

TW-1 Stan Notes / FTI Supplement Familiarization Stage (FAM)

1) OVERVIEW

- a) This TW-1 document is provided as a local supplement only where procedures differ or are not included to sufficient depth in the Flight Training Instruction (FTI). The procedures and techniques learned in this stage should be used throughout the MPTS (.167) syllabus.

2) ADMIN

- a) The Brief.
 - i) This is the SNA's first phase in the front seat, so the process should be slow and deliberate. **IPs should reference the FAM QA card to ensure all required briefing items are completed prior to FAM4490.** Standardized communications between crewmembers should be covered thoroughly, to include the importance of notifying the IP when toggling communications switches on or off. Also, provide a detailed brief on the usage of NWS and braking techniques associated with the T-45. The following takeoff data will be calculated for all flights: Minimum RPM post start, Minimum RPM at MRT, T/O Distance, Rotation Speed, and Abort speed.
- b) Walk.
 - i) Be sure to review and understand the Aircraft Discrepancy Book. Onwings should explain the "A" sheet, and "Daily/Turnaround" form.

3) FLIGHT CONDUCT

- a) Preflight.
 - i) SNA is required to perform the preflight in FAMs. The IP will follow the student around during early flights to answer questions. On later flights, the IP will quiz the student on the preflight in preparation for FAM 4490. As necessary, the plane captain will assist students in strapping into the seat. The SNA shall give a tape to his IP when walking to the jet or load it himself in the back cockpit. **SNAs shall know how to load tapes in both versions of the VCR prior to FAM4490.**
- b) Start and Checks.
 - i) SNAs shall strap in completely prior to starting the jet, to include all Koch fittings. SNAs are responsible for the start and all plane captain checks. Use a rotated fist signal for starting the GTS and the "two-finger wag" for starting the engine. The pilot at the controls is required to audible LAW, BINGO, and Altimeter settings. Common post-start Malfunctions and Solutions, as well as standardized ground and in-flight

communications are listed in the TW-1 Standardized T-45C Checklists. FAM flights to the MOA will utilize the CARP / SHAD callsign or a Grey Oak callsign if they intend to remain in the pattern. If they desire to go straight to Navy Joe Williams, they will utilize a Navy One Alpha 1XX callsign.

c) Taxi and Marshal.

- i) Max RPM in the line area is 75% without acknowledgement from lineman. When taxiing out, bring the power to idle prior to making a turn. Hi-Gain NWS should be used for turns at slow speeds, especially taxiing in the line area. Low-Gain NWS can be used for turns at higher taxi speeds. IPs need to ensure NWS is utilized vice differential braking to turn the aircraft. When taxiing, differential braking should only be used for extremely tight turns (such as those required on the aircraft carrier). Taxi speeds shall be no faster than a brisk walk in the line area and no greater than 15 KTS groundspeed otherwise.
- ii) Taxi slowly into final checkers, remaining vigilant for aircraft from other rows and parking spots. Once complete with the final checker, call base on AUX: '1XX, out of chocks'.
- iii) Taxi to marshal in order to complete waypoint programming, obtain clearance, and perform the takeoff checklist. IPs should provide instruction regarding proper location in marshal (tailpipe courtesy, formation marshaling, etc). Waypoints should be set for the planned working area and for active runways at NMM and/or NJW/MEI, as applicable. Takeoff checks during FAMs shall be performed while parked in marshal prior to taxi. During FAMs, students cannot complete checklists while taxiing. Each item shall be completed over the ICS in accordance with the current TW1 T-45C checklists.
- iii) The parking brake will be set each time the aircraft is stopped, except on the runway.
- iv) The yellow taxi lines will be used whenever possible. Taxi at a minimum of 300 feet behind other aircraft. Switch to tower when your aircraft enters the throat. Call for takeoff when you are #1 with Hold Short Checklist complete. Make voice reports per TW-1 T-45C checklists prior to crossing holdshort, when taking the runway, and during takeoff.

d) Simulated Emergencies.

