

CIVIL AERONAUTICS BOARD
Washington 25, D. C.

June 1949

Joseph J. O'Connell, Jr. - Chairman

Iswald Ryan, Vice-Chairman
Russell B. Adams, Member

Josh Lee, Member
Harold A. Jones, Member

William K. Andrews, Director
Bureau of Safety Investigation

Jesse W. Lankford, Chief
Incident Analysis Division

Ben W. Ashmead, Chief
Statistical Analysis Section

ACCIDENTS IN U. S. SCHEDULED AIR CARRIER
PASSENGER OPERATIONS
(Calendar Years 1948 & 1947)

This report summarizes, comparatively, accidents which occurred in U. S. scheduled domestic and international air carrier passenger services during 1948 and 1947. Statistics are appended showing accident totals, passenger fatalities per 100 million passenger miles, and crew fatalities. Tabulations are also attached detailing accident types, their causes, personal injuries, and aircraft damage.

COMPOSITE DOMESTIC AND U. S. FLAG INTERNATIONAL OPERATIONS (Table I)

Domestic and International U. S. Flag carriers in 1948 combined in transporting 14,540,854 passengers 8,189,726,000 passenger miles at a passenger fatality rate of 1.3 per 100 million passenger miles. The respective figures for 1947 were 14,249,920 passengers and 8,170,951,000 passenger miles at a fatality rate of 2.7.

The 1.3 passenger fatality rate in 1948 was the lowest annual one ever recorded in these combined operations and the 8,189,726,000 passenger miles flown was the highest. The previous low of 1.6 passenger fatality rate was set in 1946 when 7,198,346,000 passenger miles were flown.

In the 1948 operations, there were 64 accidents, of which six were fatal resulting in 103 passenger, and 25 crew fatalities. In 1947, there were 45 accidents of which eight were fatal causing 219 passenger and 30 crew fatalities. Revenue plane miles flown in 1948 aggregated 414,725,998 against 396,269,107 in 1947.

ALL DOMESTIC SCHEDULED OPERATIONS (Table I)

1/

The Bureau of Economic Regulation separates the scheduled domestic air carriers into 3 specific groups, defined as follows:

1. "Trunk Lines: Those permanently certificated scheduled air carriers engaged in the transportation of mail, passengers and property over the major airline networks of the country."

✓ Also, the source of all traffic statistics used in this report.

2. "Feeder Lines: Those temporarily certificated scheduled air carriers engaged in local services of a regional scope." All American Aviation, Inc., and Los Angeles Airways, Inc., although included in the "feeder group" are not considered in this report because of their specialized services involving mail pick-up and the carrying of mail by helicopter.
3. "Territorial Lines: Consist of those permanently certificated scheduled air carriers conducting services wholly in territories or possessions of the United States."

Over 13 Million Passengers Carried

The trunk, feeder and territorial scheduled airlines in 1948 flew 13,168,105 revenue passengers 6,227,932,000 passenger miles at a passenger fatality rate of 1.3 per 100 million passenger miles. This marked the first time that the 13 million figure had ever been reached. In 1947, a total of 12,890,208 passengers were transported 6,307,683,000 passenger miles at a passenger fatality rate of 3.2.

Revenue plane miles in the 1948 operations aggregated 320,834,753 against 313,143,020 in 1947. Out of a total of 53 accidents in 1948 five were fatal. During the previous year there were 36 accidents of which five were fatal.

In the five fatal accidents for 1948, there were 83 passenger and 15 crew fatalities against 199 and 17 respectively, in the preceding year.

The tremendous growth in both safety and operations of the domestic scheduled passenger service is vividly demonstrated when it is noted that in 1938 the number of revenue passengers carried was 1,197,100 and the passenger fatality rate was 4.5 per 100 million passenger miles in the 560 million passenger miles flown. In 1948, there were 13,168,105 revenue passengers transported over six billion passenger miles with a passenger fatality rate of 1.3.

TRUNK LINE CARRIERS (Table Nos. I & II)

These 16 carriers in 1948 flew 12,324,038 revenue passengers 6,077,552,000 passenger miles at a passenger fatality rate of 1.4 in comparison with 12,279,016 passengers flown 6,209,258,000 passenger miles at a 3.2 fatality rate during 1947. In the 301,194,517 revenue plane miles flown (302,098,464 in 1947) there were 45 accidents (33 in 1947), of which five were fatal (an identical number in 1947). In the fatal accidents for 1948 there were 83 passenger and 15 crew fatalities which compared with 199 and 17, respectively, in 1947.

FEEDER AIRLINES (Table Nos. I & VII)

These carriers flew 425,695 revenue passengers 96,965,000 passenger miles without a single passenger or crew fatality in 1948. The respective figures in 1947 were 235,585 passengers and 51,137,000 passenger miles, likewise without a

single passenger or crew fatality. There were also no fatalities in feeder operation during 1946 when 25,118 passengers were carried 7,379,000 passenger miles.

TERRITORIAL CARRIERS (Table Nos. I & VIII)

The two territorial carriers transported 418,372 revenue passengers 3,415,000 passenger miles in comparison with 375,607 passengers and 7,288,000 passenger miles in 1947. In both years, there was not a single passenger or crew fatality. Likewise, in 1946 these carriers operated "fatality free".

TYPES, CAUSES, OPERATIONAL PHASES, INJURY AND DAMAGE IN DOMESTIC AIR CARRIER ACCIDENTS (Table Nos. III, IV, V AND VI) (Trunk, Feeder & Territorial)

Type of Accident vs Operational Phase (Table III)

In 1948 there were 9 accidents involving collapse or retraction of landing gear (6 in 1947). There were 9 collisions with other objects (5 in 1947) of which 3 occurred while taxiing to take-off, 1 during take-off run, 3 while in landing approach, and 2 during landing roll. Overshooting and collisions with other aircraft (both on ground) resulted in 5 accidents each (5 and 1, respectively, in 1947). Failure to lower the gear accounted for 4 accidents in 1948 (2 in 1947). Six accidents were attributed to other causes as follows: Turbulence 2, hailstorm 2 and powerplant failure 2.

There were 5 fires in air (2 in 1947), 4 during normal flight, and 1 during the take-off climb.

Type of Accident vs Injury (Table IV)

Of the 5 fatal accidents in domestic scheduled operation, 1 involved collision with ground, 1 collision with trees, 1 stall, 1 airframe failure. In 1 other, a purser was killed when parts of a failed propeller penetrated the fuselage. There were 2 serious injury accidents as a result of turbulent air.

Operational Phase vs Injury (Table V)

Three of the 5 fatal accidents in 1948 occurred during normal flight, and 2 each during take off climb and landing approach. Four of the 5 fatal accidents during 1947, occurred during normal flight and the other during the take-off run. The 2 serious injury accidents in 1948 and the 4 in 1947 occurred during the course of normal flight as a result of turbulent air.

Included with the 46 minor and no injury accidents were 12 during the landing roll, 8 taxying to take-off, 8 in normal flight, 5 taxying from landing and 3 during take-off climb. The aircraft was damaged at least substantially in these and the remaining 10 accidents, which fell under diversified phase headings.

Aircraft Damage (Table V)

In the 53 total accidents, 7 aircraft were destroyed and 44 received substantial damage. In 1947, six aircraft were destroyed, and 26 were substantially damaged.

Primary Cause vs Operational Phase (Table VI)

Pilot error was the primary cause of 19 (35.8%) of the 53 accidents for domestic scheduled operations in 1948. This factor accounted for 11 (30.6%) of the 36 accidents in 1947. Other personnel error was the primary cause of 1 accident in 1948 (2 in 1947); powerplant 8 (4), airframe failure 2 (0), landing gear, 8 (6), equipment and accessories 1 (0), weather 8 (8), airport-terrain 3 (3), miscellaneous 2 (2) and in one case the cause has not yet been determined.

The detailed factors of these primary causes are set forth in Table VI in relation to the operational phase of the aircraft at time of accident.

U. S. FLAG INTERNATIONAL SCHEDULED CARRIERS

These carriers (see Tables I & IX) transported 1,372,749 revenue passengers 1,961,794,000 passenger miles at a 1.0 passenger fatality rate per 100 million passenger miles in 1948. This compares with 1,359,712 passengers and 1,863,268,000 passenger miles in 1947 at a 1.1 fatality rate. A total of 93,891,245 revenue plane miles were flown against 83,126,087 in the previous year.

There was one fatal accident in 1948 which involved 20 passenger and 10 crew fatalities. In the three fatal accidents recorded in 1947, there were also 20 passenger fatalities; crew fatalities numbered 13.

Passenger Mile Total Highest on Record

The calendar year 1948 marked the third consecutive year in which these carriers exceeded the one billion passenger mile figure. This total, slightly below two billion, was the highest calendar year figure on record.

Lowest Passenger Fatality Rate Since 1942

In the calendar years 1940 and 1942, the passenger fatality rate was zero. But the passenger mile totals reached only 104,504,182 and 277,285,638, respectively. In 1938, these carriers flew the relatively low total of 53,213,021 passenger miles at a passenger fatality rate of 13.2 per 100 million passenger miles. Despite the very impressive expansion in these passenger operations 1938 through 1948, it will be noted that fatality rates have been lowered far more than proportionately to the operational gains registered.

Type of Accident (Tables X & XI)

In the 11 accidents for international operations in 1948, the type of accident included collapse or retraction of the landing gear 4, fire in the air 3, collision with objects 2, collision with ground (fatal) and miscellaneous 1 each.

Primary Cause (Table XII)

Pilot error was the primary cause of 3 (27%) of the 11 accidents in 1948 and of 3 (one-third) of the 9 accidents in 1947. Other personnel error accounted for 4, powerplant failure for 2, and landing gear for 2.

Operational Phase vs Injury and Damage (Table XIII)

The 1 fatal accident in 1948 occurred during the landing approach. In 1947 the 3 noted occurred during the course of normal flight.

INDEX OF TABULATIONS

Tables

- I Comparative Safety Record of All Classes of U. S. Air Carriers in Scheduled Passenger Operations (Calendar Years 1948 and 1947)
- II Comparative Safety Record of Individual Domestic Trunk Line Air Carriers in Domestic Scheduled Passenger Operations (Calendar Years 1948 and 1947)
- III Type of Accident vs Operational Phase in Scheduled Domestic Trunk, Feeder and Territorial Air Carrier Passenger Operations (Calendar Years 1948 and 1947)
- IV Type of Accident vs Injury and Damage in Scheduled Domestic Trunk, Feeder and Territorial Air Carrier Passenger Operations (Calendar Years 1948 and 1947)
- V Operational Phase vs Injury and Damage in Scheduled Domestic Trunk, Feeder and Territorial Air Carrier Passenger Operations (Calendar Years 1948 and 1947)
- VI Primary Cause of Accidents vs Operational Phase in Scheduled Domestic Trunk, Feeder and Territorial Air Carrier Passenger Operations (Calendar Years 1948 and 1947)
- VII Comparative Safety Record of Individual U. S. Domestic Feeder Air Carriers in Scheduled Passenger Operations (Calendar Years 1948 and 1947)
- VIII Comparative Safety Record of Individual U. S. Territorial Air Carriers in Scheduled Passenger Operations (Calendar Years 1948 and 1947)
- IX Comparative Safety Record of U. S. Flag Scheduled Air Carriers in International Passenger Operations (Calendar Years 1948 and 1947)
- X Type of Accident vs Operational Phase in U. S. Flag Scheduled Air Carriers in International Passenger Operations (Calendar Years 1948 and 1947)
- XI Type of Accident vs Injury and Damage in U. S. Flag Scheduled Air Carriers in International Passenger Operations (Calendar Years 1948 and 1947)
- XII Primary Cause of Accidents vs Operational Phase in U. S. Flag Scheduled Air Carriers in International Passenger Operations (Calendar Years 1948 and 1947)
- XIII Operational Phase vs Injury and Damage in U. S. Flag Scheduled Air Carriers in International Passenger Operations (Calendar Years 1948 and 1947)

Charts

- A Passenger Fatality Rate and Passenger Miles in Domestic Air Carrier Scheduled Passenger Carrying Operations (Calendar Years 1938 - 1948)
- B Number of Air Carrier Accidents in Scheduled Domestic Passenger Carrying Operations (Calendar Years 1938 - 1948)

COMPARATIVE SAFETY RECORD OF ALL CLASSES OF U. S. AIR CARRIERS
 An Analysis of Accidents and Fatalities
 (Calendar Years 1948 & 1947 by Quarters)

TABLE I

Classes of Operation	Accidents		Passenger Carried ^{1/}		Passenger Miles ^{2/}		Passenger Fatalities per 100 Million Passen-ger Miles		Crew Fatalities Pilot Copilot Other		Revenue ^{3/} Planes Miles	
	Total	Fatal	Carried ^{1/}	Fatal ^{2/}	Miles (000)	per Leg	per 100 Mil-lion Miles	per Leg	Pilot	Copilot	Other	per Mile
DOMESTIC												
<u>Trunk Lines</u>												
1st Quarter 1948	12	3	2,326,912	11	1,218,368	"	0.9	2	2	2	3	66,613,814
2nd Quarter "	8	1	3,331,887	39	1,642,883	2.4	1.9	1	1	1	2	77,054,574
3rd Quarter "	11	1	3,562,031	33	1,714,195	1.9	—	—	—	—	2	82,713,433
4th Quarter "	14	5	3,103,208	—	1,502,126	—	—	—	—	—	—	74,812,696
Total.....	45	5	12,324,038	83	6,077,552	1.4	—	4	4	4	7	301,194,517
<u>1st Quarter 1947</u>	9	1	2,443,924	15	1,272,361	1.2	1.2	1	1	1	1	68,228,591
2nd Quarter "	10	3	3,295,219	137	1,666,120	8.2	—	2	2	3	4	76,681,751
3rd Quarter "	6	—	3,588,094	—	1,795,394	—	—	—	—	—	—	82,788,948
4th Quarter "	8	1	2,951,779	47	1,475,383	3.2	—	—	—	—	3	74,392,174
Total.....	33	5	12,279,016	199	6,209,258	3.2	—	—	—	—	8	302,098,664
<u>Feeder Lines</u>												
1st Quarter 1948	1	—	56,051	—	12,914	—	—	—	—	—	—	2,846,547
2nd Quarter "	2	—	106,057	—	23,877	—	—	—	—	—	—	3,943,043
3rd Quarter "	2	—	142,860	—	32,350	—	—	—	—	—	—	4,784,069
4th Quarter "	2	—	120,727	—	27,824	—	—	—	—	—	—	4,705,543
Total.....	7	—	425,695	—	96,965	—	—	—	—	—	—	16,279,202
<u>1st Quarter 1947</u>	—	—	23,922	—	5,464	—	—	—	—	—	—	1,092,626
2nd Quarter "	—	—	57,127	—	11,810	—	—	—	—	—	—	1,893,410
3rd Quarter "	—	2	90,077	—	19,316	—	—	—	—	—	—	2,597,801
4th Quarter "	—	—	64,452	—	14,547	—	—	—	—	—	—	2,715,391
Total.....	—	2	235,585	—	51,137	—	—	—	—	—	—	8,299,228

TABLE I (Continued)

Classes of Operation	Accidents Total	Fatal Accidents	Passenger Carried 12/	Passenger Miles (000)	Passenger Fatalities per 100 M.L. Passenger Miles	Fatalities per 100 M.L. Passenger Miles	Crew Fatalities Pilot Capilot Other	Passenger		Revenue Plane Miles
								2/	3/	
Territorial Lines										
1st Quarter 1948	-	-	97,344	12,181	1.2	2	2	759,117	828,225	
2nd Quarter "	-	-	101,733	13,092	1.3	1	2	828,225	1,032,750	
3rd Quarter "	-	-	124,873	16,424	1.3	1	2	1,032,750	740,942	
4th Quarter "	-	-	94,622	11,718	1.0	1	2	740,942	3,361,034	
Total.....	-	-	418,372	53,415	-	-	-	3,361,034	571,902	
1st Quarter 1947	1	-	79,774	9,868	1.1	1	1	571,902	640,945	
2nd Quarter "	-	-	90,237	11,384	1.1	1	2	640,945	781,666	
3rd Quarter "	-	-	107,823	13,966	1.2	1	2	781,666	750,825	
4th Quarter "	-	-	97,773	12,070	1.2	1	2	750,825	2,745,328	
Total.....	-	-	375,607	47,288	-	-	-	2,745,328	83,126,087	
Sub-Total Domestic										
1st Quarter 1948	13	3	2,480,307	11	1.9	2	2	70,219,478	81,325,842	
2nd Quarter "	10	1	3,539,677	39	1.0	1	1	81,325,842	88,530,252	
3rd Quarter "	13	1	3,829,764	33	1.0	1	1	88,530,252	86,259,192	
4th Quarter "	-	-	3,318,357	-	-	-	-	86,259,192	325,834,753	
Total.....	-	5	13,168,105	63	1.3	4	4	325,834,753	-	
1st Quarter 1947	10	1	2,547,620	15	1.2	1	1	69,893,119	79,216,106	
2nd Quarter "	10	3	3,442,583	137	1.6	2	3	79,216,106	86,168,415	
3rd Quarter "	8	-	3,785,994	-	-	-	-	86,168,415	77,865,280	
4th Quarter "	8	1	3,114,011	42	1.0	1	1	77,865,280	-	
Total.....	36	5	12,890,208	199	2.0	4	5	-	83,126,087	
INTERNATIONAL										
1st Quarter 1948	3	-	317,639	-	-	397,272	-	21,041,759	22,906,760	
2nd Quarter "	5	-	330,353	20	4.0	495,160	4.0	22,906,760	25,722,105	
3rd Quarter "	1	-	393,784	-	-	573,210	-	25,722,105	24,220,621	
4th Quarter "	4	2	330,973	-	-	496,152	1.0	24,220,621	93,891,245	
Total.....	11	1	1,372,749	20	1,961,794	-	-	93,891,245	-	
1st Quarter 1947	2	1	328,627	-	337,373	-	-	17,530,026	17,530,026	
2nd Quarter "	3	1	339,921	7	485,358	1.4	1	17,530,026	20,521,326	
3rd Quarter "	3	1	394,064	-	588,633	-	-	20,521,326	23,675,949	
4th Quarter "	1	3	297,100	12	451,904	2.2	1	23,675,949	21,398,786	
Total.....	9	3	1,359,712	20	1,863,268	1.1	1	21,398,786	83,126,087	

Classes of Operation	Accidents Total	Passenger Carried/ Fatalities	Passenger 2/			Revenue Plane Miles
			Total Fatal	Crew Fatalities	Passenger miles (000)	
<u>Grand Total All Carriers</u>						
1st Quarter 1948	16	3	2,797,946	11	1,640,715	•1
2nd Quarter "	15	2	3,870,030	59	2,175,012	2.7
3rd Quarter "	14	1	4,223,548	23	2,336,179	1.4
4th Quarter "	19	=	3,669,230	=	2,037,820	=
Total.....	64	6	14,540,854	103	8,189,726	1.3
1st Quarter 1947	12	2	2,876,247	15	1,625,066	•9
2nd Quarter "	13	4	3,782,504	144	2,174,672	6.6
3rd Quarter "	11	-	4,180,058	-	2,417,309	-
4th Quarter "	9	2	3,411,111	60	1,953,204	2.1
Total.....	45	8	14,249,920	219	8,170,951	2.7

1/ Revenue passengers only.

