

Improving the Configuration Development Process

LAST fall I had the opportunity, as part of a four-member (USAF, USN, NASA, industry) "peer review team," to review ongoing work at NASA Langley Research Center in high-angle-of-attack flight. There is growing military interest in exploiting this portion of the envelope—a portion denied to current inventory aircraft. NASA Langley has long served the nation as a clearinghouse for the assessment of the high-angle-of-attack flight characteristics of practically every US military and many civilian aircraft. When a safety-of-flight problem is identified in a new or modified configuration, Langley engineers work out a fix and/or provide assistance in developing flight operational limits and flight evaluation.

During our review we addressed some basic inefficiencies in the way we currently develop new military configurations. I'd like to briefly discuss some of these areas with two objectives in mind: 1) stimulation of ideas by readers and authors followed by papers for this journal addressing technical and economic solutions, and 2) recognition that the process of configuration development can be improved in the direction of shorter development cycles. Some of the points made will also apply to commercial and general aviation development. I will concentrate on high-angle-of-attack flight, but the concepts should apply to any new requirement.

The first shortcoming identified concerned the long delay in delivering the emerging configuration to NASA for assessment. These designs are considered to be frozen on arrival. This often leaves NASA little choice but to apply Band Aids to prevent departure or define limits of operation. NASA does this well, but they are left with little operating room to make significant shape optimization changes or to develop flight control design criteria. The lesson is clear: address the new envelope requirement early in the design process. This is an easy statement to make but evidently not straightforward to implement. Your ideas are needed in this area.

Another process shortcoming was seen to lie in assuring that flight-test results are effectively factored back into the development of methods and criteria. In my NASA Langley example, once the assessment had been performed, fixes identified, test guidance provided, etc., the customer went into flight test, production, etc. But NASA Langley procedures did not benefit from this information. Closing the loop is a vital, clearly understandable step in assuring validity of new envelope criteria, aerodynamic simulation models, and design tools. Yet this key step is often overcome by events or considered out of budget scope. The customer need for rapid assessment preempts making provision for such feedback. Surely the tools exist to effect a cure. Again, your ideas addressing the process of validating criteria and methods development through flight test should be developed and reported in the pages of this Journal.

A third and final area addressed during the peer review comes under the category of deficient reporting. This comes in two broad subcategories: 1) reporting each step of the development process of a given configuration, and 2) development and reporting of generic results, more or less independent of configuration specifics. How recently have you seen reports, databases, handbooks, etc., on the process of transcribing results of numerous analyses and wind-tunnel tests of a particular aircraft into a simulation model? Were these published results followed by further reporting of the simulation activity utilized to develop the required control laws? Were you able to locate definitive reports on how new design and operational criteria were derived and validated? My point here is that this phase of configuration development is normally missing or

poorly documented. It just does not receive the priority required and is displaced by the need to get on with the next customer's needs. I think this area is one where you can contribute most effectively as Journal authors and readers.

Certainly our review at NASA Langley was brief and rather superficial. But it did open my eyes to the possibility of improving the configuration development process and shortening the time involved. I hope you agree and will be willing to devote some time and energy to this certainly worthy cause.

Now, I would like to turn to some pleasant tasks involving recognition. First, please note our staff of Associate Editors (AE's), who handle your papers. They obtain reviews, resolve disagreements, and identify revision requirements. They are dedicated to assuring technical accuracy, timeliness, and importance of published papers. We have three new AE's this year. Mr. Robert Cuthbertson ably replaces Mr. Craig Simcox, who long served in the dual areas of acoustics and weather hazards. Dr. Inderjit Chopra fills a new position as editor for system development. This is still an under-represented area in the Journal, and we hope to see more papers on the development of complete aircraft systems. Mr. Kenneth Holt is also filling a new AE position in aircraft operations. This area is also under-represented, and good papers on all aspects of the operation of aircraft will be appreciated.

An all-new Board of International Editors has been appointed. My special thanks to B. L. Nagabhushan for aiding in the identification of this new Board. Their names appear inside the front cover. They are serving to make this a truly international Journal of aircraft technology. They are familiar with Journal policy and can help authors get their good material into print.

As most of you are by now aware, the AIAA Headquarters has relocated to Washington, DC. Some of the key Editorial Department staff made the move but most did not. Norma Brennan, our extremely capable Editorial Department Director, made the move. She was faced not only with reestablishing the office and her home in a strange city, maintaining journal publication schedules, but also having to hire and train a new staff. On top of this she had to phase down the New York operation while departing staff were heading for new jobs. And she did it all! I hope that when you're in DC you'll stop by and tell Norma how much you appreciate her most dedicated effort.

