



**U.S. COAST GUARD**



# OPERATIONAL SAFETY INFORMATION FOR COMMERCIAL CRABBING VESSELS **2024**



U.S. COAST GUARD OFFICE OF INVESTIGATIONS AND ANALYSIS  
& OFFICE OF COMMERCIAL VESSEL COMPLIANCE

On New Year's Eve 2019, the commercial fishing vessel SCANDIES ROSE capsized and sank with five of the seven crew lost south of the Aleutian Island Chain. Just two years prior, in 2017, the commercial fishing vessel DESTINATION sank with all hands north of the Aleutian Island Chain. In both tragedies, there was significant loss of life in extreme Alaskan winter weather conditions. This guide contains critical information on operational safety for commercial fishing operations.



The SCANDIES ROSE was lost with five of the seven-man crew off of Sutwik Island, south of the Aleutian Chain.

The DESTINATION was lost with her six-man crew off of St. George Island.





# DANGERS OF ASYMMETRICAL ICING, ICED POT WEIGHT, AND CRAB POT LOADING

As freezing spray forms and builds, ice begins to accumulate on the exterior of the crab pots, webbing, and the gear, increasing the stowed pot's potentially deadly weight. In tests conducted by the Coast Guard, ice accumulation more than doubled the weight of the dry pot and gear. As the vessel heads into the sea and wind, the ice from the freezing spray begins to form on the vessel and gear, which usually builds unevenly (asymmetrically), severely degrading the vessel's stability if not properly managed. In the cases of the SCANDIES ROSE and the DESTINATION, the severe buildup of ice led to sudden and catastrophic capsizing.



A triple stack of typical crab pots iced over in a test chamber.



The same stack of pots removed from the test chamber and placed at a distance equal to the distance from the forward wheelhouse to the front of the pot stack on SCANDIES ROSE. Can you estimate the ice thickness accurately?

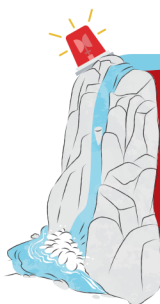


# DANGERS OF ASYMMETRICAL ICING, ICED POT WEIGHT, AND CRAB POT LOADING

Current regulations for determining stability constraints for crabbing vessels do not consider the formation and effects of asymmetrical icing of vessels and pot stacks. As such, captains and owners should take this into account when determining the number of pots to carry when freezing spray is anticipated and err on the side of caution.



A model showing the final hour of the SCANDIES ROSE with significant icing on the starboard bow and pot stack, leading to the vessel listing into a significant wind on the starboard bow.

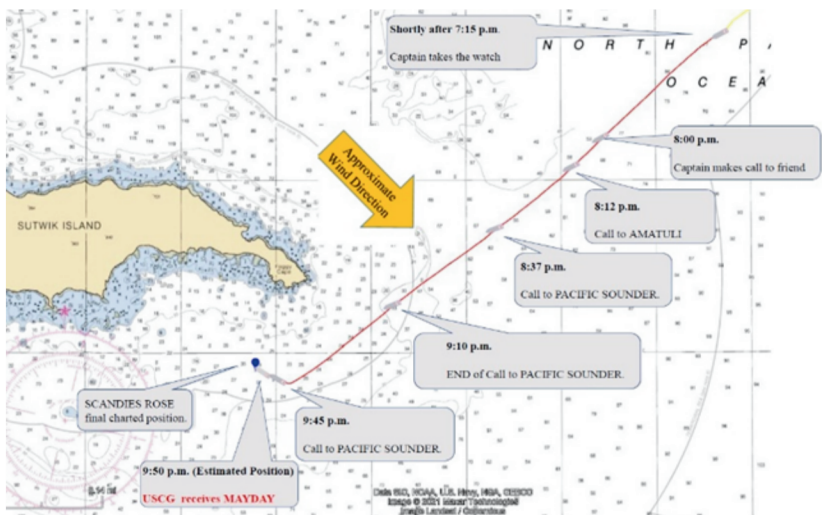


It is imperative to recognize emergency situations and alert the crew as soon as possible to maximize chances of survival. Mariners should also notify the Coast Guard as soon as they recognize an emergency onboard so they can maintain a communications watch with your vessel and mobilize assets to assist when necessary.



# IDENTIFYING A POTENTIALLY DANGEROUS SITUATION

At approximately 7:15 pm on the accident night, the captain of the SCANDIES ROSE took over the watch with a developing list to starboard in extremely harsh weather with ice forming and the wind on the forward and starboard beam at wind speeds later approaching 60–70 knots. Shortly after 8 pm, the captain made several phone calls to people discussing the worsening situation and citing the need to seek shelter. Sometime after 9 pm, the captain told another fisherman that he had a 20-degree list. At no time during his watch did the captain of the SCANDIES ROSE declare an emergency for the crew or ring the general alarm to alert the crew, send the crew to investigate the cause of the listing, or prepare to potentially abandon ship. In emergencies, preparation and early action can save lives. Onboard the SCANDIES ROSE, the crew was alerted only when the vessel began to capsize, providing little time to gather equipment, don survival suits, and prepare for the ultimate abandonment of the sinking vessel.



