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Improving Maritime Safety



*Investigations
& Suspension
and Revocation*

National Centers of Expertise



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Assistant Commandant's Perspective

by REAR ADMIRAL PAUL F. THOMAS
*Assistant Commandant for Prevention Policy
U.S. Coast Guard*

Marine investigations provide vital feedback to help improve standards and compliance processes, hold parties accountable when necessary, and prevent reoccurrence of accidents that harm people, property, and the environment.

Coast Guard marine investigators are trained to determine incident contributing factors, which include assessing vessel and equipment design, construction, operation, and maintenance. The subsequent investigation report includes a comprehensive analysis derived from witness statements, forensic scrutiny, technical calculations, and investigator observations. When deemed necessary, recommendations are made to the Commandant on specific actions the Coast Guard can take to hold people accountable and prevent similar incidents. In this manner, the Coast Guard continuously evaluates and improves prevention efforts.

For example, the joint Coast Guard and Bureau of Safety and Environmental Enforcement investigation report into the explosion and sinking of the foreign-flagged mobile offshore drilling unit *Deepwater Horizon* resulted in more than 50 recommendations, many of which have been enacted, including developing new standards for explosion-proof electrical fittings.

Establishing the Investigations National Center of Expertise (INV-NCOE) has significantly enhanced the Coast Guard's ability to investigate all marine casualties. INV-NCOE investigators actively support investigations around the globe, help identify trends, and develop key relationships with investigative counterparts from the National Transportation Safety Board and foreign maritime safety agencies. Such relationships are especially essential in the international realm, as the Coast Guard has to be invited to participate in investigations that involve U.S. citizens aboard foreign-flagged vessels operating beyond U.S. waters. As an example, INV-NCOE investigators have supported five foreign-flagged cruise ship fire investigations within the last 12 months, which prompted the release of a worldwide safety alert on fuel line maintenance.

Coast Guard marine investigators also pursue suspension and revocation (S&R) actions against merchant mariners for negligent operations, acts of misconduct, violations of law and regulation, falsification of official records or false statements to officials, fraudulent use or obtainment of Coast Guard credentials, and use of illicit drugs. The Suspension and Revocation National Center of Expertise has been instrumental in assuring that these actions are appropriate and consistent.

Because these investigations may culminate in the suspension or revocation of a mariner's Coast Guard-issued credential, potentially placing his or her livelihood at stake, the S&R NCOE's involvement and oversight is specifically implemented to safeguard mariner rights throughout a complex process, while holding parties accountable and preventing incident reoccurrence.

I want to close by thanking the authors who contributed to this edition. Their stories effectively highlight the invaluable contributions and capabilities of these specialized units that support the Coast Guard's prevention program.

Champion's Point of View



by CAPT JASON NEUBAUER
Office of Investigations and Casualty Analysis
U.S. Coast Guard

As I reflect upon my Coast Guard career and experience in marine casualty investigations, I recall my assignment as the senior investigating officer at Marine Safety Office Morgan City, Louisiana—arguably one of the busiest and most diverse areas of responsibility in the marine safety realm. I vividly recollect feeling overwhelmed, attempting to manage a seemingly continuous deluge of major marine casualties related to myriad vessel types and operations. I was drinking from a fire hose, so to speak.

Although the unit maintained several investigating officer (IO) billets, the complexities involved with incidents occurring on the outer continental shelf and within the congested inland waterways highlighted a pressing need to have experts available with an in-depth understanding of commercial operations in the region (such as drilling, diving, towing, and lightering operations).

Completing these types of complex investigations in what often equated to on-the-job-training mode was often inefficient and led to issues when time-sensitive evidence collection was involved. My entire staff frequently felt isolated, but at the same time hesitant to tap into the limited technical and engineering support resources available to field commands at the time.

As time progressed, marine safety program shortfalls and personnel proficiency gaps became too glaring to ignore. As a result, in 2007 the Coast Guard developed the Marine Safety Enhancement Plan. The prevention program realized immediate benefits, as numerous senior civilian and junior officer billets were added to field units nationwide to provide better continuity and bolster training programs. An important part of the new additions included national centers of expertise specifically created to focus on enhancing marine inspections and investigations.

The articles in this edition show how essential and integral national centers of expertise have become to prevention operations. Centralizing specialized expertise for the infrequent but highly complex investigations the marine investigators encounter has made the Coast Guard more agile while also improving casualty investigations and suspension and revocation actions.

The national centers of expertise have also established robust working relationships with key investigative partners like the National Safety Transportation Board. They also field questions from both internal and external stakeholders, including individual companies and industry organizations.

I firmly believe the national centers of expertise have improved consistency and service delivery nationwide by providing the timely resources needed to ensure that prevention personnel no longer have to drink from the fire hose. However, there's significant potential for even greater gains as we strive to attain maximum utilization of national center of expertise services. I hope that the success stories highlighted in this edition will help us achieve that goal.

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National Centers of Expertise

Critical force multipliers.

by LCDR RANDY WADDINGTON
Chief, Investigations Division
U.S. Coast Guard Office of Investigations and Casualty Analysis

In early 1994, the U.S. Coast Guard formed a marine safety investigation quality action team to analyze marine casualty investigation and enforcement program efficiency and explore improvement methods. In 1995, the team finished its report, which contained 57 improvement recommendations. While many of these changes were immediately instituted, others were longer-term goals. One such recommendation was to create a “center of excellence” to provide investigation expertise and create a valuable force-multiplying resource for investigators.

National Centers of Expertise (NCOEs) had long been a goal of the USCG prevention program, and that goal was finally realized in 2009 as part of the comprehensive Marine Safety Enhancement Plan. The Suspension and Revocation National Center of Expertise (S&R NCOE) in Martinsburg, West Virginia, was one of the first six NCOEs established (and the first investigation-related NCOE), and Coast Guard

leaders subsequently formed the Investigations National Center of Expertise (INV-NCOE) in New Orleans, Louisiana.

These two units were stood up along with four other NCOEs in an effort to foster superb service delivery within the broader U.S. Coast Guard marine safety regime. In their initial years of operation, these two units functioned under the direction of the U.S. Coast Guard Force Readiness Command and the U.S. Coast Guard Traveling Inspection staff. However, given their technical skills and high demand in field operations, both units were subsequently placed under the direction of the Office of Coast Guard Investigations and Casualty Analysis in 2013. This change allowed for optimal alignment from the top of the organization down to field-level investigators.

The S&R NCOE focuses primarily upon improving the suspension and revocation process, ensuring that investigators have access to legal support and that U.S. Coast Guard remedial actions are firmly established in legal precedent while also supporting the organization’s overall goal of promoting safety. The INV-NCOE maintains technical systems support and lends vessel-specific operational expertise to marine casualty investigators, providing critical support during major investigations. Both units play a support/ advisory role with local unit investigators, but they also execute mission functions independently.

The personnel assigned to these units possess a wealth of expertise ranging from extensive Coast Guard inspections/investigations and marine industry experience to broad legal training. The units’ initial years of operation have demonstrated benefits such as:

- operational excellence,
- improved investigator skills,
- enhanced working relationships with external partners.



The national centers of expertise: the Cruise Ship NCOE, Ft. Lauderdale, Florida; the Towing Vessel NCOE, Paducah, Kentucky; the Outer Continental Shelf NCOE, Houma, Louisiana; the Investigations NCOE, New Orleans, Louisiana; the Liquefied Gas Carrier NCOE, Port Arthur, Texas; and the Suspension and Revocation NCOE, Martinsburg, West Virginia.

Operational Excellence

Investigation Support

The Investigations National Center of Expertise has improved overall operational excellence, as demonstrated in several recent investigations. For example, on January 26, 2012, the motor vessel *Delta Mariner*, a U.S. Coast Guard-certificated oceangoing vessel, allided with a bridge while heading downstream on the Tennessee River near Aurora, Kentucky. A 300-foot span of the bridge collapsed into the waterway and onto the vessel's bow, damaging its masts and navigating bridge. Fortunately, there were no deaths or major injuries as a result of this incident.

After the initial U.S. Coast Guard response, the Coast Guard District Eight commander determined a formal investigation was necessary. Formal investigations are extremely thorough, comprehensive, and include public hearings to establish the facts surrounding an incident. Because these types of investigations are often beyond the capability of local U.S. Coast Guard unit investigators, INV-NCOE investigators stepped in to assist, getting to the scene of the accident soon after it occurred.

Once on scene, they leveraged their technical acumen to pull data from the navigation equipment and build a digital re-creation of the events leading up to the incident, including bridge audio. This highlighted causal factors critical to understanding the crew's decisions prior to the allision.

Additionally, INV-NCOE investigators played a key role in the week-long public hearings, lending their expertise to manage the proceedings and support the lead investigating officer in questioning witnesses. Investigations National Center of Expertise investigators also proved integral in developing the final report of investigation analysis, conclusions, and the subsequent proposed safety recommendations.

Informing Broader Marine Safety Efforts

On December 27, 2012, the motor vessel *Aiviq* was towing the manned *Modu Kulluk* on a voyage from Dutch Harbor, Alaska, to Everett, Washington, when the towing gear failed approximately 50 nautical miles southeast of Kodiak Island, Alaska. Though the vessel owners dispatched an offshore research vessel and tug to assist the towing evolution—and despite the best efforts of the vessels and crews involved—on December 31, 2012, the *Modu Kulluk* grounded on the southeast coast of Sitkinack Island.

This highly visible casualty brought to light a number of regional and national issues, including questions regarding Arctic oil exploration emergency preparedness sufficiency. The 17th District Coast Guard commander determined the

incident would be best served through a formal investigation, calling once again upon the Investigations National Center of Expertise.

In this instance, INV-NCOE investigators branched out from a supportive role to that of managing the entire investigation. Over the next year, INV-NCOE investigators conducted public hearings and completed an exhaustive investigation report that highlighted the unique challenges of operating in the Alaskan environment as well as the risks associated with a single-vessel tow through the Gulf of Alaska. In response, Coast Guard leaders assembled a U.S. Coast Guard and Towing Vessel Advisory Committee workgroup specifically to examine lessons learned from the investigation.

Legal Issues

In early 2014, the U.S. Coast Guard remained the lone federal agency utilizing non-lawyers to adjudicate administrative law cases on behalf of the agency. This was firmly grounded in maritime tradition and was appropriate, as regulations clearly supported this practice.

However, suspension and revocation cases, which typically involve alleged merchant mariner acts of negligence, misconduct, incompetence, or alcohol or drug use, were becoming increasingly complicated. Given this complexity, the S&R NCOE became the ideal solution to address such challenges.

Beginning in late 2014, the Suspension and Revocation Center of Expertise shifted from primarily a support resource for investigators to a quality-control clearinghouse for all formal complaints issued against merchant mariners. With several staff attorneys among its ranks, the S&R NCOE is able to ensure that every case complaint that goes before an administrative law judge (ALJ) is thoroughly vetted and researched in light of the most current case law.

Additionally, the S&R NCOE supplies legal representation for each case that goes to a hearing before an ALJ, improving the integrity of the entire U.S. Coast Guard adjudication process and ensuring local units have the support necessary to manage complex legal issues.

Improved Investigator Skills

The professional life of a U.S. Coast Guard investigator is complex, involving myriad talents and proficiencies. An investigator must be skilled across a broad spectrum of operational and engineering-related vessel issues, be fully versed in regulatory standards, understand human performance, and possess a deep understanding of marine safety. As such, the NCOEs are integral to assisting and mentoring investigators in their roles as well as improving their professional acumen.



Communication

Communication is critical to supporting the investigator community, so each NCOE takes turns sponsoring weekly teleconferences. Besides providing solutions to “hot-button” topics and fostering dialogue, these teleconferences also provide a forum for specific legal guidance, as there are numerous nuances regarding how to best implement U.S. Coast Guard policies, U.S. code statutes, Code of Federal Regulations, and vessel technical issues.

In the same vein, recognizing how important it is to foster reliable communications, NCOE personnel also now maintain the Marine Investigating Officer Exchange, an internal U.S. Coast Guard Intranet website. Through this portal, anyone within the investigator community can access the latest information, pose questions, and receive responses from colleagues or NCOE personnel, which engenders greater awareness for current issues. There are also dedicated areas within this information exchange containing internal Coast Guard policy guidance documents, technical tools, and investigator best practices and lessons learned.

Additionally, NCOE personnel are just a phone call away when local investigators or their commands need help working through difficult issues. This subject matter expertise allows units to more efficiently manage their caseloads.

Enhanced Working Relationships

Placing dedicated active duty and civilian personnel at the NCOEs provides continuity and the ideal opportunity to foster long-term working relationships with other investigative bodies. For example, National Transportation Safety Board (NTSB) personnel regularly interact with INV-NCOE investigators. This pre-established working relationship greatly improves field response effectiveness and helps prevent any potential cross-jurisdictional issues.

Interagency and International Efforts

Whereas a local investigator may be assigned as a liaison to an NTSB investigation for the first time, Investigations National Center of Expertise investigators are intimately familiar with the NTSB investigation process. This level of familiarity provides a tremendous resource not only for field investigators, but it also allows INV-NCOE investigators to respond to high-visibility investigations and help streamline investigative efforts involving multiple investigative bodies.

Investigations National Center of Expertise staff members also reach beyond domestic borders to assist with

international casualty investigations. For example, when the *Costa Concordia* sank off the coast of Italy, INV-NCOE investigators stepped forward to coordinate more than 100 interviews of the U.S. citizens aboard.¹ This helped document the witness perspectives, glean lessons learned from the incident, and provide feedback that supported the Italian government’s investigation.

More recently, INV-NCOE investigators assisted the Costa Rican government in its investigation of the passenger vessel *Pura Vida Princess*, which sank off the coast of Costa Rica in January 2015.²

Intra-agency Efforts

For their part, S&R NCOE personnel have greatly improved the working relationship with administrative law judges and their staffs. This requires a delicate balance, as the working relationships must maintain each entity’s impartiality. The S&R NCOE has also established communication channels with docketing center personnel who liaise with investigators, ALJs, and respondents (merchant mariners). Such overall efforts help to ensure that the suspension and revocation process remains efficient and effective.

The Big Picture

Since their inception, the NCOEs have provided stellar service to U.S. Coast Guard personnel and realized the envisioned program improvements. Both the S&R NCOE and INV-NCOE positively impact mission execution, which in turn provides an important public service through sound investigative and enforcement actions that promote safety throughout the maritime domain.

About the author:

LCDR Randy Waddington has served in multiple capacities during his 25-year Coast Guard career, most recently as the investigations program manager at Coast Guard headquarters. He has also served as chief of the investigations division at Sector Los Angeles/Long Beach, chief of the inspections division at Sector Juneau, and senior investigating officer at Sector Juneau.

Endnotes:

¹ The Italian-flagged cruise ship *Costa Concordia* was on a Mediterranean Sea cruise when the vessel grounded off the Italian island of Isola del Giglio on January 13, 2012, resulting in the loss of 32 lives. The vessel was carrying 4,229 people at the time of the incident. Source: Italy’s Ministry Of Infrastructures and Transport report on the safety technical investigation of the *Costa Concordia* marine casualty; see www.safety4sea.com/images/media/pdf/Costa_Concordia_-_Full_Investigation_Report.pdf.

² On January 8, 2015, the Costa Rican-flagged sightseeing vessel *Pura Vida Princess* sank on the Pacific Coast of Costa Rica near Punta Leona. There were 109 passengers aboard the vessel at the time of the incident; three died as a result of the sinking. Source: CG investigator draft findings (report not yet publicly available).



INV-NCOE Agency Partnerships

Established relationships leverage efforts.

by LCDR YANCEE MCLEMORE

Program Manager, Suspension and Revocation

U.S. Coast Guard Office of Marine Casualty Investigations and Analysis

When a major marine casualty¹ occurs, there are numerous international, federal, state, and local agencies poised and ready to engage at a moment's notice. Since its inception in late 2009, the USCG Investigations National Center of Expertise (INV-NCOE) has progressively forged strong partnerships with such agencies to make the most of the specialized expertise and resources each brings to the table.

Closing the Divide

One such example involves the Coast Guard's investigation of the loaded tank vessel *Eagle Otome*. On the morning of January 23, 2010, the vessel allided with the tank vessel *Gull Arrow* and a tank barge. As a result, the *Eagle Otome* ran aground, resulting in a major crude oil spill of more than 460,000 gallons in the port of Port Arthur, Texas, about 90 miles east of Houston.²

In addition to National Transportation Safety Board (NTSB) marine casualty investigators, the INV-NCOE was notified, and personnel immediately sprang into action. The incident laid the foundation for what proved to be the beginning of a long-lasting partnership between the two agencies, and the ensuing investigation showcased the INV-NCOE's contribution to harmonious investigations that stretch across multijurisdictional boundaries.

Though having pre-established relationships significantly improves marine casualty investigation effectiveness, the practice doesn't come without its challenges, as a September 2011 investigation proved. A U.S.-flagged liftboat was 15 nautical miles offshore in the Bay of Campeche in the Gulf of Mexico when it sustained hurricane damage. The crew of 10 abandoned the vessel and clung to a life float. Three days passed before nine of the 10 crewmembers were rescued. Only six survived. Four days later, the body of the tenth crewmember was recovered.³

After the initial search and rescue efforts, the Coast Guard requested travel clearance for USCG and NTSB casualty investigators to attend the accident scene, but they had to wait more than five weeks to get approval. Furthermore, the investigators' efforts were hindered by the extremely limited information the Mexican government shared with them regarding the initial search efforts—information that could've been valuable to the accident investigation. As a result of this limited information and the travel delay, their efforts were severely hampered.

Though Coast Guard investigators may be familiar with the investigation process and the local area, other countries and/or states have their own investigative processes and procedures. For that reason, INV-NCOE personnel have worked to ease such challenges by ensuring that all involved parties understand their respective roles in the process and everyone reports on their process in the investigation.

International Partnerships

In addition to fostering improved working partnerships with border governments, INV-NCOE staff members have demonstrated their unique ability to interact with and establish working relationships with international partners.

In one of the largest passenger shipwrecks in modern times, the Italian cruise ship *Costa Concordia* hit an underwater reef on the evening of January 2012 and partially sank in the Italian coastal waters of the Mediterranean Sea. As part of the high-profile, multinational investigation that quickly ensued, the USCG Investigations National Center of Expertise quickly joined forces with NTSB investigators to become an integral part of the incident's U.S. representation.

After the accident, INV-NCOE investigators offered technical expertise and support to the government of Italy's



Recurrent INV-NCOE Agency Partners

International

United Kingdom's Accident Investigation Branch
International Maritime Organization

Domestic

National Transportation Safety Board
Bureau of Safety and Environmental Enforcement
Offshore Marine Service Association
Department of Labor
Occupational Safety and Health Administration
Army Corps of Engineers
Federal Bureau of Investigations
Department of Justice
Chemical Safety Board

State/Federal/Private

Towing Safety Advisory Committee
Passenger Vessel Association
State Pilot Associations

marine casualty investigators. This proved crucial, as investigators were able to carry out varied and complex activities simultaneously. For example, INV-NCOE personnel conducted passenger and crewmember interviews using a questionnaire focused on safety, lifesaving apparatus, and other survivability-related issues.

As a result of the comprehensive investigation, INV-NCOE staffers were able to document facts based on eyewitness accounts, providing key information for the Italian government's casualty investigation.

During the Worst of Times

In the wake of the April 2010 *Deepwater Horizon* explosion, the Investigations National Center of Expertise once again stepped up to the plate. Within hours of the initial explosion, INV-NCOE staff members were assigned to assist with the investigation.

They worked alongside a large number of responsible parties as well as many other federal, state, and local agencies to face the unprecedented challenge. Working closely with interagency partners, including the FBI, the Chemical Safety and Hazard Investigation Board, and what would eventually become the Bureau of Safety and Environmental

Enforcement, INV-NCOE investigators played an integral part in the investigation. They were also crucial to the monumental response that included more than 47,000 workers and 6,000-plus vessels that cleaned up the estimated 4.9 million barrels of oil discharged into the Gulf of Mexico.⁴

INV-NCOE and other investigators from various Coast Guard field units worked around the clock to identify causal factors that may have contributed to the well blowout and subsequent explosion and fire. Further, the joint investigation team, composed of Coast Guard and Bureau of Ocean Energy Management Regulation & Enforcement (BOEMRE) members, held seven public hearings that included testimony from more than 80 eyewitnesses. They analyzed hundreds of thousands of pages of evidence. The USCG/BOEMRE partnership leveraged each agency's respective authorities and expertise and established a standardized response framework to manage future incidents.

Looking Forward

The Coast Guard's fundamental responsibility is to safeguard the lives and safety of its citizens. By building long-lasting partnerships with other federal agencies; state, local, and tribal governments; marine industries; and individual mariners, USCG Investigations National Center of Expertise personnel have worked diligently over the past six years to improve marine safety through accident investigation lessons learned.

Marine casualty investigations can be very complex, often requiring extensive interagency coordination, information management, and outreach. Strong interagency partnerships, unity of efforts, and flexibility are all essential elements that together lay the foundation for success. The INV-NCOE staff has played a crucial role in building and maintaining these foreign and domestic interagency relationships, establishing a legacy that will live on for years, honoring the Coast Guard's motto: *Semper Paratus*.

About the author:

LCDR Yancee McLemore is the Suspension and Revocation program manager in the Office of Marine Casualty Investigations and Analysis. He began his marine safety career as a domestic vessel inspector and marine casualty investigator at Sector Los Angeles/Long Beach. Subsequent tours include chief of the investigations division at Sector Corpus Christi and an investigating officer at the Suspension and Revocation National Center of Expertise in Martinsburg, West Virginia.

Endnotes:

- ¹ As defined by 46 Code of Federal Regulations Parts 4.03-1 and 4.02-2.
- ² U.S. Coast Guard Formal Report of Investigation, May 19, 2010.
- ³ NTSB Marine Accident Report; NTSB/MAR-13/01, adopted April 9, 2013.
- ⁴ See Final Action Memorandum: Incident Specific Preparedness Review (ISPR) *Deepwater Horizon* Oil Spill, www.uscg.mil/foia/docs/DWH/BPDWH.pdf.



Who You Gonna Call?

One man's view of the INV-NCOE.

by LCDR WILLIE PITTMAN III
National Technical Advisor
U.S. Coast Guard Investigations National Center of Expertise

Back in 2009, as the first national technical advisor for the Investigations National Center of Expertise, I was at Marine Safety Unit Texas City presenting an introduction on the National Centers of Expertise. I was the last presenter before lunch, and people were starting to fade fast, so I opened up my presentation with:

"If you have a marine casualty that looks strange — who you gonna call?"

"When things go bump in the night — who you gonna call?"

"When you have a marine casualty that no one on your staff can deal with — who you gonna call?"

Be Careful What You Ask For

That's the kind of thing that can come back and haunt you. Soon after my presentation, one of the first calls came from Coast Guard headquarters' Investigations Division. The National Transportation Safety Board (NTSB) was about to release its report on the allision of a Liberia-registered fruit juice carrier with a U.S.-registered dredge, and the Coast Guard case was nowhere close to completion.

They tasked us to review the case in the Marine Information for Safety and Law Enforcement (MISLE) database and analyze NTSB's case for comparison. Since the investigation was a joint effort, it was assumed to be a simple matter

of comparing and contrasting the two reports. Unfortunately, that was not the case.

With a history of working primarily in the Gulf of Mexico region for years, I thought I had a pretty solid knowledge base of all kinds of tank ships, but I'd never heard of a fruit juice carrier. I was also surprised the vessel had a flap-type rudder, which was somewhat controversial when combined with a controllable-pitch propeller.

As you might imagine, these issues posed a serious learning curve for a three-person unit. Luckily for us, the INV-NCOE's first civilian hire was a former Coast Guard



The *Eagle Otome* collided with a barge in Port Arthur, Texas. Photo by U.S. Coast Guard Sector Houston investigating officer.



The M/V *Patrice McAllister* after a fatal fire in which the chief engineer was killed and five others were severely injured. Photo by U.S. Coast Guard investigator, Marine Safety Detachment Massena, New York.

investigator who was also a Coast Guard-licensed master. We were able to track down the circular from Det Norske Veritas that clearly articulated the issue with that particular rudder/propeller combination, learning that at dead slow speed, the vessel loses steerage. With that full understanding of the casualty, we were able to reach out to the local unit and expedite the final report.

