COLLABORATING WITH INDUSTRY TO ENSURE REGULATORY OVERSIGHT: THE USE OF VOLUNTARY SAFETY REPORTING PROGRAMS BY THE FEDERAL AVIATION ADMINISTRATION

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to Kent State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

by
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CHAPTER 1
Introduction and Literature Review

1.1 Introduction

1.1.1 “Voluntary Regulation Does Not Work”

Voluntary programs are a fast growing and increasingly important policy tool that is being used by regulatory agencies to increase compliance and adherence to rules (Haufler 2001). Voluntary programs are alternative regulatory regimes used by government managers to foster a free exchange of information between industry and regulators by incentivizing the self-policing and self-reporting of regulatory violations to regulators in exchange for reduced enforcement action. The benefit to both firms and agencies is clear: voluntary programs give agencies access to valuable sources of data on potential violations and hazards within industry that can be used to better target regulations and inspector resources while firms receive reduced enforcement action and better informed regulations.

While voluntary programs have become popular across federal agencies, several recent salient failures of voluntary programs have brought their utility into question. First, the failure of the Securities and Exchange Commission’s Consolidated Supervised Entities (CSE) voluntary disclosure program was a major contributing factor of the financial crisis of 2007 to 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 Brothers, 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, SEC Chairman 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 former Mineral Management Service (MMS) 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). 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 responsibility for oversight of offshore drilling rigs from the MMS to the companies engaged in drilling activities by shifting the focus of inspections from compliance to a hazard and risk based approach that examined companies’ internal audit and safety processes (U.S. Department of the Interior MMS Website). In the investigations following the Deepwater Horizon explosion, employees
of Transocean and 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 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 BP and Transocean’s word that the devices were functional (Schor 2010; Barstow et al. 2010). In the wake of the investigation, commentators 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 voluntary programs utilized by both the SEC and MMS led to catastrophic regulatory failures that have negatively impacted the lives of millions of Americans. However, much of the debate over voluntary programs has been overly simplistic and focused on the traditional government provision versus privatization debate. Some argue that these programs represent industry capture of regulatory agencies while others have claimed that these programs represent a panacea or third way of ensuring industry compliance with regulation. While the promise of voluntary programs has made them popular in governments at all levels, little attention has been paid to the historical development, implementation, and structural differences between programs and the importance of these differences in leading to varying outcomes and levels of success.

1.1.2 The Regulation Dilemma and Voluntary Regulatory Partnership Programs

Government managers in regulatory agencies are increasingly attempting to balance competing demands from those calling for increased government regulation of
firms in the wake of large-scale regulatory failures such as the lack of SEC oversight that helped lead to financial crisis of 2007 to 2009 and the lack of MMS oversight of the design of BP and Transocean drilling equipment in the Gulf of Mexico that has resulted in the worst oil spill in U.S. history with calls from firms not to impose new and costly regulations that make survival difficult given the current economic environment. Another puzzle facing managers in regulatory agencies is how to effectively utilize resources to ensure effective oversight of increasingly technically complex business practices.

Regulatory scholars (Scholz 1991; Potoski and Prakash 2004) title this 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 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 benchmarks are not met. In an environment of shrinking budgets relative to regulatory mandates, 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.
Table 1.1. The Regulatory Dilemma Firm Response to Enforcement Style

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<th>Firm Response to Enforcement Style</th>
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<td>Deterrence</td>
<td>Evade</td>
<td>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</td>
</tr>
<tr>
<td>(Command and Control Tools: Strict standards, inspections, penalties for non compliance)</td>
<td></td>
<td>Mid-level of conflict; High level of cost: Regulators worry that over reliance on self-policing may lead to perception of capture. Firms worry that self-reported violations can be used to take punitive action.</td>
</tr>
<tr>
<td>Collaboration</td>
<td>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.</td>
<td>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</td>
</tr>
<tr>
<td>(Less stringent adherence to standards, Focus on building trust between regulator and regulated, incentives for regulatory compliance and self-reporting of violations)</td>
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Derived from Scholz 1991; Potoski and Prakash 2004
While governments choose regulatory styles, firms are also able to decide how to respond to the regulatory environment by either evading or self-policing. Firms engage in evading 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 agencies and firms is if the agency engages in cooperation while firms self-police as costs to both are minimal. However, the dilemma is that it is in the self-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 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 programs are one tool used by government managers in regulatory agencies to overcome the regulatory dilemma. Voluntary programs are tools that ensure industry compliance and foster collaboration and trust between government and industry to allow for a free exchange of ideas without fear of retribution. Scholars have distinguished between two types of voluntary programs: government-initiated and industry-initiated (Gunningham and Grabosky 1998; Iannuzzi 2002). Government-initiated voluntary programs typically focus on encouraging firms to self-disclose violations to 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.

While vague in their definition, voluntary regulatory partnership programs generally share some common characteristics:

- Government regulations do not mandate that firms join voluntary programs (Potoski and Prakash 2010)
- Firms receive incentives such as reduced regulatory enforcement, increased flexibility, and technical assistance when joining voluntary programs
- 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
- Confidentiality and protection of voluntarily submitted data
- Common understanding of moving beyond compliance with regulations to a more proactive self-policing environment (Short and Toffel 2008)

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

During the 1990s reinventing government movement, there was a proliferation of voluntary programs 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). Voluntary programs remain widespread in government today, as regulatory agencies have come to embrace programs that see firms as active participants in their own governance while firms view
voluntary programs as an efficient and flexible way to govern themselves and apply industry best practices (Short and Toffel 2010). Some examples of current voluntary programs include:

- Securities and Exchange Commission’s (SEC) XBRL Voluntary Filing Program
- Environmental Protection Agency’s (EPA) Audit Policy
- Occupational Safety and Health Administration’s (OSHA) Voluntary Protection Program
- U.S. Department of Defense’s (DoD) Contractor Disclosure Program
- U.S. Department of Justice’s (DoJ) Leniency Program for Anti-Trust Violations
- Department of Health and Human Service Office of the Inspector General Health Fraud Voluntary Reporting System

1.1.3 The Federal Aviation Administration’s Voluntary Safety Reporting Programs

Federal Aviation Administration (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, promoting and encouraging the development of air service, developing and maintaining a system of air traffic control, and developing 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 taxpayers and the flying public” (FAA Administrator’s Handbook 2010). In order to achieve this mission and vision, the FAA employs over 47,000 full-time employees to carry out a variety of tasks related to the management of aviation in the United States.
A 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, maintenance personnel, air carriers, manufacturers, airports, and repair stations. To enforce its laws, rules, and certificates, the FAA employs approximately 4,000 aviation safety inspectors who conduct periodic inspections of airmen, maintenance operations, and repair stations to ensure compliance. From 1990-1996, these spot-check inspections resulted in no findings of FAR violations 96% of the time. Any data that was collected from inspections was used either for enforcement actions against the carrier or in a reactive approach following a crash to determine possible causes (GAO 2010).

After a series of crashes in the early to mid 1990s, 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 these 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. 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 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 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.

To gain access to this valuable safety information, the FAA has developed a suite of voluntary safety reporting programs that offer a regulatory incentive to both air carriers and employees who voluntarily submit incident reports to the agency. The agency uses this data to proactively target its oversight of air carriers and operators while also identifying systemic areas of safety concern across the country. The three main voluntary programs operated by the FAA that gather this data are the Aviation Safety Reporting System (ASRS), the Voluntary Disclosure Reporting Program (VDRP), and the Aviation Safety Action Program (ASAP). Each of these programs has important differences in the way it is structured, how it is implemented, why it was created, and the type of data it collects that lead to a variety of outputs and challenges.
1.1.4 Research Questions

This dissertation will explore the design, implementation, and oversight of voluntary safety programs used by the FAA to ensure regulatory compliance by the airlines. The questions that this dissertation will answer are:

- What explains the development of voluntary regulatory partnership programs within the FAA and how is this development rooted in the history of aviation regulation in the United States?
- What are the structural differences between the FAA’s voluntary safety reporting programs and how do these differences lead to varying outcomes and challenges?
- How has the implementation of voluntary safety programs been influenced and shaped by the organization, mission, culture, and personnel of the FAA?
- What are the successes and limitations of the voluntary safety programs and how do these affect the ability of the programs to induce regulatory compliance?
- If voluntary programs are structured effectively, can they provide agencies with valuable sources of previously unavailable information that can be used to bridge information asymmetries between firm and regulator?
- Can the information collected through voluntary programs be used to foster proactive incremental bureaucratic policy learning and lessen reactionary policy-making following high-profile focusing events such as crashes or fines?
- What are the public management implications of voluntary regulatory partnership programs and what are some strategies for implementing these programs in agencies?

These questions are of paramount importance not only to public management and policy scholars but also to the general public for several reasons. First, the ability of consumers to make rational decisions in the marketplace is predicated on the assumption of accurate information of the safety of the aviation system. Many of the partnership programs used by the FAA allow air carriers to avoid disclosing safety violation data
under the Freedom of Information Act (FOIA), which limits the ability of consumers to have complete information when choosing an air carrier. While not attempting to evaluate the normative value of this provision, this dissertation will investigate the effectiveness of voluntary programs in producing regulatory rules that lead to improvements in the safety of aviation in the United States. Second, this dissertation will make a contribution to the larger literature on information asymmetry between regulatory agency and industry by providing an alternative framework through which to analyze the relationship between bureaucratic agencies and industry. Insights into the operation of voluntary partnership programs will provide political science and public administration scholars with a new perspective on how and why agencies structure their regulatory apparatuses to induce the cooperation of industry and the effectiveness of these programs in fostering compliance. Third, the study of voluntary partnership programs with industry in the regulation literature has almost exclusively been reserved for studies of environmental (Delmas and Keller 2005; Koski and May 2006; Dawson and Segerson 2008) or financial programs (Penno 1997; Neill et al 2005). This dissertation’s focus on transportation and more specifically, aviation regulation, will provide a new and interesting perspective through which scholars can investigate collaborative programs between industry and regulatory agencies. Finally, the diverse structures of the voluntary safety programs operated by the FAA can provide insights to government managers in the FAA and in other sectors about the successes and limitations of voluntary reporting programs and their potential for fostering regulatory compliance.
1.2 Literature Review

1.2.1 Regulation in the United States: An Overview

Eisner, Worsham, and Ringquist (2006) define regulation as “an array of public policies explicitly designed to govern economic activity and its consequences at the level of the industry, firm, or individual unit of activity” (pg. 3). Generally, regulations have been organized into two major types: economic and social. The distinction between economic and social regulation is less than precise. Sometimes, economic regulation is used for social purposes such as correcting for inequities of resource distribution, and social regulation occasionally uses price, outputs and barriers to promote social goals. For example, the Federal Communications Commission gives preferences to applicants for broadcast licenses that do not own newspapers in the same city (to promote competition) while also giving preference to applicants in which women and minorities have substantial ownership interests (to promote diversity) (Salamon 2002). While the distinctions have some overlap, their differences are salient enough to treat them as related but distinct tools of government. This brief overview of regulatory history in the United States is organized following Eisner’s (2000) classification of regulatory regimes (market, associational, societal, efficiency).

1.2.1.1 Economic Regulation: The Market and Associational Regimes

Economic regulation is a specialized bureaucratic process that combines aspects of both courts and legislatures to control prices, output, and/or entry and exit of firms in an industry (Salamon 2002). The need for economic regulation is often justified because


of a failure of the market, specifically in the areas of natural monopolies and public goods. During the Progressive Era, several economic regulations were passed in response to the unprecedented growth of corporations, which many Progressives felt threatened the market-based sphere of individual liberty and opportunity (Eisner 2000). Also, many Progressives had an unwavering faith in a scientific and independent expertise-based administration separate from the political system that led to the regulation of industry by independent governmental agencies (Harris and Milkis 1996; Eisner 2000). The United States’ experience with economic regulation began in 1887 with the passage of the Interstate Commerce Act (ICA), which established the Interstate Commerce Commission to regulate the railroads. During the Progressive era, several other economic regulations including the Sherman Anti-Trust Act of 1890, the Federal Trade Commission Act, and the Clayton Act of 1914 were passed to increase corporate competition by reducing or eliminating barriers to entry into the marketplace.

The New Deal era of regulation was largely a response to the collapse of the financial system in the United States after the Great Depression. Contrary to the Progressive Era initiatives, the New Deal initiatives of the 1930s rejected the efficacy and ability of independent regulatory agencies to effectively produce economic regulation (Harris and Milkis 1996). Therefore, many of the New Deal regulations created agencies that were directly accountable to the executive branch. Also, regulators during this time period gave economic associations a central role in defining and implementing regulatory policy and created a system of government-supervised self-regulation (Eisner 2000). In 1933, President Franklin Delano Roosevelt signed the National Industrial Recovery Act.
(NIRA) into law. The NIRA created a system of government-supervised industrial self-regulation. More specifically, the act authorized trade associations or industrial groups to establish codes of fair conduct, subject to the approval of the President (Eisner 2000). In 1935, the Supreme Court ruled that the NIRA was an unconstitutional transfer of legislative authority to the executive branch (*Schechter Poultry Company v. U.S.* 295 U.S. 495 1935). During the New Deal era, several other economic regulation reforms including the Agricultural Adjustment Act of 1933, the Securities and Exchange Act of 1934, and the Civil Aeronautics Act of 1938 were passed and gave associations and interest groups greater power in shaping government regulation. Overall, the New Deal initiatives relied on expert agencies, the organization of interest groups and government-supervised self-regulation as a means of promoting stability and distributing income in a more equitable fashion than under Progressive era initiatives (Eisner 2000).

1.2.1.2 The Societal Regulatory Regime

Unlike economic regulation, social regulations focus on fundamental aspects of the production process and on the resulting negative externalities. Social regulatory policies address the quality of goods and services produced and the by-products of the economy, which threaten human health, safety, and the environment. Rather than protecting the interests of corporations, social regulations seek to place constraints on their activity in hopes of protecting the general public. While the first social regulations were passed during the Progressive era (the Pure Food and Drug Act and the Meat Inspection Act of 1906), a proliferation of social regulations occurred in the United States during the 1960s and 1970s. Scholars have posited several explanations for the
proliferation of social regulations including the rapid expansion of consumer and environmental interest groups (Scholzman and Tierney 1986), the activities of muckrakers such as Ralph Nader and other civil rights and antiwar activists (Berry 1984), and the increased attention and significance of the New Left’s critique of capitalist democracy that rejected large corporate, military, and governmental bureaucracies (Harris and Milkis 1996; Eisner 2000). During the 1960s and 1970s, several social initiatives were passed including the creation of the Environmental Protection Agency (EPA) and placement of OSHA in the Department of Labor. The social regulations of the 1960s and 1970s were distinct from those of the New Deal in several ways including more specific enacting legislation, an increased role of interest and advocacy groups in the regulatory process, and an unprecedented increase in the use of social-scientific and scientific experts in agencies to analyze increasingly complex societal problems (Eisner 2000). As social regulations became more prevalent during the 1970s, attempts were made by corporations to blame excessive regulation for inflation and low economic growth rates, which led to the development of another regulatory regime.
1.2.1.3 The Efficiency Regime: Regulatory Reform and Deregulation

As early as the late 1950s and early 1960s, academic economists began to produce a body of literature that posited that the reason some industries such as aviation had not grown as much as others was that they had been overregulated by government agencies such as the Civil Aeronautics Board (CAB) (Derthick and Quirk 1985). As Presidents Nixon, Ford, Carter, and Reagan became increasingly sensitive to corporate concerns about the cost of social regulation during the 1970s and 1980s, many in government became wedded to the belief that established and proposed regulations, in order to be justified, must yield net social benefits (Eisner 2000). To achieve this end, Presidents Ford, Carter, and Reagan all passed executive orders requiring that new rules and regulations provide a cost-benefit analysis to justify the economic impact of the rule. At the same time, consumer advocates such as Ralph Nader who had become empowered due to the social reforms of the 1960s, also argued that the “arrogant and unresponsive bureaucracies” responsible for regulating industries such as aviation needed to be abolished (Derthick and Quirk 1985). These sentiments led to the efficiency regime marked by regulatory reform (concerns about the high compliance costs being absorbed by businesses) and deregulation (concerns about how policies that empowered firms in some industries were affecting competition) during the 1980s. Eisner (2000) notes that the efficiency regime had an unprecedented centralization of regulatory authority in the Office of Budget and Management (OMB), which required that initiatives be justified on the basis of economic analysis, reflected faith and market mechanisms and the self-regulatory capacity of corporations.
As analysts within an agency determined that existing policies imposed excessive costs on the economy or were not cost-effective, these policies became ripe for deregulation. Eisner (2000) argues that the movement towards deregulation was aided by the economic professionalization of agency staffs during the reform movement of the 1970s. The Carter Administration’s deregulation and regulatory reform movements retained a role for public input and participation in the process as was evident with the public Kennedy hearings, open comment periods, and input from interest groups during deregulation of the aviation, trucking, and railroad industries (Derthick and Quirk 1985; Harris and Milkis 1996). In contrast to the Carter philosophy, the Reagan Administration subordinated open procedures, making the conservative regulatory staff within agencies the only point of access for parties seeking to influence the formulation of a proposed rule (Fuchs and Anderson 1984). Also, some commentators argued that Reagan’s centralized and secretive use of executive orders and the power of the OMB to give business an opportunity to reargue issues they lost at the agency undermined the integrity of the governmental decision-making process (Rosenberg 1986). The Reagan philosophy led to several regulatory reforms in government agencies including the EPA where appointee Ann Burford delegated authority and responsibility for environmental protection to the states and called for deep cuts in the budget of the agency (Harris and Milkis 1996). Surprisingly, the election of President George H.W. Bush, President Reagan’s head of the Task Force on Regulatory Relief, promised more environmental regulations during the campaign. These expectations were tempered when Bush created a new President’s Council on Competitiveness to review the regulatory cost-benefit
analyses produced by agencies while his OMB chair was confirmed. However, during
his administration Bush created two of the most costly regulations in the history of the
United States: The Americans With Disabilities Act of 1990 and the Clean Air Act of

1.2.1.4 The Reinventing Government and Voluntary Partnership Era: The Clinton
and Bush II Years

A final regulatory regime in the United States began with the election of President
Government, the Clinton Administration’s goal was to produce regulations that work, are
customer-oriented, free of duplication, and empower government officials to be creative
and entrepreneurial in designing compliance mechanisms (Eisner, Worsham, and
Ringquist 2006). Also, the Clinton Administration focused on utilizing public-private
partnerships with industry to more effectively develop and implement regulations
(Rosenau 2000). Several pieces of legislation including the Government Performance
and Results Act of 1993, the Paperwork Reduction act of 1995, and the Regulatory
Flexibility Act were passed to streamline the regulatory process. The election of
President George W. Bush in 2000 brought a continuation of the Clinton regulatory
regime sans a few key exceptions. First, the Bush OMB assumed a more activist role in
scrutinizing new regulations (Goldstein and Cohen 2004). Second, and more
importantly, where the Clinton Administration used public-private partnerships and
voluntary initiatives to complement regulations, the Bush Administration used these
programs as substitutes for regulatory enforcement. Eisner, Worsham, and Ringquist
(2006) argue, “while one might celebrate voluntary initiatives and partnerships as a means of achieving gains greater than those mandated by regulation, in the absence of regulatory requirements they may well be viewed as insufficient substitutes” (p. 55).

1.2.2 Perspectives on Regulatory Change

1.2.2.1 The Public Choice Perspective

One of the leading perspectives on regulation and factors leading to change is the public choice perspective. Proponents of public choice theory use economic theories to study collective decisions made by government and particularly bureaucracy. Generally, public choice scholars argue that decisions made by government can be understood as a process of self-interest maximization. While many initial works focused on critiquing the efficiency of voting systems (Black 1948; Arrow 1951; Buchanan and Tullock 1962), Gordon Tullock’s (1965) *The Politics of Bureaucracy* and Anthony Downs’ (1967) *Inside Bureaucracy* were the initial public choice works that focused on bureaucracy. Tullock (1965) argued that bureaucrats were motivated by career advancement and as such would take actions against the public interest to further their own goals. Downs (1967) argued that the mix of personnel types in an agency would determine the efficiency of an organization. Specifically, Downs argued that since most government employees were interested in career advancement, they would maximize their budgets in an attempt to grow their agency, which leads to inefficiency in government. Niskanen (1971) took the findings of Tullock and Downs and argued that because bureaucracies enjoy near monopolistic supply of goods, there will be an incentive for bureaucrats to
maximize their budgets and oversupply public goods. Another influential public choice theory on bureaucracy and regulation was developed by George Stigler (1975) who argues that because industry and politicians have much to gain or lose from regulations produced by bureaucratic agencies and because the existence of bureaucracies is dependant upon an industry to regulate, regulatory agencies develop regulations that will allow industry to prosper at the expense of the public interest. Stigler argued that these “captured” agencies therefore allowed industry and politicians to craft regulations that produced several inefficiencies in the market including cartelized competition. While capture theory has been refined throughout the years by several scholars, Stigler’s initial conceptualization of a “cozy” relationship between industry and regulatory agencies remains a very influential explanation for regulatory change.

1.2.2.2 The Structural Politics Perspective

A variation of Stigler’s capture theory is the so-called structural politics perspective developed by Terry Moe. Where traditional capture theories focused on the outputs of agencies (regulations, rules, policies, etc.), Moe’s structural politics thesis focuses on the affect of design and structure of bureaucratic agencies on policy outcomes. Structural politics theory posits that the design and structure of bureaucratic agencies are not determined by a Weberian analysis of the most effective way to govern, but instead are the result of the interplay of rational interest groups affected by the regulations and policies produced by the agency (Moe 1989; 1995). As Moe famously argues, “Structural politics is interest group politics” (1995, p. 129). As interest groups gain influence in a particular policy domain, they are able to pressure politicians to impose constraints on the
actions of bureaucrats by imposing rules such as the criteria and procedures used in decision-making, requirements to collect and report certain kinds of information on their internal operations, and set up oversight procedures by which their activities can be monitored (Moe 1995). However, because of political uncertainty and compromise, interest groups cannot structure agencies using full technical rationality (i.e. allowing unbridled interest group access to agency decision-making). Therefore, interest groups often attempt to strategically place people sympathetic to the group’s cause in career positions to control future changes to the agency (Moe 1995). As these careerists become experienced bureaucrats, they attempt to develop autonomy for their agencies to act independently of the wishes of the groups and politicians that placed them in the agency. However, as Moe notes, regardless of the success of the agency in forming alliances, insulating itself from politics, and shaping political outcomes, bureaucratic autonomy is manufactured by the interest groups and politicians that created the agency as a vehicle for advancing and protecting their interests (Moe 1995). Moe’s structural politics theory will be used to analyze the role that aviation interest groups have had in shaping the mission, personnel, and tasks of the FAA.

1.2.2.3 The Behavioral/Punctuated Equilibrium Approach

Jones (2001) argues that human and institutional decision-making is not entirely rational because of disproportionate information processing and constraints posed by the task environment in which the individual or organization operates. Punctuated equilibrium theory has become one of the most predominant behavioral theories used by political science scholars to explain policy and regulatory change. Punctuated equilibrium
theory is based on two main pillars: first, the role of institutions in maintaining stability in the policy process and the role of policy images and people’s responses to them to determine periods of rapid change (Baumgartner and Jones 1993; 2005). Specifically, during periods of crisis or increased attention to an issue, periods of rapid policy change are possible as those outside of the dominant policy coalition attempt to shape public attention on a particular issue to change the direction of a policy. Birkland (1997) argues that crises or focusing events present opportunities for policy entrepreneurs to use symbolic emotional appeals to produce drastic policy change. Using the insights of Birkland, Cobb and Primo (2003) conducted an innovative analysis of the relationship between the amount of media coverage of aviation crashes and the scope of resulting policy change. Specifically, the authors examined three modern aviation crashes by analyzing the number of front-page news stories, the number of Congressional hearings, and the type and number of NTSB or FAA recommendations implemented to remedy the causes of the crashes. Cobb and Primo argue that air safety is a symbolic term that is defined by a variety of policy actors including the media, FAA, NTSB, Congress, and the airlines. Their analysis finds that if major changes in regulation or aviation policy occur, they will be after a crash, but a crash does not guarantee reform. This literature will be used to explore how adaptive the FAA’s voluntary safety reporting programs are to external factors such as crashes, fines, and policy guidance.

1.2.2.4 Wilson’s Perspective: Mission, Tasks, and Culture

Wilson (1989) argues that although it is unlikely that agencies can develop complete autonomy in a democratic system, they can take steps to minimize the number
of rivals and constraints by developing a sense of mission that enables the agency to complete its critical task. Additionally, Wilson argues that agencies can develop a degree of autonomy by fighting organizations that seek to perform tasks similar to that of the agency, seeking tasks not being performed by others, and avoiding tasks that are different from those at the heart of the organization’s mission. Additionally, Wilson categorized the task environment of agencies in a 2 X 2 matrix that delineated agencies by the observability of their outputs (day-to-day activities) and outcomes (things that change in the world as a result of the outputs). First, when both outcomes and outputs are measurable, a production agency exists. In production agencies, Wilson argues that a phenomenon of Gresham’s law of information exists; measurable outputs and outcomes tend to push out unmeasurable outputs and outcomes. A second type of agency that Wilson describes is the case of a procedural agency in which outputs are measurable but not outcomes. An example of this type of agency would be the United States Air Force during peace time and the Occupational Safety and Health Administration. Since superiors cannot measure the day-to-day activities of their agents, managers in these types of agencies tend to be means oriented, which entails a focus on procedure. A third type of agency is one in which outcomes are measurable but outputs are not. Wilson titles these types of agencies craft organizations. Finally, Wilson describes agencies in which neither outcomes nor outputs are measurable or observable as coping agencies. Because neither outputs nor outcomes are observable, these agencies rely heavily on the professionalism of its members to ensure compliance. Wilson’s insights will be used to
analyze how the mission, personnel, and task environment of the FAA affects the implementation of the FAA’s voluntary safety reporting programs.

