

Simwings

Virtual Accelerated Co-pilot Enrichment program



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Welcome

The USAF Strategic Air Command (SAC) had T-38 Talons in service from 1978 until SAC's deactivation in 1991. These aircraft were used to enhance the career development of bomber/tanker co-pilots through the "Accelerated Copilot Enrichment Program." They were later used as proficiency aircraft for all B-52 and B-1 pilots, as well as Lockheed SR-71, U-2, Boeing KC-135, and KC-10 pilots. SAC's successors, the Air Combat Command (ACC) and the Air Force Global Strike Command (AFGSC), continue to retain T-38s as proficiency aircraft for U-2 pilots and B-2 pilots, respectively.

vACE puts you in the cockpit of T-38's flying from several (former) SAC bases as part of the ACE program in the 1980s. Emphasys will be on aerobatics, cross country flying, and instrument and visual approaches, including touch and go's. Special repaints can be obtained via the site. The basic FS airframe is the T-38 Talon by FSD.

The cross-country flights described in this document were created after reading the Osprey Superbase series, volume "Seymour-Johnson AFB".

Some flight elements were modeled after maneuvers described in the T-38 pilot's manual.

All flights are meant to be used in Microsoft's Flight Simulator® or any other flightsim at recreational level. I used Flightsim 2004: A Century of Flight ® in the creation process. Formation flights were created using FSRecorder and the repaints made available on Simwings.nl were created using DXTBmp (bitmap manipulator).

All repaints and flights are non-commercial (freeware) creations; do not abuse them.

Have some nice flights!

Marcel Hendrikse
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Introduction to the principle of vACE

The Accelerated Co-pilot Enrichment program was designed to allow KC-135/KC-10/bomber co-pilots to gain 'stick time' at the controls of an advanced jet. Commanding an aircraft helped them gain (and improve) their decision-making skills. The flights also allowed them to amass pilot in command hours which of course counted toward their promotion to aircraft commander.

The missions of vACE consist mostly of cross-country trips to other air force bases. Once arrived there (either as a single plane or in a two-ship formation), touch and go's are practiced on the active runway. After a number of touch and go's, a full-stop landing will be made. While the aircraft are re-fuelled and serviced for the flight back home, the pilot's fill out the maintenance forms, plan their return trip and enjoy a break.

Then it's time to return to the home base: file a flight plan, check the weather, preflight checks, taxiing to the active and finally taking off. At the home base, fuel permitting, some additional touch and go's can be executed before the full-stop landing and shutdown.

Other flights may concentrate on aerobatics: Split-S, Loop, Immelmann, (half) Cuban-8, aileron roll and barrel roll. These manoeuvres will be explained/described later on.

vACE

Simwings vACE flies out of several USAF bases in the central United States. The most realistic experience is to use real-world weather, combined with a fixed startup mode:

- Create a flightsim mode that puts your T-38 at a parking spot at the AFB of your choice;
 - Make sure the aircraft systems and engines are shut down in order to force yourself to go through a realistic startup sequence;
 - **Make sure to set up real-world weather;**
- Determine where you are going and at which altitude. First listen to the ATIS so you will know the exact weather conditions;
- Take off and set course for the destination

Possible destinations

On the next page, you will find a table containing an overview of departure and arrival bases. Distances and vectors are included for reference. Keep FL220-FL300 as your reference altitude for cross-country flying in the T-38. As for speed, aim for .85-.90 Mach.

As the ACE program was hosted by the Strategic Air Command (SAC), the majority of the bases in the table are former/current USAF bomber/refuelling/air transport bases.

