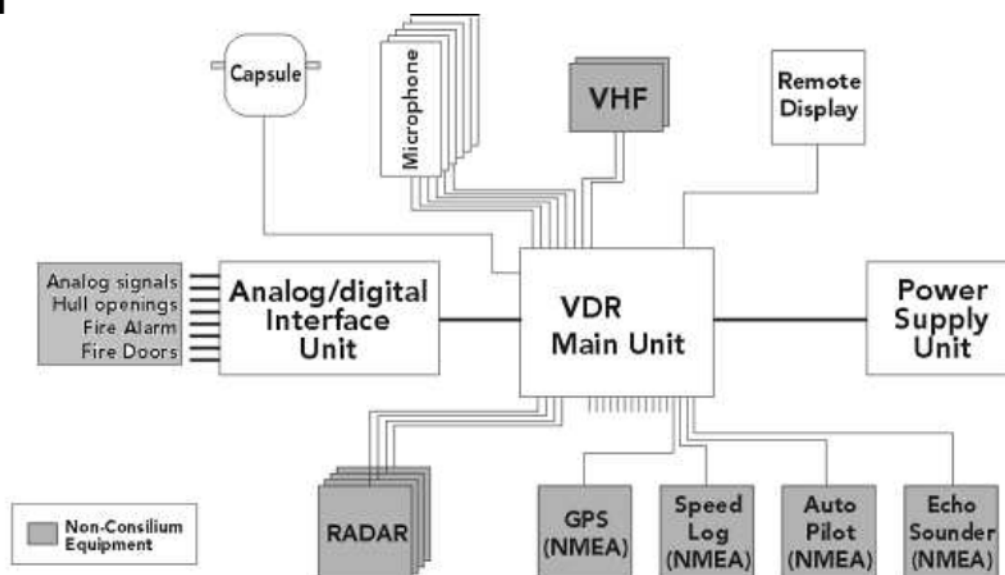




VDR User Manual

Article No. 707094



1. Notes and Updates

Revisions:			
Date	Version	Issued by	Description
01-07-06	B0	Stoft	Created from previous documents
02-09-17	B1	JXA	Updates
03-08-22	C0	SFS	Improved backup description
03-08-22	D0	SFS	Improved incident backup
04-03-14	D1	NE	Editorial corrections
05-01-14	D2	PSE,NE	Editorial corrections improved and added functions DVD-R, new options in client
05-04-07	D3	STB	New alarms added
05-08-10	E0	STE	M3.5 adapted

2. Where to call in case of problems or faults

Consilium Navigation maintains a call center service at:

Call: +46 8 563 051 00

Email: VDR-service@consilium.se

Fax: +46 8 563 051 99

The Call Center is open during office hours, 08.00 – 16.30, UTC+1.

Please note: Email is the preferred method of communication. Please state the fault or problem as fully as possible, mentioning all details that could be relevant for solving the problem.

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3. Lethal Warning!



Voltages within this equipment are sufficiently high to endanger life.

Covers are *not* to be removed, except by persons qualified and authorized to do so, and these persons should always take extreme care once the covers have been removed.

4. First Aid in Case of Electric Shock



1. Lay victim on his back.
2. Clear victim's mouth and throat
3. Tilt victim's head back as far as possible and raise his head



4. Pinch victim's nostrils
5. Take a deep breath
6. Cover the victim's mouth with yours and blow, watching his chest rise.
Note: Blow forcefully into adults, but gently into children.
7. Move your face away to allow victim to breathe out, watching his chest fall.
8. Repeat first five to ten breaths at rapid rate; thereafter, take one breath every three to five seconds.
9. Keep victim's head back as far as possible at all times.

Have someone else send for a doctor. Keep patient warm and loosen his clothing

Do not give liquids until the patient is conscious

5. Overview of this Manual

The User's Manual is intended for use by the officer on duty, responsible for the normal, day-to-day operation of the VDR. It contains general information on operation of the unit, maintenance tasks and instructions for downloading data from the equipment.

5.1. VDR Function

The VDR automatically records and stores data from radar(s), microphones, VHF sets and navigation equipment and other connected input sources. Data is stored on the VDR's hard disk for 24 hrs (optionally longer), and is automatically over-written with new data.

Recording stops automatically two hours after ship's emergency power failure, but starts automatically when the main/emergency power is restored.

In any situation where an investigation is needed, it is necessary to *immediately* make a backup copy of the stored data, covering the time of the incident, to prevent erasing the content of memory when the 24 hrs have passed. A special backup button makes it possible to save the last 12 hrs of data on the hard disc, securing it from being overwritten.

In the event of a serious accident, leading to permanent VDR power loss, the removable hard disk in the VDR and the protective capsule can be used to restore and play back the recorded data.

NOTE! As defined by the IMO, the data recorded on the protective capsule only includes the last 12 hrs of data as opposed to the 24 hrs or longer, stored on the local hard disk.

6. Introduction

The VDR system consists of several sub-units intended to record and store data in digital form, video (radar) and audio from the ship's voyage, via interfaces, on the computer's hard disc. The VDR is entirely automatic in normal operation and does not interfere with any other systems on board.

The VDR is designed to record the following minimum selection of signal sources, provided these are equipped with suitable output interfaces:

- Date and time
- Ship's position
- Speed
- Heading
- Bridge Audio
- Communications Audio
- Radar data, post-display selection
- Echo sounder
- Main alarms
- Rudder order and response
- Engine order and response
- Wind speed and direction
- Hull openings status
- Watertight and fire door status
- Accelerations and hull stresses
- Configuration of the VDR unit varies depending on the requirements. These are some of the optional items that can be recorded:
- Standard resolution video (CCTV).
- Analogue (voltage/current) or digital (on/off) input using Ethernet-connected interfaces.

For a more detailed description about the VDR, see the "Technical Specifications".

