



April 2020

VESSEL SAFETY

The Coast Guard Conducts Recurrent Inspections and Has Issued Guidance to Address Emergency Preparedness

Accessible Version

GAO Highlights

Highlights of [GAO-20-459](#), a report to congressional committees

Why GAO Did This Study

In October 2015, the U.S. cargo vessel *EL FARO* sank after encountering heavy seas and winds from Hurricane Joaquin, killing all 33 crew members. Subsequent investigations cited deficiencies in the vessel's SMS plans as a factor that may have contributed to the vessel's sinking. Some in Congress have raised questions about the effectiveness of vessel SMS plans and the Coast Guard's oversight of third parties responsible for ensuring vessels comply with international standards and federal regulations.

The Hamm Alert Maritime Safety Act of 2018 included a provision for GAO to review Coast Guard oversight and enforcement of vessel SMS plans. Accordingly, this report addresses (1) how the Coast Guard (a) verifies domestic commercial vessels' SMS plans comply with federal regulations and (b) conducts oversight of ROs, and (2) the extent to which domestic vessels' SMS plans identify potential shipboard emergencies and include applicable response procedures.

To address these objectives, GAO reviewed Coast Guard regulations and guidance, accompanied marine inspectors on vessel inspections and audits, and analyzed available data on identified vessel deficiencies. GAO also reviewed the format and content of a nongeneralizable sample of 12 SMS plans representing various types of vessels and interviewed relevant Coast Guard and RO officials.

View [GAO-20-459](#). For more information, contact Nathan Anderson at (206) 287-4804 or AndersonN@gao.gov.

April 2020

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The Coast Guard Conducts Recurrent Inspections and Has Issued Guidance to Address Emergency Preparedness

What GAO Found

The Coast Guard verifies that domestic commercial vessels comply with safety management system (SMS) requirements through activities that include conducting annual inspections of applicable U.S.-flagged vessels. In practice, the Coast Guard delegates primary vessel SMS compliance activities to third party entities, called Recognized Organizations (ROs). Among their responsibilities, ROs coordinate with vessel operators to review SMS plans, issue applicable vessel certificates, and conduct SMS compliance audits at the company level and aboard each vessel. Because the Coast Guard relies on ROs to perform SMS certification services on its behalf, it has initiated a series of efforts to enhance its oversight of ROs since 2018. The efforts include:

- establishing a new group within the Coast Guard to monitor ROs,
- developing new SMS-related guidance and work instructions,
- increasing direct observations of ROs performing SMS audits,
- developing key performance indicators for assessing ROs, and
- requesting internal investigations for certain RO deficiencies.

It is too soon to assess the effectiveness of these efforts; however, GAO believes these are positive steps toward enhancing the Coast Guard's oversight of ROs.

A Coast Guard Marine Inspector Conducting a Vessel Inspection



Source: U.S. Coast Guard. | GAO-20-459

Each of the 12 domestic vessel SMS plans GAO reviewed include potential shipboard emergencies and applicable response procedures to address them. None of the plans address all 21 potential shipboard emergencies included in 2018 Coast Guard guidance. However, these 21 potential emergencies are not required to be included in SMS plans; rather, they are suggested as part of the 2018 guidance. Further, GAO found that the SMS plans may not address all potential shipboard emergencies because not all emergency scenarios are applicable for each type of vessel or geographical operating area. Also, vessel operators may still be in the process of revising their SMS plans to include additional emergency scenarios and applicable response procedures.

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Abbreviations

CVC	Commercial Vessel Compliance
IACS	International Association of Classification Societies
ISM	international safety management
NTSB	National Transportation Safety Board
SMS	safety management system
RO	Recognized Organization

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April 8, 2020

The Honorable Roger F. Wicker
Chairman
The Honorable Maria Cantwell
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate
The Honorable Peter A. DeFazio
Chairman
The Honorable Sam Graves
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives

In October 2015, all 33 crew members of the U.S.-flagged cargo vessel *EL FARO* were killed when the ship encountered heavy winds and seas produced by Hurricane Joaquin and sank en route to Puerto Rico.¹ Subsequent investigations by the National Transportation Safety Board² and the U.S. Coast Guard cited deficiencies in the vessel's safety management system (SMS) as a factor that may have contributed to the vessel's sinking and the loss of lives.³ In its 2017 report, the National Transportation Safety Board also cited ongoing concerns regarding the Coast Guard's reliance on third-party organizations to carry out some of its vessel safety responsibilities. As a result of the *EL FARO* incident, some in Congress have raised questions about the effectiveness of SMS plans and the Coast Guard's oversight of third parties responsible for

¹ The flag state of a vessel is the jurisdiction under whose laws the vessel is registered or licensed, and is deemed the nationality of the vessel.

² The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation – railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents.

³National Transportation Safety Board, *Marine Accident Report: Sinking of U.S. Cargo Vessel SS El Faro, Atlantic Ocean, Northeast of Acklins and Crooked Island, Bahamas, October 1, 2015*. NTSB/MAR-17/01 (Washington D.C.: Dec. 12, 2017); U.S. Coast Guard, *Marine Board's Report: Steam Ship EL FARO (O.N. 561732) Sinking and Loss of the Vessel With 33 Persons Missing and Presumed Deceased Northeast of Acklins and Crooked Island, Bahamas on October 1, 2015*, (Washington D.C.: Sept. 24, 2017).

ensuring that SMS plans for applicable U.S.-flagged vessels are in compliance with relevant international standards and federal regulations.

The International Safety Management (ISM) Code was established in the 1990s to provide an international standard for the safe management and operation of ships and for pollution prevention. The ISM Code requires ship owners to maintain an SMS that, among other things, spells out safety procedures and guides ship operations in emergency situations.⁴ These procedures are to be documented and compiled in a Safety Management Manual, a copy of which is to be kept onboard the vessel.

The Coast Guard is the lead federal agency responsible for ensuring that applicable U.S.-flagged vessels comply with the ISM Code by maintaining and implementing an SMS that aligns with domestic regulations. In practice, the Coast Guard delegates principal SMS compliance activities to third-party entities, called Recognized Organizations (ROs), as authorized by federal law.⁵ Among their responsibilities, ROs are to coordinate with vessel operators to review SMS plans, issue applicable vessel certificates, and conduct SMS compliance audits at the company level and aboard each vessel. To provide oversight and help ensure that ROs are fulfilling their authorized roles, the Coast Guard also conducts its own SMS compliance verifications as part of annual vessel inspections aboard U.S.-flagged vessels, among other activities.

The Hamm Alert Maritime Safety Act of 2018 includes a provision that GAO review the implementation and effectiveness of the Coast Guard's oversight and enforcement of SMS plans and evaluate the effectiveness of the plans to address the impact of heavy weather.⁶ This report responds to that provision and, in particular, addresses the following research objectives:

(1) How does the Coast Guard (a) verify that domestic commercial vessels' SMS plans comply with federal regulations and (b) conduct oversight of ROs?

