Marine Safety Center Briefing Book

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Updated: October 30, 1997

Marine Safety Center Briefing Book

Introduction

The U.S. Coast Guard Marine Safety Center was established in 1986 as a consolidation of district Merchant Marine Technical Offices. Our offices are located on the sixth floor of the DOT Headquarters building in Washington, DC. This document provides a brief overview of our unit's organization, responsibilities, and activities. It is periodically updated so that its contents are an accurate reflection of our past, present, and future.

Additional information on our unit, as well as this document, is available through our web site at:

http://www.dot.gov/dotinfo/uscg/hq/msc

Vision Statement

"We provide the best service in government."

Mission Statement

The Mission of the Marine Safety Center is to provide marine technical services and leadership in support of the Marine Safety and Environmental Protection Programs.

Marine Safety Center Briefing Book

Mission Areas

Technical Window for the Coast Guard's Commercial Vessel Safety Program

Provide the maritime community a "window" to the Coast Guard's Marine Safety program with respect to vessel design issues.

Technical Support for Coast Guard Field Units

Provide naval architecture and marine engineering technical support to field Marine Safety Offices (MSOs), Marine Inspection Offices (MIOs), and Federal On Scene Coordinators (FOSCs). This includes forensic casualty analysis for both marine safety and operational units.

Technical Support for the Commandant

Provide technical support to the Commandant through input on casualty reviews, legislation, development of industry standards, appeals, proposed Navigation and Vessel Inspection Circulars (NVICs) and regulatory projects and the formulation of technical policy.

Commercial Vessel Plan Review

Review designs of commercial vessels to ensure compliance with domestic and international requirements as required by shipping laws, the Code of Federal Regulations, Department of Transportation and U.S. Coast Guard implementing directives and guidance, and the International Maritime Organization (IMO).

Interpretation of Technical Requirements

Develop interpretations of technical requirements in the regulations, international standards, and implementing directives. Many vessels have unique installations with unusual construction techniques, applications, or arrangements which incorporate advances in technology and which are not currently addressed by the regulations. These special designs are reviewed to ensure that the level of safety incorporated into the design is equivalent to that of the more conventional installations.

Mission Areas (cont.)

Oversight of Third Party Organizations

Conduct oversight of third party organizations which have been delegated authority to act on behalf of the Coast Guard A significant part of Coast Guard plan review is performed by third party organizations, (primarily the American Bureau of Shipping) on behalf of the Coast Guard. These reviews are audited for compliance with Coast Guard standards. Close communications are maintained to provide guidance, policy, and assistance to facilitate performance of these functions on behalf of the Coast Guard.

Letter of Compliance Program for Liquefied Gas Tankships

Provide administrative control and technical support to Coast Guard field offices carrying out port state control initiatives for foreign flag liquefied gas tankships.

Control Verification Examination Program for Passenger Vessels

Provide technical support to the Control Verification Examination (CVE) program for foreign flag passenger vessels.

