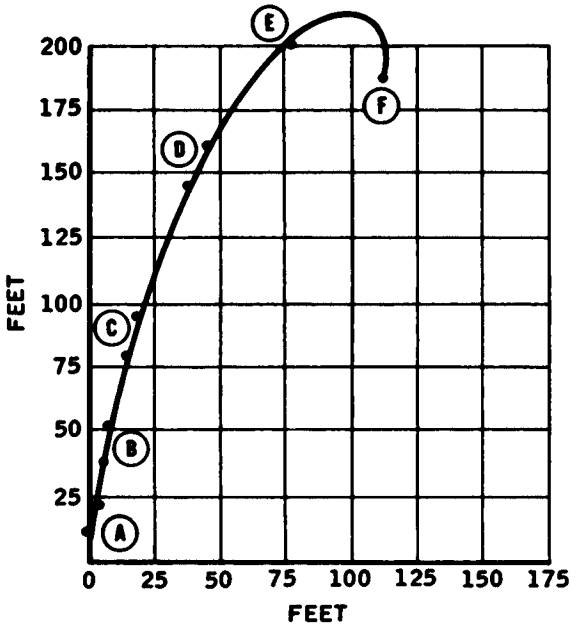
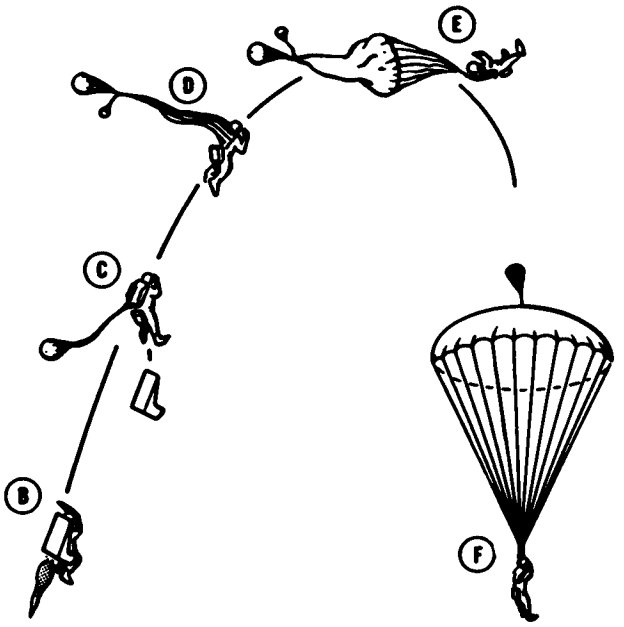
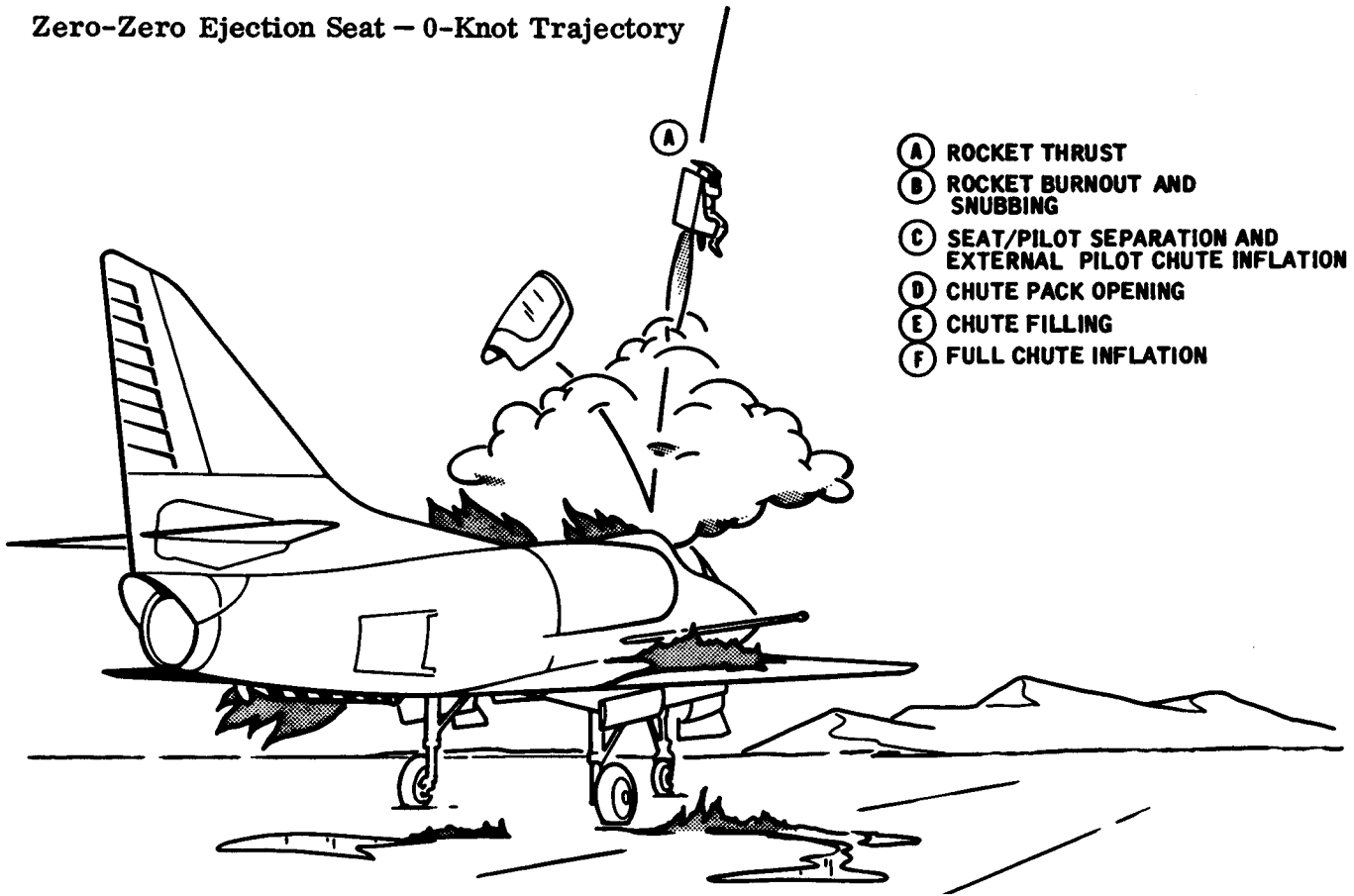
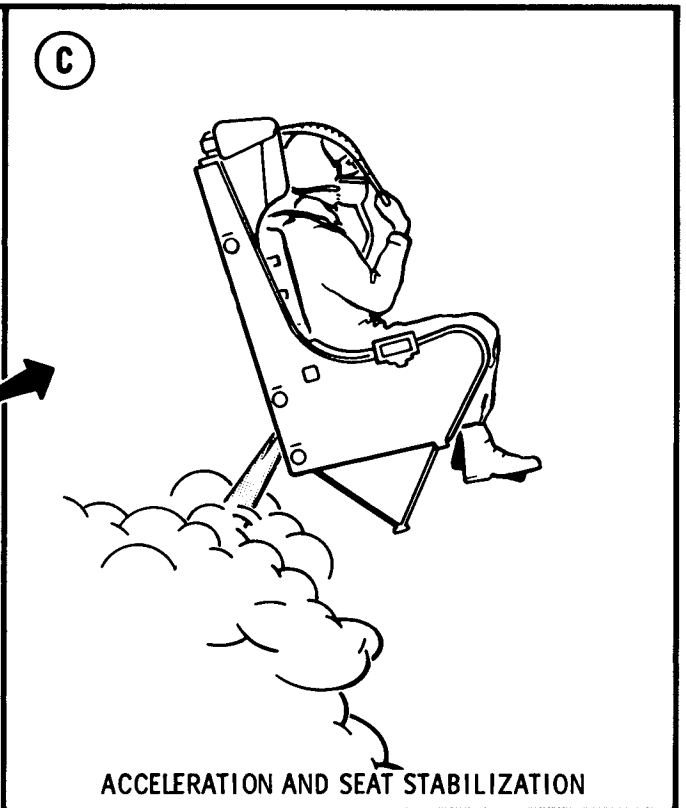
Catapault failure November 1973, HMAS Melbourne near Singapore, RAN Skyhawk A4G 889

