

DEPARTMENT OF COMMERCE
Washington

October 20, 1937.

REPORT OF AIRCRAFT ACCIDENT INVESTIGATION

Statement of probable cause concerning an accident
which occurred to an airplane of Western Air Express
Corporation near Salt Lake City, Utah, on
December 15, 1936.

TO THE SECRETARY OF COMMERCE:

On December 15, 1936, at approximately 3:14 a.m., P.S.T., at a point about twenty-three miles southeast of Salt Lake City, Utah, an airplane of United States registry, while being flown in scheduled interstate operation, carrying mail, passengers and express, met with an accident which resulted in death to all persons on board and the complete destruction of the aircraft.

The pilot, S. J. Samson, held a Federal transport pilot's license and a scheduled air transport rating. His semi-annual Department of Commerce physical examination, taken on the 15th day of October, 1936, showed him to be in good physical condition for flying. The copilot, William L. Bogan, held a Federal transport pilot's license. His latest physical examination, taken on July 1, 1936, showed him to be in good physical condition. The third member of the crew was Miss Gladys Witt, Stewardess.

The persons fatally injured were:

S. J. Samson, pilot, Burbank, California,
William L. Bogan, copilot, Burbank, California,
Gladys Witt, stewardess, Burbank, California,
C. Christopher, Dwight, Illinois,
John Wolf, Chicago, Illinois,
Mrs. John Wolf, Chicago, Illinois,
H. W. Edwards, St. Paul, Minnesota.

Two additional passengers embarked at Burbank, California, but left the airplane at Las Vegas, Nevada.

The airplane, a Boeing, model 247-D, was inspected and approved for relicense by the Department of Commerce on July 21, 1936, and bore Federal license No. NC-13370. It was owned by the Western Air Express Corporation of Burbank, California, and at the time of the accident, was being operated by that Corporation as Trip No. Six, scheduled from Burbank, California to Salt Lake City, Utah, with intermediate stop at Las Vegas, Nevada. This operation was conducted under a valid Federal Letter of Authority.

The take-off of the plane from Burbank, California, on December 14, 1936, was made on schedule at 11:15 p.m., P.S.T.

The United States Weather Bureau forecast at that time indicated favorable weather over the route. Observed weather along the route was as follows:

Station	Time	Ceiling	Gen. Con.	Vis.	T.	D.P.	Wind	B.	Remarks
BU SPL Burbank	955P	E1300	LT rain						
	1041P	1700	ovc at 3000						
			LWRBKN	6	51	49	NNE	3003	
			OVC LWR				3		
			SCDT 700.	5	50	49	NNW	3003	
							2		
Fontana	959P	E6000	OVC LT						
			RAIN	5	47	47	N 3	3002	RANST
Saugus	1041P	3200	OVC LT						
			RAIN	3	44	43	NW 2	3003	
Sandberg	1041P	1000	OVC LT						
			RAIN	3	34	34	ENE	3002	
							28		
Palmdale	950P	E2000	OVC LT						
			RAIN	7	39	37	W	3007	CIG IREG
Daggett	950P	E6000	OVC	30	45	32	ESE	3012	BRKS OVHD
							6		
Las Vegas	959P	E7000	OVC LT	30	48	29	NW 1	3015	
			RAIN						
Milford	959P	E9000	OVC	30	37	11	SSW	3007	
							12		
Salt Lake Mtn. Pass	959P	UNL	OVC	8	31	28	WSW	3011	
							6		
	936P	ZERO	CIG IREG OVC AND LESS THAN 50 FT.	5	46		NE 2		

This necessitated flying above the overcast and meant that the ground could not be observed except through occasional breaks in the clouds. At 12:40 a.m., P.S.T., the pilot requested and received authority to proceed from Kelly Field, California to Las Vegas, Nevada on instruments. Arrival at Las Vegas was at 1:08 a.m., P.S.T. While on the ground at Las Vegas, an extra ten minutes was consumed in discussing the weather, particularly between Las Vegas and Burbank, with a south-bound pilot who had arrived at the Las Vegas airport a few minutes prior to the arrival of Trip Six.

The take-off of Trip Six from Las Vegas was 1:27 a.m., P.S.T.

