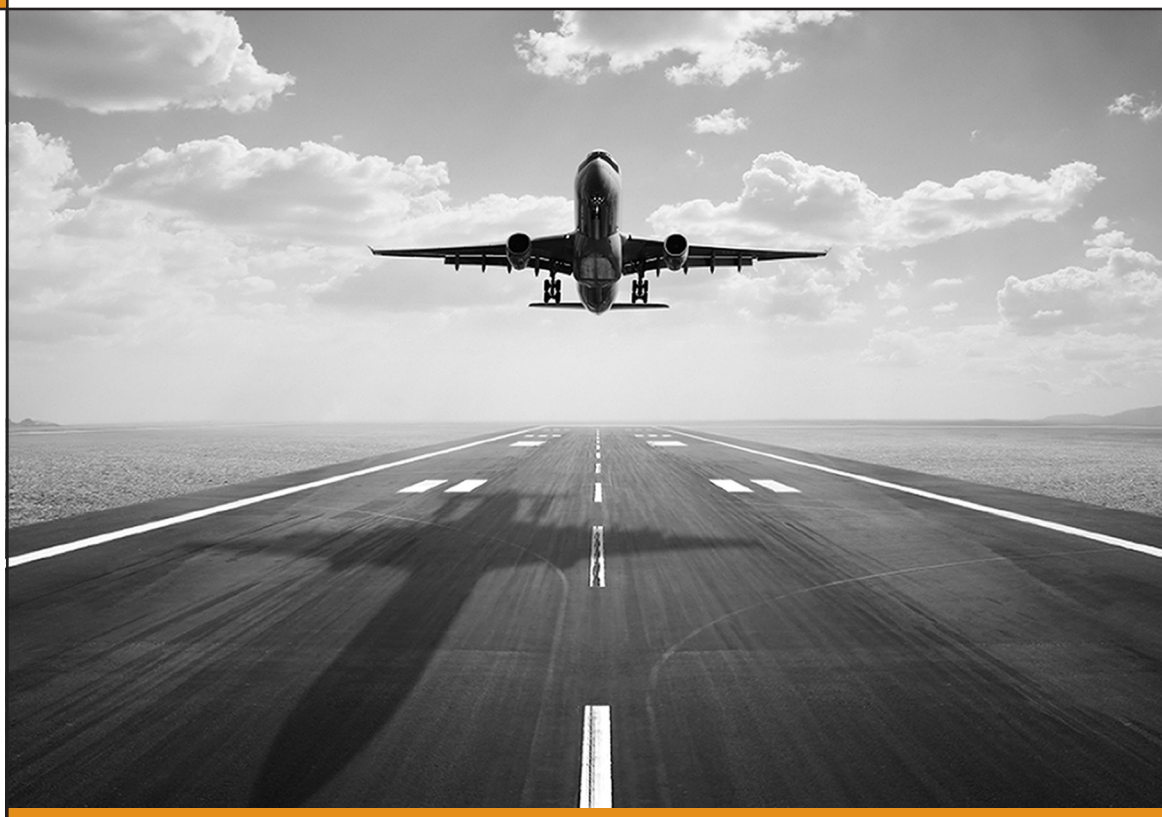
The Promise of Collaborative Voluntary Partnerships:
Lessons from the Federal Aviation Administration



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IBM Center for
The Business of Government

Collaborating Across Boundaries Series

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COLLABORATING ACROSS BOUNDARIES SERIES

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The Business of Government

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FOREWORD

On behalf of IBM Center for the Business of Government, we are pleased to present this report, *The Promise of Collaborative Voluntary Partnerships: Lessons from the Federal Aviation Administration,* by Russell W. Mills, Department of Political Science, Kent State University.

Jonathan D. Breul

In this report, Mills examines three Federal Aviation Administration programs in which government and industry work together to identify safety hazards by using voluntary regulatory partnership programs. Based on his extensive research on the three programs, Mills concludes that although the programs can be improved, they are making a worthwhile contribution to airline safety. Mills argues that collaborative voluntary partnerships should be viewed as a complement to agency regulatory activities rather than as a replacement for the traditional command-and-control approach to regulation. Viewing voluntary activities as complementary to traditional regulatory activities will require a change in an organizational culture which has long considered the command-and-control approach its major regulatory option.

Kunal Suryavanshi

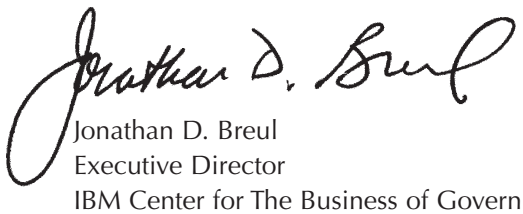
The focus of this report is quite timely given recent events prompting closer scrutiny of the relationship between government and industry. The Deepwater Horizon incident in the Gulf of Mexico has raised serious questions about the viability of real collaboration between the oil industry and its government regulator, the Minerals Management Service (now called the Bureau of Ocean Energy Management, Regulation, and Enforcement).

This report joins two recent IBM Center reports that have also examined the relationship between government agencies and private and nonprofit organizations. In their report, *Food Safety—Emerging Public-Private Approaches: A Perspective for Local, State, and Government Leaders,* Professors Noel P. Greis and Monica L. Nogueira recommend the creation of new co-regulation strategies to shape food safety policies that reflect mutual organizational and financial interests of both public and private sectors. Co-regulation activities might include setting risk-based inspection standards and jointly establishing best practices, enforcement, and monitoring approaches.

In another recent report, *Strategies for Supporting Frontline Collaboration: Lessons from Stewardship Contracting,* Cassandra Moseley describes collaborative partnerships created by the U.S. Forest Service and the Bureau of Land Management with both private companies and community-based nonprofit organizations to plan and execute land management initiatives, such as ecological restorations. Moseley found, as did Mills, that collaborative approaches require a major change in organizational culture.

We trust that this report will add to a broader body of knowledge regarding collaborative approaches that government managers can use to achieve more effective results. For example, the International Civil Aviation Organization might want to follow the FAA's example and set up their own voluntary regulatory partnership programs to improve international air safety, and to mitigate the risk associated with countries having their own varying sets of safety rules.

Based on the IBM Center's recent research, there is evidence that collaborative voluntary partnerships can serve as a useful complement to more traditional regulatory activities. Finding the right mix should be high on the agendas of government regulatory agencies.



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EXECUTIVE SUMMARY

Government managers in regulatory agencies seek to design regulatory programs that ensure industry compliance while fostering collaboration and trust between government and industry. Voluntary regulatory partnership programs (VRPPs) are one method used by government managers to ensure industry compliance while encouraging the flow of information between industry and government without fear of retribution. Much of the discussion over these partnership programs has focused on the traditional government role as regulator and whether that regulation should be solely a government function. Some argue that VRPPs represent industry's capture of regulatory agencies, while others claim that these programs represent a third way of ensuring industry compliance with regulation.

While the promise of collaborative regulatory partnerships has made them popular in governments at all levels, little attention has been paid to the characteristics of successful collaborative VRPPs. What are effective management practices that lead to successful collaborative voluntary partnerships, and what are some of the limitations of these partnership programs?

Since 1975, the Federal Aviation Administration (FAA) has operated voluntary safety reporting programs (VSRPs) that offer a regulatory incentive for operators to report potential safety hazards and violations within their organizations.

- **The Aviation Safety Reporting System (ASRS, started in 1975)** is a confidential voluntary reporting system operated by the National Aeronautics and Space Administration (NASA) that receives, processes, and analyzes incident reports from users of the national airspace—pilots, air traffic controllers, dispatchers, flight attendants, maintenance technicians, and others—that describe unsafe occurrences and hazardous situations. In exchange for their submissions, airspace users who meet qualifying criteria are ensured confidentiality in their reports and a waiver of penalty under Section 91.25 of the Federal Aviation Regulations (AC 00-46D).
- **The Voluntary Disclosure Reporting Program (VDRP, started in 1990)** is a program that offers air carriers reduced regulatory enforcement action if they voluntarily report systemic problems within their operation, and work collaboratively with their local FAA Certificate Holding District Office on designing a comprehensive fix to the problem.
- **The Aviation Safety Action Program (ASAP, started in 1997)** is a VSRP that allows employees of air carriers and other certificate-holding organizations to report safety-related events without the FAA or the carrier taking punitive action against the employee based on the information in the report. Unlike other voluntary programs, ASAP involves a partnership between three entities—the FAA, the air carrier, and the employee union—that is codified through a formal memorandum of understanding (MOU).

In many regulatory agencies, VRPPs represent a paradigm shift from a culture of enforcement to one of partnership and collaboration. To assist government managers, this report outlines lessons learned from the FAA's experience with three voluntary safety-reporting programs. The lessons are broken down into three categories: administrative, regulatory, and data analysis.

Administrative Lessons

- **Lesson One:** Regulatory agencies should have a dedicated organizational entity focused on voluntary programs. This entity should have sufficient autonomy to develop program policy guidance, to conduct routine audits and evaluations of voluntary programs that ensure consistency and standardization, and to conduct analysis of data captured from these programs.
- **Lesson Two:** Regulatory agencies must dedicate adequate personnel to the implementation of VRPPs at the local level.
- **Lesson Three:** Regulatory agencies and companies should use collaborative processes to develop and implement meaningful corrective actions that remedy safety hazards. This will both advance the agency's safety mission and limit the perception that voluntary programs are "amnesty" or "get out of jail free" programs.
- **Lesson Four:** Regulatory agencies should use a variety of collaborative tools, such as third-party agreements, to foster trust and effectively implement voluntary regulatory partnership programs (VRPPs).

Regulatory Lessons

- **Lesson Five:** Voluntary programs should be truly voluntary and not forced upon companies and/or employee groups.
- **Lesson Six:** Voluntary programs should be nonpunitive, and provide reduced regulatory and company enforcement actions to all stakeholders who participate and share information with regulatory agencies.
- **Lesson Seven:** Confidentiality of voluntarily submitted data is critical to building an effective reporting culture among employees and companies, and it must be clearly defined in program guidance.
- **Lesson Eight:** Regulatory agencies should use voluntary regulatory partnership programs (VRPPs) to complement, not replace, traditional enforcement tools.

Data Analysis/Information Technology Lessons

- **Lesson Nine:** To identify trends in safety hazards, regulatory agencies and companies need effective and robust data analysis capabilities at both the local and national levels.
- **Lesson Ten:** Regulatory agencies should use a uniform reporting platform for all VRPPs to maximize the efficiency and timeliness of analysis and outputs.
- **Lesson Eleven:** Regulatory agencies should develop a national-level database that is used to perform analyses of voluntarily submitted data. This analysis should produce alert materials that inform system users of potential systemic safety hazards.

Based on an examination of the Aviation Safety Reporting System (ASRS), the Aviation Safety Action Program (ASAP), and the Voluntary Disclosure Reporting Program (VDRP), the following recommendations are made regarding factors that are crucial for success when implementing voluntary regulatory partnership programs (VRPPs):

- **Recommendation One:** In order to successfully implement voluntary regulatory partnership programs (VRPPs), agencies must work to transform their enforcement culture to view voluntary and collaboration programs as complementary to their regulatory missions.
- **Recommendation Two:** Agencies should use a portfolio of voluntary programs coordinated by a dedicated organizational entity focused on the agency's collaborative voluntary partnership activities.

Introduction: Voluntary Regulatory Partnership Programs

The Regulatory Dilemma

In the wake of large-scale regulatory failures, such as the lack of oversight by the U.S. Securities and Exchange Commission (SEC) contributing to the recent financial crisis, and the lack of oversight by the U.S. Minerals Management Service (MMS) contributing to the Gulf of Mexico oil disaster, government managers are balancing competing demands from those calling for increased government regulation with those who would avoid imposing new and costly regulations on firms that would make survival even more difficult given current economic realities. Moreover, managers in regulatory agencies must ensure effective oversight as business practices become increasingly complex and technically challenging.

Regulatory scholars (Scholz 1991; Potoski and Prakash 2004) have termed the balancing act faced by government managers the "regulation dilemma." The regulation dilemma focuses on the interaction between how governments enforce regulations and how firms respond to those regulations. Specifically, government managers in regulatory agencies can choose either a deterrence or a collaborative enforcement style. Deterrence enforcement styles are marked by a traditional command-and-control style of setting regulatory benchmarks, conducting inspections to ensure benchmarks are met, and issuing penalties if they are not. In an environment of shrinking budgets, deterrence enforcement becomes increasingly difficult to sustain and threatens to produce an adversarial relationship between government and firms. Conversely, collaborative enforcement focuses on building a relationship of trust between government and firms by taking a less rigid interpretation and enforcement of regulations in an attempt to foster a partnership between government and industry to help firms achieve compliance.

While governments choose regulatory styles, firms also are able to choose how to respond to the regulatory environment by either evading or self-policing. Firms evade in an attempt to lower compliance costs by engaging in behavior that is not in compliance with regulations. Alternatively, firms practice self-policing by monitoring their own activities and voluntarily reporting violations to regulatory agencies in exchange for reduced penalties. The optimal environment for government and firms is one in which the government engages in cooperation while firms self-police, as costs to both are minimal. However, the dilemma is that it is in the interest of both governments and firms to engage in less than optimal regulatory processes. Governments may fear that relaxed regulatory requirements will be taken as an indication of "capture" or as an open invitation to exploit a weak enforcement environment, while firms may fear that self-disclosing violations to the government will result in increased penalties.

Voluntary Regulatory Partnership Programs (VRPPs)

VRPPs are one tool used by government managers in regulatory agencies to overcome the regulatory dilemma. VRPPs are programs that ensure industry compliance and foster collaboration and trust between government and industry by enabling a free exchange of ideas without fear of retribution. Scholars have distinguished between two types of VRPPs:

- Government-initiated
- Industry-initiated (Gunningham and Grabosky 1998; Iannuzzi 2002).

