BY ORDER OF THE COMMANDER, PACAFIC AIR FORCES

AIR FORCE INSTRUCTION 21-103

PACAF Supplement 1

18 JUNE 2004

Maintenance

EQUIPMENT INVENTORY, STATUS AND UTILIZATION REPORTING

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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OPR: HQ PACAF/LGMM (CMSgt Rian Cronin)
Supersedes AFI 21-103_PACAFSUP1, 21 January 2000

Certified by: HQ PACAF/LGM (Lt Col Gerald E. Streff)
Pages: 46
Distribution: F

This instruction implements policies in AFPD 21-1, *Managing Aerospace Equipment Maintenance,* and supplements AFI 21-103 to meet PACAF requirements. This publication applies to PACAF-gained Air Force Reserve Command (AFRC) units and members when indexed in AFRCIND 2. This publication only applies to Air National Guard (ANG) units when mobilized/federalized and assigned to PACAF. Forward comments and suggested improvements to this instruction using an AF Form 847, *Recommendation for Change of Publication*, coordinated through appropriate channels to HQ PACAF/LGMM, 25 E Street Suite I-322, Hickam AFB, HI 96853-5427. PACAF units are prohibited from supplementing AFI 21-103.

SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

The supplement incorporates changes resulting from the Combat Wing reorganization and AFI 21-101 and AFI 21-103 revisions. It provides field units updated Minimum Essential Subsystems Lists (MESLs) and MAJCOM specific reporting guidelines. The supplement clarifies PACAF policy on the use of certain possession purpose identifier codes and aircraft reporting requirements involved with depot maintenance and assistance. A bar (|) indicates revisions from the previous edition.

AFI 21-103, 3 September 2003, is supplemented as follows:

1.3.8. (Added) HQ PACAF OPRs are:

1.3.8.1. (Added) Aerospace Vehicle Inventory and Status -- HQ PACAF/LGMM-AVDO, 25 E Street, Suite I-322 Hickam AFB, HI 96853-5427.

1.3.8.2. (Added) Aerospace Vehicle Utilization - HQ PACAF/DOTT, 25 E Street, Suite I-201, Hickam AFB, HI 96853-5427.

2.5.1.2. Primary and alternate AVDOs must receive documented training on AVDO duties, data reporting requirements, documents, and reporting systems.

2.5.2.1. When notified of aircraft movement and/or depot schedules, develop a unit transfer schedule. Provide aircraft serial numbers and transfer dates to HQ PACAF/LGMM-AVDO and the respective weapons system functional manager in HQ PACAF/LGMF. Provide updates as changes occur to the transfer schedule. PACAF/LGMM-AVDO will issue aircraft ADNs when applicable. Unit AVDOs will maintain a central record file containing a current equipment listing, Core Automated Maintenance System (CAMS)/ Integrated Maintenance Data System (IMDS) product ELT, and PACAF ADNs for all aerospace vehicles assigned to the unit.

2.5.3.3. (Added) When status, inventory, or utilization errors are discovered, unit DBMs must ensure subsystem managers make every attempt to correct MIS errors on-line. Do not attempt “to fix" the database. When on-line transactions will not correct problems, request assistance from the MAJCOM AVDO and/ or CAMS/IMDS administrator. Requests should include a complete description of the problem and the on-line transactions accomplished in attempts to rectify the problem.

2.13.4. The unit performing the maintenance will possess the aircraft unless otherwise directed by MOA or MAJCOM AVDO.

2.13.5. HQ PACAF DO/XP/LG coordinate and approve all aircraft loans. Units must obtain approval for aircraft loans, outside the assigned unit, prior to aircraft movement. Loans constitute a possession change rather than a transfer of assignment. Loan requests must specify loan rationale and the time period involved. HQ PACAF/LGMM-AVDO will issue ADNs for loans over 9 months. Loaned aircraft must be returned to their assigned unit within the time limits specified. Aircraft possession transfers will be a cooperative effort between the recipient and releaser.

2.14.1. See paragraph **2.21.3. (Added)** for Possession Purpose Identifier (PPI) code changes when submitting T.O. 00-25-107 requests.

2.14.1.1. Temporarily transfer the aircraft from the CAMS/IMDS home unit and gain it in the local AFMC/Depot dummy CAMS/IMDS unit under PPI code DJ as of the ALC response message date time group.

2.14.1.2. Upon field team completion, transfer the aircraft back into the CAMS/IMDS home unit under the originally assigned PPI code.

2.15.1. Loss and gain messages are required for all aircraft possession changes and must include the reason for movement. The AFTO Form 781 will be used to determine gain/loss times if conflict exists.

2.16. Include airframe current operating time (from CAMS/IMDS) in all gain messages. Send information copies of gain messages to local accounting and finance and aviation fuels management for permanently gained aircraft.

2.17. Send information copies of loss messages to local accounting and finance and aviation fuels management for permanently transferred aircraft.

2.18. The unit AVDO will coordinate with MAJCOM AVDO to ensure correct termination code are used. A complete listing of termination codes (AE-710), definitions and applications, is located within the Air Force Data Dictionary (AFDD) at **https://www.afbudsys.disa.mil/afdd.htm**. Send information copies of termination messages to local accounting and finance and aviation fuels management

2.21. AFI 21-103, Attachment 18, lists aircraft PPI codes. PPI codes, other than original aircraft assignment PPI codes, are not authorized without prior MAJCOM AVDO approval. The following PPI codes may be used without prior approval provided the stated criteria are met:

2.21.1. (Added) PPI code BK is authorized for the C-130 refurbishment and KC-135 corrosion control programs.

2.21.2. (Added) PPI code BT may be used for:

2.21.2.1. (Added) Intra-command transfers. For aircraft transferring between units in PACAF, the PACAF AVDO will issue an ADN authorizing PPI code BT for a maximum of 5 duty days to accommodate transfer/acceptance inspections.

2.21.2.2. (Added) Inter-command transfers. For aircraft transferring to/from units outside PACAF, the PACAF AVDO will issue an ADN authorizing PPI code BT for a maximum of ten duty days to accommodate transfer/acceptance inspections.

2.21.2.3. (Added) Depot maintenance transfers. For aircraft transferring to depot/contract facilities, units are authorized a maximum of 3 duty days to accommodate transfer inspections and preparatory maintenance. For aircraft returning from depot/contract facilities, units are authorized a maximum of 5 duty days to accommodate acceptance inspections and recovery maintenance directly related to the depot program. For aircraft transferring to/from on-base depot/contractor field teams, units are authorized to use PPI code BT a maximum of 3 duty days to accommodate transfer/acceptance inspections and preparatory/recovery maintenance directly related to the modification program. PPI code BT will not be used for the sole purpose of accomplishing routine scheduled maintenance.

2.21.3. (Added) Depot Maintenance Assistance Authorized PPI codes.

2.21.3.1. (Added) PPI code BQ may only be used when both the following conditions are met:

2.21.3.1.1. (Added) The unit has submitted a T.O. 00-25-107 request for depot-level maintenance assistance to remedy an NMC discrepancy the wing has no capability to correct. Quality Assurance (QA) must validate, and the Maintenance Group commander (MXG/CC) must approve, requests for depot-level maintenance. Maintenance Operations Flight (MOF) PS&D and the Maintenance Operations Center (MOC) must be notified of all approved 107 requests. Automated T.O. 00-25-107 technical assistance requests (i.e., AFMC 202s, 107-Ts, etc.) are authorized in place of formal messages when only a technical data or waiver-type solutions is required; however QA validation and PS&D/MOC notification is still required.

2.21.3.1.2. (Added) The aircraft is at work stoppage --- no further work can be accomplished due to the discrepancy which initiated the assistance request. Aircraft in continuing maintenance (Phase, Periodic, Isochronal, fuel cell, normal discrepancies) are not authorized use of PPI code BQ.

2.21.3.2. (Added.) Procedures:

2.21.3.2.1. (Added) After transmitting depot assistance requests, the unit AVDO will change the aircraft PPI code to BQ effective no earlier than the date/time the request was transmitted to HQ PACAF/LGMF.

2.21.3.2.2. (Added) If PACAF/LGMF disapproves, the ALC does not accept responsibility for the requested aircraft repair, or the ALC responds by providing technical data/guidance for field-level repair or maintenance, change the PPI code from BQ back to the originally assigned PPI code as of the PACAF/ALC message date time group (DTG).

2.21.3.2.3. (Added) If PACAF/LGMF and the ALC authorize the unit to perform depot-level work, change the PPI code from BQ to BU as of the PACAF/ALC message DTG. Once the depot-level repair procedure specified in the response is completed, change the PPI code from BU back to the original assigned PPI code.

2.21.3.2.4. (Added) If the ALC accepts responsibility to perform the required work, follow possession procedures in paragraph 2.14.

2.21.3.2.5. (Added) When using organizational E-Mail or other electronic 107 requests and responses, use the sent or recorded entry time (converted to local time) as the effective DTG for all inventory changes. Aircraft possession does not change when B-type PPI codes are used. Possession is only transferred to depot units when a D-type PPI code is used.

2.21.4. (Added) PPI code PJ may be used for helicopter transfers and deployments when aircraft will be transported, rather than flown, to or from the destination. PPI code PJ may only be used during the period of disassembly/preparation through reassembly/check-out.

2.21.5. (Added) PPI codes TF, TJ, and TX will not be used for PACAF aircraft assigned or possessed in Combat, Combat Support, Combat Auxiliary Support, and Operational Support (CC/CA/CF/ZB) PPI codes.

2.21.6. (Added) PPI codes BW and BX are not authorized for use in PACAF.

2.23.3.1. Ground checks include T.O.-driven time criteria (e.g., cure time).

2.23.3.4. Aircraft will be reported in NMCMA (Airworthy) status IAW MESL criteria.

2.24.1. Non-flyable status conditions will take precedence.

2.25.1.2.1. (Added) The FSL column may be segmented for aircraft that have redundant mission systems installed. FMC is for all systems including all redundant components that are operational. (See the E-3 MESL, attachment 5 for an example.)

2.26.5. (Added) **Attachment 19 (Added)** through **Attachment 27 (Added)** are the PACAF authorized aircraft MESLs. For contractor-maintained aircraft without a MESL listed, consult the current contract for status reporting requirements.

2.26.6. (Added) PACAF units will generate, or deploy and regenerate, using PACAF MESLs. Each unit's Design Operational Capability (DOC) statement determines applicability of BSL columns. The MESLs incorporate all PACAF assigned aircraft; therefore it is important to compare only those columns applicable to the unit's assigned aircraft. Major command differences in MESLs are acknowledged. Upon actual deployment under another command authority, the new command gains responsibility for specifying unit aircraft requirements and resourcing any differences in support/mission equipment.

2.27.3. DOC statement tasked, nuclear air-to-surface units are excepted if the capability is inoperative. Nuclear delivery system aircraft components not installed on a day-to-day basis do not render the aircraft NMC provided: the component(s) were serviceable when last inspected/functionally checked and the total number of aircraft reported FMC does not exceed the total number of serviceable aircraft components on hand.

