
Simwings.nl – vNAVCAD T-2 syllabus



By

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Foreword

The T-2 Buckeye will be your mount during the next phase. Speeds and altitudes, as well as distances covered, will be larger than what you were used to in the T-34. As a result, you will have to think faster and anticipate further. Staying ahead of the aircraft will be even more important; if you make a mistake, the higher speeds will escalate the error faster.

Next to being a step up in aircraft performance and technology, the T-2 will also be the aircraft in which you will make your first carrier landings in this course. Prior to that, you will be given extensive practice in landing the aircraft.

An important thing is the way you are going to land the T-2. In the T-34, you have become accustomed to 'flaring'. Landings in the T-2 will be carried out at 85%-90% power (!) with the speed brakes deployed. This is sometimes referred to as 'a controlled crash', because you basically fly your aircraft to the ground as opposed to gently putting it down there.

This technique is the way you should be landing on a carrier.

The T-2 syllabus will again include repeated basic flying techniques for the airframe: basic air work, aerobatics, stalls, spins and landings.

As the general theory (patterns, aerobatics, climbing, turning, etc.) as discussed in the T-34 syllabus applies to the T-2 as well, it will not be repeated. The emphasis of the theory in this document will be on airframe-specific behavior.

See the website for references to T-2 flightsim downloads available. I have created the missions flying the RAZBAM T-2C, but there is a freeware version by an other creator available on flightsim.com. Panels are different, so are some flight characteristics, but generally they can both be used for these flights.

You will be flying from NAS Meridian in Mississippi. Look for "The Owl's Nest" and download their scenery. Runway 28 in that scenery contains the meatball lens; its importance will become clear later on.

The familiarization phase in the T-2 will be shorter: 7 basic FAM flights, the 8th will be a pre-solo, the 9th is your official solo.

FAMs 10 through 14 will concentrate on using the indexer, the scan (meatball, lineup, angle of attack) and the use of the Fresnel lens next to runway 28 at NAS Meridian.

After the FAM phase, you will go through Basic Instruments (BI). That's where you learn to trust your instruments with the simulator set to zero-visibility weather circumstances, while at the same time you are carrying out turns and S-patterns. Error margin is small, accuracy is the key! BI consists of 10 lessons and a checkride.

Next is Radio Instruments (RI). This is 5-hop sequence followed by a checkride, concentrating on navigation to and from intersections, non-directional beacons and TACAN/VOR beacons.

Following this flight, you will report to NAS Pensacola for Field Carrier Landing Practice (FCLP) and Carrier Qualification (CQ).

FAM-01: Orientation flight

Create a startup flight, located at NAS Meridian (KNMM). Use the scenery as published on the website of "The Owl's Nest". Make sure the startup flight has the aircraft parked, with shut down engines.

Go through the startup procedure and use ATC services to get permission for takeoff.

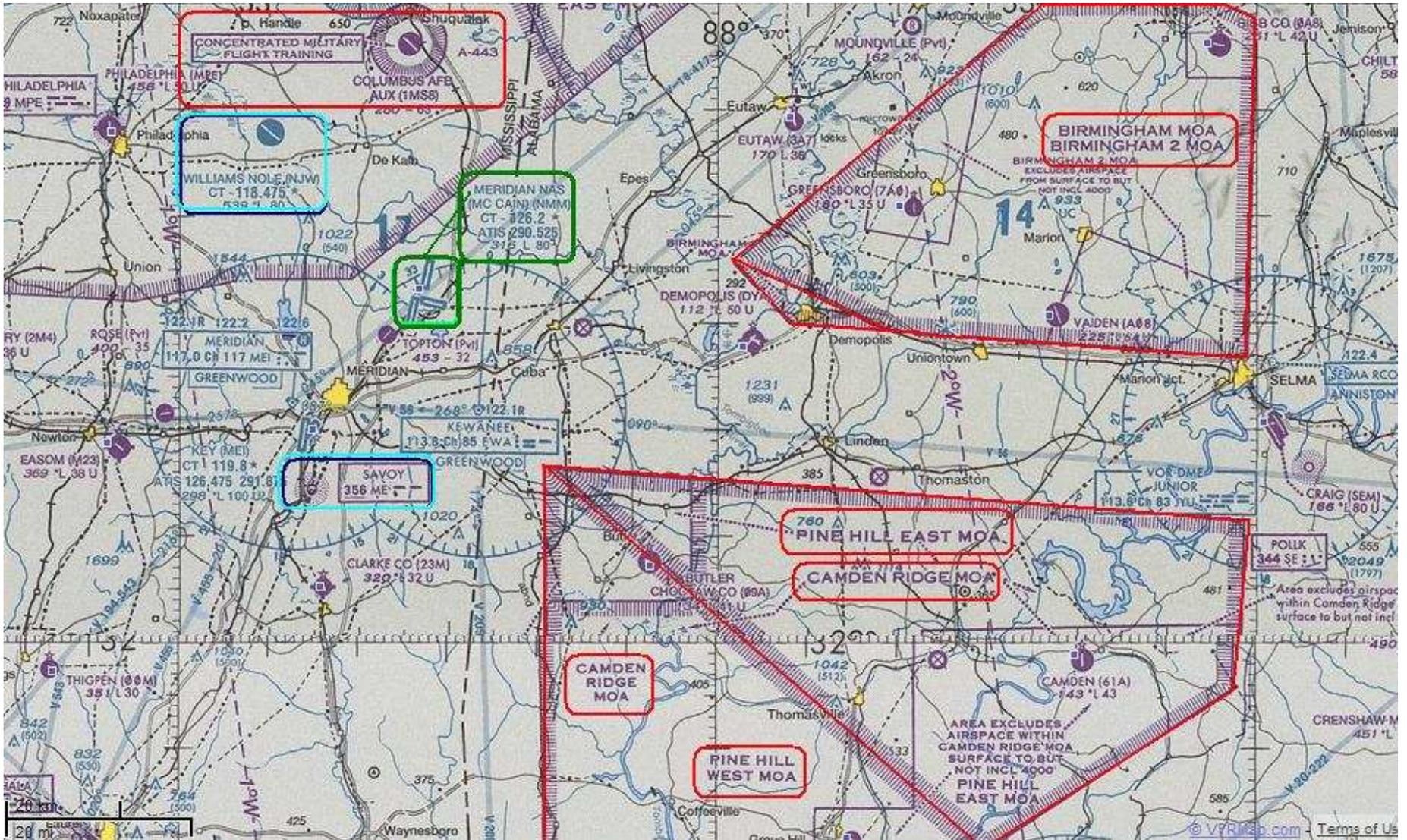
Once lined up for takeoff, with flaps in takeoff position, smoothly apply full power. Rotate to 10 degrees nose up at 100 knots, the aircraft will be airborne at about 120 knots

