Q3102
Briefing Guide
(Worksheet)

Planned Route:

Takeoff: KNSE, Rwy 32
Altitude: MOA Limits
Route: South MOA or North MOA
Training Device: OFT

SYLLABUS NOTES:
Emphasis is on procedural knowledge and execution of procedures in accordance with the NATOPS Flight Manual.

Utilize the Abbreviated Simulator Checklist.

Special Syllabus Requirement
None

Discuss

a. Emergency Landing Pattern
   - General Purpose
   - Pattern Checkpoints (NATOPS/Contact FTI diagram)
   - Considerations for aircraft configurations (Contact FTI)

b. Precautionary Emergency Landing (PEL)
   - Critical Action Items
   - Energy Management Techniques used to get to the ELP
   - Contact FTI Slip Procedures

c. Precautionary Emergency Landing from the pattern (P/PEL)
   - Guidance from Contact FTI

d. Engine Failure
   - Indications (EICAS Video for Flameout / Seizure)
   - Critical Action Items

e. Landing Pattern
   - Pattern Checkpoints
   - Procedures
   - No-Flap, Takeoff Flap, Land Flap Landings
   - Waveoff (Contact FTI)
**IUT NATOPS GRADE SHEET**

**DATE __________________**  **INSTRUCTOR __________________________**

**MEDIA:** OFT  VT- ______  **BRIEF TIME: ______**  **NAME: ______________________________**  **EVENT:_______________**

<table>
<thead>
<tr>
<th>CTS REF</th>
<th>MANEUVER</th>
<th>MIF</th>
<th>Q3101</th>
<th>Q3102</th>
<th>Q3103</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GEN KNOWLEDGE / PROCEDURES</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>EMERGENCY PROCEDURES</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>HEADWORK / SITUATIONAL AWARENESS</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>BASIC AIRWORK</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>IN-FLIGHT CHECKS / FUEL MANAGEMENT</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>IN-FLIGHT PLANNING / AREA ORIENTATION</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7</td>
<td>TASK MANAGEMENT</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>COMMUNICATION</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>MISSION PLANNING / BRIEFING / DEBRIEFING</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>10</td>
<td>GROUND OPERATIONS</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>TAKEOFF</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12</td>
<td>DEPARTURE</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>N</td>
<td>POWER-OFF STALL</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>ATS (Approach Turn Stall)</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>SPIN</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>CONTACT UNUSUAL ATTITUDES</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>INVERTED FLIGHT</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>LOOP</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>AILERON ROLL</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>SPLIT-S</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>BARREL ROLL</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>CLOVERLEAF</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>IMMELMANN</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>CUBAN EIGHT</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>WINGOVER</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>POWER LOSS</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>PRECAUTIONARY EMERGENCY LANDING</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>PEL/P</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>ELP LANDING</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>VFR ARRIVAL / COURSE RULES</td>
<td>3+</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>LANDING PATTERN</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>NO FLAP LANDING</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>TAKEOFF FLAP LANDING</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>LDG FLAP LANDING</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>WAVEOFF</td>
<td>3+</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- For the Power-Off Stall, IUTs may reference the Emergency Landing Pattern Stall in the T-6B Contact FTI.

- For the Approach Turn Stall (ATS), IUTs may reference the Landing Pattern Stall in the T-6B Contact FTI.

- For Power-Off stall and ATS, IUTs shall demonstrate proficiency in stall recovery at both first indication of impending stall and onset of stall.

1542.165A  Rev 09/30/2011
d. Executing incorrect emergency procedure.

e. Not using appropriate CRM.

f. Verbalizing procedures, but not executing.

701. ABORTED TAKEOFF DEMONSTRATION

1. **Description.** This maneuver demonstrates the characteristics and length of runway required for an aborted takeoff.

2. **General.** An aborted takeoff may be required during any takeoff. Examples of reasons for aborting a takeoff include blown tire(s), streaming fuel, fire light, chip light, fluctuating oil pressure, rapidly rising ITT or bird strike. Any situation which appears abnormal or unsafe during takeoff shall necessitate an abort.

3. **Procedures.**

   a. Call tower for takeoff, stating intentions.

   b. Position aircraft on runway for a normal takeoff.

   c. When properly aligned on the runway (and cleared for aborted takeoff), add power to 30% and check instruments.

   d. Release brakes, advance PCL to MAX, and commence normal takeoff roll.

   e. Before 1500 feet of takeoff roll and prior to 60 KIAS, initiate the Aborting Takeoff procedure as described in the T-6B NATOPS Flight Manual. Use caution when applying brakes, smooth application of brake pressure will prevent overheating and blown tires.

   f. Maneuver is complete when the aircraft has achieved a safe taxi speed. Taxi clear of runway.

4. **Common Errors.**

   a. Delaying the abort procedure beyond 1500 feet or 60 KIAS.

   b. Excessive brake pressure or pumping the brakes resulting in blown tires.

702. EMERGENCY LANDING PATTERN (ELP)

1. **Description.** The ELP is a 360° pattern designed to position the aircraft for landing at a prepared surface during a complete power loss (Forced Landing) or when an impending engine failure exists in which sufficient power for continued flight is available (Precautionary
Emergency Landing [PEL]). The ELP is used for both actual/simulated PEL and actual/simulated Forced Landings. If altitude permits, intercept the ELP at 3000 feet AGL (2500 feet AGL minimum per the T-6B Flight Manual).

2. **General.** If an engine failure or malfunction in flight requires a Forced Landing or a PEL, a thorough understanding of T-6 flight performance, emergency procedures, ELP, and ejection system capabilities is critical in the decision to eject or attempt completing the ELP to touchdown. If there is any doubt about engine performance, or there is benefit to remaining in the ejection envelope longer, consider recovering using the ELP. The time available to decide whether to recover via ELP or eject depends on the phase of flight. Time available can range from a few seconds to over 20 minutes for a high-altitude engine malfunction. ELPs are only flown to suitable landing areas (hard surface runway, taxiway, under run, or overrun) of sufficient length. Landing on an unprepared surface should only be attempted if ejection is not possible.

