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Office of Inspector General
Western Region

Audit Report

Forest Service's Air Safety Program

Report No. 08601-48-SF
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UNITED STATES DEPARTMENT OF AGRICULTURE

OFFICE OF INSPECTOR GENERAL

Washington D.C. 20250

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REPLY TO
ATTN OF: 08601-48-SF

TO: Abigail Kimbell
Chief
Forest Service

ATTN: Sandy Coleman
Audit Liaison

FROM: Robert W. Young
Assistant Inspector General /s/
for Audit

SUBJECT: Forest Service's Air Safety Program

This report presents the results of our review of the Forest Service's (FS) Air Safety Program. The FS' written response to the draft report is included as Exhibit D with excerpts and the Office of Inspector General's (OIG) position incorporated into the relevant sections of the report.

Based on the written response, we have accepted FS' management decision for all the report recommendations, except for Recommendations 9 and 11. We will be able to accept your management decision for the two remaining recommendations when you provide us with additional information as outlined in the OIG Position section of the report.

In accordance with Departmental Regulation 1720-1, please furnish a reply within 60 days describing the corrective actions taken or planned and the timeframes for completion of the recommendations for which management decisions have not yet been reached. Please note that the regulation requires a management decision to be reached on all recommendations within a maximum of 6 months from report issuance. Follow your internal agency procedures in forwarding final action correspondence to the Office of the Chief Financial Officer.

We appreciate the assistance your staff provided to our auditors during our review.

Attachment

Executive Summary

Forest Service's Air Safety Program

Results in Brief

The Office of Inspector General (OIG) audited the Forest Service's (FS) air safety program to determine whether it minimizes the risk of accidents and contributes to the effective use of aerial resources. Overall, we concluded that FS has made strides toward improving its air safety program, but still needs to develop and implement an airworthiness assessment, inspection, and maintenance program geared towards the particular demands of the firefighting flight environment. As it implements the airworthiness program, FS must ensure that all planes it employs on Federal fires (owned, contracted, and loaned to States) are held to the improved standards.

Currently, FS uses firefighting aircraft that have not been assessed or certified by the Federal Aviation Administration (FAA) for wildfire suppression or designed to fly these missions. Many of the aircraft have not been independently evaluated by any government agency to determine if they can be safely flown in the firefighting environment. FS' firefighting aircraft (owned, contracted, and loaned) are generally exempt from FAA requirements and oversight. FAA approves aircraft for firefighting based on their original specifications and maintenance service manuals but does not specifically establish and certify the aircrafts' airworthiness for firefighting or require that they be serviced for the particular stresses they will experience. Further, FAA does not determine if these aircraft can safely function for an extended period of time outside the original operational environment for which they were designed.

Firefighting aircraft are often subject to stresses well above those experienced in the flying environments for which they were originally designed. Because the fire environment is so significantly different from what these aircraft were designed for, it is imperative to ensure that they can withstand the stresses of the fire environment. Since FAA does not do this, FS has assumed the responsibility without the technical and financial wherewithal to do so adequately. FS has received no special appropriation for this task, so the funds have come at the expense of other programs. As a result, FS has suffered numerous, potentially preventable, aviation accidents over the years—and continues to be at risk for more.

From 1979 to the present, there have been six fatal accidents due to in-flight structural failure involving airtankers under contract to FS. Between 1979 and 1987, three aircraft crashed while fighting fires, claiming the lives of seven crewmembers. Since 1994, there have been three more firefighting crashes—two in 2002—which claimed the lives of all eight crewmembers. Overall, during the last two 5-year periods (from 1996-2000 and

2001-2005), FS' number of accidents for all firefighting aircraft (including helicopter and fixed-wing planes) has climbed from 17 to 28.

After the accidents in 2002, FS commissioned a blue-ribbon panel to identify weaknesses in its air safety program. In December 2002, the panel reported that FAA's approval process for FS' public-use aircraft used for mission categories such as agriculture did not establish that the aircraft could safely perform firefighting duties. Since the panel's purpose was limited to identifying problems, it did not recommend what steps FS needed to take to improve its air safety program.

In 2004, the National Transportation Safety Board (NTSB), which does make recommendations, also released a report on FS' air safety program. Like the blue-ribbon panel, NTSB found that FS had no effective mechanism to ensure the continuing airworthiness of its firefighting aircraft. NTSB recommended that FS implement inspection and maintenance programs suited to the demands of firefighting that are rooted in detailed engineering assessments of aircrafts' structural capacities. NTSB also recommended that FAA be more actively involved in FS' efforts to assess the airworthiness of its firefighting aircraft. Accordingly, we recommend that FS seek Congressional clarification about the role FAA should play in developing and implementing FS' airworthiness program.

Regardless of how responsibility is allocated between the two agencies, FS must still develop an overall implementation plan to ensure the airworthiness of all its firefighting aircraft. FS has been addressing the immediate risks identified for some of the aircraft used for fire suppression. It now needs to finalize a long-term risk management and airworthiness program for all its firefighting aircraft. Such proactive planning will require FS to overcome technical, financial, and legislative challenges and to establish realistic timeframes that prioritize its aircraft assessments. Without adopting this approach, FS lacks assurance that it is using its resources optimally to mitigate the considerable risks that come with flying firefighting missions.

To effect this proactive, strategic risk management approach, the blue-ribbon panel report and NTSB's recommendations indicated that FS should develop assessment, maintenance, and inspection programs for all its firefighting aircraft.

FS has begun assessing its most at risk aircraft (e.g., airtankers and lead planes) and strategizing about including all its owned and contracted aircraft. However, the agency has not developed plans to include firefighting aircraft it loans to States through the Federal Excess Personal Property Program (FEPP). Through FEPP, FS loans the aircraft to States for firefighting but retains title to the aircraft. The States may use the aircraft to fight Federal fires, with FS paying part of the costs, but the aircraft must meet the same

standards FS requires for its other firefighting aircraft. However, since FS retains title to the loaned aircraft wherever they fly, the agency is potentially liable for the aircraft.

Considering the well-documented safety concerns with firefighting aircraft and the potential for Government liability, FS, at a minimum, should require that States maintain and assess FEPP aircraft used on Federal fires in accordance with FS' standards. This prerequisite would also be consistent with FS' overall plans to require that all aircraft used on Federal fires comply with the NTSB's recommendations. The FS should develop a plan to assist States in assessing FEPP aircraft used on Federal fires. The plan should ensure that States prioritize their work based on risk and should include realistic timeframes for completion.

For those aircraft not used on Federal fires, FS needs to decide the level of risk it is willing to accept. For example, FS can accept the liability risk and do nothing or the agency can require that the remaining FEPP aircraft also meet FS' standards as a precondition for borrowing the aircraft. Although States that do not participate on Federal fires are not currently required to meet FS' standards, the regulations do allow FS to impose its own self-prescribed program.

During our audit, we also found that FS does not ensure that all of the light fixed-wing planes and firefighting helicopters it leases from private contractors are inspected and maintained by qualified personnel. Consequently, FS' contract aircraft are at greater risk of being improperly maintained and are subjected to the consequential hazards that follow, such as inadequate performance and accidents. In addition, FS has lacked an independent, full-time Regional Aviation Safety Manager for the Southern region (region 8) since 2004. The region's aviation officer has been filling this role, which constitutes a conflict of interest between safety concerns and aviation operations and may have diminished the region's ability to address its high accident rate.

We also reviewed FS' aviation accident investigation process to determine whether it identifies appropriate corrective actions to avoid future occurrences. Our audit of the FS' investigative process did not identify any reportable issues.

Recommendations In Brief

Overall, to address these issues, we recommend that FS:

- Request clarification from Congress to define FS' and FAA's responsibilities for assessing and certifying firefighting aircraft.

- Develop an overall implementation plan to complete airworthiness assessments on all aircraft FS uses for firefighting. The plan should prioritize the assessments based on the relative risks of each aircraft considering its mission requirements in the firefighting environment, and establish timeframes for completion.

- Require States with FEPP aircraft used on Federal fires to assess the aircrafts' airworthiness in light of NTSB's recommendations. In addition, determine whether those States with FEPP aircraft not used on Federal fires should also be required to meet FS' airworthiness standards based on the level of liability risk FS is willing to accept.

- Amend FS policy to require that all aircraft maintenance inspectors, including those for light-fixed wing aircraft, possess a current airframe and powerplant certificate issued by the FAA and to meet the requirements for inspection authorization from FAA. Also, amend helicopter contracts to require vendors to certify to their mechanics' qualifications.

- Ensure that all regions have qualified Regional Aviation Safety Managers on staff and when a vacancy develops, make the recruiting and hiring of such individuals a high priority.

