

Applying CAD for Multi Sensors in Voyage Data Recorder

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Abstract

This paper is practical design and implementation of software developed to enhance the best use of the VDR. This software uses visual basic 6.0, and consists of VDR home page. The software has a system configuration, operation, operation procedure, and operation in remote alarm panel, removing VDR and how to release DRU. We tried to comply with International Maritime Organization (IMO) regulations. The system displays information integrates position information from the Global Positioning System (GPS) and other navigational systems, such as Radar, echo sounder, gyrocompass, day and night cameras etc. It may also display additional navigation-related information, such as Sailing Directions. This project has a general background about all inputs to VDR, and concerned with the different inputs to this system such as GPS, Radar, Echo Sounder and Gyrocompass. We will demonstrate the program which will deal with VDR all interfaces with Rader, GPS, Speed log...etc. We preferred to design the software using visual basic 6.0. This Program is a window based Software. Moreover both the flow chart and the program steps are shown. [1,2,3]

Keywords

IMO, SOLAS, Ship Control, Signal Processing, Sensors, Voyage data recorder (VDR)

Introduction

In this research software is developed to enhance the best use of the VDR. This software uses visual basic 6.0, and consists of VDR home page as shown in Fig. 1 as follow:

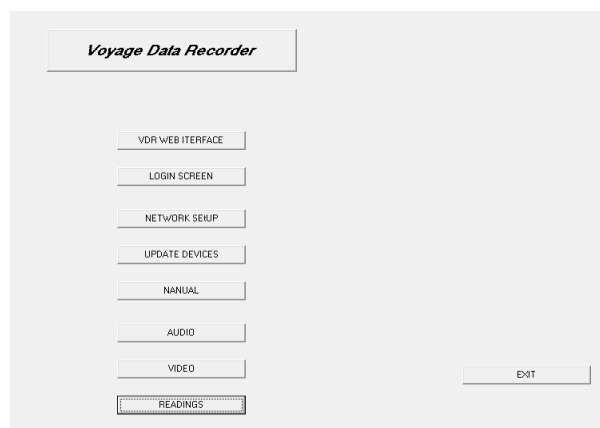


Fig.1 Sample screen shot of the VDR home page

To login the system enter the password as shown in Fig. 2

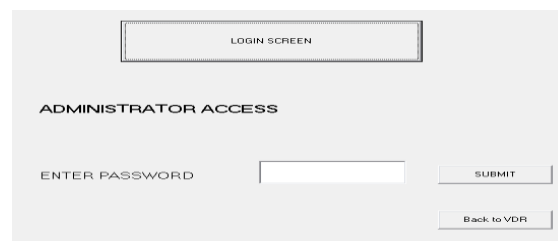


Fig. 2 Sample screen shot of the VDR Login Page

System includes network setup page that has current volume and new volume as shown in Fig. 3 as follow:

PARAMETER	CURRENT VALUE	NEW VALUE
VDR IP ADDRESS	192.168.0.2	
VDR SUBMIT MASK	255.255.255.0	
DEFAULT GATEWAY IP	192.168.0.1	
SESSION TIME-OUT (SECONDS)	300 SECONDS	

Fig. 3 Sample screen shot of the VDR network setup page

This system it has VDR device update page that updates device allocations and stream names as shown in Fig. 4

POSITION	DEVICES	DEVICES	STREAM NAME	STREAM NAME
0	16		STREAM0	
1	16		STREAM1	
2	16		STREAM2	
3	16		STREAM3	
4	16		STREAM4	
5	16		STREAM5	
6	16		STREAM6	
7	16		STREAM7	
8	16		STREAM8	

Fig. 4 Sample screen shot of the VDR device update page

Press on Manual, This window will appear as shown in Fig. 5

Fig.5 Manual of Software

The software has a system configuration, operation, operation procedure, and operation in remote alarm panel, removing VDR and how to release DRU. It includes : Maintenance (annual refraction , cleaning , software maintenance , software list , checking software , version of system program , checking of software version of RAP, replacing batteries ,replacing acoustic beacon , replacing backup VDR, replacing fuses and replacing consumable parts. Trouble shooting: general trouble shooting, error codes and testing display of remote alarm panel, Location of spares and their list. Interface, data sentences and interface circuits.