In an actual engine failure scenario, the methodology to descend below the minimum controlled ejection altitude employs a series of critical decisions. With an actual failed engine, T-6B aircrews will not descend below 2000 feet AGL unless they are on profile for a suitable landing area, with the runway in sight and in a position to safely maneuver to land. Do not delay the decision to eject in an unlikely attempt to land on an off duty runway if engine failure occurs while configured in the normal landing pattern.

Distractions resulting from excessive troubleshooting or time-consuming attempts to regain power during the execution of the ELP may cause substantial deviation from the standard pattern, precluding a safe landing at the selected site.

**ELP Types.** The depicted profile (Figure 7-1) is used for both Forced Landings and a PEL. The difference between a Forced Landing and a PEL is power available. The Forced Landing is flown with the engine inoperative (no power), or when power is insufficient for continued flight. The PEL is flown with power available, although engine failure may be imminent or power available may be less than normal.

If flown correctly, the Forced Landing and PEL look the same. However, methods to correct for low energy states differ. For a Forced Landing, correct for low energy by delaying landing gear or flap extension, intercepting the ELP at some point other than high key (low key, base key, final), and/or adjusting pattern ground track. For a PEL, immediately use power available to correct for a low energy state as soon as it is recognized and do not delay configuration.

3. **ELP Descent to High Key.** Turn immediately to the nearest suitable field based on aircraft condition, weather, airfield conditions, altitude, and gliding distance available.

**Glide Performance.** Best glide speed with the aircraft in a clean configuration is ~125 KIAS with a sink rate (VSI) of ~1350 to 1500 fpm. A clean glide at 125 KIAS approximates best glide range. For no-wind planning, a clean aircraft (prop feathered or 4-6% torque set) at 125 KIAS should be capable of a glide ratio of ~2 nautical miles for every 1,000 feet of altitude lost.
Landing gear down with flaps and speed brake retracted, your best glide speed is ~105 KIAS with a sink rate of 1500 fpm and a glide ratio of ~1.6 nautical miles for every 1,000 feet of altitude lost.

a. In an actual PEL situation, check the descent rate after setting 4-6% torque (clean configuration). If VSI is greater than 1,500 fpm, increase torque to achieve a 1,350 fpm descent. If power is insufficient to achieve a descent rate less than 1,500 fpm, consider shutting down the engine to improve glide performance.

b. If time permits, use DME or FMS to confirm the actual glide ratio. Consider winds and required turns. Adjust the plan if actual glide distance varies from expected.

c. If unable to climb or zoom, the aircraft travels approximately 0.1 to 0.2 nautical miles of horizontal distance for every 10 knots of excess airspeed above 125 KIAS in a level deceleration. For example, at 200 KIAS the aircraft glides approximately 1.2 NM straight and level before slowing to 125 KIAS.

d. Ten knots of extra airspeed can be traded for approximately 100 feet of increased altitude. For example, 175 KIAS and 6,000 feet is approximately the same energy level as 125 KIAS and 6,500 feet. Once on ELP profile, reduce power to 4-6% torque and maintain altitude as the airspeed bleeds off to 125 KIAS.

In the event of engine malfunction or failure, there may be more than one airfield within glide distance. Select the most suitable airfield based on the following factors:

a. Distance to airfield.

b. Terrain around airfield.

c. Runway length, width, direction, and condition.

d. Weather.

e. Fire or rescue support.

f. Emergency oxygen and electrical power supply. Time required for glide from high altitude with engine inoperative may exceed emergency oxygen supply.

g. Threat to the public if aircraft must be abandoned/ejected.

**Choosing the Most Suitable Field.** Choose the closest suitable hard-surface field with a minimum of a 3000’ runway to set up for the ELP. If multiple fields meet this criteria, other considerations such as crash crew support or medical assistance may be factored in.
**Distance Calculations.** A VFR chart, conventional NAVAIDS, and FMS NAV or TSD displays can be used when judging distance to the selected recovery airfield. The NRST function on the NAV and TSD FMS pages is extremely helpful in providing accurate distance information. Two primary methods used to determine energy state relative to emergency fields are:

a. **DME Method.** Compare energy state relative to a specific field. A memory aid for this method is “1/2 DME + KEY + Field Elevation.”

   i. Determine distance to field using available resources. Distance to the airport displayed by the FMS is to the center point of the airfield and not to a specific runway.

   ii. Distance divided by 2, add Field Elevation; this equals minimum AGL altitude required to reach field.

   iii. Is current altitude (AGL) sufficient to reach the field?

   iv. Add 3,000 feet (high key) or 1,500 feet (low key) to AGL altitude required.

   v. Is energy sufficient to reach high or low key?

b. **Altitude Method.** Compare energy state relative to more than one field.

   i. Subtract 3000 foot (high key) or 1500 foot (low key) from AGL altitude; multiply by 2 to determine maximum glide distance to high or low key.

   ii. Identify fields within glide distance to high or low key.

   iii. Determine most suitable field.

**Energy Management:** Normally the ELP will be entered at high key, but the ELP can be intercepted at any point on the ELP profile between high key and final. Carefully manage energy to arrive at high key on altitude and airspeed. Attempt to dissipate excess energy prior to high key to minimize disorientation and allow the profile to be flown normally. If excess altitude exists during the glide to high key, lose energy by executing: 360° turns, bow ties, S-turns, slips, lower the gear early, extending the speed brake or use a combination of these methods. In a PEL situation, expeditiously maneuver towards high key while simultaneously dissipating energy as needed. All of these methods may be used for both PEL and Forced Landings at the pilot’s discretion.
a. **360° turns prior to high key (PEL or Forced Landing).** This is generally accomplished very near or directly over the intended landing destination. Approximate altitude loss for 360° turns:

125 KIAS, Idle power:

30° bank - 3000-3500 feet.

125 KIAS, 4-6% torque or prop feathered:

30° bank - 2,000 feet.

45° bank - 1,500 feet.

