
SERVICE BULLETIN

N° **139-764**

OPTIONAL

DATE: August 4, 2023

REV. : /

TITLE

ATA 99 – MILDS SENSOR SOFTWARE UPGRADE

REVISION LOG

First Issue

An appropriate entry should be made in the aircraft log book upon accomplishment.
If ownership of aircraft has changed, please, forward to new owner.

1. PLANNING INFORMATION

A. EFFECTIVITY

AW139 S/N 31900.

B. COMPLIANCE

At Customer's option.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

Following a customer request, LHD developed this Service Bulletin to allow the upgrade of the MILDS Sensor software. N.4 sensors are installed on the helicopter and the upgrade does not require hardware modification. After software upgrade, MILS sensors P/N will be change.

LH issued this SB for the following reason:

Helicopter Reliability/Maintainability	
Product Improvement	✓
Obsolescence	
Customization	
Product/Capability Enhancement	

E. DESCRIPTION

This Service Bulletin is issued in order to provide the necessary instructions to update MILDS Sensor software.

F. APPROVAL

If an aircraft listed in the effectivity embodies a modification or repair not LHD certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.

G. MANPOWER

To comply with this Service Bulletin, 8 (eight) MMH are deemed necessary.

MMH are based on hands-on time and can change with helicopter configuration, personnel and facilities available. MMH are not comprehensive of the overall hours necessary to get access to work areas and to remove all the equipment that interferes with the application of the prescribed instructions.

H. WEIGHT AND BALANCE

N.A.

I. REFERENCES

I.1 PUBLICATIONS

Following Data Modules refer to AMP:

<u>DATA MODULE</u>	<u>DESCRIPTION</u>	<u>PART</u>
DM01 39-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance.	-
DM02 39-A-99-40-04-00A-520A-A	Master sensor head unit - Remove procedure	-
DM03 39-A-99-40-05-00A-520A-A	Number 1 sensor head unit - Remove procedure	-
DM04 39-A-99-40-06-00A-520A-A	Number 2 sensor head unit - Remove procedure	-
DM05 39-A-99-40-07-00A-520A-A	Number 3 sensor head unit - Remove procedure	-
DM06 39-A-99-40-04-00A-720A-A	Master sensor head unit - Install procedure	-
DM07 39-A-99-40-05-00A-720A-A	Number 1 sensor head unit - Install procedure	-
DM08 39-A-99-40-06-00A-720A-A	Number 2 sensor head unit - Install procedure	-
DM09 39-A-99-40-07-00A-720A-A	Number 3 sensor head unit - Install procedure	-

I.2 ACRONYMS & ABBREVIATIONS

AMDI	Aircraft Material Data Information
AMP	Aircraft Maintenance Publication
AR	As Required
DM	Data Module
LH	Left Hand
LHD	Leonardo Helicopters Division
MMH	Maintenance Man Hours
N.A.	Not Applicable
P/N	Part Number
SB	Service Bulletin

S/N Serial Number

I.3 ANNEX

Annex A Hensoldt Service Bulletin 50.2817.946.00 ERD SB1 01 (Project MILDS AN/AAR-60 IT3/IT11)

Annex B AW139 Enhanced SIAP Acceptance Test Procedure

J. PUBLICATIONS AFFECTED

39-A-S008-00-X Part 3 - Aircraft Maintenance Publication (AMP)

39-A-S008-00-X Part 6 - Illustrated Parts Data (IPD)

K. SOFTWARE ACCOMPLISHMENT SUMMARY

Refer to Annex A and B for the software required to comply with this Service Bulletin.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

A.1 PARTS

Refer to IPD for the spares materials required to comply with the AMP DMs referenced in the accomplishment instructions.

Refer also to Annex A and B for the spares materials required to comply with this Service Bulletin.

A.2 CONSUMABLES

Refer to AMDI for the consumable materials required to comply with the AMP DM referenced in the accomplishment instructions.

Refer also to Annex A and B for the consumable materials required to comply with this Service Bulletin.

A.3 LOGISTIC MATRIX

N.A.

B. SPECIAL TOOLS

Refer to ITEP for the special tools required to comply with the AMP DM referenced in the accomplishment instructions.

Refer also to Annex A and B for the special tools required to comply with this Service Bulletin.

C. INDUSTRY SUPPORT INFORMATION

N.A.

3. ACCOMPLISHMENT INSTRUCTIONS

GENERAL NOTES

a) Place an identification tag on all components that are re-usable, including the attaching hardware that has been removed to gain access to the modification area and adequately protect them until their later re-use.

1. In accordance with AMP DM 39-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
2. In accordance with Annex B, perform following steps of SIAP ATP to verify the integrity of SIAP system:
 - 4.10 LIBRARY LOAD AND VERIFICATION (only following steps);
 - Steps from 1 to 4;
 - With the libraries in an USB pen, steps from 15 to 20;
 - Steps from 21 to 24.
 - 4.11 AUDIO LEVEL (all steps);
 - 4.13 MILDS FUNCTIONAL TEST PROCEDURE (only if installed) (only following steps);
 - Steps from 1 to 4;
 - Steps from 6 to 13.
3. In accordance with AMP DM 39-A-99-40-04-00A-520A-A, remove MILDS Master sensor head unit from the helicopter.
4. In accordance with AMP DM 39-A-99-40-05-00A-520A-A, remove MILDS Number 1 sensor head unit from the helicopter.
5. In accordance with AMP DM 39-A-99-40-06-00A-520A-A, remove MILDS Number 2 sensor head unit from the helicopter.
6. In accordance with AMP DM 39-A-99-40-07-00A-520A-A, remove MILDS Number 3 sensor head unit from the helicopter.
7. In accordance with Annex A, upgrade MILDS Sensor software.
8. In accordance with AMP DM 39-A-99-40-04-00A-720A-A, install MILDS Master sensor head unit on the helicopter.
9. In accordance with AMP DM 39-A-99-40-05-00A-720A-A, install MILDS Number 1 sensor head unit on the helicopter.
10. In accordance with AMP DM 39-A-99-40-06-00A-720A-A, install MILDS Number 2 sensor

- head unit on the helicopter.
11. In accordance with AMP DM 39-A-99-40-07-00A-720A-A, install MILDS Number 3 sensor head unit on the helicopter.
 12. In accordance with Annex B, perform following steps of SIAP ATP:
 - 4.1 TEST PREREQUISITES;
 - 4.2 TOOLS REQUIRED & TEST SETUP
 - 4.3 CIRCUIT BREAKERS CONFIGURATION;
 - 4.10 LIBRARY LOAD AND VERIFICATION;
 - 4.13 MILDS FUNCTIONAL TEST PROCEDURE (only if installed).
 13. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.
 14. Gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

As an alternative, send the attached compliance form to the following mail box:

engineering.support.lhd@leonardo.com

and (for North, Central and South America) also to:

AWPC.Engineering.Support@leonardocompany.us

ANNEX A

**HENSOLDT SERVICE BULLETIN 50.2817.946.00 ERD SB1 01
(PROJECT MILDS AN/AAR-60 IT3/IT11)**

Service Bulletin (SB)

Unclassified

Project: **MILDS AN/AAR-60 IT3/IT11**Title: **Service Bulletin (SB)**Doc. ID: **50.2817.946.00 ERD SB1 01**

Prepared by:

HENSOLDT Sensors GmbH

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Authorised: by HDO	Dr. Jürgen Bestle	HS	 Bestle 2023.07.21 17:35:52 +02'00'	

Service Bulletin (SB)

Unclassified



Urgency: mandatory with immediate measure (Alert Service Bulletin)
 mandatory recommended optional

To: *Colombian Air Force and Leonardo Helicopters operating MILDS P/N 50.2817.946.00 on AW-139*

Subject: *MILDS SW Upgrade SW 3.3.1 (IT3) to SW 5.1.1 (IT11)*

Overview: *The customer requestes an upgrade of the existing MILDS SW 3.3.1 to SW 5.1.1 which provides improved performance.*

Purpose: *The improvement is expected to increase the performance of the MILDS Sensor System, especially to reduce the false alarm rate.*

Immediate Measure: *not applicable*

Measure: *Implementation of a new version 5.1.1 of the software.*

Proceeding: *HENSOLDT Sensors GmbH will coordinate together with Colombian Air Force and Leonardo Helicopters an upgrade of the SW by an HENSOLDT engineer in Bogota. The upgrade will be performed according to Change Procedure / Record BES-MLD-200001-82 (attached).*

Equipment/System Part Number: Before upgrade 50.2817.946.00, after upgrade 50.2817.987.00

Expenditure of time: *1 hours/equipment w/o removal and reinstallation of the MILDS Sensors in the H/C*

Service Bulletin (SB)

Unclassified



- Recommendation: *In general, HENSOLDT recommends the SW upgrade.*
- Reference: *CoC for P/N 50.2817.946.00 for S/N 6157, S/N 6158, S/N 6161, S/N 6165 (attached)*
- Restriction: *none*
- Attachments: *CoC P/N 50.2817.946.00 for S/N 6157, S/N 6158, S/N 6161, S/N 6165
Change Procedure / Record BES-MLD-200001-82 (latest released version)*



