ONWING PREP GOUGE

By

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Disclaimer: By no means is this all-inclusive. I will say that it works. All 12 of my onwings have passed their C4390 on their first and only attempt. The philosophy is to over-prepare them. Do that by setting the tone on day one at Fam-0. Set the standard and accept nothing less than the SMA’s best effort. The idea is that if the SMA fails, it is by virtue of their substandard performance – NOT BECAUSE THE ONWING FAILED TO PREPARE THEM. Remember, as their onwing, we are their instructor and mentor, NOT their friend. As an aside, all of my onwings have called me after their checkride to 1) share the good news and 2) thank me for being so hard on them.

This guide has worked for me. If you like it, great. If not, that’s OK, too. Do what works best for you and your student. The end goal is always to produce the highest quality Naval Aviator.

**Tricks**

* Pull (oil press) CB during preflight (C4101)
* Hold annunciator test button to prevent stud from getting master caution (C4001)
* Hold prop overspeed test button to prevent rise in prop RPM during test (C4004) Alternative: pull condition lever to “R” in RPM during the test, so there will not be a rise when SMA releases test button. If stud asks if you’re holding button, hold your hands in the air (C41XX)
* Smoke/Fumes or chips light during taxi (C42XX)
* Fast slave in a turn to get RMI misaligned
* Brake Failure in runup (C42XX)
* Binding control in runup (C42XX)
* Turn on autoignition during autoignition test so ignition light doesn’t go out (C4004)
* Lower flaps during “Radios, Navaids, NACWS, GPS” in runup or prior to runway (C41XX)
* Turn on autoignition prior to “Instruments, Fuel Quantity” check in runup (C41XX)
* Pull condition lever slightly back to see if stud catches as take active or during IGP
* Coordinate with tower on VHF as taxi to holdshort (before stud selects tower on UHF) to coordinate abort or PPEL(P) on t/o (C4202)
* Take electrical command during engine shutdown checklist so inverter is not secured (C41XX)
* Turn on autoignition but say it is off during engine shutdown checklist (C41XX)

**HAPL Scenarios**

* Bowtie (C4203)
* Flameout in which successful airstart turns into a PEL
* If SMA gets below profile and raises gear, tell him battery died, so he must lower gear manually (only at Mustang Beach)

**LAPL Scenarios**

* Xwind 1900’, 150 kts. Demonstrate it is possible to get high on a LAPL
* Xwind on profile. See if SMA turns to land into the wind.

**PPEL Scenarios**

* Massive streaming fuel accompanied by fumes. SMA must don O2, manually lower gear and leave flaps up. **Perform only at Mustang Beach**. (C4202)
* Xwind 2500’, 150 kts. Fly full ELP.
* Xwind 2000’, 150 kts. Intercept ELP, configure and slip.

**Onwing Lessons Learned**

C4000

* Stress course rules home via Shamrock more (don’t take an Oso everytime)
* Conduct ATS to **both** sides

C4100

* Don’t help studs as much on spins. Make sure they understand what we’re doing for entry and recovery.
* Brief and have SMAs perform PEL(P) and LAPL(P). Even though it’s only a demo item in C4100 block, get them performing the maneuvers now to set them up for success in C4200 block.

Apply the “Crawl, Walk, Run” mentality. C4000 block is the crawl stage. Even still, push the SMA. Stress the basics. The foundation/habits they develop in this block is/are critical for their performance in the C4200 block and the rest of their Naval Aviation career. Emphasize knowledge, procedural execution, trim as well as their addressing anytime something is not right (i.e., testing their scan during ground ops/checks). Expose SMA to course rules.