Same-Day Service, Long-Term Impact

Soon after that, many more calls started coming in, and our standard was to provide same-day service, meaning that if you called the INV-NCOE, you would either get an answer to your question or a follow-up call that day with an estimate of when you could expect an answer.

For example, we once received a call from a field investigator who was trying to figure out if she needed to cite a vessel for sailing foreign waters without international documentation, as the vessel had left the continental U.S. on a voyage to Guantanamo Bay, Cuba. Considering the vessel's destination was U.S. Naval Base Guantanamo Bay, it was our understanding that a U.S. naval base should be considered U.S. soil. We reached out to Coast Guard headquarters, and by that afternoon, we had a determination that agreed with our assumption that any voyage from a U.S. port to U.S. Naval Base Guantanamo Bay would not be considered an international voyage.

That determination was pivotal, because once the U.S. gave up control of the Panama Canal, any voyage through it became an international voyage, which meant that the maritime industry had to be compliant with all applicable international laws, rules, and treaties. Prior to the handover, the exact same trip had not been considered an international voyage. So although the field investigating officer received

her answer on the same day her question was asked, her question impacted Coast Guard policy years later.

Like a Good Neighbor

We also wanted to make sure we could be an asset to local units, so we reached out to the Eighth District commander and prevention staff to remind them we were just down the street if they needed the INV-NCOE.

It was just a few weeks later that they called for assistance with the second-largest oil spill in the state of Texas. It happened in Marine Safety Unit Port Arthur's area of responsibility, and the INV-NCOE supervisor at the time was tasked as the lead investigating officer for the casualty that caused the spill. The casualty involved a tanker, a tug pushing two oil cargo barges, and a moored break-bulk freight ship.

This case would prove to be a precursor of things to come, inaugurating INV-NCOE's long working relationship with NTSB personnel on major marine casualties. It also showcased just how invaluable vessel bridge digital video recorder data could be for identifying causal factors in a marine casualty investigation.

Deepwater Horizon

At about 4:00 a.m. on April 21, 2010, my wife woke me up to tell me there was an oil rig on fire in the Gulf of Mexico. Still under a sleepy fog, I glanced at the TV and told her it was in Morgan City's zone, so it wasn't my investigation.

An hour and a half later, my phone rings—it's the chief of staff for the Eighth Coast Guard District. I'd been tapped as a member of the investigation team for the now-infamous *Deepwater Horizon* oil spill—a lot of pressure to take in before my first cup of coffee.

I immediately put together a "go" bag, and one hour later, I found myself at the BP facility in Houma, Louisiana. I managed media interest, researched Coast Guard jurisdiction regarding the investigation, and used the International Maritime Organization Casualty Code for my first time ever. I enjoyed the work and the challenge it presented me, but was only on the case for three days before the Commandant took over the investigation and appointed handpicked personnel to take over the case. Because my supervisor was transferring, I was removed from consideration, but two members of the INV-NCOE staff worked on the case for the next year.

The next two new INV-NCOE civilian investigating officer hires worked in tandem at the *Deepwater Horizon* evidence yard for six months with the FBI as well as the Chemical Safety and Hazard Investigation Board, an experience that helped shape process guides developed for the field today.

Time Away

At about this time, I received orders to Marine Safety Unit Morgan City as the new chief of its inspections division. Though I was away from the INV-NCOE for a three-year tour, the team I'd painstakingly put together began to shine. They found themselves deeply involved with or leading a host of extremely high-profile marine casualties throughout the Western Hemisphere.

Some cases that stood out:

- the *Kulluk* grounding,
- the *Carnival Triumph* fire,
- the *Carnival Splendor* fire,
- the *Patrice McAllister* fire,
- the tank ship *Elka Apollon*/MSC *Nederland* collision.

Following their handling of these cases, the staff developed a well-earned reputation for professionalism, experience, and commitment.

Back at INV-NCOE

After a successful tour in Morgan City, I returned to the INV-NCOE as the fourth national technical advisor and assistant supervisor. I found myself living every middle manager's dream, having just walked into a unit with a fully qualified and seasoned staff who would never transfer.

I quickly noted that the unit and our missions had changed slightly: Under my new supervisor, the INV-NCOE's current focus was to assist field units with complicated cases without taking over the case, to provide more experience for field investigation officers. Another big change to operations is that we launch to any investigation involving the National Transportation Safety Board. Though we don't assume the lead on the investigation, we do help facilitate the working relationship between the local unit and the NTSB.

For example, on November 4, 2014, the INV-NCOE was called to assist in the investigation of the *Bahamas Celebration* allision that resulted in flooding, power loss, and the vessel's list to port. Because the Coast Guard was investigating the incident as a substantially interested state under



Coast Guard investigators from the Coast Guard Marine Safety Center and the Investigations National Center of Expertise examine the cruise ship *Carnival Triumph*'s engine room to determine the cause of a fire that stranded the ship with its passengers for days in the Gulf of Mexico. U.S. Coast Guard photo by LT Jerry Federer.

International Maritime Organization protocols, the INV-NCOE provided jurisdiction for NTSB personnel to also attend the vessel. This process facilitated a quick investigation that identified a major passenger accountability issue aboard the vessel, and this interagency partnership model has continued to be very effective.

The Takeaway

All told, the INV-NCOE has been open for business for six very adventurous years. This unit stands ready to assist any unit or investigating officer anywhere in the world. Just remember: When an investigation might be more than you can handle alone ... *who you gonna call?* The U.S. Coast Guard Investigations National Center of Expertise—that's who.

About the author:

LCDR Willie Pittman completed Officer Candidate School in December 1997 and has served in the Coast Guard for more than 20 years. He began his field training in New Orleans, Louisiana, and has served as a marine casualty investigator and vessel inspector for the majority of his career. He was the first member as well as the national technical advisor for the USCG Investigations National Center of Expertise in New Orleans, Louisiana. As a fully qualified marine inspector, he serves as a subject matter expert for outer continental shelf, domestic, and foreign vessel material failure investigations.

Whodunnit?

Petroleum oil fingerprinting.

by Ms. KRISTY JUAIRE
 Manager and Supervisory Chemist
 U.S. Coast Guard Marine Safety Laboratory

The Marine Safety Laboratory (MSL) was established in November 1977 to help U.S. Coast Guard pollution responders investigate oil spills and enforce the nation's environmental laws. Nearly 40 years later, the MSL still stands as the Coast Guard's sole forensic laboratory for oil spill source identification and organizes the efforts of various federal, state, and local law enforcement agencies to provide analysis to field investigators. While the majority of MSL samples are from routine oil spills, there are many applications in which petroleum oil fingerprinting can be of significant investigative value.

Fingerprinting

Petroleum oil "fingerprinting" is a term adopted in the mid-1970s, when the Coast Guard Research and Development Center (RDC) developed the Oil Identification System (OIS).¹ It reflects the idea that every petroleum oil has a unique chemical composition, or fingerprint. There have been marked technological advancements since then, but the premise remains the same: Use a multimethod analytical approach to evaluate the intrinsic composition of oil samples, then make comparisons to determine if the samples derive from a common source.

Current MSL analytical techniques include infrared spectroscopy, gas chromatography with flame ionization detector, and gas chromatography with mass selective detector. These techniques are sensitive enough to permit staffers to evaluate samples at the molecular level and compare fingerprints for similarities and differences.

Two oil samples "match" if they have the same fingerprint after weathering (when chemical, physical, and biological factors change the oil) and other contaminants are accounted for. A match is significant in that it provides forensic evidence of a chemical relationship between two samples.

Taking the Mystery Out of Mystery Spills

A routine Marine Safety Laboratory case is one in which petroleum oil has been discharged into the environment

with no obvious, single source identified during the physical investigation. Pollution responders may narrow the list of possible sources by evaluating vessel traffic logs, transfer operations, witness statements, aerial surveillance, or other components, but still lack direct evidence implicating a single responsible party. By sampling the spilled oil as well as each suspected source, investigators can eliminate suspects and may ultimately yield the evidence necessary to identify the responsible party.

Additionally, critical investigative details may be obtained from fingerprinting a mystery spill even in the absence of suspected sources, as the type of petroleum oil discharged and how degraded it is can help guide pollution responders. This guidance may spare investigators from wasting resources pursuing dead ends, such as examining fuel suppliers when the spilled product is lubricating oil. Perhaps equally important, submitting a mystery spill sample ensures the sample is preserved at the chemical level (weathering ceases after MSL sample preparation) and at the evidentiary level, pending final case disposition.

The investigation into the *SS Jacob Luckenbach* epitomizes how integral petroleum oil fingerprinting can be to solving mystery spill cases.² During this investigation, an oil spill source identification task force comprised of 20 federal and state agents worked to determine the source of petroleum oil affecting more than 2,000 birds and 220 miles of central California coastline. The 2001–2002 mystery spill event shared many commonalities with prior mystery spill events occurring in the same area since 1992, prompting the task force to re-evaluate the historical events.

Throughout 1992–2002, the MSL received samples from oiled wildlife and suspected sources. While each suspected source was a "non-match" to the oiled birds, a vital and surprising result did come from the analysis, as the mystery spills from 1992–2002 all had the same petroleum oil fingerprint. This finding was imperative for the task force, since it

eliminated vessel traffic from the list of possibilities.

Petroleum oil fingerprinting was also critical in eliminating natural seeps and submerged oil wells as the stationary source, leaving investigators with a sunken shipwreck as their target. Extensive and laborious research led to the SS *Jacob Luckenbach*, a freighter that sank in 1953 in shallow water southwest of the Golden Gate Bridge. A sample collected from the vessel was a match to the oiled birds and the prior mystery events, solving the decade-long mystery.

Monitoring Known Spills

In April 2010, the world watched as millions of barrels of crude oil escaped from the wellhead after the *Deepwater Horizon* (DWH) explosion.³ Despite the tremendous amount of resources and effort devoted to containing spilled oil and minimizing the impact to shorelines, marshes, and wildlife, major damage was done. Oiled birds and wildlife were recovered as crude oil began washing ashore.

In the days and weeks following the explosion, the source of oil contaminating the Gulf of Mexico was fairly conspicuous. Regardless, prudent investigators knew they had to collect evidence in an unbiased manner, so samples started arriving at the MSL one week into response activity.

Petroleum oil fingerprinting proved to be an important part of *Deepwater Horizon* response, providing scientific confirmation of the presence of DWH oil in various locations. As of February 2015, Marine Safety Laboratory personnel had processed 518 cases, assisting investigators at the federal and state levels to allocate responsibility for damages.

Oil fingerprinting has also helped rule out DWH as a source of oil in the environment. Significant public and media concern arose in May 2010 when tar balls were discovered in Key West, Florida, generating worry *Deepwater Horizon* oil had migrated into the Gulf Current loop. In response, USCG



Marine Safety Laboratory personnel extract a sample from an oily water separator bypass hose, also known as a "magic pipe." Photos courtesy of the U.S. Coast Guard Marine Safety Laboratory.



Air Station Miami personnel flew tar ball samples to the Marine Safety Laboratory for analysis. Within hours of taking custody of the samples, MSL staffers confirmed the tar balls did not derive from DWH and were able to notify the District Seven response chief, District Seven chief of staff, and Sector Key West commanding officer.

Personnel continued to test the samples Sector Key West and Sector Miami submitted through May 2011 (totaling 107 cases and 241 individual samples), confirming each one a non-match to DWH. Through petroleum oil fingerprinting,

Marine Safety Laboratory Customers

Federal

U.S. Coast Guard

Department of the Navy

Environmental Protection Agency

National Oceanic and Atmospheric Administration

Mine Safety and Health Administration

National Park Service

U.S. Fish and Wildlife Service

Forest Service

Federal Bureau of Investigations

State

Texas General Land Office

New Jersey Division of Criminal Justice

New York State Department of Environmental Conservation

Maine Department of Environmental Protection

Mississippi Department of Environmental Quality

Minnesota Pollution Control Agency

Local

Miami Valley Regional Crime Lab

Orange County Environmental Protection Division

Town of East Lyme Department of Public Safety

Detroit Water and Sewage

Downers Grove Fire Department

Hillsborough County Sheriff's Office

Montville Wastewater Treatment Plant

Ramsey County Public Health Department

Though many times in these “magic pipe” cases, no one observes the resultant oil slick or sheen because the discharge occurs out in open water, inspectors may uncover evidence of illegal activity during port state exams. For example, inspectors are trained to note things like discrepancies in the vessel’s oil record book, freshly painted bolts and flanges in the engine room, or an extraneous flexible hose stashed in a corner. USCG inspectors have also received reports from whistleblowers who witnessed intentional discharge.

When a spill sample is absent, submitting other samples from various locations on the vessel can provide critical information to investigators and prosecutors, since detecting petroleum oil where it does not belong is an important finding. For example, Marine Safety Laboratory personnel have processed samples from marine sanitation devices, boiler blow-down valves, and piping on the discharge side of oil filtration equipment. When oil is detected in these locations, it provides forensic evidence to investigators that something is amiss, helping to piece together the events.

Petroleum oil fingerprinting can also corroborate or disprove statements. For example, a lone whistleblower may tell a USCG inspector that a flexible hose located in the engine room was used to transfer oily bilge waste over the side of the vessel. Other crewmembers may insist that such activity never occurred, and the flexible hose was used exclusively to transfer clean water from one tank to another. Submitting the hose to the MSL for solvent extraction can prove whether or not petroleum oil passed through it—and who’s telling the truth.

Beyond Oil Spills

While MSL analyses most frequently support oil spill investigations, the Marine Safety Laboratory has provided indispensable forensic services for a wide variety of law enforcement activities, as well.

Conspiracy to Commit Racketeering: The State of New Jersey Division of Criminal Justice Environmental Crimes Unit was investigating an underground storage tank testing company that provided readings regarding heating oil storage tank integrity. It was alleged that the company knowingly used faulty equipment and recorded false readings.

The company also collected soil samples from each property to submit for hydrocarbon testing. Investigators suspected that instead of directly sending the samples for testing, the company would first spike the samples with diesel fuel to ensure a positive hydrocarbon reading. They would then provide the false readings to clients to solicit work for a related business to remove the “leaking” storage tank and remediate the site.

the MSL was able to provide absolute confirmation that *Deepwater Horizon* oil hadn’t reached the Gulf Current loop.

What if No One Sees a Spill?

The USCG and Department of Justice have been working together to hold pollution offenders accountable for deliberate discharges of oily waste into the marine environment. The International Convention for the Prevention of Pollution from Ships requires that bilge waste containing more than 15 parts per million of oil be transferred to a shoreside facility. Unfortunately, not all operators adhere to this requirement. Offenders may use a variety of novel techniques to bypass the vessel’s oil filtration equipment, dumping the oily waste directly overboard.

New Jersey investigators obtained the soil samples submitted for hydrocarbon testing and turned them over to the MSL for processing. Marine Safety Laboratory personnel compared the petroleum oil fingerprint from each client's property and determined that several sites matched each other. This finding would be impossible if each site truly did contain a leaking underground storage tank, since completely unrelated physical locations would not have precisely the same petroleum oil history throughout the tank's lifetime. The MSL's results proved there was indeed a single source of diesel fuel contaminating the soil samples rather than hydrocarbons from legitimately leaking tanks.

Kidnapping, Armed Robbery, and Motor Vehicle Theft: In January 2010, the Miami Valley Regional Crime Lab contacted the MSL for assistance in a kidnapping, armed robbery, and motor vehicle theft case. The suspects allegedly parked their vehicle in the victim's garage during the crime, where it leaked oil onto the concrete garage floor.

Investigators collected samples from the garage floor, the victim's vehicle, and the suspects' vehicle. Petroleum oil fingerprinting determined the sample from the victim's vehicle did not match the sample from the garage floor, but the sample from the suspects' vehicle did, so the MSL provided forensic evidence placing the vehicle at the crime scene.

Criminal Possession of Stolen Property, Endangering Public Health, and Unauthorized Use of a Vehicle: From January to March 2012, tankers filled with viscous waste

oil were being abandoned on the streets of New York and New Jersey. As the tankers were discovered, investigators submitted samples to the MSL for fingerprint analysis. Each sample that came in matched the ones before, indicating that the 12 seemingly random abandoned tankers were indeed connected.

State investigators suspected that the owner of a commercial facility in New York had enlisted help to make his business's thick oily waste disappear. The person he hired to help allegedly stole several empty tanker trailer trucks from lots in New Jersey and drove them to the business in New York, where employees allegedly filled the tankers with the oily waste. The loaded trucks were then abandoned on public streets. Both parties were ultimately charged with several felonies.

About the author:

Ms. Kristy Juairé has worked at the USCG Marine Safety Laboratory for 14 years. She is the USCG voting member to the American Society for Testing Materials regarding oil fingerprinting standards and has provided expert testimony in 12 federal criminal trials. She holds a B.S. and an M.S. in organic geology-chemistry from Brown University.

Endnotes:

- ¹ Oil Spill Identification System. USCG R&D Center Report No. CG-D-52-77 (NTIS #ADA044750), 1977.
- ² CDR Gabrielle McGrath et al., "The Investigation to Identify the SS *Jacob Luckenbach*—Using Technology to locate a Hidden Source of Oil that Caused Years of Impacts and the Future Implications of Sunken Shipwrecks," 2003, *IOSC Proceedings*.
- ³ *Deepwater Horizon* Oil Spill. See www.uscg.mil/foia/docs/DWH/BPDWH.pdf.



Marine Incident Investigation

NTSB and Coast Guard collaboration.

by MR. KEITH FAWCETT
U.S. Coast Guard Investigations National Center of Expertise

MR. NICHOLAS PARHAM
National Transportation Safety Board

It was early morning. Phones and other high-tech portable communication devices began emitting rings and vibrations, notifying marine casualty investigators of an incident on one of America's waterways. U.S. Coast Guard and National Transportation Safety Board (NTSB) investigators were independently briefed on the marine casualty, an incident where a ship struck a bridge span, affecting two segments of the nation's transportation infrastructure by closing down a river and a highway. Local USCG investigators immediately grabbed their "go" bags and headed to the scene, arriving shortly after the allision.

The Allision

Arriving on scene, the local Coast Guard investigation team members saw flashing lights from emergency response vehicles and floodlights illuminating an eerie scene on the waterway. An oceangoing ship, the *M/V Delta Mariner*, struck the U.S. Highway 68 bridge over the Tennessee River, which connected the communities of Cadiz and Aurora, Kentucky. One of the bridge's 300-foot spans fell onto the bow of the ship, leaving portions of the twisted girders trailing off the ship's bow, effectively trapping the ship and anchoring it to the river bottom. Fortunately there were no deaths, injuries, or pollution associated with this incident.



The bow of the *M/V Delta Mariner* with the twisted span of the Eggner's Ferry Bridge anchoring the ship to the bottom. The ship was specifically designed to be able to pass under bridges on the inland waterways. Photo courtesy of the NTSB.

While local Coast Guard investigators and response personnel worked at the scene, NTSB leaders followed established protocol and selected personnel to participate in the joint investigation. Using an already-established memorandum of understanding, it was determined that the Coast Guard would be the lead in this joint USCG/NTSB investigation. In this case, the National Transportation Safety Board investigator in charge had been working on another case in New Orleans, so he was dispatched to the accident site to prepare for this new investigation. NTSB team members were also dispatched, including one who worked in roadway accidents as well as one who was a technical expert to assist with electronic evidence collection and analysis.

Fortunately for the investigators, the ship was an oceangoing vessel that was required to have a simplified voyage data recorder (S-VDR) and an electronic chart

system (ECS). The S-VDR displays selected information about the vessel's maneuvering control settings as well as the recorded audio from five microphones located on the inside of the vessel's wheelhouse and bridge wings. The ECS data files contained a chart showing the vessel's movements along with the vessel's course, speed over the ground and through the water, its rate of turn, and the water depth.

In addition, the electronic chart system contained a graphic display of any other vessel along its track with an automatic identification system (AIS), but it is important to remember that although larger commercial vessels are equipped with an AIS transponder, most recreational vessels don't appear on this type of ECS chart display.

INV-NCOE Support

Following a request for assistance, the U.S. Coast Guard's Investigations National Center of Expertise (INV-NCOE) supervisor dispatched two personnel with the appropriate investigations equipment to support this major marine casualty. The INV-NCOE investigators departed immediately for the USCG Marine Safety Unit (MSU) in Paducah, Kentucky—the unit responsible for the investigation. After reviewing the elements of the case, the U.S. Coast Guard District Eight commander designated it a formal district investigation.

On the day following the nighttime allision, the marine casualty investigation team, comprised of Coast Guard and NTSB personnel, traveled to the scene of the incident. These team members, who had never worked together before, would be working alongside each other for months to come over the course of the investigation.

The Combined Team

Arriving at MSU Paducah, the combined team assembled in a conference room to receive information on the incident from the local Coast Guard investigators. The Coast Guard lead investigating officer in turn briefed the MSU's commanding officer on the course of action and the investigation's objectives. The team had already begun the collaborative process based on a shared respect and understanding of the priorities of each agency.

The next step was for the team to visit the incident scene to view the vessel's layout, design, construction, and unique characteristics and gain a general overview of the vessel's key personnel duties. Once there, the Coast Guard and NTSB investigators observed vessel stabilization and preliminary salvage operations. They also introduced themselves to the vessel personnel, the operating company's management personnel, and attorneys.



A technician from the NTSB uses a sophisticated laser imaging device to map the twisted steel on the bow of the M/V *Delta Mariner* while wearing a Coast Guard flotation device and an NTSB hard hat, suggesting the epitome of collaboration. Photo courtesy of the NTSB.

Meanwhile, the NTSB highway accident investigator examined the implications of the incident with respect to vehicular traffic, the highway bridge, and the roadway. The NTSB technical expert worked closely with an INV-NCOE Coast Guard investigator to gather electronic evidence from the vessel's S-VDR and the ECS. This data was sent to the National Transportation Safety Board laboratory for analysis and examination via rigid chain-of-custody protocols, in which two members of the joint team accompanied the electronic evidence to the lab.

The Interviews

At the incident site, investigators completed the on-scene overview and identified the various potential shipboard witnesses and other witnesses. To accommodate crewmembers and the involved parties at this remote location, the lead CG investigator chose a small rental cabin at a local state park for interviews. This guaranteed privacy in a location close to the damaged vessel, the bridge site, and the operating company's shoreside response site, thus providing an ideal location.

Recorded interviews followed a structured format, as the USCG and NTSB investigators focused on different lines of questioning based on agency priorities. Attorneys were present throughout most of the interviews, and written interview transcripts the NTSB prepared were of great help in the formal investigation hearings that were to follow.

The Re-Enactment

During the course of the interviews, it became apparent that the investigators could benefit from seeing the vicinity of the casualty in conditions similar to those at the time of the incident, so the investigators used the USCGC *Cimarron*, a local Coast Guard inland river tender, to recreate the events leading up to the allision.



The panel at the 2012 *Delta Mariner* formal hearing in Paducah, Kentucky, listen to testimony. U.S. Coast Guard photo.

Utilizing the S-VDR audio and the ECS chart playback, investigators combined the two sources of information into one synchronized display and played it back on a laptop computer. Synchronizing this display with an evening transit, investigators had the *Cimarron* maneuver along the same track the *Delta Mariner* followed the evening of the allision. Along the way, the wheelhouse team on the Coast Guard tug commented on how a typical vessel would transit through that particular part of the waterway, which gave valuable insight into the crew's actions on the night of the incident.

Later, NTSB highway and technical measurement personnel took extensive measurements of the height, width, and clearances of the bridge with sophisticated laser measuring tools, then did the same to record the *Delta Mariner's* dimensional properties.

After the on-scene joint investigation concluded, NTSB personnel conducted an "audition" of the S-VDR audio at its lab, where team members who were parties of the investigation listened to the soundtrack of the events recorded on the *Delta Mariner's* bridge. The team then compiled a transcript of the pilothouse discussions leading up to the incident. This information was a critical piece of evidence for the investigation.

