***T-44A Briefing Guides***



EVENT: **I4205**

**SYLLABUS NOTES:**

1. Each flight should consist of a mix of approaches flown in the I4100 block.
2. Events should have a minimum of four approaches per event and include at least two procedure turn approaches. Emergency procedures should be emphasized in this block.
3. Each event shall include a minimum of one approach with the flight director and one approach without the flight director.
4. Holding should be accomplished and graded on at least two events, one of which should be GPS holding.
5. All events shall include a missed approach and should include at least two circling missed approaches in the block.
6. One approach per event with IP as PF and SMA as PM, emphasizing CRM callouts, radio communications, and emergency procedures.
7. SMAs shall bring one DD 175 per flight plan per SMA and one DD 175-1 per aircraft for their planned profile to every brief. SMAs shall draft a flight plan than will execute the required maneuvers for the events.

**DISCUSS ITEMS:** STARs, Cross-Country Oxygen Requirements, Fuel Planning, Wake Turbulence, Windshear, Weight and Balance Form F.

**STARS –**

FTI Info –

If STARs have been published for the destination, file that STAR that is appropriate for the arrival direction. STARs are arrival routes established to simplify clearance delivery procedures and facilitate transition between enroute and instrument approach procedures. The only time you are cleared to descend according to the STAR published altitudes is if ATC uses the term “descend via”, otherwise the clearance for the STAR is only for lateral routing.

11-217 Info –

11.8.1.1. STARs can be based on conventional NAVAIDS or RNAV.

11.8.1.1.1. “Expect” altitudes/speeds are not considered STAR restrictions until verbally issued by ATC. They are published for planning purposes and should not be used in the event of lost communications unless ATC has specifically advised the pilot to expect these altitudes/speeds as part of a further clearance. Additionally, STARs will normally depict MEAs. MEAs are not considered restrictions. However, pilots are expected to remain above MEAs.

11.8.1.1.2.4.1. Notify ATC. Pilots cleared for vertical navigation using the phraseology “Descend Via” shall inform ATC upon initial contact with a new frequency. For example, “Track 32, descending via the EAU CLAIRE SIX ARRIVAL.”

11.8.1.2. RNAV STARs. RNAV STARs can be stand-alone or “overlay”. In order to fly a STAR using RNAV (either stand-alone or “overlay”), comply with the following:

###### 11.8.1.2.4.1. Aircrews must verify the information in the database with the published STAR. The maximum allowable difference between the database course(s) and published course(s) is ±5°.

11.8.1.2.7. Underlying NAVAIDS must be monitored if available for stand-alone RNAV STARs.

11.8.1.2.8. STARs based on conventional NAVAIDS in some cases are retrievable from an RNAV database. USAF aircrews are authorized to fly these procedures as an “overlay” in IMC provided it is retrieved from the database and underlying NAVAIDS are installed, operational, tuned, and monitored.

## 11.9. Flight Management System Procedures (FMSP) for Arrivals.

### 11.9.1. FMSPs for arrivals serve the same purpose as STARs but are only used by aircraft equipped with Flight Management Systems (FMS). Procedures for flying FMSPs are identical to any other STAR. FMSPs will list the equipment requirements for flying the procedure (/E, /G, etc.).

**Cross-Country Oxygen Requirements –**

NATOPS 7.2.1.1 Step 3. – Oxygen – Check Minimum Reading of 1,000 psi (recommend 1,500 psi for cross-country flight).

Ensure oxygen mask mic is operable.

**Fuel Planning –**

NATOPs 6.2.4 - Fuel Planning – A fuel planning log shall be prepared and cross-checked with actual fuel consumption on

every cross-country flight.

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2.2. Fuel Requirements.

2.2.1. General Information. The PIC will ensure sufficient fuel is available on board the aircraft to comply with the requirements of this instruction and safely conduct the flight. Before takeoff or immediately after in-flight refueling, the aircraft must have enough usable fuel aboard to complete the flight:

2.2.1.1. To a final landing, either at the destination airport or alternate airport (if one is required),

plus the fuel reserves.

2.2.1.2. To or between Air Refueling Control Points (ARCPs) and then to land at the destination

(or a recovery base, if refueling is not successful), plus the fuel reserve.

