



FY2018 Aviation Safety Summary and Annual Report

30th
Annual

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Partnering for better, faster, cheaper, safer aviation missions



Fiscal Year 2018 DOI Aviation Safety Summary and Annual Report

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The Department of the Interior’s Aviation Safety and Aircraft Accident Prevention program is founded on the four pillars of an integrated **Safety Management System (SMS)**:



The Department’s aviation programs are built on Federal Aviation Administration (FAA) regulatory requirements, Federal Management Regulations (FMR) Departmental regulations (DMs) and industry best practices.

This foundation requires each bureau and their respective region/state/unit to develop customized practices and policies to ensure they are readily adopted in their respective operational arenas. **Management is responsible for ensuring their respective aviation programs are properly resourced.** These requirements apply to all programs regardless of the amount of flying or type of aircraft (i.e. manned, sUAS).

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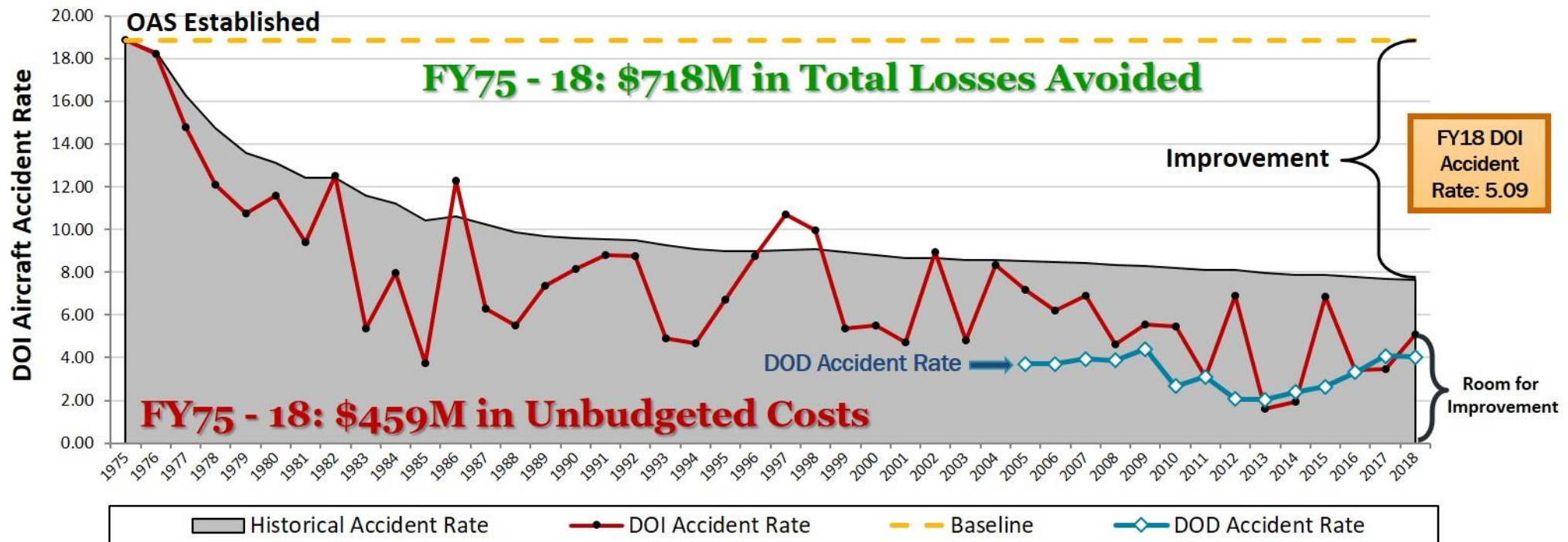




Aircraft Accident Rate

The U.S. Department of the Interior (DOI) ended the year recording four incidents with potential (IWPs) and three accidents. The **annual** aircraft accident rate is 5.09 per 100,000 flight hours, an increase of 1.63 from last year. The DOI mishap rate is 11.88, which is an increase from the previous year by 1.5. Zero aircraft accidents **IS** an attainable goal. We must meet and exceed expectations set for ourselves through training, safety guidelines, and safety tools. (<https://www.doi.gov/aviation/library/guides>)

DOI Aircraft Accident Rate History



As of October 1, 2018, flight data captured **58,911 total flight hours** (approximately 1,095 hours more than the previous year). Flights on contracted aircraft accounted for 44,258 hours (over 75% of all hours flown). The remaining 14,653 hours, or 25%, were flown using bureau-owned fleet aircraft.

Since 1975, DOI's aviation safety program has resulted in estimated savings of \$718M to the Department and its supporting vendors in reduced losses. Flight missions performed for DOI were supported in part by bureau requested and OAS supported aviation contracts that required **2,071** vendor pilot evaluations, **1,111** vendor aircraft inspections, **135** Interior fleet pilot evaluations, and **82** Interior fleet aircraft inspections. Aviation Training supported **715** instructor led course offerings accounting for **5,220.5** available student hours of training and the Interagency Aviation Training website recorded **40,134** course completions (**30,074** Online, **6,760** Residential Classroom, **2,376** ACE| Workshop, **891** Webinars, and **33** Video Teleconferencing course completions).³

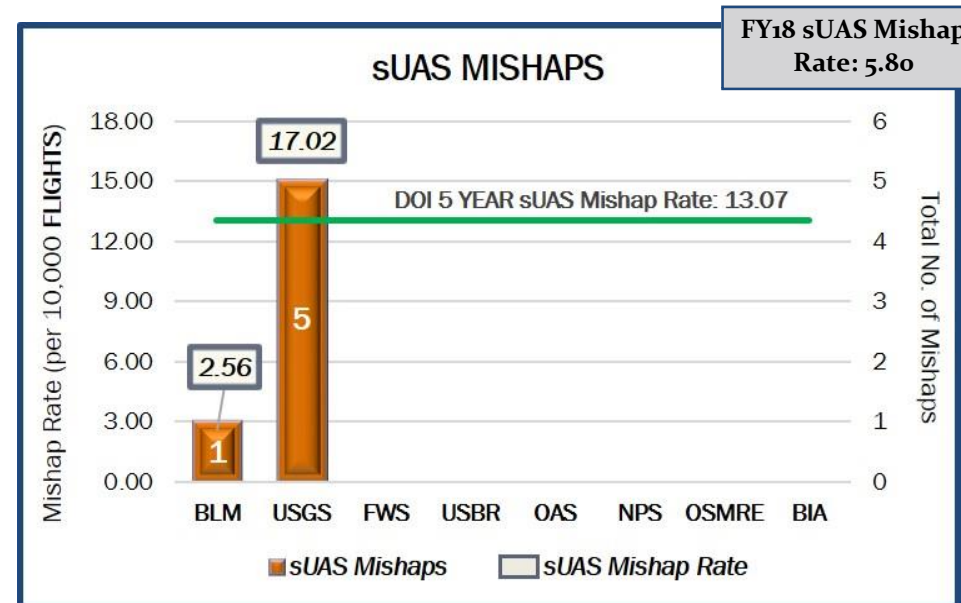
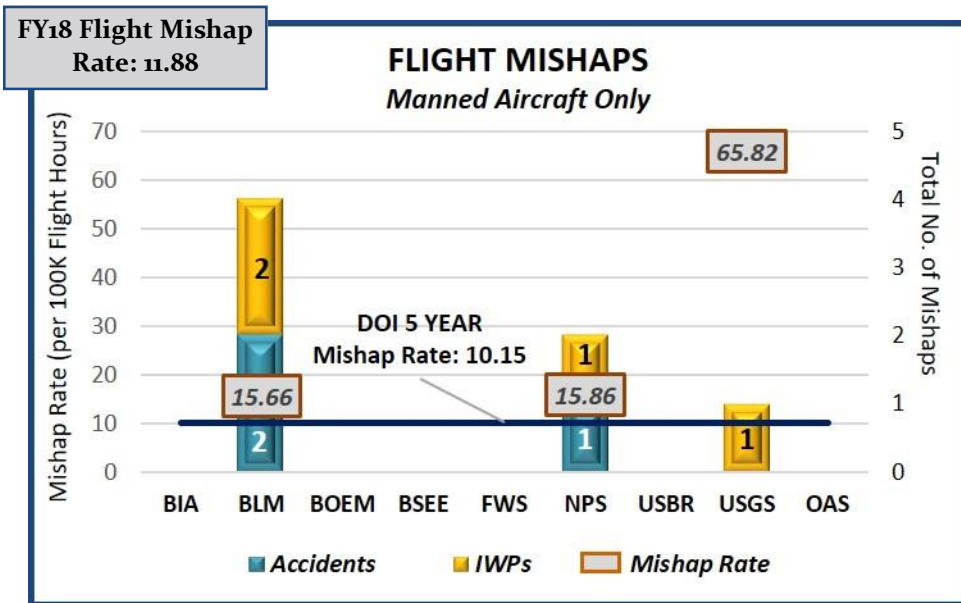
¹Historical aircraft accident rate is defined as total historical aircraft accidents per 100,000 flight hours flown. This is standard throughout the global aviation industry.

²Annual aircraft accident rate is defined as total aircraft accidents in one year per 100,000 flight hours flown. This is standard throughout the global aviation industry.

³Includes DOI Fleet, Commercial Vendor, and Cooperator aircraft from other agencies. Pilots receive evaluations for each specific special use mission area qualification.