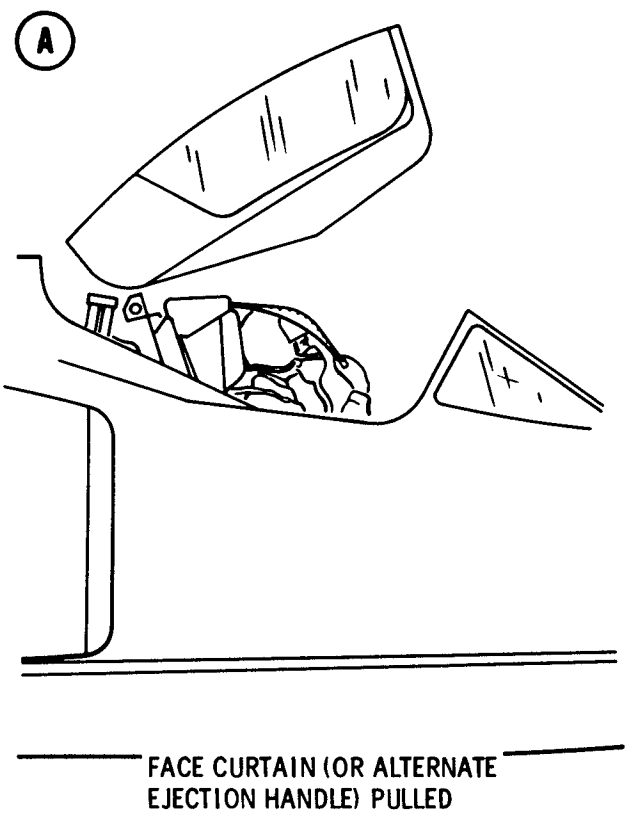




Zero-Zero Ejection Seat — 0-Knot Trajectory







Ejection Sequence - ESCAPAC 1 and 1C-3 Ejection Seats (Sheet 1)

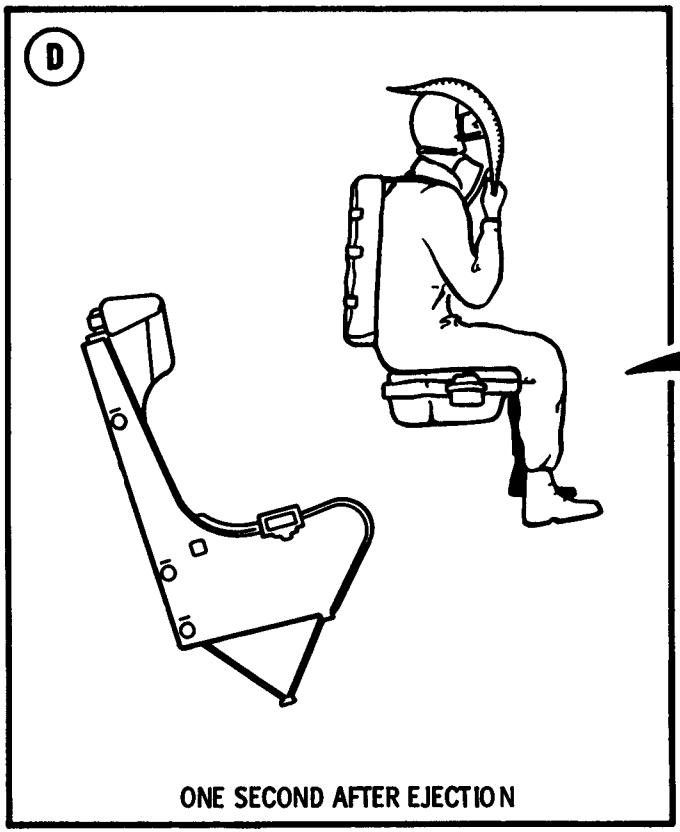
(A) FACE CURTAIN (OR ALTERNATE EJECTION HANDLE) PULLED:

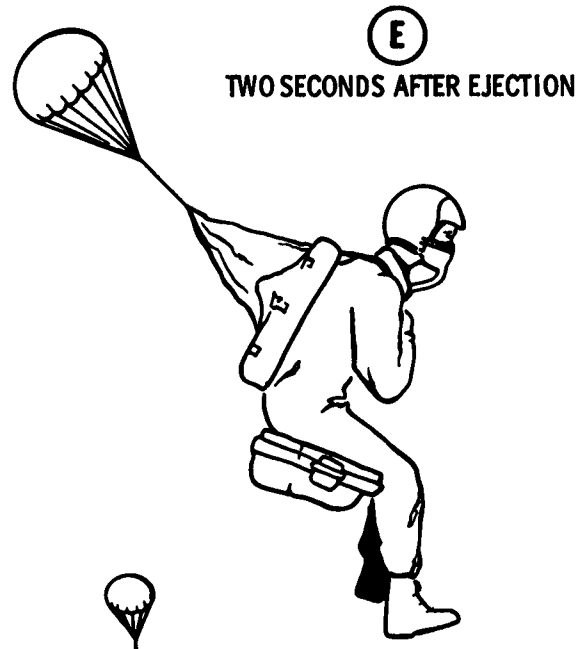
1. CANOPY JETTISONS.
2. POWER INERTIA REELS RETRACT.
3. SEAT - CANOPY INTERLOCK IS ACTUATED.

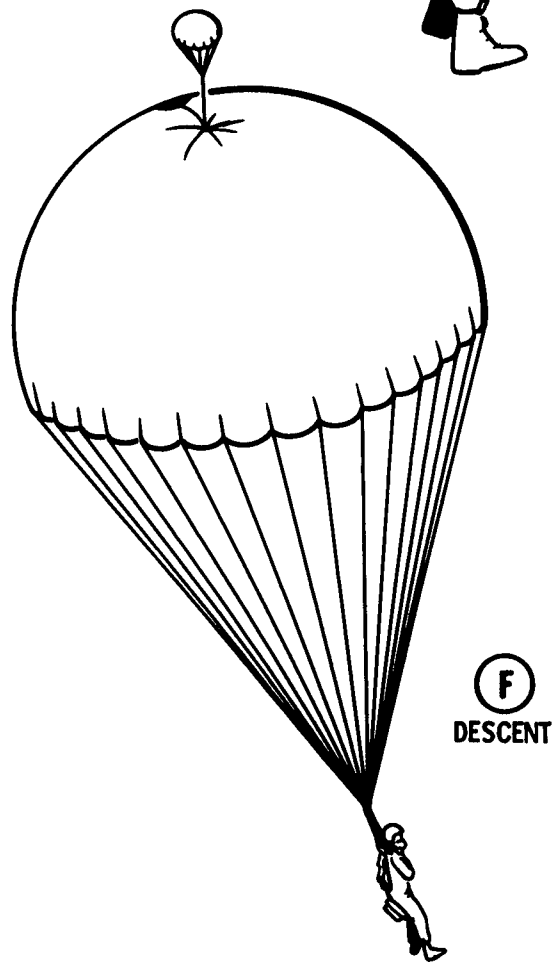
(B) FACE CURTAIN (OR ALTERNATE EJECTION HANDLE) PULL CONTINUED:

1. CATAPULT PHASE OF ROCKET FIRES.
2. SEAT TRAVELS UP GUIDE RAILS.
3. OXYGEN, COMMUNICATION, ANTIBLACKOUT, EXPOSURE SUIT, AND SHOULDER HARNESS INERTIA REEL LINES DISCONNECT.
4. EMERGENCY OXYGEN SUPPLY IS INITIATED.
5. PARACHUTE AUTOMATIC OPENER IS ARMED BY ZERO DELAY LANYARD.
6. HARNESS RELEASE ACTUATOR IS ARMED.
7. AT TOP OF GUIDE RAILS ROCKET SUSTAINER PHASE IGNITES AND CONTINUES TO ACCELERATE SEAT UPWARD.