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Project: MILDS® AN/AAR-60

Title: Change Procedure / Report Template IT3 -> IT11


Doc. ID: BES-MLD-200001-82

Issued by:
HENSOLDT Sensors GmbH
 Willy-Messerschmitt-Strasse 3
 82024 Taufkirchen
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Title: Change Procedure / Report Template IT3 -> IT11						
CAGE Code:	Date:	Document No.:	Type:	TID:	Version:	Page:
C0426	20.06.2023	BES-MLD-200001-82	EDO	000	01	1 / 1

Filename: BES-MLD-200001-82_01_Coverpage.docx

		Change Procedure/Report		Sheet 1 of 2
		MILDS Software Upgrade IT3 (V3.3.1) to IT11 (V5.1.1)		Serial Number _____
Old Sensor Part Number	50.2817.946.00	New Sensor Part Number	50.2817.987.00	Date of change _____
Change Procedure			Performed/ Result	
In case of any problems occurring during this change procedure, make a detailed note of the failure observed and contact HENSOLDT for support.				
0. Status check of the Upgrade Setup				
Ensure that the Upgrade Setup is according to the description in paragraph 2 of document 50.2817.160.00 MAN 'User Manual, MILDS Reconfiguration Tool (MIRCON)' with: <ul style="list-style-type: none"> • SW MILDS Reconfiguration Tool MIRCON V1.2 (or newer). • A subfolder '50_2817_164_08_database' in the executable directory of the MIRCON SW. 			MIRCON SW P/N 50.2817.161.02 Actual version: _____	
1. Status check of the MILDS Sensor				
Verify the Part Number on the nameplate of the MILDS sensor head to be 50.2817.946.00.			<input type="checkbox"/> PN is 50.2817.946.00	
Record the serial number of the sensor head and the date of change in the header of this document.			<input type="checkbox"/>	
Record the Date of Manufacturing.			Date of Manufacturing: ____/____/____	
2. Change Procedure				
<ul style="list-style-type: none"> • Power the MILDS sensor head. • Wait at least 20 seconds. • If the MIRCON SW is not already running, start it. Otherwise press the NEXT button. • Press the 'START' button on the 'Connect Sensor' panel. • Wait until the communication to the MILDS sensor head is set up successfully. • Verify that the PBIT Function Test before Reconfiguration reports GO. • In case of a humidity warning message box, press the 'OK' button. • Verify that the indicated SerialNr matches the serial number recorded above. 			<input type="checkbox"/>	
Optionally if a Baringa UV gun is available, check alarm reporting capability by: <ul style="list-style-type: none"> • pressing the 'START Test' button on the 'Alarm Test' panel. • Trigger the Baringa. Otherwise if no Baringa is available, press the 'SKIP Test' button on the 'Alarm Test' panel.			Baringa was used <input type="checkbox"/> ALARM Test successful <input type="checkbox"/> ALARM Test failed <input type="checkbox"/> no Baringa available	
<ul style="list-style-type: none"> • In the 'Options for MILDS Reconfiguration' selection field, select the entry with SW 5.1.1 and CFG 87.15. • Press the 'START Update' button. • Wait until the 'MILDS Label Information' panel appears (this may take up to 10 minutes). • Check whether the information on this panel correspond to the provided new MILDS sensor label which shall be attached after the successful update. • Press the OK button. 			<input type="checkbox"/>	
<ul style="list-style-type: none"> • Verify that the information on the connected MILDS sensor head displayed on the MIRCON main panel is: SW Version 5.1.1 CFG Version 87.15 • Verify that the PBIT Function Test after Reconfiguration reports GO. 			<input type="checkbox"/>	

Filename: BES-MLD-200001-82_01_template.doc; Template: BES-MLD-200001-82 Issue 01

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	Change Procedure/Report		Sheet 2 of 2
	MILDS Software Upgrade IT3 (V3.3.1) to IT11 (V5.1.1)		Serial Number _____
	Old Sensor Part Number 50.2817.946.00	New Sensor Part Number 50.2817.987.00	Date of change _____
Change Procedure		Performed/Result	
<ul style="list-style-type: none"> In case of a humidity warning message box, press the 'OK' button. Make a tick in the result column for the respective Humidity state. 		<input type="checkbox"/> HUMIDITY OK (no message box) <input type="checkbox"/> HUMIDITY WARNING	
Optionally if a Baringa UV gun is available, check alarm reporting capability by: <ul style="list-style-type: none"> pressing the 'START Test' button on the 'Alarm Test' panel. Trigger the Baringa. Otherwise if no Baringa is available, press the 'SKIP Test' button on the 'Alarm Test' panel.		Baringa was used <input type="checkbox"/> ALARM Test successful <input type="checkbox"/> ALARM Test failed <input type="checkbox"/> no Baringa available	
Press the EXIT button on the MIRCON Tool if no more other sensors have to be updated.			
3. Final activities			
<ul style="list-style-type: none"> Disconnect the sensor head. Remove the old label(s). Attach the new label (with P/N 50.2817.987.00) with the correct serial number as recorded above. Indicate date of manufacturing (recorded in step 1 above), together with the change date for the SW-Mod in brackets on the label (see example). <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> DATE OF MANUFAC-TURING 12 / 04 (mod 10/2009) </div> <ul style="list-style-type: none"> Attach a new protective plastic film on the new label. 		<input type="checkbox"/>	
If the log sheet was provided together with the sensor head, record the upgrade in the log sheet.		<input type="checkbox"/>	
Sign the Change Report.		_____ Company/Department _____ Name _____ Signature	
Send or take this signed Change Report or a copy to HENSOLDT to allow HENSOLDT to issue an updated CoC for the MILDS sensor.			

Filename: BES-MLD-200001-82_01_template.doc; Template: BES-MLD-200001-82 Issue 01

ANNEX B

AW139 ENHANCED SIAP ACCEPTANCE TEST PROCEDURE

ACRONYMS

ATP	Acceptance Test Procedure
CB	Circuit Breaker
CPLT	Copilot
DOA	Direction Of Arrival
ECDS	Enhanced Countermeasure Dispensing System
EIU	Expanded Interface Unit
EU	Electronic Unit
EW	Electronic Warfare
EWCP	Electronic Warfare Control Panel
EWP/CDU	Electronic Warfare Processor / Control & Display Unit
GND	Ground
ICS	Inter Communication System
LRU	Line Replaceable Unit
MAU	Modular Avionic Unit
MCDU	Multifunction Control Display Unit
MILDS	Missile Launch Detection System
MMI	Man Machine Interface
NAV	Navigation
OHU	Optical Head Unit
PLT	Pilot
SDU	Sequencer & Dispenser Unit
SIAP	Sistema di AutoProtezione
SSU	Safety Switch Unit
USB	Universal Serial Bus
WOW	Weight On Wheel

1 SCOPE

This document defines the Acceptance Test Procedure for the kit SIAP (*Sistema Integrato di AutoProtezione*) standalone version P/N 4G9900F00511.

The ATP consists of tests to verify the integrity of the wirings and the proper functionality of the electrical interfaces of the kit.

The Test Procedure have been compiled on the basis of the interface requirements of each subsystem and on the basis of the assumption that the tests are performed by people having general knowledge of the installed SIAP, the AW139 Primus EPIC™, the test equipment and the AW139 helicopter.

2 RELATED DOCUMENTS

2.1 APPLICABLE DOCUMENTS

- [1] 139G9960E002 System Specification for Enhanced SIAP Stand Alone Version;
- [2] MULG9900I001 SIAP - ICD for Stand Alone Version;
- [3] 3G9930W00211 Wiring Diagrams ECDS (SIAP);
- [4] 3G9960W00211 Wiring Diagrams EWP/CDU (SIAP);
- [5] 3G2420W00411 Wiring Diagram ECDS INVERTER;
- [6] 139G9960E004 MMI Specification for Enhanced SIAP Stand Alone Version;
- [7] 3G9350W02711 Wiring Diagrams MILDS (SIAP);
- [8] 3G2460W07811 Wiring Diagrams SIAP POWER;
- [9] 3G9960W00411 Wiring Diagram SIAP CONFIGURATION VAR;
- [10] 3G2420W00811 Wiring Diagram ECDS INVERTER VARIANT

2.2 REFERENCE DOCUMENTS

- [1] USER MANUAL MISSIM SIMULATOR, BAW-4004615
- [2] MANUALE DI USO DEL TEST SET FLIGHT LINE M-008/D, M-008
- [3] Specifica Tecnica per Enhanced Countermeasure Dispensing System Type – 2, ST-ECDS/1 Rev. 7;

3 SYSTEM OVERVIEW

The SIAP (Sistema Integrato di Autoprotezione) is a fully Integrated Self Protection System designed to detect and identify weapon systems whose activities constitutes a menace to the helicopter.

The SIAP installed on the AW139 is a standalone version, which means that it is not integrated with the Primus Epic MCDU, but a dedicated EWP/CDU panel is provided. The only interconnection with the PRIMUS EPIC avionics suite consists of an ARINC 429 link through which the SIAP is provided by the following NAV data:

- Latitude and Longitude
- Ground Speed
- Altitude
- IAS
- Attitude (Pitch, Roll)
- Date and Time

The SIAP provides EW situational awareness and effective alarm indications in case active threats are detected. The system is able to deploy specific countermeasures against EW threats, either automatically or under pilot's control (manual dispensing).