DOI FY18 Mishap* Overview

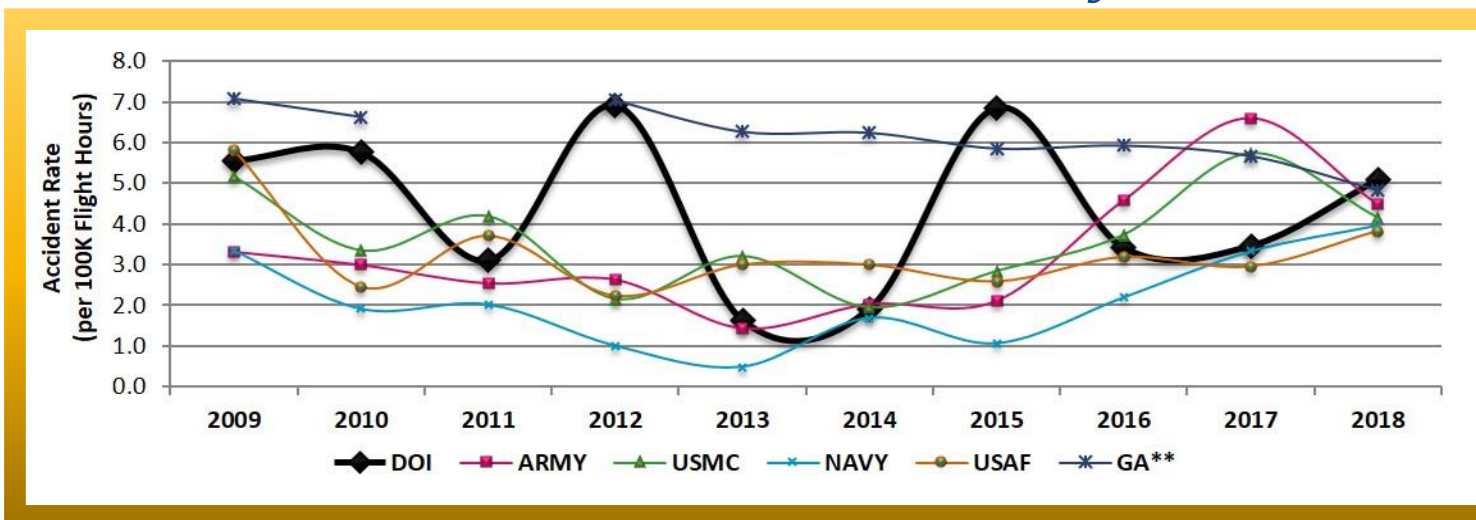


(Manned) Mishaps = Accidents + IWPs

(sUAS) Mishaps = Accidents + IWPs + Aircraft loss

Accident Rate (manned aircraft)

*Accidents are defined by 49 CFR 830.2 and are determined by the NTSB. An Incident With Potential (IWP) is an incident that narrowly misses being an accident and is determined by OAS. sUAS uses slightly different criteria due to lower flight hours and aircraft losses that don't meet either criteria. Mishaps include accidents, IWP's, and incidents.



In FY18, The DOI accident rate **increased** to 5.09 accidents for every 100,000 hours flown, a 47% over the previous year.

**2018 General Aviation Accident data is not yet available



FY18 Aviation Overview

DOI FY18 Mishap Overview

Location	Date	Severity	Operator	Aircraft	Description
Rock Springs, WY	11-15-17	Accident	Contractor BLM Wyoming	Cessna T207A	Fuel mismanagement led to an engine failure due to fuel starvation. A hard landing resulted in substantial damage and injuries.
Wrangell St. Elias National Park, AK	6-27-18	IWP	Contractor NPS Alaska	Cessna U206C Super Skywagon	Aircraft experienced engine failure due to fuel starvation during a search and rescue mission. Engine restart successful and mission continued.
Carson City, NV	7-16-18	IWP	Contractor BLM Nevada	Airbus AS350B3	Object struck aircraft while in flight. Aircraft controllability never lost and no warning lights indicated.
Owyhee, NV	7-20-18	IWP	Contractor BLM Nevada	AT-802F Fire Boss / Airbus AS350B3E	Near Mid-air collision while conducting fire suppression operations.
Arctic National Wildlife Refuge, AK	7-22-18	IWP	Contractor USGS Alaska	Bell 206 L4 Long Ranger	Aircraft pitched aft while in steep gully causing blade strike. Pilot regained control of aircraft and landed.
Fairbanks, AK	8-1-18	Accident	Fleet BLM Alaska	CubCrafters CC18-180 Top Cub	Aircraft sustained substantial damage while operating at an off-airport site.
Northway, AK	9-5-18	Accident	Fleet NPS Alaska	CubCrafters CC18-180 Top Cub	Aircraft suffered a bird strike on the leading edge of the right wing. Pilot forced to make emergency landing.

IWP - Incident with Potential

Incidental Cost* associated with Mishaps

Cost Input	Cost
DOI Losses (includes aircraft repair/recovery/replacement, loss of availability)	\$ 38,500
Vendor Losses (includes aircraft repair/recovery/replacement, loss of availability)	\$ 280,000
DOI sUAS Losses (includes airframe repair/replacement)	\$ 154,782
Fatalities (o) VSL**	\$ 0
Minor Injuries (1)	\$ 2,044,800
Serious Injuries (2)	
Total Costs (7 Manned Mishaps, 6 sUAS Mishaps)	\$ 2,518,082

* Costs associated with mishaps have not been finalized due to ongoing investigations and repairs associated to the mishaps. These costs may rise.

** Value of Statistical Life (VSL) \$9.6 Million - U.S. Department of Transportation. Serious and Minor injuries are calculated as a fraction of VSL: 0.105 and 0.003, respectively

DOI Flight Usage Cost

Cost associated with flight hours only

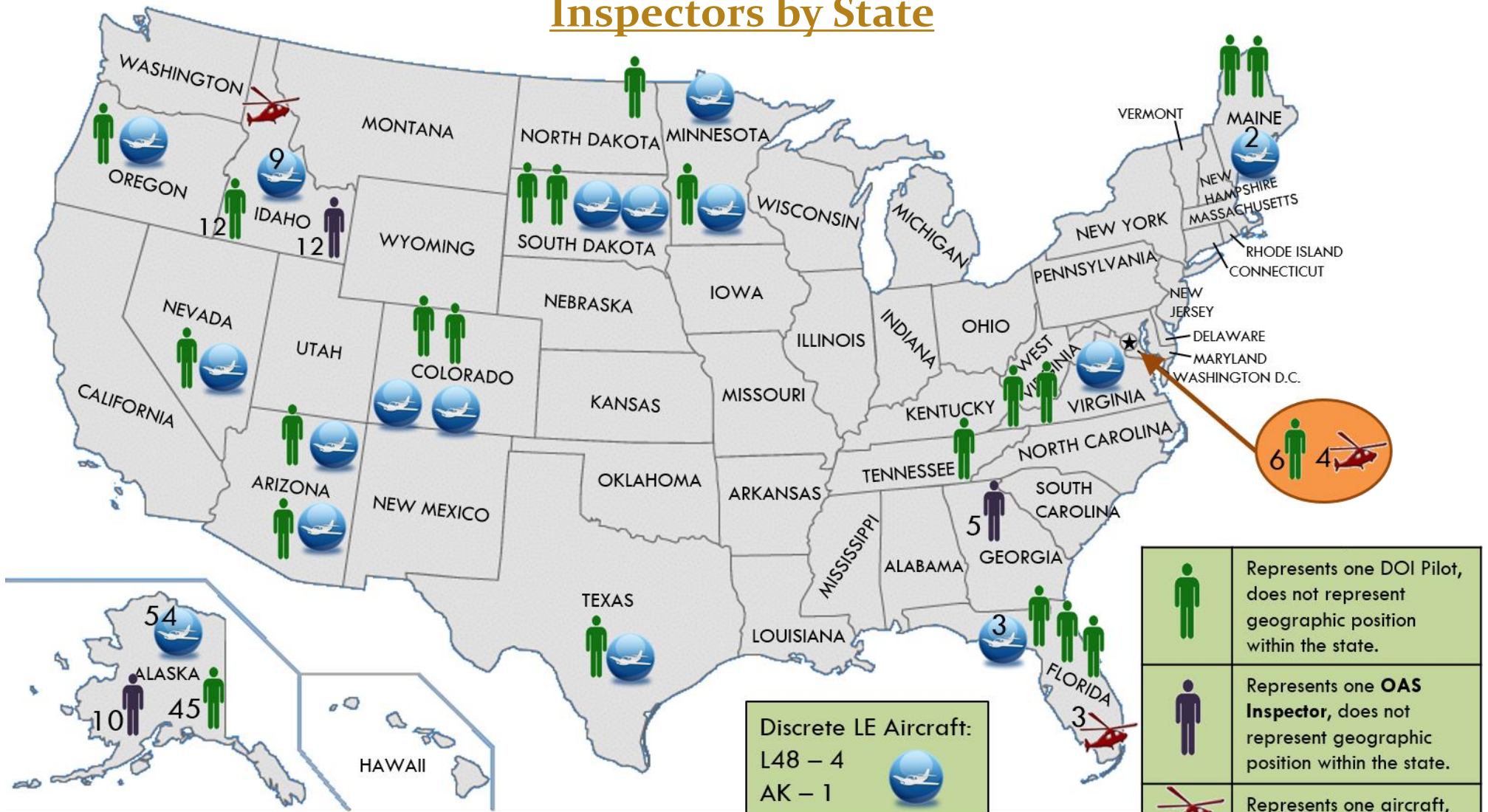
	Annual flight Usage Cost	Annual Flight Hours	Cost per Flight Hour
Fleet	\$ 6,578,156	14,653	\$ 449
Contract	\$ 71,115,774	44,258	\$ 1,607
Total Usage	\$ 77,693,930	58,911	\$ 1,319

These rates are associated to pay item codes that correspond with flight hours only. They do not include monthly rates, availability, standby, etc...