60° bank - 1,000 feet.

b. **Bow Ties.** Bow Ties are essentially a continuous set of mild turns in the shape of a bow tie flown approximately ½ wing tip distance (WTD) away and on the downwind side of the landing area. With each bow tie, you should attempt to keep the landing runway in sight. Bow ties are not precise maneuvers and different techniques exist on how to fly them. Your instructor will provide guidance; however, plan to depart the bow ties for high key with sufficient altitude remaining to glide to high key altitude.

c. **Slips.** A slip is an out-of-balance flight condition used to increase the sink rate and lose excess altitude while maintaining a constant airspeed and a specific track over the ground. Use caution slipping when configured and close to the ground. The slip must be taken out carefully with enough altitude remaining (200-300 feet) to slow the rate of descent and ensure positive control of the aircraft during the final moments of the maneuver. Refer to Chapter 5 for slip procedures.

d. **S-turns.** S-turns are used to affect a milder altitude loss and may be specifically used to make controlled corrections while proceeding direct to high key. Designed to increase the actual track over the ground, S-turns are simply lazy turns back and forth deviating from a straight-line ground track in order to provide more time to descend.

e. **Lower the gear early or extending the speed brake.** In order to expedite entry into the ELP profile, lowering the gear early or extending the speed brake is a viable method to increase drag/descent rate during a high energy state while maneuvering to enter the ELP profile. Remember, your maximum glide distance changes if the engine fails with the gear down. Glide speed is ~105 KIAS with a sink rate of 1500 fpm and a glide ratio of ~1.6 nautical miles for every 1,000 feet of altitude lost.
4. **Emergency Landing Pattern Profile.** The ELP profile is designed to position the aircraft for landing from a Forced Landing, PEL, or PEL from the pattern [PEL(P)] situation. See Figure 7-1 and Figure 7-2.

<table>
<thead>
<tr>
<th>POSITION</th>
<th>ALTITUDE</th>
<th>AIRSPEED</th>
<th>CONFIG</th>
<th>POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH KEY</td>
<td>2500-3000 feet AGL</td>
<td>120 KIAS</td>
<td>Gear Down Flaps UP</td>
<td>1/3 down the runway Offset up to 1/4 WTD</td>
</tr>
<tr>
<td>LOW KEY</td>
<td>1500 feet AGL</td>
<td></td>
<td>Gear Down Flaps TO</td>
<td>On runway heading 2/3 WTD (fuel cap on runway)</td>
</tr>
<tr>
<td>BASE KEY</td>
<td>600-800 feet AGL</td>
<td>120 KIAS</td>
<td>Gear Down Flaps LDG (as required)</td>
<td>Perpendicular to landing line; halfway between low key and the runway</td>
</tr>
<tr>
<td>FINAL</td>
<td>Descending to land</td>
<td>110 KIAS</td>
<td></td>
<td>Runway centerline</td>
</tr>
</tbody>
</table>

**Figure 7-1** Emergency Landing Pattern (ELP) Checkpoints

**Figure 7-2** Emergency Landing Pattern
a. **Planning.** The primary reference during an ELP is the runway. Crosscheck energy level (altitude + airspeed) with position. Look outside to maintain proper ground track. Predict energy level (altitude + airspeed) as early as possible at known reference points (high key, low key and base key) and anticipate required corrections. Position deviations can occur due to poor planning, imprecise aircraft control, or improper wind analysis. Trim throughout the ELP to minimize airspeed deviations. Make all corrections smooth and expeditious to avoid stall.

b. **High Key.** Position the aircraft at high key, 2500-3000 feet AGL, 120 KIAS, gear down, wings level, aligned with the landing direction and approximately one-quarter WTD from the runway away from the intended ELP turn direction. Turn, using angle of bank as necessary (~15-20° in calm wind), towards the low key position. Maintain 120 KIAS and make appropriate voice call.

c. **Low Key.** Located approximately two-thirds WTD (fuel cap on runway), abeam the intended point of landing (no wind), altitude approximately 1,500 feet AGL and 120 KIAS minimum.

   i. Approaching low key, crosscheck the runway to evaluate spacing. Check winds on PFD and crosscheck with windsock. Plan final approach accordingly.

   ii. At low key, level the wings momentarily and check for proper spacing and altitude. If energy is assessed to be adequate to make the runway, lower TO flaps (lower flaps no sooner than low key). If high energy state, lowering flaps to land will facilitate dissipating additional altitude or airspeed.

d. **Base Key.** Maintain 120 KIAS minimum. The descent is normally greater than for a normal pattern. Fly the aircraft perpendicular to the runway (base key) at 600-800 feet AGL. Altitude is not the only indication of proper energy management; the distance from the runway must also be assessed and the effect of winds taken into account. When landing is assured, flaps may be lowered to LDG.

e. **Final.** Aircraft may be slowed to 110 KIAS (minimum) on final. Maintain 110 KIAS (minimum) on final until transition to landing. The transition to landing may begin well prior to the intended point of touch down. Plan to land within the first one-third of the runway.

**NOTE**

Use caution with low power settings on final, especially with LDG flaps. High descent rate with idle power setting, coupled with pitch change to intercept a normal glide path, could result in rapid decrease in airspeed. A high sink rate can develop, which may result in a stall or hard landing.
f. **Landing.** Adjust the nose attitude in the flare to transition to a normal landing. Touch down on the main gear and then gently lower the nose wheel as in a normal landing. Apply braking as needed based on runway remaining.

i. **PEL.** If runway remaining after touchdown is insufficient to stop, waveoff. If sufficient power is available to obtain low key, attempt a PEL(P). If power is insufficient or engine failure occurs, consider ejection.

**NOTE**

If the aircraft is below profile between high key and low key, add power to regain altitude (if available). MAX power may not always be appropriate depending on the amount of correction required. After base key, use normal power corrections to ensure a safe and controlled landing.

ii. **Forced Landing.** Anticipate a longer flare and touch down due to reduced drag. Use caution when applying brakes to prevent blown tires. If the aircraft cannot be stopped before the end of the runway, execute the Emergency Engine Shutdown on Ground Procedure or Eject.

**NOTE**

Do not delay the decision to Eject (actual engine failure) or waveoff (simulated engine failure) after determining a safe landing is unlikely.