2.2.2. Alternate Airport Required. When an alternate is required, the weather conditions at the original destination govern the preflight fuel computation.

2.2.2.1. Fuel required for an approach and missed approach must be included in the total flight

plan fuel, when the visibility-only weather criteria in paragraph 8.3.3.1.2. is used to determine the

suitability of the original destination.

2.2.2.2. Fuel required for an approach and missed approach is not required when the ceiling and

visibility criteria in paragraph 8.3.3.1.3. is used to determine the suitability of the original destination.

2.2.3. Fuel Reserve. The PIC must ensure the aircraft is carrying enough usable fuel on each flight to

increase the total planned flight time between refueling points by 10 percent (up to a maximum of 45

minutes for fixed wing or 30 minutes for helicopters) or 20 minutes, whichever is greater. To compute

fuel reserves:

2.2.3.1. For reciprocating engine-driven aircraft and helicopters, use fuel consumption rates for

normal cruising altitudes.

2.2.3.2. For turbine-powered aircraft use fuel consumption rates that provide maximum endurance

at 10,000 ft. Mean Sea Level (MSL).

2.2.3.3. If the MAJCOM authorizes holding (instead of an alternate airport) for a remote or island

destination, do not consider the prescribed holding time as part of the total planned flight time for

computing fuel reserve.

**Wake Turbulence -**

AIM –

Page PCG-6 - AIRCRAFT CLASSES− For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Heavy, Large, and Small as follows:

**a.** Heavy− Aircraft capable of takeoff weights of more than 255,000 pounds whether or not they are operating at this weight during a particular phase of flight.

**b.** Large− Aircraft of more than 41,000 pounds, maximum certificated takeoff weight, up to 255,000 pounds.

**c.** Small− Aircraft of 41,000 pounds or less maximum certificated takeoff weight.

7-3-2 Vortex Generation–

(Talks about how vortices are created. When viewed from a trailing position, left wing vortex rotates clockwise and right wing vortex rotates counterclockwise.) Most of the energy is within a few feet of the center of each vortex, but pilots should avoid a region within about 100 feet of the vortex core.

7−3−3 Vortex Strength -

a. The strength of the vortex is governed by the weight, speed, and shape of the wing of the generating

aircraft. The vortex characteristics of any given aircraft can also be changed by extension of flaps or other wing configuring devices as well as by change in speed. However, as the basic factor is weight, the vortex strength increases proportionately. Peak vortex tangential speeds exceeding 300 feet per second have been recorded. The greatest vortex strength occurs when the generating aircraft is HEAVY, CLEAN, and SLOW.

b. Induced Roll 2. It is more difficult for aircraft with short wingspan (relative to the generating aircraft) to counter the imposed roll induced by vortex flow. Pilots of short span aircraft, even of the high performance type, must be especially alert to vortex encounters.

7-3-4 Vortex Behavior –

3. Flight tests have shown that the vortices from larger (transport category) aircraft sink at a rate of

several hundred feet per minute, slowing their descent and diminishing in strength with time and distance behind the generating aircraft. Atmospheric turbulence hastens breakup. Pilots should fly at or above the preceding aircraft’s flight path, altering course as necessary to avoid the area behind and below the generating aircraft. (See FIG 7−3−3.) However, vertical separation of 1,000 feet may be considered safe.

4. When the vortices of larger aircraft sink close to the ground (within 100 to 200 feet), they tend to move laterally over the ground at a speed of 2 or 3 knots. (See FIG 7−3−5.)

5. Talks about the theory of vortex “bounce”. Whatever. Read it if you want.

b**.** A crosswind will decrease the lateral movement of the upwind vortex and increase the movement of the downwind vortex (there is a good graphic of this Fig. 7-3-6). Similarly, a tailwind condition can move the vortices of the preceding aircraft forward into the touchdown zone. THE LIGHT QUARTERING TAILWIND REQUIRES MAXIMUM CAUTION.

7-3-5 Operations Problem Areas –

b. AVOID THE AREA BELOW AND BEHIND THE GENERATING AIRCRAFT, ESPECIALLY AT LOW ALTITUDE WHERE EVEN A MOMENTARY WAKE ENCOUNTER COULD BE HAZARDOUS.

