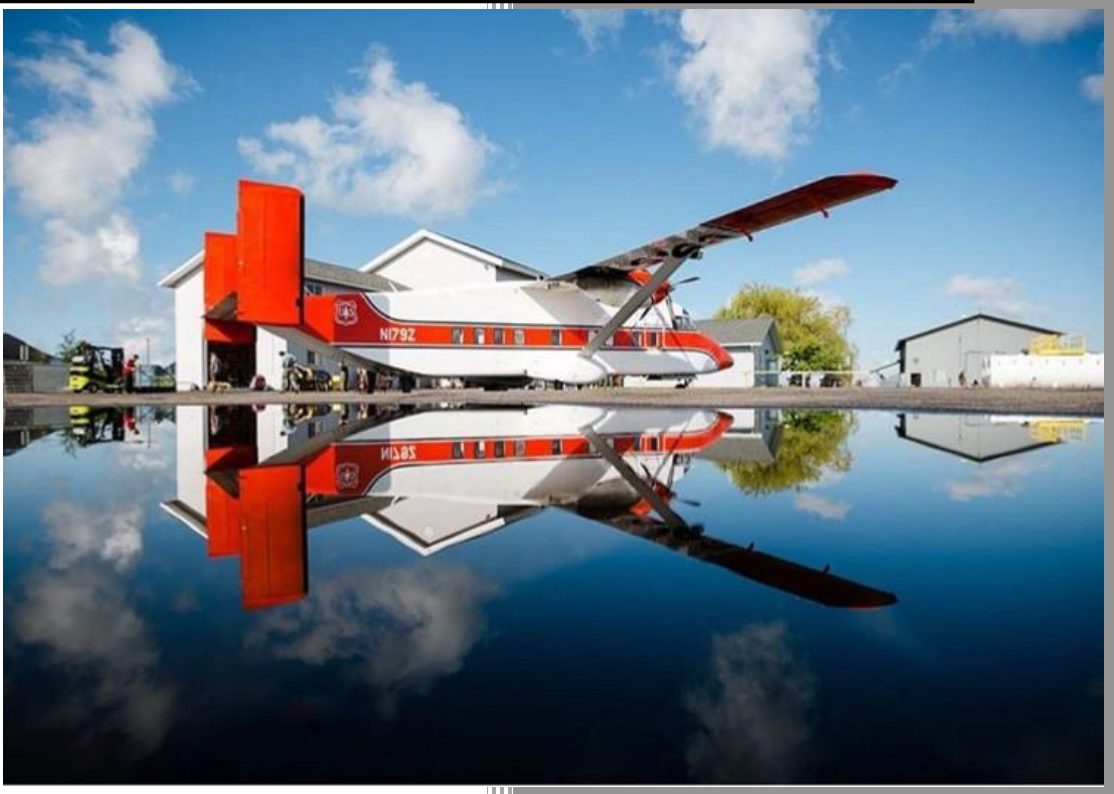
2016

Aviation Annual Report



|Aviation Facts Aircraft Use Summary

U.S. Forest Service

2016

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Executive Summary

This document provides a comprehensive picture of the U.S. Forest Service Aviation use and costs. The report is dynamic and subject to change. Fire and Aviation Management provides updates at least annually.

Information sources include the Aviation Business System (ABS), Forest Service aviation program specialists, Washington Office contract specialists and Regional aviation officers.

Report lists data using both Fiscal Year (October 1 – September 30) and Calendar Year (January 1 – December 31), depending on the record management system.

Table 1 – 2016 Forest Service Aircraft Totals

Contracted Aircraft	Number of Aircraft
Helicopters	
Helicopters – Exclusive Use (EXU)	113
Helicopters – Call When Needed (CWN)	208
Airtankers	
Legacy Airtankers – EXU	7
Next Gen Large Airtankers – EXU	13
Forest Service Owned	1
Airtanker – CWN	8
MAFFS	8
SEATs (EXU)	1
Water Scooper – CL-415 (EXU)	2
Fixed-Wing Aircraft	
Light Fixed-Wing ATGS (EXU)	46
Light Fixed-Wing ATGS (CWN)	150

Report Data Disclaimer

Aircraft use, cost and other data queried from the Aviation Business System (ABS) and Aviation Management Information System are only as accurate as the information entered. Totals can represent aircraft and flights on non-fire missions (wildlife, resource, and point to point missions) In some instances, ABS does not require completion of the cargo weight field.

