

**BY ORDER OF THE COMMANDER  
AIR FORCE MATERIEL COMMAND**



**AIR FORCE INSTRUCTION 21-103  
AIR FORCE MATERIEL COMMAND  
Supplement**

**ADDENDUM\_Q  
14 SEPTEMBER 2016**

**Maintenance**

**EQUIPMENT INVENTORY, STATUS  
AND UTILIZATION REPORTING  
SYSTEM/RQ-4 MINIMUM ESSENTIAL  
SUBSYSTEM LIST (MESL)**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements AFI 21-103\_AFMCSUP, *Equipment Inventory, Status and Utilization Reporting*. It establishes guidance and assigns responsibility to provide AFMC Test Fleet aircraft status changes/updates in accordance with (IAW) current maintenance conditions and the developed MDS specific mission essential subsystem list (MESL). This instruction applies to all AFMC organizations that manage or perform maintenance on AFMC owned/possessed aircraft regardless of Air Force Specialty Code. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). This publication may be supplemented at any level, but all direct Supplements must be routed to the Office of Primary Responsibility (OPR) of this publication for coordination prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-2, T-3") number following the compliance statement. See AFI 33-360, Publications and Forms Management, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier

waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. Send comments and suggested improvements to this instruction on AF Form 847, **Recommendation for Change of Publication**, to HQ AFMC/A4MM, 462 Chidlaw Road, Wright-Patterson AFB OH 45433-5006.

These MESLs complement AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*. They apply to maintenance activities supporting AFMC test missions across AFMC.

### **SUMMARY OF CHANGES**

This publication has been substantially revised to meet the intent of AFI 21-103 AFMCSUP; this Addendum must be reviewed in its entirety. The MESL is modified based on user inputs and has been updated to reflect current mission requirements. Additionally, removed Tier 1 (T-1) IAW AFI 33-360 dated 1 December 2015, MAJCOM level instruction will not Tier references above the MAJCOM waiver authority (e.g. Table 1.1. Tier Waiver Authorities, Tier T-1 may be used in publications at Departmental level only.).

**1.1. General.** The MESL is the basis of status reporting IAW 21-103. MESLs lay the ground work for reporting the status of assigned/possessed AFMC test fleet aircraft and equipment supporting AFMC test missions. They list the minimum essential systems and subsystems that must work on test fleet aircraft to perform specifically assigned unit test, training, or other missions.

**1.2. Qualifying notes are used to:** Define system exceptions and help explain complex degraded mission systems.

**1.3. It is understood that any aircraft or support equipment system or subsystem may:** Be subjected to test or tested under a test scenario and/or are test dependent as directed by the test mission director. If identified by test mission director, those systems or subsystems, if not already identified by qualifying notes, must be operational to be considered FMC or PMC for that mission.

**2.1. Reading the MESL.** A MESL is read by comparing the systems stated by WUC column (column 2) against the Full Systems List (FSL) and all applicable Basic Systems List (BSLs) across the page (DTE - Developmental Test and Evaluation, DTS - Developmental Test Support, BFT/NT/TT - Training). Each unit's Design Operational Capability (DOC) statement determines applicability of BSL columns. The aircraft or equipment MESLs incorporate all AFMC assigned/possessed aircraft/equipment and therefore it is important to compare only the columns listed in the MESL which are applicable to the units assigned/possessed aircraft. For example, units with training (TF) coded aircraft would determine report status using only the FSL and TNG columns. Units with multiple coded aircraft will ensure status is reported using the MESL columns appropriate to the individual aircraft/equipment assignment code or type mission being flown. (T-2)

**Table 2.1. RQ-4 Minimum Essential Subsystem Listing (MESL).**

NO.	WUC	SYSTEM/SUBSYSTEM	FSL	BSL		FSL
				DTE	DTS	BFT/NT/TT
1.	11000	Airframe	X	X	X	X
2.	13000	Landing Gear	X	X	X	X
3.	14000	Flight Controls	X	X	X	X
4.	19000	Engine Start	X	X	X	X
5.	23000	Turbofan Engine	X	X	X	X
6.	39000	Ice & Rain Protection	X9	X9	X9	X9
7.	41000	Environmental Control	X	X	X	X
8.	42000	Electrical Power	X	X	X	X
9.	44000	Lights	X1	X1	X1	X1
10.	45000	Hydraulic & Pneumatic System	X	X	X	X
11.	46000	Fuel System	X	X	X	X
12.	57A00	Flight Environment Data	X	X	X	X
13.	57CA/B/ C/D/E	SCAT-1 DGPS	X	X8	X8	X8
14.	57CF/G	GPS System	X	X	X	X
15.	57CH/J/ K	OmniStar	X	X8	X8	X8
16.	57CL/M/ N	See & Detect System	X4			
17.	57DA/B/ C/D/E	Inertial Navigation (Kearfott & LN-100)	X	X	X	X
18.	57DF/G/ H	Traffic collision Avoidance System	X2	X2	X2	X2
19.	57HA/B	IMMC	X	X	X	X
20.	57HC	Ethernet Hub	X	X	X	X
21.	57HD, 63AA/A C-AM, 68	Data Links	X	X4,5,6	X4,5,6	X4,5,6
22.	62, 63AB	UHF/VHF (Voice) Communications	X9	X	X	X3
23.	65	Identification Friend or Foe (IFF)	X	X	X	X
24.	66	Emergency Locator Transponder	X			
25.	77	Surveillance	X2,4,7	X4,7	X4,7	X4,7

