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DYNAMIC POSITIONING TRAINING UNDER REGULATORY REVIEW: COMPARATIVE GOVERNANCE, RISK EVALUATION, AND POLICY SCENARIOS FOR STCW INTEGRATION

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Abstract. The Dynamic Positioning training scheme administered by The Nautical Institute is currently referenced under Section B of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), allowing for operational flexibility but limiting its global legal recognition. This paper critically evaluates the structure, performance, and regulatory positioning of the DP scheme by comparing it to mandatory simulator-based STCW Section A qualifications, specifically Electronic Chart Display and Information Systems (ECDIS) and Bridge Resource Management (BRM). Through a multi-method approach that includes a qualitative risk matrix and a scoring framework, as well as a quantitative evaluation, the study demonstrates that the DP scheme performs at a consistently higher level in areas such as simulator fidelity, instructor qualifications, curriculum responsiveness, and certification integrity. It also reviews comparable hybrid training models—such as those used for oil and chemical tanker operations, LNG carriers, and polar navigation—that combine STCW recognition with industry-led delivery and oversight. Findings suggest that full integration of the DP scheme into Section A may improve global recognition but could compromise its current agility and quality control mechanisms. As an alternative, the paper proposes a hybrid regulatory model that maintains The Nautical Institute's authority over training delivery while aligning with international legal standards. Policy recommendations include mutual audit recognition, outcome-based competency standards, centralised certificate verification, and phased STCW integration. The study concludes that the DP training scheme offers a valuable example of how specialised maritime training can maintain high standards through industry governance. It argues that a hybrid model could preserve these strengths while ensuring legal consistency, offering a potential blueprint for integrating emerging competencies into the international maritime regulatory framework.

Keywords: Dynamic Positioning; Certificate; The Nautical Institute; Micro Qualifications; Training.

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1. INTRODUCTION

The increasing complexity of offshore maritime operations has led to a growing reliance on advanced positioning technologies. Among these, Dynamic Positioning (DP) systems allow vessels to maintain a fixed position or follow a precise track using automated control of thrusters, sensors, and navigational data (IMO, 1994). As offshore sectors such as oil and gas, subsea construction, and wind energy expand, so the demand for highly competent DP operators raises. Failures in DP operations—whether technical or human—can have significant safety, financial, and environmental repercussions (Sanchez-Varela et al, 2024).

To mitigate these risks, The Nautical Institute (NI) has developed and administered a worldwide recognised training and certification scheme for DP operators since the mid-1980s. The scheme consists of two structured courses (Basic and Simulator) and two periods of onboard DP watchkeeping, all verified via a standardised logbook. Certification is contingent on strict documentation, training centre accreditation, and quality assurance measures, all centrally managed by the NI (The Nautical Institute, 2025a; Nowak, 2021). Currently, the scheme is referenced in Section B-V/f of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), a non-mandatory guidance section that permits flexibility in implementation by flag states but lacks binding enforcement mechanisms (IMO, 2017).

A growing body of research has explored the structure, effectiveness, and future prospects of the DP training model. Sánchez-Varela et al. (2025) provide a comprehensive overview, emphasising the scheme's adaptability, centralised control, and fraud resistance. However, they also acknowledge that global consistency and legal recognition may be improved if the scheme were moved under Section A of the STCW Convention, which contains mandatory training requirements. Other researchers have noted shortcomings in simulator-based STCW programs such as Electronic Chart Display and Information Systems (ECDIS) and Bridge Resource Management (BRM), including slow curriculum updates, inconsistent instructor standards, and decentralised certification practices (Kouvertari, 2023; Nhleko, 2023).

Building on this existing literature, the present study expands the analytical scope by introducing two new comparative lenses:

- Governance structure analysis, examining how other maritime training programs (e.g. oil tanker, LNG carrier, and polar operations) have achieved hybrid models of regulation—combining mandatory STCW recognition with industry-led delivery and oversight.
- A risk-based evaluation framework, including a qualitative risk matrix of training-related failure modes and a scoring index that assesses the robustness of different training schemes across criteria such as standardisation, simulator quality, certification integrity, and curriculum responsiveness.