For example, cargo is entered just 6 percent of the time for an aircraft flight; and the weight of the cargo is not entered. In the case of contract aircraft in ABS, Forest Service updates data as payments are processed.

ABS is an invoicing tool and not designed for reporting. Inconsistences in some data sets are noted. Trends are accurate.

Contracted Aircraft	Number of Aircraft
Smokejumper Aircraft (EU)	6
Aerial Supervision Module/LP – Lease	16
Large Transport (EU)	1
Large Transport (CWN)	1
Agency Owned and Operated (O&O) Aircraft	
Working Capital Fund Fleet - Total **Fixed-Wing 20** **Rotor Wing 3**	23

Introduction

The Forest Service bases its Aviation Risk Management program on the philosophy that all aircraft mishaps are preventable and that mishap prevention is an inherent function of management.

The Forest Service had zero accidents in 2016.

The Forest Service flew 65,071 hours in FY2016, which is slightly below the 10-year average of 67,407 flight hours. The primary mission of Forest Service Aviation is to support firefighters and natural resource programs through a variety of means, including, but not limited to:

- Aerial delivery of firefighters by parachute, rappel rope, or on-site landing;
- Air tactical command and control;
- Surveillance, reconnaissance, and intelligence gathering;
- Infrared detection and mapping;
- Aerial delivery of fire retardant and water;
- Passenger transport for firefighting and resource missions;
- Administrative flights;
- Research;
- Forest rehabilitation;
- Forest health protection (aerial surveys, application and photography);
- Law enforcement; and
- Aerial photography.

Approximately 300 personnel at the Washington, Regional and Forest level offices administer the aviation program. The national staff is located in Washington, D.C., and at the National Interagency Fire Center (NIFC) in Boise, Idaho. The vast majority of aviation personnel are located throughout the forests with local forest and regional office staff providing day-to-day operational oversight and program guidance.

Numerous state agencies and county municipalities operate Forest Service owned aircraft under the Federal Excess Personal Property (FEPP) program. These aircraft are not included in these statistics or mishap data.

Aviation Safety

The Forest Service goal is to develop a safety culture that achieves and maintains a zero accident rate. A highly successful safety culture understands that every person in the organization accepts that safety is a conscious and ongoing mindset as opposed to simply a box-to-be checked. Safety is a dynamic non-event. Consequently, the Forest Service must maintain the capability to continuously seek out and eliminate latent defects without systems and cultures. By being proactive, potential causal factors are eliminated that could lead to future accidents.

Fiscal Year 2016 Aviation Safety Accomplishments

Table 2 – FY 2016 Accident Statistics

Aircraft Type	Hours	Number of Accidents	Accident Rate	Number of Fatalities	Fatality Rate
Fixed-Wing	18,238	0	0	0	0
Helicopter	35,594	0	0	0	0
Large Airtanker (LAT)	5,997	0	0	0	0
Single Engine Airtanker (SEAT)	558	0	0	0	0
USFS Owned and/or Operated (USFS O/O)	7,684	0	0	0	0
Total	**65,071**	**0**	**0**	**0**	**0**

Table 3 – 10-year Fatal Accident and Fatality Rates[1]

Year	Fatal Accidents	Fatal Accident Rate	Number of Fatalities	Fatality Rate
2016	0	0	0	0
10-Year Average	.6	.89	1.9	2.81

[1] Forest Service computes the fatal accident rate by dividing the number of fatal accidents by the number of hours flown, then, multiplied by 100,000.

Table 4 – 10-year Accident Rates[2]

Year	# of Accidents	Fixed-Wing	Helicopter	Airtanker	Single Engine Airtanker	USFS O&O
2016	0	0	0	0	0	0
10-Year Average	1.9	2.3	2.77	7.1	30.36	0

Table 5 – 10-year Fiscal Year (FY) Flight Hour Statistics

Year	Fixed-Wing	Helicopter	Airtanker	Single Engine Airtanker	USFS O&O	Total
2016	18,238	35,594	5,997	558	7,684	**65,071**
10-Year Totals	217,008	324,715	42,198	6,586	83,560	674,067
10-Year Average	21,701	32,472	4,220	659	8,356	67,407

[2] Forest Service computes the 10-year Accident Rate by dividing the number of accidents by the number of hours flown; then, multiplied by 100,000.

