C3402
Briefing Guide
(Worksheet)

Planned Route:

Takeoff:	KNSE, Rwy **05**
Altitude:	As required (6000' AGL minimum restriction)
Route:	North, South MOA, Area1,2, or 3 may be utilized
Training Device:	OFT

SYLLABUS NOTES:
Practice scenario-based emergency procedures and introduce students to aerobatic maneuvers.

The student shall only use the HUD to accomplish the SSR within this block of training.

No strap-in required for student. Need to have gloves, kneeboard, NATOPS PCL for this event.

Student will use Abbreviated Simulator checklist to expedite becoming airborne. Once airborne all applicable checklist will be conducted from the quad-fold version.

Special Syllabus Requirement
HUD Introduction and Windshear Recovery

Discuss

a. **Combination Maneuvers**

b. **Windshear Recovery Procedures**

- Definition
- Windshear Video
- Recommended Procedure

Microburst (very dangerous type of windshear)

Microburst takeoff video

Microburst landing video

c. **HUD (Basic symbology) / (Video)**

d. **Angle of Attack Approaches**

e. **Any Emergency Procedure**

- Recommend an emergency that leads to a PEL situation being as the student will practice a PEL and a PEL/P.

T-6B CONTACT C3400 BLOCK

STUDENT GRADE SHEET DATE _____ INSTRUCTOR _____

MEDIA: OFT VT- _____ BRIEF TIME: _____ NAME: _____ EVENT:_____

#	MANEUVER	MIF	C3401	C3402	
1	GEN KNOWLEDGE / PROCEDURES	4+	X	X	
2	EMERGENCY PROCEDURES	4+	X	X	
3	HEADWORK / SITUATIONAL AWARENESS	3+	X	X	
4	BASIC AIRWORK	4+	X	X	
5	IN-FLIGHT CHECKS / FUEL MANAGEMENT	4+	X	X	
6	IN-FLIGHT PLANNING / AREA ORIENTATION	3+	X	X	
7	TASK MANAGEMENT	3+	X	X	
8	COMMUNICATION	4+	X	X	
9	MISSION PLANNING / BRIEFING /DEBRIEFING	4+	X	X	
10	GROUND OPERATIONS	4			
11	TAKEOFF	4+	X	X	
12	DEPARTURE	4			
13	G-AWARENESS EXERCISE	4			
17	POWER-ON STALL	4			
18	LANDING PATTERN STALLS	4			
19	POWER-OFF STALLS	4			
20	SPIN	3			
21	CONTACT UNUSUAL ATTITUDES	3			
22	LOOP	2+	X	X	
23	AILERON ROLL	2+	X	X	
24	SPLIT-S	2+	X	X	
25	BARREL ROLL	2+	X	X	
26	CLOVERLEAF	2+	X	X	
27	IMMELMANN	2+	X	X	
28	CUBAN EIGHT	2+	X	X	
29	WINGOVER	2+	X	X	
30	SLIP	3			
31	POWER LOSS	3+	X		
32	PRECAUTIONARY EMERGENCY LANDING	3+		X	
33	PEL/P	3+		X	
34	ELP LANDING	3+	X	X	
35	ARRIVAL / COURSE RULES	3			
36	LANDING PATTERN	4			
37	NO FLAP LANDING	3			
37	TAKEOFF FLAP LANDING	3			
37	LDG FLAP LANDING	3			
37	FULL-STOP LANDING	3			
38	AOA PATTERN	2+		X	
39	WAVEOFF	4			
	SPECIAL SYLLABUS REQUIREMENTS	1	X	X	

SSR's: C3401 OCF recovery
C3402 HUD introduction (aerobatic maneuvers and landing pattern) and windshear recovery.

DISCUSS ITEMS:

C3401: Aerobatics, OCF recovery procedures, Contact unusual attitudes, airborne damaged aircraft, maneuvering speed, and AGSM
C3402: Combination maneuvers, windshear recovery, AOA Pattern, HUD, and any emergency procedure.

DEPART _____ ARRIVE _____ SIDE # _____ SIM TIME _____

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914. COMBINATION MANEUVER

1. **Description**. A Combination Maneuver is nothing more than combining a series of aerobatic maneuvers into a single evolution. A maximum of ***FOUR*** maneuvers may be "linked" together.

