



TECHNICAL AND OPERATIONAL GUIDANCE (TECHOP)

**TECHOP (P-01 - Rev1 - Jan21)
PART 1**

**COMPETENCY ELEMENTS FOR
DP PROFESSIONALS
DP SMEs / DP FMEA PRACTITIONERS**

JANUARY 2021

DISCLAIMER AND LIMITATION OF LIABILITY

The information presented in this publication of the Dynamic Positioning Committee of the Marine Technology Society ('DP Committee') is made available for general information purposes without charge. The DP Committee does not warrant the accuracy, completeness, or usefulness of this information. Any reliance you place on this publication is strictly at your own risk. We disclaim all liability and responsibility arising from any reliance placed on this publication by you or anyone who may be informed of its contents.

Nothing in this TECHOP precludes companies from developing their own competency schemes which:
Meet their own needs and / or their client's expectations.

Meets or exceeds the intent of this TECHOP.

IN NO EVENT WILL THE DP COMMITTEE AND/OR THE MARINE TECHNOLOGY SOCIETY, THEIR AFFILIATES, LICENSORS, SERVICE PROVIDERS, EMPLOYEES, VOLUNTEERS, AGENTS, OFFICERS, OR DIRECTORS BE LIABLE FOR DAMAGES OF ANY KIND UNDER ANY LEGAL THEORY, ARISING OUT OF OR IN CONNECTION WITH YOUR USE OF THE INFORMATION IN THIS PUBLICATION, INCLUDING BUT NOT LIMITED TO, PERSONAL INJURY, PAIN AND SUFFERING, EMOTIONAL DISTRESS, LOSS OF REVENUE, LOSS OF PROFITS, LOSS OF BUSINESS OR ANTICIPATED SAVINGS, LOSS OF USE, LOSS OF GOODWILL, LOSS OF DATA, AND WHETHER CAUSED BY TORT (INCLUDING NEGLIGENCE), BREACH OF CONTRACT OR OTHERWISE, EVEN IF FORESEEABLE.

THE FOREGOING DOES NOT AFFECT ANY LIABILITY WHICH CANNOT BE EXCLUDED OR LIMITED UNDER APPLICABLE LAW.

SUMMARY

This MTS TECHOP identifies competency elements that are desirable in DP professionals functioning in roles as DP SMEs in organizations as well as FMEA Practitioners. The TECHOP leverages the guidance documents published by the MTS DP Committee and utilizes the format of the Professional Development of DP Personnel Tool - PDDP2 (Formerly known as the MDAT) to provide a structured approach to obtaining and demonstrating the identified competencies.

Competency Elements for DP SMEs were developed. The approach and format used for the DP SMEs competence scheme has been adapted to identify competencies for FMEA practitioner by a Consultancy Organization engaged in the business of developing FMEAs for DP systems. This adaptation has been included within the TECHOP.

The Competency Elements for DP SMEs and FMEA Practitioners have been encompassed in two separate documents contained as appendices in this TECHOP. There is overlap between the competence elements. However, it was determined that the DP community would be best served by having separate standalone documents, one serving the DP SMEs and the other FMEA Practitioners.

The TECHOP restricts itself to identifying the competencies and points to the MTS Guidance documents where information on relevant topics can be obtained.

The TECHOP is not written with the objective of providing a prescriptive list of competencies for either of the roles. The TECHOP does not address minimum requirements for personnel in such roles nor does it prescribe a particular assessment methodology although an example of an assessment scheme is given.

It is acknowledged that end users may develop their own 'fit for purpose' competency requirements. It is envisaged that this TECHOP could be used as guidance by companies to develop their own company specific minimum requirements for personnel and competence assessment methodology. The MTS DP Committee has published this TECHOP with the objective of facilitating a level of standardization on the identification of minimum competencies.

The TECHOP acknowledges that the DP system is a complex system requiring 'Systems Thinking' and 'Systems Engineering' skills across a multitude of diverse disciplines. This is embedded in the recognition that there could be varying levels of competencies within the identified competencies ranging through Aware (FMEA Practitioners), Knowledgeable, Skilled and Mastery. It is further acknowledged that effective delivery of accountabilities of DP SMEs and FMEA Practitioners could be achieved by supplementing capabilities with access to competent resources where necessary.

