

# Re: Bombers In SPACE!!!

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- *From:* Peter Stickney <p-stickney@xxxxxxxxxxxx>
  - *Date:* Thu, 28 Jul 2005 20:26:22 -0400
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Pat Flannery wrote:

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> Henry Spencer wrote:  
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>>  
>>The Skyray chapter in Gunston's "Early Supersonic Fighters of the  
>>West" makes no mention of that, and Heinemann's autobiography  
>>mentions only  
>>"numerous detail changes" (hardly a surprise). I wonder what the  
>>source  
>>is. In particular, I wonder if this isn't the result of confusing  
>>the engine change with the Skyray's persistent problems of  
>>rear-fuselage buffet and inlet flow separation, which did result in  
>>repeated substantial changes.  
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>>  
>  
> It could be- I don't see how changing the engine could affect quite  
> that much of the airframe, because I doubt the fuselage itself makes  
> up 80% of the airframe.

In terms of parts count, it's probably pretty close. You're not just bolting in a new engine - the electrical systems, hydraulic systems, fuel, cooling the engine compartment and lube oil - all of that change as well. And you've got different airflow requirements, a changed center of gravity, and the mechanical loading is all different.

Look what happened to the Australians when they decided to go for an "easy swap" of the Rolls Avon into the F-86 Sabre to make the CA-32. The only parts of the fuselage that didn't change was the shape of the cockpit. Everything else - making the fuselage bigger to allow the inlet to handle the extra mass flow, the need for a different location for the break lines to separate the fuselage for maintenance, etc, took tears and millions of dollars (Australian) to sort out. The experience scared the Aussies so much that they refused to consider the Avon-Mirage, which Dassault was already

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flying, and wwas what they really wanted the Aussies to buy. (The Avon Mirage would have opened up new sales opportunities for Dassault, and provided a much superior alternative to the SNECMA Atar it was originally powered with.)

- > I know the intakes got modified– were there major changes to the
- > internal fuselage intake trunking due to different airflow
- > requirements of the new engine?

Good Lord, yes. The J40 was specifically designed (but badly designed) for bifurcated inlets only – the engine had 2 diffuser sections, each feeding half of the compressor. (Nobody's done that since, for good reasons. The idea sucks.) If you can find one, look at some pictures of the first prototype A3D Skywarrior – it's got weird double–inlet nacelles – it almost looks like a 4–engine airplane. The J57, like all rational engines, just feeds air in straight from the front. That's all well and good, but it needed more air than the J40, and it kinda preferred that the pressure in the inlet be as even as possible. To do that, you want as long a length as you can get, and no sharp curves. The Skyray had short, sharply curved ducts.

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Pete Stickney

Java Man knew nothing about coffee.

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• **References:**

◆ **[Re: Bombers In SPACE!!!](#)**

◇ *From:* Pat Flannery

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