2. **General.** The aerobatic training you receive is NOT intended to prepare you for the air show circuit. As previously discussed, aerobatic training IS taught to allow you to make the aircraft perform precise and controlled maneuvers, flying the aircraft throughout more of its envelope.

By combining maneuvers, you will need to plan ahead to the second maneuver while completing the first half. As always, maintain a constant and vigilant scan, especially during the maneuvers.

Energy management should be a part of the discussion so as to plan maneuvers to maximize airspeed/altitude, while staying within assigned airspace. This should be a major consideration for which maneuvers are linked together and in what order.

Example: Loop - Cuban Eight - Immelmann - Split-S

3. **Procedures**. Perform all maneuvers IAW the procedures previously set forth for the maneuvers you intend to fly. The SNA shall pre-plan his/her Combination Maneuvers and thoroughly brief his/her intentions to the IP before execution.

915. INVERTED FLIGHT

1. **Description**. The Inverted Flight maneuver is the intentional flying of the T-6B in the inverted wings level attitude for a maximum of 15 seconds. Review T-6B NATOPS Flight Manual regarding inverted flight.

2. **General**.

It is imperative that you tighten your restraint harness to the maximum extent possible (without cutting off your circulation). Regardless of how tight you think your belts are, once inverted, you will have the sensation of being pulled from the aircraft. Notice the nose attitude. The T-6B requires a relatively high nose attitude in order to maintain level flight.

Reference points that may be used to keep the aircraft from changing altitude while inverted are:

a. Front Cockpit = prop arc on the horizon.

b. Rear Cockpit = intersection of rear canopy bow and canopy rail on the horizon

Monitor the oil pressure and clock to remain within limits. Ensure the rudder pedals are within reach in this attitude.

INTRODUCTION

The purpose of this section is to inform the pilot(s) of the special precautions and procedures to be followed during various adverse weather conditions. This section is primarily narrative, and these procedures for adverse weather operations should be considered as additions or exceptions to the normal operating procedures covered in Section II. Procedures for normal instrument flight are also covered in Section II.

TURBULENCE AND THUNDERSTORMS

WARNING

Flights through thunderstorms or other areas of extreme turbulence should be avoided due to the possibility of engine flameout, structural failure, or damage due to hail, lightning, and violent up/down drafts. Maximum use of weather forecast facilities and ground radar to avoid thunderstorms or other areas of extreme turbulence is essential. Avoid flying in instrument meteorological conditions in areas where thunderstorms are known to be present.

Should flight through an area of thunderstorm activity become unavoidable, the following procedures should be used:

1. Preparation – Ensure probes anti-ice switch is ON, tighten lap strap, lock shoulder harness reel, and stow loose items.

NOTE

Make every effort to avoid looking up from the instrument panel at lightning flashes. The blinding effect of lightning can be reduced by setting instrument lighting to maximum prior to penetration.

2. Airspeed – A penetration airspeed of 180 KIAS is recommended. Do not exceed Turbulent Air Penetration Speed (V_g) of 207 KIAS. Trim the aircraft for level flight at this speed. Severe turbulence may cause large and rapid variations in indicated airspeed. Do not chase the airspeed.
3. Attitude – The key to proper flight technique through turbulence is attitude. Both pitch and bank should be controlled by reference to the attitude indicator. Do not change trim after the proper attitude has been established. Extreme gusts may cause large attitude changes. Use smooth and moderate aileron and elevator control to reestablish the desired attitude. To avoid overstressing the aircraft, do not make large or abrupt attitude changes.
4. Power – Establish and maintain the throttle setting consistent with the desired penetration airspeed and altitude.
5. Altitude – Severe vertical gusts may cause appreciable altitude deviations. Allow altitude to vary. Sacrifice altitude to maintain desired attitude. Do not chase the altimeter.

WINDSHEAR OR MICROBURST

Windshear is a dramatic change of wind speed and or direction over a short distance along the flight path. Severe windshear is that which produces airspeed changes greater than 15 knots or vertical speed changes greater than 500 feet per minute.

Microbursts are a particularly dangerous type of windshear which are typically of short duration (2 to 5 minutes) and highly localized (typically 2 miles in diameter). Microburst downdrafts have been measured in excess of 6000 feet per minute.