2/ Both revenue and non-revenue.

2/ In scheduled passenger carrying.

NOTE: Excludes propeller accidents to persons.

Statistics for 1948 contained in this and subsequent tables are subject to slight revision.

COMPARATIVE SAFETY RECORD OF INDIVIDUAL DOMESTIC TRUNK LINE AIR
CARRIERS IN DOMESTIC SCHEDULED PASSENGER OPERATIONS
(Calendar Years 1948 & 1947 by Quarters)

TABLE II

Operators	Accidents		Passenger ¹		Passenger ²		Revenue ³	
	Total	Fatal	Carried ¹	Carried ²	Fatal ²	Miles (000)	Crew Fatalities	Plane Miles
<u>American Airlines</u>								
1st Quarter 1948	1		462,528	237,993		10,415,885		
2nd Quarter "	5	748,031	365,285			13,125,019		
3rd Quarter "	2	835,642	399,212			15,057,927		
4th Quarter "	4	734,799	372,655			12,595,148		
Total.....	12	2,781,000	1,375,145			51,193,979		
<u>1st Quarter 1947</u>								
2nd Quarter "	2	-	530,727	203,581		13,245,491		
3rd Quarter "	3	743,630	389,918			14,392,562		
4th Quarter "	2	829,579	423,257			15,122,876		
Total.....	7	652,276	331,590			12,555,211		
			2,756,212	1,428,346		35,316,240		
<u>Braniff Airways</u>								
1st Quarter 1948			112,404	41,518		2,470,015		
2nd Quarter "			152,819	54,638		2,685,699		
3rd Quarter "			151,943	55,199		2,797,570		
4th Quarter "			148,500	52,506		2,797,862		
Total.....			565,666	203,861		10,751,151		
<u>1st Quarter 1947</u>								
2nd Quarter "			123,421	44,647		2,556,959		
3rd Quarter "			152,750	52,202		2,798,794		
4th Quarter "			162,115	56,858		2,861,457		
Total.....			149,195	52,581		2,789,574		
			587,481	206,288		11,006,784		

Operators	Accidents		Passenger		Passenger		Crew Fatalities		Revenue	
	Total	Fatal	Carried	Fatal	Miles (000)	Pilot	Copilot	Other	Plane	Miles
Capital Airlines (P.S.A.)										
1st Quarter 1948	-	-	186,602	-	49,989	-	-	-	3,305,184	
2nd Quarter "	-	-	287,524	-	80,989	-	-	-	4,467,672	
3rd Quarter "	-	-	297,017	-	81,896	-	-	-	4,606,156	
4th Quarter "	-	-	250,756	-	74,062	-	-	-	4,296,156	
Total.....	-	-	1,021,899	-	280,942	-	-	-	16,675,168	
1st Quarter 1947	-	-	201,095	-	52,368	-	-	-	3,375,745	
2nd Quarter "	-	-	320,815	47	88,453	1	1	1	4,300,760	
3rd Quarter "	-	-	320,371	-	86,220	-	-	-	4,319,372	
4th Quarter "	-	-	253,361	-	70,303	-	-	-	3,679,879	
Total.....	-	-	1,095,642	47	297,344	1	1	1	15,675,756	
Chicago & Southern Air Lines										
1st Quarter 1948	-	-	52,969	-	22,380	-	-	-	1,511,807	
2nd Quarter "	-	-	75,675	-	30,711	-	-	-	1,767,114	
3rd Quarter "	-	-	79,265	-	29,737	-	-	-	1,922,237	
4th Quarter "	-	-	73,529	-	27,344	-	-	-	1,872,694	
Total.....	-	-	281,438	-	110,172	-	-	-	7,074,652	
1st Quarter 1947	-	-	58,736	-	24,445	-	-	-	1,602,879	
2nd Quarter "	-	-	76,970	-	31,048	-	-	-	1,804,944	
3rd Quarter "	-	-	77,634	-	31,744	-	-	-	1,886,917	
4th Quarter "	-	-	69,209	-	29,159	-	-	-	1,789,181	
Total.....	-	-	282,549	-	116,396	-	-	-	7,083,921	
Colonial Airlines										
1st Quarter 1948	-	-	23,604	-	6,799	-	-	-	552,867	
2nd Quarter "	-	-	35,523	-	10,056	-	-	-	728,752	
3rd Quarter "	-	-	47,786	-	13,090	-	-	-	947,345	
4th Quarter "	-	-	35,650	-	9,761	-	-	-	847,042	
Total.....	-	-	142,563	-	39,706	-	-	-	3,076,006	
1st Quarter 1947	-	-	22,660	-	6,644	-	-	-	554,490	
2nd Quarter "	-	-	35,235	-	10,143	-	-	-	854,144	
3rd Quarter "	-	-	47,178	-	13,127	-	-	-	1,023,093	
4th Quarter "	-	-	30,550	-	8,697	-	-	-	685,624	
Total.....	-	-	135,623	-	38,611	-	-	-	3,117,351	

TABLE II (Continued)

Operators	Accidents		Passenger Miles		Passenger Miles		Revenue ²	
	Total	Fatal	Carried	Rate ¹² / (000)	Miles	Crew Pilot Copilot Other	Plane Miles	
<u>Continental Air Lines</u>								
1st Quarter 1948	-	1	30,724	11,936	1,203,814	-	-	
2nd Quarter "	1	43,335	15,869	1,409,619				
3rd Quarter "	2	48,148	13,792	1,583,159				
4th Quarter "	2	39,180	12,821	1,393,643				
Total.....	5	161,388	62,776	5,590,235				
1st Quarter 1947	-	1	36,215	12,510	1,124,863	-		
2nd Quarter "	2	45,452	15,858	1,255,374				
3rd Quarter "	1	50,344	19,027	1,453,419				
4th Quarter "	1	37,324	14,285	1,322,050				
Total.....	5	164,362	61,763	5,155,686				
Delta Air Lines								
1st Quarter 1948	2	1	99,610	45,276	3,014,687	2		
2nd Quarter "	-	-	133,273	49,935	3,053,413	-		
3rd Quarter "	2	-	129,720	47,758	2,949,831	-		
4th Quarter "	2	-	123,601	48,761	2,979,227	-		
Total.....	4	-	495,604	191,730	11,046,263	-		
1st Quarter 1947	-	1	107,191	52,857	2,886,242	-		
2nd Quarter "	2	-	129,252	54,236	2,811,099	-		
3rd Quarter "	1	-	137,714	52,416	3,130,050	-		
4th Quarter "	1	-	123,611	47,540	3,036,132	-		
Total.....	5	-	497,768	207,143	11,663,530	-		
Eastern Air Lines								
1st Quarter 1948	5	2	466,083	278,225	12,114,122	1		
2nd Quarter "	-	-	541,928	261,118	12,032,051	-		
3rd Quarter "	1	-	498,776	226,604	11,609,772	-		
4th Quarter "	2	-	491,998	224,261	11,654,318	-		
Total.....	7	2	1,998,785	990,208	47,410,263	-		
1st Quarter 1947	3	1	383,074	15	10,746,781	1		
2nd Quarter "	1	1	440,061	49	11,009,117	2		
3rd Quarter "	1	1	431,577	-	11,573,104	-		
4th Quarter "	1	1	430,190	64	12,217,512	-		
Total.....	6	1	1,734,902	906,304	45,546,514	-		

TABLE 4.4 (continued)

Operators	Accidents		Passenger ^{2/}		Passenger ^{2/}		Revenue ^{1/}	
	Total	Fatal	Carried	Fatal ^{2/}	Miles	(000)	Crew Fatalities	Plane Miles
<u>Inland Air Lines</u>								
1st Quarter 1948	15,366				5,771		567,712	
2nd Quarter "	18,782				7,077		576,631	
3rd Quarter "	21,533				8,195		587,117	
4th Quarter "	17,999				6,616		574,354	
Total.....	73,680				27,659		2,308,314	
1st Quarter 1947	16,564				4,560		437,347	
2nd Quarter "	21,663				8,219		597,015	
3rd Quarter "	23,209				9,270		604,298	
4th Quarter "	16,816				6,466		549,792	
Total.....	78,252				28,515		2,188,452	
<u>Mid-Continent Airlines</u>								
1st Quarter 1948	60,910				19,244		1,651,803	
2nd Quarter "	87,561				27,329		2,110,237	
3rd Quarter "	86,711				26,995		2,175,118	
4th Quarter "	77,919				24,267		2,032,285	
Total.....	313,501				97,835		7,969,743	
1st Quarter 1947	53,102				17,073		1,273,938	
2nd Quarter "	69,524				22,359		1,699,212	
3rd Quarter "	80,680				25,255		1,952,889	
4th Quarter "	65,717				20,820		1,648,499	
Total.....	269,023				85,507		6,574,538	
1st Quarter 1948	-	-			-		-	
2nd Quarter "	-	-			-		-	
3rd Quarter "	-	-			-		-	
4th Quarter "	-	-			-		-	
Total.....	-	-			-		-	
<u>National Airlines</u>								
1st Quarter 1948	30,028				16,924		901,307	
2nd Quarter "	36,253				22,720		1,264,643	
3rd Quarter "	44,898				25,928		1,662,570	
4th Quarter "	54,373				32,477		1,815,218	
Total.....	165,652				98,049		5,643,738	
1st Quarter 1947	78,705				48,570		3,401,703	
2nd Quarter "	86,900				45,005		2,629,662	
3rd Quarter "	73,347				36,548		2,077,193	
4th Quarter "	68,675				35,336		2,050,996	
Total.....	307,627				165,459		9,159,554	

TABLE II (Continued)

Operators	Accidents			Passenger			Revenue		
	Total	Fatal	Carried	Fatal	Miles (000)	Miles (000)	Crew Fatalities	Pilot	Copilot
<u>Northeast Airlines</u>									
1st Quarter 1948			47,876		9,476			690,276	
2nd Quarter "			68,698		13,809			827,888	
3rd Quarter "			96,478		19,528			1,059,996	
4th Quarter "			59,240		11,911			787,500	
Total.....			272,392		54,724			3,365,660	
1st Quarter 1947			67,380		13,064			888,595	
2nd Quarter "			85,779		16,839			1,001,183	
3rd Quarter "			98,099		20,100			1,182,573	
4th Quarter "			73,914		14,612			865,227	
Total.....			325,172		64,465			3,937,578	
<u>Northwest Airlines</u>									
1st Quarter 1948			-		-			-	
2nd Quarter "			-		-			-	
3rd Quarter "			1		107,078			4,400,777	
4th Quarter "			4		72,528			4,821,846	
Total.....			6		338,734			3,982,222	
1st Quarter 1947			110,422		-			3,420,792	
2nd Quarter "			178,182		-			4,170,843	
3rd Quarter "			192,138		33			4,374,273	
4th Quarter "			133,448		-			4,403,809	
Total.....			614,190		33			3,868,096	
1st Quarter 1948			127,265		65,200			11,721,619	
2nd Quarter "			2		101,041			13,054,956	
3rd Quarter "			1		112,865			14,210,659	
4th Quarter "			1		76,889			13,165,022	
Total.....			5		355,995			52,152,256	
1st Quarter 1948			234,769		195,016			9,561,250	
2nd Quarter "			330,608		244,005			11,753,741	
3rd Quarter "			356,149		257,375			13,035,664	
4th Quarter "			315,375		218,307			12,630,315	
Total.....			1,236,901		914,703			46,980,970	
1st Quarter 1947			-		181,492			873,740	
2nd Quarter "			4		273,661				
3rd Quarter "			2		322,810				
4th Quarter "			1		288,870				
Total.....			4		1,066,833				

- 14 -

CO

Operators	Accidents		Passengerz/		Passengerz/		Revenue 3/	
	Total	Fatal	Carried	Carried	Miles (000)	Miles (000)	Crew Fatalities	Plane Miles
<u>United Air Lines</u>								
1st Quarter 1948	1	-	331,664	-	193,374	-	-	-
2nd Quarter "	1	-	523,453	39	330,216	1	2	13,992,761
3rd Quarter "	1	-	598,758	-	364,508	-	-	14,973,781
4th Quarter "	1	-	480,927	-	285,847	-	-	12,443,083
Total.....	3	-	1,934,812	39	1,173,945	1	2	52,999,957
1st Quarter 1947	2	-	354,948	-	221,937	-	-	11,731,044
2nd Quarter "	1	-	508,218	41	317,928	-	1	13,518,492
3rd Quarter "	1	-	620,245	-	390,731	-	-	16,131,986
4th Quarter "	2	-	433,734	47	272,882	-	3	13,141,788
Total.....	5	-	1,917,145	88	1,202,479	1	4	54,523,310
<u>Western Air Lines</u>								
1st Quarter 1948			61,953		24,680		1,481,592	
2nd Quarter "			70,142		28,745		1,557,337	
3rd Quarter "			77,069		32,300		1,699,349	
4th Quarter "			65,903		25,916		1,572,216	
Total.....			275,067		111,661		6,310,494	
1st Quarter 1947			101,249		39,657		1,870,441	
2nd Quarter "			124,233		50,467		1,881,379	
3rd Quarter "			116,467		52,590		2,030,248	
4th Quarter "			69,968		28,189		1,569,191	
Total.....			412,077		170,903		7,351,259	
<u>Guard Total - Trunk Lines</u>								
1st Quarter 1948	12	3	2,326,912	11	1,218,348	2	2	66,613,814
2nd Quarter "	8	1	3,331,887	39	1,642,883	1	1	77,054,574
3rd Quarter "	11	1	3,562,031	33	1,714,195	1	2	82,713,433
4th Quarter "	14	5	3,103,208	-	1,502,126	-	7	74,812,696
Total.....	45	5	12,324,038	83	6,077,552	4	7	301,194,517
1st Quarter 1947	9	1	2,443,924	15	1,272,361	1	1	68,228,591
2nd Quarter "	10	3	3,295,219	137	1,666,120	2	4	76,681,751
3rd Quarter "	6	1	3,588,094	-	1,795,394	-	3	82,788,948
4th Quarter "	8	1	2,951,119	47	1,475,383	1	3	74,299,174
Total.....	33	5	12,279,016	199	6,209,258	4	8	302,098,464

1/ Revenue passengers only.

2/ Both revenue and non-revenue.

3/ In scheduled passenger operations.

NOTE: Excludes propeller accidents to persons.

TYPE OF ACCIDENT VS OPERATIONAL PHASE IN SCHEDULED DOMESTIC TRUNK, FEEDER AND TERRITORIAL AIR CARRIER PASSENGER OPERATIONS
 (Calendar Years 1948 and 1947)

TABLE III

Type of Accident	OPERATIONAL PHASE										Total		
	To Take Off	From Landing	Other	Run	Climb	Take Off	Normal Flight	Landing Level	Ground Roll	Around	Start Engines	Idling	Other
Ground, or water loop													2
1948													1
1947													1
Wing tips landing													4
1948													1
1947													1
Hard landing													4
1948													1
1947													1
Wheels up-down													4
1948													2
1947													2
Gear—retract, Landing Gear													5
1948													5
1947													9
Overshoot													5
1948													5
1947													1
Collision—two aircraft													3
Both on ground													4
1948													1
1947													1
Collision—ground or water													3
1948													2
1947													2
Collision—objects													9
1948													5
1947													1
Stall													1
1948													1
1947													1

- 16 -

TABLE III (Continued)

Type of Accident	OPERATIONAL PHASE												Total	
	Taxying			Take Off			Landing			Ground				
	To	From	Landing	Other	Run	Climb	Normal Flight	Approach	Level Off	Roll	Around	Start Engine	Idling	
Fire on ground														1
1948.....													-	-
1947.....														5
Fire in air														2
1948.....														3
1947.....														1
Airframe failure														6
1948.....														7
1947.....														1
Other														
1948.....														
1947.....														
Unidentified														
1948.....														
1947.....														
Total														53
1948.....														2
1947.....														36

a/ Includes 1 territorial accident.

b/ Includes 1 feeder accident.

c/ Includes 2 feeder accidents.

d/ Took off with locked controls.

e/ Four accidents involved turbulent air, 1 involved static discharge and 1 check pilot engaged gust lock.

f/ Two accidents involved hailstorms, 2 involved turbulent air and 2 powerplant failure.

g/ Excludes propeller accidents to persons.

TYPE OF ACCIDENT VS INJURY AND DAMAGE IN SCHEDULED DOMESTIC TRUNK,
FEEDER AND TERRITORIAL AIR CARRIER PASSENGER OPERATIONS
(Calendar Years 1948 and 1947)

TABLE IV

Type of Accident	Injury Index			Total	Aircraft Damage		
	Fatal	Serious	Minor-None		Destroyed	Substantial	Minor-None
Ground, or water loop							
1948.....			2	2			2
1947.....			1	1			1
Wing tips landing							-
1948.....			1	1			1
1947.....			1	1			1
Hard landing							
1948.....			1	1			
1947.....			-	-			
Wheels up-down							
1948.....			b/	4			4
1947.....			2	2			2
Caps.—retract. landing gear							
1948.....			a/	9			9
1947.....			6a/	6			6
Overshoot							
1948.....			c/	5			5
1947.....			5	5			5
Collision—two aircraft							
Both on ground							
1948.....			b/	5			5
1947.....			1	1			1
Collision—ground or water							
1948.....	1		1	2			-
1947.....	2		2	4			2
Collision—objects							
1948.....	1		c/	9			9
1947.....	-		8b/	5			5
Stall							
1948.....	1			1			
1947.....	-			-			
Fire on ground							
1948.....			1	1			1
1947.....			-	-			1
Fire in air							
1948.....	-		5	5			5
1947.....	1		1	2			1
Airframe failure							
1948.....	1		2	3			2
1947.....	-		1	1			1
Other							
1948.....	1	2	3	6			4
1947.....	1	4	2	7			2
Undetermined							
1948.....	-			-			
1947.....	1			1			
Total							
1948.....	5	2	46	53	7	44	2
1947.....	5	4	27	36	6	26	4
Propeller accidents to persons							
1948.....	-	-		-			-
1947.....	1	1		2			2
Grand Total							
1948.....	5	2	46	53	7	44	2
1947.....	6	5	27	38	6	26	6

a/ Includes 1 Territorial and 1 Feeder accident.

b/ Includes 1 Feeder accident.

c/ Includes 2 Feeder accidents.