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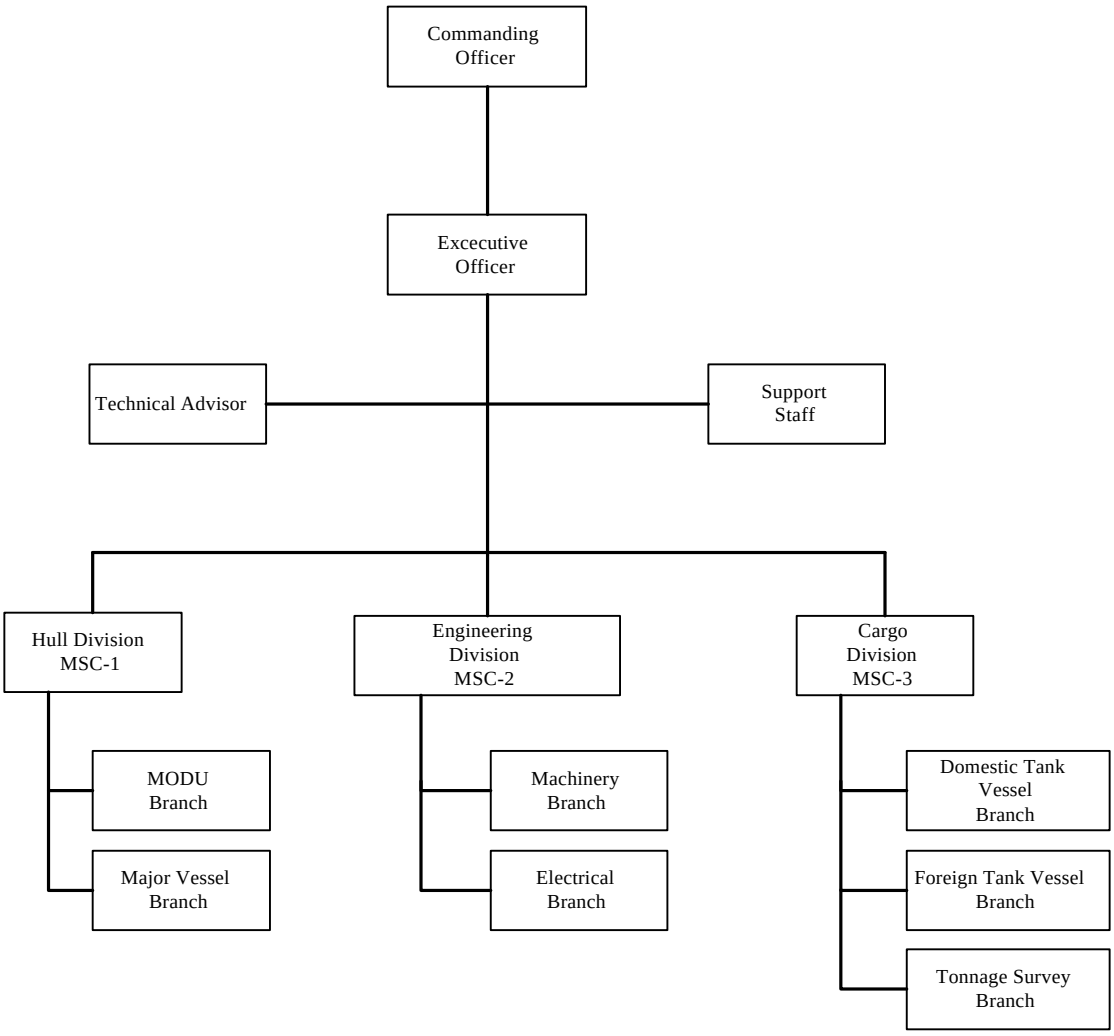
Organization

The Marine Safety Center (MSC) is comprised of 50 Coast Guard officers and civilian employees. The MSC reports to the Director of the National Maritime Center, and is organized into three divisions as shown below.



Organization (cont.)

Hull Division

Major Vessel Branch

The Major Vessel Branch conducts structural, stability, and fire protection reviews of small passenger vessels (>150 passengers), large passenger vessels, freight vessels (>100m), and fish processing vessels.

Mobile Offshore Drilling Unit (MODU) Branch

The MODU Branch conducts reviews of stability and structures for U. S. Coast Guard certificated MODUs, liftboats, small passenger vessels (<150 passengers), tug and tow boats, oceanographic research vessels (ORVs), freight vessels (<100m), and passenger submarines.

Engineering Division

Machinery Branch

The Machinery Branch verifies compliance and provides technical support to the marine industry and Coast Guard field offices on shipboard piping systems, boiler and pressure vessel design, and main and auxiliary machinery, including steering gear, materials, welding, nondestructive testing, fire fighting, and fire protection systems aboard new and existing U.S. vessels, mobile offshore drilling units, and foreign passenger vessels.

Electrical Branch

The Electrical Branch provides technical support to the marine industry and Coast Guard field offices on the design of electrical systems, equipment, and wiring methods including fault current protection, hazardous areas installations, and automated systems for control of vital vessel functions. This includes microprocessor-based control systems.

