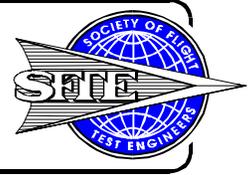


Flight Test NEWS



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USAF TEST PILOT SCHOOL: DEVELOPING FLIGHT TEST PROFESSIONALS FOR THE 21ST CENTURY

By Darcy Painter and Lee Gardner, Past FTN Editors



In Front of the VISTA Aircraft

Back row, from left to right: Maj Gen Dick Reynolds, AFFTC Commander; Col Steve Cameron, TPS Commandant; Mr John Minor, FTN Editor; Brig Gen (Sel) Perry Lamy, 412 TW Commander; Lt Col Tom Buter, TPS Technical Director; Col (Sel) Joe Zeis, TPS Deputy Commandant; Front row: Darcy Painter and Lee Gardner, Former FTN Editors.

EDWARDS AFB – 05 Jan 2001: The USAF Test Pilot School moved back into its newly remodeled headquarters building here this week, well on its way to achieving its vision of becoming The Center of Expertise of Applied Aeronautics. To discuss the vision the leadership of the TPS - Colonel Steven Cameron, Commandant, along with Col (sel) Joe Zeis, Deputy Commandant, and Lt Col Tom Buter, Technical Director sat down with former editors of *Flight Test News* (FTN), Lee Gardner and Darcy Painter, and the current editor of FTN, John Minor.

FTN: What is your vision for the USAF TPS?

TPS: The USAF TPS is the National Center of Expertise in Applied Aeronautical Engineering. We develop the visionary, technologically-savvy leaders of tomorrow's Air Force.

FTN: What does the vision of the USAF TPS to be the 'National Center of Applied Aeronautical Engineering' mean to the United States Air Force and our allies?

TPS: Our vision is for the USAF TPS to be the center of expertise for the application of academic theory to military reality. We are developing the visionary, technological leaders of tomorrow's Air Force. Our goal is to produce pilots and engineers with the skills to apply a broad array of technology to the challenging problems the war fighter faces in today's battle space. Our goal is that each student get exposure to a wide variety of aircraft during their student days – currently our students get exposure to 25 – 30 aircraft.

FTN: We understand one big addition to that set of aircraft students will get exposed to is the Variable-stability In-flight Simulation Test Aircraft (VISTA). Why VISTA?

TPS: The VISTA is here precisely because of our new vision. When we decided that we wanted to be "the National Center of Applied Aeronautics", one of our people challenged us. They said, "If we really want to be that acknowledged center of applied aeronautics, then we should own and operate the VISTA, which is specifically designed as a vehicle to prove out aeronautical theory

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by applying it to the flight environment before committing to designs." We took a close look, and they were right...the VISTA was truly suited to be the Crown Jewel of USAF TPS fleet.

The best part is that the VISTA specifically addresses the one deficiency in the TPS curriculum highlighted by customer surveys for the past 5 years – systems training. For the first time, the Test Pilot School now has the tool to train students how to test the highly integrated cockpits of the 21st Century, like those we are now seeing in the JSF and F-22. Until now, we could only teach them a system at a time, and not the cutting edge technologies like voice recognition and helmet-mounted displays found in the VISTA.

The addition of the VISTA to the TPS systems curriculum is truly a revolutionary advancement in our training capability. Even better, when not in use by TPS students on core curriculum sorties, the VISTA will still be used by defense contractors to prove new systems. In this win-win scenario, some of this testing will even be conducted by TPS students as part of their graduation exercise, the Test Management Project. This final project, a small real-world test program, is designed to reinforce the theoretical learning they have received for the first 8 months of the TPS curriculum. Both the Flying Qualities and Systems Phases will culminate in 'graduation' flights in the VISTA.



Test Pilot School Rededication Ribbon Cutting

From left to right: Col Steve Cameron, TPS Commandant, Maj Gen Dick Reynolds, AFFTC Commander, Col (Ret) Ralph Hoewing, First TPS Commandant, Brig Gen (Sel) Perry Lamy, 412 TW Commander, Col. Jim Judkins, Commander 95 Civil Engineering Group

three months after graduation from TPS integrating the results of their flight test and theoretical work into their thesis. To our knowledge this is the only program of its kind anywhere and is truly first-rate.

Our partnership with the USAFA includes teaching their Aero 456 class, a senior level class on flight test techniques two times a year. Apart from our active relationships with AFIT and USAFA, we have contacted each of the top 30 Aerospace Engineering departments in the US with a view towards establishing joint test projects. One such contact led to a project with the University of Colorado (and simultaneously supported the continuing education of an engineer from the Flight Test Center here at Edwards). Other project initiatives are under development.

Further, by having a representative on the AIAA's Atmospheric Flight Mechanics Committee for the first time, the TPS has enhanced its own visibility within the larger aerospace community. The cross-section of members on this particular committee (27 in all) includes leading engineers and scholars from industry, government and the university community. It is a great forum for discussing and establishing partnering relationships.