5. **ELP Wind Analysis.** Winds can cause ELPs to differ significantly from standard. An uncorrected/unanticipated strong wind component can result in an unsuccessful ELP, even if it was otherwise flown flawlessly.

a. **Determining Winds.** Surface winds, winds at 1,000 to 3,000 feet, winds at 5,000 feet and winds aloft should be obtained from weather forecasts and serve as a good starting point for building situational awareness about actual wind conditions. The winds at 1,000 to 3,000 feet can vary significantly from surface winds and significantly alter required ELP ground track. At tower controlled runways, actual surface winds are known. Other methods to determine the winds include:

i. Radio calls to other aircraft, a fixed base operator (FBO) on the field, ASOS, etc.

ii. Without access to actual observations, use winds briefed by weather forecaster in the preflight briefing as a starting assumption.
Transit on an unprepared surface may cause structural damage rendering the CFS system inoperative and/or make the canopy difficult or impossible to open.

**DITCHING**

This procedure is used if ejection is not possible or the ejection system malfunctions. Plan to ditch into the wind if the seas are calm. In the event of moderate swells and minimum winds, ditch parallel to the swells. With moderate to high swells and 25 knots wind or more, ditch into the wind and attempt to land on the upwind or back side of the swell (avoid the face of the swell). Figure 3-11 shows recommended ditching procedure. Follow the Emergency Landing Pattern.

**WARNING**

- Ditching is not recommended.
- To avoid causing the aircraft to tumble or cartwheel on touchdown, do not extend landing gear or flaps if ditching.

**PRECAUTIONARY EMERGENCY LANDING (PEL)**

The PEL procedure should be executed whenever indications of a possible engine failure exist and/or when directed by the checklist. Use power,airspeed, altitude, and configuration to intercept and maintain the emergency landing pattern profile. The PEL emphasizes energy management through prudent use of existing power, reducing drag, and gaining altitude as necessary. Crews should not delay configuration to correct low energy. Use power as soon as a low energy state is recognized.

**WARNING**

- If the engine should fail while flying the PEL, refer to the Engine Failure During Flight checklist, and transition to the Forced Landing procedure.
- If rate of descent (indicated on the VSI while stabilized at 125 KIAS with gear, flaps, and speed brake retracted and 4 to 6% torque) is greater than 1500 ft/min, increase torque as necessary (up to 131%) to achieve approximately 1350 to 1500 ft/min rate of descent. If engine power is insufficient to produce a rate of descent less than 1500 ft/min, set PCL to OFF.

---

*Figure 3-11. Wind Swell Ditch Heading*
WING FLAP FAILURE

Asymmetric Flaps (Split-Flap Condition)
If uncommanded lateral rolling or yawing is experienced during operation of the wing flaps, an asymmetric (split-flap) condition likely exists. Flap asymmetry may occur from physical binding of one or more of the four flap segments or from a failure of the torque link between the inner and outer flap segments. Sufficient control authority exists to counteract yaw and roll at pattern airspeeds.

NOTE
Do not attempt to extend speed brake when experiencing asymmetric flaps
1. Airspeed - As required to maintain control and minimize control effort
2. Flap control handle - Actuate to minimize or eliminate flap asymmetry

WARNING
Once asymmetry is minimized or eliminated, do not reposition flap control handle.

NOTE
If necessary, confirm flap position with tower flyby and/or visual inspection by another aircraft.
3. Controllability check - As required
4. Land via straight-in approach

LANDING GEAR MALFUNCTION

NOTE
Execute this checklist anytime the landing gear does not indicate fully up with the gear handle up, or fully down with the gear handle down.

NOTE
A visual inspection by another aircraft is the preferred method of determining abnormal landing gear and inboard gear door positions. Time and conditions permitting, do not delay coordination for an aircraft visual inspection.

NOTE
If available, have another aircraft or RDO/tower flyby report gear position visually prior to configuration change.
2. **General.** A slip occurs when the aircraft slides sideways towards the center of the turn. It is caused by an insufficient amount of rudder in relation to the amount of aileron and the angle of bank used. If you roll into a turn without using coordinated rudder and aileron, or if you hold rudder against the turn after it has been established, the aircraft will slide sideways towards the center of the turn. A slip may also occur in straight-and-level flight if one wing is allowed to drag; that is, flying with one wing low, and holding the nose of the aircraft straight by the use of rudder pressure. In this case, the aircraft slips downward towards the earth’s surface and loses altitude. In a full slip, the rate of descent may be in excess of 2000 feet per minute.

3. **Procedures.**

   a. Although the slip can be flown at any airspeed or configuration, it will normally be demonstrated and introduced at altitude simulating the slip to high key at 125 KIAS, clean configuration. Slips may also be demonstrated at 120 KIAS with gear down/flaps as required.

   **NOTE**

   Caution must be exercised, since stall speed is increased in this out-of-balance flight condition.

   b. To initiate a slip from wings level, lower one wing while applying opposite (top) rudder pressure. Select a reference point on the horizon and adjust rudder pressure and/or angle of bank to maintain the desired ground track. Full rudder deflection is not required during a slip. Use caution if electing to slip with gear down, especially low to the ground.

   c. To initiate a slip while in a turn, lower the inboard wing while increasing opposite (top) rudder pressure. It will be necessary to vary the angle of bank and rudder pressure to maintain the desired track over the ground.

   d. Monitor airspeed closely, adjust nose attitude as necessary to maintain 125 KIAS. Monitor the VSI and note increased rate of descent.

   **NOTE**

   The low-fuel warning light for the low-wing tank may illuminate regardless of fuel state.

   e. To recover from the slip, smoothly roll the wings towards level while reducing rudder pressure. Remember, the slip must be taken out with enough altitude remaining to slow the rate of descent and ensure positive control of the aircraft during the final moments of any maneuver in which it is used.
704. PRECAUTIONARY EMERGENCY LANDING FROM THE PATTERN

1. **Description.** Use PEL procedures if indications of an impending engine failure occur while in the landing pattern.

2. **General.** The same indications of an impending engine failure as discussed in the PEL may occur in the landing pattern. This maneuver affords the opportunity for the student to practice intercepting the ELP at low key while already established in the landing pattern.

The PEL in the pattern will be initiated at or above 400 feet AGL by the instructor informing the student that he or she has a simulated malfunction requiring that a PEL in the pattern be performed.

**NOTE**

This simulated PEL in the pattern should not be initiated until proper interval with both PEL and touch-and-go traffic is obtained.

