FY11 DOI Aviation Safety Summary

October, 2011

Congratulations DOI on the Best Year Yet!

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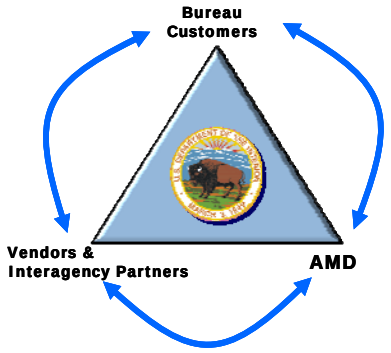
DOI aviation safety and aircraft mishap prevention is based on the philosophy that all aircraft mishaps can be prevented and that mishap prevention is an inherent function of any position. **Zero aircraft accidents is every professional's goal regardless of any barriers**. Improved aviation safety reduces cost, saves lives, and drives efficiencies across all of our mission areas.

Successful aviation programs require a partnership fostering a just culture that fairly balances safety and accountability. An organization's safety culture requires the assembly of characteristics and attitudes establishing safety as an overriding priority that receives the attention warranted by its significance. It also requires components of accountability including clear expectations, required actions, and a means by which they will be evaluated.

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

Policy, Risk Management, Assurance, & Promotion

DOI Aviation Partnership Model



Quality - Service - Efficiency - Safety

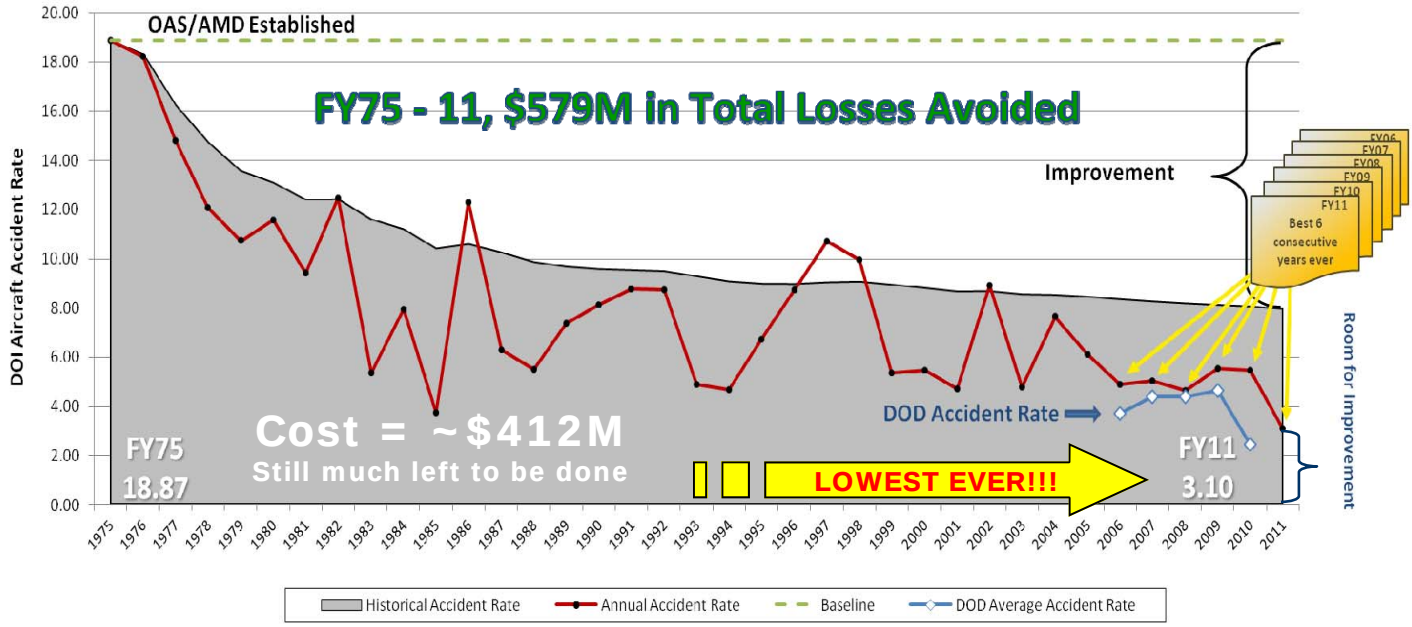
4 Pillars of DOI's Aviation Safety & Accident Prevention Program

Overview

Aircraft Accident Rate

In FY11, the U.S. Department of the Interior (DOI) continued to **lower the historical DOI aircraft accident rate**[1] by an additional 1.2% to 7.96 accidents per 100K flight hours with **the best 6 consecutive years and lowest annual rate in the Department's history!** As we continue to mature and strive for further improvement, it's imperative we benchmark ourselves against other organizations operating in the mission oriented environment as **DOI continues to remain at a higher rate than many other government and civilian aviation operations.** Benchmarking our performance externally reveals substantial opportunities for improvement. These improvements are certainly within our grasp as the most efficient method of realizing them lies within leveraging industry accepted standards and best practices. Implementing a recognized Safety Management System is one step towards seizing these opportunities as it is soon is to be required of all of our vendor partners.

DOI Aircraft Accident Rate History



In FY11, the Department achieved an annual aircraft accident rate[2] of 3.10 accidents per 100,000 flight hours, **down 43%** from 5.47 in FY10. In FY11, the Department flew 64,551.5 total flight hours, 4,945 hours (7.1%) less than the previous year. These flight hours were supported in part by 411 bureau requested AMD supported aviation contracts, 1,923 aircraft inspections, and 4,045 pilot evaluations.

Since 1975, DOI's aviation safety program has resulted in estimated savings of $579M to the Department and its supporting vendors in reduced losses[3]**.**

[1]Historical aircraft accident rate is defined as total historical aircraft accidents per 100,000 flight hours flown.
[2]Annual aircraft accident rate is defined as total aircraft accidents in one year per 100,000 flight hours flown.
[3]Based on Federal Aviation Administration (FAA) and National Transportation Safety Board (NTSB) accident cost methodologies.

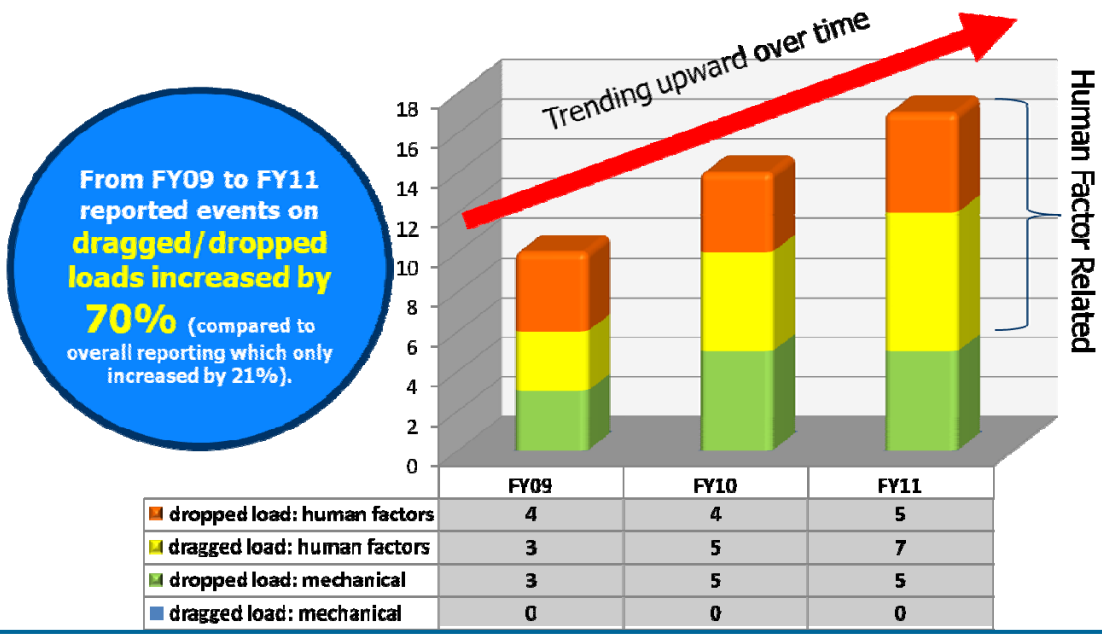
Overview

Aircraft Mishap Summary

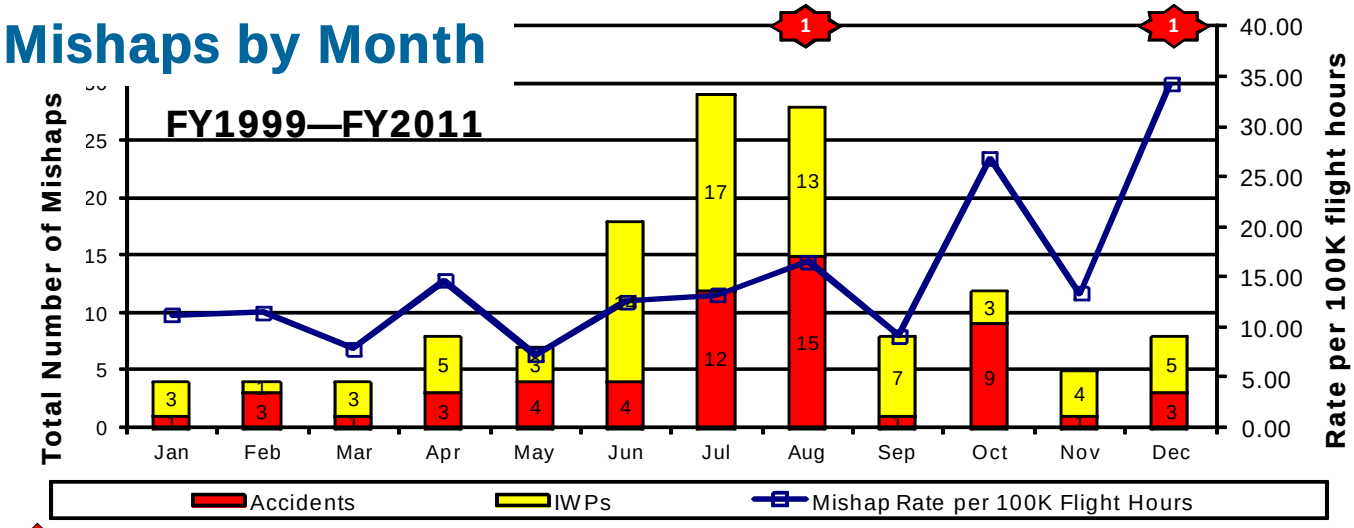
Accidents under DOI operational control were reduced by 50% from the previous year with **NO FATALITIES**[1]. Both FY11 DOI aircraft accidents were consistent with previously identified high risk mission areas of low level flight and off-airport operations. Both accidents also occurred during historically higher risk periods in December (due to greater probability) and August (resulting from higher operations tempo).