Government-initiated VRPPs typically focus on encouraging firms to self-disclose violations to

Table 1: The Regulatory Dilemma

Government Enforcement Style	Firm Response to Enforcement Style	
	Evade	**Self-Police**
Deterrence (Command and Control Tools: Strict standards, inspections, penalties for noncompliance)	**Highest level of conflict** **Highest level of cost** In face of command-and-control regulatory environment, firms attempt to hide information and violations from regulators.	**Mid-level of conflict** **High level of cost** Regulators worry that over reliance on self-policing may lead to perception of capture. Agencies increase traditional oversight activities while also participating in voluntary programs.
Collaboration (Less stringent adherence to standards, focus on building trust between regulator and regulated, incentives for regulatory compliance and self-reporting of violations)	**Mid-level of conflict** **Low level of cost** While regulators are willing to act collaboratively, firms report less severe violations in hopes that government will not find severe, more extensive violations. Firms worry that self-reported violations can be used to take punitive action.	**Lowest level of conflict** **Lowest level of cost** In exchange for reduced regulatory penalties firms agree to take proactive approach to safety by self-reporting violations, which lowers regulators cost of enforcement.

Source: *Adapted from Scholz 1991; Potoski and Prakash 2004*

regulators in exchange for some type of regulatory incentive. Industry-initiated programs are typically centered on firms' adherence to industry standards or best practices in order to achieve regulatory compliance while attempting to be perceived as good corporate citizens.

Although vague in their definition, VRPPs generally share some of the following characteristics:

- Lack of mandate in government regulations that firms must join VRPPs (Potoski and Prakash 2009)
- Incentives for firms, such as reduced regulatory enforcement, increased flexibility, and technical assistance when joining VRPPs
- Focus on building partnership and trust between regulator and industry
- Shared responsibility for monitoring, reporting, enforcement, and corrective action
- Collection and analysis of voluntarily submitted violation data by a government agency
- Common understanding of moving beyond compliance with regulations to a more proactive self-policing environment (Short and Toffel 2008)

Through repeated interactions (voluntary disclosure of violations, reduction in enforcement action, partnership in developing corrective action, etc.), these programs help to overcome the regulation dilemma by developing expectations of behavior that lead to the fostering of a partnership between the regulators and the regulated.

During the 1990s' "reinventing government" movement, there was a proliferation of VRPPs across government as President Clinton and Vice President Gore streamlined the regulatory enforcement process while also encouraging agencies to maximize voluntary compliance by business (Balleisen 2010). VRPPs are used widely in government today, as regulatory agencies come to see firms as active participants in their own governance, while firms view VRPPs as efficient and flexible ways to govern themselves and apply industry best practices (Toffel and Short 2010). Some examples of current VRPPs include:

- Securities and Exchange Commission's (SEC) eXtensible Business Reporting Language (XBRL) Voluntary Filing Program
- Environmental Protection Agency's Audit Policy
- Occupational Safety and Health Administration's Voluntary Protection Program
- Department of Defense's (DoD) Contractor Disclosure Program

- Department of Justice's Leniency Program for antitrust violations
- Department of Health and Human Services' Office of the Inspector General Health Fraud Voluntary Reporting System

Recent Failures of VRPPs

Despite cross-sector support for VRPPs, two high-profile cases of regulatory failure over the past three years have raised serious questions regarding their effectiveness. First, the failure of the SEC's Consolidated Supervised Entities (CSE) voluntary disclosure program was a major contributing factor to the financial crisis of 2007-2009. Created in 2004 by SEC Chairman Christopher Cox, the CSE program attempted to fill a regulatory gap in the Gramm-Leach-Bailey Act by delegating regulatory risk assessment to the investment banks (such as Goldman Sachs, Morgan Stanley, Lehman Brohers, Merrill Lynch, and Bear Stearns) themselves. The banks' risk managers, using highly sophisticated internal computer models, would continuously assess the risk associated with the bank's overall investment portfolio. In his review of the events leading to the financial crisis, Cox boldly asserted, "The last six months have made it abundantly clear that voluntary regulation does not work. CSE was fundamentally flawed because investment banks could opt in or out of supervision voluntarily." (Labaton 2008).

The second case of regulatory failure involves the voluntary compliance approach used by the Minerals Management Service (MMS, recently renamed the Bureau of Ocean Energy Management, Regulation and Enforcement) to oversee offshore drilling safety. On April 20, 2010, the Deepwater Horizon rig, owned by Transocean and leased to BP, experienced a large-scale failure as methane gas from the well below funneled up the drill column, causing an explosion on the rig deck that killed 11 employees. A large leak in the well allowed over 50,000 barrels of oil per day to flow into the Gulf of Mexico, causing the largest oil spill in U.S. history (Barstow et al. 2010).

The MMS had adopted a voluntary approach to safety and environmental compliance, starting in 1994 during the Clinton administration (Soraghan 2010). The major voluntary initiative, the Safety and Environmental Management Program, shifted the responsibility for the oversight of offshore drilling rigs from the MMS to the companies engaged in drilling activities by shifting the focus of inspections from ensuring compliance to using a hazard- and risk-based approach that examined companies' internal audit and safety processes.

In the investigations following the Deepwater Horizon explosion, employees of Transocean and the MMS testified that a hydraulic failure in the blowout preventer had led to the massive explosion. When asked by members of Congress if the MMS

Report Methodology

This report used a multiple case study approach (Yin 2003) to study the strengths and weaknesses of three voluntary reporting partnership programs (VRPPs) used by the FAA:

- Aviation Safety Action Program (ASAP)
- Aviation Safety Reporting System (ASRP)
- Voluntary Disclosure Reporting Program (VDRP)

Specific attention was focused on how each VRPP was structured, from the perspective of FAA officials and those within the aviation industry; what factors have been critical in successfully or unsuccessfully implementing the collaborative program; and the FAA's challenges in overseeing these collaborative programs.

The primary data used in each case are interview data[1] collected from meetings with FAA officials who have intimate knowledge of the VRPPs, both at the headquarters and local level; air carrier officials responsible for implementing the partnership programs; airline industry union and interest group representatives; and Government Accountability Office (GAO) officials responsible for evaluating these programs.

Additionally, the author was granted access to attend three confidential ASAP Event Review Committee (ERC) meetings and the Shared Vision of Aviation Safety Conference hosted by the FAA's Voluntary Safety Reporting Programs Branch. Secondary sources of data include scholarly and news accounts of the FAA's VRPPs, documentation from Congressional hearings, reports from the GAO and U.S. Department of Transportation Inspector General (U.S. DOT-IG, 2010a), and quantitative data on the numbers of voluntarily submitted reports received and acted upon by the FAA.

had inspected these critical safety devices, employees consistently said that they had not and that they relied on voluntary reporting programs to identify safety problems—and took at face value BP and Transocean's word that the devices were functional (Schor 2010; Barstow et al. 2010). Department of Interior Inspector General reports uncovered evidence of a "cozy relationship" between MMS officials and industry representatives, including "a culture where the acceptance of gifts from oil and gas companies was widespread" (Garber 2010).

The Purpose of the Report

The voluntary programs used by both the SEC and the MMS led to catastrophic regulatory failures that have negatively impacted the lives of millions of Americans. However, much of the debate over VRPPs has focused on the traditional government role as a regulator which argues that regulation should be solely a government function. Others argue that these VRPPs represent industry's capture of regulatory agencies, while others claim these programs represent a third way of ensuring industry compliance with regulation. While the promise of VRPPs has made them popular in governments at all levels, little attention has been paid to the characteristics of successful VRPPs that are used by government managers to ensure industry compliance with laws and agency rules. The questions that this research report will explore are:

- What are effective management practices that lead to successful VRPPs, and what are some of the limitations of these partnership programs?
- How can managers in regulatory agencies apply the lessons learned from mature VRPPs to their own regulatory programs?

This report addresses these questions by developing a set of practical recommendations for government managers in regulatory agencies based on three VRPPs used by the Federal Aviation Administration (FAA). The Aviation Safety Action Program (ASAP), the Aviation Safety Reporting Program (ASRP), and the Voluntary Disclosure Reporting Program (VDRP) are three examples of programs used by the FAA to promote regulatory compliance and voluntary reporting of maintenance, operations, and other violations—reducing or removing the threat of enforcement actions against individuals and companies who participate in these programs.

List of Acronyms

AFS	FAA Flight Standards Service
AFS-230	FAA Voluntary Safety Programs Branch
ASAP	Aviation Safety Action Program
ASIAS	Aviation Safety Information Analysis and Sharing Program
ASRP	Aviation Safety Reporting Program
ASRS	Aviation Safety Reporting System
ATOS	Air Transportation Oversight System
AVS	Office of Aviation Safety
CAST	Commercial Aviation Safety Team
CHDO	Certificate Holding District Office
CMO	Certificate Management Office
ERC	Event Review Committee
FAA	Federal Aviation Administration
FOQA	Flight Operations Quality Assurance
IRT	Independent Review Team
MOU	Memorandum of Understanding
NTSB	National Transportation Safety Board
PMI	Principal Maintenance Inspector
VASIP	Voluntary Aviation Safety Information-Sharing Program
VDRP	Voluntary Disclosure Reporting Program
VRPP	Voluntary Regulatory Partnership Program
VSRP	Voluntary Safety Reporting Programs

Examining these three different and unique models of VRPPs within the same agency allows a direct comparison of the strengths and weaknesses of each program without risking a loss of validity because of interagency differences. Through an examination of the structure, implementation, and oversight of these programs, the report sets forth a set of lessons learned and recommendations for future use for government managers interested in adapting VRPPs to their regulatory structures.

The Federal Aviation Administration

Background and Mission

The FAA is the primary regulatory agency in charge of air transportation in the United States, and is tasked with regulating both commercial and general aviation. In addition, the FAA promotes and encourages the development of air service, develops and maintains a system of air traffic control, and develops programs that mitigate the environmental effects of air transportation. The stated mission of the agency is "to provide the safest, most efficient aerospace system in the world," while the vision of the FAA is "to improve the safety and efficiency of flight. We are responsive to our customers, accountable to the taxpayer and the flying public" (U.S. Department of Transportation FAA 2010).

In order to achieve this mission and vision, the FAA employs over 47,000 full-time employees (Table 2) to carry out a variety of tasks related to the management of aviation in the United States. The first major task of the FAA is to oversee, maintain, and operate an air traffic control system that encompasses 17 million square miles of airspace; operate 600 air traffic control facilities; and move over 700 million passengers annually. The Air Traffic Organization of the FAA (ATO) is responsible for operating a network of air traffic control towers, terminal radar control facilities, and air traffic control centers to maintain separation between aircraft. Additionally, the ATO is responsible for developing and implementing navigational tools such as visual, radio, and electronic aids to assist in managing air traffic.

Table 2: Federal Aviation Administration At a Glance (For Fiscal Year 2009)

Budget	$16,083,000,000
Total Employees	47,020
Air Traffic Controllers	15,943
Aviation Safety Inspectors	4,806
Regional Offices	9
Flight Standards Certificate Management Offices	19
Flight Standards District Offices	82

Source: *FAA Administrator's Fact Book, March 2010*

The second major task of the FAA is to issue and enforce safety regulations that set minimum standards covering manufacturing, operating, and maintaining aircraft. Specifically, the FAA is responsible for promulgating and enforcing Federal Aviation Regulations (FARs) that appear in Title 14 of the Code of Federal Regulations (CFR). In addition to FARs, the FAA issues other mandatory orders that have the force and effect of law, including Airworthiness Directives (ADs), which are orders requiring some inspection or modification of previously certified aircraft (Hamilton 2007). Another major function of the FAA is to issue certificates of operation to airmen, female airmen, maintenance personnel, air carriers, manufacturers, airports, and repair stations; and to enforce its laws, rules, and certificates. The FAA employs approximately 4,000 aviation safety inspectors who conduct periodic inspections of airmen, female airmen, maintenance operations, and repair stations to ensure compliance.

In addition to these two major tasks, the FAA is also charged with promoting aviation and encouraging aviation safety abroad through the inspection of foreign airmen, maintenance personnel, and repair stations. The FAA is also the primary agency responsible for regulating and promoting commercial space travel in the U.S. through the licensing of commercial space

launch facilities and vehicles. The FAA also administers and manages the Airport Improvement Program, which provides grants and, in some cases, private companies for the development and planning of public-use airports. Finally, the FAA performs research, engineering, and development on a variety of subjects, including raising fuel efficiency in aircraft engines, determining human factors of flight, and developing a more efficient air traffic control system.

Organizational Structure of the FAA and the Flight Standards Service

In order to meet its diverse mission, the FAA employs an organizational structure that simultaneously divides tasks functionally (air traffic control, safety, airports, etc.) and geographically (headquarters, regions, field offices). Appendix I presents the organizational structure of the FAA's headquarters office (FAA HQ).

FAA HQ is responsible for promulgating rules and regulations such FARs and ADs. In addition, FAA HQ's program offices provide guidance on policies relating to programs through Advisory Circulars (ACs). FAA HQ is led by an administrator whose associate administrators are assigned to critical functionalities of the agency, including aviation safety. The FAA also has an assistant administrator who oversees the FAA's nine regional offices, each of which is composed of the same functional areas as found at FAA HQ. Each regional office of the FAA is responsible for ensuring the implementation and compliance of FAA HQ rules and regulations through a geographic distribution of FAA personnel.

The Flight Standards Service (AFS), located in the Office of Aviation Safety (AVS), is the branch of the FAA responsible for setting the standards for certification and oversight of airmen, female airmen, air operators, air agencies, and designees. Additionally, the AFS is responsible for the surveillance, inspection, and investigation of airmen, female airmen, aircraft, and air carriers. The AFS is organized into two main sections (see Appendix II):

- Headquarters
- Field operations

Within the Air Transport Division (AFS-200) of AFS is the Voluntary Safety Programs Branch (AFS-230), which is the office responsible for managing the voluntary safety programs.

FAA Operating Certificates

Under Title 14 of the Code of Federal Regulations (14 CFR), all businesses that provide air service to the public for hire must apply for and receive a FAA operating certificate. The FAA operating certificate is the document issued by the FAA indicating that the operator has met all requirements to conduct air operations under the applicable Federal Aviation Regulations (FARs) part. Operators typically fall into the following categories:

- **Part 91 (K): General Aviation**—Not-for-hire private aviation and fractional partnerships.
- **Part 121: Domestic Air Carriers**—Major airlines operating large aircraft with seating configurations of over 10 passengers that are engaged in scheduled operations and interstate air transportation for compensation.
- **Part 135: Commuter or Air Taxi Operations**—Smaller air carriers utilizing aircraft with under 9 seats and a payload of less than 7500 pounds.
- **Part 141: Flight school training programs** that meet FAA criteria for aircraft and air operators.
- **Part 145: Domestic repair stations** that meet FAA requirements and perform heavy maintenance of aircraft.