Aircraft Information

The U.S. Forest Service requires aircraft services for both fire and non-fire missions. In 2016, over 600 aircraft were available to fulfill the overall mission of the agency. Although the Forest Service owns a limited number of aircraft, the agency contracts the majority of the aviation assets available for mission-related work. Regardless of the type of contract, the numbers below do not "double count" aircraft.

Helicopters

In 2016, over 300 contracted helicopters, including one for night air operations in southern California, were available for fire activities.

Water Scoopers

The Forest Service contracted two water scoopers on exclusive use contracts and two on call when needed contracts.

Fixed-Winged Aircraft

The Forest Service contracted 16 light fixed-wing aircraft for air tactical supervision—one equipped with infrared and color video, providing night air tactical supervision and fire intelligence.

Airtankers

The Forest Service had combination of owned and/or contracted airtankers available in 2016. Additional airtankers included those from state and Canadian cooperators and Military MAFFS.

Table 6 – Contract Fire Suppression Helicopters

Program	Number of EXU	Number of CWN	Total Number of Contract Aircraft by Type
Type 1 (Helicopters)	34	18	52
Type 2 (Helicopters)	33	40	72
Type 3 (Helicopters)	45	150	196
Type 2 Std. (Night Flying)	1	0	1
Total Helicopters	**113**	**208**	**321**

Table 7 – Exclusive Use Helicopters by Region

Region	Type 1 LFS	Percentage	Type 2 IA	Percentage	Type 3[3]	Percentage
Region 1	5	15	3	9	5	11
Region 2	2	6	1	3	2	4
Region 3	2	6	1	3	8	18
Region 4	7	20	6	18	11	24
Region 5	12	35	16	48	3	7
Region 6	5	15	6	18	4	9
Region 8	0	0	0	0	10	22
Region 9	1	3	0	0	2	4
Region 10						

[3] Some Type 3 helicopters are shared contracts between regions. The helicopter is counted initially in the region it starts the MAP only.

Table 8 – Fixed-Wing Exclusive Use Contract Aircraft

Program	Number of EXU	Number of CWN
Smokejumper Aircraft	6	1
Aerial Supervision Modules/Lead Planes	15	0
Light Fixed-Wing ATGS[4]	16	150+
Transport Jet	1	1
Total	37	151+

Table 9 – Airtankers

Program	Agency Owned	Number of EXU	Number of CWN
Legacy Airtankers		7	0
Next Generation Airtankers		13	9
Single-Engine Airtankers (SEATs)	1		
MAFFS		0	8
Cooperator Large Airtankers		Up to 8	

Table 10 – 2016 Aircraft Use by Type on Exclusive Use Contracts (in millions for cost and gallons)

Aircraft Model	Flight Hours	Availability Cost	Retardant Gallons
BAE 146	1141	$17.7	5.2
RJ85	1080	$23.0	4.0
DC-10	484	$10.9	4.6
C 130Q	340	$4.4	1.7
P2V	1197	$15.3	2.3
Totals	4242	$74	9.2

[4] Fuels funded; not counting Type 3 helicopters

Aircraft Use Information[5]

Approximately 48 percent of Forest Service contracted airtanker used was by federal, state and local cooperators, during calendar years 2012 – 2016.