The observed weather at this time was reported as follows:

Station	Time	Ceiling	Gen. Con.	Vis.	T.	D.P.	Wind	B.	Remarks
Las Vegas	1150: PM	EST 6000	OVC LT Rain	20	43	34	SI	3014	
Milford	1159: PM	UNL	HI OVC	30	40	13	S 10	2999	
Salt Lake	1159: PM	UNL	HI OVC Smoky	6	32	26	NW 4	3003	
Gunlock	1150: PM	EST 3500	OVC	20			S 5		
Enterprise	1150P: PST	E4000	OVC	20			S 5		LOW CLOUDS N
Delta	1142P: PST	E2900	OVC	15			S 4		
Eureka	1144P: PST	E6500	OVC	4			SW 3		
Milford	1228A: PST	E6000	OVC	15R	40	13	SSE	2999: 22	

(See Exhibit No. Nineteen)

This again indicated over-top flying. Trip Six was next heard from at 1:55 A. M., P.S.T., at which time the pilot stated that he could not hear the ground station. (Las Vegas). At 1:56 A. M., P.S.T., Las Vegas contacted the Department of Commerce Radio Station at Milford, Utah, stating that it could not contact Trip Six and requested Milford to attempt to do so. Milford contacted the flight and all subsequent messages to the pilot were relayed through the Milford station.

The station radio log at Milford shows that at 2:17 A.M., P.S.T., the pilot requested instrument clearance and continuous range operation from Enterprise to Milford. This clearance was authorized through the Western Air Express dispatcher at Burbank. At 2:23 A. M., P.S.T. the pilot gave his position as over Milford. The radio operator at Milford saw the lights of the airplane as it passed over the station and verified its position to the pilot. At 2:27 A. M., P.S.T., the

pilot informed Milford that continuous range operation was no longer necessary as he could see the Black Rock Beacon. This was the last message received from Trip Six.

Calculating the speed of the airplane between various points, it was first expected to arrive at the Salt Lake City Airport approximately twenty-three minutes ahead of schedule. No particular concern was felt for the safety of the flight until after the scheduled time for its arrival had elapsed and the airplane was still unreported. When it became evident that something had happened to the flight, an immediate search was organized. Due, however, to the mountainous terrain and bad weather conditions, it was not until July 6, 1937, that the first parts of the wreckage were located, in spite of a continuous and heroic search. Investigation at this time disclosed that the airplane had collided with a mountain in the vicinity of Lone Peak, approximately twenty-three air miles southeast of Salt Lake City, Utah. The collision occurred within approximately fifteen feet from the top of the mountain. A piece of the cabin and a portion of the under-carriage and many small portions of the airplane were found at the point where the collision occurred. The main parts of the airplane had continued on over a precipitous cliff and had dropped into a basin about one thousand feet below.

In reviewing the facts and circumstances surrounding the accident, there is no record of anything worthy of note having occurred until after Trip Six departed from Las Vegas enroute to Salt Lake City. From Enterprise, Utah to Milford, the trip was authorized and did proceed on instruments. At Milford, the next check-point, the pilot recognized the ground station, and the ground station operator definitely confirmed his position. At this point, the pilot's log indicates that

that the airplane had made a ground speed of 207 miles per hour. It should be noted here that this time included taking off from Las Vegas and the time consumed in reaching an altitude of ten thousand feet between Las Vegas and Milford, a distance of approximately one hundred eighty-six miles. The normal cruising speed of the airplane was 162 miles per hour. The ground speed attained definitely indicates that the airplane was flying with a tail wind of forty-five miles or more, per hour.

Exactly how far the trip proceeded with the ground in view after leaving Milford is undeterminable. The pilot did state at Milford that he could see the Black Rock Beacon, which was 22 miles ahead and on course. From the location of the accident, directly in the projected path of the north leg of the Milford Radio Range, it is reasonably certain that the pilot received the signals from this Range for a sufficient time to get a definite setting on his gyroscopic compass, which would enable him to maintain his course for a considerable time without radio signals. This course should have been abandoned for the south leg of the Salt Lake Radio Range at the point where the Salt Lake Range intersects the north leg of the Milford Range. The evidence clearly shows that for some reason the pilot missed the intersection of these two range legs and continued on the Milford Range beyond the intersection for a distance of approximately twenty-two and one-half miles to where the accident occurred. Considering the speed of the airplane, this represents flying time of approximately six and one-half minutes.