The Voluntary Safety Programs Branch provides both technical and administrative reviews of applications or memoranda of understandings (MOUs) from certificate holders, and coordinates documentation with other FAA offices for each program. Also, the office develops program policy and guidance for use by FAA offices and the aviation industry (FAA AFS-230 Website). AFS-230 is staffed by a branch manager and seven aviation inspectors who are assigned to oversee the FAA's seven voluntary programs. These inspectors spend much of their time traveling to field offices and air carriers to conduct audits of voluntary programs. One AFS-230 program manager described his work:

> We are gone all the time because we feel our job is out in the field. The easy part is sitting up here and writing policy. The hard part is getting out there and implementing it. It is a different way of doing business and not everyone at FAA HQ agrees that

> we should be doing this. We are a different breed of cats. These are voluntary safety programs; you can't treat them like regulatory programs. It is a whole different psychology that involves collaboration and data sharing. To use the partnership is very face-to-face and one-on-one with the airline and the FAA field offices. I might go to FAA HQ four times a year. I go to the field three to four times a month (AFS-230 Interview A 2009).

Appendix III describes the seven voluntary programs operated by AFS-230. This report will examine three of its seven programs.

Within the field operations of AFS are nine regional flight standards offices, with each overseeing Flight Standards District Offices (FSDOs) and Certificate Management Offices (CMOs).[2] The 82 FSDOs across the United States provide guidance, oversight, and investigation of general aviation (FAR Part 91) and small commuter carrier (FAR Part 135) operations. AFS also has 14 CMOs that include dedicated teams of inspectors assigned to certify, oversee, and inspect the operations of a major commercial air carrier (FAR Part 121). For example, the CMO for US Airways is located in Pittsburgh, Pennsylvania, while the CMO for American Airlines is located in Fort Worth, Texas. Each CMO is organized according to the primary functions of the carrier it is overseeing. Specifically, a CMO will typically have a cadre of operations inspectors, maintenance inspectors, and avionics inspectors who are organized by aircraft type. Finally, CMOs are the primary field offices responsible for the implementation of the FAA's VSRPs.

The Evolution of the FAA's Approach to Aviation Safety Oversight: From Command-and-Control to VRPPs

The FAA's traditional approach to ensuring regulatory compliance with FARs was to use its Flight Standards force of approximately 4,000 inspectors to conduct spot checks in the following operational areas:

- Operations inspections focus on items such as pilots' certification and performance, flight crews' training, and in-flight record keeping.
- Maintenance inspections examine an airline's overall maintenance program, including the training of aviation mechanics, the development of maintenance manuals, and procedures for repairing aircraft and their components.
- Avionics inspections focus on electronic components of the aircraft.
- Cabin safety inspections concentrate on cabin procedures, passenger safety, and carry-on baggage [Government Accountability Office (GAO) 1999].

To supplement its inspection cadre, the FAA began in the late 1980s to explore allowing carriers to play a larger role in inspections and voluntarily identify and correct maintenance problems without being subject to large penalties. Continental Airlines began a self-audit program in which the carrier hired former FAA inspectors to conduct internal inspections of their operation and develop corrective action to mitigate potential safety hazards. However, when Continental began to tell its local FAA office of violations it found through the self-audit program, the FAA fined the carrier for the violations. To remedy the problem of airlines not reporting safety issues due to fear of fines or other sanctions, the FAA developed the Voluntary Disclosure Reporting

Evolution of VRPPs at a Glance

The Aviation Safety Reporting System (ASRS, started in 1975) is a voluntary incident-reporting program operated by NASA that accepts reports documenting potential safety hazards from all users of the national air space including pilots, maintenance personnel, dispatchers, and air traffic control in exchange for immunity and confidentiality.

The Voluntary Disclosure Reporting Program (VDRP, started in 1990) allows air carriers to voluntarily submit disclosures of safety violations within the company's operation found through internal audit processes to the FAA in exchange for reduced enforcement action. The FAA and the carrier work collaboratively to develop a comprehensive solution to the safety hazards identified.

The Aviation Safety Action Program (ASAP, started in 1997) is a partnership between the FAA, an individual air carrier, and an employee union that focuses on reviewing voluntarily submitted incident reports by employees to identify safety hazards within an operation and to develop corrective actions to prevent similar incidents.

Program (VDRP) in 1990 to allow air carriers to voluntarily submit safety violations to the FAA in exchange for reduced enforcement action.

After a series of crashes in the early to mid-1990s,[3] President Clinton created the White House Commission on Aviation Safety and Security to investigate new strategies to reduce the number of aviation fatalities. The recommendations of the commission charged the FAA to work more closely with industry to establish partnership programs, to more effectively use its inspector workforce to oversee industry compliance, and to make better use of emerging technologies to proactively identify safety issues (Gore 1997).

In response to the commission's recommendations, the FAA developed the Air Transportation Oversight System (ATOS) in 1998 to fundamentally change the way it conducted oversight of the nation's largest air carriers. The ATOS emphasizes a system safety approach that extends beyond periodically checking airlines for compliance with regulations to using technical and managerial skills to identify, analyze, and control hazards and risks.

Under the ATOS, inspectors develop surveillance plans for each airline based on data analysis and risk assessment, and adjust the plans periodically based on inspection results (GAO 2006). The risk-based approach to oversight inherent in the ATOS is dependent upon detailed operational and human factors data to constantly evaluate areas of risk and hazard within a carrier. The FAA's limited inspector resources made collecting this volume of information impossible.

While the FAA has been supporting the Aviation Safety Reporting System (ASRS) since its creation in 1975, the de-identified nature of that data did little to help inform risk-based inspections at specific air carriers. De-identification entails the removal of the reporter's name, reporter employer, flight number, and airport location.

In 1997, the FAA implemented the Aviation Safety Action Program (ASAP) that provides a regulatory incentive to air carrier and other employees to voluntarily submit reports of violations. The data generated from ASAP and also from flight data recorders under the Flight Operations Quality Assurance (FOQA) program have allowed the FAA and air carriers to proactively look for areas of risk and hazard in a carrier's operation, and to more efficiently assign inspector resources in the ATOS. Also, reports generated from ASAP and FOQA are being examined by the FAA and industry at the national level through programs such as the ASRS and the Aviation Safety Information Analysis and Sharing (ASIAS) program with the hope of identifying risks and hazards at the systemic level.

As the FAA and industry move forward with fully integrating a risk-based approach to aviation safety under the FAA's Safety Management System (SMS) program, VSRPs will continue to be an essential source of data in identifying future risks and hazards.[4] These programs are viewed as so essential to aviation safety that, following the crash of Colgan Air Flight 3407 outside of Buffalo, New York, FAA Administrator Randolph Babbitt issued a "Call to Action" to carriers that had not yet implemented ASAP and Flight Operations Quality Assurance (FOQA) programs in their operations (Call to Action 2010). The FAA's shift from command-and-control inspections to its reliance on VSRPs holds valuable lessons for public managers across government. The FAA's programs vary greatly in their structure and mission, yet work together to provide valuable safety information to the agency and industry that is used to improve safety.

Table 3 presents a comparison of three of FAA's seven voluntary safety reporting programs. These three will be examined in more detail in the next section. The seven voluntary safety reporting programs are described in Appendix III.

Table 3: Differences Between the FAA's Voluntary Safety Reporting Programs

	Aviation Safety Reporting System (ASRS)	Voluntary Disclosure Reporting Program (VDRP)	Aviation Safety Action Program (ASAP)
Year Created	1975	1990	1997
Impetus for Creation	Developed in response to NTSB investigation into crash of TWA Flight 514 on December 1, 1974	Response to pressure from air carriers over excessive fines	Developed by air carriers, adopted by FAA as result of recommendations from White House Commission on Aviation Safety following crash of ValuJet Flight 592.
Program Guidance	Advisory Circular 00-46D Federal Aviation Regulation 91.25	Advisory Circular 00-58B FAA Order 8900, Vol. 11, Ch. 1	Advisory Circular 120-66B FAA Order 8900, Vol. 11, Ch. 2 MOU
Key Actors	Any actor within the national airspace system	Air carrier and local CHDO principal inspectors	Air carrier, FAA CHDO representative, employee union representative
External FAA Partners	NASA, Booz Allen Hamilton	L3 Communications	MITRE (ASIAS Analysis of ASAP data), Universal Technical Resources Services (Web-Based Application Tool Development)
Regulatory Incentive	Full protection from certificate action by FAA	Reduced regulatory penalty from enforcement action to administrative action	**Sole-source:** Full protection from discipline from FAA and air carrier **Non-sole-source:** Protection from FAA, depending on MOU; limited protection from carrier discipline
Level of Disclosure	Individual	Company	Individual
Confidential Reports (Part 193 of Freedom of Information Act)	No	Yes	Yes
FAA Access to Reports	Unlimited through ASRS database	Online VDRP system, internal FAA database	Access is great at local CHDO level, restricted at FAA HQ level (moderated by ASIAS, MITRE and air carrier)
Included in the Aviation Safety Information Analysis and Sharing Program (ASIAS)	Yes	No	Only if carrier has agreement with MITRE and ASIAS
Holder of Discretion for Accepting Reports	ASRS Staff	CHDO PMIs and POIs	Event Review Committee
Number of Reports 2009	48,000	1,200	45,000
Program Outputs Generated	*CALLBACK* monthly publication, *Alert Bulletins*, queries to ASRS Database	Collaborative corrective fixes developed by CHDO and carrier.	Quarterly safety enhancement reports to FAA, queried reports from ASIAS, biannual INFOSHARE meetings, internal carrier publications

Case Studies of Voluntary Regulatory Partnership Programs at the FAA

Aviation Safety Reporting System (ASRS)

Overview

Created in 1975, the Aviation Safety Reporting System (ASRS)[5] is a confidential, voluntary reporting system that receives, processes, and analyzes incident reports—from pilots, air traffic controllers, dispatchers, flight attendants, maintenance technicians, and others—that describe unsafe occurrences and hazardous situations. In exchange for their submissions, reporters are ensured confidentiality of their reports and a waiver of sanction[6] from disciplinary action under Section 91.25 of the FAR (AC 00-46D).

Under a memorandum of agreement (MOA), the FAA has delegated management of the ASRS to the National Aeronautics and Space Administration (NASA).

The ASRS conducts an analysis of each report received in order to diagnose the causes underlying each event. Using this analysis, the ASRS produces a variety of outputs to communicate the findings of its analysis to representatives in industry and at the FAA who can implement changes to improve aviation safety. In 2006, NASA launched the public-use database of de-identified ASRS reports. Since the program's inception in 1976, the ASRS has received approximately 900,000 reports from aviation officials, and has issued over 5,000 safety *Alert Bulletins* (ASRS Program Briefing).

Background and History

The impetus for the creation of the ASRS was the crash of TWA Flight 514 on December 1, 1974, outside Mount Weather, Virginia. Flight 514 was inbound to Dulles Airport through cloudy and turbulent skies when the flight crew misinterpreted an approach chart, causing them to descend below the minimum safe altitude and collide with a Virginia mountaintop, killing 85 passengers and seven crew members (Reynard et al. 1986). In the National Transportation Safety Board's (NTSB's) investigation of the crash, it was discovered that only six weeks before the TWA crash, a United Airlines crew had experienced a similar event using the same approach chart. United had recently instituted an internal reporting system called the "Flight Safety Awareness Program" that allowed crew members to anonymously report any incidents they felt could result in a safety problem to the company. The United crew filed a report which was then distributed to all United pilots to make them aware of the Dulles approach issue. Unfortunately, as the NTSB concluded, there was no industry-government information-sharing program to spread the word beyond United Airlines.

Previous attempts to create industry-government incident reporting systems had succumbed to fears by employees over the potential legal consequences of disclosing events, leading Air Line Pilots Association President Clarence Sayen in 1954 to urge carriers "to grant pilots immunity from enforcement action to encourage their participation in reporting programs" (Reynard et al. 1986). In the wake of the TWA crash, the FAA moved swiftly to implement a confidential, voluntary, and nonpunitive reporting system.

In May 1975, the FAA issued AC 00-46, announcing the creation of the Aviation Safety Reporting Program (ASRP), which would offer a waiver of sanctions and grant anonymity to airspace users sending in reports

(who are called reporters). The FAA realized that its regulatory and enforcement roles would discourage the aviation community from trusting and using the new program if the FAA were to operate the system (ASRS Program Brief). Therefore, in August 1975, the FAA signed a memorandum of agreement (MOA) with NASA to act as an honest broker and administer the ASRS, with FAA oversight through funding of the ASRP. NASA, as an independent federal organization, saw a unique opportunity to enhance its ongoing aviation human factors research with this new source of data. The MOA charged NASA with:

- Providing for the receipt, analysis, and de-identification of aviation safety
- Publishing periodic reports of findings obtained through the reporting system
- Distributing reports to the public, the aviation community, and the FAA
- Creating a NASA ASRS Advisory Committee comprised of members of the aviation community, the DoD, the FAA, and NASA to guide the work of the ASRS

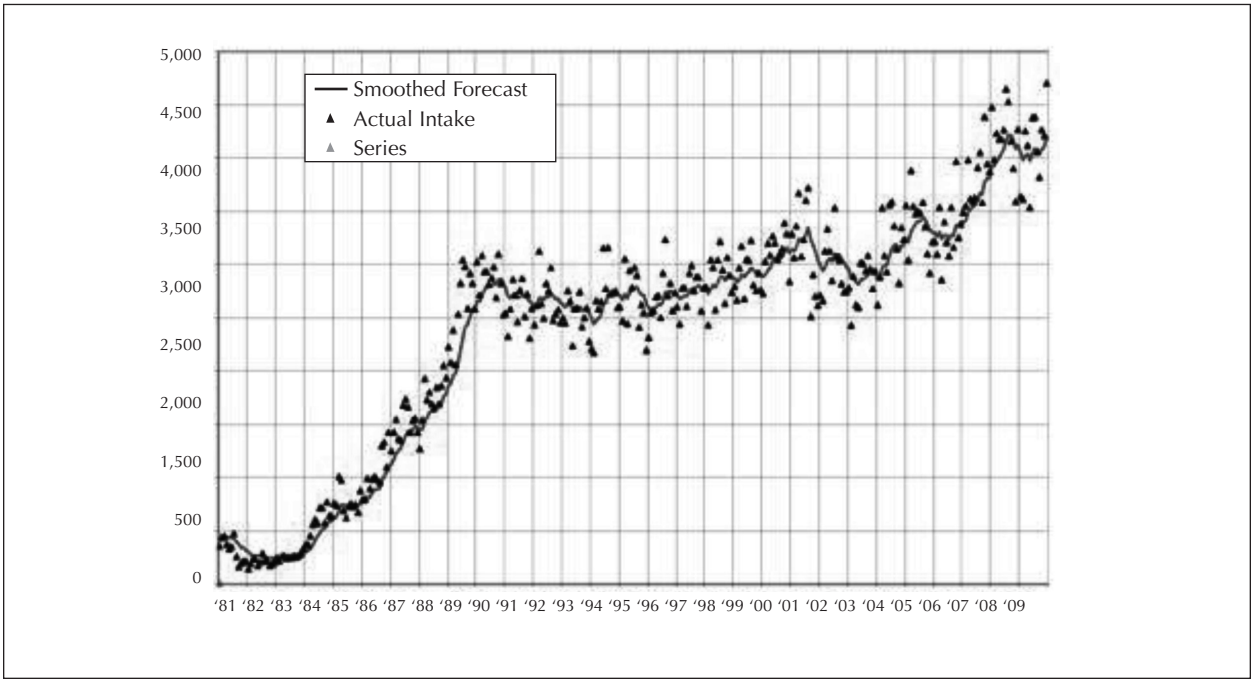
Since the ASRS officially began operation on April 15, 1976, 880,000 reports have been filed to the system.