- i) After the SNA has completed the takeoff checklist, the IP will make no configuration changes for the duration of the flight. Configuration changes include (but are not limited to) trim setting, flap setting, and anti-skid position.
- ii) Training page failures can be introduced at any time.

- iii) Compound “simulated” emergencies will not be introduced in the aircraft. However, simulated emergencies may be combined with training page failures.
 - iv) Simulated emergencies introduced shall not lead to a zero-airspeed departure or OCF procedures.
- e) Takeoff.
- i) Read back all tower instructions verbatim. When cleared onto the runway, report, “Strobes on, groove clear, winds are _____ (left to right, calm, etc)” crossing the hold short. On the ICS, the pilot flying will verbalize the immediate clearance, i.e., “Cleared for takeoff, runway heading, up to X thousand”. Both the IP and the SNA will select HOT MIC and perform the following run-up checks:
 - (1) Confirm no overspeed ($N_2 \leq 104\%$ w/106% overshoot for less than 20 seconds) and no overtemp ($EGT \leq 610^\circ\text{C}$ w/ 645° overshoot for less than 20 seconds).
 - (2) Wipe out flight controls, checking for smooth operation with no hydraulic fluctuations. Do not cycle the rudder pedals.
 - (3) Check hydraulic gauges, trim, headings, voltage, and all warning, caution, and advisory lights out (except the anti-skid advisory light).
 - (4) Make the following voice report per the checklist: “Good EGT/RPM/Fuel Flow, Watch your knees. Hyds 3 by 3, no warnings or cautions, good Volts, ready in the front” IP should respond: “Ready in the back”
 - ii) When run-up checks are complete, and with the IP ready to go, note the time. With clearance from the IP, release the brakes and start your takeoff roll and report “on the roll at _____”. If a crosswind exists, program lateral stick into the wind as required to maintain wings level. Make the following reports during takeoff roll:
 - (1) “Airspeed alive” when indicated airspeed in the HUD increases above 50 KIAS.
 - iii) Rotate to no more than 17 units AOA to approximately 10-12 degrees nose-up at calculated rotation speed. With two positive rates of climb and safely airborne, request “Gear” for clearance to raise the gear. When greater than 140 kts, request “Flaps” for clearance to raise the flaps. After the gear is up and locked and light in gear handle is out, a small downward force (< 6lbs) should be applied to the gear handle to ensure that the gear will not inadvertently extend under G. Control airspeed and acceleration rate with attitude as necessary to ensure no overspeeds prior to 200 kts. Report “Clean below 200, handle checked, going cold” on the climb out **prior to exceeding 200 kts**. At this point, both IP and SNA will select cold mic. Trim as the aircraft accelerates and anticipate the level off and power reduction required to maintain 250 KIAS.

f) Aborted Takeoff Procedures.

- i) Low-speed abort criteria are situation dependent and will be left to the discretion of the pilot at the controls
- ii) High-speed abort criteria include **but are not limited to** FIRE light, warning lights of GTS FIRE, EGT/RPM, HYD FAIL, OIL PRESS, and caution lights of ECA2 and TP HOT. For weather conditions less than 1000/3 the GEN light should be considered as qualifying for an abort.

g) Departure.

- i) Until cleared for the early turn, fly the prescribed departure procedure. 10,000' checks will be performed over the ICS. If no other aircraft are in Area 1/4, request radio check on BTN 6/8 from Memphis Center (BTN 5). Otherwise, check into the area via, "99 Area 1/4, single FAM checking in from the (direction)." Aircraft already established will report their working area, granting transit within the respective climb corridor, if required. Once inside working area, report established. At least one aircraft will respond with a "loud and clear" call.

h) Area Management.