The objective of this paper is to assess whether the current benefits of the DP training scheme—namely its operational relevance, integrity, and responsiveness—can be retained or even enhanced if the scheme were integrated into the legally binding provisions of Section A of the STCW Convention. By analysing comparative governance models and introducing structured evaluation tools, this study contributes original insights into how specialised maritime training can be effectively regulated in a rapidly evolving technological landscape.

2. THE DP TRAINING SCHEME: STRUCTURE AND IMPLEMENTATION

The DP training and certification scheme, administered by NI on behalf of the offshore industry, is a globally recognised competency-based program designed to ensure that DP operators meet the operational and safety standards required for high-risk maritime activities. The scheme was developed in collaboration with key stakeholders—including flag states, offshore contractors, and the oil and gas sector—and has been in operation since 1985. Over the decades, it has evolved to reflect technological advancements and industry expectations (The Nautical Institute, 2025a).

2.1. Structure of the Training Scheme

The NI's DP training scheme consists of four structured phases, integrating both theoretical instruction and hands-on experience:

- **Phase A – Basic/Induction Course:**

This five-day course introduces trainees to the fundamentals of DP systems, including operational principles, system components, modes of operation, and safety procedures. The course incorporates classroom instruction and simulator-based exercises. Upon completion, candidates must pass an online exam and are issued a certificate of attendance and a NI-issued logbook for recording practical experience.

- **Phase B – Initial Onboard DP Experience:**

After completing the Basic course, trainees are required to complete at least 60 days of DP sea time

on a DP vessel. Under supervision, they perform and record various DP-related tasks in their logbook. This phase focuses on applying theoretical knowledge in real operational situations.

- **Phase C – Simulator Course:**

The Simulator course, also five days in duration, builds on the initial onboard experience and emphasises advanced operational scenarios, including DP incidents, system failures, and emergency response. High-fidelity DP simulators are used to recreate complex situations, enabling trainees to refine decision-making, communication, and technical skills.

- **Phase D – Final Onboard DP Experience:**

Following the Simulator course, trainees complete an additional 60 days of DP sea time. Successful demonstration of competence, documented in the logbook and endorsed by senior DP personnel, qualifies the candidate to apply for the DP Operator Certificate.

This structured progression ensures that trainees acquire not only the theoretical foundation but also sufficient real-world practice to operate DP systems effectively in complex maritime environments.

2.2. Certification Process and Quality Assurance

Certification is granted only after a rigorous verification process. Trainees submit a portfolio comprising their completed logbook, course attendance certificates, and sea-time endorsements to NI. Each application is subject to detailed examination to verify authenticity and adherence to training standards before the issuance of the DP Operator Certificate.

The NI also accredits training centres that meet rigurous criteria regarding instructional quality, simulator capabilities, and instructor qualifications. Accredited centres are subject to periodic audits and evaluations to ensure ongoing compliance (The Nautical Institute, 2025b). The NI has also implemented fraud prevention mechanisms, including tamper-proof logbooks, unique trainee identifiers, and a centralised database for certification records; thus reinforcing the credibility and traceability of the certification process.

2.3. Responsiveness and Industry Engagement

One of the defining features of the DP training scheme is its ability to remain responsive to technological and operational changes. Through the Dynamic Positioning Training Executive Group (DPTEG), NI engages regularly with stakeholders—including training providers, vessel operators, equipment manufacturers, and regulatory bodies—to review and update training standards. The DPTEG meets biannually to evaluate emerging challenges and ensure the scheme's continued relevance and effectiveness (The Nautical Institute, 2025c).

Updates to training requirements and assessment criteria are disseminated through the NI's Alexis Platform, ensuring consistency across all accredited centres. This agility enables the scheme to incorporate new operational procedures, system upgrades, and safety recommendations much faster than international regulatory mechanisms typically allow.

3. MICRO-QUALIFICATIONS UNDER STCW SECTION A

The STCW convention defines the mandatory training requirements for seafarers in Section A of its Code. Among these requirements, several micro-qualifications incorporate the use of simulators to enhance operational competence and decision-making in complex maritime environments. This section examines two such qualifications (ECDIS and BRM) with a focus on their structure, implementation, and regulatory oversight.