The last hours of the voyage of the SCANDIES ROSE. The starboard list grew from a couple of degrees to starboard to approximately 20 degrees, the vessel listing into a powerful wind on the starboard bow.



# ELECTRONIC DISTRESS SIGNALS: DIGITAL SELECTIVE CALLING DISTRESS ALERT FEATURE

The SCANDIES ROSE had several VHF marine radios. None of these were configured to use the Digital Selective Calling (DSC) distress alert feature. On the SCANDIES ROSE, the captain stayed at his post in the wheelhouse, broadcasted the “mayday” message, and repeated the vessel’s position twice. With the DSC distress alert feature, the radio would automatically transmit the distress and the GPS-enabled latitude and longitude until it was received at a shore station, saving the master and crew valuable time in an emergency. Information on configuring the DSC function can be found in Coast Guard Marine Safety Alert 03-23 (QR code provided on the last page).



The visor panel on the SCANDIES ROSE wheelhouse with two VHF radios that could have had the DSC feature configured. When every second counts, the DSC function might have provided the master valuable time to don a survival suit, attend to his crew, egress the vessel, and potentially help him save his own life and the lives of his crew.

# ELECTRONIC DISTRESS SIGNALS: EMERGENCY POSITION INDICATING RADIO BEACON (EPIRB)

The SCANDIES ROSE was equipped with an Emergency Position Indicating Radio Beacon (EPIRB), but it was never located and did not transmit the distress signal to satellites overhead. It is possible that the EPIRB was taken into the wheelhouse of the vessel in preparation to abandon the ship. That would have trapped this critical device in the wheelhouse when the vessel suddenly capsized. While it is good practice to bring the EPIRB with you when abandoning a vessel in an emergency, the device should not be brought into the skin of a sinking vessel. Make sure that the EPIRB and mounting bracket with a valid hydrostatic release mechanism are installed and tested as specified by the manufacturer. It is also imperative to install this in a location where it will float free in an emergency to transmit critical search and rescue information including the name of the vessel and geographic position.



The empty EPIRB bracket of the SCANDIES ROSE. There was no evidence of the EPIRB being trapped in the exterior wreckage of the vessel when the underwater wreckage was later surveyed by a remote underwater vehicle (ROV).



# CREATION OF ALLEYWAYS TO OBSERVE ICE, CLEAR ICE, AND USE GROUND TACKLE IN AN EMERGENCY



How are you going to accurately determine how much ice has built up on the forward parts of your vessel? How are you going to clear and operate ground tackle and clear ice on the bow and forward end of the pot stack?



An alleyway through the pot stack on an unidentified commercial crabbing vessel. The orange arrow shows the path to move safely forward through the interior of the pot stack.

On the accident voyage, the Captain and deckhand on the SCANDIES ROSE talked about going forward “over the top” of the pot stack, but with 60–70 knot winds and high seas, this was too risky. As a result, the crew was unable to accurately determine the amount of icing forward or make any attempts to break the ice off the pots or vessel equipment. Creating a pot stowage plan that considers safe access throughout the deck which includes alleys or walkways in the pot stack enables the crew to access icing and take necessary actions to protect the vessel and crew in all weather conditions.

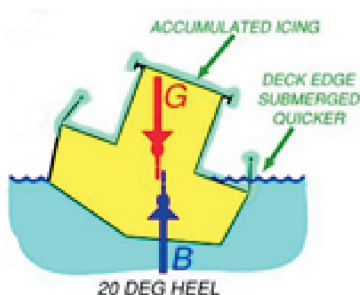
## ATTEND BASIC SAFETY TRAINING ON A REGULAR BASIS



In an emergency, seconds count and critical training kicks in to enhance your chances for survival. Attend regular basic safety training and create, and regularly practice, with realistic drills onboard where all the crew currently onboard participate. After the SCANDIES ROSE sank, survivors fired off most of the visual distress signals when there were no rescue forces in sight and long before the Coast Guard arrived on the scene. Four hours later, as a Coast Guard helo approached, the survivors used a flashlight in a side-to-side motion to attract the pilot's attention.

