Stages to Saturn

Interviewer- Dr/ Roger E. Bilstein

Interviewee- Bauer

Earlier we had talked about the progression from to S4and S4B stages. I think it's well to point out that the technical progression from the S4 to the S4B. That's what was the chart shows. Practically all of the key technological steps in the S4; the insulation the structural features are all basic to the S4.The S4 was more complicated by having six Arnold jet engines than having the single J-2. But it was a very fine engine, worked quite well for us. I would say that the experience we gained in the S4 program was very important to us being able to carry off the S4B program with the efficiency I believe we did. Since the S4B was a simpler configuration it has greater demands on it. So one of the things we learned as we progressed from S4 to S4B was that (we needed) to simplify things, make things more likely to work, more effective. And ended up with a very efficient stage. In fact, later on when we were pressed to think of how to reduce costs and make the stage for less money it became very difficult to find basic techniques of configuration and adjustment that would lead to a lesser cost stage. I think that is a tribute to the efficiency in the design.

Bilstein- So we heard some place mentioned that the S4B was really a much different flight article because of the engines maybe or because of the feed line that sent it, because of its diameter. Do you see it that way? They're trying to say that the 4 is to the S4 as the B is to the S4, just a different vehicle. 3.10

Bauer- I don't really feel that way about it. Although I could see why a person could take that position, the geometry is different on the S4B than the S4. The basic design principles are basically the same. By that let me be specific. Bulkhead, internal insulation structural concepts, bowel actuation devices, pressurization systems were essentially the same, so I consider them to be quite similar in nature and the S4 was the technical precursor to the S4B and directly applicable. The packaging was different but that's a minor thing.

Bilstein- Young Allen Tant came on the program didn't he?

Bauer- Yes, it was a fine little engine.

Bilstein- The J2 was i8n specific influence

Bauer- Yes, but mostly the large thrust that was involved and a much more efficient packaging. A single engine versus six or more smaller engines So it was a much more efficient device.

Bilstein- Was that single J2 on the S4B was that a ----C0OULD NOT UNDERSTAND 5-5.11

Bauer—was handled by the propulsion systems that were attached to the skirts.

Bilstein- Were there any difficulties in the interfaces between the S2 stage and the –unit?

Bauer- Oh no that was very straightforward. As a matter of fact it was one of the simplest jobs we had.

This chart sort of goes back to the main theme we've been talking about, which compares Thor to S4 to S4B. It notes we

launched our first Thor in September of 1957. The first launch on S4B was January of ’64.

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