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**NOTICE**

**This document contains proprietary information.**

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References

Not applicable.

Introduction

This document describes the AMCS NavVision ships alarm and monitoring Factory Acceptance Test procedures.

The test procedure for FAT is split up into 4 functional groups which are tested separately as far as practical.

• AMCS - Alarm and monitoring system (Test procedure 3, 4, 5,6, 7, 8, 9)

• EAS - Engineers alarming system (Test procedure 10 and 11)

• BNWAS - Bridge navigation watch alarm system (Test procedure 12)

• MIMIC - The visual interface displayed on the screens (Test procedure 13)

The separate test procedures will describe functionality to be verified.

About the System

The AMCS is build and programmed conform following documents:

* Sensorlist :

Sensorlist 727-r9.18.04.130-V00.06.xlsx

* Network Overview:

1003353-9910-CFS Rev 1.2



These documents should be part of this test and so be available at first request. Please ask the engineer for these documents if not on site.Abbreviations list

**AMS** Alarm Monitoring System

**AM(C)S** Alarm Monitoring (& Control) System

**COM**  Communication

**CPU**  Central Processing Unit

**DAP** Duty Alarm panel

**DM** Dead Man’s

**ECR** Engine Control Room

**EDG** Emergency Diesel Generator

**Eng** Engineer

**EMS** Energy Management System

**ER** Engine Room

**ESB** Emergency Switchboard

**FAT** Factory Acceptance Test

**GA** General Arrangement

**GEA** General Engineers Alarm

**GPS** Global Positioning System

**GRP** Group

**HAT** Harbor Acceptance Test

**ID** Identification

**I/O** Input/Output

**IMNL** Imtech Marine Netherlands

**MMI** Man Machine Interface

**MSB** Main Switchboard

**N.A.** Not Applicable

**NC** Normally Closed

**NO** Normally Open

**LAN** Local Area Network

**LED** Light Emitting Diode

**LPU** Local Processing Unit

**MAC** Media Access Control

**NMEA** National Marine Electronics Association

**OWS**  Operator Work Station

**PMS** Power Management System

**PS** Port Side

**SAT** Sea Acceptance Test

**SB** Starboard

**SMS**  Short Message Service

**TCP/IP** Transmission Control Protocol/ Internet Protocol

**UMS** Unmanned Machinery Space

**USB** Universal Serial Bus

**WH** Wheelhouse

Safety instructions

* This section provides only a summary of the safety requirements and notes in the following sections. To protect your health and prevent damage to the AM(C)S equipment or vessel, it is essential to read and carefully follow the safety instructions.*

The indications NOTE, CAUTION and WARNING have the following significance:



*NOTE:  
An operating procedure, practice or condition etc., which it is important to emphasize.*

**

*CAUTION:*

*An operating procedure, practise or condition etc., which, if not strictly observed, may damage AM(C)S equipment or crash NavVision software.*

* WARNING:*

*An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or damage to the vessel.*

Revision history

Revisions issued since publication.

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue** | **Date** | **Revision** | **Reason** |
| 2.1 | July 21, 2015 | New version |  |

Version info for system software, IO configuration and firmware of the IO.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Request** | **Action** | **Acceptance** |
|  |  |  |  |
|  |  |  | FAT |
|  |  |  |  |
| A | Version of NavVision: …………………….. | Verify |  |
|  |  |  |  |