From	To	Distance	Heading
Barksdale AFB (KBAD)	Little Rock AFB (KLRF)	163.5	R-027
Barksdale AFB (KBAD)	Keesler AFB (KBIX)	273.0	R-116
Barksdale AFB (KBAD)	Columbus AFB (KCBM)	271.1	R-074
Barksdale AFB (KBAD)	Altus AFB (KLTS)	308.8	R-296
Dyess AFB (KDYS)	Holloman AFB (KHMN)	316.9	R-276
Dyess AFB (KDYS)	Vance AFB (KEND)	254.1	R-022
Dyess AFB (KDYS)	Randolph AFB (KRND)	191.4	R-154
Dyess AFB (KDYS)	Barksdale AFB (KBAD)	313.6	R-091
McConnell AFB (KIAB)	Offutt AFB (KOFF)	219.0	R-016
McConnell AFB (KIAB)	Sheppard AFB (KSPS)	226.0	R-196
McConnell AFB (KIAB)	Whiteman AFB (KSZL)	187.6	R-068
Mountain Home AFB (KMUO)	Fairchild AFB (KSKA)	284.4	R-345
Mountain Home AFB (KMUO)	Beale AFB (KBAB)	343.8	R-229
Mountain Home AFB (KMUO)	Hill AFB (KHIF)	208.3	R-122
Offutt AFB (KOFF)	Elsworth AFB (KRCA)	365.6	R-302
Offutt AFB (KOFF)	McConnell AFB (KIAB)	219.0	R-197
Offutt AFB (KOFF)	Whiteman AFB (KSZL)	179.8	R-142
Seymour-Johnson AFB (KGSB)	Pope AFB (KPOB)	52.6	R-259
Seymour-Johnson AFB (KGSB)	Myrtle Beach AFB (KMYR)	110.5	R-206
Seymour-Johnson AFB (KGSB)	Langley AFB (KLF1)	130.2	R-036
Seymour-Johnson AFB (KGSB)	Shaw AFB (KSSC)	148.6	R-237

This table is subject to potential future expansion and to the fact that it should only be used for **recreational MS Flight Simulator ® flights**.

What to fly

All flights should be carried out flying the FSD T-38 Talon. At <http://www.simwings.nl/ace>, you can find a shortcut to the .zip file containing numerous repaints for this product, representing the typical white repaint associated with T-38 training units.

SAC leased its T-38's for the A.C.E. program from AETC (Air Education and Training Command) and these aircraft very seldomly received any changes in their appearance. AETC decals and registration numbers were kept intact. AETC ground crew and equipment were also sent to the SAC units on temporary basis.

The repaint pack includes instructions on how to make the model visible within your FS2004 installation. For each repaint, I have configured both the clean and the baggage pod versions. The pack is/will be also available from Flightsim.com, by the way.

Missions

As stated before, vACE missions can roughly be divided into two categories

1. **Cross country flights.** During these flights, you will basically travel (and navigate) to a USAF base where, upon arrival, you will carry out a couple of touch and go's. Then you request landing clearance and you taxi to a parking spot. Refill the tanks, take a break, then return to your 'home' base. There, you are advised to also make 1-2 touch and go's prior to actually landing.
2. **Aerobatics/stalls.** These flights involve flying to an area of your choice (advise: study the surrounding areas of your departure base on SkyVector.com; you might well find an MOA where you can practice aerobatics!) and start practicing aerobatic manoeuvres in order to enhance you self-confidence in the T-38. Prior to landing, request to make 2-3 touch and go's to stay proficient.

A note on Aerobatics: download the T-38 manual from http://static.e-publishing.af.mil/production/1/af_a3_5/publication/afman11-251v1/afman11-251v1.pdf

Then refer to section 5E, where all aerobatic maneuvers are described in detail, including starting airspeed and airspace room needed.

Extra missions (SR-71 crews)

Next to the missions mentioned above, an extra set of missions can be flown from Beale AFB, Ca. (KBAB). Background of these missions: you're an SR-71 pilot and use the T-38 for remaining current in high-performance jet aircraft. The SR-71 had a high pricetag per flight, meaning that it was used only for operational missions and post-maintenance functional checkflights (FCF's).

Instead, Blackbird pilots (flying an aircraft that had no speedbrakes or flaps, just elevons!) used the T-38 without deploying the flaps or using the speedbrake for flying the pattern. In this configuration, the T-38 came quite close to the SR-71 in terms of handling characteristics. Next to that, their proficiency exercises were more or less the same as the 'regular' SAC pilots.

From Beale AFB, plan trips to airports that cover distances between 150 and 300 miles. The standard MOA (Military Operating Area) of Beale AFB was Whitmore (about 60 miles NNE of Beale). That's where you can go to practice aerobatics and stalls. Next to that, make sure you practice no flap/no speedbrake touch and go's whenever you can at Beale or any location you visit, coming from Beale.

Flying the FSD T-38 Talon

vACE assumes considerable FS (fighter-like) jet experience on your part. You will need to be familiar with the way simulated modern jet fighters respond to control inputs by the pilot. FS models come in many brands and flavours. Some designers have the tendency to 'over-do' the strength of the airbrakes, causing their otherwise fine models to come to an airborne screeching halt which is very unrealistic. Others have misjudged the flight parameters and limits of the real thing, causing their jet to be able to land at speeds that would have sent the real thing into a stall long before getting actually to that speed.