OPERATIONAL PHASE VS INJURY AND DAMAGE IN SCHEDULED DOMESTIC TRUNK,
FEEDER AND TERRITORIAL AIR CARRIER PASSENGER OPERATIONS
(Calendar Years 1948 and 1947)

TABLE V

Operational Phase	Injury Index			Total	Aircraft Damage			Minor None
	Fatal	Serious	Minor None		Destroyed	Substantial		
<u>Taxying</u>								
To take off				a/ 8 4				8 4
1948.....								
1947.....								
From taxiing				b/ 5 1d.				5 2
1948.....								
1947.....								
Other				c/ 1 -				1 -
1948.....								
1947.....								
<u>Take Off</u>								
Run				d/ 1 -				1 -
1948.....								
1947.....								
Climb				e/ 2 1				2 1
1948.....								
1947.....								
<u>Flight</u>								
No. 1				f/ 2 4				2 4
1948.....								
1947.....								
Landing				g/ 4 4				2 2
Approach								2 1
1948.....								
1947.....								
Level off				h/ 2 2				1 2
1948.....								
1947.....								
Roll				i/ 12 14				11 14
1948.....								
1947.....								
Go around				j/ 2 -				2 -
1948.....								
1947.....								
<u>Ground</u>								
Other				k/ 2 -				2 -
1948.....								
1947.....								
Total				l/ 5 5	m/ 46 27	n/ 53 36	o/ 7 6	p/ 44 26
1948.....								
1947.....								

a/ Includes 7 Territorial and 2 Feeder accidents.

b/ Includes 1 Feeder accident.

c/ Includes 3 Feeder accidents.

d/ Territorial accident.

e/ Took off with locked controls.

Excludes propeller incidents to persons.

PRIMARY CAUSE OF ACCIDENT VS OPERATIONAL PHASE IN SCHEDULED DOMESTIC TRUNK, FEEDER AND TERRITORIAL AIR CARRIER PASSENGER OPERATIONS
 (Calendar Years 1948 and 1947)

TABLE VI

Primary Cause	OPERATIONAL PHASE										Total
	To	From	Taxying	Take Off	Off	Landing	Ground	Start	Engine	Tailing	
	Take Off	Landing	Other	Run	Climb	Normal	Level	Go Around	Roll	Up	Down
Pilot Error											
Misuse, powerplant and controls											
Misuse, 1948.....	1	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Misuse brakes, flight controls, etc.											
1948.....	1	2	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Improper use, flgt. controls, air											
1948.....	1	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Failure to retract or extend gear											
1948.....	3	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Selected unsuitable terrain											
1948.....	2	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Misjudged distance											
1948.....	1	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Failure to observe, aircraft, obj.											
1948.....	5	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Improper instrument operation											
1948.....	1	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Operating recklessly											
1948.....	1	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Inadequate flight preparation											
1948.....	1	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-
Improper use, miscellaneous equipment											
1948.....	1	-	-	-	-	-	-	-	-	-	-
1947.....	-	-	-	-	-	-	-	-	-	-	-

- 20 -

TABLE VI (Continued)

Primary Cause	OPERATIONAL PHASE						Landing			Ground			Total		
	To Taxiing	To Take Off	From Landing	From Run	To Take Off	From Run	Normal Flight	Discon- tinued	Approach	Level Off	Roll	Around	Start Engine	Idle	Other
<u>Other Personal Error</u>															
Inadequate maintenance, aircraft															
1948															
1947															
Improper operation, airport facilities															
1948															
1947															
<u>Powerplant</u>															
Fuel System															
1948															
1947															
Engine structure															
1948															
1947															
Propeller and prop. accessories															
1948															
1947															
Engine accessories															
1948															
1947															
Miscellaneous															
1948															
1947															
Undetermined															
1948															
1947															
<u>Airframe</u>															
Wings, rotors, flaps															
1948															
1947															
Miscellaneous															
1948															
1947															
Landing Gear															
Main landing gear															
1948															
1947															
Nose wheel															
1948															
1947															

TABLE VI (Continued)

Primary Cause	OPERATIONAL PHASE												Total	
	TAXIING			Take Off			Landing			Ground				
	To	From	Taxi	Run	Up	Other	Run	Up	Level	Off	Roll	Ground		
Brakes													1	
1948													1	
1947													1	
Tires													1	
1948													1	
1947													1	
Equipment and accessories													4	
Other													4	
1948													1	
1947													1	
Weather													1	
Rain - fog													1	
1948													1	
1947													1	
Snow - hail													2	
1948													2	
1947													2	
Unfavorable wind conditions for landing, taxiing													1	
1948													1	
1947													1	
Turbulence in flight													3	
1948													6	
1947													1	
Downdraft - updraft													1	
1948													1	
1947													1	
Other													2	
Static													2	
1948													3	
1947													1	
Airport - Terrain													1	
Wet													1	
1948													3	
1947													1	
Snow													1	
1948													1	
1947													1	
Ice													1	
1948													1	
1947													1	

TABLE VI (Continued)

Primary Cause	OPERATIONAL PHASE												Total
	To	Taxing From	Take Off	Off	Landing	Ground	Start	Around	Engine	Idle	Other		
	To Off	Landing	Other	Run	Climb	Discon-	Normal	Approach	Level	Off	Roll		
<u>Airport - Terrain (Continued)</u>													
Other hazard													
1948.....													1
1947.....													-
Miscellaneous													
Bird collision													
1948.....													1
1947.....													-
Undetermined													
1948.....													1
1947.....													-
Still in process													
1948.....													1
1947.....													-
Total													
1948.....													2
1947.....													-
Propeller accidents to persons													
1948.....													2
1947.....													-
GRAND TOTAL													
1948.....													53
1947.....													38

*/ Territorial accident.

Includes 1 Feeder accident.

COMPARATIVE SAFETY RECORD OF INDIVIDUAL U. S. DOMESTIC FEEDER
AIR CARRIERS IN SCHEDULED PASSENGER OPERATIONS
(Calendar Years 1948 and 1947 by quarters)

TABLE VII

Operators	Accidents		Passenger		Crew Fatalities		Revenue
	Total	Fatal	Carried	Fatal	Pilot	Copilot	Other
Challenger Airlines							
1st Quarter 1948	3,256		938				308,822
2nd Quarter "	5,399		1,639				351,154
3rd Quarter "	7,857		2,330				371,319
4th Quarter "	4,816		1,439				338,495
Total.....	21,328		6,346				1,369,790
 Emoire Air Lines							
1st Quarter 1947	-		-				-
2nd Quarter "	760		277				70,690
3rd Quarter "	5,496		1,654				262,214
4th Quarter "	3,727		1,119				272,382
Total.....	9,983		3,050				605,286
1st Quarter 1948	2,880		762				228,704
2nd Quarter "	6,302		1,641				251,623
3rd Quarter "	6,826		1,666				259,494
4th Quarter "	6,640		1,494				252,798
Total.....	22,648		5,563				992,619
1st Quarter 1947	1,828		482				213,019
2nd Quarter "	3,126		766				243,576
3rd Quarter "	4,433		1,023				241,902
4th Quarter "	2,131		598				207,055
Total.....			2,869				905,552

TABLE VII (Continued)

Operators		Accidents			Passenger ^{2/}			Crew Fatalities			Revenue ^{2/} Plane Miles
		Total	Fatal	Carried ^{1/}	Passaenger ^{2/}	Miles (000)	Pilot	Copilot	Other		
<u>Florida Airways</u>											
1st Quarter 1948		-	-	2,291	372	84,718					
2nd Quarter "		-	-	4,087	587	178,600					
3rd Quarter "		1	1	2,867	452	196,541					
4th Quarter "				3,015	469	201,498					
Total.....				12,260	1,880	661,357					
<u>Monarch Air Lines</u>											
1st Quarter 1947		771	118	4,034	1,102	349,515					
2nd Quarter "		1,952	311	7,632	2,087	412,896					
3rd Quarter "		1,831	285	10,171	3,017	457,778					
4th Quarter "		2,252	315	6,358	1,892	430,053					
Total.....		6,806	1,049	28,195	8,098	1,650,242					
<u>Piedmont Aviation, Inc.</u>											
1st Quarter 1948		1,711	470	1,711	470	167,660					
2nd Quarter "		3,351	882	3,351	882	286,505					
3rd Quarter "		7,351	2,044	7,351	2,044	383,208					
4th Quarter "		5,666	1,400	5,666	1,400	352,870					
Total.....		18,079	4,796	18,079	4,796	1,190,243					
Not operating in 1947.											
1st Quarter 1948		-	-	-	-	282					
2nd Quarter "		-	-	-	-	2,206					
3rd Quarter "		-	-	-	-	3,951					
4th Quarter "		-	-	-	-	3,405					
Total.....		-	-	-	-	9,844					

N.C.

TABLE VII (Continued)

Operators	Passenger 2/ Miles (000)			Revenue Plane Miles		
	Accidents Total	Passenger Fatal	Carried/ Fatal 2/	Crew Pilot	Copilot	Other
Pioneer Air Lines						
1st Quarter 1948	-	1	14,493	4,101	581,444	
2nd Quarter "	-	"	25,126	7,104	828,519	
3rd Quarter "	-	"	26,801	7,838	998,284	
4th Quarter "	-	"	<u>27,435</u>	<u>7,827</u>	<u>1,017,508</u>	
Total.....			<u>93,855</u>	<u>26,870</u>	<u>3,425,755</u>	
1st Quarter 1947	-		8,128	2,516	310,162	
2nd Quarter "	-		15,907	4,513	524,296	
3rd Quarter "	-		19,563	5,634	652,134	
4th Quarter "	-		<u>19,100</u>	<u>5,321</u>	<u>644,820</u>	
Total.....			<u>62,698</u>	<u>17,984</u>	<u>2,131,612</u>	
Robinson Airlines, Corp.						
1st Quarter 1948	-		-	-	-	
2nd Quarter "	-		766	123	-	
3rd Quarter "	-		<u>7,407</u>	<u>1,209</u>	<u>16,566</u>	
4th Quarter "	-		<u>8,173</u>	<u>1,332</u>	<u>152,276</u>	
Total.....					<u>175,842</u>	
Not operating in 1947.						
Southwest Airways						
1st Quarter 1948						
2nd Quarter "			14,585	3,153	479,206	
3rd Quarter "			23,584	4,597	596,922	
4th Quarter "			33,351	6,312	670,366	
Total.....			<u>25,914</u>	<u>5,204</u>	<u>603,792</u>	
			97,434	19,266	2,350,296	
1st Quarter 1947						
2nd Quarter "			7,898	1,467	219,415	
3rd Quarter "			22,772	4,075	449,407	
4th Quarter "			32,874	6,314	602,426	
Total.....			<u>12,924</u>	<u>4,022</u>	<u>521,037</u>	
			83,468	15,881	1,802,285	

- 26 -

TABLE VII (Continued)

Operators	Accidents		Passenger ^{2/}		Crew Fatalities		Revenue ^{2/} Plane Miles
	Total	Fatal	Miles (000)	Carried ^{1/}	Fatal ^{2/}	Pilot Copilot Other	
<u>Trans-Texas Airways^{8/}</u>							
1st Quarter 1948	-	1	2,389	701	7	7	321,753
2nd Quarter "	"	1	3,972	1,102	11	11	379,645
3rd Quarter "	"	-	7,177	2,138	11	11	567,640
4th Quarter "	"	-	8,731	2,404	11	11	575,248
Total.....		1	22,269	6,345			1,844,246
Not operating 1st 3 quarters 1947.							
4th Quarter 1947			1,550	399			219,491
<u>West Coast Airlines</u>							
1st Quarter 1948			10,842	1,430			267,163
2nd Quarter "	"		18,851	2,394			312,283
3rd Quarter "	"		25,728	3,489			356,259
4th Quarter "	"		13,347	1,865			318,651
Total.....			68,768	9,178			1,254,256
1st Quarter 1947			3,586	411			97,652
2nd Quarter "	"		9,259	986			140,336
3rd Quarter "	"		18,529	2,362			259,376
4th Quarter "	"		10,109	1,350			286,228
Total.....			41,483	5,109			783,602
<u>Wisconsin Central Airlines^{2/}</u>							
1st Quarter 1948			343	73			50,345
2nd Quarter "	"		-	2,624			192,345
3rd Quarter "	"		1	5,062			304,470
4th Quarter "	"		-	3,366			250,854
Total.....			11,395	2,213			798,614
Not operating in 1947.							

TABLE VII

Operators	Accidents		Passenger ^{1/}		Passenger ^{2/}		Revenue ^{2/}	
	Total	Fatal	Carried ^{1/}	Fatal ^{2/}	Miles (000)	Crew Fatalities	Plane Miles	
Grand Total - Feeder Lines								
1st Quarter 1948	1		56,051		12,914		2,846,567	
2nd Quarter "	2		106,057		23,877		3,943,043	
3rd Quarter "	2		142,860		32,350		4,784,069	
4th Quarter "	2		120,727		27,824		4,705,542	
Total.....	7		425,695		96,965		16,279,202	
1st Quarter 1947 ^{3/}	-		5,464		23,922		1,092,626	
2nd Quarter "	-		57,127		11,810		1,893,410	
3rd Quarter "	2		90,077		19,316		2,597,801	
4th Quarter "	-		64,459		14,547		2,715,321	
Total.....			235,585		51,137		8,299,228	

^{1/} Revenue only.^{2/} Both revenue and non-revenue.^{3/} In scheduled passenger operations.

Inaugurated passenger service	5/2/47	"	2/1/47
"	"	"	2/20/48
"	"	"	9/19/48
"	"	"	10/11/47
"	"	"	2/24/48

COMPARATIVE SAFETY RECORD OF INDIVIDUAL U. S. TERRITORIAL
AIR CARRIERS IN SCHEDULED PASSENGER OPERATIONS
(Calendar Years 1948 & 1947 by Quarters)

TABLE VIII

Operators	Accidents		Passenger 2/ Carried 1/ Miles (000)		Passenger 2/ Fatal Miles (000)		Crew Fatalities		Revenue Plans Miles
	Total	Fatal	Carried 1/	Fatal 2/	Pilot	Copilot	Other		
<u>Caribbean-Atlantic Airlines</u>									
1st Quarter 1948	-	-	19,823	-	1,249	-	-	98,296	
2nd Quarter "	"	"	17,511	-	1,106	-	-	100,424	
3rd Quarter "	"	"	18,745	-	1,212	-	-	109,778	
4th Quarter "	"	"	18,322	-	1,186	-	-	111,973	
Total.....	1	-	74,401	-	4,753	-	-	420,471	
1st Quarter 1947	-	-	16,229	-	1,036	-	-	99,325	
2nd Quarter "	"	"	16,966	-	1,085	-	-	98,212	
3rd Quarter "	"	"	16,907	-	1,081	-	-	98,970	
4th Quarter "	"	"	18,194	-	1,129	-	-	97,799	
Total.....	-	-	68,296	-	4,341	-	-	394,303	
<u>Hawaiian Airlines</u>									
1st Quarter 1948	-	-	77,521	-	10,932	-	-	660,821	
2nd Quarter "	"	"	84,222	-	11,986	-	-	727,801	
3rd Quarter "	"	"	106,128	-	15,212	-	-	922,972	
4th Quarter "	"	"	76,100	-	10,532	-	-	628,969	
Total.....	-	-	343,971	-	48,662	-	-	2,940,563	
1st Quarter 1947	1	-	63,545	-	8,832	-	-	472,577	
2nd Quarter "	"	"	73,271	-	10,299	-	-	542,733	
3rd Quarter "	"	"	90,916	-	12,685	-	-	682,696	
4th Quarter "	"	"	12,572	-	10,922	-	-	653,019	
Total.....	-	-	307,311	-	42,947	-	-	2,351,025	

TABLE VIII (Continued)

Operators	Accidents		Passenger		Crew Fatalities		Revenue/ Plane Miles
	Total	Fatal	Carried/	Miles (000)	Pilot	Copilot	
<u>Grand Total - Territorial Lines</u>							
1st Quarter 1948	-	-	97,344	12,181	759,117		
2nd Quarter "	-	-	101,733	13,092	828,225		
3rd Quarter "	-	-	124,873	16,424	1,032,750		
4th Quarter "	-	-	94,422	11,718	740,242		
Total.....	1	1	418,372	53,415	3,361,034		
1st Quarter 1947	1	1	79,774	9,868	571,902		
2nd Quarter "	-	-	90,237	11,384	640,945		
3rd Quarter "	-	-	107,823	13,966	781,666		
4th Quarter "	-	-	97,972	12,070	750,815		
Total.....	1	1	375,607	47,288	2,745,328		

1/ Revenue passengers only.

2/ Both revenue and non-revenue.

3/ In scheduled passenger operations.