2.28.3. The MOF will provide CAMS/IMDS product AUR or Maintenance Scheduling Application Tool (MSAT) equivalent to Operations Squadron (OS) utilization monitors and Aircraft Maintenance Unit (AMU) debrief daily. Flying hour products will be produced and reviewed in Zulu (GMT) time.

2.28.3.1. The Operations Support Squadron (OSS) AVUM will ensure OS utilization monitors verify the accuracy of CAMS/IMDS utilization data daily. OS utilization monitors will reconcile daily utilization products to ensure CAMS/IMDS accurately reflects the previous day's sortie and flying hour totals. Necessary changes will be coordinated with, and accomplished by, AMU debrief. The OS utilization monitor and AMU debriefer will sign reconciled daily utilization products and send them to the OSS AVUM. The OSS AVUM will retain daily signed documentation until monthly products are reconciled and signed. Automated signature/verification methods may be used as long as the documentation intent is met and individuals involved each day are identified.

2.28.3.2. The OSS AVUM will ensure OS utilization monitors reconcile monthly utilization products and that CAMS/IMDS accurately reflects the previous month's sortie and flying hour totals. Previous months' totals must also be verified to ensure accurate, year-to-date totals. Necessary changes will be accomplished by AMU debrief. The OSS AVUM will ensure discrepancies are resolved in coordination with OS utilization monitors and AMU debrief. OS utilization monitors, AMU debrief, and the OS Operations Officer will sign monthly products and forward them to the OSS AVUM who will maintain them until fiscal year close-out. At the end of the fiscal year, the OS utilization monitor, AMU debrief, and OS operations officer will reconcile and sign a complete AUR for the fiscal year. The end of fiscal year AUR will be maintained for 1 year.

2.28.4. Forward appropriate aircraft utilization data to the MAJCOM AVUM (PACAF/DOTT) for REMIS validation. Utilization data is normally forwarded as a CAMS/IMDS AUR product.

2.29.1. The PACAF AVUM will credit the hours to the assigned command.

2.29.2.1. The PACAF AVUM will provide instructions to get hours to the possessed location.

HQ PACAF/DOTT will coordinate with the PACAF AVDO to make this determination.

2.33.2. Place aircraft in possession code XW until the aircraft is terminated by the maintenance group commander IAW AFI 16-402. Units will determine the appropriate termination code IAW the Air Force Data Dictionary (AFDD) at: **https://www.afbudsys.disa.mil/afdd/index.htm**. Common termination codes are T5, T6, and T7. Consult the PACAF AVDO if questions arise regarding proper termination codes.

4.2.2.2. Maintenance is responsible for entering data into the MIS.

4.2.2.3. The inventory and status OPR is the PACAF AVDO; utilization OPR is the PACAF AVUM.

4.2.2.5. The OPRs are the aircraft functional managers in HQ PACAF/LGMF.

6.2.3. Mission reporting is not required for HQ PACAF; however equipment reporting is required.

6.3.2. Equipment in this category usually supports minimum mission requirements with deficiencies only in range, quality, and speed of service. Further loss of redundancy, spare equipment, channels, circuit frequencies, etc., will cause the equipment to become RED. AMBER reporting for the sole purpose of ordering higher priority parts is not authorized.

6.3.3. Equipment turned off at the user's discretion will be considered RED using downtime code H, text comments must provide specific details regarding who authorized the outage and why. Equipment NOTAM'd-out is considered RED until NOTAM'd back in.

6.3.4. Mission reporting is not required by HQ PACAF.

6.5.1.4. Report status changes in CAMS/IMDS within 1 hour of each event during normal duty hours. Events outside normal duty hours will be reported within 1 hour of the start of the duty day.

6.5.1.10. (Added) Review open ESR daily prior to shift change and the end of day to ensure data is current and accurate.

6.5.3. PACAF C-E CAMS/IMDS/REMIS Database Analyst (DBA) focal point is PACAF CSS/SCM.

6.6.1.1. (Added) Maintenance Control (MC) or equivalent function is responsible for entering, correcting and ensuring ESR data is transmitted off-station in a timely manner. The MC supervisor will be the primary monitor for ESR data. All MC personnel will be trained on CAMS/IMDS data entry, correction, and monitoring.

6.6.1.2. (Added) Status Times. Use the notification date/time the outage was reported as the start date/time. Use the date/time when the user logs the equipment back-in-service to close the job. Start and stop times entered in CAMS/IMDS are to be drawn from the date/time appearing on your CAMS/IMDS screen, rather than local time at any deployed location. Do not backdate entries.

6.6.1.3. (Added) Use CAMS/IMDS TRIC COX, Program NFSJR0 and screen 997 to help control maintenance and maintain equipment status. Status transactions will be entered via a CAMS/IMDS remote terminal. Transactions will be made as status events occur and will normally be entered as soon as practical after the events and in chronological order. The data contained in CAMS/IMDS will reflect the actual state of the equipment at any given time and should be considered “real time.”

6.6.3. An initial down-time code (DTC) of “U-Unknown” will be entered until maintenance has determined the exact problem/DTC. Every effort should be made to update the DTC as soon as practical. This instruction is the authority by which all discrepancies of DTC description narratives will be resolved.

6.6.4. Use the delay code (DC) that best depicts the delay status from Attachment 7 when maintenance is not working on the discrepancy. Parts research is not considered or reported as a delay. Close the delay when maintenance is back in progress and/or the reason for the delay no longer exists. Ensure comments required by attachment 7 are entered as necessary.

6.6.7. When loading status events for preventive maintenance inspections (PMIs), assign the support general WUC that depicts the calendar-type PMI (e.g., 180-day). Report PMI status in ESR only for the actual maintenance downtime required to accomplish the PMI. Example: A PMI deferred due to lack of test equipment. The ESR will only report the time the maintenance is actually performed.

6.6.8. (Added) Enter required comments against status and delay codes IAW DTC selections (attachment 6) and DC selections (attachment 7). When the job has been open for a period of ten days without a status update, a comment such as: “125/No change in status” may be appropriate. For each comment sequence, enter the Julian date followed by a slash and the comment. Special comments are required for awaiting parts delays including, but not limited to: nomenclature/national stock number (if available), part number, quantity, priority, document number, requisition number, estimated shipping date, supply status code, and whether the part was ordered via depot or laterally. Continue in the next comment sequence when the comment narrative space is not sufficient.

6.6.9. (Added) The C-E unit Data Base Management (DBM) function must review/correct CAMS/IMDS/REMIS KRE error conditions using CAMS/IMDS TRIC REM (reference AFCSM 21-571, Volume 2). The unit DBM should contact HQ PACAF CSS/SCMR when they are unable to resolve REMIS errors using CAMS/IMDS. If REMIS errors are due to an equipment load entries duplicating a serial number

already in REMIS, the serial number must be changed in CAMS/IMDS by assigning 1 of the 36 alphanumeric combinations listed in Table 6.1 as the first 2 positions of the problem serial number.

6.7.2. Coordinate all organization identifier (ORG ID) loads, changes, or deletions with HQ PACAF CSS/SCMR prior to processing the CAMS/IMDS transaction.

6.9.1. Refer to AFCSM 21-564, Volume 2, when gaining equipment type with G, H or S identifiers for AGE, Test Measurement and Diagnostic Equipment (TMDE), and Support Equipment (SE).

6.9.2. Decommissioned equipment and items sent to depot will be placed in loss status.

6.9.3.1. All C-E reportable equipment has a Type Model Series (TMS) or End Item Work Unit Code (EIWUC) equipment designator matched to only 1 SRD in the CAMS/IMDS SRD Table. Load Joint Electronic Type Designator (JETD) equipment using the TMS designator. Load Aerospace Ground Equipment (AGE) and C-E (non-JETD) equipment using the EIWUC designator.

7.1.2.3. (Added) All aircraft specific weapons system testers.

7.4.3. (Added) Wing weapons managers will send weapon system tester status to the MAJCOM weapons functional manager monthly.

9.2.3.1. (Added) –21 support sections will have a letter on file identifying –21/SPRAM account custodians by name, grade and telephone number. Forward the letter to MOF PS&D within 5 duty days of any custodian change. MOF PS&D consolidates squadron –21/SPRAM custodian listings and provides a copy to all squadron –21/SPRAM accountable individuals and the host base supply equipment management section. MOF PS&D uses the custodian listing to notify accountable agencies of aircraft deployments, aircraft transfers, or new equipment arrivals so custodians can adjust records accordingly. –21/SPRAM custodian listings will be reviewed/updated when changes occur or at least annually.

9.2.3.2. (Added) –21/SPRAM custodians and accountable individuals control equipment and ensure serviceability, including items in extended storage. Custodians and accountable individuals will use automated and manual reports or AF Form 1297 to control equipment. The reports will identify equipment by type, serial or field number, date issued and accountable squadron individual. Accountable squadron individuals sign equipment reports to acknowledge responsibility for the equipment. Accountable individuals are the primary POCs for resolving equipment problems, tracking the location of all equipment, and ensuring in-use equipment is scheduled for required maintenance.

9.3.5. (Added) Squadrons are accountable for COMSEC equipment. Each squadron may establish COMSEC sub accounts of the base account. Units without sufficient safeguards/storage space within the squadron may maintain or store COMSEC equipment in the maintenance squadron until sufficient safeguards/storage space is acquired within the squadron. Units establish procedures to track location and status of all COMSEC equipment.

9.4.1. Units will coordinate with PACAF/LGMF weapons system managers for changes to -21 technical orders for command peculiar equipment. PACAF/LGMF will supplement MDS –21 technical orders to account for installed specialized or classified equipment.

9.6.4.3. Maintain accountability files IAW AFMAN 23-110, Volume 2, Part 13.

9.6.6.3.1. Variances in PACAF require PACAF/LGW approval.

9.7.1. HQ PACAF/LGMF is OPR for -21 equipment management.

9.7.8. HQ PACAF/LGM weapons systems managers will conduct annual reviews of each unit's -21 asset levels and reallocates assets within PACAF as required to support employment roles.

9.9.1. The MXG/CC will develop local transfer and acceptance procedures for aircraft and missile equipment.

9.9.1.1. The MXG/CC assigns responsibility for aircraft travel pods. Armament systems flight exercises daily control and management for all armament related suspension equipment.

9.9.1.2. Forward a copy of unit inventory results to PACAF/LGMF NLT 30 Sep each year. Report shortages impacting unit mission via message to PACAF/LGMF. Hold overage dispositions pending reconciliation and PACAF/LGMF direction.

9.9.1.3. (Added) Follow procedures listed in applicable -21 TOs to control, report, and manage, air launched missile -21 assets.

9.9.1.4. (Added) Units using starter breech caps will develop cap exchange programs/procedures.

9.9.2. C-130 AMUs will maintain accountability of chaff/flare magazines using the R25 SPRAM listing.

9.9.2.1. Maintain an AF Form 2691 or R25 (SPRAM) listing for each applicable line item in the -21 technical order.

Tab A - Current Action: AF Forms 2691, R25 (SPRAM) listing (If only for -21 equipment)

Tab B - Information Files: AF Forms 1297, *Temporary Issue Receipt*, or in use equipment reports.