Organization (cont.)

Cargo Division

Domestic Tank Vessel Branch

The Domestic Tank Vessel Branch provides technical support to the marine industry and Coast Guard field offices on structural, stability, and fire protection issues for tank ships, all types of barges, dredges, oil spill recovery vessels, and offshore supply vessels.

Foreign Tank Vessel Branch

The Foreign Tank Vessel Branch provides technical support to the marine industry and Coast Guard field offices on tank vessel cargo carriage authority issues, cargo piping systems, and vapor control systems. The branch also manages the U.S. Letter of Compliance program for foreign flag liquefied gas carriers.

Tonnage Survey Branch

The Tonnage Survey Branch manages the U.S. Tonnage measurement program, under which U.S. flag vessels are assigned registered tonnages/dimensions and tonnage regulations are enforced.

Salvage Team

The Marine Safety Center Salvage Team is comprised of 8-10 staff engineers who are on call 24 hours a day, 7 days a week, to assist and support Coast Guard Captains of the Port (COTPs) when disaster strikes. Salvage Team members are naval architects trained to conduct technical analysis in the areas vessel stability, structural integrity, and vessel removal operations. When activated, the salvage team provides technical support to COTP during marine casualties: groundings, collisions, explosions, and fires.

Team Members

The team's members have strong credentials, including masters degrees in naval architecture, professional engineering licenses, and experience in commercial vessel design. Team members are expert users of several naval architecture software packages. Salvage Team members are selected from each of the three divisions and provide their service as a collateral duty.

Resources

The team has mobile computing capability for on-scene deployment as well as presentations to inform field personnel of the services we can provide. The MSC maintains a database of about 5,000 hull files that can be used to generate computer models of vessels for use in salvage engineering. External relationships with organizations like the Navy Supervisor of Salvage (SUPSALV), Coast Guard Intel Coordination Center, and the Office of Naval Intelligence (ONI), as well as all major class societies, enable the salvage team to quickly locate and transfer information about a damaged vessel that would otherwise be difficult to access.

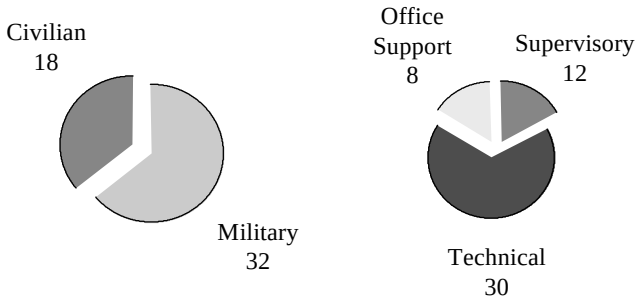
Drills

The Salvage Team assists in the development and execution of exercises involving vessel casualties under the National Preparedness for Response Exercise Program (PREP). Participation in these exercises has been on the rise over the past few years with excellent results in terms of team preparedness as well as integration with other parts of the response effort.

Education and Awareness

The salvage team educates COTPs, salvage response industry personnel, and Coast Guard members in salvage readiness and salvage engineering. The team provides training to facilitate real-time technical analysis during a vessel casualty.

Demographics of Our People



The People

The 50 currently assigned personnel at the MSC have a variety of different backgrounds and previous work experiences. Coast Guard Officers primarily come to us from graduate school. Before attending school, many were assigned to Marine Safety Offices or afloat engineering tours. Our civilian engineers have a wide variety of experience in the marine industry. The support staff includes the office automation personnel and our newly expanded Information Resourse Management (IRM) staff of three. The technical portion, of the graphic above, represents staff engineers that perform plan review.