Climb to 16,000 feet and level off there at 300 knots

The first thing to do is getting to know the area. The map on the next page has been color-coded. Red for training areas, light blue for NOLF or navigational points and green for your home base.

Fly around the area, take a look at the direct surroundings of NAS Meridian. Familiarize yourself with prominent landmarks.

I recommend using the virtual cockpit set at 0.50 zoom, which will give you a nice wide view and also comes in handy in the pattern, as it will allow you to 'look into the turn'.



After the 'recon', the next order of business is aerobatics.

From the T-34 stage, you already know how to carry out various aerobatic maneuvers. In the T-2 stage, we are going to execute aerobatic maneuvers in rapid succession. This means for example that one aerobatic sequence can be summarized as:

[The symbol ">>" can be read as "flows into"]

Loop >> barrel roll >> Split-S >> Immelmann >> aileron roll

TASK

Write down 3 aerobatic sequences and carry them out

SPEEDS

Start upward maneuvers at 450+ knots

Start downward maneuvers at no more than 250 knots

After the aerobatics, make sure you are at 16,000 feet and proceed to the next order of business: stalls

Descend to 10,000 feet at a constant rate of 2000 feet per minute (fpm)

Level off at 10,000 feet, 250 knots

Idle the power and maintain altitude, thereby forcing the aircraft's wings to lose lifting capabilities and stall

Once the stall occurs, hold back on the stick for a few more seconds, then release the stick and allow the nose to drop

Pick up speed and start pulling the nose up when the speed is above 190 knots, simultaneously adding power. Climb back to 10,000 feet, 250 knots

TASK

Carry out 4 stalls (2 in clean config, 2 in landing configuration), then level off at 10,000 feet, 250 knots and use GPS to determine the course back to NAS Meridian (KNMM)

Proceed on that course and descend to 2,500 feet

IMPORTANT:

For the next stage of this flight, it is imperative that you have installed the KNMM scenery as available at <http://www.interkultur.de/gossmann/fsx/maiw.php>, as the runway we will be using contains a Fresnel lens that you must use during landing!

Enter the pattern for runway 28 at KNMM at 800 feet, 250 knots. **REMEMBER TO SELECT VIRTUAL COCKPIT AT 0.50 ZOOM FACTOR**

Fly over the runway at that altitude and speed. Once you see the runway disappear under the nose of your aircraft, smoothly pull back the throttle to idle, make a 180-degree LEFT-HAND TURN with 60 degrees angle of bank and apply speed brakes

SPEED WILL BLEED OFF RAPIDLY!!

Lower gear and flaps, extend speedbrake and add power to maintain 150 knots

Roll wings level after 180 degrees of course change (roughly course 105) and descend to 600 feet

Make sure you are in the virtual cockpit and pan to your left. Once you see the start of the runway pass at your direct left (9 o'clock), initiate a 25-degree angle of bank left-hand turn, while slowly descending to 450 feet

Once you are 90 degrees off the final heading (runway heading) you should be at 450 feet. Keep turning and descending, using the virtual cockpit to keep the runway in sight

On the final heading, your altitude should be 300 feet maximum

Now you should be working on your scan. Look at the general picture and scan:

meatball > **lineup** > **angle of attack** > **meatball** > **lineup** > **angle of attack** > etc.



You should see the meatball green until it disappears from your FORWARD view (if you keep looking at it while panned to your 11 o'clock, it WILL turn red).

If the meatball shows red blinking light BEFORE it disappears from your forward view, IMMEDIATELY add power and retract speed brakes. The aircraft will then climb away.

