



# Management Efficiency Assessment on Aviation Activities in the USDA Forest Service

*The Department of the Interior (DOI) has reviewed this assessment and concurs with the findings and recommendations.*

## Executive Summary

This Management Efficiency Assessment provides an overview of Forest Service aviation activities and identifies where there are opportunities to implement program improvements and reduce operating costs. The review provides recommendations for follow-on actions and studies to increase program efficiency and effectiveness.

Execution of the assessment is complicated by the fact that the Fire Aviation Management function is not a single, monolithic entity. The assessment team identified six Business Areas within aviation, each of which required separate analyses.

The Forest Service Aviation Activities Management Efficiency Assessment is divided into six sub-reviews based upon the six key distinct Business Areas identified: Aerial Delivery of Firefighters and Support, Aerial Detection and Command and Control, Aerial Fire Suppression – Airtanker and Large Helicopter, Aerial Resource Support (Natural Resources and Fuel Management Missions), Aviation Contract Management and Quality Assurance, and Aviation Program Management. The Business Areas were aligned into complete business units for analysis. The assessment uses 2005 cost data in the various Business Areas.

The mission of the Forest Service is to:

*Sustain the health, diversity, and productivity of the Nation's forests  
and grasslands to meet the needs of present and future generations.*

The Forest Service mission includes four major segments: National Forest and Grasslands, Forest and Rangeland Research, State and Private Forestry, and Wildland Fire Management. Wildland Fire Management provides for the protection of life, property, and natural resources on National Forest Service (NFS) lands and the estimated 20 million acres of adjacent State and private lands<sup>1</sup>.

The primary mission of Forest Service Aviation is to support wildland fire management and the ground firefighter through a variety of means including safe delivery of smokejumpers, rappellers, air attack, aerial delivery of fire retardant and water, firefighter and cargo transport, surveillance, aerial reconnaissance, and fire intelligence gathering. Aviation activities also support Forest

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<sup>1</sup> Forest Service Performance and Accountability Report – Fiscal Year 2004 dated April 2005.

Service natural resource programs and interagency partners. High costs associated with fire and aviation activities led the Forest Service to select these activities for efficiency assessment. The assessment recognizes that a large portion of the overall Fire and Aviation Management wildland fire suppression budget is centered on aviation costs with the majority of these costs going to contract aviation resources.

This review focuses on the Forest Service's ability to bring a multitude of aircraft together, both contract and in-house, from throughout the country, to work in harmony on any wildland fire incident and function with interoperability of equipment and operating practices.

The review team was challenged with defining an aviation program that fulfills the Forest Service mission, reflects budget realities, delivers an efficient and safe aviation operation, takes advantage of multiple studies completed previously, removes existing barriers identified in previous studies, is acceptable to interagency partners, reflects the tension between trade-offs necessary for any additional equipment/investments, and minimizes new investments where savings cannot be demonstrated.

Many facets of the Business Areas were identified, analyzed, and evaluated. This final report reflects only those recommendations that are supported and proven by an objective analytical process.

The review was influenced by a number of factors that helped guide the analysis and recommendations, including severity of fire seasons; funds availability and the impact of transferring funds from other programs; availability and capability of aircraft to support the mission; personnel availability; and safety.

The assessment identified numerous assumptions for the Business Areas collectively and individually which became part of the foundation for the recommendations. Assumptions included the following: each region varies in vegetation fuels, geographic, climate and fire potential conditions; aviation resources will continue to be used in wildland fire suppression; to maintain interoperability across Regions, standardization of aviation personnel, equipment and operating procedures would be necessary to meet requirements; and aviation technology is dynamic and continually evolving.

Constraints were identified to ensure that recommendations would be executable. Following are some of the key constraints identified: wildland fire requires an immediate and appropriate response and may include a containment objective within the first burning period after detection; the use of fire suppression assets requires coordinating priorities with interagency partners; additional funding needs are often met by transferring funds from other Forest Service programs; aged aircraft retirements have decreased the size of the government-owned (working capital fund or WCF) and contracted fleet; there is an increasing requirement for the Forest Service aviation program to respond to "all hazard" incidents in support of other agencies (FEMA, etc.).

The Business Areas that were identified cover direct support to firefighters including rapid delivery of helitack crews and smokejumpers for initial and extended attack on wildfire incidents. An integral part of the incident command structure is provided by the aviation activities command and control of aerial resources along with aerial detection and communications. Aerial fire suppression provides large volume delivery of approved fire retardants or suppressants on wildland fires using airtankers and large helicopters. Throughout the year, aviation activities support the overall Forest Service mission.

