THE ECHO SOUNDER SIMULATOR UNIT BASED ON MICROCOMPUTER SYSTEMS

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THE UNIVERSITY OF HULL

The Echo Sounder Simulator Unit

Based on Microcomputer System

being a Thesis submitted for the Degree of

Master of Science

in the University of Hull

by

Mohamad Isa Bin Mansor, B.Sc (Newcastle)

September, 1981.

ACKNOWLEDGEMENT

The author wishes to express his heartfelt thanks to his
supervisors, Dr. P.M. Taylor and Captain W.D. Moss for their
efforts and dedication in guiding the author during the period
of his study.

The author also wishes to record his gratitude to the principal
of Hull College of Higher Education for his kind permission to
use the facilities at the college.

Many thanks to Mr. G. Swainson and Mr. I. Rhodes, staff members
of the Department of Radar for helping the author during the
course of the project.

Last but not least the author also wishes to thank his wife
Mariani for her encouragement and patience and the two typists
namely Mr. J. Bradley and Mrs. Aishah Yyuri for having
meticulously typed this thesis.

Summary of Thesis submitted for M Sc degree

by Mohamad Isa Bin Mansor

on

The Echo Sounder Simulator Unit

Based on Microcomputer System

The aim of the project is to study the possibility of using a microcomputer system to implement an echo sounder simulation. The design flexibility of the microprocessor software enables the development of a simulation program necessary to produce an echo signal suitable for a conventional echo sounder. An optional colour display is provided to give a simultaneous recording of the targets. The colour display is generated on a colour t.v. with a colour display generator capable of providing up to seven colours to represent the varying echo intensity. Also a demonstration of mid-water trawling manoeuvre is provided on the colour display.

In the simulator, all variables are control by the instructor using the keyboard and external switches. These variables includes, ship motion, transducer parameters, fish and seabed targets and trawling manoeuvres. The ship's location is updated every second and upon interagation from the echo sounder trans-mission pulse, the microcomputer will scan the fish and seabed targets below the ship and transmit the data to an external buffer circuit. A hardware unit is designed to receive data from the computer and convert them into a modulated analogue signal suitable for the echo sounder. The amplitude of this signal varies between 1 mV to 5 V depending upon the echoes from the targets.

The unit is designed to allow further development on the software
so that simulation of other sonic equipments such as sonar and
netsonde is possible using the same hardware unit. The program
is stored on cassette tape and loaded into the memory when
required. Areas of application includes training and education
at all levels, calibration of echo sounders and demonstration of
use and operation of any standard echo sounder.