Tab C - Suspense and Completed Files: Suspense: Due-out requests and supporting documents completed. Hold completed actions until new R25 is received.

Tab D - Adjustment Documents: Copy of applicable PACAF Forms 140a, *Reports of Survey*, AF Forms 2692, DD Forms 1149 or DD Forms 1348-1, authorization for SPRAM assets.

Tab E - Register of Control Numbers: AF Forms 126, *Custodial Request Log*, D04, D18 and M30 (For SPRAM assets).

Tab F - Regulations and Certificates: Copy of this supplement and any applicable unit supplement, current custodian designation letter, AF Forms 2426, *Training Request*, and completion notification or other certification of equipment management training for the primary and alternate custodians.

9.9.2.2. (Added) Accountable individuals monitor expendable (XB3) assets identified in Sections I, II and III of the applicable -21 technical order to ensure on hand quantities are sufficient to meet unit needs. Accomplish and document annual inventories by placing the date in Block A and writing "INV" in Block E. Adjust quantities and locations accordingly. Units may place selected expendable assets on bench stock to serve as spares if consumption data warrants. Annotate levels established for bench stock items in Block J. Actual on hand level in bench stock need not be updated. Expendable assets placed in bench stock are exchanged on a 1-for-1 basis. Exchange of item or PACAF Form 140a, *Lost Tool/Object Report*, is required to maintain accountability. Retain PACAF Forms 140a in Tab D of the custodial file for 1 year. -21 items locally manufactured to replace -21 technical order items reference the same line item number as listed in the technical order. Additional locally manufactured items maintained, but not listed in the -21 technical order, will reference local line item numbers (e.g., L-1, L-2) and identify accountable agency and appropriate line item number. Disposal of excess quantities of serviceable armament/munitions -21 assets requires HQ PACAF/LGW approval.

9.9.4. AMU –21 support sections maintain equipment item inventories.

9.13.6. AMU PS&D files AF Form 2692 in aircraft jacket files as items are received.

9.14.1. Send information copies to HQ PACAF/LGMF.

9.16.3. (Added) MXG/CC will develop procedures to ensure deployed equipment is identified and positively controlled. The senior deployed maintenance officer/senior NCO assumes control of deployed -21 equipment. The individual appointed to assume custodial responsibility at the deployed location will sign a transfer document listing all equipment prior to departure. Separate and identify deployed equipment into 3 groups: those sent with aircraft or missiles, those sent through normal transportation channels, and those sent by dedicated airlift. If maintenance support personnel are not available at the deployed location, the senior crew chief or aircrew member assumes control of the deployed equipment.

9.17.3. Forward the information copy to HQ PACAF/LGMF.

9.18.4. (Added) Follow procedures in AFMAN 23-110, Volume 2, Part 13, for changes of SPRAM or equipment custodians. Individuals designated as -21/SPRAM account custodians must attend equipment custodian training conducted by base supply. Custodians will receive work center training on -21/SPRAM equipment management responsibilities and PACAF requirements.

Attachment 19 (Added)

A/OA-10A MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

ASC – Air to Surface, Conventional

FAC – Forward Air Control

A/OA-10A MESL					
				BSL	
NO.	**WUC**	**SYSTEM/SUBSYSTEM**	**FSL**	**ASC**	**FAC**
1.	11	Airframe	X	X	X
2.	12	Cockpit	X	X	X
3.	13	Landing Gear	X	X	X
4.	14	Flight Controls	X	X	X
5.	23	Power Plant	X	X	X
6.	24	Auxiliary Power Plant	X	X	X
7.	41	Air Conditioning/Press/Anti-Ice	X	X1	X1
8.	41D/G	Rain Removal/Windshield Wash	X		
9.	42	Electrical System	X	X	X
10.	44	Interior Lighting	X	X	X
11.	44B	Exterior Lighting	X2	X3	X3
12.	45	Hydraulic And Pneumatic System	X	X	X
13.	46	Fuel System	X	X	X
14.	47	Oxygen System	X	X	X
15.	49	Miscellaneous Utilities (Fire Handles)	X	X	X
16.	51	Instruments	X	X	X
17.	51K	Inertial Navigation System	X	X	X
18.	52	Autopilot	X		
19.	55D	Turbine Engine Monitoring System (TEMS)	X	X	X
20.	62	VHF AM or FM Communications	X	X	X
21.	63	UHF Communications	X	X	X
22.	63AD	Direction Finder ADF/ARD	X	X8	X8
23.	64	Intercom	X	X2	X2
24.	65	IFF/SIF	X	X	X
25.	69	Miscellaneous Comm	X10	X10	X10
26.	69A	KY-58	X	X	X
27.	69C	LARS	X4	X4	X4

A/OA-10A MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ASC	FAC
28.	71	Radio Navigation	X	X5	X5
29.	71M	Embedded GPS	X	X4	X4
30.	72	Radar Navigation-Altimeter System	X	X9	X9
31.	74B	INS- HUD	X	X	X
32.	74C	Target Identification - Pave Penny	X	X	X
33.	74E/F	TV Monitor	X	X	X
34.	74G	Cockpit TV Sensor/CAVTR System	X	X	X
35.	74H	LASTE/INS- HUD	X	X	X
36.	75	Weapons Delivery System	X	X6	X6
37.	75A	Gun System	X	X	X
38.	76A	Countermeasure Set	X	X	X
39.	76D	ALE 40 System	X	X7	X7
40.	76E	ALR 69 System	X	X	X
41.	76F/G	ALQ-184 System	X4	X4	X4
42.	91	Emergency Equipment	X	X	X
43.	97	Explosive Devices	X	X	X

QUALIFYING NOTES:

1. Manual mode only required

2. As required by AFI 11-218, *Aircraft Operations and Movement on the Ground*

3. Strip lighting and landing lights or formation lights required as a minimum for PMC

4. If equipped/installed

5. Must have TACAN as a minimum

6. Stations 1 and 11 must be ECM Pod or AIM-9 capable. All other stations (2 through 10) must be operational.

7. Three of the Four 76D subsystems must be operational.

8. Required for combat search and rescue missions

9. Required for low level operations

10. HAVE QUICK Secure Voice capable if equipped

Attachment 20 (Added)

C-130E/H MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

ALA – Airlift Airland

ADA – Airdrop, Cargo and Personnel

ADC – Airdrop, Cargo

ADP – Airdrop, Personnel

AME – Aero-Medical Evacuation

C-130E/H MESL								
				BSL				
NO	**WUC**	**SYSTEM/SUBSYSTEM**	**FSL**	**ALA**	**ADA**	**ADC**	**ADP**	**AME**
1.	11000	Airframe	X	X	X	X	X	X
2.	11200	Cargo Ramp and Door (Primary Egress Route)	X	X	X	X	X	X
3.	11290	Air Deflector Doors	X		X		X	
4.	11310	Crew Door	X	X	X	X	X	X
5.	11320	Paratroop Door	X	X	X	X	X	X
6.	12000	Cockpit & Fuselage Comp	X	X	X	X	X	X
7.	12600	Aerial Delivery System (ADS)	X		X	X		
8.	12800	Dual Rail Cargo Handling Kit	X	X	X	X		
9.	13000	Landing Gear	X	X1	X1	X1	X1	X1
10.	14000	Flight Controls	X	X10	X10	X10	X10	X10
11.	14500	Control Surface Position Indicator	X					
12.	22000	Turboprop Power Plant	X3	X3	X3	X3	X3	X3
13.	22GG0	Oil Quantity Indicator and Low Oil Light	X	X4	X4	X4	X4	X4
14.	24A00	Auxiliary Power Unit (APU)	X	X5	X5	X5	X5	X5
15.	24100	Gas Turbine Compressor (GTC)	X					
16.	24200	Air Turbine Motor (ATM)	X	X5	X5	X5	X5	X5
17.	243AA	Cooling Fan	X					
18.	32000	Hyd Propeller	X6	X6	X6	X6	X6	X6
19.	41000	AC - Flt Compart	X					X7
20.	41000	AC - Cargo Compart.	X					X7
21.	41EAA	Aux Vent Valve	X	X8	X8	X8	X8	X8
22.	41300	Pressurization	X	X7	X7	X7	X7	X7
23.	41400	Bleed Air System	X	X	X	X	X	X
24.	41500	Anti-Ice/De-Ice Systems	X	X9	X9	X9	X9	X9

C-130E/H MESL								
				BSL				
NO	WUC	SYSTEM/SUBSYSTEM	FSL	ALA	ADA	ADC	ADP	AME
25.	41510	Propeller Anti-Ice/De-Ice	X	X10	X10	X10	X10	X10
26.	41800	Instruments (Bleed Air, De-Ice, Anti-Ice)	X	X	X	X	X	X
27.	41900	Under Floor Heat	X					
28.	42000	Electrical Power Supply	X	X11	X11	X11	X11	X11
29.	429BA	Buss Switching Unit (BSU)	X12	X12	X12	X12	X12	X12
30.	44110	Nav Lights	X13	X13	X13	X13	X13	X13
31.	44120	Landing Lights	X14	X14	X14	X14	X14	X14
32.	44130	Anti-Collision Lights	X	X14	X14	X14	X14	X14
33.	44140	Taxi Lights	X14	X14	X14	X14	X14	X14
34.	44150	Leading Edge Lights	X					
35.	44160	Formation Lights	X15	X15	X15	X15	X15	X15
36.	44200	Interior Lights	X16	X16	X16	X16	X16	X16
37.	44300	Emergency Exit Lights (Impact)	X	X	X	X	X	X
38.	45000	Hydraulic and Pneumatic Power Supply	X17	X17	X17	X17	X17	X17
39.	46000	Fuel System	X18	X18	X18	X18	X18	X18
40.	46314	SPR Dual Level Control	X					
41.	46620	Fuel Quantity Indication	X	X19	X19	X19	X19	X19
42.	47000	Oxygen System	X	X	X	X	X	X
43.	49100	Fire Extinguisher System	X	X	X	X	X	X
44.	49500	Windshield Wipers	X20	X20	X20	X20	X20	X20
45.	49611	Bell, Personnel Warning	X	X	X	X	X	X
46.	51000	Instruments	X	X	X	X	X	X
47.	51HAA	Caution Advisory Panel 90+H Models	X	X	X	X	X	X
48.	51HAB	Pilot/Co-Pilot Warning Panel 90+H Models	X	X	X	X	X	X
49.	51HAC	Pilot Mode Advisory Panel 90+H Models	X	X	X	X	X	X
50.	51J00	Ground Collision Avoidance System (If Installed)	X	X21	X21	X21	X21	X21
51.	51G00	Ground Proximity Warning System (If Installed)	X	X21	X21	X21	X21	X21
52.	51113	TCAS Vertical Speed Indicator (If Installed)	X	X21	X21	X21	X21	X21
53.	5113A	Stand By ADI (If Installed)	X	X	X	X	X	X
54.	51800	AF Standard Flt Director Sys	X	X	X	X	X	X
55.	51900	Stand By Compass System	X	X	X	X	X	X
56.	52000	Compass System	X22	X22	X22	X22	X22	X22

