

THE STUDY OF WELDING QUALITY IN SHIPYARD BASED ON
THE NON-DESTRUCTIVE TESTING METHOD BY USING
RADIOGRAPHIC TESTING

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SCHOOL OF MARITIME STUDIES AND SCIENCE MARINE
UNIVERSITY MALAYSIA TERENGGANU
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**THE STUDY OF WELDING QUALITY IN SHIPYARD BASED ON NON-
DESTRUCTIVE TESTING METHOD BY USING RADIOGRAPHIC TESTING**

**A Thesis by
MOHD AZFEEN HAKYM BIN MO'IN**

A thesis submitted in partial fulfillment of
the requirement for the award of the degree of
Bachelor of Applied Science (Maritime Technology)

DEPARTMENT OF MARITIME TECHNOLOGY
FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
UNIVERSITY MALAYSIA TERENGGANU

2013



**DECLARATION AND VERIFICATION REPORT
FINAL YEAR RESEARCH PROJECT**

It is hereby declared and verified that this research report entitled: **THE STUDY OF WELDING QUALITY IN SHIPYARD BASED ON THE NON-DESTRUCTIVE TESTING METHOD BY USING THE RADIOGRAPHIC TESTING** by **MOHD AZFEEN HAKYM BIN MO'IN** Matric No. **UK 20297** have been examined and all errors identified have been corrected. This report is submitted to the Department of Maritime Technology as partial fulfillment towards obtaining the **Bachelor Degree of Applied Science (Maritime Technology)**, Faculty of Maritime Studies and Marine Science, University Malaysia Terengganu.

Verified by:

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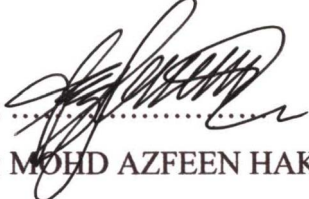
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DECLARATION

I hereby declare that this thesis entitled **THE STUDY OF WELDING QUALITY IN SHIPYARD BASED ON THE NON-DESTRUCTIVE TESTING METHOD BY USING THE RADIOGRAPHIC TESTING** is the result of my own research except as cited in the references.

Signature : 
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THE STUDY OF WELDING QUALITY IN SHIPYARD BASED ON NON-DESTRUCTIVE TESTING METHOD BY USING RADIOGRAPHIC TESTING.

ABSTRACT

This research work had to investigate the welding quality in one of the shipyard project, which is *1 × 38 m seaworks (J 145)* based on the non-destructive testing method (NDT) using the radiographic testing that has been inspect by Prescan Sdn Bhd. This inspection is following the American Bureau of Shipping (ABS) certification. This shipyard project was taken from the Kay Marine Kuala Terengganu Sdn. Bhd. The material use in this shipyard project was aluminium with GMAW (gas metal arc welding) process. The data was gathering based on reports made by the quality control officer, based on Ship Classification Malaysia (SCM) standard using radiography test (X-ray test) at selected joint. Based on the radiographic data they were 30 section take place. Length of defect of the radiographic film was calculated by using meter tape and ruler on the light source. From the data analysis in this project, they were 216mm of reject length (defect in welding) over 9000mm of total length of weld. It showed that 2.45% of the total weld was defect. Weld defect was caused by the welder itself and from data analysis welder number 16 make most defects in this project. The data were collected within a week to finish with help from the quality control officer of the Kay marine Sdn Bhd. Analyze of data is by using Microsoft Excel/ Spreadsheet and Minitab Statistical Software.

ABSTRAK

Kerja-kerja penyelidikan ini bertujuan bagi menyiasat kualiti kimpalan di dalam salah satu projek limbungan iaitu $1 \times 38 \text{ m seaworks (J 145)}$ berdasarkan kaedah ujian tidak musnah (NDT) dengan menggunakan ujian radiografik yang telah diperiksa oleh Prescan Sdn Bhd. Pemeriksaan ini mengikuti pensijilan dari American Bureau of Shipping (ABS). Projek limbungan yang dipilih ialah Kay Marine Kuala Terengganu Sdn. Bhd. Penggunaan bahan dalam projek limbungan kapal ini adalah aluminium dengan proses yang terlibat dalam kimpalan adalah GMAW (gas kimpalan arka logam). Data telah dihimpunkan berdasarkan laporan yang telah dibuat oleh pegawai kawalan kualiti, berdasarkan piawaian Klasifikasi Kapal Malaysia (SCM) dengan menggunakan ujian radiografik (ujian X-ray) di sendi/gabungan yang terpilih. Berdasarkan data radiografik, sebanyak 30 kawasan telah mengambil bahagian. Panjang kecacatan filem radiografik dikira dengan menggunakan pita meter dan pembaris di atas sumber cahaya. Berdasarkan analisis data, sebanyak 216mm adalah panjang yang terbuang (kecacatan kimpalan) daripada jumlah panjang kimpalan iaitu 9000mm. Ini menunjukkan jumlah peratus kecacatan dalam projek ini adalah 2.45%. Kecacatan pada kimpalan adalah berpunca daripada pengimpal itu sendiri, dan daripada analisis di dapati pengimpal nombor 16 telah melakukan paling banyak kecacatan dalam projek ini. Tempoh selama seminggu diperlukan bagi mengambil data dengan bantuan daripada pegawai kawalan kualiti Kay Marine Sdn Bhd. Analisis data adalah dibuat dengan menggunakan Microsoft Excel / Spreadsheet dan Minitab Statistical Software.