1.2.2.5 The Historical Development of Reputation and Autonomy Perspective

A final perspective on regulatory change focuses on the ability of agencies to develop bureaucratic autonomy throughout history. Carpenter (2001) argues that bureaucratic autonomy exists “when agencies-by virtue of their recognized legitimacy in a policy area-can make it politically costly to oppose or restrain their innovations or deny them leeway” (p. 355). Carpenter’s historical analysis of the Post Office, USDA, and the Department of the Interior challenges the claim by Moe that bureaucratic agencies cannot attain autonomy independent of interest groups and politicians. Specifically, Carpenter argues that agency designs are the result of history, shaped by the path dependent (Pierson 2004) process of positive feedback. As mezzo level managers in the Post Office and USDA began to network with actors outside of their formal structures, they developed reputations for having expert knowledge and skills that was only to be found in the agency. As these reputations evolved throughout history, they became institutionalized through a process of positive feedback in which reputations became embedded in elite and local networks, which led to the development of bureaucratic autonomy in these agencies (Carpenter 2001). Carpenter’s historical narrative approach to understanding bureaucratic autonomy will be used to examine the historical evolution of autonomy and expertise in the FAA.
1.2.3 Types and Use of Regulatory Instruments

Another major strand of regulatory literature has developed around the types of tools regulators have at their disposal to ensure compliance with laws. Sparrow (2000) notes that the dichotomy between regulatory styles has been around for decades under a variety of labels. What today’s literature presents as enforcement versus voluntary compliance appeared in the 1970s and 1980s as deterrence versus compliance. The enforcement perspective revolves around formal, precise rules and is viewed as adversarial and punitive while the voluntary perspective is seen as more results oriented, and less wed to rules, stressing responsiveness, and preferring tools involving collaboration and trade-offs. Scholars argued that the domination of one regulatory paradigm over another is a cyclical process (Sparrow 2000; Moss and Cisternino 2010).

As a new industry or risk area is identified, there is a period of proliferation of rules and enforcement action to change behavior. Over time, the regulatory agency produces more and more rules to constrain new behaviors. As the regulated entities adapt and compliance levels rise, public and governmental attention will wane. When this regulatory equilibrium sets in, resources for regulatory oversight typically remains flat or diminishes while at the same time the regulated industry becomes more complex. This period leads to an information asymmetry between the regulator and industry. The next stage in this cycle is when the regulatory agency, faced with waning support elsewhere, turns to the entity it is regulating for support. Carpenter (2001; 2010) notes that agencies that develop reputations among networks of industry actors are able to develop autonomy to act. Sparrow (2000) argues that once agencies develop this autonomy, the risk of
agency capture is great as agencies turn to more collaborative (and cost-effective) tools to ensure compliance. Once viewed by the public and elected officials as captured, the agency is replaced by a new more strict rule structure to “reign them back in”.

1.2.3.1 Command and Control Regulation

The term ‘command and control regulation’ has replaced the traditional term of direct regulation largely through the writings of neo-classical economists, who used the term to encapsulate what they regarded as the negative aspects of direct government involvement in the market (Gunningham and Grabosky 1998). Command and control regulation refers to the development of rules, standards, penalties, and enforcement mechanisms to shape the behavior of either firms or individuals. Rules are the central aspect of regulation in the United States as they prescribe expectations about behavior. Rules are often so complex that they require specification of standards to serve as benchmarks to evaluate compliance with a particular rule. Types of standards include design (specify the use of particular means to achieve compliance), performance (specified levels of performance), process (specify the process used to achieve the rule), or reference (design or performance standards developed by national or private standard setting organizations). Standards are typically implemented through the granting of government licenses, permits, or certificates (Gunningham and Grabosky 1998). Once standards are in place, regulators develop penalties such as fines and suspension to deter companies from violating the rules and standards in place. Regulated entities often engage in calculated compliance that weighs the costs and risk of getting caught with the benefits of compliance (Salamon 2002). Finally, regulators design enforcement systems
that include surveillance and inspection systems to detect violations, procedures for
invoking sanctions and fines, and reporting systems to track violations.

While command and control systems of regulation are widely used across
government, these programs have strengths and weaknesses in certain environments. A
strength of command and control regulatory systems is their dependability-the expected
behavior is clearly defined, making it easy to identify breaches of the legal standard and
to enforce the law (Gunningham and Grabossy 1998). The command and control system
also has several weaknesses that limit its effectiveness. First, no inspection program can
detect all violations all the time because inspection resources are always limited (Iannuzzi
2002). Regulatory programs are generally thought of as having extensive enforcement
systems involving an army of inspectors, but in reality enforcement relies heavily on
voluntary reporting by regulated entities as well as infrequent inspections (May 2002).
Second, command and control systems require that its regulators have comprehensive and
accurate knowledge of the workings and capacities of industry (Gunningham and
Grabosky 1998). Third, command and control systems lack incentives for firms to go
beyond minimum standards and may actually result in reduced compliance with rules
(Gunningham and Grabosky 1998). Finally, command and control systems may lead to
increasing administrative complexity vis-à-vis the sheer volume of statutes and
regulations, which makes it difficult for regulators and industry alike to comply with the
law. Given these limitations, several agencies and industries have developed alternatives
to traditional command and control systems of regulation.
1.2.3.2 Industry Self-Regulation

One alternative to command and control systems of regulation that has recently emerged is industry-self regulation. Self-regulation occurs when regulated entities design and enforce the rules themselves. The rules that govern their behavior are adopted voluntarily, either going beyond current regulatory requirements or establishing new standards in areas in which government rules or standards are lacking (Haufler 2001). Gunningham (1997) distinguishes two types of industry self-regulation: group self-regulation (where an industry group voluntarily adheres to a code of practice) and individual self-regulation (an individual entity regulates itself independent of others). Another type, mandated self-regulation, is marked by direct involvement by the state where it requires industry to establish controls over its behavior, but leaves the details and enforcement to business itself (Gunningham and Grabosky 1998). Varieties of self-regulation are used in the nuclear power, financial, environmental, and accounting industries (Iannuzzi 2002). For example, Neill et al. (2005) critically analyzed and evaluated the accounting industry’s use of voluntary codes of conduct after the WorldCom and Enron scandals. The major advantage of self-regulation is that in principle it offers greater speed, flexibility, efficiency, and less government control than command and control systems, which may lead to faster assimilation of innovative technologies, a reduction in paperwork, and other efficiency gains (Gunningham and Grabosky 1998; Iannuzzi 2002). However, self-regulation also has several limitations including the perception by many that self-regulation only benefits industry and not the public good and also that standards enacted under self-regulation are much weaker than
would be implemented under command and control systems leading some to cite self-
regulation as an instance of regulatory capture (Gunningham and Grabosky 1998).

1.2.3.3 Voluntary Programs

Voluntary programs are rule structures that focus on ensuring regulatory compliance through collaboration between the regulatory agency and the regulated entity. In an era of reduced government resources for regulatory oversight, many agencies have focused on utilizing the internal processes of regulated entities to identify areas of risk and hazards within their operations. To gain access to this valuable information, regulatory agencies typically offer participating entities a regulatory incentive such as reduced enforcement action, increased flexibility, increased access to government-funded technical assistance, and reduced regulatory oversight (Damall et al., 2003). The basic idea is that a company would be less likely to hold back on reporting a recently discovered compliance problem if it knew that the agency would be willing to work with it and if the severity of the fine would be much less for self-identified issues (Fox 1996). Given that there is always the threat of legal action against violators under the underlying regulatory mandates, the approach is more aptly considered quasi-voluntary (Koski and May 2006).

Much of the literature investigating voluntary programs has focused on environmental regulation and the classic market failure or free-riding dilemma. Iannuzzi (2002) distinguishes two types of environmental voluntary programs: Industry-initiated programs and Government-initiated voluntary programs. While industry-initiated programs are very similar to self-regulation, government-initiated voluntary programs
often provide incentives to industry such as waiving fines or sanctions for disclosing and correcting regulatory violations. Some scholars (Delmas and Keller 2005; Dawson and Sergeson 2008) argue that without incentives and government involvement, voluntary programs succumb to the traditional free-riding (Olson 1965) problem as industry can avoid the regulation or tax with less than full participation in the program. These programs are also beneficial to the agencies and to the public as they can provide a mechanism to overcome many of the information asymmetries that exist between regulator and industry and also industry and consumer (Darnall and Carmin 2005).

Potoski and Prakash (2010) argue that firms make the decision to join voluntary programs because they are viewed as having benefits that only members can obtain through involvement such as increased reputation as a socially responsible business or safe airline. The authors also note that once a company has joined a voluntary regulatory program with an agency, they have incentives to free ride and enjoy the goodwill benefits of affiliating with the program without adhering to the rules. These programs are also beneficial to the agencies and to the public as they can provide a mechanism to overcome many of the information asymmetries that exist between regulator and industry and also industry and consumer (Darnall and Carmin 2005). However, agencies also face a perverse incentive, namely to allow the regulated entity to dominate the administration of the voluntary program and to abdicate responsibility for oversight of the program. Potoski and Prakash (2010) importantly note that as is the case with command and control regulatory tools, voluntary programs also require oversight and monitoring by all participants to a voluntary agreement.
A particularly interesting area of research in the area of voluntary programs is examination of how voluntary programs interact with existing command and control regulatory programs. May (2005) found that while traditional regulatory tools were more effective at curbing water pollution than voluntary tools, the coupling of both enforcement and voluntary programs increased compliance by 15%. Similarly, Short and Toffel (2008) find a significant relationship between both inspector presence at firms and enforcement actions taken against that firm. The authors conclude that command and control inspections and enforcement actions have a coercive effect on firms who in the wake of a fine quickly seek to repair public image and their reputation with the regulator by voluntarily disclosing violations.

The existing literature on voluntary regulatory programs has several limitations and leaves several puzzles unsolved. First, many of the existing studies of voluntary programs are focused primarily on the ability of these programs to induce industry to comply with environmental regulations (Gunningham and Grabosky 1998; Delmas and Keller 2005; Koski and May 2006; Dawson and Sergeson 2008). Few studies have examined the use of any alternative to command and control studies in the transportation industry (Johnson and Plant 2008). Second, much of the literature on voluntary programs is descriptive in nature and provides no systematic analysis and evaluation of different programs within the same agency. Also, existing studies of voluntary programs focus entirely on the ability of these programs to solve various market failures, which leaves administrative questions of structure, design, implementation, and enforcement unanswered. Finally, the existing literature scantily investigates the historical evolution
and development of voluntary programs. This deficiency in the literature ignores potentially interesting puzzles such as how the development of agencies and previous policies affected the implementation of voluntary programs.

1.3 Research Design

1.3.1 Epistemological Foundations

To answer the questions above, this dissertation will employ a variety of methodologies grounded in a postpositivist epistemology to examine the FAA’s use of voluntary programs to ensure regulatory compliance by air carriers. As such, this study is rooted in the postpositivist and pragmatic works of Frank Fischer and John Dewey. Fischer (1998) argues that postpositivism “focuses on science’s account of reality rather than on reality itself” (134). More importantly for this study, Fischer argues

While the methodological principles of a postpositivist social science cannot be as firmly fixed as those of neopositivism, such research does not lack rigor. In many ways, the adoption of a multimethodological approach opens the door to a more subtle and complex form of rigor. Instead of narrowly concentrating on the rules of research design and statistical analysis (which too often passes for empirical rigor), the postpositivist framework involves the exercise of a multimethodological range of intellectual criteria, both qualitative and quantitative (1998, 134).

To gain a more complete understanding of the FAA’s use of voluntary programs, this dissertation will use a variety of methods drawing from several primary and secondary data sources to develop a more nuanced examination of voluntary programs than exists in the existing literature. This will be used to make practical recommendations about the structure and effectiveness of these programs. The influence of Dewey’s pragmatism in this study relates mainly to his commentary on democracy in
his famous 1927 work *The Public and Its Problems*. In his work, Dewey viewed democracy as a way to organize the public to examine the phenomenon of the world at that time. Dewey noted, “the problem of a democratically organized public is primarily and essentially an intellectual problem” (1927, 126). This dissertation will not only examine the use of voluntary programs by the FAA, it will also make pragmatic recommendations for FAA officials, policy-makers, academics, and other actors on how to best structure these programs and how to ensure democratic accountability. The ideas of Fischer and Dewey outlined above are meant as an epistemological guide to shape the work in the following proposal. While not every aspect of postpositivism and pragmatism will be followed exactly as the authors may have intended, the general ideas will be used to guide data collection, analysis, and the interpretation of the results.

1.3.2 Summary of Research Design/Case Selection and Presentation

This dissertation will use a multi-method approach to answer the research questions posed earlier in this prospectus. Maxwell (2005) argues that the methods are a means to answering research questions, not a logical transformation of the latter. Since the focus of this dissertation is the development, structure, and implementation of the FAA’s three voluntary safety-reporting programs, a single-embedded case study design (Yin 2003) is employed to structure the overall research design. A single-embedded case study allows the researcher to examine cases that involve more than one unit of analysis within the same overarching environment (Yin 2003). The benefit of a single-embedded case study approach for this dissertation is that it allows for comparative analysis between the embedded voluntary programs within the same agency. Yin (2003) argues
that single-case designs are appropriate for examining unique cases that can shed light on new social phenomena. The FAA represents a unique governmental agency through which to examine the development of voluntary regulatory programs for several reasons including the historically close relationship with commercial aviation, the history of reform within the FAA due to external perturbations including aviation disasters, and the complex task environment in which the FAA operates (i.e. regulate air commerce, promote aviation, manage air traffic control, etc.). King, Keohane, and Verba (1994) argue that when selecting cases, a researcher should examine the dependent and independent variables for variation and select cases based on theoretical grounds for this variation. The voluntary programs operated by the FAA exhibit variation in the structure of the programs (dependent variable) along with variation in the events and explanatory factors that led to their creation and structure (independent variables). Also, the single-embedded case study approach allows for the “patchworking” of analytic techniques such as snapshot case comparisons, longitudinal case comparisons, and pre-post event case comparisons (Jensen and Rodgers 2001).

1.4 Outline of Dissertation Chapters and Brief Description

1.4.1 Chapter 2: The Use of Voluntary Regulatory Partnerships in the United States-The Case of the FAA’s Voluntary Safety Reporting Programs

Government managers in regulatory agencies are increasingly attempting to balance competing demands from those calling for increased government regulation of firms with calls from firms not to impose new and costly regulations that make survival
difficult given the current economic environment. Voluntary regulatory partnership programs ensure industry compliance and foster collaboration and trust between government and industry to allow for a free exchange of ideas without fear of retribution in exchange for reduced regulatory enforcement action. Previous scholarship on voluntary programs has ignored questions of both the structure and administration of these programs. This chapter examines the structural differences between three voluntary safety-reporting programs operated by the Federal Aviation Administration (Aviation Safety Action Program, Aviation Safety Reporting System, and the Voluntary Disclosure Reporting Program). The major finding of this chapter is that differences in the criteria for acceptance of reports, the type of regulatory incentive offered and the protection offered for voluntarily submitted reports affect the outputs, success, and challenges of each program.

1.4.2 Chapter 3: The Historical Development of the Federal Aviation Administration’s Voluntary Safety Reporting Programs

This chapter develops a historical narrative of the development of the FAA and aviation policy in the United States to investigate the link between prior events in shaping the creation and implementation of the agency’s voluntary programs. Several theories of regulatory change including public choice/capture theory, structural theories, reputation-based theories, and behavioral theories such as punctuated equilibrium theory may offer insights as to how and why agencies shift from command and control regulatory structures to voluntary programs. Using historical documents and interviews, this chapter empirically examines several theoretical perspectives that offer competing explanations
for the development of voluntary programs within the FAA. The question that this chapter will answer is:

What explains the development of voluntary regulatory partnership programs within the FAA and how is this development rooted in the history of aviation regulation in the United States?

1.4.3 Chapter 4: Fostering Bureaucratic Policy Learning through Voluntary Safety Reporting Programs: The Case of the Federal Aviation Administration

Following the highly salient failures of voluntary programs at the SEC, former Chairman Christopher Cox boldly asserted, “voluntary regulation does not work”. The critical theoretical claim developed in this chapter is that voluntary self-disclosure programs, if effectively structured and operated, can give regulatory agencies access to valuable front-line information that can be used to proactively engage in policy learning and reduce the need for reactionary policymaking following a highly salient focusing event. Despite its reputation as the “tombstone agency”, the FAA has used its ASRS voluntary self-disclosure program since 1976 to gather valuable human factors data that is used to improve aviation safety regulations in the United States. The results of the analysis in this chapter suggest that as the amount of voluntary self-disclosures to the FAA increases, the amount of new Advisory Circulars issued by the agency has increased, providing evidence of proactive policy learning. More importantly, there is no evidence that the FAA issues new or revised Advisory Circulars in response to aviation crashes, increased media attention, or increased Congressional attention. This finding
challenges much of the agenda setting literature, which argues that agencies are forced to engage in reactionary policymaking following highly salient focusing events.

1.4.4 Chapter 5: The Future of Voluntary Programs: Policy Implications, Lessons Learned, and Recommendations

This chapter first develops a series of practical lessons learned from the FAA’s over 30-year experience in implementing voluntary programs. These lessons span three important areas of consideration for government managers in implementing voluntary programs: administrative, regulatory, and technology/data analysis. Each lesson draws on case material and conclusions drawn from chapters throughout the dissertation. Following the lessons learned, a series of three policy recommendations are made that give government managers important insights and practical advice on how to most effectively structure and implement voluntary programs within diverse policy and program areas.
CHAPTER 2

The Use of Voluntary Regulatory Partnerships in the United States: The FAA’s
Voluntary Safety Reporting Programs

2.1 The Federal Aviation Administration

2.1.1 The FAA’s Traditional Approach to Safety Oversight

The Federal Aviation Administration (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, promoting and encouraging the development of air
service, developing and maintaining a system of air traffic control, and developing
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 taxpayers and the flying public” (FAA
Administrator’s Handbook 2010). In order to achieve this mission and vision, the FAA
employs over 47,000 full-time employees to carry out a variety of tasks related to the
management of aviation in the United States.

A 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, maintenance personnel, air carriers, manufacturers, airports, and repair stations. To enforce its laws, rules, and certificates, the FAA employs approximately 4,000 aviation safety inspectors who conduct periodic inspections of airmen, maintenance operations, and repair stations to ensure compliance.

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

- Operations inspections focus on such items 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 (GAO 1999).

From 1990-1996, these spot-check inspections resulted in no findings of FAR violations 96% of the time. Any data that was collected from inspections was used either for enforcement actions against the carrier or in a reactive approach following a crash to determine possible causes (GAO 2010).

After a series of crashes in the early to mid 1990s, 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 these 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. 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 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 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 had funded a national voluntary reporting system since 1976 (ASRS), the de-identified nature of the data did little to help inform risk-based inspections at specific air carriers. Therefore in the late 1990s, the FAA implemented partnership programs called Aviation Safety Action Programs (ASAP) that provide 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 hazards in a carrier’s operation and to
more efficiently assign inspector resources in ATOS. Also, reports generated from ASAP and FOQA are being examined by the FAA and industry at the national level through programs such as ASRS and the Aviation Safety Information Analysis and Sharing (ASIAS) program in hopes of identifying risks and hazards at the systemic level.

As the FAA and industry move forward with fully integrating its risk-based approach to aviation safety under its Safety Management System (SMS) program, voluntary safety reporting programs will continue to be an essential source of data in identifying future risks and hazards. These programs are viewed as so essential to aviation safety that following the crash of Colgan Air Flight 3407 outside of Buffalo, NY, FAA Administrator Babbitt issued a “Call to Action” to carriers who had not yet implemented ASAP and FOQA programs in their operations (Call to Action 2010). The FAA’s shift from command and control inspections to its reliance on voluntary safety reporting systems holds valuable lessons for public managers. 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.

2.1.2 An Overview of the FAA’s Voluntary Safety Reporting Programs

Since 1976, the Federal Aviation Administration (FAA) has operated voluntary safety reporting programs that offer a regulatory incentive for operators to report potential safety hazards and violations within their organizations. The Aviation Safety Reporting System (ASRS) is a confidential voluntary reporting system operated by the National Aeronautics and Space Administration (NASA) 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 who meet qualifying criteria are ensured confidentiality of their reports and waiver of penalty under Section 91.25 of the Federal Aviation Regulations (FAR) (AC 00-46D). The Voluntary Disclosure Reporting Program (VDRP) is a program that offers certificate holding 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 (CHDO) on designing a comprehensive fix to the problem. Finally, the Aviation Safety Action Program (ASAP) is a voluntary safety program 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 (FAA, Air carrier, and the employee union) that is codified through a Memorandum of Understanding (MOU).

2.2 Methodology and Research Questions

This chapter utilizes a single-embedded case study approach (Yin 2003) to examine the structural differences between three voluntary programs used by the Federal Aviation Administration (FAA): The Aviation Safety Action Program (ASAP), the Aviation Safety Reporting System (ASRS), and the Voluntary Disclosure Reporting Program (VDRP). The primary data used in each case are interview data collected from meetings with FAA officials with intimate knowledge of the voluntary programs 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. Specifically, each semi-structured interview lasted approximately one to one and a half hours in length. Each participant group (air carrier ASAP representatives, FAA Certificate Management Office principal maintenance inspectors, flight standards voluntary safety branch personnel or AFS-230) were asked questions from a pre-developed interview protocol (Appendix A), however the interviewer would allow the interviewee to take the conversation in whichever direction they wanted. However, each question on the interview protocol was covered during the course of the interview. 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 Programs Branch. Secondary sources of data will include scholarly and news accounts of the FAA’s voluntary programs, documentation from Congressional hearings, reports from the GAO, Department of Transportation Inspector General (DOT-IG) and quantitative data on the numbers of voluntarily submitted reports received and acted upon by the FAA.

The questions that this chapter will explore are:

- What are the key features of each of the FAA’s voluntary safety reporting programs?
- What are the structural differences between the FAA’s voluntary safety reporting programs and how do these differences lead to varying outcomes and challenges?
2.3 The Aviation Safety Reporting Program (ASRS)

2.3.1 Overview

The Aviation Safety Reporting System (ASRS)\textsuperscript{iv} 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\textsuperscript{v} 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 NASA. ASRS conducts an analysis of each report received to diagnose the causes underlying each event. Using this analysis, ASRS produces a variety of outputs to communicate the findings of its analysis to representatives in industry and 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, ASRS has received approximately 900,000 reports from aviation officials and has issued over 5,000 safety alert bulletins (ASRS Program Briefing). Figure 1 shows the dramatic growth of the monthly intake of ASRS reports from 1981 to 2009. In 1981, NASA received approximately 5,000 self-disclosures. In 2009, NASA received approximately 49,000 reports from pilots, mechanics, and other airspace operators.

NASA operates ASRS out of its Ames Research Center in Moffett Field, CA. 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 flexibility to hire former aviation experts such as pilots, mechanics, and air traffic controllers, who seek employment on a part-time basis (NASA Interview 4/1/2010). In addition to the part-time expert analysts, NASA contracts with BAH to operate its ASRS public-use database.

2.3.2 Confidentiality and Reporting Incentive

NASA and 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 Advisory Circular 00-46D (AC 00-46D) directs NASA to remove all identifying name, 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. The confidentiality of the identifies 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 4/1/2010). ASRS also provides a regulatory incentive to those who submit a report within the guidelines of AC 00-46D. A report to 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 5 years, and the person completed the ASRS report within 10 days of the violation (AC 00-46D).

Figure 1: ASRS Monthly Report Intake

2.3.3 Reporting and Data Analysis Process

ASRS is an open reporting system meaning that any user of the National Air Space (NAS) can submit a report to the program. Currently, users can submit an ASRS report electronically on the ASRS website or through a manual form that is mailed to the ASRS office. Also, several carriers have agreements with ASRS to send a de-identified copy of ASAP reports directly to NASA. Over 62% 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?, etc. The narrative portion of the ASRS report is where the reporter attempts to tell NASA WHY he or she violated protocol.

Figure 2 outlines the process used by NASA to collect, process, and analyze ASRS data. Once the report is received by 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, ASRS immediately issues an Alert Bulletin to relay safety information to individuals in a position of authority to 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 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 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, ASRS only enters 20% of all reports into its publicly available database due to a lack of funding. A NASA official noted that the program has been flat funded since 1997 while the number of reports to ASRS has increased dramatically (NASA Interview 4/1/2010).
2.3.4 ASRS 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. Figure 3 illustrates the iterative feedback loop that describes the relationship between reporting, learning, and corrective action. 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). ASRS uses several feedback methods to disseminate information to the aviation community such as:

- **Alert Bulletins and For Your Information Notices**: Provide information on significant hazards identified in ASRS reports that may immediately impact safety.
- **Quick Response Studies**: In response to requests from FAA, NTSB, and Congress, ASRS will analyze ASRS data and provide a synopsis of reports.
- **Operational Research**: Long-term studies designed to examine human performance in aviation.
- **Database Search Requests**: The ASRS database is publicly available for searches and queries.
- **Publications**: 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 ASRS is that the agency does not produce recommendations of corrective action. Instead, 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 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 4/1/2010).
2.3.5 Challenges Facing ASRS

While 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 ASRS with some calling the program a “general aviation reporting system” (Air Carrier Interview 5/13/2010).vi
- **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 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
collaborative such as ASIAS, ASRS faces increasing perception of the program as a redundant expenditure.

2.4 Voluntary Disclosure Reporting Program

2.4.1 Overview

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 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 VDRP will enhance and promote aviation safety. Where other self-reporting systems such as ASRS and ASAP focus on the individual, VDRP is centered on offering a regulatory incentive for companies to proactively identify safety hazards and risks within their operation. In order to make the self-disclosure (SD) process more efficient, transparent, and standardized, the FAA moved from a paper-based SD process to a web-based system for major air carriers in December of 2006 (AFS-230 Interview 2/22/2010).

2.4.2 Confidentiality and Regulatory Incentive

Unlike other voluntary safety reporting programs managed by the FAA, VDRP does not forgo all action against those who submit. 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 including civil penalties that can result in a
fine of up to $25,000 per aircraft movement (FAA Order 2150.3b). In order to be accepted into VDRP, a self-disclosure must meet the following five criteria:

- The air carrier must notify the FAA of the apparent violation immediately (generally agreed to be 24 hours) after detecting it and before the agency has learned of it by other means
- The apparent violation was inadvertent
- The apparent violation does 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 has developed or is developing a comprehensive fix and schedule of implementation satisfactory to the FAA. The comprehensive fix includes a follow-up self-audit to ensure that the action taken corrects the noncompliance.

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

2.4.3 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). This process is outlined graphically in Figure 4.

- **Stage 1: Notification by the Air Carrier of an Apparent Violation:** When an air carrier learns of a potential violation, they must notify the proper Principal Inspector (PI) within the CHDO (If the issue deals with maintenance, then the Principal Maintenance Inspector 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 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 Office Manager for final approval. The FAA retains the right to withdraw acceptance of a self-disclosure at any time if they discover 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 they have 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 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 (region and then HQ).

