NORMAL PROCEDURES

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PREPARATION FOR FLIGHT

FLIGHT RESTRICTIONS

Refer to Section V for Operating Restrictions and Limitations.

FLIGHT PLANNING

Refer to Appendix I.

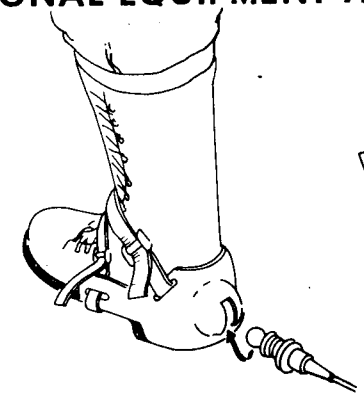
TAKEOFF AND LANDING DATA

Refer to Appendix I for Takeoff and Landing information.

WEIGHT AND BALANCE

Refer to Section V for Weight and Balance Limitations. For detailed loading information, refer to Handbook of Weight and Balance Data. Before each flight, check takeoff and anticipated landing gross weights and weight and balance clearance (Form 365F).

PERSONAL EQUIPMENT HOOKUP

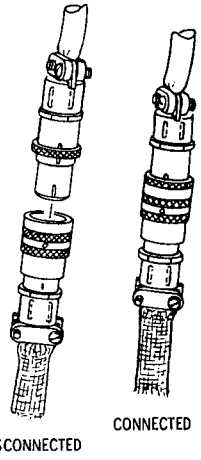


1 HOOK UP SPURS

FOOT SPURS WILL BE ATTACHED AND REMOVED BY PILOT FROM A STANDING POSITION UPON ENTERING AND LEAVING COCKPIT

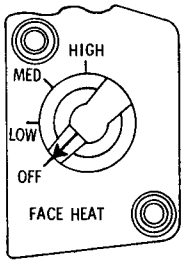
CAUTION

PERSONAL EQUIPMENT TECHNICIAN WILL ASSIST IN ATTACHING SPURS AND BALL FITTING BY HAND IF REQUESTED

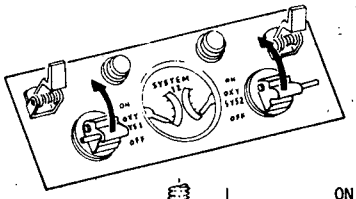


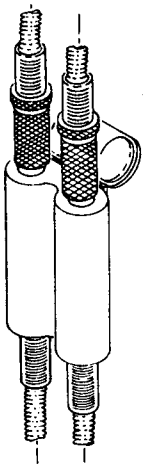
DISCONNECTED CONNECTED

2 COMMUNICATIONS (FACE HEAT AND RADIO) CONNECT HELMET CHORD TO PARACHUTE EXTENSION CHORD



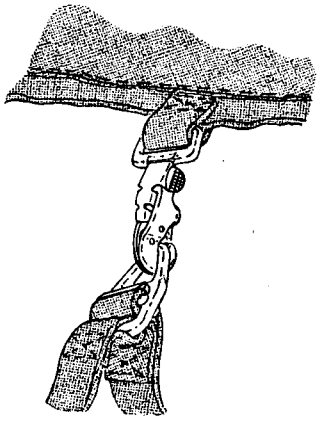
3 TURN FACE HEAT ON LOW (CONTROL ON RIGHT HAND CONSOLE)





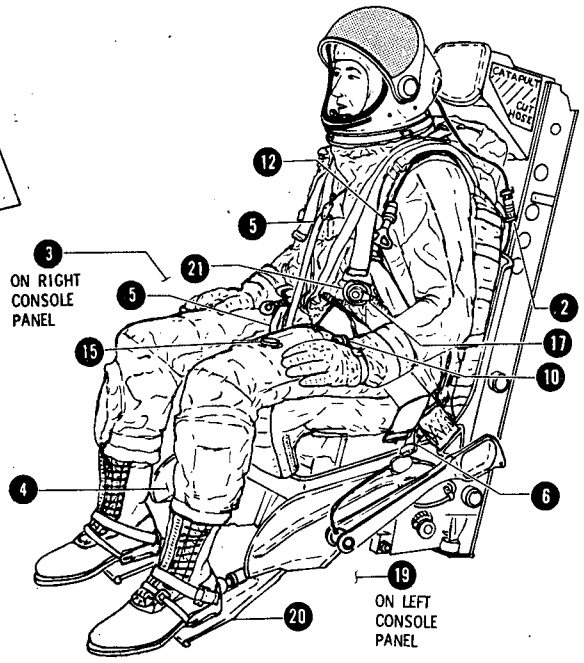
4 SECURE OXYGEN PERSONAL LEAD HOSES IN QUICK DISCONNECT (INSIDE FRONT OF SEAT BUCKET)

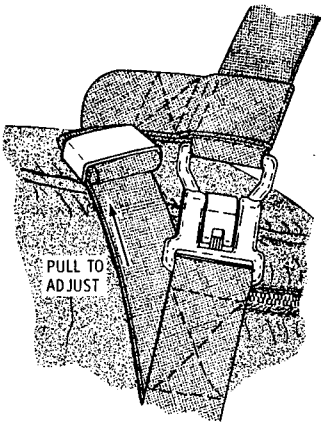
- a INSTALL NO. 2 HOSE CONNECTION AND TURN PRESSURE ON
- b INSTALL NO. 1 HOSE CONNECTION AND TURN PRESSURE ON
- c CHECK PRESSURE 65 TO 100 PSI



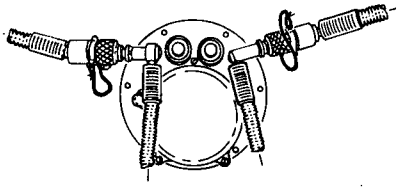
5 CONNECT PARACHUTE HARNESS, THREE PLACES

- a CHEST STRAP (UNDER HELMET HOLD DOWN LANYARD)
- b RIGHT LEG STRAP (OVER PERSONAL OXYGEN LEAD HOSES)
- c LEFT LEG STRAP





6 ADJUST KIT SEAT STRAPS; RIGHT AND LEFT SIDE



7 CONNECT EMERGENCY OXYGEN HOSES, SLIDE KNURLED FITTING INTO PLACE, INSERT SAFETY CLIP, PULL ON HOSE SLIGHTY TO ASSURE OF LOCKED POSITION

NOTE

LEFT HOSE OVER HELMET HOLD DOWN STRAP

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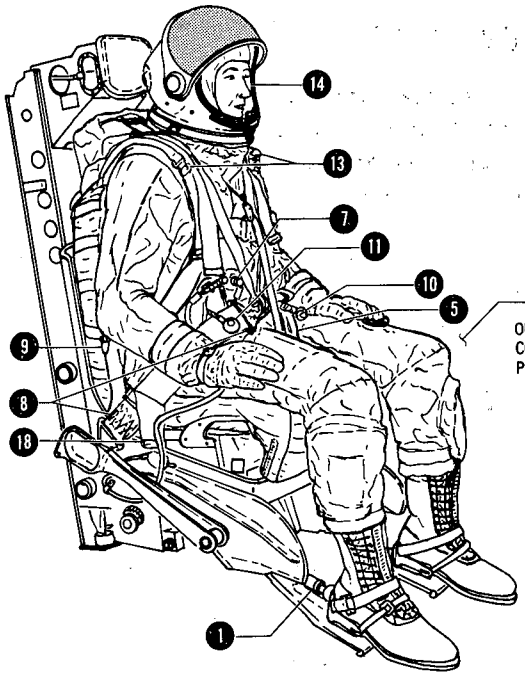
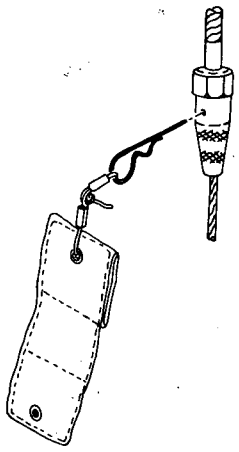
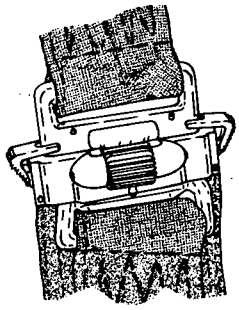
Figure 2-1 (Sheet 1 of 2)

PERSONAL EQUIPMENT HOOKUP





9 CHECK EMERGENCY OXYGEN CABLE AND REMOVE SAFETY PIN

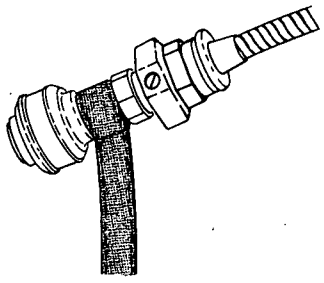


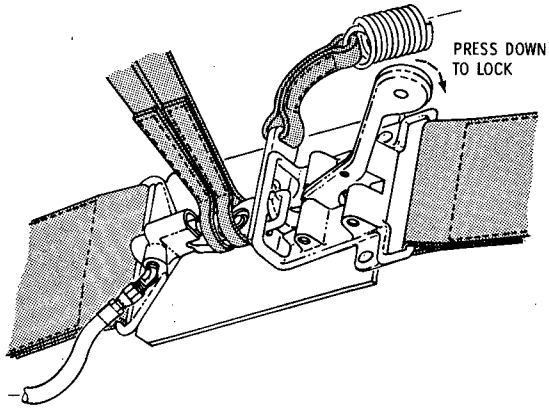
13 CHECK (TWO) PARACHUTE CANOPY ROCKET JET RELEASES. INSURE ROLL BAR PIN IS IN DOWN (LOCKED) POSITION. PULL ON EACH RELEASE TO INSURE LOCK POSITION

14 CHECK FACE HEAT, PLACE BACK OF HAND ON VISOR

15 CONNECT HEAT PROBE (IF APPLICABLE)

16 PRESS TO TEST BOTH SUIT EMERGENCY PRESSURIZATION SYSTEMS, (SEE ILLUSTRATION NO. 7) ONE AT A TIME. CHECK PRESSURE, APPROXIMATELY 65 TO 100 PSI AND FLUCTUATING





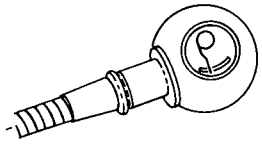
10 CHECK PARACHUTE ARMING (RED KNOB) KNOB IS SECURED INTO DETENT

17 CHECK ACCESSIBILITY OF SUIT FLOATATION KNOB PULL TAB

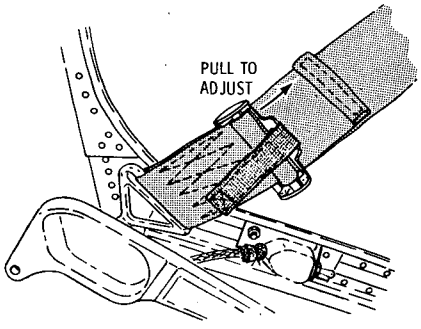
18 READJUST LAP BELT

19 CHECK OXYGEN QUANTITY, BOTH SYSTEMS

20 CHECK FOOT REST GUARDS

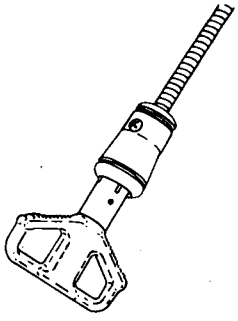


11 CHECK ACCESSIBILITY OF EMERGENCY OXYGEN ACTUATOR (GREEN APPLE) 1800 PSI MINIMUM BOTH SYSTEMS. INSURE GREEN APPLE IS SNAPPED SECURE INTO DETENT

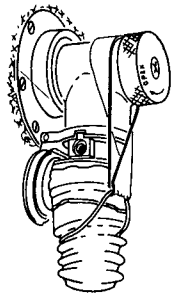


8 LAP BELT

SECURE SHOULDER HARNESS STRAPS AND PARACHUTE TIMER ARMING KEY. LOCK BELT AND ADJUST



12 CHECK PARACHUTE MANUAL "T" HANDLE. INSURE HANDLE IS SNAPPED SECURE INTO HOUSING



21 CONNECT VENT HOSE

NOTE

THIS WILL BE ACCOMPLISHED AFTER ENGINES ARE RUNNING UNLESS EXTERNAL AIR CONDITION VENTILATION UNIT IS HOOKED TO AIRCRAFT VENT SYSTEM. PULL DOWN ON VENT HOSE CONNECTION TO INSURE LOCK POSITION

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Figure 2-1 (Sheet 2 of 2)

AIRCRAFT STATUS

Refer to Form 781 for engineering, servicing, and equipment status.