⁴ International Maritime Organization, *International Safety Management Code (2018 ed.)* (London: Apr. 1, 2018).

⁵ 33 U.S.C. § 3316.

⁶ Pub. L. No. 115-265, § 205, 132 Stat. 3742, 3745-6.

(2) To what extent do domestic commercial vessels' SMS plans identify the potential for specific shipboard emergencies and include applicable response procedures?

To determine how the Coast Guard verifies that domestic commercial vessels' SMS plans comply with federal regulations and conducts related oversight of ROs, we reviewed and analyzed relevant Coast Guard regulations, policies, and guidance to identify the key processes and standards to be used for (1) evaluating SMS compliance during vessel inspections, (2) documenting any deficiencies and taking applicable enforcement actions, and (3) conducting oversight of ROs responsible for SMS certifications and associated audits. We also reviewed relevant criteria, such as the International Safety Management Code, as well as related guidelines issued by the International Maritime Organization⁷ and the International Association of Classification Societies.⁸ We also obtained information from the Coast Guard's Marine Information and Safety Law Enforcement database to identify the total number of SMS deficiencies cited for U.S.-flagged vessels since April 2018 (when the Coast Guard reported it began to collect such data). In addition, we observed the Coast Guard performing two annual vessel inspections and conducting oversight of an RO during an annual company SMS audit. These observations cannot be generalized across all vessel inspections, but they provided us with first-hand information on the procedures used and the standards applied by the ROs. Further, we interviewed relevant Coast Guard officials and representatives of two ROs—the American Bureau of Shipping and DNV-GL—that, collectively, account for over 99 percent of the SMS certificates issued to U.S.-flagged vessels on the Coast Guard's behalf.⁹

⁷ The International Maritime Organization is the United Nations' specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.

⁸ The International Associations of Classification Societies is a not-for-profit membership organization of classification societies that establish minimum technical standards and requirements that address maritime safety and environmental protection and ensures their consistent application.

⁹ According to Coast Guard data in 2019, the American Bureau of Shipping performs approximately 97 percent of the ISM Code certification services for applicable U.S.-flagged commercial vessels. DNV-GL is an international accredited classification society headquartered in Norway. DNV-GL conducted ISM certification services on approximately 30 U.S.-flagged vessels (2.6 percent) in 2019.

To determine the extent to which SMS plans for domestic commercial vessels identify the potential for specific shipboard emergencies and include applicable response procedures, we obtained and reviewed a nongeneralizable sample of 12 SMS plans representing five different vessel types (general cargo/container, chemical/oil carrier, offshore supply/support, towing/tugboats, and passenger ferries).¹⁰ To develop the SMS plans sample, we obtained data from the Coast Guard identifying all U.S.-flagged commercial vessels with a valid Safety Management Certificate¹¹ and grouped these into the five unique vessel types identified above. We then used a random number generator to assign a value to all vessels in each category and then sorted these lists from the highest to the lowest number. We used this sorted list to select the top four to five vessels from each category, for a total of 25 vessels. We determined that the American Bureau of Shipping performs ISM certification services for each of these 25 vessels, so we also selected three additional vessels serviced by DNV-GL using the same random selection process to provide us with information on a second RO.

Given that the Coast Guard reported it does not maintain SMS plan documents and that the plans may contain sensitive, proprietary information, we worked through the American Bureau of Shipping and DNV-GL to obtain copies of the SMS plans from the vessel operators on our behalf. We received 11 SMS plans (or applicable excerpts) from the American Bureau of Shipping representing 18 of the 25 vessels selected.¹² We also received one additional SMS plan from DNV-GL for a total of 12 in our review sample. We reviewed each of these plans to evaluate the extent to which they address the 21 specific shipboard emergency scenarios contained in guidance issued by the Coast Guard in April 2018.¹³ Results from our nongeneralizable sample cannot be used to make inferences about the population of all SMS plans. However, we believe that information from these SMS plans, combined with interviews

¹⁰ Data provided by the Coast Guard indicate there were approximately 80 companies that maintained an SMS plan for applicable vessels in 2019. This total does not include companies that were operating with an interim Safety Management Certificate or those that maintain a Safety Management Certificate on a voluntary basis.

¹¹ A Safety Management Certificate is a document issued to a vessel that signifies that the responsible person or its company and the vessel's shipboard management operate in accordance with the approved safety management system.

¹² The same SMS documents may cover multiple vessels of a similar type that are operated by the same company.

¹³ Coast Guard Work Instruction: CVC-WI-004 (1), *U.S. Flag Interpretations on the ISM Code*, April 2018.

conducted with Coast Guard and RO officials, provide useful insights into the general composition of SMS plans and the extent that potential emergency scenarios may be addressed within these plans across a range of different vessel types.

We conducted this performance audit from June 2019 to April 2020 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

International Safety Management (ISM) Code and Safety Management System (SMS) Requirements

The ISM Code was established to provide an international standard for the safe management and operation of ships and for pollution prevention. The code establishes safety management objectives, such as preventing human injury or loss of life, and identifies a framework of key elements required to be considered for inclusion in an SMS. According to the ISM Code, each vessel operator should develop, implement, and maintain an SMS that is to include functional requirements, such as procedures to prepare for and respond to emergency situations.¹⁴ An SMS is typically not a single plan and can take different forms. It is up to the vessel operator to determine how best to operationalize these requirements. The SMS plan documents generally contain proprietary information and are not retained by the Coast Guard or the ROs performing services on the Coast Guard's behalf.

¹⁴ These international provisions have been codified into U.S. statute and regulation. See 46 U.S.C. ch. 32; 33 C.F.R. part 96. The six functional requirements identified in the ISM Code include the following: a safety and environmental protection policy; instructions and procedures to ensure safe operation of ships and protection of the environment in compliance with relevant international and flag state law; defined levels of authority and lines of communication between, and amongst, shore and shipboard personnel; procedures for reporting accidents and nonconformities with the provisions of this code; procedures to prepare for and respond to emergency situations; and procedures for internal audits and management reviews. 46 U.S.C. § 3203(a).

Key Entities Involved in Vessel SMS Activities

There are three key entities involved in vessel SMS activities—vessel operators, ROs, and the U.S. Coast Guard. These entities' SMS responsibilities are described below.

Vessel Operators

Vessel operators are responsible for developing an SMS in accordance with ISM Code requirements if they operate U.S.-flagged vessels that are subject to the ISM Code, such as a vessel engaged in a foreign voyage that is carrying more than 12 passengers, or a tanker or freight vessel of at least 500 gross tons, among other vessel types.¹⁵ Vessel operators are required to perform an internal audit of their company's SMS each year to ensure it is being implemented effectively. Vessel operators are also responsible for obtaining the requisite evidence that the company and each of its applicable vessels are in compliance with the ISM Code. In practice, this means that the vessel operators obtain certification from ROs, which are described below. According to the Coast Guard, there were approximately 1,170 U.S.-flagged vessels that maintained SMS certifications in 2019.¹⁶

Recognized Organizations

An RO refers to an international classification society authorized by the Coast Guard to conduct applicable vessel oversight and certification services on its behalf.¹⁷ The Coast Guard has authorized several ROs to conduct SMS audits and issue applicable certificates, but over 95 percent

¹⁵ 46 U.S.C. § 3202. Some vessels are not subject to the ISM Code, such as public vessels or recreational vessels used in noncommercial service, fishing vessels, and vessels operating on the Great Lakes.

