

SECTION VIII—CREW DUTIES

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INTRODUCTION.

The successful completion of an assigned mission is dependent upon crew coordination as well as the proficiency and training of each individual crew member. The duties are divided among the crewmembers on the premise that maximum efficiency is a result of flight crew cooperation. Adherence to the following items will establish the basic requirements of crew coordination, and aid in blending the skill and abilities of the individual crew members into an efficient team. Standard phraseology should be used during all flight operations and those terms selected must be clear and familiar to flight crew members. Unnecessary conversation between crew members should be avoided during certain phases of the flight such as takeoff, approaches, landings, and emergencies. Communications at these times should be limited to pertinent orders and responses. Commands must be clear to preclude the necessity of repeating a command or an acknowledgment. Misunderstanding a command may result in confusion and could induce a hazard to safe flight.

AIRCRAFT COMMANDER/FIRST PILOT.

The first pilot is responsible for the progress and completion of a successful flight. He is vested with the authority to carry out this responsibility, and is in command of assigned crew members from the time they report for duty until termination of such assignment. The pilot's orders should receive prompt compliance; however, other crewmembers shall bring to his attention information and factors of importance which could have a direct bearing on his ultimate decision in instances that involve safety of flight.

The first pilot's normal and emergency abbreviated checklists are contained in T.O. 1C-121(E)R-1CL-1.

SECOND PILOT

The second pilot is second in command and shall assist the pilot at such times the pilot in command deems it necessary.

The pilot's normal and emergency abbreviated checklists are contained in T.O. 1C-121(E)R-1CL-1.

FLIGHT ENGINEER.

The flight engineer is directly responsible to the pilot in command. The amplified checklist for the flight engineer is covered in detail in Sections II and III.

The flight engineer's normal and emergency abbreviated checklists are contained in T.O. 1C-121(E)R-1CL-2.

NAVIGATOR.

The navigator is responsible for all matters pertaining to navigation and station stabilization. He performs the following preflight inspections of navigation equipment and reports the condition to the pilot.

NAVIGATOR NORMAL PROCEDURES.

Mission Planning.

1. Mission requirements—Checked and understood
2. Weather—Checked and recorded
3. Navigation kit—Checked and complete

Refer to local directives for required items.

4. Time hack—Obtained
5. Flight plan—Completed
6. Crew briefing—Completed

Brief crew on navigation aspects of mission to include:

- a. Route. (Furnish pilot a completed AF Form 21A/70 when required.)
- b. Estimated time enroute including operational control points.
- c. Highest terrain enroute.
- d. Takeoff alternate (if required).
- e. Emergency fields, heading and ETE.

Preflight.

- 1. B-6 driftmeter lens (extension)—Cleaned
 - 2. Form 781—Checked
 - 3. Flight engineer's electrical power check—Completed
 - 4. Aft ac power panel—External power ON
 - a. Wafer switch—EXT
 - b. Cart/reset cart switch—CART
 - c. Check external voltage—115 volts
 - 5. J-2 compass circuit breakers—ON
- Should approximate magnetic heading on master-indicator within 3 minutes. If not, reset circuit breakers; breakers must be engaged/disengaged simultaneously.
- 6. Radio operator's equipment circuit breaker (aft ac power distribution panel)—ON
 - 7. Radio operator's circuit breaker panel—On (as required)
 - 8. AN/APN-70B Loran—ON
 - 9. AN/ARN-6 radio compass—ON
 - 10. AN/APS-42—Standby
 - 11. B-6 driftmeter—Caged and ON
 - 12. Sextant and mount—Checked and aligned
 - a. Sextant—Checked (averages—2 minutes \pm 2 sec.)
 - b. Lights—Checked.
 - c. Internal mount alignment—Checked (lubber line azimuth should agree with azimuth dial window).
 - d. External alignment—Checked.
 - (1) Set 000.0 in the azimuth dial window.
 - (2) Read:
 - (a) 180 degrees on the center stabilizer.
 - e. Sextant stand, current Air Almanac, and H.O. 249 tables—Available.
 - 13. AN/APN-70B LORAN calibration and operation—Checked
 - a. Power switch—ON.
 - b. Signals on function 1—Checked.

c. Local/distant switch—Checked. (Check for signal strength and buzz of antenna coupler CU-308.)

NOTE

Antenna coupler CU-308A and CU-308B will not buzz. Observe Loran scope while a radio transmitter is keyed.

- d. Pulse drift—Checked on function 3 (ADC—OFF).
- e. Ensure pulse locks on left edge of pedestal—Checked on function 3 (ADC—ON).
- f. Pip alignment—Checked and noted.

Check on function 5 to ensure movable markers on upper trace are matched on the fixed markers. Must read an even 100 microseconds \pm 2 ms.

g. Drop-out—Checked. Perform check on function 4 for all R-rates available in flight area:

(1) MODE A:

H7	13030	L7	18030	S7	23030
H6	13080	L6	18080	S6	23080
H5	13130	L5	18130	S5	23130
H4	13180	L4	18180	S4	23180
H3	13230	L3	18230	S3	23230
H2	13280	L2	18280	S2	23280
H1	13330	L1	18330	S1	23330
H0	13380	L0	18380	S0	23380

NOTE

Drop-out must occur 50 units greater at each position.

(2) MODE C:

H7	27380	L7	37680	S7	47680
H6	27480	L6	37780	S6	47780
H5	27580	L5	37880	S5	47880
H4	27680	L4	37980	S4	47980
H3	27780	L3	38080	S3	47080
H2	27880	L2	38180	S2	48180
H1	27980	L1	38280	S1	48280
H0	28080	L0	38380	S0	48380

NOTE

Drop-out must occur 100 units greater at each position.

(3) MODE Cs:

H7	57680	L7	77680	S7	97680
H6	57780	L6	77780	S6	97780

H5	57880	L5	77880	S5	97880
H4	57980	L4	77980	S4	97980
H3	58080	L3	78080	S3	98080
H2	58180	L2	78180	S2	98180
H1	58280	L1	78280	S1	98280
H0	58380	L0	78380	S0	98380

NOTE

Drop-out must occur 100 units greater at each position.

h. Power switch—OFF

NOTE

Signals being slewed with the L-R switch move faster to the right than to the left.