The Formal Hearing

A formal hearing took place in mid-April 2012, where the Coast Guard and NTSB teams interviewed the witnesses. The hearing was streamed online, as the Eggners Ferry Bridge was out of service, preventing many people who had wanted to be present at the formal public hearing from attending.

The hearing lasted for a week, and afterward the investigators reconciled all the exhibits to ensure that each member of the hearing understood the various deliverables and expectations as the investigation moved forward.

During the months following the incident, there was a constant flurry of communication between the Coast Guard

and the National Transportation Safety Board to ensure a complete and thorough investigation. The investigators looked at the actions of shipboard personnel that night, the safety management system for the ship, the State of Kentucky's lighting maintenance procedures, the Coast Guard's notice to marines broadcast system, and the Coast Guard's bridge program.

Investigators also conducted follow-up interviews and gathered additional information and documents. This effort was coordinated among the various parties of interest and all members involved in the investigation. The information was shared between the NTSB and the Coast Guard investigation teams to facilitate a collaborative investigative effort.

The Reports

At the same time, the NTSB team gathered information that was unique to the National Transportation Safety Board safety investigation to develop a marine accident brief and a formal public report to the NTSB board, which was streamed on the Internet.

The Coast Guard lead investigating officer forwarded the USCG report of investigation according to Coast Guard policy. The report contained findings of fact, analysis, conclusions, safety recommendations, and recommended enforcement actions. For example, the Coast Guard lead investigating officer made recommendations regarding civil penalties or mariner enforcement actions as well as safety recommendations.

In addition, the USCG team loaded all the evidence and other relevant information into the Marine Information for Safety and Law Enforcement database to allow the Coast Guard to track this incident and other similar incidents to enhance the Coast Guard's marine safety prevention strategy.

About the authors:

Mr. Keith Fawcett is a staff member at the USCG Investigations National Center of Expertise, and is a licensed merchant mariner. He has worked in the marine industry for more than 20 years and is the INV-NCOE's subject matter specialist in human factors, VTS operations, and interviewing techniques.

Mr. Nick Parham is a former USCG lieutenant commander who completed Officer Candidate School in February of 2002 and served in the Coast Guard for 13 years. He began his field training in Morgan City, Louisiana, and served as a marine casualty investigator and vessel inspector for the majority of his Coast Guard career.

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Commendable Acts

Honor, respect, and keeping faith with the mariner.

by MR. KEITH FAWCETT

U.S. Coast Guard Investigations National Center of Expertise

On Easter Sunday in 1969, in the Port of New Orleans, the mighty Mississippi River was swollen with winter snow melt-off. Aboard two different tugs, Captain Chris Rieder studied for his merchant marine license, while Captain Douglas Grubbs was coming aboard for duty and dropping off an Easter meal for his crew.

The Incident

Suddenly they heard the rapid blast of a ship's whistle as the *Union Faith*, a cargo freight ship, and a couple of tugs pushing loaded oil barges were an instant from colliding. As both tug captains and their crews looked out onto the river, they witnessed the moment of impact, flames leaping into the early evening sky. The ensuing fire would reach 175 feet into the air and scar the paint on the bottom of the Greater New Orleans Bridge.

The burning ship, aflame from bow to stern, as well as the burning oil barges and oil threatened to spread the fire across the New Orleans city wharves, docks, and ships moored along the waterfront. Scores of river pilots, firefighters, marine personnel on tugs, and other marine shoreside support personnel gathered to assist as the disaster unfolded.

The Response

Captain Douglas Grubbs and his crew aboard the tug *Cappy Bisso* and Captain Chris Rieder aboard the tug *McGrath II* repeatedly braved the pools of flaming oil, frantically running through swirling fire and dangerous current to rescue mariners who had jumped from the ship, plucking them from the treacherous water. Of the *Union Faith's* crew of 51 (including the pilot), Grubbs and Rieder ultimately rescued 26 men.

The two captains also prevented the burning ship from drifting downriver, saving the wharves and their contents from the potential conflagration. At one point, Captain Grubbs went so far as to shackle his towing hawser into the anchor chains of the *Union Faith* to prevent the listing, flaming ship from drifting further downriver. His attempt couldn't have succeeded without the heroic actions of the *Union Faith's* river pilot, Captain Kenneth Scarbrough, who was last reported on its bow with the ship's master, dropping both anchors as flames from the burning tank barges consumed the bow of the freighter.

As the night progressed, Port of New Orleans fireboats fought the oil barge fires, finally getting them under control by 2 a.m. On the morning of April 7, the *Union Faith*—still



The SS *Union Faith* on fire in New Orleans Harbor, April 6, 1969. Photo courtesy of the USCG Historian's Office.





Captain Douglas Grubbs, left, and Captain Chris Rieder hold a framed USCG gold lifesaving medal near the site of the catastrophic incident. U.S. Coast Guard photo.

burning—capsized and sank. Captain Scarbrough and the rest of the crew were presumed to have perished in the fire and explosions.

Following the incident, the Coast Guard and members of the National Transportation Safety Board began the investigation, which noted:

“The actions of the crews of the tugs McGrath II and Cappy Bisso, which resulted in the saving of twenty-six lives and possibly preventing the burning of Union Faith from drifting into the New Orleans wharves are highly commendable...”

Eventual Recognition

Fast-forward to 30 years later. In 1999, oil was seen bubbling to the surface of the Mississippi River in the heart of New Orleans in one of the deepest parts of the river at Algiers Point. This oil sheen had bubbled to the surface periodically over the years. The Coast Guard Marine Safety Office commander at the time, CAPT Steve Rochon, and retired Rear Admiral Paul Pluta, who was the district commander at the time, met with a river pilot to talk about the source of the oil and create a plan of action for the spill.

At the meeting, district commander Pluta asked the river pilot some questions about the original accident leading to the leaking oil. During the discussion he made a connection between the person he was speaking with—Captain Douglas Grubbs—and one of the names mentioned in the incident. He asked if the river pilot was the father of Captain Grubbs, and the man answered that it was he himself who had been involved in the rescue that night.

That meeting sparked the Coast Guard’s awards investigation to recognize the mariners who gave so selflessly that night. Finally, over three decades later, on April 20, 2001, then-Coast Guard district commander Pluta presented the Gold Lifesaving Medal—the Coast Guard’s highest award

for bravery—to Captain Douglas Grubbs and Captain Chris Rieder.

The Legacy

The marine casualties that the Coast Guard investigates occur in challenging maritime environments, with people working on vessels navigating swollen rivers, creeping through dense fog, besting mountainous seas, and transporting dangerous cargoes. The casualties may occur far out at sea, or in the heart of our most densely packed cities.

Mariners have an unwritten code as well as a legal responsibility to come to the assistance of mariners in distress, often resulting in daring rescues the Coast Guard is unaware of. Commendable acts occur any time crewmembers use their skill, dedication, or expertise to minimize the effects of a casualty by rescuing other mariners, fighting fires, or taking quick action to prevent a more dangerous catastrophe—and when they do so, recognition is in order.

After a casualty, the Coast Guard lead investigating officer gathers facts in an unbiased manner to produce a report of investigation (ROI) with both enforcement and safety recommendations. Additionally, a section in the final part of the report calls attention to any commendable acts performed during and after the incident. Coast Guard leadership at the local, district, and headquarters levels review and comment on the ROI, and can act on the report’s recommendations.

But mariner recognition is not solely limited to the Coast Guard’s accident investigations. The partnership between the Coast Guard and the marine industry is in many ways a collaborative prevention effort to avoid accidents and keep the waterways safe. This recognition can come in a variety of forms, from “Bravo Zulu”¹ letters or certificates of appreciation to higher-level awards such as the Distinguished and Meritorious Public Service Awards. The traditional handshake exchanged when awards are presented is a fitting way to underscore the historic, unique partnership between the people served by the Coast Guard and the Coast Guard itself.

About the author:

Mr. Keith Fawcett is a staff member at the USCG Investigations National Center of Expertise and is a licensed merchant mariner. He has worked in the marine industry for more than 20 years, has participated in several high-profile marine incident investigations, and is one of the winners of the Sener Award for excellence in marine casualty investigations.

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Endnote:

¹ “Bravo Zulu” is a traditional naval signal, indicating “well done.”

Electronic Evidence

Focus on the basics.

by MR. MARC DEJESUS
Marine Investigator

U.S. Coast Guard Investigations National Center of Expertise

At times, marine investigators may become overwhelmed with the amount of on-scene information to collect, especially as ships and maritime platforms increasingly develop in innovation. However, the basics remain the same: Investigators should remember to methodically navigate through the incident details and causal factors prior to and when responding to a marine casualty.

Investigators must also be cognizant of their jurisdictional authority described in Title 46, United States Code (U.S.C.), Chapters 61 and 63; as well as Title 46, Code of Federal Regulations (CFR), Part 4 when gathering evidence. In any case in which an investigator desires to collect electronic evidence, the investigator should be able to articulate the relevance of that evidence to the investigation.

Timeline Basics

First and foremost, investigators should establish a baseline time to reconcile the various ship systems and permit direct comparison between the times recorded on such items as navigational systems and recorders, alarms, closed-circuit television, automation and control systems, and other electronic systems and computers.

Investigators normally use the Global Positioning System (GPS), Differential Global Positioning System (DGPS), or the ship's master clock as the baseline time, with the other systems corrected to adjust to the established baseline time. For example, if the time on a ship system is five minutes behind the established baseline time, five minutes would need to be added to the ship system's time to correct to the baseline time. This would be reflected as +0:05:00.

Incident and Equipment Basics

Another important step in gathering evidence items is examining the big picture. When it comes to electronic evidence, the devil is always in the details, so investigators should use a systematic approach to identify the controlling and monitoring systems

during the first hours of an investigation, as some systems are time-dependent and should be shut down to avoid crucial information being overwritten.

Navigation Incident Basics

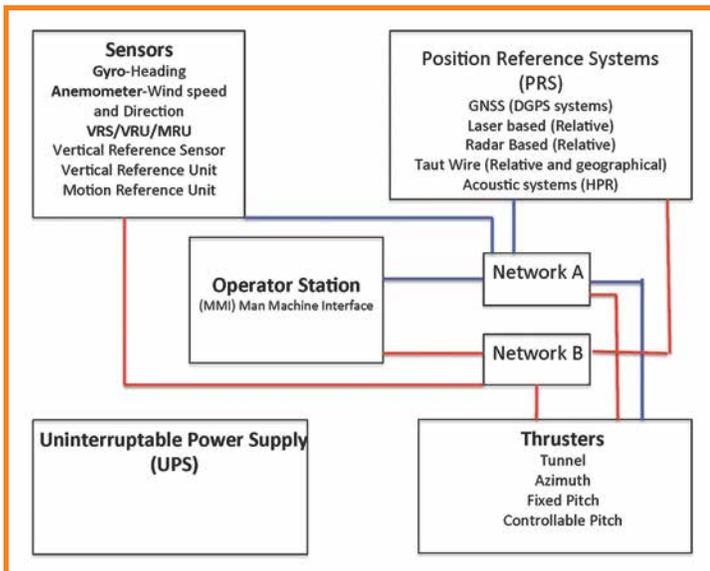
With regard to investigating navigational incidents, bridge technology holds a wealth of information. For example, information from vessels fitted with an integrated bridge system, simplified voyage data recorder (S-VDR), or voyage data recorder (VDR) can greatly assist in casualty investigations. These are typically the first items of critical time-dependent electronic evidence investigators gather.

Voyage data recorders, widely regarded as a vessel's "black box," continuously record chronological records of pre-selected data items, such as:

- ship's position, speed, and heading;
- bridge audio;
- VHF radio communications;
- radar data;



Bridge control systems. U.S. Coast Guard photo.



Dynamic positioning system flowchart. U.S. Coast Guard graphic.

- depth under keel;
- main alarms;
- rudder order and response;
- engine order and response;
- watertight and fire doors status;
- other sensor data.

The recorded data is stored on the server's hard drive and in a protective capsule (for an S-VDR system) or a fixed weather deck-mounted capsule (for a VDR system). Investigators must recognize that the digital recorded information is proprietary and therefore requires the necessary playback software. Additionally, some playback software requires a password.

On vessels not fitted with an integrated bridge system or VDR, other equipment can provide essential recorded information. This equipment includes:

- an electronic chart display and information system (ECDIS), which displays information from electronic navigational charts and integrates position information from the GPS or DGPS and other navigational sensors, such as radar, echo-sounder, or the Automatic Identification System (AIS).
- GPS or DGPS can be a resource in the absence of a VDR or ECDIS. These systems provide a list of waypoints and the track history used in the voyage, which is extremely helpful data to determine a ship's position and movements prior to an incident.
- As with GPS or DGPS, AIS is a useful tool in terms of electronic evidence collection. Some AIS systems have data recording capabilities that provide information about the ship's and other vessels' movements in the area, which is also useful in identifying witnesses. However, AIS is prone to inaccuracies and errors in

various data fields, so investigators should take that into consideration.

- Other basic individual systems such as course recorders, automatic radar plotting aids, radar consoles, and depth sounders may also hold relevant information.

Dynamic Positioning Incident Basics

When diagnosing an incident involving dynamic positioning (DP), understanding the incident and vessel platform is an essential step in identifying the probable failure.

DP technology enables a vessel to maintain its position and heading using sophisticated positioning systems and other sensors as well as its own power plant, thrusters, and propellers. Extrapolating and interpreting the information from the monitoring systems, such as an external data logger and/or data stored on the operator station (main machine interface) is key.

Investigators should familiarize themselves with the equipment description and software details in the original, subsequent, and last failure mode effect analysis (FMEA) trial report.

Fundamental questions include:

- Was the vessel in proper DP setup/configuration, matching the approved FMEA configuration? Check for changes.
- Do the hardware details match?
- Was the software upgraded?
- Was a new FMEA trial completed with the vessel's classification society? If so, examine the automation alarm panel logs and review for previous suspended, blocked, and inhibited alarms.
- Did weather cause the vessel to exceed its working envelope?
- Was there external component failure or operator error?
- Was the vessel redundancy correct for the assigned job?
- Was there a failure of a key external system, like a sensor or position reference system?
- In fair and foul weather conditions, was the failure to stay on station caused by a backup not engaging or a failure of redundant power supplies to controllers or sensors?

Engineering and Propulsion Incident Basics

Investigators should also recognize that failures in dynamic positioning may not just be a result of a localized system failure, so analyzing propulsion and machinery failures and understanding the technical basics of engineering systems is essential.

Consider starting at the source—the machinery in question may have onboard monitoring systems. From there, alarm and monitoring systems within the engine control room and on the bridge may hold vital information. The integrated bridge system and automation systems will have the individual engineering component’s electronic performance history.

Additionally, when it comes to these types of failures, investigators should review maintenance records. Key questions include:

- Was the equipment maintained in accordance with the manufacturer’s specifications?
- Was the equipment serviced by the manufacturer’s approved technicians or the ship’s crew?
- Was it being operated within specification?
- Was the equipment maintained in accordance with the vessel’s classification society technical standards?

Most engine manufacturers utilize electronic control systems that require a proprietary event data retrieval tool to gather engine performance data from event data recorders. Some data, such as event and alarm logs, can be viewed on engine monitoring screens in standard text files. Be sure to obtain data from the electronic engine control units or modules, which can provide data trouble codes or onboard diagnostics information in addition to critical operating and performance data.

This will often identify the exact cause of machinery or component failure, so service technicians must immediately recover this data to preserve its integrity.

Fire Incident Basics

A fire incident is one of the most problematic types to investigate because such incidents often destroy systems. Seek out the assistance of professional fire investigators from federal, state, or local authorities. Investigators should pay particular attention to the events/operations leading up to the initiating event. First and foremost, thoroughly document and photograph the affected areas before crewmembers or others disturb the scene or remove critical evidence. Be sure to document:

- power distribution items and panel switch positions;
- fire extinguishing systems, detection, and discharge components;
- valve handle positions;
- suppression agent levels and weights.

After collecting and documenting the affected areas, draw stored event information from individual alarm panels,



Coast Guard LT Ronald Fogan and Petty Officer Josh Hobson review a voyage data recorder. U.S. Coast Guard photo by Petty Officer Kyle Niemi.

automation and control systems, integrated bridge systems, closed-circuit TVs, and other fire suppression and engineering monitoring systems.

Human Factor Incident Basics

No matter the evolution, detail, or function, marine investigators must identify or discount marine operator activity and determine if electronic devices possibly contributed to the incident. Items to consider:

- the type of device and use;
- who owns the equipment (the operator or the company);
- proximity and accessibility to the crewmember;
- wireless capabilities.

Also consider the vessel’s capability to provide wireless connectivity to crewmembers and personal wireless providers.

Assistance Basics

Vessels are becoming increasingly complex, so even the best marine investigators may encounter unfamiliar systems or situations. Proactively obtaining technical assistance in areas you’re unfamiliar with is smart insurance. Colleagues and special teams such as the Investigations National Center of Expertise and/or other national centers of expertise are ready to help, supplying you with the best resources the Coast Guard has to offer.

About the author:

Mr. Marc DeJesus is a marine investigator and retired warrant officer at the U.S. Coast Guard Investigations National Center of Expertise. He has served in multiple operational afloat and marine safety capacities during his 35 years of service. In his present assignment, Mr. DeJesus specializes in electronic evidence collection, offshore supply vessel, and passenger vessel casualties.



When Things Go Bump

Western rivers groundings.

by MR. LES LEDET
Marine Casualty Investigator
U.S. Coast Guard Investigations National Center of Expertise

Grounding incidents occurring on the U.S. western rivers can differ greatly from typical groundings due to the unique factors of these waterways.¹ There are three basic types of groundings, explained in depth below.

Unintended Groundings

The first such type of incident is called an unintended grounding. This involves any situation in which the vessel is inadvertently or accidentally brought into contact with or placed on the ground, or riverbed.



Cargo from a grounded bulk carrier (right) is offloaded onto a barge. U.S. Coast Guard photo by Air Station Traverse City.

Considered a marine casualty, such incidents must always be reported to Coast Guard personnel, who will follow up on the report and determine the appropriate level of investigative effort necessary based on various factors, such as:

- property damage value,
- extent of personal injuries,
- resulting damage to the environment.

Intended Groundings

The second type, an intended grounding, is considered as such when it's a controlled, deliberate maneuver to place the vessel or barge in contact with the riverbed. Among other reasons, one might choose to attempt an intended grounding to offload passengers, hold position to adjust cargo, or hold position to allow safe navigation and passage of other traffic in the area.

Because these groundings are designated "intentional," they're not required to be reported unless the vessel can't free herself as intended or the intentional grounding causes damage to any people, property, or the environment. In any of those circumstances, the casualty must be reported to the Coast Guard using USCG form 2692. The Coast Guard would then evaluate the report to determine the appropriate level of investigative effort, as they would with an unintended grounding.

Bump and Go

The final type of grounding is commonly known as the "bump and go," where the involved vessel master or licensed mate on watch attests that:

- the grounding (including grounded barges under the control of a towing vessel) was only momentary (e.g., reversing engines freed the grounded vessel on the first attempt);
- no assist vessel was needed to free the vessel and all towing connections remained intact;

- the grounding did not result in any other marine casualty criteria being met as defined in 46 CFR Part 4.05-1(a)(3) through (8).

Under current policy, the Coast Guard does not consider an unintended bump and go grounding alone to be a reportable marine casualty,² but initial notifications of bump and go groundings must still be made to the appropriate Coast Guard command center as a hazardous condition, per 33 CFR Part 160.216.



A grounded tank vessel blocks deep-draft shipping traffic. U.S. Coast Guard photo.

A Coast Guard prevention officer shall review each reported bump and go grounding to confirm that it meets the criteria to be excluded from the grounding casualty reporting requirements under 46 CFR 4.05.³

Coast Guard personnel don't necessarily need to enter such information into the Marine Information for Safety and Law Enforcement (MISLE) database, but any time a field unit does complete an optional investigation on a confirmed bump and go grounding, personnel should document the activity as a nonreportable casualty in MISLE, with no associated CG-2692.

Reporting and Investigation

As all types of vessel groundings may result in injuries, damage to property and the environment, and navigational obstructions that block the flow of commerce, it is important these casualties be reported so the Coast Guard can take appropriate measures to protect the safety of the public, the safety of waterway users, and prevent future casualties.

The marine casualty reporting requirements of 46 CFR 4.05-1 require that the owner, agent, master, operator, or person in charge of a vessel must report certain marine casualties, including unintended groundings, to the Coast Guard.

Once aware of the grounding, the Coast Guard will undertake an investigation to determine as closely as possible:

- the cause of the grounding;
- whether there is evidence of any material failure (physical or design) that may have contributed to the casualty;
- whether there is evidence that any act of misconduct, inattention to duty, negligence, or willful violation of law on the part of any licensed or certified person may have contributed to the casualty;

- whether there is evidence that any Coast Guard personnel or employee of any government agency or any other person caused or contributed to the casualty;
- whether a marine board of investigations should investigate the casualty, in accordance with regulations in 46 CFR 4.09.

Coast Guard personnel then compile information from these incidents for statistics and provide indications why they occurred. This information can help them better determine when or under what conditions groundings may be likely to occur. For example, groundings may be found to be more common during certain times of day or year. Other factors affecting grounding incidents include day/night conditions, water depths, vessel operations, mechanical issues, weather conditions, changes in the waterway bottom, and whether the voyage was a vessel's or ship personnel member's first-time transit.

About the author:

Mr. Les Ledet is a civilian marine casualty investigator at the Investigations National Center of Expertise. He began his maritime career in 1974 as a deckhand and is currently a licensed towing master/unlimited pilot on the inland waters of the United States. He has also served as a civilian vessel traffic service watchstander. Mr. Ledet is a subject matter expert in the field of inland navigation, ship handling, bridge resource management, rules of the road, inland towing operations, and deck licensing.

Endnotes:

- ¹ Inland navigation rules define the term "western rivers" as "the Mississippi River, its tributaries, South Pass, and Southwest Pass, to the navigational demarcation lines dividing the high seas from harbors, rivers, and other inland waters of the United States, and the Port Allen-Morgan City Alternate Route, and that part of the Atchafalaya River above its junction with the Port Allen-Morgan City alternate route including the Old River and the Red River."
- ² U.S. Coast Guard Casualty Reporting NVIC 01-2015.
- ³ As defined in 46 CFR 4.05-1 (a)(3) through (8).



Marine Formal Board of Investigation

A lead investigating officer's perspective.

by LCDR TERESA HATFIELD
Chief, Investigations Division
U.S. Coast Guard Sector New Orleans

On April 4, 2014, I conducted a formal major marine casualty investigation as the lead investigating officer alongside National Transportation Safety Board (NTSB) personnel. Since the investigation is still open, I'll focus on what went well and investigation lessons learned rather than the incident itself.

Challenges

I already had two immediate challenges to address upon assignment as the lead investigating officer. First, the investigation wasn't designated "formal" until two weeks after the incident, putting me two weeks behind. A formal investigation is convened for the more serious or significant incidents investigated under 46 USC Chapter 63 from which the most value can be gained. A lot of things happen in the first few hours after an incident, and that much more in two weeks, so I had my work cut out for me to get up to speed as quickly as I could.

Second, the investigations division at Marine Safety Unit (MSU) Texas City had been the lead on the investigation from the beginning, doing an excellent job, and here I come out of nowhere to step in and take over the lead. Most people would have some heartburn with that—I know I would—so I knew we would need to deal with that angst right away, because I was going to need them, and we would be working very closely together for the foreseeable future.

I made first contact with the MSU Texas City investigations chief during the five-hour drive over to the unit. He came right out and said, "I'm not going to lie—I am a little hurt about it." I gave him high marks for bringing it up so we could talk about it, and I knew right then that we would be fine ... and we were. When I showed up at the unit, beyond providing me with an office, they also supplied all the support and assistance I could hope for.

Tech Support

We had audio playback of several key communications that we wanted to have available during the hearing. Though all parties of interest had their own transcripts, unfortunately that didn't mean they were all in agreement regarding what was said. We felt it would be best to have the original audio available to try to avoid such discussions.

