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(AFRIMS) located at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm**. This publication may be supplemented at any level, but all direct Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. E.O. 9397, - *Numbering System for Federal Accounts Relating to Individual Persons*," the words "as amended by E.O. 13478, *Amendments to Executive Order 9397 Relating to Federal Agency Use of Social Security Numbers*.

NOTE: The terms direct reporting unit (DRU) and field operating agency (FOA) as used in this paragraph refer only to those DRUs/FOAs that report directly to HQ USAF. Keep supplements current by complying with AFI 33-360, *Publications and Forms Management*. See **paragraph 1.7** of this volume for guidance on submitting comments and suggesting improvements to this publication. This instruction requires the collection or maintenance of information protected by the Privacy Act of 1974. The authority to collect and maintain the records prescribed in this instruction are 37 USC 301a, *Incentive Pay*; Public Law 92-204, *Appropriations Act for 1973*, Section 715; Public Law 93-570, *Appropriations Act for 1974*; Public Law 93-294, *Aviation Career Incentive Act of 1974*; Department of Defense Instruction (DODI) 7730.57, *Aviation Career Incentive Act of 1974 and Required Annual Report*; Air Force Instruction (AFI) 11-401, *Aviation Management*; AFI 11-402, *Aviation and Parachutist Service, Aeronautical Ratings and Badges*; AFI 11-421, *Aviation Resource Management*; and E.O. 9397, —*Numbering System for Federal Accounts Relating to Individual Persons*. This volume, with its complementary unit-specific Local Procedures Supplement, prescribes standard operational and weapons employment procedures to be used by all aircrews operating USAF HC-130J aircraft. 88th Test and Evaluation aircraft and aircrew may deviate from the contents of this volume as outlined in individually approved test plans required for Test and Evaluation purposes. File a copy of all approved waivers with this volume.

(AETC) This supplement implements and extends the guidance of AFI 11-2HC-130J, Volume 3. This supplement applies to all AETC units. It is N/A for Air Force Reserve Command (AFRC) units and Air National Guard (ANG)-gained units with the exception of ANG associate unit aircrew. Units may supplement this instruction. Each unit will coordinate its supplement with AETC/A3V before publication and forward one copy to AETC/A3V after publication. Submit suggested improvements to this instruction on AF Form 847, *Recommendation for Change of Publication*, through standardization and evaluation (Stan/Eval) channels, to AETC/A3V. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with (IAW) Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The operations group (OG/CC) commander, or equivalent, of the unit that generated their supplement will handle waivers to supplemental guidance. See Attachment 1 for a glossary of references and supporting information.

Chapter 1—GENERAL INFORMATION **14**

1.1. General. 14

1.2. Applicability. 14

1.3. Key Definitions: 14

1.4. Waivers and Deviations. 14

1.5. Distribution. 15

1.6. Supplements. 15

1.7. Improvement Recommendations and Reviews. 15

1.7. (AETC) Improvement Recommendations and Reviews. 15

Chapter 2—COMMAND AND CONTROL **16**

2.1. General. 16

2.2. Operational Control (OPCON). 16

2.3. Mission Monitoring. 16

2.4. Mission Commander. 18

2.5. Pilot In Command Responsibility and Authority. 18

2.6. Mission Clearance Decision. 19

2.7. Civilian Law Enforcement Support. 19

Chapter 3—AIRCREW COMPLEMENT AND MANAGEMENT **20**

3.1. Aircrew Qualification. 20

3.2. Crew Complement. 20

Table 3.1. HC-130J Crew Complement. 21

3.3. Additional Crewmembers (ACM). 21

3.4. Mission Essential Personnel (MEP). 21

3.5. Interfly. 21

3.6. Intrafly. 22

3.7. Flight Duty Period, Crew Duty Period, and Crew Rest Restrictions. 22

3.7. (AETC) Flight Duty Period, Crew Duty Period, and Crew Rest Restrictions. 22

3.8. Alert Duty. 23

3.9. TDY Crew Rest/Post Deployment Stand Down. 25

3.10. Counter-Fatigue Management Program. 25

Chapter 4—AIRCRAFT OPERATING GUIDELINES **26**

4.1. Objectives. 26
4.2. Minimum Equipment List (MEL) Policy. 26
4.3. Waiver Protocol. 26
4.4. Deviations. 27
4.5. Technical Assistance. 27
4.6. One-Time Flights. 27
4.7. Fuel System. 27
4.8. Landing Gear System. 28
4.9. Navigation Systems. 29
4.10. Soft Panel Operations. 29
4.11. MEL Table Definitions/Column Identifiers. 30
Table 4.1. Air Conditioning and Pressurization. 31
Table 4.2. Auto Flight. 34
Table 4.3. Communications. 36
Table 4.4. Electrical System. 38
Table 4.5. Equipment. 39
Table 4.6. Fire Protection. 39
Table 4.7. Flight Controls. 40
Table 4.8. Fuel (Reference para 4. 41
Table 4.9. Hydraulic System. 44
Table 4.10. Ice and Rain Protection. 44
Table 4.11. Indicating/Recording Systems. 45
Table 4.12. Landing Gear And Brakes Fuel (Reference para 4. 46
Table 4.13. Lights. 47
Table 4.14. Navigation. 48
Table 4.15. Oxygen. 49
Table 4.16. Pneumatic. 50
Table 4.17. System Integration and Display. 51
Table 4.18. Auxiliary Power Unit (APU). 52
Table 4.19. Doors. 53
Table 4.20. Propellers. 54
Table 4.21. Powerplant. 55

Table 4.22. In-flight Refueling System. 56
Table 4.23. Air Refueling System. 56

Chapter 5—OPERATIONAL PROCEDURES 57

5.1. Checklists. 57
5.2. Duty Station. 57
5.3. Flight Deck Entry. 57
5.4. Takeoff and Landing Policy. 57
5.5. MPD Trained Landing Policy. 58
5.6. Landing Gear and Flap Operating Policy. 58
5.7. Outside Observer/ACM Duties. 58
5.8. Seat Belts. 58
5.9. Aircraft Lighting. 59
5.10. Portable Electronic Devices. 59
5.11. Tobacco Use on Air Force Aircraft. 59
5.12. Advisory/Required Calls. 60
Table 5.1. Takeoff. 60
Table 5.2. Climb Out and Descent. 60
Table 5.3. Non-precision Approach. 61
Table 5.4. Precision Approach. 61
5.13. Stabilized Approach Philosophy. 61
5.14. Communications Policy. 62
5.15. Crew Resource Management (CRM). 63
5.16. Automation. 64
Table 5.5. Automated Flight. 66
Table 5.6. Manual Flight. 66
5.17. Ground Collision Avoidance System (GCAS) / Terrain Awareness and Warning System (TAWS). 67
5.18. Traffic Alerting and Collision Avoidance System (TCAS). 67
5.19. Radar Altimeter. 67
5.20. Runway, Taxiway and Airfield Requirements. 68
Table 5.7. RCR Values. 70
5.21. Aircraft Taxi and Taxi Obstruction Clearance Criteria and Foreign Object Damage (FOD) Avoidance. 71

5.22. Fuel Jettison Procedures. 72
5.23. Bird/Wildlife Aircraft Strike Hazard (BASH) Programs. 72
5.24. Aircraft Recovery from Unprepared Surfaces. 73

Chapter 6—AIRCREW PROCEDURES 74

Section 6A—Pre-Mission 74
6.1. Aircrew Uniforms. 74
6.2. Personal and Professional Equipment. 74
6.3. Pre-Mission Actions. 75
6.4. Airfield Review. 75
6.5. Intelligence Briefing. 75
6.6. Aircrew Publications Requirements. 76
Table 6.1. Aircrew Publications. 76

Section 6B—Pre-Departure 76
6.7. Classified Equipment and Material. 76
6.8. Narcotics. 77
6.9. Flight Crew Information File (FCIF). 77
6.10. Operational Risk Management (ORM). 77
6.11. Aircraft Mission Kits. 77
Table 6.2. Aircraft Mission Kit. 78
6.12. Route Navigation Kits. 78
Table 6.3. Route Navigation Kits. 79
6.13. Briefing Requirements. 79
6.14. Call Signs. 79
6.15. Instrument Flight Rules. 79
6.16. Sensitive Mission Operations. 79
6.17. Flight Plan/Data Verification. 80
6.18. Departure Planning. 80
Table 6.4. Alternative Takeoff Minima and Departure Alternate Procedures. 82
6.19. Arrival Planning. 82
6.20. Adverse Weather. 83

Section 6C—Pre-flight 85
6.21. AFTO Forms 781 Series. 85

6.22. Dash One Pre-Flight. 85
6.23. Alert Aircraft. 86
6.24. Aircrew Flight Equipment and Oxygen Requirements. 88
6.25. Cargo Documentation. 90
6.26. Airlifting Hazardous Cargo. 90
6.27. Hazardous Medical Equipment. 92
6.28. Handling Procedures. 92
Section 6D—Departure 93
6.29. On Time Takeoffs. 93
6.30. NVG Departures. 93
6.31. Departure Monitoring. 94
Section 6E—En Route 94
6.32. IFF/SIF Operations. 94
Table 6.5. Worldwide IFF Chart. 95
6.33. Flight Progress. 95
6.34. Cold Weather Altimeter Setting Procedures. 96
6.35. Traffic Collision Avoidance System (TCAS) Operations. 96
6.36. Navigational Aid Capability. 96
6.37. Communications. 96
6.38. Communications Instructions Reporting Vital Intelligence Sightings and Other Reports. 97
6.39. In-Flight Meals. 97
6.40. In-Flight Emergency (IFE) Procedures. 97
6.41. Need for Medical Assistance. 98
6.42. Weather Forecasts. 98
Section 6F—Arrival 98
6.43. Descent. 98
6.44. Instrument Approach Procedures. 98
6.45. After Beginning an Enroute Descent. 100
6.46. NVG Approach and Landing. 101
6.47. Salt Spray and Clear Water Rinse. 101
6.48. Maintenance. 102
6.49. Aircraft Recovery Away from Main Operating Base. 102

6.50. Crew Debriefing. 103
6.51. Border Clearance. 103
6.52. Insect and Pest Control (Aircraft Spraying). 106
Section 6G—Miscellaneous Procedures 107
6.53. Dropped Objects. 107
6.54. Cockpit Voice Recorder (CVR). 107
6.55. Impoundment of Aircraft. 107
6.56. Aircrew Notification Procedures. 107
6.57. Flight Deck Loose Objects. 107
6.58. Ordnance Procedures. 108
Chapter 7—AIRCRAFT SECURITY 109
7.1. General. 109
7.2. Security. 109
7.3. Procedures. 109
7.4. Aircraft Security Risk Assessment Matrix. 111
Table 7.1. Aircraft Force Protection Risk Assessment Matrix. 112
7.5. Protective Standards For Aircraft Carrying Distinguished Visitors. 112
7.6. Arming of Crewmembers. 113
7.7. Standby/Alert Aircraft Security. 114
7.8. Enroute Security. 114
7.9. Preventing and Resisting Hijacking. 114
7.10. Preventive Measures. 115
7.11. Initial Response. 117
7.12. In-Flight Resistance. 117
7.13. Communications Between Aircrew and Ground Agencies. 118
7.14. Forced Penetration of Unfriendly Airspace. 118
7.15. Air Force Installation Security Program. 118
7.16. Force Protection. 119
Chapter 8—OPERATIONAL REPORTS AND FORMS 120
8.1. General. 120
8.2. AF Form 457, USAF Hazard Report. 120
8.3. AF Form 651, Hazardous Air Traffic Report. 120

8.4. AF Form 711B, USAF Aircraft Mishap Report Worksheet. 121
8.5. AF Form 853, Bird Strike Report. 122
8.6. DD 1748-2, Airdrop Malfunction Report (Personnel-Cargo). 122
8.7. Reports of Violations, Unusual Events, or Circumstances. 122
8.8. Petroleum, Oil, and Lubricants (POL) - Aviation Fuels Documentation. 123

Chapter 9—FLYING TRAINING POLICY 127

9.1. General. 127
9.2. Passengers on Training Missions. 127
9.3. Training Aircraft Not Capable of Flight. 127
9.4. Knock-It-Off (KIO) and Terminate Calls. 127
9.5. Instructor/Flight Examiner Briefing. 127
9.6. Debriefing. 127
9.7. Touch-and-go Landings. 127
9.8. Stop-and-Go Landings. 128
9.9. Low/Missed Approaches. 128
9.10. Simulated Instrument Flight. 129
9.11. Night Vision Goggle Training. 129
9.12. Simulator Only Maneuvers. 129
9.13. Approach to Stalls. 129
9.14. Instrument Steep Turns. 129
9.15. Slow Flight. 129
9.16. Simulated Emergency Flight Procedures. 129
9.17. Simulated Engine Failure and 3-Engine Approaches/Landings/Missed Approaches. 129
9.18. Simulated Engine-Out Takeoff. 130
9.19. Actual Engine Shutdown and Airstart. 130
9.20. No-Flap Approach/Landing. 130
9.21. Unusual Attitudes and Spatial Disorientation. 130
9.22. Practice Emergency Climb Procedure. 130
9.23. Air-to-Air Refueling Training. 130
9.24. Formal Course Maneuvers Only. 131
Table 9.1. Training Restrictions Summary. 132

Chapter 10—LOCAL OPERATING PROCEDURES 134

10.1. General. 134

Chapter 11—NAVIGATION PROCEDURES **135**

11.1. General. 135

11.2. Mission Planning Procedures. 136

Figure 11.1. ETP Calculations. 137

11.3. Master Flight Plan and Master Plotting Chart. 138

11.4. Pre-Flight Procedures. 139

11.5. CAT I Navigation Procedures. 140

11.6. Special Certification Airspace Requirements and Procedures. 144

11.7. North Atlantic Tracks (NAT). 146

11.8. Navigation Malfunctions and Failures. 146

Chapter 12—FUEL PLANNING **148**

12.1. General. 148

12.2. Definitions. 148

12.3. Alternate Selection. 148

12.4. Fuel Planning Profiles. 148

12.5. Fuel Analysis. 151

12.6. Depressurization Fuel. 153

12.7. In-Flight Fuel Management. 153

Table 12.1. Fuel Load Components. 155

Figure 12.1. C-130J Fuel Planning Worksheet. 156

Figure 12.2. Sample Master Flight Plan. 157

Figure 12.3. C-130J Fuel Planning Worksheet Example. 158

Chapter 13—AIRCREW MAINTENANCE SUPPORT PROCEDURES **159**

13.1. General. 159

13.2. Responsibilities. 159

13.3. Authority to Clear a Red X. 159

13.4. Forms Management. 159

13.5. Aircraft Servicing and Ground Operations. 160

13.6. Hot Refueling. 161

13.7. Forward Area Refueling Point (FARP). 161

13.8. Aircrew/Maintenance Engine Runs. 161

13.9. Towing. 161
13.10. Adverse Weather. 162
13.11. Hostile Environment Operations. 162
13.12. Hostile Environment Repair Procedures (HERP). 162
13.13. Hostile Environment Repair Kit. 162

Chapter 14—CARGO AND PASSENGER HANDLING PROCEDURES 163

14.1. General. 163
14.2. Aircraft Loading Responsibilities. 163
14.3. Emergency Exits and Safety Aisles. 164
14.4. Channel Cargo. 164
14.5. Passenger Handling. 173
14.6. Passenger Restrictions. 165
14.7. Weight and Balance. 167
14.8. Engines Running Onload or Offload (ERO). 168
14.9. Combat Loading. 168

Chapter 15—COMMUNICATION PROCEDURES 172

15.1. General. 172
15.2. Frequency Listing. 172
15.3. Communication Threat Planning. 173
15.4. Communication Procedures. 173
Figure 15.1. Search and Rescue Frequencies. 174
Figure 15.2. Distress and Emergency Frequencies. 174
Figure 15.3. Air/Ship/Air Calling Frequencies. 175
Figure 15.4. Citizen Band (CB) Conversion Table5. 175
Figure 15.5. International Preset Maritime Channels. 176

Chapter 16—TACTICAL EMPLOYMENT PROCEDURES 178

Section 16A—General 178

16.1. General. 178
16.2. Definitions. 178
16.3. Checklists/In-flight Guides. 178
16.4. Crew Duties. 178
16.5. Aircraft Preparation. 179

16.6. Survival and Protective Equipment. 179
16.7. Use of Laptop Computers During Flight. 179
16.8. Night Vision Goggle (NVG) General. 179
16.9. Minimum Operating Equipment Requirements. 180
Table 16.1. Minimum Operating Equipment Requirements. 180
16.10. Mission Planning. 180
16.11. Briefing Requirements. 182
16.12. Chart Requirements. 182
Table 16.2. Chart Symbology Requirements. 184
Section 16B—Enroute Operations 185
16.13. Minimum IFR Enroute Altitude. 185
16.14. Low Level Operations. 185
16.15. Low Level Emergency Procedures. 187
Table 16.3. Emergency Climb Procedure. 188
16.16. Simulated Emergencies During Low Level Training. 188
16.17. Degraded Systems Training (DST). 189
16.18. Expendables/ECM Training. 189
16.19. Barometric Altimeter Settings. 189
16.20. Radar Altimeter Settings. 190
16.21. Use of TCAS During Tactical Operations. 190
Section 16C—Terminal Area Operations 190
16.22. Infil/Exfil Operations. 190
16.23. Self-Contained Approach (SCA). 192
16.24. Tactical Approaches. 194
Section 16D—Airdrop Operations 194
16.25. General. 194
16.26. Airdrop Altitudes and Airspeeds. 195
16.27. Minimum Drop Zones Size. 195
16.28. Types of Drop Zones. 195
16.29. Drop Zone Markings. 195
16.30. Airdrop Restrictions. 195
16.31. Airdrop Kits. 196

16.32. Joint Airdrop Inspection. 196
Table 16.4. Load Planning Restrictions. 197
16.33. Verification Of and Marking Airdrop Loads. 197
16.34. Safety Equipment. 197
16.35. Airdrop Flight Procedures. 198
16.36. Navigation Accuracy. 199
16.37. Methods of Aerial Delivery. 199
16.38. Low Altitude Airdrop Positioning (Visual). 200
16.39. Water DZs. 203
16.40. Pararescue JMD Fixed, Moving, and Crosswind Target Patterns. 203
16.41. Pararescue Deployments to Ships. 205
16.42. High Altitude Airdrop Requirements. 205
16.43. Emergency Parachutist Bailout. 207
16.44. PSYOPS Drops (Leaflets) 208
16.45. Specific Airdrop Information. 208
Section 16E—Helicopter Air-To-Air Refueling (HAAR) 219
16.46. HAAR Operations. 219
Section 16F—Receiver Air-To-Air Refueling (AAR) 219
16.47. General. 220
16.48. Policy. 220
16.49. Special Operations Procedures: 220
16.50. Breakaway Procedures: 222
16.51. Altitude Reservations (ALTRV). 223
Section 16G—Hot Refueling/Forward Area Refueling Point (FARP) Operations 223
16.52. General Information 223
16.53. Hot Refueling. 226
16.54. FARP Operations. 228
Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION 237
Attachment 2—AMPLIFIED CHECKLIST 256

Chapter 1

GENERAL INFORMATION

1.1. General. This Air Force instruction (AFI) provides operational guidelines and restrictions for operating HC-130J aircraft. It is an original source document for many areas but may restate information found in aircraft flight manuals, flight information publications (FLIP), and other Air Force directives for convenience. If guidance in this document conflicts with original source documents, that source document takes precedence. For matters where this AFI is the source document, waiver authority is IAW **paragraph 1.4**. Headquarters Air Combat Command (HQ ACC) Personnel and Recovery Branch (HQ ACC/A3JT) has overall responsibility for the administration of this volume.

1.2. Applicability. This AFI is applicable to all individuals performing crew duties on HC-130J aircraft.

1.3. Key Definitions:

1.3.1. "Will" and "Shall" indicate a mandatory requirement.

1.3.2. "Should" indicates a preferred, but not mandatory, method of accomplishment.

1.3.3. "May" indicates an acceptable or suggested means of accomplishment.

1.3.4. "NOTE" indicates operating procedures, techniques, etc., which are considered essential to emphasize.

1.3.5. "CAUTION" indicates operating procedures, techniques, etc., which may result in damage to equipment if not carefully followed.

1.3.6. "WARNING" indicates operating procedures, techniques, etc., which may result in personal injury or loss of life if not carefully followed.

1.3.7. See **Attachment 1**, Glossary of References and Supporting Information for additional terms.

1.4. Waivers and Deviations. Although this publication provides guidance for aircraft operations under most circumstances, it is not a substitute for sound judgment. When it is necessary to protect the crew and aircraft from a situation not covered by this AFI and when immediate action is required, the Pilot in Command (PIC) has ultimate authority and responsibility for the course of action to be taken.

1.4.1. Deviations. The PIC shall report deviations and exceptions taken without waiver, through Standardization/Evaluation (Stan/Eval) channels to the Major Command (MAJCOM)/A3 within 48 hours, followed by a written report, if requested.

1.4.1. **(AETC)** Submit deviations through command channels to AETC/A3V.

1.4.2. Waivers. Unless otherwise directed, waiver authority for contents of this AFI is the MAJCOM/A3 with mission execution authority or Commander, Air Force Forces (COMAFFOR) for contingency/expeditionary operations when units experience a change of operational control (CHOP).

1.4.2. **(AETC)** AETC/A2/3/10 is the waiver authority for all contents of this instruction for AETC units unless chopped to another MAJCOM. Submit waivers through command channels to AETC/A2/3/10.

1.4.2.1. Approved waivers are issued for a maximum of one year from the effective date.

1.4.2.2. COMAFFOR will notify HQ ACC/A3 of waivers to this instruction within 72 hours of issuance.

1.4.2.3. Submit waiver requests through Stan/Eval channels.

1.5. Distribution. Unit commanders shall ensure all aircrew members are provided current copies and changes of this AFI.

1.6. Supplements. This AFI is a basic directive. Each user MAJCOM may supplement this volume according to AFI 11-200 and AFI 33-360. These supplements will not duplicate or be less restrictive than the provisions of this instruction. Forward MAJCOM supplements to Headquarters Air Force Flight Standards Agency (HQ AFFSA)/A3OF for approval before publication.

1.6.1. Local Supplements. Operations groups shall define local operating procedures to this instruction in a unit supplement, **Chapter 10**. Send draft local operating procedures to MAJCOM Stan/Eval for validation.

1.6.1. **(AETC)** Units will coordinate unit supplement through AETC/A3V prior to approval.

1.7. Improvement Recommendations and Reviews. Send comments and suggested improvements to this instruction on AF Form 847, *Recommendation for Change of Publication*, through Stan/Eval channels to HQ ACC/A3TV and HQ ACC/A3JT.

1.7. (AETC)Improvement Recommendations and Reviews. Send AF Forms 847 to AETC/A3V.

Chapter 2

COMMAND AND CONTROL

2.1. General. The ACC command and control (C2) system is based on the principles of centralized monitoring and decentralized control and execution. The result is a C2 mechanism which keeps the ACC Commander (COMACC) informed of the current status of ACC forces while enabling the Wing Commander (WG/CC) or Operations Group Commander (OG/CC) to exercise control over day-to-day operations.

2.2. Operational Control (OPCON). ACC is designated as the controlling agency for assigned Air Force aircraft, while theater commands have OPCON of theater-based assets. In practice, responsibility for planning and executing ACC missions is routinely delegated to the WG or OG/CC. The WG/CC or OG/CC, in turn, exercises control of non-close-hold missions through the command post supporting the wing. In the event that assigned forces undergo a CHOP, responsibility for mission monitoring passes from the wing or group C2 facility to the gaining command. Changeover will be accomplished IAW the pertinent Operational Plan (OPLAN), Operational Order (OPORD), or deployment or execution order. ***NOTE:*** For certain close-hold activities, security considerations may compel the WG/CC or OG/CC to shift mission monitoring responsibilities from the command post to another wing agency. The WG/CC or OG/CC will establish procedures for the responsible agency to monitor mission progress and advise the MAJCOM/A3 and Commander, Air Combat Command (COMACC) as appropriate.

2.3. Mission Monitoring. Except for selected close-hold missions, the ACC Command Center monitors all ACC aircraft that move to, from, or between Outside the Continental United States (OCONUS) off-station locations. Key components of the ACC C2 system are the Global Command and Control System (GCCS) and the various C2 facilities at theater and wing locations. When aircraft are deployed in support of operations and exercises, the Command Center may obtain additional information from situation reports (SITREP) and Deployed Status Reports (DSR). The following mission monitoring procedures primarily apply to missions that are not close-hold in nature and have not had operational control changed to another command.

2.3.1. The respective unit command post tracks Continental United States (CONUS) movements of their aircraft based on aircrew reports.

2.3.2. Host wing command posts telephonically relay information on OCONUS movements of ACC aircraft to the ACC Command Center. The host wing command posts receive their data directly from aircrew or via the enroute facility's local command post.

2.3.3. Mission commander or PIC flight reporting duties:

2.3.3.1. Missions at Bases with a C2 Facility. At least 30 minutes prior to landing, mission commanders, PICs, or their designated crewmember will relay the following information to the applicable C2 facility: call signs, mission numbers, and estimated time of arrival (ETA), maintenance status, and additional service requirements. After landing, the mission commander or PIC will contact the C2 facility with ground handling requirements and departure information. In addition, CONUS based crews operating OCONUS must keep their home station command posts appraised of all actual takeoff and landing times, projected takeoff times, and other related information. Home station command posts relay the information to the ACC Command Center. These actions keep

COMACC apprised of the locations and status of OCONUS forces. When forces CHOP to another theater commander, reporting will be through theater C2 centers upon arrival in the assigned area of responsibility.

2.3.3.2. Missions at Bases without a C2 Facility. Mission commanders or PICs will report, as soon as possible, actual takeoff and landing times, maintenance status, projected takeoff times, and other pertinent data to the host wing command post or command center. Possible methods of communicating this information include HF phone patch, satellite communication (SATCOM), satellite phone (SATPHONE), DSN, and commercial telephone. Refer to the Flight Information Handbook, United States Air Force (USAF) High Frequency Single Side Band (HF/SSB) Airways and Command and Control Station section, for guidance on mission reporting.

2.3.3.2.1. Accomplish movement reporting when crew duties and safety permit but no later than 30 minutes after the event.

2.3.3.2.2. If unable to contact ACC command center or Deployed Tanker Airlift Control Center via HF/SSB, retain information for submission via voice to the controlling C2 center (CCC) when contact is reestablished.

2.3.3.2.3. Restrict HF transmissions to operational traffic, i.e., movement reporting, itinerary revisions, maintenance status, flight plan information, weather and/or aircraft emergencies, or other important flight information, as appropriate.

2.3.3.2.4. If experiencing problems complying with these procedures, report problems to the next CCC contacted. The CCC transmits the reporting problems to the ACC Command Center.

2.3.3.3. Enroute Reporting. Enroute reports are not required unless specified in an OPORD/OPLAN or other mission directive.

2.3.3.3.1. Unless shorter flight legs dictate, when approximately 3 hours from destination, contact the destination, CCC, or if no CCC is available, contact the ACC command center via HF radio. Upon initial contact, confirm your arrival message has been received and update your ETA. If your arrival message has been received, no further information need be transmitted. If your arrival message has not been received, pass the following:

2.3.3.3.1.1. Mission number.

2.3.3.3.1.2. Estimated Time of Arrival (ETA).

2.3.3.3.1.3. Very Important Person (VIP) code. Transmit VIP and honors code in accordance with (IAW) FLIP planning document. Send the VIP code of each VIP on board.

2.3.3.3.2. When within UHF/VHF range, contact the destination CCC with the following information, unless previously transmitted:

2.3.3.3.2.1. Mission number.

2.3.3.3.2.2. ETA.

2.3.3.3.2.3. VIP code and requirements (if applicable).

2.3.3.3.2.4. Number of passengers.

2.3.3.3.2.5. Hazardous cargo and remote parking requirements (if applicable).

2.3.3.3.2.6. Maintenance status.

2.3.3.3.2.6.1. A-1. No maintenance required.

2.3.3.3.2.6.2. A-2 (Plus Noun). Minor maintenance required, but not serious enough to cause delay. Add the noun(s) that identify the affected unit(s) or system(s); that is, hydraulic, UHF radio, radar, engine, fuel control, generator, etc. Further elaboration is discouraged.

2.3.3.3.2.6.3. A-3 (Plus Noun). Major maintenance required. Delay is anticipated. Affected unit(s) or system(s) are to be identified as in A-2 status above.

2.3.3.3.2.6.4. A-4. Aircraft or system has suspected or known radiological contamination plus any additional servicing requirements.

2.3.3.3.3. VIP Messages. Airborne classified messages originated by VIP passengers may be transmitted at the discretion of the PIC.

2.3.3.4. Close-Hold or Sensitive Missions. C2 procedures for these missions will be outlined in the tasking directive.

2.4. Mission Commander. Designate a mission commander when more than one aircraft or crew is deployed away from home station for training, exercises, or other operations. The mission commander should be a field grade officer. Mission commander duties include, but are not limited to:

2.4.1. Briefing crews on local operating procedures.

2.4.2. Coordinating with ATC, Combat Control Team (CCT), Special Tactics Squadron (STS), range control, users, and others that may have an impact on the mission.

2.4.3. Confirming that drop zones (DZ) or landing zones (LZ) have current surveys (when necessary).

2.4.4. Ensuring personnel have ample and adequate billeting, eating, and transportation arrangements.

2.4.5. Providing maintenance personnel aircraft and fuel requirements.

2.4.6. Submitting timely reports on aircraft movements (see **paragraph 2.3.3**.)

2.5. Pilot In Command Responsibility and Authority. The Flight Authorization designates a pilot in command (PIC) for all flights. PICs are:

2.5.1. In command of all persons on board the aircraft.

2.5.2. Responsible for the welfare of their aircrew and passengers.

2.5.3. Vested with the authority necessary to manage their crew and safely accomplish the mission.

2.5.4. The final mission authority and will make decisions not specifically assigned to a higher authority.

2.5.5. The final authority for accepting any waivers affecting the crew or mission.

2.5.6. Charged with keeping the applicable C2 or executing agencies informed of mission progress.

2.5.7. Responsible for the timely reporting of aircraft movements in the absence of a mission commander (see **paragraphs 2.3.3** and **2.4**.)

2.6. Mission Clearance Decision. The agency with OPCON or the PIC may make the final decision to delay a mission when, in the opinion of either, conditions are not safe to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the PIC. If the PIC refuses a mission, it will not depart until the conditions have been corrected or improved so that the mission can operate safely. Do not alert another PIC and crew to take the same mission under the same conditions.

2.6.1. The commander with OPCON must authorize diverting or rerouting a mission, except in an emergency or when required by enroute or terminal weather conditions or facilities. In the event of an emergency or weather-related divert or reroute, the mission commander or PIC must notify the controlling authority as soon as possible.

2.6.1.1. The controlling agency directing the rerouting or diversion is responsible for determining if destination requirements or facilities are adequate for the aircraft and aircrew. The PIC should verify that this is the case.

2.6.1.2. The PIC will notify the controlling agency of any aircraft or aircrew limitations that may preclude diverting or rerouting the mission.

2.6.2. When directing an aircraft to an alternate airfield, the C2 center will provide the PIC enroute weather, existing and forecast weather for the alternate, Notice to Airmen (NOTAM), and appropriate airfield information from the Airfield Suitability and Restrictions Report (ASRR). If the planned alternate becomes unsuitable while enroute, the PIC will coordinate with the C2 center for other suitable alternates. The C2 center will coordinate with customs and ground service agencies to prepare for arrival. The PIC is the final authority on selecting a suitable alternate.

2.7. Civilian Law Enforcement Support. It is the policy of the Department of Defense (DOD) to cooperate with civilian law enforcement officials to the maximum extent practicable. AFI 10-801, *Assistance to Civilian Law Enforcement Agencies*, incorporates the appropriate directive and provides uniform policies and procedures to be followed concerning support provided to federal, state, and local civilian law enforcement agencies. It establishes specific limitations and restrictions on the use of Air Force personnel, equipment, facilities, and services by civilian law enforcement organizations. Report all requests for assistance and coordinate all requests from civilian law enforcement authorities through the appropriate C2 channels.

Chapter 3

AIRCREW COMPLEMENT AND MANAGEMENT

3.1. Aircrew Qualification. Each aircrew member will be qualified or in training for qualification in that crew position, mission, and mission design series (MDS) aircraft to perform duties as a primary aircrew member.

3.1.1. Basic proficiency crewmembers may perform primary crew duties on any non-mission sortie and on unilateral training, joint training, and exercises mission sorties when receiving mission qualification training or evaluations under the supervision of a qualified instructor or flight examiner in their respective crew position. ***NOTE:*** Senior leaders who complete a Senior Staff Qualification course (restricted AF Form 8, *Certificate of Aircrew Qualification*) or orientation for a Senior Staff Familiarization flight may occupy a primary crew position when under direct instructor supervision.

3.1.2. Basic Mission Capable (BMC) crewmembers may perform primary crew duties on any unilateral training mission. For other missions, the unit commander must determine the readiness of each mission capable crewmember to perform duties.

3.1.3. Non-current or unqualified pilots may perform crew duties only on designated training or evaluation missions under the supervision of a qualified instructor pilot (IP) or flight examiner pilot. Direct IP supervision is required during critical phases of flight. ***NOTE:*** Critical phases of flight are defined as takeoff, approach and landing, and all tactical mission events.

3.1.4. Other non-current or unqualified crewmembers may serve as a primary aircrew member on any mission under the direct supervision of a qualified instructor or flight examiner. Except as noted in **Table 3.1**, the student crewmember and the instructor or flight examiner fulfill the requirement for one primary position.

3.2. Crew Complement. Minimum crew complement is specified in **Table 3.1**. Unit commanders may authorize reduced crew complements as noted in **Table 3.1**. The waiver authority for any additional crew complement reductions, down to the minimum crew complement specified in the flight manual, is the OG/CC.

Table 3.1. HC-130J Crew Complement.

Crew Position	Non-Mission Sorties		Mission Sorties	
	Basic Crew	Augmented Crew	Basic Crew	Augmented Crew
AC	1	2[1]	1	2[1]
Pilot	1	1	1	1
CSO	0	0	1[2]	2
LM	1[3]	2	2[3,4,5,6]	3
PJ/CRO	0	0	As Required	As Required

NOTES:

1. Both ACs must be qualified in all phases of the mission to be accomplished. Transfer of PIC duties between qualified ACs will be briefed to the crew.
2. A CSO is required during receiver AAR.
3. Two LMs or

a) If more than 40 passengers are scheduled to be carried (except during unit moves or contingencies). Both crewmembers must remain in the cargo compartment. ***EXCEPTION***: one LM and another qualified crewmember are required

b) The following Ramp and door airdrops: S/L Personnel, rigged alternate method zodiac (RAMZ), container ramp load (CRL), container delivery system (CDS), and combat rubber raiding craft (CRRC)

c) Airdrops when both paratroop doors are open

d) Freefall personnel airdrops above 10,000 feet MSL

e) Simultaneous Helicopter Air to Air Refueling (HAAR)

f) FARP tanker operations

g) Door bundles or rescue drops (parabundles and freefall) weighing more than 100 lbs. - ***EXCEPTION:*** A Loadmaster (LM) and another thoroughly briefed crew member meet requirements for pyrotechnic events and door bundle/rescue airdrops weighting more than 100 pounds (lbs).

4. Instructor LM (IL) and two students are considered full mission complement on training sorties, except during HAAR when accomplishing simultaneous contacts.
5. At Squadron Commander (SQ/CC) discretion, an IL and student fulfills the two LM requirement to drop unilateral training heavy equipment loads without Extraction Parachute Jettison System (EPJS).
6. Only one LM is required for tactical training missions if any of the situations below apply:
   - Personnel or door bundle (less than 100 lbs) drops using only one paratroop door.
   - High altitude (up to 13,000' Mean Sea Level (MSL) non-static line personnel are dropped from the ramp and door, or only one paratroop door is opened.
   - CDS airdrops, including TRIWALL Aerial Delivery System (TRIADS).
   - A no-drop (dry pass) is planned.
   - Dropping only standard airdrop training bundles (SATBs).
   - Unilateral heavy equipment training loads utilizing the EPJS.
   - HAAR, single hose operations.
   - Receiver Air to Air Refueling (AAR).
   - Pyrotechnic Operations

3.3. Additional Crewmembers (ACM). See AFI 11-401, *Aviation Management, as supplemented.*

3.4. Mission Essential Personnel (MEP). See AFI 11-401, *Aviation Management*, as supplemented.

3.5. Interfly. Interfly is the exchange and/or substitution of aircrew members and/or aircraft between MAJCOMs to accomplish flying missions. Normally, interfly should be limited to

specific operations, exercises, or special circumstances, but may be used to relieve short-term qualified manpower shortfalls.

3.5.1. Unless specified in a MAJCOM-to-MAJCOM Memorandum of Agreement (MOA):

3.5.1.1. Aircraft ownership will not be transferred.

3.5.1.2. The unit with operational control of the mission is responsible for publication and maintenance of the aircraft flight authorizations for each mission flown by the aircraft.

3.5.1.3. Crewmembers will be qualified in HC-130J aircraft. Differences training may be required between different series aircraft. See AFI 11-2HC-130JV1.

3.5.1.4. Crewmembers will follow operational procedures defined in 11-2HC-130J VOL 3, AFTTP 3-1 and 3-3 HC-130, and the applicable technical orders for the MDS.

3.5.1.5. The MAJCOM with aircraft ownership will retain all flight and ground mishap reporting responsibility.

3.5.2. **Approval Authority.**

3.5.2.1. The OG/CC is the approval authority for interfly on aircraft under the OG/CC's control.

3.5.2.2. Each participating MAJCOM/A3 must approve interfly for contingency operations.

3.6. Intrafly. Intrafly is the exchange and/or substitution of aircrew members from separate units under the same MAJCOM to accomplish flying missions. Normally, intrafly should be used only to relieve short-term qualified manpower shortfalls.

3.6.1. The OG/CC possessing the aircraft is the approval authority for intrafly between units.

3.6.2. As a minimum, crewmembers will be qualified in HC-130J aircraft, as well as systems or configuration required to fly the aircraft and/or mission. If non-current, comply with **paragraphs 3.1.1**, **3.1.2**, and **3.1.3**.

3.7. Flight Duty Period, Crew Duty Period, and Crew Rest Restrictions. See AFI 11-202V3 and ACC Supplement. The Flight Duty Period (FDP) falls within the constraints of the Crew Duty Period (CDP). The addition of CDP is intended for a basic crew to complete aircrew duties at the aircraft after engine shutdown (e.g. cargo loading/offloading, refueling, etc.). ***NOTE:*** Waiver authority for **paragraph 3.7** is MAJCOM/A3 or deployed equivalent, unless otherwise noted.

3.7. (AETC)Flight Duty Period, Crew Duty Period, and Crew Rest Restrictions. If the aircrew is not airborne within 4 hours after scheduled departure time, the training sortie will be canceled and the crew rescheduled. However, the PIC may request a 2 hour extension (up to 6 hours). That extension must be approved by the OG/CC.

3.7.1. Flight Duty Period. FDP is the period that starts when an aircrew reports for a mission, briefing, or other official duty and ends when engines are shut down at the end of the mission, mission leg, or a series of missions.

3.7.1.1. The basic FDP is 16 hours providing no mission events, helicopter air-to-air refueling (HAAR) below 3,000 ft AGL, pilot proficiency training, air to air refueling (AAR) or functional check flights (FCF) are accomplished after 12 hours and no HAAR at or above 3,000 ft AGL are accomplished after 14 hours. If both autopilots are not operational, it cannot be coupled to the flight director or its use is denied for more than 4 hours, the FDP will be 12 hours. If the autopilot fails after departure, continue to the next scheduled stop and then comply with the basic FDP limitations.

3.7.1.2. The augmented FDP is 20 hours providing no mission events, HAAR below 3,000 ft AGL, pilot proficiency training, AAR or FCFs are accomplished after 16 hours and no HAAR at or above 3,000 ft AGL are accomplished after 18 hours. If the both autopilots are not operational, it cannot be coupled to the flight director, or its use is denied for more than 8 hours, the FDP will be 16 hours.

3.7.1.2.1. Crew changes should not be made immediately prior to performing critical phases of flight. Normally, 30 minutes prior to initiating the checklist for an event will allow the new crewmember time to acclimate. ***EXCEPTION:*** For training missions instructors will plan and brief crew changes to safely maximize training objectives.

3.7.1.2.2. Minimum in-flight crew rest facilities will be 2 litters.

3.7.1.2.3. FDP length will be based on the mission to be performed. For example, if the planned mission duration is 15 hours from show time to termination, then a basic FDP is appropriate even if the crew is augmented. Once established, a basic FDP will not be changed to an augmented FDP, regardless of crew composition.

3.7.1.3. Time spent traveling as a passenger on commercial or military transportation in excess of 4 hours counts as part of the duty period. Official duty travel for personnel in official military/civilian status will count toward the duty period. For further information reference AFI 11-202V3 and MAJCOM Supplement.

3.7.2. Crew Duty Period. CDP is the period that starts when an aircrew reports for a mission, briefing, or other official duty and ends at the completion of aircrew duties at the aircraft. Maximum CDP is 18 hours for a basic aircrew and 22 hours for an augmented aircrew.

3.7.3. PICs may extend the FDP and/or CDP by up to 2 hours on a mission in progress. PICs should attempt to comply with the waiver authority in AFI 11-202V3. If this option is exercised, PICs must coordinate with C2 agencies so that downstream activities are not adversely affected. Missions will not be scheduled to exceed the maximum FDP in this paragraph. PICs must carefully weigh all factors affecting their crew before electing to extend the FDP and/or CDP.

3.8. Alert Duty. See AFI 11-202V3 and MAJCOM Supplement. Alert duty is defined as any period during which an alert crew is on call to perform a specific mission. Aircrew will be placed into crew rest prior to alert status. Upon entering crew rest, an aircrew will be given an expected alert assumption time. Alert aircrews must be prepared to respond at any time during the alert period.

3.8.1. Alert personnel are those required to be on duty for the prompt execution of the mission. Alert crews will be readily available in a location that allows the crew to meet the required time to launch from notification. Suitable facilities include adequate sleeping accommodations for the entire crew, unless at home station. Publish flight authorizations for the alert crew to cover the entire alert duty period.

3.8.2. The alert duty period will begin at a scheduled time determined by the unit/mission commander. Provide aircrew members 12 hours crew rest prior to alert duty. The unit/mission commander will determine the length of the alert period, not to exceed 72 hours. An alert period may be extended up to a maximum of 7 days with MAJCOM/A3 (or deployed equivalent) approval provided aircrew members receive a 24-hour recovery period prior to the next alert. Pre-departure crew rest is waived for flight surgeons or medical technicians who are on alert duty for urgent Medical Evacuation (MEDEVAC) missions.

3.8.3. The FDP will begin when the aircrew shows for flight duties. Crews may complete initial alert activities (e.g., transportation, briefing, preflight, engine run of their alert aircraft) without starting their FDP. This time should not exceed 3 hours. If the aircrew is alerted while performing initial alert activities, the FDP will be computed from the time crewmembers first arrived. ***NOTE:*** Alert response exercises that terminate prior to engine start do not start the FDP when they occur during normal waking hours.

3.8.3.1. The alert crew will not normally be used as a preflight or engine run crew for aircraft other than their alert aircraft. Alert crews will not perform other official duties (e.g., additional duties, commander's call, safety meeting, etc.) within their alert period. ***EXCEPTION:*** During normal waking hours, alert aircrew may mission plan at the discretion of the PIC.

3.8.3.2. A daily update briefing may be accomplished without starting the FDP. This briefing should include weather, local NOTAMS, latest Flight Crew Information File (FCIF) information, special instructions, and any other appropriate items. The PIC determines which crewmembers attend the briefing.

3.8.3.3. An alert crew should not remain in alert status for more than 2 consecutive 72-hour alert periods. The alert crew will receive 12 hours of pre-mission crew rest between the first and second alert periods. Following completion of the second 72-hour alert period, the alert crew or crewmember will receive a minimum of 24 hours crew rest prior to reassuming alert status.

3.8.4. Flying the Alert Crew.

3.8.4.1. If the alert crew is launched and returns with FDP remaining, they may be launched again within the constraints of that FDP. Numerous circumstances may arise that affect the decision to replace the alert crew and each incident must be evaluated on an individual basis.

3.8.4.2. If the alert crew completes 12 consecutive hours of crew rest between flights or official duties within the 72 hour alert period, the previous FDP no longer applies and the cycle can be started anew provided the crew does not remain on alert for more than 72 hours from their initial assumption of alert.

3.8.5. Flying Crew Chief Work and Rest Plan. The crew chief is responsible to the PIC. The PIC, in conjunction with the enroute station chief of maintenance, will determine how long the crew chief can safely perform aircraft recovery actions. The crew chief must have the opportunity to sleep 8 hours in each 24-hour period. See AFI 21-101, *Aircraft and Equipment Maintenance Management*, for detailed guidance.

3.9. TDY Crew Rest/Post Deployment Stand Down.

3.9.1. All primary/deadhead crewmembers departing on missions scheduled to be away from home station or rotational base for more than 16 hours or recover away from home station should be notified 24 hours before reporting for the mission. The first 12 hours are not considered crew rest, but are designed to allow crewmembers time to resolve personal affairs. During these first 12 hours, a crewmember may perform limited non-flying duties. The second 12 hour period is inviolate crew rest.

3.9.2. Post-mission crew rest begins upon the final return of an individual to home station and runs continuously until completed. Post-mission crew rest must be completed before starting the 12 hour pre-departure crew rest period for a subsequent mission. Do not require a crewmember to get immunizations, engage in ground training, perform standby or squadron duties, or perform any other activity that would encroach upon crew rest. Waiver authority for post-mission crew rest is the OG/CC or theater commander. Waiver requests for post-mission crew rest are considered on a case by case basis only with the concurrence of the individual crewmember.

3.9.2.1. Compute post-mission crew rest at the rate of 1 hour off for every 3 hours of temporary duty (TDY), not to exceed 72 hours. ***Note***: Not applicable to students in formal schools listed in AFCAT 36-2223, *USAF Formal Schools*.

3.9.3. Post-deployment stand down. IAW MAJCOM guidance.

3.9.3. **(AETC)** See the AETC Post Deployment Stand-Down Policy memorandum located on the AETC/A2/3/10 SharePoint site **https://eis.aetc.af.mil/hq/A23/Directorate%20Deployment%20Manager/Forms/AllItems.aspx**.

3.10. Counter-Fatigue Management Program. Refer to AFI 48-149 pub 2012 para. 1.3.7 and 6.4.

Chapter 4

AIRCRAFT OPERATING GUIDELINES

4.1. Objectives. The objective of the aircraft maintenance team is to provide an aircraft for launch with all equipment operational (Fully Mission Capable, FMC). However, under specific circumstances, some missions can be safely operated without all equipment being operational. Using the following policies, the PIC is the final authority in determining an overall status of an aircraft. The PIC will ensure a detailed explanation of the discrepancy is entered in the AFTO Form 781A, *Maintenance Discrepancy and Work Document*; use the following maintenance identifiers to effectively communicate aircraft status:

4.1.1. Mission Essential (ME). An item, system, or subsystem component essential for safe aircraft operation or mission completion will be designated Mission Essential (ME) by the PIC.

4.1.2. Mission Contributing (MC). The PIC will designate an item, system, or subsystem component, which is not currently essential for safe aircraft operation as MC. These discrepancies should be cleared at the earliest opportunity. If circumstances change or mission safety would be compromised, re-designate as ME. Do not delay a mission to clear a MC discrepancy.

4.1.3. Open Item (OI). The PIC will designate discrepancies not expected to adversely impact the current mission or subsequent mission as an OI. These items are normally cleared at home station. NOTE: Do not accept an aircraft from factories, modification centers, or depots unless all instruments are installed and operative. ***NOTE:*** If the PIC elects to operate with degraded equipment or aircraft systems, coordinate mission requirements (i.e. revised departure times, fuel requirements, maintenance requirements, etc.) prior to flight with the mission control agency to ensure the decision does not adversely impact follow-on missions.

4.2. Minimum Equipment List (MEL) Policy. The MEL sets forth command policy regarding equipment/systems necessary to continue or complete missions after the aircraft is released from the responsible maintenance organization. Equipment/systems not listed in **Table 4.1** through **Table 4.23** shall be considered required for flight without exception. This list cannot anticipate all combinations of failures and contingencies, and is not intended for continued operations, over an indefinite period, with failed or degraded equipment/systems.

4.2.1. PIC Responsibility. PICs must account for the possibility of additional failures when accepting aircraft with inoperative equipment/systems. A PIC accepting an aircraft (one mission or mission segment) without an item or system does not commit that PIC (or a different PIC) to subsequent operations with the same item or system inoperative.

4.2.2. All emergency equipment will be installed unless specifically exempted by mission requirements/directives.

4.3. Waiver Protocol. Waivers to operate with degraded equipment are granted on a case-by-case basis. The PIC determines the need for a waiver after coordinating with the lowest practical level of command. A PIC prepared to operate with a degraded MEL item shall request a waiver through the appropriate C2 channels. The PIC shall provide the C2 agency: 1) nature of request,

2) individual crew member qualifications, 3) mission leg(s) requiring the waiver, and 4) the governing directive of waiver request to include volume, chapter, and paragraph. Initiate waiver requests as soon as possible. MEL waiver authority is as follows:

4.3.1. Training Missions. SQ/CC or equivalent with mission execution authority.

4.3.2. MAJCOM Directed Missions. MAJCOM/A3 with mission execution authority for active duty, AFRC, or ANG units flying MAJCOM-directed missions (includes Operational Readiness Inspections). Initiate the request with MAJCOM C2 agency.

4.3.3. Contingency Missions. COMAFFOR (or equivalent) for the agency with C2, if not specified in the OPORD/Tasking Order.

4.3.4. Other than MEL Waivers. Determine governing source document (i.e. AFI, Flight Manual, Maintenance Technical Order (T.O.), etc.) to ascertain the waiver authority. Use C2 channels to notify the appropriate waiver authority. Waivers of this nature may require an extended response time.

4.4. Deviations. If beyond C2 communication capability, or it is necessary to protect the crew or aircraft from a situation not covered by this chapter and immediate action is required, the PIC may deviate IAW **paragraph 1.4**. Report deviations (without waiver) through channels to appropriate MAJCOM/A3 within 48 hours. Units shall collect background information and submit a follow-up written report upon request.

4.5. Technical Assistance. The PIC may request, at any time in the decision process, technical support and additional assistance from their home unit, MAJCOM staff, and maintenance representatives.

4.6. One-Time Flights. An aircraft may be released for a one-time flight with a condition that might be hazardous for continued use if the aircraft is airworthy for one flight to another station.

4.6.1. The chief of maintenance, senior maintenance officer, or chief of the Air Force Materiel Command (AFMC) repair team must first authorize the release.

4.6.2. After maintenance release, contact the appropriate authority for flight authorization. ***NOTE:*** One-time flights authorized in the MEL require OG/CC approval. Any one-time flight request not listed in the MEL requires MAJCOM/A3 approval.

4.6.2. **(AETC)** AETC delegates MEL waiver authority to OG/CC.

4.6.3. The maintenance release, flight authorization, and the PICs concurrence are all required before the aircraft can be flown to the specified destination.

4.7. Fuel System. The primary concern with inoperative fuel boost pumps or quantity indicators is fuel balance and wing loading. Degraded operation is permissible; however, flight crews must consider potentially trapped fuel and decreased range, should further degradation occur. The following paragraphs and MEL provide guidelines for degraded fuel system operations under most circumstances.

4.7.1. Crossfeed Operations. Begin crossfeed operation when the symmetrically opposite quantity indicator has decreased to 1,500 lbs (inboards) and 2,500 lbs (outboards)

4.7.1.1. Engine out training using the engine corresponding to the inoperative indicator or it’s symmetrically opposite will not be conducted during tank to engine operation.

4.7.1.2. Maintain symmetrical engine fuel flow.

4.7.1.3. Plan to terminate flights with a minimum of 6,000 lbs calculated main tank fuel.

4.7.2. When an external tank indicator is inoperative and the tank cannot be visually checked empty due to foam modification, comply with the following prior to flight:

4.7.2.1. Check pressure with each pump in the external tank. If no pressure is obtained, the tank is verified empty.

4.7.2.2. If pressure is obtained, ground transfer the fuel from the external tank. Defuel the external tank if unable to ground transfer.

4.7.2.3. When unable to verify an external tank is empty prior to engine start, place the tank on crossfeed until no pressure is obtained. Complete this prior to takeoff.

4.7.3. For other than normal ground refueling/defueling operations and associated guidelines in this chapter, fuel will not be transferred into or out of a main or external fuel tank with an inoperative indicator or its symmetrical tank except IAW **paragraph 4.7.2.2** and the following:

4.7.3.1. Fuel transfer into a main or external tank with an inoperative indicator may be accomplished during contingency or emergency fuel need situations. All transfers, under these conditions require more than one crewmember to monitor and coordinate the transfer to maintain lateral wing balance.

4.7.3.2. A reliable source of known quantity transferred must be available. This source can be either internal aircraft operating fuel quantity indicators, or in-flight refueling tanker fuel onload data.

4.7.3.3. Maintain symmetrical tanks within 1,000 lbs at all times. If small amounts (4,000 lbs or less) must be transferred, then transfer up to 1,000 lbs into the tank with the inoperative indicator followed by an equal amount into the tank(s) with operative indicator(s). If large amounts of fuel must be transferred, then transfer 1,000 lbs into the tank with the inoperative indicator, then up to 2,000 lbs as needed into the tank(s) with the operative indicators, then up to 1,000 lbs as needed into the tank with the inoperative indicator to bring all tanks symmetrical, or continue up to 2,000 lbs as needed, repeating the cycle until desired fuel quantity and balance is achieved in applicable tanks.

4.7.4. Fuel may be transferred from main or external tanks with inoperative fuel quantity indicators only if the receiver requires emergency fuel. In this situation, the following procedures will apply:

4.7.4.1. The fuel flow counter for the refueling pod being used must be operational to track the amount of fuel transferred.

4.7.4.2. Transfer from only one tank at a time.

4.7.4.3. Transfer no more than 1,000 lbs at a time between the tanks with the inoperative indicator and its symmetrical tank to monitor fuel balance.

4.8. Landing Gear System. If a landing gear malfunction is encountered, only a full stop landing will be made. The discrepancy will be corrected prior to the next flight. ***EXCEPTION:*** If repair capability does not exist and a positive determination is made that further flight can be

accomplished, with the gear down and locked, the aircraft may be flown to a destination where repair capability exists provided the gear is not moved from the down and locked position. Required enroute stops are authorized.

4.9. Navigation Systems. **Chapter 11** lists authorized airspace and procedures for the HC-130J. Equipment listed in FLIP for compliance with appropriate airspace is mandatory. Loss of any component before airspace entry requires return to a station with maintenance repair capability or continued flight with degraded systems when acknowledged and approved by ATC or filing via routes permitting operation with degraded equipment.

4.10. Soft Panel Operations.

4.10.1. For partial or complete hard panel failures, aircrews may revert to soft panel operations. Normally, if a soft panel is selected due to hard panel failure, it should be used for the remainder of the flight. Doing so will mitigate the hazards associated with restoring hard panel functionality for an item when the mission computer commanded-state is unknown. Accomplishing the ENGINE SHUTDOWN and BEFORE LEAVING AIRPLANE checklists after the aircraft is parked will ensure the soft panel retains control of the particular item throughout shutdown. In all cases, PICs must consider the increased workload associated with using soft panels.

4.10.2. Hard panel failures may be the result of a physical failure or loss of communication with the mission computer (MC), an aircraft "reboot" may recover hard panel functionality. To determine if hard panel functionality can be regained, the following procedures must be followed in sequential order:

4.10.2.1. Completely power down when accomplishing the BEFORE LEAVING AIRPLANE checklist.

4.10.2.2. Complete all checklist items in the POWER UP checklist. Do not proceed past the POWER UP checklist until it can be determined if the hard panel has recovered. Depending on the system effected (such as auxiliary power unit (APU), bleed air, landing gear, etc.), do not apply bleed air or hydraulics until hard panel functionality can be determined.

4.10.2.3. To determine if a hard panel has recovered, confirm hard panel and soft panel selections/settings are identical. Press the line select key (LSK) to turn the soft panel OFF. If a CNI "CHK HARD PNL" or a referenced hard panel fault advisory, caution, and warning system (ACAWS) message (i.e. "APU PNL FAULT", "DEF SYS PNL FAULT", etc.) does not appear, press the "VERIFY OFF" LSK. If feasible, check hard panel functionality.

4.10.2.4. If a Communication/Navigation/Identification-Management Unit (CNI-MU) "CHK HARD PNL" or a referenced hard panel fault ACAWS message appears, the hard panel has not recovered. The "CHK HARD PNL" message indicates there is a mismatch between the soft panel and hard panel commands to the MC independent of physical switch positions. Referenced hard panel fault messages are self-explanatory.

4.10.2.5. If it is determined that the hard panel has not recovered, at the PIC's discretion, the mission may continue to a station supporting a repair capability, including enroute

stops. Do not reselect the hard panel. If a flight must continue under the control of two or more soft panels, a waiver is required.

4.10.3. After returning to home station or repair facility with a hard panel malfunction, aircrew will shut down and turn the aircraft over to maintenance personnel.

4.11. MEL Table Definitions/Column Identifiers.

4.11.1. Installed - Number of components or systems installed.

4.11.1.1. In some cases, a component can be controlled from either a conventional (hard) panel or from a Communication/Navigation/Identification Management Unit (CNI-MU) display (soft panel). Similarly, some indications can be viewed on either a hard panel or a soft panel. Since switch functions (or indications) may be duplicated on each of the three CNI-MU displays, the number of switches (or indications) installed may not always be clear. To clarify this condition, switches (or indications) are listed as ‘1’ in the installed column even when they are duplicated on a soft panel.

4.11.1.2. Although the indications on each pilot’s Heads Down Displays (HDDs) can be repeated on more than one HDD, repetitions of data in excess of one per pilot are not relevant for flight and are not counted in this MEL. In general, the flight deck is designed to provide one set of data for each (in addition to the standby instruments). Thus, for most HDD indications, the “number installed” is listed as “2”, one for each pilot.

4.11.2. Required - The minimum number (quantity) of items required for operation provided the conditions specified in the remarks or exception column are met.

4.11.2.1. Unless otherwise noted, when the item is a switch (or indication) which is duplicated on a soft panel, the number required for dispatch may be satisfied by either the hard panel switch (or indication) or by the switch (indication) on one of the associated soft panels. For HDD indications, the number required is ‘2’ if both pilots must have an indication, ‘1’ if only one pilot must have an indication and ‘0’ if neither pilot is required to have the indication. For essential flight data (heading, airspeed, attitude and when required, navigation data), the pilot’s and copilot’s displays must have independent sources.

4.11.3. Remarks and Exceptions. Some technical information and procedures are contained in this column. This is not all-inclusive; crewmembers shall refer to the flight manual and other directives for procedures, techniques, limitations, etc.

Table 4.1. Air Conditioning and Pressurization.

System Item	Installed	Required	Remarks or Exceptions
Air Conditioning System	2	1	One may be inoperative provided: (1) Cross-flow valve is operative, (2) Associated Flow Control Valve is CLOSED, (3) Consideration is given to the type of mission, fuel quantity, required cruise altitude, and oxygen quantity.
	2	0	Both may be inoperative provided: (1) Both Flow Control Valves are CLOSED, (2) Aircraft is operated unpressurized, (3) Auxiliary Vent Valves are operative for ventilation, (4) Consideration is given to required cruise altitude, fuel quantity, OAT, and oxygen quantity. **NOTE** Pressurization and both air conditioning systems may be needed if passengers or patients are carried. If a system fails, flight to a destination with repair capability (including enroute stops) may be accomplished (coordinate with the senior medical Aeromedical Evacuation Crew Member (AECM) when patients are carried). Passengers and patients will be briefed on the possibility that discomfort may be encountered.
Air Conditioning Control Panel	1	0	May be inoperative provided control is available through the associated soft panel.
a. Automatic Temperature Control System	2	0	May be inoperative provided: (1) Respective Manual Temperature Control System is operative, **OR** (1) Respective Air Conditioning System is considered inoperative, and (2) Temperature control is not required.
b. Bleed Air/Environmental Control System (BA/ECS) Channels	2	1	**NOTE** Loss of the 2nd Channel will result in loss of all pneumatic-powered components and systems (except engine anti-ice).
c. Cargo Compartment Recirculation Fan	1	0	See Flight Manual for cooling restrictions.
d. Cross-Flow Valve	1	0	May be inoperative provided both air conditioning systems are serviceable. **OR** Only one air conditioning system is operative and the valve is manually positioned to Cargo Compartment 100% open.

e. Flow Control and Shut Off Valve			
(1) Cargo Compartment Air Conditioning System	1	0	May be inoperative provided: (1) Divider Valve operative, (2) Right Wing Isolation Valve is operative, (3) ECS Cross-flow Valve is operative.
(2) Flight Station Air Conditioning System	1	0	May be inoperative provided: (1) Divider Valve operative, (2) Left Wing Isolation Valve is operative, (3) ECS Cross-flow Valve is operative.
f. Temperature Control Valve	2	0	May be inoperative provided: (1) Valve is failed in the normal temperature range. **OR** (1) Air Conditioning System is considered inoperative.
g. Duct Overheat Temperature Sensor	2	0	May be inoperative provided associated Air Conditioning System is considered inoperative.
Auxiliary Vent Valve, Flight Deck	1	1	
Auxiliary Vent Valve, Cargo Compartment	1	0	
Avionics Cooling System			
a. Avionics Cooling Fans	2	1	
b. Cargo Compartment Avionics Cooling Fans	2	1	
c. Overhead Console Cooling Fans	2	1	**NOTE** If both fail in flight, damage to Heads Up Displays (HUD) may occur. Use Primary Flight Displays (PFD) as required. If HUDs are stowed, pull the associated ECBs to prevent damage from heat.
Cargo Under Floor Heat System	1	0	May be inoperative provided consideration is given to outside air temperature (OAT) and the number of passengers/additional crewmembers on board.
Pressurization System			**NOTE** Pressurization and both air conditioning systems may be needed if passengers or patients are carried. If a system fails, flight to a destination with repair capability (including enroute stops) may be accomplished (coordinate with the senior medical AECM when patients are carried). Passengers and patients will be briefed on the possibility that discomfort may be encountered.
a. Automatic Pressure Control System	1 1	1 0	One channel may be inoperative. May be completely inoperative provided:

			(1) Manual Pressurization System is operative, (2) Consideration is given to the additional crew workload caused by using Manual Pressurization, **OR** (1) Aircraft is operated unpressurized, (2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity.
(1) CONST ALT Mode	1	0	May be inoperative provided consideration is given to the type mission to be flown (e.g., aeromedical missions).
b. Emergency Depressurization Handle	1	0	May be inoperative provided: (1) Aircraft is operated unpressurized, (2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity.
c. Emergency Depressurization Switch	1	0	May be inoperative provided: (1) Control is available through the associated soft panel, **OR** (1) Aircraft is operated unpressurized, (2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity.
e. Manual Pressurization Control System	1	0	May be inoperative provided: (1) Automatic Pressurization System is operative **OR** (1) Aircraft is operated unpressurized, (2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity.
f. Outflow Valve	1	0	May be inoperative provided: (1) Valve is manually positioned to full open, (2) Pressurization Mode Select Switch is positioned to NO PRESS, (3) Aircraft is operated unpressurized, (4) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity.
h. Safety Valve	1	0	May be inoperative provided: (1) Outflow Valve is manually positioned to full OPEN, (2) Aircraft is operated unpressurized, (3) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity.

Table 4.2. Auto Flight.

System Item	Installed	Required	Remarks or Exceptions
Autothrottle (A/T) System	2	0	
Digital Autopilot System	2	0	May be inoperative provided: (1) Associated autopilot is not essential for performance of mission requirements, (2) If both autopilots are inoperative, consideration is given to reduced flight duty period.
Digital Autopilot/Flight Director (DA/FD) Controls			**NOTE** An automatic altitude control system capable of maintaining altitude within 65 ft of that assigned is required for operation in RVSM airspace.
a. Autopilot Disengage Switch (Control Wheel)	2	0	Both may be inoperative provided another method of disengaging the autopilot is operative (e.g. G/A Switch). **NOTE** Failure of either Autopilot Disengage switch will disengage any autopilot function that is engaged at that time and will prevent either autopilot from reengaging until the switch function is repaired. Deselecting flight director modes on the REF/MODE panel does not disengage the autopilot. The one exception is deselecting APPR after glideslope capture. This will disengage the autopilot.
b. Autopilot Engage Lever	2	0	May be inoperative provided associated autopilot is considered inoperative.
c. Course Knob	2	0	May be inoperative provided: (1) Associated DA/FD Navigation (NAV) and Approach (APPR) Modes (except INAV) are considered inoperative, (2) Associated Course Arrow and indication is considered inoperative (except in INAV Mode), (3) Departure/route/approach to destination (and alternate, if applicable) does not require use of VOR/ILS/MB or TACAN.
d. Go-around (G/A) Switch	2	0	**NOTE** Consider Go-around implications.
e. Heading Knob	2	0	May be inoperative provided: (1) Associated DA/FD Heading (HDG) Mode is considered inoperative, (2) Associated Heading Marker is considered inoperative.
f. Lateral Axis (LAT) OFF Switch	1	0	May be inoperative provided the Autopilot Lateral Mode is considered inoperative.

g. Pitch Axis (PITCH) OFF Switch	1	0	May be inoperative provided the Autopilot Pitch Mode is considered inoperative. **NOTE** An automatic altitude control system is required for operation in reduced vertical separation minimum (RVSM) airspace.
h. Pitch Control Wheel	1	0	May be inoperative provided: (1) Autopilot Pitch Attitude Hold Mode is operative, **OR** (1) Autopilot Pitch Mode is considered inoperative, (2) Autopilot Pitch OFF Switch is positioned to OFF.
i. Pitch Synchronization (SYN) Switch	2	0	
j. Reference Mode (REF/MODE) Panel	2	1	One time flight authorized to repair facility, including enroute stops.
(1) ALT SEL Switch	2	0	May be inoperative provided: (1) Associated Altitude Alert System is considered inoperative, (2) Associated DA/FD Altitude Select (SEL) Mode is considered inoperative, (3) GCAS is serviceable. **NOTE** An altitude alerting system is required for operation in RVSM airspace.
(2) BARO SET Switch	2	1	**NOTE** Both Baro set switches must be operational for operation in RVSM.
(3) Mode Select Switch	18	0	Individual Mode Select Switch(es) may be inoperative provided associated mode(s) is considered inoperative. **NOTE** For a given mode to be inoperative, both the pilot and co-pilot switches for that mode would have to be inoperative. **NOTE** An automatic altitude control system is required for operation in RVSM airspace.
(4) Reference Select Switch	2	1	
(5) Reference Set Knob	2	1	
k. Turn Ring	1	0	May be inoperative provided: (1) Autopilot Roll Attitude Hold Mode is operative, **OR** (1) Autopilot Lateral Mode is considered inoperative, (2) Autopilot LAT OFF Switch is switched OFF.
Digital			

Autopilot/Flight Director (DA/FD) Indications			
a. AFCS Annunciator Panel	2	0	May be inoperative provided inoperative annunciation(s) is operative on the HUD or HDD PFD at affected location.
b. Reference Set Panel Display	2	0	May be inoperative provided: (1) Individual Reference Annunciations and Markers (e.g. HUD, PFD cards, lines on tapes, carets) are operative, **OR** (1) Associated Reference Annunciations and Markers (e.g. HUD, PFD cards, lines on tapes, carets) are considered inoperative.
Flight Director System	2	0	May be inoperative provided Flight Director is not required for mission accomplishment or approach.

Table 4.3. Communications.

System Item	Installed	Required	Remarks or Exceptions
Control Wheel Hush Switch	2	1	
Control Wheel Microphone Switch	2	1	
Flight Station Speaker	2	1	
Get Home Radio Panel	1	0	One time flight is authorized to a repair facility.
Identification Friend or Foe (IFF) System	1	1	If self test fails, you may takeoff if the IFF was operational on the previous mission. Aircraft will not depart with an IFF known to be inoperative. **NOTE** An altitude reporting transponder is required for operation in RVSM airspace. **NOTE** Mode IV is not required for flights that originate in and will remain inside the inner boundaries of all domestic & coastal air defense identification zone ADIZs surrounding the CONUS. Refer to **Chapter 6** for further guidance.
a. Antenna	2	1	Mode IV and Mode S require both antennas.
Public Address (PA) System	1	0	May be inoperative if passengers or troops are carried and, at the discretion of the crew, effective and safe communications can be conducted.
UHF/VHF Radios	4	2	May be inoperative unless essential for performance of mission, route or Air Traffic Control requirements provided:

			(1) ultra high frequency (UHF) No. 1 or very high frequency (VHF) No. 1 is operative, (2) At least one additional UHF or VHF Radio is operative.
High Frequency (HF) Radios	2	0	May be inoperative unless essential for performance of mission, route, or Air Traffic Control requirements.
ARC 231 Radio	2	0	May be inoperative unless essential for performance of mission.

Table 4.4. Electrical System.

System Item	Installed	Required	Remarks or Exceptions
Alternating Current (AC) Generator, Engine	4	3	May be inoperative if repair capability is not available. Flight to a destination with repair capability, including enroute stops, may be made. The generator will be removed and the generator mount padded before flight.
Batteries	2	2	
Direct Current (DC) Voltmeter	1	1	
Electrical Control Panel	1	0	May be inoperative provided control is available through the associated soft panel.
Electronic Circuit Breaker Unit	13	13	
Indications (System Status Display)			
a. Loadmeter Indications	5	5	
b. Voltmeter Indication, AC	5	5	
c. Voltmeter Indication, DC	2	2	
Inverters			
a. Essential Avionics AC Bus	1	1	
b. Essential Avionics AC 26V Power	1	1	
c. Main Avionics AC Bus	1	1	
d. Main Avionics AC 26V Power	1	1	
Regulated Power Supply (RPS) System	8	0	May be inoperative provided the equipment normally powered through the inoperative Regulated Power Supply System is not required, **OR** Control is available through the associated soft panel.
Transformer Rectifiers (TR)	4	3	One TR may be inoperative for flight to a repair facility including enroute stops.

Table 4.5. Equipment.

System Item	Installed	Required	Remarks or Exceptions
Aerial Delivery System (ADS)			
a. Aerial Delivery Control Panel	1	0	May be inoperative provided: (1) Control is available through associated Soft Panel, **OR** (1) Airdrop operations will not be conducted.
Multifunction Control Display (MFCD)	1	0	May be inoperative provided Heavy Equipment airdrop or combat offload operations will not be conducted. **EXCEPTION:** May be inoperative for Heavy Equipment airdrop or combat offload during contingency operations if operational needs outweigh the risk of operating without the MFCD.
Pallet Lock Control Unit (PLCU)	7	0	May be inoperative provided Heavy Equipment airdrop or combat offload operations will not be conducted. The MFCD must be operational.
Winch	1	0	May be inoperative unless essential for performance of mission.

Table 4.6. Fire Protection.

System Item	Installed	Required	Remarks or Exceptions
APU Fire Control Handle Lights	1	1	
APU Fire Detection Loop	2	1	Flight to a station with repair capability, including enroute stops is authorized, **OR** The APU is considered inoperative.
Bleed Air Overheat Detection Sensors	14	7	One sensor in each zone may be inoperative for flight to a station with repair capability, including enroute stops.
Engine/APU Fire Extinguisher Bottle	2	2	
Engine Fire Control Handle Lights	4	4	
Engine Fire Detection Loop	8	4	One loop in each nacelle may be inoperative for flight to a station with repair capability, including enroute stops.
Fire and Overheat Detector System (FODS) Controller	1	1	One time flight authorized to repair facility, including enroute stops.
Smoke Detector	4	1	The under flight deck detector must be operational.

Table 4.7. Flight Controls.

System Item	Installed	Required	Remarks or Exceptions
Aileron Trim Indicator	1	0	Flight to a destination with repair capability, including enroute stops, may be made. The trim tab position must be visually verified prior to flight.
Aileron Trim System	1	1	
Elevator Trim Indicator	1	0	Flight to a destination with repair capability, including enroute stops, may be made. The trim tab position must be visually verified prior to flight.
Elevator Trim System	1	1	
Elevator Trim Tab Control Wheel Switch	4	4	
Elevator Trim Tab Power Selector Switch	1	1	
Emergency Elevator Trim Tab Switch	1	1	
Flap Position Indicator (AMU)	1	1	
Flap Position Indicator Gauge	1	0	May be inoperative provided Flap Position Indicator Avionics Management Unit (AMU) is operative.
Rudder System Direct Reading Pressure Gauge	2	0	
Rudder Trim Indicator	1	0	Flight to a destination with repair capability, including enroute stops, may be made. The trim tab position must be visually verified prior to flight.
Rudder Trim System	1	1	
Stick Pusher System	1	0	Flight to a destination with repair capability, including enroute stops, may be made provided the Stall Warning System is operational.
Stall Warning System	1	1	**NOTE** All stall warning system aural and visual warnings must be functional.
a. Angle of Attack (AOA) Sensor	2	1	

Table 4.8. Fuel (Reference para 4

System Item	Installed	Required	Remarks or Exceptions
Auxiliary and External Tank Empty Pressure Switch	2	0	Both may be inoperative provided the quantity gauges are serviceable.
Auxiliary Tank Magnetic Sight Gauge	2	0	Both may be inoperative provided the Magnetic Sight Gauge is not required to determine Auxiliary Tank fuel quantity.
Boost Pump, Main Tank	4	3	One may be inoperative provided: (1) Applicable Flight Manual Limitations and Procedures are observed, (2) Main Tank Transfer Pumps are operative, (3) ECBs for inoperative Main Tank Boost Pump are strapped opened.
Crossfeed Manifold Fuel Pressure Indication	2	1	
Crossfeed Valve	4	0	May be inoperative provided: (1) Associated Fuel Level Control Valve is operative, (2) Affected Valve is secured CLOSED, (3) Main Tank Transfer Pumps are operative, (4) Cross-ship Separation Valve is operative. **NOTE** Valve must be manually closed if failed open or ECBs opened if valve is failed closed.
Cross-ship Separation Valve	3 3	2 0	Two required for in-flight refueling missions. May be inoperative provided valve is electrically disconnected and secured OPEN.
Fuel Control Panel	2	0	May be inoperative provided control is available through the associated Soft Panel.
Fuel Dump Valve	2	1	May be inoperative provided the valve is secured CLOSED and at least 2 Cross-ship Valves are operative.
Fuel Management Controller	1	1	One channel may be inoperative.
Fuel Firewall Shutoff Valve	4	4	
Fuel Level Control Valve (FLCV)			**NOTE** Mission fuel requirements must be considered before accepting inoperative FLCVs.
a. Auxiliary Tank, FLCV	2	0	Both may be inoperative provided valve is not required for ground or in-flight refueling.
b. Main Tank, FLCV	6	0	All may be inoperative provided: (1) Valve is not required for ground or in-flight

			refueling, (2) All Main Tank Transfer Pumps are operative, (3) All Main Tank Crossfeed Valves are operative, (4) Cross-ship Separation Valves are operative. **NOTE** If an inboard FLCV is failed closed, the associated tank cannot be fully refueled on the ground. If an outboard FLCV is failed closed, the associated tank cannot be fully refueled in-flight.
Fuel Pressure Relief Valve	2	2	
Fuel Pressure Transducer	1	0	
Fuel Quantity Indications			**NOTE** Although the fuel quantity indications can be displayed on multiple HDD System Status Displays as well as on the hard panel, repetitions in excess of one indication per tank are not relevant. The "number installed" includes one indication per tank and the "number required" specifies the number of tanks that must have an operative indication. **NOTE** Crews will utilize a fuel log when fuel quantity indicators are inoperative.
a. Auxiliary Tank	2	0	Both may be inoperative provided: (1) All Fuel Flow Indicators are operative, (2) Associated Fuel Transfer Pump is operative, (3) All other Fuel Quantity Indicators for tanks with fuel on the same side of the Cross-ship Valve are operative, (4) Fuel quantity in the associated tank is verified by an accepted procedure before each takeoff (magnetic sight gauge).
b. External Tank	2	1	One may be inoperative provided: (1) All Fuel Flow Indicators are operative, (2) At least one associated Fuel Transfer Pump is operative, (3) All other Fuel Quantity Indicators for tanks with fuel on the same side of the Cross-ship Valve are operative, (4) Fuel quantity in the associated tank is verified by an accepted procedure before each takeoff (dipstick).
	2	0	Both may be inoperative provided associated Fuel Tanks are verified EMPTY.
c. Main Tank	4	3	One may be inoperative provided:

			(1) All Fuel Flow Indicators are operative, (2) Associated Fuel Boost Pump is operative, (3) All other Fuel Quantity Indicators for tanks with fuel on the same side of the Cross-ship Valve are operative, (4) Fuel quantity in the associated tank is verified by an accepted procedure before each takeoff (dipstick). **NOTE** Ensure maximum outboard main tank fuel weight is not exceeded when stores of any kind are installed on the outboard wing (e.g. refueling pods).
d. Totalizer	1	0	
Fuel Quantity Preset Switch	8	0	
Refuel Drain Pump	1	0	May be inoperative provided the manifold is manually drained and in-flight refueling will not occur.
Single Point Refuel Valve	1	0	May be inoperative provided alternate refueling procedures can be used. In-flight refueling is not allowed.
Transfer Pump			
a. Transfer Pump, Auxiliary Tank	2	0	May be inoperative provided the electronic circuit breaker (ECB) for the inoperative pump are open. If pump is inoperative, associated tank is considered unusable.
b. Transfer Pump, External Tank	4	2	One pump in each tank may be inoperative provided ECBs for inoperative External Tank Transfer Pump are opened.
	4	0	Both pumps in each tank may be inoperative provided: (1) ECBs for inoperative pumps are open, (2) Both tanks are empty.
c. Transfer Pump, Main Tank	4	3	One may be inoperative provided ECBs for inoperative transfer pump are open and the respective Main Tank Boost Pump is operative.

