

AVIATION

A REPORT ON THE PROFESSIONAL PILOT METEOROLOGY TRAINING STANDARDS CONFERENCE

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Abstract

A Professional Pilot Meteorology Training Standards Conference, held April 13–14, 1989 at the United States Air Force Academy, examined the training standards of professional pilots, as well as the interaction between pilots, meteorologists and training personnel. Suggestions for training standards were received from a military and a civilian group.

1. INTRODUCTION

A Professional Pilot Meteorology Training Standards Conference was held on 13–14 April, 1989, at the U.S. Air Force Academy. The conference was organized by Capt. Tim Miner of the USAF Academy to evaluate the training standards of professional pilots, and create a dialogue between pilots, meteorologists, and training personnel. The conferees defined a professional pilot as a military pilot or a civilian pilot who held at least a commercial pilot license with an instrument rating.

Attending the conference were 16 representatives of the following U.S. Air Force organizations: U.S. Air Force Academy, USAF Instrument Flight Center, HQ Air Weather Service, 3rd Weather Wing, Strategic Air Command, Air Training Command, 5th Weather Wing, Tactical Air Command, 7th Weather Wing, Military Airlift Command, and 4th Weather Wing. There were two representatives from the U.S. Army and one from the U.S. Navy. The following civilian organizations were represented: Federal Aviation Administration (FAA), National Weather Service (NWS), National Center for Atmospheric Research (NCAR), Embry-Riddle Aeronautical University, Metropolitan State College, University of North Dakota, Ohio State University, Airline Pilots Association (ALPA), American Meteorological Society (AMS), National Weather Association (NWA), United Airlines, and Transworld Airlines. Of the 30 participants, 20 were pilots (of these, 8 were civilian pilots), 19 were meteorologists, and 10 were combination meteorologists/pilots.

2. GENERAL SESSION

The general session started with presentations by Bob Massey of ALPA, Professor Frank Wenssel of Embry-Riddle, Kendall Roose of NAS Whiting, and Col. George Frederick of the Air Weather Service.

Mr. Massey's presentation focused on the fact that, due to improved efforts by the military to retain their pilots, more new pilots are coming to the airlines from general aviation. These new pilots, many of whom are young, have backgrounds characterized by a poor preparation in aviation

weather. Furthermore, airline pilots are losing their weather knowledge because there is no continuing weather training.

Professor Wensel noted that the percentage of weather-related aircraft accidents has not decreased in 40 years. He suggested increasing the weather training requirements for civilian pilots and petitioning the FAA to give a separate weather examination as opposed to the present examination, in which weather is a segment together with navigation, aerodynamics, radio procedures, etc.

Mr. Roose reported that a survey of fleet-experienced naval aviators showed that weather training time was reduced by twenty-five percent, to **30 hours**. There is no naval weather refresher training. He also observed that there was little information regarding the weather factor in fatal aircraft accidents.

Col. Frederick reviewed the U.S. Air Force weather training program calling attention to the close collaboration that exists between the weather forecasters and Air Force pilots. The weather training program is well structured and pilots obtain personal weather support through the base weather stations.

During the general session, the following emerged as differences between Military, and Civilian services.

1. Military pilots still have a personal weather service, i.e., a base weather station for individual weather briefings and a pilot-to-forecaster radio communication facility. In contrast, because of the FAA Flight Service Station (FSS), consolidation plan and NWS reorganization, civilian pilots are increasingly being faced with interactive weather information systems (e.g., computer systems and tape recorded information) and although they have the Flight Watch (EFAS 122.0 MHz) facility, they are not briefed by a weather forecaster but by FSS personnel.
2. Military pilots receive structured training, i.e., a standardized military syllabus is used in a regular classroom setting. The instructor is probably a meteorologist or someone with meteorological training. About fifteen classroom hours are spent on weather.

Civilian pilot weather training is mostly done by an FAA-Certified Flight Instructor (CFI) who in turn received his or her weather training from a CFI. These CFI's essentially receive no special training in weather beyond that which private pilots receive. The civilian weather training may be offered as part of a structured pilot ground school through a local flying school or may be a self-study course under the supervision of the CFI. Some two-day cram courses that include weather are available to prepare pilots for the FAA written exami-

nation. In all the courses cited above, from four to ten classroom hours are spent on weather (Boudreau, 2).

An exception to the above training methods are the aviation programs conducted by colleges. Typically, a college curriculum will require three to six semester hours of aviation weather that requires 45 to 90 hours of classroom instruction, respectively (Boudreau, 3). Presumably these college courses are taught by meteorologists.

