

Electronic Chart Display and Information System Operational Level Training Course

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Overview

Electronic Chart Display and Information System Operational Level Training Course is a one-week course for navigational watch officers and maritime operators who require practical competence in digital chart execution and bridge sensor integration. Modern navigation faces operational risks from sensor discrepancy, incorrect safety contour calculations, and improper alarm management on digital bridges. This course addresses these vulnerabilities through structured simulator navigation, Electronic Navigational Chart appraisal, and system verification protocols. Agile Leaders Training Center delivers the Electronic Chart Display and Information System Operational Level Training Course.

Who Should Attend

- Deck officers responsible for maintaining a safe navigational watch and monitoring electronic passages.
- Watchkeeping officers tasked with configuring safety depths, alarm boundaries, and anti-grounding vectors.
- Navigation officers handling chart updates, digital permit installations, and route verification.
- Tug and offshore vessel operators managing coastal transit, harbor approaches, and vessel positioning.
- Maritime safety superintendents reviewing bridge log data, track histories, and passage compliance records.

The course assumes participants already perform basic chart plotting and bridge watchkeeping duties, and it leaves out fundamental seamanship and introductory marine navigation theory.

Departments and Industries

The course draws operational scenarios from organizations operating commercial maritime fleets and marine logistics networks.

- Commercial shipping operations and fleet navigation departments
- Offshore energy support and marine supply vessel operations
- Container logistics and bulk cargo maritime transport
- Port towage, harbor escort, and coastal maneuvering operations
- Maritime safety oversight and fleet quality compliance units

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Learning Objectives

By the end of this course, participants will be able to:

- Apply official Electronic Navigational Chart vector data for safe passage planning and voyage appraisal.
- Use radar overlays and manual position fix methods to detect GNSS sensor drift.
- Calculate accurate safety depths and safety contours based on ship draft and under-keel clearance.
- Analyze ECDIS alert parameters to eliminate bridge alarm fatigue during high-density traffic transits.
- Diagnose sensor failure indicators across gyro, speed log, and positioning feeds.
- Prioritize corrective watchkeeping actions during sudden GNSS signal denial or system failures.

Course Agenda

Day 1: System architecture and Electronic Navigational Chart foundations

- ECDIS functional architecture, display categories, and type-approval standards under IMO Resolution MSC.23282
- Electronic Navigational Chart vector attributes, S-57 object layers, and chart presentation rules
- Chart datum conversions, geodetic reference systems, and display projection distortions
- Raster Navigational Chart limitations and operational transitions during vector data absence
- Official ENC permit loading, chart license installation, and manual notice-to-mariners updates

Day 2: Sensor integration, positioning, and data verification

- Bridge sensor inputs including GNSS receivers, gyrocompass feeds, and Doppler speed logs
- Radar and Automatic Radar Plotting Aid overlay alignment and target vector correlation
- Automatic Identification System target symbology, data filtering, and target track verification
- Position cross-checking methods utilizing radar ranges, visual bearings, and parallel indexing
- Dead reckoning modes, estimated positioning, and managing primary positioning source failure

Day 3: Passage planning, safety settings, and route appraisal

- Route appraisal principles adhering to passage guidelines and established clearance policies
- Safety depth and safety contour configuration based on vessel draft and dynamic squat
- Shallow contour and deep contour selection for visual depth gradient distinction
- Look-ahead vector, anti-grounding sector configuration, and danger highlight zones
- Route checking algorithms, cross-track distance limits, and critical waypoint attributes

Day 4: Route monitoring, alarm management, and bridge governance

- Real-time route monitoring techniques, display decluttering, and standard display presets
- ECDIS alarm hierarchies, warning notifications, and methods for mitigating alarm fatigue
- Integrated bridge network integrity, cyber risk hygiene, and portable media security controls
- Operational guidance for navigation and record-keeping under MSC.1/Circ.1503/Rev.1
- Dual ECDIS handover procedures and independent paperless navigation backup configurations

Day 5: Navigational simulation and verification practice

- Exercise: configure chart safety parameters and appraisal checks for a shallow water transit
- Exercise: execute sensor failure responses during sudden GNSS degradation in coastal waters
- Exercise: conduct route monitoring and collision avoidance under radar overlay integration
- Exercise: audit ENC update logs and verify route compliance against company safety margins
- Capstone exercise: execute an operational passage plan on an ECDIS simulator while managing sensor anomalies

Practical Exercises

The course uses practical simulation scenarios and navigation logs drawn from operational vessel workflows.

- Suggested activity: Configure vessel safety contours and look-ahead detection sectors for a restricted channel approach.
- Suggested activity: Detect artificial GNSS spoofing by executing radar overlay cross-checks and parallel indexing lines.
- Suggested activity: Resolve route validation errors and isolate charted navigation hazards on an active vector route.
- Suggested activity: Execute an emergency manual positioning procedure following a total satellite sensor dropout.

FAQs

Who suits the Electronic Chart Display and Information System Operational Level Training Course?

The Electronic Chart Display and Information System Operational Level Training Course suits certified deck officers and navigational watchkeepers. The course assumes prior experience with conventional chartwork and bridge watchkeeping procedures, and it leaves out introductory marine navigation theory and basic bridge team communication drills.

How does this course differ from management level ECDIS courses?

Operational level training focuses on direct system manipulation, sensor verification, route execution, and anti-grounding alarm setup during a watch. Management level courses focus on broader fleet navigation policies, bridge audit frameworks, legal accountability under maritime carriage requirements, and administrative incident investigation procedures.

What chart formats are utilized in operational ECDIS navigation?

Operational ECDIS navigation primarily utilizes official vector Electronic Navigational Charts compiled by national hydrographic offices. When official vector charts are unavailable, systems operate under Raster Chart Display System mode using digital raster reproductions of paper charts alongside established operational limitations.

Why must safety contours be calculated before route activation on ECDIS?

Safety contours establish the anti-grounding alarm threshold on vector charts. Entering an accurate vessel draft, required under-keel clearance, and squat allowance ensures the ECDIS automatically highlights dangerous shallow waters, sounds alarms before vessel entry, and prevents visual confusion on the bridge.

Conclusion

Participants return to their organizations with a completed passage appraisal and sensor verification portfolio prepared during simulator navigation. This work product establishes standardized safety contour calculation workflows and sensor cross-checking procedures on active bridge watches. The resulting documentation reduces navigation errors and prevents grounding incidents across commercial vessel operations.

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