LEONARDO HELICOPTERS

LEONARDO MALAYSIA SDN. BHD.

WORKSHEET

SERVICE ORDER :	9	0	0	2	5	5	6	6	WORKSHEET NUMBER :	2022/31763/007-30	
AIRCRAFT REGISTRATION :	9M-BGH	AIRCRAFT SERIAL NUMBER :	31763	AIRFRAME HOURS :	300:40	LANDINGS :	838				
#1 ENGINE SERIAL NO.:	PCE-KB1931	#1 ENGINE HOURS :	300:40	#2 ENGINE SERIAL NO.:	PCE-KB1885	#2 ENGINE HOURS :	300:40	APU SERIAL NO.:	N/A	APU HOURS :	N/A
CRITICAL MAINTENANCE TASK REQUIREMENT	YES		NO	X	RAISED BY :	SYAQIRA	RAISED DATE :	17-11-2022			

DESCRIPTION / WORK TO BE CARRIED OUT	CORRECTIVE ACTION TAKEN
EASA AD NO.: 2018-0002 ISSUED: 04 JANUARY 2018 (SB139-500 DATE:	NOT APPLICABLE DUE TO AIRCRAFT EQUIPPED WITH
OCTOBER 31, 2017 REV. : /) ATA 46 – "PRIMUS EPIC" FLIGHT SOFTWARE	PRIMUS EPIC FLIGHT SOFTWARE VERSION 7.12.
RELEASE 7.12 & 7.14 UPGRADE (PART I,II,III AND IV) TO BE CARRIED	
OUT I.A.W EASA AD AND SB ATTACHED.	
MECHANIC SIGN	N/A N/A

MAINTENANCE ACTIVITIES ABOVE ARE PERFORMED IN ACCORDANCE WITH: (CIRCLE THE SELECTED MODEL WHERE APPLICABLE)

AIRCRAFT MAINTENANCE MANUAL	AW189|AW169|AW139|A119|A109S/AW109SP IETP N/A ISSUE: N/A UPDATED: N/A
ENGINE MAINTENANCE MANUAL	GE CT7-2E|PW210A|PT6C-67C|PT6B-37A|PW206C/PW207C MM REV./ISSUE NO.N/A DATED: N/A
APU MAINTENANCE MANUAL	DT13-01_eAPU60-MLE 342 ISSUE NO.: N/A DATED: N/A
OTHER APPROVED MAINTENANCE DATA	EASA AD NO.: 2018-0002 ISSUED: 04 JANUARY 2018

INDEPENDENT INSPECTION / RE-INSPECTION I.A.W MOE 2.23

DESCRIPTION OF CRITICAL MAINTENANCE TASK REQUIREMENT AREA :

AUTHORISATION HOLDER

NAME	STAMP	SIGNATURE	DATE

INDEPENDENT INSPECTOR

NAME	STAMP	SIGNATURE	DATE

PARTS / MATERIAL USED / COMPONENT CHANGE RECORD (IF APPLICABLE)

DESCRIPTION	PART NO.	REMOVED		INSTALLED		RELEASE DOCUMENT
		SERIAL NO.	TSN/TSO	SERIAL NO.	TSN/TSO	
				N/A		

☐ ADDITIONAL PARTS / MATERIAL USED / COMPONENT CHANGE RECORD HAVE BEEN RAISED AND ATTACHED.

☐ CALIBRATED / SPECIAL TOOLS RECORD SHEET HAVE BEEN RAISED AND ATTACHED.

* CERTIFYING STAFF HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W. MAINTENANCE MANUAL SPECIFIED ABOVE.

CERTIFICATE OF RELEASE TO SERVICE

* CERTIFYING STAFF NAME	SIGNATURE	STAMP	LOCATION	DATE
S.ELCER		LM LO1	SZB	22/12/22

CAAM (MALAYSIA) AMO/2016/40 - CERTIFIES THAT THE WORK SPECIFIED, EXCEPT AS OTHERWISE SPECIFIED, WAS CARRIED OUT IN ACCORDANCE WITH CAA MALAYSIA REQUIREMENTS AND IN RESPECT TO THAT WORK THE AIRCRAFT / AIRCRAFT COMPONENT IS CONSIDERED READY FOR RELEASE TO SERVICE.

Airworthiness Directive

AD No.: 2018-0002

Issued: 04 January 2018

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:

LEONARDO S.p.A.

Type/Model designation(s):

AB139 and AW139 helicopters

Effective Date:	18 January 2018
TCDS Number(s):	EASA.R.006
Foreign AD:	Not applicable
Supersedure:	None

ATA 46 – Information Systems – "Primus Epic" System Software – Software Update

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Manufacturer(s):

Leonardo S.p.A. Helicopters (formerly Finmeccanica S.p.A., Helicopter Division (FHD), AgustaWestland S.p.A., Agusta S.p.A.), AgustaWestland Philadelphia Corporation (formerly Agusta Aerospace Corporation).

Applicability:

AB139 and AW139 helicopters, serial number (s/n) 31005, 31006, 31008 to s/n 31157 inclusive and s/n 41001 to s/n 41023 inclusive, and AW139 helicopters s/n 31201 onwards and s/n 41201 onwards, equipped with "Primus Epic" system software release 7.4 (Phase 7 V1) or 7.7 (Phase 7 V3) or 7.10 (Phase 7 V4), as applicable.

Reason:

Spurious in-flight disconnections of the Automatic Flight Control System (AFCS) have been repeatedly reported over the past months. The investigation revealed that these AFCS disconnect events relate to un-commanded single channel autopilot disengagement for most of the cases, and also to some instances of untimely dual channel autopilot disengagement. It appeared to occur in random flight conditions and to be temporary disruptions of AFCS full availability as all functionalities could always be restored after disconnect by re-engaging the complete system through the AFCS control panel.

All occurrences may not have been systematically reported by the flight crews and the total number of events could not be determined accurately, which results in potential uncertainty about the effective reliability of the helicopter AFCS function.

This condition, if not corrected, could lead to spurious degradation or unavailability of the full AFCS, possibly temporarily impairing the automated flight aid for the control of the helicopter, with detrimental increase of the crew overall workload.

To address this issue, Leonardo has designed an improved version of the "Primus Epic" system software (release 7.12 or 7.14 upgrade) of the helicopter and published Service Bulletin (SB) 139-500, providing instructions for embodiment of this software in service. As a precautionary measure, EASA decided that accomplishment of this action must be required.

For the reasons described above, this AD requires installation of the "Primus Epic" system software release 7.12 or 7.14 upgrade, as applicable, depending on helicopter configuration.

Required Action(s) and Compliance Time(s):

Required as indicated, unless accomplished previously:

Note 1: For the purpose of this AD, "Primus Epic" system software 7.12, Part Number (P/N) 3G4600P00311 or P/N 3G4600P00312; or "Primus Epic" system software 7.14, P/N 3G4600P00411 or 3G4600P00412, as applicable depending on helicopter configuration, is hereafter collectively referred to as 'applicable "Primus Epic" system software' in this AD.

Software Upgrade:

(1) Within 600 flight hours or 12 months, whichever occurs first after the effective date of this AD, install the applicable "Primus Epic" system software (see Note 1 of this AD) in accordance with the instructions of Leonardo SB 139-500.

Software Installation:

(2) After modification of a helicopter as required by paragraph (1) of this AD, it is allowed to install "Primus Epic" system software version on that helicopter, provided this is the applicable "Primus Epic" system software (see Note 1 of this AD) or a later approved software version.

Ref. Publications:

Leonardo SB 139-500 original issue, dated 31 October 2017.

The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.

2. This AD was posted on 15 December 2017 as PAD 17-173 for consultation until 29 December 2017. No comments were received during the consultation period.

3. Enquiries regarding this AD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.

4. For any question concerning the technical content of the requirements in this AD, please contact: Leonardo S.p.A. Helicopters. E-mail: cse.aw139.AW@leonardocompany.com.

Leonardo S.p.A.
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Agusta Westland Products

SERVICE BULLETIN

N° 139-500

DATE: October 31, 2017

REV. : /

TITLE

ATA 46 - "PRIMUS EPIC®" FLIGHT SOFTWARE RELEASE 7.12 & 7.14 UPGRADE

REVISION LOG

New 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

Part I: All AB139/AW139 helicopters from S/N 31005 to S/N 31157 (except S/N 31007) and from S/N 41001 to S/N 41023, equipped with "PRIMUS EPIC®" Flight Software Release 7.10 (Phase 7 V4).

Part II: All AW139 helicopters from S/N 31201 onwards and from S/N 41201 onwards, equipped with "PRIMUS EPIC®" Flight Software Release 7.10 (Phase 7 V4).

Part III: All AB139/AW139 helicopters from S/N 31005 to S/N 31157 (except S/N 31007) and from S/N 41001 to S/N 41023, equipped with "PRIMUS EPIC®" Flight Software Release 7.4 (Phase 7 V1) or 7.7 (Phase 7 V3).

Part IV: All AW139 helicopters from S/N 31201 onwards and from S/N 41201 onwards, equipped with "PRIMUS EPIC®" Flight Software Release 7.4 (Phase 7 V1) or 7.7 (Phase 7 V3).

B. COMPLIANCE

Within and not later than 600 flight hours or 12 months whichever occurs first after the issue of this Service Bulletin.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to provide the necessary instruction on how to perform the retrofit installation of "PRIMUS EPIC®" Flight Software Release 7.12 or 7.14.

E. DESCRIPTION

Product Improvement - "PRIMUS EPIC®" Flight Software Release 7.12 and 7.14 have been developed to fix potential in-service issues identified with previous versions of the Primus Epic SW.

The SW releases 7.12 and 7.14 are equivalent in terms of content, but designed to support different hardware configurations (SW release 7.12 requires NIM III p/n 60000091-919 on both MRCs; SW release 7.14 requires NIM II p/n 7517964-914 on both MRCs).

Part I of this SB provides the necessary instructions to perform the installation of "PRIMUS EPIC®" Flight Software Release 7.12 on all AB/AW139 helicopters Short

Nose configuration equipped with "PRIMUS EPIC®" Flight Software Release 7.10 (Phase 7 V4), through relevant retromod P/N 3G4600P00311.

Part II of this SB provides the necessary instructions to perform the installation of "PRIMUS EPIC®" Flight Software Release 7.12 on all AW139 helicopters Long Nose configuration equipped with "PRIMUS EPIC®" Flight Software Release 7.10 (Phase 7 V4), through relevant retromod P/N 3G4600P00312.

Part III of this SB provides the necessary instructions to perform the installation of "PRIMUS EPIC®" Flight Software Release 7.14 on all AB/AW139 helicopters Short Nose configuration equipped with "PRIMUS EPIC®" Flight Software Release 7.4 (Phase 7 V1) or 7.7 (Phase 7 V3), through relevant retromod P/N 3G4600P00411.

Part IV of this SB provides the necessary instructions to perform the installation of "PRIMUS EPIC®" Flight Software Release 7.14 on all AW139 helicopters Long Nose configuration equipped with "PRIMUS EPIC®" Flight Software Release 7.4 (Phase 7 V1) or 7.7 (Phase 7 V3), through relevant retromod P/N 3G4600P00412.

F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before applying the Service Bulletin, applicable Aviation Authority approval must be checked within Leonardo Helicopters customer portal.

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives.

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 approximately twenty-four (24) MMH are deemed necessary.

MMH are based on hands-on time and can change with personnel and facilities available.

H. WEIGHT AND BALANCE

PART I

N.A.

PART II

N.A.

PART III

N.A.

PART IV

N.A.

I. REFERENCES

1) PUBLICATIONS

DATA MODULE		DESCRIPTION	PART
DM01	39-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance.	All

2) ACRONYMS

AMP	Aircraft Maintenance Publication
APM	Aircraft Personality Module
DM	Data Module
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
FH	Flight Hours
IPD	Illustrated Parts Data
LHD	Leonardo Spa Helicopters
LS	Local Supply
MMH	Maintenance Man-Hours
MMIR	Maintenance Malfunction Information Report
N.A.	Not Applicable
P/N	Part Number
SB	Service Bulletin
S/N	Serial Number
S/W	Software

3) ANNEX

Annex A Phase 7.12 & 7.14 APM P/Ns upgrade

Annex B Software installation procedure

Annex C Avionic system Primus Epic S/W load operational check

Annex D APM settings recording

J. PUBLICATIONS AFFECTED

AW139 Illustrated Parts Data (IPD)

AW139 Aircraft Maintenance Publication (AMP)

K. SOFTWARE ACCOMPLISHMENT SUMMARY

Modification of Option File is required.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

PART I

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
1	**3G4600P00311**		**PRIMUS EPIC SYS SW RETROMOD**	**REF**	**.**		**N.A.**
2	DM60000218-003	MM60000218-002	Performance Database CD	REF	..	(6), (10)	N.A.
3	DM60000218-004		Performance Database CD	REF	..	(7), (10)	N.A.
4	TM7035294-106		Tool CD	REF	..	(8), (10)	N.A.
5	DM60004869-XXXXX		Option File CD	1	..	(9), (10)	N.A.
6	MM7035985-00717		CMC LDI CD	1	..	(8) (10)	139-500L1
7	MM7030191-014		Operational Software CD	1	..	(8) (10)	139-500L1
8	A601A1B08		Bonding Cable Assy	8	..	(3)	139-500L2
9	A601A1B10		Bonding Cable Assy	8	..	(3)	139-500L2
10	MS35338-135		Washer, lock	20	..	(3)	139-500L2
11	NAS1149CN416R		Washer, flat	20	..	(3)	139-500L2
12	NAS1149CN616R		Washer, flat	8	..	(3)	139-500L2
13	MS51957-12		Screw	12	..	(3)	139-500L2
14	MS51957-14		Screw	8	..	(3)	139-500L2
15	MS35338-136		Washer, lock	4	..	(3)	139-500L2
16	MS51957-30		Screw	4	..	(3)	139-500L2
17	NAS671C6		Nut	4	..	(3)	139-500L2

PART II

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
18	**3G4600P00312**		**PRIMUS EPIC SYS SW RETROMOD**	**REF**	**.**		**N.A.**
19	DM60000218-003	MM60000218-002	Performance Database CD	REF	..	(6), (10)	N.A.
20	DM60000218-004		Performance Database CD	REF	..	(7), (10)	N.A.
21	TM7035294-106		Tool CD	REF	..	(8), (10)	N.A.
22	DM60004869-XXXXX		Option File CD	1	..	(9), (10)	N.A.
23	MM7035985-00717		CMC LDI CD	1	..	(8) (10)	139-500L1
24	MM7030191-014		Operational Software CD	1	..	(8) (10)	139-500L1
25	A601A1B08		Bonding Cable Assy	8	..	(3)	139-500L2
26	A601A1B10		Bonding Cable Assy	8	..	(3)	139-500L2
27	MS35338-135		Washer, lock	20	..	(3)	139-500L2
28	NAS1149CN416R		Washer, flat	20	..	(3)	139-500L2
29	NAS1149CN616R		Washer, flat	8	..	(3)	139-500L2
30	MS51957-12		Screw	12	..	(3)	139-500L2
31	MS51957-14		Screw	8	..	(3)	139-500L2
32	MS35338-136		Washer, lock	4	..	(3)	139-500L2
33	MS51957-30		Screw	4	..	(3)	139-500L2
34	NAS671C6		Nut	4	..	(3)	139-500L2

PART III

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
35	**3G4600P00411**		**PRIMUS EPIC SYS SW RETROMOD**	**REF**	**.**		**N.A.**
36	DM60000218-003	MM60000218-002	Performance Database CD	REF	..	(6), (10)	N.A.
37	DM60000218-004		Performance Database CD	REF	..	(7), (10)	N.A.
38	DM60004869-XXXXX		Option File CD	1	..	(9), (10)	N.A.
39	MM7030191-015		Operational Software CD	1	..	(8), (10)	139-500L3
40	TM7035294-106		Tool CD	1	..	(8), (10)	139-500L3
41	MM7035985-00718		CMC LDI CD	1	..	(8), (10)	139-500L3

PART IV

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
42	**3G4600P00412**		**PRIMUS EPIC SYS SW RETROMOD**	**REF**	**.**		**N.A.**
43	DM60000218-003	MM60000218-002	Performance Database CD	REF	..	(6), (10)	N.A.
44	DM60000218-004		Performance Database CD	REF	..	(7), (10)	N.A.
45	DM60004869-XXXXX		Option File CD	1	..	(9), (10)	N.A.
46	MM7030191-015		Operational Software CD	1	..	(8), (10)	139-500L3
47	TM7035294-106		Tool CD	1	..	(8), (10)	139-500L3
48	MM7035985-00718		CMC LDI CD	1	..	(8), (10)	139-500L3

2) CONSUMABLES

N.A.

3) LOGISTIC MATRIX

In order to apply this Service Bulletin, the following Logistic P/N can be ordered in accordance with the applicable notes:

	LOGISTIC P/N	Q.TY (PER HELO)	NOTE
Part I	139-500L1	1	(1)
	139-500L2	1	(3)
	DM60004869-XXXXX	1	(9), (10)
Part II	139-500L1	1	(2)
	139-500L2	1	(3)
	DM60004869-XXXXX	1	(9), (10)
Part III	139-500L3	1	(4)
	DM60004869-XXXXX	1	(9), (10)
Part IV	139-500L3	1	(5)
	DM60004869-XXXXX	1	(9), (10)

NOTE

(1) All AB139/AW139 helicopters from S/N 31005 to S/N 31157 (except S/N 31007) and from S/N 41001 to S/N 41023, equipped with "PRIMUS EPIC®" Flight Software Release 7.10 (Phase 7 V4).

(2) All AW139 helicopters from S/N 31201 onwards and from S/N 41201 onwards, equipped with "PRIMUS EPIC®" Flight Software Release 7.10 (Phase 7 V4).

(3) Item required only for AB139/AW139 helicopters equipped with Display Hardened (HW III) P/N 7036350-812.

(4) All AB139/AW139 helicopters from S/N 31005 to S/N 31157 (except S/N 31007) and from S/N 41001 to S/N 41023, equipped with "PRIMUS EPIC®" Flight Software Release 7.4 (Phase 7 V1), 7.7 (Phase 7 V3).

(5) All AW139 helicopters from S/N 31201 onwards and from S/N 41201 onwards, equipped with "PRIMUS EPIC®" Flight Software Release 7.4 (Phase 7 V1), 7.7 (Phase 7 V3).

(6) This item has already been provided with previous SW releases and it is applicable only for helicopters NOT equipped with kit LGS Increased Gross Weight 7000kg P/N 4G0000F00311.

(7) This item has already been provided with previous SW releases and it is applicable only for helicopters equipped with kit LGS Increased Gross Weight 7000kg P/N 4G0000F00311.

(8) SW is part of CD P/N. To upload SW P/N EB7030191-00114 or P/N EB7030191-00115 use tools CD P/N TM7035294-106. Refer to the table below to identify the proper coupling between SW and CD P/Ns:

SW P/N	CD P/N
EB7030191-00114	MM7030191-014
EB7030191-00115	MM7030191-015
PS7035985-00717	MM7035985-00717
PS7035985-00718	MM7035985-00718

Tools CD P/N TM7035294-106 has already been provided for helicopters equipped with Phase 7.10.

(9) Option File P/N is depending upon helicopter configuration and can be different from the one reported in relevant helicopter "Commessa di Vendita". Refer to Annex A for the definition of the new Option File P/N. Customer must contact AW139 Customer Support Engineering (cse.aw139.aw@leonardocompany.com) to request the new Option File at least three months in advance from the scheduled application of this Service Bulletin. The proper coupling between Option File P/N and helicopter S/N shall be recorded in the specific purchase order.

(10) This item is part of Honeywell PRIMUS EPIC® S/W CD package.

B. SPECIAL TOOLS

The following special tools, or equivalent, are necessary to accomplish this Service Bulletin:

#	P/N	DESCRIPTION	Q.TY	NOTE	PART
49	110-6B or GB713-045-700	Electrical power supply (28 VDC) (BB-01-00)	1		All

#	P/N	DESCRIPTION	Q.TY	NOTE	PART
50	LANTAP-10	Primus Epic Lan interface kit (RF-01-00)	1		All
51	3G3200G00131	Test box MLG micro switches (AJ-06-00)	1		All
52	CEA 041-139-A01-1	mVdc Signal generator (range 0 ÷ 200 mVdc)	1	(B1)	All
53		Laptop computer	1	(B1), (B2)	All
54		Multimeter	1	(B1)	All
55		Headset kit	1	(B1)	All
56		NAV Database	1	(B3)	All

SPECIAL TOOLS NOTE

(B1) Item to be procured as local supply.

(B2) Minimum requirements for the laptop PC:

- Windows XP, Windows 7;
- 256 MB RAM;
- CD-ROM driver

(B3) This item is part of Honeywell PRIMUS EPIC® S/W CD package A NAV DATABASE CD which is valid only for 28 days shall be delivered. Each 28 days the Database expires and an updated release shall to be installed, two CDs, labelled 'EAST' and 'WEST' will be delivered: the operator shall install the CD in accordance with the customer's own area.

C. INDUSTRY SUPPORT INFORMATION

Owners/Operators who comply with the instructions of this Service Bulletin no later than the applicable date in the "Compliance" section will be eligible to receive REQUIRED MATERIALS on free of charge basis, except for Consumable Materials and Special Tools.

NOTES:

- Customers who fail to comply with the instructions in this Service Bulletin before the compliance date are not eligible for the aforementioned special policy.
- Please Issue relevant MMIR form to your Warranty Administration Dpt. for each helo's s/n.
- Refer to "Annex A" for a correct definition of Option Filet to order.
- Helo's S/N is mandatory for each order.
- Correct definition of Option file's P/N, complete of initial matrix "DM" before code 60004869-XXXXX is mandatory for each order.

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.

b) During the installation of bonding braids or components requiring grounding, clean the surface structure in order to obtain a good ground contact.

PART I

1. In accordance with 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.

NOTE

Following steps 2 thru 5 have to be performed only if the helicopter is equipped with Display Hardened (HW III) P/N 7036350-812.

2. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B08 by means of n°4 washers P/N MS35338-135, n°4 screws P/N MS51957-12, n°4 washers P/N NAS1149CN416R.
3. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B08 by means of n°8 washers P/N MS35338-135, n°8 screws P/N MS51957-14, n°8 washers P/N NAS1149CN416R.
4. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B10 by means of n°4 washers P/N MS35338-136, n°4 screws P/N MS51957-30, n°4 washers P/N NAS1149CN616R and n°4 nuts P/N NAS71C6.
5. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B10 by means of n°8 washers P/N MS35338-135, n°8 screws P/N MS51957-12, n°8 washers P/N NAS1149CN416R.
6. In accordance with Annex D, perform the APM setting recording.
7. In accordance with Annex B, perform the Software installation procedure of the PRIMUS EPIC® Flight Software release 7.12.

NOTE

Refer to Annex A for the definition of the new Option File P/N, according to aircraft initial configuration.

NOTE

Customer must contact AW139 Customer Support Engineering (cse.aw139.aw@leonardocompany.com) to request the new Option File at least three months in advance from the scheduled application of this Service Bulletin. The proper coupling between Option File P/N and helicopter S/N shall be recorded in the specific purchase order.

8. Ensure that the applicable Option File has been installed for the S/W kit installation.
9. In accordance with Annex C, perform the avionic system PRIMUS EPIC S/W Load operational check.
10. Return the helicopter to flight configuration and record for compliance with Part I of this Service Bulletin on the helicopter logbook.
11. Send the attached compliance form to the following mail box:

    cse.aw139.aw@leonardocompany.com

    As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART II

1. In accordance with 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.

NOTE

Following steps 2 thru 5 have to be performed only if the helicopter is equipped with Display Hardened (HW III) P/N 7036350-812.

2. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B08 by means of n°4 washers P/N MS35338-135, n°4 screws P/N MS51957-12, n°4 washers P/N NAS1149CN416R.
3. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B08 by means of n°8 washers P/N MS35338-135, n°8 screws P/N MS51957-14, n°8 washers P/N NAS1149CN416R.
4. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B10 by means of n°4 washers P/N MS35338-136, n°4 screws P/N MS51957-30, n°4 washers P/N NAS1149CN616R and n°4 nuts P/N NAS71C6.
5. With reference to Figure 1 view B-B, install n°4 bonding cable assemblies P/N A601A1B10 by means of n°8 washers P/N MS35338-135, n°8 screws P/N MS51957-12, n°8 washers P/N NAS1149CN416R.
6. In accordance with Annex D, perform the APM setting recording.
7. In accordance with Annex B, perform the Software installation procedure of the PRIMUS EPIC® Flight Software release 7.12.

NOTE

Refer to Annex A for the definition of the new Option File P/N, according to aircraft initial configuration.