The moment the wheels hit the tarmac, go to full power and retract the speed brakes, while maintaining the nose-up attitude. Climb straight forward, retract gear and flaps and, at level off at 800 feet, 250 knots

Make a 180-degree LEFT turn. Once on downwind, lower gear and flaps and open speed brakes

Maintain 150 KIAS until the runway is at your 9 o'clock.

Start your turn-in to final approach and make a full stop landing

Review checklists and procedures first. Draw up your aerobatics sequences. SET CLEAR WEATHER WITH NO WINDS AT ALL.

TOPICS:

- taxiing and takeoff
- climb to 16,000 feet, 300 knots
- straight and level flight
- level and climbing turns (30 through 90 degrees AOB)
- stalls in clean and landing configuration

AEROBATICS:

3 Complete sequences in rapid succession

Maneuvers:

- Loop
- Aileron roll
- Barrel roll
- Immelmann
- Half Cuban 8
- Wingover
- Split-S

NAVIGATION:

Proceed to KNMM (GPS)

Make 1 touch and go (RWY 28, use meatball)

Then: landing, taxi in, shutdown

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NAVIGATION:

Proceed to Williams NOLF (NJW) and land there. Stay parked for 1 minute while the instructor exits the aircraft, then take off and carry out 3 touch and go's

On the 4th approach, make a full-stop landing, pick up the instructor and take off again

Proceed to KNMM (GPS)

Make 1 touch and go (RWY 28, use meatball)

Then: landing, taxi in, shutdown

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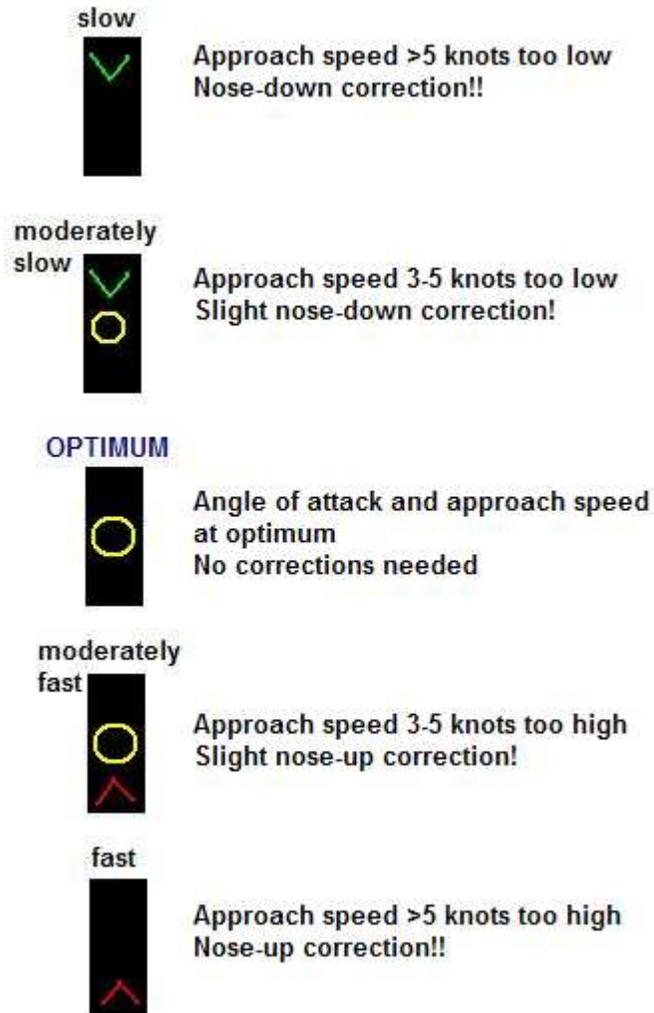
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Then: landing, taxi in, shutdown

Landing technique

FAM flights 10 through 14 will concentrate on your landing technique. Runway 28 at KNMM is equipped with a Fresnel lens which helps you follow the correct glide path under VFR conditions.

You will need to learn how to interpret the signals the Angle-Of-Attack (AOA) indicator is providing you with. For naval aviators, this instrument is one of the most important ones during landing: it allows them to judge their speed without the need to check the airspeed indicator. The AOA will tell them instantly whether or not they are exceeding the safe speed margins of a safe landing. Here is the overview:



The trick is to keep the AOA indicator to show "OPTIMUM" and the meatball to show green lights all the way down to the runway. What you are doing in approaches like this, is flying a straight line down a precise angle.

Remember: AOA controls speed; power controls descent

FAM-10 through FAM-14 are identical flights. Here, too, the philosophy "Repetition is the key to perfection" applies!

Review checklists and procedures first. SET CLEAR WEATHER WITH NO WINDS AT ALL.

