US Department
of Transportation
**Federal Aviation
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Rotorcraft Activity Survey

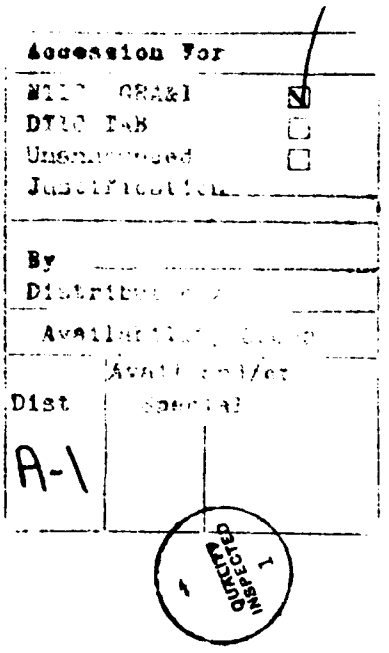
1989

Office of

U.S. Department
of Transportation
**Federal Aviation
Administration**

Rotorcraft Activity Survey

1989



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16. Abstract

This report presents the results of a special one-time Rotorcraft Activity Survey. The survey is conducted by the FAA to obtain information on the activity of the United States registered rotorcraft fleet.

The report contains breakdowns of active rotorcraft, annual flight hours, average flight hours and other statistics by rotorcraft type, manufacturer/model group, region and state of based aircraft, and primary use. Also included are law enforcement and public use rotorcraft, lifetime airframe hours, engine hours, miles flown estimates, and estimates of the number of landings.

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Date next publication is available:	September 1991 (1990 data)
Person to contact:	Patricia Beardsley

Census of the U.S. Civil Aircraft is an annual publication that includes statistical data on the registered civil fleet, air carrier aircraft, and general aviation aircraft--both registered and active, detailed reports for general aviation aircraft by owner's state and county, and registered aircraft by make and model.

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FAA Air Traffic Activity furnishes terminal and enroute air traffic activity information (e.g., takeoffs and landings, flight plans filed) of the National Airspace System. The data is collected/compiled from the FAA-operated Airport Traffic Control Towers, Air Route Traffic Control Centers, Flight Service Stations, Approach Control Facilities, and FAA Contract-towered airports.

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Person to contact:	Nancy Trembley

FAA Directory is published twice a year. It contains six sections of data: Washington/Region/Center headquarters' managers; field facilities' managers/ supervisors; regional area maps/organizational charts; alphabetical listing; special interest groups; and a glossary.

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Date next publication is scheduled:	July 1991
Person to contact:	Alfredia Brooks

FAA Statistical Handbook of Aviation is a convenient source for historical data. It presents statistical information pertaining to the Federal Aviation Administration, the National Airspace System, Airports, Airport Activity, U.S. Civil Air Carrier Fleet, U.S. Civil Air Carrier Operating Data, Airmen, General Aviation Aircraft, Aircraft Accidents, Aeronautical Production and Import/Export.

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Person to contact:	Patricia Beardsley

General Aviation Activity and Avionics Survey is an annual report that presents the results of the general aviation activity and avionics survey conducted to obtain information on the activity and avionics of the U.S. registered general aviation aircraft fleet. The report contains estimated flying time, landings, fuel consumption, lifetime airframe hours, avionics, and engine hours of the general aviation aircraft by manufacturer/model group, aircraft type, state and region of based aircraft, and primary use.

Reporting period:	Calendar Year
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Person to contact:	Shung-Chai Huang

U.S. Civil Airmen Statistics is an annual study of detailed airmen statistics. It contains calendar year statistics on pilots and nonpilots and the number of certificates issued.

Reporting period:	Calendar Year
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Date 1990 information is available:	February 1991
Date next publication is scheduled:	April 1991 (1990 data)
Person to contact:	Patricia Carter

PREFACE

This report presents the results of the 1989 Rotorcraft Activity Survey as prepared by the Statistical Analysis Branch, Management Standards and Statistics Division, Office of Management Systems (AMS-420).

The report is divided into seven, easy-to-read chapters. Each chapter contains its corresponding tables and figures. The figures are presented first, with the tables following the figures.

Chapter I, **Introduction**, briefly discusses the purpose, background and scope of the Rotorcraft Activity Survey Report and highlights the important findings of the survey.

Chapter II, **Common General Aviation Activity Measures**, presents information on several aviation activity measures used to indicate growth trends and activity levels in the rotorcraft fleet. Some common aviation activity measures of interest are the number of active rotorcraft (flew one or more hours during the year), the total hours flown, and average annual hours flown per rotorcraft.

Chapter III, **Landings and Rotorcraft Base Facilities**, presents the number of rotorcraft landing at airports; heliports; helipads at airports; offshore platforms; and other landing facilities.

Chapter IV, **Primary Use by Expanded Use Category**, displays the array of services provided by the rotorcraft fleet, such as air taxi, external load, personal, business, instructional, and emergency medical service.

Chapter V, **Airframe Hours**, provides data on the age of the rotorcraft fleet by presenting the average airframe hours per active rotorcraft.

Chapter VI, **Law Enforcement Rotorcraft**, examines the estimated number of law enforcement rotorcraft, total flight hours and average flight hours in four different ways, by: 1) aircraft type; 2) region of based rotorcraft; 3) Service Difficulty Reporting (SDR) Rotorcraft Manufacturer/Model Group; and 4) state of based rotorcraft. In addition, this chapter looks at the number of law enforcement rotorcraft and total flight hours by expanded use category.

Chapter VII, **Public Use Rotorcraft**, examines the estimated number of public use rotorcraft, total flight hours and average flight hours in four different ways, by: 1) aircraft type; 2) region of based rotorcraft; 3) SDR Rotorcraft Manufacturer/Model Group; and 4) state of based rotorcraft. In addition, this chapter looks at the number of public use rotorcraft and total flight hours by expanded use category.

Appendix A details the methodology of the survey and includes a definition and explanation of "standard error," a statistical measure reported in each table. Appendix B lists SDR aircraft group name and FAA Manufacturer/Model Codes. Appendix C contains the definitions of rotorcraft expanded use categories.

Suggestions and comments about this report are welcome and will be given careful consideration in planning future editions.

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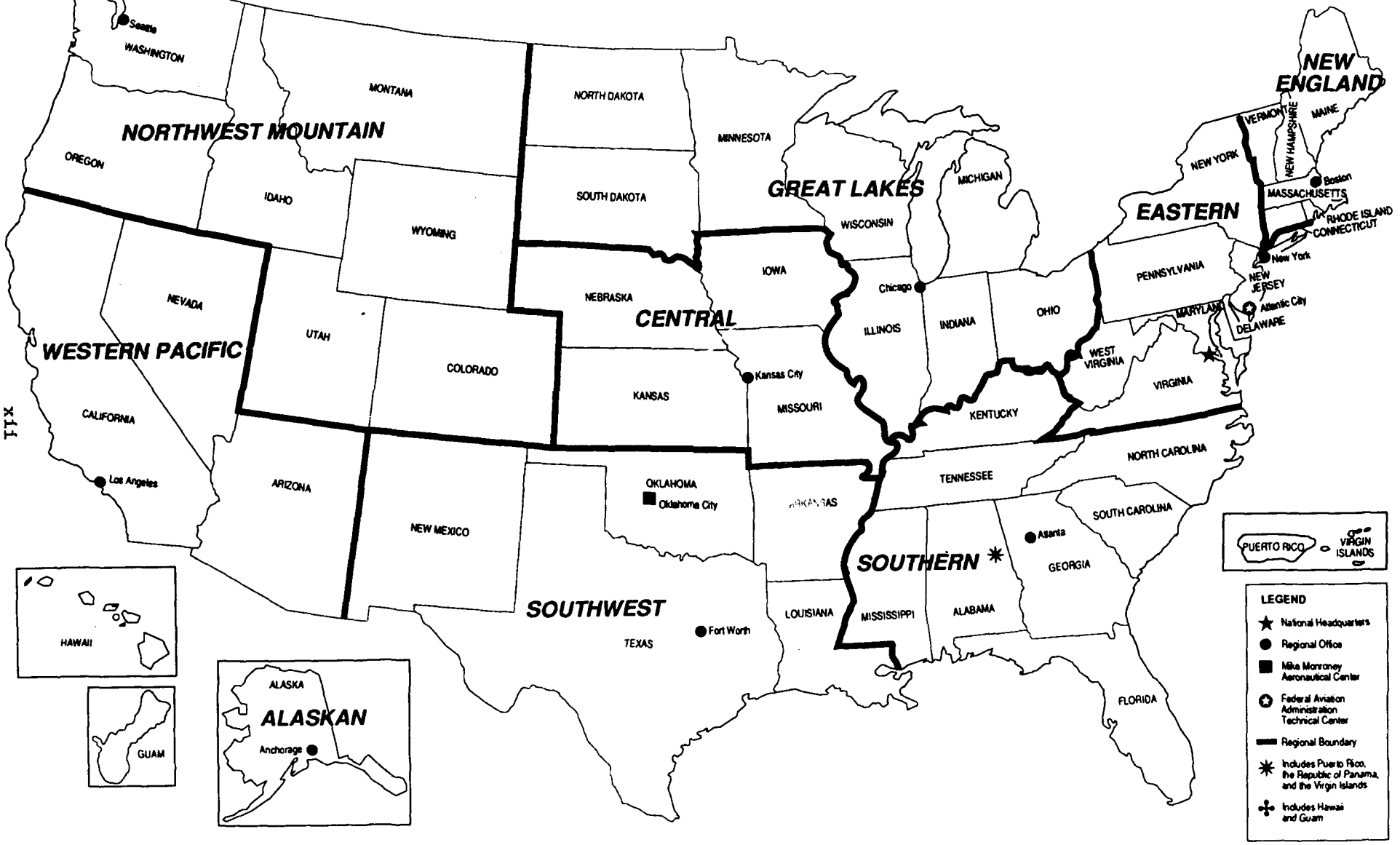
INCLUDING LOCATIONS OF REGIONAL HEADQUARTERS AND CENTERS



CHAPTER I

INTRODUCTION

The 1989 Rotorcraft Activity Survey is the first ever census of the more than 10,000 registered rotorcraft in the United States. This report presents the 1989 Rotorcraft Activity Survey results which provide the FAA with valuable information about the activities of the rotorcraft fleet. The information obtained from this survey enables the FAA to monitor the rotorcraft fleet so that FAA can, among other activities, anticipate and meet demand for National Airspace System (NAS) facilities and services, assess the impact of regulatory changes on the rotorcraft fleet, and implement measures to assure the safe operation of rotorcraft in the airspace.

For the purposes of this rotorcraft survey, the term, "rotorcraft," refers to aircraft that use rotating wings (blades) to move through the air. In this report, rotorcraft are considered in two aircraft groups, manufacturer built and amateur built. The manufacturer built rotorcraft are further divided into piston, and single engine and multiengine turbine rotorcraft. The rotorcraft surveyed, therefore, range in complexity from simple, amateur built rotorcraft, to the more sophisticated manufacturer built multiengine, turbine-powered rotorcraft. These rotorcraft are used for a variety of purposes such as air taxi, commuter, personal, corporate/business, instructional, and emergency medical service--to name a few.

Also provided in this report is information on rotorcraft used for law enforcement purposes and public use activities.

The rotorcraft survey questionnaire was mailed to every U.S. registered rotorcraft owner in three mailings and to rotorcraft operators in the first two mailings. More than 64 percent of the rotorcraft owners/operators responded to the census. Rotorcraft data, therefore, were collected for every state and FAA region, as well as all of the major manufacturer/model groups of rotorcraft. A detailed description of the survey methodology is provided in Appendix A.

This report is divided into seven chapters. Each chapter contains its corresponding tables and figures, which follow each chapter's text. The figures are presented first, with the tables following the figures. Altogether, there are 15 figures and 39 tables of data on rotorcraft presented in this report.

Following are some of the significant rotorcraft survey findings for 1989:

GENERAL

- More than 2.8 million hours were flown by the 7,488 active rotorcraft in the U.S. fleet during 1989.
- The average flight time per active rotorcraft was 390 hours, almost two and a half times the average flight time of the 1989 general aviation fixed wing fleet (158 hours).
- Active rotorcraft comprised approximately 72 percent of the registered rotorcraft fleet.
- During 1989, the rotorcraft fleet made almost 7.4 million landings.

- The total airframe hours for the active rotorcraft population is 31.4 million hours.

- The active rotorcraft population has an average of approximately 4,191 lifetime airframe hours.

GEOGRAPHIC

- The three regions with the greatest number of active rotorcraft are: the Western-Pacific with 1,458; the Southwestern with 1,413; and the Southern with 1,223.

- The state with the largest estimated number of active rotorcraft is California with 1,072 active rotorcraft. The next top two states are Louisiana with 645 and Florida with 635 active rotorcraft.

- The three regions with the greatest number of landings are: Southwestern with nearly 2 million landings; Western-Pacific with 1.7 million; and Eastern with more than 951,000 landings.

ROTORCRAFT TYPE AND PRIMARY USE

- Air taxi is the most popular primary use of the active rotorcraft fleet. Almost 18 percent are primarily used in this way. The second and third most popular primary uses are aerial observation and personal - 17 percent and 14 percent, respectively.

- Single engine turbine rotorcraft flew more than 54 percent of the total hours flown.

- Multiengine turbine rotorcraft averaged the most hours flown per rotorcraft, with 552 average hours. The single engine turbine rotorcraft followed closely with an average of 481 average hours.

- Although piston rotorcraft represent the greatest population, they do not have the highest total airframe hours. Single engine turbine rotorcraft have both the highest total airframe hours and average airframe hours, with 16.0 million total airframe hours and 4,934 average airframe hours.

LAW ENFORCEMENT AND PUBLIC USE ROTORCRAFT

- Law enforcement rotorcraft comprise 8.2 percent of the active rotorcraft fleet, and public use rotorcraft comprise 9.6 percent of the active rotorcraft fleet.

- Aerial observation is the most frequent primary use of law enforcement rotorcraft, with 68 percent of the law enforcement rotorcraft used primarily for this purpose.

- Aerial observation is also the most frequent primary use of public use rotorcraft, with 50 percent of the public use rotorcraft used primarily for this purpose.

CHAPTER II

COMMON GENERAL AVIATION ACTIVITY MEASURES

Several aviation activity measures are used to indicate growth trends and activity levels in the rotorcraft fleet. Some common aviation activity measures of interest are the number of active rotorcraft (flew one or more hours during the year), the total hours flown, and average annual hours flown per rotorcraft.

This chapter presents four tables and three figures on these common aviation activity measures. Tables 2.1-2.4 give estimates of the rotorcraft population size, number of active rotorcraft, total flight hours and average annual flight hours in four different ways, by: 1) Rotorcraft Type; 2) Service Difficulty Reporting (SDR) Rotorcraft Manufacturer/Model Group; 3) Region of Based Rotorcraft; and 4) State of Based Rotorcraft.

To visualize the data presented in Tables 2.1-2.4, three figures are included in this chapter. Figures 2.1, 2.2 and 2.3 show, by rotorcraft type, the number of active versus registered rotorcraft, total flight hours, and average annual flight hours, respectively.

Table 2.2 breaks down the number of estimated active aircraft and their respective average annual flight hour estimates by Service Difficulty Reporting (SDR) Rotorcraft Manufacturer/Model Group. The four "Other" categories listed in the beginning of Table 2.2 refer to all the rotorcraft which belong to a manufacturer's/model group that has less than 20 rotorcraft.

The different "Other" categories represent:

1 Manufactured Piston.
2 Manufactured Single Engine Turbine Rotorcraft.
3 Manufactured Multiengine Turbine Rotorcraft.
4 Amateur Built Rotorcraft.

On a national level, the results of the 1989 Rotorcraft Activity Survey revealed that:

- More than 2.8 million hours were flown by the 7,488 active rotorcraft in the U.S. fleet during 1989.
- The average annual flight time per active rotorcraft was 390 hours, almost two and a half times the average flight time of the 1989 general aviation fixed wing fleet (158 hours).
- Active rotorcraft comprised approximately 72 percent of the registered rotorcraft fleet.

The following observations can be derived from Tables 2.1 through 2.4:

- There is a great deal of variation in the total number of hours flown, number of active aircraft, and average hours flown among all types of rotorcraft.

- In 1989, piston rotorcraft, the rotorcraft type with the largest number registered (3,994), had 67.2 percent of their fleet active. However, single engine turbine rotorcraft, the rotorcraft type with the second largest number of rotorcraft registered (3,616), had 89.8 percent of their fleet active.

- Single engine turbine rotorcraft flew more than 54 percent of the total hours flown.

- Multiengine turbine rotorcraft averaged the most hours flown per rotorcraft, with 552 average hours. The single engine turbine rotorcraft follow closely with an average of 481 hours.

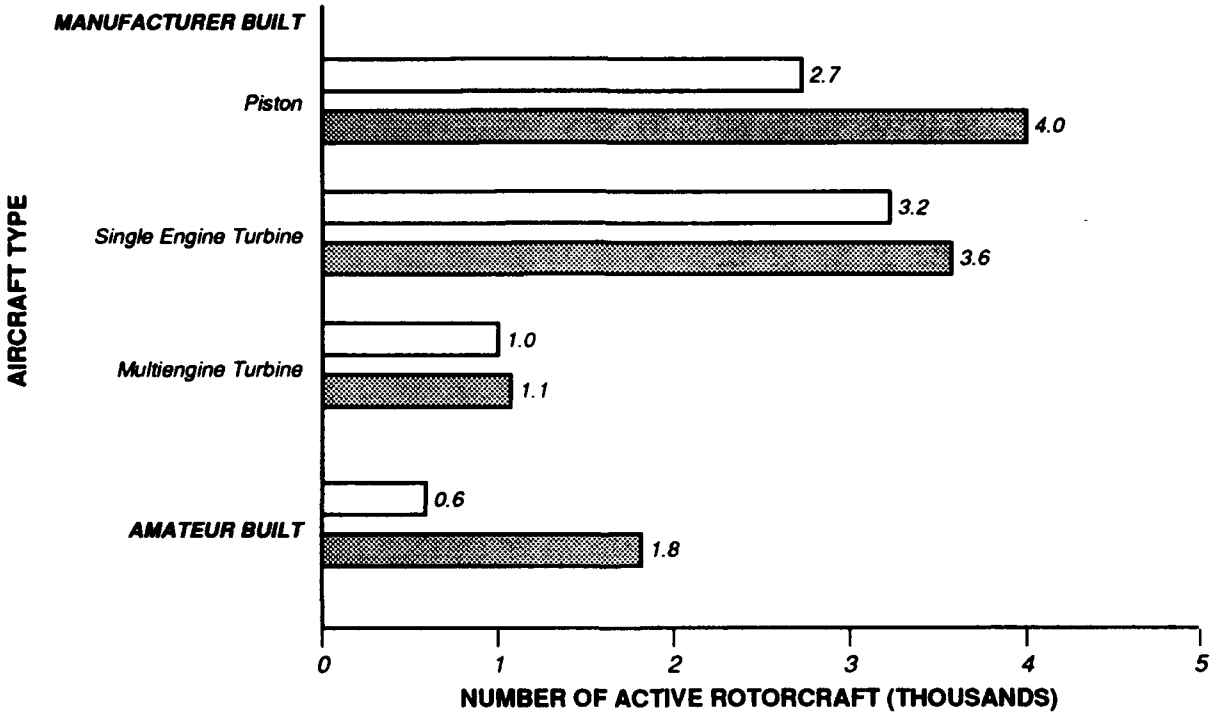
- The percentages of active rotorcraft in each region versus the total number of registered rotorcraft in each region range from a low of 62 percent in the Great Lakes region to a high of 86 percent in the Alaskan region.

- The three regions with the greatest number of active rotorcraft are: the Western-Pacific with 1,458; the Southwestern with 1,413; and the Southern with 1,223. These three regions also had the highest number of total hours flown. The Southwestern ranked first with 779,136 hours, the Western-Pacific was second with 664,113 hours, and the Southern region had 342,154 hours.

- The Southwestern region had the highest average hours flown, 577. This most likely can be attributed to the use of helicopters in offshore exploration for oil and natural gas in Louisiana and Texas, as well as law enforcement activities throughout the region.

- The state with the largest estimated number of active rotorcraft is California with 1,072 active rotorcraft. The next states with the largest estimated number of active rotorcraft are Louisiana with 645 and Florida with 635.

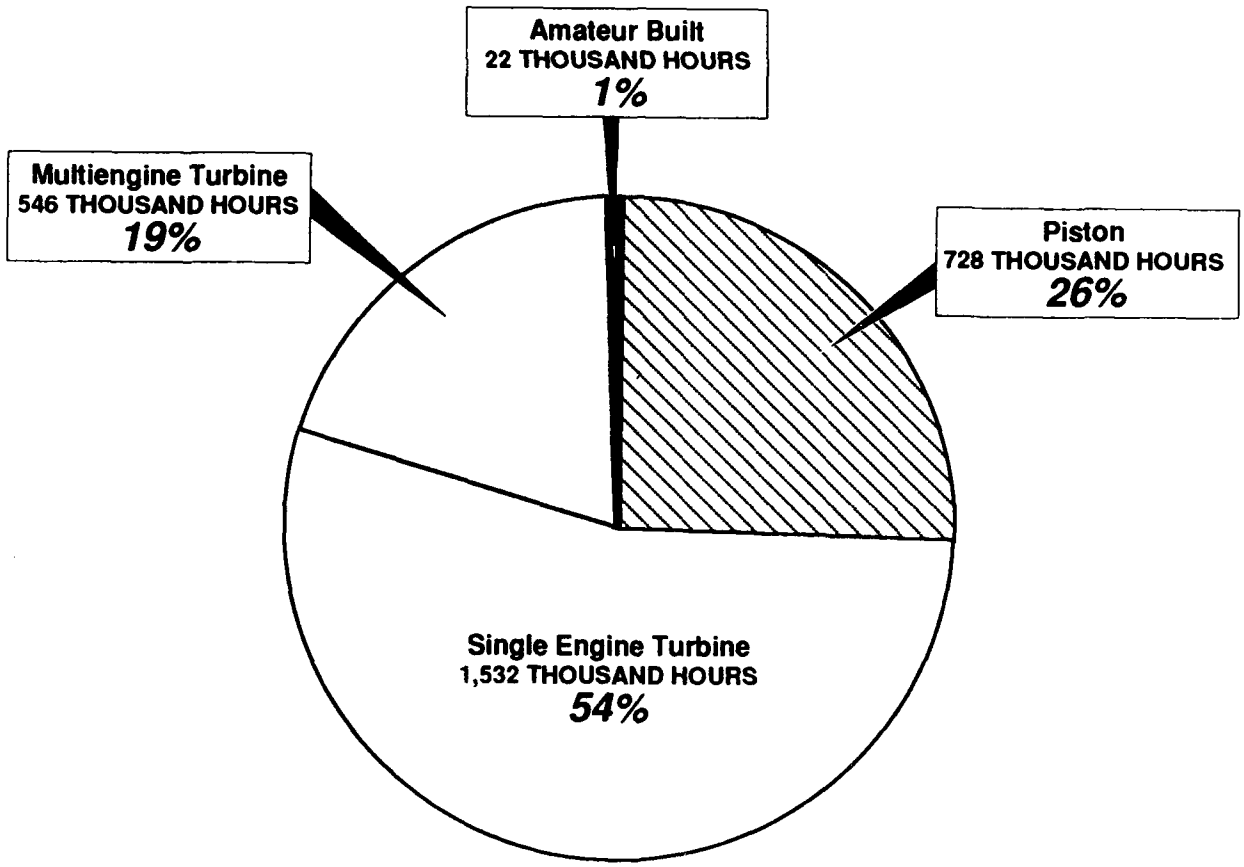
Figure 2.1
1989 ACTIVE VS. REGISTERED ROTORCRAFT BY ROTORCRAFT TYPE



SOURCE: Table 2.1

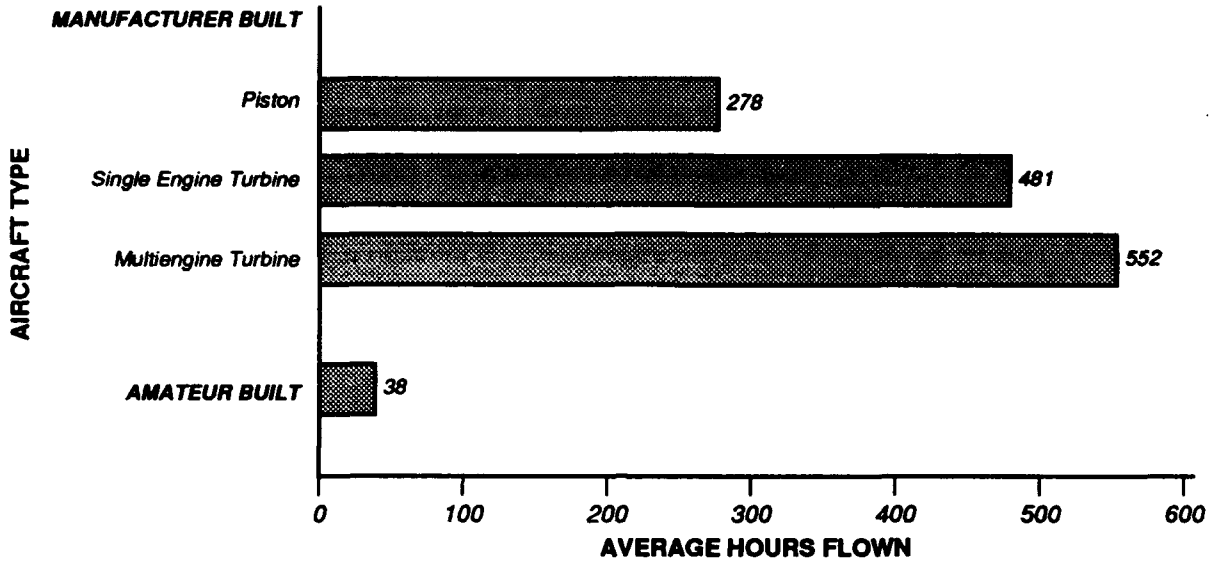
Figure 2.2

1989 ROTORCRAFT TOTAL FLIGHT HOURS BY ROTORCRAFT TYPE



SOURCE: Table 2.1

Figure 2.3
1989 ROTORCRAFT AVERAGE HOURS FLOWN BY ROTORCRAFT TYPE



SOURCE: Table 2.1

2.1 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:									
PISTON TOTAL:	3,994	2,684	1.2	67.2	0.8	728,125	2.2	277.8	2.0
TURBINE: SINGLE ENGINE	3,616	3,248	0.5	89.8	0.4	1,532,270	1.0	480.5	0.9
TURBINE: MULTI - ENGINE	1,069	984	0.7	92.0	0.7	546,471	2.0	551.8	1.9
TURBINE TOTAL:	4,685	4,232	0.4	90.3	0.4	2,078,741	0.9	496.5	0.8
MANUFACTURER BUILT TOTAL:	8,679	6,916	0.5	79.7	0.4	2,806,866	0.9	417.3	0.8
AMATEUR BUILT TOTAL:	1,790	572	3.5	32.0	1.1	21,830	7.5	38.2	6.7
TOTAL - ALL ROTORCRAFT:	10,469	7,488	0.6	71.5	0.4	2,828,697	0.9	390.2	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

2.2 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	126	93	14.7	73.8	10.9	9,901	49.7	106.5	47.5
OTHER 2 (*)	113	91	4.4	80.7	3.5	36,571	9.9	401.1	8.8
OTHER 3 (*)	142	111	3.3	78.4	2.6	69,599	8.2	625.1	7.5
OTHER 4 (*)	1,790	572	3.5	31.9	1.1	21,830	7.5	38.2	6.7
AERORSJ2	38	20	13.3	51.7	6.9	576	21.5	29.3	16.9
AEROSPAS355	109	108	0.6	99.0	0.6	58,868	2.9	545.6	2.9
AEROSPSA316	91	61	6.4	67.4	4.3	27,516	10.0	448.9	7.7
AGUSTA205	32	30	3.4	95.0	3.2	11,856	9.9	390.0	9.3
AGUSTAA109	66	66	0.0	100.0	0.0	15,372	8.7	232.9	8.7
AIRSPC18	23	15	14.9	64.3	9.6	939	40.0	63.5	37.1
ARCRNEH37	45	0	0.0	0.0	0.0	0	0.0	0.0	0.0
BELL 204	26	22	5.2	84.3	4.4	5,621	8.4	256.6	6.6
BELL 206	1,900	1,810	0.3	95.3	0.3	979,907	1.0	541.5	1.0
BELL 212	117	106	3.1	90.2	2.8	56,155	6.2	532.1	5.4
BELL 222	83	70	2.5	84.3	2.1	26,601	4.5	380.3	3.7
BELL 412	61	61	0.0	100.0	0.0	41,651	5.8	682.8	5.8
BELL 47	838	579	2.3	69.1	1.6	155,156	5.3	267.8	4.8
BOLKMS105	175	171	1.9	97.7	1.9	107,506	6.1	628.6	5.8
BOLKMS117	113	110	2.9	97.2	2.8	54,321	7.2	494.5	6.6
ENSTRMF28	421	330	2.2	78.5	1.7	61,181	9.8	185.1	9.6
H23/HTE	36	12	22.9	32.1	7.3	2,302	48.5	199.2	42.8

2.2 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
H34/55	29	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	64	29	20.7	45.2	9.4	3,871	34.7	133.7	27.8
HILLERUH12	585	373	3.0	63.8	1.9	78,181	5.9	210.1	5.2
HUGHES269	676	476	2.0	70.4	1.4	162,192	4.5	340.9	4.0
HUGHES369	600	551	1.0	91.8	0.9	245,743	3.5	446.3	3.3
HYNES B2	126	53	10.2	41.9	4.3	3,577	15.9	67.7	12.2
MACDOUG369	61	61	0.0	100.0	0.0	30,873	5.7	506.1	5.7
MILITARY204	201	142	6.3	70.8	4.5	17,028	12.1	119.6	10.3
MILITARY47	395	235	3.7	59.4	2.2	46,384	8.0	198.1	7.2
MODFD47	53	37	10.8	70.4	7.6	11,898	20.3	319.0	17.2
ORLHELH19	73	44	33.5	60.3	20.2	7,014	59.1	159.2	48.7
ORLHELS58	33	11	60.3	33.3	20.1	220	60.3	20.0	0.0
ROBSINR22	408	395	0.6	96.9	0.6	176,948	3.2	447.6	3.2
SCHWZH269	54	48	2.0	89.6	1.8	27,400	4.9	566.2	4.5
SKRSKYS55	34	7	55.0	20.0	11.0	323	58.7	47.5	20.5
SKRSKYS58	72	35	17.9	48.6	8.7	4,073	21.0	116.4	10.8
SKRSKYS58T	38	27	11.2	71.4	8.0	12,170	19.4	448.4	15.9
SKRSKYS61	28	14	6.7	49.6	3.3	12,133	10.2	873.6	7.7
SKRSKYS76	175	167	1.0	95.6	0.9	104,265	2.8	623.4	2.6
SNIAS 350	271	255	1.1	94.0	1.0	127,895	2.9	501.9	2.7
SNIAS SA318	21	0	0.0	0.0	0.0	0	0.0	0.0	0.0

2.2 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SNIAS SA341	29	20	15.4	68.7	10.6	2,958	25.8	148.6	20.8
TH55	60	42	3.8	70.1	2.6	4,584	7.7	108.9	6.7
TOMCAT	38	24	13.1	63.8	8.3	4,830	16.4	199.2	9.8
TOTAL	10,469	7,488	0.6	71.5	0.4	2,828,696	0.9	390.2	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

2.3 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY REGION OF BASED ROTORCRAFT

REGION	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALASKAN	289	248	5.2	85.7	6.3	101,441	5.8	429.5	3.5
CENTRAL	335	216	6.5	64.4	5.4	62,804	6.8	310.3	5.9
EASTERN	1,333	1,004	2.8	75.3	2.8	281,562	3.2	287.7	2.5
GREAT LAKES	1,208	752	3.5	62.2	2.7	182,934	4.5	255.3	3.6
NEW ENGLAND	378	292	4.8	77.4	5.1	84,710	5.4	312.0	3.9
NORTHWEST MT.	1,264	882	3.1	69.8	2.8	271,558	3.9	323.5	3.3
SOUTHERN	1,751	1,223	2.6	69.9	2.4	342,154	2.7	297.0	2.7
SOUTHWESTERN	1,863	1,413	2.1	75.9	2.1	779,136	2.2	577.1	1.5
WESTERN-PACIFIC	1,983	1,458	2.1	73.5	2.1	664,113	2.2	468.1	2.1
TOTAL	10,469	7,488	0.6	71.5	0.4	2,810,971	1.1	387.9	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

2.4 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALABAMA	163	96	10.4	58.8	7.9	22,813	10.5	276.9	10.8
ALASKA	289	248	5.2	85.7	6.3	101,441	5.8	429.5	3.5
ARIZONA	293	176	7.4	60.0	5.9	69,153	7.1	400.2	5.3
ARKANSAS	66	37	16.2	56.8	10.8	7,641	20.2	212.7	14.5
CALIFORNIA	1,430	1,072	2.5	75.0	2.6	449,346	2.5	431.3	2.4
COLORADO	151	101	9.9	67.3	9.0	32,864	11.2	344.8	9.7
CONNECTICUT	78	66	10.6	84.7	12.1	23,984	12.4	385.0	7.8
DELAWARE	39	33	18.2	85.5	20.6	9,434	15.9	288.8	11.7
DIST. OF COLUMBIA	32	32	21.9	99.0	31.4	5,229	35.6	169.4	29.5
FLORIDA	869	635	4.3	73.0	4.1	168,751	3.7	279.3	4.4
GEORGIA	192	127	7.1	66.2	6.5	54,500	6.8	462.0	5.1
HAWAII	150	126	6.3	83.6	7.5	103,653	6.5	842.5	4.0
IDAHO	108	86	9.3	79.7	10.1	22,833	10.5	263.4	10.3
ILLINOIS	230	137	10.2	59.5	7.5	27,473	11.6	203.8	7.3
INDIANA	183	124	8.1	68.1	7.1	29,352	8.9	248.1	8.2
IOWA	91	46	17.4	50.7	10.3	12,490	15.8	303.8	11.8
KANSAS	73	45	13.3	61.5	10.7	11,266	14.6	246.5	19.0
KENTUCKY	86	68	8.8	78.9	9.8	15,884	10.4	251.7	7.2
LOUISIANA	704	645	2.9	91.6	3.8	511,658	2.9	807.7	1.3
MAINE	43	27	18.5	63.8	16.2	4,623	21.2	178.3	16.9
MARYLAND	111	101	7.9	90.2	9.7	31,635	8.2	318.7	6.2
MASSACHUSETTS	145	107	8.4	73.7	8.1	39,631	7.8	389.7	5.3
MICHIGAN	216	151	7.3	69.8	6.7	36,169	7.9	253.5	6.7

2.4 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MINNESOTA	140	73	11.0	52.1	7.0	17,862	10.8	251.7	6.3
MISSISSIPPI	62	51	11.8	81.8	14.4	12,107	17.4	242.2	11.5
MISSOURI	152	114	8.8	75.1	8.5	38,258	8.9	358.1	6.6
MONTANA	97	69	15.9	70.8	14.0	18,796	27.0	265.7	12.6
NEBRASKA	20	11	27.3	56.8	21.1	790	32.4	80.5	14.5
NEVADA	109	85	10.6	77.3	11.2	41,962	12.6	496.6	16.1
NEW HAMPSHIRE	78	67	9.0	87.0	11.4	13,568	9.3	207.7	6.4
NEW JERSEY	239	202	6.4	84.5	7.5	59,221	5.4	300.3	3.5
NEW MEXICO	63	40	25.0	63.8	18.9	7,093	15.6	223.4	14.6
NEW YORK	334	239	5.9	71.6	5.4	67,922	6.5	299.5	6.0
NORTH CAROLINA	135	88	9.1	65.0	8.2	22,399	11.4	268.2	9.3
NORTH DAKOTA	28	23	17.4	81.4	30.3	8,013	19.6	356.9	16.5
OHIO	296	190	6.8	64.0	5.8	53,608	10.7	294.2	9.5
OKLAHOMA	160	92	12.0	57.5	8.3	21,549	10.1	251.1	7.4
OREGON	406	282	5.3	69.4	4.9	96,421	5.9	355.4	4.6
PENNSYLVANIA	408	258	6.2	63.3	5.1	70,913	7.4	276.0	5.7
RHODE ISLAND	15	10	20.0	67.5	19.9	2,041	23.8	204.0	15.2
SOUTH CAROLINA	115	67	13.4	58.5	9.4	21,525	12.6	327.8	12.3
SOUTH DAKOTA	13	9	33.3	73.3	29.0	1,838	42.5	199.4	25.5
TENNESSEE	129	92	8.7	71.6	8.2	24,176	10.4	276.3	6.2
TEXAS	870	599	3.3	68.8	3.1	231,197	3.9	399.2	3.0
UTAH	106	70	10.0	66.0	9.2	22,335	13.5	383.5	7.6
VERMONT	20	15	26.7	75.9	24.0	862	37.0	90.1	21.6

2.4 1989 ROTORCRAFT POPULATION SIZE, ACTIVE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
VIRGINIA	123	97	11.3	78.9	11.4	24,649	13.5	261.7	5.9
WASHINGTON	349	233	6.9	66.9	5.7	71,586	6.7	325.7	6.7
WEST VIRGINIA	46	41	12.2	90.1	17.8	12,559	11.7	308.9	6.1
WISCONSIN	103	45	15.6	43.8	8.6	8,619	22.0	214.6	11.5
WYOMING	47	40	15.0	85.6	16.5	6,723	14.5	194.9	7.1
PUERTO RICO	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0
TOTAL	10,469	7,488	0.6	71.5	0.4	2,770,415	6.2	390.2	0.8

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

CHAPTER III

LANDINGS AND ROTORCRAFT BASE FACILITIES

Another aviation activity measure used to indicate growth trends and activity levels in the rotorcraft fleet is number of landings. The first 4 tables in this chapter, Tables 3.1-3.4, contain data on the number of rotorcraft landing at the five types of landing facilities: 1) airports; 2) heliports; 3) helipads at airports; 4) offshore platforms; and 5) other. The data in these tables are presented by four distinct factors: 1) Rotorcraft Type; 2) Service Difficulty Reporting (SDR) Rotorcraft Manufacturer/Model Group; 3) Region of Based Rotorcraft; and 4) State of Based Rotorcraft.