NOTE

Customer must contact AW139 Customer Support Engineering (cse.aw139.aw@leonardocompany.com) to request the new Option File at least three months in advance from the scheduled application of this Service Bulletin. The proper coupling between Option File P/N and helicopter S/N shall be recorded in the specific purchase order.

8. Ensure that the applicable Option File has been installed for the S/W kit installation.
9. In accordance with Annex C, perform the avionic system PRIMUS EPIC S/W Load

operational check.

10. Return the helicopter to flight configuration and record for compliance with Part II of this Service Bulletin on the helicopter logbook.
11. Send the attached compliance form to the following mail box:

    cse.aw139.aw@leonardocompany.com

    As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART III

1. In accordance with 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 D, perform the APM setting recording.
3. In accordance with Annex B, perform the Software installation procedure of the PRIMUS EPIC® Flight Software release 7.14.

NOTE

Refer to Annex A for the definition of the new Option File P/N, according to aircraft initial configuration.

NOTE

Customer must contact AW139 Customer Support Engineering (cse.aw139.aw@leonardocompany.com) to request the new Option File at least three months in advance from the scheduled application of this Service Bulletin. The proper coupling between Option File P/N and helicopter S/N shall be recorded in the specific purchase order.

4. Ensure that the applicable Option File has been installed for the S/W kit installation.
5. In accordance with Annex C, perform the avionic system PRIMUS EPIC S/W Load operational check.
6. Return the helicopter to flight configuration and record for compliance with Part III of this Service Bulletin on the helicopter logbook.
7. Send the attached compliance form to the following mail box:

   cse.aw139.aw@leonardocompany.com

   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

PART IV

1. In accordance with 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 D, perform the APM setting recording.
3. In accordance with Annex B, perform the Software installation procedure of the PRIMUS EPIC® Flight Software release 7.14.

NOTE

Refer to Annex A for the definition of the new Option File P/N, according to aircraft initial configuration.

NOTE

Customer must contact AW139 Customer Support Engineering (cse.aw139.aw@leonardocompany.com) to request the new Option File at least three months in advance from the scheduled application of this Service Bulletin. The proper coupling between Option File P/N and helicopter S/N shall be recorded in the specific purchase order.

4. Ensure that the applicable Option File has been installed for the S/W kit installation.
5. In accordance with Annex C, perform the avionic system PRIMUS EPIC S/W Load operational check.
6. Return the helicopter to flight configuration and record for compliance with Part IV of this Service Bulletin on the helicopter logbook.
7. Send the attached compliance form to the following mail box:

   cse.aw139.aw@leonardocompany.com

   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the "Service Bulletin Application Communication".

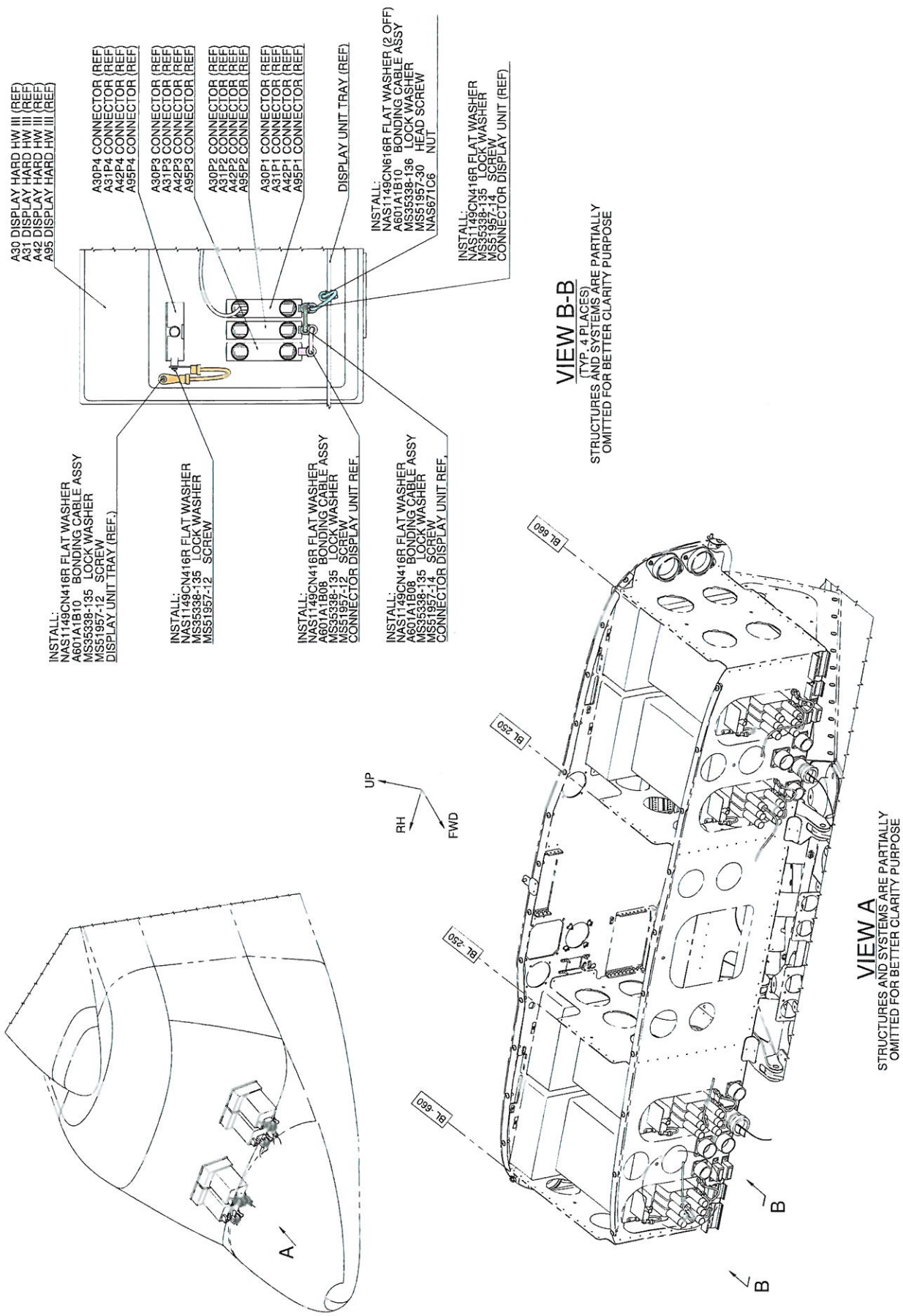

A30 DISPLAY HARD HW III (REF)
A31 DISPLAY HARD HW III (REF)
A42 DISPLAY HARD HW III (REF)
A95 DISPLAY HARD HW III (REF)
A30P4 CONNECTOR (REF)
A31P4 CONNECTOR (REF)
A42P4 CONNECTOR (REF)
A95P4 CONNECTOR (REF)
A30P3 CONNECTOR (REF)
A31P3 CONNECTOR (REF)
A42P3 CONNECTOR (REF)
A95P3 CONNECTOR (REF)
A30P2 CONNECTOR (REF)
A31P2 CONNECTOR (REF)
A42P2 CONNECTOR (REF)
A95P2 CONNECTOR (REF)
A30P1 CONNECTOR (REF)
A31P1 CONNECTOR (REF)
A42P1 CONNECTOR (REF)
A95P1 CONNECTOR (REF)
DISPLAY UNIT TRAY (REF)
INSTALL:
NAS1149CN616R FLAT WASHER (2 OFF)
A601A1B10 BONDING CABLE ASSY
MS35338-136 LOCK WASHER
MS51957-30 HEAD SCREW
NAS6710C6 NUT
INSTALL:
NAS1149CN416R FLAT WASHER
MS35338-135 LOCK WASHER
MS51957-14 SCREW
CONNECTOR DISPLAY UNIT (REF)
INSTALL:
NAS1149CN416R FLAT WASHER
A601A1B10 BONDING CABLE ASSY
MS35338-135 LOCK WASHER
MS51957-12 SCREW
DISPLAY UNIT TRAY (REF.)
INSTALL:
NAS1149CN416R FLAT WASHER
MS35338-135 LOCK WASHER
MS51957-12 SCREW
INSTALL:
NAS1149CN416R FLAT WASHER
A601A1B08 BONDING CABLE ASSY
MS35338-135 LOCK WASHER
MS51957-12 SCREW
CONNECTOR DISPLAY UNIT REF.
INSTALL:
NAS1149CN416R FLAT WASHER
A601A1B08 BONDING CABLE ASSY
MS35338-135 LOCK WASHER
MS51957-14 SCREW
CONNECTOR DISPLAY UNIT REF.
VIEW B-B
(TYP. 4 PLACES)
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE
BL 660
BL 250
BL 250
BL 660
UP
RH
FWD
A
B
B
VIEW A
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 1

ANNEX A

PHASE 7.12 & 7.14

APM P/N UPGRADE

Option File P/N is composed of two parts:

- Base Number: first eight (8) digits;
- Dash Number: last five (5) digits.

Phase 7.4 or 7.7 or 7.10 has the following Option File Base Number: **60000685;**
Phase 7.12 or 7.14 has the following Option File Base Number: **60004869.**

Otherwise, Phase 7.12 or 7.14 upgrade will not change Option File Dash number.

To correctly define the new Option File p/n considers:

Option File Base Number	
WAS (Phase 7.4 or 7.7 or 7.10)	**BECOME** (Phase 7.12 or 7.14)
60000685	**60004869**

Option File Dash Number	
WAS (Phase 7.4 or 7.7 or 7.10)	**BECOME** (Phase 7.12 or 7.14)
XYZKW	**XYZKW**

Refer to the tables below **as an example**:

Example 1	
WAS (Phase 7.4 or 7.7 or 7.10)	**BECOME** (Phase 7.12 or 7.14)
60000685-10401	**60004869-10401**

Example 2	
WAS (Phase 7.4 or 7.7 or 7.10)	**BECOME** (Phase 7.12 or 7.14)
60000685-20240	**60004869-20240**

CAUTION

The proper coupling between Option File P/N and helicopter S/N shall be recorded in the specific purchase order.

Customers must consider P/N **DM60004869-XXXXX** to purchase the correct Option File CD as specified in SB Industry Support Information field (ref. 2.C).

ANNEX B

SOFTWARE INSTALLATION PROCEDURE

PROCEDURE PREREQUISITES

1. Verify that the External Power Bench is operative and set to the appropriate Voltage (28 VDC ± 5%).
2. Verify that all the electrical power supply CB's are pushed IN.
3. Verify that the "LDG GEAR CONTR" CB126 is pushed IN.
4. Verify that at least the PRIMUS EPIC® SYSTEM devices CB's (Table 1) are pushed IN.
5. During the procedure keep at least the AUX battery plugged to avoid damages to the CMC module in MAU1 in case of external power loss.
6. If the helicopter is not WOW, connect the WOW simulation kit switches to the relevant connectors, set them to the GND position and electrically reset the system. The S/W upload procedure cannot be performed with helicopter in air.

C/B	Condition	Verified
MAU CMC	PUSHED IN	
MAU 1	PUSHED IN	
MAU 2	PUSHED IN	
MFD PLT	PUSHED IN	
MFD CPLT (4 display config. only)	PUSHED IN	
PFD PLT	PUSHED IN	
PFD CPLT	PUSHED IN	
MRC1-VHF1	PUSHED IN	
MRC2-VHF2	PUSHED IN	
PFD CONTR PLT	PUSHED IN	
MRC1-NAV1	PUSHED IN	
MRC2-NAV2	PUSHED IN	
MRC1 - NIM	PUSHED IN	
MRC2 - NIM	PUSHED IN	
MRC2-XPNDR	PUSHED IN	
MCDU PLT	PUSHED IN	
MCDU CPLT	PUSHED IN	
AP-FD1 (FD1)	PUSHED IN	
AP-FD2 (FD2)	PUSHED IN	
PFD CONTR CPLT	PUSHED IN	
MRC2-ADF	PUSHED IN	
MRC2-DME	PUSHED IN	

Table 1: PRIMUS EPIC® Avionic System Circuit Breakers Setting.

TOOLING REQUIRED

1. The following equipment is required for the software installation:
   - ✓ DC External Power Bench (28VDC);
   - ✓ Computer with:
     - Windows XP or Windows 7;
     - 256 MB RAM;
     - CD-ROM Driver;
   - ✓ LANTAP-10 Primus EPIC Lan Interface Kit (see Figure 1 below)

Figure 1: LANTAP - 10

   - ✓ WOW simulator kit.
   - ✓ PRIMUS EPIC® Software package CD dedicated to the helicopter.
   - ✓ Multimeter

2. In case, use following equivalent tools:
   - ✓ Co-Axial Cable (at least 3 meters) with BNC connectors;
   - ✓ Co-Axial BNC "T" Connector;
   - ✓ 50 Ohm Co-Axial BNC Termination.
   - ✓ LAN Network "Dongle Adapter": PCMCIA slot to Coax LAN cable (See Figure 2 below):

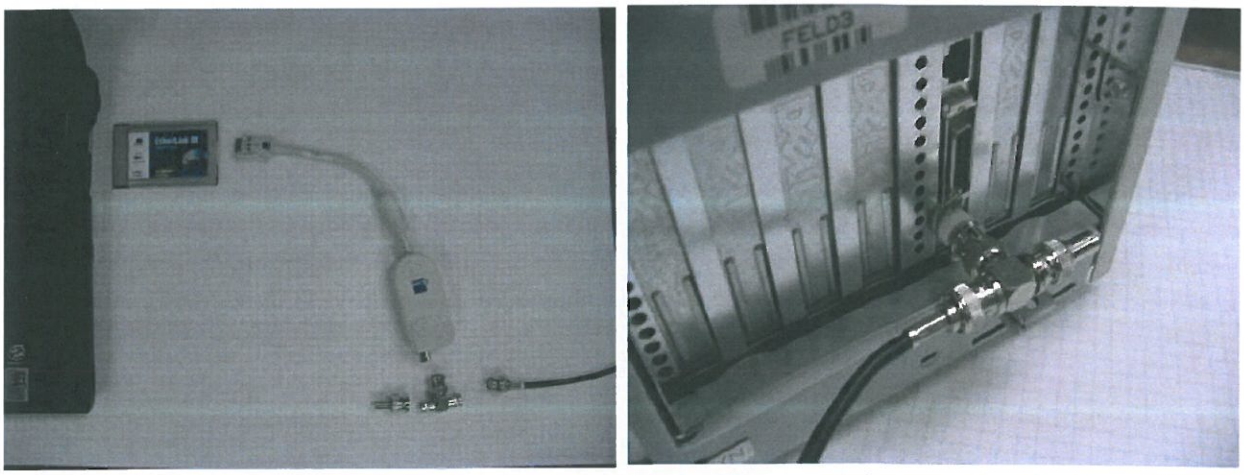


Figure 2: LAN "Dongle Adapter" connection and Network module connection

COMPUTER SETTING

NOTE

The Computer setting procedure shall be performed only the first time the PC is used to load the PRIMUS EPIC® S/W.

CAUTION

The computer used for the software uploading on the helicopter should not be used for other tasks and efficient anti-virus software shall be installed and kept updated.

1. Power ON the computer.
2. From the START button select "Settings" ➔ "Control Panel" ➔ "Network".
3. Right click on the "Local Area Connection" being used to connect to the aircraft, then select "Properties".
4. Scroll down the window and highlight "Internet Protocol (TCP/IP)", select Properties button.
5. A window similar to Figure 3 will appear. Select the "Use the following IP address" button and enter the IP address 192.168.200.201 and the Subnet mask 255.255.0.0 in the window.
6. When a new PRIMUS EPIC® Software Release is issued, the relevant TOOL software must be installed on the Computer (Tools CD) before proceeding with the S/W installation on the helicopter. Launch the "AW139 Tools CD.exe" program supplied on the Tools CD and install the following programs:
   - ✓ APM Restoration Tool
   - ✓ APM Settings Tool
   - ✓ CMC Remote Terminal Tool

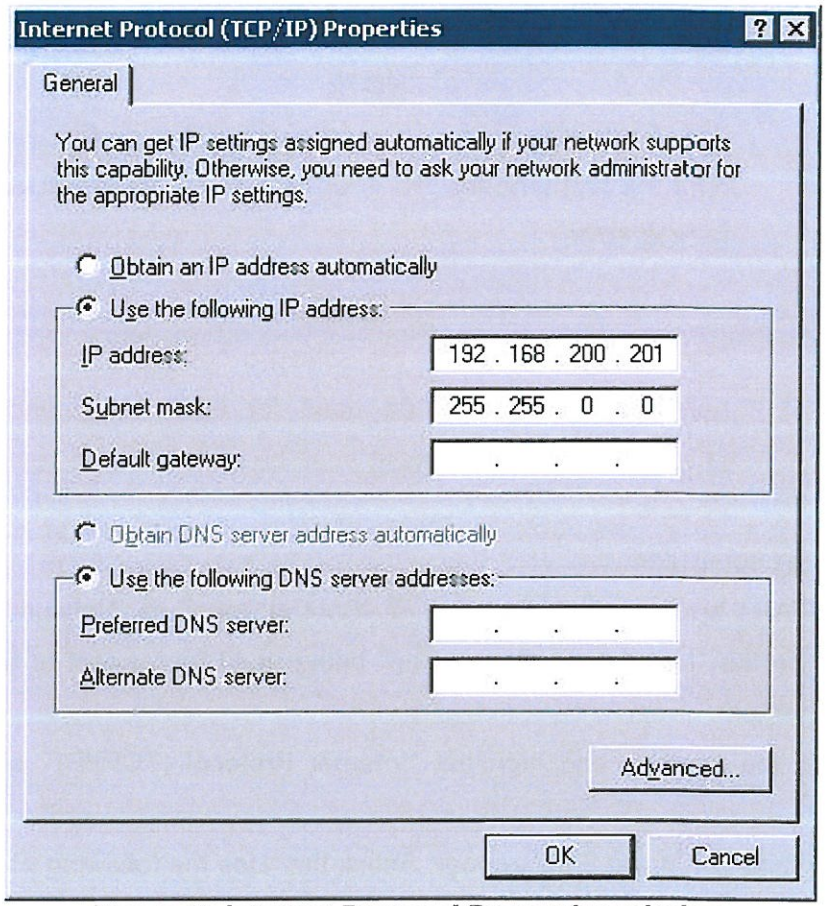


Figure 3: Internet Protocol Properties window

CAUTION

A power interruption during the Flight Software installation may damage the under uploading LRU's. Do not power off the system during the flight software installation.

1. Verify that the helicopter is set on GND (WOW on GND).
2. Connect the PC to the helicopter LAN.
3. Power on the helicopter by means of the "EXT PWR" switch.
4. To verify that the LAN works properly, open the DOS command window and type the command "ping 192.168.200.1" and press Enter. The response should be as depicted in the Figure 4 below; otherwise the LAN integrity should be checked (LAN cable termination resistors equal to 50-55 Ohm measured at the opposite termination side).

CAUTION

Power off the helicopter, before checking LAN integrity.

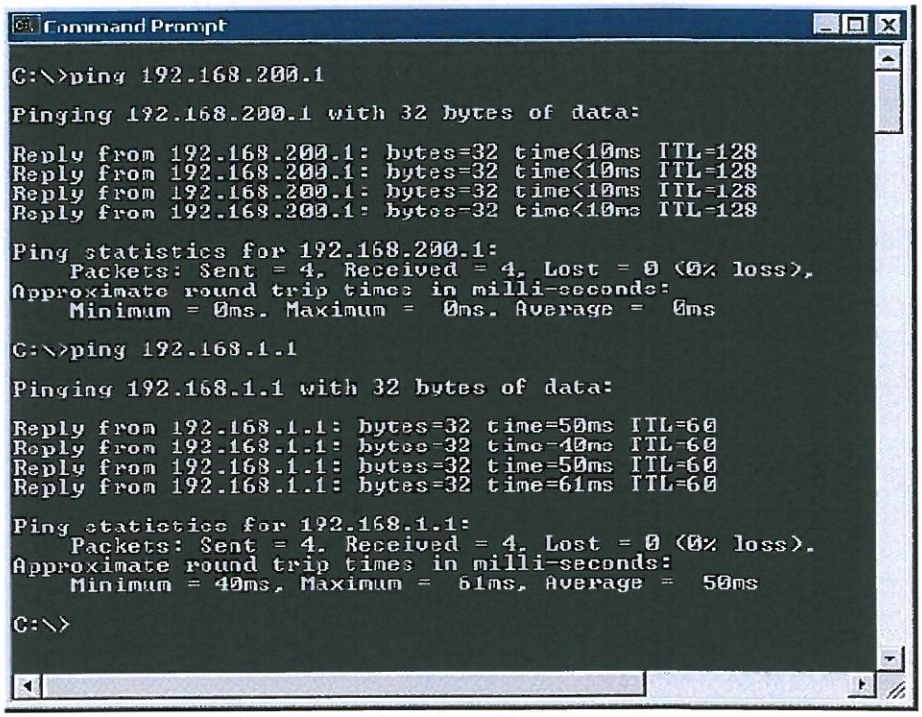


Figure 4: Ping Positive Response

5. Insert the "Flight Software" CD in the computer CD player.
6. Launch the CMC RT tool and click on 'DATA LOADER'.
7. Select the "FULL LOAD" option.

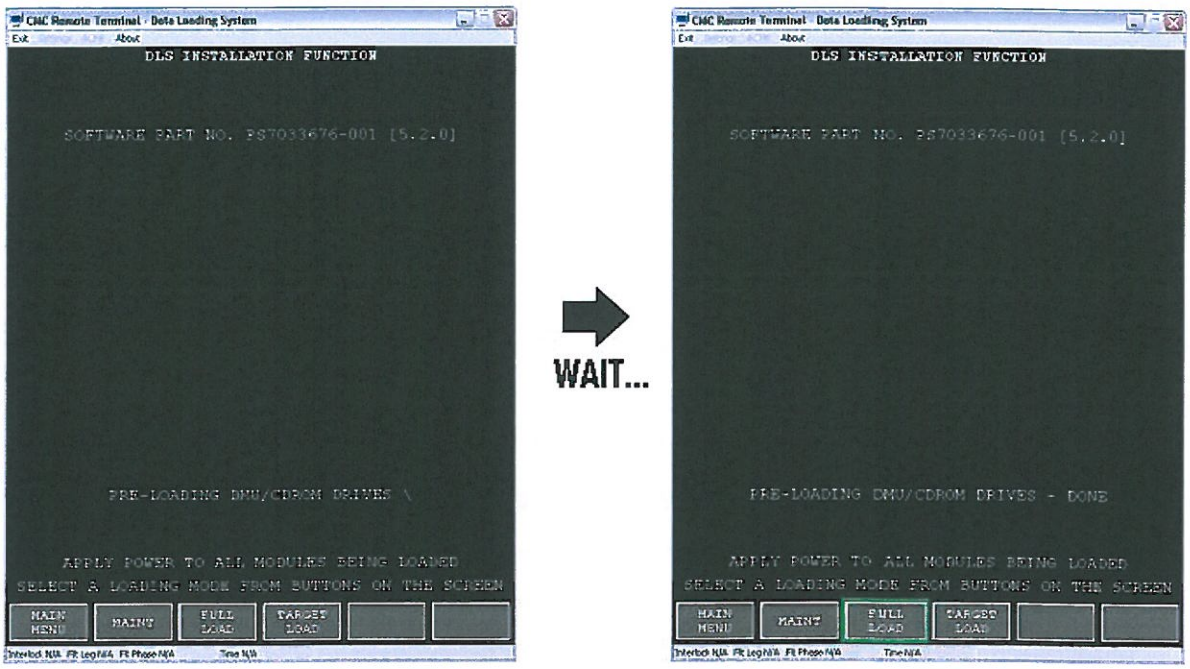


Figure 5: Data Loader Main Menu CMC Remote Terminal (only for reference)

8. Browse the CD and once you have chosen the file, click on "SELECT FILE":

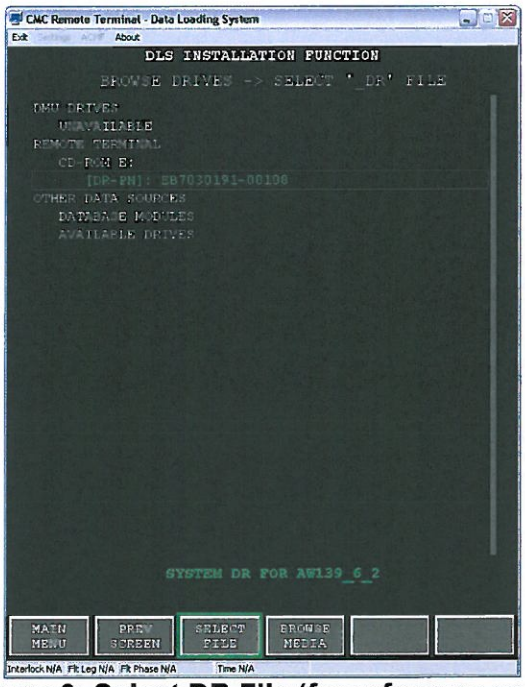


Figure 6: Select DR File (for reference only)

9. Verify that the configuration check procedure starts and the "Configuration Check" window (see Figure 7) appears on the screen. During the configuration check, the "% COMPLETE" of the process will be shown and a report will be listed in the page.