¹⁶ Approximately 600 of these vessels were not statutorily required to obtain SMS certification but did so on a voluntary basis. These vessels may include navy vessels that are part of the Military Sealift Command or vessels enrolled in the Alternate Compliance Program. The Alternate Compliance Program is a voluntary program intended to reduce duplicative surveys/inspections by leveraging the certification services performed by ROs. Compliance with the ISM Code is required for all vessels enrolled in this program, regardless of whether a vessel engages in an international voyage.

¹⁷ A classification society is an organization that develops official standards for the shipping industry and checks the condition of ships and their equipment to verify they are safe and meet the official standards of the shipping industry.

of these vessel oversight and compliance activities are conducted by a single RO, the American Bureau of Shipping. ROs have to meet specific requirements for authorization, such as making information about vessel class and inspections available to the Coast Guard.¹⁸ In order to be authorized, the RO needs to have been an international classification society for 30 years and have a history of taking appropriate corrective actions in addressing, among other things, vessel deficiencies.¹⁹

ROs are to conduct the following SMS activities on the Coast Guard's behalf:²⁰

- review SMS documents and conduct initial company and vessel audits to verify compliance with the ISM Code and applicable national and international requirements;
- issue a Document of Compliance to the vessel operator and a Safety Management Certificate for the vessel, which is valid for up to 5 years;
- conduct annual SMS compliance audits of the vessel operator;
- conduct an intermediate SMS compliance audit for the vessel at least once during the 5-year period; and
- conduct renewal SMS compliance audits of vessel operator and vessel(s) prior to expiration of the 5-year certificate.

U.S. Coast Guard

The U.S. Coast Guard is ultimately responsible for guaranteeing the effectiveness of SMS compliance activities and audits that ROs perform on its behalf. The Coast Guard's oversight activities of ROs are conducted by the Office of Commercial Vessel Compliance. This office oversees a range of different activities to help ensure SMS compliance with the ISM Code and applicable federal regulations. Such activities include managing the commercial vessel inspection program, developing related guidance, and overseeing SMS audits and related activities performed by ROs. In addition to oversight provided by officials at Coast Guard headquarters, marine inspectors within local Coast Guard field

¹⁸ 46 C.F.R. § 8.130.

¹⁹ 46 C.F.R. § 8.230.

²⁰ See appendix I for further information on the key roles and responsibilities of ROs related to safety management certification services.

units are also responsible for conducting vessel inspections, which routinely include assessing SMS effectiveness for applicable vessels.

The Coast Guard Verifies SMS Compliance through Recurrent Vessel Inspections and Has Initiated Additional Oversight of Third Parties

The Coast Guard Verifies SMS Compliance through Recurrent Inspections of Applicable U.S.-Flagged Vessels

The Coast Guard verifies SMS compliance as part of its overall vessel compliance activities, such as conducting annual inspections of applicable U.S.-flagged vessels. According to the Coast Guard, recurrent vessel inspections are important opportunities for its marine inspectors to verify the effectiveness of the vessels' SMS, even if SMS oversight is not the primary purpose of the vessel inspections. When conducting an annual vessel inspection, Coast Guard marine inspectors are to look for material deficiencies, such as poor condition of vessel structures, missing or defective equipment, or hazardous conditions that could indicate a potential SMS nonconformity.²¹ According to Coast Guard officials, marine inspectors routinely review the Coast Guard's internal database for a record of any past deficiencies and are to inspect the vessel's SMS documentation to determine if the Safety Management Certificate is up-to-date and the drill logs are current, among other things. The Coast Guard advises vessel operators to self-report or, in other words, proactively manage their vessels and report any deficiencies identified by the vessel's crew and report them at the beginning of any Coast Guard inspection.

When conducting an annual vessel inspection, Coast Guard marine inspectors are to follow a five-step process to identify any SMS-related deficiencies, determine if there are clear grounds for an expanded vessel inspection, and specify any applicable compliance options. The process requires distinguishing between normal wear and tear to the vessel and deficiencies that could be the result of failures to implement an effective SMS. (See appendix II for further details on this five-step process.) A

²¹ According to Coast Guard guidance, a deficiency is not designated as a "nonconformity" until an external SMS verification has been completed and the RO verifies the item is not in accordance with the applicable requirement.

more in-depth inspection, if warranted, may include a review of maintenance schedules and records, crew training records and certifications, emergency procedures, and associated interviews with the vessel master and crew. Marine inspectors are to record any identified deficiencies on a Form 835V, which specifies the time frames and procedures required to address the identified deficiencies. See figure 1 for a blank copy of the Form 835V.

Figure 1: Copy of a Blank Coast Guard Form 835V Used for Documenting Deficiencies Observed during Vessel Inspections

DEPARTMENT OF HOMELAND SECURITY U.S. Coast Guard VESSEL INSPECTION REQUIREMENTS							
1. Date of Inspection		2. COTP/OCMI Zone/Unit		3. MISLE Activity Number		4. ON/IMO#	
5. Vessel Name				6. Inspection Type			
7. Alternate Inspection Program: <input type="checkbox"/> ACP <input type="checkbox"/> MSP <input type="checkbox"/> MSP Select <input type="checkbox"/> TSMS <input type="checkbox"/> SIP/TBSIP <input type="checkbox"/> N/A - Traditionally Inspected							
Nature of Deficiency: The vessel representative must inform the Recognized Organization, the Coast Guard, and/or the Streamlined Inspection Program (SIP/TBSIP) Coordinator, as applicable, when the following item(s) have been corrected. Note: "RO" includes ROs (33 CFR 96), Authorized Classification Societies (46 CFR 8), and Third Party Organizations (46 CFR 139).							
8. No.	Deficiency Code	Description	Cite	Action Code	SMS Related	Self Re-ported	Work List Item
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Copy Provided to:				Signature: _____			
(Printed name of vessel representative)							
Phone Number: _____ Email: _____							
Name of MI:				Signature: _____			
(Printed name of qualified marine inspector)							
Phone Number: _____ Email: _____							
10. Copies forward to - check as appropriate: <input type="checkbox"/> OTHER: _____							
<input type="checkbox"/> Vessel Owner <input type="checkbox"/> PSC Authority <input type="checkbox"/> RO <input type="checkbox"/> COMDT (CG-CVC) <input type="checkbox"/> CG-5P-TI <input type="checkbox"/> CG District: _____ <input type="checkbox"/> CG Area: _____							
Codes for action taken, see below (Note: code numbers are derived from international harmonization; U.S. uses similar codes and those are reflected below.)							
10	Deficiency Rectified	60	Rectify deficiencies prior to movement	66	Prior to drilling or production operations	ACTION CODE	
15	Rectify deficiencies by next port	40	Rectify deficiencies prior to next US port after sailing foreign	701	Prior to carriage of passengers/cargo	a	To the satisfaction of RO
16	Rectify deficiencies w/in 14 days	30	Ship detained	702	Prior to embarking on International Voyage	c	To the satisfaction of the Coast Guard
50	Rectify deficiencies w/in 30 days	20	Ship expelled	703	Prior to bunkering operations	d	To the satisfaction of the SIP/TBSIP coordinator
17	Rectify deficiencies prior to departure	25	Ship denied entry	705	Other:		

