BLACKBIRD FOR TRAINING

GMDSS Radio Maintenance and Survey Readiness Course

7 – 18 December 2026
Düsseldorf (Germany)

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GMDSS Radio Maintenance and Survey Readiness Course

Ref: 28_361535 **Date:** 7 – 18 December 2026 **Location:** Düsseldorf (Germany) **Fees:** 10600 GBP

Introduction:

GMDSS radio maintenance and survey readiness is the work of keeping a ship's Global Maritime Distress and Safety System equipment working to the maintenance rules of SOLAS Chapter IV and ready for its annual radio survey. This 2-week course is for marine electronics technicians, electro-technical staff, ship radio maintainers and technical superintendents, and its final deliverable is a ship-specific GMDSS maintenance and radio survey readiness plan. It is taught at intermediate to advanced practitioner level as a lab, with delegates fault-finding equipment on a test bench against IMO Resolution A.70217, the radio maintenance guidelines for GMDSS.

Course Objectives:

- Define the GMDSS functional requirements and sea areas, and distinguish Inmarsat-C from Iridium terminals as recognised mobile satellite services
- Distinguish duplication, shore-based maintenance and at-sea electronic maintenance, and select the combination SOLAS Chapter IV Regulation 15 requires for a ship's sea areas
- Apply structured fault-finding with dummy loads, power meters, battery testers and cable analysers to restore DSC, satellite and NAVTEX equipment to service
- Compare float-free and manual EPIRBs, and radar SARTs and AIS-SARTs, and apply the annual testing and shore-based maintenance requirements to each
- Interpret the radio log, the Record of Equipment and the survey checklist to judge whether a ship is ready for its annual radio survey
- Justify maintenance intervals, spares holdings and equipment replacement decisions using fault history, readiness indicators and clear reports to crews and surveyors

Target Audience:

- Marine electronics and radio technicians who service shipboard radio installations, deciding whether a unit can be repaired on site or must be replaced
- Electro-technical staff on board who carry out at-sea electronic maintenance, judging when a fault exceeds onboard capability and needs shore support
- Ship radio maintainers and service-agent staff who perform shore-based maintenance and beacon servicing, deciding whether test results support a return-to-service entry
- Port and shore-based maintenance staff who prepare vessels for radio surveys, judging which defects must be closed before the surveyor attends
- Fleet technical staff who follow radio equipment condition across several ships, choosing the maintenance method, service intervals and spares holding for each vessel

Course Outline:

Day 1: Foundations: GMDSS Functions, Sea Areas and Shipboard Radio Installations

- GMDSS Functional Requirements: Alerting, Locating, Distress Traffic and Maritime Safety Information Duties
- Sea Area A1/A2 vs A3/A4: Radio Equipment Carriage Set by Trading Area
- Shipboard GMDSS Console Layout: Transceivers, Satellite Terminals, Receivers and Survival Craft Units
- Modernised GMDSS Amendments: Recognised Mobile Satellite Services and Withdrawn Legacy Equipment Duties
- MMSI and Maritime Identities: Programming Rules Under the ITU Radio Regulations

Day 2: Maintenance Rules: SOLAS Chapter IV Regulation 15 and IMO Radio Maintenance Guidelines

- Duplication vs Shore-Based Maintenance vs At-Sea Electronic Maintenance: Availability Methods Under SOLAS Chapter IV
- Sea Area Combinations: Choosing Two of Three Maintenance Methods for A3 and A4 Ships
- IMO Resolution A.70217: Radio Maintenance Guidelines for GMDSS Installations and Onboard Spares
- Shore-Based Maintenance Agreements: Scope, Service Agent Duties and Evidence Kept on Board
- At-Sea Electronic Maintenance Capability: Qualified Personnel, Spare Parts and Technical Documentation

Day 3: Core Skills: Testing and Servicing MF/HF and VHF DSC Radio Equipment

- MF/HF DSC vs VHF DSC Transceivers: Frequency Bands, Alert Formats and Range
- DSC Test Calls: Verifying Transmit and Receive Paths Without False Distress Alerts
- Dummy Load and Power Meter Checks: Measuring Transmitter Output and Reflected Power
- Antenna Tuning Units and Coupler Faults: Diagnosing High SWR on HF Installations
- Portable Two-Way VHF Radiotelephones: Battery Seals, Expiry Checks and Channel Tests

Day 4: Tools and Systems: Satellite Terminals, NAVTEX and Power Supply Test Equipment

- Inmarsat-C vs Iridium GMDSS Terminals: Recognised Mobile Satellite Service Differences for Maintainers
- Satellite Terminal Link Tests: Logon Status, Distress Button Circuit and GNSS Position Input
- NAVTEX Receiver Servicing: Station Selection, Message Type Settings and Antenna Checks
- Reserve Source of Energy: Battery Capacity Tests, Hydrometer Readings and Charger Alarms
- Insulation Testers and Cable Analysers: Locating Coaxial Damage, Water Ingress and Earth Faults

Day 5: Week-One Integration: Guided Lab Case on a Complete GMDSS Console Fault

- Fault Tree vs Half-Split Method: Structuring the Search for an Intermittent Radio Fault
- Guided Test-Bench Case: Tracing a Failed DSC Alert From Controller to Antenna
- Power Changeover Exercise: Proving Main to Reserve Supply Switching Under Load
- Interface Fault Case: GNSS Position Feed Lost Across DSC and Satellite Units
- Week-One Fault Log Review: Recording Symptoms, Tests, Repairs and Return-to-Service Checks