The SIAP allows also recording the available information about the weapon system activities detected during the mission (event recording) and the path that has been flown by the helicopter. The data are stored permanently in organized data structure in the EWP/CDU for post mission analysis.

In details, the SIAP electronic warfare system is capable of:

- detecting and identifying weapon system activities against the helicopter;
- providing EW situation awareness to the aircrew;
- providing means to deploy passive countermeasure against EW threats, either automatically or under aircrew control;
- providing means to record in organized data structure the available information on the weapon system activities detected during the mission, including related platform/environment data (e.g. countermeasures, helicopter position etc).

3.1 SIAP BASIC CONFIGURATION

The SIAP basic configuration installed on the AW139 helicopter is composed of the following subsystems:

- EWP/CDU: the central computer in charge of managing the whole system and providing system interface to the pilots.
- TWD: the display in charge of showing the threats to the pilots, including DOA, and the status of the system and decoys.
- EWCP: the control panel that allows the pilots to quickly control the SIAP. The functions made available via this panel are: Power ON/OFF, Operative mode (STBY, LIVE, EMER), Survive, Discharge, Library management (SWAP / ERASE).
- ECDS (EIU, SDU, SSU): the subsystem in charge of firing the countermeasures. The EIU is the main processor, which receives commands from the EWP/CDU and the EWCP; the SSU is the Safety Pin that removes the power to the launchers when inserted; the SDU are the dispensing units that can house both chaff and flare.

3.2 MWR SENSOR.

The SIAP basic configuration described in the previous paragraph is the basic architecture. The basic architecture is fully operative and constitutes a complete standalone system.

In order to improve the detection capabilities of the basic SIAP system, an option exists, which can be added to the basic architecture described in the previous paragraphs. The option is the Missile Warning System (MWR). The MWR is an additional sensor that can be used to detect missile threats. The MWR cannot be installed without the basic SIAP system, which provides the basic architecture for data exchange and the countermeasure release system.

Due to the modularity of the basic SIAP architecture, which is based on the MIL-1553, the MWR can be easily added to the system without introducing changes to the basic system.

The Missile Warning system (MWR) is composed of 4 Sensor Head (SH).

3.3 SIAP INSTALLED ARCHITECTURE.

Figure 1 shows a high level block diagram representing the SIAP installed architecture (basic configuration).

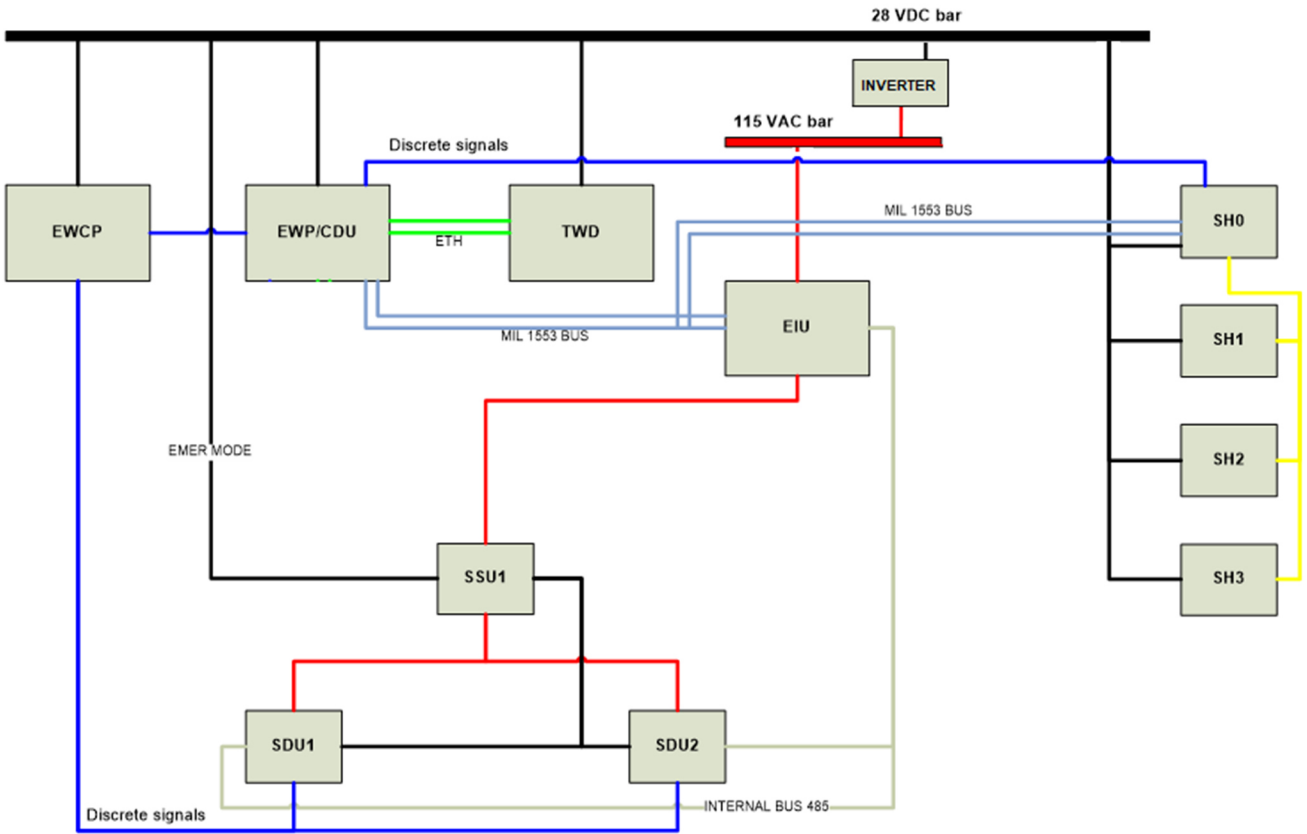


Figure 1 – SIAP architecture

3.4 SYSTEM COMPONENTS

The SIAP installed architecture is composed of the following equipment/subsystems:

ITEM	REF. DES.	QUANTITY
EWCP	PL138	1
EWP/CDU	PL139	1
Enhanced TWD	DS195	1
ECDS SDU	A415 – A414	2
Magazine 1”X1” Flare	N.A (inside A415 – A414)	2
EDS SSU	A412	1
ECDS EIU	A413	1
Cyclic Grip	A58 – A59	2
Safety Pin	N.A.	1
Inverter	PS75	1
MILDS AN/AAR-60	A416 – A417 – A418 – A419	4

4 TEST PROCEDURE

4.1 TEST PREREQUISITES

<p>1. Check that all the SIAP basic configuration REF. DES., inverter and grips are correctly installed, as per wiring diagrams and installation drawings. Fill table on the left.</p> <table border="1" data-bbox="201 465 1152 1160"> <thead> <tr> <th>ITEM</th> <th>REF. DES.</th> <th>QTY</th> <th>CHECK</th> </tr> </thead> <tbody> <tr> <td>EWCP</td> <td>PL138</td> <td>1</td> <td><input type="checkbox"/></td> </tr> <tr> <td>EWP/CDU</td> <td>PL139</td> <td>1</td> <td><input type="checkbox"/></td> </tr> <tr> <td>TWD</td> <td>DS195</td> <td>1</td> <td><input type="checkbox"/></td> </tr> <tr> <td>SDU</td> <td>A414 – A415</td> <td>2</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Magazine 1"x1" Flare</td> <td>N.A. (inside A414 – A415)</td> <td>2</td> <td><input type="checkbox"/></td> </tr> <tr> <td>SSU</td> <td>A412</td> <td>1</td> <td><input type="checkbox"/></td> </tr> <tr> <td>EIU</td> <td>A413</td> <td>1</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Cyclic Grip</td> <td>A58 – A59</td> <td>2</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Safety Pin</td> <td>N.A.</td> <td>1</td> <td><input type="checkbox"/></td> </tr> <tr> <td>INVERTER</td> <td>PS75</td> <td>1</td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	ITEM	REF. DES.	QTY	CHECK	EWCP	PL138	1	<input type="checkbox"/>	EWP/CDU	PL139	1	<input type="checkbox"/>	TWD	DS195	1	<input type="checkbox"/>	SDU	A414 – A415	2	<input type="checkbox"/>	Magazine 1"x1" Flare	N.A. (inside A414 – A415)	2	<input type="checkbox"/>	SSU	A412	1	<input type="checkbox"/>	EIU	A413	1	<input type="checkbox"/>	Cyclic Grip	A58 – A59	2	<input type="checkbox"/>	Safety Pin	N.A.	1	<input type="checkbox"/>	INVERTER	PS75	1	<input type="checkbox"/>	<input type="checkbox"/>
ITEM	REF. DES.	QTY	CHECK																																										
EWCP	PL138	1	<input type="checkbox"/>																																										
EWP/CDU	PL139	1	<input type="checkbox"/>																																										
TWD	DS195	1	<input type="checkbox"/>																																										
SDU	A414 – A415	2	<input type="checkbox"/>																																										
Magazine 1"x1" Flare	N.A. (inside A414 – A415)	2	<input type="checkbox"/>																																										
SSU	A412	1	<input type="checkbox"/>																																										
EIU	A413	1	<input type="checkbox"/>																																										
Cyclic Grip	A58 – A59	2	<input type="checkbox"/>																																										
Safety Pin	N.A.	1	<input type="checkbox"/>																																										
INVERTER	PS75	1	<input type="checkbox"/>																																										
<p>2. The SIAP basic configuration wiring harnesses installation must have been checked by DIT-MCO.</p>	<input type="checkbox"/>																																												
<p>3. The SIAP basic configuration wiring harnesses pin to pin must have been performed on the helicopter.</p>	<input type="checkbox"/>																																												
<p>4. If the MWR is installed, the MWR wiring harnesses installation must have been checked by DIT-MCO.</p>	<input type="checkbox"/>																																												
<p>5. If the MWR is installed, the MWR wiring harnesses pin to pin must have been performed on the helicopter</p>	<input type="checkbox"/>																																												
<p>6. Verify no decoy (chaff and/or flare) is loaded into the SDU.</p> <p style="text-align: center;"><u>WARNING</u></p> <p style="text-align: center; color: red;">THE PROCEDURE SHALL BE EXECUTED WITHOUT DECOYS IN THE SDU, BECAUSE THE PROCEDURE SETS THE SDU TO FIRE MODE IN FLIGHT (THROUGH THE WOW SWITCHES).</p>	<input type="checkbox"/>																																												