**Test Procedures FAT**

# Verify scope of supply

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Scope of supply** |  | **Needed** |  |  | **Present** |  |
|  |  |  |  |  |  |  |  |
|  |  | AMCS Main Server PC |  |  |  |  |  |
|  |  | (Bridge AMCS Cabinet): | 1 |  |  |  |  |
|  |  | Box PC with two TFT screens |  |  |  |
|  |  |  |  |  |  |  |
|  | Alarm PC Systems | Keyboard/Trackball wireless (USB) |  |  |  |  |  |
|  | AMCS Backup Server PC |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  | (ECR AMCS Cabinet): | 1 |  |  |  |  |
|  |  | Box PC with one TFT screen |  |  |  |
|  |  |  |  |  |  |  |
|  |  | Keyboard/Trackball wireless (USB) |  |  |  |  |  |
|  | Duty Alarm Panel | DAP 1 (Crew Mess room) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | DAP 2 (BNWAS, Wheelhouse) | 1 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | PLC 1 (Bridge Cabinet) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | PLC 2 (LPU01) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | PLC | PLC 3 (LPU03) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | PLC 6 (ECR Cabinet) | 1 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | PLC 7 (LPU04) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | PLC 9 (BNWAS, Bridge Cabinet) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Network | Network Switches Phoenix Contact | 6 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | Serial Servers Moxa | 6 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | RS232 to RS485 opto-isolators | 6 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | NMEA Interface (GPS Time, Bridge Cabinet) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | Basic Alarm 3 Button Panel (Wheelhouse) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Additional Hardware | BNWAS 1 Button Panel (Wheelhouse) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | BNWAS 1 Button Panel (Crew Mess room) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | Basic Alarm 3 Button Panel (Fwd Engine Room) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | Alarm/Log Printer | 2 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | Watch Entrance 3 Button Panel | 1 |  |  |  |  |
|  |  | (Aft/Fwd Engine Room) |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Additional Hardware | Timer Reset Buttons (Engine Room) | 4 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | GSM Modem & Antenna (Bridge Area) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |
|  | **Part of FAT setup but not in scope of supply** | | **Needed** |  |  | **Present** |  |
|  |  |  |  |  |  |  |  |
|  |  | PLC 4 / MSB PS (CPU only) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | PLC | PLC 8 / ESB (CPU only) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | PLC Drive Forward (CPU only) | 1 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | PLC Drive Aft (CPU only) | 1 |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | Network | Network Switches (MSB PS & ESB) | 2 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | Serial Servers Moxa (MSB’s & ESB) | 4 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |  |

# AMCS: Basic Alarm Functionality

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-condition: system running with no unacknowledged alarms** | | |  |  |
|  |  |  |  |  |
| **Step** | **Description** | **Required Steps** | *Expected result* | *Remarks* |
|  |  |  |  |  |
| 1 | Generate alarm | Remove test-wire from a PLC | Relevant alarm is indicated in top right corner of  every screen (for Stations that are allowed to see the alarm) |  |
|  |  |
|  |  |
| 2 | Alarm is generated | verify the output to buzzers and lights where applicable | Alarm output is enabled |  |
|  |  |
| 3 | Check alarm page for consistency | On all AMCS screens (where alarm is allowed to show):  Open the alarm page | The alarm page shows all unacknowledged (new)  alarms as blinking and on top of the list |  |
|  |  |
|  |  |
| 4 | Acknowledge alarm on Bridge PC  (Main Server) | Double click on the alarm line or click on the silence button | Acknowledging is not possible |  |
|  |  |
|  |  |
| 5 | Acknowledge alarm on the Duty  Alarm Panel in the Crew Mess room | Double click on the alarm line or click on the silence button | Acknowledging is not possible |  |
|  |  |
|  |  |
| 6 | Acknowledge alarm on ER PC  (Backup Server) | Double click on the alarm line or click on the silence button | Alarm is acknowledged and sound stops, alarm is  still visible in list |  |
|  |  |
|  |  |
| 7 | Rectify alarm | Restore removed test-wire | Alarm is automatically removed from list |  |
|  |  |