Luckily, our designated recorder also happened to be an IT wizard. On the Friday before the hearing, we visited the courtroom to make sure everything was set up the way we wanted and to do one last audio/visual equipment check. Despite our best efforts, we still had some difficulty with the audio feed during the hearing, but at that point, all we could do was press on.

Time Management

I was fortunate to have a well-seasoned and very capable assistant senior investigating officer (ASIO) who held



Here we listen to testimony. That's me—top row, center. U.S. Coast Guard photo by Petty Officer Andrew Kendrick.

down the reins for Sector New Orleans investigations while I focused on preparing for the hearing. We chose the first week of June for the hearing date, which was a fairly aggressive timeline, but I wanted to move forward quickly because I knew my ASIO would be transferring out, and I would be needed back at Sector New Orleans.

Weeks flew by as the team, working from our separate units, finalized the witness list, developed a list of questions for each witness, and assembled the evidence/exhibits we would need for each. One thing that saved us quite a bit of time was developing our script from an Investigations National Center of Expertise (INV-NCOE) script that had worked well for them.

As the hearing approached, we sent out the finalized list of witnesses to the parties of interest as well as the witness subpoenas. We decided on the order of testimony that would best tell the story, then finalized the script, witness questions, and exhibit binders.

In addition to 32 exhibit binders for the investigations team, the NTSB, the parties of interest, and the witnesses, we also prepared staff binders holding the script and the questions for each witness. Each binder was numbered, assigned to a specific person, and handed out each morning and retrieved every afternoon during the hearing to ensure accountability for each piece of paper.

The Hearing Site

The city of Galveston had a new judicial complex, and they offered one of their courtrooms free of charge. Though some feel a courtroom isn't the most effective setting for administrative hearings, this facility had everything we needed:

- plenty of free parking,
- a side room for the investigations team to meet with the parties of interest privately,
- security,
- state-of-the-art visual and audio equipment.

Further, the judicial complex provided two IT techs for the duration of the hearing, streamed the entire hearing, and it was all free. Though District Eight was set to fund the hearing, such cost considerations helped make this a very favorable venue.

Expect the Unexpected

Shortly after I took over the investigation, district legal made a determination that I couldn't re-interview any witnesses already interviewed prior to my arrival. We could only contact these people regarding whether we would be calling them as witnesses at the hearing—all other questioning would have to wait for the formal proceeding.

Tips and Tricks

■ **Good Team and Time Management Are Critical**

Start out right by choosing a good team, then delegate. You'll be shocked at how fast the time goes, especially if you're working on other cases.

■ **IT Support**

Make sure one of your team members is an IT wizard.

■ **Pre-Hearing Prep**

Do not underestimate the time and effort it takes to put exhibit binders together.

■ **Choose the Right Venue**

There are many things to consider, and they will be different for every hearing. Be sure to consider local community and media interest, security, room size, seating, parking, audio/visual equipment, and cost.

■ **Be Flexible, Be Ready For Anything, and Be Ready to Make Hard Choices**

■ **Working with Partners? Build a Bridge**

When the USCG has the lead in an investigation with other agencies, conflicting policies can cause some angst at the field level. Develop a positive working relationship with other agency lead investigators.

This was a new one for me. I'd participated in the preparation for several hearings, as well as countless suspension and revocation cases, and we had always been able to go back to the well as many times as needed to be ready for the hearing.

Then there was a further complication: One of the key witnesses refused to comply with the Coast Guard subpoena. This meant I had to make a quick, unexpected trip to Houston to stand next to the U.S. attorney in front of a federal judge to plead our case for subpoena enforcement. Fortunately, we were successful, and I'm hopeful my experience will keep others from having to deal with the same issue in the future.

Keep the Focus

There were a few other changes necessary mid-stream, which we made as the situation required. For example, I wanted as many members of the team to get experience questioning witnesses during the hearing as possible, since the more of us who could get such experience under our





The Marine Board of Investigation into the *Alaska Ranger* sinking in 2008 tours the trawl deck of the *Alaska Warrior*, another Fishing Company of Alaska vessel. The crew of the *Alaska Warrior* responded to the casualty and recovered several of the crew. U.S. Coast Guard photo by Petty Officer Sara Francis.



The Marine Board of Investigation listens to testimony in the 2008 sinking of the fishing vessel *Katmai*. U.S. Coast Guard photo by Petty Officer Allyson E.T. Conroy.

belts, the more we could pass on to others. With that in mind, we divvied up the witnesses for questioning.

However, not all of us had the same interview style. As the lead, it was my job to make sure that we conducted the hearing in such a way so that we got as much information as possible. During the hearing, it was clear to me that one team member had a style of questioning that came off as aggressive and off-putting to the witnesses and their attorneys. At

that point, I made the decision to change investigators doing the questioning. It was a tough call, but the lead investigating officer has to keep the end goal in focus—sometimes at the cost of someone else’s feelings.

Joint Efforts

This was not my first time working with the NTSB. I know firsthand that their personnel have their own marching orders, their own investigative process, and often the scope of their investigation is much wider than ours.

As the lead agency, we shared all evidence and information with NTSB personnel, and they participated in our interviews and all aspects of the investigation at their discretion. Often though, because their scope is wider, they ask for additional information, documentation, and other material the Coast Guard doesn’t typically require during an investigation.

That said, when we’re the lead agency, NTSB personnel have to go through us to get these things, which can lead to frustration, lending an extra burden to an already intense and time-consuming investigation. I recommend keeping the door of communication open with your joint lead investigating officer.

My best advice for a joint investigation:

- Know who your district point of contact is and keep the chain of command informed of any and all issues.
- Lead agency or not, make sure you understand your role in the investigation, then hold your investigation as close to your role and scope as possible.
- Ensure that you are familiar with the differences in policies and adhere to the ones that apply according to who has the lead.
- Be fully cognizant that you will need to compromise along the way to facilitate the process. This will reduce frustrations and keep both agencies on an even keel.

About the author:

LCDR Teresa Hatfield enlisted in 1986 and received a reserve commission in 2001. Returning to active duty after 9/11, she responded to Hurricane Katrina and the Deepwater Horizon spill, among other events. She has served as supervisor at Marine Safety Detachment Vicksburg, as the INV-NCOE’s national technical advisor, and is currently chief of the investigations division at Sector New Orleans.

Marine Casualty Subpoena Authority and Enforcement

What every investigating officer should know.

by LCDR DAMIAN YEMMA
Attorney Advisor

U.S. Coast Guard Investigations National Center of Expertise

A subpoena is one of the most important tools available to a Coast Guard investigating officer (IO), as that simple piece of paper is actually a forceful mechanism to issue a legal command. Because they usually move forward unchallenged, IOs may issue subpoenas with little thought as to what would happen if a party refused to comply. However, it's important for investigating officers to fully understand their subpoena authority — especially the process to enforce a subpoena — for those rare situations when enforcement action is necessary.

Enforcement of a marine casualty subpoena requires federal judicial action, which can be a lengthy process requiring justification from the IO as well as assistance from the servicing legal office and the Department of Justice. Therefore, so as not to waste any time, it's essential to ensure:

- every subpoena will be enforceable before issuance,
- the investigating officer has a general understanding of the enforcement process,
- the IO is prepared to follow through with the enforcement process.

Marine Casualty Subpoena Authority

A subpoena is a written order commanding a person to appear before a court or other tribunal to give testimony and/or to produce certain documents or other items. Subpoenas are usually issued by or under the authority of a court. Under 46 United States Code §6304, designated investigating officers are invested with the authority to issue subpoenas directly — in other words, without having to petition a court to issue a subpoena on their behalf. IOs can use a subpoena to compel evidence production, a party in interest, or a witness for testimony. Every investigating officer should be familiar with and have access to a modifiable version of the subpoena template.¹

An IO's subpoena carries the same force, the same effect, and has the same limitations as a civil subpoena issued by a United States district or federal court.² One relatively recent change to the subpoena rules, however, involves geographic limits on service and compliance. In the past, investigating officers could legally serve a subpoena only within certain geographical limits, generally equivalent to

A blank sample subpoena.



the jurisdictional boundary of the federal district court in which the investigation was being conducted.

For example, before 2013, if an IO conducting a marine casualty investigation in Norfolk, Virginia, needed to examine a computer located in Los Angeles, California, he previously needed to ask an investigating officer in that Los Angeles area to issue the subpoena on his behalf. But the revision to the Federal Rules of Civil Procedure (Fed. R. Civ. P.) 45 in 2013 eliminated that geographical limit on service, allowing the IO in Norfolk or any other unit to legally serve a subpoena anywhere in the United States. In situations where personal service is not possible, investigating officers should accomplish effective service using certified mail with a return receipt or some other traceable form of delivery.

Though the limitation on *service* was eliminated, which was good news, unfortunately the bad news is that IOs must understand that a limitation on the place for *compliance* remains. Rule 45(c) generally limits compliance to a location within 100 miles of where the person resides, is employed, or regularly transacts business. Returning to the example above, while the investigating officer in Norfolk can now serve the subpoena requesting the computer in Los Angeles, he or she likely will not be able to require it to be delivered to Norfolk. Instead, the investigating officer will likely still need assistance from an IO in Los Angeles to get the computer to Norfolk.

The geographical limitation on compliance is a complex rule that will require evaluating factors specific to each case. Investigating officers should contact their serving legal office or the Investigations National Center of Expertise (INV-NCOE) attorney for assistance whenever there is a question about setting forth the appropriate place for compliance with a subpoena.

Additionally, the IO must ensure that the evidence or appearance sought is relevant to the investigation. When dealing with records, it's a best practice to describe the sought-after records in the greatest detail possible in the subpoena. Overly broad descriptions, such as "all records or information related to F/V X," may result in either an unenforceable subpoena or a collection of irrelevant records that the IO will then have to review and process in accordance with Coast Guard evidence- and documentation-handling requirements.

Quashing or Objecting to a Subpoena

A Coast Guard investigating officer's subpoena authority is well established, and compliance with a subpoena will not likely be an issue in the majority of cases. However, investigating officers should understand that compliance is

When dealing with records, it's a best practice to describe the sought-after records in the greatest detail possible in the subpoena.

not necessarily a given in every case, nor is it a party's only option when responding. Under Fed. R. Civ. P. 45(d), a subpoenaed party has the ability to either object to or attempt to quash a Coast Guard subpoena.

In the case of a subpoena to produce documents or other evidence, under Rule 45(d)(2)(B), a subpoenaed party can respond to the IO by objecting to the subpoena. The objection must be in writing and must be served to the investigating officer within 14 days of the subpoena's date of service. In this situation, the IO's next step would be to pursue judicial enforcement.

A subpoenaed party can also go to court to attempt to quash, or void, a subpoena. Rule 45(d)(3) states that a court will quash or modify a subpoena if it does not permit a reasonable time for the party to comply, requires the party to comply outside of specified geographic limits (see the Marine Casualty Subpoena Authority discussion), requires disclosure of privileged or protected material, or imposes undue burden on the party. IOs should carefully consider these factors before serving a subpoena. Additionally, the attorney advisor at the INV-NCOE or the staff attorneys at the servicing district legal office are available to review draft subpoenas and advise IOs on this issue.

Judicial Enforcement Process

In those rare situations where a party objects to or ignores a subpoena, the investigating officer should be prepared to seek judicial enforcement. The first step involves contacting the investigating unit's servicing legal office, normally at the district level, for assistance. Although IOs may have developed a working relationship with assistant U.S. attorneys in their area, investigating officers must always work through their servicing legal office before requesting Department of Justice support. The Coast Guard legal office will coordinate referral of the matter to the appropriate U.S. attorney's office, which may not necessarily be in the same federal district as where the investigator or investigation is located.³

Similar to the geographical limitation issue discussed, the concept of venue determines the appropriate judicial district in which a case may be brought. Under 28 USC §1391, venue will normally be determined by where a subpoenaed party resides or where subpoenaed property is located. For

example, if an IO located at Sector Northern New England subpoenas records of a company located in New Orleans, Louisiana, he or she (through the servicing legal office) would likely need to engage with the U.S. Attorney's Office for the Eastern District of Louisiana.

Under 46 USC §6304(b), a federal court has jurisdiction to judicially enforce a marine casualty subpoena. The IO must request that the court issue an order compelling the party to comply with the subpoena. A party's refusal to comply with the court order may subject him or her to various sanctions, including contempt.

If the appropriate U.S. attorney's office agrees to support subpoena enforcement, the next step involves drafting and filing a petition for enforcement. The petition should be accompanied by a written declaration from the Coast Guard describing in detail:

- the casualty,
- the Coast Guard's role in the investigation,
- the Coast Guard's authority to conduct marine casualty investigations and issue subpoenas, and
- details of the contested subpoena, including the manner of service and a description of the evidence or appearance being sought as well as the relevance to the investigation.

The investigating officer is the appropriate party to submit this declaration, and therefore should be prepared to provide all the above information. The IO's servicing legal office and the INV-NCOE attorney can assist the officer with drafting this declaration. Additionally, the Investigations National Center of Expertise maintains previously filed petitions and declarations, which the IO and servicing legal office may review to prepare similar documents for their case.

The assistant U.S. attorney working on the case will then file the petition with the court and arrange for the petition to be served on the party. The party then must respond within 21 days of service; however, a party may waive formal service to extend the response deadline to 60 days.⁴ The party will then file his or her answer within the specified time period, admitting or denying any allegations asserted in the petition and also stating any applicable defenses or objections to the subpoena.⁵

Following the answer, the government and party may engage in discovery, motions, preliminary hearings, or various other procedural matters to bring all necessary information before the court for consideration. Local federal court rules, which supplement the Federal Rules of Civil Procedure, may also affect this process.

During enforcement proceedings, the IO should be prepared to testify in support of the petition, providing information to supplement that provided in the declaration. This testimony may also include cross-examination by the opposing party. The servicing legal office and assistant U.S. attorney will help prepare the investigating officer before testifying.

It is difficult to estimate how long the judicial enforcement process will last. The schedule will depend in part on the district court's previously docketed cases, the judge's availability, and the party's and assistant U.S. attorney's availability. While there may be an expedited process available, the applicability of that process will depend largely on the specific facts of each case. One recent successful judicial enforcement proceeding, using an expedited process, lasted approximately five months from the date the case was referred to the U.S. attorney until the date the judge issued an order requiring compliance with the subpoena.⁶

In Sum

Judicial enforcement of a subpoena can be a lengthy process requiring significant attention from the investigating officer and supporting Coast Guard and Department of Justice attorneys. However, if an item of evidence or an individual's appearance is important enough to subpoena, then it is important enough to follow through with on the enforcement process. Therefore, IOs must ensure their subpoenas are enforceable before they are served, and they must be prepared to take the necessary steps to enforce every subpoena they issue.

Coast Guard investigating officers may contact the attorney advisor at the INV-NCOE if they have any questions about subpoenas, enforcement, or other legal matters related to marine casualty investigations.

About the author:

LCDR Damian Yemma is the attorney at the Investigations National Center of Expertise. He has served in the Coast Guard for 14 years, and his prior assignments include USCGC Sanibel, Sector Guam, the District Seven prevention staff, and the District Eight legal staff. He is a graduate of the University of Florida (B.S. in environmental science, 2000) as well as the College of William & Mary's Marshall-Wythe School of Law (J.D., 2010).

Endnotes:

- ¹ Note that the authority listed on the figure is specific to a marine casualty investigation. The authority for a suspension and revocation subpoena will read: "46 United States Code §7705 and 46 Code of Federal Regulations 5.301(b)."
- ² The general rules governing those federal subpoenas are stated in Rule 45 of the Federal Rules of Civil Procedure (Fed. R. Civ. P.).
- ³ See www.justice.gov/usao/find-your-united-states-attorney for a breakdown of the federal judicial districts and corresponding U.S. Attorney's Offices.
- ⁴ Fed. R. Civ. P. 12.
- ⁵ Fed. R. Civ. P. 8(b).
- ⁶ *United States v. Pizzitola*, 4:14-cv-02335 (S.D. Tx. Dec. 4, 2014) (order on motion for order to show cause).



Promoting Professionalism and Proficiency

The Coast Guard's Suspension and Revocation National Center of Expertise.

by LCDR YANCEE MCLEMORE
Program Manager, Suspension and Revocation
U.S. Coast Guard Office of Marine Casualty Investigations and Analysis

The Coast Guard bears the enormous responsibility of ensuring that the 250,000-plus credentialed mariners operating on our nation's navigable waterways are not only competent, but that their conduct promotes marine safety, ensures marine security, and protects the public and marine

environment. Suspension and revocation (S&R) proceedings are fundamental to achieving those goals.

The rules, regulations, and processes involved in S&R proceedings help the Coast Guard administer oversight of mariner conduct where credentialed merchant mariners:

- ▶ have been negligent in their responsibilities;
- ▶ have acted beyond the scope of their credentials;
- ▶ have been shown to have taken actions that are contrary to public safety, such as inappropriately or illegally using drugs and alcohol.

The process helps to ensure that merchant mariners continue to possess and display the essential skills, experience, and character to safely operate in America's maritime transportation system.

The Genesis

In 2008, under the framework of the Coast Guard's 2007 Marine Safety Enhancement Plan, leadership established the Coast Guard's Suspension and Revocation National Center of Expertise (S&R NCOE) to improve the professionalism and proficiency of the Coast Guard investigating officer (IO) workforce through direct support, oversight, and training.

Shortly after its establishment, the S&R NCOE became recognized as the central repository of Coast Guard expertise and best practices associated with merchant mariner credential suspension and revocation. As such, it is well prepared and proactive in its mission to provide support to the people and units who carry out the suspension and revocation mission. The S&R NCOE does so throughout all stages of the process to ensure mission operations and activities are achieved within the spirit as well as the letter of the law and the marine safety program.

Suspension & Revocation NCOE Functions

- ▶ Maintain programmatic expertise in the suspension and revocation process and administrative procedures.
- ▶ Serve as the field's primary liaison with the National Maritime Center on S&R-related issues that deal with medical and professional incompetence.
- ▶ Provide Coast Guard investigating officers with continual training opportunities on S&R procedures and hearing processes.
- ▶ Provide technical assistance with suspension and revocation hearing preparation and representation.
- ▶ Provide sector commanders with expert advice on contentious suspension and revocation cases.
- ▶ Provide Coast Guard investigating officers with resources for review and assistance with document filing as well as general advice on case management.

Located in Martinsburg, West Virginia, the S&R NCOE is conveniently housed within the Coast Guard's National Maritime Center (NMC) building. The NMC site was chosen because of its direct association with merchant mariner credentialing, imparting a natural synergy to effectively and efficiently oversee mariner issues pertaining to S&R investigations and provide S&R NCOE staff with direct and immediate access to mariner record review and retrieval. Suspension and Revocation National Center of Expertise staff members are also able to easily coordinate with NMC personnel on issues ranging from medical fitness to criminal convictions—issues that could possibly preclude a mariner from obtaining or maintaining a credential.

Personnel

The Suspension and Revocation NCOE is staffed by seven highly specialized personnel, including two active duty Coast Guard officers, three civilian personnel, and two dedicated attorneys. The attorneys work together to address numerous technical, complex, and often unique S&R issues, providing focused legal support to a corps of more than 170 field investigating officers across the entire country and abroad. The staff helps to ensure that IOs interpret Coast Guard law and policies correctly and implement the S&R program consistently. In addition, the S&R NCOE has established a 24-hour call line to ensure that investigating officers nationwide have continual access to uniform, consistent guidance and legal advice.

Furthermore, Suspension and Revocation National Center of Expertise staff members work closely with staffers in the Coast Guard headquarters Office of Investigations and Analysis as well as personnel from the Training Center Yorktown investigations school to develop, disseminate, and implement tools and techniques that help to enhance the knowledge and skill of IOs throughout the Coast Guard.

Training

One of the goals of the Suspension and Revocation NCOE is to build a corps of proficient, experienced, motivated, and competent IOs. To achieve that goal, investigating officers must receive continual training and education. S&R NCOE staffers have taken a step toward that goal by implementing a weekly investigating officer "roundtable" discussion forum to foster improved teamwork and partnership within the IO community and directly link the workforce with training coordinators and policymakers from all levels within the organization.

The concept quickly flourished into a much-anticipated weekly event, often reaching 50-plus investigating officer



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participants. The forum serves to capture best practices and new policy documents while also offering immediate peer-to-peer communications. When emerging issues are identified, an agenda is developed and reference material is distributed to inform the IO community and improve overall competency.

Moving Forward

The marine transportation system can only be as effective and dependable as its personnel, and maintaining a corps of capable, proficient merchant mariners can be a daunting task. Looking ahead, the Suspension and Revocation NCOE is positioned to provide even greater professional counsel and administrative assistance to Coast Guard investigating officers nationwide, providing real-time feedback and leveraging modern technology to deliver specialized, contemporary training on technical suspension and revocation issues.

About the author:

LCDR Yancee McLemore is the Suspension and Revocation program manager in the Office of Marine Casualty Investigations and Analysis. He began his marine safety career as a domestic vessel inspector and marine casualty investigator at Sector Los Angeles/Long Beach. Subsequent tours include chief of the investigations division at Sector Corpus Christi and investigating officer at the Suspension and Revocation National Center of Expertise in Martinsburg, West Virginia.



Service to the Mariner and the Public

Bringing Coast Guard attorneys into the S&R process.

by MR. BRIAN C. CROCKETT
Attorney

U.S. Coast Guard Suspension and Revocation National Center of Expertise

LCDR DAMIAN YEMMA
Attorney

U.S. Coast Guard Investigations National Center of Expertise

A suspension and revocation (S&R) proceeding is a legal mechanism by which the Coast Guard exercises authority over a mariner's credentials. Subject to the Administrative Procedures Act, the S&R proceeding was originally designed to be a more efficient alternative to the federal court system.

Coast Guard investigating officers, or IOs, are specifically trained and qualified to investigate alleged regulatory violations (such as negligence, incompetence, or drug use) that could affect a mariner's ability to hold a Coast Guard-issued credential.¹ For decades, Coast Guard IOs presented the government's case, based on their investigations, at administrative hearings, effectively arguing for suspension or revocation of a mariner's credential. Due to the administrative nature of the hearings, IOs often prepared and argued their cases without the assistance of a Coast Guard attorney.

Legal Support

In recent years, however, S&R hearings have become increasingly complex and formalized. Administrative law judges (ALJs) have demanded stricter adherence to procedural and evidentiary rules, and respondents (mariners) have hired legal counsel or received free legal assistance from a growing list of attorney volunteers to defend S&R actions. Though most investigating officers receive case presentation training, these developments led the Coast Guard to realize a greater need to provide dedicated legal support for suspension and revocation cases.

In 2008, the Coast Guard established the Suspension and Revocation National Center of Expertise (S&R NCOE) to

help improve the S&R process and administrative hearing procedures. The center is located in Martinsburg, West Virginia, and its attorneys and experienced investigating officers support S&R actions throughout the country.

While IOs are primarily responsible for investigating cases, collecting facts, uncovering regulatory and legal violations, and preparing complaints, current Coast Guard policy mandates attorney participation in all S&R proceedings. In most cases, Coast Guard active duty or civilian attorneys from the S&R NCOE or servicing district legal office will typically start providing this support near the time of the investigation's completion. These attorneys are involved in all prehearing matters, including prehearing conferences, motions and discovery practice, and witness preparation. Attorneys also participate with an IO in every suspension and revocation hearing.

The Process

Similar in form to federal civil or criminal trial practice, a suspension and revocation hearing involves:

- an opening argument from the Coast Guard presenting witness testimony and other evidence to support allegations in the complaint,
- direct and cross examination,
- the respondent's defenses or mitigating facts, and
- a closing argument.²

Further, administrative law judges typically expect post-trial briefs, which Coast Guard attorneys also support. Additionally, S&R NCOE attorneys now write all appeal

briefs. Integrating attorneys into the process demonstrates the Coast Guard's commitment to ensuring a mariner's due process in suspension and revocation proceedings.

Complaints

For example, a Coast Guard attorney reviews each complaint before it is served upon the mariner. S&R NCOE personnel review the overwhelming majority of new complaints for legal sufficiency, factual support, and nationwide consistency.