(C) SEAT AND PILOT ARE ACCELERATED UPWARD APPROXIMATELY 200 FEET. SEAT STABILIZATION (DART) SYSTEM CORRECTS FOR ADVERSE SEAT PITCH IF PRESENT (ESCAPAC 1C-3, A-4F).







(D) ONE SECOND AFTER EJECTION:

1. HARNESS AND SURVIVAL GEAR RELEASE FROM SEAT.
2a. BOTH EJECTION CONTROL HANDLES DISCONNECT FROM SEAT (ESCAPAC 1C-3, A4F)
2b. EJECTION CONTROL HANDLE DISCONNECTS (ESCAPAC 1, A4E).
3. SEPARATION BLADDERS INFLATE.

(E) TWO SECONDS AFTER EJECTION:

1a. PARACHUTE BEGINS TO DEPLOY (IF BELOW 14,000 FEET) (ESCAPAC-1C-3,A4F).

1b. BELOW 14,000 FEET FULL PARACHUTE BLOSSOMING MAY REQUIRE 1 TO 4 SECONDS DEPENDING ON AIRSPEED. (ZERO DELAY NOT INSTALLED, ESCAPAC 1, A4E)

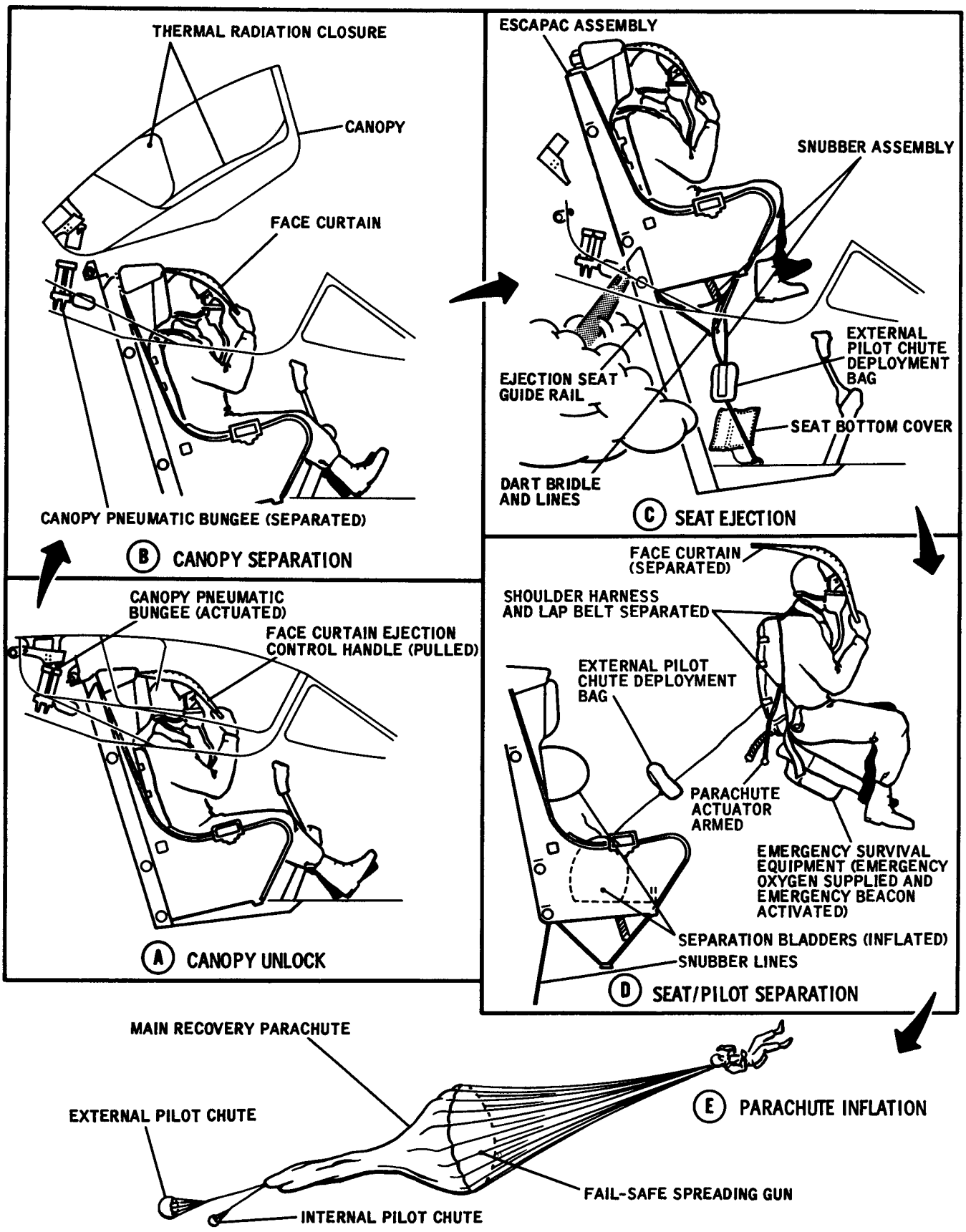
(F) DESCENT

1. REMOVE OXYGEN MASK AND DISCONNECT OXYGEN/RADIO HOSE BELOW 10,000 FEET BUT BEFORE CONTACT.
2. PULL SEATPACK RELEASE HANDLE TO DEPLOY LIFERAFT. LIFERAFT WILL INFLATE AND SUSPEND FROM A 20-FOOT LINE.