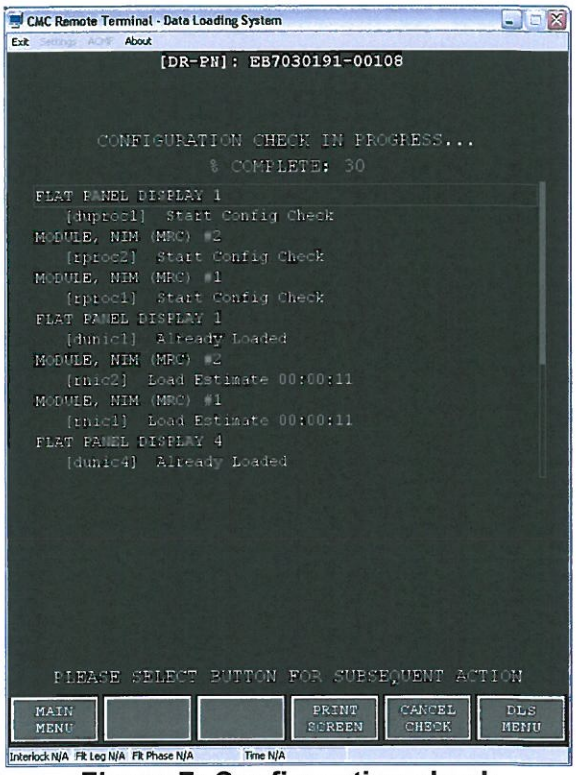


Figure 7: Configuration check

10. On completion of the configuration checks, the estimated load time, along with the computed error codes, will be displayed in the Configuration Check Complete page (see Figure 8).

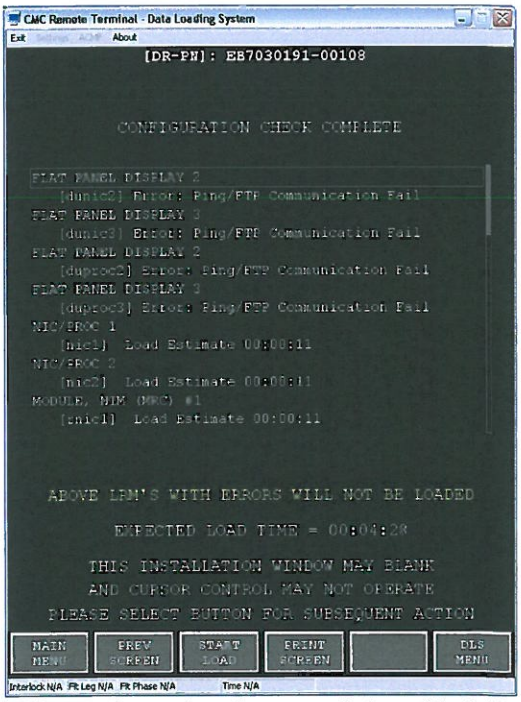


Figure 8: Configuration check complete with failure reporting

11. If any error has been detected, repeat the Configuration Check procedure. If the problem persists, fix the problem (i.e. replace the failed component) and repeat the Configuration Check.
12. If no error has been found, on the Configuration Check Complete page, press the "START LOAD" softkey.
13. The page System Load Status will be visualized and the loading percentage starts running.
14. At the end of the loading process the software installation log will be displayed in System Load Status page.
15. If no error has been found, the process has been successfully completed.
16. If any error has been detected during the installation proceed as indicated:
17. If 3 or more modules fail the installation, reset the system and repeat the FULL LOAD Procedure.
18. If 1 or 2 modules fail the installation, reset the system and proceed with the TARGET LOAD Procedure (see Figure 9).
19. Repeat the procedure until the S/W has been successfully uploaded into all the LRU's (no error reported). If the malfunction persists (more than 3 process failures), contact Honeywell support personnel.
20. Recycle the power.
21. Verify on the MFD SYSTEM page that the indicated S/W P/N is correct.

PRIMUS EPIC®FLIGHT SOFTWARE TARGET LOAD INSTALLATION PROCEDURE

NOTE

TARGET LOAD installation procedure could be executed either with a PC connected to the helicopter LAN (as described in PRIMUS EPIC® flight software installation procedure) for the FULL LOAD installation or on MFD CMC page as described below.

1. Select the 'System' button on MFD menu bar.
2. Select 'Maintenance' option to display the CMC page.
3. Click on 'DATA LOADER'.
4. Wait for the end of pre-loading phase.
5. Select 'TARGET LOAD'.
6. Browse drives and select DATABASE MODULE EB7030191-00108; (EPIC SW P/N).
7. Select LRM to load (green colored).
8. Press 'NEXT' softkey and then wait for the end of Configuration Check.
9. If no error has been found, press 'START LOAD' softkey.
10. Wait for the message 'LOADING SEQUENCE COMPLETE'.

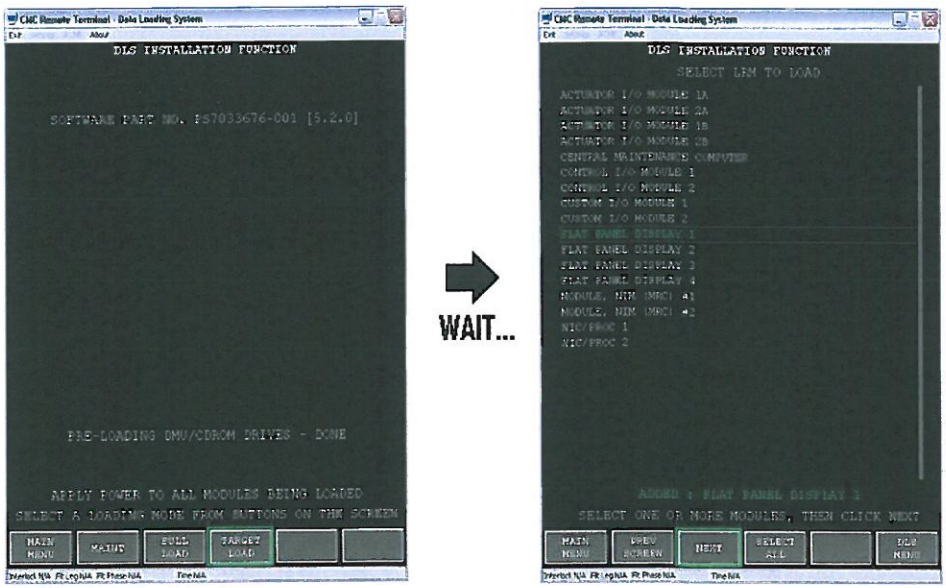


Figure 9: Target Load.

SETTINGS FILE INSTALLATION PROCEDURE

CAUTION

Do not interrupt the power during the Settings File Installation operations. A power interruption before completion of the operation will create an inconsistency in the APM that will prevent the associated NIC from powering on in normal flight mode.

NOTE

If it's not the first software upload on the aircraft: try to find the setting.txt relevant to the setting.dr installed (if not possible, open the Sys Config tab on MFD) and note the parameters or use the APM Restoration Tool.exe to store the current configuration.

CAUTION

If it is the first software upload on the aircraft, take note of settings in the page SYS CONFIG of MFD.

1. Verify that the helicopter is set on GND (WOW on GND).
2. Connect the PC to the helicopter LAN.
3. Power on the helicopter by mean the "EXT PWR" switch.
4. To verify that the LAN works properly, open the DOS command window and type the command "ping 192.168.200.1" and press Enter. The response should be as depicted in the Figure 4, otherwise the LAN integrity should be checked. (LAN cable termination resistors equal to 50-55 Ohm measured at the opposite termination side).
5. Insert the "Flight Software" CD dedicated to the helicopter into the computer CD driver.
6. Launch the APM Settings Tool.exe (Figure 10).
7. Select the settings.def file provided in the "Flight Software" CD via the browse button.
8. Press the ***Open*** button.
9. Press the ***Load from Definition File*** button to select the PC stored definition file as the source of default data; or the ***Load from a Binary file*** button to select an existing settings binary file as the source file by browsing to an existing settings binary file; or the ***Get APM List*** button to load the default values from an APM (Figure 11).
10. Enter the data as described from the PHASEs 7 APM Settings from Figure 12 to Figure 19. To fill all the fields in the setting tool form use the setting taken previously.
11. Press the ***Create & load binary file*** (Figure 19) to create the settings APM file and load it directly to the Primus Epic® APM memory; or press the ***Create binary file*** to only create the settings APM file and then use the CMC RT to load it directly to the Primus

Epic® APM memory (Figure 20).

12. At the end of the process, the installation of the following files on the APM modules has been completed:
    - ✓ SYSID.bin – uploaded as "Flight Software" component;
    - ✓ Settings.bin – uploaded using the created *setting.bin* file, dedicated specifically to the single helicopter S/N.
13. Recycle the power.
14. Verify on the MFD SYSTEM page that the settings are correctly installed (look for the Mode S Transponder ICAO Address, the Cameras).

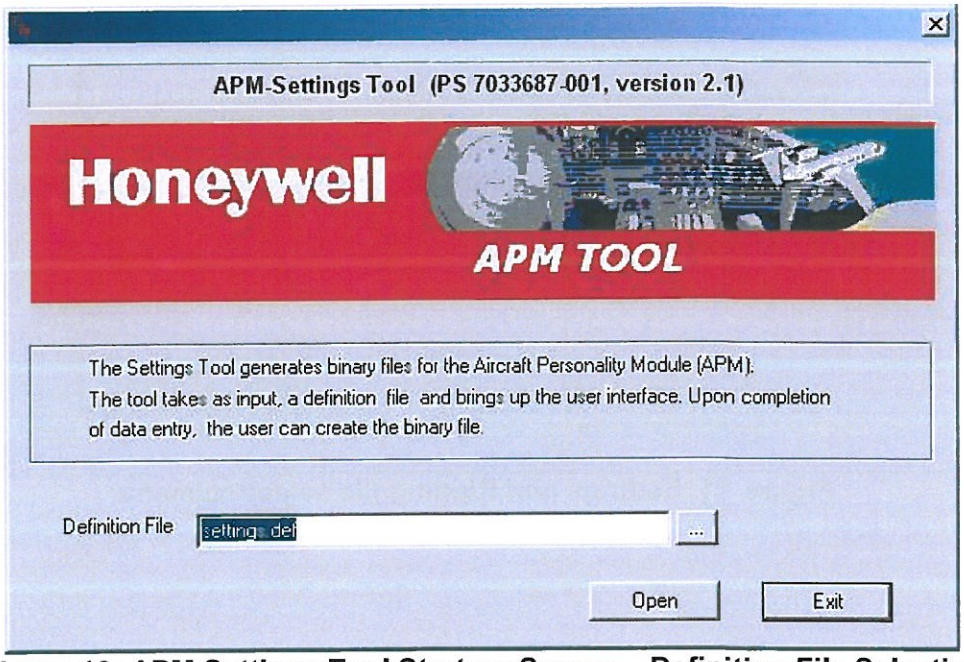


Figure 10: APM Settings Tool Start-up Screen – Definition File Selection

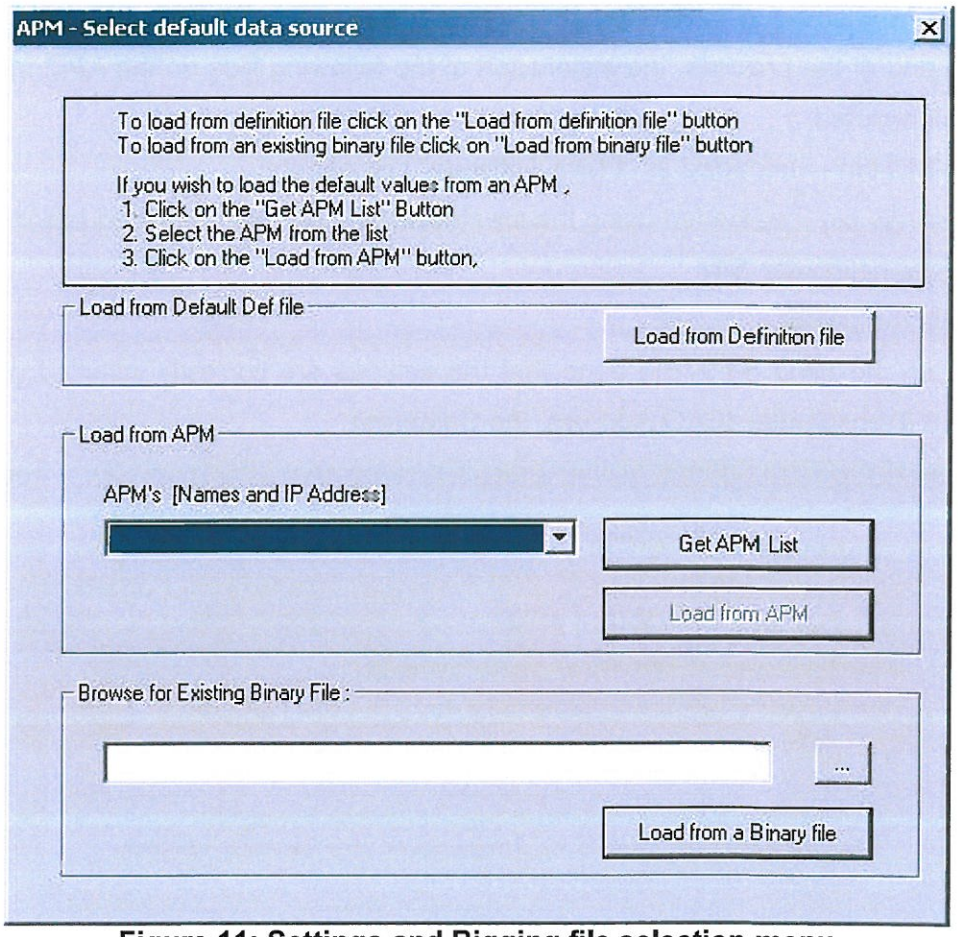


Figure 11: Settings and Rigging file selection menu

PHASEs 7 APM Settings:

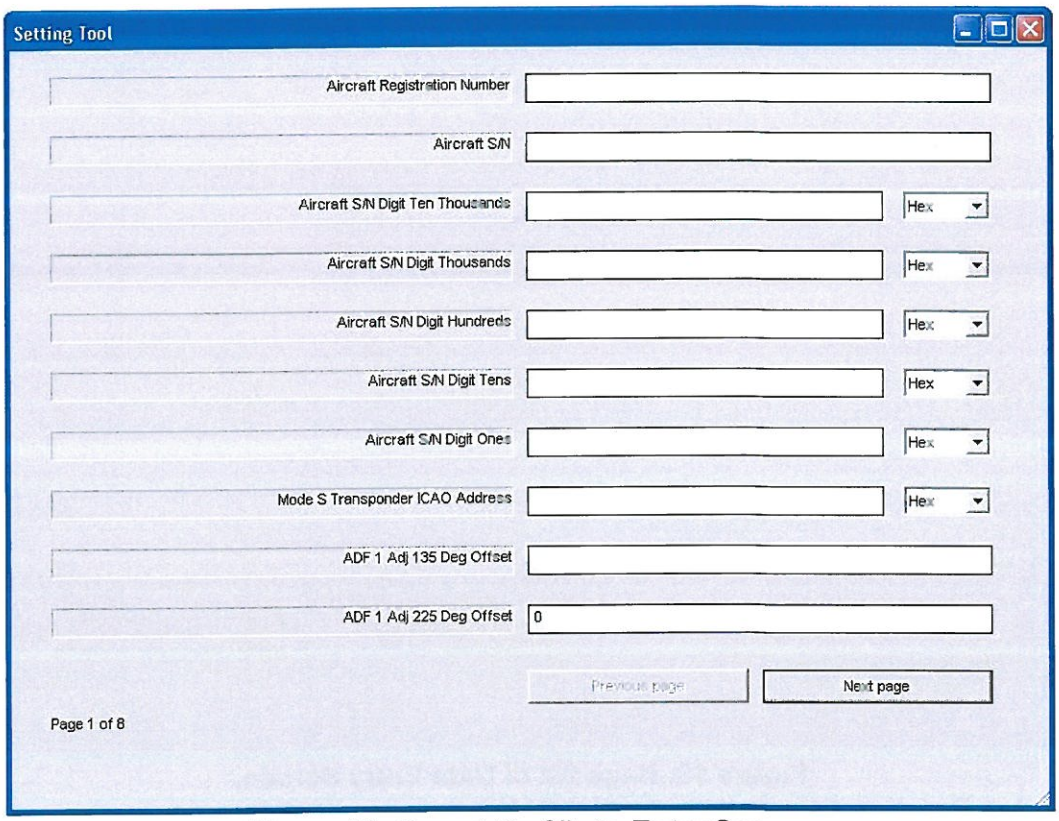


Figure 12: Page 1/8 of Data Entry Screen

Aircraft Registration Number: Insert the TAIL ID.

Aircraft S/N: Insert serial number: Hex Box need to be changed to "Decimal". **PAY ATTENTION:** the serial number inserted will have to match with the aircraft s/n reported on the Option file CD (See chapter "Options file installation procedure" step 5).

Mode S Transponder ICAO Address: Insert the MODE S ICAO 24 bit transponder address or the new assigned address.

1 **NOTE:**

Default value for this field is 000000.
If this value is not changed, transponder will fail.

ADF x Adj y Deg Offset: If it's the first S/W installation don't insert any value, otherwise insert the values previous uploaded.

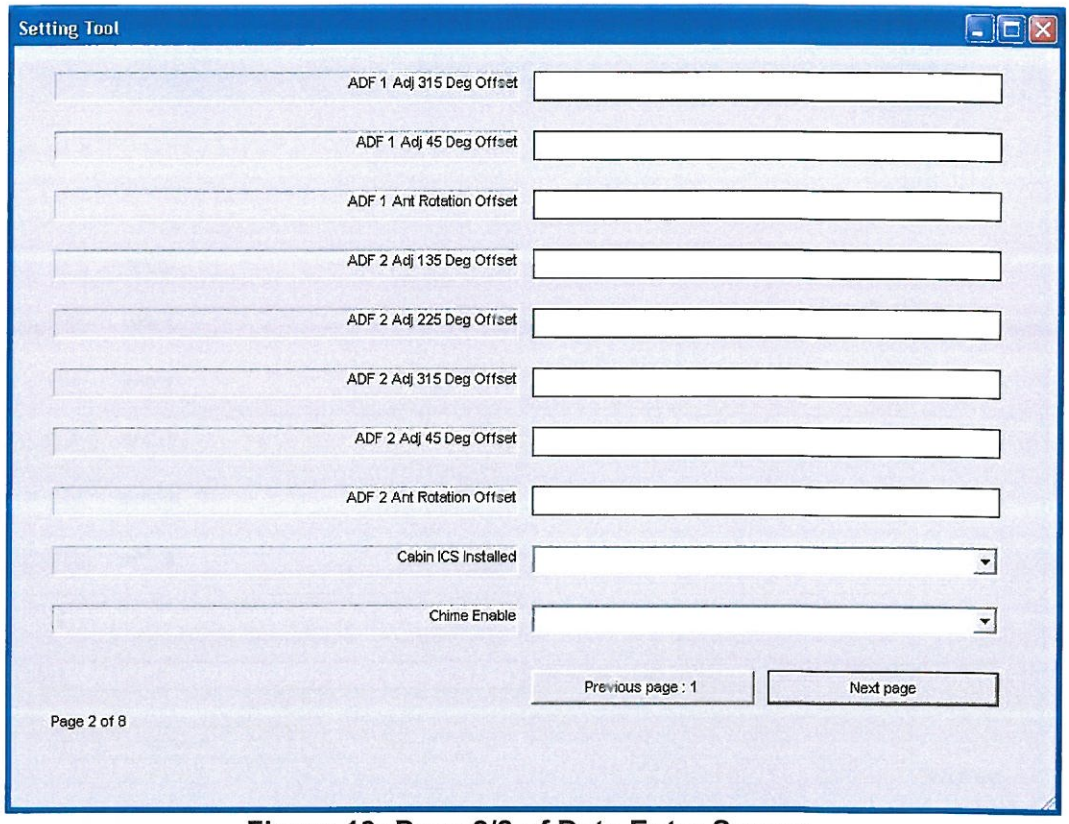


Figure 13: Page 2/8 of Data Entry Screen.

ADF x Ant Rotation Offset: If it's the first S/W installation don't insert any value, otherwise insert the values previous uploaded.

Cabin ICS Installed:

Block1 and Block2 **P/N 7511900-98201, -9860X, -98801**	**Block3** **P/N 7511900-99001, -99201**
To be selected if the CA 900 Audio panel is installed in the cabin or another ICS is installed (i.e. EMS or 16PAX Gemelli).	**ALWAYS SELECTED**

Chime Enable: Select "Enable" only if the chime system is installed into the cabin.