14. J-2 Compass—Checked
 - a. The settable indicator and the directional gyro control indicator must agree within 2 degrees.
 - b. Correct any malfunction before takeoff.
 - c. Compare with the B-16 (standby compass).

NOTE

Local magnetic disturbances may cause the J-2 magnetic heading to vary widely from the actual magnetic heading.

15. Fluxgate (RMI) compass—Checked
 - a. Automatic pilot cage switch—Cage momentarily (check RMI reaction).
 - b. Compare with the B-16 (standby compass).
16. AN/APS-42—Checked
(Refer to Section IV.)
17. Pressure altimeter—Set
18. Intercommunication system—Checked
19. AN/ARN-6 radio compass—Checked
 - a. Tuning dial and band switch—ANT position. Tune to local station.
 - b. Function switch—COMPASS position. (No. 1 needle of RMI should point to station.)
 - c. L-R switch—LOOP position. (Check for proper rotation of No. 1 needle.)
20. B-6 driftmeter—Checked
 - a. Lights—Checked.
 - b. Focus control—Adjusted
 - c. Caging control—Uncage (If gyro tumbles, check fuses.)

d. Horizontal alignment—Read 004 approximate degrees on nose gear door actuating cam. (Compute correction if required.) Located on center strut between tire (See Figure 4-40).

e. Caging control—Caged

f. Azimuth—Set at 270 degrees.

21. Very pistol, flares, and first aid kit—Checked and stowed.
22. Personal equipment—Checked and stowed
 - a. Life preserver (LPU-2/3P).
 - (1) Safety threads secure
 - (2) Inspection due date not expired
 - b. Parachute:
 - (1) General condition of fabric
 - (2) Ensure canopy retaining pins are straight.
 - (3) Inspection due date not expired.
23. Preflight report to pilot—Preflight completed. Keep aircraft commander advised of all equipment malfunctions.

Before Starting Engines.

1. Sextant and stand—Stowed
2. Navigator's chair—Stowed and secured
3. All electrical navigation equipment (except J-2 compass)—OFF
4. Personal equipment—Donned or stowed as required

Before Landing

1. APR-25/26 equipment—OFF (if no EWO is on board)
2. Altimeter—Reset when passing through published transition level
3. Driftmeter—Caged and set at 270 degrees
4. Navigator's chair—Stowed and secured
5. Sextant and stand—Stowed (bubble chamber knob to MAXIMUM INCREASE average unwound.)
6. All electrical navigational equipment (except J-2 compass)—OFF
7. Personal equipment—Donned or stowed as required

Postflight

1. J-2 compass circuit breakers—OFF
2. Navigational equipment malfunction(s)—Entered in Form 781
3. Navigator's station—Secured

4. Maintenance debriefing—Attended (as required)
5. Kits, logs, forms and reports—Turned in
6. Crew debriefing—Attended (as required)

NAVIGATOR'S EMERGENCY PROCEDURES.

The navigator amplified emergency checklists are contained in Section III; the abbreviated emergency checklists are contained in T.O. 1C-121(E)R-1CL-3.

RADIO OPERATOR.

RADIO OPERATOR'S NORMAL PROCEDURES.

The primary duty of the radio operator is to operate and check the radio equipment to ensure the maintenance of communications throughout the mission. A checklist for this portion follows.

Mission Planning.

1. Pertinent NOTAMS and information file—Checked
2. HF frequencies—Checked

Refer to local directives to obtain frequencies in use.

3. Briefing—As required

Visual Preflight—Exterior

NOTE

Asterixed (*) items are duplicated effort and may be omitted if electronics technician aboard

*Exterior Preflight

1. Inspect the following items for presence and condition.

a. Left Wing:

- (1) ASA-3 Static Dischargers
- (2) C-823/AIC-10 Control Box
- (3) No. 2 VHF Antenna

b. Mid-wing Bottom Fuselage.

- (1) C-823/AIC-10 Control Box
- (2) No. 1 ADF Sense Antenna
- (3) No. 2 ADF Sense Antenna
- (4) APX 25 IFF Antenna
- (5) ARN 6 No. 1 ADF Loop Antenna
- (6) ARN 6 No. 2 ADF Loop Antenna
- (7) ARC-27 No. 6/8 UHF Antenna
- (8) ARN-21 TACAN Antenna

- (9) C-823/AIC-10 Control Box

- (10) AN/APS-42 Nose Radome

c. Right Wing

- (1) ARN-12 Marker Beacon Ant.

- (2) C-823/AIC-10 Control Box

- (3) ASA-3 Static Dischargers

d. Top Fuselage

- (1) No. 1 VHF Antenna

- (2) ARC-27 No. 6/8 UHF Antenna

- (3) ARA-25 No. 1 UHF/DF Antenna

- (4) 618T-3 Wire Antenna No. 1 (Right)

- (5) 618T-3 Wire Antenna No. 2 (Left)

- (6) ARN-21 Upper TACAN Ant.

- e. Bottom Fuselage, Tail: RT-160/APN-22 Radar Altimeter Antenna

- f. Horizontal and Vertical Tail Surfaces: ASA-3 Static Dischargers.

Interior Preflight—Visual

1. Check the following circuit breakers.

- a. Radio Operators Main and Auxiliary (if applicable) Circuit Breakers

- *b. DC Circuit-Breakers on Radar Operators Power Panel

- *c. Variable AC Circuit Breakers (Radio Operators Equipment) Radar Operators Power Panel

2. Inspect the following items for presence and condition.

CAUTION

Repeated pulling on antennas, couplings and shaking of components hastens the deterioration of shock mounts, antennas and connectors.