TABLE IX (Continued)

Operators	Passenger ^{2/}			Revenue ^{2/}		
	Accidents		Carried ^{1/}	Fatal ^{1/}	Crew Fatalities	Pilot Copilot Other
	Total	Katal	(100)	(100)	Miles	Miles
<u>Chicago & Southern Air Lines</u>						
1st Quarter 1948	"	1	2,909	2,115	121,930	
2nd Quarter "	"		2,813	2,269	123,985	
3rd Quarter "	"		4,738	4,343	262,716	
4th Quarter "	"		5,012	5,461	317,849	
Total.....	2		15,472	14,294	806,480	
<u>Colonial Airlines</u>						
1st Quarter 1948	"		2,588	1,967	108,521	
2nd Quarter "	"		1,894	1,593	119,190	
3rd Quarter "	"		2,732	2,235	121,930	
4th Quarter "	"		2,551	2,836	132,560	
Total.....	5		9,765	7,681	471,201	
<u>Eastern Air Lines</u>						
1st Quarter 1948	"		3,642	3,642	166,878	
2nd Quarter "	"		4,271	4,271	175,307	
3rd Quarter "	"		3,694	3,694	170,635	
4th Quarter "	"		2,503	2,503	182,811	
Total.....	5		14,110	14,110	695,631	
<u>Midwest Airlines</u>						
1st Quarter 1948	"		"	"	"	
2nd Quarter "	"		4,211	4,211	110,738	
3rd Quarter "	"		2,800	2,800	147,566	
4th Quarter "	"		16,537	16,537	258,304	
Total.....	5					
<u>North Central Airlines</u>						
1st Quarter 1948	"		"	"	"	
2nd Quarter "	"		1,438	1,401	187,320	
3rd Quarter "	"		2,810	2,674	189,280	
4th Quarter "	"		4,248	4,075	187,236	
Total.....	5		16,061	16,061	553,116	
<u>Trans World Airlines</u>						
1st Quarter 1948	"		3,906	4,089	180,180	
2nd Quarter "	"		4,039	4,246	182,418	
3rd Quarter "	"		5,016	5,268	180,180	
4th Quarter "	"		3,100	3,296	185,139	
Total.....	5		16,061	16,061	727,517	
<u>United Air Lines</u>						
1st Quarter 1948	"		3,583	3,595	180,180	
2nd Quarter "	"		4,291	4,320	182,418	
3rd Quarter "	"		4,773	4,816	180,180	
4th Quarter "	"		3,750	3,855	185,139	
Total.....	5		16,397	16,397	727,517	

**COMPARATIVE SAFETY RECORD OF U. S. FLAG SCHEDULED AIR CARRIERS
IN INTERNATIONAL PASSENGER OPERATIONS**
(Calendar Years 1948 & 1947 by quarters)

TABLE IX

Operators	Accidents		Passenger ²		Revenue ³	
	Total	Fatal	Carried	1/ Fatal	Miles	Plane Miles
<u>American Airlines</u>						
1st Quarter 1948	-	1	12,877	12,114	388,018	
2nd Quarter "	"	-	18,737	14,051	478,511	
3rd Quarter "	"	-	19,287	14,951	561,036	
4th Quarter "	"	-	18,113	14,512	540,380	
Total.....	1	1	69,014	55,628	1,967,945	
<u>American Overseas Airlines</u>						
1st Quarter 1947	-	-	18,010	15,001	530,799	
2nd Quarter "	"	-	17,841	14,988	536,393	
3rd Quarter "	"	1	21,321	18,114	542,610	
4th Quarter "	"	-	16,581	14,115	452,957	
Total.....	1	1	73,763	62,218	2,062,759	
<u>Braniff Airways</u>						
1st Quarter 1948	-	-	22,884	22,987	1,374,984	
2nd Quarter "	"	-	18,919	13,217	1,948,760	
3rd Quarter "	"	-	26,563	21,974	2,401,860	
4th Quarter "	"	-	19,602	13,775	1,684,919	
Total.....	1	1	75,617	182,653	7,410,523	
<u>Not operating in 1947.</u>						
1st Quarter 1948	-	-	288	619	69,544	
2nd Quarter "	"	-	1,938	4,285	268,337	
3rd Quarter "	"	-	1,800	3,889	261,569	
4th Quarter "	"	-	4,026	8,793	599,450	

TABLE IX (Continued)

Operators	Accidents		Passenger ²		Crew Fatalities		Revenue Plane Miles
	Total	Fatal	Carried ¹	Fatal ²	Pilot	Copilot	
<u>National Airlines</u>							
1st Quarter 1948	5,386		1,676		76,119		
2nd Quarter "	5,390		1,796		105,088		
3rd Quarter "	9,027		2,836		111,579		
4th Quarter "	7,202		2,356		105,088		
Total.....	27,002		8,664		399,874		
1st Quarter 1947	11,049		3,072		103,507		
2nd Quarter "	7,137		2,352		104,136		
3rd Quarter "	7,816		2,536		105,889		
4th Quarter "	6,004		1,947		102,210		
Total.....	32,006		9,907		418,042		
1st Quarter 1948	5,600		12,619		1,014,500		
2nd Quarter "	6,741		14,106		1,013,067		
3rd Quarter "	8,396		18,033		1,104,025		
4th Quarter "	8,210		20,650		1,402,773		
Total.....	28,947		65,408		4,534,365		
1st Quarter 1947	3,444		5,757		434,716		
2nd Quarter "	4,282		7,438		456,053		
3rd Quarter "	6,167		13,025		875,763		
4th Quarter "	5,751		12,254		975,233		
Total.....	19,664		38,474		2,741,765		
1st Quarter 1948	2	"	-		-		
2nd Quarter "	3	1	20		1		
3rd Quarter "	1	-	-		-		
4th Quarter "	1	-	-		-		
Total.....	7	1	20		1		
1st Quarter 1947	233,220		-		259,693		
2nd Quarter "	219,931		20		295,166		
3rd Quarter "	254,252		-		325,211		
4th Quarter "	213,428		-		284,006		
Total.....	920,831		20		1,164,076		
1st Quarter 1948	2	"	-		-		
2nd Quarter "	1	1	7		1		
3rd Quarter "	2	1	7		1		
4th Quarter "	1	1	7		1		
Total.....	5	2	20		5		
1st Quarter 1947	243,444		-		224,977		
2nd Quarter "	234,173		7		300,811		
3rd Quarter "	265,283		-		351,473		
4th Quarter "	200,952		13		291,622		
Total.....	943,857		20		1,168,883		

TABLE IX (Continued)

Operators	Accidents		Passenger ^{2/}		Passenger ^{2/}		Revenue ^{2/}	
	Total	Fatal	Carried ^{1/}	Carried ^{1/} Fatal ^{2/}	Miles (000)	Crew Fatalities	Pilot Copilot Other	Plane Miles
<u>Pan American-Grace Airways</u>								
1st Quarter 1948	24,536		27,565		1,409,653			
2nd Quarter "	22,908		28,032		1,397,949			
3rd Quarter "	22,495		26,213		1,369,100			
4th Quarter "	22,358		27,874		1,250,212			
Total.....	92,297		109,684		5,526,914			
1st Quarter 1947	29,013		27,772		1,554,100			
2nd Quarter "	28,331		27,079		1,513,502			
3rd Quarter "	26,575		28,213		1,455,921			
4th Quarter "	27,697		29,252		1,440,520			
Total.....	111,616		112,316		5,964,043			
<u>Transcontinental & Western Air</u>								
1st Quarter 1948	12,549		41,031		2,320,165			
2nd Quarter "	19,672		65,691		2,747,948			
3rd Quarter "	27,205		86,073		3,627,301			
4th Quarter "	22,517		72,376		3,120,176			
Total.....	81,943		265,177		11,865,590			
1st Quarter 1947	1	1	9,035		1,329,124			
2nd Quarter "	-	-	17,253		1,956,155			
3rd Quarter "	1	-	24,779		-			
4th Quarter "	-	-	16,394		2,695,442			
Total.....	2	1	67,461		2,170,920			
<u>United Air Lines^{2/}</u>								
1st Quarter 1948	1		3,032		7,400			
2nd Quarter "	-		5,343		12,949			
3rd Quarter "	-		8,099		19,847			
4th Quarter "	-		6,278		15,271			
Total.....	2	1	22,752		55,467			
1st Quarter 1947	"		"		"			
2nd Quarter "	"		4,582		11,119			
3rd Quarter "	"		7,780		18,769			
4th Quarter "	"		4,515		10,913			
Total.....	"		16,877		40,801			

" 309,600
468,000
396,035
1,173,635

TABLE IX (Continued)

Operators	Accidents			Passenger ^{2/}			Revenue ^{3/}		
	Total	Fatal	Non-Fatal	Carried ^{1/}	Carried ^{1/}	Fatal ^{2/}	Miles (000)	Crew Fatal	Plane Fatal
<u>Iraiba, Medellin & Central Airways</u>									
1st Quarter 1948				719			241		
2nd Quarter "	"			443			147		
3rd Quarter "	"			532			176		
4th Quarter "	"			546			183		
Total.....				2,240			747		
1st Quarter 1947				1,491			473		
2nd Quarter "	"			1,218			359		
3rd Quarter "	"			979			323		
4th Quarter "	"			785			265		
Total.....				4,473			1,420		

Grand Total - International Carriers

1st Quarter 1948	3	1		317,639	-		397,272	-	
2nd Quarter "	5	1		330,353	20		495,160	1	1
3rd Quarter "	1	"		393,784	-		573,210	-	-
4th Quarter "	2	"		330,973	-		496,152	-	-
Total.....	11	1		1,372,749	20		1,961,794	1	1
1st Quarter 1947	2	1		328,627	-		337,373	-	1
2nd Quarter "	3	1		339,921	7		485,358	1	5
3rd Quarter "	3	"		394,064	-		588,633	-	-
4th Quarter "	1	"		297,100	13		451,904	1	1
Total.....	9	3		1,359,712	20		1,863,268	2	9

1/ Revenue passengers only.

2/ Both revenue and non-revenue.

3/ In scheduled passenger operations.

4/ Regular scheduled operations inaugurated 6/4/48.

5/ Regular scheduled operations inaugurated 8/1/47.

6/ Regular scheduled operations inaugurated 5/1/47.

TYPE OF ACCIDENT VS OPERATIONAL PHASE IN U. S. FLAG SCHEDULED AIR CARRIERS IN INTERNATIONAL PASSENGER OPERATIONS
(Calendar Years 1948 and 1947)

Type of Accident	OPERATIONAL PHASE										Total
	To Landing	From Landing	Take Off	Normal Flight	Landing	Start Engine	Ground	Roll	Around	Other	
Take Off	From Landing	Other	Run	Climb	Approach	Level Off	Go Around	Idling			
Clips—retract, landing gear											4
1948.....											-
1947.....											-
Overshoot											3
1948.....											-
1947.....											-
Collision—ground or water											2
1948.....											-
1947.....											-
Collision—objects											1
1948.....											-
1947.....											-
Fire in air											2
1948.....											-
1947.....											-
Airframe failure											1
1948.....											-
1947.....											-
Other											2
1948.....											-
1947.....											-
Total											9
1948.....											-
1947.....											-

- 36 -

TYPE OF ACCIDENT VS INJURY AND DAMAGE IN U. S. FLAG SCHEDULED
AIR CARRIERS IN INTERNATIONAL PASSENGER OPERATIONS
(Calendar Years 1948 and 1947)

TABLE XI

Type of Accident	Injury Index			Total	Aircraft Damage		
	Fatal	Serious	Minor - None		Destroyed	Substantial	Minor - None
<u>Clps. — retract. ldg. str.</u>							
1948.....			4	4			4
1947.....			-	-			-
<u>Overshoot</u>							
1948.....			-	-			-
1947.....			3	3			3
<u>Collision — ground or water</u>							
1948.....	1			1	1		
1947.....	1			1	1		
<u>Collision — objects</u>							
1948.....			2	2			2
1947.....			-	-			-
<u>Fire in air</u>							
1948.....	-		3	3			3
1947.....	1		1	2	1		1
<u>Airframe failure</u>							
1948.....			-	-			-
1947.....			1	1			1
<u>Other</u>							
1948.....	-		1	1			1
1947.....	1		1	2			1
<u>Total</u>							
1948.....	1		10	11	1		10
1947.....	3		6	9	2		6

PRIMARY CAUSE OF ACCIDENTS VS OPERATIONAL PHASE IN U. S. FLAG SCHEDULED AIR CARRIERS IN INTERNATIONAL PASSENGER OPERATIONS
 (Calendar Years 1948 and 1947)

TABLE XII

Primary Cause	OPERATIONAL PHASE										Total	
	Take Off			Landing			Ground					
	To	From	Normal	Level	Up	Down	Around	Engine	Idle	Other		
Take Off	Run	Landing	Flight	Off	Roll	Up	Around	Engine	Idle	Other	Total	
<u>Pilot Error</u>											1	
Failure to retract or extend gear											1	
1948.....											1	
1947.....											1	
misjudged distance											1	
1948.....											1	
1947.....											1	
failure to observe, aircraft, objects											1	
1948.....											1	
1947.....											1	
improper instrument operation											1	
1948.....											1	
1947.....											1	
<u>Other Personnel Error</u>											1	
inadequate maintenance, aircraft											1	
1948.....											1	
1947.....											1	
Other											1	
1948.....											1	
1947.....											1	
<u>Powderplant</u>											1	
Fuel system											1	
1948.....											1	
1947.....											1	
Engine structure											1	
1948.....											1	
1947.....											1	
Engine accessories											1	
1948.....											1	
1947.....											1	
<u>Airframe</u>											1	
wings, rotors, flaps											1	
1948.....											1	
1947.....											1	

TABLE XII (Continued)

Primary Cause	OPERATIONAL PHASE												Total	
	Taxying			Take Off			Landing			Group				
	To	From	Landing	Run	Climb	Other	Normal Flight	Discon-timed	Approach	Level Off	Roll	Around		
Airframe (Continued)														
Fuselage														
1948.	•	•	•	•	•	•	•	•	•	•	•	•	1	
1947.	•	•	•	•	•	•	•	•	•	•	•	•	1	
Landing gear														
Nose wheel														
1948.	•	•	•	•	•	•	•	•	•	•	•	•	2	
1947.	•	•	•	•	•	•	•	•	•	•	•	•	2	
Weather														
Hail														
1948.	•	•	•	•	•	•	•	•	•	•	•	•	1	
1947.	•	•	•	•	•	•	•	•	•	•	•	•	1	
Undetermined														
1948.	•	•	•	•	•	•	•	•	•	•	•	•	1	
1947.	•	•	•	•	•	•	•	•	•	•	•	•	1	
Total														
1948.	•	•	•	•	•	•	•	•	•	•	•	•	3	
1947.	•	•	•	•	•	•	•	•	•	•	•	•	4	
	1	2	1	3	1	5	1	5	1	3	1	5	11	
	-	-	-	-	-	-	-	-	-	-	-	-	9	

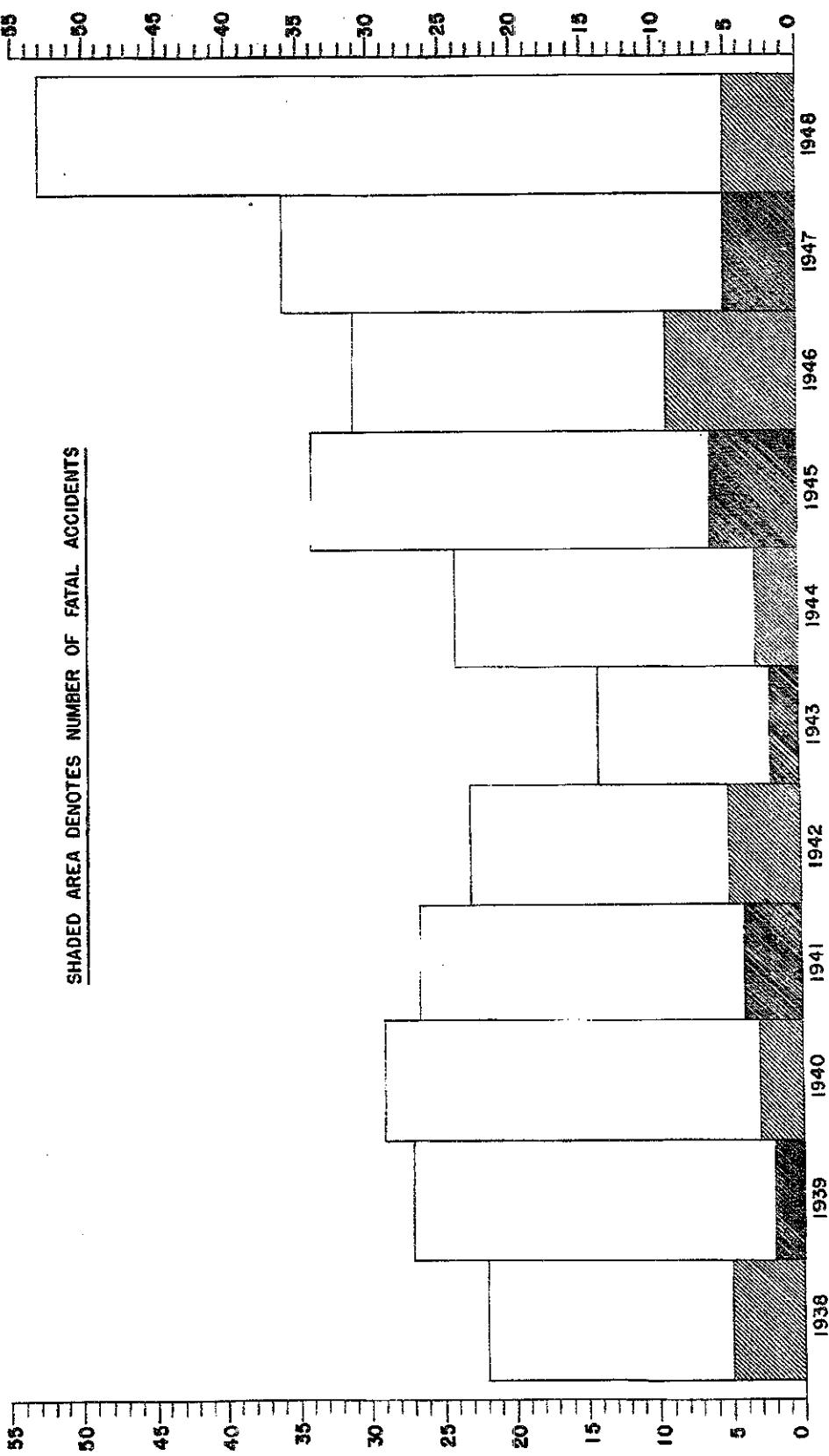
OPERATIONAL PHASE VS INJURY AND DAMAGE IN U. S. FLAG SCHEDULED
AIR CARRIERS IN INTERNATIONAL PASSENGER OPERATIONS
(Calendar Years 1948 and 1947)

TABLE XIII

Operational Phase	Injury Index			Total	Aircraft Damage		
	Fatal	Serious	Minor - None		Destroyed	Substantial	Minor - None
<u>Taxying</u> From landing				1			1
1948.....			1	-			-
1947.....			-	-			
<u>Take off</u>							
Run							
1948.....			2	2			2
1947.....			-	-			-
Discontinued							
1948.....			1	1			1
1947.....			-	-			-
<u>Flight</u>							
Normal							
1948.....			3	3			3
1947.....	3		2	5	2		2
Landing							
Approach							
1948.....		1		1			
1947.....		-		-			
Roll							
1948.....			3	3			3
1947.....			4	4			4
<u>Total</u>							
1948.....	1		10	11	1		10
1947.....	3		6	9	2		6

