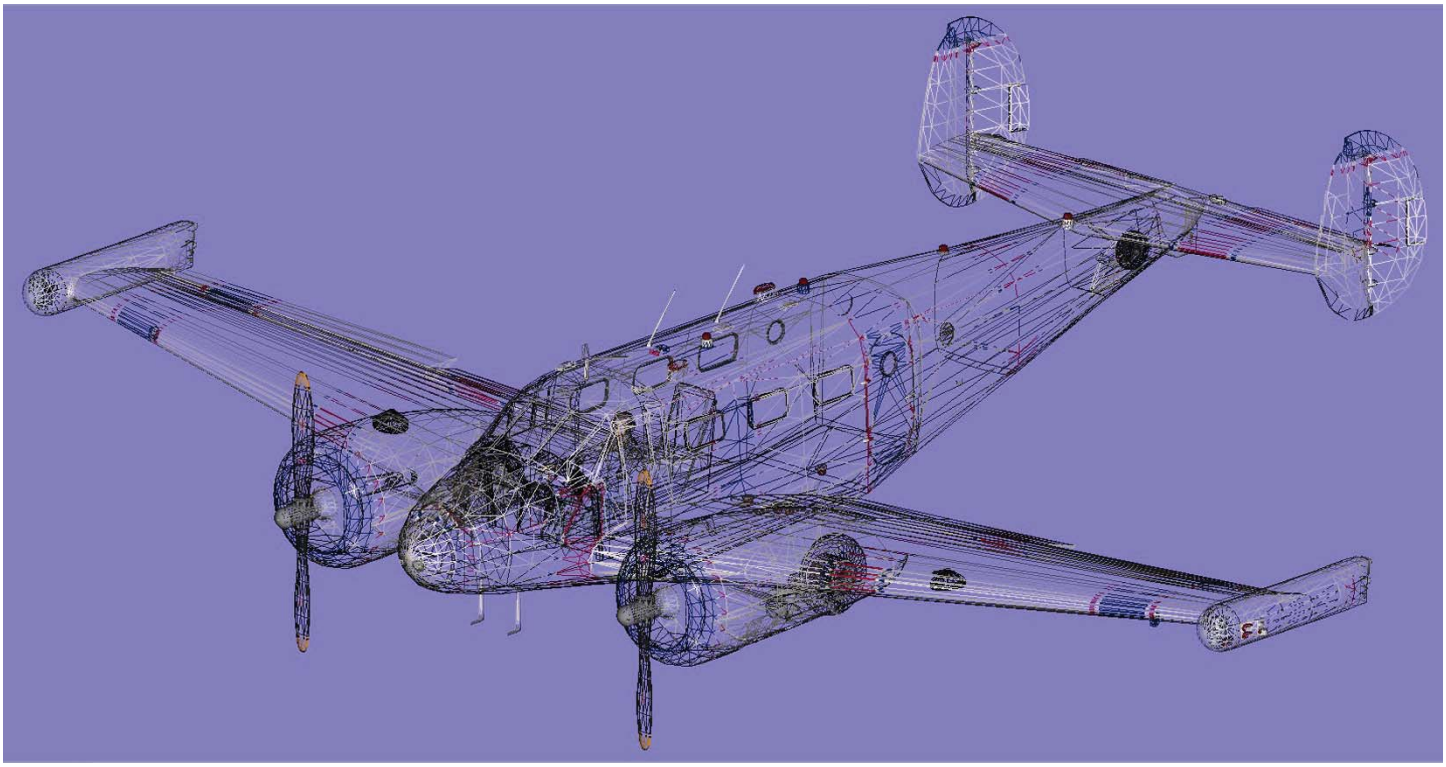
TECHNICAL NOTES
BEECHCRAFT C-45H N8640E
GRIMES FLYING LABORATORY MODEL



gmax C-45H Wire Frame Model

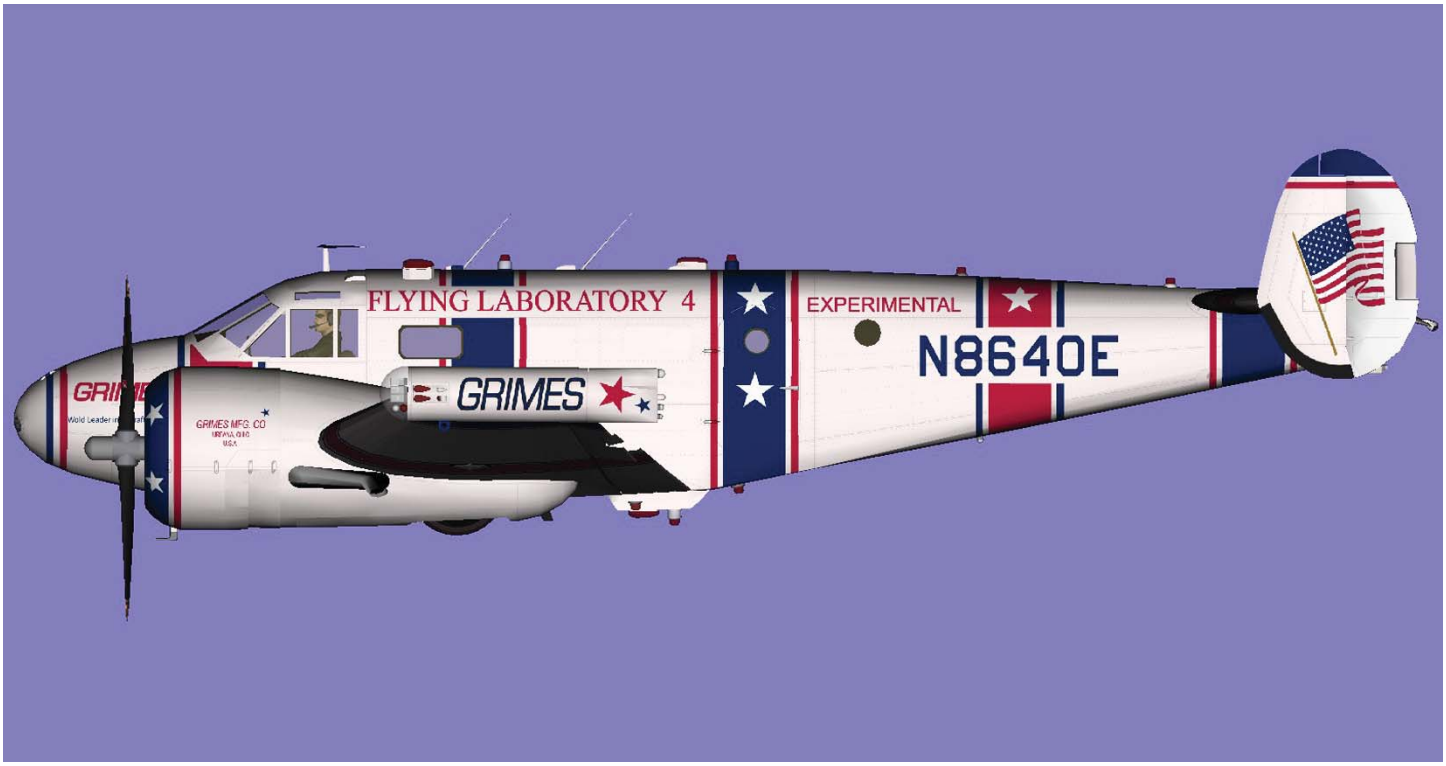
The Grimes Flying Laboratory (https://www.facebook.com/GrimesFlyingLab/posts?ref=page_internal) is a unique and colorful aircraft lighting demonstrator. The Flight Simulator aircraft airframe configuration is at least representative of the real aircraft and complete including exterior lights. Twelve (12) beacon, 4 landing, 11 navigation and 26 strobe lights are modeled. In the current configuration, all lights of the same type are controlled by a common switch. For example, the cockpit “BEACON” switch turns on all beacons. At the present time, aircraft interior including the virtual cockpit and lighting controls is not representative of the real aircraft.

