ELECTROCHEMICAL DIAGNOSIS OF GALVANIC CORROSION IN OIL WELL STRINGS

By

Nabil Adil Tayeb Ubaid

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
DOCTOR OF PHILOSOPHY
In
Petroleum Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

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Title of Thesis: Electrochemical Diagnosis of Galvanic Corrosion in Oil Well Strings

Key Words: Casing, Tubing, Drillpipe, Galvanic corrosion, NDT

Summary:

Manufacturing and standards permit producing of oil well pipes holding various microstructures and stresses on their inner and outer walls, this assumed to be insignificant in premature string's failures. Full-Ring specimen was approved to be best representative of tubular good's corrosion. Tubular Dual Wall Corrosion Cell Kit and Full Ring Galvanic Corrosion Kit were innovated and effective galvanic corrosion was detected between walls. The study proposed introducing Jointal Corrosion Stability Index to tubular specifications, pipe joints with low index shall be excluded before marketing or assembling in strings.

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Dedication

I dedicate this work to those who believe in human dignity over religious, races and nations, to those who feel pain for every tear drops worldwide and please for any smile drawn on any lip overseas.

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