Agency Response

In its written response to the draft report, dated January 25, 2008, FS concurred with most of our findings and recommendations and stated its belief that our recommendations will benefit the overall fire and aviation program. The complete written response is shown in exhibit D of the audit report.

OIG Position

Based on FS' written response, OIG accepts FS' management decision on all the audit recommendations except for two. Additional FS actions are needed in order to reach management decision on the remaining two recommendations.

Abbreviations Used in This Report

A&P	Airframe and Powerplant
CFR	Code of Federal Regulations
FAA	Federal Aviation Administration
FEPP	Federal Excess Personal Property Program
FS	Forest Service
FSM	Forest Service Manual
NASMPP	National Aviation Safety and Mishap Prevention Plan
NTSB	National Transportation Safety Board
OGC	Office of General Counsel
OIG	Office of Inspector General
WO	Washington Office

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Background and Objectives

Background

FS primarily uses its aviation resources to support ground firefighters through missions such as transporting cargo and personnel, dropping retardant and water on fires, and air reconnaissance. In total, FS owns 23 fixed-wing airplanes and 3 helicopters, and contracts for 771 other aircraft, including helicopters, airtankers, lead planes (used both for air reconnaissance and to lead airtankers to their drop sites), and other fixed-wing planes (see exhibit B). FS also loans aircraft it acquires through the Federal Excess Personal Property Program (FEPP) to States if they use them predominately for firefighting. The number of operational FEPP aircraft FS loaned to States for firefighting is currently 149 (see exhibit C).

FS and contractors provide both civilian and military surplus aircraft for firefighting. FAA authorizes surplus military aircraft to engage in certain "agricultural" operations (including firefighting) through restricted category type certificates. FAA also issues supplemental type certificates for retardant tanks and other modifications to these aircraft. On the other hand, civilian aircraft operate under FAA's normal or transport category type certificates. FAA is currently not required to ensure the airworthiness of the aircraft used for firefighting purposes since these aircraft are considered public use aircraft.[1]

Maintenance and Inspection Requirements

FS and all contractors must maintain their aircraft in accordance with FAA-approved maintenance programs. Both FS aircraft mechanics and contractors' mechanics who approve maintenance work on aircraft must be FAA-certified with airframe and powerplant (A&P) ratings. FS also employs aircraft maintenance inspectors who oversee work on agency-owned aircraft and conduct annual inspections of all aircraft under contract. These maintenance inspectors must possess FAA inspection authorizations.

Pilot Qualification Requirements

FS employs pilots to fly FS-owned aircraft and leased lead planes, while contractors provide their own pilots for their planes. FS issues annual qualification cards to the contractors' pilots. All qualified pilots must possess current FAA commercial pilot licenses, with required ratings for the aircraft to be flown; possess valid FAA

[1] Public use aircraft are those that are used for a governmental function such as firefighting.

medical certificates; satisfy other FAA competency and currency requirements for the type of flying they will be engaged in; and complete FS check flights to test their skills for specific mission work.

Accident Investigations

The National Transportation Safety Board (NTSB) has the responsibility to investigate all FS aviation accidents. FS also investigates aviation accidents concurrently with the NTSB to provide management with timely information to prevent future occurrences. FS is required to produce a preliminary report within 45 days of the accident containing findings, causal factors, and recommendations. This report does not state a probable cause and remains a preliminary report until the NTSB issues its final report containing the probable cause. FS' preliminary report must be reviewed and approved for release by the NTSB before going to an Accident Review Board. The Accident Review Board approves FS' preliminary report and may issue a detailed Accident Prevention Action Plan. FS' report remains preliminary until the NTSB releases its final report. If significant differences are found between FS' preliminary report and the NTSB's final report, the Accident Review Board may be reconvened.

Objectives

Our overall objective was to determine whether FS' air safety program minimizes the risk of accidents and contributes to the effective use of aerial resources. More specific objectives were to evaluate FS controls to ensure that (1) all aircraft used in firefighting operations have satisfied FAA airworthiness criteria and are maintained in a manner that ensures their continued airworthiness; (2) FS and contract pilots that fly firefighting missions are fully qualified to perform the duties they have been assigned; and (3) FS' aviation accident investigation process identifies appropriate corrective actions to avoid future occurrences.

Details of our audit methodology can be found in the Scope and Methodology section at the end of this report.

For its air firefighting missions, FS uses aircraft that it owns, contracts for, and has loaned to States. These aircraft are often subject to stresses well above what they have previously experienced. However, these aircraft have not been assessed or certified by FAA for wildfire suppression, or designed to fly these missions. FS has assumed the responsibility for assessing the airworthiness of its owned and contracted firefighting aircraft but needs Congressional clarification of the role that FAA will play in developing a plan for aviation safety that is suitable to the demands of firefighting.

Regardless of how responsibility is allocated, FS needs to shift from a risk management strategy focused on immediate concerns to the long-range planning necessary to develop an adequate airworthiness program. Without adopting this approach, FS lacks assurance that it is using its resources optimally to mitigate the considerable risks that come with flying firefighting missions. As FS strengthens its airworthiness assessments and maintenance programs, the agency must ensure that the firefighting aircraft loaned to States are held to similarly improved standards. Even though the States have full custody of the aircraft and are responsible for their maintenance, FS still retains title to them and therefore could be exposed to potential liability.

Finding 1

FS Uses Firefighting Aircraft that Have Not Been Designed or Certified To Fly in a Fire Environment

FS uses firefighting aircraft that have not been assessed or certified by the FAA for wildfire suppression or designed to fly these missions. Firefighting aircraft often undergo stresses well above those anticipated for in the original operational environment for which they were designed. Because of these increased stresses, it is essential to ensure that they can withstand the perils of the fire environment. Since FAA does not do this, FS has assumed the responsibility but lacks the technical and financial wherewithal to do so adequately. As a result, FS has suffered numerous, potentially preventable, aviation accidents over the years—and continues to be at risk for more.

FS' firefighting aircraft (owned and contracted) are generally exempt from FAA requirements and oversight. FAA approves aircraft for

firefighting based on their original specifications and maintenance service manuals, but does not specifically establish and certify the aircrafts' airworthiness for firefighting or require that that they be serviced for the particular stresses they will experience. Further, FAA does not determine if these aircraft can safely function for an extended period of time outside their original operational environment.

Historically, FS has relied on FAA's approval to fly the aircraft for public-use purposes (i.e., governmental) and in restricted mission categories (e.g., agriculture or conservation) as sufficient to establish the aircrafts' airworthiness for firefighting. Accordingly, FS' inspection and maintenance programs have focused on ensuring that contract requirements were met and that specific mission concerns were addressed rather than establishing the aircraft's airworthiness.

However, since 1979, there have been six fatal accidents due to in-flight structural failure involving airtankers under contract to FS. Between 1979 and 1987, three aircraft crashed while fighting fires, claiming the lives of seven crewmembers. Since 1994, there have been three more firefighting crashes—two in 2002—which claimed the lives of all eight crewmembers. During this period, all of the airtankers under contract to FS were between 40 and 60 years old. For all firefighting aircraft (including helicopter and fixed-wing planes) during the last two 5-year periods (from 1996-2000 and 2001-2005), FS' number of accidents has climbed from 17 to 28.

After the accidents in 2002, FS discontinued operations for the two models of air tanker that crashed due to in-flight structural failures. FS also commissioned a blue-ribbon panel to identify weaknesses in its air safety program.[2] In December 2002, the panel reported that FAA's approval process for FS' public-use aircraft did not establish that the aircraft could safely perform firefighting duties. The panel singled out airtankers as especially at risk.

The panel also identified FS' lead planes as an imminent safety concern. Based upon these concerns and a reevaluation of the aircrafts' operational service life, the agency grounded them and chose another model that was more suited to the firefighting environment (e.g., more robust airframe and stronger engines). While not seen as an immediate concern, the panel also expressed concerns about the airworthiness of certain ex-military helicopters FS was using on firefighting operations. Since the panel's purpose was limited to identifying problems, it did

[2] The panel was jointly commissioned by FS and the Department of Interior's Bureau of Land Management, and its analysis covers both agencies' aviation safety programs.

not recommend what steps FS needed to take to improve its air safety program.

In 2004, the National Transportation Safety Board (NTSB), which does make recommendations, released a report on FS' air safety program.[3] Like the blue-ribbon panel, NTSB found that FS had no effective mechanism to ensure the continuing airworthiness of its firefighting aircraft. NTSB recommended that FS implement inspection and maintenance programs suited to the demands of firefighting that are rooted in detailed engineering assessments of aircrafts' structural capacities. In response, FS has contracted with a private company to develop continuous assessment and maintenance plans for its airtankers but has yet to develop an overall implementation plan for assessing the airworthiness of all its firefighting aircraft (see Finding 2).