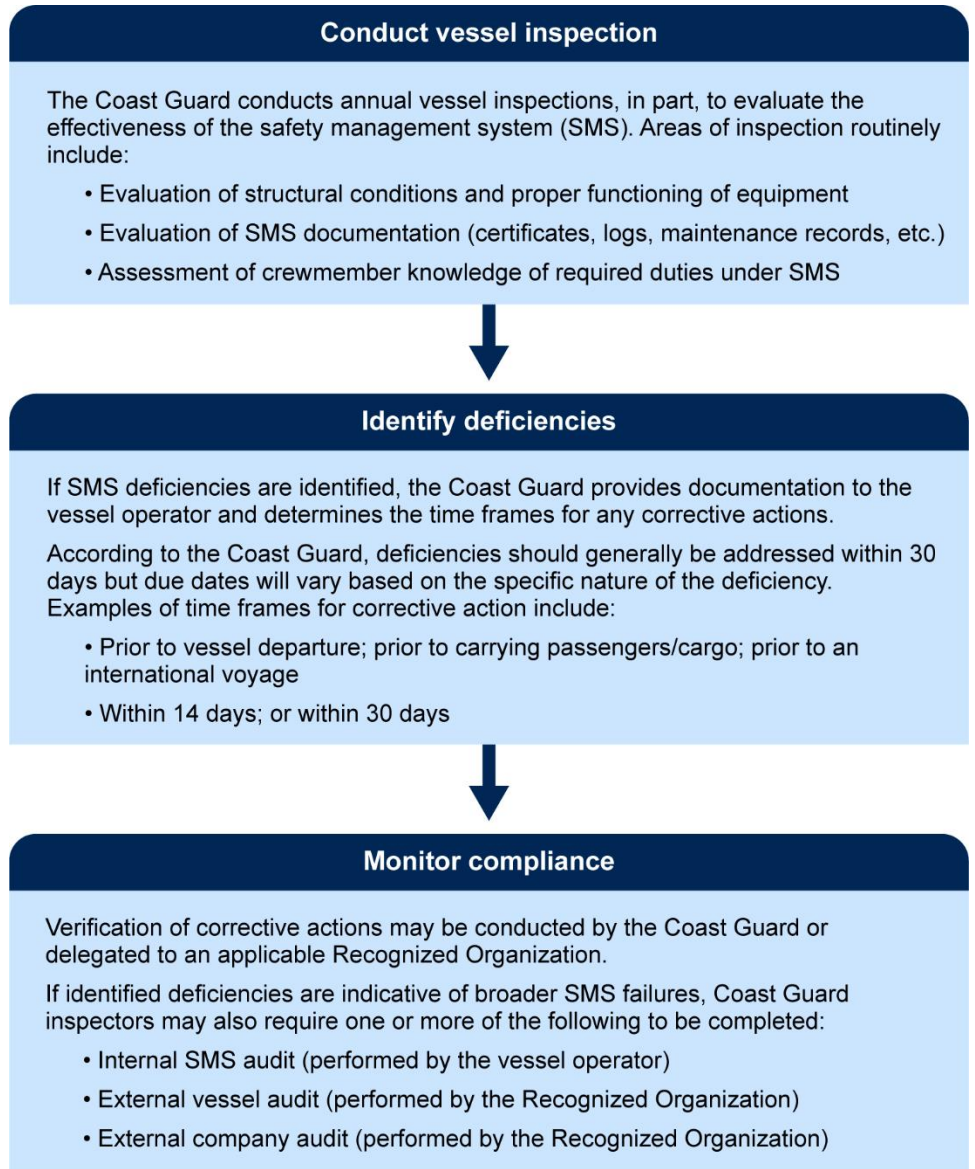
The Coast Guard uses a range of options for addressing SMS-related deficiencies. Some deficiencies, such as improperly secured wiring or missing documentation, can sometimes be corrected by the vessel's crew during the course of a Coast Guard inspection. According to Coast Guard guidance, if marine inspectors identify serious deficiencies that could

indicate broader SMS failures, such as an absence of required equipment or failure by the company to notify the Coast Guard of reportable marine casualties²² and hazards, the inspectors record an SMS-related deficiency and require an internal SMS audit. An internal SMS audit is for technical or operational deficiencies that individually or collectively do not warrant the detention of the vessel but indicate a failure or lack of effectiveness of the SMS. The internal SMS audit and any corrective actions are to be completed by the vessel operator within three months from the date of the Coast Guard vessel inspection.

If during the course of a vessel inspection Coast Guard inspectors observe more serious deficiencies or failures, such as defective or missing fire-fighting or life-saving equipment, the vessel is to be detained and an external audit is to be performed by the RO prior to the vessel being released from detention. Figure 2 shows the Coast Guard's process for ensuring SMS compliance during vessel inspections.

²² A marine casualty is an accident involving a vessel. Examples of marine casualties include collisions, groundings, and incidents involving significant harm to the environment.

Figure 2: The Coast Guard's Process for Ensuring Compliance of Safety Management Systems during Annual Vessel Inspections



Source: GAO analysis of information provided by the U.S. Coast Guard. | GAO-20-459

The Coast Guard Conducts Additional SMS Oversight of Vessels Designated as Higher Risk

In addition to the annual vessel inspections it conducts, the Coast Guard also maintains a list of vessels that require additional oversight, referred to as the “fleet risk index.” The Coast Guard Office of Commercial Vessel Compliance evaluates vessels enrolled in the Alternate Compliance Program and the Maritime Security Program to develop the fleet risk index using modeling that considers and weighs multiple risk factors to assign each vessel a risk score.²³ This list is used internally by Coast Guard inspectors when prioritizing vessels for additional oversight and more frequent inspections. Assessed risk factors include vessel detentions, marine violations/enforcement actions, vessel deficiencies, vessel type, and vessel age, among others. According to Coast Guard officials, the Coast Guard uses the fleet risk index to identify approximately 50 vessels each year that are subject to inspections every 6 months rather than annually.

In 2018, the Coast Guard stipulated that traveling inspectors would accompany the local inspection team to conduct all inspections aboard vessels designated for additional oversight. According to Coast Guard officials, traveling inspectors have additional training and inspection expertise, including supplemental coursework in auditing and quality management systems, and they routinely conduct additional background research on these vessels prior to participating in the inspections.

