

ACCIDENT COMPARATIVE DATA

COMMANDER 112/114 SERIES

BEECH 33,35,36 SERIES

MOONEY M-20 SERIES

PIPER PA-32 SERIES

1977 - 1998

for

THE COMMANDER AIRCRAFT COMPANY

September 1999

by

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INTRODUCTION

At the request of Mr. Dean N. Thomas, Senior Vice President Marketing, Sales and Service, Commander Aircraft Company, the number of accidents, fatal accidents and accident rates were compiled for the following aircraft:

Beech 33,35,36 Series
Commander 112,114 Series
Mooney M-20 Series
Piper PA-32 Series

Accident data was compiled from the National Transportation Safety Board (NTSB) records in Washington D.C. for the period 1975 through 1998.

To develop accident rates, the annual fleet size and estimated flight hours for each aircraft series was extracted from each annual "FAA General Aviation and Air Taxi Survey" for the years 1977 through 1996. Data prior to 1977 was not available. Although there are some questionable years in the activity surveys where fleets contract and expand suspiciously, the FAA Survey data is the only data available in the industry. The years 1997 and 1998 were estimated based on units delivered each year and estimated annual utilization.

FINDINGS

Comparative data was developed for each aircraft series for the following year groups:

1977 - 1998	22 years
1984 - 1998	15 years
1989 - 1998	10 years
1994 - 1998	5 years

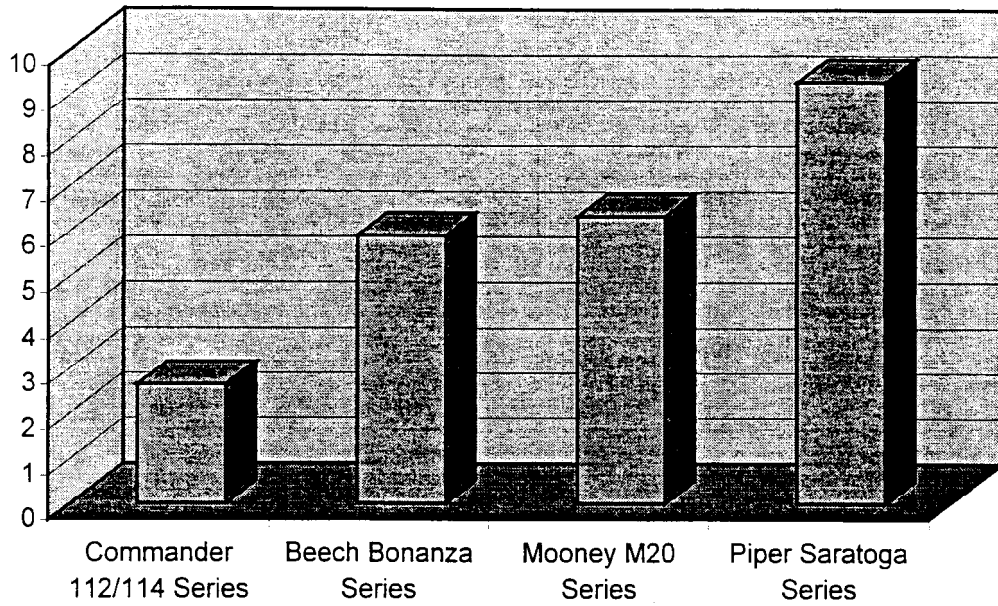
The Commander 112,114 series safety record surpasses the record established by the other three aircraft series, the Beech 33,35,36, the Mooney M-20 series and the Piper PA-32 series in each of the annual groups and in all methods observed:

Accidents as a percent of the active fleet
Fatal accidents as a percent of the active fleet
Accident rate per 100,000 flying hours
Fatal accident rate per 100,000 flying hours