NTSB also recommended that FAA be more actively involved in FS' efforts to assess the airworthiness of its firefighting aircraft. For example, NTSB recommended that FAA serve as a clearinghouse for airworthiness and maintenance information for firefighting aircraft acquired from the military. (The blue-ribbon panel went further and suggested that such interagency collaboration and cooperation were key to establishing a safe aviation program.) However, since these aircraft are generally exempt from its oversight and regulation, FAA has only made itself available to answer questions and analyze information at FS' request. According to FAA, it lacks the resources to certify firefighting aircraft or to develop an appropriate assessment and maintenance program and therefore has not taken on these responsibilities. Meanwhile, FS possesses neither the technical information nor the expertise to assess its firefighting aircrafts' airworthiness, which requires indepth knowledge of their structural, mechanical, and design elements.

Firefighting aircraft do require maintenance and inspection programs that are more stringent than those FAA requires for civil aviation. They must perform "frequent and aggressive low-level maneuvers with high acceleration loads and high levels of atmospheric turbulence."[4] For example, one study conducted by Conair, a Canadian manufacturer and operator of firefighting aircraft, found that the time spent in the firefighting environment is 5.7 times more severe on an aircraft than when the aircraft is used in a typical transport role.[5] Consequently, these aircraft may be in greater danger of structural and

[3] NTSB's "Safety Recommendation" p. 10 (April 23, 2004).
[4] NTSB's "Safety Recommendation" p. 5 (April 23, 2004).
[5] Conair Aviation Ltd., Supplemental Structural Inspection Document, F27 SSID-535 (November 22, 1996).

mechanical failure when used for firefighting than for other purposes. In addition, some aircraft are older and lack adequate maintenance and flight records.

The cost to assess the airworthiness of each aircraft and to develop an appropriate maintenance and inspection program could be considerable, particularly for those aircraft that are older and lack adequate maintenance and flight records. FS estimates that, between 2003 and 2007, it will have spent about $8.4 million for airworthiness assessments related to its airtankers, which does not include internal FS costs. Since FS owns and contracts 130 different aircraft models (see exhibit B), the agency's cost to complete comprehensive assessments could be significant. However, the amount of work involved will likely vary for each model of aircraft depending on the aircraft's mission requirements for the firefighting environment and the degree to which these requirements exceed those for which the aircraft was originally designed. FS has received no special appropriation for this task, so the funds have come at the expense of other programs.

More importantly, using aircraft that have neither been designed nor certified for firefighting increases the risk for potential accidents. Currently, several factors are converging to increase the danger. While FS' firefighting fleet continues to age, more flight hours may be required of them because wildfires are growing larger and more frequent and intense each succeeding season. With this added strain come increased hazards. To mitigate the risk, FS needs to implement an aviation safety program that can ensure aircraft are properly designed, assessed, and maintained for firefighting. As an initial step, FS should request Congress to clarify the roles and responsibilities of itself and FAA in developing and implementing such a program. The results of this clarification will significantly influence the development of any FS Airworthiness Assessment and Maintenance Plan (see finding no. 2).

Recommendation No. 1

Request clarification from Congress to define FS' and FAA's responsibilities for assessing and certifying firefighting aircraft.

Agency Response

The FS does not concur with this recommendation. The responsibilities for assessing and certifying firefighting aircraft are clear, as was explored during the Blue Ribbon Panel investigation and

the congressional hearings held in the aftermath. The FAA clearly has no public aircraft jurisdiction. The FAA's regulation at 14 CFR 91.403 provides that "the owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition..." The FS interprets this to mean that the FS assesses the airworthiness for aircraft it operates under the public use aircraft regulations. But in the case of FEPP aircraft that is loaned to States, the FS owns those aircraft, but do not operate those aircraft. The operator becomes the responsible party for maintaining the aircraft in airworthy condition. Any requested changes in the responsibilities would be based on the Administration's desire to adjust roles and responsibilities between the agencies.

OIG Position

Since FS is accepting full responsibility for assessing and certifying the airworthiness of its firefighting aircraft, we accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer documentation supporting its decision.

Finding 2

FS Needs To Develop an Overall Implementation Plan To Ensure the Airworthiness of All Its Firefighting Aircraft

Regardless of how responsibility is allocated between FS and FAA, FS must still develop an overall implementation plan to ensure the airworthiness of its firefighting aircraft. FS has been addressing the immediate risks identified for some of the aircraft used for fire suppression. It now needs to finalize a long-term risk management airworthiness program for all of its aircraft. Such proactive planning will require FS to overcome technical, financial, and legislative challenges. FS needs to establish realistic timeframes that prioritize its aircraft assessments. Without adopting this approach, FS lacks assurance that it is using its resources optimally to mitigate the considerable risks that come with flying firefighting missions.

In general, a central objective of FS' air safety program is to conduct planning processes that comply with its National Aviation Safety and Mishap Prevention Plan (the plan).[6] FS' National Aviation Safety and Training Manager is responsible for developing, implementing,

[6] Forest Service Manual (FSM) 5700 ch. 5720.45 (February 4, 2005).

monitoring, and overseeing the plan.[7] The plan affirms safety as a "core organizational value" and establishes a system safety approach to safeguard against aviation accidents.[8]

In terms of aviation, system safety is defined as: "using analytical techniques to identify system weaknesses and conditions that if left unchanged could lead to unwanted events" and then developing appropriate countermeasures.[9] In terms of risk management, a systems approach is defined as: "the application of special technical and managerial skills to the systematic, forward-looking identification and control of hazards throughout the life cycle of a project, program, or activity."[10]

FS recognizes that it must be flexible enough to change its aviation risk management techniques as the situation allows from a time-critical, "on the run" approach, which deals with urgent problems needing immediate solutions, to a strategic process appropriate for "long-range planning for complex missions or program development and review."[11] FS is therefore currently in the process of shifting from the time-critical risk management practices triggered by the two fatal aircraft accidents in 2002 to the long-term strategic development of an air safety program that mitigates risks inherent to flying firefighting missions.

To effect this proactive, strategic risk management approach, the blue-ribbon panel report and NTSB's recommendations indicated that FS should develop maintenance and inspection programs for all its firefighting aircraft. Since the panel singled out airtankers as especially at risk, FS discontinued operations for the two airtanker models that crashed in 2002. In response to the NTSB report, FS temporarily grounded the remaining six airtanker models in 2004 until it could assess whether they were safe to fly in the firefighting environment.

Although its assessment at the time was not specifically designed to determine the appropriate maintenance and inspection programs necessary for the firefighting environment, FS ultimately determined that two of the airtanker models should be allowed to continue firefighting. FS based its decision primarily on the availability of test data from the manufacturer, the original owner of the aircraft, and from other sources needed to establish airworthiness standards for the aircraft for the firefighting environment. Such data were not readily

[7] FSM 5700 ch. 5720.45 (February 4, 2005).
[8] National Aviation Safety and Mishap Prevention Plan (NASMPP) 1.1(B) (June 2005).
[9] NASMPP 1.3 (June 2005).
[10] NASMPP app. 1, p. 15 (June 2005).
[11] NASMPP 6.2 (June 2005).

available for the other airtankers that were grounded. FS also grounded its lead planes, which were also identified as at risk, and chose another model that was better suited to firefighting (e.g. more robust airframe and stronger engines), though it had also not been certified or thoroughly assessed for firefighting operations. Preliminary analysis suggests that the lead planes may be even more vulnerable in the fire environment than the airtankers.[12] These actions were sufficient to respond to immediate hazards but not adequate to mitigate long term risks.

On April 5, 2005, the Secretary of the Interior and the Secretary of Agriculture jointly submitted a plan to NTSB responding to its recommendations. In accordance with the plan, FS agreed to develop maintenance and inspection programs for aircraft that are used in the firefighting environment and to develop a Special Purpose Operations and Airworthiness Manual to clearly articulate maintenance and inspection standards for firefighting aircraft. NTSB responded on July 6, 2005, accepting the FS' plan but expressing concern that the actions FS agreed to take only addressed large airtankers. NTSB wanted FS' plan to address all of its firefighting aircraft.

Complicating matters, FS currently possesses neither the technical information nor the expertise to assess its firefighting aircrafts' airworthiness, which is necessary for developing a comprehensive air safety program. To conduct an airworthiness assessment requires indepth knowledge of the structural, mechanical, and design elements that impact each aircraft's operation. Since most of the aircraft have design specifications that do not provide relevant information about their firefighting capabilities, FS would need to collect specific stress and performance data for each model and then analyze the results relative to its history, modifications, and fire use. Therefore, FS has had to use a private contractor to assess the airworthiness of the remaining two airtanker models previously mentioned that were allowed to continue to fly firefighting missions. Through the contractor, FS has completed its assessment of its large airtanker fleet and has developed the appropriate maintenance and inspection programs for the aircraft. FS has also deliberated about conducting airworthiness assessments for its lead planes, smoke jumpers (which carry firefighters to remote fires), and other aircraft including helicopters.