- **Stage VI: Inspector Signoff:** At the conclusion of the implementation of the comprehensive fix, the PI and CHDO Office Manager make a final assessment of the successfulness of the fix. If the PI and the Office 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.
2.4.4 Analysis and Outputs of VDRP Data

The major output of the data gathered through VDRP is the comprehensive fix implemented by the carrier to correct the violation identified in the self-disclosure. The data gathered through 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 2/18/2010; Air carrier Interview 5/20/2010). However, the voluntary, confidential, and textual nature of VDRP data have made analysis at the national-level very difficult (AFS-230 Interview 2/22/2010). 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 interpret the carrier who is submitting more self-disclosures as less safe than the carrier who submits fewer self-disclosures (AFS-230 Interview 2/22/2010). Additionally, analyzing raw numbers of self-disclosures is not effective because it does not take into consideration the severity and likelihood of the violation captured in the Risk Assessment Matrix (AFS-230 Interview 2/22/2010).

2.4.5 The Southwest/American Airlines Incident

As an inspector for the FAA at the Southwest Airlines (SWA) 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 did not meet the requirements of the law. He informed the SWA maintenance officials and recommended on numerous occasions to
his Supervisory Principal Maintenance Inspector (SPMI) Douglas Gawadzinski that they file a letter of investigation (LOI) 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 3 years overdue. On March 15, 2007, SWA informed Gawadzinski that 47 of their aircraft had over-flown 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 in passenger operations until March 23, 2007 and that six of these aircraft had up to 4-inch cracks in the fuselage (USHTI Hearing 4/3/2008). On the VDRP application, Gawadzinski falsely confirmed that SWA had ceased operations of the planes after they 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, chaired by Representative James L. Oberstar D-MN, conducted a hearing into safety issues at Southwest Airlines, and possible lapses in FAA oversight. In the testimony following the discovery of the violations, it became clear that Gawadzinski had fallen trap to the “relaxed culture” in the SWA CMO. Specifically, it was determined that Gawadzinski had allowed the non-compliant 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’s at the FAA. Also, an investigation of phone records found that FAA inspectors were in some instances calling SWA maintenance staff to inform them ahead of time of what inspections were coming in order to file VDRP claims before the FAA inspectors discovered the same violations.

In response to the congressional and public concern arising from the Southwest Airlines incident, the FAA ordered an immediate and nationwide audit of other airlines, to see if they too had any compliance problems with any airworthiness directives (AD) that affected their fleets (FAA AFS 8900.36). Each FAA office that oversees Part 121 air carriers with aircraft seating ten or more passengers was asked to audit 10 percent of the ADs applicable to each aircraft type they operate. As a direct result of these “special emphasis” AD audits, problems quickly surfaced with American Airlines’ fleet of MD-80s. On March 25 and 26, 2008 FAA inspectors found discrepancies with some of American Airlines’ MD-80s, and American grounded part of its fleet, canceling a few hundred flights. On April 7, 2008, just three days after the congressional hearings arising from the Southwest Airlines events, FAA inspectors re-inspected 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, American Airlines chose to ground its entire fleet of MD-80’s (more than 350 planes), putting these planes back into service only when the AD requirements had been completely met, and were to the FAA’s satisfaction. From April 8 to 11, American Airlines cancelled 3,100 flights,
stranding or inconveniencing more than 250,000 passengers (Independent Review Team “Managing Risks in Civil Aviation” 2008).

2.4.6 Challenges Facing VDRP

The high-visibility negative attention resulting from the Southwest/American Airlines incident has placed a spotlight on VDRP more so 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 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 2/18/2010). Also, some CMOs collaboratively examine SD 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 4/7/2010).

- **Overlap with ASAP:** Both air carrier and FAA personnel acknowledge that there is substantial overlap between ASAP and VDRP. While ASAP covers employees and VDRP covers carriers, several air carriers noted that the possibility exists that for the same incident two separate simultaneous comprehensive fix processes can take place (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 VDRP does give the FAA that authority). (9.8% of VDRP self-disclosures are generated by employee ASAP reports, AFS-230).

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

- **Incomplete Root-cause Analysis:** Pressure from FAA HQ on principal inspectors at the CHDO level to close self-disclosures as quick as possible is limiting the effectiveness of root-cause analysis and the development of comprehensive fixes, which results in reoccurring 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).

2.5 The Aviation Safety Action Program

2.5.1 Overview

The Aviation Safety Action Program (ASAP) is a voluntary safety program 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, Air carrier, and the employee union) that is codified through a Memorandum of Understanding (MOU). A representative from the FAA, air carrier, and the employee union sit on an Event Review Committee (ERC) to decide if an ASAP report should be accepted into the program and what corrective action, if any, is necessary to remedy the safety concern. ASAP provides the FAA and air carriers valuable safety information it would not otherwise have access to 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 these potential safety concerns. Currently, there are 218 active ASAPs spanning a variety of employee groups including pilots, mechanics, dispatchers, flight crew, and ramp operators.
2.5.2 Confidentiality and Regulatory Incentive

The regulatory incentive offered to employees under 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% of all ASAPs are sole-source (Kelley 2010).
- **Non-sole source ASAP Reports**: The FAA or air carrier has knowledge of the event through means other than the employee report (air traffic control report, maintenance inspection, etc).

Under 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 ASAP if:

- Reports involve acts of intentional disregard for safety
- Reports involve 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 employee who sent in report
- **Custom Closure of Event**: Letter with specific content of ASAP report and directions to employee
- **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 ASAP, the reporter will receive administrative action from the FAA in lieu of legal enforcement action. This may include:

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

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

In order to foster an open reporting system, all materials submitted under ASAP including reports, ERC conversations, a carrier’s database of records, trend data of ASAP reports, safety publications, etc. are exempt from 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 secure, de-identified sharing of safety data.

### 2.5.3 The Memorandum of Understanding and the Event Review Committee

The critical document in initiating an ASAP is the MOU, which is a codified agreement between the FAA, air carrier and 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 any time. Air carriers and employee unions submit to their local CHDO a proposed MOU for their perspective 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 their process and MOU. If the ASAP is found to be effective, the group becomes a formal ASAP and must renew their MOU every 2 years.

The most unique feature of 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 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 reoccurrence of targeted safety events (Kelly 2010).

The ERC will meet as needed to conduct the business of accepting, analyzing and recommending corrective action. The ERC will also conduct telephone or face-to-face interviews with employees who reported more serious violations 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 consensus on both accepting the report into ASAP and the corrective action to resolve the safety hazard (outlined in Figure 5). If members of the ERC are unable to come to consensus, the FAA representative under AC 120-66B retains the right to make the final decision (Air carrier interview 4/20/2010; FAA CMO
Interview 4/20/2010). When the ERC does come to consensus on a corrective action that may involve a more systemic problem that requires a change to a company policy or procedure, the ERC has little authority other than recommending to management that a change be made. Some ERCs engage in strategic behavior by waiting to bring an issue to the attention of senior management until a more severe event takes place (ERC Observation 4/27/2010).

The level of reports to the ERC varies greatly across employee reporting groups. At one large carrier, a flight ASAP program received an average of 125 reports per week (Air carrier interview 4/26/2010) where a maintenance ASAP at a large carrier typically received 20-30 reports a month (Air carrier interview 4/20/2010). Under a funding agreement with Universal Technical Resource Services (UTRS), 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 WBATvii 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 suggesting a corrective action over the web (ERC Meeting Observation 5/13/2010).
Although 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 2/18/2010; Air carrier Interview 4/26/2010). The level of staffing provided by carriers varies greatly with some carriers having 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, ASAP Manager and data analyst (Air carrier interview 5/14/2010; Air carrier interview 4/20/2010). The level of FAA resources dedicated to ASAP within CMOs appears to be much less than is necessary. FAA ERC Representatives are often also full-time aviation inspectors who have other
oversight tasks in addition to reading and analyzing a large volume of ASAP reports (FAA CMO Interview 4/20/2010). Also, several air carriers noted that the FAA representatives often come to ERC meetings unprepared and will ask for the carrier to conduct analysis of its ASAP data for the CMO (Air carrier interview 4/20/2010; Air carrier interview 4/26/2010).

2.5.4 Analysis of ASAP Data

The central goal of ASAP is to provide both air carriers and the FAA with valuable operational data on its operation from employees 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 monthly analysis of their ASAP data and report the findings of that analysis to a variety of departments, including quality assurance who use the data to change internal processes (Air carrier interview 2/22/2010). However, several carriers noted that their ASAP programs were not effective at communicating with one another (i.e. 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 2/18/2010). CMOs are also 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 Department of Transportation Inspector General criticized the quarterly reports for a lack of standardization across CMO and for “not providing sufficient detail about the nature of ASAP events to be useful for safety data analysis or trending” (Department of Transportation Inspector General Report 2009). Also, one air carrier criticized their local CMO’s effort in analyzing 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 2/22/2010).

Inspectors within CMOs argue that they simply do not have the resources to analyze ASAP data as well as they would like (FAA CMO Interview 2/18/2010).

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**: Air carrier’s demands 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 is retained only for 3 years, which does not allow for adequate trending of data (Department of Transportation Inspector General Report 2009).
- **Lack of FAA Access to ASAP Data**: The FAA does not have direct access to ASAP records nor the ability to conduct systematic trending analysis.
- **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 WBAT system, several large carriers do not, which leads to standardization and compatibility issues.
As the FAA moves towards fully implementing its data-driven SMS program, they have made investments in fully analyzing data collected through ASAP. Under an agreement with MITRE Corporation, the FAA purchased secure servers for many carriers to house their ASAP data on their premises. Carriers can then opt to share their data with the FAA’s Aviation Safety Information Analysis And Sharing (ASIAS) program. 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 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 data (ASIAS Interview 2/24/2010).

ASIAS studies of ASAP data are approved by an Executive Board (AEB) that is comprised of industry and government members. Once approved, MITRE Corporation 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. This process is illustrated in Figure 6. After a study of ASAP data is completed, it is sent to another government-industry collaborative called the Commercial Aviation Safety Team (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 2/24/2010). The process for the approval and implementation of CAST-approved ASIAS studies is illustrated in Figure 7.
In addition to conducting analysis of ASAP data, ASIAS and MITRE also host a bi-annual 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. 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 5/14/2010).

**Figure 6: ASAP Data Sharing with MITRE and ASIAS**
2.5.5 Outputs of 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, notice to mechanics, etc.)
• **Weekly or Bi-weekly 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 ERC corrective action)

• **Quarterly/Annual safety publication:** Part of the carrier’s larger safety publication that details 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 2/22/2010).

Another output 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 on approach to Oakland, CA. 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 4/1/2010).

### 2.5.6 Challenges Facing ASAP

FAA officials (and some air carriers) describe ASAP as “our most valuable source of safety information” and “the crown jewel of voluntary safety programs” (ASIAS Interview 2/24/2010; AFS-230 Interview 11/6/2009). While ASAP has generated valuable safety information for carriers and the FAA, there are several challenges facing ASAP that are not allowing the FAA to realize the full benefits of the program:

• **Lack of integration of ASAPs within 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 corrective actions (NASA Interview 4/1/2010).
• **Lack of communication 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 hinders systemic data analysis at 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 ASAP (Department of Transportation Inspector General Report 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 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 only conducted 3 directed studies (GAO Report 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 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 often the FAA representative would often 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 5/14/2010).
2.6 Structural Differences Between ASRS, ASAP, and VDRP

Each of the voluntary safety reporting programs operated by the FAA has unique characteristics that result in different program outputs and structure. The most important difference between ASAP, ASRS, and VDRP is that the two former programs give a regulatory incentive to employees and individuals to report violations whereas VDRP offers air carriers themselves reduced regulatory enforcement action if they report safety violations to the FAA. The level of disclosure affects the types of collaborative processes that are undertaken to produce comprehensive fixes for each safety violation. With ASAP, the ERC is the main mechanism used to develop comprehensive solutions through the interplay of representatives from the FAA, employee union, and air carrier. The ERC process allows each entity to vote to either accept or reject an ASAP report and what level of corrective action should be taken to remedy the situation. The collaborative process involved with VDRP is much more limited than in ASAP as the decision to accept an air carrier’s self-disclosure is at the discretion of the PMI, who may or may not consult with others in the CHDO before accepting or rejecting a self-disclosure. If accepted, the collaborative development of a comprehensive fix is limited to the PMI and the appropriate designee of the air carrier.
Table 2.1. Examining the differences between the FAA’s Voluntary Safety Reporting Programs

<table>
<thead>
<tr>
<th></th>
<th>Aviation Safety Reporting Program (ASRP)</th>
<th>Voluntary Disclosure Reporting Program (VDRP)</th>
<th>Aviation Safety Action Program (ASAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year Created</strong></td>
<td>1975</td>
<td>1990</td>
<td>1997</td>
</tr>
<tr>
<td><strong>Impetus for Creation</strong></td>
<td>Developed in response to NTSB investigation into crash of TWA Flight</td>
<td>Response to pressure from air carriers over excessive fines</td>
<td>Developed by air carriers, adopted by FAA as result of crash of ValuJet Flight 592</td>
</tr>
<tr>
<td><strong>Program Guidance</strong></td>
<td>Advisory Circular 00-46D</td>
<td>Advisory Circular 00-58B</td>
<td>Advisory Circular 120-66B</td>
</tr>
<tr>
<td></td>
<td>Federal Aviation Regulation 91.25</td>
<td>FAA Order 8900 Vol. 11 Ch. 1</td>
<td>FAA Order 8900 Vol. 11 Ch. 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Memorandum of Understanding (MOU)</td>
<td></td>
</tr>
<tr>
<td><strong>Key Actors</strong></td>
<td>Any actor within the national airspace system</td>
<td>Air carrier and local CHDO principal inspectors</td>
<td>Air carrier, FAA CHDO Representative, Employee Union Representative</td>
</tr>
<tr>
<td><strong>External FAA Partners</strong></td>
<td>NASA, Booz Allen Hamilton</td>
<td>L3 Communications</td>
<td>MITRE (ASIAS Analysis of ASAP data), UTRS (WBAT Development)</td>
</tr>
<tr>
<td><strong>Regulatory Incentive</strong></td>
<td>Full protection from certificate action by FAA</td>
<td>Reduced regulatory penalty from enforcement action to administrative action for air carriers</td>
<td>Sole-source: Full protection from discipline from FAA and carrier Non sole-source: Protection from FAA, depending on MOU, limited protection from</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>Company</td>
<td>Individual</td>
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<tr>
<td><strong>Level of Disclosure</strong></td>
<td>Individual</td>
<td>Company</td>
<td>Individual</td>
</tr>
<tr>
<td><strong>Criteria for Acceptance into Program</strong></td>
<td>Within 10 days; Not involve substance abuse; No previous violations of FARs within 5 years</td>
<td>Within 24 hours of company knowledge Must be inadvertent Must not be due to lack of qualification Action taken to stop violation Corrective action taken or planned</td>
<td>Within 24 hours of employee knowledge Not involve intentional disregard for safety or substance abuse</td>
</tr>
<tr>
<td><strong>Confidential Reports (Part 193 of FOIA)</strong></td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>FAA Access to Reports</strong></td>
<td>Unlimited through ASRS database</td>
<td>Principal inspectors have access and can give access to other inspectors, FAA Voluntary Programs Branch</td>
<td>Access is great at local CHDO level, restricted at FAA HQ level (moderated by ASIAS, MITRE and Air carrier)</td>
</tr>
<tr>
<td><strong>Included in ASIAS</strong></td>
<td>Yes</td>
<td>No</td>
<td>Only if carrier has agreement with MITRE and ASIAS</td>
</tr>
<tr>
<td><strong>Who Has Discretion for Accepting Reports?</strong></td>
<td>ASRS Staff</td>
<td>CHDO PMIs and POIs</td>
<td>Event Review Committee</td>
</tr>
<tr>
<td><strong>Number of Reports 2009</strong></td>
<td>48,000</td>
<td>1,200</td>
<td>45,000</td>
</tr>
<tr>
<td><strong>Program Outputs Generated</strong></td>
<td><em>CALLBACK</em> monthly publication; Alert Bulletins, Queries to ASRS Database</td>
<td>Collaborative corrective fixes developed by CHDO and carrier.</td>
<td>Quarterly safety enhancement reports to FAA; Queried reports from ASIAS; Bi-annually INFOSHARE meetings, Internal carrier publications</td>
</tr>
</tbody>
</table>
The type of regulatory incentive offered to employees and air carriers has a substantial affect on the outputs generated in each program. ASRS offers reporters immunity from FAA certificate action; however, ASRS does little to provide an employee protection from disciplinary action within that employee’s air carrier. Once a report is accepted into ASAP, the employee, depending upon the MOU, receives immunity from both FAA and air carrier discipline if the report is sole-source. If the report is non sole-source, the employee receives immunity only from certificate action. The regulatory incentives offered in both ASRS and ASAP give reporters adequate reason to submit violations because they know if they meet the conditions of acceptance; they will receive some level of protection. Regulatory incentives have prevented many of the free-rider concerns often associated with voluntary programs by only offering protection and immunity to those who submit reports to NASA or the FAA.

VDRP offers air carriers reduced enforcement action (usually from monetary penalty to a warning letter) if their self-disclosure meets the criteria for acceptance. Because the development of a comprehensive fix that meets FAA approval is a condition for the acceptance of a VDRP self-disclosure, air carriers often engage in an internal cost-benefit analysis to determine if the comprehensive fix needed will cost more than the civil penalty faced if a FAA inspector uncovered the violation. This moral hazard condition is one of the challenges faced by the FAA and has led to several high profile instances of abuse of VDRP and is consistent with findings by Delmas and Keller (2005) and Dawson and Segerson (2008) who find that some incentives actually may reduce the number of reports and lead to free-riding and moral hazard.
The main goal of the FAA’s voluntary safety reporting programs is to gain access to safety data it would not otherwise have to proactively identify areas of risk in carrier operations. However, the level of FAA access to this data varies across each of its programs. The FAA and public have unfettered access to de-identified ASRS data because of its status as the national repository for all voluntarily submitted safety violations. However, because NASA operates ASRS, the FAA has not fully utilized ASRS for conducting systematic studies of national safety issues. Access to VDRP data and self-disclosures is typically limited to a carrier’s CHDO and principal inspectors who examine the data for areas of safety risk in a carrier’s operation. Access to ASAP data is great at the local ERC level where all members have access to reports. However, ASAP data is viewed as highly valuable by carriers who fear bad publicity and misinterpretation of reports. Therefore, carriers and the FAA have taken steps to protect ASAP data and the identity of reporters by exempting even de-identified ASAP reports from the Freedom of Information Act. Also, the FAA has used highly trusted contractors such as MITRE to structure information sharing systems (ASIAS) that allow this proprietary data to be shared without ever leaving a carrier’s premises. The FAA faces constraints from air carriers and its own lack of resources in fully utilizing the data collected through voluntary programs.

Finally, the administrative differences between each of the programs affects the outputs generated by each program. The contracting out of the operation of ASRS to NASA has allowed the agency to act as a neutral broker while also fostering a high level of trust in the confidentiality of reports. However, to maintain this status as a neutral and
trusted broker, NASA does not make recommendations to carriers or the FAA regarding its analysis of ASRS data. The transfer of VDRP from a paper-based to web-based system has made the process of self-disclosing violations much more transparent and structured. However, factors such as the relationship between the local FAA office and the carrier still influence the decision to accept or reject self-disclosures. The high-level of discretion delegated to the local FAA offices has led to high-profile cases of abuse in VDRP. Finally, the ability of carriers and local FAA offices to customize ASAP programs through ERCs and MOUs allows for the crafting of comprehensive fixes within an air carrier. Also, the FAA’s willingness to accommodate carrier concerns over the protection of ASAP data through the contracting of MITRE to handle data analysis has resulted in increased participation in nationwide sharing initiatives such as ASIAS.

2.7 Conclusion

Voluntary regulatory partnership programs ensure industry compliance and foster collaboration and trust between government and industry to allow for a free exchange of ideas without fear of retribution in exchange for reduced regulatory enforcement action. Previous studies of voluntary programs have not examined various programs within the same agency and the effect of structural differences on the outputs produced by these programs. The FAA’s voluntary safety reporting programs vary greatly in the type of regulatory incentive offered to participants, the criteria for accepting a report, the level of collaboration in designing and implementing corrective action, and the confidentiality of submitted data. These structural differences have led to several successes and challenges faced by those who administer ASRS, ASAP, and VDRP, which suggests that public
managers must think strategically when designing and implementing voluntary programs to ensure the effectiveness of these programs and prevent the disastrous consequences that resulted from mismanagement of these programs in the SEC, MMS, and FAA.
CHAPTER 3

The Historical Development of the Federal Aviation Administration’s Voluntary
Safety Reporting Programs

3.1 Introduction and Research Questions

The existing literature on voluntary programs has focused primarily on examining
the effectiveness of these programs in ensuring regulatory compliance. One of the least
understood and examined aspects of voluntary programs in the United States is how and
why they develop. Examining the development of voluntary programs is critical for
several reasons. First, as scholars such as Paul Pierson (2004) note, policy decisions
made in the past are path dependent, or limit the possible range of future policy choices.
By only paying passing notice to the history and development of voluntary programs,
scholars have ignored an important variable that explains why these programs developed
and why they are structured in their current arrangements. Second, examining the
historical development of voluntary programs sheds new theoretical light on the politics
behind the development and structure of these programs. Several theories of regulatory
change including public choice/capture theory, structural theories, reputation-based
theories, and behavioral theories such as punctuated equilibrium theory may offer
insights as to how and why agencies shift from command and control regulatory
structures to voluntary programs. The question that this chapter will answer is:
• What explains the development of voluntary regulatory partnership programs within the FAA and how is this development rooted in the history of aviation regulation in the United States?

3.2 Theoretical Frameworks for Explaining the Development of Voluntary Regulatory Programs

The development of voluntary regulatory partnership programs represents a major shift from traditional command and control structures of bureaucratic oversight of industry. Voluntary programs place much more control in the hands of industry to self-police their own processes and procedures. Many observers have argued that the shift towards voluntary programs to ensure regulatory compliance is the result of the coupling of stagnant or dwindling bureaucratic resources to oversee industry and increased influence of interest groups and industry lobbyists in providing information and expertise to agencies (Sparrow 2000). Other commentators in the media have argued that the shift towards voluntary programs has led to “cozy relationships” between regulators and industry and a “revolving door” of personnel between the two (Garber 2010). However, this simplistic view of the development of voluntary programs obscures the role that history, agency reputation, and focusing events have in the development of these programs. Several theories of regulatory change will be explored to explain the FAA’s shift from command and control inspections of aircraft and airmen to voluntary safety reporting programs.

3.2.1 Public Choice Agency Capture Theory

As with all programs and outputs of regulatory agencies, voluntary programs are situated in a larger regulatory environment that includes external perturbations and
external actors such as Congress, the President, and interest groups that compete to shape the decisions of agencies. These groups all use agencies to produce programs and outputs that reinforce their favored policy positions through laws, rules, regulations, etc. Principal agent theory focuses on the ability of political principals such as Congress (McCubbins and Schwartz 1984; McCubbins, Noll, and Weingast 1987; Epstein and O’Halloran 1999) and the President (Moe and Wilson 1994) to influence bureaucratic agents to produce outcomes that are favorable to their particular policy position.

One strand of literature has focused on the ability of organized interests to influence bureaucratic outcomes. The public choice theory of regulation likens the process of developing and implementing regulatory programs to market decision making, treating legislative, regulatory, and electoral institutions as an economy in which citizens, legislators, agencies, and interest groups exchange regulatory goods which are demanded and supplied. These goods include regulations that control entry into the market or rules governing safety of an industry. According to the theory, organized interests seek regulatory decisions that advance the selfish interests of their members by persuading legislators and bureaucrats to favor regulations that benefit their organizations at the expense of the public interest. In his thorough treatment of the public choice theory of regulation, Croley (2008) identifies several theoretical expectations. First, regulatory outcomes favor the interests of large well-organized interest groups over more diffuse interests. Second, administrative processes should afford well-organized parties easy access to regulators, and opportunities for informing administrators about the regulatory
goods they demand. Finally, regulatory decision makers are subject to little or no critical outside scrutiny.

The next step of interest group influence over regulatory decisions occurs when these groups are able to wield substantial influence over agency decision-making. Stigler (1975) argues that agencies become captured by interests when, due to a lack of resources, they become dependent upon the information and expertise possessed by interest groups. This information asymmetry leads to increased interest group influence in agency decision-making process. Sparrow (2000) argues that agencies are also vulnerable to capture when other actors such as Congress, the media, and the public turn against an agency. When this occurs, agencies turn to the industry they are charged with regulating for support and increased information to bridge resource gaps created by the lack of support from Congress.

If public choice and capture theories of regulation are accurate, how would they explain the development of voluntary regulatory partnership programs in the FAA?:

- The decision to create voluntary regulatory programs was in response to direct influence from a large interest group.
- The decision to create voluntary regulatory programs was not influenced by Congress, the President, the media, or the public.
- The FAA would be most likely to form voluntary regulatory programs when political and public support is waning for agency policies.

3.2.2 Structural Politics Theory

A variation of public choice theory has been posited by Terry Moe (1989) who argues that interest groups seek to shape agency outcomes by exerting control over the structure and personnel of agencies. The structural politics perspective posits that interest groups seek to control uncertainty and ambiguity in bureaucratic outcomes by placing
people sympathetic to their goals in positions of power within agencies. An interest group, in a 'perfect' world, would impose a set of rules to constrain bureaucratic behavior but, because of uncertainty and ambiguity, control is imperfect. The solution is twofold:

- Interest groups seek the right 'kind' of bureaucrat. This is associated with professionalism, which implies predictable behavior.
- Interest groups try to design a structure that affords them reasonable autonomy.

Also, interest groups face the specter of political compromise, which gives opponents to particular regulations access to the decision-making process. Moe (1989) somewhat skeptically argues that opponents of particular regulations or programs will attempt to make the process inefficient by delaying or adding wasteful provisions.

If the structural politics perspective is accurate, how would this theory explain the development of voluntary regulatory partnership programs within the FAA?

