

Failure of cable socks (Chinese fingers) on subsea rigging

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We have been passed information on the following incident.

What happened?

A 2" diameter pipeline dewatering hose had been deployed to the seabed, supported at 20 m intervals by cable socks (Chinese fingers) on a winch wire. The water depth was 380 m.

After a period of several hours it was found that most of the cable socks had moved down the winch wire, causing the full weight of the hose to be taken on the cable socks above, which subsequently broke. The weight of the hose was then transferred to the slack section of hose on the deck of the deployment vessel. The dewatering operation was aborted and a controlled abandonment of the hose and support rigging onto the vessel was carried out.

Our member's investigation revealed the following:

The investigation found that the cable socks were not suitable for this duty:

- Their design load was much higher than their working load and they did not develop an adequate grip on the winch wire.
- They were constantly tensioned due to swell heave on the hose and were, therefore, able to relax their bite on the wire.
- The use of cable socks on a winch wire (a very hard surface in comparison to a cable's outer sheath) was not appropriate.

The investigation also identified some important system causes into the failure:

- Although a simulated test on a cable sock was carried out on the deck of the vessel, it wasn't representational of the cyclic loading conditions subsea.
- The risk assessment process, although extensive, had not addressed this use of cable socks. This rigging feature was added at a later date and was not adequately risk assessed.

The following actions were taken:

Subsequently, an alternative method of rigging was developed, employing clamps onto the support wire and the dewatering operation was successfully completed.

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