**Take SMA to A-Cty AT LEAST ONCE in each of the C4000, C4100 and C4200 stages**

**C4001**

\*\* NOTE: IP does majority of flying and makes all radio comms\*\*

Demo

Taxi

Takeoff

Departure

Radio Comms

Turn Pattern

LSC

Landing Pattern

Arrival

Perform

GPU start (time permitting)

Taxi

Basic Transitions

Trim Exrcise/Drill

Turn Pattern

LSC

Manually Lower Gear (**Use Checklist**)

One Landing (Guard the controls & help as necessary – this is done as a confidence builder)

Study Items for Next Flight

Engine Limits at Idle

SF/MCM

POS

**C4002**

\*\* NOTE: SMA does majority of flying while IP makes all radio comms\*\*

Demo

Abort T/o

SF/MCM

POS (time permitting)

Perform

Taxi

Takeoff

Departure

SF/MCM

LSC

Turn Pattern

POS (time permitting)

Landing Pattern

**C4003**

\*\* NOTE: SMA does majority of flying and makes all radio comms\*\*

SMA draws and explains landing pattern from memory.

Demo

POS (if not previously done)

ATS

Perform

\*\*NOTE: SMA flies & talks\*\*

ALDIS Lamp Signals

POS

ATS

Landing Pattern

**C4004**

Either have SMA come in 45 minutes before scheduled brief time or meet outside of scheduled hours to have SMA draw and discuss fuel system from memory. Push SMA to think beyond the black and white of the drawing and procedures. Stress the “Why” behind procedures so SMA will tie in system knowledge and get the big picture of why procedures are written in the manner that they are. Sample questions to ask: Why does fuel press light go out on engine start before fuel is introduced with condition lever? What are possible causes for the fuel press light to come on? If you turn on the standby fuel pump and the fuel press light extinguishes, what does that mean (what are still possible causes for the original problem)? Do we still continue with PEL? Why? If you turn on the standby fuel pump and the fuel press light remains on, what does that mean (what are still possible causes for the original problem)? Tie in the note from the uncontrollable high power E.P. If the pilot pulls the T-handle, why will the engine continue to run for up to 30 seconds? Show this on the SMA’s diagram. Quiz on engine compartment during preflight. Review Ch. 4 limits.

SMA does all flying and talking. SMA should have seen all block items by this point. Continue to work on ATS and landing pattern.

Study Items for Next Flight

ELP

Scan items for Spin (OCF scan)

C4100 block is the crawl stage. It is expected that SMA has solid knowledge and can fly the aircraft somewhat well by this point (BIs help a lot with this). Build upon the foundation you established in C4000 block by introducing simulated malfunctions. The first time the SMA sees the ELP is critical. If you fly a poor demo, or the SMA is not seeing the same sight picture as the IP, you are wasting your time, and the SMA gets nothing out of the training. For this reason, take SMA to Mustang Beach on C4101 so that they will be looking at exactly the same sight picture as the IP for the ELP checkpoints. If you demo an ELP for the first time at Chapman or a mudflat and tell the SMA to reference “that rock,” you have no idea if they are looking at the same checkmark that you are. Whereas at Mustang Beach, they must be looking at the same checkmarks as you – the sole runway. If they are not, they have no business flying an aircraft in the first place.

**C4101**

Go to Mustang Beach for PPEL, HAPL & LAPL intro for SMA to positively acquire sight picture and not be overwhelmed by having to also choose a landing site. This is the crawl stage for ELP training. Focus on them flying the aircraft along the ELP the first time. On their second attempt, have them fly the ELP and execute the necessary (HAPL or PEL) procedures. On C4102 they will walk by having to fly the profile, execute procedures AND choose a landing site.

Brief at least 30 mins early. Do not shortchange this brief. If you do, it will be apparent to other IPs, and the SMA will struggle with the ELP all the way through to C4390. Fully explain ELP checkpoints (compare to landing pattern), rate of descent for profile, how to correct when off parameters for PEL vs HAPL/LAPL (if raise gear, will you be able to lower it electrically?), engine failure procs & the why behind them (tie-in glide performance data), & how we conduct simulated emergency training. **Stress ELP checkpoints are based on relation to a landing site (checkpoints are not based on altitude only; if you are in correct position with regard to landing site, altitude just determines whether you are on/above/below profile).** Stress PEL is always conducted to paved surface. Review cases when we do not attempt an airstart. Go over priorities for HAPL/LAPL (My technique only: 1. Fly the ELP first 2. Execute procedures 3. The Mayday call) as well as priorities for landing site selection (My technique only: 1. Paved runway 2. Note and avoid any type of ground obstruction – power lines, wildlife, etc. 3. Maximize the real estate – select the largest landing site possible to have large margin for error. 4. Land into the wind.). Review the math behind dead engine glide distance : at 100 kts clean with the prop fx’ed, you can glide 2nm for every 1,000’ of altitude. Draw an airplane and landing sites various distances from the aircraft. State that the aircraft is at 6,000’. Explain that you can glide 12nm but will be at ground impact at 12 nm. Subtract 2500’ for high key altitude. You therefore have 3500’ of usable altitude. Any field within 7nm, you can make high key and fly a full ELP. For a field between 7-12nm, the scenario basically turns into a LAPL because you will have to intercept ELP beyond high key.