Although FS plans to assess the airworthiness of all its remaining aircraft, to date FS has only developed a methodology for assessing the

[12]Consolidation and Analysis of Loading Data in Firefighting Operations: Analysis of Existing Data and Definition of Preliminary Air Tanker and Lead Aircraft Spectra pp. 4-11 (October 2005).

lead planes and lacks an overall implementation plan including timeframes and cost to complete the assessments for the other aircraft. FS has also not finished the Special Purpose Operations and Airworthiness Manual that it agreed to develop in response to NTSB's recommendations. According to FS, it had hired a contractor to develop the Special Purpose Operations and Airworthiness Manual but ran out of money before the manual was completed. FS already has an operations manual for its helicopters and agreed that it would also be a useful document to have for its fixed-wing aircraft to ensure the safe operations of the aircraft. According to FS, it intends to complete the manual.

NTSB's recommendations, the blue-ribbon panel's report, and FS' own guidance agree that the agency needs to adopt a long-term, strategic plan to mitigate the risks associated with firefighting aviation by adopting an airworthiness assessment and maintenance plan geared to firefighting that includes all its firefighting aircraft. To accomplish this, FS needs to develop an overall implementation plan to ensure that the airworthiness assessments are timely completed for all of its firefighting aircraft. The plan should prioritize the workload based on the relative risks of each aircraft model considering its mission requirements for the firefighting environment. The plan should include realistic timeframes for completing the assessments. FS can also use the plan to prioritize funding and to notify Congress of program costs. Once the airworthiness assessments are complete, FS will also need to amend vendor contracts to require that all aircraft leased for firefighting meet the airworthiness standards established for the aircraft and that vendors have the appropriate maintenance and inspection programs for the aircraft.

Recommendation No. 2

Develop an overall implementation plan to complete airworthiness assessments on all aircraft FS uses for firefighting. The plan should prioritize the assessments based on the relative risks of each aircraft model considering its mission requirements for the firefighting environment, and establish timeframes for completion.

Agency Response

The FS concurs with this audit recommendation. A detailed plan to complete airworthiness assessments on all aircraft the FS uses for firefighting will be formulated by January 31, 2009. The plan will include the airworthiness assurance methodology, aircraft

prioritization by mission type, schedule for completion, and budget and staffing needs.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer a copy of its plan to complete the airworthiness assessments on all its firefighting aircraft.

Recommendation No. 3

Specify FS' timeframe for completing the Special Purpose Operations and Airworthiness Manual in the overall implementation plan developed in Recommendation No. 2.

Agency Response

The FS concurs with this audit recommendation. The general outline for a Special Purpose Operations and Airworthiness Manual will be accomplished in conjunction with the fielding of three agency owned P-3's and included in the detailed plan requested in Recommendation No. 2. The FS' estimated completion date for this action is January 31, 2009.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer its timeframe for including the outline it develops for the Special Purpose Operations and Airworthiness Manual in its airworthiness implementation plan.

Recommendation No. 4

Prioritize existing funds to accomplish the assessments within the timeframes specified in the plan.

Agency Response

The FS concurs with this audit recommendation. Detailed budget and staffing projections based on existing program funding will be included in the plan requested in Recommendation No. 2. The FS' estimated completion date for this action is January 31, 2009.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer documentation showing that the agreed upon action has been taken.

Recommendation No. 5

Notify Congress if additional funds are needed based on Recommendations 2 through 4.

Agency Response

The FS concurs with this audit recommendation. Additional funding needs will be included in the plan requested in Recommendation No. 2. The FS' estimated completion date for this action is January 31, 2009.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer documentation showing that the agreed upon action has been taken.

Recommendation No. 6

Amend vendor contracts to require that all aircraft leased for firefighting meet the airworthiness standards established for the aircraft and that vendors have appropriate maintenance and inspection programs for the aircraft.

Agency Response

The FS concurs with this audit recommendation. The formulation and implementation of airworthiness standards for aircraft that perform special missions will take time to accomplish. Any standards would apply to contract as well as FS fleet aircraft. Aircraft performing missions deemed to be severe usages and aircraft performing a flight profile that is not supported by the original equipment manufacturer may require additional effort to address these issues. Language is currently included in the 2008 Airtanker Services Request for Proposal (RFP) to meet revised airworthiness standards, and therefore this recommendation will be accomplished by Janaury 31, 2009, for the

aircraft contracts currently being renewed. However, there is a 5-year timeframe for the expiration and renewal of the other aircraft contracts, and those will be amended to reflect the applicable standards and programs required on a rolling basis, over the next 5 years.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer documentation showing that the agreed upon action has been taken.

Finding 3 — FS Needs To Ensure Airworthiness of FEPP Aircraft

FS' airworthiness assessment, maintenance, and inspection programs do not include firefighting aircraft it loans to States through the Federal Excess Personal Property Program (FEPP). FS has not considered this a priority because the agency largely gives up both management and operational control of the aircraft – particularly FEPP aircraft not used on Federal fires – once they pass into State hands. However, since FS by law retains title to the loaned aircraft wherever they fly, the agency is exposed to potential liability.

FS loans FEPP aircraft to States if they use it predominately for firefighting. Through FEPP, the States essentially gain access to aircraft they are not otherwise able to afford. FS enters into cooperative agreements with individual States for the property but retains ownership. FS pays States for a portion of their costs when their FEPP aircraft take part in the agency's firefighting operations but to participate they must obtain an approval letter from FS.

To be eligible for the letter, the aircraft must provide a level of safety and mission effectiveness comparable to FS' contract aircraft and they must be compatible with FS operations, i.e., the aircraft must meet FS' standards.[13] FS' management stated that its policy is to inspect each eligible aircraft, but there are no documented procedures for doing so. Currently, 17 States have a total of 149 FEPP aircraft that are operational, of which 73 are eligible to fly on Federal fires (see exhibit C).

[13] FSM 5713.43 (March 29, 2006).

While 73 of the 149 FEPP aircraft must meet FS' firefighting maintenance and inspection standards to fly on Federal fires, FS requires that the other 76 only meet their original maintenance standards to fly on State or local fires. (As discussed in Finding 1, FS' current standards for the aircraft it uses on its own fires may also be inadequate to meet the demands of the firefighting environment.) For non-Federal firefighting, FS only requires States to have the aircrafts' operating plans and FAA registrations, and to maintain them according to their original military or FAA-approved standards. It is up to the States to decide whether or not to maintain their FEPP aircraft to the level required to fly on Federal fires.

The standards for both FS and FEPP aircraft have primarily been developed to meet the needs of civilian and military operations and not firefighting, which requires aircraft to execute frequent, stressful maneuvers in a turbulent atmosphere. Investigations by NTSB and a blue-ribbon panel commissioned by FS both concluded that FS must assess the airworthiness of its firefighting aircraft and develop maintenance and inspection programs geared to the demands of firefighting. FS has accepted the conclusion that the best way to mitigate the risks associated with using firefighting aircraft is to implement a safety program that assesses and maintains them in terms of their firefighting use. However, since States do not have to follow these standards if they do not fly their FEPP aircraft on Federal fires, the risk to these planes remains unmitigated.

In May 1992, the Office of General Counsel (OGC) issued a formal opinion addressing the Government's potential liability for FEPP aircraft loaned to States for firefighting. According to the opinion, title to the aircraft, which remains with the Government after they are transferred, does not determine the Government's potential liability for the subsequent accidents involving these aircraft. However, one of the key factors is who has operational control over the aircraft. In those instances where the FEPP aircraft are used on Federal fires, FS generally has operational control of the aircraft since it is in charge of the overall firefighting operation. This control would extend to the pilot's day-to-day operations and performance even though the pilot is not officially a Government employee.

For those FEPP aircraft not used on Federal fires, the Government's potential liability is less clear since in these cases FS does not have operational control over the aircraft. However, according to an OGC staff attorney we spoke to, FS can still be held liable if the agency is proven negligent in its duties pertaining to the aircraft and if the law in the State in which the accident occurred prohibited FS from delegating

those duties to the State that received the aircraft. For example, the plaintiff could show that FS did not provide adequate oversight of the State's maintenance and inspection program, which contributed to the accident.

Considering the well-documented safety concerns with firefighting aircraft and the potential for Government liability, FS at a minimum should require that States maintain and assess FEPP aircraft used on Federal fires in accordance with FS' standards. This prerequisite would also be consistent with FS' overall plans to require that all aircraft used on Federal fires comply with the NTSB's recommendations. The FS should develop a plan to assist States with FEPP aircraft used on Federal fires. The plan should ensure that States prioritize their work based on risk and should include realistic timeframes for completion.