This provides two advantages:

- First, the S&R NCOE personnel ensure that complaint allegations have sufficient factual and legal basis. This protects mariners from the financial and emotional toll of an unjustified suspension and revocation prosecution. It also reduces the Coast Guard's exposure to potential Equal Access to Justice Act claims.³
- Second, this centralized review process ensures nationwide consistency in charging decisions as well as in the length of suspension or revocation requested. Prior to the policy, mariners in different locations who committed similar offenses could face dissimilar potential consequences. The S&R NCOE works to maintain consistency on a nationwide level, leading to greater fairness in S&R actions.

Attorneys also play a vital role in negotiating and crafting settlement agreements, as the involved attorney reviews, edits, and approves each agreement. This ensures that settlement agreements are legally sound and fair to mariners.

The Results

Coast Guard attorney involvement in S&R cases also benefits the public, as credentialed mariners hold positions of great responsibility, including transporting essential, often hazardous cargo on the nation's waterways. In cases where mariners use drugs, conduct negligent operations, or commit other violations, the Coast Guard must zealously pursue suspension or revocation of the mariner's credential to remove them from that position of responsibility and protect the public health and well-being.



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By combining the Coast Guard attorney's legal acumen and advocacy experience with the IO's maritime investigations and regulatory enforcement experience, the Coast Guard creates teams that provide greater consistency and fairness to the mariner and maritime community, ultimately protecting the public.

About the authors:

Mr. Brian C. Crockett is an attorney at the Suspension and Revocation National Center of Expertise.

LCDR Damian Yemma is the attorney at the Investigations National Center of Expertise. He has served in the Coast Guard for 14 years, and his prior assignments include USCGC Sanibel, Sector Guam, District Seven prevention staff, and the District Eight legal staff. He is a graduate of the University of Florida (B.S. in environmental science, 2000) as well as the College of William & Mary's Marshall-Wythe School of Law (J.D., 2010).

Endnotes:

¹ See 46 USC §7703 and 46 CFR Part 5.

² See 33 CFR Part 20 for the rules of practice, procedure, and evidence for formal administrative proceedings of the Coast Guard.

³ These claims may entitle a mariner to the recovery of attorney's fees or related costs in a case where a Coast Guard complaint is dismissed, not substantially justified, and where the mariner meets other qualifying factors. See 49 CFR Part 6 for Equal Access to Justice Act procedures and information.



Raising the Bar

How the S&R NCOE improves the S&R process.

by HON. WALTER BRUDZINSKI
Chief Administrative Law Judge
U.S. Coast Guard

To promote safety at sea, Congress granted the Coast Guard authority to suspend or revoke merchant mariner credentials for acts of incompetence, misconduct, negligence, violations of law or regulation, or using dangerous drugs. The Coast Guard initiates nearly 600 suspension and revocation (S&R) cases each year, most of which are settled.

Chapter 77 of Title 46 U.S. Code contains the legal authority for these proceedings, which requires that administrative law judges (ALJs) adjudicate them. These S&R proceedings are formal administrative actions that are similar to civil trials in state or federal court, but without a jury and with streamlined discovery and procedural rules to ensure a just, speedy, and inexpensive determination.¹

The suspension and revocation process consists of formal proceedings prescribed within a framework of legally binding regulations and agency rulings. The Suspension and Revocation National Center of Expertise (S&R NCOE) ensures Coast Guard representatives understand S&R subject matter and possess appropriate advocacy skills.

The Proceedings

Coast Guard investigating officers (IOs) initiate S&R proceedings by serving a complaint on the mariner. ALJs rule on motions, hold pre-hearing conferences, issue subpoenas, and preside at hearings that involve written and oral testimony with the right of cross-examination. They also review briefs and issue written decisions. The parties may appeal the judge's decision to the Commandant and the Commandant's decision to the National Transportation Safety Board (NTSB). NTSB's decision may be appealed to the appropriate Circuit Court of Appeals and ultimately to the U.S. Supreme Court.

The Coast Guard always bears the burden of proving the complaint allegations by the preponderance of the evidence, and the administrative law judge must determine if the Coast Guard has met its burden.²

ALJs have decisional independence which enables them to review the evidence, find facts, and issue decisions free from any pressures the parties or officials within the agency might apply.³ To help ensure decisional independence, regulations prohibit agencies, including the Coast Guard, from controlling judges' salaries, conducting performance evaluations on them, or providing monetary/honorary awards to judges.⁴

ALJs have decisional independence which enables them to review evidence, find facts, and issue decisions free from pressure from the parties or agency officials.

Because suspension and revocation proceedings are formal, judges expect an appropriate level of preparedness and professionalism throughout the process, similar to what a judge expects of professional counsel in state or federal court.

The Players and the Process

Administrative Law Judges

The Coast Guard is one of approximately 30 federal agencies administering laws that require civil administrative adjudication, and there are approximately 1,600 administrative law judges in the federal government. The Coast Guard has six judges, plus one chief judge. Experienced attorneys who wish to become a federal administrative law judge must undergo the Office of Personnel Management (OPM)'s competitive screening and qualification process, which involves documenting several years of experience in trials and hearings, securing letters of recommendation, passing a written examination, and going through structured interviews.

Upon successfully completing the screening and qualification process, judicial candidates are placed on a register for ultimate appointment as administrative law judges. ALJs

receive special civil service protections and can expect a full career; that is, they are not term-limited.

Coast Guard administrative law judges also function as the Department of Homeland Security's administrative judiciary. They conduct formal proceedings in cases initiated by the department's agency components, such as the Transportation Security Administration. As time and availability permit, Coast Guard judges also adjudicate cases for other agencies on a reimbursable basis to support OPM's ALJ loan program.⁵ For example, Coast Guard judges helped the special master of the September 11th Victim Compensation Fund adjudicate claims. This type of assistance brings timely, cost-effective resolution to the requesting agency's pending cases and broadens and enhances the Coast Guard judges' analytical and adjudicatory skills.

Investigating Officers

Investigating officers traditionally represented the Coast Guard in suspension and revocation proceedings. While they were not required to be attorneys, formal S&R proceedings are adversarial, requiring the Coast Guard representative to exercise attorney-like trial advocacy skills as well as substantial suspension and revocation case law knowledge.

Though the investigating officers were very well trained, some situations required knowledge, skills, and abilities they hadn't yet had the opportunity to acquire, given the limited amount of time in the position, the press of other casualty investigations, and the infrequency of contested hearings. Despite the investigating officer's advanced training and expertise, some legal situations develop during the proceedings that necessitate the appearance and participation of an attorney. The Coast Guard addressed this issue by having some attorneys serve on rotational tours as investigating officers and assigning attorneys from other commands on an "as needed" basis to litigate cases involving unique legal issues.

Having attorneys serve on rotational tours as investigating officers and assigning attorneys from other commands on an "as-needed" basis addressed this issue, but there remained a growing, servicewide need for consistent and reliable S&R expertise. The S&R NCOE now meets that need. Since it has been in existence, investigating officers have had a consistent source of knowledge, skills, and abilities to draw from. An attorney from the Suspension and Revocation National Center of Expertise can provide comprehensive representation throughout the proceedings. Representation



Chief Judge Brudzinski conducts a suspension and revocation hearing. Photo by Ms. Megan H. Allison, director of judicial administration, Office of the Chief Administrative Law Judge, U.S. Coast Guard.

may include responding to pre-hearing motions, presenting evidence during the hearing before the administrative law judge, and/or preparing post-hearing and appellate briefs.

When attorneys present S&R cases, they ensure the appropriate level of professionalism and preparedness for these formal, civil administrative proceedings. Their representation also promotes fairness, minimizes errors in law, and ensures cases are adjudicated in accordance with Congress' intent.

Drafting Complaints

Inadequately drafted complaints may require the time-consuming process of redrafting the allegations and issuing an amended complaint. Further, proposed sanctions may vary greatly, often resulting in widely different results imposed for the same offense.

In response, the S&R NCOE now reviews complaints to ensure legal sufficiency and consistency in proposed sanctions. Clear and legally sufficient complaints drafted correctly and consistently the first time puts the respondent on notice of the proscribed conduct and provides a firm basis to prepare a defense. It also eliminates delays incurred amending the complaint and promotes consistency in sanctions. Consistent sanctions promote fairness.

Case Presentation

Presentations of evidence in hearings before administrative law judges reflect the degree of the investigating officer's pre-hearing preparation and his/her level of S&R experience. Typically, investigating officers aren't in their assignments for a period of time sufficient to obtain legal knowledge or gain adequate experience in prosecuting cases. With most cases being disposed of by settlement, a majority of investigating officers never get the opportunity to put on

evidence at a suspension and revocation hearing before an administrative law judge.

Fortunately, S&R NCOE attorneys have experience in suspension and revocation litigation. Having experienced attorneys serve as the Coast Guard's representative at S&R hearings has greatly improved the process.

How the S&R NCOE Advances the Process

The S&R NCOE has been instrumental in assisting the Coast Guard throughout the entire suspension and revocation process. For example, after completing the investigating officer's course, IOs engage in periodic conference calls with the Suspension and Revocation National Center of Expertise, during which they're briefed on the latest developments in ALJ decisions, Commandant decisions on appeal, and NTSB decisions, as well as other developments. As a result, Coast Guard representatives are better prepared for S&R litigation by being up to date with the latest case law.

The Suspension and Revocation National Center of Expertise also benefits the Coast Guard by supporting a legal representation program for mariners of limited financial means. The Office of the Chief Administrative Law Judge implemented this program to provide mariners with contact information of attorneys willing to provide no-cost or reduced-cost legal representation. At a recent Maritime Law Association (MLA) conference, member attorneys presented a mock S&R scenario in which S&R NCOE personnel represented the Coast Guard, the MLA attorneys represented the mariner, and Coast Guard judges presented the view from the bench.

The MLA member attorneys helped initiate this program to encourage other member attorneys to learn more about suspension and revocation and perhaps volunteer their

services. Respondents are now advised that volunteer attorneys might be able to assist them and are referred to the ALJ program to contact a volunteer attorney in their state. With few exceptions, most respondents are now represented by counsel at S&R hearings.

The S&R NCOE also benefits the Coast Guard by supporting a legal representation program for mariners of limited financial means.

In sum, the Suspension and Revocation National Center of Expertise has raised the quality of preparation and presentation to a level appropriate for formal proceedings, considering the mariner's due process rights are paramount in these cases. The S&R NCOE has also promoted fairness in the process by supporting efforts for both parties to be represented by professional counsel. Finally, the S&R NCOE's efforts provide greater transparency, which enhances the public's understanding of maritime safety and security. Most importantly, it leads to greater public confidence in the fairness of the process.

About the author:

Chief Judge Brudzinski has published several articles concerning suspension and revocation. A former career prosecutor who was originally appointed administrative law judge in 1996, he holds a B.A. from the University of Maryland, a J.D. from George Mason University (with distinction), and a master's and Ph.D. in judicial studies from the University of Nevada.

Endnotes:

- ¹ 33 CFR §20.103(a) (2014).
- ² 33 CFR §§20.701 and 20.702 (2014).
- ³ See 5 USC §§554 and 556 (2012).
- ⁴ See 5 CFR §930.206 (2014).
- ⁵ 5 USC §3344 (2012) and 5 CFR §930.208 (2014).

Prescription Drug Abuse on the Water

A growing problem.

by LT SARAH E. BRENNAN
Marine Investigator

U.S. Coast Guard Suspension & Revocation National Center of Expertise

CDR CHRISTOPHER F. COUTU
Chief

U.S. Coast Guard Suspension & Revocation National Center of Expertise

When a mariner uses dangerous drugs, Congress requires the Coast Guard to initiate suspension and revocation (S&R) proceedings against his or her merchant mariner credential (MMC). This authorizing statute states that the MMC shall be revoked unless the mariner provides satisfactory proof that he or she is “cured” of any addiction or current use.¹

The authority is broad for a reason. Whether a mariner has a history of using drugs on or off the water, while on-duty or not, Congress means business when it comes to its vision of removing *all* drug users from the water.

The Coast Guard must only prove the mariner held a merchant mariner credential at the time of the drug use—not that the drug use occurred while the mariner was working.

Hence, at an S&R hearing, the Coast Guard must only prove the mariner held an MMC at the time of the drug use—not that the drug use occurred while the mariner was working or “acting under the authority of the credential,” in S&R parlance. More simply put, drug use off the water is as actionable as drug use on the water.

It’s true: An individual who holds a merchant mariner credential is held to a higher professional standard than other nonlicensed professions, and is expected not to engage in any illicit activity involving illegal drugs at any time, whether on a vessel or on shore leave.

The Coast Guard’s Authority to Test

The reason for the strict rule is simple: Drug use is not consistent with marine safety. Using drugs off the water is an indicator of drug use on the water, and Congress will not accept that risk. However, the statute does not apply to prescription drugs.² But while the use of a prescription drug is not inherently illegal, using any controlled prescription



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Prescription Drug-Related Incidents

Any discussion about prescription drug use on the waterways necessarily recalls major accidents stemming from their effects. In October 2003, the Staten Island Ferry allided with its pier, causing 11 fatalities and 71 injuries. Fatigue resulting from painkiller use is noted as contributing to the incident.



The outside lower level of the Staten Island Ferry *Andrew J. Barberi* after it struck a pier, killing ten people. U.S. Coast Guard photo by Petty Officer Mike Hvozda.

In November 2007, the container ship *Cosco Busan* allided with the Oakland Bay Bridge, spilling more than 53,000 gallons of fuel oil. The pilot's use of impairing prescription medications is cited as one of the main incident causes.



A Coast Guard small boat patrols in the Port of Oakland near the M/V *Cosco Busan*. Unified Command photo by Petty Officer Prentice Danner, U.S. Coast Guard.

Bibliography:

Report of investigation into the circumstances surrounding the incident involving allision/personnel casualties — *Andrew J. Barberi* on 10/15/2003.
Report of investigation into the allision of the *Cosco Busan* with the Delta Tower of the San Francisco-Oakland Bay Bridge on November 7, 2007.

drug without a prescription would still be considered “drug use.” Unfortunately, the Coast Guard has no mechanism in place to test for such illicit use at this time.

Under current regulations,³ marine employers must test for five drugs—marijuana, cocaine, opiates, phencyclidine

(PCP), and amphetamines—during pre-employment screenings, via random testing throughout the year, after serious marine incidents, and whenever reasonable suspicion exists.⁴ The National Maritime Center also requires each mariner making an application or application for renewal to submit a recent urinalysis or “periodic” test.

Prescription Drugs

The Drug Enforcement Administration's 2014 National Drug Threat Assessment reported that the annual economic cost of controlled prescription drug non-medical use (use beyond that of prescription) was more than \$53 billion in 2011, with painkillers being the most commonly abused. It is clear that prescription drug abuse is gaining steam throughout our society, and this type of drug abuse has the potential to impair a mariner's faculties to a greater extent than the recreational drugs identified and tested for in our regulations.

While the Coast Guard does not mandate testing for prescription drugs, marine employers certainly are wary of their abuse. In an effort to ensure vessel, cargo, and employee safety, as well as that of the marine environment, marine employers may implement their own testing requirements that go beyond what Coast Guard and Department of Transportation (DOT) regulations require.

Current regulations don't require marine employers to report the results of non-DOT testing to the Coast Guard, which is disappointing to Coast Guard investigating officers and the S&R National Center of Expertise (S&R NCOE).⁵ They are just as interested in the results as marine employers and medical review officers (MROs) across the nation, and similarly concerned about the rising nature of these cases and the danger they present to marine safety. In 2014, marine employers voluntarily reported 54 cases of drug use to the Coast Guard that involved positive tests for drugs outside of traditional DOT screening.

You're Busted

Those who abuse prescription drugs (take a controlled substance either without a prescription or beyond the bounds of prescribed use) are discovered several ways, and marine employers are the key. As part of a company policy, marine employers test after an injury, following a reportable marine casualty, or because a fellow crewmember or supervisor suspects a mariner may be operating under the influence.

Frankly, a marine employer may choose to test for any reason, but whether the Coast Guard can use those test results for suspension and revocation actions depends on a number of factors, particularly if the mariner was provided fair notice of the testing requirements. Suspension and revocation action on non-DOT drug tests is generally permissible,

though the Coast Guard must look at the reasons for the test with great scrutiny and ensure the test was accurate and defensible.

Currently, the S&R NCOE receives reports of non-DOT positive drug tests at a rate of two cases a week. As these are not mandatory reports, we must presume that the rate is higher to account for those positive reports handled by marine employers on their own.

It's unfortunate more marine employers haven't shared non-DOT positive drug tests with the S&R NCOE. In some cases, the employer releases the mariner, who then seeks employment elsewhere. When the employer doesn't report the case to the Coast Guard, we can't establish a record, and the mariner receives a fresh start with a new employer who is left unaware of any prior or recent drug history.

Dealing with Dual Systems

Many cases of prescription drug use come to light via testing in tandem with Coast Guard-required testing. Since maritime companies recognize that the scope of the required test is limited, employers may also conduct their own "expanded panel" test at the same time.

When done in this manner, companies must ensure that the DOT-required test is done first, before any other company test. There should be two different samples collected, with the first being the DOT sample, completed start to finish, before any other company-required test is initiated. Using a sample in a manner outside the scope of the regulations invalidates the results of the DOT test, and so the Coast Guard cannot use the test for S&R purposes.

The Coast Guard requires that marine employers test any crewmember directly involved in a serious marine incident, "serious" meaning involving any injury incurred requiring treatment beyond first aid. Some marine employers choose to conduct their expanded testing in those situations, as well. This makes good sense. Questioning the involvement of drug use is fundamental when determining whether an injury was caused by an employee's own actions, and the required five-panel screen may not provide all the necessary information.

Hospitals are a common source of non-DOT tests. When mariners are injured and crewmembers are sent to the hospital for care, the treating physician will often conduct further urine or blood testing. Positive results are sometimes reported back to the marine employers, then passed to the Coast Guard for potential action.

Contractors for large marine employers also may require an expanded panel drug test before the mariner is allowed to work. These closely resemble a pre-employment screen and are common in the Gulf of Mexico outer continental shelf, where companies contract offshore supply vessels and crew. While the Coast Guard doesn't require testing in these situations, some marine employers mandate the tests on their own to minimize risk.

How the S&R NCOE Can Help

These examples provide evidence of industry-wide knowledge and concern for the abuse of drugs beyond those identified in the Coast Guard regulations—namely prescription drugs. When unprescribed controlled substances are found through expanded non-DOT testing, the Coast Guard can and will take action on the positive result if the test was conducted in a scientifically valid and reliable manner.

The Coast Guard has jurisdictional authority under the drug use statute to take action against a merchant mariner credential when it receives a positive drug test and can show that the mariner has been a user of—or is addicted to—a dangerous drug. The Commandant has also provided guidance that specifically recognized that the Coast Guard may place in evidence facts (results of non-DOT drug tests) that tend to show drug use to prove the charge.⁶

However, we must carefully review the tests to be sure regulations have not been circumvented. At times, the S&R NCOE has rejected an investigating officer's request to take action on a non-DOT positive test, as the test was either not collected in accordance with the marine employer's own policy, or the test was taken in an effort to circumvent the regulations.

About the authors:

LT Sarah E. Brennan is a 2003 graduate of Texas A&M University at Galveston with a degree in ocean and coastal resources. She also holds a master's degree in environmental policy and management. She has served more than 11 years in the Coast Guard, most recently as an investigator at the Suspension & Revocation NCOE.

CDR Christopher F. Coutu is the chief of the Suspension and Revocation NCOE. He is a 1993 graduate of the University of Rhode Island and a 2001 graduate of Suffolk University Law School. He has served for 13 years in the Coast Guard in legal and prevention positions.

Endnotes:

¹ See 46 USC §7704(c).

² See 46 USC §7704 notes.

³ 46 CFR Part 16 Chemical Test regulations, 49 CFR Part 40.

⁴ See 46 CFR §16.113(b).

⁵ Marine employers are only required to report results from testing pursuant to Part 16.

⁶ See Franks (CDOA 2704).



Bearing the Burden of Proof

The Suspension and Revocation NCOE brings drug users to justice.

by MR. ERIC A. BAUER
Senior Investigating Officer

U.S. Coast Guard Suspension and Revocation National Center of Expertise

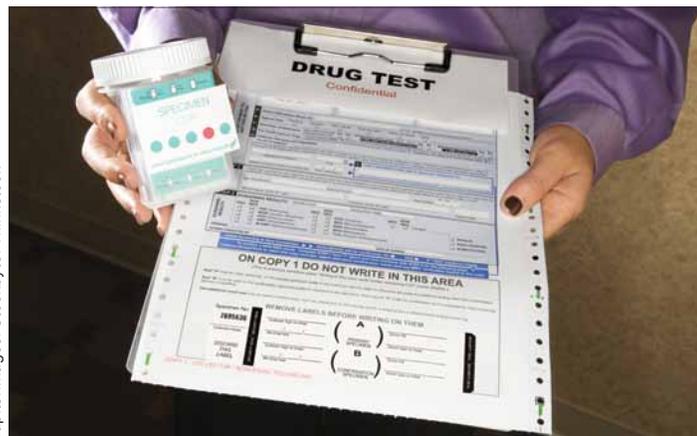
LT SARA M. ELLIS-SANBORN
U.S. Coast Guard Atlantic Area

The U.S. Coast Guard has a duty to enforce laws that promote the safety of life and property at sea. Among other laws that aid in this effort, Congress enacted Title 46, United States Code (USC) §7704, to allow the Coast Guard to remove individuals who possess or use drugs from service in the U.S. Merchant Marine. Further, the Coast Guard established the regulations found in Title 46, Code of Federal Regulations (CFR) Part 16, which provide the means to minimize merchant mariners' use of dangerous drugs and promote a drug-free and safe work environment.

Drug Testing

The regulations set minimum standards for marine employer drug testing programs and require marine employers to conduct drug testing on four occasions:

- pre-employment,
- random,
- after a serious marine incident (SMI), and
- for reasonable cause.¹



When the threat of testing fails to deter mariners from dangerous drug use, it is anticipated such use will be exposed by this required testing. Consequently, Part 16 requires the marine employer or sponsoring organization to report to the Coast Guard in writing when a credentialed mariner fails a drug test.

Failing a Test

When the Coast Guard receives such a report, an investigating officer (IO) commences an investigation. If the investigation yields evidence supporting drug use, the IO will initiate administrative actions against the mariner's merchant mariner credential (MMC) by filing a complaint with the administrative law judge (ALJ) docketing center and serving it upon the mariner.

The complaint will charge the mariner with use of or addiction to a dangerous drug, and will seek to either revoke the MMC, or the IO may offer a settlement agreement, allowing the mariner an opportunity to remediate the offense by proving cure. The matter will be assigned to an ALJ for a hearing if:

- the investigating officer chooses not to enter into a settlement agreement with the mariner (whom we will now refer to as the "respondent"),
- the respondent declines a settlement agreement,
- the respondent declines to voluntarily surrender the MMC.

The Hearing

The administrative hearing is a trial-like proceeding where the Coast Guard always bears the burden of proof, which must be met by a preponderance of the evidence. In other words, the Coast Guard must establish that the allegations

are more likely than not to have occurred. To do this, the Coast Guard must prove all of the required elements of the offense charged.

If the Coast Guard successfully proves the jurisdictional and factual elements for use of or addiction to a dangerous drug, 46 USC §7704 and 46 CFR §5.59 leave no discretion on sanction, making revocation of the MMC mandatory unless the respondent provides satisfactory proof of cure.

The Burden of Proof for a USCG-Mandated Drug Test

As with other court cases, meeting the burden of proof is easier said than done, and involves several elements.

Jurisdictional Element: First off, the Coast Guard must prove it has jurisdiction over the MMC. Administrative proceedings (also referred to as suspension and revocation [S&R] proceedings) are directed solely at merchant mariner credentials or endorsements—not against persons or property.

In the case of drug use, jurisdiction exists if the respondent holds a valid MMC. To prove jurisdiction, the Coast Guard need only prove that the mariner was issued a merchant mariner credential, and that it is valid at the time of the hearing. If the mariner does not have a valid MMC, then nothing exists for the ALJ to issue an order of suspension or revocation against. Once jurisdiction is established, the Coast Guard then bears the burden of proving the factual elements of the offense by a preponderance of the evidence (more likely than not).