Pilots should search for clues to the presence of windshear along the intended flight path. Stay clear of areas of heavy precipitation, known thunderstorm cells, or areas of known windshear activity. If severe windshear is indicated, delay takeoff or abort the approach. Conditions which may indicate windshear include thunderstorm activity and associated gust fronts, recent passage of a front, large temperature inversions, Virga (rain which evaporates before reaching the ground), pilot reports (pireps), and low level windshear alerting system (LLWAS) warnings.

Windshear Takeoff Precautions

Use the longest suitable runway that avoids suspected areas of windshear. The choice of runway should include crosswind consideration, obstacle clearance and runway surface conditions. Use takeoff flaps, but delay rotation to VROT plus up to 10 knots. Rotate to normal climb attitude at the increased VROT and maintain attitude.

If windshear is encountered near VROT, abort if possible. Once airborne, do not attempt to accelerate to higher than normal climb airspeed, as the lower pitch attitude at low altitude might produce a hazard if windshear were then encountered.

Windshear Approach Precautions

Set takeoff flaps and fly approach up to 10 knots faster than normal. Stabilize approach prior to descending to 1000 feet AGL. Avoid large power or trim changes in response to sudden airspeed increases as these might be closely followed by airspeed decreases. Many windshear induced accidents occur when a pilot corrects for an apparent increase in speed and is then caught "behind the power curve" with a sudden loss of wind or change in wind direction. The pilot should be prepared to execute a go-around/waveoff.

Windshear Recovery

If windshear is encountered during an approach for landing, execute a go around/waveoff.

LANDING WITH WIND GRADIENT OR WINDSHEAR

Wind velocity is generally higher a short distance above the runway than at the runway. Entering this wind gradient during the landing approach may result in an airspeed change requiring correction.

When landing with a headwind, more power will be required to maintain the desired glideslope. Also, a decreasing headwind will require the addition of power to maintain airspeed and glideslope to prevent landing short. With a tailwind during approach and landing, glideslope may be maintained with less power than normal, and airspeed may increase requiring even less power to prevent landing long.

LIGHTNING STRIKES

Lightning can cause significant structural or systems damage to an aircraft which encounters a strike. Because the metal structure of the aircraft is an excellent conductor of electricity, avoid flying into or near areas where severe weather is expected. Cloud to cloud lightning has been observed traveling distances of up to 50 miles. Lightning has been observed which discharges upwards from the tops of weather cells.

NOTE

The potential for lightning strikes increases near the freezing level.

SNOW, ICE, RAIN, AND SLUSH

ICE PROTECTION

The aircraft has been approved only for transit through light rime icing conditions. Prolonged flight in known icing conditions is prohibited and must be avoided. The aircraft includes protection for critical systems and cockpit displays through the use of heated pitot masts and a heated angle-of-attack sensor. The fuel system is protected with external fairings to prevent accumulation of ice on fuel tank vent ports. External static ports are located on the aft fuselage to eliminate exposure to icing.

The engine intake duct in the forward lower cowling incorporates a fixed geometry particle separator requiring no mechanical actuation or pilot action.