4.2 TOOLS REQUIRED & TEST SETUP

1.	DC External Power Bench (28VDC)	<input type="checkbox"/>
2.	Tester, conductor pins and wire extensions for troubleshooting operation (*)	<input type="checkbox"/>
3.	WOW Switches (*)	<input type="checkbox"/>
4.	Jumpers (*)	<input type="checkbox"/>
5.	Headset kit for ICS system	<input type="checkbox"/>
6.	28 VDC generator (*)	<input type="checkbox"/>
7.	USB memory stick. <i>The following SIAP, TWD and AUDIO libraries for testing shall be loaded into the USB:</i> <ul style="list-style-type: none"> ○ COL_TEST_ATP.SLB ○ CE_TWDFQT.STL ○ ANNA.SAU 	<input type="checkbox"/>
8.	Test box FL-AGE, PN M-008/A (*)	<input type="checkbox"/>
9.	MISSIM, PN 1012267-101	<input type="checkbox"/>

(*) Tool not required for MILDS sensor software upgrade.

4.3 CIRCUIT BREAKERS CONFIGURATION

1. Verify that all the Electrical Distribution System Circuit Breakers are pushed in except IGN #1/2 and START #1/2.	<input type="checkbox"/>															
2. Verify that all the avionic Circuit Breakers are pushed in.	<input type="checkbox"/>															
3. Verify the following circuit breakers are OUT: <table border="1" data-bbox="188 497 794 779" style="margin-left: 20px;"> <thead> <tr> <th>CIRCUIT BREAKER</th> <th>REF.DES.</th> <th>CHECK</th> </tr> </thead> <tbody> <tr> <td>EWP/CDU</td> <td>CB413</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>EWCP</td> <td>CB414</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>TWD</td> <td>CB415</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>MILDS (if installed)</td> <td>CB416</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>	CIRCUIT BREAKER	REF.DES.	CHECK	EWP/CDU	CB413	<input type="checkbox"/>	EWCP	CB414	<input type="checkbox"/>	TWD	CB415	<input type="checkbox"/>	MILDS (if installed)	CB416	<input type="checkbox"/>	<input type="checkbox"/>
CIRCUIT BREAKER	REF.DES.	CHECK														
EWP/CDU	CB413	<input type="checkbox"/>														
EWCP	CB414	<input type="checkbox"/>														
TWD	CB415	<input type="checkbox"/>														
MILDS (if installed)	CB416	<input type="checkbox"/>														
4. Verify the following circuit breakers are OUT: <table border="1" data-bbox="188 862 794 1144" style="margin-left: 20px;"> <thead> <tr> <th>CIRCUIT BREAKER</th> <th>REF.DES.</th> <th>CHECK</th> </tr> </thead> <tbody> <tr> <td>SIAP CNTRL</td> <td>CB409</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>SIAP PWR</td> <td>CB410</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>INV ECDS</td> <td>CB411</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>ECDS EMER</td> <td>CB412</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>	CIRCUIT BREAKER	REF.DES.	CHECK	SIAP CNTRL	CB409	<input type="checkbox"/>	SIAP PWR	CB410	<input type="checkbox"/>	INV ECDS	CB411	<input type="checkbox"/>	ECDS EMER	CB412	<input type="checkbox"/>	<input type="checkbox"/>
CIRCUIT BREAKER	REF.DES.	CHECK														
SIAP CNTRL	CB409	<input type="checkbox"/>														
SIAP PWR	CB410	<input type="checkbox"/>														
INV ECDS	CB411	<input type="checkbox"/>														
ECDS EMER	CB412	<input type="checkbox"/>														
5. The helicopter external power port shall be linked to the External Power Bench set to 28V ± 2V DC	<input type="checkbox"/>															

4.4 SIAP BASIC CONFIGURATION BONDING CHECKS

1. Disconnect all the connectors of the SIAP basic configuration LRUs (EIU, SSU, SDUs, EWCP, EWP/CDU, TWD) and inverter.	<input type="checkbox"/>												
2. Measure the bonding of the EIU and write the values in the following table:	<input type="checkbox"/>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">SENSOR HEAD</th> <th style="width: 25%;">EXPECTED VALUE</th> <th style="width: 25%;">MEASURED VALUE</th> </tr> </thead> <tbody> <tr> <td>EIU</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> </tbody> </table>	SENSOR HEAD	EXPECTED VALUE	MEASURED VALUE	EIU	$\leq 10 \text{ m}\Omega$								
SENSOR HEAD	EXPECTED VALUE	MEASURED VALUE											
EIU	$\leq 10 \text{ m}\Omega$												
3. Measure the bonding of the SDU and SSU and write the values in the following table:	<input type="checkbox"/>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">SENSOR HEAD</th> <th style="width: 25%;">EXPECTED VALUE</th> <th style="width: 25%;">MEASURED VALUE</th> </tr> </thead> <tbody> <tr> <td>SDU left</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> <tr> <td>SDU right</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> <tr> <td>SSU</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> </tbody> </table>	SENSOR HEAD	EXPECTED VALUE	MEASURED VALUE	SDU left	$\leq 10 \text{ m}\Omega$		SDU right	$\leq 10 \text{ m}\Omega$		SSU	$\leq 10 \text{ m}\Omega$		
SENSOR HEAD	EXPECTED VALUE	MEASURED VALUE											
SDU left	$\leq 10 \text{ m}\Omega$												
SDU right	$\leq 10 \text{ m}\Omega$												
SSU	$\leq 10 \text{ m}\Omega$												
4. Measure the bonding of the EWCP in the interseat console and verify it is $\leq 10 \text{ m}\Omega$	<input type="checkbox"/>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">UNIT</th> <th style="width: 25%;">EXPECTED VALUE</th> <th style="width: 25%;">MEASURED VALUE</th> </tr> </thead> <tbody> <tr> <td>EWCP</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> </tbody> </table>	UNIT	EXPECTED VALUE	MEASURED VALUE	EWCP	$\leq 10 \text{ m}\Omega$								
UNIT	EXPECTED VALUE	MEASURED VALUE											
EWCP	$\leq 10 \text{ m}\Omega$												
5. Measure the bonding of the EWP/CDU in the interseat console and verify it is $\leq 10 \text{ m}\Omega$	<input type="checkbox"/>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">UNIT</th> <th style="width: 25%;">EXPECTED VALUE</th> <th style="width: 25%;">MEASURED VALUE</th> </tr> </thead> <tbody> <tr> <td>EWP/CDU</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> </tbody> </table>	UNIT	EXPECTED VALUE	MEASURED VALUE	EWP/CDU	$\leq 10 \text{ m}\Omega$								
UNIT	EXPECTED VALUE	MEASURED VALUE											
EWP/CDU	$\leq 10 \text{ m}\Omega$												
6. Measure the bonding of the TWD in the cockpit and verify it is $\leq 2.5 \text{ m}\Omega$	<input type="checkbox"/>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">UNIT</th> <th style="width: 25%;">EXPECTED VALUE</th> <th style="width: 25%;">MEASURED VALUE</th> </tr> </thead> <tbody> <tr> <td>TWD</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> </tbody> </table>	UNIT	EXPECTED VALUE	MEASURED VALUE	TWD	$\leq 10 \text{ m}\Omega$								
UNIT	EXPECTED VALUE	MEASURED VALUE											
TWD	$\leq 10 \text{ m}\Omega$												
7. Measure the bonding of the INVERTER and verify it is $\leq 10 \text{ m}\Omega$	<input type="checkbox"/>												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">UNIT</th> <th style="width: 25%;">EXPECTED VALUE</th> <th style="width: 25%;">MEASURED VALUE</th> </tr> </thead> <tbody> <tr> <td>INVERTER</td> <td style="text-align: center;">$\leq 10 \text{ m}\Omega$</td> <td></td> </tr> </tbody> </table>	UNIT	EXPECTED VALUE	MEASURED VALUE	INVERTER	$\leq 10 \text{ m}\Omega$								
UNIT	EXPECTED VALUE	MEASURED VALUE											
INVERTER	$\leq 10 \text{ m}\Omega$												
8. After completion of the bonding tests, ensure all the SIAP unit connectors are fastened and all the SIAP units are properly installed	<input type="checkbox"/>												