* a. Tail Compartment

- (1) RT-160/APN-22

- (2) AM-291/APN-22

- (3) C-823/AIC-10 (Jumpmasters position)

- (4) C-823/AIC-10 Tailcone

b. Radio Operator/Navigators Compartment

- (1) 618T-3 HF (2)

- (2) 180-L3 Antenna Tuners (2)

- (3) CU-308 Antenna Coupler
- (4) 807 Wilcox VHF (2)
- (5) RT-178/ARC-27
- (6) RT-220/ARN-21 TACAN
- (7) CRT-3 Emergency Radio
- (8) Seat, Safety Belt, Headsets
- c. Galley: C-823/AIC-10 Control Box
- d. AFTO-781
- e. Forward Lower Compartment
 - (1) RT-178/ARC-27
 - (2) ARA-19/ARN-6(2)
 - (3) R-101/ARN-6(2)
 - (4) C-823/AIC-10
- f. Flight Compartment
 - (1) R-322/ARN-18
 - (2) AM-608/ARA-25
 - (3) KY-95A/APX-25 (Check preflight code)
 - (4) R-540/ARN-14
 - (5) DY-84
 - (6) DY-84/ARN-14
 - (7) RT-178/ARC-27
 - (8) RT-279/APX-25
 - (9) RE-120/ARA-25
 - (10) Coaxial Relay

Operational Preflight

1. Turn on equipment as each area is preflighted. Then operationally preflight IAW appropriate manuals and directives.

- a. Radio Operator/Navigator Compartment.
 - (1) No. 2 VHF
 - (2) No. 7/8 UHF
 - (3) UHF Relay
 - (4) Radio Operator ICS Panel. UHF Switch in normal pilots position.
 - (5) HF 1 or 2
 - (6) No. 1 ADF. (May be omitted if Navigator aboard)
 - (7) Remaining HF
- b. Flight Compartment
 - (1) APN-22 Radar Altimeter
 - (2) ARN-21 TACAN
 - (3) ARN-6 ADF No. 1 (F-91 Filter)

- (4) ARN-14 VOR/ARN-18 ILS
- (5) ARN-6 ADF No. 2 (F-91 Filter)
- (6) Wilcox 807 No. 1 VHF
- (7) APX-25 IFF
- (8) ARC-27 No. 6 UHF
- (9) ARA-25/ARC-27 UHF/DF
- (10) Coaxial Relay

(11) PA, Alarm Bell, Rotating Beacon, Emergency ICS (RO), Loud and Clear (Jumpmaster)

After Preflight

NOTE

Upon completion of preflight, properly stow all headsets and microphones. Set all equipment on normal frequencies. Turn off all equipment except UAF-6 and PA system. Pilots C-824, mike selector, will be set on PA and copilots C-824, mike selector, will be set on UHF ground control.

1. Radio log initiated
2. Advise pilot that preflight is complete and of any discrepancies noted. Keep pilot posted on progress of clearing discrepancies.
3. Personal equipment fitted, checked and stowed

Before Taxiing

1. Overwing hatches—Close
2. PA, Alarm Bell report to pilot as loud and clear. (Report given after CICO)
3. KY95A set as required
4. Don applicable personal equipment
5. Fasten seat belt.

Taxiing

1. Monitor communications
2. Required information transmitted on tactical frequency
3. When requested perform visual check of de-icer boot operation and report to pilot on interphone.

Visual Preflight—Interior

NOTE

All equipment visual checks shall include cabling antenna connection, fuses, alignment, and security.

T.O. 1C-121(E)R-1

1. Personal equipment—Checked, fitted, and stowed
2. Jumpmaster's station—Checked

Check the C-823, headset, microphone, AM 291/APN 22 and R/T 160/APN 22 in the tail cone.

3. Center lower compartment C-823—Checked
4. CIC compartment—Checked

Check AIC-18 circuit breakers, technicians circuit breaker power panel.

5. Radio operator's station equipment—Checked
6. CRT-3 Gibson Girl emergency radio—Checked and secured
7. Forward lower compartment—Checked

Check UHF No. 8 and C-823. Check main dc bus current limiter panel, R-101/ARN 6(2), PD-5/ARA-19(2), AM-203/ARN 6(2), AM-608/ARA-25(1), RE-120/ARA-25.

8. Form 781 and G file—Checked
9. Forward radio rack equipment—Checked
10. Forward radio junction box, fuses, and circuit breakers—Checked

Before Takeoff

1. Radio operator's table secured up.
2. Turn seat facing aft, slide seat forward and fasten seat belt.

In Flight

1. Make overwing check after takeoff and hourly during flight.
2. Maintain radio log.
3. Perform communications duties IAW applicable local directives.

Before Landing

1. Radio operator's table secured in up position.
2. Turn seat facing aft, slide seat forward and fasten seat belt.

After Landing and Postflight

1. Perform communications IAW local directives.
2. All radio equipment and circuit breakers—Off
3. Safety belt and cords—Stowed
4. Radio position—Cleaned
5. KY/95A settings—Zeroized
6. Outside walk around—Completed
7. AFTO Form 781—Completed

8. Kits, logs, forms and reports—turned in
9. Debriefing—As required

RADIO OPERATOR'S EMERGENCY PROCEDURES.

The radio operator's amplified emergency checklists are contained in Section III; the abbreviated emergency checklists are contained in T.O. 1C-121(E)R-CL1-4.

CICO.

CICO NORMAL PROCEDURES.

The CICO is responsible for efficient operation and security of the combat information center (CIC). He supervises the assistant CICO, CIM's and electronics technicians. The CICO is personally responsible for CIC classified material.

Mission Planning.

1. CICO information file—Reviewed
2. CICO flight Kit—Checked for completeness

Refer to local directives.

3. Pick up all CIC classified material.
4. Ground agency briefing—Completed
5. CIM crew duties—Assigned
6. Ditching positions—Assigned
7. Crew briefing—Attended
8. General CICO briefing (entire crew)—Completed

Brief flight and CIM crew on latest tactical information.

Preflight.

1. Mission equipment in Form 781—Review status
2. Ensure that all necessary equipment is on board and ready for operation—Checked
3. Mission and communication systems operating condition—Checked
4. Set paddles and code ROMEO-8
5. Status board—Posted (if required)
6. Installation and operation of tape recorders—Checked
7. CIM crew survival equipment—Fitted and stowed
8. All loose equipment—Stowed
9. Preflight report to pilot—Preflight completed
10. All CIM crewmembers in ditching position—Checked
11. PA, warning light and alarm bell check—Acknowledged

Enroute to Station.

