

SUMMARY REPORT OF COMMITTEE A

Charles H. Sprinkle

National Weather Service

Committee Composition: (See Table 4, page 11)

I. Session with Standing Committee on Aircraft Design

It was stated that current procedures for designing structural (strength) components with respect to turbulence forcing functions are adequate; however, it was emphasized that we must be sure to separate structural (strength) components and control components in our discussions. Engineering procedures ~~are~~ adequate (aircraft do not break up in flight). It was agreed that there is sufficient turbulence data available to do adequate modeling; however, it may be well to look into an updated discrete gust model. Newer, more sophisticated aircraft do not behave like the old aircraft.

Spectral models are an improvement over discrete gust models. Spectral models give you everything the discrete gust model gives you, plus more. The amount of effort is identical; however, the numbers may need updating--at least someone should take a look at it. We're in a better position to give better numbers now.

A need to update meteorological data below 2,000 ft. was expressed. The atmosphere is very different below 2,000 ft. We need more information on low level eddies, also need more information on the patchiness of turbulence at all levels. There is a lack of correlation at low altitudes in the U, V, and W components at the same time. Rolling effects should be considered in aircraft design. Information is also needed on wind shear for design purposes. Need wind profiles, and they should be incorporated into specifications. For thunderstorms and other severe weather we can't design for the worst

cases. As for wind shear, it's not a design (structure) problem, it's a control problem!

With respect to lightning, more detection design work is needed. Data are not sufficient and not fully understood. We really don't know the impact of lightning on onboard digital systems.

The state of the art for forecasting meteorological elements is sufficient for design purposes.

II. Session with Standing Committee on Simulation

There are no standard models. In fact, there are several within one company. There are several types of wind and turbulence models. Some models are better for some things than others. Models are generally oversimplified. Simulator models cannot take care of all cases. There must be a bounds placed on the simulation (average, extreme, and moderate).

In reference to turbulence model studies, authors should be encouraged to include mathematical methods for solution in their papers. Frequently it's not readily apparent as to how to arrive at the solution.

The persons more deeply involved in simulation stated that current turbulence simulation models are adequate. **Also**, the meteorological data is sufficient to simulate the effects of icing, temperature variations, humidity variations, etc.

It was pointed out that a wealth of data is currently being collected in the form of profiles in the lower atmosphere. The FAA (NAFEC) will be the principal source of this data. It will be possible to have this new data available shortly (within the next year).

111. Session with Standing Committee on General Services

At the outset, it was agreed that the ultimate goal of aviation weather services is the delivery of accurate and timely information to the cockpit flight crew.

There were several items raised which demand action to provide better service. They were:

- More frequent updates of the Transcribed Weather Broadcasts (TWEB)--make it a higher priority job within the Flight Service Stations (**FSS**) (need someone from the **FSS** side of the house within FAA to speak to this problem);
- SIGMET's not being broadcast on VOR;
- NAMFAX circuit has too much information moving on it that does not support aviation (NWS will examine the circuit and attempt to remove some extraneous charts).

Other items and questions raised were:

- There is a need for a pilot's satellite "handbook" to aid the pilot in the interpretation of satellite information.
- With regard to the dependability of data, the question was asked, "How much are you willing to 'pay' for small improvement in an already good system?" This was unanswered.
- With respect to the shortage of personnel in meteorology and aviation weather services, little hope was offered for increased personnel. The aviation industry pointed out to NWS that quality control of products and services is vital and should be sought at every opportunity.
- **As** far as weather training as a service, it was noted that forecaster-to-pilot briefing is an education to both of the participants in the exercise.
- The responsibility for aviation weather research was noted to be splintered among many agencies. NOAA, DOD, **FAA**, **NASA**, etc., all appear to be

doing something. To what extent are the programs coordinated? It was felt that the role of the Federal Coordinator should be brought more into play, defining the content and quality of R&D as well as defining the direction we are heading. Question was asked concerning follow-ups of National Transportation Safety Board (NTSB) recommendations--who has the authority? FAA pointed out that there is now a specific office within FAA, formed recently, that is bird-dogging NTSB recommendations.

Discussion concluded with recommendations on a future aviation workshop:

- A more structured meeting in 1-2 years;
- Attempt to include representatives from some groups absent from this initial effort;
- Include persons with decision-making authority; and
- A more complete package to participants in advance of the workshop (some important inputs could be gathered before coming to the meeting).

IV. Session with Standing Committee on General Aviation

The initial item under discussion centered around education. How do you make pilots aware of what is available and where to get it (films, etc.)? A publication (such as the Airmen's Information Manual) could list available information. Also, some feeling was expressed that student pilots should be given some actual in-flight experience with bad (IFR) weather (under proper supervisions, of course). Education should also pass from the pilot to others. Pilots should be informed that they have the responsibility of passing weather information to the tower, **UNICOM**, etc., in

regard to wind shear, winds not as forecast or not as indicated, etc. There is a real need for timely exchange of safety information between all concerned.

Several other items were touched upon briefly. They included:

- Too much background noise on ATIS (Automatic Terminal Information Service)--difficult to understand;
- TWEB/PATWAS updating not frequent enough--"Updating TWEB is 9 or 10 on the FSS priority list";
- 927 airports have instrument approaches without observations;
- Need an FAA publication on good practices of UNICOM operations (should include altitude restrictions on UNICOM);
- In the A.I.M., the section on good operating practices should be examined for things that do not apply to all aircraft and airports. A rewrite is needed to bring them in line with the real world;
- Not enough emphasis is placed on the human factor in accident investigation--especially in general aviation accidents;
- What are the time definitions of ocnl, vrbl, etc. . . . (the definitions are available in NWS and FAA publications).

In conclusion, it was pointed out the importance of proper attitude in pilots. Proper attitude must be instilled --you cannot legislate common sense!