The Education

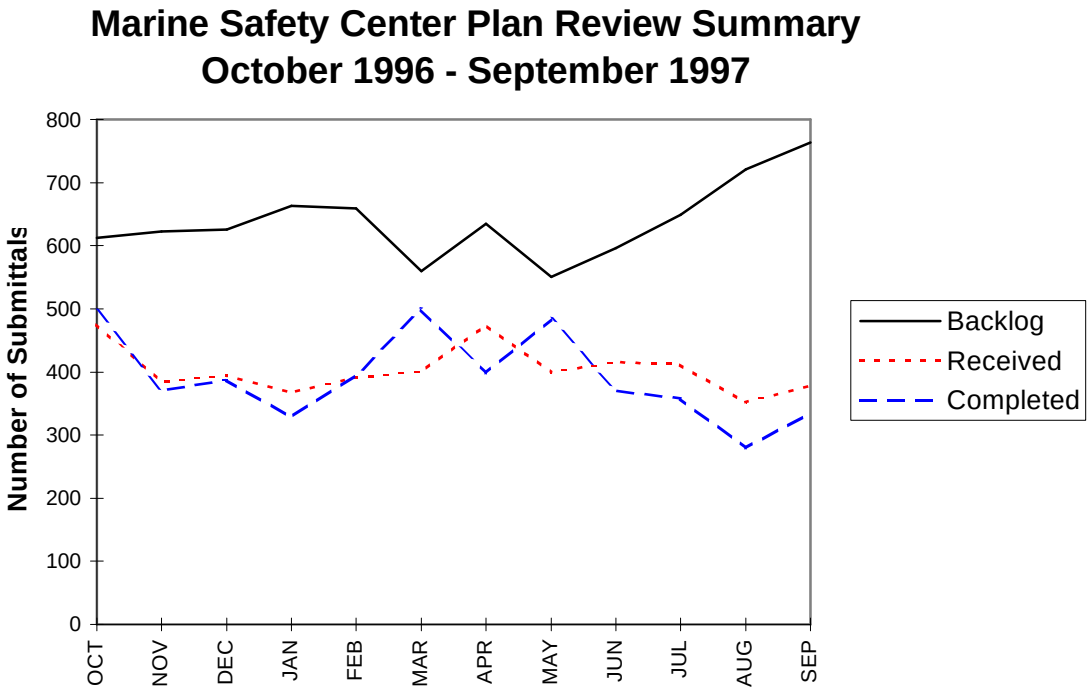
The MSC has 27 engineers with one or more Master's Degrees in the following areas:

Naval Architecture and Marine Engineering
Mechanical Engineering
Civil/Environmental Engineering
Electrical Engineering
Fire Protection Engineering
Chemical Engineering
Business Administration

Professional Engineering Registration

As a testament to the dedication and expertise of our staff, we currently have 5 licensed Professional Engineers in the office, and that number is growing.

Our World of Work


Marine Safety Center Plan Review Summary
October 1996 - September 1997
Number of Submittals
800
700
600
500
400
300
200
100
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
Backlog
Received
Completed

Accomplishments

Pequot Shipyard "SASSACUS" High Speed Craft (HSC) Project

This project marks the first large scale application of the international HSC Code in U.S. commercial shipbuilding. These vessels are classed by Det Norske Veritas, who is actively involved in the plan review process. The Pequot Indian tribe is underwriting the project. The plan is to build a fleet of HSC vessels to ferry New York City passengers to a Connecticut casino and also to sell additional ships abroad. The first vessel has been completed and the keel has been laid on the second of the six planned vessels.

Strategic Sealift Project

The MSC provided plan review support of the conversions and new builds of the RO/RO fleet to be used to pre-position U.S. forces in critical areas throughout the world. Construction is being accomplished at Avondale, Newport News, and NASSCO.

The Safety of Life at Sea (SOLAS) Retroactive Fire Safety Amendments (RFSAs)

The 1992 SOLAS amendments mandate certain safety upgrades to existing passenger vessels. The critical issues include spaces adjacent to stair towers and automatic sprinkler systems. The compliance date for these upgrades is 1 October 1997. Since over 150 vessels are subject to these requirements the MSC anticipated the surge of incoming plans. To prepare for the influx of plans, the MSC shifted personnel resources to offset the projected increase in workload. The MSC also conducted an RFSA workshop to address the industry's technical concerns. By making these adjustments and preparations the MSC decreased the potential impact that the RFSAs could have on our ability to serve the entire spectrum of the marine community.