Demo

PPEL

HAPL

LAPL  
Spin

STS

Slip

SMA performs PPEL. HAPL, LAPL, spin and continues to practice C4000 maneuvers.

**C4102**

Go to (Southern) mudflats or Chapman for HAPL/LAPL training. Southern muds and Chapman allow margin for error due to the long length of the landing site. Decision-making for site selection is not too difficult. This is the walk stage of ELP training. Next stage in progression would be Port A or Northern muds.

SMA draws oil system from memory. Why can we only fly inverted for 15 secs? We got the aux oil tank for inverted flight, so what’s the problem? Stress how components interrelate to one another. An oil pressure flux could be to the precursor to high oil temp, rising ITT, loss of torque gauge, chips lt, fuel press lt, uncommanded prop fx and eventual engine failure.

Demo

Fx while Airborne

C4200 block. This is the run stage. Not only must SMA possess required knowledge and fly the aircraft well, he must apply these items in a manner that conveys good headwork and judgment. This is critical to demonstrate to a C4390 IP that the SMA can keep his aircraft and himself safe on a solo in the event of a malfunction/emergency.

**\*\*On at least one C4200 flight, begin by showing SMA how to enter homefield bounce\*\***

**C4202**

Use C4202 and C4203 to run SMA through the ringer. Push the SMA to his breaking point but not past it. The idea is to over-prepare SMA for C4390. The check should feel like a breeze compared to flying with their onwing on a C4200 event. Brief bowtie technique. Brief and draw PEL(P). Begin with streaming fuel on initial t/o (coordinate PPEL(P) with tower on VHF). Look for SMA to leave gear down and make no flap landing. When depart homefield, tell SMA he has streaming fuel and to coordinate for Mustang Beach. SMA must don O2, manually lower gear and make no flap landing. In high area, give SMA rollback and require him to use EPL (SSR). Focus on areas SMA has not seen for HAPL/LAPL and pattern work. Expose SMA to as much as possible. You do not want him seeing something for the first time on C4390.

Study Items for Next Flight

Discuss items for both C4203 and C4204

**C4203**

Go over the ADB extensively. Quiz stud on all limits associated with ground checks. Give SMA EP scenario while taxiing to see how he’d handle it. Aborted t/o. Test stud’s S.A. by asking what nearest divert is inflight, giving simulated scenarios and asking where he’d go, # of aircraft in pattern, etc. Focus on places that SMA has not seen. Bird strike leading to controllability check and straight-in approach.

**C4204**

**Now that you have beaten down SMA on C4202 and C4203, this event is meant to build SMA’s confidence back up for C4390.**

Use the brief and preflight time exclusively for checkride prep. Go over C4390 discussion items, syllabus requirements and graded items. Review how a typical C439 IP will conduct the brief (system discussion of oil/prop/fuel/electrical with associated EPs interspersed, a malfunction scenario for that system while in a high area on their solo, lost comm. scenario, etc). Stress to review solo briefing guide. Have SMA go through all of his survival gear with you. Demo how to secure rear cockpit. Have SMA talk through entire preflight while pointing out additional items to him and quizzing him on various items. Treat flight as a mini-checkride. **Aim to evaluate more than instruct**. Keep the scenario/profile simple and straight forward. Where instruction is needed, provide it.