C-130E/H MESL								
				BSL				
NO	WUC	SYSTEM/SUBSYSTEM	FSL	ALA	ADA	ADC	ADP	AME
57.	52300	C-12 Compass System	X	X23	X23	X23	X23	X23
58.	52100	E-4 Auto Pilot	X	X24	X24	X24	X24	X24
59.	52400	CADC (If Installed)	X	X	X	X	X	X
60.	526DE	EFIS (Electronic Flight instrument System) 90+H Models	X	X	X	X	X	X
61.	52600	FCS-105 Auto Pilot 73+ Models	X	X24	X24	X24	X24	X24
62.	52700	Auto-Pilot AN/AYW-1(v)1	X24	X24	X24	X24	X24	X24
63.	56A00	Cockpit Voice Recorder	X	X	X	X	X	X
64.	56B00	Flight Data Recorder	X	X	X	X	X	X
65.	61500	HF (AN/ARC-190)	X25	X25	X25	X25	X25	X25
66.	62X00	VHF (AN/ARC-186)	X25	X25	X25	X25	X25	X25
67.	63A00	UHF (AN/ARC-164)	X25	X25	X25	X25	X25	X25
68.	63M00	UHF (AN/ARC-164) HAVE QUICK II	X25	X25	X25	X25	X25	X25
69.	64000	Interphone-General	X26	X26	X26	X26	X26	X26
70.	65000	IFF	X	X27	X27	X27	X27	X27
71.	65L00	TCAS AN/APN244 (If Installed)	X	X21	21	21	21	21
72.	66000	Emergency Communications	X	X	X	X	X	X
73.	66300	Underwater Acoustic Locator Sys	X	X	X	X	X	X
74.	69YB0	KY-75 Secure Voice (If Installed)	X	X25	X25	X25	X25	X25
75.	69YC0	KY-58 Secure Voice	X	X25	X25	X25	X25	X25
76.	69210	UHF Direct. Finder (AN/ARA-25)	X	X28	X28	X28	X28	X28
77.	69230	UHF Direct. Finder (AN/ARA-50)	X	X28	X28	X28	X28	X28
78.	69250	UHF/VHF DF301E Direction Finder	X	X28	X28	X28	X28	X28
79.	69420	Crypto, HF (ANDVT/KYV-5) If inst.	X	X25	X25	X25	X25	X25
80.	71A00	ADF (ANG H-Model)	X	X25	X25	X25	X25	X25
81.	71AC0	Radio Compass (AN/ARN-149) (ANG H-Model)	X	X25	X25	X25	X25	X25
82.	71C00	VOR/ILS/MB (AN/ARN-147)	X	X29	X29	X29	X29	X29
83.	71E00	GPS	X					
84.	71G00	SCNS	X	X30	X30	X30	X30	X30
85.	71G10	HIS Data Converter Unit (90+ H-Models)	X					
86.	71GE0	RLG INU	X31	X31	X31	X31	X31	X31
87.	71J00	Microwave landing System (If Installed)	X	X25	X25	X25	X25	X25
88.	71KD0	HIS Interface 90+H Models	X	X	X	X	X	X

C-130E/H MESL								
				BSL				
NO	WUC	SYSTEM/SUBSYSTEM	FSL	ALA	ADA	ADC	ADP	AME
89.	71Z00	TACAN AN/ARN-118	X25	X25	X25	X25	X25	X25
90.	71100	Radio Compass (AN/ARN-6)	X	X25	X25	X25	X25	X25
91.	72K00	Low Power Color Radar (AN/APN-241) 92+H Models	X	X32	X32	X32	X32	X32
92.	72100	Doppler Velocity Sensor (AN/ARN-218)	X	X32	X32	X32	X32	X32
93.	72230	CARA (AN/APN-232)	X	X21	X21	X21	X21	X21
94.	72320	Waveguide Pressurization System	X	X32	X32	X32	X32	X32
95.	727A0	Search Radar (AN/APN-59F)	X	X32	X32	X32	X32	X32
96.	72800	Radar (AN/APN-59E/F)	X	X32	X32	X32	X32	X32
97.	72900	SKE (AN/APN-169C(V))	X	X33	X33	X33	X33	X33
98.	76000	Electronic Countermeasure (If Installed)	X34	X34	X34	X34	X34	X34
99.	91113	Escape Rope	X	X	X	X	X	X
100.	91213	Life Raft (Type F-2)	X	X32	X32	X32	X32	X32
101.	97A00	Squib, Fire Extinguisher	X	X	X	X	X	X

QUALIFYING NOTES:

1. If a repair capability does not exist, the aircraft may be flown to a destination with a repair capability (including enroute stops) provided the gear is not moved from the down and locked position. Flight (including enroute stops) with landing gear doors removed may be accomplished to a destination with repair capability.

2. Aileron trim tabs that can be set to neutral are authorized for flight.

3. 22DBF-Datum Amplifier, 22EBD-Temp Datum Amplifier, 22EBH-Low Speed Idle Solenoid, 22GF0-Oil Cooler Flap Position Indicators may be inoperative if flap can be manually set to the open and fixed position and oil temperature maintained within normal limits.

4. One (1) Oil Quantity Gauge per aircraft maybe inoperative if Low Oil Light is operational. Low Oil Quantity light may be inoperative if all 4 engine Oil Gauges are operational.

5. May be inoperative for flights in visual meteorological conditions (VMC) if no other electrical malfunction exists.

6. IAW T.O. 3-1-6, if Synchrophaser fails, mission may continue to a repair facility provided no other portion of the propeller system is affected.

7. Manual mode is required. If 1 of the systems fails, flight to a destination with repair capability (including enroute stops) may be accomplished. Air conditioning and pressurization are not required for low-level missions if a reasonable temperature can be maintained.

8. Cargo Compartment may be inoperative.

9. Will be operational for flights into known or forecast icing conditions.

10. Blade de-icing will be operational for flights into known forecast icing conditions.

11. All generators operational on missions departing the CONUS. Local training missions/overseas enroute aircraft may have 1 generator inoperable if all associated systems/components are operational and generator disconnected or removed and the mount padded. Three (3) of the four (4) generator-out lights must be operable.

12. The #1 BSU must be operational.

13. Six (6) installed and three (3) operational. For night operations, the left and right wingtip navigation lights must be operational in addition to white lights on tail cone.

14. One may be inoperable provided the Landing/Taxi light on same side is working.

15. Not required for daylight operation. 2 Lights per wing will be operational for night formation flights.

16. Will be operational for night operations.

17. Aux Direct Reading Gauge in Cargo Compartment may be inoperable.

18. 46212-Aux Tank Boost Pumps, and 46213-Pylon Tank Boost Pumps may be inoperable and both tanks empty. For External Tank leaks, defuel both Externals and deactivate leaking tank. For Auxiliary Tank leak, defuel and deactivate affected tank. Aircraft with deactivated tanks will be reported as PMC.

19. Fuel Quantity Indication for: both Auxiliary tanks, 1 External tank, 2 non-symmetrical Main tanks (Local Training), 1 Main tank (En-route) may be inoperable provided fuel quantity is verified on inoperative tank. Note: Both a main and external may be inoperable on same wing provided limitations listed for single main/external indicator are followed.

20. Pilots side required.

21. Required when carrying passengers/troops.

22. Two independent heading references required (i.e. 2 Compasses, 1 Compass/SCNS, etc. Number 1 Compass system required for E-4 Auto-pilot system operation. At least 1 Compass system required for AN/AWY-1(v)1 auto-pilot system operation.

23. VG mode required.

24. Crew limited to 12hr duty day.

25. One required.

26. 46120-AN/AIC-13 public address system not required.

27. Mode IV not required for flights that originate in and will remain entirely inside the inner boundaries of all domestic & coastal ADIZs surrounding CONUS. For units stationed outside CONUS, Mode IV is not required for flights remaining within the designated local area and/or not penetrating an ADIZ.

28. Required for Search and Rescue (SAR) missions.

29. One required, but the working ILS or VOR must be on the pilot’s side.

30. 71GAO-IDCU, 2 required.

31. Two (2) required for 90+H models.

32. Required if thunderstorms or hazardous conditions that can be detected by airborne radar are forecast or exist along the flight route.

33. Multi-ship formations only.

34. Required for war zone missions.

Attachment 21 (Added)

E-3 MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

ACT – Airborne C2, Tactical

ACW – Airborne C2, Early Warning

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
1.	11000	Airframe	X	X	
2.	11CMM	Drive, Antenna, Rotodome	X	X1	
3.	12000	Cockpit and Fuselage Compartments	X	X	
4.	13000	Landing Gear	X	X	
5.	13B00	Nose wheel snubbers	X	X	Required for touch & go
6.	13DJM	Brake interconnect	X	X	
7.	13DJA	Anti-skid system	X	X	
8.	13DJD	Brake pressure gauge	X	X	
9.	13DJK	Emergency brake (pneumatic)	X	X	
10.	13GAX	Takeoff Warning Horn	X	X	
11.	13HA0	Gear Warning Horn	X	X	Light and horn required
12.	14000	Flight Controls	X	X	
13.	14AE0	Stabilizer trim	X	X	
14.	14DA0	Wing flap position indicator	X	X	
15.	14DD0	Leading Edge Flap Indicator	X		Visual inspection required. Wing lights required for night flight.
16.	23000	Turbofan Power Plant, TF-33-PW-100A	X	X	
17.	23GAK	Continuous ignition	X	X	
18.	23HA0	Fuel enrichment	X	X	
19.	23KB0	Anti Ice System (8 Valves)	X	X	1 valve or valve open light may be inop (confirmed closed) if flight will not encounter icing conditions
20.	23LA0	EGT indicators	X	X	
21.	23LB0	Pressure Ratio Indicating System	X	X2	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
22.	23LCA	N-1 RPM Indicator	X	X3	
23.	23LCH	N-2 RPM Indicator	X	X	
24.	23LDA	Oil low pressure warning light	X	X	
25.	23LDP	Oil temp indicator	X	X	
26.	23LDR	Oil Quantity Indicator	X	X4	
27.	23LDV	Oil pressure indicator	X	X	
28.	23LE0	Fuel flow indicators	X	X	
29.	24000	Auxiliary Power Plant	X		
30.	24A00	Auxiliary Power Unit (APU)	X		
31.	24AVN	APU door warning light	X		Visually verify door is closed
32.	41000	Air Conditioning, Pressurization, and Surface Ice Control	X	X	
33.	41A00	Bleed Air System	X	X	
34.	41AA0	Valve, Pressure/Flow (PRSOV) (4 Valves)	X	X1	
35.	41AB0	Heat Exchanger	X	X5	
36.	41AC0	Valve, Firewall Shut-off (FWSOV) (4 Valves)	X	X1	
37.	41AW0	Valve, Antenna Pedestal Shut-off	X6		
38.	41AV0	Bleed air isolation valve	X	X	
39.	41AX0	Instrumentation, Bleed Air System	X	X	Firewall closed light & pressure gauge required
40.	41AX9	Overheat and overpressure indicators	X	X	
41.	41B00	Cabin Air conditioning System	X	X6	
42.	41BA0	Flow Control and Shut-off valves (2)	X	X	
43.	41BAN	Valve, Temperature Control (4 Valves)	X	X	
44.	41BE0	Trim air shutoff valves	X		
45.	41BF0	By-pass valve	X	X	
46.	41BK0	Zone temp controller	X	X6	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
47.	41BL0	Pack temp controller	X	X6	
48.	41BP0	Actuator, Ram Air	X	X	
49.	41BU0	Valve, Zone Temperature Trim (4 Valves)	X	X1	May be inoperative if pack operates in automatic.
50.	41B3S	Indicator, Ram Air Inlet Door Position	X	X	
51.	41B3W	Compressor discharge temp indicator	X	X	
52.	41C00	Cabin Pressurization System	X	X6	
53.	41CA0	Outflow Valve (2 Valves)	X	X1	
54.	41CB0	Vacuum Pump (2 Pumps)	X	X1	
55.	41CCD	Cabin altimeter indicator	X	X	May be inop if Cabin Pressure Indicator works
56.	41CF0	Cabin Pressure Indicator	X	X	May be inop if Cabin Altimeter Indicator works
57.	41CFC	Indicator, Cabin Rate Of Climb	X		
58.	41CFD	Cabin Altimeter	X		
59.	41CFE	Gauge, Bailout Pressure Differential	X		
60.	41D00	Forward, Avionics Forced Air Cooling System (2)	X	X1	
61.	41DY0	Supply air temp gauge	X	X	
62.	41E00	Aft, Avionics Forced Air Cooling System(2)	X	X1	
63.	41F00	Draw through cooling	X	X	All indicators required
64.	41H00	Radar Liquid Cooling System	X	X7	
65.	41HAA	LCS Pump Unit, Centrifugal (2 Pumps)	X	X1	
66.	41HA1	LCS Nitrogen system	X	X	
67.	41HDQ	LCS Control panel	X	X	Fuel temp gauge at ART's station may be inop if FE's gauge is operable
68.	41J00	Windshield Wipers	X		Required in moderate rain for taxi, departure and arrival