Aviation support depends predominantly on contract aviation services. This requires a significant effort to administer, and to monitor and direct the most effective use of resources. The Contract Management and Quality Assurance Business Areas are critical to ensure that the aircraft used are safe and capable of providing necessary support. Quality assurance includes both contract and government operations ensuring performance quality and standardization.

Aviation Program Management provides management at all levels through close interagency coordination to obtain and maintain an effective aviation capability to complement ground firefighter capabilities. National, Regional, and Administrative Unit levels actively coordinate and work in conjunction with other federal, tribal, state, and local government agencies and private entities.

Through review of previous studies, interviews, subject matter experts, and analysis of operations and aviation activity cost, this assessment found that there are areas for improvement. However, these findings require additional studies and evaluation, to include updating the eight-year old Aerial Delivered Firefighters (ADFF) Study based upon new information and available resources.

### **General Description of Forest Service Aviation Activities**

The primary mission of Forest Service Aviation is to support wildland fire management and the ground firefighter through a variety of means including safe delivery of smokejumpers and rappellers, air attack, aerial delivery of fire retardant and water, firefighter and cargo transport, surveillance, aerial reconnaissance, and fire intelligence gathering. Aviation activities also support Forest Service natural resource programs and interagency partners.

Fire Management accounts for 75 to 80 percent of agency flight hours. The yearly fluctuations in flight hours result from variations in fire season suppression activities.

Fire suppression and protection responsibilities for natural resources are generally assigned to a lead local, state, federal or tribal agency; however, wildland fires often cross agency boundaries. As a result, wildland fire response is conducted in an interagency and cooperator environment. This assessment takes into consideration potential impacts to stakeholders that may result from implementation of findings and recommendations.

Aviation activities support a wide variety of agency missions, including fire suppression, fire prevention, research study, forest rehabilitation, law enforcement support, aerial photography, infrared detection, and personnel transport. Aerial delivered firefighters (smokejumpers and helitack crews) provide a pool of experienced fire professionals to ensure integrity and continuity of wildland firefighting capability and provide technical expertise to fire and resource managers at all levels of the Forest Service.

The Forest Service owned and operated 26 aircraft (See Appendix G – Aircraft) in 2005. In FY 2005, an additional thirteen aircraft were leased for Forest Service pilot operation and approximately 643 aircraft were contracted, including both airplanes and helicopters (See Appendix H – Forest Service Contracts). These numbers were reported by the regions in the original data call for this review.

Owned and leased aircraft are crewed by Forest Service government employee pilots and manager/pilots. Approved contractors with oversight by Forest Service maintenance and avionics specialists/inspectors maintain these aircraft to Federal Aviation Administration (FAA) standards. Additional cooperating aviation support is provided by other federal or state firefighting organizations when wildland fire incidents are located in areas of mutual interest and concern. Military assets may be employed during the most severe wildland fire situations when no additional commercial resources are reasonably available.

The Forest Service aviation program provides aviation services that support agency managers in accomplishing their land management goals. The Forest Service uses approximately 700 contracted and owned aircraft each year. This number varies from year to year based on the amount of fire activity.

An average of 80,000 flight hours are flown annually. The average Forest Service accident rate is 6.3 accidents per 100,000 hours flown. This is 23 percent below the FFA statistical General Aviation (GA) average accident rate of 8.2 per 100,000 hours flown. The lower Forest Service accident rate is achieved under challenging weather, terrain, and flight profile conditions.

The majority of aircraft services needed to support Forest Service programs are provided through contract and rental agreements with commercial aviation operators. The majority of contracts are complete with aircraft, crews, and maintenance support. Contracts may be "exclusive use" or "call-when-needed" (CWN) and vary in length from 30 days to a year. Rental agreements are simplified CWN contracts. Large transport aircraft are contracted from air carriers or occasionally provided by military services under Memorandums of Agreement (MOA). Approved aircraft operated by cooperating agencies are also used.

The extensive number of contracts and individual contractors located throughout the country require a large number of personnel to administer the contracts and perform quality assurance. Contract Management and Quality Assurance are discussed in Business Area E – Aviation Contract Management and Quality Assurance.

Forest Service exclusive use and CWN contract specifications for aerial firefighting assets used in fire suppression are similar to the specifications for Department of the Interior-Aviation Management Directorate (DOI-AMD) and some state contracts. Through this interagency coordination, aircraft contracted and approved by AMD may be ordered and used interchangeably with Forest Service contracted aircraft. Both agencies agree that complete standardization of contract specifications is desirable.