6.1. Purpose of a VDR

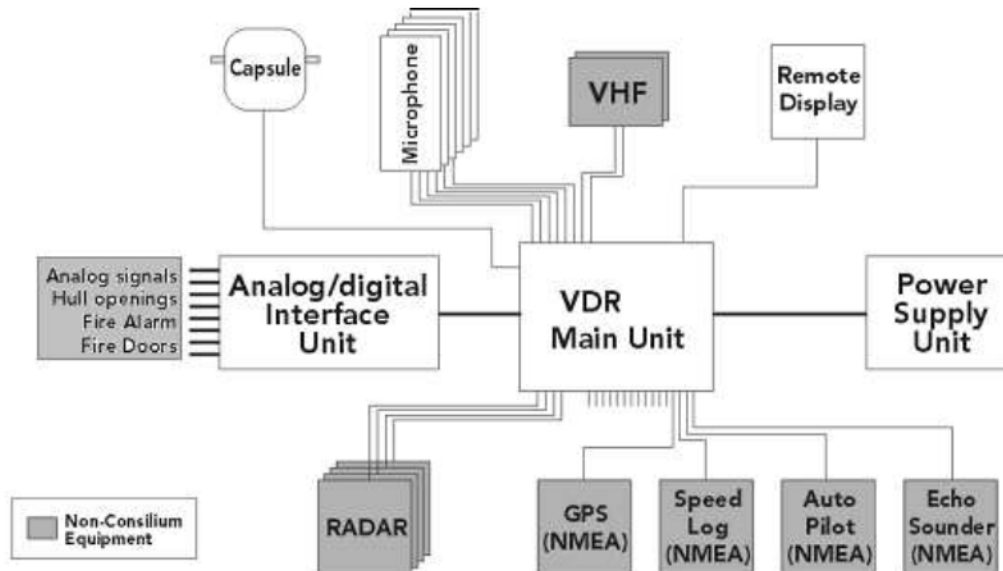
Referring to IMO Resolution A.861(20), Performance Standards for Shipborne Voyage Data Recorders (VDRs), stating:

The purpose of a voyage data recorder (VDR) is to maintain a store, in a secure and retrievable form, of information concerning the position, movement, physical status, command and control of a vessel over the period leading up to, and following, an incident having an impact thereon. Information contained in a VDR should be made available to both the Administration and the ship owner. This information is for use during any subsequent investigation to identify the cause(s) of the incident.

Although this is the main purpose as defined by IMO, the VDR can also provide useful information in situations far less dramatic. This can involve monitoring of ship voyage management, crew training etc. For this purpose, the VDR is designed to make back-up copying easy and the companion VDR Player software for playback of voyage data is designed to be interactive.

7. System overview

7.1. The Standard VDR



The VDR is a completely passive system, decoding and storing data as it is fed from the output interfaces of the connected equipment.

Since a number of sensors are connected, it is vital that all input data is time stamped to maintain time co-relation of the stored data. Date and time are thus important to the VDR and synchronization is maintained from UTC (Coordinated Universal Time) received from any connected GSNS (Global Satellite Navigation System) receiver (GPS, in most cases).

The VDR system is normally powered from the ship's emergency power source, as is most other vital navigation equipment. The VDR is equipped with a built-in PSU, designed to keep the VDR operational for at least two hours after an emergency power failure.

7.2. Backup

The VDR automatically maintains a hard disc recording of the last 24 hrs, or optionally for a longer period. A manual backup for safekeeping or for test purposes can be made whenever needed. For a detailed description of the backup copy, please refer to the "Accessing Data from the Equipment" chapter. An incident backup can be made from the SD2-16 display, please refer to the "Remote Display SD2-16" chapter for details.

NOTE: Retrieving the capsule memory data after an accident needs a special equipment not built into the VDR. Of technical reasons and to avoid tempering with the data, the capsule data retrieving and restoring must be performed by the investing authority, supervised by Consilium specialists.

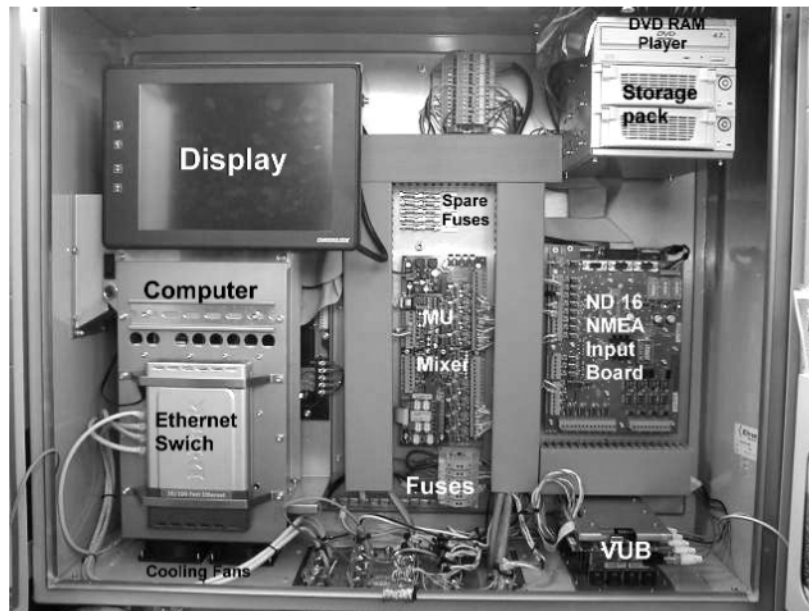
7.3. Playback functions

The player software for the voyage data is not included in the standard VDR unit, but can be run on a suitably equipped multimedia PC. Please contact Consilium for more information.

8. Hardware overview

8.1. VDR Main Unit components

Most system components and sub-units are installed in the Main Unit. The Main Unit is equipped with doors with a lock. Only authorized Consilium personnel, appointed crewmembers or the Legal Authorities may open it.



Inside the cabinet there is a 10.4-inch LCD monitor with a touch screen for user commands. This screen provides essential needs of visual information, for making back-up copies, performing system set-up, service or troubleshooting. The Main Unit has a few assemblies that you should know:

- **The LCD display:** used for controlling the central computer, entering data, making back-ups etc. The display power switch is on the left side. The buttons to the left regulate brightness, contrast etc.
- **The storage stack:** holding all the storage media: a DVD player, and two (mirrored) hard disks, storing identical data for maximum reliability.
- **Central Computer** The computer samples and records the incoming information on to the two hard discs and the capsule and monitors the integrity of the recording.
- **The Ethernet Switch:** mounted on the computer unit is an 8-port "switch", the connection center of all Ethernet devices in the VDR.
- **ND 16:** the receiver board for all serial (e.g. NMEA) signals.
- **VUB:** VDR Utility Board, the receiver board for up to 4 radar channels or other high-resolution video channels. Also the connection point for the Remote Display and the PSU control signals.

- **MU Mixer:** The receiving board for up to 8 microphones or other audio sources, such as VHF equipment, etc.
- **Cooling fans** with fan filters. These fans must be unobstructed to properly cool the unit, and the filters must be cleaned periodically.
- **The type label:** showing the article and serial number of the unit.
- **Sparefuses**

8.2. VDR Power Supply Unit components



High Voltage Warning!

Voltages within the Power Supply Unit are sufficiently high to endanger life.

230 volts alternating current exists inside the Power Supply Unit on exposed terminals. It contains no user operable parts. Do not open the unit if you are not properly qualified. Both Live and Neutral wires and connections are to be regarded as dangerous! They are not at ship's bulkhead potential.

The power supply unit has several functions, and a separate section in the technical manual provides further details about this unit. The power supply unit performs the following functions :

1. It transforms the 230 V AC power from the ship to 24 V DC power for the system.
2. It monitors the battery status and charges the batteries whenever necessary.
3. It switches to supply the system with battery power for 2 hrs during a black out.