TOPICS:

Landing technique

AEROBATICS:

None

Maneuvers:

Take off from runway 28 and climb to 800 feet @ 250 knots

At 800 feet, throttle back, speed brakes out, make a LEFT turn, 180 degrees heading change, 60 degrees angle of bank, and maintain 800 feet

Gear down, flaps down

When the course change is completed, descend to 600 feet, stabilize at 150 knots

When passing the start of the runway at your 9 o'clock, commence a 25 degree angle of bank LEFT turn, while **GENTLY** descending to 450 feet

At 90 degrees off final approach heading, you should be at 450 feet

Make sure you are in virtual cockpit

Use the AOA indicator and the Fresnel lens to the left of the runway to get yourself on the correct glide scope

SCAN SCAN SCAN!! MEATBALL – LINEUP – ANGLE OF ATTACK

When on final approach, center the visual cockpit view. Keep the Fresnel lens in sight until it disappears; by that time you should hit the runway

Immediately retract the speed brakes and apply full power. The nose wheel should not come down on the runway, resulting in an immediate takeoff

Climb back to 800 feet, 250 knots and repeat the cycle

TASK

Make 3 touch and go's

Your 4th approach is a full-stop landing, taxi in, shutdown engines and systems

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TOPICS:

Landing technique

AEROBATICS:

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COMMENTS ON FAM-10 >> FAM-14

The procedure followed in these flights, is basically the same as what you will be doing later on at NAS Pensacola during FCLP (Field Carrier Landing Practice)

Although it may seem boring to fly a certain mission several times in a row, you must bear in mind that

- 1) This syllabus is about training and training mainly consists of repetition in order to make sure the student gains experience
 - 2) Naval aviation involves a lot of repeated instruction, even for veteran carrier pilots. Repeated instruction is considered necessary, even paramount; its value is written in the blood of those who died during non-combat carrier mishaps!
-

Basic Instruments (BI)

In this stage, you will be exposed to flight in IMC (Instrument Meteorological Conditions). In other words: you are not going to be able to see the horizon while flying your aircraft.

So in order to tell what your aircraft is doing (its altitude, speed, course, attitude, vertical or directional movement) you must look at your flight instruments. With nothing to see outside, those instruments are all that is left to look at.

Just looking at them will not be enough. You must correlate their information. You can take a short look at your altimeter and note it reads 9,000 feet, then continue on to the next instrument. But what was the altimeter *DOING* ? Was it stable? Correlate with the vertical speed indicator. And what about your course? Is it stable? Is it changing? If so: in which direction? Does that match what the attitude indicator is telling you?

From these many questions you can gather that instrument flying poses its own challenges and difficulties. In "*Rampant Raider*", Stephen Gray vividly describes his first steps into "IMC-country" and all stress involved in it. It is interesting to note that he indicates this was the stage where most of the drop-outs (on request or by elimination) occurred. That in itself also says something about IMC flying!

In real life, BI flights were flown with the instructor in the FRONT cockpit of the T-2, with the student in the rear cockpit with a hood over his head to keep him from having an outside view. Gray recalls profoundly hating the thing, but the effectiveness of the device is clear.

In this stage, you are NOT going to land via ILS. This is my recommended setup for BI flights in the T-2:

> Position the aircraft on the runway, ready for takeoff
then go to the Weather menu and set visibility to the minimum of the slider

> Take off, following the mission profile as described in the flight sheet (BI-0x)

> Once finished with the maneuvers, return to the Weather menu and select a clear/fair weather profile

> Use GPS to get your bearings back to KNMM

It is also very useful to have a watch/stopwatch/etc. at hand. You will need this for the timing required during one of the (recurring!) exercises.

Good luck and enjoy these flights (despite their difficulty level!)

Review checklists and procedures first.**TOPICS:**

Basic Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Maneuvers:

Note the runway heading and set the Horizontal Situation Indicator (HSI) to match that

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet

Level off at 16,000 feet, 250 knots

DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:

ALTITUDE: +/- 100 FEET
SPEED: +/- 20 knots

TASK 1

30 degree AOB left & right turns

Straight and level flight 250 knots

Deceleration to pattern/landing speeds, go to landing config while maintaining altitude

TASK 2**S-Patterns**

Start at a random altitude above 10,000 feet, flying 250 knots straight and level

Start your timer and initiate a 1-minute, 1000 fpm descend at 250 knots (requires power decrease)

At the end of the minute, break the descend and IMMEDIATELY start a 1000 fpm climb for another minute (requires power increase)

At the end of the 1st minute, you should be exactly 1,000 feet lower

At the end of the 2nd minute, you should be at your initial altitude, flying the same course, same speed (250)

[REPEAT 4 TIMES]

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TASK 2**S-Patterns**

Start at a random altitude above 10,000 feet, flying 250 knots straight and level

Start your timer and initiate a 1-minute, 1000 fpm descend at 250 knots (requires power decrease)

At the end of the minute, break the descend and IMMEDIATELY start a 1000 fpm climb for another minute (requires power increase)

At the end of the 1st minute, you should be exactly 1,000 feet lower

At the end of the 2nd minute, you should be at your initial altitude, flying the same course, same speed (250)

[REPEAT 4 TIMES]

Review checklists and procedures first.**TOPICS:**

Basic Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Maneuvers:

Note the runway heading and set the Horizontal Situation Indicator (HSI) to match that

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet

Level off at 16,000 feet, 250 knots

DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:**ALTITUDE: +/- 100 FEET**
SPEED: +/- 20 knots**TASK 1**

30 degree AOB left & right turns

Straight and level flight 250 knots

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Radio Instruments (RI)

RI consists of 6 flights during which you are going to use intersections and VOR beacons for orientation. Here, too, we will simulate you being 'under the bag' in the rear cockpit by setting visibility to the minimum level.

At the end of each flight, while still airborne, you will set visibility back to normal and return to base.