1. Mission equipment—On
2. Required information to ground agency—
Transmitted
3. Radio listening watch—Established
4. Tape recorders—Cleaned and loaded
5. CICO panel check—Completed
6. Crew positions (15 minutes prior to station)—
Manned
7. Air situation, from aircraft to station—Obtained

On Station—Prior to Assuming Station.

1. Assume or phase on station and initiate operations.
2. Advise the ground agency of station assumption time and pass on all data including equipment status.
3. Advise pilot and radio operator of station assumption time.
4. Prior to departing station, pass air situation to relieving aircraft.

Inbound to Recovery Base.

1. Departure time and required information—Passed to ground agency
2. All unnecessary equipment—Secured and stowed
3. All CIM equipment—Off
4. Ensure ROMEO-8's are zeroized.
5. Tape recorders—Unloaded
6. Review CIM logs and give mission critique to CIC crew.
7. All CIM crewmembers in landing positions—
Checked
8. CIC compartment eights to DIM (night operations only).

Postflight.

1. Form 781—Entries completed
2. Used tapes—Removed and turned in
3. Kits, logs, forms, classified materials and reports—
Turned in
4. Ground agency debriefing—Completed
5. Crew debriefing—Completed

CICO EMERGENCY PROCEDURES.

CICO's amplified emergency checklists are contained in Section III; the abbreviated emergency checklist is contained in T.O. 1C-121(E)R-1CL-5.

ACICO

The ACICO's duties are similar to the CICO except that he exercises more direct supervision over the CIM's on permission, planning and preparation of logs.

CIM.**CIM NORMAL PROCEDURES.**

The CIM is responsible to the CICO for the correct operation of the CIM equipment and all associated equipment. He completes all duties assigned by the CICO.

Mission Planning.

1. Pre-briefing—Report to squadron operations, assist CICO as directed
2. Briefings (General and detailed CIM briefings)—
Attended

Preflight.

1. Duties as prescribed by the CICO—Completed
Report preflight discrepancies to the CICO.
2. Survival equipment—Checked and stowed
3. Ditching position—Assumed

Inflight.

1. Duties as prescribed by the CICO—Completed

Postflight.

1. Headsets and mission logs—Turned in
2. All loose equipment—Secured
3. Assist CICO—As directed
4. Debriefing—Attended
5. Survival equipment—Turned in

CIM EMERGENCY PROCEDURES.

CIM's amplified emergency checklists are contained in Section III; the abbreviated emergency checklist is contained in T.O. 1C-121(E)R-1CL-6.

JUMPMASTER.**JUMPMASTER NORMAL PROCEDURES**

The jumpmaster duties will be performed by an ACICO appointed by the pilot. He is responsible for insuring that emergency equipment is aboard and safety procedures are adhered to so that the safety of the crew is maximized in the event of an emergency. He will maintain ICS contact

with the flight crew during all simulated and actual emergencies and on all take-off's and landings.

Mission Planning.

1. Secure copy of crew manifest prior to briefing and prepare ditching chart.

Formal Crew Briefing.

1. Provide ditching chart during crew briefing
2. Brief any special procedures pertinent to the jump-master duties that will be in effect for the flight. Also insure new personnel receive an emergency equipment/procedures briefing when directed by the pilot. Insure sufficient life support equipment is secured from P.E. should crew exceed the normal complement.

Preflight.

1. Insure aft cabin light is on and remains on throughout the flight.
2. Inventory all prepositioned life support equipment as required and sign appropriate forms.
3. Confirm that all required emergency equipment is aboard.
4. Insure aft crew door locking pin is available and stowed.
5. Report any discrepancies noted during preflight to the pilot.

Prior to Engine Start

1. When requested, report stand away, door secured and give the number of people on board to the pilot.
2. Insure all loose objects in the CIC, galley and aft compartment are stowed and secured. Secure forward latrine cargo webbing and unused forward restraining devices.
3. Conduct a walk through inspection to insure personnel are seated with gloves and safety belt on.

After Engine Start.

1. Acknowledge PA, Alarm Bell and rotating beacon check.
2. Acknowledge aft de-icer boot check (night operations require listening for segment distributor valve) operation.
3. Make final aircraft inspection insuring all personnel are alert in their seats. Seats will be in the upright position. Flex lights will be stowed or set flush to wall. Aft ditching light on when directed by pilot.

After Take Off

1. When advised by the pilot, make aft fumes check, aft overwing check, advise pilot of any abnormal conditions.

2. Aft ditching light OFF when directed by the pilot.

Prior to Landing.

1. Aft ditching light on when directed by the pilot.
2. Stow loose equipment and insure personnel are prepared for landing.

Engine Shut Down.

1. Aft ditching light off.
2. Open aft crew door and check stand in position.



Until stand is in place, stand in front of doorway to insure that crew members do not inadvertently come near the door.

3. Insure all parachute harnesses/parachutes are properly stowed.

ELECTRONICS TECHNICIANS.

ELECTRONICS TECHNICIANS CHECKLIST.

The primary duty of the electronics technician is to maintain all electronic equipment in operating condition throughout the airborne mission. The CICO will be notified of equipment changes in status and problems encountered immediately upon determining the condition. When more than one electronics technician is assigned to the mission the senior qualified technician will have supervisory responsibility over the other assigned technicians. Duties also include the following checklist:

Mission Planning.

1. Inventory technicians kit-completed
 - a. Technical orders 1C-121(E)R-2-10A and 1C-121(E)R-2-12A
 - b. PSM-6 Multimeter and cables
 - c. Maintenance forms, AFTO Forms 349 and 350
 - d. Additional items as specified in local directives
2. Review aircraft electronic history—completed
3. Coordinate with CICO for preflight assistance—completed
4. Crew briefing—attended

Pre-Flight—Power Off

1. AFTO Form 781A—checked

WARNING

Maintain a distance of 25 feet from the ART-47/49 antenna due to high radiation hazard. Insure that refueling operations are not in progress within 300 feet of the antenna.

