

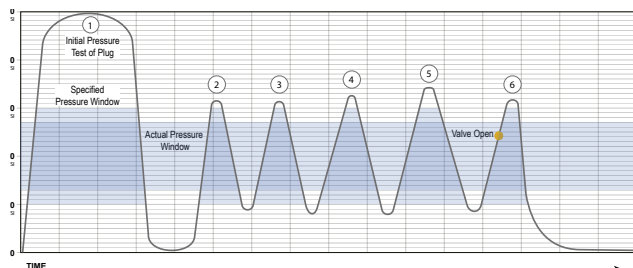
CASE STUDY

Pressure Wave Valve Delivers Long-Term Reliability in P&A Operations

THE CHALLENGE

In today's increasingly complex plug and abandonment (P&A) landscape, operators face mounting pressure to deploy barrier technologies that ensure long-term reliability, reduce risk, and minimise costly interventions. Conventional pump-open valves used for remote equalisation often require activation pressures that exceed surface equipment ratings-introducing uncertainty and potential safety concerns into abandonment programmes.

During pre-abandonment phase operations, a major North Sea operator required a remotely activated equalisation device that could be installed below the primary barrier, operate safely below surface test pressures, remain in place for years, and be reliably opened before completion recovery.



THE SOLUTION

The Oilenco Pressure Wave Valve (PWV) is a mechanical cycle valve that enables remote equalisation across a well barrier by applying a predetermined number of pressure cycles from surface. Its flexible design allows configuration as either a balanced or non-balanced system, making it suitable for scenarios where pressure changes below the barrier pose a risk.

During a subsea abandonment campaign conducted from a Light Well Intervention Vessel (LWIV), the PWV was installed as a shallow annulus barrier beneath a 1.875" Oilenco Hybrid lock mandrel, serving as the primary barrier until the rig returned to complete the final abandonment.

Configured to activate after six cycles between 1,000 and 3,000 psi, the PWV ensured safe, predictable activation without compromising system integrity. With no electronics or batteries, it could remain dormant for several years until remote activation was required, streamlining operations and reducing intervention costs.

VALUE CREATED

Following the initial plug and lubricate stage, an unexpected integrity issue led to a pressure increase below the shallow annulus well barrier. Because the installed PWV was configured as a non-balanced type, any pressure build-up below could be safely disregarded- giving the operator confidence that only the pre-set pressure cycles from above would trigger activation. When the rig returned, the programmed cycles were applied, and the PWV opened exactly as designed, re-establishing communication and enabling recovery of the completion string.

- **Activated after 5 years and 9 months downhole**—the longest recorded duration for the technology
- **Reduced the number of wireline interventions**, reducing operational risk and cost
- **Maintained reliable activation despite altered downhole pressure conditions**, validating tool integrity and design robustness
- **Reduced vessel exposure**, contributing to lower emissions and a more sustainable abandonment strategy

With nearly 100 installations across the sector, the Oilenco PWV has proven itself as a reliable mechanical barrier technology that reduces intervention requirements in long-term P&A programmes. This operation demonstrates the PWV's ability to maintain functionality after nearly six years downhole- offering operators a dependable, cost-effective solution for safe and sustainable well abandonment.



FURTHER INFORMATION

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