Other mishap trend analysis identified a significant increase in water bucket mishaps. According to the most recent data, there was a 21% increase in dragged and dropped loads. 29% involved mechanical/equipment related issues and **71% involving human factor related issues**. Additionally, there were two incidents involving water drops on personnel with one resulting in injuries and the other in damaged equipment.

Dragged and Dropped Loads



Mishaps by Month



1 Key: Number of accidents that occurred in this month of FY11

[1]One DOI employee was fatally injured while receiving civil flight training at an Air Force Base as a part of his official duties.

FY11 DOI Aviation Safety Summary

Overview

Aviation Flight Hour & Safety Statistics

Type	Airplane	Helicopter	Total Hours	Cost
Contract	11,675.1 (-0.1%)	20,874.6 (-22.9%)	32,549.7 (-16.0%)	$ 89,599,765.02 (-6.1%)
Fleet	19,691.5 (+23.7%)	1,714.3 (-14.3%)	21,405.8 (+19.4%)	$ 8,593,438.40 (+12.1%)
ARA	9,588.7 (-14.8%)	1,007.3 (-35.7%)	10,596 .0 (-17.4%)	$ 5,785,117.56 (-34.2%)
Total	40,955.3 (+5.4%)	23,596.2 (-22.9%)	64,551.5 (-7.1%)	$103,978,320.98 (-7.0%)

*Percentages are increases or decreases from FY10. Note: data collection methodology was revised to increase consistency with FAIRS reporting.

FY 11 Annual accident rate = $\frac{2 \text{ reportable accidents}}{64{,}551.5 \text{ reportable DOI flight hours}}$ * 100,000 = **3.10 accidents / 100,000 hours**

Historical accident rate = (37 fiscal years) $\frac{255 \text{ reportable accidents}}{3{,}199{,}473.10 \text{ reportable DOI flight hours}}$ * 100,000 = **7.97 accidents / 100,000 hours**

In FY11, DOI experienced a reduction in total flight hours by 7.1% primarily resulting from a decrease in vendor aircraft utilization which ultimately drove down costs concurrently by 7.0%. Among fleet aircraft, utilization increased 19.4% while cost per flight hour decreased by 6% from $427.84 in FY10 to $401.45 in FY11.

Accident and IWP Costs Total DOI and related commercial vendor aircraft accident costs for the two accidents experienced in FY11 were $124K, down from $21.1M in FY10 (which was primarily driven by multiple fatalities in FY10). The average FY11 aircraft accident cost was $62K. Total cost for the seven FY11 DOI Incidents-With-Potential (IWP) was $269K ($34K per IWP average).

Onsite Investigation Costs AMD's average per aircraft onsite (unprogrammed) accident investigation costs for the two aircraft accidents in FY11 was $2,183.00, 64% lower than the average FY10 cost. Average AMD onsite investigation costs for the seven FY11 IWP's was $1,803.57, 156% higher than the average FY10 cost for four IWPs primarily due to the fact that there were no onsite IWP investigations in FY10. There were no unprogrammed IWP costs. Lessons learned from the investigation of one aircraft accident or IWP can prevent the occurrence of a future accident resulting in a substantial monetary return on the investment of resources in accident and IWP investigations.

FY11 Accident Prevention Products—AMD collaborated with the bureaus and USFS in producing and distributing the following mishap prevention products:

4 - Interagency Aviation Safety Alerts
6 - Interagency Aviation Lessons Learned
4 - Interagency Accident Prevention Bulletins

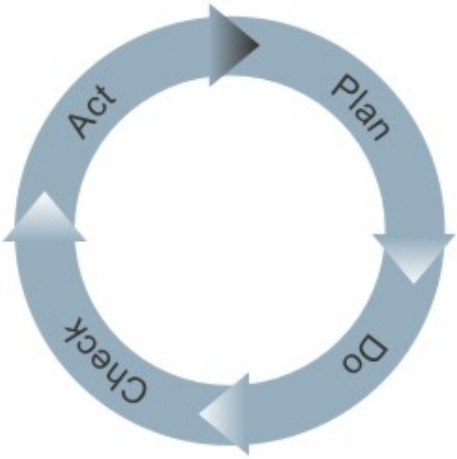
Aircraft Safety Inspections Performed — 1,923[1]
Pilot In-Flight Evaluations Conducted — 4,045[1]

Aviation Safety Training Delivered — 36,945 online modules and 62,317 student hours of classroom and hands-on aviation safety training were delivered to DOI and interagency personnel.

[1]Includes DOI Fleet, Commercial Vendor, and Cooperator aircraft from other agencies. Pilots receive evaluations for each specific special use mission area qualification. *Data not available for the month of September.

Policy – Making It Real

Policy – it's the foundation upon which operational standards and principles are based for other documents to reference in relating operational components to the organization's strategic plans and goals. Policy also establishes required processes, expected level of performance, and the authority under which they are conducted. Fortunately, many bureaus possess policies and procedures addressing their respective aviation operations yet an alarming trend has surfaced within the Department leading us to conclude that some are essentially "paper programs". This issue has been identified in aviation mishap investigations, incidents described within the SAFECOM system, and Program Evaluations. This most often occurs in the areas of Operational Risk Management (ORM) which in some cases, ultimately resulted in fatalities. Simply stating a requirement in a document signed by Departmental or Bureau leadership doesn't **assure** its actually happening where it counts the most.



The Department Manual (DM) is the cornerstone from which all bureau policies are to be based. Operational Procedure Memorandums (OPMs) should also be reviewed as they supplement DMs to ensure relevancy by allowing AMD and other stakeholders to update Departmental policies as needed. That said, DMs and OPMs may not provide the specific operational guidance required to ensure adequate safety and efficiency. Individual bureaus are responsible for developing, implementing, and updating bureau specific policy addressing how operations are to be conducted, line managing responsibilities, and reporting requirements to name a just a few.

Auditing – not a word that invokes a pleasurable response in most cases although it remains an essential process to ensuring your organization is actually doing what it said it was going to do. Perhaps a more palatable word might be "evaluation". Audits/evaluations uncover what really happened as a result of activities and also alleviates fears about revealing failures. Failures represent vital learning opportunities which managers should create a supportive environment for learning from past mistakes. These assessment activities can be tailored to meet organizational needs – in other words, it doesn't need to be painful as they can be performed internally if a third party is unavailable or unfeasible and is much better than not doing it at all. This is an essential component of a Safety Management System in that the bureau **assures** that it's living up to standards. Evaluations are tools in the quest for impact and effectiveness but not a "magic 8 ball" that can tell you what to do.

Tools – you wouldn't ask someone to change a tire without the right tools (lug wrench, jack, etc.) would you? The outcome of any audit is essential information that must be effectively communicated and implemented in order for any improvements to become reality. People at the operational level are most successful if they're provided information in a manner that is accurate, clear, concise, and actionable. Tools are instruments that enable means to an end. Dashboards/scorecards conditionally formatted to include color coding that visually indicates performance (red, yellow, blue) with specific action plans addressing issue(s) with a periodic review set to specific time intervals (at least annually) is just one of many methods. The important thing is that it gets done!

Developing a document describing roles and responsibilities within key organizational functions, how they are to be performed and linking the operational relationships to these policies can be challenging. It truly requires continual improvement (Plan Do Check Act – PDCA) activities in order to ensure reality reflects policy and vice versa – especially in a constantly changing environment. Making your organization's policy become reality all starts with simple planning and a sincere commitment from leadership.

Unmanned Aircraft Systems (UAS)

During the past four years, AMD and USGS have led the effort to explore and advance the intriguing possibilities and complex requirements of integrating UAS in support of DOI missions such as wildlife surveys, mapping, law enforcement, SAR, firefighting, and command and control. In March of 2011, the first ever exclusively developed DOI UAS COA (sponsored by the USGS) was actually flown during a Sandhill Crane count in the Monte Vista Wildlife Refuge.

But remember, with UAS come new requirements:

OPM 11-11 requires UAS pilots, mission operators, and observers be certified, maintain currency, and comply with safety protocols.

UAS are considered aircraft and must be acquired and controlled IAW similar regulations.

FAA must issue a Certificate of Authorization (COA) for all UAS flights not performed in military or restricted, airspace. All COAs are required to be submitted through the AMD COA coordinator.

Certificate of Authorization (COA) application must include at a minimum: communication plan, airspace, pilot/operator qualifications, visual observers, project aviation safety plan, risk assessment, and most importantly — the mitigations.