Tables 3.5-3.8 provide estimates of the average number of landings per flight hour at each of the five landing facility types by the four factors listed above.

Table 3.9 presents total rotorcraft landings by expanded use category by rotorcraft type. (Chapter 4, Primary Use by Expanded Use Category, discusses rotorcraft expanded use categories in greater detail).

The last group of tables in this chapter, Tables 3.10-3.13, present data on the number of active rotorcraft based at airports, heliports or some other base facility type as of December 31, 1989, by: 1) rotorcraft type; 2) SDR Rotorcraft Manufacturing/Model Group; 3) Region of Based Rotorcraft; and 4) State of Based Rotorcraft.

Four figures are included in this chapter. Figure 3.1 shows the number of rotorcraft landings by aircraft type; Figure 3.2 displays the number of landings by type of landing facility; Figure 3.3 shows the number of rotorcraft landings by expanded use category; and Figure 3.4 shows the number and percent of active rotorcraft by base facility type.

The following facts can be derived from Tables 3.1-3.9:

- During 1989, the rotorcraft fleet made almost 7.4 million landings.
- The majority of rotorcraft landings, 29 percent, were made at some "other" type of landing facility; 23.3 percent were made at helipads at airports; 22.3 percent were made at heliports; 20.1 percent were made at airports; and 4.9 percent were made at offshore platforms.
- California accounted for 18.9 percent of the 1989 rotorcraft landings. Louisiana was second with 17.2 percent, and Texas was third with 6.3 percent of the rotorcraft landings.
- During 1989, 47.8 percent of all landings by piston engine rotorcraft were made at "other" types of landing facilities; 31.3 percent of the landings by single engine turbine rotorcraft were made at heliports; 43.5 percent of the landings made by multiengine turbine rotorcraft were made at heliports; and 48.1 percent of the landings by amateur built rotorcraft were made at helipads at airports.

- The three regions with the greatest number of landings are: Southwestern with nearly 2 million landings; Western-Pacific with 1.7 million; and Eastern with more than 951,000 landings.

- Amateur built rotorcraft averaged the greatest number of landings per flight hour, 4.6. Piston rotorcraft had 3.5, multiengine turbine rotorcraft had 2.4, and single engine turbine rotorcraft had 2.2 landings per hour.

- The average number of landings per flight hour was 3.4 in the Eastern region; 2.9 in the Great Lakes region; and 2.7 in the Northwest Mountain region.

- The 50-state average number of landings per flight hour was 2.6. The highest average number of landings per flight hour was experienced by Virginia, with 12 landings per flight hour.

- Of the 7.4 million landings in 1989, 1.8 million were conducted for air taxi purposes, 1.3 million for aerial application purposes, and 1.1 million for instructional purposes.

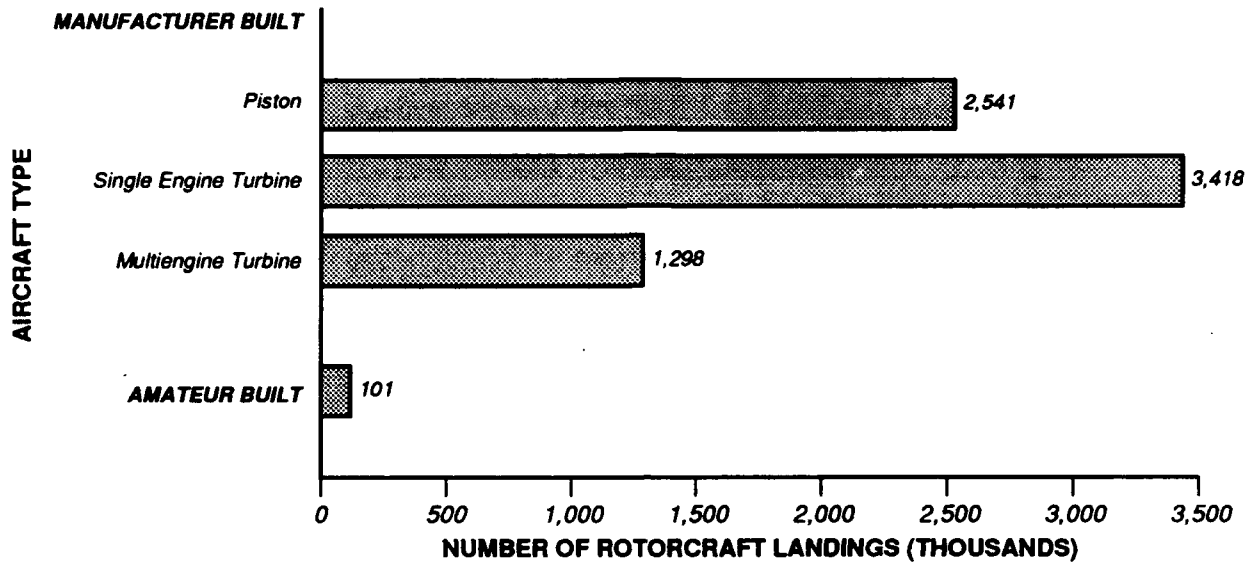
- Most piston rotorcraft landings were in the aerial application use category (45 percent). The majority of single and multiengine turbine rotorcraft landings were in the air taxi category (with 37 and 35 percent, respectively), and most amateur built rotorcraft landings were in the personal use category (25 percent).

The following observations can be derived from Tables 3.10-3.13:

- Over 51 percent of all active rotorcraft are based at airports. Heliports account for another 34 percent. The remaining active rotorcraft are based at some "other" base facility type.

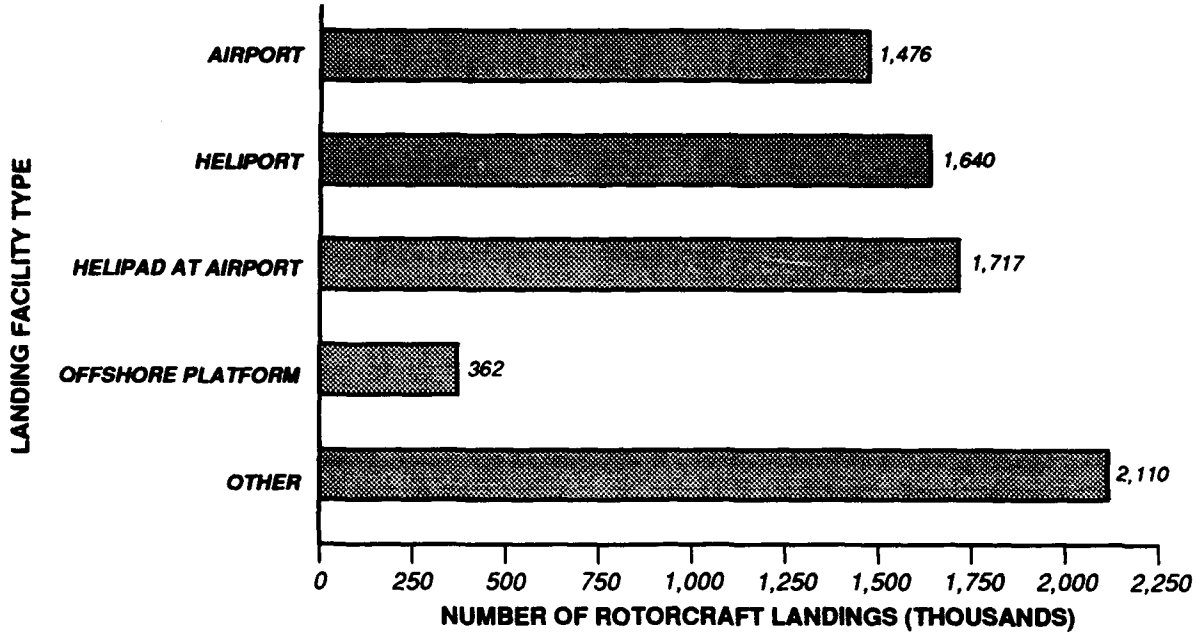
- In all the regions except the Southwestern, active rotorcraft are primarily based at airports. The percentages of active rotorcraft based primarily at airports ranged from a low of 46 percent in the Central region to a high of 70 percent in the New England region. In the Southwestern region, however, the majority of active rotorcraft, 66 percent, are based at heliports.

Figure 3.1
1989 NUMBER OF ROTORCRAFT LANDINGS BY ROTORCRAFT TYPE



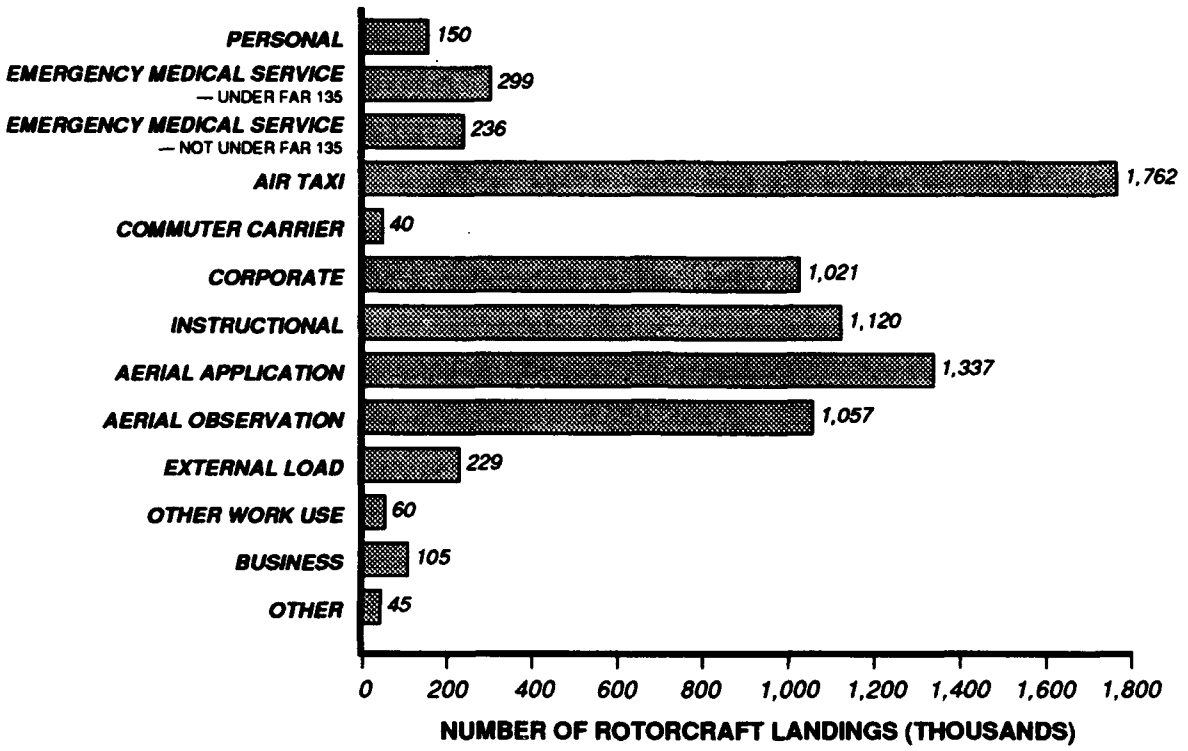
SOURCE: Table 3.1

Figure 3.2
1989 ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE



SOURCE: Table 3.1

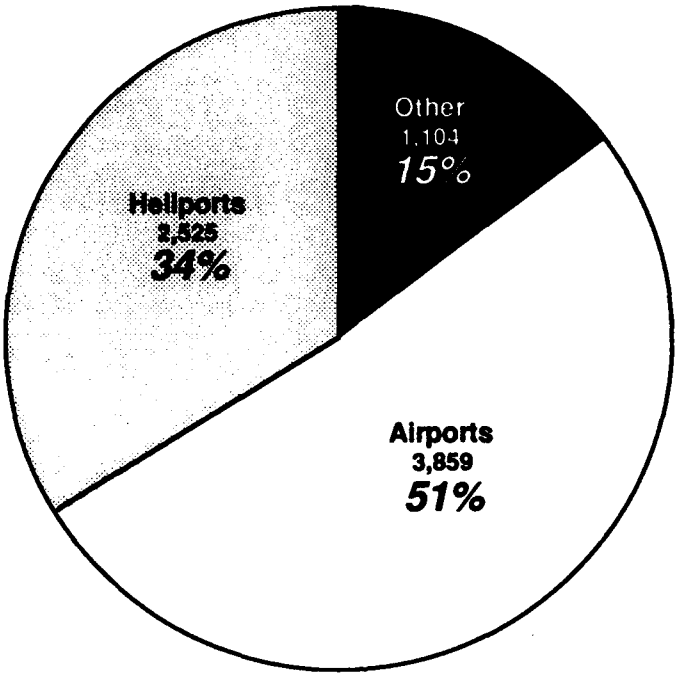
Figure 3.3
1989 NUMBER OF ROTORCRAFT LANDINGS BY EXPANDED USE CATEGORY



SOURCE: Table 3.9

Figure 3.4

1989 ACTIVE ROTORCRAFT BY BASE FACILITY TYPE



SOURCE: Table 3.10

3.1 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
MANUFACTURER BUILT: PISTON TOTAL:						
EST. LANDINGS	2,540,599	791,611	7,914	407,048	95,043	1,214,137
% STD. ERROR	2.9	3.5	23.1	12.1	7.0	3.0
TURBINE: SINGLE ENGINE						
EST. LANDINGS	3,417,711	548,009	1,068,251	813,693	204,362	779,272
% STD. ERROR	1.3	2.8	3.7	3.3	4.8	2.5
TURBINE: MULTI - ENGINE						
EST. LANDINGS	1,297,740	98,195	563,894	447,841	61,975	102,656
% STD. ERROR	3.2	7.8	7.2	6.1	16.7	9.5
TURBINE TOTAL:						
EST. LANDINGS	4,715,450	646,204	1,632,145	1,261,534	266,336	881,928
% STD. ERROR	1.3	2.6	3.5	2.9	4.8	2.4
MANUFACTURER BUILT TOTAL:						
EST. LANDINGS	7,256,049	1,437,815	1,640,059	1,668,582	361,380	2,096,065
% STD. ERROR	1.3	2.4	3.5	4.1	4.0	2.2
AMATEUR BUILT:						
EST. LANDINGS	100,935	37,869	0	48,503	342	13,496
% STD. ERROR	7.6	2.3	0.0	19.9	47.7	4.1
TOTAL						
EST. LANDINGS	7,356,984	1,475,685	1,640,059	1,717,085	361,722	2,109,561
% STD. ERROR	1.3	1.9	3.5	4.1	3.9	2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.2 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
OTHER 1 (*)						
EST. LANDINGS	63,380	3,882	0	38,156	0	12,884
% STD. ERROR	64.1	70.0	0.0	137.6	0.0	26.0
OTHER 2 (*)						
EST. LANDINGS	59,115	10,025	0	13,317	2,198	33,899
% STD. ERROR	9.6	16.1	0.0	22.5	44.0	18.2
OTHER 3 (*)						
EST. LANDINGS	131,582	9,340	39,689	65,137	663	14,255
% STD. ERROR	3.4	15.3	11.4	8.5	48.6	19.2
OTHER 4 (*)						
EST. LANDINGS	100,935	37,809	0	48,503	342	13,496
% STD. ERROR	6.7	2.3	0.0	19.9	47.7	4.1
AERORSJ2						
EST. LANDINGS	1,168	1,168	0	0	0	0
% STD. ERROR	11.0	11.0	0.0	0.0	0.0	0.0
AEROSPAS355						
EST. LANDINGS	114,070	4,426	65,640	32,562	3,750	8,532
% STD. ERROR	5.2	30.8	6.5	17.9	31.2	28.5
AEROSPSA316						
EST. LANDINGS	81,633	0	0	13,414	2,181	68,241
% STD. ERROR	2.3	0.0	0.0	13.2	42.2	5.6
AGUSTA205						
EST. LANDINGS	39,174	224	0	1,228	0	41,456
% STD. ERROR	5.2	53.0	0.0	48.8	0.0	5.9
AGUSTAA109						
EST. LANDINGS	46,880	9,793	0	24,974	2,239	11,026
% STD. ERROR	8.2	17.0	0.0	19.0	47.6	26.3

3.2 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
AIRSPC18						
EST. LANDINGS	2,638	2,207	296	0	0	0
% STD. ERROR	24.5	29.7	48.9	0.0	0.0	0.0
ARCRNEH37						
EST. LANDINGS	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0
BELL 204						
EST. LANDINGS	16,938	370	0	6,495	0	1,873
% STD. ERROR	3.3	8.3	0.0	23.0	0.0	33.7
BELL 206						
EST. LANDINGS	2,389,016	290,590	1,046,618	558,948	97,474	394,177
% STD. ERROR	1.7	3.5	3.8	4.2	6.1	3.3
BELL 212						
EST. LANDINGS	149,377	18,628	114,450	2,409	0	15,462
% STD. ERROR	6.6	24.8	10.0	63.3	0.0	22.0
BELL 222						
EST. LANDINGS	57,306	5,025	7,901	26,078	8,077	8,045
% STD. ERROR	3.7	18.2	10.9	8.2	23.3	16.8
BELL 412						
EST. LANDINGS	73,275	6,041	42,363	10,674	0	14,118
% STD. ERROR	6.9	40.6	14.0	26.1	0.0	24.1
BELL 47						
EST. LANDINGS	523,008	63,774	2,434	30,251	32,781	395,127
% STD. ERROR	3.1	11.0	58.9	11.1	15.5	4.5
BOLKMS105						
EST. LANDINGS	220,348	2,057	162,578	36,641	4,009	10,429
% STD. ERROR	14.4	65.3	24.1	25.8	49.7	47.6

3.2 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
BOLKMS117						
EST. LANDINGS	248,605	19,544	0	190,395	26,548	7,625
% STD. ERROR	6.7	45.7	0.0	13.0	47.9	78.0
ENSTRMF28 (1)						
EST. LANDINGS	77,301	39,114	0	31,069	2,082	8,102
% STD. ERROR	7.8	11.8	0.0	15.8	21.0	13.5
ENSTRMF28 (2)						
EST. LANDINGS	46,215	16,674	0	7,921	7,806	12,913
% STD. ERROR	9.5	21.3	0.0	32.6	24.9	16.6
H23/HTE						
EST. LANDINGS	1,384	0	0	0	0	1,116
% STD. ERROR	6.2	0.0	0.0	0.0	0.0	10.4
H34/55						
EST. LANDINGS	DIS	DIS	DIS	DIS	DIS	DIS
% STD. ERROR						
HILLERFH1100						
EST. LANDINGS	4,383	3,130	0	258	0	1,083
% STD. ERROR	6.9	16.5	0.0	41.2	0.0	26.4
HILLERUH12 (1)						
EST. LANDINGS	374,222	32,780	2,449	115,881	0	220,298
% STD. ERROR	5.4	11.2	22.6	17.0	0.0	4.7
HILLERUH12 (2)						
EST. LANDINGS	20,224	229	0	181	2,249	19,207
% STD. ERROR	11.8	31.3	0.0	53.8	29.8	13.3
HUGHES269						
EST. LANDINGS	401,034	104,226	2,736	114,562	7,555	175,195
% STD. ERROR	4.1	7.9	35.9	7.2	20.0	8.6

3.2 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
HUGHES369						
EST. LANDINGS	403,117	130,603	4,244	95,030	29,205	144,158
% STD. ERROR	2.9	7.0	35.2	8.5	12.5	6.8
HYNES B2						
EST. LANDINGS	7,285	2,374	0	918	311	3,504
% STD. ERROR	3.2	13.8	0.0	18.4	46.0	9.2
MACDOUG369						
EST. LANDINGS	54,642	38,167	0	4,160	7,677	6,093
% STD. ERROR	5.4	8.8	0.0	14.8	22.0	16.4
MILITARY204						
EST. LANDINGS	36,129	2,559	0	5,314	6,008	22,688
% STD. ERROR	6.9	19.4	0.0	23.8	37.1	12.1
MILITARY47 (1)						
EST. LANDINGS	261,046	31,646	0	27,037	15,441	179,239
% STD. ERROR	4.1	13.1	0.0	23.6	15.4	5.9
MILITARY47 (2)						
EST. LANDINGS	3,791	0	0	1,827	0	2,249
% STD. ERROR	11.9	0.0	0.0	32.8	0.0	43.7
MODFD47						
EST. LANDINGS	58,779	53	0	12,432	1,243	34,360
% STD. ERROR	11.0	33.3	0.0	63.9	63.9	15.2
ORLHELH19						
EST. LANDINGS	71,066	0	0	0	0	71,066
% STD. ERROR	33.4	0.0	0.0	0.0	0.0	33.4
ORLHELS58						
EST. LANDINGS	110	31	0	0	0	0
% STD. ERROR	0.0	61.3	0.0	0.0	0.0	0.0

3.2 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
ROBSINR22						
EST. LANDINGS	608,745	497,297	0	19,749	32,049	59,795
% STD. ERROR	4.5	5.8	0.0	15.0	14.6	11.2
SCHWZH269						
EST. LANDINGS	48,492	5,323	0	15,001	2,913	24,211
% STD. ERROR	6.9	18.4	0.0	7.6	16.5	15.8
SKRSKYS55						
EST. LANDINGS	510	61	0	0	0	449
% STD. ERROR	4.0	72.7	0.0	0.0	0.0	11.0
SKRSKYS58						
EST. LANDINGS	8,053	1,296	0	26	0	6,379
% STD. ERROR	8.2	78.1	0.0	78.1	0.0	6.4
SKRSKYS58T						
EST. LANDINGS	35,458	4,119	0	2,354	11,612	13,461
% STD. ERROR	17.0	38.5	0.0	45.6	57.4	22.9
SKRSKYS61						
EST. LANDINGS	18,351	9,377	0	0	64	7,038
% STD. ERROR	4.0	10.8	0.0	0.0	32.8	8.4
SKRSKYS76						
EST. LANDINGS	237,946	13,965	131,274	58,972	16,625	6,127
% STD. ERROR	4.3	11.6	8.8	8.2	15.5	19.6
SNIAS 350						
EST. LANDINGS	223,108	46,643	17,389	102,153	37,952	17,681
% STD. ERROR	2.8	7.9	11.7	7.2	12.1	15.3
SNIAS SA318						
EST. LANDINGS	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0

3.2 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
SNIAS SA341						
EST. LANDINGS	4,767	4,674	0	1,092	0	95
% STD. ERROR	9.1	14.2	0.0	44.5	0.0	54.9
TH55						
EST. LANDINGS	12,921	4,599	0	1,966	669	5,641
% STD. ERROR	3.9	9.3	0.0	15.9	24.3	9.5
TOMCAT						
EST. LANDINGS	17,468	455	0	0	0	16,770
% STD. ERROR	7.2	52.9	0.0	0.0	0.0	9.1
TOTAL						
EST. LANDINGS	7,356,984	1,475,685	1,640,059	1,717,085	361,722	2,109,561
% STD. ERROR	1.3	1.9	3.5	4.1	3.9	2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON
(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

3.3 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY REGION OF BASED ROTORCRAFT

REGION	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
ALASKAN						
EST. LANDINGS	248,360	52,035	28,332	29,152	2,495	115,893
% STD. ERROR	6.7	10.8	42.2	29.0	83.2	9.1
CENTRAL						
EST. LANDINGS	127,037	19,255	0	69,806	6,305	23,281
% STD. ERROR	7.9	10.5	0.0	11.9	29.3	12.6
EASTERN						
EST. LANDINGS	951,290	162,485	2,307	445,109	111,362	110,014
% STD. ERROR	4.4	5.8	67.9	8.1	9.0	6.9
GREAT LAKES						
EST. LANDINGS	537,716	139,561	6,207	160,605	17,663	208,541
% STD. ERROR	4.5	5.8	30.3	9.3	16.9	7.6
NEW ENGLAND						
EST. LANDINGS	214,147	91,553	0	77,435	3,997	17,306
% STD. ERROR	6.3	8.5	0.0	11.5	29.1	13.1
NORTHWEST MT.						
EST. LANDINGS	729,578	97,912	124	84,757	29,229	397,415
% STD. ERROR	4.5	10.8	240.1	11.9	14.6	4.6
SOUTHERN						
EST. LANDINGS	829,721	188,195	16,742	197,710	43,108	352,813
% STD. ERROR	4.6	5.2	18.1	7.3	10.6	8.6
SOUTHWESTERN						
EST. LANDINGS	1,953,891	90,353	1,310,688	219,859	24,473	234,482
% STD. ERROR	3.1	6.5	4.7	8.6	17.5	5.5
WESTERN-PACIFIC						
EST. LANDINGS	1,674,813	576,832	45,744	281,519	109,613	608,563
% STD. ERROR	2.9	4.8	15.9	6.2	7.5	4.6
TOTAL						
EST. LANDINGS	7,356,984	1,475,685	1,640,059	1,717,085	361,722	2,109,561
% STD. ERROR	1.3	1.9	3.5	4.1	3.9	2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.4 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
ALABAMA						
EST. LANDINGS	58,942	6,494	0	16,214	1,490	29,685
% STD. ERROR	12.2	16.4	0.0	29.9	76.9	19.5
ALASKA						
EST. LANDINGS	248,360	52,035	28,332	29,152	2,495	115,893
% STD. ERROR	6.7	10.8	42.2	336.2	83.2	9.1
ARIZONA						
EST. LANDINGS	113,332	26,174	28,332	21,542	17,738	44,291
% STD. ERROR	8.4	8.9	0.0	20.5	21.1	14.0
ARKANSAS						
EST. LANDINGS	52,902	7,307	28,332	1,826	298	31,928
% STD. ERROR	16.1	22.0	0.0	58.9	106.0	24.5
CALIFORNIA						
EST. LANDINGS	1,389,904	506,471	32,338	204,110	58,357	512,650
% STD. ERROR	3.4	5.4	20.5	9.2	9.2	5.2
COLORADO						
EST. LANDINGS	65,048	13,948	32,338	3,626	7,713	34,492
% STD. ERROR	11.9	17.8	0.0	61.5	43.2	13.6
CONNECTICUT						
EST. LANDINGS	83,388	45,907	32,338	25,207	7,713	108
% STD. ERROR	11.3	13.5	0.0	17.0	0.0	226.5
DELAWARE						
EST. LANDINGS	16,743	7,460	32,338	2,790	820	3,397
% STD. ERROR	21.0	28.4	0.0	88.0	49.1	43.5
DIST. OF COLUMBIA						
EST. LANDINGS	13,467	676	32,338	9,724	2,413	3,397
% STD. ERROR	24.0	43.4	0.0	67.1	20.5	0.0

3.4 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE
BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE				
		AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
FLORIDA						
EST. LANDINGS	439,532	123,049	2,047	64,895	23,122	177,714
% STD. ERROR	7.5	7.8	316.9	10.2	13.5	14.1
GEORGIA						
EST. LANDINGS	71,408	19,361	2,228	22,506	7,578	14,770
% STD. ERROR	8.5	13.2	51.5	11.7	17.3	20.0
HAWAII						
EST. LANDINGS	125,966	46,178	1,131	36,366	23,740	4,325
% STD. ERROR	7.9	13.0	153.5	22.7	14.1	45.5
IDAHO						
EST. LANDINGS	68,765	3,238	1,131	12,123	4,112	37,702
% STD. ERROR	13.7	27.3	0.0	17.1	30.1	19.3
ILLINOIS						
EST. LANDINGS	72,784	15,035	1,559	27,889	3,508	20,799
% STD. ERROR	10.9	17.4	83.7	20.0	25.0	9.1
INDIANA						
EST. LANDINGS	57,046	12,773	1,559	10,335	3,508	27,402
% STD. ERROR	8.6	12.1	0.0	26.6	0.0	11.2
IOWA						
EST. LANDINGS	31,237	2,517	1,559	24,630	3,508	3,565
% STD. ERROR	21.6	19.0	0.0	24.9	0.0	44.5
KANSAS						
EST. LANDINGS	19,351	2,762	1,559	4,418	2,149	8,857
% STD. ERROR	14.0	23.6	0.0	31.7	44.0	18.7
KENTUCKY						
EST. LANDINGS	40,443	10,133	1,096	2,375	3,751	18,358
% STD. ERROR	10.9	15.1	37.4	37.6	30.1	17.2

3.4 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE
BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
LOUISIANA						
EST. LANDINGS	1,267,777	3,140	1,120,143	55,211	5,565	22,890
% STD. ERROR	4.8	16.7	5.4	20.6	36.4	16.5
MAINE						
EST. LANDINGS	7,847	5,102	1,120,143	55,211	5,565	3,003
% STD. ERROR	20.4	19.8	0.0	0.0	0.0	22.5
MARYLAND						
EST. LANDINGS	34,753	11,213	1,120,143	328	5,428	8,056
% STD. ERROR	9.5	16.3	0.0	64.4	21.4	14.0
MASSACHUSETTS						
EST. LANDINGS	86,794	26,004	1,120,143	42,835	1,472	10,096
% STD. ERROR	9.6	11.2	0.0	19.5	37.2	22.4
MICHIGAN						
EST. LANDINGS	112,111	36,755	1,120,143	13,920	5,490	56,024
% STD. ERROR	13.6	10.1	0.0	15.8	22.3	18.5
MINNESOTA						
EST. LANDINGS	49,050	12,918	1,120,143	5,649	5,490	21,139
% STD. ERROR	11.3	19.0	0.0	68.0	0.0	17.4
MISSISSIPPI						
EST. LANDINGS	31,382	2,468	1,120,143	8,516	1,730	11,366
% STD. ERROR	18.9	19.6	0.0	28.9	38.0	22.0
MISSOURI						
EST. LANDINGS	69,432	11,702	1,120,143	40,796	3,388	6,698
% STD. ERROR	11.3	16.3	0.0	22.9	43.7	23.5
MONTANA						
EST. LANDINGS	33,407	919	1,120,143	40,796	441	24,706
% STD. ERROR	16.1	34.4	0.0	0.0	54.1	17.3

3.4 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE
BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
NEBRASKA						
EST. LANDINGS	2,308	1,088	1,120,143	40,796	441	398
% STD. ERROR	33.4	38.3	0.0	0.0	0.0	172.3
NEVADA						
EST. LANDINGS	44,607	2,123	1,120,143	17,454	8,031	8,301
% STD. ERROR	12.9	16.9	0.0	40.4	40.3	18.6
NEW HAMPSHIRE						
EST. LANDINGS	25,031	9,173	1,120,143	7,578	2,525	3,536
% STD. ERROR	10.9	16.7	0.0	20.1	36.8	19.7
NEW JERSEY						
EST. LANDINGS	188,842	50,079	971	62,567	46,512	10,149
% STD. ERROR	7.4	15.6	32.3	9.0	12.2	47.5
NEW MEXICO						
EST. LANDINGS	12,464	409	971	6,203	1,009	2,743
% STD. ERROR	30.0	66.5	0.0	21.4	57.7	36.7
NEW YORK						
EST. LANDINGS	177,791	26,330	971	88,690	24,909	24,455
% STD. ERROR	7.0	10.0	0.0	13.8	17.4	11.7
NORTH CAROLINA						
EST. LANDINGS	36,121	7,234	971	7,464	24,909	29,387
% STD. ERROR	11.6	15.9	0.0	22.5	52.8	10.2
NORTH DAKOTA						
EST. LANDINGS	26,892	3,723	971	8,355	24,909	11,482
% STD. ERROR	21.8	50.4	0.0	127.8	0.0	55.9
OHIO						
EST. LANDINGS	148,248	23,193	4,648	83,501	802	22,028
% STD. ERROR	8.6	16.6	26.8	18.1	62.7	11.2

3.4 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
OKLAHOMA						
EST. LANDINGS	70,067	9,608	4,648	6,151	6,171	44,690
% STD. ERROR	11.8	18.5	0.0	23.3	30.0	14.3
OREGON						
EST. LANDINGS	254,448	46,847	124	8,217	5,083	147,485
% STD. ERROR	6.5	26.2	184.3	41.0	45.3	7.0
PENNSYLVANIA						
EST. LANDINGS	218,932	33,317	836	108,059	27,775	36,440
% STD. ERROR	8.2	11.5	178.5	21.8	40.9	13.9
RHODE ISLAND						
EST. LANDINGS	5,490	3,611	836	1,080	27,775	36,440
% STD. ERROR	22.6	26.6	0.0	52.3	0.0	0.0
SOUTH CAROLINA						
EST. LANDINGS	64,675	1,103	836	13,801	3,682	37,043
% STD. ERROR	14.8	32.3	0.0	37.3	61.1	17.5
SOUTH DAKOTA						
EST. LANDINGS	4,003	5	836	2,661	3,682	249
% STD. ERROR	29.6	75.7	0.0	43.9	0.0	78.2
TENNESSEE						
EST. LANDINGS	66,117	6,700	922	41,442	3,682	4,229
% STD. ERROR	12.7	13.9	27.1	39.7	0.0	31.1
TEXAS						
EST. LANDINGS	465,884	62,291	161,486	148,778	10,477	85,023
% STD. ERROR	4.2	7.7	7.0	11.2	20.7	7.5
UTAH						
EST. LANDINGS	46,774	62,291	161,486	19,906	1,064	25,591
% STD. ERROR	15.7	0.0	0.0	27.5	69.5	15.8