Results of the Coast Guard’s Vessel SMS Compliance Activities for 2018 and 2019

Based, in part, on recommendations in the EL FARO investigative report, in 2018 the Coast Guard took steps to improve its management of the Alternate Compliance Program, including efforts to improve data reporting. For example, the Coast Guard revised its form for documenting deficiencies during annual vessel inspections. In particular, since March 2018, the Form 835V has included a checkbox to indicate if a deficiency is related to an SMS. According to the Coast Guard, this revision will

²³ The Coast Guard’s Alternative Compliance Program is a voluntary program intended to reduce duplicative surveys or inspections by leveraging the certification services performed by ROs. The Maritime Security Program is a program whereby certain categories of militarily useful U.S. commercial vessels may be designated for emergency service to carry military cargo in time of war, national emergency, or military contingency. In 2019, there were approximately 422 vessel enrolled in the Alternative Compliance Program and 76 vessels enrolled in the Maritime Security Program.

allow for enhanced annual reporting of safety-related deficiencies identified during compliance activities.

The Coast Guard reported it conducts approximately 1,200 inspections each year of vessels that are either required to maintain a Safety Management Certificate, or do so voluntarily. According to the Coast Guard,

- in calendar year 2018, the Coast Guard issued between 70 and 130 SMS-related deficiencies (reporting available for April through December only),²⁴ and
- for calendar year 2019, the Coast Guard issued between 183 and 212 SMS-related deficiencies.

Given the limited data and time frames available, we were not able to identify any trends regarding SMS deficiencies. However, we noted that the highest number of safety-related deficiencies cited in 2019 were related to maintenance of vessels and equipment—43 of the 212 annual deficiencies. The second-highest number of deficiencies addressed issues related to emergency preparedness—37 of the 212 annual deficiencies. Some specific examples in this category relate to the posting of applicable emergency instructions and providing updated records of emergency drills. According to Coast Guard headquarters officials, the Coast Guard plans to review and assess the SMS deficiency data to provide feedback to inspectors, vessel operators, and ROs. The officials also stated that SMS deficiencies will be included in future risk-based vessel inspection programs, including the fleet risk index discussed earlier.

The Coast Guard Has Initiated Efforts to Enhance Its Oversight of ROs Since 2018

Following the investigative reports of the EL FARO sinking, the Coast Guard initiated several efforts in 2018 to enhance oversight of the ROs

²⁴ According to Coast Guard officials, a range is provided because not all of the vessels that were issued safety-related deficiencies via the checkbox on the Form 835V within the Marine Information for Safety and Law Enforcement database are required to maintain a Safety Management Certificate. The officials reported that the checkbox is still a relatively new function within the Marine Information for Safety and Law Enforcement database and the Coast Guard is continuing to refine its business processes to develop repeatable data extracts.

that perform SMS-related services and certifications on its behalf. These efforts were largely driven by actions identified by the Commandant of the Coast Guard in December 2017 in response to EL FARO investigative report recommendations. In particular, the Coast Guard established a new group to monitor ROs, developed new SMS-related guidance and associated work instructions, increased direct observations of ROs, developed key performance indicators, and developed guidance to request internal investigations for certain RO deficiencies.²⁵ It is too early for us to assess the overall effectiveness of these Coast Guard efforts; however, we believe they are positive steps toward enhancing oversight of ROs. Further information on each of these efforts is provided in the sections that follow.

Established a new group within the Office of Commercial Vessel Compliance. The Coast Guard established a new group within its Office of Commercial Vessel Compliance in 2018 to help monitor the global performance of the U.S.-flagged fleet, provide enhanced oversight of ROs performing vessel safety management functions, and implement any necessary changes to related roles and responsibilities.

Developed SMS-related guidance and work instructions. The Office of Commercial Vessel Compliance developed several new work instructions to help inform mariners, the public, the Coast Guard, and other federal and state regulators in applying SMS-related statutory and regulatory requirements. The following are examples of applicable guidance issued since 2018:

- *CVC-WI-003(1): USCG Oversight of Safety Management Systems on U.S. Flag Vessels* (March 23, 2018). This document contains guidance for assessing the effectiveness of the SMS on U.S.-flagged vessels, including directions for evaluating potential deficiencies and compliance options during the course of a vessel inspection.
- *CVC-WI-004(1): U.S. Flag Interpretations on the ISM Code* (April 16, 2018). This document provides guidance regarding the Coast Guard's interpretations on the application and implementation of the ISM Code.

Increased the number of Coast Guard direct observations of ROs performing vessel and company audits. The Coast Guard reported it

²⁵U.S. Coast Guard, *Steam Ship El Faro (O.N. 561732) Sinking and Loss of the Vessel with 33 Persons Missing and Presumed Deceased Northeast of Acklins and Crooked Island, Bahamas on October 1, 2015*, Action by the Commandant, (December 19, 2017).

has increased the number of direct observations of ROs conducting vessel and company SMS audits since 2018. According to the Coast Guard, audit observations aboard vessels are routinely performed by traveling inspectors. Additionally, staff from the new Commercial Vessel Compliance group are observing an increased number of company audits. This group has eight staff available for direct observations of ROs, all of whom have received training in international auditing and safety management standards. The Coast Guard reported that the number of audit observations attended by the Commercial Vessel Compliance staff increased from three in 2018 to 21 in 2019. According to the Coast Guard, these additional observations serve as a mechanism to provide increased oversight of the ROs and the companies or vessels being audited, as well as to verify that the services provided by ROs are effectively executed in accordance with established requirements.

Developed key performance indicators for assessing ROs. In mid-2018, Coast Guard officials identified 10 key performance indicators to be used to evaluate the performance of ROs. Due, in part, to challenges with collecting and synthesizing the requested data from the different ROs, the Coast Guard reported on limited performance information in the 2018 Domestic Annual Report.²⁶ According to Coast Guard officials, the Coast Guard is working with each of the ROs and the International Association of Classification Societies to standardize the key performance indicator data to better integrate the data into the Coast Guard's data system. The Coast Guard said that it plans to include a subset of the key performance indicators in its 2019 annual report, which is scheduled for issuance in April 2020. See appendix III for more information on these key performance indicators.