Not included: an additional 606 Fleet aircraft flight hours flown by external use customers in FY18



Department of the Interior Fleet Aircraft, Pilots, and Inspectors by State



Note: Fleet aircraft and pilots occasionally move their home base location. For the latest location information, call the Fleet Maintenance Manager in OAS-Technical Services at (208) 433-5082 for Lower 48, or at (907) 271-6104 in Alaska. Aircraft locations can be found at <https://sites.google.com/a/ibc.doi.gov/aviation-resources/doi-fleet>

	Represents one DOI Pilot, does not represent geographic position within the state.
	Represents one OAS Inspector, does not represent geographic position within the state.
	Represents one aircraft, does not represent geographic position within the state.
	Represents one aircraft, does not represent geographic position within the state.



DOI Fleet Aircraft Inventory

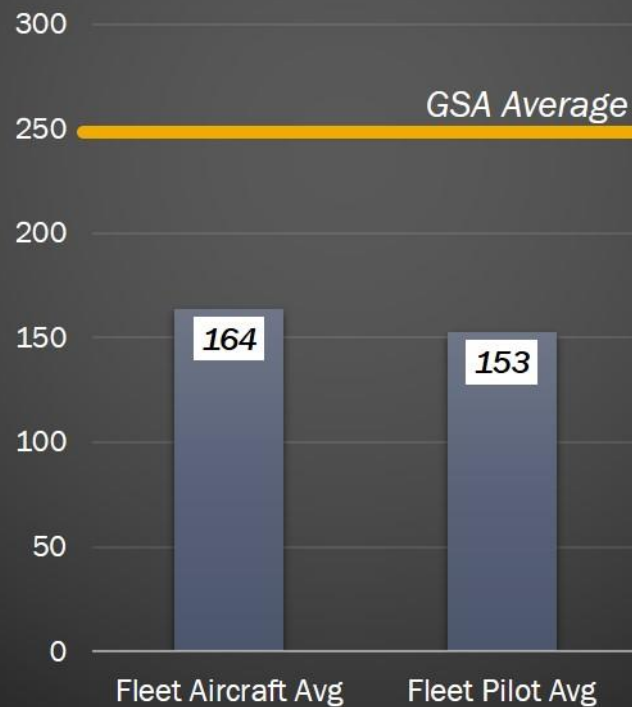
DOI Fleet Aircraft: 93
(average age: 24 years old)

# of Aircraft	Type of Aircraft
1	Aerospatiale AS350
1	Aviat A-1B Husky
2	Beechcraft BE200 King Air
2	Bell 206 B-3
2	Bell 206 L-3
3	Bell 412
3	Cessna 182
14	Cessna 185
21	Cessna 206
20	Cub Crafters CC-18 Top Cub
2	DHC2 MK1 Beaver
1	DHC-6-300 Twin Otter
6	Found FBA 2C
2	Partenavia P-68 Observer
1	Pilatus PC-12
4	Piper PA-18 Super Cub
2	Quest Kodiak 100
6	Quest Kodiak 100 Amphibian

The graph below represents DOI's average annual flight hours compared with the GSA federal aircraft utilization average of 250 flight hours per year.

DOI Fleet pilots flew an average of 153 hours this year.

DOI Fleet aircraft averaged 164 hours this year.



DOI Fleet Pilots: 96



Manned Aircraft Pilots: 82

- Pilot: 19
- Dual Function Pilot: 60
- Pilot Trainee: 3

Inspector Pilots: 14

(1.02 pilots per manned aircraft)

Note: A pilot to aircraft ratio of at least 1.0 or greater is desirable.

Fleet Aircraft Inspectors: 14



High Diversity Rate

A low fleet diversity is desirable, due to savings in training and maintenance.



FY18 Aviation Overview



BLM	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Fleet	1,284	\$ 1,219,714	\$ 950
Contract	24,263	\$47,908,458	\$ 1,975

BIA	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Contract	2,620	\$4,117,890	\$ 1,572

FY18 BLM Fleet Statistics

Manned Aircraft	7
Unmanned Aircraft	196
Manned Aircraft Age	
0-10 Years	2
11-20 Years	0
> 20 Years	5
*Pilots	4
Dual Function Pilots	8
Trainee	2
sUAS Pilots	155
Manned Pilot-Aircraft Ratio	2.0
Unmanned Pilot-Aircraft Ratio	0.79

BLM sUAS Flights 2018

Total Flights	Fleet: 3895	Contract: 15
Principal Mission Types	<ul style="list-style-type: none"> ◆ Pilot Proficiency/Training ◆ Mapping-Non Fire ◆ Reconnaissance ◆ Mapping-Interagency Fire 	
Aircraft Systems Used	<ul style="list-style-type: none"> ◆ 3DR Solo ◆ Mavic ◆ FireFly 	<ul style="list-style-type: none"> ◆ Autel EVO ◆ M600 ◆ Silent Falcon

*BLM pilots fly commercial-owned government operated (COGO) aircraft in addition to fleet aircraft. Dual Function Pilots: Pilots who also have another job. (Ex. Scientist)

SAFECOM

BLM has one of the highest SAFECOM completion rates in DOI for FY18 at 97% with 2 SAFECOM remaining open from 2014 to 2017. BLM's manned aircraft SAFECOM reporting rate increased 12% from FY17, while the sUAS SAFECOM reporting rate increased 42% over FY17.

Aviation Mishaps = 2 Accidents, 2 Incidents with Potential (IWP)
 BLM manned aircraft flight hours increased 11% from FY17.
 Total BLM sUAS flights increased 41% over FY17.

FY18 BIA Fleet Statistics

Unmanned Aircraft	8
sUAS Pilots	3
Unmanned Pilot-Aircraft Ratio	0.38

BIA sUAS Flights 2018

Total Flights	60
Principal Mission Types	<ul style="list-style-type: none"> ◆ Air Crew Training ◆ Pilot Proficiency/Training ◆ Mapping-Non Fire
Aircraft Systems Used	◆ 3DR Solo

SAFECOM

BIA has the highest SAFECOM completion rate in DOI at 100% with 3 SAFECOMs remaining open from 2014 to 2017. BIA's manned aircraft SAFECOM reporting rate decreased 57% from FY17, while the sUAS SAFECOM reporting rate remained unchanged from FY17.

BIA manned aircraft flight hours increased 13% from FY17.
 BIA did not have sUAS flights prior to FY18.



FY18 Aviation Overview



BOEM	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Fleet	116	\$ 83,226	\$ 715
Contract	466	\$ 736,707	\$ 1,582

USBR	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Fleet	13	\$ 11,560	\$ 889
Contract	43	\$ 62,704	\$ 1,452

SAFECOM

No SAFECOMs were submitted by BOEM in FY17. No SAFECOMs remain open for the period between 2014 and 2017.

BOEM manned aircraft flight hours increased 6% from FY17.



BSEE	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Contract	6,143	\$ 6,939,218	\$ 1,130

SAFECOM

BSEE has one of the best SAFECOM completion rates in DOI at 96% with no SAFECOMs remaining open from 2014 to 2017. BSEE's manned aircraft SAFECOM reporting rate increased 23% from FY17.

BSEE manned aircraft flight hours decreased 18% from FY17.

FY18 USBR Fleet Statistics

Unmanned Aircraft	26
sUAS Pilots	18
Unmanned Pilot-Aircraft Ratio	0.69

USBR sUAS Flights 2018

Total Flights	781
Principal Mission Types	<ul style="list-style-type: none"> ◆ Mapping-Non Fire ◆ Pilot Proficiency/Training ◆ Auto Surveyor ◆ Reconnaissance ◆ Air Crew Training
Aircraft Systems Used	◆ 3DR Solo

SAFECOM

USBR has one of the lowest SAFECOM completion rates at 40% for FY18, with 4 SAFECOMs remaining open from 2014 to 2017. BOR's manned aircraft reporting rate suffered a 100% decline over the previous year, while the sUAS SAFECOM reporting rate decreased 47% from FY17.

USBR manned aircraft flight hours decreased 72% from FY17. Total USBR sUAS flights increased 135% over FY17.



FY18 Aviation Overview



FWS	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Fleet	8,015	\$ 2,608,817	\$ 325
Contract	1,305	\$ 827,184	\$ 634

NPS	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Fleet	4,719	\$ 2,417,344	\$ 512
Contract	7,893	\$ 9,401,951	\$ 1,191

FY18 FWS Fleet Statistics		FWS sUAS Flights 2018	
Manned Aircraft	53	Total Flights	985
Unmanned Aircraft	109		
Manned Aircraft Age		Principal Mission Types	<ul style="list-style-type: none"> ◆ Pilot Proficiency/Training ◆ Mapping-Non Fire ◆ Wildlife Surveys ◆ Habitat/Environmental Evaluations ◆ Law Enforcement ◆ Reconnaissance
0-10 Years	24		
11-20 Years	9		
> 20 Years	20		
Pilots	6	Aircraft Systems Used	<ul style="list-style-type: none"> ◆ 3DR Solo ◆ FireFly
Dual Function Pilots	33		
sUAS Pilots	47		
Manned Pilot-Aircraft Ratio	0.74		
Unmanned Pilot-Aircraft Ratio	0.43		

FY18 NPS Fleet Statistics		NPS sUAS Flights 2018	
Manned Aircraft	31	Total Flights	446
Unmanned Aircraft	23		
Manned Aircraft Age		Principal Mission Types	<ul style="list-style-type: none"> ◆ Pilot Proficiency/Training ◆ Mapping-Non Fire ◆ Reconnaissance ◆ Habitat/Environmental Evaluations ◆ Air Crew Training
0-10 Years	6		
11-20 Years	6		
> 20 Years	19		
Pilots	9	Aircraft System Used	◆ 3DR Solo
Dual Function Pilots	18		
Trainee	1		
sUAS Pilots	27		
Manned Pilot-Aircraft Ratio	0.9		
Unmanned Pilot-Aircraft Ratio	1.17		

SAFECOM

FWS has a SAFECOM completion rate of 87% with no SAFECOMs remaining open from 2014 to 2017. FWS's manned aircraft SAFECOM reporting rate decreased 1% from FY17, while the sUAS SAFECOM reporting rate decreased 94% from FY17.