2. External inspection—Checked
 - a. Antennas, masts, insulators and connectors
 - b. Static dischargers
3. Electronic equipment off—Check
 - a. Electronics inverter
 - b. Display light circuit breakers
 - c. Five each “Main DC to Plotters station circuit breakers
 - d. ECM inverters
 - e. ECM transformer—Rectifier units
 - f. Plotters station AC circuit breakers for TTD’s and multicouplers. (All others should be on.)
4. Power selector switch—External
 - a. Meter switch—External
 - b. Voltage A, B and C phases 110 to 120 volts—Checked
 - c. External power warning lights—Checked
5. Main electronic inverter—On
(Needed to check automatic changeover relay operation in a later step.)
6. Cart switch—Inverter (momentary)
7. ECM transformer—Rectifier units—On
 - a. T-R lights circuit breaker—On
 - b. Overheat lights—Press to test
 - c. T-R circuit breakers—On
8. Forward lavatory and 545 bulkhead—Checked
 - a. Axe—Secured to bulkhead by trash container
 - b. Portable oxygen bottles and mask—Serviceable and secured
 - c. Fire extinguisher—Serviceable and secured
 - d. Electronic spares—Stowed and secured

NOTE

Due to different aircraft configurations the electronic equipment spares will be located in various places.

9. Forward lower compartment electronic equipment—Checked and secured
 - a. Electronic equipment components:
 - (1) No. 8 UHF—RT-178/ARC-27
 - (2) ALR-27 Frequency band 1, 2 and 3 tuners
 - (3) R-101/ARN-6 ADF and ARA-19 remote tuners No. 1 and No. 2
 - (4) Forward equipment cooling blower
 - (5) ART-47/49 components. (IPA, synthesizer, power supply, PA, circuit breakers, cabling and antenna connections).
 - (6) Circuit breakers—On. (Overhead access panel and external DC power control)
 - (7) ARR-52A system pre-amplifier and cabling
 - (8) C-823/AIC-10 and cabling
 - b. Electronic inverter change over relay—Checked

NOTE

Depress and hold the button on front of the change over relay, located between the main and spare electronic inverters, for approximately six seconds. The main inverter should turn off and the spare inverter should turn on.

10. Electronic inverters control panel—Check
 - a. “Main inverter off” light on
 - b. “Dead buss” light off
 - c. A, B and C phase voltage 112 to 118 volts
 - d. Inverter switch—Change to “OFF”, then back to “Main”. (“Main inverter off” light should go off. “Dead buss” light should remain “off”).
 - e. A, B and C phase voltage 112 to 118 volts

NOTE

Notify EWO or Navigator that the electronics AC buss is available.

11. Spare electronic equipment—Installed, secured and inventoried in accordance with T.O. 1C-121(E)R-21 and current local directives
12. Center lower compartment electronic equipment—Checked and secured:
 - a. Automatic relay equipment: (power amplifier, drivers, platform, antenna mounting and cabling)
 - b. ARR-52A pre-amplifier and cabling
 - c. C-823/AIC-10 and cabling

- 13. Fire extinguisher—Serviceable and secured at sensor station No. 2 or No. 4
- 14. Aft lower compartment electronic equipment—Checked and secured
 - a. Transformer-rectifier units and inverters
 - (1) Cabling and mounting
 - (2) Circuit breaker panel (Circuit breakers set on open as required)
 - (3) T-R unit blowers operating
 - b. L-Band receiver and antenna
 - (1) Cabling and mounting
 - (2) Frequency checked and recorded (Inform CICO)
 - c. Aft blower and cabling
 - d. RE-120/ARC antenna relays
 - e. UHF and ECM antennas and cabling
- 15. Technicians table area—Checked, serviceable and secured
 - a. Portable oxygen bottles and masks
 - b. Fire extinguisher
 - c. Asbestos gloves
 - d. Fire axe and hatchet
 - e. Aft radio rack:
 - (1) AM-291/APN-22 electronic control amplifier
 - (2) C-823 AIC-10 and cabling
 - (3) RE-120/ARC antenna relays and cabling.

Preflight power off.

NOTE

Steps 16 and 17 may be accomplished simultaneously.

- 16. CIC compartment headsets—Distributed
- 17. CICO, Plotter and sensor stations equipment present and secured—Checked
- 18. 7AC electronics rack equipment present and secured—Checked



Insure that power to secure voice equipment is not applied before installing codes.

- 19. Codes for secure voice—Checked and installed

NOTE

At least two qualified personnel will insure correctness of codes and at no time will any action take place that may compromise security. Preflight power off.

- 20. ARR-52A, A.R.E., and ART-47/49 controls at radio operator position off—Checked

Preflight—Power On

- 1. Equipment rack blower—On

NOTE

If switch is not installed below “Blower inop” indicator, the blower can be activated by turning on any ECM inverter in step 9.

- 2. AFT Power distribution panel—Checked
 - a. 115 to 120 volts, 3 phase external AC power
 - b. 112 to 118 volts, 3 phase main electronics inverter power
 - c. Five each “Main DC to Plotters station” circuit breakers On
- 3. Multicoupler and TTD AC circuit breakers at plotters station circuit breaker panel—On
- 4. FM-622 at plotters station—On
 - a. Frequency set to 30 MHz
 - b. Squelch switch set to Carrier

NOTE

Steps 5 and 6 should be accomplished simultaneously at each Sensor station and the CICO station.

- 5. TTD Blower operation—Check
 - a. Assist request lights—On
- 6. ARC-51, FM-622 and secure voice equipment—On and CRAD-2
 - a. ARC-51 Controls—On
 - (1) Rechannelize to check tuning
 - (2) Frequency selector to Manual
 - (3) Set all ARC-51’s to the same unused frequency
 - b. FM-622 (CICO Station)—On
 - (1) Frequency set to 30 MHz
 - (2) Squelch switch set to Carrier

- c. Secure voice controls—On and Set to CRAD-2
- 7. Display lights circuit breakers—On
- 8. Supervisor display panel signal and assist Request lights on (CICD Station)—Check

NOTE

ECM Inverter turn on will be accomplished by the Electronics Technician with coordination of the EWO.

CAUTION

Activate one ECM Inverter at a time.

- 9. ECM Inverters—On (as required)
 - a. Inverter control circuit breakers on Aft Power distribution Panel—On
 - b. ECM Inverter switches on lower aft power distribution panel—On

WARNING

Prior to turning on ART-47/49 ensure that radiation hazard warning signs or guards are posted.