2- The Applied Software

Visual Basic (6.0) is used with this applied soft ware. The flow chart of the applied program as shown in appendix (A) and the complete program is available. The program will deal with eighteen sensors as inputs with different data format according to sensor data format, and also this is an open architecture in which a new sensor inputs can be added .

3. Replaying of Software

This software is used in voyage data recorder in both recording and replay back

to obtain the recorded data during the accident events. Press on readings, the following window will appear in Fig. 6 shows all sensors.

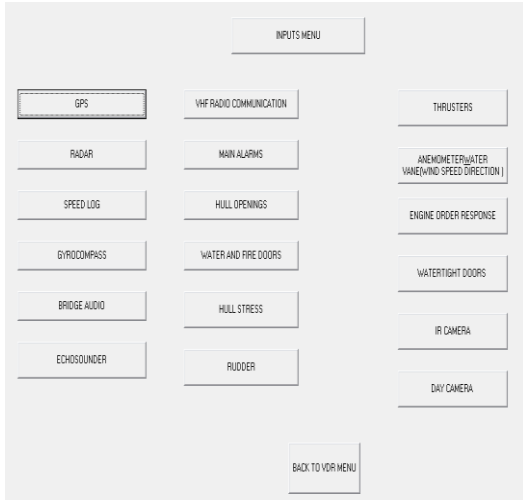


Fig.6 Sensors appear on this Window

To read any of the sensor data, press the sensor name so, it will appear the data recorded of this sensor.

GPS data will be appear as shown in Fig. 7



Fig.7 GPS sensor data recorded

RADAR data will be appear as shown in Fig. 8



Fig.8 RADAR sensor data recorded

SPEED LOG data will be appear as shown in Fig. 9

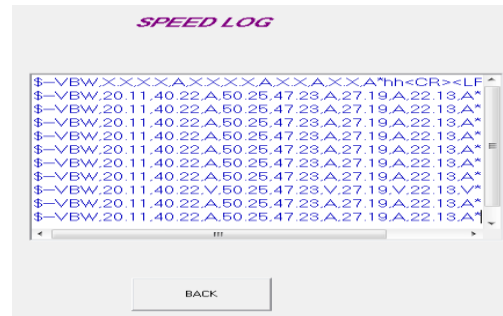


Fig. 9 Sensor data recorded

GYROCOMPASS data will be appear as shown in Fig. 10

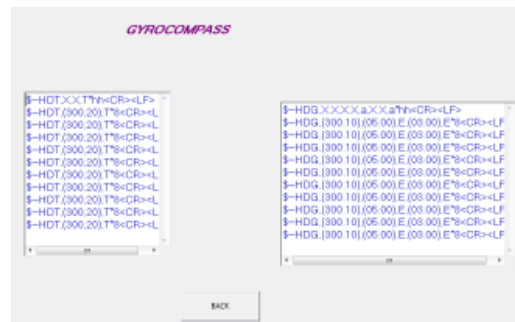


Fig. 10 GYROCOMPASS sensor data recorded

BRIDGE AUDIO: the data will be appearing as shown in Fig. 11 as follow:



Fig.11 BRIDGE AUDIO sensor data recorded

ECHOSOUNDER data will be appear as shown in Fig. 12

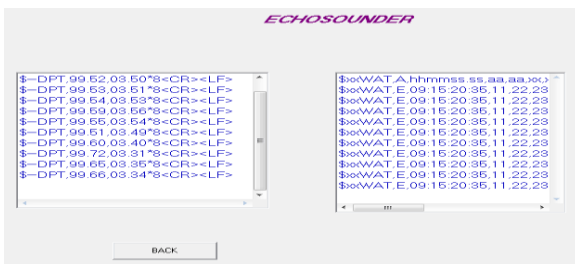


Fig. 12 ECHOSOUNDER sensor data recorded

VHF RADIO COMMUNICATION data will be appearing as shown in Fig. 13

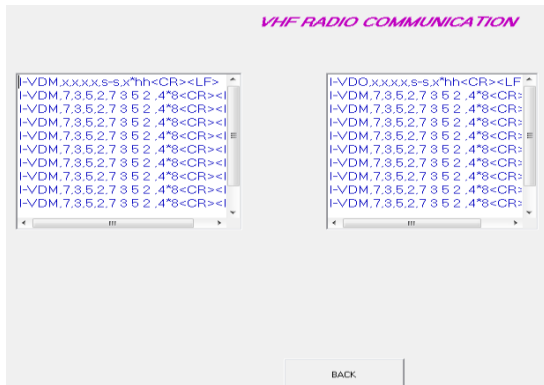


Fig. 13 VHF RADIO COMMUNICATION sensor data recorded

MAIN ALARMS: the data will be appearing as shown in Fig. 14

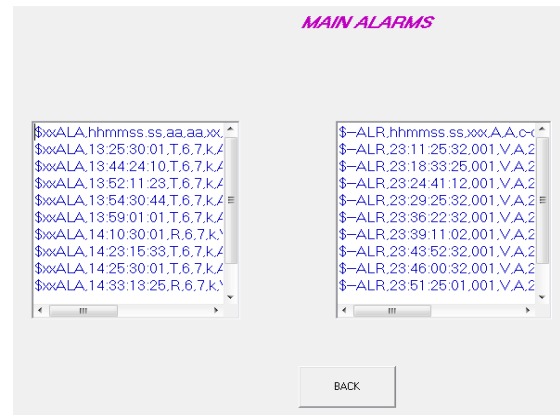


Fig. 14 MAIN ALARMS sensor data recorded

HULL OPENINGS data will be appearing as shown in Fig.15

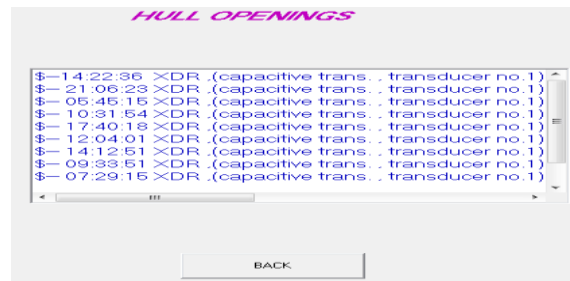


Fig. 15 HULL OPENINGS sensor data recorded

WATER AND FIRE DOORS data will be appearing as shown in Fig. 16



Fig. 16 WATER AND FIRE DOORS sensor data recorded

RUDDER: the data will be appearing as shown in Fig. 17

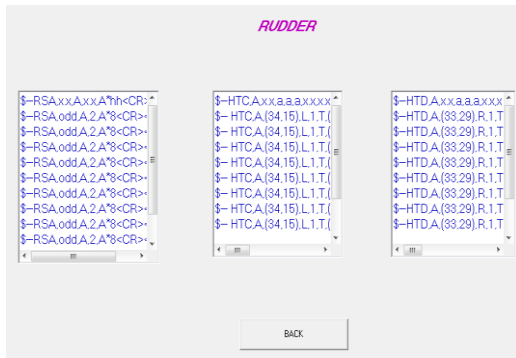


Fig. 17 RUDDER sensor data recorded