WARNING

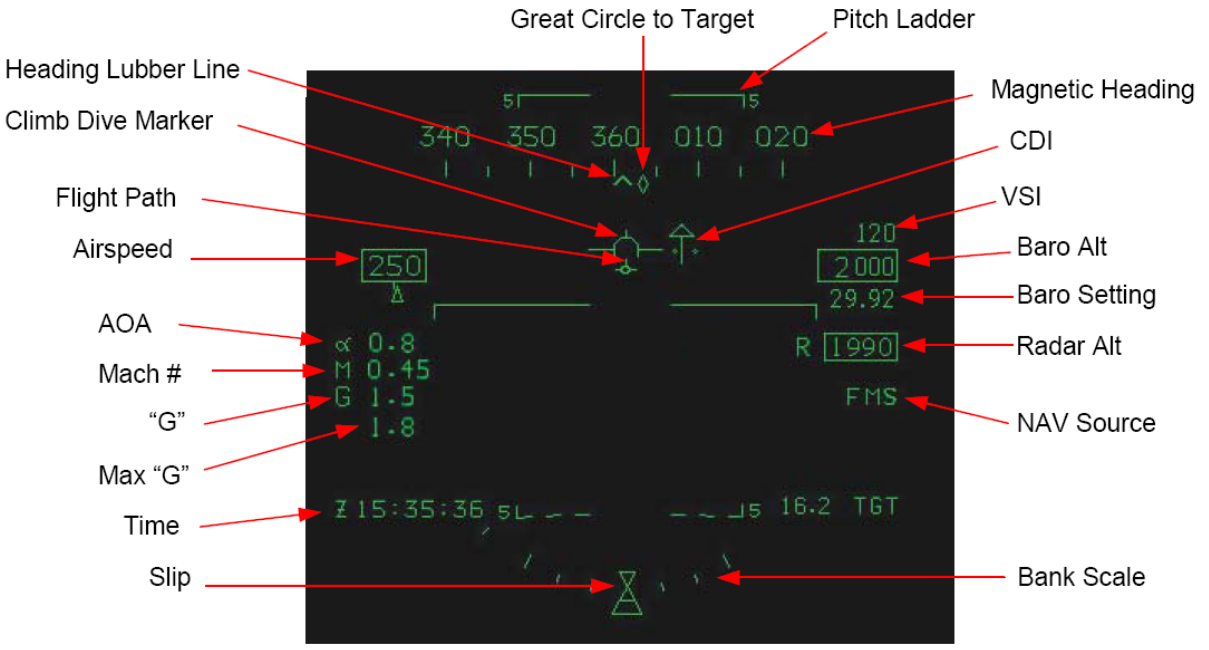
- Sustained operation in icing conditions is prohibited. The aircraft has been approved only for transit through a 5000-foot band of light rime ice.
- Aerobatics after an icing encounter are prohibited until ice accumulations on the aircraft are melted or sublimated. Maneuvers with ice accumulation are restricted to 30 degrees bank angle and 0 to 2 G's normal acceleration, up to stall warning system activation.
- For the landing configuration and during the landing phase, with ice accumulation, approach speed must be increased by 10 KIAS. To ensure safe landing, make sure that sufficient forward cockpit visibility exists from either the front or rear cockpit.
- Canopy defog may not clear the windshield. If freezing conditions are occurring at the recovery runway, ensure that conditions will allow sufficient forward cockpit visibility from either the front or rear cockpit to ensure safe landing.
- Detection of icing from the rear cockpit is not probable due to the inability to see the windshield.

AIRCRAFT DEICING

When available, use hangars and covers for protection against the accumulations of frost, ice, and snow.

Deicing can be accomplished by one, or a combination, of the following: Brushing, blowing, wiping and/or spraying heated fluid onto the aircraft. Do not attempt to chip or break ice from the aircraft. Heavy accumulations that cannot be removed by wiping with a gloved hand or clean soft brush must be removed by placing the aircraft in a warm hangar followed by the application of a deicing fluid outside the hangar as required.

The use of spraying heated fluid should be the last option considered. The process uses propylene glycol (AMS 1424, Type I) diluted by water. Make all attempts to minimize its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CHAPTER TEN
ANGLE OF ATTACK APPROACHES

1000. INTRODUCTION

This chapter contains procedures to conduct Angle of Attack (AOA) approaches. The AOA approach is typically used by carrier based airplanes to perform a precision approach to the carrier. The skills learned by conducting AOA approaches in the T-6B will be used as a building block for advanced jet training.

1001. ANGLE OF ATTACK APPROACHES

1. **Description.** The AOA approach is a descending 180º balanced turn to final followed by a normal flared landing. During the approach, the optimum AOA is maintained by controlling nose/pitch attitude and rate of descent is controlled by power adjustment.

2. **General**. You are introduced to angle of attack approaches for two primary reasons. One is to simply broaden your exposure to different aspects of aviation. Additionally, AOA approaches are commonplace in jet and multi-engine aircraft and are virtually mandatory when used with a visual glideslope indicator during carrier landings. Should you end up flying jets or multi-engine aircraft, your exposure to AOA approaches in the T-6B will be beneficial.

AOA is displayed on the PFD and AOA indexer. The PFD provides continuous AOA readout. When the gear is down, the indexer displays one or two of three illuminated symbols. Depending on which symbols are illuminated, the indexer tells you if you are flying at optimum, higher than optimum, or less than optimum AOA. Refer to the T-6B NATOPS Flight Manual for further discussion of the AOA system.