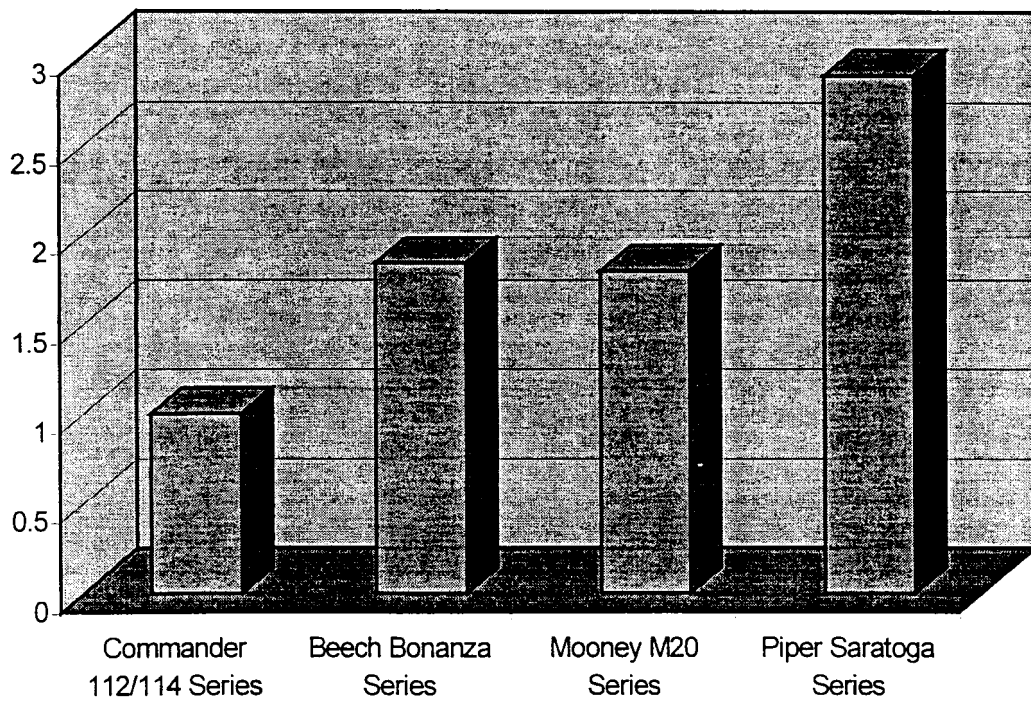
Since introduction of the Commander 112,114 series aircraft, the accident rate per 100,000 hours is 2.24 times better than that of the Beech 33,35,36 series, 2.4 times better than that of the Mooney M-20 series and 3.53 times better than that of the Piper PA-32 series.

The fatal accident rate per 100,000 hours since introduction is 1.8 times better than that of the Beech series and Mooney M-20 series and 2.89 times better than that of the Piper PA-32 series.

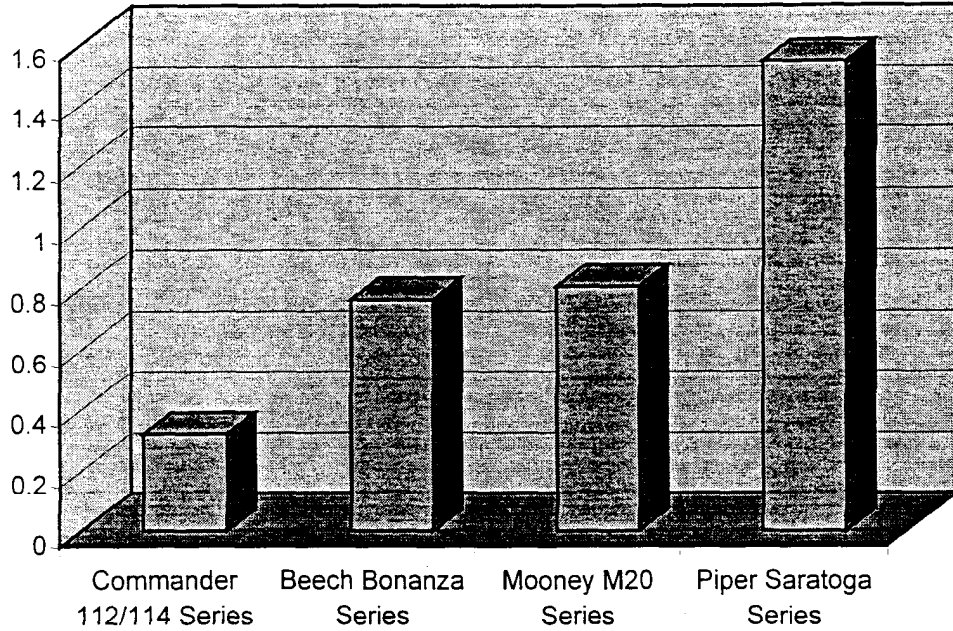
Total Accident Rate per 100,000 Flight Hours (1977-1998)