NASA operates the ASRS out of its Ames Research Center in Moffett Field, California. The program is staffed by a full-time ASRS Manager who oversees all operations and is the point of contact with AFS-230. NASA also contracts with Booz Allen Hamilton (BAH) to bring in part-time subject matter experts to read, analyze, and categorize ASRS reports. The decision was made to contract with BAH in order to give NASA access and the flexibility to hire former aviation experts such as pilots, mechanics, and air traffic controllers who seek employment on a part-time basis (NASA Interview 2010). In addition to the part-time expert analysts, NASA contracts with BAH to operate its ASRS public-use database.

Confidentiality and Regulatory Incentives

NASA and the FAA realized early on that, in order to foster trust and collaboration between the aviation community and the ASRS program, the program would need to guarantee that reporters' confidentiality would be maintained and that, if the report met certain conditions, any sanction imposed on the individual would be waived. The guidance in AC 00-46D directs NASA to remove all identifying names and air carrier and third-party references from ASRS reports within 72 hours of NASA's receipt of the report if no further information is required.

Figure 1: ASRS Monthly Intake of Reports



Source: *ASRS*

The confidentiality and safeguarding of the identities of reporters has been crucial to the longevity of the ASRS program. One NASA official noted, "We guard the data and confidentiality of reporters religiously. We are at about 880,000 reports that have been submitted over 34 years, and we have had no breach of identity" (NASA Interview 2010). The ASRS also provides a regulatory incentive to those who submit a report within the guidelines of AC 00-46D. A report to the ASRS will receive a waiver of enforcement action by the FAA if the reported violation was inadvertent, the violation does not involve a criminal act, the person has not been found to have violated a FAR in the past five years, and the person completed the ASRS report within 10 days of the violation (AC 00-46D).

Reporting and Data Analysis Process

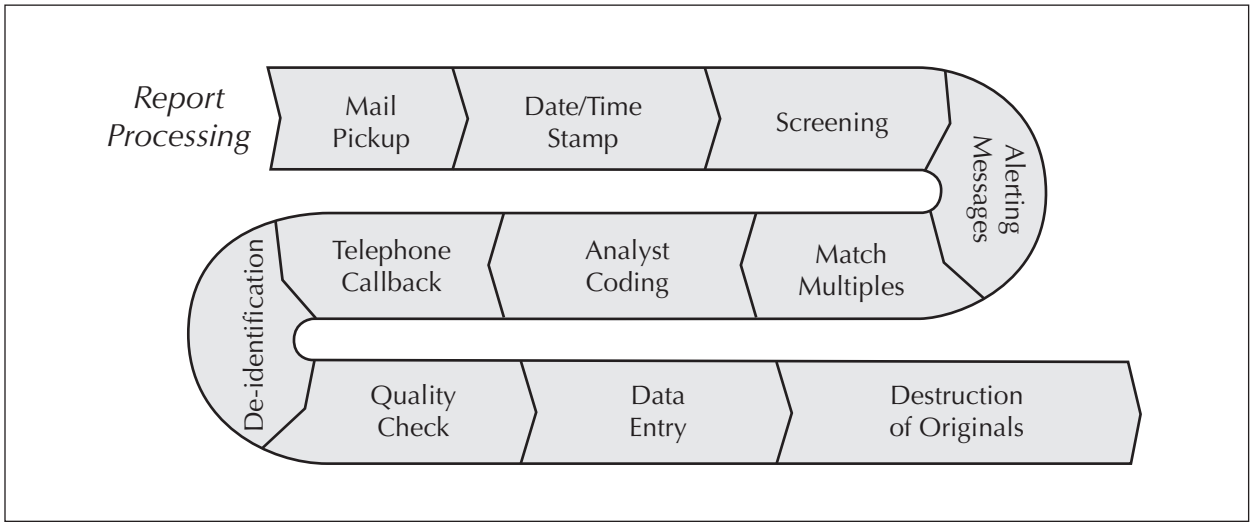
The ASRS is an open reporting system, meaning that any user of the National Air Space can submit a report to the program. Currently, users can submit an ASRS report electronically on the ASRS website or through a manually completed form that is mailed to the ASRS office. Also, several carriers have agreements with the ASRS to send de-identified copies of Aviation Safety Action Program (ASAP) reports directly to NASA. Over 62 percent of all air carrier ASRS reports originate directly from ASAP reports (Kelley 2010). An ASRS report form contains two key components: a fixed-field incident report and an open narrative section. The fixed-field section tells the analyst WHAT occurred:

- What type of plane?
- What weather conditions?
- What airport?

The narrative portion of the ASRS report is where the individual attempts to tell NASA WHY he or she violated protocol. Once the report is received, NASA analysts process a receipt that captures the date that the report was received to provide evidence of compliance with the requirements for a waiver of sanction. The next step is an initial reading by an ASRS expert analyst who screens the report for hazards that could pose imminent danger. If such a hazard is found, the ASRS immediately issues an *Alert Bulletin* to relay safety information to individuals in positions of authority so they can evaluate the information and take corrective action, if needed.

Once the analysts have checked for matching reports of the same event (a captain, first officer, flight attendant, and air traffic controller could all submit ASRS reports for the same event), the narrative of the report is analyzed by at least two of the ASRS's analysts who have expertise in the area of aviation identified by the report. Expert analysts code the narrative description by determining the root cause of the event, the resolution implemented by the crew, and the consequence of that action. The analysts may contact the reporter for more information on the incident if the details of the narrative are unclear or

Figure 2: ASRS Report Processing Flow (Manual Submission)



Source: *ASRS*

incomplete. After the report has been analyzed for content, the report is de-identified by editing the report for any identifying features of the reporter, air carrier, or third parties. The process of de-identifying the reports can be very tedious and time-consuming, as any one report may make reference to another member of the flight crew, more than one carrier, or specific routes that only a specific carrier may fly. After the report is de-identified, it is entered into an internal ASRS database. Currently, due to a lack of funding, the ASRS only enters 20 percent of all reports into its publicly available database. A NASA official noted that the program has been "flat-funded" since 1997, while the number of reports to the ASRS has increased dramatically (NASA Interview 2010).

Outputs Produced

The collecting and coding of ASRS reports is only one part of the incident reporting process. Far more crucial is the strength of ASRS's feedback loop to the reporters and industry it serves. The feedback loop directly reaches the system's users to enable learning to take place and to ensure that effective and appropriate corrective actions are taken (ASRS Program Briefing, 2009). The ASRS uses several feedback methods to disseminate information to the aviation community, such as:

- ***Alert Bulletins* and For Your Information Notices:** Both provide information on significant hazards identified in ASRS reports that may immediately impact safety.
- **Quick Response Studies:** In response to requests from the FAA, the NTSB, and Congress, the ASRS will analyze ASRS data and provide a synopsis of reports.
- **Operational Research:** Long-term studies are designed to examine human performance in aviation.
- **Database Search Requests:** The ASRS database is publicly available for searches and queries.
- **Publications:** The ASRS publishes *CALLBACK* and *Directline* to educate a broad aviation audience through a "lessons learned" approach.

A key component of the independent honest broker role that NASA plays in administering the ASRS is that the agency does not produce recommendations of corrective action. Instead, the ASRS focuses on producing high-quality, data-driven alerts to decision makers in the aviation community who have the authority to take corrective action. According to a NASA official:

> The minute we take a position on a corrective action, even if it is right, we will be called into question by those who find it unpopular. The minute we take sides, we have moved out of independence and unbiasedness. The decisions about corrective action are made by industry and the FAA, not by NASA. It is not our mandate as an agency and is not part of our mission at ASRS (NASA Interview 2010).

Challenges Facing the ASRS

While the ASRS received almost 49,000 reports from members of the aviation community in 2009, the program faces several challenges:

- **Perception as a General Aviation Program:** Several in the aviation community have questioned the continued need of the ASRS, with some calling the program a "general aviation reporting system" (Air Carrier Interview C 2010).[7]
- **Lack of Awareness of ASRS Outputs:** Interviewees within the FAA and air carriers noted that they had never seen a report or *Alert Bulletin* produced by the ASRS. The proliferation of ASAPs within individual carriers and employee groups has greatly diminished the reliance on ASRS protection and outputs.
- **Competition with Other FAA Programs:** As more and more carriers enter into agreements to share their proprietary safety data with government-industry collaboratives developed years later, such as the Aviation Safety Information Analysis and Sharing Program (ASIAS), the ASRS faces increasing perceptions of the program as a redundant expenditure.

Voluntary Disclosure Reporting Program (VDRP)

Overview

Created in 1990, the Voluntary Disclosure Reporting Program (VDRP) is a program that offers certificate-

holding air carriers reduced regulatory enforcement actions if they voluntarily report systemic problems within their operation, and work collaboratively with their local FAA Certificate Holding District Office (CHDO) on designing a comprehensive fix to the problem. The FAA believes that the open sharing of apparent violations and a cooperative as well as advisory approach to solving problems through the VDRP will enhance and promote aviation safety. Where other self-reporting systems such as the ASRS and the ASAP focus on the individual, the VDRP is centered on offering a regulatory incentive for companies to proactively identify safety hazards and risks within their operations. In order to make the self-disclosure process more efficient, transparent, and standardized, the FAA moved from a paper-based self-disclosure process to a web-based system for major air carriers in December 2006 (AFS-230 Interview B 2010).

Background and History

During the early 1980s, the FAA instituted a national inspection program in which airlines were periodically subjected to an intensive, thorough inspection by a team of outside inspectors not usually assigned to that carrier. This system of detailed inspections for violations resulted in a highly adversarial relationship between airlines and the FAA—marked by high fines, extensive litigation, and overburdened staff, for both the air carriers and the local FAA CHDOs (Quinn, 2008).

Air carriers and industry representatives pressured the FAA to move from a reactionary safety inspection system to one that provides incentives to the air carriers to voluntarily submit violations to the FAA. In 1990, FAA Administrator James Busey and FAA Chief Counsel Kenneth Quinn developed the Air Carrier Voluntary Disclosure Program (now known as the VDRP) to allow carriers to voluntarily submit apparent violations to the FAA with the promise of reduced enforcement action.[8] The first guidance document issued for VDRP was AC 120-56 in 1992, but the program was given its current structure and format in AC 00-58A in 2006 and in AC 00-58B in 2009.

Confidentiality and Regulatory Incentive

Unlike other voluntary safety reporting programs (VSRPs) managed by the FAA, the VDRP does not forgo all action against those who submit reports. . Companies that self-disclose apparent violations to their local FAA CHDO and fully implement a comprehensive fix will receive administrative action (typically a Letter of Correction outlining the process of the self-disclosure) in lieu of legal action, which could include civil penalties that result in a fine of up to $25,000 per aircraft movement (FAA Order 2150.3b). In order to be accepted into the VDRP, a self-disclosure must meet the following five criteria:

- The air carrier must have notified the FAA of the apparent violation immediately (generally agreed to be within 24 hours) after detecting it, and before the agency learned of it by other means.
- The apparent violation was inadvertent.
- The apparent violation did not indicate a lack of qualification of the air carrier.
- Immediate action, satisfactory to the FAA, was taken upon discovery to terminate the conduct that resulted in the apparent violation.
- The air carrier developed or is developing a comprehensive fix and schedule of implementation that is satisfactory to the FAA. The comprehensive fix must include a follow-up self-audit to ensure that the action taken corrects the noncompliance.

All self-disclosure records submitted to the FAA under the VDRP, including those submitted on the web-based system, are protected from release to the public under the Freedom of Information Act (FOIA; 14 CFR Part 193). The FAA also protects the identities of carriers by restricting internal access to self-disclosure materials to all Principal Inspectors (PIs) and other inspectors who have been added to the system by PIs. Also, CHDO managers, regional flight standards personnel, and analysts who are tasked with reviewing VDRP records are granted access to the FAA internal system.