EXTERIOR INSPECTION

It is not practical for the pilot to perform an exterior inspection while wearing a pressure suit. The exterior inspection should be accomplished by other qualified personnel.

PREFLIGHT CHECK

ENTRANCE

A ladder platform stand which overhangs the chine is used to gain entrance to the cockpit. The canopy is unlatched externally by rotating the external canopy control clockwise with an L-shaped 1/2 inch square bar. The canopy is manually raised to the full open latched position.

BEFORE ENTERING COCKPIT

1. Manual cable cutter ring - Secure.
2. Ejection seat and canopy safety pins installed - Check.

INTERIOR CHECK

1. All circuit breakers - In.
2. Foot retractors - Attach.
3. Throttles - OFF.
4. Landing gear lever - DOWN.
5. Battery switch - EXT PWR.
6. Accomplish and check personal equipment hookup. (Hookup will be performed by personal equipment personnel). Refer to figure 2-1.
7. Suit vent boost lever - Set at 2/3 lever travel.

Left Console

1. IFF - ON. Set to proper mode and code.
2. Panel and instrument lights switches - As desired.
3. COMM selector switch - UHF.
4. External light selector switch - OFF.
5. Defog switch - OFF.
6. HF radio - OFF.
7. UHF radio - OFF.
8. Throttle friction lever - As desired.
9. TEB counter - Check 12.
10. Aft bypass switches - Both CLOSED.

Instrument Panel

1. Cabin Q-bay altitude selector lever - CABIN.
2. Landing and taxi light switch - OFF.
3. Brake switch - ANTI-SKID.
4. Cockpit temperature switch - AUTO.
5. Q-bay temperature switch - AUTO.
6. Q-bay air switch - ON.

7. Cockpit and Q-bay auto temperature rheostats - As desired.
8. Cockpit and Q-bay temperature indicator switch - Q-BAY.
9. Cockpit air switch - ON.
10. Pressure dump switch - OFF.
11. Drag chute handle - Stowed.
12. Windshield deicer switch - OFF.
13. Clocks - Check.
14. Compressor inlet temperature gage - Check needles together and indicating ambient temperature.
15. Igniter purge switch - OFF (down).
16. Compressor inlet static pressure gage - Check needles together and indicating barometric pressure.
17. TDI - Check for proper indication.
18. Altimeter - Set.
19. Periscope MIR SEL handle - Full forward - (Projector).
20. Fuel derichment arming switch - OFF.
21. Restart switches - OFF.
22. Spike knobs - AUTO.
23. Inlet air forward bypass knobs - AUTO.
24. Emergency fuel shutoff switches - Fuel On (guards down).
25. Cockpit pressure schedule switch - As desired.
26. Spike and forward bypass position indicators - Check.
27. Fuel transfer switch - OFF (guard down).
28. Fuel dump switch - OFF (guard down).
29. ILS receiver - OFF.
30. Air refuel switch - OFF.
31. Destruct switch - OFF (guard down).

Right Console

1. Nose hatch seal pressure lever - ON.
2. Pitot pressure selector lever - NORMAL.
3. Canopy seal pressure lever - OFF.
4. Stability augmentation switches - OFF.
5. Autopilot switches - OFF.
6. Inertial navigation system panel - As required.
7. Autopilot and attitude reference selector switch - As desired.
8. BDHI needle selector switch - TACAN.
9. TACAN switches - T/R and tuned to desired station.
10. ADF receiver switch - ANT.
11. Floodlight switch - As desired.
12. Face plate heat switch - As desired.
13. Flight reference system (FRS) compass select switch - MAG.
14. Birdwatcher and SIP power switches - OFF.

Lower Instrument Panel

1. Surface limit release handle - Pulled out.
2. Pitot heat switch - OFF.
3. Hydraulic reserve oil switch - OFF (guard down).
4. Trim power switch - ON.
5. Nose air conditioning handle - Stowed.
6. Backup pitch damper switch - OFF (guard down).
7. Pitch logic override switch - OFF (guard down).
8. Yaw logic override switch - OFF (guard down).
9. Gear release handle - Stowed.

EQUIPMENT FUNCTION CHECK

1. Inverter switches - NORM.
2. N_2 and tank lights switch - Test.
   a. N_2 quantity indicators should decrease to zero.
   b. N QTY LOW warning light should illluminate.
3. Crossfeed and boost pump switches - Press lights on.
4. Pump release switch - PUMP REL, then release.
5. Tank boost pumps - Check 1, 2 and 6 TANK lights on (automatic sequencing).
6. Crossfeed switch - Press (check light off).
7. Fuel quantity indicating system - Check.
   a. Individual (1, 2, 3, 4, 5 and 6) tank quantities - Check.
   b. Total fuel quantity - Check.
8. Gear and warning lights test switch - Press.
   a. All warning and fire lights should illuminate.
   b. Landing gear unsafe warning horn should sound.
9. IND TEST button - Press.
   a. Oxygen quantity needles will move to below 0.
   b. CIT indicator will decrease toward zero.
   c. Spike and forward bypass position indicators increase to maximum forward indication on spike and maximum open on forward bypass.
10. Headset plug and oxygen mask - Connect (if pressure suit is not used).
11. No. 1 and No. 2 oxygen systems - ON (if pressure suit is not used). Check system pressures.
12. Tape and flight recorders - ON.

STARTING ENGINES

CAUTION

Before starting an engine, determine that the wheels are firmly chocked since brakes are inoperable until hydraulic pressure is available and no parking brake is installed.

. Determine that intake and exhaust areas are clear of personnel and ground equipment. The ground personnel using interphone communication equipment will be in position to observe the exhaust nozzle and nacelle inspection panels during starting.

. Do not move the control stick until at least 1500 psi hydraulic pressure can be maintained on the A or B system gages or a control system inspection will be necessary.

1. Check with INS crew prior to starting engines.
2. Fuel low pressure lights - Off.
3. Engine instruments - Check.
4. Ground starting unit - Instruct ground crew to rotate engine for start.
5. Throttle - IDLE when rpm is indicated.
6. Fuel flow - Check 1500-2000 pph.
7. Engine light up will be indicated in approximately 15 seconds by a continuous rpm increase and by a rise in EGT.
8. EGT - Check for 540°C max during acceleration.

NOTE

If engine does not accelerate smoothly to 3550-3650 rpm, retard throttle to OFF and then quickly advance to IDLE. This "double clutching" momentarily leans the fuel:air mixture and properly positions the flame front in the burner cans. Count as another TEB shot.

9. Ground starting unit - Signal ground crew for starter OFF at 3200-3300 rpm.
10. Idle rpm - Check 3550-3650 rpm.

NOTE

Idle rpm increases 50 rpm per °C above 32°C (90°F).

11. Engine and hydraulic pressure instruments - Check normal.
    a. Fuel flow - Check (approximately 3300 pounds per hour).
    b. EGT - Check (350°-540°C).
    c. Oil pressure indicator - Check.

CAUTION

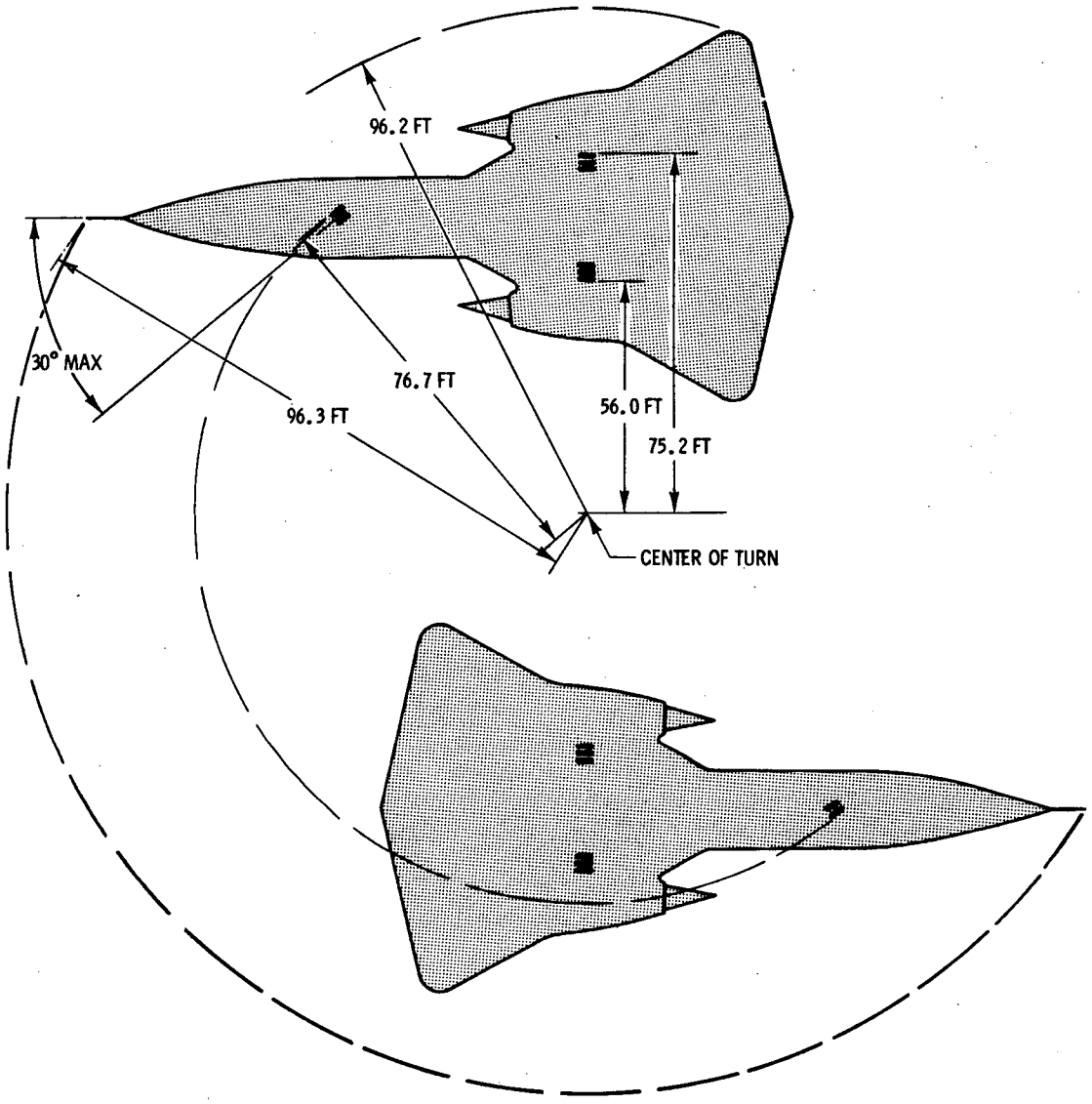
Discontinue start if oil pressure rise is not observed within 60 seconds from start of rotation.

    d. Hydraulic system pressures - Check.
12. UHF switch - BOTH.
13. Start other engine using above procedure.
14. TEB counter - Check.