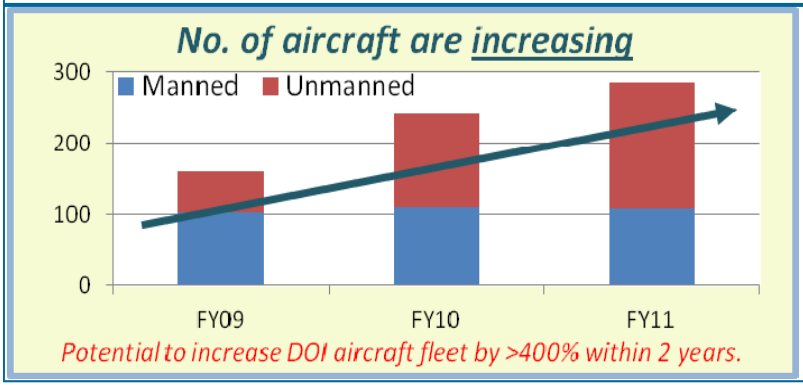
AMD Responsibilities:

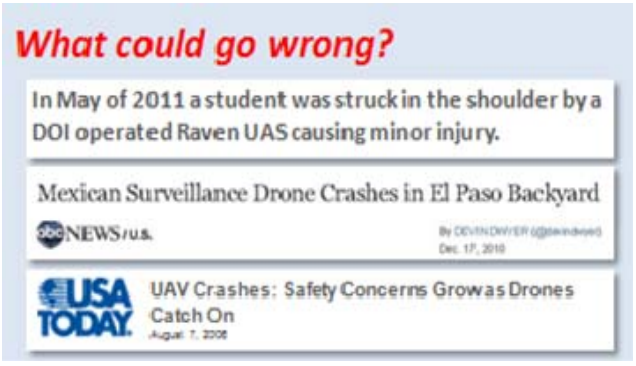
- Pilot/Aircraft/Maintenance Inspections
- Carding
- Pilot/Operator/Observer training

Mishap Reporting: In May of 2011 a student was struck in the shoulder by a DOI operated Raven UAS causing minor injury. All mishaps involving UAS operations must be reported. Notification can be made by calling the 1-888-4MISHAP number.

UAS Procurement:

UAS are procured the same as an aircraft. You can't just buy one and start flying it.





Safety Impact of Fiscal Budget Tightening

Anyone that's been around for a while will tell you that when challenging economic periods hit the aviation industry, maintenance and training programs are often the first to suffer. This challenging situation appears to be upon us (again) and the Department is expected to provide stringent oversight of our vendors while maintaining the highest standards for our fleet aircraft.

Maintenance. High-profile accidents involving public aircraft operations triggered an FAA and NTSB review of aircraft operating under public status and related oversight responsibilities. Although the full impact of these reviews is still not clear, the one thing that appears imminent is a greater oversight role by federal agencies in order to improve the overall safety with an added focus on airworthiness of aircraft operating under our veil of "public" status. Ultimately, this will increase AMD's role in aircraft inspections at a time when staffing and funding are stagnant (at best).

What does all of this mean for you? As in any risk assessment, you need to start with hazard identification (poor economy + reduced FAA oversight + economic pressure on vendors) in order to determine the risks (increased potential for maintenance deficiencies + increased workload for aircraft inspectors).

The next step is to mitigate the risks you've identified. Individually, we can't fix the economy, increase the budget, or (in some cases) reduce aviation resource utilization. However, the things that remain within our control include increasing our general situational awareness, checking that the aircraft we use are properly carded **before** we fly, questioning the operator if you see maintenance issues that are not corrected or documented properly, and actively participating in the SAFECOM system.

If you are ever in doubt about the airworthiness of an aircraft, ask the pilot. If you're not satisfied, contact an AMD maintenance inspector. The consequences are just too high to take lightly.

Training. The good news is that the economic impact on our Interagency Aviation Training program, though serious, can be managed as nearly all of the "A" courses are available online. These courses are current and their quality is excellent. The only drawback to the online delivery method is the lack of the student - instructor interface associated with the classroom environment. Fortunately, this limitation can be overcome by receiving instruction via Webex and Webinars. These methods of course delivery also eliminate costs and reduce lost productivity normally associated with travel. Most important, you're still able to obtain the benefit of quality instructors.

Unfortunately, many investigations of accidents and incidents over the past several years consistently identified aviation users and their supervisors as failing to satisfy minimum training requirements in accordance with Departmental and bureau policy. Part of your job is to ensure you and the people who work for you comply with these requirements.

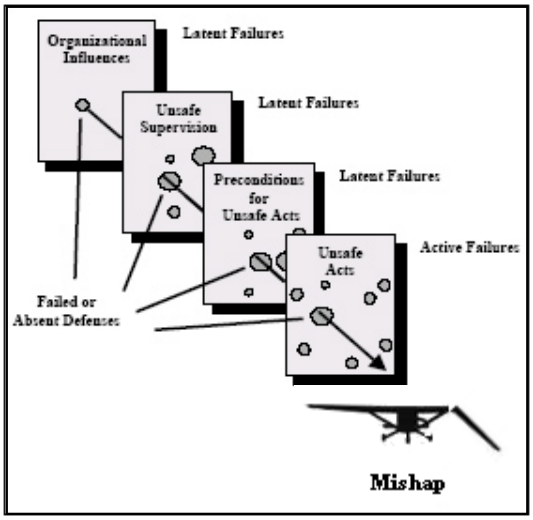
The economy's impact on training within DOI is certainly manageable, especially if it doesn't require additional resources. The only thing required is a little effort on the part of employee and commitment from management.

As these economic challenges become more pronounced, it becomes imperative that users and managers be proactive in determining where new risks will appear and which remaining risks may intensify. Armed with this knowledge, you and your respective bureau will be better able to mitigate risks to an acceptable level and accomplish your mission safer.

Investigation Observations and Areas for Improvement

(aka Management Action in Response to Mishap Events)

When an aircraft accident occurs, an investigation follows in order to figure out what happened and why. This investigative process creates an opportunity to implement corrective actions that will prevent another accident from happening in the future. In the past, it was often common practice to find out what the pilot did (or didn't do) and then re-train or punish the pilot. Modern theories of accident causation illustrate the fallacy of this "blaming" approach and focuses on those aspects of the system (management, policy, mission environment, or equipment) that allowed the aircrew to be placed in a situation where a mishap could occur.



Using that model, DOI accident investigations have increasingly looked beyond the pilot's performance in order to seek out systemic deficiencies that enabled those errors to become accidents. Common deficiencies include:

- Supervisors who have not satisfied minimum training requirements
- Inappropriate aircraft utilization
- Failure to check pilot and aircraft cards before the mission
- Lack of risk assessment/risk decisions made at inappropriately low levels
- Flight plans not filed and flight following not conducted in accordance with Departmental (or bureau) policy.
- Failure to implement recommendations from previous Aircraft Mishap Review Boards and Aviation Program Evaluations.

While this is not a complete list, it reflects on management's role in accident causation and subsequent contributions to a substandard safety culture.

Correcting this trend is feasible but requires effort and commitment from everyone involved in DOI aviation. Leadership from those who supervise employees using aviation resources or manage aviation programs is essential. Leaders need to become actively involved by complying with Departmental and respective bureau training requirements in addition to ensuring their employees satisfy their training requirements as well. If you're not trained, then you aren't qualified.

Manage the mission— don't let it manage you. The key to managing risks is to know what can hurt you and then doing something about it. The key to knowing what can hurt you is maintaining a high level of situational awareness. The key to possessing situational awareness is to communicate amongst others, actively observe your aviation operations, make necessary adjustments, obtain feedback, then repeat.

Third, do more than just use aviation, understand aviation. If you're not an expert, become an expert in the policies and procedures that apply to your missions. An organization as mature as DOI seldom lacks adequate policy. What DOI lacks is understanding, application, and accountability.

Finally, any safety investigator will tell you that "there are no new accidents, just new people having them" and the participants generally say "I've really learned a lesson from that experience, I'll never do that again..." An aviation accident is too costly to let everyone learn the hard way. Just as there are no new accidents, there are generally no new recommendations. DOI can operate safer if we learn the lessons and apply the recommendations from past accidents and evaluations in a conscientious and timely manner.

Risk Management

FY 11 Mishap Summary

Location	Date	Severity	Operator	Aircraft
Lake Clark, AK	Dec 1, 10	IWP	Fleet	PA-18 SuperCub
Reedsport, OR	Dec 31, 10	Accident	Fleet	Quest Kodiak
West Palm Beach, FL	Feb 18, 11	IWP	Fleet	AS 350 B2
Port Alsworth, AK	Apr 14, 11	IWP	Fleet	Cessna 206
Bethel, AK	Apr 15, 11	IWP	Fleet	DHC-2 Beaver
Manteo, NC	Jun 19. 11	IWP	Vendor	Bell 407
Cinnabar, AK	Jul 26, 11	IWP	Vendor	Cessna 207
Northway, AK	Aug 3, 11	Accident	Vendor	DHC-2 Beaver
Wendover, NV	Aug 13, 11	IWP	Vendor	AS 350 B2

FY11 was a better year for DOI, but we've been very lucky. Not lucky because we only had two accidents (which is not great), but lucky because those accidents and the 7 designated Incidents With Potential (IWPs) did not result in any injuries or loss of life despite their potential. The chart above contains a quick overview of DOI's FY11 mishaps.