3.1. ECDIS

ECDIS training is mandated under STCW Code Sections A-II/1 and A-II/2 for deck officers responsible for navigational watchkeeping. The course aims to ensure that officers can competently operate electronic chart systems for voyage planning, route monitoring, position fixing, and emergency response. The 2010 Manila Amendments to STCW reinforced the requirement for dedicated ECDIS training in recognition of its central role in modern bridge operations (IMO, 2011).

Training is typically based on IMO Model Course 1.27, which outlines a standardised curriculum covering system functionality, chart updates, sensor integration, and alarm management. Assessment includes both theoretical examinations and simulator-based practical scenarios, enabling trainees to demonstrate operational competency in simulated navigational situations. While the course content is uniform in principle, its delivery and instructor qualifications may vary depending on national maritime authorities and the capabilities of individual training institutions.

3.2. BRM

BRM, required under STCW Code Section A-II/1, focuses on non-technical skills vital to safe navigation—particularly communication, leadership, teamwork, and situational awareness on the bridge.

The course draws on the aviation model of Crew Resource Management (CRM) and aims to reduce human error by promoting coordinated decision-making among bridge teams.

A typical BRM course utilise simulation as a core training component. Full-mission bridge simulators allow participants to engage in real-time scenarios that replicate operational pressures, system complexity, and human dynamics. Exercises often involve role-playing, time-critical decisions, and incident response under varying environmental and traffic conditions. Assessment is performance-based and often includes debriefings to reinforce learning and behavioural insights.

Although simulator use is central to BRM training, variations exist in course content, instructor qualifications, and assessment criteria due to differing national interpretations of STCW standards and the absence of a single IMO model course.

4. COMPARATIVE ANALYSIS: DP TRAINING SCHEME VS. STCW SECTION A SIMULATOR-BASED QUALIFICATIONS

A structured comparison of the NI DP training and certification scheme with ECDIS and BRM is presented in this section. This comparison is based on five key parameters: access to training, instructor qualifications, control of materials and equipment, curriculum updating, and certification control.

4.1. Access to Training

ECDIS and BRM courses are widely available across maritime training centres globally, often with minimal entry restrictions beyond holding a basic deck officer qualification. However, entry criteria may vary among flag states, and in some cases, access is granted without rigorous verification of prior experience or readiness (IMO, 2012). In particular, IMO Model course 1.27 regarding the ECDIS training, requires "previous basic knowledge", without any more specifications.

In contrast, access to DP training is more restrictive. Courses are only offered at Nautical Institute-accredited centres, which must meet stringent requirements related to facilities, equipment, and instructional quality (The Nautical Institute, 2025a). Trainees must also hold specific STCW certificates of competence (Regulations II/1, II/2, II/3 for deck; III/1, III/2, III/3 for engine; III/6 for ETOs), ensuring a higher threshold for entry and consistency in baseline competence.

4.2. Instructor Qualifications

In ECDIS and BRM training, instructor qualifications are generally defined by national maritime administrations. The basic requirement is typically that instructors hold the same certification they are delivering (e.g. an ECDIS certificate to teach ECDIS). However, enforcement and quality assurance mechanisms vary by jurisdiction, which may lead to inconsistency in instructional competence.

The DP scheme imposes stricter controls. Instructors must not only be experienced DP operators but must also undergo periodic evaluation and approval by The Nautical Institute. This includes assessments of both operational competence and pedagogical effectiveness (The Nautical Institute, 2025b). Such oversight helps ensure a high and uniform standard of instruction across centres.

4.3. Control of Materials and Equipment

ECDIS and BRM training programs generally follow IMO model courses (e.g. Model Course 1.27 for ECDIS), which promote international consistency. However, these materials are updated infrequently, and some training centres may rely on outdated simulations or instructional content (Kouvertari, 2023). Equipment used in simulation can also vary widely in sophistication and fidelity.