3. **Procedures.**

   a. **TURN** towards the nearest suitable runway. Consider the use of an off-duty runway. If the pattern is extended and/or the winds are calm, the nearest suitable runway may be the reciprocal of the runway the aircraft just departed. The instructor will then direct which runway will be used. Practice PELs in the pattern must conform with local course rules. The instructor will make the appropriate call to the Tower/RDO/crash crew.

   b. **CLIMB** at 125 KIAS, utilizing power setting as appropriate for the simulated emergency.

      **NOTE**

      Anticipate immediate forward stick to maintain 125 KIAS should total engine power be lost.

   c. **CLEAN** up the aircraft, gear, flaps, and Speed brake – UP. Report "aircraft clean" to your instructor.

   d. **CHECK** Aircraft and engine instruments. Conduct a systematic check of the aircraft for secondary indications.

   e. **Boost** Pump Switch – As required.

   f. **Ignition** Switch – As required.
NOTE

Turn boost pump and ignition switches ON unless an Airstart would not be warranted should the engine fail (oil system malfunction, chip light, fire light or FOD)

g. **Plan** – to intercept ELP at or above low key position.

h. **Determine** or verify the intended runway with the instructor.

i. **Deliver** the appropriate simulated emergency voice report using the ISPI format over ICS to your instructor. For an actual emergency, notify the tower/RDO of your situation/intentions on the radio.

j. **Reduce** power to 4-6% torque once within dead engine gliding distance of a low key position. (Lower the nose to the 125 KIAS glide attitude and re-trim.)

k. **Lower** the landing gear.

l. **Report** over ICS the Before Landing Checklist and re-trim for 120 KIAS.

m. Arrive at pattern low key with proper configuration *(lower flaps no sooner than low key)*, altitude, and \( \frac{3}{5} \) wingtip distance.

n. Make the appropriate radio call at pattern low key IAW local SOP.

o. Complete the maneuver as in the last half of the PEL.

NOTE

Any time the aircraft is below profile, add power as required to regain proper altitude/airspeed. After the base key position, use momentary power as required to regain profile.

4. **Common Errors.**

a. Not maintaining 125 KIAS in the climb.

b. Failure to use power when low throughout the pattern.

c. Over climbing to low key, resulting in excessive altitude precluding a safe descent profile to landing.

d. Failure to complete the Before Landing Checklist prior to low key.

e. Failure to anticipate or correct for wind.
BARRIER ENGAGEMENT

Aircrews will not call for a raised barrier in the event of an aborted takeoff. If a raised barrier is already up, aircrews will steer around it, to include departing the prepared surface if necessary, or ejecting before engagement.

WARNING

- Significant aircraft damage can be anticipated when engaging a raised web barrier and webbing may preclude normal canopy opening.
- If contact with a lowered BAK-15 is imminent, discontinue braking before reaching lowered barrier, then recommence once past barrier. In the unlikely event that webbing catches on aircraft, there may be unexpected directional control problems.

AIRCRAFT DEPARTS PREPARED SURFACE

If it appears likely that the aircraft will depart the prepared surface, execute the Emergency Engine Shutdown On The Ground procedure.

TIRE FAILURE DURING TAKEOFF

IF THE DECISION IS MADE TO STOP:
1. Abort

IF TAKEOFF IS CONTINUED:
2. Gear and flaps position - Do not change
3. Straight-in approach - Execute

CAUTION

Land on side of runway corresponding to the good tire (put drag in the middle). Maintain directional control using rudder, brakes, and nose wheel steering as required.

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF (SUFFICIENT RUNWAY REMAINING STRAIGHT AHEAD)

A complete engine failure immediately after takeoff is an extremely critical emergency requiring immediate action and decision making by the pilot. Indications are a total loss of power and a fairly rapid reduction in airspeed. A positive nose down pitch change will be needed to maintain a safe flying airspeed. If sufficient runway remains, the best option is to continue straight ahead and land. If that is not possible,

AIR FORCE TO 1T-6B-1
NAVY NAVAIR A1-T6AAA-NFM-100

careful consideration of the recovery situation must be made. An early decision to eject may be the best option. Anticipate increased brake sensitivity when braking above 80 KIAS. In all cases, control the aircraft energy state through prudent use of altitude, airspeed, and configuration.

WARNING

- If insufficient runway remains to land straight ahead, consider immediate ejection.
- Do not sacrifice aircraft control while troubleshooting or lowering gear with emergency system.

* 1. AIRSPEED - 110 KNOTS (MINIMUM)
* 2. PCL - AS REQUIRED

NOTE

The pilot should select IDLE to use the increased drag of the not yet feathered propeller or select OFF to reduce the sink rate.

* 3. EMER LDG GR HANDLE - PULL (AS REQUIRED)

NOTE

With a loss of hydraulic pressure, landing gear and flaps cannot be lowered by normal means.

* 4. Flaps - As required

IN-FLIGHT EMERGENCIES

ENGINE FAILURE DURING FLIGHT

In the event of an engine failure, a decision to eject, land, or aircrat start must be made. The altitude at which the engine fails will determine the time available to perform the following procedures.

Initial indications of engine failure/flameout are: loss of power and airspeed; rapid decay in N₁, torque, and ITT; and propeller movement towards feather due to loss of oil pressure. Depending on airspeed, N₁ will indicate 0% within approximately 5 seconds, even though the gas generator core may not have seized. N₁ does not indicate speeds below 8%. Torque will be indicating 0%. As the propeller moves towards feather, it may still be turning (windmilling), but at a reduced RPM. Secondary indications include rapidly decreasing ITT and lower-than-normal oil pressure.

The GEN, FUEL PX, and OIL PX warning will illuminate, followed by the OBOGS FAIL warning. The PMU FAIL and CKPT PX warning may illuminate.

Change 4
Sufficient hydraulic pressure may not be available to operate the gear and flaps as the engine spools down. Gear and flaps will remain in the last selected position at the time of engine failure. Gear may indicate unsafe or in transit if operation is attempted at time of engine failure.

Initial reaction to any malfunction at low altitude should be to trade excess airspeed for altitude. Higher altitude translates directly to additional terrain clearance for ejection, additional glide range to reach a suitable landing, or additional time to achieve an airstart.