# AMCS: Testing of Redundancy

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pre-condition: system running with no unacknowledged alarms** | | | | |
|  |  |  |  |  |
| **Step** | **Description** | **Required Steps** | *Expected result* | *Remarks* |
|  |  |  |  |  |
| 1 | Generate alarm | Remove test-wire from a PLC | Relevant alarm is indicated in top right corner of  every screen (for Stations that are allowed to see the alarm) |  |
|  |  |
|  |  |
| 2 | Alarm is generated | verify the output to buzzers and lights where applicable | Alarm output enabled |  |
|  |  |
| 3 | Check alarm page for consistency | On all AMCS screens (where alarm is allowed to show):  Open the alarm page | The alarm page shows all unacknowledged (new)  alarms as blinking and on top of the list |  |
|  |  |
|  |  |
| 4 | Simulate a failure of the Server PC  in the AMCS ECR Cabinet | Shutdown ECR PC | New alarm is generated showing broken AMCS  network connection |  |
|  |  |
|  |  |
| 5 | Automatically Server PC in the  AMCS Bridge Cabinet will get an alarm message to take over |  | New alarm generated for fallback/takeover of  AMCS ER Alarm Group Rights to Bridge PC (visible on Bridge PC) |  |
|  |  |
|  |  |
| 6 | Acknowledge test-wire alarm on  Bridge PC | Double click on the alarm line or click on the silence button | Acknowledging is not possible |  |
|  |  |
|  |  |
| 7 | Acknowledge Bridge Fallback For  ECR alarm | Double click on the alarm line | Take-over alarm is removed from alarm list. Bridge PC takes over rights of ECR PC. system keeps running |  |
|  |  |
|  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step** | **Description** | **Required Steps** | *Expected result* | *Remarks* |
|  |  |  |  |  |
| 8 | Acknowledge test-wire alarm on  Bridge PC | Double click on the alarm line or click on the silence button | Alarm is acknowledged and sound stops, alarm is  still active in list |  |
|  |  |
|  |  |
| 9 | Rectify alarm | Restore removed test-wire | Alarm is automatically removed from list |  |
|  |  |
| 10 | Simulate server repair | Boot up ECR PC | AMCS ER Alarm Group Rights are transferred back to ECR PC |  |
|  |  |
|  |  |
| 11 | Generate alarm | Remove test-wire from a PLC | Relevant alarm is indicated in top right corner of  every screen (for Stations that are allowed to see the alarm) |  |
|  |  |
|  |  |
| 12 | Acknowledge alarm on Bridge PC | Double click on the alarm line or click on the silence button | Acknowledging is not possible |  |
|  |  |
| 13 | Acknowledge alarm on ECR PC | Double click on the alarm line or click on the silence button | Alarm is acknowledged and sound stops, alarm is  still visible in list |  |
|  |  |
|  |  |
| 14 | Rectify alarm | Restore removed test-wire | Alarm is automatically removed from list |  |
|  |  |

# AMCS: General Engineers Alarm

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | |  |  |
| **Pre-condition: system running with no unacknowledged alarms** | | |  |  |
|  |  |  |  |  |
| **Step** | **Description** | **Required Steps** | *Expected result* | *Remarks* |
|  |  |  |  |  |
| 1 | Generate alarm | Remove test-wire from a PLC | Relevant alarm is indicated in top right corner of  every screen (for Stations that are allowed to see the alarm) |  |
|  |  |
|  |  |
|  | Alarm is generated | verify the output to buzzers and lights where applicable | Alarm output enabled |  |
|  |  |
| 2 | Check Alarm Page for  consistency | On all AMCS screens (where alarm is allowed to show):  Open the alarm page | The alarm page shows all unacknowledged (new)  alarms as blinking and on top of the list |  |
|  |  |
|  |  |
| 3 | Don’t acknowledge the alarm | Do nothing | After 5 minutes a General Engineers Alarm is  generated |  |
|  |  |
|  |  |
| 5 | Alarm is generated | verify the output to buzzers and lights where applicable and extra to the horn. | Alarm output enabled |  |
|  |  |
| 6 | Acknowledge the test-wire alarm  on the Bridge PC | Double click on the alarm line or click on the silence button | Acknowledging is not possible  Silencing also not possible |  |
|  |  |
|  |  |
| 7 | Acknowledge test-wire alarm on  the Messroom Duty Alarm Panel | Double click on the alarm line or click on the silence button | Acknowledging is not possible  Silencing also not possible |  |
|  |  |
|  |  |
| 8 | Acknowledge the test-wire alarm  on the ECR PC | Double click on the alarm line or click on the silence button | Test Alarm & Gen.Eng.Alarm are both acknowledged  and sound stops, test alarm is still active in list |  |
|  |  |
|  |  |
| 9 | Rectify the test-wire alarm | Restore removed test-wire | Alarm is automatically removed from list |  |
|  |  |