Within these 7 mishaps we:

- Hit wires that we should have known were there—twice.
- Failed to report noticeable aircraft damage—twice.
- Flew an unairworthy aircraft—twice.
- Failed to flight follow—twice.
- Flew on aircraft that weren't properly carded—twice.
- Flew with pilots that weren't properly carded—twice.
- Flew missions under point-to-point rules when they were actually special use—three times.
- Failed to comply with Aviation Life Support Equipment requirements—twice
- Identified pilots who failed to satisfy minimum training requirements—AT LEAST three times.
- Identified supervisors who failed to satisfy minimum training requirements—AT LEAST three times.

352 DM 1.9 recommends bureau Aircraft Mishap Prevention Plans address the items listed below. Those items in bold were identified as deficiencies in DOI's FY11 mishaps.

a. **Risk Assessment (and Risk Decision Making)**.

b. **Education and Training**.

c. **Project Planning**.
   1) Flight routes/areas and **altitudes**
   2) **Risk assessment**.
   3) **Hazard identification** (e.g. weather, takeoff or landing weights, **landing areas, wire hazard**, etc.).
   4) **Management approval for special use activities**.

d. **Wire Strike Prevention**.
   1) **Flight Environment Considerations.**
   2) **Risk Assessments**/**Hazard Maps**.

e. Operational Environmental Considerations.

f. **Aviation Life Support Equipment.**

g. **Flight Following**.

h. **Weight and Balance.**

i. Airspace Coordination

★ Success Story ★

Although a mishap review commonly focuses on deficiencies and weaknesses, one event highlighted a true success story where everything went right. The Bethel IWP involved a flight where the aircraft's engine failed unexpectedly and the pilot did an outstanding job of landing the aircraft with no additional damage. Factors that supported a successful outcome include:

- The pilot's supervisor was properly trained and was very involved in aviation safety.
- The organization possessed a thorough, up-to-date Aviation Plan.
- The pilot flew the mission conservatively (wheel-skis lowered, sufficient altitude for forced landing).
- Proper flight plan and flight following system using redundant technologies and active monitoring.
- Immediate communication of the emergency while still in the air.
- Pre-mission planning that applied risk management principles.

Improved Opportunities for Aviation Training

Failure to complete required initial aviation training or maintain currency in accordance with OPM 11-04 Interior Aviation User Training Program is one of the "Top 4 Findings 2005 – 2011" discovered while conducting DOI Aviation Program Evaluations. As a result, AMD initiated a collaborative effort with bureau national aviation managers in order to significantly improve compliance with minimum training requirements set forth in OPM 11-04.

In FY2011, the AMD Training Division began implementing Distance Learning to meet a wide variety of aviation training and education needs via Interactive Television (ITV) and Webinars. Courses such as M-3 Management Training for Supervisors, A-200 Mishap Review, A-310 Overview of Crew Resource Management, and many others have been offered via distance training.

Several bureaus participate in a network of Federal Government agencies using a common satellite carrier supporting ITV. The interoperable network allows the various user agencies to share distance learning programs and use common facilities. AMD will continue to promote multiple training opportunities using this technology. ITV and Webinar course information can be found at https://www.iat.gov

AMD Support Significantly Increases Bureau Aviation Safety Training Compliance

As a result of AMD's use of live interactive distance learning, there has been a **13% increase** over FY10 total for instructor led M3 ("Aviation Management for Supervisors") course completions. AMD's decision to focus initial distance learning efforts on M3 was in response to customer driven requirements including responses to the Interagency Aviation Training needs survey, training deficiencies identified in unit program evaluations and training deficiencies uncovered in mishap investigations.

Departmental Expectations for Employees Using Aircraft for Civil Flight Training

In FY 10 and 11, two Departmental employees and one Certified Flight Instructor (CFI) were fatally injured during two separate aircraft accidents involving civil flight training. The first accident occurred on July 24, 2010 while an employee was receiving flight instruction in a Cessna 180J float plane and the second occurred on June 23, 2011 while an employee was receiving flight instruction in a Beech C24R. The investigations of these accidents by the National Transportation Safety Board (NTSB) are ongoing.

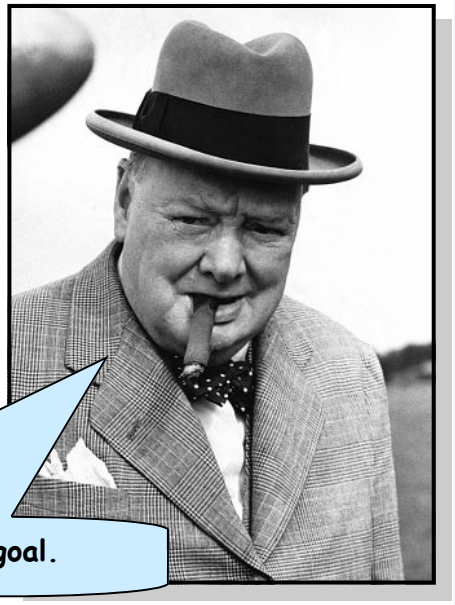
AMD and bureaus continue to partner in administering risk management in order to proactively reduce civil flight training accidents.

1. Perform Project Planning. Remember the 7 P's: Proper Prior Planning Prevents Present Poor Performance.
2. Develop a formal training plan to include identification of hazards, assessment of risk and implementation of measures to control those risks.
3. DOI employees should attempt to follow DOI aviation policies to the extent practical. In all cases, DOI employees are expected to use good judgment and common sense.

Risk Management

Reoccurring Events

"Those that fail to learn from history are doomed to repeat it."



While some may attribute these words to Santayana, they were also spoken by Winston Churchill.

Another old saying that's been around aviation for years is "There are no new accidents, just new participants." A review of the past two years illustrates that there have been three events involving wire strikes and eight events involving off-airport operations. Only one of these involved a mechanical failure.

Doing it right. The Bureau of Land Management (BLM) and the Single Engine Air Tanker (SEAT) community are committed to learning from the past in order to ensure the future is accident free. With SEAT accidents occurring in 2007, 2008, and 2009, BLM dedicated resources and intensified efforts which lead to positive programmatic changes that ultimately reversed the trend. After the Safety Initiative of 2010, the last two fire seasons have been accident free. This is just one example of how an organizational commitment to improve aviation safety can reduce the mishap rate and save lives.

Remember, a zero accident rate is an achievable goal.

Reporting Damage to 888-4MISHAP

When an "event associated with the operation of an aircraft" occurs and either damage or injury results, the event is required to be immediately reported using the Departmental accident hotline 888-4MISHAP (888-464-7427). The Interagency Aviation Mishap Response Guide and Checklist reminds you to not try and classify the event, just report it.

Clearly, we don't want people to take this to the extreme and start reporting bug strikes to the windshield, but in FY11, a majority of the incidents were not reported to the 888-4MISHAP hotline. In one instance an airplane landed to a remote site and the tail wheel assembly completely separated from the aircraft. An excellent SAFECOM was filed six days after the accident (a good thing) but neither AMD or the Bureau's National Office were notified before the aircraft was repaired and put back into service. There are Federal and Departmental requirements that demand timely reporting of aircraft damage and other incidents to which the 888-4MISHAP number will (ultimately) satisfy many of them.

If you see this...

Do not waste time trying to figure out if an event is an accident, that's not your job.
If you have an event with an aircraft that results in damage or injury no matter how slight.

REPORT IT to DOI or USFS by calling 1-888-464-7427 (888-4MISHAP).

Has 911/ Search and Rescue (SAR) been notified?

Then notify your Bureau / Agency and follow their procedures
Bureau / Agency Point of Contact and phone number _____

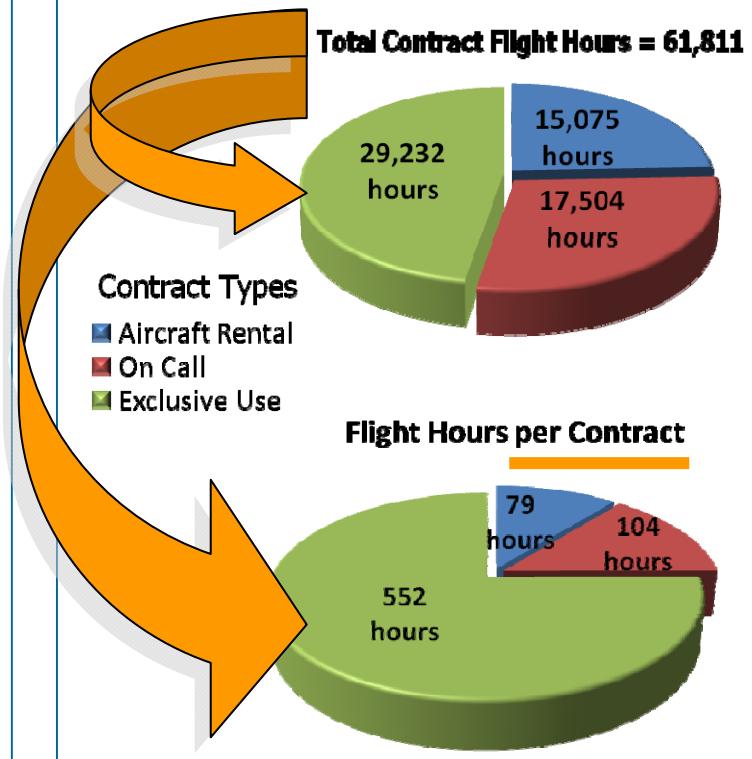
Use this !!!

