

REFERENCE CASE

OFFSHORE OIL & GAS



Structural Integrity Assessment of Offshore Wells in the United Arab Emirates

At the end of 2013, TÜV Rheinland Middle East was invited by a large offshore producer of oil and gas and an oil field operating company to conduct D-PEC pilot inspections to assess the structural integrity of 35 offshore wells in the United Arab Emirates.

Basic Facts	
Client	<ul style="list-style-type: none">▪ Abu Dhabi's major offshore producer of oil and gas▪ UAE leading oil field operating company
Timeframe	September – October 2013
Project location	Zakum, Umm Dalakh, Satah, Nasr and Arzana oil fields – United Arab Emirates
Main services	Offshore well structural integrity assessment
Involved regulations/standards	<ul style="list-style-type: none">▪ Shell Global Solutions▪ SNT-TC-1a – Personnel qualification and certification in non-destructive testing▪ ISO 9712 – Qualification and certification of NDT personnel▪ BS 5750 – Standard on quality systems

Initial situation and requirements

When assessing the condition of offshore well casings and conductors using non-destructive testing (NDT), it is necessary to accurately characterize hidden corrosion by identifying the affected layers, and measuring both the amount of metal loss and the associated pillowing due to the corrosion products.

As one of the single testing companies holding an operating license for pulsed eddy-current (PEC) inspection technology, primarily developed by Shell Global Solutions, TÜV Rheinland Middle East was invited in September 2013 by Abu Dhabi's major offshore producer of oil and gas and the leading oil field operating company in the United Arab Emirates to perform pilot inspections on the 13-3/8" surface casings and 30" conductors of 35 offshore wells.

Solutions, results

The main purpose of the inspection for both companies, leaders in oil and gas in the UAE, was to identify corrosion and measure wall thickness of surface and conductor casings through the well's D-annulus using the D-PEC method. Licensed to operate PEC well inspection equipment, we offered inspection of surface casings and conductors and assessed the structural integrity of 35 offshore wells using the PEC technique.

It has been demonstrated that PEC has very high potential for applications in corrosion detection and characterization. Its most powerful advantage over conventional eddy-current is the ability to capture broadband frequency information within a single signal. Upon completion of the inspection, our experts provided both companies with PEC scans, featuring valuable and essential information to help detect corrosion in in-service oil wells and prevent failures and risks to well integrity.

Did you know?

D-PEC technique is the only known NDT method available today which measures the general corrosion of surface casing and conductors with a plus/minus accuracy of 10% in depths up to 60 meters without cleaning or removing marine growth or internal liquid.

Benefits for the client

Through the application of the PEC and D-PEC methods, TÜV Rheinland helped both companies to:

- Ensure structural integrity of their offshore assets.
- Identify corrosion at early stages and take corrective measures.
- Prevent well failures and risks to well integrity.
- Detect well corrosion at sea level and hinder contamination of seawater.

About TÜV Rheinland:

Founded more than 140 years ago, TÜV Rheinland is a global leader in independent inspection services, ensuring quality and safety for people, the environment, and technology in nearly all aspects of life.

We inspect technical equipment, products and services, oversee projects and help to shape processes for companies around the world. Since 2006, we have been a member of the United Nations Global Compact to promote sustainability and combat corruption.

As one of the leading providers of inspection services in the oil and gas industry, we can help to reduce risk, prevent material defects and ensure maximum safety and optimal functioning of offshore wells. Throughout the entire project we can support our clients with certification, inspection and consulting services and help meet obligations for all applicable standards and regulations.

We can provide a full range of conventional and advanced non-destructive testing services through our global network. With our state of the art inspection technologies, you will save overall maintenance costs, improve production quality and ensure reliable operation of plants, pipelines and wells.

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