Along with the monitoring and transforming the power, the Power Supply Unit also filters most of the voltage transients, which can be harmful to the VDR system.

The Power Supply Unit consists of a number of internal parts and subassemblies that it is necessary that you familiarize yourself with, before beginning of any maintenance work:

- **Charger and control unit:** Electronic device for charging and controlling the lead-acid batteries and keep them in optimum condition.
- **Batteries:** Marine-hardened, but otherwise ordinary 12 volts lead-acid batteries, series connected to produce the 24 volts used by the Main Unit.
- **Terminal block:** for connecting input and output voltages. It has a high-voltage and a low voltage side.

8.2.1. Indicator Lamps in the PSU

The PSU has a green led for indicating that the output is ok.

8.2.2. Fuses in the PSU

The battery charger is protected internal by T6.3 A high breaking fuses

8.2.3. Short-Circuit Warning!

Be sure never to short circuit the 24-volt leads coming from the Power Supply Unit! The current available is very large, and the cable might melt or catch fire.

8.3. Microphones

The microphones shall be installed at designated locations to pick up internal voice, radio and public address communications as well as audible alarms and other sounds on the bridge. They are designed for panel mounting. For bulkhead mounting, and for outdoor mounting a watertight boxmounted version is available.

Each microphone unit is also equipped with a loudspeaker, forming a part of the mandatory acoustic monitoring system, checking audio recording integrity by emitting a test tone each 12 hrs.

8.4. Remote display SD2-16



Front Panel of the Remote Display SD2-16

A remote display is used to monitor the operation of the VDR. It is designed for installation on the bridge and will give acoustic and visual alarms and warnings in case of a VDR failure. (See alarm table in: 10.Actions Following Any VDR Alarm)

The remote display has a incident push-button to timestamp and store a preset time periode of data recorded by the VDR.

It is also equipped with an external alarm relay for connection to other alarm systems on board.

8.5. Optional Sub-units

8.5.1. Analogue/Digital Interfaces

The analogue/digital signal interfaces collect non-NMEA compatible digital and analogue data information from the ship's sensors, such as fire alarms, fire doors, hull opening sensors etc. After being processed, the data is transferred to the Main Unit via a network connection.

9. Normal Operation of the VDR

The user will only operate with a few parts of the VDR in normal situations: the remote display SD2-16 and the Main Unit (with an interactive touch-screen display and the back-up media drive) .

9.1. Remote Display SD2-16

The VDR is completely passive and operates automatically without any user interaction.

The remote display SD2-16 monitors the status of the VDR and contains the display for alarms and warnings related to the function of the VDR.

It is also enables the user to time-stamp and store data in the event of an incident.



Front Panel of the Remote Display SD2-16

9.1.1. Normal Operation

During normal operation, the green “Normal operation” LED will be lit and the “0” messages will be shown, but no other information will be visible.

The two arrow buttons marked “DIM” at the lower right can be used to adjust the light intensity of all indicator elements of the remote display. All the important text is permanently backlit with low intensity light. The light intensity should be adjusted to keep the light level in balance with other light sources on the bridge.

9.1.2. Failure

Indicators

Any failure in the VDR will cause the SD2-16 to extinguish the “Normal operation” LED and to light the yellow “Warning” LED or the red “Alarm” LED, depending on the severity of the failure.

Acknowledgement



An alarm status always causes an audible alarm buzzer, which can be muted using the

“Alarm mute” button.

Displays

- The upper numerical display shows the total number of active alarms and warnings.
- The bottom numerical display shows the current alarm status number.
- Should more than one error condition exist, the error codes will be held in an alarm stack.
- The +/- keys can be used to scroll through the alarm stack.

9.1.3. Incident Backup



In case of an incident of importance, the operator can mark the VDR's recorded data with a time-stamp and store up to the last 12 hrs of data to the hard disk by depressing the "backup button".

This incident backup is secured from being overwritten by the VDR's normal operation.

Note: Only one 12 hrs periode will be saved like this. E.i. a new push of the button will save a new last 12 hrs periode.

The procedure starts when the backup button is pushed for 2 seconds. The LED just above the button turns red to acknowledge that the procedure has started and the LED is turned on until the backup has finished. Depending on how the VDR was configured at installation time, the local backup will store the configured amount of recorded hours to the hard disk and it will be saved until the next time the backup button is pushed again.

The VDR may also be configured to store one or more additional local backup(s) of 2 hrs (option) for exporting to other media. The default setting is 1,5 hrs before and 0,5 hrs after pressing the incident button. Note: A new 12 hrs periode is then also saved as above.

A message is displayed on the remote display when this memory is full and the first 2 hrs backup will be erased.

9.2. Using the Main Unit

The VDR Main Unit cabinet is lockable to prevent unauthorized admittance. Authorized to operate the VDR are trained crew members as appointed by the ship owner and Consilium approved technical personnel.

All actions in the Main Unit for back-up copying or troubleshooting shall be done via the touch screen display.

9.2.1. Important when working with the VDR main unit

To achieve full security and best possible working environment, the cabinet door must always be closed and locked, except at operator's use, maintenance and repair.

The VDR cabinet is ventilated with fans and must not be covered.

Important!

According to IMO A.861(20) the recording shall be continuous and may not be terminated except for essential maintenance purposes whilst the ship is in port or when the ship is laid up.

10. Actions Following Any VDR Alarm

Any alarm status indicates some specific VDR malfunction, which should always be investigated to provide guidance to relevant action.

The alarm identity numbers along with an explanation and troubleshooting help are listed in the table below.

Alarm No	Failure alarm description	Explanation	Required action
General faults			
001	No signal to remote display	VDR not operating / communication to remote display not working.	Check on Main unit to verify if VDR is working.
002	Power failure	No power to VDR. VDR will work on UPS for 2 hrs.	Find cause of power loss, check fuses
004	Recording integrity	Recorded data lost.	Consult service center.
005	HDD failure	Internal memory error	Contact Consilium
006	Raid failure	Critical array error	Contact Consilium
007	File failure	Fast Trak driver failure	Contact Consilium
008	Battery Failure	PSU battery failure	Contact Consilium
009	Other failure		Observe display of Main unit
NMEA 0183/IEC 1162-1,-2			
010	General	General/unknown failure	
011 012	Date and time 1 Date and time 2	Failing data	Check UTC source
013 014	Ship's position 1 Ship's position 2	Failing data	Check navigator
015 016	Speed 1 Speed 2	Failing data	Check speed log
017 018	Heading 1 Heading 2	Failing data	Check gyro compass
019 020	Echo Sounder 1 Echo Sounder 2	Failing data	Check sounder
021 022	Main alarms 1 Main alarms 2	Failing data	Check alarm system
023 024	Rudder order and response 1 Rudder order and response 2	Failing data	Check rudder repeater/ auto pilot
025 026	Engine order and response 1 Engine order and response 2	Failing data	Check engine control system