The Six Stages of the VDRP Process

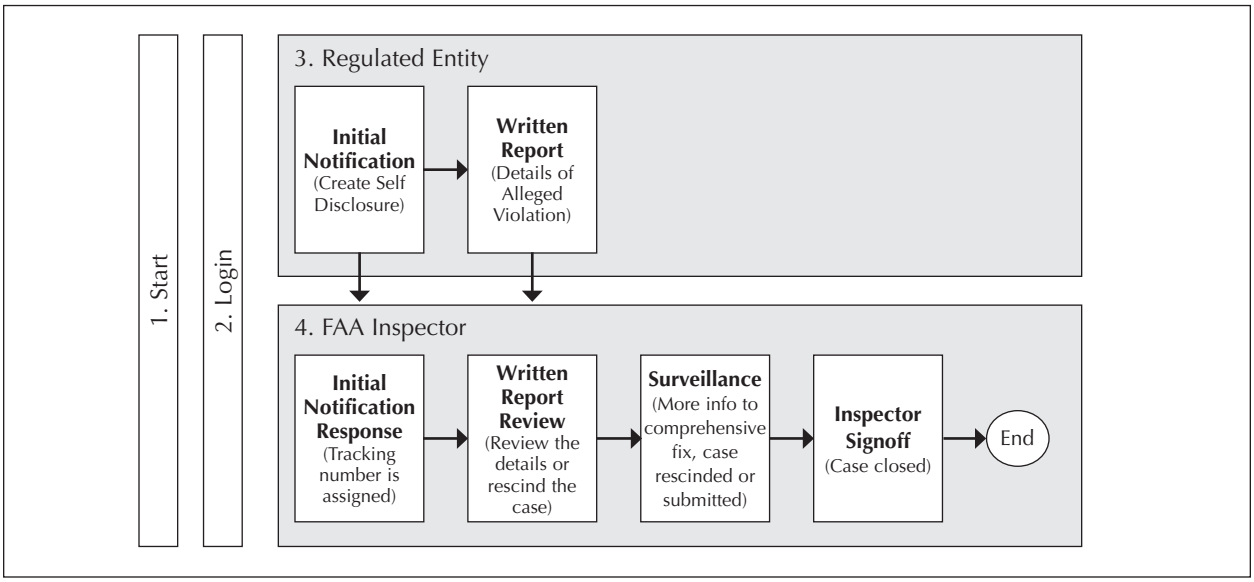
The web-based VDRP system uses a six-stage process to guide users through the self-disclosure process (AC 00-58B):

- **Stage I—Notification by the Air Carrier of an Apparent Violation:** When an air carrier learns of a potential violation, they must notify the proper

PI within the CHDO [if the issue deals with maintenance, then the Principal Maintenance Inspector (PMI) would be notified], either through the web-based VDRP system or via telephone, within 24 hours of learning of the violation. The PI has the discretion to accept self-disclosures that exceed the 24-hour rule if the carrier learned of the violation through other voluntary programs such as the ASAP. The FAA recommends that a top safety official within the carrier submit the notification.

- **Stage II—FAA Response to Certificate Holder:** The appropriate PI reviews the submission from the air carrier to ensure that the apparent violation meets the five criteria for acceptance. If the report meets these criteria, the PI then submits the self-disclosure to the CHDO manager for final approval. The FAA retains the right to withdraw acceptance of a self-disclosure at any time if it discovers that the violation does not meet the requirements for acceptance. In these instances, the FAA can pursue enforcement action against the carrier for the violation contained in the self-disclosure only if the CHDO has evidence regarding the violation from a source independent of the carrier's self-disclosure.
- **Stage III—Written Report of the Air Carrier's Apparent Violation:** Within 10 working days of the initial notification of the apparent violation, the air carrier submits a written report to the CHDO that contains a description of the regulations that may have been violated; a description of the violation and how it was detected; an explanation of the immediate action to terminate the violation; evidence demonstrating the seriousness of the violation and the risk involved; and a detailed description of the comprehensive fix—including an implementation plan and identification of company officials responsible for ensuring the completion of the fix.
- **Stage IV—Written Report Review by the FAA CHDO:** The CHDO then works with the air carrier to ensure that it has identified the root cause of the violation and any systemic issues that led to the apparent violation. Here, the PI and air carrier representative work collaboratively to complete a Risk Assessment Matrix to determine the seriousness of the event and the likelihood that the proposed comprehensive fix will sufficiently address the violation.
- **Stage V—Implementation of a Comprehensive Fix and FAA CHDO Surveillance:** The CHDO and the air carrier work collaboratively to implement the corrective fix and identify any potential systemic problems within the carrier's operation. The CHDO may make changes to the comprehensive fix as needed while the self-disclosure is in surveillance. If the carrier is

Figure 3: VDRP Flow Chart



Source: *VDRP Web User's Guide*

unwilling to accept the CHDO's recommended changes, the FAA can initiate legal enforcement action. However, the carrier has the right under the Consistency and Standardization Initiative (formerly called the Customer Service Initiative) to appeal the decision of the PI to a higher level (regional and then HQ).

- **Stage VI—Inspector Signoff:** At the conclusion of the implementation of the comprehensive fix, the PI and CHDO manager make a final assessment of the success of the fix. If the PI and the CHDO manager agree that the fix is satisfactory, then they issue a Letter of Correction to the carrier, which details the violation and the fix issued.

Analysis and Outputs of VDRP Data

The major output of the data gathered through the VDRP is the comprehensive fix implemented by the carrier to correct the violation identified in the self-disclosure. The data gathered through the VDRP are very valuable to local FAA CHDO inspectors, who use the information on systemic problems within a carrier to better target their risk-based ATOS inspections (FAA CMO Interview B 2010; Air Carrier Interview D 2010). However, the voluntary, confidential, and textual nature of VDRP data has made analysis at the national level very difficult (AFS-230 Interview B 2010). All VDRP reports are available for review by AFS-230 inspectors through the web-based system. Currently, AFS-230 does compile quarterly reports of de-identified VDRP submissions for distribution to FAA CHDOs to use as another data source to target their risk-based ATOS inspections. However, because of the proprietary and confidential nature of the data, the FAA has not yet distributed these reports to industry through its information-sharing programs such as ASIAS.

Another barrier to further analyzing VDRP data is that some in the FAA are fearful that raw numbers of VDRP submissions will be misinterpreted by those not familiar with the program. Specifically, an air carrier with a high level of trust in its CHDO and good internal audit programs will typically submit more self-disclosures than a carrier with less-effective internal audit programs. However, when these numbers are presented as raw numbers of submissions, some may judge the carrier who is submitting more self-disclosures to be less safe than the carrier who submits fewer self-disclosures (AFS-230 Interview B 2010). Additionally, analyzing raw numbers of self-disclosures is not effective, because it does not take into consideration the severity and likelihood of the violation as captured in the Risk Assessment Matrix (AFS-230 Interview B 2010).

Challenges Facing VDRP

The high-visibility negative attention resulting from the Southwest and American Airlines inspection problems (see page 24) has placed a spotlight on VDRP more than any other voluntary program managed by the FAA. While the FAA and air carriers have implemented many of the changes recommended by the DOT-IG and the DOT's Independent Review Team (IRT), several challenges remain in effectively administering VDRP:

- **Lack of Standardization:** Although the web-based system has brought a much higher degree of standardization to VDRP, there are still major differences in the way the self-disclosure process is implemented at each CHDO and air carrier. Specifically, some CHDOs are very stringent on the time requirements outlined in AC 00-58B, while others are more lenient (FAA CMO Interview B 2010). Also, some CMOs collaboratively examine self-disclosure notifications to ensure that no one in the office is aware of the problem, while some PIs will initially accept self-disclosures without speaking to others in the CHDO (FAA CMO Interview C 2010).
- **Overlap with the ASAP:** Both air carrier and FAA personnel acknowledge that there is substantial overlap between the ASAP and the VDRP. While the ASAP covers employees and the VDRP covers carriers, several air carriers noted the possibility that—for the same incident—two separate, simultaneous, comprehensive fix processes could take place. (The ASAP does not give the FAA the autonomy to implement corrective actions or issue administrative action if a carrier fails to implement a fix, whereas the VDRP does; 9.8 percent of VDRP self-disclosures are generated by employee ASAP reports (AFS-230; FAA CMO Interview B 2010).
- **Lack of System-Level Analysis of VDRP Data:** While the use of VDRP data at the local CHDO level is robust and effective in informing risk-based ATOS inspections, the lack of analysis of VDRP data at the systemic level is inhibiting the

Inspection Problems at Southwest and American Airlines

Southwest Airlines

As an inspector for the FAA at the Southwest Airlines (SWA) Certificate Management Office (CMO), Charalambe Boutris was responsible for inspecting the airframe and systems of the airline's fleet of Boeing 737 jets. In the course of his inspections and as early as 2003, Boutris found that SWA records of airworthiness directives (ADs) did not meet the requirements of the law. He informed SWA maintenance officials, and recommended on numerous occasions to his Supervisory PMI Douglas Gawadzinski that they file a letter of investigation against SWA. Gawadzinski refused the request by Boutris and instead told him that a safety attributes inspection (SAI) would be conducted to see if the airline was in compliance with federal regulations.

One year later, when Gawadzinski approved the SAI with Boutris in charge, SWA maintenance officials met with Gawadzinski to have Boutris replaced with a "more friendly supervisor" (USHTI Hearing 4/3/2008). This once again delayed the SAI, which according to FAA records was three years overdue. On March 15, 2007, SWA informed Gawadzinski that 47 of its aircraft had overflown the required fuselage fatigue inspection. On March 19, 2007, SWA filed a VDRP claim to the FAA. However, after the VDRP claim was filed, Boutris learned that the affected aircraft were flying passenger operations until March 23, 2007, and that six of them had cracks of up to four inches in the fuselage (USHTI Hearing 4/3/2008). On the VDRP application, Gawadzinski falsely confirmed that SWA had ceased operations of the planes after it discovered the crack in the fuselage, and allowed the 47 aircraft to continue in service for up to 30 months after they were due to be inspected.

On April 3, 2008, the House Committee on Transportation and Infrastructure (USHTI), chaired by U.S. Representative James L. Oberstar (D-MN), conducted a hearing into safety issues at SWA and possible lapses in FAA oversight. In the testimony following the discovery of the violations, it became clear that Gawadzinski had fallen victim to the "relaxed culture" of the SWA CMO. Specifically, it was determined that Gawadzinski had allowed the noncompliant aircraft to continue to operate because of a close personal relationship with the manager of regulatory affairs at SWA, who also happened to be a former subordinate of Gawadzinski while at the FAA.

American Airlines

In response to the congressional and public concern arising from the SWA incident, the FAA ordered an immediate and nationwide audit of other airlines, to see if they too had any compliance problems with any ADs that affected their fleets. Each FAA office that oversees Part 121 air carriers with aircraft seating 10 or more passengers was asked to audit 10 percent of the ADs applicable to each aircraft type that the carriers operate. As a direct result of these "special emphasis" AD audits, problems quickly surfaced in American Airlines' (AA) fleet of MD-80s. On March 25 and 26, 2008, FAA inspectors found discrepancies with some of AA's MD-80s. AA grounded part of its fleet, canceling a few hundred flights.

On April 7, 2008, just days after the congressional hearings arising from the SWA events, FAA inspectors reinspected 17 of AA's MD-80s and found 16 of them to be out of compliance with AD 2006-15-15. On April 8, faced with the prospect of imminent enforcement action by the FAA, AA chose to ground its entire fleet of MD-80s (more than 350 planes), and to put the planes back into service only after the AD requirements had been completely met and the planes were maintained to the FAA's satisfaction. From April 8–11, AA cancelled 3,100 flights, stranding or inconveniencing more than 250,000 passengers (U.S. DOT, IRT 2008).

On August 25, 2010, the FAA proposed a record $24.2 million fine against American Airlines for the maintenance violations that led to the canceling of thousands of flights in April 2008. The FAA charged that AA's fleet of MD-80 aircraft was out of compliance with AD 2006-15-15, which could have resulted in the chafing of wires that might have sparked fires in the planes' hydraulic systems. American Airlines is now appealing the fine.

FAA from fully utilizing VDRP data through a trending of common root causes of violations.

- **Incomplete Root-Cause Analysis:** Pressure from the FAA HQ on PIs at the CHDO level to close self-disclosures as quickly as possible is reported to be limiting the effectiveness of root-cause analysis and the development of comprehensive fixes, which results in recurring self-disclosures for similar issues.
- **Flaws in VDRP Web-Based Technology:** Several air carriers noted that, while the new VDRP web-based system is much more efficient than the old paper-based system, the self-disclosure process could be more efficient if both the FAA and air carriers were allowed to work on written reports while the other was reviewing previous documents. (Currently, the VDRP web-based system does not allow an air carrier to begin work on the written report while the FAA is reviewing the initial notification).

Aviation Safety Action Program (ASAP)

Overview

Created in 1997, the Aviation Safety Action Program (ASAP) is a VSRP that allows employees of air carriers to report safety-related events without the FAA or the carrier taking punitive action against the employee based on the information in the report. Unlike other voluntary programs, ASAP involves a partnership between three entities (FAA, the air carrier, and the employee union) that is codified through a memorandum of understanding (MOU).

A representative from each entity—the FAA, the air carrier, and the employee union—sits on an Event Review Committee (ERC) to decide jointly whether an ASAP report should be accepted into the program and what corrective action, if any, is necessary to remedy the safety concern. The ASAP provides the FAA and air carriers valuable safety information to which they would not otherwise have access from those on the front lines of aviation. This information is used to proactively identify areas of risk and hazard in a carrier's operation and to develop corrective measures to address those potential safety concerns. Currently, there are 218 active ASAPs spanning a variety of employee groups including pilots, mechanics, dispatchers, flight crew, and ramp operators.

Background and History

As early as 1992, USAir, American Airlines, and Alaska Airlines, under an FAA demonstration project, had implemented an ASAP program to encourage pilots to voluntarily submit altitude deviations to the carriers. This demonstration project, as well as others, was very successful, and illustrated to the FAA and air carriers that employees would divulge intimate details of safety violations if given protection from punitive action (AFS-230 Interview A 2009).

Following the crash of ValuJet Flight 592 in 1996, one of the major recommendations of the White House Commission on Aviation Safety and Security was to encourage partnerships between the private and public sectors to improve aviation safety (Gore 1997). Following this guidance, the FAA formally created the ASAP by issuing AC 120-66 in 1997. One of the provisions of the AC is that each ASAP be governed by an MOU signed by the local FAA CHDO, the air carrier, and the employee union.

Confidentiality and Regulatory Incentive

The regulatory incentive offered to employees under the ASAP varies with each MOU approved by the FAA. In AC 120-66B, the FAA differentiates between two types of ASAP reports:

- **Sole-Source ASAP Reports:** When all evidence of the event available to the FAA or air carrier is discovered by or predicated on the report. Approximately 90 percent of all ASAPs are sole-source (Kelley 2010).
- **Non-Sole-Source ASAP Reports:** When the FAA or air carrier has knowledge of the event through means other than via the employee report (e.g., air traffic control report, maintenance inspection, etc.).