The aircraft model configuration includes the D-18S/C-45H/SNB-5 fuselage with upper antenna pod removed, nose mounted landing lights, non-vented engine cowlings and wing tip pods. Main cabin door hinges were also added. A significant modeling challenge was supporting the detailed painting scheme on the aircraft.

The duplication of text, stripe, star and US flag graphics required crossing the intersection of texture maps and resulted in remapping and or adjusting all of the main texture maps of the model. A complete set of Flying Laboratory textures, rendered in both vector and bitmap form, were developed for this purpose.

The following specific colors were used:

Red - Old Glory Red - RGB - 187,19, 62
White - Flag - RGB - 255, 255, 255
White - Aircraft - RGB - 255, 245, 245
Blue - Old Glory Blue - RGB - 0, 38, 100



The following fonts were used:

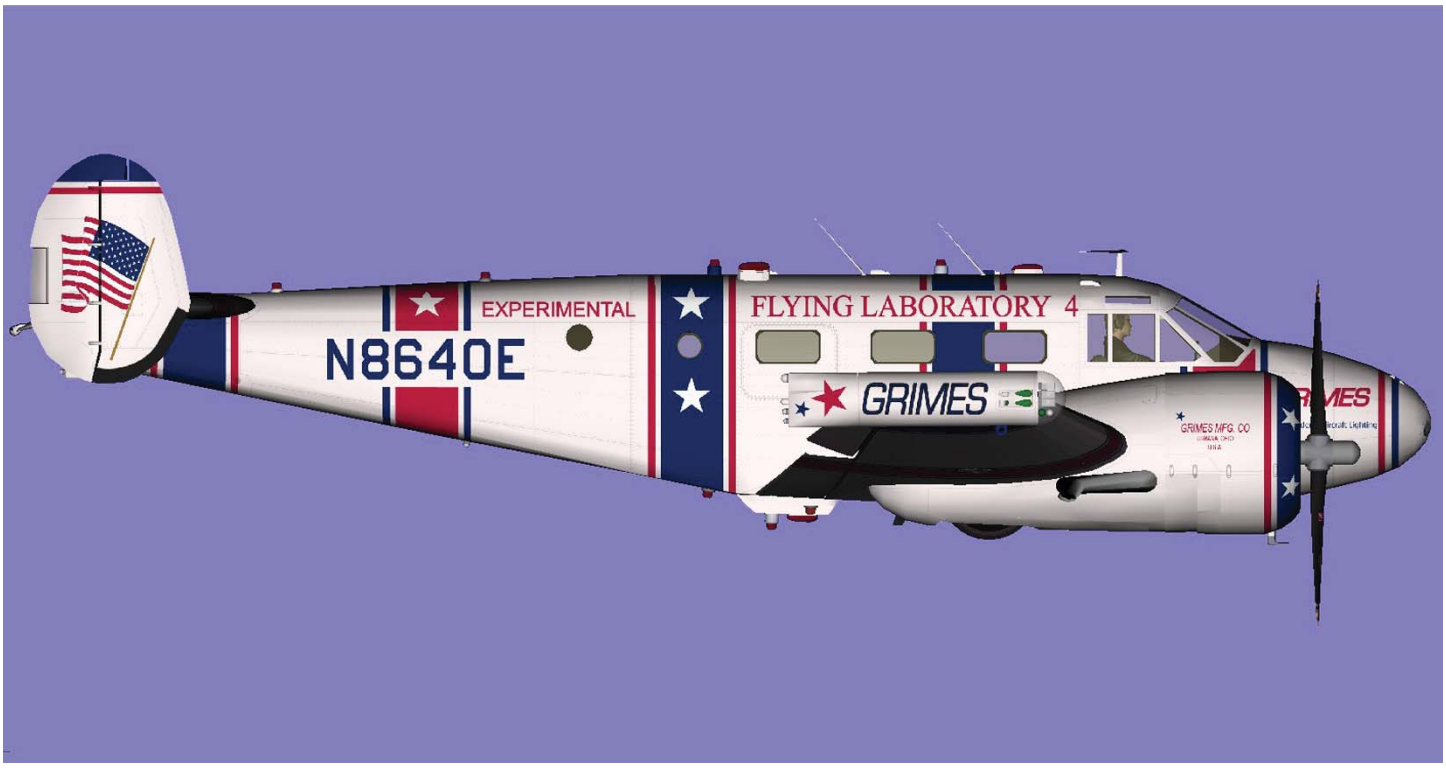
Arial - regular and modified stroke and compression