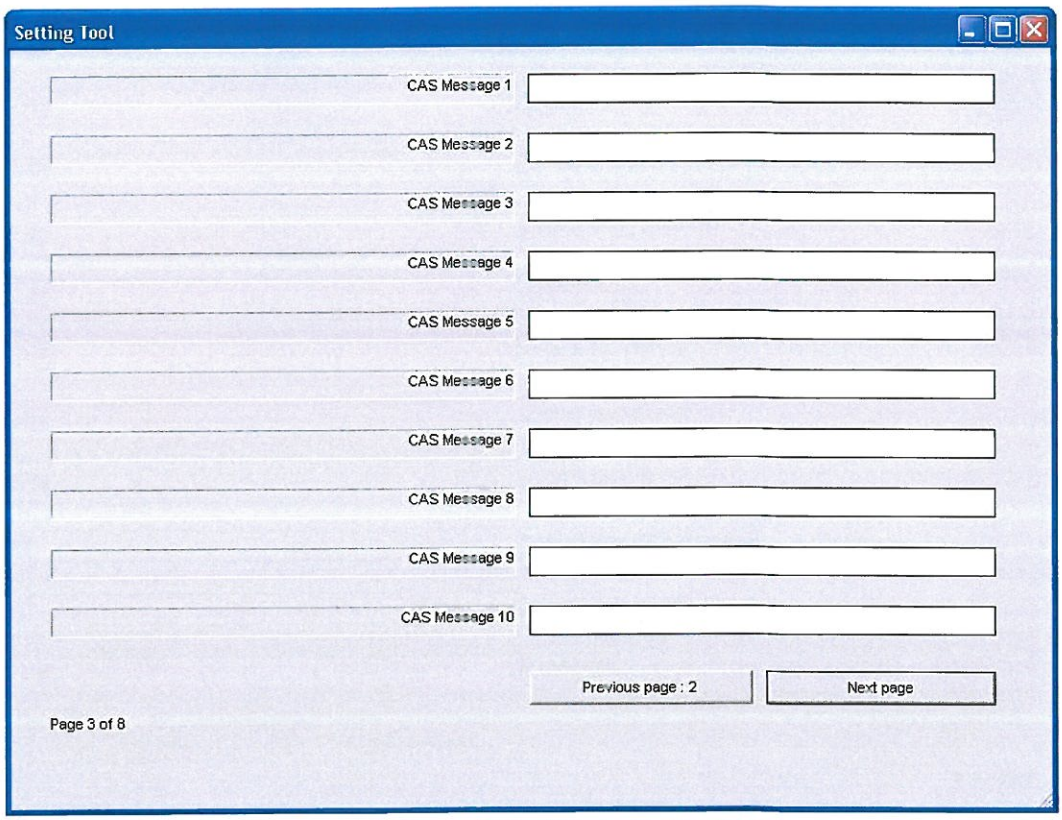


Figure 14: Page 3/8 of Data Entry Screen

CAS Message x: Insert the following text messages:

CAS MSG N.	LONG NOSE		SHORT NOSE
1	ICE DET ON		
2	NOSE FAN 1 OFF		AVNX FAN1 OFF
3	PA OFF		PA OFF
4	NOSE FAN 2 OFF		AVNX FAN2 OFF
5	ICING		
6	PARK BRK LVL		
7	Legacy system	Enhanced system	RH LDG LT2 SEL
	RH LDG LT2 SEL		
8	Legacy system	Enhanced system	LH LDG LT2 SEL
	LH LDG LT2 SEL	RADAR TX ON (only if radar Gabbiano is installed)	
9	150 FT AURAL INHIB		150 FT AURAL INHIB
10	CHECK VMU		CHECK VMU

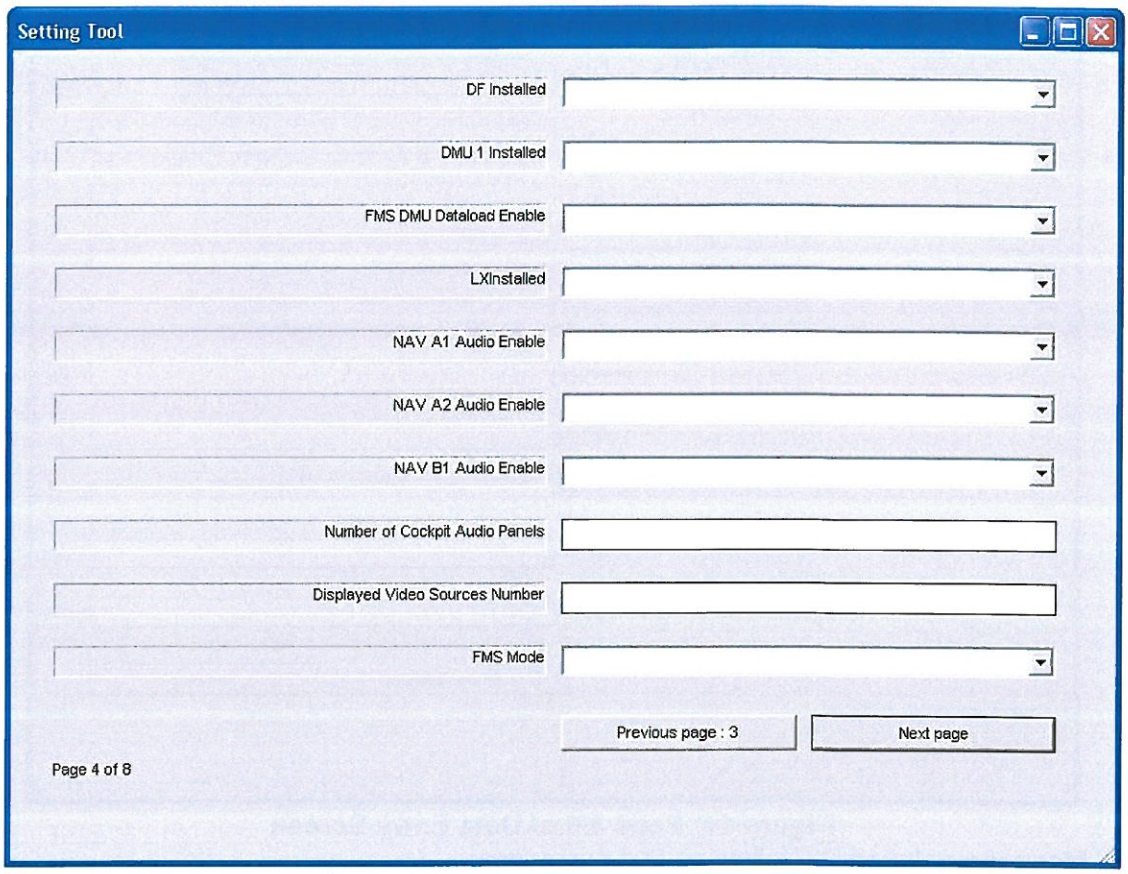


Figure 15: Page 4/8 of Data Entry Screen

DF Installed: Only if DF is installed

DMU 1 Installed: Only if DMU is installed

FMS DMU ACDB Dataload Enable: Only if DMU is installed

FMS DMU Dataload Enable: Only if DMU is installed

LX Installed: Only if Lightning Sensor System is installed

NAV x Audio Enable:

Block2 P/N 7511900-9860X, -98801	Block3 P/N 7511900-99001, -99201
NAV A2 Enable only if DF is installed	NAV A2 Enable only if DF is installed NAV A1 Enable only if Auxiliary Audio System (AUX 1) is installed (Passenger Briefing system) NAV B1 Enabled only if Auxiliary Audio System (AUX 2) is installed (not used)

Num of Cockpit Audio Panels:

Block1 and Block2 P/N 7511900-98201, -9860X, -98801	Block3 P/N 7511900-99001, -99201
Insert the total number of AV900s installed	Insert "2" if number of AV900 installed is 2 or greater than 3 Insert "3" if 3 AV900 are installed

Displayed Video Sources Number: Insert "8".

FMS Mode: Set "3" = MCDU control.

(other options available:"0" = single, "1" = Dual, "2" = Independent)

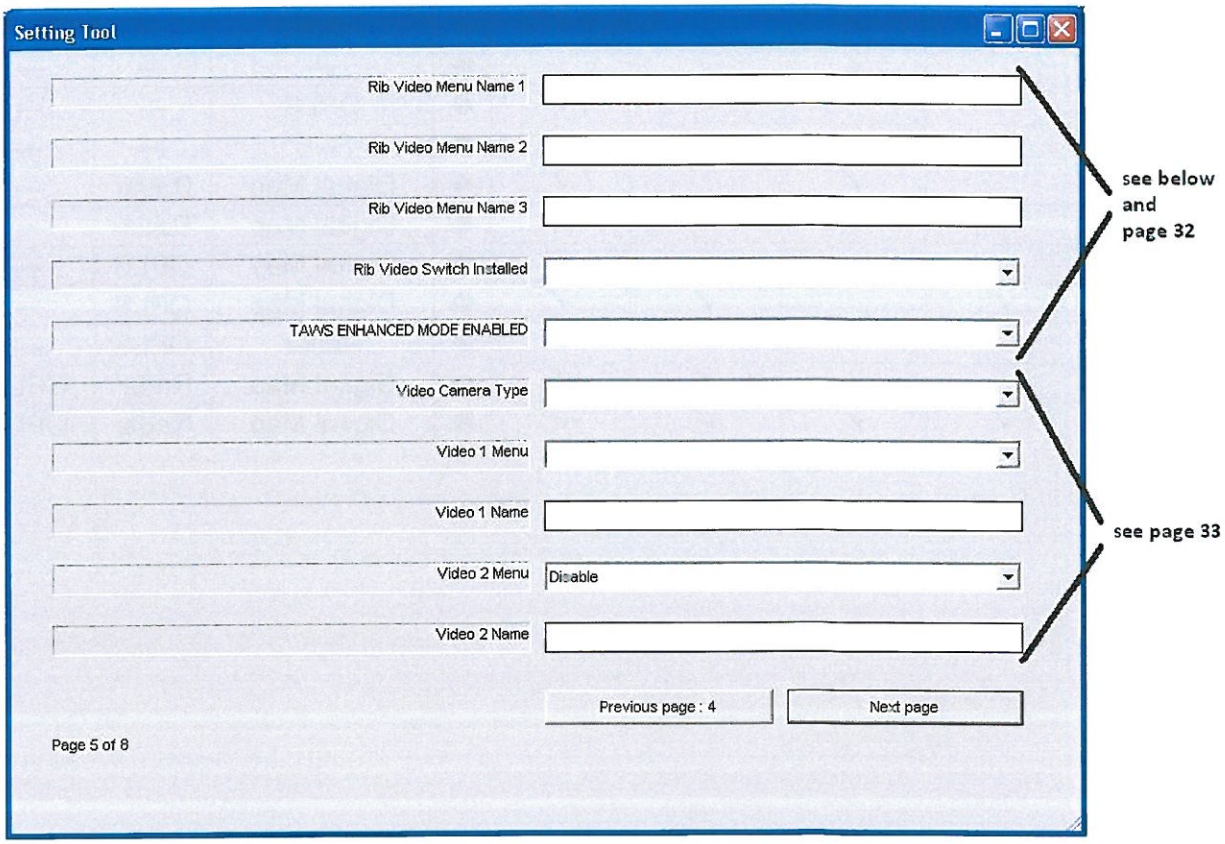


Figure 16: Page 5/8 of Data Entry Screen

Rib Video Menu Name x: insert the name of the source installed as indicated in the *Table 1* OR *Table 2* (applicable to 31521, 31526, 31528, 31556, 31560, 31563, 31564) below, depending on the video customization:

TABLE 1

SOURCES CONFIGURATION						SETTINGS		
						Rib Video Menu Name x		
SkyForce **Installed**	Euronav **Installed** **OR** both Euronav and 2nd Euronav **Installed** (see NOTE below)	Radar 1500 B+ **OR** Gabbiano **Installed**	OPLS **Installed**	VMU **Installed**		x=1	x=2	x=3
				✓	➡	---	---	---
✓					➡	Digital Map	---	---
	✓				➡	---	---	---
	✓			✓	➡	Digital Map	---	---
		✓		✓	➡	Radar	---	---
		✓			➡	---	---	---
			✓	✓	➡	OPLS	---	---
			✓		➡	---	---	---
✓		✓		✓	➡	Digital Map	Radar	---
	✓	✓		✓	➡	Digital Map	Radar	---
✓			✓	✓	➡	Digital Map	OPLS	---
	✓		✓	✓	➡	Digital Map	OPLS	---
		✓	✓	✓	➡	Radar	OPLS	---
✓		✓	✓	✓	➡	Digital Map	Radar	OPLS
	✓	✓	✓	✓	➡	Digital Map	Radar	OPLS

TABLE 2 (applicable to 31521, 31526, 31528, 31556, 31560, 31563, 31564)

SOURCES CONFIGURATION						SETTINGS		
						Rib Video Menu Name x		
SkyForce **Installed**	Euronav **Installed** **OR** both Euronav and 2nd Euronav **Installed** (see NOTE below)	Radar 1500 B+ **OR** Gabbiano **Installed**	OPLS **Installed**	VMU **Installed**		x=1	x=2	x=3
				✓	➡	---	---	---
✓					➡	DIGITAL MAP	---	---
	✓				➡	---	---	---
	✓			✓	➡	DIGITAL MAP	---	---
		✓		✓	➡	RADAR	---	---
		✓			➡	---	---	---
			✓	✓	➡	OPLS	---	---
			✓		➡	---	---	---
✓		✓		✓	➡	GRAPHICS	---	---
	✓	✓		✓	➡	GRAPHICS	---	---
✓			✓	✓	➡	GRAPHICS	---	---
	✓		✓	✓	➡	GRAPHICS	---	---
		✓	✓	✓	➡	GRAPHICS	---	---
✓		✓	✓	✓	➡	GRAPHICS	---	---
	✓	✓	✓	✓	➡	GRAPHICS	---	---

NOTE: only for aircrafts s/n 31250 and 31267 set as follow:

Rib Video Menu Name 1 = Digital Map 1
Rib Video Menu Name 2 = Digital Map 2

Rib Video Switch Installed: only if installed

TAWS ENHANCED MODE ENABLED: "Enable" or "Disable". See the bullets below:

- If EGPWS is not installed, select "DISABLE";
- If EGPWS is installed and:
  - ✓ FD configuration is ENHANCED (kit p/n 4G2210F00411) or SAR (kit p/n 4G2210F00111), select "ENABLE";
  - ✓ FD configuration is BASIC (kit p/n 4G2210F00511) and:
    - OFFSHORE MODE is required by work order (see EGPWS-030 note), select "ENABLE";
    - OFFSHORE MODE is not required by work order (see EGPWS-030 note), select "DISABLE".
    - EGPWS-030 note is not specified in the work order, select "DISABLE".

Video Camera Type: NTSC or PAL

Video x Menu: Insert "enable" depending on the cameras installed

Video x Name: if enabled insert the relevant name as indicated below:

Only if Simplex GII tank is installed	
X	**Name**
1	Fas Doors Camera
2	Fas Snorkel Camera
3	Fin Camera
4	EVS Camera
5	Hoist Camera
6	Cabin Camera
7	---
8	Flir Camera

Only if CARGO HOOK Cameras or both Simplex GII tank and CARGO HOOK Cameras are installed	
X	**Name**
1	Hook Camera OR Cargo Camera depending on actual helicopter video customization
2	Cargo Camera OR Hook Camera depending on actual helicopter video customization
3	Fin Camera
4	EVS Camera
5	Hoist Camera
6	Cabin Camera
7	---
8	Flir Camera

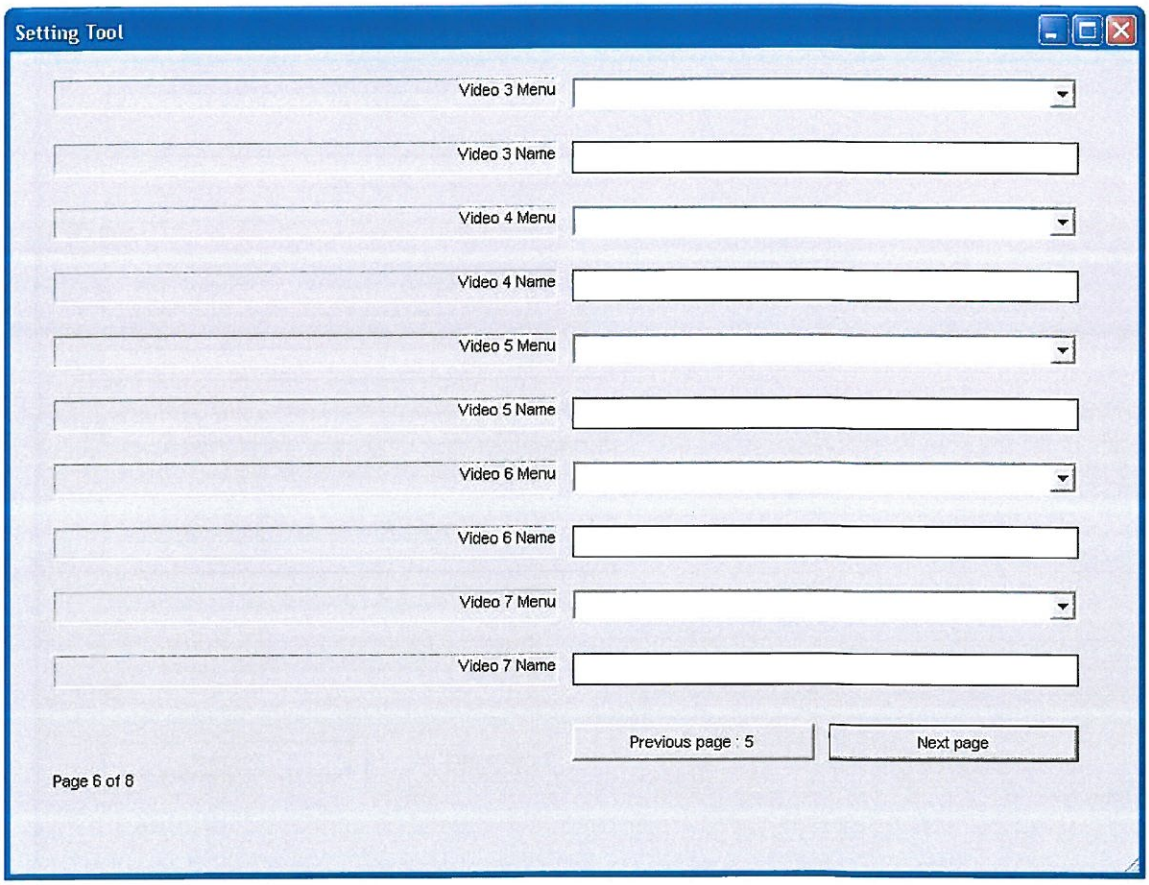


Figure 17: Page 6/8 of Data Entry Screen

Video x Menu: as page 5 of 8

Video x Name: as page 5 of 8

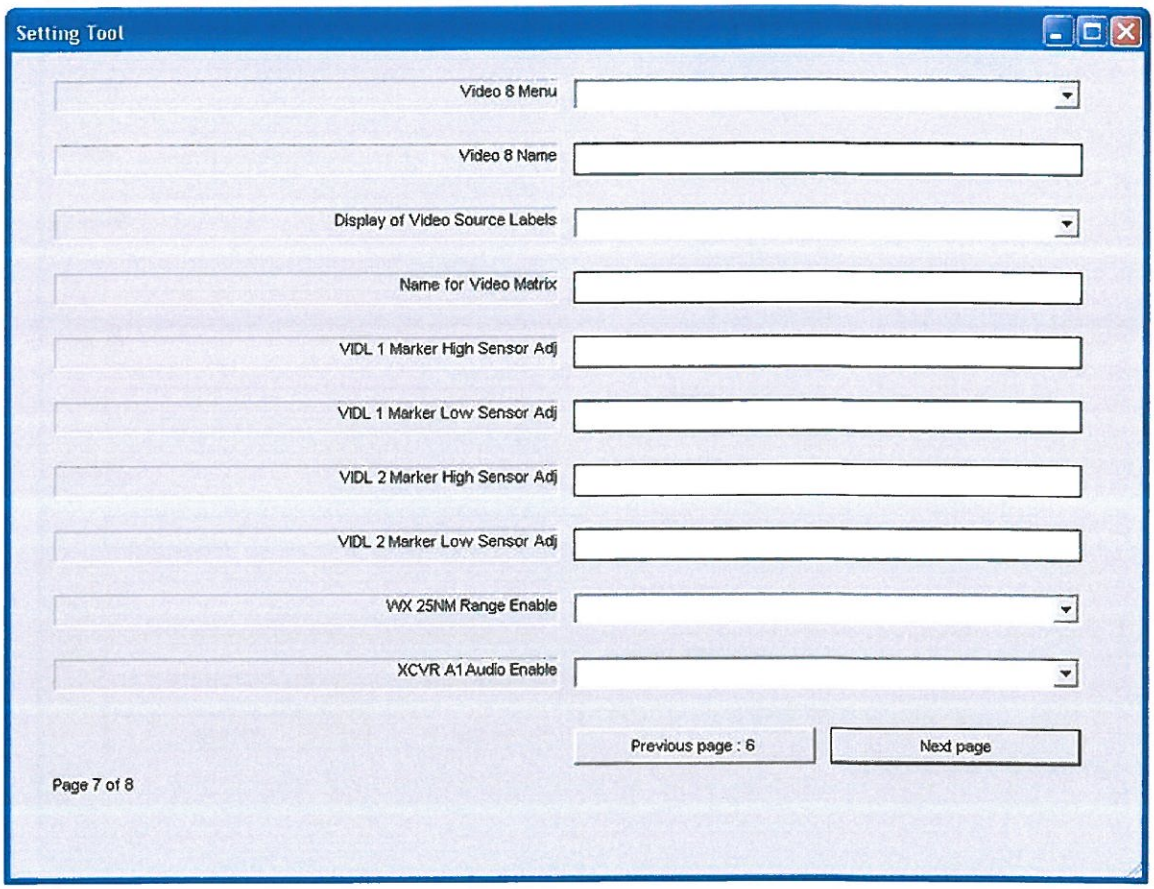


Figure 18: Page 7/8 of Data Entry Screen

Video x Menu: as page 5 of 8

Video x Name: as page 5 of 8

Display of Video Source Labels: Select "Enable"

Name for Video Matrix: Insert "Cameras"

VDL x Marker High Sensor Adj: Don't insert any value

VDL x Marker Low Sensor Adj: Don't insert any value

WX 25NM Range Enable: Only if Radar 660 2.5 NM range is installed (panel 7008471-688 in interseat console);

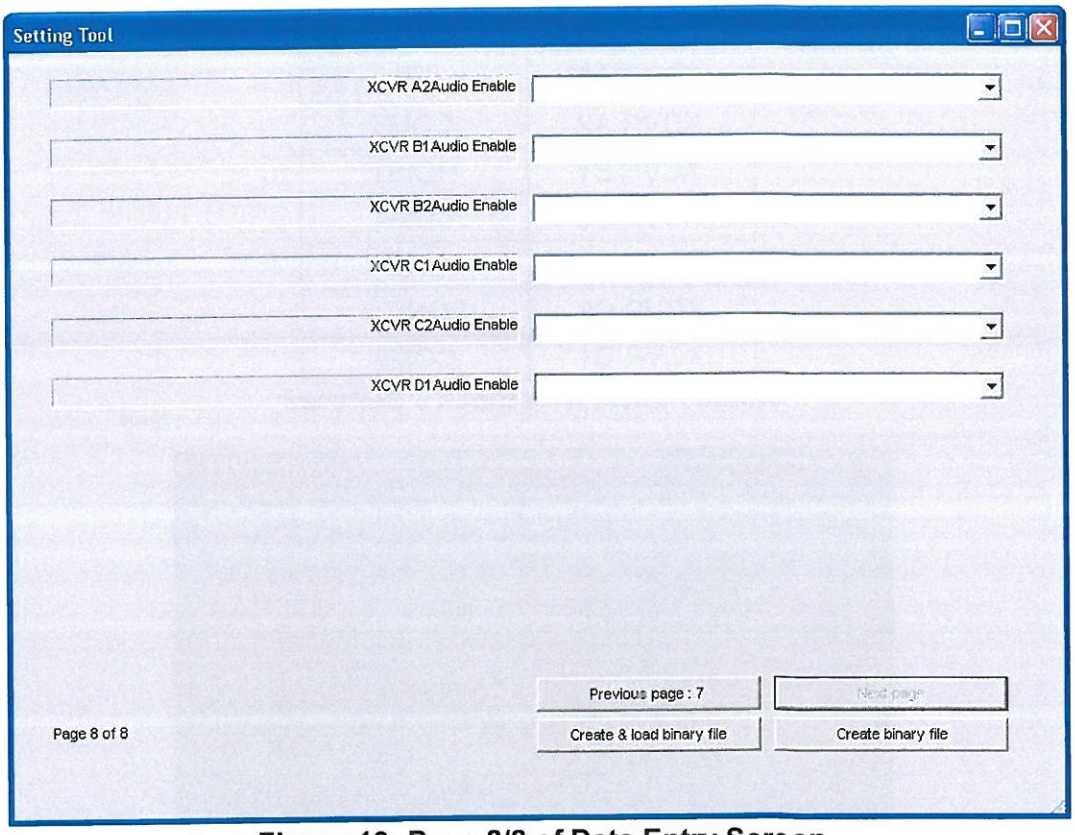


Figure 19: Page 8/8 of Data Entry Screen

XCVR xAudio Enable: Enable only the transceiver of the relevant MRC (1-2) that is used. (See the following tables).

Block1 and Block2	Block3
Always Selected	Selected only if FONE2 is installed.

XCVR C2 Audio Enabled

XCVRA1	HF
XCVRB2	COM3
XCVRC1	FONE
XCVRC2	PA

Audio Panels with Block 1 Software

XCVRA1	HF
XCVRA2	COM3
XCVRB1	HOIST
XCVRB2	COM4
XCVRC1	FONE

Audio Panels with Block 2 Software

XCVR A1	HF
XCVR A2	COM3
XCVR B1	HOIST
XCVR B2	COM4
XCVR C1	FONE 1
XCVR C2	FONE 2
XCVR D1	COM5

Audio Panels with Block 3 Software

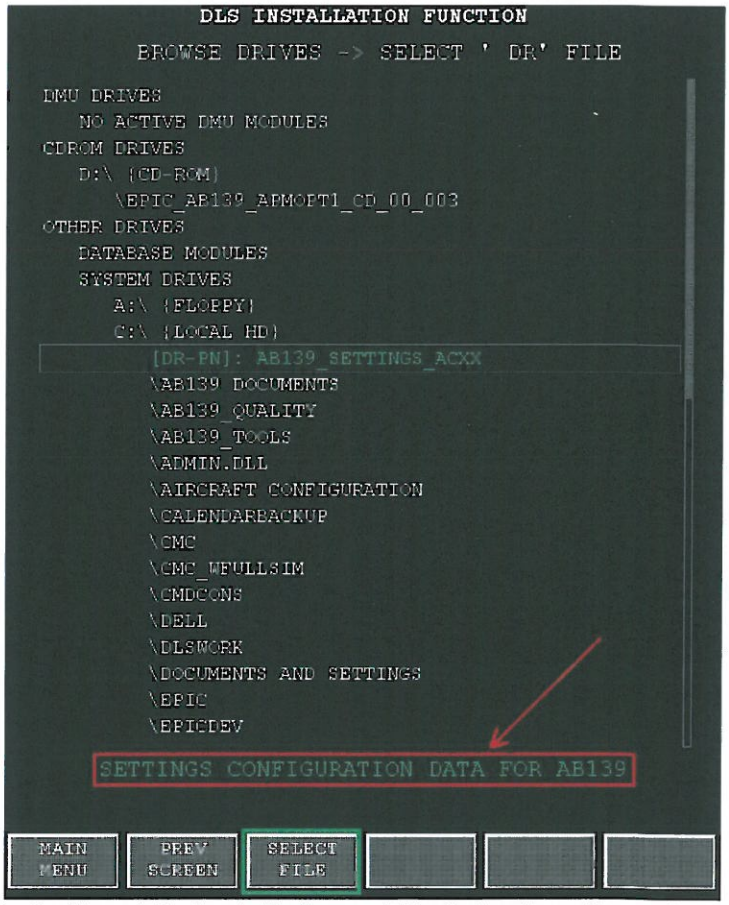


Figure 20: Setting File Installation – File Selection (for reference only)

OPTIONS FILE INSTALLATION PROCEDURE

NOTE

Each helicopter must have a dedicated Options CD defining the proper helicopter configuration.