3.4 1989 TOTAL ROTORCRAFT LANDINGS BY LANDING FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	LANDING FACILITY TYPE AIRPORTS	HELIPORT	HELIPAD/ AIRPORTS	OFFSHORE PLATFORM	OTHER
VERMONT						
EST. LANDINGS	3,077	2,458	161,486	262	1,064	86
% STD. ERROR	33.6	29.2	0.0	95.4	0.0	65.5
VIRGINIA						
EST. LANDINGS	284,971	20,272	161,486	151,929	728	4,769
% STD. ERROR	10.8	16.1	0.0	26.0	36.1	20.9
WASHINGTON						
EST. LANDINGS	229,904	17,718	161,486	30,557	491	112,037
% STD. ERROR	9.5	15.8	0.0	32.3	48.9	8.3
WEST VIRGINIA						
EST. LANDINGS	21,380	4,599	161,486	2,356	742	11,790
% STD. ERROR	13.2	25.3	0.0	51.5	50.8	23.9
WISCONSIN						
EST. LANDINGS	35,812	7,433	161,486	1,237	2,678	12,547
% STD. ERROR	21.6	58.3	0.0	69.2	159.5	43.1
WYOMING						
EST. LANDINGS	12,766	4,188	161,486	4,056	2,678	2,557
% STD. ERROR	18.5	21.9	0.0	35.1	0.0	25.0
ZPUERTO RICO						
EST. LANDINGS	12,766	4,188	161,486	4,056	2,678	2,557
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL						
EST. LANDINGS	7,356,984	1,475,685	1,640,059	1,717,085	361,722	2,109,561
% STD. ERROR	1.3	1.9	3.5	4.1	3.9	2.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.5 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
MANUFACTURER BUILT:				
PISTON TOTAL:	2,540,599	728,125	3.49	3.20
TURBINE: SINGLE ENGINE	3,417,711	1,532,270	2.23	1.56
TURBINE: MULTI - ENGINE	1,297,740	546,471	2.37	3.54
TURBINE TOTAL:	4,715,450	2,078,741	2.27	1.49
MANUFACTURER BUILT TOTAL:	7,256,049	2,806,866	2.59	1.47
AMATEUR BUILT TOTAL:	100,935	21,830	4.62	8.39
TOTAL - ALL AIRCRAFT:	7,356,984	2,828,697	2.60	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.6 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
OTHER 1 (*)	63,380	9,901	6.40	67.00
OTHER 2 (*)	59,115	36,571	1.62	11.45
OTHER 3 (*)	131,582	69,599	1.89	3.71
OTHER 4 (*)	100,935	21,830	4.62	6.84
AERORSJ2	1,168	576	2.03	13.13
AEROSPAS355	114,070	58,868	1.94	5.77
AEROSPSA316	81,633	27,516	2.97	3.26
AGUSTA205	39,174	11,856	3.30	7.66
AGUSTAA109	46,880	15,372	3.05	10.80
AIRSPC18	2,638	939	2.81	31.59
BELL 204	16,938	5,621	3.01	4.47
BELL 206	2,389,016	979,907	2.44	1.90
BELL 212	149,377	56,155	2.66	7.62
BELL 222	57,306	26,601	2.15	4.59
BELL 412	73,275	41,651	1.76	8.67
BELL 47	523,008	155,156	3.37	3.88
BOLKMS105	220,348	107,506	2.05	15.16
BOLKMS117	248,605	54,321	4.58	8.65
ENSTRMF28 (1)	77,301	38,289	2.02	10.37
ENSTRMF28 (2)	46,215	22,891	2.02	14.12

3.6 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
H23/HTE	1,384	2,302	0.60	12.15
H34/55	DIS	DIS	DIS	DIS
HILLERFH1100	4,383	3,871	1.13	10.53
HILLERUH12 (1)	374,222	74,173	5.05	5.85
HILLERUH12 (2)	20,224	4,008	5.05	23.91
HUGHES269	401,034	162,192	2.47	4.67
HUGHES369	403,117	245,743	1.64	3.79
HYNES B2	7,285	3,577	2.04	4.57
MACDOUG369	54,642	30,873	1.77	7.05
MILITARY204	36,129	17,028	2.12	8.45
MILITARY47 (1)	261,046	45,720	5.71	5.17
MILITARY47 (2)	3,791	664	5.71	40.04
MODFD47	58,779	11,898	4.94	12.16
ORLHELH19	71,066	7,014	10.13	42.19
ORLHELS58	110	220	0.50	0.00
ROBSINR22	608,745	176,948	3.44	5.13
SCHWZH269	48,492	27,400	1.77	7.78
SKRSKYS55	510	323	1.58	6.96
SKRSKYS58	8,053	4,073	1.98	9.01
SKRSKYS58T	35,458	12,170	2.91	20.22
SKRSKYS61	18,351	12,133	1.51	5.08

3.6 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
SKRSKYS76	237,946	104,265	2.28	4.88
SNIAS 350	223,108	127,895	1.74	3.32
SNIAS SA341	4,767	2,958	1.61	12.58
TH55	12,921	4,584	2.82	5.35
TOMCAT	17,468	4,830	3.62	8.48
TOTAL	7,356,984	2,828,696	2.60	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON
(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

3.7 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY REGION OF BASED ROTORCRAFT

REGION	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
ALASKAN	248,360	101,441	2.45	8.83
CENTRAL	127,037	62,804	2.02	10.71
EASTERN	951,290	281,562	3.38	5.41
GREAT LAKES	537,716	182,934	2.94	5.88
NEW ENGLAND	214,147	84,710	2.53	8.42
NORTHWEST MT.	729,578	271,558	2.69	5.73
SOUTHERN	829,721	342,154	2.42	5.56
SOUTHWESTERN	1,953,891	779,136	2.51	3.94
WESTERN-PACIFIC	1,674,813	664,113	2.52	3.80
TOTAL	7,356,984	2,810,971	2.62	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.8 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
ALABAMA	58,942	22,813	2.58	18.16
ALASKA	248,360	101,441	2.45	8.83
ARIZONA	113,332	69,153	1.64	11.35
ARKANSAS	52,902	7,641	6.92	23.62
CALIFORNIA	1,389,904	449,346	3.09	4.54
COLORADO	65,048	32,864	1.98	16.30
CONNECTICUT	83,388	23,984	3.48	15.91
DELAWARE	16,743	9,434	1.77	29.24
DIST. OF COLUMBIA	13,467	5,229	2.58	33.91
FLORIDA	439,532	168,751	2.60	8.83
GEORGIA	71,408	54,500	1.31	11.88
HAWAII	125,966	103,653	1.22	9.99
IDAHO	68,765	22,833	3.01	16.89
ILLINOIS	72,784	27,473	2.65	14.46
INDIANA	57,046	29,352	1.94	12.80
IOWA	31,237	12,490	2.50	29.80
KANSAS	19,351	11,266	1.72	20.96
KENTUCKY	40,443	15,884	2.55	15.26
LOUISIANA	1,267,777	511,658	2.48	5.81
MAINE	7,847	4,623	1.70	29.56
MARYLAND	34,753	31,635	1.10	11.63

3.8 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
MASSACHUSETTS	86,794	39,631	2.19	12.99
MICHIGAN	112,111	36,169	3.10	16.03
MINNESOTA	49,050	17,862	2.75	16.05
MISSISSIPPI	31,382	12,107	2.59	23.19
MISSOURI	69,432	38,258	1.81	14.61
MONTANA	33,407	18,796	1.78	22.53
NEBRASKA	2,308	790	2.92	47.77
NEVADA	44,607	41,962	1.06	19.88
NEW HAMPSHIRE	25,031	13,568	1.84	15.29
NEW JERSEY	188,842	59,221	3.19	10.22
NEW MEXICO	12,464	7,093	1.76	39.32
NEW YORK	177,791	67,922	2.62	9.72
NORTH CAROLINA	36,121	22,399	1.61	15.63
NORTH DAKOTA	26,892	8,013	3.36	30.05
OHIO	148,248	53,608	2.77	11.53
OKLAHOMA	70,067	21,549	3.25	16.98
OREGON	254,448	96,421	2.64	8.37
PENNSYLVANIA	218,932	70,913	3.09	10.80
RHODE ISLAND	5,490	2,041	2.69	28.10
SOUTH CAROLINA	64,675	21,525	3.00	21.45
SOUTH DAKOTA	4,003	1,838	2.18	42.15

3.8 1989 ROTORCRAFT AVERAGE NUMBER OF LANDINGS PER FLIGHT HOUR BY STATE OF BASED ROTORCRAFT

STATE	TOTAL LANDINGS	TOTAL FLIGHT HOURS	AVG. NO. LANDINGS PER HOUR	PERCENT STANDARD ERROR
TENNESSEE	66,117	24,176	2.73	15.78
TEXAS	465,884	231,197	2.02	5.67
UTAH	46,774	22,335	2.09	21.05
VERMONT	3,077	862	3.57	40.74
VIRGINIA	284,971	24,649	11.56	16.16
WASHINGTON	229,904	71,586	3.21	12.37
WEST VIRGINIA	21,380	12,559	1.70	17.60
WISCONSIN	35,812	8,619	4.16	27.34
WYOMING	12,766	6,723	1.90	25.11
PUERTO RICO	0	0	0.00	0.00
TOTAL	7,356,984	2,810,972	2.62	1.45

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.9 1989 ROTORCRAFT TOTAL LANDINGS BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	PRIMARY USE						
	PER-SONAL	EMERGENCY MEDICAL SERVICE UNDER FAR 135	EMERGENCY MEDICAL SERVICE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL
MANUFACTURER BUILT: PISTON TOTAL:							
EST. LANDINGS	77,678	13,036	5,612	29,201	0	16,181	891,914
% STD. ERROR	8.2	22.8	36.7	16.9	0.0	22.4	5.4
TURBINE: SINGLE ENGINE							
EST. LANDINGS	30,709	106,871	115,099	1,278,304	28,111	649,769	143,741
% STD. ERROR	9.2	8.1	9.1	2.5	22.3	6.6	12.9
TURBINE: MULTI - ENGINE							
EST. LANDINGS	5,893	174,332	115,691	454,416	11,878	354,870	78,225
% STD. ERROR	36.5	13.2	13.0	6.4	20.6	6.8	30.3
TURBINE TOTAL:							
EST. LANDINGS	36,601	281,202	230,790	1,732,719	39,989	1,004,639	221,966
% STD. ERROR	8.7	7.9	7.8	2.5	17.1	4.9	12.1
MANUFACTURER BUILT TOTAL:							
EST. LANDINGS	114,279	294,238	236,402	1,761,921	39,989	1,020,820	1,113,880
% STD. ERROR	6.3	7.6	7.5	2.5	17.1	4.8	5.0
AMATEUR BUILT:							
EST. LANDINGS	35,727	4,642	0	0	0	0	6,446
% STD. ERROR	5.9	26.7	0.0	0.0	0.0	0.0	27.8
TOTAL							
EST. LANDINGS	150,007	298,880	236,402	1,761,921	39,989	1,020,820	1,120,327
% STD. ERROR	4.6	7.4	7.5	2.5	17.1	4.8	5.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

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3.9 1989 ROTORCRAFT TOTAL LANDINGS BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

PRIMARY USE (CONTINUED)

ROTORCRAFT TYPE	AERIAL APPL	AERIAL OBS	EXTRNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
MANUFACTURER BUILT: PISTON TOTAL:							
EST. LANDINGS	1,134,870	433,207	41,159	18,057	30,806	8,108	2,525,425
% STD. ERROR	6.1	7.7	30.0	26.0	9.7	31.2	5.0
TURBINE: SINGLE ENGINE							
EST. LANDINGS	197,535	604,822	150,660	39,267	59,886	22,555	3,414,216
% STD. ERROR	10.3	3.4	9.6	14.5	7.5	16.6	1.6
TURBINE: MULTI - ENGINE							
EST. LANDINGS	4,336	18,253	36,950	2,381	12,821	9,340	1,292,008
% STD. ERROR	58.8	27.5	9.7	56.5	16.8	26.5	3.7
TURBINE TOTAL:							
EST. LANDINGS	201,871	623,075	187,610	41,649	72,707	31,894	4,706,224
% STD. ERROR	10.2	3.4	7.9	14.0	6.7	13.9	1.5
MANUFACTURER BUILT TOTAL:							
EST. LANDINGS	1,336,742	1,056,282	228,769	59,706	103,513	40,002	7,231,646
% STD. ERROR	5.2	3.6	9.1	12.8	5.5	14.2	2.0
AMATEUR BUILT:							
EST. LANDINGS	0	1,036	0	0	1,172	5,424	144,226
% STD. ERROR	0.0	49.5	0.0	0.0	58.3	23.2	27.2
TOTAL							
EST. LANDINGS	1,336,742	1,057,318	228,769	59,706	104,684	45,426	7,375,872
% STD. ERROR	5.2	3.6	9.1	12.8	5.5	12.3	2.1

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

3.10 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE			IN-ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
MANUFACTURER BUILT:					
PISTON TOTAL:					
EST. NO. ACTIVE	2,684	1,565	594	525	1,265
% STD. ERROR	1.2	1.8	4.0	4.4	
EST. % ACTIVE	68.0				
TURBINE: SINGLE ENGINE					
EST. NO. ACTIVE	3,248	1,687	1,324	237	347
% STD. ERROR	0.5	1.4	1.6	5.4	
EST. % ACTIVE	90.3				
TURBINE: MULTI - ENGINE					
EST. NO. ACTIVE	984	354	586	44	85
% STD. ERROR	0.7	4.3	2.8	18.4	
EST. % ACTIVE	92.0				
TURBINE TOTAL:					
EST. NO. ACTIVE	4,232	2,040	1,911	281	432
% STD. ERROR	0.4	1.4	1.4	5.4	
EST. % ACTIVE	90.7				
MANUFACTURER BUILT TOTAL:					
EST. NO. ACTIVE	6,916	3,605	2,505	806	1,697
% STD. ERROR	0.5	1.1	1.4	3.4	
EST. % ACTIVE	80.3				
AMATEUR BUILT:					
EST. NO. ACTIVE	572	254	20	298	1,218
% STD. ERROR	3.5	5.5	25.9	4.7	
EST. % ACTIVE	31.9				
TOTAL					
EST. NO. ACTIVE	7,488	3,859	2,525	1,104	2,915
% STD. ERROR	0.6	1.1	1.5	2.8	
EST. % ACTIVE	72.0				

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.11 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
OTHER 1 (*)					
EST. NO. ACTIVE	93	81	7	5	33
% STD. ERROR	0.0	13.9	123.6	151.7	
EST. % ACTIVE	73.8				
OTHER 2 (*)					
EST. NO. ACTIVE	91	56	24	11	22
% STD. ERROR	0.0	8.8	18.4	29.8	
EST. % ACTIVE	80.7				
OTHER 3 (*)					
EST. NO. ACTIVE	111	52	54	5	31
% STD. ERROR	0.0	9.7	9.4	42.9	
EST. % ACTIVE	78.4				
OTHER 4 (*)					
EST. NO. ACTIVE	572	254	20	298	1,218
% STD. ERROR	0.0	5.5	25.9	4.7	
EST. % ACTIVE	31.9				
AERORSJ2					
EST. NO. ACTIVE	20	11	0	9	18
% STD. ERROR	0.0	19.0	0.0	24.4	
EST. % ACTIVE	51.7				
AEROSPAS355					
EST. NO. ACTIVE	108	DIS	DIS	DIS	1
% STD. ERROR	0.0				
EST. % ACTIVE	99.0				
AEROSPSA316					
EST. NO. ACTIVE	61	18	44	0	30
% STD. ERROR	0.0	23.4	9.4	0.0	
EST. % ACTIVE	67.4				
AGUSTA205					
EST. NO. ACTIVE	30	DIS	DIS	DIS	2
% STD. ERROR	0.0				
EST. % ACTIVE	95.0				
AGUSTAA109					
EST. NO. ACTIVE	66	DIS	DIS	DIS	0
% STD. ERROR	0.0				
EST. % ACTIVE	100.0				

3.11 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
AIRSPC18					
EST. NO. ACTIVE	15	DIS	DIS	DIS	8
% STD. ERROR	0.0				
EST. % ACTIVE	64.3				
ARCRNEH37					
EST. NO. ACTIVE	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	0.0				
BELL 204					
EST. NO. ACTIVE	22	14	0	8	4
% STD. ERROR	0.0	22.4	0.0	40.5	
EST. % ACTIVE	84.3				
BELL 206					
EST. NO. ACTIVE	1,810	832	872	105	90
% STD. ERROR	0.0	1.6	1.6	6.1	
EST. % ACTIVE	95.3				
BELL 212					
EST. NO. ACTIVE	106	DIS	DIS	DIS	11
% STD. ERROR	0.0				
EST. % ACTIVE	90.2				
BELL 222					
EST. NO. ACTIVE	70	34	31	5	13
% STD. ERROR	0.0	6.7	7.3	23.6	
EST. % ACTIVE	84.3				
BELL 412					
EST. NO. ACTIVE	61	DIS	DIS	DIS	0
% STD. ERROR	0.0				
EST. % ACTIVE	100.0				
BELL 47					
EST. NO. ACTIVE	579	297	181	101	259
% STD. ERROR	0.0	4.9	7.4	10.8	
EST. % ACTIVE	69.1				
BOLKMS105					
EST. NO. ACTIVE	171	29	133	8	4
% STD. ERROR	0.0	31.9	7.7	63.2	
EST. % ACTIVE	97.7				

3.11 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
BOLKMS117					
EST. NO. ACTIVE	110	DIS	DIS	DIS	3
% STD. ERROR	0.0				
EST. % ACTIVE	97.2				
ENSTRMF28 (1)					
EST. NO. ACTIVE	219	137	48	34	80
% STD. ERROR	0.0	5.4	13.1	16.4	
EST. % ACTIVE	73.2				
ENSTRMF28 (2)					
EST. NO. ACTIVE	112	79	23	9	10
% STD. ERROR	0.0	5.9	18.1	32.0	
EST. % ACTIVE	91.5				
H23/HTE					
EST. NO. ACTIVE	12	0	0	12	24
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	32.1				
H34/55					
EST. NO. ACTIVE	DIS	DIS	DIS	DIS	DIS
% STD. ERROR					
EST. % ACTIVE	11.4				
HILLERFH1100					
EST. NO. ACTIVE	29	DIS	DIS	DIS	35
% STD. ERROR	0.0				
EST. % ACTIVE	45.2				
HILLERUH12 (1)					
EST. NO. ACTIVE	351	188	68	95	207
% STD. ERROR	0.0	6.1	13.3	10.7	
EST. % ACTIVE	63.0				
HILLERUH12 (2)					
EST. NO. ACTIVE	22	7	5	9	5
% STD. ERROR	0.0	21.7	28.8	17.8	
EST. % ACTIVE	80.2				
HUGHES269					
EST. NO. ACTIVE	476	243	142	91	200
% STD. ERROR	0.0	4.1	6.4	8.6	
EST. % ACTIVE	70.4				

3.11 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE			IN-ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
HUGHES369					
EST. NO. ACTIVE	551	326	147	77	49
% STD. ERROR	0.0	3.4	6.8	10.1	
EST. % ACTIVE	91.8				
HYNES B2					
EST. NO. ACTIVE	53	DIS	DIS	DIS	73
% STD. ERROR	0.0				
EST. % ACTIVE	41.9				
MACDOUG369					
EST. NO. ACTIVE	61	DIS	DIS	DIS	0
% STD. ERROR	0.0				
EST. % ACTIVE	100.0				
MILITARY204					
EST. NO. ACTIVE	142	121	16	5	59
% STD. ERROR	0.0	6.7	45.2	80.0	
EST. % ACTIVE	70.8				
MILITARY47 (1)					
EST. NO. ACTIVE	219	123	51	45	156
% STD. ERROR	0.0	6.1	12.4	13.5	
EST. % ACTIVE	58.5				
MILITARY47 (2)					
EST. NO. ACTIVE	15	0	15	0	5
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	76.9				
MODFD47					
EST. NO. ACTIVE	37	17	8	12	16
% STD. ERROR	0.0	25.6	42.8	32.4	
EST. % ACTIVE	70.4				
ORLHELH19					
EST. NO. ACTIVE	44	DIS	DIS	DIS	29
% STD. ERROR	0.0				
EST. % ACTIVE	60.3				
ORLHELS58					
EST. NO. ACTIVE	11	11	0	0	22
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	33.3				

3.11 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
ROBSINR22					
EST. NO. ACTIVE	395	311	44	41	13
% STD. ERROR	0.0	2.0	11.0	11.5	
EST. % ACTIVE	96.9				
SCHWZH269					
EST. NO. ACTIVE	48	19	23	6	6
% STD. ERROR	0.0	7.9	6.8	17.3	
EST. % ACTIVE	89.6				
SKRSKYS55					
EST. NO. ACTIVE	7	DIS	DIS	DIS	27
% STD. ERROR	0.0				
EST. % ACTIVE	20.0				
SKRSKYS58					
EST. NO. ACTIVE	35	DIS	DIS	DIS	37
% STD. ERROR	0.0				
EST. % ACTIVE	48.6				
SKRSKYS58T					
EST. NO. ACTIVE	27	16	12	0	11
% STD. ERROR	0.0	18.6	25.0	0.0	
EST. % ACTIVE	71.4				
SKRSKYS61					
EST. NO. ACTIVE	14	DIS	DIS	DIS	14
% STD. ERROR	0.0				
EST. % ACTIVE	49.6				
SKRSKYS76					
EST. NO. ACTIVE	167	DIS	DIS	DIS	8
% STD. ERROR	0.0				
EST. % ACTIVE	95.6				
SNIAS 350					
EST. NO. ACTIVE	255	132	117	6	16
% STD. ERROR	0.0	4.9	5.5	33.3	
EST. % ACTIVE	94.0				
SNIAS SA318					
EST. NO. ACTIVE	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	0.0				

3.11 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
SNIAS SA341					
EST. NO. ACTIVE	20	DIS	DIS	DIS	9
% STD. ERROR	0.0				
EST. % ACTIVE	68.7				
TH55					
EST. NO. ACTIVE	42	DIS	DIS	DIS	18
% STD. ERROR	0.0				
EST. % ACTIVE	70.1				
TOMCAT					
EST. NO. ACTIVE	24	DIS	DIS	DIS	14
% STD. ERROR	0.0				
EST. % ACTIVE	63.8				
TOTAL					
EST. NO. ACTIVE	7,488	3,859	2,525	1,104	2,915
% STD. ERROR	0.6	1.1	1.5	2.8	
EST. % ACTIVE	72.0				

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON
(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

3.12 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY REGION OF BASED ROTORCRAFT

REGION	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
ALASKAN					
EST. NO. ACTIVE	248	126	48	26	40
% STD. ERROR	5.3	8.4	14.2	20.2	
EST. % ACTIVE	86.1				
CENTRAL					
EST. NO. ACTIVE	216	100	85	41	120
% STD. ERROR	6.4	10.1	13.3	17.1	
EST. % ACTIVE	64.3				
EASTERN					
EST. NO. ACTIVE	1,004	575	345	117	325
% STD. ERROR	2.8	3.9	6.5	9.7	
EST. % ACTIVE	75.5				
GREAT LAKES					
EST. NO. ACTIVE	752	399	231	129	456
% STD. ERROR	3.4	5.7	7.3	9.7	
EST. % ACTIVE	62.2				
NEW ENGLAND					
EST. NO. ACTIVE	292	205	63	32	85
% STD. ERROR	4.8	6.5	12.0	18.7	
EST. % ACTIVE	77.5				
NORTHWEST MT.					
EST. NO. ACTIVE	882	441	192	163	380
% STD. ERROR	3.1	5.4	7.1	9.4	
EST. % ACTIVE	69.9				
SOUTHERN					
EST. NO. ACTIVE	1,223	728	296	235	535
% STD. ERROR	2.6	4.2	5.6	7.4	
EST. % ACTIVE	69.6				
SOUTHWESTERN					
EST. NO. ACTIVE	1,413	402	936	146	454
% STD. ERROR	2.1	5.9	2.5	9.0	
EST. % ACTIVE	75.7				

3.12 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY REGION OF BASED ROTORCRAFT

REGION	TOTAL ACTIVE ROTORCRAFT	BASE FACILITY TYPE			IN-ACTIVE
		AIRPORTS	HELIPORTS	OTHER	
WESTERN-PACIFIC					
EST. NO. ACTIVE	1,458	919	329	178	521
% STD. ERROR	2.1	2.9	5.2	8.0	
EST. % ACTIVE	73.7				
TOTAL					
EST. NO. ACTIVE	7,488	3,859	2,525	1,104	2,915
% STD. ERROR	0.6	1.1	1.5	2.8	
EST. % ACTIVE	72.0				

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

3.13 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
ALABAMA					
EST. NO. ACTIVE	96	66	24	8	69
% STD. ERROR	10.6	14.8	20.2	41.7	
EST. % ACTIVE	58.0				
ALASKA					
EST. NO. ACTIVE	248	126	48	26	40
% STD. ERROR	5.3	8.4	14.2	20.2	
EST. % ACTIVE	86.1				
ARIZONA					
EST. NO. ACTIVE	176	110	29	37	120
% STD. ERROR	7.6	8.7	17.9	18.0	
EST. % ACTIVE	59.3				
ARKANSAS					
EST. NO. ACTIVE	37	25	5	12	28
% STD. ERROR	14.9	21.2	37.2	32.4	
EST. % ACTIVE	57.5				
CALIFORNIA					
EST. NO. ACTIVE	1,072	688	251	129	352
% STD. ERROR	2.5	3.4	6.0	9.5	
EST. % ACTIVE	75.3				
COLORADO					
EST. NO. ACTIVE	101	70	25	12	47
% STD. ERROR	10.2	15.8	19.8	24.8	
EST. % ACTIVE	68.4				
CONNECTICUT					
EST. NO. ACTIVE	66	DIS	DIS	DIS	12
% STD. ERROR	10.3				
EST. % ACTIVE	85.0				
DELAWARE					
EST. NO. ACTIVE	33	DIS	DIS	DIS	6
% STD. ERROR	17.8				
EST. % ACTIVE	85.8				
DIST. OF COLUMBIA					
EST. NO. ACTIVE	32	34	6	0	0
% STD. ERROR	22.9	25.7	65.2	0.0	
EST. % ACTIVE	100.0				

3.13 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
FLORIDA					
EST. NO. ACTIVE	635	414	90	123	239
% STD. ERROR	4.3	6.4	11.6	9.9	
EST. % ACTIVE	72.6				
GEORGIA					
EST. NO. ACTIVE	127	69	47	18	65
% STD. ERROR	7.3	9.7	11.0	26.3	
EST. % ACTIVE	66.2				
HAWAII					
EST. NO. ACTIVE	126	70	17	5	24
% STD. ERROR	6.5	9.4	19.7	53.9	
EST. % ACTIVE	83.7				
IDAHO					
EST. NO. ACTIVE	86	47	23	19	22
% STD. ERROR	9.3	14.4	18.3	26.5	
EST. % ACTIVE	80.0				
ILLINOIS					
EST. NO. ACTIVE	137	71	49	20	95
% STD. ERROR	10.4	20.8	16.3	24.0	
EST. % ACTIVE	58.9				
INDIANA					
EST. NO. ACTIVE	124	69	30	31	58
% STD. ERROR	7.9	11.7	18.5	21.2	
EST. % ACTIVE	68.3				
IOWA					
EST. NO. ACTIVE	46	10	29	8	46
% STD. ERROR	16.7	30.8	27.4	44.3	
EST. % ACTIVE	50.2				
KANSAS					
EST. NO. ACTIVE	45	28	15	8	28
% STD. ERROR	13.5	18.3	32.6	41.1	
EST. % ACTIVE	61.2				
KENTUCKY					
EST. NO. ACTIVE	68	56	11	12	18
% STD. ERROR	8.8	11.0	23.9	26.5	
EST. % ACTIVE	79.4				

3.13 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
LOUISIANA					
EST. NO. ACTIVE	645	54	647	18	59
% STD. ERROR	3.0	18.7	3.1	29.3	
EST. % ACTIVE	91.6				
MAINE					
EST. NO. ACTIVE	27	22	0	5	15
% STD. ERROR	20.1	28.3	0.0	52.2	
EST. % ACTIVE	63.9				
MARYLAND					
EST. NO. ACTIVE	101	56	7	22	10
% STD. ERROR	7.6	10.6	35.3	22.1	
EST. % ACTIVE	90.7				
MASSACHUSETTS					
EST. NO. ACTIVE	107	96	17	7	38
% STD. ERROR	8.1	9.4	26.4	35.1	
EST. % ACTIVE	73.6				
MICHIGAN					
EST. NO. ACTIVE	151	101	34	31	64
% STD. ERROR	7.2	10.2	16.0	21.2	
EST. % ACTIVE	70.1				
MINNESOTA					
EST. NO. ACTIVE	73	34	15	6	68
% STD. ERROR	10.6	14.4	31.7	41.4	
EST. % ACTIVE	52.0				
MISSISSIPPI					
EST. NO. ACTIVE	51	46	6	10	11
% STD. ERROR	12.8	15.9	49.8	25.7	
EST. % ACTIVE	82.7				
MISSOURI					
EST. NO. ACTIVE	114	48	41	25	37
% STD. ERROR	8.5	14.5	15.5	20.6	
EST. % ACTIVE	75.3				
MONTANA					
EST. NO. ACTIVE	69	43	5	9	28
% STD. ERROR	15.8	21.2	48.0	96.9	
EST. % ACTIVE	70.8				

3.13 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
NEBRASKA					
EST. NO. ACTIVE	11	13	0	0	8
% STD. ERROR	29.9	31.5	0.0	0.0	
EST. % ACTIVE	57.2				
NEVADA					
EST. NO. ACTIVE	85	51	33	7	24
% STD. ERROR	10.9	16.6	18.6	44.3	
EST. % ACTIVE	78.1				
NEW HAMPSHIRE					
EST. NO. ACTIVE	67	23	27	11	10
% STD. ERROR	9.4	18.8	15.3	27.5	
EST. % ACTIVE	87.4				
NEW JERSEY					
EST. NO. ACTIVE	202	151	57	7	37
% STD. ERROR	6.5	6.8	19.4	44.8	
EST. % ACTIVE	84.7				
NEW MEXICO					
EST. NO. ACTIVE	40	23	8	7	24
% STD. ERROR	25.1	45.2	29.7	44.0	
EST. % ACTIVE	62.3				
NEW YORK					
EST. NO. ACTIVE	239	118	68	44	94
% STD. ERROR	5.7	10.2	11.6	15.8	
EST. % ACTIVE	71.8				
NORTH CAROLINA					
EST. NO. ACTIVE	88	42	23	23	47
% STD. ERROR	9.5	17.6	16.7	21.5	
EST. % ACTIVE	65.2				
NORTH DAKOTA					
EST. NO. ACTIVE	23	DIS	DIS	DIS	5
% STD. ERROR	19.4				
EST. % ACTIVE	81.5				
OHIO					
EST. NO. ACTIVE	190	65	87	34	106
% STD. ERROR	7.1	11.7	13.1	19.0	
EST. % ACTIVE	64.1				

3.13 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
OKLAHOMA					
EST. NO. ACTIVE	92	60	21	16	69
% STD. ERROR	11.9	19.3	24.5	29.4	
EST. % ACTIVE	57.2				
OREGON					
EST. NO. ACTIVE	282	121	63	41	126
% STD. ERROR	5.4	9.4	14.3	17.0	
EST. % ACTIVE	69.2				
PENNSYLVANIA					
EST. NO. ACTIVE	258	86	160	25	149
% STD. ERROR	6.2	10.4	9.0	23.1	
EST. % ACTIVE	63.3				
RHODE ISLAND					
EST. NO. ACTIVE	10	DIS	DIS	DIS	5
% STD. ERROR	21.4				
EST. % ACTIVE	67.5				
SOUTH CAROLINA					
EST. NO. ACTIVE	67	12	26	30	50
% STD. ERROR	13.3	33.1	21.0	28.0	
EST. % ACTIVE	57.5				
SOUTH DAKOTA					
EST. NO. ACTIVE	9	DIS	DIS	DIS	3
% STD. ERROR	29.5				
EST. % ACTIVE	75.0				
TENNESSEE					
EST. NO. ACTIVE	92	23	71	10	37
% STD. ERROR	8.5	17.4	11.2	31.1	
EST. % ACTIVE	71.6				
TEXAS					
EST. NO. ACTIVE	599	240	255	93	274
% STD. ERROR	3.4	6.3	5.9	10.8	
EST. % ACTIVE	68.6				
UTAH					
EST. NO. ACTIVE	70	11	20	10	35
% STD. ERROR	10.4	33.2	20.4	30.1	
EST. % ACTIVE	66.4				

3.13 1989 TOTAL ACTIVE ROTORCRAFT BY BASE FACILITY TYPE BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	BASE FACILITY TYPE AIRPORTS	HELIPORTS	OTHER	IN-ACTIVE
VERMONT					
EST. NO. ACTIVE	15	DIS	DIS	DIS	5
% STD. ERROR	23.9				
EST. % ACTIVE	75.7				
VIRGINIA					
EST. NO. ACTIVE	97	76	28	10	26
% STD. ERROR	11.2	12.2	34.6	33.7	
EST. % ACTIVE	79.0				
WASHINGTON					
EST. NO. ACTIVE	233	127	54	63	116
% STD. ERROR	6.6	11.1	14.1	13.1	
EST. % ACTIVE	66.8				
WEST VIRGINIA					
EST. NO. ACTIVE	41	28	11	7	3
% STD. ERROR	11.6	15.6	27.7	31.5	
EST. % ACTIVE	92.6				
WISCONSIN					
EST. NO. ACTIVE	45	24	8	6	57
% STD. ERROR	15.6	22.4	38.5	43.6	
EST. % ACTIVE	44.0				
WYOMING					
EST. NO. ACTIVE	40	DIS	DIS	DIS	6
% STD. ERROR	14.0				
EST. % ACTIVE	87.9				
PUERTO RICO					
EST. NO. ACTIVE	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	
EST. % ACTIVE	0.0				
TOTAL					
EST. NO. ACTIVE	7,488	3,859	2,525	1,104	2,915
% STD. ERROR	0.6	1.1	1.5	2.8	
EST. % ACTIVE	72.0				

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

CHAPTER IV

PRIMARY USE BY EXPANDED USE CATEGORY

The rotorcraft fleet is used to provide an array of services, such as air taxi, external load, personal, business, instructional, and emergency medical service. This chapter considers the major uses of the rotorcraft fleet. Twelve expanded use categories for rotorcraft are defined in Appendix C.

This chapter consists of eight tables and one figure. The odd numbered Tables, 4.1-4.7, present the estimated number of active and inactive rotorcraft, by expanded use category, in four different ways, by: 1) aircraft type; 2) SDR Rotorcraft Manufacturer/Model Group; 3) region of based rotorcraft; and 4) state of based rotorcraft. The even numbered Tables, 4.2-4.8, present the estimated total hours, by expanded use category, in the same four ways listed above.

Figure 4.1 displays two graphs. The first one shows the number of rotorcraft in each primary use category. The second graph depicts the total flight hours by rotorcraft in each expanded use category.

Some key observations to be drawn from Tables 4.1-4.8 and the figure in this chapter are:

- Approximately 72 percent of the registered rotorcraft fleet were active in 1989.

- Air taxi is the most popular primary use of the active rotorcraft fleet. Almost 18 percent are primarily used in this way. The second and third most popular primary uses are aerial observation and personal - 17 percent and 14 percent, respectively.

- About 28 percent of the active single engine turbine rotorcraft and almost 38 percent of the active multiengine turbine rotorcraft are used primarily for air taxi purposes. Together, 32 percent of the turbine rotorcraft are used for air taxi.