4.5 MWR BONDING CHECKS (only if installed)

1. Measure the bonding of each MILDS sensor head and write the values in the following table:	<input type="checkbox"/>															
<table border="1"> <thead> <tr> <th>SENSOR HEAD</th> <th>EXPECTED VALUE</th> <th>MEASURED VALUE</th> </tr> </thead> <tbody> <tr> <td>UNIT 0 FWD LH</td> <td>$\leq 5 \text{ m}\Omega$</td> <td></td> </tr> <tr> <td>UNIT 1 FWD RH</td> <td>$\leq 5 \text{ m}\Omega$</td> <td></td> </tr> <tr> <td>UNIT 2 AFT RH</td> <td>$\leq 5 \text{ m}\Omega$</td> <td></td> </tr> <tr> <td>UNIT 3 AFT LH</td> <td>$\leq 5 \text{ m}\Omega$</td> <td></td> </tr> </tbody> </table>		SENSOR HEAD	EXPECTED VALUE	MEASURED VALUE	UNIT 0 FWD LH	$\leq 5 \text{ m}\Omega$		UNIT 1 FWD RH	$\leq 5 \text{ m}\Omega$		UNIT 2 AFT RH	$\leq 5 \text{ m}\Omega$		UNIT 3 AFT LH	$\leq 5 \text{ m}\Omega$	
SENSOR HEAD		EXPECTED VALUE	MEASURED VALUE													
UNIT 0 FWD LH		$\leq 5 \text{ m}\Omega$														
UNIT 1 FWD RH		$\leq 5 \text{ m}\Omega$														
UNIT 2 AFT RH	$\leq 5 \text{ m}\Omega$															
UNIT 3 AFT LH	$\leq 5 \text{ m}\Omega$															
2. After completion of the bonding tests, ensure all the MWR unit connectors are fastened	<input type="checkbox"/>															

4.6 EWP/CDU, EWCP, TWD POWER CHECKS

1. With the helicopter power set to OFF, disconnect the following connectors:	<input type="checkbox"/>												
<table border="1"> <tbody> <tr> <td>PL138P1 (EWCP)</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>DS195P1 (TWD)</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>PL139P1 (EWP/CDU)</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>PL139P2 (EWP/CDU)</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>A415P2 (SDU 2 LH)</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>A414P2 (SDU 1 RH)</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>		PL138P1 (EWCP)	<input type="checkbox"/>	DS195P1 (TWD)	<input type="checkbox"/>	PL139P1 (EWP/CDU)	<input type="checkbox"/>	PL139P2 (EWP/CDU)	<input type="checkbox"/>	A415P2 (SDU 2 LH)	<input type="checkbox"/>	A414P2 (SDU 1 RH)	<input type="checkbox"/>
PL138P1 (EWCP)		<input type="checkbox"/>											
DS195P1 (TWD)		<input type="checkbox"/>											
PL139P1 (EWP/CDU)		<input type="checkbox"/>											
PL139P2 (EWP/CDU)		<input type="checkbox"/>											
A415P2 (SDU 2 LH)	<input type="checkbox"/>												
A414P2 (SDU 1 RH)	<input type="checkbox"/>												
2. Inject a 28 VDC across pin 65 (HI) and pin 39 (LO) of PL138P1 and verify the 28 VDC is present across pin 7 (HI) and pin 8 (LO) of A415P2	<input type="checkbox"/>												
3. Inject a 28 VDC across pin 66 (HI) and pin 54 (LO) of PL138P1 and verify the 28 VDC is present across pin 7 (HI) and pin 8 (LO) of A415P2	<input type="checkbox"/>												
4. Inject a 28 VDC across pin 63 (HI) and pin 21 (LO) of PL138P1 and verify the 28 VDC is present across pin 7 (HI) and pin 8 (LO) of A414P2	<input type="checkbox"/>												
5. Inject a 28 VDC across pin 64 (HI) and pin 37 (LO) of PL138P1 and verify the 28 VDC is present across pin 7 (HI) and pin 8 (LO) of A414P2	<input type="checkbox"/>												
6. Reconnect connectors A415P2, A414P2.	<input type="checkbox"/>												
7. Power ON the helicopter.	<input type="checkbox"/>												

8. Push in the SIAP CNTRL circuit breaker CB409 and the SIAP PWR circuit breaker CB410.	<input type="checkbox"/>
9. Verify the voltage across pins 9 and 6 of the connector PL138P1 (EWCP) is 28 V DC. The PIN 9 is the positive pin.	<input type="checkbox"/>
10. Verify the voltage across pins 33 and 5 of the connector PL138P1 (EWCP) is 0 V DC.	<input type="checkbox"/>
11. Verify the voltage across pins 1 and 8 of the connector DS195P1 (TWD) is 0 V DC. Pin 1 is positive.	<input type="checkbox"/>
12. Verify the voltage across pins 10 and 9 of the connector DS195P1 (TWD) is 0 V DC. Pin 10 is positive.	<input type="checkbox"/>
13. Verify the voltage across pins "E - D" and "E - T" of the connector PL139P2 (EWP/CDU) is 0 V DC. Pin E is positive.	<input type="checkbox"/>
14. Pull out the SIAP CNTRL breaker CB409	<input type="checkbox"/>
15. Put a jumper between the pins 9 and 42 of connector PL138P1 (EWCP).	<input type="checkbox"/>
16. Push in the SIAP CNTRL circuit breaker CB409	<input type="checkbox"/>
17. Push in the following circuit breakers in the SIAP BUS: <ul style="list-style-type: none"> - EWP/CDU: CB413 - EWCP: CB414 - TWD: CB415 - MILDS: CB416 	
18. Verify the voltage across pins 33 and 5 of the connector PL138P1 (EWCP) is 28 V DC. The PIN 33 is the positive pin.	<input type="checkbox"/>
19. Verify the voltage across pins 1 and 8 of the connector DS195P1 (TWD) is 28 V DC. The PIN 1 is the positive pin.	<input type="checkbox"/>
20. Verify the voltage across pins 10 and 9 of the connector DS195P1 (TWD) is 28 V DC. Pin 10 is positive.	<input type="checkbox"/>
21. Verify the voltage across pins "E - D" and "E - T" of the connector PL139P2 (EWP/CDU) is 28 V DC. PIN E is positive.	<input type="checkbox"/>
22. Lift up the flip guard of the Late Arm Switch on the PLT Cyclic stick and press the C/F FIRE momentary push-button and verify the 28 V DC is present across the following pins:	<input type="checkbox"/>

<ul style="list-style-type: none"> - 69 and 63 of connector PL139P1 - 79 and 63 of connector PL139P1 - 14 and 29 of connector PL138P1 <p>(the positive pins are: 69, 79, 14)</p>	
<p>23. Lift up the flip guard of the Late Arm Switch on the CPLT Cyclic stick and press the C/F FIRE momentary push-button and verify the 28 V DC is present across the following pins:</p> <ul style="list-style-type: none"> - 70 and 63 of connector PL139P1 - 13 and 63 of connector PL139P1 - 15 and 29 of connector PL138P1 <p>(the positive pins are: 70, 13, 15)</p>	<input type="checkbox"/>
<p>24. Set the tester for conductivity test. Connect the black probe to the ground and the red probe to the following pins one at the time:</p> <ul style="list-style-type: none"> - 3 of the connector DS195P1 (instrument knob) - 23 of the connector PL138P1 (console knob) <p>Enter the Night condition and verify a ground is measured by the tester.</p>	<input type="checkbox"/>
<p>25. Put the tester in diode test. Connect the black probe to the ground and the red probe to the following pins one at the time:</p> <ul style="list-style-type: none"> - 2 of the connector DS195P1 - 24 of the connector PL138P1 <p>Enter the NVG condition and verify that approximately 0.6 drop is measured by the tester.</p>	<input type="checkbox"/>
<p>26. Put the tester in diode test. Connect the black probe to the ground and the red probe to the following pins one at the time:</p> <ul style="list-style-type: none"> - 10 of the connector PL138P1 - 11 of the connector PL138P1 <p>With WOW Switches set on ground, verify that approximately 0.6 drop is measured by the tester</p>	<input type="checkbox"/>
<p>27. Set the WOW Switches to FLIGHT and verify the change of the status with respect to the previous test of the following pins:</p> <ul style="list-style-type: none"> - 10 of the connector PL138P1 - 11 of the connector PL138P1 <p>Set the WOW Switches to Ground.</p>	<input type="checkbox"/>