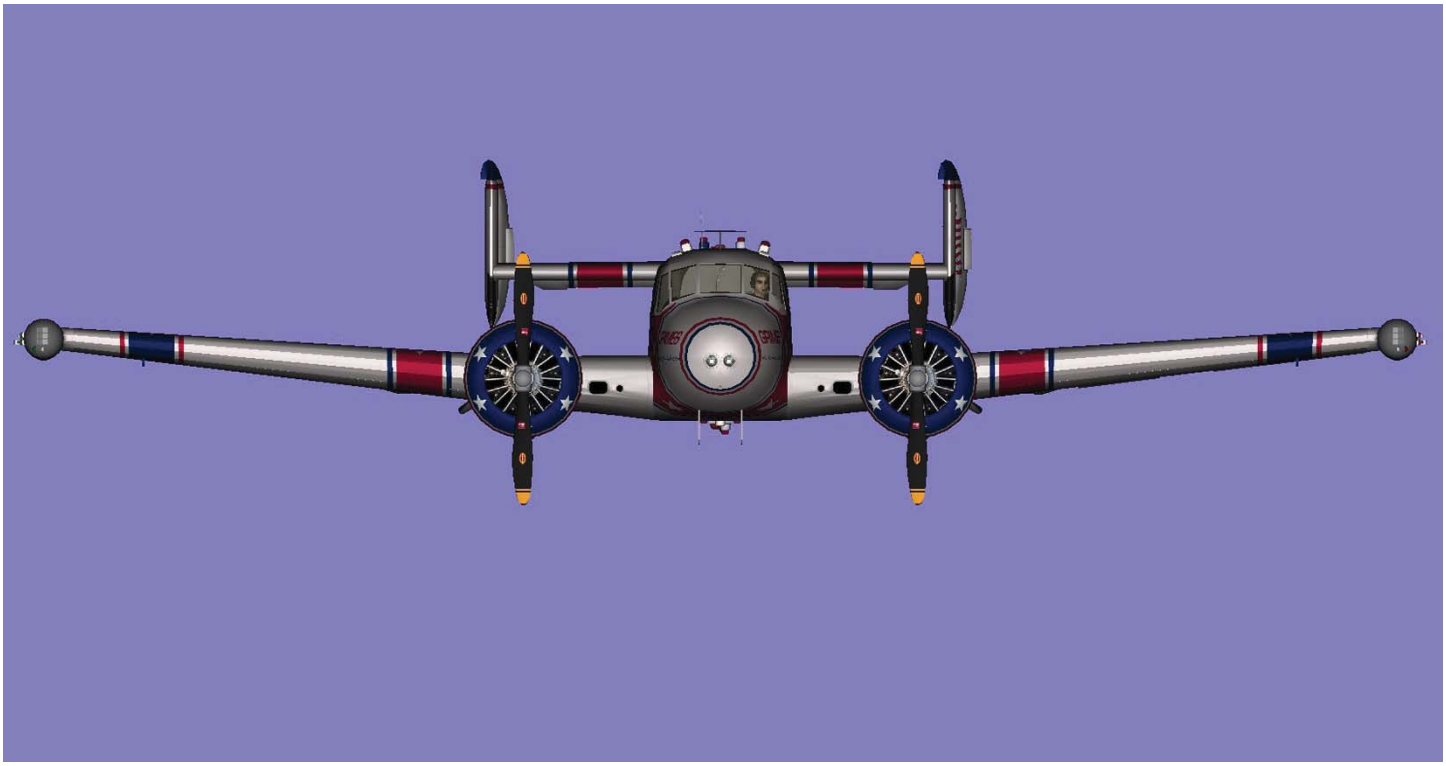
Brush Script

Drawn Commercial Masked Font - modified stroke and compression