Developed guidance for ROs on "quality cases." In May 2018, the Coast Guard also issued guidance that describes a new oversight mechanism, referred to as a "quality case." If a Coast Guard marine inspector observes evidence during the course of a vessel inspection that an RO is not adequately performing its required SMS-related functions, the Coast Guard can request that the RO conduct a root-cause analysis

²⁶ Performance information included in the 2018 report are (1) the number of deficiencies and detentions received by U.S.-flagged vessels during foreign port state control inspections and (2) the number of detentions associated with each RO authorized to issue international certificates. Port state control is the inspection of foreign ships in national ports to verify that the condition of the ship and its equipment comply with the requirements of international regulations and that the ship is manned and operated in compliance with these rules.

to help identify the underlying issue(s). This analysis would generally involve the RO evaluating its quality management system and reporting findings and corrective actions to the Coast Guard. From May 2018 to November 2019, the Coast Guard reported it initiated 13 quality cases; one of which was SMS-related.²⁷

Vessel SMS Plans Address Some of the Potential Shipboard Emergencies and Response Procedures Proposed by Coast Guard Guidance

Each of the 12 SMS plans (or plan excerpts) for U.S.-flagged vessels that we reviewed identify potential shipboard emergencies and applicable response procedures, but they do not address the full range of emergency scenarios included in Coast Guard guidance.²⁸ While the 12 SMS plans do not address all potential emergencies included in Coast Guard guidance, the plans do address the broad, functional requirement to identify potential shipboard emergencies and applicable response procedures to address them, as required by the ISM Code and applicable federal regulations.²⁹ In reviewing the 12 SMS plans, we also found variation among the specific scope and formats of the emergency preparedness sections. Four of the 12 SMS plans are large documents spanning hundreds of pages that incorporate various component manuals. For example, one vessel operator provided a comprehensive SMS plan document of nearly 600 pages that includes six different procedural manuals covering the following issues: Management, Vessel, Safety, Environmental, Cargo Operations, and Emergency Response. For the other eight SMS plans we reviewed, the vessel operators provided us

²⁷ The one SMS-related quality case occurred in 2018. The Coast Guard initiated the case because an RO had failed to address deficiencies that had been previously noted by the Coast Guard. The RO conducted an internal investigation and changed its software to enable automated alerts designed to catch the kind of deficiencies that had gone unaddressed. Based on these corrective actions, the Coast Guard considers the case closed.

²⁸ GAO obtained 12 SMS plans (or applicable excerpts of the emergency procedures section) that collectively represent 19 vessels that were randomly selected among a range of different vessel types (i.e., cargo/container carriers, oil/chemical carriers, offshore support and supply vessels, passenger ferries, and towing vessels).

²⁹ ISM Code (2018); 33 C.F.R. § 96.250.

with either a stand-alone manual specifically addressing shipboard emergency preparedness and response procedures, or individual chapters and excerpts that included this information.³⁰ According to Coast Guard and RO officials, the ISM Code does not require a specific format or level of detail for SMS plans and, rather, allows vessel operators flexibility to choose how they will implement and document SMS requirements based on their specific operations and business processes.

In addition to reviewing the SMS plans for content and format, we also reviewed each of the 12 SMS plans (or excerpts) to determine the extent to which they address 21 different potential shipboard emergencies identified in 2018 Coast Guard guidance related to the application and implementation of the ISM Code³¹ (see table 1). The number of unique, potential shipboard emergency scenarios addressed in the SMS plan documents we reviewed generally range from five to 16.³² Ship routing procedures related to heavy weather, which is an emergency scenario highlighted in the EL FARO investigative report, is clearly identified in five of the 12 SMS plans reviewed. However, one additional SMS plan makes reference to a separate heavy weather plan that was not included in the primary SMS plan documents that we reviewed. The most frequently addressed shipboard emergency scenarios—that are addressed in at least 10 of the 12 SMS plans we reviewed—are Fire, Collision, Grounding, Abandon Ship, and Man Overboard. In addition, 10 of the 12 SMS plans we reviewed also identify additional potential emergency shipboard scenarios not included in the 2018 Coast Guard guidance, such as breakaway from dock, emergency towing, or confined space rescue.

³⁰ Additional details and response procedures for some potential shipboard emergency scenarios may also be included in different manuals or separate plans. For example, six of the 12 SMS plans that we reviewed make reference to a Vessel Response Plan or Vessel Security Plan that may contain additional details related to planning for and responding to potential emergency scenarios.

³¹ *U.S. Flag Interpretations on the ISM Code*, Work Instruction: CVC-WI-004(1), April 16, 2018.

³² Plan excerpts provided by one operator identified a list of eight unique emergency scenarios; however, additional supporting documents were not provided to verify the extent to which all applicable response procedures were developed.

Table 1: Information on Potential Shipboard Emergencies Addressed in 2018 Coast Guard Guidance and the Number of These Emergencies Addressed in a Sample of 12 Safety Management System (SMS) Plans

Potential shipboard emergencies addressed in Coast Guard guidance ^a	Number of sampled SMS plans that address the potential shipboard emergency
Fire	12
Collision	11
Abandon ship	11
Grounding/stranding	10
Man overboard	10
Propulsion failure	9
Structural/flooding/heavy weather damage	9
Steering gear failure	8
Personnel accidents/injuries	8
Electrical power failure	7
Pollution ^b	7
Helicopter/rescue operations	6
Ships routing procedures related to heavy weather	5
Unlawful acts threatening safety/security of the ship ^b	4
Emergency assistance to other vessels	3
Piracy/terrorism/cyber attacks ^b	2
Sailing short or loss of key personnel	2
Cargo-related accidents/shifting of cargo	2
Icing conditions/ice operations (as applicable)	1
Automation or Dynamic Positioning failure	1
Loss of communications with a vessel	0

Source: GAO analysis of the contents of a non-generalizable sample of 12 SMS plans. | GAO-20-459

^a *U.S. Flag Interpretations on the ISM Code*, Work Instruction: CVC-WI-004(1), April 16, 2018. These emergency scenarios are not required to be included in SMS plans; rather, they are suggested as part of 2018 Coast Guard guidance.

^b Additional details regarding these emergency scenarios may be included in different manuals or plans that are not represented in this table. For example, a separate Vessel Response Plan or Shipboard Marine Pollution Emergency Plan is referenced in three of the 12 SMS plans that we reviewed in regard to pollution incidents. Similarly, three of the 12 SMS plans we reviewed make reference to a separate Vessel Security Plan, which may contain additional details related to planning for and responding to scenarios such as piracy or terrorism, or unlawful acts threatening the safety of the ship and security of passengers and crew.

While none of the SMS plans that we reviewed specifically address all 21 potential shipboard emergencies identified in the 2018 Coast Guard guidance, the guidance states that it is not a substitute for applicable legal requirements, nor is it itself a rule. According to officials from the two ROs

with whom we discussed this program, their auditors are provided the 2018 Coast Guard guidance to use as part of their SMS audit criteria.³³ The officials noted, however, that their auditors may be limited to issuing an “observation” to the vessel operator if any potential shipboard emergency listed in Coast Guard guidance is not addressed in SMS plan documents.³⁴ Under the ISM Code, an “observation” is not the same as an SMS “nonconformity,” which would require specific corrective action.³⁵ Officials from one RO noted that any nonconformities identified would need to be based on specified mandatory requirements, such as ISM Code provisions, U.S. statutes, or applicable U.S. or international regulations, and not solely on the 2018 Coast Guard guidance.

In addition to the fact that the emergencies listed in the guidance are not required to be included in SMS plans, there are other factors to explain why the SMS plans we reviewed may not address all 21 potential shipboard emergency scenarios identified in the 2018 Coast Guard guidance. Such factors include the following:

Size and nature of vessel operations. According to RO and Coast Guard officials, not all of the 21 potential shipboard emergency scenarios contained in the 2018 Coast Guard guidance are applicable for each type of vessel or for all geographical operating areas. For example, specific emergency procedures related to piracy or terrorism, cargo-related accidents, helicopter rescue operations, or loss of key personnel may not be necessary for towing vessels, given the nature of their operations, their limited size, and the reduced number of crew required to operate that type of vessel. Similarly, icing conditions would not be expected to be included in the SMS plans for those vessels that operate solely in temperate waters.

