



## Safety recommendation no. 181

<b>Date of the publication</b>	31.01.2023
<b>Number of the final report</b>	2017120701
<b>Safety deficit</b>	<p>At 21:13 on 7 December 2017 the MS Diamant, which was operating a special service, collided with a rock near the shore, 400m from the Kehrsiten-Bürgenstock landing stage. The hull was damaged laterally over a length of 23 m, causing water to enter three watertight compartments via a crack about 1.2 m long. The MS Diamant was subsequently able to reach the landing stage under its own power, with all passengers disembarking unharmed. The immediate and proportionate response by the crew (issuing an alert without delay and piloting towards the landing stage) and the appropriate measures taken by participating emergency services (pumping water from the ship, provisional sealing of leak by diving specialists) helped minimise the damage.</p> <p>The reason the MS Diamant ran aground on 7 December 2017 on its special service near the Kehrsiten-Bürgenstock landing stage was because it manoeuvred into an unsafe position while approaching the landing stage at night and was consequently steered too close to the shore. Both shipmasters were too slow to notice the spatial disorientation created by the lack of visible reference points in the dark shore area, the bright lighting on the MS Waldstätter ahead and the illumination on the landing stage. The available aids (radar and GPS with heading lines and speed indicators) were insufficiently used, and the handover of command was unstructured. The requirements for approaching the landing stage – including keeping to the shipping lane and regulating speed – were not followed. The incident shows that the error tolerance of the man-machine-environment system was insufficient under such circumstances.</p> <p>The following contributed to the accident:</p> <ul style="list-style-type: none"><li>• The shipmasters' desire to meet their obligation to moor the ship on time.</li><li>• The shipmasters' insufficient awareness of the fact that, despite good visibility, they were vulnerable to optical illusions and spatial disorientation while piloting at night and should have consistently deployed the available aids. This issue was not sufficiently addressed in training on risk recognition and response.</li></ul> <p>The following weaknesses were identified during the investigation:</p> <ul style="list-style-type: none"><li>• Insufficient operational guidance and standard operating procedures (SOP) for piloting with radar at night and for handing over command.</li><li>• The shipmasters' insufficient training and consequent lack of awareness regarding human performance limitations, which resulted in a failure to develop appropriate human factors competences for piloting at night.</li></ul> <p>Neither shipmaster noticed their spatial disorientation and resultant loss of situational awareness. Neither of them had a sufficient basic</p>

awareness of the limits of human performance in darkness or the impact of this on the safe operation of the vessel.

<b>Safety recommendation</b>	The Federal Office of Transport (FOT) should issue a requirement or check with supervisors that the training officers educate their shipmasters sufficiently and at the appropriate level on relevant human factors in the man-machine-environment system, specifically in the area of situational awareness. Similarly, the FOT should request evidence from training officers of how shipmasters train for and assess these human factors competencies in practical situations.
<b>Addressees</b>	Bundesamt für Verkehr
<b>Stage of the implementation</b>	Implemented: The Federal Office of Transport (FOT) responds as follows: Navigating at night is now an element in the training of nautical staff (e.g. shipmasters), as specified in the revised Implementing Provisions of the Shipbuilding Ordinance (IP-ShipBO). A number of questions on navigating at night are now in the FOT practical examination for shipmasters. The revised IP-ShipBO came into effect on 15.05.2024.
<b>Investigation report concerning the safety recommendation</b>	<u><a href="#">Vorbericht</a></u> <u><a href="#">Schlussbericht</a></u>