Barge Buckling Study

As a result of the Buffalo Barge casualties in Galveston, the MSC conducted a comprehensive study into root causes of tank barge structural failure due to buckling. It was the most in-depth study ever performed by the Coast Guard on this issue. As a result of this study, the Coast Guard has issued a new NVIC providing the inland tank barge industry with recommendations for safe cargo loading practices.

Accomplishments (cont.)

Changes to Letter of Compliance (LOC) Program

The MSC implemented a major regulatory change to LOC Program streamlining the application and review process for foreign flag chemical tankships operating in U.S. waters.

Alternate Tonnage Implementation

The Tonnage Survey Branch coordinated development of the first alternate tonnage threshold rulemaking for OSV's, which was published in the Federal Register on December 18, 1996. The 1996 Coast Guard Authorization Act gave the Coast Guard the authority to specify alternate convention tonnage thresholds to the existing thresholds found in Coast Guard related statutes. The intent of the legislation was to provide the marine industry relief from having to rely on tonnage reduction techniques, by allowing vessels to be regulated to higher tonnage thresholds as determined under the convention measurement (ITC) system. Other fleet segments are being addressed by separate rulemakings, whose development is being coordinated at USCG headquarters with the assistance of the MSC.

Partnerships with Industry

The following list are but a few high profile partnerships with industry, formed to provide the best service possible:

Fastship ATLANTIC
Chevron Spar Buoy Tiger Team
Oryx Spar Buoy Project
AMOCO Spar/TLP Project
AMERICA WORLD CITY
ABS Technology Liaison
Arco/Avondale Shipyard Tiger Team
Newport News Double Eagle Tanker Project

Accomplishments (cont.)

MSC's Comprehensive Oversight Program

The MSC performs technical oversight of functions delegated to third party classification societies or entrusted to certification by registered Professional Engineers (P.E.). Many functions are currently delegated to the American Bureau of Shipping (ABS), with other classification societies involved to a much lesser extent. This is expected to change significantly over the next few years as additional classification societies are empowered through the Coast Guard's Alternate Compliance Program. MSC oversight of classification societies is based on a single overall scheme of mutually acceptable written procedures. Oversight of P.E. certified plans is accomplished in accordance with Navigation and Vessel Inspection Circular 10-92 and MSC procedures. Active and open communications between the MSC, ABS and others audited by these activities is key to the success currently enjoyed by this program. Lessons learned have been used to refine activities and prepare for greatly expanded activities in the future.

Salvage Team

The MSC Salvage Team responds to ship casualties 24 hours a day, 7 days a week. As the Captain of the Port's (COTP's) salvage consultant, the team assists the field offices in dealing with collisions, groundings, capsizings, and fires. The salvage team receives an average of 4-6 calls per month from MSOs requesting assistance. A few recent cases are listed below.

NORTH CAPE - Grounded barge, Rhode Island.
BUFFALO 292/286 - Buckled barges, Houston/Galveston.
JULIE N - Tankship allided with bridge, Portland, Maine.
IGLOO MOON - Compressed gas vessel grounding, Miami.
TOPAZ - Chemical tankship grounding in Savannah.
FORMOSA SIX - Tankship collision, New Orleans.
COASTAL EAGLE POINT - Tankship grounding, Tampa.
BELL 157 - Capsized barge, 2 crew casualties.

Initiatives

High Speed Craft (HSC) Implementation QAT

The MSC is actively participating in a Quality Action Team(QAT) that is working on the development of U.S. interpretations needed to implement the new International Maritime Organization (IMO) HSC Code.

Water Mist Fire Extinguishing Systems

The MSC is working closely with HQ on development of policy and review procedures of this new fixed fire fighting technology.

Revisions to Vessel Vapor Control System (VCS) Regulations

The MSC is working as a member of joint CG/industry team under charter of Chemical Transportation Advisory Committee (CTAC) to review existing VCS regulations and make recommendations for regulatory revisions.