Table 4.9. Hydraulic System.

System Item	Installed	Required	Remarks or Exceptions
Hydraulic Control Panel	1	0	May be inoperative provided control is available through the associated Soft Panel.
Hydraulic Pumps			
a. Auxiliary Hydraulic Pump	1	1	
b. Engine Hydraulic Pump	4	4	
c. Hand Pump, Auxiliary	1	0	May be inoperative provided no Air-to-Air Refueling is required.
d. Suction Boost Pump	2	2	
Hydraulic System Indications (System Status Display)			
a. Auxiliary System Pressure	1	0	May be inoperative provided the direct reading gauge is serviceable.
b. Booster System Pressure	1	0	May be inoperative provided Rudder Boost Pressure Indication is operative.
c. Utility System Pressure	1	0	May be inoperative provided Rudder Boost Pressure Indication is operative.

Table 4.10. Ice and Rain Protection.

System Item	Installed	Required	Remarks or Exceptions
Angle of Attack Sensor Anti-ice System	2	1	May be inoperative provided AOA sensor is considered inoperative.
Ice Detector	2	0	Both may be inoperative provided: (1) Wing Leading Edge Lights are operative, **OR** (1) Aircraft is not operated in known or forecast icing conditions.
Ice Protection Control Panel	1	0	May be inoperative provided control is available through the associated soft panel.
Engine Anti-ice Valve	4	0	Valve may be inoperative provided the failed valve has failed OPEN. If any valve is failed CLOSED, do not operate in known or forecast icing conditions.
NESA Windshield Heat System	2	0	May be inoperative provided aircraft is not operated in known or forecast icing conditions. Flight manual restrictions apply.
Pitot Heat System	2	1	May be inoperative provided associated pitot static system is considered inoperative.
Propeller Ice Protection System	4	0	May be inoperative provided aircraft is not operated in known or forecast icing conditions.

Propeller De-icing Timer Unit	1	0	May be inoperative provided aircraft is not operated in known or forecast icing conditions.
Total Air Temperature Sensor Anti-ice System	2	0	May be inoperative provided aircraft is not operated in known or forecast icing conditions.
Windshield Defog	2	0	
Windshield Wiper	2	0	May be inoperative provided aircraft is not operated in precipitation on the ground.
Wing and Empennage Ice Protection System	1	0	May be inoperative provided aircraft is not operated in known or forecast icing conditions.

Table 4.11. Indicating/Recording Systems.

System Item	Installed	Required	Remarks or Exceptions
Advisory Caution and Warning System (ACAWS)	1	1	
Cockpit Voice Recorder (CVR)	1	1	**NOTE** The CVR will be operational unless parts are not available on station to repair the unit. Do not fly passengers without an operative CVR.
Digital Flight Data Recorder (DFDR)	1	1	**NOTE** The DFDR will be operational unless parts are not available on station to repair the unit. Do not fly passengers without an operative DFDR.

Table 4.12. Landing Gear And Brakes Fuel (Reference para 4

System Item	Installed	Required	Remarks or Exceptions
Anti-Skid System	1	0	May be inoperative provided: (1) Anti-Skid System ECBs are opened, (2) Flight Manual Performance limitations are applied, (3) Shall be repaired at first capable repair facility, (4) Maximum Effort operations are not allowed, (5) Restricted to one full stop landing. **NOTE** A local training flight may continue once airborne if the antiskid fails provided the system is turned off.
Brake Pressure Indication			
a. Emergency Brake Pressure Indication	1	0	May be inoperative provided the Auxiliary System Pressure is operative.
b. Normal Brake Pressure Indication	1	0	May be inoperative provided Utility System Pressure Indication is operative.
Landing Gear Lever Lock	1	0	May be inoperative provided Landing Gear Control Panel is considered inoperative. **NOTE** On associated Soft Panel, the Lock Function is satisfied by the Verify Switch.
Landing Gear Position Indicator	3	3	
Landing Gear Warning Light	2	0	May be inoperative provided GCAS is operational.

Table 4.13. Lights.

System Item	Installed	Required	Remarks or Exceptions
Exterior Lighting			
a. Landing Light, Vis/IR	2	1	One landing light may be inoperative provided taxi light on that side is operative.
b. Navigation Light	6	3	For night operations, the left and right wingtip Nav lights must be operational in addition to one of the white lights on the tail cone.
c. Anti-collision (Strobe) Light	2	0	May continue to first stop where repairs can be made.
d. Taxi Light	2	0	Both may be inoperative provided landing lights are operative.
e. Wing Leading Edge Lights	2	0	May be inoperative at night provided: (1) Ice Detectors are operative, **OR** (1) Aircraft is not operated in known or forecast icing conditions.
f. Wing Tip Taxi Lights	2	0	May be inoperative provided aircraft is not taxied in congested areas at night without adequate lighting for obstacle clearance.
Flight Station Lighting			May be inoperative provided sufficient lighting is operative to make each instrument, control and other device for which it is provided easily readable.
a. Copilot Displays Light Circuit	1	1	
b. Lamp Test Circuit	1	1	

Table 4.14. Navigation.

System Item	Installed	Required	Remarks or Exceptions
ADC	2	1	**NOTE** Both must be operative for operation in RVSM airspace.
Automatic Direction Finding (ADF) System	2	0	Both may be inoperative provided departure/ route/approach to destination (and alternate, if applicable) does not require use of ADF. **NOTE** All components must be operative for the ADF to be considered operative.
Cursor System	2	0	May be inoperative unless required to accomplish mission objectives.
Digital Mapping System	1	0	May be inoperative unless required to accomplish mission objectives. Consideration should be given to the terrain, required altitudes, route peculiarities, visibility, the crew's experience with the route and whether the mission is conducted during daylight or at night.
Terrain Awareness and Warning System (TAWS)	1	0	May be inoperative unless required to accomplish mission objectives. Consideration should be given to the terrain, required altitudes, route peculiarities, visibility, the crew's experience with the route and whether the mission is conducted during daylight or at night.
Doppler Velocity Sensor	1	0	
Embedded Global Positioning/Inertial Navigation System (EGI)	2	1	May be inoperative provided: (1) Overwater (out of NAVAID range) or BRNAV flight will not be conducted, (2) Consult FLIP for airspace restrictions.
Global Positioning System (GPS)	2	0	**NOTE** With GPS inoperative, the Inflight Alignment capability will not be available.
Internal Navigation System (INU)	2	1	
Ground Collision Avoidance System (GCAS)	1	0	May be inoperative provided passengers/troops will not be carried. Consideration should be given to the terrain, required altitudes, route peculiarities, visibility, the crew's experience with the route and whether the mission is conducted during daylight or at night.
Inertial Navigation Unit	2	1	Both must be functional to meet requirement of redundant heading, altitude, and airspeed information for Civil Airspace compliance.
Radar, Low Power	1	0	Required if thunderstorms or hazardous conditions that

Color			can be detected by airborne radar are forecast or exist along the route of flight, or essential to accomplish mission objectives.
a. Control Panel	2	0	Both may be inoperative provided: (1) Control is available through the associated Soft Panel, (2) Modes other than the Map or Weather (WX) Modes are not essential to accomplish mission objectives.
Radar Altimeter (RA)	2	0	One may be inoperative provided CAT II ILS approaches will not be flown. See **paragraph 16.20** for additional tactical restrictions.
Standby Flight Instruments			
a. Inclinometer (Slip ball)	2	0	May be inoperative provided HUD Slip/Skid Indicator at affected position is operative.
b. Magnetic Compass	1	1	
c. Standby Airspeed/Altimeter	1	1	
d. Standby Attitude	1	1	
Tactical Air Navigation (TACAN)	2	0	All components must be operative for the TACAN to be considered operative. If both TACANs are inoperative, DME is not available.
Total Air Temperature Sensor	2	2	
Traffic Alert Collision Avoidance System (TCAS)	1	0	May be inoperative provided: (1) TCAS is deactivated and secured, (2) TCAS is not necessary for compliance with ATC requirements, (3) Passengers/troops will not be carried.
UHF Direction Finder System	1	0	May be inoperative unless essential for accomplishment of mission objectives.
VHF Navigation System (VOR/ILS/MB)	2	1	The No. 1 system must be operative. **NOTE** All components must be operative for the VHF Navigation System to be considered operative.

Table 4.15. Oxygen.

System Item	Installed	Required	Remarks or Exceptions
Crew Oxygen System	1	1	Minimum quantity is 5 liters, or as necessary for mission accomplishment.
Oxygen Regulators	10	3	May be inoperative provided one is available for each primary crewmember.

Table 4.16. Pneumatic.

System Item	Installed	Required	Remarks or Exceptions
Bleed Air Augmenter Valve	4	3 Less than 3	One may be inoperative provided: (1) Affected valve is CLOSED, (2) All Nacelle Shut Off Valves are operative. May conduct a one-time flight to repair facility. Fly unpressurized (Manual/Open) and with no icing forecast.
Bleed Air Divider Valve	1	0	May be inoperative provided: (1) Affected valve is OPEN, (2) Both Wing Isolation Valves are operative.
Bleed Air Pressure Indication	1	1	
Bleed Air Environmental Control System Electronic Controller	1	1	One channel may be inoperative.
Nacelle Shutoff Valve	4	4	
Wing Isolation Valve	2	1	One may be inoperative provided: (1) Affected valve is OPEN, (2) Divider Valve is operative.

Table 4.17. System Integration and Display.

System Item	Installed	Required	Remarks or Exceptions
Avionics Management Unit (AMU)	2	1	**NOTE** All displays and data fields must be operative for the associated AMU to be considered operative.
Bus Adapter Unit (BAU) Type I	6	4	BAU 3 (daytime only) and/or 6 will be used as replacements or can be failed (swap modules). 1, 2, 4, & 5 must be operational.
Bus Adapter Unit (BAU) Type II	4	4	
Bus Interface Unit (BIU)	2	2	
Communication/Navigation/ Breaker Panel (CNBP)	1	1	**NOTE** All displays and data fields must be operative for the CNBP to be considered operative. However, when an input is not present and the correct 'data not available' or 'fail' indication is displayed, the CNBP may still be considered operative provided the failed indication is not required for the current mission or flight.
Communication/ Navigation/ Identification Management Unit (CNI-MU)	3	2	One may be inoperative at the CSO position. **NOTE** All components must be operative for the CNI-MU to be considered operative except as listed below.
Communication/ Navigation/ Identification System Processor (CNI-SP)	2	1	One may be inoperative for one time flight to repair facility.
Data Bus, (1553B)			
a. Avionics Bus	2	2	
b. Communication/ Navigation Bus	2	2	
c. Display Bus	2	2	
d. Electronic Warfare Bus	1	0	Unless required for mission accomplishment.
e. Interprocessor Communication Bus	1	1	
f. Panel Bus	2	2	
Heads Down Display (HDD) #1--#4	4	3	One may be inoperative provided the HUD on the affected side is fully operational. **NOTE** All data fields and displays must be operative for the associated HDD to be considered operative. However, when an input is not present and the correct 'data not available' or 'fail' indication (which may be a blank or

			removal of the indication) is displayed, the affected HDD may still be considered operative provided the failed indication is not required for the current mission.
HDD #5--#8	4	0	May be inoperative unless essential for accomplishment of mission objectives.
Heads Up Display (HUD)	2 2	1 0	One may be inoperative provided both HDDs on the affected side are fully operational. Both may be inoperative provided: (1) HDDs #1-4 are operative (including operative independent PFDs in the pilot and copilot positions), (2) Forecast weather at destination is at or above Category I approach minimums.
a. HUD Control Panel	2	0	May be inoperative provided the associated HUD is considered inoperative.
b. HUD Declutter Switch, Control Wheel	2	0	
Mission Computer	2	2	One may be inoperative for a one time flight to a repair facility.

Table 4.18. Auxiliary Power Unit (APU).

System Item	Installed	Required	Remarks or Exceptions
AC Generator, APU	1	0	May be inoperative provided APU electrical power is not required. External electrical power or aircraft battery power must be available for starting engines.
Auxiliary Power Unit (APU)	1	0	May be inoperative provided APU bleed air or electrical power is not required. An alternate air source and external electrical power or aircraft battery power must be available for starting engines.
Bleed Air System, APU	1	0	May be inoperative provided APU bleed air is not required. An alternate air source must be available for starting engines.
Inlet Door, APU	1	0	May be inoperative provided: (1) Inlet Door can be operated manually, (2) Inlet Door is secured CLOSED prior to departure, **OR** (1) Inlet Door is secured CLOSED, (2) APU is considered inoperative.

Table 4.19. Doors.

System Item	Installed	Required	Remarks or Exceptions
Cargo Ramp and Door System	1	0	Latching mechanisms and locking systems will be operative for pressurized flight. **NOTE** Aircraft will not take-off with a malfunctioning ramp lock system, with cargo on the ramp. Aircraft may continue to destination if ramp locks malfunction in-flight. Repair lock malfunction or remove cargo from ramp prior to continuing flight operations. Do not pressurize the airplane if the ramp locks fail to lock. Unpressurized flight, with no cargo on the ramp, may be performed with a cargo ramp lock malfunction when mission requirements dictate.
a. Ramp Latches	10	9	One may be inoperative provided: (1) All remaining latches are operative, (2) Latch Warning System is operative, (3) No cargo is carried on the ramp, (4) Ramp is verified CLOSED and LATCHED before each departure, (5) Cabin differential pressure is limited to 5 IN. HG.
Cargo Door and Ramp Indicators			
a. Ramp/Door FULL Light	1	0	May be inoperative provided: (1) MFCD "RAMP & DOOR FULL OPEN" ACAWS message can be used, **OR** (1) Ramp position airdrop light (aft cargo comp.) is operative.
b. Ramp Position Airdrop Light	1	0	May be inoperative provided: (1) MFCD "RAMP & DOOR FULL OPEN" ACAWS message can be used, **OR** (1) Ramp/Door FULL Light (flight station) is operative.
c. Ramp Warning Light	1	0	May be inoperative provided: (1) ACAWS RAMP OPEN PRESSURIZED and RAMP OPEN 250 messages are operative, **OR** (1) Ramp is verified CLOSED and LATCHED before each departure, **OR** (1) Aircraft is operated unpressurized.
Cargo Door and Ramp Sensors			

a. ADS Arm Position Switches	2	0	May be inoperative provided the Aerial Delivery System is considered inoperative.
Crew Entrance Door	1	1	
a. Door Warning Light	1	0	May be inoperative provided the ACAWS CREW DOOR OPEN messages are operative.
Paratroop Door	2	0	May be inoperative provided affected Door is secured CLOSED and Latched, and the exit is not required to meet minimum emergency exits per number of passengers carried.
a. Door Warning Light	2	0	May be inoperative provided the associated ACAWS L TROOP DOOR OPEN 250 or R TROOP DOOR OPEN 250 message is operative.

Table 4.20. Propellers.

System Item	Installed	Required	Remarks or Exceptions
Propeller	4	4	
Propeller Control Panel	1	0	May be inoperative provided control is available through the associated Soft Panel.
a. Propeller Control Switch	4	0	May be inoperative provided control is available through the associated Soft Panel.
b. Prop Sync Switch	1	0	
Propeller Synchrophasing	1	0	

Table 4.21. Powerplant.

System Item	Installed	Required	Remarks or Exceptions
Automatic Thrust Control System (ATCS)	1	1	If ATCS is degraded, a component/sensor has potentially failed. If maintenance is not available and takeoff is necessary, flight with ATCS DEGRADED (C) must be authorized by the OG/CC. Operation with ATCS Inoperative procedures will be followed.
Engine Assembly	4	4	
Engine Controls			
a. Engine Start Panel	1	0	May be inoperative provided control is available through the associated Soft Panel.
b. FADEC Panel	1	1	
c. Low Speed Ground Idle Switch	4	0	
d. Oil Cooler Flap Indications	4	0	May be inoperative provided control is available through the associated Soft Panel and oil temp indication(s) is/are operational for affected oil cooler flap(s).
Engine Indicating System			
a. Fuel Flow Indication	4	4	
b. Gas Generator Speed (NG) Indication	4	4	
c. Horse Power Indication	4	4	
d. Measured Gas Temperature (MGT) Indication	4	4	
e. Oil Pressure Indication, Engine	4	4	
f. Oil Pressure Indication, Gearbox	4	4	
g. Oil Quantity Indication	4	0	May be inoperative provided the oil quantity is verified before flight and the OIL QTY 1 (2, 3, or 4) LO (C) is operational.
h. Oil Temperature Indication	4	4	
i. Power Turbine Speed (NP) Indication	4	4	
Engine Oil System			
a. Oil Cooler Flap Automatic Control	4	0	May be inoperative provided Oil Cooler Flap Manual Control is operative.
b. Oil Cooler Flap Manual Control	4	4	
Full Authority Digital	8	7	One may be inoperative provided all dedicated sensor

Electronic Controls (FADEC)			input and control logic is serviceable to/from the operative FADEC on the engine with lost redundancy and ATCS Inoperative Take-Off procedures are carried out. All eight engine FADECs must be serviceable for auto shutdown to be operative. ATCS will be degraded. **NOTE** If maintenance is not available and takeoff is necessary, flight with ATCS DEGRADED © must be authorized by the OG/CC.
Nacelle Interface Unit (NIU)	4	4	

Table 4.22. In-flight Refueling System.

System Item	Installed	Required	Remarks or Exceptions
Universal Aerial Refueling Receptacle Slipway Installation (UARRSI) System	1	0	System required for In-flight Refueling. **NOTE** The Aux Hydraulic system and/or Override signal amplifier will not be used for training flights.

Table 4.23. Air Refueling System.

System Item	Installed	Required	Remarks or Exceptions
	2	0	System required for air refueling.

Chapter 5

OPERATIONAL PROCEDURES

5.1. Checklists. A checklist is not complete until all items have been accomplished. Momentary hesitations for coordination items, ATC interruptions, and deviations specified in the flight manual, etc. are authorized. Notes amplifying checklist procedures or limitations may be added to the checklists (in pencil). Currency of notes is a crewmember's responsibility. Checklist pages may be carried in separate binders provided checklist integrity is not compromised.

5.1.1. Checklist Inserts. The only pages (or inserts) authorized in checklist binders are C-130 series T.O. aircrew checklists, ACC approved checklists, briefing guides and unit approved information guides IAW AFI 11-215. The inserts should be placed at the end of the appropriate checklist or in an in-flight guide. All checklist inserts must have a POC. Units may construct locally approved in-flight guides using AF Form 4124, *Flight Crew Information Guide*.

5.2. Duty Station. One of the pilots may be out of their seat for brief periods to meet physiological needs. With both pilots in their seats, the PIC may authorize rest periods for one pilot occupying a primary duty station in accordance with Controlled Cockpit Rest guidance in AFI 11-202 Volume 3, *General Flight Rules*. All other crew positions are authorized rest periods with approval from the PIC and IAW AFI 11-202V3. Only one pilot may be absent from their duty station at a time. All aircrew members will notify the PIC prior to departing assigned primary duty station.

5.2.1. Combat System Operator (CSO) Station. The PIC may allow individuals to occupy the CSO station, when unoccupied, as long as their presence will not hinder the performance of the crew. Qualified crewmembers, or unqualified crewmembers under the supervision of an instructor, may perform tasks assigned by the PIC.

5.3. Flight Deck Entry. PICs may authorize passengers and observers access to the flight deck during non-critical phases of flight. Limit the number of persons on the flight deck to the minimum required for mission accomplishment. At no time will this exceed seven (unless otherwise specified in a MAJCOM supplement to this AFI). Passengers and observers will not be permitted access to either pilot position.

5.4. Takeoff and Landing Policy.

5.4.1. The PIC will occupy either the left or right seat during all takeoffs/landings.

5.4.2. Instructor/flight examiner pilots may takeoff/land from either seat under any condition.

5.4.3. An Aircraft Commander (AC) qualified pilot may takeoff/land from either seat. Comply with **paragraph 5.5**.

5.4.4. An AC qualified pilot will land from the left seat under the following conditions:

5.4.4.1. Aircraft emergencies, unless conditions prevent compliance.

5.4.4.2. Maximum effort or substandard airfield operations. Instructor upgrade students may land from the right seat for training under direct Instructor Pilot (IP) supervision.

5.4.4.3. Missions operating in areas of hostile activity. For units operating in defined combat zones, SQ/CC or equivalent may authorize AC qualified pilot or copilot landings from the right seat at specific airfields.

5.4.4.4. Arrival and departure at airfields that require OG/CC or deployed equivalent approval as indicated in **paragraph 5.20.5.1**. Instructor/flight examiner pilots may perform or demonstrate takeoffs/landings from either seat into certification airfields specified in the HQ AMC Airfield Suitability and Restrictions Report (ASRR.)

5.4.4.5. PICs who possess less than 100 PAA hours in command since initial upgrade will make all takeoffs/landings in the left seat. ***EXCEPTION:*** AC or higher qualified pilots may perform takeoffs/landings from the right seat with a less than 100 hour AC in the left seat when required for currency.

5.4.4.6. NVG Airland current and qualified ACs may accomplish NVG landings (non-short field/non-max effort) from the right seat provided the left seat pilot is an NVG Airland current and qualified AC or higher.

5.5. MPD Trained Landing Policy. Except as specified in **paragraph 5.4**, MPD pilots may takeoff or land:

5.5.1. From either seat if an instructor/flight examiner pilot occupies the other seat.

5.5.2. From either seat if the PIC has accumulated at least 100 PAA hours in command since initial upgrade.

5.5.3. From the right seat using NVGs for non-short field/non-maximum effort operations provided they are current and qualified and a current mission qualified AC occupies the left seat.

5.6. Landing Gear and Flap Operating Policy. The PF will command configuration changes. The PM will verify appropriate airspeed and configuration prior to echoing the gear or flap actuation command. The PM will operate the landing gear and the flaps.

5.7. Outside Observer/ACM Duties. Available crewmembers will assist in clearing during taxi operations, and any time the aircraft is below 10,000 ft MSL as crew duties permit.

5.8. Seat Belts. Crewmembers occupying the P and CP positions will have seat belts fastened from engine start through shutdown, except as outlined in **paragraph 5.2** and the following:

5.8.1. All occupants will be seated with seat belts fastened during taxi, takeoffs, and landings. ***EXCEPTION:*** Evaluators, Instructors, Mission Commanders, crewmembers performing scanner duties, outside observers during taxi, LMs and medical personnel performing required duties; however, those individuals will have a designated seat (spot for combat loading procedures) and required restraint available.

5.8.2. Provide a safety belt for all occupants over 2 years of age. Occupants will fasten seat belts securely when turbulence is encountered or anticipated, or in areas of forecast clear air turbulence.

5.8.3. Floor loading is authorized to support dedicated unconventional forces and foreign counterparts during operations, exercises, and training. This procedure will not be used in lieu of providing normal seating when available. ***EXCEPTION:*** OG/CC (or deployed equivalent) may authorize floor loading other personnel on a case-by-case basis.

5.9. Aircraft Lighting. IAW AFI 11-202V3, AFI 11-218, *Aircraft Operations Movement on the Ground,* and applicable T.O.s.

5.9.1. NVG Lighting. Lights-out operations during peacetime will be conducted IAW AFI 11-202V3 and local procedures as required. During contingency operations IAW SPINS.

5.9.1.1. Total lights out operations are authorized with concurrence of the controlling agency in restricted airspace and warning areas.

5.9.2. Cargo compartment lighting will be dictated by the tactical situation and will be coordinated between the mission commander/PIC and LM(s). Cargo compartment emergencies may require overt lighting on full bright. The nature of the emergency and the tactical situation will dictate what level of lights is used, and whether the LM continues the use of NVGs. ***NOTE:*** If NVIS cannot be selected due to required HUD intensity levels or is not desired, thought should be given to pulling ECB 883, AFT CARGO DOME. This allows cargo compartment lighting to be NVIS mode while flight deck lighting remains in NORM.

5.9.3. Strobe Lights. During contingency operations IAW SPINS. For non-tactical operations, the aircraft strobe lights will be operated as follows:

5.9.3.1. BEFORE STARTING ENGINES Checklist. Set the top strobe to RED. ***NOTE:*** When operating the APU, set the top strobe to RED.

5.9.3.2. LINEUP Checklist. Set both strobes to WHT.

5.9.3.3. AFTER LANDING Checklist. Set the top strobe to RED. The top strobe shall remain in RED until APU shutdown.

5.10. Portable Electronic Devices. IAW AFI 11-202V3.

5.10.1. Do not connect unauthorized equipment (laptop computers, video equipment, food preparation equipment, radios/tape players, CD players, etc.) to the aircraft intercom, PA, or radio systems.

5.10.2. Aircrew members shall not use uncertified Government Furnished Equipment (GFE) or personal devices with RF transmit/receive capability on ACC aircraft carrying hazard class 1 explosive cargo at anytime. Prohibited devices include cellular phones and laptop computers/PDAs with wireless capability enabled (i.e. Bluetooth). LMs will ensure passengers comply with this restriction. Aircrew members may use certified GFE such as PFPS laptops, handheld (HH) GPS, and PDAs with infrared transmitters.

5.10.3. EMI Certified laptop computers and software, such as PFPS or Falcon view are allowed in-flight IAW AFI 11-202V3, and their use is highly encouraged. These systems do not replace existing navigation equipment and must not be used as the sole means of navigation; each user must have a back-up chart immediately available in case use of the system is denied.

5.11. Tobacco Use on Air Force Aircraft. Tobacco use of any type is prohibited on Air Force aircraft.

5.12. Advisory/Required Calls. The PF will announce changes to the level of automation, flight director and autopilot mode section, and mode transition, (e.g. "Autopilot engaged", "Altitude hold", "Auto-throttles", "Nav-Capture", etc.) and/or when circumstances require deviating from normal procedures.

5.12.1. Takeoff Aborts and Landings. The PM will advise the PF which power levers to bring to reverse ("All 4", "Inboards", "Outboards").

5.12.2. Deviations. Any crewmember seeing a deviation of heading (+/- 10 degrees), airspeed (+/-10 kts), or altitude (+/- 100 ft), and no attempt is being made to correct the deviation will immediately notify the PF.

5.12.3. Any crewmember seeing a potential terrain or obstruction problem will immediately notify the PF.

5.12.4. Advisory calls: Refer to **Table 5.1** through **Table 5.4** for a listing of mandatory advisory calls, responses, and aircrew actions.

Table 5.1. Takeoff.

PHASE OF FLIGHT	PF	PM
Takeoff – prior to Refusal Speed		"Reject" [1]
At Refusal Speed		"Go" [2]
At Rotation Speed		"Rotate"
Note 1. Prior to Refusal Speed, any crewmember noting a safety of flight condition/malfunction will state "Reject" and give a brief description of the malfunction. Note 2. If refusal speed equals takeoff speed, "Go" is not required.		

Table 5.2. Climb Out and Descent.

PHASE OF FLIGHT	PF	PM
Climb Out - Transition Altitude	State Altimeter[1]	State Altimeter[1]
Climb Out - 1000 below assigned altitude/FL	"Passing # Feet for # Feet"	"Checks"
Descent - Transition Level	State Altimeter[1]	State Altimeter[1]
Descent - 1000 above assigned altitude/FL, initial approach fix, or holding altitude	"Passing # Feet for # Feet"	"Checks"
Note 1. All crew positions who can change the altimeter setting will state the new setting.		

Table 5.3. Non-precision Approach.

PHASE OF FLIGHT	PF	PM
100 above FAF altitude, step-down altitude(s), and Minimum Descent Altitude (MDA)		"100 Above"
500 AGL		"500 Feet" **OR** "Unstable Go Around"[2]
At MDA		"Minimums"
Runway environment in sight	State Intentions[1]	"Runway In Sight"
At MAP	State Intentions[1]	"Missed Approach Point"
Note 1. The PF will announce intentions to land or go-around no later than the MAP. Note 2. Refer to stabilized approach criteria in **paragraph 5.13**.		

Table 5.4. Precision Approach.

PHASE OF FLIGHT	PF	PM
100 above FAF/GSI altitude and DH/DA		"100 Above"
500 AGL[4]		"500 Feet" **OR** "Unstable Go Around"[3]
At DH/DA		"Minimums"
- Runway environment in sight	"Landing"	
- Approach lights in sight (CAT I ILS)	"Continuing"[1]	
- Neither in sight	"Going Around"	
At 100 HAT (CAT I ILS)	State Intentions[2]	"100 Feet"
Note 1. With weather at CAT I minimums on a CAT I ILS, the pilot may only see the initial portion of the approach lighting system (ALS). The pilot may continue to 100 HAT but may not descend below 100 ft above touchdown zone elevation using the ALS as a reference unless the red termination bars or the red side row bars are also visible and identifiable. Note 2. The PF will announce intentions to land or go-around. Note 3. Refer to stabilized approach criteria in **paragraph 5.13**. Note 4. For CAT II approaches crosscheck offside Radar Altimeter if not accomplished previously on approach (i.e., 1000 AGL).		

5.13. Stabilized Approach Philosophy. Unstable approaches are primary contributors to numerous military and civilian mishaps. Stabilized approaches are essential for the safe operation of aircraft and are mandatory. This criterion defines specific parameters that mitigate the risk during this critical phase of flight. This philosophy requires aircrew to take immediate corrective actions to stabilize the approach when outside designated parameters.

5.13.1. The following criteria apply to all non-tactical approaches:

5.13.1.1. At 1000 ft AGL (IMC):

5.13.1.1.1. Airspeed is -10/+20 knots of computed approach speed for aircraft configuration.

5.13.1.1.2. Aircraft is in a landing configuration.

5.13.1.1.3. Sink rate is no greater than 1500 FPM.

5.13.1.1.4. All briefings and checklists are complete.

5.13.1.1.5. If these criteria are not met by 1000 ft AGL (IMC), the PM will announce the deviation.

5.13.1.2. At 500 ft AGL (IMC/VMC):

5.13.1.2.1. Airspeed is -10/+10 knots of computed approach speed for aircraft configuration.

5.13.1.2.2. Aircraft is in a landing configuration.

5.13.1.2.3. Sink rate is no greater 1000 FPM.

5.13.1.2.4. All briefings and checklists are complete.

5.13.1.2.5. If these criteria are not met by 500 ft AGL for all non-tactical approaches, the PM will announce "Unstable, go around." The PF will execute a missed approach.

5.13.2. Tactical Approaches/VFR Patterns. Stabilized approach criteria for tactical approaches/VFR patterns is recommended and desired. However, it is recognized that this criteria is not always valid due to the type of approach being conducted. In this situation, the PF is required to brief the maneuver parameters prior to execution.

5.13.3. For FTUs only. FTUs will fully emphasize and train so as to ensure the final product complies with all aspects of stabilized approach criterion. However, the building block approach used to properly execute both tactical and non-tactical approach/landings for initial/upgrade training requires that instructors have the latitude to use their expertise and experience to deviate from stabilized approaches guidance. FTU instructors are expected to use good judgment, technique and latitude while developing student skills and therefore are relieved of strict compliance to the stabilized approach criterion during appropriate instructional scenarios.

5.14. Communications Policy. The Air Force does not give a promise of confidentiality to aircrews regarding their recorded aircraft crew communications. Crewmembers are expected to maintain a high degree of cockpit professionalism and crew coordination at all times.

5.14.1. Aircraft Interphone. Primary crewmembers will monitor VOX and interphone during all phases of flight. Crewmembers will advise the PF before checking off interphone. Crewmembers will ensure personnel on headset or within listening distance are cleared prior to discussing classified information over interphone.

5.14.2. Radios:

5.14.2.1. The PM normally makes all ATC radio calls.

5.14.2.2. In terminal areas, all crewmembers (if able) will monitor the primary ATC radio unless directed otherwise. A crewmember will be designated to monitor C2 frequencies on the inbound and outbound legs.

5.14.2.3. The pilot operating the radios will notify the crew which radio is primary, and update the crew when the primary radio changes.

5.14.2.4. One pilot should record and read back all ATC clearances.

5.14.2.5. Both pilots will monitor UHF and VHF guard emergency frequencies to the maximum extent possible.

5.14.2.6. The Federal Communications Commission (FCC) prohibits the use of unauthorized frequencies for interplane, HAVE QUICK, or SECURE VOICE training.

5.14.3. Classified Communication Policies:

5.14.3.1. Do not discuss classified information on the interphone during radio transmissions.

5.14.3.2. Classified interphone or radio transmissions will be recorded on the cockpit voice recorder (CVR) if it is operating. Ensure the CVR remains on and running for 30 minutes until the tape is clear of any recorded classified conversations. If classified information is discussed while the EO/IR voice recorder is used in flight, the Removable Memory Module (RMM) tape must be turned into Intel to be classified upon landing. If en route, have the classified courier maintain the VHS tape until the tape has been properly classified.

5.14.3.3. Non-aircrew members may monitor interphone or radio transmissions only when specifically approved by the AC. The AC will ensure the communications policy is briefed to these personnel prior to flight. The AC must ensure no one monitors classified information for which they are not cleared or transmits classified information over the radios.

5.14.3.4. In order to prevent accidental recording of classified information on the Digital Flight Data Recorder (DFDR) or downloading it via the maintenance Data Transfer and Diagnostic System (DTADS), crews need to be fully aware of how the DFDR and DTADS work. DTADS is used routinely to download data from the DFDR for the C-130J AIRCAT program to assess structural life and other factors. DTADS is an unclassified system. If the DFDR contains classified information such as latitude/longitude, it could be downloaded in this process. Maintainer's attach the DTADS system directly to the DFDR export connect to accomplish the download. This process only copies the data, the original content remains on the DFDR until written over. In order to ensure classified information is not recorded to the DFDR; crews should use the 'record inhibit' functionality in the CNI-MS during classified missions and inhibit data which is determined to be classified.

5.15. Crew Resource Management (CRM).

5.15.1. “Time Out” is the common assertive statement for use by all crewmembers. The use of “Time Out” will:

5.15.1.1. Provide a clear warning sign of a deviation or loss of situational awareness.

5.15.1.2. Provide an opportunity to break the error chain before a mishap occurs.

5.15.1.3. Notify all crewmembers when someone sees the aircraft or crew departing from established guidelines, the briefed scenario, or that someone is simply uncomfortable with the developing conditions.

5.15.2. As soon as possible after a "Time Out" has been called, the aircrew will take the following actions:

5.15.2.1. Safety permitting, stabilize the aircraft and ensure terrain clearance.

5.15.2.2. The initiating crewmember will voice their concerns to the crew.

5.15.2.3. The PIC will provide all other crewmembers with the opportunity to voice inputs relative to the stated concerns.

5.15.2.4. After considering all inputs, the PIC will direct the aircrew to continue the current course of action or direct a new course of action.

5.15.3. Sterile Cockpit. Limit conversation to essential for crew coordination and mission accomplishment during taxi, takeoff, approach, landing, and any flight below 3,000 ft AGL.

5.15.4. Fuel Panel. The fuel panel is considered a "verification panel." The PM/LM/CSO should advise the PF before operating the panel (i.e., priming, cross-feeding, tank-to-engine, transferring, non-standard configurations, and dumping). After completing the task, a second crewmember should verify the panel is set correctly. To facilitate this coordination, pilots should plan to make changes to the fuel panel during periods of low workload such as before taxi and during cruise segments.

5.15.5. Critical Action Coordination.

5.15.5.1. Flight critical/irreversible actions should always be confirmed by two crew members. These actions include, but are not limited to, pulling the engine fire handle, placing the engine start switch to stop, moving a propeller control switch to feather, discharging agent, and dumping fuel. The crewmember performing the action points to the affected switch/handle and verbally seeks confirmation from a second crew member (i.e. "CONFIRM NUMBER ONE"). The crew member confirming the action looks at the affected switch/handle and acknowledges (i.e. "NUMBER ONE CONFIRMED").

5.15.5.2. Once the fire handle is pulled, the ACAWS messages indicating the shutdown condition/situation may disappear. Verifying and verbally confirming associated ACAWS messages prior to engine shutdown will assist the aircrew in determining if the engine can be restarted if a greater emergency arises.

5.16. Automation. The purpose of the automation is to assist the flight crew with mission accomplishment. Aircraft automation will not command crew actions. The automated systems will recommend/perform actions and the crew will determine/verify the proper course of action.

5.16.1. Crewmembers will understand the operation and limitations of automation and be proficient at operating the aircraft in all levels of automation. The level of automation used at any specific time should be the most appropriate to reduce crew workload, increase situational awareness, and enhance mission effectiveness and safety. The PF will determine the most desirable level of automation for a given situation. The PIC has the ultimate responsibility and authority for the safety of the aircraft, passengers, and crew and will

manage workload, set priorities and employ the available resources accordingly. As flight situations change, do not feel locked into a level of automation.

5.16.2. If the AFCS/Flight Director provides unexpected commands to the flight controls, the PF will revert to lower levels of automation or manual flight as necessary before attempting to resolve system problems.

5.16.3. Crews will follow the guidance below, except for cruise flight (above 3,000 ft AGL):

5.16.3.1. The PF will fly the aircraft and maintain a dedicated head-up lookout. If the PF intends to be head-down, aircraft control shall be transferred to the PM, who will remain head-up. Head-down time does not include momentary scanning of the CNI-MU, HDDs, and panels.

5.16.3.2. Any crewmember that observes both pilots head-down at the same time shall alert the PF without delay.

5.16.3.3. If the PM must divert attention away from normal clearing and monitoring duties for an extended period of time, the PM will state "head-down." The PF will verbally acknowledge this call. The PM will verbalize "head-up" after completion of duties. The PF will then update the PM on current status as required.

5.16.4. The importance of entering the proper data into the system is elevated with automated flight. Historical data has indicated a significant decrease in the level of safe operations due to pilots becoming complacent and overly reliant on automated systems.

5.16.4.1. A closed loop system of entering data and verifying the correct data is entered before allowing the aircraft automation to perform a function is critically important. Regardless of who initiates the action, the other pilot must verify the data and both pilots will monitor the aircraft for the appropriate response.

5.16.4.1.1. Verbalize, Verify, and Monitor (VVM) is a closed-loop system of communication designed to significantly reduce typical automation selection errors between the PF and PM. VVM consists of the following three step process:

5.16.4.1.2. Prior to making any changes to the selected automated system, or performing any T.O. defined irreversible/critical action, the pilot performing the action will VERBALIZE the intended changes.

5.16.4.1.3. Both pilots will VERIFY the intended changes prior to execution, and ensure the correct change or action was made.

5.16.4.1.4. Both pilots will MONITOR the aircraft to ensure the expected performance is achieved.

5.16.4.1.5. The PF will announce changes to the level of automation, flight director and autopilot mode selections, and mode transitions to the maximum extent possible. The PM will acknowledge the call. Use appropriate levels of automation as required by the flight conditions.

5.16.4.2. **Table 5 5 and Table 5.6** provide standard actions for both pilots during Automated and Manual flight.

5.16.4.3. Automated Flight is defined as the autopilot fully engaged and coupled to the Flight Director. Use autothrottles as desired. ***CAUTION***: If the autothrottles are disengaged for sustained descents during automatic flight, it is possible that Altitude Capture may occur with the power levers at or near Flight Idle and result in an approach to stall condition.

5.16.4.4. Manual Flight is defined as the PF providing manual input to the flight controls or autopilot. Use autothrottles as desired.

Table 5.5. Automated Flight.

	PF	**PM**
REF/MODE PANEL		
Reference Settings (1) (HP, RAD ALT, IAS, FPA, MINS)	- Set as required	- Verify settings
Mode Selections (ALT, NAV, HDG, APPR, IAS, VS)	- Select desired mode - Announce mode status	- Verify and acknowledge
LATERAL FLIGHT		
Direct To / Intercept Course To / Route Modification	- Verify route modification - Direct the PM to execute	- Modify route as directed - Execute when directed
Radar Vector / Heading Change	- Set the heading reference - State setting	- Verify and acknowledge
VERTICAL FLIGHT		
Climb / Descent Clearance	- Verify and acknowledge	- Set new FL/altitude reference
NOTE: 1. For arrival/approach planning, the PF may transfer aircraft control to the PM and set all reference settings as required for the planned approach.		

Table 5.6. Manual Flight.

	PF	**PM**
REF/MODE PANEL		
Reference Settings (1) (HP, RAD ALT, IAS, FPA, MINS)	- Direct PM to set as required - Verify settings	- Set as directed by PF
Mode Selections (2) (ALT, NAV, HDG, APPR, IAS, VS)	- Select desired mode - Announce mode status	- Verify and acknowledge
LATERAL FLIGHT		
Direct To / Intercept Course To / Route Modification	- Verify route modification - Direct the PM to execute	- Modify route as directed - Execute when directed
Radar Vector / Heading Change	- Verify and acknowledge	- Set heading reference - State setting
VERTICAL FLIGHT		
Climb / Descent Clearance	- Verify and acknowledge	- Set new FL/altitude reference
NOTE: 1. For arrival/approach planning, the PF may transfer aircraft control to the PM and set all reference settings as required for the planned approach. 2. The PF may direct the PM to select desired modes. In this case, the PM will make the necessary announcements and the PF will verify and acknowledge.		

5.17. Ground Collision Avoidance System (GCAS) / Terrain Awareness and Warning System (TAWS).

5.17.1. When a GCAS TERRAIN or TAWS TERRAIN / OBSTACLE AHEAD alert occurs and terrain/obstacle clearance cannot be assured visually, immediately change the flight path (within 3 to 5 seconds) by initiating a takeoff power climb. Continue the climb until a safe altitude is reached or until exiting the alert envelope. With terrain and obstacles clearly in sight, the PF will call terrain/obstacle in sight, state intentions and visually remain clear of terrain/obstacles. If the situation degrades and a GCAS PULL UP or TAWS TERRAIN / OBSTACLE PULL UP alert occurs, immediately execute the GCAS/TAWS alert recovery IAW the flight manual. ***WARNING*:** Do not delay pull-up for diagnosis of the low altitude warning.

5.17.2. In TACTICAL mode, several GCAS alert envelopes are modified to allow for maneuvering in close proximity to terrain. Normally, this mode is most suitable for modified contour flight and VFR low-altitude arrivals but, at the PIC‘s discretion, may be used for any tactical operation.

5.18. Traffic Alerting and Collision Avoidance System (TCAS). It is imperative to follow resolution advisories (RAs) to obtain aircraft separation computed by TCAS. Failure to follow the computed RA may increase the probability of a midair collision. Pilots who deviate from an ATC clearance in response to an RA shall notify ATC of the deviation as soon as practical and promptly return to the ATC clearance when the traffic conflict is resolved or obtain a new clearance.

5.18.1. Mission requirements and certain emergencies may allow selection of “TA only” since the proximity to aircraft may result in unwarranted RAs. Excessive climb and descent rates could lead to inadvertent TCAS advisories. Reducing climb/descent rates near level off can limit inadvertent TCAS advisories.

5.19. Radar Altimeter.

5.19.1. Instrument Approaches.

5.19.1.1. Precision Approaches.

5.19.1.1.1. Set RAD ALT reference to HAT minus 50 ft.

5.19.1.1.2. CAT II ILS. Set published RA minimums.

5.19.1.2. Non-Precision Approaches. Setting the RAD ALT as prescribed below is meant to adequately alert the crew to an unsafe terrain clearance condition ("Altitude-Altitude") in the absence of a "Minimums-Minimums" alert. Setting the RAD ALT to a higher setting than prescribed may result in premature/unexpected "Altitude-Altitude" advisories and prevent the GCAS "Minimums" alert.

5.19.1.2.1. Straight-In Approaches. Normally set RAD ALT reference to 250 ft (minimum setting).

5.19.1.2.2. Circling Approaches. Normally set RAD ALT reference to 300 ft (minimum setting).

5.19.1.3. When established on a published approach in IMC, or at night when terrain clearance cannot be assured, and an "Altitude-Altitude" special alert is heard, initiate an

immediate go-around. Once terrain clearance is confirmed, resume normal operations. In day VMC, the aircrew will evaluate the alert and determine the appropriate course of action (continue the approach or go-around).

5.19.2. Tactical Operations. Reference **Chapter 16, paragraph 16.20** for further guidance.

5.20. Runway, Taxiway and Airfield Requirements.

5.20.1. Minimum Runway and Taxiway Requirements. For peace-time do not use runways less than 3,000 ft. Minimum runway width is 80 ft (60 ft for max effort procedures). Minimum taxiway width is 30 ft. The MAJCOM/A3 may waive runway/taxiway width requirements. ***NOTE:*** Use of non-hard surfaced runways or taxiways require OG/CC approval (or deployed equivalent.) Use **Table 5.7** when applicable.

5.20.2. Use of Wheel Brakes. If greater than a flight manual defined "partially braked landing" is used, the PIC will comply with all zone requirements and minimum brake cooling times IAW the performance manual LANDING BRAKE ENERGY chart. This will ensure adequate braking capability is available for any subsequent takeoff and abort.

5.20.3. Normal Operations.

5.20.3.1. The minimum runway required for a normal takeoff is the charted CFL.

5.20.3.2. Normal takeoffs shall not be made when Refusal Speed is less than Ground Minimum Control Speed (Vmcg). In this condition the PIC will either:

5.20.3.2.1. Download cargo or fuel.

5.20.3.2.2. Wait until weather conditions improve.

5.20.3.2.3. Utilize maximum effort procedures, see **paragraph 5.20.7**

5.20.3.3. Runway Length for Takeoff and Intersection Takeoffs. Normally, takeoffs will be initiated from the beginning of the approved usable portion of the runway. Intersection takeoffs may be made at the discretion of the PIC provided the operating environment (i.e., gross weight, obstructions, climb criteria, weather, etc.) allows for a safe takeoff and departure. CNI TOLD will be updated to reflect actual runway remaining.

5.20.3.4. The minimum runway required for normal landings is the charted landing distance over 50 ft obstacle with outboard engines in high speed ground idle and inboard engines in max reverse.

5.20.3.5. Use of Overruns. If approach end overruns are available, stressed, and authorized for normal operations, they may be used to increase the runway available for takeoff. Departure end overruns (if stressed and authorized) may also be used for landing if needed.

5.20.3.6. Acceleration Check Time. An acceleration time check is required when refusal speed is less than rotation speed. An Acceleration Time Check should also be computed when, in the opinion of the PIC, a critical condition exists (heavy GW, high PA, obstacles, RSC, etc.).

5.20.4. Arresting Cables.

5.20.4.1. Do not land on (touchdown on) approach end arresting cables (does not include recessed cables). If the aircraft lands before the cable, the crew should contact the tower to have the cable inspected.

5.20.4.2. Do not takeoff or land over an approach end cable that has been reported as slack, loose, or improperly rigged by NOTAM, ATIS, or ATC.

5.20.4.3. Operations are authorized on runways where BAK-12 systems are installed, with an eight point cable tie-down system, without regard to the flight manual caution. When operating from runways equipped with other types of systems, or if it is unknown if the BAK-12 system includes eight point tie-downs, aircrews should recognize the increased risk of damage to the aircraft.

5.20.5. Other Airfield Requirements.

5.20.5.1. Aircraft Rescue Fire Fighting Requirements (ARFF). ARFF requirements at non-USAF active flying bases are as follows:

5.20.5.1.1. Up to four takeoffs and landings within 14 consecutive days may be accomplished at an airfield or LZ without ARFF. Each Group/Wing should track landing totals at airfields under their control. If landing totals are not tracked at airfields owned/controlled by other agencies, Group/Wing current ops will track landings to ensure the restriction is not exceeded for assigned aircraft.

5.20.5.1.2. For more frequent operations at an airfield or LZ, refer to AFPAM 32-2004, *Aircraft Fire Protection for Exercises and Contingency Response Operations*, and AFI 13-217 to calculate ARFF requirements. ***NOTE:*** Non-USAF ARFF vehicles may be used if the agent and pumping capabilities are equivalent.

5.20.5.1.3. Waivers to the ARFF requirements will be considered on a case-by-case basis. Required information for waiver requests can be found in AFPAM 32-2004.

5.20.5.2. A current landing zone (LZ) survey (within the past five years as specified in AFI 13-217) is needed before using other than hard-surfaced runways or taxiways.

5.20.6. RCR and RSC Limitations.

5.20.6.1. When other than RCR or RSC is used to report the runway conditions, the PIC will refer to the Flight Information Handbook (FIH) for standard ICAO conversions based on general runway conditions; be conservative when dealing with unknown conditions (e.g., forward operating bases (FOBs), unpaved runways). Normally, RCR values are not reported for taxiways and ramps. During periods of reported low RCR, the taxiways and ramps may have an even lower RCR than reported for the runway. The runway surface should be considered wet when water on the runway causes a reflective glare.

5.20.6.2. The performance charts used to determine braking action are based on concrete runways. Use the RCR values given in **Table 5.7** when landing on other than concrete surfaces. The RCR values in **Table 5.7** are estimates based on operational experience and should be used only as a guide.

Table 5.7. RCR Values.

TYPE SURFACE	RCR (DRY)	RCR (WET)
Asphalt	23	12
Aluminum Matting	20	10
M8A1/With Anti-Skid (PSP)	20	8
M8A1/Without Anti-Skid (PSP)	13	3
Clay/Crushed Rock/Coral	16	5

5.20.6.3. Limit HC-130J operations into and out of slush or water covered runways to a covering of one inch. This number is based on performance charts where an RSC of 10 is equal to one inch of slush or water. Performance data where more than one inch of slush or water is present may not be accurate.

5.20.6.4. On runways partially covered with snow or ice, takeoff computations will be based on the reported RSC or RCR for the cleared portion of the runway. A minimum of 40 ft either side of centerline should be cleared (30 ft for maximum effort procedures). If 40 ft either side of centerline is not cleared (30 ft for max effort procedures), computations will be based on the non-cleared portion.

5.20.7. Maximum Effort Operations.

5.20.7.1. Use Maximum Effort procedures when conditions (runway dimensions and/or obstacles) or directives require their use. Runway widths less than 80 ft require a maximum effort qualified crew. All maximum effort operations must fall in the "Recommended" area of the wind limitations charts unless otherwise approved by the OG/CC. For peace-time, do not use runways less than 3,000 ft long unless waived by the OG/CC or designated representative.

5.20.7.2. Maximum Effort Takeoff. Use maximum effort takeoff procedures if available runway length is less than CFL.

5.20.7.2.1. Minimum runway length is the charted ADJUSTED MFLMETO. ***EXCEPTION:*** SQ/CC may approve the use of MFLMETO not corrected for VMCA or VMU3 if mission necessity dictates.

5.20.7.2.2. Minimum rotation speed is Adjusted Maximum Effort Rotation Speed (VRamax). ***EXCEPTION:*** SQ/CC may approve the use of VRmax if mission necessity dictates.

5.20.7.2.3. Acceleration Check Time. An acceleration check time is required when refusal speed is less than rotation speed.

5.20.7.3. Maximum Effort Landing. Use maximum effort landing procedures whenever the runway available for landing is less than that required for a normal landing. Plan the touchdown within the first 500 ft of usable runway.

5.20.7.3.1. The minimum runway required for a maximum effort landing is equal to the charted Maximum Effort landing ground roll plus 500 ft. If the zone is unmarked, minimum runway length is ground roll plus 1,000 ft. OG/CC (or deployed equivalent) may approve ground roll plus 500 ft to an unmarked zone. ***WARNING:***

A go-around point will be identified to all crewmembers for all AMP-4 operations prior to execution.

5.20.7.3.2. Compute landing performance using: two outboard engines in ground idle, two inboard engines in reverse, ("2OB HGI; 2IB REV" in the Performance Manual), and maximum anti-skid braking. OG/CC (or deployed equivalent) may approve the use of all four in reverse performance data.

5.20.7.4. Training.

5.20.7.4.1. Minimum runway length is 3,000 ft or IAW **paragraph 5.20.7.2.1** and **5.20.7.3.1**.

5.20.7.4.2. Takeoff speed will be Adjusted Max Effort Rotation Speed (AMAX). Squadron commanders may approve the use of actual max effort speeds (takeoff and obstacle clearance) on a case-by-case basis.

5.20.7.4.3. Simulated obstacle clearance height will not exceed 50 ft.

5.21. Aircraft Taxi and Taxi Obstruction Clearance Criteria and Foreign Object Damage (FOD) Avoidance.

5.21.1. Do not taxi an aircraft within 25 ft of obstructions without wing walkers monitoring the clearance between aircraft and obstruction. With wing walkers, avoid taxi obstructions by at least 10 ft. ***EXCEPTION:*** IAW AFI 11-218, *Aircraft Operations and Movement on the Ground*, aircraft may taxi into or out of a marked parking spot without marshallers/wing walkers at home station along fixed taxi lines which have been measured to ensure a minimum of 10 ft clearance from any permanent obstruction. Adjacent aircraft are considered a permanent obstruction provided the aircraft is parked properly in its designated spot and not moving. Aerospace Ground Equipment (AGE) and vehicles are considered a permanent obstruction provided it is parked entirely within a designated area. Areas will be designated by permanent markings such as painted boxes or lines on the ramp or another suitable means.

5.21.2. When taxi clearance is doubtful, use one or more wing walkers. If wing walkers are unavailable, the PIC will deplane crewmembers to maintain obstruction clearance and provide marshaling using AFI 11-218 signals. Use wing walkers, deplaned crewmembers, or a crewmember on interphone positioned at the paratroop door(s) or ramp to act as an observer while maneuvering on narrow taxiways. During night taxi operations, marshallers and wing walkers will have an illuminated wand in each hand. Observers should be in a position to see wing walkers at all times (through door or windows) and communicate with the pilot.

5.21.3. FOD Avoidance. Make every effort to minimize the potential for engine FOD. Crews should:

5.21.3.1. Carefully review airfield layout during mission planning. Be familiar with taxi routes, turn requirements, and areas for potential FOD.

5.21.3.2. Minimize power settings during all taxi operations.

5.21.4. Reverse Taxi. The PIC shall coordinate reverse taxi directions and signals with the LM and marshaller (when available). Before reverse taxiing, the LM shall:

5.21.4.1. Secure all cargo and ensure all passengers are seated.

5.21.4.2. Open the aft cargo door and lower the ramp to approximately 12-inches above horizontal.

5.21.4.3. Position himself/herself on the aircraft ramp to direct reverse taxi, report any hazards, and provide the PIC with timely interphone instructions on turns, distance remaining, conditions of the maneuvering area, and stopping point.

5.21.4.4. Stop no less than 25 ft from an obstruction even if using a wing walker.

5.21.4.5. During night reverse taxi operations without NVGs, the PIC and LM will ensure the taxi area is sufficiently lighted.

5.21.5. After landing and clearing the runway, and with approval of the PIC, the LM may open the aft cargo door and lower the ramp to horizontal to prepare for cargo offload/onload provided equipment, cargo, and passengers remain secure in the cargo compartment. Careful attention must be given to the ramp position when taxiing on rough or unprepared surfaces.

5.22. Fuel Jettison Procedures.

5.22.1. PICs should elect to burn down fuel versus jettison, unless safety of flight dictates an immediate jettison (as determined by the PIC). Except in the case of an emergency, before jettisoning fuel, notify the appropriate ATC or flight service facility of intentions, altitude, and location. If available, the PIC will use designated jettison areas, except when safety of flight would be compromised.

5.22.2. For missions tasked by higher headquarters authority, the tasking C2 agency may authorize fuel jettison when an urgent operational requirement dictates immediate recovery/reconstitution of the aircraft and/or aircrew. The tasking C2 agency may provide fuel jettison instructions in the OPORD, mission directive, SPINS, etc.

5.22.3. For training missions, the OG/CC may approve fuel jettison when an urgent operational requirement exists to expedite recovery of the aircraft and all alternatives have been exhausted.

5.22.4. OG/CCs will establish jettison areas and procedures to minimize the impact of fuel jettison. Ideally, establish jettison areas at altitudes above 20,000 ft AGL, off published airways, avoiding urban areas, agricultural regions, and water supply sources. Avoid circling descents. Initiate AF Form 813, *Request for Environmental Impact Analysis*, and submit it to the base environmental coordinator.

5.23. Bird/Wildlife Aircraft Strike Hazard (BASH) Programs. BASH programs are centralized unit efforts that provide information cross-feed, hazard identification, and a consolidated course of action.

5.23.1. Ensure compliance with the following Bird Watch condition restrictions.

5.23.1.1. Bird Watch Condition Low - No operating restrictions.

5.23.1.2. Bird Watch Condition Moderate - Initial takeoffs and final landings allowed only when departure and arrival routes will avoid bird activity. Local IFR/VFR traffic pattern activity is prohibited.

5.23.1.3. Bird Watch Condition Severe - All takeoffs and landings are prohibited. Waiver authority is local OG/CC or equivalent.

5.23.2. Commanders establish Phase II of the BASH program during increased periods of migratory bird activity. Schedulers shall make every effort to not schedule takeoffs, landings, and low-levels from one hour before to one hour after sunrise and sunset during the Phase II period. Publish significant bird hazards in FLIP Area Planning (AP) and the IFR Supplement along with the associated airfield operating hour restrictions and avoidance instructions.

5.23.3. When operating at airfields where no BASH program exists, the PIC has the authority to delay takeoffs and arrivals due to bird condition after coordinating with the appropriate C2 authority.

5.23.4. Consider bird migratory patterns during the enroute portion of the mission to help minimize the potential of an in-flight bird strike. The Bird Avoidance Model (BAM) on HQ AFSC/SEF website contains BASH information including regionalized CONUS bird migration patterns, PFPS software overlay, and the latest news. The Avian Hazard Advisory System (AHAS) website is another source for real time bird hazard information. See AFPAM 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*, for additional information.

5.23.5. Following a bird strike, aircrews should land as soon as conditions permit, or as practical, to inspect the aircraft for damage.

5.24. Aircraft Recovery from Unprepared Surfaces. Aircrews will not normally attempt to recover an aircraft after inadvertent entry onto unprepared surfaces not suitable for taxi; ground crews will accomplish aircraft recovery. Unless an emergency dictates otherwise, aircrews may only accomplish recovery if there is no aircraft damage, the surface will support the aircraft, and the PIC has coordinated with appropriate MAJCOM headquarters maintenance authorities.

Chapter 6

AIRCREW PROCEDURES

Section 6A—Pre-Mission

6.1. Aircrew Uniforms.

6.1.1. Wear the aircrew uniform as outlined in AFI 11-301V1, *Aircrew Flight Equipment (AFE) Program*, and the appropriate MAJCOM supplement, on all missions, unless other attire is authorized. When the Foreign Clearance Guide (FCG) requires civilian attire, wear conservatively styled clothing.

6.1.2. All crewmembers will have Nomex gloves in their possession. It is recommended that primary crewmembers wear Nomex gloves during engine start, takeoff, landing, and when operating in a combat environment. LMs and anyone assisting will wear gloves for all airdrops, cargo loading/unloading, winching, and pyrotechnic operations.

6.1.3. Crewmembers will remove rings and scarves before performing aircrew duties.

6.1.4. Personnel will have the appropriate items of clothing in their possession when flying in Arctic and Antarctic regions. ***EXCEPTION:*** Not applicable to transoceanic flights or when staging or transiting Elmendorf AFB, AK.

6.2. Personal and Professional Equipment.

6.2.1. Passports. Carry passports on missions when the FCG requires them.

6.2.2. Shot Records. Carry shot records on all off-station missions outside the CONUS, Alaska, or Hawaii. Aircrew members must meet immunization requirements for the mission.

6.2.3. Identification Tags. Identification tags will be worn around the neck or carried in a flight suit pocket.

6.2.4. FOD Hazards. Crewmembers will not wear wigs, hairpieces, rings, ornaments, pins, clips, other hair fasteners, or earrings in the aircraft or on the flightline. ***EXCEPTION:*** Female crew members may wear plain elastic hair fasteners or plastic barrettes, providing they do not interfere with the wearing of headsets, helmets, or the donning of oxygen equipment. Account for all devices before and after flight.

6.2.5. Flight Kits. Carry a headset, helmet, oxygen mask, and operable flashlight on all flights.

6.2.6. Restricted Area Badges. Carry the restricted area badge on all missions (except actual combat missions.) Display the badge only in designated restricted areas.

6.2.6.1. Attach badges to the uniform by a lanyard or display it on an arm band or double breakaway lanyard around the neck. Do not display badges from before starting engines until after engine shut-down.

6.2.7. Reflective Belts. Wear a reflective belt or suitable substitute IAW local directives.

6.2.7.1. Deployed commanders will direct reflective belt use in a combat zone, but crews will normally wear them during night operations.

6.2.8. Tool and Airdrop Kits. A tool kit will be on board for all flights. Individual units will establish requirements for tool kit contents. One LM airdrop kit will be on board for aerial delivery missions.

6.2.8.1. For PDM inputs, carry a tool kit containing as a minimum: multi-tool (screw driver, pliers, wire cutter), safety wire, fuse pullers, and a 3/8" wrench.

6.2.9. Hostile Environment Repair Procedures (HERP) Kit. For future reference.

6.2.10. Night-Vision Operations. Each crewmember will preflight their own NVGs before flight and carry a spare set of batteries. The PIC must designate a crewmember to preflight and carry a spare set of NVGs onboard the aircraft. Each crewmember will also carry an NVG-compatible light source.

6.2.11. Survival and Protective Equipment. Personnel will wear survival and protective equipment provided during hostile environment operations. Unit/deployed commanders may amend survival and protective equipment requirements based on the threat. See AFTTP 3-3.HC-130 for a list of survival and protective equipment.

6.3. Pre-Mission Actions.

6.3.1. Before transiting areas outside the CONUS, aircrews will review theater-specific information necessary to successfully operate there. The review, at a minimum, should include the items in AFI 11-202V3, AFTTP 3-3.HC-130, and the following:

6.3.1.1. Review tasking, itinerary, and altitude reservation (ALTRV) requirements.

6.3.1.2. Review applicable OPORD, SPINS, Airfield Risk Assessment (ARA), Country Risk Assessment (CRA), and FLIP.

6.3.1.3. Review the FCG for the areas of operation (to include classified portions). Obtain necessary diplomatic clearances where required.

6.3.1.4. Obtain required customs forms.

6.3.1.5. Obtain appropriate FLIP and sufficient communications security (COMSEC) materials for the duration of the mission.

6.3.1.6. Ensure physiological training, annual physical, immunizations, and flight evaluations will remain current for crewmembers throughout TDY or deployment period.

6.3.1.7. Compile sufficient spare forms, flight orders, etc. to cover the TDY period.

6.3.1.8. Ensure the correct aircraft navigation database is loaded or will be carried, as appropriate.

6.4. Airfield Review. Accomplish airfield review IAW AFI 11-202V3.

6.5. Intelligence Briefing. Before departing on missions outside the United States, aircrews will receive an intelligence briefing that will emphasize terrorist, enemy, and friendly political and military development in the planned operating area. In theater, aircrews should receive intelligence updates on initial arrival at a forward operating location (FOL), or enroute stop, and thereafter when significant developments occur. Report information of possible intelligence value to the local intelligence office as soon as practical to ensure timely dissemination of mission reports (MISREPs).

6.6. Aircrew Publications Requirements. PICs will ensure the publications specified in **Table 6.1** are current and available on the aircraft for all missions. Units may specify additional publications in their local unit supplement. The use of electronic flight manuals in flight will be for reference purposes only (paper copies are always required) unless MAJCOM approved electronic flight bags are approved for use. Primary crewmembers will carry their respective crew position aircrew guide on all missions.

Table 6.1. Aircrew Publications.

PUBLICATION	AIRCREW
TO 1C-130(H)J-1, *Flight Manual*	On Aircraft
TO 1C-130(H)J-1-1, *Flight Manual Performance Data*	On Aircraft
TO 1C-130(H)J-1-4, *Communication/Navigation/Identification Management System (CNI-MS) Operator Manual*	On Aircraft
TO 1C-130(H)J-9, *Cargo Loading Manual*	On Aircraft
TO 1C-130(H)J-5, *Weight and Balance*	On Aircraft
TO 1C-130(H)J-5-1, *Sample Basic Weight Checklist*	On Aircraft
TO 1C-130(H)J-5-2, *Loading Data Manual*	On Aircraft
TO 1C-130(H)J-1CL-1, *Pilot/CSO Checklist*	P, CP, CSO
TO 1C-130(H)J-1CL-2, *Loadmaster's Checklist*	LM
TO 1C-130(H)J-9CL-1, *Loadmaster's On/Offloading Procedures*	LM
11-2HC-130J VOL 3 CL-1	P, CP, CSO
11-2HC-130J VOL 3 CL-2	LM
AFI 11-202 Volume 3, *General Flight Rules* w/ MAJCOM Supp	On Aircraft
11-2HC-130J VOL 3, *HC-130J Operations Procedures*	On Aircraft
AFI 13-217, *Drop Zone and Landing Zone Operations*	On Aircraft
AFI 11-231, *Computed Air Release Point Procedures*	On Aircraft
ATB-56(B), *NATO Air to Air Refueling Procedures*	On Aircraft
AFTTP 3-3.HC-130, *Combat Aircraft Fundamentals HC-130*	On Aircraft

Section 6B—Pre-Departure

6.7. Classified Equipment and Material. Comply with the following or as directed in MAJCOM supplement.

6.7.1. Equipment. When classified equipment is on board, ensure the C2 Center or airfield management operations office is aware of the requirement for aircraft security IAW **Chapter 7**. At bases not under jurisdiction of the AF, ensure the aircraft and equipment are protected. AFI 31-401, *Information Security Program Managmenet*, provides specific guidance concerning the security of various levels of classified equipment on board the aircraft. For classified aircraft components which cannot be removed and stored, lock and seal the aircraft. If available, use RAVENS to guard the aircraft; otherwise, use guards employed by the host country for flightline/airport area control.

6.7.2. Material. Ensure COMSEC and other classified materials are turned in at destination and receipts are obtained. The on-site C2 center will provide temporary storage for COMSEC and other classified materials during enroute, turnaround, and crew rest stops. If a storage facility is not available, the aircraft safe is GSA approved, and may be used for

material classified up to and including SECRET. Encrypted COMSEC will only be transferred to authorized DoD personnel. ***NOTE:*** Narcotics, currency, and weapons are not allowed to be stored along with COMSEC in the same aircraft safe at any time.

6.7.3. Aircrews will carry COMSEC equipment and documents required to operate the Mode IV on missions when required for mission accomplishment. Carry authenticators when flying into an ADIZ, participating in exercises, on overseas missions, deployments, and when specified in operation plans. Before departing for any destination without COMSEC storage facilities, crews will contact their local COMSEC managers for guidance.

6.7.3.1. The COMSEC material required depends on the theater of operation and user. The base COMSEC custodian has access to the AFKAG 44/AFKAG 14 and can assist in obtaining the material required for the mission.

6.7.4. Remove classified information stored in any electronic devices or aircraft systems (such as secure voice/DAMA, IFF, and mission information.)

6.7.5. In the event of an emergency, destroy or damage classified material and equipment prior to crash landing or bailout, if possible.

6.8. Narcotics. Maintain narcotics in the pararescue medical kits IAW appropriate directives.

6.9. Flight Crew Information File (FCIF). Crewmembers will review the FCIF before all missions or ground aircrew duties and update the FCIF currency record with the latest FCIF item number, date, and crewmember's initials. If an electronic sign-in system is used (i.e., PEX), then FCIF currency will be verified appropriately utilizing that system.

6.9.1. Crewmembers delinquent in FCIF or joining a mission enroute will receive an FCIF update from their primary aircrew member counterpart on the mission. Instructor pilots flying with general officers will brief appropriate FCIF items to them.

6.9.1. **(AETC)** Units will establish procedures for updating aircrew off-station. At a minimum, crews will be notified of any safety related issues.

6.9.2. Crewmembers not assigned or attached to the unit operating a mission will certify FCIF review by entering the last FCIF number and their initials beside their name on the file copy of the flight authorization or file copy of their crew orders. This applies to all crewmembers if the electronic sign in system is not operational at alert time.

6.10. Operational Risk Management (ORM). ORM is logic based, common sense approach to making calculated decisions on human, material, and environmental factors. PICs will accomplish ORM worksheets IAW MAJCOM and local guidance as part of preflight activities.

6.10.1. OG/CCs will develop ORM guidelines to identify and mitigate acceptable levels of risk for all missions.

6.11. Aircraft Mission Kits. Units will maintain one mission kit per aircraft. ***EXCEPTION:*** FTUs will establish the number and content of the mission kits for their assigned aircraft.

6.11.1. Prior to off-station departures, the PIC will confirm a current mission kit is on board the aircraft. The kit will contain, but is not limited to the items listed in **Table 6.2**. Items required by a unit or wing directive to be carried by an individual crewmember need not be duplicated in the mission kit. Maintain sufficient quantities of directives and planning documents to allow implementation of evacuation and contingency plans.

Table 6.2. Aircraft Mission Kit.

SECTION I – Publications	
1. AFI 11-2HC-130JV1, *HC-130 Aircrew Training* **w/ MAJCOM Supp** 2. AFI 11-2HC-130JV2, *HC-130 Aircrew Evaluation Criteria* **w/ MAJCOM Supp** 3. AFMAN 24-204, *Preparing Hazardous Materials for Military Air Shipments* 4. AFJI 11-204, *Operating Procedures for Aircraft Carrying Hazardous Materials* 5. DESC-I-31, *Purchase of Aviation Fuel and Services* 6. DOD 4515.13R, *Air Transportation Eligibility* 7. DOD Foreign Clearance Guide (when applicable) 8. HQ AMC Airfield Suitability and Restrictions Report	
SECTION II – Forms	
AF Forms 15, *USAF Invoice* 72, *Air Report (AIREP)* 315, *USAF AV Fuels Invoice* 457, *USAF Hazard Report* 651, *Hazardous Air Traffic Report* 711B, *USAF Mishap Report* 791, *Aerial Tanker In-flight Issue Log* 1297, *Temporary Issue Receipt* 2282, *Statement of Adverse Effect – Use of Government Facilities* 3823, *Drop Zone Survey* 4015, *HARP Computation* 4018, *CARP Computation* 4052, *C-130 Air Refueling Worksheet* 4075, *Aircraft Load Data Worksheet* 4108, *C-130 Fuel Log* 4116, *C-130 Flight Plan Record* 4118, *SCA Planning Form* 4119, *C-130 Fuel Planning Worksheet* 4122, *Airborne Radio Log* 4139, *Special Operations Refueling Worksheet*	DD Forms: 175, *Military Flight Plan* 1385, *Cargo Manifest* 1748-2, *Airdrop Malfunction Report* 1801, *DOD International Flight Plan* 1854, *U.S. Customs Accompanied Baggage Declaration* 2131, *Passenger Manifest* CBP 6059B, *Customs Declaration* CBP 7507, *General Declaration (Outward/Inward) Agriculture, Customs, Immigration, and Public Health*
SECTION III – Miscellaneous	
1. Foreign Nation Custom Forms (when applicable)	
2. Local Forms (all applicable)	
3. Box Car Seals	

6.12. Route Navigation Kits.

6.12.1. A route navigation kit is issued to the PIC at home station and remains with the aircraft until return. Kits will contain sufficient quantities of materials to cover the planned mission and global operations as required. Minimum contents of route navigation kits are IAW **Table 6.3**.

6.12.2. On unit local training sorties, local area navigation kits may be used in lieu of route navigation kits. Contents of these kits will be determined by the unit.

Table 6.3. Route Navigation Kits.

Item (Applicable to Area of Operations)	Quantity Required
FLIP Planning (GP, AP/1, AP/2, AP/3, AP/4)	1
FLIP IFR Supplement	2
FLIP Flight Information Handbook (FIH)	2
FLIP En Route Charts (High and Low)	2
FLIP Area Charts (Terminal)	2
FLIP Instrument Approach Procedures (High and Low)	3*
Standard Terminal Arrival (STAR)	3*
OPREP-3 Report Format	1
Maps and Charts	As Required
FLIP VFR Supplement	1
* Two required when a CSO is not part of the crew. ***NOTE:*** Units may modify the kit to carry only FLIP documents for the theater of operations.	

6.13. Briefing Requirements.

6.13.1. Briefings should be clear, concise, and designed to provide mission essential information. Refer to the appropriate briefing guides for content.

6.13.2. Crewmembers will not fly unless they attend the crew briefings for their mission. ***EXCEPTION:*** When pre-mission requirements dictate, the PIC may excuse certain crewmembers from the briefing. The PIC will conduct a face-to-face briefing with those personnel prior to engine start.

6.14. Call Signs. Use Voice Call Sign Listing (VCSL) or as specified in mission directives for all missions except local area training missions. Use squadron or wing static call signs, as directed, for local area training missions.

6.14.1. Aeromedical Evacuation. Preface normal call sign with "EVAC" plus the last five digits of the aircraft tail number when patients are on board.

6.14.2. Search and Rescue (SAR). When tasked to participate in SAR operations, use the call sign "AIR FORCE RESCUE" plus the last five digits of the aircraft tail number.

6.15. Instrument Flight Rules. Conduct flight operations under IFR to the maximum extent possible without unacceptable mission degradation. This does not preclude VFR training to maintain proficiency in mission essential VFR operations.

6.16. Sensitive Mission Operations.

6.16.1. Certain missions require special flight planning procedures or deceptive measures. Mission operating directives, MAJCOM/CC operations orders, or other tasking orders will direct use of these procedures. Crewmembers will be briefed on modification to normal procedures prior to execution of the operation. For these types of missions, the MAJCOM/CC or COMAFFOR will approve missions requiring coordination with non-ACC agencies prior to execution.

6.16.2. The planning agency tasked with the mission will provide the aircrew with the following information:

6.16.2.1. Departure procedures.

6.16.2.2. Enroute procedures to include tracks, ALTRVs, MARSA, tanker rendezvous, and emergency divert procedures.

6.16.2.3. Arrival procedures.

6.16.2.4. All communications requirements.

6.17. Flight Plan/Data Verification.

6.17.1. Computer Flight Plan (CFP) Use. CFPs are the official sources of performance, navigation, and climatic data, including enroute wind information. If stand-alone computer based plans are used, each mission segment should utilize best wind data available. Use only MAJCOM validated CFPs. Regardless of whether a flight plan is prepared by the aircrew or furnished by another agency, the PIC and CSO will verify routes and flight altitudes for proper terrain clearance.

6.17.1.1. Use CFPs to the maximum extent practical. Flight crews may manually compute flight plans. The PIC has final responsibility for flight plan accuracy and diplomatic clearance compliance.

6.17.1.2. Verify CFPs for route of flight and fuel computation accuracy before departure.

6.17.2. All waypoint data retrieved from a database should be verified by one or more of the following methods:

6.17.2.1. Latitude/longitude from current FLIP.

6.17.2.2. Bearing/distance from a flight plan.

6.17.2.3. Ground based NAVAIDs.

6.17.3. When conducting DZ/LZ operations, both pilots will verify CNI-MU CARP/LZ information with a valid DZ/LZ survey. Refer to AFI 13-217 for DZ/LZ survey information, requirements, and applicability.

6.18. Departure Planning. Comply with AFI 11-202V3, AFMAN 11-217V1, this chapter, and the appropriate MAJCOM supplements. Regardless of the type of departure flown (IFR/VFR), review the following (as appropriate): IFR Departure Procedure, instrument approach plate, NOTAMS, GDSS Giant Report, and suitable terrain charts. The PIC must determine the obstacle height, distance, and gradient information necessary for performance computations. To verify CNI TOLD, both pilots will cross-check CNI TOLD INIT entries.

6.18.1. VFR Departures. VFR departures will not be flown in lieu of obstacle clearance planning.

6.18.1.1. VFR departures are authorized when there is no authorized IFR departure method for the airport, when the aircraft cannot depart using one of the IFR departure methods contained in AFI 11-202V3 and AFMAN 11-217V1, when operational requirements dictate (i.e. tactical necessity), or when most of the mission is planned as a VFR flight for training. VFR departures require detailed planning to ensure obstacles and high terrain are avoided.