7-3-6 Vortex Avoidance Procedures –

b. The following vortex avoidance procedures are recommended for the various situations:

**1. Landing behind a larger aircraft− same runway**. Stay at or above the larger aircraft’s final approach flight path-note its touchdown point-land beyond it.

**2. Landing behind a larger aircraft− when parallel runway is closer than 2,500 feet**. Consider possible drift to your runway. Stay at or above the larger aircraft’s final approach flight path− note its touchdown point.

**3. Landing behind a larger aircraft− crossing runway**. Cross above the larger aircraft’s flight path.

**4. Landing behind a departing larger aircraft− same runway**. Note the larger aircraft’s

rotation point− land well prior to rotation point.

**5. Landing behind a departing larger aircraft− crossing runway**. Note the larger aircraft’s rotation point− if past the intersection− continue the approach− land prior to the intersection. If larger aircraft rotates prior to the intersection, avoid flight below the larger aircraft’s flight path. Abandon the approach unless a landing is ensured well before reaching the intersection.

**6. Departing behind a larger aircraft.** Note the larger aircraft’s rotation point and rotate prior to the larger aircraft’s rotation point. Continue climbing above the larger aircraft’s climb path until turning clear of the larger aircraft’s wake. Avoid subsequent headings which will cross below and behind a larger aircraft. Be alert for any critical takeoff situation which could lead to a vortex encounter.

**7. Intersection takeoffs− same runway.** Be alert to adjacent larger aircraft operations, particularly upwind of your runway. If intersection takeoff clearance is received, avoid subsequent heading which will cross below a larger aircraft’s path.

**8. Departing or landing after a larger aircraft executing a low approach, missed**

**approach, or touch-and-go landing.** Because vortices settle and move laterally near the ground, the vortex hazard may exist along the runway and in your flight path after a larger aircraft has executed a low approach, missed approach, or a touch-and-go landing, particular in light quartering wind conditions. You should ensure that an interval of at least

2 minutes has elapsed before your takeoff or landing.

**9. En route VFR (thousand-foot altitude plus 500 feet).** Avoid flight below and behind a large aircraft’s path. If a larger aircraft is observed above on the same track (meeting or overtaking) adjust your position laterally, preferably upwind.

**7-**3-8 Pilot Responsibility –

**c.** Pilots are reminded that in operations conducted behind all aircraft, acceptance of instructions from ATC in the following situations is an acknowledgment that the pilot will ensure safe takeoff and landing intervals and accepts the responsibility for providing wake turbulence separation.

**1.** Traffic information.

**2.** Instructions to follow an aircraft; and

**3.** The acceptance of a visual approach clearance.

e. Heavy and Large Aircraft (summary)

1. Fly on but NOT ABOVE the established glidepath using ILS, Approach lights, or height above for guidance (eg, 3,000 ft at 10 miles, 1500 ft at 5 miles, etc…)

2. Fly as close to approach course or runway centerline as possible.

f. Lighter aircraft (summary)

1. Fly on OR ABOVE glidepath.

2. If you have visual with preceding heavier aircraft and the runway:

(a) Pick a point of landing no less than 1,000 feet from the arrival end of the runway.

(b) Establish a line−of−sight to that landing point that is above and in front of the heavier preceding aircraft.

(c) When possible, note the point of landing of the heavier preceding aircraft and adjust point of intended landing as necessary.

*EXAMPLE−*

*A puff of smoke may appear at the 1,000−foot markings of the runway, showing that touchdown was that point; therefore, adjust point of intended landing to the 1,500−foot markings.*

(d) Maintain the line−of−sight to the point of intended landing above and ahead of the heavier preceding aircraft; maintain it to touchdown.

(e) Land beyond the point of landing of the preceding heavier aircraft.

3. If in doubt of separation on visual approaches, query the controller.

7-3-9 Air Traffic Wake Turbulence Separations

a. Controllers are required to apply no less than specified minimum separation for aircraft

operating behind a heavy jet and, in certain instances, behind large nonheavy aircraft (i.e., B757 aircraft).