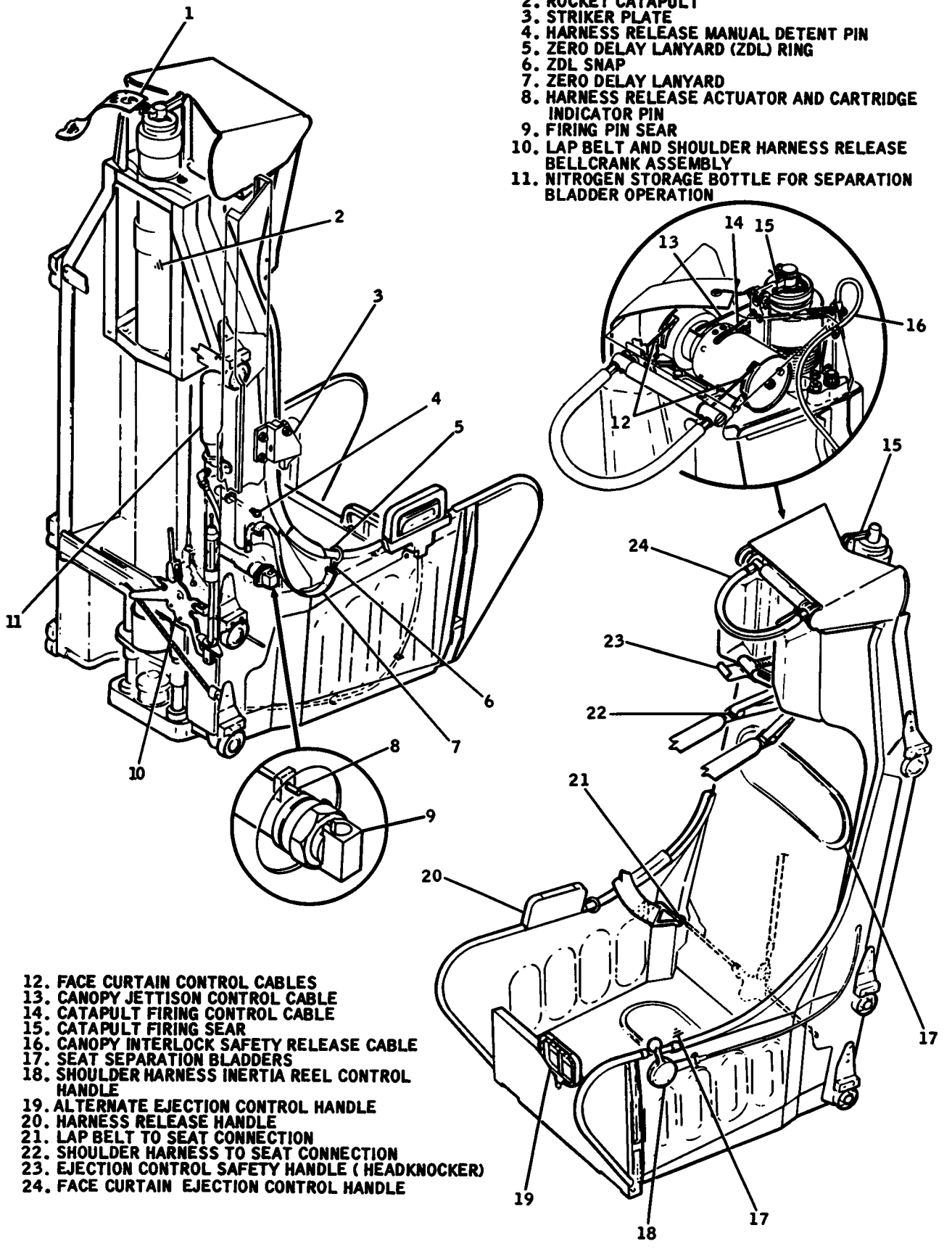
WARNING

DEPLOYING RSSK-8 SEAT PACK IS NOT RECOMENDED OVER HEAVILY WOODED AREA.

Ejection Sequence – ESCAPAC 1 and 1C-3 Ejection Seats (Sheet 2)



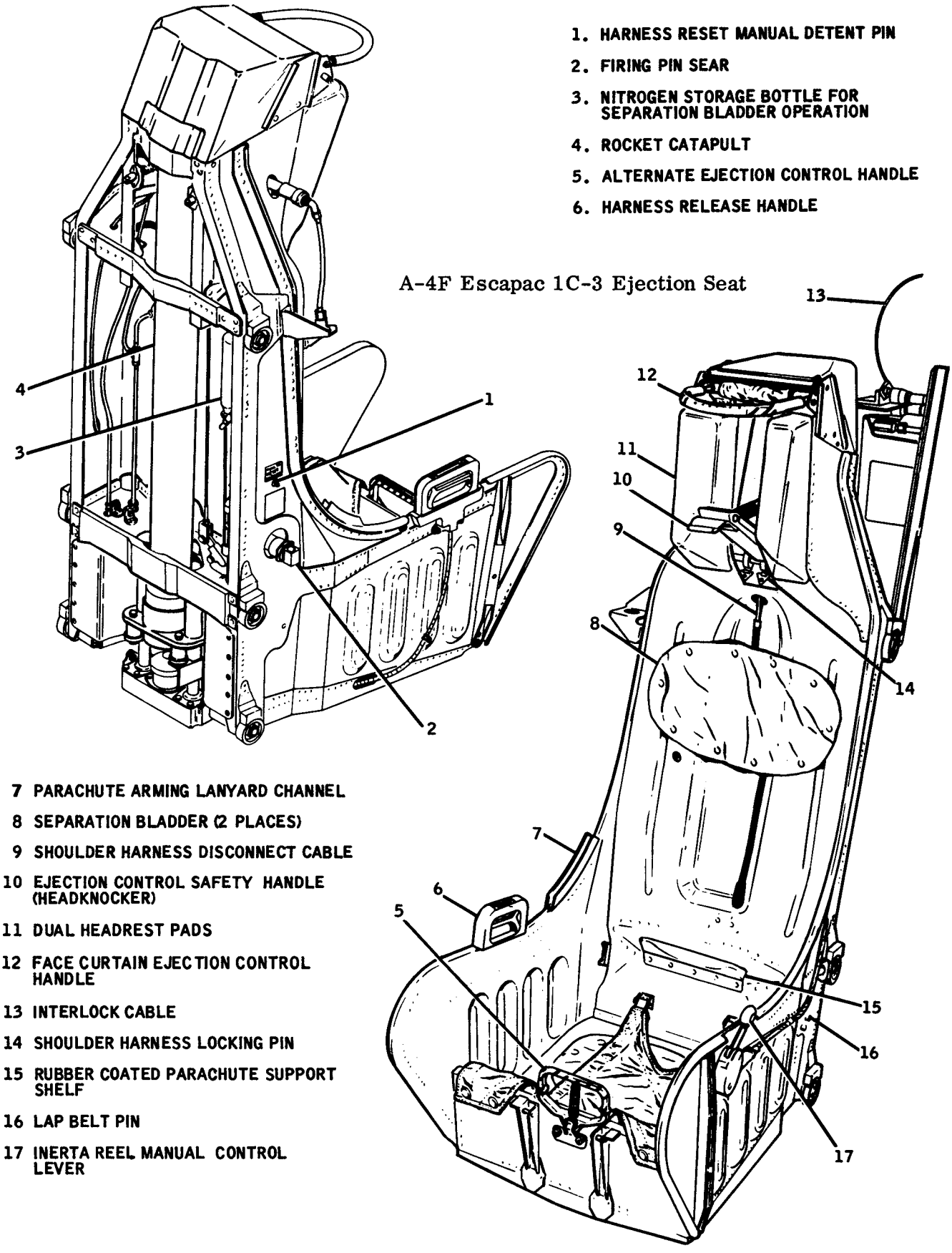
Zero-Zero Ejection Seat Sequence



A-4E Rocket Ejection Seat

1. HARNESS RESET MANUAL DETENT PIN
2. FIRING PIN SEAR
3. NITROGEN STORAGE BOTTLE FOR SEPARATION BLADDER OPERATION
4. ROCKET CATAPULT
5. ALTERNATE EJECTION CONTROL HANDLE
6. HARNESS RELEASE HANDLE