L

NUMBER OF AIR CARRIER ACCIDENTS IN
SCHEDULED DOMESTIC PASSENGER CARRYING OPERATIONS
CALENDAR YEARS 1938 - 1948

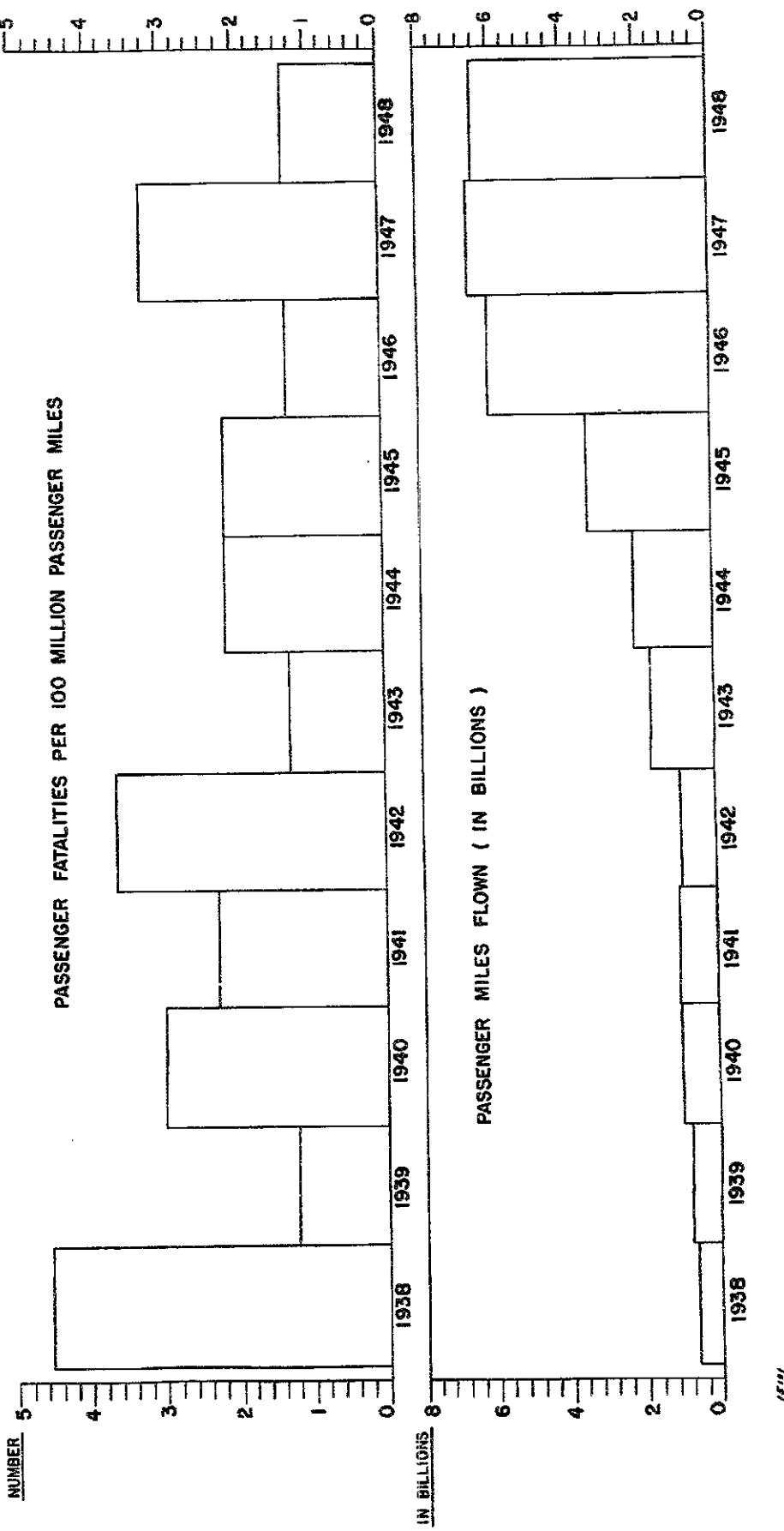


1510

ACCIDENT ANALYSIS DIVISION
BUREAU OF SAFETY INVESTIGATION
CIVIL AERONAUTICS BOARD
JUNE 1949

308

PASSENGER FATALITY RATE AND PASSENGER MILES IN DOMESTIC
 AIR CARRIER SCHEDULED PASSENGER CARRYING OPERATIONS
 CALENDAR YEARS 1938 - 1948



ACCIDENT ANALYSIS DIVISION
 BUREAU OF SAFETY INVESTIGATION
 CIVIL AERONAUTICS BOARD
 JUNE - 1949

309

CIVIL AERONAUTICS BOARD

Washington 25, D. C.

Josh Lee, Member
Harold A. Jones, Member

Joseph J. O'Connell, Jr. - Chairman

Oswald Ryan, Vice-Chairman
Russell B. Adams, Member

Safety Investigation Bureau

W. K. Andrews, Director

Accident Analysis Div., J. W. Lankford, Chief

Statistical Analysis Sect., B. W. Ashmead, Chief

RESUME OF U. S. AIR CARRIER ACCIDENTS
Calendar Year 1947

Details of accidents in (1) scheduled, (2) irregular, and (3) Alaskan air carrier operations during 1947 are contained in the following pages. The accidents are shown according to the classes of operation conducted by the three air carrier groups noted from the standpoints of date, location of accident, operator, equipment, total personnel aboard, injury division among crew and passengers, and aircraft damage. Indication is made whether accident occurred at night, and if fire in air or after impact was involved. A brief description of each accident is included.

July 15, 1948

RECAPITULATION OF U. S. AIR CARRIER ACCIDENTS
 (Calendar Year 1947)

Type of Operation	Total Accidents	Fatal Accidents	Division of Crew Injury			Division of Passenger Injury			Total Aboard	See Pages
			Fatal	Serious	Minor	Fatal	Serious	Minor		
<u>Scheduled Domestic</u>										
1/Passenger Carrying...	35	5	17	2	8	104	199	6	33	715
Other Revenue.....	8	3	5	-	-	10	1	-	-	1084
2/Non-Revenue.....	13	4	12	2	-	29	8	1	1	16
Sub-Total.....	56	12	34	4	8	143	208	7	34	1153
<u>Scheduled International</u>										
Passenger Carrying...	9	3	13	2	-	48	20	11	-	292
Other Revenue.....	-	-	-	-	-	-	-	-	-	15-16
Non-Revenue.....	2	-	-	-	-	7	-	-	-	17
Sub-Total.....	11	3	13	1	-	55	20	11	-	17
<u>Irregular Domestic</u>										
Passenger Carrying...	8	4	6	4	1	7	36	28	10	159
Other Revenue.....	15	4	8	-	1	24	2	-	2	20-23
Non-Revenue.....	2	-	-	1	-	1	-	-	-	23
Sub-Total.....	25	8	14	5	2	32	38	28	10	198
<u>Irregular International</u>										
Passenger Carrying...	2	-	-	-	-	10	-	-	-	83
Other Revenue.....	2	1	1	-	-	4	-	-	-	5
Non-Revenue.....	-	-	-	-	-	-	-	-	-	-
Sub-Total.....	4	1	1	-	-	4	10	-	-	88
<u>Alaskan Carriers</u>										
Passenger Carrying...	11	1	1	-	-	4	14	7	11	65
Other Revenue.....	3	-	-	-	-	5	-	-	1	6
Non-Revenue.....	4	-	-	-	-	5	24	7	11	1
Sub-Total.....	18	1	1	-	-	5	-	-	10	21
<u>Total</u>										
Passenger Carrying...	66	13	37	7	13	183	262	56	52	1073
Other Revenue.....	28	8	14	-	5	39	3	-	3	64
Non-Revenue.....	21	4	12	3	1	42	8	1	2	70
Grand Total.....	114	25	63	10	19	264	273	57	54	1077

1/ Excludes 1 fatal and 1 serious injury propeller accident to 3rd party.
 2/ Excludes 1 fatal injury propeller accident to 3rd party.

AIR CARRIER ACCIDENTS - CALENDAR YEAR 1947

A. Scheduled Domestic Operations

1. Passenger Carrying Operations

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury			Passenger			Aircraft Damage	Fire In Air	After Impact
						F	S	M	F	S	M			
1/5/47	Yes	Jones Beach, N. Y.	AA	DC-3	16	-	-	2	1	-	-	13	Subst. **	
Description:	Flight 203 was cleared into Washington, visual flight rules, and although within sight of the airport, was instructed to "hold" east of the field because of two emergencies. Here the flight found it impossible to stay on contact and so climbed to a safe altitude and was cleared to the vicinity of Baltimore. Other emergencies were in existence at Baltimore and the flight held here for 1 hour, 15 minutes, before deciding to proceed to Philadelphia. Static interference became severe and prevented the use of the Philadelphia radio range. The flight continued northeastward with weather conditions worsening, although both company and meteorologists had been unable to predict it. Finally with only 30 minutes of fuel left, the pilot decided on an emergency landing. Dropping a flare, he found he was over the Atlantic, so turned northwest until the coastline was picked up where a landing was made on the beach, wheels retracted.													
1/6/47	Yes	Chicago, Illinois	Northwest	DC-4	41	-	-	-	4	-	-	37	Destroyed Yes	
Description:	Pilot was cleared to land on runway 22 center, but this clearance was changed to 22 right to permit an aircraft ahead of him to land. The pilot made a low approach over the lighted arrow and after about 125 feet, the aircraft landing gear struck an unlighted concrete marker which marked another runway. Snow covered terrain was an additional factor. After striking the marker the aircraft skidded around on the ground and while all personnel got out safely, fire destroyed the plane.													
1/8/47		Jacksonville, Fla.	National	Lockheed 18-50	15	-	-	-	3	-	-	12	Subst.	
Description:	Aircraft was cleared to land but let down to 400 feet before ground was seen. Overshot approach and flew out at 300 feet. On second approach lined up with a taxi strip. Pulled up again. On final approach came in with excessive speed and overshot runway going off of it into a wooded area.													

* F - Fatal; S - Serious; M - Minor; N - None

** Subst. - Substantial

A. Scheduled Domestic Operations (Continued)

1. Passenger Carrying Operations

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury Passengers						Aircraft Damage	Fire In Air After Impact
						F	S	M	N	P	S		

1/12/47 Yes Galax, Virginia EAL DC-3 19 3 - - - 15 1 - - Destroyed
Yes

Description: While enroute from Akron to Winston-Salem, the flight was cleared to the Winston-Salem Tower but no further contacts were made and the Virginia State Police reported that the flight had crashed. Investigation disclosed that the pilot had erroneously reported his position as over Roanoke when actually he was 53 miles north and also chose to fly direct to Winston-Salem instead of via the Greensboro range which was standard company procedure. In the belief that he was in the close proximity of Winston-Salem, the pilot chose to establish a let-down without definitely establishing his position with relation to the Winston-Salem radio range station. In so doing he flew into the ground in rugged country 63 miles northwest of Winston-Salem.

1/21/47 Yes Chicago, Illinois PCA Douglas C54C 44 - - - 4 1 - - 40 None
None

Description: A passenger who was late in boarding a plane saw an airliner standing by with engines idling, and thinking it was his plane, rushed out and attempted to attract the pilot's attention. In so doing, he walked straight into one of the idling propeller blades before the pilot could stop the engine.

2/3/47 Detroit, Michigan UAL Douglas C54 17 - - - 4 - - - 13 Subst.

Description: During a normal landing, the nosewheel collapsed, the plane skidded forward and came to rest 2/10 mile from point of failure. Examination disclosed malfunction of the nose gear extension and locking system and also malfunction of the gear warning system. Further tests are being conducted.

2/4/47 Yes South Bend, Ind. AA DC-3A 19 - - - 3 - - - 16 Subst.

Description: On the climb to cruising altitude some engine roughness was noted. Upon switching tanks the left engine backfired and lost power, which continued in spite of all measures for correction. A landing was attempted at South Bend in which the pilot was greatly handicapped by the lack of adequate runway lighting. Insufficient time remained for the landing gear to lock in the down position and it folded up on the landing roll. Investigation revealed that the cause of engine malfunction was failure of the pivot bolt of the exhaust rocker of #7 cylinder of the left engine.

A. Scheduled Domestic Operations (Continued)

1. Passenger Carrying

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury</u>						<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>		
						<u>Crew</u>	<u>F</u>	<u>S</u>	<u>M</u>	<u>F</u>	<u>S</u>	<u>M</u>	<u>N</u>			
2/24/47	Yes	Philadelphia, Pa.	UAL	DC-3	23	-	-	-	2	-	-	-	-	21	Subst.	
																Description: While taxying out, pilot chose a route past equipment which was engaged in grading. As the aircraft approached a grader was put into motion and the aircraft was taxied into it.
3/7/47	Yes	Kennett, Ia.	EAL	DC-3	20	-	-	-	3	-	-	-	-	17	Subst.	
																Description: During the approach to a landing a heavy rain was encountered and the approach was made with excessive speed. After getting on the ground well down the runway, bracing action was poor on the wet runway and the pilot was unable to halt the aircraft before it went off the end of the runway and into a mound of dirt.
3/25/47		Honolulu, Hawaii	Hawaiian Airlines	DC-3A	26	-	-	-	3	-	-	-	-	23	Subst.	
																Description: Upon arrival at destination, it was found that the landing gear would not lock, and the klaxon and warning light stayed on. Pilot therefore abandoned landing and returned to Honolulu, where after the tower made a visual check of the gear, a landing was made without incident until taxiing was begun and slight use made of the brakes which caused the left side of the gear to collapse. Lack of lubrication of mechanical latch dog was found to be cause of the trouble.
3/29/47		Pittsburgh, Pa.	EAL	DC-3	23	-	-	-	3	-	-	-	-	20	Subst.	
																Description: While landing in wind which was variable and gusty, gust hit plane just prior to contact with runway tipping wing into ground. Ship was straightened out and landing completed.
4/24/47	Yes	Albuquerque, N. Mex.	TWA	DC-3	24	-	-	-	3	-	-	-	-	21	Subst.	
																Description: While flying at 10,000 feet between layers, a static discharge was experienced which damaged right wing aileron. Flight continued safely.
4/27/47		Anton Chico, N. Mex.	TWA	DC-3	24	-	-	-	3	-	-	1	1	19	Nons	
																While in flight a severe downdraft was encountered causing two passengers to be thrown from their seats and injured, one seriously.

A. Scheduled Domestic Operations (Continued)

1. Passenger Carrying

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury			Passenger		Aircraft Damage	Fire In Air	Fire After Impact
						Crew	S	M	F	S	M		
5/21/47 Yes	Butte, Montana	Northeast	DC-3A	15	- - - - -	3	- - -	- - -	- - -	- - -	12	Subst.	Yes
	Description:	On making a normal landing, aircraft veered to the right after the tailwheel was on the ground and continued on until a low embankment was struck. Evidence indicates that no mechanical malfunction occurred and accident was result of pilot relaxing his vigilance after plane was on ground.											
5/29/47	New York, N. Y.	VAL	Douglas C54B	48	2 1 1 -	41	3	-	-	-	Destroyed	Yes	
	Description:	The evidence indicates that take-off, with fully loaded aircraft, was made with the "gust lock", a device for holding the controls immobile while sitting on the ground in gusty air, in the locked position. It is also indicated that this lock had been altered in such a way as to permit it to remain locked even after the gust lock warning tape, a device for holding the lock, had been removed from it. On the take-off, pilot was, of course, unable to get plane off ground with the locked controls, and the throttles were cut. The crew was unable to stop the plane before it went off runway and across a road and burst into flames upon coming to rest.											
5/30/47	Mr. Bainbridge, Md.	EAL	Douglas C54B	53	4 - - -	49	-	-	-	-	Destroyed	Yes	
	Description:	Flight 605 from Newark, N. J. to Miami, Fla., was off ground at 1700 and gave position report over Metuchen, N. J. at 1000 feet and Philadelphia, Pa., at 4000 feet, estimating in the latter, an arrival time over Baltimore at 1749. No report of any trouble was made. At approximately 1741 persons on the ground near Bainbridge, Md., saw the aircraft enter a dive which became progressively steeper until the aircraft was in an inverted or partially inverted position before striking the ground at very high speed. This dive was also witnessed from the air by two CAB officials. An exhaustive investigation over a period of several months was made to ascertain the cause of loss of control but while a number of plausible theories were advanced, the evidence failed to substantiate them. While the cause of this accident must be ascribed to loss of control for reasons unknown resulting in a dive into the ground nevertheless, many valuable points were brought out relative to airline maintenance and directives issued covering many of them. As a result it is felt that the overall safety has been improved even though no definite cause could not be discovered.											
6/5/47 Yes	Indianapolis, Ind.	TWA	Boeing SA 307-B-1	45	- - - - -	5	- - -	- - -	- - -	- - -	40	Subst.	
	Description:	Left tire came off wheel during landing roll, causing ship to veer into a runway light.											
6/13/47	Lookout Rock, W. Va.	PCA	DC-4	50	3 - - -	47	- - -	- - -	- - -	- - -	Destroyed	Yes	
	Description:	Flight 410 from Pittsburgh to Washington was cleared to cruise at 7000 feet on an instrument flight plan. In the vicinity of the Flinstone Intersection, the flight was cleared to the Herndon fan marker to maintain 5000 feet and advised that a delay of about an hour and 20 minutes could be expected because of traffic. At this, the pilot requested permission to approach Washington on contact flight rules on the N. W. leg of the Arcola range, which was sighted by witnesses, west of a ridge of mountains below the crest of the ridge and heading in a southeast direction. The plane entered a cloud covering the top of the ridge and while in this cloud struck the top of the ridge and was destroyed by impact and fire.											

A. Scheduled Domestic Operations (Continued)

1. Passenger Carrying

Date	At	Night	Location	Operator	Equipment	Total Aboard	Injury				Aircraft Damage	Fire In Air	Fire After Impact
							Crew	S	M	N			
6/22/47	Mr. Minneapolis, Minn.		Mid-Cont.	DC-3A	20	- - - - 3	- 1	- 16			None		
			Description:	Light rain was encountered and before the seat belt sign was turned on, a severe bump occurred which threw several passengers out of their seats and resulting in a cervical vertebrae fracture for one of them. The flight then returned to Minneapolis.									
6/26/47	Eldorado, Kansas		TWA	DC-3	24	- 1 - 2 -	-	-	1 20		None		
			Description:	While operating in clear air at 3000 feet without seat belt sign on, moderate turbulence was encountered causing hostess to be thrown against the arm rest of her seat and then to the floor.									
8/5/47	Boston, Mass.		EAL	Two DC-3's	39 ^{b/}	- - - - 6	-	-	33		Subst.		
			Description:	E.A.L. plane (NC 25646) taxying behind A. A. plane was cleared, No. 1, to take off. In passing to the right of the standing A. A. plane, the left wing of the E.A.L. plane struck the right wing of the A. A. plane.									
8/8/47	New York, N. Y.		AA	DC-4	54	- - - - 4	-	-	50		Subst.		
			Description:	Flap was damaged as plane went through a pool of water on runway.									
8/15/47	St. Louis, Mo.		AA	DC-3A	18	- - - - 3	-	-	15		Subst.		
			Description:	The flight reported roughness in one engine and was cleared to return to its point of take-off and land. During the final approach about 5/8 of a mile from the end of the runway, a heavy rain shower was encountered which restricted all outside visibility. Contact was made about half way down the 6000 foot runway and as the brakes were not effective the aircraft rolled off the runway onto a sodded portion where a ground loop was purposely made to avoid striking a building. During the loop the tail surfaces struck a post, damaging them. Some dirt had been spilled on the runway from trucks, producing a very slippery surface. The engine roughness was found to be due to the breaking of an exhaust valve washer.									
8/18/47	Midland, Texas		Pioneer	DC-3C	12	- - -	3	-	-	9	Subst.		
			Description:	"All Clear" signal was given to pilot while the auxiliary power unit, used for starting the engines, was still connected to the airplane and in its bay. The airplane knocked the unit over resulting in some damage to the tail section and setting auxiliary unit on fire. The flight was able to complete its schedule.									

