

Technical Insight: Pressure Testing

Transoceanic cables cross the world's oceans, the systems are laid along the ocean bed and the cable, joints and repeaters are therefore subjected to the hydrostatic pressure generated by the mass of sea water above them. The deeper the sea bed the greater the pressure. Some oceans can be over 11km deep. While this is the case most of the oceans are around 3km water depth. For the best fit, the Universal joint is designed to be deployed and recovered from 8km water depth.

To verify that the design is fit for purpose the joint and cable is placed into a pressure chamber and subjected to pressure that's equivalent to 8000m water depth. The pressure is held over a period and at the same time the optical path may be monitored depending upon the test regime and testing equipment. At the end of the test if there has not been any evidence of damage seen during joint dissection, or optical changes the test is considered successful.

On rare occasions, there are other factors that mean that the qualified joint is not deployed to 8km, for example the cable may be armored or may not be designed for that water depth. In these cases the pressure test limits would be adjusted to suit the specific operational requirements.

To demonstrate the force generated by water pressure, the following photograph shows a steel tube that was subjected to 8860 psi (pounds per square inch) which is in excess of 6km water depth.