A-4F Escapac 1C-3 Ejection Seat



7 PARACHUTE ARMING LANYARD CHANNEL

8 SEPARATION BLADDER (2 PLACES)

9 SHOULDER HARNESS DISCONNECT CABLE

10 EJECTION CONTROL SAFETY HANDLE (HEADKNOCKER)

11 DUAL HEADREST PADS

12 FACE CURTAIN EJECTION CONTROL HANDLE

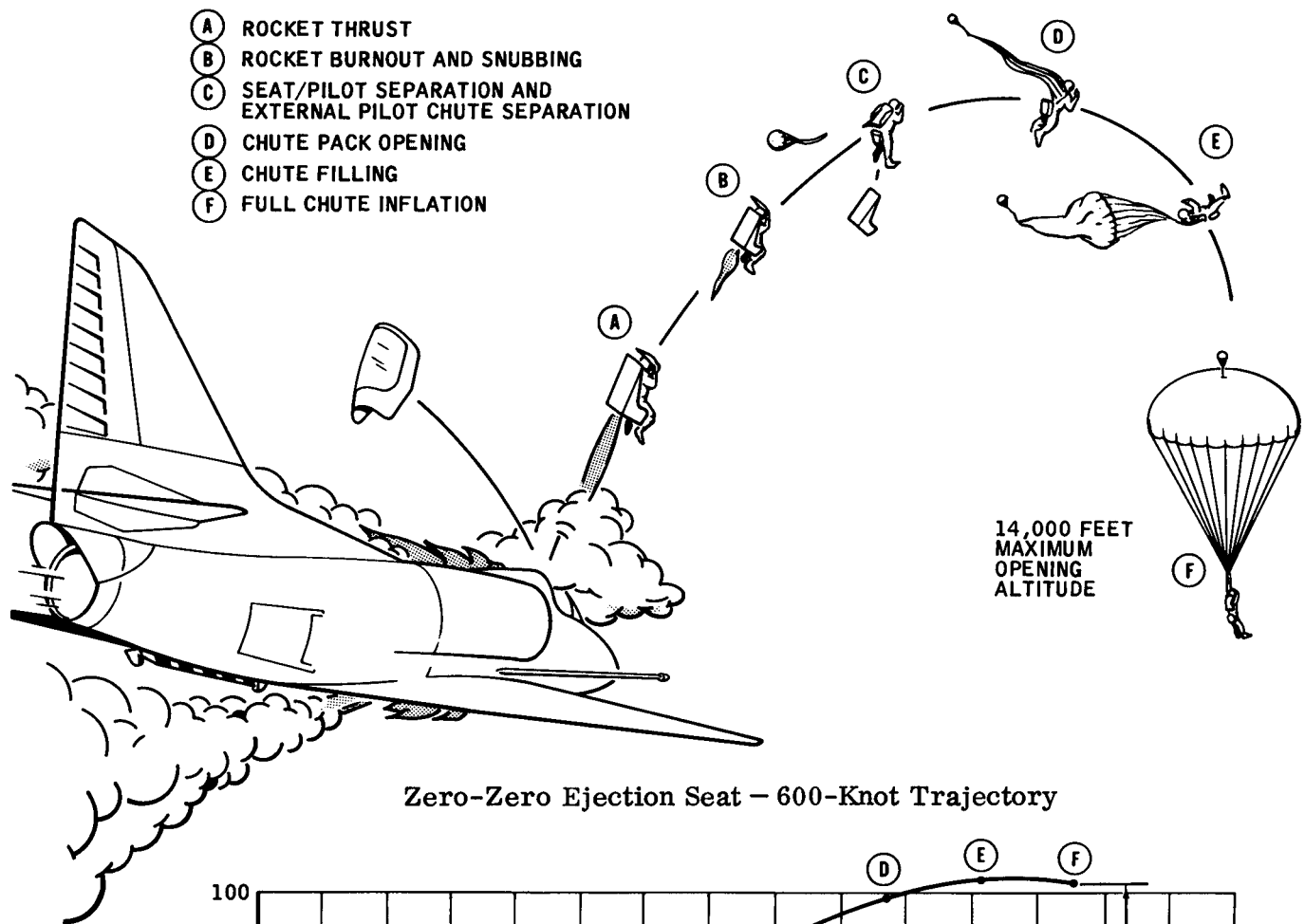
13 INTERLOCK CABLE

14 SHOULDER HARNESS LOCKING PIN

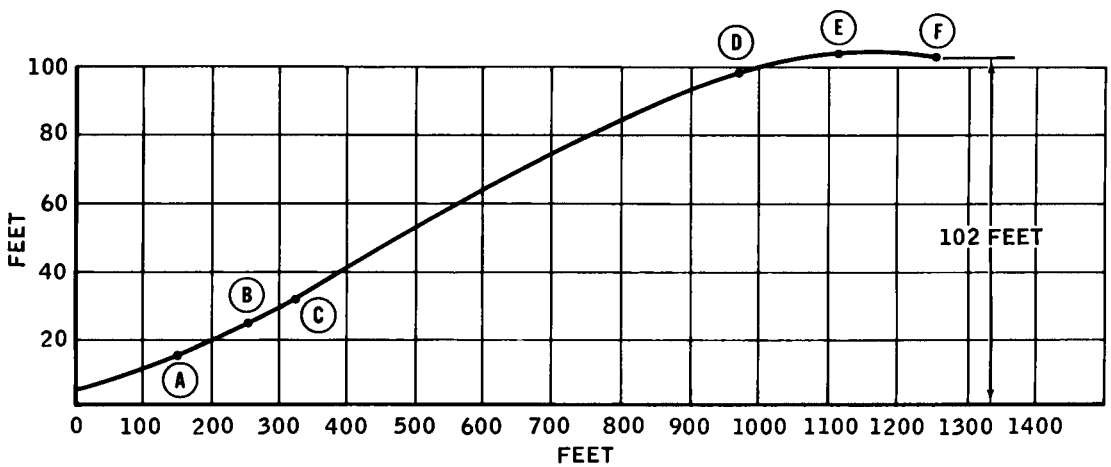
15 RUBBER COATED PARACHUTE SUPPORT SHELF

16 LAP BELT PIN

17 INERTA REEL MANUAL CONTROL LEVER



Zero-Zero Ejection Seat – 600-Knot Trajectory



3. If the decision to eject is made at high altitude, it is recommended that the pilot eject at a minimum of 10,000 feet AGL, or higher, if conditions so indicate. (See figure 5-3.)

Using the rocket-catapult seat in A-4E aircraft reworked per AFC 359, ejection may be accomplished on the ground at zero airspeed and above. Without incorporation of AFC 359, minimum airspeed for ejection is 90 KIAS. Ejection may be accomplished with either system at all other altitudes and airspeeds within the flight range of the aircraft (figure 5-4), except for abnormal flight conditions of steep angles of bank (or inverted flight and high rates of descent at very low altitudes).

Using the ESCAPAC 1C-3 ejection seat (all A-4F aircraft), ejection may be accomplished on the ground at zero airspeed and above, and at all other altitudes and airspeeds within the flight range of the aircraft (figure 5-4), except for abnormal flight conditions of steep angles of bank (or inverted flight and high rates of descent at very low altitudes). For all practical purposes, in predicting minimum terrain clearance altitude (figure 5-8) from the charts, dive angle and angle-of-bank chart altitudes are additive up to 60 degrees dive. In steeper dives, bank angle is negligible. The possibility of injury to shoulders and hips from flailing, and wind-blast damage to personal gear, makes it imperative that the airspeed be reduced to 350 KIAS or less prior to ejection whenever possible. Inverted and severe yaw positions should be corrected, if feasible, prior to ejection, and every attempt should be made to reduce speed.

Usually, the pilot will have time enough to do several things to prepare himself for a successful ejection prior to pulling the face curtain. However, when the emergency condition requiring ejection is such that ejection must be made without hesitation, simply grasp the face-curtain handle (or alternate ejection handle) and pull forceably to the fullest extent until seat ejects.

EJECTION SEQUENCE

Refer to figures 5-4 and 5-5 for ejection sequence.

CONTROLLED EJECTION

The following procedure is recommended, if time permits:

1. Throttle ..... IDLE
2. Slow aircraft as much as possible
3. Seat ..... full down position
4. Emergency generator ..... As required
5. IFF ..... EMERGENCY
6. Transmit MAYDAY position report.
7. Shoulder harness ..... locked
8. Visor ..... down
9. Air conditioning switch ..... RAM
10. Leave feet on rudder pedals
11. Sit erect, with spine straight and head firmly against headrest.
12. Grasp face curtain handle with both hands and pull down forcefully to fullest extent. The canopy should jettison when the curtain is pulled over the helmet and the catapult should fire when the handle passes the nose or chin. A canopy interlock prevents firing of the catapult before the canopy is jettisoned. Consequently, if the curtain is pulled very fast, the interlock may cause a pause or stop and the force of the continued pull on the face curtain may not be sufficient to effect catapult firing. It will then be necessary for the pilot to jerk as hard as possible on the face curtain to obtain sufficient pull force. If the seat still does not fire, release the face curtain and apply a strong, steady, two-handed pull on the alternate ejection handle.
13. If pulling on face curtain (or alternate ejection handle) fails to jettison canopy, perform the following emergency procedure:
    a. Retain a firm grip on face curtain (or alternate ejection handle) with one hand, but do not pull it farther out. Hold elbow inboard.
    b. PULL canopy-jettison handle firmly.
    c. After the canopy leaves, continue pulling face curtain (or ejection handle) with both hands.
    d. As a last resort, if the canopy still remains, it may be removed by the force of the airstream by unlatching canopy manually, if airspeed is in excess of 125 KIAS.

WARNING

Beware of a rapid rearward movement of the canopy lever when this is done.

Retain the face curtain (or alternate ejection handle) with one hand during this procedure.