If you observe an event involving damage or injury,
please pick up the phone and call **888-4MISHAP**

Contract Utilization

A recent analysis of Aircraft Rental Agreement (ARA) and On-Call utilization revealed that many of the current agreements were underutilized or not used at all. While there may be some legitimacy for low utilization rates (i.e. geographic limitations or timeliness), associated organizational costs such as inspections and contract administration resulting from each agreement negatively impacts Departmental costs. Scarce funds spent on unutilized contracts reduces resources available for other requirements (i.e. training, proficiency, etc.). The information provided (below) contains some of the data:

Exclusive Use aircraft are the most utilized and have the fewest contracts



		No. of Contracts	Hours Flown
Used as Needed	Aircraft Rental (Individual orders not to exceed $25,000)		
	Fixed Wing	165	13,552
	Helicopter	25	1,523
	Total	190	15,075
	On Call (Individual orders may exceed $25,000)		
	Fixed Wing	39	4,836
	Helicopter	129	12,668
	Total	168	17,504
Dedicated	Exclusive Use (Aircraft are dedicated for a specific time period)		
	Fixed Wing	19	10,106
	Helicopter	34	19,126
	Total	53	29,232

*Flight hour data includes non-DOI use

Aircraft Rentals—of the 190 agreements that were utilized, **40 firms flew less than 10 hours**. In addition to the 195 agreements with billable hours, there were another **50 vendors under contract that were never used**.

On Call Contracts—in addition to the 168 contracts that were utilized, there were another **81 vendors under contract that were never used.**

In order to address this problem, a significant number of the Aircraft Rental and On-Call contracts will not be renewed for FY12 as cost saving alternatives are identified that will still meet mission requirements.

Program Evaluations

DOI's aviation program evaluation function serves as an integral element of the Department's aviation Safety Management System "Assurance" pillar and a critical piece of the DOI A-123 management controls assurance program. In collaboration with the bureaus, AMD led aviation program evaluations are held on-site at bureau aviation unit locations. The objectives of the program evaluations include:

- Assessment of unit compliance with DOI aviation policy and Federal regulation.
- Evaluation of AMD's effectiveness in communicating and implementing DOI aviation policies.
- Identification of areas of potential improvement, sharing best practices, and support needs for each unit.

Location	Date	Result of Review
NPS – Midwest Region	10/10	**6** Findings
BLM – Arizona	01/11	**4** Findings
BIA – Southwest Region	02/11	**3** Findings
BLM – New Mexico	03/11	**6** Findings
BIA – Navajo Region	03/11	**5** Findings
BLM – Wyoming	04/11	**5** Findings
USGS – South Central Area	06/11	**7** Findings
USGS – Rocky Mountain Area	07/11	**10** Findings
FWS – Mountain Prairie Region	08/11	**7** Findings
BOR – Upper Colorado Region	08/11	**9** Findings
NPS – Intermountain Region	09/11	TBD
No Material Weaknesses Found		*Total 62 Findings*

FY11 Results & Performance

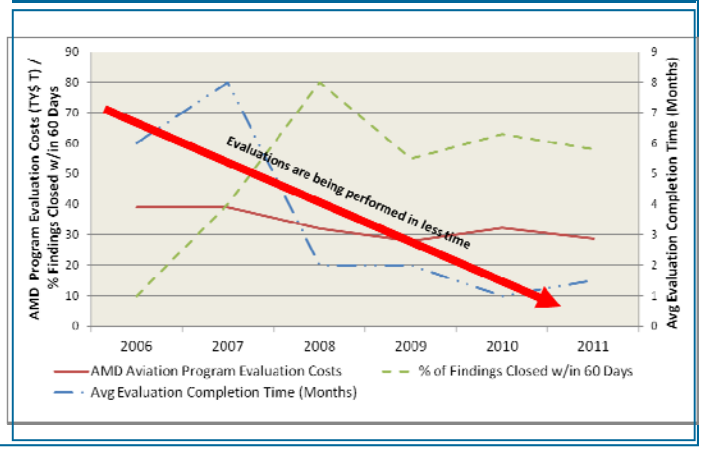
In FY11, AMD conducted 11 aviation program evaluations amongst 7 bureaus resulting in a total of 62 findings and **no material weaknesses.** Findings, corrective actions, and aviation program enhancements were collaborated with bureau aviation managers and tracked using AMD's ISO 9001-2008 certified program evaluation process (implemented in 2008). Since FY06, AMD has achieved an **83% reduction in completion time for aviation program evaluations**. 100% of all Plan Of Action and Milestones (POAMs) have been fulfilled for the aviation program evaluations conducted to date in accordance with AMD's ISO 9001-2008 process requirements.

FY11 Analytics The aviation program evaluation system is a proactive process for gathering and analyzing data to assess the health of aviation programs within the Department. Regular monitoring of key "vital signs" provides a quality assurance system to assess the safety of aviation services provided, ensures efficiency in the management of complex resources, and provides a means of sharing best practices.

From April 2005 to July 2011, a comprehensive analysis of 313 historical aviation program evaluation findings was completed within 56 evaluations. An analysis of these findings determined four major areas for improvement encompassing aviation program aviation plans, MOUs/IAAs, training, and safety.

The Top 4 Findings, 2005-2011

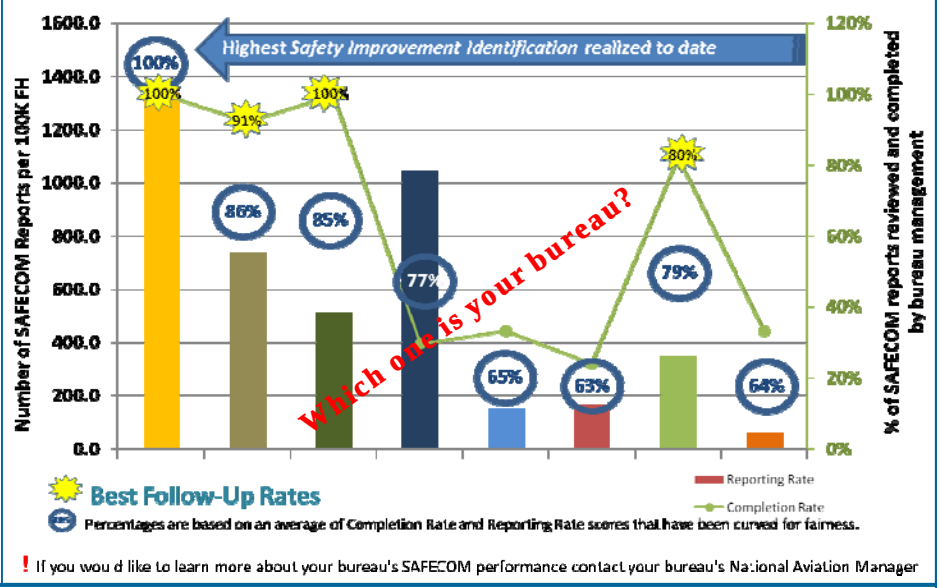
1. **Incomplete or out of date aviation plans.**
   ⇒ *31 of 56 evaluations, or 55.4%*
2. **MOUs/IAAs/SLAs are missing or out of date.**
   ⇒ *27 of 56 evaluations, or 48.2%*
3. **Required Line Manager (M2)/Supervisor (M3) training not conducted or current (per OPM 11-04)**
   ⇒ *30 of 56 evaluations, or 53.6%*
4. **Minimal or no SAFECOMs compared to total amount of bureau flight time.**
   ⇒ *18 of 56 evaluations, or 32.1%*



Safety Improvement Opportunities

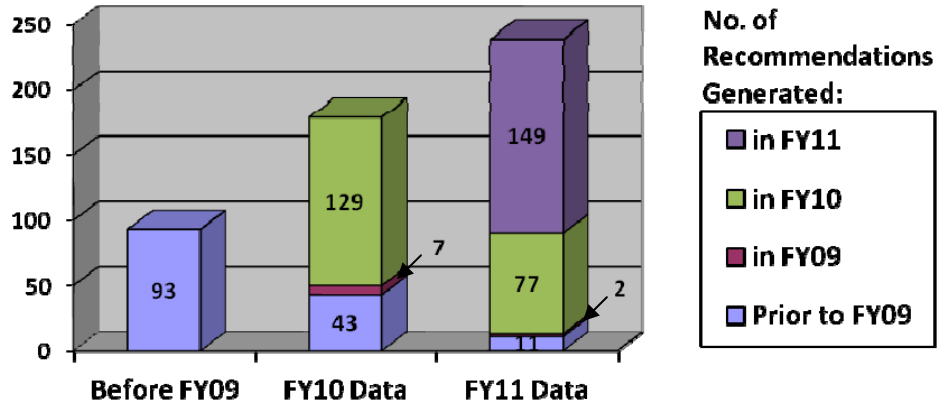
Industry studies have verified a correlation between increasing voluntary hazard reporting and decreasing mishap rates. The Department uses the SAFECOM system as its primary vehicle for voluntarily reporting aviation activity hazards and identifying safety improvement opportunities. As a counterpart to reporting, assigned managers within the system are responsible for reviewing the reports, ensuring corrective actions were taken, and preparing the report for public viewing so that others may benefit from the lessons learned.

In an attempt to measure the maturity of the Department's safety culture, the Aviation Safety & Program Evaluations office performed an analysis of SAFECOM reporting rates (per 100,000 flight hours) compared to SAFECOM completion percentages (the number of SAFECOMs managers completed over the total number submitted). The combined score illustrates an approximation of how developed the safety culture is in comparison to other bureaus and also demonstrates where the strengths and weaknesses exist in each bureau's voluntary hazard reporting program.



AMRB Recommendations

In FY11, many AMRB recommendations from previous years were finally closed however the total number of recommendations increased. This was primarily due to new accident reviews that attempted to address the active and latent failures that led to three accidents in FY10 and one in FY11 of which two resulted in fatal injuries to the occupants. Recommendations are aimed at preventing similar mishaps from occurring in the future.



