

**BY ORDER OF THE COMMANDER
AIR COMBAT COMMAND**



AIR FORCE INSTRUCTION 21-103

**AIR COMBAT COMMAND
Supplement**

ADDENDUM_Y

22 OCTOBER 2015

Maintenance

**EQUIPMENT INVENTORY, STATUS, AND
UTILIZATION REPORTING SYSTEM/
2S/TU-2S MINIMUM ESSENTIAL
SUBSYSTEM LIST (MESL)**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at <http://www.e-Publishing.af.mil> for downloading or ordering.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: HQ ACC/A4CQ-U2

Certified by: HQ ACC/A4C
(Colonel Charles D. Johnson)

Supersedes: AFI 21-103_
ACCSUP_ADD_Y, 09
December 2013

Pages: 7

This MESL compliments AFI 21-103, *Equipment Inventory, Status, and Utilization Reporting*. It applies to all U-2S/TU-2S ACC units. This Addendum does not apply to Air National Guard (ANG) or Air Force Reserve Command (AFRC) units and members. Ensure that all records created as a result of processes prescribed in this document are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Contact supporting records managers as required. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier number. 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 recommended changes or comments on AF Form 847, *Recommendation for Change of Publication*, to HQ ACC/A4C, 130 Douglas St., Suite 210, Langley AFB VA 23665-2791, and send information copies to the applicable OCR. This publication may not be supplemented.

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. Wing/unit level compliance mandates have been identified with a waiver authority tier (T-0, T-1, T-2, T-3) IAW AFI 33-360. This addendum provides better alignment of the Basic Systems Listings (BSL) with current mission types and will help improve the accuracy of aircraft status reporting by updating the system listing and qualifying notes.

1. General. The MESL is the basis of status reporting IAW AFI 21-103. MESLs lay the ground work for reporting the status of aircraft, and in the case of the U-2S weapon system, sensor, data links and electronic warfare systems (hereafter referred to as Mission Systems) capabilities. The MESL also lists the minimum essential systems and subsystems that are required for flight based on mission type. Aircraft and Mission System status is determined by maintenance technicians using applicable system technical orders. The ability to fly an aircraft with inoperative systems is a risk management decision that must be evaluated by both aircrew and maintenance subject matter experts and unit command. This MESL shall be used by both maintenance personnel and aircrew. **(T-1)**

1.1. Mission Ready Available (MRA) is used in readiness Status of Resources and Training System (SORTS) reporting only and denotes Mission Capable (MC) aircraft that have the ability to be configured for a contingency mission in accordance with the COMACC OMNIBUS Plan.

1.2. Aircraft status for generation and deployment: The goal is to generate or deploy Fully Mission Capable (FMC) aircraft, recognizing status actually achieved may be less than FMC. A Non-Mission Capable (NMC) aircraft may be deployed provided it is safe for flight and can be configured and generated to MRA status at an employment site. **(T-3)**

1.3. All ACC units will generate, or deploy and regenerate, using ACC MESLs. Upon actual deployment to another MAJCOM/COCOM theater, the gaining MAJCOM/COCOM has the responsibility to resource and specify the unit's requirements and resource the differences in support/mission equipment. **(T-1)**

2. Reading the MESL. A MESL is read by comparing the system or subsystem stated by work unit code (WUC) against the Full System List (FSL) and all BSL across the page. Applicability of BSL columns is determined by mission requirements and mission specific directives. Note: the Reconnaissance Tactical and Reconnaissance Strategic columns have been deleted from the U-2 MESL and replaced with Operational Reconnaissance. For purposes of this instruction, Emergency War Order (EWO) missions are considered operational. **(T-1)**

2.1. The U-2 has three basic mission types: operational, training, and survival launch. Operational sortie risk acceptance will be driven by Air Tasking Order (ATO) requirements and as such have the most complicated system degradation acceptability tolerances. Training sorties should accept the least risk in system degradation in order to accomplish training requirements. Survival launch missions will accept the most risk with degraded systems to protect the weapon system from serious threat. Survival launch missions operate at the discretion of the WG/CC. For purposes of this instruction, Reconnaissance in Support of Nuclear Operations (RISNO) missions are considered survival launch. All RISNO missions are required to have the appropriate Primary Mission Equipment systems installed in addition to the WUCs listed in the BSL as per classified OPLANs.