Total Use

Table 11 – Aircraft Total Use

Total Use by Year	Number of Hours
CY 2012	81,649
CY 2013	66,222
CY 2014	57,716
CY 2015	68,239
CY 2016	65,767
5-Year Average	**67,799**

Table 12 – Percent of CY 2016 Flight Time Average by Aircraft Type[6,7]

Aircraft Type	Number of Hours	Average
Contracted Rotor-Wing	32,594	57%
Contracted Fixed-Wing (Excluding Airtankers)	18,238	32%
Airtankers	5,997	11%
Totals	56,829	100%

[5] Obtained all Use Information from Aviation Business System (ABS)
[6] Water Scooper is included in Fixed-Wing
[7] Forest Service Owned C130s are included in Airtankers

Table 13 – CY 2016 Exclusive Use (EXU) and Forest Service Owned Helicopter Use

Helicopter Type	Flight Hours	Gallons of Water	Gallons of Retardant
Type 1	9,565	50,837,322	2,910,102
Type 2	7,209	8,103,575	123,675
Type 3	8,355	1,867,747	31,177
Firewatch[8]	296.3		
Totals	**25,425**	**60,808,644**	**3,064,954**

Table 14 – CY 2016 Call When Needed (CWN) Helicopter Use

Helicopter Type	Flight Hours	Gallons of Water	Gallons of Retardant
Type 1	2,930	13,213,904	1,288,992
Type 2	1,358	2,247,152	69,730
Type 3	3,359	391,435	950
Totals	**7,647**	**15,852,491**	**1,359,672**

Table 15 – CY 2016 EXU and Forest Service Owned Airtanker Use[9]

Exclusive Use Airtanker Utilization		
Calendar Year	**Flight Hours**	**Gallons of Retardant**
2012	3,137	6,170,014
2013	2,381	5,449,199
2014	2,814	7,993,527
2015	2,960	8,505,338
2016	3,842	13,413,889

[8] Firewatch helicopters have infrared equipment used to find hotspots, and do not fill the role of the usual type designation. The Forest Service owns these aircraft.
[9] Does not include Very Large Airtankers (VLAT), Modular Aerial Fire Fighting Systems (MAFFS) or Cooperator airtankers

Table 16 – CY EXU VLAT Use

Calendar Year	Flight Hours	Gallons of Retardant
2013	379	3,627,080
2014	390	3,664,909
2015	243	2,206,558
2016	484	4,698,349

Table 17 – CY 2016 Forest Service Owned C130

Calendar Year	Flight Hours	Gallons of Retardant
2016	29.6 (training)	0

Table 18 – CY 2012 – 2016 CWN VLAT Use

Calendar Year	Flight Hours	Gallons of Retardant
2012	327	2,963,276
2013	60	473,206
2014	4	0
2015	273	2,517,189
2016	52	595,995
5-Year Average	**143**	**1,309,933**

Table 19 – CY 2012 – 2016 MAFFFs Use

Calendar Year	Flight Hours	Gallons of Retardant
2012	848	2,352,000
2013	579	1,387,900
2014	117	244,406
2015	424	980,246
2016	144	411,774
5-Year Average	**422**	**1,075,265**

Table 20 – Aircraft Use on Forest Service Lands by Region on Fires in CY 2016

Region	Flight Hours	Percentage of Total Flight Hours
Region 1	4,074	11.6%
Region 2	3,167	9.1%
Region 3	3,362	9.6%
Region 4	6,963	20.1%
Region 5	11,141	31.9%
Region 6	2,509	7.2%
Region 8	3,064	8.7%
Region 9	663	1.8%
Region 10	0	0.0%
Total	**34,943**	**100%**

Table 21 - Contract and Agency-Owned Aircraft Use Information

Calendar Year	Flight Hours	# of Passengers	Cargo Weight (LBS)
2012	80,688	82,896	13,601,055
2013	66,559	79,171	18,419,724
2014	57,713	82,807	23,914,465
2015	68,239	93,630	16,294,902
2016	65,767	75,422	10,711,562

Table 22 – Retardant Use

Fiscal Year	Gallons
2012	11,484,191
2013	13,269,027
2014	13,628,338
2015	17,829,660
2016	23,554,633

Table 23 – CY 2011 – 2015, 2016 Airtanker Flight Hours on Fires, by Fire Ownership

Region/Agency	2011-2015 Average	2016
DOI	20.0%	15.7%
State	34.5%	31.4%
FS Total	45.4%	52.9%
FS – Region 1	3.7%	3.1%
FS – Region 2	2.0%	8.4%
FS – Region 3	9.8%	5.8%
FS – Region 4	4.2%	27.3%
FS – Region 5	18.5%	46.7%
FS – Region 6	6.1%	4.2%
FS – Region 8	.7%	3.3%
FS – Region 9	.3%	1.2%
FS – Region 10	.1%	0.0%