Alarm No	Failure alarm description	Explanation	Required action
027 028	Hull openings status 1 Hull openings status 2	Failing data	Check hull monitoring system
029	Watertight and fire doors status 1	Failing data	Check door monitoring system
030	Watertight and fire doors status 2	Failing data	Check door monitoring system
031 032	Accelerations and hulls stresses 1 Accelerations and hulls stresses 2	Failing data	Check hull monitoring system
033 034	Wind speed and direction 1 Wind speed and direction 2	Failing data	Check wind meter
DCU			
41-99	DCU errors	DCU unit is to be phased out of production.	Contact Consilium for a list of error codes.
Audio			
100	Audio general failure		Consult technical manuals
Radar			
120 130 140 150	Radar input #1 Radar input #2 Radar input #3 Radar input #4	Missing input from radar #1 Missing input from radar #2 Missing input from radar #3 Missing input from radar #4	
159	High-Res video general failure		Consult technical manuals
CCTV			
160 161 162 163 164	CCTV camera 1 failure CCTV camera 2 failure CCTV camera 3 failure CCTV camera 4 failure CCTV camera 5 failure	Missing input from camera #1 Missing input from camera #2 Missing input from camera #3 Missing input from camera #4 Missing input from camera #5	
169	Low-Res video general failure		Consult technical manuals
Backup			
170	Backup general failure		Consult technical manuals
171	FTP transfer failed	The VDR was not able to connect to the FTP server.	Check connection to the FTP server.
172	Backup configuration error		Consult technical manuals
173	12 hour backup failure		Consult technical manuals

FTP Audio			
180	FTP Audio channel 1 failure	Missing input	Consult technical manuals
181	FTP Audio channel 2 failure		
182	FTP Audio channel 3 failure		
183	FTP Audio channel 4 failure		
184	FTP Audio channel 5 failure		
189	FTP Audio channel general failure		Consult technical manuals
Watchdog			
190	Watchdog	Order entry error	Contact Consilium
191	Watchdog	Configuration error	Contact Consilium
192	Watchdog	System file failed	Contact Consilium
Sixnet analogue/digital interface			
200	Sixnet digital input failure	Missing digital input signal	
201	Sixnet analogue input failure	Missing analogue input signal	
202	General failure		Consult technical manuals
NMEA serial input			
301	COM1 input failure	Missing signal on COM1	
302	COM2 input failure	Missing signal on COM2	
303	COM3 input failure	Missing signal on COM3	
304	COM4 input failure	Missing signal on COM4	
305	COM5 input failure	Missing signal on COM5	
306	COM6 input failure	Missing signal on COM6	
307	COM7 input failure	Missing signal on COM7	
308	COM8 input failure	Missing signal on COM8	
309	COM9 input failure	Missing signal on COM9	
310	COM10 input failure	Missing signal on COM10	
311	COM11 input failure	Missing signal on COM11	
312	COM12 input failure	Missing signal on COM12	
313	COM13 input failure	Missing signal on COM13	
314	COM14 input failure	Missing signal on COM14	
315	COM15 input failure	Missing signal on COM15	
316	COM16 input failure	Missing signal on COM16	
317	COM17 input failure	Missing signal on COM17	
318	COM18 input failure	Missing signal on COM18	
319	General NMEA serial failure		Consult technical manuals
VDR			
400	VDR general failure		Consult technical manuals
VUB			
410	VUB connection failure		Consult technical manuals

Autronica			
420	Communications timeout		Consult technical manuals
MTU			
430 441	Communications timeout Configuration error		Consult technical manuals
Bitlink			
440	Communications timeout		Consult technical manuals
KNC-LAN			
450	General failure		Consult technical manuals
Microphone Test			
460 461 462 463 464 465 466 467	Microphone #1 test failed Microphone #2 test failed Microphone #3 test failed Microphone #4 test failed Microphone #5 test failed Microphone #6 test failed Microphone #7 test failed Microphone #8 test failed		Consult technical manuals
Power Supply			
500	UPS general failure		Consult technical manuals
Alarm			
600	Alarm general failure		Consult technical manuals
UTC			
700	UTC synch general failure		Consult technical manuals
Capsule HVR			
800	Capsule, connection failure	Fatal error.	Check connections to capsule
801	Capsule, overrun	Fatal error.	Contact Consilium
802	Capsule, not enough space	Possible error. Capsule memory not enough if current recording size continues for 12 hrs.	Contact Consilium See note below.
803	Capsule, lost data	Fatal error.	Contact Consilium
804	Capsule, internal loop error	Fatal error.	Contact Consilium
Capsule JV			
900	Capsule, connection failure	Fatal error.	Check connections capsule
901	Capsule, overrun	Fatal error.	Contact Consilium
902	Capsule, not enough space	Not enough capsule memory.	Contact Consilium

903	Capsule, lost data	Fatal error.	Contact Consilium
904	Capsule, internal loop error	Fatal error.	Contact Consilium
905	Capsule, status error	Fatal error.	Contact Consilium

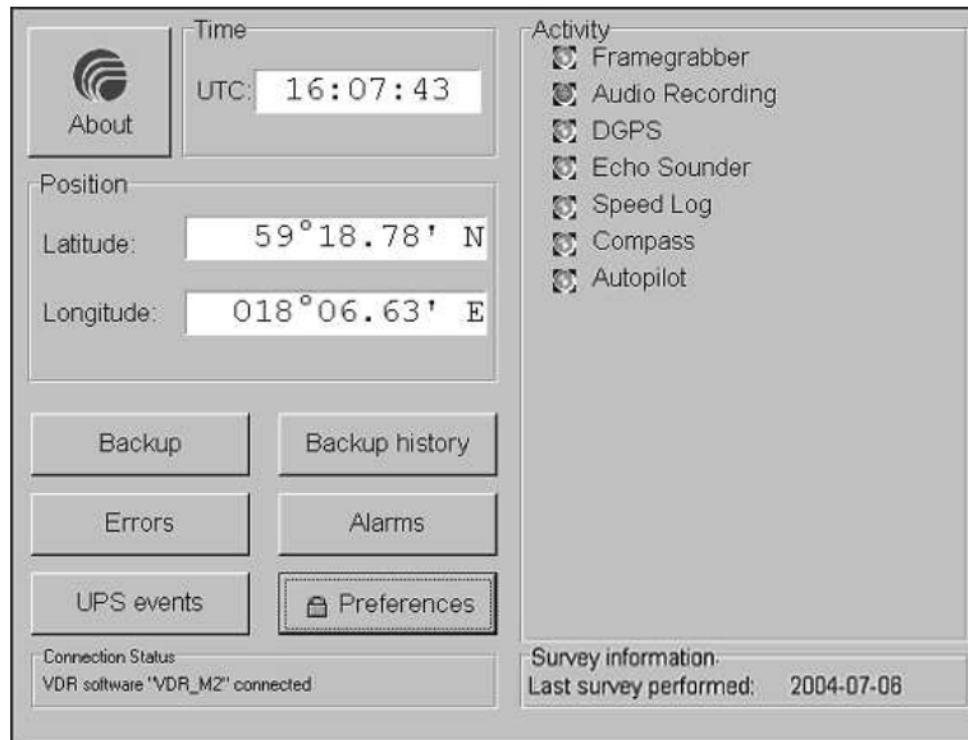
Note: Alarm No 802 can occur occasionally when radar screen is filled with echoes e.g. when the ship is in harbour or in archipelago.