- 10. Electronic equipment at Radio operator station turn on procedure.
 - a. ARR-52A
 - (1) Power switch—On
 - (2) Frequency selectors—Set to Channel No. 1
 - b. ART-47/49
 - (1) Circuit breakers—On
 - (2) Transmitter frequency—Set as required
 - (3) Set AM-FM switch in FM position
 - (4) Turn function switch to MANUAL
 - c. Automatic Relay Equipment
 - (1) Circuit breakers—On
 - (2) A.R.E. Control box power switch—On
- 11. Automatic Relay Equipment Blower operation—Check
- 12. Secure voice Alarm system—Checked
 - a. At Sensor station No. 1 or No. 3, set ICS volume to full gain, pull “on” all monitor switches for UHF and place ICS/SONO.Selector switch in ICS position.

b. Test each secure voice equipment installation for visual and audio alarms In Accordance with T.O. KOA-101D/TSEC.

13. ARC-51 and FM-622 power out-put and reflected power in secure—Check

a. Key each ARC-51 transmitter and check meter ID-1003/ARC.

b. Set UHF Antenna switches to the opposite position and repeat step a.

c. Place secure voice controls No. 4 and No. 5 to CRAD-1 position.

d. Key FM-622 transmitter and check integral meter on front of transceiver.

14. ARC-51 UHF Relay operation—Check.

NOTE

If capabilities are not available to establish a relay check with maintenance facilities, the following procedure may be used.

- a. Local/Remote switch—Local
 - b. Normal/Relay switch—Relay
 - c. Squelch disable switch on No. 1 UHF—On. No. 2 UHF should key.
 - d. Squelch disable switch on No. 1 UHF—OFF. No. 2 UHF should return to receive.
 - e. Reaccomplish steps c and d on UHF—No. 2. No. 1 UHF should key and return to receiver.
 - f. Local/Remote switch—Remote
 - g. No. 1 Secure voice delay switch—Up
 - h. Re-Accomplish steps c, d and e.
 - i. Return Relay Control box switches to normal and local.
15. CICO position AIC-10, P.A., VHF and HF operation—Checked
16. Supervisor display panel lights off—Check
- a. If all signal lights remain on, select a channel with no signal and check that all lights are out.
 - b. If a receiver signal light stays on, and most others go out, check, isolate and repair the malfunction.

NOTE

Steps 17 through 19 will be accomplished at each station where subject equipment is installed. An assistant assigned by the CICO may assist in accomplishing these steps.

17. Prime Mission Equipment—Checked
 - a. Tape recorder—On
 - b. Tape recorder AUTO/MANUAL switch—AUTO
 - c. Recorder operation on any TA, TB, TC and both annotate positions
 - d. Tape recorder AUTO/MANUAL switch to MANUAL and repeat step c
 - e. Tape recorder—OFF
 - f. TTD panels for proper signal lights, secondary lights and Audio (operator and assistant)
 - g. Each Monitor Selector panel for proper operation of TA, TB, and TC

NOTE

Extinguish each assist request light as each TTD panel is found to operate properly. If a malfunction is found and cannot be located quickly, leave assist request light on for the affected unit and refer to AMS launch crew.

- h. Assist Request lights—OFF
18. AIC-18—Checked
 - a. Interphone operation
 - b. Call operation
19. ARC-51 and FM-622 secure voice operation—Checked
 - a. ARC-51
 - (1) Ensure frequency controls are set to proper frequency.
 - (2) Secure voice equipment set to CRAD-2.
 - (3) Voice transmission and reception between units
 - b. FM-622
 - (1) Ensure frequency controls are set to proper frequency.
 - (2) Secure voice equipment set to CRAD-1.
 - (3) Voice transmission and reception between units
20. Zeroize KYK-3—Completed
21. ARR-52A Control box at CICO station—OFF
22. Display light circuit breakers—OFF
23. ARR-52A control boxes at Radio operators station—OFF

NOTE

A.R.E. power out-put meter is effective only as an indication of out-put. Not as a calibrated meter.

24. Automatic Relay Equipment power out-put—Checked
 - a. Set function switch to operate.
 - b. Activate only one frequency at a time.
25. Sensor Control System—Checked
 - a. Servo tuning check
 - (1) Change frequency setting on transmitter control box.
 - (2) Check servo on lights for proper operation.
 - b. Transmitter power out-put check
 - (1) High voltage indicator lights on
 - (2) Local/Remote switch to Local
 - (3) Key switch to on
 - (4) Calibrate VSWR on out-put power indicator meter.
 - (5) Check for proper power out-put, reflected power, VSWR and power input.
 - (6) Key switch to OFF
 - (7) Local/Remote switch to Remote
 - c. Sensor Control box operation—Check
 - (1) Power switch to on
 - (2) Mode switches to MANUAL and interrogate.
 - (3) Key execute button and observe the transmitter indicator on radio operator station.
 - (4) Power switch to OFF

NOTE

Before turning off ECM T/R units and Inverters, coordinate with EWO.

26. Sensor Control System, Automatic Relay Equipment—OFF
 - a. ART-47/49 control box—OFF and set to 300 MHz
 - b. Automatic Relay Control—Frequency controls and power OFF
 - c. ECM Inverters and T/R units—OFF
 - d. Antenna Guard—Recalled or removed
27. CIC Equipment—OFF
 - a. CICO No. 5 UHF, No. 1 FM-622, secure voice controls
 - b. Plotter No. 2 FM-622
 - c. Sensor positions—Applicable UHF No. 1 through No. 4
28. “Main DC to Plotters Station” circuit breakers except circuit breaker furnishing R.O. panel lights—OFF

29. Electronics Inverter—OFF
30. Equipment Blower—OFF
31. Mission Ready—Inform CICO
32. All equipment, tools and technical orders—Stowed and secured
33. Ditching position—Checked
 - a. Seat belt
 - b. Headrest
 - c. Chair rotation and security
34. Personal equipment—Inspected and donned

Engine Start

1. Electronic blowers off—Checked
2. All ECM T-R units and Inverters OFF—Checked
3. Variable AC Power Selector switch—OFF
4. Power Meter switch—Left Generator
5. Push-to-test lights at AFT power distribution panel—Checked

NOTE

Leave the variable AC power selector switch Off until aircraft has completed taxi, and engine RPM is stable enough to retain AC power on the line.

