

CMEO for Engineers

1. Course Content

The following courses comprise the MSC CMEO for Engineers:

- AVCERT ARQ(Aviation Certification)
- Chemicals & Commodities Contract/
Chemical Testing & Treatment
- Condition Monitoring System (CMS)
 - Reciprocating Analysis (Diesel Doctor)
 - Vibration Analysis
 - Special Tests
 - Lube Oil Analysis
- SAMM Ashore Apps
 - PMIA
 - VRR Log
 - TransAlt
 - Availabilities
- SAMM Corrective Maintenance
 - Work Requests
 - Ship's Force Work List (SFWL)
 - Voyage Repair Request (VRR)
- Fuel/Lube Oil & Paint Contracts, Theory,
Analysis, Sampling & Testing
- LogiQuest
- SAMM Virtual Technical Library (VTL)
- Intro to Shipboard Automated
Maintenance Management (SAMM)
- Logbook
- Machinery Alignment
- MSC Ship Operation and Maintenance
Philosophy
- SAMM Planned Maintenance
- SAMM Workbook
- ESR/Inspections & Assessments
- Regulatory Body Inspections
- SAMM User Utilities
- ShipClip (Basic & Advanced)

2. Prerequisites

No Prerequisites: This course is designed for all MSC and Contract Engineers.

3. Administration

Course registration is online at <http://mscn7training.com>. The course is required every 5 years for all contract shipboard engineers. Completion of the course requires 100% attendance as well as passing an assessment to prove competence in the following areas:

- Logbook
- SAMM
- VMS
- Diesel Doctor

4. Schedule

The courses are conducted over a period of **5 days**, starting at 8:00 on Monday and ending at 5:00 on Friday. The maximum course size is 16 students on a first come first served basis. The courses are taught by Emprise, MSC, and Contract personnel.

The schedule is as follows:

CMEO AFLOAT TRAINING – ENGINE					
Location: EMPRISE, Chesapeake, VA					
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
08:00-0900	Class Intro	SAMM Reciprocating Analysis (RA)	SAMM Machinery History	LogiQuest	FO/LO & Paint Contracts & Analysis
09:00-10:00	MSC Ship Operation and Maintenance Philosophy				
10:00-11:00	Intro to SAMM & VTL	SAMM Vibration Analysis (VMS)	Logbook	ShipClip (Basic and Advanced)	Lube Oil Theory, Sampling & Testing
11:00-12:00					
12:00 - 1:00	Lunch	Lunch	Lunch	Lunch	Lunch
1:00- 2:00	SAMM Planned Maintenance (PM)	SAMM Corrective Maintenance	AVCERT ARQ	Chemical & Commodities Contracts Chemical Testing & Treatment	Machinery Alignment
2:00-3:00			Engineering Status Reports (ESR)		Open
3:00-4:00	SAMM Workbook	SAMM Utilities	Reg. Bodies and Inspections		
4:00 -5:00					

5. Course Descriptions:

AVCERT ARQ: This module covers Aviation re-Certification requirements and the necessary preparations required to ensure the vessel is ready for its recertification inspection. This particular module is tailored for the preparations required by the ship's engineers.

CMS – Condition Monitoring System: This module provides instruction on the different Condition Monitoring System items contained in the SAMM program. Each course will cover interpretation of data and the required action for any alert generated by one of the technologies in the CMS module.

- **Reciprocating Analysis** – How to use the Diesel Doctor software in SAMM to review reciprocating analysis data for validity and repair recommendations. Brief instruction on the junior engineer process to collect combustion data, including possible sources of incorrect data and actions if invalid data is collected.
- **Vibration Analysis** – How to use the VMS software in SAMM to review vibration data for validity and repair recommendations. Brief instruction on the junior engineer process to collect vibration data, including possible sources of incorrect data and actions if invalid data is collected
- **Special Tests** – How to review special test data in the CMS module in SAMM.
- **Lube Oil Analysis** – How to review Lube Oil Analysis results in the CMS module and actions to take for LO Analysis alerts.

Chemical & Commodities Contracts / Chemical Testing & Treatment: This module introduces users to the MSC Chemical contract – purchasing requirements, other information required for purchasing and tracking chemicals for engineering use. MSC policies and procedures for chemicals will be provided. This module also introduces users to the Chemical products on the MSC Contract and how to access the Material Safety Data Sheets (MSDS) for proper stowage and handling instructions. The student will also be shown best practices for testing and applying treatment.

Class Intro: Introduces the CMEO Course, covering the course objectives, goals, and schedule. The Course format will be covered as well as the technology used. The Instructors for each module will be listed as well as expectations of the students.

SAMM Corrective Maintenance: This module provides instructions on the process to initiate and complete a Corrective Maintenance action in the MSC SAMM Program. Instruction will include generating and managing departmental Work Requests (WR) and upgrading all work requests to Ship's Force Work List (SFWL) items or Voyage Repair Requests (VRR). Instructions and guidance on MSC required actions for each of the different repair types (WR, SFWL and VRR) will be provided during this instruction.