Additional time may be needed to incorporate expanded potential shipboard emergency scenarios into existing SMS plans. Although the Coast Guard guidance identifying the 21 potential shipboard

³³ The two ROs, collectively, provide ISM certification services for over 99 percent of U.S.-flagged vessels.

³⁴ An “observation” means a statement of fact made during a safety management audit and substantiated by objective evidence. It may also be a statement made by the auditor referring to a weakness or potential deficiency in the SMS which, if not corrected, may lead to a nonconformity in the future.

³⁵ According to officials from one RO, audit observations are generally used to document areas for continual improvement and additional areas of focus for subsequent audits.

emergency scenarios was issued in April 2018, vessel operators may still be in the process of revising their SMS plans to include additional potential shipboard emergency scenarios and applicable emergency response procedures. For example, we observed that six of the 21 scenarios included in the 2018 Coast Guard guidance are not listed in related guidance provided by the International Association of Classification Societies.³⁶ These six scenarios are among those observed with the lowest frequency during our review of SMS plans. It is feasible that information related to these scenarios—such as loss of key personnel, or loss of communications with a vessel—may exist elsewhere in vessel operators’ SMS documents or in other vessel plans, but not incorporated as potential shipboard emergency response scenarios as proposed in the 2018 Coast Guard guidance. Along these lines, officials from the ROs with whom we spoke also noted that, in accordance with the ISM Code, they routinely use a sampling approach when conducting annual company SMS audits, and would generally not review the entire scope of an SMS plan each year.³⁷ As a result of the sampling process, the annual audits occurring since April 2018 may not have addressed any potential “observations” related to the expanded scope of potential shipboard emergencies included in the Coast Guard guidance for SMS plans.

As noted previously, the ISM Code and corresponding U.S. regulations and Coast Guard guidance allow vessel operators flexibility in how they address SMS functional requirements, including the documentation of potential shipboard emergencies and applicable response procedures in their SMS plans. Following the EL FARO incident, in 2018 the Coast Guard developed guidance to help inform vessel operators and ROs of potential shipboard emergency scenarios to consider. However, similar to the SMS-compliance and oversight practices used by comparable agencies in other developed countries, we found that the Coast Guard does not have a direct role in reviewing or approving vessel SMS plan

³⁶ International Association of Classification Societies (IACS), *IACS Recommendation No. 41, Guidance for IACS Auditors to the ISM Code*, IACS Rec. 1996/Rev.4 2005/Corr.1 2016. These scenarios include: (1) ships routing procedures related to heavy weather, (2) sailing short or loss of key personnel, (3) unlawful acts threatening the safety/security of the ship, (4) icing conditions/ice operations, (5) automation or dynamic positioning failure, and (6) loss of communications with a vessel.

³⁷ Officials from one RO stated that a more complete review of the entire SMS system would be carried out prior to an initial audit of the vessel operator, or if significant changes to the SMS plan were made. Officials representing this RO also noted that auditors would routinely inquire as to whether the operator had considered all potential shipboard emergency scenarios for their applicability and associated risks to their vessels.

documents, including response procedures for potential shipboard emergency scenarios. Rather, as described earlier, the Coast Guard relies on periodic vessel inspections and oversight of ROs that perform more rigorous ISM audits on the Coast Guard's behalf. Although the Coast Guard has taken positive steps since 2018 to develop additional guidance and increase the number of observations of RO audits and inspections, the extent to which these efforts will result in any specific changes to the content of SMS plans by vessel operators in the future is yet to be determined.

Agency Comments

We requested comments on a draft of this report from DHS and the Coast Guard. Officials from the Coast Guard provided technical comments, which we incorporated into the report as appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Homeland Security, the U.S. Coast Guard, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (206) 287-4804 or AndersonN@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix IV.



Nathan Anderson
Director,
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Appendix I: Key Roles and Responsibilities of Recognized Organizations Related to Safety Management Systems

Federal regulations allow the Commandant of the Coast Guard to delegate certain functions to authorized classification societies. In order for a classification society to be recognized by the Coast Guard and receive statutory authority to carry out delegated functions as a Recognized Organization (RO), the classification society must meet certain requirements, including having functioned as an international classification society for at least 30 years and having established a history of appropriate corrective actions in addressing vessel casualties and deficiencies, among other things.¹ With respect to safety management systems (SMS), ROs—once authorized by the Coast Guard—are able to perform SMS-related audits and issue SMS-related certifications and documentation.

The following information summarizes the key roles and responsibilities of ROs related to International Safety Management (ISM) Code certification services and the key activities that ROs perform to fulfill their delegated SMS compliance functions on behalf of the Coast Guard.

Interim verification. When a new company (i.e., vessel owner/operator) is established, or an existing company wants to add a new vessel type to its current Document of Compliance,² the RO is to first verify that the company has an SMS that complies with ISM Code requirements. If the RO determines that the company is in compliance, it issues the company

¹ 46 C.F.R. § 8.230.

² A Document of Compliance is a certificate issued to a company after it satisfactorily passes a safety management audit to verify that it complies with the requirements of the ISM Code governing the safe operation of vessels.

an interim Document of Compliance (which applies to the entire company) that is valid for up to 12 months.

Initial verification. After receiving an interim Document of Compliance, a company applies for ISM Code certification, and an RO conducts an SMS audit of the company's shoreside management system that is to include a visit to the company's physical offices. Following the satisfactory completion of the audit and verification that the company's SMS has been in operation for at least 3 months, the RO would issue the company a Document of Compliance that is valid for 5 years.

After the RO issues the Document of Compliance, the RO is to verify that the company's SMS has been functioning effectively for at least 3 months for each of the vessels for which the company is seeking a Safety Management Certificate.³ A Safety Management Certificate is vessel-specific and may only be issued to a vessel if the company holds a valid Document of Compliance. To perform the initial verification, the RO is to assess each vessel to determine if the company's SMS is being employed effectively on that vessel.

Annual or intermediate verification. The RO is responsible for verifying a company's Document of Compliance every year and for verifying the company's Safety Management Certificates at least once during the 5-year period covered by the issued certificates. ROs generally verify Safety Management Certificates between 2 and 3 years after their issuance. Annual and intermediate verifications are opportunities for the RO to verify whether the company has taken appropriate actions to sufficiently address any deficiencies the RO may have identified during previous audits.

Renewal verification. Up to 3 months before a company's Document of Compliance or a vessel's Safety Management Certificate expires, the RO is to conduct a renewal verification. The renewal verification is to address all elements of the SMS, including activities required under the ISM code.