RI prepares you for what will be part of the curriculum in the RAG (Replacement Air Group) where you will learn instrument flying in the type you are going to fly in the fleet.

There will be 6 similar flights, which again are based on the principle that repetition is the key to proficiency. You can opt to work through RI in just under a week by flying 1 sortie per day, or in 3 days by flying a sortie in two separate parts of the day (morning and afternoon for example).

For the purpose of this exercise, you are allowed to use the GPS for navigation to and from intersections.

The next page contains an IFR chart (source: Skyvector) of the direct surroundings of NAS Meridian. Take a close look at it.

Intersections in this area:

- NOSRY
- BOYDD
- UTESE
- CONEE
- UTOWE
- NOVCA
- EUTAW

VORs:

- Meridian: (MEI) 117.00
- Kewanee: (EWA) 113.80
- NAS Meridian: (NMM) 111.90

FSNavigator is also a very good tool. I would advise you to use that program as well to create your own area map including intersections, etc. The procedure is simple: just zoom as desired and make sure the program is set to display intersections, navigational aids and Victor airways

Make sure you already have some basic knowledge of air navigation. If necessary, use the lessons in Flightsim to get an introduction/refresher on the subject. You can think of that as the simulated classroom sessions.

Review checklists and procedures first.**TOPICS:**

Radio Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Set the Horizontal Situation Indicator (HSI) to match runway heading

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet and level off at 16,000 feet, 250 knots

DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:

ALTITUDE: +/- 100 FEET
SPEED: +/- 20 knots

Maneuvers:

After leveling off, fly directly to BOYDD intersection. From there, turn to heading 045. Now fine-tune your course: BOYDD must be at BRG (bearing) 225, so directly at your 6 o'clock. Adjust your course to keep BOYDD directly behind you: if BRG increases, turn LEFT; if BRG decreases, turn RIGHT.

MAXIMUM DISTANCE FROM BOYDD: 40 miles

Turn right, 30 degrees AOB, directly to BOYDD. Once over BOYDD, turn to heading 270 until 5 miles, then turn left, heading 090

When BRG to BOYDD is 360/0: turn left, 30 degree AOB, directly to BOYDD

Once over BOYDD, turn to heading 270 until 5 miles, then turn left, heading 090

When BRG to BOYDD is 360/0: turn left, 30 degree AOB, directly to BOYDD

Set GPS to KNMM and descend to 10,000 feet. Level off, 250 knots

Over KNMM, start a 1000 fpm descending turn (30 degrees AOB), 250 knots and level off at 2,000 feet

Set weather to clear, enter the pattern and land (optional: touch and go)

Review checklists and procedures first.**TOPICS:**

Radio Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Set the Horizontal Situation Indicator (HSI) to match runway heading

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet and level off at 16,000 feet, 250 knots

DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:

ALTITUDE: +/- 100 FEET
SPEED: +/- 20 knots

Maneuvers:

After leveling off, proceed directly to EWA VOR (113.80). Over EWA, turn to heading 090 for 12 miles

Turn left, 30 degrees AOB, to heading 225 and set the HIS to intercept EWA at 270 degrees. Fly to EWA

Over EWA turn left, heading 268. You are now proceeding directly to the Meridian VOR (117.00 MEI)

Over MEI, turn to heading 272 until 10 miles from MEI, set HSI to intercept MEI at 045

Turn left and intercept the 045 radial inbound to MEI.

Continue on course 045 after passing MEI and descend to 10,000 feet, 250 knots

Set GPS to KNMM

Over KNMM, start a 1000 fpm descending turn (30 degrees AOB), 250 knots and level off at 2,000 feet

Set weather to clear, enter the pattern and land (optional: touch and go)

Review checklists and procedures first.**TOPICS:**

Radio Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Set the Horizontal Situation Indicator (HSI) to match runway heading

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet and level off at 16,000 feet, 250 knots

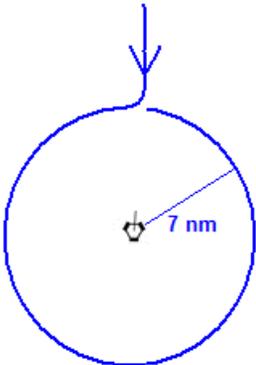
DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:

ALTITUDE: +/- 100 FEET
SPEED: +/- 20 knots

Maneuvers:

*** For this flight, you should use a DME indicator capable of displaying 1 decimal readouts (e.g. "1.2 miles") ***

After leveling off, proceed directly to EWA (113.80) and start circling this VOR at 7 miles:



The trick with circling is to make minor angle of bank adjustments: steepen your bank if readout exceeds 7.0 and flatten it if it drops below that value. Your general angle of bank will be about 10 degrees.

In order to be able to concentrate on flying the circle, you are allowed to engage autopilot ALTITUDE hold.

