Form Gouge

Ground School:

Once you are issued the Formation FTIs, start to study them, even if you haven't had Formation ground school yet! Use down time during VNAVs to study the FTI and MEMORIZE it so that when it comes time to brief the events you only have to practice the chair-flying of the briefs. There should be no excuse that you didn't have enough time to prep for these flights. These notes have been created to bridge the gap between the way we do things and the FTI. These notes are merely a supplement to the FTI.

Gouge:

- Watch the Formation Brief and Flight videos which are posted on the VT-10 Training Website.
- Use the Formation Kneeboard Cards provided on the VT-10 Website for your planning and to use in the flight. Beware of old/outdated cards that might be floating around via other students.
-Briefing Board templates are on contained within the same file as the kneeboard cards. These are a 90 percent solution. They are a template that you should tailor to your flight. If you plan on doing a section takeoff, your board should not have (Section/Interval) on it.
- Find IPs and ask them any questions you might have about the flight(s) prior to the briefs. A list of formation qualified IPs is in the formation briefing guides.

F4001/4002:

- Know the FTI verbatim, no joke!
- Know the SOP as it relates to formation
- Call your IPs the night prior to find out where they want to go(MOA/R-2908) R-2908 is the standard.
    - If going to R-2908 (Prop formation working area) be familiar with the CTW-6 in-flight guide referencing that area. If your IP wants to go to the R-2908 you will most likely still be filed for the NPA-633. On departure when checking with departure control "KATT 6XX flight of two passing one thousand for three thousand request status of R-2908" If ATC tells you it is cold you will most likely cancel IFR once clear of class C. This also clues ATC into the fact that you will not be going to the MOA.
      You need to check the Jacksonville center NOTAMS (KZJX) to see if the R-2908 is scheduled to be active.
- Make your briefing board professional looking (straight lines, correct colors, etc) A sloppy board is the fastest way to make a bad first impression!
- Lead should brief and is responsible for the Conduct portion of the brief. Lead can delegate to Wing to brief the Admin and you can split up the Emergencies.
- Practice use of the models and make sure that the IPs can see what you are demonstrating
- Practice the time hack(sync your own watches with GPS time or the Naval Observatory prior to the brief), have one person give the time hack as the other starts the brief and as the time gets near, the time hacker can interrupt to do the hack

- "In 45 seconds the time will be 0530 local."….."ten seconds….five, four, three, two, one, hack. The time is now 0530 local."

- After a Lead change the new Dash 2 says "good hits" to the new Lead on tac frequency to let him know his transponder is working. The new Dash 2 will not squawk STBY until he gets a TAS hit from the new Lead to ensure someone in the section is squawking ALT.
- The lost sight exercise will happen in a turn into or away from wingman, have a plan to brief either scenario because in flight it will be dictated by area management.
- Practice all the radio comms with your form partner
    - Check in on aux/NAV check/clnc
    - Radio freq changes and procedures via Pri/Aux
    - FENCE In/out
    - G-Warm prep call
    - Terminate/KIO
- Think about hand signal cadence and coordination with IP

-Typically you will conduct an RNAV approach to your destination with your IP giving you simulated vectors. Following the RNAV approach you will depart and re-enter for the break to a full stop. Keep in mind runway requirements for centerline and staggered landings.

F4002:

-Typically you will conduct a section approach at the beginning of the flight. Again, VFR with your IP giving you vectors to final.
-On the way to the R-2908 you will have your wingman check the status of the R-2908 prior to entering.
-Once you are fenced-in and ready to begin your called tac turn sequence you will preface with " the following will be a series of called/un-called tac turns". When the training objectives are complete you will terminate the sequence.

Event Rehearsal Guidance:

-Refer to the Event Rehearsal Guidance when scheduled. It details how to best utilize this scheduled simulator time to prepare for your form flights. Students who have done really well in forms have taken this to heart.

