TW-1 Stan Notes
Single Plane Operational Navigation Stage
REV: APR 2011

1. OVERVIEW

(a) This document is in no way meant to replace the FTI; rather it will complement the FTI and improve standardization within TW-1. The purpose of this stage is to introduce mission planning and chart interpretation for correct low-level pilotage methods.

2. WEATHER

(a) Ceilings of 3000' AGL and 5 SM are required for current and forecast weather on the route. Utilize the weather office at NMM Base Operations or a forecaster at Norfolk weather (757-444-2913) to obtain weather. The Navy Flight Weather Briefer on line can be accessed from HTTPS://FWB.METOC.NAVY.MIL/FWB121/. If weather is a consideration, aircrew shall not launch unless they are reasonably confident they can complete five points or 20 minutes along the route.

3. ADMINISTRATION

(a) The Student will draw the route on the briefing board. This will include diverts with headings and fuel from the route points, as well as bingo information back to NMM. A briefing card will be completed for the instructor. A copy of NOTAMS for all applicable diverts will be brought to the brief. SNAs will log on to www.usahas.com prior to each flight brief and obtain a real time forecast of bird activity on the applicable low-level route. The data provided is only valid for the current hour. Forecasted bird activity should not be used to decide bird condition. The ODO should be contacted on base frequency before you taxi if you do not have the current hour information. The following actions will be taken by aircrew based on the results of the data provided by this web site.

(i) LOW bird activity.....No action required. Exercise caution.

(ii) MODERATE bird activity...No action required. Exercise caution.

(iii) SEVERE bird activity.....Do not fly segments of this route where bird conditions are listed as SEVERE. This does not mean that the sortie has to be cancelled. Remember, only a minimum of five points or 20 minutes on the route must be flown to complete the event. If the beginning of the planned stereo route is workable (Low or Moderate) and an alternate exit point can be utilized before SEVERE conditions are encountered, then the route may be flown.

(b) Stereo routes can be found in the CTW-1 In-Flight Guide. The call to Clearance Delivery will be, "Clearance, Hawk 1XX, Hawk one on request." If doing two routes on an "out- and-in" a DD-175 will be required. The DD-175 exception is an out and in to Key Field. Although the Stereo routes originate from NMM, Key Field ground will accept your ONAV Stereo Route "On Request" during your taxi to the FBO.

(c) Student Local Training Routes: Each ONAV syllabus event correlates to a local ONAV route. ONAV flights are scheduled by OPS accordingly. Students should fly 5 different routes during the ONAV stage. VR 1030, 1031, 1032, 1033, 1055, and 1056 are the standard local routes. Students are required to strip the VR 1030, 1031, 1032, 1033, 1055, and 1056 during ground school. Any of the VR 103X routes can be flown for the non-system or system hops if WX dictates. The VR 1056/1055 should be scheduled as an out and in to KTYS or KCHA for ON-07/ ON4104 and ON-08X/ ON4105. The following routes should be planned for the following hops.

ONAV 1S/ON 3101:	VR-1031
ONAV 2S/ON 3102:	VR-1030
ONAV 3S/ON 3103:	VR-1032 or VR-1033
ONAV4/ON 4101:	VR-1031 non-system or any VR103X
ONAV5/ON 4102:	VR-1030 non-system or any VR103X
ONAV6/ON 4103:	VR-1032 or 1033 system hop or VR103X flown as non system hop
ONAV7/ON 4104:	VR-1056 C-G (flown w/ ONAV8X on an "out and in" to KTYS)
ONAV8X/ON 4105:	VR-1055 A-E (TYS) C-G (CHA) (flown w/ ONAV7 on an "out and in" from KTYS or KCHA).

(d) If weather or scheduling does not allow for an "out and in" on ONAV7-8X /ON4104-5, then the SNA may fly a VR-103X route flown as a non-system hop. VR-1072 can be used in place of any route on any event, but the SNA MUST have 24 hrs notice to CHUM the chart, which can be obtained from ONAV Stan.

