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DIFFICULTIES AND RISKS INVOLVED IN THE SETTING OF RADAR DISPLAYS TO CORRECTLY VISUALIZE RADAR SEARCH AND RESCUE TRANSPONDER (SART) SIGNALS

1 The Maritime Safety Committee, at its 109th session (2 to 6 December 2024), recognizing the need to raise awareness of potential difficulties with the setting of radar displays to correctly visualize radar search and rescue transponder (SART) signals, agreed to circulate the information contained in the annex until a long-term solution was considered.

2 Member States are invited to bring the information in the annex to the attention of all concerned.

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ANNEX

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1 Introduction and purpose

1.1 On 13 April 2021, the liftboat **Seacor Power** capsized in the Gulf of Mexico, resulting in the loss of 13 lives at sea. When the liftboat capsized, the mate had grabbed one of two radar SARTs when egressing the vessel and turned it on after being washed overboard. However, responders stated they never saw the radar SART's signal appear on their radars, even though the mate stated seeing the light on the device illuminate, indicating that it was being interrogated by a vessel's radar. During post-casualty testing with a response boat and fire department boat, the United States National Transportation Safety Board found that crews were initially unable to see the radar SART signal. The range ring on the radar display was instead set appropriately for the navigational area, and was not expanded to 12 NM rings as suggested by the radar SART user's manual. The radar SART signal was detected only after the crew became familiar with procedures addressing changes to the radar gain, clutter, and range necessary to accommodate the radar SART detection, rather than retaining settings necessary to accommodate radar targets in areas being searched or navigated. Follow-on testing with search and rescue aircraft was also successful only after training the air crews what to look for.[*] Since radar SART activation is uncommon, crews of vessels and aircraft responding to a distress incident may not remember to tune their radars for optimal radar SART detection, and may be reluctant to do so due to its degradation of the radar's normal operation.

1.2 The purpose of this guidance is to advise radar operators, those engaged in search and rescue, and shipowners of the difficulties and risks involved in the setting of radar displays to correctly visualize radar SART signals, and guidance on how best to mitigate those problems and risks.

2 Radar SART mode

2.1 While the *Revised recommendation on performance standards for radar equipment* set out in resolution MSC.192(79) requires X-band radars to detect radar SARTs, it does not require radar SARTs and other wanted navigational and anti-collision information to be displayed together. The performance standards only provide that "It should be possible to switch off those signal processing functions, including polarization modes, which might prevent an X-band radar beacon or SARTs from being detected and displayed." *Operation of marine radar for SART detection* (SN/Circ.197) warns radar operators that "Care should be taken in operating the radar in the detuned condition [to increase the visibility of the SART] as other wanted navigational and anti-collision information may be removed."

2.2 The radar operator's manual should be consulted on the necessary settings for displaying radar SART signals. These settings typically change range settings and detune the radar out of its best tuning condition, erasing or weakening all normal radar echoes. For this reason, radars should only be set to display radar SART signals when not immediately needed for navigation or target detection.

[*] See docket items 82 to 88 for the Search and Rescue Transponder (SART) Specialist's Factual Report and its six annexes. https://data.ntsb.gov/Docket/?NTSBNumber=DCA21MM024

2.3 Operators should assess the risks of missing radar SART signals from possible survivors, or missing important radar targets, when setting the radar into the radar SART mode in a given situation and decide accordingly.



**SEACOR's radar SART display when radar was properly set to SART mode.
None of the vessels involved in the search for survivors received this radar SART signal.**

3 AIS-SARTs

3.1 SOLAS regulation IV/7 requires every ship to be provided with either a radar SART or an AIS-SART to meet the GMDSS functional requirement for transmitting and receiving signals for locating as required by regulation IV/4. AIS-SART signals are shown with other AIS targets, distinctly marked on IEC 62288-compliant shipboard navigation displays. AIS-SARTs do not experience the reception problems radar SARTs experience and require no special mode setting.