6.18.1.2. The minimum climb performance for VFR departures is determined by ensuring all the following conditions are met:

6.18.1.2.1. All-engine climb capability must provide obstacle avoidance along departure route.

6.18.1.2.2. Weather Minimums For Takeoff and Departure Alternate Procedures. Use **Table 6.4** and AFI 11-202V3.

Table 6.4. Alternative Takeoff Minima and Departure Alternate Procedures.

Departure Weather	Approval Authority	Departure Alternate
At or above authorized ceiling and visibility landing minimums	Not Required	Not Required (see note 1)
Below either authorized ceiling or visibility minimums and RVR is 1600 or greater (visibility 1/4 miles or greater)	OG/CC or designated representative	Required (see notes 1, 2 and 3)
Below either authorized ceiling or visibility minimums and RVR is less than 1600 but equal to or greater than 1000	OG/CC or designated representative, if mission is HHQ directed	Required (see notes 1, 2, 3 and 4)

NOTES:

1. A departure alternate is required if weather is below landing minimums for the available approach (at departure aerodrome). Do not use CAT II ILS minimums to determine if a departure alternate is required.

2. To qualify as a departure alternate, the airfield must meet one of the following conditions:

a. Alternate must be located within 30 minutes flying time, the existing weather must be equal to or better than the published approach minimums and forecast to remain so until 1 hour after takeoff, but in no case forecast to be lower than 200-1/2 (RVR 2400).

-OR-

b. Alternate must be located within 2 hours flying time, the existing weather must be at least 500-1 above the lowest compatible published approach minimums, but no lower than 600-2 for a precision approach or 800-2 for a non-precision approach, and forecast to remain so for ETA at the alternate +/- 1 hour.

3. Aircraft must be capable of maintaining the MEA or minimum obstruction clearance altitude (MOCA), whichever is higher, to the alternate using OEI performance criteria.

4. Departure runway must have operational centerline lighting and dual RVR readouts and displays for both the approach and departure end of runway (RVR must be at or greater than 1000 at both the approach end and departure end and runway). For runways with triple RVR readouts, the pilot may use any two consecutive read-outs to determine if the runway is usable for departure (aircraft performance permitting). For example: Approach end RVR=800, midfield RVR=1200, departure end RVR=1000. If aircraft performance and runway length will permit taking off at midfield, this runway is usable for takeoff.

6.19. Arrival Planning. The forecast destination weather will be according to AFI 11-202V3 and the following:

6.19.1. File two alternates when:

6.19.1.1. The forecast visibility (intermittent or prevailing) is less than published for the available DoD or FAA AeroNav Products (AJV-3) precision approach.

6.19.1.2. The forecast ceiling OR visibility (intermittent or prevailing) is less than published for all other approaches. For approaches with no published ceiling requirement (for example Jeppesen approaches), the minimum required ceiling shall be computed by taking the published HAA or HAT and rounding it up to the nearest 100 ft (or as determined by MAJCOM TERPs review). For example, a Jeppesen VOR approach with a published HAA of 642 ft would require a forecasted ceiling of 700 ft.

6.19.1.3. The forecast surface winds (intermittent or prevailing) exceed limits corrected for RCR.

6.19.2. File an alternate, regardless of forecast weather, when the destination aerodrome is outside the CONUS. **EXCEPTION:** OCONUS, intra-theater flights that do not exceed 3-hours, comply with basic AFI 11-202V3.

6.19.3. A remote or island destination is defined as any aerodrome, which due to its unique geographic location, offers no suitable alternate (civil or military) within 2 hours flying time. The forecast weather at the remote or island destination must meet the following criteria:

6.19.3.1. The prevailing surface winds, corrected for RCR, must be within limits at ETA and forecast to remain so for 2 hours thereafter, and.

6.19.3.2. The prevailing ceiling and visibility must be equal to or greater than published minimums for an available non-precision approach, for ETA plus 2 hours. However, if a precision approach is available, the ceiling or visibility may be intermittently below non-precision approach minimums, but not below precision approach minimums (for ETA plus 2 hours). ***NOTE:*** See **Chapter 12** for fuel planning considerations to a remote or island destination.

6.19.4. When filing to a destination where the alternate is located in Alaska or at latitudes greater than 59°N, see **Chapter 12** for fuel planning considerations.

6.20. Adverse Weather. All missions should be planned to avoid areas of severe weather, including icing or severe turbulence.

6.20.1. Flight into areas of forecast or reported severe turbulence is prohibited.

6.20.1.1. Anytime windshear may be encountered on departure or approach, it is recommended that aircrews select weather mode on one NAV RADAR display and windshear mode on another NAV RADAR display.

6.20.1.2. The PIC is responsible for ensuring all passengers are seated, with seat belts fastened, when areas of moderate or greater turbulence are encountered or anticipated.

6.20.2. Flight into areas of forecast or reported moderate or greater mountain wave turbulence is prohibited.

6.20.3. Flight into areas of forecast or reported severe icing is prohibited. Prolonged operation, such as cruise flight or holding, in areas of moderate icing should be avoided.

6.20.3.1. Do not takeoff under conditions of freezing rain or freezing drizzle.

6.20.3.2. Air Force Weather Agency technical note AFWA/TN 98/002, *Meteorological Techniques*, states that freezing drizzle is equivalent to moderate icing and freezing rain is equivalent to severe icing. Temperatures near 0°C, may cause ice or frost to accumulate on aircraft surfaces. When freezing fog is forecast or reported, aircrews will confirm with weather agencies what type (if any) icing is associated with the freezing fog. When an aircraft requires de-icing/anti-icing prior to takeoff, refer to the following:

6.20.3.2.1. Aircrews will only use de-ice and anti-ice fluids listed in their respective flight manual. Aircrews will be familiar with, and follow all restrictions in their associated flight manual with respect to de-ice/anti-ice procedures and holdover times.

6.20.3.2.2. MIL-A-8243 Type I and Type II de-icing fluids do not provide any anti-icing benefit, and therefore do not have holdover times. As a guide, for approved anti-icing fluids, aircrews may use published anti-icing holdover times IAW TO 42C-1-2, *Aircraft Anti-icing Procedures*, and AFFSA holdover tables located on the CoP: **https://www.my.af.mil/afknprod/community/views/home.aspx?Filter=OO-OT-SA-03**. The holdover time begins when anti-icing fluid is first applied and the PIC shall use time, temperature, and dilution of mixture to determine when times are exceeded and re-apply fluid if required.

6.20.3.2.3. In all cases, PICs will ensure a visual inspection of the aircraft is completed within 5 minutes of departure.

6.20.4. Do not fly directly above (within 2,000 ft) thunderstorms or cumulonimbus clouds. If unable to clear thunderstorms or cumulonimbus clouds by at least 2,000 ft vertically, avoid them by at least:

6.20.4.1. 20 NMs at or above FL 230.

6.20.4.2. 10 NMs below FL 230.

6.20.4.3. 5 NMs for tactical low-level operations. ***CAUTION:*** Aircraft damage is possible 20 NMs or more from any thunderstorm. Refer to AFH 11-203, *Weather for Aircrews*, for more information.

6.20.5. Avoid prolonged flight in areas of high lightening potential, i.e., clouds within +/- 5,000 ft of the freezing level or +/- 8°C of the freezing level, and in any intensity of precipitation or turbulence associated with thunderstorm activity.

6.20.6. Avoid thunderstorms visually, by airborne radar, or by specific request of a ground-based radar. The use of ground-based radar as a means of thunderstorm avoidance should only be used to assist in departing an inadvertently penetrated area of significant weather. It should never be considered a normal avoidance procedure. When relying exclusively on ground-based radar for weather avoidance, and the ground controller is unable to provide avoidance instructions, attempt to maintain VMC by:

6.20.6.1. Changing routing.

6.20.6.2. Diverting to alternate.

6.20.6.3. Declaring an emergency and requesting priority assistance.

6.20.7. In order to minimize exposure to thunderstorm hazards when approaching or departing an airport in an area where thunderstorms are occurring or are forecast:

6.20.7.1. Attempt to maintain VMC.

6.20.7.2. Maintain at least 5 NMs separation from heavy rain showers.

6.20.8. Approaches or departures may be accomplished when thunderstorms are in the vicinity of the airport providing they are not producing any hazardous conditions (such as hail, lightning, strong winds, gust fronts, heavy rain, wind shear, or microburst) at the airport, and are not forecast or observed to be moving in the direction of the route of flight (to include the planned missed approach corridor, if applicable).

6.20.9. When performing approaches and landing at locations where temperature are 0°C or below, refer to the *Flight Information Handbook* (FIH) Section D, Temperature Correction Chart, to correct MDA, DH, and other altitudes inside the FAF.

6.20.10. Volcanic Dust Precautions. Flight into areas of forecast or reported volcanic activity or dust is prohibited. Plan all missions to avoid volcanic activity by at least 20 NMs.

Section 6C—Pre-flight

6.21. AFTO Forms 781 Series.

6.21.1. Review the AFTO Forms 781 series before applying power to the aircraft or operating aircraft systems. An exceptional release (ER) must be signed before flight. A maintenance officer, maintenance superintendent, or authorized civilian normally signs the ER. If one of these individuals is not available, the PIC may sign the ER. When a release is signed by the PIC, it is effective only for those flights in which the releasing PIC participates as an aircrew member. Confirm that the DD1896, *Jet Fuel Identaplate*, and AIR card are on board the aircraft.

6.21.2. One-Time Flights. An aircraft may be released for a one-time flight with a condition that might be hazardous for continued use, provided the aircraft is airworthy for one flight to another station. Refer to T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, for downgrade authority and procedures. The chief of maintenance, the senior maintenance officer, or the chief of the AFMC repair team must first authorize the release. After the maintenance release is obtained, contact HQ ACC/A3, via Stan/Eval channels, for flight authorization. The PICs concurrence is required before the aircraft can be flown.

6.21.3. Aircrews are not qualified to accomplish the required ground inspections. In those instances where maintenance personnel are not available, the aircrew will enter a red dash symbol in the AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*, updating current status and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (i.e. pre-flight, thru-flight, basic post-flight) is overdue.

6.21.4. For Red X clearing procedures at stations without maintenance support refer to **Chapter 13**.

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6.22. Dash One Pre-Flight.

6.22.1. Aircrew Dash One Pre-flight Inspection Requirements. Except to prepare for OREs, ORIs, and contingencies/evacuations, units should avoid using unscheduled crewmembers to accomplish multiple pre-flights. In the case where an aircrew is flying an aircraft they did not preflight, they must receive a briefing from the preflight crew on the condition of that aircraft.

6.22.2. The aircrew dash one preflight inspection is required prior to the first flight of the flying period and will remain valid until either:

6.22.2.1. Aircraft ground time exceeds 12-hours (72-hours provided the aircraft is sealed, not flown, and documented entry control is maintained).

6.22.2.2. Another maintenance dash six preflight is performed.

6.22.2.3. When an aircrew assumes a pre-flighted spare or quick-turn, perform a thorough visual inspection, paying particular attention to areas affected by maintenance or servicing.

6.22.3. Fire Protection and Crash Rescue. See AFI 13-217 and MAJCOM specific guidance for specific Fire Fighting and Rescue requirements.

6.22.3.1. The aircraft engine fire extinguisher system fulfills the minimum requirements for fire protection during engine start. If available, position a portable fire extinguisher for added fire protection.

6.22.3.2. A fire guard is required for all engine starts except normal APU starts. A crewmember or ground controller may act as fire guard.

6.23. Alert Aircraft. When an aircraft is mobilizing for deployment, units are authorized to place it on alert status. It must be prepared IAW established T.O.s, accepted by an aircrew, remain under the control of operations, and be monitored by maintenance. When sealing an aircraft, accomplish pre-flight inspections IAW **paragraph 6.22**. Maintain aircraft on alert status as follows: ***NOTE:*** Placing a unit on alert does not in itself place the unit's aircraft on alert status.

6.23.1. Park the aircraft in a designated alert parking area to expedite taxi and takeoff.

6.23.2. When operationally feasible, have an aircrew other than the alert aircrew preflight the alert aircraft. If this is not feasible, follow procedures outlined in **paragraph 3.8.4**.

6.23.3. Aircraft preflight times should align with the start of the alert period eliminating the need to update the preflight during the alert period.

6.23.4. The alert aircraft may be flown for purposes other than actual alert missions provided the following conditions are met:

6.23.4.1. Alert requirements can be met with sufficient fuel to meet mission requirements.

6.23.4.2. Communication is maintained with the primary controlling agency.

6.23.4.3. Controlling agencies are notified any time the alert aircraft departs the local area.

6.23.4.4. Maintenance Thru-Flight Inspection. A thru-flight inspection will be accomplished IAW T.O. 00-20-1 after each flight when a turnaround sortie, continuation flight, or continuation of alert is scheduled and a basic post-flight inspection is not required.

6.23.4.4.1. Alpha-1. No maintenance actions required. The aircrew may seal the aircraft for alert once the aircraft servicing is complete. A new preflight is not required until the end of the preflight validity period.

6.23.4.4.2. Alpha-2. Maintenance action required. If the preflight validity period has time remaining, the aircrew may seal the aircraft after a thorough inspection of maintenance actions.

6.23.4.4.3. Alpha-3. Prolonged maintenance required. If major maintenance is accomplished, accomplish preflight inspections IAW **paragraph 6.22**. If minor maintenance is accomplished and the preflight validity period has time remaining, the aircrew may seal the aircraft after a thorough inspection of maintenance actions.

6.23.5. A DD Form 365-4, *Weight and Balance Clearance, Form F*, will be prepared for the alert aircraft. Alert crews are authorized to load TOLD using the worst weather conditions expected for the alert period. Use the TOLD for alert scrambles. If the alert aircraft is flown for other reasons, use TOLD for the existing weather conditions.

6.23.6. Consider alert aircraft off-limits to all personnel except alert crewmembers. No maintenance may be performed on the aircraft without approval of the unit/mission commander. ***NOTE:*** With PIC agreement, and when cargo load warrants (i.e. T.O. 1C-130(H)J-9 section VI cargo), alert LMs before the rest of the crew. Base the aircrew FDP/CDP on the LMs show time.

6.23.7. When a pre-flighted alert aircraft changes, or an alert crew change occurs and the same aircraft remains on alert, the oncoming crew will, as a minimum, apply power to the aircraft and check applicable items listed below:

6.23.7.1. AFTO Forms 781 series.

6.23.7.2. Interior and exterior for proper configuration and special equipment.

6.23.7.3. Fuel quantity.

6.23.7.4. Survival and emergency equipment.

6.23.7.5. Navigation and communication equipment.

6.23.7.6. Liquid oxygen quantity.

6.23.7.7. Battery Voltages

6.23.7.8. Hydraulic reservoirs and accumulator charges.

6.23.7.9. Publications.

6.23.7.10. Once the aircraft is accepted for alert, the LM will make an entry in the AFTO Form 781A stating, at a minimum, the date and time the crew completed the pre-flight.

6.24. Aircrew Flight Equipment and Oxygen Requirements.

6.24.1. The PIC or designated representative will ensure appropriate serviceable protective clothing, aircrew flight equipment, survival, and Dash 21 equipment for the entire mission are aboard the aircraft and all personnel are briefed or trained in their use before departing home station or enroute stations. ***NOTE:*** Local training missions only require a preflight inspection prior to the first flight of the day.

6.24.2. Before departing home station and following enroute crew changes, review, sign, and date the AFTO Form 46, *Prepositioned Life Support Equipment*, and verify all required equipment is on board and required inspections have been completed. In addition, review AF Form 4076, *Aircraft Dash 21 Equipment Inventory*, and verify all required Dash 21 equipment has been certified as installed and initial check signed by maintenance and configuration documents match mission requirements.

6.24.2.1. Mission Equipment. Aircrew members discovering missing equipment will accomplish the following:

6.24.2.1.1. Make an AFTO Form 781A entry for equipment found missing. Additionally, ensure equipment removed from the aircraft at an enroute station is documented in the AFTO Form 781A.

6.24.2.1.2. Annotate in the AF Form 4076 or AFTO Form 46 in the next vacant column indicating the quantity remaining for the item.

6.24.2.1.3. Advise the PIC and determine whether the missing equipment should be recovered or replaced before mission continuation.

6.24.2.2. Additional Equipment. If more equipment is discovered during the pre-flight than is annotated on the AF Form 4076 or AFTO Form 46, annotate the total quantity in the next vacant column for the item.

6.24.3. Oxygen. Oxygen on board for takeoff must be sufficient to accomplish the planned flight from the equal time point (ETP) to a suitable recovery base, should oxygen be required (minimum 5 liters for all flights). Calculate crew requirements using the 100% Oxygen Duration Chart in the flight manual at 10,000 ft.

6.24.3.1. Crewmembers occupying a crew station will have an oxygen mask connected and readily available for use from before starting engines until engine shutdown. ***NOTE:*** Crewmember pre-flight will include communication checks to include quick don and/or helmet and mask.

6.24.3.2. Normally, unpressurized flight will not be planned above 18,000 ft cabin altitude (except HALO).

6.24.3.3. Crewmembers who do not have access to the aircraft oxygen system will have an EEBD, EPOS, or other approved system within arm's reach for flights above 10,000 ft.

6.24.3.4. On missions carrying passengers, distribute EPOS to each passenger regardless of planned flight altitude. EPOS will be distributed and their use demonstrated before departure.

6.24.3.5. Walk-around bottles will not be considered a primary source of supplemental oxygen for crewmembers performing duties in a primary crew position. Furthermore, walk-around bottles will not be considered as a source of supplemental oxygen for any crewmember during unpressurized operations above 10,000 ft MSL.

6.24.3.6. Do not remove the LMs emergency equipment (cargo compartment quick dons/smoke masks) for use by flight deck crew members.

6.24.4. Life Rafts. On overwater flights do not carry more passengers and crewmembers than wing well life rafts will accommodate.

6.24.5. Life Preserver Units (LPUs). The LM will place an LPU within easy reach of each passenger and aircrew member before takeoff on overwater flights. Crewmembers will fit and adjust LPUs for overwater flights and will wear them on overwater missions below 2,000 ft. (except for takeoffs, approaches, or landings). ***NOTE:*** Parachutists will provide their own LPUs. The flying unit will notify the supported unit when route of flight requires the use of LPUs. ***NOTE:*** Infil/Exfil operations may preclude issuing LPUs to user personnel. In this case, carry sufficient LPUs on board for all personnel.

6.24.5.1. Crewmembers wearing a parachute or harness during air refueling overwater will also wear an LPU.

6.24.5.2. Ensure the appropriate number and type of LPUs are on board for overwater missions carrying children and infants.

6.24.6. Anti-exposure suits. Anti-exposure suits will be available during overwater flights when route of flight is beyond power-off gliding distance from land and the water temperature is 60°F or below (except when only the approach or departure is flown over water.)

6.24.6.1. If the water temperature ranges between 51°F and 60°F, the unit or mission commander may waive or extend the anti-exposure suit requirement after carefully considering factors such as: climate zone and existing weather throughout range of flight, operational requirements, time of flight over water, risk based on aircraft load and mission configuration, degree of surveillance over mission, location/availability/capability of SAR forces (consider anticipated time in the water prior to pick-up), winds and wave height and their impact on SAR forces, altitude and distance from land.

6.24.7. Parachutes and Restraint Harness. Configure all aircraft with one parachute for each crewmember.

6.24.7.1. Crewmembers should wear parachutes during combat and hazardous acceptance flights. ***EXCEPTION:*** Unit or mission commanders may authorize crewmembers to size and stow their parachutes in an easily accessible location. A restraint harness may be used in lieu of a parachute IAW **paragraph 6.24.7.2**, **6.24.7.3** and **16.34**. However, a parachute must be fitted and stowed in an easily accessible location for each crewmember using a restraint harness.

6.24.7.2. Personnel performing duties near an open (or suspected open) door/hatch/ramp in-flight will be restrained by a safety harness, or wear a parachute.

6.24.7.3. LMs will wear a restraining harness instead of a parachute during airdrops below 800 ft AGL or when performing duties near an open exit above 14,000 ft MSL. For additional guidance see **paragraph 16.34**.

6.24.8. Survival Kits/Vests. Configure all aircraft with one survival kit (ML-4) for each crewmember. Use survival vests in lieu of survival kits if the mission will not be conducted beyond gliding distance of land. Individuals should wear survival vests on all combat and contingency missions.

6.24.9. Protective Headgear and Eye Protection.

6.24.9.1. All crewmembers will preflight and wear their helmets during contingency and combat missions at the discretion of deployed commander.

6.24.9.2. Mobile crewmembers in the cargo compartment will wear helmets, with the chinstrap fastened, during all actual airdrop operations from the Twenty-Minute Warning through the completion of the airdrop checklist. ***WARNING:*** Personnel in the cargo compartment will not be seated under the anchor cables or static line retriever cables that are rigged for use, unless cargo compartment configuration or mission requirements dictate otherwise. In that event, protective headgear will be worn. Personnel will not position themselves directly under the center anchor cable supports (A-frames, FS 737) during personnel or equipment airdrops requiring the use of the anchor cable.

6.24.9.3. Eye Protection. All personnel aft of FS 617 will lower helmet visors or wear eye protection on all airdrops, PR, HAAR, and pyrotechnic missions requiring doors to be open. NVGs do not satisfy the requirement for eye protection.

6.25. Cargo Documentation. Proper cargo documentation will accompany each load. See **Chapter 14** for more specific guidance.

6.26. Airlifting Hazardous Cargo. AFMAN 24-204, *Preparing Hazardous Materials for Military Air Shipment*, contains a description of the types and classes of hazardous cargo that may be carried. PICs are responsible for ensuring all procedures contained in AFMAN 24-204, AFJI 11-204, *Operational Procedures for Aircraft carrying Hazardous Materials*, and any other applicable guidance are complied with when airlifting hazardous cargo.

6.26.1. Cargo Documentation. Do not accept hazardous materials unless proper documentation, certification, and identification of the cargo are provided. This includes transportation control number entered correctly on both the cargo manifest and the Shipper's Declaration for Dangerous Goods.

6.26.2. Briefing. Reference AFMAN 24-204.

6.26.2.1. The military host is responsible for displaying the proper placards on the aircraft. For non-military installations, the briefing to the PIC will include the placard requirements and, if required, placards will be furnished at the on-load base. The shipper must make prior arrangements with the airport manager for shipments of hazardous materials requiring placards. The shipper is responsible for cargo identification, fire-fighting procedures, and isolated parking requirements.

6.26.3. Flight Planning. Based on the Hazardous Cargo Briefing, the PIC will:

6.26.3.1. Enter "Hazardous Cargo", “Inert Device” (or both), and the mission number, PPR number, or flight number in the “Other information” or “Remarks” section of DD Form 1801 or DD Form 175, unless prohibited by directives that govern the area of operation. Refer to the FCG for country specific requirements concerning over-flight when transporting hazardous materials cargo.

6.26.3.2. If possible, plan the flight to minimize overflying heavily populated or otherwise critical areas. Approach, landing, and takeoff tracks are excluded.

6.26.3.3. Prepare a departure message. The remarks section of the departure message will include: class of hazardous material, DoD class or division for explosives, net explosive weight (NEW), and gross weight. If required, request special handling (e.g., isolated parking, security, technical escort teams, etc.).

6.26.3.3.1. If ETE is less than 1 hour, or if other circumstances preclude timely message receipt at destination, notify the next destination of the ETA and information listed above in **paragraph 6.26.3.3**. If available, C2 will relay required information to the next destination.

6.26.4. Before Engine Start. Confirm placards are removed. Give the controlling agency parking location, approximate engine start time, and verify the fire-fighting agency has the hazardous materials information. If not, request the following be relayed to the fire-fighting agency: class of hazardous material, DoD class or division for explosives, net explosive weight (NEW), and estimated time of departure.

6.26.5. Before Landing. Unless specifically prohibited by the theater commander or FLIP planning accomplish the following:

6.26.5.1. Contact base operations, control tower, approach control, or other agency specified in FLIP at least 30 minutes (or as soon as practical) prior to arrival to announce that hazardous materials are on board, and to verify the appropriate base support agencies have received the departure message. If not received, notify the next destination of the ETA and information listed in **paragraph 6.26.3.3**.

6.26.5.1.1. If landing at a CONUS civil airport without a tower, give the previous information to the nearest FAA flight service station. Request the information be relayed immediately to the civil airport manager, fire-fighting agency, and other support agencies (if required).

6.26.6. Parking. DoD requires aircraft carrying DoD Hazard Class or Division 1.1, 1.2, 1.3 explosives, DOT Class A poisons, and certain biological agents and munitions be parked in areas isolated from personnel. PICs must correctly identify cargo to the tower and ground control. When aircraft are not directed to an isolated area, identify the cargo again to tower or ground control. Once identification is acknowledged, the host is solely responsible for selecting the parking area. Should host procedures be questionable, submit trip reports, as appropriate, to document such occurrences.

6.26.7. Unscheduled Landing Due to IFE. In addition to standard declaration of the IFE, transmit unclassified information including hazardous materials on board, location of the cargo, and applicable information listed in **paragraph 6.26.3.3** to the appropriate air traffic control facility.

6.26.7.1. After unscheduled landing, contact the ACC Command Center or theater command post by telephone, HF radio, or message, giving arrival notice, hazardous materials information, and other pertinent information as required.

6.27. Hazardous Medical Equipment. Nonstandard hazardous medical equipment possessed by medical facilities using ACC air evacuation services should be regarded as potentially hazardous. Two types of equipment of major concern are:

6.27.1. Electronic Medical Equipment. This type of equipment produces electromagnetic interference (EMI) which is commonly beyond the limits specified by MIL STD 461A and 462, and therefore can interfere with aircraft communication and navigational equipment. For nonstandard electronic medical equipment, take the following precautions:

6.27.1.1. Pararescue personnel must inform the PIC when nonstandard electronic medical equipment is brought on board the aircraft. In addition, the PIC must be informed of the anticipated period of use of the equipment during the mission.

6.27.1.2. The PIC must be alert for any interference with aircraft communications or navigation equipment during periods of use of this equipment.

6.27.1.3. If continuous use of the equipment is required throughout the duration of the mission, flight is restricted to VFR conditions.

6.27.2. Therapeutic Oxygen Systems. These systems present an increased hazard of fire or explosion. A potential hazard is the inadvertent disruption of the cylinder neck, manifold, or regulator resulting in explosion and propulsion of the container or accessories. For nonstandard oxygen equipment, take the following precautions:

6.27.2.1. All compressed oxygen equipment with exposed, unprotected cylinder neck, manifold, or regulator will be completely secured from all movement in its longitudinal and lateral axes.

6.27.2.2. Pararescue personnel will continually monitor the operation of the equipment to detect possible malfunction during exposure to altitude.

6.28. Handling Procedures. Handling of Classified Cargo, Registered Mail, Mission Capable (MICAP) Parts, Very, Very Important Parts (VVIP), Forward Supply System (FSS) Shipments, and Courier Material. MICAP, VVIP, sensitive cargo, courier materials, and registered mail moving within the normal airlift system are receipted at the on and offload stations using the air cargo manifest. For unit moves operated IAW Defense Transportation Regulation (DTR), Part III, Mobility, classified or sensitive cargo movement is normally manifested utilizing the DD Form 2130-2, *Cargo Manifest* or similar automated product (such as CALM or AALPS), and will normally be accompanied by a unit courier. However, if classified/sensitive unit cargo is offered without an accompanying courier, the DD1907, *Signature and Tally Record*, must be used.

6.28.1. Defense Courier Service (DCS) couriers coordinating with the PIC are authorized to designate officer or enlisted, (E-5 and above) crewmembers on military aircraft as couriers to escort and safeguard courier material when other qualified personnel are not available. Qualified passengers, if carried, are designated before designating crewmembers. The following restrictions apply:

6.28.1.1. Primary crewmembers will not be designated couriers without the consent of the PIC.

6.28.1.2. Crewmembers on aircraft scheduled to make an extended enroute stop at a location where DCS couriers cannot provide enroute support will not be designated as couriers.

6.28.2. During stops at enroute locations supported by DCS stations, DCS couriers are required to meet designated couriers, guard and protect the material.

6.28.2.1. During unscheduled enroute stops crewmembers may place courier material in temporary custody of the following agencies in descending order of priority:

6.28.2.1.1. DCS courier.

6.28.2.1.2. TOP SECRET control officer of the US armed forces.

6.28.2.1.3. US Department of State Diplomatic Courier.

6.28.2.1.4. US Department of State activity.

6.28.2.1.5. US military guards.

6.28.2.1.6. US DoD civilian guards.

6.28.3. If unable to follow the itinerary to the destination of the courier material, or material is lost, stolen or otherwise compromised, report circumstances to the nearest DCS station and notify the local US military commander or US Government activity.

6.28.4. Life or death urgency shipments consist of biological or other medical supplies of such urgency that human life is dependent upon immediate receipt. Shipments will be manifested separately and the manifest annotated with the words LIFE OR DEATH URGENCY. All shipments will be handled on a hand-to-hand receipt basis, using either the air cargo manifest or the DD 1907, for unit moves. The PIC will be briefed on the urgency of the shipment and be made the custodian during flight.

Section 6D—Departure

6.29. On Time Takeoffs. Mission departures are on time if airborne no later than 15 minutes after the scheduled takeoff time. PICs may depart up to 30 minutes early provided the aircrew evaluates local and down-range impacts and no adverse effect will result.

6.30. NVG Departures.

6.30.1. NVG Departure Weather Minimums. Pilots may use NVGs to assist in instrument takeoffs as mission requirements dictate. Weather minimums for NVG departures for pilots who are current and qualified is 1 mile visibility. Weather minimums for NVG departures for pilots who are non-current or unqualified is 1500/3. Crews must give careful consideration to potential hazards during this critical phase of flight. Other weather limitations are IAW this instruction and AFI 11-202V3. NVGs have inherent limitations which can further be reduced by poor weather conditions. Crews will consider weather conditions, moon illumination and position, sky glow at dawn and dusk, cultural lighting, and weapon/expendable effects when planning NVG operations.

6.30.2. NVG Malfunctions During Takeoff. During an NVG takeoff, if the PF experiences NVG failure, takeoff may be continued at the discretion of the PIC. If NVG malfunctions occur after the PM states "rotate," consideration should be given to either continuing the takeoff as an overt instrument takeoff or transferring control of the aircraft as the situation dictates. If either pilot's NVGs fail after takeoff, continue the climb out and follow the appropriate procedures for loss of NVGs. The PM will be ready to immediately assume aircraft control if the PF experiences spatial disorientation or an NVG malfunction. ***WARNING:*** NVGs and associated components (battery cords, safety cords, and other hardware) can become entangled with the fire handles, overhead panel switches, or other controls. Pilots must exercise extreme care during seat changes as any interference can cause inadvertent engine shutdown, or repositioning of other critical switches or controls.

6.31. Departure Monitoring. The CSO and PM will back up the PF and report any deviations from the planned departure.

Section 6E—En Route

6.32. IFF/SIF Operations.

6.32.1. Aircrews will ensure that they have an operable Mode IV when required for mission accomplishment. Aircrews will conduct an operational ground test of the Mode IV using either the self-test or ground radar interrogator (ground test assets permitting). If the self-test fails and radar facilities do not permit a ground check, takeoff is authorized if the IFF/SIF was operational on the previous mission. Accomplish an airborne check immediately after takeoff.

6.32.1.1. Attempt to fix an inoperable Mode IV before takeoff. Do not delay takeoff or cancel a mission for an inoperable Mode IV, except when the aircraft will transit an area where safe passage procedures are implemented.

6.32.2. Aircraft with inoperable Mode IV may continue to their intended destination if use is no longer required. If use is required, repairs will be accomplished at the first destination where equipment, parts, and maintenance technicians are available. In theaters where safe passage is implemented, aircraft will follow procedures for inoperable Mode IV as directed in the applicable Airspace Control Order or Air Tasking Order.

6.32.3. Use the IFF/SIF IAW **Table 6.5**. ***NOTE:*** Once set and transmitted, IFF/SIF modes 1, 2, and 3/A codes are unclassified and may be left in the transponder.

Table 6.5. Worldwide IFF Chart.

IFF Mode	NATO	LANTCOM and NOPAC	All Other Areas
1	IAW ACP 160, NATO directives, SPINS/ATO	IAW ACP 160, US Sup-1(C), NI 10-41, NI 10-15, NR 55-68, NR 55-2, SPINS/ATO	
2	IAW ACP 160, USAFER 60-17, NATO directives, SPINS/ATO	IAW ACP 160, US Sup-1(C), and ANNEX A, SPINS/ATO	
3	As directed by ATC, SPINS/ATO	As directed by ATC, SPINS/ATO	As directed by ATC, otherwise IAW ACP 160, US Sup-1 (C)
4	Keyed and On when required		

6.33. Flight Progress. In-flight, use all available navigation aids to monitor Mission Computer performance. Immediately report malfunctions or any loss of navigation capability that degrades centerline accuracy to the controlling radar facility. See **Chapter 11** for procedures to monitor flight progress.

6.33.1. Operations in International/Territorial Airspace. (See FLIP, FCG, and AP for further guidance). US military aircraft and DoD personnel entering another nation to conduct US government business must have the approval of the foreign government concerned to enter their airspace. Foreign clearances for US international air operations are obtained through US officials known as Defense Attaché Officers (DAOs).

6.33.1.1. There are essentially two types of airspace: international airspace and territorial airspace. International airspace includes all airspace seaward of coastal states' territorial seas. Military aircraft operate in such areas free of interference or control by the coastal state. Territorial airspace includes airspace above territorial seas, archipelagic waters, inland waters, and land territory, and is sovereign airspace. Overflight may be conducted in such areas only with consent of the sovereign country.

6.33.1.2. Consistent with international law, the US recognizes sea claims up to 12 NMs. Diplomatic constraints and/or a lack of diplomatic clearances usually result in missions operating in international airspace. Therefore, it is imperative sufficient information be provided far enough in advance to allow compliance with FCG requirements established by the countries concerned. The US does not normally recognize territorial claims beyond 12 NMs; however, specific guidance from certain US authorities may establish limits which differ from the standard.

6.33.1.3. Flight Information Region (FIR). A FIR is an area of airspace within which flight information and related services are provided. A FIR does not reflect international borders or sovereign airspace. Aircraft may operate within an established FIR without approval of the adjacent country, provided the PIC avoids flight in territorial airspace.

6.33.1.4. Aircrews on a flight plan route, which takes them from international airspace into territorial airspace, for which approved aircraft clearances were obtained, should not amend entry point(s).

6.33.1.5. Violations of foreign sovereignty result from unauthorized or improper entry or departure of aircraft. Aircrews should not enter into territorial airspace for which a clearance has not been duly requested and granted through diplomatic channels.

6.33.1.6. ATC agencies are not vested with authority to grant diplomatic clearances for penetration of sovereign airspace where prior clearance is required from the respective country. Aircraft clearances are obtained through diplomatic channels only.

6.33.1.7. In the event an ATC agency challenges the validity of a flight routing or attempts to negate existing clearances, PICs must evaluate the circumstances. The normal response will be to attempt to advise the ATC agency that the aircraft will continue to planned destination, as cleared in international airspace. The key phrase is "in international airspace." Safety of flight is paramount in determining mission continuation. Under no circumstances should aircrews construe a clearance, which routes their mission over sovereign airspace not approved through diplomatic channels before mission departure, as being valid authorization.

6.33.1.8. Aircrews operating missions requiring unique or specially developed routing will normally be briefed at home station, onload station, and/or by the last C2 facility transited before performing the critical portion of the mission.

6.33.1.9. Due Regard Procedures. Aircrews normally are not tasked to and should not fly "due regard" routings unless coordinated and authorized by the unit commander. The "due regard" or "operational" option obligates the military aircraft to be their own ATC agency to separate their aircraft from all other air traffic. If operational requirements dictate, the PIC may exercise the "due regard" option to protect their aircraft. The aircraft will return to normal air traffic services as soon as practical. Fly "due regard" procedures IAW AFI 11-202V3 and FLIP GP "Operations and Firings over the High Seas."

6.34. Cold Weather Altimeter Setting Procedures. Apply cold weather altimeter corrections for non-tactical operations IAW AFI 11-202V3 and FIH. For tactical operations, apply cold weather altimeter corrections to any reference barometric altitude, e.g. MSA, ESA, NVG reference altitude, drop altitude, SCA backup altitudes, SCA minimums, etc., used during low level operations whenever the outside air temperature is below 32º F/0º C.

6.35. Traffic Collision Avoidance System (TCAS) Operations. Comply with AFI 11-202V3, *General Flight Rules.*

6.35.1. Mission requirements may allow selection of TA Only when operating from parallel runways, in the visual traffic pattern, or during air refueling operations since the proximity to aircraft may result in unwarranted RAs. In addition, excessive climb/descent rates could lead to an inadvertent TA/RA. Reducing climb/descent rates near level off can limit inadvertent TCAS advisories.

6.36. Navigational Aid Capability. The following airspace categories are each defined in FLIP, and are considered special qualification airspace: MNPS, RVSM, RNP, and BRNAV. For further details about specific airspace procedures and restrictions, see **Chapter 11**.

6.37. Communications. Make all communications IAW FLIP or as directed by the controlling agency.

6.37.1. Crews should conduct an HF radio ground check before takeoff if use of the HF radio may be required for ATC or C2 communications. Attempt to establish HF contact before going out of UHF/VHF range. If unable to establish HF contact with the controlling HF station, and an alternate means of relay of ATC information is not available, the aircraft should return to the nearest suitable support base.

6.38. Communications Instructions Reporting Vital Intelligence Sightings and Other Reports.

6.38.1. Report all vital intelligence sightings from aircraft as indicated in FIH.

6.38.2. In-flight harassment or hostile action against aircraft. Aircraft subjected to harassment or hostile action by foreign aircraft will immediately contact the nearest USAF air and ground voice facility and report the encounter. Include aircraft nationality, type, insignia, or any other identifying features; note position, heading, time, speed when harassed, and type of harassment. Request relay of the report to the nearest C2 agency. Also, attempt to contact the nearest command post when in UHF and VHF range.

6.38.3. Other incidents will be reported as indicated in JCS Pub 6V5 and AFMAN 10-206, *Operational Reporting*.

6.39. In-Flight Meals. Pilots should not consume meals at the same time, and their meals should consist of different menu items.

6.40. In-Flight Emergency (IFE) Procedures. Crews will report deviations from directives that occur as a result of an emergency IAW AFI 11-202V3, and this instruction.

6.40.1. Notification of Controlling Agencies. As soon as practical after completing the aircraft emergency action checklist, furnish the controlling agency and appropriate C2 agencies with a description and extent of the difficulty, assistance required, intentions, and any other pertinent information.

6.40.2. The PIC may initiate a CONFERENCE HOTEL when additional expertise is necessary. This procedure will make aircraft specialists accessible to the aircrew when in-flight situations pose systems-related questions that cannot be answered at the local level. See AFI 11-418, *Operations Supervision*, for contact information and further details.

6.40.2.1. When in UHF or VHF range, initiate the conference over appropriate discrete frequencies. When out of VHF or UHF range, use HF radios to establish a phone patch with the nearest or controlling C2 agency. Provide a narrative description of the situation including actions taken, intentions, and type of expertise desired.

6.40.3. Turnaround Procedures. When a turnaround is necessary, use procedures in FLIP. Maintain VFR, reverse course, climb or descend to a VFR altitude or flight level and request ATC clearance. If unable to maintain VFR, obtain an ATC clearance before reversing course. A turnaround under IFR conditions, without ATC approval, will be made only after a thorough evaluation of the seriousness of the emergency, general traffic density, and known traffic operating in the immediate area. Normally, a climb or descent (with minimum change in altitude) to a VFR altitude or flight level will result in minimum exposure to other aircraft.

6.40.4. Continued Flight with Engine Loss. A flight may proceed on three engines to its destination if two-engine capability exists, favorable operating conditions prevail both enroute and at the point of intended landing, and a suitable alternate airfield is available at all

times. If these conditions cannot be met, the flight will terminate at the nearest facility (preferably military) which, in the judgment of the PIC, offers safe and favorable operating conditions.

6.40.5. Fuel Jettison. Fuel will not be jettisoned except in combat, emergency conditions, or rescue missions requiring gross weight reduction.

6.40.5.1. Advise ATC should it become necessary to jettison fuel.

6.41. Need for Medical Assistance. When a person on board the aircraft requires medical care, the PIC will inform the station of next intended landing in sufficient time so medical personnel may meet the aircraft. Notification will include the individual's sex, approximate age, and the nature of the medical problem.

6.41.1. Suspected Laser Exposure. If laser exposure is suspected, the PIC will ensure appropriate C2, intelligence, safety, and medical agencies are notified as soon as possible. Aircrew who suspect exposure to laser radiation from either friendly or hostile sources should report to the Flight Surgeon's office or nearest emergency room where the individual can be examined by an ophthalmologist immediately upon landing.

6.42. Weather Forecasts. The PIC will ensure destination weather is obtained prior to descent for landing. ***NOTE:*** For all flights outside the local area, the CSO/PM will obtain the destination and alternate (if applicable) forecasts, to include pressure altitude and temperature, before reaching the equal time point and one hour prior to ETA.

6.42.1. The primary sources for in-flight weather assistance is Operational Weather Squadron (OWS), Pilot-to-Meteorological Service (PMSV), or through a USAF aeronautical station. Refer to the FIH for weather agency contact information. The ATC system can provide weather information to enroute aircraft.

Section 6F—Arrival

6.43. Descent. Crews should plan and initiate their descent to comply with ATC arrival and instrument approach procedures. Before descent into unfamiliar areas, pilots and CSO will review appropriate terrain charts to increase aircrew situational awareness of obstructions. Primary crewmembers will not be involved in duties other than aircraft operations, descent and approach monitoring, and required checklist items from the initial descent point to landing. The PM and CSO will monitor the approach and report any deviations from prescribed procedures.

6.43.1. Pilots and CSO will crosscheck radar altimeters during descent to verify adequate terrain clearance throughout the descent and maneuvering portion of the approach.

6.43.2. Night and Marginal Weather Operations. Fly a precision approach, if available, at night or during marginal weather. If a precision approach is not available, fly any available approved instrument approach. A visual approach may be flown during night VFR conditions if an approved instrument approach is not available or operational/training requirements dictate.

6.44. Instrument Approach Procedures.

6.44.1. Aircraft category. The HC-130J is a category "C" aircraft. If approach speeds exceed 140 knots, the minimums for category "D" will be used.

6.44.2. Prior to starting an instrument approach, pilots will confirm their aircraft can comply with the missed approach climb gradient requirements established in AFI 11-202V3.

6.44.3. Weather minimums. Before starting an instrument approach, or beginning an enroute descent, pilots will confirm the existing weather is reported to be:

6.44.3.1. At or above required visibility for straight-in or sidestep approaches.

6.44.3.1.1. For PAR approaches, visibility will be no lower than RVR 2400 (730 meters) or ½ mile visibility (800 meters) with no RVR readout available.

6.44.3.1.2. CAT I ILS Procedures. Decision height for precision approaches will be as published, but no lower than a 200 ft height above touchdown (HAT).

6.44.3.2. At or above required ceiling and visibility for circling approaches.

6.44.3.2.1. For circling approaches with no published ceiling requirement, the required ceiling shall be computed by taking the published HAA plus 100 ft rounded up to the next one hundred foot value. (For example, if the HAA is 747 ft, add 100 ft to get 847 ft and then round up to the next one hundred foot value which would be 900 ft. Your ceiling for the approach must be at or above 900 ft.) When circling minimums are published, but not by category, circling approach minimums will be as published, but in no case lower than:

6.44.3.2.1.1. Category C - 500 ft - 1 1/2 SM.

6.44.3.2.1.2. Category D - 600 ft - 2 SM.

6.44.3.3. Increase the published visibility minimums of an instrument approach by ½ SM or as noted in NOTAMs, on ATIS, or on the approach plate, when the runway approach lighting system (ALS) is inoperative. (This applies only to the ALS itself, not to VASIs, PAPIs, and other lights that are not a component of the ALS.)

6.44.4. Flight Instrumentation Requirements.

6.44.4.1. Full flight instrumentation for a CAT I ILS and precision approach radar (PAR) includes a HUD or PFD at each station, and no shared CADC or INU attitude reference.

6.44.4.2. Full flight instrumentation for a CAT II ILS includes an operational HUD in the PF position, a HUD or PFD at the PM position, and meeting the flight manual CAT II ILS criteria.

6.44.4.3. Aircraft are limited to a DH/MDA based on a HAT of 300 ft and RVR 4000 or 3/4 SM visibility (1220 meters) with no RVR if full flight instrumentation is not operational.

6.44.5. ILS Precision Runway Monitor (PRM) Approaches. Both pilots must be certified to conduct an ILS PRM approach. Comply with the following operational procedures:

6.44.5.1. Two operational VHF communication radios are required.

6.44.5.2. The approach must be briefed as an ILS/PRM approach.

6.44.5.3. If unable to accept an ILS PRM approach clearance, contact the FAA ATCSCC at 800-333-4286 prior to departure time to obtain a pre-coordinated arrival time. Pilots who arrive at a PRM airport unable to accept PRM approach clearance and did not

contact ATC prior to departure, should expect an ATC directed divert to a non-PRM airport.

6.44.5.4. All breakouts from the approach shall be hand flown. Autopilots shall be disengaged when a breakout is directed.

6.44.5.5. Should a TCAS Resolution Advisory (RA) be received, the PF shall immediately respond to the RA. If following an RA requires deviating from an ATC clearance, the PM shall advise ATC as soon as practical. While following an RA, comply with the turn portion of the ATC breakout instruction unless the PF determines safety to be a factor.

6.44.6. CAT II ILS Procedures. DH is based on radar altitude. Minimum HAT is 100 ft. Minimum RVR is 1200. Maximum crosswind limitation is 10 knots. Crosswind of 15 knots may be used for training approaches (requires weather of 200 – ½ or greater).

6.44.6.1. The following airfield and aircraft equipment must be operational (AFMAN 11-230, *Instrument Procedures*).

6.44.6.1.1. Approach lights.

6.44.6.1.2. Runway centerline lighting.

6.44.6.1.3. High intensity runway lights or touchdown zone lights.

6.44.6.1.4. Approach end transmissometer.

6.44.6.1.5. ILS far field monitor.

6.44.6.1.6. Sequenced flashers.

6.44.6.2. Aircrews will not execute an IMC CAT II ILS to minimums unless both pilots are qualified and current in Category II ILS.

6.44.6.3. When performing CAT II ILS procedures on a CAT I ILS for training/evaluations, the DH is the HAT for the CAT I ILS.

6.44.6.4. Refer to AFI 11-217V1 regarding equipment failure and go-around criteria.

6.44.7. NDB Procedures. The HUD alone is not sufficient for NDB approaches. A head-down display, which depicts a bearing pointer tuned to the NDB, must be used in conjunction with the HUD throughout the approach. NDB approaches may be flown during day, night, or IMC conditions after compliance with any airfield restrictions in GDSS2/ASRR. Pilots should back up each approach with available NAVAIDSs/GPS to include loading the NDB coordinates in the FMS.

6.45. After Beginning an Enroute Descent. Do not continue a CAT II ILS if the weather is reported to be below CAT II minimums.

6.45.1. Do not continue the approach below minimums unless the runway environment is in sight and the aircraft is in a position to make a safe landing.

6.45.2. If the approach is continued, sufficient fuel must be available to complete the approach and missed approach, and proceed to a suitable alternate with normal fuel reserve.

6.45.3. Holding. An aircraft may hold at a destination that is below landing minimums, but forecast to improve to at or above minimums provided:

6.45.3.1. The aircraft has more fuel remaining than that required to fly to the alternate and hold for the appropriate holding time, and the weather at the alternate is forecast to remain at or above alternate filing minimums for the period, including the holding time.

6.45.3.2. Destination weather is forecast to be at or above minimums before excess fuel will be consumed.

6.46. NVG Approach and Landing.

6.46.1. NVG Approach Weather Minimums. Weather minimums for NVG visual approaches, NVG visual pattern work, and pilots who are non-current and/or unqualified is 1500/3. Current and qualified NVG pilots may fly IFR approaches with weather at approach minimums. Crews must give careful consideration to potential hazards during this critical phase of flight. Other weather limitations are IAW this instruction and AFI 11-202V3. NVGs have inherent limitations which can further be reduced by poor weather conditions. Crews will consider weather conditions, moon illumination and position, sky glow at dawn and dusk, cultural lighting, and weapon/expendable effects when planning NVG operations.

6.46.2. NVG Malfunction during Approach and Landing. If either pilot experiences NVG failure on short final, it will be at the discretion of the PIC whether or not to transition to an overt landing or perform a go-around. The PM will be ready to immediately assume aircraft control if the PF experiences spatial disorientation or an NVG malfunction. If the PFs NVGs fail after touchdown, transfer control of the aircraft to the PM, if required, for the landing rollout. Use overt landing and taxi lights for illumination until both pilots are ready to resume NVG operations.

6.47. Salt Spray and Clear Water Rinse. The accumulation of salt spray on windshields and side windows is a hazard that must be considered for low-level overwater flight. Weigh this against mission urgency prior to descent below 500 ft, when heavy seas or high surface winds exist. In some cases, it will be preferable to fly at a higher altitude to avoid this condition.

6.47.1. Crews should use a clear water rinse facility (birdbath) after every flight in which the aircraft is flown over salt water below 3,000 ft AGL, including tactical approaches and landings. Two or more approaches over salt water require a clear water rinse after the last flight of the day IAW T.O. 1-1-691, *Cleaning and Corrosion Prevention and Control, Aerospace and Non-Aerospace Equipment*. ***EXCEPTION:*** Aircraft equipped with Large Aircraft Infrared Counter Measures (LAIRCM) Small Laser Turret Assemblies (SLTA) will not utilize the bird bath with the turrets installed due to water intrusion problems.

6.47.2. If a birdbath facility is unavailable make the following annotation in the AFTO Form 781A, “Aircraft Subjected to Salt Spray, Birdbath Unavailable.”

6.47.3. Clear water rinse facility (birdbath) usage guidelines are as follows:

6.47.3.1. Deactivate all sensors, such as the LPCR and EO-IR, prior to entering the birdbath.

6.47.3.2. The APU will remain off with doors closed to prevent flameout and flooding of the APU compartment.

6.47.3.3. Set flaps to 100% and switch off and extend landing lights.

6.47.3.4. All four engines should be at normal ground idle. Two engines in normal ground idle, and two in LSGI may be used if aircraft weight does not restrict forward movement through the bath.

6.47.3.5. As full water spray begins, taxi slowly on centerline at a rate which allows adequate rinsing of the aircraft. Hold nose wheel steering centered and start windshield wipers. Exercise flight controls while in the birdbath.

6.47.3.6. Complete the AFTER LANDING checklist after rinse is completed. Run engines at normal ground idle for a minimum of two minutes to aid in drying out engine nacelles. ***NOTE:*** Each birdbath is unique in design and function. Review local procedures for birdbath operating guidelines including direction of entry, wing tip clearance criteria, and noise abatement concerns. ***NOTE:*** It is possible to experience an overheat indication during or immediately following the birdbath due to water intrusion into overheat warning systems. Each crew will analyze the indication and make a judgment as to the emergency action to be taken.

6.48. Maintenance. Complete the AFTO Form 781 after each flight. After landing, the PIC and any crewmembers documenting a maintenance discrepancy will debrief maintenance personnel on the condition of the aircraft and subsystems as required. The PIC will review the aircraft forms, determine those discrepancies considered as mission essential, and indicate them by entering "ME" in block letters in the lower left hand corner of the discrepancy block. Enter "MC" for mission contributing discrepancies to indicate any discrepancies that, if not corrected, would substantially affect mission accomplishment, but are not mission essential. At stations where there is no maintenance, and maintenance support is required, the PIC will ensure a thorough debrief is provided to the controlling C2 agency prior to entering crew rest.

6.48.1. **Documentation of Fuel Onload/Offload.** Document all fuel onloaded/offloaded in the AFTO Form 781H.

6.49. Aircraft Recovery Away from Main Operating Base. The PIC is responsible for ensuring the aircraft is turned to meet subsequent mission taskings, even when qualified maintenance specialists are unavailable.

6.49.1. The PIC is responsible for the recovery items including:

6.49.1.1. Parking and receiving.

6.49.1.2. Aircraft servicing, including Aircraft Ground Equipment (AGE) usage.

6.49.1.3. Supervision of minor maintenance within local capability.

6.49.1.4. Minor configuration changes to meet mission tasking.

6.49.1.5. Securing the aircraft before entering crew rest.

6.49.1.6. Coordinating aircraft security requirements.

6.49.1.7. Documenting AFTO 781-series forms.

6.49.2. In all cases where aircrews must service the aircraft without qualified maintenance specialist assistance, comply with the appropriate maintenance T.O.

6.49.3. Aircrews are not qualified to accomplish the required ground inspections. In those instances where maintenance personnel are not available, the aircrew will enter a red dash

symbol in the AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*, updating current status and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (i.e. preflight, thru-flight, basic post-flight) is overdue.

6.50. Crew Debriefing. The PIC will conduct a debriefing after each mission. The debriefing will include all applicable crewmembers so that common problems can be discussed and resolved. Crewmembers may be excused from debrief at the discretion of the PIC.

6.51. Border Clearance. The border clearance responsibility will be as designated by the base or area command IAW DTR 4500.9R, *Defense Transportation Regulation*, Part V, *Department of Defense Customs and Border Clearance Policy and Procedures*, AFI 24-203, *Preparation and Movement of Air Force Cargo*, applicable FCG, and other US entry requirements and related areas.

6.51.1. Normal Operations.

6.51.1.1. The unit dispatching the mission is normally responsible for the border clearance of its aircraft.

6.51.1.2. When support is not available, border clearance is the responsibility of the PIC. Duties may be assigned to ground personnel or the LM, but the PIC retains ultimate responsibility. When an HC-130J aircraft is on-loaded at a base without an air traffic function, the PIC is responsible for ensuring the following:

6.51.1.2.1. Crewmembers and passengers possess current passports and valid visas, if required.

6.51.1.2.2. Crewmembers and passengers have current certificates of immunization (shot records).

6.51.1.2.3. Cargo entry documents are in proper order.

6.51.1.2.4. Departure or arrival to the US is through a port of entry where border clearance can be obtained.

6.51.1.2.5. Border clearance for aircraft cargo, passengers, crew and baggage, if required, is obtained before takeoff to a foreign area, or after arrival from a foreign area.

6.51.1.2.6. Aircraft spraying is accomplished, if required (see FCG and **paragraph 6.52**).

6.51.2. Procedures for US Entry.

6.51.2.1. Enroute, the LM will distribute personal customs declarations to all passengers and crewmembers. The LM will also brief passengers and crewmembers on customs regulations, and prepare and compile necessary border clearance forms for the PICs signature.

6.51.2.2. Enroute, notify the base of intended landing of any change in ETA, to ensure border clearance is accomplished as soon as possible after landing.

6.51.2.3. Obtain a Permit to Proceed when the mission requires an aircraft, which has landed in the US for customs clearance, to proceed to another US base to obtain border

clearance. The permit delays customs inspection of cargo, passengers, and crew until arrival at the offload station, saving intermediate offloading and reloading normally required for customs inspection. The permit is valid only to the airport of next landing, where the border clearance must be completed, or a new permit obtained. Do not make intermediate stops unless required by an emergency, or directed by the controlling agency.

6.51.2.4. When an aircraft lands for a US border clearance, a US Customs representative normally meets the aircraft to obtain the required documents. Do not deplane passengers or crewmembers unless necessary for safety (i.e. flare safety check) or preservation of life and property. Do not unload until approved by customs and agriculture personnel or their designated representatives. This procedure applies to the initial landing in the US and all subsequent landings until crew, passengers, and cargo complete final border clearance.

6.51.3. Inspections of US Aircraft by Foreign Officials.

6.51.3.1. Follow USAF policy on status of military aircraft as stated in chapter 3 (*General Information*) of the FCG. This policy holds that US military aircraft are immune from searches, seizures, and inspections (including customs and safety inspections) by foreign officials. In addition, PICs must be aware of, and adhere to, any specific FCG provisions for individual countries.

6.51.3.2. If confronted with a search request by foreign authorities, aircrews should consider the following procedures:

6.51.3.2.1. In most cases, search attempts may be stopped by a statement to the foreign officials that the aircraft is sovereign and not subject to search without consent of HQ USAF or the US Department of State in the country concerned. This should be clearly conveyed in a polite manner so as not to offend foreign authorities that may honestly, but mistakenly, believe they have authority to search USAF aircraft.

6.51.3.2.2. If foreign authorities insist on conducting a search, the PIC must make every effort to delay the search until contact is made with HQ USAF (through MAJCOM C2) or the appropriate American Embassy. The PIC should unequivocally state that they have no authority to consent to the search and that they must relay the host nation request to these agencies for decision. The PIC should then notify these agencies of the request by the most expeditious means available and follow their instructions. ***NOTE:*** If necessary, the crew will seal the aircraft, enter crew rest, and cancel departure intentions until resolution of the matter by the appropriate authority.

6.51.3.2.3. If foreign officials refuse to desist in their search request, the PIC should indicate that they would prefer to fly the aircraft elsewhere (provided fuel and mechanical considerations permit a safe departure) and request permission to do so.

6.51.3.2.4. If permission is refused and the foreign authorities insist on forcing their way on board the aircraft, the PIC should state that they protest the course of action being pursued and that they intend to notify both HQ USAF and the appropriate American Embassy of the foreign action. The PIC should then allow the foreign agents onboard the aircraft, without physical resistance, and thereafter report the

incident to HQ USAF and appropriate embassy, as soon as possible. ***NOTE:*** Other procedures may apply when carrying sensitive cargo or equipment. These instructions and applicable provisions of classified supplements to the FCG should be followed, where applicable.

6.51.4. Exercise and Contingency Operations.

6.51.4.1. General. Certain missions, which do not transit normal ports of entry or exit, require special procedures to expedite compliance with customs, public health, immigration, and agricultural requirements. A joint memorandum of understanding establishes procedures and waivers.

6.51.4.2. Implementation. Traffic and border clearing agencies implement all or part of the agreement as necessary for each operation. Inspection and clearance may be accomplished at the US onload or offload base instead of the normal port of entry, or at the foreign onload or offload base.

6.51.5. Customs Procedures.

6.51.5.1. Outbound. No requirement. Filing of Customs and Border Protection (CBP) Form 7507 is not required unless directed.

6.51.5.2. Inbound. Prepare one copy of the following documents before arrival:

6.51.5.2.1. CBP 7507 (passenger list not required).

6.51.5.2.2. Cargo manifest.

6.51.5.2.3. For troops out of country less than 140 days:

6.51.5.2.3.1. Troop commander’s certificate for examination of troop baggage.

6.51.5.2.3.2. One copy of DD Form 1854 or CBP Form 6059B for each passenger not under command of the troop commander, to include observers, support personnel, civilians, news reporters, and crewmembers.

6.51.5.2.3.3. Upon arrival at a CONUS offload base, a customs representative will meet the aircraft and accept the troop commander's certificate with respect to troop baggage. Individual baggage declarations are not required. The troop commander should have inspected troop baggage. Troops will debark under the observation of the customs representative with only a spot check of articles and baggage. The customs officer may elect to make a more extensive inspection.

6.51.5.2.4. For troops out of the country 140 days or more:

6.51.5.2.4.1. One copy of DD Form 1854 or CBP Form 6059B for each passenger and crewmember.

6.51.5.2.4.2. Upon arrival at a CONUS offload base, a customs representative will meet the aircraft and collect all declarations. Troops will debark under the observation of the customs representative, who may make discretionary examination of the baggage.

6.51.6. Immigration Procedures.

6.51.6.1. Outbound. No requirement.

6.51.6.2. Inbound. Submit the following to the Immigration inspector.

6.51.6.2.1. One copy of CBP Form7507

6.51.7. Agriculture Procedures.

6.51.7.1. Outbound. No requirement.

6.51.7.2. Inbound. Consult FCG.

6.51.7.2.1. The command being airlifted will instruct troops that no fresh fruit, milk, milk products, vegetables, plants, plant pests, soil samples, animals, meat, and animal products can be brought into the US. All items of troop personal gear/cargo are to be thoroughly cleaned of mud, dirt, sand, and other foreign material before brought on board the aircraft. Personal gear and equipment must be examined for snails and other plant pests to prevent their accidental entry into the US.

6.51.7.2.2. Before loading, the command responsible for cargo being airlifted will clear vehicles and cargo of snails or other plant pests and of all mud and soil.

6.51.7.2.3. When required by agricultural quarantine regulations, the FCG, or higher HQ, the aircraft will receive an aerosol treatment 30 minutes before landing.

6.51.7.2.4. On arrival, agricultural inspectors will inspect the aircraft after troops have disembarked. Crewmembers will assemble remains of in-flight lunches for prompt removal by fleet service personnel.

6.51.7.2.5. Inspectors examine baggage, equipment, vehicles, and cargo as offloaded. Any items found to be contaminated will be held for such treatment as the inspector may direct (washing, steam cleaning, physical cleaning, or fumigation).

6.51.8. Military Customs Preclearance Inspection Program.

6.51.8.1. The military customs program outlined in DTR 4500.9R Part V, chapter 506 was developed to assist DoD and other US Government agencies in the control of narcotics, contraband, and prohibited agricultural products, and to expedite entry of DoD personnel and material into the customs territory of the US.

6.51.8.2. Military customs inspectors will accomplish this inspection immediately prior to departure and may conduct more than one preclearance inspection on CONUS-bound aircraft. When security considerations necessitate deviation from this policy, mission planners must coordinate with the appropriate agency to prevent jeopardizing the mission.

6.52. Insect and Pest Control (Aircraft Spraying).

6.52.1. Responsibility. The PIC will ensure required spraying is accomplished IAW AFJI 48-104, *Quarantine Regulations of the Armed Forces*, FCG, or as directed by higher headquarters. Certify the spraying on CBP Form 7507, or on forms provided by the country transited. Aircraft should never be sprayed with passengers on board. The only exception is when when mandated by the FCG.

6.52.1.1. When spraying is required, use insecticide, Aerosol D-Phenothrin-2%, NSN 6840-01-067-6674 (or equivalent), to spray the aircraft. Wear leather or Nomex gloves while spraying.

6.52.1.1.1. Aerosol is normally dispersed at a flow rate of 10 seconds per 1,000 cubic ft. Direct the nozzle toward the ceiling of the compartment or space being sprayed. Do not spray plastic surfaces.

6.52.1.1.2. Spray spaces inaccessible from within the aircraft after completely loading fuel, baggage, and cargo, including baggage compartments, wheel wells, and other similar spaces.

6.52.1.1.3. Spray the cabin (aft to forward), flight deck, and other spaces accessible from within the aircraft ensuring all doors, windows, hatches, and ventilation openings are closed. Exit and close the crew entrance door when complete. Keep all doors and hatches closed for 10 minutes after dispensing and ventilate for 15 minutes before allowing anyone on board. ***WARNING:*** Aerosol D-Phenothrin-2% contains hazardous ingredients that when exposed for prolonged periods may become hazardous to humans.

6.52.1.2. Spray for 50 seconds unless longer periods are specified for the country being transited. ***NOTE:*** Keep used aerosol cans separate from other trash so they may be disposed of safely.

6.52.2. When seeing any insect or rodent infestation of the aircraft in-flight, notify the destination C2 center, airfield management, or airport manager of the situation before landing so the proper authorities can meet the aircraft.

6.52.3. Upon arrival, do not open doors or hatches except to enplane officials inspecting the aircraft for insect or rodent infestation. Do not onload or offload until the inspection is satisfactorily completed. This procedure may be altered to satisfy mission or local requirements, as arranged by the base air terminal manager.

Section 6G—Miscellaneous Procedures

6.53. Dropped Objects. During aircraft exterior visual inspections, pay particular attention to surfaces, panels, and components, which could potentially be dropped objects. If a dropped object is discovered, the flight crew will:

6.53.1. Enter a write-up in the AFTO Form 781A.

6.53.2. Notify the C2 agency as soon as practical. Include route of flight, altitude, and weather conditions (i.e., turbulence, etc.).

6.54. Cockpit Voice Recorder (CVR). If involved in a mishap or incident, after landing and terminating the emergency, pull the CVR power circuit breaker (ECB #464).

6.55. Impoundment of Aircraft. If an aircraft is involved in a serious ground or in-flight incident, the PIC should impound the aircraft immediately and contact the ACC Command Center or controlling agency for further instructions.

6.56. Aircrew Notification Procedures. When transiting installations, the PIC will establish a point of contact with the C2 agency, base operations, or local airport manager. The PIC will be notified immediately in case of incident or emergency affecting the safety or security of the aircraft.

6.57. Flight Deck Loose Objects.

6.57.1. No items (checklists, charts, etc.) will be placed on the center pedestal in a position that covers or hides any switch or light from view. Do not place any item behind the power levers.

6.57.2. No items (checklists, charts, etc.) will be placed on the flight deck glare shield.

6.57.3. Do not hang any item on the flight deck escape ladder higher than the second from the bottom rung.

6.57.4. Store only the minimum amount of professional gear required to accomplish the mission on the flight deck. Additional items will be secured in the cargo compartment.

6.58. Ordnance Procedures. Conduct the following procedures after the live firing of chaff/flares on the HC-130J aircraft:

6.58.1. After landing, taxi to the de-arm area or another suitable safe location to check for hung ordinance.

6.58.2. The LM or another qualified crewmember will deplane and check all dispensers for hung ordnance. ***NOTE:*** ALE-47 flare squibs that fail to fire are not considered hung ordnance.

6.58.3. If hung ordnance is found, identified by a protruding or partially ejected chaff/flare cartridge, the aircraft will remain in a de-arm area until Explosive Ordnance Disposal (EOD) personnel meet the aircraft. The aircraft must remain in the designated safe area until EOD personnel can clear all hung ordnance.

Chapter 7

AIRCRAFT SECURITY

7.1. General. This chapter provides guidance on aircraft security, as well as, prevention and resistance against aircraft piracy (hijacking) of the HC-130J aircraft on the ground and in-flight. Due to the sensitive nature of anti-hijacking procedures, aircrew members should reference AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking) (FOUO)*, AFI 31-101, *Integrated Defense (FOUO)*, FIH, and any MAJCOM supplements or specific security publications. Some aircraft contain equipment and documents that require protection per DoD 5200.1-R and AFI 31-401, *Information Security Program Management*. Aircrews will not release any information concerning hijacking attempts or identify armed aircrew members or missions to the public.

7.2. Security. The HC-130J is a "Protection Level 3" resource. Aircraft security at non-US military installations is the responsibility of the controlling agency. Additional equipment onboard or installed on the aircraft may result in increased security measures.

7.3. Procedures. The PIC is ultimately responsible for the security of their aircraft when located away from US military installations. AFJI 31-102, *Physical Security*, covers security arrangements when US Air Force aircraft are located on other DoD installations. Arrangements must be made to protect the aircraft during crew rest status at non-US protected locations. If US military security forces are not available, the US embassy assigned to that country must be consulted to ensure security arrangements are made. For missions involving a planning agency, the agency must coordinate with the PIC to ensure the planned security measures conform to mission requirements. The amount of security required will vary, depending on location and ground time.

7.3.1. For non-permissive or uncertain environments, airfield and LZ security is the responsibility of the agency requesting the airlift. Crews will work with the agency requesting the airlift to ensure security meets the requirement for the mission.

7.3.2. For permissive environments, the PIC will receive a threat assessment and force protection capability evaluation briefing at home station prior to departure and receive updates enroute, if required. When landing at a DoD component installation, the installation commander is responsible to provide adequate security for the aircraft. The PIC will determine if security is adequate. Planning agencies and PIC will use **Table 7.1** to help assess the risk to parked aircraft for planned overnight stops located at non-US military installations overseas and civilian airfields. For unscheduled or emergency landings at non-USAF installations, the PIC will assess the aircraft security situation and take the following actions, if force protection capability appears insufficient: ***NOTE:*** Aircrews do posses the training to provide the appropriate security when present at the aircraft.

7.3.2.1. Aircrew Surveillance. If the aircraft is not remaining overnight, aircrew are capable of maintaining appropriate aircraft security. The PIC will direct armed crewmembers to remain with the aircraft and maintain surveillance of aircraft entrances and activities in the aircraft vicinity. Obtain a means to report suspicious or hostile activity to security forces (e.g., land mobile radio, cellular phone, etc.)

7.3.2.2. Area Patrol. Request area patrol coverage from local security forces to include back-up response forces. If local authorities request payment for this service, use AF Form 15, *USAF Invoice*.

7.3.2.3. Departure without Crew Rest. If local security forces are unacceptable or unavailable, the PIC may waive FDP restrictions and depart as soon as possible for a destination with adequate force protection. If unable to depart the location due to system malfunction, the aircrew must secure the aircraft to the best of their ability. In no case, will the entire crew leave the aircraft unattended. Crew rest requirements will be subordinate to aircraft security when the airframe may be at risk. The PIC should rotate a security detail among the crew to provide for both aircraft protection and crew rest until relief is available. The PIC will coordinate through home station channels or the nearest DoD installation, US embassy, local military, or law enforcement agencies as appropriate to acquire additional security.

7.3.3. Tailored Security Measures. Standard physical security measures may be impractical at times due to mission, terrain, climate, sociopolitical sensitivities, or other factors. For example, some countries don't allow armed security personnel. On other deployments, the mission may rely on maintaining a low profile and attracting as little attention as possible. At such locations, tailor security measures to meet unique requirements when necessary. As a minimum, lock aircraft entry points and hatches. If it is not possible to lock the aircraft, secure aircraft entry points and hatches in a manner to indicate unauthorized entry (i.e., taping hatch release handles or using seals.) The PIC is the final authority for determining tailored security measures. Contact with US Embassy personnel is required at locations where security agreements are not in existence.

7.3.4. Ground Security Teams. Ground security teams may be needed to guard the aircraft for planned overnight stops. Teams may be sized as appropriate based on mission requirements and threat evaluation (two member's minimum) and may be made up entirely, or in part, by members from other services. Teams may travel in Mission Essential Personnel (MEP) status and are responsible to the PIC at all times. In turn, the PIC is responsible for their welfare (transportation, lodging, etc.) The PIC will ensure security team members receive a mission briefing, aircraft egress training, and passenger briefings, as appropriate. The squadron commander is the final approval authority for the need of ground security teams for their aircraft and authority may be delegated to no lower than the PIC.

7.3.4.1. Ground security teams will comply with AFMAN 24-204(I), *Preparing Hazardous Materials For Military Air Shipments*, at all times when carrying weapons, ammo and equipment onboard the aircraft.

7.3.4.2. Due to the sensitivity of weapons in foreign countries, ground security teams will keep their weapons inside the aircraft and out of sight of foreign nationals, even if the FCG allows them to be carried outside the aircraft. If a destination requires weapons to be carried outside the aircraft, the controlling MAJCOM must approve such action prior to deployment.

7.3.5. Unauthorized Entry. If, in the PIC's judgment, the aircraft needs to be locked and sealed as a measure to detect unauthorized entry:

7.3.5.1. Use the aircraft lock and available aircraft ground security locking devices. ***NOTE:*** The aircraft will be locked during all off-station missions remaining overnight.

7.3.5.2. Secure the doors in a manner that will indicate unauthorized entry (e.g., tape inside of doors to airframe so that entry pulls tape loose).

7.3.5.3. Close and seal the crew entrance door (box car seal.)

7.3.5.4. Wipe the immediate area around lock and latches clean to aid in investigation of forced entry.

7.3.5.5. Report any unauthorized entry or tampering to the Office of Special Investigation (OSI), security forces or local authorities, and the C2 agency. Thoroughly inspect aircraft prior to flight.

7.3.5.6. Close and seal the main crew entrance door or left troop door using a metal boxcar seal or other controllable device to identify forced entry. Wipe the immediate area around the seal clean to help investigate forced entry.

7.3.5.7. Coordinate with the local base operations representative on procedures for servicing the aircraft while the crew is away. If a padlock is used, the key or combination will be left with base operations or the representative for servicing and maintenance personnel.

7.3.6. Security awareness is crucial to effective mission accomplishment. Aircrews must always remain vigilant to their surroundings, especially in high threat, low security locations. During pre-flight activities, aircrews will inspect accessible areas not normally covered by normal pre-flight duties, to include aircraft wheel-wells, air conditioning compartments, crew/troop oxygen service panels, and cargo compartment for unauthorized packages, personnel, or other unfamiliar devices. Report any suspicious items to host security forces. Aircrews will maintain a heightened security posture throughout all pre-takeoff activities.

7.4. Aircraft Security Risk Assessment Matrix. Planning agencies and the PIC will use this matrix to help assess the risk to parked aircraft in a permissive environment. This matrix will be used for planned overnight stops at non-US military installations overseas and civilian airfields. A cumulative score of less than 55 implies that normal unmanned aircraft security measures are adequate. A score of 55 to 90 implies moderate security risk. Commanders may consider additional security measures. If the cumulative score is greater than 90, commanders should consider deploying or contracting security personnel. The squadron commander or deployed commander is the final approval authority for aircraft security issues. Authority may be delegated no lower than the PIC. ***EXCEPTION:*** During unscheduled or emergency landings, the PIC is the final approval authority for aircraft security. The PIC should contact the US Embassy or United States Defense Attaché Office (USDAO) for security assistance. ***NOTE:*** Normally, additional security for the aircraft is not required at military installations within a NATO country or US civilian airfields approved by the FAA/TSA.

Table 7.1. Aircraft Force Protection Risk Assessment Matrix.

FACTORS	0 POINTS	5 POINTS	10 POINTS	15 POINTS
The local terrorist threat is currently: (1)	Negligible	Low	Medium (3)	High (3)
The local mob violence threat is currently: (1)	Negligible	Low	Medium (3)	High (3)
Installation/Airport security services are:	Provided by host military forces only	Provided by host military and contract security forces	Contract security forces only	Not available (3)
Host security forces control entry:	The flightline and installation/airport	To the flightline only	To the installation/airport only	To neither the flightline nor the installation/airport (3)
There is perimeter fencing or barriers around:	The flightline and installation/ airport	The flightline only	The installation/ airport only	Neither the flightline or the installation/ airport (3)
Host security forces will provide_____ to guard the aircraft	An armed sentry	An unarmed sentry	Random security patrol coverage only	No sentry or random patrol coverage (3)
Host security forces will_____ security incidents involving the aircraft	Provide armed response to	Provide unarmed response to	Notify civilian authorities of	Notify the PIC of (3)
The aircraft will be parked:		Separate from host military and civilian aircraft	Among other host military aircraft only	Among civilian aircraft
The aircraft will _____illuminated during the hours of darkness (2)		Be adequately	Be marginally	Not be (3)
TOTAL POINTS: 1. Derive the local threat from valid intelligence sources only. 2. "Adequate lighting" is equal to the illumination provided by one standard USAF light cart. 3. If a security response team and security patrol is not present, commanders should consider deploying or contracting security personnel.				

7.5. Protective Standards For Aircraft Carrying Distinguished Visitors. This paragraph applies specifically to aircraft transporting DVs Code 4 or above. The PIC is responsible for aircraft security at enroute stops.

7.5.1. DoD Installations. Notify base security forces of estimated arrival and departure times. Request security forces maintain continuous security surveillance during the entire ground time. If the installation is unable to comply, arrange for the best protection available.

7.5.2. Non-DoD Installations. Contact the airport manager or installation commander to arrange for force protection. If available security is inadequate, purchase additional security using AF Form 15.

7.6. Arming of Crewmembers. When crews are directed to carry weapons, at least one flight deck crewmember, and one LM will be armed. All crewmembers should know who is armed. The following procedures apply when arming is directed:

7.6.1. Weapons Issue. Before departing home station, authorized crewmembers will obtain weapons, ammunition, box (if required), lock, and key. Crewmembers will be armed according to AFI 31-207, *Arming and Use of Force by Air Force Personnel*, and MAJCOM publications. Crewmembers must present a current AF Form 523, *USAF Authorization to Bear Firearms*. Crewmembers will be reissued the same weapon until the mission terminates at home station. If an armed crewmember must leave the crew enroute, transfer the weapon to another authorized crewmember using AF Form 1297, *Temporary Issue Receipt*.

7.6.2. Loading and Transfer of Weapons. Load and unload weapons at approved clearing barrels/facilities, if available. To transfer a loaded weapon to another crewmember, place the weapon on a flat surface. Do not use a hand-to-hand transfer.

7.6.3. Wearing of Weapons for Anti-Hijacking. Wear weapons in a holster, concealed at all times to protect the identity of armed crewmembers. Do not wear weapons off the flight line, except to and from the C2, armories, and other facilities associated with aircrew activities such as base operations, fleet service, cargo or passenger terminals, flight line cafeterias, snack bars, etc.