FWS manned aircraft flight hours decreased 17% from FY17. Total FWS sUAS flights increased 804% over FY17.

SAFECOM

NPS has a SAFECOM completion rate of 98% with 25 SAFECOMs remaining open from 2014 to 2017. NPS's manned aircraft SAFECOM reporting rate decreased 26% from FY17, while the sUAS SAFECOM reporting rate decreased 68% from FY17.

Aviation Mishaps = 1 Accident, 1 Incident with Potential (IWP)
 NPS manned aircraft flight hours increased 14% from FY17. Total NPS sUAS flights increased 57% over FY17.



FY18 Aviation Overview



OSMRE	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Contract	21	\$ 10,550	\$ 500

FY18 OSMRE Fleet Statistics

Unmanned Aircraft	15
sUAS Pilots	24
Unmanned Pilot-Aircraft Ratio	1.6

OSMRE sUAS Flights 2018	
Total Flights	119
Principal Mission Types	<ul style="list-style-type: none"> ◆ Pilot Proficiency/Training ◆ Mapping-Non Fire ◆ Air Crew Training
Aircraft System Used	◆ 3DR Solo

SAFECOM

OSMRE has a 0% completion rate for FY18. Their sUAS SAFECOM reporting rate increased 100% over FY17, while the manned aircraft reporting rate remained unchanged.

OSMRE manned aircraft flight hours have decreased 33% from FY17. Total sUAS flights increased 38% over FY17.

 OST	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Contract	35	\$ 25,380	\$ 734

SAFECOM

No SAFECOMs were submitted by OST and none remain open from 2014-2017.

OST manned aircraft flight hours decreased 7% from FY17.

USGS	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Fleet	62	\$ 30,435	\$ 494
Contract	1,458	\$ 1,071,288	\$ 735

FY18 USGS Fleet Statistics

Unmanned Aircraft	133
Dual Function Pilot sUAS Pilots	1 89
Pilot to Aircraft Ratio	0.67

USGS sUAS Flights 2018	
Total Flights	2,937
Principal Mission Types	<ul style="list-style-type: none"> ◆ Mapping-Non Fire ◆ Pilot Proficiency/Training ◆ Habitat/Environmental Eval ◆ Reconnaissance ◆ Wildlife Surveys
Aircraft Systems Used	<ul style="list-style-type: none"> ◆ 3DR Solo ◆ Mavic ◆ M600 ◆ Firefly ◆ Autel EVO ◆ Pulse Vapor 55 ◆ Eval Aircraft ◆ MLB Superbat

SAFECOM

USGS closed out FY18 with a 100% completion rate. 2 SAFECOMs remain open from 2014 to 2017. The USGS manned aircraft SAFECOM reporting rate increased 281% from FY17, while the sUAS SAFECOM reporting rate decreased 37% from FY17.

Aviation Mishaps = 1 Incident with Potential (IWP)
USGS manned aircraft flight hours increased 5% from FY17.
Total USGS sUAS flights increased 171% over FY17.



FY18 Aviation Overview

OAS	Annual Flight Hours	Annual flight Usage Cost	Cost per Flight Hour
Fleet	445	\$ 207,061	\$ 466
Contract	13	\$ 14,445	\$ 1,139

Office of Aviation Services PERFORMANCE

Performance	Quantity
Interagency Safety Communications Issued	16
Program Evaluations completed	8
Student Hours of Training completed	119,059
Fleet Pilot Evaluations completed	135
Fleet Aircraft Inspections completed	82
Fleet Maintenance facilities inspections completed	1
UAS Operator Individual Inspections	621
UAS Pilots Qualified by OAS	205
Commercial Pilot Evaluations	2,071
Commercial Aircraft Inspections	1,111
Point to Point Inspections	585
Fuel Service Vehicle Inspections	373
Cooperator Approvals	128

FY18 OAS Fleet Statistics

Manned Aircraft	2
Unmanned Aircraft	21

Manned Aircraft Age

0-10 Years	0
11-20 Years	0
> 20 Years	2

Inspector Pilots	14
sUAS Pilots	11

Manned Pilot-Aircraft Ratio	6.5
Unmanned Pilot-Aircraft Ratio	0.67

OAS sUAS Flights 2018

Total Flights	722	
Principal Mission Types	◆ Reconnaissance	
	◆ PSD Aerial Ignition	
	◆ Pilot Proficiency/Training	
	◆ Mapping - NonFire	
	◆ Habitat/Environmental Eval	
Aircraft Systems Used	◆ M600	◆ Evaluation Aircraft
	◆ 3DR Solo	
	◆ Mavic	
	◆ FireFly	
	◆ Autel EVO	

SAFECOM

OAS has a SAFECOM completion rate of 78% with no SAFECOMs remaining open from 2014 to 2017. OAS's manned aircraft SAFECOM reporting rate decreased 17% from FY17, while the sUAS SAFECOM reporting rate decreased 57% from FY17.

OAS manned aircraft flight hours decreased 9% from FY17. Total number of OAS sUAS flights increased 135% over FY17.