In the DP scheme, NI mandates high-fidelity simulation technology, often using full-mission or class-approved DP simulators. Accredited centres are subject to hardware and software requirements that closely reflect real-world DP environments. Regular audits ensure equipment is current, functional, and aligned with industry standards (The Nautical Institute, 2025b). This stringent control enhances the realism and relevance of training exercises and sets a higher benchmark than most STCW-aligned programs.

4.4. Curriculum Updating

Updates to ECDIS and BRM curricula follow the formal procedures of the International Maritime Organization (IMO), which involve broad consultation, drafting, review by expert sub-committees, and eventual adoption by the Maritime Safety Committee (MSC). This process, while inclusive, is often lengthy and may lag behind technological advancements (Nhleko, 2023).

In contrast, NI operates independently of intergovernmental processes and can revise its training framework in response to stakeholder feedback, safety reports, or technological change. Updates are reviewed by the DPTEG and disseminated rapidly via

the Alexis Platform. This allows DP training standards to remain more agile and responsive to evolving industry needs.

4.5. Certification Control

Certification for ECDIS and BRM is typically administered by national maritime authorities. While this model aligns with the sovereignty of flag states, it often results in variability in oversight, record-keeping, and fraud prevention (Obando-Rojas et al., 2004). In some jurisdictions, limited digital infrastructure or inconsistent auditing may compromise the integrity of issued certificates.

The DP scheme offers a more centralised and tightly controlled certification system. NI verifies each candidate's documentation—including simulator records, sea-time entries, and instructor endorsements—before issuing certificates. Tamper-evident logbooks, unique identifiers, and a secure digital registry allow real-time verification of credentials (The Nautical Institute, 2025a). This centralisation significantly reduces the risk of fraud and enhances global trust in the qualification.

5. POTENTIAL IMPLICATIONS OF INTEGRATING THE DP TRAINING SCHEME INTO STCW SECTION A

The potential integration of the DP) training scheme into Section A of the STCW Convention carries significant implications for maritime education governance, international standardisation, and industry responsiveness. While the legal recognition afforded by Section A could promote global consistency and cross-jurisdictional acceptance of DP certification, it also introduces challenges related to bureaucratic inertia, administrative complexity, and the potential dilution of existing quality control mechanisms.

To evaluate these trade-offs more effectively, it is useful to examine how similar specialised training programs—such as oil and chemical tanker operations, LNG-fuelled ship training under the IGF Code, and Polar Code qualifications—have been successfully integrated into STCW frameworks while maintaining strong links with industry. These **comparative governance models** provide precedents for hybrid regulatory arrangements, in which training is both formally mandated and partially overseen or executed by professional or industrial bodies.

The following subsection presents a comparative analysis of these models to assess their relevance and applicability to the DP training scheme.

5.1. Comparative Governance Models in Maritime Training

To assess the feasibility and implications of integrating the DP training scheme into Section A of the STCW Convention, it is instructive to examine other maritime training frameworks that operate under hybrid governance models—that is, systems where training is mandated by international convention but developed, delivered, or overseen in part by industry or specialist bodies. These models provide realistic precedents for balancing regulatory standardisation with operational flexibility.

5.1.1. Oil and Chemical Tanker Training (STCW Chapter V, Regulation V/1-1 and V/1-2)

Training for service on oil and chemical tankers is a mandatory requirement under STCW Section A and is typically delivered through accredited private training providers. The content is informed by IMO Model Courses (e.g., 1.01 and 1.02). However, flag states may approve centres based on industry-aligned criteria, often relying on class societies (e.g., DNV, ABS) or national maritime academies for oversight.

This model allows for the standardisation of core content while permitting flexibility in instructional delivery. Industry input—particularly from tanker operators and classification societies—ensures that training stays aligned with operational needs. However, enforcement of certification standards remains inconsistent, particularly in jurisdictions with limited oversight capacity.

5.1.2. IGF Code and LNG Carrier Training

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code) requires specialised training for crews serving on board LNG-fuelled vessels. While STCW Regulation V/3 establishes this requirement as mandatory, the detailed course content and simulator specifications are typically defined by national maritime authorities in consultation with shipowners and equipment manufacturers.

