

# Operations Manual - 2006

## VandenbergAFB

### **VandenbergAFB**

An Add-on for  
Orbiter Space  
Flight Simulator

### **Author**

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### **Sources**

GoogleEarth.com, WorldWind.com  
Terraserver.com, Calspace.com  
Vandenberg.af.mil/ & outstanding  
photos at [www.ktb.net/%7Ebillmeco](http://www.ktb.net/%7Ebillmeco)



V. 2.0 for Orbiter 2006  
May 2006

### **Special Thanks**

**Martin Schweiger**  
for *Orbiter Space Flight Simulator*  
(patched through v. 05216)

**Mr. Batman & SimFan**  
for Forum strings on surface tiles

**AR81**  
for base and runway tutorials

**Kev33**  
for *K-SLC-6*

**GregBurch**  
For getting me started in this time  
consuming madness - thanks a lot

## **BACKGROUND**

Vandenberg Air Force Base covers 155 square miles on the central coast of California, 150 miles northwest of Los Angeles. VAFB is the only base in the United States from which satellites are launched into polar orbit -- Antarctica is the first landfall when launching south from Vandenberg. As of November, 2005, 1,858 orbital and ballistic missiles have lifted off from Vandenberg. The 30th Space Wing, under the 14th Air Force, is in command of all launch operations from Vandenberg so the add-on logo uses the 30th's insignia.

Vandenberg AFB is divided into two sections. The ICBM launch sites north of the airport are used for testing ballistic missiles and training missile crews. The Space Launch Complexes for orbital flights are located over a wide area west and south of the airport. Currently, Space Launch Complex 2 (SLC-2, pronounced "slick two") is used for launching Delta II rockets. SLC-3 East serves the Atlas V. The above-ground structures at SLC-3 West were recently demolished. Titan II rockets were launched from SLC-4 West and the last Titan IV lifted off from SLC-4 East in October, 2005. Plans are being made to renovate the SLC-4 launch structures. Construction on SLC-6 began in 1966 to serve as the launch site for the Manned Orbiting Laboratory, and perhaps the X-20. But those projects were canceled. SLC-6 was renovated in 1979 to serve the Space Shuttle, but the Challenger accident canceled that effort. Lockheed Martin launched three commercial satellites from the site from 1995 to 1999. The site is currently being renovated by Boeing to serve the Delta IV. The newest launch complex, SLC-8, is the launch site for

Spaceport Systems International, a private firm using decommissioned ICBMs to launch commercial satellites.

## **CHANGES for 2006**

The directory structure is updated to conform to Orbiter 2006. Base meshes are placed in a VandenbergAFB sub-folder. Textures that need to be listed in the Base.cfg file do not seem to work properly when placed in a sub-folder. The textures associated with VandenbergAFB remain in the Textures folder.

The base surface tiles now have an alpha mask covering the water areas of tiles, permitting Orbiter's water texture to run right up to the beach. This greatly improves the appearance and keeps the Vandenberg surface tiles on the same level of development with the Orbiter 2006 Kennedy Spaceflight Center.

## **INSTALLATION**

1. Copy the zipped files into your corresponding Orbiter folders. Preserve the directory structure.
2. **No need to edit your Earth.cfg file!** The VandenbergAFB-2006 folders conform to Orbiter 2006 directory structure. Orbiter's default Vandenberg.cfg will be overwritten and the new base correctly located.
3. **Edit your CONFIG\Base.cfg file!** Under the heading BEGIN\_TEXTURES add the following two lines to the list:

**VAFBDeltaBlue**  
**VAFBconcrete**  
**VAFBasphalt**  
**K-Mount-1**

## SCENARIOS

The VandenbergAFB add-on includes the scenario file **VAFB Position Master.scn** which places a standard Delta Glider at VAFB, Runway 30. Open up the scenario file with a plain text editor and look at the BEGIN\_SHIPS section. POSITION lines are included for several of the Space Launch Complexes, and for each end of the runway. All but one of the POS lines are "covered up" by a semicolon. Orbiter will not read a line of text following a semicolon. Try covering up the POS line for runway 30 with a semicolon, and uncovering a different POS line by deleting its semicolon. Save the file, start Orbiter, and the Delta Glider will appear at the new location. Be careful -- uncovering more

than one POS line (or uncovering none at all) may cause Orbiter to crash to desktop.

To place another ship at a Vandenberg runway or SLC, simply open up the ship's scenario file and copy the appropriate POS line from VAFB Position Master. Delete any other POS or BASE lines from the scenario (or cover up the lines with semicolons) and save the file. You may also need to alter the ship's vertical location in the Scenario. Refer to your ship's own documentation.