Engineering Status Reports (ESR) This module covers the Engineering Status Report (ESR), which includes PM deferrals, condition monitoring results, Water Chemistry, VRR and PMIA status, and SMART/OCI findings, amongst other metrics. Other topics are covered such as Port Engineer Vessel Inspections (PEVI) as well as the Inspection Program, including Vessel Self Assessments (VSA).

FO/LO & Paint Contracts & Analysis / Lube Oil Theory, Sampling & Testing: This module covers fuel oil and lube oil types, the ordering procedure under SEACARD or NAVSUP, the Paint Contract details, sampling procedures, testing and analysis, regulatory requirements, shipboard records (e.g. NEURS), and sample shipping procedures.

Logbook: This module provides instruction on the use of an electronic log keeping system for the Engine Department, employed throughout MSC's fleet. This section includes instruction on generating the monthly NEURS report.

LogiQuest: This module instructs the user on how to identify replacement parts by National Stock Number, commercial part number, or by equipment information. This module builds upon the ShipClip module by showing how to access detailed parts information missing from other ship's databases, or when the need arises to cross reference between NSN and commercial part numbers, especially when those numbers have been changed by the OEM.

Machinery Alignment: This module covers basic alignment theory and a discussion on common alignment errors and corrections, such as soft-foot, bar sag, piping stress, and thermal growth. Students will also learn a procedure to perform alignment by dual indicator alignment procedure with only one indicator and a commercially available Microsoft spreadsheet (Excel). Other methods to align belt driven units and mechanical couplings are also discussed.

SAMM Machinery History and Equipment Reports: This module covers what information entered into SAMM is stored in Machinery History, how to review all history (Maintenance, Corrective, CMS, Other) and print reports for inspection and monitoring evolutions. The user will print several reports under instruction based on previous inspections and common reports requested by regulatory organizations. Specifically, the Engineering Status Reports and other Documents will be covered as well.

MSC Ship Operation and Maintenance Philosophy The topics covered in this module include: MSC's use of commercial ship design, operation, and maintenance standards, MSC's Safety Management System, MSC's Quality Management System, MSC's ship operating models, MSC's maintenance philosophy, MSC's maintenance model, MSC's predictive maintenance tools, MSC's web-based maintenance planning and management tools, visibility of MSC's operating and maintenance costs, and MSC's alignment of life cycle maintenance and fiscal decision-making responsibilities and authorities.

SAMM Planned Maintenance: This module covers Planned Maintenance in the SAMM Program, including navigating to find, schedule or complete a Preventive Maintenance item. This module will also cover using Planned Maintenance to organize maintenance by assigning to a different billet, submitting feedback for a Planned Maintenance Item or Equipment, and viewing the PM Item Details, including User Notes, History, Schedule, or other additional Details. Advanced topics such as different PM Schedules will also be covered.

Regulatory Bodies and Inspections: This module summarizes the regulatory body rules (USCG, ABS, IMO, and Industry standards) and regulations, including inspection specification sheets and the repository for where the regulatory body records are kept.

SAMM Intro: This module covers the architecture, purpose, and use of MSC's Shipboard Automated Maintenance Management system. Common terminology, common features and the Navigation/Search features will be taught during this course. Included in this section is a description of each Tab in the SAMM Dashboard and how each tab applies to the overall management of the vessel's maintenance.

SAMM Utilities: This module will cover the administrative functions included in SAMM Utilities, such as User Admin (Adding a user to the ship, adjusting user permissions, deactivating a user), Scheduler (Running the Workbook Scheduler, Resetting the Current Workbook Schedule), Feedback Administration (Reviewing SAMM Feedback, Attaching files, Reviewing Shoreside Response), ROS/FOS (Altering Vessel/System/Equipment Status to change Planned Maintenance Schedule), Equipment (Adding Ad-Hoc Equipment in SAMM), Reports (Printing Various SAMM Reports), Running Hours (Adding Machinery Running Hours).

ShipClip (Basic & Advanced): This module focuses on the ship's logistical supply program; parts identification, location, ordering, and equipment specifications.

ShipClip Basic covers those elements commonly used for most engineers, such as how to look up parts, equipment and tech manual information.

ShipClip Advanced covers those elements required for engineers serving as supply officers, such as parts ordering, logistical data, and inventory management.

SAMM VTL: This module focuses on MSC's Virtual Technical Library, what it contains, how to access its information, and how it is used by ship and shore personnel.

SAMM Workbook: This module covers Workbook in the SAMM Program, including navigating to find, schedule or complete Preventive maintenance items. This will cover printing out PM Worksheets for currently scheduled work, completing or deferring scheduled maintenance, completing condition monitoring items, including special test items, as well as reviewing Workbook Item details, including User Notes, History, and other Details, as well as submitting feedback to Workbook Items. Other information in Workbook included for prioritizing maintenance will also be emphasized, such as the Mission Readiness Criticality Code.

Date	Version	Description	Author
02/17/22	1.0	Added Version Table, modified schedule to remove RCM, RCA, and ENCON, added Intro to MSC	Henry Scharf
6/20/2022	1.1	Adjusted Schedule for Wednesday Afternoon to Accommodate MSC Instructors. Changed name of AVCERT to AVCERT ARQ	Henry Scharf