Factual Elements: Unless the Commandant, the National Transportation Safety Board, or the federal courts modify or reject them, Commandant decisions and the principles and policies enunciated in appeal decisions are binding upon all administrative law judges.

Regarding appeal decisions,² until recently, the Vice Commandant (by direction of the Commandant) has stated, “The Coast Guard may establish a *prima facie* case of illegal drug use by showing that:

- (1) the respondent was tested for a dangerous drug,
- (2) the respondent tested positive for a dangerous drug, and

The administrative hearing is a trial-like proceeding where the Coast Guard always bears the burden of proof, which must be met by a preponderance of the evidence.



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Administrative proceedings are directed at merchant mariner credentials or endorsements—not persons or property.

- (3) the test was conducted in accordance with 49 CFR Part 40.”³

To prove these three elements, the Coast Guard needs only evidence from the urine collector, the laboratory, and the medical review officer (MRO).

However, in two recent appeal decisions, the Vice Commandant negated the results of the mariners’ failed chemical tests despite the Coast Guard proving the necessary elements. In Appeal Decision 2697, the Vice Commandant advanced previous appeal decisions by stating, “To establish a *prima facie* case of drug use based solely on a urinalysis test result, the Coast Guard must prove three elements:

- (1) that respondent was tested for a dangerous drug,
- (2) that respondent tested positive for a dangerous drug, and
- (3) that the test was conducted in accordance with 46 CFR Part 16.”

With regard to Appeal Decision 2697, the Vice Commandant found, as previously noted, that the urinalysis test must have been conducted in accordance with 46 CFR Part 16, which requires that crewmembers selected for random drug testing be selected by a scientifically valid method. When randomness is at issue, if it is not shown that a respondent was



selected for testing by a scientifically valid random method, the drug test has not been shown to have been conducted in accordance with 46 CFR Part 16 and one of the elements of a *prima facie* case has not been established.

Later, in Appeal Decision 2704, the Vice Commandant further clarified the statements in Appeal Decision 2697 concerning the three elements required for a *prima facie* case of drug use. In Appeal Decision 2704, the Vice Commandant held that a *prima facie* case of drug use is established when:

- (1) the respondent was the person who was tested for dangerous drugs,
- (2) the respondent failed the test, and
- (3) the test was conducted in accordance with 46 CFR Part 16 (with the proviso that 46 CFR Part 16 incorporates by reference the regulations in 49 CFR Part 40).

Under this rule, when the test was ordered pursuant to the regulations, but the justification for it is not consonant with the regulations, or the test is not conducted in accordance with 49 CFR Part 40 and is therefore unreliable, there is no *prima facie* case proved.⁴

The Vice Commandant explained the procedures in 46 CFR Part 16 were established not only to protect public safety interests, but also to ensure that mariners' constitutional rights are safeguarded throughout the drug testing process. By expressly mandating limited, specific types of drug tests, the regulation drafters ensured that the constitutionally protected privacy interests of the mariner were balanced with the overriding need to ensure a drug-free and safe workplace.

The drafters of 46 CFR Part 16 recognized that the Fourth Amendment (which protects against unreasonable searches and seizures) applies, and that private employers' testing to comply with federal regulatory requirements constitutes government action.⁵ Hence, when the employer conducts tests in accordance with 46 CFR Part 16, the employer acts as an instrument or agent of the government. Therefore, it is vital that if a marine employer orders a mariner to submit to a drug test under the authority of 46 CFR Part 16, the reason for the test must be fully supported by 46 CFR Part 16.

The Respondent Was the Person Who Was Tested for Dangerous Drugs. To prove the respondent was tested for a dangerous drug, the Coast Guard leans heavily on the urine collector's training, actions during the collection process, documentation, and testimony concerning the proof of identity for the person providing the specimen.

Since the chemical test must have been conducted in accordance with 49 CFR Part 40, the testimony and documentation

the collector provides as evidence must prove he/she is properly trained and authorized to collect urine specimens for Department of Transportation drug testing. To do this, the Coast Guard need only produce documentation that the collector, at the time the specimen was collected, met all of the regulation's requirements.⁶ The collector must also show that the mariner was properly identified.

For example, the collector must see an original employer photo ID (other than in the case of an owner-operator or other self-employed individual) or a federal, state, or local government ID. Employer representative (not a co-worker or another employee being tested) positive identification is also acceptable. The preferred means of identification is viewing the MMC and/or Transportation Worker Identification Credential.

It is worth noting that the majority of drug use cases the Coast Guard loses are due to error(s) in the collection process.

The Respondent Failed the Test. The second element to prove is that the mariner tested positive or failed the drug test, which requires sub-elements also to be proved. To fail a chemical test for dangerous drugs per 46 CFR Part 16 means:

- the result arose from a chemical test conducted in accordance with 49 CFR Part 40, and
- a medical review officer reported it as "positive" because the chemical test indicated the presence of a dangerous drug at a level equal to or exceeding those established in 49 CFR Part 40.

To prove this element, the Coast Guard leans slightly on the collector and heavily on the laboratory and medical review officer. The Coast Guard will offer the laboratory's copy of the federal drug testing custody and control form (also referred to as the CCF) into evidence to show the chain of custody matches the collector's copy, indicating the chain remained intact.

Once this is established, the Coast Guard will ask the ALJ to take "official notice" of the current list of Health and Human Services-certified laboratories and instrumented initial testing facilities that meet minimum standards to engage in urine drug testing for federal agencies.⁷ This combined with the CCF should serve as proof the chemical test was conducted in accordance with 49 CFR Part 40.

The Coast Guard must then prove a medical review officer reported the results as "positive" because the chemical test indicated the presence of a dangerous drug at a level equal to or exceeding those established in 49 CFR Part 40. To this end, the Coast Guard will first prove the MRO's qualification by entering into evidence his or her training certificates.

The majority of drug use cases the Coast Guard loses are due to errors in the collection process.

Next, the Coast Guard must put into evidence further proof the chemical test was conducted in accordance with 49 CFR Part 40. This is accomplished through the MRO's testimony that the procedures of 49 CFR Part 40, Subpart G—Medical Review Officers and the Verification Process—were followed. The medical review officer is the independent and impartial “gatekeeper” and advocate for the accuracy and integrity of the drug testing process.⁸ The medical review officer's testimony that the process outlined by 49 CFR Part 40, Subpart G, was followed should also serve as proof that the entire process was conducted in accordance with 49 CFR Part 40.

The Test Was Conducted in Accordance With 46 CFR Part 16 (With the Proviso That 46 CFR Part 16 Incorporates by Reference the Regulations in 49 CFR Part 40). For this element, the Coast Guard requires evidence and testimony from the marine employer to prove the test was conducted in accordance with 46 CFR Part 16. To accomplish this, the Coast Guard must present evidence that the test was required by the regulation as either a pre-employment, random, serious marine incident, or reasonable cause drug test.

Each of these tests requires different evidence from the marine employer.

- For a pre-employment test, the Coast Guard requires a copy of the mariner's application for employment and the marine employer's testimony to introduce the application into evidence and testify that the test was conducted pursuant to 46 CFR §16.210.
- For a random test, the Coast Guard needs evidence that the mariner was selected by a scientifically valid method (such as a random number table or a computer-based random number generator). The Coast Guard will also need testimony from the marine employer to enter the random selection into evidence as well as testimony that the test was, indeed, taken because of the random test regulation.
- For a serious marine incident test,⁹ the Coast Guard needs testimony from the marine employer and to have the report of marine casualty and the report of required chemical drug and alcohol testing following a serious marine incident admitted as evidence, as well as testimony that the test was conducted because of the SMI.¹⁰

Pros and Cons of Non-USCG Mandated Drug Testing

The Suspension and Revocation National Center of Expertise seeks to move forward with all reported positive marine employer drug tests. However, the first inquiry is how the marine employer conducted the test, whether it was conducted in an effort to circumvent 46 CFR Part 16, or if it was conducted in strict compliance with the marine employer's drug testing policies.

Pros

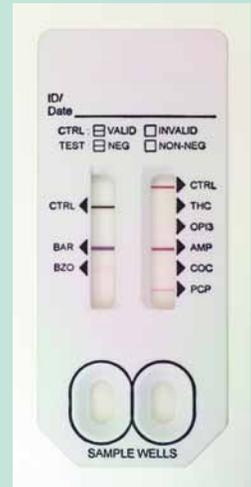
Marine employer tests typically capture information that the government-required test cannot. For example, they could detect prescription drugs and other drugs not specifically tested for in a Part 16/Part 40 Coast Guard test.

If the marine employer takes the care, concern, and expense to ensure its workforce is drug-free, the Coast Guard can better direct its investigating officer and attorney resources to ensure the mariner is rehabilitated or removed from the licensed community.

Cons

There is no reporting requirement for marine employer-mandated tests, so if the marine employer does not report the positive test, the mariner is free to seek employment elsewhere without any form of cure or administrative action. Hence, while the mariner may be released from one employer's roster, he enters another—and therefore there is no benefit to the maritime community as a whole.

Please report your positive drug test results to your nearest Coast Guard sector or MSU. Coast Guard personnel will evaluate for potential remedial action.



In addition, the Coast Guard may also require other evidence and/or additional testimony from the marine employer that the casualty was a serious marine incident (or the employer believed it was likely to become a serious marine incident) and to prove the mariner was directly involved in the casualty.

- For a reasonable cause test, the Coast Guard will need testimony and, if available, documentation as to why the marine employer (or their representative) believed the mariner had used a dangerous drug, as well as testimony that the test was conducted pursuant to the SMI

testing requirement (46 CFR §16.250). This evidence must be reasonable, articulable, and based on direct observation of specific, contemporaneous physical, behavioral, or performance indicators of probable use. Where practicable, this belief should be based on the observation of the individual by two persons in supervisory positions.

The Burden of Proof for a Non-USCG Drug Test

The aforementioned appeal decisions 2697 and 2704 not only lay out the course for proving a charge of use of a dangerous drug based on a USCG-mandated chemical test, they also open the door to proving a charge of drug use based on a marine employer-mandated chemical test. Appeal Decision 2704 stated that, for these tests:

- the employer is not acting as an instrument or agent of the government,
- the constitutional harms that Part 16 seeks to avoid are absent, and
- the Coast Guard may place in evidence facts that tend to show drug use in order to prove a charge in accordance with 46 CFR §5.35.¹¹

Jurisdictional Element: For a marine employer-mandated chemical test, the jurisdictional elements are identical to those for a USCG-mandated chemical test. To prove jurisdiction, the Coast Guard need only prove that the mariner was issued an MMC and it is valid at the time of the hearing.

Factual Elements: Proving the first two factual elements for a marine employer-mandated chemical test is very similar to proving those elements for a USCG-mandated chemical test.

The Coast Guard supports this law [46 USC §7704] through its suspension and revocation program, where investigating officers work diligently to determine the best means for moving forward when notified of a failed drug test.

With the cooperation of marine employers who also desire to promote marine safety, the Coast Guard is able to ensure a safer day at sea for all.

The Respondent Was Tested for a Dangerous Drug. The Coast Guard should first prove the urine collector is properly trained and authorized to collect urine specimens. If the collector is trained to the DOT drug-testing standard per 49 CFR Part 40, Subpart C—Urine Collection Personnel, this is done in the same manner as a 46 CFR Part 16 case. The Coast Guard need only produce the collector’s training certificates or training records.

If the collector is not trained to the DOT drug-testing standard, the Coast Guard will need to prove the collection was conducted in substantial compliance with 49 CFR Part 40, Subpart C, by whatever documentation and testimony is available, including the drug testing custody and control form.

It is important to note that 49 CFR §40.47 prohibits using CCFs for non-federal urine collections. The Coast Guard must also prove that the collector affirmatively identified the mariner by whatever means possible, preferably in substantial compliance with Part 40 rules.

The Respondent Tested Positive for a Dangerous Drug. Just as when proving this element for a USCG-mandated chemical test, the Coast Guard leans heavily on the laboratory and MRO to prove this element for a marine employer-mandated chemical test.

Since the testing is not necessarily in compliance with 46 CFR Part 16, the meaning of “to fail a chemical test for dangerous drugs” has an altered meaning. In a marine employer-mandated test the Coast Guard will need to prove:

- the chemical test analysis was conducted in substantial compliance with 49 CFR Part 40, and
- an MRO reported the result as “positive” because the chemical test indicated the presence of a dangerous drug at a level equal to or exceeding those established in 49 CFR Part 40.

The Coast Guard will introduce and offer into evidence the laboratory’s copy of the CCF to show that the chain of custody matches the collector’s copy, indicating the chain remained intact.

Again, once it is established that the chain of custody remained intact, the Coast Guard will ask the ALJ to take “official notice” of the current list of Health and Human Services-certified laboratories and instrumented initial testing facilities that meet minimum standards to engage in urine drug testing for federal agencies.

However, if the laboratory is not approved, then the Coast Guard must establish that the science used to analyze the specimen is reliable and probative of drug use. Unlike



proving a USCG-mandated chemical test, the Coast Guard will require the testimony of the laboratory's certifying scientist and/or a laboratory litigation package to prove the laboratory processes samples in substantial accordance with the requirements of 49 CFR Part 40.¹² This testimony and evidence, combined with the CCFs, should serve as proof that the chemical test was conducted in substantial accordance with 49 CFR Part 40 or the science is reliable and probative.

The Coast Guard must then prove that a medical review officer reported the results as "positive" because the chemical test indicated the presence of a dangerous drug at a level equal to or exceeding those established in 49 CFR Part 40. To this end, the Coast Guard will first prove the MRO's qualification by entering into evidence his or her training certificates.

Next, the Coast Guard must put into evidence further proof that the chemical test was conducted in substantial accordance with 49 CFR Part 40. This is accomplished through MRO testimony that the procedures of 49 CFR Part 40, Subpart G, were followed and that the medical review officer—as the independent and impartial gatekeeper and advocate for the accuracy and integrity of the drug testing process—affirms that the process outlined by 49 CFR Part 40, Subpart G, was followed.

The Test Was Conducted in Accordance With the Marine Employer's Policy. For a marine employer-mandated test, the Coast Guard requires:

- testimony from the employer regarding the policy,
- a copy of the marine employer's drug testing policy,
- proof that the mariner knew of this policy prior to the marine employer drug test, and
- that the mariner understood the test was pursuant to the marine employer's policy and not 46 CFR Part 16.

In Sum

When Congress enacted 46 USC §7704 with the intent of promoting the safety of life and property at sea, it recognized the threat posed by merchant mariners who use or possess drugs and the necessity to remove them from service. The Coast Guard supports this law through its suspension and revocation program, where investigating officers work

diligently to determine the best means for moving forward when notified of a failed drug test.

With the cooperation of marine employers who also desire to promote marine safety, the Coast Guard is able to ensure a safer day at sea for all.

About the authors:

Mr. Eric A. Bauer retired from Coast Guard active duty in 2006. During his career, he served two tours as a senior investigating officer, as well as tours as assistant chief and chief of regional examination centers. He was also a senior marine inspector. He has served as the senior investigating officer at the Suspension and Revocation National Center of Expertise since 2009.

LT Sara M. Ellis-Sanborn earned her commission in 2003. After a Coast Guard headquarters tour, she was assigned to Sector New Orleans, where she earned qualifications as a marine inspector. She then served as chief of the Inspections and Investigations Division at Marine Safety Unit Cleveland before completing a year of industry training. LT Ellis-Sanborn reported to Atlantic Area in 2012.

Endnotes:

- ¹ Although periodic testing requirements are included in 46 CFR Part 16, the marine employer plays no role in periodic testing. The requirements for periodic testing rest solely upon an applicant, who must pass a chemical test for dangerous drugs when executing a merchant mariner credential transaction, as required by 46 CFR §§10.225(b)(5), 10.227(d)(5), and 10.231(c)(6).
- ² All appeal decisions cited in this article can be found at www.uscg.mil/Legal/CDOA/Commandant_Decisions/S_and_R_2580_2879/COMDT_S_and_R_2580_2879.asp.
- ³ See 49 CFR Part 40.
- ⁴ The Vice Commandant footnotes this passage with, "In the absence of the presumption and the associated *prima facie* elements, as noted in section II of this opinion, it is still possible to prove the use of dangerous drugs, but any drug test used in such a case must be a non-Part 16 test."
- ⁵ See the Fourth Amendment at https://www.law.cornell.edu/constitution/fourth_amendment.
- ⁶ This can usually be accomplished by entering into evidence a copy of the collector's training certificates or training records, as described, and a copy of the federal drug testing custody and control form.
- ⁷ See the Substance Abuse and Mental Health Services Administration, HHS (SAMHSA) website at www.samhsa.gov/workplace/lab-list.
- ⁸ As such, "...the laboratory report itself, once it [is] signed by the MRO, [constitutes] proof adequate to shift to [the mariner] the burden of going forward with evidence that the positive finding of [dangerous drugs] metabolites in [the mariner's] urine was not the product of a wrongful use of the drug." National Transportation Safety Board in *KIME v. SWEENEY* (Docket ME-155).
- ⁹ 46 CFR 4.03-2 defines a serious marine incident.
- ¹⁰ See CG-2692 (Report of Marine Casualty) at https://www.uscg.mil/forms/cg/CG_2692.pdf. See CG-2692B (Report of Required Chemical Drug and Alcohol Testing Following a Serious Marine Incident) at https://www.uscg.mil/forms/cg/CG_2692B.pdf.
- ¹¹ See, e.g., Appeal Decision 2675 (MILLS)(2008) (Part 16 testing requirements are the "minimum standards, procedures, and means to be used to test for the use of dangerous drugs," 46 CFR §16.101(b), and a marine employer may require further drug testing under its own rules). The Vice Commandant adds to this opinion a footnote stating that, "A complaint based on an alleged employer-required test independent of [46 CFR] Part 16 should be subjected to close scrutiny to ensure that [46 CFR] Part 16 has not been circumvented."
- ¹² See Decision & Order in *USCG v. DAIRE*; Docket Number CG S&R 08-0231.



Medical Certificates

The purpose, the process, and the pitfalls.

by LT SARAH E. BRENNAN

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The National Maritime Center (NMC) has been evaluating and issuing medical certificates since January 24, 2014. As recent regulations require mariners serving on vessels transiting on international voyages to have a valid medical certificate by January 1, 2017, and all credentialed mariners to hold a valid medical certificate by 2019,¹ these certificates show that the holders meet the medical and physical standards required.

The NMC has identified those mariners that these regulations apply to, and the Coast Guard has already begun issuing medical certificates to those individuals. As with all changes to the credentialing process, there is a potential impact upon any suspension and revocation (S&R) action that might be taken against the underlying merchant mariner credential (MMC).

The Process

For example, in 2014, without further application, the NMC began proactively issuing medical certificates to mariners who held a valid International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) endorsement to minimize foreign port state control actions against U.S. vessels, reduce the administrative burden, and facilitate international commerce. For all other mariners, the Coast Guard issues a medical certificate to each qualified mariner after processing an application that requires a medical evaluation, such as issuing an original, raise-in-grade, or renewal MMC.²

Maintaining a current medical certificate along with the MMC is required of all mariners in positions that require a merchant mariner credential.³ This brings medical fitness front and center, as marine employers are required to ensure the mariner holds a current medical certificate. Without it,

employment would violate the rule. This is a change, as prior to January 24, 2014, U.S. mariner medical certification was embedded in the MMC and separate certificates were not issued—that is, holding an MMC was evidence that the mariner was medically qualified to hold the credential.

While it is always the responsibility of the mariner to operate in accordance with his/her credential as endorsed and within any applied restrictions, the marine employer must verify that their mariners hold valid and current medical certificates. As the medical certificate now separately verifies fitness, it allows the employers to easily inspect and ensure it is valid. With regard to suspension and revocation, a marine employer's failure to inspect the certificate does not relieve the mariner of any S&R action. The burden of ensuring a valid MMC and medical certificate lies with the mariner, who must not work under the authority of the credential unless he or she also holds a valid medical certificate.

Resolution of Confusion

To qualify for a medical certificate, a mariner must provide evidence of meeting the medical and physical standards on form CG-719-K or CG-719-K/E, as appropriate. Once the National Maritime Center receives the form, NMC medical staff evaluate it to determine whether the mariner is medically and physically qualified as described in 46 CFR 10.302(a). When the Coast Guard determines a merchant mariner meets the medical and physical evaluation standards (with or without a waiver and/or limitations), the NMC will issue a medical certificate.

Other than for STCW-endorsed mariners, this will normally be done through the course of an MMC transaction, such as an original application, renewal, or raise in grade. The NMC medical staff may request additional information

from the mariner to determine if he or she is qualified for the medical certificate, and if not, the NMC will deny the medical certificate. Once the mariner has received the medical certificate, he or she must carry it with the merchant mariner credential at all times.⁴ The mariner should be ready to present the certificate along with the credential during any Coast Guard inspection or investigation.

Further, the medical certificate is valid for varying amounts of time, based on the type of vessel on which the mariner serves. If the mariner serves aboard vessels to which STCW applies, the medical certificate is valid for up to two years, unless the mariner is under the age of 18, in which case the maximum period of validity would be one year. For those mariners serving as a first-class pilot, the maximum period of validity is two years, and for all other mariners, the maximum period is five years.

Finally, mariners who receive a waiver of certain medical conditions may receive time-limited certificates, which expire in one or two years, depending on the condition. Additionally, mariners must comply with the terms of the waiver to renew their certificates. This time-limited medical certificate eliminates S&R action on mariners who are noncompliant with the previous rules' waivers. As medical fitness was embedded in the former MMCs, those mariners with a medical waiver were obliged to comply with its terms, including providing the annual information to the NMC.

However, once issued, the National Maritime Center had no administrative mechanism to void or revoke the waivers when necessary. In such cases, the Coast Guard's only recourse was through suspension and revocation action, as a mariner operating outside the scope of the medical waiver could be sanctioned for misconduct. The Suspension and Revocation National Center of Expertise (S&R NCOE), collocated with the NMC, maintained a list of thousands of mariners who had difficulty complying with a waiver's terms. Now, with time-limited medical certificates and the self-enforcing mechanism that requires a valid certificate to accompany the merchant mariner credential, this removes the need for suspension and revocation action to compel waiver compliance.

Medical Disqualification

Regardless of whether a mariner holds a valid medical certificate for one, two, or five years, medical conditions may arise during that time frame that could render the mariner unfit. If a mariner is on a time-limited medical certificate issued due to an existing condition, he/she may have an



Image courtesy of the U.S. Coast Guard National Maritime Center.

obligation to report a change in the medical condition. If, however, a mariner experiences a new condition, there is no such reporting obligation.

However, the Coast Guard learns of new conditions through a variety of sources. The NMC may receive medical information from mariner employers, Coast Guard investigating officers, and from mariners themselves who are self-reporting. For example, during the course of a Coast Guard investigation, investigating officers (IOs) may learn of a medical condition concerning one of the operators. When this happens, they forward any relevant medical information to the NMC medical staff for review. The National Maritime Center staff reviews the information as a new or changed condition and then works with the S&R NCOE to advise the Coast Guard IO.

In some instances, the NMC requires further medical information to make a more informed decision. In the aforementioned case, the S&R NCOE would work with the local investigating officer to fashion a request for more information via a phone call, email, or administrative subpoena. Once the National Maritime Center personnel have the information necessary to determine the mariner's fitness, they refer the matter to the S&R NCOE for possible suspension and revocation action.

S&R Investigation and Action

The S&R NCOE has investigating officers on staff who may represent the National Maritime Center officer in charge of marine inspection in cases throughout the country. While the NCOE exercises this authority at times, the preferred course of action is to work in partnership with a local investigating officer.

The S&R NCOE investigating officer team as well as the local unit may investigate the mariner to determine whether he/she had knowledge of his or her condition before operating under the authority of the credential. If not, then the IO



would notify the mariner that the medical condition is disqualifying, and that operating a vessel under the authority of the credential could be deemed medical incompetence.