2.2. The U-2 aircraft and Mission Systems are uploaded and downloaded by military and contractor maintenance personnel. Mission Systems have an Equipment ID with a Standard Reporting Designator (SRD) that is status reportable. Mission System Status will be reported whether the capability is loaded on an aircraft or not. Aircraft undergoing sensor, data link, or EWS configuration changes may be reported as FMC unless a discrepancy exists affecting the condition of a system as indicated below. If a discrepancy exists, both the Aircraft and Mission System Status shall be reported appropriately. **(T-1)**

2.3. The U-2 may be FMC with particular sub-systems and/or Mission Systems inoperative. The U-2 is NMC if an item marked in the applicable BSL is completely inoperative. PMC status is applicable when the U-2 is still capable of conducting its primary tasked mission, but not all systems operate (i.e., AN/ASQ-230 inoperative on an imagery mission, or a single MFD inoperative). Aircraft status shall be assigned based upon the primary mission configuration, regardless of the system being installed or not. **Example** - For an IMINT prime aircraft; removing a SYERS system from the airframe to the backshop for troubleshooting/repair does not change the aircraft to FMC. The aircraft will remain NMC/PMC until it is capable of IMINT collection or the aircraft is designated as non-mission taskable (all mission systems removed; a.k.a. "low profile") or the primary mission set is changed to something other than IMINT. **(T-1)**

2.4. Qualifying notes are used to define aircraft exceptions and help explain degraded mission systems.

2.5. U-2 flight authority for inoperative equipment not listed in this AFI supplement is the OG/CC. and will not be delegated lower than a flying squadron operations officer. **(T-1)**

2.6. All Mission Systems malfunctions impacting intel collection shall be documented in both the Aircraft 781 forms and IMDS during post-flight maintenance debrief. Mission System malfunctions resulting in an inoperative system will have the status updated appropriately. This is critical given the distributed nature of the U-2 mission system.

Table 1. U-2S/TU-2S Minimum Essential Subsystem List (MESL).

NO.	WUC	SYSTEM/SUBSYSTEM	FSL	BSL		
				OP	TNG	SV
1.	11	Airframe	X	X	X	X
2.	12	Cockpit and Fuselage Compartments	X	X	X	X
3.	13	Landing Gear	X	X	X	X
4.	14	Flight Controls	X	X	X	X
5.	16	Egress Systems	X	X	X	X1
6.	19	Engine Emergency Start System	X	X	X	X1
7.	24	Aircraft to Engine Configuration (AMAD)	X	X	X	X
8.	27	Turbofan Power Plant	X	X	X	X
9.	41	Environmental Control Systems	X	X2	X2	
10.	42	Electrical Power Supply	X	X	X	X
11.	43	Data Bus Systems (1553B)	X	X	X	
12.	44	Lighting Systems	X	X3	X3	
13.	45	Hydraulic Power System	X	X	X	X
14.	45C	Pneumatic Power Supply	X	X	X	X
15.	46	Fuel System	X	X	X	X
16.	47	Oxygen System	X	X	X	X
17.	49	Miscellaneous Utilities/Special Equipment	X	X3	X3	
18.	49F	Face Heat	X	X	X4	
19.	51	Instruments General	X	X3	X3	X5
20.	51A	Angle of Attack	X	X3	X3	
21.	52	Autopilot Air Data System (APADS)	X	X	X6	
22.	54	Data Link Systems (DDL II)	X	X12	X3	
23.	57	Integrated Guidance (INS/GPS)	X	X	X3	
24.	60	VHF/UHF Communication Systems	X	X3	X3	
25.	61	HF Communication	X	X3	X	
26.	64	Interphone System	X	X	X7	
27.	65	IFF System	X	X3	X3	
28.	71	Radio Navigation (ADF, ILS, TACAN)	X	X3	X3	
29.	72	Aperture Mission Radar System (ASARS-2A)	X	X8	X3	
30.	76	AN/ALQ-221 Electronic Warfare System (EWS)	X	X9	X3	
31.	77	Photographic System (OBC)	X	X	X3	
32.	79	AN/ASQ-230 System	X	X10	X3	
33.	80	RAS-1R System	X	X11	X3	
34.	82A	Multifunction Displays	X	X13	X13	
35.	82B	Avionics Processor System	X	X	X	
36.	82D	Standby Flight Display System	X	X	X	X
37.	82F	Up Front Control/Display System	X	X	X	
38.	84	SYERS-2 System	X	X8	X3	
39.	91	Emergency Equipment	X	X	X	
40.	96	Personal Equipment	X	X3,4	X4	

