



WELL-SAFE
SOLUTIONS

CASE STUDY

NEP legacy well remediation study

Well-Safe Solutions was chosen to develop well re-entry plans for remediation of legacy wells within planned UKCS CO₂ storage sites, as part of the East Coast Cluster Carbon Capture and Storage (CCS) project.

Well-Safe Solutions deployed extensive engineering and problem-solving expertise in accordance with its Well Decommissioning Delivery Process (WDDP).

This project assessed the status and suitability of legacy well barriers for CO₂ containment in the Northern Endurance Partnership (NEP) project, before evaluating direct intervention and well intercept well re-entry methods to assess their effectiveness in achieving reinforcement of zonal isolation in CO₂ storage formations.

Analysis began by understanding the subsurface elements including CCS field stratigraphy, history, planned CO₂ storage zones and pressures.

Data mining of legacy well documentation followed, evaluating the abandonment quality of the originally-targeted reservoirs and the planned CO₂ storage reservoir.

Well-Safe Solutions established the required abandonment barriers to align with the Offshore Energies UK (OEUK) Well Decommissioning and Well Decommissioning for CO₂ Storage Guidelines, before engaging with the supply chain to accurately cost and analyse the suitability and limitations of technologies to complete the scope's objectives.

Well-Safe Solutions' WDDP multi-discipline workflow combines geophysical, petrophysical, geological, reservoir and geomechanics specialisms with a dedicated well engineering team.

These specialisms enabled Well-Safe Solutions to analyse cost, time and the likelihood of success to provide a robust recommendation. The WDDP is ideally-suited to clients looking to safely and efficiently remediate their legacy wells, considering multiple methodologies in a holistic manner to find the most appropriate solution.

Key facts:

- This scope detailed well re-entry plans for legacy well remediation
- Direct intervention and well interception options considered
- Project utilised Well-Safe Solutions' well evaluation specialism and WDDP



Well Decommissioning Delivery Process (WDDP)



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Well locating is challenging for both direct intervention and intercept well access solutions due to the uncertainty associated with outdated survey technology used to drill legacy wells. Well-Safe Solutions identified suitable scanning technologies to resolve this issue.

Well-Safe Solutions investigated both direct access and well intercept re-entry techniques, assessing both existing and emerging technologies.

The well intercept option, where a new well is drilled to intersect the target well, is a recognised industry solution more commonly employed in relief well situations. In this scenario, the well would intersect the legacy well at the required window depth to place a cement barrier for CO₂ containment.

Various direct well re-entry technologies were assessed, including trenching to expose the well for subsea tieback installation, subsea caisson application and the use of a recoverable abandonment frame. Each of these technologies aim to regain direct access to the original severed wellbore and reinstate an adequate pressure-containing envelope to enable placement of additional well barriers.

Each of these intercept and direct well re-entry technologies was evaluated against time, cost risk and success rate to determine the optimum solution for the NEP project. The conclusions of Well-Safe Solutions' comprehensive analysis were adopted by the client.



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Well-Safe Solutions has the capability to assist with your CCS or CCUS project.

Our multi-discipline service includes geophysical, petrophysical, geological, reservoir and geomechanics specialisms, backed by the company's well engineering resources, assets and deep sector experience.



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