Many models, however, are a joy to fly. The FSD T-38 definitely is one of them, providing you're aware of its ideosyncrasies.

Like the real T-38, FSD's model can snap-roll: rolling along the longitudinal axis at speeds exceeding 360 degrees per second! And like the real deal, FSD's T-38 requires you to maintain **45-60 degrees angle-of-bank** in the pattern in order to prevent you from flying across half the state while turning to downwind while circuit flying.

One thing you should pay special care to is the aircraft's response in pitch. At approach and landing speeds, the pitch of the aircraft can be controlled easily by using the pitch trim. However, when the airspeed starts exceeding 250 knots, the effect of the pitch trim is suddenly 'enlarged'. The T-38 will then tend to sharply pitch up or down, even with mild trim inputs. My advise: leave the pitch trim alone when exceeding 250 knots and concentrate on using the stick (the elevators) to control the aircraft's movement in pitch direction.

Of course, during cross-country flights, you are eventually allowed to use the autopilot to keep the aircraft at altitude, but I'd suggest you first practice holding the altitude in the manual mode by simply using your control stick and keeping off the trim button.

While practicing touch and go's, don't hesitate to experiment with different aircraft setups:

- No-flap landing
- No-flap landing with speed brakes extended
- T/o flap landing
- T/o flap landing with speed brakes extended
- Full flap landing
- Full flap landing with speed brakes extended

Each setup will require your focus, especially the ones where the speed brakes are extended. Don't forget that pulling back on the power will have a larger and/or faster effect in the 'speed brake extended'-configuration, so be carefull with your throttle inputs! The speed brakes on the FSD T-38 are quite effective; their braking effect can easily be diminished and broken by the engines, providing they're both functional.

The Talon's climbing performance is good. With full military power (100% without afterburner), you can make a nice climb at 300 knots, using the pitch of the aircraft to maintain that speed and leaving the throttle in the MIL power setting.

With full afterburner engaged (use SHIFT+F4 after applying full MIL), you can climb at about 400 knots, again using pitch to maintain speed.

I will not provide joystick setting recommendations, as these are – I've noticed over the years – quite personal. So go with your own settings and adjust them where needed.

Flying the pattern in the T-38

The manual mentioned on page 6 also contains information on how to fly the pattern. One of the most important quotes is shown below:

4.5.2. Normal Closed Pattern. With clearance for the closed pattern, *begin the pull-up with a minimum of 240 KCAS*. Normally, power will be in MIL, although a closed pull-up from a go-around may require less power. Execute a climbing 180-degree turn, *maintaining a minimum of 200 KCAS until wings-level on downwind*. Consider winds (overshooting or undershooting), and establish the proper crab on rollout. Visually clear for traffic in the break and for other aircraft on downwind.

The normal no-wind spacing is approximately 1 to 1.3 miles for a 1,500 feet AGL traffic pattern. Don't mind the "KCAS" speed designator: 200 on the dial, that's what you aim for.

Another important piece of information from the manual:

“Halfway around the final turn, check altitude; you should lose about half the altitude between traffic pattern altitude and rollout altitude ...”

This means that during the first 90 degrees of heading change from downwind to base leg, you should lose 750 feet of altitude. One good advise: **use the virtual cockpit @ 0.75/0.50 zoom factor to allow yourself to 'look into the turn'.**

While practicing touch and go's, you can also include some missed approaches. Make sure that at all times you retract the landing gear prior to reaching 240 knots.

Engine responses to throttle input are good, yet somewhat sluggish as one might expect from a jet engine (as opposed to a prop engine). The general advise I can give you regarding the T-38 engines is to keep your inputs modest/small, avoiding sudden and drastic power setting changes (such as cramming on the power too late, yet expecting near-instant response or pulling too much power off the engines while close to the ground, e.g. during final approach).

T-38 repaints for the vACE program

Based on pictures I found in publications I own, I have created a number of T-38 repaints. All repaints are the white AETC standard with different tail banner colors (blue, red and gold). The aircraft.cfg file adjustments are in the accompanying instruction file. Each repaint can be done with and without baggage pod.

These repaints are/will be available on the Simwings vACE site and also downloadable from Flightsim.com.

I hope you will enjoy the vACE flights!

Best regards,
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