7.6.3.1. Military Passenger Terminal Procedures. Armed crewmembers must discreetly identify themselves to military passenger service personnel upon arrival at security checkpoints. One crewmember will present a valid set of crew orders, military identification card, and AF Form 523, *USAF Authorization to Bear Firearms*, authorizing the carrying of concealed weapons. Once terminal personnel verify this, they will allow the crewmember to vouch for the remaining crewmembers. The entire crew will then proceed through the magnetometer without removing objects from their pockets. This will prevent passengers from determining which crewmembers are armed.

7.6.4. Weapons Storage In-Flight. Crewmembers will be armed before beginning preflight, on-load or off-load duties and until completion of all post-flight duties. When no passengers are aboard, weapons may be stored in the gun box in-flight after a satisfactory stowaway check. If no gun box is available retain weapon for the duration of the flight. Crewmembers will rearm before landing. Weapons should not be unloaded before placing them in a gun box.

7.6.5. Weapons Storage on the Ground. Aircraft gun box use is acceptable at military base locations providing the aircrew coordinates with base security forces so they can provide a 24 hour guard at the aircraft.

7.6.6. When storing weapons in the gun box:

7.6.6.1. Weapons should normally not be unloaded.

7.6.6.2. Inform C2/base operations which crewmember has the gun box key/combination.

7.6.7. Crew Rest. During crew rest, store weapons in the most secure facility available, normally the base armory. If a weapons storage facility is unavailable, or the country prohibits or restricts the entry of weapons, secure firearms and ammunition in the gun box.

7.6.7.1. Aircraft without a Gun Box. If an aircraft without a gun box must remain overnight at a location where a government-owned storage facility is unavailable, use the nearest acceptable facility. Acceptable storage facilities are US or Allied military services armories, US National Guard and Reserve armories, and US civil law enforcement armories. If none of these are available, or the PIC believes weapons security may be compromised, crewmembers may secure their weapons in their quarters. One crewmember will remain with the weapons at all times. In this case, turn the ammunition over to the PIC.

7.6.8. Due to the dynamic nature of contingency and combat operations, unit commanders may designate all aircrew as arming group B for the purpose of aircraft/resource protection for the following weapons: M-9, M-14/M-16 or equivalent, and M-870, IAW AFI 13-207 and AFI 36-2226, *Combat Arms Program*.

7.7. Standby/Alert Aircraft Security. Ensure aircraft hatches and doors are secure to show unauthorized entry; seal the crew entrance door with a box car seal, or other controllable device, which will prevent entry without damaging the door or lock. The PIC shall notify the C2 agency the aircraft is sealed and provide them a means to access the aircraft in an emergency. Annotate the forms with the time the aircraft was sealed. The C2 Senior Controller may grant access to a sealed aircraft, shall document time of entry and ensure it remains launch capable. The PIC or designated representative must be present if access to the aircraft is required and will ensure the aircraft is resealed. The aircrew pre-flight portion will remain valid if performed by one aircrew, sealed, and flown by another aircrew. ***NOTE:*** WG/CCs should develop local procedures for documentation and management IAW TO 00-20-1 and MAJCOM Supplement.

7.8. Enroute Security. If required, a ground security team will be assigned to the mission.

7.8.1. Entry Control Procedures. Unescorted entry is granted to aircrew members and support personnel assigned to the mission who possess their home station AF Form 1199, *Air Force Entry Control Card*, supported by an Entry Access List (EAL) or aircrew orders. Aircrew members and assigned crew chiefs are authorized escort authority.

7.8.1.1. Normally, non-United States nationals, such as cargo handlers, can perform their duties under escort and should not be placed on the EAL.

7.8.1.2. Personnel not on the EAL or aircrew orders must be escorted within the area.

7.9. Preventing and Resisting Hijacking.

7.9.1. The Air Transportation Act of 1974 and the Federal Aviation Act of 1958, as amended, vest the FAA Administrator with exclusive responsibility for the direction of law enforcement activity in aircraft hijacking situations involving all aircraft (civil and military) in-flight in the United States.

7.9.2. In taking action during an aircraft hijacking situation, military forces will act under military command within the scope of their duties.

7.9.3. In the event an aircraft involved in an aircraft hijacking situation is carrying documents, equipment, or material that DoD has determined to be highly sensitive, or weapons of mass destruction, DoD will provide FAA, and where appropriate, the Federal Bureau of Investigation (FBI) with all pertinent information. Where possible, the FAA will consult and cooperate with DoD prior to directing any law enforcement activity.

7.9.4. An aircraft is most vulnerable to hijacking when the aircrew is aboard and the aircraft is operationally ready for flight.

7.9.5. A concerted effort must be made to prevent the hijacking of military or military contract aircraft by detecting potential hijackers before they board the aircraft.

7.9.6. Should preventive efforts fail, any actual attempt to hijack a military aircraft must be resisted in a manner appropriate to the situation.

7.9.7. Since air piracy may be committed by political terrorists or by individuals to whom the threat of death is not a deterrent but a stimulus, ordinary law enforcement procedures may be ineffective. Thus, successful conclusion of a hijacking situation and apprehension of the hijackers may require use of specialized law enforcement techniques and procedures.

7.9.8. Delaying actions have been most successful in overcoming hijackings without loss of life or property.

7.9.9. Assistance to hijacked civil or military contract aircraft will be rendered as requested by the PIC of the aircraft and the authority exercising operational control of the anti-hijacking effort.

7.10. Preventive Measures. Commanders at all levels must ensure preventive measures are taken to minimize access to the aircraft by potential hijackers. Aircrews must make every reasonable effort to resist an aircraft hijacking attempt, resistance may vary from dissuasion, to direct physical confrontation, including the use of deadly force. Due to the sensitive nature of anti-hijacking procedures, crewmembers should reference AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking) (FOUO)*, MAJCOM Sup. to AFI 13-207, and the FIH for more specific guidance. Aircrews will not release any information concerning those procedures or hijacking attempts. Anti-hijacking is a crew duty performed exclusively by aircrew personnel. The hijacking of an USAF aircraft could create a serious international incident and jeopardize the safety of passengers and property. An aircraft is most vulnerable when the crew is on board and the aircraft is ready for flight. Hijackers cannot be dealt with as ordinary criminals. Some are mentally disturbed, emotionally unstable individuals for whom the threat of death is not a deterrent, but a stimulus to crime. Delay tactics have been most successful in saving lives and property. Detection of potential hijackers before they board the aircraft is the best solution to the problem. Passenger terminals will be used for passenger screening to the maximum extent possible.

7.10.1. Acceptance of Passengers. The host station passenger processing or manifesting facility should conduct anti-hijacking inspections. Do not board passengers until the PIC is fully satisfied with inspection results. In the absence of qualified passenger service representatives, the PIC will ensure the anti-hijacking inspection of passengers and baggage

is accomplished. ***EXCEPTION:*** Supporting/supported forces may be anti-hijack inspected at the aircraft by the aircrew.

7.10.1.1. The Transportation Security Administration provides the latest guidance on passenger screening and carry-on allowances.

7.10.1.1.1. Aircrew must ensure thorough screenings are accomplished when processing passengers at locations without a military passenger terminal.

7.10.1.1.2. Carry-on restrictions apply to all passengers required to process through the passenger terminal. Carry-on restrictions do not apply to personnel not required to process through the passenger terminal. This includes:

7.10.1.1.2.1. Aircrew members listed on the Flight Authorization for that mission.

7.10.1.1.2.2. MEPs for that mission.

7.10.1.1.3. Consider baggage contained in areas not readily accessible in-flight as checked baggage, even if carried to the aircraft by the passengers. This includes, but is not limited to segregated baggage compartments, floor loaded baggage tied down with cargo straps/chains, palletized baggage, and baggage in baggage bins.

7.10.1.1.4. Brief passengers, required to process through the passenger terminal, or equivalent, that baggage in these areas will not be accessed in-flight. If these passengers attempt to access checked baggage in-flight, all attempts shall be made to stop the passengers from accessing the baggage. Land the aircraft at the nearest suitable airport (preferably a military facility) with appropriate law enforcement personnel. If needed, request assistance removing the passenger(s) and any accompanying baggage from the aircraft. Comply with all law enforcement direction.

7.10.2. Medical facility commanders are responsible for anti-hijacking inspection of patients. When patients are delivered to the aircraft by civilian sources, the aircrew will perform required inspections prior to loading.

7.10.2.1. For aeromedical evacuation (AE) missions, the Medical Crew Director (MCD) is the final authority for determining what medical items can be carried by/for AE patients.

7.10.3. During exercises or contingencies in support of combat operations involving the movement of large groups of personnel, the unit being supported should manifest passengers and perform anti-hijacking inspections.

7.10.4. Passengers will not carry weapons or ammunition on their person or in hand-carried baggage aboard an aircraft. ***EXECPTION:*** Special agents, guards of the Secret Service or State Department, designated security team members, and other individuals specifically authorized to carry weapons with coordination of the PIC. In all cases the crew will be aware of location of weapons and ammunition.

7.10.4.1. Troops or deadhead crewmembers will not retain custody of ammunition on an aircraft. They will turn it in to the troop commander or PIC. Troops may carry unloaded weapons and ammunition aboard the aircraft during combat operations. ***EXCEPTION:*** During combat operations, troops may carry unloaded weapons and ammunition on board

the aircraft. When the tactical situation dictates, personnel who will engage an enemy force immediately upon deplaning at the objective may carry loaded weapons aboard the aircraft at the discretion of the troop commander/team leader, with the PIC's concurrence. Weapons will not be breached until clear of the aircraft.

7.10.4.2. Dummy clips that can be easily identified may be loaded for training at the order of the team leader in coordination with the aircrew.

7.10.4.3. Designated security teams will only be armed in-flight on specifically designated missions identified on the mission "frag" as "in-flight arming required."

7.10.5. If weapons must be cleared, instruct the individual(s) to:

7.10.5.1. Move to a safe, clear area at least 50 ft from any aircraft, equipment, or personnel before un-holstering or un-slinging their weapons.

7.10.5.2. Clear weapons in accordance with standard safety procedures. Ensure troop/aircraft commander retains ammunition IAW **paragraph 7.10.4.1**.

7.11. Initial Response. When an act of air piracy involves an Air Force installation or aircraft within the United States, response will be according to the following guidelines until such time as FAA assumes active direction of anti-hijacking efforts. Resist all attempts to hijack a military aircraft. Resistance may vary from simple dissuasion, through deception and subterfuge, to direct physical confrontation, including the prudent use of weapons.

7.11.1. The following guidelines should be used to counter a hijacking, actual or threatened, while the aircraft is on the ground:

7.11.1.1. Delay movement of the aircraft to provide time for ground personnel and the aircrew to establish communication and execute coordinated resistance actions.

7.11.1.2. The authority for determining when ground resistance will be discontinued is vested in the highest available level of command. When adequate communication cannot be established, or when time does not permit, this authority is delegated in the following order:

7.11.1.2.1. MAJCOM commander exercising operational control of the aircraft.

7.11.1.2.2. MAJCOM commanders in whose AOR the airfield lies.

7.11.1.2.3. Senior operational commander on scene.

7.11.1.2.4. PIC in compliance with MAJCOM directives.

7.11.2. A hijacked aircraft carrying weapons of mass destruction will not be allowed to takeoff. Refer to DoD 5210.41M, for additional guidance.

7.12. In-Flight Resistance. In the event of a hijacking, crewmembers must act immediately and resourcefully, without instruction, in order to counter the attacker successfully. Many variables of a hijacking preclude use of any specific counter-hijacking procedure. Some key factors should be evaluated before deciding a course of action to be taken, including the nature of the threat, danger to life or crippling damage to the aircraft in-flight, destination indicated by the hijacker, and the presence of sensitive material onboard. Some counter-hijacking actions the aircrew may consider are:

7.12.1. Engage the hijacker(s) in conversation in an attempt to calm them and to evaluate what course of action might be effective.

7.12.2. Dissuade the hijacker.

7.12.3. Use facts or subterfuge to convince the hijacker intermediate stops are necessary.

7.12.4. Propose more favorable alternatives, such as landing in a neutral, rather than a hostile, country.

7.12.5. Exploit any reasonable opportunity to incapacitate or overcome the hijacker physically, including the prudent use of firearms.

7.12.6. In any suspected or actual hijack attempt, the aircrew basic objective is to get the aircraft on the ground as quickly as possible and keep it there. If the pilot needs to land quickly, the pilot will request an emergency descent clearance from ATC.

7.13. Communications Between Aircrew and Ground Agencies. Crews facing a hijacking threat will transmit an in-the-clear notification of hijacking to ATC. Notify ground agencies as soon as practical and follow-up with situation reports as circumstances permit. Covert signals are no longer used per FAA guidance.

7.14. Forced Penetration of Unfriendly Airspace. Refer to FIH for international signals for air intercept.

7.15. Air Force Installation Security Program. The following security procedures will implement AFI 31-101, *Integrated Defense (FOUO)*, requirements for C-130 aircraft:

7.15.1. The aircraft will be parked in an established restricted area and afforded protection via a roving patrol, a two-person Internal Security Response Team (ISRT), with immediate response not to exceed 3 minutes, and a two-person External Security Response Team (ESRT), with response capability within 5 minutes.

7.15.2. When no permanent or established restricted area parking space is available, establish a temporary restricted area consisting of a raised rope barrier, and post with restricted area signs. Provide a one-person mobile patrol, supported by a two-person ISRT capable of a 5 minute response. Portable security lighting will be provided during the hours of darkness if sufficient permanent lighting is not available.

7.15.3. At non-United States military installations, the PIC determines the adequacy of local security capabilities to provide aircraft security commensurate with this chapter. If he or she determines security to be inadequate, the aircraft will depart to a station where adequate security is available.

7.15.4. The security force must be made aware of all visits to the aircraft. The security force POC must be identified to the PIC.

7.15.5. Security support is a continual requirement and is not negated by the presence of aircrew or ground crewmembers. Security force support terminates only after the aircraft doors are closed and the aircraft taxis.

7.15.6. Locking and Sealing. Lock and seal the aircraft during a “remain over night” (RON) on non-secure ramps (see **paragraph 7.3.5**.) ***NOTE:*** The aircraft will be locked during all off-station missions remaining overnight.

7.16. Force Protection. Crews must be alert to possibility of terrorist activities at all times. Reference AFMAN 10-100, *Airman's Manual,* Joint Service Guide 5260, *Service Member's Personal Protection Guide: Combat Terrorism While Overseas,* and AFI 10-245, *Antiterrorism (AT)* for Force Protection measures.

Chapter 8

OPERATIONAL REPORTS AND FORMS

8.1. General. This chapter contains a description of applicable reports and forms. For assistance in completing safety forms contact the wing/group, unit, or local flight safety officer.

8.2. AF Form 457, *USAF Hazard Report*. Refer to AFI 91-202, *The USAF Mishap Prevention Program*. The USAF hazard reporting system provides a means for Air Force personnel to alert supervisors and commanders to hazardous conditions requiring prompt corrective action. A hazard is any condition, act, or circumstance that jeopardizes or may jeopardize the health and well being of personnel, or which may result in loss, damage, or destruction of any weapons system, equipment, facility, or material resource.

8.3. AF Form 651, *Hazardous Air Traffic Report*. Refer to AFI 91-202, Attachment 3, for a list of reportable incidents and detailed reporting procedures.

8.3.1. The Air Force HATR program provides a means for personnel to report all near midair collisions and alleged hazardous air traffic conditions. Use information in HATR reports only for mishap prevention.

8.3.2. Procedures:

8.3.2.1. Report the details on AF Form 651 within 24 hours to the base safety office if you are at the Air Force base where the incident occurred. Submit the form to the nearest US Air Force Base Safety Office after landing if the incident occurred during flight.

8.3.2.2. If you have a near midair collision, make an airborne report of the hazardous condition to the nearest ATC agency (e.g. center, FSS, control tower, or aeronautical radio station), and give the following information as appropriate:

8.3.2.2.1. Aircraft identification or call sign.

8.3.2.2.2. Time and place of incident (radial/DME, position relative to the airfield, etc.).

8.3.2.2.3. Altitude or flight level.

8.3.2.2.4. Description of the other aircraft.

8.3.2.2.5. Advise the agency that you intend to file a written Near Midair Collision Report and request that the controllers save all available data.

8.3.3. To encourage reporting, individuals submitting HATRs are granted immunity from disciplinary action provided:

8.3.3.1. Their violation was not deliberate.

8.3.3.2. They committed no criminal offense.

8.3.3.3. No mishap occurred.

8.3.3.4. They properly reported the incident. ***NOTE:*** HATR reports are not privileged information and may be released outside the USAF.

8.4. AF Form 711B, *USAF Aircraft Mishap Report Worksheet*. Refer to AFI 91-223, *Aviation Safety Investigations and Reports*, for a list of reportable aviation mishaps and events.

8.4.1. Responsibilities. Notify the appropriate authorities of any mishap involving aircraft or crew. When notified, ACC units will initiate investigative and reporting actions IAW AFI 91-204. ***NOTE:*** Do not attempt to classify a mishap.

8.4.2. Reportable Mishaps:

8.4.2.1. Report damage to the aircraft, or injury to the crew or passengers; as well as any damage or injury to another organization's equipment or personnel resulting from the movements or actions of an aircraft or crew.

8.4.2.2. Report the following occurrences:

8.4.2.2.1. Physiological Events. Report episodes of abnormal physical, mental, or behavioral conditions or symptoms which occur during or after flight. This includes: ***NOTE:*** In the event of a physiological event, all crewmembers and passengers involved will report to a flight surgeon as soon as practical.

8.4.2.2.1.1. Aircrew or passenger decompression sickness from evolved gas (bends, chokes, skin, or neurological manifestations), or severe reaction to trapped gas resulting in incapacitation.

8.4.2.2.1.2. Aircrew loss of consciousness or incapacitation in-flight.

8.4.2.2.1.3. Aircrew hypoxic (altitude) hypoxia (suspected, probable, or definite).

8.4.2.2.1.4. Aircrew or passenger symptoms or health effects caused by toxic, noxious, or irritating materials such as smoke, fumes (including carbon monoxide), or liquids.

8.4.2.2.1.5. Aircrew spatial disorientation of any type (including visual illusions) resulting in an unusual aircraft attitude.

8.4.2.2.1.6. Any medical condition, event, or physical injury significant to the health of the aircrew (i.e. death, alcohol intoxication, illness, hyperventilation, etc.).

8.4.2.2.1.7. Unintentional loss of pressurization if cabin altitude is above FL180, regardless of effects on personnel.

8.4.2.2.1.8. Aircrew degraded operational capabilities or retinal damage caused by military or commercial lasers.

8.4.2.2.2. Propulsion-Related Events. Report the following:

8.4.2.2.2.1. Loss of thrust sufficient to prevent maintaining level flight at a safe altitude.

8.4.2.2.2.2. Engines which do not restart after intentional in-flight shutdown for training, FCF, or other non-emergency purposes.

8.4.2.2.2.3. Any uncommanded propeller reversal.

8.4.2.2.2.4. In-flight flameout, engine failure, or emergency engine shutdown. ***NOTE:*** Intentional shutdowns for training and FCF are excluded.

8.4.2.2.3. Flight Control-Related Events. Report the following:

8.4.2.2.3.1. Unintentional departure from controlled flight for any reason.

8.4.2.2.3.2. All uncommanded inputs to the flight controls (including auto-pilot or trim systems) whether it results in a dangerous situation or not.

8.4.2.2.3.3. Aircraft control wheel interference or binding of any type.

8.4.2.2.4. Instrument-Related Events. Report the following:

8.4.2.2.4.1. In-flight loss of all pitot-static instrument indications.

8.4.2.2.4.2. In-flight loss of both primary and standby attitude indicators.

8.4.2.2.4.3. Simultaneous loss of more than one electronic display showing attitude, airspeed, or heading regardless of duration.

8.4.2.2.5. Miscellaneous Aircraft Events. Report the following:

8.4.2.2.5.1. In-flight fires, fuel leaks, smoke and/or fumes present, structural failure of critical landing gear components, or gear up landings.

8.4.2.2.5.2. Unintended departure from takeoff or landing surface onto adjacent surfaces. Includes landing short of the landing surface. ***NOTE:*** The overrun is considered part of the takeoff or landing surface.

8.4.2.2.5.3. Spillage or leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores or cargo.

8.4.2.2.5.4. In-flight malfunction of an air refueling drogue, hose, hose reel assembly, or refueling pod.

8.4.2.2.6. Any incident which does not meet the established criteria for a reportable mishap but, in the judgment of the PIC, needs to be emphasized in the interest of flight safety.

8.5. AF Form 853*, Bird Strike Report*. Report all bird or wildlife strikes regardless of damage.

8.6. DD 1748-2*, Airdrop Malfunction Report (Personnel-Cargo)*. The DD1748-2 is a tool to document any airdrop malfunction IAW AFI 13-210. Consistent with safety, immediately report off-Drop Zone (DZ) drops/extractions to the controlling agency and proper safety channels. The PIC or designated representative shall complete DD1748-2 before entering crew rest. ***EXCEPTION:*** If a malfunction is due to a failure of the static-line retriever or CDS remote timer system, the mission may be continued provided the 80 lb tie on the knife did not break, and the knife did not nick the gate. Use the opposite static line retriever and manually activated the retriever switch at FS 245or perform a manual gate cut. The DD 1748-2 is not required, but a write-up in the AFTO 781A is required.

8.7. Reports of Violations, Unusual Events, or Circumstances. Violations identified in AFI 11-202V3 and navigation errors (including over-water position errors exceeding 24NMs, border and ATC violations) will be reported.

8.7.1. Include the following: factual circumstances, investigation and analysis, findings and conclusions, recommendations, and actions taken.

8.7.1.1. Attachments should include; notification of incident, crew orders, statement of crewmembers (if applicable), and documenting evidence (logs, charts, etc.)

8.7.2. In addition to the information listed, the historical flight plan will be electronically downloaded and turned in to the C2 center or owning standardization and evaluation office.

8.7.3. Send the original investigation report within 45 days to HQ ACC/IG.

8.7.4. The following OPREP-3, *Event or Incident Report* reporting procedures for all aircraft notified of navigational errors exceeding 24 NMs will be reported under AFI10-206, *Operational Reporting*:

8.7.4.1. On notification of a navigational position error, the PIC (or agency receiving notification) documents the circumstances surrounding the incident (report content below) and ensures submission of an OPREP-3 report through C2 channels.

8.7.4.2. Include the following:

8.7.4.2.1. Name and location of unit submitting report, mission identification number, reference to related OPREPs-3, type of event (e.g., state "navigation position error"), date, time (Zulu), and location (e.g., ARTCC area.)

8.7.4.2.2. Description of facts and circumstances. Include aircraft type and tail number, unit (wing/group or squadron assignment of crew), home base, route of flight, point of alleged deviation, and miles off course.

8.7.4.2.3. PICs must keep the appropriate agencies apprised of any unusual events or circumstances impacting their missions. Examples of reportable events include meaconing, jamming, intrusion, interception, fuel dumping, loss of multiple engines, hostile fire, injury to passengers or crewmembers, etc. This list is not exhaustive. Some events may require the C2 agency to forward OPREP reports to higher headquarters. The old adage, "when in doubt, report it," applies.

8.8. Petroleum, Oil, and Lubricants (POL) - Aviation Fuels Documentation. This section prescribes aviation POL (AVPOL) procedures that ensure correct documentation, form and invoice processing, and program supervision. Reference DESC-I-31, *Purchase of Aviation Fuel and Services at Commercial Locations*. Use the Multi Service Corporation (MSC) air card for the purchase of aviation fuel and ancillary ground services at commercial airports (and some military installations) worldwide. The air card is authorized for use by all U.S. government aircraft, state, and local law enforcement aircraft, and some foreign government aircraft. All PICs should plan to use the “platinum” MSC card. In most cases, there will be no changes when refueling at non-Defense Energy Support Center (DESC) contract locations. The MSC card is accepted at approximately 4,800 locations worldwide. A list of all MSC-accepting merchants can be found at **https://www.airseacard.com**. It replaces the Standard Form (SF) 44, *Purchase Order-Invoice-Voucher*, at locations that accept the MSC card.

8.8.1. Responsibilities. Aircrew and maintenance personnel will be familiar with AVPOL procedures and documentation requirements of this chapter. Improper use of the MSC card could create financial liability for the purchaser.

8.8.2. Refuel/defuel USAF aircraft at DoD locations whenever possible. If DoD service is not available, purchase fuel from other source(s) in the following priority:

8.8.2.1. Defense Fuel Supply Center (DFSC) or Canadian into-plane contracts. ***NOTE:*** DoD FLIP enroute supplements identify locations with into-plane contracts.

8.8.2.2. Foreign government air forces.

8.8.3. AVPOL Forms Documentation and Procedures.

8.8.3.1. The DD1898, *Fuel Sale Slip*, is the fuel transaction receipt used for purchases at other DoD locations, including DFSC into-plane contract locations. Log and place the DD1898 inside the AF Form 664, *Aircraft Fuels Documenting Log*. The PIC or designated representative shall complete this form. ***NOTE:*** If the contractor insists on a unique invoice along with the DD1898, annotate the vendor's invoice with "DUPLICATE DD1898 ACCOMPLISHED."

8.8.3.2. The AF Form 664, *Aircraft Fuels Documenting Log*, is a tool to log and store all AVPOL transaction forms. Record all off-station transactions on the front of the form and insert the original form inside the envelope. Turn in the AF Form 664, with supporting forms, to maintenance debriefing or as directed by local procedures. The PIC or designated representative shall complete this form when appropriate.

8.8.3.3. The SF 44, *Purchase Order-Invoice-Voucher*, may be used to purchase fuel, ground services and/or other authorized products when no MSC card contract is in place.

8.8.3.3.1. SF 44 fuel purchases where FBO agrees to invoice DESC for payment.

8.8.3.3.1.1. The aircrew shall present the SF 44 as the purchase invoice when an FBO refuses to accept the MSC card. The aircrew shall complete the SF 44 and attach it to the FBO vendor ticket/invoice when the FBO also declines use of the SF 44 and uses its own invoice/receipt. Fuel purchases shall be documented on a separate SF 44 from ground services and other authorized products since the FBO must invoice DESC for the fuel and the customer for non-fuel product and services.

8.8.3.3.1.2. Copies 1 and 2 of the SF 44 shall be provided to the FBO. Copy 1 of the SF 44 and one copy of the FBO commercial invoice, if applicable, shall be forwarded to the following address by the FBO to bill/invoice DESC: DESCRRF, Building 1621-K, 2261 Hughes Avenue, Suite 128, Lackland AFB, Texas 78236.

8.8.3.3.1.3. Copy 3 of the SF 44 and one copy of the FBO commercial invoice, if applicable, shall be provided to the aircrew. Log and place a copy inside the AF Form 664. Aircrews shall present all fuel purchase receipts to the designated aviation squadron Certifying Official and/or Accountable Official upon return to home station to enable timely validation and financial obligation processing into the Fuels Automated System (FAS).

8.8.3.3.2. SF 44 fuel purchases where the FBO requires cash payment.

8.8.3.3.2.1. Cash fuel purchases are only authorized when either the Foreign Clearance Guide requires cash payment, or when FBO locations outside the US and US Territories refuse MSC card and/or SF 44 invoicing processes. Aircrews required to pay cash for aviation fuel purchases shall employ the following procedures: ***NOTE:*** These procedures do not apply to non-fuel products or services.

8.8.3.3.2.1.1. The aircrew shall obtain cash from a local DoD Finance source charged to an approved Treasury suspense account prior to home station departure.

8.8.3.3.2.1.2. Aircrews shall complete the SF 44 and obtain the FBO fuel vendor annotation in block 11 of the SF 44 to confirm total cash amount and also sign and date the SF 44 blocks 20 and 21. Log and place a copy inside the AF Form 664. Aircrew shall return unused cash to their local DoD Finance source upon return to home station. Present the completed SF 44 (for non-fuel charges only) to the appropriate home station administrative personnel for processing (e.g., Wing Refueling Document Control Officer, Finance Office, etc.)

8.8.3.3.3. SF 44 purchases of ground services and other approved products (non-fuel.)

8.8.3.3.3.1. Complete a separate SF 44 for non-fuel purchases. Provide the FBO copies 1 and 2 of the SF 44. The FBO shall use copy 1 and one copy of the FBO commercial invoice, if applicable, to directly bill/invoice the purchasing organization. Block 9 of the SF 44 shall reflect the organization name and address of the finance office responsible for payment to the FBO. The purchasing organization shall make payment to the FBO upon receipt of the invoice from the FBO. Log and place a copy inside the AF Form 664.

8.8.3.3.4. If the vendor presents their own form for signature and accepts the SF 44, write the statement "SF 44 Executed" on the vendor‘s form.

8.8.3.3.5. Turn in two copies of the SF 44 to the operations officer at home station.

8.8.3.3.6. Present the aircraft identaplate for purchases at SITCO Agreement locations. Make certain the invoice includes date of transaction, grade of product, quantity issued/defueled, unit of measure, and signature of Air Force member who accepted product. If vendor also requires completed SF 44 write statement, "AF FORMS EXECUTED” on vendor‘s invoice. Log and place a copy inside the AF Form 664.

8.8.3.4. Purchasing Aviation Fuel in Canada. The DoD and Canadian Department of National Defence have signed a memorandum of understanding allowing DoD aircraft to use the DD1896, *Jet Fuel Identaplate*, when refueling at Canadian airfields with a Canadian National Defense Contract (CNDC). Use the AIR card for fuel purchases at Canadian airports without a CNDC, and for ground handling services at all Canadian airports.

8.8.3.5. Use host country forms to effect purchases at foreign military airfields, including “replacement-in-kind” locations. Hand scribe information from the aircraft identaplate on the local form. Log and place a copy inside the AF Form 664.

8.8.3.6. AF Form 1994, *Fuels Issue/Defuel Document*, records fuel purchases at USAF bases using a valid DD1896. The PIC or designated representative shall complete the form then log and place a copy inside the AF Form 664.

8.8.3.7. AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*, records POL actions for a particular airframe IAW applicable directives. The PIC or designated representative shall complete the form and submit it to maintenance debrief.

8.8.3.8. DD1896, *Jet Fuel Identaplate*, is the aircraft fuel and oil charge card.

8.8.3.9. The PIC will verify the AFTO Form 781H is completed and turned in to maintenance debriefing following the mission.

8.8.3.10. For off-station missions, the PIC will complete or verify accuracy of the SF 44, AF Form 664, AFTO Form 781H, DD1898, and associated fuels receipts and place them in the AF Form 664 (***NOTE:*** Use eight digits for all USAF aircraft tail number entries.) The PIC will transmit all AF Form 664 information via phone, fax, or message if the mission will be off-station past the last day of the month.

Chapter 9

FLYING TRAINING POLICY

9.1. General. This chapter outlines requirements and restrictions for training and evaluation missions. Refer to AFI 11-202V1, *Aircrew Training*, AFI 11-202V2, *Aircrew Standardization/Evaluation Program,* AFI 11-2HC-130JV1, *HC-130J Aircrew Training,* and AFI 11-2HC-130JV2, *HC-130J Aircrew Evaluation Criteria,* for additional information.

9.2. Passengers on Training Missions. Refer to 11-2HC-130JV3, Chapter 6 and 14.

9.3. Training Aircraft Not Capable of Flight. If an aircraft is not capable of departure within four hours after scheduled departure time, the mission may be canceled at the discretion of the PIC. Provide a planned minimum of 2 hours for aircraft preflight duties before the end of the 4-hours.

9.4. Knock-It-Off (KIO) and Terminate Calls. Use KIO or Terminate procedures to direct aircraft to stop engagements, scenarios, and tactical maneuvering. Procedures IAW AFI 11-214, *Air Operations Rules and Procedures*.

9.5. Instructor/Flight Examiner Briefing. Before all training/evaluation missions, the PIC or instructors/flight examiner should brief the crew on the following items:

9.5.1. Training/Evaluation requirements. Instructors/evaluators (for each crew position) will outline requirements and objectives for each student or examinee.

9.5.2. Planned profile and seat changes.

9.6. Debriefing. For all training flights, instructors will:

9.6.1. Review and critique student performance.

9.6.2. Review training requirements fulfilled for each student and aircrew member (all aircrew members should understand thoroughly what training was accomplished.)

9.6.3. Answer technical questions.

9.6.4. Preview objectives of the next mission.

9.6.5. Complete required training documentation.

9.7. Touch-and-go Landings. Touch-and-go landings are authorized only on designated training, evaluation, or currency missions.

9.7.1. Touch-and-go landings will only be accomplished under the direct supervision of an instructor pilot (IP) or PIC certified by the unit commander to perform touch-and-go landings.

9.7.1.1. Ground idle touch-and-go landings may be performed by any pilot from either seat, when a flight examiner pilot, IP, or IP candidate during upgrade training/evaluation occupies a pilot's seat. ***NOTE:*** PICs must have a minimum of 100 hours in command of C-130J type aircraft prior to certification. Documentation of touch and go certification will be IAW 11-2HC-130JV1.

9.7.2. Touch-and-Go Restrictions.

9.7.2.1. Comply with all flight manual restrictions and procedures to include performance, fuel and cargo limits.

9.7.2.2. Minimum runway length is:

9.7.2.2.1. 5,000 ft for 50% flap flight idle touch-and-go landings.

9.7.2.2.2. 6,000 ft for all other touch-and-go landings.

9.7.2.3. Minimum ceiling/visibility: 300 ft and RVR 40 (3/4 SM visibility).

9.7.2.4. Only authorized when crosswind component corrected for RCR is within the recommended zone of the landing crosswind chart.

9.7.2.5. Do not accomplish touch-and-go landings on slush covered runways.

9.7.2.6. Authorized when normal wake turbulence criteria are met.

9.7.2.7. Do not perform ground-idle touch-and-go landings in conjunction with no-flap or NVG landings.

9.7.3. Include type of touch-and-go as part of the briefing, (i.e. ground-idle or flight idle).

9.8. Stop-and-Go Landings. Stop-and-go landings are authorized only on designated training, evaluation, or currency missions.

9.8.1. Stop-and-go landings may be performed by any HC-130J qualified pilot.

9.8.2. Stop-and-go restrictions:

9.8.2.1. The runway remaining is greater than or equal to CFL.

9.8.2.2. Crosswind component corrected for RCR must be in the recommended zone of the landing crosswind chart.

9.8.2.3. Minimum ceiling/visibility: 300 ft and RVR 40 (3/4 SM visibility).

9.8.2.4. Use of Wheel Brakes. Use flight manual defined “partially braked landing” to stop.

9.8.2.5. Must meet normal wake turbulence criterion.

9.8.2.6. Not authorized in conjunction with no-flap landings.

9.9. Low/Missed Approaches. Initiate a planned missed approach no lower than:

9.9.1. Precision approach - DH (or 200 ft HAT, whichever is higher for practice emergency involving a simulated engine shutdown).

9.9.2. Non-precision approach - Minimum altitude depicted on approach plate.

9.9.3. Visual Approach - 200 ft AGL for simulated emergencies (no minimum for non-emergency).

9.9.4. Restricted Low Approach (aircraft, equipment, or personnel are on the runway) - 500 ft AGL.

9.10. Simulated Instrument Flight. Artificial vision restricting devices are not authorized for any phase of flight. Simulated instrument flight may be flown and logged without the use of a vision-restricting device.

9.11. Night Vision Goggle Training. Crews will accomplish training and qualification according to AFI 11-2HC-130JV1, AFI 11-2HC-130JV2, and formal training syllabi before performing NVG operations.

9.12. Simulator Only Maneuvers. The following maneuvers will not be practiced or demonstrated in the aircraft:

9.12.1. Full stalls.

9.12.2. Rudder force reversals.

9.12.3. Spins.

9.12.4. Runaway trim malfunctions.

9.12.5. Hydraulic system loss by turning engine driven hydraulic pumps off.

9.12.6. Two-engine approaches, landings and missed approaches.

9.13. Approach to Stalls. Direct IP supervision required. Authorized during day VMC at a minimum of 5,000 ft AGL or cloud deck.

9.14. Instrument Steep Turns. Authorized during day VMC with up to 60-degrees bank. Turns are restricted to 5,000 ft AGL (or 5,000 ft above a cloud deck) for bank angles in excess of 45-degrees.

9.15. Slow Flight. Requires direct IP supervision and is only authorized at or above 5,000 ft AGL. Fly at approach, threshold, and 10 knots above the stall speed caret with gear down and flaps 0%, 50%, or 100%. Do not exceed 15-degrees angle of bank. Air Refueling MOS may be demonstrated. If Air Refueling MOS is demonstrated, do not use any angle of bank.

9.16. Simulated Emergency Flight Procedures. Conduct simulated emergency flight procedures IAW AFI 11-202V3 and this instruction.

9.16.1. Practice emergencies (which require simulating an engine shutdown, placing switches in other than their normal position, or an abnormal configuration) only during training, evaluation, or currency flights when an instructor or flight examiner pilot is in one of the pilot seats. Instructor pilot candidates who occupy a pilot seat and are under the supervision of a flight examiner pilot, not in a pilot seat, may conduct simulated emergency procedures during initial or requalification upgrade evaluations. Preface all simulated emergencies with the word "simulated" and terminate simulated emergencies if an actual emergency arises.

9.17. Simulated Engine Failure and 3-Engine Approaches/Landings/Missed Approaches. Direct IP supervision required except for IP candidates under the supervision of a flight examiner during initial or requalification upgrade evaluations to IP. One power lever may be retarded to FLIGHT IDLE at not less than VMCA (one-engine inoperative, out of ground effect) not less than 300 ft AGL.

9.17.1. Turns into the simulated inoperative engine(s) should be minimized. Such turns are permissible but require a higher degree of pilot skill than with actual failed engines and must

be smooth and coordinated. ***WARNING:*** Improper rudder or power application can lead to an immediate out-of-control condition where recovery may not be possible.

9.17.2. Weather. Simulated engine failure is authorized in during day IMC conditions if weather is at or above circling minimums and at night with weather at or above 1,000 ft ceiling and 2 SM visibility, or circling minimums, whichever is higher. Crosswind component must be within the recommended zone of the landing crosswind chart.

9.17.3. Additional Restrictions:

9.17.3.1. Use all 4 engines for a touch-and-go takeoff.

9.17.3.2. Simulated engine-out no-flap landings are restricted to AC candidates and above.

9.17.3.3. Planned go-arounds from simulated engine-out no-flap approaches are not authorized.

9.17.3.4. Required go-arounds from simulated engine out no-flap approaches require setting the flaps to 50% and using all four engines.

9.17.3.5. Do not compound engine out circling approaches with any other simulated malfunctions.

9.17.3.6. Missed approach/go-arounds will be executed IAW **paragraph 9.9** of this instruction.

9.18. Simulated Engine-Out Takeoff. Requires direct IP supervision and authorized during daylight VMC only. Maximum aircraft gross weight is limited to 120,000 lbs. Crosswind component must be within the recommended zone of the takeoff crosswind chart. Runway must be dry, hard surfaced, and at least 147 ft wide, by 7,000 ft long.

9.19. Actual Engine Shutdown and Airstart. Direct IP supervision required. One engine may by shutdown at no lower than 2,500 ft AGL in daylight VMC.

9.20. No-Flap Approach/Landing. Direct IP supervision required. Maximum aircraft gross weight limited to 120,000 lbs. Crosswind component must be within the recommended zone on the crosswind chart. Authorized in daylight IMC if the weather is at or above circling minimums and at night with weather at or above 1,000 ft ceiling and 2 SM visibility, or circling minimums, whichever is higher. Use 50% flaps for a go-around and touch-and-go takeoff. ***NOTE:*** Check no-flap landing distance with runway available.

9.20.1. Do not compound no-flap circling approaches with any other simulated malfunction.

9.21. Unusual Attitudes and Spatial Disorientation. Authorized at no lower than 10,000 ft AGL.

9.22. Practice Emergency Climb Procedure. Authorized in day/night VMC. Minimum airspeed should not be less than 10 knots above the stall speed caret. An instructor or flight examiner is not required for accomplishment of this event.

9.23. Air-to-Air Refueling Training. During training missions the aux hydraulic system and/or override signal amplifier will not be used.

9.24. Formal Course Maneuvers Only. The following maneuvers are authorized only during formal course upgrade/qualification training.

9.24.1. Aborted Normal Takeoff. Requires OG/CC approval and direct IP supervision and authorized during formal upgrade training in daylight VMC only. Runway must be dry, hard-surfaced, and equal to or greater than CFL. Crosswind component must be within the recommended zone of the takeoff crosswind chart. Initiate the abort by stating "REJECT" before refusal speed. Do not practice aborts from touch-and-go or stop-and-go landings. Do not shut down an engine due to simulated malfunctions.

9.24.2. Aborted Maximum Effort Takeoff. Requires OG/CC approval and direct IP supervision and authorized for AC upgrades and above during formal upgrade training. Procedure is restricted to the main runway during daylight VMC. Runway must be dry, hard surfaced, 147 ft wide and equal to or greater than CFL. Crosswind component must be within the recommend zone of the takeoff crosswind chart. Simulate a runway length less than CFL. Initiate the abort by stating "REJECT" at or below a refusal speed based on simulated runway length. Compare the distance traveled to runway length and point out the ramifications of operating with less than CFL. Subsequent aborted takeoffs can lead to excessive brake heating. If greater than a flight manual defined "partially braked landing" is used to stop, comply with all zone requirements and minimum brake cooling times IAW the performance manual LANDING BRAKE ENERGY chart between aborted takeoffs. Do not shut down an engine due to simulated malfunctions. Do not practice aborted max effort takeoffs from stop-and-go landings.

Table 9.1. Training Restrictions Summary.

Simulated Engine Failure	Direct IP supervision required. Retard one throttle to flight idle at not less than VMCA (one-engine inoperative, out of ground effect) nor less than 300 ft AGL. Authorized day IMC if WX at or above circling minimums or night if weather is at or above 1,000 ft ceiling and 2 SM visibility or circling minimums, whichever is higher. Crosswind component must be in the recommended zone. Engine out no flap landings are restricted to AC pilots and above, and planned go-arounds are not authorized. Engine out circling approaches will not be compounded with any other simulated malfunctions.
No-Flap Landing	Direct IP supervision required. No-flap circling approaches will not be combined with any other simulated emergencies. Max gross weight is 120,000 lbs and crosswind component must be within the recommended zone. Authorized day IMC if WX at or above circling minimums or night if weather is at or above 1,000 ft ceiling and 2 SM visibility or circling minimums, whichever is higher.
Touch-and-Go Landings	Requires certification for PIC. ACs restricted to flight idle touch and go landings. Ground-idle performed by any pilot from any seat when a flight evaluator, IP, or IP candidate during upgrade/evaluation occupies a pilot‘s seat. No-flap ground-idle touch and go landings not authorized. Minimum runway length: flaps 50%, 5,000 ft, for all other, 6,000 ft. Crosswind component corrected for RCR is within recommended zone. Minimum ceiling of 300 ft and RVR 4000 (3/4 SM visibility.)
Stop-and-Go Landings	Authorized only on designated training, evaluation, or currency missions. Runway remaining for takeoff must be greater than or

	equal to CFL. Crosswind component corrected for RCR must be in the recommended zone of the landing crosswind chart. Ceiling and visibility must be at least 300 ft and 3/4 mile (RVR 4000).
Go-around, Missed Approaches	Minimum altitude is 500 ft AGL when aircraft, equipment, or personnel are on the runway. VFR - No lower than 200 ft AGL when practicing simulated emergencies. Practice instrument approaches - no lower than minimum altitude for the approach.
Slow Flight	At or above 5,000 ft AGL. Fly at approach, threshold, and 10 knots above the stall speed caret with gear down and flaps 0, 50, or 100%. Do not exceed 15 degrees of bank for normal slow flight, and 0 degrees for Air Refueling MOS.
Approach to Stalls	Requires day VMC at a minimum of 5,000 ft AGL or 5,000 ft above cloud deck.
Instrument Steep Turns (N/A for Tactical maneuvers)	Authorized during day VMC with up to 60 degrees bank. Restricted to at or above 5,000 ft AGL or 5,000 ft above a cloud deck for bank angles in excess of 45 degrees.

Chapter 10

LOCAL OPERATING PROCEDURES

10.1. General. Units will publish local and/or unique unit operation procedures as a supplement to this chapter commencing with **paragraph 10.2**. The title will indicate the unit concerned (e.g., 10.2. 71 RQS Local Operating Procedures).

10.1.1. Procedures in this chapter will not duplicate, alter, amend, or be less restrictive than those in this instruction.

10.1.2. After validation, send final copies to HQ ACC/A3TV.

Chapter 11

NAVIGATION PROCEDURES

11.1. General.

11.1.1. Definitions and Terminology.

11.1.1.1. Category I (CAT I) Route. Any route that does not meet the requirements of a CAT II route, including tactical navigation and overwater routes.

11.1.1.2. Category II (CAT II) Route. Any route on which the position of the aircraft can be accurately determined by the overhead crossing of a radio aid (NDB, VOR) or intersection of at least two radio aid radials (VOR, TACAN) or one radial (VOR, TACAN) and one DME at least once each hour.

11.1.1.3. Controlling Navigation Solution. The controlling EGI (INAV) navigation solution the mission computer is using for enroute navigation. The SHIP SOLN, selected via the NAV SELECT page of the AMU, determines which will be used to steer the aircraft either manually or with the autopilot.

11.1.1.4. First Suitable Airfield (FSAF) and Last Suitable Airfield (LSAF). Utilized in the equal time point (ETP) calculation. These are represented as the “First Nearest” and the “Last Nearest” airports in the ETP calculation in the PROGRESS pages of the CNI-MU. They are airports closest to the coast out and coast in waypoints that meet applicable criteria for HC-130J operations. Forecast weather for the FSAF and LSAF must meet destination weather minimum filing requirements.

11.1.1.5. Equal Time Point (ETP). Geographic point along the route from which the flight time to the FSAF or the LSAF is equal.

11.1.1.6. Required Navigation Performance (RNP). RNP accuracy standards require an aircraft to remain within a specific number of nautical miles of its cleared course centerline for 95% of the duration of the flight. The associated track containment limit is twice the RNP value and represents the maximum limit of protected airspace. Airspace where RNP is applied is considered special qualification airspace. Both the operator and the specific aircraft type must be approved for operations in these areas. RNP airspace is being incorporated around the world to increase air traffic capacity by decreasing separation requirements between routes. Refer to FLIP Area Planning publications/charts to determine RNP airspace.

11.1.1.7. Minimum Navigation Performance Specifications (MNPS) Airspace. MNPS airspace exists in both the North Atlantic Region (NAT) and certain Canadian portions of the North American Region. Refer to FLIP Area Planning publications/charts to determine MNPS airspace. The HC-130J must comply with all MNPS equipment requirements when flying within the lateral dimensions of this airspace (consult FLIP for mandatory equipment). Aircraft meeting the North Atlantic MNPS requirements also meet the Canadian MNPS requirements. Aircraft entering MNPS airspace are required to have two Long Range Navigation Systems (LRNS) capable of staying within 12.6 NM of cleared track for 95 percent of the flight. Gross navigation errors are those that exceed 24 NM from track center line. Prior to entering MNPS airspace, both INSs must be fully

operational to meet the MNPS requirement of having two fully serviceable LRNSs. In order to signify that a flight is approved to operate in NAT MNPS airspace, the letter "X" will be inserted within item 10 of the DD1801 flight plan form.

11.1.1.8. NAT Tracks. Contained within the North Atlantic MNPS airspace is an organized track system (NAT Tracks) between FL 285 and FL 420 to optimize air traffic flow between the North American and European continents. NAT tracks are designed based on meteorological data and are updated twice daily. When flying over the North Atlantic, crews should obtain a copy of the North Atlantic Tracks (NAT tracks) valid for their coast out time from the DoD NOTAM internet site.

11.1.1.9. Reduced Vertical Separation Minimum (RVSM) Airspace. This airspace requires special certification and exists to increase airspace capacity, safely, by reducing vertical separation from 2000 ft to 1000 ft between suitably equipped aircraft. RVSM has been implemented in the CONUS, Europe, Africa, and Middle East. RVSM airspace typically extends from FL 290 through FL 410. Consult AP/1 and AP/2 for locations and lateral and vertical dimensions of this airspace.

11.1.1.10. Mission Planning Environment (MPE). A MAJCOM-certified combination of mission planning hardware and software used to load an aircraft data transfer device. Only an approved ACC MPE may be used to load HC-130J map cards and mission cards (RMMs) for use in flight.

11.2. Mission Planning Procedures.

11.2.1. Refer to **Chapter 6** for general mission planning requirements.

11.2.2. Mission/Route Planning. Pilots/CSO will normally accomplish and verify mission planning while in a flight planning facility/base operations; the data is then loaded manually (or via the data transfer card) into the CNI. Pilots/CSO will also calculate and verify the required ramp fuel load.

11.2.2.1. When practical, pilots/CSO will plan the most direct routing possible or utilize wind optimized CFP routing to enhance fuel conservation.

11.2.2.2. Computer Flight Plan (CFP). A CFP generated from PFPS is the preferred flight plan for all HC-130J operations. Wind may either be applied automatically via Winder (USN METOC) or manually from a DD 175-1, USAF OWS, or AFWA product. When paper wind products are used for flight planning, they will be carried in-flight and filed with the completed master log and chart for 90 days. When planning CAT I sorties crews should obtain wind data for multiple suitable altitudes including 10,000 ft MSL.

11.2.2.3. Verify the CFP for route definition and accuracy, paying particular attention to adherence with over flight clearances.

11.2.2.4. Refer to **Chapter 12** for fuel planning procedures.

11.2.3. Equal Time Point (ETP) Computations.

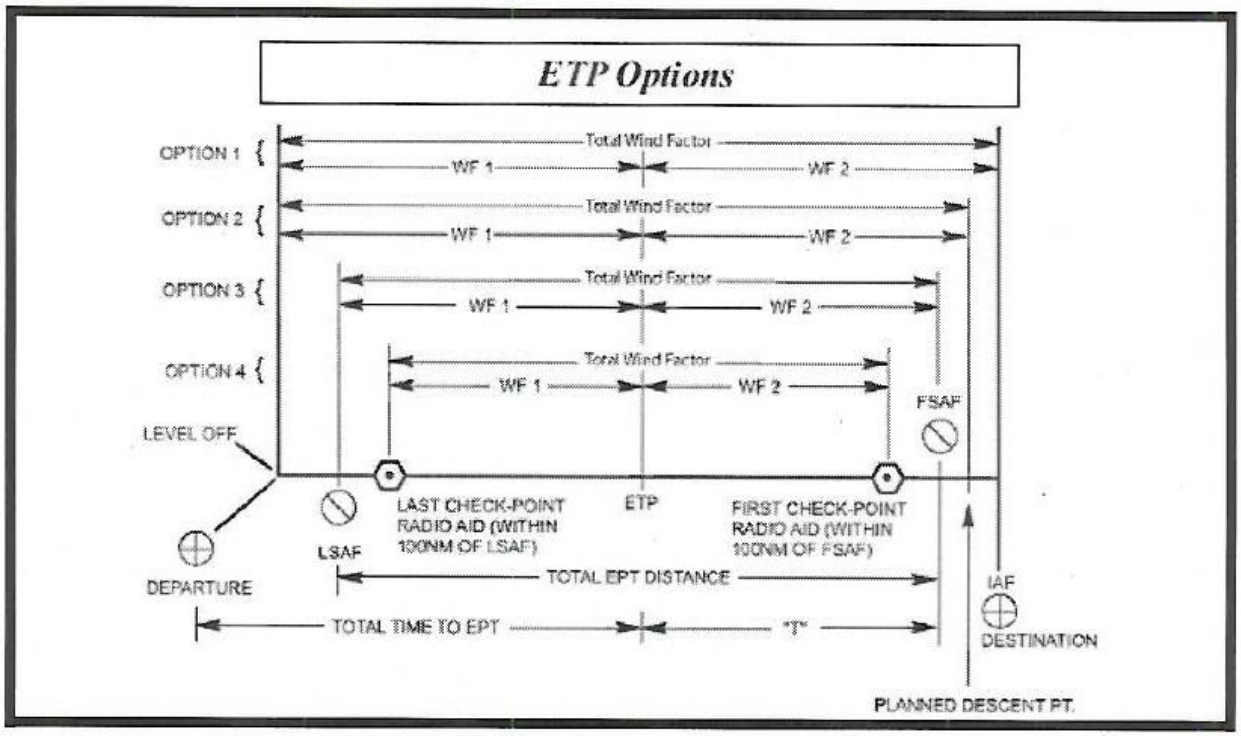
11.2.3.1. The ETP provides crews a tool for recovery airfield decision-making when in-flight emergencies occur. ETP computations are required on CAT I routes when the total time between the LSAF and FSAF is 5 hours or more. ETPs must be annotated and plotted on the MPC and MFP prior to the coast-out waypoint. Squadron-approved

computer programs which use similar algorithms as the manual computation may be used. The PFPS Fuel Analysis Tool (FAT) is approved for computing ETPs. Enter ETP information into the CNI PROGRESS page during preflight. CNI-computed ETPs only become accurate upon reaching the PERF CRUISE altitude. CNI-computed ETPs can be obtained for different airspeeds (i.e. 260 KTAS for a 3-engine scenario). CNI-computed ETP will not calculate if you do not overfly the programmed coast-out point.

11.2.3.2. The blocks provided on top of the C130J PFPS CFP should be used to record information needed by the CNI to compute an ETP. These blocks and provided formulas also serve as a worksheet for crews to do the manual ETP computation. If using the computer programs or the CNI, annotate applicable information on the Master Flight Plan (MFP). If the CNI is used, annotate "CNI" in the master flight plan blocks for which the CNI does not present a number.

11.2.3.3. In-flight ETP. Manually re-compute the ETP when the actual arrival over any reporting point prior to the ETP (as displayed on the printed and winded flight plan) exceeds 15 minutes ahead or behind time when the change was caused by erroneous wind information. Acceptable manual calculation methods include the PFPS FAT and any of the four ETP Options from **Figure 11.1**. ***NOTE:*** ETP computations are not required for maritime search procedures.

Figure 11.1. ETP Calculations.



11.2.3.4. To compute a manual ETP:

11.2.3.4.1. Identify and record the LSAF, coast-out point, approximate midpoint of the CAT I portion, coast-in point, and FSAF. The coast-out point, approximate

midpoint, and coast-in point are actual waypoints on the flight plan. The coast-out point for ETP purposes must occur after initial level-off.

11.2.3.4.2. Determine and record the distance from the LSAF to the FSAF (entering the two airfields and approximate midpoint into PFPS is an easy way to do this).

11.2.3.4.3. Determine and record the average groundspeed (GS) for the first-half (coast-out to midpoint) and second-half (midpoint to coast-in) of the CAT I portion. Divide the respective enroute distance by the enroute time to/from the midpoint to determine accurate average GS.

11.2.3.4.4. Calculate a wind factor (WF1 & WF2) for each half by subtracting the flight-planned average TAS from the averaged GS. If a tailwind is experienced the WF will be positive. If a headwind is experienced the WF will be negative.

11.2.3.4.5. Use the provided formulas to compute the time it takes to fly from the ETP to the FSAF. Use this time and the second-half-averaged GS to calculate a distance from the FSAF that the ETP occurs.

$$\text{TIME in hours (ETP-FSAF)} = \frac{\text{DISTANCE (LSAF-FSAF)}}{(\text{WF2} - \text{WF1}) + 2\text{TAS}}$$

DISTANCE (ETP-FSAF) = TIME (ETP-FSAF) * GS (2nd half)

NOTE: The ETP will always occur upwind of the geographic midpoint.

11.2.3.4.6. The INDEX FROM/TO and PROGRESS pages may also be utilized in-flight to update times and distances to diversion bases along the route of flight. An accurate GS must be entered in order to obtain correct ETE calculations.

11.2.3.4.7. Due to the requirement for ETPs to be highly accurate in the case of an emergency, it is always advisable for aircrew to double-check both computer and manual calculations. Failure to follow this guidance could result in the inability of an aircraft to make landfall prior to fuel exhaustion.

11.3. Master Flight Plan and Master Plotting Chart.

11.3.1. One CFP and one plotting chart will be used as master copies for each flight utilizing CAT I procedures. Both will be labeled “MASTER COPY” and will be referred to as Master Flight Plan (MFP) and Master Plotting Chart (MPC). Both documents must be retained by the unit current operations or designated representative for a period of 90 days following the mission.

11.3.2. MFP Usage. The MFP is normally maintained by the PM or CSO but should be kept readily available to all crew members. It will be used to record the following in flight:

11.3.2.1. All ATC route clearances and changes to clearances.

11.3.2.2. The wind, temperature, altitude, fuels remaining, and the bearing/range between the INAV solutions over waypoints bordering and within CAT I Navigation airspace.

11.3.2.3. Any loss or degraded navigation/avionics equipment.

11.3.2.4. Compass deviation checks.

11.3.2.5. Oceanic Navigation Accuracy Check.

11.3.3. MFP Symbology. Use the following symbology to ensure that both pilots can easily determine which waypoints have been programmed into the CNI-MU, which programmed waypoints have been verified, and which waypoints have been transitioned in-flight. See **Figure 12.2** for an example MFP.

11.3.3.1. Place a check-mark next to the waypoint to signify the waypoint has been entered into the CNI-MU and the course and distance have been verified.

11.3.3.2. Circle the check-mark to signify the coordinates, course and distance in the CNI-MU have been verified by another crewmember.

11.3.3.3. Draw one diagonal line through the circled check-mark to signify the waypoint has been passed, reported, and all applicable annotations associated with waypoint passage have been completed.

11.3.3.4. Cross the first diagonal line with another to signify that the aircraft‘s position has been plotted on the MPC approximately 60 NM (10 to 15 minutes depending on groundspeed) after waypoint passage.

11.3.4. MPC Usage. The use of a plotting chart is required on every route requiring CAT I Navigation. Use an appropriate JNC-A, JNC, GNC, or an Oceanic Planning Chart (OPC). During mission planning, draw/print the course line representing the planned route of flight on the MPC and mark the associated suitable emergency airfields. The PIC will verify this information and annotate the chart with his/her signature, date, and mission number/call sign. During flight, 10 to 15 minutes (depending on groundspeed) after each CAT I waypoint, the CSO/PM will Mark Position and then plot the INS-only position on the MPC (using a dot surrounded by a square) and annotate the marked time and position coordinates adjacent to the plot. The CSO/PM should compare the plotted point to the course line. This procedure confirms that the navigation system is steering the airplane to the correct waypoint.

11.4. Pre-Flight Procedures.

11.4.1. Pre-flight procedures must include a ZULU time check and resynchronization of the aircraft master clock, if necessary. The aircraft master clock will always be set to ZULU time. All annotated times will be in ZULU format. Aircraft clock errors resulting in position report time errors can lead to an erosion of actual longitudinal separation between aircraft. Acceptable time standards that can be used include GPS, Naval Observatory Master Clock (DSN 312-762-1401/1069 or 312-560-6742), and WWV (2500, 5000, 10,000, 15,000, 20,000 kHz) via wristwatch or other device.

11.4.2. Pre-Flight Communications Check. A pre-flight check of the SATCOM and HF radios should be made to a suitable agency (operating authority, command post or ATC). At least one HF radio must be confirmed operational prior to coast out or the mission must be terminated.

11.4.3. Navigation Initialization and Solutions. Both the AUTONAV and manual GC alignment of the INSs result in the required navigation performance needed for RNP RNAV operation. The GPS positions may be used as initial positions as long as they agree within one-tenth of one minute. If GPS is not available, use precision parking coordinates or, as a

last resort, obtain coordinates from an airfield diagram published in an approved instrument approach book. This position must be checked and verified by both pilots and recorded on the MFP.

11.4.4. Communication/Navigation/Identification Management System (CNI-MS). In addition to **Chapter 6** requirements, when configuring for CAT I operations, both pilots or pilot and CSO will verify that the INAV Position Alert 1 is set to 4.0 miles and INAV Position Alert 2 is set to 8.0 miles on the CNI PROGRESS page. This will generate an INAV POS DIFFERENCE Advisory at 4.0 miles and an INAV POS MISCOMPARE Caution at 8.0 miles.

11.4.5. Loading the Route of Flight. Because CAT I routes usually involve the manual input of waypoints not found in the database, and often require aircraft maximum range capability, it is critical that both pilots and CSO work in sequence and independently to enter accurate route of flight data. It is not sufficient for one crewmember to simply observe another crewmember entering the data. The following steps will be completed by the pilots/CSO:

11.4.5.1. One of the pilots or CSO will:

11.4.5.1.1. Load the route of flight directly from the filed flight plan, MFP or data transfer card into the CNI and verify both the magnetic course and the leg distance for each waypoint with the MFP. Loading the route directly from the filed flight plan may minimize pilot/controller clearance loop (misinterpretation) errors. Label waypoints so they can be readily identified for subsequent position reporting. If the courses differ by more than 2° or the distances differ by more than 2 NM, the pilot will resolve the discrepancy prior to flight. Completion of this step will be annotated with a check-mark next to the waypoint.

11.4.5.1.2. Using the LEGS pages, insert the forecast winds (if available) at each waypoint.

11.4.5.1.3. Verify the total distance to the destination on the CNI PROGRESS page. Any significant disparity (more than 25 NM to allow for SIDs/STARs and approaches) in the total distance between the CNI and MFP will require a recheck of the ramp position and waypoint coordinates.

11.4.5.2. Both pilots (or pilot and CSO) will verify the waypoint coordinates and course and distance information from the opposite side CNI to the MFP. Completion of this step will be annotated with the check-mark being circled on the MFP.

11.4.5.3. If the planned route of flight is a stored route or one loaded during a data transfer, verification of waypoint coordinates must still be accomplished by both pilots (or pilot and CSO) in the same manner.

11.5. CAT I Navigation Procedures.

11.5.1. This section provides general procedures and guidance for the operation of navigation systems on CAT I routes. For navigation system requirements, consider all oceanic airspace as MNPS airspace. Specific procedures for RNP RNAV airspace are addressed in subsequent sections.

11.5.2. Aircraft is currently not RVSM compliant.

11.5.3. Navigation System Accuracy Checks.

11.5.3.1. Ground. After leaving the ramp, perform the INS/INAV groundspeed check by stopping the aircraft and checking each pilot‘s groundspeed on the CNI-MUs or HDDs/HUDs. Groundspeeds in excess of 1 knot while the aircraft is stationary may indicate a faulty INS.

11.5.3.2. Airborne. Determine INAV position accuracy by comparing it to enroute NAVAIDs.

11.5.3.3. Compass Deviation Check. Perform a compass deviation check using both INSs and the standby compass prior to entering CAT I airspace. Perform subsequent checks after heading changes of 30° (or greater) or every 3 hours. Record the deviation in the appropriate block of the MFP. Apply this correction to headings to be flown whenever it is necessary to use the standby compass as the sole source for navigation.

11.5.3.4. Oceanic Navigation Accuracy Check. Prior to coast-out, evaluate/compare the accuracy of all navigation solutions. In the event of discrepancies, greater than 4 NM, the crew should investigate the cause and determine if CAT I flight is feasible. Record this gross error check in the appropriate block of the MFP. If a pure INS position is determined to be more than 4 miles in error, an in-flight alignment (IFA) may be accomplished provided sufficient time is available prior to entering RNP RNAV or oceanic airspace. If coast-out is made at a radial/DME fix, the appropriate radial should be selected on the non-active CDI as a further check that the navigation system is tracking to the fix.

11.5.4. Communications. In addition to guidance in **Chapter 6**, crews will accomplish the following:

11.5.4.1. Emergency Frequency Monitoring. In the interest of safety during oceanic and remote area operations (100 NM offshore), flights should maintain a listening watch on 121.5 and 243.0 MHz and the VHF common frequency.

11.5.4.2. BIU Backup. Ensure that a pilot places their transmission switch to an HF radio so that the crew can transmit on HF in case of BIU Backup. The other pilot should select VHF 2 for the same reason. VHF 1 will be available on the Get Home Control and crew can attempt to relay transmissions to other aircraft on 121.5 until within VHF range of ATC.

11.5.5. Oceanic Clearance. If not received before take-off, the oceanic clearance should be obtained prior to the boundary of oceanic airspace IAW FLIP.

11.5.5.1. The PIC will designate the duties of flying the aircraft and copying/monitoring clearances so that they are clearly understood by all crewmembers. The PM will normally receive and record the oceanic clearance. Both pilots will monitor and crosscheck to ensure that it has been copied correctly and clearly understood.

11.5.5.2. The clearance will be recorded on the MFP, and reviewed by two crew members. If the oceanic clearance received is different from the planned clearance, use the following procedures:

11.5.5.2.1. Record the new route on the MFP to include applicable updates to ETP data.

11.5.5.2.2. Enter the new waypoints into the CNI IAW the pre-flight procedures in this chapter.

11.5.5.2.3. Ensure fuel will still be sufficient to arrive at the destination waypoint with required reserves.

11.5.5.2.4. Mark out the old plotted track and draw the revised plot on the MPC.

11.5.5.2.5. In no case should this process simultaneously engage the attention of both pilots during flight.

11.5.6. Approaching Coast-Out. Prior to coast-out and outside of RNP RNAV airspace it is permissible and recommended to use the EGI or GPS (INAV source in AUTO mode) as the INAV solution for both CNI-SPs if NAVAIDs are available for monitoring. Prior to losing NAVAID reception, the INAV solution that is not the controlling solution must be placed to INS. This ensures there is constant comparison of the controlling solution to an independent INS solution. Beginning at the coast-out waypoint and continuing through coast-in, CNI-MU bearing/range between INAV solutions should be recorded at each waypoint to provide a running record of INS drift relative to the controlling solution.

11.5.7. IFF. Reset Mode 3A code to 2000, 30 minutes after entering Category I airspace.

11.5.8. MFP and MPC Procedures.

11.5.8.1. After takeoff, record the takeoff time in the Actual Time of Arrival (ATA) block of the departure airfield on the MFP. As soon as practical after takeoff, determine a revised Estimated Time of Arrival (ETA) for each line of the MFP using flight-planned leg times and the actual departure time.

11.5.8.2. Prior to waypoint transition, check the MFP magnetic course and distance to the next waypoint against the CNI-MU. The courses should be within 2º and the distances should agree within approximately 2 NM. Check and verify that the subsequent waypoint is properly programmed. Update ETAs to the next two waypoints.

11.5.8.3. Overhead the waypoint, confirm the ATA and determine the minutes ahead/behind by comparing it to the ETA. Record the CNI-MU bearing/range between INAV solutions to provide a running record of INS drift relative to the controlling solution. Record the actual fuel remaining above the flight-planned continuation fuel and write the difference between continuation fuel and actual fuel remaining in the EXCESS block of the MPF. See the in-flight fuel management section of **Chapter 12** for additional guidance and definitions.

11.5.8.4. Immediately after waypoint passage, and as soon as the aircraft has intercepted its new course, confirm that the aircraft is outbound on its flight planned magnetic course to the next waypoint and record the bearing/range between INAV solutions found on the INAV 1/3 page.

11.5.8.5. Record the actual in-flight conditions (altitude, wind, and static air temperature (SAT)) above the forecast conditions on the next line of the MFP. Update these conditions as well as fuel flow as needed on the PERF CRUISE and LEGS pages in the CNI-MU.

11.5.8.6. If required, complete a position report to the controlling agency IAW FIH procedures. The layout of the CNI PROGRESS page supports the format of the position report; however, ensure that ETAs passed to the controlling agency match the ETAs on the MFP. This will enable the pilots to determine if an ETA has changed from what was previously reported. If an ETA changes by more than 3 minutes, notify the controlling agency.

11.5.8.7. Draw a diagonal line through the waypoint on the MFP to indicate it has been passed, reported, and all applicable annotations associated with waypoint passage have been completed.

11.5.8.8. Approximately 60 nm (10 to 15 minutes depending on groundspeed) after waypoint passage, MARK the aircraft position and plot the INS-only position on the MPC. Record the mark time and position coordinates next to the plot. If the plotted position is not within 2 NM of the course center-line, check waypoint coordinates for accuracy, ensure the autopilot is tracking correctly in NAV mode, re-check the accuracy of the charted course-line, and re-check that the position was plotted correctly.

11.5.8.9. Cross the first diagonal on the MFP to indicate that the aircraft position has been plotted.

11.5.8.10. When the frequency of waypoints along CAT I route segments is greater than one every thirty minutes, full-line entries and plotting can be limited to a minimum of one every hour. Full-line entries with the corresponding position plot are required for every waypoint involving a change of heading over 20 degrees.

11.5.9. Routine Monitoring.

11.5.9.1. Because of the possibility of the autopilot disconnecting from the altitude/steering modes, regular checks of correct engagement with the navigation system should be made.

11.5.9.2. Crews should monitor aircraft performance and outside parameters, suspect potential problem areas, and review the performance manual if the following conditions are encountered:

11.5.9.2.1. The fuel remaining is less that the planned continuation fuel.

11.5.9.2.2. Any Low Calculated Fuel CNI-MU advisory.

11.5.9.2.3. ATA at any MFP fix is off by more than ± 5 minutes.

11.5.9.2.4. SAT differs by more than ± 5ºC from flight planned.

11.5.9.2.5. Actual winds differ by more than 30º or 15 knots from flight-planned.

11.5.9.2.6. Any Ahead/Behind Time more than 10% of total planned enroute time to that point.

11.5.9.2.7. Hazardous meteorological conditions.

11.5.10. Approaching Landfall. Use the radar to help identify the coast-in position. When the aircraft is approaching the first landfall NAVAID, tune and identify the navigation facility and crosscheck the aircraft position. If coast-in is made at a radial/DME fix, the appropriate radial should be selected on the non-active CDI as a further check that the

navigation system is tracking according to the current clearance. Once NAVAID reception is assured and flight is not being conducted in RNP RNAV airspace, all INAV solutions can be returned to AUTO. If entering BRNAV airspace, AUTOTUNE the NAVAIDS, select INS/RAD as the controlling solution, and place the other INAV solution in AUTO. Revert to CAT II procedures. Reset POS ALERT and IFF Mode 3 as appropriate.

11.6. Special Certification Airspace Requirements and Procedures.

11.6.1. The GPS currently installed in the HC-130J navigation suite does not meet FAA certification requirements for IFR navigation. AFI 11-202V3 allows the GPS to be used as a mission enhancement system for enroute instrument navigation, if it is used to update a self–contained navigation system, such as INS or mission computer, and is checked against other approved sources (in this case an RNP-10 certified INS). Therefore, on CAT II routes (not including operations in BRNAV airspace), the EGI or GPS can be used as the controlling solution for enroute instrument navigation if NAVAIDs are available for monitoring. The NAVAIDs must be operational and actively monitored. If deviations are observed, crews should revert to navigation via ground based NAVAIDs. For operations over CAT I routes (not including operations in RNP-10 airspace), the EGI or GPS can be used as the controlling solution providing the pilot can monitor its performance using the offside INS as an independent navigation source. The EGI or GPS cannot be used as the controlling solution in BRNAV or RNP-10 airspace, even when using INS as the sole input source for the EGI.

11.6.2. The HC-130J is certified for RNP-10 and Basic RNAV (BRNAV)/RNP-5 airspace, but with operational time restrictions. These certifications are based on raw INS data.

11.6.2.1. RNP-10 airspace requires a track keeping accuracy of 10 NM for 95% of the flight. The track containment limit is 20 NM. The HC-130J navigation system has been certified to meet the requirements of RNP-10 airspace for up to 10.4 hours from the time the controlling INS was commanded to the NAV mode. The pure INS solution is the only certified navigation solution for flying in this airspace. Annotate the letter “R” in Block 10 of the DD Form 1801 or appropriate block of the ICAO flight plan to indicate RNP-10 certification.

11.6.2.1.1. The clock can be reset for an additional 10.4 hours maximum, following an in-flight alignment of an INS. Due to the lack of GPS RAIM, in-flight alignments done for the purpose of extending RNP-10 airspace time must be conducted on only one INS at a time and within coverage of a NAVAID. Only after verifying the aircraft’s position within 0.3 NM of the first alignment, may an in-flight alignment be performed on the subsequent INS.

11.6.2.2. BRNAV/RNP-5 airspace requires a track keeping accuracy of 5 NM for 95% of the flight. The track containment limit is 10 NM. Minimum equipment to operate in this airspace is one INS capable of updates. The INS/RAD or INS-only solution will be the controlling INAV solution in this airspace. The INS/RAD solution can be used without time restrictions if the solution is being updated from NAVAIDs. If the NAVAIDs become unreliable, either through radio failure or denial, the INS-only solution will still maintain BRNAV accuracy for 2.6 hours from the time the controlling INS was commanded to the NAV mode. If needed, an in-flight alignment may be used to restart the time-in-NAV of an INS prior to entry into this airspace. INS/RAD or INS-only solution will be selected prior to entering BRNAV airspace. The AUTOTUNE function

of the CNI-MS must be enabled. BRNAV airspace currently exists throughout the European Region. Because BRNAV airspace exists only where NAVAID reception is available, CAT I procedures are not required. Annotate the letter "R" in Block 10 of the DD Form 1801 or appropriate block of the ICAO flight plan to indicate BRNAV certification.

11.6.3. ***Note:*** The HC-130J is currently not certified to operate in RVSM airspace. Reduced Vertical Separation Minimum (RVSM) Airspace. Airspace where RVSM is applied is considered special qualification airspace. Both the operator and the specific aircraft type must be approved for operations in these areas. Pilots will refer to FLIP AP/2 and the following for RVSM requirements:

11.6.3.1. Both primary altimeters, at least one autopilot, the altitude advisory system, and the transponder, must be fully operational. The PIC will request a new clearance to avoid this airspace should any of this equipment fail.

11.6.3.2. Have the autopilot engaged during level cruise, except when circumstances such as the need to re-trim the aircraft or turbulence require disengagement.

11.6.3.3. Crosscheck the altimeters before or immediately upon coast out. Record the readings of both altimeters.

11.6.3.4. Continuously crosscheck the primary altimeters to ensure they agree ± 200 ft.

11.6.3.5. Limit climb and descent rates to 1,000 ft per minute when operating near other aircraft to reduce potential TCAS advisories.

11.6.3.6. Immediately notify ATC if any of the required equipment fails after entry into RVSM airspace and coordinate a plan of action.

11.6.3.7. Document in the aircraft forms malfunctions or failures of RVSM required equipment.

11.6.4. North Pacific Region (NOPAC) MNPS airspace. For flights in NOPAC MNPS airspace comply with the following additional procedures when transiting the Anchorage/Tokyo Oceanic Control Area/First-Impressions Report; Flight Information Region on the NOPAC North route. The following minimum operable navigation systems are mandatory:

11.6.4.1. Prior to entering the NOPAC North route, the radar and both EGI navigation systems must be fully operational.

11.6.4.2. After entering the NOPAC North route:

11.6.4.2.1. Aircraft on the NOPAC North route may continue without functional radar, if radar is not required for weather avoidance, as long as both EGI systems are fully functional to include GPS and INS inputs. If the EGI accuracy cannot be determined, either re-file a flight plan on another track (fuel permitting) or return to the nearest facility possessing maintenance capability.

11.6.4.2.2. Aircraft on the NOPAC North route may continue with only one functional EGI system, which includes both GPS and INS input, or two functional INS provided the radar system is fully functional. Verify in-flight that satisfactory RADAR returns are available on all ranges, particularly the 80, 160, and 320 NM

ranges. If the radar system is either marginal or inoperative, fuel permitting, re-file a flight plan to another track or return to the nearest facility possessing maintenance capability.

11.6.4.2.3. Aircraft that do not meet the requirements of **paragraphs 11.6.4.1** or **11.6.4.2** will return to the nearest maintenance repair facility.

11.7. North Atlantic Tracks (NAT). When flying over the North Atlantic, crews should obtain a copy of the NAT valid for their coast out time. Until RVSM certification is complete the HC-130J is not permitted into the NAT system, but can follow track routings below the NAT altitude structure.

11.8. Navigation Malfunctions and Failures.

11.8.1. Should INAV solutions noticeably separate and exceed 8 NM, determine and use the INS solution considered most accurate by evaluating both INSs using available radio aids, ground mapping radar, and GPS. Highest validity should be given to positions referenced via radar. Next highest validity should be given to positions derived via radio aid fixing. When left to determine most probable position (MPP) via navigation solution comparisons, two agreeing INS positions are more valid than two agreeing GPSs; and two agreeing GPSs and one agreeing INS indicate a probable INS problem. Consider INS-radar/NAVAID, INS-INS, and INS-GPS position comparisons that are less than 4 NM difference to be valid and in agreement. Once the most accurate INS is determined, select it as the controlling solution. Update ETAs to ATC if required.

11.8.2. Situations may arise when crews cannot identify the faulty navigation system by simple comparison of positions between navigation solutions. Fly the aircraft halfway between the disagreeing INS solutions. Plot both CNI-SP solutions at least once every 30 minutes on the MPC, labeling the pilot CNI-SP navigation solution MPP1 and the copilot‘s MPP2. Continue to evaluate outputs from each INS and try to use plotted position information to identify adverse trends.