The IOs must determine whether the mariner continued to operate after receiving notice. If so, it is the Coast Guard's responsibility to take action. Simply waiting for credential renewal to allow the NMC medical staff to review any new medical information is to accept a level of risk that is unnecessary. The Coast Guard is compelled to take action in such cases to prevent a casualty from occurring.

Medical Fitness S&R Enforcement

Currently, the only way to remove a medically unfit mariner from the waterway is via the S&R process. The Coast Guard takes action against the credential—not the medical certificate—and can suspend or revoke the merchant mariner credential if the holder is found incompetent to operate a vessel. For our purposes, incompetence is defined as “the inability on the part of a person to perform required duties, whether due to professional deficiencies, physical disability, mental incapacity, or any combination thereof.”⁵

Further, on October 1, 2014, the Vice Commandant released a decision on appeal that affirmed a previous administrative law judge (ALJ) decision to revoke a mariner's credential based on medical fitness.⁶ The decision defined when an act of medical incompetence becomes actionable for S&R purposes: The act must relate to the operation of a vessel, and for medical incompetence, the mariner must operate under the authority of the credential while medically unfit. In other words, a mariner will not lose his credential if he is deemed unfit but chooses not to operate. Being unfit, in and of itself, will not give rise to an S&R proceeding.

Additionally, for the Coast Guard to seek MMC suspension or revocation for medical incompetence, the mariner would first have to have a disqualifying medical condition, be notified that that condition is in fact disqualifying, and then continue to operate under the authority of that credential despite the notice.

There are several ways that a potentially disqualifying medical condition will present itself to the Coast Guard—most typically, by way of the application process. Prior to the National Maritime Center's existence, investigating officers would make this determination. Now, with the NMC's team of medical review officers, IOs have a resource available to help make informed decisions regarding mariner fitness.

If a potentially disqualifying medical condition is discovered during a personnel investigation, investigators forward the

information to the S&R NCOE for review with the National Maritime Center medical staff. The S&R NCOE then works with the mariner or a local Coast Guard investigating officer to issue notice to the mariner (if the mariner was not aware of his or her disqualifying condition).

If they determine that the mariner is no longer qualified to hold a medical certificate, the mariner would be informed of such and subsequently informed that he or she should not operate under the authority of the credential until the medical condition is resolved. Note the credential is not revoked or suspended here—only after the mariner operates under the authority of the credential, after receiving notice of his or her fitness status, would the Coast Guard have jurisdiction to pursue suspension and revocation.

Medical certificates clarify the rules of enforcement for medical fitness for the Coast Guard as well as the mariner. Further, the new rules place much of the burden on marine employers, as mariners cannot be employed without the certificate. Therefore, mariners are either fit to operate (and have a medical certificate), or they are not (and do not have the certificate to accompany their MMC). This should reduce the Coast Guard's S&R enforcement efforts in this area.

About the authors:

LT Sarah E. Brennan is a 2003 graduate of Texas A&M University at Galveston with a degree in ocean and coastal resources. She also holds a master's degree in environmental policy and management. She has served more than 11 years in the Coast Guard, most recently as an investigator at the Suspension & Revocation NCOE.

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Endnotes:

- ¹ The Final Rule on the Implementation of the Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, and Changes to National Endorsements.
- ² See NVIC 1-14.
- ³ See 46 CFR 15.401(c).
- ⁴ See 46 CFR 15.401(d).
- ⁵ See 46 U.S.C. 7703(4) and 46 C.F.R. §5.31.
- ⁶ See Appeal Decision 2705 (PLENDER) (2014).

For more information:

For detailed information regarding medical waivers, see NVIC 01-14 and the NMC website at www.uscg.mil/nmc/medical/medical_cert.asp.

Mariners Can Lose Credentials for *What?*

Navigating through suspension and revocation.

by MR. JAMES P. FINK

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U.S. Coast Guard Suspension and Revocation National Center of Expertise

For the newly minted merchant mariner, the notion of having your merchant mariner credential (MMC) suspended or revoked can be very upsetting. Discussions with fellow mariners, even those never subject to a suspension and revocation (S&R) proceeding, may conjure up frightening scenarios. Even well-seasoned mariners with decades of service may readily blanch when confronted by a Coast Guard investigating officer (IO) who may simply be gathering preliminary information relevant to a recent marine casualty.

We'll be setting these horror stories aside for now, so we can part the curtain of dread, uncertainty, and astonishment that has colored the S&R process and cut to the facts: Plain and simple, the Suspension and Revocation National Center of Expertise (S&R NCOE) helps maintain the standards for professional conduct and mariner competency. We attempt to seamlessly increase the quality and professionalism of the S&R process, all the while remembering the statutory intent—promoting safety at sea.

The Beginning

The Coast Guard's suspension and revocation enforcement system began after the nation and Congress witnessed horrible maritime incidents on U.S. waters over hundreds of years. Legislation enacted in the late 1800s created the Steamboat Inspection Service, which could grant and revoke pilot, engineer, master, and chief mate licenses.¹ After a succession of shifts and changes for the law and the Coast Guard, safety at sea still drives the current statutory and regulatory provisions that drive the suspension and revocation process.

Remedial vs. Penal

While the sanctions resulting from S&R enforcement actions do not involve monetary fines or jail time, for someone who earns a living as a mariner, losing a credential—even if only for a short time—can be devastating. Suspension and

revocation enforcement sanctions span a continuum that runs from dismissal (if the case is not proved) to revocation, at the highest end. Once a credential is revoked, it may only be re-issued under very limited conditions.²

Title 46 United States Code §§7703 and 7704 provide the backdrop of offenses Congress has approved where the Coast Guard may suspend or revoke a merchant mariner credential. By law, certain offenses are actionable only when the Coast Guard can prove that the mariner was “acting under the authority” of the credential at the time of the offense; for others, the mariner must only be a “holder of” a credential to be subject to S&R.

Lesser-known offenses are also applicable to mariners, such as incompetence, convictions, or driving under the influence (DUI) charges. The consequences arising from such offenses can blindside a mariner and cause the loss of an MMC.

“Holder of” Offenses

The law allows for S&R action when the mariner is simply a “holder” when that mariner is convicted of an offense that would prevent issuing or renewing a license. Examples include homicide, assault, robbery, destruction of property, burglary, and larceny.³

Since the Coast Guard National Maritime Center (NMC) serves as an applicant's adjudicator regarding convictions that prevent issuing or renewing credentials, NMC personnel decide if criminal convictions falling outside those specifically identified in regulations will affect the credential. It is not uncommon to issue a complaint against a mariner who was convicted of a land-based offense such as assault or damage to property.

Since the ultimate purpose of suspension and revocation is safety at sea, it makes sound marine safety sense to suspend or revoke a merchant mariner credential for offenses that



otherwise would have prevented its issuance in the first place during the application phase.

Driving Offenses: The S&R statute provides for action when a mariner is convicted of an offense described by the National Driver Register Act (NDRA), such as driving under the influence, reckless driving, racing on the highways, traffic violations connected with a fatal traffic accident, or other comparable offenses.⁴ The conviction must have occurred within three years before the S&R complaint is filed.

Recently, various U.S. state jurisdictions have reclassified some convictions that would normally be cited within the NDRA. To accomplish this, local courts may label a DUI conviction as “obstructing highway or other passageway,” which is not an NDRA conviction for the purposes of S&R enforcement.⁵ This results in disparate treatment of mariners, as a mariner who received a DUI may very likely face suspension and revocation action, while another mariner who also drove while intoxicated might not face S&R for receiving an “obstructing the highway” conviction. Therefore, the S&R NCOE works with prosecutors and state jurisdictions to inform them of these types of consequences.

Incompetence: The S&R statute allows action if the holder is incompetent with regard to vessel operation. The complementary regulation, 46 CFR §5.31, defines incompetence as “the inability on the part of a person to perform required duties, whether due to professional deficiencies, physical disability, mental incapacity, or any combination thereof.” Unfit mariner citations constitute just a sliver of the hundreds of Coast Guard-filed complaints each year, but due to their complexity (they are more complex for suspension and revocation than most all other offenses), they tend to be very controversial.⁶

For the most part, the S&R NCOE has taken the lead in pursuing these types of cases, shouldering the burden of complexity with the advantage of its co-location at the NMC, which has its own medical division. Most notable “unfit” cases deal with mariners treated for sudden seizures. In and of itself, a seizure or any other debilitating medical condition is not enough to have a merchant mariner credential suspended or revoked, but if the mariner operates under the authority of the merchant mariner credential after being notified by the Coast Guard or a doctor, the Coast Guard will take suspension and revocation action. Therefore, receiving notice that you cannot operate due to a medical condition is (or should be) as effective as any S&R.

Security Risks: The S&R statute permits action if the mariner is a security risk who threatens the safety or security of a vessel or a public or commercial structure. This section was added after September 11, 2001, for obvious reasons, and

focuses upon a mariner’s Transportation Worker Identification Credential (TWIC). The regulations at 46 CFR Part 10 state, in part, that if the Transportation Security Administration advises the Coast Guard that a mariner has either been denied a TWIC or the TWIC has been revoked, the Coast Guard may initiate suspension and revocation action against the mariner’s MMC.⁷

Drug Convictions: If a mariner is convicted of violating a dangerous drug law, his or her credential will be suspended or revoked.⁸ Further, Congress has authorized the Coast Guard to reach back 10 years for these convictions.

Interestingly, the term “convicted” is not limited to felonies, misdemeanors, or NDRA offenses—it is more complex. By regulation, the Coast Guard expands convictions to include such things as expungements, deferred adjudications, court-mandated classes, judicially enforced contributions, judicially mandated treatment, probation, or supervision. By expanding the definition, we can address the underlying behavior.

“Acting Under the Authority” Offenses

“Acting under the authority” means:

- the credential is required by law or regulation for vessel operation, and
- the employer requires the merchant mariner credential as a condition of the mariner’s employment.

Other means of acting under the authority of the MMC include when the mariner is engaged in official matters regarding the credential, including but not limited to:

- applying for renewal,
- taking exams for raise of grade,
- requesting duplicate or replacement credentials,
- appearing at a suspension and revocation hearing,
- responding to Coast Guard subpoenas during marine casualty or personnel action investigations, or
- taking a Coast Guard-required drug test.

Additionally, a person is still acting under the authority of a credential while on shore leave from the vessel.

Violation of a Marine Safety Rule: Violation of a marine safety statute or regulation requires that a mariner must have been acting under the authority of the MMC to initiate suspension and revocation enforcement. The regulations also require that the complaint state the specific statute or regulation by title, section number, and the particular manner in which it was allegedly violated.

This offense designation covers a wide swath of laws and rules, but complaints alleging these accounted for less than

5 percent of filings in 2014.⁹ Sanctions for this category normally range from one to three months of suspension.

Misconduct and Negligence: S&R action is applicable if the mariner, when acting under the authority of the credential, commits an act of misconduct or negligence.

Misconduct is defined as “human behavior which violates some formal, duly established rule. Such rules are found in, among other places, statutes, regulations, the common law, the general maritime law, a ship’s regulation or order, or shipping articles and similar sources. It is an act which is forbidden or an omission to do that which is required.”¹⁰

With its broad definition, misconduct can incorporate offenses that fit into other categories, including negligence, but all the offenses mentioned are similar in that “acting under the authority” of the credential is required for S&R jurisdiction. About 25 percent of complaint filings in 2014 were classified as misconduct.¹¹

The regulations at 46 CFR §5.29 define negligence as “the commission of an act which a reasonable and prudent person of the same station, under the same circumstances, would not commit, or the failure to perform an act which a reasonable and prudent person of the same station, under the same circumstances, would not fail to perform.” The first part describes someone committing an act that another would not (for example, a pilot improperly navigating a commercial vessel). A reasonable and prudent pilot would properly navigate the vessel. From the second part of the definition, the Coast Guard would seek to charge a mariner’s failure to perform an act (such as a pilot failing to sound fog signals while in or near fog) where a reasonable and prudent pilot would sound signals appropriately.

Unlike the civil law requirement for negligence, which necessitates damage resulting from a breach of a duty, in the suspension and revocation context, a casualty resulting from the negligent act or omission is not required for the Coast Guard to take action. Remember, the purpose of these proceedings is to prevent casualties. Any damage resulting from the negligence would be identified as an aggravating circumstance on the complaint.

Drug Use: The greatest number of offenses cited in S&R complaint filings have been for illegal drug use. Out of 480 complaint filings in 2014, 264 involved mariners testing positive for use of dangerous drugs.¹² Based on federal workplace rules, the Coast Guard limits collection of specimens for drug testing to urine. However, marine employers are increasingly expanding into other scientifically recognized methods such as hair tests, and also incorporate a wider range of drugs in their selection. The Coast Guard

Cured From Drugs?

The suspension and revocation statute mandates that if a mariner uses or is addicted to a dangerous drug, the mariner’s credential will be revoked unless the mariner provides satisfactory proof of “cure.”¹

The History

The required drug testing regulations in 46 CFR Part 16 have been around since the late 1980s, and no other offense category has generated as many interpretations in the process for all involved. Defined individual roles, questions of exactitude in following regulatory intent, and equitable treatment of mariners have served to create continuing confusion.

The Cure

To address these issues, the Coast Guard established a standard “proof of cure” process for mariners through a series of Commandant decisions.² The terms in the decisions are now embedded within the standard drug use settlement agreement. The typical cure process takes 16 months or more to complete, but — considering that revocation is the only other allowable sanction when drug use is proven at a hearing — the cure process is a good option for mariners.

Endnotes:

¹ 46 U.S.C. 7704(c).

² See CDOA 2535 (SWEENEY), CDOA 2634 (BARRETTA), and CDOA 2638 (PASQUARELLA).

lauds this proactive approach, and has embraced any extra workload from the voluntary reporting of these drug tests as a means to ensure a safer maritime transportation system.

Contemplating Sanctions

There are a number of sanctions (orders) the administrative law judge (ALJ) may issue at the conclusion of an adversarial suspension and revocation proceeding. From the lowest to highest impact level to the credential, an ALJ may order:

- Dismissal (case not proved): nothing happens that affects the merchant mariner credential.
- Admonition (case proved): the administrative law judge issues a formal warning against the MMC. The mariner retains merchant mariner credential possession and is able to continue sailing.
- Suspension on probation (case proved): the ALJ issues a suspension, but the suspension is placed on probation. The mariner retains MMC possession and may continue sailing.
- Outright suspension (case proved): the administrative law judge issues a period of suspension, and the merchant mariner credential is turned over to the Coast



Guard. The credential is returned when the suspension period is completed.

- Outright suspension followed by suspension on probation (case proved): this is a combination of the third and fourth bullets. The merchant mariner credential is returned after the outright suspension period, then the mariner may sail on the MMC during the probationary period.
- Revocation (case proved): the administrative law judge revokes the merchant mariner credential. Other than motioning to the ALJ to re-open the hearing (limited conditions), another merchant mariner credential can be issued only after certain criteria is met, usually through the process of administrative clemency. This may take years.

Settlement Agreements

Settlement agreements, in which mariners and the Coast Guard agree on a course of action in lieu of battling out the case in court, are on the rise. They are a win/win/win for all involved, as the mariner avoids revocation (if for a drug case) and is given a second chance, the Coast Guard is assured of a mariner who will be safer on the water, and the maritime community retains a good worker whose former drug use is no longer a concern to marine safety. Settlement agreements may be accepted for other offenses, as well, and for the 2014 calendar year, out of 480 filed complaints, 255 resulted in settlement agreements.¹³

Most of these were for mariners with positive drug test results. An approved settlement for drug “cure” can shorten the total time for the mariner to be “on the beach;” however, cure is not easily met, by any means. The incentive for settlement is obvious—the ultimate return of the MMC upon successful completion. Settlements can be tough, however. Some mariners may sign them and carry on without considering the terms, but they should be a serious consideration, as failure to complete the settlement terms results in merchant mariner credential revocation.

Additionally, settlement agreements are favorable, as they may require conditions above and beyond that which an ALJ can order after a hearing. Therefore, the S&R NCOE makes the most of them, using them to increase mariner competency or knowledge by imposing remedial (corrective) actions such as completing professional training or instructional courses. Settlements are favorable to the mariner, as well, as he or she may ultimately see the merchant mariner credential returned without necessarily having to admit wrongdoing because admission is required only to the jurisdictional elements of the case (does not apply to drug offenses).

It is important to note that the Coast Guard is never obligated to offer a settlement to a mariner, nor to accept any proposed settlement. In fact, Coast Guard policy limits them. For instance, if a mariner has completed a previous settlement for cure within the last three years or has positive drug test results from a serious marine incident testing, settlement is not acceptable and the Coast Guard must proceed to a hearing.

Lastly, an administrative law judge is not bound by a submitted motion for settlement. The ALJ may either approve the motion and issue a consent order (beginning the settlement), or reject it based on legal insufficiency or flaws in the settlement, including excessive (or lack of) conditions or failure of the settlement to adequately reflect the complaint offenses.

Looking Ahead

The suspension and revocation program holds more promise for some, more trepidation for others, as changes in Coast Guard policies seek to seamlessly increase the quality and professionalism of the process while promoting safety at sea.

Coast Guard regulations provide for a range of remedial actions, tempered through a well-structured sieve at multiple levels, from the individual investigating officer all the way to the Commandant and beyond. This ensures that whether or not S&R action *can* be done, we give due consideration to whether it *should* be done.

About the author:

Mr. Fink is the national technical advisor at the S&R National Center of Expertise. He has been an investigating officer for more than 25 years, including 13 years as an instructor in the marine inspection and investigation school at CG Training Center Yorktown, Virginia.

Endnotes:

¹ 10 Stat. 61 (1852). Cf. 5 Stat. 305 (1838).

² See 46 USC §7701(c).

³ 46 U.S.C.

⁴ 46 USC §7703(3), 49 USC §30304(a)(3)(A) or (B).

⁵ Texas Penal Code Section 42.03.

⁶ See CDOA 2698 (HOCKING) and CDOA 2705 (PLENDER).

⁷ 46 CFR §10.235(h), 49 CFR Part 1572.

⁸ 46 USC 7704(b). We recognize, however, that not all drug offenses are equal, and in 2004, amendments to the statute expanded the mandated “revocation only” sanction to allow suspension as an S&R option. This provides a window for settlement agreements and is now a recognized remedial response to a conviction instead of strict revocation.

⁹ Internal review/assessment, Feb. 2015.

¹⁰ 46 CFR §5.27.

¹¹ Internal review/assessment, Feb. 2015.

¹² *Ibid.*

¹³ *Ibid.*



Marine Casualty Trends

Looking for commonalities
to prevent future occurrences.

by CDR BLAKE WELBORN
Detachment Supervisor
U.S. Coast Guard Investigations National Center of Expertise

Consider this fictional scenario: On a clear Tuesday evening, an outbound small coastal freight ship collides with an inbound offshore supply vessel while navigating a bend in a waterway, causing moderate damage to both vessels. On a Tuesday two weeks later, an uninspected towing vessel pushing 12 loaded barges collides with a small passenger vessel in the same general location. Both vessels sustain damage. While each incident may seem different at first, upon closer examination we can identify several commonalities.

By studying the particulars of incidents within a given area, we can detect similarities such as the time of day, time of year, tidal cycles, vessel types, weather conditions, type of operations, or other factors. Such analysis may show a pattern of factors that could help predict future events, and investigators can proactively implement efforts to curb, control, eliminate, or publicize such contributing factors.

What Are Marine Casualties, and Why Do They Happen?

The term “marine casualty” is defined in Title 46 Code of Federal Regulations (CFR) Part 4 as an incident that involves a vessel and includes, among other things:

- loss of life, injury, or any fall overboard;
- vessel occurrences that result in a grounding, stranding, foundering, flooding, collision, or allision;
- explosions or fires on vessels, reduction or loss of power, or impairments to a vessel’s operation;
- circumstances that affect a vessel’s seaworthiness or incidents that cause significant harm to the environment.

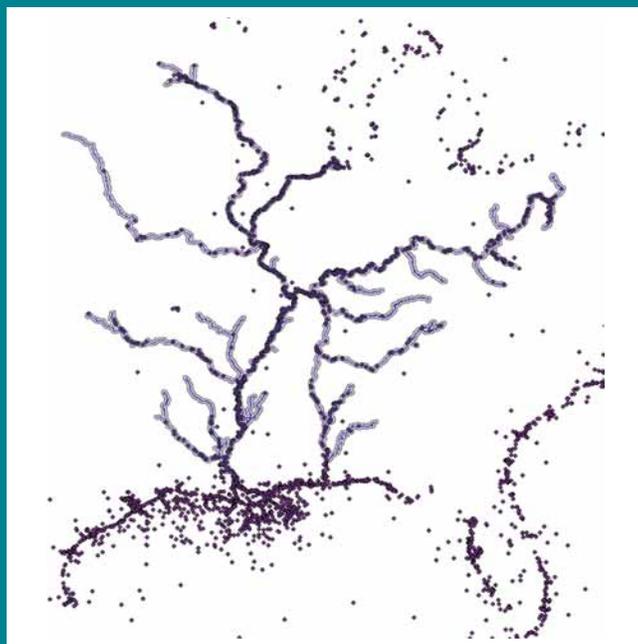
In the simplest terms, marine casualties are accidents, and accidents occur when an undesirable or unfortunate event occurs unintentionally, often resulting in injury, loss, or damage.

The captains of the vessels in the scenarios mentioned didn’t plan on colliding, but unexpected events happen every day.

In “Breakfast Club” terms: “Screws fall out all the time—the world’s an imperfect place.”¹ When those screws do fall out, people make mistakes, the weather adversely impacts mariners, or sea conditions unexpectedly change, marine casualties can—and do—occur.

Commonalities or Trends

After studying incident particulars, the next step is to evaluate the events or decisions that led to the accident. An investigator can create an event timeline and identify links between incidents. If there are commonalities between separate incidents, then steps to correct or avert the commonalities may prevent future incidents.



2002–2013 marine casualties on U.S. western rivers. Graphic courtesy of Dr. James Dobbins.

Case Study, Sector Hampton Roads

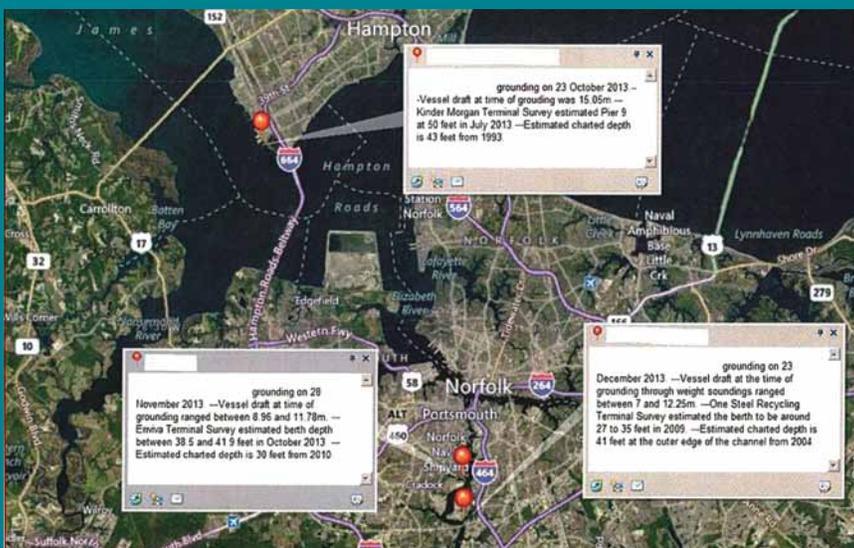
In 2013, Sector Hampton Roads had a series of marine casualties involving deep draft ships grounding while moored at the dock. Although these incidents were not at the same dock or even on the same waterway, they were, indeed, linked.

Charted Depth Accuracy

Sector personnel found that crews, agents, and waterfront facilities were relying on charted water depths rather than conducting more frequent surveys to determine actual waterway conditions.

As a result, the Coast Guard issued a marine safety information bulletin cautioning facilities and marine employers in Sector Hampton Roads' area of responsibility to:

- conduct berth hydrographic surveys and soundings at least once annually and maintain survey records;
- consider tidal variances at their berths and incorporate this into cargo loading plans;
- become familiar with facilities' intended loading plans and consider how those plans may or may not address projected tidal changes and a vessel's draft;
- question facility representatives regarding the currency and validity of hydrographic surveys and soundings prior to mooring at that facility; and
- request the assistance of docking masters and assist tugs to scan water depths at berths prior to vessels mooring, especially if there is any doubt about draft clearance.