Square 721 BT Roman - modified stroke and compression

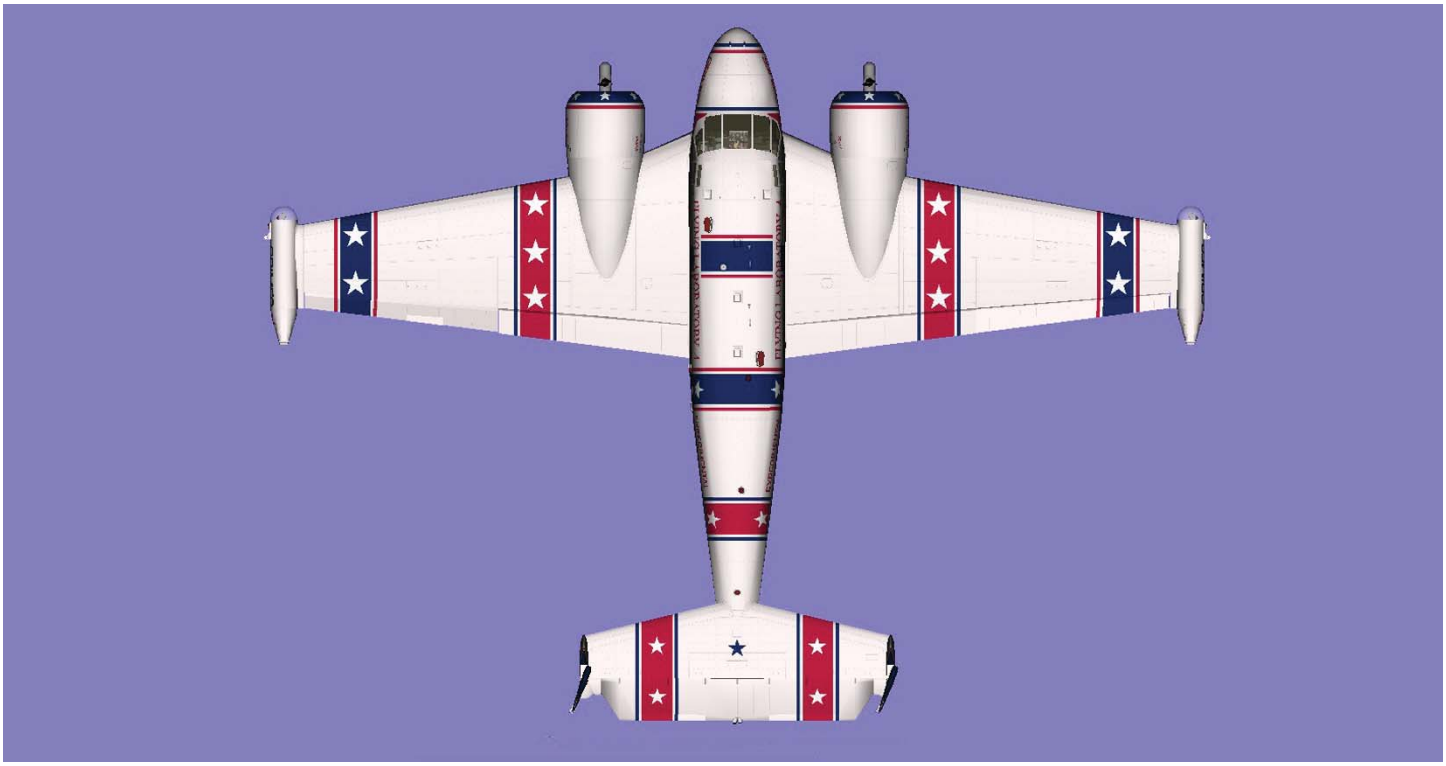
Times New Roman - modified stroke and compression