- **Voluntary programs would develop under agency leadership that has a close relationship with industry or has worked in prominent positions within aviation.**
- **Opponents of voluntary regulation will attempt to delay the creation and development of these programs.**

### 3.2.3 Organization Reputation Theory

A more recent theory of bureaucratic politics that can be used to explain the development of voluntary programs is organizational reputation theory. This framework, developed by Daniel Carpenter (2001; 2010), focuses on the inadequacies of capture theories in explaining the ability of agencies to act with autonomy in certain situations. Specifically, in Carpenter's (2001) examination of the USDA, Department of Interior, and Post Office, he finds that agencies are able to act autonomously and change the preferences of politicians and organized groups when they develop a reputation for the
uniqueness of their services among networks of interested parties. In his subsequent
examination of the FDA, Carpenter (2010) further develops his theory of organizational
reputation by outlining four pillars of an organization’s reputation that shape the beliefs
about that organization:

- **Performative Reputation:** Judgments of the quality of the organization’s decision-
  making and capacity for effectively achieving its mission and objectives
- **Moral Reputation:** The ability of the agency to foster a culture of ethical behavior,
  transparency, and respect for human needs.
- **Technical Reputation:** How expert are members of the organization? Do they
  possess the technical prowess necessary to effectively analyze the issues it must
  address?
- **Legal-procedural Reputation:** Does the organization follow its established
  procedures to come to its decision?

Carpenter uses this detailed conceptualization of agency reputation to explain
both regulatory politics and regulator behavior. In the wake of a new public problem or
industry to be regulated, Carpenter argues that the public does not look to economic
textbook conceptualizations of market failures, but rather looks to the reputation of past
and current agencies and regulatory arrangements to determine what sort of regulatory
arrangements will be entertained. Therefore, because of the path-dependent nature of
reputations (Pierson 2004), Carpenter argues that the more legitimate, expert, and
effective a regulator is perceived to be, the more likely politicians will be to create new
regulations in the policy areas that the regulator governs and the more likely politicians
will be to vest significant authority and resources in the regulator. Carpenter also
challenges the assertion made by public choice scholars that agencies always seek to
maximize their budgets. Instead, he argues that agencies seek to maximize their
reputation, power, and prestige by only accepting resources for tasks they can effectively
manage to increase their organizational reputations.

If the organizational reputation perspective is correct, how would this theory explain the development of voluntary safety reporting programs in the FAA?

- The FAA would be most likely to adopt voluntary programs that utilize the expertise of industry when the reputation of the agency is poor among policymakers and the public.
- The FAA would create voluntary programs when it is not constrained by other actors and its ability to act autonomously is high.

3.2.4 The Behavioral/Punctuated Equilibrium Theory

The final theory of regulatory change is the behavioral or punctuated equilibrium perspective. A critical component of the behavioral approach to regulatory change is that both individuals and organizations are cognitively limited in their ability to rationally process information (Simon 1947; March and Simon 1958). Jones (2001) argues that while humans and institutions are adaptive and goal oriented, because of cognitive limitations, they disproportionately react to new stimuli or information by neglect or overestimation. As a result, institutions will not react proportionately to incoming information and outputs will be disjointed and episodic. Baumgartner and Jones’ (1993; 2005) punctuated equilibrium theory incorporates these insights by explaining long periods of relative policy stability and sudden perturbations that result in drastic policy change. The authors argue that groups or monopolies that currently have power in a governance system attempt to promote policies or regulations favorable to groups sympathetic to their cause. However, during highly salient focusing events (Birkland 1997), a wave of public and attention to a problem cause those outside the group in
power to mobilize those unaware of the problem, which results in drastic policy or regulatory change.

Cobb and Primo (2003) use punctuated equilibrium theory to examine the relationship between aviation crashes, public attention, and policy change. The authors argue that media coverage of aviation disasters captures the attention of both the public and policymakers because it is simple to understand, it is symbolic, and it can be personalized. Through their detailed analysis of the coverage of the crashes of USAir Flight 427, ValuJet Flight 592, and TWA Flight 800, the authors conclude that in the wake of a crash, the resulting regulatory change will often be unrelated to the direct cause of the crash, which allows for even greater change within the FAA during times of crashes. Additionally, they find that the regulatory response of the FAA to crashes is limited and slow. If punctuated equilibrium theory is correct, how would it explain the development of voluntary safety programs in the FAA?

- The FAA would be most likely to adopt voluntary programs after a highly salient aviation incident as pressure from Congress and the media to make change is highest following a disaster.
- The development of voluntary programs would occur substantially after the highly salient aviation incident.

3.3 Methodology

This chapter employs a qualitative research design that uses a variety of primary sources including interviews with FAA officials and government documents to make inferences about the FAA’s development of voluntary safety programs. Specifically, a narrative analysis (Riessman 1993) of the history of the FAA’s development of voluntary safety programs is conducted. Gibbs (2007) argues that narrative analysis can be used as
a method to convey information and history through the perspectives of others.

Additionally, Czarniawska (1998) argues that narrative analysis can be used to study the history, development and legacy of organizations. This approach is consistent with Carpenter’s (2001; 2010) examination of agencies in which interviews and document analysis were used to build narratives detailing the history of the FDA, USDA, Post Office, and Department of the Interior. Semi-structured interviews of approximately one and a half hours were conducted with mezzo level and field level employees within the FAA’s Flight Standards Service (AFS) to obtain perceptions and accounts of the historical development of the voluntary safety programs. These accounts are then triangulated with news accounts, government documents and existing literature to provide a complete narrative of the development of the FAA’s voluntary programs.

The narrative produced on the history of the FAA’s development of voluntary programs is then analyzed using an inductive, open coding (Patton 2002) process that focuses on finding common themes within the narrative to explore the effectiveness of theories of regulatory change in explaining the development of voluntary programs in the agency. Specifically, the narrative produced was entered into Qualifiers, an open-source qualitative data analysis package, which allowed the author to easily develop and apply a coding scheme tailored to the narrative of the FAA’s historical development.
3.4 The Historical Development of Aviation Regulation in the United States

3.4.1 The Early Years: World War I and NACA

While the first successful flight of the Wright Flyer took place in 1903, the impression of the usefulness and utility of air transportation as a mode of transportation were slow to develop among the American public and the federal government during the early 1900s (Whitnah 1966). Although many men and woman had demonstrated that heavier-than-air craft could remain aloft for a number of hours, many Americans remained unconvinced of the safety of flying. Crashes had gained such glaring attention that they detracted from endurance and distance records and the many years of flying without accident or engine failure (Whitnah 1966). Also, many daredevil tactics illustrated in Hollywood films and in thrill rides did little to instill public confidence in early aviation (Adamski and Doyle 2005). At the same time, government confidence in aviation was also low. While the government did support aviation through interest, encouragement, and the support of federal scientists and politicians, more formal government recognition of aviation as a legitimate mode of transportation through the regulation and subsidy of the industry, as was the case in Europe, did not occur until 1926 with the passage of the Air Commerce Act (Whitnah 1966). As early as 1912, some groups such as the Aero Club of America in its publication, Aeronautics, emphasized the importance of federal registration and licensing of airmen (Burkhardt 1967).

Many of these calls for formal government regulation and subsidy of aviation in the United States went unanswered leading to “the chaos of Laissez Faire of the Air”
(Adamski and Doyle 2005). However, many in Congress who were reluctant to take over regulation and promotion of aviation realized that future aeronautical progress depended on federal help and guidance. Therefore on March 3rd, 1915 President Wilson signed the naval appropriations bill, which contained a provision for the creation of the National Advisory Committee for Aeronautics (NACA), which was charged “to supervise and direct the scientific study of the problems of aerial flight” (Burkhardt 1967 p. 6). From its inception, NACA was considered an independent agency even though its funds originated in the Department of the Navy. Shortly after its inception, NACA became involved in managing the production of both aircraft and the training of pilots during World War I from its research laboratory at Langley Field (Adamski and Doyle 2005). While research was the primary goal of the organization, NACA also made several recommendations that had a profound impact on aviation in the United States including cross licensing of aeronautic patents, increased funds for the Weather Bureau to study aviation related weather patterns, and the establishment of regular airmail service (Whitnah 1966). When World War I ended, NACA lobbied Congress to develop legislation for the control of civil aviation by the Department of Commerce. However, Congress was slow to realize the necessity for regulation of civil aviation and did not create such a regulatory infrastructure.

3.4.2 Through Rain and Snow: The Air Mail Acts

The Air Mail Act of 1925 (also known as the Kelly Act after its sponsor Clyde Kelly R-Pa) authorized the Post Office to award Contract Air Mail routes (CAM Routes) to commercial air carriers for the carriage of domestic mail, and established airmail rates.
The purpose or intent of the Air Mail Act of 1925 was described by Representative Kelly as to get the Federal government out of the mail business as it competed directly with the railroad industry (Adamski and Doyle 2005). Whether intentional or not, the legacy of the Air Mail Act of 1925 other than the transfer of airmail service from the public to private sector was to establish the framework for regulation of aviation by the Federal government. The airmail rate and structure set by the Act enticed carriers to send large quantities of bogus mail and freight on their airlines, which made it necessary for the Federal government to oversee and inspect these private companies. Komons (1989) argues, “No event was more pivotal in the eventual assumption of civil air regulation by the Federal government than the enactment of the Air Mail Act of 1925” (p. 77). Also, the Act set the pace for aviation development through the subsidy, either directly or indirectly, as was the case with airmail (Whitnah 1966).

3.4.3 The Beginning of Modern Aviation Regulation: The Air Commerce Act of 1926 and the Aeronautics Branch

During the 1920s, the push for Federal regulation of aviation reached a boiling point in the United States. Many members of Congress and those within the Coolidge administration noted that aviation was the only industry “that favors itself regulated by Government” (Adamski and Doyle 2005 p. 78). While the general public was unconcerned with the growth of the aviation industry, special interest aviation groups and powerful figures such as Orville Wright demanded the licensing of commercial pilots and the mandatory inspection of commercial aircraft. The U.S. Senate discovered that unregulated flying experienced one fatality per 13,500 hours of flying whereas the Post
Office (which enforced regulations) posted only one fatality per 463,000 hours (Adamski and Doyle 2005). In 1924, General Billy Mitchell lobbied for the development of a Department of Air that would oversee all aviation and be controlled by the military. After two high profile accidents involving Navy planes in 1925, Mitchell publicly accused Navy and Army officers of using pilots as pawns to prove the usefulness of airplanes in the military. As the controversy and court-martial trial surrounding General Billy Mitchell was gaining publicity, President Coolidge appointed a nine-member board headed by financier Dwight Morrow (called the Morrow Board) to investigate the Mitchell affair while at the same time investigating how to best apply aircraft in national defense (Burkhardt 1967).

The Morrow Board recommended that civil and military aviation be separated and that civil aviation was badly in need of Federal regulation and encouragement in the interest of safety (Adamski and Doyle 2005). The Board also suggested that civil aviation would be best regulated by the Commerce Department (headed by Herbert Hoover, a strong proponent of aviation) because of the aviation industry’s implications for interstate commerce (Wensveen 2007). The Senate Committee on Interstate Commerce introduced a bill that was to stabilize civil aviation in such a way to attract capital to the fledgling industry through the development of facilities necessary for air navigation and to regulate and maintain them (Wensveen 2007). This bill, known as the Air Commerce Act of 1926, was signed into law on May 20th and instructed the Secretary of Commerce to do almost all the things done today by the FAA: to foster air commerce; designate and establish federal airways; establish, operate, and maintain aids for air
navigation; arrange for research and development to improve such aids; license pilots and other airman; issue airworthiness certificates for aircraft and major aircraft components; and investigate accidents (Burkhardt 1967).

The Act did not initially create a new bureau within the Department of Commerce, but rather the intention was to distribute the duties imposed by the act among existing agencies. Secretary of Commerce Herbert Hoover believed that the agency could best accomplish the tasks charged in the Act through utilizing the existing organization of the Department of Commerce. As a result, only two new divisions were set up, although the Aeronautics Branch was given authority to direct the work of both the Air Regulations Division and the Air Information Division (Whitnah 1966). Other agencies such as the Department of Treasury (regulation of aircraft involved in foreign commerce), the Department of Labor (immigration problems of aviation), and the Department of Agriculture (meteorological information) also provided support to the Department of Commerce to implement the Act (Wensveen 2007). On August 11, 1926, Hoover appointed William P. MacCracken, former co-counselor of the National Transport Association (NTA), to the position of Assistant Secretary of Commerce for Aeronautics (Burkhardt 1967). The choice of MacCracken was one favored by private aviation companies because of his ensuing cautiousness inaugurating unprecedented regulations upon an industry, which was growing so rapidly. In December 1926, MacCracken held a series of conferences with representatives of the aviation industry to develop regulations that would ensure the continued success of the industry (Whitnah 1966).
Under the leadership of MacCracken, one of the first tasks of the Aeronautics Branch was the hiring of field inspectors to certify aircraft and pilots while also developing airworthiness standards for aircraft manufactures. Inspectors in the Air Regulations Division during the early years of the Aeronautics Branch expended their activities to embrace the supervision of airline operations. At times unknown to the pilot, the inspector took a seat with the passengers to evaluate the pilot and the aircraft (Whitnah 1966). Early inspectors earned a reputation for being very tough on airline pilots and aircraft resulting in a 10% rejection rate in 1928. Because of the continual growth of aviation during the Depression coupled with cuts in the Air Regulations Division budget, and difficulties in traveling to areas to inspect planes and pilots, inspectors were handicapped and struggled to keep up with the increased demand for certification. In 1931, the airline inspection force was organized into crews and placed at maintenance facilities in New York, Chicago, Dallas, and Los Angeles. Also, engineering bases were established in New York, Detroit, Kansas City, and Los Angeles to inspect the development of new aircraft (Whitnah 1966). Additionally, the Aeronautics Branch established traffic rules on a nationwide scale, licensed all aircraft and airmen, developed a system of identification for all aircraft, and began the process of installing beacons to facilitate night flying. In November 1929, because of the increasing volume of work incident to the rapid development of aviation, the Aeronautics Branch was decentralized by creating three new positions including the director of air regulation. In 1934, the Aeronautics Branch was renamed the Bureau of Air Commerce to reflect the growing stature of aviation within the Department of Commerce.
3.4.4 The Civil Aeronautics Act of 1938

As was the case with most industries during the Great Depression, the aviation industry suffered economic setbacks during the 1930s. The Bureau of Air Commerce’s efforts to improve air safety standards through inspections had a positive effect during the early 1930s (the death rate per mile flown improved from one in 1.4 million in 1927 to one in 13 million miles in 1937) (Dilger 2003). While air safety had increased drastically during the early 1930s, a series of high-profile accidents during the mid 1930s brought the effectiveness of the Bureau of Air Commerce in regulating air safety into question. Specifically, the deaths of celebrity figures such as Will Rogers and Knute Rockne along with the crash of a TWA flight carrying Senator Bronson Cutting of New Mexico set off a series of congressional hearings on air safety that were critical of the Bureau of Air Commerce (Dilger 2003). In response to these crashes, the perception that politics influences the hiring practices of the Bureau of Air Commerce, and anger over the Post Office’s handling of airmail contracts, Congress adopted the Civil Aeronautics Act of 1938.

The Civil Aeronautics Act of 1938 created an independent agency, the Civil Aeronautics Authority to replace the Bureau of Air Commerce. Its independence from the executive was supposed to free it from political pressures to go easy on the airlines (Dilger 2003). The five members of the Authority performed quasi-judicial functions related to economic and safety regulations (Wensveen 2007). Also, the newly created Authority was responsible for regulating airline routes, fares, and approved all mergers and airmail contracts. Air carriers at the time did not oppose these regulations because
the intense competition for scarce passengers had driven down prices and profits (Dilger 2003). Many air carriers believed that uniform price controls would stop the price wars that were reducing profits. In addition, the Act created a three-member Air Safety Board that acted as a quasi-independent body created for the purpose of analyzing accidents and making recommendations to eliminate the causes of accidents. Finally, the Act created a new position called the Administrator of Aviation whose charge was to perform executive functions related to the development, operation, and administration of air navigation facilities as well as promotional work in aviation (Wensveen 2007).

Almost immediately after the creation of the Civil Aeronautics Authority, the Air Safety Board, and the Administrator of Aviation, intense turf wars immediately surfaced among the entities responsible for regulating aviation in the United States. The problems grew so quickly that President Roosevelt directed the Bureau of Budget to initiate a study of the entire organization without consulting any of its personnel. In the spring of 1940, the Bureau of Budget developed three recommendations: first, there was a need to redefine the responsibilities of the Administrator and the Civil Aeronautics Authority because of a serious overlap of authority, second the Air Safety Board and the Civil Aeronautics Authority should be combined into a new body called the Civil Aeronautics Board, and third the Administrator should be transferred to the Department of Commerce to ensure a direct line of communication with the President (Adamski and Doyle 2005). These changes were endorsed by President Roosevelt and passed under the Reorganization Act of 1939, which created the Civil Aeronautics Administration (CAA) and the Civil Aeronautics Board (CAB). The CAA provided air traffic control services,
certification of pilots and aircraft, safety enforcement, and airway development while the CAB issued safety rules, investigated accidents, and regulated the airline industry. The CAB also regulated entry into the airline market in the United States and issued permanent rights to the 18 airlines operating in 1940. Famously, the CAB did not allow another air carrier to enter the marketplace for 40 years, which gave those 18 air carriers a significant advantage over start-up airlines and resulted in the domination of the market by a smaller number of “legacy” carriers such as American, United, Continental, etc (Dilger 2003).

During the 1940s, the United States was entering World War II, and thus most functions of civil aviation were halted to support the war effort. In addition to creating and reorganizing aviation regulation in the United States, the Civil Aeronautics Act of 1938 also contained a provision that issued federal dollars for the improvement, expansion, and renovation of airports. Prior to the Act of 1938, airport construction was almost exclusively the domain of state and local governments with the federal government taking a laissez-faire approach to airport construction. However, the need for job creation and economic recovery prompted Roosevelt to charge the Works Progress Administration to expand the length and number of runways to assist in the war effort during the 1940s (Dilger 2003). Specifically, the Act of 1938 authorized $560 million over six years to build 4,000 airfields. Also, the Federal Airport Act of 1946 provided state and local governments $234 million over the next decade in matching funds to further expand and improve the nation’s airports. These improvements to
airports resulted in a dramatic increase in air traffic during the late 1940s and early 1950s, which often overwhelmed other aspects of the American aviation system (Dilger 2003).

3.4.5 The Federal Aviation Act of 1958 and the Department of Transportation Act of 1966

During the early and mid 1950s, there was increasing tension between military and civilian aviation in the United States (Dilger 2003). The major issue concerned control of the air space, as military commanders were extremely reluctant to give the control of the skies to civilian air-traffic controllers. Also complicating matters was the fact that the military and the civilian aviation system used different types of air traffic control systems. Another pressing issue was that criticisms of the CAA and the CAB were mounting for their inability to navigate an increasingly difficult bureaucratic environment. These two issues came to a tragic point during the mid 1950s when a series of midair collisions illustrated the inadequacies of the American aviation system and the lack of coordination between the civilian and military aviation systems. First, on June 30, 1956, a Trans World Airlines Constellation and a United Airline DC-7 collided over the Grand Canyon killing all 128 people aboard both aircraft. Next, on January 31, 1957, a collision between a commercial DC-7 and a U.S. Air Force F-89 in California resulted in the DC-7 crashing onto a junior high school playground killing all aboard the aircraft and three students (Adamski and Doyle 2005). Finally, a United Airline DC-7 and a U.S. Air Force F-100 collided near Las Vegas, Nevada. Faced with a restless public worried about air safety, the media’s demand for action, support from the various aviation interest
groups, and President Eisenhower’s endorsement, Congress passed the Federal Aviation Act of 1958 (Dilger 2003).

The Federal Aviation Act of 1958 created the Federal Aviation Agency out of the remnants of the CAA and made it an independent agency. The Federal Aviation Agency was charged with promoting air safety and general aviation development, managing the nation’s navigable airspace, prescribing regulations concerning pilot’s competence, and the airworthiness of aircraft and air traffic control systems, operating air route traffic control centers, airport traffic control towers, and flight service stations, and issuing rules concerning the design, construction, maintenance, and inspection of navigation, traffic control, and communications equipment. The CAB continued to investigate accidents, regulate airlines, and issue monthly and quarterly financial and traffic data for certified air carriers (Dilger 2003). The CAB’s role in safety making after the passage of the act was limited to participation as an interested party in FAA proceedings. President Eisenhower appointed Pete Quesada to head the Federal Aviation Agency. During his two years as Administrator, Quesada issued an astounding 400 safety rules and processed 8,822 violations of agency rules and regulations (Dilger 2003). When President Kennedy appointed Najeeb Halaby to replace Quesada as Administrator, Halaby focused more on improving safety by expanding air traffic control systems and navigational aids rather than through issuing rules and enforcement of regulations, a move Dilger (2003) argues was motivated by the Democratic administration’s alliance with labor, including the Air Line Pilots Association and the Aircraft Owners and Pilots Association. In 1965, the Federal Aviation Agency announced a plan to decentralize the agency (based on
recommendations from an internal study called Project FOCUS) by creating 18 area offices to work in consultation with the regional offices to inspect airlines, develop regulations, etc. (FAA Chronology).

When Lyndon Johnson became president following the assassination of President Kennedy, he quickly realized that one of the major regulatory problems facing the federal government was the number of federal agencies regulating the transportation system. President Johnson signed the Department of Transportation Act into law on October 15, 1966. The law changed the title of the Federal Aviation Agency to the Federal Aviation Administration (FAA) and removed its independent status by placing it under the jurisdiction of the newly created Department of Transportation. During the development of the DOT, Senator Mike Monroney placed a provision in the bill giving the FAA administrator the final say in matters relating to aviation safety, ensuring that technically sophisticated aviation regulations could not be stalled by more generalist transportation officials (Adamski and Doyle 2005). The Act of 1966 also created a new independent board called the National Transportation Safety Board (NTSB) to investigate accidents and make recommendations to the FAA for corrective measures.

While 1967 (the first year of the FAA’s existence) was hailed the safest year in air travel (Hudson 1968), the FAA quickly gained a reputation as an agency that promulgated new regulations only in the wake of aviation disasters. After a series of crashes involving DC-10 aircraft during the early 1970s, the FAA was charged by critics and Congress for being “sluggish which at times approaches an attitude of indifference towards public safety” (Witkin 1974).
3.4.6 The FAA’s First Voluntary Regulatory Partnership Program: The Development of the Aviation Safety Reporting Program

The impetus for the creation of ASRS was the crash of TWA Flight 514 on December 1, 1974 outside of 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 mountain top killing 85 passengers and 7 crew members (Reynard et al. 1986). In the 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”, which 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, the NTSB concluded, there was no industry-government 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 potential legal consequences of disclosing events leading Air Line Pilots Association (ALPA) 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 non-punitive reporting system. In May 1975, the FAA issued Advisory Circular 00-46 announcing the
creation of the Aviation Safety Reporting Program (ASRP), which would offer a waiver of sanctions and anonymity to 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 research organization, saw a unique opportunity to enhance its ongoing aviation human factors research with this new source of data.

3.4.7 The Airline Deregulation Act of 1978

The CAB remained the primary source of economic regulation of the airlines even after the Department of Transportation Act of 1966. While many in the country were generally satisfied with the aviation system and fares under the CAB, a movement for deregulation of the aviation industry began during the late 1960s and 1970s because of an economic downturn and the creation of wide-bodied aircraft, which provided more capacity for airlines. Led by consumer advocates such as Ralph Nader, academic economists, and influential members of Congress including most notably Senator Edward Kennedy, deregulation advocates argued that the economic pricing policies of the CAB fostered inefficiency within the aviation system, higher costs for companies, and higher prices for consumers (Wensveen 2007). Senator Kennedy argued that the CAB’s reluctance to allow other carriers into the marketplace and their fare regulations had created a situation where “airlines flew with artificially high-fares in half-empty places and using timely and frequent departures, along with extraneous frills to lure the thinning
ranks of air travelers to their planes” (Dilger 2003, p. 132). Also, critics such as Nader and Stephen Breyer, Kennedy’s staff on the deregulation issue, charged that the airlines had too much influence in determining CAB policies and that the board had become captured by the airlines. The American public agreed: Derthick and Quirk (1985) argue that by 1977, 81 percent of American agreed that the airlines had a major influence on the government agencies regulating them.

On January 20, 1977, President Carter appointed Alfred Kahn, a proponent of deregulation, to chair the CAB. Kahn implemented many of the recommendations of deregulation proponents including approving applications for new operating authority, realigning routes, and the elimination of restrictions, as well as to exit from those markets to which entry had been liberalized (Wensveen 2007). Airlines, labor unions, and financial institutions argued against deregulation claiming that it would lead to worsening of safety, concentration of service on dense traffic routes with a deterioration of service on others, impairment of the air transportation system (baggage handling, ticketing, etc), predatory price competition, and negatively impact airline employees. Public opinion towards deregulation was crystallized following the release of a GAO report that stated fares might have been 22-25% lower and the public might have saved 1.8 billion dollars between 1969 and 1974 had routes not been regulated (Kane 2005). President Carter signed the Airline Deregulation Act of 1978 into law with the overarching theme of increasing competition to obtain low prices, service options, efficiency, and innovation (Adamski and Doyle 2005). The Act also contained a provision to provide essential air
service to smaller rural communities whose routes would no longer be subsidized by the CAB. The CAB itself was disbanded as part of a sunset clause on January 1, 1985.

3.4.8 The Post-Deregulation Era: FAA Oversight in the 1980s

Following the deregulation movement of the 1970s, critics charged that in order to maintain profitability, airlines would “cut corners” in aircraft maintenance to reduce expenses, resulting in a less safe aviation system (Dilger 2003). Gattuso (1986) argues that while airline expenditures on maintenance from 1978 to 1984 did not increase, airlines may be utilizing more efficient maintenance techniques such as contracting out to reduce their costs. To ensure strict oversight of carriers, FAA Administrator Bond announced a plan that would increase the amount of fines the agency could level against air carriers and would discontinue the provision of ASRS that allowed pilots and other air space users to avoid punitive action by the FAA if they reported a violation to NASA (Witkin 1979). The Administrator argued that by closing this loophole, the agency would be able to ensure accountability against those who violated FARs.

During the 1980s, almost all of the surveillance of maintenance and operations of Part 121 carriers (major airlines with scheduled service) was done through the FAA’s Flight Standards Service’s (AFS) National Program Guidelines (NPG). The NPG system of oversight focused on inspectors, with checklist in hand, watching the work of an employee at specified intervals to ensure the work was being done properly. NPG established a set of required and planned inspection activities for airlines to ensure compliance with safety regulations (Stolzer, Halford, and Goglia 2008). Also, in NPG, an FAA committee of program managers identified an annual minimum set of required
inspections that were to be undertaken to ensure that airlines were in compliance with their operating certificates (GAO 2005). The revitalization of “white-glove” FAA inspections through NPG resulted in a series of heavy fines against airlines such as a $1.5 million fine against American Airlines in 1985 for using plastic instead of aluminum pulleys on its fleet of DC-10s, a $1.95 million fine against Pan Am, and a record $9.5 million fine against Eastern Air Lines in 1986 for about a total of 78,000 safety violations (Whitnah 1998; Gattuso 1986).