- i) VT-7 FAM flights will normally seek to work in Alpha upon check in. If Alpha is clear, simply call established once you are within its confines. If Alpha is in use and either Bravo or Charlie are free, request clearance south of the 275 Radial (for Charlie) or to transit below Alpha at 10,000' (for Bravo). Call established when appropriate. If all three areas are in use, request to split Alpha down the 290 Radial with the current occupant working north and new aircraft working south.

VT-9 FAM flights can utilize any sector of Area 4 during training flights, but should use LUKE or WILBUR on their SOLO flight. Deconfliction of A/C while FOZZIE is in use shall be conducted as follows: A/C transiting to WILBUR or CURLY can fly at 10K if cleared by A/C in FOZZIE: A/C transiting to LUKE may be cleared to climb east of the 007 radial with proper coordination.

- ii) Complete Pre-Stall and Aerobatic checklist during your climb/transit. Report "stall/aerobatic checklist complete, area clear" prior to each maneuver. Listen for, and deconflict with, incoming traffic.

i) JOKER/BINGO.

- i) When you reach your JOKER fuel state, as indicated by your BINGO bug flashing, reset it at the next most appropriate moment (i.e. finish your Loop) to your BINGO setting. Once you begin your recovery back to NMM, reset your BINGO bug to 500 lbs (IAW Joint SOP).

j) Recovery.

- i) At the completion of all area maneuvers, obtain ATIS and check out of the area. Passing 10,500', call "99 Area ___, checking out of (area) on a random." Continue descent to 9k' while checking in with Memphis Center and request a "Random" or "Bravo" recovery. Remain within the lateral confines of your working area until cleared on the "Random/Bravo".
- ii) If you are in Area 1 Alpha, you will likely need to work toward the border with Bravo and Charlie (West), outside of 25 nm, weather permitting, to give Center the space they need to clear you on the Random or Bravo. Likewise, if working Area 4 Fozzie, you will need to work North, (outside of 25 nm), before commencing with the recovery.
- iii) Once cleared for the appropriate recovery, descend to 8k' and put NMM or NJW on the nose. Memphis will switch you to Approach. You will receive vectors and IFR separation from Approach to the initial until reporting "field in sight." Report the "field in sight" as soon as possible. Approaching 5K in the descent, SNAs should report, "approaching platform", or give a "platform" call at exactly 5K AGL in order to build awareness. The radar altimeter should be allowed to go off at 5k' and then reset to 1000' until the initial. Approaching the initial, set 380' for the pattern to acknowledge ball acquisition at the "45."

vii) NOLF Williams Normal Procedures

(1) You should plan on going to Bravo field unless FCLPs are in progress there or the field is closed. It is recommended that you perform a straight in or overhead PA into Bravo field and then, while in the pattern, an overhead PA can be requested with a right hand turn back overhead the runway for a perpendicular entry.

(2) Arrivals

- (a) If departing KNMM to head directly to KNJW, utilize a "Navy One Alpha" call sign. Radar vectors will be provided via the "Williams Departure." Maintain assigned altitude until reporting NJW in sight. Expect vectors to 3,000' MSL. Contact NJW Tower outside Class D airspace for arrival instructions.
- (b) If departing KMEI to head directly to KNJW, you can utilize a callsign of your choice, and request "IFR direct Navy Joe Williams at 3,000".
- (c) If departing from the Area, contact Memphis Center and Meridian Approach and request a Bravo recovery to NJW. Maintain assigned altitude until reporting NJW in sight. Contact NJW Tower outside the Class D airspace for arrival instructions.

(3) Departures

- (a) VFR – Maintain VFR; fly runway heading climbing to 1500’ MSL until number one upwind. Then follow departure instructions as assigned and contact Meridian Approach.
- (b) IFR – When able, contact NJW Tower and tell them you’d like to put an IFR clearance back to Navy McCain on request. NJW Tower shall issue the appropriate departure instructions to IFR aircraft as depicted in the TW1 in-flight guide.
- (c) Aircraft departing NJW to the MEI 1 West MOA shall be cleared via the MOA B Departure, also depicted in the TW1 in-flight guide.

k) Precautionary Approaches.