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
69.	41K00	NESA Window Anti-Ice System	X	X8	
70.	41LA0	Power Feeder Cooling System Fan Assembly	X		
71.	41S00	Accessory Support Modules (AMS)	X	X	PMC if either high or low speed is operable
72.	42000	Electrical Power Supply	X	X	
73.	42A00	Power Supply, AC	X	X	
74.	42ACS	AC Voltmeter	X	X	Required for each IDG
75.	42ACT	Frequency meter	X	X	Required for each IDG
76.	42ADA	AC Ammeters (8)	X	X	
77.	42AH0	Generator, APU			
78.	42AT0	Generator, Integrated Drive (IDG) (8)	X9	X9	PMC if 1 or 2 inoperative
79.	42AT1	IDG Temperature Indicator	X	X10	
80.	42AX0	IDG overheat caution light	X	X10	
81.	42B00	DC Power Supply	X	X	
82.	42BB0	Transformer/Rectifier Unit (T/ R), T11-T16	X	X11	
83.	42BD0	Battery Chargers	X	X	
84.	44000	Lighting System	X	X	
85.	44AA0	Navigation Light System	X	X	
86.	44AC0	Anti Collision Light System	X	X12	
87.	44AE0	Landing Light System	X	X13	
88.	44AEC	Wing Illumination Lights	X	X	
89.	44AH0	Wheel Well Lighting	X	X	
90.	44AJ0	Air Refueling Receptacle Slipway Light System	X	X	
91.	44AK0	Emergency Exit Lights	X	X	
92.	44C00	Interior emergency lights	X	X	Includes fwd & aft lobes
93.	44CA0	Flight Crew Cabin Lighting	X	X14	
94.	44CD0	Mission Crew Cabin Lighting	X	X	
95.	44CJ0	Miscellaneous Warning Lights	X	X15	
96.	44CK0	Emergency Lighting	X	X	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
97.	45000	Hydraulic and Pneumatic Power	X	X	
98.	45A00	Utility Hydraulic Power System	X	X	
99.	45AL9	Utility overheat caution light	X	X	
100.	45AMA	Utility system quantity gauge	X	X	
101.	45ANC	Switch, Utility Low Pressure Warning	X	X16	
102.	45AND	Utility system pressure gauge	X	X	
103.	45B00	Auxiliary Hydraulic System	X	X	
104.	45BA9	Auxiliary low pressure light	X	X	
105.	45BA9	Auxiliary overheat light	X	X	
106.	45BP0	Hydraulic system interconnect valve	X	X	
107.	46000	Fuel System	X	X	
108.	46BA0	Engine Feed System Motor operated gate valve (2 Valves)	X	X	
109.	46BD0	Pump, Booster	X	X	
110.	46BE0	Pump, Boost Override	X	X	
111.	46D00	Aerial Refueling System	X	X17	
112.	46HK0	Fuel Heat Exchanger	X	X5	
113.	46LAE	Fuel quantity indicator (Reserve)	X		Both may be inop if respective main tank quantity gauge and transfer valve operates
114.	46LA0	Fuel quantity indicator (Main)	X	X18	
115.	46LC0	Indicating System, Fuel Temperature	X	X7	
116.	46LDJ	Indicator, Fuel Remaining	X	X19	
117.	47000	Oxygen System	X	X	
118.	47A00	Liquid Oxygen System	X	X20	
119.	49000	Miscellaneous Utilities	X	X	
120.	49A00	Fire Detection and Control System	X	X	
121.	49AG0	Bleed air leak detector	X	X	
122.	51000	Instruments	X	X	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
123.	51A00	Attitude Warning System	X	X	
124.	51B00	Angle Of Attack (AOA)System	X	X	
125.	51BB0	AOA Indicator	X		
126.	51C00	Attitude Heading Reference System (AHRS)	X	X21	
127.	51CD0	Compass controller	X	X	
128	51D00	Flight Director System	X	X	
129.	51DE0	Attitude Direction Indicator (ADI)	X	X22	
130.	51DF0	Horizontal Situation Indicator (HSI)	X	X23	
131.	51DG0	Gyro, Rate Transmitting (TRU-2A/A)	X	X	
132.	51DH0	Nav mode selector panel	X	X	
133.	51E00	Central Air Data System	X	X24	
134.	51G00	Pitot Static System	X	X	
135.	51GE0	Indicator, Vertical Airspeed (AAU-9/A)	X	X	
136.	51GG0	MACH/Airspeed System	X	X25	
137.	51GN0	Pitot Tube Heat System	X	X	
138.	51GN9	Q-inlet heater	X	X	
139.	51HB0	Total Air Temp Indicator (TAT)	X	X24	
140.	51KB0	Standby Magnetic Compass	X	X	
141.	51KC0	Standby Attitude Indicator (SAI)	X	X	
142.	51KD0	Altimeter	X	X	
143.	51KG0	Panel, Annunciator, Door Warning	X	X	
144.	52000	Autopilot System	X	X	
145.	52A00	Autopilot	X		
146.	52AG0	Autopilot (AP) warning light	X		Required if autopilot is functional
147.	52AP0	Indicator, 3 Axis Trim	X	X26	
148.	52AW0	Autopilot Disconnect Switch	X		Both required for Air Refueling
149.	52BB0	Coupler, Parallel Yaw Damper	X		

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
150.	52C00	Coupler, Series Yaw Damper	X	X	
151.	61000	High Frequency Communications	X	X	
152.	61B00	HF Radio Set (3)	X	X1	
153.	61R00	Flight Deck Interface	X		
154.	61PA0	HF Radio Set Control	X	X1	
155.	62000	VHF Communications	X	X	
156.	63000	UHF Communications	X	X	
157.	63A00	UHF Communications Systems	X	X27	
158.	63AN0	Indicator, UHF Control	X	X1	
159.	63BB0	UHF Radio Sets (U-1 - U-11, U-12, U-14 - U-18)	X	X	PMC if 3 or less are inoperative
160.	63CL0	SATCOM Systems General	X	X1	Corresponding WBSV must operate.
161.	63D00	Have Quick A-Net Communication Systems	X	X5	
162.	64000	Interphone System	X	X	
163.	64BA0	Program display & test panel	X	X	
164.	64BB0	Intercommunication Set Control/Mission ADS Panel (17)	X	X	FMC if 1 or 2 are inoperative, PMC if 3 or 4 are inoperative
165.	64BC0	Intercommunication Set Control/Special ADS Panel (2)	X	X	
166.	64BF0	Intercommunication Set Control/Mission Maintenance Panel	X	X28	
167.	64BG0	Intercommunication Set Control/Air Vehicle Maintenance Panel	X	X5	Nose unit must be operational.
168.	64BK0	Audio Frequency Amplifier (PA)	X	X	
169.	64DD0	HF/VHF Signal Distribution Radio Panel	X	X	
170..	64DF0	UHF Signal Distribution Radio Panel	X	X	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
171.	65000	Identification, Friend or Foe (IFF)	X	X	
172.	65D00	Interrogator Set (2)	X	X	PMC if 1 RT, KIR, and power supply is operative
173.	65DA0	Antenna AS-3034A	X	X	
174.	65DL0	Control antenna C95731	X	X	
175.	65DP0	RF transmitter line switch	X	X	
176.	65DQD	Radar target data processor C-3132	X	X	
177.	65DR0	IFF Receiver/Transmitter (RT)	X	X1	
178.	65DW0	KIR 1A/ Top Secret Interrogator Computer (mode IV)	X	X	PMC if 1 RT, KIR, and power supply is operative
179.	65EM0	Power Supply, IFF (2)	X	X1	
180.	65G00	Transponder Set AIMS	X	X	
181.	65PU0	IFF Power supply	X	X1	
182.	66000	Emergency Communications	X	X	
183.	66B00	Flight Recorder/Crash Position Locator Sys (DFDR)	X		
184.	69000	Miscellaneous Communications Equipment	X	X	
185.	69A00	Digital Data Set (TADIL-A)	X	X29	
186.	69EA0	KY-58 Wide Band Secure Voice (WBSV) (10)	X30, 31	X30, 31	
187.	69EC0	KG-40	X	X	TADIL-A only
188.	69EE0	KY-75 Narrow Band Secure Voice(NBSV)(2)	X	X	PMC if 1 or 2 KY-75s or KYV-5s are inoperative
189.	69EHA	KYV-5 COMSEC Module (4)	X	X	PMC if 1 or 2 KY-75s or KYV-5s are inoperative
190.	69G00	Electronic Counter Measures Resistant Communication (ERCS, 20/25 JTIDS)	X	X29	
191.	69H00	Electronic Support System (ESS)	X	X5	
192.	69K00	JTIDS Radio Set (30/35 JTIDS)	X	X29	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
193.	71000	Radio Navigation	X	X	
194.	71A00	Inertial Navigation Set (INS)	X	X1, 21	
195.	71D00	VHF Navigation System (VOR/ ILS)	X	X32	
196.	71E00	Low Frequency ADF	X	X	
197.	71F00	Marker beacon	X		
198.	71GA0	Radio altimeter	X		
199.	71HG0	Radio Magnetic Indicator (RMI)	X	X33	
200.	71K00	TACAN Navigational Set	X	X32	
201.	71RB0	Control Display Unit (CDU)	X34	X1, 34	
202.	71RD0	Embedded GPS Internal Ref. Unit (EGI)	X	X1	
203.	71RF0	Bus Subsystem Interface Unit (BSIU)	X	X1	
204.	72000	Radar Navigation	X	X	
205.	72A00	Weather Radar	X34	X1, 34	
206.	72C00	Radar Navigation Set (Doppler)	X		
207.	74000	Miscellaneous Systems	X	X	
208.	74A00	System M	X	X35	
209.	76000	Electronic Countermeasure	X	X	
210.	76A00	Have Siren System	X37	X36, 37	
211.	76C00	Passive Detection Receiving System	X35	X35	
212.	81000	Surveillance Radar	X	X	
213.	81A00	Radar Set Antenna Group (2)	X	X38	
214.	81ACB	Universal multiplexer channel	X	X1	
215.	81AC1	Antenna driver 1-14, 15-28, 29-30	X	X1	
216.	81AD0	RF Amplifier group	X	X1	
217.	81AE0	Antenna data comm	X	X1	
218.	81AGC	RCMP Data comm (APY 1,2)	X	X1	
219.	81B00	Radar Transmitter (2)	X	X38	
220.	81BC0	Voltage regulator	X	X1	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
221.	81BD0	Amp power supply KPA	X	X1	
222.	81BR0	Pressurization System SF-6	X	X	
223.	81C00	Radar Control Processor Group (3)	X	X38	
224.	81CA0	RDC processor	X	X	Minimum of 2 required
225.	81D00	Radar control processor group (RSIP)	X	X1	
226.	81DAE	RDP AMP (RSIP)	X	X1	
227.	81DAF	RDP VIM (RSIP)	X	X1	
228.	81DAG	RDP RIM (RSIP)	X	X1	
229.	81DCS	ASP/RIAU Backend Channel (RSIP)	X	X1	
230.	81DCZ	SRC +5.2V PS (RSIP)	X	X1	
231.	81E00	Radar Target Data Processor Group (2)	X	X38	
232.	81EAH	Sync	X	X1	
233.	81ECG	Radar analog receivers	X	X	Minimum of 2 required
234.	81EGA	STALO	X	X1	
235.	81F00	Radar Signal Distribution Panel	X	X38	
236.	81JAL	RCDU (RSIP)	X	X1	
237.	81JAX	RCDU PS (RSIP)	X	X1	
238.	81L00	Radar Set Antenna Group (APY-2)	X	X38	
239.	81N00	Analog and Digital Enclosures (APY-2)	X	X38	
240.	81QK0	Radar Target Data Processor Group (2)	X	X38	
241.	81R00	Radio Signal Distribution Panel (APY-2)	X	X38	
242.	81T00	Analog receiver group (RSIP)	X	X	Minimum of 2 required
243.	82000	Computer and Data Display	X	X	
244.	82C00	Hard Drive System (HDS)	X	X1	
245.	82GA0	Display Processor Assembly (2)	X	X1	