The FAA’s system of command and control inspections, while effective at handing out fines during the 1980s was unsustainable for several reasons. First, deregulation led to an increase in the number of Part 121 carriers the FAA had responsibility for overseeing. Specifically, between 1978 and 1983, the number of airlines almost doubled from 35 to 65. Second, the FAA’s organizational structure of placing teams of inspectors at main operation centers of carriers was not cost-effective for smaller commuter air carriers. Finally, the number of FAA inspectors was cut drastically to just over 1,300 in 1983 by the Reagan Administration who believed the FAA was over funded and that air carriers and not government could best ensure air safety (Phillips and Hamilton 1990; Cushman 1990). This drastic cut in workforce made the implementation of NPG very difficult. However, a series of high-profile crashes during the mid to late 1980s resulted in increased Congressional and public pressure on the Reagan Administration to hire more inspectors from 1987-1989.

The lack of FAA inspector resources and personnel during the 1980s led to complacency among those inspectors who were employed by the agency. Several audits
conducted during the 1980s revealed that inspectors at some field offices succumbed to “rubber stamp syndrome” by allowing some carriers to go up to an entire year without being inspected. A FAA report noted, “Personnel are going through the motions of inspecting air operators, but are not probing deep enough to uncover even potential problems” (Cushman 1990). While the FAA had began to train some its newly hired inspectors by the end of the 1980s, the growth in air travel had drastically outpaced the modest growth in the agency’s inspection workforce. The agency was forced to consider alternative programs to ensure air carrier oversight including programs that placed more emphasis on the specific carriers to conduct oversight of their own operations.

3.4.9 The Development of the Voluntary Disclosure Reporting Program

To supplement its inspection cadre, the FAA in 1987 began to explore allowing carriers to play a larger role in inspections and voluntarily identify and correct maintenance problems without being subject to large penalties. The idea was first outlined by FAA Administrator T. Allen McArtor, who argued airline executives should take greater responsibility for monitoring safety within their operations (Parker 1987). Continental Airlines began a self-audit program during the late 1980s in which the carrier hired former FAA inspectors to conduct internal inspections of their operation and develop corrective action to mitigate potential safety hazards (Phillips 1990). 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. This led to a debate within the industry as to whether the airline was required to tell the FAA the results of its
self-audit. Some carriers took a hard-line stance that they would report all violations to the FAA while other carriers avoided making reports or did not do audits (Phillips 1990).

On March 27, 1990, FAA Administrator Admiral James B. Busey announced the Air Carrier Voluntary Disclosure Program (later to become VDRP): “Simply stated the policy is if a carrier discovers an inadvertent violation, corrects the problem, reports it promptly to the FAA and puts in place a permanent fix acceptable to all of us, the FAA will not penalize that carrier. Period” (Weiner 1990). Busey justified the program by arguing that the FAA’s lack of inspector resources coupled with the agency’s past practice of fining air carriers who voluntarily submitted violations had led to a highly adversarial relationship (Quinn 2008). Busey claimed, “The system isn’t working as intended. I want to promote a spirit of cooperation” (Weiner 1990). Immediately following the announcement by Busey, consumer groups released statements against the new policy claiming that the program might induce the Federal inspectors to “become too cozy with the airlines” (Weiner 1990).

While Busey’s announcement was well received by airline executives, they still had more questions than answers regarding voluntary disclosure of safety violations. For example, some air carriers worried that voluntarily submitted data would be made public records, which could hurt their bottom lines (Phillips 1990). Others wondered if the FAA would only accept self-disclosures from carriers who had implemented Internal Evaluation Programs (IEPs) such as Continental. In 1992, the FAA released AC 120-56, which codified several provisions of VDRP including exempting self-disclosed reports from FOIA, outlining the process of review of SDs by the FAA, and encouraging carriers
to adopt IEPs to ensure a uniform and regular method of identifying safety hazards within their operation (AC 120-56). The issuing of AC 120-56 marked the beginning of a new era of collaboration between air carriers and the agency that was primarily driven by the agency’s realization that it would not receive the level of resource support necessary from Congress or the President to adequately oversee the operation of large carriers in a post-deregulation environment.

3.4.10 The Turbulent Decade: The FAA and Aviation Safety During the 1990s

A series of aviation crashes during the early 1990s would bring sweeping changes to the way the FAA conducts oversight of air carriers. The growth of media coverage of aviation disasters coupled with the drastic increase in passenger demand placed increased pressure on the FAA, Congress, and the President to react swiftly and boldly following the crash of an airplane. This reactionary policy-making led to a series of drastic changes within the FAA that changed the way the agency conducted its business. However, as Cobb and Primo (2003) note, the FAA is forced to act or adapt only when the cause of an accident illustrates problems within the agency.

On September 8, 1994, a Boeing 737 operated as USAir Flight 427 en route from Chicago to Pittsburgh crashed outside Aliquippa, PA on approach to Pittsburgh International Airport killing all 132 passengers and crew aboard. This was USAir’s third fatal crash in three months, which focused media scrutiny on the carrier and its safety record. The cause of the crash of Flight 427 was very difficult to ascertain and led to a lengthy NTSB investigation (Adair 2004), which led to a lull in media coverage of the
crash and allowed the FAA to avoid questions regarding its oversight of USAir (Cobb and Primo 2003).

Following the crash of Flight 427, FAA Administrator David Hinson and DOT Secretary Federico Pena held an aviation safety summit to bring together government and industry officials to discuss ways to improve safety. As a result of the summit, the FAA and industry agreed to share flight data recorder information to proactively search for areas of safety hazards within carriers and across the airspace system in the United States. Prior to the agreement, carriers had been reluctant to share flight operations data with the FAA for fear that it would be used in punitive actions against carriers and individuals (Phillips 1995). Some carriers such as US Airways, United, and Continental had voluntarily developed internal programs to review flight data recorder data to make changes in training programs (GAO 1997). The FAA’s Flight Operations Quality Assurance (FOQA) was formally codified in 1995 through a three-year demonstration program where the agency provided hardware and software to three carriers (United, US Airways, and Continental) to assist in the development of these programs. FOQA programs routinely examine and analyze data recorded in flight to identify areas of safety hazard within the operation of an air carrier. The use of FOQA programs has proliferated over the last decade with all major U.S. carriers having implemented these programs.

Another development in aviation during the 1990s was the introduction of “low-cost carriers” who stressed low fares, no frills, and cost-cutting strategies. In 1993, ValuJet Airlines began operations offering passengers low fares to a variety of destinations. ValuJet’s business model focused on obtaining older DC-9 aircraft,
outsourcing maintenance, hiring less-experienced pilots and mechanics and flying nonstop routes that did not rely on hubs for connecting flights (Cobb and Primo 2003). The Clinton Administration was extremely supportive of encouraging low-cost carriers as a way to lower airfares and satisfy the public. Political advisors in the White House saw a partisan advantage in encouraging the DOT to do everything possible to provide additional price competition for the major carriers (Nomani and Frisby 1996). The FAA’s focus under the Clinton Administration was on the promotion of ValuJet, not on oversight. Since its inception in 1993, ValuJet had experienced safety violations and incidents such as aborted take-offs, landings, and maintenance violations at a rate four times higher than at major carriers (Marchak 1996; Biskupic and Phillips 1996).

On May 11, 1996, a ValuJet DC-9 operating as flight 592 was en route from Miami to Atlanta under ideal weather conditions. Ten minutes after take-off, the pilot reported smoke in the cockpit and began to return to Miami. The plane crashed into the Florida Everglades where all 105 passengers and 5 crew members perished. Immediately following the crash, DOT Secretary Pena tried to further promote ValuJet, “Whenever we have found any issues, ValuJet has been responsive, they have been cooperative, and they have exceeded the safety standards that we have. I’ve flown ValuJet. ValuJet is a safe airline, as is our entire system” (Navarro 1996). FAA Administrator Hinson added, “I will tell you the airline is safe. I would fly it. And I will leave it at that” (Cobb and Primo 2003). The NTSB investigation into the crash found that oxygen canisters in the cargo hold, which were supposed to be emptied by a maintenance company called SabreTech, became unstable at altitude and led to a fire and explosion.
Following the crash, the FAA faced increased media and political scrutiny regarding its lax oversight of air carriers. DOT-IG Mary Schiavo became a vocal opponent of the agency and its ability to oversee air carriers in the United States. Three months before the ValuJet crash, she had warned FAA officials that ValuJet had major safety hazards. The FAA, who Schiavo called a tombstone agency that only took action when people died, ignored her concerns. Schiavo said, “It is not my job to sell tickets on ValuJet. I would not fly ValuJet” (Cobb and Primo 2003). Former NTSB Chairman James Burnett said, “It’s as if the FAA acts to protect the airline rather than the consumer until they can’t maintain that position any longer. The FAA spends a lot of money looking for red flags, but then they don’t see the color red” (Bryant 1996).

On June 18, 1996, DOT Secretary Pena urged Congress to change the FAA charter to give it a single, primary mission-safety. In the past, FAA officials had argued that the agency did in fact have a singular mission: to promote aviation by improving safety (Bryant 1996). However, faced with increasing scrutiny from the public and major air carriers (whose bottom line was dependent upon public perception of a safe industry), President Clinton signed the Federal Aviation Reauthorization Act of 1996. The Act formally eliminated the FAA dual mandate, however a 2010 Frontline report noted that language tucked into the conference report said, “The managers do not intend for enactment of this provision to require any changes in the FAA’s current organization or functions. Instead, the provision is intended to address any public perception that might exist that the promotion of air commerce by the FAA could create a conflict with its safety regulatory mandate." The Act also ordered the FAA Administrator to establish a
National Civil Aviation Review Commission comprised of aviation industry personnel to develop recommendations to improve safety. In addition to signing the FAA Reauthorization Act of 1996, President Clinton issued Executive Order 13015 on August 22, 1996, which formally created the White House Commission on Aviation Safety and Security. These two commissions would set the framework for the continued proliferation of voluntary safety programs in aviation.

The White House Commission on Aviation Safety report was issued in February 1997 and contained several recommendations to improve aviation safety in the United States, with a stated goal of reducing the accident rate 80% by 2007 (Gore 1997).

Additionally, the report recommended:

- The FAA should work with the aviation community to develop and protect the integrity of standard safety databases that can be shared in accident prevention.
- The FAA should develop better quantitative models and analytical techniques to inform management decision-making.
- Legislation should be enacted to protect aviation industry employees who report safety or security violations.

The National Civil Aviation Review Commission’s final report was issued in December of 1997 and contained the following recommendations to improve aviation safety in the United States:

- FAA and the aviation industry must develop a strategic plan to improve safety, with specific priorities based on objective, quantitative analysis of safety information and data. Presently, there is no agreed upon safety improvement strategy; rather there are many tactical efforts at work. Without a comprehensive strategy, priorities are allowed to fluctuate and progress toward safety improvement is slowed.
- Aviation safety programs in industry and government need to be improved by establishing more effective safety risk management programs. This should include self-audit and self-disclosure programs within aviation companies, protecting and sharing safety information in non-punitive ways, and encouraging research to support these activities. Where possible, these programs should include the
analysis of real flight and operational data. The aviation community must look deeper than accidents and incidents to identify latent and emerging problems and fix them before a mishap occurs. There needs to be a willingness in government and industry to invest in new ways of doing business. This will require changes in the traditional regulatory relationship so that tools beyond the simple enforcement of rules are available to improve safety.

Following the recommendations from these committees, the FAA and industry decided to collaboratively bring their resources together to address large-scale aviation safety issues in the United States. In 1998, the Commercial Aviation Safety Team (CAST) was formed to proactively examine various data sources to identify areas of safety hazard across air carriers. Also, CAST was formed to utilize the expertise of aviation professionals to develop safety solutions that were not “knee-jerk” responses to aviation crashes (Phillips 1998). The stated goals of CAST are to:

- Identify the top safety areas through the analysis of accident and incident data.
- Charter joint teams of experts to develop methods to fully understand the chain of events leading to accidents.
- Identify and implement high-leverage interventions or safety enhancements to reduce the fatality rate in these areas.

For years, carriers had been using internal employee voluntary reporting programs to make changes within their own organizations. In 1997, the FAA initiated a pilot program that allowed carriers to develop internal employee reporting programs (AC 120-66). The US Air Altitude Awareness Program, the American Airlines Safety Action Partnership, and the Alaska Airlines Altitude Awareness Program were founded under this pilot program and were successful in giving employees the opportunity to self-disclose potential safety hazards to their employees. Following the recommendations of
both the White House and National Civil Aviation Commissions, the FAA decided to further encourage the use of employee reporting systems by issuing program guidance for the implementation of Aviation Safety Action Programs (ASAP). On January 14, 2000, President Clinton announced the creation of ASAP “to encourage airline employees to report their own rule violations, in exchange for immunity from punishment, to make it easier to detect trends that could hurt safety” (Wald 2000). In March of 2000, the FAA issued Advisory Circular 120-66A, which established industry-wide guidelines and criteria for participation in the program.

3.4.11 The Proliferation of Voluntary Programs During the 2000s

The FAA knew that in order for employees and companies to truly buy into the idea of using voluntarily submitted data to improve safety they would need to codify provisions ensuring that data submitted to the agency voluntarily would not be used in punitive measures against companies and individuals. Therefore, on June 25, 2001 the FAA enacted 14 CFR Part 193, Protection of Voluntarily Submitted Information. This regulation provides protection for safety information voluntarily submitted to the FAA from use for punitive actions by regulators and from release to third parties under the Freedom of Information Act (FOIA).

Following the terrorist attacks on the United States on September 11, 2001, many airlines were pushed to the brink of bankruptcy. The four-day shutdown of air travel in the United States after September 11th cost the industry an estimated $1.4 billion (Makinen 2002). The airlines continued to bleed money in the months following the attack as Americans decided to avoid flying or stay home. In response to this
unprecedented attack, Congress passed and President George W. Bush signed the Air Transportation Safety and System Stabilization Act into law on September 22, 2001, which gave the airlines access to $15 billion in short term assistance (Makinen 2002). Of the $15 billion, $5 billion was given as direct aid to the airlines and another $10 billion was made available through guaranteed loans.

Airlines also complained that strict FAA enforcement of FARs was complicating their attempts to return to profitability. Specifically, many carriers argued that inspectors were being inconsistent in applying FARs to their operations. For example, the airlines argued that maintenance requirements for all 737s were not being applied consistently by the Certificate Management Offices (CMO) responsible for oversight different carriers. Therefore, an airline, say US Airways, may be at a competitive disadvantage if their CMO were strictly enforcing the FAR while another airline’s CMO, say United, was not strictly enforcing the FARs. Therefore, in a speech before a luncheon at the Aero Club of Washington on February 20, 2003, FAA Administrator Marion Blakey announced that the FAA would implement a customer service initiative (CSI) to provide more consistent application of regulations and standards to the airlines (Blakey Speech, 2/20/2003). Specifically, the customer service initiative outlines a series of steps air carriers could take to challenge agency decisions including “clear guidance on how you can elevate your concerns to the next higher level of authority” (Customer Service Initiative Brochure). CSI allowed air carriers to challenge the outcomes of ERC meetings and also decisions by principal maintenance inspectors on whether to accept VDRP reports.

The CSI became a source of contention within individual CMOs as inspectors
struggled with how to balance their duty for enforcing regulations with political pressures from Washington that was friendly to air carriers (PMI Interview 4/7/10). The CSI coupled with the increased use of voluntary safety programs led to what observers called “a creep away from their rigorous oversight of maintenance”, “a coddling of the airlines”, and “a coziness between regulator and regulated” (Wald and Maynard 2008). This “cozy relationship” between the FAA and the airlines became crystallized in the minds of the public and members of Congress in early April 2008 when airlines were forced to cancel thousands of flights to perform overdue maintenance inspections on hundreds of aircraft. On April 3, 2008, the House Committee on Transportation and Infrastructure, chaired by Representative James L. Oberstar D-MN, conducted a hearing into safety issues at Southwest Airlines (SWA), and possible lapses in FAA oversight. In the testimony following the discovery of the violations, it became clear that Gawadzinski had fallen trap to the “relaxed culture” in the SWA CMO. Specifically, it was determined that Gawadzinski had allowed the non-compliant 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’s at the FAA. SWA CMO Manager Michael Mills in 2005 wrote a memo to all employees called “A Time for Change” which said:

The relaxation into a level of coziness with Southwest did not occur overnight. Over time, familiarity with our counterparts at the carrier, combined with our intermingling with their freewheeling and informal culture, have perhaps influenced us to settle for winks, nods, verbals, and e-mails as acceptable methods by which we do our business as regulators. Who wouldn’t find Southwest’s easygoing camaraderie and jovial atmosphere appealing? What we want to avoid at all costs is a relationship so comfortable that the line of distinction blurs between the regulator and the regulated… We are hired by the taxpayers to look over
Southwest’s shoulder and ensure they conduct their business with safety as the uppermost consideration at all times—nothing more, nothing less (USHTI Hearing 4/3/2008).

Also, an investigation of phone records found that FAA inspectors were in some instances calling SWA maintenance staff to inform them ahead of time of what inspections were coming in order to file VDRP claims before the FAA inspectors discovered the same violations. While Mills’ goal may have been to change the culture at the SWA CMO, it is clear from the actions of those responsible for overseeing the airline that the customer service initiative and the desire to please their “customers” has clouded the mission of FAA inspectors. These inspectors have argued that the partnership programs along with the relationship between the airlines and the FAA have overshadowed the “safety-enforcer” role that many of the inspectors see themselves filling. Frequently, inspectors view these partnership programs as “get out of jail free” cards. Inspectors have also noted that even when the FAA sanctions the airlines, most claims are dropped because inspectors feel that “there is little chance anything will get done” (USHTI Hearing 4/3/2008). The GAO found evidence to support the claims of inspectors: between 1993 and 2003, monetary penalties against the airlines were reduced by 52% from $334 million to $162 million.

In response to the congressional and public concern arising from the Southwest Airlines incident, the FAA ordered an immediate and nationwide audit of other airlines, to see if they too had any compliance problems with any airworthiness directives (AD) that affected their fleets (FAA AFS 8900.36). Each FAA office that oversees Part 121 air carriers with aircraft seating ten or more passengers was asked to audit 10 percent of the
ADs applicable to each aircraft type they operate. As a direct result of these “special emphasis” AD audits, problems quickly surfaced with American Airlines’ fleet of MD-80s. One particular airworthiness directive issued back in 2006 (AD 2006-15-15) specified the manner in which wiring harnesses should be insulated and secured within the wheel wells of MD-80s to prevent chafing of electrical cables and thus eliminate the possibility of arcing in the vicinity of the central fuel-tank. On April 7, 2008, just three days after the congressional hearings arising from the Southwest Airlines events, FAA inspectors re-inspected 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, American Airlines chose to ground its entire fleet of MD-80’s (more than 350 planes), putting these planes back into service only when the AD requirements had been completely met, and were to the FAA’s satisfaction. By April 12, the FAA had accepted all these planes as compliant, and they were returned to service. MD-80s make up almost half of American Airlines’ overall fleet, and account for 40 percent of American’s daily flights. From April 8 to 11, American Airlines cancelled 3,100 flights, stranding or inconveniencing more than 250,000 passengers (Taken from Independent Review Team “Managing Risks in Civil Aviation” 2008).

As a result of these two incidents, DOT Secretary Mary Peters convened a Blue Ribbon Independent Review Team (IRT) to examine the FAA’s safety culture and its implementation of safety management. The IRT interviewed officials from all branches of the FAA, air carrier representatives, and other aviation officials to make a series of recommendations to improve the FAA’s oversight and rule-making processes. Some of
the recommendations/observations of the IRT in each of the four areas include:

- **Airworthiness Directives**
  - ADs should be distributed to FAA field offices in a timely manner
  - The AD process needs to be revised to provide increased clarity for air carriers trying to comply with ADs
  - Inspectors should not be expected to make risk assessments or determination of safety-of-flight before taking enforcement action in response to AD non-compliance

- **Voluntary Disclosure Programs**
  - Voluntary disclosure programs are programs are more vital to the FAA than to other regulatory agencies, given the essentially preventive nature of the residual risk-control task, and the resulting importance of learning about and learning from precursor events.
  - Re-affirmed the value of the FAA’s voluntary disclosure programs as vital to continuing improvement. These programs are in line with modern regulatory practice, and are suitably circumscribed.

- **Culture/Structure of the FAA**
  - Found that the FAA’s aviation safety staff was dedicated to their core mission of safety.
  - There was a remarkable degree of variation in regulatory ideologies among the field office staff, which creates the possibility of generating wide variances in regulatory decision-making.
  - The FAA needs a method for reviewing the overall regulatory functioning of CMOs, using teams of experienced managers drawn from other regions.
  - The creation of an independent office inside the FAA to receive and handle complaints regarding critical safety issues is unnecessary.
  - The FAA’s carrier-specific oversight structure needs to be further examined. Alternative forms of organization, applied to suitable functions, might better balance the agency, helping to mitigate the dangers of capture, promote consistency across airlines, and eliminate obvious inefficiencies in the oversight of certain categories of facilities.

- **ATOS and the role of FAA inspectors**
  - From its interviews with FAA inspectors, the IRT noted that ATOS still needs further attention for it to live up to its promise.
  - The process of further refining this system must be informed by a solid empirical understanding of the way in which inspectors now spend their time.
  - The IRT recommended to the Aviation Safety Office study the daily work-life for front-line inspectors, particularly to discern the effects of ATOS on the productivity and effectiveness of the inspection workforce.
As the IRT was making its recommendations to the DOT and the FAA, members of the House Committee on Transportation and Infrastructure were crafting a bill to mandate several changes to the FAA and the aviation industry in response to the crash of Colgan Air Flight 3407 outside of Buffalo, NY in February 2009. Specifically, bill titled the “Airline Safety and Pilot Training Improvement Act of 2009” was proposed on July 29, 2009 and contains provisions to mandate specific numbers of training hours for regional carrier pilots, request information from the FAA on its use of voluntary reporting requirements, and mandate a prescribed length of time regional pilots can fly in a week to manage fatigue (H.R. 3371). FAA Administrator Randy Babbitt argued that Congress’s bill was unnecessary and redundant to efforts already underway within the FAA to reform its oversight of regional carriers and more broadly its safety oversight (Sobie 2009). In early September of 2009, the FAA announced several reforms to address the recommendations of the IRT report as well as concerns from members of Congress. Specifically, on September 17, 2009, the FAA announced:

- The creation of the Accident Investigation and Prevention Service to manage and analyze the data collected through voluntary programs, accident investigations, and historical records
- The creation of a new Office of Audit and Evaluation that will handle all public safety complaints and whistleblower contributions as well as those from the GAO and DOT-IG.
- The replacement of the “Customer Service Initiative” with the “Consistency and Standardization Initiative” to ensure FAA decisions are consistent with rules and policies across all field offices
- Increased collaboration with air carriers in the planning and prototyping processes of ADs
Several of these reforms directly answer complaints in the IRT report while also creating several new departments within the FAA in increase the capacity of the agency to engage in safety oversight.

In addition to these reforms, Administrator Babbitt announced a plan called the “Call to Action” that outlined several steps the FAA was taking to ensure safety on regional and all Part 121 air carriers. Specifically, the “Call to Action” requested that Part 121 carriers that did not currently have an ASAP for FOQA program enter into a MOU with the FAA (“Answering the Call to Action” Jan. 2010). However, the DOT-IG questioned the effectiveness of mandating the use of voluntary programs by the FAA, noting that a more effective approach would be to conduct a thorough investigation of the programs and find where obstacles for implementation exist (DOT-IG 2010). Since the FAA Administrator’s Call to Action, the number of airlines participating in the FAA’s voluntary safety programs has increased drastically. For example, the number of ASAP MOUs jumped from 172 in September of 2009 to 218 in May of 2010.

The news media has also criticized the FAA’s lack of clarity on exactly who the agency serves. A recent Frontline report on the safety of regional carriers in the United States illustrated the potential conflicts between the implementation of voluntary safety programs and the continuation of the CSI (Frontline: Flying Cheap: 2/9/2010). Following the Frontline special and the Call to Action by the FAA Administrator, the House and Senate passed and President Barack Obama signed H.R. 5900 The “Airline Safety and Federal Aviation Administration Extension Act of 2010” on August 1, 2010, which ordered the FAA to produce a report that identifies all voluntary safety programs
being used across all US based air carriers (PL 111-216). Specifically, H.R. 5900 calls for the FAA explain why some carrier have not implemented ASAP and FOQA programs, how the data collected from these programs is being used by the agency to improve safety, how the data is being collected and stored, and how this data is being used to inform traditional ATOS inspections (PL 111-216).

3.5 Key Themes in the Development of Aviation Regulation and Voluntary Safety Programs in the United States

Throughout the history of the FAA, certain thematic elements have shaped the behavior and outputs of the agency. Using a grounded coding scheme, the narrative of the FAA’s historical development was analyzed. The analysis resulted in three themes that are critical in explaining the development of the agency and the voluntary regulatory partnership programs:

**Theme #1: Many of the systemic changes in regulatory structure have been the result of high-profile air disasters and not the result of continual organizational evaluation**

Many of the largest changes to both the FAA and the aviation regulatory structure in the United States have occurred as the result of high-profile air disasters leading to some labeling the FAA “the tombstone agency”. Table 3.1 illustrates how aviation disasters have led to substantial regulatory change within the FAA. In their book *The Plane Truth*, Cobb and Primo (2003) examine how the media’s framing and coverage of aviation disasters leads to policy change by the FAA. They find that while a crash is a necessary condition for large-scale policy change it does not guarantee that the agency will act. In their analysis, Cobb and Primo argue that while the FAA responds to 80% of
NTSB recommendations after a crash, it does so several years after the fact, allowing air carriers and manufacturers to shape the legislation. Finally, the authors argue that it is Congressional committees that often are the largest source of policy change following an aviation disaster as election-seeking members of Congress attempt to posture to the media and the public by assessing blame and “fixing the problem” to ensure aviation safety. Members of aviation-related Congressional committees often have vested constituent interests in the outcomes of FAA reform and policies, they attempt to become highly visible actors and advocates following an aviation disaster.