Day 6: Advanced Topics: EPIRBs, SARTs and Survival Craft Radio Equipment

- Float-Free EPIRB vs Manual EPIRB: Release Units, Hydrostatic Expiry and Mounting Checks
- EPIRB Annual Testing Under MSC/Circ.1039: Self-Test, Beacon Coding and Registration Checks
- EPIRB Shore-Based Maintenance Under MSC.1/Circ.1040 Rev.1: Battery Replacement and Interval Rules
- Radar SART vs AIS-SART: Test Modes, Detection Checks and Battery Expiry
- Beacon and SART Test Sets: Confirming Transmission Without Triggering a Live Distress Alert

Day 7: Compliance and Quality: Radio Survey Requirements, Records and Defect Control

- Annual Radio Survey vs Shore-Based Maintenance Visit: Purpose, Scope and Evidence Required
- Record of Equipment Form R: Matching Installed Radio Units to the Safety Certificate
- GMDSS Radio Log: Daily, Weekly and Monthly Test Entries Surveyors Check
- Radio Survey Checklist Items: Antennas, Labels, Operating Instructions and Spare Fuses
- Deficiency Handling: Classing Radio Defects, Temporary Measures and Close-Out Evidence

Day 8: Stakeholders and Communication: Working With Crews, Surveyors and Service Agents

- Ship Crew vs Shore Technician Roles: Who Tests, Who Repairs, Who Signs
- Service Reports for Surveyors: Writing Test Results, Readings and Repair Findings Clearly
- Briefing GMDSS Operators: Handover of Repaired Equipment and Correct Self-Test Use
- False Distress Alert Response: Cancellation Procedure and Reporting After a Maintenance Error
- Equipment Replacement Decisions: Change Requests, Type Approval Evidence and Owner Sign-Off

Day 9: Measurement and Improvement: Reliability Data, Maintenance Intervals and Readiness Indicators

- Preventive vs Corrective Maintenance: Setting Radio Service Intervals From Fault History
- Mean Time Between Failures: Estimating Reliability of Transceivers, Terminals and Batteries
- Survey Readiness Indicators: First-Time Pass Rate, Open Defects and Overdue Tests
- Spare Parts and Consumables Planning: Batteries, Release Units and Critical Modules
- Fleet Benchmarking of Radio Faults: Comparing Vessels, Equipment Makers and Repeat Defects

Day 10: Lab Capstone: Building a GMDSS Maintenance and Radio Survey Readiness Plan

- Sea Area vs Installed Equipment Check: Mapping a Delegate's Ship Against Carriage Rules
- Maintenance Method Selection Exercise: Justifying Duplication, Shore-Based or At-Sea Arrangements
- Test-Bench Fault-Finding Assessment: Clearing a Seeded Fault on a DSC or Satellite Unit
- Mock Radio Survey Walkthrough: Checking Logs, Beacons, Batteries and Records Against the Checklist
- GMDSS Maintenance and Survey Readiness Plan: Completing and Presenting the Ship-Specific Plan

Skills You Will Gain:

- DSC Transceiver Testing
- Satellite Terminal Verification
- EPIRB and SART Servicing
- Reserve Battery Capacity Testing
- RF Fault Isolation
- Radio Survey Preparation
- GMDSS Maintenance Planning
- Radio Log Auditing

Why Attend This Course:

- From replacing radio units by trial and error to isolating faults with dummy loads, power meters and cable analysers
- From treating the annual radio survey as a surprise to arriving with logs, records and beacon tests already in order
- From running GMDSS maintenance by habit to matching duplication, shore-based and at-sea arrangements to the ship's sea areas
- From scattered service notes to a ship-specific GMDSS maintenance and radio survey readiness plan

Conclusion:

GMDSS radio maintenance and survey readiness means keeping every distress and safety radio on a ship provably working, so that its alerting, locating and safety-information functions can be proven when a surveyor asks. The course makes three distinctions clear: duplication versus shore-based versus at-sea maintenance, Inmarsat-C versus Iridium terminals, and an annual radio survey versus a shore-based maintenance visit. It suits technicians, electro-technical staff and fleet technical staff at intermediate to advanced level who already work on shipboard radio equipment and now need to diagnose faults faster and prepare ships for survey.

Frequently Asked Questions FAQ:

What should a delegate know before a GMDSS radio maintenance and survey readiness course?

Working experience with marine electronics or radio equipment and the use of a multimeter is expected. Delegates should recognise the main GMDSS units on a bridge; regulations, test methods and survey records are built up step by step before the bench exercises.

How does a GMDSS radio maintenance and survey readiness course differ from a GMDSS operator course?

It teaches servicing, testing and fault-finding of the equipment rather than operating it to send and receive distress traffic. Operator courses prepare watchkeepers to use the consoles; this course prepares technical staff to keep them working and to evidence that for a radio survey.

Why does GMDSS radio maintenance need more than one maintenance method on some ships?

SOLAS Chapter IV Regulation 15 requires equipment availability to be ensured by duplication, shore-based maintenance or at-sea electronic maintenance, or a combination. Ships trading in sea areas A3 and A4 use at least two of the three methods, so one failure does not remove distress capability.

What does a delegate take back to work from a GMDSS radio maintenance and survey readiness course?

A ship-specific GMDSS maintenance and radio survey readiness plan covering the chosen maintenance methods, test schedules, EPIRB and SART servicing intervals, spares and a pre-survey checklist, plus a fault-finding routine the delegate has already applied on the test bench.