28. Move the instrument dimming control and verify the voltage of the pin 11 of the connector DS195P1 moves from 0 to 5 V.	<input type="checkbox"/>
29. Move the console dimming control and verify the voltage of the pins 18 of connector PL138P1 and R of connector PL139P2 moves from 0 to 5 V.	<input type="checkbox"/>
30. Pull out the SIAP CNTRL circuit breaker CB409, remove the jumper on connector PL138P1 (EWCP) and reconnect the connector PL138P1 (EWCP)	<input type="checkbox"/>
31. Verify the EWCP master selector is in OFF position	<input type="checkbox"/>
32. Push in the SIAP CNTRL circuit breaker CB409	<input type="checkbox"/>
33. Put the tester in diode test. Connect the black probe to the ground and the red probe to the pin 24 of connector PL139P1 (EWP/CDU) and verify 1.2 drop is measured by the tester.	<input type="checkbox"/>
34. Move the EWCP master selector to STBY position and verify 28 V DC is present across pins 66 and 37 of PL139P1 (EWP/CDU)	<input type="checkbox"/>
35. Move the EWCP master selector to LIVE position and verify 28 V DC is present across pins 67 and 37 of PL139P1 (EWP/CDU)	<input type="checkbox"/>
36. Move the EWCP master selector to EMER position and verify 28 V DC is present across pins 68 and 37 of PL139P1 (EWP/CDU)	<input type="checkbox"/>
37. Press the ERASE button on the EWCP and verify a ground is present on pin 90 of PL139P1 (EWP/CDU)	<input type="checkbox"/>
38. Press the SWAP button on the EWCP and verify a ground is present on pin 89 of PL139P1 (EWP/CDU)	<input type="checkbox"/>
39. Press the SURVIVE button on the EWCP and verify 28 V DC is present across pins 55 and 37 and 56 and 37 PL139P1 (EWP/CDU)	<input type="checkbox"/>
40. Press the DISCH button on the EWCP and verify 28 V DC is present across pins 57 and 37 and 58 and 37 PL139P1 (EWP/CDU)	<input type="checkbox"/>
41. Move the EWCP master selector to OFF	<input type="checkbox"/>
42. Verify a ground is present on pin 92 and pin 93 of PL139P1	<input type="checkbox"/>
43. Connect the connectors DS195P1 (TWD), PL139P1 (EWP/CDU), PL139P2 (EWP/CDU)	<input type="checkbox"/>

4.7 ECDS POWER CHECKS

1. Disconnect the inverter mating connector PS75P1	<input type="checkbox"/>				
2. Verify 0 VDC is present across pins D (positive) and A (return)	<input type="checkbox"/>				
3. Push in the circuit breaker INV ECDS CB411	<input type="checkbox"/>				
4. Verify 28 VDC is present across pins D (positive) and A (return)	<input type="checkbox"/>				
5. Pull out the circuit breaker INV ECDS CB411	<input type="checkbox"/>				
6. Verify a ground is present on pin C	<input type="checkbox"/>				
7. Ensure the Safety Pin is not inserted	<input type="checkbox"/>				
8. Verify there is no short circuit between pin G (115 VAC output) and ground	<input type="checkbox"/>				
9. Reconnect the inverter mating connector PS75P1	<input type="checkbox"/>				
10. Disconnect the following connectors:	<input type="checkbox"/>				
<table border="1" data-bbox="199 1010 563 1164"> <tr> <td>A415P1 (SDU 2 LH)</td> <td><input type="checkbox"/></td> </tr> <tr> <td>A414P1 (SDU 1 RH)</td> <td><input type="checkbox"/></td> </tr> </table>	A415P1 (SDU 2 LH)	<input type="checkbox"/>	A414P1 (SDU 1 RH)	<input type="checkbox"/>	
A415P1 (SDU 2 LH)	<input type="checkbox"/>				
A414P1 (SDU 1 RH)	<input type="checkbox"/>				
11. Insert the Safety Pin in the SSU	<input type="checkbox"/>				
12. Push in the circuit breaker ECDS EMER CB412 and the circuit breaker INV ECDS CB411.	<input type="checkbox"/>				
13. Verify the voltage across the pins A and B of A415P1 and A414P1 is 0 VAC	<input type="checkbox"/>				
14. Verify the voltage across the pins E and F of A415P1 and A414P1 is 0 VDC	<input type="checkbox"/>				
15. Move the EWCP master selector to STBY position	<input type="checkbox"/>				
16. Verify the voltage across the pins A and B of A415P1 and A414P1 is 0 VAC	<input type="checkbox"/>				
17. Verify the voltage across the pins E and F of A415P1 and A414P1 is 0 VDC	<input type="checkbox"/>				
18. Remove the Safety Pin from the SSU	<input type="checkbox"/>				
19. Verify the voltage across the pins A and B of A415P1 and A414P1 is 115 VAC	<input type="checkbox"/>				
20. Verify the voltage across the pins E and F of A415P1 and A414P1 is 0 VDC	<input type="checkbox"/>				

21. Pull out the circuit breaker INV ECDS CB411	<input type="checkbox"/>
22. Verify the voltage across the pins A and B of A415P1 and A414P1 is 0 VAC	<input type="checkbox"/>
23. Verify the voltage across the pins E and F of A415P1 and A414P1 is 28 VDC	<input type="checkbox"/>
24. Disconnect the connector A413P3 (EIU)	<input type="checkbox"/>
25. Press the ERASE button on the EWCP	<input type="checkbox"/>
26. Verify a ground is present on pin 13 of A413P3 (EIU)	<input type="checkbox"/>
27. Move the EWCP master selector to OFF	<input type="checkbox"/>
28. Reconnect all the connectors and push in the circuit breaker INV ECDS CB411	<input type="checkbox"/>
29. Insert the Safety Pin in the SSU	<input type="checkbox"/>

4.8 MILDS POWER CHECKS (only if installed)

1. Disconnect the following connectors:									
<table border="1"> <tr> <td>A416P1 (MILDS 1 FWD RH)</td> <td><input type="checkbox"/></td> </tr> <tr> <td>A417P1 (MILDS 0 FWD LH)</td> <td><input type="checkbox"/></td> </tr> <tr> <td>A418P1 (MILDS 2 AFT RH)</td> <td><input type="checkbox"/></td> </tr> <tr> <td>A419P1 (MILDS 3 AFT LH)</td> <td><input type="checkbox"/></td> </tr> </table>	A416P1 (MILDS 1 FWD RH)	<input type="checkbox"/>	A417P1 (MILDS 0 FWD LH)	<input type="checkbox"/>	A418P1 (MILDS 2 AFT RH)	<input type="checkbox"/>	A419P1 (MILDS 3 AFT LH)	<input type="checkbox"/>	<input type="checkbox"/>
A416P1 (MILDS 1 FWD RH)	<input type="checkbox"/>								
A417P1 (MILDS 0 FWD LH)	<input type="checkbox"/>								
A418P1 (MILDS 2 AFT RH)	<input type="checkbox"/>								
A419P1 (MILDS 3 AFT LH)	<input type="checkbox"/>								
2. Push in the circuit breaker MILDS CB416	<input type="checkbox"/>								
3. Verify the voltage across pins 1 and 2 of A416P1 (MILDS 1 FWD RH), A417P1 (MILDS 0 FWD LH), A418P1 (MILDS 2 AFT RH), A419P1 (MILDS 3 AFT RH) is 0 VDC.	<input type="checkbox"/>								
4. Move the EWCP master selector to STBY	<input type="checkbox"/>								
5. Verify the voltage across pins 1 and 2 of A416P1 (MILDS 1 FWD RH), A417P1 (MILDS 0 FWD LH), A418P1 (MILDS 2 AFT RH), A419P1 (MILDS 3 AFT RH) is 28 VDC	<input type="checkbox"/>								
6. Move the EWCP master selector to OFF	<input type="checkbox"/>								
7. Reconnect the connectors A416P1 (MILDS 1 FWD RH), A417P1 (MILDS 0 FWD LH), A418P1 (MILDS 2 AFT RH), A419P1 (MILDS 3 AFT RH)	<input type="checkbox"/>								

4.9 FL-AGE PREPARATION

The FL-AGE and the AIA units shall be connected to the SDU units in order to perform the tests.

The SIAP system uses the following SDU configuration rule:

SDU #	POSITION
SDU1	FWD RH
SDU2	FWD LH

The system libraries are programmed in order to have:

POSITION	MAGAZINE
FWD RH	CHAFF
FWD LH	FLARE

The TES A.I.A units shall be connected in series to the FL-AGE and the first unit is the DISP1, the second unit is the DISP2. The flare cable shall be installed on the A.I.A. which monitors flare ejection and attached to the SDU flare sensor.