For those aircraft not used on Federal fires, FS needs to decide the level of risk it is willing to accept. For example, FS can accept the liability risk and do nothing or the agency can require that the remaining FEPP aircraft also meet FS' standards as a precondition for borrowing the aircraft. Although States that do not participate on Federal fires are not currently required to meet FS' standards, the regulations do allow FS to impose its own self-prescribed program.[14]

Further, FS must strengthen and formalize its procedures for monitoring FEPP aircraft to ensure that they are properly assessed and maintained. Currently, FS has no formal requirements to evaluate the States' assessment and maintenance programs. Although FS' manual states that triennial inspections should be considered for FEPP, this suggestion relates to generally verifying FEPP inventory and not specifically assessing the firefighting airworthiness of FEPP aircraft.

FS management told us that FS maintenance inspectors are supposed to annually inspect FEPP aircraft that have been approved to take part in Federal firefighting. However, this requirement is not documented and we found that two of FS' five regions with FEPP aircraft loaned to States and used on Federal fires either did not conduct annual inspections or did not inspect individual aircraft thoroughly enough to verify that they met standards. Beyond interviews, we could not confirm that the other annual inspections were adequate. We discussed this issue with FS' National Aviation Operations Officer for Airworthiness and Logistics, who agreed that the agency's guidance was not adequate.

[14] 41 CFR 102-33.170 (July 1, 2006).

Even if FS does inspect the aircraft, it cannot ensure their continuing airworthiness without monitoring the States' maintenance programs. Since firefighting aircraft are subjected to greater and more frequent stress than they experience in other uses, they require a continuous maintenance cycle that is geared to firefighting. Consequently, FS needs to implement FEPP maintenance monitoring requirements adequate to assure it that aircraft are continuously being maintained for firefighting airworthiness.

Recommendation No. 7

Require States with FEPP aircraft used on Federal fires to assess their airworthiness in light of NTSB's recommendations.

Agency Response

The FS concurs with this audit recommendation. FS policy currently requires all aircraft used on federal fires meet the same standards regardless of the ownership or operator of the aircraft. As stated in the response to Recommendation No. 6, the FS is working to improve processes for determination of airworthiness. As these standards are completed, implementation will continue and policy will be amended as needed. The FS' estimated completion date for this action is January 31, 2009.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer documentation showing that the agreed upon action has been taken.

Recommendation No. 8

Determine whether those States with FEPP aircraft not used on Federal fires should also be required to meet FS' airworthiness standards based on the level of liability risk FS is willing to accept.

Agency Response

The FS has made a determination on this issue. However, based on precedent and OGC opinion, we believe the FS has only a limited liability exposure and has elected not to require additional airworthiness standards. FEPP aircraft not approved for use on

Federal fires are the responsibility of the cooperator for appropriate inspection, maintenance, and usage of the aircraft. The FS is the property custodian for those aircraft, but not the operational custodian, and would not infringe on the autonomy of that State or Local cooperator that have been loaned those aircraft unless those aircraft are offered for use on Federal fires. We understand OIG's concerns, however, and are drafting a letter to our State cooperators that will clarify issues of liability risk, and airworthiness responsibilities. We expect to send the letter in late January or early February 2008.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer a copy of the letter it sends to State cooperators.

Recommendation No. 9

Develop a plan to assist those States with FEPP aircraft to assess the airworthiness of their aircraft. The plan should prioritize the aircraft based on the model and mission requirements and establish timeframes for completing the assessments.

Agency Response

The FS does not believe a plan to assess airworthiness is necessary for the reasons stated in our response to Recommendation No. 8. However, we will assist any state requesting our help to develop a plan to assess the airworthiness of their aircraft. Currently, the States have access to the FS airworthiness information and processes. The FS will continue to convey information on any new airworthiness processes it develops but there are no plans to create new programs for every aircraft type in the FEPP inventory. States that wish to fly FEPP aircraft on FS fires will continue to be held to the same interagency standards required of federal and contract aircraft, but action by States that do not fly FEPP aircraft on FS fires under this recommendation would be strictly voluntary. States with FEPP aircraft that fly strictly non-Federal missions must comply with the FAA's regulations on what constitutes an acceptable airworthiness process.

OIG Position

We accept FS' position to exempt from its airworthiness standards the FEPP aircraft not used on Federal fires. However, to reach

management decision on this recommendation, FS still needs to develop a formal plan outlining how it intends to ensure that the FEPP aircraft that is used on federal fires meets its airworthiness standards. Such a plan is necessary to ensure that all States with FEPP aircraft used on Federal fires timely comply with FS' airworthiness standards. The plan would not only prioritize the States' FEPP aircraft needing assessed, but establish realistic timeframes for the completion of the airworthiness assessments.

Recommendation No. 10

Require States to provide FS with their maintenance programs for review and approval. FS' approval of the programs should be a prerequisite for future FEPP aircraft loans.

Agency Response

The FS does not believe States with FEPP aircraft that fly strictly non-Federal missions must provide the FS with their maintenance programs for review and approval for the reasons stated in our response to Recommendation No. 8. The FS does review and approve the maintenance programs for FEPP aircraft that are used on Federal fires. If the aircraft are not maintained and certified to the same interagency standards required of federal and contract aircraft, then we do not allow them to fly on our fires. In addition, the FS does not agree with making approval of maintenance programs a prerequisite for future loans. For States that receive FEPP aircraft and do not operate on Federal fires, we do not believe it is appropriate to interfere with the States' autonomy by requiring them to submit the maintenance programs for review and approval.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer a copy of its written policy requiring those States with FEPP aircraft used on Federal fires to provide their maintenance programs to FS for review and approval.

Recommendation No. 11

Monitor States to ensure that they follow their approved maintenance plans. If States are unable to timely correct identified problems, they should not be allowed to fly firefighting missions with their current FEPP fleet, or to borrow future aircraft.

Agency Response

The legislation that authorized the FEPP program was not intended to create an oversight program, rather it was to allow the FS to be an intermediary, using its federal government status to procure higher-value equipment to pass on to the States that did not have the same preference to obtain the equipment. The FS does not oversee and manage the equipment once it is conveyed to the States, it is merely the property custodian, much the same way as an aircraft may be owned by a leasing company but operated by a commercial airline.

OIG Position

We disagree with FS' management decision on this recommendation. Although there is no specific requirement that FS monitor the States to ensure that they follow their approved maintenance plans, without such monitoring, FS has no way of knowing whether the plans are being followed, and more importantly whether the States are in compliance with FS' airworthiness standards. To reach management decision on this recommendation, FS needs to at least monitor the States with FEPP aircraft used on Federal fires. FS could accomplish this during its annual inspections of the FEPP aircraft that States are using on Federal fires.

Finding 4

FS Needs To Ensure Aircraft Are Inspected and Maintained by Qualified Personnel

FS does not ensure that all of the light fixed-wing planes and firefighting helicopters it leases from private contractors are inspected and maintained by qualified personnel. This occurred because FS' guidance is inadequate by (1) exempting light fixed-wing plane inspectors from FAA requirements, and (2) allowing mechanics to maintain the helicopters while in the field without verifying their credentials. As a result, FS' contract aircraft are at greater risk of being improperly maintained and are therefore subject to the consequential hazards that follow, such as inadequate performance and accidents.

In general, FS requires aircraft to be inspected and maintained by qualified personnel, but there are two exceptions. First, FS' manual exempts light fixed-wing planes from having to be inspected by personnel who meet FAA's inspection requirements and hold inspection authorization credentials. Second, FS' contract with vendors that provide mechanics for its firefighting helicopters does not require the vendors to certify to the mechanics' qualifications. Below, we discuss these issues in more detail.

Light Fixed-Wing Aircraft Inspections

FS pilots who were not credentialed to perform inspections once were allowed to inspect light fixed-wing planes when there was a shortage of qualified maintenance inspectors. Currently, only one of FS' nine regions (region 6) still allows pilots to do so; the rest now require inspectors to possess an FAA-issued inspection authorization since it provides a higher level of assurance that the planes have been properly inspected. However, FS has not modified its official policy to reflect its current, general practice.

FS' guidance requires that aircraft maintenance inspectors possess current airframe and powerplant (A&P) ratings and are authorized by FAA to conduct aircraft inspections.[15] This direction applies to all aircraft except light fixed-wing airplanes. The handbook does not explain this exemption but FS' National Fixed-Wing

[15] Forest Service Handbook 5709.16, §42.1 (February 4, 2005).