The pilot should zoom to eject if the engine has failed and there are no suitable landing options and a restart is not warranted (insufficient altitude or type of failure precludes restart). The zoom to eject is accomplished by pulling up to a 20° climb angle (if able) and ejecting before a sink rate develops. Zoom to eject allows the pilot to add 200 feet of altitude increase above the altitude gain noted in the zoom chart due to not pushing over. If the decision to eject is not immediately obvious, follow the zoom to climb procedure.

If attempting an airstart or positioning to land, the following procedures should be followed. Above 150 KIAS, initiate a zoom climb using a 2 G pull up to a 20° climb angle until approaching the desired glide airspeed (use approximately 20 KIAS lead point) and then initiating a 0 to +0.5 G pushover to capture desired glide airspeed. Below 150 KIAS, the benefits of a zoom climb are negligible. The recommended procedure is to perform a constant altitude deceleration to desired glide airspeed. Figure 3-2 shows low altitude zoom capability at 200 KIAS and Figure 3-3 shows low altitude zoom capability at 250 KIAS.

Zoom capability at 200 knots will vary from 603 to 915 feet of altitude gained. Zoom capability at 250 knots will vary from 1180 to 1576 feet of altitude gained. The lower numbers are for light aircraft at low pressure altitudes and the higher numbers are for heavier aircraft at higher pressure altitudes. The zoom to eject procedure will gain an additional 200 feet of altitude.

To use the low altitude zoom charts, proceed as follows:

EXAMPLE 1 (airspeed 200 KIAS, Figure 3-2): Enter chart with initial conditions of weight, altitude, and airspeed (6000 lbs, 6000 feet, and 200 KIAS in the example). Trace vertically up from weight (A) and interpolate between the pressure altitude guidelines, as required, to determine the intersection of these values (B). Trace back to the left hand margin to determine the altitude gain (C) (843 feet). Therefore, a 2 G zoom from 200 KIAS and 6000 feet with a 0 to +0.5 G pushover to capture 125 KIAS glide airspeed should result in a final altitude of 6843 feet.

EXAMPLE 2 (airspeed 250 KIAS, Figure 3-3): Enter chart with initial conditions of weight, altitude, and airspeed (6000 lbs, 6000 feet, and 250 KIAS in the example). Trace vertically up from weight (A) and interpolate between the pressure altitude guidelines, as required, to determine the intersection of these values (B). Trace back to the left hand margin to determine the altitude gain (C) (1522 feet). Therefore, a 2 G zoom from 250 KIAS and 6000 feet with a 0 to +0.5 G pushover to capture 125 KIAS glide airspeed should result in a final altitude of 7522 feet.

Figure 3-4 provides a tabular listing of altitude gains based on a variety of conditions at 200 and 250 KIAS.

If a decision is made to land, enter the emergency landing pattern at high key, if possible. If high key entry is not possible, it may be possible to intercept the pattern at a lower altitude. Glide performance will be considerably reduced until the propeller is feathered. Figure 3-5 shows maximum glide information.

*1. ZOOM/GLIDE – 125 KNOTS (MINIMUM)

**NOTE**

- Crosscheck N1 against other engine indications to assess condition of engine and determine if an airstart is warranted. At 125 KIAS, an engine which has flamed out will rotate below 8% N1 and indicate 0% N1. The engine oil pressure indicator may display oil pressures up to 4 psi with an N1 of 0%.
- If experiencing uncommanded power changes/loss of power/uncommanded propeller feather or compressor stalls, refer to appropriate procedure.

*2. PCL – OFF

**NOTE**

Propeller will not feather unless the PCL is fully in OFF.

*3. INTERCEPT ELP
AIR FORCE TO 1T-6B-1  
NAVY (NAVAIR) A1-T6BAA-NFM-100

**WARNING**

- If a suitable landing surface is available, turn immediately to intercept the nearest suitable point on the ELP. Any delay could result in insufficient gliding distance to reach a landing surface.
- Do not delay decision to eject below 2000 feet AGL.

*A. Airstart - Attempt if warranted

**WARNING**

Airstart procedure is not recommended below 2000 feet AGL, as primary attention should be to eject or safely recover the aircraft.

**IF CONDITIONS DO NOT WARRANT AN AIRSTART:**

- *5. FIREWALL SHUTOFF handle - Pull
- *6. Execute Forced Landing or Eject

**AIRSTART**

Three airstart procedures are approved for this aircraft: PMU NORM; PMU OFF; and Immediate Airstart (PMU NORM). The status of the PMU dictates the type of airstart attempted. All airstarts are starter assisted.

Use this procedure if engine failure was not due to fire or mechanical failure. Airstarts may be attempted at any altitude and airspeed, although airstarts have only been demonstrated at 20,000 feet MSL and below, as depicted in Figure 3-6.

If the engine fails during flight at low altitude, an immediate ejection should be considered if sufficient altitude and airspeed are not available for a successful restart. If excess airspeed is available, exchange airspeed for altitude to allow more time to accomplish the AIRSTART procedures. Restart should be attempted immediately. The first action, PCL OFF, is critical. This will feather the propeller, reduce the aircraft drag and increase glide distance. Attempt a PMU NORM airstart if PMU FAIL warning is not illuminated. The PMU OFF (Manual) airstart is recommended only for PMU malfunctions, since pilot workload is increased with manually metering fuel with the PCL during the start. If the airstart is successful, useful power will be available after 40 seconds from starter engagement.

In general, trim the aircraft to the desired airspeed and ensure sufficient altitude is available prior to the airstart.

The extra drag during airstart attempts will cause a greater descent rate than 1350 to 1500 feet/minute. Approximately 1200 feet of altitude will be lost during an airstart attempt performed at the best glide speed of 125 KIAS. Approximately 40 seconds will be required to complete the starting sequence. The higher the altitude, and the slower the airspeed, the warmer the starting ITT peak temperature. As the start progresses, the pilot's attention must be focused on fuel flow, ITT and N₁ throughout the starting sequence. After the start is complete, the critical step is setting the starter switch to NORM to allow the generator to come online.

**WARNING**

Consideration should be given to not attempting an airstart if on a minimum glide profile to an airfield, since repeated airstart attempts will result in excessive altitude loss.

The PMU NORM airstart is considered the primary method since it is less sensitive to the rate of PCL movement, and cooler starts can be expected at lower airspeeds. This procedure depends upon pilot action to correctly position the PCL and critical switches.