E-3 MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ACT/ ACW	REDUNDANT MISSION SYSTEM PMC CRITERIA
246.	82GK0	MPC Refresh Channel Assembly (7)	X	X1	
247.	82H00	Situation Display Console (14)	X	X	PMC if 3 or less are inoperative
248.	82P00	Digital Display Indicator (DDI) (2)	X	X1	
249.	82QA0	Digital Mutiplexer (2)	X	X1	
250.	82QB0	Computer Arithmetic Unit (CAU) (2)	X	X1	
251.	82QD0	Core Memory Unit (CMU) (10)	X	X	PMC if 3 or less are inoperative
252.	82TG0	Monolithic Memory Unit (3)	X	X4	
253.	82TJ0	Bubble Memory Unit (2)	X	X4	
254.	91000	Emergency Equipment	X	X	
255.	91F00	Emergency Exit Portable Light Assembly	X	X39	
256.	96000	Personnel and Miscellaneous Equipment	X	X	

QUALIFYING NOTES:

1. PMC if 1 is inoperative, NMC if 2 or more are inoperative.

2. PMC when inoperative if associated engine N1 indicator is operable.

3. PMC when inoperative if associated engine EPR indicator is operable.

4. PMC when inoperative if associated oil pressure/oil temperature systems are operable.

5. PMC if 1 or 2 are inoperative; NMC if 3 or more are inoperative.

6. PMC if manual control is operational.

7. PMC if gauge at either ART or FE position is operational.

8. PMC if inoperative on #3 windows and on low on other windows; #1, 2, 4, and 5 window heat must work on high.

9. Disconnect function must be operable.

10. PMC if either light or gauge indication is operational.

11. PMC if minimum of 4 are operable, NMC if 3 or less are operative.

12. PMC if 1 top and 1 bottom in either strobe or beacon is operable.

13. PMC if 2 of 3 on each side are operable.

14. Instrument lights required at Pilot, Copilot, and F.E. positions. Floodlights required at Navigator and F.E. positions.

15. PMC if PA system, flight deck and mission interphone systems are operable.

16. PMC if corresponding pressure gauge(s) operable.

17. PMC if 1 set of ready, contact, disconnect lights is operable.

18. PMC when reserve tank indicator is inoperative provided associated main tank quantity gauge and transfer valve are operable.

19. PMC when inoperative if all fuel quantity gauges are operable.

20. PMC if recharging hoses in "J" compartment and/or latrine and bunk regulators are inoperative.

21. PMC if AHRS #1 or #2 is inoperative provided corresponding EGI is operable.

22. PMC if glide slope pointer is inoperative provided corresponding HSI pointer is operable.

23. Pilot's indicator required; PMC if copilot's HSI is inoperative provided copilot's RMI is operable.

24. PMC if static air temperature gauge (SAT) or true air temperature gauge (TAT) is operational.

25. Airspeed indication must be operable. PMC if mach warning indicator or mach warning bell is operational.

26. PMC if the rudder axis is operable.

27. PMC if U-13 and U-19 are operable.

28. PMC if fwd/aft lower lobe and galley are operable.

29. PMC if either TADIL-A or JTIDS is operable.

30. NMC if either #1 or #6 is inoperable.

31. PMC if 3 or less are inoperable.

32. PMC if 1 TACAN or VOR/ILS is operable at each pilot's station.

33. PMC if corresponding HSI is operable.

34. NMC if Navigator's is inoperable.

35. When required by mission.

36. PMC if in-boards are operative and mission requires system operation and mission requires system operation.

37. When installed.

38. PMC if main or redundant is inoperative.

39. PMC if only bailout position is inoperable.

Attachment 22 (Added)

F-15A/B/C/D MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

ASY – Air Superiority

ADC – Air Defense, Conventional

F-15A/B/C/D MESL					
				BSL	
NO	**WUC**	**SYSTEM/SUBSYSTEM**	**FSL**	**ASY**	**ADC**
1.	11	Airframe	X	X	X
2.	12	Cockpit & Fuselage Compartments	X	X	X
3.	13	Landing Gear	X	X	X
4.	14	Flight Controls	X	X	X
5.	23	Turbofan Power Plant	X	X	X
6.	24	Auxiliary Power Plant	X	X	X
7.	41	AC/Press	X	X1	X1
8.	42	Electrical Power Supply	X	X	X
9.	44A	Exterior Lighting System	X2	X3	X3
10.	44B/E	Interior Lighting System/Caution Light Panel Assy	X	X	X
11.	45	Hydraulic and Pneumatic Power Supply	X	X	X
12.	46	Fuel System	X4	X4	X4
13.	47	Oxygen System	X	X	X
14.	49	Miscellaneous Utilities	X	X	X
15.	51	Instruments	X	X	X
16.	52	Autopilot	X		
17.	52A	Control Augmentation System	X	X	X
18.	55	Malfunction Analysis & Recording	X5,8		
19.	55AE	Build-In-Test Display Group	X	X	X
20.	57	Integrated Guidance And Flight Control	X	X	X
21.	63A	UHF Communications Set	X6	X6	X6
22.	63B	Integrated CNI Control Set	X	X	X
23.	63C	Intercommunication System	X7		
24.	65	IFF	X	X	X
25.	71A	Inertial Navigation Set (AN/ASN-109)	X	X	X
26.	71B	Direction Finder Group	X		
27.	71C	Instrument Landing Set	X	X	X

F-15A/B/C/D MESL					
				BSL	
NO	WUC	SYSTEM/SUBSYSTEM	FSL	ASY	ADC
28.	71F	Attitude Heading Reference Set	X	X	X
29.	71G	Global Positioning	X8	X8	X8
30.	71M	Inertial Navigation (RLG)	X	X	X
31.	71Q	Fighter Data Link	X8		
32.	71Z	Tactical Air Navigation	X	X	X
33.	74	Radar Set	X	X	X
34.	74L	Video Tape Recorder System	X		
35.	74T	Joint Helmet Mounted Cueing System	X8	X8	X8
36.	75	Weapons Delivery	X	X9	X9
37.	75H	Gun System	X	X	X
38.	76A/B	ALR-56 (A/C)	X	X	X
39.	76C	Interference Blanker	X	X	X
40.	76G	Electronic Warfare Warning Set (ALQ-128)	X	X	X
41.	76H/M	ALQ-135 Band 1 & 3	X	X8,10	X8,10
42.	76K	Countermeasures Dispenser	X	X	X
43.	91	Emergency Equipment	X	X	X
44.	97	Explosive Devices And Components	X	X	X

QUALIFYING NOTES:

Rear cockpit systems, subsystems and components need not be operational for BSLs.