11. Accessing Data from the Equipment

11.1. The main screen of the VDR Client

The Client Main Window is always displayed on the LCD display inside the VDR cabinet during normal operation.

- If you cannot see the image, activate the back-lighting using the Power On switch.
- The screen shall be switched off during normal conditions.



VDR Client Main Window

The main window is the central switchboard for all the client functions, as well as for proceeding to the **VDR Configure** utility via the **Preferences** button. Each button is explained in further detail in the following.

Always Check the Following

The **Time** field shows UTC as decoded from connected GPS. The **Position** fields show the ship's longitude and latitude as recovered from the connected GPS. The UTC, Latitude and Longitude fields, along with the Activity lamps which are the main indicators proving that the VDR is working and collecting data.

The **Connection status** box should always show "VDR Software connected", meaning that the client is connected and reading from the data logging function.

The **Activity** field, if configured, contains live indicators of some of the input signals that the logging function is recording. They should blink in a regular pattern, showing that NMEA data is coming in, the frame grabber is grabbing, etc.

For Backup, Use the Following

With the **Backup** button you can make a backup of the hard disk data to a DVD player or a DVD-R disc. (See 11.2 below)

The **Backup History** button opens up a list of backup status messages, with all the backups made.

For Troubleshooting, Use the Following

The **Errors** button opens up a list of current errors, which have not been cleared yet. The same errors are displayed on the Remote Display. After the error has been cleared, it disappears from the list. However, it remains in the Alarms list.

The **Alarms** button opens up a historic list of general system error messages. The list contains both the error ON and the error OFF message, i.e. the messages to say that the error occurred and then was cleared. All alarms on this display will also appear on the Remote Display.

The **UPS Events** button will display problems with the Un-interruptible Power Supply .

The **About** button behind the Consilium logotype displays a message box with the client and server version number.

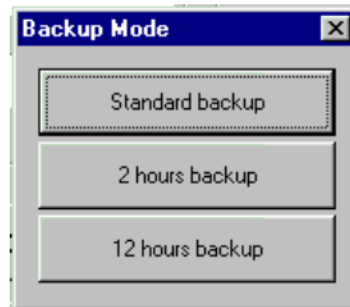
The **Preferences** button leads to another box of tabbed dialog boxes, for setting various operating parameters for the system. The Preferences function is only to be used by an authorized service engineer, and is therefore password protected. The full and proper use of these controls is explained in the “Technical Manual” and the “Commission Manual”.

11.2. Backup Data from the VDR

Copying, or Downloading of data from the VDR is made by making a backup copy of a selected interval of time of the data stored in VDR memory onto a DVD disc. Backing up data is done with the VDR Client application, an application that is always running in the VDR.

- You need an empty **DVD-R disc** to perform and initiate the backup procedure. This is to give you the option to use different medias for backing up data from the VDR.

Pressing the Backup button on the client main screen opens the Starting Backup dialog box.:



The starting Backup dialog box enables the copying of data from the VDR to a DVD media from three possible sources in the VDR:

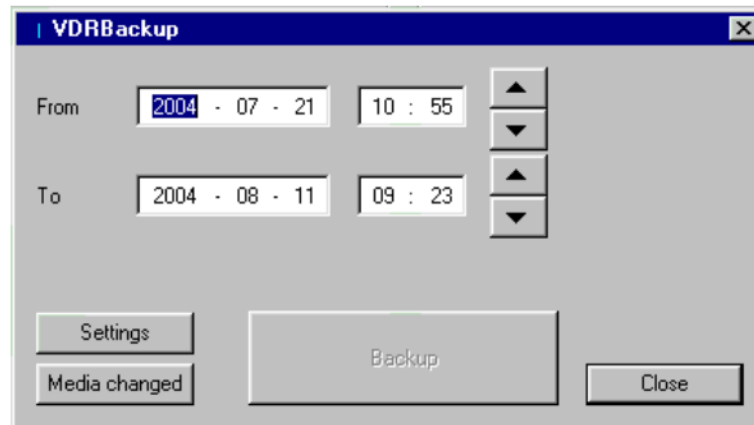
- **Standard backup** - Data can be selected from any of the last 24 hrs (ore optionally more) recorded on the standard hard disk.

Note: Downloading all data to a DVD-R can take several hours if many hours are selected.

- **2 Hour** - Data can be selected from one or more incident recordings, depending on the configuration of the VDR.
- **12 Hour** - Data can be selected from the 12-hour period of the special incident recording counted backwards from the last depressing of the “Incident Button”.

11.2.1. Standard Backup

By Pressing “Standard button” following VDR Backup dialog box will appear:



Backup Range Setting

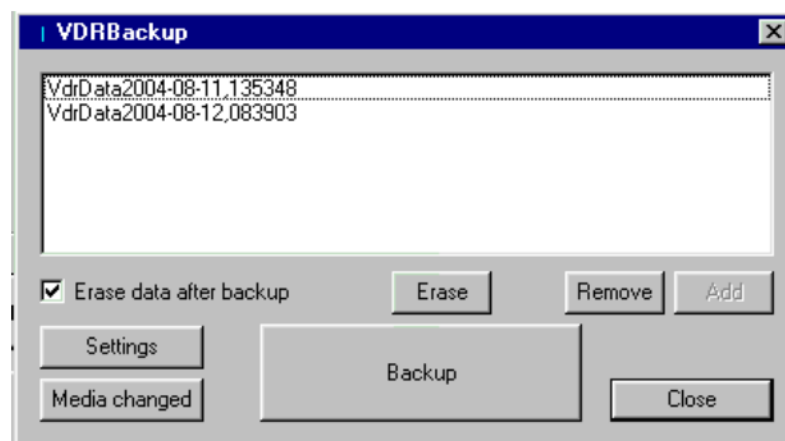
Begin by deciding which data and which time interval to record.