NOTE

Do not interrupt the power during the Option File Installation operations. A power before completion of the operation will create an inconsistency in the APM that will prevent the associated NIC from powering on in normal flight mode.

1. Verify that the helicopter is set on GND (WOW on GND).
2. Connect the PC to the helicopter LAN.
3. Power on the helicopter by mean the "EXT PWR" switch.
4. To verify that the LAN works properly, open the DOS command window and type the command "ping 192.168.200.1" and press Enter. The response should be as depicted in the Figure 4 otherwise the LAN integrity should be checked. (LAN cable termination resistors equal to 50-55 Ohm measured at the opposite termination side).

CAUTION

Before check the LAN integrity, the helicopter has to be powered off.

5. Two procedures are available in order to install the option file:
   - ✓ Using Option CD (follow steps 6, 7 and from 15 to the end of paragraph)
   - ✓ Downloading the option file from https://apmweb.honeywell.com/apmweb/ (follow from step 8 to the end of paragraph).

6. Before start the installation procedure take note the Security Code and check the matching between Aircraft S/N reported on Option CD and Aircraft S/N entered during Setting File installation procedure (Figure 12 Page 1/8 of Data Entry Screen). (see below).

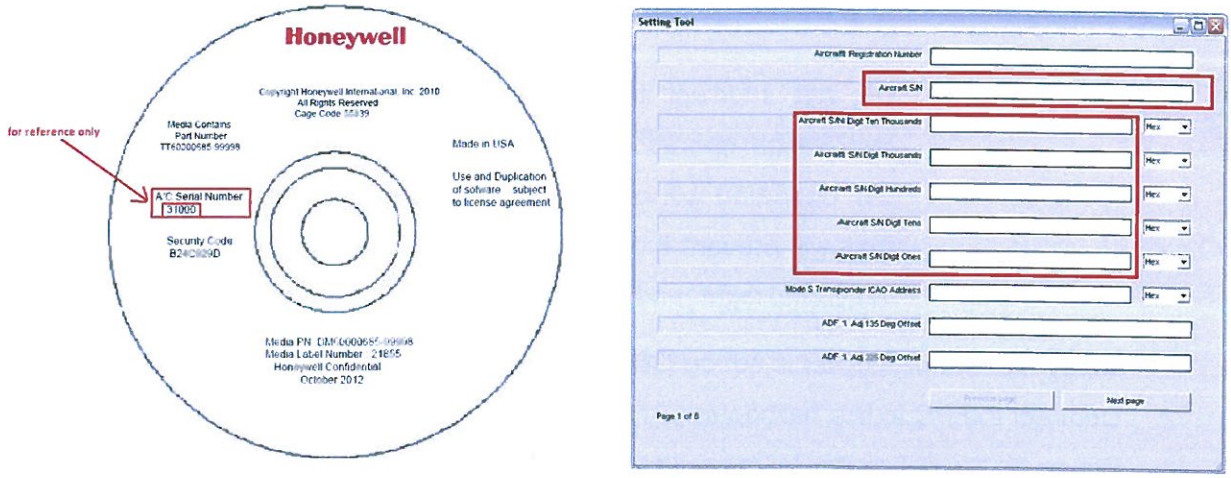


Figure 21

7. Insert the "Options" CD dedicated to the helicopter into the computer CD driver. (go to step 15).

8. From https://apmweb.honeywell.com/apmweb/, insert User ID and password in order to access to APM services:

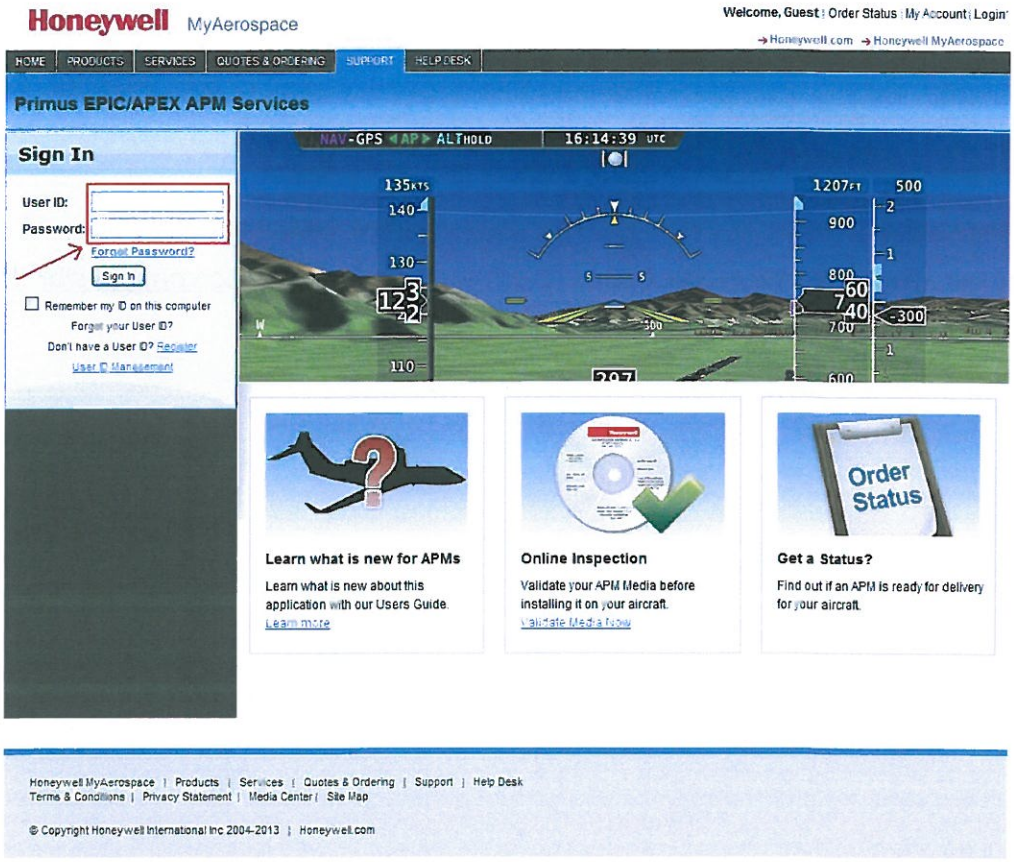


Figure 22

9. Click on "View/Download Certificate of Conformance PDF" icon accordingly to the Option file order:

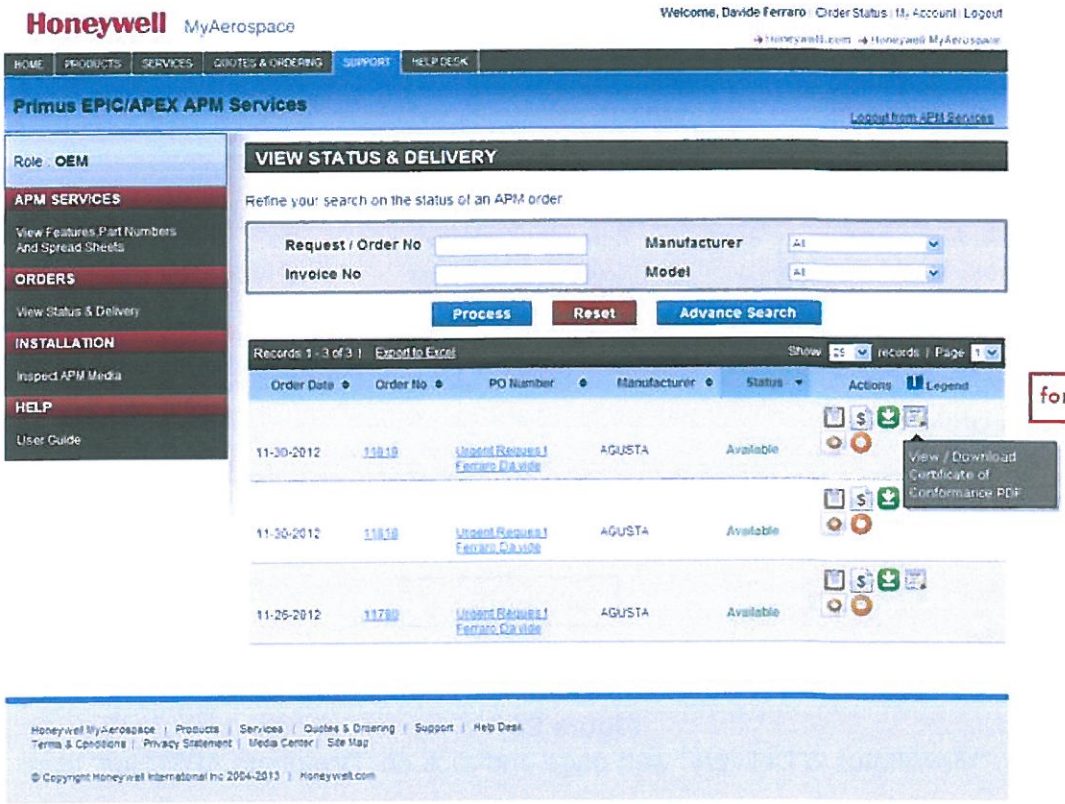


Figure 23

10. Check the correctness of option file part number,

Description material
TT60000685-99996 Ref: DM60000685-99996

for reference only

the HELICOPTER part number,

AC SN #
31000

for reference only

and take note of Security Code:

SC
8846F3ED

for reference only

Then, save a copy of Certificate of Conformance (CoC)

Honeywell

30-NOV-2012

APM Web Delivery Certificate of Conformance

Add Type	Order #	Customer #	Address
Sold To	11818	001443	Ferraro Davide AGUSTAWESTLAND SPA Amministrazione E Finanza, Via Giovanni Agusta 520, Cascina Costa Di Samarate VA, ITALY, 21017

Qty	Order #	PO #	Ref #	Description material	SC	AC SN #
1	11818	Urgent Requ est Ferrar o Davide		TT60000685-99996 Ref: DM60000685-99996	8846F3ED	31000

ECCN=7E994;Schedule B=8523.49.2020

Certificate Of Conformance

I hereby certify that the supplies or services listed herein were shipped as shown in the quantities and quality called for in the above cited purchase order and were in all respects in accordance with applicable specifications. And that, all processes conform to DO-200A Standards for Processing Aeronautical Data.

for reference only

Don Nicholas
Operations Leader BIC DB&IS Services

Figure 24

11. Return on "ViewStatus & Delivery" web page and click on "Download APM files" icon:

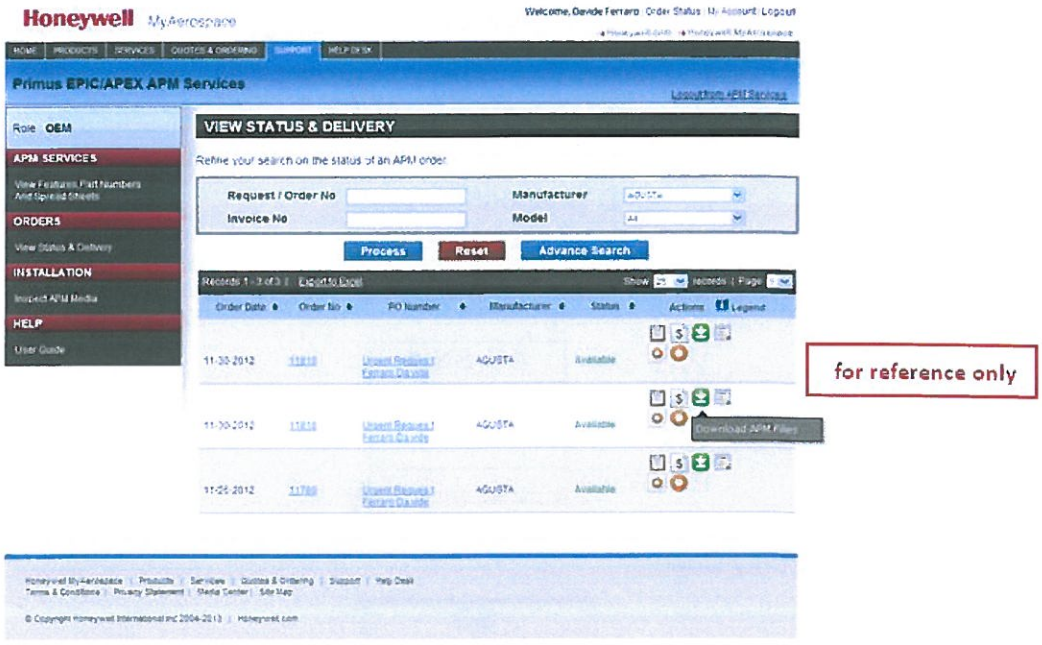


Figure 25

12. Click on option file part number link:

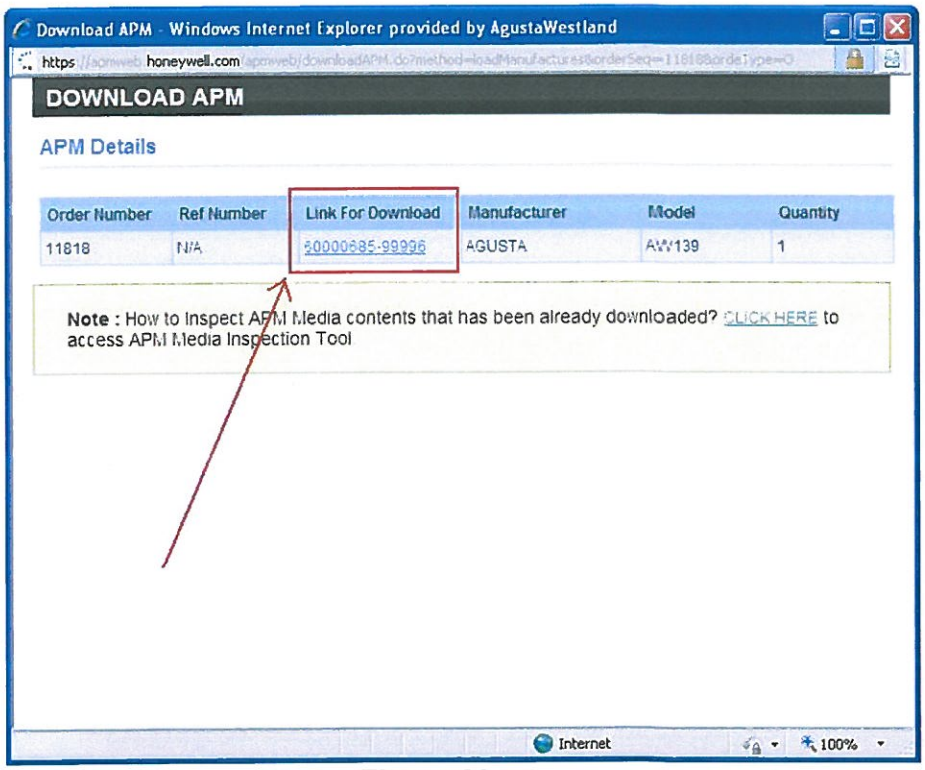


Figure 26

13. Check the HELICOPTER serial number and the Security Code, then click on "I Agree":

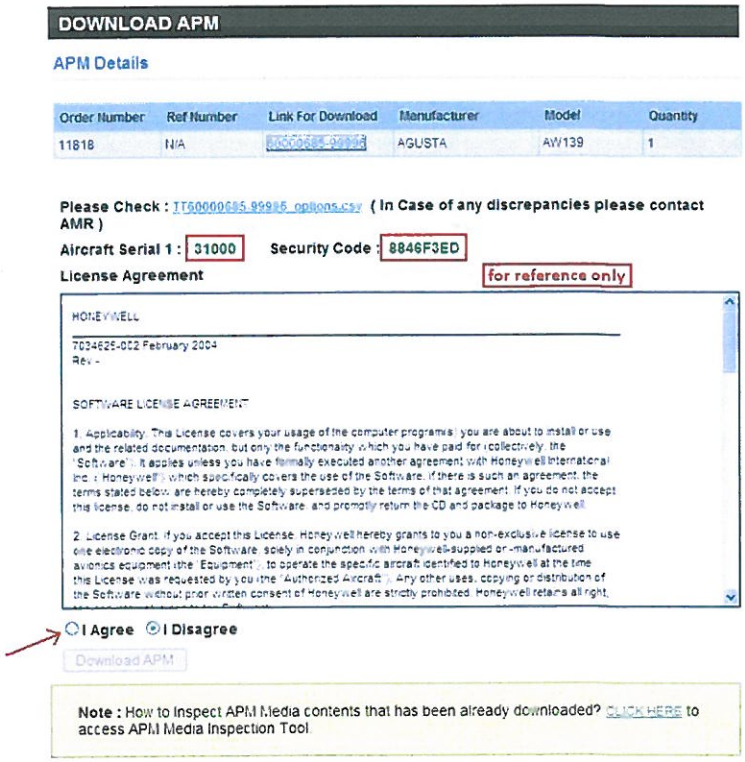


Figure 27

14. Select “Download APM” and save it into a folder:

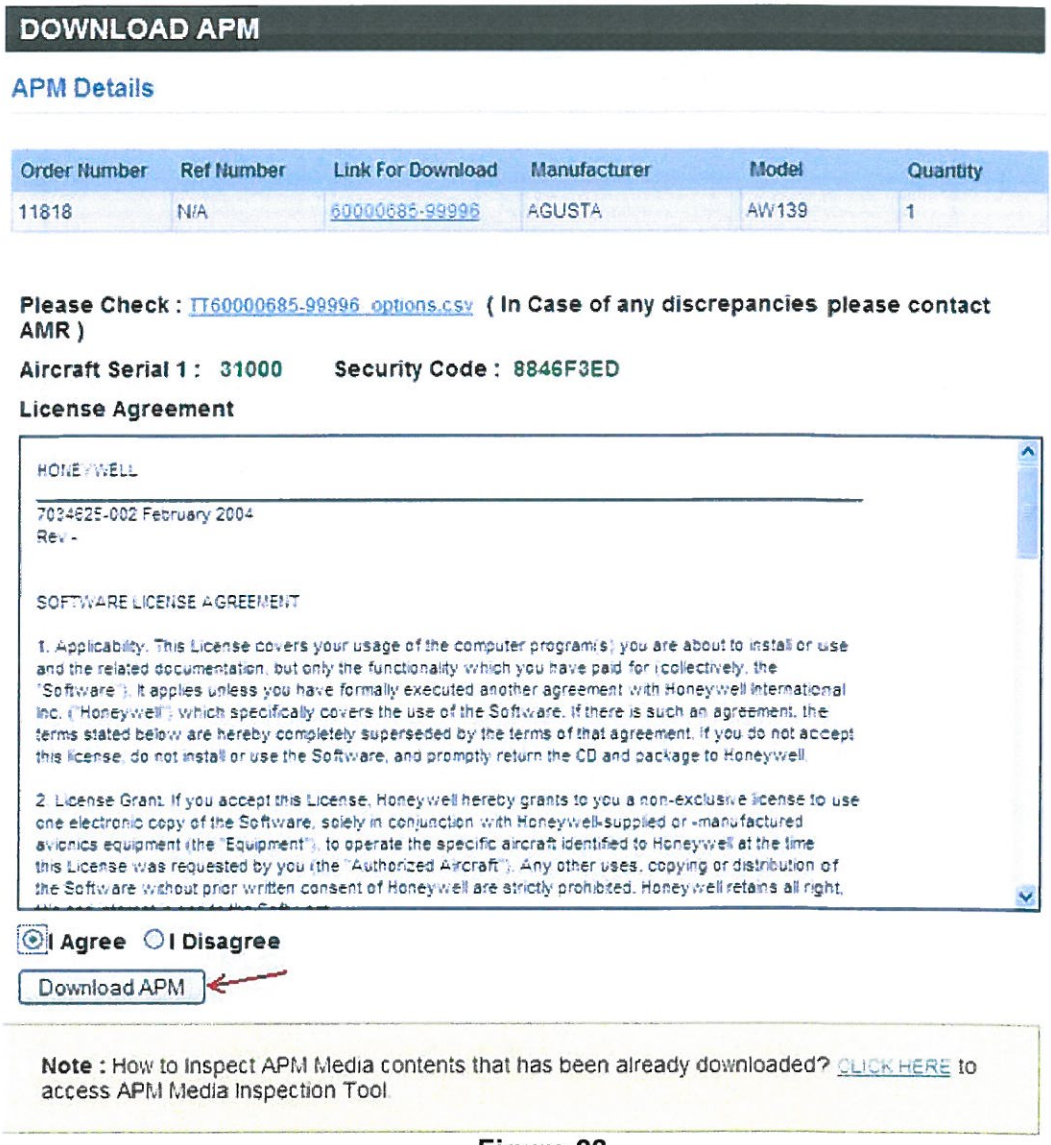


Figure 28

15. Launch the CMC RT tool and click on ‘DATA LOADER’.
16. Select the “FULL LOAD” option.
17. Select, from the DLS INSTALLATION FUNCTION Browse window, the file preceded by the wording “[DR-PN]”.

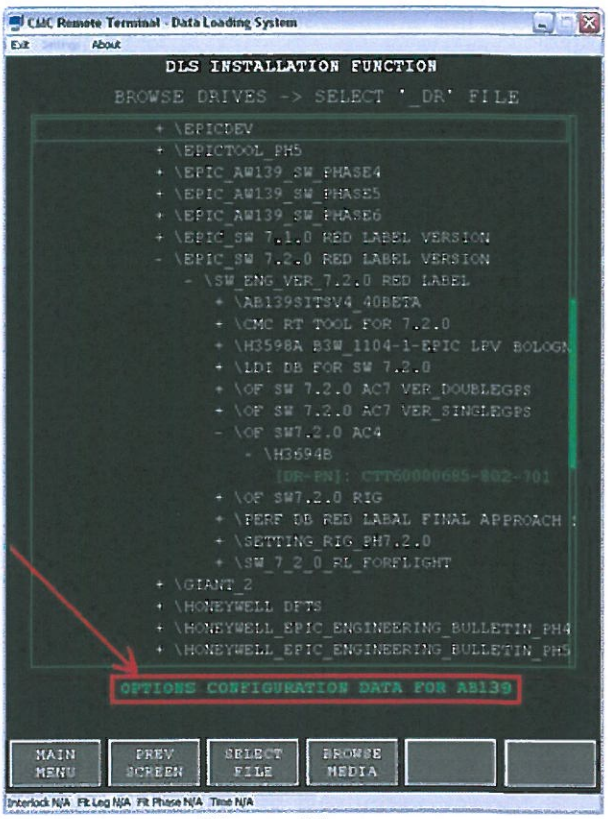


Figure 29

18. In the "TERMS AND CONDITIONS" page, select "I ACCEPT" option (the option changes color to green as indicated below) and the select "ENTER CODE"

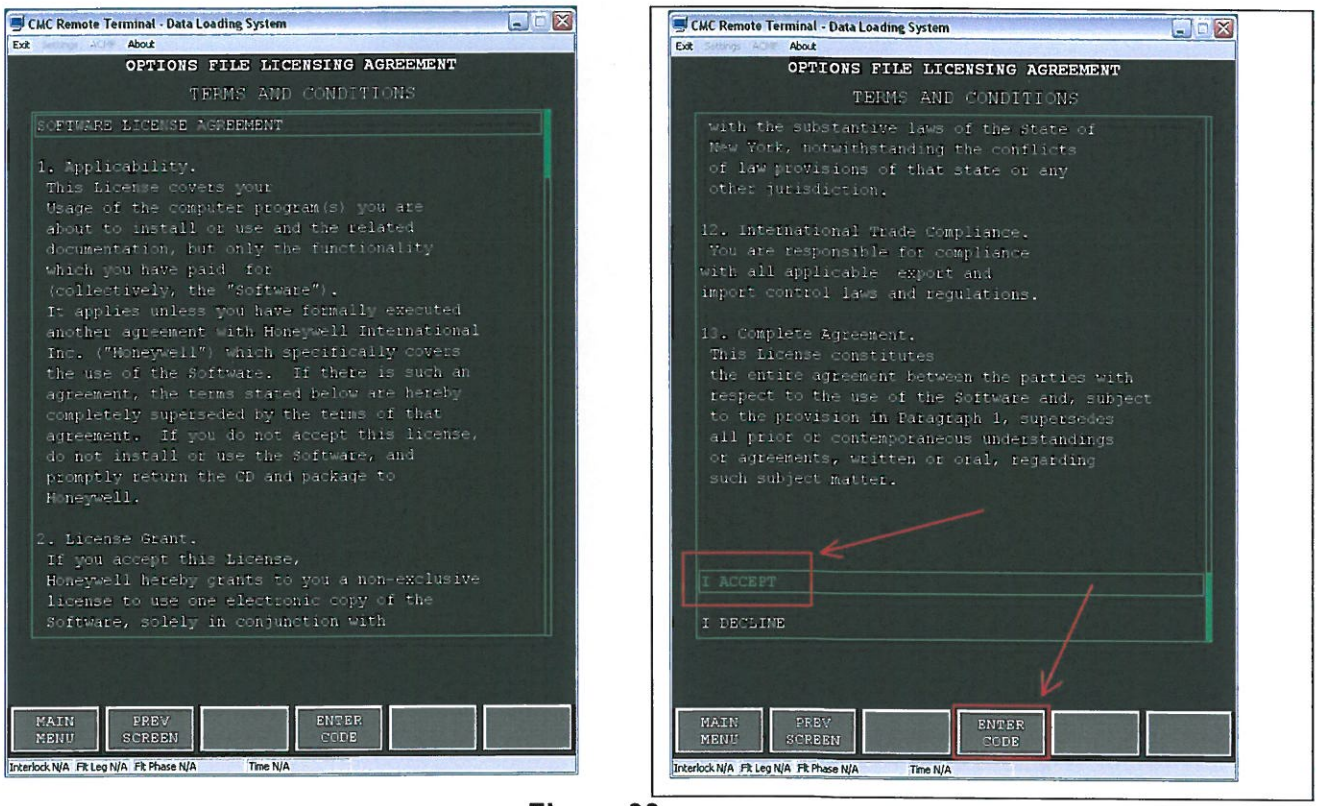


Figure 30

19. In the green box, insert the authorization code (reported on CD as indicated below or that one noted during download from web site procedure) and select "ENTER.