1. Manual mode only required.

2. As required by AFI 11-202V3, *General Flight Rules*.

3. Strip lighting and landing lights required as a minimum.

4. Conformal fuel system required when CFTs are assigned to the unit.

5. Flight Data Recorder system not required.

6. Have Quick/Secure Voice required if aircraft is equipped.

7. Applies to B/D models only.

8. If installed.

9. All 8 Aim-7/Aim-9 stations required for FMC. Any combination of 6 required for PMC.

10. Internal ECM required for A and C models for FMC; external ECM capability required for B and D models for FMC.

Attachment 23 (Added)

F-15E MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

ADC – Air Defense, Conventional

ASC – Air to Surface, Conventional

ASN – Air to Surface, Nuclear

F-15E MESL						
				BSL		
NO	**WUC**	**SYSTEM/SUBSYSTEM**	**FSL**	**ADC**	**ASC**	**ASN**
1.	11	Airframe	X	X	X	X
2.	12	Cockpit & Fuselage Comps	X	X	X	X
3.	13	Landing Gear	X	X	X	X
4.	14	Flight Controls	X	X	X	X
5.	23	Turbofan Power Plant	X	X	X	X
6.	24	Auxiliary Power Plant	X	X	X	X
7.	41	AC/Press	X	X1	X1	X1
8.	42	Electrical Power Supply	X	X	X	X
9.	44A	Exterior Lighting	X2	X3	X3	X3
10.	44B/E	Interior Lighting/Caution Light Panel Assy	X	X	X	X
11.	45	Hydraulic System	X	X	X	X
12.	46	Fuel System	X	X	X	X
13.	47	Oxygen System	X	X	X	X
14.	49	Miscellaneous Utilities	X	X	X	X
15.	51	Instruments	X	X	X	X
16.	52	Autopilot	X			
17.	52B	Automatic Flight Control Set	X	X	X	X
18.	55	Malfunction Analysis & Recording	X			
19.	55A	Built-In-Test Display Group	X	X	X	X
20.	57	Integrated Guidance & Flight Control System	X	X	X	X
21.	63A	UHF Communications	X	X4	X4	X4
22.	63B	Integrated CNI Control Set	X	X	X	X
23.	63C	Intercommunications System	X	X	X	X
24.	65	IFF	X	X	X	X
25.	71B	Direction Finder Group	X			
26.	71C	Instrument Landing Set	X	X	X	X

F-15E MESL						
				BSL		
NO	WUC	SYSTEM/SUBSYSTEM	FSL	ADC	ASC	ASN
27.	71F	Attitude Heading Reference Set	X	X	X	X
28	71G	Global Positioning	X10	X10	X10	X10
29.	71M	Inertial Navigation Set (INS)	X	X	X	X
30.	71Q	Fighter Data Link	X10	X10	X10	X10
31.	71Z	Tactical Air Navigation Set	X	X	X	X
32.	72A	Cara AN/APN-232	X		X	X
33.	74G	Radar Set - AN/APG-70	X	X	X	X
34.	74K	Heads Up Display Set (HUD)	X	X	X	X
35.	74L	Video Tape Recorder System	X			
36.	74M	Multi-Purpose Display System	X5	X5	X5	X5
37.	74N	LANTIRN Targeting Set	X6		X6	X6
38.	74P	LANTIRN Navigation Set	X6		X6	X6
39.	75	Weapons Delivery	X7	X8	X8	X8, 9
40.	75H	Gun System	X	X	X	
41.	76A/B	ALR-56C	X	X	X	X
42.	76C	Interference Blanker	X	X	X	X
43.	76G	Electronic Warfare Warning Set (ALQ-128)	X	X	X	X
44.	76H/L/M/N	ALQ-135 Band 1.5 & 3	X	X10	X10	X10
45.	76K	Countermeasures Dispenser	X	X	X	X
46.	82A	Remote Map Reader	X10		X10	X10
47.	82B	Digital Map System	X10		X10	X10
48.	91	Emergency Equipment	X	X	X	X
49.	97	Explosive Devices	X	X	X	X

QUALIFYING NOTES:

1. Manual mode only required for PMC.

2. As required by AFI 11-202V3, *General Flight Rules*.

3. Strip and landing lights required as a minimum for PMC.

4. One radio must be HAVE QUICK capable.

5. Seven (7) multi-purpose displays required.

6. Aircraft systems must be capable of LANTIRN operation for FMC, regardless of pod installation.

7. Eight (8) missile and fifteen (15) air-to-ground station capability required for FMC.

8. Any 6 missile stations, with 2 LAU-128 capable; and 8 conformal fuel tank (CFT) air-to-ground stations required for PMC.

9. LC-2 (Primary) and RC-2 (Alternate) stations (BRU-47) required for FMC. Either LC-2 or RC-2 required for PMC.

10. If installed.

Attachment 24 (Added)

F-16C/D MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

ASC – Air to Surface, Conventional

ASY – Air Superiority

ASD – Air to Surface, Dual

CAS – Close Air Support

DSP – Defense Suppression

F-16C/D MESL								
				BSL				
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ASC	ASY	ASD	CAS	DSP
1.	11	Airframe	X	X	X	X	X	X
2.	12	Crew Station System	X	X	X	X	X	X
3.	13	Landing Gear System	X	X	X	X	X	X
4.	14	Flight Control System	X	X1	X1	X1	X1	X1
5	23	Turbofan Power Plant (PW)	X	X	X	X	X	X
6.	24	Aux. Power Plant/JFS	X	X	X	X	X	X
7.	27	Turbofan Power Plant (GE)	X	X	X	X	X	X
8.	41	Environmental Control System	X2	X2	X2	X2	X2	X2
9.	42	Electrical Power Supply	X	X3	X3	X3	X3	X3
10.	44A	Exterior Lighting	X4, 6	X5, 6	X5, 6	X5, 6	X5, 6	X5, 6
11.	44B/C	Interior Lighting	X7	X7	X7	X7	X7	X7
12.	45	Hydraulic & Pneumatic System	X	X	X	X	X	X
13.	46	Fuel System	X	X	X	X	X	X
14.	47	Oxygen System	X	X8	X8	X8	X8	X8
15.	49A	Fire Detection System	X	X	X	X	X	X
16.	49B	Overheat Detection System	X	X	X	X	X	X
17.	51	Flight Instruments	X	X9	X9	X9	X9	X9
18.	55	Malfunction Analysis & Recording Equipment (CSFDR)	X					
19.	62	VHF Communications	X10	X10	X10	X10	X10	X10
20.	63	UHF Communications	X10	X10	X10	X10	X10	X10
21.	64	Interphone System	X	X11	X11	X11	X11	X11
22.	65	IFF	X	X	X	X	X	X
23.	69AE	Situational Awareness Data Link (SADL)	X12	X12	X12	X12	X12	X12

F-16C/D MESL								
				BSL				
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	ASC	ASY	ASD	CAS	DSP
24.	69B	Link 16 (MIDS)	X12					
25.	71	Radio Navigation	X	X	X	X	X	X
26.	71D	Global Positioning System	X12	X12	X12	X12	X12	X12
27.	74	Fire Control System	X	X	X	X	X	X
28.	74B	HUD Unit	X	X	X	X	X	X
29.	74D	Inertial Navigation System	X	X	X	X	X	X
30.	74G	Airborne Video System	X12					
31.	74H	Data Transfer Unit	X	X	X	X	X	X
32.	74K	Multifunction Display Set	X	X13	X13	X13	X13	X13
33.	74L	Radar Altimeter System	X14	X14		X14	X14	X14
34.	74N	Targeting Pod (GTP) System	X15	X15		X15	X15	
35.	74P	Navigation Pod (VP) System	X15	X15		X15	X15	
36.	74R	Harm Targeting System (HTS)	X					X
37.	74U	JHMCS	X12					
38.	75	Weapons Delivery System	X	X16	X16	X16	X16	X16
39.	75A	Gun System	X	X	X	X	X	X
40.	76	Penetration Aids And ECM	X	X	X	X	X	X
41.	76B/C	RWR	X	X	X	X	X	X
42.	76Y	Chaff/Flare Disp System	X	X	X	X	X	X
43.	91	Emergency Equipment	X	X	X	X	X	X
44.	97	Explosive Devices/Components	X	X	X	X	X	X

QUALIFYING NOTES:

1. Excludes indicator override, leading edge flap indicator and speed brake indicator.

2. Manual mode only required.

3. Excludes external power system.

4. As required by AFI 11-218, *Aircraft Operations and Movement on the Ground*.

5. Minimum navigation/formation light requirements for PMC include 1 anti-collision, 1 position light per wing, both inlet and tail navigation lights. Landing and taxi lights required for PMC.

6. For NVIS modified aircraft, external light covert function must be operational.

7. Interior NVIS lighting requirements satisfied either by permanent or LED illumination system.

8. Excludes quantity check switch.

9. Excludes secondary instruments and rear cockpit instructor's accelerometer.

10. HAVE QUICK secure voice required if equipped.

11. B/D models only.

12. If equipped/modified.

13. One MFD required.

14. Required for aircraft performing LANTIRN mission only.

15. Aircraft systems must be capable of LANTIRN operation for FMC regardless of pod operation.

16. For Air-to-Air, all 4 outboard stations (1/2/8/9) are required for FMC; 3 of 4 outboard stations (1/2/8/9), 2 LAU-129 capable, are required for PMC. For Air-to-Surface, all 4 inboard stations (3/4/6/7) are required for FMC/PMC.

Attachment 25 (Added)

HH-60G MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

PRL – Personnel Recovery over Land

PRW – Personnel Recovery over Water

MS – Mission Support

HH-60G MESL						
				BSL		
NO	**WUC**	**SYSTEM/SUBSYSTEM**	**FSL**	**PRL**	**PRW**	**MS**
1.	11000	Airframe	X	X	X	X
2.	12000	Cockpit/Fuselage Compartment	X	X	X	X
3.	13000	Landing Gear Systems	X	X	X	X
4.	14000	Flight Controls	X	X	X	X
5.	15000	Aircraft Rotor System	X	X	X	X
6.	15200	Main Rotor De-Icing System	X	X1	X1	X1
7.	15300	Tail Rotor De-Icing System	X	X1	X1	X1
8.	22000	Turbo Shaft Engines	X	X	X	X
9.	24000	Auxiliary Power Plant	X	X	X	X
10.	26000	Rotor Drive System	X	X	X	X
11.	26190	Rotor Brake	X2			
12.	41000	Environmental Control System	X	X1	X1	X1
13.	41130	Propulsion Anti-Ice	X	X	X	X
14.	42000	Electrical Power Supply	X	X	X	X
15.	42410	EME Pin Filter Adapters	X			
16.	44A00	Caution Lights	X	X	X	X
17.	44110	Exterior Lights	X	X3	X3	X3
18.	44120	Interior Lights	X4			
19.	4411U	Controllable Searchlight	X			
20.	45000	Hydraulic/Pneumatic Power	X	X	X	X
21.	46110	Main Fuel System	X	X	X	X
22.	46500	Air Refuel System	X5			
23.	46600	Fuel Dump System	X	X	X	X
24.	46700	Fuel Quantity System	X	X6	X6	X6
25.	46800	Internal Auxiliary Tank System	X2			
26.	49B00	Fire Extinguishing System	X	X	X	X

