



Stena Clyde

Pod line tensioner failure

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The Incident

- 23rd October 2008 - The blue Pod line support wire parted in the tensioner system and the blue Pod line storm loop and saddle (see photo) falls into the sea.
- The tensioner piston strokes down rapidly, shearing the bottom securing bolts of the neck bush housing assembly, allowing the rod and piston assembly to fall to the lower moonpool deck.
- Upon inspection it was observed that the wire had parted at the tensioner turn down sheave, due to wire fatigue. The BOP had been deployed some three months prior to this incident, rendering the normal procedure of changing the wear points, by slipping and cutting the wire impossible.
- When the wire parted the piston should have stroked out and the travel speed should have been restricted by the flow of oil through the control orifice. In this instance, the correct sequence of events did not take place due to insufficient fluid in the system.



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Background Information

- This particular tensioner had been removed twice in recent times for re-packing with new seals; this was due to severe leakage, making it necessary to air up the tensioner on a regular basis.
- The barrel was badly scored, allowing the high pressure air (420psi) to leak past the top seals into the oil reservoir area and causing the low pressure regulator to leak oil. (Air / oil reservoir pressure is 45 psi)

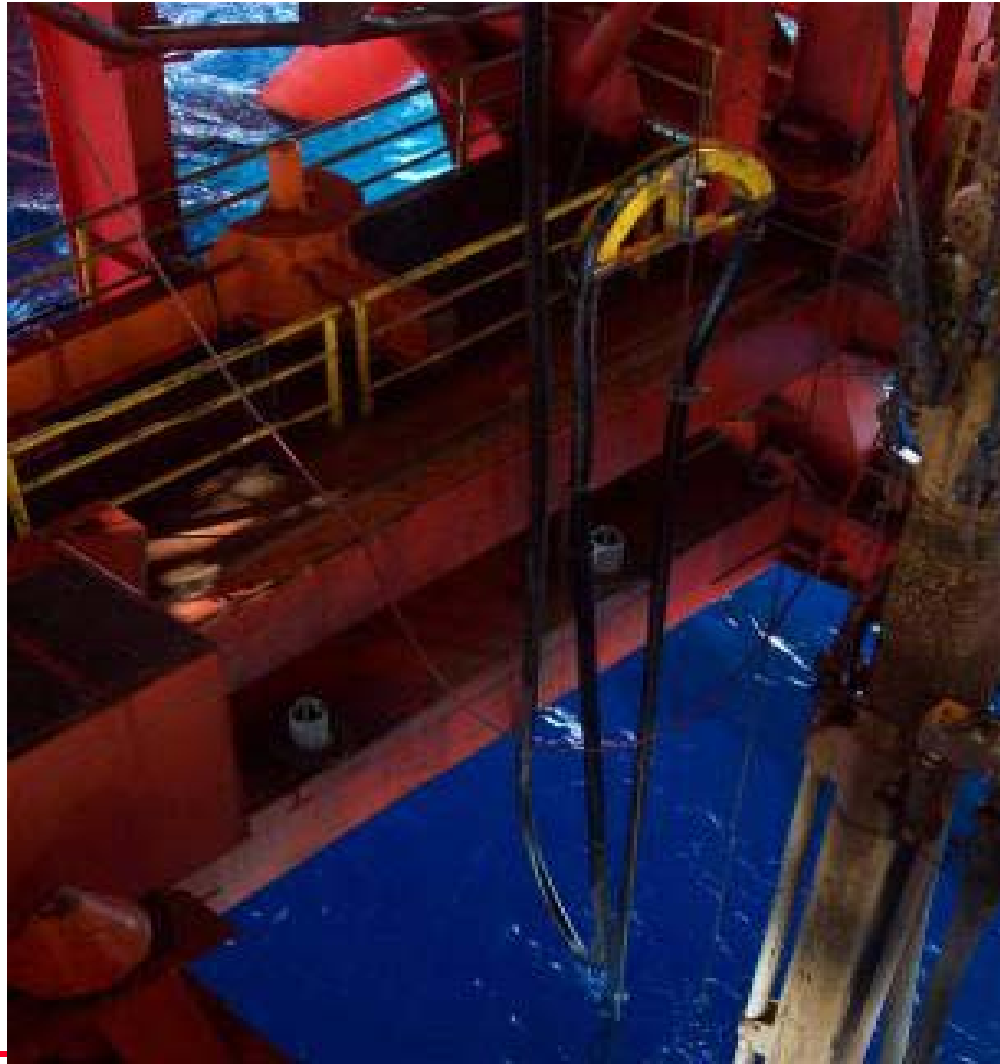
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Final Landing Point Of Piston Rod



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Storm loop and saddle



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Result / Potential Impact

- **Result was a major dropped object with critical potential.**
- **The pod hose was damaged and needed to be replaced.**
- **Damage sustained to the reputation of Stena Clyde operators in terms of ability to manage equipment.**

What Did We Miss

- **If we had taken the time to heed the warning signs i.e. seal replacement, better inspections of the wire, better access to inspect the complete unit including the turn-down sheave; any one of the events in the incident could have been prevented and ultimately the incident in itself would not have occurred.**



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Primary / Direct Cause

- The wire broke at a wear point in the tensioner system



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Underlying Causes

- Due to the BOP being deployed subsea for an extended period and being unable to slip the wire to move the wear points.
- There is a PM which requires the piston to be stroked out, then retracted fully to expel all air from the system, also checking the levels in the underside oil chamber. But this could not be undertaken once the BOP had been deployed.



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Learning Outcomes

- All the pod line and guideline tensioners were inspected and fluid levels were checked.
- PM system was reviewed to take into account long deployment operations.
- A full review was undertaken of the type and construction of the wire. (A better construction wire has since been fitted to the pod lines).
- Access to service the unit and to carry out the PM's has been reviewed. Modification request has been submitted for a engineered platform to be fitted.
- All the units have been rebuilt with new barrels and long-life seals.
- Restraining cables have been fitted to stop the full extension of the rod.
- A review of all tensioner systems has been undertaken by shore management.



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Long Term Outcomes.

- The management review came up with the following findings:
- **Marine Riser Tensioning System:** Recommended that a rotational spare set be purchased and a program be implemented whereby the units are systematically changed out and serviced by the original equipment manufacturer. This was commenced in 2009 by the Stena Clyde, with the first unit already changed out. The newly implemented unit was simple to install and return to service.
- Performance based Auditing is now being implemented against all Safety Critical Elements with a view to preventing Process Failures.