Fly three circles and use the world map to see how you did. Set GPS to KNMM

Over KNMM, start a 1000 fpm descending turn (30 degrees AOB), 250 knots and level off at 2,000 feet

Set weather to clear, enter the pattern and land (optional: touch and go)

Review checklists and procedures first.**TOPICS:**

Radio Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Set the Horizontal Situation Indicator (HSI) to match runway heading

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet and level off at 16,000 feet, 250 knots

DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:

ALTITUDE: +/- 100 FEET
SPEED: +/- 20 knots

Maneuvers:

After leveling off, proceed directly to EUTAW intersection. From there, turn to heading 090

When 8 miles from EUTAW, make a LEFT turn, 30 degrees AOB, toward heading 270 and intercept EUTAW on radial 225

Pass EUTAW and adjust course to maintain BRG 45 to EUTAW. You are now flying course 225 away from EUTAW

At 41 miles from EUTAW, freeze the sim and check out your position: it should be over the Kewanee VOR (EWA 113.80)

Set GPS to KNMM

Over KNMM, start a 1000 fpm descending turn (30 degrees AOB), 250 knots and level off at 2,000 feet

Set weather to clear, enter the pattern and land (optional: touch and go)

Review checklists and procedures first.**TOPICS:**

Radio Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Set the Horizontal Situation Indicator (HSI) to match runway heading

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet and level off at 16,000 feet, 250 knots

DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:

ALTITUDE: +/- 100 FEET
SPEED: +/- 20 knots

Maneuvers:

After leveling off, turn to course 272. Set GPS to UTESE intersection and intercept its 180 radial. So once the BRG value starts toward 180, start turning toward it.

Over UTESE, turn directly toward Meridian VOR (MEI 117.00), pass it and turn to heading 045

Set GPS to KNMM

Over KNMM, start a **2000** fpm descending turn (30 degrees AOB), 250 knots and level off at 2,000 feet

Set weather to clear, enter the pattern and land (optional: touch and go)

Review checklists and procedures first.**TOPICS:**

Radio Instrument

PREREQUISITE(S):

Startup mode in Flight Simulator:

1. T-2 at start of active runway at KNMM with idling engines, flaps in takeoff
2. Visibility set to minimum in Weather menu
3. No winds set

Set the Horizontal Situation Indicator (HSI) to match runway heading

Start your takeoff run, rotating at 100 knots. KEEP THE AIRCRAFT ALIGNED WITH THE RUNWAY!

Once the aircraft leaves the ground, keep a positive rate of climb all the way to 16,000 feet and level off at 16,000 feet, 250 knots

DEVIATIONS TOLERANCE FOR ENTIRE FLIGHT:**ALTITUDE: +/- 100 FEET**
SPEED: +/- 20 knots**Maneuvers:**

Create a flight profile based on the map on page 37

The profile should include

- 1 holding turn over a fix (=intersection)
- Two 10-mile circles around a VOR
- 1 descending turn, using a fix or VOR as starting/ending point
- Return flight to KNMM (identical to those in previous flights)

This concludes the RI-phase. Your next challenge will be the transfer to NAS Pensacola, where we will really be shaping up on typical Navy landings!

FORM-01

Review checklists and procedures first.

SKIPPED

Field Carrier Landing Practice and Carrier Qualification

Before you start going through this phase of your virtual training, make sure you have 'seen and heard' about FCLP and CQ. FCLP is lengthy: it consists of no less than 78 practice approaches (!) which result in a touch and go, concentrating on keeping a centered ball and correct lineup and angle-of-attack. By the end, you should be able to keep the proper speeds and altitudes while flying around the field. This should really prepare you well for the upcoming carrier landings.

FCLP and CQ are the main topics in the 1970 US Navy film "Down to the Wire". Search for it on YouTube (term: "*Down To The Wire (1970)*").

And while you are at it: also make sure you have seen "*Sabre Dance*". This film will show you what could happen if you should screw up on the combination of low speed and wrong angle of attack. Watch it and keep it in mind!....

Finally, my advise is to search for anything that has to do with carrier landings and watch as many YouTube-movies as possible on this subject. The more you have seen, the more potential dangers will be in the back of your mind.

ADVISE: use www.keepvid.com to paste the YouTube URLs of both movies in the search field and download the movies to your local computer in the format you prefer. That way, you'll be able to watch them without having to put a strain on your internet connection every time.

FCLP will take place at NAS Pensacola (KNPA). Make sure you have installed the KNPA scenery by "The Owl's Nest" in order to have the IFLOLS (meatball) available.

PREPARATION FOR FCLP

First, use a slewed flight mode (or a helicopter, if you are proficient using those in flightsim!) to spot the runways equipped with IFLOLS (Improved Fresnel lens optical landing system) at NAS Pensacola.

FIRST: Make sure you have set clear weather and positioned the tower right next to the chosen runway at about 4 feet altitude to simulate the instructor's seat during FCLP.

You can choose to use flightsim ATC during your FCLP runs. If you do, make sure ATC associates you with an IFLOLS-equipped runway.

Bear in mind that using flightsim ATC requires you to respond to their calls regarding landing clearance. Although this of course adds to realism, it will also be a constant 'interruption' on the concentration required for FCLP-maneuvers.

As said, FCLP consists of no less than 78 touch and go's. I have completed this run and you will find that your precision increases with each landing. By the end, I could really easily fly the pattern at the prescribed altitudes and speeds. That's where I found the satisfaction in this kind of flying: you actually see (and feel) progression in your flying. I used the Razbam T-2C, starting at 75% fuel load every time.

The 78 touch and go's are divided into 10 flights (FCLP-01 through -10). Nine of these consist of 8 landings, the tenth includes the remaining 6 ones.