Backup from one specific time to another specific time

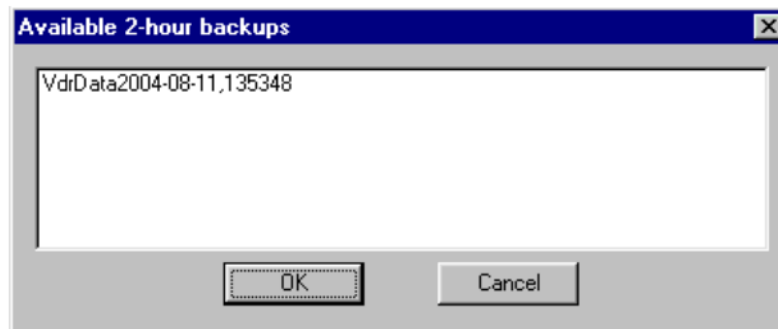
Select a **Start at** time well in advance of the incident to be saved, and a **Stop at** time such as the present or well after the incident. Times are all in UTC, as derived from GPS time.

11.2.2. Incident Backup or 2hour backup. (optional)

Pressing the 2-Hour button on the starting backup screen opens the Select Data to Backup dialog box.:



If several “2 hour backups” has been made, all will be shown in the main window. All of them will be saved to the backup media. To choose only one specific backup, mark the unwanted once and press the remove button. To reselect them, press the add button and a new window will open as shown below.



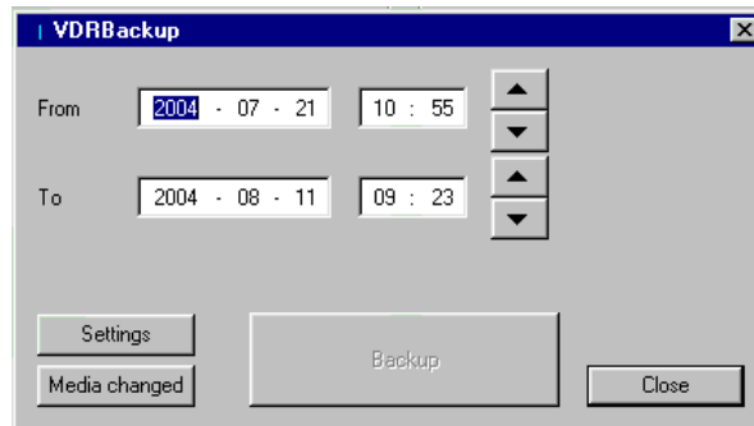
Mark the file(s) to add and press OK.

To start the backup, press the “Backup” button in the main (backup) window.

It is also possible to select and erase one specific recording at this stage, by using the erase button.

11.2.3. 12 hour backup

Pressing the “12-hour backup” button on the starting backup screen opens the VDR Backup dialog box. With the 12 hour of backup data marked:



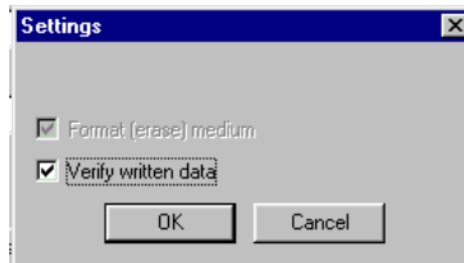
Backup Range Setting

Begin by selecting which data and which time interval to be recorded on a DVD media Consider the time for downloading.

Select a **Start at** time well in advance of the incident to be saved, and a **Stop at** time such as the present or well after the incident. Times are all in UTC, as derived from GPS time.

11.2.4. Settings

If you click on the button “Settings” in either backup mode, another dialog box will appear “DVD backup settings” containing the following information:



The setting “Format (erase) medium” forces the Client always to format DVD media before starting file copying.

The setting “Verify back-up result”, enables or disables verification of the back-up results

The settings are enabled by default for every back-up session, it is recommended not to change the default settings.

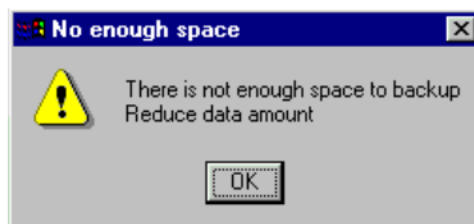
11.2.5. Make the Backup

1. Insert the empty **DVD-R** disc.
2. Select the data-range as indicated in either of the previous sections 11.2.1, 11.2.2 or 11.2.3
3. Press **Start backup/OK** after having set the data range.

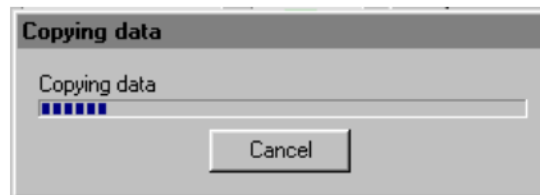
The system displays a “Please Wait” box while it calculates the amount of data to record.

4. If the media is not formatted then it will be formatted and the backup will commence.

When checking space available on a DVD media, the requested data size is compared to the total media size (one side) and not to the available space. You will get an error message if you select more data than will fit on the medium.



If the DVD media is correct and requested data will fit, the “Back-up in progress” window appears. The window contains current information about the progress and “Abort” button for stopping the back-up.

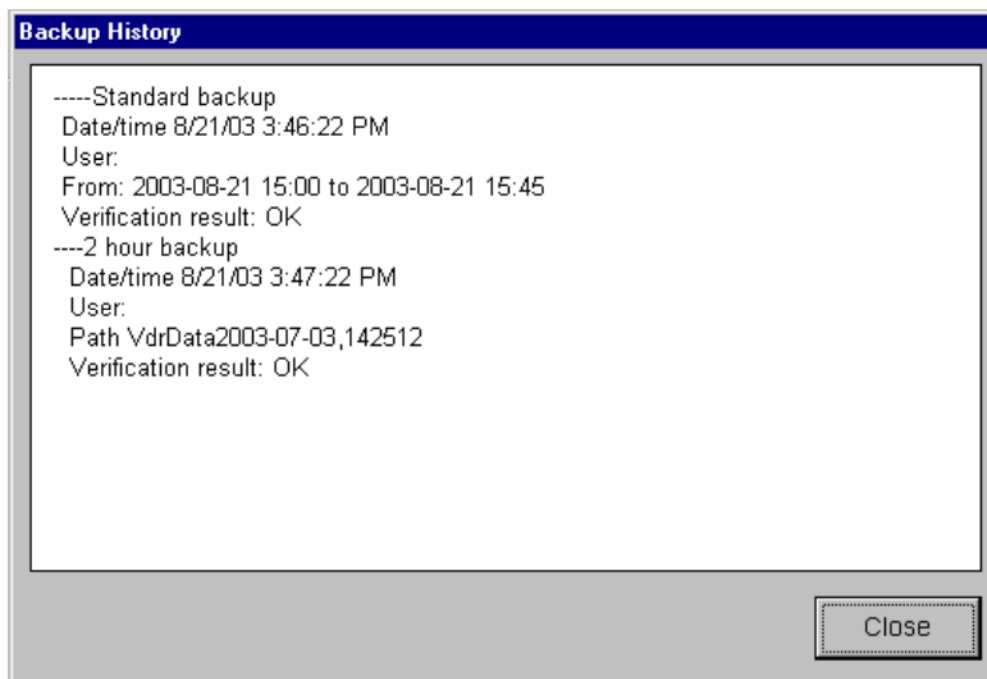


The VDR Backup dialog box shows the progress of the backup procedure.