THRUSTERS: the data will be appearing as shown in Fig. 18

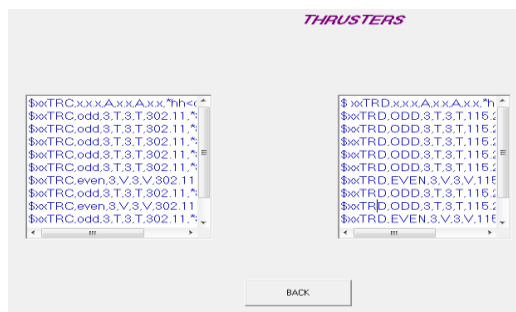


Fig.18 THRUSTERS sensor data recorded

WIND SPEED DIRECTION: the data will be appearing as shown in Fig. 19

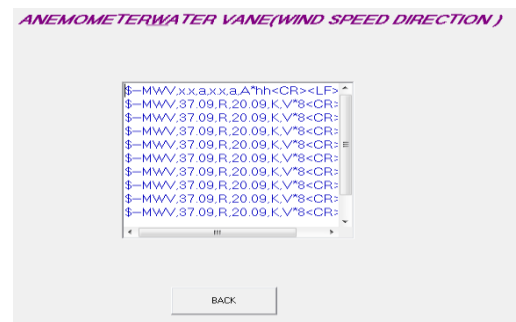


Fig. 19 WIND SPEED DIRECTION sensor data recorded

ENGIN ORDER RESPONSE: the data will appearing as shown in Fig. 20

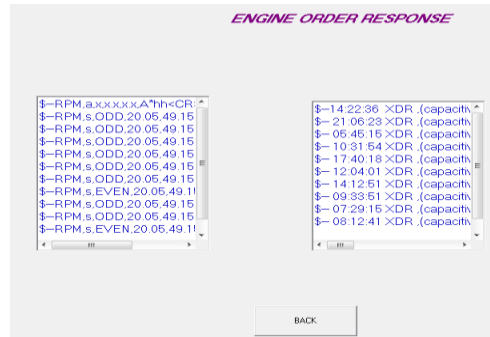


Fig. 20 ENGIN ORDER RESPONSE sensor data recorded

WATERTIGHT DOORS: the data will be appearing as shown in Fig. 21

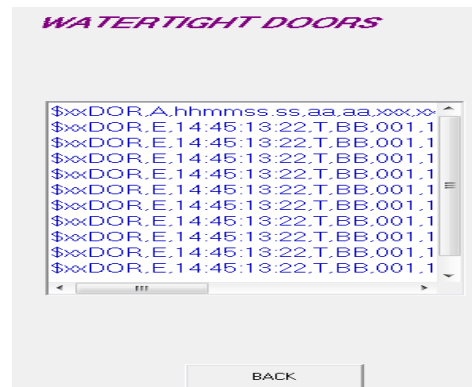


Fig.21 WATERTIGHT DOORS sensor data recorded

HULL STRESS data will be appearing as shown in Fig. 22



Fig. 22 HULLS STRESS sensor data response

IR CAMERA: the data will be appearing as shown in Fig. 23 as follow:

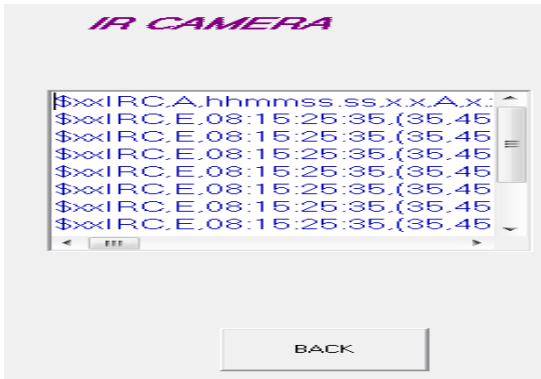


Fig. 23 IR CAMERA sensor data recorded DAY CAMER data will be appearing as shown in Fig. 24

