

WHAT HAPPENED:

On a semi-submersible MODU during a severe weather event, the chain lifter on Anchor Winch #1 experienced total failure. The chain lifter was split into two halves by tension exerted on the anchor chain via the fairlead and over the chain lifter. This resulted in loss of both the anchor chain and tail chain to the seabed.

Metallurgical analysis identified that the chain lifter had a manufacturing defect consisting of a significant cavity extending over approximately 1/3 of the cross-sectional circumference and thus reducing the wall thickness to around half in comparison to the solid unaffected portion.

CONTRIBUTING FACTORS:

The chain lifter failed through high stress low cycle fatigue cracking due to the presence of the manufacturing defect.

The chain lifter was subjected to severe environmental loading because of the severe oceanic conditions encountered at the time of the event. A series of significant waves placed sufficient tension through the defective gypsy to split the component.

Full independent inspection of the chain lifter is hindered as the winches remain in tension during intermediate surveys & the depth of analysis required was beyond the current scope of inspection.

LESSONS LEARNED:

1. Undertake a thorough inspection of all remaining winches to determine whether any further defects are existent
2. Implement a thorough Non-Destructive Testing (NDT) / Magnetic Particle Inspection (MPI) inspection of all chain lifters into the 5yr Special Periodic Survey to identify emerging issues associated with fatigue life of components