Standardization Officer said that it was put into place to allow pilots to check for contract compliance when the agency was extremely short of qualified inspectors. He added that the pilots could not be expected to identify any airworthiness problems.

We discussed the issue with region 6's aviation operations manager, who said that the region currently had a sufficient number of maintenance inspectors and no longer needed to use unqualified individuals. A maintenance inspector in region 6 substantiated this opinion when he told us that he performed about 12 light fixed-wing inspections in 2006 because pilots felt they were unqualified to do them. The aviation operations manager said that the region would discontinue the practice in 2008. However, the region has yet to formalize plans to implement this change.

Allowing unqualified individuals to conduct inspections that should be performed by properly qualified professionals reduces FS' assurance that the planes are safe to fly. To ensure that the light fixed-wing planes are inspected by qualified personnel, FS should correct its policy to include these planes in the general requirement that aircraft be inspected by properly credentialed personnel.

Vendor Certification of Helicopter Mechanic Qualifications

FS issues qualification cards for helicopter mechanics that work in the field during firefighting operations. FS requires that these mechanics be highly trained, experienced, and skilled, since they will often have to work independently, without the guidance and support available at their home base. However, FS qualifies the mechanics based only on information the mechanics themselves provide. FS, thus, lacks assurance from an independent source that the mechanics are in fact qualified to maintain the helicopters in the field.

The qualification process begins when a contractor's mechanic submits an application to a FS regional maintenance inspector. The inspector reviews the application and issues an Interagency Mechanic Qualifications card based on the information submitted. According to FS' contract with the vendors, all qualified mechanics must have held an FAA mechanic's license with A&P ratings for 2 years, maintained a helicopter of the same make and model under field conditions for one full season, and completed a manufacturer's maintenance course or maintained an identical helicopter for 1 year. The mechanics must also have 18 months of

current A&P experience. However, the vendor does not certify to the accuracy of the information that the mechanics submit to FS when applying for their qualifications card.

Vendor certification will provide FS an added level of confidence in the information underlying its decisions to qualify helicopter mechanics to work in the field. Since these mechanics determine helicopters' fitness for flight after maintenance, they play a critical role in the safety of FS' firefighting aviation. Consequently, FS needs to be confident that they are qualified to perform their jobs.

In order to ensure that the aircraft are inspected and maintained by qualified personnel, FS should revoke the guidance exempting light fixed-wing aircraft inspectors from FAA requirements. Further, FS should require vendors providing helicopter mechanics to certify to their qualifications. These actions will strengthen FS firefighting aviation safety program by increasing its confidence in the quality of the maintenance and inspections of its aircraft.

Recommendation No. 12

Amend policy to require that all aircraft maintenance inspectors, including those for light-fixed wing aircraft, possess a current A&P certificate issued by the FAA and to meet the requirements for inspection authorization from FAA.

Agency Response

The FS concurs with this audit recommendation. The agency will amend policy to require that all aircraft contract compliance inspections (aircraft carding) be accomplished by an approved agency inspector that holds an FAA A&P certificate and meet the requirements for an FAA Inspection Authorization. The FS' estimated completion date for this action is May 1, 2008.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer a copy of the amended policy.

Recommendation No. 13

Amend helicopter contracts to require vendors to certify to their mechanics' qualifications.

Agency Response

The FS concurs with this audit recommendation. All FS helicopter contracts will be amended to include vendor certification that mechanics offered under the contract have met the minimum certification, training, and experience qualifications of the contract. The FS' estimated completion date for this action is May 1, 2008.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer documentation showing that the agreed upon action has been taken.

Finding 5

FS Lacks Independent, Full-Time Regional Aviation Safety Manager

Since 2004, FS has lacked an independent, full-time Regional Aviation Safety Manager (safety manager) for the Southern region (region 8). This occurred because the region did not proactively pursue filling the position after the previous safety manager resigned, but instead allowed the Regional Aviation Officer (aviation officer) to act as the safety manager in addition to his normal duties. Not only did this dual responsibility constitute a potential conflict of interest, but it may have diminished the region's ability to address its accident rate, the highest of FS' regions.

According to FS' guidance, "Regional Directors of Fire and Aviation Management . . . must designate a qualified [safety manager] to manage and coordinate aviation safety matters. These duties must be assigned to an employee other than the [aviation officer]." The safety manager is separate from the aviation officer so that safety duties can be performed independently of conflicts of interest that might arise from aviation operations. The safety manager's duties include preparing safety plans, coordinating and monitoring hazard detection, monitoring compliance with safety standards and procedures, implementing appropriate prevention actions, and providing aviation officers with timely safety information such as accident investigation reports.[16] Typically, safety managers report to a Regional Director of Fire and Aviation Management who oversees a region's entire fire program.

However, for 5½ of the last 7 years, FS' region 8 has left this critical safety position unfilled. Further, despite the requirement that the duties be segregated, region 8's aviation officer has taken on safety manager responsibilities for approximately the last 3 years. The aviation officer said that after the safety manager quit in mid-2000, the region hired another one in early 2002 who stayed until mid-2003. The position remained unfilled until July 2004, when they hired a new safety manager who quit after 2 weeks. Since then, the aviation officer has filled both roles.

[16] FSM 5720.48d (February 4, 2005).

According to the aviation officer, the region's management had decided to hire someone full-time for the position but events intervened, such as new management and the region's response to hurricane Katrina. The aviation officer sent us a copy of a "Request for Personnel Action" for hiring a safety manager, dated February 1, 2007. The request went to FS' human resources department, but the region has not received a response about the status of the request.

During the course of our audit, we also found that the Pacific Southwest region's safety manager (region 5) reports to the aviation officer. The safety manager said that the potential for conflict of interest had been discussed by FS' management but that the region had not been directed to change this arrangement. He said that reporting to the operations manager had not created any issues. We followed up with the national aviation safety manager who confirmed that the situation had been discussed but that FS' management did not see a direct conflict between the two positions. He did, however, agree that "having a separate and independent position for safety makes sense."

While the manual direction only explicitly requires the safety manager and aviation officer duties to be assigned to different personnel, the clear intent is to maintain independence between operations and safety. We did not find any definitive evidence that the lack of an independent safety manager resulted in an aviation accident, but we agree with FS senior management that staffing the position in region 8 would allow the region to focus on improving its safety record and to enhance the overall safety atmosphere. Further, in region 5, dividing safety from operations will protect the region from the appearance of conflicts of interest that can diminish the public's faith in FS' commitment to aviation safety.

Recommendation No. 14

Ensure that all regions have qualified Regional Aviation Safety Managers on staff. When a vacancy develops, make the recruiting and hiring of such individuals a high priority.

Agency Response

The FS concurs with this audit recommendation. The FS has initiated a broad transition to doctrine-based management which has resulted in extensive review and revision of policy manuals. The FS manual, "FSM 5700 – Aviation Management" is scheduled to begin this process in January 2008. The revision will ensure that qualified Regional Aviation Safety Managers remain a key staff position and

will ensure that the recruiting and hiring of such individuals is a high priority. The FS' estimated completion date for this action is January 31, 2009.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer a copy of the revised policy.

Recommendation No. 15

Amend manual to prohibit safety managers from reporting to aviation officers.

Agency Response

The FS concurs with this audit recommendation. The scheduled review and revision of FSM 5700 addressed in response to Recommendation No. 14 will ensure that safety managers report to the appropriate supervisory level to maintain objectivity and effectiveness. The FS' estimated completion date for this action is January 31, 2009.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer a copy of the revised policy.

Recommendation No. 16

Require region 5's safety manager to report to the Regional Director of Fire and Aviation Management for that region.

Agency Response

The FS concurs with this audit recommendation. The scheduled review and revision of FSM 5700 addressed in response to Recommendation No. 14 will ensure that safety managers report to the appropriate supervisory level to maintain objectivity and effectiveness. The FS' estimated completion date for this action is January 31, 2009.

OIG Position

We accept FS' management decision on this recommendation. For final action, FS needs to provide the Office of the Chief Financial Officer a copy of the revised policy.

Scope and Methodology

The purpose of our review was to determine whether the FS' air safety program minimizes the risk of accidents and contributes to the effective use of aerial resources. Our review generally covered program activities from FY 2000 to the present and included all aircraft and pilots the FS currently uses in its firefighting operations.

To accomplish our audit objectives, we performed audit work at the FS Washington Office in Washington, D.C.; the National Interagency Fire Center (NIFC) in Boise, Idaho; and at three FS regional offices (see exhibit A). We also visited the facilities of four contractors that lease aircraft to FS. Fieldwork was performed between July 2006 and May 2007.

Regions 4, 6, and 8 were selected for review primarily because they had the largest number of aviation accidents. Collectively, the three regions accounted for 54.8 percent of FS' total accidents and 37.6% of its total aviation expenditures. The four contractors selected for review included a mix of both small and large companies.