14. If ejection occurs above the preset altitude, the parachute will not deploy automatically until after descent below the preset altitude (14,000 feet).

chute mouth will open. After approximately 3/4 second, the main recovery parachute reaches full-open inflation.

NOTE

- If a ballistic failure occurs in the fail-safe spreading gun, the gun will release slugs for an aerodynamic inflation.
- In cases of ejection over water, the pararaft kit, attached to underside of seat pan assembly and containing survival supplies, can be manually inflated.

ESCAPAC 1C-3 EJECTION SEAT SYSTEM

Effectivity: A-4F aircraft

The A-4F aircraft is equipped with an ESCAPAC 1C-3 ejection seat. The seat utilizes rocket thrust to provide escape capability from zero speed and zero altitude throughout the entire aircraft flight profile except for very unusual flight conditions such as inverted flight, steep angles of bank, or dives at low altitudes. The seat accommodates a back-type parachute and a RSSK-8A survival kit, and is designed for use with an integrated torso harness. A non-adjustable headrest is part of the seat structure and houses the face curtain. The front surface of the seat bucket serves as a buffer for the calves of the legs, and the sides of the bucket extend above the pilot's thighs to protect the legs and minimize flailing during high speed ejection. The ejection sequence is started by pulling the face curtain over the helmet and past the face with both hands, or by pulling the alternate ejection D-handle on the seat between the pilot's legs. This jettisons the canopy and initiates the power retract mechanism on the inertia reel, pulling the pilot to the proper sitting position for ejection. As the seat travels up the guide rails, the emergency oxygen bailout bottle is actuated and the zero-delay arming lanyard arms the automatic barometric parachute actuator. The seat contacts a striker plate which trips the harness release actuator sear and fires the actuator after a 1-second delay. When the 1-second delay cartridge fires, the harness release actuator automatically releases the seat belt, shoulder harness, face curtain, alternate ejection handle, and inflates the separation bladders which separate the pilot from the seat.

The delayed action of the harness release actuator provides protection for the pilot by keeping him in the seat during the ejection period. The zero-delay arming lanyard initiates a 2-second delay cartridge in the automatic barometric parachute actuator. The 2-second delay prevents premature parachute opening that could cause damage to the parachute and severe shock to the pilot from high velocity windblast. During the delay period, the pilot and seat will decelerate to a speed where the stresses placed upon the pilot and parachute are reduced from the critical stage. As the pilot descends below 14,000 feet or if ejection occurs below 14,000 feet, the parachute is opened automatically at the end of the delay period.

Other features of the rocket catapult ejection seat include a load limiting energy absorbing device to reduce the possibility of back injuries from survivable crashes or hard arrested landings. An alternate ejection control handle (to be used when conditions prevent the pilot from reaching the face curtain) is located on the seat bucket between the pilot's legs. An ejection control safety handle, located in the center of the headrest, locks the ejection mechanism in a safe condition during ground operation. A dual strap inertia reel allows for mobility while seated.

Functional Components

HARNESS-RELEASE ACTUATOR

The harness-release actuator is essentially a cylinder containing a piston, a slow burning MK 86 MOD 0 cartridge, and a firing mechanism. The firing mechanism is spring loaded and is held in a safe position by a sear in the firing pin assembly. The actuator piston rod is connected to a bellcrank attached to the seat structure. Thus, when the seat is ejected, the actuator arming pin sear is tripped by the striker plate allowing the firing mechanism to detonate the cartridge which, 1.0 second later, exerts enough force to actuate the piston. The piston extends and rotates the bellcrank causing the seat belts, shoulder harness, and face curtain (or alternate ejection handle) to pull free, and puncture the nitrogen storage bottle releasing pressure to the separation bladders, thus separating pilot and seat.

AUTOMATIC BAROMETRIC PARACHUTE ACTUATOR

Parachutes used with the integrated torso harness are equipped with a barometrically controlled parachute actuator. The actuator is designed to deploy the parachute automatically at a predetermined altitude, in the event of pilot incapacitation. The actuator provides a 2-second delay before opening the parachute after reaching the preset altitude. When ejection is made below, at, or slightly above, the altitude for which the actuator is set, the delay allows the pilot to decelerate prior to parachute opening, thus reducing or eliminating pilot injury or parachute damage from opening shock. The delay also prevents the parachute from fouling on the seat when ejection is made at altitudes below that for which the actuator is set, where deployment would occur immediately upon separation from the seat. The automatic parachute actuator interferes in no way with the manual parachute release ripcord grip (D-ring) which may be pulled at any time to open the parachute.

An arming pin is inserted through the actuator mechanism to prevent inadvertent release of the parachute during normal operation when the aircraft descends through the altitude for which the actuator is set. The arming pin is anchored by the automatic parachute actuator arming lanyard to the harness-release handle. The arming pin is pulled by the ZDL, and the actuator is armed as the seat moves up the guide rails. If the automatic harness-release mechanism fails to operate and the harness-release handle is used to free the pilot from the seat, the parachute should deploy automatically since the actuator was armed by ZDL.

NOTE

All A-4 aircraft are equipped with the ZDL as an integral part of the ejection system.

SEAT ATTACHMENTS

The pilot is held in the seat by attachments to the integrated torso harness. This torso harness incorporates within its structure a seat belt, shoulder straps, and a parachute harness, thus leaving the pilot with few of the usual encumbrances. The shoulder harness straps are sewn to the parachute risers and attach to the inertia reel connection just below the headrest. The loose ends of the parachute risers have quick-disconnect fittings which engage other fittings that extend from the front shoulders of the torso harness. Short seat belts, which are sewn to the parachute harness on each side, and attached to the seat structure at the aft corners of the seat bucket, are adjustable in length. The loose ends of the seat belts have quick-action fittings which engage fittings protruding from the hip region of the torso harness.

SEAT CONTROLS

SEAT SWITCH. The seat is electrically adjusted in the vertical plane by movement of the three-position seat switch located on the miscellaneous switches panel (figures FO-1 and FO-2) to either UP or DOWN, and is stopped at the desired position by releasing the switch to the center or off position.

SHOULDER HARNESS INERTIA REEL CONTROL. The shoulder harness inertia reel control handle (figures 1-10 and 1-11), on the left side of the seat bucket, locks the inertia reel drum to prevent playout of the webbing from the inertia reel. When the control is in the LOCKED position, the shoulder harness will not extend and the pilot's freedom of movement is restricted.

The UNLOCKED position allows the shoulder harness to extend or retract as the pilot moves about. The reel will lock automatically if the aircraft is subjected to a deceleration in excess of 2.5±0.5g along the thrust line. This safety feature helps to prevent injuries if the shoulder harness is not locked prior to an arrested landing or a crash. If the inertia reel fails to unlock while any load is being applied to the cable, relax the load and recycle the handle.

HARNESS-RELEASE HANDLE. A D-handle (figures 1-10 and 1-11), labeled HARNESS RELEASE is mounted on the right side of the seat. A pin protrudes from the aft end of the handle, which extends down through the edge of the ejection seat to anchor the arming lanyard of the barometric parachute opener. A spring-loaded latch, which is grasped in conjunction with the harness release handle, retains the handle in the proper position and must be squeezed before the latter can be pulled. When the handle is pulled up, the barometric parachute opener lanyard and the shoulder harness and seat belt attachments are released from the seat, allowing the pilot to leave the cockpit with the parachute and survival kit still attached to the integrated torso harness.

NOTE

- Pulling the harness release D-handle releases the shoulder harness and lap belt end fittings, which cannot be reengaged in flight.
- Disconnect the barometric parachute opener arming lanyard from the harness-release handle before removing the parachute from the seat. If this is not done, the arming pin will be pulled and the parachute will open.

