27	Explain how the Automatic line-break detection works	U
8.3.28	Explain why automatic line-break detection is not active in anchor handling mode	U
8.3.29	Explain the relationship between the automatic line-break detection and Posmoor/ATA mode	U
	Winch operation during Position Mooring	
8.3.30	Describe the interface of the winch control system towards the DP-system	U
8.3.31	Explain the importance of maintaining optimum tension in the anchor lines to avoid excessive tension / line breakage	U
8.3.32	Monitor anchor line tension and evaluate the need to decrease the tension	A
8.3.33	Demonstrate actions to decrease the anchor-line tension (rig movement, pay out wire)	U
8.3.34	Optimize the mooring system in a given weather situation by adjusting the correct anchor-lines	I
8.4	*Abandoning operation*	
8.4.1	Explain the procedure for ceasing the operation, disconnecting from the moorings and moving away from the work location	U
8.4.2	Terminate the operation in a controlled manner, disconnecting from the moorings and moving away from the work location, according to available checklists and procedures	I

SECTION 4 REFERENCES

1	IMCA M 103 – *Guidelines for the design and operation of dynamically positioned offshore vessels*
2	IMCA M 117 Rev. I – *The training and experience of key DP personnel*
3	IMCA M 182 – *Int. guidelines for the safe operation of dynamically positioned offshore supply vessels*
4	IMCA C 001 - *Competence assurance and assessmen*t
5	Marine safety forum (MSF) The North West European Area (NWEA) *Guidelines for the safe management of offshore supply and anchor handling operations*

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