Emergency Procedures:

Brief these up from the section standpoint. Don't get into how individual aircraft will execute boldface, that will be briefed in the singles brief. We all know how to perform an aborted takeoff: PCL-Idle, Brakes-As required. The important thing for our briefing purpose is what happens as one of the aircraft aborts and the other continues.

F4101-F4201

-refer to UMFO Intermediate Event Guidance document for gouge

F4301-4490

-refer to UMFO Intermediate Event Guidance document for gouge (disregard what it says for the Attack). You will conduct the Attack per the FTI.
- Know the AP-1B
    - VR generalities
    - VR-1024 specifics
    - Altitude from PT-A to PT-B
    - Mach/squawk/clock/ route freq
- Know the FTI!
- Know the VT-10 and CTW-6 SOPs as they pertain to MTRs
-CTW-6 SOP details BASH requirements while on a MTR (what to do if its severe)
- Contact your IPs the night prior to figure out where they want to land
- Have an idea of how to navigate visually to/from your stopover destination
- Your Real World TOT will be your scheduled route entry time plus your ETA to the target
-Real World TOT techniques for the T-6 are on the VT-10 training website
- Have a plan on how to get to PT-A on time
- Keep your eyes on the time during the brief and keep the flight on time
- Calculate the time backwards from route entry (Enter at 0800 local, t/o at 0730, starting engines at XXXX, walking at XXXX, etc)
- Know what the 5-min prior call entails and put it on your kneeboard for ease of use
- Think about wingman positioning for the turns and when you will give them the preparatory command
-Generally at VT-10 we put the wingman on the inside of the turn
- On PTs G-M (VR-1024) you make several right turns in a row, what can you do to get the wingman on the correct side?
-The Target Attack should be thoroughly briefed utilizing the models.

Connecting the Dots

(or, why we do what we do)

This write-up is an attempt to correlate what we do in Intermediate Forms with what you will be doing in The Fleet. Rather than serve as an additional FTI, its purpose is to provide a little depth to our instruction and provide a framework for students to ask questions as they train. To that end, this is *not* required reading and is not subject to evaluation at VT-10; however, you'll probably find it useful. The focus of the write-up is mainly on section formation, though we'll mention division operations on a limited basis. Bottom line for Form flights: you are the mission commander; drive the conduct!

Training rules:

- Like the SOP, you're expected to know, understand, and abide by these even if we don't spend a lot of time explaining them. There are some fighter-specific terms that you haven't been introduced to—particularly in the Tail Chase TRs—so ask questions if something's not clear.
- Generally you just read through these, with one exception: Departure/Spin Procedures. Someone in the brief needs to rattle off the boldface, and it won't be an IP. Get used to this: in Large Force Exercises conducted at venues like TOPGUN and Red Flag, the FNG for each type/model/series represented stands up and spouts them off for the audience.

Time hacks:

- GPS is the gold standard for timing, and it's used by everyone for a lot of different reasons. Two big ones:
    - Synchronizing frequency-hopping radios so you can talk.
    - Synchronizing fires (Close Air Support, artillery, mortars, naval guns, etc) so you can kill Bad guys.
- You will plan on your jet already having GPS time loaded, but you'll expect it to dump when you need it most. Your watch then becomes the critical element in reestablishing comms and making mission. Get in the habit now of hacking your watch every day.

Comm checks (on deck):

- Get used to doing these. In the future, not only will you check multiple radios, you will also check different functions of the radios (frequency hopping and crypto).
- As the FNG in a Hornet/Growler squadron, you'll be flying with a senior pilot. That means he'll be the section lead, and *that* means you'll be doing comm checks on Day 1 in the fleet.
- Conducted as a roll-call for the same reasons as in grade school: so you know who's missing.
- Pass the numbers in bearing/distance.

Switching to Tower prior to the Hold Short:

- In a jet, you don't necessarily need extra time in the hold short to knock out checklists. Expect to auto-switch to Tower about 1,000' prior to the hold short (arresting gear makes a good reference also) and call for takeoff while still taxiing.