- As one might expect, personal use is the most popular primary use of amateur built rotorcraft. More than 68 percent of the amateur rotorcraft were used primarily for this purpose.

- Aerial observation is the most popular primary use in five out of nine regions: the Southern region, 39 percent; the Central region, 34 percent; the Great Lakes region, 33 percent; the Western-Pacific region, 33 percent; and the Eastern region, 24 percent.

- The rotorcraft fleet flew over 896 thousand air taxi hours in 1989. The next closest use category, aerial observation, totaled more than 626 thousand hours.

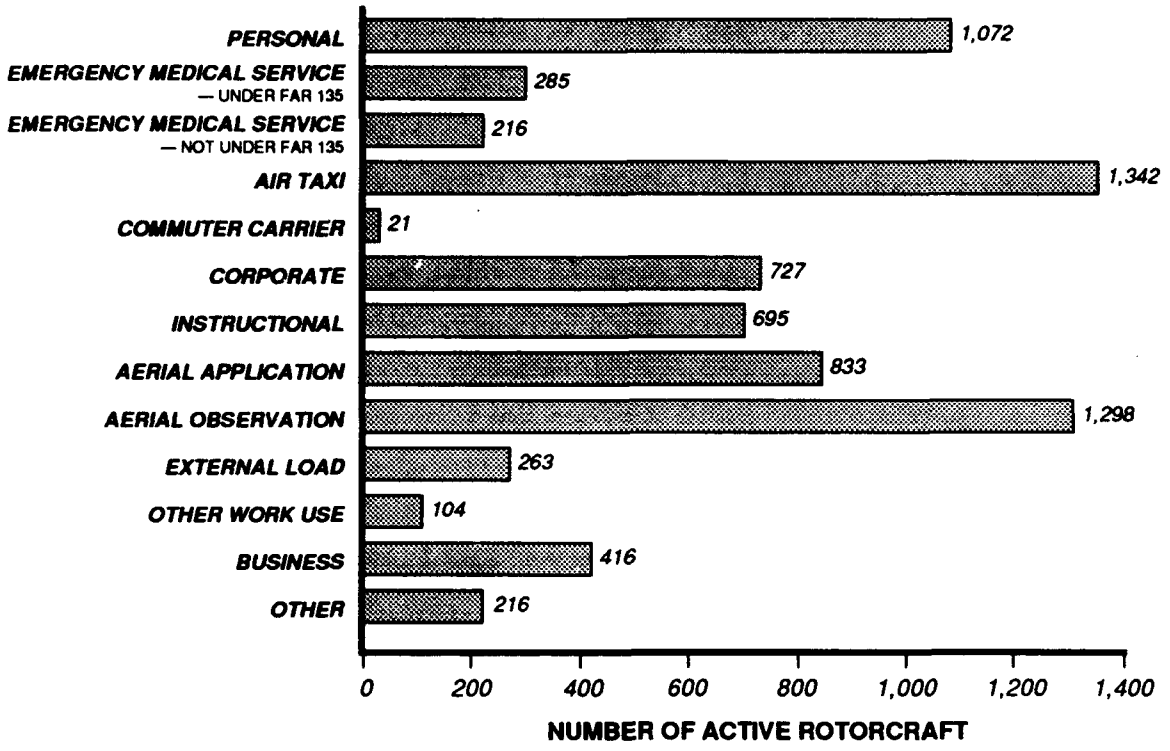
- Instructional use is the largest use of piston rotorcraft. Almost 31 percent (224,075 hours) of the total hours flown by piston rotorcraft were used primarily for this purpose.

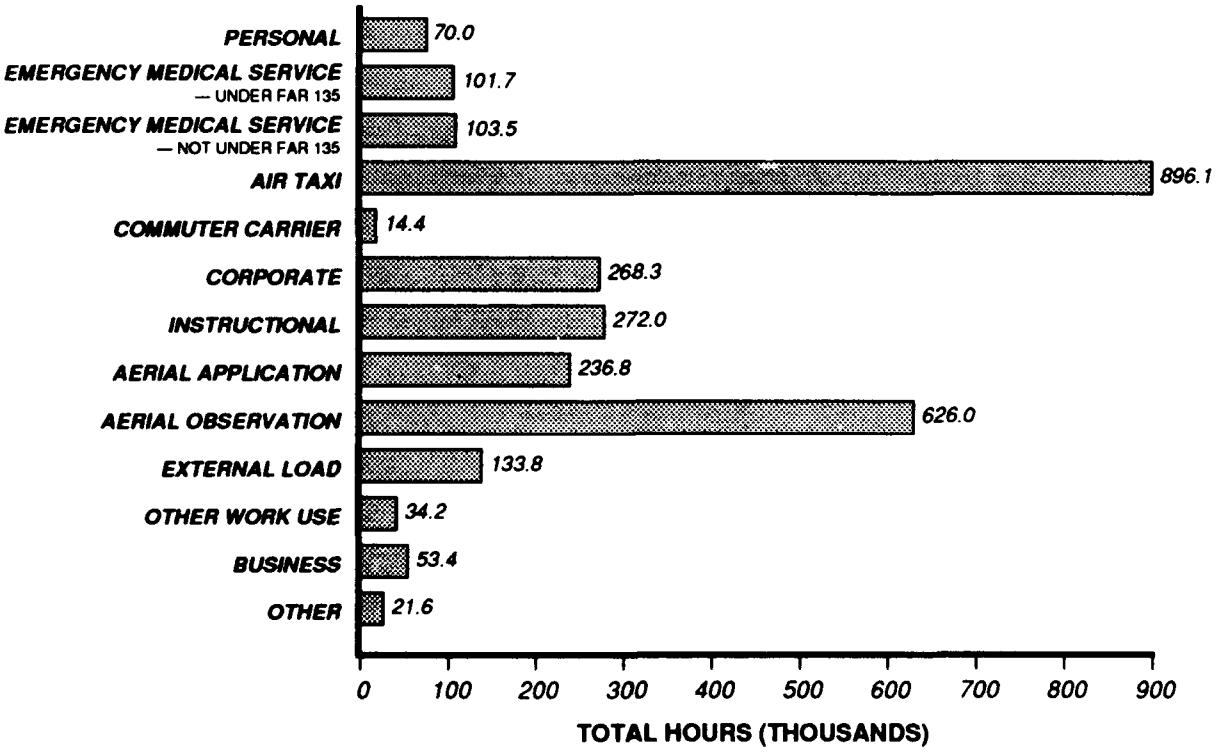
- The largest use of both the single and multiengine turbine rotorcraft was air taxi, with 40 percent and 49 percent of the total hours flown, respectively, comprising this use category.

- In both the Alaskan and Southwestern regions, the largest use is air taxi, accounting for 79 percent and 72 percent, respectively, of the total hours flown in those regions. Even though the Southwest region has only 9 percent of the active fleet, rotorcraft in this region accounted for over 60 percent of the air taxi hours flown.

- The largest use of rotorcraft in the Northwest Mountain region is external load, with 26 percent of its total hours flown in this category. In the New England region, the largest use of rotorcraft is split between corporate and instructional use categories, with 28 percent of the region's total hours flown in each category.

Figure 4.1
1989 NUMBER OF ROTORCRAFT AND TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY





SOURCE: Tables 4.1 and 4.2

4.1 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	TOTAL ACTIVE	ACTIVE USE: PER-SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
MANUFACTURER BUILT: PISTON TOTAL:															
EST. NO. ACTIVE	2,684	462	37	12	50	0	44	530	610	553	87	46	189	64	1,265
% STD. ERROR	1.2	5.2	15.6	29.1	14.4	0.0	13.6	3.3	4.1	3.3	18.6	14.2	6.3	23.6	
EST. % ACTIVE	68.0														
TURBINE: SINGLE ENGINE															
EST. NO. ACTIVE	3,248	140	103	109	917	16	459	110	211	708	139	56	200	80	347
% STD. ERROR	0.5	6.8	7.1	8.2	1.8	15.1	3.2	8.9	6.2	2.5	7.3	10.3	5.4	12.4	
EST. % ACTIVE	90.3														
TURBINE: MULTI - ENGINE															
EST. NO. ACTIVE	984	13	111	95	375	5	224	34	12	28	35	2	23	27	85
% STD. ERROR	0.7	33.2	12.0	12.4	4.3	19.0	5.2	25.0	29.8	26.6	11.4	56.5	16.5	18.4	
EST. % ACTIVE	92.0														
TURBINE TOTAL:															
EST. NO. ACTIVE	4,232	153	215	204	1,292	21	683	144	223	736	174	58	223	107	432
% STD. ERROR	0.4	6.8	7.1	7.3	1.8	12.3	2.7	9.0	6.1	2.6	6.3	10.1	5.2	10.4	
EST. % ACTIVE	90.7														
MANUFACTURER BUILT TOTAL:															
EST. NO. ACTIVE	6,916	615	251	216	1,342	21	727	673	833	1,289	261	104	412	171	1,697
% STD. ERROR	0.5	4.2	6.5	7.1	1.8	12.3	2.7	3.3	3.4	2.0	7.5	8.4	4.0	11.0	
EST. % ACTIVE	80.3														
AMATEUR BUILT:															
EST. NO. ACTIVE	572	456	34	0	0	0	0	22	0	9	3	0	4	45	1,218
% STD. ERROR	3.5	2.3	18.3	0.0	0.0	0.0	0.0	23.2	0.0	36.8	68.0	0.0	58.3	15.8	
EST. % ACTIVE	31.9														
TOTAL															
EST. NO. ACTIVE	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	216	2,915
% STD. ERROR	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	9.3	
EST. % ACTIVE	72.0														

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

4.2 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

PRIMARY USE

ROTORCRAFT TYPE	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTRNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
MANUFACTURER BUILT:														
PISTON TOTAL:														
EST. TOT. HOURS	35,108	4,155	3,553	14,007	0	12,415	224,075	168,783	210,781	19,506	9,346	17,913	5,227	728,589
% STD. ERROR	8.0	19.2	30.6	16.0	0.0	32.6	4.3	5.5	4.8	30.3	21.0	8.8	27.8	2.3
TURBINE: SINGLE ENGINE														
EST. TOT. HOURS	17,529	46,221	56,318	617,075	10,369	154,809	31,718	63,796	405,210	66,752	24,069	29,810	10,888	1,531,427
% STD. ERROR	8.8	7.9	8.9	2.1	18.5	3.9	10.4	7.0	3.2	9.0	11.8	6.8	15.5	1.0
TURBINE: MULTI - ENGINE														
EST. TOT. HOURS	2,242	49,806	43,637	265,047	4,008	101,116	13,698	4,253	9,428	47,437	794	5,390	4,057	543,577
% STD. ERROR	34.5	12.7	13.0	4.6	19.2	5.9	27.4	29.5	27.3	12.5	56.5	17.5	23.0	2.1
TURBINE TOTAL:														
EST. TOT. HOURS	19,771	96,027	99,956	882,122	14,378	255,925	45,416	68,048	414,638	114,189	24,863	35,199	14,945	2,075,004
% STD. ERROR	8.5	7.6	7.8	2.0	14.6	3.2	10.3	6.8	3.2	7.4	11.6	6.3	13.0	0.9
MANUFACTURER BUILT TOTAL:														
EST. TOT. HOURS	54,879	100,182	103,509	896,129	14,378	268,340	269,491	236,831	625,419	133,695	34,209	53,113	20,172	2,803,592
% STD. ERROR	6.1	7.1	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	13.1	0.9
AMATEUR BUILT:														
EST. TOT. HOURS	15,083	1,515	0	0	0	0	2,473	0	583	78	0	249	1,462	22,164
% STD. ERROR	7.8	26.0	0.0	0.0	0.0	0.0	35.9	0.0	47.7	68.0	0.0	58.3	21.1	7.7
TOTAL														
EST. TOT. HOURS	69,962	101,697	103,509	896,129	14,378	268,340	271,963	236,831	626,003	133,773	34,209	53,361	21,634	2,825,756
% STD. ERROR	4.6	6.8	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	11.4	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

4.3 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	ACTIVE USE													INACTIVE
		PERSONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORPORATE	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSINESS	OTHER	
OTHER 1 (*)															
EST. NO. ACTIVE	93	11	0	0	0	0	0	4	12	0	38	0	0	28	33
% STD. ERROR	0.0	87.6	0.0	0.0	0.0	0.0	0.0	151.6	85.4	0.0	39.6	0.0	0.0	50.1	
EST. % ACTIVE	73.8														
OTHER 2 (*)															
EST. NO. ACTIVE	91	1	0	2	4	0	17	2	8	30	17	3	1	6	22
% STD. ERROR	0.0	79.4	0.0	66.9	50.6	0.0	21.3	66.5	32.6	14.7	21.0	55.7	79.4	39.6	
EST. % ACTIVE	80.7														
OTHER 3 (*)															
EST. NO. ACTIVE	111	0	10	15	27	0	15	1	3	0	23	2	6	9	31
% STD. ERROR	0.0	0.0	23.2	19.0	13.2	0.0	18.6	66.4	46.7	0.0	14.5	56.5	31.1	25.7	
EST. % ACTIVE	78.4														
OTHER 4 (*)															
EST. NO. ACTIVE	572	456	34	0	0	0	0	22	0	9	3	0	4	45	1,218
% STD. ERROR	0.0	2.3	18.3	0.0	0.0	0.0	0.0	23.2	0.0	36.8	68.0	0.0	58.3	15.8	
EST. % ACTIVE	31.9														
AERORSJ2															
EST. NO. ACTIVE	20	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	18
% STD. ERROR	0.0														
EST. % ACTIVE	51.7														
AEROSPAS355															
EST. NO. ACTIVE	108	0	6	8	68	0	15	6	0	DIS	0	0	DIS	DIS	1
% STD. ERROR	0.0	0.0	24.8	21.6	4.6	0.0	14.8	25.2	0.0		0.0	0.0			
EST. % ACTIVE	99.0														
AEROSPSA316															
EST. NO. ACTIVE	61	0	17	5	15	0	0	0	DIS	0	20	DIS	0	0	30
% STD. ERROR	0.0	0.0	19.9	40.2	21.1	0.0	0.0	0.0		0.0	17.2		0.0	0.0	
EST. % ACTIVE	67.4														
AGUSTA205															
EST. NO. ACTIVE	30	0	0	DIS	7	0	DIS	0	6	0	12	0	0	0	2
% STD. ERROR	0.0	0.0	0.0		29.9	0.0		0.0	33.3	0.0	19.9	0.0	0.0	0.0	
EST. % ACTIVE	95.0														
AGUSTAA109															
EST. NO. ACTIVE	66	7	0	7	DIS	0	29	DIS	0	0	0	0	8	DIS	0
% STD. ERROR	0.0	35.1	0.0	36.9		0.0	14.0		0.0	0.0	0.0	0.0	33.1		
EST. % ACTIVE	100.0														

4.3 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	ACTIVE USE: PER-SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
AIRSPC18															
EST. NO. ACTIVE	15	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	8
% STD. ERROR	0.0														
EST. % ACTIVE	64.3														
ARCRNEH37															
EST. NO. ACTIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	0.0														
BELL 204															
EST. NO. ACTIVE	22	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	4
% STD. ERROR	0.0														
EST. % ACTIVE	84.3														
BELL 206															
EST. NO. ACTIVE	1,810	42	53	65	695	16	314	44	74	376	10	18	86	17	90
% STD. ERROR	0.0	9.2	8.2	7.4	1.8	15.1	3.1	9.0	6.9	2.8	18.9	14.1	6.3	14.5	
EST. % ACTIVE	95.3														
BELL 212															
EST. NO. ACTIVE	106	0	0	DIS	71	0	15	0	5	5	DIS	0	0	DIS	11
% STD. ERROR	0.0	0.0	0.0		7.3	0.0	25.9	0.0	47.7	47.7		0.0	0.0		
EST. % ACTIVE	90.2														
BELL 222															
EST. NO. ACTIVE	70	DIS	9	DIS	17	0	29	DIS	DIS	DIS	DIS	0	DIS	DIS	13
% STD. ERROR	0.0		16.3		11.3	0.0	7.5					0.0			
EST. % ACTIVE	84.3														
BELL 412															
EST. NO. ACTIVE	61	0	DIS	14	28	0	14	0	0	0	0	0	0	DIS	0
% STD. ERROR	0.0	0.0		20.4	12.1	0.0	20.4	0.0	0.0	0.0	0.0	0.0	0.0		
EST. % ACTIVE	100.0														
BELL 47															
EST. NO. ACTIVE	579	62	6	8	34	0	12	34	217	143	9	8	33	12	259
% STD. ERROR	0.0	13.2	44.7	38.4	18.3	0.0	31.2	18.1	5.9	7.9	35.7	37.5	18.4	31.2	
EST. % ACTIVE	69.1														
BOLKMS105															
EST. NO. ACTIVE	171	DIS	22	19	91	0	23	DIS	DIS	12	0	0	0	0	4
% STD. ERROR	0.0		34.7	37.8	12.4	0.0	33.6			47.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	97.7														

4.3 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

ACTIVE USE

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	PER- SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP- ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	IN- ACTIVE
BOLKMS117															
EST. NO. ACTIVE	110	DIS	51	18	13	0	DIS	18	0	DIS	0	0	0	DIS	3
% STD. ERROR	0.0		19.9	41.8	50.4	0.0		42.5	0.0		0.0	0.0	0.0		
EST. % ACTIVE	97.2														
ENSTRMF28 (1)															
EST. NO. ACTIVE	219	61	8	0	DIS	0	0	42	6	32	0	DIS	60	DIS	80
% STD. ERROR	0.0	10.4	32.5	0.0		0.0	0.0	13.4	37.7	15.8	0.0		10.6		
EST. % ACTIVE	73.2														
ENSTRMF28 (2)															
EST. NO. ACTIVE	112	39	8	0	0	0	7	12	0	15	0	0	25	5	10
% STD. ERROR	0.0	12.8	32.8	0.0	0.0	0.0	36.3	26.4	0.0	23.8	0.0	0.0	17.4	44.5	
EST. % ACTIVE	91.5														
H23/HTE															
EST. NO. ACTIVE	12	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	24
% STD. ERROR	0.0														
EST. % ACTIVE	32.1														
H34/55															
EST. NO. ACTIVE	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
% STD. ERROR															
EST. % ACTIVE	11.4														
HILLERFH1100															
EST. NO. ACTIVE	29	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	35
% STD. ERROR	0.0														
EST. % ACTIVE	45.2														
HILLERUH12 (1)															
EST. NO. ACTIVE	351	82	DIS	0	5	0	DIS	32	146	36	9	21	9	9	207
% STD. ERROR	0.0	10.2		0.0	44.7	0.0		17.8	6.7	16.7	34.2	22.5	35.4	35.6	
EST. % ACTIVE	63.0														
HILLERUH12 (2)															
EST. NO. ACTIVE	22	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5
% STD. ERROR	0.0														
EST. % ACTIVE	80.2														
HUGHES269															
EST. NO. ACTIVE	476	62	6	DIS	DIS	0	16	106	31	197	9	8	26	5	200
% STD. ERROR	0.0	10.0	33.7			0.0	20.7	7.3	14.8	4.6	28.6	29.6	16.1	37.2	
EST. % ACTIVE	70.4														

4.3 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	ACTIVE USE													INACTIVE
		PERSONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORPORATE	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSINESS	OTHER	
HUGHES369															
EST. NO. ACTIVE	551	37	9	DIS	66	0	55	24	47	192	29	29	54	DIS	49
% STD. ERROR	0.0	13.5	28.4		9.9	0.0	10.9	17.2	11.9	5.0	15.5	15.5	11.0		
EST. % ACTIVE	91.8														
HYNES B2															
EST. NO. ACTIVE	53	26	DIS	0	0	0	0	6	DIS	8	0	0	DIS	0	73
% STD. ERROR	0.0	14.7		0.0	0.0	0.0	0.0	39.7		35.3	0.0	0.0		0.0	
EST. % ACTIVE	41.9														
MACDOUG369															
EST. NO. ACTIVE	61	DIS	0	0	DIS	0	5	0	DIS	37	0	0	6	6	0
% STD. ERROR	0.0		0.0	0.0		0.0	23.5	0.0		5.8	0.0	0.0	21.2	22.0	
EST. % ACTIVE	100.0														
MILITARY204															
EST. NO. ACTIVE	142	0	0	11	DIS	0	12	20	40	12	11	0	DIS	31	59
% STD. ERROR	0.0	0.0	0.0	47.0		0.0	45.6	34.3	22.2	46.2	47.4	0.0		26.0	
EST. % ACTIVE	70.8														
MILITARY47 (1)															
EST. NO. ACTIVE	219	33	DIS	0	0	0	DIS	48	85	35	0	0	9	0	156
% STD. ERROR	0.0	14.2		0.0	0.0	0.0		11.3	7.6	13.9	0.0	0.0	28.9	0.0	
EST. % ACTIVE	58.5														
MILITARY47 (2)															
EST. NO. ACTIVE	15	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5
% STD. ERROR	0.0														
EST. % ACTIVE	76.9														
MODFD47															
EST. NO. ACTIVE	37	5	0	0	0	0	0	11	14	8	0	0	0	0	16
% STD. ERROR	0.0	56.3	0.0	0.0	0.0	0.0	0.0	31.7	27.7	40.3	0.0	0.0	0.0	0.0	
EST. % ACTIVE	70.4														
ORLHELH19															
EST. NO. ACTIVE	44	20	0	0	0	0	0	0	24	0	0	0	0	0	29
% STD. ERROR	0.0	64.1	0.0	0.0	0.0	0.0	0.0	0.0	53.4	0.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	60.3														
ORLHELS58															
EST. NO. ACTIVE	11	0	0	0	0	0	0	0	11	0	0	0	0	0	22
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	33.3														

4.3 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	ACTIVE USE: PER-SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
ROBSINR22															
EST. NO. ACTIVE	395	73	DIS	0	DIS	0	7	225	6	33	0	6	38	DIS	13
% STD. ERROR	0.0	7.9		0.0		0.0	29.1	3.3	31.1	12.5	0.0	31.2	11.6		
EST. % ACTIVE	96.9														
SCHWZH269															
EST. NO. ACTIVE	48	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	6
% STD. ERROR	0.0														
EST. % ACTIVE	89.6														
SKRSKYS55															
EST. NO. ACTIVE	7	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	27
% STD. ERROR	0.0														
EST. % ACTIVE	20.0														
SKRSKYS58															
EST. NO. ACTIVE	35	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	37
% STD. ERROR	0.0														
EST. % ACTIVE	48.6														
SKRSKYS58T															
EST. NO. ACTIVE	27	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	11
% STD. ERROR	0.0														
EST. % ACTIVE	71.4														
SKRSKYS61															
EST. NO. ACTIVE	14	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	14
% STD. ERROR	0.0														
EST. % ACTIVE	49.6														
SKRSKYS76															
EST. NO. ACTIVE	167	DIS	9	8	55	DIS	82	0	0	0	0	0	5	5	8
% STD. ERROR	0.0		19.2	21.4	6.6		4.7	0.0	0.0	0.0	0.0	0.0	26.9	26.7	
EST. % ACTIVE	95.6														
SNIAS 350															
EST. NO. ACTIVE	255	DIS	13	11	120	0	40	6	DIS	35	6	DIS	12	DIS	16
% STD. ERROR	0.0		19.6	21.1	4.8	0.0	10.6	28.2		11.3	28.1		20.1		
EST. % ACTIVE	94.0														
SNIAS SA318															
EST. NO. ACTIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	0.0														

4.3 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

ACTIVE USE

MANUFACTURER/ MODEL GROUP	TOTAL ACTIVE	PER-SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
SNIAS SA341															
EST. NO. ACTIVE	20	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	9
% STD. ERROR	0.0														
EST. % ACTIVE	68.7														
TH55															
EST. NO. ACTIVE	42	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	18
% STD. ERROR	0.0														
EST. % ACTIVE	70.1														
TOMCAT															
EST. NO. ACTIVE	24	0	0	0	0	0	0	0	24	0	0	0	0	0	14
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	63.8														
TOTAL															
EST. NO. ACTIVE	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	216	2,915
% STD. ERROR	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	9.3	
EST. % ACTIVE	72.0														

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON
(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

4.4 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	PRIMARY USE													
	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
OTHER 1 (*)														
EST. TOT. HOURS	268	0	0	0	0	0	4	3,744	0	4,230	0	0	1,655	9,901
% STD. ERROR	94.0	0.0	0.0	0.0	0.0	0.0	151.6	87.1	0.0	102.1	0.0	0.0	53.3	47.5
OTHER 2 (*)														
EST. TOT. HOURS	88	0	62	1,527	0	5,959	613	1,884	15,421	9,822	59	74	1,062	36,571
% STD. ERROR	79.4	0.0	66.9	50.9	0.0	24.4	66.5	35.4	18.5	29.8	55.7	79.4	46.5	8.8
OTHER 3 (*)														
EST. TOT. HOURS	0	4,284	5,772	17,082	0	5,127	46	1,243	0	37,317	794	1,435	280	67,573
% STD. ERROR	0.0	24.9	23.1	14.4	0.0	20.6	66.4	46.7	0.0	16.3	56.5	33.7	31.4	8.2
OTHER 4 (*)														
EST. TOT. HOURS	15,083	1,515	0	0	0	0	2,473	0	583	78	0	249	1,462	22,164
% STD. ERROR	7.8	26.0	0.0	0.0	0.0	0.0	35.9	0.0	47.7	68.0	0.0	58.3	21.1	6.8
AERORSJ2														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	576
% STD. ERROR														16.9
AEROSPAS355														
EST. TOT. HOURS	0	2,022	3,961	43,334	0	6,629	1,698	0	DIS	0	0	DIS	DIS	58,663
% STD. ERROR	0.0	27.5	22.2	5.0	0.0	23.1	32.1	0.0		0.0	0.0			3.0
AEROSPSA316														
EST. TOT. HOURS	0	10,054	2,090	4,383	0	0	0	DIS	0	8,580	DIS	0	0	27,516
% STD. ERROR	0.0	21.0	40.2	33.9	0.0	0.0	0.0		0.0	23.5		0.0	0.0	7.7
AGUSTA205														
EST. TOT. HOURS	0	0	DIS	2,703	0	DIS	0	1,458	0	4,878	0	0	0	11,553
% STD. ERROR	0.0	0.0		32.1	0.0		0.0	35.3	0.0	27.5	0.0	0.0	0.0	10.4
AGUSTAA109														
EST. TOT. HOURS	511	0	2,347	DIS	0	9,742	DIS	0	0	0	0	1,036	DIS	15,372
% STD. ERROR	44.4	0.0	36.9		0.0	16.5		0.0	0.0	0.0	0.0	36.9		8.7

4.4 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY
BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PRIMARY USE

MANUFACTURER/ MODEL GROUP	PER- SONAL	EMERG MED SVCE UNDER FAR 135	NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
AIRSPC18														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	939
% STD. ERROR														37.1
ARCRNEH37														
EST. TOT. HOURS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BELL 204														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5,621
% STD. ERROR														6.6
BELL 206														
EST. TOT. HOURS	7,253	23,295	39,112	494,558	10,369	118,926	18,484	30,874	207,561	4,781	7,819	14,245	1,337	980,885
% STD. ERROR	11.1	9.5	8.1	2.2	18.5	4.0	11.0	7.8	3.5	19.4	15.8	8.5	27.0	1.0
BELL 212														
EST. TOT. HOURS	0	0	DIS	38,458	0	11,236	0	1,987	1,748	DIS	0	0	DIS	56,155
% STD. ERROR	0.0	0.0		9.4	0.0	27.6	0.0	47.9	47.9		0.0	0.0		5.4
BELL 222														
EST. TOT. HOURS	DIS	4,386	DIS	8,729	0	8,486	DIS	DIS	DIS	DIS	0	DIS	DIS	26,601
% STD. ERROR		17.6		11.9	0.0	9.8					0.0			3.6
BELL 412														
EST. TOT. HOURS	0	DIS	6,652	26,995	0	5,743	0	0	0	0	0	0	DIS	41,651
% STD. ERROR	0.0		21.4	12.5	0.0	30.2	0.0	0.0	0.0	0.0	0.0	0.0		5.8
BELL 47														
EST. TOT. HOURS	8,450	92	2,566	9,094	0	6,675	9,413	66,721	41,865	2,317	2,925	3,547	1,895	154,204
% STD. ERROR	24.2	46.6	39.2	20.8	0.0	63.5	23.0	8.8	10.7	40.0	53.7	27.5	38.8	4.9
BOLKMS105														
EST. TOT. HOURS	DIS	8,246	8,867	73,714	0	12,169	DIS	DIS	3,276	0	0	0	0	107,249
% STD. ERROR		35.4	38.7	13.2	0.0	34.9			47.7	0.0	0.0	0.0	0.0	5.9

4.4 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PRIMARY USE

MANUFACTURER/ MODEL GROUP	PER- SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
BOLKMS117														
EST. TOT. HOURS	DIS	21,471	10,220	8,395	0	DIS	10,796	0	DIS	0	0	0	DIS	53,916
% STD. ERROR		21.8	42.7	51.1	0.0		44.6	0.0		0.0	0.0	0.0		7.2
ENSTRMF28 (1)														
EST. TOT. HOURS	4,118	582	0	DIS	0	0	8,215	4,951	17,936	0	DIS	3,306	DIS	39,802
% STD. ERROR	13.9	39.9	0.0		0.0	0.0	19.2	41.8	25.7	0.0		14.0		12.4
ENSTRMF28 (2)														
EST. TOT. HOURS	3,222	1,995	0	0	0	613	2,545	0	10,906	0	0	2,413	709	20,406
% STD. ERROR	17.7	34.1	0.0	0.0	0.0	41.5	36.7	0.0	32.0	0.0	0.0	20.8	44.5	16.5
H23/HTE														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,302
% STD. ERROR														42.8
H34/55														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
% STD. ERROR														
HILLERFH1100														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	3,871
% STD. ERROR														26.3
HILLERUH12 (1)														
EST. TOT. HOURS	4,525	DIS	0	1,748	0	DIS	3,073	40,639	7,748	7,761	3,945	815	87	71,710
% STD. ERROR	17.6		0.0	45.4	0.0		26.2	7.7	22.2	35.2	30.7	41.8	66.7	5.4
HILLERUH12 (2)														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	6,559
% STD. ERROR														19.6
HUGHES269														
EST. TOT. HOURS	3,719	767	DIS	DIS	0	1,858	45,695	7,116	93,379	2,382	1,560	3,207	20	162,945
% STD. ERROR	13.4	43.2			0.0	24.0	10.0	17.0	6.9	34.3	40.1	19.9	1154.2	4.2

4.4 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PRIMARY USE

MANUFACTURER/ MODEL GROUP	PER- SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
HUGHES369														
EST. TOT. HOURS	3,653	3,535	DIS	37,869	0	11,831	8,562	15,039	120,194	21,154	13,065	7,408	DIS	245,743
% STD. ERROR	17.9	38.8		11.1	0.0	13.5	18.9	13.7	7.2	17.3	18.2	14.7		3.3
HYNES B2														
EST. TOT. HOURS	1,881	DIS	0	0	0	0	698	DIS	569	0	0	DIS	0	3,577
% STD. ERROR	19.8		0.0	0.0	0.0	0.0	54.8		40.4	0.0	0.0		0.0	11.6
MACDOUG369														
EST. TOT. HOURS	DIS	0	0	DIS	0	910	0	DIS	27,485	0	0	1,762	901	29,482
% STD. ERROR		0.0	0.0		0.0	25.5	0.0		7.2	0.0	0.0	21.7	22.0	6.5
MILITARY204														
EST. TOT. HOURS	0	0	1,675	DIS	0	1,227	614	6,225	969	2,117	0	DIS	3,128	17,028
% STD. ERROR	0.0	0.0	50.7		0.0	47.6	35.6	23.9	50.0	50.2	0.0		33.0	10.3
MILITARY47 (1)														
EST. TOT. HOURS	1,613	DIS	0	0	0	DIS	9,273	21,721	7,709	0	0	1,488	0	43,459
% STD. ERROR	18.2		0.0	0.0	0.0		17.0	12.8	22.8	0.0	0.0	37.3	0.0	7.4
MILITARY47 (2)														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,685
% STD. ERROR														19.2
MODFD47														
EST. TOT. HOURS	316	0	0	0	0	0	1,664	3,816	2,292	0	0	0	0	14,105
% STD. ERROR	56.3	0.0	0.0	0.0	0.0	0.0	46.4	31.5	55.4	0.0	0.0	0.0	0.0	17.0
ORLHELH19														
EST. TOT. HOURS	501	0	0	0	0	0	0	6,513	0	0	0	0	0	7,014
% STD. ERROR	64.1	0.0	0.0	0.0	0.0	0.0	0.0	56.7	0.0	0.0	0.0	0.0	0.0	48.7
ORLHELS58														
EST. TOT. HOURS	0	0	0	0	0	0	0	220	0	0	0	0	0	220
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

4.4 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PRIMARY USE

MANUFACTURER/ MODEL GROUP	PER- SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
ROBSINR22														
EST. TOT. HOURS	8,679	DIS	0	DIS	0	1,338	139,913	3,488	14,799	0	604	4,991	DIS	175,735
% STD. ERROR	11.5		0.0		0.0	31.1	4.5	36.8	13.7	0.0	38.2	14.6		3.2
SCHWZH269														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	27,146
% STD. ERROR														4.8
SKRSKYS55														
EST. TOT. HOURS	0	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	323
% STD. ERROR														20.5
SKRSKYS58														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	4,073
% STD. ERROR														10.8
SKRSKYS58T														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	12,170
% STD. ERROR														15.9
SKRSKYS61														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	12,133
% STD. ERROR														7.1
SKRSKYS76														
EST. TOT. HOURS	DIS	7,150	3,926	47,306	DIS	41,354	0	0	0	0	0	2,018	333	104,265
% STD. ERROR		19.2	22.7	7.5		5.9	0.0	0.0	0.0	0.0	0.0	27.7	40.1	2.6
SNIAS 350														
EST. TOT. HOURS	DIS	5,971	5,794	73,886	0	12,502	885	DIS	17,465	4,483	DIS	2,745	DIS	128,380
% STD. ERROR		20.2	23.6	5.8	0.0	12.7	46.1		12.8	35.8		21.3		2.8
SNIAS SA318														
EST. TOT. HOURS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

4.4 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

PRIMARY USE

MANUFACTURER/ MODEL GROUP	PER- SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP- ORATE	INSTRUC- TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI- NESS	OTHER	TOTAL
SNIAS SA341														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,958
% STD. ERROR														20.8
TH55														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5,021
% STD. ERROR														7.0
TOMCAT														
EST. TOT. HOURS	0	0	0	0	0	0	0	4,830	0	0	0	0	0	4,830
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0	0.0	0.0	9.8
TOTAL														
EST. TOT. HOURS	69,962	101,697	103,509	896,128	14,378	268,340	271,963	236,831	626,002	133,773	34,209	53,361	21,634	2,825,757
% STD. ERROR	4.6	6.8	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	11.4	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

(1) INDICATES MANUFACTURER BUILT - PISTON
(2) INDICATES MANUFACTURER BUILT - TURBINE-SINGLE ENGINE

4.5 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY REGION OF BASED ROTORCRAFT