(e) Cross Country Flights: Students are responsible for all planning of ONAV cross countries. ONAV Stan may have canned plans for certain destinations. Students planning a cross-country do not have to strip the local (NMM) charts once an ONAV instructor is scheduled for routes on the road, and the respective Squadron Schedules Officer has been advised. If SNAs plan to go on a cross-country with several other classmates, then cooperation in stripping charts is authorized. SNAs going on cross-countries are responsible for providing ALL charts for both IPs and students.

(f) Students will prepare two identical charts for each scheduled route flown in the aircraft, giving one to the IP during the brief. All charts will be stripped using the JMPS system. Students are responsible for completing one chart for each simulator event, regardless of where they intend to fly the aircraft events. All charts prepared will have the SNA's name written in heavy black marker on the left side cover on the chart. Each chart will also have the current CHUM date in the upper right hand corner. SNAs arriving at the brief with another student's

chart will receive a mandatory UNSAT/ RRU for ONAV planning. The only exception applies to SNAs who had planned an ONAV cross-country but were cancelled for various reasons. These SNAs may borrow local charts from the Stan Dept (not another student) and use them for their flights. SNAs in this situation are still required to ensure the CHUM is current. At the completion of all routes, SNAs must give both charts to their IP, who will, in turn, return them to the Stan Department.

(g) BINGO will be set to JOKER, which is also the Minimum Fuel Remaining (MFR) at the entry point on the route. After passing the entry point, BINGO will be updated to the Bingo fuel required from the furthest point on the route to the planned destination.

(h) Should it be necessary to terminate the route, the student should have the ATC (Center/Approach) frequencies readily available. Center frequencies can be found on the Low Altitude charts, which shall be carried for all ONAV flights.

(i) Before walking on low-level flights, check with the SDO to confirm route deconfliction. When the T/O time is changed, ensure that you recheck the routes for deconfliction! As a rule of thumb, plan on rescheduling your route time if you cannot make your scheduled route entry point within a five-minute window.

4. TRANSIT

(a) Ground Operations and Departure: For the majority of local routes, Meridian Departure will be the final controlling agency prior to route entry. All FSSs are contacted on 255.4, which will be set manually in PRI prior to T/O. When contacting any FSS, tell them what frequency you are transmitting on, as they monitor multiple frequencies. AUX will generally be base frequency or the MOA frequency, where applicable. TR&G will be set on PRI. After "IFR cancellation received", squawk 4000 for all VR routes.

(b) Enroute: When not climbing above 5000' (platform), reset the LAW to 2000' after departure. With a good LAW check during the descent, reset the LAW using the 10% rule for the start of the route. The SNA will perform the Low-Altitude Checks and report complete to the IP before descending below 1000' AGL.

Low Altitude Checklist:

1. Radalt – Good LAW, reset IAW 10% rule
2. Visor – Down
3. Loose Cockpit Items – Secure

(c) Navigating to the entry point may be done utilizing the WYPT option on both system and non-system flights. On system, and non-system flights, correlate your entry point waypoint with the respective TCN radial/DME assigned to the fix. With satisfactory correlation, select WPT as the navigation source for the route. Bricks shall be loaded with the exact route waypoints.

(d) Four tasks need to be accomplished prior to route entry. These will be done in level flight if below platform.

(i) Cancel with Departure/Center 10-15 nm from the entry point. Sanitize the airspace between your current position and the entry point with the controlling agency by transmitting, "Approach, with no traffic between myself and point X, I would like to cancel and proceed VFR".

(ii) Squawk 4000 once "Cancellation is received"

(iii) Contact Flight Service. In there is no timely response, give the check-in call in-the-blind using "Any Radio, Any Radio". Set the new altimeter if received from FSS.

(iv) Within five miles of the entry point, attempt to intercept a run-in heading that equals the first point outbound heading and accelerate to 360 knots groundspeed. Accelerate using power and potential energy as required. Fuel flow of 2300 pph will approximate 360 knots.

