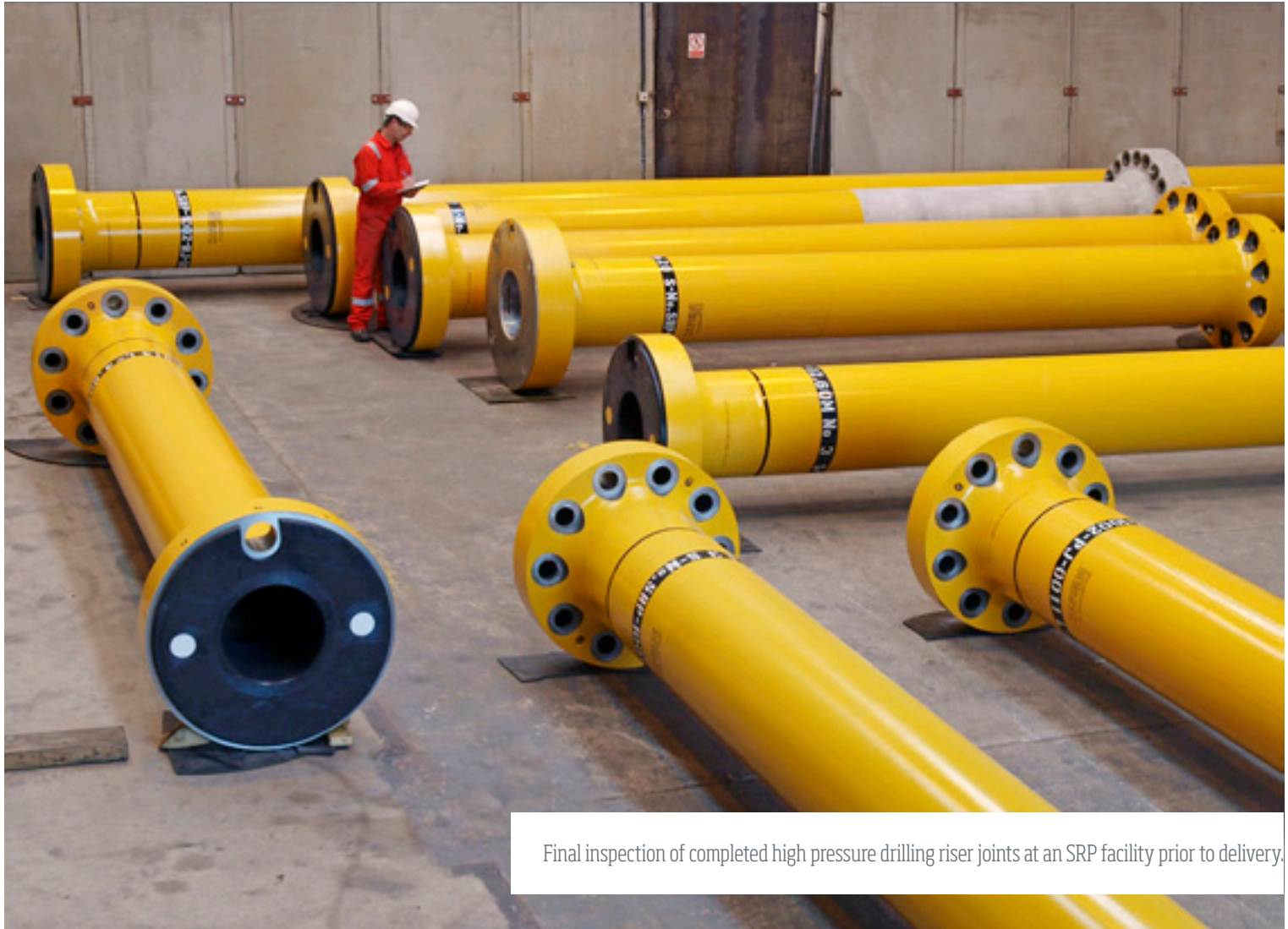


5000 PSI HP DRILLING RISER



Final inspection of completed high pressure drilling riser joints at an SRP facility prior to delivery.

SCOPE OF SUPPLY

Subsea Riser Products Ltd was contracted to execute the design and supply of a full bore (19"ID) 5000psi drilling riser system. For complete reliability and operation in extreme North Sea environmental conditions, the system was based on a flanged coupling design. The complete scope included:

- 1 off Forged Tension Joint + 1off welded Tension Joint
- 1 off Forged Lower Stress Joint + 1off welded Lower Stress Joint
- 12 off Intermediate Joint
- 8 off Pup Joint
- 1 off SLIDING-SPIDER
- 1 off Spider Control Panel and HPU
- Riser Lifting Clamps

CLIENT

"Anonymous" via Claxton Engineering

SCHEDULE

Award:	2nd Q'08
Engineering:	2nd Q'08
Fabrication:	2nd Q'08 - 4th Q'09
Testing:	4th Q'09
Delivery:	4th Q'09



View of riser through the Texas deck



Joint handled on to spider



Shipping of joints

The riser was designed to operate in extreme North Sea environmental conditions. To meet the challenges of the operator, SRP opted to design and manufacture a flanged riser based on its compact design - an optimized flange that is standard in our high pressure riser product range (up to 10,000psi).

Flanged connections have the reputation of being very reliable due to the easy access and witness during bolt preloading, however, an offset of this advantage occurs in the disadvantage of make-up/break-up times that are longer when compared to other riser connector types. SRP's compact riser flange is fast make up due to a number of key design changes from that of a standard API design.

Firstly, the flange preload values are engineered to minimize the number of bolts required, whilst ensuring flange face contact and sealing under extreme loading conditions. For this project, the SRP flange had only half the bolts compared to an API flange equivalent. This was coupled with a 100% bolt tensioning system that would speed up the connection process and give reliable application of preload.

Design considerations also included the retention of the bolts within the flange face. This reduced handling time on deck and reduced the number of loose parts in use during operation. As well as improving safety, this feature reduced the make-up/ break-up time further, to the extent that it was comparable to a low pressure drilling riser connection type.

The engineering of the flange face has also led to a unique contact profile that provided robust sealing and improved fatigue performance. A standard metal gasket was used to ensure metal to metal sealing at the bore. The transition between pipe and flange neck was also optimized to minimize stress concentrations due to geometry and improve fatigue resistance to deal with the extreme dynamic loading.

All joints went through a stringent material selection process to ensure high strength steel with ease of weldability. This process improved manufacturing lead times and reduced material waste through rejected welds or components, it also enabled a higher toughness in the steel that enhanced the fatigue resistance further while eliminating HIC and sour service corrosion. Girth weld defect inspection criteria was linked to riser fatigue performance through ECA. At critical riser locations the use of the flange is complemented by SRP's range of integrally forged stress and tension joints. All joints were coated with thermally sprayed aluminium and paint coating in accordance with the clients specification.

The riser itself was also supplied with the SRP's PRESSURE-SPIDER and control face. The spider is a twin plate, quick-lock product that was engineered for the specific environmental conditions through detailed material specifications and dynamic loading analysis.

The complete riser system was delivered, on schedule, to Claxton Engineering (an Acteon Company) who provided the system with offshore services and ancillary equipment.



an **ACTEON** company

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