Table 24 – 2016 Agency Owned Aircraft Use

Aircraft Registration #	Aircraft Make	Aircraft Model	Flight Hours
N4704A	CESSNA	185 SKYWAGON	333
N111Z	CESSNA	206 STATIONAIR-6	44.9
N166Z	CESSNA	206 STATIONAIR-6	218.9
N126Z	CESSNA	206/STATIONAIR-6	62.4
N106Z	BELL	206B-III	153.1
N109Z	BELL	AH-1 COBRA	268.4
N173Z	SHORT	C-23A	181
N175Z	SHORT	C-23A	112.4
N178Z	SHORT	C-23A	97.7
N179Z	SHORT	C-23A	140.7
N191Z	DE HAVILLAND	DHC-2 BEAVER	117.7
N192Z	DE HAVILLAND	DHC-2 BEAVER	28.1
N106FS	DE HAVILLAND	DHC-2 BEAVER	89.4
N193Z	DE HAVILLAND	DHC-2 BEAVER	93.6
N144Z	CESSNA	CITATION I 500	552.7
N107Z	BELL AH-1	AH-1 COBRA	295.4
N147Z	GULFSTREAM	COMMANDER 500 B	88.7
N149Z	BEECH	KING AIR 200	538.6
N182Z	BEECH	KING AIR 200	98.4
N4340Z	PIPER	SUPER CUB PA-18	191.2
N141Z	DE HAVILLAND	TWIN OTTER DHC-6	173.5
N143Z	DEHAVILLAND	TWIN OTTER DHC-6	189

Aircraft Registration #	Aircraft Make	Aircraft Model	Flight Hours
N118Z	Lockheed	HC-130H	29.6
TOTAL AGENCY OWNED HOURS			**4098.4**

Table 25 – CY 2012 – 2016 Total Flight Hours by Aircraft Type[10]

Calendar Year	Fixed-Wing	Rotor-Wing	Airtanker	Total Hours
2012	26,184	38,473	3,410	68,067
2013	21,993	29,480	2,786	54,259
2014	17,736	24,614	3,188	45,539
2015	22,276	30,399	4,128	56,794
2016	26,480	32,776	6,511	65,767

Table 26 – 2012 – 2016 Non-Preparedness and Suppression Flight Hours

Calendar Year	Flight Hours	Percentage of Total Hours
2011	13,034	19%
2012	12,621	16%
2013	12,300	18%
2014	12,174	21%
2015	11,403	17%
2016	12,788	18.8%

[10] For the purpose of this report, Water Scoopers count as Fixed-Wing aircraft.

Table 27 – CY 2016 Rappel Program

Base	Region	Aircraft	Rappellers	Fires Rappelled	Large Fires Supported	Flight Time
Gallatin	R1	Bell 212 HP	13	5	4	132.6
Libby	R1	Bell 212 HP	16	4	6	162.4
Salmon	R4	(2) Bell 205A1++	35	38	20	386.6
Lucky Peak	R4	Bell 205 A1++	15	5	3	198.3
Price Valley	R4	(2) Bell 205A1++	29	17	14	357.4
Scott Valley	R5	Bell 205 A1++	20	9	6	229
Trimmer	R5	Bell 212HP	15	11	9	259.4
Blue Mountain	R6	Bell 205 A1++	19	29	19	129.1
Wenatchee	R6	Bell 205 A1++	27	16	11	160
Sled Springs	R6	Bell 205 A1++	15	38	6	149.5
John Day	R6	Bell 210	27	16	3	186.3
Siskiyou	R6	Bell 205 A1++	19	21	1	198.1
Central OR	R6	Bell 205 A1++	18	22	3	134
13 Bases	4 Regions	15 Aircraft	268	231	105	2,682.70