# AMCS: Network Alarms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | |  |  |
| **Pre-condition: system running with no unacknowledged alarms** | | |  |  |
|  |  |  |  |  |
| ***Step*** | **Description** | **Required Steps** | *Expected result* | *Remarks* |
|  |  |  |  |  |
| 1 | Generate network alarm | Disconnect any network cable(s) and wait > 15 seconds | All alarms are shown on the appropriate stations; newest alarm is on top ofthe alarm list |  |
|  |  |
|  |  |
| 2 | Check Alarm Page for  consistency | On all AMCS screens (where alarm is allowed to show):  Open the alarm page | The alarm page shows all unacknowledged (new)  alarms as blinking and on top of the list |  |
|  |  |
|  |  |
| 3 | Acknowledge network  alarm(s) on the ECR PC | Double click on the alarm line or click on the silence button | Alarm is acknowledged and sound stops, alarm is  still active in list |  |
|  |  |
|  |  |
| 4 | Rectify alarm | Reconnect the disconnected network cable(s) | Network alarm is automatically removed from list |  |
|  |  |

# AMCS: Serial Alarm

At this moment it is not possible to test the serial connections during FAT AMCS. To be tested during HAT AMCS.

# AMCS: Redundant Power Supply Alarm

**Pre-condition: system running with no unacknowledged alarms**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | | **Required Steps** | *Expected result* | *Remarks* |
|  |  |  |  |  |  |
| 1 | Activate the Bridge AMCS Cabinet  Redundant Power Supply Alarm | | Switch off 24Vdc supply to the  Bridge AMCS Cabinet | Relevant alarm is indicated in top right corner of  every screen (for Stations that are allowed to see the alarm) |  |
|  |  |
|  |  |
| 2 | Acknowledge and rectify the Power  Supply Alarm | | Switch on 24Vdc supply to Bridge AMCS Cabinet. Double click on the alarm line or click on the silence button | The Redundant Power Supply Alarm is removed  from the Alarm List. |  |
|  |  |
|  |  |
|  |  |
| 3 | Activate the ECR AMCS Cabinet  Redundant Power Supply Alarm | | Switch off 230Vac supply to the  ECR AMCS Cabinet | Relevant alarm is indicated in topright corner of  every screen & Alarm Output enabled |  |
|  |  |
|  |  |
| 4 | Acknowledge and rectify the Power  Supply Alarm | | Double click on the alarm line in the  Alarm List & Switch on 230Vac  supply to ECR AMCS Cabinet | The Redundant Power Supply Alarm is removed  from the Alarm List |  |
|  |  |
|  |  |
|  |  |
| 5 | Repeat step 1, … 4 for following  cabinets:   * LPU 01 * LPU 02 (ECR Cabinet) * LPU 03 * LPU 04 | | Same as step 1, … 4 | Same as step 1, … 4 |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# Deadman: Engine Room Attended/Unattended