Ae. Scheduled Domestic Operations (Continued)

1. e. Passenger Carrying

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury Passengers			Aircraft Damage	Fires	After Impact
						Crew	M	N	F	S	M
9/5/47	New York, N.Y.	AA	DC-4	54	- - - - 4	- - -	-	-	-	-	50 Subst.
Description:	Ran through an excessive amount of water on runway during landing roll which severely damaged one flap.										
9/6/47	Abilene, Texas	Pioneer	DC-3C	8	- - - - 3	- - -	-	-	-	-	5 Subst.
Description:	Following take-off it was found that the left gear could neither be raised nor lowered which necessitated a return to the point of take-off. A landing was made with the right gear down and locked and the left gear warning sounding. During the roll the retracting piston failed, being unable to stand the strain placed upon it. Investigation disclosed that the piston seals had deteriorated causing them to bind and seize.										
9/15/47	Ashville, N. Car.	Delta	DC-3	17	- - - - 3	- - -	-	-	-	-	14 Subst.
Description:	A straight in approach through light rain was made from the south. A windshift occurred before contact with the runway was made and although the aircraft landed within the first 1000 feet of runway, its speed was somewhat excessive and the runway was wet from the rain. The brakes were ineffective due to sliding and the plane overshot runway and struck a ditch.										
9/19/47	Yes	Minneapolis, Minn.	Nortimest	DC-4	21	- - - - 4	- -	-	-	-	2 15 Subst.
Description:	As Flight 7 prepared to land at Minneapolis, it was discovered that the hydraulic control handle could not be moved from neutral. It was found by experiment that the landing gear could be lowered and apparently locked but this resulted in no pressure for the brakes or flaps. A landing was made on a 5848 foot runway. The engine switches were cut, but the brakes being ineffective the aircraft continued rolling until it hit the airport boundary fence and an embankment where it came to rest. Passengers and crew deplaned without serious injury. Investigation disclosed that a link rod in the brake system had failed due to being bent against another part because of insufficient clearance.										
10/8/47	El Paso, Texas	AA	Douglas C-54A	54	- - - 5	- -	-	-	-	-	29 20 Subst.
Description:	While in flight, the Captain, who was sitting in the jump seat in the lock position, unbeknown to the men at the controls, moved the gust lock to the locked position, moved the flettner control to nose down position to correct this. Having no effect he the pilot in the left hand seat, moved the flettner control to nose up position to correct tail heaviness. At this time, the Captain in the jump seat, released the gust lock, and the continued to move it to correct tail heaviness. At this time, the Captain in the jump seat, released the gust lock, and the aircraft entered a violent maneuver, actually becoming inverted. The co-pilot was able to roll it out to the left after which the flight returned to El Paso and landed.										

Ae. Scheduled Domestic Operations (Continued)

1e. Passenger Carrying

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury			Aircraft Damage	In Air	After Impact
						Crew	Passenger	Total			
10/21/47	Yes	Denver, Colo.	UAL	DC-4	31	-	-	4	-	-	27 Subst.

Description: On a landing at Denver, all three wheels retracted during the roll. Later examination disclosed gear to be normal and evidence indicates that pilot was in such a hurry due to flight being late, that he failed to allow sufficient time for the gear to become fully extended and locked before the landing.

10/24/47	Bryce Canyon, Utah	UAL	DC-6	52	5	-	-	47	-	-	Destroyed Yes
----------	--------------------	-----	------	----	---	---	---	----	---	---	---------------

Description: Flight reported that a fire had been detected in the baggage compartment and that an emergency landing was going to be made at the Bryce Canyon Airport. Shortly after, the flight reported that the tail was going out and expressed doubt as to whether they would get down safely. Another report stated that they were approaching a strip but no further word was received. Witnesses observed the aircraft with dense black smoke pouring from it, but it appeared to be under control until very shortly before the impact. Investigation resulted in the determination of probable cause as being the combustion of gasoline which had entered the cabin heater air intake scoop from the #3 alternate tank vent due to inadvertent overflow during the transfer of fuel from the #4 alternate tank. Contributing factors were the improper location of #3 alternate tank air vent outlet and the lack of instructions provided DC-6 crews concerning hazards associated with fuel transfer.

11/11/47	Gallup, N. Mex.	AA	DC-6	25	-	-	-	4	-	-	21 Subst. Yes
----------	-----------------	----	------	----	---	---	---	---	---	---	---------------

Description: While cruising at 11,000 feet the cabin heater indicator rose to over 300°. Blue acrid smoke was noticed and an approach was started toward the airport at Gallup, N. Mex. Smoke began pouring into the cockpit and the fire warning lights came on. CO₂ bottles were discharged without effective result. In spite of difficulty, however, a safe landing on the Gallup airport was made where the fire was extinguished by the local fire department. Investigation disclosed that the cause of the fire was the entry of gasoline into the cabin heater combustion air intake scoop from the #3 alternate tank vent due to overflow during inadvertent transfer of fuel from the #4 alternate tank. This condition was the result of improper location of the #3 alternate tank vent outlet and the inadequate instructions provided DC-6 crews concerning fuel management.

11/15/47	Yes	Covington, Ky.	Delta	DC-4	32	-	-	4	-	-	28 Subst.
----------	-----	----------------	-------	------	----	---	---	---	---	---	-----------

Description: During an approach under conditions of low visibility and sand clouds, the aircraft struck the tips of some trees 25 to 40 feet high. By the application of full power, the crew was able to maintain flight and proceeded to another airport where a safe landing was made.

A. Scheduled Domestic Operations (Continued)

1. Passenger Carrying

At Date	Night	Location	Operator	Equipment	Total Aboard	Injury			Passenger			Aircraft Damage	In Air	After Impact
						F	S	M	E	S	M			
11/16/47	Yes	Ypsilanti, Mich.	EAL	DC-3	17	-	-	3	-	-	14	Subst.		
Description:		On the take-off climb as the plane reached the end of the runway a loud noise was heard like a racing engine and the pilot immediately requested clearance for a right turn back into the field. However, following overreving of the left engine it had been feathered by the pilot, and the right engine inadvertently feathered by the co-pilot. An immediate forced landing was made in an open field with landing gear retracted, without injury to personnel. The original engine trouble was probably due to a faulty governor.												
12/26/47	Yes	Dallas, Texas	Delta	DC-3	17	-	-	3	-	-	14	Subst.		
Description:		As ship was being taxied forward, the left landing gear suddenly folded into the nacelle, allowing the left wing to settle to the ground. The cause of the failure was not definitely determined but it is believed that in the prior landing, insufficient time was allowed in which to build up down pressure before placing the positive lock into position, which resulted in gear being insecurely locked. This, however, is not established.												
12/30/47	Yes	Madison, Wisconsin	Northwest	DC-3A	23	-	-	3	-	-	20	Subst.		
Description:		Evidence indicates that pilot allowed aircraft to drift during landing with 10 M.P.H. quartering right cross-wind and allowed aircraft to start groundloop to the right with aircraft running up onto hard snow bank causing left wing to drag on runway.												
12/30/47	Yes	Newark, N. J.	TWA	Douglas C54D	44	-	-	4	-	1 ^e / -	40	None		
Description:		As the flight was taxiing out for take-off the left wheel became stuck in a snowbank. The left engine was cut off but the right remained idling while a ground crewman started to remove snow on the left side with a shovel. A blow was heard and the crewman was seen lying on the ground, having been struck by the idling propeller as he started under the ship on the right side instead of the left.												
TOTAL														1084

a/ Bystander fatally injured by revolving propeller not counted in totals.

b/ Includes occupants of both aircraft.

c/ Attendant seriously injured by revolving propeller not counted in totals.

- 8 -

A. Scheduled Domestic Operations (Continued)

2. Other Revenue Operations

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury</u>				<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>
						<u>Crew</u>	<u>Passengers</u>	<u>F</u>	<u>S</u>			
<u>F</u>	<u>M</u>	<u>N</u>	<u>F</u>	<u>S</u>	<u>N</u>	<u>F</u>	<u>S</u>	<u>N</u>	<u>F</u>	<u>S</u>	<u>N</u>	
3/17/47	Rapid City, S. Dak.	Inland	No. Amer. AT-6	2	1	-	-	1	-	-	-	Destroyed
Description: The pilot took off on a regular scheduled mail flight with his wife riding in the rear seat as an unauthorized passenger. The trip was apparently normal and the Army Control Tower at Rapid City was contacted at 1648 and pilot was given landing instructions. He was observed by the tower operator west of the airport at 1000 feet, descending. The pilot acknowledged his landing instructions. However, while turning on to the downwind leg of the traffic pattern at an altitude of 500 feet, the aircraft was stalled and crashed.												
4/9/47	West Chester, Pa.	All Amer. Stinson SR10	2	-	-	2	-	-	-	-	-	Destroyed
Description: On making approach for a pick-up, pilot smelled oil burning and the engine became rough. Pilot applied throttle and pulled up at which point a loud noise was heard in the engine and it began to vibrate badly, lost rpm and oil pressure, and finally quit completely. Pilot was forced to make a turn and land downwind in a field. A bump was struck throwing ship into air a short distance, causing left wheel to dig into the soft ground and break. The ship cartwheeled.												
4/29/47	Bellefonte, Pa.	All Amer. Stinson SR-10C	2	2	-	-	-	-	-	-	-	Destroyed
Description: On an approach for a mail pick-up at Bellefonte, the pickup was missed. The aircraft continued on for about 1200 feet then suddenly nosed down into the ground in an almost vertical dive. Fire followed. Investigation revealed that during the approach the pick-up hook struck the ground and was jerked off of the pick-up hook boom and then engaged itself on the edge of one of the elevators. The flight mechanic, contrary to company instructions for handling such situations, used the electric winch to reel in the line. As a result the elevator was pulled down to the full down position.												
6/12/47	Parkersburg, W. Va.	All Amer. Beechcraft D18C-T	3	-	-	3	-	-	-	-	-	Subst.
Description: On take-off run, the landing gear switch was accidentally knocked to the "up" position, resulting in gear retracting which caused aircraft to settle to the runway on its belly. Evidence indicates that the pilot may have done this while closing his cowl flaps.												

A. Scheduled Domestic Operations (Continued)

2. Other Revenue Operations

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury			Passenger			Aircraft Damage			Fire In Air			Fire After Impact		
						Green	Yellow	Red	F	S	M	N	E	S	W	N	Subst.			
9/19/47		Spearfish, S. Dak.	Inland	No. Amer. AT-6	1	-	-	-	1	-	-	-	-	-	-	-	Subst.			
			Description:	Pilot landed and was rolling when he observed a light plane taking off on an intersecting runway. He turned left to get behind the light plane, which was successful, but in attempting to straighten up again, a groundloop ensued.																
12/3/47	Yes	Los Angeles, Calif.	UAL	Douglas C54B	2	-	-	-	2	-	-	-	-	-	-	-	Subst.			
			Description:	As an approach was made to the Los Angeles airport, some traffic was reported over the range; so the flight made a 360° turn descending to 1700 feet in order to lose some time and avoid the traffic. Lower scattered clouds were observed and a climbing turn to the right was started during which the aircraft entered some stratus. At this time a loud noise was heard and a shock felt. Full power was applied and the aircraft righted when it was seen that #3 and 4 propellers were gone and the nacelles of those engines damaged. The flight was climbed to 2500 feet, an emergency clearance requested, and a safe landing on the Los Angeles airport followed. It was found that the aircraft had struck the top of a hill, in the Hollywood Hills, 12 miles north of the airport. Insufficient attention to their location was given by the crew, prior to the impact.																
12/5/47		Jamesstown, N. Y.	All Amer.	Stinson SR10	2	-	-	-	2	-	-	-	-	-	-	-	Subst.			
			Description:	Engine failed for undetermined reason on take-off climb resulting in forced landing.																
12/6/47		Wellsburg, W. Va.	All Amer.	Beechcraft D-18-C	2	2	-	-	-	-	-	-	-	-	-	-	Destroyed	Yes		
			Description:	The flight was observed to approach the pick-up station and make a normal delivery and pick-up. At a point 50 feet beyond the station, however, the aircraft was observed to roll to the right and a structural failure of what was first reported as the tail assembly occur. The aircraft descended sharply and crashed at a point approximately 675 feet beyond the station. Later investigation disclosed that the actual failure had occurred in the right wing at the attachment fitting of the front main spar, and it appeared to have been a fatigue failure.																
				TOTAL	16	5	-	-	10	1	-	-	-	-	-	-				

- 10 -

A. Scheduled Domestic Operations (Continued)

3. Non-Revenue Operations (Test, Engineering, Training, Check, Publicity,
Familiarization, Company Flights, etc.)

Date	At Night	Location	Operator	Equipment	Injury										Aircraft Damage	In Air Fire	Fire After Impact
					Total Aboard	Crew F	Crew S	Crew M	Crew N	Passenger F	Passenger S	Passenger M	Passenger N				
1/10/47	Yes	Denver, Colo.	UAL	Stinson SR8E	3	-	-	3	-	-	-	-	-	Subst.			
3/20/47		Ashland, Ky.	All Amer.	Stinson SR10C	2	-	2	-	-	-	-	-	-	Destroyed	Yes		
4/3/47	Yes	New Hackensack, N. Y.	UAL	DC-6	5	-	-	5	-	-	-	-	-	Subst.	Yes		
4/22/47		Columbus, Ga.		Delta	DC-3C	8	1	-	-	7	-	-	-	Destroyed	Yes		

Description: Upon landing, plane was rolling on the ground when it started to veer to the right. Pilot was unable to regain control and ship groundlooped breaking left landing gear and wing tip.

Description: Following repairs after a minor accident, the aircraft was to be taken off and ferried to its home base. The tanks were filled, mechanics tools and an extra propeller were put in, which was in addition to a load of express already on board. There is a possibility that some frost may have been on the wings. This all added up to 259 pounds overweight, and conditions were not favorable for take off. The ship settled after becoming airborne and struck an embankment. The two men extricated themselves but fire broke out and destroyed the aircraft.

Description: While in flight it was noted that there was an excessive oil leak in #2 engine as a thick stream of oil was flowing out from under the cowl flaps. Consequently throttle was closed and the feathering button pushed. However the engine r.p.m. surged and increased rapidly to as high as 4000 r.p.m. and fire issued from the engine, which was extinguished by use of engine fire extinguisher. The ignition switch was cut reducing engine speed to windmilling speed and a safe landing was effected. Examination disclosed a break in the blower housing as cause of the oil leakage and a rupture of the governor cut out adapter switch gasket as the cause of the sudden overrevving.

Description: An air carrier aircraft carrying company officials arrived over the Muscogee Airport and was circling preparatory to landing at the same time that a private plane arriving from the Columbus Airport was making an approach from a shallow right turn. The private plane continued its approach until directly over the airliner, which descended until within ten feet of the ground, at which point the private plane landed squarely on top of it. The airliner pilot applied power as the tail was forced down and both planes hanging together zoomed to about 150 feet, crashed and burned.

Ae. Scheduled Domestic Operations (Continued)

2e. Non-Revenue Operations (Test, Engineering, Training, Check, Publicity, Familiarization, Company Flights, etc.)

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury Passengers					Aircraft Damage	Fire In Air	After Impact
						F	S	M	N	F	S	M	N
5/8/47	Hartfield, Va.	PCA	DC-3		2	-	-	2	-	-	-	-	Subst.
													Yes
5/11/47	Cape May, N. J.	TWA	Lockheed 049		4	4	-	-	-	-	-	-	Destroyed
7/22/47	San Francisco, Calif.	VAL	DC-6		5	-	-	5	-	-	-	-	Subst.
7/25/47	Seattle, Wash.	Northwest	Douglas C54B		-	-	-	-	-	-	1	-	None

Description: While on ferry flight left engine became very rough and pilot was unable to feather the propeller. A forced landing was made in an open field with wheels retracted. Inspection disclosed cause of engine trouble to be a failed link rod.

During a transition training flight, the aircraft was observed flying at 2500 feet in straight and level flight from which a left turn was started. As the turn progressed, the bank increased sharply and the aircraft assumed a nose down attitude and then entered a tight diving spiral. The spiral was stopped but the plane continued descending in a steep dive. A loud roar of the engines was heard just before the plane struck the water at an angle of about 45°. Following impact, muffled explosions were heard, followed by smoke and fire. No radio contacts were received to indicate any difficulties and investigation showed only that loss of control occurred for reasons undetermined. Investigation was greatly hampered by the fact that the wreckage was in a considerable depth of water.

Description: During pilot check flight, a landing approach on 3 engine operation was made, and both pilots overlooked the fact that the landing gear had not been extended. As the throttles were cut, the landing gear sounded and the Captain immediately applied power to the three engines being used, but with a slight delay in opening #1, the engine not being used, which resulted in plane veering slightly and settling just enough to strike #2 propeller tips on ground and tips of flaps. Full recovery was made, however, and a circle of the airport and a safe landing followed.

a/ 1 - - - - 1 - - - - None

Ground crew were making an engine test when a man who had previously deplaned from a Pan American plane, walked out onto the field and walked straight into the #3 propeller blade which was turning up. Investigation disclosed that this man was definitely under the influence of liquor at the time.

A. Scheduled Domestic Operations (Continued)

24. Non-Revenue Operations (Test, Engineering, Training, Check, Publicity, Familiarization, Company Flights, etc.)

Date	At	Location	Operator	Equipment	Injury						Aircraft Damage	Fires In Air	Fires After Impact	
					Total	Aboard	Crew	F	S	M				N
8/8/47	New York, N. Y.	AA	DC-3C	5	2	-	-	-	1	1	1	-	Destroyed	

Description: The flight, carrying an engine and engine change crew to Buffalo, N. Y., took off from La Guardia. Two minutes after take-off the flight called the tower, stating that oil pressure was low on one engine and that the flight was returning. The approach was high, however, and the ship was pulled up and a go-around attempted on one engine with the right propeller feathered. The flaps and gear were raised and a right turn made at very slow speed and a high angle of attack. The aircraft nearly settled into the water twice during the circle and as it made a flat right turn toward runway 13, it was down to 50 feet. The landing gear was extended at which time the wings were seen to wobble, the nose dropped, and the ship struck the water at an angle of about 20°, where it went over on its back and sank in about 5 minutes. Investigation disclosed that the oil screen cover plate gasket on the right engine was either fractured when installed just prior to the flight, or had failed during that flight, thus reducing oil pressure, and inducing the crew to feather the right propeller. The failure to maintain sufficient airspeed for single engines operation in a missed approach procedure was the primary cause leading to the accident.