Engine Run-Up

1. Place Power Selector Switch to NORMAL or Both—Check A, B, and C phase voltage.

NOTE

If no indication is observed on the meters check the circuit breakers on the AFT power distribution circuit breaker panel labeled “voltmeter” for the affected phases. Fuses rated at 2 amperes, used to protect the voltmeters are located in the AFT power.

2. Place Power Selector Switch to LEFT—Check Trip/Reset operation of the Right generator.
3. Place Power Selector Switch to Right—Check Trip/Reset operation of the left generator.
4. AC Power Selector switch—Return to NORMAL or BOTH.

NOTE

Leave ECM transformer rectifier units, ECM Inverters and all blowers controlled by the electronics technician OFF until airborne, and aircraft commander releases crew members to move about and assume their duties.

5. Assigned ditching position—Assumed

Inflight.

1. AC generator voltage and frequency warning lights—Checked
2. Electronics Inverter switch—MAIN, Check A, B and C phase voltage
3. ECM T/R and Inverters—ON as required
 - a. T/R overheat lamps—Push to test
 - b. T/R circuit breakers—ON
 - c. ECM Inverter switches—ON

CAUTION

Activate only one ECM Inverter at a time.

4. Electronics blowers—ON
 - a. “Radar Vent DC” Circuit breaker at Radar Operator circuit breaker panel checked—ON
 - b. Blower switch, upper portion Radar Operators circuit breaker panel—ON

NOTE

If switch is not installed on aircraft the blower may be activated by energizing any ECM Inverter. Blower should be energized on step 3 in this type configuration.

- c. Airflow on wall in rear of TAC electronics rack—Checked
5. “Main DC to Plotters Station” circuit breakers—ON
6. Display lights circuit breakers—ON
7. Electronic equipment in CIC compartment—ON
 - a. ARC-51's
 - b. Romeo's and C/Rad 2 operation
 - c. FM-622's
 - d. Sensor control
 - e. CICO's ARR-52 control

CAUTION

Check the A.R.E. blower for proper operations before activating any frequencies.

NOTE

If “power on” light does not operate, adjust Radio Operator's panel lights control.

8. A.R.E. and ARR-52 receivers—ON
 - a. A.R.E. power switch—ON
 - b. ARR-52 receivers—ON

NOTE

Proper channelization is necessary to complete the assigned mission. The CICO will provide the channelization information to the R.O. or Electronics technician.

9. ART-47/49—ON and set as follows:
 - a. Off—Preset—Manual switch—MANUAL
 - b. FM-AM switch—FM
 - c. Channel select—As directed
10. Station changeover—Monitored (To expedite any required maintenance action, the technician will monitor the loop test and station changeover on the communications system, unless other equipment malfunctions dictate otherwise. If a malfunction exists the technician will take all necessary action to return the equipment to normal operations.)
11. Necessary Forms—Updated (The technician will be responsible for the maintenance of the necessary forms as outlined in current local directives.)

On Station.

1. All electronic equipment in CIC compartment—Monitor (Insure that all equipment is maintained in a serviceable condition during flight.)
2. AFT Power distribution panel warning lights—Monitor periodically
3. Generator and Inverter voltage—Checked periodically
4. ARR-52 receivers compared with CICO's—Checked periodically
5. CIC compartment electronic equipment—Repair as required
6. Primary flight crew electronics equipment—Repair as required
7. Form—Maintained

Departing Station

NOTE

Coordinate CIC equipment turn-Off with CICO position and ECM power turn-off with EWO or Navigator.

1. ARR-52, A.R.E. and ART-47/49—OFF and frequency zeroized

- a. ARR-52—Set to blank channel
- b. A.R.E.—All frequencies Off
- c. ART-47/49—Set to 3000.0 MHz
2. CIC electronic equipment—OFF as directed by CICO
 - a. ARR-52 at CICO position—OFF and set to blank channel
 - b. Sensor control—OFF
 - c. Secure voice—OFF
 - d. ARC-51—OFF and set to 225.0 MHz
 - e. FM-622—OFF and set to 30.00 MHz
3. Display lights circuit breakers—OFF
4. TTD and Multicoupler fixed frequency AC circuit breakers—OFF

NOTE

Coordinate with EWO before turning off ECM Inverters and T/R units.

5. ECM Inverters—OFF
6. T/R units circuit breakers—OFF
7. Inverter control DC circuit breakers—OFF

NOTE

Coordinate with CICO before performing steps 8 and 9.

CAUTION

Insure that power switch for secure voice equipment control box is OFF before zeroizing.

8. Secure voice equipment—Zeroized
 - a. Electrically zeroize
 - b. Visually check for proper zeroize action.
9. Tape Recorders—Unloaded and OFF
10. Electronic Inverter—OFF
11. "Main DC to Plotters station" circuit breakers—OFF as required.

NOTE

28v DC for emergency ICS operation is supplied by the same circuit breaker that powers the radio operators panel lights.

12. Electronic equipment blower—OFF
13. Replace cover on TAC electronics rack.

14. Collect headsets and stow (except CICO's. Do not collect CICO Headset until after landing)
15. All forms and logs completed
16. All loose equipment—STOWED
17. Duty Station—Cleaned
18. Personal Equipment—As required
19. Ditching position for landing—Assumed

Postflight.

1. AC generators—OFF
2. CICO Headset—Collected
3. Personal equipment—Stowed as required
4. Exterior inspection for lost or damaged antennas—Completed
5. Maintenance debriefing—Attended
6. Personal Equipment—Turned In
7. Electronics technician logs and kit—Turned In
8. Crew Debriefing—Attended

ELECTRONIC WARFARE OFFICER.

The Electronic Warfare Officer (EWO) is responsible for the operation of all assigned passive and active electronic countermeasures equipment (ECM). He performs the following preflight and inflight checks to assure the proper status and operation of all ECM equipment.

EWO PROCEDURES.

Mission Preparation.