CONTENTS

SECTION	PAGE
1 INTRODUCTION	6
1.1 PREAMBLE	6
1.2 TECHOP NAMING CONVENTION	6
1.3 MTS DP GUIDANCE REVISION METHODOLOGY	6
2 SCOPE AND IMPACT OF THIS TECHOP	7
2.1 PREAMBLE	7
2.2 SCOPE	7
2.3 IMPACT ON PUBLISHED GUIDANCE	7
2.4 ACKNOWLEDGEMENT	8
3 CASE FOR ACTION	9
3.1 COMPETENCE - ENABLING PREDICTABLE OUTCOMES AND DELIVERY OF INCIDENT FREE DP OPERATIONS	9
3.2 LEVERAGING THE MTS DP COMMITTEE GUIDANCE	9
3.3 STANDARDIZATION ON MINIMUM COMPETENCIES	9
4 REFLECTIONS FROM THE PILOT	11
4.1 DP SME	11
4.2 ASSESSMENT OF RESPONSIBLE PERSONNEL (TECHNICAL AND OPERATIONAL)	11
4.3 INTEGRITY OF ASSESSMENT	12
5 MISCELLANEOUS	13

TABLES

Table 1	Core Competencies	9
---------	-------------------	---

APPENDICES

APPENDIX 1	PART 2 - PDDP2 DP SME
APPENDIX 2	PART 3 - PDDP2 FMEA PRACTITIONER
APPENDIX 3	ADDENDUM

ABBREVIATIONS

MDAT	Mapping Delivery Ability Tool (now known as PDDP2)
OCIMF	Oil Companies International Marine Forum
PDDP2	Professional Development of DP Personnel (formally MDAT)
SMEs	Subject Matter Experts
TECHOP	Technical and Operational Guidance

1 INTRODUCTION

1.1 PREAMBLE

1.1.1 The guidance documents on DP (Design and Operations and People) were published by the MTS DP Technical Committee in 2011, 2010 and 2012, respectively. Subsequent engagement has occurred with:

- Classification Societies (DNV, ABS)
- United States Coast Guard (USCG)
- Marine Safety Forum (MSF)
- Oil Companies International Marine Forum (OCIMF)

1.1.2 Feedback has also been received through the comments section provided in the MTS DP Technical Committee Web Site.

1.1.3 It became apparent that a mechanism needed to be developed and implemented to address the following in a pragmatic manner.

- Feedback provided by the various stakeholders.
- Additional information and guidance that the MTS DP Technical Committee wished to provide and a means to facilitate revisions to the documents and communication of the same to the various stakeholders.

1.1.4 The use of Technical and Operations Guidance Notes (TECHOP) was deemed to be a suitable vehicle to address the above. These TECHOP Notes will be in the following categories:

- General TECHOP (G)
- Design TECHOP (D)
- Operations TECHOP (O)
- People TECHOP (P)

1.2 TECHOP NAMING CONVENTION

1.2.1 The naming convention, TECHOP (CATEGORY (G / D / O / P) – Seq. No. – Rev.No. – MonthYear) TITLE will be used to identify TECHOPs as shown in the examples below:

Examples:

- TECHOP (D-01 - Rev1 - Jan21) Addressing C³EI² to Eliminate Single Point Failures
- TECHOP (G-02 - Rev1 - Jan21) Power Plant Common Cause Failures
- TECHOP (O-01 - Rev1 - Jan21) DP Operations Manual

Note: Each Category will have its own sequential number series.

1.3 MTS DP GUIDANCE REVISION METHODOLOGY

1.3.1 TECHOPs as described above will be published as relevant and appropriate. These TECHOP will be written in a manner that will facilitate them to be used as standalone documents.

1.3.2 Subsequent revisions of the MTS Guidance documents will review the published TECHOPs and incorporate as appropriate.

1.3.3 Communications with stakeholders will be established as appropriate to ensure that they are notified of intended revisions. Stakeholders will be provided with the opportunity to participate in the review process and invited to be part of the review team as appropriate.

2 SCOPE AND IMPACT OF THIS TECHOP

2.1 PREAMBLE

- 2.1.1 Competency is an oft used term in most industries and communities. The DP Community is not immune to it.
- 2.1.2 Traditionally, the word has been associated with DPOs. DPO competency is a subject that has been discussed and addressed over the years through the scheme administered by the Nautical Institute and more recently by other bodies such as DNV GL Seaskill and OSVDPA.
- 2.1.3 There is increasing awareness in the DP Community that delivery of predictable incident free DP operations is not dependent on DPO competency alone. Predictable and desired outcomes are influenced by a multitude of diverse stakeholders. Personnel functioning in roles as DP SMEs in organizations as well as DP FMEA practitioners have been identified as key stakeholders with the ability to influence outcomes.
- 2.1.4 This TECHOP identifies key competency elements that enable personnel in the above identified roles to contribute effectively to the delivery of incident free DP operations.