An interesting trend that emerges from the analysis of large-scale aviation disasters in Table 3.1 is the recent shift from increased FAA oversight of air carriers following highly salient events to placing more responsibility for safety oversight on air carriers themselves. Following the most recent crash of a commercial air carrier outside Buffalo, NY, FAA Administrator Randy Babbitt released a Call for Action to all small regional carriers to place more emphasis on identifying safety issues internally through programs such as ASAP and FOQA. This reaction is in stark contrast to other aviation disasters throughout the FAA’s history after which the agency often made the case for increased resources to improve inspector oversight or improve technology to ensure aviation safety. This shift indicates how vital the voluntary safety reporting programs have become to the FAA’s safety oversight apparatus.
<table>
<thead>
<tr>
<th>Aviation Disaster/Incident</th>
<th>Year</th>
<th>Resulting Reform in Regulatory Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Navy plane crashes</td>
<td>1925</td>
<td>Leads to creation of Morrow Board that recommends placing responsibility for Federal regulation of aviation in the Commerce Department</td>
</tr>
<tr>
<td>Will Rogers, Knute Rockne, and Senator Cutting crashes</td>
<td>1930s</td>
<td>Led to perception that politics and spoils-style hiring practices were influencing ability of agency to regulate air carriers. Civil Aeronautics Act of 1938 passed to create an independent agency to regulate aviation</td>
</tr>
<tr>
<td>Mid-air collision over Grand Canyon between TWA Constellation and United DC-7 Collision between DC-7 and Air Force F-89 over California</td>
<td>1956, 1957</td>
<td>Illustrated lack of coordination in air traffic system between military and civilian aircraft. Also illustrated the inability of the CAA and CAB to effectively operate within an increasingly difficult bureaucratic environment. Led to the passage of the Federal Aviation Act of 1958. Created an independent Federal Aviation Agency charged with promoting air safety and aviation development, regulating air traffic control, and inspecting aircraft.</td>
</tr>
<tr>
<td><em>TWA Flight 514 Mt. Weather, VA</em></td>
<td>1974</td>
<td>Information on dangerous approach to Dulles was not reported and shared among air carriers, which led to development of Aviation Safety Reporting Program (ASRP)</td>
</tr>
<tr>
<td>USAir Flight 427</td>
<td>1994</td>
<td>Led to first Aviation Safety Summit where ideas and implementation plan for voluntary programs were first discussed</td>
</tr>
<tr>
<td>ValuJet Flight 537</td>
<td>1996</td>
<td>Led to symbolic elimination of the FAA’s dual mandate by Congress in FAA Reauthorization Act of 1996 Commissions recommend increased use of voluntary safety reporting programs such as</td>
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VDRP and the development of ASAP programs

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 11th Terrorist Attacks</td>
<td>2001</td>
<td>Shifted focus of aviation regulation from safety to security. Separated security function from FAA to TSA. Fear of flying coupled with economic troubles for air carriers leads to creation of Customer Service Initiative in 2003 to give air carriers greater avenues of appeal in regulatory enforcement actions.</td>
</tr>
<tr>
<td>Southwest/American Airlines Incident</td>
<td>2008</td>
<td>Whistle-blowers uncover problems in implementation of VDRP by showing that PMI allowed unqualified VDRP reports to be accepted. Leads to Congressional hearings about the voluntary programs; results in change of Customer Service Initiative to Consistency and Standardization Initiative and creation of Office of Audit and Evaluation to handle whistle-blower complaints.</td>
</tr>
<tr>
<td>Colgan Air Flight 3407</td>
<td>2009</td>
<td>Leads to Call to Action plan that strongly encourages air carriers to develop ASAP programs. Proposal to strengthen analysis of ASAP and other voluntary program data.</td>
</tr>
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**Theme #2: The historically close relationship between air carriers and the FAA has resulted in the development of autonomy that allows the agency to act as a partner to air carriers to ensure safety**

Throughout history, air carriers have had a very close relationship with the government. The first critical juncture in the development of this close relationship was
the passage of the Air Mail Act of 1925, which shifted the responsibility of airmail service from the government to the private sector. The decision to identify commercial airmail service as a private venture rather than as a public good to be administered through government meant that the government would be the regulator of air service rather than the provider. Early agencies such as the Aeronautics Branch and the CAA relied heavily upon the ability of its inspectors to police the maintenance and flight operations of air carriers. As the number of aircraft, air carriers, and pilots increased, the regulatory agencies quickly became aware that they would need to change their safety oversight approach because of the limited number of inspector resources available. The Federal Aviation Act of 1958 changed the nature of the relationship between regulator and industry as safety and maintenance became a cooperative venture.

Another area where the close relationship between air carriers and the FAA is very evident is in the area of personnel hiring. The first administrator of the Aeronautics Branch of the Commerce Department, William MacCracken, was co-counselor of the National Transport Association. In his first act, he convened members of the aviation community to gather their input and guidance on the types of regulations that the agency should pursue. The practice of hiring administrators and high-level officials from aviation interest groups has continued throughout history, with current Administrator, Randy Babbitt serving as a founding member of the Air Line Pilots Association. Employees from air carriers often work for the FAA and vice-versa, which produces several characteristics including a close working knowledge of air carriers by the FAA
and a joint responsibility for the implementation and success of voluntary safety programs.

In response to several aviation disasters, the FAA decided against the conventional wisdom of stricter regulations and instead developed partnership programs with air carriers. In the face of intense pressure from Congress and the President after the ValuJet crash to increase safety by increased oversight of air carriers, the FAA decided to implement a voluntary safety program developed by an air carrier (ASAP). More recently, the crash of Colgan Air Flight 3407 has again resulted in calls for the FAA to increase its oversight of regional carriers. In its “Call to Action”, the agency has proposed increasing the use of voluntary safety programs to increase aviation safety (FAA Report: Answering the Call to Action 2010). This proposal was an attempt to preemptively address issues proposed by the Congress in H.R. 5900. While the FAA proposal and H.R. 5900 have a considerable amount of overlap, the FAA (and the airline industry) strongly opposes a 1,000-hour pilot training requirement found in the Congressional bill. These responses to highly emotional and politicized situations provide the best support for Carpenter’s hypothesis that agencies that develop networks of actors supportive of their work develop a high level of autonomy to act contrary to pressure from political principals.
**Theme #3: The organization and mission of the FAA have led to a culture within the agency that is inherently conflicted between regulating and protecting civil aviation in the United States**

One of the most often cited pieces of evidence by proponents of agency capture in the FAA was the agency’s initial dual mandate to both promote and regulate the aviation industry. This dual mandate was the historical and institutional legacy of several pieces of legislation including the Air Commerce Act of 1926, which housed the regulatory apparatus for the aviation industry in an agency designed to promote industry more generally. Early officials in the Aeronautics Branch and subsequent agencies knew that their careers depended upon the success of the aviation industry. The inherent conflict in the dual mandate of regulation and promotion is clear: the first implies oversight of the airline industry, with demands for changes in safety policy while the latter implies a laissez-faire approach, in which air carriers would be responsible for regulating themselves. The result has been an uneasy compromise tilted towards self-regulation (Cobb and Primo 2003). After the ValuJet crash in 1996, Congress eliminated the FAA’s dual mandate in the FAA Reauthorization Act of 1996. Specifically, the law struck any mention of promotion or air commerce from the mission of the agency (Public Law 104-264 1996). However, in a recent *Frontline* interview, former DOT-IG Mary Schiavo noted that in the conference committee reports, a comment from the FAA stated, “The managers do not intend for enactment of this provision to require any changes in the FAA's current organization or functions. Instead, the provision is intended to address any public perception that might exist that the promotion of air commerce by the FAA could create a conflict with its safety regulatory mandate” (*Frontline: Flying Cheap 2/9/2010*).
In 2003, Administrator Blakey’s announcement of the Customer Service Initiative that allowed air carriers to circumvent certain inspectors if they felt they were being too stringent towards them once again brought the agency’s mission into question.

In his seminal work on bureaucracy, Wilson (1989) argues that a sense of mission is marked by a clear understanding and widespread acceptance of the critical task of an agency and an organizational culture dedicated towards achieving that task. Organizations in which two or more cultures or tasks struggle for supremacy will experience serious conflict as defenders of one seek to dominate supporters of another. Wilson’s analysis seems to fit well when describing the conflict over the FAA’s mandate, particularly given the diffuse and regionalized organizational structure of the agency. As several officials noted, the culture within different CMOs varies greatly with some inspectors referring to air carrier officials as “friends of this office” and “my air carrier” to other inspectors calling air carriers “those rat bastards” (AFS-230 Interview 11-6-2009). The diffuse nature of the organization coupled with the remaining legacy of the dual mandate and Customer Service Initiative has made it difficult for the FAA to develop a sense of mission dedicated towards aviation safety. This lack of mission has had a tremendous effect on the implementation of the voluntary safety programs, as was evident in the Southwest Airlines case. Both the GAO (2005) and DOT-IG (2008) found that the voluntary safety programs were being implemented in different ways depending upon the CMO. As the FAA moves forward in promoting and supporting the voluntary safety programs, the agency needs to focus on developing and refining its sense of mission to ensure the successful implementation of the voluntary safety programs.
3.6 Evaluating Different Explanations for the Development of Voluntary Safety Programs in the FAA

Using the narrative of the FAA’s history and development of voluntary regulatory programs outlined above and the themes derived from the analysis of the narrative, this section will evaluate how well the theoretical frameworks of regulatory change explain the development of voluntary regulatory programs within the FAA. Specifically, the following sections will outline the expectations derived in Section 3.2 and will evaluate them using evidence contained in the historical narrative of the development of the FAA’s voluntary regulatory programs (Table 3.2).
Table 3.2. Analysis of Theoretical Expectations and FAA’s Historical Experience

<table>
<thead>
<tr>
<th>Theory of Regulatory Change</th>
<th>Theoretical Expectation</th>
<th>FAA’s Historical Experience</th>
</tr>
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<tr>
<td>Public Choice and Agency Capture</td>
<td>The decision to create voluntary regulatory programs was in response to direct influence from a large interest group</td>
<td>The origin of each of the three voluntary programs is different. <strong>However, the support for this expectation is mixed.</strong> ASRS was launched in response to a NTSB report following the crash of TWA Flight 514. The support for the program was found mainly within the FAA and NASA. VDRP was launched in response to calls from air carriers to the FAA to ease the enforcement actions the agency was taking and to allow carriers to voluntarily disclose violations to the agency in exchange for reduced penalties. ASAP was created in response to Congressional and Presidential attention to aviation safety following the crash of ValuJet Flight 592 in 1997.</td>
</tr>
<tr>
<td></td>
<td>The decision to create voluntary regulatory programs was not influenced by Congress, the President, the media, or the public</td>
<td><strong>The support for this expectation is limited.</strong> The ASAP program was directly influenced by President Clinton and Vice-President Gore during their Reinventing Government movement.</td>
</tr>
<tr>
<td>Structural Politics</td>
<td>Voluntary regulatory programs would develop under agency leadership that has a close relationship with industry or has worked in prominent positions within aviation</td>
<td>The support for this expectation is mixed. ASRS was founded under the direction of FAA Administrator John McLucas, who was the former Secretary of the Air Force and who also worked for the MITRE Corporation. VDRP was founded under the direction of FAA Administrator Admiral James Busey, who had little aviation background prior to becoming head of the agency. ASAP was founded under the direction of FAA Administration Jane Garvey, who was the first agency chief without a pilot license. Garvey was director of Boston Logan Airport before becoming Administrator.</td>
</tr>
<tr>
<td><strong>Opponents of voluntary regulation</strong> will attempt to delay the creation and development of these programs</td>
<td><strong>The support for this expectation is limited.</strong> In each of the three programs, there was no organized opposition to the development of voluntary programs. Since the creation of each program was done through the rulemaking process, Congressional and media attention was very isolated during the creation of each program.</td>
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<tr>
<td><strong>Organizational Reputation</strong></td>
<td>The FAA would be most likely to adopt voluntary programs that utilize the expertise of industry when the reputation of the agency is poor among policy-makers and the public</td>
<td><strong>The support for this expectation is very strong.</strong> In each instance, the FAA decided to utilize the expertise of industry to identify weaknesses in safety when political principals called into question the ability of the agency to effectively oversee carriers and ensure safety.</td>
</tr>
<tr>
<td></td>
<td>The FAA would create voluntary programs when it is not constrained by other actors and its ability to act autonomously is high.</td>
<td><strong>The support for this expectation is very strong.</strong> Throughout its history, the FAA’s close relationship with air carriers and interest groups has resulted in the ability of the FAA to develop a high level of autonomy to act unchecked by other political actors. Also, the highly complex nature of aviation-related tasks allows the agency to</td>
</tr>
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</table>
operate with a great deal of autonomy. This autonomy has allowed the agency to develop voluntary regulatory programs that give more responsibility to carriers to self-police safety hazards even as members of Congress and the media call for greater agency oversight and inspections of air carriers.

<table>
<thead>
<tr>
<th>Behavioral/Punctuated Equilibrium</th>
<th>The FAA would be most likely to adopt voluntary programs after a highly salient aviation incident</th>
<th>The support for this expectation is mixed. Both ASRS and ASAP were developed after highly salient aviation crashes and in response to pressure from political groups. VDRP was created in response to air carrier and internal agency pressure to reduce the amount and number of enforcement actions being taken against carriers.</th>
</tr>
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<tr>
<td>The development of voluntary programs would occur substantially after the highly salient aviation incident</td>
<td>The support for this expectation is limited. All three programs were implemented quickly after their conceptualization through pilot programs that led to the crafting of Advisory Circulars to codify each of the programs.</td>
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</table>
The results of the analysis conducted in Table 3.2 indicate that Daniel Carpenter’s organizational reputation framework (2001; 2010) best explains the development of voluntary regulatory partnership programs within the FAA. Throughout its history, the agency has developed a close relationship with industry that has given the FAA the reputation as both a regulator and also a partner that works with industry to ensure safety. The technically sophisticated nature of aviation also allows FAA officials to enjoy information advantages over political principals, which furthers the agency’s ability to act autonomously to implement programs it finds effective. While the agency enjoys a favorable “technical reputation”, the moral reputation of the agency (the ability of the agency to foster a culture of ethical behavior and transparency) has suffered. However, while Congress and the media have focused on the deficiencies in the moral reputation of the agency throughout its history, the agency’s technical reputation has allowed it to act autonomously to partner with industry to create voluntary safety reporting programs that place greater responsibility on air carriers for self-identifying and self-policing potential safety hazards within their operations.

3.7 Conclusion

The development of the FAA’s voluntary safety reporting programs is one that is rooted in the historical legacy of regulatory decisions dating back to the founding of aviation in the United States. Throughout history, the aviation industry and the government entity responsible for overseeing its behavior have had a close relationship that has focused on working collaboratively to overcome technical and safety obstacles. The FAA’s historical experience also provides an interesting case to evaluate theoretical
frameworks of regulatory change. Because of the technically sophisticated nature of aviation, both industry and the FAA have developed a positive technical reputation that has afforded a great deal of autonomy to develop a regulatory regime that focuses on industry voluntarily self-identifying and self-reporting violations to the agency rather than a strict command and control model of regulatory oversight. This important finding lends further support to Carpenter’s organizational reputation framework, which highlights the importance of autonomy and reputations in fostering policy change. Also, this chapter illustrates limitations of other theories of regulatory change. For example, the incremental development of the VDRP program illustrates that large-scale policy change within an agency can occur without the presence of a large-scale focusing event. Contrary to structural politics theory, the development of voluntary safety reporting programs occurred under the leadership of administrators who had not directly worked for industry prior to becoming head of the FAA. The historical development of voluntary safety reporting programs within the FAA adds another interesting and appropriate perspective through which to examine these alternative regulatory regimes.
CHAPTER 4

Fostering Bureaucratic Policy Learning through Voluntary Safety Reporting

Programs: The Case of the Federal Aviation Administration

4.1 Introduction and Research Questions

Voluntary programs are a fast growing and increasingly important policy tool that is being used by regulatory agencies to increase compliance and adherence to rules (Haufler 2001). Voluntary programs are alternative regulatory regimes used by government managers to foster a free exchange of information between industry and regulators by incentivizing the self-policing and self-reporting of regulatory violations to regulators in exchange for reduced enforcement action. The benefit to both firms and agencies is clear: voluntary programs give agencies access to valuable sources of data on potential violations and hazards within industry that can be used to better target regulations and inspector resources while firms receive reduced enforcement action and better informed regulations.

While voluntary programs have become popular across federal agencies, several recent salient failures of voluntary programs have brought their utility into question. First, the failure of the Securities and Exchange Commission’s Consolidated Supervised Entities (CSE) voluntary disclosure program was a major contributing factor of the financial crisis of 2007 to 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 Brothers, 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, SEC Chairman 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 former Mineral Management Service (MMS) 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). 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 responsibility for oversight of offshore drilling rigs from the MMS to the companies engaged in drilling activities by shifting the focus of inspections from compliance to a hazard and risk based approach that examined companies’ internal audit and safety processes (U.S. Department of the Interior MMS Website). In the investigations following the Deepwater Horizon explosion, employees
of Transocean and 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 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 BP and Transocean’s word that the devices were functional (Schor 2010; Barstow et al. 2010). In the wake of the investigation, commentators 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).

In the wake of large-scale failures of voluntary programs at SEC and MMS, many observers and elected-officials have concluded, as did Chairman Cox, that voluntary regulation does not work. However, voluntary programs may offer agencies valuable sources of information that can be used to proactively revise and create new regulations and reduce the need for reactionary policymaking following large scale focusing events. The questions that this chapter will examine are:

- Do failures of voluntary programs at SEC and MMS mean that all voluntary regulation is destined to fail?
- If voluntary programs are structured effectively, can they provide agencies with valuable sources of previously unavailable information that can be used to bridge information asymmetries between firm and regulator?
- Can this information collected through voluntary programs be used to foster proactive incremental bureaucratic policy learning and lessen reactionary policy-making following high-profile focusing events such as crashes of fines?

4.2 The Regulatory Dilemma and Information Asymmetry

Regulatory scholars (Scholz 1991; Potoski and Prakash 2004) title the balancing act faced by government managers in ensuring compliance with regulations but also
encouraging collaboration between agencies and firms the “regulatory dilemma.” The regulatory dilemma (illustrated in Table 4.1) 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 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 benchmarks are not met. May (2005) argues that under a deterrence environment, the motivation of the firm to comply is one of fear of consequence if they are found to be in violation of the regulatory requirement. In an environment of shrinking budgets relative to regulatory mandates, deterrence enforcement becomes increasingly difficult to sustain and threatens to produce an adversarial relationship between government and firms and may undermine enforcement frequency and effectiveness (Carpenter 1996; Wood and Waterman 1993). 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. Here, May (2005) argues, the motivation to comply is one borne of a sense of duty and professionalism.

While governments choose regulatory styles, firms are also able to choose how to respond to the regulatory environment by either evading or self-policing. Firms engage in evading 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 if the government engages in cooperation while firms self-police as costs to both are minimal. However, the dilemma is that it is in the self-interest of both governments and firms to engage in less than optimal regulatory processes (Williamson 1975). Specifically, scholars such as Moe (1984) and Wood (1988) argue that agencies are often on the short end of an information asymmetry and that imperfect information on firm operations leads to non-optimal regulations marked by “government failures” such as adverse selection and moral hazard.
Table 4.1. The Regulatory Dilemma

Firm Response to Enforcement Style

<table>
<thead>
<tr>
<th>Government Enforcement Style</th>
<th>Evade</th>
<th>Self-Police</th>
</tr>
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<tbody>
<tr>
<td>Deterrence (Command and Control Tools: Strict standards, inspections, penalties for non compliance)</td>
<td><strong>Highest level of conflict; Highest level of cost:</strong> In face of command and control regulatory environment, firms attempt to hide information and violations from regulators</td>
<td>Regulators worry that over reliance on self-policing may lead to agency capture.</td>
</tr>
<tr>
<td>Collaboration (Less stringent adherence to standards, Focus on building trust between regulator and regulated, incentives for regulatory compliance and self-reporting of violations)</td>
<td>While regulators are willing to act collaboratively, firms report smaller violations in hopes that government will not find larger, more extensive violations. Firms worry that self-reported violations can be used to take punitive action.</td>
<td><strong>Lowest level of conflict; Lowest level of cost:</strong> In exchange for reduced regulatory penalties firms agree to take proactive approach to safety by self-reporting violations, which lowers regulators cost of enforcement</td>
</tr>
</tbody>
</table>

Derived from Scholz 1991; Potoski and Prakash 2004

4.3 Voluntary Programs and Information Sharing

Voluntary programs are one tool used by government managers in regulatory agencies to overcome the regulatory dilemma. Voluntary programs are programs that ensure industry compliance and foster collaboration and trust between government and industry to allow for a free exchange of information and data in exchange for reduced enforcement action. These programs help to overcome the regulation dilemma by supplementing command and control regulatory programs through the sharing of new sources of information and data between agency and firm and by developing expectations of behavior through repeated interactions (voluntary disclosure of violations, reduction in
enforcement action, partnership in developing corrective action, etc.) that lead to the fostering of a partnership between regulator and regulated.

In order for voluntary programs to be effective in providing a free-exchange of information between firm and agency they must be structured to overcome the self-interest of both firms and agencies illustrated in Table 4.1. For example, if a firm enters into a voluntary agreement with an agency to report safety violations it uncovers through its internal evaluation programs, the agency expects that it will report all such violations. However, it may be in the best interest of the firm to report only minor infractions to the agency and hide more serious violations that would be costly to correct. Therefore, agencies must adequately incentivize the sharing of information to help overcome free riding (Olson 1965). Also, agencies, faced with political pressures to show measurable outputs for their inspection resources, may be tempted to take punitive enforcement action against a firm based on voluntarily submitted data. Therefore, firms must insist that information supplied to agencies must be de-identified to prevent future punitive action. To overcome the regulatory dilemma, most successful voluntary programs have the following characteristics:

- Government regulations do not mandate that firms join voluntary programs (Potoski and Prakash 2010)
- Firms receive incentives such as reduced regulatory enforcement, increased flexibility, and technical assistance when joining voluntary programs
- Shared responsibility for monitoring, reporting, enforcement, and corrective action
- Collection and analysis of voluntarily submitted violation data by a government agency
- Confidentiality and protection of voluntarily submitted data
- Common understanding of moving beyond compliance with regulations to a more proactive self-policing environment (Short and Toffel 2008)
4.3.1 Industry-initiated Voluntary Programs

The scholarly literature on voluntary programs has been divided into two broad camps: industry-initiated (Gunningham and Grabosky 1998; Iannuzzi 2002) and government-initiated voluntary programs. Industry-initiated voluntary programs are unilateral commitments entered into by individual or groups of firms who agree to adhere to industry standards or best practices in order to achieve regulatory compliance while attempting to be perceived as good corporate citizens by going beyond minimum compliance levels (Borkey, et al. 1998) and reducing their compliance costs by preempting or replacing future regulations (Welch et al. 2000; Potoski and Prakash 2005). Much of the scholarship on voluntary programs has focused primarily on examining the incentives, structure, and operation of industry-created standards for companies to adopt and follow. Using the work of North (1981) and Ostrom (1990) as a theoretical point of departure, much of the industry-initiated scholarship argues that self-regulation by firms and adherence to best practices arise to constrain individual actions that might harm the reputation of an industry as a whole (Barnett and King 2008).

The examples of industry-initiated voluntary programs in the literature are extremely diverse and illustrate how ubiquitous these types of programs have become. The most studied example of industry-initiated voluntary programs is the ISO 14001 Environmental Management Systems environmental certification given out by the industry group the International Organization for Standardization. Murray (1999) argued the ISO 14001 Environmental Management Systems would take some time to become an effective regulatory tool because of the difficulty in building trust between firms and the
public. Others have argued that ISO 14001 certification mitigates noncompliance by professed ignorance by focusing on the root causes of noncompliance (Winter and May 2001). Finally, Potoski and Prakash (2005) found that ISO 14001 certification reduced firms overall compliance costs and also led to a reputational benefit for the firm through the perception that the firm was going above traditional compliance standards. Other studies of industry-initiated voluntary programs have covered industries such as electric utilities (Welch et al. 2000), chemical plants (King and Lenox 2000), food producers (Segerson 1999) and accounting (Neill 2005).

4.3.2 Government-initiated Voluntary Programs

Government-initiated voluntary programs ones in which a public entity, typically an agency, develops an alternative framework of regulatory compliance that outlines conditions for participation and offers firms incentives to develop self-auditing and self-reporting processes to proactively identify areas of hazard within the firm (Borkey et al. 1998). Also, agencies can establish a series of best practices or accepted procedures known as management based regulation to be implemented to each firm’s specifications to allow employee groups to self-police and self-report violations and hazards (Coglianese and Lazer 2003). A key insight of the government-initiated voluntary program literature is that firms are much better positioned than the agency to identify, monitor, and deter violations by employees (Arlen 1994; Arlen and Kraakman 1997). In their study of the EPA’s Audit Policy program\(^\text{x}\), Pfaff and Sanchirico (2000) find that self-auditing can be more effective than periodic regulatory inspections when regulators increase potential fines for noncompliance.
The literature on government-initiated voluntary programs has focused on two main themes: motivations for joining and the effectiveness of self-reporting in signaling regulatory compliance. Becker (1968) first hypothesized that the major motivation of firms in complying with government-issued regulations was deterrence, which is marked by a fear of the consequences of being found out of compliance. Under traditional command and control regulatory regimes, the deterrence motivation is a powerful one. However, voluntary regulatory regimes rely on a different motivation: a combined sense of moral obligation and agreement with the need for addressing a certain problem (Winter and May 2001; May 2005). Potoski and Prakash (2004; 2009) have used a club theory approach to argue that participation in voluntary programs provides firms with a powerful reputational advantage that can be used to create a niche or preempt future regulations.

A less studied aspect of voluntary programs has been the motivation of government agencies in establishing and operating voluntary programs. Kaplow and Shavell (1994) note that establishing voluntary programs drastically reduces inspection costs by transferring a majority of the responsibility for discovering violations to the private sector. Innes (2001) finds that self-reporting of violations also reduces the costs of agencies because firms tend to work more collaboratively with regulators to develop corrective action to remedy violations. Another benefit to agencies is that they gain access to valuable data of the internal operations of firms that can be used to target future inspections and to make meaningful regulatory change (Toffel and Short 2010). Both firms and agencies have powerful incentives to join government-initiated voluntary
programs. However, as the regulatory dilemma presented earlier described, the self-interests of both actors may limit the successfulness of voluntary programs in producing compliance and meaningful regulatory change.