Under the ASAP, the FAA provides protection from any enforcement or administrative action for employees who file sole-source reports to their ERC within 24 hours. Reports can be excluded from the ASAP if they involve:

- Acts of intentional disregard for safety
- Criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification

While employees who submit sole-source reports to the ERC receive protection from FAA action, sole-

source reports accepted into the ASAP are subject to the following actions by the ERC:

- **Routine Closure of Event:** Pre-generated closure letters sent to the employee who sent in report
- **Custom Closure of Event:** Letter with specific content of the ASAP report and directions for employee action
- **ERC Letter of Corrective Action:** The ERC may recommend additional training or other corrective action for employees

Employees who file non-sole-source reports to their ASAP will receive varying levels of protection, depending upon evidence that they in fact violated a FAR. However, if a non-sole-source report does not violate the terms of acceptance for the ASAP, the reporter will receive administrative action from the FAA in lieu of legal enforcement action. This may include the following:

- FAA Letter of No Action
- FAA Warning Letter
- FAA Letter of Correction

Employees filing non-sole-source reports to the ERC also will be subject to the same ERC corrective actions as sole-source reporters.

In order to foster an open reporting system, all materials submitted under the ASAP—including reports, ERC conversations, a carrier's database of records, trend data of ASAP reports, safety publications, etc.—are exempt from the FOIA under FAA Order 8000.82. The FAA further ensured the safety of a carrier's proprietary ASAP data by purchasing servers through the MITRE Corporation to ensure that ASAP data does not leave a carrier's property, and to allow for the secure, de-identified sharing of safety data.

The MOU and the ERC

The critical document in initiating an ASAP is the MOU, which is a codified agreement between the FAA, the air carrier, and the employee union. While each of the signatories to the MOU agrees to follow the provisions within, any of the three members can end their participation in the program at anytime. Air carriers and employee unions submit to their local CHDO a proposed MOU for their respective ASAP. The CHDO is tasked with reviewing the MOU for compliance with AC 120-66B and to ensure that the CHDO has adequate resources to support the ASAP. Once accepted by the CHDO, the Office Manager submits the MOU to AFS-1 and AFS-230 for final approval.

During the 18-month probationary period, the newly formed ERC will receive an audit from AFS-230 examining the effectiveness of its process and MOU. If the ASAP is found to be effective, the group becomes a formal ASAP and must renew its MOU every two years. The most unique feature of the ASAP is the ERC, which is a three-member group comprised of a representative from the local FAA CHDO, the air carrier, and the appropriate employee group union representative. The ERC has several responsibilities, including:

- Review and analyze reports submitted under the ASAP.
- Determine through consensus if such reports meet the criteria for acceptance into the program.
- Identify actual or potential problems from the information contained in the reports.
- Propose solutions to safety hazards.
- Conduct an annual review of the ASAP database to determine whether corrective actions have reduced the recurrence of targeted safety events (Kelley 2010).

The ERC will meet as needed to conduct the business of accepting, analyzing, and recommending corrective action. The ERC also will conduct telephone or face-to-face interviews with employees who report more serious violations in order to engage in a deeper examination of the circumstances that led to the incident. A unique feature of the ERC process is that members must come to a consensus on both accepting the report into the ASAP and on the action to resolve the safety hazard.

If members of the ERC are unable to come to a consensus, the FAA representative under AC 120-66B retains the right to make the final decision (Air Carrier Interview A 2010; FAA CMO Interview D 2010). When the ERC does come to a consensus on a corrective action that may involve a more systemic problem and require a change to company policy or procedure, the ERC has little authority other than to

recommend to management that a change be made. Some ERCs engage in strategic behavior, waiting until a more high-profile event takes place before bringing an issue to the attention of senior management (ERC Observation A 2010).

The frequency of reports to the ERC varies greatly across employee reporting groups. At one large airline carrier, a flight ASAP program received an average of 125 reports per week (Air Carrier Interview B 2010), while a maintenance ASAP at another large airline carrier typically received 20-30 reports a month (Air Carrier Interview A, 2010). Under a funding agreement with Universal Technical Resource Services, AFS-230 developed a reporting and data management system called the Web-Based Application Tool (WBAT) for use by carriers in managing their ASAPs. Many carriers use WBAT[9] to manage all aspects of their ASAP programs including report intake, corrective action notices, and data analysis. Systems such as WBAT allow ERC members to read and analyze reports in advance of the ERC meetings. Other large carriers use individualized computer systems that have additional functionality, including the ability to vote on accepting a report and to suggest a corrective action over the web (ERC Observation B 2010).

Although the ASAP is a creation of the FAA, the air carrier is typically responsible for providing resources for the administration and coordination of the ASAP, and serving as the leader of the ERC (FAA CMO Interview B 2010; Air Carrier Interview B 2010). The level of staffing provided by carriers varies greatly. Some carriers have a full-time ASAP administrator and several ASAP analysts (in addition to the carrier's ERC representative) to examine the carrier's data, while other carriers have one manager who serves as the ERC representative, an ASAP Manager, and a data analyst (Air Carrier Interview C 2010; Air Carrier Interview A 2010).

The level of FAA resources dedicated to the ASAP within CMOs appears to be much less than is necessary. FAA ERC representatives are often full-time aviation inspectors who have other oversight tasks in addition to reading and analyzing large volumes of ASAP reports (FAA CMO Interview D 2010). Also, several air carriers noted that the FAA representatives often come to ERC meetings unprepared, and will ask for the carrier to conduct an analysis of its ASAP data for the CMO (Air Carrier Interview A 2010; Air Carrier Interview B 2010).

Analysis of ASAP Data

The central goal of the ASAP is to provide to both air carriers and the FAA valuable operational data from employees on its operation that can be used to proactively mitigate safety hazards. ASAP guidance requires that the air carrier maintain a database of de-identified ASAP reports that will be analyzed annually to examine trends in reporting. Many carriers conduct a monthly analysis of their ASAP data and report the findings of that analysis to a variety of departments, including the quality assurance unit, which uses the data to change internal processes (Air Carrier Interview A 2010). However, several carriers noted that their ASAP programs were not effective at communicating with one another (i.e., between flight operations and maintenance), which is a central goal of the FAA's SMS initiative.

The local FAA CMO offices also use ASAP data trends within a single carrier to identify areas of risk and hazard within the operation. One CMO inspector notes, "Most of the changes resulting from ASAP happen at the local CMO level as opposed to the national level because most problems identified in ASAP are company-specific problems" (FAA CMO Interview B, 2010). CMOs also are required to submit quarterly ASAP safety reports to AFS-230 that highlight the number of reports received and the types of corrective action taken. However, the DOT-IG criticized the quarterly reports for a lack of standardization across CMOs and for "not providing sufficient detail about the nature of ASAP events to be useful for safety data analysis or trending" (U.S. DOT-IG 2009). Also, one air carrier criticized its local CMO efforts to analyze ASAP data:

> I get a call from our PMI asking for all ASAPs related to a particular maintenance procedure. They have access to the same information that I have! Just because I take the time to do a sort of the data, they expect me to do their work for them. They are not as nearly engaged in ASAP or the information that could be derived out of ASAP as they should be (Air Carrier Interview B, 2010).

Inspectors within the CMOs argue that they simply do not have the resources to analyze ASAP data as well as they would like to (FAA CMO Interview B, 2010).

Many within aviation have questioned the ability of the FAA to identify systemic national trends from the analysis of ASAP data. The sharing of de-identified carrier ASAP data with the FAA at the national level has been difficult for several reasons:

- **Concerns over Confidentiality:**[10] Air carriers demand that their data stay at their offices and that ASAP data are de-identified both by employee and by carrier.
- **Longevity of ASAP Data:** ASAP data are retained for only three years, which does not allow for adequate trending of data (U.S. DOT-IG 2009).
- **Lack of FAA Access to ASAP Data:** The FAA has neither direct access to ASAP records, nor the ability to conduct systematic trending analyses.
- **Lack of FAA Authority to Make Recommendations Resulting from ASAP Data Analysis:** The FAA does not have the ability to make safety recommendations based on lessons learned from ASAP without industry approval.
- **Lack of Information Technology Standardization:** While many carriers use the FAA-supported Web-Based Application Tool (WBAT) system, several large carriers do not, which leads to standardization and compatibility issues.

As the FAA moves toward fully implementing its data-driven SMS program, it has made investments in fully analyzing data collected through the ASAP. Under an agreement with MITRE, the FAA purchased secure servers for many carriers to use to house their ASAP data on their premises. Carriers then can opt to share their data with the FAA's Aviation Safety Information Analysis and Sharing (ASIAS) program.

In addition to conducting analyses of ASAP data, ASIAS and MITRE also host a biannual meeting called INFOSHARE, where carriers and employee groups can come together and share the findings of their ASAP programs. INFOSHARE is a unique opportunity for carriers and employee groups to exchange information regarding best practices and new technologies to improve the effectiveness of their ASAP programs. However, some have noted problems in the way MITRE conducts its INFOSHARE meetings.

Aviation Safety Information and Analysis Sharing Program (ASIAS)

ASIAS is a collaborative government and industry initiative on data sharing and analysis to proactively discover safety hazards, leading to timely mitigation and prevention. ASIAS conducts studies of safety hazards in aviation by leveraging a variety of data sources including ASRS, ASAP, and Flight Operations Quality Assurance (FOQA) data. Because ASIAS is funded and administered by the FAA, carriers wanted to ensure that they had control over the types of queries conducted on their respective data (ASIAS Interview 2010).

ASIAS studies of ASAP data are approved by the ASIAS Executive Board (AEB) comprised of industry and government members. Once approved, MITRE then conducts queries of ASAP reports on its servers so that the actual data does not leave the carrier's premises, and the compiled dataset is de-identified by carrier. After a study of ASAP data is completed, it is sent to another government-industry collaborative called the Commercial Aviation Safety Team[11] (CAST) that has the responsibility through its Joint Implementation Data Analysis Team (JIMDAT) to develop recommendations resulting from ASIAS studies. However, the implementation of CAST recommendations is voluntary and left to the individual air carrier (ASIAS Interview 2010).

Managers from large carriers with well-established ASAPs noted that their return on investment in INFOSHARE has diminished, as they often are the ones providing best practices to newly established ASAP programs (Air Carrier Interview C 2010).

Outputs from ASAP Data

Many of the direct safety improvements resulting from ASAP focus on changing behavior within individual carriers. The recommendations resulting from ERC discussions typically focus on rewriting a policy or procedure within the carrier, or changing an aspect of the carrier's training program. Additionally, the ERC and air carrier produce a wide range of safety publication data for distribution, including:

- **Sample ASAP Updates:** A compilation of de-identified ASAP reports selected by the ERC for distribution within the carrier
- **Safety Alerts:** For issues that are identified through ASAP reports that require immediate

correction (daily briefings to pilots, notices to mechanics, etc.)

- **Weekly or Biweekly Newsletters:** A series of articles written by those who submitted ASAPs, detailing their experiences and what factors led them to violate company procedures (usually done as part of an ERC corrective action)
- **Quarterly/Annual Safety Publication:** Part of the carrier's larger safety publication that details the number of ASAP reports, tangible safety changes, etc.

Additionally, carriers use trend data compiled by the ASAP manager to make more systemic safety changes within their operation (Air Carrier Interview A 2010).

Other outputs of ASAP data are studies produced by ASIAS and MITRE on systemic issues across air carriers. For example, MITRE and ASIAS conducted an analysis of ASAP and FOQA data containing Terrain Awareness Warning System activation information on the approach to Oakland, California. By fusing these data sources, ASIAS and MITRE were able to recommend changes to the approach path into Oakland to avoid these nuisance alarms and to keep aircraft at safe altitudes. In addition to the studies conducted by ASIAS, the ASRS program has produced safety studies based on increased access to de-identified ASAP data (NASA Interview, 2010).

Challenges Facing the ASAP

FAA officials (and some air carriers) describe the ASAP as "our most valuable source of safety information" and "the crown jewel of voluntary safety programs" (ASIAS Interview 2010; AFS-230 Interview A 2009). While the ASAP has generated valuable safety information for air carriers and the FAA, there are several challenges facing the ASAP that appear to be preventing the FAA from realizing the full benefits of the program:

- **Lack of integration of ASAPs exists within the same carrier:** Many ERCs noted that they do not communicate with other ASAP ERCs within the same company. This "siloing" of safety information within the same carrier can lead to ineffective root cause analysis and ineffective corrective actions (NASA Interview 2010).
- **Lack of communication exists between CMOs:** Many FAA inspectors noted that they never communicate with other inspectors who sit on ERCs to discuss safety issues identified through their ERCs.
- **ERC does not have adequate authority to effectively recommend corrective actions:** Several carriers and ERCs noted that they do not have the authority to implement changes within carriers. Some noted that they act strategically by withholding a particular recommendation derived from an ASAP report until the number of ASAPs on that issue reaches a critical mass or a high-profile event takes place.
- **Concerns over confidentiality hinder systemic data analysis at the national level:** The lack of direct access to ASAP reports has limited the ability of the FAA to conduct systemic analysis at the national level, which is one of the major goals of the ASAP (U.S. DOT-IG 2009). While the FAA, through its funding of MITRE and ASIAS, has developed appropriate technology solutions to overcome some of these concerns, the agency's lack of a national database of ASAP reports limits its ability to fully analyze ASAP data and propose mitigations to safety concerns.
- **Collaborative data-sharing efforts lack authority, resources, and technology to effectively analyze ASAP data:** The lack of standardization of incoming ASAP data has made the analysis by groups such as FAA's Aviation Safety Information Analysis and Sharing (ASIAS) very difficult. Additionally, the inability of ASIAS to directly commission studies and propose mitigation strategies has limited the ability to look at trending across carriers to identify systemic issues. To date, ASIAS has conducted only three directed studies (GAO 2010).
- **Lack of systematic audits leads to complacency among established ERCs:** The proliferation of ASAPs across aviation has reduced the ability of AFS-230 to conduct follow-up audits of established ASAPs. Some more-established ERCs have become complacent in their analysis of events and would benefit from an evaluation of their processes and procedures.
- **Lack of staffing limits ability of ERCs to conduct effective root cause analyses:** The most common problem identified with the ASAP was the lack of staffing provided by both the air carrier and the FAA. Several carriers and FAA CMO

inspectors noted that they believe the FAA should dedicate one inspector to ASAP. ERC members noted that FAA representatives often would come to meetings unprepared because of their additional inspector workload. Also, carriers noted that they lacked resources to adequately analyze ASAP data within their companies, which would improve their ability to conduct root cause analyses (Air Carrier Interview C 2010).