## FORMAL STABILITY TRAINING

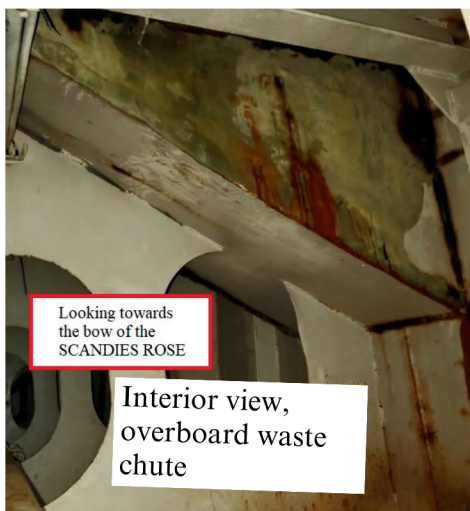
If you are the captain, it is highly recommended to get formal stability training so you can understand the basic principles of stability and can effectively understand the stability document that was created for your vessel. This will help you understand the vessel's limits and dangers associated with all the factors that can negatively affect the stability of your vessel. These classes generally teach:



- Stability Terminology
- Stability Principles & the Stability Curve
- Operational Considerations for Fishing Vessels
- Understanding Stability Instructions and Documents
- Damage Control and the Importance of Watertight Integrity

## MAINTAIN WATERTIGHT INTEGRITY AND USE CERTIFIED WELDERS

Keeping the water outside the vessel where it belongs is a complex issue and requires proactive maintenance of the watertight integrity of the vessel. The sea will look for any opening to get into the vessel such as wasted hull plating, poorly welded seams, and hatches or other fittings left open, either inadvertently or for ease of passage onboard. Closing the appropriate hatches, scuttles, and other valves and fittings when underway is key to ensuring vessel stability and safety. If repairs are needed, seek certified welders who test their work. The captain of the SCANDIES ROSE had requested repairs of previous sub-standard weld work. In response, the owner approved the use of a certified welder to crop, renew, and perform non-destructive testing to ensure the quality of the final welds. The difference in quality of work was evident in the provided photos.



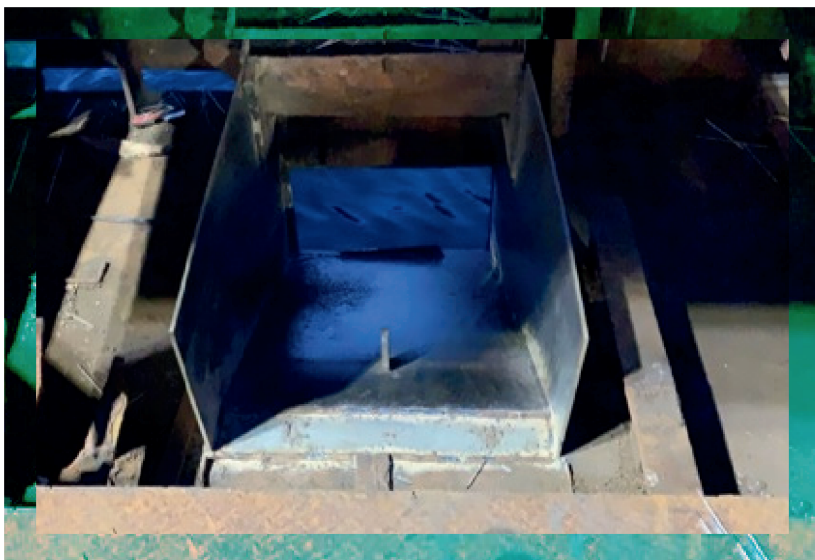
After starboard overboard by-catch chute when viewed from the interior of the SCANDIES ROSE.



## ***THE CHUTE BEFORE REPAIR:-***



## ***THE CHUTE AFTER REPAIR:-***



The overboard chute, prior to cropping and renewing which leaked and penetrated the side shell plating on the SCANDIES ROSE and after the repair non-destructive testing conducted by an ABS certified welder.

# REDUCE FATIGUE FROM WORKLOAD, STRESS, AND ENVIRONMENTAL FACTORS

The effects of fatigue should never be overlooked. Fatigue can have the same impairment effect as being legally intoxicated and can be deadly when not accounted for. Approximately 70% of accidents are caused by human error and fatigue can lead to human errors that may put lives in danger. Sea conditions, vessel motion, diet, work and rest hours, and use of caffeine and stimulants all play a part in reducing your ability to make decisions and react safely. This presents compounding issues when operating dangerous equipment and serving in safety sensitive positions onboard vessels. This excerpt from a Coast Guard publication on fatigue and fishing gives some strategies to help reduce fatigue.

## ENHANCE PERFORMANCE AND FIGHT FATIGUE



Eat a well-balanced diet! Too much sugar, fat, and starch will make you feel sluggish. Balance your meals by increasing your intake in lean proteins, fruits, vegetables, and complex carbohydrates.



Watch caffeine and medications – certain foods, beverages, and medications cause us to be more alert, while others make us drowsy. Read labels and be aware of what you consume.



Get regular exercise. Whether cardiovascular or muscle-building, regular exercise increases overall endurance levels. Try for at least 20 minutes, three to four times a week.