Section vs. interval takeoff:

- Section takeoff: typically done with low ceilings. Although counterintuitive at first, a section go is pretty much your only shot at joining in parade prior to hitting a 500' ceiling. One additional planning factor that you'll contend with later: the two airplanes' weight must be within a few thousand pounds of each other (per your squadron's SOP) so they rotate and lift off at the same airspeeds… more below.
- Interval takeoff: preferred method, for a few reasons:
    - Increased safety margin (malfunction or threat).

- Allows for large difference in aircraft gross weight (usually due to ordnance/configuration, sometimes due to fuel load).
- Weapons checks on the join-up: wingman checks his radar and AIM-9 seeker head, and lead checks his Radar Warning Receiver (RWR, pronounced "raw").

FENCE checks, g-warm, and area entry:

- The typical fleet sequence is: direct the FENCE-in; push wingman to spread (if he's not there already); g-warm and weapons checks; chaff/flare checks; report FENCE-in with alibis.
- Doing FENCE checks in a T-6 is like trying to fit a square peg in a round hole. Ignore the fact that it doesn't make sense in our airplane and accept the fact that we're trying to establish a rhythm for you to use later. FENCE actually stands for Fuel, Expendables (Chaff/Flare), Navigation, Communication systems (including transponder), Electronic Countermeasures (ECM); since your fleet airplane will have these systems, FENCE checks will be more intuitive and more important.
- When you call FENCE-in ("Raider, FENCE-in"), you are *directing* the flight to FENCE in. No need for lead to add his callsign here; as lead, he's the only one who can direct the FENCE-in and so his callsign is implied. In the fleet, the wingman will take this opportunity to deploy to combat spread (if he's not there already). He'll also set up his jet for combat: ensure stores are appropriately selected for jettison, chaff and flare (expendables) systems are programmed and armed, etc.
- "Accel g-warm" is a fleet call. In tactical jets, "accel" is a heads-up that the flight will be trading altitude for airspeed (bunting the nose) in order to expedite the g-warm.
- We conduct the g-warm in VT-10 exactly as you will do it in the fleet. In the fleet, however, you will generally conduct the first turn *into* the wingman so lead can check his radar/AIM-9 and wing can check his RWR (remember, it was the other way around on the interval takeoff). You don't need to do it now, but someday you'll need to position your wingman prior to entering the area so you can get these checks done.
- After the g-warm, you'll check chaff/flare, even if you aren't carrying any (you can at least check the counters and see that the bucket pins are sequencing). Pretty simple, one guy puts some out and the other guy calls what he sees. We obviously don't do these.
- Now you're ready to report your systems via the "FENCE**d**-in" roll call beginning with lead (Raider 11, FENCE**d**-in, 920, good g). You'll also report alibis, which are things that don't work and could impact your mission; for example, maybe you found out in your weapons checks that your AIM-9 seeker just ran out of coolant… good to know for the debrief when lead wants to know why you took a bunch of invalid AIM-120 shots.

Tail Chase:

- The purpose here is to demonstrate lead/lag/pure pursuit, and also give you a feel for positioning your body under g while developing an inside/outside scan.
- Lead/lag/pure pursuit is over-simplified in our FTI.
o Using nose positioning to define pursuit curves only works in level flight with relatively

low AOA. The defining characteristics per the FTI are a decrease in range (lead) or an increase in range (lag). An additional characteristic is fuselage alignment (or misalignment), commonly referred to as *angles off the tail (AOT),* or just *angles*. Look for these indicators in flight to get a feel for your flight path. Generally you'll pull lead to take a shot (think guns… you need to shoot the bullets out in front of the other airplane so he'll fly into them) which will decrease range at the cost of developing fuselage misalignment, or angles off. You'll then have to pull lag to preserve your range and realign the fuselages. If you don't, those angles off can turn into an overshoot which could lead to a role reversal.

- Pursuit curves are not the sole domain of the trail aircraft; the lead aircraft can affect the trail aircraft's pursuit curve, and in fact, that's what he wants to do. Imagine both aircraft in a level, left turn, with the trail aircraft in lag. If lead pulls hard to the right (reverses), the trail aircraft will be in lead pursuit. Since it's possible to be *too* close to shoot, the trail aircraft will have to go to lag to preserve his shot. If lead times his reversal correctly—and several times in a row—he can flush the trail aircraft out in front.