11.8.3. Malfunctions and failures in MNPS airspace:

11.8.3.1. After entering MNPS airspace, flight may be continued with a minimum of only one functional INS if the opposing EGI system has access to both GPS and INS inputs.

11.8.3.2. Crews experiencing deterioration or failure of navigation equipment that reduces the capability to comply with MNPS prior to MNPS entry will return to a suitable airfield with a maintenance repair facility.

11.8.3.3. Crews experiencing deterioration or failure of navigation equipment after entry into MNPS airspace should immediately report the malfunction to the controlling agency and subsequent agencies throughout the route of flight. Once the aircraft has entered oceanic airspace, the PIC should continue to operate the aircraft IAW the Oceanic Clearance already received, appreciating that the reliability of the total navigation system has been significantly reduced. The PIC should also prepare a proposal to ATC with respect to the prevailing circumstances and consult with ATC as to the most suitable action.

11.8.3.4. If an aircraft in MNPS airspace is unable to continue flight IAW ATC clearance for reasons such as severe turbulence, aircraft performance problems, or pressurization failure, a revised clearance should be obtained as soon as possible. If unable to obtain a new clearance, offset 30 NM from the assigned route by turning 90 degrees from track and maintain altitude if possible. Once offset 30 NM, climb or descend to an altitude which differs from those normally used by 500 ft.

11.8.4. Malfunctions and failures in RNP-10 or BRNAV airspace:

11.8.4.1. Aircraft unable to maintain RNP-10 or BRNAV RNAV tolerances must advise controlling agency immediately and take appropriate coordinated action.

Chapter 12

FUEL PLANNING

12.1. General. This chapter is designed to assist planners and aircrews in fuel planning airland and airdrop missions, with or without low-level segments. A fuel plan is required for all flights except local area training flights with established standard fuel loads. The CFPS Computer Flight Plan (CFP) and T.O. 1C-130(H)J-1-1 Performance Manuals are the primary preflight references. All preflight planning must be verified with aircraft mission computer (MC) performance prior to departure. Missions should be planned at altitudes, routes, and airspeeds to minimize fuel usage.

12.2. Definitions. The following definitions apply to fuel planning, and take precedence over similar definitions published elsewhere.

12.2.1. CAT 1 Route: Any route that does not meet the requirements of a CAT II route, including tactical navigation and overwater routes.

12.2.2. Contingency Fuel: An identified extra to compensate for unforeseen circumstances during any phase of flight (i.e. un-forecasted weather, launch delay, etc.)

12.2.2.1. Terminal Fuel Flow (TFF). Hourly fuel flow from the last applicable cruise leg on the CFP.

12.2.3. Required Ramp Fuel Load (RRFL): Minimum fuel required at engine start to complete tasked mission.

12.2.4. Depressurization Fuel: Additional fuel required to protect the aircraft and occupants in the event of a cabin depressurization followed by an extended diversion to an alternate airport at low altitude where fuel consumption is increased.

12.2.5. Tankered Fuel: Additional fuel carried through a primary destination for use on a subsequent leg.

12.2.6. Wing Relieving Fuel: Additional fuel kept in the main tanks intended to counter wing bending moments and keep the aircraft within flight manual weight limitations.

12.3. Alternate Selection. Plan fuel to an alternate only when AFI 11-202V3 or 11-2HC-130JV3 VOL 3 require the filing of an alternate.

12.3.1. When only one alternate is required, use the closest suitable airfield meeting mission requirements (such as special requirements for hazmat or patients) and AFI 11-202V3 weather criteria.

12.3.2. If two alternates are required, use the two closest suitable airfields meeting AFI 11-202V3 weather criteria and fuel plan to the more distant of the two.

12.3.3. When selecting an alternate, suitable military airfields are preferred.

12.4. Fuel Planning Profiles. Divert profiles should be fully fuel planned and represent what will actually be flown. Altitudes should be no higher than the ATC cruise ceiling per the performance manual. For fuel analysis, use **Table 12.1**, **Fuel Load Components** with the C130JHI.frm PFPS form (non-air refueled) or AF Form 4139 (if receiver air refueled). The PFPS

Fuel Analysis Tool can directly read the CFPS route and print a completed copy of AF Form 4139.

12.4.1. Computer Flight Plans. Print the CFPS route using the C130JHI.frm form. If a destination alternate or an air refueling abort base is required, use the Turnpoint/Additional Points tool to insert the designated airfield as a DVT (divert) type after the intended landing airfield.

12.4.2. Computer Fuel Plans. Forms printed from the certified ACC MPE are authorized. Computed data will match aircraft type, configuration, requirements and limitations for the mission to be flown. The C-130J Flight Performance Module (FPM) of PFPS is certified to calculate accurate fuel planning information for the HC-130J. Crews should use CFPS System Admin to verify the FPM version with TO 1C-130J-1-1 and note any differences.

12.4.2.1. CFPS CFP Planning Profile. The C130JHI.frm form permits both the route of flight and fuel planning information to be recorded. Use the fuel planning blocks on the top of the flight plan and **Table 12.1** for fuel planning. Enroute and Minimum Landing Fuel will be automatically printed. Planners will ensure an accurate Recovery Fuel is input on the CFPS Premission/Configuration/Fuel screen so calculated Continuation Fuels used during in-flight fuel monitoring are valid. When alternates are required, planners may need to accomplish and print two iterations of the flight plan to incorporate an accurate Recovery Fuel. For example: After the first calculation, extract the enroute fuel to the alternate from the last line of the flight plan and add this to the initial Recovery Fuel. A second flight plan will be calculated once the Premission/Configuration/Fuel screen is updated with the correct Recovery Fuel. If an alternate is required, use the Turnpoint/Additional Points screen to insert the designated airfield as a DVT (divert) type after the intended landing airfield. See **Figure 12.2** for a sample of a completed CFPS CFP and **Figure 12.3** for a sample of a completed fuel planning worksheet.

12.4.2.2. Continuation Fuel for each leg will be calculated using the following formula:***Continuation Fuel = Fuel Remaining (beginning of leg) – Landing Fuel + Recovery Fuel***

12.4.3. Non-Air Refueled Planning . En route cruise airspeed normally should be planned at a constant TAS. Use the fuel planning blocks at the top of the printed C130JHI flight plan form with **Table 12.1** for fuel analysis. En Route and Minimum Landing Fuel are automatically printed.

12.4.4. Air Refueled Planning. Use AF Form 4139 in place of the fuel planning blocks at the top of C130JHI.frm. The AF Form 4139 is applicable to both single and multiple tanker air refueled planning. The PFPS Fuel Analysis Tool can be used to produce a computerized version of this form directly from the CFPS route. The computerized version of the form is valid for up to four receiver air refuelings. All items are self-explanatory except as noted below. Items common to all sections: Item A, OPERATING WEIGHT on the manual form is the basic aircraft operating weight plus the cargo/pax weight. The computerized version of the form has separate blocks for the two items.

12.4.4.1. UNIDENTIFIED EXTRA. Must not be negative. If necessary, add fuel to the Planned Ramp Fuel (item B) or the Planned Onload (items C, D, E, or F). Alternatively, move the air refueling track or add another air refueling.

12.4.4.2. GROSS WT. Not required.

12.4.4.3. TEMP DEV. Not required.

12.4.4.4. TAKEOFF TO EAR 1 Section:

12.4.4.5. ENROUTE (Item 1). CFPS Clock Time and Total Fuel at EAR 1 (prior to onload), minus STTO fuel from line 1. Subtract the helicopter/tiltrotor refueling offload (if any) from Fuel and add it to Item 3, Identified Extra. The PFPS Fuel Analysis Tool performs this correction automatically.

12.4.4.6. IDENTIFIED EXTRA (Item 3). Include 1000 pounds per hour for the time anticipated at lower altitude on the track prior to and during actual air refueling. Do not enter if the CFP takes into account the altitude change for the refueling.

12.4.4.7. RESERVE (Item 5). Ten percent of the Category I time from takeoff to end air refueling, not to exceed +45 minutes. Compute at TFF.

12.4.4.8. FUEL AT EAR #1 (No Onload) (B-6) (Item 7). Planned Ramp Fuel (item B) minus Total (item 6). This is the fuel remaining at EAR 1 prior to onload.

12.4.4.9. PLANNED EAR #1 FUEL (Item 8). Planned fuel at EAR 1 including the fuel onload.

12.4.4.10. EAR 1 TO AR 1 ABORT BASE:

12.4.4.10.1. This section accounts for an unsuccessful fuel transfer. Plan an abort base for all receiver air refueling operations. The departure base may be used. The designated abort base must meet alternate airfield weather requirements.

12.4.4.11. EN ROUTE (Item 9). CFPS DVT time from the EAR to the abort base.

12.4.4.12. RESERVE (Item 10). Ten percent of the DVT time from EAR to abort base. The combined total for item 5 plus item 10 must not exceed +45 minutes. If the combined total exceeds +45, reduce Item 10 to bring the total down to +45. Entry is only required when the flight time from the EAR to the abort base exceeds 1+30. Compute at TFF.

12.4.4.13. AAR #1 ABORT ALTERNATE (Item 11). Optional entry.

12.4.4.14. HOLDING (Item 12). Use 3000 pounds if the AR abort base is in Alaska or at latitudes greater than 59 degrees N/S.

12.4.4.15. PLANNED RAMP FUEL (Item 16). Must be greater than Item 17, Required Ramp Fuel.

12.4.4.16. REQUIRED RAMP FUEL (Item 17). Sum of the totals in Items 6 and 15. This is the fuel required to fly from departure to the end air refueling point and then continue to the abort base with required reserves if the transfer is unsuccessful.

12.4.4.17. EAR 1 TO EAR 2 Section. Not applicable to single air refueling planning. The computerized AF Form 4139 also supports EARs 3 and 4 using procedures identical to this section. Items in this segment are identical to the TAKEOFF TO EAR 1 section,

but the ENROUTE TIME and FUEL values are the differences in CFPS Clock Time and Total Fuel between the next EAR (prior to onload) and the previous EAR (after onload).

12.4.4.18. EAR TO DESTINATION Section: Items separated by a diagonal (/) are applicable to both single and multiple air refueling missions. Use the item letter or number that corresponds to the final refueling.

12.4.4.19. EN ROUTE (Item 38). The differences in CFPS Clock Time and Total Fuel between destination/IAF and the final EAR line after onload.

12.4.4.20. RESERVE (Item 39). Ten percent of the Category I time from EAR to destination/IAF, not to exceed +45. Compute at TFF.

12.4.4.21. HOLDING (Item 41). Use 3000 pounds if abort base is in Alaska or at latitudes greater than 59 degrees N/S.

12.4.4.22. REQUIRED EAR TO DEST (Item 44). This is the fuel required at the final EAR to arrive at the destination/IAF with required reserves.

12.4.5. HC-130J CNI-MS Profile. The HC-130J CNI-MS plans a complete climb, cruise, descent, approach and landing profile based on the inserted LEGS DATA and PERF CLIMB, CRUISE, and DESCENT factors. Accurate leg fuels, as calculated by the CNI-MS, are dependent on crews ensuring that airspeed, altitude, winds, temperature, and fuel flow are correctly represented for each leg of the route and updated/corrected as in-flight conditions change. Because the flight profile is more than a planning tool, use good judgment when inputting forecast/planned information versus actual performance and conditions. During preflight and at each waypoint, the Fuel On Board (FOB) for remaining legs will be compared against the flight planned Continuation Fuel to ensure there is sufficient fuel to continue the mission as planned in order to meet or exceed destination fuel requirements. Once airborne, the FOB on the PERF INIT WEIGHT page is calculated (not sensed) using sensed Fuel Flow versus Time. Update the FOB on the PERF INIT WEIGHT page to the amount indicated by the totalizer only when the totalizer amount is less than the calculated FOB. Use the most conservative of the FOB or totalizer readings when recording fuel remaining during in-flight fuel monitoring. The CNI-MS will provide a FUEL QTY ERROR advisory when the PERF INIT WEIGHT FOB and totalizer readings differ by more than 2500 lbs for more than 10 minutes. Set the FIXED reserve fuel on PERF INIT WEIGHT to the Recovery Fuel value. Set the +EXTRA reserve fuel on PERF INIT WEIGHT to the Unidentified Extra fuel value. The CNI-MS will then alert the crew to a deteriorating fuel situation by generating two Low Calculated Fuel advisories: one when the Unidentified Extra fuel is burnt and a second one when the Recovery Fuel is burnt. Destination and Alternate Landing Fuel can be obtained from the CNI-MS. Flight crews will use the CNI-MS to evaluate and verify destination landing fuel status after mission changes and reroutes and whenever a divert is required and/or extensive weather avoidance routing is required.

12.5. Fuel Analysis. Aircrew and mission planners will manage aviation fuel as a limited commodity and precious resource. Fuel optimization will be considered throughout all phases of mission planning and execution. Excessive ramp and recovery fuel adds to aircraft gross weight and increases fuel consumption. Do not ferry extra fuel beyond optimum requirements for safe mission accomplishment and training objectives. Aircrew and mission planners will optimize flight plans and flight routing for fuel efficiency. In-flight procedures such as climb/descent

profiles and power settings should also be considered for efficient fuel usage. Due to the dynamic nature of CSAR, fuel optimization may not always be possible due to airborne alert status, unknown orbit times, and TEXACO procedures. Alert fuel loads should be carefully considered to plan for these circumstances while practicing good fuel management. Aircrew should employ the following aviation fuel optimization measures without compromising flight safety or jeopardizing mission/training accomplishment:

12.5.1. Plan a 45-minute fuel reserve at destination or alternate (when an alternate is required.)

12.5.2. For remote destinations, holding is authorized in lieu of an alternate airport. Use 3000 lbs for holding fuel in this case.

12.5.3. For all missions, calculate an additional 15 minutes of contingency fuel. Contingency fuel should not be considered reserve fuel since crews may burn some or all of their contingency fuel. Contingency fuel will be included in the initial required ramp fuel load (RRFL.)

12.5.4. Reserve and contingency fuel will be computed using consumption rates providing maximum endurance at 10,000 ft MSL. When computing reserve and contingency fuel for remote destinations, use consumption rates providing maximum endurance at 20,000 ft MSL.

12.5.5. Calculate CAT 1 fuel reserve as 10% of flight time fuel over the CAT 1 route/route segment, not to exceed +45 minutes of fuel at TFF.

12.5.6. Thunderstorm forecasts will be based on the DD Form 175-1 or equivalent. Where weather forecast conditions dictate, add the following fuel corrections to Identified Extra:

12.5.6.1. 1,000 lbs if the route of flight has known or forecast icing conditions.

12.5.6.2. 1,500 lbs if forecast thunderstorms are scattered or numerous along the route of flight.

12.5.7. Approach fuel is 700 lbs, not required for a planned enroute descent.

12.5.8. Minimum landing fuel is 3,000 lbs. This fuel accounts for gauge errors. Do not include this 3,000 lbs of fuel in the 45-minute fuel reserve and 15 minute contingency fuel calculations.

12.5.9. Using all available planning tools and guidance in this chapter, PICs will determine the RRFL. In all cases, the PIC is the final authority for determining the actual fuel required for a mission.

12.5.10. Wing Relieving Fuel.

12.5.10.1. Calculate Wing Relieving Fuel using the flight manual weight limitations chart for the aircraft‘s planned cargo load. Enter the chart with the aircraft empty weight and cargo weight, then read across to determine the fuel required to remain within limits. Add enough Wing Relieving Fuel, if required, to ensure that Recovery Fuel does not fall below the fuel required to remain within limits.

12.5.10.2. All local and JA/ATT missions flying low-level will initially takeoff with main tanks full to reduce the effects of wing upbending and increase the center wingbox

service life. Decreased takeoff fuel in the main tanks can decrease the center wingbox service life as much as 47 percent.

12.5.11. Optimize Fuel Loads. Mission plan for the required ramp and recovery fuel. Ensure ramp fuel is correct upon arrival at aircraft.

12.5.12. Minimize use of APUs. Use ground power units when practical.

12.5.13. Delay engine start time. Units should establish and implement local engines start time standards.

12.5.14. Minimize aircraft weight through optimized fuel loads and reduction of equipment not necessary to accomplish the mission.

12.5.15. Establish C2 and flight following procedures to ensure timely notification of mission changes/cancellations to avoid unnecessary or unproductive flight time.

12.6. Depressurization Fuel. Pressurization Loss fuel is applicable when carrying passengers and oxygen is not available to them. Compute at 1,000 lbs/hr for the ETP "T" time.

12.7. In-Flight Fuel Management. For a flight plan and corresponding fuel log to be most meaningful for in-flight fuel monitoring, the actual cruise altitude should be no lower than 2000 ft below planned altitude and the airspeed no lower than planned airspeed –10 KTAS or higher than planned airspeed + 10 KTAS. If initial cruise conditions do not fall within these parameters, the PIC should strive to reach (or beat) them as soon as possible.

12.7.1. Monitor fuel consumption by comparing the FOB to predicted Fuel Remaining and the required Continuation Fuel on the flight plan. At a minimum, consumption comparisons will be accomplished and recorded on the Master Flight Plan (MFP):

12.7.1.1. As soon as practical after initial level off.

12.7.1.2. At convenient waypoint intervals not to exceed 1 hour.

12.7.1.3. At convenient waypoint intervals not to exceed 30 minutes if aircraft performance is critical or marginal (actual fuel is less than Continuation Fuel, icing conditions, weather avoidance, etc.)

12.7.1.4. Any time re-routing occurs or a lower altitude than what was flight-planned is required to be flown.

12.7.1.5. After onload or offload is complete for air-to-air refueling missions.

12.7.2. When proceeding to an air refueling abort base after aborting an air refueling onload, compute the Recovery Fuel based on required reserves at the abort base. Reset FIXED on PERF INIT WEIGHT to match the new Recovery Fuel. Use the CNI-MS to monitor fuel consumption as for non-air refueled missions.

12.7.3. Inflight fuel management may be discontinued at the discretion of the PIC when ALL of the following conditions have been met:

12.7.3.1. The Equal Time Point (ETP) has been crossed (CAT I routes.)

12.7.3.2. Fuel systems and quantity indicators are functioning normally.

12.7.3.3. There is obvious extra fuel and the +EXCESS fuel trend is favorable.

12.7.4. On CAT I routes, prior to the ETP, if the EXCESS fuel becomes negative the PIC will consider and accomplish one of the following recommended actions:

12.7.4.1. Change the flight profile to ensure planned performance is reacquired and Fuel Reserves at destination will be met or exceeded.

12.7.4.2. Continue and land short of the intended destination (i.e., First Suitable Airfield (FSAF)) or proceed to intended destination based on an updated weather forecast that no longer requires an alternate.

12.7.4.3. Return to the departure base or the Last Suitable Airfield (LSAF).

12.7.5. Flight Plan Changes and Diversion. When mission requirements or ATC dictate a change to the planned mission or route, the fuel must be recalculated to ensure safe completion of the flight. It is not practical to complete a new PFPS flight plan and fuel log, so the CNI-MS is the primary method of deciding if a mission change or reroute can be accommodated.

12.7.5.1. For an unplanned or directed enroute divert, the FROM/TO page, with an associated cruise ground speed, can be used to determine an Estimated Time Enroute (ETE). Using a 4000 lbs/hr fuel burn, crews should be able to decide if the new routing is achievable without adverse effects on destination fuel. Do not accept a reroute that adversely depletes the destination Reserve Fuel as prescribed in this chapter.

12.7.5.2. If the enroute change does not affect the intended destination, then in-flight fuel monitoring will consist of comparing the CNI-MS predicted Remaining Fuel with Flight Plan Continuation Fuel at the next point common to the reroute and the original flight plan. After any route alteration, crews should actively monitor fuel state by recording the Fuel Remaining values at abeam positions of the original flight plan and using the "Abeam" function of the INDEX/FIX INFO PAGE to crosscheck fuel status.

12.7.6. Declare "Emergency Fuel" when it is determined that the aircraft will land with less than 3000 lbs. Declare "Minimum Fuel" to ATC when it is determined that the aircraft will land with less than 3000 lbs plus the Required Reserve. ***NOTE:*** According to the *Aeronautical Information Manual* (AIM) *Pilot/Controller Glossary*, "Minimum Fuel indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur." Furthermore the AIM states that "a minimum fuel advisory does not imply a need for traffic priority. If the remaining useable fuel supply suggests the need for traffic priority to ensure a safe landing, you should declare an emergency due to low fuel and report fuel remaining in minutes."

Table 12.1. Fuel Load Components.

FUEL PLANNING	
EN ROUTE	Fuel required from takeoff through landing at the intended destination. Components include climb, cruise, and approach fuel. Enroute fuel will be obtained from the CFPS CFP or the Fuel Analysis Tool. For planned enroute descent to destination or alternate, use a CFPS Approach leg ("AP" point type) with Fuel set to 700 lbs. CFPS uses this fuel for the entire distance of the Approach leg. For air refueled missions, En Route is the fuel (excluding onload) required from takeoff through the first EAR, or between EARs, or from the final EAR through destination IAF or landing.
STTO	Fuel required for engine start, taxi, and takeoff. Normally 800 lbs. For known taxi delays or additional engine running ground time in excess of 30 minutes, add 30 lbs/min.
CAT I RESERVE	Fuel for 10% of enroute time along a CAT I route/segment, not to exceed +45 minutes of flight time. Compute at TFF.
ALTERNATE	Fuel required from intended destination to alternate, or most distant alternate when two are required. Flown at optimum cruise altitude, using direct routing to the alternate at LRC airspeed. Fuel for a missed approach (2000 lbs) and second approach at the alternate airfield is required when the visibility-only weather criteria is used to determine the suitability of the original destination.
REQUIRED RESERVE	45 minute reserve, using maximum endurance airspeed at 10,000 ft MSL (20,000 ft remote fields.) Required overhead destination or alternate (if alternate is needed.)
CONTINGENCY FUEL	15 minutes, using max endurance airspeed at 10,000 ft MSL (20,000 ft MSL for remote fields.)
HOLDING FUEL	Use 3000 lbs when the alternate or AR abort base is located in Alaska, or is located at latitudes greater than 59 degrees N/S.
MINIMUM LANDING FUEL	3000 lbs (Required.) If it is determined that the aircraft will land with less than this amount, a fuel emergency exists and ATC must be informed. This entry is separate from required reserve and contingency fuel.
RECOVERY FUEL	Sum of MINIMUM LANDING FUEL, HOLDING FUEL, and ALTERNATE or AAR ABORT FUEL (if required). Also add any applicable Identified Extra categories, e.g. fuel for icing between the destination and alternate or AAR abort base. Used to calculate accurate Continuation Fuels for each leg; it must be updated in the Premission Configuration screen of CFPS.
CONTINUATION FUEL	Fuel required at the beginning of each leg to be able to proceed to the intended destination and land with the required Recovery Fuel.
TANKERED FUEL	Fuel for succeeding legs without refueling.
UNIDENTIFIED EXTRA	The difference between RRFL and actual ramp fuel. For air refueled missions, also the difference between Planned EAR and Required EAR

	fuel. Must never be negative.
WING RELIEVING FUEL	Additional fuel kept in the main tanks intended to counter wing bending moments and keep the aircraft within flight manual weight limitations.
WEATHER AVOIDANCE	1,500 lbs if forecast thunderstorms are scattered or numerous along the route of flight.
ICING	1,000 lbs if the route of flight has known or forecast icing conditions.
KNOWN HOLDING DELAYS	Fuel for anticipated/planned holding, including remote destinations. Compute at Four-Engine Maximum Endurance Fuel Flow.

Figure 12.1. C-130J Fuel Planning Worksheet.

Instructions: Manual Flight Plan begin at Step 1. CFP begin at Step 5 and insert Enroute fuel.

Ramp Gross Weight	
Initial Cruise Altitude	
Temperature Deviation	

				Depressurization Fuel Planning	
1	Min Landing (3000 lbs)		A	Min Landing (3000 lbs)	
2	Required Reserve (0+45)		B	Depressurization Reserve (0+30)	
3	Alternate (see Table 14.1) -or- Holding In Lieu Of (remote dest, 1+15)		C	Wing Relieving Fuel (if required)	
4	Wing Relieving Fuel (if required)		D	High Altitude Fuel Burn from takeoff to ETP	
5	Recovery Fuel (1+2+3+4)		E	Low Altitude Fuel Burn from ETP to FSAF, 10K' MSL, 260 KTAS	
6	Contingency (0+30)		F	Total Required (A+B+C+D+E)	
7	Tankered Fuel (only if req for next sortie)		G	Normal Mission Fuel (from left column) Same as block 13	
8	Approach (only if not incl in enroute fuel)		H	Depressurization Fuel (F minus G) Zero if negative, move to block 14	
9	Icing (1000 lbs if known/forecast)				
10	Thunderstorms (1500 lbs if SCT or NUM)			**Manual Flight Plan Calculation for Enroute Fuel**	
11	Enroute (from CFP or block 11.5)		11.1	STTO (norm 800 lbs)	
12	Cat I Reserve (10% of Cat I fuel burn)		11.2	Climb	
13	Mission Fuel (5+6+7+8+9+10+11+12)		11.3	Cruise ETE FF (ETE*FF)	
14	Depressurization Fuel (from right column) Same as block H		11.4	Approach (norm 700 lbs)	
15	Required Ramp Fuel Load (RRFL, 13+14)		11.5	Enroute Fuel (11.1+11.2+11.3+11.4)	
16	Actual Ramp Fuel Load				
17	Unidentified Extra (16 minus 15, not more than 2200 lbs)				

Figure 12.2. Sample Master Flight Plan.

CFPS VERSION: 3.3.1 FOR THE C-130J-30 MASTER NAVAID FLIP: 9 APR 09 DATE SPUN: 200905011423

MISSION DATE 15 APR 09	1. MIN LANDING	3000	3000	A. DEPRESS MIN LANDING	
	2. RESERVE (45 MIN)	3000	2000	B. RESERVE (30 MIN)	
CALL SIGN RCH5154	3a. ALTERNATE (IF REQ) OR 3b. HILO (75 MIN IF REQ)	2000	—	C. WG RELIEVING (IF REQ)	
PILOT IN CMD MILLER	4. WG RELIEVING (IF REQ)	—	14400	D. HI ALT BURN TO ETP	
FROM: POPE AFB	5. RECOVERY FUEL (TOTAL OF 1-4)	8000	20400	E. LO ALT BURN ETP-FSAF (10K MSL, 260 KTAS)	
TO: LAJES	6. CONTINGENCY (30 MIN)	2000	39800	F. DEPRESS FUEL REQUIRED (TOTAL OF A-E)	
	7. TANKERED (REQ'D ONLY)	—	40792	G. MISSION FUEL (FROM 13)	
TOT DISTANCE 2477.7	8. APPCH (IF NOT IN 11)	—	0	H. DIFFERENCE: E MINUS F (ZERO IF NEGATIVE, ENTER IN BLOCK 14)	
TOT ETE 07+23	9. ICING (1000 IF REQ)	—			
	10. TSTORM (1500 IF REQ)	—			
TAKEOFF GROSS WT 140200	11. ENROUTE (INCL STTO)	29192			
	12. CAT 1 RESERVE (10% OF CAT 1 TIME, 1 HR MAX)	1600			
PARKING LOCATION GPS 1 N 3510.10 W 07901.58	13. MISSION FUEL (TOTAL OF 5-12)	40792			
	14. DEPRESS (FROM H)	0			
GPS 2 N 3510.09 W 07901.58	15. REQ RAMP FUEL LOAD (TOTAL OF 13-14)	40792			
	16. ACTUAL FUEL LOAD	42000			
	17. UNIDENTIFIED EXTRA (15 MINUS 16, DEFUEL IF >2200)	1308			

COMPASS DEVIATION CHECKS

TIME	INS1	INS2	DEV	STBY
1525	080	080	-3	083
1815	098	098	-2	100

GROSS NAVIGATION ACCURACY CHECK

TIME 1530
NAVAID ECG
RADIAL 109
DME 30
ERROR 240/0.21

ETP CALCULCATIONS

T = TIME (IN HRS) FROM ETP-FSAF
DIST1 = DISTANCE FROM LSAF-FSAF
DIST2 = DISTANCE FROM ETP-FSAF
WF = GS - TAS

$$T = \frac{DIST1}{(WF2-WF1) + 2*TAS} \qquad DIST2 = T * GS2$$

$$T = \frac{1002 + 1303}{(22-62) + 600} = \frac{2305}{560} = 4.12 \text{ hr}$$

DIST2 = 4.12 × 322 = 1326.6 NM

ETP is 23.7 NM short of midpt (≈ N3927.3 W055 20.7)

ETP INFORMATION

LSAF		KNGU	DIST	TIME			
COAST-OUT WAYPT		ZIBUT	154	0+31			
APPROX MID POINT	N3930 W055	LEG DIST	848	2+15	GS1	TAS	WF1
		FROM LSAF	1002	2+46	- 362	- 300	= +62
COAST-IN WAYPT		KOKER	984	2+50	<-- FROM MIDPOINT		
FSAF	LPLA	LEG DIST	319	1+13	GS2	TAS	WF2
		FRM MIDPT	1303	4+03	= 322 -	300	= +22

#	ROUTE FIX	BANK CHNL FREQ	LAT LONG	MC DRIFT MH	ZD TD TDR	ALT W/V SAT	IN FLIGHT WEATHER	IAS TAS GS	ZT TT TTR	ETA RETA ATA	MIN A/B	LEG FUEL REM FUEL F FLOW	ACTUAL CONT F EXCESS	INAV POS DIFF (BEARING/RANGE)
	KPOB/A POPE AFB	30	N 35 10.25 W079 00.87	050 0 050	0.0 0.0 2477.7	217M 238/007 +20C			00+00 00:00 07+23	15:00	A/B	800 41200	41500 36392 +5108	
	.level off		N 35 37.96 W077 29.95	078 0 078	79.3 79.3 2398.4	27000M 236/033 -33C		N/A N/A N/A	00+21 00:21 07+02	15:21	A/B	2221 38979 6272	34171	

C-130J HIGH LEVEL FLIGHT PLAN

Figure 12.3. C-130J Fuel Planning Worksheet Example.

#	ROUTE FIX	BANK CHNL FREQ	LAT LONG	MC DRIFT MH	ZD TD TDR	ALT W/V SAT	IN FLIGHT WEATHER	IAS TAS GS	ZT TT TTR	ETA RETA ATA	A/B	LEG FUEL REM FUEL F FLOW	ACTUAL CONT F EXCESS	INAV POS DIFF (BEARING/RANGE)
⊗	Coast Out ZIBUT/W ZIBUT	30	N 36 56.31 W072 39.97	080 2 081	247.1 326.5 2151.3	27000M 236/033 -33C	27000 235/030 -32	195 300 331	00+44 01:05 06+17	16:05 1607 1608	A/B 1B	2946 36033 3950	36500 31225 +5275	073/0.27
⊗	AKERS/W AKERS	30	N 37 58.69 W066 09.33	090 1 091	317.1 643.6 1834.1	27000M 252/068 -33C	27000 260/70 -33	195 300 367	00+51 01:57 05+26	16:57 1658 1700	A/B 2B	3361 32672 3894	33200 27864 +5336	086/0.49
⊗	39W60	30	N 39 00.00 W060 00.00	092 -4 088	296.3 939.9 1537.8	27000M 271/084 -35C	27000 260/80 -34	196 300 380	00+46 02:44 04+39	17:44 1744 1746	A/B 2B	2994 29678 3841	30100 24870 +5330	079/0.71
⊗	39355	30	N 39 30.00 W055 00.00	098 -6 092	234.9 1174.8 1302.9	27000M 281/098 -36C	27000 280/95 -35	197 300 390	00+36 03:20 04+03	18:20 1820 1822	A/B 2B	2288 27390 3800	28000 22582 +5418	081/0.92
✓	40W50	30	N 40 00.00 W050 00.00	099 -8 090	233.3 1408.1 1069.6	27000M 284/108 -38C		197 300 396	00+35 03:56 03+27	18:56 1855	A/B	2217 25173 3766	20365	
✓	40W45	30	N 40 00.00 W045 00.00	106 -3 102	230.5 1638.6 839.1	27000M 281/079 -39C		198 300 377	00+36 04:32 02+51	19:32 1931	A/B	2286 22887 3734	18079	
✓	40W40	30	N 40 00.00 W040 00.00	104 4 108	230.5 1869.2 608.6	27000M 236/036 -39C		198 300 330	00+41 05:14 02+09	20:14 2012	A/B	2586 20301 3701	15493	
✓	Coast In KOKER/W KOKER	30	N 39 54.35 W033 44.03	104 5 109	289.1 2158.3 319.5	27000M 206/029 -39C		198 300 312	00+55 06:10 01+13	21:10 2107	A/B	3391 16910 3661	12102	
	.descent pt		N 38 56.16 W028 11.50	114 5 119	264.1 2422.4 55.3	27000M 206/029 -39C		198 300 306	00+51 07:01 00+21	22:01	A/B	3122 13788 3622	8980	
	LAJ/T LAJES	30 045X	N 38 42.80 W027 06.93	115 -3 113	52.2 2474.6 3.1	2000M 280/013 +10C		N/A N/A N/A	00+11 07:13 00+10	22:13	A/B	280 13508 1420	8700	
	LPLA/A LAJES	30	N 38 45.71 W027 05.45	032 -3 029	3.1 2477.7 0.0	180M 326/016 +15C			00+10 07:23 00+00	22:23	A/B	700 12808	8000	

C-130J HIGH LEVEL FLIGHT PLAN

Chapter 13

AIRCREW MAINTENANCE SUPPORT PROCEDURES

13.1. General. This chapter contains aircrew procedures not contained in the flight manual, other portions of this AFI, or other readily available publications.

13.2. Responsibilities. Aircrew may assist the normal maintenance function when critical contingency taskings dictate their use, provided this action does not impact crew duty and crew rest limits specified in **Chapter 3** of this AFI.

13.3. Authority to Clear a Red X. Aircrews are not normally authorized to clear a Red X. If a situation is encountered where the aircraft is on a Red X and qualified maintenance personnel are not available to clear it, the PIC may obtain authorization to clear the Red X from the home station MXG/CC or designated representative, in accordance with T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedure.*

13.3.1. At enroute stations, LMs are authorized to clear Red X symbols for: intake and exhaust inspections, dust covers and plugs installed, and aircraft panels removed and installed to facilitate other maintenance when qualified maintenance personnel are not available.

13.3.2. In-Process Inspections. LMs must be aware of their responsibility to perform in-process inspections when clearing Red X symbols. During the assembly where further assembly will prevent the required inspection of the item, an in-process inspection will be performed. The inspection will be documented IAW TO 00-20-1.

13.4. Forms Management. In addition to the procedures in TO 00-20-1 and AFI 11-401, the CSO/LM will assist the PIC in maintaining the AFTO Form 781. Verify the exceptional release is signed before flight and resigned, if necessary, at enroute stops.

13.4.1. After each flight, ensure the number of discrepancies (if any), landings, and flight duration time(s), etc., are entered on the AFTO 781H. Review all AFTO 781A discrepancies to ensure symbols, date discovered, and clear, detailed entries were entered and the discovered by blocks are completed for each discrepancy.

13.4.2. IAW ACCGM 10-1, DoD Manual 4140.25M Vol II, *DoD Management of Bulk Petroleum Products, Natural Gas, and Coal;* AFI 23-201, *Fuels Management*; and AFI 23-111, *Management of Government Property in Possession of the Air Force;* AFMAN 23-110, *USAF Supply Manual*, Vol. 1, Pt 3; and Defense Energy Support Center (DESC)–I-31, *Purchase of Aviation Fuel and Services at Commercial Locations*, all off-station fuel purchases (to include FARP and in-flight refueling) will be logged on AFTO 781H and AF Form 664, if applicable.

13.4.3. IAW AFMAN 23-110, Volume 1, *USAF Supply Manual, Part 3*, C*hapter 1, Paragraph 1.26.* The CSO will record all in-flight transfers from C-130 tanker aircraft to any receiver aircraft on the AF Form 791. This form will also be accomplished for Forward Area Refueling Point (FARP) off-loads and fuel jettison in excess of 1,000 lbs. IAW AFMAN 23-110, Volume 1, *USAF Supply Manual, Part 3*, C*hapter 1, 1.27 and 1.37*. Turn completed forms in during maintenance debrief.

13.5. Aircraft Servicing and Ground Operations. Aircrews are normally not required to service the aircraft; however, they are qualified and authorized to perform those aircrew maintenance support tasks found in this volume. The aircrew performs these tasks only in the absence of qualified maintenance personnel and is designed for support of the aircraft and its mission while away from home station. Without exception, the applicable checklists/job guides will be used during all refueling and defueling operations.

13.5.1. Liquid Oxygen (LOX) Servicing. Under no conditions are crewmembers allowed to service liquid oxygen.

13.5.2. Aircraft Refueling. Aircrew members qualified in ground refueling may perform refueling duties IAW this chapter. Crew chiefs should be scheduled on those missions where a need is anticipated. Aircrews should not refuel except in cases when maintenance support is not readily available and the mission would be delayed. Aircrew members may augment maintenance refueling teams at enroute stops. Crewmembers may perform refueling duties at austere locations or at stations without maintenance support.

13.5.2.1. Crewmembers acting as refueling supervisors and panel operators will comply with T.O. 00-25-172 and refueling job guides.

13.5.3. Concurrent Ground Operations. The PIC and chief servicing supervisor (CSS) shall ensure aircrew members and servicing personnel accomplish concurrent servicing (CS) in accordance with T.O. 00-25-172 and servicing technical orders. Aircrews performing Dash-1 preflight inspections or cargo loading concurrent with servicing must have cooperation and close coordination with the CSS. The CSS will remain in continuous intercom contact with fuel servicing team members during the entire servicing operation. When the aircrew is at the aircraft, the PIC is responsible for all aspects of aircraft operations and shall inform the CSS how aircrew members will participate in passenger evacuation/safety. In keeping with the guidelines in T.O. 00-25-172, CSS has authority over all phases of CS operations to include personnel participating in the refuel.

13.5.3.1. Use the following guidelines when CS operations are conducted with passengers on board:

13.5.3.1.1. A current and qualified crew member will be designated the passenger compartment monitor (PCM) and shall continuously monitor passengers during CS. PCMs will not perform other duties during servicing.

13.5.3.1.2. The AC shall designate a current and qualified crew member to remain on the flight deck to monitor interphone and be prepared to broadcast a request for emergency assistance on a radio tuned to the appropriate agency with ready access to an emergency response team. The PA may be used to direct passenger evacuation in an emergency.

13.5.3.1.3. The PCM shall brief passengers on emergency egress, exits, prohibitions, and hazards. Passengers will remain seated but will not wear seat belts during CS. Passengers shall turn off all portable electronic devices, except medically required devices, prior to servicing.

13.5.3.1.4. Passengers shall not board/exit the aircraft during servicing.

13.5.3.1.5. Passengers are not required to ground themselves.

13.5.3.1.6. Passenger representatives will assist the PCM when passengers board and exit. Passengers must remain outside the vapor hazard area, the fuel servicing safety zone, oxygen servicing area, and 25 feet from fuel vents during servicing.

13.5.3.1.7. The AC, or designated aircrew representative, or CSS will advise PCMs when to evacuate passengers.

13.5.3.1.8. Unless environmental conditions dictate, the crew entrance door and left paratroop door should remain open and the right paratroop door should remain closed and locked during concurrent servicing. The PCM may lower, but not lock, the left paratroop door during inclement weather.

13.5.3.1.9. The PCM shall set the interior lighting as bright as possible to suit the combat environment.

13.5.3.1.10. The loadmaster shall ensure cargo loading or unloading does not jeopardize passenger safety. Winching is prohibited. Do not load/unload cargo containing explosives, oxygen, flammable gases or liquids during CS.

13.5.3.2. Simultaneous fuel and oxygen servicing is not authorized.

13.6. Hot Refueling. Hot refueling (refueling with aircraft engines running) will only be conducted by crews that have been properly trained and certified. See **Chapter 16G** and AFTTP 3-3.HC-13

13.7. Forward Area Refueling Point (FARP). FARP operations will only be performed at approved sites by crews that have been properly trained and certified. See **Chapter 16G** and AFTTP 3-3.HC-130.

13.8. Aircrew/Maintenance Engine Runs. Mixed aircrew/maintenance engine runs will not normally be accomplished. When an aircrew member is required to start or run up engines for maintenance purposes, the following procedures apply:

13.8.1. Maintenance personnel will accomplish all necessary inspections and preparations for the engine run. These actions include but are not limited to: intake/exhaust inspections, access panel security servicing, and AFTO Forms 781 documentation.

13.8.2. Use the pilot and LM checklists. Begin with the POWER UP checklist, and complete all appropriate checklists through the BEFORE LEAVING AIRPLANE checklist. Only deviate from the flight crew checklist when maintenance requires less than four engines to be started.

13.8.3. Operate symmetrical engines when power settings above ground idle are required.

13.8.4. The cargo ramp and door will be closed for all engine run-up's above flight idle.

13.9. Towing. Aircrew members will not normally participate in towing operations. The PIC will coordinate with the senior maintenance officer or superintendent to ensure the towing supervisor and crew are qualified. At non-USAF installations, the PIC must have approval from the airfield operations officer or manager prior to towing. The PIC will ensure the tow team supervisor briefs all personnel on their duties and the associated hazards. Proper checklists will be used. If any doubt exists as to the qualification of tow team personnel or the safety of the operation, make no attempt to tow the aircraft until qualified Air Force personnel can be located.

Under no circumstances will any crewmember act as the towing supervisor. ***CAUTION:*** Aircraft damage may occur if the improper tow bar is used.

13.10. Adverse Weather. When thunderstorms are reported within 10 NM of the airfield, only operations leading to an immediate engine start and departure may continue. However, personnel must be prepared to cease all activities in the event lightning within 5 NM is declared. When advised of lightning within 5 NM of the airfield, all flight line activities will cease and personnel will seek shelter.

13.10.1. Aircraft taxiing to parking or hot cargo when lightning is declared within 5 NM should not expect a marshaller. The aircrew will hold in place or proceed to parking if clearance is assured. Remain in the aircraft if ground transportation cannot be arranged. Time permitting, coordinate with Base Operations if the aircraft will be parked in a location other than the one assigned.

13.11. Hostile Environment Operations. Remove all non-essential equipment from the aircraft prior to a combat mission.

13.12. Hostile Environment Repair Procedures (HERP). Reserved for future use.

13.13. Hostile Environment Repair Kit. Reserved for future use.

Chapter 14

CARGO AND PASSENGER HANDLING PROCEDURES

14.1. General. The loadmaster (LM) coordinates loading or offloading with air terminal operations or shipping agencies; plans loads; supervises loading, tie-down, and offloading operations; performs preflight and postflight of aircraft and systems; computes aircraft weight and balance; provides for the safety and comfort of passengers/troops and security of cargo during flight; prepares and rigs equipment for airdrop; participates in the aerial delivery of equipment, supplies, and personnel. In addition to the duties listed in the flight manual, other applicable technical orders, tactical manuals, and this instruction, the PIC may assign other mission-related duties as necessary.

14.1.1. Multiple LM CRM. To ensure good CRM, the primary LM will assume overall responsibility for completion of all checklists and ensure no confusion exists about what duties have been or need to be accomplished.

14.2. Aircraft Loading Responsibilities.

14.2.1. The LM is responsible for aircraft preflight, load planning, certifying load plans, operating aircraft equipment, supervising and directing loading and offloading operations, and cargo tie down. He or she is also responsible for entering weight and balance data into the CNI-MU Weight and Balance pages, and transferring that information onto the DD Form 365-4 Form-F. This can either be accomplished manually or electronically using the AFF program and a printer. The LM coordinates with the loading crew supervisor to verify cargo against manifests, supervises loading operations, and is responsible for safe movement of cargo into and out of the aircraft. The LM will notify the PIC, command post, or the terminal operations officer if loading personnel are injured or cargo, aircraft equipment, or aircraft structure is damaged during loading or offloading. The LM will brief the PIC on any hazardous cargo and cargo jettison ability prior to engine start.

14.2.2. Loads planned by qualified load planners will be accepted by the aircraft LM and loaded aboard the aircraft as planned, unless the load or any portion of it will compromise flight safety or does not comply with applicable aircraft technical orders or USAF publications. The aircraft LM may also deviate from load plans to facilitate ease of onload or offload of cargo and to alleviate unnecessary aircraft reconfiguration.

14.2.3. The LM is the on-scene expert for load planning and accepting cargo for airlift. Some loads are not specifically detailed in applicable directives and require the LM to use their best judgment, based on training, experience, and knowledge, to determine the best and safest method of loading the cargo. When difficulties arise, they should seek advice of other personnel (i.e. available LMs and squadron, group, wing, or MAJCOM standardization personnel.)

14.2.4. At locations without air terminal or traffic personnel, the shipper assumes the responsibility for ensuring cargo is properly weighed, marked and is accompanied by the correct documentation.

14.2.5. During joint airborne air transportability training (JA/ATT), special assignment airlift mission (SAAM), USAF mobility, and contingency missions, the LM can accept DD

Form 2133, *Joint Airlift Inspection Record*, as a valid pre-inspection of equipment being offered for air shipment. This form, validated by two joint inspection signatures (user and transporting force), may be used in lieu of the applicable portions of the TO 1C-130(H)J-9CL-1. The DD Form 2133 will not be used to document preparation of hazardous materials. This will be accomplished using the Shipper's Declaration for Dangerous Goods.

14.3. Emergency Exits and Safety Aisles. Safety aisles will be maintained IAW 11-2HC-130JV3, Addenda A, and this chapter.

14.3.1. When passengers are seated in side facing seats, the LM will ensure there is sufficient space between the cargo and the seats to permit passenger leg room. ***NOTE:*** All passenger hand-carried items must be of a size to fit under the seat and must not obstruct the safety aisle. Any items that do not fit under a seat or obstruct an aisle way will be stowed with checked baggage and secured for flight.

14.3.2. At least one unobstructed emergency exit will be available for each 20 passengers/troops. (This does not restrict overwater flights if the three overhead escape hatches are available for egress.) Litters and seats erected across an emergency exit are not considered an obstruction.

14.3.3. Passengers/ambulatory patients may not be seated closer than 30 inches in front of palletized netted cargo or cargo secured with straps. When the cargo, either palletized or non-palletized, is secured with chains, the 30-inch spacing is not required. ***EXCEPTION:*** Maintain 30 inch spacing on AE missions, when carrying occupied litters.

14.4. Channel Cargo.

14.4.1. ACC aircraft do not routinely airlift channel cargo; however, if so tasked, contact the air terminal operations center (ATOC), airlift control element (ALCE), or air freight/passenger service to obtain the cargo and passenger breakdown and assist in planning of proposed load. If required, security requirements for the cargo/passengers being carried will be briefed to the LM during the initial load briefing at ATOC. At stations where aircraft tie-down equipment is exchanged, make every effort to ensure that a one-for-one exchange occurs. If this is not possible, the LM will inform the PIC of lost or missing equipment and annotate missing items on the aircraft Dash 21 Equipment Inventory, refer to AFTO Form 781.

14.5. Passenger Handling.

14.5.1. ACC aircraft will not normally be tasked to support AMC passenger missions, nor will passengers be manifested or loaded aboard ACC aircraft without the prior approval of the PIC, or mission commander.

14.5.2. Prior to releasing seats, ensure terminal operations passenger handling personnel are aware that passenger comfort latrine facilities are extremely limited, and of the possibility of an in-flight diversion.

14.5.3. Pre-flight Procedures.

14.5.3.1. The PIC and LM are responsible to ensure all passengers are properly manifested.

14.5.3.1.1. Aircrew will manifest all passengers using DD Form 2131, *Passenger Manifest*, and leave a copy of the manifest with the flight plan. If not filed with the flight plan, annotate the location of the manifest on the flight plan IAW AFI 11-202V3.

14.5.3.1.2. Aircrew will accomplish anti-hijacking requirements for passengers IAW AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking)*, and this publication.

14.5.3.2. Ensure the APU is shutdown before boarding passengers unless adequate ear protection is provided. Ensure that only adult, English-speaking passengers are seated next to emergency exits. Do not seat mothers with infants, children under 15 years old or physically challenged persons in seats adjacent to emergency exits. Make every effort to seat families together.

14.5.3.3. When children under the age of two are accepted as passengers, their sponsor has the option to either hold the child or place him or her in a Department of Transportation-approved infant car seat (ICS). Although the use of an ICS for children is no longer mandatory, all passengers (duty and space A), regardless of age, are required to be assigned their own seat. This policy will provide an infant and their sponsor with a dedicated seat allowing the use of an ICS at the sponsor‘s discretion; this mirrors current FAA (commercial) standards. The FAA has banned the use of booster seats, harnesses and **child vest** restraints.

14.5.4. In-Flight Procedures.

14.5.4.1. Passengers may move about the cabin after reaching cruise altitude; however, judgment must be exercised on the number of passengers allowed out of their seats at any one time. Encourage passengers to remain seated with their seat belts fastened. Due to concern for their safety, passengers will not be allowed to lounge or sleep on cargo or baggage.

14.5.4.2. Make frequent checks on the following:

14.5.4.2.1. Cabin temperature.

14.5.4.2.2. Passengers with small children.

14.5.4.2.3. Cleanliness of the cabin and lavatories.

14.5.4.3. Do not allow passengers to tamper with emergency equipment. Passengers will not be permitted access to checked baggage.

14.5.4.4. On long flights, particularly during hours of darkness, use all possible means to make passengers comfortable. Dim and extinguish unnecessary compartment lights.

14.5.4.5. Passengers may visit the flight deck only when approved by the PIC. Use good judgment when requesting this authority.

14.5.4.6. Ensure that classified equipment remains covered during the entire mission when passengers are onboard and ensure passengers are denied access to this equipment.

14.6. Passenger Restrictions. DoD 4515.13-R, *Air Transportation Eligibility*, establishes criteria for passenger movement on DoD aircraft. It defines five categories of passenger travel:

space-available, aeromedical evacuation (AE), orientation, public affairs, and space-required. AFI 11-401, *Aviation Management*, provides further guidance on orientation and public affairs travel. Refer to these publications directly for details not addressed in this instruction. In all cases, passengers will be manifested on a DD Form 2131. ***NOTE:*** See AFI 11-401 as supplemented for MEP policy.

14.6.1. Space-available. Authorized passengers, processed through the passenger terminal, may occupy surplus seats on DoD aircraft after all space-required passengers have been accommodated. Required documentation is listed in DOD 4515.13-R. OG/CCs or COMAFFOR may approve space-available travel on aircraft after careful consideration of mission requirements and sensitivities.

14.6.1.1. Restrictions. Both pilots must be fully qualified. OG/CCs or COMAFFOR may approve HAAR on a case-by-case basis. All other mission events and simulated EPs are prohibited.

14.6.2. AE. Defined as the movement of patients by air. Specific guidance on eligibility and documentation is contained in DoD 4515.13-R. Commander, USTRANSCOM is the single manager for policy and procedure.

14.6.2.1. Restrictions. If tasked to conduct AE, both pilots must be fully qualified. HAAR may be performed if required for mission accomplishment after coordination with tasking authority. All other mission events and simulated EPs are prohibited.

14.6.3. Orientation. There are four categories of orientation flight (refer to AFI 11-401): incentive flights, distinguished visitor (DV) flights, familiarization flights, and spouse orientation flights. Document authorization requests by letter and DD Form 2131. Requests for approval will include the mission profile and events to be accomplished.

14.6.3.1. Restrictions:

14.6.3.1.1. Spouse Orientation Flights. Comply with restrictions in AFI 11-401 and the MAJCOM Supplement. Additionally, AAR, HAAR, and threat maneuvers are prohibited.

14.6.3.1.2. All Other Orientation Categories. Both pilots must be fully qualified. OG/CCs or COMAFFOR may approve all mission events on a case-by-case basis. Simulated EPs are prohibited. Passengers will be seated with belts fastened during threat maneuvers.

14.6.4. Public Affairs Travel. Defined as travel in the interest of adding to public understanding of DoD activities. AFI 11-401 contains specific details on the Air Force Public Affairs Flight Program. Document authorization by letter and manifest on DD Form 2131. Requests for approval will include the mission profile and events to be accomplished. Forward requests through public affairs channels.

14.6.4.1. Restrictions. Both pilots must be fully qualified. OG/CCs or COMAFFOR may approve all mission events on a case-by-case basis. Simulated EPs are prohibited. Passengers will be seated with belts fastened during threat maneuvers.

14.6.5. Space-required. DoD 4515.13-R lists several categories of passengers who are authorized official travel on DoD aircraft. Apply the space-available processing, approval, and restrictions to all space-required categories with the following exceptions:

14.6.5.1. Supported Forces. A sub-category of space-required passenger defined by this instruction as US and foreign military personnel who are an integral part of the mission being performed. Approval is assumed by the mission tasking. Manifest on DD Form 2131.

14.6.5.1.1. Restrictions. Both pilots must be fully qualified (unless excepted by AFI 11-401.) Simulated EPs are prohibited. There are no restrictions on mission events. Passengers will be seated with belts fastened during threat maneuvers. The PIC will ensure supported forces are briefed on the mission profile and events prior to flight.

14.6.6. Mission Essential Personnel (MEP). Procedures and policies regarding MEP are contained in AFI 11-401 as supplemented. The PIC will verify personnel traveling in this status are properly authorized.

14.6.6.1. Restrictions. Both pilots must be fully qualified (unless excepted by AFI 11-401.) Simulated EPs are prohibited (unless required for the purposes of a functional check flight (FCF.)) Limit personnel to the absolute minimum required.) There are no restrictions on mission events. Passengers will be seated with belts fastened during threat maneuvers. The PIC will ensure MEPs are briefed on the mission profile and events prior to flight.

14.7. Weight and Balance. Accomplish weight and balance according to T.O. 1-1B-50, *Weight and Balance*, T.O. 1C-130(H)J-5-1, *Sample Basic Weight Checklist*, T.O. 1C-130(H)J-5-2, *Loading Data Manual*, and 11-2HC-130J V3 VOL 3, Addenda A, HC-*130J Configuration/Mission Planning*. The unit possessing the airplane maintains the primary weight and balance handbook containing the current airplane status and provides a supplemental weight and balance handbook for each airplane. Enclose the supplemental handbook in a wear-resistant binder (preferably metal), stenciled "Weight and Balance" with the airplane model and complete serial number on the cover or spine.

14.7.1. The supplemental handbook will include T.O. 1C-130(H)J-5-1, T.O. 1C-130(H)J-5-2, and the 11-2HC-130J V3, Addenda A, sufficient copies of DD Form 365-4, *Weight and Balance Clearance Form F –Transport/Tactical*, to complete the mission and a certified copy of the current DD Form 365-3, *Chart C-Basic Weight and Balance Record*. The Chart C will include the airplane's basic weight, basic moment, and center of gravity.

14.7.2. Compute weight and balance either using the Chart E mathematical (moments) method or approved Automated Form F (AFF) software. Compute DD Form 365-4 IAW this AFI**'s** applicable addenda

14.7.2.1. Presently AFF software does not accommodate the HC-130J airframe. If used, Center of Gravity limits for takeoff and landing must be physically checked against T.O. 1C-130(H)J-5. Estimated landing fuel function will also be used as software does not support HAAR, AAR, and present fuel burn rates. These items will be annotated in the additional remarks block of the AAF. Two copies will be printed, one will remain onboard until mission termination, make every attempt to leave the other copy with air terminal/maintenance personnel remaining on the ground.

14.7.3. The weight and balance section of the unit possessing the airplane will maintain the required documents.

14.7.4. LMs, in units who authorize the use of Canned Forms F, will still compute an accurate operating weight in the CNI-MU.

14.8. Engines Running Onload or Offload (ERO). Use ERO procedures when necessary to expedite aircraft or cargo movement, meet time requirements of unit moves, joint training exercises, and contingencies or to enhance crew duty day.

14.8.1. With the exception of small arms ammunition (Hazardous Class/Division 1.4), do not use ERO procedures when explosive cargo is involved unless authorized in the JA/ATT, exercise, operation or contingency air tasking order.

14.8.2. ERO procedures may be used for any mix of personnel or cargo. Material handling equipment should be used if palletized cargo is to be onloaded or offloaded. PICs must assess prevailing weather, lighting, and parking location to ensure safe operations. ***NOTE:*** At the PICs discretion any category passenger may ERO. The number of passengers and amount of baggage to be onloaded or offloaded should be taken into consideration. The well being of the passengers should be considered at all times. ***WARNING:*** Do not onload or offload through the crew entrance door and cargo ramp and door at the same time. Paratroop doors will not normally be used.

14.8.2.1. The PIC will brief crewmembers on the intended ERO operation, emphasizing specific crewmember duties.

14.8.3. After the aircraft is slowed to taxi speed, the LM may remove all tie-downs except one forward and one aft restraint, open the aft cargo door, and position the ramp no lower than horizontal. ***WARNING:*** If a combat offload of pallets is to be accomplished before offloading vehicles, do not remove any vehicle restraint until after the combat offload is complete. ***NOTE:*** LMs will ensure vehicles and troops proceed directly aft of the aircraft at least 50 ft before turning and/or 300 ft before stopping. ***NOTE:*** If downloading to an empty aircraft, a DD Form 365-4 is not required. Ensure the PERF WT and WT and BALANCE pages of the CNI-MU are updated prior to takeoff.

14.8.4. During onload and offload through the crew entrance door, station a crewmember (normally the LM) on interphone (cord held taut) approximately 25 ft and at a 45-degree angle from the aircraft axis. Brief deplaning personnel to remain forward of the interphone cord.

14.8.5. The LM will direct all onload and offload operations using prebriefed signals. Passengers will be escorted by a crewmember when enplaning or deplaning. Deplane passengers before cargo and enplane passengers after cargo unless cargo size or location dictates otherwise. ***NOTE:*** Does not apply to INFIL/EXFIL operations. During INFIL/EXFIL operations onload and offload cargo per static training.

14.8.6. ERO for crew changes during local training missions is authorized provided the enplaning crew does not approach the aircraft until the deplaning LM on headset is in position outside the aircraft.

14.9. Combat Loading. Combat loading is comprised of three types of operations: combat offload, passenger combat loading, and Infil/Exfil procedures. See AFTTP3-3.HC-130 for additional guidance. All personnel in the cargo compartment will be seated and secured except those personnel having valid duties to perform.

14.9.1. Combat Offload. Combat Offload provides a means of off-loading single, multiple, and married pallets; ramp and airdrop platforms; and CDS containers without the use of Material Handling Equipment (MHE). OG/CCs or deployed equivalent may authorize combat off-load when hostile conditions or similar situations warrant the use of these procedures. The method of combat offload will be determined by the aircrew based on the conditions at the offload site.

14.9.1.1. Combat Offload Method A.

14.9.1.1.1. A taxiway or ramp at least 500 ft long is required; however, 1,000 ft is desired to provide a margin of safety. When pallets, platforms, or containers are offloaded one at a time, use a longer taxiway based on the number to be offloaded. Explosives and munitions shall not be combat offloaded without approval of ACC/A3T. ***EXCEPTION:*** Small arms ammunition (hazard class and division 1.4) and explosives/munitions rigged for airdrop may be combat offloaded without ACC/A3T approval. ***WARNING:*** Many explosive items have specific drop criteria that, if exceeded, render the item useless or dangerous to the user. ***CAUTION:*** When using Method A on excessively rough, sharply undulating, or battle-damaged surfaces, damage to the aircraft ramp may occur. Reducing forward taxi speed on these surfaces will reduce aircraft oscillation. The PIC must determine if the offload area will permit the offload operation to be conducted without damage to the aircraft or equipment.

14.9.1.1.2. Combat offload of fragile and sensitive cargo items (i.e., computers) that might be damaged by standard Method A combat offload procedures will not be attempted without user concurrence. If the nature of the mission dictates that cargo must be offloaded, aircrews may lower the ramp to approximately 18 inches above the ground. ***CAUTION:*** Do not attempt to lower the ramp below horizontal unless the UNRESTRICTED RAMP TRAVEL light is illuminated. ***EXCEPTION:*** UNRESTRICTED RAMP TRAVEL light will not illuminate when cargo compartment lights are in the covert position. ***NOTE:*** Normal Method A procedures cannot be used with the ramp below the horizontal position. In this case the LM must release the locks using either the PLCUs or RECP Jettison switches.

14.9.1.1.3. Pallets may be offloaded, without ballast, using Method A procedures provided their total weight does not exceed 12,000 lbs, and the height of the pallets fall within cargo height jettison limit in section III of the flight manual or section V of the cargo loading manual.

14.9.1.1.4. Airdrop rigged platforms up to 24 ft in length may be offloaded, without ballast, using Method A procedures provided their weight does not exceed 12,000 lbs. ***NOTE:*** Pallets and airdrop rigged platforms over 12,000 lbs total weight may be offloaded using this method, provided ballast or cargo equal to the difference between 12,000 lbs and the weight of the pallets or platforms (to be offloaded) remains in C through F compartments during offload. Example: A 17,000 lb married pallet or airdrop platform requires 5,000 lbs of ballast or cargo to remain in C through F compartments during the offload.

14.9.1.1.5. CDS may be combat offloaded using Method A procedures. The static line retriever will be used via manual activation; manual gate cut may be done if the

retriever is inoperative. With Centerline Vertical Restraint (CVR), offload will be accomplished one side at a time if the total bundle weight exceeds 12,000 lbs. Non-CVR sticks may be offloaded if the total weight is less than 12,000 lbs. Without the CVR, if the total weight of the bundles exceeds 12,000 lbs bundles should be restrained in groups of four or less and offloaded one group at a time. For the unplanned combat offload of non-CVR bundles, restrain the bundles as described above. Perform an initial offload via the static line retriever, and on sequential offload, remove aft restraint before clearing the pilot to taxi. Consider the slope of the offload site which may cause bundles to roll aft upon removal of restraint.

14.9.1.2. Combat Offload Method B. Use this method to offload married pallets that do not fit the category for Method A or for which no ballast is available for married pallets weighing between 12,000 to 15,000 lbs. Use four serviceable steel 55-gallon drums under each pallet to be offloaded. The correct number of steel drums needed to complete this type of offload must be available at the offload site or must accompany the load when conditions at the offload site are unknown. ***WARNING:*** The maximum weight for pallets to be offloaded across the ramp at any one time when using Method B is 15,000 lbs. Do not use Method B for airdrop-rigged platforms to prevent binding the platform under the vertical restraint rails.

14.9.2. Passenger Combat Loading. Additional procedures are located in AFTTP 3-3.HC-130. Floor loading is authorized to support dedicated forces and foreign counterparts during operations, exercises, and training. Standard seating configurations listed in AFI 11-2HC-130JV3, Addenda A, *HC-130J Configuration/Mission Planning*, are recommended, if practical.

14.9.3. Infil/Exfil Procedures. These procedures are only authorized when conducting Infil/Exfil operations with dedicated unconventional or CSAR/PR forces and foreign counterparts. If troops do not provide their own restraining devices, secure personnel using passenger combat loading procedures.

14.9.3.1. Egress and Static Load Training. Conduct static load training prior to all Infil/Exfil operations. ***EXEPTION:*** For unilateral Infil/Exfil training conducted with home-station assigned units using ATV, Quads, Polaris, and Gator type vehicles, the OG/CC may waive this requirement.

14.9.3.2. Vehicle Restraint Procedures. User will identify any "load specific" tie-down requirements or limitations. ***WARNING:*** Chains positioned across the right side emergency exit will be connected to the sidewall tie-down ring with a tie-down device to expedite removal for emergency egress.

14.9.3.3. LMs will wear NVGs during blacked-out rapid infil/exfil operations.

14.9.3.3.1. LMs will wear NVGs on aircraft with NVG-compatible lighting; however, they may be raised when NVG lighting is illuminated.

14.9.3.4. Loadmaster Infiltration/Exfiltration Guide. LMs will use the AFTTP 3-3.HC-130 to amplify flight manual procedures and guidance found in this instruction.

14.9.3.5. Procedures after Touchdown:

14.9.3.5.1. Open the cargo ramp and door to horizontal when the PF states, "Clear to open," or as prebriefed. Lower the ramp to the ground once the aircraft has stopped, parking brake has been set and the pilot states, "Clear to offload." ***CAUTION:*** Maintain positive control of canary slides/ground loading ramps.

14.9.3.5.2. Position canary slides/ground loading ramps. ***NOTE:*** If a time delay is anticipated before onloading, raise the ramp enough to allow the aircraft to taxi in the event of an emergency.

14.9.3.5.3. Complete offload/onload.

14.9.3.5.4. Raise canary slides/ground loading ramps.

14.9.3.5.5. Raise the ramp to approximately 12” above horizontal.

14.9.3.5.6. Notify the pilot, “Clear to taxi.”

14.9.3.5.7. Secure canary slides/ground loading ramps.

14.9.3.5.8. Close the ramp and door.

14.9.3.5.9. Turn on red or NVG-compatible lights.

14.9.3.5.10. Prior to takeoff, ensure vehicles/equipment and exits are secure, and warning lights are extinguished.

14.9.3.5.11. Place ADS latch handles in lock position after takeoff as soon as mission requirements allow

14.9.3.5.12. Check vehicle tie-downs and secure cargo compartment after takeoff as soon as mission requirements allow.

Chapter 15

COMMUNICATION PROCEDURES

15.1. General. This chapter provides guidance on communications procedures for all missions and the requirement and completion of applicable forms.

15.1.1. The PIC is responsible for ensuring all communications requirements, frequencies, special procedures necessary for optimum communication coverage, and in-flight troubleshooting of communications, navigation, IFF/SIF, and specialized mission equipment is provided. In addition to the duties listed in the flight manual, other applicable technical orders, and this instruction, the PIC may assign other duties to the crew as necessary to accomplish this requirement. Communication duties are as follows: ***NOTE:*** The CP/PM will assist the CSO as required in accomplishment of duties.

15.1.2. Pilot Monitoring (PM).

15.1.2.1. Initiates and maintains communication with ATC and landing zone control personnel. Provides secure and non-secure communications IAW Command Electronic Order of Information (CEOI.)

15.1.2.2. Zeroize all cryptographic devices, IFF/SIF, and clear classified frequencies prior to leaving the aircraft.

15.1.2.3. Preflight and ensure IFF/SIF Modes are set IAW mission requirements.

15.1.3. Combat Systems Operator (CSO.) ***Note:*** Accomplished by PM if no CSO onboard.

15.1.3.1. Determines and coordinates frequencies and call signs and advises the PIC off all mission communications requirements.

15.1.3.2. Initiates and maintains communication with C2 agencies, range control, combat control teams (CCT), drop zone control personnel, and other ground parties during mission events. Initiates frequency hopping, secure and non-secure communications IAW Command Electronic Order of Information (CEOI.) Compiles and transmit required in-flight and position reports to appropriate facilities.

15.1.3.3. Signs out and maintains control of COMSEC and classified documents required during the mission. Annotate safe inventory and complete daily destruction as required. Return all COMSEC and classified materials to proper storage facilities.

15.1.3.4. Keys all secure equipment and makes appropriate operational checks.

15.1.3.5. Troubleshoots malfunctioning voice/data communication and navigation equipment and ensure discrepancies are annotated on the AFTO Form 781A.

15.1.3.6. Provides a documented record of all pertinent events during the mission using AF Form 4122, *Airborne Radio Log*.

15.2. Frequency Listing.

15.2.1. The crew will review applicable Air Tasking Orders and Special Instructions (ATO/SPINS) prior to each flight when deployed or during exercise participation. Use current FLIP, local IFGs and other documents as required to obtain frequency information.

NOTE: **Figure 15.1-Figure 15.5** contain listings of commonly used frequencies, including search and rescue, citizen band, and the Maritime radio presets.

15.3. Communication Threat Planning. During contingency operations, or exercise participation, the crew will obtain the most up to date information on enemy systems that may affect communication, navigation, and IFF equipment in the mission area. ***NOTE:*** HAVE QUICK II and SINCGARS anti-jam capability is not secure and will not be used for classified transmissions unless used in conjunction with a secure voice system.

15.4. Communication Procedures.

15.4.1. Communication Checks. It is the responsibility of the crew to be aware of OPSEC requirements prior to making communication checks.

15.4.2. Frequency Monitoring. The PIC will ensure a crewmember is monitoring ATC, C2, and Guard frequencies at all times.

15.4.3. Weather Forecasts. For flights outside the local area, obtain the destination and alternate (if applicable) forecasts, to include pressure altitude and temperature, before reaching the equal time point and one hour prior to ETA. Whenever SIGMETs are received, contact the nearest USAF weather facility to determine mission applicability.

15.4.4. Designated crewmembers must be proficient in the use of and procedures contained within JAFPUB 33-2007 and ACPs to include ACP 122(D), *Communication Instruction Security*, ACP 125(F), *Allied Communication Publication Communication Instruction Radiotelephone Procedures*, ACP 131 US SUPP-1(D), *US National Letter of Promulgation*, ACP 135(E), *Communication Instruction Signaling Procedures in the Visual Medium*, ACP 160(D), *IFF/SIF Operational Procedures (NOFORN)*.

15.4.5. JAFPUB 33-2007 prescribes procedures for HF communication between aircraft and ground stations for most circumstances. Ensure long-range communication, normally HF, is established prior to departing VHF/UHF range.

15.4.6. Tactical Operations.

15.4.6.1. Plan and fly missions using strict radio discipline to deny enemy DF, jamming and intrusion capability and ensure clear channels are available for emergencies. Limit transmissions to only those essential to mission accomplishment and use secure means when possible. Long range communication channels will be as directed by the mission controlling authority.

15.4.6.2. JSIR Reporting. Electromagnetic Interference (EMI) can be caused by enemy, neutral, friendly, or natural sources. The crew will report any hostile interference experienced while supporting joint operations IAW ATO/SPINS. When EMI is suspected to be non-intentional, file reports through the unit frequency manager. Refer to the FIH and CJCSM 3320.02-B, *Joint Spectrum Interference Resolution (JSIR) Procedures* for additional program and procedure information.

15.4.6.3. Classified Transmissions. If classified transmissions are made during flight, power will remain applied to the CVR for at least 30 minutes after the final classified transmission is completed.

15.4.7. Communication Reports. Forward all ATC communication and associated air reports (AIREP) to ICAO aeronautical stations IAW FLIP GP and FIH. Pass C2 and all other operational communication through the USAF HF/SSB GCCS or dedicated C2 assigned station.

Figure 15.1. Search and Rescue Frequencies.

Frequency	Usage	Mode[1]	Authority
251.9 MHz	Operational and Training	V	RFA[2]
252.8 MHz	Operational and Training	V	RFA
259.0 MHz	Operational and Training	V	RFA
381.0 MHz	Operational and Training	V	RFA
46.85 MHz	Operational and Training	V	RFA

Figure 15.2. Distress and Emergency Frequencies.

Frequency	Usage	Mode[1]	Authority
2.182 MHz[5]	Aero/Maritime Survival Craft	V	Joint Pub 3-50.1[3]
2.670 MHz	USCG Emergency Coordination	V	AFMAN 33-120
3.0235 MHz	International Scene of Action SAR	V	Joint Pub 3-50.1
4.835 MHz	AF Crash Boats (General)	V, CW	AFMAN 33-120
5.680 MHz	Int'l Scene of Action SAR	V	Joint Pub 3-50.1
5.717 MHz	Canadian MACS SAR	C	Canadian IFR Supp
8.364 MHz	For use internationally by Survival Craft Stations	CW	Joint Pub 3-50.1
121.5 MHz	Int'l Aeronautical Emergency	V	Joint Pub 3-50.1 AFMAN 33-120
123.1 MHz	NATO/ICAO Scene of Action	V	Joint Pub 3-50.1
138.45 MHz	ARRS Scene of Action	V	AFMAN 33-120
138.78 MHz	Scene of Action	V	AFMAN 33-120
156.8 MHz	Maritime Mobile VHF Radio-Telephone Service as a Distress, Safety, and Calling (Channel 16)	FM	Joint Pub 3-50.1 AFMAN 33-120
243.0 MHz	Int'l Aeronautical Emergency	V	Joint Pub 3-50.1 AFMAN 33-120
282.8 MHz	Int'l Scene of Action SAR	V	Joint Pub 3-50.1 AFMAN 33-120

Figure 15.3. Air/Ship/Air Calling Frequencies.

Frequency	Usage	Mode[1]	Authority
4.182 MHz	May be used by any aircraft to communicate with stations (ships) in the maritime mobile service.	V	RR 1178[4]
6.273 MHz		V	RR 1178
8.364 MHz		CW	RR 1178
12.546 MHz		V	RR 1178
16.728 MHz		V	RR 1178
22.245 MHz		V	RR 1178

Figure 15.4. Citizen Band (CB) Conversion Table 5

Channel	MHz	Channel	MHz	Channel	MHz	Channel	MHz
1	26.965	11	27.085	21	27.215	31	27.315
2	26.975	12	27.105	22	27.225	32	27.325
3	26.985	13	27.115	23	27.235	33	27.335
4	27.005	14	27.125	24	27.245	34	27.345
5	27.015	15	27.135	25	27.255	35	27.355
6	27.025	16	27.155	26	27.265	36	27.365
7	27.035	17	27.165	27	27.275	37	27.375
8	27.055	18	27.175	28	27.285	38	27.385
9	27.065	19	27.185	29	27.295	39	27.395
10	27.075	20	27.025	30	27.305	40	27.405

Figure 15.1-15.4 NOTES

1. Modes are V for voice, CW for International Morse Code, and FM for VHF FM.
2. The USAF RFA list is the authority for the use of these frequencies.
3. Joint Publication 3-50, Volume 1, and AFMAN 33-120, *Radio Frequency Spectrum Management*, explain the use of these frequencies, which are authorized in the RFA of the ITU Radio Registration (see following note).
4. The International Telecommunications Union (ITU) Convention of 1959 promulgated Radio Regulations (RR 994, 999, 1107, and 1323) which permit the use of frequencies for general air-to-ship communications uses.
5. In order to be on the correct frequency, ensure HF equipment is set to AM, not Upper Side Band (USB).

Figure 15.5. International Preset Maritime Channels.

Channel	Frequency		Use
	Ship	Shore	
1	156.050	**160.65**	Public Correspondence, Port Ops, Ship Movement
2	**156.100**	**160.700**	Public Correspondence, Port Ops, Ship Movement
3	**156.150**	**160.750**	Public Correspondence, Port Ops, Ship Movement
4	**156.200**	**160.800**	Public Correspondence, Port Ops, Ship Movement
5	156.250	**160.850**	Public Correspondence, Port Ops, Ship Movement
6	156.300		Safety (Inter-ship) Ship -to -Aircraft During Rescue
7	156.350	**160.950**	Public Correspondence, Port Ops, Ship Movement
8	156.400		Commercial (Inter-ship)
9	156.450		Port Ops, Inter-ship, Ship Movement
10	156.500		Port Ops, Inter-ship, Ship Movement
11	156.550		Port Ops, Ship Movement
12	156.600		Port Ops, Ship Movement
13	156.650		Port Ops, Inter-ship, Ship Movement
14	156.700		Port Ops (Inter-ship/Ship-To-Coast), Ship Movement
15	156.750		Port Ops, Inters-hip, Ship Movement
16	**156.800**		**Distress, Safety And Calling**
17	156.850		Port Ops, Inter-ship, Ship Movement
18	156.900	**161.500**	Port Ops, Ship Movement
19	156.950	**161.550**	Port Ops, Ship Movement
20	157.000	161.600	Port Ops, Ship Movement
21	157.050	**161.650**	Port Ops, Ship Movement
22	157.100	**161.700**	Port Ops, Ship Movement
23	157.150	**161.750**	Public Correspondence
24	157.200	161.800	Public Correspondence (Ship-To-Coast)
25	157.250	161.850	Public Correspondence (Ship-To-Coast)
26	157.300	161.900	Public Correspondence (Ship-To-Coast)
27	157.350	161.950	Public Correspondence (Ship-To-Coast)
28	157.400	162.000	Public Correspondence (Ship-To-Coast)
60	**156.025**	**160.675**	Public Correspondence, Port Ops, Ship Movement
61	**156.075**	**160.675**	Public Correspondence, Port Ops, Ship Movement
62	**156.125**	**160.725**	Public Correspondence, Port Ops, Ship Movement
63	156.175	**160.775**	Public Correspondence, Port Ops, Ship Movement
64	**156.225**	**160.825**	Public Correspondence, Port Ops, Ship Movement
65	156.275	**160.875**	Public Correspondence, Port Ops, Ship Movement
66	156.325	**160.925**	Public Correspondence, Port Ops, Ship Movement
67	156.375		Inter-ship, Port Ops, Ship Movement
68	156.425		Port Ops, Ship Movement
69	156.475		Inter-ship, Port Ops, Ship Movement
70	156.525		Digital Selective Calling (DSC)
71	156.575		Port Ops, Ship Movement
72	156.625		Non-Commercial / Non-Commercial (Inter-ship)
73	156.675		Inter-ship, Port Ops, Ship Movement
74	156.725		Port Ops, Ship Movement
75	156.775		
76	156.825		
77	156.875		Inter-ship
78	156.925	**161.525**	Public Correspondence, Port Ops, Ship Movement
79	156.975	**161.575**	Port Ops, Ship Movement
80	157.025	**161.625**	Port Ops, Ship Movement

81	157.075	161.675	Public Correspondence, Port Ops, Ship Movement
82	157.125	**161.725**	Public Correspondence, Port Ops, Ship Movement
83	157.175	**161.775**	Public Correspondence, Port Ops, Ship Movement

NOTES:
- Transmissions on frequencies or channels in **BOLD** are not allowed within U.S. territorial waters, but are allowed on the high seas and most other countries.
- No shore frequency listed indicates that the frequency is the same as that used on ships.