**Table 2.2. Qualifying Notes.**

1.	As required by AFI 11-218, Aircraft Operations and Movement on the Ground and AFI 11-202 Vol. 3, <i>General Flight Rules</i> .
2.	When Installed.
3.	Either aircraft or LRE voice must always be operable
4.	Based on mission requirements.
5.	At least one broadband data link is required for each sensor mission.
6.	Use of data link requires that the associated Ground Segment equipment be functional.
7.	Aircraft undergoing sensor/EWS configuration changes will be reported as FMC unless a discrepancy exists affecting the serviceability/functionality of the airframe, "Group A" or "Group B" of the system being removed/installed. (T-2)
8.	Either SCAT-1 or OmniStar DGPS corrections are required for all taxi, takeoff & landing events.
9.	Ice Detection System Only.

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 Protection

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 11-202, Volume 3, *General Flight Rules*, 7 Nov 2014

AFI 11-218, *Aircraft Operations and Movement on the Ground*, 28 Oct 2011

AFI 21-101, *Aircraft and Equipment Maintenance Management*, 21 May 2015

AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*, 26 Jan 2012

AFI 33-360, *Publications and Forms Management*, 1 Dec 2015

AFMAN 33-363, *Management of Records*, 1 Mar 2008

AFPD 21-1, *Air and Space Maintenance*, 29 Oct 2015

***Prescribed Forms***

There are no prescribed forms for this publication

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*, 22 Sep 2009

***Abbreviations and Acronyms***

**A/PDMC**—Aircraft/Propulsion Data Management Computer

**AC**—Air Conditioning

**ACMI**—Air Combat Maneuvering Instrumentation

**AFCS**—Automatic Flight Control System

**AFMC**—Air Force Materiel Command

**AHHS**—Automatic Hover Hold System

**AINS**—Area Inertial Navigation System

**AOA**—Angle of Attack

**APU**—Auxiliary Power Unit

**ARIP**—Air Refueling Initial Point

**AVTR**—Audio or Video Tape Recorders

**BSL**—Basic Systems List

**CARA**—Combined Altitude Radar Altimeter

**CDL**—Common Data Link

**CDS**—Container Delivery System

**CFT**—Conformal Fuel Tank

**CMDS**—Countermeasure Dispensing System

**CNC**—Communication Navigation Control  
**CNI**—Communication Navigation Indication  
**CSAR**—Combat Search and Rescue  
**DGPS**—Differential GPS  
**DOC**—Design Operational Capability  
**DTE**—Developmental Test and Evaluation  
**DTS**—Developmental Test Support  
**ECM**—Electronic Counter Measures  
**EEC**—Electronic Engine Control  
**EFCS**—Electronic Flight Control System  
**EFQI**—Enhanced Fuel Quantity Indicating  
**ELMO**—Electronic Map Ordering  
**ELT**—Emergency Locator Transmitter  
**EMI**—Electromagnetic Interference  
**ESCP**—Environmental System Control Panel  
**FDR**—Flight Data Recorder  
**FEDS**—Flotation Equipment Deployment System  
**FLIR**—Forward-looking Infrared Radar  
**EW**—Electronic Warfare  
**FMC**—Full Mission Capable  
**FSL**—Full Systems List  
**HUD**—Heads-Up Display  
**GINS**—Global Positioning Inertial Navigation System  
**GPS**—Global Positioning System  
**IAW**—In Accordance With  
**IFF**—Identification Friend or Foe  
**ILS**—Instrument Landing System  
**IMMC**—Integrated Mission Management Computer  
**IMT**—Information Management Tool  
**INMARSAT**—International Maritime Satellite  
**INS**—Inertial Navigation System  
**IRU**—Inertial Reference Unit

**JHMCS**—Joint Helmet Mounted Cueing System  
**LAIRCM**—Large Aircraft Infrared Countermeasures  
**LANTIRN**—Low-Altitude Navigation and Targeting Infrared for Night  
**LO**—Low Observable  
**LOX**—Liquid Oxygen  
**LRE**—Launch and Recovery Element  
**MCE**—Mission Control Element  
**MDS**—Mission Design Series  
**MDU**—Multipurpose Display Unit  
**MESL**—Minimum Essential Subsystem List  
**MFD**—Multi Function Display  
**MLD**—Missile Launch Detector  
**MPCD**—Multi-Purpose Color Display  
**NAV**—Navigation  
**NMC**—Non-Mission Capable  
**OBIGGS**—Onboard Inert Gas Generating System  
**OPR**—Office of Primary Responsibility  
**PLZT**—Lead-Lanthanum-Zirconate-Titanate  
**PMC**—Partial Mission Capable  
**RCS**—Radar Cross-Section  
**RLG**—Inertial Navigation System  
**SAS**—Signature Assessment System  
**SATCOM**—Satellite Communication  
**SKE**—Station Keeping Equipment  
**TACAN**—Tactical Air Control and Navigation  
**TAWS**—Terrain Avoidance Warning System  
**TCAS**—Traffic Collision Avoidance System  
**TCTO**—Time Compliance Technical order  
**TNG**—Training  
**TOD**—Technical Order Data  
**UARRSI**—Universal Aerial Refueling Receptacle Slipway Installation  
**UHF**—Ultra High Frequency

**VHF**—Very High Frequency

**VOR**—VHF Omnidirectional Range

**VSD**—Vertical Situation Display

**WUC**—Work Unit Code