- i) If an abeam PA is required, state “low key on request” to tower when making your preceding abeam call. At home field, if the pattern is busy, request “low key for the right runway.” After the touch and go, apply full power and climb straight ahead and remain in the pattern until number one upwind and/or cleared to low key by tower. At a minimum of 125 KIAS, call for “Gear and flaps to half.” Accelerate through 140 KIAS and call “Flaps” to raise the flaps to up. Continue to accelerate straight ahead to 250 KIAS until your interval reaches approximately the 8 o’clock position, then make a climbing turn to 20 degrees nose up towards low key. **Altitude crossing the upwind numbers (prior to your turn) should be no less than 200’ AGL.** At 2000’ feet, reduce power to approximately 78-87%. Then roll the aircraft to 90 degrees AOB and let the nose slowly fall to horizon and level off at 3300’ (3500’ for NJW). Next, assess the throttle setting and set appropriate RPM for gross weight. Then, deploy the speed brakes as required so as to arrive at abeam below 200 KIAS. At the abeam, you should have speed brakes out (if required to maintain airspeed below 200 KIAS), nose down, gear down, flaps half. Once you are stabilized nose down, use your speed brakes as required to maintain required speed. Fly the rest of the profile as per FTI and NATOPS. LAW setting remains 380’ as with normal pattern work.

l) VFR Straight-in and Downwind Entry Procedures.

- i) See the TRAWING ONE In-Flight Guide and the description in the FTI. Note that the diagram on p. 9-3 of the FTI is incorrect.

m) Landing Pattern.

- i) Entry. The landing pattern is the “meat and potatoes” of the FAM training curriculum. Ensure you report the initial, (the carrier break is assumed) and turn your squawk to standby once you are inside the initial. Also, clear the AV BIT and ensure

the HSI scale is set to 10. Break between 250-300 KIAS in FAMs with interval at the 7 o'clock position.

- ii) Pattern. Keep the interval tight in the pattern to maximize everyone's fuel, turning with normal full flap interval between the 9 and 10 o'clock position. When greater than 4.0 NM upwind from the runway, identified by the waypoint for the runway in use, a courtesy "crosswind at ___" call shall be made to tower. Speed brakes should be extended abeam the upwind numbers on downwind and the landing checklist, including AOA/airspeed crosscheck, shall be completed by the abeam position for each pass. Ensure the landing checklist is complete prior to reporting any "abeam, gear" or "3 down and locked" calls. If a roll-and-go landing is required, call "xxx abeam, gear, option."
- iii) Approach turn to final. During the approach turn, do not descend below 300 feet AGL without a ball. Line-up corrections should be made with the wings vice the rudder. The rudder should be utilized only as described in crosswind landing techniques. During FAMs, full-stop landings, PAs and roll-and-go landings shall be to runway centerline, with emphasis on crosswind landing technique (see crosswind landing material at the end of this section).
- iv) Full stop. Brakes should not be applied until below 100 kts on a normal landing rollout. However, if necessary to make line speeds when landing on a shorter runway (i.e., runway 28/10), they may be applied after weight is firmly on wheels and you've passed the short field arresting gear. Ensure that you release the brakes prior to crossing the long field arresting gear and try to avoid the 'donuts' on the arresting gear wire as this can cause the gear to be knocked out of battery. **All FAM students shall rollout on centerline to the perpendicular exit during full stop landings.**
- v) For no-flap landing, raise the flaps while climbing straight ahead and after accelerating beyond 140 KIAS. Make a courtesy call, "crosswind, no-flap" as you start the crosswind turn. Stay at pattern altitude until the 90. This will assist you in visually obtaining the runway from an otherwise deep and low 90. Fly the ball until in close and then flare to reduce sink rate below 600 FPM and ensure groundspeed is less than 176 KTS. Speedbrakes will be in for the no-flap to simulate a loss of HYD 1.
- vi) Crosswind landings. To prevent a mishap resulting from pilot-induced loss of directional control, the following crosswind landing technique shall be taught:
 - (1) Crosswind component up to 20 kts:
 - (a) Maintain a wings-level crabbed approach on extended runway centerline.
 - (b) Prior to touchdown, smoothly take out the crab with rudder to align the fuselage with the runway; simultaneously use aileron to maintain wings-level. Drift should not be allowed to build due to aligning the fuselage with the