Chapter 16

TACTICAL EMPLOYMENT PROCEDURES

Section 16A—General

16.1. General. Personnel Recovery (PR) is the umbrella term for operations focusing on recovering captured, missing, or isolated personnel. This chapter provides procedures, requirements, and restrictions for HC-130J tactical employment. Additional TTPs required by crews in the tactical execution of PR are contained in AFTTP 3-3.HC-130 and other tactics manuals. In the case of conflict, the information in this instruction will take precedence.

16.2. Definitions. See **Attachment 1** for a complete list of definitions used in this chapter.

16.3. Checklists/In-flight Guides. Amplified checklist information is included in **Attachment 2** of this instruction. Abbreviated checklists/briefing guides are located in AFI 11-2HC-130JV3, CL-1/2.

16.4. Crew Duties. All crewmembers will perform normal crew duties as outlined in appropriate flight manuals and other chapters of this instruction. The following duties are divided between all crew positions. CNI-MU programming/updating, time control, mission planning, and monitoring of fuel status (fuel should be checked at least once every 60 minutes.) The PIC will ensure all navigation and communication duties are clearly understood prior to flight. This includes assigning responses for particular equipment in the tactical checklists. Emphasis will be placed on all dual use controls (CNI-MU, LPCR, fuel panel, refuel control panel, etc.) Specialized duties are as follows:

16.4.1. Pilot Flying (PF).

16.4.1.1. Maintains contour altitude and ensures terrain clearance.

16.4.1.2. Responsible for time control when within one minute of TOT/TOA.

16.4.2. Pilot Monitoring (PM).

16.4.2.1. Runs all checklists unless delegated to another crewmember.

16.4.2.2. Assists the CSO with maintaining proper flight path, acquiring controlling obstacles, and identifying the objective area.

16.4.2.3. Backs up the PF by monitoring aircraft instruments and cross checking aircraft altitude and terrain clearance using NVGs and radar altimeter.

16.4.2.4. During low level operations, state “190 knots” when airspeed decays below 190 knots. Further announce in 10 knot increment airspeeds below 190 knots (e.g., “180,” “170”) until airspeed exceeds 190 knots. ***EXCEPTION:*** Not required for planned slowdowns (HAAR, airdrops, Infil/Exfil, etc.)

16.4.3. Combat Systems Operator (CSO).

16.4.3.1. Advise the crew upon crossing the combat entry point (CEP), forward edge of the battle area (FEBA), forward line of troops (FLOT), passive detection line (PDL), combat exit point (CXP), etc.

16.4.3.2. Provide a turn point briefing prior to each leg of a route to include course heading, MSA, significant terrain, aircraft deviations, and anticipated threats. Be prepared to supply the PF with the highest altitude available, based on the threat, for each leg. Also, provides time warnings and advisories as appropriate.

16.4.3.3. Directs low level navigation to include start climb points (SCPs), reference altitudes, and responsible for keeping time control within one minute of TOT/TOA.

16.4.3.4. Assists the PF in maintaining terrain clearance, acquiring controlling obstacles, and maintaining desired flight path by using LPCR, EO-IR, or visually as required.

16.4.3.5. Programs and monitors ECM gear. Accomplishes threat avoidance and maintains awareness of position relative to known threats and terrain. Directs defensive maneuvers and employs ECM, as appropriate. Advises the PF when clear of threats and able to resume planned heading, altitude, and airspeed.

16.4.4. Loadmaster (LM).

16.4.4.1. Responsible for rear quadrant visual threat detection. ***NOTE:*** When in a threat environment, crew members/pararescue stationed at a scanner position will hold the ALE-47 remote flare dispenser switches.

16.4.4.2. Mask lights or install blackout kit as necessary. See AFTTP 3-3.HC-130 for items to be masked.

16.4.4.3. Will be responsible for light signal communication IAW visual signals listed in ATP-56(B).

16.4.4.4. Ensures that cargo compartment lights (except electroluminescent lights (EL), if installed) are off from ingress to egress in hostile areas at night.

16.5. Aircraft Preparation. All equipment such as pyrotechnics, excess seats, trashcans, etc., not essential to the mission should be removed from the aircraft prior to a combat mission. Securely tie down all other equipment.

16.6. Survival and Protective Equipment. All personnel will wear the survival and protective gear provided during hostile environment operations. Unit/deployed commanders may amend survival/protective equipment requirements based on the threat. See AFTTP 3-3.HC-130 for a list of survival/protective equipment.

16.7. Use of Laptop Computers During Flight. Electro-magnetic Interference (EMI) certified laptop computers and software, such as PFPS, are allowed in-flight IAW AFI 11-202V3, and their use is highly encouraged. These systems do not replace existing navigation equipment, must not be used as the sole means of navigation, and must not interfere with the accomplishment of normal duties.

16.7.1. Each user must have a back-up paper chart immediately available in case use of the system is denied.

16.8. Night Vision Goggle (NVG) General.

16.8.1. Limitations. All aircrew will be familiar with the limitations associated with NVG use as discussed in AFMAN 11-217V3, *Supplemental Flight Information*, and AFTTP 3-

3.HC-130. ***NOTE:*** The route study should emphasize NVG limitations and performance factors and their impact on terrain and obstacle clearance.

16.8.2. Preflight. Each crewmember will preflight their own NVGs before flight and carry a spare set of batteries. The PIC must designate a crewmember to preflight and carry a spare set of NVGs onboard the aircraft. Each crewmember will also carry an NVG-compatible light source.

16.8.3. In-flight Requirements. When NVG use is required, the pilots, CSO, LMs, and scanners should wear them or have them immediately available based on mission requirements.

16.8.3.1. Pilots will wear NVGs with similar acuity and gain. ***WARNING:*** NVGs and associated components (battery cords, safety cords, and other hardware) can become entangled with the fire handles, overhead panel switches, or other controls. Any interference can cause inadvertent engine shutdown, or repositioning of other critical switches or controls. Pilots must exercise extreme care during seat changes.

16.8.3.2. Panoramic NVG (PNVG) Usage. Only pilots are authorized use of AN/AVS-10 PNVGs.

16.9. Minimum Operating Equipment Requirements. The minimum operating equipment required for tactical employment is contained in **Table 16.1**. Aircrew experience level and mission factors may dictate greater equipment requirements than those listed.

Table 16.1. Minimum Operating Equipment Requirements.

EVENT	EQUIPMENT REQUIRED	NOTES
Day Low Level	1. One Radar Altimeter 2. One Operable INS	- Aircraft not meeting min equipment requirements are restricted to MSA.
NVG Low Level	1. One Radar Altimeter 2. LPCR (MAP/MGM/RBGM) 3. One Operable INS	- Aircraft not meeting min equipment requirements are restricted to MSA.
IMC Low Level	1. One Radar Altimeter 2. LPCR (MAP/MGM) 3. One Operable EGI	
Visual Airdrop	1. One Operable INS	- This restriction does not prohibit using winds obtained visually or from alternate methods to assist in airdrop computations.
MC Airdrop	1. One Operable EGI	- A FOM greater than 4 requires an update
NVG Airland	1. One Radar Altimeter 2. One Operable INS	- For AMP-4 operations either the EO-IR or LPCR must be operational.
NVG SCA	1. One Radar Altimeter 2. LPCR (MAP/MGM/RBGM) 3. One Operable INS	
Threat Penetration	1. Day/NVG Low Level Requirements	

16.10. Mission Planning. Refer to AFTTP 3-1/3.HC-130 for in-depth mission planning and employment considerations. For complex missions, a minimum of one full day should be allocated for mission planning. ***NOTE:*** PR is a very demanding mission due to the time-critical nature involved in the recovery of survivors. Because of their medical condition, survivors may perish while a traditional preplanned mission is formulated. Most searches are part of an effort

to save life; therefore, make every effort to complete the search as rapidly and efficiently as possible. A thorough scan of the search area and accurate navigation significantly increases the probability of detection. Reactions to sightings must be timely and accurate. Operational procedures for conducting effective searches can be found in AFTTP 3-3.HC-130. Refer to the IAMSARV1/V2 for additional information.

16.10.1. Enroute Planning. Crews should fly tactical missions at the highest altitude commensurate with the threat(s) environment. During training, greater weather or altitude minimums may be dictated by FLIP, ICAO procedures, or training considerations. ***NOTE:*** A daylight route survey will be conducted for all unpublished training routes prior to NVG/IMC operations.

16.10.1.1. Whenever possible, plan the leg course prior to the IP or ARIP, to be within 30 degrees of the run-in or AR track course.

16.10.1.2. During contingency or combat operations, flying portions of planned flights in IMC may be necessary to accomplish mission objectives; however, due to aircraft equipment limitations, operational employment in a low level environment should be considered a last resort. The pilots and CSO must consider the terrain, accuracy of the altimeter setting, and increased mid-air potential prior to IMC profiles being attempted.

16.10.2. NVG Low Level Specific Requirements.

16.10.2.1. Lunar Illumination Criteria. There is no minimum illumination requirement to conduct NVG modified contour low level operations. Aircrews will use 0.8 millilux (.00008 lux) effective illumination as a standard for low illumination and increased risk mitigation. This roughly equates to 10% lunar illumination on a clear night. When effective illumination is below 0.8 millilux, crews will obtain squadron CC/DO approval prior to flight, add low illumination as a factor in their risk assessment, and mitigate the risk. This may require changing profile, airspeeds, or altitudes among many other options. ***NOTE:*** Lack of sufficient illumination may prevent NVG contour operations in otherwise VMC conditions.

16.10.2.2. Reference Altitudes and Start Climb Points (SCPs). The CSO will compute reference altitudes and SCPs for all NVG low level routes and brief them during route study.

16.10.2.2.1. Reference Altitudes. Reference altitudes are designed to provide terrain masking and terrain clearance along the planned flight path. Calculate reference altitudes by adding the appropriate enroute AGL (contour) altitude to predicted terrain elevation (e.g., chart, DTED) within 1 NM either side course centerline or planned flight path. Computation and frequency of reference altitudes should take into account terrain topography, turn radius of aircraft, chart deficiencies, navigation system accuracy, threat environment, terrain elevation data accuracy, aircraft performance, and crew experience. Keep in mind the PF will rely more heavily on reference altitudes as illumination decreases.

16.10.2.2.2. SCPs. SCPs are predetermined points, at a distance-to-go, where the aircraft should start a climb to a reference altitude based on an obstacle in its flight-path. Evaluate the entire leg for rapidly rising terrain and compute SCPs when there is a terrain differential of 1,000 ft or greater over 4 NMs or less. Since the primary

source for NVG low level altitude is visual pilotage, CSO should assume the aircraft will be at the lowest possible point within the corridor and compute climbs from there. When calculating SCPs in this manner, greater terrain differentials will result, placing SCPs further away from critical terrain. This approach will result in less aggressive climb profiles, allowing the aircraft to retain a greater amount of energy in mountainous terrain. In addition, regardless of planned visibility or illumination, consider tailwind effects and one-engine inoperative performance. Continue to evaluate planned climb schedule during execution.

16.10.2.2.2.1. SCP Calculations. Calculate SCPs IAW AFTTP 3-3.HC-130. Normally, climb rate should be based on 1,000 ft per minute. Density altitude, aircraft gross weight, and tailwinds may require pilots to add distance to SCPs. ***NOTE:*** Due to errors in DTED, consider using reported DTED accuracy (if available) and applying it to the user-specified buffer altitude when computing reference altitudes.

16.10.3. Fuel Planning. For tactical low level operations, assume a 5,000 lbs per hour fuel burnoff rate unless more accurate data is available.

16.10.4. Threat Analysis. Refer to AFTTP 3-1.1 and AFTTP 3-1.2 for in-depth information of threat system capabilities and limitations, as well as threat employment techniques.

16.11. Briefing Requirements. Conduct aircrew briefings IAW **paragraph 6.14** of this instruction and the guidance below:

16.11.1. During the mission crew briefing, the PIC will brief all applicable items from the PIC's briefing guide located in AFI 11-2HC-130JV3 CL-1.

16.11.2. Tactical Briefings. All tactical sorties will include a route study and tactical briefing. The CSO will brief all applicable items from the CSO's briefing guide located in AFI 11-2HC-130JV3 CL-1. All pilots and CSO are required to attend the tactical route study and briefing. ***NOTE:*** The route study will emphasize NVG limitations and performance factors and their impact on terrain and obstacle clearance.

16.12. Chart Requirements. Planned low level routes will be drawn/printed on a 1:500,000 (TPC or Sectional) or larger scale chart. Use a 1:250,000 (JOG) or larger scale chart for overland threat penetration operations, mountainous NVG low-level operations, and the objective areas, unless not available, or of an inferior quality to a TPC. ***WARNING:*** Mixing multiple coordinate data can cause significant navigation and target errors. The consistent use of data for all coordinates greatly reduces these errors. Use the same datum to derive coordinates for all mission requirements. ***WARNING:*** Do not use the PFPS TCA tool as the sole source for calculating MSA/ESA. Although the TCA tool accounts for both DTED and VVOD elevations utilizing PFPS 4.XX and later versions, aircrew must still manually verify all MSA/ESA elevations to account for potential DTED errors, surveyed chart spot elevations, or any other discrepancies (e.g., ECHUM versus VVOD). ***WARNING:*** Aeronautical charts do not depict man-made obstacles less than 200 ft AGL or a change in terrain until it exceeds the chart contour interval. The worst situation would occur if a 199 ft tower sat on terrain with an elevation just below the next higher contour. For a 1:500,000 (TPC) with a contour interval of 500 ft, this would result in an uncharted obstacle existing 698 ft above charted terrain. Additionally, the highest spot elevation on any given leg may not be the highest terrain as in the

case of gradually rising elevations. ***NOTE***: Whenever available (e.g., in most instances) Level II DTED will be utilized when determining controlling obstacle elevations. Likewise, selection of VVOD overlay shall not implement option to hide towers when determining controlling obstacles. ***NOTE:*** Color copies, laminated, and PFPS charts are acceptable forms of hardcopy charts provided the contour and contrast remain intact and the chart is used for preflight route study and the flight. If using laminated charts, the crew will ensure that the laminate does not degrade the quality or readability of the chart and that all data remains intact. ***NOTE:*** For local training routes, if a mountainous NVG route has been planned using a JOG and elevations and altitudes are verified, the route may be flown with reference to a TPC or Sectional. ***NOTE***: Classify charts accordingly based on the information sources and methods used to obtain data.

16.12.1. Minimum Hardcopy Chart Requirements for Mission Planning and Flight.

16.12.1.1. The CSO will carry a hardcopy chart (or set of charts as required) that covers all enroute and objective mission areas.

16.12.1.2. The pilot and copilot may share a single low level/objective area chart during flight. If this option is used, both the pilot and copilot must participate in pre-mission route analysis using the single chart(s).

16.12.2. Use dark ink, pencil, or symbol tapes to portray course lines. Obstacles and other chart entries may be drawn or highlighted in any legible color.

16.12.3. When strip charts are used, the CSO will prepare a larger scale chart (i.e., ONC, JNC) to allow for major unplanned deviations during critical mission phases and emergency egress.

16.12.4. When transitioning from one chart to another, allow a sufficient route overlap.

16.12.5. Chart Annotation. At a minimum, low level charts will be annotated IAW **Table 16.2**.

Table 16.2. Chart Symbology Requirements.

ITEM	Pilot	CSO
Chart Scale, Code, and Edition	M	M
Current ECHUM/DAFIF/CADRG (EADRG)	M	M
Emergency Airfields	M	M
Course-line and Deviation Plan (planned flight path) [1]	M	M
Route Corridor	M	M
MSA and controlling obstacles [2]	M	M
ESA and controlling obstacle [3]	M	M
Distance Ticks	M	M
Course Arrow Box (leg magnetic course, distance, & MSA) [4]	M	M
Start Climb Points (SCPs) [5]	M	M
Start Descent Points (SDPs) [6]	M	M
Reference Altitudes [5]	M	M
Update Points	O	M
Initial Point (IP) / Slowdown Point	M	M
DZ / LZ / HAAR / AAR Points	M	M
Missed Approach Point / SCA Template	O	M
Applicable Local Draw Files	M	M
Go-Around Path	M	M
Re-attack Paths / Options (If used)	M	M
ACO Items	A	A
Combat Entry / Exit Point	M	M
Warning / Advisory Locations (e.g., 20, 10, 6, and 1 minute)	M	M
VVOD (minimum 100' towers)	M	M
FEBA / FLOT / PDL	A	A
Threat Masking / Shadow Graphing	A	A
Known Threats	A	A
LOCs / Population Centers	A	A
Bullseye	A	A

M = Mandatory O = Optional A = As Required Based On Mission

NOTES:

1. If planned route is different than course line, draw deviation lines. Annotate magnetic heading information near these deviation lines (if desired) to aid in dead reckoning during significant turns.
2. Place a box around the obstacle or terrain that defines the MSA for each leg.
3. Place the ESA in bold numbers on the chart. When multiple ESAs are used, or when using strip charts, annotate ESA on each chart segment. Place a double box around the obstacle or terrain that defines each ESA.
4. If the leg is split between two charts, place a Course Arrow Box on both charts.
5. Required for NVG low-level operations. Place SCPs and associated reference altitude at the required distance to go where the start climb (S/C) is to be initiated. Annotate as follows: "S/C 17/12/3500" or "S/C 17/3500/12" or "S/C 3500/17/12." Example indicates a S/C to 3500' MSL reference altitude, started at 17 NMs to go and at reference altitude by 12 NM to go.
6. Calculate IMC airdrop SDPs IAW AFTTP 3-3.HC-130 IFR Drop Corridor procedures.

Section 16B—Enroute Operations

16.13. Minimum IFR Enroute Altitude.

16.13.1. Minimum IFR enroute altitude is IAW AFI 11-202V3 as supplemented. ***EXCEPTION:*** For contingency operations, compute minimum IFR enroute altitude by adding 1,000 ft (2,000 ft in mountainous terrain) to the highest obstacle or terrain feature within 5 NM either side of route centerline, and rounded up to the next 100-ft increment. For routes where the terrain varies significantly, crews may establish a separate minimum IFR enroute altitude for route segments with similar terrain or obstacle elevations.

16.13.2. Descent below IFR minimum altitudes, listed above, is only authorized under the following conditions:

16.13.2.1. Intercepting glideslope for an approved IMC SCA.

16.13.2.2. Reaching the Drop Zone Entry Point for IMC airdrop.

16.13.2.3. Established on an ATC provided minimum radar vectoring altitude available from a suitably equipped and capable radar facility.

16.13.2.4. Established on a published IFR route or instrument approach procedure compatible with aircraft navigation systems.

16.13.2.5. IMC descent to VFR.

16.14. Low Level Operations. VFR tactical operations conducted below 3,000 ft AGL are considered low level operations.

16.14.1. AFTTP 3-3.HC-130 augments procedures in this instruction. ***WARNING:*** The CSO or PM must continually keep the PF apprised of flight progress and anticipated terrain elevations, obstructions, start climb points, and start descent points.

16.14.2. Minimum Operating Equipment Requirements. IAW **Table 16.1**.

16.14.3. Weather Minimums. Conduct modified contour low level operations in VMC. ***NOTE:*** This does not preclude the pilot from VFR filing requirements in AFI 11-202V3 or applicable ICAO/host nation requirements if operating outside CONUS. ***WARNING:*** Operating under VFR clearance in IMC conditions is normally an emergency procedure during training or exercise operations, requiring appropriate IFF and radio calls to the area air traffic control agency. During contingency or combat operations, flying portions of planned flights in IMC may be necessary to accomplish mission objectives; however, due to aircraft equipment limitations, operational employment in a low level environment should be considered a last resort. The pilots and CSO must consider the terrain, accuracy of the altimeter setting, and increased mid-air potential prior to IMC profiles being attempted.

16.14.4. Low Level Altitudes.

16.14.4.1. Lowest Acceptable Altitude (LAA). During training operations, higher weather or altitude minimums may be dictated by FLIP, ICAO procedures, training considerations, or crew experience. LAAs allowed for enroute modified contour low level operations are:

16.14.4.1.1. Day VMC LAA. LAA is 300 ft AGL modified contour above the terrain (except when using Threat Penetration Altitude), by visual reference to both the terrain and radar altimeter. Momentary terrain clearance deviations are expected and allowed due to terrain variance; however, crews must avoid sustained deviations below LAA.

16.14.4.1.2. Night VMC (Non-NVG) LAA. LAA is MSA. When the altitude for the next leg or segment is higher than the altitude currently being flown, complete the climb prior to the turn point or segment. When the altitude for the next leg segment is lower than the current altitude, do not initiate descent until established on the new leg or segment. ***EXCEPTION:*** During terminal area operations (airdrops and approaches), do not descend from enroute altitude until the objective is identified and adequate terrain clearance is assured.

16.14.4.1.3. IMC LAA. LAA is MSA. When the altitude for the next leg or segment is higher than the altitude currently being flown, complete the climb prior to the turn point or segment. When the altitude for the next leg segment is lower than the current altitude, do not initiate descent until established on the new leg or segment. ***NOTE:*** During training, conduct planned IMC routes under instrument flight rules (IFR) unless FLIP, ICAO, or host nation rules define other procedures.

16.14.4.1.4. NVG LAA. LAA is 500 ft AGL modified contour above the terrain (except when using Threat Penetration Altitude), by visual reference to both the terrain and radar altimeter. Momentary terrain clearance deviations are expected and allowed due to terrain variance; however, crews must avoid sustained deviations below LAA.

16.14.4.1.5. Threat Penetration (TP) LAA. LAA is 200 ft AGL for day VMC operations and 300 ft AGL for NVG operations.

16.14.4.1.5.1. During combat operations, limit the time spent at TP altitude to the duration needed to avoid/negate the specific threat.

16.14.4.1.5.2. During training operations, fly TP altitudes with the following restrictions:

16.14.4.1.5.2.1. A mission IP must be in either seat.

16.14.4.1.5.2.2. Not authorized on unfamiliar routes.

16.14.4.1.5.2.3. Pre-planned and restricted to flat/rolling terrain and coastal penetrations.

16.14.4.1.5.2.4. No "Break" or "Hard Turn" calls may be made. "Turn" calls are allowed. If a turn requires more than 20 degrees angle of bank, the aircraft will terminate TP operations and immediately climb to a normal modified contour profile, MSA, or ESA as required.

16.14.4.1.5.2.5. No simulated emergencies allowed. ***WARNING:*** Severely restrict bank angles below 200 ft AGL. Due to the close proximity to the ground, aircrews must be cautious of any descending vector that may develop during TP operations.

16.14.4.2. Climb to MSA when either pilot must leave the seat during low level flight. ***EXCEPTION:*** If performing a planned seat swap for training with an IP in the seat, climb to a safe altitude.

16.14.5. NVG Enroute and Objective Area Navigation. Obstacle avoidance at night is accomplished using NVGs, LPCR, EO-IR, and radar altimeter along with flying reference altitudes as necessary to maintain terrain clearance. Higher altitudes up to MSA may be required. ***WARNING:*** NVG low level flight and low illumination air refueling increase the chance crewmembers will experience spatial disorientation.

16.14.5.1. Once the reference altitude controlling obstacle is called in sight, the PF may fly below reference altitude as desired. The PF will notify the crew any time the aircraft descends below reference altitude. If a higher reference altitude is based on an obstruction beyond the PFs line of sight, the CSO will direct a climb at the SCP to the new reference altitude. Once the obstruction becomes visible, the PF may continue the climb or fly below reference altitude. ***WARNING:*** If at any time the PF loses sight of the reference altitude controlling obstruction, the PF will fly the computed reference altitudes. ***WARNING:*** Flying below reference altitude directly affects SCPs. CSO must evaluate the impact of flying below reference altitudes and determine if a start climb is required earlier than planned due to aircraft altitude.

16.15. Low Level Emergency Procedures. The procedures listed below apply to both training and contingency operations. ***EXCEPTION:*** During combat operations, a climb to MSA/ESA may expose the aircraft to greater hazard due to enemy threat detection. The PIC may climb to a Detection Free Altitude (DFA) or intermediate altitude during a low level emergency. Base the decision to use this lower altitude after a thorough pre-mission assessment of the enemy's overall threat detection capability and nature of the emergency.

16.15.1. Crew Disorientation. When a crew becomes disoriented on a low level mission, start a climb to ESA. Continue the climb until ESA is reached or a positive fix is obtained. After obtaining a positive fix, descend and resume low level operations. The CSO/PM will crosscheck timing and adjust as necessary.

16.15.2. Spatial Disorientation or NVG Malfunction. The PM will be ready to immediately take control of the aircraft if the PF experiences spatial disorientation or NVG malfunction.

16.15.2.1. If either pilot experiences spatial disorientation or NVG malfunction, start a climb to at least MSA until the pilot experiencing the problem is ready to resume PM or PF duties. Continue low level operations at PICs discretion.

16.15.2.2. During NVG takeoff or landing, the PM must react quickly to assume control and execute the appropriate action, regardless of qualification or pilot position. The CP must be ready to turn on overt landing and taxi lights to assist in the maneuver.

16.15.3. Inadvertent Weather Penetration. Climb to MSA if unable to avoid flight into weather conditions that prohibit VMC operations. A further climb to ESA may be required. After VMC is reestablished, continue low level operations at PICs discretion.

16.15.4. Aircraft System Failure. Start a climb to MSA when a known or suspected malfunction prevents continued safe low level operations. Maintain at least MSA until completion of troubleshooting. If the aircraft meets minimum operating equipment

requirements IAW **Chapter 4** and **Table 16.1**, the crew may continue low level operations at PICs discretion. Aircraft not meeting requirements will fly at MSA or higher.

16.15.5. Emergency Climb. The decision to execute an emergency climb should be made as soon as possible. The procedure should be considered in cases of, but not limited to, certain equipment malfunctions, spatial disorientation, inadvertent weather penetration, loss of situational awareness, and imminent contact with the terrain. Any crewmember may initiate an emergency climb by stating "EMERGENCY CLIMB." See **Table 16.3** for emergency climb procedure.

Table 16.3. Emergency Climb Procedure.

1. Announce "Emergency Climb" to the crew over interphone.
2. Set TAKEOFF power, level the wings and close bleed air valve switches. ***CAUTION:*** Closing the bleed air valves will result in depressurizing the aircraft. Use caution in areas of high terrain as cabin altitude may exceed 10,000 ft. The onset of hypoxia symptoms may complicate judgment. ***CAUTION:*** Closing the bleed air valves may result in decreased equipment cooling and may degrade critical component operation.
3. Close Ramp and Door (if open.)
4. For zero flaps (e.g., enroute) adjust the pitch to maintain at 10 knots above stall warning caret. For any flap setting (e.g., airdrop, HAAR) set flaps to 50% and adjust the pitch to maintain at 10 knots above stall warning caret.
5. Turn away (with consideration for stall margin) from terrain if feasible. If not possible, climb straight ahead for the maximum climb angle. ***WARNING:*** If flaps are up and turning is required, additional flaps may be necessary to avoid an accelerated stall. ***WARNING:*** A low altitude stall has a high probability of resulting in a crash and loss of life. ***WARNING:*** Any bank angle during this procedure will result in a lower than possible climb gradient and increases stall speed. A wings level climb will result in the maximum angle/rate of climb.
6. The PM will monitor and call airspeed as appropriate. Pilots must monitor stall caret.
7. The CSO should state the MSA. The CSO will monitor terrain (via LPCR) and call "CLEAR OF TERRAIN" when above all critical terrain. If the straight-ahead flight path vector will not provide terrain clearance, the CSO will state optimum heading.
8. When clear of all terrain, adjust pitch, power and airspeed for a normal climb out and level off and return all switches to their normal position.
WARNING: If impact with terrain is imminent, use 100% flaps, 10 kts above power off stall speed and crash the aircraft straight ahead.

16.16. Simulated Emergencies During Low Level Training. Simulated emergencies may be conducted during enroute low level training on local routes. Aircrew will comply with the following restrictions in addition to those listed in **Chapter 9**:

16.16.1. Restricted to flat or rolling terrain.

16.16.2. Simulated emergencies will only be conducted on specific legs identified during the crew briefing.

16.16.3. Do not compound emergencies.

16.16.4. As determined by the IP, initiate a climb to an intermediate altitude, DFA, or MSA. Continue a climb to or maintain required altitude until the completion of the simulated emergency.

16.17. Degraded Systems Training (DST). DST is used to prepare crews to accomplish missions simulating certain pieces of equipment inoperative (or intentionally turned off for emission control.) On non-local routes, designate leg segments during the route briefing. The following restrictions and procedures are designed to maximize training and safety.

16.17.1. Restrictions:

16.17.1.1. Visibility must be 5 SM minimum.

16.17.1.2. One radar altimeter must be operational and on.

16.17.1.3. The LPCR must be operational.

16.17.1.4. A mission instructor must be in either the pilot or CSO position.

16.17.1.5. One HDD at any crew position must be selected and monitored by an instructor (P/CSO) for DST of the navigation system.

16.17.2. PICs will brief the following items:

16.17.2.1. Equipment simulated inoperative.

16.17.2.2. Aircrew coordination.

16.17.2.3. Disorientation and emergency procedures.

16.18. Expendables/ECM Training. Conduct all expendables training IAW AFI 11-214, AFI 10-706, *Electronic Warfare (EW) Operations*, and host nation directives. Dispense only when approved by the controlling agency IAW agency procedures and restrictions. When over open water, do not drop expendables below 500 ft AGL or within 3 NM of any surface vessel, platform, or landmass.

16.19. Barometric Altimeter Settings. Altimeter update points should be planned for enroute portions of the mission. Sources of update include weather forecast, ground reporting stations, and crew updates. It is vital that aircrews accurately update all altimeters prior to low level and objective areas. When a current local altimeter setting is not available and an altitude update (ALT UPDATE) cannot be accomplished, use the lowest forecast altimeter setting.

16.19.1. An ALT UPDATE derived aircraft altimeter setting should only be used outside ATC controlled environments. An ALT UPDATE should be performed prior to all airdrops or landings. Obtain an ALT UPDATE as close to the objective area and as near the objective altitude as possible. Use sound judgment when updating aircraft altimeters and crosscheck elevations and new settings with all available information.

16.19.1.1. The CSO will update the pressure altimeter by recording the current altimeter setting, AGL altitude from the radar altimeter, and the MSL altitude from the pressure altimeter over a known elevation and computing a new setting. This works well when flying over a body of water, or flat terrain. Ensure the radar altimeter is fully operational and use sound judgment when updating aircraft altimeters. ***WARNING:*** Use extreme

caution when updating the pressure altimeter to a higher setting, as lower absolute altitudes will result.

16.19.2. Cold Weather Altimeter Corrections. Apply corrections to any barometric altitude (MSA, ESA, reference altitude, drop altitude, SCA backup altitudes, SCA minimums, etc.) used during low level operations when the outside air temperature is below 32ºF/0ºC.

16.20. Radar Altimeter Settings. All crew positions will use the same radar altimeter setting.

16.20.1. Low Level Settings. Set radar altimeters no lower than 10% below minimum enroute altitude (i.e. minimum setting of 450 ft for 500 ft NVG modified contour and 180 ft for day TP altitude at 200 ft.)

16.20.2. Airdrop Settings.

16.20.2.1. Low Altitude Airdrops. The radar altimeter should be set no lower than 10% below drop altitude.

16.20.2.2. High Altitude Airdrops. Set the radar altimeter at the discretion of the PIC.

16.20.3. The PF will make an immediate correction any time the system provides an "Altitude-Altitude" annunciation. ***NOTE:*** Regardless of the radar altimeter setting used, the PF will not wait for an annunciation to begin a correction to altitude.

16.21. Use of TCAS During Tactical Operations.

16.21.1. TCAS.

16.21.1.1. Crews may operate TCAS in TA-only mode during low level operations.

16.21.1.2. Crews will operate TCAS in TA-only mode during airdrop, HAAR, and AAR operations.

Section 16C—Terminal Area Operations

16.22. Infil/Exfil Operations.

16.22.1. General. Use the INFIL/EXFIL checklist and procedures to transition from the low level environment to place the aircraft on final approach, properly configured, in a position to identify the landing area, complete a landing, conduct a rapid onload or offload (if required), and quickly return to the low level environment. The INFIL/EXFIL checklist is used during tactical operations and replaces the APPROACH, BEFORE and AFTER LANDING, BEFORE TAKEOFF, LINE UP, and AFTER TAKEOFF checklists. Use the checklist for day or NVG operations and to make overt and covert/blacked-out landings.

16.22.1.1. When the tactical situation dictates flying an instrument approach while utilizing the INFIL/EXFIL checklist, ensure all briefing items from Step 5 of the APPROACH checklist are covered in the INFIL/EXFIL checklist crew briefing. Multiple instrument approaches for training will not be accomplished utilizing the INFIL/EXFIL checklist.

16.22.2. Aircraft Preparation.

16.22.2.1. Chemical lights. During blacked-out operations attach chemical lights to each emergency exit handle with tape in such a way as to allow a small amount of light to

shine through. WARNING: Chemical lights attached to exit doors and emergency escape hatch handles will remain in place until mission completion.

16.22.3. Aircrew Requirements. Aircrew may fly NVG airland operations commensurate with their level of qualification.

16.22.4. Approach to LZ.

16.22.4.1. Minimum Operating Equipment Requirements. See **Table 16.1** for any restrictions for the approach type being flown to an LZ.

16.22.4.2. NVG Batteries. Each pilot will silently check both NVG batteries are operational during the INFIL/EXFIL checklist.

16.22.4.3. Barometric Altimeter Setting. The CSO will determine the most accurate altimeter setting for the LZ using all available sources.

16.22.4.4. Radar Altimeters. Radar altimeters should remain set at enroute altitude.

16.22.4.5. Flap Settings. Verify desired flap setting prior to reaching threshold speed.

16.22.5. Descent. Do not descend below 300 ft AGL until both pilots visually identify the LZ environment. Whoever identifies the LZ first will call out "zone in sight," its clock position, and any discrepancies (i.e., any lights out, etc.) Both pilots will then confirm the zone and crosscheck the alignment for proper heading. WARNING: Do not initiate a descent below 300 ft AGL prior to 2 NM to touchdown. This will cause the glideslope to be excessively shallow.

16.22.5.1. Landing lights. Depending on the type of landing, the pilot will select either overt or covert lighting. If the PF requires lights to acquire the LZ, he will call for "taxi lights," the PM will turn on the taxi lights. If the PF requires additional lights he will call for "landing lights," the PM will turn on both the taxi and landing lights.

16.22.5.1.1. Aircraft lighting will be as briefed/directed by ground parties for authentication purposes. The use of covert lighting will be thoroughly briefed in respect to the threat, runway environment, and authentication procedures.

16.22.5.2. The CSO will call 100, 50, 25 and 10 ft above touchdown.

16.22.6. Go-Around and Departure Procedures. Identify a go-around point during pre-mission planning for all NVG airland operations. When executing a go-around or departure, the CSO will call out passing through 100, 200, and 300 ft AGL. Whether maneuvering for another approach or proceeding with the route, plan to fly no lower than enroute LAA unless operational requirements dictate other altitudes. During a go-around, initiate the GO AROUND Procedure. WARNING: Pilots are more susceptible to spatial disorientation during NVG go-arounds and departures.

16.22.6.1. Immediate Landing Feasible. If an immediate visual approach and landing are feasible, clear vigilantly for obstacles. Maneuver the aircraft to be 500 ft AGL wings level and configured at approximately a 2 NM final. The PF will keep the landing zone insight during this maneuver.

16.22.6.2. Immediate Landing Not Feasible. If an immediate approach and landing are not feasible, maneuver the aircraft to the IP or next waypoint at or above enroute LAA

unless operational requirements dictate other altitudes. When an immediate landing is not feasible, execute the AFTER TAKEOFF checklist after the completion of the GO AROUND Procedure.

16.22.7. Ground Operations.

16.22.7.1. The ON THE RUNWAY checklist is automatically initiated when the pilot clears the ramp and door. During the initial Infil/Exfil briefing, the pilot may pre-brief the opening of the ramp and door upon reversing of the engines. In this case, opening the ramp and door initiates the ON THE RUNWAY checklist.

16.22.7.2. The copilot and CSO will assist the pilot in locating the offload/onload site once taxi speed is reached and will aid in clearing for other aircraft and obstructions.

16.22.7.3. Use IR taxi and landing lights to the minimum extent required to maintain visual references during taxi operations and takeoff roll. Interior lighting is the same as for the approach and landing.

16.22.8. Overt Landings Following NVG Landings. If the sortie will continue with Non-NVG VFR traffic patterns, accomplish either the COMBAT EXIT and TOUCH AND GO LANDING checklists or the INFIL/EXFIL OPTION LANDING checklist. If only a few patterns are planned, the INFIL/EXFIL OPTION LANDING checklist is quicker and easier to use. If many patterns or instrument work is planned, the COMBAT EXIT and TOUCH AND GO LANDING checklists are appropriate.

16.22.9. Infil/Exfil Option Landing Procedures. Fly a normal visual pattern. Pilots will call "zone in sight" as they turn final and the CSO will make standard altitude advisory calls on descent.

16.22.10. Loss of NVGs.

16.22.10.1. Before Landing. If the PF or PM loses use of their NVGs inside of 1 NM, perform a go-around.

16.22.10.2. After Takeoff. Transfer aircraft control and continue the climb to enroute altitude or MSA as appropriate.

16.22.10.3. On the Ground. The PF will determine whether to continue the landing rollout or takeoff roll as applicable. The PM should be prepared to turn on overt lighting at the direction of the PF in case of NVG failure during takeoff or landing roll.

16.23. Self-Contained Approach (SCA). SCA procedures may be used for approaches to conventional airfields and assault zones, and for either overt or NVG airland operations. Conduct SCAs using the tactical INFIL/EXFIL checklist procedures or from the normal APPROACH and BEFORE LANDING checklists. Comply with local ATC restrictions and host nation agreements, as appropriate.

16.23.1. Weather Minimums:

16.23.1.1. Unpublished SCAs will be conducted VMC.

16.23.1.2. IMC SCA wx minimums will be IAW the published procedure, but no lower than 300-1.

16.23.1.3. IMC SCAs will be flown IAW AFI 11-202 Volume 3 and the following guidance:

16.23.1.3.1. Flown from a published SCA approach.

16.23.1.3.2. Required navigation accuracy for an IMC SCA is:

16.23.1.3.3. To provide an early indication of degraded navigation accuracy, set the POS ALERT(s) at 0.03 NM (55 yards; FOM 2) and 0.05 NM (110 yards; FOM 4). If both INAV solution FOM's are less than or equal to 4 and no POS ALERTS (INAV Pos Miscompare ACAWS/INAV Pos Difference ACAWS) are indicated, navigation accuracy (300 yd CEP) is verified. If these conditions are not met a radar or visual update is necessary to verify/improve navigation accuracy prior to performing SCAs. ***NOTE:*** Anytime a position bias (update) has been added to the EGI INAV solution, displayed FOM values do not reflect the result of the bias.

16.23.1.3.4. For any SCA, verify navigation accuracy within 10 minutes of the FAF. Do not descend from FAF altitude without verifying the active ship solution if any of the following conditions exists: either FOM greater than 4, INAV Pos Miscompare ACAWS, or INAV Pos Difference ACAWS.

16.23.1.4. Both pilots or a pilot a CSO will verify runway point of intercept (RPI) or LZ coordinates in the mission computer. Verify the CNI-MU LZ information with a valid LZ survey.

16.23.2. Minimum Operating Equipment Requirements. See **Table 16.1**.

16.23.3. Pre-mission Requirements.

16.23.3.1. SCA Construction. Construct SCAs IAW the guidance found in AFTTP 3-3.HC-130.

16.23.3.1.1. Chart Scale. Use the largest scale chart available from 10 NM inbound. A 1:50,000 chart is preferred, but in no case will it be smaller than 1:250,000.

16.23.3.1.2. The CSO/pilot will construct an approach plate for the SCA using the AF Form 4118, *SCA Planning Form*, computer Approach Planning Tool (APT), or an OGV approved planning form.

16.23.3.2. Plan a minimum 7 NM for a straight-in approach unless the order of battle prohibits it. Plan and execute turning SCAs, dogleg SCAs etc. IAW AFTTP 3-3.HC-130. If developing an SCA for IMC use, plan a minimum 10 NM straight-in approach.

16.23.3.3. Plan to intercept a 3 degree glideslope from enroute altitude unless terrain or obstructions dictate a different glideslope. Avoid using glideslopes greater than 5 degrees. Slowdown to threshold speed approximately 3 NM prior to intercepting the glideslope.

16.23.4. Missed Approach Point (MAP). The MAP will be at zero distance to go on the mission computer or as required on the SCA plate at MDA.

16.23.5. Approach Execution:

16.23.5.1. General. The CSO will make distance calls at every mile inside 10 miles and every half mile inside 3 miles (or as briefed.) ***NOTE:*** Each pilot will silently check both NVG batteries are operational during the INFIL/EXFIL checklist.

16.23.5.2. Inbound to LZ. Maintain enroute profile until descent to MDA. Initiate slowdown at the point identified during mission planning. Slow the aircraft to no less than 50 percent threshold speed, configure the flaps and gear as airspeed permits. Call for 100% flaps as airspeed permits. Confirm 100% flaps are set prior to reaching threshold speed. ***NOTE:*** The EO-IR is helpful in LZ identification and should be used to scan the LZ for obstructions, but it is not intended to be used to fly the entire SCA. ***WARNING:*** Do not slow to threshold speed until established on final for both straight-in and turning SCAs.

16.23.5.3. Descent. At glideslope interception, the CSO will state "begin descent," and repeat the desired initial descent rate. The CSO will provide glide-path advisories with reference to the mission computer, pressure altimeter, and radar altimeter. These calls will be made at 1/2 NM intervals until reaching the "100 feet" call. The CSO will state altitude deviations in actual feet above or below glideslope (ex. “15 feet above glideslope.”) The CSO will state deviations in excess of 150 ft explicitly. The CSO also advises the PF if the aircraft is correcting to or diverging from glide-path, using the term "Rapidly," if appropriate. The PM and CSO will closely monitor radar altimeters to ensure accuracy of altimeter settings to prevent inadvertently flying below planned AGL minimums. ***WARNING:*** Use of a 5 degree glideslope can cause descent rates in excess of 1,000 ft per minute. Pilots must take extreme care to break high descent rates with application of power prior to touchdown. WARNING: Do not initiate a descent below 300 ft AGL prior to 2 NM to touchdown. This will cause the glideslope to be excessively shallow. ***NOTE:*** Do not descend below 300 ft AGL until both pilots visually identify the LZ environment. Whoever identifies the LZ first will call out "zone in sight,” its clock position, and any discrepancies (i.e., any lights out, etc.) Both pilots will then confirm the zone and crosscheck the alignment for proper heading.

16.24. Tactical Approaches. Aircrews will conduct tactical approaches (overhead, downwind, random steep, SCA, and random shallow) IAW the airland operation procedures found in AFTTP 3-3.HC-130. NOTE: When using other than SCA tactical approaches, the PF will call “slowdown now” initiating the INFIL/EXFIL BEFORE LANDING checklist.

16.24.1. NVG Tactical Approaches. Tactical recovery certified pilots may conduct NVG tactical approaches to AMP 1, 2, 3 or 4 marked landing zones.

16.24.2. When performing tactical approaches, adhere to flight manual maneuvering and configuration restrictions.

Section 16D—Airdrop Operations

16.25. General. This chapter prescribes HC-130J employment procedures for all airdrop operations. For additional guidance and information, refer to AFTTP 3-3.HC-130.

16.25.1. Depending on the threat environment, there are generally two airdrop methods used; i.e., tactical airdrop and rescue airdrop procedures

16.25.1.1. Permissive Environment. The situation will usually allow multiple passes and a drop into the wind. In this instance, a jumpmaster (JM) directed pararescue/equipment deployment or rescue equipment kit deliveries could be used.

16.25.1.2. Contested Environment. In a tactical situation where the hostile threat is unknown or determined to be a factor, low observability is a requirement. A single pass over the objective, with minimum time spent in the drop area at altitude and at slower airdrop airspeeds, will reduce vulnerability. The primary method used in this environment is automatic release at the computer derived release point. ***NOTE:*** Prior to takeoff, the PIC will ensure that all crewmembers have reviewed the emergency procedures for the proposed airdrop. ***NOTE:*** In the event of a malfunction, incident, or off-DZ drop, do not de-rig, handle or move items unless required for safety of flight. Any follow-on investigation will benefit from seeing the items in the position or state they were in at the time of the event. Drop zone malfunctions and off-DZ drops will be reported IAW AFI 13-210 and AFI 13-217 as supplemented.

16.26. Airdrop Altitudes and Airspeeds. Refer to AFI 11-231 for specific airdrop altitudes and airspeeds.

16.27. Minimum Drop Zones Size. Refer to AFI 13-217.

16.28. Types of Drop Zones. Refer to AFI 13-217.

16.29. Drop Zone Markings. Plan and coordinate DZ markings according to AFI 13-217.

16.30. Airdrop Restrictions.

16.30.1. Airdrop Weather Minimums. Airdrops will be conducted in day or night VMC/IMC. ***EXCEPTION:*** Only certified and current aircrews are authorized to conduct airdrops in IMC.

16.30.2. Airdrop wind limitations. Refer to AFI 13-217.

16.30.3. DZ Surveys. The pilots and CSO will review the DZ survey during mission planning. CSO will carry a valid DZ survey onboard all flights performing airdrops. ***NOTE:*** CSO laptop with current DZ database will meet this requirement. ***EXCEPTION:*** Contingency operations are exempt from this requirement if current DZ survey is not available.

16.30.4. Airdrop Communications Procedures. Radio silence procedures will be coordinated prior to mission execution.

16.30.5. Minimum Enroute Flight Time. Minimum enroute flight time from takeoff to time over release point, for drops, will be sufficient to safely accomplish all required checklists. For airdrops involving personnel, enroute time of less than 25 minutes must be approved by the JM.

16.30.6. Ballistic Requirements. Crews will not make airdrops using parachutes for which AFI 11-231 does not list ballistics unless the user provides approved ballistic data or K factor. HQ ACC/A3T, Aeronautical Systems Division or US Army Soldier's System Center Natick (ASD/ENFC), and Special Operations Aerial Delivery Element (SOADE) will approve the ballistics or K factor. This does not apply to formal test missions where the purpose of the test is to derive ballistic data for a specific load or operational test.

16.30.7. Airdrop Operations.

16.30.7.1. The aircraft will not be configured where the cargo ramp and door and the paratroop door(s) are open at the same time. ***EXCEPTION:*** Authorized LM-directed airdrops of bundles off the ramp, to include trail-line drops, while spotting from a single open paratroop door.

16.30.7.2. If an air deflector door cannot be opened, its respective paratroop door will not be used.

16.30.7.3. A maximum of ten static lines may be retrieved manually per paratroop door. A maximum of 20 static lines per cable may be retrieved with a static line retriever winch.

16.31. Airdrop Kits. The LM will carry enough equipment in the airdrop kit to satisfy load or mission requirements. Minimum contents of airdrop kits will include cloth-backed pressure sensitive tape, 1/2-inch tubular nylon cord, 550 cord, 5 cord, 80 lb cotton webbing, two G-14 clevises, adjustable wrench and four carabiners.

16.32. Joint Airdrop Inspection.

16.32.1. Joint Airdrop Inspection Records. Unless exempted by AFI 13-210, *Joint Airdrop Inspection Records, Malfunction Investigations, and Activity Reporting*, MAJCOM supplements or waivers, a DD Form 1748 will be accomplished prior to all equipment airdrops. Completion, retention, and disposition of the form(s) will be in accordance with AFI 13-210, as supplemented. A-7A and A-21 containers rigged as door bundles do not require a before loading or after loading inspection. The JM of the airdrop unit and the LM will perform an inspection to ensure the A-7A and A-21 containers are properly rigged for either breakaway or nonbreakaway (IAW FM 3–21.220), connection to aircraft equipment, and clear route of exit. ***NOTE:*** Equipment not rigged IAW 13C-series TOs, Army Field Manuals, or Joint Special Operations Command (JSOC) 350-series manuals require a waiver from U.S. Army Quartermaster, Ft Lee, VA. Channel waiver requests through HQ ACC/A3TV. ***EXCEPTION:*** Waivers are not required for resupply, parabundles, and equipment described in this volume.

16.32.2. If airdrop and airland loads are carried at the same time, see the restrictions listed in **Table 16.4**. These restrictions are designed to prevent airland loads from interfering with airdrop rigging equipment.

Table 16.4. Load Planning Restrictions.

	Restrictions	Minimum Distance (Inches)
1.	Retriever Winch Cable/Pulley from aircraft floor	84”
2.	Distance between anchor cables; (a) CDS or Equipment (b) Personnel[1] (1) Forward Bulkhead (2) Intermediate Supports	 108” 6” Inboard, 64” Outboard 76” Inboard, 76” Outboard
3.	Airland Cargo Height	Cannot interfere with overhead rigging equipment CDS Only – 80” Height[2]
4.	Cargo locations on personnel airdrops (Static line or HALO)	Troop Door Exit: No Cargo Between FS 657-737
5.	Passenger/Personnel distance from airdrop rigging equipment	60”
6.	Safety Aisle to rear of aircraft[3]	All missions, alongside or over top of cargo
7.	Access to operate airdrop equipment	Troop Seats not used 1L and 2L

NOTES:
(1) Personnel airdrops may be performed with only one troop door configured for airdrop with user concurrence.

(2) Will not exceed 80” with 12” either side of retriever cable. Height of cargo outside of the 12” left and right (total 24”) may exceed the 80” height limitation, but will not interfere with overhead rigging equipment.

(3) CDS and heavy equipment configuration. A maximum of three rows of nylon seats may be used. The remaining vacant row serves as a safety aisle. All sidewall seats will be raised or stowed in the wheel well area when airland pallets and vehicles are located within this area and exceed 96” width.

16.33. Verification Of and Marking Airdrop Loads. The CSO will verify with the LM the actual number and type of parachutes, load weights, sequence of extraction, and position of loads in the aircraft agree with planned CARP data. If an individual load has a different type or number of parachutes from other loads, compute a CARP for each load to ensure all loads will land on the DZ. Base drop altitude on the item requiring the highest drop altitude. For training missions, the LM will coordinate with the CSO to ensure all equipment, drogues, containers, and standard airdrop training bundles are marked with the aircraft call sign and date. If more than one load is dropped on the same pass, mark loads with order of exit from aircraft. Markings will be placed on the extracted end of the load, and on the drogue line. ***EXCEPTION:*** If more than one CDS bundle is dropped on the same pass, mark only the first container out. ***NOTE:*** Contingency loads will not be marked.

16.34. Safety Equipment. During Airdrops, all personnel in the cargo compartment will be seated with their seat belt fastened. Crewmembers will wear a restraint harness/parachute, helmet, and eye protection when performing duties near an open exit in flight. ***WARNING:*** Crewmembers must wear a restraint harness when performing duties near an open exit above 14,000 ft MSL or below 800 ft AGL. ***WARNING:*** Except for an actual contingency, towed trooper, or emergency that threatens the survivability of the aircraft and crew, the restraint

harness will not be disconnected or lengthened to a point that would allow the LM to fall outside the aircraft.

16.34.1. When used, fit the restraint harness and adjust the lifeline before flight as follows:

16.34.1.1. Connect and adjust the lifeline to a floor tie-down ring that will preclude the wearer from exiting an aircraft.

16.34.1.2. Restraint harness lifelines may be attached to an unused anchor cable provided no static lines are attached and an anchor cable stop is positioned and taped at FS 737. The center anchor cable support may be used in lieu of the stop if lowered. Do not use this configuration(s) if both paratroop doors are open at the same time. Instead, connect and adjust the lifeline to a floor tie-down ring that would preclude the wearer from exiting either exit.

16.34.1.3. Connect the lifeline when at, or anticipating movement aft of FS 677.

16.34.1.4. The onboard safety personnel will normally provide their own parachute. Alternately, at their discretion, they may use a restraint harness. Personnel required to be mobile will wear a restraint harness, or wear a parachute before doors are opened. ***EXCEPTION:*** Flight examiner LMs are exempt from wearing a parachute or restraint harness while conducting flight evaluations provided they do not go aft of FS 677. For static line jumps, static lines are attached to anchor cables before doors are opened. ***EXCEPTION:*** Jumpers exiting on subsequent passes (racetracks) may stand and hook up with doors open if they are forward of the aft edge of the wheel wells FS 617. ***NOTE:*** Do not use flight deck restraint harness for airdrops.

16.34.2. For use of LPUs refer to **paragraph 6.24.5**

16.35. Airdrop Flight Procedures.

16.35.1. Airdrop Checklists. Airdrop checklists are located in the TO 1C-130(H)J-1.Checklists may be compressed or completed early if mission requirements dictate. Normally, all items of the preceding checklist are to be accomplished prior to initiating the next checklist. Avoid the use of the word “GREEN” or “LIGHT” after initiation of the slowdown checklist until arriving at the release point.

16.35.2. The LM will open and close the ramp and door unless otherwise briefed.

16.35.3. Aircrew No Drop Decisions.

16.35.3.1. Prior to the “1-MINUTE” call, any crewmember who determines a condition exists that could jeopardize a safe drop will notify the PIC. A “NO DROP” will be called at the discretion of the PIC.

16.35.3.2. After the “1-MINUTE” call, any crewmember observing a condition that would jeopardize a safe drop will transmit “NO DROP” on interphone. The PM and LM will immediately acknowledge the “NO DROP” call. The LM will accomplish the applicable no drop procedures before performing the COMPLETION OF DROP checklist. The PIC must ensure the crew is aware of what the plan is in the event of a no drop (race track, alternate DZ, RTB, etc.) and instruct the crew to follow the appropriate procedures.

16.35.3.3. Checklists may still be in progress after the “ONE MINUTE WARNING.” Call “NO DROP” if all checklists are not completed by the “5 SECOND” call.

16.35.3.4. If a “NO DROP” is called after the load restraint is removed and a racetrack is not planned, restraint will be reapplied.

16.35.4. Departure from Drop Zone (Escape). The PM/CSO will call "RED LIGHT" at the expiration of the "GREEN LIGHT" time or upon hearing the LM’s call of "LOAD CLEAR," whichever occurs first.

16.35.4.1. When the red light is turned on, immediately begin the escape maneuver by tracking flaps if required, turning to the departure heading, increase airspeed as required, and attain enroute altitude.

16.35.4.2. Accelerate as required, climb or descend as briefed, and perform the COMPLETION OF DROP checklist. ***NOTE:*** During combat, static lines that cannot be retrieved will be cut so that doors can be closed. Close all doors, raise flaps, and accelerate to enroute airspeed. It is imperative that the aircraft be configured for high speed evasive maneuvers. Therefore, after the static lines have been retrieved or cut, the doors and air deflectors closed, and flaps raised, the remainder of the COMPLETION OF DROP checklist may be deferred to a more convenient time.

16.35.5. Multiple Passes (Racetrack). Multiple passes will not be made unless directed or previously agreed upon by all units involved. If multiple passes are flown, all airdrop checklists will be accomplished. Checklists may be compressed during racetracks, but the aircraft commander must ensure the LM has adequate time to complete all items before the drop is initiated. The One Minute Warning is never compressed and is always given on time. ***EXCEPTION:*** During pilot directed airdrops, the checklist may be initiated at a point commensurate with the available time and type of drop. Doors may remain open at the discretion of the PIC.

16.36. Navigation Accuracy.

16.36.1. To provide an early indication of degraded navigation accuracy, set the POS ALERT(s) at 0.03 NM (55 yards; FOM 2) and 0.05 NM (110 yards; FOM 4). If both INAV solution FOM's are less than or equal to 4 and no POS ALERTS (INAV Pos Miscompare ACAWS/INAV Pos Difference ACAWS) are indicated, navigation airdrop accuracy (300 yd CEP) is verified. If these conditions are not met a radar or visual update is necessary to verify/improve navigation accuracy prior to performing airdrops. ***NOTE:*** Anytime a position bias (update) has been added to the EGI INAV solution, displayed FOM values do not reflect the result of the bias.

16.36.2. For all airdrops, verify navigation accuracy within 10 minutes of slowdown. Do not continue an airdrop without verifying the active ship solution if any of the following conditions exists: either FOM greater than 4, INAV Pos Miscompare ACAWS, or INAV Pos Difference ACAWS.

16.37. Methods of Aerial Delivery.

16.37.1. The primary method of aerial delivery for the HC-130J is automatic release at the computer derived release point. See **paragraph 16.36** for navigation system accuracy requirements. See AFTTP 3-3.HC-130 for additional guidance on methods of aerial delivery.

16.37.2. PM and CSO will verify DZ point of impact coordinates in the mission computer and CNI-MU CARP information with a valid DZ survey. Refer to AFI 13-217 for DZ survey information/requirements/applicability.

16.37.3. Airdrops are not allowed if a CARP XTK or CARP VERT is displayed. During contingency operations, the ERQS/CC or equivalent may approve manual drops (pushing green light switch based on visual reference to PI only) for increased flexibility of PI placement. ***EXCEPTION:*** Continuing an airdrop with CARP XTK displayed or performing a manual drop is permissible for alternate airdrop methods.

16.38. Low Altitude Airdrop Positioning (Visual). The following are approved methods of positioning the aircraft on a final for low level visual airdrops.

16.38.1. Computed Air Release Point (CARP) Aerial Delivery. The computed air release point (CARP) is a mathematical computation based on average parachute ballistics and dead reckoning principles. After computing the CARP solution, the CSO plots it on an appropriately scaled chart, sketch, diagram, or aerial photograph. Detailed instructions for CARP computations and depictions are contained in AFI 11-231. ***NOTE:*** Accurate visual positioning of the aircraft over the release point is the major difficulty of the CARP system. Make corrections to the aircraft track as far out from the CARP as possible to minimize this deficiency. To achieve desired drop accuracy, maintain the track during the final approach to the CARP and throughout the drop (green light) time.

16.38.2. Pilot/LM Directed Airdrops. Pilot and LMs may direct certain specialized rescue equipment and freefall equipment deliveries IAW this chapter and AFTTP 3-3.HC-130.

16.38.3. Ground Marked Release System (GMRS). Airdrops may be made using the visual ground marked release system (GMRS). In this system, supported ground forces are responsible for computing a release point and providing ground markings (panels or lights). The airdrop will be made directly over this marker or abeam a flank marker as determined during joint planning. Aircrew procedures are the same as those employed during a standard drop except that a pilot may assume the responsibility for calling "5 seconds" and "green light." An in-flight CARP will be computed to predict the approximate location of the release point and facilitate initial line-up during the run-in to the DZ. See AFI 13-217 for markings. ***NOTE:*** The user assumes responsibility for airdrop accuracy during GMRS drops.

16.38.4. Verbally Initiated Release System (VIRS). VIRS is an airdrop method by which ground personnel provide verbal steering guidance to an aircraft and call the release when the aircraft arrives over a predetermined point on the ground. VIRS will only be performed by qualified and properly trained personnel IAW AFI 13-217.

16.38.4.1. When this option is selected:

16.38.4.1.1. The ground party will compute the release point.

16.38.4.1.2. The ground party will position on the intended release point, provide the aircrew with verbal steering guidance and call the release when the aircraft reaches the release point.

16.38.4.1.3. The ground party should use the following terminology:

16.38.4.1.3.1. "Turn left or right" (directs approximately a half standard rate turn unless specified otherwise.)

16.38.4.1.3.2. "Stop turn" (self-explanatory.)

16.38.4.1.3.3. "Standby" (indicates approximately five seconds prior to the release point.)

16.38.4.1.3.4. "Execute, execute, execute" (directs release of the load.)

16.38.4.1.4. Upon hearing the term "standby", the CSO will state "5 seconds" on the interphone. On the first "execute," the CSO will state "green light."

16.38.4.1.5. The authentication procedures to be employed will be briefed prior to the mission. The procedure should be as simple and short as possible so as not to interfere with the approach to the DZ. Based on the limitations of radio equipment and terrain, a point will be identified as far out on the approach as possible where contact should be first attempted for authentication.

16.38.4.1.6. The ground party must maintain positive visual contact with the aircraft at all times during the inbound approach. If, in a training situation, doubt exists that the airdrop can be safely executed, or if the DZ cannot be positively identified by the aircrew, a no drop will be called by either the ground party or the aircrew.

16.38.5. Jumpmaster Directed (JMD) Airdrops. JMD airdrops require OG/CC or higher approval. ***EXCEPTION:*** Unilateral PJ airdrops for continuation training. These drops may be performed by qualified AF or sister service JMs (or trainees under the supervision of qualified personnel), may direct the aircraft to a release point and determine the exit point IAW the following restrictions and procedures:

16.38.5.1. JMD airdrops will be conducted using the SEARCH AND RESCUE checklists in AFI 11-2HC-130J Vol 3 Attachment 2.

16.38.5.2. Airdrop personnel in VMC only. ***NOTE:*** For PJ JMD airdrops of ATV/RAMZ packages, crews will use SEARCH AND RESCUE checklists and either a Fixed, Moving, or Crosswind Target Pattern for deployment.

16.38.5.3. The JM parent service/user accepts all responsibility for the accuracy of the drop, plus any potential injuries/damage to equipment.

16.38.5.4. In-flight visual signals, verbal signals, and interphone procedures between the JM, LM, and pilots will be coordinated prior to takeoff.

16.38.5.5. HALO and HAHO operations may be conducted using JMD procedures.

16.38.5.6. Personnel will not exit the aircraft unless the green light is illuminated.

16.38.5.7. The CSO will still calculate a CARP/HARP for mission planning purposes. CNI-MU calculated CARP/HARPs will be used to back up the computations and in-flight directions given by the JM. Prior to flight, the aircrew and the JM will compare predicted release points, resolve any significant differences, and agree to a planned slowdown point or time. CSO will update the JM in-flight on actual wind information and any changes to the crew's preflight CARP/HARP location.

16.38.5.8. Standard Voice Terminology. When the JM provides assistance on final approach, use the following standard voice terminology:

16.38.5.8.1. "Steady" (present course is satisfactory.)

16.38.5.8.2. "Right" (change direction to the right 5 degrees.)

16.38.5.8.3. "Left" (change direction to the left 5 degrees.)

16.38.5.8.4. "Right or left __ degrees" (change direction as indicated.) This direction will be utilized when directional changes in excess of 5 degrees are desired.

16.38.5.8.5. "No-drop" (no-drop will be called for unsafe or unknown conditions or unsatisfactory positioning over the target.)

16.38.5.8.6. "Load Clear" (jumpers or cargo bundles have cleared the aircraft and the PF is clear to make a turn to begin the next pass and/or observe results of the drop just accomplished.)

16.38.5.8.7. Hand Signals. The JM may use the following hand signals to relay course corrections through the safety man: Thumb left/right, indicating 5-degree correction; and palm open, fingers pointed toward the cockpit, indicating steady.

16.38.5.9. Deployment Procedures.

16.38.5.9.1. No less than 2 minutes out from the release point, the LM will allow the JM access to the door to begin the "spotting procedures." JM duties can be performed from any position in either paratroop door or the ramp and door; however, it is recommended that the JM use the right door for right-hand patterns and the left door for left-hand patterns. The JM, when wearing a parachute, will connect the static line to the anchor cable designated for use. When wearing an adjusted restraint harness, the JM will connect to the personnel restraint system or to a tie-down ring that would preclude the wearer from exiting the aircraft. The JM visually relays steering signals to the LM, who verbally relays this information to the PF. ***WARNING:*** The paratroop door(s) and the cargo ramp and door will not be opened at the same time. ***EXCEPTION:*** Authorized LM-directed airdrops of bundles off the ramp, to include trail-line drops, while spotting from a single open paratroop door.

16.38.5.9.2. Once safety checks are complete, and the pilot determines that all conditions are favorable for deployment upon reaching the planned/desired exit point, the pilot states "CLEAR TO JUMP" and the PM will turn on the green light. Jumpers will exit the aircraft upon reaching the JMs identified release point. ***NOTE:*** The aircrew may turn on the green light once the drop zone has been positively identified, but no earlier than 1 minute prior to the release point for freefall operations, or 30 seconds for static line operations. If at any time exit of jumpers becomes unsafe (aircraft emergency or similar circumstances), the aircrew will turn on the red light and the LM will direct the JM to stop remaining parachutists.

16.38.5.10. After all jumpers have exited; the LM will call “LOAD CLEAR.” At this point the PM will turn on the red light.

16.38.5.11. Aircrew No Drop Decision. If the crew believes the drop will occur outside of safe parameters, the words "NO DROP" announced over the interphone by any person after the CSO’s " CREW, 1-MINUTE WARNING " call will terminate deployment procedures until the situation is resolved. Upon hearing a "NO DROP" call, the PM will turn the red light on, and the PM and the LM will acknowledge the “NO DROP.”

16.38.5.12. Mixed Procedures. JMD releases will not be mixed with any other type of airdrop method (e.g., GMRS, VIRS) or standard CARP/HARP drops. When JMD drop procedures are used, the crew will follow the JM‘s instructions, while adhering to normal safety concerns.

16.39. Water DZs. Water drops can be conducted on marked or unmarked DZs. Refer to AFI 13-217 for further guidance.

16.40. Pararescue JMD Fixed, Moving, and Crosswind Target Patterns. For PJ JMD airdrops of ATV/RAMZ/ARC/CRL packages, Pararescue Fixed, Moving, and Crosswind Target Patterns will be used running the SEARCH AND RESCUE checklists. These procedures may be used for JMD pararescue personnel only drops. Comply with the applicable guidance in **paragraphs 16.38.5**, **16.39**, **16.41**.

16.40.1. Pre-Deployment Evaluation. In a permissive environment, evaluation of the landing surface and surrounding obstructions should be accomplished by observation passes. Evaluation of the weather should include existing and forecast temperatures, wind direction, precipitation, cloud cover, fog, visibility, etc. Wind velocity evaluation will include consideration of direction, gusts, and wind shear. The crew should keep the JM advised of current mean altitude winds. The presence of rocks or stumps may impose a lower maximum velocity while the presence of trees, unfrozen tundra, or soft snow might permit safe jumping at higher velocities.

16.40.2. General. Pararescuemen (PJ) wearing static line parachutes will normally deploy through a single paratroop door or off the cargo ramp (tailgate). The parachute static lines will be connected to the anchor cable on the same side the static line retriever is installed. No more than 20 parachutists may exit on a single pass using the long cable either from the paratroop door or off the ramp. Streamer/spotter chutes will be used prior to JMD PJ deployments using Pararescue Fixed Target, Moving Target, or Crosswind Target deployment patterns.

16.40.2.1. Streamers are 20-ft lengths of crepe paper weighted on one end. The spotter chute used is the standard J-1 (12 ft diameter) wind drift determination parachute. The spotter chute weight can be provided by the PJ or a MK-6 Mod 3 smoke. When the MK-6 Mod 3 is used, the JM will signal the safetyman/LM when to launch the smoke. Immediately upon receiving the signal, the safetyman/LM will simultaneously activate and launch the smoke.

16.40.2.2. The safetyman/LM will assist the JM in launching the streamer/spotter chute and will remain at the door during PJ deployments. The JM, pilot, and CSO will confirm the exit point prior to release. ***NOTE:*** For low altitude JMD PJ drops, a CARP is not required when using streamers/spotter chutes. ***WARNING:*** During paratroop door static line personnel drops, personnel will not position themselves directly under the center anchor cable supports (A- frame, FS 737.)

16.40.3. Deployment Pattern. The normal flight pattern will be a racetrack pattern, with the final approach from spotting device to target. ***NOTE:*** See AFI 11-231 for detailed guidance on Pararescue Fixed Target, Moving Target, or Crosswind Target deployment patterns.

16.40.3.1. The pattern will be large enough to allow for heading corrections on final approach. The crosswind leg will be made as soon as possible after the spotting device or jumper clears the aircraft. It is important that the target area remain in sight at all times.

16.40.3.2. The aircraft will be maneuvered at 150 KIAS or below in a racetrack pattern.

16.40.3.3. Aircraft Configuration.

16.40.3.3.1. Deployment airspeed is 125 KIAS.

16.40.3.3.2. Set flaps to 50% below 140,000 lbs and 70% at or above 140,000 lbs. If use of CDS flap setting is desired, perform an automatic release at the computer derived release point using the CDS checklist. ***NOTE:*** Pararescuemen will not be deployed from aircraft with gross weights greater than 155,000 lbs. ***NOTE:*** Static line deployments at airspeeds above 130 KIAS are prohibited due to parachute limitations.

16.40.3.4. The JM must be kept advised of the position of the aircraft in the pattern and the PIC must be kept informed of the activities in the rear of the aircraft.

16.40.4. Deployment Procedures. In addition to the deployment procedures listed in **paragraph 16.38.5.9**, the following procedures apply:

16.40.4.1. Leave the red light on for dry passes and streamer/spotter chute patterns.

16.40.4.2. On final for live drops, the pilot will make a "CREW, 1-MINUTE WARNING" call, ***WARNING:*** For the confined lake or near shore water drops of PJ personnel or RAMZ training, do not call “CREW, 1-MINUTE WARNING” until over water. Call “NO DROP” if the exit point for the RAMZ will be over land. ***NOTE:*** The deployment pattern may be flown on autopilot

16.40.5. Post-Deployment. Maintain visual or radio contact with the pararescue team and maintain surveillance of the area for possible natural or man-made hazards. After pararescue deployment, the PIC will notify the appropriate agencies to ensure required team support is provided. Every effort will be expended to ensure that the pararescue team is covered by rescue aircraft until the party is assured of surface assistance. Surface assistance for land operation is not required as long as sufficient supplies are available. Prior to departure of the aircraft from the incident site, resupply schedules, communication schedules, supply requirements, and planned actions of the pararescue team will be established by the aircraft commander and team leader.

16.40.5.1. Primary and alternate frequencies, schedules, and an alternate method of communication will be established by the mission commander and will be included in the mission commander’s pre-mission brief.

16.40.5.2. If practicable, the pararescuemen will immediately establish radio contact with the drop aircraft upon penetration of the incident site. The team leader will verify the predetermined schedule for the next radio contact before the drop aircraft departs the area.

16.40.5.3. In the event the PJ team fails to establish communication at the initial pre-briefed time, maximum effort will be made on the next check or the alternate schedule until radio contact is established.

16.40.5.4. If communication cannot be established through the procedures outlined above, any other method of communication may be used to relay information to the rescue team.

16.40.5.5. Radio will be used as the primary method of communication. The MK 13 day/night flares will be the alternate method. When signals for special purposes are needed, they may be locally devised.

16.41. Pararescue Deployments to Ships. Many factors affect the decision to deploy PJs to ships at sea, precluding the establishment of a single procedure that will apply to all situations. In all cases, thorough preplanning and coordination with the recovery vessel is vital to a safe and successful operation. The following will provide guidelines and considerations:

16.41.1. In sea conditions other than calm, it is essential the ship have a motorized launch in the water prior to team deployment, unless the PJ team deploys with a RAMZ watercraft. ***WARNING:*** The aircrew will prepare an MA-1 sea rescue kit for deployment from the cargo ramp as soon as practical following an open water PJ deployment (not required for training).

16.41.1.1. Positioning and maneuvering of the ship, motorized launch, and deployment of the MA-1 kit is the ship captain's decision. When possible, the PIC should advise the ship captain on positioning and maneuvering prior to deployment. The crew should determine whether the ship can remain still in the water, whether the ship will be steered into the wind or crosswind, and where the launch will be positioned.

16.41.1.2. The rescue aircraft should deploy the pararescue team to the motorized launch. The launch should maintain its position during the deployment pattern. ***WARNING:*** The crew will make every effort to advise the ship to shut down its propellers anytime a pararescuemen is in the water alongside it.

16.41.1.3. In the case that a decision is made to deploy the team without the use of a motorized launch, it is critical that the method of boarding is verified prior to deployment.

16.42. High Altitude Airdrop Requirements. Airdrops conducted above 3,000 ft AGL are considered high altitude drops. ***EXCEPTION:*** RAMZ airdrops at or below 3,500 ft AGL are considered low altitude drops. PSYOPS are governed by **paragraph 16.44**. ***NOTE:*** Only essential personnel who have accomplished appropriate physiological training described in AFI 11-403 are permitted on mission aircraft for airdrops above 10,000 ft MSL.

16.42.1. A continuous supply of 100% oxygen will be used by all personnel during unpressurized operations above 10,000 ft MSL IAW AFI 11-409. Crewmembers will follow established MAJCOM oxygen mask requirements.

16.42.2. The JM may dictate the use of supplemental oxygen by any or all jumpers at altitudes less than those listed. Parachutists transfer from the aircraft oxygen system or portable oxygen console to a personal oxygen system at approximately 1 minute before green light.

16.42.3. High Altitude Emergency Procedures. If a physiological incident occurs, the PIC will:

16.42.3.1. Abort the mission.

16.42.3.2. Begin descent (pressurization and descent will be determined by the type and degree of sickness or pain).

16.42.3.3. Ensure the affected person remains on 100% oxygen until a medical doctor determines the type of treatment required.

16.42.3.4. Proceed to the nearest base with qualified medical assistance available.

16.42.3.5. Advise the control tower of the emergency and request an ambulance meet the aircraft.

16.42.4. High Altitude Mission Requirements

16.42.4.1. A pre-mission HARP solution will be calculated based on preflight weather and winds.

16.42.4.2. Briefings. Aircrew will ensure all aspects of HALO/HAHO airdrops are discussed in detail at the Pilot-Jumpmaster and CSO-Jumpmaster briefings. Use the pilot-jumpmaster and CSO-jumpmaster briefing guides found in AFI 11-2HC-130JV3 CL-1.

16.42.4.3. For all HALO/HAHO operations, CSO will provide the JM with a magnetic course +/- 5 degrees and a distance (NM, km, or meters) from the release point to the drop zone.

16.42.4.4. CSO will compare their HARP location and calculations with the JM chart and calculations.

16.42.4.5. In-flight changes to the HARP location or significant wind changes will be relayed to the JM as soon as possible.

16.42.4.6. The CNI-MU winds may be used to update preflight HARP winds and to determine and update the winds at altitude.

16.42.4.7. The I-NAV course guidance will be used to properly align the aircraft on the inbound course.

16.42.4.8. All available navigation aids may be used to assist in locating the HARP but will not be relied on as the sole means for release. ***NOTE:*** For HALO, positive identification of the drop zone area must be confirmed electronically or visually prior to calling the release.

16.42.4.9. Low level flight to the target area with a climb is most desirable for HALO or HAHO operations. This will enable the CSO to obtain current winds for updating the HARP. High level flights are also possible but the HARP will have to be based on external sources. The release may be accomplished visually.

16.42.5. High Altitude Drop Procedures. The CSO will compute a high altitude release point (HARP) solution for all HALO or HAHO drops unless specific mission directives dictate otherwise. Use the PERSONNEL checklist. ***NOTE:*** HALO or HAHO drops may be JMD. Use the SEARCH AND RESCUE checklist.

16.42.5.1. Pressurization Scheduling. Maintain cabin pressure at or below 10,000 ft until the Twenty Minute Warning and until prebreathing is complete. Have cabin altitude equal to the ambient pressure prior to completion of the Ten Minute Warning. Pressurizing after the drop will be IAW mission requirements; normally, the cabin

altitude should return to 10,000 ft or below as soon as possible. If any jumpers are still onboard, ensure the parachutes automated actuation devices are disabled prior to descending or pressurizing.

16.42.5.2. Drop Configuration.

16.42.5.2.1. Flaps. Normal configuration is with 50% flaps. However, at high altitudes, it may be desirable to use less flaps.

16.42.5.2.2. Airspeed. The JM will be briefed on the airspeed used.

16.42.5.2.3. Altitude. Pressure or indicated altitude will be used as the airdrop altitude reference.

16.42.5.2.4. Exits.

16.42.5.2.4.1. Parachutists will normally exit from the cargo door and ramp. All parachutists, with the exception of the JM, will stand forward of the ramp hinge until the One-Minute Warning.

16.42.5.2.4.2. A paratroop door may be used in lieu of the cargo door and ramp. When this is the case, air deflector doors will be opened. All parachutists, except JM, will stand forward of the paratroop door until the One Minute Warning. ***NOTE:*** Jump platforms must be installed. ***NOTE:*** All parachutists, including JM, will exit the aircraft during the green light time.