For a pattern with gear down, flaps LDG, and PCL set for a 3° glidepath, the optimum approach speed (center donut) is approximately 100 KIAS at maximum landing weight. As landing weight decreases, approach AOA (center donut) continues to provide the optimum approach speed and maneuver speed (regardless of bank angle). Optimum approach airspeed decreases approximately 1 knot for every 100 pounds of fuel burned.

The AOA system in the T-6B is calibrated in units of AOA, not degrees. An adjustment is automatically made to the readout based on whether the flaps are up, set to TO, or LDG. Because of this, optimum AOA is 10.5 units, regardless of configuration.

As you can see, flying an approach at optimum AOA gives you an adequate safety margin (approach airspeed above stall speed), while keeping your approach and landing speed low.

3. **Procedures.**

   a. AOA approaches will normally be flown after one or more touch-and-go landings. After a touch-and-go, climb out at 120 KIAS with the flaps up. Climb to pattern altitude.

b. During the turn, notify other aircraft in the pattern that your are performing an AOA approach.

c. Level off at pattern altitude at 120 KIAS. TRANSTION as follows:

No Flap AOA: Established on downwind, reduce power to 15-20% and slow to optimum AOA (~110 KIAS). Carefully adjust power to 25-30% to maintain pattern altitude and adjust nose attitude to maintain optimum AOA, an amber donut, "O" on the indexer. Maintain 10-11 units and a ¾-1 wingtip distance on downwind.

TO Flap AOA: Established on downwind, reduce power to 15-20%, lower flaps to TO and slow to optimum AOA (~100 KIAS). Carefully adjust power to 25-30% to maintain pattern altitude and adjust nose attitude to maintain optimum AOA, an amber donut, "O" on the indexer. Maintain 10-11 units and a ¾-1 wingtip distance on downwind.

LDG Flap AOA: Established on downwind, reduce power to 15-20%, lower flaps to LDG and slow to optimum AOA (~95 KIAS). Carefully adjust power to 25-30% to maintain pattern altitude and adjust nose attitude to maintain optimum AOA, an amber donut, "O" on the indexer. Maintain 10-11 units and a ¾-1 wingtip distance on downwind.

d. Perform the Before Landing Checklist prior to abeam position.

e. At the 180º position, initiate final turn by reducing power to approximately 15-20%. Lower the nose slightly to maintain 10-11 units, commence the TURN and TALK. Your pattern over the ground should be the same as in previous landings. You may require less angle of bank with TO Flap/LDG Flap approaches. Using the same angle of bank as in a normal approach would result in too tight a turn.

f. During the approach, scan the AOA indexer, the aimpoint and the altimeter. Adjust power and attitude as necessary to maintain the proper rate of descent and 10-11 units. If the green "slow" chevron ("V") lights up, your AOA is higher than optimum and your airspeed is too slow. To correct, lower the nose slightly. The chevron points in the direction the nose needs to go. Too low of a nose attitude results in illumination of the red "fast" chevron, indicating less than optimum AOA and excessive airspeed. In this case, the correct response is to raise the nose. Again, all nose attitude adjustments must be coordinated with power to control altitude/rate of descent.

g. Rate of descent should be constant. Vary the angle of bank and power as necessary to arrive at the proper 90º position (10-11 units AOA, 450 feet AGL or ½ the pattern altitude in feet AGL, perpendicular to the runway). Maintain 10-11 units AOA through the rest of the turn to final. When you are established on final with 1200-1500 feet of straightaway from the runway threshold, ensure 150-250 feet of altitude and maintain 10-11 units AOA until just prior to the runway threshold. On

short final, transition to a normal flared landing.

NOTE

The intent of this training is to do an AOA approach to a normal flared landing, not an AOA approach to an AOA landing!

4. **Common Errors.**

a. Excessive nose attitude corrections. Scanning the indexer will indicate if you are not at optimum AOA. A glance at the gauge will show how far from optimum. Correct only as much as necessary.

b. Failure to coordinate power and attitude changes. Keep in mind that power affects AOA attitude. Remember to control AOA with attitude and rate of descent with power.

c. Using the same angle of bank as utilized during normal landing patterns.

d. Failure to transition to a normal flared landing.


AOA HIGH (SLOW)


AOA OPTIMUM (ON-SPEED)


AOA LOW (FAST)