After the progress bar at the bottom has reached 100%, the backup is finished. When the backup is finished this window will disappear and for a short while a new window will be shown verifying the data. After that a window will open telling the status of the backup.

1. Click **OK** to return to the Main window.
2. Remove the DVD disk from the drive and label it properly.

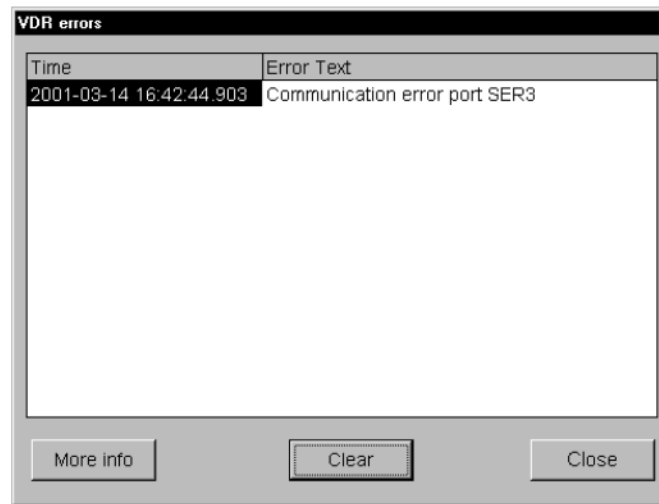
11.3. Backup History



Pressing the **Backup History** button on the client main screen opens the **Backup History** dialog box, showing a list of all the backups, type of backup made and media used. Information about errors is collected and presented as a summary when the operation finish.

Click **Close** to return to the client main screen.

11.4. Errors



Pressing the **Error** button on the client main screen opens the **VDR Errors** list displaying the current system faults, the time the error was detected and a short description. After the error has been cleared, it will disappear from this list.

Clicking the **Clear** button will empty the list, but because this is a dynamically updated list, all the current errors will be back in the list again after about one minute.

Clicking the **Close** button returns you to the client main screen.

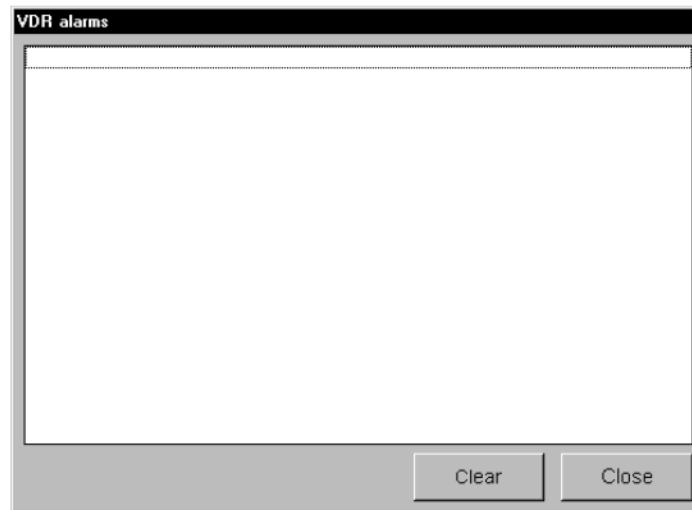
Selecting a fault and clicking the **More Info** button will open another message box, spelling out the error in more detail.



In this example there was a communications time out on serial port 3. This could indicate that either the connector had fallen out, or the device delivering the data was faulty.

After contemplating the nature of the fault, click **Close** to get back to the VDR Errors list.

11.5. Alarms



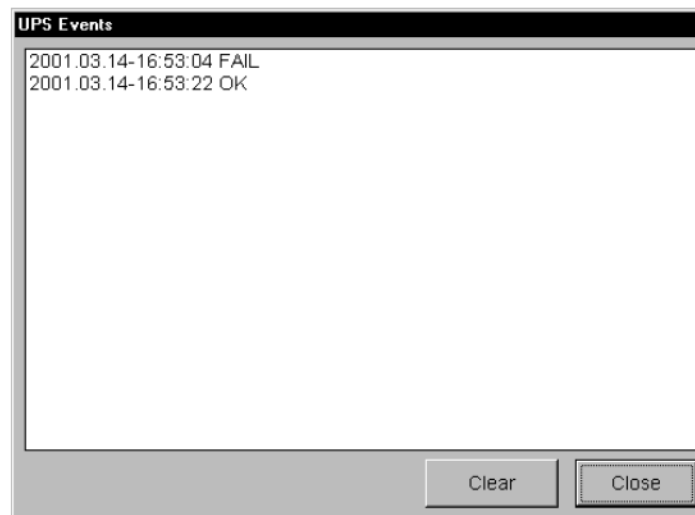
Pressing the **Alarms** button on the client main screen opens the **VDR Alarms** list displaying the system faults, current and historical, the time the error was detected and a short description. When the error occurs it will have an ON label in the list, after it has been acknowledged it will get an ACK label, and after the error has been cleared, it will have an OFF label in the list.

The list shows all the errors since the system was last restarted.

Clicking the **Clear** button will empty the list.

Clicking the **Close** button returns you to the client main screen.

11.6. UPS Events



Pressing the **UPS Events** button on the client main screen opens the **UPS Events** list displaying all fault conditions reported from the Uninterruptable Power Supply. Such a fault will generate a fault code on the Remote Display and an audible alarm after a few seconds.

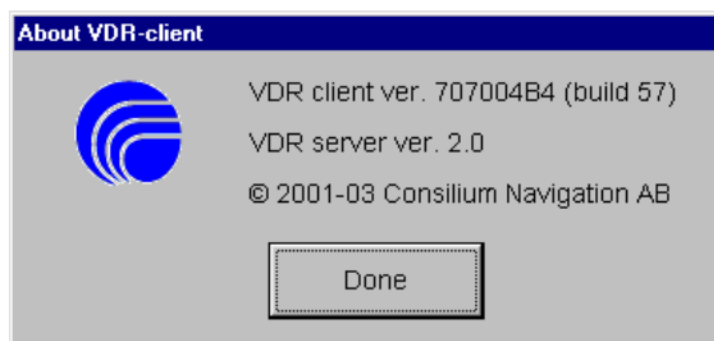
The list shows all the errors since the system was last restarted.

