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ATION SERIES NO. 9

FLYING WEATHER INFORMATION. . .

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What it Means to the Pilot



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U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

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FLYING WEATHER INFORMATION . . .

Weather is vital to successful planning and completion of flight operations. To meet this need various weather reporting and forecasting services are available.

The U. S. Weather Bureau is responsible for providing basic weather information for the general public, commerce, and agriculture. As a part of this responsibility, the Weather Bureau aids aviation by providing reports of flying weather conditions and regularly issuing flying weather forecasts. It also furnishes pilots with flight weather briefings so far as its resources permit. These reporting and briefing services are available to pilots through approximately 250 airport offices of the Weather Bureau. At some 200 other locations where there are no government weather stations, the Federal Aviation Agency's Air Traffic Communication Stations (ATCS) perform flight weather briefing service, using reports and forecasts furnished by the Weather Bureau.



U. S. Weather Bureau Photo

FIG. 1 - AUTOMATIC VOICE TRANSCRIBING EQUIPMENT USED IN CONTINUOUS BROADCAST OF AVIATION WEATHER INFORMATION ON FAA L/MF RADIO FACILITIES

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Telephone numbers of Weather Bureau Airport Stations (WBAS) are listed in the FAA Flight Information Manual as a convenience to pilots who wish to telephone the nearest weather station for information. In addition, automatic telephone answering devices to provide weather briefing service for pilots are being installed at WBAS's located in communities having the highest rates of flying activity. These transcribed briefings include forecasts, warnings, and upper air wind conditions for a radius of about 250 miles.



U. S. Weather Bureau Photo

FIG. 2 - PILOT OBTAINING FLYING WEATHER INFORMATION FROM CONTINUOUS TRANSCRIBED BROADCAST

The Weather Bureau and FAA have developed jointly a system for the continuous broadcast of pilot weather briefing information and NOTAMS over low/medium frequency (L/MF) radio facilities of the FAA. See Figures 1 and 2. The weather portion includes forecasts, warnings (or flash advisories), pertinent pilot reports, upper wind conditions, and selected up-to-date weather

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reports from surrounding stations. At this writing such broadcasts are being made at Indianapolis, Washington, Los Angeles, Fort Worth, Chicago, New York, Boston, Denver, Cleveland, Pittsburgh, Cincinnati, and Boise.

Additional broadcasts are being added each month and in another year a nation-wide network of 87 broadcasts will be operating. Other FAA radio facilities can be tuned in at scheduled broadcast times, 15 and 45 minutes past each hour, to obtain additional reports and flash advisories.



Courtesy of Beech Aircraft Corporation

FIG. 3 - PILOTS' SELF-HELP WEATHER BRIEFING STAND PROVIDED BY FLIGHT SERVICE OPERATOR. WEATHER BUREAU REPORTS AND FORECASTS RECEIVED BY PRIVATELY LEASED WEATHER TELETYPEWRITER

These broadcasts, and the automatic telephone transcribed briefings mentioned above, will enable most pilots to obtain routinely a basic weather service at the airport, home, office, or hotel. Where more information is needed for flight planning, pilots are encouraged to telephone the nearest Weather Bureau Airport Station, using the numbers listed in the FAA Flight Information

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Manual. These numbers are also published by flying organizations and distributed to pilots.

Aircraft operators who wish to have their own weather facilities may enter into an agreement with the Department of Commerce for a receiving-only connection to the national weather teletypewriter system by applying to the Chief, U. S. Weather Bureau, Washington 25, D. C. Such a connection will provide them with several hundred reports each hour, plus written forecasts at frequent intervals, thus making available most of the weather information needed to carry out flight operations. A weather briefing room having a privately leased weather teletypewriter is shown in Figure 3.

At some locations weather information may also be obtained from private weather consulting firms who handle specific weather problems for their clients. Some business corporations make considerable use of flying weather information in connection with operation of their own aircraft, and have found it to be to their advantage to engage private weather consultants.

The weather information available to pilots at most weather stations can be divided into three main classes; (1) MAPS of the weather, (2) REPORTS of current weather conditions, and (3) FORECASTS of expected changes in the flying weather. Each of these has a definite place in studying the weather for a flight, but each item also has certain limitations. No one of them is a substitute for the other, and it is to the pilot's advantage to utilize all of the aids to determine the weather conditions he may expect to encounter on a particular flight.