Lessons Learned from the FAA's Experience with Voluntary Regulatory Partnership Programs

Administrative Lessons

Lesson One: Regulatory agencies should have a dedicated organizational entity focused on voluntary programs. This entity should have sufficient autonomy to develop program policy guidance, to conduct routine audits and evaluations of voluntary programs that ensure consistency and standardization, and to conduct analysis of data captured from these programs.

One of the most common criticisms leveled against voluntary regulatory partnership programs (VRPPs) is that they represent the capture of agencies by interests that can lead to a "cozy relationship" between regulators and the entities they regulate. Through the development of program guidance and routine audits and evaluations of localized programs, a dedicated organizational entity can ensure the standardized implementation of VRPPs.

In the wake of the Southwest Airlines incident (as discussed on page 24), the Independent Review Team (IRT) noted that the FAA needed to conduct more routine audits of its voluntary programs to ensure conformity with program guidance (U.S. DOT, IRT 2008). The organizational entity dealing with VRPPs will require staff who have a different perspective on enforcement than most regulators. As one flight standards official (in AFS-230) noted:

> It is a different way of doing business that some in headquarters do not understand. Instead of waiting for policy questions to come in over the phone, we are proactively out in the field working with carriers and local FAA (AFS-230 Interview A 2009).

In addition to developing program guidance, the organizational entity coordinating voluntary programs should be responsible for analyzing the data collected from these programs. One of the fundamental weaknesses of the FAA's voluntary programs is the lack of a central clearinghouse for VDRP and ASAP data, such as NASA's ASRS (U.S. DOT-IG 2009; DOT, IRT 2008). AFS-230 is in the best position of any office in the FAA to effectively analyze and understand the underlying trends derived from voluntarily submitted data and make recommendations on corrective action.

Lesson Two: Regulatory agencies must dedicate adequate personnel to the implementation of VRPPs at the local level.

Within many of the FAA's Certificate Holding District Offices (CHDOs), inspector resources have been thinly stretched, as managers attempt to maximize staffing resources while keeping pace with the growth of aviation. When properly implemented, VRRPs are one way to reduce enforcement costs within agencies. Agencies must adequately staff these programs to ensure effective investigation of voluntary reports and effective development of corrective actions. For example, the FAA's lack of adequate staff dedicated to VSRPs has led air carriers to view FAA as unequal partners in Event Review Committee (ERC) meetings. The lack of sufficient staff also slows down the Voluntary Disclosure Reporting Program (VDRP) reporting process.

Lesson Three: Regulatory agencies and companies should use collaborative processes to develop and implement meaningful corrective actions that remedy safety hazards and prevent the perception that voluntary programs are "amnesty" or "get out of jail free" programs.

The FAA's ASAP and VDRP effectively use collaborative processes to develop mitigation strategies to safety hazards identified through voluntary reporting. Specifically, the ERC—comprising an air carrier representative, a FAA CHDO representative, and an employee union representative—determine the root cause of an incident and recommend corrective action. Within the VDRP, the local FAA CHDO principal investigator and the air carrier work to assess the root cause of a violation and determine the best way to address the problem. These types of collaborative efforts effectively use the joint knowledge that both partners bring to the table to enhance safety.

The ability of collaborative groups to develop and implement corrective action based on data collected through voluntary reporting is critical to prevent perceptions of a "captured" agency. Currently, ERCs that develop corrective actions have little authority to implement them, leaving some to claim that voluntary programs such as the ASAP represent an amnesty program offering a "get out of jail free card." The MOUs that govern the ASAP should be modified to give ERCs the authority to implement corrective actions (U.S. DOT-IG 2009). It is crucial that agencies empower collaborative groups such as ERCs to have the authority to implement corrective actions.

Lesson Four: Regulatory agencies should use a variety of collaborative tools, such as third-party agreements, to foster trust and effectively implement VRPPs.

A key factor in the early success of the FAA's first voluntary safety reporting program (VSRP), the ASRS, was the decision to use NASA to operate the program. The FAA chose to use NASA to provide an arms' length between its enforcement activities and its partnership programs. By ensuring confidentiality and a nonpunitive reporting environment, this decision resulted in the immediate success of the ASRS and has allowed the program to continue effectively for over 30 years.

When the FAA decided to begin implementation of its ASIAS program, the agency decided to contract out the analysis of ASAP data to MITRE. MITRE has a reputation as a professional organization that does high-quality, nonbiased analyses of data across a variety of industries. The FAA's decision to use MITRE has resulted in a willingness on the part of carriers to share their proprietary ASAP data with the FAA. Using third parties to administer VRPPs can be particularly useful in agencies that have more adversarial relationships with the industries they oversee.

Regulatory Lessons

Lesson Five: Voluntary programs should be truly voluntary, and not forced upon companies and employee groups.

SEC Chairman Cox identified the ability of firms to pull out of voluntary programs as a major factor for their failure to work in that agency. However, regulatory agencies must be careful not to mandate the use of voluntary programs. The success and effectiveness of these programs rest on the free exchange of information between partners with common goals rather than relying on simple compliance with agency directives.

The FAA's experience with VRPPs further illustrates the need for these programs to remain voluntary. As programs such as the ASAP become more widespread across aviation, there has been a call from the FAA administrator for all carriers to implement ASAPs (U.S. DOT, 2010b). However, many carriers and FAA officials note that the reason these programs work so well is that they are not mandatory and are predicated on a shared vision of developing effective mitigation strategies for reducing aviation accidents. In mandating the use of such voluntary programs, the agency removes much of the flexibility of companies to tailor these programs to fit their individual operating environments.

Lesson Six: Voluntary programs should be nonpunitive and provide reduced regulatory and company enforcement actions to all stakeholders who participate and share information with regulatory agencies.

A critical component of VRPPs is adequate incentives for the free exchange of information between regulators and regulated entities. As one FAA official noted, "If you want to know the hazards of your organization, ask those working on the front lines. However, unless you provide a confidential and nonpunitive reporting environment, be prepared to receive few reports" (AFS 230 Interview A 2009). Regulators must ensure a nonpunitive reporting environment among both companies and their employees. If companies

and employees fear that the information they report will be used against them in enforcement action, they will not submit reports, and the VRPP will fail. Agencies also must assure that certain reports, such as those involving criminal acts or falsified accounts, must be excluded from protection in order to ensure the integrity of the program.

Starting in 1976 with the ASRS, all FAA VRPP's provided those companies and employees who voluntarily submitted reports detailing safety hazards with immunity from enforcement actions. Under the Voluntary Disclosure Reporting Program (VDRP), companies that submit self-disclosures of systemic violations face administrative, rather than enforcement, action. Employees who submit ASAP reports are given full immunity depending upon the recommendation of the ERC.

Lesson Seven: Confidentiality of voluntarily submitted data is critical to building an effective reporting culture among employees and companies, and must be clearly defined in program guidance.

For voluntary programs to be successful, the confidentiality of reporters is crucial to building trust in a reporting program. If reporters fear, suspect, or find that voluntarily submitted data is being used to further punitive action, their trust and use of the program will diminish significantly. When creating the ASRS, the FAA decided to use NASA as a third party and honest broker in order to build instant confidence and trust in the program. By contracting with NASA, the FAA diffused concerns that those who would submit reports would be pursued for enforcement action by the agency.

Due to the proprietary nature of ASAP and the Voluntary Disclosure Reporting Program (VDRP) data, a crucial step in establishing a free flow of information was to protect the reports from release under the FOIA. The Independent Review Team (IRT) also noted that the confidentiality of voluntarily submitted data was essential because statistics on the number of disclosures and ASAP reports could be misconstrued by those not familiar with aviation safety (i.e., more reports could be in fact indicative of a better safety culture, whereas a low number of reports could indicate a lack of awareness of mistakes being made).

Lesson Eight: Regulatory agencies should use VRPPs to complement, not replace, traditional enforcement tools.

Agencies should use VRPPs to enhance, not replace their existing regulatory structures. VRPPs provide agencies with valuable information that can be used to better target more traditional regulatory tools such as inspections. The FAA does an excellent job of using information gathered from voluntary reports to better inform its inspections of air carriers at the CHDO level. Through its risk-based ATOS, the FAA can prioritize compliance checklists based on areas of safety hazard identified by frontline carrier employees.

Agencies must be careful to retain the right to pursue enforcement action if regulated entities violate laws. Additionally, agencies should raise the level of enforcement action against those entities that do not comply with regulations in order to further encourage the use of VRPPs. Some carriers noted that they would engage in a cost-benefit analysis when deciding to self-disclose certain violations that would require costly, comprehensive fixes. To overcome this moral hazard, the FAA should raise civil penalties to a level that would make the cost-benefit calculation too costly for carriers not to self-disclose and correct the violation.

It is vital for the FAA to maintain its reputation as a regulator while also partnering with the carriers. As one carrier official noted, "They have a job to do, and we understand and respect that. They have provided us with these programs to work collaboratively to improve safety. If we do not self-disclose violations and then get fined, the blame is on us" (Air Carrier Interview A 2010).

Data Analysis/Information Technology Lessons

Lesson Nine: Regulatory agencies and companies need effective and robust data analysis capabilities at both the local and national levels in order to identify safety hazard trends.

The major reason given by the FAA for creating VRPPs is that the agency gains access to valuable safety data that it would not otherwise have. The FAA's goal is to use the analysis of this data to

proactively mitigate safety hazards at the local carrier and national levels. Without robust data analysis tools and personnel, an agency quickly will become overwhelmed by the amount of data collected through VRPPs. Several carrier and FAA officials claimed to be drowning in data because of the success of the VSRPs. Local FAA CHDOs do an excellent job of using analysis produced by air carriers and within the office to identify risks and hazards within their assigned carriers.

At the national level, the agency has invested significant resources in developing analysis tools such as the Web-Based Application Tool (WBAT) and the ASIAS program developed through MITRE (see box on ASIAS on page 28). While these tools have helped the FAA proactively identify safety concerns, the DOT-IG and the GAO have noted that a lack of standardization in reporting has limited the ability of the agency to fully use the data to develop corrective actions (U.S. DOT-IG 2009; GAO 2010).

Agencies must retain the right to have access to de-identified safety information to conduct trending analyses of that data. One key impediment to the FAA's ability to conduct any analysis of ASAP data at the national level is that the agency must gain approval of the ASIAS Executive Board (a government/industry collaborative initiative) before analyzing trends in the data. A benefit of the ASRS is that it contains duplicates of many de-identified ASAP reports. Because the ASRS is a public-use database and resource, the FAA can commission NASA to conduct analyses of its data without having to seek approval from an outside board.

Lesson Ten: Regulatory agencies should use a uniform reporting platform for all VRPPs in order to maximize the efficiency and timeliness of analysis and outputs.

The FAA's experience with the paper-based self-disclosure process in the Voluntary Disclosure Reporting Program (VDRP) was one marked by great variation in the quality and depth of reporting. In 2006, the agency developed a web-based the Voluntary Disclosure Reporting Program (VDRP) system that provides uniformity in the requirements of submitting a self-disclosure to the FAA. The web-based VDRP system has led to more efficient processing of self-disclosures and has fostered collaboration between the FAA and carriers in developing corrective fixes to systemic safety hazards in carriers.

One of the key limitations of the FAA's ability to analyze ASAP data at the national level is the lack of a uniform reporting system. While many carriers use the FAA-developed WBAT system, several carriers use different systems that contain data fields different from those found in WBAT. This makes the analysis process much more resource-intensive, as analysts often re-code incoming data to ensure conformity. The FAA helped to improve the standardization of its analysis process by purchasing servers through MITRE for all air carriers with ASAPs. These servers allow MITRE to conduct queries of ASAP data (approved by the AEB) without the data ever leaving the carrier's premises. Also, MITRE has developed tools to effectively merge a carrier's ASAP data fields in WBAT to its analysis platforms (ASIAS Interview 2010).

Lesson Eleven: Regulatory agencies should develop a national-level database that is used to perform analyses of de-identified voluntarily submitted data and to produce alert materials that inform system users of potential systemic safety hazards.

Critical to the success of voluntary programs is the ability of the regulatory agency and users within industry to conduct analyses of all voluntarily submitted data. Both agencies and industry should have access to this database of de-identified reports to conduct localized and national analyses of safety trends. The FAA decided long ago that it would be best served by housing the national repository of voluntarily submitted reports in an agency (NASA) with a mission independent of its own. The ASRS is a valuable resource that houses all ASRS reports voluntarily submitted since 1976. Several stakeholders—including the FAA, industry, NASA, the GAO, and Congress—all regularly ask the ASRS to conduct analyses of its data to identify the severity of risks in aviation. This analysis capability has been used to proactively identify risks and mitigation techniques that have improved aviation safety.

The FAA has been less successful in using ASAP data to identify systemic risks and produce mitigation strategies. It is constrained by the fear of carriers and their employees that ASAP data will be used to take legal action. Therefore, the agency created the ASIAS

as a way to have limited access to ASAP data while also protecting the identify of both carrier and employee. However, the process to commission an ASIAS study is both time-consuming and costly, leading the DOT-IG to recommend that the FAA create an ASAP database similar to that of the ASRS to ensure FAA access to ASAP data (U.S. DOT-IG 2009).

Recommendations for Implementing Voluntary Programs in Government Organizations

Recommendation One: In order to successfully implement voluntary regulatory partnership programs (VRPPs), agencies must work to transform their enforcement culture to view voluntary and collaboration programs as complementary to its regulatory mission.

A key component of implementing voluntary programs within an agency is to understand that to err is human—and that most errors within an organization are the result of a system, and not the people, committing the error. Traditional regulatory regimes view human error as a violation that needs to be punitively addressed in order to prevent that violation from occurring again. However, if one attempts to correct the individual making the mistake without addressing the potential larger systemic issues behind the error, violations will continue to occur and potentially lead to a larger-scale incident. In voluntary programs, the goal of regulators is to establish an environment in which firms and employees who realize that they have made an error will have an incentive to report it to the regulator instead of attempting to hide the violation.