1. Separation is applied to aircraft operating directly behind a heavy/B757 jet at the same altitude or less than 1,000 feet below:

(a) Heavy jet behind heavy jet−4 miles.

(b) Large/heavy behind B757 − 4 miles.

(c) Small behind B757 − 5 miles.

(d) Small/large aircraft behind heavy jet − 5 miles.

2. Also, separation, measured at the time the preceding aircraft is over the landing threshold, is provided to small aircraft:

(a) Small aircraft landing behind heavy jet − 6 miles.

(b) Small aircraft landing behind B757 − 5 miles.

(c) Small aircraft landing behind large aircraft− 4 miles.

3. Additionally, appropriate time or distance intervals are provided to departing aircraft:

(a) Two minutes or the appropriate 4 or 5 mile radar separation when takeoff behind a heavy/B757 jet will be:

(1) From the same threshold.

(2) On a crossing runway and projected flight paths will cross.

(3) From the threshold of a parallel runway when staggered ahead of that of the adjacent runway by less than 500 feet and when the runways are separated by less than 2,500 feet.

*NOTE – Controllers may not reduce or waive these intervals.*

b. A 3−minute interval will be provided when a small aircraft will takeoff:

1. From an intersection on the same runway (same or opposite direction) behind a departing large aircraft,

2. In the opposite direction on the same runway behind a large aircraft takeoff or low/missed approach.

*NOTE− This 3−minute interval may be waived upon specific pilot request.*

c. A 3−minute interval will be provided for all aircraft taking off when the operations are as

described in subparagraph b1 and 2 above, the preceding aircraft is a heavy/B757 jet, and the

operations are on either the same runway or parallel runways separated by less than 2,500 feet.

Controllers may not reduce or waive this interval.

d. Pilots may request additional separation i.e., 2 minutes instead of 4 or 5 miles for wake turbulence avoidance. This request should be made as soon as practical on ground control and at least before taxiing onto the runway.

**Windshear -**

NATOPs 16.3 –

A windshear is defined as any rapid change in wind direction and/or speed that results in an airspeed change of 10 knots or more and/or a vertical speed change greater than 500 fpm. The principal causes of low altitude windshear are convective activity, frontal systems, lake and sea breezes, and large temperature inversions. A windshear is an extremely dynamic event that if severe and encountered at a low altitude makes aircraft recovery extremely difficult if not impossible.

If low altitude windshear cannot be circumnavigated and is anticipated on approach, consideration should be given to maintaining airspeed 5 to 10 knots higher than normal approach speeds. If executing a nonprecision approach, descending rapidly to the minimum descent altitude should be avoided in favor of a 3° glideslope. A stabilized approach should be established no lower than 1,000 feet AGL. If low altitude windshear is anticipated for takeoff, consideration should be given to delaying the takeoff until the windshear has ended. Other precautions for takeoff include using the longest runway available and increasing rotation speed.

WARNINGS - If stall warning is encountered during windshear recovery, aft yoke pressure should be relaxed only slightly to lessen angle of attack and allow the aircraft to exit stall.

It is imperative that the pilot fly a constant nose high attitude with maximum allowable power set. The pilot should disregard airspeed. When any type of windshear is encountered, it shall be reported to the controller immediately.

**Weight and Balance Form F -**

NATOPs –

21.5.10.1 - It is necessary to complete Form F prior to flight whenever an aircraft is loaded in a manner for which no previous valid Form F is available. (This section also has step by step instructions on how to fill out a Form F).

SOPs VT-31 5.a. –

The number of passengers permitted on any given flight is at the discretion of the AC. Aircraft weight and balance must remain within limits. A Weight and Balance Clearance Form F shall be completed for aircraft departing with 3 or more passengers or any time when transporting parts and/or equipment.

FTI Instrument: Preflight Planning –

Weight and Balance Computations. A Weight and Balance Clearance Form F is required for every flight. Normally, the pre-computed Form F found in the back of the Aircraft Discrepancy Book (ADB) is sufficient. If carrying passengers (3 or more, see above) or cargo, a Form F must be computed and on file to ensure the aircraft is under the structural weight limitation (check both the maximum takeoff eight and the maximum zero fuel weight) and has its center of gravity within limits for both takeoff and landing.