CAUTION

If throttle is inadvertently retarded to OFF do not advance in an attempt to restart engine. In case of false start use engine clearing procedures, this section. Afterburner duct must be visually checked and unburned fuel removed prior to attempting another start.

TURNING DIAGRAM



NOTE: 151.9 FT MINIMUM RUNWAY WIDTH REQUIRED FOR 180-DEGREE TURN (MAIN GEAR WHEELS ON EDGE OF RUNWAY AT START OF TURN).

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Figure 2-2

CLEARING ENGINE

When a false start occurs, trapped fuel and fuel vapor may be removed from engine by using the following procedure:

1. Throttle - OFF.
2. Ground starting unit - ON for approximately 1 minute. Then signal ground crew for ground starting unit - OFF.

CAUTION

Do not rotate the engine with fuel shut off (Emergency Fuel Shutoff switch - UP, Guard up) except in case of emergency, because damage to the engine may result.

BEFORE TAXIING

1. UHF and IFF/SIF - Check.
2. IFF - As required.
3. Generator switches - RESET (momentary) at idle rpm. Check with INS crew prior to resetting.
4. Battery switch - BAT (within 3 seconds).
5. Generator out lights - Check Off.

NOTE

If the generator out warning lights fail to extinguish, return the battery switch to the EXT PWR position and repeat steps 3 and 4 above.

6. INS DEST/FIX switch - VARIABLE DEST.
7. INS mode switch - NAV. Check with INS crew prior to actuating switch. Press the STORE button and check BDHI No. 2 steering needle for 10° right indication and Distance To Go indicator for 122 nautical mile readout.
8. INS indications - Report Destination Coordinates, Distance To Go and Groundspeed when slewing is completed.
9. INS DEST/FIX switch - Select VARIABLE FIX and press STORE button. Check INS FIX REJECT light on.
10. INS DEST/FIX switch - Select VARIABLE DEST and press STORE button. Check INS FIX REJECT light off.
11. INS umbilical cord - Check disconnected (confirmed by INS crew).
12. External power - Signal for disconnect.
13. Inlet air forward bypass - Check open. Ground crew will confirm open.
14. HF radio - ON.
15. SAS channel switches - All ON.
16. SAS recycle lights - Press (all lights should go out).
17. SAS light test switch - Press (all lights should illuminate).
18. Autopilot pitch and roll engage switches - ON.
19. Autopilot disengage switch (control stick)- Press. Check that autopilot disengages.
20. SAS channel switches - OFF. Pitch and yaw A and B and Roll disengage lights illuminate. Both MON lights must stay out.

21. Surface trim - Check for proper operation with ground crew and set to zero.

22. Control system - Check for proper direction of movement. Individually check each axis in both directions and have ground personnel verify proper deflection of control surfaces.

23. Package switches - As required.

24. Canopy and seat safety pins - Remove and stow.

25. Canopy - Close and lock.

26. Canopy seal pressure lever - ON.

CAUTION

The canopy should be opened or closed only when the aircraft is completely stopped. Maximum taxi speed with the canopy open is approximately 40 knots. Gust or severe wind conditions should be considered as a portion of the 40 knot limit taxi speed.

27. Rear view periscope - Check.

28. Taxi clearance - Obtain clearance from control tower.

29. Chocks and downlock pins - Signal for removal. Observe ground crew for clearance to taxi.

30. Nosewheel steering - Engage and check operation.

TAXIING

1. Brakes - Check.

WARNING

Do not switch to alternate brakes with both L & R hydraulic systems operative.

2. Flight instruments - Check.

3. Navigation equipment - Check operation of ADF, TACAN, and INS.

CAUTION

All taxiing and turns should be accomplished at slow speeds so as to limit side loads on the landing gear. Fast taxiing should also be avoided to prevent excessive brake and tire heating and wear.

BEFORE TAKEOFF

1. Engine trim - As required.

NOTE

If engine trim run is required, EGT values appropriate for ambient temperature will be supplied during preparation for flight.

During trim run at Military rpm:

2. Cockpit and Q-bay auto temp controls - Adjust if necessary.

NOTE

Adjust both controls toward increasing temperature positions if necessary, to eliminate cockpit fog if fog is encountered at lower temperature settings. 12:00 to 1:00 o'clock settings are normally sufficient. Lower temperature settings are desirable when local humidity and ambient temperature conditions permit, in order to assure personal and equipment cooling.

3. SAS channel switches - All ON.

4. SAS recycle lights - Press, if necessary (lights should go out).

5. Surface trim indicators - Check for zero setting.

6. Tanks 1, 2 and 6 - Check ON.

7. INS - Check and fix as required. At designated runway position, select correct STORED FIX position and fix. Check INS FIX REJECT light off. Select STORED MAN. Reset DEST/FIX briefed initial destination position, and store. Check distance to go after slewing completed, then reset DEST FIX to STORED AUTO if desired.

8. Compasses - Check. Check and synchronize FRS and check INS if applicable. Return INS mode selector switch to desired position. Check Standby Compass against runway heading.

9. Pitot heat switch - ON.

10. Warning lights - All Off.

11. External lights switch - BCN (if required).

12. Shoulder harness - Lock.

13. Flight controls - Cycle and check hydraulic pressures.

14. Suit vent boost lever - NORM.

15. Birdwatcher power switch - ON and checked.

16. Fuel derich arming switch - ARM.

17. Elapsed time clock - Start.

TAKEOFF

1. Brakes - Hold.

2. Nosewheel steering - Engaged.

3. Throttles - Advance.

CAUTION

Engine turbine life can be appreciably decreased by too rapid throttle movement. The time for throttle advancement from IDLE to MILITARY should be no less than one second.

4. Brakes - Release at 6000 rpm.

CAUTION

The tires may skid if the brakes are held on at high thrust.

5. Engine instruments - Check at MILITARY thrust.

   a. Tachometer.

   b. Nozzle Position.

   c. Oil Pressure.

6. Throttles - Advance to afterburner midrange position after engines reach MILITARY rpm.

WARNING

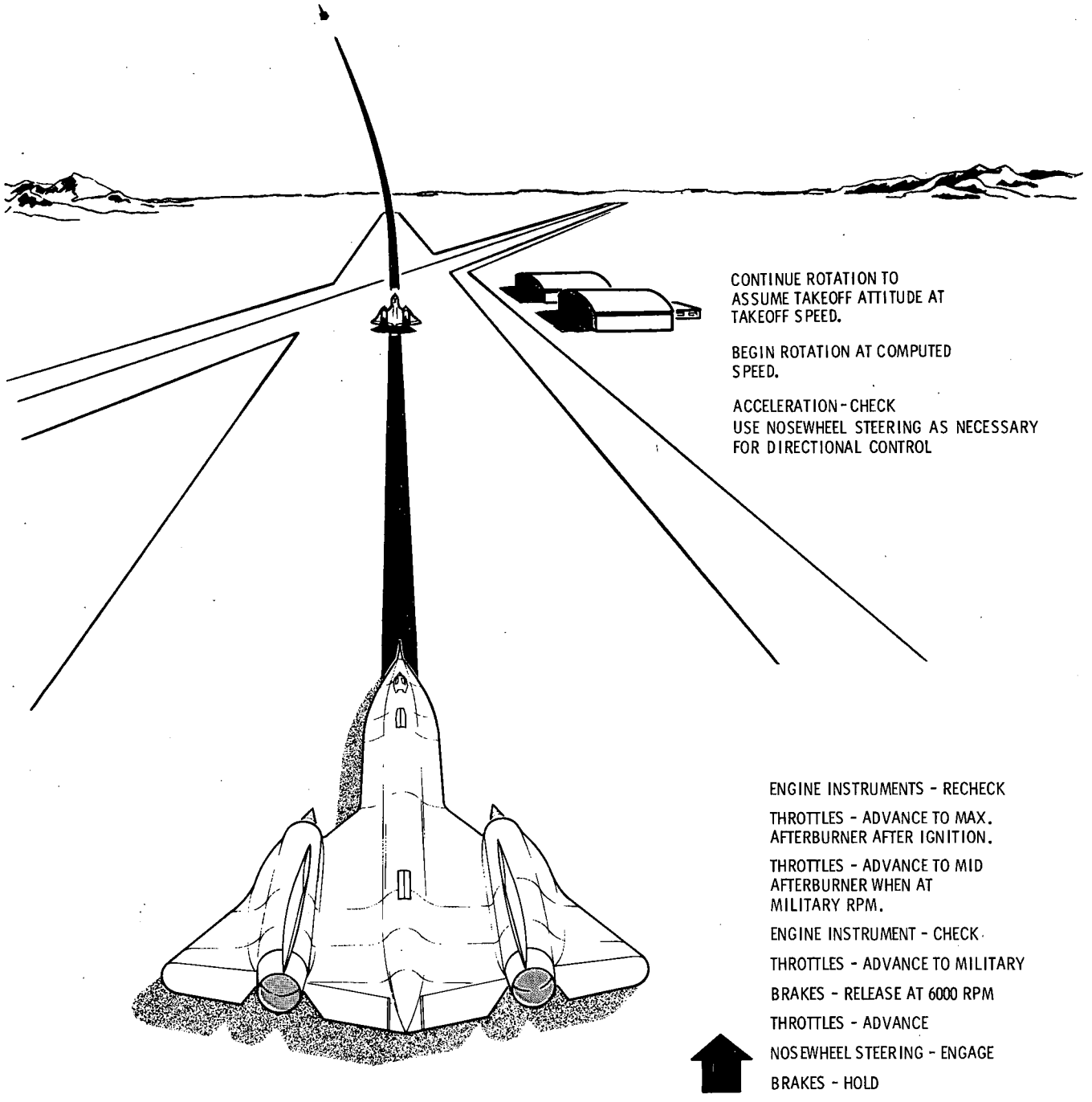
To prevent overspeed, afterburner ignition must not be accomplished before the engines reach MILITARY rpm.