Figure 31

20. If the typed code is correct, verify that the following page is displayed for few seconds and then the configuration check process starts autonomously.

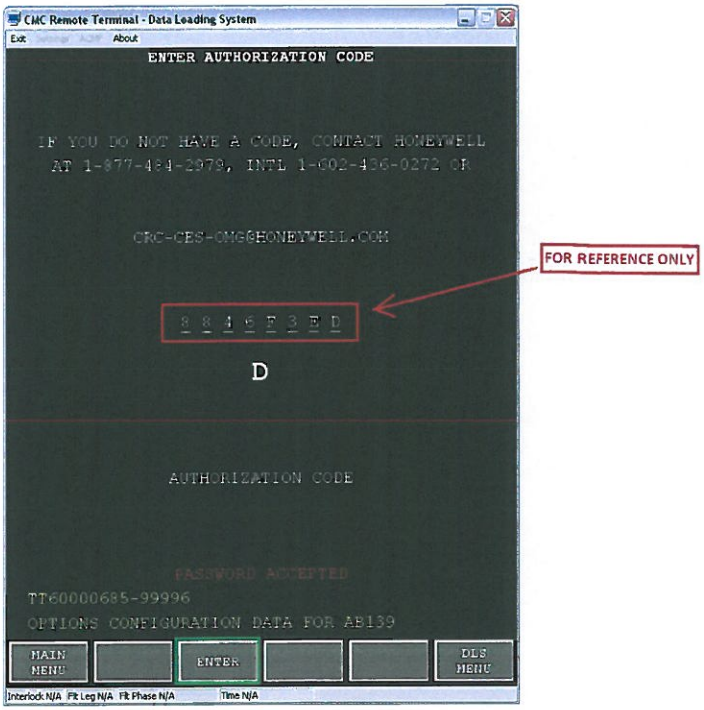


Figure 32

21. At the end of the CONFIGURATION CHECK, select "START LOAD".

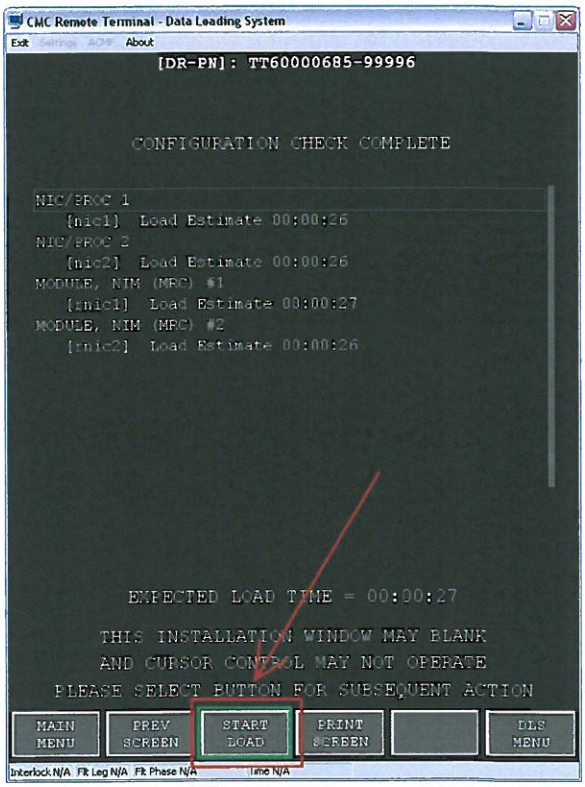


Figure 33

22. At the end of the process, the installation of the following files on the APM modules has been completed:

    ✓ Options.bin – uploaded from the Options CD, dedicated to the helicopter type.

NAVIGATION DATABASE INSTALLATION PROCEDURE

1. From the www.honeywellaes.com website download the navigation database named:

   AW7YYCC001

   where YY = year and CC = cycle. (for example: AW71209001 represents the Nav DB for PRIMUS EPIC phase 7.4 delivered in September 2012).
2. Select the "FULL LOAD" option.
3. From the DLS INSTALLATION FUNCTION browse window and select the file:

   [DR-PN]: AW139 - 7 - 3CC

   where X is a private code and CC = cycle as indicated (**for reference only**) in Figure 34.
4. Select the "FULL LOAD" option.
5. Select "START LOAD" to install the NavDB.

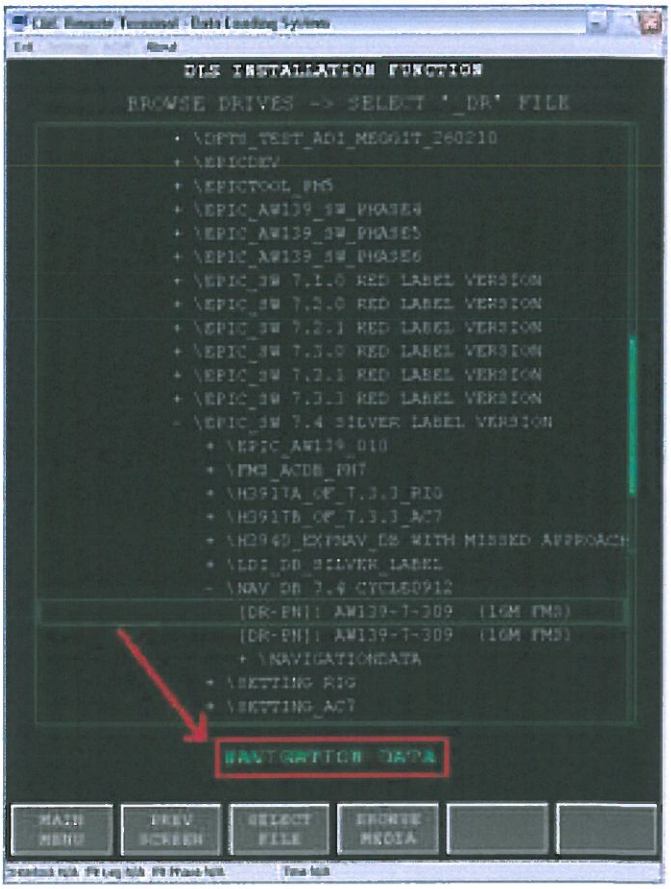


Figure 34: NAV DB selection (for reference only)

PERFORMANCE DATABASE INSTALLATION PROCEDURE

1. Insert the "PERF DATABASE" CD into the computer CD driver.
2. Launch CMC RT tool and select the "FULL LOAD" option.
3. From the DLS INSTALLATION FUNCTION Browse window, select the file FMS_ACDB_AGST_60000218-003 or
   FMS_ACDB_AGST_60000218-004 (if Kit 4G0000F00311 "LGS Increased Gross Weight 7000Kg" is installed) or
   FMS_ACDB_AGST_60000218-002 (Legacy DB)

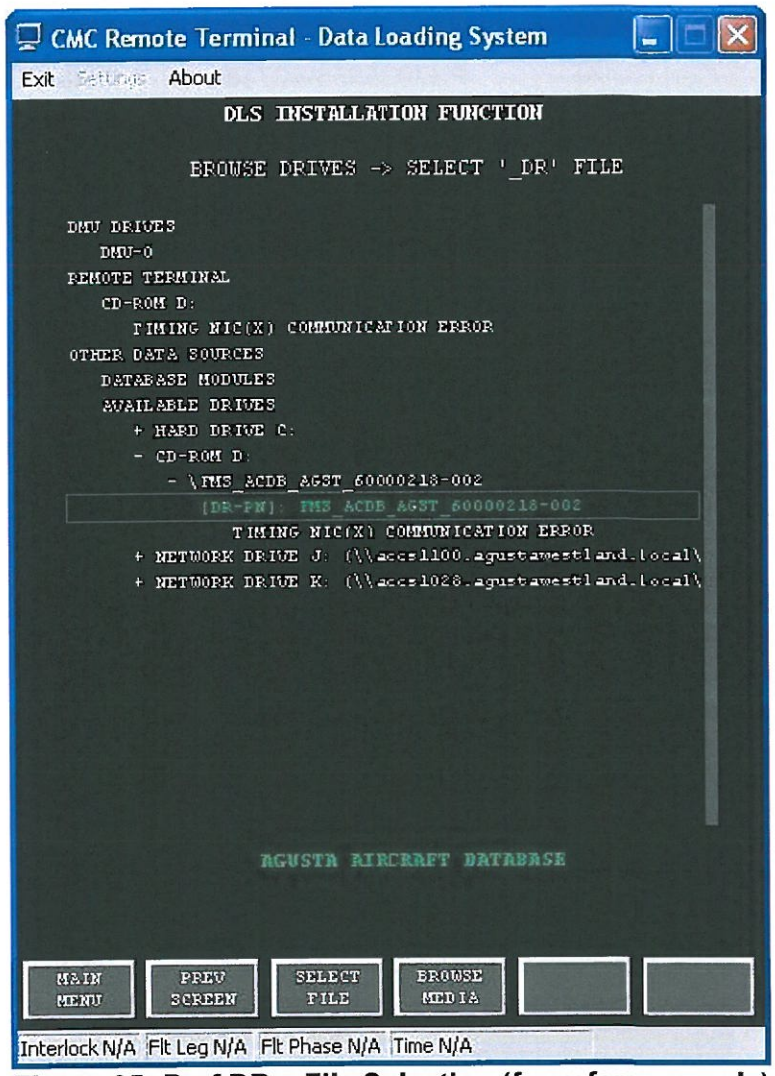


Figure 35: Perf DB – File Selection (for reference only)

4. Select "SELECT FILE" to install the PERF DB.

CMC LDI SOFTWARE LOAD

NOTE

If before uploading new CMC LDI S/W, mind to download the CMC data (if CMC data are already present), in order to avoid to lose them.

1. Extract the correct LDI SW from the CD to a folder on the computer.

Phase 7 SW Version	LDI SW to be loaded	CD containing LDI SW
Phase 7 NIM 3 Cert (7.12)	PS7035985-00717	MM7035985-00717
Phase 7 NIM 2 Cert (7.14)	PS7035985-00718	MM7035985-00718

2. On CMC Remote Terminal Select the "FULL LOAD" option.
3. From the DLS INSTALLATION FUNCTION Browse window, select the correct file LDI [DR-PN]

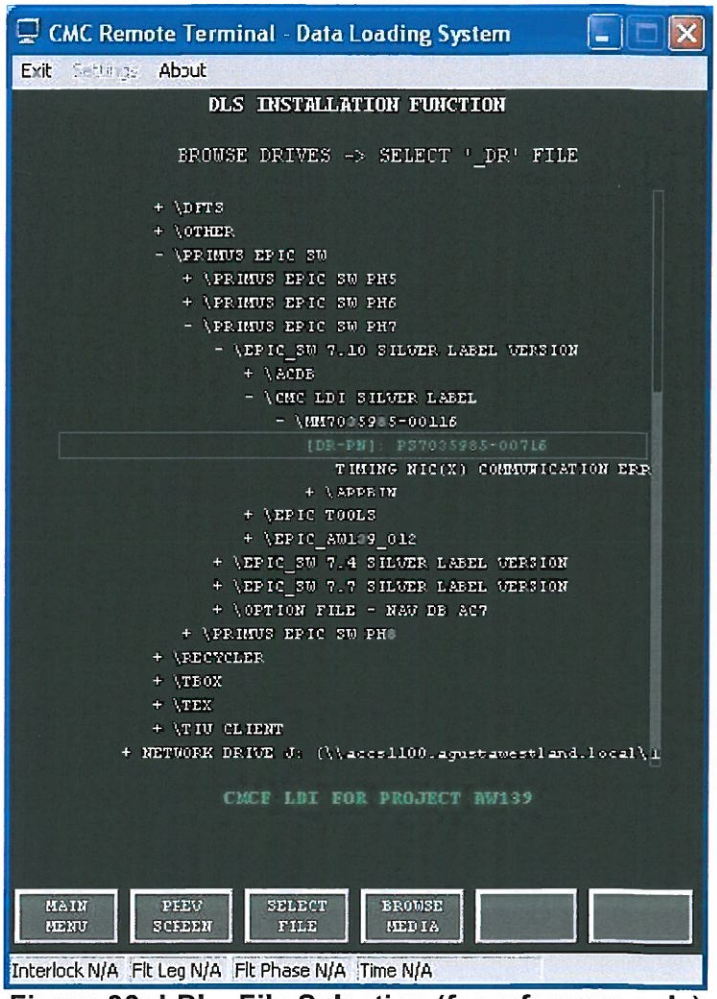


Figure 36: LDI – File Selection (for reference only)

4. Select "START LOAD" to install the LDI Software.

VALIDATION OF S/W SYSTEM INSTALLATION

1. Recycle the power.
2. Verify any of the following caution is present in CAS list:
   - ✓ SYS CONFIG FAIL
   - ✓ AVIONIC FAULT
3. Verify "VALIDATE CONFIG" caution is present in CAS list.
4. Scroll SYSTEM drop down menu and select "Sys Config" sub menu.
5. Before press 'ENTER' on Configuring Window page 1 verify the following field are correctly filled in:
   - ✓ Top Level System Part Number
   - ✓ Configuration Part Number
6. In Configuring Window page 2 verify the following field are correctly filled in:
   - ✓ FMS 1 NAV
   - ✓ FMS 2 NAV
   - ✓ FMS 1 A/C PERF
   - ✓ FMS 2 A/C PERF
   - ✓ CMC 1 CDI
7. Return on Configuring Window page 1 end press ENTER.
8. Exit from Configuring Window page and verify "VALIDATE CONFIG" is no longer displayed.

ANNEX C

AVIONIC SYSTEM PRIMUS EPIC S/W LOAD OPERATIONAL CHECK

TOOLING REQUIRED

1. The following equipment is required for the functional check
   - ✓ DC External Power Bench (28VDC);
   - ✓ Two Headsets;
   - ✓ WOW simulation switch kit;
   - ✓ mVdc Signal generator (range 0 ÷ 200 mVdc)

PRELIMINARY OPERATIONS

1. During all the test procedure keep the AUX battery plugged to preserve the CMC module.
2. Before starting with the test procedure, make a visual inspection of the proper installation of the under test avionic equipments.
3. Pull Out 1-2 START and 1-2 IGN CBs.
4. In accordance with AMP DM 39-A-12-41-00-00A-730A-A, connect the external electrical power to the helicopter and set it to on.
5. Verify that:
   - ✓ The Caution "SYS CONFIG FAIL" is not displayed in the CAS list.
   - ✓ The Caution "AVIONIC FAULT" is not displayed in the CAS list.
6. Enter the SYS CONFIG page on the MFD and visual check that the Top Level System Drawing P/N is compliant with the applicable S/W installation drawings.
7. In the SYS CONFIG page verify that the required SETTINGS have been installed.

AVIONIC SYSTEM TESTS

NOTE

The following steps 1 thru 3 must be executed with **ENGINE OFF.**

1. Radio navigation functions:

System	TEST	RESULTS		Note
		PASS	FAIL	
ICS	ICS communication with 2 headsets (1 provision out of the helicopter)	❑	❑	
ICS	ICS communication with 2 headsets (AUDIO panel in BKUP mode)	❑	❑	
ICS	Baseline cabin Interphonic communication (if installed)	❑	❑	
VHF 1, 2	Setting control of the radios (MCDU's and CCD's on PFD) and communication with an external radio	❑	❑	
VHF 1, 2	Set radios in Emergency mode and perform a communication with an external radio (with	❑	❑	

System	TEST	RESULTS		Note
		PASS	FAIL	
	both MAUs OFF verify both MCDU's in BKUP mode)			
XPDR 2 (MCDU 2 backup mode - MAU 2 OFF)	In BKUP mode check the correct functionality (set MAU2 OFF and verify the control of XPDR in MRC2 is available on MCDU 2 in backup page) **NOTE**: XPDR1 is displayed on MCDU2 backup page instead of XPDR2	❑	❑	
XPDR 1, 2 (normal mode)	Check the correct functionality with an external source and verify proper indication are displayed.	❑	❑	XPDR1: if installed
FMS 1, 2	Initialize FMS position, create and activate a flight plan	❑	❑	

NOTE

Only qualitative tests shall be executed on Radio & NAV equipment.

2. AFCS functions:

NOTE

Mind to do not press SAS REL button twice.

System	TEST	RESULTS		Note
		PASS	FAIL	
AFCS	Apply Hydraulic bench. Set AP 1&2 off. Visualize FLT CTRL page. Press TEST button on AP control panel. Press and release SAS REL button on cyclic stick	❑	❑	1-2 AP FAIL could momentarily appear on CAS List when TEST button is pressed.

3. Alarm generation:

3.1 Warning messages:

NOTE

For each Warning Message generated, verify that the relevant aural warning is generated in the headset.

ENGINE SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 ENG FIRE	Press 1 ENG FIRE on the TEST PANEL	❑	❑
2 ENG FIRE	Press 2 ENG FIRE on the TEST PANEL	❑	❑
1 ENG OUT	Pull Out 1 EEC CB (Not EEC 1 FAIL CB)	❑	❑
1 EEC FAIL		❑	❑
2 ENG OUT	Pull Out 2 EEC CB (Not EEC 2 FAIL CB)	❑	❑

Message	Settings	RESULTS	
		PASS	FAIL
2 EEC FAIL		❑	❑

MISCELLANEOUS SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
BAG FIRE	Press BAG FIRE on TEST PANEL	❑	❑

3.2 Caution messages:

ENGINE SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 ENG CHIP	Press 1 ENG CHIP on the TEST Panel	❑	❑
2 ENG CHIP	Press 2 ENG CHIP on the TEST Panel	❑	❑
1 FIRE DET	Press 1 ENG FIRE on the TEST Panel	❑	❑
2 FIRE DET	Press 2 ENG FIRE on the TEST Panel	❑	❑
1-2 ECL FAIL	Pull out the GOV CONTR CB	❑	❑
1 ECL POS	Move the 1 ECL out of flight position	❑	❑
2 ECL POS	Move the 2 ECL out of flight position	❑	❑
1 EEC DATA (see note [1] below)	Pull Out 1 EEC CB (Not EEC 1 FAIL CB)	❑	❑
2 EEC DATA (see note [1] below)	Pull Out 2 EEC CB (Not EEC 2 FAIL CB)	❑	❑

[1] On CAS list 'AVIONIC FAULT' caution is displayed, too.

FUEL SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 FCU FAIL (see note [2] below)	Pull Out 1 FCU CB	❑	❑
2 FCU FAIL (see note [3] below)	Pull Out 2 FCU CB	❑	❑
2 FUEL PUMP	Open the 1 SOV valve and Switch ON/OFF the Pump 1 on the FUEL control panel	❑	❑
1 FUEL PUMP	Open the 2 SOV valve and Switch ON/OFF the Pump 2 on the FUEL control panel	❑	❑

[2] On CAS list '2 FUEL LOW', '2 FUEL LOW FAIL' and 'AVIONIC FAULT' cautions are displayed, too.
[3] On CAS list '1 FUEL LOW', '1 FUEL LOW FAIL' and 'AVIONIC FAULT' cautions are displayed, too.

ELECTRICAL SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
BUS TIE OPEN	BUS TIE switch with EXT PWR OFF, Battery Master ON	❑	❑
EXT PWR DOOR	Open EXT PWR Door	❑	❑
MAIN BATT OFF	Supply helicopter with external power and select BATT MASTER switch to ON position. Now select MAIN BATT switch to ON position	❑	❑

Message	Settings	RESULTS	
		PASS	FAIL
AUX BATT OFF	Supply helicopter with external power and select BATT MASTER switch to ON position. Now select AUX BATT switch to ON position	❑	❑
BATT OFF LINE	Supply helicopter with external power and select BATT MASTER switch to OFF position.	❑	❑
1 GEN OVLD	Set both WOW switches ON GROUND, provide a voltage > 50mV on the shunt of rear avionic bay side 1 for more than 45 secs	❑	❑
2 GEN OVLD	Set both WOW switches ON GROUND, provide a voltage > 50mV on the shunt of rear avionic bay side 2 for more than 45 secs	❑	❑

TRANSMISSION SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
CHIP DET UNIT (see note (4) below)	Pull Out TRANS CHIP BURN CB	❑	❑
MGB OIL LOW	Press MGB OIL LOW button on the TEST control Panel	❑	❑
IGB OIL LOW	Press IGB OIL LOW button on the TEST control Panel	❑	❑
TGB OIL LOW	Press TGB OIL LOW button on the TEST control Panel	❑	❑

(4) On CAS list 'AVIONIC FAULT' caution is displayed, too.

HYDRAULIC SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
NOSE WHL UNLK	Unlock the Nose wheel on Landing Gear Control Panel	❑	❑
ROTOR BRK FAIL	Ensure 1 START and 1 IGN CB are pulled OUT. Ensure the Rotor Brake is engaged, set ENG 1&2 in IDLE	❑	❑

MISCELLANEOUS SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 PITOT FAIL	Switch ON 1 Pitot and Pull out 1 Pitot Fail Cplt CB	❑	❑
2 PITOT FAIL	Switch ON 2 Pitot and Pull out 2 Pitot Fail Plt CB	❑	❑
COCKPIT DOOR	OPEN Cockpit Door	❑	❑
CABIN DOOR	OPEN Cabin Door	❑	❑
BAG DOOR	OPEN Bag Door	❑	❑
1 WOW FAIL	Set Left WOW switch on air	❑	❑
2 WOW FAIL	Set Right WOW switch on air	❑	❑
PARK BRK PRESS & PARK BRK ON	**If tank accumulator installed:** Pull and turn brake on and wait until caution disappears. ('PARK BRK ON' advisory appears). Turn brake on without release it. NOTE: Be careful 'PARK BRK ON' caution appears momentarily	❑	❑
	If tank accumulator not installed: Pull and turn brake on. Press the pedals with Park Brake ON until the caution disappears. ('PARK BRK ON' advisory appears) Turn brake on without push it. NOTE: Be careful 'PARK BRK ON' caution appears momentarily	❑	❑

NOTE

Following additional miscellaneous caution tests have to be executed only **if the relevant source is installed.**

MISCELLANEOUS SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
FLOAT ARM	Arm the Floatation System	❑	❑
HOOK ARM	Arm the HOOK System	❑	❑
HOOK OPEN	Open the HOOK using the normal procedure	❑	❑
ICE LIMIT	N/A	❑	❑
ICE CONDITION	N/A	❑	❑
1-2 ICE DET OFF	N/A	❑	❑
1-2 ICE DET FAIL	N/A	❑	❑
IPS FAIL	N/A	❑	❑
HOIST CUT ARM	Arm Hoist CUT switch	❑	❑
1 WSHLD HTR FAIL	Ref. Heated Windshield Operational Check DM 39-A-56-12-00-00A-321A-K	❑	❑
2 WSHLD HTR FAIL	Ref. Heated Windshield Operational Check DM 39-A-56-12-00-00A-321A-K	❑	❑

AVIONICS SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 AP OFF (see note [5] below)	a) Verify '1-2 AP OFF' is displayed in CAS list b) Press AP1 and AP2 buttons on AP Control Panel c) Verify '1-2 AP OFF' disappears Press AP1 button on Control Panel	❑	❑
2 AP OFF (see note [6] below)	a) Verify '1-2 AP OFF' is displayed in CAS list b) Press AP1 and AP2 buttons on AP Control Panel c) Verify '1-2 AP OFF' disappears Press AP2 button on Control Panel	❑	❑
1 AP FAIL	Pull Out LIN ACT1 CBs	❑	❑
2 AP FAIL	Pull Out LIN ACT 2 CBs	❑	❑
ATT OFF	On AP Control Panel press AP1 and AP2 buttons and then press SAS button	❑	❑
AFCS DEGRADED	On AP Control Panel press AP1 and AP2 buttons and then pull out ADI STBY CB	❑	❑
1 GPS FAIL	Pull out 2nd GPS CB	❑	❑
1 FMS FAIL	Pull out MAU 1 CBs	❑	❑
1 ADS FAIL		❑	❑
1 AP FAIL		❑	❑
AVIONIC FAULT		❑	❑
AWG FAIL	Pull out MAU 2 CBs	❑	❑
2 FMS FAIL		❑	❑
2 ADS FAIL		❑	❑
2 AP FAIL		❑	❑
AVIONIC FAULT		❑	❑
2 GPS FAIL		❑	❑
SYS CONFIG FAIL	This caution mustn't be displayed	❑	❑
1,2,3,4 AUDIO FAIL	Verify number of AV900 installed and pull out relevant CB	❑	❑
5,6,7,8 AUDIO FAIL	Verify number of AV900 installed and pull out relevant CB	❑	❑
CVR FAIL	Pull Out FDR CB, set WOW switch in air and wait ten (10) minutes	❑	❑
FDR FAIL	Pull Out FDR CB, set WOW switch in air and wait ten (10) minutes	❑	❑
1 AHRS FAIL	Pull Out AHRS 1 CB	❑	❑
2 AHRS FAIL	Pull Out AHRS 2 CB	❑	❑

[5] On CAS list 'AFCS DEGRADED' caution is displayed, too.
[6] On CAS list 'AFCS DEGRADED' caution is displayed, too.