2.2 SCOPE

- 2.2.1 This TECHOP provides:
- A list of nine identified competencies for:
 - DP SMEs in Organizations
 - FMEA Practitioners
 - Defining various competency levels and expectations of personnel at those levels.
 - A structured list of topics and pointers to relevant information contained within MTS DP Committee and other published guidance on:
 - An overview of a process applied on a pilot project to assess effectiveness of the approach espoused in the TECHOP.
- 2.2.2 The TECHOP does not prescribe the minimum requirements for personnel to be in the above-mentioned roles.
- 2.2.3 The TECHOP does not prescribe an assessment methodology nor provides recommendation on a certification / accreditation regime.

Note:

1. *Experience from assessment methodology on a pilot project has been summarized in Section 4.*
2. *It is expected that companies that elect to implement this guidance will address 2.2.2 and 2.2.3 as appropriate to their business.*

2.3 IMPACT ON PUBLISHED GUIDANCE

- 2.3.1 The existing MTS publication on professional development was titled 'Guidance for Professional Development of Personnel Engaged in DP Operations - Using the Mapping Delivery Ability Tool (MDAT)'. User feedback at the MTS DP Conference and Workshop in 2017 suggested a change in the title. The title of the TECHOP has been changed to read 'Professional Development of DP Personnel (PDDP2) - Using the PDDP2 tool'.

2.4 ACKNOWLEDGEMENT

2.4.1 The DP Committee of the Marine Technology Society greatly appreciates the contribution of the following individuals to the preparation of this TECHOP.

Participants	Company Affiliation
Chris Richardson*	Aqualis Offshore
Richard Purser*	DNV GL
Rupert Bambach*	
Dr Steven Cargill**	
Dr Steven Cargill***	
Brian Haycock*	DP Expertise
Doug Phillips **	DP Expertise
Dan Endersby*	DPD Marine
Mat Bateman*	Keelson Marine Assurance L.L.C
Pete Fougere**	Chairman MTS DP Committee
	<ul style="list-style-type: none"> • *Assessee (Pilot Project) • **Assessor (Pilot Project) • ***Adaptor and Contributor of FMEA Practitioner section

3 CASE FOR ACTION

3.1 COMPETENCE - ENABLING PREDICTABLE OUTCOMES AND DELIVERY OF INCIDENT FREE DP OPERATIONS

- 3.1.1 There has been increasing awareness of the importance of the need for additional focus on competence beyond DPOs.
- 3.1.2 The OCIMF DP Assurance paper draws attention to competency of shore-based personnel involved in delivery of DP Operations.
- 3.1.3 Numerous papers presented at DP conferences globally addresses the need for FMEA practitioner competence.
- 3.1.4 It was considered timely for the MTS DP Committee to address this important topic.

3.2 LEVERAGING THE MTS DP COMMITTEE GUIDANCE

- 3.2.1 There is growing acknowledgement of the value delivered by the MTS DP Committee published guidance documents.
- 3.2.2 Structure and format of the PDDP2 has been successfully adapted by a number of users to improve acquiring and demonstration of competence.
- 3.2.3 It was thought appropriate to leverage a similar approach to address competence for DP SMEs and FMEA practitioners.

3.3 STANDARDIZATION ON MINIMUM COMPETENCIES

- 3.3.1 There was a lack of a uniform approach to defining minimum competencies for personnel with accountability for delivery in these roles and identifying means to achieve the same.
- 3.3.2 Subjectivity was widespread resulting in significant variability in the observed competence reflect in quality of documentation and decision making.
- 3.3.3 This TECHOP strives to provide an objective approach.
- 3.3.4 Table 3-1 below lists the nine identified competencies.
- 3.3.5 The detailed competency schemes are provided in Appendices 1 and 2.

Table 3-1 Core Competencies

COMPETENCY NUMBER	DP SME CORE DP COMPETENCY	FMEA PRACTITIONER CORE DP COMPETENCY
1	Deliverables and decision support tools	Deliverables and decision support tools
2	Barrier philosophy & defense in depth	Barrier philosophy & defense in depth
3	DP concepts	DP concepts and engineering
4	DP guidance & basis of requirements	DP guidance & basis of requirements
5	Verification and Validation	Verification and validation
6	In Execution Support	Power Plant configured as a Common Power System (Closed Busties)