The pilot failed to make a routine position report at 2:55 A.M., P.S.T. However, there is nothing unusual about this, as when concerned about the flight, the pilot would, in all probability, delay making these reports until a more opportune time. In this case, based upon the pilot's estimate of the ground speed of the airplane, he would expect to reach the Salt Lake Range at approximately 3:03 A.M., P.S.T.; eight minutes after the time for the routine position report. The pilot was probably attempting to tune in the Salt Lake Range during this period.

It is not believed that a pilot of Mr. Samson's experience, who had flown the Burbank to Salt Lake Route for a period of four years and had to his credit approximately four thousand flying hours along the route traversed by Trip Six, would have failed to recognize the Salt Lake Range had he had proper radio reception or had it been possible for him to have seen anything on the ground. It is reasonable to assume, therefore, that the ground could not be seen and that, for some reason, his radio was not functioning properly and that he was attempting to establish contacts with the emergency set.

At the time Trip Six was approaching the south leg of the Salt Lake Radio Range and at the time of the accident, it is known that snow was falling above a ten thousand foot altitude which reached the ground in the form of rain. It is, therefore, reasonable to assume that the pilots were receiving static interferences in radio reception and experiencing icing conditions at the time the Salt Lake Range was most needed.

Other flights in the general vicinity of Salt Lake City, at or near the time of the accident, encountered static icing conditions.

A careful examination of the wreckage was made, but due to the complete destruction of the airplane, it was impossible to determine whether any malfunctioning of controls or accessories contributed to the cause of the accident. All the major components of the airplane were accounted for. The instrument board was recovered, but was so badly damaged that it was of no

value in determining the probable cause of the accident. The major parts had hurtled over the ridge of the mountain and made a sheer drop of approximately one thousand feet into the basin below. The tail group, the fuselage, the right wing and the two engines were found in widely separated places. Except for the engines, the distribution of the wreckage contributed little to the investigation, as snow and rock slides had, besides battering the parts materially, changed their original position within the basin. One engine had shifted its original position but left definite indication as to where it first came to rest and indicated that at the time of the impact, the airplane was traveling on the course indicated by the north leg of the Milford Radio Range.

The evidence also shows that at the time of impact with the mountain, the airplane was flying at an altitude of approximately eleven thousand feet, it being in normal attitude, the wheels retracted and at normal cruising speed, or better. Witnesses testified that both of the engines were functioning normally, which testimony was substantiated by other evidence. All propeller blades were accounted for. Three watches were recovered which definitely fixed the time of the accident as 3:14 A.M., P.S.T.

In arriving at the probable cause of the accident, based upon an analysis of available evidence, it does not appear that the accident was due to mechanical failure or failure of the Company or crew to operate or navigate the airplane in accordance with prevailing rules and practices.

The evidence disclosed that strong southwest winds developed as Trip Six proceeded towards Salt Lake City and that the ceiling at Salt Lake City lowered materially without warning. These conditions were not deemed serious, and without other factors present would not have, in all probability, caused the accident. There is no definite evidence as to why the pilots were unable to receive the signals of the south leg of the Salt Lake Radio Range.

As previously indicated, however, it is believed that Pilot Samson's failure to receive the signals might have been caused by severe static conditions or malfunctioning of the radio instruments within the airplane.

It is the opinion of the Accident Board that the probable cause of the accident was inability of the pilots to identify the south leg of the Salt Lake Radio Range due to a local static condition which rendered both range receivers in the airplane inoperative.

RESPECTFULLY SUBMITTED, this 3rd day of September, A.D. 1937.

(Signed) Glen D. Woodmansee,
Member of Accident Board.

(Signed) Jas. E. Read,
Member of Accident Board.

(Signed) W. E. Phelan,
Member of Accident Board.

(Signed) U. D. Hammond,
Associate-Member of Accident
Board.

(Signed) Preston G. Peterson,
Associate-Member of Accident
Board.

APPROVED:

Daniel C. Roper,
Secretary of Commerce.