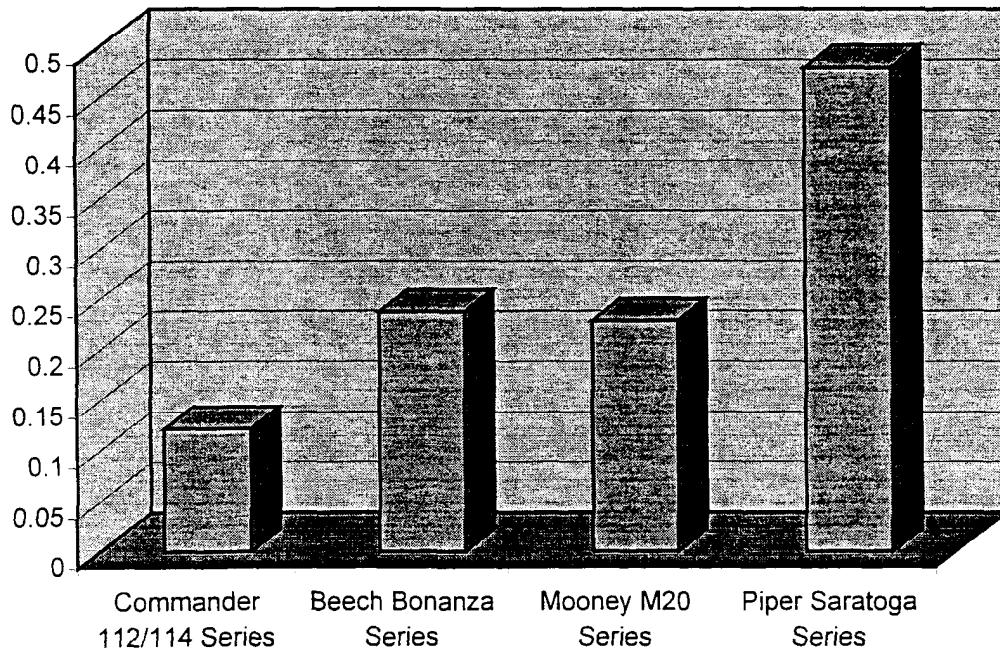
Fatal Accident Rate per 100,000 Flight Hours (1977-1998)



Total Accidents as a Percent of Total Fleet (1977-1998)



Fatal Accidents as a Percent of Total Fleet (1977-1998)



ACCIDENTS/FATAL ACCIDENTS

Year	<u>Beech 33,35,36</u>		<u>Commander 112,114</u>		<u>Mooney 20</u>		<u>Piper PA-32</u>	
	<u>Accidents</u>	<u>Fatal Accidents</u>	<u>Accidents</u>	<u>Fatal Accidents</u>	<u>Accidents</u>	<u>Fatal Accidents</u>	<u>Accidents</u>	<u>Fatal Accidents</u>
1975	121	43	-	-	65	16	63	14
1976	99	25	-	-	62	11	70	12
1977	91	35	3	1	63	17	73	18
1978	107	32	1	-	60	10	82	23
1979	102	21	6	5	52	12	86	17
1980	89	25	2	-	44	17	80	19
1981	88	29	4	-	66	19	73	25
1982	89	22	2	-	53	16	66	45
1983	90	30	3	2	58	19	77	19
1984	80	25	3	1	51	15	61	20
1985	80	25	-	-	49	15	65	14
1986	53	16	1	1	45	10	47	11
1987	63	21	1	1	55	16	52	45
1988	65	17	1	-	42	13	51	11
1989	78	29	1	-	29	7	61	11
1990	56	19	3	3	42	12	41	16
1991	74	26	1	1	27	12	40	11
1992	64	25	-	-	32	10	51	12
1993	65	22	3	-	35	13	48	16
1994	42	11	1	-	36	8	52	20
1995	66	23	-	-	31	5	38	15
1996	58	19	-	-	28	8	40	8
1997	62	16	2	1	35	10	38	9
1998	45	14	4	2	35	11	26	4
Since 1977 22 years	1607	502	42	16	968	275	1248	389
Since 1984 15 years	951	308	21	8	572	165	711	223
Since 1989 10 years	610	204	15	7	330	96	435	122
Since 1994 5 years	273	83	7	3	165	42	194	56