FACE CURTAIN. The face curtain screens the face from wind blast during ejection. In the A-4E aircraft, the face curtain ejection control handle adjusts automatically during vertical movement of the seat to maintain a suitable handle position relative to the pilot's helmet. In the A-4F aircraft, the face curtain ejection control handle (figure 1-11) should be manually adjusted prior to engine start to establish a suitable handle position relative to the pilot's helmet. It serves as a control for ejecting the seat and aids in supporting and positioning the pilot during ejection. The face curtain, which is housed in the headrest structure with the handle protruding, is mechanically connected to the canopy-jettison system and the seat

catapult firing mechanism. When the face curtain is pulled downward, the first portion of travel jettisons the canopy and the last portion causes the seat to be ejected. The seat will not eject until the canopy is clear of the ejection path.

WARNING

Canopy jettisoning by means of partial face curtain extension should not be attempted since no positive stops are provided to prevent seat ejection after the canopy has jettisoned.

ALTERNATE EJECTION HANDLE. The alternate ejection handle (figures 1-10 and 1-11) is located on the forward side of the ejection seat between the pilot's legs. The handle is used to initiate the ejection sequence when use of the face curtain is not desirable or possible.

EJECTION CONTROL SAFETY HANDLE. The ejection control safety handle (headknocker), located between two rubber pads on the upper forward area of the seat assembly, functions as an ejection seat safety lock when in the down position. Locking is achieved in the A-4F aircraft by locking the firing control disconnect assembly and in the A-4E aircraft by securing the pulley mechanism; in turn locking the face curtain ejection control handle and alternate ejection control handle. The headknocker is identified with a "PULL OUT TO SAFETY EJECTION CONTROLS" decal. Moving the headknocker to the down position engages a locking pin into a locking drum, locking all movements of the ejection control pulley mechanism (A-4E) or firing control disconnect (A-4F). The headknocker cannot be moved to the up position (unlocking the ejection mechanism) until a safety lock is manually depressed, disengaging the lock.

NOTE

- Effectivity: All A-4F aircraft; A-4E aircraft reworked per A-4 AFC 310. Pull safety lockpin streamer before depressing the safety lock.
- The safety lock is visible only when the headknocker is in the down position. The safety lock is identified from above with a black and yellow checkerboard decal, providing visual verification that ejection controls are secured in the locked (headknocker down) position.

EJECTION SEAT STABILIZATION SYSTEM (DART)

Effectivity: All A-4F aircraft; all A-4E aircraft reworked per A-4 AFC 359

The ejection seat stabilization system counteracts the adverse effects of aerodynamics and seat system center-of-gravity variation. The system provides consistent and predictable trajectory during the rocket buring phase. The stabilization system is installed on the underside of the seat bucket and consists of two brake units, a deployable bridle arrangement, and four nylon draglines. Portions of the system lines are stowed in two fabric pouches mounted on the seat. The lines are routed through the brake units and through the eye of the bridle. At the eye, the remaining lengths of the system lines are gathered together and covered with a flame retardent sleeve. The covered section of line is stowed in a deployment pouch and the end is attached to the cockpit floor.

As the seat ejects, the slack line stowed in the deployment pouch pays out, and the bridle drops into position. At a preprogrammed distance, the system lines are pulled through the brake units developing a preprogrammed force in the lines and, consequently, a moment around the system center of gravity which counteracts any adverse rotation of the seat.

Ejection Sequence

Refer to section V for ejection sequence.

OXYGEN SYSTEM

Oxygen is supplied by a vacuum bottle liquid oxygen converter mounted in a vented compartment in the aft fuselage section. The converter filler valve is reached through an access door on the right side of the fuselage for servicing. The bottle contains 10 liters of liquid oxygen when serviced to capacity. Evaporation loss is constant when the system is not in use, and this loss is used to pressurize the system. By venting any excess pressure overboard through relief valves, pressure is maintained at 70±5 psi. Venting pressure may increase to 100±10 psi when the liquid oxygen system is not being used.

Liquid Oxygen Quantity Indicator

A liquid oxygen quantity indicator (figures FO-1 and FO-2) is located on the left center of the instrument panel, and is graduated with markings of 10, 8, 6, 4, 2, and 0. The quantity indicator is electrically operated and has a small OFF window to show that the indicator is inaccurate when electrical power is

OXYGEN SYSTEM

Oxygen is supplied by a vacuum bottle liquid oxygen converter mounted in a vented compartment in the aft fuselage section. The converter filler valve is reached through an access door on the right side of the fuselage for servicing. The bottle contains 10 liters of liquid oxygen when serviced to capacity. Evaporation loss is constant when the system is not in use, and this loss is used to pressurize the system. By venting any excess pressure overboard through relief valves, pressure is maintained at 70±5 psi. Venting pressure may increase to 100±10 psi when the liquid oxygen system is not being used.

Liquid Oxygen Quantity Indicator

A liquid oxygen quantity indicator (figures FO-1 and FO-2) is located on the left center of the instrument panel, and is graduated with markings of 10, 8, 6, 4, 2, and 0. The quantity indicator is electrically operated and has a small OFF window to show that the indicator is inaccurate when electrical power is lost. A red low level warning light on the indicator face comes on when the quantity falls below 1 liter. Depressing the TEST button on the instrument panel tests the operation of the liquid oxygen quantity indicator causing the needle to move counterclockwise. The low level warning light will come on when the needle passes the 1-liter mark. When the TEST button is released, the needle should return to its previous position.

Controls and Equipment

A lift-type toggle switch installed at the rear of the left console on the anti-g and oxygen panel (figures FO-1 and FO-2) places the oxygen system in operation when moved from OFF to OXY ON position.

When the oxygen switch is turned on, oxygen is delivered from the supply system at a pressure of 70 psi to the oxygen receptacle located on the oxygen and anti-g panel (figures FO-1 and FO-2) on the left console. The pilot's supply tube is plugged into the receptacle to allow the oxygen to flow to the oxygen mask regulator, installed just below the pilot's face mask. The mask regulator reduces the 70-psi converter oxygen pressure and delivers 100-percent oxygen to the mask under a positive pressure of approximately 1-inch water pressure at all cabin altitudes below 35,000 feet. At higher cabin altitudes, the delivered pressure is automatically increased to allow the pilot adequate oxygen absorption. The type A-13A face mask used with this oxygen system should be properly fitted to the pilot's face for best results. Relatively small leaks around a mask are cumulative in effect and result in considerable oxygen loss over long periods of operation. Always check the oxygen supply tubes for tight connections before moving the OXYGEN control to ON. Escaping oxygen creates a fire hazard in the presence of oil or grease.

Emergency Oxygen Supply

Emergency oxygen is contained in a U-shaped cylinder installed in the seat pan/survival kit. The cylinder pressure gage, visible through the upper surface of the forward corner of the seat pan/survival kit, should register 1800 psi when the cylinder is full. A pressure reducer allows oxygen to flow at 60 psi through the supply tube to the oxygen regulator for delivery to the face mask. The duration of the emergency supply is approximately 4 to 20 minutes, depending upon the altitude (the higher the altitude the longer the duration). Emergency oxygen is supplied and normal oxygen is shut off to the mask when the emergency oxygen actuator assembly is activated. The manual release handle (green ring) is attached to the actuator assembly by a cable. A lanyard is also attached to the actuator assembly and to the aircraft through a quick-disconnect fitting. Pulling the green ring provides emergency oxygen at any time. When the seat is ejected or the pilot, still attached to his survival kit, leaves the cockpit, the lanyard attached to the aircraft initiates flow of emergency oxygen automatically.

Prior to flight, the following inspection should be made to ensure automatic supply of emergency oxygen during an emergency:

1. Check pressure gage for adequate supply (1800 psi).

2. Check that actuator lanyard (located on left console of A-4E; located on cockpit floor of A-4F) is attached to the aircraft.

3. With the mask-to-survival kit hoses connected and the console supply shut off or disconnected, check that there is no oxygen flow.