(5) THE ROUTE

(a) Time Hack: The SNA will do the time hack over hot-mic as follows, "Stand by for time hack, 3, 2, 1, hack." The aircraft clock is unreliable. A digital timepiece, appropriately secured to prevent cockpit FOD is recommended. The aircraft clock should be started as a backup. If an accurate time hack is not obtained, the IP may take aircraft control and set up for another entry. After the hack, give a mark time at 5-7 seconds to ensure the IP's clock is synchronized. Select cold-mic for the remainder of the route.

(b) Navigation: After each waypoint, fix deviations in heading, airspeed and altitude as soon as practical. Make corrections based on what you saw at the checkpoint. Navigation shall then continue through diligent use of the clock/chart/ground method. Think ahead at least one minute when on the route. The clock will tell you where you should be. The chart will tell you what you should see. The ground will depict where you actually are. When using the system for navigation, check system accuracy by correlating Dog House information on the chart against the waypoint indicated course and time to go.

(c) Timing: Timing is a direct result of BAW. Referencing the system for ground speed is acceptable. However, be prepared for an IP-induced degraded navigation system. If this happens, use the benchmark fuel flow of ~2300pph and have frequent intermediate checkpoints for verification of ground speed/TAS. If a timing error of more than 5 seconds is noted, make corrections IAW the FTI and inform the IP of the correction being incorporated.

(d) Course: Disciplined BAW is key. There is a degree of inaccuracy when judging distance. If you are off course, notify the IP and make immediate, authoritative corrections to

place the aircraft back on course. A 45-degree AOB is used in planning and executing the route turns; this is not the AOB limit when making a course correction on the route. It will take a pull (add power), not to exceed 17 units, to displace the aircraft. Your minimum cross-check time is 3-5 seconds. **Never descend in a turn.**

(e) Altitude: CNATRA minimum altitude is 500 ft AGL on any ONAV route. A good scan is required to observe changes in the upcoming terrain. The LAW is not meant to be a crutch for maintaining altitude, rather a "warning" of lost situational awareness. When the LAW sounds, immediately execute a wings level climb until LAW tone ceases, then return to the briefed altitude. Use the 10% rule and remember to reset the LAW prior to descending to a lower route altitude. When descending to intercept an altitude use the rule of thumb of 1deg depression for every 100' to lose. i.e.: going from 700'AGL to 500'AGL maximum 2 deg depression of the velocity vector.

(f) System Usage: The first two sorties in the aircraft will not use the system. Entering waypoints for the route is not required (on non-system flights), unless the IP briefs inclusion. Normally, the student should have the use of both MFDs during all flights.

(i) On system flights, the route should be entered and cross-checked on deck. Erroneous waypoint data shall not be purposely loaded into the brick load. Students will utilize the sequence string and auto sequencing. Overlay the ground track marker on the waypoint triangle when out of a turn. The wind corrected ground track is the same as the planned ground track. The sequence string in the aircraft does not display planned turn radius. Cross check that the outbound heading is close. Determine if the timing to the next waypoint is close. Make corrections as necessary. Following corrections based off of the system, back up navigation with the clock/chart/ground method. System Time To Go shall be used as the primary source of timing to the next waypoint unless suspected of marked inaccuracies (system flights). The student's goal is to utilize the system to the fullest extent possible while flying the route. Beware of system fixation.

(g) Check Points: Intermediate checkpoints will enable a constant update to navigation and ensure a properly working navigation system. There is no minimum or maximum number of intermediate checkpoints to select. Pick points that will be a good timing or course correction point and are easily distinguishable. Be aware of features that will funnel you on course. All intermediate checkpoints are preflight planned; you do not have the cross-check time to do it "on the fly".

(i) At one minute prior to the point, give the "dog house brief". This should be quick and concise ("Point bravo is the road intersection, time on top 3+10, out bound heading 165 deg, two point three, one point nine, divert Centralia").