One very important thing about this flight is the use of the virtual cockpit. Set at zoom factor 0.50, it will give you a good view and allow you to simulate looking 'into the turn'. **(The freeware T-2 as obtainable from flightsim.com does not have a virtual cockpit, which makes this aircraft a bit more difficult to use this way. The Razbam T-2C, on the other hand, has an excellent vcockpit.)**

Review checklists and procedures first.

TOPICS:

Field Carrier Landing Practice

PREREQUISITE(S):

Clear weather + aircraft set at an IFLOLS-equipped runway

Maneuvers:

Take off from the runway and climb to 800 feet, level off at 250 knots

[**] Turn 180 degrees to the left while idling the engines

Lower gear and flaps, extend speed brakes, maintain 150 knots and descend to 600 feet

Passing the start of the runway, start a gentle descending turn. Make sure that when you are 90 degrees off the final heading (runway heading), your altitude is no less than 450 feet

This is also where you would start using the virtual cockpit in order to allow yourself to turn the aircraft to the final approach heading while keeping the runway (and at some point the IFLOLS or "meatball") in sight

When rolling out on the final approach heading, your altitude should be no less than 300 feet. Use the IFLOLS and the angle-of-attack indicator to maintain proper speed and attitude.

Do NOT (!!!!) flare. Instead, 'fly' the aircraft to the ground at a constant speed

Upon touchdown, retract speed brakes, apply full power and do NOT allow the nose wheel to touch the ground. You should maintain angle of attack; the aircraft will immediately become airborne again

Retract gear and - above 200 knots - flaps

Climb to 800 feet and level off at 250 knots, then repeat all from [**]

Use the below table to check off your touch and go's

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

After the last touch and go, apply for a full-stop landing (or just make one)

Taxi in and shutdown systems and engines.

Review checklists and procedures first.

TOPICS:

Field Carrier Landing Practice

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1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

After the last touch and go, apply for a full-stop landing (or just make one)

Taxi in and shutdown systems and engines.

Review checklists and procedures first.**TOPICS:**

Field Carrier Landing Practice

PREREQUISITE(S):

Clear weather + aircraft set at an IFLOLS-equipped runway

Maneuvers:

Take off from the runway and climb to 800 feet, level off at 250 knots

[**] Turn 180 degrees to the left while idling the engines

Lower gear and flaps, extend speed brakes, maintain 150 knots and descend to 600 feet

Passing the start of the runway, start a gentle descending turn. Make sure that when you are 90 degrees off the final heading (runway heading), your altitude is no less than 450 feet

This is also where you would start using the virtual cockpit in order to allow yourself to turn the aircraft to the final approach heading while keeping the runway (and at some point the IFLOLS or "meatball") in sight

When rolling out on the final approach heading, your altitude should be no less than 300 feet. Use the IFLOLS and the angle-of-attack indicator to maintain proper speed and attitude.

Do NOT (!!!!) flare. Instead, 'fly' the aircraft to the ground at a constant speed

Upon touchdown, retract speed brakes, apply full power and do NOT allow the nose wheel to touch the ground. You should maintain angle of attack; the aircraft will immediately become airborne again

Retract gear and - above 200 knots - flaps

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Taxi in and shutdown systems and engines.

FCLP: Considerations

FCLP is a stage in which your landing technique is polished to the utmost level. Landing an aircraft on a carrier is aviation's most difficult task. The currency in this field is one that in real life is carefully maintained. Reason for this is that the skill of carrier landings is a complex one that is 'perishable'. In other words: it is humanly impossible to stay away from carrier operations for let's say 6 months and then pick up as if your last carrier landing was 24 hours ago.

The landing technique used in FCLP is the exact same one as used during the next stage: carrier qualification (CQ).

In order to judge how you are doing, I recommend playing back the last 20-30 seconds immediately after you have left the tarmac and view that replay from the tower view (see page 45). Be critical: these sessions are about precision. Your performance here determines how you will be doing during CQ.

Carrier Qualification (CQ)

As I have not been able to get a carrier moved to the Gulf of Mexico (where in real life carrier quals took place), I have opted to start CQ from NAS Jacksonville. The carr2006.zip file has the USS John F. Kennedy (CV-67) positioned East of that base.

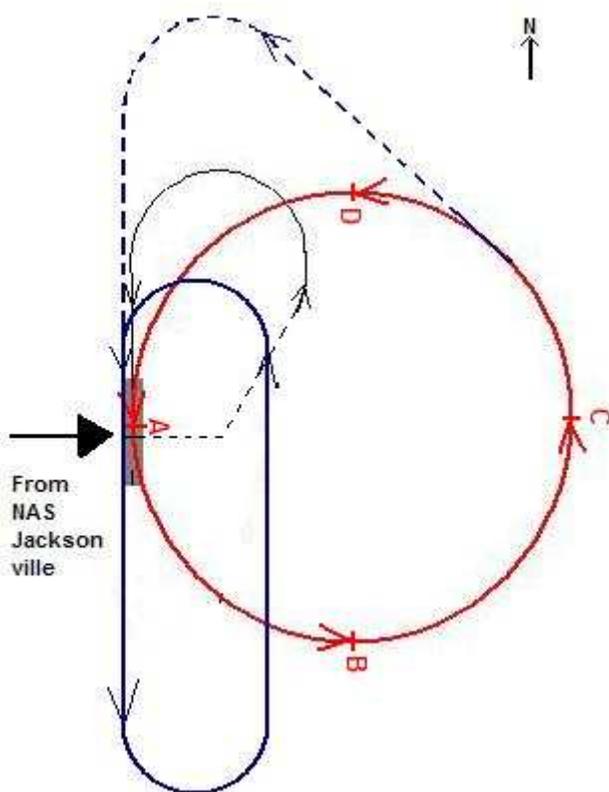
Set your ADF to frequency 367. If you have the NAV2 radio available, you may want to set it to 108.40. Set your NAV1 radio (which will control the ILS) to 110.30.

