PHYSICAL PROTOTYPE OF AN AUTONOMOUS BUOY FOR TRACKING SPILLED OIL

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Physical prototype of an autonomous buoy for tracking oil spill / Yusrina Abdullah.

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PHYSICAL PROTOTYPE OF AN AUTONOMOUS BUOY FOR TRACKING OIL SPILL

By

YUSRINA BINTI ABDULLAH

A thesis submitted in partial fulfilment 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 SCIENCE MARINE
UNIVERSITI MALAYSIA TERENGGANU
2013

DEPARTMENT OF MARITIME TECHNOLOGY
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UNIVERSITI MALAYSIA TERENGGANU

DECLARATION AND VERIFICATION REPORT
FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled: **PHYSICAL PROTOTYPE OF AN AUTONOMOUS BUOY FOR TRACKING OIL SPILL** by **YUSRINA BINTI ABDULLAH**, Matric No. **UK 20722** has 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, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that this thesis entitled Development of Laboratory Scale Remote Operated Vehicle for Marine Applications is the result of my own research except as cited in the references.

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PHYSICAL PROTOTYPE OF AN AUTONOMOUS BUOY FOR TRACKING OIL SPILL

ABSTRACT

Marine pollution by oil spill caused environmental hazards, this problem requires a low-cost system for the detection of oil spills efficiently and able to provide accurate warnings when the accident happened. Such a system is necessary to control the spread of oil and speed up the cleaning process. The tools that have been developed previously unable to meet the criteria as effectively tracking spilled oil. So, the method and the new system should be brought to the detection of oil spills. This project presents a buoy equipped with sensors that use copper and is able to detect and transmit information at the time of the accident spilled oil and its installation is easy. The paper discusses the development and analysis of buoy and sensor concept. The application of electrolysis applied on the sensor, which are based on the electric conductivity properties of oil and water. The application concept of electrolysis for sensor is assisted with Arduino UNO programme . The results presented in this paper, which are physical prototype and the performance of sensor proposed to detect the oil spilled in real testing.

PROTOTAIP FIZIKAL BOYA BERANATOMI UNTUK MENGESAN MINYAK TERTUMPAH

ABSTRAK

Pencemaran laut oleh tumpahan minyak menyebabkan terganggunya ekosistem hidupan aquatik, masalah ini memerlukan sistem yang berkos rendah dan cekap untuk pengesanan minyak tumpah dan mampu memberi amaran tepat ketika kemalangan ini berlaku.Sistem sebegini adalah perlu untuk mengawal daripada minyak merebak dan mempercepatkan proses pembersihan. Alat-alat yang telah dibangunkan sebelum ini tidak mampu memenuhi kriteria sebagai pengesan minyak tertumpah secara berkesan. Jadi, kaedah dan sistem baru perlu diketengahkan untuk membantu dalam pengesanan tumpahan minyak. Projek ini membentangkan boya yang dilengkapi dengan pengesan yang menggunakan tembaga dan mampu mengesan dan menghantar maklumat pada ketika berlakunya kemalangan minyak tertumpah dan pemasangannya adalah mudah. Kertas kerja ini menyentuh mengenai cara-cara pembikinan boya dan pengesan minyak serta analisis dibuat pada boya dan alat pengesan minyak.Aplikasi elektrolisis digunakan pada alat pengesan minyak, yang berdasarkan sifat kekonduksian elektrik oleh minyak dan air. Konsep aplikasi elektrolisis untuk pengesan minyak dibantu oleh Arduino UNO. Hasil daripada projek ini adalah boya dicipta bersama pengesan minyak, kestabilan boya dan penghasilan pengesan minyak di analisis serta boya ini di uji dalam keadaan sebenar untuk mengesan minyak.