41.	97	Explosive Devices and Components	X	X	X	
FSL - Full Systems List						
BSL - Basic Systems List						
OP – Operational Reconnaissance						
TNG - Training						
SV - Survival						
QUALIFYING NOTES:						
1	Must be installed, but not required to operate.					
2	Automatic Temperature Control not required if manual mode provides full temperature range selection.					
3	Launching with an inoperative or partially inoperative system at the discretion of the flying squadron commander, as required for specific mission accomplishment, may not violate regulatory guidance (e.g. AFI 11-202, AFI 11-218, AFI 11-220, AFI 21-101, CJCSI 3250) or FAA/ICAO regulations when applicable. CONOPS, SPINS, and Theater-specific guidance may also apply.					
4	Required if mission requires the pilot to wear a full pressure suit.					
5	Standby engine instruments must operate if AVP and/or MFDs are inoperative.					
6	Not required for training sorties. ATC may require functioning transponder, see Note 3.					
7	Interphone required on TU-2S with both cockpits occupied.					
8	If the mission is designated as IMINT Prime, system must be able to complete at least 80% of collection plan and any degradation must not prohibit image exploitation. System may be PMC if able to collect greater than 80%, but is not FMC. System should be able to forward processed results to Data Link system. If Data Link is unable to forward results, the use of SSA (sensor storage array / solid state array) is an option but the decision to proceed with mission or return to base will be determined by the (C)AOC based upon timeliness of data collection required.					
9	System must not have complete loss of Detect, Jam, and Direction Finding capability for High and Low Band threats. System may be PMC with partial degradation in these areas. System must be able to maintain communication with AVP and all subsystems to display threat and status information. EWSDR must be able to record threat data and produce pilot audio.					
10	If required for the designated mission set or tasking, or as dictated by AOR CONOPS, system must not have complete loss of Direction Finding capability, Search and Detect, or Processing functions. System must be able to forward processed results to Data Link system.					
11	If required for the designated mission set or tasking, or as dictated by AOR CONOPS, PME-1 system must not have complete loss of Audio Data, Search, or Geolocation and must be able to pass PME-2 data to the Data Link system. PME-1 system must be able to initialize, load, and maintain ATM communications. PME-2 system must not have complete loss of Direction Find or Pulse Measurement Capability. System may be PMC with partial degradation in these areas. System must be able to forward processed results to Data Link system.					
12	If required for the designated mission set or tasking, system must be able to link with appropriate relay or ground site for at least 80% of required on-station time. System may be PMC when able to link for greater than 80% but is not FMC.					

13	At least one of three MFDs must be operational. TU-2S requires operational Rear Cockpit MFD also.
----	---

JOHN B. COOPER
Major General, USAF
Director of Logistics

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI11-202 V1, *Aircrew Training*, 22 November 2010

AFI11-218, *Aircraft Operations and Movement on the Ground*, 28 October 2011

AFI11-220, *Reconnaissance Flight Rules and Procedures (S)*, 12 March 2013

AFI21-101, *Aircraft and Equipment Maintenance Management*, 26 July 2010

AFI21-103, *Equipment Inventory, Status, and Utilization Reporting*, 26 January 2012

Prescribed Forms

This addendum does not prescribe any forms.

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*