The configuration of the FL-AGE described below represents the following configuration:

DISPENSER	MAGAZINE	LOCATION
DISP1	ID 02 = CHAFF	Right
DISP2	ID 05 = FLARE	Left

1. Install the first magazine unit TES A.I.A. in the SDU1 (Right)	<input type="checkbox"/>
2. Install the second magazine unit TES A.I.A. in the SDU2 (Left)	<input type="checkbox"/>
3. Ensure the FL-AGE is supplied by 28 V	<input type="checkbox"/>
4. Turn ON the power switch and wait until the message "FL-AGE READY" appears	<input type="checkbox"/>
5. Push "SEL " button and keep pushing it until message "MAGAZINE COMMAND" appears	<input type="checkbox"/>

6. Execute the following sequence:		
Command / Data	Message on FL-AGE display	
ENT	DISPENSER : 01	
ENT	ID: **	
02	ID: 02 (CHAFF 1 X 1)	
ENT	PAYLOAD: SINGLE	
ENT	MAGAZINE COMMAND	<input type="checkbox"/>
ENT	DISPENSER : 01	
02	DISPENSER : 02	
ENT	ID: **	
05	ID: 5 (FLARE 1 X 1)	
ENT	PAYLOAD: SINGLE	
SEL	MAGAZINE COMMAND	
7. Power cycle the FL-AGE		<input type="checkbox"/>
8. After the power up, verify the following configurations of the dispensers appears:		
DISP1	DISP2	
B01	B02	<input type="checkbox"/>

4.10 LIBRARY LOAD AND VERIFICATION

1. Power on the helicopter	<input type="checkbox"/>
2. Set the WOW switches to On Ground	<input type="checkbox"/>
3. Ensure the Safety Pin is properly inserted	<input type="checkbox"/>
4. Insert the USB that contains the libraries	<input type="checkbox"/>
5. Power on the SIAP system by moving the EWCP master selector to STBY	<input type="checkbox"/>
6. Verify 'NO LIB' is displayed on the EWP/CDU and 'NO LIBRARY FOUND' is displayed on the TWD	<input type="checkbox"/>

7. On the EWP/CDU, enter the UP/DOWNLOAD → 3/3 MAINTENANCE → TWD LIB UPLOAD	<input type="checkbox"/>
8. Select 'CE_TWDFQT.STL' + press Upload + press Confirm Upload	<input type="checkbox"/>
9. Verify 'TWDLIB LOADING' is displayed on the EWP/CDU	<input type="checkbox"/>
10. Verify 'LIBRARY UPLOAD IN PROGRESS' yellow string message on TWD	<input type="checkbox"/>
11. After load completion (the EWP/CDU is back to 'TWD LIB UPLOAD' and on TWD is displayed the yellow string message 'LIBRARY UPLOAD SUCCESS'), power cycle both SIAP and TWD by moving the EWCP master selector to OFF and back to STBY	<input type="checkbox"/>
12. Verify 'EW SYSTEM STARTING NO LIBRARIES FOUND' is displayed on the TWD and 'NO LIB' is displayed on the EWP/CDU	<input type="checkbox"/>
13. Move to UP/DOWNLOAD → MAINTENANCE → UPLOAD AUDIO, select 'ANNA.SAU' + Upload + Confirm upload	<input type="checkbox"/>
14. Verify 'LOADING' is displayed on the EWP/CDU. At load completion, moving the EWCP master selector to OFF and back to STBY.	<input type="checkbox"/>
15. Press UP/DOWNLOAD → 1/3 LIBRARIES → STORAGE DEV LIBS	<input type="checkbox"/>
16. Select 'COL_TEST_ATP.SLB' + Upload + confirm the upload.	<input type="checkbox"/>
17. Press ↑, move to 'EWP LIBS', select the library loaded and activate it by pressing SET ACTIVE	<input type="checkbox"/>
18. Press ↑ and verify the correct library is displayed in brackets [COL_TEST_ATP.SLB] on the EWP/CDU	<input type="checkbox"/>
19. Verify the library is shown as ACTIVE LIB on the TWD	<input type="checkbox"/>
20. Move to UP/DOWNLOAD → ENTER OPERAT MODE	<input type="checkbox"/>
21. Verify TWD is loading the library with incrementing percentage	<input type="checkbox"/>
22. On the EWP/CDU verify 'LOADING LIB' is displayed and the progress bar is incrementing	<input type="checkbox"/>
23. After the completion of the loading, verify the EWP/CDU page is 'SYSTEM'	<input type="checkbox"/>
24. On the TWD page verify: <ul style="list-style-type: none"> 24.1. The heading rose is depicted in white 24.2. The helicopter heading is displayed in green 24.3. A yellow flag is present due to the Safety Switch inserted 	<input type="checkbox"/>

<p>24.4. 'AIRCRAFT ON GROUND – WOW' is displayed</p> <p>24.5. STBY status is displayed on top left</p> <p>24.6. No red box NAV, CFD or RW or LW or MWS is displayed</p> <p>24.7. Red boxes CH and FL are displayed due to the safety pin</p> <p>24.8. Verify no yellow square is present, which alerts about a maintenance failure. If present, move to UP/DOWNLOAD → MAINT INFO, take note of the type of maintenance and then reset the maintenance by moving to UP/DOWNLOAD → MAINTENANCE → RESET MAINT INFO</p> <p style="text-align: center;">NOTE</p> <p style="text-align: center;">Don't care if any humidity fail appears. If you enter this page, go back in OPERATIVE MODE.</p>	
25. Reset the FL-AGE (keep RST button pressed for 3 seconds) and remove the Safety Pin	<input type="checkbox"/>
26. Verify the yellow flag disappears and two yellow magazine rectangles with a black line inside appear instead	<input type="checkbox"/>
27. Verify CH 030 green string and FL 030 green string are displayed on the TWD	<input type="checkbox"/>
28. On the TWD move to the DECOY status (Page button) page and verify both Chaff and Flare are green. (FLARE on left quadrant and CHAFF on right quadrant)	<input type="checkbox"/>
29. Move to SURV STATUS	<input type="checkbox"/>
30. Pull out the INV ECDS circuit breaker CB411 and verify the red box CFD appears on the TWD	<input type="checkbox"/>
31. On the EWP/CDU press STS and verify CFD is NOGO	<input type="checkbox"/>
32. On the TWD, verify the SDU rectangles are red	<input type="checkbox"/>
33. On the EWCP, move the master selector to EMER	<input type="checkbox"/>
34. Verify on the TWD the SDU rectangles become green	<input type="checkbox"/>
35. Push in the INV ECDS circuit breaker CB411	<input type="checkbox"/>
36. On the EWCP, move the master selector to OFF	<input type="checkbox"/>
37. On the EWCP, move the master selector to STBY	<input type="checkbox"/>
38. On the EWP/CDU press SYS → UP/DOWNLOAD → ENTER OPERAT MODE	<input type="checkbox"/>
39. On the TWD verify the ECDS/CFD warning messages disappear	<input type="checkbox"/>

40. Pull out the MAU 1 circuit breakers and verify the red box NAV appears on the TWD	<input type="checkbox"/>
41. Push in the MAU 1 circuit breakers and verify the warning message disappear on the TWD	<input type="checkbox"/>
42. Insert the Safety Pin	<input type="checkbox"/>

4.11 AUDIO LEVEL

1. Ensure the EWCP master selector is set to STBY	<input type="checkbox"/>
2. Connect the PLT and CPLT headphones to the ICS	<input type="checkbox"/>
3. On the EWP/CDU enter SYSTEM → SET AUDIO LEVEL	<input type="checkbox"/>
4. Listen to the audio in the PLT headphone and tune the level by using the arrow keys of the EWP/CDU	<input type="checkbox"/>
5. Listen to the audio in the CPLT headphone and tune the level by using the arrow keys of the EWP/CDU	<input type="checkbox"/>

4.12 SIAP BASIC CONFIGURATION FUNCTIONAL TEST PROCEDURE

1. Set the WOW switches to 'In Air', insert Safety Pin, reset the FL-AGE (keep RST button pressed for 3 seconds) and then remove Safety Pin	<input type="checkbox"/>
2. Remove the Safety Pin (Note: if CFD in red appears on the TWD for few seconds, do not care because it is correct)	<input type="checkbox"/>
3. Move the EWCP master selector to LIVE.	<input type="checkbox"/>
4. On the EWP/CDU enter MODE and select MANUAL MODE.	<input type="checkbox"/>
5. Verify the MAN status is shown on the TWD top left	<input type="checkbox"/>
6. Verify the magazine rectangles are displayed in full green on the TWD	<input type="checkbox"/>
7. Verify MP 01 is displayed on the TWD (Manual Program 1 is the default program)	<input type="checkbox"/>
8. Lift up the flip guard of the Late Arm Switch on the PLT Cyclic stick and press the C/F FIRE momentary push-button	<input type="checkbox"/>
9. On the TWD verify 'CFD MANUAL PROGRAM' is displayed	<input type="checkbox"/>
10. Verify the CH counter has decremented of 2 on the TWD	<input type="checkbox"/>