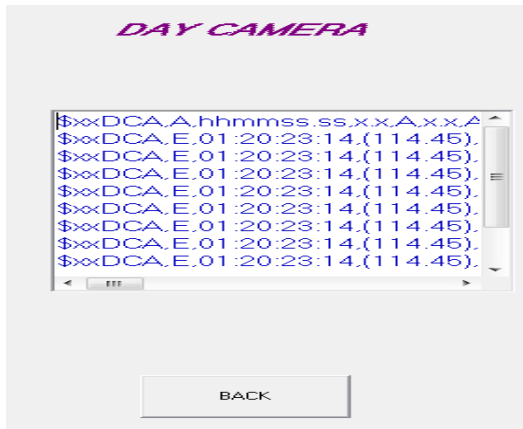
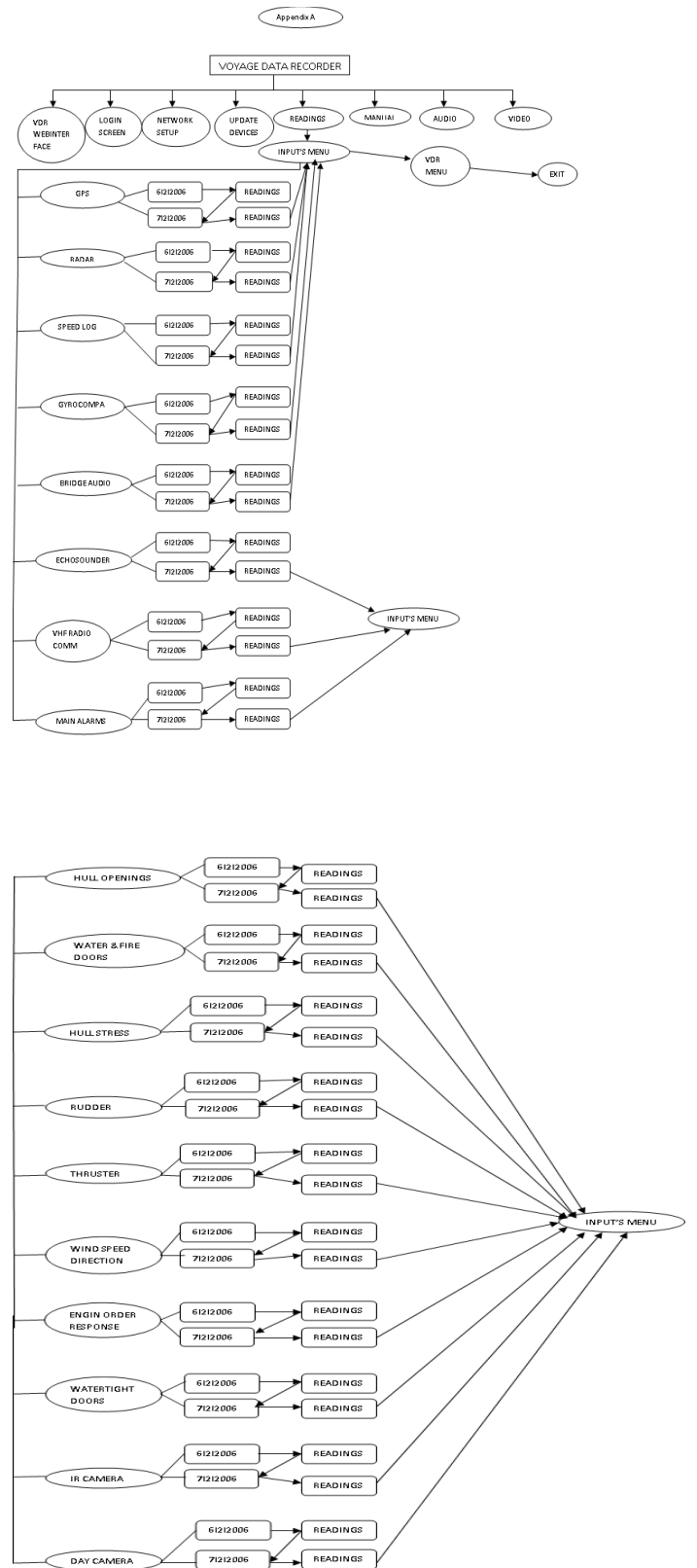


Fig. 24 DAY CAMERA sensor data recorded

The flow chart



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