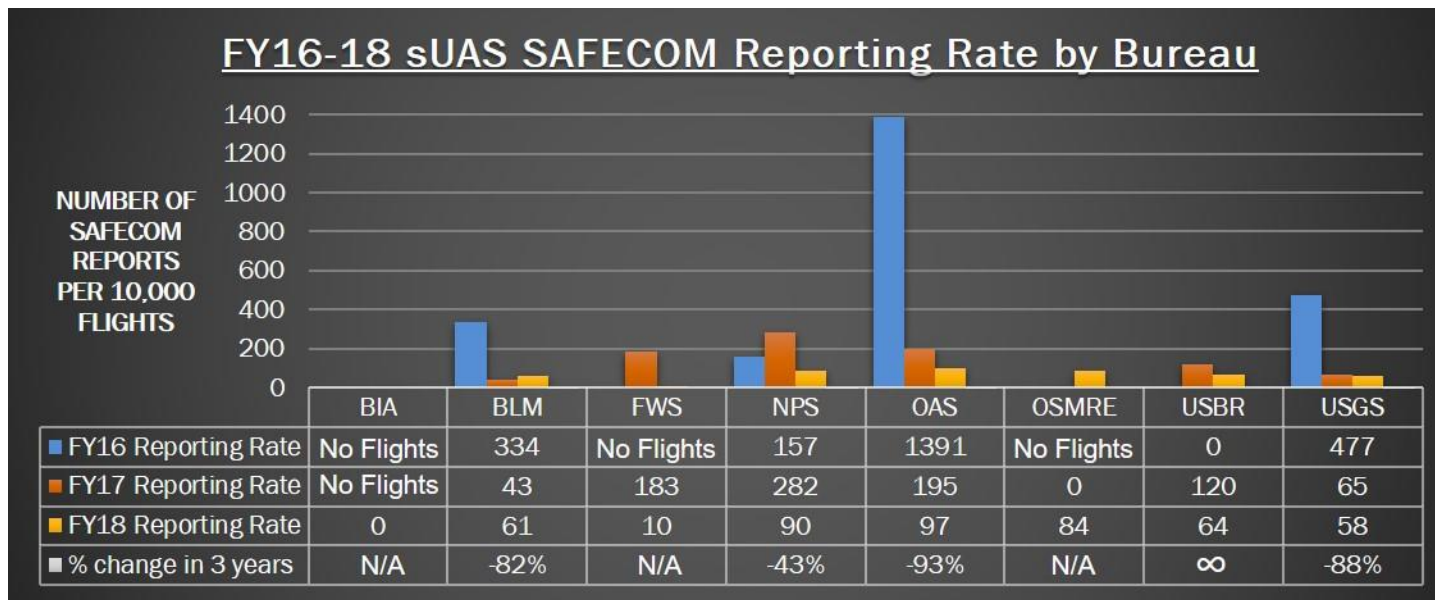
DOI sUAS
Fleet Pilots: 374



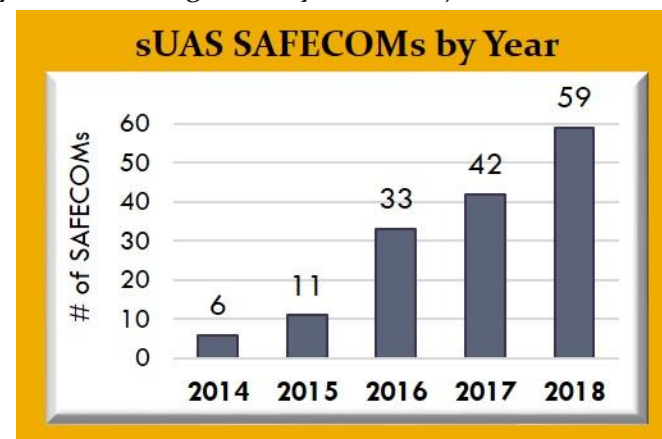
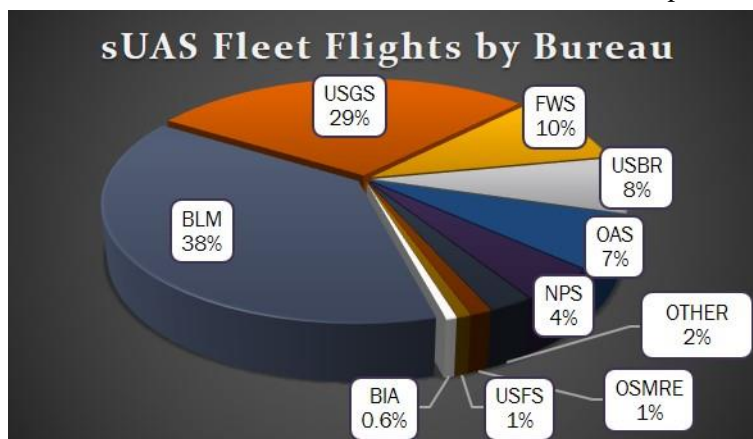
Unmanned Aircraft Systems (sUAS)

DOI sUAS
Fleet Aircraft: 531 (573)

# of AC	Type of Aircraft	
486	3DR Solo	
20	FireFly	
10 (38*)	Mavic**	
6 (20*)	M600**	
5	MLB Super Bat	
2	Evo	
1	H10	
1	Vapor 55	



sUAS SAFECOM reports increased approximately 40% over FY17. The number of sUAS flights increased 108% which drove down the SAFECOM reporting rate. The reporting rate directly correlates to the ratio of SAFECOMs filed versus the number of sUAS flights (not hours). There was a 53% increase in the number of sUAS SAFECOMs reviewed and completed by bureau managers this year. Great job!



*Early acquired FY19 aircraft totals are provided in parentheses. **Mavic and M600 aircraft were procured and flown as part of OAS's Data Security V&V Test Plan. Tests were not complete and they had not been approved for general DOI use by the end of 2018.



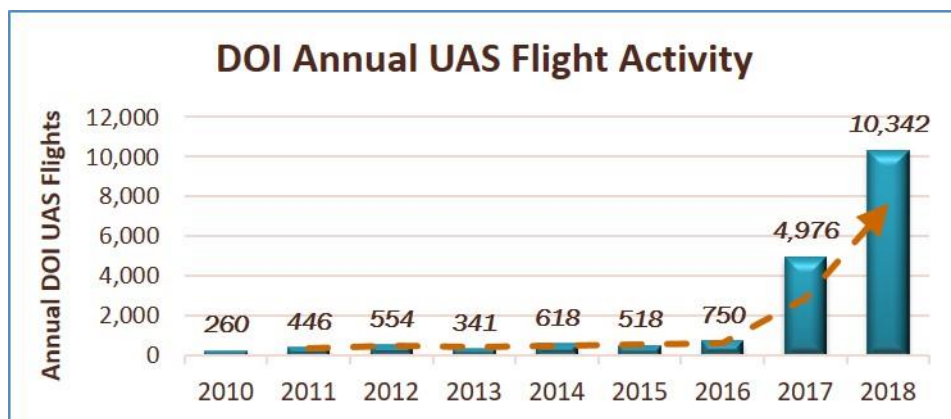
FY18 UAS Program Update

Where We've Been

The DOI UAS program began in 2006. In 2008, DOI acquired surplus DOD small UAS to conduct operational test and evaluation flights in support of requirements development. The Department utilized these aircraft for several years during the initial phases of the program. While useful in some cases, it became readily apparent the excess DOD aircraft/sensors did not meet the mission requirements for the DOI bureaus. This led DOI to search for consumer off the shelf solutions that would better suit DOI operational needs. In 2014, the department selected the 3DR Solo aircraft for purchase. This aircraft was widely adopted by the bureaus and presently accounts for 85% of the DOI fleet. Simultaneous to the selection of the 3DR solo, the FAA released 14CFR Part 107 which allowed for much easier access to airspace for commercial use of UAS. These factors led to explosive growth in the DOI program between 2017 and 2018.

2018 Program Highlights

In 2018, the [DOI UAS program](#) continued its tradition of innovation, collaboration, and leadership in drone space. Adoption and integration of UAS in missions by DOI bureaus continued to grow with 10,342 UAS flights conducted across more than 25 mission applications in 42 States and U.S. Territories in 2018; a **108% increase** in DOI UAS flights over 2017's record setting year.



The number of Interior owned UAS and Interior and FAA trained and certified operators also grew to meet the increasing bureau demand for UAS in 2018 with **531 drones** and **359 active operators** distributed across 37 States and seven of Interior's nine bureaus.

A couple highlights from 2018 include:

- [DOI UAS Teams Quickly Respond to Support Kilauea Volcano Emergency Response, Rescue, and Monitoring](#) –DOI teams of UAS operators from USGS, BLM and OAS rapidly deployed and provided extended support for the monitoring of the Kilauea Volcano eruptions in Hawaii. The UAS teams monitored volcanic activity using thermal video imagery and on-board gas sensors, able to provide never before acquired data. In addition, [the Interior UAS team assisted the local county and fire emergency managers in support of monitoring lava movement and on May 27th were instrumental in directing the rescue of a stranded resident from fast-moving lava that had rapidly inundated their neighborhood.](#)
- [DOI Conducts Operational Testing and Fielding of Groundbreaking UAS Aerial Ignition Capability](#) – [Continuing development that began in 2016](#), Interior conducted operational testing and [initial fielding of the first-ever drone based aerial ignition capability, including the first-ever night aerial ignition ability](#). Aerial ignition is an important tool in the reduction of hazardous fuels ahead of the fire year and in conducting burnout operations during a wildfire. Traditional aerial ignition methods often pose significant risk and have resulted in numerous fatalities. Drones offer safer ignition operations and expanded utilization opportunities.

Where We Are Headed

DOI is in the process of selecting several new platforms for use by the bureaus. All new platforms will be selected utilizing the DOI's master UAS requirements specifications. The DOI fleet will continue to grow during the next several years in both size and scope. One of the biggest changes in the near future will be the increase in the use of cloud processing and artificial intelligence to increase the speed in which data can be turned into useful information and that information into actionable knowledge.



FY18 Safety & Training Updates

OAS Training Division Update

IAT.GOV

In FY18, the OAS Training Branch successfully hosted 3 Aviation Centered Training events. The events were held in New Orleans, Denver, and Anchorage and averaged 150 students per event. In total, the OAS Training Branch supported 715 instructor led course offerings accounting for 5,220.5 available student hours of training and the Interagency Aviation Training website recorded 40,134 course completions:

- 30,074 Online
- 6,760 Residential Classroom
- 2,376 ACE| Workshop
- 891 Webinars
- 33 Video Teleconferencing

OAS Training has implemented a planned schedule to revise and update the complete library of online courses. Currently, A-100 Basic Aviation Safety, A-110 Aviation Transportation of Hazardous Materials, and M-3 DOI Aviation Management Training for Supervisors are in the revision process to replace the current online modules.

In 2018, the A-200 Mishap Review transitioned from an annually updated course package to an event driven update format. Students taking the online version of the course on the IAT website are now be able to select individual modules based on year, aircraft type, and incident location.

ACE: Aviation Centered Education events continue to be a big success thanks to all of those who participate as students and as instructors! ACE allows DOI bureau and interagency partner personnel to acquire in one week required training that would otherwise take many months to complete.

Potential future ACE locations for FY20 (February - April) are Phoenix, AZ and Anchorage, AK. Locations will be finalized in late spring / early summer of FY19.

Aircraft Mishap Review Board (AMRB) Update

DOI Bureaus and the Office of Aviation Services continued their efforts in FY18 towards closing open Aircraft Mishap Review Board (AMRB) recommendations. At the end of FY18, 20 AMRB recommendations remained open. AMRB recommendations are part of a bureau-led process aimed at preventing similar mishaps from reoccurring in the future. These recommendations were the result of accidents that have claimed lives, caused injuries, and/or resulted in significant damage.

In FY18, three AMRBs resulted in 12 additional recommended action items, to which 4 have already been closed.

Aviation Program Evaluation Update

Bureau & Region	Date	Result of Review:	
BSEE Pacific OCS	12/17	2 Findings	9 Best Practices Observed
USGS Midwest	01/18	4 Findings	3 Best Practices Observed
BLM California	03/18	4 Findings	10 Best Practices Observed
BLM Nevada	04/18	4 Findings	11 Best Practices Observed
BLM Colorado	05/18	5 Findings	8 Best Practices Observed
BOR Mid-Pacific	06/18	3 Findings	2 Best Practices Observed
BIA Pacific	06/18	3 Findings	2 Best Practices Observed
FWS Southeast	09/18	7 Findings	4 Best Practices Observed
8 Program Evaluations completed with no material weaknesses identified		32 Findings	49 Best Practices Observed



First-Ever Interagency Aviation Helmet Standard Promotes Safety and Industry Innovation

The rollout of the Interagency Aviation Helmet Standard was the culmination of a lengthy collaborative process involving experts from both government and private industry. **It wasn't too long ago that adopting the military's equipment was the only option for our aviation operations, which greatly limited industry's ability to enter this market.** We relied on Personal Protective Equipment (PPE) the military developed for their crewmembers.