(ii) When flying with the system, include a system check at two minutes prior to the point. Check the "time to go" waypoint information, as well as the depicted heading. They should match up with the mission clock.

(iii) Once visual contact is made with the upcoming checkpoint, fly directly over it and give the instructor a "mark" of the time crossing the point along with the number of seconds ahead or behind timeline. Turn to the new heading, focusing solely on the turn and possible obstructions in that turn. No cockpit loading is authorized; the SNA must be focused on terrain clearance tasking only. Once out of the turn, inform the instructor of what was noted at the turn point; correct any altitude, heading and airspeed deviations; make timing correction; set the new divert in the TACAN; give an aircraft status report (fuel, hyd, etc.) and then start looking for the next intermediate check point with the clock/chart/ground method. If using the system for navigation, check the system through indicated course and time to go to the next waypoint and make deviation corrections before looking for any intermediate checkpoints.

(iv) There may be times when the turn point is not in sight. If this happens, turn on time. Stay on the clock/chart/ground method to reorient. If on the system, ensure the ground track marker and waypoint triangle are aligned until the time to go expires, then turn.

(6) RECOVERY

(a) At the exit point, smoothly climb and turn to the pre-briefed RTB heading. Clear your lift vector before beginning your climb.

(b) Make the FSS check-off call as soon as cockpit tasking allows. When comfortably stable off of the route, squawk 1200.

(c) Contact Meridian Approach/ATC ASAP to RTB under IFR handling. If you are so close to NMM to preclude a timely IFR pickup, do not penetrate class D airspace without establishing radio contact with tower. Remember that class D airspace extends up to 2500' AGL and the lateral confines are typically 5nm, but not always. Some airfields contain approach extensions that need to be avoided.

(d) Though you may have contacted Approach without getting ATIS, you should still get the ATIS if time permits. When contacting ATC, establish two-way comm., "Meridian Approach, Hawk1XX". Once comms are established, give your position report and request.

(7) EMERGENCIES

(a) The number one priority with low-level emergencies is to get away from the ground (Climb to cope). Go through the immediate action items and Aviate-Navigate-Communicate. You must be thoroughly familiar with all the diverts prior to flight.

(b) Inadvertent IMC: Continually assess the weather to ensure ONAV minimums. If inadvertent IMC occurs, immediately perform a wings level climb to ESA/MSA, which you SHALL know prior to flying any route. When at that altitude, make a 180° turn back to VMC. Climb to a VFR cruising altitude and contact the appropriate ATC agency to pick up an IFR clearance. Avoid flying through forest fire smoke.

(c) Bird Strike:

(i) Down the intake- Immediately start a climbing turn to the nearest divert. Manage your energy. Set power and climb rates commensurate with engine health. Plan for a PA.

(ii) Structural damage. Start a climb and slow the aircraft to minimize follow-on damage. Turn towards the nearest suitable divert.

(iii) Cockpit penetration. Level the wings and climb. Fly the jet unless a three way positive change of control takes place. Your IP will be very vocal. If you are injured, unable to fly, and are POSITIVE that your IP has been incapacitated, do not delay ejection. HOWEVER, it is likely the plexi-glass which separates the forward and aft cockpit stopped penetration of the bird prior to reaching the aft cockpit. Although the front cockpit occupant may be blinded and injured, it is possible the IP will be able to take control of the aircraft and initiate a divert to the nearest suitable field. Time compression and fear may become a barrier to communication. You may have missed the immediate "I have the controls" comm, or the "Shake to take" signal. There are no fast hands in the cockpit. Allow your IP the opportunity to recover the aircraft.

(d) Low Altitude Ejection: Level the wings, arrest rate of descent and initiate ejection. Prepare for an immediate and abrupt PLF.

Prepared by

C. M. McLean
TW-1 Stan O

Approved by

Keith T. Taylor
Commodore, TW-1