REGION	TOTAL ACTIVE	ACTIVE USE: PER-SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
ALASKAN															
EST. NO. ACTIVE	248	21	DIS	DIS	164	0	11	5	0	12	13	DIS	16	0	40
% STD. ERROR	5.3	22.2			6.3	0 0	21.5	47.5	0.0	25.6	31.4		26.1	0.0	
EST. % ACTIVE	86.1														
CENTRAL															
EST. NO. ACTIVE	216	44	DIS	12	DIS	DIS	11	20	23	58	13	0	8	DIS	120
% STD. ERROR	6.4	16.0		19.5			24.3	19.2	30.6	12.0	27.0	0.0	27.0		
EST. % ACTIVE	64.3														
EASTERN															
EST. NO. ACTIVE	1,004	137	60	44	97	DIS	179	121	73	154	DIS	12	84	48	325
% STD. ERROR	2.8	9.2	18.9	15.4	9.4		5.6	8.8	16.7	6.3		27.4	9.5	18.2	
EST. % ACTIVE	75.5														
GREAT LAKES															
EST. NO. ACTIVE	752	153	50	13	28	DIS	64	85	122	161	15	DIS	60	12	456
% STD. ERROR	3.4	8.0	17.1	17.1	16.4		8.9	13.0	9.1	7.0	71.0		10.8	32.0	
EST. % ACTIVE	62.2														
NEW ENGLAND															
EST. NO. ACTIVE	292	70	10	DIS	DIS	DIS	53	50	15	30	DIS	DIS	26	0	85
% STD. ERROR	4.8	11.6	45.3				9.2	11.3	33.9	16.0			16.7	0.0	
EST. % ACTIVE	77.5														
NORTHWEST MT.															
EST. NO. ACTIVE	882	93	47	DIS	76	DIS	92	57	153	87	100	35	49	34	380
% STD. ERROR	3.1	13.5	13.6		10.4		9.9	11.8	8.0	9.8	11.2	16.1	12.7	20.4	
EST. % ACTIVE	69.9														
SOUTHERN															
EST. NO. ACTIVE	1,223	198	55	34	76	DIS	101	80	194	311	51	DIS	60	29	535
% STD. ERROR	2.6	9.4	14.6	17.4	8.1		7.2	9.6	9.5	4.6	32.5		10.3	23.6	
EST. % ACTIVE	69.6														
SOUTHWESTERN															
EST. NO. ACTIVE	1,413	158	23	28	694	DIS	123	66	62	153	22	DIS	39	43	454
% STD. ERROR	2.1	9.3	22.4	25.0	2.7		7.7	11.3	11.7	6.9	29.6		14.8	21.3	
EST. % ACTIVE	75.7														

4.5 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY REGION OF BASED ROTORCRAFT

REGION	TOTAL ACTIVE	ACTIVE USE: PER-SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
WESTERN-PACIFIC															
EST. NO. ACTIVE	1,458	197	37	63	209	DIS	88	210	209	304	44	28	63	DIS	521
% STD. ERROR	2.1	7.2	15.0	14.2	5.2		8.2	5.5	8.2	4.6	10.0	16.8	10.6		
EST. % ACTIVE	73.7														
TOTAL															
EST. NO. ACTIVE	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	216	2,915
% STD. ERROR	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	9.3	
EST. % ACTIVE	72.0														

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

4.6 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY REGION OF BASED ROTORCRAFT

PRIMARY USE

REGION	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
ALASKAN														
EST. TOT. HOURS	360	DIS	DIS	80,198	0	5,781	100	0	4,937	6,546	DIS	2,573	0	101,564
% STD. ERROR	22.6			6.7	0.0	23.7	47.5	0.0	27.0	33.2		28.0	0.0	6.0
CENTRAL														
EST. TOT. HOURS	2,395	DIS	8,291	DIS	DIS	1,824	5,835	3,912	22,466	1,984	0	588	DIS	66,146
% STD. ERROR	17.4		20.6			25.7	22.5	32.9	14.9	29.5	0.0	27.2		8.2
EASTERN														
EST. TOT. HOURS	9,249	18,085	20,088	40,930	DIS	53,055	35,998	18,353	68,201	DIS	2,023	11,365	4,125	279,010
% STD. ERROR	11.3	21.5	16.7	9.7		6.2	9.9	16.8	7.3		27.8	11.0	20.9	3.5
GREAT LAKES														
EST. TOT. HOURS	6,332	15,710	7,230	11,350	DIS	15,844	29,053	26,144	61,161	3,353	DIS	7,558	1,219	186,105
% STD. ERROR	11.9	18.4	16.7	17.0		9.6	14.0	10.2	8.4	72.1		12.3	32.1	4.3
NEW ENGLAND														
EST. TOT. HOURS	5,712	2,432	DIS	DIS	DIS	24,495	24,461	2,951	11,789	DIS	DIS	3,143	0	87,844
% STD. ERROR	14.0	49.4				9.9	12.3	33.3	17.5			18.8	0.0	5.8
NORTHWEST MT.														
EST. TOT. HOURS	5,779	17,354	DIS	23,277	DIS	30,013	19,510	43,775	37,153	71,336	11,053	4,621	1,975	277,378
% STD. ERROR	16.4	13.6		11.9		16.1	14.2	8.9	11.1	11.8	19.1	18.6	24.3	4.4
SOUTHERN														
EST. TOT. HOURS	12,412	20,600	15,864	33,111	DIS	24,520	30,924	48,608	136,260	4,197	DIS	8,360	1,774	348,689
% STD. ERROR	11.1	16.1	17.5	8.9		7.9	11.4	11.2	5.4	47.0		12.5	26.9	3.5
SOUTHWESTERN														
EST. TOT. HOURS	10,900	9,832	16,717	568,436	DIS	74,532	16,283	19,730	53,125	7,855	DIS	5,640	3,650	784,207
% STD. ERROR	11.4	23.5	25.5	2.8		8.3	13.4	12.4	8.5	33.8		16.9	24.9	2.4
WESTERN-PACIFIC														
EST. TOT. HOURS	14,759	14,499	25,968	142,358	DIS	26,780	114,666	70,368	219,330	22,469	12,253	7,939	DIS	661,746
% STD. ERROR	15.4	17.0	14.7	5.8		9.7	6.7	9.4	5.8	12.1	19.6	12.4		2.9
TOTAL														
EST. TOT. HOURS	69,962	101,697	103,509	896,129	14,378	268,340	271,963	236,831	626,003	133,773	34,209	53,361	21,634	2,825,756
% STD. ERROR	4.6	6.8	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	11.4	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

4.7 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	ACTIVE USE: PERSONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORPORATE	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSINESS	OTHER	INACTIVE
ALABAMA															
EST. NO. ACTIVE	96	6	8	DIS	DIS	0	12	6	19	16	10	0	0	5	69
% STD. ERROR	10.6	47.6	23.8			0.0	23.6	32.2	34.4	17.2	30.3	0.0	0.0	50.9	
EST. % ACTIVE	58.0														
ALASKA															
EST. NO. ACTIVE	248	21	DIS	DIS	164	0	11	5	0	12	13	DIS	16	0	40
% STD. ERROR	5.3	22.2			6.3	0.0	21.5	47.5	0.0	25.6	31.4		26.1	0.0	
EST. % ACTIVE	86.1														
ARIZONA															
EST. NO. ACTIVE	176	37	0	DIS	21	0	11	24	8	42	DIS	9	8	13	120
% STD. ERROR	7.6	17.5	0.0		16.4	0.0	26.9	18.1	97.2	12.5		29.7	28.1	21.8	
EST. % ACTIVE	59.3														
ARKANSAS															
EST. NO. ACTIVE	37	18	DIS	DIS	DIS	0	0	DIS	6	10	0	0	0	0	28
% STD. ERROR	14.9	25.4				0.0	0.0		38.3	30.4	0.0	0.0	0.0	0.0	
EST. % ACTIVE	57.5														
CALIFORNIA															
EST. NO. ACTIVE	1,072	131	30	43	100	0	76	182	195	208	41	16	48	5	352
% STD. ERROR	2.5	8.9	15.4	18.5	8.0	0.0	8.6	5.9	7.8	5.3	9.7	22.5	12.2	47.3	
EST. % ACTIVE	75.3														
COLORADO															
EST. NO. ACTIVE	101	12	9	6	DIS	DIS	5	5	14	18	12	0	9	7	47
% STD. ERROR	10.2	55.0	27.6	30.8			27.0	44.9	27.0	20.9	27.8	0.0	25.4	42.2	
EST. % ACTIVE	68.4														
CONNECTICUT															
EST. NO. ACTIVE	66	13	8	DIS	9	0	19	14	0	0	0	0	DIS	0	12
% STD. ERROR	10.3	29.8	45.0		20.6	0.0	14.1	20.0	0.0	0.0	0.0	0.0		0.0	
EST. % ACTIVE	85.0														
DELAWARE															
EST. NO. ACTIVE	33	DIS	0	DIS	0	0	10	DIS	DIS	5	0	0	10	0	6
% STD. ERROR	17.8		0.0		0.0	0.0	22.8			33.3	0.0	0.0	28.0	0.0	
EST. % ACTIVE	85.8														
DIST. OF COLUMBIA															
EST. NO. ACTIVE	32	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	0
% STD. ERROR															
EST. % ACTIVE	100.0														

4.7 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	ACTIVE USE: PER-SONAL	EMERG UNDER FAR135	MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
FLORIDA															
EST. NO. ACTIVE	635	121	22	12	49	DIS	35	47	130	127	39	9	32	DIS	239
% STD. ERROR	4.3	13.6	31.1	21.1	10.7		12.4	12.8	12.7	7.9	41.4	21.9	14.8		
EST. % ACTIVE	72.6														
GEORGIA															
EST. NO. ACTIVE	127	21	0	DIS	9	0	DIS	7	10	57	0	0	5	0	65
% STD. ERROR	7.3	23.3	0.0		21.3	0.0		31.7	36.0	8.5	0.0	0.0	28.8	0.0	
EST. % ACTIVE	66.2														
HAWAII															
EST. NO. ACTIVE	126	8	DIS	DIS	68	DIS	DIS	DIS	6	25	0	DIS	DIS	0	24
% STD. ERROR	6.5	31.4			8.4				42.5	15.9	0.0			0.0	
EST. % ACTIVE	83.7														
IDAHO															
EST. NO. ACTIVE	86	17	0	DIS	10	0	18	DIS	17	DIS	6	0	7	DIS	22
% STD. ERROR	9.3	24.7	0.0		24.3	0.0	21.2		21.7		42.2	0.0	33.6		
EST. % ACTIVE	80.0														
ILLINOIS															
EST. NO. ACTIVE	137	19	16	6	DIS	0	13	8	22	15	12	DIS	15	0	95
% STD. ERROR	10.4	23.9	33.9	25.3		0.0	20.4	34.7	21.2	26.2	87.2		20.9	0.0	
EST. % ACTIVE	58.9														
INDIANA															
EST. NO. ACTIVE	124	34	9	0	DIS	DIS	11	9	20	35	0	DIS	6	DIS	58
% STD. ERROR	7.9	17.7	37.4	0.0			18.0	36.2	22.5	14.3	0.0		31.6		
EST. % ACTIVE	68.3														
IOWA															
EST. NO. ACTIVE	46	8	5	DIS	0	0	DIS	10	10	DIS	DIS	0	0	DIS	46
% STD. ERROR	16.7	40.0	40.7		0.0	0.0		27.2	58.1			0.0	0.0		
EST. % ACTIVE	50.2														
KANSAS															
EST. NO. ACTIVE	45	9	DIS	DIS	0	0	0	DIS	6	15	0	0	5	DIS	28
% STD. ERROR	13.5	34.1			0.0	0.0	0.0		49.5	25.0	0.0	0.0	34.0		
EST. % ACTIVE	61.2														
KENTUCKY															
EST. NO. ACTIVE	68	9	DIS	DIS	DIS	0	24	DIS	0	16	0	DIS	8	0	18
% STD. ERROR	8.8	35.7				0.0	14.9		0.0	20.7	0.0		27.1	0.0	
EST. % ACTIVE	79.4														

4.7 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

STATE	ACTIVE USE														INACTIVE
	TOTAL ACTIVE	PERSONAL	EMERG UNDER FAR135	MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORPORATE	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSINESS	OTHER	
LOUISIANA															
EST. NO. ACTIVE	645	19	6	8	497	DIS	81	DIS	22	9	8	0	8	DIS	59
% STD. ERROR	3.0	24.3	47.4	57.6	3.4		10.2		19.2	30.6	69.5	0.0	35.0		
EST. % ACTIVE	91.6														
MAINE															
EST. NO. ACTIVE	27	11	0	0	DIS	0	0	DIS	8	6	0	0	DIS	0	15
% STD. ERROR	20.1	32.2	0.0	0.0		0.0	0.0		55.3	37.6	0.0	0.0		0.0	
EST. % ACTIVE	63.9														
MARYLAND															
EST. NO. ACTIVE	101	18	0	25	DIS	0	11	15	0	25	0	0	8	DIS	10
% STD. ERROR	7.6	23.0	0.0	15.6		0.0	21.5	21.8	0.0	14.8	0.0	0.0	26.3		
EST. % ACTIVE	90.7														
MASSACHUSETTS															
EST. NO. ACTIVE	107	13	DIS	0	6	DIS	23	25	8	17	9	DIS	DIS	0	38
% STD. ERROR	8.1	22.7		0.0	25.1		15.0	16.3	39.6	22.2	38.5			0.0	
EST. % ACTIVE	73.6														
MICHIGAN															
EST. NO. ACTIVE	151	42	DIS	DIS	16	0	12	25	9	32	DIS	0	11	DIS	64
% STD. ERROR	7.2	16.1			18.7	0.0	26.0	18.2	37.2	16.7		0.0	24.1		
EST. % ACTIVE	70.1														
MINNESOTA															
EST. NO. ACTIVE	73	5	DIS	DIS	0	0	DIS	5	41	18	0	DIS	DIS	0	68
% STD. ERROR	10.6	46.3			0.0	0.0		39.9	16.4	17.3	0.0			0.0	
EST. % ACTIVE	52.0														
MISSISSIPPI															
EST. NO. ACTIVE	51	9	DIS	DIS	0	0	DIS	DIS	12	22	0	0	DIS	DIS	11
% STD. ERROR	12.8	35.9			0.0	0.0			29.9	19.3	0.0	0.0			
EST. % ACTIVE	82.7														
MISSOURI															
EST. NO. ACTIVE	114	19	6	7	5	DIS	10	9	5	39	10	0	DIS	0	37
% STD. ERROR	8.5	24.4	38.4	25.7	27.5		25.5	29.5	45.1	14.3	32.0	0.0		0.0	
EST. % ACTIVE	75.3														
MONTANA															
EST. NO. ACTIVE	69	5	7	0	9	DIS	14	DIS	6	9	6	0	6	0	28
% STD. ERROR	15.8	45.4	33.8	0.0	33.8		36.8		41.3	30.4	108.7	0.0	30.1	0.0	
EST. % ACTIVE	70.8														

4.7 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	ACTIVE USE: PERSONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORPORATE	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSINESS	OTHER	INACTIVE
NEBRASKA															
EST. NO. ACTIVE	11	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	8
% STD. ERROR	29.9														
EST. % ACTIVE	57.2														
NEVADA															
EST. NO. ACTIVE	85	20	DIS	12	19	0	0	DIS	0	29	0	0	5	DIS	24
% STD. ERROR	10.9	23.3		28.0	17.1	0.0	0.0		0.0	21.6	0.0	0.0	42.7		
EST. % ACTIVE	78.1														
NEW HAMPSHIRE															
EST. NO. ACTIVE	67	25	0	0	DIS	0	7	DIS	0	6	DIS	0	15	0	10
% STD. ERROR	9.4	17.5	0.0	0.0		0.0	26.5		0.0	33.6		0.0	22.8	0.0	
EST. % ACTIVE	87.4														
NEW JERSEY															
EST. NO. ACTIVE	202	18	DIS	7	37	DIS	65	20	17	18	0	0	7	5	37
% STD . ERROR	6.5	37.7		22.5	11.2		10.1	17.7	32.7	21.1	0.0	0.0	31.1	39.7	
EST. % ACTIVE	84.7														
NEW MEXICO															
EST. NO. ACTIVE	40	12	DIS	0	5	0	DIS	DIS	DIS	DIS	0	0	7	0	24
% STD . ERROR	25.1	68.0		0.0	31.3	0.0					0.0	0.0	42.1	0.0	
EST. % ACTIVE	62.3														
NEW YORK															
EST. NO. ACTIVE	239	41	8	DIS	16	0	22	34	11	46	DIS	5	25	22	94
% STD . ERROR	5.7	15.6	29.7		20.5	0.0	15.2	13.9	28.6	11.7		40.8	19.6	31.2	
EST. % ACTIVE	71.8														
NORTH CAROLINA															
EST. NO. ACTIVE	88	21	DIS	7	7	0	7	DIS	8	20	0	DIS	8	0	47
% STD . ERROR	9.5	25.1		25.5	23.5	0.0	29.9		39.7	20.1	0.0		31.8	0.0	
EST. % ACTIVE	65.2														
NORTH D AKOTA															
EST. NO. ACTIVE	23	7	0	0	DIS	0	0	6	9	DIS	0	0	0	0	5
% STD . ERROR	19.4	39.8	0.0	0.0		0.0	0.0	29.3	36.1		0.0	0.0	0.0	0.0	
EST. % ACTIVE	81.5														
OHIO															
EST. NO. ACTIVE	190	36	17	DIS	6	0	25	27	11	38	0	0	24	DIS	106
% STD . ERROR	7.1	17.3	26.0		31.0	0.0	13.1	30.6	28.5	13.6	0.0	0.0	18.4		
EST. % ACTIVE	64.1														

4.7 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	ACTIVE USE: PER-SONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	IN-ACTIVE
OKLAHOMA															
EST. NO. ACTIVE	92	26	DIS	0	6	0	7	8	11	16	0	0	DIS	7	69
% STD. ERROR	11.9	20.7		0.0	34.3	0.0	28.8	38.0	30.3	22.5	0.0	0.0		104.7	
EST. % ACTIVE	57.2														
OREGON															
EST. NO. ACTIVE	282	13	DIS	DIS	17	0	25	22	67	29	43	15	13	12	126
% STD. ERROR	5.4	26.0			23.2	0.0	18.5	17.7	12.4	19.5	13.3	24.6	26.1	27.8	
EST. % ACTIVE	69.2														
PENNSYLVANIA															
EST. NO. ACTIVE	258	37	39	DIS	34	0	39	20	31	21	8	DIS	20	9	149
% STD. ERROR	6.2	17.1	26.5		21.7	0.0	12.2	20.6	19.0	15.8	30.5		19.0	32.3	
EST. % ACTIVE	63.3														
RHODE ISLAND															
EST. NO. ACTIVE	10	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5
% STD. ERROR	21.4														
EST. % ACTIVE	67.5														
SOUTH CAROLINA															
EST. NO. ACTIVE	67	DIS	7	0	0	0	6	DIS	12	21	DIS	5	0	8	50
% STD. ERROR	13.3		25.3	0.0	0.0	0.0	24.7		29.1	18.5		35.2	0.0	70.7	
EST. % ACTIVE	57.5														
SOUTH DAKOTA															
EST. NO. ACTIVE	9	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	3
% STD. ERROR	29.5														
EST. % ACTIVE	75.0														
TENNESSEE															
EST. NO. ACTIVE	92	7	8	DIS	DIS	0	12	8	DIS	32	0	0	6	9	37
% STD. ERROR	8.5	36.7	30.5			0.0	19.9	28.6		14.8	0.0	0.0	30.9	26.4	
EST. % ACTIVE	71.6														
TEXAS															
EST. NO. ACTIVE	599	81	8	18	185	DIS	32	49	21	115	14	DIS	23	32	274
% STD. ERROR	3.4	11.0	46.7	28.5	6.2		13.3	12.9	20.8	8.0	26.2		17.5	16.6	
EST. % ACTIVE	68.6														
UTAH															
EST. NO. ACTIVE	70	DIS	11	DIS	22	0	DIS	0	DIS	5	DIS	DIS	0	0	35
% STD. ERROR	10.4		33.6		19.5	0.0		0.0		34.0			0.0	0.0	
EST. % ACTIVE	66.4														

4.7 1989 TOTAL ACTIVE ROTORCRAFT BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

STATE	TOTAL ACTIVE	ACTIVE USE: PERSONAL	EMERG MED SVCE UNDER FAR135	EMERG MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORPORATE	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSINESS	OTHER	INACTIVE
VERMONT															
EST. NO. ACTIVE	15	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5
% STD. ERROR	23.9														
EST. % ACTIVE	75.7														
VIRGINIA															
EST. NO. ACTIVE	97	16	5	DIS	DIS	0	19	10	11	19	0	DIS	5	10	26
% STD. ERROR	11.2	22.5	44.7			0.0	19.4	25.9	67.1	18.8	0.0		36.8	41.7	
EST. % ACTIVE	79.0														
WASHINGTON															
EST. NO. ACTIVE	233	42	14	0	DIS	0	26	25	37	24	29	DIS	10	13	116
% STD. ERROR	6.6	21.0	26.6	0.0		0.0	16.6	18.4	17.4	17.1	18.3		33.8	39.6	
EST. % ACTIVE	66.8														
WEST VIRGINIA															
EST. NO. ACTIVE	41	DIS	DIS	0	DIS	0	10	0	DIS	14	0	0	9	0	3
% STD. ERROR	11.6			0.0		0.0	21.3	0.0		21.0	0.0	0.0	29.0	0.0	
EST. % ACTIVE	92.6														
WISCONSIN															
EST. NO. ACTIVE	45	8	DIS	0	DIS	0	DIS	DIS	9	16	DIS	0	0	0	57
% STD. ERROR	15.6	39.1		0.0		0.0			33.6	24.9		0.0	0.0	0.0	
EST. % ACTIVE	44.0														
WYOMING															
EST. NO. ACTIVE	40	0	DIS	0	7	0	DIS	0	9	0	0	14	5	0	6
% STD. ERROR	14.0	0.0		0.0	28.9	0.0		0.0	32.1	0.0	0.0	26.4	37.2	0.0	
EST. % ACTIVE	87.9														
PUERTO RICO															
EST. NO. ACTIVE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EST. % ACTIVE	0.0														
TOTAL															
EST. NO. ACTIVE	7,488	1,072	285	216	1,342	21	727	695	833	1,298	263	104	416	216	2,915
% STD. ERROR	0.6	2.6	6.1	7.1	1.8	12.3	2.7	3.2	3.4	2.0	7.5	8.4	4.0	9.3	
EST. % ACTIVE	72.0														

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

4.8 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

PRIMARY USE

STATE	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
ALABAMA														
EST. TOT. HOURS	231	4,726	DIS	DIS	0	2,275	390	7,344	3,266	2,599	0	0	148	22,813
% STD. ERROR	63.2	24.7			0.0	24.9	32.0	44.7	21.2	34.1	0.0	0.0	49.4	16.5
ALASKA														
EST. TOT. HOURS	360	DIS	DIS	80,198	0	5,781	100	0	4,937	6,546	DIS	2,573	0	101,564
% STD. ERROR	22.6			6.7	0.0	23.7	47.5	0.0	27.0	33.2		28.0	0.0	6.0
ARIZONA														
EST. TOT. HOURS	1,987	0	DIS	14,584	0	3,515	11,505	2,395	21,149	DIS	7,331	1,490	1,735	69,153
% STD. ERROR	20.3	0.0		17.3	0.0	27.8	20.5	95.4	13.6		29.4	28.1	23.0	8.6
ARKANSAS														
EST. TOT. HOURS	765	DIS	DIS	DIS	0	0	DIS	2,339	2,386	0	0	0	0	7,641
% STD. ERROR	32.4				0.0	0.0		38.2	31.7	0.0	0.0	0.0	0.0	16.2
CALIFORNIA														
EST. TOT. HOURS	8,434	8,652	15,122	47,463	0	23,001	100,293	65,797	157,840	22,387	3,078	5,642	638	447,674
% STD. ERROR	15.3	16.7	19.3	8.6	0.0	10.3	7.3	9.1	6.3	11.9	26.9	13.8	48.7	3.4
COLORADO														
EST. TOT. HOURS	498	4,822	2,712	DIS	DIS	2,555	1,066	3,769	12,165	4,001	0	1,921	356	32,864
% STD. ERROR	53.7	27.7	31.2			30.5	43.6	29.6	20.9	29.4	0.0	32.9	63.7	11.6
CONNECTICUT														
EST. TOT. HOURS	589	1,751	DIS	2,232	0	10,927	8,502	0	0	0	0	DIS	0	23,984
% STD. ERROR	30.0	47.8		21.7	0.0	14.9	21.0	0.0	0.0	0.0	0.0		0.0	11.4
DELAWARE														
EST. TOT. HOURS	DIS	0	DIS	0	0	1,892	DIS	DIS	2,798	0	0	1,329	0	9,434
% STD. ERROR		0.0		0.0	0.0	24.5			34.2	0.0	0.0	28.0	0.0	21.2
DIST. OF COLUMBIA														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	5,229
% STD. ERROR														24.0

4.8 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY
BY STATE OF BASED ROTORCRAFT

STATE	PRIMARY USE													
	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
FLORIDA														
EST. TOT. HOURS	10,137	7,492	5,907	24,015	DIS	8,772	21,282	30,105	46,513	1,402	3,944	3,933	DIS	170,135
% STD. ERROR	14.1	36.2	22.4	11.5		13.3	14.0	13.1	9.1	63.2	24.1	15.3		5.5
GEORGIA														
EST. TOT. HOURS	892	0	DIS	3,775	0	DIS	3,764	4,094	39,659	0	0	1,046	0	53,778
% STD. ERROR	27.4	0.0		25.0	0.0		32.5	37.1	8.9	0.0	0.0	30.3	0.0	8.6
HAWAII														
EST. TOT. HOURS	459	DIS	DIS	71,074	DIS	DIS	DIS	2,176	15,932	0	DIS	DIS	0	103,653
% STD. ERROR	36.4			8.9				42.6	21.4	0.0			0.0	7.5
IDAHO														
EST. TOT. HOURS	2,171	0	DIS	3,893	0	1,978	DIS	5,056	DIS	2,596	0	511	DIS	22,545
% STD. ERROR	24.8	0.0		25.2	0.0	24.7		23.1		38.8	0.0	33.6		11.1
ILLINOIS														
EST. TOT. HOURS	975	4,172	3,243	DIS	0	2,692	2,582	3,707	3,071	2,394	DIS	1,923	0	27,473
% STD. ERROR	26.4	36.7	25.8		0.0	22.3	35.2	22.4	27.8	87.4		26.3	0.0	11.6
INDIANA														
EST. TOT. HOURS	1,609	1,096	0	DIS	DIS	2,782	933	4,631	15,926	0	DIS	2,011	DIS	29,568
% STD. ERROR	26.4	41.4	0.0			21.6	47.4	22.7	17.3	0.0		31.7		10.3
IOWA														
EST. TOT. HOURS	163	1,459	DIS	0	0	DIS	3,690	1,010	DIS	DIS	0	0	DIS	12,910
% STD. ERROR	50.0	42.6		0.0	0.0		30.1	63.7			0.0	0.0		21.9
KANSAS														
EST. TOT. HOURS	380	DIS	DIS	0	0	0	DIS	1,337	5,934	0	0	316	DIS	11,080
% STD. ERROR	41.8			0.0	0.0	0.0		50.1	33.7	0.0	0.0	34.7		20.5
KENTUCKY														
EST. TOT. HOURS	152	DIS	DIS	DIS	0	6,023	DIS	0	6,541	0	DIS	457	0	15,884
% STD. ERROR	38.5				0.0	17.0		0.0	21.8	0.0		33.5	0.0	11.2

4.8 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

PRIMARY USE

STATE	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
LOUISIANA														
EST. TOT. HOURS	2,000	1,241	5,077	441,847	DIS	67,053	DIS	6,130	699	6,084	0	965	DIS	511,657
% STD. ERROR	25.1	52.0	58.0	3.5		10.4		20.1	35.9	72.7	0.0	35.6		3.2
MAINE														
EST. TOT. HOURS	230	0	0	DIS	0	0	DIS	869	2,110	0	0	DIS	0	4,623
% STD. ERROR	32.5	0.0	0.0		0.0	0.0		53.9	38.4	0.0	0.0		0.0	22.2
MARYLAND														
EST. TOT. HOURS	1,309	0	11,849	DIS	0	2,996	3,755	0	10,675	0	0	1,008	DIS	31,635
% STD. ERROR	24.2	0.0	17.1		0.0	24.1	24.6	0.0	16.5	0.0	0.0	26.0		8.7
MASSACHUSETTS														
EST. TOT. HOURS	1,248	DIS	0	1,792	DIS	11,078	12,133	2,082	7,686	1,678	DIS	DIS	0	39,631
% STD. ERROR	26.1		0.0	25.4		15.5	17.7	40.0	24.0	39.7			0.0	9.6
MICHIGAN														
EST. TOT. HOURS	1,998	DIS	DIS	7,724	0	2,330	3,910	1,898	14,407	DIS	0	1,384	DIS	35,872
% STD. ERROR	17.6			19.5	0.0	26.0	22.1	38.9	18.9		0.0	24.8		9.4
MINNESOTA														
EST. TOT. HOURS	82	DIS	DIS	0	0	DIS	1,277	9,831	5,912	0	DIS	DIS	0	17,862
% STD. ERROR	49.2			0.0	0.0		41.2	17.8	18.4	0.0			0.0	11.8
MISSISSIPPI														
EST. TOT. HOURS	313	DIS	DIS	0	0	DIS	DIS	3,768	5,721	0	0	DIS	DIS	12,107
% STD. ERROR	37.9			0.0	0.0			30.2	20.4	0.0	0.0			13.8
MISSOURI														
EST. TOT. HOURS	1,370	3,751	4,441	4,073	DIS	1,670	1,138	1,343	15,945	1,879	0	DIS	0	38,258
% STD. ERROR	26.9	39.7	26.4	29.9		27.0	29.2	44.8	16.6	32.0	0.0		0.0	10.4
MONTANA														
EST. TOT. HOURS	172	1,491	0	2,522	DIS	2,080	DIS	1,968	2,393	6,254	0	346	0	19,072
% STD. ERROR	45.1	35.2	0.0	34.4		38.2		41.2	30.8	117.5	0.0	33.3	0.0	16.0

4.8 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY
BY STATE OF BASED ROTORCRAFT

PRIMARY USE

STATE	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
NEBRASKA														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	790
% STD. ERROR														34.1
NEVADA														
EST. TOT. HOURS	3,879	DIS	4,524	9,237	0	0	DIS	0	24,325	0	0	178	DIS	41,962
% STD. ERROR	23.1		27.8	19.2	0.0	0.0		0.0	27.9	0.0	0.0	41.0		15.9
NEW HAMPSHIRE														
EST. TOT. HOURS	3,280	0	0	DIS	0	1,764	DIS	0	1,819	DIS	0	1,970	0	13,568
% STD. ERROR	19.1	0.0	0.0		0.0	27.6		0.0	34.4		0.0	24.8	0.0	11.0
NEW JERSEY														
EST. TOT. HOURS	1,217	DIS	1,744	15,864	DIS	20,236	7,463	3,629	4,570	0	0	1,121	272	59,030
% STD. ERROR	43.0		22.5	11.7		10.9	19.0	31.9	22.0	0.0	0.0	45.4	46.1	7.1
NEW MEXICO														
EST. TOT. HOURS	183	DIS	0	1,829	0	DIS	DIS	DIS	DIS	0	0	274	0	7,221
% STD. ERROR	72.8		0.0	31.1	0.0					0.0	0.0	47.9	0.0	34.4
NEW YORK														
EST. TOT. HOURS	3,164	1,782	DIS	5,349	0	6,478	13,516	2,483	27,072	DIS	1,347	3,216	2,612	67,804
% STD. ERROR	19.8	39.1		23.6	0.0	16.0	15.8	28.7	13.8		39.2	21.9	31.0	7.2
NORTH CAROLINA														
EST. TOT. HOURS	318	DIS	4,445	1,904	0	1,943	DIS	1,525	9,996	0	DIS	609	0	22,399
% STD. ERROR	26.4		24.8	24.2	0.0	28.3		40.4	22.0	0.0		33.2	0.0	11.3
NORTH DAKOTA														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	8,211
% STD. ERROR														21.3
OHIO														
EST. TOT. HOURS	1,208	6,842	DIS	1,626	0	7,017	14,752	3,629	14,901	0	0	1,902	DIS	53,609
% STD. ERROR	30.0	27.0		32.5	0.0	14.1	30.9	29.3	17.0	0.0	0.0	19.2		8.2

4.8 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY
BY STATE OF BASED ROTORCRAFT

PRIMARY USE

STATE	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
OKLAHOMA														
EST. TOT. HOURS	2,145	DIS	0	1,959	0	1,064	1,268	3,249	6,479	0	0	DIS	1,096	21,361
% STD. ERROR	23.8		0.0	35.9	0.0	29.5	38.3	29.7	23.7	0.0	0.0		141.7	13.8
OREGON														
EST. TOT. HOURS	535	DIS	DIS	3,575	0	7,291	11,622	19,945	10,940	32,960	6,790	312	829	95,024
% STD. ERROR	26.7			27.0	0.0	18.8	19.9	13.7	20.5	13.6	24.9	26.9	29.1	6.8
PENNSYLVANIA														
EST. TOT. HOURS	1,898	14,152	DIS	14,872	0	11,627	5,839	7,535	8,231	3,536	DIS	2,330	326	70,076
% STD. ERROR	19.5	28.5		21.6	0.0	12.7	21.8	19.6	19.1	32.4		19.7	42.2	7.9
RHODE ISLAND														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	2,041
% STD. ERROR														25.2
SOUTH CAROLINA														
EST. TOT. HOURS	DIS	1,675	0	0	0	1,181	DIS	1,459	12,643	DIS	504	0	870	21,569
% STD. ERROR		24.9	0.0	0.0	0.0	24.7		29.4	21.2		35.4	0.0	144.1	17.2
SOUTH DAKOTA														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	1,838
% STD. ERROR														30.0
TENNESSEE														
EST. TOT. HOURS	203	3,539	DIS	DIS	0	2,573	1,479	DIS	11,496	0	0	2,104	92	24,176
% STD. ERROR	38.9	31.1			0.0	21.6	28.8		16.5	0.0	0.0	32.4	27.4	10.1
TEXAS														
EST. TOT. HOURS	5,808	4,296	10,731	122,532	DIS	5,327	11,892	6,715	42,743	1,771	DIS	4,034	2,491	232,607
% STD. ERROR	13.5	47.0	29.1	6.5		15.1	14.5	21.6	9.8	31.2		18.4	21.1	4.2
UTAH														
EST. TOT. HOURS	DIS	6,295	DIS	8,038	0	DIS	0	DIS	1,165	DIS	DIS	0	0	22,335
% STD. ERROR		32.9		21.4	0.0		0.0		32.9			0.0	0.0	13.6

4.8 1989 ROTORCRAFT TOTAL FLIGHT HOURS BY EXPANDED USE CATEGORY BY STATE OF BASED ROTORCRAFT

PRIMARY USE

STATE	PERSONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORPORATE	INSTRUCTIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSINESS	OTHER	TOTAL
VERMONT														
EST. TOT. HOURS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS	862
% STD. ERROR														38.6
VIRGINIA														
EST. TOT. HOURS	1,064	551	DIS	DIS	0	5,452	3,682	3,719	6,977	0	DIS	475	841	24,649
% STD. ERROR	29.4	82.6			0.0	20.1	28.6	68.3	19.7	0.0		42.1	46.4	12.1
WASHINGTON														
EST. TOT. HOURS	2,096	2,810	0	DIS	0	15,040	6,779	10,935	9,158	22,999	DIS	684	405	72,039
% STD. ERROR	24.4	29.8	0.0		0.0	16.3	21.1	17.9	18.3	19.0		34.6	42.1	9.3
WEST VIRGINIA														
EST. TOT. HOURS	DIS	DIS	0	DIS	0	3,654	0	DIS	4,445	0	0	1,333	0	12,559
% STD. ERROR			0.0		0.0	22.1	0.0		21.4	0.0	0.0	30.9	0.0	12.3
WISCONSIN														
EST. TOT. HOURS	157	DIS	0	DIS	0	DIS	DIS	1,527	4,080	DIS	0	0	0	8,619
% STD. ERROR	48.0		0.0		0.0			33.0	30.1		0.0	0.0	0.0	19.5
WYOMING														
EST. TOT. HOURS	0	DIS	0	2,405	DIS	DIS	0	1,804	0	0	1,773	848	0	6,723
% STD. ERROR	0.0		0.0	28.6			0.0	32.4	0.0	0.0	26.4	37.2	0.0	16.8
PUERTO RICO														
EST. TOT. HOURS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL														
EST. TOT. HOURS	69,962	101,697	103,509	896,128	14,378	268,340	271,963	236,831	626,002	133,773	34,209	53,361	21,634	2,825,757
% STD. ERROR	4.6	6.8	7.5	2.0	14.6	3.4	4.0	4.3	2.7	9.0	10.4	5.2	11.4	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

CHAPTER V

AIRFRAME HOURS

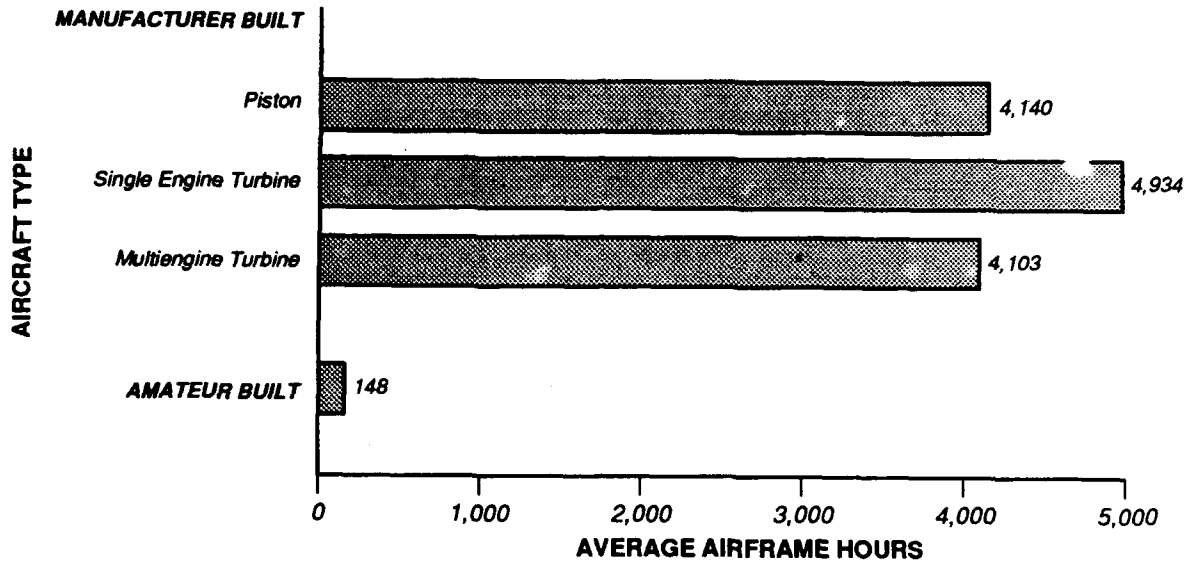
The subject of aircraft aging is becoming increasingly important because of recent questions raised about the safety of commercial air carriers relative to the age of their aircraft. Similar questions might be asked of the rotorcraft fleet. Data in this chapter can serve as input to studies correlating age and safety.