Another strand of literature has focused on the accuracy of self-reporting in signaling effective self-auditing processes and compliance with regulatory standards. In a comprehensive study of the relationship between participation in voluntary environmental programs and regulatory compliance, Darnall and Carmin (2005) found that free-riding problems permeated programs in the absence of government inspections and sanctions, indicating that the threat of enforcement action is vital to the success of self-reporting programs. The most rigorous examinations of the signaling accuracy of self-reporting programs in producing effective self-auditing processes to uncover violations have been conducted by Jodi Short and Michael Toffel. In their study of EPA Audit Policy self-disclosures, Short and Toffel (2008; 2010) found that firms that voluntarily disclosed a violation and committed to self-policing practices under EPA guidelines, improved their environmental performance and compliance. Also, the authors suggest that voluntary disclosures can help reduce enforcement costs for regulators as information gathered through voluntary programs can be used to more effectively target inspections. Government-initiated voluntary programs have the potential to be a vital source of information that agencies can use to ensure regulatory compliance.
4.4 The Aviation Safety Reporting System

The Aviation Safety Reporting System (ASRS) is 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 (Figure 8). In exchange for their submissions, reporters are ensured confidentiality of their reports and a waiver of sanction 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 NASA. ASRS conducts an analysis of each report received to diagnose the causes underlying each event. Using this analysis, ASRS produces a variety of outputs to communicate the findings of its analysis to representatives in industry and the FAA who can implement changes to improve aviation safety through new regulations or targeted inspections.

The impetus for the creation of ASRS was the crash of TWA Flight 514 on December 1, 1974 outside of 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 mountain top killing 85 passengers and 7 crew members (Reynard et al. 1986). In the 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”, which 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, the NTSB concluded, there was no industry-government sharing program to spread the word beyond United Airlines. Since the program’s inception in 1976, ASRS has received approximately 900,000 reports from aviation officials and has issued over 5,000 safety alert bulletins (ASRS Program Briefing).
4.5 Bureaucratic Policy Learning

A theoretically interesting perspective through which to examine the link between the information gathered through self-disclosure programs and agency action is found in the literature on bureaucratic policy learning. Most scholars define policy learning as a process in which individuals apply new sources of information to policies and regulations (Mahler 1997; Busenberg 2001). Studies of policy learning within agencies typically begin with a discussion of the bounded rationality model, in which individuals and
agencies have limited capacity to incorporate multiple sources of information into
decision-making processes (Simon 1947; March and Simon 1958). The lack of capacity
to integrate information sources often results in a search for new and innovative sources
of information (Simon 1985) and less than optimal policy choices (Lindblom 1959). In
the regulatory arena, the literature on the information asymmetry between regulator and
firm has been well documented, with several scholars noting that imperfect information
leads to failures such as agency capture, moral hazard, and adverse selection (Downs

Building on the bounded rationality literature, scholars such as Sabatier and
Jenkins-Smith (1993; 1999), May (1992; 1999), Jones (2001), and Carpenter (2004) have
examined how agencies can use information from regulated entities to adapt their
behavior and overcome traditional government failures associated with limited
information processing (Jones 2001). May (1992; 1999) argues that instrumental policy
learning gives agencies cues “about the viability of policy instruments or designs” that
can be used to alter or adapt future program goals or tactics (1999; p. 21). In their
groundbreaking work on policy learning, Sabatier and Jenkins-Smith (1993) argued that
new sources of information were influential in changing individual’s secondary beliefs,
which could be used to adapt to new signals from the external environment, particularly
within advocacy coalitions interested in a particular policy domain. Finally, Carpenter
(2004) examined the role of reputation and history in determining Food and Drug
Administration (FDA) drug approvals. According to Carpenter, the FDA engaged in
policy learning by relying on prior experience and reputation of drug producers to grant
tentative approvals of new drugs. Challenging the agency capture argument, Carpenter finds that the FDA’s use of reputation to guide its decision-making process in drug approvals is strong evidence of a “learning and adaptive regulator” (2004).

Scholars have bifurcated the literature on policy learning and change into two camps: proactive and reactive policy learning. Proactive policy learning is derived from Lindblom’s (1959) conception of incremental policy learning, which focuses on a rational and purposeful effort to interpret and analyze new information to correct problems through new or revised regulations (Mahler 1997). This type of policy learning occurs through a purposeful design of agency programs to gain new sources of information to better understand a particular process (Busenberg 2001). Typically, studies of proactive learning have focused on the trial and error implementation of policies and programs and how future programs adapt to lessons learned and best practices (Kelman 1981, Majone 1989). A missing link in the literature is how voluntary programs can be structured to provide agencies with actionable information to make immediate proactive changes to existing policies.

A large body of literature has examined reactive learning processes following focusing events (Kingdon 1984; Birkland 1997) or large-scale perturbations (Baumgartner and Jones 1993). By focusing public and political attention on safety within an industry, such events can provide the impetus for large-scale policy change based on information learned through an investigation of the accident. Cobb and Primo (2003) conducted an innovative analysis of the relationship between the amount of media coverage of aviation crashes and the scope of resulting policy change. Specifically, the
authors examined three modern aviation crashes by analyzing the number of front-page news stories, the number of Congressional hearings, and the type and number of NTSB or FAA recommendations implemented to remedy the causes of the crashes. Cobb and Primo argue that air safety is a symbolic term that is defined by a variety of policy actors including the media, FAA, NTSB, Congress, and the airlines. Their analysis finds that an aviation disaster is not a sufficient condition for major change in aviation regulation, indicating mixed support for the importance of reactionary policy learning.

In an innovative study in the highly hazardous and safety focused marine oil trade in Price William Sound, Alaska, Busenberg (2001) investigates the affect of proactive and reactive policy learning following the Exxon Valdez oil spill. The key insight of Busenberg’s work is the delineation between learning by design (proactive) and learning by accident (reactive) and the impact of each on the actions taken by government agencies and private firms. Busenberg finds that learning by accident is constrained by political influence following a highly salient event whereas learning by design is often conducted without constraint. While descriptively interesting, Busenberg’s study is limited in its conclusions because of the lack of empirical evidence to tease out the comparative effect of proactive and reactive learning on policy change in a highly salient environment. This chapter will fill a gap in the literature by empirically investigating the influence of voluntarily submitted self-disclosures in providing the mechanism for proactive policy learning within the FAA to improve aviations safety by issuing new regulations based on new information. Also, this chapter provides an empirical assessment of the relative importance of reactive learning following aviation disasters.
4.6 The Iterative Loop of Voluntary Reporting: The FAA’s Use of Voluntarily Submitted Data

To make the argument that proactive agency learning takes place within the FAA, it is first necessary to examine why and how the agency uses voluntarily self-disclosed violation reports from aviation professionals and companies. The main rationale for the FAA’s use of voluntary self-disclosure programs is to gain access to unfiltered information from front-line aviation operators on safety hazards within general and commercial aviation within the United States. Self-disclosed reports by front-line aviation operators give the FAA insight into the “why” question of safety hazards, which is referred to as “human factors” data. Human factors data is valuable to the FAA because it provides candid insights into common safety hazards and potential methods to prevent them from occurring in the future and also allows the agency to see potential systematic problems within an aviation company (Dekker 2007; Stolzer, Halford, and Goglia 2008).

A common criticism of voluntary self-reporting programs is that they represent “get out of jail free” programs and are conducive to falling victim to the forces of “agency capture”. Former SEC Chairman Cox’s comment that “voluntary regulation does not work” following the collapse of the CSE program is strong evidence of the potential consequences voluntary self-reporting programs. However, both the SEC and MMS did not have both the collection and analytical capabilities to learn from the data collected through self-reporting programs and make meaningful regulatory changes to correct problems identified through reporting programs. The FAA has robust collection
and analytical programs designed to identify hazards at both the local (individual carrier) and national (aviation system) levels. For example, NASA collects and analyzes ASRS reports on a monthly basis to produce *Alert Bulletins* that are used by FAA and air carrier officials to make meaningful regulatory and operational safety enhancements. Also, ASRS reports are de-identified and entered into Aviation Safety Information Analysis and Sharing (ASIAS) database where it is merged with other sources of safety data to provide a complete picture of national safety hazards. 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 FOQA data. ASIAS studies are approved by an Executive Board (AEB) that is comprised of industry and government members. Once approved, MITRE Corporation then conducts queries of data and produces safety hazard reports for both the FAA and carriers, which are used to identify potential regulatory changes or operational changes within an airline.

Theoretically, the FAA’s use of voluntarily self-disclosed reports to engage in proactive learning and make regulatory change has been described as an “iterative loop of policy learning” (Billings 1998). Figure 9 outlines the iterative process through which the FAA and industry engage in policy learning. First, the FAA establishes a program through which employees and companies can voluntarily self-disclosure violations to the agency for reduced regulatory enforcement action. Through repeated interactions, a level of trust is developed, which leads to increased reporting over time. The next step in the
loop is perhaps the most critical. As the agency becomes inundated with self-disclosures, it is vital that they have the necessary resources to collect, organize, and analyze the reports to identify safety hazards and potential corrective actions. Within the FAA, local offices receive reports on self-disclosures and the national office has access to both the ASRS and ASIAS databases to robustly analyze data to identify system-wide safety hazards and potential regulatory solutions to correct issues identified through self-reporting.

As the FAA analyzes the self-disclosures collected through ASRS and other programs, it engages in proactive policy learning by using this data to more effectively target local inspection activities to areas of hazard within a carrier and also identifying potential regulatory strategies to mitigate the safety hazard at the national level. In response to regulatory issues raised through the analysis of self-disclosed reports, the FAA can issue new Airworthiness Directives (ADs) or Advisory Circulars (ACs) to correct safety hazards. Once the agency adapts new guidance through ACs, air carriers being the process of revising their internal processes and procedures to adhere to the new guidance issued by the FAA to remain in compliance. However, as carriers begin to adapt to new ACs and ADs issued by the FAA, employees may quickly realize that the new regulations result in new unforeseen safety hazards that result in new self-disclosures to complete the loop of reporting. The iterative loop of safety reporting within the FAA offers a theoretically interesting case to examine the relative importance of incremental policy learning. The FAA’s reputation as the “tombstone agency” (only taking action following aviation disasters) provides an appropriate policy domain to empirically
compare the usefulness of voluntary self-disclosure programs in fostering proactive policy learning while reducing the need for reactionary policy change following an aviation disaster.

Figure 9: An Iterative Loop of Policy Learning within the FAA
4.7 Modeling Bureaucratic Policy Learning: Data and Methods

The purpose of this chapter is to empirically assess and answer the following research questions posed earlier through the development of a model of proactive policy learning through voluntary self-disclosure that controls for the effect reactionary policy making following an aviation disaster:

- Does the FAA use information from air carrier employees collected through voluntary disclosure programs such as ASRS to proactively create new or revised Advisory Circulars?
- Or, as punctuated equilibrium theory would predict and popular observers charge does the FAA react to aviation crashes and increased Congressional and public attention by issuing more Advisory Circulars?

To develop an empirical model that effectively assesses the causal relationship between voluntary self-disclosures to the FAA and agency regulations as evidence of proactive policy learning, it is paramount to capture an accurate measure of the volume of self-disclosures to the FAA and the number of regulations promulgated by the agency within a given time period. The dependent variable of interest in the model is the number of Advisory Circulars dealing with Part 121 carrier related regulations issued per year from 1990-2009\textsuperscript{xiii}. The number of ACs issued per year was collected through a FOIA request to the FAA and verified by a search of the FAA’s \textit{Advisory Circular Database}. The number of Advisory Circulars was used instead of Airworthiness Directives for several reasons. First, Advisory Circulars are designed to be modified more quickly than Airworthiness Directives, which often require substantial input from manufacturers and other stakeholders. Thus, Advisory Circulars can provide a much more direct measure of regulatory change than would Airworthiness Directives because of the expedited process through which they are issued. Second, Airworthiness Directives often deal with very
specific aspects of aircraft that may or may not be addressed in voluntary disclosures. Advisory Circulars are used as a communication tool by the FAA to issued national-level policy guidance that deals with systemic issues that are often raised in self-disclosures.

The key independent variable in the model is the level of self-disclosures to the FAA, which is measured using the number of Part 121 carrier ASRS self-disclosures per year from 1990-2009 (Figure 10)\textsuperscript{xiv}. ASRS disclosures were chosen as the key independent variable for several reasons. First, while the numbers of Aviation Safety Action Program (ASAP) and Voluntary Disclosure Reporting Program (VDRP) reports would be a more direct measure of self-disclosure rates, Part 193 of the Federal Aviation Regulations protects the number of disclosures from public release under FOIA. Second, ASRS is a national clearinghouse of all voluntary reports, which can serve as a reliable proxy to capture both ASAP and VDRP reports. To capture the speed with which the FAA acts on ASRS disclosures to promulgate new Advisory Circulars, a one-year lagged version of the ASRS disclosures variable is included in the model.
Several other independent variables are included in the model to control for the effect of reactionary policy-making following an aviation disaster. The number of Part 121 fatalities per year is included to measure both the frequency and severity of aviation crashes that may occur during a year (Cobb and Primo 2003). Also, the number of *New York Times* and *Washington Post* articles on aviation safety per year is included as an independent variable to measure public salience of aviation-related events. The number of stories was collected through a *Lexis Nexis* search of “aviation safety” per year of both newspapers. The author then reviewed each article to ensure that each story in fact dealt with aviation safety. Finally, a variable was included that measured the number of Congressional hearings on aviation safety per year. This variable was constructed by performing a search of “aviation safety” in the *LexisNexis Congressional* database for
each year from 1990-2009. The Congressional hearings variable is intended to capture
the level of political attention shifted on the aviation industry following a crash. A test of
multi-collinearity among the three variables designed to measure reactionary policy
learning resulted in no significant correlations between the variables. Finally, a variable
measuring FAA fines in dollars per year is included to act as a control for both the
general level of FAA regulatory activity and the level of tension between the agency and
air carriers.

A series of diagnostics was conducted to determine the optimal time series
regression model to ensure unbiased and robust estimates. Both partial and full
correlograms and Portmanteau’s Q statistics of the dependent variable revealed no
significant patterns of autocorrelation. Also, the Durbin-Watson test of autocorrelation
resulted in a value of 1.53. Using the Savin and White tables with 13 degrees of freedom
results in no significant autocorrelation. Also, a Dickey-Fuller test was conducted on the
dependent variable, which resulted in no significant MacKinnon p-values for unit roots
were found. Due to the lack of autocorrelation in the model, it may be appropriate to use
a standard Ordinary-Least Squares regression model. However, because of the limited
number of degrees of freedom, a Prais-Winsten time series regression model is used to
estimate the affect of ASRS disclosures per year on the number of Advisory Circulars
issued by the FAA. Beck and Katz (1995) recommend using Prais-Winsten when there
are few degrees of freedom. Prais-winsten is a generalized least squares (GLS) model
that controls for autoregressive processes. It is similar to the Cochrane-Orcutt methods,
however, Prais does not drop the first observation, which is important given the limited
number of degrees of freedom (Barrilleaux and Berkman 2003). This is a better alternative than including a lagged version of the dependent variable in the model because as Achen (2000) notes, lagged dependent variables overpower other variables in the model. Also, the model was estimated using robust standard errors in an attempt to overcome any heteroskedasticity in the model.

This chapter empirically examines only the first half (agency learning) of the iterative loop of policy learning outlined in Figure 9. While a simultaneous model of the interaction between proactive bureaucratic policy learning and industry adaptation would capture the full extent of the iterative loop of policy learning, such a model would be recursive and would make it impossible to parse out the individual causal factors of one variable on another (Townes 2010). The main question of interest focuses on how agencies use voluntarily self-disclosed data to engage in policy learning. An examination of subsequent industry adaptation to new regulations, while interesting, is not entirely theoretically relevant to the question posed in this chapter.

4.8 Hypotheses

This analysis presented in this chapter examines the relationship between voluntarily self-disclosed reports and FAA behavior through the issuing of Advisory Circulars as evidence of policy learning. To identify the type of policy learning taking place in this model, a series of proactive policy learning and reactive policy learning hypotheses are presented.
4.8.1 Proactive Policy Learning Hypotheses

Proactive policy learning is an incremental and purposeful process that uses new sources of information to make changes to existing policy or regulations (Mahler 1997; Busenberg 2001). In the FAA context, as the agency gathers new information about national and local safety hazards through ASRS disclosures, inspectors are better able to target their inspections and national-level regulators are able to revise or create new Advisory Circulars to communicate the content of these self-disclosures to aviation operators to improve safety. Therefore:

- H1: As the number of voluntary disclosures per year from Part 121 carriers increases, the number of Advisory Circulars directed towards Part 121 carriers issued by the FAA increases.

A positive and significant relationship between ASRS disclosures issued by major air carriers and their employees in a year and the number of Advisory Circulars issued by the FAA within the same year would be strong evidence of proactive bureaucratic policy learning.

Another interesting phenomenon to examine is the speed with which the FAA responds to safety information contained in voluntary self-disclosures. The FAA can issue Advisory Circulars much more quickly than other forms of regulation, which indicates that the agency may act quickly in implementing the findings of self-disclosures in Advisory Circulars. Also, if the agency is engaging in policy learning, we would expect to see a decrease in the importance of prior ASRS reports in influencing new Advisory Circulars because those issues would have presumably been addressed in previous Advisory Circulars. Therefore:
• H2: *As the number of ASRS disclosures in a previous year increases, the number of Advisory Circulars issued by the FAA in the current year decreases.*

A negative and significant relationship between last year’s ASRS reports and the current year’s Advisory Circulars would be strong evidence that the FAA acts immediately in learning from and responding to safety hazards contained in ASRS reports.

### 4.8.2 Reactive Policy Learning Hypotheses

The reactive policy learning literature focuses on the affect of highly salient focusing events (Kingdon 1984; Birkland 1997) or perturbations to the existing subsystem around a policy issue (Baumgartner and Jones 1993; 2005). By focusing public and political attention on safety within an industry, such events can provide the impetus for large-scale policy change based on information learned through an investigation of the accident. Immediately following an aviation disaster, members of the media, Congress, FAA, and NTSB begin a predictable pattern of attempting to assess blame for the resulting loss of life (Cobb and Primo 2003). Many times the actual cause of the crash will not be perceived as the true cause if a dominant public narrative is communicated because of the length of NTSB investigations. The FAA, as the only agency authorized with issuing new aviation regulations, often faces pressure to act immediately in the wake of an aviation disaster. Also, the FAA faces more pressure to act depending upon the severity of each aviation disaster. Therefore:

• H3: *As the number of Part 121 Air Carrier fatalities per year increases, the number of Advisory Circulars per year increases.*
A positive and significant relationship between Part 121 air carrier fatalities and Advisory Circulars would be strong evidence that the FAA’s regulatory making process is reactionary and driven not only by the occurrence of an aviation disaster, but also by the severity of the crash.

Another common variable in reactionary policy learning studies is the level of public salience and media coverage of an event in driving agency action. Following an aviation disaster, many news outlets shift attention to various aspects of aviation safety to highlight deficiencies in the system. The FAA, under increased public scrutiny, may take immediate action to appease those calling for swift action to remedy a particular problem. Therefore:

- H4: As the number of New York Times and Washington Post stories on aviation safety per year increases, the number of Advisory Circulars increases.

A positive and significant relationship between media coverage of aviation safety and Advisory Circulars would be strong evidence that the FAA’s regulatory policymaking is influenced by public attention.

Finally, a wide range of literature has examined the ability of Congress to influence agency decision-making following a highly salient focusing event (Kingdon 1984; Birkland 1997; Jones and Baumgartner 2005). Following an aviation disaster, Congress holds hearings with aircraft manufactures, airline executives, FAA officials, NTSB officials, and consumer groups to develop a narrative that identifies a preliminary cause for the disaster (Cobb and Primo 2003). Members of Congress typically attempt to
preempt or pressure the FAA into quickly passing a stopgap safety enhancement to appease their constituents and the flying public. Therefore:

- **H5:** *As the number of Congressional hearings on aviation safety increase, the number of Advisory Circulars increases.*

A positive and significant relationship between Congressional hearings on aviation safety and Advisory Circulars would add evidence to the burgeoning body of literature that supports the importance of Congressional pressure in driving agency action following a focusing event.

Finally, the number of Advisory Circulars issued in a year by the FAA may be positively related to the general regulatory activity of the agency. For example, the FAA may be conducting more inspections and uncovering safety hazards through its traditional inspection-activities. Also, as the agency issues large, highly-salient fines to carriers who violate FAR’s, media attention and public pressure may result in the agency issuing more regulations. Therefore:

- **H6:** *As the dollar amount of fines issued in a year increases, the number of Advisory Circulars issued by the agency increases.*

### 4.9 Results and Discussion

The results of the Prais-Winsten regression model are presented in Table 4.2. Overall, the model performs very well with an adjusted R-squared value of .70. The proactive policy learning hypotheses (H1 and H2) are confirmed by the results of the analyses. The positive and significant relationship (*t*=3.27; *p*<.01) between ASRS Disclosures and Advisory Circulars indicates that the FAA uses information contained in voluntary self-disclosures to engage in proactive policy learning by issuing increased
guidance to aviation operators through Advisory Circulars. Also of importance, the negative and significant relationship ($t=-4.34; p<.001$) between lagged ASRS disclosures and Advisory Circulars indicates that the FAA takes immediate action on potential safety hazards identified within disclosures. These results indicate that voluntary self-disclosure programs may act as a conduit to foster proactive policy learning within agencies by giving regulators access to new information sources that can be used to identify and remedy potential safety hazards within a specific carriers or at the national-level. This finding expands upon the proactive policy learning literature by showing that proactive policy learning can take place outside of trial and error implementation of programs. Voluntary self-disclosure programs are another tool of governance agencies can use to both bridge the information asymmetry between regulator and firm and also to engage in proactive policy learning to revise and improve the quality of regulations.
Table 4.2. Prais-Winsten Regression for Advisory Circulars Per Year (1990-2009)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>St. Error</th>
<th>T-Score</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASRS Disclosures</td>
<td>0.0027</td>
<td>0.0008</td>
<td>3.27</td>
<td>0.007**</td>
</tr>
<tr>
<td>ASRS Disclosures (t-1)</td>
<td>-0.0041</td>
<td>0.0009</td>
<td>-4.34</td>
<td>0.001***</td>
</tr>
<tr>
<td>FAA Fines (in millions)</td>
<td>-0.0944</td>
<td>0.401</td>
<td>-0.20</td>
<td>0.848</td>
</tr>
<tr>
<td>Part 121 Carrier Fatalities</td>
<td>-0.0240</td>
<td>0.0408</td>
<td>-0.59</td>
<td>0.567</td>
</tr>
<tr>
<td>Congressional Hearings</td>
<td>0.8348</td>
<td>0.4783</td>
<td>1.75</td>
<td>0.106</td>
</tr>
<tr>
<td>News Stories on Aviation Safety</td>
<td>0.0915</td>
<td>0.1504</td>
<td>0.61</td>
<td>0.554</td>
</tr>
<tr>
<td>Constant</td>
<td>53.198</td>
<td>42.497</td>
<td>1.25</td>
<td>0.234</td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.7043</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(N=20, \text{df}=12\)
\(** p<.05, *** p<.001\)

Another interesting result from Table 4.2 is that the number of Part 121 carrier fatalities is not significantly related to Advisory Circulars issued by the FAA \((t=-0.59; H3\) not supported). While this result challenges much of the established literature on reactionary policymaking, it is hardly surprising given the length of time between an NTSB investigation into a crash and the pronouncement of a detailed cause of a crash. In the months following an aviation disaster, the NTSB conducts a thorough and technically sophisticated investigation to determine the cause of the accident. Therefore, the Prais-Winsten regression analysis was run with a lagged Part 121 carrier fatalities variable for five time periods (a five year window). In each instance, the Part 121 carrier fatality variable was insignificant, providing further evidence that the FAA does not engage in reactionary policymaking following aviation disasters. Further evidence of the FAA’s lack of reactionary policymaking is found in the lack of significance between *New York Times* and *Washington Post* stories on aviation safety and the number of Advisory
Circulars issued by the agency (t=0.61; H4 not supported). This null finding is consistent with scholars who have found that the media ranks quite low on the list of influences over bureaucratic decision-making (Furlong 1998).

The most surprising null finding of evidence of reactionary policy making in the FAA is the lack of significance of the relationship between Congressional hearings on aviation safety and Advisory Circulars issued by the FAA (t=1.75; H5 not supported). In the aftermath of an aviation disaster, members of Congress typically hold hearings to develop a narrative that assesses an early indication of a cause of the accident. This narrative is based on preliminary information and findings and thus can be based more on perception and opinion rather than technical details. The FAA, therefore, is unlikely to engage in regulatory reform following a Congressional hearing when information is not certain. Importantly, following an aviation disaster, several stakeholders (aircraft manufactures, airline executives, FAA and NTSB officials, victim’s families groups, airline safety experts, etc.) use the tragedy as an opportunity to tie their organization’s particular agenda to their analysis of the preliminary cause of the accident (Cobb and Primo 2003). With each member of Congress attempting to represent their district’s interests, it is unlikely that a dominant narrative of a cause will be developed, which makes it unlikely that the FAA will be pressured by a unified Congress to make regulatory change.

The results of this analysis indicate that, contrary to the agency’s perception as a tombstone agency, the FAA uses information collected and analyzed through its voluntary self-disclosure programs to engage in proactive policy learning by issuing
Advisory Circulars to highlight and remedy potential safety hazards identified in reports. The popular notion that the FAA only takes action to improve safety following highly salient aviation crashes is not supported by the results of this analysis and indicates that the FAA enjoys a fair degree of autonomy from the media and Congress when using its expertise to develop new safety regulations. While crashes provide the agency with a wealth of information on particular safety failures, typically these incidents do not give the agency insight into why a crash occurred. Voluntary self-disclosures give the agency into valuable human factors data that not only tells the agency how often a violation occurs, but also why a hazard occurs and potentially how to correct and prevent it from occurring again. While the results are robust, it is necessary to note that the significance of the null findings must be kept in perspective due to the limited degrees of freedom in the model.