In many cases, training programmes go beyond the baseline set by IMO Model Course 7.13, incorporating proprietary simulator technologies supplied by vendors such as Wärtsilä and Kongsberg. These industry partnerships help ensure that training remains aligned with contemporary onboard technologies, operational routines, and emergency procedures. Nonetheless, the issuance of certificates remains under the control of national maritime administrations.

This arrangement illustrates a functional division between regulatory obligations and delivery mecha-

nisms, demonstrating how operational authority can be delegated to industry stakeholders within a formal STCW framework.

5.1.3. Polar Code Training (STCW Section V/4)

Polar Code training, as required under STCW Regulation V/4, offers another enlightening example. Although this training is mandatory for officers operating in polar waters, it is often developed and delivered by a combination of flag-state-approved centres and industry bodies, particularly in Arctic countries.

The unique nature of polar operations compels the training to strongly rely on simulator exercises and scenario-based learning developed in close collaboration with industry and academic institutions. Updates to training materials frequently come from ice navigation experts and polar research organisations, yet the qualification remains formally embedded within STCW.

5.1.4. Implications for DP Training

These hybrid models reveal a regulatory design that could be applied to the DP training scheme:

- STCW Section A recognition could dictate fundamental competencies and minimum training duration.
- NI could retain authority over course content, simulator standards, instructor approval, and certification issuance.
- Flag states would audit training providers for compliance with both STCW and NI requirements, enabling alignment with international law while preserving operational excellence.

Such a structure would allow the DP scheme to retain its strengths—centralised quality control, rapid curriculum updates, and fraud prevention—while adding to legal uniformity and cross-jurisdictional recognition.

5.2. Need for a Hybrid or Phased Regulatory Model

Given these considerations, a binary shift to Section A may not represent the most effective path forward. Instead, a hybrid model may offer a viable compromise — formally acknowledging the DP scheme within STCW Section A while retaining NI's role in course oversight, simulator standards, and certification issuance. This dual structure would maintain the scheme's operational strengths while aligning it with international regulatory structures, as seen in similar schemes for specialised tanker endorsements or polar code training (Šekularac-Ivošević and Milošević, 2019).

5.3. Training-related failure modes and risk matrix

An essential aspect of assessing maritime training schemes lies in identifying and evaluating potential failure points that may compromise the competency of certified personnel. Particularly in simulation-based training environments, risks may arise from deficiencies in instructional quality, outdated curricula, weak certification oversight, or inadequate technology. These risks can directly influence operational safety, especially in high-consequence areas such as DP.

A qualitative risk matrix comparing the three simulator-dependent training schemes (DP, ECDIS

Table 1. Qualitative risk matrix for training-related failure modes (prepared by authors)

Failure mode	DP scheme	ECDIS	BRM	Explanation
Inadequate simulator realism	Low	High	Medium	DP centres must use class-approved full-mission simulators; ECDIS simulators vary widely in quality and configuration.
Instructor underqualification	Low	Medium	Medium	DP instructors require prior DP experience and are periodically revalidated; STCW relies on flag-state guidelines, leading to variability.
Outdated curriculum	Low	High	Medium	DP curriculum is updated regularly by NI through DPTEG and the Alexis platform; ECDIS updates depend on slow IMO processes.
Fraudulent certification	Very low	Medium	Medium	DP uses tamper-proof logbooks and a central registry; STCW certification is decentralised and varies in oversight.
Inconsistent audit of training centres	Low	Medium	High	NI conducts regular global audits; STCW enforcement varies significantly by flag state.
Lack of global recognition	Medium	Low	Low	DP is not mandated under Section A and lacks automatic global equivalence; STCW qualifications are widely recognised.

and BRM) was prepared. This matrix evaluates each scheme across key training-related failure modes, considering both the likelihood of occurrence and the consequences on operational performance.

Table 1 summarises the comparative findings.