Reports of existing weather conditions are the most universally used of all aviation weather information. There is an extensive network of surface weather observing stations in the United States where detailed observations of flying weather conditions are made each hour, or more often if the weather is changing rapidly. Among other reports available to the pilot are those of radar observations, which help to define rain and

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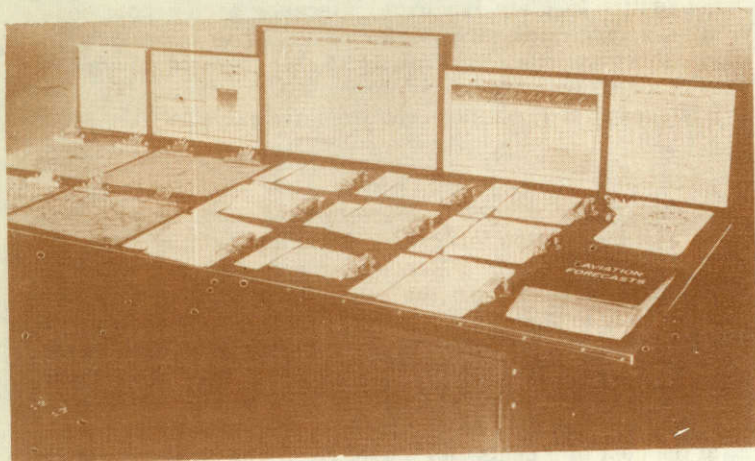
thunderstorm areas, and reports from pilots concerning the in-flight weather encountered. Reports of the weather as seen by pilots while in flight are a very important part of the entire weather reporting system. No one can tell more about the severity of a front, the intensity of the icing in the clouds, or the actual flying weather conditions between reporting stations than a pilot who has just flown through it. That is why the Weather Bureau is always anxious to obtain these informal, first-hand reports and arranges to give them wide distribution via the teletypewriter circuits, and to post them for ready reference at weather stations.

Forecasts of the flying weather are issued at regular intervals by the Weather Bureau for all sections of the United States. The "area" type forecasts describe such conditions as the location of areas of low clouds, heights of cloud bases and cloud tops, surface visibilities, and the development and movement of severe weather phenomena such as thunderstorms and line squalls. They also contain information on the height of the freezing level and zones of expected icing and turbulence. Forecasts of winds aloft expected at the various flight levels for a number of hours in advance are also made at frequent intervals.

Detailed forecasts for specific air terminals, known as "terminal forecasts," are issued for nearly 400 principal air terminals in the United States. These forecasts state in specific terms the ceiling, visibility, and wind conditions expected at each particular location.

"Flash advisories" are issued by the Weather Bureau as an in-flight weather safety service for flight operations in the contiguous United States. The flash advisory is a two- to four-hour notice of the expected onset or development of any weather condition considered potentially hazardous to aircraft in flight. The advisories are broadcast over FAA radio facilities and are also available for pre-flight use. Specifically they relate to severe weather such as tornadoes, thunderstorms, hail, dust-

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U. S. Weather Bureau Photo

FIG. 4 - DISPLAY OF PILOT WEATHER INFORMATION AT TYPICAL WEATHER BUREAU STATION

storms, icing, and turbulence; also to the onset of phenomena producing extensive areas of low ceilings or restricted visibilities.

Figure 4 shows an aviation weather display typical of that found at most Weather Bureau Airport Stations. This display is maintained for the convenience of the pilot and includes weather maps, aviation weather reports (including reports volunteered by pilots), radar weather reports, upper wind information, and area and terminal forecasts. Charts and posters along the back of the display help the pilot interpret the various information, if he needs assistance. Also in this panel is a chart showing times of sunrise and sunset for all parts of the country. This chart is helpful to pilots who wish to complete their flights during daylight hours.

The pilot who is not familiar with the form of the various written reports and forecasts may wonder why they are

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not written in plain language. Because each report contains a large amount of information, it is necessary to use abbreviations and symbols so that the many hundreds of reports furnished each hour can be transmitted on the teletypewriter circuits in the time available.

Pilots are encouraged to learn to read the hourly reports as well as aviation forecasts. A card providing a Key To Aviation Weather Reports on one side, and a Key To Aviation Forecasts on the other, has been prepared especially to assist pilots in the reading and understanding of this information. These cards have been distributed to all known active pilots. Pilots not having one of these cards may obtain one at most local Weather Bureau offices. It can also be obtained, in the larger quantities, at the cost of 5 cents per card, from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

In using the reports, pilots are encouraged to keep in mind that the regularly available reports can only show conditions as they existed at a particular time and at a particular place. Conditions between stations may be different. Also, there is no assurance that the conditions will remain unchanged, so it is most important also to review the forecasts to see if important changes are expected that would affect the plan of flight.

Pilots having questions about the aviation weather services that are available should feel free to inquire at any Weather Bureau station.