8/26/47	Miami, Fla.	EAL	L-49	6	-	-	-	-	6	-	-	-	Subst.
---------	-------------	-----	------	---	---	---	---	---	---	---	---	---	--------

Description: During a routine training flight it was noticed by the tower operator that there was fire around the left main wheels and he so notified the crew, which immediately left the plane which was on the ground at the time. The fire was quickly extinguished by fire fighting equipment. Investigation disclosed that excessive wear between the brake discs had allowed the hydraulic pressure seal to be forced out of its groove allowing the inflammable brake fluid to flow over the hot brake discs and ignite.

9/2/47	Ypsilanti, Mich.	PCA	DC-4	4	-	-	-	4	-	-	-	Subst.
--------	------------------	-----	------	---	---	---	---	---	---	---	---	--------

Description: While on an instrument procedure check flight, roughness was noticed in #3 engine. As a landing approach was being made, a loud noise followed by a thud was heard. The aircraft shook violently and the controls started vibrating. Propellers of engines 1 & 2 were seen to have left the engine and a fire had started in #1. This was extinguished and the pilot was able to get the plane under control and effect a landing on the airport. An exhaustive investigation disclosed that some internal failure in #2 engine caused the crankshaft to lock, shearing off the propeller and shaft, which then struck the #1 propeller, tearing it off, and allowing it to strike the wing. The roughness of #3 engine was due to failure of an exhaust valve, but it is not believed to have any connection with the #2 failure. To date, the cause of the primary failure of #2 has not been established.

A. Scheduled Domestic Operations (Continued)

3. Non-revenue Operations (Test, Engineering, Training, Check, Publicity, Familiarization, Company Flights, etc.)

Date	At	Night	Location	Operator	Equipment	Total Aboard	Injury Passengers				Aircraft Damage	Fire In Air After Impact
							F	S	M	N		
10/17/47	Kansas City, Mo.		TWA	DC-3	2	- - -	2	-	-	-	Subst.	
11/18/47	New Castle, Delaware		TWA	1-49	5	5	-	-	-	-	Destroyed	Yes
12/10/47	Fargo, N. Dak.		Northwest	Martin 202	2	- - -	2	-	-	-	Subst.	

Description: On a transition training flight, the aircraft was taxied out and the tail struck a fence as the plane was swinging about.

Description: On an instrument approach, a turn into the final approach was completed at 200 to 300 feet with landing gear down but flaps still up. About 400 feet from end of runway the aircraft was seen to assume a nose high attitude. The rate of descent increased rapidly and the ship struck the ground on a 5 foot embankment, skidded forward, caught fire.

Description: Following replacement of a generator and a left magneto on the right engine, the engines were preheated and run up for 4.5 minutes in the zero temperature. A take-off was made during which Control Tower personnel noted smoke coming from the left engine, and the pilot was notified three times after which he replied that they were returning to the field on account of engine trouble. A wide turn to the left was started at about 300 feet, which was continued while the aircraft lost altitude until it struck the ground in an open field. Investigation disclosed the fact that a take-off had been made with the superchargers in the high blower position resulting in excessive manifold pressures and detonation which burned through eight pistons.

TOTAL	53	12	2	-	29	8	1	1	-	-	
GRAND TOTAL	1153	34	4	8	143	208	7	34	715		

^{a/} Bystander not counted in totals.

B. Scheduled U. S. Flag International

1. Passenger Carrying Operations

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury</u>					<u>Passenger Aircraft Damage</u>			<u>Fire</u>				
						<u>Crew</u>	<u>F</u>	<u>S</u>	<u>M</u>	<u>N</u>	<u>E</u>	<u>F</u>	<u>S</u>	<u>M</u>	<u>N</u>			
1/8/47		Seattle, Washington	PAA	DC-3A	17	-	-	-	4	-	-	-	-	13	Subst.			
				Description:		Upon arrival at destination airport, it was found that smoke and fog obscured the field. The flight then proceeded to another field where a visual approach was made. However, the approach was too fast and contact with the runway was not made until past an intersection. A somewhat slippery condition of the runway prevented full effectiveness of brakes and the aircraft continued on off the end of the runway and over a bluff about 20 feet high at a speed of 40 mph.												
3/11/47	Yes	Mr. Gardner, Newfoundland TWA	L-49	28	1	-	-	9	-	-	-	-	18	Minor				
				Description:		While cruising at 19,000 feet over the Atlantic, the "Astrodome"- a bubble plexiglass arrangement in the fuselage through which the navigator could "shoot the stars", was suddenly blown out. It is apparent that this happened at a time when the navigator was using it, and as the cabin was pressurized, the sudden release of pressure through the hole which was created sucked the navigator out through it. The flight returned to Gander, Newfoundland and landed safely.												
4/3/47	Yes	San Jose, Costa Rica	PAA	DC-3A	27	-	-	-	4	-	-	-	-	23	Subst.			
				Description:		On landing at San Jose the runway was wet and the landing was slightly overshot. Went off runway and into some trees.												
5/3/47		Boston, Massachusetts Amer. Overseas	L-49	45	4	-	-	10	-	-	-	-	35	Subst.				
				Description:		Pilot missed his first approach, made under marginal ceilings and visibility, and received permission from the control tower to land on runway "33" believing he would land there instead of "parallel 33" which was then under construction but not marked as being closed. During landing roll pilot observed oil drums across the runway (placed some distance from the end) and applied brakes with a surging motion so as not to lock the wheels. After several surges the right landing gear wing structure collapsed, allowing wing to strike the runway, and the aircraft groundlooped.												
6/19/47	Yes	Mayadine, Syria	PAA	L-49	36	7	1	-	2	7	11	-	8	Destroyed	Yes			
				Description:		While cruising at 18,500 ft. trouble developed in #1 engine and it was feathered. Overheating of the three remaining engines occurred and power was reduced and altitude gradually lost. The company radio was advised and also the Royal Air Force field at Habbaniya contacted. Habbaniya advised that a landing be made there but the Captain decided to continue to Istanbul on three engines. In the meantime the Damascus, Syria Airfield was alerted. At a point 75 miles Northwest of Habbaniya at 10,000 ft., fire broke out in Zone 1 of the #2 engine nacelle and a rapid descent was started. Six or seven minutes later #2 engine fell from the aircraft but the wing continued to burn fiercely. Less than a minute later a wheels up landing was made on hard packed desert sand, striking first on the left wing tip, groundlooping violently and skidding backwards for 210 ft., coming to rest in flames. Investigation disclosed that the initial failure on #1 engine was due to a broken exhaust rocker arm on #18 cylinder. The failure of #2 engine was found to be due to the failure of the thrust bearing which in turn resulted in blocking the passage of oil from the propeller feathering motor to the propeller. If the propeller had been feathered or an attempt made to feather it, excessively high pressures would have been generated in the wing ring, sprazing oil on the front exhaust collector ring and causing the engine to drop off.												

B. Scheduled U. S. Flag International (Continued)

1. Passenger Carrying Operations

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury Passengers</u>			<u>Aircraft Damage</u>	<u>In Air</u>	<u>Fire</u>	<u>After Impact</u>
						F	S	N				
7/26/47 Yes	Kinesma, Kire	TWA	Lockheed 049	36	- - - - -	10	- - -	- - -	26	Subst.		

Description: On landing, touch down was not made until near middle of field. Brakes were applied but without much effect, on the wet runway. Full brakes were applied before reaching the end of the runway. Apparently this resulted in a failure of the right main gear which collapsed and the aircraft went slowly over the end of the runway.

9/14/47 Nr. Monclova, Mexico AA DC-6 44 - - - 4 - - - 40 Subst.

Description: Encountered a hailstorm in flight which caused considerable damage to plane. Pilot got out of hailstorm and continued onto a safe landing.

9/20/47 Brooklyn, N. Y. PAA DC-4 41 - - - 5 - - - 36 Subst. Yes

Description: After proceeding on course for 3 hours, difficulty with the right side of the fuel system became apparent. The Captain attempted to operate engine 3 and 4 from their respective main tanks, which resulted in their complete failure. The flight continued on two engines when the fire warning light came on for engine #4, followed by #3. CO₂ was discharged in #3 and there was no further indication of fire. Shortly after, the right landing gear dropped down with its tire burning and it could not be raised. At 1000 feet full take-off power was applied and emergency preparations made for "ditching". By application of full power the flight was able to reach Floyd Bennett where the plane was landed 775 feet from the south end of runway #1 where the ship skidded for 2,167 feet on the concrete. Spilled gasoline was ignited but was quickly brought under control by Navy crash personnel. Extensive investigation disclosed that the cause of the trouble was electrical arcing between an aluminum battery "bus" bar and an engine control pulley bracket in #3 engine nacelle, due to lack of adequate protection for the "bus" bar. The burning resulted in the destruction and grounding of much of the wiring.

10/26/47 Annette Island, Alaska PAA DC-4 18 5 - - - 13 - - - Destroyed

Description: Aircraft struck side of a mountain while on instruments.

TOTAL	292	13	1	-	48	20	11	-	199
-------	-----	----	---	---	----	----	----	---	-----

- 16 -

B. Scheduled U. S. Flag International (Continued)

2. Other Revenue Operations

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	Injury						<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>	
						<u>Crew</u>	<u>S</u>	<u>M</u>	<u>N</u>	<u>Passenger</u>	<u>E</u>				
No accidents.															
6/22/47	Yes	San Francisco, Calif.	PAA	Douglas C54ADC	4	-	-	-	4	-	-	-	-	-	Subst.
Description:	Aircraft was being operated on a night training flight and was being handled by a student under the supervision of one of the Pan American instructors. Student was making a "no flaps" approach but undershot, making contact with the ground only 90 inches short of the runway striking a ridge of dirt 15 inches high, resulting in considerable damage to the aircraft.														
6/28/47		New York, N. Y.	PAA	Lockheed L-749	3	-	-	-	3	-	-	-	-	-	Subst.
Description:	While making a training landing, following contact with the ground, the main wheels retracted leaving the nosewheel extended and allowing the tail assembly to drag on the ground. Damage also occurred to propellers and other parts. Extensive company tests and investigation failed to disclose any mechanical malfunction other than an inoperative condition of the landing gear warning horn. The only conclusion left is that the crew failed to lock the gear in the down position prior to the landing.														
TOTAL						7	-	-	-	7	-	-	-	-	-
GRAND TOTAL						299	13	1	-	55	20	11	-	199	

C. Irregular Domestic Operations

1. Passenger Carrying

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Injury Passengers</u>						<u>Aircraft Damage</u>	<u>In Air</u>	<u>After Impact</u>	
					Total	Aboard	P	S	M	N				
1/5/47	Yes	Carmel, N. J.	Nationwide Air Transport Service	DC-3	23	1	1	-	1	3	11	5	1	Destroyed
Description:	Aircraft was cleared from Miami, Fla. at 1400 after a two-hour delay for instrument maintenance. Destination was Newark, N. J. With a scheduled stop at Raleigh, N. C. with Richmond, Va. as alternate. On instrument flight plan, the flight was routine with normal radio contacts being made until 2 minutes south of Raleigh which had a 400 foot ceiling at which time pilot requested the Richmond weather, which was given him, showing 4,000 feet for ceiling and visibility 2 1/2 miles. He requested clearance to Richmond which was given. Upon reporting over Richmond at 9000 feet, he was told that the weather there was then below minimum. After requesting the Washington weather, the pilot was cleared to that point. Flight reported over Washington at 1938 where it was unable to land due to traffic and the fact that two flights had declared an emergency due to fuel shortage. At this time the flight reported one hour fuel supply and requested clearance to Millville, N.J. which was expected to be reached in thirty minutes. Shortly after clearing the flight to Millville, the Washington aircraft communicator recalled that the Millville communications station ceased operation at 2000. This fact was relayed to the New York Center which notified Philadelphia to contact the flight and inform it of such fact. This effort however was unsuccessful due apparently to the unusually heavy static interference. The flight descended and conducted a standard instrument approach and passed over the airport at 1000 feet but due to the fact that the field was not lighted, the pilot was unable to see it. Although the airport manager heard the flight pass and turned on the beacon boundary and runway lights the flight failed to see them due no doubt to heavy snow which had started falling, and the plane was not again in the vicinity of the field. Due to near fuel exhaustion an emergency landing was decided upon and while maneuvering to find a suitable area the aircraft collided with trees, struck the ground and skidded to a stop in a wooded area. Investigation of this accident disclosed that the Weather Bureau had failed to anticipate below minimum conditions north and south of Washington sufficiently in advance. Further contributing to the cause was the failure of the C.A.A. personnel to note the status of communication and lighting facilities at Millville and failure to transmit the flight plan to Millville in sufficient time to alert that station to the arrival of the flight.													
5/4/47	Yes	Newark, N. J.	Union Southern Airlines	DC-3	12	-	2	1	-	-	4	6	/ -	Subst. Yes
Description:	On routine landing clearance, the aircraft passed over the range station at 800 feet where contact was established. The captain advised the tower that he was too far to the right for an approach to runway 6 and was advised by the tower that he could be seen and that he was in line for an approach to runway 28 if he so desired. The approach was then made to runway 28 which is 7100 ft. long with an additional usable 500 feet at the end. The approach was fast, however and contact was not made with the runway until within the last 2000 feet. Aircraft continued on off runway and into a drainage ditch where fire broke out, which was quickly extinguished.													
5/13/47	Yes	Prompton, Pa.	Page Airways, Inc.	Beechcraft- Bonanza	4	-	1	-	-	-	3	-	-	Destroyed
Description:	On cross country flight aircraft was observed at dark circling a town where fog covered the tops of the hills. It passed over the valley at low altitude and was heard to strike a hill on the west side of the valley about 3/4 of the way up the slope. Investigation disclosed that the plane was not equipped properly for instrument flight and the pilot did not hold an instrument rating.													

C. Irregular Domestic Operations (Continued)

1. Passenger Carrying

<u>Date</u>	<u>At</u>	<u>Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Aircraft</u>	<u>Injury</u>		<u>Passenger</u>		<u>Aircraft Damage</u>	<u>In Air</u>	<u>After Impact</u>	<u>Fire</u>	
							Total	Aboard	P	S	M	N	I	S	W
Rating: Weather conditions for the flight were reported as being marginal. It is apparent that the pilot attempted to maintain contact flight under instrument conditions and flew the aircraft into the ground.															
5/13/47	Prompton, Pa.	(Continued)													
5/21/47	Mayaguez, Puerto Rico	Nationalwide Air Transport Service	DC-3	21	- - -	2	-	-	-	-	-	19	Subst.		
Description: Landing was made on a 3200 foot surfaced strip which was wet from recent rainshower, and with calm air conditions prevailing. Continued on past end of runway and struck a drainage ditch.															
7/13/47	Yes	Melbourne, Fla.	Burke Air Transport	DC-3C	36	2	1	-	19	13	-	1	Destroyed		
Description: The evidence indicates that this flight originating in San Juan, Puerto Rico, was flown to Newark, N. J. with only brief stops being made at Miami, Augusta, and Baltimore. At Newark the flight back to San Juan was resumed only 8 hours later. One stop of an hour and 20 minutes was made at Augusta and the flight continued. Up to the time of the accident, therefore, the pilots had been in the air more than 23 hours out of a period of 37 hours and 45 minutes. The flight was observed west of Melbourne, Fla. flying at 300 to 500 feet. One of the engines was heard to sputter and misfire. Altitude was gradually lost with landing lights on until the plane struck the ground in an area of trees and stumps. Investigation disclosed that the D chamber vent valve needle in the left carburetor was out of its seat which could be expected to result in a flow of approximately 20 gallons per hour through the carburetor vent return line to the main tank. This condition would not have resulted in engine failure but would result in draining the auxiliary tank much sooner than expected. If no fuel were taken from the main tank, the excess fuel would escape through the left main overflow line. It was further found that six spark plugs were defective in the right engine. It is believed that some emergency arose quickly possibly due to fuel exhaustion from the auxiliary tank and that the pilots, fatigued from long hours of flying, were not fully awake and alert. Gradual altitude was lost under these conditions and when the emergency arose, little time remained to ascertain the trouble or take corrective action. A crash landing was made straight ahead.															
10/29/47	Philadelphia, Pa.	Winged Cargo, Inc.	DC-3C	20	- - -	2	-	-	-	-	-	18	Subst.		
Description: Upon landing at Philadelphia and turning off runway, a bright yellow flame was observed in the left engine nacelle. Use of the CO ₂ bottle failed to extinguish the flame and local fire fighting equipment was used which also failed to completely extinguish it. However, city fire fighting equipment arrived and succeeded in putting out the fire. Examination disclosed evidence of extreme heat at the fuel and hydraulic pumps which were completely disintegrated. Although the origin of the fire could not be definitely established the evidence indicates that an oil or hydraulic line broke or became loose on the landing and the fluid was ignited by the exhaust.															
11/27/47	Yes	Yakutat, Alaska	Columbia Air Cargo Inc.	DC-3	13	2	-	-	11	-	-	-	Destroyed		
Description: While maneuvering for an instrument approach, aircraft struck a tree, crashed and burned.															

Yes

C. Irregular Domestic Operations (Continued)

1. Passenger Carrying

Date	At Night	Location	Operator	Equipment	Injury Passengers						Aircraft Damage	Fire After Impact
					Total	Aboard	F	S	M	N		
12/21/47	Yes	North Platte, Nebr.	Seattle Air Charter Corp.	DC-3C	30	-	-	2	-	-	28	Subst.

Description: While making a standard instrument approach through a light drizzle a small amount of wing ice was taken on which was cleared off with the deicers, at least as far as the top surface of the wings was concerned. At an altitude of 250 feet, however, the aircraft suddenly stalled and fell off to the left. Full power was applied, the engines instantly responded and partial recovery was made before the aircraft contacted the runway on the left wing tip and in a tail high attitude. Further on, first the left propeller, then the right propeller struck the ground tearing both off. As the stall occurred at an indicated airspeed of 105 mph investigation disclosed that some rough ice remained on the under surface of the wings, affecting their lift characteristics adversely.

	Total	159	6	4	1	7	36	28	10	67
--	-------	-----	---	---	---	---	----	----	----	----

2. Other Revenue Operations

1/22/47	Yes	Allentown, Pa.	Allegheny Air Cargo	DC-3	3	-	1	2	-	-	Destroyed	Yes
<u>Description:</u> While cruising at 6,000 feet heavy smoke filled the cabin and a landing was made immediately. Larking was successful but fire destroyed plane and cargo after crew had left through emergency hatch. The origin of the fire was undetermined.												
2/14/47	Yes	Denver, Colo.	Slick Airways	Curtiss C-46-E	2	-	-	-	-	-	Destroyed	

Description: On the landing at Denver, the pilot requested and received approval for a practice approach on the ILS. The approach appeared to be normal until just short of the runway when the lights of the aircraft were seen to disappear. It was found that the aircraft had been flown into the ground at a point 3232 feet from the end of the runway. Investigation eliminated all mechanical difficulty as being a factor and showed that the probable cause was the momentary loss of control or overcontrol by the pilot at a critically low altitude in the final stages of the approach. Also a contributing factor was the failure of the safety pilot (co-pilot) to remain alert to the altitude of the aircraft.