TAKEOFF

NOTE

ENGINE INSTRUMENT CHECKS SHOULD BE MADE DURING THE INITIAL PORTION OF TAKEOFF ROLL.

THE TIRES MAY SKID WITH THE BRAKES ON AT HIGH ENGINE THRUST.



CONTINUE ROTATION TO ASSUME TAKEOFF ATTITUDE AT TAKEOFF SPEED.

BEGIN ROTATION AT COMPUTED SPEED.

ACCELERATION - CHECK
USE NOSEWHEEL STEERING AS NECESSARY FOR DIRECTIONAL CONTROL

ENGINE INSTRUMENTS - RECHECK

THROTTLES - ADVANCE TO MAX. AFTERBURNER AFTER IGNITION.

THROTTLES - ADVANCE TO MID AFTERBURNER WHEN AT MILITARY RPM.

ENGINE INSTRUMENT - CHECK

THROTTLES - ADVANCE TO MILITARY

BRAKES - RELEASE AT 6000 RPM

THROTTLES - ADVANCE

NOSEWHEEL STEERING - ENGAGE

BRAKES - HOLD

F200-4(e)

Figure 2-3

NOTE

- Afterburner ignition should occur within 3 seconds.
- Abort the takeoff if one or both afterburners do not ignite.

Advancing the power lever to initiate afterburning results in momentary nozzle excursion, and engine transient speed oscillation may approach 250 rpm.

7. Throttles - Advance to MAXIMUM THRUST.

CAUTION

The time for throttle advancement should be no less than one second.

8. Engine instruments - Recheck at MAXIMUM THRUST.

NOTE

Exact readouts on these instruments is time consuming. The readout should be anticipated and needle position checked against a clock position. If there is any indication of improper engine performance during power advancement, the takeoff should be aborted. Monitor ground run distance and airspeed during the takeoff roll. If possible, any abort decision should be made before the aircraft has reached high groundspeed. Directional control can be maintained with nosewheel steering up to nosewheel lift off speed.

9. Acceleration - Check indicated airspeed against computed acceleration check speed at selected acceleration check distance. Refer to performance data, Appendix I, for takeoff information.

10. Rotation - Begin at computed airspeed approximately five seconds before reaching takeoff speed. Apply smooth, constant back pressure on the stick so that required stick deflection and rotation to takeoff attitude occurs at takeoff speed. Refer to Appendix I for rotation and takeoff speeds.

NOTE

Use indicated airspeed during takeoff and climb until proper climb schedule speed is reached on the triple display indicator.

CROSSWIND TAKEOFF

During crosswind takeoffs the aircraft tends to weather vane into the wind. This will be noted when the nosewheel lifts off and nosewheel steering is no longer available. Rudder pressure must be held to counteract the crosswind effect. A definite correction must be made as the aircraft breaks ground. Apply lateral control as necessary for wings level flight. Both the directional and lateral control applications are normal and no problems should be encountered when taking off during reasonable crosswind conditions.

ROTATION TECHNIQUE

During takeoff, the maximum load on the main wheel tires occurs during rotation to takeoff attitude.

CLIMB SPEED SCHEDULES

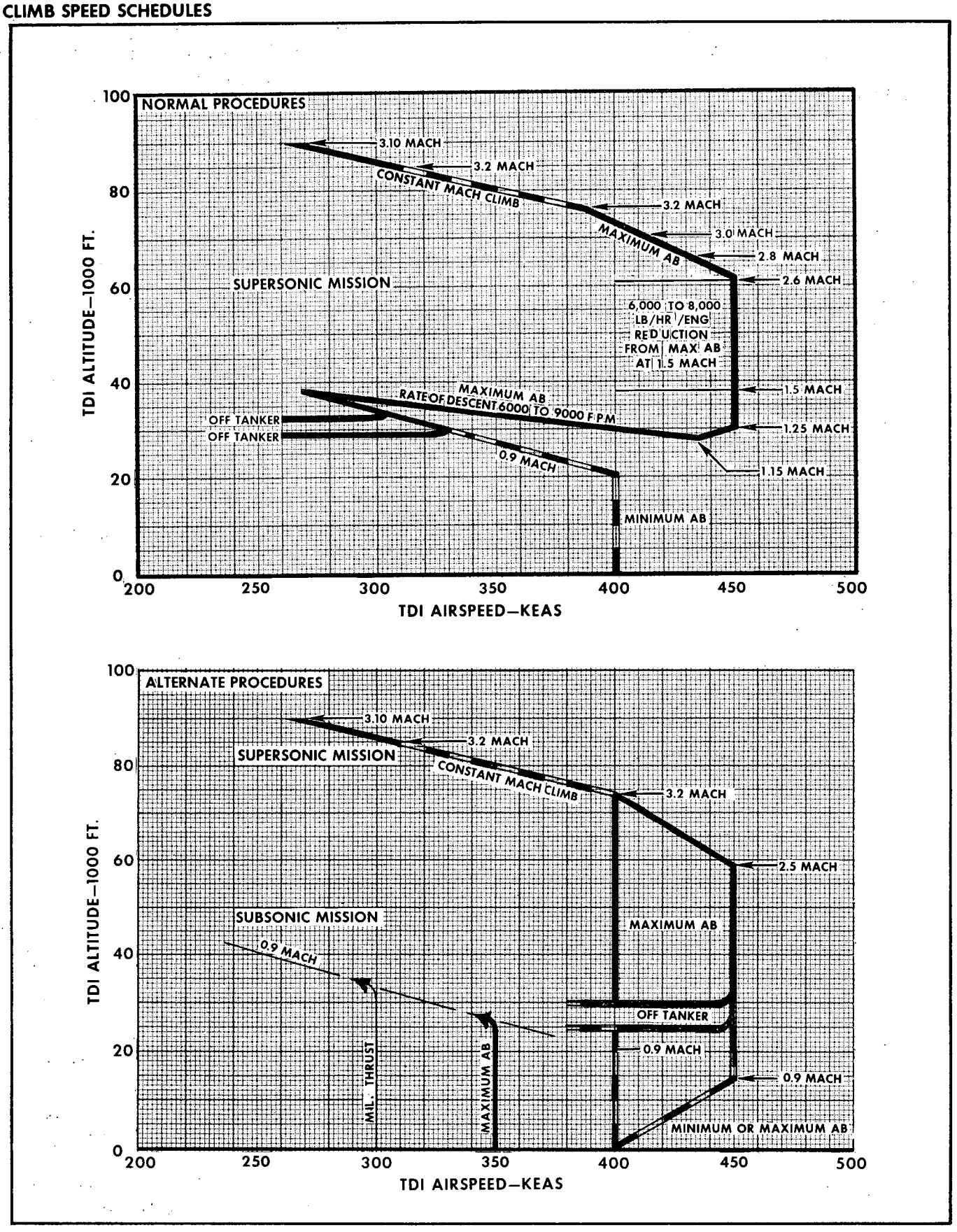


Figure 2-4

CAUTION

Avoid abrupt rotation since this can impose an excessive load on the tires and cause blowouts.

In general, the tires are more critical during takeoff than at landing because of the higher ground speeds and gross weights involved. Wing lift quickly relieves the gear load as the nose is raised. Start rotation approximately five seconds before reaching the scheduled takeoff airspeed. Premature nosewheel lift off should be avoided because the unnecessary drag extends the ground run. Delayed rotation also extends the ground run and may result in excessive tire speeds.

AFTER TAKEOFF

When definitely airborne:

1. Landing gear lever - UP.

NOTE

The gear will retract in approximately 12 seconds. Observe landing gear limit speed while gear is extended.

WARNING

Single engine operation is critical immediately after takeoff. Increasing airspeed and decreasing angle of attack has greater benefits than gaining altitude at a maximum rate.

After gear retraction is complete:

2. Throttles - Climb power.

   Minimum afterburning is normally set after takeoff. When flight plan deviates from normal climb procedure, maintain maximum afterburning or reduce power in accordance with alternate plan.

3. Engine instruments - Check.

At Mach 0.5:

4. Surface limiter release handle - Engage.

   Rotate handle counterclockwise and stow to engage limiters. Check SURF LIMIT warning light off to confirm engagement.

5. Airspeed - Establish climb schedule.

   For normal operation:

   a. 400 KEAS while below FL 200.

   b. Mach 0.9 while subsonic above FL 200.

6. Altimeter - Set to 29.92" Hg at FL 180.

Above FL 200, with CIT 5° to 15°C:

7. EGT trim - Check $815^{\circ} \pm 25^{\circ}$C.

NORMAL CLIMB

The normal climb procedure optimizes power and airspeed schedules for supersonic range and is applicable to climbs after takeoff or air refueling. Use of alternate procedures is permitted, but results in degraded supersonic range capability. The general technique for airspeed and power scheduling is as follows:

a. After takeoff, accelerate to 400 KEAS in a climbing flight path, then climb with minimum afterburning at 400 KEAS. Intercept Mach 0.9 at approximately 20,000 feet and readjust climb attitude to hold 0.9 to 0.95 Mach number. The autopilot KEAS Hold and Mach Hold

features may be used for this climb phase. Adjust throttles to maximum afterburning at approximately 32,000 feet.

b. After refueling, set maximum afterburning power and accelerate to intercept 0.9 Mach number, then climb at 0.90 to 0.95 Mach number. When the autopilot Mach Hold feature is used, engage Mach Hold at Mach 0.93.

c. At FL 380, level out momentarily, disengage the autopilot, and push over at approximately 0.8 g's. Establish a 6000 fpm to 9000 fpm rate of descent. Accelerate toward 450 KEAS. Plan this maneuver so as to avoid turns while below Mach 1.15.

NOTE

It is most important to exceed Mach 1.05 early in the descent, and to attain Mach 1.15 before starting the pull-out with sufficient airspeed margin so as not to exceed 450 KEAS.

The 37,000 ft. to 39,000 ft. maximum altitude band is optimum for a wide range of ambient temperatures when rates of descent of 6000 fpm to 9000 fpm are used. 39,000 ft. and 9000 fpm may be favored with tropic hot day temperatures. 37,000 ft. and 6000 fpm may be used with good results when ambient temperatures are below standard.

NOTE

When possible, check EGT trim before starting the transonic acceleration maneuver. Abnormally low EGT degrades performance.

d. After Mach 1.15 is attained, approximately 435 KEAS, start a smooth round-out so as not to exceed 450 KEAS. A peak load factor of up to 1-1/2 g's may be required as level attitude is approached. Climb at 450 KEAS, using the autopilot KEAS Hold feature as desired.

e. At Mach 1.5, reduce power to obtain a fuel flow reduction of 6000 to 8000 pounds per hour per engine. Maintain 450 KEAS to Mach 2.6.

f. At Mach 2.6, approximately 60,800 ft., increase power to maximum afterburning and begin decreasing airspeed 10 KEAS per 0.1 Mach increase. If engaged, the autopilot KEAS Hold feature accomplishes the speed decrease automatically.

g. As cruise Mach number and/or initial cruise altitude are approached, reduce power so as to end the climb and start cruise climb as briefed.

