



# *A Visit to the* Smithson

## **An Overview of the Aerobee 350 Data Project**

*by Josh Tschirhart*



Project personnel pose with Aerobee 350 round 17.01 GT.

# sonian's Attic

Every rocketeer has a favorite scale subject. It was not long after I joined the NAR that I discovered mine: the Aerobee 350. I first encountered Aerobee rockets (in general) when I read an article by Peter Alway in the June 1989 issue of *American Space modeling*. Conveniently, the very next page held the latest copy of the NARTS catalog, with a listing for an Aerobee 350 scale data packet with photos. I purchased the data packet, and I have been hooked on the 350 ever since. Over fifty feet long and 22 inches in diameter, the 350 was the largest of the liquid-fueled Aerobee series, employing a Nike booster during the first few seconds of flight. In 1991 I attempted to build a competition-quality model of the 350, but frustration over discrepancies between drawings and photos led me to put the project on hold.

I returned to the Aerobee 350 project

in 2001 with renewed interest and a determination to fix (as well as possible) the errors within the drawings. I made some changes by referencing official documents; however, any surface detail modifications were derived from close analysis of NASA photos. In 2002, I completed four pages of drawings in CAD and sent them to Bill Spadafora of NARTS—just in time for publication in the NARTS Scale Data CD.

The new drawings were a definite improvement in terms of accuracy and level of detail, but I still had hopes of updating the drawings sometime again in the future. I had heard that an Aerobee 350 sustainer was slated for display at the new Steven F. Udvar-Hazy Center near Washington D.C. I could certainly acquire better data by viewing the real thing.

In late 2004, less than a year after Udvar-Hazy's opening, I sent an email to the

Smithsonian's National Air and Space Museum (NASM) inquiring about the Aerobee's planned exhibition. I received a reply from Frank Winter, a NASM curator, and we began to discuss how I could get a closer look after completion of the exhibit. After several weeks, he informed me that plans for display had been cancelled, but NASM would be willing to take the Aerobee out of storage at the Paul E. Garber Facility (NASM's restoration facility) in Suitland, Maryland, in order for me to photograph and measure the rocket. Mr. Winter would take the time out of his schedule to meet me in person.

Although it took over a year of email correspondence, we were finally able to coordinate a day for my visit—Tuesday, April 4, 2006. Dan Wheeler, a fellow rocketeer from the Vikings Rocket Society, took a day off from work to accompany me on the



Right: Dan Wheeler with the Nike thrust structure interstage adapter.

Below: The four engine cluster of the Aerobee 350 main stage.



trip. Dan and I arrived at the Garber Facility around 9:30 AM and met Frank Winter inside. After we signed in, he led us on a brief but thorough tour of the facility, stopping to point out anything of particular interest while we made our way to the Aerobee's storage location. Since Garber was no longer open to the public, we were enjoying a private tour, a dream of any aerospace enthusiast. There were a number of old planes, rocket parts, models, etc. We saw part of Apollo 4's boost protective cover, an entire Mercury retro-rocket pack, and an RL-10 engine, among other things.

When we reached our destination, the rocket was still in its three crates—it had not been viewed since it was acquired by the Smithsonian several years beforehand. We helped Garber employee John Eckstine open the containers. The longest crate (29 feet long) held the main fuselage of the Aerobee, and the second held the four large aluminum fins. We were able to take a fin out of the box to get a closer look—it was surprisingly lightweight. The third container held a dummy



payload section with nosecone and, to my utter surprise, also contained the rocket's interstage adapter, a Nike thrust structure. (I think the raised pitch of my voice and my "Oh my gosh! No way!" iterations gave away my delight in this particular discovery).

After handing some promised Aero-  
bee 350 documents over to Frank, I got  
to work on sketching and measuring the  
rocket. This was very different from mea-  
suring an old rocket coated with a ton of  
weathered, peeling paint in some outdoor  
rocket garden—this AeroBee was com-  
pletely bare and well-preserved. The gray-  
ish-steel body was a bit dirty but not rusty.  
Only the payload section had corrosion on  
it, but it was not a focus of my research.  
This was definitely a good day in a fifteen-  
year-old search for better scale data. Dan  
and John chatted while waiting in case I  
needed any assistance. Aside from asking  
me a few questions about the AeroBee,  
Frank made the most of his time with us by  
studying two very early Jet-Assisted Take  
Off (JATO) rocket motors—performing his  
own research just a few feet away.

After a couple hours of measuring, we  
needed to break for lunch, but we first  
took a detour through Garber's main resto-  
ration work area and machine shop. Frank  
gave us an informative overview of several



Josh Tschirhart poses with the  
AeroBee 350 main fuselage.

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The payload nose section of the Aerobee.

projects, including a large P-61 Black Widow airplane that was being restored (it has since been put on display at Udvar-Hazy). Dan and I then headed off to the local Wendy's and returned an hour later to sign back in. I finally finished my data gathering after 2 PM, before Frank gave us a final "tour" of artifacts that I had been too busy to notice on the storage shelves behind us. Although many items were in crates, we could see a Juno II nosecone and what looked like a Gemini service module, among other rocket-related items.

Dan and I parted ways with Frank and John, offering many thanks to them for their gracious assistance with my project. We had hoped to spend the rest of the day visiting the Udvar-Hazy Center, but since time was short, we made our way to the closest Metro station in Suitland and rode to the Washington Mall.



A Gemini spacecraft service module.



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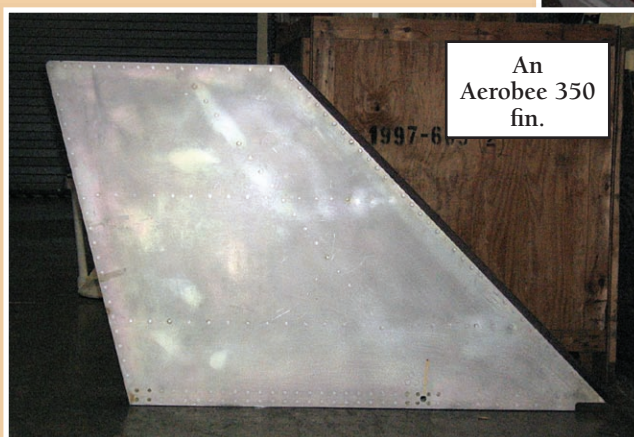


After spending a couple of hours at NASM and viewing as many rocket exhibits as we could, at Dan's suggestion we headed off on foot to eat dinner at Union Station. After our meal, we road the Metro back to Dan's car in Suitland and headed home after our long and fruitful day.

2006 brought additional successes for the Aerobee 350 data project.

Searching the NASA Technical Reports Server ([ntrs.nasa.gov](http://ntrs.nasa.gov)) yielded some very helpful detail data and some launch photos, and Taras Tataryn graciously sent me data from his own collection. I also had the old NARTS slides professionally scanned, yielding much better image files than were previously available. But in spite of all these good things, I

am still lacking information on a few items I consider important, and I am still looking for a way to contact Mark Mercer, who provided the data for the 1973 drawings. I have posted a list of my current 350 data sources at [www.meatballrocketry.com/350biblio.htm](http://www.meatballrocketry.com/350biblio.htm); anyone who has additional data should feel free contact me. In the meantime, I am continuing to develop the updated drawings for NARTS. They may appear in the form of multiple *Sport Rocketry* articles within the next year or two, so be sure to keep an eye out for them.



An  
Aerobee 350  
fin.



A Juno II nose  
cone sits on a shelf.

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