11. Verify the FL counter has decremented of 0 on the TWD	<input type="checkbox"/>
12. Verify on the FL-AGE that 2 chaff have been fired	<input type="checkbox"/>
13. Lift up the flip guard of the Late Arm Switch on the CPLT Cyclic stick and press the C/F FIRE momentary push-button	<input type="checkbox"/>
14. On the TWD verify 'CFD MANUAL PROGRAM' is displayed	<input type="checkbox"/>
15. Verify the CH counter has decremented of 2 on the TWD	<input type="checkbox"/>
16. Verify the FL counter has decremented of 0 on the TWD	<input type="checkbox"/>
17. Verify on the FL-AGE that 2 chaff have been fired	<input type="checkbox"/>
18. Lift up the flip guard of the SURVIVE function on the EWCP and press the button	<input type="checkbox"/>
19. Verify 'CFD DISPENSE SURVIVE' appears on the TWD	<input type="checkbox"/>
20. Verify the FL counter decrements of 1 flares on the TWD and the CH counter decrements of 1 chaffs	<input type="checkbox"/>
21. Verify on the FL-AGE that the DISP2 counter increments of 1 units and the DISP1 counter increments of 1 units	<input type="checkbox"/>
22. Lift down the flip guard of the SURVIVE function on the EWCP, the Late Arm Switch on the PLT and the CPLT Cyclick Sticks	<input type="checkbox"/>
23. Move the EWCP master selector to EMER	<input type="checkbox"/>
24. Verify EMER is displayed on the TWD top left	<input type="checkbox"/>
25. Lift up the flip guard of the Late Arm Switch on the PLT Cyclic stick and press the C/F FIRE momentary push-button	<input type="checkbox"/>
26. Verify the FL counter decrements of 1 flares on the TWD.	<input type="checkbox"/>
27. Verify on the FL-AGE that the DISP2 counter increments of 1 units.	<input type="checkbox"/>
28. Lift down the flip guard of the Late Arm Switch on the PLT Cyclic Stick.	<input type="checkbox"/>
29. Lift up the flip guard of the DISCH function on the EWCP and press the button	<input type="checkbox"/>
30. Verify 'CFD DISCHARGING' appears on the TWD	<input type="checkbox"/>
31. Verify both CH and FL counters decrements to 0	<input type="checkbox"/>

32. Verify 'DECOY DISCHARGED' appears on the TWD when all the decoys have been discharged and that all the decoys have been fired on the FL-AGE	<input type="checkbox"/>
33. Lift down the flip guard of the DISCH function on the EWCP	<input type="checkbox"/>
34. Move the EWCP master selector to STBY	<input type="checkbox"/>
35. Insert the safety pin	<input type="checkbox"/>
36. Reset the FL_AGE by pressing RST (keep RST pressed for 3 seconds)	<input type="checkbox"/>
37. Remove the safety pin	<input type="checkbox"/>
38. Move the EWCP master selector to LIVE and verify on the TWD that the system is operative with 30 CH and 30 FL	<input type="checkbox"/>
39. Pull out the INV ECDS circuit breaker CB411	<input type="checkbox"/>
40. Verify on the TWD that: 40.1. the red box CFD appears 40.2. CH and FL counters are 00 and red coloured 40.3. the dispenser rectangles are red and double crossed	<input type="checkbox"/>
41. Move the EWCP master selector to EMER	<input type="checkbox"/>
42. Verify the dispenser rectangles turn green and are not crossed	<input type="checkbox"/>
43. On the EWCP, lift up the flip guard of the DISCH function and press the button	<input type="checkbox"/>
44. Very 'CFD DISPENSING' is displayed on the bottom of the TWD	<input type="checkbox"/>
45. After the 'CFD DISPENSING' has disappeared, check on the FL-AGE that all the decoys have been fired (30 + 30)	<input type="checkbox"/>
46. On the EWCP, lift down the flip guard of the DISCH function.	<input type="checkbox"/>
47. Move the EWCP master selector to OFF, set the WOW switches to ground and push in the INV ECDS circuit breaker CB411	<input type="checkbox"/>

4.13 MILDS FUNCTIONAL TEST PROCEDURE (only if installed)

1. Ensure the WOW switches are set to GND	<input type="checkbox"/>
2. Ensure the Safety Pin is inserted	<input type="checkbox"/>

3. Ensure the EWCP master selector is set to STBY	<input type="checkbox"/>
4. Ensure the system has positively completed the power up (see paragraph 4.7)	<input type="checkbox"/>
5. Reset the FL-AGE (keep RST button pressed for 3 seconds) and then remove Safety Pin	<input type="checkbox"/>
6. On the EWP/CDU, press STAT and verify MILDS is GO	<input type="checkbox"/>
7. Pull out MILDS circuit breaker CB416 and verify the red box MWS appears on the TWD	<input type="checkbox"/>
8. On the EWP/CDU press STS and verify MWS is NOGO	<input type="checkbox"/>
9. Push in MILDS circuit breaker CB416 and wait until the red box MWS disappears from the TWD	<input type="checkbox"/>
10. Press SRS on the EWP/CDU and turn the MILDS OFF	<input type="checkbox"/>
11. Verify the red box MWS appears on the TWD	<input type="checkbox"/>
12. Press SNSR on the EWP/CDU and turn the MILDS ON	<input type="checkbox"/>
13. Verify the red box MWS disappears on the TWD	<input type="checkbox"/>
14. Insert the safety pin	<input type="checkbox"/>
15. Set the WOW switches to 'In Air' and reset the FL-AGE (keep RST button pressed for 3 seconds)	<input type="checkbox"/>
16. Remove the Safety Pin (Note: if CFD in red appears on the TWD for few seconds, do not care because it is correct)	<input type="checkbox"/>
17. Move the EWCP master selector to LIVE	<input type="checkbox"/>
18. On the EWP/CDU press SET → FAST TR → ON	<input type="checkbox"/>
19. Verify 'FT ON' on the TWD	<input type="checkbox"/>
20. Power on the MISSIM simulator	<input type="checkbox"/>
21. Point the simulator at the MILDS sensor head number 1 and simulate missile UV emission	<input type="checkbox"/>
22. Verify the trace on the TWD (DOA + deg) + listen to the warning 'Missile' using the PLT/CPLT headphone + verify decoy launch on the FL-AGE and on the TWD (FLARES for threats coming from the left side and CHAFF for threats coming from the right side)	<input type="checkbox"/>
23. On the EWP/CDU press SET → FAST TR → OFF	<input type="checkbox"/>

24. Verify 'FT OFF' on the TWD	<input type="checkbox"/>
25. On the EWP/CDU enter MODE and select AUTO MODE	<input type="checkbox"/>
26. Verify AUTO is displayed on the TWD (top left)	<input type="checkbox"/>
27. For each MILDS sensor head (0 FWD LH, 1 AFT LH, 2 AFT RH, 3 FWD RH), fire at the MILDS sensor head with the MISSIM and verify: 27.1. the trace on the TWD (DOA + deg) is correct 27.2. the aural warning 'Missile' is loud and clear on the PLT/CPLT headphone 27.3. the decoy launch is properly recorded and displayed by the TWD and the FL-AGE 27.4. Verify the FL counter decrements of 3 flares on the TWD for any threats, but take in account that several countermeasures cycles could be verified for continuous threats.	<input type="checkbox"/>
28. Move to STBY the master selector on the EWCP.	<input type="checkbox"/>

4.14 LIBRARY ERASE

1. Move the EWCP master selector to LIVE	<input type="checkbox"/>
2. Lift up the flip guard of the ERASE function on the EWCP and press the button	<input type="checkbox"/>
3. Verify the red box CFD appears on the TWD	<input type="checkbox"/>
4. Verify 'STBY' appears on the TWD	<input type="checkbox"/>
5. Verify the STBY light blinks on the EWCP	<input type="checkbox"/>
6. Move the EWCP master selector to STBY	<input type="checkbox"/>
7. Press UP/DOWNLOAD on the EWCP and verify on the TWD the following: Active Lib = None	<input type="checkbox"/>
8. On the EWP/CDU, enter the Library page and verify the EWP library is empty	<input type="checkbox"/>
9. Lift down the flip guard of the ERASE function on the EWCP.	<input type="checkbox"/>

4.15 INITIAL CONDITIONS RESTORING

1. Move the EWCP master selector to OFF	<input type="checkbox"/>
2. Remove the WOW switches	<input type="checkbox"/>

3. Insert the Safety Pin	<input type="checkbox"/>
4. Uninstall the A.I.A and FL-AGE	<input type="checkbox"/>
5. Leave all the circuit breakers pushed in	<input type="checkbox"/>

5 TEST RESULTS

ENHANCED SIAP Acceptance Test Procedure				
REF.	DESCRIPTION	OPERATOR	DATE	REMARKS
4.1	TEST PREREQUISITIES			
4.2	TOOLS REQUIRED & TEST SETUP			
4.3	CIRCUIT BREAKERS CONFIGURATION			
4.4	SIAP BASIC CONFIGURATION BONDING CHECKS			
4.6	EWP/CDU, EWCP, TWD POWER CHECKS			
4.7	ECDS POWER CHECKS			
4.8	MILDS POWER CHECKS			
4.9	FL-AGE PREPARATION			
4.10	LIBRARY LOAD AND VERIFICATION			
4.11	AUDIO LEVEL			
4.12	SIAP BASIC CONFIGURATION FUNCTIONAL TEST PROCEDURE			
4.13	MILDS FUNCTIONAL TEST PROCEDURE			
4.14	LIBRARY ERASE			
4.15	INITIAL CONDITIONS RESTORING			
Engineering dpt signature (if required):				
Quality dpt approval:				