Finally, in an attempt to push our 'egghead coefficient' (EC) above 0.0, we have also put our Technical Director, Lt Col Tom Buter, on the Advisory Board for two universities - the USAFA and North Carolina State and made him an Adjunct Professor at AFIT. These affiliations have been very helpful in understanding and anticipating trends in the academic community.

FTN: You have set the TPS on a strategic path to higher academic rigor – what academic changes support this?

FTN: In your quest to become the National Center of Expertise to apply theoretical aeronautical engineering to the challenges of testing weapons systems are you developing partnering relationships with other centers of theoretical aeronautical engineering?

TPS: Yes. In particular, we have active relationships with the Air Force Institute of Technology (AFIT) at Wright Patterson Air Force Base, Ohio and the USAF Academy (USAFA) in Colorado Springs, Colorado. Our relationship with AFIT is particularly crucial, given their posture as the U.S. Air Force's graduate school. We view our highly successful joint program as one facet of a highly beneficial relationship between the two schools. AFIT provides instructors for TPS courses, thereby enhancing the academic rigor of key blocks of our curriculum. Our joint program is, in our opinion, the best Master of Science program for Aerospace or Electronic Engineers in the world! In the joint program, three TPS students are picked each year to attend AFIT en route to TPS, where they complete the course and theoretical research requirements for a Masters in either A.E. or E.E. Their thesis topic is a flight testable project, which becomes their Test Management Project at TPS. The students then spend

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TPS: We have instituted three substantive changes to the TPS to instill higher academic rigor in the curriculum: the Board of Visitors, the position of Adjunct Dean of TPS/AFIT, and our concept of TPS as a Center of Active Research.

Board of Visitors - Virtually all academic institutions have a Board of Visitors (or something like it) for the purpose of obtaining advice, views and recommendations on matters involving performance of their educational mission. We are instituting one here too. We are in the process of finalizing the list of members, but we envision a group of six to eight. Membership in the Board of Visitors is being sought from a broad range of USAF organizations, civilian and military academic institutions, and distinguished graduates of the school.

We intend to use the Board of Visitors to solicit the advice of members of the educational, industrial and user communities. We also view this forum as an opportunity for the TPS to refine and communicate its message to key operational USAF commands.

Our new Adjunct Dean of AFIT meets the following requirements:

- A special TPS advisor on matters relating to the curriculum and AFIT instruction;
- A driving force from the AFIT side on matters relating to joint research. There is a great deal of potential for additional collaboration between AFIT, the Air Force Research Laboratory at Kirtland Air Force Base, New Mexico and the TPS on AF-related research and this individual would be a key player in facilitating such activity.

A Center of Active Research – Our goal is to provide the following unique capabilities:

- Test resources for advanced university or lab projects;
- Battle lab opportunities for demonstration/validation programs;
- Incentives for staff research and publication interests.

We intend to 'barter' for these services by accepting 'visiting professors' as compensation from universities and laboratories.

FTN: What are the products of your research?

TPS: Often our research leads to new curriculum (hence enhanced training), new capability (e.g. the Libelle g-suit; several Flight Controls projects leading to control law advances; GPS-based range instrumentation, etc.), and new flight test techniques. We have authored and published several technical papers over the past several years in the American Institute of Aeronautics and Astronautics, the Institute of Navigation and the Institute of Electronic and Electrical Engineers journals through AFIT or through the AFFTC.

FTN: Can you describe the end state, the TPS you see in the future?

TPS: The TPS will be the Development, Test and Evaluation Champions of the USAF. It will have a highly respected academic stature – like the MIT of applied aeronautical engineering. It will provide the highest qualified and experienced test pilots, navigators, and flight test engineers in the world to be the visionary leaders of tomorrow's Air Force.

FTN: What do you mean when you say the "TPS will be the DT&E Champions of the USAF?"

TPS: Development, Test and Evaluation, DT&E, is our charter, it is our role, and it is our life, . . . we eat, sleep, and drink development test. We produce "Experimental" Test Pilots, Engineers, and Navs. According to all the high level thought in this area, Developmental Test is intentionally separate from Operational Test, since DT exists to influence the design of the system, which necessarily requires close collaboration with the system developer. Operational Test (OT) was established to prevent the fielding of defective systems, which requires a formal stage of testing, like qualification or acceptance testing, which necessarily requires independence from influence by the system developer.

We need to push the early user involvement in the design and development of Air Force systems, which is what Developmental Testers do... that is why we have highly experienced (former operational users) involved in DT and why we select only the most highly qualified operational users to attend the school. People sometimes forget that Developmental Testers are representatives of the user, just as are OT testers.

FTN: All of this sounds very ambitious. With periodic staff changes (including the Commandant), how do you intend to sustain your progress toward your vision?

TPS: The heart and soul of TPS does not reside in the Commandant's office.....it lives in the hearts and minds of every member of the TPS staff and faculty. While it is true that we have a relatively high turn-over rate among our military personnel, the strong understanding of our focused vision and the stability of our civilian staff will keep TPS on solid track toward where we need to be...*the* place to go to learn about the application of theoretical aeronautics.

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