Many of us who used the old equipment still remember the cranial “hotspots” the old suspension system caused.

Today, we have a vastly different environment where there are a myriad of helmet manufacturers and models to chose from. Unfortunately, some of these helmets offer varying degrees of protection to which the consumer has little basis for judging the relative effectiveness of any given model.

Some of the helmets we have seen in the field have been made with surplus and often obsolete parts, others are state of the art.

Aviation helmets provide multiple levels of protection and need to be evaluated for many properties including (but not limited to) crown and side impact, sound attenuation, retention, and weight. Outside of the military, the flight helmet world lacked a meaningful, relevant performance standard...until now. OAS has contracted with a recognized helmet expert to provide technical and scientific expertise to develop a civil flight helmet performance standard.

This Standard presents a rational means for differentiating between helmets which meet specified standards for impact protection and retention system effectiveness and those which do not. Additionally, the requirement of modern testing methodologies and validation through updated accredited laboratories provide the assurance the helmet will perform when it's needed most.

The DOI/USFS Aviation Helmets Standard Specification **provides a first-ever avenue to allow non-military helmets to be considered for acquisition within our aviation communities through their respective procurement channels.** Both manufacturers and distributors can test their helmets using an ISO certified laboratory to the DOI/USFS Aviation Helmet Standards. Those meeting or exceeding these standards can be issued a certificate of compliance by the laboratory. These helmets will be identified by the manufacturer and model type on the OAS website (www.doi.gov/aviation/safety/helmet) within 30 days of receiving the certificate.



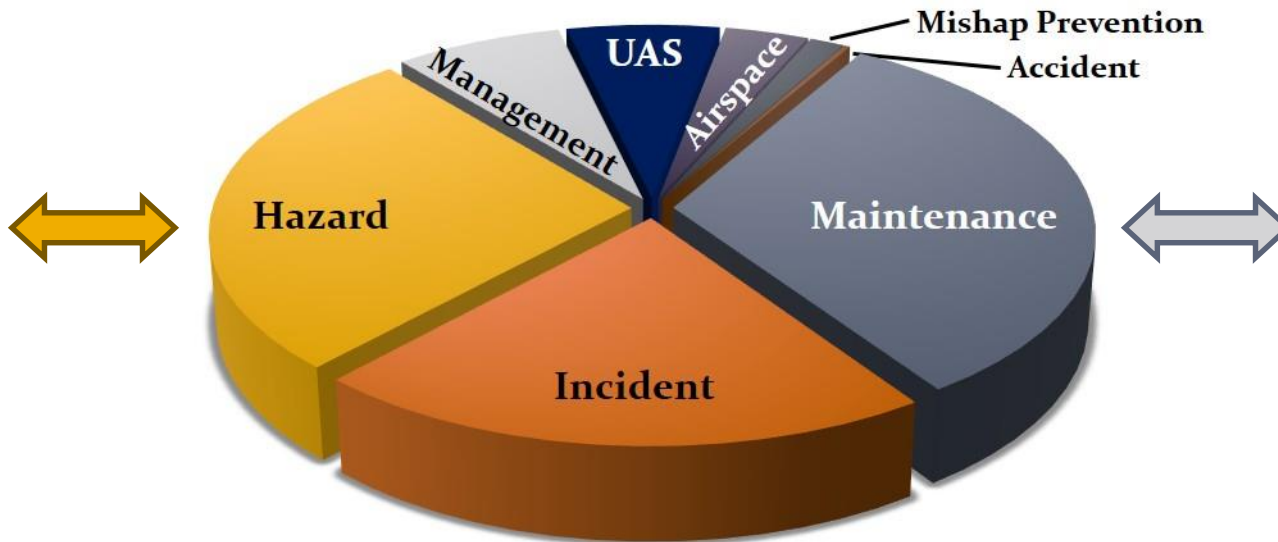


FY18 SAFECOM Overview

SAFECOMs by Category

Well-represented Hazards include:

- Pilot Action
- Mission Equipment
- Pre-flight Action
- Policy Deviation
- Communications
- Instructions



Top Maintenance Issues:

- Avionics
- Engine
- Airframe
- Electrical
- Chip Light
- Mission Equipment



Using the SAFECOM system for punitive actions is prohibited (352 DM 3.10B).

Submitting a SAFECOM is **not** a substitute for "on-the-spot" corrections to a safety concern. It's a tool used to identify, document, track, and correct safety related issues.

A SAFECOM **does** not replace the requirement for initiating an accident or incident report.

SAFECOM.gov

Bureau	Percentage of SAFECOM's Submitted
BLM	37%
BSEE	33%
NPS	11%
FWS	6%
USGS	5%
BIA	4%
OAS	2%
BOR	1%
OSM	<1%
BOEM	0%



FY18 SAFECOM Overview

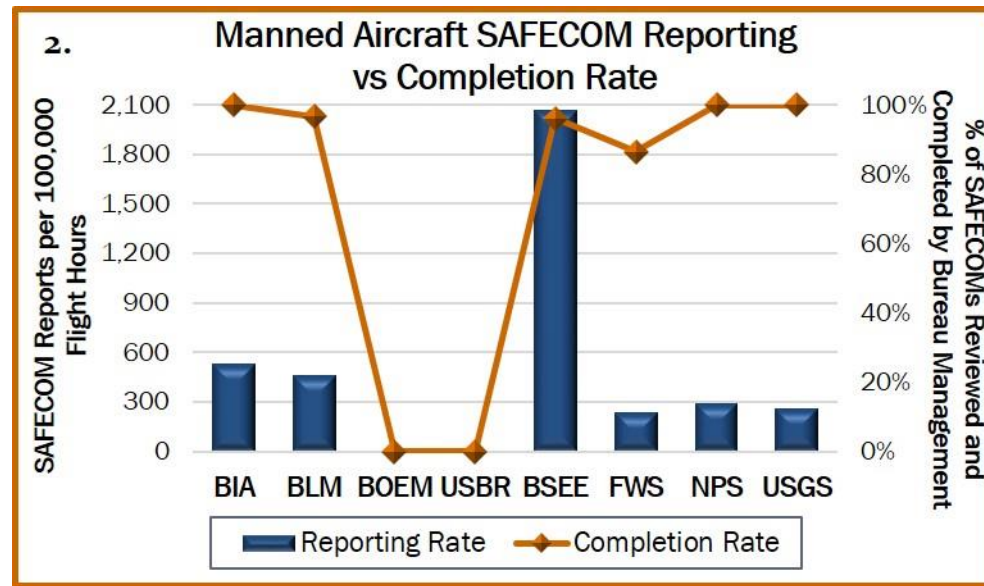
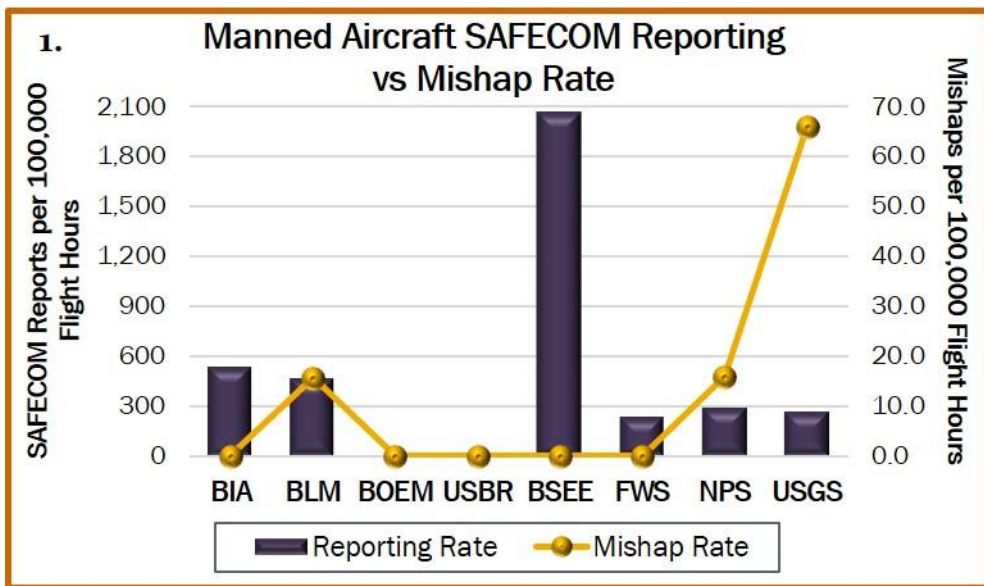
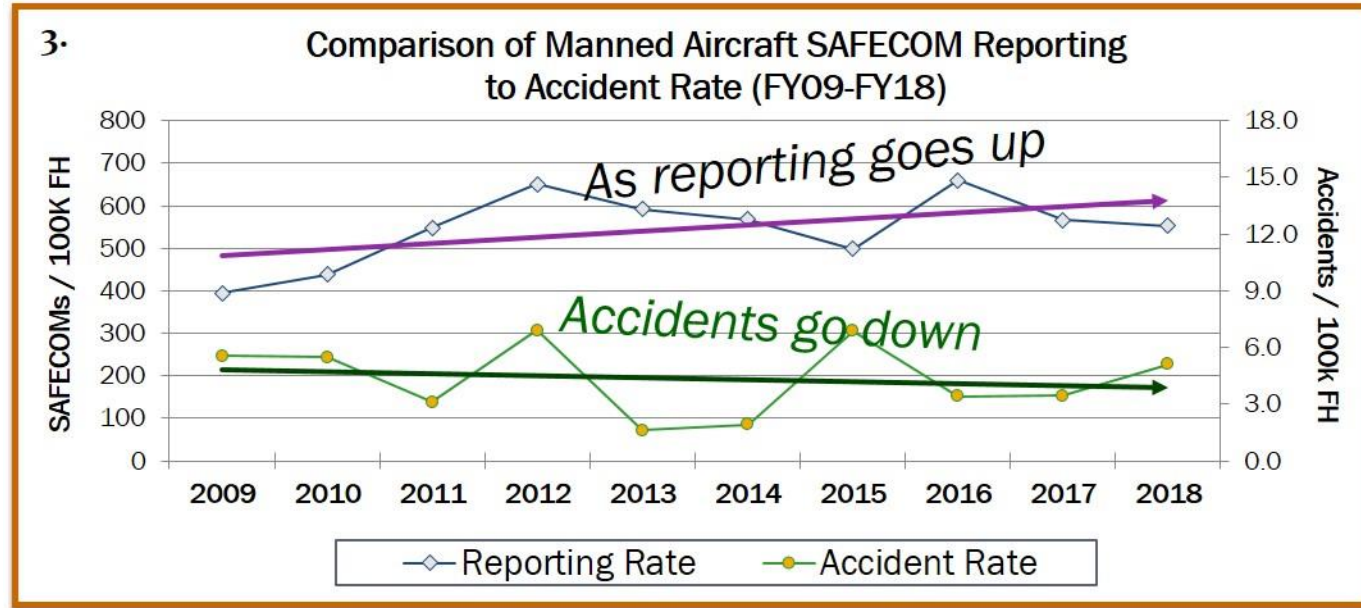