Additional Verification. The Coast Guard may also require additional verification to ensure that an SMS is functioning effectively—for example,

³ A Safety Management Certificate is a document issued to a vessel that signifies that the responsible person or its company and the vessel's shipboard management operate in accordance with the approved safety management system.

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Recognized Organizations Related to Safety
Management Systems**

to make sure that the company has sufficiently implemented appropriate corrective actions to address any identified deficiencies.

Appendix II: Coast Guard's Process for Evaluating Safety Management System Deficiencies and Corrective Action Options

This appendix provides summary information on the Coast Guard's process for evaluating safety management system (SMS) deficiencies and corrective action options if a Coast Guard marine inspector identifies any SMS-related deficiencies during a vessel inspection.

Table 2: Overview of the Coast Guard's Process for Evaluating Potential Safety Management System (SMS) Deficiencies and Corrective Action Options during Recurrent Vessel Inspections

Initiating factor	<p>Identification of types of vessel deficiencies include the following:</p> <p>Technical: Poor structural condition, oil leaks, defective/missing equipment.</p> <p>Operational: Accidents and hazards not reported to the company, crew not able to satisfactorily conduct demonstrations of emergency equipment or required drills.</p> <p>Documentation: Expired statutory certificates, missing or incomplete entries for drills in the log book, and applicable plans and manuals unavailable or inaccurate.</p> <p>Any identified deficiencies are to be evaluated to determine whether the SMS reasonably should have prevented or otherwise managed the deficiency. According to Coast Guard guidance, a vessel's SMS is operating properly if deficiencies are identified, reported, and corrected in a timely manner.</p>
Clear grounds	<p>Evidence that the vessel, its equipment, or its crew does not substantially conform to requirements, or that the vessel's master or crew members are not familiar with essential shipboard procedures relating to the safety of the vessel or the prevention of pollution.</p> <p>During this phase, the Coast Guard inspector is to distinguish between deficiencies that result from normal operation (e.g., wear and tear, weather, operational environment) and those that are due to failure of the vessel owner or operator to implement an effective SMS.</p>
Expanded examination	<p>A more in-depth inspection that may include a review of vessel maintenance schedules and records, training records and certifications, plans and procedures, and associated interviews with the vessel master and crew.</p>
Objective evidence	<p>Coast Guard inspectors are to collect quantitative or qualitative information, such as records or statements of fact, to serve as the evidence to establish the existence of a deficiency.</p>

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Evaluating Safety Management System
Deficiencies and Corrective Action Options**

Compliance options	<p>Coast Guard inspectors have a range of compliance options that vary based on the nature of any SMS deficiencies observed. These may include immediate corrective action(s) required prior to vessel departure, or corrective action(s) to be verified at a later date by either the Coast Guard or a designated Recognized Organization (RO) operating on its behalf.</p> <p>If identified deficiencies are indicative of broader SMS failures, Coast Guard inspectors may also require the following:</p> <p>Internal SMS audit: For technical or operational deficiencies that individually or collectively do not warrant the detention of the vessel, but indicate a failure or lack of effectiveness of the SMS. This audit is to be performed by the vessel owner /operator.</p> <p>External vessel audit: If objective evidence indicates a serious failure or lack of effectiveness of the SMS, the vessel may be detained and an external audit is to be performed by the RO prior to the vessel being released from detention.</p> <p>External audit of company SMS: This additional audit is to be recommended if related deficiencies indicate a serious failure or lack of effectiveness at the company (owner/operator) level.</p>
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Source: Coast Guard Work Instruction, CVC-WI-003(1), USCG Oversight of Safety Management Systems on U.S. Flag Vessels, March 23, 2018. | GAO-20-459

Appendix III: Key Performance Indicators for Assessing Recognized Organizations

In mid-2018, Coast Guard officials identified 10 key performance indicators to be used to evaluate the performance of Recognized Organizations (RO). Information on these 10 performance indicators is summarized below.

- 1: Number of RO-issued statutory findings divided by the number of statutory surveys conducted (e.g., 100 findings / 10 surveys = 10 Key Performance Indicators).¹
- 2: Number of RO Safety Management Certificate² audit findings divided by the number of Safety Management Certificate audits conducted
- 3: Number of RO Document of Compliance³ audit findings divided by the number of Document of Compliance audits conducted (includes all types of Document of Compliance audits).

¹ A statutory survey is a service conducted by an RO on behalf of a flag administration to verify that a vessel is in compliance with applicable requirements set forth by international and/or national statutes or regulations, such as the International Safety Management (ISM) Code.

² A Safety Management Certificate is a document issued to a vessel that signifies that the responsible company and the vessel's shipboard management operate in accordance with the approved safety management system.

³ A Document of Compliance is a certificate issued to a company after it satisfactorily passes a safety management audit to verify that it complies with the requirements of the ISM Code governing the safe operation of vessels.

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- 4: Number of RO associations to Port State Control Detentions under the Paris and Tokyo Memoranda of Understanding, and Coast Guard Port State Control programs.⁴
- 5: Number of International Association of Classification Societies Procedural Requirement-17s (IACS PR-17) issued divided by the total number of RO applicable surveys conducted.⁵
- 6: Total number of U.S. commercial vessel casualties⁶ divided by the total number of commercial vessels in the U.S. fleet of responsibility.
- 7: Total number of RO nonconformities⁷ issued by the Coast Guard divided by the number of statutory surveys and International Safety Management (ISM) audits conducted.
- 8: Total number of Coast Guard-issued deficiencies⁸ related to statutory certificates divided by the total number of Coast Guard inspections conducted.
- 9: Total number of RO-associated Flag State Detentions divided by the total number of statutory surveys and audits performed.
- 10: Number of Coast Guard-issued ISM-related deficiencies divided by the total number of Coast Guard inspections completed.

⁴ Port State Control is the inspection of foreign ships in national ports to verify that the condition of the ship and its equipment comply with the requirements of international regulations and that the ship is manned and operated in compliance with these rules. Nine regional agreements, or Memoranda of Understanding (MOU) on Port State Control have been signed, including for Europe and the north Atlantic (Paris MOU), and Asia and the Pacific (Tokyo MOU).

⁵ IACS PR-17 refers to a report produced as a result of a vessel survey that documents observed deficiencies that could affect a vessel's implementation of the ISM Code.

⁶ A marine "casualty" refers to an accident or event caused by a vessel that includes, but is not limited to, a fall overboard; injury or loss of life; or an incident resulting in grounding, collision, flooding, fire, or environmental harm.

⁷ A nonconformity is designated when an RO verifies a condition is not in accordance with the applicable requirement.

⁸ A deficiency refers to a defect or a failure in the operation of the vessel, a part of the vessel's structure or its machinery, equipment, fittings; or a failure in the documentation, possibly arising from the lack of implementation of the ISM Code.

Appendix IV: GAO Contact and Staff Acknowledgments

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In addition to the contact named above, Christopher Conrad (Assistant Director), Ryan Lambert (Analyst-in-Charge), Ben Nelson, Elizabeth Dretsch, Tracey King, Kevin Reeves, and Benjamin Crossley made key contributions to this report.

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