NOTE

Following step 4 must be executed with **ENGINE ON**.

4. Alarm generation:

4.1 Warning system:

ENGINE SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 ENG IDLE	At MPOG 100% NR with ENG 1 in IDLE and ENG 2 in FLIGHT gently pull collective to generate the 1 ENG IDLE warning and back collective to 0%	❑	❑
2 ENG IDLE	At MPOG 100% NR with ENG 1 in FLIGHT and ENG 2 in IDLE gently pull collective to generate the 2 ENG IDLE warning and back collective to 0%	❑	❑

TRANSMISSION SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
ROTOR LOW	Verify the Warning is displayed on ground and removed after engine start	❑	❑
MGB OIL PRESS	Verify the Warning is displayed on ground and removed after engine start	❑	❑

ELECTRICAL SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1-2 DC GEN	With both engine running, both generator ON and external power ready, set the EXT PWR switch to ON and verify that 1-2 DC GEN warning displays	❑	❑

4.2 Caution messages:

NOTE

Be careful, the following Electrical System test is not considered "PASS" if the operator just check the 1-2 DC GEN warning. 1 DC GEN and 2 DC GEN Cautions have been verified one by one.

ELECTRICAL SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 DC GEN	With both engine running, DC generator 2 ON, DC generator 1 OFF, verify that 1 DC GEN caution displays	❑	❑

2 DC GEN	With both engine running, DC generator 1 ON, DC generator 2 OFF, verify that 2 DC GEN caution displays	❑	❑

HYDRAULIC SYSTEM

Message	Settings	RESULTS	
		PASS	FAIL
1 HYD OIL PRESS	Verify the Caution is displayed on ground and removed after engine start	❑	❑
2 HYD OIL PRESS	Verify the Caution is displayed on ground and removed after engine start	❑	❑
EMER LDG PRESS	Verify the Caution is displayed on ground and removed after engine start	❑	❑
HYD UTIL PRESS	Verify the Caution is displayed on ground and removed after engine start	❑	❑
1 HYD PUMP	Verify the Caution is displayed on ground and removed after engine start	❑	❑
2 HYD PUMP	Verify the Caution is displayed on ground and removed after engine start	❑	❑
4 HYD PUMP	Verify the Caution is displayed on ground and removed after engine start	❑	❑
1 SERVO	Verify the Caution is displayed on ground and removed after engine start	❑	❑
2 SERVO	Verify the Caution is displayed on ground and removed after engine start	❑	❑

SYSTEM PARAMETERS DISPLAY

1. Helicopter on ground with ENGINES OFF: (The following tables must be verified on both Pilot and Copilot MFDs/PFDs):

Parameter scale	Normal	MAU 1 OFF*	MAU 2 OFF**	RESULT		NOTE
				PASS	FAIL	
NG1 (MFD)	0	0	0	❑	❑	
NG2 (MFD)	0	0	0	❑	❑	
ITT1 (MFD)	0	0	0	❑	❑	
ITT2 (MFD)	0	0	0	❑	❑	
TQ1 (MFD)	0	0	0	❑	❑	
TQ2 (MFD)	0	0	0	❑	❑	
NG1 ANALOGUE (MFD)	0	--	0	❑	❑	Sel analog data
NG2 ANALOGUE (MFD)	0	0	--	❑	❑	Sel analog data
ITT1 ANALOGUE (MFD)	0	--	0	❑	❑	Sel analog data
ITT2 ANALOGUE (MFD)	0	0	--	❑	❑	Sel analog data
TQ1 ANALOGUE (MFD)	0	--	0	❑	❑	Sel analog data
TQ2 ANALOGUE (MFD)	0	0	--	❑	❑	Sel analog data
ENG OIL PRESS1 (MFD)	0	--	0	❑	❑	
ENG OIL PRESS2 (MFD)	0	0	--	❑	❑	
ENG OIL TEMP1 (MFD)	OAT ±2	--	OAT ±2	❑	❑	
ENG OIL TEMP2 (MFD)	OAT ±2	OAT ±2	--	❑	❑	
MGB OIL PRESS (MFD)	0	--	0	❑	❑	
MGB OIL TEMP (MFD)	OAT ±2	--	OAT ±2	❑	❑	
IGB OIL TEMP (MFD)	OAT ±2	OAT ±2	--	❑	❑	
TGB OIL TEMP (MFD)	OAT ±2	OAT ±2	--	❑	❑	
FUEL PRESS 1 (MFD)	0	--	0	❑	❑	
FUEL PRESS 2 (MFD)	0	0	--	❑	❑	
HYD OIL PRESS 1 (MFD)	0	--	0	❑	❑	
HYD OIL PRESS 2 (MFD)	0	0	--	❑	❑	
HYD OIL TEMP 1 (MFD)	OAT ±2	--	OAT ±2	❑	❑	
HYD OIL TEMP 2 (MFD)	OAT ±2	OAT ±2	--	❑	❑	
MAIN BUS 1 (MFD)	28 ±2	28 ±2	--	❑	❑	
MAIN BUS 2 (MFD)	28 ±2	--	28 ±2	❑	❑	
ESS BUS 1 (MFD)	28 ±2	--	28 ±2	❑	❑	
ESS BUS 2 (MFD)	28 ±2	28 ±2	--	❑	❑	
DC GEN LOAD 1 (MFD) (1)	0	--	0	❑	❑	
DC GEN LOAD 2 (MFD) (1)	0	0	--	❑	❑	
MAIN BATTERY LOAD (MFD) (1)	0	0	--	❑	❑	
AUX BATTERY LOAD (MFD) (1)	0	--	0	❑	❑	
OAT 1 (PFD)	OAT	--	(OAT 1 visual.)	❑	❑	
OAT 2 (PFD)	OAT	(OAT 2 visual.)	--	❑	❑	

(1)For these readouts a flickering readout value around 0, is allowed

Parameter scale	Normal	MAU 1 OFF*	MAU 2 OFF**	RESULT		NOTE
				PASS	FAIL	
FUEL QUANTITY (MFD)	QTY	QTY	QTY	❑	❑	
FUEL QTY LEFT (MFD)	LQTY	LQTY	LQTY	❑	❑	
FUEL QTY RIGHT (MFD)	RQTY	RQTY	RQTY	❑	❑	
FUEL FLOW LEFT (MFD)	--	--	--	❑	❑	
FUEL FLOW RIGHT (MFD)	--	--	--	❑	❑	
NR (PFD/MFD)	0	0	0	❑	❑	
NF1 (PFD/MFD)	0	0	0	❑	❑	
NF2 (PFD/MFD)	0	0	0	❑	❑	
PI 1 (PFD/MFD)	0	0	0	❑	❑	
PI 2 (PFD/MFD)	0	0	0	❑	❑	
NR (PFD/MFD) ANALOGUE	0	0	0	❑	❑	Sel analog data
NF1 (PFD/MFD) ANALOGUE	0	--	0	❑	❑	Sel analog data
NF2 (PFD/MFD) ANALOGUE	0	0	--	❑	❑	Sel analog data
PI 1 (PFD/MFD) ANALOGUE	--	--	--	❑	❑	Sel analog data
PI 2 (PFD/MFD) ANALOGUE	--	--	--	❑	❑	Sel analog data
AHRS HDG 1	HDG1	HDG1	HDG1	❑	❑	
AHRS HDG 2	HDG2	HDG2	HDG2	❑	❑	
AHRS ROLL 1	ROLL1	ROLL1	ROLL1	❑	❑	
AHRS ROLL 2	ROLL2	ROLL2	ROLL2	❑	❑	
AHRS PITCH 1	PITCH1	PITCH1	PITCH1	❑	❑	
AHRS PITCH 2	PITCH2	PITCH2	PITCH2	❑	❑	
ADS IAS 1	0 ± 20	X	0 ± 20	❑	❑	
ADS IAS 2	0 ± 20	0 ± 20	X	❑	❑	
ADS BARO ALT 1	ALT1	--	ALT1	❑	❑	
ADS BARO ALT 2	ALT2	ALT2	--	❑	❑	
ADS ALTIMETER1 DIGITAL AND ANALOGUE INDICATION	ADS1	X	ADS1	❑	❑	
ADS ALTIMETER2 DIGITAL AND ANALOGUE INDICATION	ADS2	ADS2	X	❑	❑	
RADIO ALTIMETER 1	RA 1	RA 2	RA 1	❑	❑	
RADIO ALTIMETER 2	RA 2	RA 2	RA 1	❑	❑	

* 1 MAU DISPLAYED on PFD bottom left
** 2 MAU DISPLAYED on PFD bottom left

2. Helicopter on ground with both engines in flight.

NOTE

Verify that all the displayed values are valid and inside normal operating limits.

Parameter scale	Normal	RESULT		NOTE
		PASS	FAIL	
NG1 (MFD)	NG1	❑	❑	
NG2 (MFD)	NG2	❑	❑	
ITT1 (MFD)	ITT1	❑	❑	
ITT2 (MFD)	ITT2	❑	❑	
TQ1 (MFD)	TQ1	❑	❑	
TQ2 (MFD)	TQ2	❑	❑	
NG1 ANALOGUE (MFD)	NG1	❑	❑	Sel analog data
NG2 ANALOGUE (MFD)	NG2	❑	❑	Sel analog data
ITT1 ANALOGUE (MFD)	ITT1	❑	❑	Sel analog data
ITT2 ANALOGUE (MFD)	ITT2	❑	❑	Sel analog data
TQ1 ANALOGUE (MFD)	TQ1	❑	❑	Sel analog data
TQ2 ANALOGUE (MFD)	TQ2	❑	❑	Sel analog data
ENG OIL PRESS1 (MFD)	EOP1	❑	❑	
ENG OIL PRESS2 (MFD)	EOP2	❑	❑	
ENG OIL TEMP1 (MFD)	EOT1	❑	❑	
ENG OIL TEMP2 (MFD)	EOT2	❑	❑	
MGB OIL PRESS (MFD)	MGBP	❑	❑	
MGB OIL TEMP (MFD)	MGBT	❑	❑	
IGB OIL TEMP (MFD)	IGBT	❑	❑	
TGB OIL TEMP (MFD)	IGBT	❑	❑	
FUEL PRESS1 (MFD)	FUELP1	❑	❑	
FUEL PRESS2 (MFD)	FUELP2	❑	❑	
HYD OIL PRESS 1 (MFD)	HYDP1	❑	❑	
HYD OIL PRESS 2 (MFD)	HYDP2	❑	❑	
HYD OIL TEMP 1 (MFD)	HYDT1	❑	❑	
HYD OIL TEMP 2 (MFD)	HYDT2	❑	❑	
MAIN BUS 1 (MFD)	28 ±2	❑	❑	
MAIN BUS 2 (MFD)	28 ±2	❑	❑	
ESS BUS 1 (MFD)	28 ±2	❑	❑	
ESS BUS 2 (MFD)	28 ±2	❑	❑	
DC GEN LOAD 1 (MFD)	GENL1	❑	❑	
DC GEN LOAD2 (MFD)	GENL2	❑	❑	
MAIN BATTERY LOAD (MFD)	MBATTL	❑	❑	
AUX BATTERY LOAD (MFD)	ABATTL	❑	❑	
OAT 1 (PFD CPLT)	OAT1	❑	❑	
OAT 2 (PFD PLT)	OAT2	❑	❑	
FUEL QUANTITY (MFD)	QTY	❑	❑	
FUEL QTY LEFT (MFD)	LQTY	❑	❑	
FUEL QTY RIGHT (MFD)	RQTY	❑	❑	
FUEL FLOW LEFT (MFD)	LFF	❑	❑	
FUEL FLOW RIGHT (MFD)	RFF	❑	❑	

Parameter scale	Normal	RESULT		NOTE
		PASS	FAIL	
NR (PFD/MFD)	100%	❑	❑	
NF1 (PFD/MFD)	100%	❑	❑	
NF2 (PFD/MFD)	100%	❑	❑	
PI 1 (MFD)	PI1	❑	❑	
PI 2 (MFD)	PI2	❑	❑	
NR (PFD/MFD) ANALOGUE	100%	❑	❑	Sel. Analog data
NF1 (PFD/MFD) ANALOGUE	100%	❑	❑	Sel. Analog data
NF2 (PFD/MFD) ANALOGUE	100%	❑	❑	Sel. Analog data
PI 1 (MFD) ANALOGUE	PI1	❑	❑	Sel. Analog data
PI 2 (MFD) ANALOGUE	PI2	❑	❑	Sel. Analog data

CONTROL PANELS FUNCTIONS

System	TEST	Results		Note
		PASS	FAIL	
Display Controller	Check the correct functionality of all controller buttons	❑	❑	
Remote instrument Controller	Check the correct functionality of all controller buttons	❑	❑	
CMC	Verify maintenance PAGE can be opened on MFD (on ground only)	❑	❑	
FMS	Create a flight plan. Press LNAV pushbutton and verify that the FMS is displayed on PFD. Verify the relevant Flight Plan is displayed on both MFD (MAP/PLAN page).	❑	❑	
Dimming Display	Display dimming	❑	❑	
REV Panel	Power off ADS 1 and on copilot side, verify the following failure indications: Airspeed, Vertical Speed and Altitude. Switch REV panel on ADS 1 and verify the same failures on pilot side	❑	❑	"ADS 1" air data source annunciation is displayed
	Power off ADS 2 and on pilot side, verify the following failure indications: Airspeed, Vertical Speed and Altitude. Switch REV panel on ADS 2 and verify the same failures on copilot side	❑	❑	"ADS 2" air data source annunciation is displayed
	Power off AHRS 1 and on copilot side, verify the following failure indications: Attitude and Heading. Switch REV panel on AHRS 1 and verify the same failures on pilot side	❑	❑	"AHRS 1" air data source annunciation is displayed
	Power off AHRS 2 and on pilot side, verify the following failure indications: Attitude and Heading. Switch REV panel on AHRS 2 and verify the same failures on copilot side	❑	❑	"AHRS 2" air data source annunciation is displayed
	Verify PFD/MFD correct reversionary	❑	❑	
Copilot Display	Set WOW in air Pull Out PFD CPLT CB and verify MFD CPLT in composite. Pull Out MFD CPLT CB and verify PFD CPLT in composite.	❑	❑	
Pilot Display	Set WOW in air Pull Out PFD PLT CB and verify MFD PLT in composite. Pull Out MFD PLT CB and verify PFD PLT in composite.	❑	❑	
TEST Panel/AWG "full" test	Check all the aural warnings are correctly played	❑	❑	

ADDITIONAL TESTS

1. Generic checks.

System	TEST	RESULTS		Note
		PASS	FAIL	
Display	Helicopter on Ground with engines OFF. Check the cyclic position indicator is centred on both PFDs.	☐	☐	
Kit Increased Gross Weight 6800 kg	Verify you're able to set weights in order to obtain GROSS WT = 6451 kg in the PERFORMANCE INIT-KG 3/3 page. Set weights in order to obtain 6801 Kg and verify 'EXCEEDS MAX GROSS WEIGHT' message is displayed on MCDU. Furthermore, you're not able initiate them ('CONFIRM INIT' linekey is not displayed)	☐	☐	
Kit Increased Gross Weight 7000 kg	Verify you're able to set weights in order to obtain GROSS WT = 6451 kg in the PERFORMANCE INIT-KG 3/3 page. Set weights in order to obtain 7001 Kg and verify 'EXCEEDS MAX GROSS WEIGHT' message is displayed on MCDU. Furthermore, you're not able initiate them ('CONFIRM INIT' line key is not displayed)	☐	☐	

2. Options File additional checks.

NOTE

If some test results 'FAIL', re-load correct option file.

System	TEST	RESULTS		Note
		PASS	FAIL	
2nd ADF Parameter: **adf1Installed**	If the 2nd ADF is installed on MRC 1, verify the 1-2 ADF selection is available on the MCDU and AV900 and both ADF 1 and ADF 2 are selectable on both PFDs (press BRG buttons on Display Controller).	☐	☐	
	If the 2nd ADF is not installed, verify the 1-2 ADF selection is not available on the MCDU and only ADF 2 is selectable on both PFDs. Pressing ADF 1 on the AV900 "NO FUNCT" is displayed.	☐	☐	
2nd DME Parameter: **dme1Installed** **numDME**	If the 2nd DME is installed on MRC 1, verify the 1-2 DME selection is available on the MCDU NAV / POS SENSORS / VOR/DME page and on the AV900.	☐	☐	
	If the 2nd DME is not installed, verify the 1-2 DME selection is not available on the MCDU.	☐	☐	
2nd XPDR Parameter: **xpd1Installed** **dualGPSToXpdrInstallation**	If the 2nd XPDR is installed on MRC 1, verify the 1-2 XPDR selection is available on the MCDU RADIO page and displayed on PFDs	☐	☐	
	If the 2nd XPDR is not installed on MRC 1, verify the 1-2 XPDR selection is not available on the MCDU RADIO page and only XPDR is displayed on PFDs	☐	☐	

System	TEST	RESULTS		Note
		PASS	FAIL	
Wx P660 or Wx P701 Parameter: **wxInstalled** **wxType**	If the Wx P660 (or Wx P701) is installed, ensure that the Wx display is selectable on both PFDs and MFDs, perform a WX test and verify the video is correctly displayed on both PFDs and MFDs	☐	☐	
	If no Wx P660 (or Wx P701) is installed in the aircraft, selection of the corresponding item shall be removed from the sequence of the WX/TAWS pushbutton on the display controller. If both WX P660 (or Wx P701) and EGPWS are not installed in the aircraft, selection of this button shall display the "NO WX/TAWS INSTALL" CAS message for 5 seconds.	☐	☐	
EGPWS Parameter: **egpws1Installed**	If the Honeywell EGPWS Mark XXII is installed and TAWS ENHANCED MODE ENABLED = DISABLED (see [4] par 3.5 - Settings file installation procedure (Fig 3.5-7)), ensure that the TAWS display is selectable on both PFDs and MFDs, verify the video is correctly displayed on both PFDs and MFDs and no failure indications are present	☐	☐	
	If the Honeywell EGPWS Mark XXII is installed and TAWS ENHANCED MODE ENABLED = ENABLED (see [4] par 3.5 - Settings file installation procedure (Fig 3.5-7)), ensure that the TAWS display is selectable on both PFDs and MFDs, verify the video is correctly displayed on both PFDs and MFDs, no failure indications are present and verify SAR and OFFSHORE option are displayed on MCDU Menu\TAWS page	☐	☐	
	If EGPWS Mark XII is not installed in the aircraft, selection of the corresponding item shall be removed from the sequence of the WX/TAWS pushbutton on the display controller. If both weather radar (WX P660 or WX P701) and EGPWS are not installed in the aircraft, selection of this button shall display the "NO WX/TAWS INSTALL" CAS message for 5 seconds.	☐	☐	
Video Module Parameter: **videoModule1Installed**	If the MAU Video Module is installed, ensure that the available video sources are selectable on both MFDs and correctly displayed	☐	☐	
	If the MAU Video Module is not installed, ensure that the video sources are not selectable on both MFDs	☐	☐	
TCAS I or TCAS II Parameter: **xpd2TcasInstalled**	If the Honeywell TCAS I or TCAS II is installed, ensure that the TCAS display is selectable on both MFDs, ensure TCAS FAIL is not displayed on the PFD (exception only for IFF transponder installed if IFF is in OFF state).	☐	☐	
	If the Honeywell TCAS I or TCAS II is not installed, ensure that the TCAS display is not selectable on both MFDs, ensure TCAS FAIL is not displayed on the PFDs	☐	☐	
Windshield Heater Parameter: **iceProtectionSystem**	If a windshield heater is installed, power on the system and check '1(2) WSHLD HTR ON' advisory appears on CAS list	☐	☐	

System	TEST	RESULTS		Note
		PASS	FAIL	
AV900 cabin Parameter: **audioPan3Installed**	If a 3rd AV900 is installed in the cabin, pull out 3rd AV900 CB and verify "3 AUDIO FAIL" appears on CAS list	☐	☐	
4th AV900 cabin Parameter: **audioPan4Installed**	If a 4th AV900 is installed in the cabin, pull out 4th AV900 CB and verify "4 AUDIO FAIL" appears on CAS list	☐	☐	
5th AV900 cabin Parameter: **audioPan5Installed**	If a 5th AV900 is installed in the cabin, pull out 5th AV900 CB and verify "5 AUDIO FAIL" appears on CAS list	☐	☐	
6rd AV900 cabin Parameter: **audioPan6Installed**	If a 6th AV900 is installed in the cabin, pull out 6th AV900 CB and verify "6 AUDIO FAIL" appears on CAS list	☐	☐	
7th AV900 cabin Parameter: **audioPan7Installed**	If a 7th AV900 is installed in the cabin, pull out 7th AV900 CB and verify "7 AUDIO FAIL" appears on CAS list	☐	☐	
8th AV900 cabin Parameter: **audioPan8Installed**	If a 8th AV900 is installed in the cabin, pull out 8th AV900 CB and verify "8 AUDIO FAIL" appears on CAS list	☐	☐	
CAT A Parameter: **catADisplayInhibit**	On PFD, verify 5 CAT A labels will be displayed (HELIPAD, SHORT FIELD, CLEAR AREA, ELEV HELIPAD and BKUP HELIPAD)	☐	☐	
EAPS Parameter: **eapsInstalled**	If EAPS is installed, initiate perf data and on MCDU PERF DATA 4/4 verify 'YES' under EAPS INSTALLED linekey	☐	☐	
HF Parameter: **hf1Installed** **numHFCom**	Helicopter on ground in open space. If the Honeywell HF KHF1050 is installed, verify the HF page is present on the MCDU RADIO 2/2 page	☐	☐	
	If the HF KHF1050 is not installed, verify the HF page is not present on the MCDU RADIO 2/2 page	☐	☐	
TCAS type Parameter: **tcasType**	If TCAS I is installed, on TCAS/XPDR 2/2 MCDU page verify the following TCAS/XPDR modes are displayed: TA, ALT ON, ALT OFF	☐	☐	
	If TCAS II is installed, on TCAS/XPDR 2/2 MCDU page verify the following TCAS/XPDR modes are displayed: TA/RA, TA, ALT ON, ALT OFF	☐	☐	
RIB Video switch **Parameter:** **numRibVideoSwitch**	If: • No video source is installed, OR • only VMU is installed, OR • only EURONAV is installed, OR • only RADAR (1500 B+ or Gabbiano) is installed, OR • only OPLS is installed, then no "GRAPHICS" menu shall be displayed.	☐	☐	
	If: • only SKYFORCE is installed, OR • only EURONAV AND VMU are installed, then 'DIGITAL MAP' is visualized in the menu.	☐	☐	

System	TEST	RESULTS PASS	RESULTS FAIL	Note
	If: • OPLS AND VMU are installed then 'NOT USED' AND 'OPLS' are visualized in the menu	☐	☐	For aircrafts reported in NOTE below, only 'OPLS' is visualized.
	If: • SKYFORCE AND OPLS AND VMU are installed, OR • EURONAV AND OPLS AND VMU are installed, then 'DIGITAL MAP' AND 'OPLS' are visualized in the menu.	☐	☐	For aircrafts reported in NOTE below, only 'GRAPHICS' is visualized.
	If: • RADAR (1500 B+ or Gabbiano) AND VMU are installed then 'NOT USED' AND 'NOT USED' AND 'RADAR' are visualized in the menu	☐	☐	For aircrafts reported in NOTE below, only 'RADAR' is visualized.
	If: • RADAR (1500 B+ or Gabbiano) AND OPLS AND VMU are installed then 'NOT USED' AND 'OPLS' AND 'RADAR' are visualized in the menu	☐	☐	For aircrafts reported in NOTE below, only 'GRAPHICS' is visualized.
	If: • SKYFORCE AND RADAR (1500 B+ or Gabbiano) AND VMU are installed, OR • EURONAV AND RADAR (1500 B+ or Gabbiano) AND VMU are installed. then 'DIGITAL MAP' AND 'NOT USED' AND 'RADAR' are visualized in the menu.	☐	☐	For aircrafts reported in NOTE below, only 'GRAPHICS' is visualized.
	If: • SKYFORCE AND RADAR (1500 B+ or Gabbiano) AND OPLS AND VMU are installed, OR • EURONAV AND RADAR (1500 B+ or Gabbiano) AND OPLS AND VMU are installed. then 'DIGITAL MAP' AND 'OPLS' AND 'RADAR' are visualized in the menu.	☐	☐	For aircrafts reported in NOTE below, only 'GRAPHICS' is visualized
Landing Lights Parameter: **landingLightsType**	If landingLightsType = Legacy system, ?? power on right light and verify 'LANDING LT ON' advisory on CAS list then power on left light and verify 'SEARCH LT ON' advisory on CAS list	☐	☐	
	If landingLightsType = Enhanced system, ?? power on right light and verify 'LANDING LT RH ON' advisory on CAS list then power on left light and verify 'LANDING LT LH ON' advisory on CAS list	☐	☐	
LPV Parameter: **fmsSBASenable**	If dual SBAS GPS configuration is installed (Standalone GPS p/n 100-601944-312, MAU 2 GPS module p/n 245-604067-101 and two GPS antennas p/n S67-1575-145), load a FLT PLAN including an approach with LPV minima (see Note below); access Arrival Page and verify RNAV MIN prompt is displayed and LPV is the selected minima.	☐	☐	

System	TEST	RESULTS		Note
		PASS	FAIL	
	If dual SBAS GPS configuration is NOT installed load a FLT PLAN including an approach with LPV minima (see Note below); access Arrival Page and verify RNAV MIN prompt is NOT displayed.	☐	☐	

NOTE

To create a simple FLT PLN with LPV minima:

on the MCDU Flight Plan Page set LIMC as destination;

select APPROACH and choose RNAV RWY 35;

If configuration is correct, accessing Arrival Page, RNAV MIN prompt should be displayed and LPV should be the selected minima.