If the PMU FAIL warning is illuminated, a PMU OFF airstart is required. Critical steps during this starting procedure include setting the PMU switch to OFF and turning the ignition switch ON. The most critical pilot action during the start is PCL movement while monitoring fuel flow, ITT and N₁ acceleration. Advancing the PCL too rapidly during the start causes high ITT and may overtemp the engine. Advancing the PCL too slowly may cause N₁ to roll back with increasing ITT.

**PMU NORM AIRSTART**

The PMU NORM airstart procedure will provide the least complicated airstart. Refer to PMU OFF airstart if PMU FAIL message is present.

**WARNING**

Airstart attempts outside of the airstart envelope may be unsuccessful or result in engine overtemperature. Consideration should be given to ensure airstarts are attempted within the airstart envelope (125-200 KIAS for sea level to 15,000 feet, or 135-200 KIAS for 15,001 to 20,000 feet).

1. PCL – OFF
## Maximum Glide Distance

**ASSOCIATED CONDITIONS:**
- Engine Inoperative
- Speedbrake In
- Zero Wind
- Standard Day

### Configuration Table

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Drag Index</th>
<th>Propeller</th>
<th>Glide Speed (KIAS)</th>
<th>Sink Rate (FT/Min)</th>
<th>Glide Ratio (NM/1000 FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean</td>
<td>0</td>
<td>Feathered</td>
<td>125</td>
<td>1350</td>
<td>2.0</td>
</tr>
<tr>
<td>Gear Down</td>
<td>20</td>
<td>Feathered</td>
<td>105</td>
<td>1500</td>
<td>1.6</td>
</tr>
<tr>
<td>Flaps Landing Gear Down</td>
<td>80</td>
<td>Feathered</td>
<td>95</td>
<td>1800</td>
<td>1.1</td>
</tr>
<tr>
<td>Clean</td>
<td>0</td>
<td>Windmilling</td>
<td>110</td>
<td>2350</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### Notes:
1. PCL-off will feather propeller.
2. Sink rates are approximate and will increase with altitude.
3. Glide Dist = Dist at Initial Alt + Dist at Final Alt.

**Figure 3-5. Maximum Glide**
Fly GPS approaches using the above airspeeds and configurations.

**WARNING**

The GPS always displays distance to the active waypoint. During GPS approaches, this distance may not be the same as the published DME distance on the instrument approach procedure.

**RADAR APPROACH**

Figure 2-7 shows a typical radar approach. Maintain 150-200 KIAS in clean configuration on radar downwind. Slow to 120-150 KIAS on base leg. Prior to glideslope intercept, ensure that landing gear are down and set flaps as required. Fly final approach at 100-120 KIAS.

**CIRCLING APPROACH**

Minimum recommended speed prior to final approach is 115 KIAS with gear down and flaps set to TO.

**MISSING APPROACH**

Smoothly advance PCL to MAX power and retract the speed brake (if extended). Set attitude to 10-15° nose high and execute air traffic control (ATC) missed approach procedure. Maintain the landing approach speed until clear of obstacles. Reduce power as required to preclude excessive nose high attitude in actual instrument conditions. Refer to the After Takeoff checklist.

**NOTE**

Selection of MAX power automatically retracts the speed brake.

**BEFORE LANDING**

Refer to Appendix A for recommended landing data. The flaps may be set to TO prior to lowering gear.

**NOTE**

Prior to landing, set pressurization switch to DUMP if landing field elevation is above 7500 feet MSL.

1. DEFOG switch - OFF
2. Engine instruments - Check
3. Gear - DOWN (BOTH)
   
   (Check three green annunciators illuminated)

4. Brakes - Check, as required (Verify positive pressure by actuating toe brakes)
5. Flaps - As required (BOTH)
6. Speed brake - Retracted

**NOTE**

- Setting flaps to TO or LDG automatically retracts the speed brake.

- If conditions require, the pilot may select defog during climbout from missed approach, go around/climbout, or touch and go.

**GO AROUND/WAVEOFF**

The decision to go around/waveoff should be made as early as possible. Go around/waveoff procedures are similar to missed approach. Refer to the After Takeoff checklist.

**CAUTION**

Excessive pitch near the ground can result in scraping the tail on the runway.

**NORMAL LANDING**

Figure 2-8 and Figure 2-9 show typical landing patterns for Air Force and Navy operations. Prior to entering the traffic area, slow the aircraft to 200-250 KIAS in a clean configuration.

**NOTE**

For heavy weight conditions, approach speed will be greater than those indicated in Figure 2-8 and Figure 2-9. Fly base and final with no less than an “on speed” AOA indication.

Cross the threshold with final flap setting and control forces trimmed. Coordinate PCL and pitch attitude to maintain proper airspeed and rate of descent. Retard the PCL to IDLE once landing is assured. Momentary actuation of the stick shaker may occur just prior to touchdown. Airspeed will be dissipated in the flare, and touchdown will normally occur approximately 7 knots below the landing approach speed.

Upon touchdown, smoothly lower the nose gear to the runway once airspeed is below 80 knots unless needed to affect stopping distance.
Figure 2-9. Normal Landing Pattern (USN)
To avoid possible contact of ventral fin with runway, do not allow the aircraft to develop excessive sink rates or allow excessive nose-high pitch attitudes during landing. No-flap landings with excessive sink rates greatly increase the likelihood of tail strikes.

If nose wheel shimmy occurs after the nose wheel contacts the runway, apply back stick pressure to relieve the weight on the nose wheel, then gently release pressure to reestablish nose wheel contact with the runway. Notify maintenance after the mission.

Use rudder and ailerons to maintain directional control. Continue to apply brakes as required, but avoid differential braking during high speed portion of landing rollout. \( N_1 \) will automatically reduce from flight idle (67%) to ground idle (60-61%), approximately 4 seconds after touchdown.

**WARNING**

Engaging nose wheel steering during shimmy may damage the actuator and result in a steering "hard over" event and loss of directional control. Do not engage nose wheel steering during landing rollout in attempt to dampen nose wheel shimmy. Engage nose wheel steering as required once taxi speed is achieved.