5.4. Evaluation of training schemes: a scoring framework

To complement the risk matrix presented, the authors introduce a scoring system designed to evaluate maritime training schemes according to key performance indicators related to quality, oversight, and regulatory responsiveness. The goal is to offer a structured, comparative view of how the DP training scheme performs relative to mandatory STCW Section A simulator-based courses (ECDIS and BRM).

Six evaluation criteria have been selected based on the literature, international training standards, and operational best practices:

- Standardisation of content across training centres
- Instructor qualification and ongoing competency
- Curriculum update frequency and responsiveness
- Certification control and fraud resistance
- Simulation fidelity and technical relevance
- Global recognition and regulatory alignment.

Each criterion is scored on a five-point scale, where 1 means weak, and 5 stands for excellent. A weight is also applied to reflect the relative importance of each criterion in the context of maritime safety and regulatory integrity.

5.5. Policy design recommendations for integrating DP training under STCW

The analysis above confirms that the NI DP training scheme offers reliable high levels of instructional quality, simulator realism, and certification integrity. These strengths position it favourably in comparison with other existing simulator-based qualifications. However, its lack of formal legal standing under the STCW convention continues to present challenges regarding its international recognition and uniform implementation.

In light of the comparative governance models, the risk analysis, and the evaluation framework, several policy options appear for aligning the DP training scheme with STCW provisions without destabilising its current advantages. These policy recommendations are intended to ensure regulatory alignment while preserving responsiveness, integrity, and operational relevance, and are detailed below.

5.5.1. Adopt a hybrid regulatory model

The DP training scheme could be formally recognised under Section A of the STCW Convention, but operational control, including curriculum development, simulator specifications, instructor vetting, and certification issuance, would remain within the NI control. This mirrors successful hybrid arrangements in tanker, LNG, and polar code training, where mandatory requirements coexist with delegated industry delivery.

5.5.2. Focus on minimum outcome standards

Rather than imposing standardised model courses, STCW provisions could define core competency outcomes for DP operators. The design and delivery of the training could remain flexible, provided the outcomes are met and independently verified. This would allow the DP scheme to maintain its rapid curriculum update cycle while aligning with international standards.

5.5.3. Establish mutual audit recognition mechanisms

To minimise regulatory duplication, STCW guidance could encourage flag states to recognise audits and accreditation procedures conducted by NI, provided they meet or exceed IMO criteria. This would ensure

Table 2. Comparative scoring of maritime training schemes

Evaluation criterion	Weight (%)	DP scheme	ECDIS	BRM
Standardisation of content	20	5	3	3
Instructor qualification	20	5	3	3
Curriculum update frequency	15	5	2	3
Certification control and integrity	20	5	2	3
Simulation fidelity	15	5	3	4
Global recognition	10	3	5	5
Weighted average (0–5)	100	4.7	3.1	3.5

the quality of training centres without dividing supervision responsibilities.

5.5.4. Implement centralised certification verification

A mechanism for verifying DP operator certification through the IMO's Global Integrated Shipping Information System (GISIS) or a linked registry would enhance transparency and global recognition. This would integrate the strengths of the DP scheme's anti-fraud architecture with international compliance structures.

5.5.5. Allow for phased integration

Rather than immediate incorporation into all aspects of STCW Section A, a gradual or modular approach could be adopted. Initial reference in Part I (General Provisions) could be followed by inclusion in Tables of Competence or certification pathways, allowing time for stakeholder feedback and administrative adaptation.

5.5.6. Safeguard the curriculum feedback loop

The role of the DPTEG in revising training standards should be formally preserved in any regulatory shift. This group ensures that the training programme remains responsive to emerging technologies and operational practices, and its continued operation is critical to maintaining the scheme's relevance.

6. DISCUSSION: TRAINING QUALITY, GOVERNANCE TRADE-OFFS, AND REGULATORY SCENARIOS

The comparative evaluation of the DP training scheme and simulator-based STCW Section A qualifications reveals a complex interplay between regulatory legitimacy, educational quality, and operational responsiveness. The results of the risk matrix and evaluation framework indicate that, across key dimensions such as curriculum agility, simulator fidelity, and certification control, the DP scheme consistently outperforms its STCW Section A counterparts. These findings are consistent with earlier research highlighting the scheme's robustness, notably its centralised control and fraud mitigation mechanisms (Sánchez-Varela et al., 2025; Nowak, 2021).