-When you incorporate vertical (out-of-plane) maneuvering, pursuit curves are defined by *lift vector placement*. Finding your lift vector is easy: imagine a broomstick coming out of the top of your head. Put the imaginary broomstick in front of the lead aircraft for lead pursuit, and behind him for trail pursuit.

-Loops are a good opportunity to demonstrate nose vs. lift vector placement, as well as the effect of God's g on turn radius.

- God's g is nothing more than vector addition and subtraction. If you pull 4g pure nose up, you are pulling against the Earth's 1g (God's g) which is acting downward giving you an overall performance of 3g. At the top of a loop, God's g is in the same direction as your pull, so your 4g pull yields 5g of performance. This principle is important because, generally, the more g you pull, the smaller your turn radius will be.
- Beginning in trail, -2's nose is on lead: pure pursuit. Make a note of the range.
- Lead pulls up into the loop while -2 continues straight ahead for attack window entry: looks like lag pursuit (-2's nose is behind lead), but is actually lead pursuit (-2's lift vector is in front of lead's flight path). You may AOT increase.
- Dash 2 reaches the attack window and pulls up. Both airplanes should be circumscribing the same flight path through the sky. Lead should be about a fist above -2's canopy bow, which looks like lag pursuit. However, you'll notice range decreasing, which can only happen under these circumstances due to lead pursuit. AOT will visibly increase.
- Nearing the top of the loop, God's g will begin reducing lead's turn radius. -2 will see lead appear to pivot, and -2 will be looking at mostly the top of lead's aircraft rather than the tail. Closure will decrease significantly until lead's nose passes through the horizon, at which point AOT will be near maximum.
- Once lead's nose passes through the horizon, -2's lift vector will be in lag. Look

for decreasing AOT and increasing range.
-At the completion of the loop, -2 is back in pure pursuit with nose on lead. Range should be the same as at loop entry: this is an indication that -2 matched lead's flight path.
- Don't forget to look inside and back up the pilot with altitude, airspeed, fuel, and g. It's more difficult as lead; try to develop a sense when relative motion between the aircraft is stagnant; those are good moments to come inside and look at the instruments, but they're brief and you need to anticipate them. Also, try to get a feel for where the pilot is looking. Eventually you'll need to coordinate your scan with his. You don't both need to be looking at the other airplane, or at the instruments. If the IP is looking aft and describing -2's movements, you can come inside and scan. If you've got something to say ("7,000', 280 kts"), speak over the IP… he'll hear you.
- The post-tail chase rendezvous is one of the most difficult ones to perform; not only because you are transitioning from an aggressive mindset to a safety mindset, but also because lead is transitioning to rendezvous airspeed and altitude. You really need to keep an eye on what's happening; keep a sharp eye on altitude and airspeed, and don't be afraid to call the underrun.

FENCE out and area exit

- Directing the flight to FENCE out is just like the FENCE in; no need to use your callsign, because only lead has this ability and therefore callsign is implied ("Raider, FENCE out."). In the fleet, fencing out will safe up weapons systems and other things that could deploy from your airplane and hurt people on the ground. With that in mind, be sure to FENCE out within the confines of your operating area!
- You have some options for rejoining the flight. Since fuel is rarely an issue in the T-6, you can set up a CV rendezvous to affect the join prior to leaving the area. If you are short on fuel (in other words, at or near bingo), you can begin your transit to your destination and have your wingman join via running rendezvous.

Instrument Approaches

- You need to be on top of things with respect to instrument approaches; at this stage in your training, the instructor should not need to pimp you to take the GPS out of OBS, or begin your descent to the MDA.
- Wingman considerations: it's going to take you longer to slow and configure with a wingman, and you need to think about formation management. Beyond that, don't worry about your wingman. He will be in position. Concentrate on flying your best approach.