

WAVE FLIGHT TO 46,267 FT.

by PAUL F. BIKLE

(Editor's note: The following account is the pilot's description of flight which accompanied his applications for new world soaring records for absolute altitude and altitude gained. Calibration of the barograph showed a maximum altitude of 46,267 feet (14,102 meters) and a low point of 3,963.7 feet (1208.1 meters) for a gain of 42,303.3 feet (12,893.9 meters). The record applications have recently been accepted by F.A.I. Contrary to a statement made in the announcement of this flight in the last issue, it takes a 3% increase to establish new altitude records. This flight was made on Saturday, Feb. 25, 1961.)

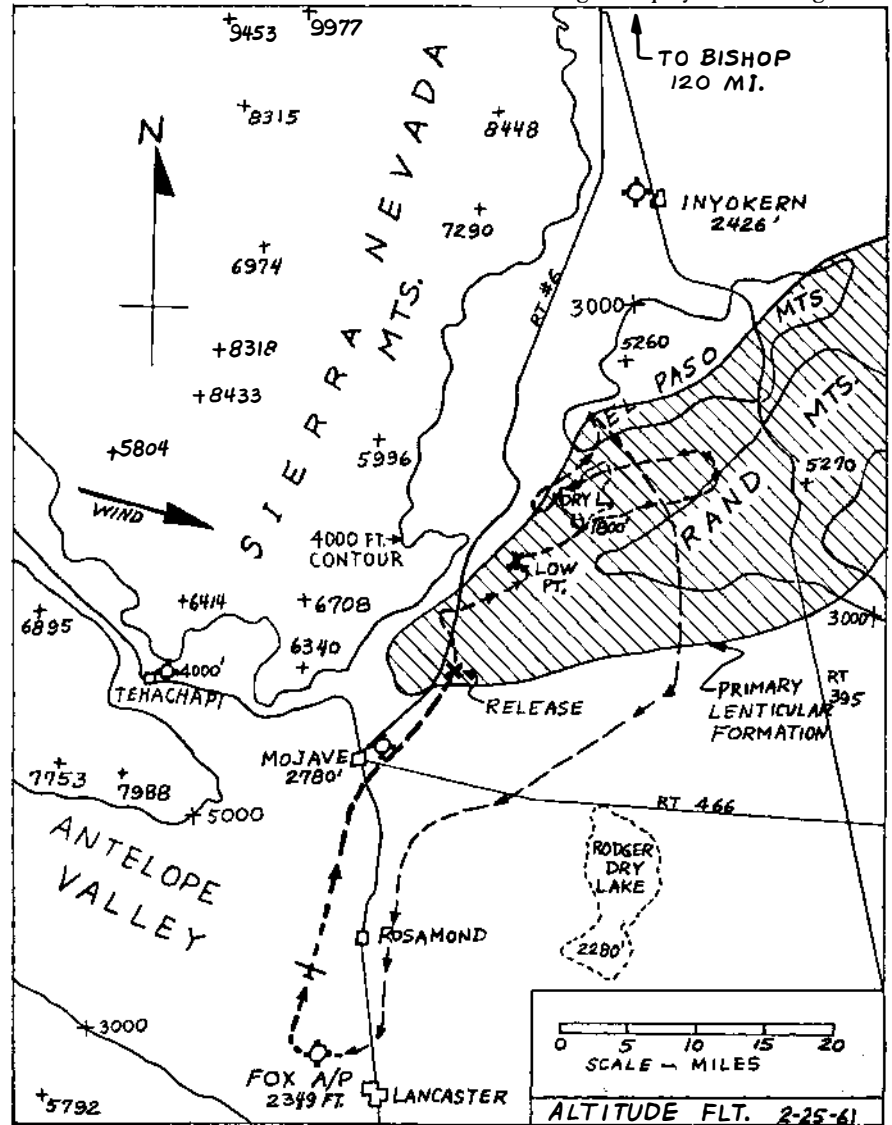
Three weeks before this flight, I had moved my Schweizer 1-23E sailplane to the Fox Airport at Lancaster, Calif., located in the Antelope Valley at the southern end of the Sierra Nevada mountains. This location was close to my home and appeared to be a favorable place to make some altitude flights, based on the results of flights made by Mr. Mancuso in this same area in 1959. In 1952 I made several flights in the wave at Bishop; my highest flight then was to 36,000 feet for my diamond altitude. I have lived in the Antelope Valley since 1952 and have observed, on frequent occasions, lenticular formations as spectacular as any that I have observed at Bishop. My 1-23E was fully equipped with a pressure-demand oxygen system, an attitude indicator, turn indicator, and double-vision panels on the canopy, in addition to the more standard instruments.

On February 23rd it was my good fortune to sit in on a discussion with Messrs. Harold Klieforth, who had done so much of the meteorological work on the mountain wave project conducted by UCLA and the SCSA, and D. Mancuso. On the evening of February 24th, Klieforth called me from Bishop to alert me to the conditions which were then developing that might produce waves the following day. The next morning, February 25th, I examined the available weather information and the indications were that a cold front would pass over the Antelope Valley in the afternoon with winds from the west or northwest of sufficient velocity to produce wave lift to reasonably high altitudes. I made arrangements

for a towplane to be available during the afternoon. By noon I could see large lenticular developments far to the north. By 2:00 P.M. these had extended south to the area of Mojave and a large, sharply defined lenticular was much in evidence about 25 miles northeast of the airport with smaller, more transient fragments forming and dissipating to the lee of the mountains just north of the airport.