3. Settings File additional checks

NOTE

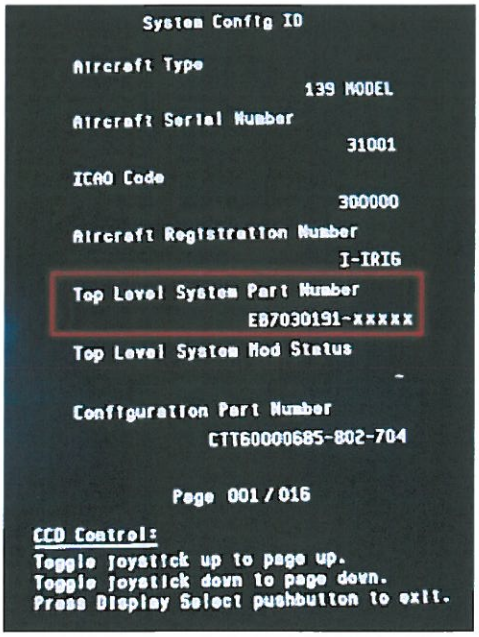
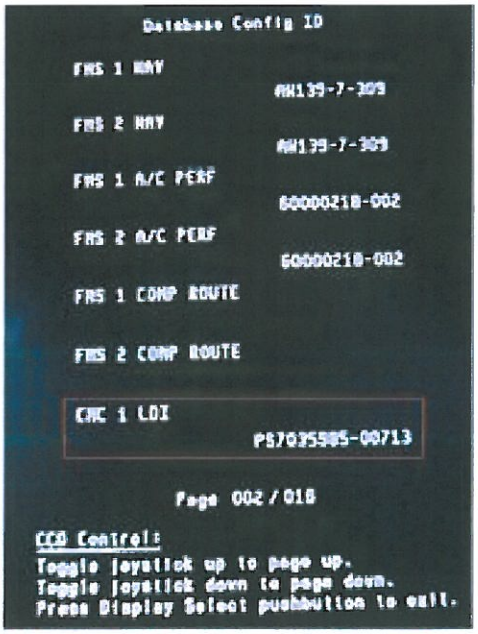
If some test results 'FAIL', re-load correct settings file

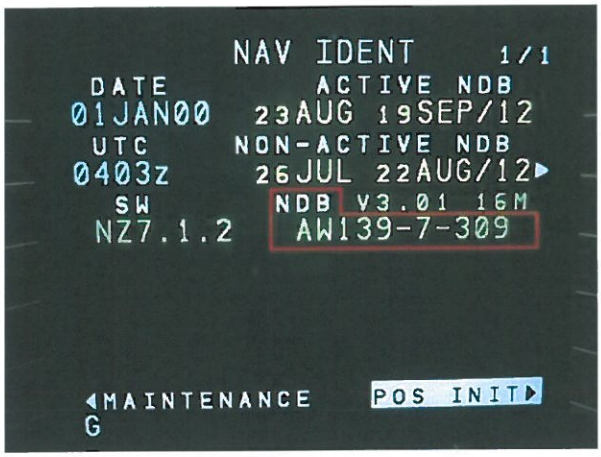
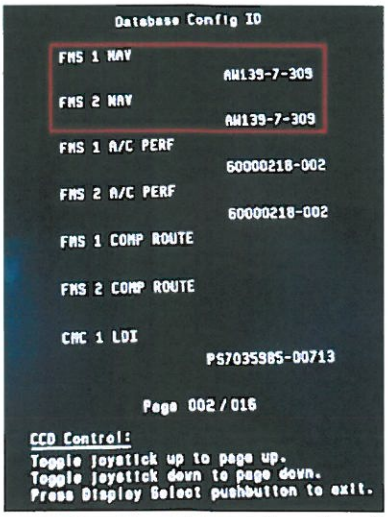
System	TEST	RESULTS		Note
		PASS	FAIL	
Cabin ICS Parameter: **Cabin ICS Installed**	If a Cabin ICS is installed, execute a cabin CALL and verify the cabin ICS is properly working If AV 900 BLOCK 3 audio panel (P/N 7511900-99001, -99201) is installed verify, CABIN ICS Installed = 1 on SYS CONFIG page	☐	☐	
	If a Cabin ICS is not installed, press CAB on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
COM 3 Parameter: **XCVR A2 AudioEnabled**	If a third COM is installed, press the COM 3 button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If a third COM is not installed, press COM 3 MIC on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
COM 4 Parameter: **XCVR B2 AudioEnabled**	If AV900 Block 2 or 3 is installed and a fourth COM is installed, press the COM 4 button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 2 or 3 is installed and a fourth COM is not installed, press COM 4 MIC on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
COM 5 Parameter: **XCVR D1 AudioEnabled**	If AV900 Block 3 is installed and a fifth COM is installed, press the COM 5 button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 3 is installed and a fifth COM is not installed, press COM 5 MIC on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
AUX 1 Parameter: **NAV A1 Audio Enabled**	If AV900 Block 3 is installed and a receiver connected to AUX 1 is installed, press the AUX 1 button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 3 is installed and a receiver connected to AUX 1 is not installed, press AUX 1 MIC on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
AUX 2 Parameter: **NAV B1 Audio Enabled**	If AV900 Block 3 is installed and a receiver connected to AUX 2 is installed, press the AUX 2 button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 3 is installed and a receiver connected to AUX 2 is not installed, press AUX 2 MIC on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
FONE Parameter: **XCVR C1 AudioEnabled**	If AV900 Block 1 or 2 is installed and if a SATCOM is installed, press the FONE button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 1 or 2 is installed and if a SATCOM is not installed, press FONE on both the AV900 and verify "NO FUNCT" is displayed	☐	☐	

System	TEST	RESULTS		Note
		PASS	FAIL	
FONE 1 Parameter: **XCVR C1 AudioEnabled**	If AV900 Block 3 is installed and a SATCOM is installed, press the FONE 1 button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 3 is installed and no SATCOM is installed, press FONE 1 on both the AV900 and verify "NO FUNCT" is displayed	☐	☐	
FONE 2 Parameter: **XCVR C2 AudioEnabled**	If AV900 Block 3 is installed and a SATCOM is installed, press the FONE 2 button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 3 is installed and SATCOM connected to FONE 2 is not installed, press FONE 2 on both the AV900 and verify "NO FUNCT" is displayed	☐	☐	
HOIST Parameter: **XCVR B1 AudioEnabled**	If AV900 Block 2 or 3 is installed ICS HOIST POLYCON is installed, press the HOIST button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 2 or 3 is installed ICS HOIST POLYCON is not installed, press HOIST on both the AV900 and verify "NO FUNCT" is displayed	☐	☐	
DF Parameter: **DF Installed**	If AV900 Block 3 is installed and a receiver connected to DF is installed, press the DF button on both the AV900 and verify pushbutton light is illuminated.	☐	☐	
	If AV900 Block 3 is installed and a receiver connected to DF is not installed, press DF MIC on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
HF Parameter: **XCVR A1 AudioEnabled**	Helicopter on ground in open space. If the Honeywell HF KHF1050 is installed, press the HF button on both the AV900 verify pushbutton light is illuminated	☐	☐	
	If the HF KHF1050 is not installed, press HF on both AV900 and verify "NO FUNCT" is displayed	☐	☐	
Lightning Sensor System Parameter: **LXInstalled**	If LSS is installed, the 'Weather' menu item shall change to 'Weather/LSS'	☐	☐	
FMS Parameter **FMS mode**	On MCDU NAV 2/2 ➡ MAINTENANCE 1/3 pages, verify that DUAL is displayed under both ACTIVE MODE and SELECTED MODE labels	☐	☐	

System	TEST	RESULTS		Note
		PASS	FAIL	
EGPWS Parameter **TAWS ENHANCED MODE ENABLED**	If EGPWS Mark XXII is not installed verify TAWS ENHANCED MODE ENABLED = DISABLE	☐	☐	
	If EGPWS Mark XXII is installed and FD configuration is ENHANCED (kit p/n 4G2210F00411) or SAR (kit p/n 4G2210F00111), verify TAWS ENHANCED MODE ENABLED = ENABLE	☐	☐	
	If EGPWS Mark XXII is installed, FD configuration is BASIC (kit p/n 4G2210F00511) and OFFSHORE MODE is required by work order, verify TAWS ENHANCED MODE ENABLED = ENABLE	☐	☐	
	If EGPWS Mark XXII is installed, FD configuration is BASIC (kit p/n 4G2210F00511) and OFFSHORE MODE is not required or not specified by work order, verify TAWS ENHANCED MODE ENABLED = DISABLE	☐	☐	

4. NAVIGATION DB Test.

TEST	RESULT PASS	RESULT FAIL
On MFD, open the System ➡ Sys Config and verify the Top Level System Part Number is the correct one: • EB7030191-00114 (Phase 7.12 - NIM 3 Mini Cert) • EB7030191-00115 7.14 (Phase 7.14 - NIM 2 Mini Cert) (see fig below **for reference only**) 	☐	☐
Verify the LDI SW is the correct one: • PS7035985-00717 (Phase 7.12 - NIM 3 Mini Cert) • PS7035985-00718 (Phase 7.14 - NIM 2 Mini Cert) (see fig below for reference only) 	☐	☐

Verify that: • **FMS 1 NAV** and **FMS 2 NAV** (on MFD System ➡ Sys Config) • **NDB** (on MCDU NAV ➡ NAV IDENT 1/1 page) are equal to: **AW139-7-XCC** where X is a private code for AW139 and CC = cycle (see fig below **for reference only**)   	☐	☐
Verify that one the following PERF DB is installed: **60000218-003** OR **60000218-004** (if Kit 4G0000F00311 LGS Increased Gross Weight 7000Kg is installed) OR **60000218-002** (Legacy DB) (see fig below for reference only)	☐	☐

ANNEX D

APM SETTINGS RECORDING

PROCEDURE PREREQUISITES

1. Verify that the External Power Bench is operative and set to the appropriate Voltage (28 VDC ± 5%).
2. Verify that all the electrical power supply CB's are pushed IN.
3. Verify that the "LDG GEAR CONTR" CB126 is pushed IN.
4. Verify that at least the PRIMUS EPIC® SYSTEM devices CB's (Table 1) are pushed IN.
5. During the procedure keep at least the AUX battery plugged to avoid damages to the CMC module in MAU1 in case of external power loss.
6. If the helicopter is not WOW, connect the WOW simulation kit switches to the relevant connectors, set them to the GND position and electrically reset the system. The S/W upload procedure cannot be performed with helicopter in air.

C/B	Condition	Verified
MAU CMC	PUSHED IN	
MAU 1	PUSHED IN	
MAU 2	PUSHED IN	
MFD PLT	PUSHED IN	
MFD CPLT (4 display config. only)	PUSHED IN	
PFD PLT	PUSHED IN	
PFD CPLT	PUSHED IN	
MRC1-VHF1	PUSHED IN	
MRC2-VHF2	PUSHED IN	
PFD CONTR PLT	PUSHED IN	
MRC1-NAV1	PUSHED IN	
MRC2-NAV2	PUSHED IN	
MRC1 - NIM	PUSHED IN	
MRC2 - NIM	PUSHED IN	
MRC2-XPNDR	PUSHED IN	
MCDU PLT	PUSHED IN	
MCDU CPLT	PUSHED IN	
AP-FD1 (FD1)	PUSHED IN	
AP-FD2 (FD2)	PUSHED IN	
PFD CONTR CPLT	PUSHED IN	
MRC2-ADF	PUSHED IN	
MRC2-DME	PUSHED IN	

Table 1: PRIMUS EPIC® Avionic System Circuit Breakers Setting.

TOOLING REQUIRED

1. The following equipment is required:
   - ✓ DC External Power Bench (28VDC);
   - ✓ Computer with:
     - Windows XP or Windows 7;
     - 256 MB RAM;
     - CD-ROM Driver.
   - ✓ LANTAP-10 Primus EPIC Lan Interface Kit (see Figure 2 below)

Figure 2: LANTAP - 10

   - ✓ WOW simulator kit.
   - ✓ PRIMUS EPIC® Software package CD dedicated to the helicopter.

2. In case, use following equivalent tools:
   - ✓ Co-Axial Cable (at least 3 meters) with BNC connectors;
   - ✓ Co-Axial BNC "T" Connector;
   - ✓ 50 Ohm Co-Axial BNC Termination.
   - ✓ LAN Network "Dongle Adapter": PCMCIA slot to Coax LAN cable (See Figure 3 below):

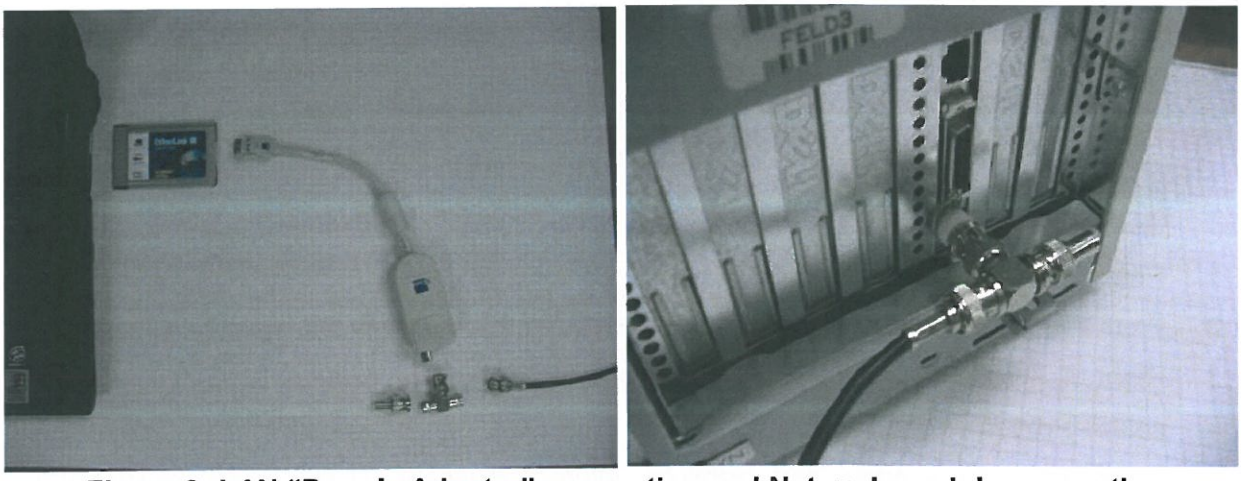


Figure 3: LAN "Dongle Adapter" connection and Network module connection

COMPUTER SETTING

NOTE

The Computer setting procedure shall be performed only the first time the PC is used to load the PRIMUS EPIC® S/W.

CAUTION

The computer used for the software uploading on the helicopter should not be used for other tasks and efficient anti-virus software shall be installed and kept updated.

1. Power ON the computer.
2. From the START button select "Settings" ➔ "Control Panel" ➔ "Network".
3. Right click on the "Local Area Connection" being used to connect to the aircraft, then select "Properties".
4. Scroll down the window and highlight "Internet Protocol (TCP/IP)", select Properties button.
5. A window similar to Figure 4 will appear. Select the "Use the following IP address" button and enter the IP address 192.168.200.201 and the Subnet mask 255.255.0.0 in the window.
6. When a new PRIMUS EPIC® Software Release is issued, the relevant TOOL software must be installed on the Computer (Tools CD) before proceeding with the S/W installation on the helicopter. Launch the "AW139 Tools CD.exe" program supplied on the Tools CD and install the following programs:
   APM Restoration Tool
   APM Settings Tool
   CMC Remote Terminal Tool

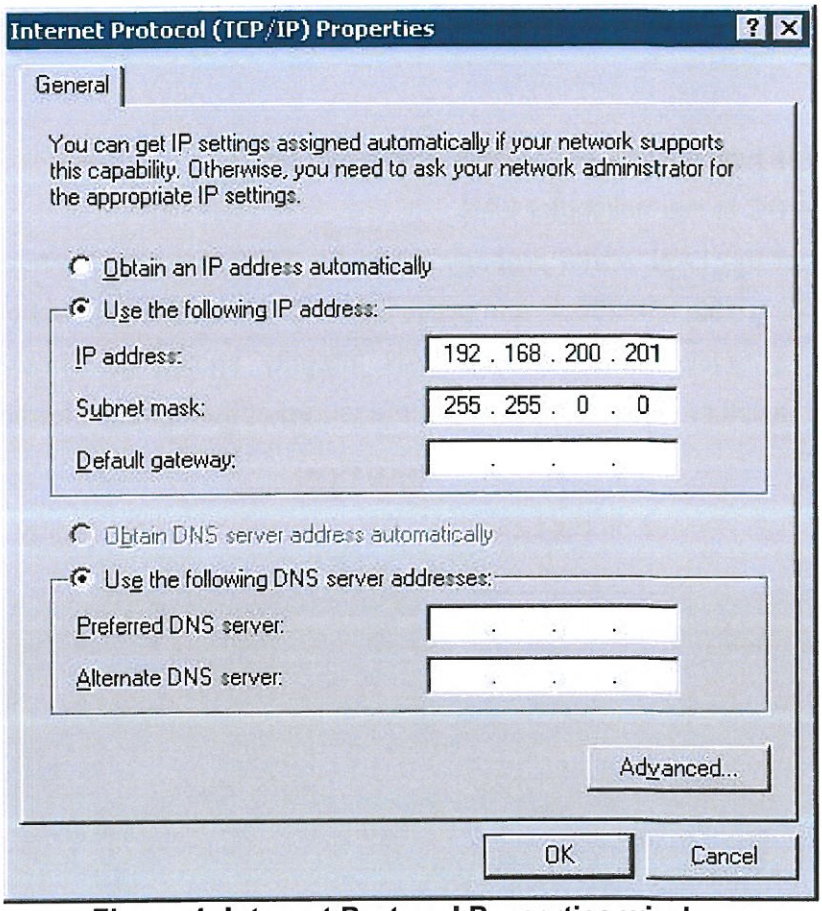


Figure 4: Internet Protocol Properties window

SETTING RECORDING

1. Verify that the helicopter is set on GND (WOW on GND).
2. Connect the PC to the helicopter LAN.
3. To verify that the LAN works properly, open the DOS command window and type the command "ping 192.168.200.1" and press Enter. The response should be as depicted in the Figure 5 below; otherwise the LAN integrity should be checked (LAN cable termination resistors equal to 50-55 Ohm measured at the opposite termination side).

CAUTION

Power off the helicopter, before checking LAN integrity.

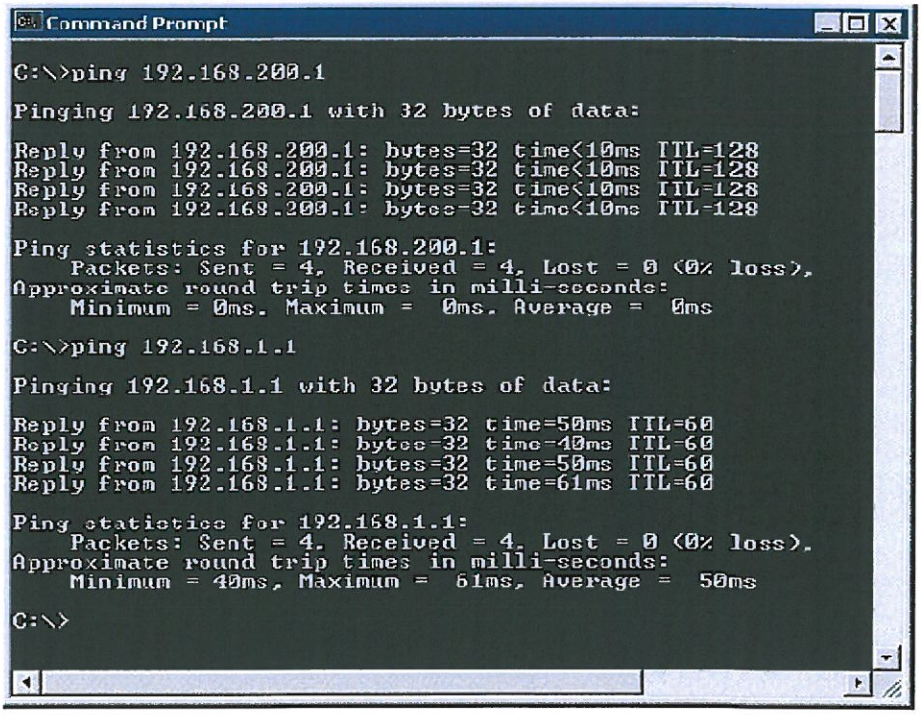


Figure 5: Ping Positive Response

4. By mean of the AMP Setting Tool (amp.exe), open the file "settings.def" provided in the Operational SW CD – Primus Epic current release.
5. Select "Get AMP List" to fulfill the "setting.def" file with the current aircraft settings.

NOTE

If you accomplish "Get AMP List" and the AMP file is corrupted, use the AMP restoration tool of the Primus Epic Loading tools.

6. Select "Binary File" and save current aircraft settings.

7. By mean of the AMP Setting Tool (amp.exe) open the file "settings.def" provided in the Operational SW CD – Primus Epic Phase current release and take note of the settings.

NOTE

The settings recording in step 7 will be necessary during the installation of the PRIMUS EPIC® Flight Software release 7.12 and 7.14.

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Please send to the following address: **LEONARDO S.p.A.** **CUSTOMER SUPPORT & SERVICES - ITALY** **PRODUCT SUPPORT ENGINEERING & LICENSES DEPT.** Via Giovanni Agusta, 520 21017 Cascina Costa di Samarate (VA) - ITALY Tel.: +39 0331 225036 Fax: +39 0331 225988	**SERVICE BULLETIN COMPLIANCE FORM**	Date:
	Number:	
	Revision:	

Customer Name and Address:	Telephone:
	Fax:
	B.T. Compliance Date:

Helicopter Model	S/N	Total Number	Total Hours	T.S.O.

Remarks:

Information:

We request your cooperation in filling this form, in order to keep out statistical data relevant to aircraft configuration up-to-date. The form should be filled in all its parts and sent to the above address or you can communicate the application also via Technical Bulletin Application Communication Section placed in Leonardo AW Customer Portal - MyCommunications Area. We thank you beforehand for the information given.