CASE STUDY

VESSEL TYPE: Dry Cargo: General
TITLE: Corrosion – The Hidden Enemy
CATEGORY: Misc

THE INCIDENT:

Please note that this case study has been provided by the MAIB Safety Digest 2/2007, Case 6.

After completing the weekly planned maintenance routine on a rescue boat and its crane, it was usual for the crew to lower the boat to the water for training purposes while alongside. The boat was lowered and manoeuvred in the water for a short time and then brought back to be hoisted on board. As the boat was being hoisted, the wire rope parted and the boat fell into the sea. Fortunately, the company had already identified this as a high risk operation and had stopped the practice of having the crew in the boat while hoisting or lowering during training exercises. There were no injuries, and the boat was not damaged. On investigation, it was found that a new wire rope had been fitted 14 months previously, and it had passed a thorough examination about five months before the incident. It was also inspected/greased on a weekly basis as part of the ship’s planned maintenance programme. Despite the checks, the incipient corrosion had not been discovered and the wire eventually failed at the top of the steel ball counter weight. The accelerated corrosion was partly due to the harsh environment in which the rescue boat and its crane were located, at the aft end of the vessel. The ball weight had a crevice at the top where the wire passed through, and this formed an ideal trap for sea water, salt and sulphur deposits from nearby exhaust outlets to accumulate and obstruct regular inspection. The investigation discovered that unsuitable grease had been applied, and this had not been effective in lubricating the wire core and served to obscure the underlying corrosion (see photograph of wire and crane ball indicating the point of failure). The failed segments of the wire rope were sent to a laboratory for testing, and the subsequent report confirmed that the wire rope had failed through ductile tensile fractures of wires wasted by corrosion. The laboratory was also able to confirm that a contributory cause of the failure was inadequate maintenance greasing over a significant period of time.

CONCLUSION:

1. The inspection of all wire ropes should be thorough, and should include the removal of old grease to assess the condition of the wire rope before re-coating with fresh wire lubricant.
2. Senior staff should regularly monitor planned maintenance procedures which are carried out by crew.
3. Consideration should be given to the use of a thinner self penetrating lubricant on seldom used wire ropes, especially where they are used or stored in a harsh corrosive environment.

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