A second scenario file that comes with VandenbergAFB is for use with Kev33's K-SLC-6 add-on, described in the Add-on section below.

[The ship definition portion of VAFB Position Master.scn]

```
BEGIN_SHIPS
GL-01:DeltaGlider
STATUS Landed Earth
POS -120.56755 34.72100 ;VAFB Runway 30 (southeast end) HEADING 316.75
;POS -120.60077 34.75014 ;VAFB Runway 12 (northwest end) HEADING 136.75
;POS -120.6230320 34.7541900 ;SLC-2W launch table coordinates - Delta II
;POS -120.5893715 34.6391721 ;SLC-3E launch table coordinates - Atlas V
;POS -120.6101125 34.6310700 ;SLC-4E launch table coordinates - Titan IV
;POS -120.6151950 34.6320580 ;SLC-4W launch table coordinates - Titan II
;POS -120.6265787 34.5804914 ;SLC-6 launch table coordinates - Delta IV, STS, MOL
;POS -120.6325320 34.5757555 ;SLC-8 launch table coordinates - Minotaur
HEADING 316.75
PRPLEVEL 0:1.000 1:1.000
NAVFREQ 402 94 0 0
XPDR 0
NOSECONE 0 0.0000
GEAR 1 1.0000
AIRLOCK 0 0.0000
END
END_SHIPS
```

## CONFIGURATION

The **Vandenberg.cfg** file begins with three meshes that place mountains at the south end of the base. The mountains are high-polygon count, so they are covered with semicolons. You can uncover one, two, or all three -- as many as your computer's memory will handle. They do add something to the look. I would be happy for other developers to create mountains that maintain the look, but have a lower impact on computer memory. The mountain mesh is edited from Kev33's K-SLC-6 add-on (K-SLC-6 includes Kev's 3ds files and an invitation to add and modify - much appreciated). I created two versions of a replacement texture file (K-Mount-1.dds) to make the mountain colors blend in with the surface tiles, one with Orbiter HiRes colors and another with Level 9 colors.

Vandenberg.cfg also models a well-developed airport -- runway, taxiways and buildings. The Space Launch Complexes are more simply modeled, using standard Orbiter block shapes and textures to represent the essential above-ground structures. A typical SLC has a foundation slab, launch table, fixed umbilical tower and a mobile service tower located in its roll-back position. I regard these structures as "place holders," opportunities awaiting detailed treatment by other add-on developers. I would only ask that all developers respect the POS line of the launch tables. The center point of each launch table matches the POS coordinates in the **VAFB Position Master.scn** scenario, and the launch tables are correctly located on the base surface tiles.

## **ADD-ONS**

To install an add-on launch complex you must first edit CONFIG\EARTH\BASE\Vandenberg.cfg to remove the "place holder" structures. Cover up the structures with semicolons or delete the lines altogether. The Space Launch Complexes are well-labeled in the Vandenberg.cfg file, and separated with triple spaces. It should be hard to go wrong, but do back-up the original before you edit.

### **Installing K-SLC-6**

To the best of my knowledge, Kev Shanow's **K-SLC-6** add-on is the only Vandenberg Space Launch Complex to be developed thus far. It is a beautiful piece of work, with animated service structures and umbilical arms, but you will need a mid-range to high-end computer to make it work. To install K-SLC-6 with VandenbergAFB:

1. Delete the SLC-6 "place holding" structures from CONFIG\EARTH\BASE\Vandenberg.cfg. See above.
2. Copy the K-SLC-6 files to the appropriate folders, but DO NOT copy the K-Mount-1.dds texture file. Use the replacement K-Mount-1.dds texture file that comes with the VandenbergAFB add-on. This provides correct color matching between the K-SLC-6 mountain and the VandenbergAFB surface tiles.
3. The Atlantis scenario that comes with K-SCL-6 places the launch complex several kilometers east of its actual location. Use the VandenbergAFB scenario:

**Atlantis-VandenbergAFB & K-SLC-6.scn**

## **OPPORTUNITIES**

In addition to the launch complexes, VandenbergAFB offers opportunities for developers to create some new spacecraft [www.calspace.com](http://www.calspace.com) is the web site of Spaceport Systems International. It has a wealth of detailed information on their new SLC-8 and the Minotaur rocket. Information on the Pegasus rocket system can be found at [www.orbital.com](http://www.orbital.com). The privately launched Pegasus delivers small satellites to low earth orbit using a winged, air-launched missile carried aloft by an L-1011 carrier ship. Flights have originated from several locations around the world, but primarily from Vandenberg.

It would also be neat if some Orbiter developer could come up with historical documentation on SLC-6, from the mid 60s, to compliment the existing Manned Orbiting Laboratory and the X-20 add-ons.

## **OPEN LICENSE**

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