Get your rest. Though it is not possible to “store” sleep, you can prepare for long hours by sleeping as much as possible on the days prior to departure. Schedule at least seven hours of sleep per day.

## GENERAL ENDURANCE TIPS

### BEFORE WATCH

- Take some time before watch to “rev up” and wake up your mind and body.
- Get exposure to daylight or other bright light upon waking.
- Eat the largest meal of your day now rather than before bed.
- In moderation, coffee and other sources of caffeine may help you feel awake and alert. Just be sure to cut back three to four hours before bedtime.

### DURING WATCH

- It is important to be fully rested and to stay alert so you can work.
- Keep well-hydrated!
- To keep your alertness high, talk to other crewmembers and/or keep walking and moving around.
- Consider two-person bridge watches whenever possible.
- Seek to avoid light exposure, following the vessel’s or personal light management plan.
- Ten-minute naps can help minimize the ill effects of sleep loss. Just make sure to allow yourself 15 minutes to wake up afterwards.

### AFTER WATCH

- Once you’re off watch, let your body wind down to relax and get ready for sleep.
- Drink water, warm milk, or hot herbal tea before bed instead of caffeine.
- Heavy or spicy meals may interfere with deep sleep. Have a light meal or snack instead.
- Relax – read or listen to music.
- Minimize your exposure to bright light and get to bed before the sun comes up.
- Try to find a quiet, dark, and cool place to sleep.



# CONTRIBUTING FACTORS & ANALYSIS

The investigation revealed that several crewmembers had significant medical issues and that the managing owner was unaware of the extent of those issues prior to the vessel departing port. These medical issues could have been exacerbated in the challenging maritime environment of Alaska and similar areas. The pressures of commercial fishing operations likely reduce management's ability to focus on these types of risks to vessel operations. While these medical issues were not found as a direct cause of the casualty, they greatly increased the risk to the crewmembers once the vessel capsized.

- During post-casualty drug testing following this incident, one of the two surviving crewmembers tested positive for marijuana. The same crewmember was tested prior to the voyage and their test results were reported back to the company as negative. It is the opinion of the Marine Board of Investigation that the initial test for this crewmember was most likely positive however the results were reported as negative due to the pressure to get underway with a full complement of crew. While this may not have directly contributed to the cause of the accident, it may have impacted the safe operation of the vessel considering this crewmember was in a safety-sensitive position as the navigation watch directly preceding the watch when the incident occurred.
- During the analysis of a survivor's work-rest history, it was identified that the level of fatigue experienced by the crewmember would have been equivalent to legal intoxication by alcohol. Due to the nature of the work, there is a strong likelihood that the deckhands experienced a sleep deficit while the vessel was at sea. Despite the uncertainty of fatigue's impact on this accident, research has shown that fatigue leads to errors in decision-making and decreased motor skills reducing the crewmembers' ability to respond during an emergency.
- This investigation revealed that the vessel did not have any written procedures relating to the safe operations of the vessel. Companies that operate fishing vessels without developed written procedures, especially those with multiple employees and operators, may create situations that lead to latent unsafe conditions due to misunderstanding of roles and expectations for important duties.

# IMPLEMENTING VOLUNTARY RISK-MITIGATING MEASURES

U.S. Coast Guard investigators have identified several measures that may mitigate the risks posed by the issues discussed on the previous page. All commercial fishing vessel owners and operators should consider the following voluntary measures:

- While there are no medical fitness requirements to operate a commercial fishing vessel of this type in this casualty, owners and operators should consider medical conditions in the employment of personnel and how disclosed medical conditions may be further exacerbated by extreme weather and fatigue. Special attention should be paid to crew assigned to safety-sensitive positions.
- Although boating under the influence laws (Title 33, Code of Federal Regulations Part 95) states a person should not be under the influence of drugs or alcohol while operating the vessel, there is no explicit requirement for commercial fishing vessels to have a drug and alcohol program, except for post-casualty testing. This leaves a gap where owners or operators may unknowingly hire individuals who routinely operate vessels under the influence of drugs or alcohol. Owners and operators should adopt pre-employment drug screening programs that are timely and do not place unnecessary pressure on captains to rush testing for a last-minute hire.
- Understanding the “time is money” moniker, there are direct impacts on the safety of the vessel and crew when fatigue is ignored. Owners and operators are encouraged to establish work schedules that consider the effects of fatigue. Specifically, for the crew in safety-sensitive positions.
- Owners and operators should consider developing written procedures to operate their vessels safely with due regard to the intended service and fishery of the vessel and ensure that all employees within the company are thoroughly familiar with these policies and procedures.

***NOTE: These Findings of Concern are provided for informational purposes only and do not relieve any domestic or international safety, operational, or material requirements.***



# ***U.S. COAST GUARD***

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