The Good News:

- There has been a 88% reduction in outstanding recommendations issued before FY09.
- Of the seven recommendations issued in FY09 only 2 remain.
- And the 129 recommendations issued in FY10 has been reduced by 40% leaving 77 recommendations still unaddressed.

Moving Forward with SMS

Congratulations to those organizations that have begun training auditors in the International Standard for Business Aircraft Operations (IS-BAO). This training is an important step toward preparing the Department for an internationally recognized Safety Management System (SMS).

Those that have completed the training include:

Mark L. Bathrick (AMD)
Frank Crump (AMD)
Guy R. Exon (USDA-FS)
Rick Gividen (AMD)*
Donnie R. Herman (AMD)
Ricky E. Howe (USDA-FS)
Bill James (AMD)
Bradley S. Koeckeritz (AMD)
Gary Kunz (AMD)
John E. Mills (AMD)
Gary Morgan (USDA-FS)
James M. Morrison (USDA-FS)
John A. Nelson (USDA-FS)
Keith C. Raley (AMD)
Stephen V. Rauch (AMD)
Matthew Rielly (AMD)
Michael K. Rothwell (BLM)*
James Traub (NPS)*

* attended training but did not receive accreditation for auditing.

Notable FY11 Bureau Continuous Accident-Free Flying Milestones

BSEE/BOEMRE - 37 years.

OSM - 25 years.

BOR - 14 years.

USGS - 5 years.

BIA - 4 years.

BLM - 2 years.

"An Ounce of Prevention is Worth a Pound of Cure"

To help provide that ounce of prevention, the Aviation Safety and Program Evaluations (AS&PE) office develops and distributes aviation safety publications for the Department of the Interior. AS&PE partners with the U.S. Forest Service to create Interagency accident prevention publications that can reach a wider aviation community that shares in many of the same mission profiles and flying culture as the DOI. In Fy11, AS&PE produced 14 safety publications. They can be found on the AMD website at http://amd.nbc.gov/safety/index.htm

AMD-25A (04/10)

Interagency Aviation

Safety Alert

No. IA SA 11-02 Date: May 25, 2011 Page 1 of 2

Subject: Dip Tanks
Area of Concern: Aerial Fire Fighting
Distribution: All Aviation Activities

Discussion: Recently, a type 1 helicopter was sent to perform water drops on a fire. The dipsite included two Fol-Da-Tanks that were filled by hoses laying over the sides into the middle of the tanks. During the hover-dip process, the helicopter's snorkel became entangled in the tanks framing and lifted it off the ground. As a result, the tank was severely damaged. The next day, a different type of tanks (Heliwell) tank was set up for use.

Fol-Da-Tanks are not listed in the Aviation Management Tech Tips published by the San Dimas Technology & Development Center (March 2008). The Tech Tips, titled *Helicopter Dip Tank Capabilities and User's Guide* provides helicopter field operators with information needed to match the proper dip tank with the equipment in use. The following criteria for dip tanks not listed in the guide will assist you in determining whether to use a non-listed tank. In this particular event, the second criteria was certainly not met.

First, inspect for sharp surfaces. Nothing sharp or pointed should be inside the tank and at the upper outside sections of the tank. These areas are most likely to come in contact with a helicopter bucket or snorkel. Examples of sharp objects are jagged edges of a sheet metal, exposed screws or bolt heads, hooks, and pipes with sharp ends.

Second, look for any object that will create interference with a bucket or snorkel. These objects can be ladders that have the potential to catch the side of a snorkel, edges that are not flush, support beams that can tangle with the bucket line, and pipes that can snag another object.

Third, the dip tank must have a stable base. Its bottom has to rest on the ground or have support points that rest on the ground. The supports need to have large ground-contact pads so it does not sink into any soft soil or pavement. These supports not only prevent road damage but prevent the tank from tipping over if it starts to sink unevenly. A tank towed in by truck needs support other than its wheels. The brakes on the wheels can fail on a sloped surface and allow the tank to shift with unpredictable results.

Fourth, the dip tank has to accommodate the largest buckets expected to be used in the incident. A dip tank is no good if a bucket will not fit in it.

Fol-Da-Tank Portable Dip Tank

Check them out today!

Safety Alerts

DOI SA 11-01	The Ice Man Cometh
IA SA 11-01	MET
IA SA 11-02	Dip Tanks
IA SA 11-03	Loss of Tail Rotor Effectiveness

Lessons Learned

DOI LL 11-01	Aircraft Rental Agreements
IA LL 11-01	Foreign Object Damage in Cockpit
IA LL 11-02	Winter Off-Airport Operations
IA LL 11-03	Communication
IA LL 11-04	UAS Operations
IA LL 11-05	Wire Strike Protection Kits

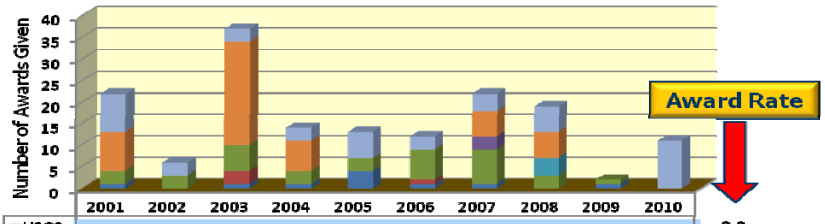
Accident Prevention Bulletins

IA APB 11-01	PSD Aerial Operations
IA APB 11-02	Flight Helmet Maintenance
IA APB 11-03	Mid-Air Collision Avoidance
IA APB 11-04	Dip Site Considerations

!!!!!!!!!!!!!!!!!!!Awards!!!!!!!!!!!!!!!!!!!

Recognition for those who excel at making sure we're flying safely is the cornerstone of promoting a well honed safety management system.

10-Year History of Safe Flying Awards



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
USGS											0.0
OSM											0.0
NPS	9	3	3	3	6	3	4	6		11	29.1
FWS	9		24	7			6	6			28.6
BOR								4			22.2
BOEM							3				4.8
BLM	3	3	6	3	3	7	8	3	1		13.6
BIA			3			1					10.1
AMD	1		1	1	4	1	1		1		149.8

(per 100K flight hours)

★ FY2011 Award Recipients ★

Secretary's Award for Outstanding Contribution to Safety: Michael Ebersole (NPS)

Award of Honor: Michael Ebersole (NPS), Leon Alsworth (NPS), and Bruce Lenon (NPS)

Award of Distinction: Nick Herring (NPS), and Bill Evans (NPS)

Award of Merit: Richard Richotte (NPS), Colin Milone (NPS), and Daniel Scott (NPS)

Airwards: Billy Shirley (Guardian Helicopter, given by BLM), Steve Maxwell (Aero Union, given by BLM), Gary Thomas (Aero Union, given by BLM), Dan Stucki (BLM), Scott Schmidt (BLM), Don Mitchell (BIA), and Charlie Miller (Queen Bee Air Specialties, given by BLM)

A New Contract for an Old Relationship

A Technical Panel Evaluation Committee was organized to review 5-year proposals submitted in response to a solicitation seeking offers to provide the Gulf of Mexico (GOM) Region aviation support services, beginning February 1, 2012. The panel recommended the selection of Era Helicopters L.L.C., the GOM's current aviation contractor.

The panel viewed Era's 5-year offer to represent the best value on the basis of (1) acceptability, (2) evaluated price, and (3) the capability of the offeror. The solicitation took into account the reorganization of BSEE and GOM's anticipated future helicopter needs.

Era has over 60 years total aviation experience (to include 40 yrs offshore) and average 40,000 flight hours per year in the GOM Region. They also possess experience in both shallow and deep water operations. Currently, ERA manages 175 aircraft including medevac aircraft, 2 SAR aircraft, and SEACOR marine vessel assets in the event of an emergency

In the previous 10 yrs, Era has flown 454,189 hours and experienced 11 accidents, resulting in a very low **2.42 accident rate, and while flying for BSEE it has been zero.**

Era is fully committed to its Safety Management System and has the very highest support from the Executive Chairman of SEACOR down throughout all Management of Era Helicopters to promote and continue to improve SMS into every facet of their daily activities. This system was adopted by Era in 2005 and has been a part of their continual improvement process since its inception.