Sector Hampton Roads' graphic depicting ship groundings from October to December 2013. Graphic provided courtesy of CDR Kevin Carroll, prevention department head, Sector Hampton Roads.

The two fictional marine casualties mentioned were collisions occurring in the same area of a waterway on the same day of the week. While looking into such incidents, an investigator might identify other interconnecting factors. For example, strong currents could have adversely affected one or more of the involved vessels, the crew might

for the study had no property damage amount figures, or they contained a zero in the corresponding data bank. Though this information must be reported to investigators, it was not always available in the public data extracts his studies utilized.

not have made radio calls between the vessels to arrange passing agreements, or fog might have been present. Any number of similarities might become evident during investigations.

Just the Facts

The key in looking for commonalities is to seek events that led to the marine casualty that also occurred on vessels in similar situations. For example, the investigations of our fictional collisions might find that crews of both outbound vessels misinterpreted a radar contact or were unfamiliar with river current patterns in that stretch of the waterway. Such issues would be of note as commonalities between the incidents.

The investigator could produce an exhaustive list of similarities linking incidents to each other, but often the most simple interconnecting criteria proves noteworthy. In the first few moments of an incident briefing, start with the basic information passed, then advance to those facets of the investigation that require more probing.

Vessels under comparable conditions may exhibit common characteristics that lead to marine casualties. These are the types of occurrences that should lead to trend analysis endeavors, when they're found to take place with some frequency.

Better Data

Dr. James Dobbins was an engineering professor at Vanderbilt University when he conducted research analyzing marine casualties. Specifically, his team sought to identify clusters of marine casualties in an effort to pinpoint and chart the most hazardous locations on U.S. waterways.²

Using information from U.S. Coast Guard databases stretching back as far as 1980, his study identified areas where the historical records were deficient. Dr. Dobbins advised that 60 percent of marine casualty cases used

Case Study, Morgan City

For many years, ships navigating in southern Louisiana along the lower section of the Atchafalaya River had to take special precautions when transiting the “horseshoe,” a compact river bend. The water slows in this area and drops sediment. As the sediment built up, the charted channel narrowed, groundings became more frequent, and the channel required frequent dredging.

A Money-Saving Project

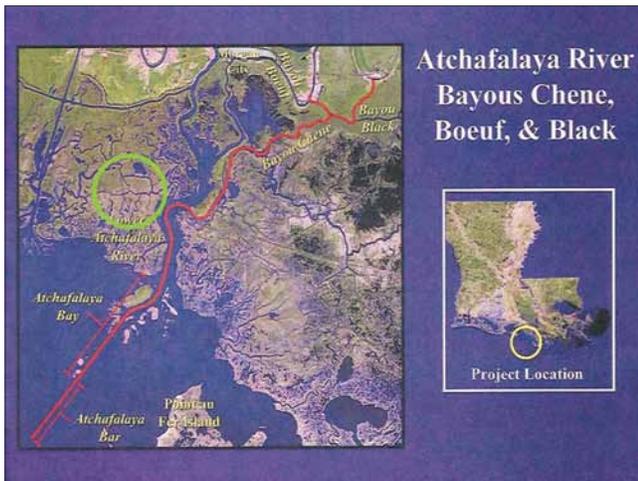
To remedy these problems, the Port of Morgan City approached the U.S.

Army Corp of Engineers and the U.S. Coast Guard to move the channel. The \$4 million project took several years to complete and involved armoring one side of the river against erosion due to the increased wave action from trafficking vessels.

While \$4 million may seem like a lot of money, the project will save much more than that down the road. According to Raymond Wade, Port of Morgan City’s executive director, it cost nearly \$10 million to dredge and maintain the

horseshoe during the 7-year period immediately preceding the project. Further, the resultant channel reduces the trip from offshore to and from Morgan City by approximately three miles, which saves transiting ships both fuel and time.

In more good news, Wade noted no new vessel groundings in the area, and the new portion of the waterway is self-scouring, so it maintains itself without any required regular dredging.



Graphics provided courtesy of Mrs. Cindy Cutrera, Port of Morgan City.

The team also noted problems with incident location information. Dr. Dobbins stated, “It was hoped that the coordinate data would be precise enough to identify a bridge pier or lock wall as commonly involved in allisions, as an example. Ostensibly from manual typos, several coordinates were transposed or incorrect.”³ Due to some instances of poor data, casualties more than three miles from any waterway were discarded.

Dr. Dobbins further noted, “In recent years location accuracy has significantly improved in U.S. Coast Guard marine casualty files.”⁴ With an eye toward continuous improvement, Coast Guard personnel have developed new information quality guidelines, policies, and job aids and stressed the need for improved data entry during marine casualty investigator training at U.S. Coast Guard Training Center Yorktown.

Moving Forward

It’s impossible to engineer a system that will prevent all marine casualties. As defined, marine casualties are

accidents—and accidents happen every day. But through conducting simple trend analysis studies and seeking to identify and eliminate hazardous conditions that lead to marine casualties, we can realize a significant decrease in accidents.

Acknowledgement:

Special thanks to Mr. Paul Ledoux, senior investigating officer, Sector Hampton Roads, for his assistance.

About the author:

CDR Blake Welborn is a 1993 graduate of the Coast Guard Officer Candidate School. A career prevention officer, his service includes command cadre positions at marine safety units and training tours in vessel inspections, casualty investigations, and incident response management. CDR Welborn holds a master’s degree in quality systems management.

Endnotes:

- ¹ John Bender (performed by Judd Nelson), “The Breakfast Club,” Universal Pictures, 1985.
- ² Dr. James Dobbins, personal communication, Mar. 16, 2015.
- ³ Ibid.
- ⁴ Ibid.



Coast Guard Reports of Investigation

The Investigations National Center of Expertise's role.

by LCDR BARBARA WILK
Marine Casualty Program Manager
U.S. Coast Guard Investigations and Analysis

The report of investigation (ROI) following a marine incident is the primary communication method connecting all involved stakeholders. It delivers a coherent event timeline regarding actions surrounding the marine casualty and describes why the event occurred. Once completed, a report of investigation contains a wealth of knowledge to:

- help prevent casualties,
- base safety alerts upon, and
- make appropriate changes to policy and regulations.

Coast Guard personnel use the ROI to evaluate existing programs, regulations, and policy and incorporate changes as deemed necessary. Private industry corporations may also adjust their internal safety and operating procedures

based on report results. With so much follow-up at stake, it's important to get these reports right. Fortunately, the Investigations National Center of Expertise (INV-NCOE) provides a wide range of experience and technical advice to help investigating officers complete their investigations thoroughly and accurately for the benefit of the entire maritime community.

Vessel Electronic Analysis Expertise

Today's investigation challenges include increasingly complex vessel electronics and the resulting volume of information investigating officers must review. The INV-NCOE ensures that field units have access to investigative and technical expertise for different types of vessel fleets as well as for the various types of onboard electronics.

For example, the voyage data recorder (VDR), typically located on the vessel bridge, is considered the nautical "black box." Some of the VDR's capabilities include ship's position, speed, heading, bridge audio, very high frequency (VHF) radio communications, radar data, depth under keel, rudder order and response, and engine order and response. INV-NCOE personnel can download VDR data and enter it into a proprietary program that translates it all into a legible format for the investigations team.

For example, VDR causal analysis of a 2012 bridge allision revealed that the bridge's navigational span should have been illuminated by three vertical white lights, indicating the main channel span. But VDR audio recorders revealed various inactions of the crewmembers on watch, including no verification of bridge lighting and no questioning of improper characteristics.

Additionally, the vessel's Automatic Identification System, which is incorporated into the vessel's electronic chart system, identified a towing vessel that had recently moored



Inspections officer Chief Warrant Officer Jeff Gradel responds to a bridge allision. U.S. Coast Guard photo.

just upriver of the bridge due to prevailing weather conditions. The bridge audio revealed no communication with that moored vessel, which could have revealed the lighting scheme of the bridge and the local notice to mariners, giving warning of the lighting scheme.

Thus, VDR information provides real-time overlay of the bridge crew actions as a marine casualty unfolds, so investigating officers can verify the facts via this VDR view of the incident in real time.

INV-NCOE Experience

When a mobile offshore drilling unit grounded in the Arctic, the INV-NCOE investigation highlighted industry towing standards, lack of government towing oversight, shackle design and strength, and crew competencies for Arctic towing.

The interest for oil exploration in the Arctic will continue to grow. Since the final report of this investigation covered a vast amount of information in great detail due to INV-NCOE technical and investigative support, it is hoped it will be referenced to help industry develop adequate operating procedures for the harsh Arctic environment.

One-Stop Shop

Whether an investigation yields an overwhelming amount of information or not enough, the INV-NCOE provides investigative expertise to ensure investigating officers have asked and answered all the necessary questions. They then apply their technical expertise to provide in-depth analysis and get the trickiest questions answered. Lending such quality and accuracy to the investigative process, the Investigations National Center of Expertise helps to make ROIs better products in the public interest and within the Marine Safety mission for the Coast Guard.

About the author:

LCDR Wilk is a 2001 U.S. Coast Guard Academy graduate. She has spent the majority of her time stationed in the Gulf, conducting vessel inspections, waterways management, and marine casualty and suspension and revocation investigations. She most recently completed a tour at U.S. Coast Guard headquarters in the Office of Marine Casualty Investigations and Analysis, where she provided program oversight for marine casualty and suspension and revocation investigations.

The General Slocum

The first official report of investigation was written upon conclusion of the United States Commission of Investigation into the disaster to the steamship *General Slocum* on October 8, 1904.

The *General Slocum* was chartered by a church group to transport approximately 1,300 individuals along the East River in New York. When a fire started in the poorly organized forward cabin, it quickly spread among the steam steering gear, lamps, table, four barrels of oil, paint pots, life jackets in varying conditions, charcoal, glasses, hay, and various other ship's stores, ultimately consuming the vessel.

The Commission

Following the disaster, the Secretary of Commerce and Labor convened a commission to investigate the incident. The commission members held an array of experience and knowledge, and included the Commissioner of Corporations, the Supervising Inspector General of the Steamship Inspection Service, and members of the War Department and Department of the Navy.

The Report of Investigation

After countless hours reading regulations, scouring vessel and inspection documents, and interviewing witnesses, the commission produced its report regarding the *General Slocum*. Among various deficiencies, the report noted:

- lack of crew proficiency with regard to fire and abandon-ship procedures;
- lack of a licensed mate, as required by certificate;
- lack of operational firefighting equipment; and
- lack of construction regulation of the steamship.

The commission also identified the lack of inspection oversight (due to a shortage of inspectors) and deviation from inspection regulations.

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Report of the United States Commission of the Investigation upon the Disaster to the Steamer "General Slocum," October 8, 1904. Washington: Government Printing Office, 1904.



Understanding Nickel Ore

by Ms. AMY PARKER
Lead Chemical Engineer
U.S. Coast Guard Hazardous Materials Division

What is it?

Nickel ore, a naturally occurring metal ore of varied composition and color, is the fifth most abundant element on Earth. While nickel has many applications, it's primarily used in stainless steel and alloy steel production.

Historically, stainless steel has accounted for nearly two-thirds of nickel use worldwide. In 2014, the U.S. and China produced 18.34 million tons of austenitic (nickel-bearing) stainless steel.

Nickel is also used in the more specialized aerospace, military, and power-generating industries. Applications include metal plating, electronics, and batteries for hybrid vehicles and portable equipment.

Why should I care?

Shipping Concerns:

The primary concern with nickel ore shipment is its potential to liquefy. Over a three-year period from October 2010 to October 2013, six bulk carrier vessels carrying nickel ore capsized, with 81 seafarers losing their lives.¹ Cargo liquefaction was the root cause of these casualties.

Liquefaction occurs in cargoes comprised of fine particles that also contain some moisture. Conversely, liquefaction will not occur in cargoes comprised of large particles or lumps, or when the cargo has a low moisture content. During liquefaction, water within the cargo separates from the solid particles, resulting in the cargo behaving more like a liquid than solid, which can cause significant cargo shift and decrease ship stability.

Health Concerns:

There are no known health concerns associated with nickel ore; however, dust may be generated from its processing, transporting, or handling. Shippers should use appropriate protective equipment to minimize exposure.

Fire or Explosion Concerns:

Nickel ore is non-combustible and presents a low fire risk.

What is the Coast Guard doing about it?

The International Maritime Solid Bulk Cargoes Code specifies how nickel ore should be loaded, unloaded, and transported on a cargo vessel for international shipments. Domestic nickel ore shipments require a special permit issued in accordance with regulations found in 46 CFR Part 148.

Prior to a nickel ore shipment, the shipper must provide a signed certificate of the transportable moisture limit as well as a signed certificate or declaration of the moisture content to the vessel's master or his/her representative. Additionally, the competent authority of the port of loading must approve the testing procedures for sampling, testing, and controlling the nickel ore cargo's moisture content.

About the author:

Ms. Amy Parker is a lead chemical engineer in the Hazardous Materials Division at U.S. Coast Guard headquarters. She develops domestic and international regulations for hazardous material and solid bulk cargo marine transport and represents the U.S. at the meeting of the International Maritime Organization's Sub-Committee on Carriage of Cargoes and Containers.

Endnote:

¹ Baltic and International Maritime Council, "Why is Nickel Ore so Hazardous?" Available at https://www.bimco.org/en/Education/Seascapes/Questions_of_shipping/2014_03_07_Why_is_nickel_ore_so_hazardous.aspx.

References:

The Nickel Institute website, www.nickelinstitute.org, accessed March 4, 2015.
U.S. Geological Survey, 2015, Mineral Commodity Summaries 2015: U.S. Geological Survey, p. 108-109. Available at <http://dx.doi.org/10.3133/70140094>.

Nautical Engineering Queries

Prepared by NMC Engineering Examination Team



1. When a megohmmeter is being used to test insulation resistance, current leakage along the surface of the insulation is indicated by the megohmmeter's pointer responding in a very unique way. What would be the response of the pointer?
 - A. dipping toward zero, then raising slowly
 - B. continually rising as test voltage is applied
 - C. kicking slightly down scale as voltage is applied
 - D. fluctuating around a constant resistance reading

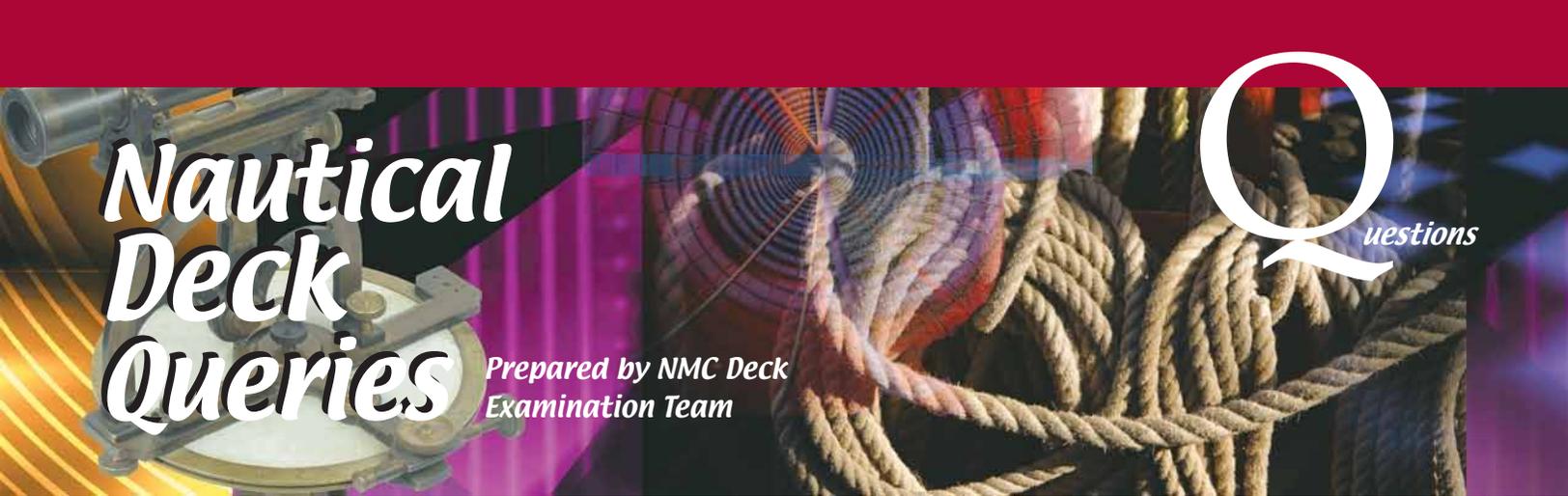
2. The quantity or condition which is measured and controlled is known as the _____.
 - A. controlled variable
 - B. manipulated variable
 - C. set point
 - D. control point

3. Excessive side clearance between a piston ring and its groove will cause the ring to _____.
 - A. expand excessively under operating temperatures
 - B. scuff the cylinder liner excessively
 - C. hammer the piston land above the ring
 - D. hammer the piston land below the ring

4. The horizontal fore and aft movement of a vessel is called _____.
 - A. yaw
 - B. sway
 - C. heave
 - D. surge



1. *Note: A hand-cranked analog megohmmeter is used to evaluate insulation resistance by imposing a relatively high DC voltage across a conductor and the framework of the apparatus (ground). The response of the pointer while performing this nondestructive test is used to determine the condition of the insulation. Assuming that constant DC voltage is applied while cranking, the measured resistance is inversely proportional to the leakage current.*
- A. dipping toward zero, then raising slowly Incorrect answer. This response pattern is the result of the capacitance of good, dry insulation and is especially seen when testing the insulation of large machines.
- B. continually rising as test voltage is applied Incorrect answer. This response pattern is seen when testing good, dry insulation, and the resistance will continue to climb to the true resistance value.
- C. kicking slightly down scale as voltage is applied **Correct answer.** This response pattern is caused by leakage of current along the surface of dirty insulation.
- D. fluctuating around a constant resistance reading Incorrect answer. This is not a typical response pattern.
-
2. *Note: Using a steam-heated fuel oil heater and associated control system as an example, the fuel oil heater fuel oil outlet temperature is the quantity or condition being measured and controlled, and is known as the controlled variable.*
- A. controlled variable **Correct answer.** The controlled variable is that quantity or condition that is being measured and controlled, as explained in the note above.
- B. manipulated variable Incorrect answer. The manipulated variable is the variable of the process acted upon to control the output (controlled variable) at the desired value. In the example cited in the note, this would correspond to the fuel oil heater steam inlet flow.
- C. set point Incorrect answer. The set point is the desired value of the controlled variable.
- D. control point Incorrect answer. The control point is the actual value of the controlled variable at any given time.
-
3. *Note: The side clearance between a piston ring and its groove should be sufficient to allow for thermal expansion but not so great as to allow the ring to reciprocate within its groove excessively and cause pounding.*
- A. expand excessively under operating temperatures Incorrect answer. The thermal expansion rate of piston rings is a function of ring metallurgy and the piston operating temperature, not piston ring side clearance.
- B. scuff the cylinder liner excessively Incorrect answer. Excessive scuffing of the cylinder liner is primarily the result of inadequate cylinder liner, piston, and piston ring lubrication.
- C. hammer the piston land above the ring Incorrect answer. Though excessive side clearance does cause the ring to reciprocate within its groove excessively, due to firing pressure, the resulting pounding causes the piston land below the ring to be hammered, not the land above.
- D. hammer the piston land below the ring **Correct answer.** Excessive side clearance causes the ring to reciprocate within its groove excessively. Due to firing pressure exerting downward, the resulting pounding causes the piston land below the ring to be hammered.
-
4. *Note: A vessel is subject to six freedoms of movement, three of which are linear motions and the other three rotational motions about a specific axis of rotation.*
- A. yaw Incorrect answer. The yaw motion is a rotational motion where the vessel rotates about a vertical axis.
- B. sway Incorrect answer. The sway motion is a linear horizontal motion where the direction of movement is to port or starboard.
- C. heave Incorrect answer. The heave motion is a linear vertical motion where the direction of movement is up or down.
- D. surge **Correct answer.** The surge motion is a linear horizontal motion where the direction of movement is forward or aft.

The banner features a background of nautical equipment including a sextant, a compass, and coiled ropes. The title 'Nautical Deck Queries' is written in a large, white, serif font on the left side. On the right side, a large white letter 'Q' is positioned above the word 'uestions' in a smaller, italicized serif font.

Nautical Deck Queries

Prepared by NMC Deck Examination Team

Q uestions

1. **INTERNATIONAL ONLY:** Your vessel is backing out of a slip in a harbor. Visibility is restricted. Which signal are you required to sound?
 - A. one prolonged blast only
 - B. one prolonged blast followed by three short blasts when the last line is taken aboard
 - C. one prolonged blast followed by three short blasts when leaving the slip
 - D. the danger signal

2. Which statement regarding the free surface correction is TRUE?
 - A. It is added to GM at light drafts and subtracted at deep drafts.
 - B. It is increased if the slack tank is not on the centerline.
 - C. It is decreased if the slack tank is below the KG of the vessel.
 - D. The correction decreases as the draft increases.

3. You are steering 125° PGC. The wind is southwest by south, causing a 3° leeway. The variation is 6°E, the deviation is 2°W, and the gyro error is 1°W. What is the true course made good?
 - A. 121°T
 - B. 123°T
 - C. 127°T
 - D. 129°T

4. Which statement is true when the captain of the port or officer in charge, marine inspection issues an order of suspension to the operator of a vessel concerning oil transfer operations?
 - A. It is always effective immediately.
 - B. It includes a statement of each condition requiring corrective action.
 - C. It must be in writing before it takes effect.
 - D. All of the above.

1. A. one prolonged blast only **Correct answer.** "A power-driven vessel making way through the water shall sound at intervals of not more than 2 minutes one prolonged blast."
Reference: International Rule 35(a)
- B. one prolonged blast followed by three short blasts when the last line is taken aboard **Incorrect answer.**
- C. one prolonged blast followed by three short blasts when leaving the slip **Incorrect answer.**
- D. the danger signal **Incorrect answer.**

2. A. It is added to GM at light drafts and subtracted at deep drafts. **Incorrect answer.**
- B. It is increased if the slack tank is not on the centerline. **Incorrect answer.**
- C. It is decreased if the slack tank is below the KG of the vessel. **Incorrect answer.**
- D. The correction decreases as the draft increases. **Correct answer.** The free surface correction will decrease as displacement increases; this can be demonstrated by the following formula:
 $GGo = \text{Free surface constants} / \text{Displacement}$
Where: GGo = Virtual rise of the center of gravity
Free surface constants = Free surface constant for all of the slack tanks
Displacement = Vessel displacement
Reference: Stability and Trim for the Ship's Officer, Fourth Edition, William E. George, p. 170-171.

3. A. 121°T **Correct answer.** Correct the Gyro Compass Heading as follows:
 $125^\circ \text{PGC} - 1^\circ \text{W GE} = 124^\circ \text{True}$
Apply leeway to the true course in the direction the wind is setting to obtain the CMG.
 $124^\circ \text{True} - 3^\circ \text{ of leeway} = 121^\circ \text{True}$
Reference: The American Practical Navigator, 2002 Edition, p. 97, p. 102, and p. 785.
Where: T = True; PGC = Per Gyro Compass; GE = Gyro Error; CMG = Course Made Good
- B. 123°T **Incorrect answer.**
- C. 127°T **Incorrect answer.**
- D. 129°T **Incorrect answer.**

4. A. It is always effective immediately. **Incorrect answer.**
- B. It includes a statement of each condition requiring corrective action. **Correct answer.** "A suspension order:
(a) May be effective immediately;
(b) Is issued in writing unless it is effective immediately and then it may be issued orally and followed up in writing;
(c) Includes a statement of each condition requiring correction to-"
Reference: 33 CFR 156.112(c)
- C. It must be in writing before it takes effect. **Incorrect answer.**
- D. All of the above. **Incorrect answer.**

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