Chart 1 – Mishap prevention efforts are more effective when reporting rates are high, as you only know what’s being reported. USGS’ FY18 mishap rate is relatively high, partially due to their lower flight hours. In FY18, BSEE had the highest reporting rate, submitting one SAFECOM for every 48 hours flown.

Chart 2 – Three Bureaus (BIA, NPS, and USGS) finished the year with **100%** of SAFECOMs completed by Bureau Management. Overall, the DOI SAFECOM completion rate increased by 4% over the previous year. Conversely, the SAFECOM reporting rate decreased over 2% this year.

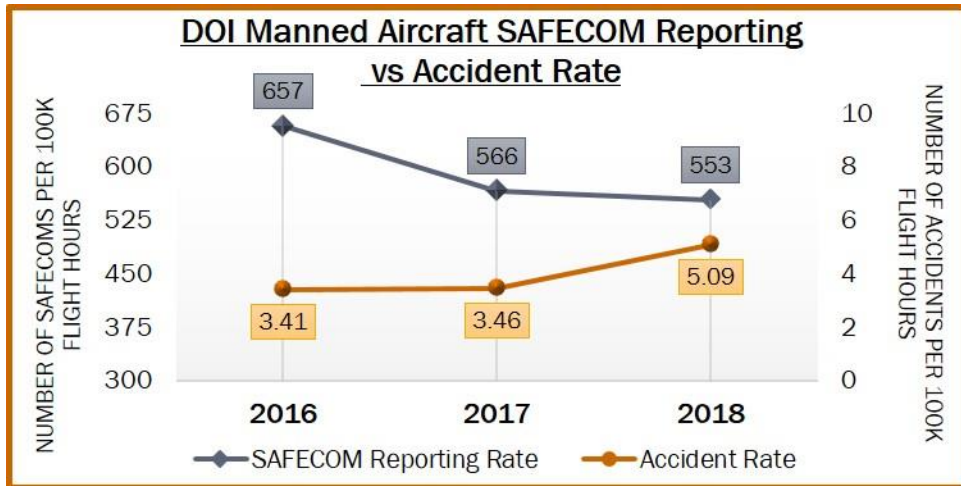
Chart 3 – We continue to see an inverse correlation between SAFECOM reporting and DOI’s accident rate. SAFECOM reporting for the period between 2009 and 2018 has increased 40% while the accident rate has decreased by 8%.



NOTE: The data above does NOT include sUAS SAFECOM reporting statistics. That information can be found on page 13 of this report.



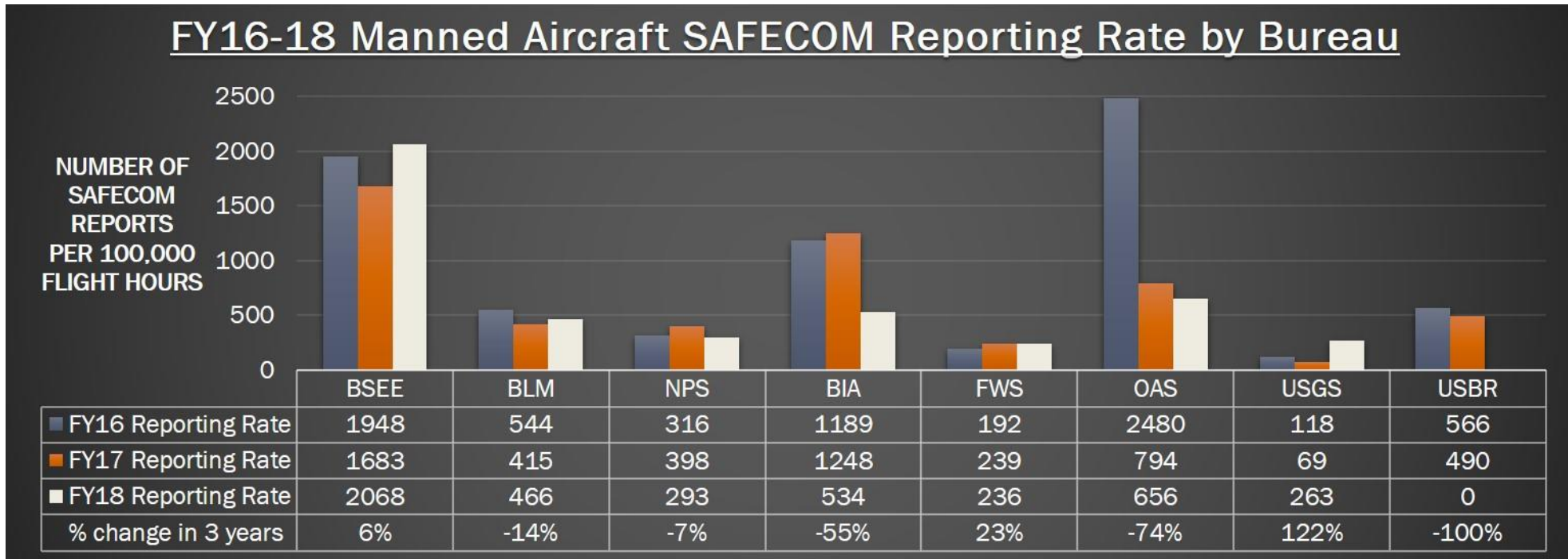
SAFECOM Trends



Between FY16 and FY18, the Department of the Interior’s SAFECOM Reporting Rate has decreased by **16%** while the accident rate has increased by **49%**. As demonstrated on slide 3 of the previous page, as reporting goes up, accidents go down. The opposite is also true.

Lower SAFECOM reporting rates could mean that managers may not know what hazards aren’t being reported. The SAFECOM system remains an essential tool in our continued efforts to reduce aviation mishaps by applying lessons learned from less serious incidents. In order to maintain a culture that balances safety and accountability, DOI continues to depend on input from aviation users.

If you see something, say something.



NOTE: The data above does NOT include sUAS SAFECOM reporting statistics. That information can be found on page 13 of this report.



FY18 Awards and Achievements

In-Flight Action Award

Lynn Ellis	National Park Service
Andy Hermansky	National Park Service
Terry Liddick	U.S. Fish and Wildlife Service

Airward

Scott Beck	Bureau of Land Management
Greg Burch	Bureau of Land Management
Kyle Beinschroth	Bureau of Land Management
Rick Gicla (USFS)	Bureau of Indian Affairs
Cannon Mix (OAS)	U.S. Geological Survey
Mark Oberman	National Park Service

Safe Flying - Award of Honor

20 years or 7,500 hours

This award is restricted to DOI employees who have distinguished themselves by safe flying for the period considered.

Kenneth Burchell National Park Service

Award for Significant Contribution to Aviation Safety

This award is established to recognize an individual, group, or organization for outstanding contribution to aviation safety or aircraft accident prevention.

Scott Bishaw U.S. Fish and Wildlife Service
Jim Traub National Park Service



FY18 Awards and Achievements



Departmental Award for Outstanding Contribution to Aviation Safety

This award is established to recognize an individual, group, or organization for outstanding contribution to aviation safety or aircraft accident prevention.

This year's Departmental Award recipients were members of a Multi-Bureau Unmanned Aircraft Systems Response Team. This team is recognized for their outstanding leadership and technical contributions to the Aviation Safety Program of the Department of the Interior (DOI) in support of the 2018 Mount Kilauea volcanic activity.