Safety Promotion

Recognizing Personal Excellence

Accident Free DOI Fleet Pilots

STAR PERFORMERS

Aviation Management Directorate

Castillo, James	AMD
Davidson, Ben	AMD
Foster, Edward	AMD
Fowler, K. Dale	AMD
Howell, Gilbert	AMD
James, William	AMD
Kearney, Patrick	AMD
Mancano, Maria	AMD
Miller, Arlyn	AMD
Palmer, Earl Jr.	AMD
Stone, Bart	AMD

Bureau of Land Management

Bell, Donald	BLM
Curl, R. Ryan	BLM
Duhrsen, Jeffrey L.	BLM
House, Greg	BLM
Lynn, Michael	BLM
McCormick, Robert	BLM
Stright, John	BLM
Warbis, Rusty	BLM

Bureau of Reclamation

Norton, Michael	BOR
Phelps, Randy	BOR
Shanen, Geoffrey	

Bureau of Indian Affairs

Amicarella, Michael	BIA

Fish and Wildlife Service

Barnett, Heather	FWS
Bayless, Shawn	FWS
Bedingfield, Isaac J.	FWS
Beyer, Duston	FWS
Bollinger, Karen	FWS
Bredy, James	FWS
Clark, Stephen	FWS
Dillard, Les	FWS
Dobson, Garland	FWS
Earsom, Stephen	FWS
Ellis, James (Jim) F.	FWS
Ernst, Richard	FWS
Fox, Kevin	FWS
Guldager, Nikolina	FWS
Hink, Mike	FWS
Hinkes, Michael	FWS
Hurd, Shay	FWS
Koneff, Mark	FWS
Larned, William	FWS
Liddick, Terry	FWS
Liedberg, Paul	FWS
Lubinski, Brian	FWS
Mallek, Ed	FWS
Moore, Charles	FWS

Fish and Wildlife Service (cont'd)

Olson, Nathan	FWS
Powell, Doug	FWS
Rayfield, John	FWS
Rhodes, Walt	FWS
Rippeto, Dave	FWS
Roetker, Fred	FWS
Scotton, Brad	FWS
Sieh, Eric	FWS
Spangler, Robert	FWS
Spindler, Michael (Mike)	FWS
Stark, Rory	FWS
Sundown, Robert	FWS
Thorpe, Philip	FWS
VanHatten, G. Kevin	FWS
Wade, Mike	FWS
Ward, James	FWS
Wilson, Heather	FWS
Wittkop, Jim	FWS
Wortham, James	FWS

National Park Service

Alsworth, Leon	NPS
Cebulski, Curtis	NPS
Ellis, Lynn	NPS
Evans, William	NPS
Fink, Leon F.	NPS
Gilliland, Allen	NPS
Herring, J. Nick	NPS
Howell, Galen	NPS
Kangus, W.B. "Tug"	NPS
Kimmel, John	NPS
Lenon, Bruce	NPS
Loach, James	NPS
Mazur, Stephen	NPS
Milone, Colin B	NPS
Richotte, Richard	NPS
Sample, Scott	NPS
Shults, Brad	NPS
Stevenson, Dan	NPS
Taylor, Scott	NPS
Traub, James	NPS

National Park Service - U.S. Park Police

Bohn, Keith	USPP
Burchell, Kenneth	USPP
Chittick, Kevin	USPP
Davis, Craig	USPP
Hertel, Jeffery	USPP
Wright, Keaton	USPP

U.S. Geological Survey

Christiansen, William	USGS
Heywood, Charles	USGS
Wright, C. Wayne	USGS

DOI Mishap Reduction Breakthrough Performance

During the last six consecutive years, DOI aircraft accident rates have trended better than in any time in its history. A noteworthy accomplishment however one that can lead to complacency and acceptance of the status quo if not compared externally.

Organizations solely focusing on the bottom line will find themselves seeing ever decreasing efficiencies and increasing costs. Success hinges on managing a wide range of process and performance indicators that are vital to long-term performance improvement and sustainability. Figure 1 demonstrates the high cost of accepting the status quo and illustrates an urgent need for breakthrough performance in reducing DOI mishaps.

Costs Associated with DOI Accidents

(FY2007 – FY2011)

Cost Input	Average*
Bureau Investigation	$123,764.82
AMD Investigation	$5,331.93
Direct Losses (a/c repair, recovery, loss of availability, etc.)	$67,248.33
Vendor Losses (a/c repair, recovery, loss of availability, etc.)*	$243,621.00
Fatalities (7)**	$3,132,700.00
Other Injuries(7)**	$34,957.00
Total Average Cost	$3,607,623.08
Total Actual Costs (# Accidents / # Fatalities)	$29,653,034.30

*Vendor losses are based on estimates obtained during course of investigation, actual costs may vary.
**Injury costs are based on the value of a statistical life from the FAA publication "Economic Values for FAA Investment and Regulatory Decisions" published on October 3, 2007.

Figure 1. Five Year DOI Accident Costs

As previously stated, DOI aviation safety has reached a sustained period of generally acceptable performance from an internal perspective, however the new challenge is to avoid a plateau. To achieve a quantum leap in safety and operational performance, a new approach within a component of a Safety Management System (SMS) is required. This approach requires a seamless integration with the existing structure in order to improve performance in the way of reducing DOI mishaps.

A way forward…

Many successful organizations operating in high risk environments use external benchmarking as a key component of their strategic planning. By comparing a group's processes and performance against its peers, leaders can better understand strengths, weaknesses and opportunities for improvement. Benchmarking allows the practice to see how it compares to "best-in-class" performers and learn from their success. Figure 2 illustrates DOI's benchmarked performance against DoD organizations operating in a more demanding mission oriented environment and yet, possess significantly superior accident rates. Additionally, DoD statistics include a far greater opportunity to capture mishap data due to its robust reporting systems,

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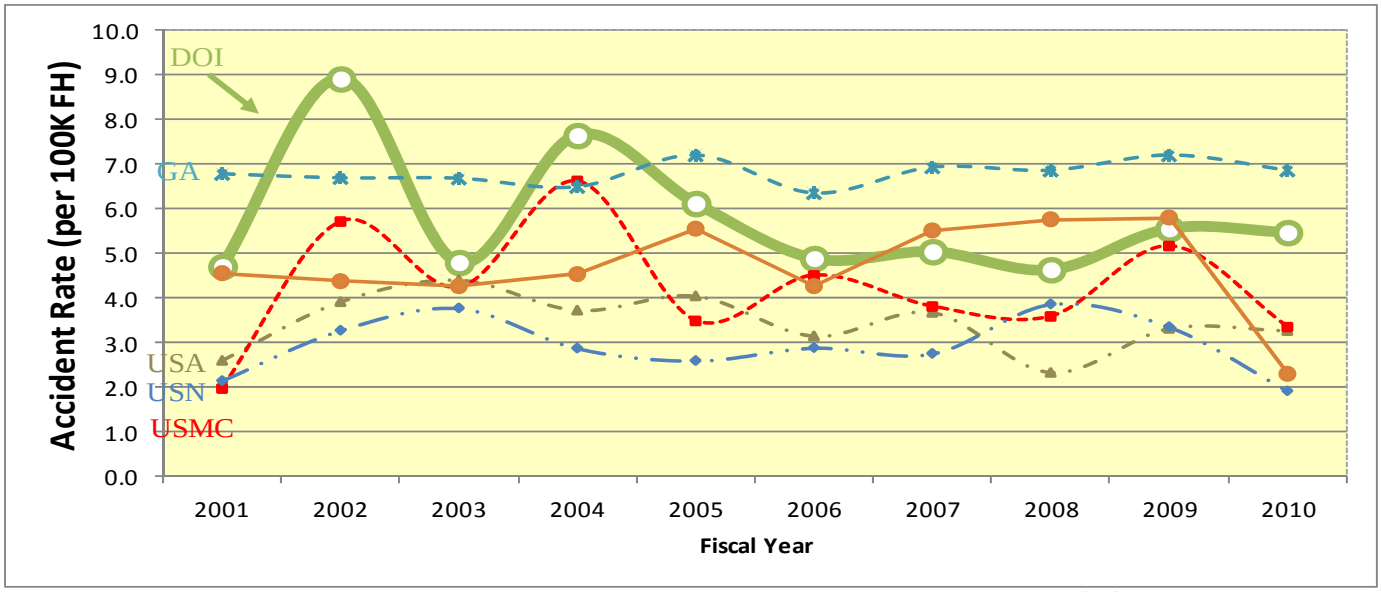
management oversight, and criteria requiring the inclusion of a wider range of mishap data (class A and B) than DOI which uses the civil "substantial damage" criteria as defined within 49 CFR 830.2.



General Aviation accident rate calculated by the National Transportation Safety Board (2010 statistics are preliminary as of 9/12/2011)
All DOD aviation accident rates are calculated based on Class A & B mishaps.
US Navy and Marine Corps aviation accident rates provided by the US Navy Safety Center
US Air Force aviation accident rates provided by the US Air Force Safety Center
US Army aviation accident rates provided by the Army Safety Center
A Class A mishap is defined as an event in which there was intent for flight and the total cost of damage is more than $1,000,000 and/or involves destroyed aircraft and/or fatal injury and/or permanent total disability
A Class B mishap is defined as an event in which there was intent for flight and the total cost of damage is at least $200,000 but less than $1,000,000 and/or involves permanent partial disability and/or hospitalization of five or more personnel.

Figure 2. DOI vs. DOD Accident Rate Comparison

Culture is key…

Many organizations possess what amounts to "paper" safety and loss control programs; in other words, written programs are in place to comply with imposed regulations, but little is done to foster a truly effective safety culture within the organization. Safety culture is a critical element affecting all aspects of the organization to which a positive or improving culture is required for breakthrough performance. A significant barrier to improving the safety culture lies within how an organization measures it (awareness) which ultimately allows leaders to invoke step change towards improvement.

The primary leading indicator of a safety culture is the amount of voluntary "hazard reporting". James Reason, a professor of psychology and leading authority on safety culture, has identified a reporting culture, in which people are willing to report errors, as a key characteristic of an organizational culture that makes safety a priority[1]. Unfortunately, many people negatively view the term "hazard reporting" which ultimately imposes a reluctance to participate in this important aspect of a positive safety culture. The primary goal is to establish a "just culture" which ensures open communication of event circumstances and

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[1] Hudson, P., *Safety Culture – Theory and Practice*, TRO MP-032, 1999

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affording appropriate action to ensue. A "just culture" recognizes human potential for error and that the organization plays a role in events, clearly defines an open and objective event investigation process, and ensures any disciplinary actions are done in a consistent and just manner.

Action is louder than words…

Reporting/ identification is only half of the challenge. Using accident investigation or SAFECOM reports as vehicles to illustrate the concept of detecting and responding to leading indicators will empower those to make changes where they are needed most and in a more timely manner. Using these reports will demonstrate the concept of transitioning towards more interactive briefings in which supervisors will do a better job of gathering information and implementing appropriate action. This process, often referred as "upward reporting" is another essential element of a just culture that requires a climate in which people hold themselves accountable, but do not fear reprisal for reporting. Management must communicate to employees that upward reporting is their job, that keeping problems to themselves is inappropriate, and that they have not only a right but a responsibility to speak up when they have concerns. "If you see something, tell me because I can't see everything".