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Pre-condition: system running with no unacknowledged alarms** | | | |  |  |
|  |  |  | |  |  |
| **Step** | **Description** | **Required Steps** | | *Expected result* | *Remarks* |
|  |  |  | |  |  |
| 1 | Select Engine Room  Unattended | Make sure a Duty officer is selected.  Than press “Unattended” on the Engine Room Watch Entrance 3 Button Panel or on the ECR PC | | Engine Room is set to “Unattended”. This will be shown on all screens with ER duty rights.  On the ER Watch Entrance 3 Button Panel  the Attended button (blue) is off. |  |
|  |  |
|  |  |
|  |  |
| 2 | Generate alarm | Remove test-wire from a PLC | | Relevant alarm is indicated in top right corner of  every screen (for Stations that are allowed to see the alarm) |  |
| 3 | Silence Alarm  on Bridge Panel | Push Silence button on the Basic Alarm 3 Button Panel or on the PC in the Wheelhouse | | AMCS alarm will be silenced (Bridge  buzzer off). Alarm can’t be acknowledged |  |
|  |  |
|  |  |
| 4 | Silence Alarm on  DAP’s | Push Silence buttons on both DAP’s | | AMCS alarm will be silenced (DAP buzzer  off, 2x). Alarm can’t be acknowledged |  |
|  |  |
|  |  |
| 5 | Silence Alarm in the  Engine Room | Push Silence button on the Basic Alarm 3 Button Panel in the ECR | Buzzer on all AMCS PC’s & DAP’s are off.  No changes for AMCS Alarm visual indications.  AMCS “Unattended” state changes to “Attended” | |  |
|  |
|  |
| 6 | Acknowledge alarm and  restore fault | Acknowledge alarm on the ECR PC (alarm page) | Alarm is acknowledged.  Alarm is removed from all alarm pages.  AMCS “Unattended” state changes to “Attended” | |  |
|  |
|  |
|  |
| 7 | Select Engine Room  Attended | Push “Unattended” and then “Attended” on the Engine Room Watch Entrance 3 Button Panel  or on ECR PC (alarm page) | Engine Room is set to “Attended” This will be shown on all screens with ER duty rights  On the ER Watch Entrance 3 Button Panel the  Attended button (blue) is on | |  |
|  |
|  |
|  |

# Deadman: Engine Room Attended Timer (Deadman Timer)

**Pre-condition: system running with no unacknowledged alarms**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step** | **Description** | **Required Steps** | *Expected result* | *Remarks* |
|  |  |  |  |  |
| 1 | Select Engine Room  Attended | Push “Attended” on the Engine Room Watch  Entrance 3 Button Panel | Engine Room is set to “Attended” This will be shown on all screens with ER duty rights  On the ER Watch Entrance 3 Button Panel the Attended button (blue) is on |  |
|  |  |
|  |  |
|  |  |
| 2 | Start the Engine Room  Attended Timer | Activate timer on the alarm page (password) | Menu appears for password. |  |
|  |  |
|  |  |
| 3 | Enter password | Enter “1234” | The Engineers Deadman Timer starts running |  |
|  |  |
| 4 | Engine Room Attended  Timer reset | Push timer reset button on:   * ER Watch Entrance 3 Button Panel * or on ECR PC alarm page * or push an ER timer reset button (4x) | The Engineers Deadman Timer is set to the default time and starts counting down from there. |  |
|  |  |
|  |  |
|  |  |
|  |  |
| 5 | Select Engine Room  Unattended | Push “Attended” on the ER Watch Entrance  3 Button Panel or on the ECR PC (alarm page) | The Engineers Deadman Timer is set to the default time and stopped |  |
|  |  |
|  |  |
| 6 | Select Engine Room  Attended | Push “Attended” on the ER Watch Entrance  3 Button Panel or on the ECR PC (alarm page) | The Engineers Deadman Timer starts running |  |
|  |  |
|  |  |
| 7 | Run for 27 min | Wait 27 min | Alarm displayed on all AMCS screens in public spaces and with ER Duty and |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (... min FAT) | (...min FAT) | buzzers sound |  |
|  |  |
| 8 | Wait extra 3 min  (… min FAT) |  | General Engineers Alarm will sound and  appears on all AMCS screens. |  |
|  |  |
|  |  |
| 9 | Accept alarm |  | Can only be acknowledged on the ECR PC.  All AMCS stations go silent.  The Engineers Deadman Timer is set to the default time and starts counting down from there. |  |
|  |  |
|  |  |
|  |  |
|  |  |