The following procedure is recommended after air refueling or when the after takeoff procedures are completed:

After refueling, or at FL 320 after takeoff:

1. Throttles - Maximum afterburning.

2. Airspeed - Mach 0.93.

   Mach Hold may be used if desired.

3. Cockpit and Q-bay auto temp controls - Adjust to individual settings as required.

4. HF radio and B-W - Check as briefed.

NOTE

Operation of Birdwatcher causes the HF radio to transmit a coded signal and produce a noise burst in the headset.

5. EGT trim - Check.

RPM*	6500	6400	6300	6200	6100	6000
EGT**	800	750	710	670	630	590
CIT	0	-10	-18	-27	-36	-45

* Allowable rpm vs CIT tolerance is ± 150 rpm.
** Normal EGT is in °C ± 25°C.

Use above table, or base trim check on information supplied by tanker while refueling.

At FL 380:

6. Airspeed - Start transonic acceleration to 450 KEAS.

   Disengage autopilot and establish 6000 fpm to 9000 fpm rate of descent. After Mach 1.15 attained, round-out to supersonic climb speed. Do not exceed 450 KEAS.

At Mach 1.3:

7. Oscillograph switches - ON as briefed.

At Mach 1.5:

8. Throttles - Reduce fuel flow 6000-8000 pph per engine.

At Mach 1.7:

9. Aft bypass controls - Set both to B position (50% open).

NOTE

At approximately Mach 2.3 (CIT 150° to 190°C.) there will be a slight but noticeable yaw as the compressor bypass bleeds open if the left and right engines do not operate on exactly the same schedule.

10. Pitot heat switch - OFF below FL 600.

NOTE

The PITOT HEAT warning light will illuminate if pitot heat is left on above FL 600 while climbing.

11. IFF/SIF controls - As briefed at FL 600.

12. Beacon and fuselage lights - Off above FL 600.

At Mach 2.6:

13. Throttles - Maximum afterburning.

14. KEAS - Checked.

    Decrease KEAS 10 knots per 0.1 Mach number increase in speed above Mach 2.6. The KEAS Hold function of the autopilot should maintain this schedule automatically if engaged.

Mach No.	2.6	2.7	2.8	2.9	3.0	3.1	3.2
KEAS	450	440	430	420	410	400	390

At Mach 2.7:

15. Aft bypass controls - Set both to A position (15% open).

At Mach 3.0:

16. Aft bypass controls - Set both to CLOSED position.

Reduce equivalent airspeeds if climb is to be continued after reaching the desired Mach number.

Desired supersonic speeds may be maintained by throttling to partial afterburning settings. Maintain EGT by use of trim switches.

17. Oscillograph switches - OFF or as briefed.

ALTERNATE CLIMB

Deviations from Normal Climb procedures are permitted when limitations of Section V are observed. Maximum Thrust may be used continuously, but fuel economy will be less than for normal climb procedures. See figure 2-4. The recommended Military Thrust climb speed is a constant 300 KEAS. EGT can be expected to decrease as CIT decreases. The recommended Maximum Thrust climb speed for subsonic operation is 350 KEAS to approximately FL 260, and Mach 0.9 above that altitude. When Maximum Thrust is used continuously after takeoff, a definite rotation is required to establish initial climb attitude. Begin rotation sufficiently in advance of reaching the climb speed schedule to avoid overshoot. Refer to Appendix I for climb performance.

TRANSONIC OPERATION

Transonic accelerations can be started by using the 450 KEAS climb speed schedule, starting at approximately 15,000 feet, or by making a level transonic acceleration at an altitude between 25,000 and 30,000 feet.

Climbing Acceleration Procedure

When this procedure is used, accelerate from takeoff to 350 - 370 KEAS and rotate to climb attitude.

NOTE

Begin the rotation sufficiently in advance of reaching climb speed to avoid exceeding 400 KEAS. If rotation is delayed, it is possible to overshoot the airspeed by an appreciable amount.

Establish 450 KEAS at approximately 15,000 feet and climb at this speed using maximum afterburning thrust. Mach number will increase with altitude and Mach 1.0 will be reached at 20,000 feet.

CRUISE

Observe limitations of Section V.

Center of gravity control is important for optimum cruise performance. Fuel load distribution and automatic tank sequencing provides a forward cg for takeoff and initial climb. During supersonic climb and cruise, automatic sequencing provides an aft cg to minimize elevon deflection and resulting trim drag. Supplemental manual control of fuel usage is also possible, but should only be used in the event of malfunction of the automatic sequencing system.

CAUTION

Spike and forward bypass knobs must be in AUTO position when cruising above 80,000 feet.

For long range operation, establish a throttle setting for the applicable cruise KEAS/altitude weight schedule; then only make minor adjustments as necessary to maintain the schedule.

ENGINE OPERATION

Exhaust gas temperature and engine speed limits vary with CIT. Refer to Engine Operating Limits, Section V, for limit schedule.

CAUTION

As Mach number is increased, caution is required in the rate of throttle movement following afterburner ignition and during afterburner shutdown.

Oil Pressure and Temperature

Oil pressure should be monitored closely. Mach number should be reduced if pressure does not remain within the limits listed in Section V or if the oil temperature warning light illuminates.

PRIOR TO DESCENT

Retrimming of EGT should not be required prior to start of descent unless manual uptrimming has been accomplished during climb or cruise. The amount of downtrim required will be approximately equal to the total prior uptrim. Pilot judgement must govern its use. As a general rule, 755°C EGT at start of deceleration should prevent overtemperature conditions and provide normal engine operation at lower Mach numbers. Retrim if necessary and accomplish the following before descending in order to obtain scheduled descent distance.

1. Throttles - Slowly retard to minimum afterburning position.
2. Spike knobs - Check AUTO.
3. Inlet air aft bypass switches - Check normal schedule.
4. Inlet air forward bypass knobs - Check AUTO.

DESCENT

Aircraft deceleration rates are limited by maximum tolerable temperature transients within the engines. Engine cooling rates will be satisfactory when deceleration rate is not greater than prescribed in Section V. Use of Military Thrust and a speed schedule of 300 KEAS during deceleration to Mach 2.5 satisfies this requirement when the spikes are set in AUTO. Descents can be made at engine speeds below the Military rpm schedule between Mach 2.5 and Mach 1.0. Throttles may be set as desired at subsonic speeds.

WARNING

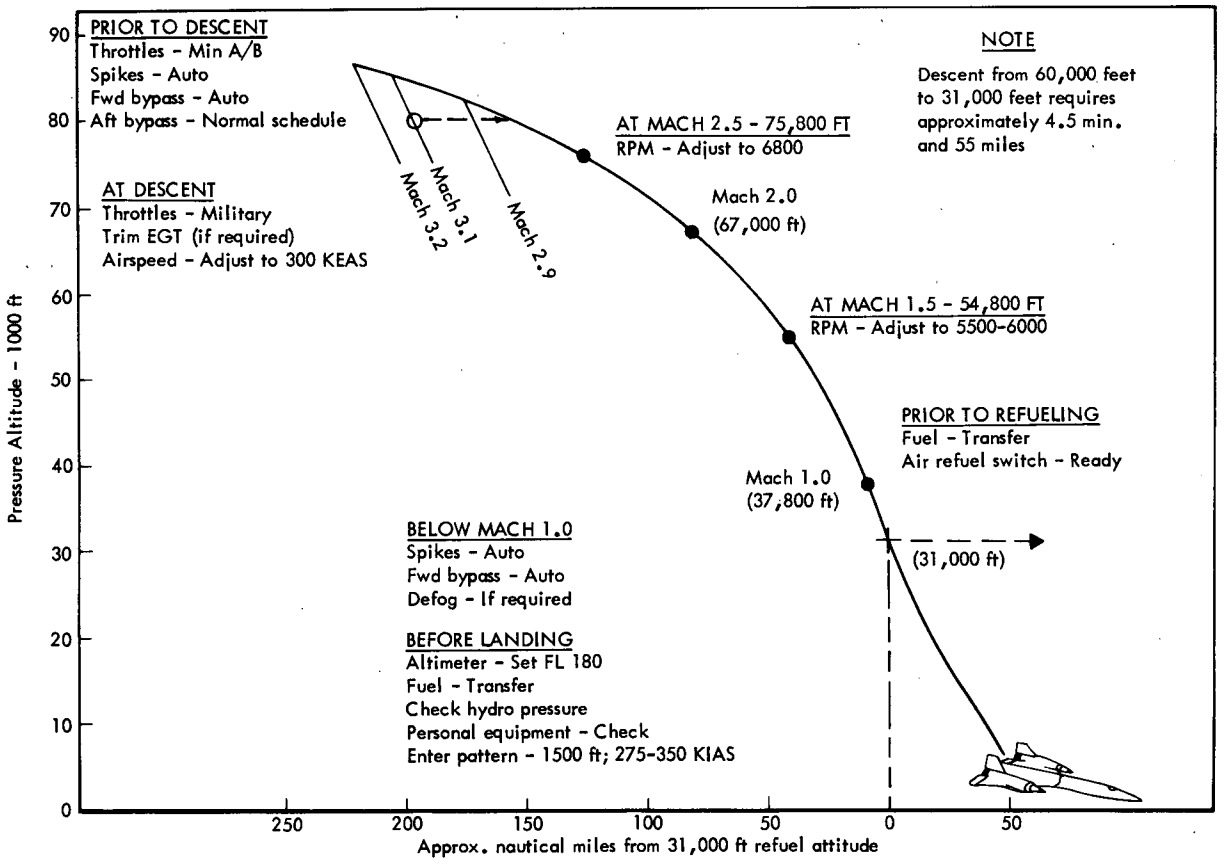
Monitor fuel tank pressure during descent, and reduce rate of descent if necessary in order to maintain positive fuel tank pressure.

A high descent rate below FL 500 can exceed the LN_2 system ability to pressurize the fuel tanks. Negative pressure allows atmospheric oxygen to enter the tanks through the vacuum relief valve. If fuel vapor temperature in the tanks is high, above approximately 410°F (or 210°C), and tank internal pressure is equivalent to 30,000 feet pressure altitude, or less, mixture with a critical percentage of oxygen can result in fuel vapor ignition.

NORMAL DESCENTS

In the event of inlet roughness set the forward bypass doors open, then set the spikes forward and increase rpm if necessary. Refer to appendix for normal descent performance, and for performance with forward bypass open.

