

SOARING WEATHER SERVICE

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Among the more important factors contributing to a sailplane pilot's pleasure and performance is a good description of expected soaring conditions. In the present and past this information has been totally or partially unavailable to the sailplane pilot except during national or other large contests. This is a most regrettable situation since there exists an organization ready and willing to present such information to the sailplane; namely the U. S. Weather Bureau.

The West Coast Soaring Contest Chairman, Bill Hoverman, requested the first author listed above to secure soaring weather information and present it at the pilots' meeting held each contest day. The problem indicated in the first paragraph immediately came to mind. It was then decided to attack this basic problem as well as secure information for this particular contest.

It was readily discovered that, except for the most experienced, soaring pilots did not know exactly what questions to ask of the Weather Bureau, nor were they completely aware of the services which the Bureau could provide them. It was also discovered that most forecasters were not familiar with the needs of soaring pilots. The logical direction to follow, then, was to take a poll of the experienced pilots in the local area in order to limit and define the questions to be put to the Weather Bureau, and then take the questions to an experienced member of the Bureau to determine how the Bureau's information and services could be applied to these questions.

The questions were gathered and presented to the second author listed above. In the resulting conference a system was devised which presumably furnished the information most wanted by the pilot, without duplication or unnecessary details, displayed this information in a clear concise

manner so that it could be carried aloft for reference during flight, made full use of standard Weather Bureau data, and was of such a form that it could be transmitted over the Bureau's teletype system without interfering with normal communications.

The system adopted consisted of essentially three operations: (1) The Weather Bureau's aviation forecaster gathered the appropriate data on a "standard forecast message form", (2) coded this information and had it teletyped to the C.A.A. communica-

TUDE 12000 STABILITY 1 -1
 -1 0 2.

The above information transferred to a "standard forecast message form" is illustrated in Figure 1.

The location of the sites for wind observations were selected because they satisfied two basic conditions, one of which was that balloon soundings were normally conducted at each site, and the other is that the group, when taken together, formed a coverage such that the general circulation of the air mass over the cross country flying region was immediately evident to the interested pilots. The lapse rate, thermal triggering temperature, and maximum expected altitude of thermals pertains to the local soaring site—in this case El Mirage Field, California. The expected stability conditions is specifically designed for cross-country flights in

FIG. 1
WEATHER CONDITIONS

STATION	EL MIRAGE			BISHOP			LAS VEGAS			PHOENIX		
	ALTITUDE MSL	DIRECTION DEGREES FROM NORTH	SPEED MPH	ALTITUDE MSL	DIRECTION DEGREES FROM NORTH	SPEED MPH	ALTITUDE MSL	DIRECTION DEGREES FROM NORTH	SPEED MPH	ALTITUDE MSL	DIRECTION DEGREES FROM NORTH	SPEED MPH
WINDS	5000'	230	12	5000'	210	10	5000'	200	20	5000'	180	10
	10,000'	240	15	10,000'	290	15	10,000'	200	25	10,000'	200	12
	15,000'	240	20	15,000'	270	15	15,000'	220	25	15,000'	220	12
	20,000'	250	20	20,000'	270	20	20,000'	240	30	20,000'	220	18
	25,000'	270	25	25,000'	270	25	25,000'	250	35	25,000'	230	20
LAPSE RATE °F/1000 FT.	MSL 5000'	MSL 10,000'	MSL 15,000'	ADDITIONAL INFORMATION:								
	5	5	3									
THERMAL TRIGGERING TEMP.	93° F											
MAX. EXPECTED ALTITUDE OF THERMALS	MSL 12,000											
EXPECTED STABILITY CONDITIONS* ~200 MI. FROM STATION	N	NE	E	SE	S							
	1	-1	-1	0	2							

*DEFINITION OF EXPECTED STABILITY CONDITIONS:
 - 2 = CUMULUS-NIMBUS ; 1 = WEAK THERMALS, DRY
 - 1 = CUMULUS ; 2 = DOUBTFUL
 0 = UNSTABLE, DRY ; 3 = FLAT

DATE: JULY 3, 1955

tions station closest to the soaring site, and (3) the soaring pilot telephoned the C.A.A. station, recorded the coded information verbatim, and then transferred this information at his leisure to a "standard forecast message form."

A sample "standard forecast message" in its coded form is given as follows:

Soaring Forecast for July 3: Winds
El Mirage 23012 24015 24020 25020
27025 B1H 21010 29015 27015 27020
27025 LAS 20020 20025 22025 24030
25035 PHX 18010 20012 22012
22018 23020 LAPSE RATE 553
THERMALS AT 93 MAX ALTI-

that it gives the stability conditions at a radial distance of approximately 200 miles from the local soaring site in the directions indicated, e.g., one would expect weak dry thermals 200 miles north of El Mirage, etc.

It will be noted that an effort was made to escape forecasting such unknown quantities as surface winds (experience shows this to be futile). Forecasters generally have no reports of localized surface conditions and it is believed that pilots familiar with local conditions can forecast them better than weathermen at a distance. The same is true for beginning of thermals—from a distance it is better