

High potential near-miss: Dropped ROV/TMS leading to equipment damage

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A Member has reported an incident in which an ROV/TMS and an A-frame docking head fell to the deck from approximately 1 m.

The incident occurred during the launch of the system; the ROV crew witnessed a guide bar from the A-frame docking head fall more than 4 m to the deck, landing at the base of the ROV some 2 m from an ROV crew member. The guide bar was heavy-walled box section, approximately 2 m in length and weighed approximately 20 kg. The launch was stopped immediately; after a further 20-30 seconds, the docking head separated from the A-frame, and the ROV/TMS and docking head fell to the deck.

There was significant damage to the equipment, and our member considered that the incident had the potential to have caused a fatality or serious injury to personnel.

Our member's initial investigation of the incident revealed the following:

- The two snubbing damping cylinder rams had stripped out from their clevis threads on the swing frame.
- The welds between the sheave guide posts and the docking head had also separated.
- The initial investigation suggested that the guide post welds had been compromised, allowing movement of the docking head out with the design of this system. This movement eventually transferred through to the damping cylinder clevis points, causing stretching of the clevis points over time until they reached a failure point.
- The stresses that led to the guide post weld failures were most likely to have been induced over time by operating the A-frame with the damping cylinders in the locked position.

The following causes were identified, subject to clarification when the fuller investigation is completed:

- **Equipment**
 - A review of the clevis design is required to assess their suitability for the loads to which they can be subjected.
- **Procedures**

- The site-specific launch and recovery procedure called for putting the snubber ring in the 'locked' position in marginal sea states to prevent excessive swinging of the ROV/TMS, for both launch and recovery. The manual for the type of A-frame involved in this incident makes specific references warning against moving the A-frame with the snubbing damping cylinders in the 'locked' position.
- The preliminary investigation indicates that the stress on the guide post welds is possibly a result of the A-frame being operated with the system in the 'locked' position over a period of time.
- The manual for the type of A-frame involved in this incident contains storage and start up procedures which include instructions to 'inspect structure for inadvertent damage' and 'check condition of paintwork ensuring there are no bare metal surfaces'. Had these procedures been followed, it is possible that damage to the guide post welds would have been spotted before the failure.

- **Inspection and Maintenance**

- Inspection of the weld areas between the sheave guide posts and the docking box suggest that these areas had been compromised and possibly separated for some time prior to this incident, and should have been identified already as part of 'routine' maintenance on the A-frame.

Members may also wish to refer to the following IMCA documents:

- The initial and periodic examination, testing and certification of ROV launch and recovery systems
- Guidelines for lifting operations

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