Prevention Through People Initiative with Inland Tankbarge Industry

The MSC is working as a member of joint CG/industry team under charter of CTAC to review Tankbarge Certificates of Inspection and develop recommendations to modify the method and contents of endorsements to reduce the potential for human error.

Baldrige Management System

The MSC has conducted a self assessment and identified gaps against the Baldrige Criteria. The current Baldrige score is 216 points out of a possible 1,000. Project Plans have been created to close priority gaps to achieve the following Baldrige target scores: 1998: 350 points; 1999: 450 points; 2000: 600+ points. MSC project team members are currently working on completing milestones identified for the current fiscal year. Achieving these targets will help the MSC compete successfully for the Commandant's Quality Award in 1999 and the President's Award in 2000.

Initiatives (cont.)

Strategic Planning

The MSC Quality Management Board (QMB) has identified the priority issues, Key Success Factors and primary strategies of its strategic plan. The focus of the plan is to reengineer the core process of plan review using a risk based approach. This approach will not only allow the MSC to quantify the value of its activities in terms of reduction in risk to life, property and the environment, but will provide a mechanism to systematically improve the process of plan review.

ISO 9000

A cross-functional team has evaluated the cost/benefits for the MSC obtaining ISO certification. Based on the team's recommendation, the MSC has established a long term goal (3-5 years) for ISO-9002 compliance, beginning now with documenting core processes and coordinating ISO activities with current Baldrige priorities.

EITS (Engineering Information Technology System)

The MSC is in the process of procuring a new computer system capable of performing the highly technical review and analysis of commercial vessel designs. The upgrade includes the installation of Standard Workstation (SWS) III, extending its capabilities in the areas of scanning, printing, and video interface that will enable more thorough, timely, and accurate design reviews, aid customer interaction, and provide a sustainable infrastructure.

MASCOT Replacement

(Marine Safety Center Office Tracking System)
The MSC is evaluating the options for replacement of its document and project management software. The primary purposes of MASCOT are correspondence tracking, time keeping, and project management. This system will undergo modifications in conjunction with the move to our new computer system. The MSC is currently exploring various possibilities to upgrade/modify MASCOT in preparation to the switch to SWS III. Improvements in system speed, user input/output flexibility, and the ability to track various key management indicators are among the improvements that will be incorporated into the next revision of MASCOT.

Initiatives (cont.)

Policy Tracking System

The MSC is developing a policy tracking system that will make its written policy more consistent, available, and accurate. To perform it's primary mission, the MSC applies, interprets, and develops commercial vessel design review policy. The policy is currently captured in a complicated and often confusing variety of written guidance. Reliance on this policy has grown as technology outpaces the regulations and precedent setting decisions are made. In the interest of providing consistent, accurate, and timely policy interpretations to our maritime industry customers, a Quality Action Team (QAT) was formed in 1995 to investigate possible solutions. This QAT identified several commercial-off-the-shelf applications which identify, document, distribute, store, and retrieve electronic documents. This allows the staff engineers, doing the work real-time, fingertip access to policy information from many sources. This system is planned as an integral part of the EITS/SWS III computer upgrade.

Tonnage Technical Policy

A Tonnage Technical Policy document is being developed to provide interpretive guidance and serve as a centralized source of all tonnage policy. The document will be posted on the MSC web site when completed The first part of this document, addressing the convention measurement system, is targeted for release in early 1998.

Electronic Commerce

The MSC is gearing up to begin preliminary acceptance of plans in an electronic format. The electronic transmission, routing, reviewing, and distribution of electronic Computer Aided Design (CAD) drawings, instead of paper drawings, can mean time and cost savings for the MSC and its submitters. Teams have been formed at the American Bureau of Shipping (ABS) and the MSC to help facilitate the transition to electronic forms of communication, including plan submission, electronic storage, and video conferencing capabilities. By the end of the calendar year, the MSC is planning to begin preliminary acceptance of electronic drawings from ABS. Electronic submissions from other submitters will follow shortly.