The inclusion of comparator models such as tanker, LNG, and Polar Code training further strengthens the argument that a hybrid governance approach is both viable and precedent-based. In these cases, industry-led or co-developed training schemes operate effectively under the legal structure of the STCW Convention without undermining the quality of instruction or the responsiveness of curriculum updates. Such models suggest that full governmental control is not the only path to global standardisation.

However, the analysis also highlights persistent trade-offs. While the DP training scheme benefits from agility and quality assurance, its position under Section B of the STCW Convention limits automatic recognition across flag states. This poses risks to labour mobility, regulatory coherence, and mutual certificate validation. On the other hand, STCW Section A programs benefit from international recognition but often lack uniformity in implementation due to flag-state-level discretion, delayed curriculum updates, and inconsistent enforcement.

The policy recommendations proposed offer a structured response to this problem. Rather than supporting for full absorption of the DP scheme into the rigid structures of Section A, a phased or hybrid approach is proposed. Such a model would preserve the key strengths of the existing scheme—particularly its capacity for rapid content updates and its rigorous audit and certification processes—while securing the benefits of legal harmonisation.

This approach reflects wider trends in maritime education and training. As the sector continues to evolve in response to automation, artificial intelligence, and low-emission technologies, future training schemes may need to move away from the current static model courses and towards modular, industry-responsive schemes. The DP scheme, with its established mechanisms for stakeholder engagement, technological integration, and quality control, may serve as a useful blueprint for these future qualifications.

In this context, the regulatory treatment of the DP training scheme represents not only a case study in maritime training policy but also a potential model for balancing international standardisation with the operational demands of specialised, high-risk competencies. Any attempt to integrate the scheme into STCW Section A must be established in an understanding of these dynamics, ensuring that legal recognition does not come at the expense of instructional relevance or systemic integrity.

7. CONCLUSIONS

This paper has evaluated the DP training and certification scheme currently administered by NI, comparing it to simulator-based qualifications mandated under Section A of the STCW Convention, specifically ECDIS and BRM. Through an integrated

analysis combining regulatory comparison, risk assessment, and training quality scoring, the study provides a comprehensive review of the DP scheme's current effectiveness and explores the implications of potential integration into the mandatory provisions of the STCW Convention.

The findings suggest that the DP training scheme outperforms existing STCW Section A qualifications in several key areas, including instructor competence, curriculum update responsiveness, simulation fidelity, and certification control. This is supported by both the qualitative risk matrix and the scoring framework, which highlight the DP scheme's superior safeguards against training-related failure modes. These strengths are largely attributable to its centralised management, rigorous audit protocols, and dedicated stakeholder governance structure.

However, the scheme's current placement under STCW Section B limits its legal recognition and creates challenges in terms of cross-jurisdictional equivalence and labour mobility. Addressing this gap through full integration into Section A could improve consistency and global acceptance but would also introduce regulatory rigidity and potential loss of agility in curriculum development and enforcement.

The analysis of other hybrid training models—such as oil tanker, LNG carrier, and Polar Code training—demonstrates that it is possible to achieve formal regulatory recognition while preserving operational control by specialised professional bodies. Based on these precedents, a phased or hybrid integration model for DP training appears both feasible and desirable.

Accordingly, the paper proposes a set of policy recommendations to support such a model. These include mutual audit recognition, competency-based rather than model course–based regulation, the preservation of NI's authority over certification, and the adoption of centralised certificate verification mechanisms. Together, these measures would enhance the legal and international standing of the DP scheme without compromising its effectiveness.

In conclusion, the DP training scheme presents a robust and adaptable framework that may serve as a model for future maritime training in technologically advanced domains. Its continued success, and potential integration into STCW Section A, will depend on regulatory approaches that combine international consistency with the flexibility necessary to meet evolving industry needs. The case of DP training highlights the importance of hybrid governance models in maintaining both educational quality and regulatory legitimacy in an increasingly complex maritime environment.

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