3. WORKSHOP

The participants were separated into three working groups to consider a list of topics that could be included in a syllabus for professional pilot training. The objective of the working groups was to eliminate, from a very extensive list, the topics considered non-essential to weather training. The groups systematically eliminated the more theoretical topics and stressed the practical topics. Examples of topics eliminated were: the transfer of latent heat during a phase change of water, cyclogenesis and upper-level divergence, conditions associated with land-sea breeze fronts, and the use of constant pressure charts. Weather topics that were aircraft specific (e.g., the operation of de-icing and anti-icing systems and their effectiveness in various icing conditions) or that were related to piloting technique (e.g., techniques for flight operations in turbulent conditions) were also eliminated; it was felt that these topics are covered in flight training. Generally, the consensus of the three groups was to concentrate training on topics that prepare pilots to use and understand weather information.

It should be reiterated that 20 of the participants in the workshop were pilots, and that 10 of the 19 meteorologists were pilots. Hence, the conference consisted primarily of pilots who were indicating their opinion on the subjects they considered essential to pilot training. The author noted a tendency for the meteorologists (especially those from academe) to include some of the more theoretical topics with the aim of improving a pilot's understanding of the weather. But despite the wincing of these theoreticians, the majority prevailed.

4. MILITARY AND CIVILIAN RECOMMENDATIONS

Because of the differences in the training regime for military and for civilian pilots, the types of aircraft flown, and the nature of military and civilian flying operations, the participants separated into a military group (20 members) and a civilian group (10 members) for the purpose of translating the findings of the conference into specific recommendations.

Because the military is highly organized and military training is controlled and structured, the military group was quick to respond and made the following recommendations:

1. Put "meat" back in the undergraduate pilot training (UPT) program, i.e., increase the weather instruction portion of the UPT program from the present 15 hours to 25 or 30 hours.
2. Have weather courses taught by meteorologists.
3. One day or more of continuing pilot training programs should be spent on weather.
4. Applied aviation meteorology should be taught.
5. NCAR developed videotapes should be used by the Instrument Refresher Course (IRC).
6. An evaluation of weather knowledge should be a standard part of check rides.

7. The IRC needs to be standardized.

8. A comparison of the Department of Defense weather programs needs to be made.

The military group will continue as a working group to work to accomplish these objectives.

The civilian counterparts, faced with the reality that the only way to effect improvements in civilian pilot training is to change Federal Aviation Administration policy, formed a committee to pursue that approach. The Meteorology Education and Training Committee (METAR) as an aviation resource, will seek funding to present a proposal to the FAA to strengthen weather training. Committee members voiced some preliminary ideas which could be included in such a proposal and they are:

1. Separate FAA written examinations in weather for licenses, the instrument rating, and for the CFI rating.
2. Additional weather training should be part of the requirement for certifying a CFI.
3. CFI candidates must take weather training from a meteorologist.
4. Biennial flight reviews and check rides should make testing of the pilot's knowledge of weather mandatory.

The METAR committee cited the colleges and universities which offer aviation programs for their superior training programs in weather.

5. SUMMARY

This conference fulfilled the purpose for which it was convened, i.e., that of creating a dialogue between pilots, meteorologists, and training personnel. Indeed, the dialogue was spirited, very informative and resulted in the formation of two continuing working groups that will work to accomplish their respective recommendations.

Another purpose is in the process of being fulfilled. Minor (4) is preparing a detailed Air Force Academy Technical Report that will include conference position papers from participating organizations, the weather training topics considered and those adopted, together with dissenting opinions.

ACKNOWLEDGMENTS

The Air Force Academy and Capt. Tim Miner in particular, should be commended for organizing and hosting this conference.

NOTES AND REFERENCES

1. Dr. Rob Boudreau has served as an aviation weather forecaster for the USAF Air Weather Service. He received his B.S., M.S., and Ph.D. degrees in meteorology at Texas A&M University and is currently a professor of meteorology at Metropolitan State College. He also holds an airline transport pilot license with certified multiengine and instrument flight instructor ratings. He is the chairperson of the NWA Committee on Aviation and aviation editor of the *National Weather Digest*. He represented the NWA at this conference.
2. Boudreau, R.D.: personal informal survey
3. Boudreau, R.D., 1983: Collegiate weather education for pilots. *Proceedings 9th Conference on Aerospace and Aeronautical Meteorology*, AMS, Boston, MA, pp. 215-218.
4. Miner, T.H., Editor, 1989: *Professional Pilot Meteorology Training Standards Conference*, U.S. Air Force Academy Technical Report, Colorado Springs, CO, to be published.