# BNWAS Bridge Navigational Watch Alarm System

**Pre-condition: system running with no unacknowledged alarms**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Required Steps** | **Expected result** |  | **Remarks** |
| 1 | Activate BNWAS timer | Activate timer on the alarm screen on the main Bridge DAP or on the Bridge AMCS PC (Password is .....) | BNWAS Timer is running | |  |
|  |  |
|  |  |
| 2 | Timer reset | Move mouse pointer over screen in a a long swipe movement or acknowledge on AMCS bridge screen or push BNWAS timer reset button | Timer is set to the default time and starts counting down from there. | |  |
|  |  |
|  |  |
|  |  |
| 3 | Timer over 12 min  (… min FAT) |  | * Stage 0 *(0 sec)*: Deadman warning alarm   Only visual indication on the bridge station   * Stage 1 *(15 sec)*: After 15 sec buzzer will sound (on bridge) * Stage 2 *(30 sec)*: 15 sec After visual and audible alarms goes off in back-up officer and/or master’s location * Stage 3 *(120 sec)*: 90 sec after visual and audible alarms will be shown in crew member areas and public spaces * Eventually after 5 minutes in total the general engineers alarm will go off. | |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| 4 | Accept Alarm | Acknowledge on AMCS bridge  screen | Alarm is acknowledged. Timer is set to the default time and starts counting down from there. | |  |
|  |  |
|  |  |
|  |  |

# MIMICS: Mimic Structure and Characteristics

**Pre-condition: system running with no unacknowledged alarms**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Step** | **Description** | **Required Steps** | *Expected result* | | *Remarks* |
|  |  |  |  |  |  |
| 1 | Opening the CMAL 3 Mimic | Open the CMAL 3 Main Mimic and navigate |  | 1- Main Menu |  |
|  | presentations | to the underlying Mimics and back to the |  |  |  |
|  |  | Main Mimic | Doc P1003353-9910-FPT\_01 R1.0 | |  |
|  |  | Test functionality on the Mimic |  |  |  |
| 2 |  |  |  | 2- Generator 1 |  |
|  |  |  | Doc P1003353-9910-FPT\_02 R1.0 | |  |
|  |  |  |  |  |  |
| 3 |  |  |  | 3- Generator 2 |  |
|  |  |  | Doc P1003353-9910-FPT\_03 R1.0 | |  |
|  |  |  |  |  |  |
| 4 |  |  |  | 4- Generator 3 |  |
|  |  |  | Doc P1003353-9910-FPT\_04 R1.0 | |  |
|  |  |  |  |  |  |
| 5 |  |  |  | 5- Emergency/Harbour Generator |  |
|  |  |  | Doc P1003353-9910-FPT\_05 R1.0 | |  |
|  |  |  |  |  |  |

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| 6 |  |  |  | 6- Power Generation |  |
|  |  |  | Doc P1003353-9910-FPT\_06 R1.0 | |  |
|  |  |  |  |  |  |
| 7 |  |  |  | 7- Power Distribution 400V/230V |  |
|  |  |  | Doc P1003353-9910-FPT\_07 R1.0 | |  |
|  |  |  |  |  |  |
| 8 |  |  |  | 8- Battery Banks Forward/Aft |  |
|  |  |  | Doc P1003353-9910-FPT\_08 R2.0 | |  |
|  |  |  |  |  |  |
| 9 |  |  |  | 9- Propulsion Forward |  |
|  |  |  | Doc P1003353-9910-FPT\_09 R1.0 | |  |
|  |  |  |  |  |  |
| 10 |  |  |  | 10- Propulsion Aft |  |
|  |  |  | Doc P1003353-9910-FPT\_10 R1.0 | |  |
|  |  |  |  |  |  |
| 11 |  |  |  | 11- Bilge & Fire |  |
|  |  |  | Doc P1003353-9910-FPT\_11 R1.0 | |  |
|  |  |  |  |  |  |
| 12 |  |  |  | 12- Fuel System |  |
|  |  |  | Doc P1003353-9910-FPT\_12 R1.0 | |  |
|  |  |  |  |  |  |