DESCENT PROFILE



300 KEAS NORMAL DESCENT SCHEDULE TABLE

Press. Alt. - 1000 ft.	MACH NUMBER											
	3.20	3.10	3.00	2.90	2.80	2.70	2.60	2.50	2.0	1.50	1.20	0.90
	DTG and (KEAS) are at start of decel.											
86.3	241 (300)			Notes: Altitudes given in 1000 feet. Distances to go - DTG - are n. mi. Inlet - Spikes, AUTO Fwd bypass doors, AUTO Aft bypass doors, Normal schedule No turns. Military thrust above Mach 2.5 20 mi. tanker overtake allowance included. Make additional 20 mi. allowance for straight in approach to pattern altitude.								
85.0	239 (310)	225 (300)										
83.6	236 (321)	222 (311)	209 (300)									
82.1	233 (332)	220 (321)	206 (311)	195 (300)								
80.6	230 (344)	217 (333)	204 (323)	192 (312)	181 (300)							
79	228 (357)	214 (346)	200 (334)	189 (323)	178 (312)	169 (300)						
77.4	225 (371)	211 (359)	198 (347)	186 (336)	175 (324)	166 (312)	158 (300)					
75.9	222 (384)	209 (372)	195 (360)	183 (348)	172 (336)	163 (324)	156 (312)	147 (300)				
66.8									101 (300)			
54.7										60 (300)		
45.3											41 (300)	
33.4												23 (300)

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Figure 2-5

1. Throttles - MILITARY.

At Mach 3.0:

2. Aft bypass switches - Position A.

3. EGT trim - Down trim if required.

4. Airspeed - Adjust to 300 KEAS. Maintain cruise altitude until 300 KEAS is intercepted. Rate of deceleration must not exceed allowable Mach rate.

5. Fuel tank pressure - Check.

At Mach 2.7:

6. Aft bypass switches - Position B.

At Mach 2.5:

7. Throttles - Adjust to 6800 rpm. Maintain at least 6500 rpm while above Mach 2.0.

NOTE

Set forward bypass open, spikes forward and increase rpm as required if inlet roughness is encountered.

8. IFF/SIF controls - As briefed at FL 600.

9. INS mode switch - FRS.

10. Pitot heat switch - ON.

NOTE

The PITOT HEAT warning light will illuminate if pitot heat is left off below FL 500 while descending.

11. External lights switch - As desired.

At Mach 1.7:

12. Aft bypass switches - CLOSED.

At Mach 1.5:

13. RPM - Check. Maintain at least 5500 for remainder of descent to subsonic speed.

Below Mach 1.0:

14. Throttles - Adjust as required. Rate of descent must not result in negative fuel tank pressure. Avoid speed below 5100 rpm to prevent cycling of engine start bleed valves.

15. Airspeed - Adjust as desired.

16. Forward bypass - Check closed indication.

17. Defog switch - ON and HOLD if required.

At FL 180:

18. Altimeter - Set.

19. Use pitot static system for descent.

AIR REFUELING PROCEDURES

Either of two methods of handling power during refueling may be used. Whenever the initial fuel quantity remaining is over approximately 15,000 pounds it is possible to use minimum afterburning on one engine and less than Military thrust on the other. This allows refueling to be accomplished at a constant altitude of approximately 32,000 feet, using the non-afterburning engine for thrust control. Normally or when at light weight, the initial contact should be made using non-afterburning power settings. One afterburner should then be lighted after temporarily disconnecting when the aircraft

AIR REFUELING DIRECTOR LIGHTS

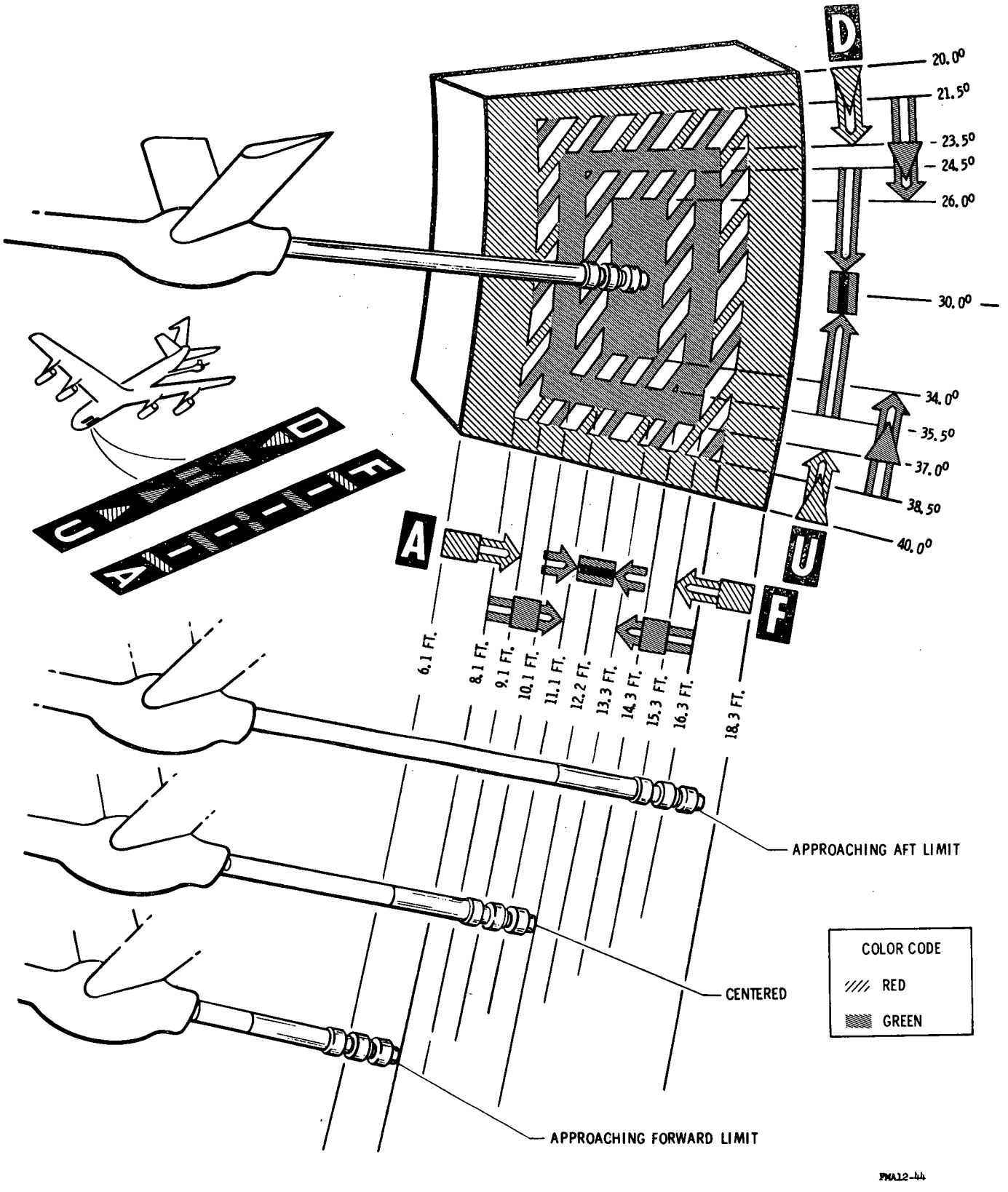
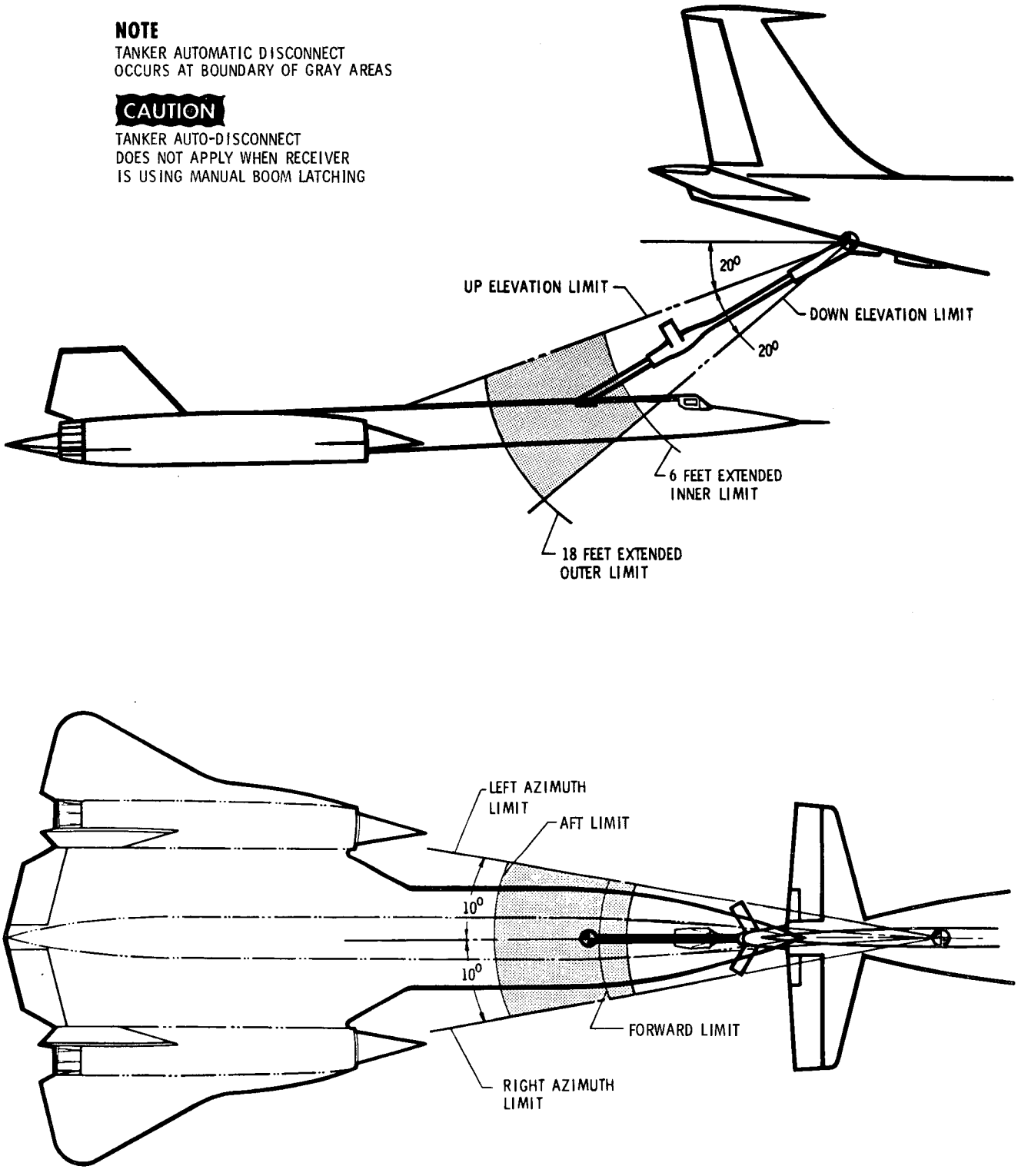


Figure 2-6

AIR REFUELING BOOM ENVELOPE

NOTE
TANKER AUTOMATIC DISCONNECT
OCCURS AT BOUNDARY OF GRAY AREAS

CAUTION
TANKER AUTO-DISCONNECT
DOES NOT APPLY WHEN RECEIVER
IS USING MANUAL BOOM LATCHING



F200-6(a)

Figure 2-7

becomes power limited at Military thrust. The conventional procedure of completing refueling without use of an afterburner can also be used; however, a toboggan to approximately 25,000 feet will be necessary after the tanks are filled to 1/2 to 2/3 capacity.