In developing the findings in this report, we performed the following steps and procedures:

At Washington Office

- Reviewed applicable laws, regulations, polices and procedures pertaining to FS' air safety program.
- Interviewed key FS Washington Office staff including the Assistant Director for Aviation about FS' air safety program.
- Evaluated prior reviews, studies, and analysis FS and other Federal and non-Federal entities conducted related to FS' air safety program.
- Obtained statistics on the number of accidents involving FS' firefighting aircraft and reviewed accident reports to determine the underlying causes for the accidents.
- Interviewed staff from FAA to ascertain its responsibilities for ensuring the airworthiness of FS' firefighting aircraft.

- Interviewed staff from the U.S. Army's Aviation Engineering Directorate in Huntsville, Alabama, to obtain their opinion on the maintenance needs for helicopters used for firefighting purposes. The staff interviewed were considered experts in the use of engineering services in army aviation missions.

- Interviewed a California Department of Forestry official to determine the maintenance and inspection requirements for their firefighting aircraft.

- Contacted Avenger Aircraft and Services, the company FS is currently using to assess the airworthiness of its airtankers to discuss the status of their work.

- Interviewed a staff attorney from the Office of General Counsel to ascertain FS' liability for the FEPP aircraft it loans to the States.

At National Interagency Fire Center

- Interviewed key FS staff including the National Aviation Safety Manager and National Airworthiness and Logistics Officer about FS' air safety program.

- Interviewed national contracting officers for aviation resources and reviewed the national contracts for airtankers, helicopters and maintenance services. Also reviewed the maintenance inspection files for the national airtanker contracts.

- Evaluated procedures used to verify the qualifications of FS and contractor pilots. Also judgmentally selected a sample of pilots used on the national airtanker contracts and reviewed the documentation supporting their qualifications.

- Obtained and reviewed accident investigation reports for those accidents occurring since FY 2000.

At Selected Regional Offices (see exhibit A)

- Interviewed key FS staff including the Regional Aviation Safety Manager about FS' air safety program. Although not one of the regional offices selected for review, also interviewed the Regional Aviation Safety Manager from the Pacific Southwest Region

(Region 5) to determine whether the safety manager position in that region was independent from aviation operations.

- Reviewed inspection records for all FS-owned aircraft at the region. Also reviewed the inspection records for a judgmental sample of regionally contracted aircraft from the largest contractors.

- Reviewed the documentation supporting the qualifications of a sample of FS and contract pilots. The contact pilots selected for review were from the same companies whose inspection records were reviewed.

- Obtained and reviewed the region's accident investigation reports for those accidents occurring since FY 2000.

At Selected Contractors (see exhibit A)

- Toured the contractor's maintenance facility and interviewed key personnel about their company's efforts to ensure the safe operation of their firefighting aircraft used on Federal fires.

Our audit was conducted in accordance with generally accepted government auditing standards.

Exhibit A – Audit Sites Visited

AUDIT SITE	LOCATION
FS Washington Office	Washington, DC
National Interagency Fire Center	Boise, ID
Region 4	
Intermountain Regional Office Regional Aviation Center of Excellence	Ogden, UT Ogden, UT
Region 6	
Pacific Northwest Regional Office Redmond Air Center	Portland, OR Redmond, OR
Region 8	
Southern Regional Office Regional Aviation Office	Atlanta, GA Lawrenceville, GA
Contractors	
Evergreen Aviation Erickson Air-Crane Colombia Helicopters Precision Helicopters	McMinnville, OR Central Point, OR Aurora, OR Newberg, OR

Exhibit B – Number of Aircraft FS Owns and Leases for Its Firefighting Program

Aircraft Type	FS-Owned				FS-Leased			
	Number of Aircraft	Number of Models	Number That Are Civilian	Number That Are Ex-Military	Number of Aircraft	Number of Models	Number That Are Civilian	Number That Are Ex-Military
Helicopters	3	2	1	2	421	40	387	34
Fixed-Wing:								
Airtankers	0	0	0	0	18	2	0	18
Lead Planes	0	0	0	0	10	1	10	0
Smoke Jumper	8	3	4	4	4	3	2	2
Air Attack	0	0	0	0	84	22	84	0
Other	15	5	15	0	234	52	234	0
Total	26	10	20	6	771	120	717	54

Exhibit C – Number of Operational FEPP Aircraft Loaned by FS to States for Firefighting

State	Number of Aircraft	Number of Different Models	Number of Aircraft That Are Civilian	Number of Aircraft That Are Ex-Military	Number of Aircraft Approved for Federal Fires in 2006
Alaska	1	1	0	1	1
Alabama	3	3	3	0	0
Arkansas	9	7	9	0	0
California	58	9	3	55	48
Florida	17	8	9	8	14
Georgia	1	1	0	1	0
Louisiana	2	2	2	0	0
Maine	8	3	2	6	3
Minnesota	1	1	1	0	0
Montana	8	3	3	5	0
North Carolina	14	8	5	9	6
New Jersey	6	5	3	3	0
Nevada	1	1	0	1	1
South Carolina	11	7	11	0	0
Tennessee	1	1	1	0	0
Virginia	1	1	1	0	0
Washington	7	3	0	7	0
Total	149		53	96	73

Forest Service | Washington Office | 1400 Independence Avenue, SW Washington, DC 20250

File Code: 1430 Date: JAN 2 5 2008
Route To:

Subject: Response to Office of the Inspector General Official Draft Report Audit Number 08601-48-SF, "Forest Service's Air Safety Program"

To: Robert W. Young, Assistant Inspector General for Audit, Office of Inspector General, USDA

Thank you for the opportunity to review and comment on the official draft of Office of the Inspector General (OIG) Audit Report Number 08601-48-SF, "Forest Service's Air Safety Program." The Forest Service takes very seriously its responsibility for safety in aviation and has been working steadily to improve the air safety program. Since the suspension of contracts for the large airtankers in May of 2004, we have worked to establish a path to address the airworthiness assurance issues highlighted by the National Transportation Safety Board Recommendations A-04-29, 30 and 31. The Forest Service welcomes constructive criticism of its aviation and air safety program from both internal and external sources.

The Forest Service concurs with most of the recommendations in the report and believes these will benefit the overall fire and aviation program. The Forest Service will work with its partners and with Congress and the Administration to improve the air safety program to the best of its abilities.

Please see the enclosure for our proposed actions to implement the recommendations in the OIG Audit Report. Contact Erica Kim, Fire & Aviation OIG Audit Lead, at 202-205-0811, with any technical questions, and Art Seggerson, FS OIG Audit Liaison, at 703-605-4983, with any other questions.

Sincerely,

ABIGAIL R. KIMBELL
Chief

Enclosure

cc: Erica Kim, Art Seggerson

USDA

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USDA Forest Service (FS)

Office of Inspector General (OIG) Audit Report No. 08601-48-SF
Forest Service Air Safety Program
Issued November 21, 2007

Official Draft Recommendations

OIG Recommendation 1: Request clarification from Congress to define FS' and FAA's responsibilities for assessing and certifying firefighting aircraft.

FS Response to Recommendation 1: The Forest Service does not concur with this recommendation. The responsibilities for assessing and certifying firefighting aircraft are clear, as was explored during the Blue Ribbon Panel investigation and the congressional hearings[1] held in the aftermath. The FAA clearly has no public aircraft jurisdiction. The FAA's regulation at 14 CFR 91.403 provides that "the owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition..." The FS interprets this to mean that the FS assesses the airworthiness for aircraft it operates under the public use aircraft regulations. But in the case of FEPP aircraft that is loaned to States, the FS owns those aircraft, but do not operate those aircraft. The operator becomes the responsible party for maintaining the aircraft in airworthy condition. Any requested changes in the responsibilities would be based on the Administration's desire to adjust roles and responsibilities between the agencies.

Estimated Completion Date: N/A

OIG Recommendation 2: Develop an overall implementation plan to complete airworthiness assessments on all aircraft FS uses for firefighting. The plan should prioritize the assessments based on the relative risks of each aircraft model considering its mission requirements for the firefighting environment, and establish timeframes for completion.

FS Response to Recommendation 2: The FS concurs with this audit recommendation. A detailed plan to complete airworthiness assessments on all aircraft the FS uses for firefighting will be formulated. The plan will include the airworthiness assurance methodology, aircraft prioritized by mission type, schedule for completion, and budget and staffing needs.

Estimated Completion Date: January 31, 2009

[1] See S. HRG. 108-29, "HEARING BEFORE THE SUBCOMMITTEE ON PUBLIC LANDS AND FORESTS OF THE COMMITTEE ON ENERGY AND NATURAL RESOURCES, UNITED STATES SENATE - AERIAL FIREFIGHTING SAFETY," March 26, 2003.