16.42.5.3. Communications and Signals. The LM will coordinate the following hand signals with the JM.

16.42.5.3.1. Time warnings (20, 10, 6, 2, and 1-minute) may be given to the parachutists by the LM pointing at a watch and then indicating with fingers the correct warning.

16.42.5.3.2. The velocity of winds on the DZ will be given by the LM by cupping one hand and blowing into it, then indicating with upturned fingers the speed of the wind.

16.42.5.3.3. A no drop will be indicated by passing a hand across the throat.

16.42.5.3.4. LMs will have pencil and paper available during airdrops for use in communicating with parachutists.

16.43. Emergency Parachutist Bailout.

16.43.1. Maintain an acceptable altitude and attitude for the parachutists to evacuate the aircraft. The minimum acceptable altitude is 400 ft AGL for static line deployments and 1,000 ft AGL for personnel freefall deployments. If the jump must be made at airspeed in excess of 150 KIAS, advise parachutists of the airspeed and altitude.

16.43.2. If conditions are unsuitable for aircraft evacuation, turn the red light on until exit doors are closed. The PIC advises the JM through the LM to have the parachutists unhook, take their seats, and fasten seatbelts.

16.44. PSYOPS Drops (Leaflets)

16.44.1. PSYOPS Drops (Leaflets). Airdrop and dispersal of large quantities of printed materials is possible using prepackaged leaflets. Drop altitudes may vary from 500 ft AGL to the aircraft service ceiling. Use high altitude oxygen requirements as specified in **Table 16.5**. Drops require the movement of boxes of various weights from throughout the cargo compartment via intermediate rollers (if required) to the ramp area for dispersal off the ramp. For additional guidance see AFTTP 3-3.HC-130 Chapter 8.

16.44.1.1. Equipment. In addition to normal aircraft equipment, the following items may be required to perform leaflet drops:

16.44.1.1.1. Parachutes or restraining harnesses must be available for use by all personnel working in the cargo compartment.

16.44.1.1.2. A portable oxygen console with a minimum of four regulators and output hoses of sufficient length to reach through the entire cargo compartment must be available for high altitude airdrops (above 10,000 ft.)

16.44.1.1.3. An interval timer is desirable (alternating red and green jump lights may serve for sequencing the drops). ***WARNING:*** Aircrew members will not be exposed to 30,000 ft MSL more than three times per 7 days and must have a minimum of 24 hours between exposures. ***NOTE:*** Long duration high altitude drops will require the aircraft remain open. Consider outside air temperature and clothing requirements prior to step.

16.44.1.2. Aircrew Procedures. Use the LEAFLET AIRDROP checklist. Under normal circumstances the crew required for leaflet operations consists of a tactical crew plus two PTs (for high altitude airdrops) and three additional crew members to act as feeders. The primary LM will assign specific positions for activity in the cargo compartment.

16.44.1.2.1. Drop Configuration/Maneuvering. Configuration is based on desired coverage and airframe airspeed limitations. All personnel should be constantly aware of the possibility of an emergency break upon encountering a threat.

16.44.1.2.1.1. Flaps. Flaps are normally set at 50% and flap settings should not be changed during the drop unless the LM is notified.

16.44.1.2.1.2. Airspeed. Base indicated airspeed on desired groundspeed. This may range from 130 KIAS to 150 KIAS. Other speed ranges may apply if not dropping off of the ramp (i.e., cargo door only).

16.44.1.2.1.3. Static Lines. To increase speed of closing the ramp if a hostile threat is detected and to prevent damage to the aircraft, the static lines should be stowed after each box goes out. Do this if the interval between boxes permits safe operation. Static lines may be cut in an emergency.

16.45. Specific Airdrop Information. For additional information about airdrops to include airdrops not covered in this section see AFTTP 3-3.HC-130 Chapters 8 and 9.

16.45.1. Personnel Airdrops.

16.45.1.1. LMs will ensure JMs receive all time advisories, wind updates, and no-drop decisions when passed.

16.45.1.2. Air deflectors must be operational if paratroop doors are used. If an air deflector does not extend, do not open the affected troop door.

16.45.1.3. LMs will not position themselves directly under the center anchor cable supports (A-Frame, FS 737) in case of anchor cable or support mounting failure.

16.45.1.4. Loadmaster-Jumpmaster Control.

16.45.1.4.1. At completion of the Slowdown Checklist, the LM will allow the JM access to the paratroop door or ramp no later than (NLT) 1 minute prior to jump.

16.45.1.4.2. For JM-directed airdrops using the SEARCH AND RESCUE checklists, after Pre-Deployment checks are complete, the LM will allow the JM access to paratroop door or ramp NLT 2 minutes prior to the jump.

16.45.1.4.3. The LM will then take position in such a manner as to provide maximum maneuverability for the JM and safety NCOs to perform their duties, and to prevent interference with exiting jumpers. Upon seeing the red jump lights illuminate, the LM will notify the JM or safety personnel of the red light condition. The LM will take no further action to stop any of the remaining parachutists. The LM will count (if possible) any parachutists that exit the aircraft after the red light has illuminated.

16.45.1.4.4. Control of the paratroop door/cargo ramp will revert back to the LM after all parachutists have exited or remaining parachutists have been stopped by the JM or safety NCO and cleared from the paratroop door/cargo ramp area.

16.45.1.4.5. For multiple passes (i.e., racetracks), after assuming control of the paratroop door/cargo ramp from the JM, the LM(s) will maintain control of the doors/cargo ramp until completion of subsequent Slowdown Checklists. ***WARNING:*** Do not attempt to physically stop or hinder jumpers from exiting the aircraft if jumpers continue to exit after "red light". ***WARNING:*** During airdrops, personnel will not position themselves directly under the center anchor cable supports (A-frame, FS 737). Ensure all personnel aft of FS 677 are secured to the aircraft or have a static line connected prior to opening the ramp and door/troop door. HALO/HAHO personnel must be configured and ready to jump.

16.45.1.5. Fouled Parachutist Procedures. The JM or safety is responsible to observe the fouled parachutist and recommend whether to retrieve or cut the parachutist free. If all parachutists have exited and there is no JM on board, this responsibility rests with the LM. The recommendation is relayed, by the LM, to the PIC who makes the final decision whether to retrieve or cut the parachutist free. The LM will initiate retrieval or cut the parachutist‘s static line on the pilot‘s command. When a parachutist is observed to be fouled during a paratroop door exit, the first priority is to retrieve, regardless if the parachutist is conscious or unconscious. If the parachutist cannot be retrieved and indicates consciousness, the parachutist will be cut free. For a tailgate exit, the first priority is to cut the parachutist free if the parachutist indicates consciousness. If the parachutist is unconscious, does not signal, cannot be observed, or a condition exists that prevents cutting the static line, implement emergency retrieval procedures.

16.45.1.5.1. The JM stops remaining parachutists and the LM notifies the pilot of a fouled parachutist.

16.45.1.5.2. Upon being notified of a fouled parachutist, the PF should lower the landing gear and configure the aircraft flap setting to 100% flaps (paratroop door exits only). ***WARNING:*** If a parachutist becomes fouled during missions when the aircraft is operating with a high gross weight or is flying in a high density altitude environment, the PF may elect to maintain flaps at 50%, landing gear up, and slow to the slowest practical airspeed in lieu of the standard procedure. ***WARNING:*** The PF should maintain approximately 5 knots above the Vs caret in the HUD, or the red and white diagonally striped airspeed scale of the PFD, for a margin of safety.

16.45.1.5.3. The PF maintains at least the minimum drop altitude (AGL) for the type parachute being used, and avoids flying over or upwind of water or built up areas. ***EXCEPTION:*** If the parachutist is equipped for a water drop, the PF should avoid flying over land. ***WARNING:*** If possible, the PF will avoid turning the aircraft in the direction of the fouled parachutist. Turning into the parachutist often starts violent swinging of the parachutist and poses an increased possibility of injury to the fouled parachutist.

16.45.1.5.4. The PM turns on the red light.

16.45.1.5.5. The parachutist indicates consciousness and that the reserve parachute is ready by maintaining a tight body position with both hands on the reserve parachute.

16.45.1.5.6. If the PIC's decision is to cut the parachutist free, the parachutist's static line will be cut by the LM on the PIC's command.

16.45.2. Combination Airdrops. Combination drops are those during which parachutists exit from the aircraft ramp after the deployment of an airdrop load. When tailgating parachutists, the drop altitude is determined by the item requiring the highest drop altitude per AFI 11-231. If an additional pass is required to drop all the personnel after a combination CDS drop, close the ramp and door and re-rig the static line retriever cable as depicted in TO 1C-130(H)J-9.

16.45.3. Heavy Equipment (HE) Airdrops. Towplate is the primary method of HE airdrop. However, crews will be thoroughly familiar with both towplate and non-towplate procedures. Only equipment rigged in accordance with 13-C series T.O.s or JSOC 350 series may be airdropped. The maximum airdrop load to be extracted over the ramp is 42,000 lbs. The aerial delivery unit supporting the load movement ensures current publications are available for LM reference during joint inspections.

16.45.4. Door Bundle Airdrops

16.45.4.1. General A-7A or A-21 containers weighing up to 500 lbs (excluding the weight of the parachutes) are referred to as "door bundles" and are dropped from the aircraft through the paratroop door or ramp and door using the PERSONNEL/CRL or SEARCH AND RESCUE checklist. Loads weighing more than 350 lbs require two trained designated pushers to assist the LM/JM in pushing loads from the aircraft. Door bundles may be dropped independently or with personnel and are limited to one bundle per exit used. When dropped with personnel, the bundle is the first object to exit the aircraft. Remove restraints and position the bundle in the paratroop door or on the ramp prior to completion of the slowdown checklist (***EXCEPTION:*** If the JM needs the paratroop door for spotting, place the door bundle as close as possible to the paratroop

door). If jumpers are to follow the door bundle, the user is responsible for ejecting the bundle out the troop door or off the ramp. Maintain positive control of all door bundles exiting out the cargo ramp. To maintain positive control of door bundles exiting over the ramp, it may be necessary to secure the forward end of the bundle to a suitable floor tiedown ring with 550 cord or suitable substitute. This tie is to prevent premature release of the bundle and will be cut by the LM at the release point.

16.45.4.1.1. Door bundles dropped from the paratroop doors will be rigged with non-breakaway static lines. The dimensions, including the parachute, must not exceed 48 inches by 30 inches by 66 inches unless authorized in a specific T.O. When the container is placed in the door for airdrop, place the largest dimension in the vertical or upright position.

16.45.4.1.2. Door bundles followed by paratroopers dropped from the ramp and door or paratroop door(s) will be rigged with a T-10 parachute (converted for cargo) or parachute equipped with breakaway static lines (per TO 13C7-1-11). Also, bundles rigged for a ramp exit are equipped with a skid board compatible with the center roller conveyors. ***NOTE:*** If no parachutists are to be dropped after the door bundles, non-breakaway static lines will be used. Anchor cable stops will be positioned as depicted in TO 1C-130(H)J-9 for CDS airdrops.

16.45.4.2. During unilateral single-ship airdrop training, door bundles will not exit the aircraft after a paratrooper has jumped. ***NOTE:*** During joint training, a combat or contingency operation, the user determines door bundle requirements and order of exit from any or all personnel airdrop aircraft in the formation.

16.45.4.3. When door bundles are dropped with personnel, compute the CARP for the first paratrooper exiting after the bundle and compute an additional CARP for the door bundle to ensure that it will impact on the DZ. Release the bundle at the personnel CARP, followed by the parachutists when the door is clear. When a door bundle is the only object dropped, base the CARP on the bundle.

16.45.5. Container Ramp Load(CRL)/Ramp Bundle.

16.45.5.1. CRL/Ramp Bundle. CRLs may consist of A-series containers (e.g. double A-22 or single A-22) or loads rigged on combat expendable platforms (e.g. ATV, motorcycle) rigged for airdrop from the cargo ramp or floor. CRLs are individually restrained with a length of Type VIII nylon webbing (release gate) routed through ramp/floor tiedown rings and secured to the container webbing on the forward and aft side. At the release point the LM manually cuts the release gate, allowing the bundle to exit from the aircraft. Ramp bundles must be rigged IAW T.O. 13C7- series rigging manuals. The total weight of the bundle will not exceed 2335 lbs. Loads to be followed by parachutists will be rigged with breakaway static lines, unless specified in specific rigging directive. All remaining restraint will be removed prior to the completion of the 10 minute checklist (***EXCEPTION:*** Forward restraint for CRLs rigged on the ramp may be removed after the cargo ramp and door are in the ADS position and prior to the completion of the slowdown checklist). The bundle may be followed by personnel. These procedures may be accomplished from either side of the ramp or from the centerline. Specific aircraft preparation and rigging procedures are contained in T.O.1C-130(H)J-9, Section VII.

16.45.6. CDS Airdrops.

16.45.6.1. LMs are permitted to pull down sharply with a gloved hand or on a nylon strap looped over the static-line retriever winch cable to assist the cut of the release gate. LMs will only pull on the cable after hearing and seeing "GREEN LIGHT".

16.45.6.2. Manual CDS gate cuts are authorized for all CDS/I-CDS/JPADS single-stick airdrops (CVR or non-CVR). A manual gate cut is defined as using a knife to cut/release the CDS/intermediate gates. LMs will ensure they hear and see "GREEN LIGHT" before manually cutting the CDS/intermediate release gate. LMs are allowed to go aft of the buffer stop/alternate forward barrier to manually cut the release gate. Exercise caution to remain clear of any bundles in the event of an emergency. Manual gate cuts may be performed with CDS loaded into both sides of the CVR, as long as the bundles are released one stick at a time, and the LM has adequate space to remain clear on the opposite side of the exiting CDS. ***WARNING:*** Double stick CDS released simultaneously will only be cut using the static-line retriever. ***WARNING:*** LM will not cut release gates while in the paratroop doors next to the exiting CDS.

16.45.7. Combat Rubber Raiding Craft (CRRC). The raiding craft is normally an inflated, 16 ft rubber boat mounted on a specially constructed expendable platform. Equipment and supplies (including outboard motor, fuel, and other supplies) are secured inside the boat. The platform, weighted with sandbags, sinks when it is cut away from the boat in the water. Total rigged weight is approximately 2,000 lbs. The recovery parachute is a G-12D/E deployed by a 15 ft pilot chute packed in a T-10 deployment bag. Use the CDS Checklist. One CRRC with up to 19 personnel or 2 (stacked) CRRC with 18 personnel can be safely airdropped on one pass. Compute a CARP, unless mission directives dictate otherwise. Sea state maximum for CRRC drops is 3 ft High Chop/4 FT Swell for personnel in the water. For additional guidance see AFTTP 3-3.HC-130 Chapter 8.

16.45.8. Rigged Alternate Method Zodiac (RAMZ)/All Terrain Vehicle (ATV) Equipment Airdrops. The RAMZ consists of a deflated Zodiac F470 combat rubber raiding craft with a 35 horsepower outboard engine rigged for low velocity airdrop from any C-130 aircraft. The RAMZ engine is configured in a plywood box and is secured in a standard A-22 container using two modified T-10C parachutes. When rigged for deployment, the RAMZ package weighs between 600 and 900 lbs. The ATV is rigged IAW Army Field Manual 10-500-77, *Airdrop of Supplies and Equipment: Rigging Motorcycles*, and Air Force Technical Order 13C7-55-1, *Airdrop of Supplies and Equipment--Rigging Motorcycles*. ATVs are rigged on combat expendable platforms and dropped using G-12E cargo parachutes equipped with 15 ft extraction (deployment) parachute packed in T-10 deployment bag.

16.45.8.1. Deployment Altitudes.

16.45.8.1.1. The minimum deployment altitude will be 3,000 ft AWL/AGL when the PJs exit using non-static line deployed parachutes. Higher altitudes may be used for training.

16.45.8.1.2. For operational missions, minimum altitude with a non-static line deployed parachute is 2,500 ft AWL/AGL.

16.45.8.1.3. The minimum deployment altitude for training or non-combat single-pass combination air drops of RAMZ/ATV and PJs exiting with static lines will be

800 ft AWL/AGL. ***NOTE:*** The RAMZ/ATV and PJs will be deployed from the same altitude.

16.45.8.2. Deployment Procedures. In addition to the deployment procedures required by the specific method of delivery being used, the following procedures apply:

16.45.8.2.1. Parachutists using static line deployed parachutes will attach their static lines to the same anchor cable to which the RAMZ/ATV static lines are attached or jump on a subsequent pass after the RAMZ/ATV static line deployment bags are retrieved.

16.45.8.2.2. Military freefall parachutists may exit from the aircraft ramp on the same pass after the RAMZ/ATV static line deployment bags are retrieved or cut, or exit on a subsequent pass using Fixed/Moving target JMD procedures, as appropriate. If dropping from the paratroop door on the subsequent pass, complete the POST-DEPLOYMENT checklist, and initiate the PRE-DEPLOYMENT checklist.

16.45.8.2.3. For JMD drops, at the pilot‘s "ONE MINUTE ADVISORY" call, the JM will be on either side of the cargo ramp and may be spotting from the aft end. Additional jumpers will be forward of the RAMZ/ATV. The LM will be positioned to remove aft restraint and to observe equipment and jumpers at all times. At the "ONE MINUTE ADVISORY," the JM will be alerted, the load release gate is checked, and the aft restraint is removed.

16.45.8.2.4. The LM will relay "Safety Checks Complete" to the PF if the JM has already gone off interphone. The PM will turn on the green light, indicating to the JM that conditions are satisfactory for the airdrop.

16.45.8.2.5. The JM will determine the exit point and deploy prior to receiving a “No-drop” notification or seeing the red light on. The LM will relay to the PF all visual corrections given by the JM. The JM will signal for the LM to cut the release gate. ***WARNING:*** If a “No-drop” is called and the RAMZ/ATV is held in place by only the release gate, all personnel will move forward of the load, except the LM and the JM who will monitor the RAMZ/ATV for possible shifting and secure as necessary. ***WARNING:*** If the RAMZ/ATV exits the aircraft but fails to properly deploy, the static lines will be cut immediately. ***CAUTION:*** The release gate must be cut below the knot to allow the nylon strap to pull free through floor tie down rings.

16.45.8.3. Limitations. During training, limit sea state for RAMZ to 5, Moderate Wave (10ft), taking a pronounced long form, with many white caps. Limitations for operational or contingency missions will be determined by the JM in coordination with the PIC.

16.45.9. Specialized Rescue Airdrops.

16.45.9.1. Aircrew Procedures. Use either the PERSONNEL/CRL or SEARCH AND RESCUE checklist. ***EXCEPTION:*** Refer to AFTTP 3-3.HC-130 for guidance on rescue equipment (MA-1 kit, parabundle, or freefall) airdrops.

16.45.9.2. Free Fall Airdrops. The delivery of certain types of supplies, such as bulk food products or clothing, can be accomplished without the use of parachutes. Free-fall

bundles are similar to parabundles but consist of only non-destructible items which are able to be airdropped without a recovery parachute attached.

16.45.9.2.1. Drift Effect. For free-fall airdrops, wind drift need not be considered.

16.45.9.3. Parabundle Airdrops. Parabundles are small items rigged with a small recovery parachute which are able to be dropped from a door without the need for a CARP/HARP.

16.45.9.4. Minimum Drop Altitudes. For freefall airdrops minimum altitude during the day is 150 ft and 500 ft at night. For parabundle airdrops minimum altitude during the day is 300 ft and 500 ft at night. ***WARNING:*** Keeps turns below 300 ft AGL to a minimum.

16.45.9.5. MA-1 Sea Rescue Kit. The MA-1 kit is designed to meet conditions which require aerial delivery of emergency flotation and survival gear. It consists of five bundles, each connected with 210 ft of buoyant rope. The kit is dropped free-fall and abeam during a crosswind pass over the target. When correctly dropped, a straight line is formed on the water with an inflated raft at each end. After delivery, the two rafts with their high freeboard will begin to drift downwind until retarded by the partially submerged supply containers. Thus, when the kit is properly deployed, wind conditions will cause the kit to form a "U," partially encircling the target. Aircrews will use the SEARCH AND RESCUE Checklists.

16.45.9.5.1. The Sea Rescue Kit consists of five bundles. The two end bundles (1 and 5) contain either a six, seven or 20 man raft. Bundles 2 and 4 contain emergency radios and bundle 3 contains medical gear. The total weight of all five bundles is 232 lbs for a MA-1 kit and 311 lbs for a MA-2 kit. The kit is deployed manually off the cargo ramp.

16.45.9.5.2. Rigging Sequence.

16.45.9.5.2.1. During in-flight rigging, the cargo ramp and door will remain closed. Attach a tiedown strap across the kit to prevent movement.

16.45.9.5.2.2. Unsnap the inflation lanyard protection flap of container #1 (raft), marked 1 of 5 and leave open. Remove enough lanyard from the retaining loops to allow the snap fastener (yellow) to be fastened to ramp tie-down fitting 30F.

16.45.9.5.2.3. Remove enough buoyant rope from container #1 to allow the rope fastener (red) to be connected to the D-ring (red) of container #2, marked 2 of 5.

16.45.9.5.2.4. Remove enough buoyant rope from container #2 to allow the rope fastener (green) to be connected to the D-ring (green) of the container #3, marked 3 of 5.

16.45.9.5.2.5. Remove enough buoyant rope from container #3 to allow the snap fastener (blue) to be connected to the D-ring (blue) of container #4, marked 4 of 5.

16.45.9.5.2.6. Remove enough buoyant rope from container #4 to allow the rope snap fastener (white) to be connected to the lanyard loop of container #5, marked 5 of 5.

16.45.9.5.2.7. Unsnap the inflation lanyard protector flap on container #5 and leave open. Remove enough lanyard from the retaining loops to allow the snap fastener (yellow) to be fastened to the ramp tie-down ring 30B.

16.45.10. Low Cost Aerial Delivery System (LCADS). The Low Cost Aerial Delivery System is a one-time use, stand-alone airdrop system consisting of a modular suite of low cost airdrop items, and comprised of parachutes, containers, platforms, and other air items configured for low-velocity, high-velocity, and free fall-drop aerial delivery of loads.

16.45.10.1. Rigging. Breakaway static lines will be used regardless of altitude. The static line break tie will be full strength type III nylon (550) cord for all LCADS parachutes. ***NOTE:*** Use of gutted type III nylon (550) cord will result in chute deployment failure. Joint airdrop inspectors will ensure proper static line configuration, including anti-oscillation ties.

16.45.10.2. Low Cost Aerial Delivery System-High Velocity (LCADS-HV) is not authorized for training use. LCADS-HV is authorized for contingency missions and developmental/operational test & evaluation (DT&E/OT&E) missions.

16.45.10.3. Low Cost Aerial Deliver System-Low Altitude (LCLA) is one of the army's low cost airdrop systems. LCLA was designed to provide very low altitude aerial resupply using small fixed wing and rotary wing aircraft. LCLA parachutes are compatible with A-7A, and A-21 containers. Containers may be rigged with a single parachute or with clusters of up to three parachutes.

16.45.11. JPADS Airdrops (I-CDS/I-CRL and Guided). JPADS operations are conducted using the JPADS T-1 aircraft modification. Specific aircraft/aircrew equipment includes the GPS Retransmission kit (GPS-RTK), UHF Dropsonde Receiver Subsystem (UHF-DRS), the JPADS Mission Planner (JPADS-MP) laptop and software. I-CDS loads are normally rigged CDS loads with non-steerable chutes. JPADS guided operations are conducted using steerable chutes rigged with Autonomous Guidance Units (AGUs). When referenced in this volume, JPADS refers to the aircraft equipment and family of guided and unguided systems.

16.45.11.1. Aircrew Qualification. JPADS-qualified PADS Operators (POs) are authorized to use the JPADS-MP to calculate release points for JPADS/I-CDS/I-CRL, JPADS guided combination personnel/equipment, and normal (CDS/CRL) airdrop operations.

16.45.11.2. JPADS Alert Procedures. When alert postured and JPADS equipment is installed on the alert aircraft, the mission planner has the following responsibilities:

16.45.11.2.1. Manage Forecasts. 4D forecast data from AFWA (**https://weather.afwa.af.mil/PADS**) should be downloaded for the alert coverage area and uploaded to the JPADS-MP laptop once every 24-hour period. 45km resolution cells are sufficient for wide-area coverage. 5km or 15km (where available) should be downloaded for specific objective areas and defined areas of operation. When an increased alert posture is necessary to support contingency operations and 5km 4D forecast resolution cells are not available, contact AFWA at DSN 312-271-0690 ASAP and request the generation of coverage. In the event that an aircraft is alerted and departs without 4D forecast data for the objective area, this data should be immediately downloaded and passed to the aircraft in-flight via HPW. ***NOTE:***

Accomplishment of duties listed in **paragraph 16.45.11.2.1** is not limited to qualified POs.

16.45.11.2.2. Pre-Build Missions. A qualified PO should build and save a mission on the JPADS-MP laptop that contains all of the JPADS equipment that is pre-positioned and loaded on the sealed alert aircraft. Leave DZ information blank and do not calculate release points.

16.45.11.2.3. Remote-Assisted JPADS. When an aircraft or crew is not JPADS capable due to lack of equipment or aircrew certification, but a qualified HC-130 PO and JPADS-MP system are available in the TOC, JPADS release data may be relayed to the aircraft via any possible means. Aircrews are permitted to release I-CDS/I-CRL and guided loads based on release points generated remotely. When employing JPADS in this manner, all required information must be relayed to the aircraft (PI latitude/longitude, PI elevation, nominal release point latitude/longitude, release altitude, etc). This procedure may also be used to relay data from one airborne JPADS-qualified aircrew/aircraft to another aircraft in-flight.

16.45.11.3. In-Flight Procedures. The PO will determine a release point using dropsonde data (when necessary), and will advise the crew of the updated release point. After the JPADS-MP produces an updated release point, it is entered into the CNI-MU. The PM and PO will verify that the release point coordinates and all airdrop parameters are entered correctly into the navigation system. For verification, the PO will read the JPADS-MP computed release point coordinates directly from the JPADS-MP while the PM verifies the same information is in the CNI-MU.

16.45.11.4. Dropsonde and Weather Data Requirements.

16.45.11.4.1. Unguided (I-CDS/I-CRL). One dropsonde with a vertical wind profile consisting of gaps less than 2,000 ft is required for airdrops greater than 3,000 ft AGL.

16.45.11.4.2. Guided (AGU, Paranav, or Remote Guidance). Either a valid AFWA 4D forecast of 15km (mountainous DZ) /45km (non-mountainous DZ) or one dropsonde with a vertical wind profile consisting of gaps less than 2,000 ft is required.

16.45.11.4.3. Waiver Authority. The waiver authority for unguided and guided weather data requirements is the squadron or deployed commander.

16.45.11.5. Release Procedure. Use the approved checklist for dropsonde and I-CDS/I-CRL/JPADS airdrops. During the dropsonde release, use of zero flaps at speeds between 170 – 180 KIAS is required to preclude dropsonde tail strikes. LMs should release the dropsondes from the corners of the cargo ramp.

16.45.11.6. Collateral Damage Assessment (CDA). The PO or mission planner is required to provide JPADS-MP derived release points for each airdrop pass and a completed CDA prior to an airdrop mission. Both pilots will review preflight release points/CDA for each respective airdrop. For training and civil missions, units are responsible for performing a full collateral damage assessment prior to JPADS airdrops. The CDA must be coordinated and approved by the area controlling agency. Coordinate

with the owning agency of the restricted airspace or controlled airspace and landowners with property surrounding the DZ for all JPADS operations. Examine the area in the vicinity of the DZ for potential damage or hazards in the course of normal operations or during extraordinary system failure events. If the CDA demonstrates potential damage or hazards restrict airdrop release Launch Acceptability Region (LAR), lower the drop altitude, change the run-in, change parachute type or cancel operations. Inform the controlling unit of the risk to their operations; the controlling unit, and the Joint Force Controller (JFC) designated agency are approving authorities for risk to the area surrounding the DZ. Intelligence personnel (JPRC) are responsible for providing the JFC-designated agency close-up and overview imagery to facilitate CDA. For training units are highly encouraged to contact HQ ACC/A3J (2-3 weeks prior) in order to ensure all planning, coordination and reviews/assessments have been accomplished. The CDA must include, at a minimum, a review of the airspace and ground space with respect to:

16.45.11.6.1. Release point and LAR location.

16.45.11.6.2. 63% 1-sigma I-CDS success ellipse.

16.45.11.6.3. Chute failure footprint.

16.45.11.6.4. Guidance failure footprint.

16.45.11.7. Visibility Requirements. IMC/VMC day/night airdrops are authorized for contingency operations. CONUS training operations are required to comply with FAR §105 —Parachute Operations restrictions. Drops conducted through or originating from IMC are only authorized from within or above an active restricted area. JPADS parachutes will not be dropped through severe turbulence or severe icing.

16.45.11.8. Navigation Requirements. For all JPADS operations an EGI Figure of Merit (FOM) 3 is required.

16.45.11.9. Wind Limits. Wind limitations are unrestricted for dropsonde operations, 18 knots for Firefly, Screamer, and Dragonfly and as published in AFI 13-217 for all other parachutes.

16.45.11.10. DZ Size. DZ size criteria for JPADS and I-CDS drops during contingency operations is at the discretion of the user. AFI 13-217 DZ size restrictions apply during training.

16.45.11.11. JPADS Guided Footprint Locations. During normal training operations a JPADS DZ, release point, chute failure footprint, and guidance failure footprint will be located within a restricted airspace. If winds force the release point outside of restricted airspace, additional coordination with ATC is required prior to airdrop operations. This includes coordination with the ATC agency, filing a NOTAM, and ensuring airspace is clear for the entire guided system‘s flight profile from the drop altitude to the ground. ***EXCEPTION:*** Operational Test (OT) airdrops conducted or supported by 88 TES aircrew do not have to comply with the restrictions in **paragraph 16.45.11.11** if the exception is identified in the test plan.

16.45.11.11.1. During normal training operations the entire 1-sigma (63%) I-CDS success footprint will be located within the surveyed DZ boundaries. The chute failure footprint must fall within restricted airspace. If outside of a restricted airspace

the chute failure must fall on the surveyed DZ. If operating in a restricted area and winds force the RP outside of restricted airspace coordination with ATC is required prior to airdrop operations.

16.45.11.12. Jettison of JPADS AGU with Military GPS (MILGPS). Instances of jettison, unauthorized access, tampering, theft, or loss of the JPADS MILGPS enclosure must be reported to the GPS Controlling Authority (CA). Each such report shall include the JPADS MILGPS serial number and Selective Availability/Anti-Spoofing Module (SAASM) GPS serial number of the missing item and must state whether the system was keyed or unkeyed. Product Manager Force Sustainment Systems (PM FSS) will relay such jettison to the GPS CA. ***NOTE:*** Time permitting; the LM with concurrence from the PO will remove the MILGPS enclosure from the AGU prior to load jettison.

16.45.11.13. JPADS AGU MILGPS Procedure. For training missions with Air Force JPADS AGUs, aircrew will check out the MILGPS from the unit tactics office. Upon mission completion and prior to removing the MILGPS enclosure, power up the AGU and accomplish the Recovery Mission Duration Zeroization function (if desired). Zeroize prior to removal by pushing, for three seconds, the zeroize button located on the front panel of the MILGPS enclosure. ***NOTE:*** Keying and unkeying requires the MILGPS to be installed in a powered ON AGU. The AGU LCD screen should update within 20 seconds and should read MILGPS Keyed or Unkeyed. Once complete power OFF the AGU. The PO will remove and return the enclosure to the unit's tactics office.

16.45.11.14. Additional Guidance. Review AFI 13-217 for amplified information on JPADS DZ and airspace restrictions.

16.45.12. IMC Drop.

16.45.12.1. IMC Drop Altitude. Plan minimum IMC drop altitude of 500 ft above the highest obstruction to flight (man-made obstruction, terrain feature, or spot elevation), or 400 ft plus one contour interval above the highest depicted terrain contour, whichever is higher, within 3 NM of the run-in centerline from DZ entry point to DZ exit point, or as specified in AFI 11-231, whichever is higher.

16.45.12.2. IFR Drop Corridor. As defined in FAR Exemption 4371, the corridor where aircraft may transition between IMC enroute altitude and IMC drop altitude to perform airdrop operations. The beginning of the corridor, the IFR Drop Corridor Ingress Point, is a maximum of 40 NMs from the IFR Drop Corridor Egress Point (co-located with the DZ Exit Point). Plan segmented corridor altitudes not lower than 500 ft above the highest obstruction to flight (manmade obstruction, terrain feature, or spot elevation), or 400 ft plus one contour interval above the highest depicted terrain contour, whichever is highest, within 3 NMs either side of centerline.

16.45.12.2.1. DZ Entry Point. The point where an aircraft may safely begin descent from IFR enroute altitude or a segmented altitude to IMC drop altitude.

16.45.12.2.2. DZ Exit Point. A fixed point on the DZ escape flight path centerline where each aircraft will be at minimum IFR enroute altitude. Normally, calculate the exit point based on a 1000 FPM climb at 140 KIAS. Analyze 3-engine climb performance and ensure obstacle clearance at pre-airdrop gross weight. If unable to clear all obstacles on 3-engines, adjust the DZ exit point based on 3-engine climb

capability. This point will be a minimum of 4 NMs track distance from the trailing edge of the DZ. ***WARNING:*** Analyze pre-drop gross weight to determine if obstructions can be cleared on 3- engines from DZ Entry through DZ Exit. If obstructions cannot be cleared, reduce aircraft gross weight, revise run-in and/or escape course, or increase drop altitude.

Section 16E—Helicopter Air-To-Air Refueling (HAAR)

16.46. HAAR Operations. HAAR operations will be conducted IAW ATP-56(B), T.O.1C-130(H)J-1, and AFTTP 3-1/3.HC-130.

16.46.1. Minimum HAAR Altitudes.

16.46.1.1. Training. HAAR will not be conducted below 1,000 ft AGL on normal training missions. Waiver authority for HAAR down to 500 ft AGL is MAJCOM/A3 or deployed equivalent. OG/CCs may request standing waivers for local HAAR tracks and recurring major exercises be included in their supplement to this instruction. ***NOTE:*** Low altitude HAAR training (below 1,000 ft AGL) will not be conducted at tanker gross weights above 130,000 lbs or without a minimum three engine climb capability of 500 FPM.

16.46.1.2. Contingency/Combat. Plan HAAR altitudes as follows:

16.46.1.2.1. Day Operations. Compute HAAR altitude no lower than 500 ft AGL above the highest terrain or obstacle within 1 NM of the air refueling/flight planned track.

16.46.1.2.2. NVG Operations. Compute HAAR altitude no lower than 500 ft AGL above the highest terrain or obstacle within 3 NM of the air refueling/flight planned track. ***NOTE:*** HAAR altitudes below 1,000 ft AGL may be required due to the threat environment or weather conditions on actual rescue or combat missions. Final HAAR altitude in no case will be lower than 300 ft above the receivers' minimum enroute altitude capability. ***WARNING:*** Low altitude HAAR (below 1,000 ft AGL) assumes permissive terrain and is not normally possible at night with unaided vision. Large turns or course reversals below 1,000 ft AGL should be avoided. ***WARNING:*** When operating at or near minimum operating speed, any bank angle could result in a stall without warning.

16.46.2. ATP-56(B), Part 3 guidance is supplemented as follows:

16.46.2.1. HC-130J aircrews will not use Rendezvous (RV) Altitudes (AAR altitude + 500 ft) under normal circumstances during rendezvous operations. Tankers will conduct rendezvous and join-up operations at refueling altitude (AAR altitude) unless operational requirements dictate otherwise.

16.46.2.2. HC-130J aircrews will not fly RV BRAVO (Head-On) procedures listed in Part 3, Chapter 2, Annex 2B.

16.46.2.3. Either the tanker or receiver may initiate/direct a breakaway when an unsafe condition is identified.

Section 16F—Receiver Air-To-Air Refueling (AAR)

16.47. General. ATP-56(B) provides the basic guidance for refueling terminology and procedures.

16.48. Policy. The following policies apply to all air refueling conditions regardless of emission control or type of rendezvous:

16.48.1. AAR will only be accomplished by an AAR qualified pilot, or a pilot in training under the supervision of an instructor. Unqualified pilots, undergoing AAR training, must inform the tanker prior to completing any contacts and receive an acknowledgment.

16.48.2. Use manual boom latching procedures only during fuel emergencies and contingency operations. ***EXCEPTION:*** Manual boom latching procedures are authorized for all AAR operations with the KC-10A if the tanker‘s independent disconnect system is operational. ***CAUTION:*** Air refueling operations will not be conducted when radio communications capability between the tanker and receiver is lost, except during emergency fuel situation.

16.48.3. During aerial refueling missions, fuel will not be onloaded with an inoperative drain pump.

16.48.4. Do not make any HF radio transmissions or Electronic Counter Measures emissions during AAR operations. ***EXEPTION:*** ECM expendable patterns approved for use during AAR may be utilized IAW their flight tested parameters.

16.49. Special Operations Procedures:

16.49.1. Lighting:

16.49.1.1. Tanker lighting:

16.49.1.1.1. Director lights-bright.

16.49.1.1.2. Boom nozzle and boom marker lights – bright and on, respectively.

16.49.1.1.3. Under wing illumination lights-bright.

16.49.1.1.4. All lights will remain bright until the receiver is approaching the pre-contact position. At this time, director lights and under wing illumination lights will go to the normal refueling position and boom nozzle lights to low. Tail mounted flood light may be used in normal operation. All remaining lights will remain off, safety permitting.

16.49.1.2. Receiver Lighting:

16.49.1.2.1. Slipway lights – bright or as directed.

16.49.1.2.2. Area lights – bright or as directed.

16.49.1.2.3. IR rotating beacon/strobes-on or as directed.

16.49.1.2.4. All other lights will be off, except position lights will be on for training missions.

16.49.1.2.5. All lights will remain bright until the receiver visually acquires the tanker. At this time, slipway and area lights will be turned to normal night refueling setting. If no —“TALLY HO” call is heard and a “JUDY” call is made, rotating beacon will be turned off at pre-contact.

16.49.2. Rendezvous Procedures. Use enroute overtaking rendezvous. Both tanker and receiver will monitor primary air refueling frequency (secure) 30 minutes prior to the RZCT. Limit transmissions to those specified below unless operational requirements dictate otherwise.

16.49.2.1. Tanker:

16.49.2.1.1. At the entry point, adjust airspeed to 275 Knots Indicated Airspeed (KIAS) and ensure external lighting is set.

16.49.2.1.2. Upon visual contact with the receiver and in a position to complete the rendezvous, the tanker boom operator will transmit "TALLY HO" on primary AAR frequency (secure.)

16.49.2.1.3. If "JUDY" is heard, tanker will slow to AR speed and proceed down track. Tanker lead will acknowledge by turning the lower rotating beacon on then off (daylight, wing rock.) During training and exercises, the tanker will also transmit the numeric part of their call sign and altitude (secure.) They will switch to plain (non-secure) as the receiver approaches pre-contact.

16.49.2.2. Receiver:

16.49.2.2.1. At the entry point, the receiver will be at the rendezvous altitude at 215 KIAS and ensure outside lighting is set. Plan to arrive at the Rendezvous Initial Point (RZIP) at the RZCT.

16.49.2.2.2. Upon hearing the tanker call "TALLY HO," turn off the IR rotating beacon for 10 seconds (daylight, wing rock). During training and exercises, the receiver will also transmit the numeric part of their call sign and altitude on primary AAR frequency (secure). Approaching pre-contact, switch to plain (non-secure.)

16.49.2.2.3. Should the tanker pass the receiver and advance to a position in front of the receiver without calling "TALLY HO," and if the receiver is in position to complete the rendezvous, the receiver will transmit "JUDY" on the secure primary refueling frequency. The tanker will respond as described in **paragraph 16.49.2.1.3**.

16.49.2.2.4. The receiver then moves to the pre-contact position and switches to the primary refueling frequency (non-secure.)

16.49.3. Control Time Adjustment:

16.49.3.1. Revised ETA prior to RZIP. If tanker is notified of a revised receiver ETA prior to crossing the RZIP, the tanker will adjust timing to arrive at the RZIP at the revised RZCT.

16.49.3.2. Revised ETA after RZIP. If notified after passing the RZIP, the tanker will delay at the ARCP or RZIP and adjust timing to make an enroute overtaking rendezvous at RZIP based on new RZCT. If the tanker is unable to make the timing at the RZIP they will rendezvous at the RZCP using the adjusted RZCT.

16.49.4. Post Strike Rendezvous Procedures. For missions that do not have a firm RZCT, a control time window will be established. This provides the tanker with a no earlier than/No Later Than (NLT) RZCT time for rendezvous. Tankers will arrive at the RZIP no later than the earliest possible control time. If there is no receiver, tanker will proceed to RZCP and

hold using 2-minute legs, left-hand turns. The receiver, when enroute to AAR and NLT 10 minutes from the RZIP, will call the tanker (secure) with the revised RZCT. The tanker will adjust orbit to make an enroute overtaking rendezvous at the RZIP at the new control time.

16.49.5. Completion of Refueling.

16.49.5.1. The tanker will plan to offload the pre-briefed transfer load.

16.49.5.2. Upon transfer of the planned onload, the receiver will initiate a normal disconnect and close the UARRSI door.

16.49.5.3. If more fuel is required, leave the UARRSI door open and return to the pre-contact position.

16.49.6. Missed Rendezvous. If the rendezvous has not been made as planned, enter a left-hand holding pattern at the RZCP and use the following procedures to accomplish the rendezvous:

16.49.6.1. Receiver Procedures for Missed Rendezvous.

16.49.6.1.1. On arrival at the RZCP, the receiver will enter a left-hand holding pattern, adjusting the first pattern so as to arrive back at the RZCP on an 8-minute multiple from the RZCT, the "Rule of Eight." Example: A receiver is on time at the RZIP and arrives at the RZCP at the RZCT (0100Z) without hearing "TALLY HO" (secure) or seeing the tanker. The receiver enters holding, adjusting so as to arrive back at the RZCP at the RZCT plus 8 minutes (0108Z, 0116Z, etc.)

16.49.6.1.2. Maintain 1,000 ft below the refueling altitude.

16.49.6.1.3. Maintain 215 KIAS until entering holding at the RZCP, then as required.

16.49.6.1.4. Upon hearing "TALLY HO" (secure), proceed down track and complete the rendezvous.

16.49.6.1.5. If the receiver acquires the tanker and is in a position to complete the rendezvous, call "JUDY" (secure) and complete the rendezvous.

16.49.6.2. Tanker Procedures for Missed Rendezvous.

16.49.6.2.1. The tanker enters a left-hand holding pattern upon arrival at the RZCP, adjusting holding to rendezvous with the receivers based on the "rule of eight" at the RZCP. Rendezvous equipment will not be turned on unless directed by receiver.

16.49.6.2.2. Maintain refueling altitude.

16.49.6.2.3. Maintain 275 KIAS.

16.49.6.2.4. Upon positively identifying the receiver, the tanker will maneuver for rendezvous and will call "TALLY HO" (secure) when ready for the receiver. If the receiver calls "JUDY" (secure), slow to refueling airspeed and proceed down track.

16.50. Breakaway Procedures:

16.50.1. Tanker. The tanker will flash the receiver director lights as the primary indication for a breakaway. The lower rotating beacon will be turned on as an additional signal. A radio call will be used as the last resort. When the tanker is ready to resume refueling the lower rotating beacon will be turned off.

16.50.2. Receiver. Initiate a breakaway when conditions warrant. Resume refueling when the tanker is ready.

16.51. Altitude Reservations (ALTRV). Whenever practical, refueling operations are done on tracks or anchor areas published in DoD FLIP. ALTRVs are used when certain missions or operational considerations may require air refueling operations in areas not published in FLIP. For specific ALTRV procedures, refer to FLIP and FAA Special Military Operations 7610.4H, 3.

Section 16G—Hot Refueling/Forward Area Refueling Point (FARP) Operations

16.52. General Information

16.52.1. **General.** This chapter provides guidance for Hot Refueling/FARP for HC-130J aircraft. The guidance in this chapter supplements the procedures outlined in TO 00-25-172, *GROUND SERVICING OF AIRCRAFT AND STATIC GROUNDING/BONDING*, AFI 11-235, *FORWARD REFUELING POINT (FARP) OPERATIONS*, AFTTP 3-3.HC-130 and checklists. A comprehensive mission briefing and strict compliance with these procedures will ensure an expeditious safe refueling operation.

16.52.2. **Applicability.** This chapter is applicable to all HC-130J units and crews conducting hot refueling or FARP.

16.52.3. **Deviations and Waivers.** Do not deviate from the policies and guidance in this instruction, unless safety dictates otherwise.

16.52.3.1. Although this publication provides guidance for aircraft operations under most circumstances, it is not a substitute for sound judgment. When it is necessary to protect the crew and aircraft from a situation not covered by this instruction and when immediate action is required, the PIC has ultimate authority and responsibility for the course of action to be taken. Report deviations, without waiver, through channels to HQ ACC/A3TV within 48 hours, followed by a written report, if requested.

16.52.3.2. Unless otherwise indicated, ACC/A3TV is the waiver authority for operational procedure requirements contained in this volume. Waver authority may be delegated to deployed equivalent for operationally assigned forces.

16.52.4. **Terms.** The following terms are unique to hot refueling operations:

16.52.4.1. Wet Wing Refueling. Engines not running (power cart, GTC, or APU used). The same checklist and procedures apply as for hot refueling.

16.52.4.2. Tanker Operations. The act of providing fuel to a receiver source at a hot refueling site.

16.52.4.3. Receiver Operations. The act of receiving fuel at a hot refueling site.

16.52.4.4. Fuel Servicing Safety Zone (FSSZ). The area within 50 ft of a pressurized fuel carrying component and 25 feet around fuel vent outlets of an aircraft.

16.52.5. **Hot refueling and FARP Equipment**. Refueling aircraft while engines are running requires specific equipment and inspections prior to commencing operations. Only equipment approved IAW TO 00-25-172, TO 37A9-7-2-1, and in the system safety engineering analysis (SSEA) shall be used. This equipment is unique in that it provides for an

internal bond that is not provided for with conventional refueling equipment. If unapproved equipment is used, the refueling operation must be accomplished without engines running (cold refueling).

16.52.5.1. Required personal equipment for personnel having direct contact with refueling equipment:

16.52.5.1.1. Spare Nomex flight gloves.

16.52.5.1.2. Extra flight suit or complete change of clothing, including flight boots.

16.52.5.1.3. Full canteen (filled with water), to be carried on your person.

16.52.5.1.4. NVGs with spare battery (as required).

16.52.5.1.5. Dust goggles (as required).

16.52.5.1.6. Survival vest (as required).

16.52.5.1.7. Overt/IR chemlights and/or flashlights (as required).

16.52.5.1.8. IR compatible flashlight (as required).

16.52.5.1.9. Sealable water and fuel resistant garment bag to store fuel soaked clothing. ***NOTE:*** Skin contact with fuel causes minor burns, irritation and severe loss of body oils in the affected area. Immediately, remove all fuel soaked clothing and wash affected areas thoroughly. Put clean clothing on and seal fuel soaked clothes in a plastic bag. Clothing splashed or soaked with fuel will not be worn on aircraft due to combustion and fume hazard.

16.52.6. **Weather Requirements**. For training operations and exercises, stop fuel servicing when high winds or reduced visibility caused by blowing rain, snow, or sand exists or when an electrical storm is within a five mile radius of the hot refueling site. Sound travels about 1/5 of a mile per second. An approximation of the number of miles to the storm can be made by counting the seconds between the flash of lightning and the sound of thunder and dividing this number by five. For real world operations, consider the distance of the storm from the refueling site, direction it is traveling, and its intensity, and use good judgment to determine when to suspend fueling operations.

16.52.7. **Safety**. Because of the inherent dangers with the ground refueling and rearming of aircraft, safety cannot be overemphasized. Safety is the responsibility of all personnel and is considered before, during, and after all refueling operations. Any person observing an unsafe situation, practice, or procedure should immediately inform all personnel, and all refueling and rearming operations will immediately stop until the unsafe condition can be eliminated.

16.52.7.1. Safety guidance. Each aircraft and the refueling equipment involved in the operation was subjected to a System Safety Engineering Analysis (SSEA), which includes; a failure mode/effects criticality assessments, and operating/support hazard analysis. This process considers the weapon system, support equipment and the personnel interface. Overall, the system safety approach minimizes the hazards associated with this operation, reducing them to an acceptable level.

16.52.7.2. Electrostatic discharge. Energy levels associated with electrostatic discharge are several times the energy required to ignite fuel vapors. A charge of static electricity

can accumulate from fuel flowing through piping, hoses, couplers, and nozzles. Operating aircraft engines, rotor blades, and propeller blades also generate high static electricity voltages. The normal activity of personnel involved in refueling operations can generate static electricity on their clothing. To equalize these charges and reduce the possibility of sparks, aircraft and refueling equipment are bonded to each other. The electrical bonding of refueling servicing equipment and aircraft is a critical item because aircraft are not normally grounded for this operation.

16.52.7.3. In the event of static discharge, forward the following data to ACC/A3TW following all Hot Refueling/FARP operations: type aircraft involved, OAT, dew point, humidity, engines running / low speed / shutdown, taxiway / runway surface, indication of discharge, and sequence followed when bonding / grounding.

16.52.7.4. Fire Protection:

16.52.7.4.1. Personnel involved in servicing operations will be trained in the use of portable fire extinguishers

16.52.7.4.2. If Hot Refueling/FARP operations are being conducted at an ACC, AFSOC or AMC certified site, a minimum of one 20-pound dry chemical will be located in the immediate vicinity of the aircraft SPR and the fuel servicing equipment. Additionally, crash fire rescue vehicle will be on standby IAW TO 00-25-172 and/or AFI 11-235. If a fuel truck is used as the tanker, a 150 pound Halon 1211 fire extinguisher will be used in lieu of the 20-pound extinguisher.

16.52.7.4.3. For exercises or contingencies where a crash fire vehicle cannot be provided, a minimum of one 20-pound dry chemical extinguisher will be positioned at the receiver SPR and the refueling source.

16.52.7.5. Heat exhaustion and carbon monoxide inhalation: Heat exhaustion and carbon monoxide inhalation, although not serious problems are two factors that can affect a crew's ability to perform at their peak. You can suffer heat exhaustion or minor burns from the heat of the engines combined with wind conditions. You may also inhale carbon monoxide from the engine exhausts. The following are suggestions of how to minimize the effects of heat and carbon monoxide if the tactical situation will permit:

16.52.7.5.1. Keep drinking water available, and drink large quantities of water to help prevent dehydration.

16.52.7.5.2. Raising the aircraft flaps may reduce the exhaust being placed on the loadmaster. Wind direction, temperature, location, and environment are all factors to be considered.

16.52.7.6. Use of 100 percent nylon garments. The wear of Gortex is authorized for aircraft servicing with JP-5/8/10, Jet-A, and diesel fuel (including mixed fuel criteria). Personnel will not wear Gortex within 50-feet when servicing aircraft with JP-4 or ground servicing with Mogas.

16.52.7.7. General Ordnance Procedures. Aircraft may be refueled with engines running with live ordnance aboard, however upload/download of ordnance and refueling of aircraft will normally be conducted as separate operations; a separate area should be established at least 300 feet from the Hot Refueling/FARP site. During combat or

contingency operations, concurrent refueling and upload/download of ordnance may be authorized when, in the judgment of the mission commander, operational necessity and benefits of reducing ground time outweigh the risks involved.

16.52.8. **Electronic Emissions:**

16.52.8.1. Inertial navigational systems may remain energized.

16.52.8.2. Radar and ECM equipment will not be operated within the refueling area.

16.52.8.3. Any hand-held radios used within the FSSZ must be intrinsically safe.

16.52.8.4. HF radio transmissions are not allowed within the FSSZ during refueling operations.

16.52.8.5. Internal Communications. During ground operations, communications can be difficult due to aircraft noise levels. Interphone discipline is essential so emergency calls may be relayed clearly. All unnecessary voice communication is prohibited for safety reasons.

16.52.9. **Aircraft Marshaling:**

16.52.9.1. When CCT/STS are responsible for primary air traffic control of an airfield, they will marshal and control all aircraft movement into the refueling site. If CCT/STS are not available, all aircraft are responsible for self marshaling into the refueling site.

16.52.9.2. Aircraft commanders must ensure marshaling procedures are thoroughly pre-briefed between all agencies involved prior to refueling operations. These procedures must be strictly adhered to at all times, to ensure all safety requirements are met.

16.53. Hot Refueling.

16.53.1. **General.** For ACC aircrews, basic hot refueling is the transfer of fuel (refuel or defuel) at sites where all required equipment is provided at that site. Aircrews qualified in hot refueling may refuel/defuel at fixed-sites, refuel/defuel with approved fuel trucks and receive fuel from a fixed-wing tanker at FARP sites. NVG-qualified aircrews may conduct hot refueling operations under NVG conditions.

16.53.2. **Planning Factors:** Planners must be aware of factors which limit hot refueling employment and should consider the following when including a hot refueling option in an exercise or contingency:

16.53.2.1. Passengers. Personnel and equipment may be off/on-loaded in conjunction with refueling operations. Personnel movement on or off the aircraft should be monitored to maintain accountability in case of an emergency.

16.53.2.2. Hot refueling sites. Depending on the sister service or host nation there can be several different types of hot refueling sites. Some of the different types of sites are as follows:

16.53.2.2.1. Forward Area Refueling Equipment (FARE). Forward area refueling equipment sites are normally setup by the Army using blivets to refuel aircraft. Hot refueling qualified crews may conduct refueling /defueling operation at these sites.

16.53.2.2.2. Forward Area Refueling Point (FARP). Forward area refueling point sites are normally established for aircraft to aircraft refueling. Hot refueling qualified crews may conduct receiver operations at these sites. ***NOTE:*** Refueling trucks may conduct refueling/defueling operations to a single aircraft at FARP sites.

16.53.2.2.3. Hot Refueling Site. Hot refueling site is a generic term used for a site that refuels/defuels aircraft with engines running from a fixed source or a fuel truck. Hot refueling qualified crews may conduct operations at these sites. ***WARNING:*** All hot refueling sites will have a current site survey and meet the minimum unobstructed egress distance required by the survey to ensure the aircraft can taxi from the site in the event of an emergency. If the egress distance is less than the required minimum or the egress area is obstructed, tanker/receiver aircraft will perform refueling/defueling in a cold environment only.

16.53.2.3. Planners must verify equipment at intended Hot Refueling location is approved for use in hot refueling operations. Refer to T.O. 00-25-172, TO 37A9-7-2-1 and SSEA for approved equipment.

16.53.3. **Responsibilities**. Only current and qualified crewmembers will be allowed to occupy a primary crew position on hot refueling missions. ***EXCEPTION:*** Crewmembers in training under the supervision of a current and qualified instructor. ***NOTE:*** The Pilot, Copilot, and Combat Systems Operator will remain on the flight deck in the event of an emergency taxi.

16.53.3.1. The PIC is responsible for the overall safety of the crew and the aircraft hot refueling operations. The PIC relies on the LM to announce any unusual situations and to recommend the best course of action.

16.53.3.2. The Aircraft Commander will:

16.53.3.2.1. Ensure approval has been granted by the proper authority prior to conducting hot refueling operations.

16.53.3.2.2. Ensure all crewmembers are briefed on their specific responsibilities.

16.53.3.2.3. Analyze runway availability prior to landing to determine braking action. Unnecessary or heavy braking could delay hot refueling operations.

16.53.3.2.4. Analyze planned hot refueling area for hazards and sufficient taxi clearances.

16.53.3.2.5. Determine fuel requirements to include estimated on-load and off-load.

16.53.3.3. The CSO/CP will:

16.53.3.3.1. Control fuel distribution and the SPR drain pump.

16.53.3.4. Loadmaster: The LM is responsible for supervising fuel servicing operations.

16.53.3.4.1. Ensure compliance with all safety procedures.

16.53.3.4.2. Immediately inform the pilot and advise the crew on recommended course of action, in the event of a hazardous situation/emergency.

16.53.3.4.3. Ensure all required equipment is on board prior to and after Hot Refueling operations.

16.53.3.4.4. Operate the ramp and door or paratroop door as required.

16.53.3.4.5. Complete the hot brake/hung flare check prior to commencing hot refueling operations.

16.53.3.4.6. Ensure that all personnel are properly briefed on fueling procedures.

16.53.3.4.7. Connect the fuel source to SPR panel**.**

16.53.3.4.8. Perform leak check at SPR panel.

16.53.3.4.9. Secure aircraft for departure after all equipment and personnel are aboard.

16.53.4. **Internal Communications.** Voice communication contact between the LM and cockpit will be maintained at all times. The LM does not have to maintain interphone contact while positioning/repositioning refueling equipment, but will be on interphone any time the refueling nozzle is connected to the aircraft and the switches on the Fuel Management Panel are in a position other than off or closed.

16.53.5. **Bonding procedures.** If a ground is not available at a FOL or remote site, aircraft will be bonded to servicing equipment during actual servicing. Bonding will be accomplished by inserting the bonding plug into the receiver aircraft's external receptacle prior to any other action.

16.53.6. **Emergency Procedures.** Emergency procedures are published in the amplified checklist contained within Attachment 2. They will be reviewed by all crewmembers and briefed by the PIC prior to commencing Hot Refueling operations. All personnel, including ground controllers, will know the ground evacuation plans. Stop all Hot Refueling operations immediately when a leak, unsafe condition, or system malfunction occurs. Correct the deficiency before resuming hot refueling operations.

16.54. FARP Operations.

16.54.1. **General.** For ACC aircrews, FARP is a tactical ground refueling operation that can be performed by the HC-130J with engines running to a fixed/rotary-wing/tilt-rotor aircraft or fuel bladders/vehicles. FARP may be used to extend the combat radius/loiter time of the receiver. FARP is normally conducted at night in austere environments with engines running and includes fuel transfer from aircraft fuel tanks through the SPR panel or the Rapid Ground Refueling (RGR) port to the receiver. All equipment and personnel required to set-up the FARP site are assigned to the tanker aircraft.

16.54.2. **Planning Factors:** Planners must be aware of factors which limit FARP employment and should consider the following when including a FARP option in an exercise or contingency: ***WARNING:*** All FARP sites will have a current site survey and meet the minimum unobstructed egress distance required by the survey to ensure the aircraft can taxi from the site in the event of an emergency. If the egress distance is less than the required minimum or the egress area is obstructed, tanker/receiver aircraft will perform refueling/defueling in a cold environment only.

16.54.2.1. Fire protection equipment will be available IAW AFI 11-235, *Forward Area Refueling Point Operations*, and meets the requirements of TO 00-25-172, *Ground Servicing and Static Grounding/Bonding.*

16.54.2.2. All Air Force personnel involved will be trained IAW appropriate command directives.

16.54.2.3. Passengers. Personnel and equipment may be on/off-loaded in conjunction with refueling operations. Personnel movement on or off the aircraft should be monitored to maintain accountability in case of an emergency.

16.54.3. **Responsibilities**. Only current and qualified crewmembers will be allowed to occupy a primary crew position on FARP missions. ***EXCEPTION:*** Crewmembers in training under the supervision of a current and qualified instructor. ***NOTE:*** The Pilot, Copilot, and CSO will remain on the flight deck in the event of an emergency taxi, i.e. moving the aircraft.

16.54.3.1. The PIC is responsible for the overall safety of the crew and the aircraft hot refueling operations. The PIC relies on the LM to announce any unusual situations and to recommend the best course of action.

16.54.3.2. The Aircraft Commander will:

16.54.3.2.1. Ensure approval has been granted by the proper authority prior to conducting FARP operations.

16.54.3.2.2. Ensure all crewmembers are briefed on their specific responsibilities.

16.54.3.2.3. Analyze runway availability prior to landing to determine braking action. Unnecessary or heavy braking could delay FARP operations.

16.54.3.2.4. Analyze planned FARP area for hazards and sufficient taxi clearances.

16.54.3.2.5. Determine fuel requirements to include estimated on-load and off-load.

16.54.3.3. The Panel Operator (PO) is normally the CSO. They will:

16.54.3.3.1. Control fuel distribution and the SPR drain pump.

16.54.3.4. Hot Refueling Supervisor (HRS) is the LM. There will be two HRS's during all FARP operations. The primary HRS is responsible for supervising fuel servicing operations and ensures that all personnel are properly briefed on fueling procedures. The secondary HRS will be standing near the SPR/RGR port to observe the hose connection and be standing by to disconnect the hose in case of an emergency,

16.54.3.4.1. The HRS has a thorough knowledge of all equipment and systems and how they operate. HRS will also be PO certified.

16.54.3.4.2. Has a thorough knowledge of and observes all safety procedures.

16.54.3.4.3. Has a thorough knowledge of and follows the sequential steps for each operation. ***NOTE:*** The right paratroop door will remain open during FARP operations.

16.54.3.4.4. A HRS will position an inter-phone cord near the right paratroop door ***NOTE:*** During hose deployment, the HRS's will assist the HDP deploying the hoses.

16.54.3.4.5. A HRS will instruct the PO when to dispense or shut-off fuel flow by interphone, monitor for fuel leaks and periodically scan the tanker wings.

16.54.3.4.6. In the event of a hazardous situation/emergency, a HRS will immediately inform the PO and advise the crew on recommended course of action. When the FARP operation is complete, the HRS's will assist the HDPs with the tear down of the FARP site and the primary HRS assumes interphone contact.

16.54.3.4.7. The HRSs secure the aircraft for departure after all equipment and personnel are aboard.

16.54.3.4.8. The primary HRS will brief who will operate the ramp and door, paratroop door, and canary slides/ground loading ramps. A HRS, upon landing and after clearance from the pilot, will open the cargo ramp. Upon clearance from the pilot to offload the HRS will lower the cargo ramp to the ground. A HRS will exit the aircraft through the ramp and door to perform the hot brake /hung flare checks and to clear personnel off the aircraft to establish the FARP site.

16.54.3.4.9. The primary HRS will be positioned so as to have an unobstructed view of the entire FARP operation.

16.54.3.4.10. Upon clearance from the primary HRS, the secondary HRS and HDP will exit the aircraft and deploy the tanker end of the refueling hose towards the SPR panel/RGR port.

16.54.3.4.11. The secondary HRS monitors the refueling hose to prevent the HDP from possibly damaging the hose/connector. Once hose layout is complete, position the fire extinguisher and water container next to the SPR panel/RGR port. The secondary HRS then connects to the prepositioned inter-phone cord. ***CAUTION:*** In the event the aircraft must depart immediately, **t**he PO must immediately discontinue refueling by placing all the transfer pumps, IFR pumps, and valve switches to the OFF/CLOSED position. The secondary HRS must confirm the SPR Valve/pod supply valve position with the PO to ensure no fuel is pressurizing the hoses prior to disconnecting the SPR nozzle. ***NOTE:*** The HRSs and HDP at each refueling point will perform an on-scene inspection of the pressurized system for leaks, slippage of fuel hoses from hose couplings and general condition of hoses. Hoses that leak or have blistering, saturation or cuts/abrasions which expose the reinforcement material shall be removed from service.

16.54.3.4.12. To drain the residual fuel from the refueling hoses, pressure will be relieved from the refueling hose IAW applicable directives. ***CAUTION:*** The secondary HRS disconnects the SPR nozzle after confirming with the PO the SPR Valve/pod fuel valve position to ensure no fuel is pressurizing the hoses.

16.54.3.4.13. After all hoses have been rolled/stowed to the low (suction) side of the pump, turn the pump off and disconnect the hose. The 10' section can be evacuated by use of the SPR drain pump and holding the hose over head. Some residual fuel will remain in this section of hose.

16.54.3.5. Hose Deployment Personnel (HDP). Air Force fuels personnel (AFSC 2FOXl) will be included in the FARP crew and will deploy/redeploy fuel hoses.

Minimum HDPs will be one person for each receiver point. The personnel designated as HDPs will deploy hoses from the aircraft and set up the refueling points,

16.54.4. **FARP Equipment**. FARP requires specific equipment and inspections prior to commencing operations. Only equipment approved IAW TO 00-25-172, TO 37A9-7-2-1, and in the system safety engineering analysis (SSEA) shall be used. This equipment is unique in that it provides for an internal bond that is not provided for with conventional refueling equipment. If unapproved equipment is used, the refueling operation must be accomplished without engines running (cold refueling).

16.54.4.1. Unisex couplings. Each coupler has a two-position handle for Flow or No Flow. Connection and disconnection are only possible when the handles of both couplers are in the No Flow position. In the No Flow position, the internal ball valve is locked closed to prevent fuel spillage. Approximately 15cc of fuel may spill when disconnecting the coupler assembly. The Unisex coupling provides the following unique features:

16.54.4.1.1. Provides fuel shut off and disconnects with dry break capability at each coupling.

16.54.4.1.2. Eliminates the concern for male/female connection relationship of FARP components.

16.54.4.1.3. Fuel spillage during set-up and tear-down of equipment is minimized to less than 15cc fluid loss when couplings are disconnected.

16.54.4.1.4. The couplings cannot be connected or disconnected while either valve is open. The handle dual safety lock prevents inadvertent valve opening while disconnected and pressurized.

16.54.4.1.5. Valve design provides straight through flow for maximum flow rate with minimal pressure loss. Valves can be opened with full line pressure when connected. Valves can be shut off while the system is pressurized should it be necessary to isolate or bypass any section of the FARP layout.

16.54.4.1.6. Dust Caps provide a seal against dust and dirt when installed. The common face seal used on caps may be used as a spare should coupling seal become damaged. Caps will be connected together for seal and dirt protection when not connected to couplings. ***NOTE:*** The dust cap seal and coupling seal have a tendency to stick together. When removing dust cap, check that only one seal is installed in the coupling. Failure to adhere to this note will make other connections difficult or impossible.

16.54.4.1.7. Electrical conductivity is provided throughout the connected system.

16.54.4.2. Fueling hose. The hose is a lay-flat, lightweight, continuous length, flexible design with an abrasive resistant sheath cover. The hose features a khaki green color polyurethane elastomer tube. The textile reinforcement contains 4 continuous length copper wires to provide an electrical bond between the hose and end couplings. The abrasion resistant outer sheath is woven from polyester and is coated with black polyurethane to increase abrasion resistance and provide the required flat black color. Operating pressure for the hose is 300 psi with a burst pressure of 600 psi. Hoses that have been re-coupled must maintain 90 percent of original hose length. ***NOTE:*** Avoid

crimping a pressurized hose and dragging it on the crimped end. This will cause damage to the hose.

16.54.4.2.1. Kinks and short loops in refueling hose shall be avoided.

16.54.4.2.2. Do not drag fuel nozzles and hose couplers along the ground unnecessarily. ***NOTE:*** Each continuous length hose assembly has a Unisex ball coupler. Hoses can be connected to nozzles and hose reels by aligning the coupler lugs and rotating. Dust caps are supplied and must be connected together to prevent contamination. ***NOTE:*** Hoses that have abrasion through the sheath (detected by seeing the khaki green underlying hose) will be repaired by replacing the sheath. Hoses that have been cut and re-coupled must maintain 90 percent of original length. ***NOTE:*** The dust cap seal and coupling seal have a tendency to stick together. When removing dust cap, check that only one seal is installed in coupling. Failure to adhere to this note will make other connections difficult or impossible.

16.54.4.3. Unisex Fittings. The "T" and "X" fittings are used for connecting hoses together and directing fuel flow. Each fitting has a coupling with a two position handle for flow/no flow. Connect/disconnect is possible only when the handles of both coupling halves are in the no flow position. In the no flow position, the internal ball valve is locked closed to prevent fuel spillage. An interlock locks the coupling halves together to prevent accidental disconnect and fuel spillage. No more than 15cc of fuel will spill when disconnecting these items. Each coupling has identical manually operated ball valves on each end of the assembly. Coupling assemblies are connected by aligning lugs and rotating. Dust caps will be attached and in place when hose assembly is stored.

16.54.4.4. SPR Nozzle. The SPR nozzle provides a leak tight connection for aircraft fueling. Nozzles that are attached to the tanker aircraft will have a 60-mesh strainer. This is the only means of filtering out solid particles of contamination before they reach the receiver aircraft. If the nozzle is to be used as a tanker nozzle, remove the strainer. This reduces the pressure drop and prevents contamination from collecting outside on the strainer element and inadvertently being pumped into a receiver aircraft at a later date.

16.54.4.4.1. To connect the nozzle to the aircraft receptacle remove the dust cap from the nozzle face, connect the nozzle to the adapter and turn clockwise. Turn the nozzle handle to the FLOW position. To disconnect the nozzle, turn the handle to the NO FLOW position, turn the nozzle counterclockwise and remove it from the adapter. Place the dust cap on the nozzle face down to secure it to the nozzle. Nozzle bonding plugs will be connected to bonding receptacles prior to connecting/inserting the nozzle to receiver aircraft.

16.54.4.4.2. Always bond the nozzle to the aircraft before the fill cap is removed. This connection should remain in place until after the cap is replaced. Failure to perform this procedure can cause a static spark at the tank fill opening. ***NOTE:*** Prior to applying fuel pressure to the system, ensure the nozzle is securely locked by manually attempting to remove the nozzle with the valve in the FLOW position. If the nozzle can be removed, it is defective and must be removed from service.

16.54.4.5. RGR Port. The RGR port is located on the bottom of the aerial refueling pod, can be opened to allow fuel to be transferred, via hoses and couplings. Its purpose is to

provide a standard connection point for refueling aircraft, vehicles, or fuel storage devices on the ground. When using this adapter procedures are similar to using the SPR.

16.54.4.6. Open-Port/Over Wing Nozzle. The over wing nozzle contains a 60 mesh strainer and an automatic shut-off feature. It is regulated to 25 PSI maximum (20 GPM max output). Remove dust cap and lift handle to dispense fuel. Automatic shut-off feature must be tested prior to deployment by partially filling a grounded drip pan with the nozzle immersed in fuel. The automatic shut-off device should stop fuel flow. If shut-off feature fails, nozzle will be removed from service

16.54.4.7. 50 GPM Pump. This pump has a 28 volt DC l/2 HP electric motor and is used for defueling the last 200' of hose by pumping the fuel from the hoses into the tanker aircraft.

16.54.4.8. Squeegees. Squeegees are used to ensure all residual fuel is removed from the hose. Squeegees should be used to evacuate fuel from the hose. When squeegees are not available, walking and rolling the hose will suffice as an alternate method of draining. This alternate method will leave more residual fuel in the hose, increasing its weight.

16.54.4.8.1. Manual squeegee. The manual squeegee consists of two rollers attached to a three foot handle. The squeegee is manually pulled along each individual length of the flexible hose.

16.54.4.8.2. Motorized squeegee. The motorized squeegee consists of two rollers that are driven by a battery powered 24 VDC motor. The battery is located inside a latched cover above the rollers. All squeegee batteries must be recharged before each mission (recharging time is approximately 45 minutes when battery is fully discharged). To operate, hold the squeegee handle and pull the forward or reverse trigger switch to start the squeegee rollers. Guide squeegee along the length of the hose. A fully charged battery will squeegee approximately 1,700 feet of hose before the battery is completely discharged. If a squeegee fails electrically while in use, the operator can pull the squeegee along the hose to provide defueling. ***NOTE:*** If squeegee battery appears to be drained or squeegee comes to a stop, release trigger. Forcing squeegee to continue will result in overheating of squeegee and/or battery. Replace squeegee or allow squeegee to cool for 30 minutes, prior to replacing battery. ***NOTE:*** Do not operate squeegee within 8 inches of the coupler. Operation closer than eight inches to the coupler will damage the hose resulting in a possible fuel spill.

16.54.4.9. Interphone cord**.** A 220' interphone cord will accompany FARP equipment.

16.54.4.10. Fire extinguisher. A 20 lb dry chemical fire extinguisher will be placed near each tanker and receiver refueling point, SPR/RGR port.

16.54.4.11. Water Container. A 5 gallon water container will be placed near each tanker and receiver refueling point, SPR/RGR port. An infrared chemlight will be placed on each receiver water container indicating that the refueling point is ready for operation.

16.54.5. **Equipment Maintenance**

16.54.5.1. Hydrostatic testing. FARP hoses will be hydrostatic tested upon receipt, annually and after any hose repair or coupler replacement. The entire system, FARP hose kit (hoses, couplers, etc.) is connected to a hydrostatic hose tester, and pressurized to 75

PSI. Testing procedures are outlined in T.O. 37A-1-10. Operating pressure for the hose is 300 PSI and burst pressure is 600 PSI.

16.54.5.2. Hose maintenance. Defective Fuel hoses may have 10 percent of a hose length removed without replacing it with a new hose. Defective hoses that are less than 90 percent of original length will be removed from service.

16.54.5.3. Ohms check. The FARP equipment bonds the tanker and receiver aircraft. Bonding is accomplished by internal conductors within the hoses. The ohms (resistance) check is critical, as the equipment provides the only means of bonding between the tanker aircraft and the receiver aircraft. An ohms check will be performed on each hose using a multi-meter prior to each FARP mission and each time the equipment is reconfigured during that mission. ***EXCEPTION:*** When nozzles or hoses are changed out during actual ongoing FARP operations.

16.54.5.3.1. Total resistance values are as follows:

16.54.5.3.1.1. The maximum allowable resistance for a 100-foot hose with couplers is 100 ohms.

16.54.5.3.1.2. The maximum allowable resistance for a 200-foot hose with couplers is 200 ohms.

16.54.5.3.1.3. The maximum allowable resistance for a 240-foot hose with couplers is 240 ohms.

16.54.5.3.1.4. FAM Cart (if used) maximum allowable resistance 10 ohms.

16.54.6. **Hose Deployment from Aircraft Floor/Ramp.**

16.54.6.1. When deploying hoses for a multi-point site, refer to the FARP site survey for proper positioning of equipment. ***CAUTION*:** Refueling hoses should only be pulled from over the shoulder while walking forward, not backwards.

16.54.6.2. While deploying hoses, after sufficient resistance is met, lay down hoses and return to the aircraft for another length. Repeat this step as necessary until positioning is complete. Minimize dragging connections/valves to prevent damage.

16.54.6.3. When using the RGR port, drag the length of hose towards the SPR panel first to ensure proper slack is available for defueling.

16.54.6.4. After positioning hoses the full distance, the nozzle end is brought back approximately 25 feet (50 feet when refueling fixed wing aircraft). HDPs will walk the length of the hoses back to the aircraft checking for kinks, twists, and dry break positions.

16.54.6.5. After HDPs have finished walking the hoses, they will notify the primary HRS with a thumbs up signal that the (dry) line check is complete. HDPs will return to the aircraft for the fire extinguishers and water containers and return to the “X/T” fitting. They will then wait for fuel pressurization to the points.

16.54.6.6. After the hoses are pressurized, the HDPs will perform a leak check taking the water bottle and fire extinguisher along. When the leak check is complete, the fire extinguisher and water container are positioned alongside the refueling nozzle at the refueling point. The HDP will place an infrared chemlight on the water container, then

kneel indicating the point is ready for operation. ***NOTE:*** If the point becomes non-operational, remove the chemlight from the water container

16.54.6.7. HDPs will remain at the refueling point to act as fire guard after passing the refueling nozzle to the receiver crewmember.

16.54.6.8. Bonding will be accomplished by inserting the bonding plug from the refueling nozzle into the aircraft's external receptacle prior to any other action. Once the bond has been made, the HDP will not place the hose on the ground or touch the receiver aircraft until the bonding wire is removed.

16.54.6.9. After the final receiver is fueled, the HDPs will position themselves at each refueling point to drain the hose. When using the RGR port, disconnect the nozzle from the port and attach to the SPR panel before starting to drain hoses. Stretch hoses to their full length and attach the squeegee to drain that segment of hose. After running the squeegee over the length of hose and reaching a connection, close both sides of the valve and disconnect hose. Install dust caps. Roll that segment of hose. Repeat steps for each section of hose. Return hoses to the aircraft.

16.54.6.10. Squeegees should be used to drain hoses. When squeegees are not available, walking and rolling the hoses will suffice as an alternate method of draining. This alternate method will leave more residual fuel in the hoses and will increase tear down time as well as hose weight. When reaching the fittings, raise the hose and let fuel drain from the fitting into the next hose, close both valves while in raised position. When reaching the cross connection, only close the valve that is designated for the hose you evacuated.

16.54.7. **Internal Communications.** During ground operations, communications can be difficult due to aircraft noise levels. Interphone discipline is essential so emergency calls may be relayed clearly. All unnecessary voice communication is prohibited for safety reasons. Voice communication contact between the loadmaster and cockpit will be maintained at all times.

16.54.7.1. FARP operations will not be conducted if interphone contact cannot be established and maintained between the HRS, PO. ***Exception:*** The HRS may clear off interphone to assists the HDPs with the tear down of the FARP site.

16.54.8. **Emergency Procedures.** Emergency procedures are published in the amplified checklist contained in attachment 2. They will be reviewed by all crewmembers and briefed to the crew by the HRS prior to commencing FARP operations. All personnel, including ground controllers, will know the ground evacuation plans. Stop all FARP operations immediately when a leak, unsafe condition, or system malfunction occurs.