Clicking the **Clear** button will empty the list.

Clicking the **Close** button returns you to the client main screen.

After contemplating the nature of the fault, click **Close** to get back to the UPS Events list.

11.7. About

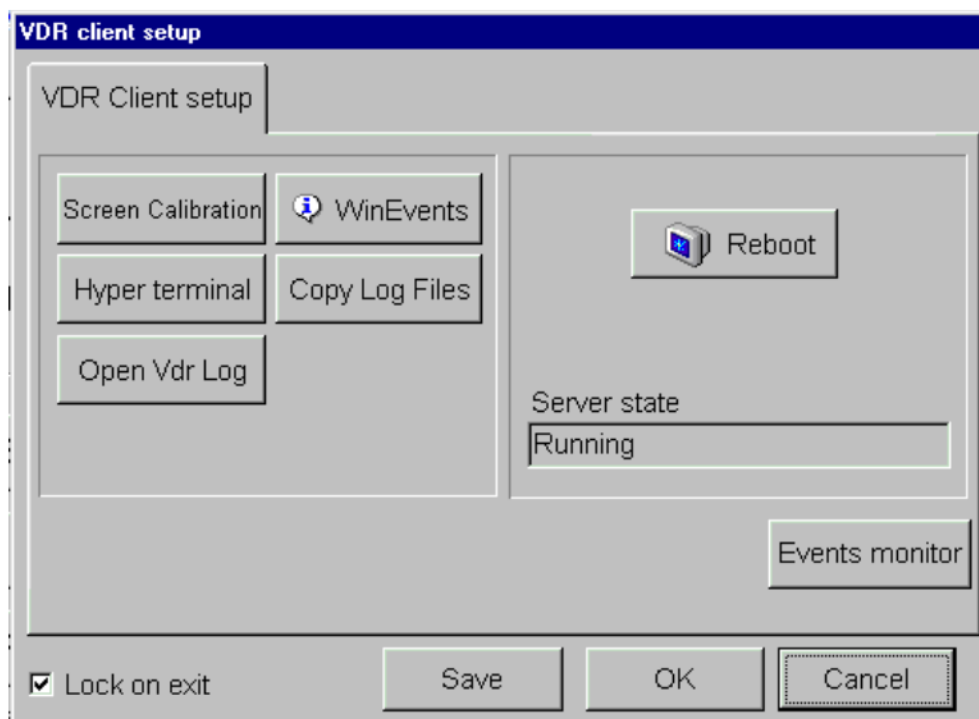


Pressing the **About** button on the client main screen opens the **About VDR Client** message box with the client and server (logging service) version numbers.

Clicking the **Done** button returns you to the client Main Window.

11.8. Preferences

Pressing the **Preferences** button on the client main screen will prompt you for a password, there is one password for the ships crew to use incase it will be needed for minor service and fault locating issues. The password for this is: **crew**. This will give you access to the following functions in the **VDR Client setup** window.



During normal operation, the client application is the interface visible to the user. Checking for proper operation usually comes down to viewing the client interface, and seeing that the position display and UTC time are being properly updated from the GPS receiver, and that the indicators for activity signals are blinking at the proper intervals, indicating the presence of input signals. Should this not occur, there are always error messages available in the various error logs. A new feature is a password protected maintenance interface giving the user the possibility to access the following functions:

- **Screen calibration**, in case that the monitor gets misaligned in the calibration, this feature will make it possible for the customer to calibrate the monitor without a Consilium technician.
- **HyperTerminal**, In case of that there is a loss of one or several NMEA cannels, then this function is useful.
- **Open VDR Log**, To verify more of a long time error and fault description in the VDR and incoming signals.
- **Win Events**, same as VDR log but for the Operating system.
- **Copy log files**, makes it possible to get the log files out on a DVD-R disc. To send to Consilium technichan for evaluation.
- **Event monitor**, advanced feature for fault isolation in signals, how to use is to be advice in co-operation with Consilium engineer.
- **Reboot**, reboot of the system.

The password for this feature is “crew”.

11.8.1. Everyday Routine

Typical everyday routine for the user include:

- Creating backup copies of important data
- Checking the various error logs for error messages
- Attending the errors and alarms

12. Maintenance Tasks to Ensure Serviceability

Maintenance should be carried out at regular intervals to ensure proper operation of the VDR.

12.1. Hardware safety

1. Check the battery charge level to see that the batteries are fully charged and have their full capacity.
2. Take out the fan filters and clean them.

12.2. Software safety

3. Make regular backups of voyage data.

12.3. Statistics

4. Check to see if warnings are recurring. This could point to some future, possible malfunction.

13. Spare Parts List

Article No	Description
708006	Audio Card LCM440 – Sound board
708002 B	Frame grabber board
707300	Mixer unit MU144
707123	VDR utility board VUB2
707089	NMEA concentrator ND16
707001	Power supply unit
708012	12 V accumulator
707017	Remote Display SD2-16
707020	Microphone AM1
701924	NMEA Buffer 2 (NBUB2)
707126	Video switch VMUX
700012	RSA VHF Splitter
707194	VDR fuse set
708001	VDR HDD –40Gb

14. Troubleshooting

Using the tables below you may be able to find a fault, or to collect enough information to relay the problem to Consilium for further fault-finding.

14.1. General

Problem	Cause	Action
VDR/PSU units are dead	Probably a PSU fault	Continue under "PSU".
Remote display showing alarm 001	No heartbeat arrives from VDR to SD2.	Continue under "Remote Display"

14.2. PSU

Problem	Cause	Action
VDR/PSU units are dead	Faulty connections, lack of connection.	Refer to the Installation manual for connections of high/low voltage and signal cables.
	Ship's power may be off	Turn on ship's power
	Ship's fuses may be broken	Change ship's fuses
	Power cable may be broken or give intermittent contact	Check power. 230/115 V input OK?
	Charger/batteries may be faulty. 24 V output from PSU?	Check control LEDs. If it gives no clues, change PSU.
	Cable between units faulty. 24 V input to VDR?	Check cable, connections and fuses in fuse block.
	Something short-circuiting inside the VDR. All VDR fuses intact?	Replace the fuse and check to see if it stays intact.
	Charger/batteries may be faulty, batteries flat	Wait for them to charge. Control LEDs OK in PSU?

14.3. VDR

Problem	Cause	Action
VDR unit lamps are on but computer does not run	Probably a fault in the internal switching power supply	Check voltages on the motherboard or Contact Consilium

14.4. Remote Display SD2

Problem	Cause	Action
Alarm 001	Communications fault between SD2 and VDR, i.e. a broken cable or connector problem. Could also indicate a stopped VDR.	Check cabling and connections. Then check VDR Main Unit.