ACTIVE FLEET/FLIGHT HOURS

<u>Year</u>	<u>Beech 33,35,36</u>		<u>Commander 112,114</u>		<u>Mooney 20</u>		<u>Piper PA-32</u>	
	<u>Active Fleet</u>	<u>Flight Hours</u>	<u>Active Fleet</u>	<u>Flight Hours</u>	<u>Active Fleet</u>	<u>Flight Hours</u>	<u>Active Fleet</u>	<u>Flight Hours</u>
1977	8,687	1,382,257	478	118,061	4,546	698,511	2,759	755,016
1978	9,430	1,573,639	698	92,141	4,834	723,170	3,410	627,498
1979	9,654	1,578,079	743	183,443	5,401	877,447	3,813	863,655
1980	9,553	1,548,152	722	115,575	5,425	694,787	3,899	821,002
1981	9,863	1,293,829	661	64,961	5,684	840,479	4,023	833,925
1982	9,260	1,184,807	506	59,056	5,363	701,761	3,890	529,110
1983	9,820	1,282,134	630	61,933	5,475	637,207	3,986	737,525
1984	9,910	1,194,450	570	63,051	5,699	712,662	4,271	747,618
1985	9,565	1,239,711	670	70,520	5,884	721,198	4,087	670,176
1986	9,831	1,202,172	629	67,157	6,011	698,255	4,069	600,649
1987	10,059	1,187,783	632	65,349	5,653	651,918	4,174	676,678
1988	9,749	1,295,562	544	54,264	5,661	684,739	3,861	570,937
1989	10,516	1,175,909	544	42,164	5,709	577,619	4,212	642,898
1990	10,273	1,381,167	592	45,153	5,938	862,062	3,734	542,689
1991	9,858	1,280,993	602	60,653	5,755	760,042	3,650	536,759
1992	9,036	1,138,878	548	48,622	5,045	619,685	3,262	488,059
1993	9,163	1,139,410	492	52,520	5,194	643,214	3,210	530,436
1994	8,676	1,001,932	505	51,866	5,169	596,528	3,180	501,312
1995	9,076	1,096,895	528	52,706	5,171	754,971	3,025	427,520
1996	9,446	939,251	583	68,716	5,423	556,733	3,398	416,051
1997e	9,545	1,002,225	597	74,625	5,509	605,990	3,462	432,750
1998e	9,638	1,079,456	610	82,350	5,602	644,230	3,534	459,420
Since 1977								
22 years	210,608	27,198,688	13,084	1,594,886	120,151	15,263,208	80,909	13,421,683
Since 1984								
15 years	144,341	17,355,794	8,646	899,716	83,423	10,089,846	55,129	8,243,952
Since 1989								
10 years	95,227	11,236,116	5,601	579,375	54,515	6,621,074	34,667	4,977,894
Since 1994								
5 years	46,381	5,119,759	2,823	330,263	26,874	3,158,452	16,599	2,237,053