After the usual preliminaries, including the sealing and installation of barographs in the sailplane and towplane, take-off was made to the west in a strong, gusty crosswind behind the 85 H.P. Luscombe towplane flown by Mr. James Moeller, who was also the SSA Official Observer for this attempt. Take-off time was 2:55 P.M. An extended tow was

made to the north to reach the area under the first large lenticular. Some wave lift was encountered on the way. An area of sink was flown through just before release was made in relatively strong lift at the southern end of the lenticular. Release altitude was at about 10,000 feet and I immediately started to work my way north in steady 500 or 600 foot per minute lift. It was my intention to fly north and west to the leading edge of the cloud, explore the lift area and then descend to about 6,000 feet to obtain a low point before climbing to altitude. After a short interval I had reached 12,000 feet when I encountered an area of rapid sink. I increased speed to 120 mph to penetrate through this area to the primary wave. Altitude was falling away at an alarming rate when I noticed an area of blowing sand on the ground off to the northeast near a dry lake. This sand was rising abruptly from the ground



at a point about 4 miles down wind from the foot of the Sierras. Turning to the right, I continued at a high speed and high rate of sink until I reached the rising dust. By this time I was down to an altitude of about 2500 feet above the ground, or about 4500 feet above sea level. The rate of sink did not diminish as I had expected, so I turned my attention to locating a suitable landing area in the desert. At this moment, extreme turbulence was encountered; I pulled up nearly vertically to kill off my speed as rapidly as possible. While slowing down, I glanced at the altimeter which was then passing rapidly by 5,000 feet. Rolling level when the speed dropped to 50 mph, I noted that I was in a steady climb approaching 1,000 feet per minute.

The lift at this point was in a narrow band so that I frequently circled and made "S" turns to stay in the lift as I climbed back to 15,000 feet. This portion of the flight was rather rough because of the limited extent of lift and because of periods of letting the sailplane fly itself while I was adjusting and checking my oxygen mask. Above 15,000 feet the lift became smooth and more wave-like in nature as I approached the base of the lenticular. I was a mile, or possibly two miles, back from the leading edge of the cloud. At 19,000 feet I started to fly forward again toward the leading edge but the lift diminished rapidly so I slowed down to remain in the area of maximum lift. My heading was about 290° and the wind velocity appeared to be only about 60 or 65 mph at this altitude.

Frost began forming inside the canopy and cockpit. At 25,000 feet the canopy and double-vision windows were almost completely covered. I was now above the first lenticular. Rate of climb was fairly steady between 1,000 and 2,000+ feet per minute. The area of lift was fairly extensive, although it was necessary to dive forward to regain the lift on at least one occasion and again I turned back to pick up the lift on another occasion. A heading of 280° and a speed of 50 to 60 mph was held to stay in the lift. At 35,000 feet I turned up my oxygen regu-

lator to the maximum pressure setting, tightened the straps and used my left hand to help hold the mask to a tight seal on my face.

The rate of climb started to diminish; at 40,000 feet it was down to about 1,000 feet per minute. I had now been in the air 1 hour and 15 minutes and resolved to continue to 45,000 feet or for not more than 10 minutes above 40,000 feet. At 43,000 feet the lift was below 500 feet per minute when it seemed to pick up again. I continued climbing, letting the speed build up to about 80 mph momentarily. Above 44,000 feet I bled off this speed so that I was down to 40 mph IAS as 45,000 feet was attained on the altimeter. The speed brakes were opened immediately and I descended as rapidly as possible by diving toward the area of sink behind the wave. Near 35,000 feet I leveled off, noted that it was just about 10 minutes since I had climbed past 40,000 feet, and spent some moments scraping at the frost on the canopy.

I found that I was now some 20 miles east of my release point and perhaps 40 miles northeast of the airport. To the east and south a whole series of lenticulars extended as far as I could see in the direction of Phoenix and Tucson. These did not seem to be associated with particular terrain features, but seemed to indicate a continuous wave was being propagated through this part of the air mass. I was far too cold to stay longer. Again the speed brakes were opened and I dropped back to 20,000 feet as I turned toward Fox Airport. Lift was abundant as I flew back between layers of clouds, using the setting sun as a beacon. Soon I could see the airport. I was now down to 15,000 feet. Although the air rushing through the open ventilator was still below freezing,

it felt warm by comparison to the cold cockpit. The frost on the canopy was starting to dissipate, so I again opened the speed brakes and descended rapidly to the airport, landing about 2 hours and 10 minutes after take-off.

(To supplement the foregoing, there follows some excerpts from a letter Bikle wrote concerning the flight.)

My oxygen equipment was quite similar to that used by most of those who have set altitude records in the wave at Bishop. It was a low pressure system using a pressure demand mask and regulator such as those used by fighter pilots at the end of World War II. I had no pressure suit; however, I have had considerable altitude experience while flying in service aircraft and have had ample opportunity to test myself in altitude chambers. Although it is not desirable to try to fly at these heights without a pressure suit or cabin, I did not detect any particular difficulty from this source. Actually, I was so cold (-65° C outside air temperature) that I could not pay attention to anything else. Maximum rate of climb was about 2000 ft./min.

ANY NEW CLUBS?

SSA would like to learn of any new soaring clubs that have come into existence since the 1960 SSA Soaring Directory was published so information about them may be included in the 1961 edition of the Directory which will go to press in the near future. Questionnaires have been mailed to all known clubs but many have not been returned as press deadline approaches. If you are interested in having the information about your club up to date and correct, check to see that your questionnaire has been sent to SSA.

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