HH-60G MESL						
				BSL		
NO	WUC	SYSTEM/SUBSYSTEM	FSL	PRL	PRW	MS
27.	49B20	Fire Detection System	X	X	X	X
28.	49B30	Windshield Wiper System	X	X	X	X
29.	49C00	Rescue Hoist System	X	X2	X2	X2
30.	49100	Cargo Hook System	X2			
31.	51200	AFCS Instrument System	X	X	X	X
32.	51A00	Engine Instrument System	X	X	X	X
33.	51B00	Flight Instruments	X	X	X	X
34.	51C00	Caution/Advisory Warning System	X	X	X	X
35.	51C40	Audible Warning	X	X	X	X
36.	52000	AFCS System	X	X	X	X
37.	52130	AHHS	X			
38.	56100	Vertical Gyro System	X	X	X	X
39.	57A00	AAQ-16 / AAQ-22 FLIR System	X2			
40.	62300	VHF AM/FM AN/ARC-222	X	X7	X7	X7
41.	63100	UHF AM AN/ARC-164	X	X7	X7	X7
42.	64000	Intercom System	X	X8	X8	X8
43.	65000	IFF System	X	X	X	X
44.	66A00	Radio Set/Personnel Locator	X	X	X	
45.	66B00	HAVE CSAR	X2			
46.	68D00	GPS AN/ARN-151	X	X9	X9	X9
47.	68F00	SATCOM AN/ARC-210(V)	X			
48.	69C00	Secure Communications (KY-58)	X	X	X	X
49.	71100	LF/ADF System AN/ARN-89	X			
50.	71210	VOR Navigation System AN/ARN-123	X	X10	X10	X10
51.	71A00	TACAN AN/ARN-118	X	X10	X10	X10
52.	71B00	UHF Directional Finder	X11			
53.	71C00	Inertial Navigation System	X	X9	X9	X9
54.	71F00	AN/ASN-137 Doppler	X	X9	X9	X9
55.	72A00	APN-239 Radar	X			
56.	72110	Radar Altimeter	X	X	X	X
57.	75000	Weapons Delivery System	X	X	X	X
58.	76000	Countermeasures	X	X	X	X
59.	82100	AN/ASN-161 VSDS	X	X	X	X
60.	82200	1553 Databus	X12	X12	X12	X12

HH-60G MESL						
				BSL		
NO	WUC	SYSTEM/SUBSYSTEM	FSL	PRL	PRW	MS
61.	82300	Data Transfer System DTS3266A	X			
62.	82400	Control Display Unit (CDU)	X	X13	X13	X13
63.	82700	RS-232 Moving Map Display	X			
64.	91000	Emergency Equipment	X	X	X	X
65.	97115	Cargo Hook Explosive Cart	X2			
66.	97116	Fire Bottle Explosive Cart	X	X	X	X
67.	97117	Hoist Guillotine Cart Assembly	X2	X2	X2	X2

QUALIFYING NOTES:

1. Based on anticipated icing conditions.
2. If installed.
3. One upper or lower strobe required for PMC.
4. PMC for night missions.
5. Required only if mission location is beyond mission-capable fuel.
6. PMC if inoperative EFQI with auxiliary tank dipsticks.
7. One required for PMC.
8. PMC if troop commander’s position inoperative, all others NMC.
9. One INS, Doppler or GPS, required for PMC.
10. Either VOR or TACAN required for PMC.
11. Not required if AN/ARS-6 (66A00) PLS system is operational.
12. Either Bus A or B and pilot or copilot CDU for PMC.
13. One CDU required for PMC.

Attachment 26 (Added)

KC-135R/T MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

CONV – Conventional

SIOP – Single Integrated Operations Plan

KC-135R/T MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	CONV (EM24)	SIOP (EG23)
1.	11	Airframe	X	X	X1
2.	12	Fuselage compartments	X	X16	X16,22
3.	13	Landing gear	X	X	X2
4.	14	Flight controls	X	X	X1
5.	23	Engines	X	X	X1
6.	24B/C/D	APU (QSAS)	X	X5	X5
7.	27	Engines	X	X24	X1
8.	41	Environmental control	X	X6	X6
9.	42	Electrical power	X	X	X7
10.	44	Lighting	X	X8	X8
11.	45	Hyd/pneu power supply	X	X	X1
12.	46	Fuel systems	X	X	X1
13.	467/8	Boom air refueling (off load)	X	X9	X9
14.	47	Oxygen system	X	X16	X16
15.	49	Miscellaneous utilities	X	X19	X11
16.	51A	Flight director	X	X	X12
17.	51B	RGA	X	X17	
18.	51D	Central Air Data Sys	X	X	
19.	51E	FSA/CAS	X	X25	X13
20.	51F	FMAC	X	X25	X13
21.	51H	Turbine Engine Monitoring (TEMS)	X		
22.	511	Flight instruments (analog)	X	X	X12
23.	512	Sextant /mount	X	X26	X26
24.	513	Engine instruments	X	X20	X21
25.	514	LDG Gear/Flap Ind Sys	X	X	
26.	515	Fuel Qty system	X	X25	X13

KC-135R/T MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	CONV (EM24)	SIOP (EG23)
27.	516	Hydraulic Ind system	X	X	
28.	517	Elect sys indicators	X	X	
29.	518	Utility Instrumentation	X	X	X4
30.	519	Inflight Refueling instr	X	X	
31.	52	Autopilot	X		
32.	522	Flt Cont Aug sys (KC-135R/T)	X	X	
33.	524	Compass systems	X	X26	X14,26
34.	61	HF communications	X	X	
35.	62	VHF communications	X	X	
36.	63	UHF communications	X	X15	X15
37.	64	Interphone	X	X16	X16
38.	65	IFF	X	X	X
39.	68	SATCOM	X	X10	
40.	71B	VOR	X	X17	
41.	71Z	TACAN	X	X	
42.	72C	Rendezvous equipment	X		
43.	72H	Embedded GPS/INS system	X	X	X
44.	72Y	Carousel INS	X	X	
45.	72Z	Search radar (APN-59)	X	X	X18
46.	721	APN-218 Doppler	X	X26	X26
47.	721 - -	Doppler navigation (DNS)	X	X3	
48.	728	Weather radar (WXR-700)	X	X	X23
49.	729	Flight Management system	X	X	X
50.	73	E-TCAS	X	X27	X27

QUALIFYING NOTES

1. Sufficient for take-off and sustained flight through air refueling.

2. Capable of taxi, take-off, and retraction.

3. Not required if PACER CRAG or avionics relocation program (ARP), TCTO 1426, equipped.

4. Sufficient to maintain cabin altitude below 12,000 feet.

5. Capable of providing air for engine start.

6. Normal air conditioning or alternate pressurization operable, automatic or manual temperature control, window and engine anti-ice protection operable.

7. One generator operational provided all busses can be powered. All battery emergency power systems and transformer rectifiers fully operational.

8. Sufficient for night operational requirements.

9. Capable of off-loading fuel in normal or override.

10. If equipped and mission required.

11. PLZT (aircraft system only) must be operable.

12. Sufficient at pilot and copilot position to monitor aircraft position, performance, and maintain aircraft control.

13. Must provide accurate fuel quantity indication for tanks that can't be visually checked.

14. Either N-1 or J-4 fully operational.

15. Comm #1 must be operable.

16. Operable at primary crew positions.

17. One position.

18. One operable radar scope, either navigator's or pilot's.

19. Engine stall warning advisory may be inop; remaining safety equipment/warning indications must be operational; all other items are as mission dictates.

20. Analog indication must be operational.

21. Sufficient to monitor engine operation.

22. Thermal curtains required.

23. Weather mode must be operational.

24. Minimum of 3 PMC's must be operational.

25. Reserve and upper deck tank gauges may be inop if fuel quantity can be verified prior to take-off.

26. Not required if PACER CRAG equipped.

27. Fully operational, if equipped.

Attachment 27 (Added)

UH-1N MINIMUM ESSENTIAL SUBSYSTEMS LIST (MESL)

FSL – Full Systems List

BSL – Basic Systems List

OSA – Operational Support

AMN – Administrative Support

UH-1N MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	OSA	AMN
1.	11000	Airframe	X	X	X
2.	12000	Cockpit/Fuselage Compartment	X	X	X
3.	12B00	Litter Kits	X1	X1	
4.	12C00	Troop Seats	X	X	X
5.	12D00	Crew Seats	X	X	X
6.	12E00	Windshield Wiper	X2	X2	X2
7.	13000	Landing Gear System	X	X	X
8.	13210	Ground Handle Wheels	X	X3	X3
9.	14000	Flight Controls	X	X	X
10.	15000	Helicopter Rotor System	X	X	X
11.	22000	Turbo Shaft Engines	X	X	X
12.	22B00	Engine Instruments	X	X	X
13.	26100	Transmission Instruments	X	X	X
14.	41000	Bleed Air Heat & Vent System	X	X5	X5
15.	42000	Elect Power Supply	X	X	X
16.	42100	DC Power Supply	X	X10	X10
17.	42300	AC Power Supply	X	X10	X10
18.	42510	Power Indicators	X	X	X
19.	44110	Exterior Lights	X	X	X
20.	44110	Dome Lights	X	X1	
21.	44120	Interior Lights	X	X	X
22.	44120	Instrument Panel Light	X	X	X
23.	44130	Instrument Secondary Light	X	X	X
24.	44140	Pedestal Lights	X	X	X
25.	44150	Overhead Console Lights	X	X	X
26.	44160	Utility Lights	X		
27.	44210	Navigational Lights	X	X	X

UH-1N MESL					
				BSL	
NO.	WUC	SYSTEM/SUBSYSTEM	FSL	OSA	AMN
28.	44230	Landing Light	X	X4	X4
29.	44240	Formation Lights	X	X	X
30.	44250	Search Light	X	X4	X4
31.	44300	Caution Lights	X	X	X
32.	44500	Strobe Lights	X	X2	X2
33.	45000	Hyd/ Pneudraulic Power	X	X	X
34.	46110	Main Fuel System	X	X	X
35.	4611E	Fuel Boost Pumps	X	X	X
36.	4613C	Fuel Indicator System	X	X	X
37.	46300	Auxiliary Fuel System8	X	X5	X5
38.	49100	Engine Fire Detection System	X	X	X
39.	51100	Flight Instruments	X	X	X
40.	51120	Pilot Static System	X	X	X
41.	51210	Gyro magnetic Compass	X	X	X
42.	51220	Stand-By Compass	X		
43.	5131A	Free Air Temp Indicator	X	X5	X5
44.	5131B	Clock	X	X5	X5
45.	56000	IDARS	X	X	X
46.	62400	VHF Communication (AM) (AN/ARC-186)	X	X6	X6
47.	63AC0	UHF Communication (RT-1505/ARC-164) HQ	X	X6	X6
48.	64000	Interphone System	X	X7	X7
49.	65100	IFF Transponder AN/APX-72	X	X	X
50.	68000	GPS AN/ASN-175	X	X5	X5
51.	71110	UHF Direction Finder AN/ARC-50	X	X5	X5
52.	7121Q	Course Indicator ID-387	X	X9	X9
53.	71320	VOR/ILS AN/ARC-147	X	X8	X8
54.	71410	ADF AIN/ARN-89	X	X9	X9
55.	71Z00	Radio NAV TACAN AN/ARC-118	X	X8	X8
56.	72000	Radar Altimeter AN/APN-232 System	X	X5	X5
57.	91210	Passenger Alarm System	X	X5	X5
58.	9131A	First Aid Kits (4ea)	X	X	X
59.	9131B	Hand Held Fire Extinguisher (2ea)	X	X	X
60.	91410	Emergency Locator Transmitter EBC-302	X	X	X

QUALIFYING NOTES:

1. MEDIVAC Only.
2. Co-pilot's may be inoperative.
3. Required for cross-country flights.
4. Landing/search lights - 1 must be operational.
5. As required for mission.
6. VHF or UHF must be operational.
7. Pilot, co-pilot, and flight mechanic stations must be operational.
8. VOR or TACAN must be operational.
9. As required for instrument approaches.
10. Only 1 inverter and 1 starter generator required (VFR Only).

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