Oxygen Duration

Figure 1-12 is a tabulation of hours remaining for various altitude oxygen quantity combinations for the liquid oxygen supply system. It will be noted that although 100 percent oxygen is used at all times, duration is greater at high altitudes. Because the physical property of gases is affected by pressure, the volume of oxygen increases in direct proportion to the decrease in atmospheric pressure as altitude increases. Thus, while the volume of oxygen required by the pilot is approximately the same at any altitude, the oxygen delivered in reduced cockpit pressure is lower in density and less of the supply is required to satisfy the demand.

Normal Operation

BEFORE FLIGHT

Before each flight, the oxygen system and mask shall be checked for proper operation.

Connect the oxygen supply tube to the connector on the survival kit with the mask turned away from the face. Place the oxygen switch in ON. Listen for free flow of oxygen. Don the mask. Inhalation should be almost effortless if the regulator is delivering oxygen at a slight positive pressure. Exhalation should also be possible but will require some effort in order to close the inhalation valve.

NOTE

If exhalation is difficult, there is inhalation valve leakage.

DURING FLIGHT

Oxygen quantity should be checked periodically during flight. Separation of the oxygen hose couplings will be immediately apparent as oxygen flow and radio communication will cease.

UNDERWATER ESCAPE PROCEDURE

1. Remain braced until all shocks stop.

2. Emergency oxygen . . . . . PULL

3. Oxygen hose (left console) . . . DISCONNECT

4. Canopy jettison handle . . . . . PULL

5. Harness-release handle . . . . . PULL

6. Lean forward to separate the harness linkage and clear the parachute past the headrest and to ensure separation of the shoulder harness fitting.

7. Pull forward with the hands on the top of the windshield bow and push with the feet.

WARNING

Do not inflate flotation gear until clear of cockpit as inflated gear may trap the pilot in cockpit.

8. When clear of the cockpit, inflate flotation gear.

It is recommended that pilots periodically practice exiting from the cockpit with the parachute and para-raft to ensure separation from the seat and clearing the headrest. The canopy should not actually be jettisoned in practice. Proper oxygen mask fit will prevent water from seeping in during the critical underwater escape.

IMMEDIATE EJECTION

During any combined low altitude/low airspeed conditions, as in the landing pattern or immediately after launch, the alternate handle should be considered the primary means of ejection. Continue to fly the aircraft with the right hand keeping the wings level and maintaining altitude or the lowest possible sink rate while initiating ejection sequence with the left hand.

NOTE

During ejection, if either the harness release or automatic barometric parachute actuator cartridges fail to function properly, automatic seat separation and/or parachute deployment may not occur. Therefore, during any low altitude ejection, the pilot should attempt to "beat the seat" by manually pulling the harness release handle and then the parachute ripcord D-ring immediately after ejection.

10. Leave feet on rudder pedals

11. Sit erect, with spine straight and head firmly against headrest.

12. Grasp face curtain handle with both hands and pull down forcefully to fullest extent. The canopy should jettison when the curtain is pulled over the helmet and the catapult should fire when the handle passes the nose or chin. A canopy interlock prevents firing of the catapult before the canopy is jettisoned. Consequently, if the curtain is pulled very fast, the interlock may cause a pause or stop and the force of the continued pull on the face curtain may not be sufficient to effect catapult firing. It will then be necessary for the pilot to jerk as hard as possible on the face curtain to obtain sufficient pull force. If the seat still does not fire, release the face curtain and apply a strong, steady, two-handed pull on the alternate ejection handle.

13. If pulling on face curtain (or alternate ejection handle) fails to jettison canopy, perform the following emergency procedure:

a. Retain a firm grip on face curtain (or alternate ejection handle) with one hand, but do not pull it farther out. Hold elbow inboard.

b. PULL canopy-jettison handle firmly.

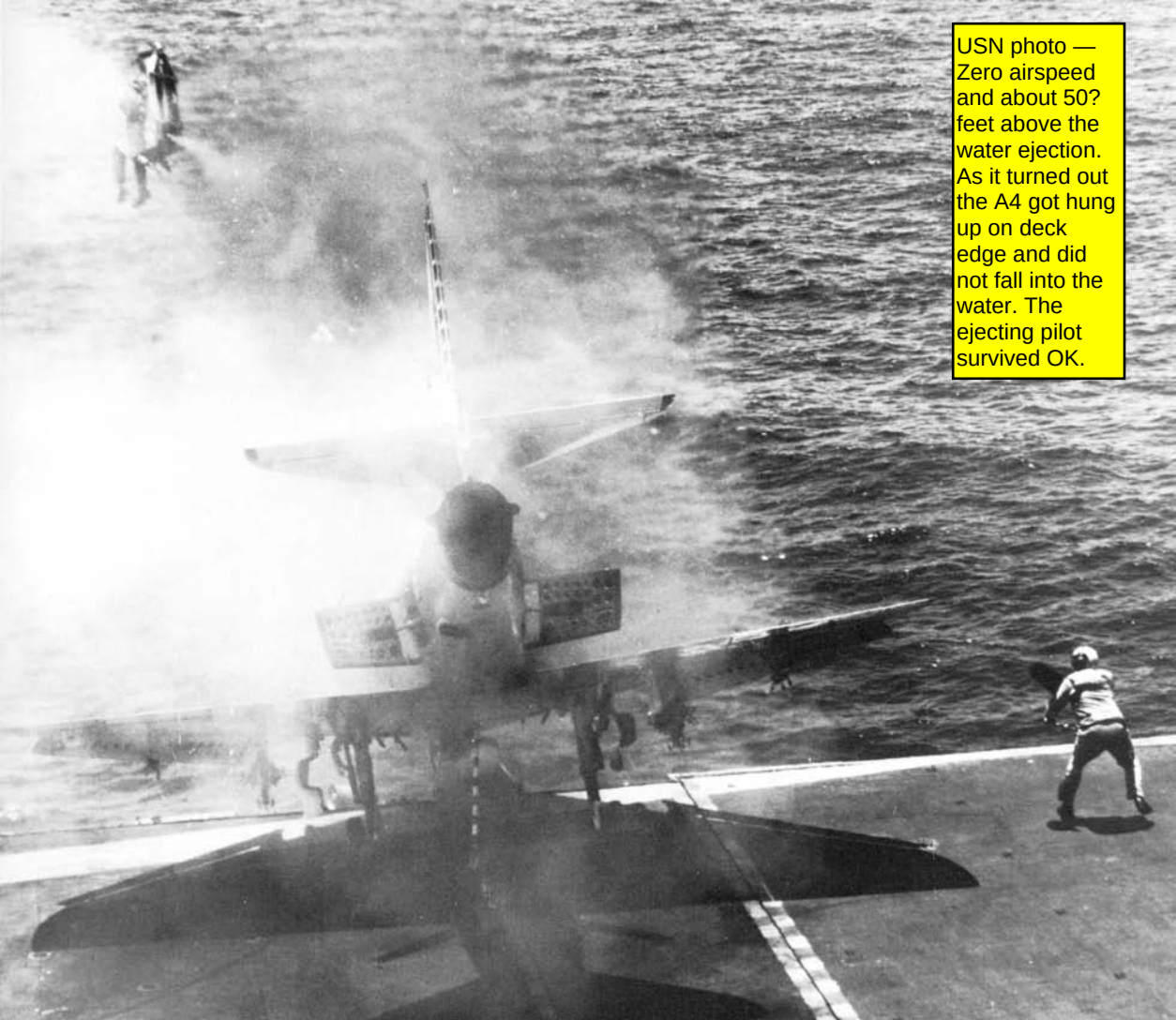
c. After the canopy leaves, continue pulling face curtain (or ejection handle) with both hands.

d. As a last resort, if the canopy still remains, it may be removed by the force of the airstream by unlatching canopy manually, if airspeed is in excess of 125 KIAS.

WARNING

Beware of a rapid rearward movement of the canopy lever when this is done.

Retain the face curtain (or alternate ejection handle) with one hand during this procedure.


USN photo — Zero airspeed and about 50? feet above the water ejection. As it turned out the A4 got hung up on deck edge and did not fall into the water. The ejecting pilot survived OK.