This chapter presents two tables and one figure: Table 5.1 presents data on the total and average airframe hours per active rotorcraft by rotorcraft type. Table 5.2 presents the total and average airframe hours per active rotorcraft by SDR Rotorcraft Manufacturer/Model Group. Figure 5.1 graphically displays the average airframe hours per rotorcraft type.

Major findings of this chapter include:

- The total airframe hours for the active rotorcraft population is 31.4 million hours.
- The active rotorcraft population has an average of approximately 4,191 lifetime airframe hours per rotorcraft.
- Although the piston rotorcraft have the greatest population, they do not have the highest total airframe hours. Single engine turbine rotorcraft have both the highest total airframe hours (16.0 million) and average airframe hours (4,934).
- As one might expect, the amateur built rotorcraft have both the lowest total airframe hours and the lowest average airframe hours, with only 84,341 total airframe hours and 147.5 average airframe hours.

Figure 5.1
1989 ROTORCRAFT AVERAGE AIRFRAME HOURS BY ROTORCRAFT TYPE



SOURCE: Table 5.1

5.1 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:									
PISTON TOTAL:	3,994	2,684	1.2	67.2	0.8	11,321,890	2.2	4,139.7	1.6
TURBINE: SINGLE ENGINE	3,616	3,248	0.5	89.8	0.4	15,969,102	1.2	4,934.3	1.1
TURBINE: MULTI - ENGINE	1,069	984	0.7	92.0	0.7	4,048,312	2.8	4,103.3	2.7
TURBINE TOTAL:	4,685	4,232	0.4	90.3	0.4	20,017,414	1.1	4,749.0	1.0
MANUFACTURER BUILT TOTAL:	8,679	6,916	0.5	79.7	0.4	31,339,304	1.1	4,526.2	0.9
AMATEUR BUILT	1,790	572	3.5	32.0	1.1	84,341	7.3	147.5	6.4
TOTAL - ALL ROTORCRAFT:	10,469	7,488	0.6	71.5	0.4	31,423,644	1.1	4,191.2	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

5.2 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	126	93	14.7	73.8	10.9	289,913	21.6	3,117.3	15.8
OTHER 2 (*)	113	91	4.4	80.7	3.5	264,069	10.6	2,896.4	9.7
OTHER 3 (*)	142	111	3.3	78.4	2.6	547,328	10.4	4,916.1	9.9
OTHER 4 (*)	1,790	572	3.5	31.9	1.1	84,341	7.3	147.5	6.4
AERORSJ2	38	20	13.3	51.7	6.9	4,444	17.4	226.4	11.2
AEROSPAS355	109	108	0.6	99.0	0.6	407,886	3.6	3,780.5	3.5
AEROSPSA316	91	61	6.4	67.4	4.3	364,388	8.8	5,945.0	6.1
AGUSTA205	32	30	3.4	95.0	3.2	226,074	7.8	7,436.6	7.0
AGUSTAA109	66	66	0.0	100.0	0.0	69,510	7.0	1,053.2	7.0
AIRSPC18	23	15	14.9	64.3	9.6	6,661	22.3	450.5	16.7
ARCRNEH37	45	0	0.0	0.0	0.0	0	0.0	0.0	0.0
BELL 204	26	22	5.2	84.3	4.4	150,004	7.7	6,846.6	5.7
BELL 206	1,900	1,810	0.3	95.3	0.3	10,127,647	1.1	5,596.1	1.0
BELL 212	117	106	3.1	90.2	2.8	910,447	6.0	8,626.7	5.1
BELL 222	83	70	2.5	84.3	2.1	172,941	4.2	2,472.3	3.4
BELL 412	61	61	0.0	100.0	0.0	328,385	7.5	5,383.4	7.5
BELL 47	838	579	2.3	69.1	1.6	3,681,220	3.3	6,354.6	2.3
BOLKMS105	175	171	1.9	97.7	1.9	682,275	10.5	3,989.0	10.4
BOLKMS117	113	110	2.9	97.2	2.8	124,113	12.6	1,129.8	12.3
ENSTRMF28	421	330	2.2	78.5	1.7	451,611	5.8	1,371.5	5.3
H23/HTE	36	12	22.9	32.1	7.3	41,877	35.8	3,624.0	27.5

5.2 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
H34/55	29	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	64	29	20.7	45.2	9.4	80,818	26.6	2,791.4	16.6
HILLERUH12	585	373	3.0	63.8	1.9	1,741,753	5.2	4,671.5	4.3
HUGHES269	676	476	2.0	70.4	1.4	2,157,515	3.4	4,535.3	2.7
HUGHES369	600	551	1.0	91.8	0.9	2,370,203	4.8	4,304.2	4.7
HYNES B2	126	53	10.2	41.9	4.3	203,979	43.9	3,862.6	42.6
MACDOUG369	61	61	0.0	100.0	0.0	71,631	6.0	1,174.3	6.0
MILITARY204	201	142	6.3	70.8	4.5	775,646	7.7	5,447.9	4.4
MILITARY47	395	235	3.7	59.4	2.2	1,291,723	5.3	5,454.5	3.8
MODFD47	53	37	10.8	70.4	7.6	143,524	20.6	3,848.2	17.5
ORLHELH19	73	44	33.5	60.3	20.2	288,718	35.5	6,554.1	11.6
ORLHELS58	33	11	60.3	33.3	20.1	27,500	60.3	2,500.0	0.0
ROBSINR22	408	395	0.6	96.9	0.6	636,350	7.7	1,609.8	7.7
SCHWZH269	54	48	2.0	89.6	1.8	55,947	6.2	1,156.0	5.8
SKRSKYS55	34	7	55.0	20.0	11.0	41,273	55.5	6,069.5	6.8
SKRSKYS58	72	35	17.9	48.6	8.7	164,166	20.5	4,692.4	9.9
SKRSKYS58T	38	27	11.2	71.4	8.0	253,763	13.3	9,349.2	7.2
SKRSKYS61	28	14	6.7	49.6	3.3	150,953	8.5	10,869.3	5.3
SKRSKYS76	175	167	1.0	95.6	0.9	654,475	3.4	3,913.1	3.3
SNIAS 350	271	255	1.1	94.0	1.0	877,252	7.5	3,442.6	7.4
SNIAS SA318	21	0	0.0	0.0	0.0	0	0.0	0.0	0.0

5.2 1989 ROTORCRAFT TOTAL AIRFRAME HOURS AND AVERAGE AIRFRAME HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ROTORCRAFT POPULATION SIZE	ESTIMATE OF NUMBER ACTIVE	PERCENT STANDARD ERROR	ESTIMATE OF PERCENT ACTIVE	STANDARD ERROR	ESTIMATE OF TOTAL AIRFRAME HOURS	PERCENT STANDARD ERROR	ESTIMATE AVERAGE AIRFRAME HOURS	PERCENT STANDARD ERROR
SNIAS SA341	29	20	15.4	68.7	10.6	59,919	20.8	3,009.4	14.0
TH55	60	42	3.8	70.1	2.6	331,409	5.6	7,874.6	4.1
TOMCAT	38	24	13.1	63.8	8.3	91,204	19.4	3,762.3	14.4
TOTAL	10,469	7,488	0.6	71.5	0.4	31,423,640	1.1	4,191.2	0.9

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

CHAPTER VI

LAW ENFORCEMENT ROTORCRAFT

Some of the rotorcraft in the rotorcraft fleet are used for law enforcement activities. These activities include surveillance, instructional use, and emergency medical service--to name a few. For the purpose of this chapter, a law enforcement rotorcraft is one that was used for law enforcement 90 percent of the time or more during the year. This chapter presents the number of rotorcraft used in law enforcement activities, the total flight hours, and the primary use of law enforcement rotorcraft.

This chapter presents six tables and three figures. Tables 6.1-6.4 present the estimated number of law enforcement rotorcraft, total flight hours and average flight hours in four different ways, by: 1) aircraft type; 2) region of based rotorcraft; 3) SDR Rotorcraft Manufacturer/Model Group; and 4) state of based rotorcraft. Tables 6.5 and 6.6 present the number of law enforcement rotorcraft and total flight hours by expanded use category. Definitions of expanded use categories are listed in Appendix C.

Figure 6.1 shows the number of law enforcement rotorcraft as a percent of all active rotorcraft. Figure 6.2 displays law enforcement rotorcraft total flight hours by rotorcraft type. Figure 6.3 displays two graphs--the first one shows the number of law enforcement rotorcraft in selected expanded use categories; the second graph depicts the total hours flown by law enforcement rotorcraft in selected expanded use categories.

Some key observations to be drawn from Tables 6.1-6.6 and the figures in this chapter include:

- Approximately 615 out of 7,488 active rotorcraft are used for law enforcement purposes.
- Law enforcement rotorcraft comprise 8.2 percent of the active rotorcraft fleet.
- Law enforcement rotorcraft flew more than 331,000 hours, 11.7 percent of the total hours flown by rotorcraft in 1989.
- Law enforcement rotorcraft averaged 546 hours, with a low of 314 average hours for multiengine turbine rotorcraft and a high of 609 average hours for single engine turbine rotorcraft.
- More single engine turbine rotorcraft than any other type of rotorcraft are used for law enforcement activities, comprising 60 percent of the active law enforcement rotorcraft.
- Aerial observation is the most frequent primary use of law enforcement rotorcraft, with 68 percent of the law enforcement rotorcraft primarily used for this purpose. The aerial observation use category accounted for more than 252,000 total flight hours or 76 percent of the total flight hours by law enforcement rotorcraft.

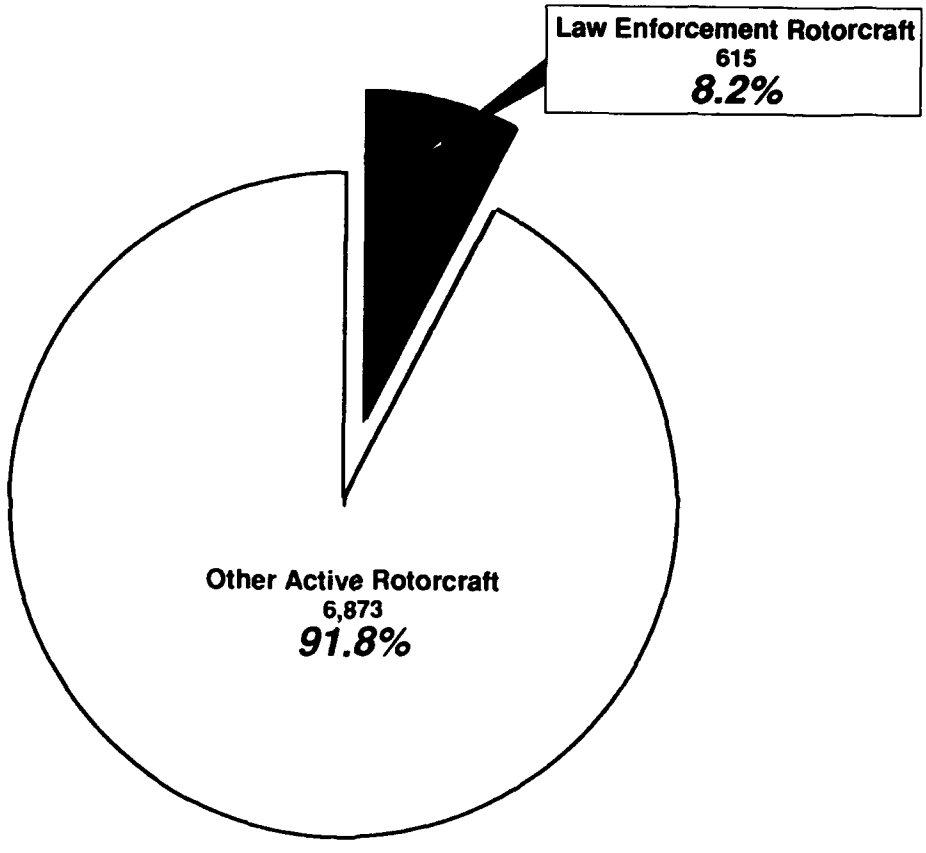
- The second and third highest use categories are emergency medical service not under FAR 135, with 24,105 flight hours, and aerial application, with 13,904 flight hours.

- The three regions with the greatest number of law enforcement rotorcraft are: Western-Pacific with 194; Southern with 141; and Eastern with 110 rotorcraft.

- The three states with the greatest number of rotorcraft in law enforcement are: California with 149; Florida with 76; and Texas with 41.

- The state of California alone accounted for 34 percent of the total law enforcement flight hours in 1989.

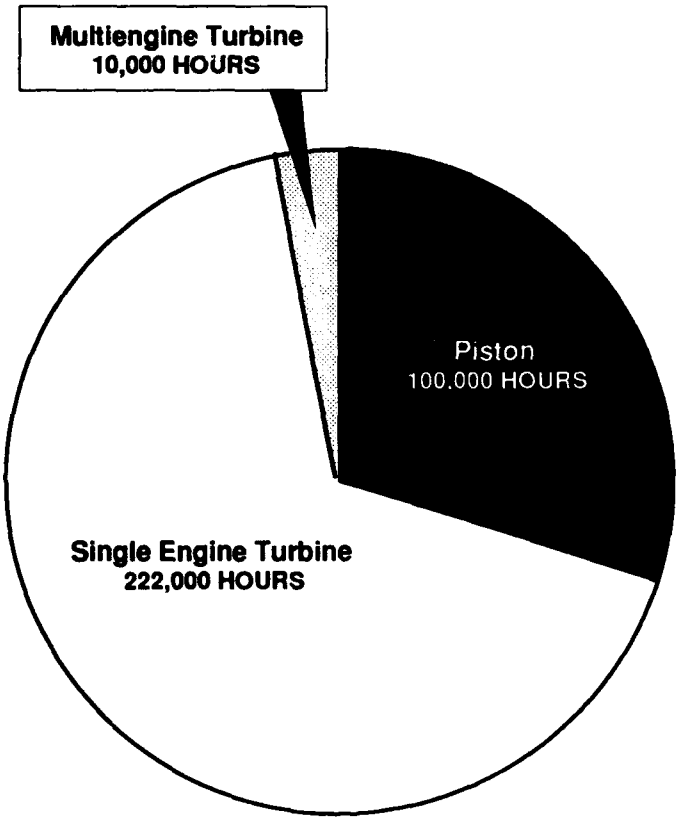
Figure 6.1
1989 LAW ENFORCEMENT ROTORCRAFT



Total Active Rotorcraft: 7,488 = 100%

SOURCE: Table 6.1

Figure 6.2
1989 LAW ENFORCEMENT ROTORCRAFT TOTAL FLIGHT HOURS BY ROTORCRAFT TYPE

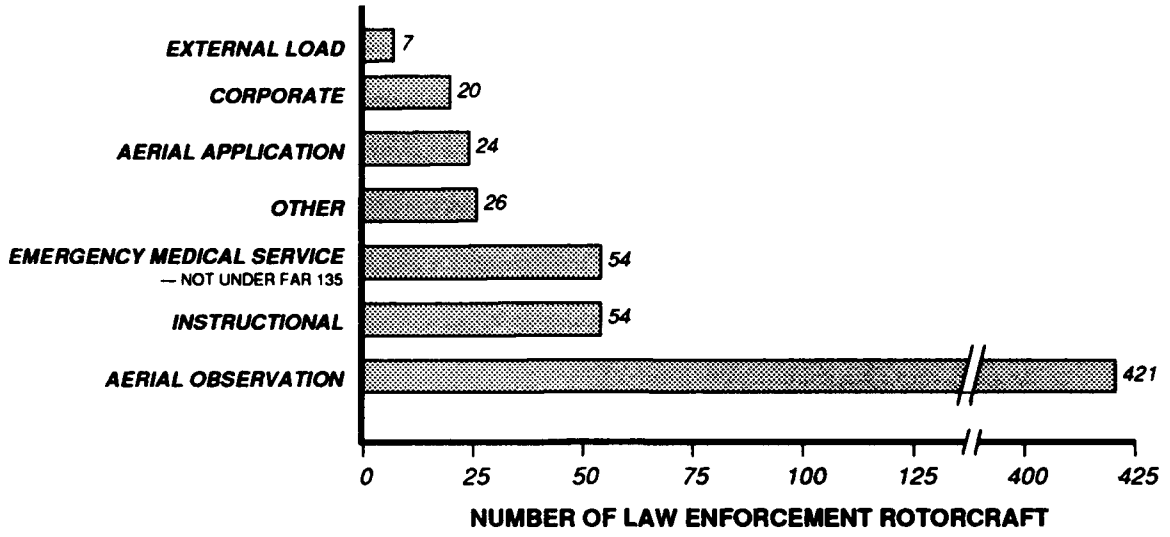


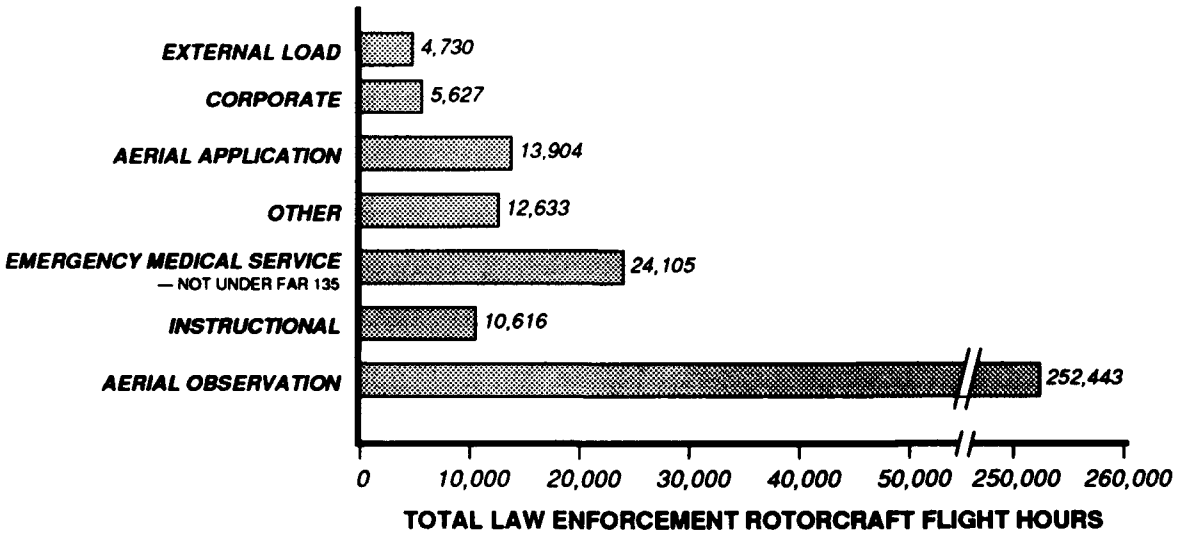
Amateur Built Rotorcraft did not have any law enforcement flight hours.

SOURCE: Table 6.1

Figure 6.3

1989 NUMBER OF LAW ENFORCEMENT ROTORCRAFT AND TOTAL FLIGHT HOURS BY SELECTED PRIMARY USE CATEGORIES





SOURCE: Tables 6.5 and 6.6

6.1 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:						
PISTON TOTAL:	216	5.1	99,875	7.8	459.4	4.7
TURBINE: SINGLE ENGINE	367	3.8	221,765	4.7	608.8	2.8
TURBINE: MULTI - ENGINE	31	16.1	9,680	24.6	313.7	5.8
TURBINE TOTAL:	398	3.8	231,444	4.6	587.6	2.7
MANUFACTURER BUILT TOTAL:	615	3.1	331,319	4.0	545.8	2.3
AMATEUR BUILT:	0	0.0	0	0.0	0.0	0.0
TOTAL - ALL ROTORCRAFT:	615	3.1	331,319	4.0	545.8	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

6.2 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	0	0.0	0	0.0	0.0	0.0
OTHER 2 (*)	21	18.5	10,354	25.1	484.5	16.9
OTHER 3 (*)	10	23.1	2,642	26.4	263.4	12.8
OTHER 4 (*)	0	0.0	0	0.0	0.0	0.0
AERORSJ2	0	0.0	0	0.0	0.0	0.0
AEROSPAS355	DIS	DIS	DIS	DIS	DIS	DIS
AEROSPSA316	0	0.0	0	0.0	0.0	0.0
AGUSTA205	0	0.0	0	0.0	0.0	0.0
AGUSTAA109	0	0.0	0	0.0	0.0	0.0
AIRSPC18	0	0.0	0	0.0	0.0	0.0
ARCRNEH37	0	0.0	0	0.0	0.0	0.0
BELL 204	0	0.0	0	0.0	0.0	0.0
BELL 206	166	4.3	106,005	5.1	638.4	2.6
BELL 212	DIS	DIS	DIS	DIS	DIS	DIS
BELL 222	9	16.9	2,679	21.2	299.4	12.9
BELL 412	0	0.0	0	0.0	0.0	0.0
BELL 47	39	15.7	10,888	24.9	276.5	19.2
BOLKMS105	0	0.0	0	0.0	0.0	0.0
BOLKMS117	DIS	DIS	DIS	DIS	DIS	DIS
ENSTRMF28	19	19.9	19,675	23.9	1,025.0	12.3
H23/HTE	0	0.0	0	0.0	0.0	0.0

6.2 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
H34/55	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	DIS	DIS	DIS	DIS	DIS	DIS
HILLERUH12	DIS	DIS	DIS	DIS	DIS	DIS
HUGHES269	96	7.5	54,073	10.1	561.3	6.8
HUGHES369	93	8.0	75,755	10.3	814.5	6.6
HYNES B2	0	0.0	0	0.0	0.0	0.0
MACDOUG369	22	9.1	11,439	11.3	522.2	6.7
MILITARY204	36	20.9	2,572	38.8	70.9	32.7
MILITARY47	19	18.9	3,305	24.2	173.3	15.2
MODFD47	0	0.0	0	0.0	0.0	0.0
ORLHELH19	0	0.0	0	0.0	0.0	0.0
ORLHELS58	0	0.0	0	0.0	0.0	0.0
ROBSINR22	6	28.2	4,256	30.1	696.9	10.4
SCHWZH269	12	10.8	6,169	14.3	504.5	9.3
SKRSKYS55	0	0.0	0	0.0	0.0	0.0
SKRSKYS58	0	0.0	0	0.0	0.0	0.0
SKRSKYS58T	DIS	DIS	DIS	DIS	DIS	DIS
SKRSKYS61	0	0.0	0	0.0	0.0	0.0
SKRSKYS76	DIS	DIS	DIS	DIS	DIS	DIS
SNIAS 350	20	15.0	11,755	18.3	598.8	10.6
SNIAS SA318	0	0.0	0	0.0	0.0	0.0

6.2 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SNIAS SA341	0	0.0	0	0.0	0.0	0.0
TH55	24	7.0	2,877	11.7	118.5	9.4
TOMCAT	0	0.0	0	0.0	0.0	0.0
TOTAL	615	3.1	331,319	4.0	545.8	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

6.3 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY REGION OF BASED ROTORCRAFT

REGION	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALASKAN	DIS	DIS	DIS	DIS	DIS	DIS
CENTRAL	21	14.3	14,155	19.5	638.3	10.4
EASTERN	110	6.4	43,025	6.4	397.1	8.3
GREAT LAKES	56	10.7	19,703	12.3	358.6	9.5
NEW ENGLAND	DIS	DIS	DIS	DIS	DIS	DIS
NORTHWEST MT.	21	19.0	4,594	24.3	223.4	16.0
SOUTHERN	141	5.7	60,927	5.9	443.9	3.8
SOUTHWESTERN	57	8.8	27,063	11.1	513.6	6.9
WESTERN-PACIFIC	194	4.6	156,071	5.9	804.1	4.6
TOTAL	615	3.1	333,543	3.4	546.4	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

6.4 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALABAMA	7	14.3	1,243	31.7	190.9	20.8
ALASKA	DIS	DIS	DIS	DIS	DIS	DIS
ARIZONA	29	13.8	18,076	14.1	622.1	6.4
ARKANSAS	DIS	DIS	DIS	DIS	DIS	DIS
CALIFORNIA	149	6.0	113,698	5.6	764.8	4.8
COLORADO	9	33.3	1,624	36.0	181.8	20.4
CONNECTICUT	DIS	DIS	DIS	DIS	DIS	DIS
DELAWARE	DIS	DIS	DIS	DIS	DIS	DIS
DIST. OF COLUMBIA	21	28.6	2,873	36.3	139.5	38.9
FLORIDA	76	7.9	39,384	7.1	527.8	5.3
GEORGIA	28	14.3	12,129	14.7	448.7	5.7
HAWAII	DIS	DIS	DIS	DIS	DIS	DIS
IDAHO	0	0.0	0	0.0	0.0	0.0
ILLINOIS	DIS	DIS	DIS	DIS	DIS	DIS
INDIANA	16	18.8	5,176	23.2	333.7	22.7
IOWA	5	40.0	3,411	35.5	667.0	4.1
KANSAS	7	28.6	5,690	36.5	853.7	26.4
KENTUCKY	DIS	DIS	DIS	DIS	DIS	DIS
LOUISIANA	7	28.6	1,618	26.1	245.8	15.5
MAINE	0	0.0	0	0.0	0.0	0.0
MARYLAND	25	12.0	12,234	12.1	501.5	6.2
MASSACHUSETTS	9	22.2	4,378	21.7	498.5	12.6
MICHIGAN	21	19.0	7,022	21.3	365.6	13.0

6.4 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MINNESOTA	5	40.0	916	32.6	192.6	22.5
MISSISSIPPI	12	25.0	1,428	26.6	115.1	11.2
MISSOURI	10	20.0	5,054	26.6	518.2	14.2
MONTANA	0	0.0	0	0.0	0.0	0.0
NEBRASKA	0	0.0	0	0.0	0.0	0.0
NEVADA	15	20.0	20,357	26.5	343.0	19.3
NEW HAMPSHIRE	0	0.0	0	0.0	0.0	0.0
NEW JERSEY	12	16.7	4,377	15.3	350.8	6.0
NEW MEXICO	DIS	DIS	DIS	DIS	DIS	DIS
NEW YORK	24	12.5	9,252	10.8	388.8	8.4
NORTH CAROLINA	DIS	DIS	DIS	DIS	DIS	DIS
NORTH DAKOTA	0	0.0	0	0.0	0.0	0.0
OHIO	12	16.7	5,758	24.7	482.6	17.7
OKLAHOMA	7	28.6	4,136	26.8	602.2	3.1
OREGON	DIS	DIS	DIS	DIS	DIS	DIS
PENNSYLVANIA	7	14.3	3,876	22.0	562.0	5.7
RHODE ISLAND	0	0.0	0	0.0	0.0	0.0
SOUTH CAROLINA	0	0.0	0	0.0	0.0	0.0
SOUTH DAKOTA	0	0.0	0	0.0	0.0	0.0
TENNESSEE	12	25.0	3,503	21.9	349.5	10.8
TEXAS	41	12.2	20,932	13.2	551.0	9.0
UTAH	DIS	DIS	DIS	DIS	DIS	DIS
VERMONT	0	0.0	0	0.0	0.0	0.0

6.4 1989 LAW ENFORCEMENT ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ESTIMATE OF NUMBER LAW ENFORCMNT	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
VIRGINIA	15	20.0	6,325	15.9	427.5	7.4
WASHINGTON	7	42.9	1,925	47.3	261.3	37.9
WEST VIRGINIA	DIS	DIS	DIS	DIS	DIS	DIS
WISCONSIN	0	0.0	0	0.0	0.0	0.0
WYOMING	0	0.0	0	0.0	0.0	0.0
PUERTO RICO	0	0.0	0	0.0	0.0	0.0
TOTAL	615	3.1	330,710	14.8	545.8	2.3

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

6.5 1989 LAW ENFORCEMENT ROTORCRAFT, NUMBER OF ROTORCRAFT BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	TOTAL LAW ENFORCMT	PER-SONAL	EMERG UNDER FAR135	MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER
MANUFACTURER BUILT: PISTON TOTAL:														
EST. NO. LAW ENFORCMT	216	0	DIS	0	0	0	DIS	21	13	167	0	0	0	10
% STD. ERROR	5.2	0.0		0.0	0.0	0.0		17.8	21.6	3.0	0.0	0.0	0.0	20.9
EST. % LAW ENFORCMT	5.5													
TURBINE: SINGLE ENGINE														
EST. NO. LAW ENFORCMT	367	0	0	37	DIS	0	DIS	32	DIS	DIS	DIS	DIS	DIS	16
% STD. ERROR	3.9	0.0	0.0	15.8		0.0		19.4						16.6
EST. % LAW ENFORCMT	10.2													
TURBINE: MULTI - ENGINE														
EST. NO. LAW ENFORCMT	31	0	0	17	0	0	DIS	0	DIS	DIS	DIS	0	DIS	0
% STD. ERROR	15.5	0.0	0.0	7.0	0.0	0.0		0.0				0.0		0.0
EST. % LAW ENFORCMT	2.9													
TURBINE TOTAL:														
EST. NO. LAW ENFORCMT	398	0	0	54	DIS	0	DIS	32	11	254	7	DIS	DIS	16
% STD. ERROR	3.8	0.0	0.0	11.0		0.0		19.4	26.5	2.4	19.4			16.6
EST. % LAW ENFORCMT	8.5													
MANUFACTURER BUILT TOTAL:														
EST. NO. LAW ENFORCMT	615	0	DIS	54	DIS	0	20	54	24	421	7	DIS	DIS	26
% STD. ERROR	3.1	0.0		11.0		0.0	14.6	13.7	16.9	1.9	19.4			13.0
EST. % LAW ENFORCMT	7.1													
AMATEUR BUILT:														
EST. NO. LAW ENFORCMT	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EST. % LAW ENFORCMT	0.0													
TOTAL														
EST. NO. LAW ENFORCMT	615	0	DIS	54	DIS	0	20	54	24	421	7	DIS	DIS	26
% STD. ERROR	3.1	0.0		11.0		0.0	14.6	13.7	16.9	1.9	19.4			13.0
EST. % LAW ENFORCMT	5.9													

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

6.6 1989 LAW ENFORCEMENT ROTORCRAFT FLIGHT HOURS BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

PRIMARY USE

ROTORCRAFT TYPE	PER-SONAL	EMERG MED SVCE UNDER FAR 135	EMERG MED SVCE NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTRNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
MANUFACTURER BUILT: PISTON TOTAL:														
EST. TOT. HOURS	0	DIS	0	0	0	DIS	3,446	7,940	79,846	0	0	0	5,196	99,875
% STD. ERROR	0.0		0.0	0.0	0.0		24.5	21.6	6.1	0.0	0.0	0.0	23.9	7.9
TURBINE: SINGLE ENGINE														
EST. TOT. HOURS	0	0	19,953	DIS	0	DIS	7,170	DIS	DIS	DIS	DIS	DIS	7,437	221,765
% STD. ERROR	0.0	0.0	16.6		0.0		21.7						18.1	4.6
TURBINE: MULTI - ENGINE														
EST. TOT. HOURS	0	0	4,152	0	0	DIS	0	DIS	DIS	DIS	0	DIS	0	9,680
% STD. ERROR	0.0	0.0	12.7	0.0	0.0		0.0				0.0		0.0	26.3
TURBINE TOTAL:														
EST. TOT. HOURS	0	0	24,105	DIS	0	DIS	7,170	5,964	172,597	4,730	DIS	DIS	7,437	231,444
% STD. ERROR	0.0	0.0	11.9		0.0		21.7	32.6	3.9	37.1			18.1	4.5
MANUFACTURER BUILT TOTAL:														
EST. TOT. HOURS	0	DIS	24,105	DIS	0	5,627	10,616	13,904	252,443	4,730	DIS	DIS	12,633	331,319
% STD. ERROR	0.0		11.9		0.0	15.4	16.1	18.9	3.3	37.1			14.4	4.0
AMATEUR BUILT:														
EST. TOT. HOURS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL														
EST. TOT. HOURS	0	DIS	24,105	DIS	0	5,627	10,616	13,904	252,443	4,730	DIS	DIS	12,633	331,319
% STD. ERROR	0.0		11.9		0.0	15.4	16.1	18.9	3.3	37.1			14.1	4.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

LAW ENFORCEMENT ROTORCRAFT ARE ONES THAT WERE USED IN LAW ENFORCEMENT ACTIVITIES 90% OR MORE DURING THE YEAR.

