

KEELSON CONCISE
Tool Box Training



**Position Reference Systems for
Dynamic Positioning**

AN INTRODUCTION

WORK BOOK

Participant Workbook

This training session aims to support you in developing your knowledge and understanding of the Position Reference Systems used for Dynamic Positioning.

- This workbook is purely for your own use. It gives you information, scenarios and places to write down your thoughts.


Top Tips!

- *You will learn and remember more if you actively engage with the your colleagues and throw yourself into the activities, even if you already have a good knowledge and understanding of DGNSS.*
- *All discussions will be treated as confidential. Don't be afraid to make a mistake, or discuss near misses or incidents you have experienced, this is how we learn.*
- *Throughout the video and this work book you will see this symbol.*



It is a THOUGHT WARNING and indicates an important piece of information that you need to think about and remember. It signifies a 'pay attention' moment!



- *Where you see this symbol  you will be asked to complete 6 quick exercises after you have watched the video. Work in pairs or groups to share brainpower!*
- *Try and relate the information in the video exercise scenarios to your experiences with working with DP – you will already know more than you think!*

Exercise 1 Accuracy and Repeatability



IMO MSC.1/Circ.1580 section 3.4.3 Position reference systems states “.5 *The position reference systems should produce data with adequate accuracy and repeatability for the intended DP operation.*”

What does *repeatability* mean in this context?

ANSWER

Exercise 2 Absolute and Relative



Put the position reference systems into the correct category in the table.

Absolute	Relative

- DGNSS (DGPS and GLONASS)
- Acoustic (USBL, SBL, LBL)
- Taut Wire
- Laser (Fanbeam, Cyscan)
- Radar (RADIUS, RadaScan)
- DARPS

Exercise 3 Equipment Class Vessels



According to IMO MCS 1580 how many independent position reference systems should be installed and simultaneously available to the DP control system during operation for:

- equipment class 1,
- equipment class 2, and
- equipment class 3 vessels

What special arrangements need to be in place for at least one of the position reference systems?

ANSWER


Exercise 4 Common Mode Failure Syndrome



Explain COMMON MODE FAILURE SYNDROME with regards to position reference systems used in DP operations and then explain how it can be mitigated.

ANSWER

Exercise 5 The role of the DPO



Explain two ways in which the actions of a DPO are critical to the safety of DP operations with regards to position reference systems. Give one answer for BEFORE operations, and one During Operations

ANSWER

Exercise 6 Selecting Position Reference Systems



Explain why two INDEPENDENT DGNS systems are not suitable for selection on DP Class 2 and 3 vessels.

ANSWER

References and Further Reading

You do not need to read these additional documents; this training package provides all the necessary background, instructions and content to support senior officers and superintendents delivering it to ship's officers and crew.

Should you want to read further then these documents provide a good, but not exhaustive, starting point.

- IMO MSC.1/Circ.1580 Guidelines For Vessels And Units With Dynamic Positioning (DP) Systems 16 June 2017
- IMCA 103 Guidelines for The Design and Operation of Dynamically Positioned Vessels
- IMCA M 246 Station Keeping Incidents Reported For 2017 January 2018



TOP TIPS!




This KEELSON CONCISE Tool Box Training was designed to support you in developing your knowledge and understanding of the operating principles of, and an understanding of the operational limitations of DGNSS.

Our final job is to check that it has worked! As a group and with your trainer as yourself the following questions:

- *Can I Explain the importance of the accuracy and repeatability of position reference system used during DP operations?*
- *Can I Explain the difference between absolute and relative position reference systems?*
- *Can I State the number of position reference system required for equipment class 1, 2, and 3 vessels according to IMO MSC 1580?*
- *Can I Explain a common mode failure syndrome and the actions required of the DPO to mitigate its effect on DP operations?*

JOB DONE!

Now complete the feedback sheet on the next page, tear it out, and return to your trainer.

<p><i>Tick as appropriate</i></p>			
<p><i>I can explain the operating principles of DGNSS.</i></p>			
<p><i>I can explain the operational limitations of DGNSS as a position reference system for DP operations.</i></p>			
<p><i>I can now appropriately select DGNSS as a position reference system for DP operations in a variety of operational circumstances.</i></p>			
<p><i>I would recommend KEESLON CONCISE Tool Box Training to a colleague.</i></p>			