

# Sealing 15,000 PSI at 300°F and a Large Extrusion Gap: A Case Study

Eclipse supplied a client with spring energized seals, which were used to seal electrical feedthroughs for downhole oil drilling instrumentation in ocean and deep-sea applications.

The seals were originally designed to handle 500 psi max. But the client came back to Eclipse with new requirements: for the seal to handle 15,000 psi – 30 times the initial requirement.

Testing proved the original seals performed admirably, and passed the test at cold and ambient temperatures.

The client had to make only a simple modification to their existing hardware to fit the new seal design, which now meets leakage and life requirements at the high pressure and temperature.

## The Clients Issue

The client returned to Eclipse with another challenge: for the sealing requirements to provide optimal performance in a “worst case” scenario.

The client had an issue with outside seals failing at the deepest possible ocean depth and at max temperature of the instrument.

When put up against testing, Eclipse’s seals were failing at the max temperature of 300°F.



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## The Eclipse Solution

Eclipse went back to the drawing board to re-design seals that could handle the 15,000 psi, while working with the client's original hardware space limitations and maintaining the (extremely large for 15k psi) 0.012" extrusion gap.

Eclipse redesigned the seals to incorporate a small wedge style (or cammed) EP033: PEEK back-up rings. The seal material was changed to Eclipse's ET025 high-fill percentage Polyimide PTFE, and the seal lip thickness was increased to help with extrusion resistance.



## How it Performed

set of industrial seals. Spring energized seals can be made to perform in extreme service including contaminants, pressure and fluid variation such as sour gas and oil.



[Find out how you can improve the seal performance and longevity of your reciprocating machinery »](#)



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