Prior to air refueling, stabilize and trim at refueling speed for contact. Observe the tanker for director light signals and a maneuver as directed by the lights. A successful connection is confirmed by a mild jolt to the aircraft, steady illumination of the director light panel and the extinguishing of the READY light. Slight maneuvering may be necessary at this point to illuminate the azimuth and elevation neutral lights during fuel transfer. Contact can be maintained between the aircraft and tanker during a turn or in a descent. No adverse flight characteristics are present due to tanker downwash. After the disconnect occurs, separation is made down and to the rear of the tanker.

PRIOR TO REFUELING

Accomplish the following prior to refueling:

1. Radar beacon - As briefed.
2. Air refuel switch - READY.

NOTE

Amplifier requires up to approximately five minutes for warmup.

3. Forward transfer switch - No. 4 TRANS. (Transfer 2000-4000 lbs).

CAUTION

If less than a full fuel load is onloaded, it is possible for an abnormal aft c.g. to develop.

4. Fuel quantity indicator selector - TOTAL. Monitor total fuel quantity.
5. Seat - Lower.

When in observation position after rendezvous with tanker.

6. UHF radio INT-EXT mode switch - INT.
7. READY light - Push on (green) if necessary.
8. Forward transfer switch - OFF.
9. Stabilize in pre-contact position.
10. Beacon light switch - FUS.
11. Observe tanker director lights illuminated and boom in ready for contact position.

NORMAL REFUELING

Normal refueling is accomplished as follows:

1. Establish contact.

After contact is made:

2. READY light - Check out.
3. Total fuel quantity - Monitor.

When refueling is complete:

4. Control stick disconnect - Press.
5. Air refuel switch - OFF. Check ready light off.
6. Tanks 1, 2, 6 - Check ON.
7. Trim engines to EGT supplied by tanker.
8. Radar beacon - OFF.

In case L hydraulic pressure is lost, R pressure may be utilized for refueling by moving the brake switch to ALT STEER & BRAKE position.

SECTION II

PRIOR TO REFUELING

Add the folliwng after step 3.

CAUTION

If forward transfer is not accomplished and less than a full fuel load is onloaded it is possible for an abnormal aft c. g. to develop.

CAUTION

Do not leave the brake switch in the ALT STEER & BRAKE position after refueling.

ALTERNATE REFUELING PROCEDURE

The boom may be latched in the refueling receptacle manually as an alternate procedure by using the following procedure:

1. Air refuel switch - MANUAL. Check READY light on.
2. Control stick disconnect - Press and hold.

When nozzle has bottomed in the receptacle:

3. Control stick disconnect - Release.

CAUTION

If the disconnect trigger is released before the nozzle is in the bottom of the receptacle, it is possible for the nozzle to damage nozzle latches, preventing any further refueling.

4. Fuel quantity - Monitor TOTAL fuel.

When refueling is complete:

5. Control stick disconnect - Press.

CAUTION

The automatic limit disconnect system is inoperative. All disconnects must be initiated by the receiver aircraft, since the tanker operator is unable to release the nozzle latches during manual boom latching.

6. Accomplish steps 5, 6, 7, 8 of Normal Procedure.

NOTE

If a malfunction occurs which prevents disconnecting the boom, place the Air Refuel switch in the MANUAL position and depress the IFR DISC trigger. If disconnect is not accomplished proceed with brute force pullout by retarding throttles.

BEFORE LANDING

Below 20,000 feet:

1. Cockpit and Q-bay auto temp controls - Adjust to approximately two-o'clock position or as required to avoid cockpit fog.

CAUTION

- Monitor Q-bay and cockpit temperatures to avoid equipment overheat, if possible.
- Keep UHF radio transmissions to a 5 second maximum if possible while defogging step is employed.

2. Fuel transfer switch - FWD TRANS, if required.

NOTE

When tank 5 or 6 contains fuel, transfer 1000 to 4000 lbs forward to obtain a slight nose up pitch trim.

3. Surface limiter handle - Pull out and rotate 90° CW at Mach 0.5.
4. Periscope MIR SEL handle - Full forward.

LANDING PATTERN (Typical)

NOTE

NORMAL FINAL APPROACH SPEED IS 165 KIAS PLUS ONE KNOT PER 1000 LB OVER 5000 LB FUEL REMAINING. LANDING SPEED IS 20 KIAS BELOW FINAL APPROACH SPEED. SPEED FOR MINIMUM LANDING ROLL IS 10 KNOTS LESS THAN FOR NORMAL PROCEDURE.

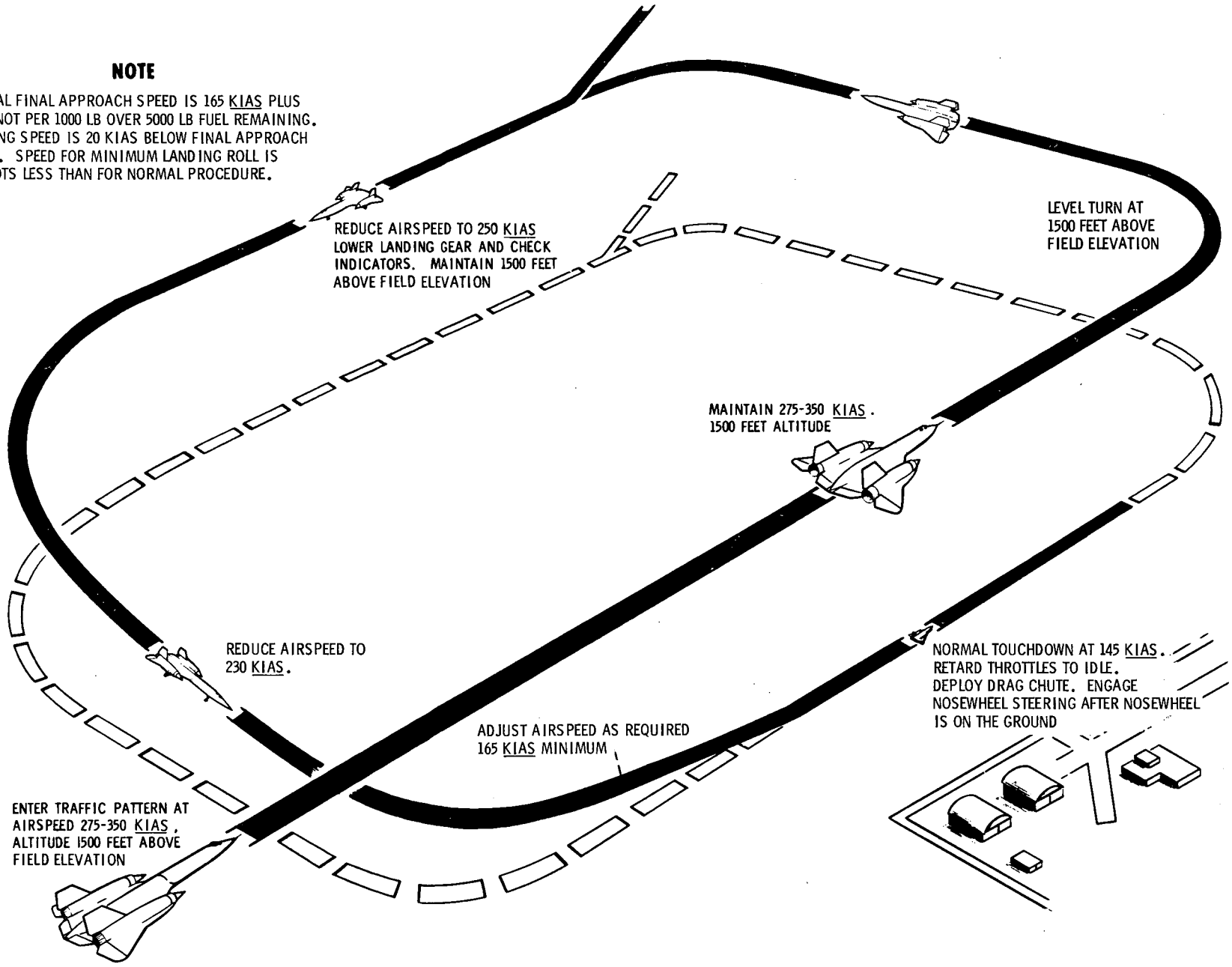


Figure 2-8

F200-37(e)

5. Hydraulic pressures - Check.
6. Fuel transfer switch - OFF.
7. B-W power switch - OFF.
8. Shoulder harness - Manually locked.
9. Face plate - Open.
10. Oxygen - OFF.
11. Traffic pattern entry - 275 to 350 KIAS, 1500 feet above field elevation.
12. Downwind - 250 KIAS, 1500 feet above field elevation.
13. Landing gear lever - DOWN (check gear down and locked).

NOTE

Normal gear extension time is approximately 16 seconds. Observe gear limit speed with gear extended.

14. Base leg - 220 to 230 KIAS.
15. Final approach - Maintain 165 KIAS minimum with 5000 pounds of fuel.

NOTE

Base minimum final approach speed on intended touchdown speed. Do not use maximum performance final approach speed unless operating conditions require minimum roll or runway is wet or icy.

See figure 2-8 for a typical landing pattern.

16. Landing and taxi lights switch - As required.

LANDING

NORMAL LANDING

Refer to the Appendix for landing ground roll distances. If airspeed becomes excessively low, a high sink rate will develop resulting in a hard landing. During the flare, throttles are reduced to IDLE and touchdown is made at approximately 10° pitch angle (nose approximately on the horizon).

The following procedures should be employed:

1. Throttles - IDLE.

CAUTION

Throttle movement should follow quadrant curvature so that the hidden ledge at the IDLE position can prevent inadvertent engine cutoff.

2. Touchdown speed - As required.
3. Hold nosewheel off.

CAUTION

Fuselage angle must not exceed 14° to avoid scraping the tail.

4. Drag chute handle - Pull to deploy. Chute deployment takes approximately three seconds.
5. Lower nosewheel at 110 KIAS.

6. Engage nosewheel steering for directional control. Steering will not engage until rudder pedals align with nosewheel position (straight ahead) and weight of aircraft is on any one gear.

7. Brakes - Apply after chute deployment. Moderate braking may be used prior to chute deployment.

CAUTION

If the chute does not deploy observe the brake energy limit speeds in Section V. Brake switch should remain in the ANTI-SKID position if runway is dry. Refer to Drag Chute Failure, Section III.

8. Drag chute handle - Turn and push to jettison chute.

CAUTION

The drag chute should be jettisoned while the aircraft still has forward motion to prevent drag chute collapse. The aircraft should not be taxiied with a collapsed drag chute.