ACCIDENT/FATAL ACCIDENT RATES

	1977-1998 <u>22 years</u>	1984-1998 <u>15 years</u>	1989-1998 <u>10 years</u>	1994-1998 <u>5 years</u>
<u>Beech 33,35,36</u>				
Cumulative Fleet Size	210,608	144,341	95,227	46,381
Cumulative Flight Hours	27,198,688	17,355,794	11,236,116	5,119,759
Accidents	1607	951	610	273
Fatal Accidents	502	308	204	83
Accidents as % of Fleet	0.763	0.659	0.641	0.589
Ftl. Acc. as % of Fleet	0.238	0.213	0.214	0.179
Accident Rate/100,000 hrs.	5.908	5.480	5.429	5.332
Ftl. Acc. Rate/100,000 hrs.	1.846	1.775	1.816	1.620

Commander 112,114

Cumulative Fleet Size	13,084	8,648	5,601	2,823
Cumulative Flight Hours	1,594,886	899,716	579,375	330,263
Accidents	42	21	15	7
Fatal Accidents	16	8	7	3
Accidents as % of Fleet	0.320	0.243	0.268	0.248
Ftl. Acc. as % of Fleet	0.122	0.093	0.125	0.106
Accident Rate/100,000 hrs.	2.633	2.334	2.589	2.120
Ftl. Acc. Rate/100,000 hrs.	1.003	0.889	1.208	0.908

Mooney M-20 Series

Cumulative Fleet Size	120,151	83,423	54,515	26,874
Cumulative Flight Hours	15,263,208	10,089,846	6,621,074	3,158,452
Accidents	968	572	330	165
Fatal Accidents	275	165	96	42
Accidents as % of Fleet	0.806	0.686	0.605	0.614
Ftl. Acc. as % of Fleet	0.229	0.198	0.176	0.156
Accident Rate/100,000 hrs.	6.342	5.669	4.984	5.224
Ftl. Acc. Rate/100,000 hrs.	1.802	1.635	1.450	1.330

Piper PA-32 Series

Cumulative Fleet Size	80,909	55,129	34,667	16,599
Cumulative Flight Hours	13,421,683	8,243,952	4,977,894	2,237,053
Accidents	1248	711	435	194
Fatal Accidents	389	223	122	56
Accidents as % of Fleet	1.542	1.290	1.255	1.169
Ftl. Acc. as % of Fleet	0.481	0.405	0.513	0.337
Accident Rate/100,000 hrs.	9.298	8.625	8.739	8.672
Ftl. Acc. Rate/100,000 hrs.	2.898	2.705	2.451	2.503

ACCIDENT RATE COMPARISON

	<u>Beech</u> <u>33,35,36</u>	<u>Commander</u> <u>112/114</u>	<u>Mooney 20</u> <u>Series</u>	<u>Piper PA-32</u> <u>Series</u>
<u>1977 -1998 22 years</u>				
Accidents as % of Fleet	0.763	0.320	0.806	1.542
Ftl. Acc. as % of Fleet	0.238	0.122	0.229	0.481
Accident Rate/ 100,000 hrs.	5.908	2.633	6.342	9.298
Ftl. Acc. Rate /100,000 hrs.	1.846	1.003	1.802	2.898
<u>1984 - 1998 15 years</u>				
Accidents as % of Fleet	0.659	0.268	0.605	1.255
Ftl. Acc. as % of Fleet	0.213	0.125	0.176	0.513
Accident Rate/100,000 hrs.	5.480	2.334	4.984	8.739
Ftl. Acc. Rate /100,000 hrs.	1.775	0.889	1.450	2.451
<u>1989 - 1998 10 years</u>				
Accidents as % of Fleet	0.641	0.268	0.605	1.255
Ftl. Acc. as % of Fleet	0.214	0.125	0.176	0.513
Accident Rate/100,000 hrs.	5.429	2.589	4.984	8.739
Ftl. Acc. Rate /100,000 hrs.	1.816	1.208	1.450	2.451
<u>1994 - 1998 5 years</u>				
Accidents as % of Fleet	0.589	0.248	0.614	1.169
Ftl. Acc. as % of Fleet	0.179	0.106	0.156	0.337
Accident Rate/100,000 hrs.	5.332	2.120	5.224	8.672
Ftl. Acc. Rate /100,000 hrs.	1.620	0.908	1.330	2.503