Table 28 – CY 2016 Smokejumper Program

Smokejumper Base	Region	Aircraft	# of Smokejumpers	Fires	Fires Jumped
Grangeville	R1	(1) DHC-6 Twin Otter/Leading Edge	29	25	60
Missoula	R1	(1) Sherpa/USFS (1) DHC-6 Twin Otter/Leading Edge (1) CASA 212/Bighorn	65	42	172
West Yellowstone	R1	(1) Dornier 228/Bighorn	28	25	67
McCall	R4	(2) DHC-6 Twin Otter/USFS (1) DHC-6 Twin Otter/Leading Edge	63	32	149
Redding	R5	(1) Sherpa/USFS (1) CASA 212/Bighorn	37	22	110
North Cascades	R6	(1) CASA 212/Bighorn	28	12	51
Redmond	R6	(2) Sherpa/USFS	50	22	116
7 Bases	**4 Regions**	**13 Aircraft**	**301**	**180**	**725**

Table 29 – Total Aviation Cost in $ millions (FY 2012 – 2016)[11]

Fiscal Year	Total Aviation Costs	Availability Cost	Flight and Miscellaneous
2012	$366.8	$183.9	$182.9
2013	$358.6	$185.7	$172.9
2014	$376.3	$222.3	$154.0
2015	$468.6	$283.5	$185.1
2016	$490.9	$293.8	$197.1

Table 30 – Airtanker Availability and Flight Costs in $ millions (FY 2012 -2016)

Fiscal Year	Flight Hours	Total	Availability	Flight and Miscellaneous
2012	3,137	$47.3	$26.9	$20.4
2013	2,381	$58.9	$30.2	$28.7
2014	2,814	$87.3	$58.2	$29.0
2015	2,960	$122.8	$85.9	$36.9
2016	6,277	$121.9	$82.2	$39.7

Table 31 – MAFFS Costs in $ millions (FY 2012 – 2016)

Fiscal Year	Total Cost
2012	$19.5
2013	$18.5
2014	$2.6
2015	$5.3
2016	$2.3

[11] Total Cost is derived from ABS

Table 32 – Helicopter Availability and Flight Costs in $ millions (FY 2012-2016)

Fiscal Year	Flight Hours	Total	Availability	Flight and Miscellaneous
2012	40,786	$263.8	$141.1	$122.6
2013	35,272	$245.8	$139.0	$106.8
2014	28,440	$227.3	$137.8	$89.4
2015	32,946	$264.7	$162.7	$102.1
2016	34,371	$382.0	$173.6	$208.4

Table 33 – Type 1 Helicopter Availability and Flight Costs in $millions (FY 2012-2016)

Fiscal Year	Flight Hours	Total	Availability	Flight and Miscellaneous
2012	11,661	$135.3	$74.3	$61.0
2013	11,323	$139.0	$79.3	$60.6
2014	8,623	$128.2	$78.9	$49.3
2015	10,698	$164.0	$101.1	$62.9
2016	13,168	$178.2	$107.5	$70.6

Table 34 – Type 2 Helicopter Availability and Flight Costs in $millions (FY2012-2016)

Fiscal Year	Flight Hours	Total	Availability	Flight and Miscellaneous
2011	7,276	$38.2	$23.5	$14.7
2012	10,108	$46.0	$24.9	$21.1
2013	9,310	$48.1	$28.4	$19.7
2014	8,060	$49.9	$31.5	$18.5
2015	9,913	$59.9	$38.1	$12.9
2016	10,061	$165.6	$44.5	$121.1

Table 35 – Type 3 Helicopter Availability and Costs in $millions (FY2012-2016)

Fiscal Year	Flight Hours	Total	Availability	Flight and Miscellaneous
2012	18,393	$82.3	$41.9	$40.3
2013	14,035	$57.6	$31.4	$26.1
2014	11,198	$48.9	$27.5	$21.4
2015	11,749	$40.6	$23.5	$17.1
2016	11,142	$38.2	$21.5	$16.7

Table 36 – Total Fixed Wing Costs (in $millions) [12]

Fiscal Year	Total	Availability	Flight and Miscellaneous
2012	$55.7	$15.9	$39.8
2013	$53.8	$16.5	$37.3
2014	$61.7	$26.2	$35.4
2015	$80.9	$34.9	$46.0
2016	$127.9	$70.1	$57.7

[12] Includes Water Scoopers, not Airtankers