4.10 Conclusion

This chapter sought to empirically investigate the claim by Former SEC Chairman Christopher Cox that “voluntary regulation does not work.” Voluntary self-disclosure programs are a tool of governance that can provide agencies with valuable sources of information on the internal operations of firms to produce more effective regulations. The failures of voluntary programs within the SEC and MMS were less a result of the fact that the regulation was voluntary and more attributable to the poor management within the agencies themselves. Neither agency effectively structured their voluntary programs in a way to use the information collected through self-disclosure programs to make meaningful regulatory change. For voluntary programs to be viewed as more than
“get out of jail free” programs, the information collected from self-disclosures must be analyzed and used to make regulatory change that is rooted within an agency’s larger regulatory enforcement goals.

The critical theoretical claim developed in this chapter is that voluntary self-disclosure programs, if effectively structured and operated, can give regulatory agencies access to valuable front-line information that can be used to proactively engage in policy learning and reduce the need for reactionary policymaking following a highly salient focusing event. Despite its reputation as the “tombstone agency”, the FAA has used its ASRS voluntary self-disclosure program since 1976 to gather valuable human factors data that is used to improve aviation safety regulations in the United States. The results of the analysis in this chapter suggest that as the amount of voluntary self-disclosures to the FAA increases, the amount of new Advisory Circulars issued by the agency has increased, providing evidence of proactive policy learning. More importantly, there is no evidence that the FAA issues new or revised Advisory Circulars in response to aviation crashes, increased media attention, or increased Congressional attention. This finding challenges much of the agenda setting literature, which argues that agencies are forced to engage in reactionary policymaking following highly salient focusing events.

The analysis presented in this chapter is not without limitations. First, the results in this chapter would be greatly improved had monthly data on all variables been available. An increased sample size and more time periods would allow for greater understanding of the time it takes the FAA to analyze self-disclosures and produce new or revised Advisory Circulars. A second limitation is the fact that it is impossible to tell
how many issues raised in self-disclosures or an aviation crash are captured in one Advisory Circular. Future studies of the use of voluntarily self-disclosed data in fostering new regulations would enhance this work by including pre and post studies of a particular regulation following a self-disclosure or a large-scale focusing event.
CHAPTER 5
The Future of Voluntary Programs: Policy Implications, Lessons Learned, and Policy Recommendations

5.1 Public Policy and Management Implications of Voluntary Programs

The FAA’s experience with voluntary safety programs documented in this dissertation has important policy implications for the future of voluntary programs in other agencies within the Federal government. As some observers have noted, the use of voluntary programs has proliferated across the Federal government without a complete understanding of the structures or culture needed to effectively implement these programs. The case studies of the FAA’s voluntary safety programs presented in chapter 2 coupled with the historical narrative of the development of voluntary programs (chapter 3) and the results of the empirical analysis of the drivers of voluntary self-disclosures presented in chapter 4 have important practical policy and management implications that can be used by government managers to effectively implement voluntary programs and avoid large-scale failures of these programs.

This chapter first develops a series of practical lessons learned from the FAA’s over 30-year experience in implementing voluntary programs. These lessons span three important areas of consideration for government managers in implementing voluntary programs: administrative, regulatory, and technology/data analysis. Each lesson draws on case material and conclusions drawn from chapters throughout the dissertation.
Following the lessons learned, a series of three policy recommendations are made that give government managers important insights and practical advice on how to most effectively structure and implement voluntary programs within diverse policy and program areas.

5.2 Lessons Learned from the FAA’s Experience with Voluntary Safety Programs

5.2.1 Administrative Lessons Learned

Lesson # 1: Regulatory agencies should create a national-level voluntary programs organization that has sufficient autonomy to develop program policy guidance, to conduct routine audits and evaluations of voluntary programs to ensure consistency and standardization, and to conduct analysis of data captured through voluntary programs.

One of the most common criticisms leveled against voluntary programs is that they represent capture of agencies by interests and can lead to a “cozy relationship” between regulators and regulated entities. A national-level voluntary partnership program office is critical to ensuring the standardization of implementation of voluntary programs through the development of program guidance and routine audits and evaluations of localized programs. In the wake of the Southwest Airlines incident, 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 (IRT Report 2008). The program office dealing with voluntary programs will require staff that has a different perspective on enforcement than most regulators. As one AFS-230 official 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 11/6/2009).

In addition to developing program guidance, the office in charge of coordinating voluntary programs within an agency should also 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 (Department of Transportation Inspector General Report 2009; IRT Report 2008). AFS-230 is in the best position of any office in the FAA to effectively understand the underlying trends within voluntarily submitted data and would be the appropriate office to make recommendations on corrective action.

**Lesson # 2: Regulatory agencies must dedicate adequate personnel to the implementation of voluntary programs at the local-level**

Within many of the FAA’s Certificate Holding District Offices (CHDO), inspector resources have been stretched thin as managers attempt to maximize staffing resources while keeping pace with the growth of aviation. Voluntary safety programs are one way to reduce enforcement costs within agencies if properly implemented. To ensure effective investigation of voluntary reports and effective development of corrective actions, agencies must adequately staff these programs. The FAA’s inability to adequately staff voluntary safety programs has led to consternation among air carriers who do not view the FAA as an equal
partner in Event Review Committee meetings within ASAP and note that the lack of FAA personnel slows down the VDRP reporting process.

Lesson # 3: Regulatory agencies and companies should utilize collaborative processes to develop and implement meaningful corrective actions to safety hazards in order to advance the mission of the agency and prevent the perception that voluntary programs are “amnesty” or “get out of jail free” programs.

The FAA’s ASAP and VDRP effectively utilize collaborative processes to develop mitigation strategies to safety hazards identified through voluntary reporting. Specifically, the ERC comprised of an air carrier representative, FAA CHDO representative, and an employee union representative determine the root-cause of an incident and recommend corrective action. Within VDRP, the local FAA CHDO principal inspector and the air carrier work to assess the root-cause of a violation and what comprehensive fix will best address the problem. These types of collaborative efforts effectively utilize 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. ERCs that develop corrective actions have little authority to implement them in air carriers, leaving some to claim voluntary programs such as ASAP represent an amnesty program and a “get out of jail free card”. The Memorandums of Understanding (MOU) that govern ASAP should be modified to give ERCs authority to implement corrective actions (Department of Transportation Inspector General Report
It is crucial that agencies empower collaborative groups such as ERCs to have the discretion to implement corrective actions.

5.2.2 Regulatory Lessons Learned

Lesson # 4: Voluntary programs should be truly voluntary and not forced upon companies and employee groups.

SEC Chairman Christopher Cox identified the ability of firms to pull out of voluntary programs as a major factor of their failure in that agency. However, regulatory agencies must be careful not to mandate the use of voluntary programs as much of the free exchange of information is predicated on a partnership towards a common goal rather than compliance with agency directives.

The FAA’s experience with voluntary programs further illustrates the need for these programs to remain voluntary. As programs such as ASAP become more widespread across aviation, there has been a call from the FAA Administrator for all carriers to implement ASAPs (Call to Action Report 2010). 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. By mandating the use of voluntary programs, the agency removes much of the flexibility of companies to tailor these programs to their individual operating environments.
Lesson # 5: Voluntary programs should be non-punitive and provide reduced regulatory and company enforcement actions to all stakeholders who participate and share information with regulatory agencies.

A critical component of voluntary programs is to adequately incentivize 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 frontlines. However, unless you provide a confidential and non-punitive reporting environment, be prepared to receive few reports” (FAA Official 11/6/2009). Regulators must ensure a non-punitive 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 voluntary program will fail. Agencies must also assure that certain reports such as those involving criminal acts or falsified accounts must be excluded from protection to ensure the integrity of the program.

Starting with ASRS in 1976, all voluntary programs used by the FAA have provided those companies and employees who voluntarily submit reports detailing safety hazards with immunity from enforcement actions. Under VDRP, companies that submit disclosures of systemic violations receive administrative instead of enforcement action. Employees that submit ASAP reports are given full immunity from FAA violations and in some cases from their employers depending upon the recommendation of the ERC.
Lesson # 6: 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 ASRS, the FAA decided to use NASA as a third party and honest broker 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 VDRP data, a crucial step in establishing a free flow of information was to protect the reports from release under FOIA. The IRT Review team 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 indicative of a better safety culture whereas low number of reporting could indicate a lack of awareness of mistakes being made).

Lesson # 7: Regulatory agencies need to use voluntary regulatory partnership programs to complement, not replace, traditional enforcement tools.

Agencies must use voluntary programs to enhance, not replace their existing regulatory structures. Voluntary programs 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 local level. Through its risk-based Air Transportation Oversight System, 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 voluntary programs. 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. Also, 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 2/22/2010).
5.2.3 Data Analysis/Information Technology Lessons Learned

Lesson # 8: Regulatory agencies and companies need effective and robust data analysis capabilities at both the local and national levels to identify safety hazard trends.

The major reason given by the FAA in creating voluntary programs 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 will quickly become overwhelmed by the amount of data collected through voluntary programs. Several carrier and FAA officials claimed to be drowning in data because of the success of the voluntary safety programs. Local FAA CHDOs do an excellent job of using analysis produced by air carriers 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 its ASAP Web based application tool (WBAT), the Web-based VDRP system, and the Aviation Safety Information Analysis and Sharing (ASIAS) program through MITRE. While these tools have helped the FAA proactively identify safety concerns, the Department of Transportation Inspector General (DOT-IG) and GAO noted that a lack of standardization in reporting has limited the ability of the agency to fully utilize the data to develop corrective actions (DOT-IG Report 2009; GAO 2010).
Agencies must also retain the right to have access to de-identified safety information to conduct longitudinal analysis to identify key trends within the data. One key impediment to the FAA’s ability to conduct 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 ASRS is that it contains duplicates of many de-identified ASAP reports. Because ASRS is a public use database and resource, the FAA can commission NASA to conduct analyses of its database without having to seek approval from an outside board.

Lesson # 9: Regulatory agencies should utilize a singular reporting system and information technology provider that covers all programs in order to maximize efficiency and timeliness of analysis and outputs.

The FAA’s experience with the paper-based self-disclosure process in VDRP was one marked by great variation in the quality and depth of reporting. In 2006, the agency developed a Web-based 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 WBAT. This makes the analysis process much more resource intensive as analysts often re-code incoming data to ensure conformity. The FAA also 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 ASIAS Executive Board) 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 2/24/2010).

Lesson # 10: Regulatory agencies should develop a national-level database that is used to perform analysis of de-identified voluntarily submitted data and 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 analysis of all voluntarily submitted data. Both agencies and industry should have access to this database of de-identified reports to conduct localized and national analysis 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 with a mission independent of its own (NASA). ASRS is a valuable resource that houses all voluntarily submitted ASRS reports since 1976. Several stakeholders including the FAA, industry, NASA, the GAO, and Congress all regularly ask ASRS to conduct analyses of its data to identify the severity of risks in aviation. This analysis 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. The FAA is constrained by the fear of carriers and their employees that ASAP data will be used to take legal action. Therefore, the agency created ASIAS as a way to have limited access to ASAP data while also protecting the identity 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 ASRS to ensure FAA access to ASAP data (DOT-IG 2008).

5.3 Policy Recommendations for Implementing Voluntary Programs in Other Sectors

**Recommendation # 1: Agencies must work to transform the enforcement culture within their organizations to successfully implement voluntary regulatory partnership programs**

A key component of implementing voluntary programs within an agency is to understand that to error 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 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. The goal of regulators in voluntary programs is to establish the environment for firms and employees to realize they
have made an error and to provide an incentive for that entity to report that 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 11/6/2009). Some steps managers can take to change from an enforcement culture to a partnership or just culture are:

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

**Recommendation # 2: Agencies should use a suite of voluntary programs coordinated by one central voluntary programs office**

Many critics of voluntary programs have cited the recent failures of the MMS and 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 office of managers whose task was to develop and coordinate voluntary programs. These agencies were reliant upon one type of voluntary program to
provide them with information on the activities of the industries they were regulating.

One of the benefits of having a central voluntary programs office within an agency is that it can develop and coordinate several programs that address a variety of functions of an industry. AFS-230 utilizes a suite of voluntary reporting programs 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. ASRS is also used by the general aviation community, which gives the FAA access to data from that subgroup. ASAP is used to gather safety reports from a variety of employee groups such as pilots, dispatchers, air traffic controllers, maintenance, and ramp operators. VDRP is used to allow companies to self-disclose safety issues they proactively identified in their operation. Each of these programs is coordinated through AFS-230, which helps both the FAA and industry understand how these programs complement one another.

**Recommendation # 3: Agencies should utilize collaborative tools such as interagency agreements or contracting-out when initiating voluntary programs to help build a reputation as an honest broker**

A key factor in the early success of FAA’s first voluntary safety program, ASRS, was the decision to use NASA to operate the program. The FAA chose to use NASA to provide an arm’s length between its enforcement activities and its partnership programs. By ensuring confidentiality and a non-punitive reporting environment, this decision
resulted in the immediate success of ASRS and has allowed the program to prosper for over 30 years. When the FAA decided to begin to implement its ASIAS program, the agency decided to contract-out the analysis of ASAP data to the MITRE Corporation. MITRE has a reputation as a professional organization that does high-quality, non-biased analysis 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 a third party to administer a voluntary program can be particularly useful in agencies that have a more adversarial relationship with the industry they oversee.
CHAPTER 6

Conclusions and Areas for Further Study

_The last six months have made it abundantly clear that voluntary regulation does not work._ –Former SEC Chairman Christopher Cox

The primary aim of this dissertation was to conduct a rigorous empirical investigation of the development, implementation, and utility of voluntary safety programs within the Federal Aviation Administration to expand the scholarly literature on voluntary programs by investigating a new series of self-reporting programs and to derive a series of practical public policy and management lessons that can be used to guide the implementation of voluntary programs in other agencies. Voluntary programs represent an alternative to command and control regulatory structures by providing firms with incentives to self-audit and self-report regulatory violations to regulators who gain access to valuable new sources of information that can be used to improve existing regulations. Recent large-scale failures of voluntary programs in both the Securities and Exchange Commission and the former Minerals Management Service have led both government officials and members of the media to question the effectiveness of these alternative arrangements in ensuring compliance with regulations with some, such as Former Chairman Cox, claiming that all voluntary programs are destined to fail.

The major claim presented here is that the success or failure of voluntary programs within government is not predetermined, but rather depends on a variety of factors including the structure, the historical development, and the enforcement culture of
an agency, and the ability of agencies to proactively use the information gathered through voluntary programs to make meaningful regulatory change. The in-depth case studies of the Aviation Safety Reporting System (ASRS), Aviation Safety Action Program (ASAP), and Voluntary Disclosure Reporting Program (VDRP) presented in Chapter 2 reveal how important structural differences in the design of voluntary programs can influence the outputs, successes, and challenges faced by agencies. Offering confidentiality to operators who self-report violations to the FAA presents serious technology challenges when attempting to share and combine report data at the national-level. Providing reduced regulatory enforcement action for those air carriers who self-disclose violations can result in charges of agency capture of operating a “get out of jail” program. Using a neutral third party to administer a voluntary program can result in increased levels of trust and reporting. These structural differences reveal that agencies must consider using a suite of voluntary programs rather than one program to achieve success. Also, it is vital that agencies make meaningful regulatory changes based on information collected through voluntary programs to avoid the negative perceptions mentioned earlier and also to prevent large-scale regulatory failures such as those that occurred within the SEC and MMS.

Political science scholars have developed several theories that attempt to identify and predict the drivers of regulatory change. Theories ranging from public choice (Stigler 1975), structural politics (Moe 1989), organizational reputation (Carpenter 2001; 2010), and behavioral/punctuated equilibrium (Baumgartner and Jones 1993; 2005, Jones 2001) have all posited a variety of mechanisms through which agencies move from one
regulatory regime to another. The analysis of the historical narrative of the development of aviation regulation in the United States presented in Chapter 3 noted that there were several critical historical and reputational factors that led to the shift from a command and control regime to one largely centered on voluntary safety reporting programs. High-profile aviation disasters coupled with the tremendous growth of aviation during the 1980s and 1990s led to the realization that the FAA did not possess the resources necessary to ensure compliance through inspections alone. Voluntary programs centered on information exchange between air carriers and the FAA could supplement the FAA’s existing oversight system by providing regulators with valuable human factors data from carriers on areas of hazard within their operations. The technically sophisticated nature of aviation coupled with the historically close relationship between air carriers and regulators have resulted in a large degree of autonomy for the FAA to develop and implement voluntary safety programs. Autonomy has afforded the FAA the ability to thoughtfully and carefully design and implement voluntary programs through its central Voluntary Programs Branch Office, which has been the major factor in the continued success of the agency’s voluntary programs. Finally, the dispersed organization of the FAA’s regional and field offices and the dual mission of the agency to promote and regulate aviation have resulted in the fractured implementation of the voluntary programs. As the FAA continues to improve its voluntary safety programs, an important factor for success will be standardizing the implementation of voluntary programs across all its field offices through increased training and auditing of voluntary programs.
A critical component of the success of voluntary programs is the ability of the regulatory agency to use the information collected through these programs to proactively engage in policy learning to issue new and revised regulations that are driven by the data collected through self-disclosures. Studies of industry-initiated voluntary programs have examined how businesses improve their operational and regulatory performance by implementing lessons learned through implementing best practices (Darnall and Carmin 2005). However, the existing scholarship on voluntary programs suffers from a lack of studies on how agencies use information gathered through voluntary programs to make regulatory change. The analysis of the relationship between ASRS disclosures and Advisory Circulars issued by the FAA presented in Chapter 4 provides evidence that the agency engages in proactive policy learning by using the information contained in ASRS disclosures from aviation operators to quickly issue new or revised policy guidance to improve safety. This finding expands on the policy learning literature by describing a continuing process of learning rather than the generally accepted “trial and error” process of incremental policy learning. Critically, the results of the analysis also indicate that information provided to the FAA in self-disclosures through ASRS reduces the importance of reactionary policymaking following highly salient aviation disasters. This finding challenges a large body of well established literature on policy and regulatory change that focuses on the necessity for highly salient focusing events as a condition for policy change (Kingdon 1984; Baumgartner and Jones 1993; and Birkland 1997). The ability of the FAA to resist pressure from the NTSB, Congress and the media for regulatory change following highly salient aviation disasters is further evidence that the
agency enjoys a high-degree of autonomy in developing corrective actions based on self-disclosed data. While these results are robust, it is important to note that the limited number of time periods observed might overstate the significance of the null findings.

While this dissertation has made a contribution to the scholarly literature on voluntary programs, much work remains to gain a more complete understanding of these alternative regulatory structures. The literature on government-initiated voluntary programs remains sparse. This dissertation has produced preliminary results that have identified many areas where further research could enhance understanding of the management and policy implications of voluntary programs. Specifically, a more robust examination of the relationship between self-disclosures and new regulations issued by agencies could provide a more nuanced view of the timing and process by which agencies use voluntarily submitted data to make policy change. Also, research into the relationship between self-disclosed data and agency policymaking would benefit from specific case studies of policy areas where information from voluntary programs was used to make a specific improvement to existing regulations. This type of research would supplement quantitative studies (such as the one presented in Chapter 4) that fail to account for differences in the number of regulatory topics covered in broad guidance documents such as Advisory Circulars. Finally, the literature on voluntary programs would benefit from a cross-agency comparison of structural differences and how these programmatic variations lead to specific outputs, successes, and failures.
APPENDIX A

Sample Interview Protocol

ASAP
What are your specific tasks on a day-to-day basis in administering the maintenance ASAP program?

What technology does US Airways currently have in place to collect, analyze, and distribute ASAP data? Have you used the WBAT or UTRS system?

What specific safety improvements result from the collection and analysis of ASAP data?

Describe the nature of your relationship with the FAA representative on the ERT. Has this relationship evolved over time?

Describe the nature of your relationship with the Union representative on the ERT. How has this relationship evolved over time?

How often would you say that there is disagreement over a corrective action recommended by one party to the ERT?

What factors seem to influence the frequency of ASAP reports? How does this number vary based on FAA fines, accidents, etc.?

How often have you sought guidance from AFS-230 regarding the implementation of ASAP?

Do you communicate with the other ASAP program directors at US Airways? (Pilots, Flight Attendants, etc.)

How much interaction have you found between ASAP and the VDRP? How much interaction do you have with X?
**ASIAS/INFOSHARE**
What information do you provide to the FAA on a regular basis regarding MSAP submissions?

Does US Airways participate in the INFOSHARE meetings? How useful do you find these meetings? Suggestions for improvement?

Does US Airways submit their data to ASIAS? Who operates the exchange of information between you and the FAA? What is US Airways’ relationship with CAST?

Do you feel that the FAA does enough to collect, analyze, and distribute safety data from ASAP programs?

**ASRS**
How familiar are you with the ASRS program administered by NASA?

How does the US Airways ASAP program interface with ASRS? Do you encourage pilots to submit both reports?

**Contacts**
Could you provide me with contact information for those who run your Pilot ASAP program? Also the union representation on your MSAP?
APPENDIX B

Summary Statistics, Measurement of Independent Variables, and Graphs of Variables used in Chapter 4

**Appendix Table 1: Measurement and Source of Independent Variables in Model**

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<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
<th>Source</th>
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<tr>
<td>Part 121 Air Carriers Per Year</td>
<td>Number of Part 121 U.S. Air Carrier fatalities per year</td>
<td>NTSB Air Crash Database</td>
</tr>
<tr>
<td>News Stories on Aviation Safety</td>
<td>Total number of <em>Washington Post</em> and <em>New York Times</em> stories on aviation safety</td>
<td>LexisNexis Search</td>
</tr>
<tr>
<td>Congressional Hearings Per Year</td>
<td>Number of Aviation Safety Congressional Hearings per Year</td>
<td>LexisNexis Congressional Search</td>
</tr>
<tr>
<td>Advisory Circulars Per Year</td>
<td>Advisory Circulars issued by FAA per year</td>
<td>FAA Advisory Circular Database</td>
</tr>
<tr>
<td>FAA Fines Issued Per Year</td>
<td>Dollar amount of FAA Civil Penalties against Part 121 air carriers per year</td>
<td>FAA Enforcement Database</td>
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Appendix Table 2: Summary Statistics of Variables

<table>
<thead>
<tr>
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<th>Mean</th>
<th>St. Dev</th>
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<th>Maximum</th>
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<tr>
<td>ASRS Disclosures</td>
<td>24697.4</td>
<td>3607</td>
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<td>Total Aviation Safety News Stories</td>
<td>37.25</td>
<td>20.27</td>
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<td>Part 121 Carrier Fatalities</td>
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<td>Congressional Hearings</td>
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<td>24</td>
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<tr>
<td>Advisory Circulars Per Year</td>
<td>27.65</td>
<td>18.80</td>
<td>8</td>
<td>74</td>
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<tr>
<td>FAA Fines Per Year (millions)</td>
<td>8.10</td>
<td>5.93</td>
<td>1.93</td>
<td>30.13</td>
</tr>
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Appendix Figure 1: Number of Part 121 Passenger Fatalities Per Year (1990-2009)
Appendix Figure 2: New York Times and Washington Post Articles on Aviation Safety (1990-2009)
Appendix Figure 3: Amount of FAA Fines Issued Per Year (1990-2009) in dollars

FAA Fines Per Year ($)

Year

FAA Fines Per Year ($)
APPENDIX C

Summary of Interviews Conducted

The researcher conducted a total of 13 interviews and attended a total of 2 event review committee meetings to gather data on the FAA’s voluntary safety programs. Due to confidentiality concerns and agreements signed during the course of the research process, the researcher cannot reveal the names, locations, or any other identifying information regarding the air carriers and FAA field offices visited.

**FAA Interviews**


**NASA Interviews**


**Air Carrier Interviews**

- Air Carrier Interview A. ASAP Program Manager. April 20, 2010.
- Air Carrier Interview B. ASAP Program Manager. April 26, 2010.
- Air Carrier Interview C, Director of SMS. May 14, 2010.
- Air Carrier Interview D, Director of Regulatory Compliance. May 20, 2010.
Trade Association Interviews

Event Review Committee Meetings
  • Event Review Committee Observation. 4/27/2010.

Event Review Committee Observation. 5/13/2010.
APPENDIX D

List of Acronyms Used

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
FAA    Federal Aviation Administration
FOQA   Flight Operations Quality Assurance
MOU    Memorandum of Understanding
NTSB   National Transportation Safety Board
PMI    Principal Maintenance Inspector
POI    Principal Operations Inspector
SD     Self-disclosure
VASIP  Voluntary Aviation Safety Information-Sharing Program
<table>
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<th>Description</th>
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<tr>
<td>VDRP</td>
<td>Voluntary Disclosure Reporting Program</td>
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<tr>
<td>VRPP</td>
<td>Voluntary Regulatory Partnership Program</td>
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<td>VSRP</td>
<td>Voluntary Safety Reporting Programs</td>
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REFERENCES


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   No. 1: 45-71.

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http://www.faa.gov/about/office_org/headquarters_offices/aba/admin_factbook/


The crashes of TWA Flight 800 off of Long Island, NY and ValuJet Flight 592 in the Florida Everglades promoted many to question the FAA’s ability to effectively oversee the airlines. In addition to ordering the White House Commission, 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.

An FAA official estimated that up to 80% of the data that will support SMS will come from voluntary safety programs.

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.

ASRS is also 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.

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

In reality General Aviation reports make up only 22% of ASRS reports.

Of the 218 ASAPs, 169 use WBAT.

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

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% by 2007. CAST has the responsibility through its Joint Implementation Data Analysis Team (JIMDAT) to develop and implement recommendations resulting from ASIAS studies.

Some examples of VRPPs include Securities and Exchange Commission’s (SEC) XBRL Voluntary Filing Program, Environmental Protection Agency’s (EPA) Audit Policy, Occupational Safety and Health Administration’s (OSHA) Voluntary Protection Program, U.S. Department of Defense’s (DoD) Contractor Disclosure Program, U.S. Department of Justice’s (DoJ) Leniency Program for Anti-Trust Violations, and Department of Health and Human Service Office of the Inspector General Health Fraud Voluntary Reporting System.

The EPA’s Audit Policy was founded in 1995 and allows firms to self-disclose violations found through established self-audit programs for reduced regulatory enforcement action.

Airworthiness Directives are notifications to aircraft owners of safety hazards with a particular aircraft and the steps needed to correct the hazard. Advisory Circulars are regulatory guidance documents produced by the FAA to assist operators to be compliant with Federal Aviation Regulations.

The timeframe of 1990-2009 was chosen for several reasons. First, the availability of the number of Advisory Circulars per year was limited to 1990. Second, prior to 1990, reports collected through the VDRP program were not included in the ASRS database.

The unit of analysis in this chapter is the calendar year. While data sources broken into smaller units of time such as months provides more accurate and robust results with greater degrees of freedom, they were not available to the author at the time of writing.