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DCS, Operations, Plans and Requirements

(AETC)

TIMOTHY M. ZADALIS, Major General, USAF
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Attachment 1

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AF Form 711, *USAF Aircraft Mishap Report Worksheet*

AF Form 711B, *USAF Mishap Report*

AF Form 791, *Aerial Tanker In-flight Issue Log*

AF Form 813, *Request for Environmental Impact Analysis*

AF Form 847, *Recommendation for Change of Publication*

AF Form 1199, *Air Force Entry Control Card*

AF Form 1297, *Temporary Issue Receipt*

AF Form 1994, *Fuels Issue/Defuel Document*

AF Form 2282, *Statement of Adverse Effect – Use of Government Facilities*

AF Form 3823, *Drop Zone Survey*

AF Form 4015, *HARP Computation*

AF Form 4018, *CARP Computation*

AF Form 4051, *Low Level Flight Plan and Log*

AF Form 4052, *C-130 Air Refueling Worksheet*

AF Form 4064, *C-130 Takeoff and Landing Data*

AF Form 4075, *Aircraft Load Data Worksheet*

AF Form 4076, *Aircraft Dash 21 Equipment Inventory*

AF Form 4108, *C-130 Fuel Log*

AF Form 4116, *C-130 Flight Plan Record*

AF Form 4118, *SCA Planning Form*

AF Form 4119, *C-130 Fuel Planning Worksheet*

AF Form 4121, *FCIF Currency Record*

AF Form 4122, *Airborne Radio Log*

AF Form 4123, *Airdrop Card*

AF Form 4124, Flight Crew Information Guide

AF Form 4139, *Special Operations Refueling Worksheet*

AF Form 4327A, *Crew Flight (FA) Authorization*

AFTO Form 46, *Prepositioned Life Support Equipment*

AFTO Form 350, *Repairable Item Processing Tag*

AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*

AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*

DD Form 175, *Military Flight Plan*

DD Form 175-1, *Flight Weather Briefing*

DD Form 365-4, *Weight and Balance Clearance, Form F*

DD Form 1384, *Transportation Control and Movement Document*

DD Form 1385, *Cargo Manifest*

DD Form 1748, *Joint Airdrop Inspection Record*

DD Form 1801, *DoD International Flight Plan*

DD Form 1854, *U.S. Customs Accompanied Baggage Declaration*

DD Form 2130-2, *C-130 A/B/E/H Load Plan*

DD Form 2131, *Passenger Manifest*

DD Form 2133, *Joint Airlift Inspection Record*

Abbreviations and Acronyms

AAR—-Air to Air Refueling

AC—Aircraft Commander

ACC—Air Combat Command

ACAWS—Advisory, Caution and Warning System

ACM—Additional Crew Member

ACO—Airspace Control Order

ADIZ—Air Defense Identification Zone

ADS—Aerial Delivery System

AE—Aeromedical Evacuation

AF—Air Force

AFCS—Automatic Flight Control System

AFI—Air Force Instruction

AFMC—Air Force Materiel Command

AFMSS—Air Force Mission Support System

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFRIMS—Air Force Records Information Management System

AFSOC—Air Force Special Operations Command

AFTTP—Air Force Tactics, Techniques, and Procedures

AGL—Above Ground Level

AI—Airborne Interceptor

ALT CAL—(Barometric) Altimeter Calibration

ALT UPDATE—(Barometric) Altimeter Update

AMC—Air Mobility Command

AO—Area of Operations

AOA—Angle of Attack

AP—Auto Pilot

APU—Auxiliary Power Unit

AR—Air Refueling

ARCP—Air Refueling Control Point

ARCT—Air Refueling Control Time

ARTCC—Air Route Traffic Control Center

ASRR—Airfield Suitability and Restrictions Report

AT—Auto Throttle

ATC—Air Traffic Control

ATIS—Automatic Terminal Information Service

ATO—Air Tasking Order

ATOC—Air Terminal Operations Center

ATS—Automatic Throttle System

ATV—All-Terrain Vehicle

AUX—Auxiliary

BAI—Back-up Aircraft Inventory

BARO—Barometric

BASH—Bird Aircraft Strike Hazard

BCN—Beacon

BIT—Built in Test

BRNAV—Basic Area Navigation Airspace

C—Centigrade (degrees)

C2—Command and Control

C3—Command, Control, and Communications

CARP—Computed Air Release Point

CAT I—Category I Approach/Navigation Route

CAT II—Category II Approach/Navigation Route

CB—Circuit Breaker

CBP—Customs and Border Protection

CCC—Command Control Center

CCT—Combat Control Team

CDS—Container Delivery System

CEOI—Command Electronic Order of Information

CFL—Critical Field Length

CHOP—Change in Operational Control

CHUM—Chart Updating Manual

CIRVIS—Communications Instructions for Reporting Vital Intelligence Sightings

CNI-MU—Communication, Navigation, Interrogation – Management Unit

COMSEC—Communications Security

CONUS—Continental United States

CRS—Container Release System

CSO—Combat Systems Officer

CVR—Cockpit Voice Recorder

DFDR—Digital Flight Data Recorder

DH—Decision Height

DME—Distance Measuring Equipment

DOD—Department of Defense

DOT—Department of Transportation

DR—Dead Reckoning

DSN—Defense Switched Network

DTADS—Data Transfer and Diagnostic System

DTD—Data Transfer Device

DV—Distinguished Visitor

DZ—Drop Zone

DZCO—Drop Zone Control Officer

ECM—Electronic Counter Measures

EGI—Enhanced GPS INS

ELT—Emergency Locator Transmitter

EMCON—Emission Control

EMI—Electro-Magnetic Interference

EO-IR——Electro-Optical/Infrared

ER—Exceptional Release

ERO—Engines Running On/Offload

ESA—Emergency Safe Altitude

ETA—Estimated Time of Arrival

ETD—Estimated Time of Departure

ETE—Estimated Time Enroute

ETP—Equal Time Point

F—Fahrenheit (degrees)

FAA—Federal Aviation Administration

FAF—Final Approach Fix

FARP—Forward Area Refueling Point

FCF—Functional Check Flight

FCG—Foreign Clearance Guide

FCIF—Flight Crew Information File

FCIS—Flight Crew Information Summary

FD—Flight Director

FIH—Flight Information Handbook

FIR—Flight Information Region

FL—Flight Level

FLIP—Flight Information Publication

FMC—Fully Mission Capable

FMS—Flight Management System

FOB—Forward Operating Base

FOD—Foreign Object Damage

FOM—Figure of Merit

GCCS—Global Command and Control System

GCI—Ground Controlled Intercept

GDSS—Global Decision Support System

GMT—Greenwich Mean Time

GPS—Global Positioning System

GPWS—Ground Proximity Warning System

GS—Groundspeed

HAA—Height Above Aerodrome

HAAR—Helicopter Air to Air Refueling

HAHO—High-Altitude High Opening

HALO—High-Altitude Low Opening

HARP—High Altitude Release Point

HAT—Height Above Touchdown

HDD—Head Down Display

HDG—Heading

HE—Heavy Equipment

HERP—Hostile Environment Repair Procedures

HF—High Frequency

HQ—Headquarters

HSLLADS—High-Speed Low-Level Aerial Delivery System

HUD—Head Up Display

IAF—Initial Approach Fix

IAW—In Accordance With

ICAO—International Civil Aviation Organization

IFF/SIF—Identification Friend or Foe/Selective Identification Feature

IFR—Instrument Flight Rules

ILS—Instrument Landing System

IMC—Instrument Meteorological Conditions

INOP—Inoperative

INS—Inertial Navigation System

IP—Instructor Pilot or Initial Point

IRCM—Infrared Counter Measures

JPADS—Joint Precision Aerial Delivery System

KCAS—Knots Calibrated Airspeed

KIAS—Knots Indicated Airspeed

KTAS—Knots True Airspeed

KTS—Knots

LM—Loadmaster

LNAV—Lateral Navigation

LNO—Liaison Officer

LOC—Localizer

LPU—Life Preserver Unit

LRU—Line Replaceable Unit

LS—Line Select

LSK—Line Select Key

LZ—Landing Zone

LZCO—Landing Zone Control Officer

MARSA—Military Assumes Responsibility for Separation of Aircraft

MC—Mission Computer

MDA—Minimum Descent Altitude

MDS—Mission Design Series

(Added-AETC) MEL—Minimum Equipment List

MEP—Mission Essential Personnel

MFCD—Multifunction Control Display

MFD—Multifunction Display

MFF—Military Free Fall

MNPS—Minimum Navigation Performance Specifications

MSA—Minimum Safe Altitude

MSL—Mean Sea Level

MWS—Missile Warning System

NET—No Earlier Than

NLT—No Later Than

NM—Nautical Mile

NOAA—National Oceanic and Atmospheric Administration

NOPAC—North Pacific

NOTAMS—Notices to Airmen

NVG—Night Vision Goggle

OAT—Outside Air Temperature

OCONUS—Outside Continental United States

OFP—Operational Flight Program

OFT—Operational Flight Trainer

OPCON—Operational Control

OPR—Office of Primary Responsibility

OPLAN—Operational Plan

OPORD—Operational Order

ORE—Operational Readiness Exercise

ORI—Operational Readiness Inspection

P—Pilot

PA—Public Address

PAR—Precision Approach Radar

PDO—Publishing Distribution Office

PF—Pilot Flying

PFD—Primary Flight Display

PFPS—Portable Flight Planning System

PI—Point of Impact

(Added-AETC) PIC—Pilot In Command

PLS—Personal Locator System

PM—Pilot Monitoring

PMSV—Pilot-to-Metro Service

POK—Passenger Oxygen Kits

RA/BA—Radar Altitude/Barometric Altitude

RAMZ—Rigging, Alternate Method, Zodiac

RCC—Rescue Coordination Center

RCR—Runway Condition Reading

RNP—Required Navigation Performance

ROE—Rules of Engagement

RON—Remain Over Night

RPM—Revolutions Per Minute

RSC—Runway Surface Condition

RTB—Return to Base

RVR—Runway Visual Range

RWR—Radar Warning Receiver

RZCP—Rendezvous Control Point

RZCT—Rendezvous Control Time

RZIP—Rendezvous Initial Point

SAR—Search and Rescue

SARSAT—Search and Rescue Satellite-aided Tracking

SATB—Standard Airdrop Training Bundle

SATCOM—Satellite Communications

SCA—Self-Contained Approach

SEAD—Suppression of Enemy Air Defenses

SID—Standard Instrument Departure

SNS—Satellite Navigation Station

SOC—Special Operations Command

SPINS—Special Instructions

SSEA—System Safety Engineering Analysis

STAR—Standard Terminal Arrival Route

STS—Special Tactics Squadron

T.O.—Technical Order

TACC—Tanker Airlift Control Cell

TCMD—Transportation Control and Movement Document

TDY—Temporary Duty

TERPS—Terminal Procedures

TOLD—Takeoff and Landing Data

TOT—Time Over Target

UARRSI—Universal Aerial Refueling Receptacle Slipway Installation

UHF—Ultra-High Frequency

USDAO—United States Defense Attaché Office

VFR—Visual Flight Rules

VHF—Very High Frequency

VNAV—Vertical Navigation

VSCL—Voice Call Sign Listing

VMC—Visual Meteorological Conditions

WST—Weapon System Trainer

WX—Weather

XFEED—Crossfeed

XFER—Transfer

XMIT—Transmit

Terms

Additional Crew Member (ACM)—Aircrew members and authorized flight examiners possessing valid aeronautical orders who are authorized to accompany the normal crew complement required for that mission.

Aeromedical Evacuation (AE)—Movement of patients under medical supervision between medical treatment facilities by air transportation.

Air Force Cryptological Aids Instruction (AFKAI)—Contains the worldwide USAF voice call sign list and the specific assignment of each to USAF, JCS, Army, Navy, unified and specified commands, and certain Executive, State Department, and DOD activities.

Air to Air Refueling (AAR)—Airborne fuel onload by receiver aircraft.

Air Refueling Control Point (ARCP)—The planned geographic point over which the receiver arrives in the precontact position with respect to the assigned tanker. For HAAR, the planned geographic point or coordinates over which the tanker arrives abeam the receiver and assumes formation lead.

Air Refueling Control Time (ARCT)—The planned time that the receiver and tanker will arrive over the ARCP.

Air Reserve Component (ARC)—Units of the Air Force Reserve (AFRC) or Air National Guard (ANG).

Air Route Traffic Control Center (ARTCC)—The principle facility exercising enroute control of aircraft operating under instrument flight rules within its area of jurisdiction. Approximately 26 such centers cover the US and its possessions. Each has a communication capability to adjacent centers.

Air Traffic Control (ATC)—A service provided by an appropriate authority to promote the safe, orderly and expeditious use of the air transportation system and to maximize airspace utility.

Airborne Mission Coordinator (AMC)—Serves as an airborne extension of the executing component's rescue coordination center (RCC) and coordinates the personnel recovery (PR) effort between the combat search and rescue task force (CSARTF) and the RCC or the Joint Personnel Recovery Center (JPRC) by monitoring the status of all CSARTF elements, requesting additional assets when needed, and ensuring the recovery and supporting forces arrive at their designated areas to accomplish the PR mission. The component RCC or higher authority may designate the AMC. The AMC appoints, as necessary, an on-scene commander (OSC).

Allowable Cabin Load (ACL)—The maximum payload which can be carried on an individual sortie.

Augmented Crew—Basic aircrew supplemented by additional qualified aircrew members to permit in-flight rest periods.

Auto CARP—An airdrop in which the Computed Air Release Point (CARP) is automatically calculated in-flight by the navigation system. Automatic steering or manual steering indications are provided to guide the aircraft to the CARP.

Basic Proficiency—Crews or crewmembers qualified and current to fly the unit aircraft only on non-mission sorties.

Basic Mission Capable—Crews or crewmembers qualified and current to perform some portion of the unit mission, but who do not maintain mission ready status.

Bird Condition Low—No significant bird activity that would present a probable hazard to flying operations. List restrictions in local **Chapter 10**.

Bird Condition Moderate—Concentrations of 5 to 15 large birds (waterfowl, raptors, gulls, etc.) or 15 to 30 small birds (terns, swallows, etc.) observable in locations that represent a probable hazard to flying operations. Initial takeoffs and final landings allowed when departure and arrival routes will avoid bird activity. List restrictions in local **Chapter 10**.

Bird Condition Severe—Bird conditions greater than moderate. List restrictions in local **Chapter 10.**

Block Time—Time determined by the scheduling agency responsible for mission accomplishment for the aircraft to arrive at (block in) or depart from (block out) the parking spot.

Border Clearance—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunization requirements.

Category I Route—Any route that does not meet the requirements of a category II route.

Category II Route—Any route on which the position of the aircraft can be accurately determined by the overhead crossing of a radio aid (NDB, VOR, TACAN) at least once each hour with positive course guidance between such radio aids.

Chalk Number—A number on an aircraft to identify and designate its position for loading and unloading.

Change of Operational Control (CHOP)—The change of operational control of forces as outlined in applicable tasking directives.

Circular Error Average (CEA)—Indicator of accuracy of an airdrop operation. It is the radius of a circle within which half of the airdropped personnel and items or materials have fallen.

Circular Error Record (Individual)—Maintained for all CSOs who are airdrop qualified. See AFI 11-231.

Combat Control Team (CCT)—A small task organized team of Air Force parachute and combat diver qualified personnel trained and equipped to rapidly establish and control drop, landing, and extraction zone air traffic in austere or hostile conditions. They survey and establish terminal airheads as well as provide guidance to aircraft for airlift operations. They

provide C2, and conduct reconnaissance, surveillance, and survey assessments of potential objective airfields or assault zones. They also can perform limited weather observations and removal of obstacles or unexploded ordinance with demolitions.

Combat Entry Point—A geographical point inbound to the objective area where the hostile environment is penetrated.

Combat Offload—Method by which palletized cargo is offloaded without Materials Handling Equipment (MHE).

Command and Control (C2)—The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. C2 functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.

Command and Control Center (CCC)—An agency used by a commander to plan, direct, or control operations. Each CCC provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this instruction, CCCs include the ACC or respective command center, AMC Command Center, Command Post (CP), Air Mobility Elements (AME), Airlift Coordination Centers (ACC), Combat Control Teams (CCT), AFRC Headquarters Command Post (HQ AFRC CP), NGB Field Support Center, and ARC wing or group operations centers and command posts.

Computed Air Release Point (CARP)—A computed air position at which the release of personnel, equipment, containers, and bundles is initiated to land on a specific point of impact (PI).

Conference SKYHOOK/HOTEL—The name of the communication conference available to assist aircrews in coping with in-flight emergencies and conditions that require expertise in addition to that available onboard the aircraft.

Contingency Mission—A mission operated in direct support of an operation plan, operation order, disaster, or emergency.

Deadhead Time—Duty time accrued by crewmembers in a passenger or ACM status.

Digital Aeronautical Flight Information File (DAFIF)—Digitized FLIP data containing airport, runway, navigation aid, and enroute data. Contains both low and high altitude structures.

Digital Terrain Elevation Data (DTED)—A matrix of terrain elevation values that provides landform, slope, elevation, and/or terrain roughness information.

Drop Zone Control Officer (DZCO)—An individual on a drop zone required to monitor all airdrop operations except airdrop of Special Forces.

Due Regard—Operational situations that do not lend themselves to International Civil Aviation Organization (ICAO) flight procedures, such as military contingencies, classified missions, politically sensitive missions, or training activities. Flight under "Due Regard" obligates the military PIC to be his or her own air traffic control (ATC) agency and to separate his or her aircraft from all other air traffic. (See FLIP General Planning, section 7.)

Emergency Safe Altitude (ESA)—ESA is designed to provide positive IMC terrain clearance during emergency situations that require leaving the low level structure. Planners may compute

several ESAs for route segments transiting significant terrain differentials, or a single ESA for the entire low-level route. Climbing to ESA will expose the aircraft to possible threats. Compute ESA by adding 1,000 ft (2,000 ft in mountainous terrain) to the highest obstacle or terrain feature within 10 nm either side of centerline or planned flight path, whichever is greater, and rounded up to the next 100-ft increment. The ESA(s) will be computed for the route and conspicuously annotated on all flight charts.

Equal Time Point (ETP)—The point along a route at which an aircraft may either proceed to the first suitable airport or return to the last suitable airport in the same amount of time based on all engines operating (see **Chapter 11**).

Estimated Time In Commission (ETIC)—Estimated time required to complete required maintenance.

First Suitable Airfield (FSAF)—The first suitable airfield available after completing the Category I route segment.

Forward Operating Base (FOB)—An airfield without full support facilities used during mission operations for an undetermined and sometimes extended period of time.

Hazardous Cargo or Materials—Explosive, toxic, caustic, nuclear, combustible, flammable, biologically infectious, or poisonous materials that may directly endanger human life or property, particularly if misused, mishandled or involved in accidents. (AFJI 11-204, AFMAN 24-204, TO 11N-20-11).

Helicopter Air to Air Refueling (HAAR)—Airborne fuel offload to a helicopter.

High Altitude High Opening (HAHO)—A high altitude airdrop in which personnel deploy their parachutes immediately on exiting the aircraft (no programmed free fall).

High Altitude Low Opening (HALO)—Airdrop of personnel or containers using a programmed free fall (parachutist) or a staged parachute delivery.

High Altitude Release Point (HARP)—A computed air position at which parachutists, equipment, containers, or bundles are released to land on a specific point of impact. A HARP is computed for all HAHO and HALO drops.

Home Station Departure—For the purposes of **Chapter 4** of this instruction, home station departure refers to a flight duty period which begins at the units home base and is planned to terminate at another location.

Hung Ordnance—Any ordnance or stores that fail to release, jettison, or fire and cannot be removed from the weapon prior to landing (ALE-47 chaff or flare squibs that fail to fire are not considered hung ordnance).

Initial Point (IP)—A point near drop zones or landing zones over which final course alterations are made to arrive at the specified zone.

Interfly—Intermixing of crewmembers from different units in the same aircrew or unit aircrews flying aircraft assigned to another unit.

Joint Airborne/Air Transportability Training (JA/ATT)—Continuation and proficiency combat airlift training conducted in support of DoD agencies. Includes aircraft load training and service school support.

Jumpmaster (JM)—The assigned airborne qualified individual who controls parachutists from the time they enter the aircraft until they exit.

Last Suitable Airfield (LSAF)—The last suitable airfield available before beginning the Category I route segment.

Live Ordnance—Combat type ordnance incorporating explosive or incendiary material to include flares.

Load Message—An operational immediate message electronically transmitted from departure station listing pertinent traffic and operational data.

Local Training Mission—A mission scheduled to originate and terminate at home station, generated for training or evaluation, and executed at the local level.

Low Level—Operations conducted below 3,000 ft AGL.

Maintenance Codes:—-Fully Mission Capable (FMC). -Partially Mission Capable (PMC). -Not Mission Capable (NMC). + M (Maintenance), + S (Supply), + B (Both)

Military Authority Assumes Responsibility for Separation of Aircraft (MARSA)—A condition whereby the military services involved assume responsibility for separation between participating aircraft in the air traffic control (ATC) system.

Military Free Fall (MFF)—HALO or HAHO airdrop operations.

Minimum Safe Altitude (MSA)—MSA is an intermediate altitude that will provide local terrain clearance, yet limit threat detection during situations that require leaving the modified contour profile, but do not require an overall route abort. -Compute MSA for enroute low level, airdrop operations, and SCAs by adding 500 ft above the highest obstacle or terrain feature within 3 NM of centerline or planned flight path, whichever is greater, and rounded up to the next 100-ft increment. -Compute MSA for HAAR legs by adding 1,000 ft (2,000 ft in mountainous terrain) to the highest obstacle or terrain feature within 5 nm either side of centerline or planned flight path, whichever is greater, and rounded up to the next 100-ft increment.

Mission Capable—Crews or crewmembers qualified and current to perform some portion of the unit mission, but who do not maintain mission ready status.

Mission Essential Personnel (MEP)—Individuals who perform essential duties in support of a particular aircraft, aircrew, or mission.

Mission Ready—Crews or crewmembers fully qualified and current to perform the unit mission.

Modified Contour—Flight in reference to base altitude above the terrain with momentary deviations above and below the base altitude for terrain depressions and obstructions to permit a smooth flight profile.

Mountainous Terrain—USAF aircrews shall consider as mountainous: those areas defined in 14 CFR §95.11 for CONUS, Alaska, Hawaii and Puerto Rico. For all other areas of operation, use a 500 ft surface elevation change over a 1/2 NM distance, or less, to define the location of mountainous terrain.

Night Vision Goggles (NVG)—Self-contained, battery-operated devices that amplify light to enhance night vision.

Off Station Training Flight—A training flight that originates or terminates at other than home station that is specifically generated to provide the aircrew experience in operating away from home station.

Offset Aiming Point (OAP)—A reference, other than the actual target, used for aircraft positioning.

Operating Weight—Basic aircraft weight plus weight of crewmembers, crew baggage, steward's equipment, emergency and extra equipment.

Operational Control (OPCON)—Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training.

Operational Risk Management (ORM)—ORM is a logic-based, common sense approach to making calculated decisions on human, material, and environmental factors before, during, and after Air Force operations. It enables commanders, functional managers, and supervisors to maximize operational capabilities while minimizing risks by applying a simple, systematic process appropriate for all personnel and Air Force functions.

Operational Missions—Missions such as deployment, re-deployment, SAR operations, operational readiness inspections (ORI), and JA/ATT missions are considered operational missions.

Overwater Flight—Any flight that exceeds power off gliding distance from land.

Payload—(1) The sum of the weight of passengers and cargo that an aircraft can carry. (2) The load (expressed in tons of cargo or equipment, gallons of liquid, or number of passengers) which the vehicle is designed to transport under specified conditions of operation, in addition to its unladen weight.

Permit to Proceed—Aircraft not cleared at the first US port of entry may move to another US airport on a permit to proceed issued by customs officials at the first port of entry. The permit lists the requirements to be met at the next point of landing, i.e., number of crew and passengers, cargo not yet cleared. PICs are responsible to deliver the permit to proceed to the customs inspector at the base where final clearance is performed. (Heavy monetary fines can be imposed on the PIC for not complying with permit to proceed procedures.)

Point of Impact (PI)—The point on the drop zone where the first airdropped parachutist or cargo item lands or is expected to land.

Quick Turn—A set of procedures designed to expedite the movement of selected missions by reducing ground times at enroute or turnaround stations.

Self-Contained Approach (SCA)—An approach conducted using self-contained, onboard navigation systems.

Significant Meteorological Information (SIGMET)—Area weather advisory issued by an ICAO meteorological office relayed to and broadcast by the applicable ATC agency. SIGMET advisories are issued for tornadoes, lines of thunderstorms, embedded thunderstorms, large hail, severe and extreme turbulence, severe icing, and widespread dust or sand storms. SIGMETs frequently cover a large geographical area and vertical thickness. They are prepared for general aviation and may not consider aircraft type or capability.

Special Tactics Squadron (STS)—Air Force special operations combat control and pararescue forces.

Stabilized Approach—Criteria that defines specific parameters in order to mitigate the risk during this critical phase of flight.

Standby Force, Aircraft, or Crews—Designated aircraft and crews capable of being launched in less than the normal alert-to-takeoff time period.

Station Time (Air Force)—A specified time at which aircrew, passengers, and material are to be in the aircraft and prepared for flight. Passengers will be seated and loads tied down. Aircrews will have completed briefing and aircraft preflight inspection prior to station time. Normally, station time will be 30 minutes prior to takeoff time.

Station Time (Airborne)—A specified time when parachutists will be seated in the aircraft with seat belts fastened. This time normally will be 5 minutes prior to Air Force station time.

Suitable Airfield—Normally, suitable airfields are those which meet weather, fuel, and runway (**Chapter 6**) requirements and are within 50 NM of flight plan course centerline.

Tactical Control (TACON)—Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned. Tactical control is inherent to OPCON. Tactical control may be delegated to and exercised at any level at or below the level of combatant command.

Time Out—Common assertive statement to voice crewmember concern when safety may be jeopardized.

Time Over Target (TOT)—The actual time an aircraft is at a geographic point or area carrying out an assigned mission.

Training Mission—Mission executed at the unit level for the sole purpose of aircrew training for upgrade or proficiency. This does not include operational missions as defined in this instruction.

Unilateral—Operations confined to a single service.

Zero Fuel Weight—Weight, expressed in pounds, of a loaded aircraft not including wing and body tank fuel. All weight in excess of the maximum zero fuel weight will consist of usable fuel.

Attachment 2

AMPLIFIED CHECKLIST

A2.1. General. The PM will read all checklists in this chapter. Abbreviated checklist items that do not apply to mission/event need not be challenged during checklist accomplishment

A2.2. Search and Rescue Checklist (Pilot/CSO).

A2.2.1. The PF will initiate this checklist by calling for the "Pre-Search Checklist" or "Pre-Deployment Checklist" as appropriate for the maneuver being flown.

A2.2.2. Run the COMBAT ENTRY Checklist as required. Items previously run on the COMBAT ENTRY Checklist need not be challenged and/or re-accomplished.

A2.2.3. Prior to takeoff, the PIC will ensure the crew has thoroughly reviewed all emergency procedures. LMs will thoroughly pre-brief verbal/visual signals and establish coordinated tasks prior to running the PRE-DEPLOYMENT Checklist.

PRE-SEARCH/PRE-DEPLOYMENT CHECKLIST (Pilot/CSO)

PF	PM	CSO
Altimeters	Pressurization Altimeters Radar Altimeter Aux Pump Computer Drop Switch Red Light HDD No. 2 Indicated Airspeed	Altimeter Update

Checklist.

WARNING: Keep turns below 300 feet AGL to a minimum.

1. "PRE-SEARCH/PRE-DEPLOYMENT CHECKLIST" PF

a. The PF will call this step as "Pre-search Checklist" or "Pre-deployment Checklist" as appropriate for the operation being conducted.

2. "ACKNOWLEDGED" LM

3. Search Data Computed PM, PF

4. Briefing "Complete" PF

a. Brief/update applicable items from the Search and Rescue Briefing Guide. .

WARNING: If search is conducted some distance from a known altimeter setting, take precautions to ensure that the aircraft does not descend to a dangerously low altitude. Obtain a forecast altimeter setting upon departure or enroute for the area of operation. Set the altimeter to this setting and crosscheck against the radar altimeter.

5. Altimeters "Set, ___" PM, PF, CSO

6. Radar Altimeter "Set, ___" PM

NOTE: If climbing above 10,000 feet MSL, all personnel will don their helmet and mask and set oxygen regulators to 100 percent. If oxygen is not required, this step may be omitted.

7. Helmet and Oxygen Mask (if required) "On" PM, PF, CSO, LM

WARNING: When cabin altitude exceeds 10,000 feet MSL, all crewmembers will continuously breathe oxygen provided by the airplane oxygen system. If any persons experience signs of decompression sickness/or unusual pain, follow the high altitude airdrop emergency procedures.

NOTES:

A cabin altitude check will be accomplished at a cabin altitude of 10,000 and 15,000 feet MSL. At a cabin altitude of 20,000 feet MSL, this step will be accomplished every 15 minutes or with each 5,000 foot increase in altitude, whichever is first, and will be accomplished every 5 minutes above 30,000 feet MSL.

Parachutists may operate without supplemental oxygen during unpressurized flight up to 13,000 feet MSL provided the elapsed time above 10,000 feet MSL does not exceed 30 minutes per sortie. Under circumstances other than these, jumpers will use supplemental oxygen. When supplemental oxygen is required for parachutists, a check of the oxygen console, connections, pressure, and quantity is required. The loadmaster will confirm that the cargo compartment crewmembers have completed this action by receiving a thumbs up indication from each person.

8. Cabin Altitude Checks (if required) "Complete" PM, PF, CSO, LM

a. Mask – On and connected

b. Oxygen regulators – On

c. Mask hose connection – Checked

d. Regulator flow indicator – Checked

e. Airplane oxygen quantity – Checked

NOTE: Advise the crew of pressurization and setting and exercise caution not to open doors prior to depressurizing.

9. Cabin Pressure (as required) "Depressurizing" PM

10. IFF/TCAS "Set" PM

a. Mode 1, 2, 4 (as required by SPINS)

b. TCAS – Standby / TA only / TA/RA depending on tactical situation

11. Lighting "Set" PM, PF, CSO, LM

a. Interior lights

b. Exterior lights

12. NVGs (if required) "On/Ready" PM, PF, CSO, LM

a. Respond with "On" if worn or "Ready" if immediately available

13. Aux pump (if required) "On" PM

14. Computer Drop Switch	"Man"	PM
15. Red Light (JMD/Pararescue Deployment Only)	"On"	PM

NOTE: Flaps will be set upon clearance from the PF and as airspeed permits.

16. Flaps	"Set flaps, ___ percent"	PF
	"Flaps set, ___ percent"	PM

a. Flap setting normally will be 50 percent for search operations but may be less if required for airspeed, fuel, etc. Refer to the Performance Manual for specific search configuration flap setting.

b. For rescue equipment or pararescue deployment, set flaps to 50 percent at aircraft gross weights below 140,000 lbs and 70 percent at or above 140,000 lbs.

NOTES: The PM will open the air deflector doors upon reaching 150 KIAS or less.

The loadmaster is clear to open the paratroop door(s) upon hearing the PM calling air deflector doors "Open."

17. Air Deflector Doors (if required)	"Open"	PM

WARNING: Under no circumstance will a paratroop door and ramp and door be open at the same time when parachutists are involved. If the bundle/equipment dropped from the ramp requires spotting procedures from an open paratroop door, ensure life lines are properly adjusted for both exits.

18. Paratroop Door	"Open and locked"	LM
	"Indicates open"	PM

NOTE: When MFCD and RECP panels are malfunctioning, the ramp and door will be opened by the PM (when cleared by the LM.)

19. Ramp and Door (if required)	"Cleared to open"	PF
	"Open and locked"	LM
	"Indicates open"	PM
20. Cockpit Setup	Set	PM

a. Engine Status HDD No. 2

b. Indicated Airspeed (if required)

21. PRE-SEARCH/PRE-DEPLOYMENT CHECKLIST	"Complete"	LM, PM

a. The PM will read this step as "Pre-search Checklist" or "Pre-deployment Checklist" as appropriate for the operation being conducted.

EQUIPMENT DEPLOYMENT CHECKLIST (Pilot/CSO)

MA-1 KIT, PARABUNDLE, AND FREEFALL

NOTES: The PF will initiate this checklist by briefing the pattern and delivery to be flown.

If the PRE-SEARCH checklist has already been accomplished and the aircraft configuration will not be changed for the delivery pattern, e.g., flap settings and/or door, rescue equipment drops can commence immediately. On each pattern flown, the PF should call downwind, turning base, turning final, and the type of deployment pattern being flown (e.g., "Turning base for MA-1 kit," "Turning final for parabundle"). The loadmaster will acknowledge the PF's calls for situational awareness and crew coordination.

(MA-1 KIT)

1. "30 SECONDS TO TARGET" PF
2. "10 SECONDS TO TARGET" PF
3. "READY" PF
4. "DROP" PF
5. "LOAD CLEAR" LM

(PARABUNDLE AND FREEFALL)

1. "30 SECONDS TO TARGET" PF
2. "10 SECONDS TO TARGET" PF
3. "TARGET IN SIGHT" LM
4. Pattern Corrections PF
5. "LOAD CLEAR" LM

PERSONNEL DEPLOYMENT CHECKLIST (Pilot/CSO)

(JMD/PJ, JMD/RAMZ/ATV)

NOTES: This checklist will be used for jumpmaster directed (JMD) airdrops and pararescue deployment (PJD)/equipment airdrops utilizing the fixed, moving, and crosswind target patterns. The PF will initiate this checklist by calling for the "PERSONNEL DEPLOYMENT CHECKLIST." No less than 2 minutes out from the release point, the loadmaster will allow the jumpmaster access to the door to begin "spotting procedures." When the jumpmaster is off interphone, the loadmaster will relay all visual corrections given by the jumpmaster to the pilot. The jumpmaster may spot from the aircraft ramp or a paratroop door; however, the aircraft ramp and paratroop door(s) will not be opened simultaneously during personnel airdrops.

1. "PERSONNEL DEPLOYMENT CHECKLIST" ` PF
2. "ACKNOWLEDGED" LM
3. Turn on Final

WARNING: If any crewmember calls "No Drop" after the "One Minute Warning" call, no deployment will be made and the deployment phase of the checklist will be re-initiated. Upon hearing a "No Drop" call, the PM will turn the red light on and, along with the loadmaster, acknowledge the "No Drop." For a RAMZ/ATV bundle "No Drop," avoid abrupt maneuvers and make all turns as level as possible as the equipment is restrained by the release gate only at this point.

4. "CREW, ONE MINUTE WARNING" PF

WARNING: Jumpmasters will run their Safety Checks; the loadmaster is responsible for accomplishing all other appropriate checklists and overall safety in the cargo compartment. When either the loadmaster or jumpmaster responds “SAFETY CHECKS COMPLETE,” this indicates that both the personnel/equipment and safetyman checklists have been completed on all jumpers exiting this pass.

5. "SAFETY CHECKS COMPLETE" LM/JM

NOTE: When the PF responds “CLEAR TO JUMP,” this indicates that all conditions are favorable for personnel deployment upon reaching the planned/desired exit point.

6. "CLEAR TO JUMP" PF

NOTE: The PM will turn on the green light. Perform this step for live passes only. For streamer/spotter or observations, leave the red light turned on.

7. Green Light "ON" PM

NOTE: When using PJ JMD Fixed or Moving Target Patterns, make minor heading changes to pass over spotter chute and the target on a direct line. Establish drift correction prior to passing over the Spotter Chute. The JM will reverse count over the target.

8. Fly streamer to Target (if required) PF

9. Fly JM directed Course (if required) PF

NOTES: At the completion of the reverse count (PJ fixed or moving target pattern only) or when the aircraft is in a direct line with the target and spotter chute (PJ crosswind target pattern drop), the jumpmaster will release the jumpers and/or equipment. For JMD airdrops where the JM is verbally directing the aircraft the JM will release the jumpers when reaching the release point.

10. Release jumpers and/or equipment JM

11. “GATE RELEASED” (or state condition) (As Required) LM

12. “LOAD CLEAR” (or state condition) LM

NOTES: The CSO will monitor the timing for usable DZ length and call “RED LIGHT” at the expiration of the time or that of the loadmaster’s “LOAD CLEAR” call as required. It is possible for the CAUTION light indications to get out of synchronization with the MFCD red light indication. To resynchronize the light indications, ensure that the CAUTION light is illuminated on the AERIAL DELIVERY panel, and if not, press the CAUTION switch to illuminate the CAUTION light. Then press the JUMP switch, and then press the CAUTION switch again. This will reset all CAUTION lights to on and illuminate the MFCD red light indication.

13. “RED LIGHT” CSO

14. "ON" PM

15. After Jumper(s) Clear the Aircraft – Turn to Observe the Accuracy of the Drop

POST-SEARCH/POST-DEPLOYMENT CHECKLIST (Pilot/CSO)

NOTES: For multiple drops, the POST-SEARCH/POST-DEPLOYMENT Checklist is not required until after completion of the last drop, but each pattern and delivery will be briefed. As a minimum, brief the type of equipment to be delivered, delivery method (shape, relationship to wind, etc.), altitudes, airspeeds, commands to be used and required actions for malfunctions.

This checklist must be accomplished prior to initiating a non-search/deployment checklist

Accomplish applicable steps of the POST-SEARCH/POST-DEPLOYMENT Checklist and re-accomplish the PRE-SEARCH/PRE-DEPLOYMENT Checklist when changing the aircraft or door configuration.

1. "POST-SEARCH/POST-DEPLOYMENT CHECKLIST" PF

a. The PF will call this step as "Post-search Checklist" or "Post-deployment Checklist" as appropriate for the operation being conducted.

2. "ACKNOWLEDGED" LM

NOTE: Clearing of the ACAWS advisories indicates that the respective doors are closed.

CAUTION: If both the cargo ramp and door and a paratroop door were open for loadmaster-directed rescue equipment airdrops, close the ramp and door first then the paratroop door.

3. Ramp and Door/Paratroop Door(s) (as required)	"Closed and locked"	LM
	"Indicates closed"	PM

NOTE: Delay closing the air deflector doors until the L/R TROOP DOOR OPEN 250 advisories are cleared.

4. Air Deflector Doors (if required)	"Closed and off"	PM

NOTE: This step is initiated by the PF. Delaying this step does not preclude remaining steps from being accomplished.

5. Flaps (as required)	"State setting"	PM
6. Red Light	"Off"	PM
7. Aux pump	"Off"	PM

NOTE: Pressurization may be set, as required, at any point after doors indicate closed.

8. Cabin Pressure	"Set" (as required)	PM
9. Altimeters	"Set, ___"	PM, PF,CSO
10. Radar Altimeter	"Set, ___"	PM
11. IFF/TCAS	"Set"	PM

a. Mode 1, 2, 4 (as required by SPINS)

b. TCAS – Standby / TA only / TA/RA depending on tactical situation

12. NVGs (if required)	"On/Off/Ready"	PM, PF, CSO, LM

a. Respond with "On" if worn or "Ready" if immediately available

13. Lighting	"Set"	PM, PF, CSO, LM

a. Interior lights

b. Exterior lights

14. Post-Search/Post-Deployment Checklist "Complete" LM, PM

a. The PM will read this step as "Post-search Checklist" or "Post-deployment Checklist" as appropriate for the operation being conducted.

A2.3. Search and Rescue Checklist (Loadmaster).

A2.3.1. The PF will initiate this checklist by calling for the "Pre-Search Checklist" or "Pre-Deployment Checklist" as appropriate for the maneuver being flown.

A2.3.2. Run the COMBAT ENTRY Checklist as required. Items previously run on the COMBAT ENTRY Checklist need not be challenged and/or re-accomplished.

A2.3.3. Prior to takeoff, the PIC will ensure the crew has thoroughly reviewed all emergency procedures. LMs will thoroughly pre-brief verbal/visual signals and establish coordinated tasks prior to running the PRE-DEPLOYMENT Checklist.

PRE-SEARCH/PRE-DEPLOYMENT CHECKLIST (Loadmaster)

1. "PRE-SEARCH/PRE-DEPLOYMENT CHECKLIST" PF

a. The PF will call this step as "Pre-search Checklist" or "Pre-deployment Checklist" as appropriate for the operation being conducted.

2. "ACKNOWLEDGED" LM

3. Helmet and Oxygen Mask (if required) "On" PM, PF, CSO, LM

WARNING: When cabin altitude exceeds 10,000 feet MSL, all crewmembers will continuously breathe oxygen provided by the airplane oxygen system. If any persons experience signs of decompression sickness/or unusual pain, follow the high altitude airdrop emergency procedures.

NOTES: A cabin altitude check will be accomplished at a cabin altitude of 10,000 and 15,000 feet MSL. At a cabin altitude of 20,000 feet MSL, this step will be accomplished every 15 minutes or with each 5,000 foot increase in altitude, whichever is first, and will be accomplished every 5 minutes above 30,000 feet MSL. Parachutists may operate without supplemental oxygen during unpressurized flight up to 13,000 feet MSL provided the elapsed time above 10,000 feet MSL does not exceed 30 minutes per sortie. Under circumstances other than these, jumpers will use supplemental oxygen. When supplemental oxygen is required for parachutists, a check of the oxygen console, connections, pressure, and quantity is required. The loadmaster will confirm that the cargo compartment crewmembers have completed this action by receiving a thumbs up indication from each person. When oxygen is not required, the loadmaster(s) will don their helmet IAW MAJCOM directives.

4. Cabin Altitude Checks (if required) "Complete" PM, PF, CSO, LM

a. Mask – On and connected

b. Oxygen regulators – On

c. Mask hose connection – Checked

d. Regulator flow indicator – Checked

e. Parachutists/Personnel Oxygen – Checked

5. Cabin Prepared

a. Emergency Equipment – As required

b. Loose Equipment – Stowed/secured

c. LPUs – On (as required)

d. MA-1 Kits – Positioned/Secured

6. Aft Anchor Cable Supports Lowered (Paratroop Door exit only)

7. Anchor Cables Attached to Center Anchor Cable Supports (Paratroop Door Exit Only)

8. Anchor Cable Stops Positioned and Secured

9. Static Line Retriever Cable Safety Tied and Checked (as required)

10. Retrieval Sling Assembly Attached and Safety Tied (As required)

11. Retrieval Assist Strap (Roller Assembly) Positioned and Secured (As required)

12. ADS Latch Handles Checked

a. LOCK, UNRESRICTED ramp travel light – OFF

NOTE: Prior to opening the cargo ramp and door, ensure chemlights/strobelights are activated/on and cargo chute LPUs are inflated (for training chutes only).

13. Bundle/RAMZ Marker Lights/LPUs Activated (As required)

14. Lighting "Set" PM, PF, CSO, LM

a. Jump Platform Lights – As Required

b. Jump Light Intensity – As Required

c. Cargo Compartment Lights – As Required

15. NVGs (if required) "On/Ready" PM, PF, CSO, LM

a. Respond with "On" if worn or "Ready" if immediately available

WARNING: Prior to opening the ramp and door, all personnel aft of FS 677 will wear a restraining harness with the life-line adjusted to preclude exiting the aircraft and attached, have a parachute with the static line connected to the anchor cable or will be secured to the aircraft with a seatbelt or using floor loading procedures. ***EXCEPTION:*** Parachutists with reserve or HGRP (high glide ratio parachute) or parachutes supplied by life support may remain aft of FS 677 provided the aircraft does not descend below 800ft AGL.

16. Restraint Harness/Parachute On/Adjusted/Attached

CAUTION: Ensure that parachutists have secured all seats (as required) and no part protrudes/obstructs the aisle or paratroop doors. Appropriate seats must be raised/stowed prior to the drop.

17. Appropriate Seats Raised (as required)

18. Red Lights On/Checked (Personnel Deployment Only)

CAUTION: The loadmaster will be positioned to remove aft restraint and to observe equipment and jumpers at all times.

NOTES:

Forward restraint strap may remain in place until the ramp is in the ADS position.

If an extended search is conducted with the ramp in the ADS position, the aft restraint strap may remain installed until the EQUIPMENT DEPLOYMENT Checklist is initiated.

19. Bundle Restraint Straps	Removed	

NOTE: The loadmaster is clear to open the paratroop door(s) upon hearing the PM calling air deflector doors "Open."

20. Air Deflector Doors (if required)	"Open"	PM

WARNING: If an air deflector door fails to open, do not open the respective paratroop door. Notify the pilot of the problem.

WARNING: Under no circumstances will a paratroop door and the ramp and door be open at the same time when parachutists are involved. If the bundle/equipment dropped from the ramp requires spotting procedures from an open paratroop door, ensure life lines are properly adjusted for both exits.

WARNING: Paratroop doors will be opened only by the loadmaster(s). After opening and locking the safety pin will be installed.

WARNING: Anytime the paratroop doors are lowered the jump platform will be retracted and the door lowered completely.

NOTE: The loadmaster will ensure all personnel are aware the doors are going to be opened.

21. Paratroop Door	"Open and locked"	LM
	"Indicates open"	PM

CAUTION: Ensure the aft anchor cable supports are raised and the cargo door and ramp area is clear prior to opening the ramp and door.

NOTES: The loadmaster will ensure all personnel are aware the doors are going to be opened.

When MFCD and RECP panels are malfunctioning, the ramp and door will be opened by the PM (when cleared by the LM.). During tailgate exits, all parachutists with the exception of the jumpmaster will remain forward of the ramp hinge until the one-minute warning.

22. Ramp and Door (if required)	"Cleared to open"	PF
a. Check that the cargo door and ramp are fully open, with the cargo door locking in the up position and flags visible (when possible.)	"Open and locked"	LM
	"Indicates open"	PM

WARNING: (Paratroop Door Exit Only) Loadmasters will not position themselves under the center anchor cable support.

WARNING: Parachutists are cleared to line up along side of the forward most CRL but will not move aft of FS 737 or the forward load static line, whichever is more restrictive. For floor loaded CRL, parachutists will not move aft until the load crosses FS 737 on exit.

23. Anchor Cable Support(s)	Lowered
24. Door Control	Assumed by Jumpmaster/Safety

WARNING: If the drop is aborted after completion of the PRE-DEPLOYMENT Checklist, the loadmaster will ensure the aft anchor cable supports are raised prior to closing the ramp and door.

25. PRE-SEARCH/PRE-DEPLOYMENT CHECKLIST	"Complete"	LM, PM

a. The PM will read this step as "Pre-search Checklist" or "Pre-deployment Checklists" as appropriate for the operation being conducted.

EQUIPMENT DEPLOYMENT CHECKLIST (Loadmaster)

MA-1 KIT, PARABUNDLE, AND FREEFALL

NOTES: The PF will initiate this checklist by briefing the pattern and delivery to be flown.

If the PRE-SEARCH checklist has already been accomplished and the aircraft configuration will not be changed for the delivery pattern, e.g., flap settings and/or door, rescue equipment drops can commence immediately.

On each pattern flown, the PF should call downwind, turning base, turning final, and the type of deployment pattern being flown (e.g., "Turning base for MA-1 kit," "Turning final for parabundle"). The LM will acknowledge the PF's calls for situational awareness and crew coordination.

(MA-1 KIT)

1. "30 SECONDS TO TARGET"	PF
2. "10 SECONDS TO TARGET"	PF
3. "READY"	PF
4. "DROP"	PF
5. "LOAD CLEAR"	LM

(PARABUNDLE AND FREEFALL)

1. "30 SECONDS TO TARGET"	PF
2. "10 SECONDS TO TARGET"	PF
3. "TARGET IN SIGHT"	LM
4. Pattern Corrections	PF
5. "LOAD CLEAR"	LM

PERSONNEL DEPLOYMENT CHECKLIST (Loadmaster)

(JMD/PJ, JMD/RAMZ/ATV)

NOTES:

This checklist will be used for jumpmaster directed (JMD) airdrops and pararescue deployment (PJD)/equipment airdrops utilizing the fixed, moving, and crosswind target patterns. The PF will initiate this checklist by calling for the "PERSONNEL DEPLOYMENT CHECKLIST."

No less than 2 minutes out from the release point, the loadmaster will allow the jumpmaster access to the door to begin "spotting procedures." When the jumpmaster is off interphone, the loadmaster will relay all visual corrections given by the jumpmaster to the pilot. The jumpmaster may spot from the aircraft ramp or a paratroop door; however, the aircraft ramp and paratroop door(s) will not be opened simultaneously during personnel airdrops.

1. "PERSONNEL DEPLOYMENT CHECKLIST" ` PF

2. "ACKNOWLEDGED" LM

WARNING: If any crewmember calls "No Drop" after the "One Minute Warning" call, no deployment will be made and the deployment phase of the checklist will be re-initiated. Upon hearing a "No Drop" call, the PM will turn the red light on and, along with the loadmaster, acknowledge the "No Drop." For a RAMZ/ATV bundle "No Drop," avoid abrupt maneuvers and make all turns as level as possible as the equipment is restrained by the release gate only at this point.

NOTE: Jumpers may move aft of the ramp hinge at jumpmasters discretion after the ONE MINUTE WARNING is called.

3. "CREW, ONE MINUTE WARNING" PF

4. Load Release Gate Checked

WARNING: Upon hearing a "NO DROP" call, the PM will turn the red light on and, along with the loadmaster, acknowledge the "NO DROP". If the CRL is held in place by only the release gate strap, all personnel on the cargo ramp will move forward of the forward most load, except the loadmaster and jumpmaster who will monitor the CRL for possible shifting and secure as necessary.

5. Aft Restraint Removed (as required)

WARNINGS:

Jumpmasters will run their Safety Checks; the loadmaster is responsible for accomplishing all other appropriate checklists and overall safety in the cargo compartment. When either the loadmaster or jumpmaster responds "SAFETY CHECKS COMPLETE," this indicates that both the personnel/equipment and safetyman checklists have been completed on all jumpers exiting this pass.

Each jumper is responsible for monitoring their own static line. ***EXCEPTION:*** The loadmaster will monitor the jumpmaster's static line at all times unless preparing the CRL or equipment for deployment.

During paratroop door static line drops, personnel will not position themselves directly under the center anchor cable supports (A-frame, FS 737). Personnel in the cargo compartment during tailgate drops will not position themselves below the static line retriever cable while the cargo ramp and door are open.

6. "SAFETY CHECKS COMPLETE" LM/JM

WARNING: When the PF responds “CLEAR TO JUMP”, this indicates that all conditions are favorable for personnel deployment. If any crewmember calls “NO DROP” after the “ONE MINUTE WARNING” call, no deployment will be made and the deployment phase of the checklist will be reinitiated.

NOTE: After hearing “CLEAR TO JUMP”, the loadmaster will alert the jumpmaster and relay all visual corrections given by the jumpmaster to the PF. The PM will turn on the green light.

7. "CLEAR TO JUMP" PF

8. Green Light "ON" PM

WARNING: Before cutting the gate, the loadmaster will ensure the jumpmaster has moved forward of the CRL package. No person will be aft of the package during gate cut and deployment. If the CRL exits the aircraft but fails to properly deploy (hangs up), the static lines will be cut immediately.

CAUTION: The release gate must be cut below the knot to allow the nylon strap to pull free through the floor tiedown rings.

NOTE: The jumpmaster will signal the loadmaster to cut the release gate. The loadmaster will not cut the gate until he receives this signal. If jumpers are tailgating, this signals that they are clear to follow the load. When jumpers use freefall parachutes they will not deploy until after the loadmaster retrieved the CRL stat lines/parachute D-bags. It may take up to 20 seconds for all equipment and personnel to exit the aircraft.

9. “GATE RELEASED” (or state condition) (As Required) LM

10. “LOAD CLEAR” (or state condition) LM

NOTE: The CSO will monitor the timing for usable DZ length and call “RED LIGHT” at the expiration of the time or that of the loadmaster’s “LOAD CLEAR” call as required.

11. “RED LIGHT” CSO

12. "ON" PM

NOTE: If personnel drops are complete or if the aircraft or door configuration will be changed, the pilot will call for the POST-DEPLOYMENT Checklist. If additional drops are planned, continue with the racetrack patterns and PERSONNEL DEPLOYMENT Checklist. Deploy additional jumpers using the drop heading and count established by the jumpmaster. Disregard the spotter chute.

13. Jumpmaster/Safety Notify (if required)

POST-SEARCH/POST-DEPLOYMENT CHECKLIST (Loadmaster)

NOTES:

For multiple drops, the POST-SEARCH/POST-DEPLOYMENT Checklist is not required until after completion of the last drop, but each pattern and delivery will be briefed. As a minimum, brief the type of equipment to be delivered, delivery method (shape, relationship to wind, etc.), altitudes, airspeeds, commands to be used and required actions for malfunctions.

This checklist must be accomplished prior to initiating a non-search/deployment checklist

Accomplish applicable steps of the POST-SEARCH/POST-DEPLOYMENT Checklist and re-accomplish the PRE-SEARCH/PRE-DEPLOYMENT Checklist when changing the aircraft or door configuration.

1. "POST-SEARCH/POST-DEPLOYMENT CHECKLIST" PF

a. The PF will call this step as "Post-search Checklist" or "Post-deployment Checklist" as appropriate for the operation being conducted.

2. "ACKNOWLEDGED" LM

WARNING: If unable to retrieve static line(s), cut on command of the pilot.

CAUTION: Prior to retrieving static line(s), allow a few seconds for the static lines to wrap together.

3. Static Lines Retrieved/Cut

4. Jump Platform(s) Folded in (if required)

CAUTION: Anchor cables will be removed from A-Frame prior to raising supports (paratroop door only.)

5. Anchor Cable Supports Raised (If required)

CAUTION: Ensure the ramp and door area is clear of all obstructions prior to initiating closing procedures.

NOTES:

If both the cargo ramp and door and a paratroop door were open for loadmaster directed rescue equipment airdrops, close the cargo ramp and door first, then the paratroop door.

The loadmaster will close the ramp and door as soon as they clear the area of static lines and anchor cable supports.

Visually check the ramp and door locks after closing.

6. Ramp and Door/Paratroop Door(s) (as required) "Closed and locked" LM
"Indicate closed" PM

7. Cabin Secured

a. Loose Equipment – Stowed/Secured

b. Emergency Equipment – Stowed/Secured

c. Static Line Retriever Cable – Rewind/Repositioned (as required)

d. Oxygen – Set (Regulators and consoles set as required)

8. NVGs (if required) "On/Off/Ready" PM, PF, CSO, LM

a. Respond with "On" if worn or "Ready" if immediately available

9. Lighting "Set" PM, PF, CSO, LM

a. Jump Platform Lights – As Required

b. Jump Light Intensity – As Required

c. Cargo Compartment Lights – As Required

10. Post-Search/Post-Deployment Checklist "Complete" LM, PM

a. The PM will read this step as "Post-search Checklist" or "Post-deployment Checklist" as appropriate for the operation being conducted.

A2.4. Rear Vision Device In-Flight Installation Checklist (Crew). REAR VISION DEVICE INSTALLATION/REMOVAL CHECKLIST (Crew)

WARNING: Do not attempt to install a rear vision device (bubble) that does not have two handles integral to bubble frame. Keep your fingers away from the rim of the hatch and bubble when removing and installing or severe injury to the hands may result due to suction force.

NOTES:

If above 10,000 feet MSL, consider oxygen requirements for the crew and passengers.

Steps in parenthesis ( ) are for device removal.

1. "REAR VISION DEVICE INSTALLATION/REMOVAL CHECKLIST" PF

2. "ACKNOWLEDGED" LM

NOTE: The assistant for supporting the loadmaster could be another loadmaster or any other available aircrew member.

3. Crew Briefing "Complete" PF

a. Altitude, Airspeed, and Aircraft Configuration.

b. Emergency Procedures

c. Primary Bubble Operator/Loadmaster and Assistant

NOTE: Advise the crew of pressurization and setting. Exercise caution not to open doors prior to depressurizing.

4. Pressurization Depressurizing PM

NOTE: Position assistant at base of ladder to help in installation.

5. Protective Equipment "On" LM

a. Don restraining harness, flight gloves, and helmet

6. Flaps "SET, STATE SETTING" PM

CAUTION: Suction forces are considerably lower at 140 KIAS, which reduces the possibility of personnel injury.

7. Airspeed "Checked" PF, PM

a. Slow aircraft to maintain 140-170 KIAS (140 KIAS Preferred)

8. Pressurization "Depressurized" PM

NOTE: Keep a hand on center bar and release the hatch, next pull the hatch out and hand to assistant.

9. Remove Hatch/(Remove Bubble) LM

NOTE: Place and hold the rear pin of the bubble in the appropriate receptacle and keep bubble angled down to at least 45 degrees. While bubble is angled down, align the front of the bubble with the locking mechanism and lock the bubble in place.

10. Install Bubble/(Install Hatch) LM

11. Bubble "Installed/Removed" LM

A2.5. Hot Refueling/FARP Checklist. The Hot Refueling/FARP checklist may be accomplished in conjunction with the INFIL/EXFIL or AFTER LANDING checklist. Duplicate steps may be omitted when using these checklists.

A2.5.1. If flight operations will continue after Hot Refueling/FARP operations, complete the ON THE RUNWAY Checklist if using INFIL/EXFIL procedures or resume with the BEFORE TAKEOFF Checklist if using normal checklist.

NOTE: After the Hot Refueling/FARP Checklist has been called complete, ensure that all radios, navigational equipment, and ECM equipment is set as required to continue the mission. This equipment is covered in the INFIL/EXFIL and BEFORE TAKEOFF checklists.

A2.5.2. If the sortie will terminate after refueling, complete the AFTER LANDING Checklist.

A2.5.3. **Hot Refueling (Receiver) Checklist**

HOT REFUELING (RECEIVER) CHECKLIST

1. **"CREW, HOT REFUELING (RECEIVER) CHECKLIST"** P

2. **"Acknowledged"** LM

3. Crew Briefing **"Complete"** P

a. Brief/update applicable items from the Hot Refueling/FARP Briefing Guide. See AFI 11-2HC-130JV3 CL-1.

WARNING: Do not operate the radar, radar altimeters, or transmit on HF during fuel transfer operations

4. Radios and Navigational Equipment **"Set"** CP, P, CSO, LM

a. Radios – Set (As required)

b. Radar – STANDBY/OFF

c. Radar altimeters – OFF

d. IFF – STANDBY

WARNING: Do not operate defensive systems/equipment during fuel transfer operations.

5. DEFENSIVE SYSTEMS MASTER Switch **"STANDBY"** CSO/PO

6. CMDS Safety Pins **"Installed"** LM

7. Flaps **"Set, ___"** CP

WARNING: Ensure airplane is fully depressurized before opening any door. Failure to do so may result in airplane damage and/or personal injury.

8. Doors	**"Clear to open"**	P
9. Offload Clearance	**"Clear to offload"**	P

a. Parking Brake – Set

b. Brakes – Normal/EMER

c. Engines – GND IDLE/LSGI

WARNING: Do not conduct hot refueling operations if wheel brakes indicate an overheated condition. If hot refueling must be completed allow adequate time for brakes to cool before commencing operation.

NOTE: The hot brake/hung flare checks will be accomplished prior to entering the hot refueling site.

NOTE: The loadmaster will state "CLEAR TO TAXI" after completion of required checks and when cargo compartment is secure. Aircraft will then taxi into refueling area.

10. **"Hot brake/Hung Flare Checks Complete, Clear to Taxi"**		LM
11. Offload Clearance	**"Clear to Offload"**	P

a. Parking Brake – Set

b. Brakes – Normal/EMER

c. Engines – GND IDLE/LSGI

***CAUTION*:** Aircraft ramp will be raised to allow the aircraft to taxi in the event of an emergency.

NOTE: The Fire extinguisher will be positioned between the Single Point Refueling Panel and the refueling equipment.

12. Fire Extinguisher	Positioned	LM
13. Refueling Equipment	Positioned	LM

WARNING: Bonding will be accomplished by inserting the bonding plug into the aircraft's external receptacle prior to any other action.

WARNING: Ensure the refueling nozzle is locked and checked for security prior to pressurizing refueling hoses. Failure to check security of the nozzle could result in a fuel spill.

NOTE: Connect the SPR nozzle to the aircraft. With the SPR nozzle crank handle in the closed position, check the strainer coupling quick disconnect device for positive locking. Prior to pressurizing the hose, be sure the nozzle is securely locked to the aircraft by attempting to remove the nozzle with the nozzle crank handle in the open position. Any nozzle that can be disconnected from the SPR with the nozzle crank handle in the open position is defective and must be removed from service immediately. Check the strainer quick disconnect locking device for positive engagement and assuring the refueling nozzle is securely locked.

14. "**Refueling Hose Connected"** LM

a. Bonding Wire – Attached

b. SPR Panel Door – Open

c. Refueling Nozzle – Connected

d. Flow Valve – Opened

e. Refueling Nozzle – Locked and Checked

15. FUEL MANAGEMENT Panel	**"Set"**	CSO/CP/PO

a. CROSS FEED Switches – CLOSED

b. CROSS SHIP Switch - OPEN

c. FUEL TRANSFER Switches – TO (Select tanks to transfer to)

d. SPR Valve – OPEN

NOTE: Typical Hand signals for hot refueling operations

OK or Transfer Fuel: Hand raised thumbs up

A negative flow: Hand raised thumbs down

Service complete stop fuel flow: Hand moving in large circular motion

16. Fuel Onload	Initiated	LM
17. "**Fuel Onload Complete"**		CSO/CP/PO
18. FUEL MANAGEMENT Panel	**"Set"**	CSO/CP/PO

a. CROSS FEED Switches – CLOSED

b. CROSS SHIP Switch - CLOSED

c. FUEL TRANSFER Switches – CLSD/OFF

d. SPR Valve – DRAIN

19. Refueling Hose	Disconnected	LM

a. Flow Valve – Closed

b. Refueling Nozzle – Disconnected/Dust Cap Installed

c. SPR Panel Door – Closed/Secured

d. Bonding Wire – Removed

20. Fire Extinguisher	Repositioned	LM
21. **"Clear to taxi"**		LM
22. Radios and Navigational Equipment	**"Set"**	CP, P, CSO, LM

a. Radios – Set (As required)

b. Radar – Set (As required)

c. Radar altimeters – Set (As required)

d. IFF – Set (As required)

23. Defensive Systems Settings **"Set, ____"** CSO/PO

a. CNI-MU Settings (As required)

b. DEFENSIVE SYSTEMS Panel – (As Required)

24. CMDS Safety Pins **"Removed/Installed"** LM

25. Hot Refueling (Receiver) Checklist **"Complete"** CSO/PO, LM, CP

A2.5.4. **FARP (Tanker) Checklist**

FARP (TANKER) CHECKLIST

1. **"CREW, FARP (TANKER) CHECKLIST"** P

2. **"Acknowledged"** LM

3. Crew Briefing **"Complete"** P

a. Brief/update applicable items from the Hot Refueling/FARP Briefing Guide. See AFI HC-130J V3 CL-1.

WARNING: Do not operate the radar, radar altimeters, or transmit on HF during fuel transfer operations

4. Radios and Navigational Equipment **"Set"** CP, P, CSO, LM

a. Radios – Set (as required)

b. Radar – STANDBY /OFF

c. Radar altimeters – OFF

d. IFF – STANDBY

WARNING: Do not operate defensive systems/equipment during fuel transfer operations.

5. DEFENSIVE SYSTEMS MASTER Switch **"STANDBY"** CSO/PO

6. CMDS Safety Pins **"Installed"** LM

7. Flaps **"Set, ___"** CP

WARNING: Ensure airplane is fully depressurized before opening any door. Failure to do so may result in airplane damage and/or personal injury.

8. Doors **"Clear to open"** P

9. Offload Clearance **"Clear to offload"** P

a. Parking Brake – Set

b. Brakes – Normal/EMER

c. Engines – GND IDLE/LSGI

WARNING: Do not conduct FARP/RGR operations if wheel brakes indicate an overheated condition. If FARP/RGR must be completed allow adequate time for brakes to cool before commencing operation.

NOTE: Complete Hot brake/Hung Flare checks at this time if not completed prior to entering the FARP site.

NOTE: The loadmaster will state CLEAR TO TAXI after completion of required checks and when cargo compartment is secure. Aircraft will then taxi into refueling area.

10. **"Hot brake/Hung Flare Checks Complete, Clear to Taxi"** LM

11. Offload Clearance **"Clear to offload"** P

a. Parking Brake – Set

b. Brakes – Normal/EMER

c. Engines – GND IDLE/LSGI

NOTE: A five gallon jerry can or igloo filled with water will be positioned in the vicinity of the HRS.

12. Refueling Equipment Positioned LM/HRS/HDP

a. Fire Extinguisher

b. Water Container

c. External Drain Pump

d. Refueling Hoses

WARNING: Bonding will be accomplished by inserting the bonding plug into the aircraft's external receptacle prior to any other action.

WARNING: Ensure the refueling nozzle is locked and checked for security prior to pressurizing refueling hoses. Failure to check security of the nozzle could result in a fuel spill.

NOTE: Connect the SPR nozzle to the aircraft. With the SPR nozzle crank handle in the closed position, check the strainer coupling quick disconnect device for positive locking. Prior to pressurizing the hose, be sure the nozzle is securely locked to the aircraft by attempting to remove the nozzle with the nozzle crank handle in the open position. Any nozzle that can be disconnected from the SPR with the nozzle crank handle in the open position is defective and must be removed from service immediately. Check the strainer quick disconnect locking device for positive engagement and assuring the refueling nozzle is securely locked.

NOTE: Check refueling hose valves at the SPR/RGR Port nozzle and at the 50 GPM pump (as required) to ensure they are open.

13. Refueling Nozzle Connected and Checked HRS

a. Bonding Wire – Attached

b. RGR Port – Open (as required)

c. SPR Panel Door – Open (as required)

d. Refueling Nozzle – Connected

e. Flow valve – Opened

f. Refueling nozzle – Locked and Checked

g. Valves – Open/Checked for Security (Prior to pressurizing Hoses)

h. 50 GPM Pump Control Valves – Positioned refuel (If SPR Used)

NOTE: Raise the ramp approximately 12 inches above the ground. The HRS may delay raising the ramp until immediately prior to pressurizing the hoses. This action may help dissipate static electricity.

14. Aircraft Ramp Raised HRS

NOTE: HDP's will walk a designated section of refueling hose to check for twists, kinks, and to ensure that dry breaks are open. The Loadmaster will perform the same check on the 10 foot section of the hose and the tanker refueling nozzle. The HRS will perform the same check on the remainder of the hoses to the 50 GPM pump.

NOTE: The HRS may stand by at the 10 foot section until the PO pressurizes the system. This will enable them to complete the leak check.

15. "**Line Check Complete"** HRS

16. Fuel Management Panel **"Set, SPR Valve OPEN" (If required)** CSO/PO

a. CROSS FEED Switches – CLOSED

b. CROSS SHIP Switch - OPEN

c. Tank Select Switch – ACTIVE (If Desired) When using presets for Bingo Fuel

d. Preset Fuel Levels – Checked (If tank select used)

e. Transfer Pump Switch(es) – FROM (For tanks offloading fuel from)

f. Verify Cross Ship Manifold Pressure – 28-40 PSI

g. SPR Valve – OPEN (If Required) CSO/PO

17. CNI-MU POD CTRL page 1/3 (If required) Set CSO/PO
a. MSTR POWER LSK – ON, STWD LKD Status Highlighted

b. Refuel Control Panel : Interconnect switches OPEN

c. ACAWS – Checked

d. **"Pod Supply Valve –MAN/OPEN"** CSO/PO

18. CNI-MU POD CTRL page 2/3 Set CSO/PO

a. "**Pod Pump – AUTO"** (If required) CSO/PO

NOTE: HDP's will walk a designated section of refueling hose to check for leaks. The loadmaster will perform the same check on the 10 foot section of the hose and the tanker refueling nozzle. The HRS will perform the same check on the remainder of the hoses to the 50 GPM pump.

19. "**Leak Check Complete"** HRS

WARNING: Insert the bonding plug into the aircraft's external receptacle prior to any other action.

NOTE: Typical Hand signals for FARP operations

OK or Transfer Fuel: Hand raised thumbs up

A negative flow: Hand raised thumbs down

Service complete stop fuel flow: Hand moving in large circular motion

20. Receiver(s)	Ready	HDP

a. Bonding Wire – Connected

b. Refueling Nozzle – Connected

c. Fire Guard – In Place

21. **"Fuel Offload Complete"**		HRS

WARNING: Do not stop refueling by closing the nozzle flow valve. Use the SPR valve, Pod Supply Valve(s), and Transfer Pump Switch(es) to start and stop fuel flow.

22. CNI-MU POD CTRL page 2/3	Set	CSO/PO
a. "**Pod Pump – OFF"** (If required)		CSO/PO
23. Refuel Control Panel	Set	CSO/PO
a. **"Pod Supply Valve Switch(s) – MAN/CLSD"**		CSO/PO

b. Interconnect Switch(es) – CLSD

24. CNI-MU POD CTRL page 1/3 (If required)	Set	CSO/PO

a. Pod Status Indication – STWD LKD Status Highlighted

b. Hydraulic Power LSK – OFF

c. Master Power LSK - OFF

NOTE: Based on the time it takes to drain the hoses, it may be necessary to hit the drain button multiple times to ensure that the drain pump runs during the entire draining operation.

25. Fuel Management Panel	**"Set"**	CSO/PO

a. FUEL TRANSFER Switch(es) – CLSD/OFF

b. CROSS SHIP Switch – CLOSED

c. SPR Valve – DRAIN

d. Tank Select Switch(es) – OFF (If used)

NOTE: When using the RGR Port reposition the hose to connect it to the SPR Panel and external drain pump.

26. External Drain Pump Control Valves	Positioned for defuel	HRS
27. External Drain Pump	ON	HRS
28. Leak Check	Complete	HRS

NOTE: Do not close both Unisex valves. Doing so will allow the hoses to inadvertently disconnect during rewind operation.

29. Refueling Hoses	Drained	HDP/HRS/LM

a. Upon completion of a section of hose, close one of the Unisex couplers

30. Hoses	Rolled/Stowed	HDP/HRS
31. Nozzles, Fire Extinguishers, & Water Containers	Stowed	HDP/HRS
32. External Drain Pump	OFF	HRS
33. Ten Foot Hose Section	Drained/ Disconnected	HRS
34. Nozzle Flow Valve	Closed	HRS
35. Refueling Nozzle	Disconnected	HRS
a. Dust Caps Installed		
36. Bonding Wire	Removed	HRS
37. SPR Panel Door	Closed	HRS
38. RGR Port	Closed (as required)	HRS
39. Aircraft Ramp	Positioned for Onload	HRS
40. Equipment and Personnel	Loaded and Secured	HRS
a. Ramp raised for Taxi		
41. **"Clear to Taxi"**		LM
42. Radios and Navigational Equipment	**"Set"**	CP, P, CSO, LM
a. Radios – Set (As required)		
b. Radar – Set (As required)		
c. Radar altimeters – Set (As required)		
d. IFF – Set (As required)		
43. Defensive Systems	**"Set"**	CSO/PO
a. CNI-MU Settings (As required)		
b. DEFENSIVE SYSTEMS Panel – (As required)		
44. CMDS Safety Pins	**"Installed/Removed"**	LM
45. FARP Checklist	**"Complete"**	CSO/PO, LM, CP

A2.5.5. **Hot Refueling/FARP Emergency Procedures.** Emergency procedures are not an exact science. Common sense and sound judgment should prevail. However, crews should follow guidelines during hot refueling operations. Remember that the LM, HRS, and HDP are the eyes and ears of the crew during all hot refueling operations. Escape routes should be established for each aircraft in the event of an emergency. The escape route should be depicted on the hot refueling site survey and must be reviewed prior to the mission. Crews must monitor radios to ensure they receive any evacuation call and must be ready to break radio silence and notify other participants in the event they experience an emergency.

A2.5.5.1. The emergency signal for stopping fuel flow is arm and hand extended level with shoulder, palm downward, moving from left to right in front of the body. At night, the same procedure will be used while holding an overt/covert chemlight.

FUEL LEAK/SPILL

1. Fuel Leak/Spill	**"Emergency Stop"**	Any Crewmember
2. Fuel Leak/Spill Checklist	**"Acknowledged"**	CSO/PO, LM

NOTE: The LM must confirm the Valve positions from the PO to ensure no fuel is pressurizing the hoses.

3. CNI-MU POD CTRL page 2/3 (If required)	Set	CSO/PO
a. **"POD PUMP – OFF"**		
4. Refueling Operation	Shut Down	CSO/PO
a. **"Pod Supply Valve Switches – MAN/CLSD"**		
b. **"SPR Valve – CLOSED"**		
c. Fuel Transfer Switches – CLSD/OFF		
d. Interconnect Switches – CLSD		
5. CNI-MU POD CTRL page 1/3 (If required)	Set	CSO/PO
a. MSTR POWER – OFF		
6. Controlling Agency/Fire Department	Notified	CP

CAUTION: Contact of fuel to human skin causes minor burns, irritation and loss of body oils. Immediately remove all fuel soaked clothing and wash affected areas thoroughly. Put clean clothing on and seal fuel soaked clothes in a plastic bag. Clothing splashed or soaked with fuel will not be worn on aircraft due to combustion and fume hazard.

NOTE: If it is determined that the leak is not repairable, terminate refueling operation.

7. Leak Cause	Determined	HDP/HRS/LM
8. Nozzle/Hose	Replaced	HDP
9. Fuel Spill	Cleaned	HDP/HRS/LM

AIRCRAFT EGRESS

Use this checklist when a catastrophic emergency precludes moving the aircraft and ground egress is the only option.

NOTE: Any crewmember recognizing an emergency that precludes moving the aircraft will notify the crew "Egress, Egress, Egress."

NOTE: The Pilot will initiate the Ground Evacuation Emergency Procedure.

1. Crew Notified	**"Egress, Egress, Egress"**	(Any Crewmember)
2. CNI-MU POD CTRL page 2/3 (If required)	Set	CSO/PO
a. **"POD PUMP – OFF"**		

3. Refueling Operation	Shut Down	CSO/PO

a. **"Pod Supply Valve Switches – MAN/CLSD"**

b. **"SPR Valve – CLOSED"**

c. Fuel Transfer Switches – CLSD/OFF

d. Interconnect Switches – CLSD

4. CNI-MU POD CTRL page 1/3 (If required)	Set	CSO/PO

a. MSTR POWER – OFF

5. Refueling Nozzle/Bonding Wire	Removed	HRS/LM

AIRCRAFT FIRE/SPARKS/AIRCRAFT TAXI

1. Crew Notified	**"Fire/Sparks"** (Any Crewmember)	
2. CNI-MU POD CTRL page 2/3 (If required)	Set	CSO/PO

a. **"POD PUMP – OFF"**

3. Refueling Operation	Shut Down	CSO/PO

a. **"Pod Supply Valve Switches – MAN/CLSD"**

b. **"SPR Valve – CLOSED"**

c. Fuel Transfer Switches – CLSD/OFF

d. Interconnect Switches – CLSD

4. CNI-MU POD CTRL page 1/3 (If required)	Set	CSO/PO

a. MSTR POWER – OFF

5. Refueling Nozzle/Bonding Wire	Removed	HRS/LM
6. 50 GPM Pump (If required)	Unplugged (If time permits)	

NOTE: The Pilot will taxi the aircraft to the pre briefed rendezvous location and wait for the HRS/HDP/LM.

7. Notify Pilot	**"Taxi, Taxi, Taxi"**	HRS/LM
8. Controlling Agency/Fire Department	Notified	CP

NOTE: The 20 lb dry chemical fire extinguisher will provide a limited fire fighting capability and must be used as quickly as possible when needed if it is to be effective. During training, crash recovery equipment will be on site or on call; however, during actual employment or exercises, the 20 lb dry chemical fire extinguisher may be all you have.

9. Fire/Sparks	Extinguish fire or determine cause of sparks	(Any Crewmember)

FUEL SPILL ON PERSONNEL

1. Crew Notified	**"Fuel Spill"**	(Any Crewmember)
2. CNI-MU POD CTRL page 2/3 (If required)	Set	CSO/PO

a. **"POD PUMP – OFF"**

3. Refueling Operation	Shut Down	CSO/PO
a. **“Pod Supply Valve Switches – MAN/CLSD”**		
b. **“SPR Valve – CLOSED”**		
c. Fuel Transfer Switches – CLSD/OFF		
d. Interconnect Switches – CLSD		
4. CNI-MU POD CTRL page 1/3 (If required)	Set	CSO/PO
a. MSTR POWER – OFF		
5. Contaminated Clothing	Removed	HDP/LM

NOTE: Clean the area with soap if possible. Continue irrigation of the contaminated area as long as burning persists.

NOTE: Clean any fuel spill using absorbent material

6. Contaminated Area	Flushed	HRS/HDP/LM
7. Controlling Agency/Fire Department	Notified	CP