This change requires a considerable measure of confidence by supervisors. Organizations must prepare their supervisors if they seriously intend to encourage an organization with a reporting culture and free flowing communication. To encourage upward reporting and open communication, supervisors must communicate with the personnel closest to the operation, loosen hierarchical restraints, empower expert people closest to a problem, and even shift leadership to people who currently have the answer to the problem at hand. Most importantly, a commitment to upward voice must prove genuine[2].

Tools for continual improvement…

The Department of the Interior commissioned AMD to create a "hazard reporting" system for aviation users as means to fulfill the Aviation Mishap Information System (AMIS) requirements for mishap reporting. The Aviation Safety Communiqué (SAFECOM) database was developed to meet that requirement. The database system is used to "report any condition, observation, act, maintenance problem, or circumstance with personnel or the aircraft that has the potential to cause an aviation-related mishap."[3] Reports submitted to the SAFECOM system should not be used for punitive purposes (352 DM 3.10 B).

AMD's Aviation Safety and Program Evaluation Division periodically conducts trend analysis on the Department's mishap rate. Data is gathered and stored in the Interagency Aviation Accident Database (IAAD), the SAFECOM system, and the Legacy Aviation Management and Finance System (Alpha). Statistical analysis has revealed a relationship between mishap rates and voluntary hazard reporting rates that can be used as a measure of the organization's safety culture. Due to DOI's composition of several nationwide bureaus with their own distinct aviation culture, analysis can be broken down to the bureau and regional level.

The comparison of DOI reporting and mishap rates (Figure 3) demonstrates a divergent relationship where as voluntary reporting increases, mishaps decrease.

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[2] Highly Reliable Organization Case Study number three National Advanced Fire & Resources Institute
[3] https://www.safecom.gov/

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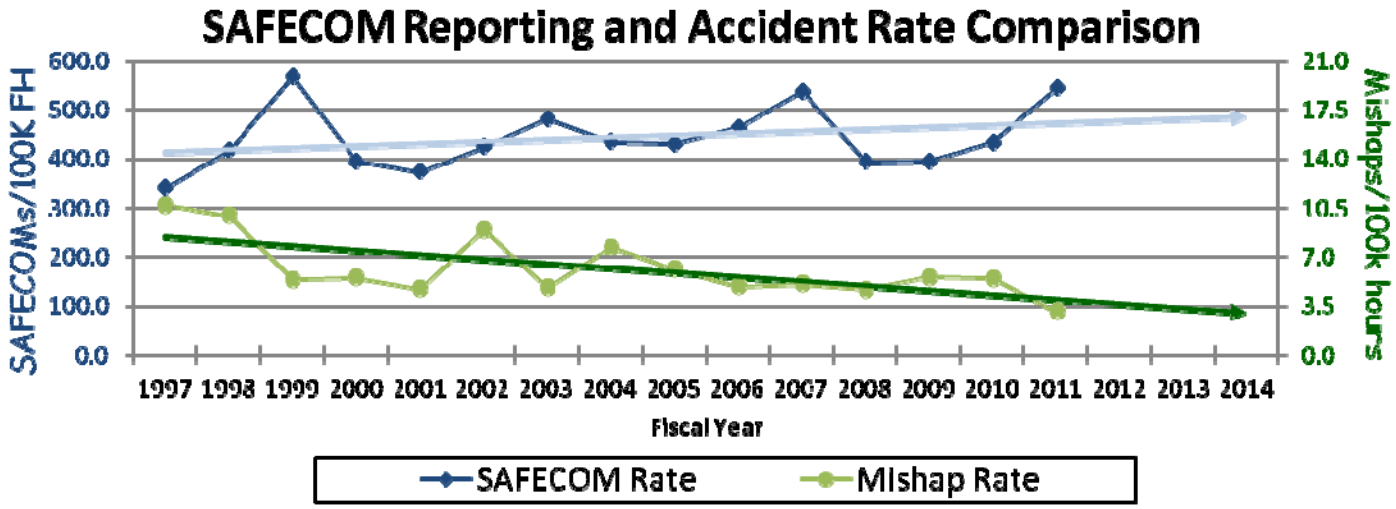


Figure 3. DOI reporting compared with Mishap Rate

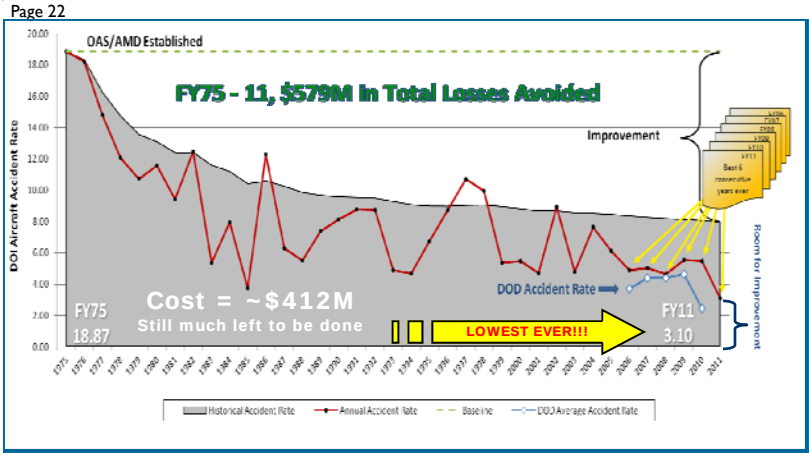
Utility…

This tool is amongst many "instruments" provided by AMD that should be used to ensure awareness in order to chart the course towards reducing mishaps and improving efficiencies.

FY11 DOI Aviation Safety Summary

Executive Summary

(Take Away Sheet)

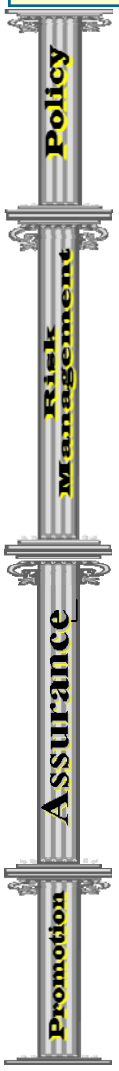


DOI Aviation Accident Rate = 3.10 per 100K FH
FY11—DOI's lowest rate since 1975!
FY06-11 = Best 6 Consecutive Years Ever

2 Accidents
1 Accident (0 Fatalities)—Alaska
1 Accident (0 Fatalities) - Oregon

FY 11 Annual accident rate = $\frac{2 \text{ reportable accidents}}{64{,}551.5 \text{ reportable DOI flight hours}}$ * 100,000 = **3.10 accidents / 100,000 hours**

Historical accident rate = (37 fiscal years) $\frac{255 \text{ reportable accidents}}{3{,}199{,}473.10 \text{ reportable DOI flight hours}}$ * 100,000 = **7.97 accidents / 100,000 hours**



This year's policy transformations:

- Unmanned Aircraft Systems (UAS) are changing the way DOI does business and AMD/FAA requirements are a critical component. UAS must be acquired and operated in a similar fashion as traditional manned aircraft. A certificate of authorization (COA) is required before flying in non-military or non-restricted airspace.
- Fiscal budget tightening is placing pressure on meeting training and maintenance requirements as we look for ways to save money. Remember to identify risks and seek mitigations strategies. AMD offers budget friendly distance learning opportunities.

With the lowest accident rate in recorded DOI history, there's a lot to be proud of:

- Although an unexpected engine failure in mid-flight caused the pilot to perform an emergency landing, the incident ended successfully due to proper prior planning. An organizational and supervisory infrastructure that supported safe aircraft operations and training gave the pilot the best possible opportunity for a positive outcome.
- Use of interactive distance learning has increased instructor led M3 training by 13% this year. Failure to complete required training remains one of the "Top 4 Findings" discovered during Aviation Program Evaluations and almost all mishap investigations. Utilizing this new technology helps us eliminate this deficiency and makes aviation safer.
- BLM resources and management initiatives have reversed the trend in SEAT accidents resulting in two accident free fire seasons.
- This year a study of aviation contract utilization was conducted that identified a large number of unutilized rental agreements and on-call contracts. As a result, more efficient alternatives are being implemented that will enable these resources to be redirected to where they are needed most.

In FY11 AMD conducted 11 aviation program evaluations amongst 7 bureaus with the following results:

- 62 Findings and NO MATERIAL WEAKNESSES.
- 83% reduction in completion time for aviation program evaluations
- 100% of all Plan of Action & Milestones (POAMs) have been fulfilled!

Additional improvements in assurance include:

- Development of a new tool for measuring safety culture within an organization based on SAFECOM reporting and completion rates.
- AMRB recommendations over a year old have been reduced nearly 50% from 179 in FY10 to 90 in FY11 as we progress towards our goal of 100% closure.
- 14 Accident Prevention Publications were produced in FY11 and are posted on-line at http://amd.nbc.gov/safety/index.htm

- Safety Management Systems are gaining ground as the Department gains more IS-BAO accredited auditors.
- Excellence in aviation safety has been achieved yet again for many of our bureaus that have maintained continuous accident-free records. NOTABLE ACHIEVEMENTS INCLUDE: BSEE-37 years; OSM– 25 years; BOR-14 years; USGS-5years; BIA-4 years; and BLM-2 years.
- Many of the Department's own fleet pilots have also stood out as star performers in achieving personal excellence by flying accident free during their time of service with DOI.