CHAPTER VII

PUBLIC USE ROTORCRAFT

Some of the rotorcraft in the rotorcraft fleet are used by local, state and Federal government agencies on behalf of their citizens for public use activities. These activities include survey work, aerial observation, and aerial application--to name a few. For the purpose of this chapter, a public use rotorcraft is one that was used for public use 90 percent of the time or more during the year. This chapter presents the number of rotorcraft used in public use activities, the total flight hours, and the primary use of public use rotorcraft.

This chapter presents six tables and three figures. Tables 7.1-7.4 present the estimated number of public use rotorcraft, total flight hours and average flight hours in four different ways, by: 1) aircraft type; 2) region of based rotorcraft; 3) SDR Rotorcraft Manufacturer/Model Group; and 4) state of based rotorcraft. Tables 7.5 and 7.6 present the number of public use rotorcraft and total flight hours by expanded use category. Definitions of expanded use categories are listed in Appendix C.

Figure 7.1 shows the number of public use rotorcraft as a percent of all active rotorcraft. Figure 7.2 displays public use rotorcraft total flight hours by rotorcraft type. Figure 7.3 displays two graphs--the first one shows the number of public use rotorcraft in selected expanded use categories; the second graph depicts the total hours flown by public use rotorcraft in selected expanded use categories.

Some key observations to be drawn from Tables 7.1-7.6 and the figures in this chapter include:

- Approximately 716 out of 7,488 active rotorcraft are used for public use purposes.
- Public use rotorcraft comprise 9.6 percent of the active rotorcraft fleet.
- Public use rotorcraft flew more than 293,000 hours, 10.4 percent of the total hours flown by rotorcraft in 1989.
- Overall, public use rotorcraft averaged 417 flight hours with single engine turbine rotorcraft experiencing 466 average flight hours.
- As with law enforcement rotorcraft, single engine turbine rotorcraft are also the most frequently used public use rotorcraft type, comprising 60 percent of the public use rotorcraft.
- Aerial observation is the most frequent primary use of public use rotorcraft, with 50 percent of the public use rotorcraft primarily used for this purpose. The aerial observation use category also accounted for the most total flight hours, almost 188,000 hours or 64 percent of the total hours flown by public use rotorcraft.

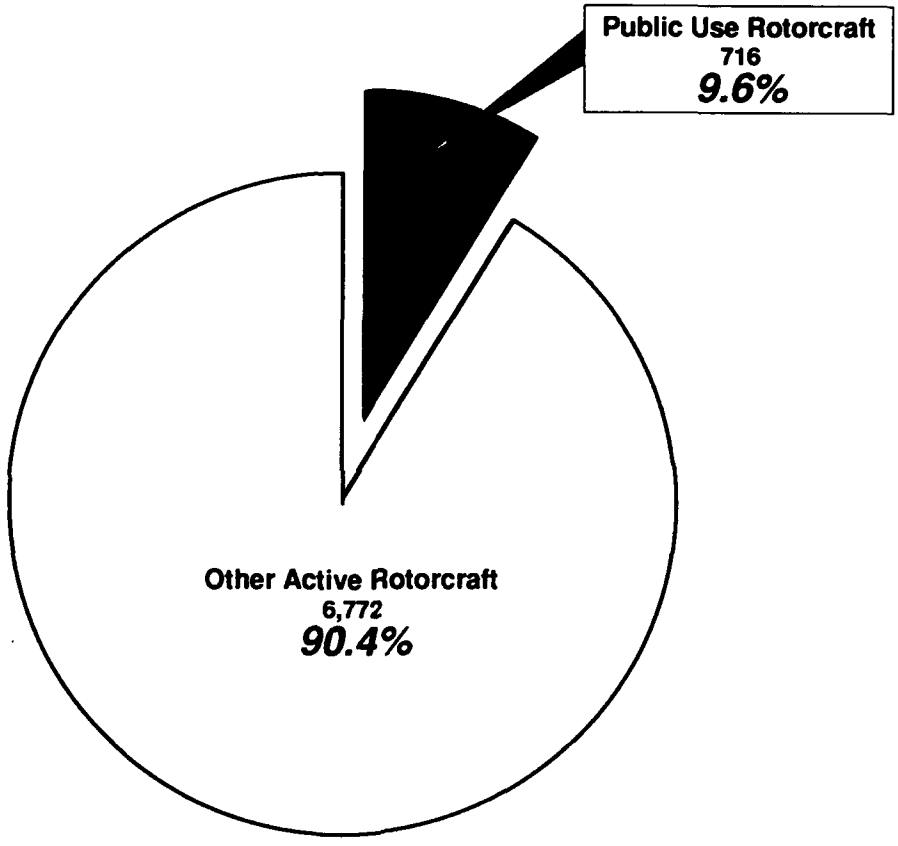
- The second and third highest use categories are aerial application with 21,990 flight hours and emergency medical service not under FAR 135, with 20,507 flight hours.

- The three regions with the greatest number of public use rotorcraft are: Western-Pacific with 220; Southern with 158; and Eastern with 96 rotorcraft.

- The three states with the greatest number of public use rotorcraft are: California with 155; Florida with 86; and Texas with 40.

- The state of California alone accounted for 30 percent of the total public use flight hours in 1989.

Figure 7.1
1989 PUBLIC USE ROTORCRAFT

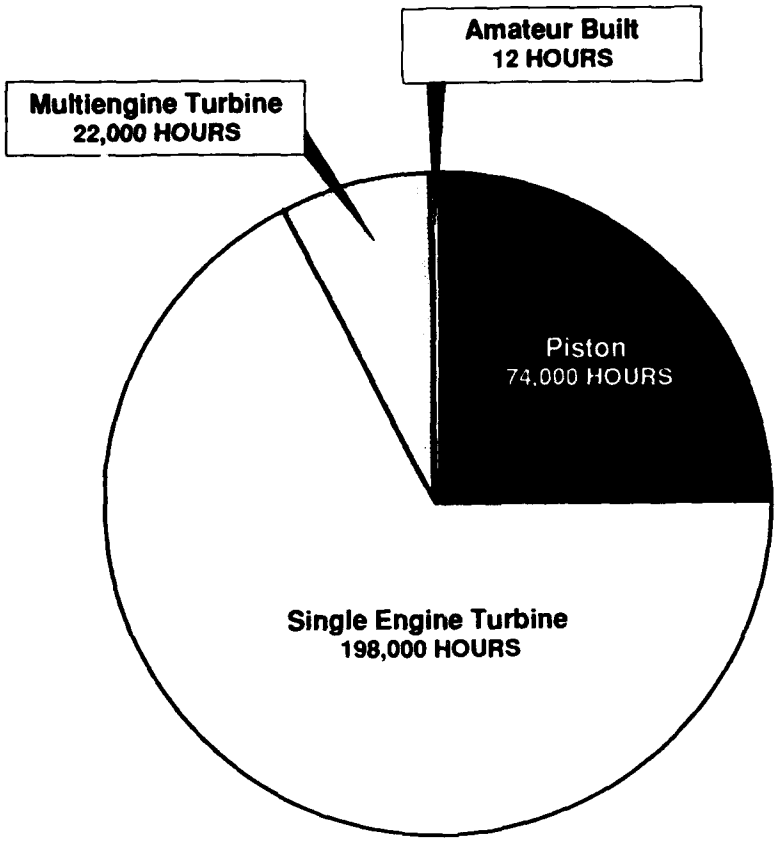


Total Active Rotorcraft: 7,488 = 100%

SOURCE: Table 7.1

Figure 7.2

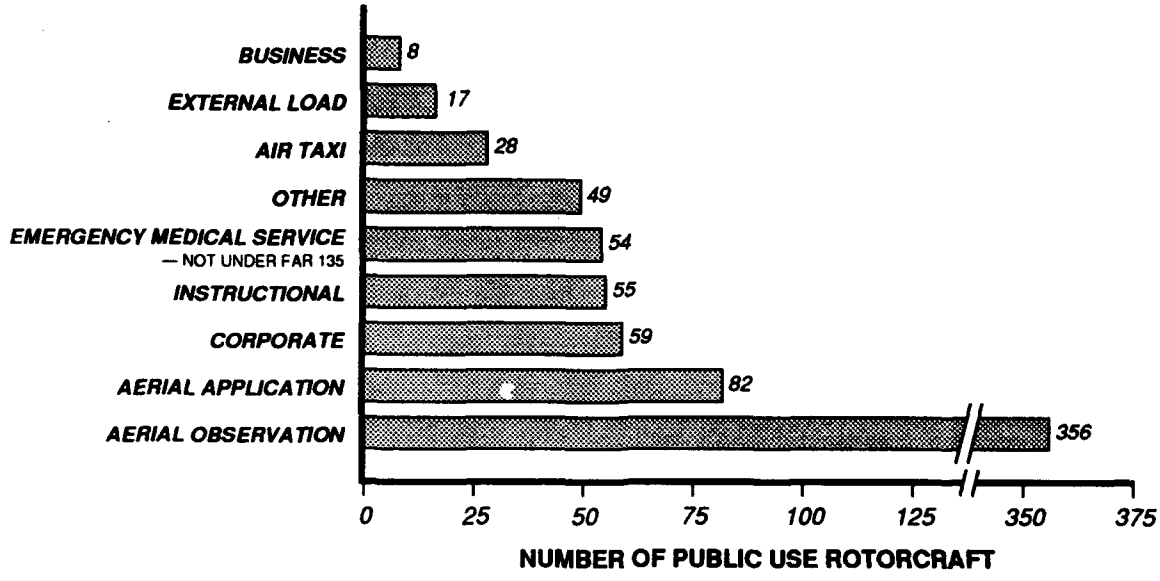
1989 PUBLIC USE ROTORCRAFT TOTAL FLIGHT HOURS BY ROTORCRAFT TYPE

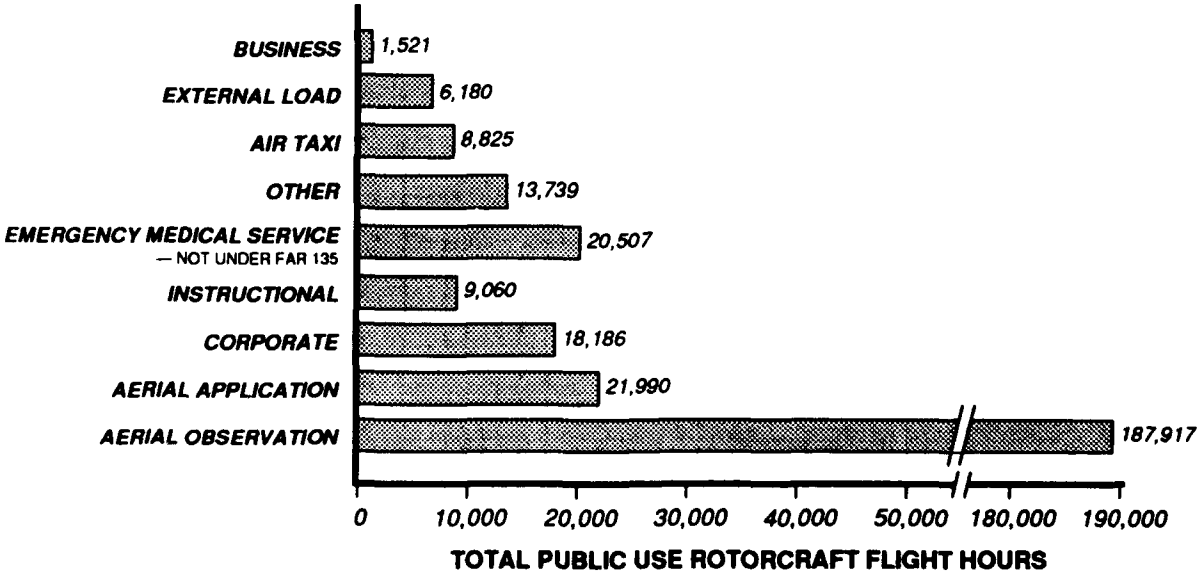


SOURCE: Table 7.1

Figure 7.3

1989 NUMBER OF PUBLIC USE ROTORCRAFT AND TOTAL FLIGHT HOURS BY SELECTED PRIMARY USE CATEGORIES





SOURCE: Tables 7.5 and 7.6

7.1 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MANUFACTURER BUILT:						
PISTON TOTAL:	225	5.8	73,612	7.9	326.0	4.5
TURBINE: SINGLE ENGINE	431	3.7	198,141	4.9	466.1	3.2
TURBINE: MULTI - ENGINE	58	13.8	22,051	14.7	378.8	4.5
TURBINE TOTAL:	489	3.7	220,193	4.6	457.8	2.9
MANUFACTURER BUILT TOTAL:	714	3.1	293,805	4.0	418.4	2.5
AMATEUR BUILT:	2	100.0	12	66.4	5.0	0.0
TOTAL - ALL ROTORCRAFT:	716	3.1	293,817	4.0	417.0	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

7.2 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
OTHER 1 (*)	DIS	DIS	DIS	DIS	DIS	DIS
OTHER 2 (*)	24	17.3	12,836	21.3	537.1	12.5
OTHER 3 (*)	6	29.8	2,549	29.9	410.6	2.4
OTHER 4 (*)	DIS	DIS	DIS	DIS	DIS	DIS
AERORSJ2	0	0.0	0	0.0	0.0	0.0
AEROSPAS355	DIS	DIS	DIS	DIS	DIS	DIS
AEROSPSA316	DIS	DIS	DIS	DIS	DIS	DIS
AGUSTA205	12	18.9	4,618	21.8	386.8	10.9
AGUSTAA109	0	0.0	0	0.0	0.0	0.0
AIRSPC18	0	0.0	0	0.0	0.0	0.0
ARCRNEH37	0	0.0	0	0.0	0.0	0.0
BELL 204	7	19.7	1,631	23.5	233.1	12.8
BELL 206	170	4.3	86,153	5.3	505.7	3.1
BELL 212	12	27.9	5,193	31.9	443.9	15.4
BELL 222	11	15.0	3,397	18.4	308.0	10.8
BELL 412	5	36.3	1,746	36.7	353.0	4.9
BELL 47	58	12.8	9,784	17.6	167.4	12.2
BOLKMS105	7	61.2	2,028	61.4	286.4	5.1
BOLKMS117	6	72.4	2,797	73.5	465.5	13.0
ENSTRMF28	12	24.7	11,199	27.7	834.5	12.9
H23/HTE	0	0.0	0	0.0	0.0	0.0

7.2 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
H34/55	DIS	DIS	DIS	DIS	DIS	DIS
HILLERFH1100	DIS	DIS	DIS	DIS	DIS	DIS
HILLERUH12	27	17.6	3,152	21.9	116.3	11.8
HUGHES269	75	8.7	39,390	11.4	524.0	7.4
HUGHES369	95	7.9	66,407	11.1	701.8	7.8
HYNES B2	0	0.0	0	0.0	0.0	0.0
MACDOUG369	7	19.3	2,463	22.9	363.3	12.3
MILITARY204	73	13.0	7,604	20.9	104.5	16.3
MILITARY47	30	17.0	3,727	22.0	121.0	11.9
MODFD47	0	0.0	0	0.0	0.0	0.0
ORLHELH19	0	0.0	0	0.0	0.0	0.0
ORLHELS58	0	0.0	0	0.0	0.0	0.0
ROBSINR22	DIS	DIS	DIS	DIS	DIS	DIS
SCHWZH269	11	11.4	4,946	15.0	441.3	9.7
SKRSKYS55	0	0.0	0	0.0	0.0	0.0
SKRSKYS58	0	0.0	0	0.0	0.0	0.0
SKRSKYS58T	DIS	DIS	DIS	DIS	DIS	DIS
SKRSKYS61	0	0.0	0	0.0	0.0	0.0
SKRSKYS76	7	22.1	2,433	22.7	350.0	5.4
SNIAS 350	22	13.9	10,730	15.6	477.2	7.0
SNIAS SA318	0	0.0	0	0.0	0.0	0.0

7.2 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY SDR ROTORCRAFT MANUFACTURER/MODEL GROUP

MANUFACTURER/ MODEL GROUP	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
SNIAS SA341	0	0.0	0	0.0	0.0	0.0
TH55	20	8.1	2,516	13.3	124.5	10.6
TOMCAT	0	0.0	0	0.0	0.0	0.0
TOTAL	716	3.1	293,817	4.0	417.0	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

(*) THE "OTHER" CATEGORIES REPRESENT:
OTHER 1 - MANUFACTURER BUILT - PISTON
OTHER 2 - MANUFACTURER BUILT - TURBINE-SINGLE ENGINE
OTHER 3 - MANUFACTURER BUILT - TURBINE-MULTI ENGINE
OTHER 4 - AMATEUR BUILT

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

7.3 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY REGION OF BASED ROTORCRAFT

REGION	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALASKAN	18	22.2	5,706	20.4	377.7	6.2
CENTRAL	20	15.0	11,291	22.3	544.6	13.7
EASTERN	96	8.3	28,791	8.0	309.3	9.7
GREAT LAKES	65	9.2	16,982	12.8	284.3	8.3
NEW ENGLAND	15	13.3	5,054	20.2	424.4	13.2
NORTHWEST MT.	71	11.3	16,301	10.8	245.7	8.2
SOUTHERN	158	6.3	46,143	6.7	308.3	5.1
SOUTHWESTERN	54	9.3	23,183	10.6	477.0	7.2
WESTERN-PACIFIC	220	4.5	130,669	6.1	627.5	5.2
TOTAL	716	3.1	293,778	3.4	419.9	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

7.4 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
ALABAMA	8	25.0	1,664	26.6	211.4	14.2
ALASKA	18	22.2	5,706	20.4	377.7	6.2
ARIZONA	34	14.7	19,689	13.4	575.3	6.9
ARKANSAS	DIS	DIS	DIS	DIS	DIS	DIS
CALIFORNIA	155	5.8	84,577	5.7	580.0	5.1
COLORADO	8	37.5	1,807	28.7	218.5	19.3
CONNECTICUT	DIS	DIS	DIS	DIS	DIS	DIS
DELAWARE	DIS	DIS	DIS	DIS	DIS	DIS
DIST. OF COLUMBIA	19	31.6	1,804	48.8	102.1	43.8
FLORIDA	86	9.3	30,352	8.5	349.4	7.5
GEORGIA	16	18.8	4,338	20.7	280.9	9.8
HAWAII	5	40.0	4,831	54.6	63.7	35.1
IDAHO	DIS	DIS	DIS	DIS	DIS	DIS
ILLINOIS	11	18.2	3,516	19.4	346.8	10.8
INDIANA	5	40.0	772	51.8	168.8	22.5
IOWA	8	25.0	4,318	30.3	556.3	11.5
KANSAS	7	28.6	5,690	37.0	853.7	26.4
KENTUCKY	DIS	DIS	DIS	DIS	DIS	DIS
LOUISIANA	5	20.0	2,062	25.4	395.0	3.3
MAINE	0	0.0	0	0.0	0.0	0.0
MARYLAND	8	25.0	3,658	22.7	490.6	12.3
MASSACHUSETTS	9	22.2	4,614	21.8	498.5	12.6
MICHIGAN	21	19.0	7,243	21.5	365.6	13.0

7.4 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
MINNESOTA	7	28.6	1,187	25.9	170.0	17.3
MISSISSIPPI	12	25.0	2,121	22.5	173.0	10.3
MISSOURI	5	40.0	1,283	34.6	248.1	17.2
MONTANA	19	26.3	2,640	25.9	163.0	12.2
NEBRASKA	0	0.0	0	0.0	0.0	0.0
NEVADA	26	15.4	21,572	23.6	881.8	25.1
NEW HAMPSHIRE	0	0.0	0	0.0	0.0	0.0
NEW JERSEY	27	11.1	6,919	11.9	257.1	7.0
NEW MEXICO	DIS	DIS	DIS	DIS	DIS	DIS
NEW YORK	21	14.3	7,007	15.3	355.4	10.3
NORTH CAROLINA	6	50.0	1,643	33.9	267.5	24.9
NORTH DAKOTA	DIS	DIS	DIS	DIS	DIS	DIS
OHIO	16	18.8	3,262	37.3	231.2	27.4
OKLAHOMA	5	40.0	3,236	30.7	640.0	2.4
OREGON	18	22.2	5,237	18.4	325.7	9.9
PENNSYLVANIA	DIS	DIS	DIS	DIS	DIS	DIS
RHODE ISLAND	DIS	DIS	DIS	DIS	DIS	DIS
SOUTH CAROLINA	14	14.3	1,161	37.4	140.5	30.0
SOUTH DAKOTA	DIS	DIS	DIS	DIS	DIS	DIS
TENNESSEE	12	25.0	3,568	22.0	349.5	10.8
TEXAS	40	12.5	17,507	12.5	470.8	9.7
UTAH	8	37.5	1,448	39.3	208.4	19.9
VERMONT	0	0.0	0	0.0	0.0	0.0

7.4 1989 PUBLIC USE ROTORCRAFT, TOTAL FLIGHT HOURS AND AVERAGE FLIGHT HOURS BY STATE OF BASED ROTORCRAFT

STATE	ESTIMATE OF NUMBER PUBLIC USE	PERCENT STANDARD ERROR	ESTIMATE OF TOTAL HOURS FLOWN	PERCENT STANDARD ERROR	ESTIMATE OF AVERAGE HOURS	PERCENT STANDARD ERROR
VIRGINIA	15	26.7	5,593	20.3	385.3	10.6
WASHINGTON	15	26.7	4,109	24.9	267.4	18.1
WEST VIRGINIA	DIS	DIS	DIS	DIS	DIS	DIS
WISCONSIN	DIS	DIS	DIS	DIS	DIS	DIS
WYOMING	0	0.0	0	0.0	0.0	0.0
PUERTO RICO	0	0.0	0	0.0	0.0	0.0
TOTAL	716	3.1	284,123	16.6	417.0	2.5

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED IN PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

7.5 1989 PUBLIC USE ROTORCRAFT, NUMBER OF ROTORCRAFT BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	TOTAL LAW ENFORCMT	PER-SONAL	EMERG UNDER FAR135	MED SVCE NOT UND FAR135	AIR TAXI	COMMUTR CARRIER	CORP-ORATE	INSTRUC TIONAL	AERIAL APPL	AERIAL OBS	EXTNL LOAD	OTHR WK USE	BUSI-NESS	OTHER
MANUFACTURER BUILT: PISTON TOTAL:														
EST. NO. PUBLIC USE	225	0	DIS	0	15	0	DIS	28	38	121	0	DIS	0	17
% STD. ERROR	5.6	0.0		0.0	25.6	0.0		15.1	13.3	5.1	0.0		0.0	20.0
EST. % PUBLIC USE	5.7													
TURBINE: SINGLE ENGINE														
EST. NO. PUBLIC USE	431	0	DIS	38	8	0	DIS	27	DIS	223	DIS	DIS	DIS	DIS
% STD. ERROR	3.7	0.0		14.0	22.0	0.0		23.5		3.3				
EST. % PUBLIC USE	12.0													
TURBINE: MULTI - ENGINE														
EST. NO. PUBLIC USE	58	0	0	16	6	0	DIS	0	DIS	12	DIS	DIS	DIS	DIS
% STD. ERROR	13.5	0.0	0.0	13.4	31.2	0.0		0.0		20.6				
EST. % PUBLIC USE	5.4													
TURBINE TOTAL:														
EST. NO. PUBLIC USE	489	0	DIS	54	14	0	DIS	27	44	235	17	DIS	8	DIS
% STD. ERROR	3.7	0.0		10.6	18.5	0.0		23.5	14.5	3.3	22.7		38.7	
EST. % PUBLIC USE	10.5													
MANUFACTURER BUILT TOTAL:														
EST. NO. PUBLIC USE	714	0	DIS	54	28	0	59	55	82	356	17	DIS	8	DIS
% STD. ERROR	3.1	0.0		10.6	16.0	0.0	10.5	13.8	9.9	2.8	22.7		38.7	
EST. % PUBLIC USE	8.3													
AMATEUR BUILT:														
EST. NO. PUBLIC USE	DIS	0	0	0	0	0	0	0	0	0	0	DIS	0	DIS
% STD. ERROR		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
EST. % PUBLIC USE	DIS													
TOTAL														
EST. NO. PUBLIC USE	716	0	DIS	54	28	0	59	55	82	356	17	DIS	8	49
% STD. ERROR	3.1	0.0		10.6	16.0	0.0	10.5	13.8	9.9	2.8	22.7		38.7	13.6
EST. % PUBLIC USE	6.9													

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED FOR PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

7.6 1989 PUBLIC USE ROTORCRAFT FLIGHT HOURS BY EXPANDED USE CATEGORY BY ROTORCRAFT TYPE

PRIMARY USE

ROTORCRAFT TYPE	PER-SONAL	EMERG MED SVCE UNDER FAR 135	NOT UND FAR 135	AIR TAXI	COMMUTER CARRIER	CORP-ORATE	INSTRUC-TIONAL	AERIAL APPL	AERIAL OBS	EXTRNL LOAD	OTHR WK USE	BUSI-NESS	OTHER	TOTAL
MANUFACTURER BUILT:														
PISTON TOTAL:														
EST. TOT. HOURS	0	DIS	0	3,874	0	DIS	4,568	10,995	45,816	0	DIS	0	5,490	73,612
% STD. ERROR	0.0		0.0	29.0	0.0		21.6	13.7	8.1	0.0		0.0	21.7	8.2
TURBINE: SINGLE ENGINE														
EST. TOT. HOURS	0	DIS	15,305	2,696	0	DIS	4,492	DIS	137,988	DIS	DIS	DIS	DIS	198,141
% STD. ERROR	0.0		15.2	22.7	0.0		25.4		5.1					4.8
TURBINE: MULTI - ENGINE														
EST. TOT. HOURS	0	0	5,203	2,255	0	DIS	0	DIS	4,113	DIS	DIS	DIS	DIS	22,051
% STD. ERROR	0.0	0.0	18.2	31.7	0.0		0.0		21.0					15.8
TURBINE TOTAL:														
EST. TOT. HOURS	0	DIS	20,507	4,951	0	DIS	4,492	10,995	142,101	6,180	DIS	1,521	DIS	220,193
% STD. ERROR	0.0		12.1	18.8	0.0		25.4	17.7	5.1	27.3		48.5		4.6
MANUFACTURER BUILT TOTAL:														
EST. TOT. HOURS	0	DIS	20,507	8,825	0	18,186	9,060	21,990	187,917	6,180	DIS	1,521	DIS	293,805
% STD. ERROR	0.0		12.1	17.2	0.0	11.1	16.6	11.3	4.3	27.3		48.5		4.0
AMATEUR BUILT:														
EST. TOT. HOURS	0	0	0	0	0	0	0	0	0	0	DIS	0	DIS	DIS
% STD. ERROR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
TOTAL														
EST. TOT. HOURS	0	DIS	20,507	8,825	0	18,186	9,060	21,990	187,917	6,180	DIS	1,521	13,739	293,817
% STD. ERROR	0.0		12.1	17.2	0.0	11.1	16.6	11.3	4.3	27.3		48.5	12.5	4.0

NOTE: ROW AND COLUMN SUMMATIONS MAY DIFFER FROM PRINTED TOTALS DUE TO ESTIMATION PROCEDURES.
ROW SUMMATIONS MAY DIFFER FROM PRINTED TOTALS BECAUSE SOME ACTIVE ROTORCRAFT DID NOT REPORT USE.

"DIS" INDICATES AN ESTIMATE WAS DELETED TO AVOID ANY POSSIBLE DISCLOSURE OF INDIVIDUAL RESPONSES.

PUBLIC USE ROTORCRAFT ARE ONES THAT WERE USED FOR PUBLIC USE ACTIVITIES 90% OR MORE DURING THE YEAR.

APPENDIX A

METHODOLOGY FOR THE 1989 ROTORCRAFT ACTIVITY SURVEY

1. OVERVIEW

1.1 Purpose and Background

The purpose of the Rotorcraft Activity Survey is to provide the Federal Aviation Administration (FAA) with information on the activity of the rotorcraft fleet. The information obtained from the survey enables the FAA to monitor the rotorcraft fleet so that the FAA can, among other activities, anticipate and meet demand for National Airspace System (NAS) facilities and services, assess the impact of regulatory changes on the rotorcraft fleet, and implement measures to assure the safe operation in the airspace of all aircraft.

The 1989 Rotorcraft Activity Survey is the first ever attempted census of the general aviation rotorcraft population conducted by the FAA. The census was initiated in order to address industry concerns of bias in rotorcraft statistics which were thought to stem from sample design and response problems. FAA also needed additional information about rotorcraft not currently collected. FAA Form 1800-55 was the questionnaire used for data collection (see Figure A.1).

2. COVERAGE

2.1 Rotorcraft

The Rotorcraft Activity Survey covers all rotorcraft registered in the United States as of December 31, 1989. The term, "rotorcraft," used in this survey refers to aircraft that use rotating wings (blades) to move through the air. In this report, rotorcraft are considered in two aircraft groups, manufacturer built and amateur built. The manufacturer built rotorcraft are further divided into piston, and single engine and multiengine turbine rotorcraft.

Certain rotorcraft have been excluded from the survey. This group consists of rotorcraft registered to dealers, rotorcraft in the process of being sold or with registration pending, and rotorcraft for which not enough information was available to categorize them properly for sampling purposes.

Rotorcraft are used for a variety of purposes such as air taxi, corporate/business, personal, recreational, instructional, and emergency medical service to name a few. Rotorcraft range in complexity from simple, amateur built rotorcraft to the more sophisticated manufacturer built multiengine turbine rotorcraft.

2.2 Geographic

The rotorcraft survey conducted by the FAA covers rotorcraft registered with the United States Aircraft Registry as of December 31, 1989. Over 99 percent of these aircraft are registered to owners living in the 50 states; Washington, D.C.; Puerto Rico; and other U.S. territories.[1]

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[1]Source: FAA Aircraft Registration Master File as of December 31, 1989.

Figure A.1 SURVEY QUESTIONNAIRE *Form Approved OMB NO. 2120-0541*

US Department of Transportation
Federal Aviation Administration

1989 ROTORCRAFT ACTIVITY SURVEY

This report is authorized by Section 311 of the Federal Aviation Act of 1958. This information collection conforms to the legal and administrative standards established by the Federal Government to assure confidential treatment of statistical information. The information you provide will be used only for statistical purposes and will not be published or released to any person, organization, or government entitity in any form that would reveal specific information reported by an individually identifiable respondent.

INSTRUCTIONS: Please answer questions for the aircraft below.
AIRCRAFT CHARACTERISTICS
N-

Mail the completed questionnaire in the enclosed, postage-paid envelope to:
Federal Aviation Administration
Attention: Executive Resource Associates
Caller No. 91013
Arlington, Virginia 22202

1. Is this rotorcraft primarily operated by the:
☐ Registered owner ☐ Long-term lessee or operator

2. *Person completing this form:*
☐ Owner, or owner's representative
☐ Long-term lessee or operator, or representative

3. Did this rotorcraft have a valid airworthiness certificate on December 31, 1989?
☐ Yes ☐ No

4. Was this aircraft certificated for IFR flight on December 31, 1989?
☐ Yes ☐ No
If not certificated for IFR flight, was it IFR equipped?
☐ Yes ☐ No

5. In what state, U.S. territory, or foreign country was this rotorcraft based on December 31, 1989?
_____ State, U.S. Territory 2 digit abr.
_____ Foreign Country

6. At what kind of facility was it based on December 31, 1989?
☐ Airport ☐ Heliport ☐ Other

7. What were the total lifetime airframe hours as of December 31, 1989?
_____ Hours

8. Is this rotorcraft a military surplus aircraft?
☐ Yes. If yes, what was the original military make and model?
_____
☐ No.

9. Did this rotorcraft fly at any time during calendar year 1989?
☐ Yes. If yes, **please answer the remaining questions** on this form.
☐ No. If no, **do not complete the rest of this form,** but return it in the enclosed business reply envelope to the address shown above.

10. Was this rotorcraft operated by or for the Federal, state or local government, or a public utility as a public use aircraft at any time during calendar year 1989?
☐ Yes ☐ No
If yes, list the percentage of the total flight hours it was used as a public aircraft: _____ %

11. Was this rotorcraft operated by or for a law enforcement agency at any time during calendar year 1989?
☐ Yes ☐ No
If yes, list the percentage of the total flight hours it was operated by or for a law enforcement agency: _____ %

Comments:

We appreciate your completing this form.

12. How many total hours in all use categories did this rotorcraft fly during 1989? _____ Hours

13. What percentage of time was this rotorcraft flown in the following use categories during 1989? (Aircraft used as **public** and/or **law enforcement** aircraft should also complete this question. For example, a law enforcement aircraft could be used for EMS and aerial observation.) ***Please make sure that your responses in items 1-12 add up to 100%.***

a. **Personal/Recreational** — individual flying for personal, non-business reasons.	%
b. **Emergency Medical Service** — transporting people for medical care, or transporting donor organs for transplant.	
Under FAR Part 135, Air Taxi and Commercial Operators,	%
Not under FAR Part 135.	%
c. **Air Taxi Charter** — FAR Part 135: Air Taxi and Commercial Operators passenger and cargo operations, for hire, excluding commuters and EMS.	%
d. **Commuter Air Carrier** — scheduled (at least five scheduled round trips per week) FAR Part 135, Air Taxi and Commercial Operators, passenger and cargo operations.	%
e. **Company/Executive Transportation** — transportation of company personnel, guest, or cargo, with a *professional crew* (not under FAR Part 135, Air Taxi and Commercial Operators). Examples include: transporting parts or crews to off-shore oil rigs, *transporting fire fighters to fires,* and bank paper transfer.	%
f. **Instructional** — flying under the supervision, or *specific direction, of a flight instructor.*	%
g. **Aerial Application** — use of the aircraft for the distribution of things; includes operations under *FAR Part 137, Agricultural Aircraft Operations,* and also activities like crop dusting, insect control, fish stocking, fire fighting, and fertilization.	%
h. ***Aerial Observation*** — *use of the aircraft as an* observation platform. Examples include: mapping, photography, survey, patrol, search and rescue, highway traffic advisory, sightseeing, ranching, surveillance, oil and mineral exploration, criminal pursuit, and fish spotting.	%
i. **External Load** — operations under FAR Part 133, Rotorcraft External Load Operations. Examples include helicopter hoist, and hauling logs.	%
j. **Other Work Use** — construction work, aerial advertising, pollenating, movie making, etc.	%
k. **Business Transportation** — individual use of an aircraft for business reasons.	%
l. **Other** — R&D, experimentation, testing, air shows, demonstrations, etc.	%
TOTAL	**100 %**

14. What percentage of the total hours were flown IFR? %

15. How many landings did this rotorcraft make during 1989?
_____ Landings.

16. What percentage of landings were at the following facilities?
Airports _____ % Offshore Platforms _____ %
Heliports _____ % Other _____ %
Helipads at Airports _____ %

17. Does this report cover all of 1989?
☐ Yes.
☐ No. If no, which months does it cover? _____ (Month) to _____ (Month)

18. **Comments** — Your comments are invited to assist us in improving this survey. Please use the comments area to the left or the reverse side of this form.

Agency Display of Estimated Burden of the 1989 Rotorcraft Activity Survey

The public reporting burden for the collection of this information is estimated to average 20 minutes per response. If you wish to comment on the accuracy of the estimate or make suggestions for reducing this burden, please direct your comments to FAA and OMB at the following addresses:

U.S. DOT Federal Aviation Administration
Statistical Analysis Branch, AMS-420
Washington, D.C. 20591

&

OMB Management and Budget
Paperwork Reduction Project 2120-0541
Washington, D.C. 20503

FAA Form 1800-55 (1-90)

2.3 Content

The questionnaire, FAA Form 1800-55 shown previously in Figure A.1, requests the rotorcraft owner/operator to provide the following information on the aircraft's characteristics and uses for various periods:

1) hours by use and the number of landings for the entire calendar year, 1989; and

2) total airframe hours and the aircraft's base location as of December 31, 1989.

