

3. Case studies of accidents caused by dozing

1. A case where BNWAS detected the operator's body movements though dozing, so the alarm did not work

Summary: A cargo ship (Vessel A, 9,589 tons, 18 crew members) was drifting at anchor, and a cargo ship (Vessel B, 498 tons, 5 crew members) was heading east-northeast when Vessel B collided with Vessel A. Vessel A suffered a gash in the port aft hull, while Vessel B suffered a crushing injury to her bow. Both sustained no casualties.

The course of the accident

Vessel A

Vessel B

March, 10 a.m. range

Officer A noticed by radar that Vessel B moving east-northeastwards, was approaching Vessel A.

Officer A questioned that Vessel B was approaching approximately 1.5 miles without changing course, so he sounded ship's whistle and called Vessel B on the VHF.

Master A sounded ship's whistle continuously and called Vessel B on the VHF, but there was no response from Vessel B.

Master B alone was on bridge watchkeeping duty under autopilot, heading east-northeastwards, he was on visual watch as there were just a few vessels around, and visibility was good.

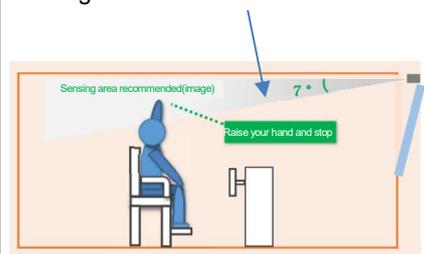
Master B was sitting on his chair and continuing to navigate when he dozed.

Master B heard the whistle and looked up to see Vessel A at close quarters on the starboard bow, and sensing the danger of a collision, he operated to move backwards at full speed.

The bow of Vessel B collided with the port aft hull of Vessel A.

- At the time of the accident, in addition to his duties as a master, Master B was also engaged in operational management and other responsibilities for Company B (owner and operator of Vessel B). Although he took intermittent leave, Company B could not find a replacement for the master's position, and **fatigue had built up in him after being on board for an extended period.**
- BNWAS is designed to raise the alarm if the person on duty shows **no movement for a specific time** and to have the person stop the alarm with his hand.
- The alarm did not work because **the sensors pointed downwards from the manufacturer's recommended position and detected the body and foot movements of Master B, who dozed.**

Position and angle at which the person cannot stop the alarm without raising a hand



Sensing area recommended by the manufacturer.

Probable causes: It is probable that Master B dozed because **he was fatigued from being on board for an extended period, there were few vessels around, he was on duty in his chair with autopilot, and his alertness level was likely low, having believed the alarm would work if he dozed.**

It is likely that **BNWAS did not likely raise the alarm because the sensor pointed lower than the manufacturer's recommended position and detected the body and leg movements of Master B, who dozed.**

Safety Actions (measures to prevent accidents)

- Operators should **have crew members take leaves at appropriate intervals** to let them perform their bridge watchkeeping duty properly and in good condition and **instruct them to get out of their chairs and into the open air to dispel any drowsiness** if they feel drowsy while on duty.
- Shipowners, masters and bridge watchkeepers of vessels equipped with a BNWAS **should not overconfidently depend on the system, endeavour to prevent sleep operation, thoroughly check the system working at departure and under sail, adjust the sensor conditions such as its mounting angle, and set the time (the alarm inactivation time) to be short as possible.**

The investigation report on this case is published on the JTSB website. (Published on March 28, 2019)

https://www.mlit.go.jp/jtsb/ship/rep-acci/2019/MA2019-3-2_2018tk0019.pdf

2. A case where the alarm did not work because of dozing in less than the set time (the alarm inactivation time)

Summary: The tanker (299 tons, 4 crew members) heading east-southeast in the night got aground on a reef. The vessel sustained cracks and dented damage to the hull planking, with no casualties.

March, 10 p.m. range

The course of the accident

The vessel was sailing towards the east-southeast by autopilot with the master alone on bridge watchkeeping.

The master was on watch with both elbows on the steering gear and felt sleepy, but thought he would not doze as he would have the vessel veer shortly, so he continued in the same position and, at some point, dozed.

The vessel went past the planned veering point and grounded on a nearby reef.

On the day of the accident, the master woke up at around 4:30 am and was then on duty for loading, unloading and bridge duty, and after those duties, he did the paperwork and other tasks, **which led to a lack of sleep and fatigue**. And having seen off a vessel on the opposite lane at the left, he **became relaxed as he saw no other vessels around** and dozed.

The vessel was equipped with **BNWAS set to raise the alarm at no movement of the bridge watchkeeper for 7 minutes, though, at the accident, the alarm did not work because he dozed in less than 7 minutes**, and the accident occurred before the set time.

Having experienced the accident, they **changed to set the time (the alarm inactivation time) at the BNWAS to 3 minutes**.

Probable causes: It is probable that the vessel grounded at night because the master dozed, the vessel went past the planned veering point and continued to be navigated towards a nearby reef.

Safety Actions (measures to prevent accidents)

- If the bridge watchkeeper feel drowsy while on watch duty alone, **move your body and open the windows to expose yourself to the air** to prevent dozing.
- Shipowners, masters, and bridge watchkeepers need to check and monitor the BNWAS and **have the time (the alarm inactivation time) short as possible**.

The investigation report on this case is published on the JTSC website. (Published on November 26 2020)

https://www.mlit.go.jp/jtsb/ship/rep-acci/2020/keibi2020-10-32_2020hs0056.pdf