3/14/47	Yes	Charleston, S. C. U. S. Airlines	DC-3C	2	2	-	-	-	-	-	Destroyed	Yes
<u>Description:</u> On flight from St. Petersburg, Fla. to Teterboro, N. J., the flight reported over Charleston and was cleared to land. Plane was seen to pass over the airport at 400 feet and make a left turn and temporarily disappeared in clouds. When the plane reappeared it was at a very low altitude and about one mile from the end of the runway. The pilot was advised by the tower that he was low and was approaching to the left of the runway. A few seconds after this the aircraft lights disappeared followed by an explosive flare. The aircraft had struck trees 50 feet high at a point 3800 feet from the runway, crashed and burned.												

C. Irregular Domestic Operations (Continued)

2. Other Revenue Operations

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Injury</u>						<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>	
					Total Aboard	F	S	M	N	F	S			
3/18/47		Annette Island Alaska	Standard Air Cargo	DC-3C	4	-	-	-	-	-	-	Subst.	Yes	

Description: On the take-off run a tendency to turn left was noted, and which continued to increase as speed was picked up. After 1730 feet the plane finally became airborne with full throttle but a right turn was made to avoid obstructions during which the right wing contacted the ground followed by the right landing gear. The crash followed. Fire broke out but was quickly extinguished and the crew escaped through an emergency exit, and the main door. Investigation disclosed that an axle had broken and had been cracked for some time previous, also that brake shoes had been inadequately serviced on last assembly resulting in shoe expanding, binding wheel and breaking axle through the old break.

5/16/47 Yes Gainesville, Ga. Strato Freight DC-3 2 - - - 2 - - - Subst.

Description: Pilot landed on a runway which was 4200 feet long but made his approach too fast. Brakes were not used until within 300 feet of the end of the runway. The aircraft continued off over the runway, down a rough incline and across a dirt road.

6/28/47 Yes Teterboro, N. J. Meteor Air Transport DC-3C 2 - - - 2 - - - Subst.

Description: Collided with tree tops on take-off climb at night. Flight was continued and a safe landing was made at Newark airport.

8/19/47 Yes Fairbanks, Alaska General Air Cargo DC-3 3 - - - 3 - - - Subst.

Description: Pilot in letting down on an instrument approach undershot it, and saw trees ahead. He immediately pulled up but trees were struck, doing damage to the tail sections. Pilot was able to maintain flight however and proceeded to an Army field where a safe landing was made.

8/21/47 Mr. Hanksville, Utah Slick Airways Curtiss C-46E 3 2 - - - 1 - - - Destroyed

Description: The flight, scheduled from Denver to Los Angeles, encountered a line of severe thunderstorms and high cumulus clouds in the vicinity of Hanksville, Utah. The pilot entered the area of thunderstorms at an altitude too low to clear the rugged terrain and crashed against the side of a canyon wall while on instruments. No malfunction of the aircraft is indicated and it is apparent that the pilot could have avoided the accident by either changing his flight path to the south or by gaining a greater altitude.

8/24/47 Chicago, Ill. Flying Tigers DC-3 2 - - - 2 - - - Subst.

Description: Brakes failed as plane was being taxied. Unable to stop it or turn in time, the plane rolled into two parked aircraft.

C. Irregular Domestic Operations (Continued.)

2. Other Revenue Operations.

Date	At Night	Location	Operator	Equipment	Injury						Aircraft Damage	Passenger Injuries	Aircraft In Air	Fire After Impact
					Total	Aboard	Crew F	Crew S	Crew M	Crew W				

9-17-47 Burbank, Calif. Slick Airways Curtiss C-46A 2 - - - 2 - - - - - Subst.

Description: Enroute, Denver, Colo. to Burbank, Calif., headwinds were encountered of higher velocity than anticipated. In spite of this, however, the pilot estimated that he still had sufficient fuel to reach his destination and failed to land for refueling at Las Vegas, Nevada. After passing Las Vegas, headwinds of lower velocity were encountered and the flight was actually able to reach the Burbank airport where complete fuel exhaust occurred. A sharp turn was executed and a landing made on the north-south taxi way, contact being made 1900 feet from the south boundary of the airport. Brakes were applied but the aircraft could not be brought to a stop before leaving the airport, skidding across a highway, and railroad track. Fuel tanks were found to be dry.

10-16-47 Yes Syra, N. Car. Strato Freight HC-3 3 2 - - - 1 - - - - Destroyed

Description: Pilot was in considerable hurry to get off at Charlotte, N. C. due to fact his cargo of baby chicks might suffocate in the warm air on the ground. He took off without a careful check of weather conditions for his destination at Gainesville, Ga. The wreckage was later discovered by bear hunters where it had flown into the side of a mountain in very rugged country. It is the opinion of the Investigator that the pilot failed to locate his destination possibly because of other station interference with their AMF, and that in milling around they drifted farther north and west than they realized, due to strong southeast winds aloft. Weather, being instrument, was also a factor.

11-19-47 Yes Richmond, Va. Willis Air Service DC-3 3 - - - 2 - - - 1 Subst.

Description: Flight crew attempted a take-off with a light coating of snow on wings which apparently they expected to blow off. Instead, however, it froze on the take-off and adversely affected the lift characteristics of the wings. The left wing dropped and the plane settled into the ground, still within the area of the airport. No fire occurred.

12-4-47 Yes Chicago, Ill. Santa Fe Skyway HC-4 2 - - - 2 - - - - - Subst.

Description: Taxied into a parked aircraft.

12-10-47 Chicago, Ill. Slick Airways Curtiss C-46-A 2 - - - 2 - - - - - Subst.

Description: Take-off with loaded cargo plane was made on a straight course, the plane becoming airborne for about 2100 feet and gained 15 to 100 feet, when it was observed to settle back to the ground, the gear retracting and the plane sliding into and damaging four parked Ill. National Guard airplanes. Investigation disclosed that plane had been stalled on take-off climb.

C. Irregular Domestic Operations (Continued)

2. Other Revenue Operations

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total</u>	<u>Injury Passengers</u>			<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>
						F	S	M			
12/23/47	Miami, Fla.	Coastal Air Lines	DC-3C	2	-	-	2	-	-	-	Yes

Description: Aircraft enroute from Raleigh, N. C. to Miami with West Palm Beach as an alternate, was advised when over Melbourne, Fla. that weather at both points was below minimums, and suggested Key West as an alternate. Pilot advised that he had insufficient fuel to reach Key West. Tampa was then advised as alternate but pilot now had insufficient fuel to reach that point. Pilot declared an emergency and was cleared to the Miami Tower. Plane was next observed over the Miami Aviation Center Airport at 150 to 200 feet altitude. Pilot attempted a sharp turn to line up on a runway at which time the right engine failed. The ship yawed but it was necessary to use full power on the left engine to clear obstructions. The right wing dropped and dragged on the ground and the ship slued around losing the left engine and landing gear. A small fire followed which was extinguished.

TOTAL	37	8	-	1	24	2	-	-	2
-------	----	---	---	---	----	---	---	---	---

3. Non-revenue Operations (Test, Ferrying, Training, Check, Publicity, Familiarization, Company Flights, etc.)

<u>Date</u>	<u>At</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total</u>	<u>Crew</u>	<u>Passenger</u>	<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>	
						F	S	M			
2/14/47	League City, Tex.	Atlantic & Pacific Airlines Co.	DC-3	1	-	-	1	-	-	-	Destroyed

Description: According to statement of pilot-co-owner, who was sole occupant of aircraft at time, both engines failed, restarted, then failed again. A forced landing was made on an abandoned Army field, following which the aircraft was destroyed by fire.

<u>Date</u>	<u>At</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total</u>	<u>Crew</u>	<u>Passenger</u>	<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>	
						F	S	M			
7/5/47	Portland, Ore.	Hook & Fleming Flying Service	Cessna 140	1	-	1	-	-	-	-	Destroyed

Description: Engine malfunctioned at 100 feet on take-off climb. Attempted to turn back and crashed into a plowed field. Cause of engine failure due to fuel exhaustion.

TOTAL	2	-	1	-	1	-	-	-	-
GRAND TOTAL	198	14	5	2	32	38	28	10	69

D. Irregular International Operations

1. Passenger Carrying

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury</u>			<u>Passenger</u>			<u>Aircraft Damage</u>	<u>In Air</u>	<u>Fire After Impact</u>
						<u>Crew</u>	<u>F</u>	<u>S</u>	<u>M</u>	<u>F</u>	<u>S</u>	<u>M</u>		
3/9/47		Guayaquil, Ecuador	Skyways International	Lockheed 18-56	14	-	-	-	3	-	-	11	Subst.	
10/14/47	Yes	AT SEA - In the North Atlantic	Amer. International Airways	Boeing A-314	69	-	-	-	7	-	-	62	Destroyed	

Description: Groundlooped on take-off run into a swampy area adjacent to runway.

10/14/47 Yes AT SEA - In the Amer. International Airways
North Atlantic

Description: After flying under instrument conditions and apparently encountering headwinds stronger than forecast, the Captain decided to return to a weather ship in the ocean for fear of exhausting the fuel supply while over the Atlantic. After landing in rough seas alongside the ship the plane was damaged by colliding with the ship. All occupants of the plane were taken safely aboard the ship.

TOTAL.	83	-	-	-	10	-	-	-	73				
--------	----	---	---	---	----	---	---	---	----	--	--	--	--

2. Other Revenue Operations

2/5/47 Harrington, Del. International Air Freight DC-3C 3 1 - 2 - - - - Destroyed

Description: While enroute from N. Y. to Raleigh, N. C., a reduction of r.p.m.'s occurred in the right engine while over Delaware. The pilot was unable to correct this and after letting down decided to land at the small Harrington, Del. airport rather than try for the large Army field at Dover, 19 miles north. Approach was made to the small snow covered field, downwind, on a result of which the aircraft badly overshot and went into some trees resulting in fatal injury to the pilot. Examination of the right engine disclosed nearly two ounces of water in the carburetor fuel passages.

D. Irregular International Operations (Continued)

2. Other Revenue Operations

Date	At Night	Location	Operator	Equipment	Total Aboard	Injury						Aircraft Damage	Fire In Air	After Impact	
						F	S	M	N	P	S	M			
4/4/47		Lantana, Fla.	International Air Freight	DC-3C	2	-	-	2	-	-	-	-	Subst.		
					TOTAL	-	-	-	-	-	-	-	-	-	-

Description: On take-off climb plane began to mush and try to turn to right due to right engine malfunction of an undetermined nature. Pilot, however, failed to feather propeller and establish single engine procedure. Also he had failed to retract the landing gear immediately after take-off and maintain sufficient airspeed for single engine performance. Seeing that he was not going to clear obstructions both engines were cut and the plane was landed in a lake.

2. Non-revenue Operations (Test, Ferrying, Training, Check, Publicity,
Familiarization, Company Flights, etc.)

No accidents.

GRAND TOTAL 88 1 - 4 10 - - - 73

E. Alaskan Air Carriers

1. Passenger Carrying

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury Passengers</u>						<u>Aircraft Damage</u>	<u>Fires In Air After Impact</u>
						<u>Crew</u>	<u>S</u>	<u>M</u>	<u>F</u>	<u>S</u>	<u>M</u>		
2/7/47	Yes	Homer, Alaska	Pacific Northern Airlines	DC-3	5	-	-	3	-	-	-	2	Subst.
2/24/47	Yes	Galena, Alaska	Wien Alaska Airlines	Boeing 247D	4	-	-	2	-	-	-	2	Subst.

Description: Flight was of routine nature until within ten minutes of Galena when the right engine quit without warning. Although there was ample altitude for maneuvering to a landing on the Galena airport, the approach was made high and fast, and the pilot was unable to get the ship down on the runway. Power was applied to the right engine and for some reason the feathered right propeller was unfeathered. The ship continued on for some distance but being unable to maintain altitude a landing, wheels up, was made in a snow covered clearing. Investigation disclosed that the aircraft was overloaded by over one thousand pounds. The cause of engine failure was failure of the governor control cable allowing propeller to shift to very high pitch and literally "choke" the engine.

3/16/47 McGrath, Alaska Northern Airways Stinson V-77 3 - - - 2 - - - 1 Destroyed

Description: Pilot encountered poor visibility and low ceiling after taking off from McGrath and turned back because of this. While over a mountainous area a downdraft was encountered which pulled the plane down into a slope where a crash landing was made in trees.

5/2/47 Petersburg, Alaska Alaska Island Fairchild 24GS 3 - - 1 - - - 2 - Destroyed

Description: Pilot made a take-off from water without checking the take-off path, and aircraft struck a boat before becoming airborne.

5/31/47 Ketchikan, Alaska Ellis Air Lines Grumman G-21A 2 - - 1 - - - 1 - Destroyed

Description: Amphibian was landed on water with landing gear extended resulting in nosing over.

6/27/47 Eagle, Alaska Alaska Airlines Bellanca 31-42 2 - - 1 - - - 1 Subst.

Description: On take-off climb engine quit at an altitude of about 50 feet, due to the breaking of an intake valve. Plane was landed in water.

E. Alaskan Air Carriers (Continued)

1. Passenger Carrying

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury</u>			<u>Aircraft Damage</u>	<u>Fire In Air</u>	<u>Fire After Impact</u>
						<u>Crew</u>	<u>Passenger</u>	<u>Passenger</u>			
7/12/47		Myrtle Creek, Alaska	Wien Alaska Airlines	Stinson SR-8	3	-	-	-	1	-	2 Subst.

Description: Pilot attempted a take-off with aircraft overloaded by 191 pounds from a small field under adverse wind conditions. Was unable to clear obstacles and aircraft struck bushes and mashed into ground and nosed over. Pilot had very little recent experience with this model aircraft.

8/2/47 Kotzebue, Alaska
Wien Alaska Airlines
Description: Struck a pile of dirt during landing approach which snapped off right gear. Returned to Kotzebue and landed.

11/22/47 Nulato, Alaska
Northern Consolidated Airlines
Description: Engine failed on take-off climb, cause undetermined. Landed on unfavorable terrain.

11/23/47 Anchorage, Alaska
Northern Consolidated Airlines
DC-3
Description: Landing was made in a variable wind which switched to a light tailwind just prior to the touchdown. The runway had patches of ice on it and was slick. Pilot made a fast approach and used up a major share of runway before full lift of wings was lost. The plane began skidding sideways but was straightened up just before going off the end of the runway onto a city garbage dump, 25 feet lower than the end of the runway. No injuries to persons resulted. Two other DC-3's landed on same runway later but experienced no difficulty.

11/30/47 Seattle, Wash.
Alaska Airlines
DC-4
Description: In approaching the airport through rain, smoke and fog with excessive speed, aircraft landed "deep" on the runway. Brakes failed to hold on the wet runway and the plane overshot, struck a ditch, tearing off the landing gear, slid across a road, crushing a passing car and came to rest right side up. Fire immediately broke out and nine persons, including an occupant of the car, were fatally injured.

<u>TOTAL</u>	<u>65</u>	<u>1</u>	<u>4</u>	<u>14</u>	<u>7</u>	<u>11</u>	<u>9</u>	<u>19</u>
--------------	-----------	----------	----------	-----------	----------	-----------	----------	-----------

Yes
Description: Includes 1 occupant of auto. Not counted in totals.

E. Alaskan Air Carriers (Continued)

2. Other Revenue Operations

<u>Date</u>	<u>Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury</u>						<u>Aircraft Damage</u>	<u>In Air Fire</u>	<u>After Impact</u>
						<u>Crew</u>	<u>Passenger</u>	<u>F</u>	<u>S</u>	<u>M</u>	<u>N</u>			
2/18/47	Pt. Yukon, Alaska	Wien Alaska Airlines	Stinson SR-8C	1	- - - 1	- - 1	- - -	-	-	-	-	Subst.		
Description: Left landing gear broke during a normal landing resulting in plane nosing up.														
6/26/47	Waseman, Alaska	Wien Alaska Airlines	Boeing 247D	3	- - - 3	- - 3	- - -	-	-	-	-	Subst.		
Description: Landed downwind and overshot field wrenching one landing gear loose and sliding on the nose for 20 to 30 feet.														
10/11/47	Yes Candle, Alaska	Wien Alaska Airlines	Waco VKS-7	2	- - - 1	- - 1	- - -	-	-	-	-	1	Destroyed	
Description: Pilot landed drifting and too near the left edge of the narrow runway, where wheel struck a hole and swung aircraft off runway into a gulley.														
			TOTAL		- - - 6	- - 5	- - -	-	-	-	-	1		

2. Non-revenue Operations (Test, Ferrying, Training, Check, Publicity, Familiarization, Company Flights, etc.)

5/11/46	3rd Tukchik Lake, Alaska	Alaska Airlines	Piper PA-12	2	- - - 2	- - 2	- - -	-	-	-	-	1	Subst.	
Description: Landed on ice covered lake and after coming to a stop, plane broke through.														
7/19/47	Kotzebue, Alaska	Alaska Airlines	Stinson SR-9	2	- - - 1	- - 1	- - -	-	-	-	-	1	Subst.	
Description: In taking off pilot of Stinson allowed it to veer to left and strike the wing tip of the Douglas which was parked very close to the runway.														

E. Alaskan Air Carriers (Continued)

3. Non-revenue Operations (Test, Ferrying, Training, Check, Publicity,
Familiarization, Company Flights, etc.)

<u>Date</u>	<u>At Night</u>	<u>Location</u>	<u>Operator</u>	<u>Equipment</u>	<u>Total Aboard</u>	<u>Injury Passengers</u>						<u>Aircraft Damage</u>			<u>Fire</u>		
						P	S	M	N	F	S	M	N	In Air	After Impact		
7/20/47		Kotzebue, Alaska	Lavery Airways	Lockheed 18-56	3	-	-	1	1	-	-	1	-				
Description: After a landing run of about 200 feet, the plane nosed up on the runway and turned over on its back. Investigation disclosed that the plane was loaded in such a way as to bring the C. G. to 33.2 forward when it should have been at least 38.8. This unbalanced condition together with somewhat soft ground resulted in the nose over.																	
8/24/47		Tenalon Point, Alaska	Northern Republic Airlines Consolidated Airlines	Republic Seabee RC-3	1	-	-	1	-	-	-	-	-	1	1	1	1
Description: On landing approach for a water landing pilot absent-mindedly lowered landing gear and plane nosed over on the water landing.																	
						TOTAL	8	-	-	1	5	-	-	1	1		
						GRAND TOTAL	79	1	-	5	24	7	11	10	21		

b/ Received after close of business April 30, 1947.