OIG Recommendation 3: Specify FS' timeframe for completing the Special Purpose Operations and Airworthiness Manual in the overall implementation plan developed in Recommendation No. 2.

FS Response to Recommendation 3: The FS concurs with this audit recommendation. The general outline for a Special Purpose Operations and Airworthiness Manual will be accomplished in conjunction with the fielding of three agency owned P-3's and included in the detailed plan requested in Recommendation No. 2.

Estimated Completion Date: January 31, 2009

OIG Recommendation 4: Prioritize existing funds to accomplish the assessments within the timeframes specified in the plan.

FS Response to Recommendation 4: The FS concurs with this audit recommendation. Detailed budget and staffing projections based on existing program funding will be included in the plan requested in Recommendation No. 2.

Estimated Completion Date: January 31, 2009

OIG Recommendation 5: Notify Congress if additional funds are needed based on recommendations 2 thru 4.

FS Response to Recommendation 5: The FS concurs with this audit recommendation. Additional funding needs will be included in the plan requested in Recommendation No. 2.

Estimated Completion Date: January 31, 2009

OIG Recommendation 6: Amend vendor contracts to require that all aircraft leased for firefighting meet the airworthiness standards established for the aircraft and that vendors have appropriate maintenance and inspection programs for the aircraft.

FS Response to Recommendation 6: The FS concurs with this audit recommendation. The formulation and implementation of airworthiness standards for aircraft that perform special missions will take time to accomplish. Any standards would apply to contract as well as Forest Service fleet aircraft. Aircraft performing missions deemed to be severe usages and aircraft performing a flight profile that is not supported by the original equipment manufacturer (OEM) may require additional effort to address these issues.

Language is currently included in the 2008 Airtanker Services Request for Proposal (RFP) to meet revised airworthiness standards, and therefore this recommendation will be accomplished by January 31, 2009 for the aircraft contracts currently being renewed. However, there is a 5-year timeframe for the expiration and renewal of the other aircraft contracts, and those will be amended to reflect the applicable standards and programs required on a rolling basis, over the next 5 years.

Estimated Completion Date: January 31, 2009

OIG Recommendation 7: Require States with FEPP aircraft used on Federal fires to assess their airworthiness in light of NTSB's recommendations.

FS Response to Recommendation 7: The FS concurs with this audit recommendation. Forest Service policy currently requires all aircraft used on federal fires meet the same standards regardless of the ownership or operator of the aircraft. As stated in the response to recommendation 6, the Forest Service is working to improve processes for determination of airworthiness. As these standards are completed, implementation will continue and policy will be amended as needed.

Estimated Completion Date: January 31, 2009

OIG Recommendation 8: Determine whether those States with FEPP aircraft not used on Federal fires should also be required to meet FS' airworthiness standards based on the level of liability risk FS is willing to accept.

FS Response to Recommendation 8: The FS has made a determination on this issue. However, based on precedent and OGC opinion, we believe the FS has only a limited liability exposure and has elected not to require additional airworthiness standards.[2] FEPP aircraft not approved for use on Federal fires are the responsibility of the cooperator for appropriate inspection, maintenance and usage of the aircraft. The Forest Service is the property custodian for those aircraft, but not the operational custodian, and would not infringe on the autonomy of that State or Local cooperator that have been loaned those aircraft unless those aircraft are offered for use on Federal fires. We understand OIG's concerns, however, and are drafting a letter to our State cooperators that will clarify issues of liability risk, and airworthiness responsibilities. We expect to send the letter in late January or early February 2008.

Estimated Completion Date: January or February 2008

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[2] See USDA Office of the General Counsel's Memorandum dated March 18, 1992, "Liability for Excess Personal Property Loaned to State Cooperators," and also 14 CFR 91.403.

OIG Recommendation 9: Develop a plan to assist those States with FEPP aircraft to assess the airworthiness of their aircraft. The plan should prioritize the aircraft based on the model and mission requirements and establish timeframes for completing the assessments.

FS Response to Recommendation 9: The FS does not believe a plan to assess airworthiness is necessary, for the reasons stated in our response to Recommendation 8. However, we will assist any state requesting our help to develop a plan to assess the airworthiness of their aircraft. Currently, the States have access to the Forest Service airworthiness information and processes. The FS will continue to convey information on any new airworthiness processes it develops but there are no plans to create new programs for every aircraft type in the FEPP inventory. States that wish to fly FEPP aircraft on FS fires will continue to be held to the same interagency standards required of federal and contract aircraft, but action by States that do not fly FEPP aircraft on FS fires under this recommendation would be strictly voluntary. States with FEPP aircraft that fly strictly non-Federal missions must comply with the FAA's regulations[3] on what constitutes an acceptable airworthiness process.

Estimated Completion Date: N/A

OIG Recommendation 10: Require States to provide FS with their maintenance programs for review and approval. FS' approval of the programs should be a prerequisite for future FEPP aircraft loans.

FS Response to Recommendation 10: The FS does not believe States with FEPP aircraft that fly strictly non-Federal missions must provide the FS with their maintenance programs for review and approval, for the reasons stated in our response to Recommendation 8. The FS does review and approve the maintenance programs for FEPP aircraft that are used on Federal fires. If the aircraft are not maintained and certified to the same interagency standards required of federal and contract aircraft, then we do not allow them to fly on our fires. In addition, the FS does not agree with making approval of maintenance programs a prerequisite for future loans. For States that receive FEPP aircraft and do not operate on Federal fires, we do not believe it is appropriate to interfere with the States' autonomy by requiring them to submit the maintenance programs for review and approval.

Estimated Completion Date: N/A

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[3] 14 CFR 91.403

OIG Recommendation 11: Monitor States to ensure that they follow their approved maintenance plans. If States are unable to timely correct identified problems, they should not be allowed to fly firefighting missions with their current FEPP fleet, or to borrow future aircraft.

FS Response to Recommendation 11: . The legislation that authorized the FEPP program was not intended to create an oversight program, rather it was to allow the FS to be an intermediary, using its federal government status to procure higher-value equipment to pass on to the States that did not have the same preference to obtain the equipment. The FS does not oversee and manage the equipment once it is conveyed to the States, it is merely the property custodian, much the same way as an aircraft may be owned by a leasing company but operated by a commercial airline.

Estimated Completion Date: N/A

OIG Recommendation 12: Amend policy to require all aircraft maintenance inspectors, including those for light-fixed wing aircraft, to possess a current A&P certificate issued by the FAA and to meet the requirements for inspection authorization from FAA.

FS Response to Recommendation 12: The FS concurs with this audit recommendation. The agency will amend policy to require that all aircraft contract compliance inspections (aircraft carding) be accomplished by an approved agency inspector that holds an FAA A&P certificate and meet the requirements for an FAA Inspection Authorization.

Estimated Completion Date: May 1, 2008

OIG Recommendation 13: Amend helicopter contracts to require vendors to certify to their mechanics' qualification.

FS Response to Recommendation 13: The FS concurs with this audit recommendation. All Forest Service helicopter contracts will be amended to include vendor certification that mechanics offered under the contact have met the minimum certification, training and experience qualifications of the contract.

Estimated Completion Date: May 1, 2008

OIG Recommendation 14: Ensure that all regions have qualified Regional Aviation Safety Managers on staff. When a vacancy develops, make the recruiting and hiring of such individuals a high priority.

FS Response to Recommendation 14: The FS concurs with this audit recommendation. The FS has initiated a broad transition to doctrine-based management which has resulted in extensive review and revision of policy manuals. The FS manual, "FSM 5700 – Aviation Management" is scheduled to begin this process in January 2008. The revision will ensure that qualified Regional Aviation Safety Managers remain a key staff position and will ensure that the recruiting and hiring of such individuals is a high priority.

Estimated Completion Date: January 31, 2009

OIG Recommendation 15: Amend manual to prohibit safety managers from reporting to aviation officers.

FS Response to Recommendation 15: The FS concurs with this audit recommendation. The scheduled review and revision of the FS manual, "FSM 5700 – Aviation Management", addressed in response to Recommendation 14 will ensure that safety managers report to the appropriate supervisory level to maintain objectivity and effectiveness.

Estimated Completion Date: January 31, 2009

OIG Recommendation 16: Require Region 5's safety manager to report to the Regional Director of Fire and Aviation Management for that region.

FS Response to Recommendation 16: The FS concurs with this audit recommendation. The scheduled review and revision of FSM 5700 addressed in response to Recommendation 14 will ensure that safety managers report to the appropriate supervisory level to maintain objectivity and effectiveness.

Estimated Completion Date: January 31, 2009

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