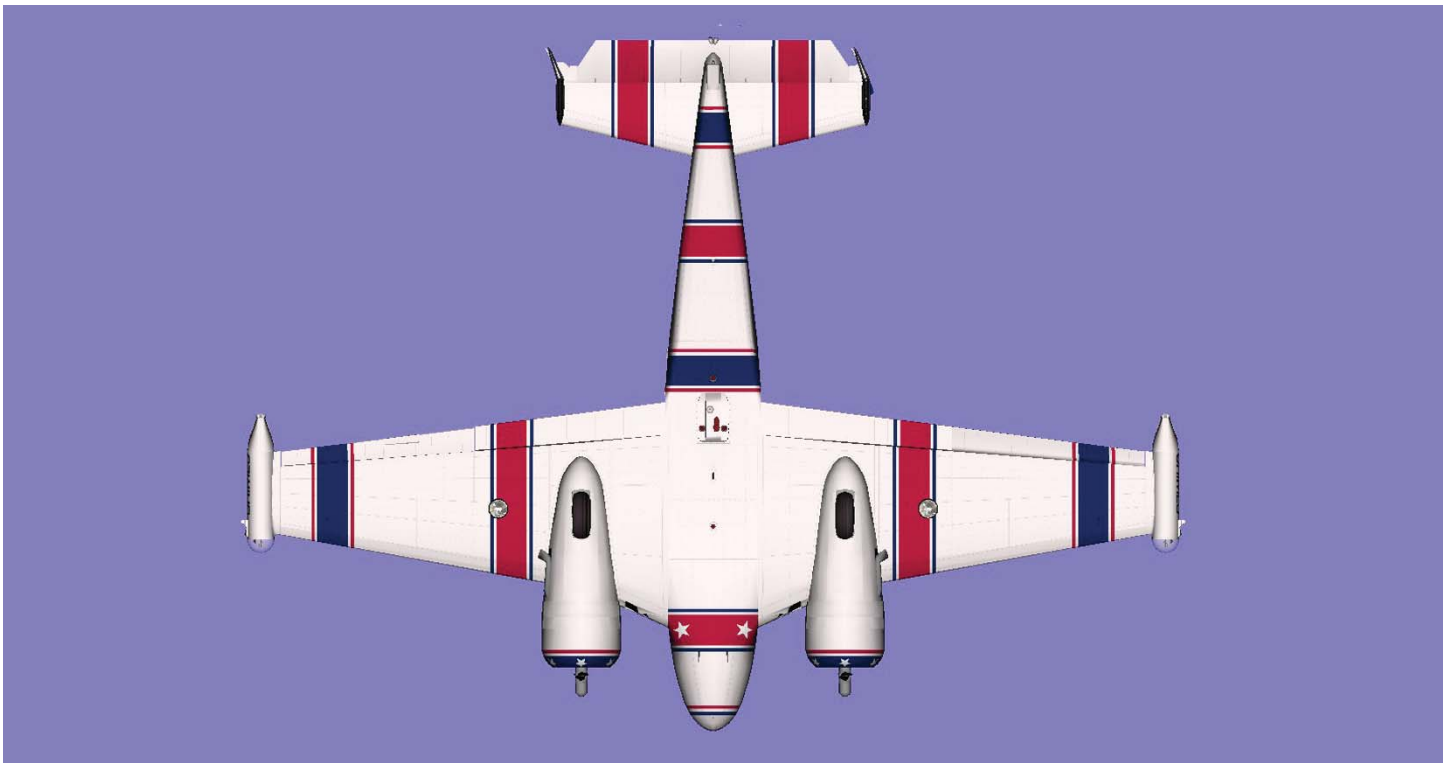


In order to maintain 80 pixel/ foot resolution, the fuselage texture mapping scheme is divided into main fuselage and aft fuselage sections. In order to minimize distortion, each of these sections is divided into top, left and right side and bottom. With the old scheme, text, bars and stars crossed the intersection of one or more texture maps. The width of the top maps was reduced and the height of the side maps increased to provide some relief. Even so, the aircraft registration band crosses all eight of the fuselage maps.

In order to minimize alignment errors, new wire frame maps were developed and textures for fuselage



and wings again remapped. This was insufficient.

A full set of Flying Laboratory textures was developed, first in vector form with conversion to bitmap, and the mapping again adjusted in gmax to finally achieve acceptable alignment.

Stars, when projected on curved surfaces, are distorted. The distortion is corrected by reverse distortion in the flat textue,