Before the move we underwent two changes in senior staff. My thanks to Robert Inman and Kathy Felix, who both served as highly capable Managing Editors. They were both key in helping with the appointment of new AE's and International Editors. Ed McKenna and Barbara Towar were perfect Senior Editors, and I will miss their professionalism and willingness. After the move, Bill O'Connor took over as Managing Editor, and Heather Ames temporarily filled in as Senior Editor. Evamarie Socha is now our permanent Senior Editor. Bill and Evamarie have picked up the job very quickly, and I look forward to working with them this year.

Reviewers are vital to any archival journal. We have been blessed this past year with excellent reviews. The trivial review has become the exception. The past year has seen some significant improvement in promptness of reviews as well. Names of last year's reviewers appear on the next page. I hope we haven't missed anyone. If so, send me a postcard with a log number or other identification of any papers you reviewed, and I'll publish an addendum next January.

Authors provide the substance of the Journal. Their names appear in the December 1987 issue. They truly represent the significant cross section of international aircraft technology. I

do make one major request of authors, and that is more attention to timely revision.

And so the Journal must have Editors, a professional staff, reviewers, and authors. But it cannot survive long without readers. I don't hear much from readers and have to assume, based on circulation, that we're doing the right thing. But this is your Journal, and if you feel we overlook important areas

of aircraft technology, fail to generate useful, timely articles, or are in any way coming up short in your mind, please let me know. My address is on the inside back cover.

Thomas M. Weeks
Editor-in-Chief

Reviewers for the *Journal of Aircraft* – 1987*

Almosnino, D.	Johnson, F. T.	Pao, S. P.
Ballal, D. R.	Johnson, J. K.	Parkinson, G. V.
Barnett, L.	Johnson, W. S.	Pate, S. R.
Bennet, R. M.	Jumper, E. J.	Peloubet, R. P.
Berrier, B. L.	Katz, J.	Poling, D. R.
Black, R. J.	Keener, E. R.	Radovcich, N. A.
Booz, D.	Kendall, J. M., Jr.	Ramachandra, S.
Bosworth, J. T.	Kibens, V.	Rao, D. M.
Bowes, R. L.	Klein, V.	Rasmussen, M. L.
Bowles, R. L.	Koval, L. R.	Ray, E. J.
Brobston, J. C.	Lagace, P. A.	Reding, J. P.
Brockman, R. A.	Lamar, J. E.	Reshotko, E.
Bushnell, D. M.	Lan, C. E.	Reynolds, G. A.
Carlson, L. A.	Lekoudis, S.	Rockwell, D. O.
Carr, L. W.	Levin, D. B.	Rodden, W. P.
Caughey, D. A.	Loeffler, I. J.	Rogan, J. E.
Chaput, A. J.	Long, L. N.	Rozendaal, R. A.
Craig, L. W.	Lorber, P. F.	Rubbert, P. E.
Davis, S. S.	Luckring, J. M.	Schindel, L. H.
Dillenius, M. F. E.	Malik, M.	SenGupta, G.
Dillner, B.	Malmuth, N. D.	Sobieski, J.
Dixon, C. J.	Marchman, J. F., III	Sorenson, R. L.
Doviak, R. J.	Marconi, F.	Strash, D. J.
Dugundji, J. M.	Maresca, C.	Suchomel, C. F.
Eastep, F. E.	McAlister, K. J.	Tai, T. C.
Eisenmann, J. R.	Mendenhall, M. R.	Tauber, M. E.
Everett, W. J.	Miranda, L. R.	Terry, J.
Favier, D. P.	Mook, D.	Tinoco, J.
Fidler, J. E.	Morgan, K.	Tobak, M.
Flores, J.	Morris, S. J., Jr.	Vadyak, J.
Gad-el-Hak, M.	Mueller, T. J.	Van Dalsem, W. R.
Garrad, W.	Muirhead, V.	van Lavante, E.
Giesing, J. P.	Munce, A. C., Jr.	Vukelich, S. R.
Groeneweg, J.	Nakayama, A.	Walker, J. M.
Goradia, S.	Nelson, R. C.	Walters, M. M.
Gupta, N. K.	Nguyen, L. T.	Wardlaw, A. B., Jr.
Guruswamy, G. P.	Nielsen, J. N.	Weisshaar, T. A.
Hall, R. M.	Nixon, D.	Wendtz, W. H., Jr.
Harris, C. D.	Obara, C. J.	Wrenn, G. A.
Ho, P.	Obye, R. C.	Wu, J. M.
Horstman, C. C.	Ormsbee, A. I.	Yates, E. C., Jr.
Hummel, D.	Owens, H. G.	

*This list represents names received through October 1987. We regret any inadvertent omissions.