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| 13 |  |  |  | 13- Cooling |  |
|  |  |  | Doc P1003353-9910-FPT\_13 R2.0 | |  |
|  |  |  |  |  |  |
| 14 |  |  |  | 14- Ventilation |  |
|  |  |  | Doc P1003353-9910-FPT\_14 R1.0 | |  |
|  |  |  |  |  |  |
| 15 |  |  |  | 15- Tanks |  |
|  |  |  | Doc P1003353-9910-FPT\_15 R1.0 | |  |
|  |  |  |  |  |  |
| 16 |  |  |  | 16- Hour Counters |  |
|  |  |  | Doc P1003353-9910-FPT\_16 R2.0 | |  |
|  |  |  |  |  |  |
| 17 |  |  |  | 17- Pumps |  |
|  |  |  | Doc P1003353-9910-FPT\_17 R2.0 | |  |
|  |  |  |  |  |  |
| 18 |  |  |  | 18- Energy Management System |  |
|  |  |  | Doc P1003353-9910-FPT\_18 R2.0 | |  |
|  |  |  |  | |  |
| 19 |  |  |  19- Bridge Alarm & Indicating Monitor | |  |
|  |  |  | Doc P1003353-9910-FPT\_19 R1.0 | |  |
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2

# List of Outstanding Items / Remarks

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Description** | **Action** | **Solved** |  | **Checked** |  |
| . |  |  | **Date** | **By** | **Date** | **By** |
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# Approval Report

**STATEMENT OF ACCEPTANCE\***

SHOP TEST FINAL ACCEPTANCE PROTOCOL NO.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **SUBJECT: Hybrid RO-RO Passenger** | | |  | PROJECT NO.: 1003353 | |  |  |
|  | **Ferry** | |  |  | GROUP NO. : | |  |  |
|  |  |  |  |  | ORDER NO. : | |  |  |
|  | Hull number: 727 |  |  |  |  |  |  |  |
|  |  |  | ITEM | : AMCS |  |  |
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|  |  |  |  |  | DATE | : |  |  |
|  |  | |  |  |  |  |  |  |
|  | **JOB IDENTIFICATION:** | |  |  |  |  |  |  |
|  | PURCHASER |  | JOB NO. |  |  | ITEM NO. |  |  |
|  | INSPECTION / SURVEY | | JOB NO. |  |  | ITEM NO. |  |  |
|  | OFFICE |  |  |  |  |  |  |  |
|  | |  |  |  | |  |  |  |
| **Agreed by** | |  |  | **Agreed by** | |  |  |  |
| **Imtech Marine Netherlands B.V.** | | | | **Ferguson Marine** | | |  |  |
| Name | | : |  | Name | | : |  |  |
| Function | | : |  | Function | | : |  |  |
| Date | | : |  | Date | | : |  |  |
| Signature | | : |  | Signature | | : |  |  |
|  | |  |  |  | |  |  |  |
| **Agreed by** | |  |  | **Agreed by** | |  |  |  |
| **Lloyds Register** | |  |  | **Caledonian Maritime Assets Limited** | | |  |  |
| Name | | : |  | Name | | : |  |  |
| Function | | : |  | Function | | : |  |  |
| Date | | : |  | Date | | : |  |  |
| Signature | | : |  | Signature | | : |  |  |

**\*This acceptance includes the version of the software, the hardware as tested and the mimics as shown during the procedure and as described in this protocol, as well as all functionality and automatic control sequences if present.**