Set your VOR1 to 184, which is the final heading toward the landing deck.

IMPORTANT: The landing deck is headed a few degrees to the left in relation to the ship's actual heading. This means that the ship should be steaming at a heading at approximately 190-192 degrees.

Take off from NAS Jacksonville, climb to 4000 feet and at the same time turn toward heading 100

Once the ADF needle zeroes in on the carrier's NDB, turn directly toward it



You will be coming in from the west, meaning your heading is roughly perpendicular to the final approach heading. Just keep flying and cross the ship (note the ADF needle tumble and start pointing to your tail!).

At about 2 miles from the carrier, decrease speed to 250 KIAS and start a wide circle (AOB 15-20 degrees) to the left, circling back toward the ship. Cross the ship again and complete one more circle (ABCD).

The small dotted line with the angle in it, is the course you follow then overflying the carrier upon arrival on station. You turn back toward the carrier as described above.

Then you start following circle ABCD, the familiar wide circle (maximum of 5 miles from the carrier).

Point C is where you start your descend to 800 feet above the sea, following the dotted line in the upper part of the diagram. You follow that dotted line till you pass over the ship at 250-300 KIAS.

In order to get used to the ship, your first two passes will be touch and go's (like in FCLP). Aboard the carrier, a touch and go is known as a bolter pass. It is of course very important to keep your hook up during this sequence! Disable ArrestorCables (SHIFT+F12) to make sure you can't make an arrested landing

Set up the tower view to be roughly at the LSO position near the back of the ship with a good view on the landing area.

NEXT: NAVY BREAK

This maneuver (executed AFTER passing the bow of the ship) involves idling the engines and banking sharply to the left (60-70 degrees) while maintaining 800 feet, changing course by 180 degrees. You should end up flying directly opposite the ship's course at a distance of 1-1.5 miles.

BOLTER BOLTER BOLTER

On the downwind leg, lower gear, flaps and extend speed brakes, maintain 150 knots and descend to 600 feet

When you are abeam the fantail of the carrier, start the familiar turn toward it: 450 feet at 90 degrees of the final approach heading (in this case heading 274) and 300 degrees when you roll out facing the landing area (heading 184)

Carry out the procedure as taught in FCLP: upon touchdown retract speed brakes, maintain angle of attack and apply full power. Your aircraft should be running off the end of the landing area at flying speed

Climb back to 800 feet and turn back for another bolter pass.

THE TRAP

After the second bolter pass, it is time to do it for real. Repeat the procedure, this time including the lowering of the tailhook. **Press SHIFT+F12 to re-enable ArrestorCables and note the message at the top of the screen.**

Approach and landing technique are of course identical, only this time your aircraft should come to a halt. Keep the power up until you notice a rapid deceleration, then pull the throttle back to idle.

Raise the hook and taxi out of the landing area, toward one of the bow catapults.

THE CAT SHOT

Once your aircraft is on one of the catapults, centered and far enough forward to have the jet blast deflector (JBD) raise itself, brake. Set parking brake and press SHIFT+F9. You should see a message confirming that the catapult is armed. A similar audio message can also be heard. The catapult is now ready to launch your aircraft.

CHECKLIST

Flaps_____takeoff

Speedbrakes_____in

Trim_____slightly up (as required)

Parking brake_____set

Catapult_____set (SHIFT+F9)

Controls_____able to move freely

Rudder_____centered (no deflection)

Power_____set to full

Launch_____press wheel brake control (default: `.`)

Depending on ArrestorCables settings, you will now be launched at 150+ knots off the bow of the carrier.

Keep 8-10 degrees nose up and climb to 800 feet

Proceed with the normal procedure for your next landing

The requirement for this stage is 2 bolters and 4 traps (see next page).

Review checklists and procedures first.**TOPICS:**

Carrier Qualification

PREREQUISITE(S):

Clear weather + aircraft set at NAS Jacksonville, active runway (KNIP)

Maneuvers:

Take off and fly to the East, see the diagram on page 57

Carry out the described procedures along this schedule:

T-2C CARRIER QUALIFICATION	
Action	Check
1 st bolter	
2 nd bolter	
1 st trap – 1 st launch	
2 nd trap – 2 nd launch	
3 rd trap – 3 rd launch	
4 th trap – 4 th launch	
RETURN TO NAS JACKSONVILLE	
Land and shutdown	

After the 4th launch, head west back toward NAS Jacksonville. Land there, taxi to the platform, shut down, get out and enjoy a cold beer!

You next port of call will be NAS Kingsville, Texas, in order to start training in the (A)F-9J jet trainer.