USGS

- | | |
|-------------------------|--------------------------------------|
| <i>Seth Ackerman</i> | <i>James Foreman</i> |
| <i>Josip Adams</i> | <i>Amy Gilmer</i> |
| <i>Mark Bauer</i> | <i>Shawn Harrison</i> |
| <i>Brad Bickford</i> | <i>Steve Hartley</i> |
| <i>Sandy Brosnahan</i> | <i>Rogelio Hernandez</i> |
| <i>Todd Burton</i> | <i>Shelby Hunter</i> |
| <i>Geoff Debendetto</i> | <i>Bill Jones</i> |
| <i>Angie Diefenbach</i> | <i>Cameron Marshall</i> |
| <i>Frank Engel</i> | <i>Timothy McKinney</i> |
| <i>Brandon Forbes</i> | <i>Christopher Holmquist-Johnson</i> |

OAS

- Brad Koeckeritz*
- Colin Milone*
- Steve Ramaekers*
- Steve Stroud*
- Richard Thurau*
- John Vogel*

BLM

- Gary Baumgartner*
- Bobby Eisele*




DOI Accident Free Pilots



Bureau of Land Management

Allen, Lisa	McCormick, Bob
Bell, Don	Meierotto, Marty
Gusse, Walker	Pearson, Craig
House, Greg	Smyth, Scott
Lenmark, Paul	Warbis, Rusty
Mascheroni, Andrew	




Office of Aviation Services

Bannister, Gene	James, William
Castillo, James	Kearney, Patrick
Curtis, Scott	Kopczynski, Jim
Englert, Rich	Miller, Arlyn
Flack, Andy	Pena, Terry
Fowler, Dale	Wittkop, Jim
Howell, Gil	




U.S. Fish and Wildlife Service

Anderson, Anna	Koneff, Mark	Scotton, Brad
Bayless, Shawn	Liddick, Terry	Shelden, Dan
Bosch, Brandon	Lubinski, Brian	Shults, Brad
Daniels, Chris	Mallek, Ed	Spangler, Robert
Earsom, Stephen	Mullin, Brian	Sundown, Robert
Greeley, Chris	Olson, Nate	Thorpe, Phil
Greil, Thomas	Pepin, Dan	Twitchell, Hollis
Guldager, Nikolinda	Rayfield, John	VanHatten, Kevin
Hamilton, Clay	Rees, Kurt	Wade, Mike
Hilwig, Kara	Rhodes, Walt	Wortham, James
Kadmas, Neil	Rippetto, Dave	Yates, Sarah



U.S. Geological Survey

Heywood, Charles



National Park Service

Babcock, Jeff	Howell, Galen
Bell, Steven	Hummel, James
Capra, Jim	Larsen, Amy
Cebulski, Curtis	Nigus, Brett
Dolan, Richard	Richotte, Rich
Drum, Gregory	Sample, Scott
Enzfelder, Glen	Stevenson, Dan
Goodwin, Fred	Taylor, Scott
Grenda, Adam	Thompson, Nick
Hamon, Troy	Welty, Don



U.S. Park Police

Abate, Mike	Lindley, Jonathan
Evasick, Ryan	Perkins, Christopher
Haapapuro, Eric	Wright, Keaton



FY18 Safety Improvement Opportunities

Bureau Continuous Accident Free Milestones



BSEE 44 Years



OSM 32 Years



BOR 21 Years



USGS 12 Years



BOEM* 7 Years



FWS 3 Years

*contributed to BSEE's 44 year accident free milestone

Honorable Mention



US Park Police for 45 years of accident free flying.

"A superior pilot uses his superior judgement to avoid situations which require the use of his superior skill."

-NASA Astronaut Frank Borman

Safety Publications

As part of the DOI mishap prevention program, OAS, in partnership with the U.S. Forest Service, publishes a variety of safety publications.

<https://www.doi.gov/aviation/safety/library>

Accident Prevention Bulletins

- DOI 18-01 Acquisition of SEAT Fares
- IA 18-01 Improper Seat Belt Rigging
- IA 18-02 Smoke Column Hazards
- IA 18-03 ALSE Guide/Handbook
- IA 18-04 Sterile Cockpit and Airtanker Roll Times
- IA 18-05 UH-1H Tail Rotor Pitch Change Quill Assembly Inspection Criteria
- IA 18-06 Lithium Batteries
- IA 18-07 Frogs in the Fuel Tank



Safety Alerts

- DOI 18-01 Aviation Operations Tempo
- IA 18-01 Temporary Flight Restrictions (TFRs)



Lessons Learned

- DOI 18-01 3DR Solo UAS Issues
- IA 18-01 Aircraft Accident Success Story
- IA 18-02 SEAT Aircraft Accident
- IA 18-03 VFR Flight Operations/Decision Making/Risk Tolerance
- IA 18-04 Bird Strikes
- IA 18-05 Dropped Load



Bureau Aviation Managers

BIA - Joel Kerley (208) 387-5371

BLM - (Acting) Brad Gibbs (208) 387-5199

BOR - (Acting) Cory Stokesberry (208) 258-0023

BSEE - (Acting) Gabe Durand (703) 372-3931

BOEM - (Acting) Richard Knowles (907) 334-5268

FWS - Anthony Lascano (571) 213-3021

NPS - John Buehler (208) 387-5227

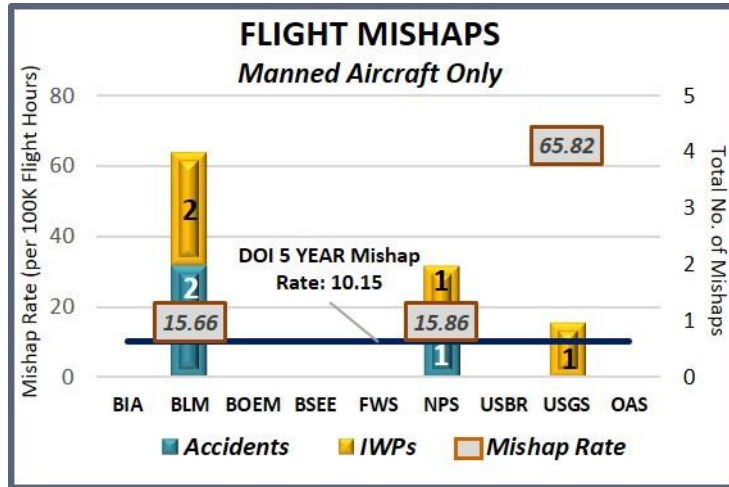
OSMRE - Sean Strate (202) 208-2575

USGS - Bill Christiansen (303) 236-5513

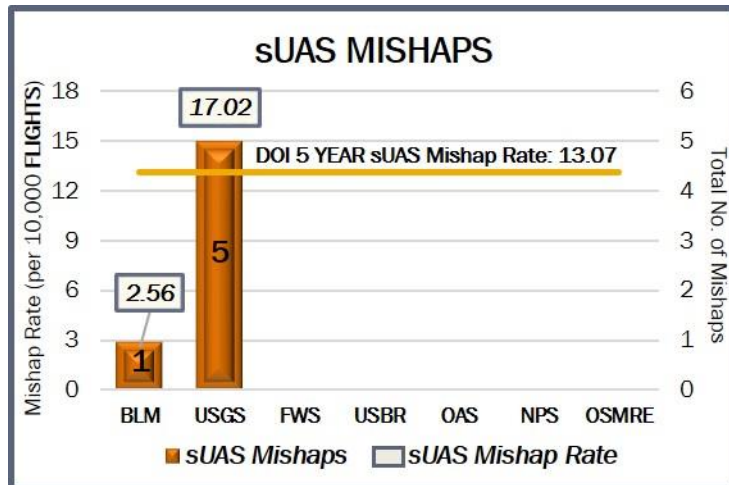


Executive Summary

Take Away Sheet



3 Accidents and 4 Incidents with Potential



	Annual Flight Usage Cost	Annual Flight Hours	Cost per Flight Hour
Fleet	\$6,578,156	14,651	\$449
Contract	\$71,115,774	44,258	\$1,607
Total Usage	\$77,693,930	58,911	\$1,319

POLICY: In FY18, three AMRBs resulted in 12 additional recommended action items, to which 4 have already been closed. As of today, 26 AMRB recommendations remain open.

POLICY: OAS has developed a modern, cost effective civilian aviation performance helmet standard. The DOI/USFS Standard presents a rational means for differentiating between helmets which meet specified standards for impact protection and retention system effectiveness and those which do not.

RISK MANAGEMENT: The SAFECOM system remains an essential tool in our continued efforts to reduce aviation mishaps. Over the last two years, the DOI manned aircraft SAFECOM reporting rate has declined by 16% while the accident rate has increased 49%.

ASSURANCE: In FY18, 8 Program Evaluations were completed among 6 bureaus with no material weaknesses found. These evaluations resulted in 32 findings and a total of 49 best practices observed.

ASSURANCE: The 108% increase in sUAS flights over FY17 outpaced the 40% increase in sUAS SAFECOMs reported in FY18. As a result, the overall sUAS SAFECOM reporting rate decreased this year.

PROMOTION: FY18 award nominations came from 5 different bureaus/offices. FY18 awards included 2 Awards for Significant Contribution to Aviation Safety, 2 In-Flight Action Awards, 6 Airwards, and 1 Safe Flying Award. The FY18 Departmental Award for Outstanding Contribution to Aviation Safety was awarded to a Multi-Bureau UAS Response Team who supported the Kilauea Volcano Activity in May 2018.

PROMOTION: Bureaus maintaining excellence in aviation safety through their continuous accident-free years record include: BSEE-44 years (manned aircraft reporting rate-2068), OSM-32 years (sUAS reporting rate-168), BOR-21 years (sUAS reporting rate-64), USGS-12 years (manned aircraft reporting rate-263), BOEM-7 years (manned aircraft and sUAS reporting rate-0), and FWS-3 years (manned aircraft reporting rate-236). US Park Police is to be commended for their 45 continuous accident-free years.

