Weak Link Bails
The answer to ISO 13628-7 Chp 6.7.1 compliance

Risk reduction for life, environment, reputation and expensive equipment.
Weak Link Bails

It is a well-known industry challenge to operate semi submucible drilling rigs safely at all times during completion, well testing, well intervention and workover riser (WOR) operations. Higher pressure rated WOR systems combined with all year round operations in the harsh environments of the world have increased the probability for catastrophic events and equipment damage during well testing and workover operations.

This has been recognised by the International Standards Organisation who have written ISO 13628-7 Chp 6.7.1 which states that “A safety joint or weak link shall be designed to fail or break under specified loads”. The weak link bails have been designed to do exactly that during any failure to the compensator whether mechanical or human.

Deepwater drilling

As the demand for oil increases and with the developments in technology, the requirement to be able to extract oil from deeper and harsher environments continues to grow. The Weak Link Bails is ideally suited for this environment with the additional protection offered to the riser and other expensive equipment. As the water depth for drilling increases, so does the risk to the environment and potential negative publicity for the offshore industry.

Weak Link Bail offers:

- Protection to personnel
- Protection to the riser
- Protection from any unforeseen forces that may be applied to the rig
- Environmental protection
- Protection from any mechanical lock up - if the rig experiences increased loading, the automatic shearing of the Weak Link Bolt will allow increased stroke in the bail, so no load is transferred into the riser, well head or derrick.
- No environmental spillage is caused by the emergency disconnection of the riser
- No riser or other expensive equipment damage
**Performance**

The precision setting of the Weak Link Bolt allows for the stroke of the Weak Link Bails to be extended at a specific load. At the set load the Weak Link Bolt will shear allowing the stroke of the Weak Link Bails to increase - offering overload protection to all components in the riser, well head and derrick.

- Weak Link Bail protects the rig in instances of surge, mechanical failure or human error causing overloading of the riser or other expensive equipment
- Dramatically reduces the risk of uncontrolled spillage into the environment
- The increased stroke allows the rig operator to regain control without having to disconnect the riser and risk leakage into the environment
- Designed topside for simplicity of use and ease of resetting after any incident, avoiding expensive underwater operations.

**Protection**

While complying with ISO 13628-7, the weak link system is specifically designed and manufactured to minimise potential risks from compensator failure or misuse. This avoids damage to the derrick, drilling rigs, travelling assembly and load path equipment.

**Disadvantages of not using Weak Link Bails**

- Injuries or loss of crew
- Falling objects from potential overload
- Damage to the riser and other pressure controlled equipment
- Undesirable spill to sea
- Potential damage to company reputation

**Training**

By utilising our on land rig in Stavanger this will allow training for the crew prior to the weak link being installed on the offshore rig. This facility allows the weak link to be used in all modes including the breaking of a link and the resetting of the Weak Link Bail. Taking advantage of this training facility, will ensure that the rigs crews are able to fully utilise the efficiency saving offered by the Weak Link Bails during actual production operations.
ISO 13628-7. Weak link safety joint chp. 6.7.1. The C/WO riser system in use shall be designed with adequate safety joint / weak link to prevent damage to the well barriers in case of accidental loads in the C/WO riser system.

APOS. Statoil Control System, specify that a weak link shall be included in workover riser systems on underwater installation work with semi sub rigs.

Statoil references:
- Songa Delta
- COSL Pioneer
- Bideford Dolphin
- Borgland Dolphin
- Scarabeo 5
- Polar Pioneer
- Snorre B
- Transocean Spitsbergen
- Deepsea Bergen
- Njord A

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