3. METHODOLOGY

The rotorcraft data were collected by mailing the questionnaire three different times (March, May and July 1990) to the owners of all rotorcraft registered in the U.S. as of December 31, 1989. In addition, the questionnaire was sent twice (March and May, 1990) to rotorcraft operators identified by the Helicopter Foundation International (HFI). The HFI provided a listing of 706 rotorcraft operators. Even though all of the rotorcraft operated by the 706 operators were also on the FAA Master File, only 127 matches could be made by name and address since the HFI listing did not identify the N-number of the rotorcraft. Thus, 579 operators received two separate questionnaires: one as HFI-identified operators operating an unknown number of rotorcraft and a second questionnaire as the FAA-identified owner of a specific rotorcraft. If multiple questionnaires for the same rotorcraft were returned, the earliest one received was used.

4. RESPONSE

The first mailing in March 1990 covered all 10,469 aircraft in the census (including 579 operators) and had an overall response rate of 55.3 percent as shown in Table A.1. The response rate was 25.6 percent for operators and 57 percent for owners. The responses for the first mailing accounted for approximately 86.0 percent of the total responses to the survey. The second mailing conducted in May included only those aircraft in the census that had not yet responded including those respondents whose first mailing had been returned by the U.S. Postal Service (i.e., postal returns). The second mailing had a response rate of 13.2 percent which accounted for approximately 9.2 percent of the total responses to the survey. In the second mailing, 68 percent of the operators responded and 7.7 percent of the owners. The third mailing conducted in July 1990 was sent only to the owners of the rotorcraft who had not responded to the first or second mailings and postal returns were eliminated. The third mailing produced a response rate of 14.6 percent, or 4.7 percent of the total responses to the survey. The valid survey responses resulted in an overall response rate of 64.2 percent. Overall, 76.2 percent of the operators and 63.5 percent of the owners responded. Adjusting for postal returns, the response rate for delivered questionnaires was 78.3 percent. Similar adjustments show operator and owner responses for delivered questionnaires to be 92.9 percent and 77.5 percent, respectively.

Each of the three mailings was accompanied by a cover letter, shown respectively in Figures A.2, A.3, and A.4 at the back of this Appendix. The third mailing also had a special insert of an article by the FAA Administrator published in the Summer 1990 edition of Rotor magazine (Figure A.5).

TABLE A.1 SUMMARY OF RESPONSE INFORMATION

PHASE	VALID SAMPLE SIZE	# RESPONSES	RESPONSE RATE		% TOTAL RESPONSE
1st Mailing					
Operators	579	148	25.6		33.6
Owners	9,890	5,638	57.0		89.7
Total 1st Mailing:	10,469	5,786	55.3	(67.4)*	86.1
2nd Mailing[2]					
Operators	431	293	68.0		66.4
Owners	4,252	326	7.7		5.2
Total 2nd Mailing:	4,683	619	13.2	(22.1)*	9.2
3rd Mailing[3]					
Operators	0	0	0.0		0.0
Owners	2,181	319	14.6		5.1
Total 3rd Mailing:	2,181	319	14.6	(14.6)*	4.7
Census Total					
Operators	579	441	76.2		100.0
Owners	9,890	6,283	63.5		100.0
CENSUS TOTAL:	10,469	6,724	64.2	(78.3)*	100.0

*Adjusted for postal returns.

5. CENSUS DESIGN

5.1 Census Frame and Size

The FAA Mike Monroney Aeronautical Center in Oklahoma City maintains the Aircraft Registration Master File, which is the official record of registered civil aircraft in the United States. Questionnaires were sent to owners of all rotorcraft in the master file (according to the definition in Section 2.1), with the following exceptions:

1) rotorcraft registered to dealers;

2) rotorcraft with "Sale Reported" or "Registration Pending" appearing in the record instead of the owner's name;

3) rotorcraft with a known, inaccurate owner's address; and

4) rotorcraft with missing state of registration, aircraft make-model-series code, or aircraft type information.

For calendar year 1989, 10,469 general aviation rotorcraft were surveyed. Table A.2 shows the distribution of the census by rotorcraft type.

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[2]Includes postal returns.

[3]Excludes 1,883 postal returns.

TABLE A.2 CENSUS AND POPULATION DISTRIBUTION BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	APPROXIMATE POPULATION	SAMPLE SIZE	SAMPLE AS % OF POPULATION
Manufacturer Built			
Piston	3,994	3,994	100.0
Single Engine Turbine	3,616	3,616	100.0
Multiengine Turbine	1,069	1,069	100.0
Amateur Built	1,790	1,790	100.0
TOTAL:	10,469	10,469	100.0

5.2 Description of Census Design

The 1989 Rotorcraft Activity Survey was initially designed to be a complete census of the rotorcraft fleet with the four exceptions listed on page A-4. However, as indicated in Table A.1, out of the 10,469 rotorcraft listed on the FAA Master file (including 579 rotorcraft owners identified as operators by the HFI), a total of 6,724 completed questionnaires were received which represents 64.2 percent of the targeted rotorcraft population. Therefore, the data received were extrapolated to the rotorcraft population size in order to represent all 10,469 rotorcraft in the general aviation rotorcraft fleet.

Each rotorcraft in the census was given a weight which corresponded to the number of rotorcraft in the census frame represented by that rotorcraft. When all responses to the census were tallied, each weight was adjusted according to the response rate for the cell, counting a rotorcraft for which no survey questions were answered as a non-respondent, and a rotorcraft for which at least one question was answered as a respondent. The weight adjustment is described below:

1) non-respondents' weights were changed to zero; and

2) the weights of all responding aircraft were adjusted uniformly by dividing the initial weight by the response rate for the cell.

This method of weight adjustment has several attributes. It actually incorporates the response rates into the final weights and simplifies estimation procedures.

5.3 Error

Errors associated with estimates derived from the census survey results fall into two categories: sampling and non-sampling errors. Sampling errors occur because the final estimates are based on a sample of only those rotorcraft that responded--not the entire population.

Non-sampling errors arise from a number of sources such as non-response, inability or unwillingness of respondents to provide correct information, differences in interpretation of questions, mistakes in recording or coding the data obtained, and others. The following sections discuss the two types of errors.

5.3.1 Sampling Error

In a designed survey, the sampling error associated with an estimate is generally unknown, but a measurable quantity, known as the standard error, is often used as a guide to the magnitude of sampling error. The standard error measures the variation which would occur among the estimates from all possible samples of the same design from the same population. It measures the precision with which an estimate approximates the average result of all possible samples or the result of a survey in which all elements of the population were sampled.

Since a census is a 100 percent sample, it is theoretically possible to eliminate sampling error altogether. However, there typically will be nonresponse. If the assumption is made that nonresponse is random, then the results are the same as having a survey with the original sample size, reduced by the number of nonresponses, with a 100 percent response for the survey. Since we have no strong basis to assume response biases, this is a reasonable assumption and permits the use of the standard survey estimation equations.

The user of survey results must consider sampling error along with the point estimate itself when making inferences or drawing conclusions about the sample population. A large standard error relative to an estimate indicates lack of precision and, inversely, a small standard error indicates precision. To facilitate the comparison of estimates and their errors, the tables in this publication display standard errors for all estimated quantities. In most cases, the tables contain the percent standard error, which is the standard error multiplied by 100 and divided by the corresponding estimate. The paragraphs below explain the proper interpretation and use of the errors.

An estimate and its standard error make it possible to construct an interval estimate with the prescribed confidence that the interval will include the average value of the estimate from all possible samples of the population. Table A.3 below shows selected interval widths and their corresponding confidence.

TABLE A.3 CONFIDENCE OF INTERVAL ESTIMATES

WIDTH OF INTERVAL	APPROXIMATE CONFIDENCE THAT INTERVAL INCLUDES AVERAGE VALUE
1 Standard error	68%
2 Standard errors	95%
3 Standard errors	99%

For the most part, the measure of precision presented in this report is the percent standard error (% s.e.). As explained above, this statistic is merely the ratio of the standard error to the estimate times 100 (to convert the fraction to a percent). In addition to immediately communicating the relative

precision of the estimate, it allows ready comparison of the survey's performance across variables. The following is an example of how to use the % s.e.: from Table 2.1, a 95 percent confidence interval for the number of active manufacturer built piston response would be 2,684 plus or minus 2 (1.2/100)(2,684) or the interval between 2,620 and 2,748. One would say that the number of active manufacturer built piston responses lies somewhere between 2,620 and 2,748 with 95 percent confidence. Another way of expressing this is that we are highly confident (95 percent) that the number of active manufacturer built piston responses is within plus or minus 2(1.2) percent, or 2.4 percent of 2,684.

5.3.2 Non-Sampling Error

Non-sampling error can be reduced through survey design, although the amount of reduction is difficult, if not impossible, to quantify in any given design. There are, however, various techniques which can limit non-sampling error. Several of these techniques were incorporated into the design of the Rotorcraft Activity Survey and are itemized below:

1) A second mailing and third mailing with an enclosed published article by the FAA Administrator were mailed in addition to the original mailing in order to improve the response rate, since a low response rate may be a major cause of non-sampling error due to the fact that nonrespondents may have different characteristics than respondents. The responses by rotorcraft type are listed in Table A.4. The data reveal a continuing problem with the sample frame because of incorrect addresses.

2) The survey questionnaire was designed to minimize misinterpretation of questions by the rotorcraft owners.

3) Comprehensive editing procedures insured the accuracy of the data transcription to machine readable form and the internal consistency of responses.

4) The official and most accurate source of information available on the civil fleet, the FAA Aircraft Registration Master File, provided the rotorcraft census list. This was supplemented by a listing of rotorcraft operators provided by the Helicopter Foundation International. Unfortunately, the high rate of postal returns reflects a seriously out-of-date rotorcraft file.

TABLE A.4 RESPONSE RATE BY ROTORCRAFT TYPE

ROTORCRAFT TYPE	RESPONSE RATE WITH POSTAL RETURNS	RESPONSE RATE ADJUSTED FOR POSTAL RETURNS
Manufacturer Built		
Piston	62.3%	76.0%
Single Engine Turbine	70.5%	85.9%
Multiengine Turbine	66.3%	80.1%
Amateur Built	54.7%	66.7%

Figure A.2 First Cover Letter

U.S. Department of Transportation
Federal Aviation Administration

800 Independence Ave., S.W.
Washington, D.C. 20591

March 1990

Dear Rotorcraft Owner:

As you well know, rotorcraft are playing an increasing role in aviation these days. Because of this increased role, the FAA is conducting a one-time special survey covering all rotorcraft.

The information collected will help all of us understand more about rotorcraft activities, their needs for air traffic facilities and services, and for assessing the impact of rotorcraft on the National Airspace System. These data will be used by the Federal, state, and local governments, as well as by private industry and individuals, for safety analysis, planning, forecasting, research and development.

The enclosed 1989 Rotorcraft Activity Survey questionnaire requests information for calendar year 1989.

After reading the instructions and the information on the back of this letter, please answer all the questions for the aircraft identified on the form and mail it today.

If you have any questions or need further assistance, please call Ms. Patricia Beardsley at (202) 267-8032 or Mr. Shung-Chai Huang at (202) 267-9943.

We appreciate your participation.

Sincerely,

Bert LaCroix
Manager, Management Standards and Statistics Division

Enclosure

The 1989 Rotorcraft Activity Survey

Why does the FAA collect this information?

The information collected by the survey will be used in a variety of ways. It will help the FAA to determine the need for changes to some of our regulations and the impact of those changes, and to pinpoint potential safety problems. The information also will help us to forecast rotorcraft activity and to help keep our Rotorcraft Master Plan up to date.

Will the survey responses be kept confidential?

Absolutely!!! The information you provide will not be published or released in any form that would reveal specific information reported by any individually identifiable respondent.

Why was I selected for this survey?

The survey covers all rotorcraft registered with the FAA as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. If you own more than one rotorcraft, you will receive a questionnaire for each. Please answer all questions for the aircraft identified on the questionnaire.

It is very important that we receive a survey questionnaire for each and every rotorcraft registered as of December 31, 1989 so we can make accurate activity estimates for the various rotorcraft models and missions. In some cases the aircraft is not operated by the registered owner, but is actually being operated by another party under a long term operator or lessee arrangement. To increase the chances of covering 100% of the fleet, we are also mailing a package of blank questionnaires to a list of operators provided by the rotorcraft industry.

IF You receive questionnaires as both a registered owner and an operator, complete whichever form is the most convenient for you.

IF You are the owner, but not the operator and cannot complete the form, please send it to the operator. Please do not assume that the operator has received a questionnaire. That company may not be on our list.

We realize, that by doing this, we will get duplicate forms for some aircraft, but we will be able to eliminate duplicate responses. We would rather take this additional step than risk missing an aircraft. So whether you are an owner, operator, or both please complete the form as best you can and return it to us.

What should I do?

IF Your rotorcraft, for whatever reasons, was not in use during calendar year 1989, answer questions 1-9 and **return the questionnaire to FAA.** The fact that your rotorcraft was not flown during the year is just as important as the fact that it was flown.

IF You cannot provide a precise answer to any questions, make your best estimate.

IF You are no longer in possession of this rotorcraft but were the registered owner on December 31, 1989, try to answer all the questions.

IF your rotorcraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.

IF Your rotorcraft was stolen, destroyed, lost, donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Registry, do so immediately by writing to:

Aircraft Registration Branch, AVN-450
7500 South MacArthur Blvd.
Oklahoma City, OK 73125

The signature of the rotorcraft owner of record is required to make any changes to the aircraft registration record.

If you have any questions regarding the registration of your aircraft, please call (405) 686-3116.

Figure A.3 Second Cover Letter

U.S. Department
of Transportation
Federal Aviation
Administration

800 Independence Ave., S.W.
Washington, D.C. 20591

April 1990

Dear Rotorcraft Owner:

In March we sent you a 1989 Rotorcraft Activity Survey questionnaire. The information collected by this survey will be used to help all of us understand more about rotorcraft activity and their missions.

As of this date, we have not received your response. In case our first mailing never reached you or was misplaced, we have enclosed another questionnaire and a return, postage-paid envelope.

I urge you to read the instructions and information on the back page of this letter, complete the questionnaire for the aircraft identified on the form, and use the enclosed envelope to return it to us today.

If you have any questions or need further assistance, please contact Ms. Patricia Beardsley at (202) 267-8032 or Mr. Shung-Chai Huang at (202) 267-9943.

We appreciate your participation.

Sincerely,

Bert LaCroix

Bert LaCroix
Manager, Management Standards
and Statistics Division, AMS-400

Enclosure

The 1989 Rotorcraft Activity Survey

Why does the FAA collect this information?

The information collected by the survey will be used in a variety of ways. It will help the FAA to determine the need for changes to some of our regulations and the impact of those changes, and to pinpoint potential safety problems. The information also will help us to forecast rotorcraft activity and to help keep our Rotorcraft Master Plan up to date.

Will the survey responses be kept confidential?

Absolutely!!! The information you provide will not be published or released in any form that would reveal specific information reported by any individually identifiable respondent.

Why was I selected for this survey?

The survey covers all rotorcraft registered with the FAA as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. If you own more than one rotorcraft, you will receive a questionnaire for each. Please answer all questions for the aircraft identified on the questionnaire.

It is very important that we receive a survey questionnaire for each and every rotorcraft registered as of December 31, 1989 so we can make accurate activity estimates for the various rotorcraft models and missions. In some cases the aircraft is not operated by the registered owner, but is actually being operated by another party under a long term operator or lessee arrangement. To increase the chances of covering 100% of the fleet, we are also mailing a package of blank questionnaires to a list of operators provided by the rotorcraft industry.

IF You receive questionnaires as both a registered owner and an operator, complete whichever form is the most convenient for you.

IF You are the owner, but not the operator and cannot complete the form, please send it to the operator. Please do not assume that the operator has received a questionnaire. That company may not be on our list.

We realize, that by doing this, we will get duplicate forms for some aircraft, but we will be able to eliminate duplicate responses. We would rather take this additional step than risk missing an aircraft. So whether you are an owner, operator, or both please complete the form as best you can and return it to us.

What should I do?

IF Your rotorcraft, for whatever reasons, was not in use during calendar year 1989, answer questions 1-9 and return the questionnaire to FAA. The fact that your rotorcraft was not flown during the year is just as important as the fact that it was flown.

IF You cannot provide a precise answer to any questions, make your best estimate.

IF You are no longer in possession of this rotorcraft but were the registered owner on December 31, 1989, try to answer all the questions.

IF your rotorcraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.

IF Your rotorcraft was stolen, destroyed, lost, donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Registry, do so immediately by writing to:

Aircraft Registration Branch, AVN-450
7500 South MacArthur Blvd.
Oklahoma City, OK 73125

The signature of the rotorcraft owner of record is required to make any changes to the aircraft registration record.

If you have any questions regarding the registration of your aircraft, please call (405) 680-3116.

Figure A.4 Third Cover Letter

U.S. Department of Transportation
Federal Aviation Administration

800 Independence Ave., S.W.
Washington, D.C. 20591

July 1990

Dear Rotorcraft Owner:

This is your last opportunity to participate in the 1989 Rotorcraft Activity Survey.

In March and April, we asked you to complete the survey questionnaire which will be used to make estimates of rotorcraft activity. We have not yet received your response.

To make accurate activity estimates, we need information for each and every rotorcraft registered with the FAA as of December 31, 1989. Please consider completing the enclosed survey form and sending it back to us. (Instructions are on the back of this letter.)

If you have any reservations or questions about completing the form, or need further assistance, please call Ms. Patricia Beardsley at (202) 267-8032 or Mr. Shung-Chai Huang at (202) 267-9943.

We appreciate your cooperation.

Sincerely,

Bert LaCroix

Bert LaCroix
Manager, Management Standards and Statistics Division, AMS-400

Enclosure

The 1989 Rotorcraft Activity Survey

Why does the FAA collect this information?

The information collected by the survey will be used in a variety of ways. It will help the FAA to determine the need for changes to some of our regulations and the impact of those changes, and to pinpoint potential safety problems. The information also will help us to forecast rotorcraft activity and to help keep our Rotorcraft Master Plan up to date.

Will the survey responses be kept confidential?

Absolutely!!! The information you provide will not be published or released in any form that would reveal specific information reported by any individually identifiable respondent.

Why was I selected for this survey?

The survey covers all rotorcraft registered with the FAA as of December 31, 1989. The Registry shows you as the registrant of this aircraft on that date. If you own more than one rotorcraft, you will receive a questionnaire for each. Please answer all questions for the aircraft identified on the questionnaire.

It is very important that we receive a survey questionnaire for each and every rotorcraft registered as of December 31, 1989 so we can make accurate activity estimates for the various rotorcraft models and missions. In some cases the aircraft is not operated by the registered owner, but is actually being operated by another party under a long term operator or lessee arrangement. To increase the chances of covering 100% of the fleet, we are also mailing a package of blank questionnaires to a list of operators provided by the rotorcraft industry.

IF You receive questionnaires as both a registered owner and an operator, complete whichever form is the most convenient for you.

IF You are the owner, but not the operator and cannot complete the form, please send it to the operator. Please do not assume that the operator has received a questionnaire. That company may not be on our list.

We realize, that by doing this, we will get duplicate forms for some aircraft, but we will be able to eliminate duplicate responses. We would rather take this additional step than risk missing an aircraft. So whether you are an owner, operator, or both please complete the form as best you can and return it to us.

What should I do?

IF Your rotorcraft, for whatever reasons, was not in use during calendar year 1989, answer questions 1-9 and return the questionnaire to FAA. The fact that your rotorcraft was not flown during the year is just as important as the fact that it was flown.

IF You cannot provide a precise answer to any questions, make your best estimate.

IF You are no longer in possession of this rotorcraft but were the registered owner on December 31, 1989, try to answer all the questions.

IF your rotorcraft was sold prior to December 31, 1989, please forward this mail to the new owner for response.

IF Your rotorcraft was stolen, destroyed, lost, donated to an organization, or otherwise not in your possession, and you have not yet notified the FAA Registry, do so immediately by writing to:

Aircraft Registration Branch, AVN-450
7500 South MacArthur Blvd.
Oklahoma City, OK 73125

The signature of the rotorcraft owner of record is required to make any changes to the aircraft registration record.

If you have any questions regarding the registration of your aircraft, please call (405) 680-3116.

Figure A.5 Special Insert in Third Mailing

ASK THE ADMINISTRATOR

FAA Helicopter Survey Will Improve Services to Users

James B. Busey
Administrator, Federal Aviation Administration

Ask the Administrator is a regular feature column in Rotor magazine. It reaches the top leaders of the civil helicopter industry and serves as a direct communication link between the rotorcraft community and the FAA Administrator.

Mr. Administrator: The FAA has recently initiated a survey of all helicopters registered in the United States.

An earlier survey was done under FAA contract with participation of the Helicopter Foundation International (HFI), and in cooperation with HAI's Safety Through Accurate Technical Statistics (S.T.A.T.S.) Program, which recommended follow on 100 per cent surveys annually.

What do you plan to accomplish with the survey, and when will the results be available?

Answer: It has become clear to me that rotorcraft are playing an increasingly important role in U.S. aviation. Helicopters have become a dominant force in specialized areas such as servicing the natural resource industry, including oil exploration and production, forestry and agriculture, and in law enforcement and emergency medical services. Other important areas continue to grow. These include air taxi charter, executive and business transportation, and aerial observation and application.

Rotorcraft commercial passenger traffic does not appear to be significant today when compared to national totals; however, I believe we will see rapid growth in the commercial passenger area this decade. With new and improved passenger-friendly, all-weather, turbine-powered helicopters coming into the fleet, and the potential that tiltrotor technology offers, the rotorcraft industry should be in a position to capture an increasing market share of short-haul passengers.

Our planning studies indicate that by 2010 rotorcraft could provide as much as 10 percent of intercity air passenger operations capacity in the National Airspace System. This would represent phenomenal growth. These forecasts are driven by two key factors: First, by the end of this decade the number of capacity-constrained airports in this country is expected to almost double from 22 to 37. Secondly, improved helicopters and tiltrotors will be available and capable of operating reliably, independent of congested air routes and runways. The FAA is committed to doing the necessary air traffic control and airspace work to permit this to happen. We are also committed to doing our share to support state and local governments and developers in their efforts to bring public use heliports and vertiports on-line.

The 1989 Rotorcraft Activity Survey will help the Federal Aviation Administration improve the services it provides to system users. To make decisions on what services are needed, and in which locations, we need accurate operations data. This data is also important for improving our rotorcraft forecasts, which serve as a foundation for planning and development of future strategies. The 100 percent rotorcraft activity survey is targeted at developing this industry data.

Since 1977, the FAA, using sampling techniques, has collected general aviation activity information as part of its General Aviation Activity and Avionics (GA) Survey. The activity information collected includes such items as total flight hours, flight hours by use category, total lifetime airframe hours, number of landings, and the state where the aircraft is based. Categories of use include areas such as commuter air carrier, business transportation, and aerial observation. The survey is broad and covers the full spectrum of General Aviation aircraft: fixed-wing powered aircraft, rotorcraft, gliders, blimps, dirigibles, and balloons.

Although rotorcraft are included in the GA Surveys, their data is not categorized such that it clearly and completely describes rotorcraft operations, and the GA Survey does not collect data on types of landing facilities used by rotorcraft. Therefore, the data is not segmented into all the areas of particular interest to rotorcraft owners and operators. This additional information is captured in the new survey.

Another concern is that rotorcraft represents only 4 percent of the registered general aviation fleet that is being sampled. As a result, year-to-year rotorcraft data showed more variability than we would like to see. The one-time 100 percent survey will enable us to accurately describe helicopter operations in 1989. This data will serve as a base for current decisions and improve forecasts and future planning. I believe it will aid manufacturers and operators in developing strategies that will be beneficial to the overall growth and health of the industry.

Questionnaires were mailed in late March, 1990. The response rate has been good; by mid-June, over 60% of the survey forms were completed and submitted to FAA. Since our goal is to collect data on all helicopters, we are now taking steps to encourage owners and operators, who have not as yet responded, to fill out their forms. Data collection should be completed by the end of July and survey results will be available by the end of the year. I'm sure that you in the industry are as anxious as I am to see the results of this survey.

The survey could not be successful without the cooperation of the owners and operators. The FAA has appreciated the interest and support that the industry, and the Helicopter Association International, has given to this effort.

This article is reprinted from the Summer 1990 edition of Rotor magazine with the permission of the Helicopter Association International.

APPENDIX B

SDR ROTORCRAFT GROUP NAME
FAA MANUFACTURER/MODEL CODES

SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
AERORSJ2	5500604	BELL 47	1181012	FRCHLDFH1100	4361415	HUGHES369	4470731	MILITARY47	1181002
AEROSP360	8680662	BELL 47	118084G	H19/45	8141615	HUGHES369	4470704	MILITARY47	1181005
AEROSPAAS355	8680807	BELL 47	1181102	H19/45	814161E	HUGHES369	4470718	MILIYARY204	118141G
AEROSPAS355	8680806	BELL 47	1181011	H23/HTE	4360109	HUGHES369	4470708	MODFD47	1181074
AEROSPAS355	8680812	BELL 47	1180606	H23/HTE	4360111	HUGHES369	4470802	MODFD47	1181306
AEROSPAS355	8680805	BELL 47	1181003	H23/HTE	4362305	HUGHES369	4470806	MODFD47	1181063
AEROSPAS355	8680810	BELL 47	1181014	H23/HTE	4360123	HUGHES369	4470722	MODFD47	1180822
AEROSPSA316	8680615	BELL 47	1181202	H23/HTE	4362303	HUGHES369	4470706	MODFD47	1181027
AEROSPSA316	8680515	BELL 47	1181023	H34/55	8141813	HUGHES369	4470720	MODFD47	1180820
AEROSPSA316	8680605	BELL 47	1181104	H34/55	8141810	HUGHS369	4470805	MODFD47	118084V
AEROSPSA316	8680207	BELL 47	1181031	H34/55	8141823	HYNES 305	1440602	MODFD47	118103Z
AEROSPSA365	8680669	BELL 47	1181033	H34/55	8141819	HYNES B2	1440502	MODFD47	118084F
AGUSTA205	1181414	BELL 47	1181024	H37	8142302	HYNES B2	1440506	MODFD47	1181060
AGUSTA206AGS	0260301	BELL 47	1181310	HILLERFH1100	3376502	HYNES B2	1440504	MODFD47	1180846
AGUSTA206AGS	0260302	BELL 47	1181026	HILLERUH12	4360105	KAMAN K600	4800805	MODFD47	1181072
AGUSTAA109	0260112	BELL 47	1181029	HILLERUH12	4360809	KAMAN K600	4800702	MODFD47	1180843
AGUSTAA109	0260120	BELL 47	1180702	HILLERUH12	4360130	KAMAN K600	4800704	MODFD47	1180844
AGUSTAA109	0260109	BELL 47	1181008	HILLERUH12	4360113	KAMAN K600	4800802	MODFD47	1181065
AIRSPC18	0440104	BELL 47	1181025	HILLERUH12	4360128	KAMANK600	8940101	MODFD47	118103H
AMTR GOOD	1301577	BELL 47	1181034	HILLERUH12	4360132	KAWSKIKV107	4820101	MODFD47	1181013
AMTR MENZIE	13027HJ	BELL 47	1181106	HILLERUH12	4360127	KELLETKD1	4850106	MODFD47	1181068
AMTRACELITE	13027GG	BELL 47	1181030	HILLERUH12	4360120	MACDOUG369	3027369	MODFD47	118100V
AMTRBTBARNET	05602VE	BELL 47	1180604	HILLERUH12	4360110	MILITARY204	1181401	MODFD47	1180847
AMTRNPVCRAFT	13027C7	BELL 204	1181402	HILLERUH12	4360121	MILITARY204	1181411	MODFD47	118084C
ARCRNEH37	8141617	BOEING107	9420604	HILLERUH12	4360118	MILITARY204	118141B	MODFD47	1181001
ARCRNEH37	8142801	BOEING107	1385005	HILLERUH12	4360122	MILITARY204	1181407	MODFD47	1181019
BELL 204	1181404	BOEING107	1385007	HILLERUH12	4360114	MILITARY204	1181410	MODFD47	118084R
BELL 204	1181405	BOEING234	1385064	HILLERUH12	4360124	MILITARY204	1181409	MODFD47	1180845
BELL 206	1182107	BOEING234	1385049	HILLERUH12	4360116	MILITARY204	118141M	MODFD47	1181066
BELL 206	1181522	BOEINGH21	9420102	HILLERUH12	4360126	MILITARY204	1181408	MODFD47	1181071
BELL 206	1181502	BOEINGH21	9420106	HILLERUH12	4360119	MILITARY47	1180804	MODFD47	1181067
BELL 206	1181511	BOEINGH21	1385006	HILLERUH12	4360125	MILITARY47	8930105	MODFDUH12	4360704
BELL 206	1182108	BOLKMS105	5626020	HILLERUH12	4360103	MILITARY47	1180817	MODFDUH12	4360702
BELL 206	1181506	BOLKMS105	5626006	HILLERUH12	4360102	MILITARY47	1181007	MODFDUH12	4361301
BELL 206	1182103	BOLKMS105	5626008	HILLERUH12	4360131	MILITARY47	1180810	MODFDUH12	4360701
BELL 206	1181508	BOLKMS105	5626005	HILLERUH12	4360135	MILITARY47	8930107	MODFDUH12	4361101
BELL 212	1181420	BOLKMS117	5626015	HILLERUH12	4360104	MILITARY47	1181010	MODFDUH12	4360801
BELL 214	1182100	BOLKMS117	5626010	HILLERUH12	4360115	MILITARY47	8930110	MODFDUH12	4360601
BELL 214	1182105	BOLKMS117	5626012	HILLERUH12	4360117	MILITARY47	1180813	MODFDUH12	4360810
BELL 214	1182106	BOLKMS117	5626017	HILLERYROE1	4362402	MILITARY47	8930103	MODFDUH12	4361501
BELL 222	1182122	ENSTRMF28	3300506	HUGHES269	4470402	MILITARY47	1180806	ORLHELH19	8141614
BELL 222	1182124	ENSTRMF28	3300404	HUGHES269	4470404	MILITARY47	1181585	ORLHELH19	8141609
BELL 222	1182140	ENSTRMF28	3300510	HUGHES269	4470403	MILITARY47	1180802	ORLHELH19	8141610
BELL 222	1182148	ENSTRMF28	3300407	HUGHES269	4470504	MILITARY47	1180904	ORLHELH19	814161G
BELL 222	1182123	ENSTRMF28	3300505	HUGHES269	4471004	MILITARY47	1180809	ORLHELH19	8141612
BELL 301	1182109	ENSTRMF28	3300412	HUGHES269	4470502	MILITARY47	1180808	ORLHELH19	8141608
BELL 412	1182202	ENSTRMF28	3300550	HUGHES369	4470728	MILITARY47	1181504	ORLHELH19	814161J
BELL 47	1181028	ENSTRMF28	3300406	HUGHES369	4470702	MILITARY47	1180815	ORLHELH19	8141618
BELL 47	1181032	ENSTRMF28	3300430	HUGHES369	4470707	MILITARY47	1181006	ORLHELH19	8141616
BELL 47	1181020	ENSTRMF28	3300502	HUGHES369	4470730	MILITARY47	8930102	ORLHELS58	8141818

APPENDIX B

SDR ROTORCRAFT GROUP NAME
FAA MANUFACTURER/MODEL CODES

SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE	SDR NAME	FAA CODE
OTHEXMILPIST	8140102	SKRSKYS76	8143006						
OTHEXMILPIST	8140304	SKRSKYS76	8143010						
OTHEXMILTURB	4800803	SKRSKYS76	8143007						
OTHEXMILTURB	4470904	SNIAS 350	8680803						
OTHEXMILTURB	4470905	SNIAS 350	8680800						
OTHEXMILTURB	4800708	SNIAS 350	8680801						
PIASEHUP	6980302	SNIAS 350	8680802						
PIASEHUP	6980320	SNIAS 350	8680804						
ROBSINR22	7640102	SNIAS AS332	8680808						
ROBSINR22	7640110	SNIAS AS332	8680809						
ROBSINR22	7640104	SNIAS SA318	8680506						
ROBSINR22	7640115	SNIAS SA318	8680508						
SCHWZH269	8059500	SNIAS SA318	8680511						
SCHZOWMODELB	0560221	SNIAS SA330	8680612						
SKRSKYS51	8141102	SNIAS SA341	8680610						
SKRSKYS52	8141306	SNIAS SE313	8680502						
SKRSKYS52	8141308	TH55	4471002						
SKRSKYS55	8141603	TOMCAT	2390304						
SKRSKYS55	8141606	TOMCAT	2390101						
SKRSKYS55	8141602	TOMCAT	1181069						
SKRSKYS55	8141604	TOMCAT	2390302						
SKRSKYS55	8141605	TOMCAT	2390204						
SKRSKYS58	8141808	TOMCAT	2390303						
SKRSKYS58	8141806	TOMCAT	2390202						
SKRSKYS58	8141821	TOMCAT	1180816						
SKRSKYS58	8141804	TOMCAT	2390301						
SKRSKYS58	8141811	TOMCAT	1181062						
SKRSKYS58	8141801	TOMCAT	1181061						
SKRSKYS58	8141814	TOMCAT	2390305						
SKRSKYS58	8141815	WESTLD30	9650160						
SKRSKYS58	8141839								
SKRSKYS58	8141809								
SKRSKYS58	8141800								
SKRSKYS58T	8141805								
SKRSKYS58T	8141807								
SKRSKYS58T	8141840								
SKRSKYS58T	8141803								
SKRSKYS58T	8141844								
SKRSKYS58T	8141842								
SKRSKYS61	8142102								
SKRSKYS61	8142104								
SKRSKYS61	8142103								
SKRSKYS61	8142101								
SKRSKYS61	8141826								
SKRSKYS61	814210C								
SKRSKYS61	8142107								
SKRSKYS62	8142202								
SKRSKYS64	8142604								
SKRSKYS64	8142620								
SKRSKYS70	8143000								

APPENDIX C

DEFINITIONS OF ROTORCRAFT EXPANDED USE CATEGORIES

Aerial Application--Use of the aircraft for the distribution of things; includes operations under FAR Part 137, Agricultural Aircraft Operations, and also activities like crop dusting, insect control, fish stocking, fire fighting, and fertilization.

Aerial Observation--Use of the aircraft as an observation platform. Examples include: mapping, photography, survey, patrol, search and rescue, highway traffic advisory, sightseeing, ranching, surveillance, oil and mineral exploration, criminal pursuit, and fish spotting.

Air Taxi--Passenger and cargo operations for hire under FAR Part 135: Air Taxi and Commercial Operators, excluding commuters and Emergency Medical Service (EMS).

Business Transportation--Individual use of an aircraft for business reasons.

Commuter Air Carrier--Scheduled (at least five scheduled round trips per week) passenger and cargo operations under FAR Part 135: Air Taxi and Commercial Operators.

Company/Executive Transportation--Transportation of company personnel, guest, or cargo, with a professional crew (not under FAR Part 135, Air Taxi and Commercial Operators). Examples include: transporting parts or crews to off-shore oil rigs, transporting fire fighters to fires, and bank paper transfer.

Emergency Medical Service (EMS)--Transporting people for medical care, or transporting donor organs for transplant.

- o Under FAR Part 135, Air Taxi and Commercial Operators;
- o Not under FAR Part 135.

External Load--Operations under FAR Part 133, Rotorcraft External Load Operations. Examples include helicopter hoist and hauling logs.

Instructional--Flying under the supervision, or specific direction, of a flight instructor.

Other--R&D, experimentation, testing, air shows, demonstrations.

Other Work Use--Construction work, aerial advertising, pollinating, movie making.

Personal/Recreational--Individual flying for personal, non-business reasons.

* U.S. G.P.O.:1991-521-778:40028