runway too early. An early “kickout” may lead to excessive drift, whereas a late kickout could result in swerve on touchdown due to nose wheel steering inputs.

- (c) Just prior to touchdown, center the rudders regardless of any crab or lateral drift because of the full time, low gain NWS that will activate upon weight on wheels. Upon touchdown it is imperative to apply aileron into the wind as necessary to counter any wing-up tendency. Judicious NWS inputs should be applied to track parallel to runway centerline.

(2) General landing considerations:

- (a) Maintaining a straight track down the runway is best achieved by utilizing small, short-duration rudder inputs, always returning to the neutral position to maintain the straight track. The use of large inputs could create pilot-induced oscillation and difficulty in maintaining proper track. The T-45 exhibits oversteering characteristics, particularly with a failure of NWS AUG, which means that a given NWS input will produce an ever-increasing rate of turn. This is an example of an acceleration-commanded system and is the cause of difficulty in predicting the effect of large NWS inputs.
- (b) The use of brakes increases NWS sensitivity and decreases aircraft directional stability because it distributes more of the aircraft weight towards the nose. Moving the throttle to idle produces the same effect. Continue using small, short-duration NWS inputs while braking.
- (c) Making excessive lineup corrections immediately prior to touchdown may cause excessive post-touchdown drift. If the lineup correction was large enough, the resulting drift may preclude recovering the aircraft before departing the runway surface.
- (d) Students and IUTs should be given at least one no-HUD landing on each FAM simulator and flight event.

4) POST LANDING

- a. After landing and clear of the runway:
 - i) F/C: “Ready to safe the seats.”
 - ii) R/C: “Safe in the back.”
 - iii) F/C: “Safe in the front.”
- b. Students will not change configuration while on the runway. All solo flights shall exit the runway at the end. Dual FAM flights should exit at the end to allow the Post-Landing Checklists to be performed while stopped on the taxiway after clearing the duty runway. IPs may take the controls to continue taxiing in order for the student to complete the

checklist. In Phase I, do not unstrap until cleared by the IP. Select the BIT page and check status, then select MAINT and check for an exceedance or overflow. Contact maintenance on button 27 for a parking spot, and advise if the aircraft is up or down. If the aircraft is down, tell maintenance what the aircraft is down for. Maintenance may require that you remain turning in the parking space while trouble shooters evaluate the problem. Contact Base to let them know that you are safe on deck. Maintain Base frequency active until standard shut down procedures in the chocks. The canopy will remain closed until engine RPM is below 20%.

5) SHUTDOWN

- a. Prior to shutdown:
 - i) R/C: "All my equipment is off, I'll be clear of the canopy".
 - ii) F/C: "Roger."

- b. Once chocked, signal thumbs up/down to indicate aircraft status to PC, then secure the throttle and open the canopy with IP clearance if he has not already cleared you. After your Engine Shutdown checklist is complete, clean up the rest of the aircraft for the next pilot – loosen the straps, return the TACAN and NAV channels to their defaults (56X, 109.7), adjust volumes to mid-range, and adjust seat height to mid-range. Rear C/P aircrew shall ensure the Marconi VCR switch is set to "Off" at least 10 seconds prior to removing the tape. This will reduce (but not eliminate) the instances of destroyed tapes during removal from the Marconi VCR system. After you have retrieved your tape, ensure the Marconi VCR is re-seated, and properly locked, prior to exiting the aircraft.

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