1. Mission Planning—COMPLETED (EW Log/Chart Prepared)
2. Intelligence Data—CHECKED (Refer to local directives)
3. Mission Briefing—ATTENDED
4. Personal and Professional Equipment—CHECKED (Refer to local directives for required items)

Power Off Preflight.

1. AFTO Form 781—CHECKED (Check for ECM equipment write-ups and completion of ECM maintenance preflight - if required)
2. Coordinate with ET to insure ECM Inverters and TR units—OFF
3. ECM Equipment Controls Preset
 - a. AN/ALR-27
 - (1) Power Switch—OFF
 - (2) Intensity—Minimum

- (3) Modes—AUTO
 - (4) Tune—COUNTERCLOCKWISE
 - (5) Attenuation—OUT (Perform items (3), (4), (5) for all traces which have tuners installed)
 - (6) Volume—Optimum
- b. AN/ALT-28 System
 - (1) Transmitter Control Indicator
 - (a) Power Selector Switch—OFF
 - (b) RF Bandwidth—MINIMUM
 - (2) Programmer
 - (a) Power Switch—OFF
 - (b) Program Selectors—BARRAGE
 - c. AN/APR-25/26
 - (1) Intensity—Minimum
 - (2) Audio—Optimum

Exterior Inspection.

1. ECM Antennas and Radomes—CHECKED (This check includes the four external APR-25 radomes and all centerline external ECM antennas for cleanliness, security, seal and drain holes.)

Interior Inspection.

1. Aft ECM Equipment Rack
 - a. Equipment and Cables—SECURE
 - b. Coolant Level—CHECKED (between 80–150 and exceeds temperature level)
 - c. Spare Fuses—Available
 - d. Cooling Air—UNRESTRICTED

NOTE

No gear (which might restrict the flow of cooling air) should be stowed on the rack above the transmitters and heat exchanger units.

2. EWO Station
 - a. Equipment and Cables—SECURE
 - b. Spare Fuses—AVAILABLE
3. Radar Operators AC Power Panel
 - a. ECM Equipment circuit breakers (2)—SET
4. ECM Equipment Rack Circuit Breakers
 - a. RHAW (2)—SET
 - b. AN/ALT-28 AC and DC (8)—SET
 - c. AN/ALR-27 (1)—SET
5. A1C-10 Interphone System

a. Monitor Switches—SET

b. Interphone and "Call" Position—CHECKED
(Check interphone for normal communications. Check "Call" Position to assure EWO's ability to override normal interphone).

6. Survival Equipment—CHECKED AND FITTED

7. Take Assigned Station for Takeoff

After Takeoff/Climb.

1. AN/ALT-28 Blower/Flex Arm/Edge Lights—CHECKED ON

NOTE

Notify pilot before applying power to APR 25/26. Coordinate operational check with pilot.

2. ECM Equipment Power Switches—ON

3. AN/APR-25/26

a. Intensity—OPTIMUM (Set intensity just below visibility when there are no incoming signals) (Wait 10–15 seconds for CRT filaments to warm up.)

b. Audio—OPTIMUM

c. Dim—OPTIMUM

d. Threshold Controls—OPTIMUM

e. Billboard Lights—DEPRESSED (See IC-121(E)R-1A, for self test)

f. Visual and Aural Presentation—CHECKED

g. Logic Buttons—CHECKED AND SET AS REQUIRED

4. AN/ALR-27

a. Intensity—OPTIMUM

b. Focus—OPTIMUM

c. Scale Illumination—OPTIMUM

d. Volume—OPTIMUM

e. Attenuation—OUT

f. Video Test—DEPRESSED (Check for 7 strobes on each trace)

g. Perform the following steps (1) - (5) for each trace:

(1) Mode Switch—MANUAL

(2) Video Test—DEPRESS AND HOLD (With video test in, tune through the range of each trace to check for pulse movement and audio.)

(3) Mode Switch—SECTOR (If signals are present, check that the frequency range displayed in sector mode is approximately correct.)

(4) Mode Switch—AUTO

(5) Attenuation—CHECKED

5. AN/ALT-28 System and Programmer

NOTE

Systems will be preset in accordance with ECM tactics guidelines.

a. Control Indicator

(1) Power Selector—BARRAGE/PRESET A

and B

(2) RF Bandwidth—OPTIMUM

(a) Programmer

1. Program Selectors—Checked with appropriate modes on control indicator

2. Manual Rate—Checked and set to optimum

b. Control Indicator

(1) Power Selector—STANDBY

Before Landing.

1. Operational Check—Required only if operator feels there are equipment discrepancies.

NOTE

This operational check involves checking any potential malfunctioning receivers and/or transmitters for proper operation. Any discrepancies will be noted in the AFTO Form 781.

2. ECM Equipment Turn-Off

a. AN/ALR-27

(1) Volume—OPTIMUM

(2) Scale Illumination—OPTIMUM

(3) Intensity—MINIMUM

(4) Power Switch—OFF

b. AN/APR-25/26

(1) Dim—OPTIMUM

(2) Audio—OPTIMUM

(3) Intensity—OPTIMUM

(4) Power Switch—OFF

c. AN/ALT-28 System and Programmer

(1) Control Indicator

(a) RF Bandwidth Control—MINIMUM

(b) Power Selector—OFF

- (c) Barrage/Presets A/R—CENTERED
(See local directives)

CAUTION

Electrical power must be maintained for five minutes after turning off ECM equipment to allow ALT-28 systems to cool down cycle.

- (2) Programmer
- (a) Power Switch—OFF
 - (b) Program Selector—BARRAGE
 - (c) Manual Rate—MINIMUM

- 3. AN/ALT-28 Blower/Flex Arm/Edge Lights—CHECKED OUT
- 4. ECM Equipment Rack Circuit Breakers
 - a. RHAW (2)—OFF
 - b. AN/ALT-28 AC and DC (8)—OFF
 - c. AN/ALR-27(1)—OFF
- 5. Radar Operators AC Power Panel
 - a. ECM Equipment Circuit Breakers (2)—OFF
- 6. Personal and Professional Equipment—STOWED
- 7. Take assigned Stations for Landing

Postflight.

- 1. Required Forms—COMPLETED
- 2. Crew Debriefing—COMPLETED