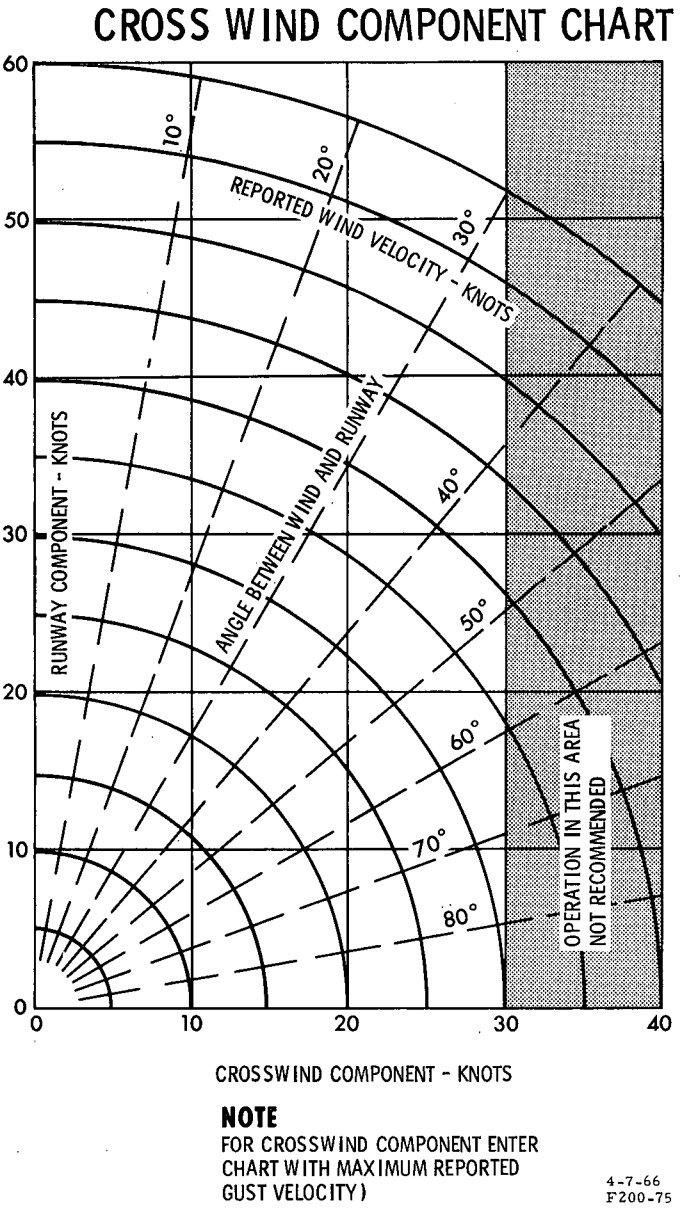


Figure 2-9

CROSSWIND LANDING

The traffic pattern for a crosswind landing should be normal, making proper allowances for velocity and direction of the cross wind. Proper runway alignment on final approach can be maintained by crabbing or dropping one wing; however, a combination of the two is recommended just prior to flare. Remove crab before touchdown, using wing low technique to prevent side drift. Reduce sink rate to a minimum to accomplish smooth touchdown. At increased cross wind components, sink rate must be minimized due to increase of side loads imposed on the landing gear. With more than a 30 knot crosswind component it may be advisable to lower the nose and engage

nosewheel steering prior to drag chute deployment. With less than 30 knot crosswind component, rudder control is sufficient to offset the crosswind effect on the drag chute.

LANDING ON SLIPPERY RUNWAYS

Wet Runway

Set brake switch NORMAL and, when field length would be critical in the event of drag chute failure, use minimum roll technique. Landing roll will increase due to reduction in available braking force. Use lightest brake pressure consistent with stop distance available.

WARNING

Tests indicate that the aircraft will plane with heavy water conditions on the runway. With this condition, directional control in a crosswind may be difficult.

Icy Runways

Same as wet runway except braking effectiveness is further reduced.

MINIMUM ROLL LANDING

a. Make touchdown close to the end of the runway at minimum airspeed. This is primary for a successful short field landing.

b. Deploy the drag chute as quickly as possible after touchdown. Lower the nosewheel while the chute is deploying.

c. Apply maximum braking immediately after chute deployment. Moderate braking may be used prior to chute deployment.

d. Throttles to IDLE during flare or immediately after touchdown.

e. Right engine throttle OFF after touchdown.

NOTE

Retarding both throttles to OFF further reduces thrust, but eliminates nosewheel steering and braking. If the brakes are burned out at the end of the runway, and speed will permit a safe turn off, the nosewheel steering system will "save" the landing.

Throttle technique depends upon the pilot's judgement of the particular field conditions.

WARNING

Engine shut down will result in loss of hydraulic actuating pressure for the following systems:

a. Right engine shutdown - Alternate brakes and NWS system.

b. Left engine shutdown - Normal and anti-skid brakes.

GO-AROUND

A go-around may be initiated anytime during the approach, or during landing roll when sufficient runway remains for takeoff.

GO-AROUND (Typical)

NOTE

The excess thrust available to perform a go-around varies with airspeed, gross weight, airplane configuration, field elevation and ambient temperature. As extremes of these variables are approached, the ability to perform a successful go-around with military thrust decreases, thus requiring afterburning thrust. Refer to appendix for charts showing variation in performance to be expected with changes in these operating conditions.

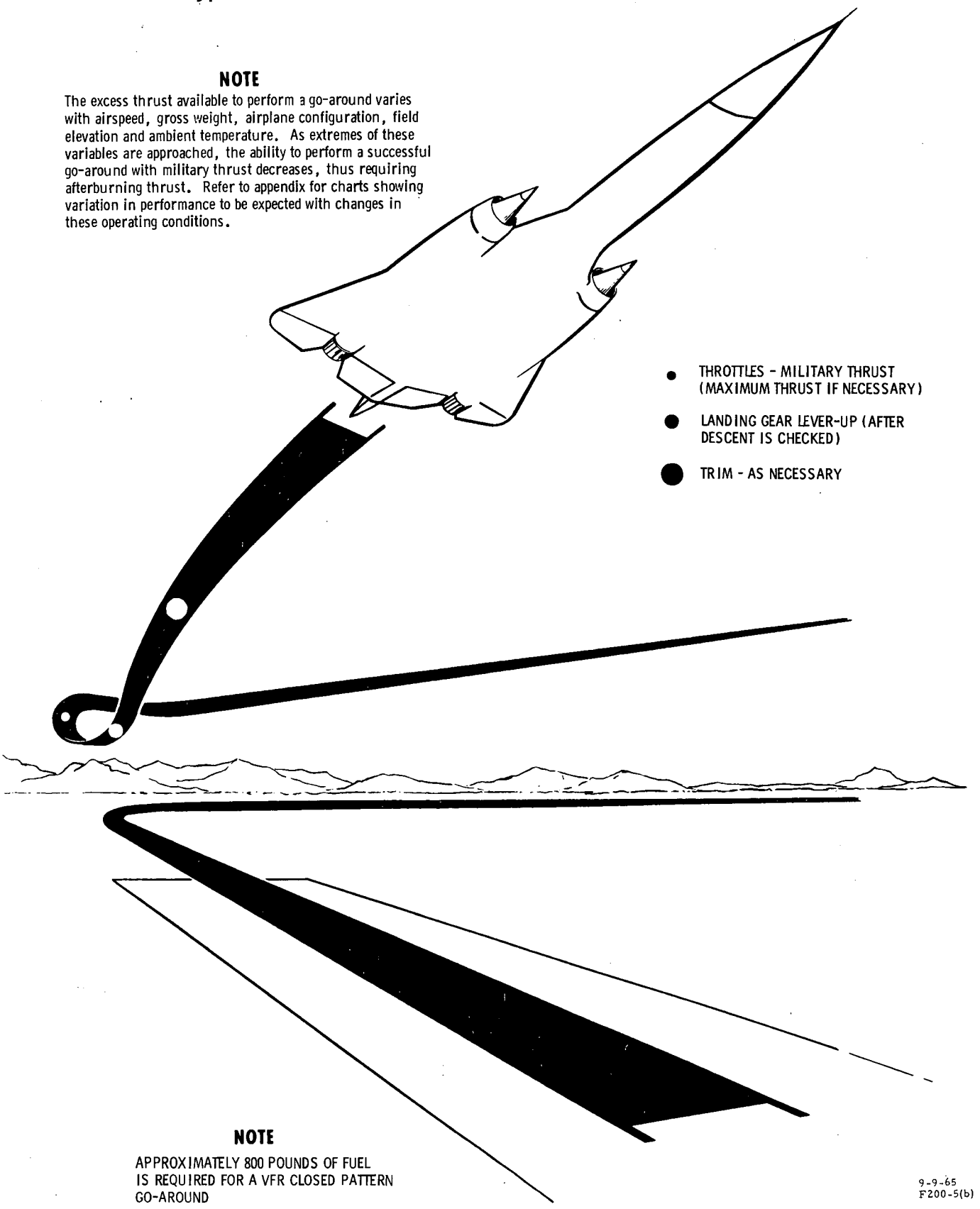


Figure 2-10

1. Drag chute handle - Turn and push to jettison chute, if deployed.
2. Throttles - MILITARY thrust, MAXIMUM thrust if required.
3. Landing gear lever - UP after positive climb established.
4. Trim - As necessary.

AFTER LANDING

1. Pitot heat - OFF.
2. SAS channel switches- OFF (before taxiing).
3. Lighting switches - As required.
4. Suit vent boost lever - Set at 2/3.
5. Adjust cockpit and Q-Bay temperature control for comfort and equipment cooling.

CAUTION

If taxiing with the canopy open is desired, the canopy should be opened only when the aircraft is completely stopped and canopy seal pressure is off. It should only be opened if both engines and both air conditioning systems are operating normally and after the normal cockpit post-flight check of INS and Q-bay and associated equipment has been accomplished and this equipment turned off. The maximum taxi speed with the canopy open and latched is 40 knots. Gusts or severe wind conditions should be considered as a portion of the limit taxi speed.

ENGINE SHUTDOWN

CAUTION

The engine should be operated at IDLE for 5 minutes (including taxi time) before engine shutdown to permit uniform turbine cooling and prevent possible rotor seizure.

1. Wheel chocks - Installed.
2. INS - As briefed.

CAUTION

INS and package equipment must be off prior to opening canopy to prevent possibility of excessive temperatures of INS components.

3. Canopy seal pressure lever - OFF.
4. Canopy - Open.

NOTE

In the event of engine fire during shutdown, the engine can be motored with fuel OFF to blow out fire if starter unit is connected. Refer to Section III.

5. Igniter purge switch - DUMP. Hold 30 seconds.
6. Recorders - OFF.
7. External power - Connect, if available.
8. Battery switch - EXT PWR or OFF as required.

9. Generator switch - TRIP (momentary).

10. Appropriate electrical switches - OFF.

11. Throttles - OFF.

12. Seat and canopy pins - Installed.

STRANGE FIELD PROCEDURES - AS BRIEFED.

ABBREVIATED CHECKLIST

Normal and emergency procedures abbreviated checklists are furnished separately.