COMPETENCY NUMBER	DP SME CORE DP COMPETENCY	FMEA PRACTITIONER CORE DP COMPETENCY
7	Impacts on Station Keeping on the Industrial Mission	Cross connections, External Interfaces and Influences
8	Impacts of the industrial mission on station keeping	In execution support
9	Defining, Identifying and managing interfaces relevant to DP station keeping	Industrial Mission (Impacts and Management)
Required Competency Levels	<ul style="list-style-type: none"> • Four at Mastery • Three at Skilled • Two at Knowledgeable 	<ul style="list-style-type: none"> • Four at Mastery • Two at Skilled • Two at Knowledgeable • One at Aware
<ul style="list-style-type: none"> • Competencies marked in red font are required to be at Mastery level. • DP FMEA practitioners intending to carry out unsupervised work on analysis of vessels operating with closed busties must have Mastery in Competency 6 – ‘Power Plant configured as a Common Power System (Closed Busties)’. 		

4 REFLECTIONS FROM THE PILOT

NOTE: - *This section is included with an intent to share reflections from a pilot for DP SMEs. This is not intended to be the prescriptive approach for getting the best out of this guidance.*

4.1 DP SME

- 4.1.1 It was acknowledged that personnel in these roles may not necessarily possess the required depth in technical and operational matters.
- 4.1.2 This was not considered an impediment as long as they had access to personnel with the required competencies who were able to support the DP SME.
- 4.1.3 A distinction was made between 'Accountable Person' and 'Responsible Person'. An Accountable Person was the person who was accountable to ensure that an activity was done. The Responsible Person was someone doing the activity.
- 4.1.4 There could be several responsible persons, but the accountable person had to be, of necessity, a single point of accountability.
- 4.1.5 A responsible person could also be an accountable person, but the converse was not necessarily true.
- 4.1.6 An effective DP SME was one who could deliver a systems thinking / systems engineered approach addressing elements of technical and operational influences balancing the business needs whilst effectively and pragmatically managing risk. A key attribute of a DP SME is knowing what he or she does not know and more importantly not hesitating to reach out and seek advice from those who do know.

4.2 ASSESSMENT OF RESPONSIBLE PERSONNEL (TECHNICAL AND OPERATIONAL)

- 4.2.1 Personnel aspiring to be assessed and acknowledged as Technical DP SMEs had to demonstrate their technical prowess through a written assessment. In addition to the interview / viva voce type of assessment.
- 4.2.2 Interview / Viva Voce assessment was conducted by a four-person panel for the Pilot. Subjectivity was reduced through a structured set of leading and follow up questions on topics that were contained within the PDDP2 tool.
- 4.2.3 Time demands for an effective assessment:
- Written Assessment – 3 hours.
 - Interview - A range of 2 to 3 hours.

Notes:

1. *Personnel with the requisite operational experience but lacking the technical skills and competence could deliver as DP SMEs, provided they had access to support from technical resources with the appropriate skills and competencies.*
2. *The above holds true for personnel with technical skills and competencies but lacking operational experience.*
3. *Experience from the pilot emphasized the importance of the need for multidisciplinary skills and the recognition that this may not be resident in one individual. Effective delivery could be accomplished by ensuring access to support from a multidisciplinary team.*

4.3 INTEGRITY OF ASSESSMENT

- 4.3.1 The best value is achieved when the interview questions are designed to elicit an understanding of what the Assessee knows rather than what they do not know.
- 4.3.2 The PDDP2 tool provides an effective knowledge gap identification and closure pathway.
- 4.3.3 The integrity of the assessment was deemed to be dependent on the nature of control exercised over the distribution of the questions. A decision was thus made to treat the list of interview questions as 'Controlled'.
- 4.3.4 The questions will remain within the custody of the MTS DP Technical Committee and Guidance and Standards Subcommittee. Dissemination methodology will be at their discretion.

5 MISCELLANEOUS

Stakeholders	Impacted	Remarks
MTS DP Committee	✓	To track and incorporate in next rev of MTS DP Guidance Documents
USCG	✓	MTS to communicate
ABS	✓	MTS to communicate
DNV GL	✓	MTS to communicate
Equipment vendor community	X	MTS to engage with suppliers.
Consultant community	✓	MTS members to cascade/ promulgate.
Training institutions	✓	MTS members to cascade/ promulgate.
Vessel Owners/Operators	✓	Establish effective means to disseminate information to Vessel Management and Vessel Operational Teams.
Vessel Management/Operational teams	✓	Establish effective means to disseminate information to Vessel Operational Teams.

APPENDICES

APPENDIX 1 PART 2 - PDDP2 DP SME

APPENDIX 2 PART 3 - PDDP2 FMEA PRACTITIONER

APPENDIX 3 ADDENDUM