This is a major departure from the traditional "enforcement" regulatory culture that focuses on changing behavior through punitive means. Even after over 30 years of operating voluntary programs, the FAA still struggles with convincing its inspector workforce of the usefulness and importance of voluntary programs (AFS-230 Interview A 2009). Some steps managers can take to change from an enforcement culture to a partnership culture are:

- Develop a central voluntary programs office comprised of personnel with different backgrounds from those of the rest of the agency's workforce (e.g., organizational psychology, human factors, etc.).
- Publicize any and all safety enhancements resulting from voluntary disclosures to illustrate progress.
- Involve as many of the agency's inspectors as possible in the implementation of VRPPs through rotational assignments.
- Make program guidance as clear as possible to avoid confusion over the purpose of VRPPs.

Recommendation Two: Agencies should use a portfolio of voluntary programs coordinated by a dedicated organizational entity focused on the agency's collaborative voluntary partnership activities.

Many critics of voluntary regulatory partnership programs (VRPPs) have cited the recent failures of the Minerals Management Service (MMS) and the Securities and Exchange Commission (SEC) as reasons to abandon these programs and shift resources to enforcement activities. However, a look inside these agencies reveals that neither had a dedicated organizational entity with staff whose task was to develop and coordinate voluntary programs. These agencies were reliant upon one type of VRPP to provide them with information on the activities of the industries they were regulating.

One of the benefits of having a central voluntary organizational entity within an agency is that it can develop and coordinate several programs that address a variety of functions of an industry. The FAA Flight Standards Office (AFS-230) uses a portfolio of voluntary safety reporting programs (VSRPs) to give both employees and firms the opportunity to self-disclose violations.

While there are some areas of overlap between programs, AFS-230 uses each program in a specific way to give the FAA access to more safety data. The ASRS, also used by the general aviation community, gives the FAA access to data from that subgroup. The ASAP is used to gather safety reports from a variety of employee groups such as pilots, dispatchers, air traffic controllers, and maintenance and ramp operators. The VDRP is used to allow companies to self-disclose safety issues they have proactively identified in their operations. Each of these programs is coordinated through AFS-230, which helps both the FAA and industry understand how these programs complement one another.

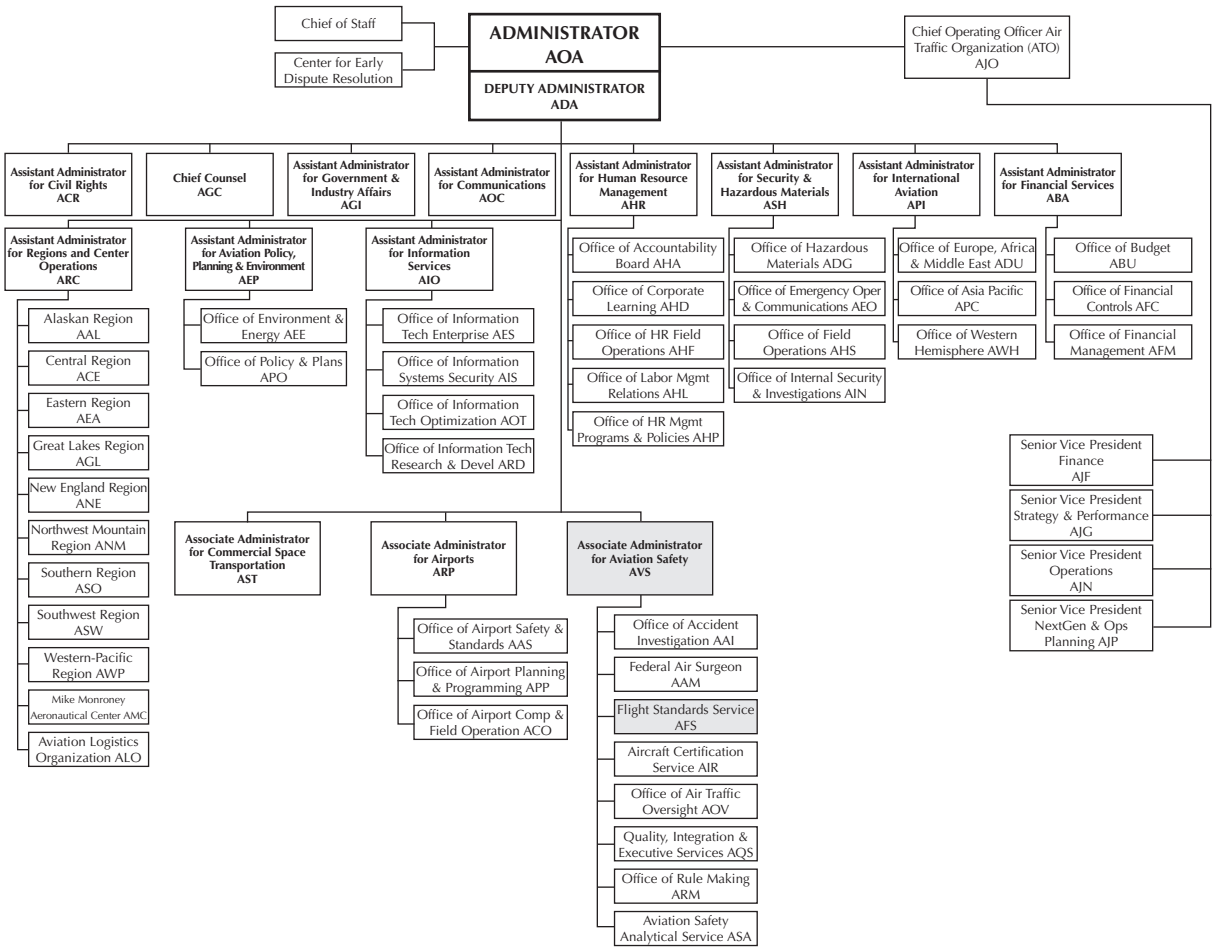
Conclusion

This report has examined the FAA's voluntary safety reporting programs (VSRPs) and the public management lessons learned from the implementation of voluntary regulatory partnership programs (VRPPs). As industry practices become increasingly complex and government resources for oversight become more constrained, the challenge before public managers is not how to provide more command and control oversight, but rather how to effectively design collaborative voluntary programs with industry to ensure a shared responsibility for compliance.

The lessons, presented in this report from the FAA's 30-plus years of experience in operating VRPPs with air carriers, offer public managers a series of effective management techniques to overcome the high-profile failures of VRPPs in both the SEC and MMS. They also offer insight on how to structure incentives and programs that foster a shared responsibility for oversight.

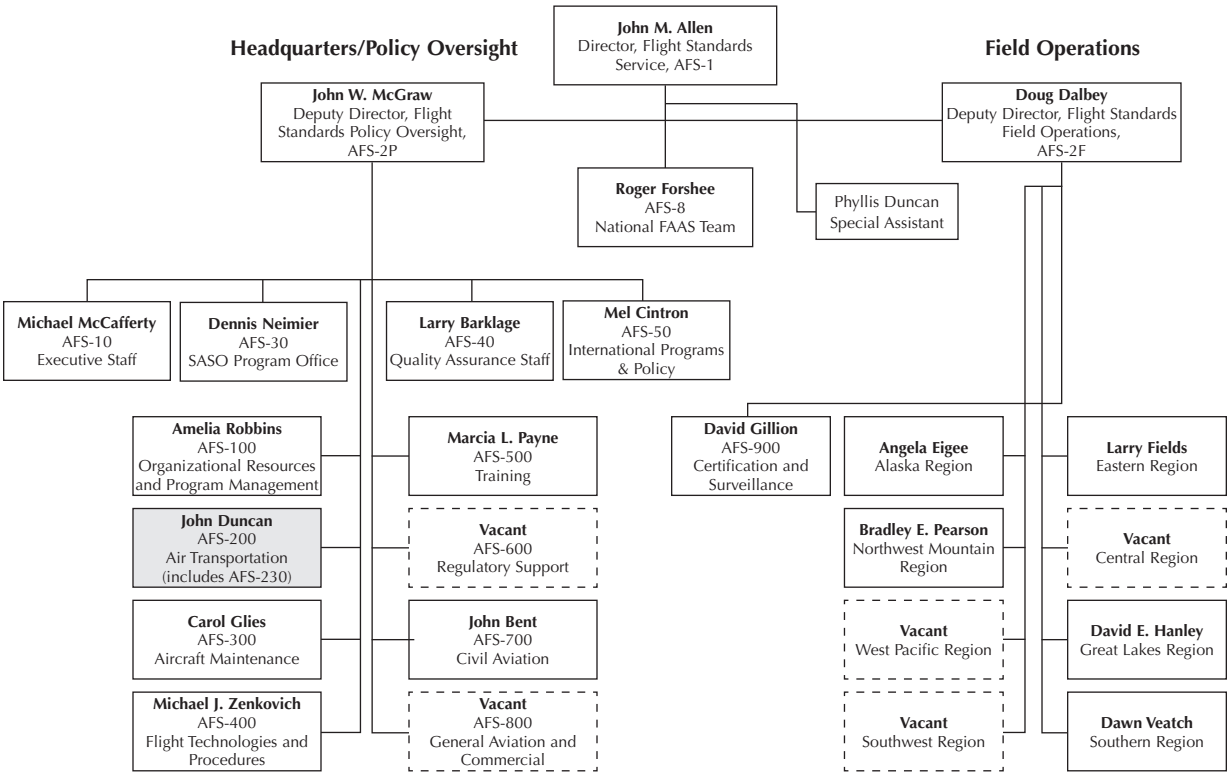
Appendix I: Organizational Structure of the FAA*

*As of September 29, 2008



Appendix II: Organizational Structure of Flight Standards Service (AFS)

	AVS Quality Management System	QPM # AFS-001A	Revision 4
Title: ORGANIZATION CHART		Effective Date: February 4, 2009	Page 1 of 1



Appendix III: Overview of the FAA's Voluntary Safety Reporting Programs (VSRPs)

Program Title (Acronym)	Source and Format of Inputs	Process	Safety and Data Outputs
Aviation Safety Reporting System (ASRS)	Aviation community-wide individual Self-reports (All interested parties).	Review and analysis by NASA ASRS team. Report to FAA management.	Newsletter, alerts, magazine, bulletins, database services, website, joint teleconferences.
Aviation Safety Action Program (ASAP)	Airline or repair station employee self-reports [Part 121 or 145, other Federal Aviation Regulations (FAR) parts being piloted].	Review and corrective action under Event Review Committee (ERC): FAA, company, & union.	Corrective actions, database of findings and actions, Distributed National ASAP Archive of events.
Voluntary Disclosure Reporting Program (VDRP)	Certificate holder self-reports (Part 121, Part 135 or Production Approval Holder).	Review and corrective action under FAA principal inspector.	Corrective actions, database of disclosures, Internet-based.
Internal Evaluation Program (IEP)	Airline self-audits (Part 121 or Part 135).	Ongoing audit program of detection and correction across operational areas.	Audit reports, Corrective Action Plans, follow-up evaluation results.
Flight Operations Quality Assurance (FOQA)	Airline flight data recorder information (All FAR parts).	Review and correction by airline ERC.	Changes to line operations based on analysis of data, Distributed National FOQA Archive of events.
Advanced Qualification Program (AQP)	Airline training and proficiency data (pilot and FA grades; Part 121 or Part 135).	Review and approval by FAA Extended Review Team.	Revisions to training programs based in part on data analysis.
Line Operations Safety Audit (LOSA)	Airline audit data (All).	Periodic audit of crew performance during normal line operations.	Audit report to carrier (and FAA-encouraged but optional).

Source: *AFS-230 Inspector*

Appendix IV: Guidance Documents for the ASRS, the VDRP, and the ASAP

Documents Governing ASRS Immunity and Confidentiality

- Federal Aviation Regulations Part 91.25 (14 CFR 91.25)
- FAA Advisory Circular No. 00-46D
- Memorandum of Agreement with the FAA

Guidance Documents for the VDRP

General Guidance

- FAA Advisory Circular No. 00-58B
- FAA Order 8900, Volume 11, Chapter 1, Voluntary Disclosure Reporting Program
- Web-Based VDRP Users Guide

Confidentiality

- Protection of Voluntarily Submitted Data (14 CFR 193)
- FAA Order 8000.89, Designation of VDRP Information as Protected from Public Disclosure

Enforcement

- FAA Order 2150.3a, Compliance and Enforcement Program

Documents Governing the ASAP

General Guidance Documents

- Memorandum of Understanding with the FAA
- FAA Advisory Circular 120-66B
- FAA Order 8900.1 Volume 11, Chapter 2, Aviation Safety Action Program

Confidentiality Documents

- Protection of Voluntarily Submitted Data (14 CFR 193)
- FAA Order 8000.82, Designation of ASAP Information as Protected from Public Disclosure

Endnotes

1. In order to gather candid responses from interviewees, each interview has been de-identified by name and any other identifying information, including the location of CMO interviews.

2. The FAA used the term "Certificate Holding District Office" to refer collectively to both FSDOs and CMOs that have direct oversight over a "certificated" air carrier.

3. The crashes of TWA Flight 800 off of Long Island, New York, and ValuJet Flight 592 in the Florida Everglades prompted many to question the FAA's ability to effectively oversee the airlines. In addition to ordering the creation of the White House Commission on Aviation Safety and Security, President Clinton signed the Federal Aviation Reauthorization Act of 1996, which contained a provision to eliminate the dual mandate of the FAA to both promote and regulate aviation.

4. An FAA official estimated that up to 80 percent of the data that will support the SMS will come from VSRPs.

5. The ASRS also is called the Aviation Safety Reporting Program, which is the actual program operated by AFS-230. While AFS-230 is responsible for oversight of the program, NASA is the primary operator of the program.

6. As opposed to the ASAP, ASRS reporters still must undergo investigation, go before a law judge, and have a violation appear on the record. The waiver of sanction prevents a fine or the loss of a certificate.

7. In reality, general aviation reports make up only 22 percent of ASRS reports.

8. The VDRP also provides reduced enforcement action to air carrier employees if, while following company-approved procedures, they violated an FAR.

9. Of the 218 ASAPs, 169 use WBAT.

10. After the crash of a Comair flight in 2006 outside Lexington, Kentucky, a judge ruled that ASAP reports were not fully protected under the FOIA and that they could be released for use in litigation.

11. CAST was first developed in 1997 in response to recommendations from the White House Commission on Aviation Safety and Security; with a goal of using a proactive approach focused on data analysis to reduce the commercial aviation fatality rate in the United States by 80 percent by 2007. CAST has the responsibility through its Joint Implementation Measurement Data Analysis Team (JIMDAT) to develop and implement recommendations resulting from ASIAS studies.

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