**WARNING**

- If one brake fails, use the other brake and rudder/aileron to aid in maintaining directional control. If both cockpits are occupied, the pilot with effective brakes shall assume braking authority. If directional control cannot be maintained, execute Aircraft Departs Prepared Surface procedure.
- Neutralize rudder pedals prior to engaging nose wheel steering to avoid excessive swerve when nose wheel steering is selected.

**TOUCH AND GO LANDING**

Upon touchdown, smoothly advance the PCL to MAX. Anticipate a slight amount of right rudder as torques increase. Rotate at rotation speed.

The landing gear may be left down when remaining in the pattern, but the pilot must observe the maximum gear extended speed in Section V. After liftoff, proceed with the After Takeoff checklist.

**CROSSWIND LANDING**

Crosswind landings require only a slight adjustment of landing technique. Crab as necessary while in the pattern to accommodate crosswind component. Once transitioned to final, establish a wing low attitude into the wind to counter drift, and maintain runway alignment with rudder. Maintain the wing low attitude and rudder input throughout the flare.

**GUSTY WIND LANDING**

During gusty wind conditions, increase landing threshold and touchdown speeds by 50% of the gust increment up to a maximum increase of 10 knots. LDG flaps are not recommended during gusty wind conditions.

**ANGLE OF ATTACK (AOA) LANDING**

Angle of attack (AOA) landings utilize the normal landing pattern in Figure 2-8 or Figure 2-9 while maintaining optimum AOA throughout the final/approach turn. On downwind, slow to optimum AOA (on-speed amber donut on indexer) prior to the perch/abeam position. After the perch/abeam position, maintain on-speed AOA with pitch and maintain controlled descent rate with power. Maintain an appropriate angle of bank and line up on runway centerline. On final, coordinate stick and power inputs to land at desired touchdown point while continuing to fly on-speed AOA. Round out and touch down normally.

**MAXIMUM BRAKING**

Maximum braking effectiveness is obtained with a steady application of brakes.

The physical limitations of the tire and brake system make it extremely difficult to consistently achieve maximum braking action, particularly at high speeds where the weight component is reduced due to lift. A smooth, single application, increasing as airspeed decreases, offers the best braking opportunity. Great caution should be used when braking at speeds above 80 KIAS. Locked brakes are difficult to diagnose until well after the fact. Braking should be discontinued at the first sign of directional control problems and then cautiously reapplied. At speeds below 80 KIAS, the chances of approaching maximum braking action are greatly increased.
610. WAVEOFF (GO-AROUND)

1. **Description.** The waveoff is a set of standard procedures used to effect the safe discontinuation of an approach.

2. **General.** Occasionally, during your landing practice, you will have to discontinue an approach and execute a waveoff. A waveoff may be initiated by the pilot, or may be directed by an external source (RDO, wheels watch, waveoff lights, IP, tower, another aircraft, etc.). The reason for an externally directed waveoff may not be apparent to the pilot, but the waveoff is mandatory unless a greater emergency exists. Do not confuse a waveoff with a stall recovery. If a stall indication occurs in the landing pattern, disregard ground track and execute the stall recovery procedures. After safely climbing away from the ground, reestablish the proper ground track and execute a waveoff.

Although a landing approach may be aborted at any point in the pattern, a waveoff will usually be executed during the approach turn, in the straightaway, or during the landing transition. Of course, the sooner a poor landing condition is recognized and the waveoff executed, the safer it will be. Do not delay the decision to waveoff and do not try to salvage a bad approach. If at any time your approach does not feel comfortable or you are too close to the aircraft in front of you, "take it around." You should not wait until the last second to make a decision. Keep in mind that a waveoff is not an emergency procedure unless it is executed too late. A pilot who recognizes a poor approach situation and executes a proper waveoff well before getting into a dangerous situation is demonstrating maturity and good judgment. Be alert for a waveoff given by wheels watch (radio call or waveoff lights). Once you have initiated a waveoff, do not change your mind and attempt to land.

Examples of an unsafe approach are unsafe altitude, unsafe airspeed, overshooting approach, drifting or crabbing prior to touchdown, and high transitions that will lead to a bounced landing. The sooner a poor landing condition is recognized and the waveoff executed, the safer it will be.

Conflicts in the traffic pattern and insufficient separation during the landing approach are usually solved by establishing proper interval in the break or upwind prior to the crosswind turn; however, the following guidelines should be followed.

If you roll out in the straightaway before the aircraft has landed, an immediate waveoff shall be initiated. Do not delay your waveoff in hopes that the situation will correct itself. During operations at outlying fields where Practice Precautionary Emergency Landing (PPEL), PPEL in the pattern, and touch-and-go are in progress simultaneously, pilots must be constantly alert for traffic conflicts. ELP traffic has the right-of-way over normal touch-and-go traffic.

3. **Procedures.**

   a. Advance PCL; **MAX power may not always be required.** Aircraft deconfliction, maneuvering requirements, and traffic pattern may warrant the use of something other than MAX power.

   b. Simultaneously level the wings (if conditions permit), and center the ball.
c. Raise the nose to climbing attitude and climb at 120 KIAS. Re-trim.

NOTE

When the aircraft is under control, make a radio transmission that you are waving off.

d. If flaps were lowered, when safely airborne at or above 110 KIAS and a positive rate of climb, raise the flaps and then accelerate to 120 KIAS. Reduce power to 60-70%, re-trim.

e. Adjust your flight path, moving to either side of the runway if necessary, to avoid conflicting traffic and to keep aircraft on the runway in sight. Comply with any instructions given to you from the tower/RDO. If the wave-off was performed on final or during the landing transition with no other aircraft on the runway, the wave-off may be performed directly over the runway (unless prohibited by SOP).

NOTE

Wave-off shall continue to follow ground track to avoid traffic and comply with local course rules.

f. With interval, call crosswind to re-enter downwind or depart the pattern.


a. Failure to initiate waveoff early enough.

b. Failure to advance PCL as required.

c. Failure to establish aircraft in a positive rate of climb.

d. Failure to maintain 120 KIAS.

e. Forgetting to raise the flaps.

f. Forgetting to transmit waveoff call.

g. Failure to maintain solid lookout doctrine and keep other aircraft in sight.

611. LANDING ERRORS

1. Description. A deviation from a normal landing which could cause a dangerous situation to quickly develop.