Cooperator aircraft are owned, leased or contracted and operated by other federal, state, and local government agencies or tribal governments. Some of these aircraft have been obtained through the Federal Excess Property Program (FEPP) and are utilized by states and local government entities for emergency incident operations including wildland fire suppression. The Forest Service utilizes these aviation platforms in a variety of configurations under the auspices of cooperative agreements, interagency operating plans, and Memorandums of Understanding (MOU).

Aviation assets are controlled and managed at all levels as National Shared Resources (NSR), Regional, or local resources based upon the needs and criticality of the incident.

**Summary of Recommendations**  
**Management Efficiency Assessment on Aviation Activities in the USDA Forest Service**

*The assessment team did not identify recommendations by priority.*

**Business Area and Description of Recommendation**

<b>Business Area A – Aerial Delivery of Firefighters and Support</b>
<b><i>Short-Term Recommendations</i></b>
Consolidate helicopter rappel training to one location in each Region in order to promote standardization and efficiency.
Update the Aerial Delivery of Firefighters Study (ADFF) to evaluate and recommend the best mix of helicopter delivered versus airplane delivered firefighters. The study should include an analysis of the optimal locations for staging aircraft and crews based upon improved helicopter capabilities.
Develop a strategic plan for a phased replacement of the smokejumper aircraft in accordance with the Exhibit 300 process. Recommend that the Forest Service replace the current fleet with pressurized aircraft that have increased smokejumper and cargo capacity along with greater range capability.
<b><i>Long-Term Recommendations</i></b>
Develop a strategic plan to determine the best acquisition method for helitack aircraft in accordance with the Exhibit 300 process.

<b>Business Area B – Aerial Detection and Command and Control</b>
<b><i>Short-Term Recommendations</i></b>
Explore WCF for the various funding mechanisms to assist with the acquisition of replacement command and control aircraft.
Explore Agency-owned, lease-to-own, and contract options from the OMB Exhibit -300 business case study/analysis for aviation assets with the various funding mechanisms and authorization to assist with the replacement of leadplane/ASM aircraft.
Evaluate the potential of contracting for multiple ATGS platforms utilizing a single national contract similar to the national helicopter contracts. These platforms would consist of an aircraft and pilot. The Agency will provide the ATGS.
Validate the efficacy of the IR Program with the primary customers, including Incident Management Teams, Line Officers, and Natural Resource Specialists. Also evaluate the adequacy of the technology being used to assist decision makers.
Evaluate Firewatch program expansion for other Agency programs, such as law enforcement. Consider sharing Firewatch resources among Regions and the interagency community for large fire support and other Agency natural resource missions.
Qualify Firewatch pilots at ATP level in order to be able to fulfill the ASM missions.
<b><i>Long-Term Recommendations</i></b>
Recommend the development of long-term funding and implementation strategy for aviation training and ASM development. Consider changing the existing Forest Service approach to initial ground training for leadplane pilots and geographic area training of ATGS candidates. An example could be a National Aerial Supervision Academy, that includes all command and control aviation resource training. This would consolidate leadplane pilot training and ATGS training into an interagency aerial supervision academy, and could include command and control resources, interagency flight training, S-378, professional flight simulator training and Crew Resource Management.

## Business Area and Description of Recommendation

### Business Area C – Aerial Fire Suppression – Airtanker and Large Helicopter

#### *Short-Term Recommendations*

Develop a value analysis for use by each airtanker base to determine the best method of contracting for retardant, i.e. either full service or bulk. This analysis should also take into consideration the most effective and cost efficient type of retardant to be used at each base (i.e. powder, liquid).

Provide funding allocation within constrained preparedness and suppression budgets for dedicated helicopter managers for the 16 exclusive use Helitankers and Type I bucketed helicopters to maximize the efficiency of large helicopter usage. Forest Service management should be assigned to them on a 7-day basis when the helicopters are activated.

Explore alternative preparedness cost sharing strategies for the annual costs associated with aviation resources (airtankers and MAFFS).

If cost sharing alternatives are not available for the MAFFS program, evaluate alternative resources available for delivery of fire suppressants and retardants.

Utilize the Exhibit 300 study process to determine the appropriate number and mix of large airtankers and helitankers for long-term Agency use. This process is currently being used to determine the number of airtankers.

Until the Exhibit 300 is completed, maintain the large airtanker fleet at the current number of 19 and continue with the ongoing effort to refurbish three government-owned P3s.

Based on the Wildland Fire Management Aerial Application Study, evaluate the recommendation to consolidate airtanker bases from 38 down to 23. Eleven bases should be converted to reload bases and four bases closed.

### Business Area D – Aerial Resource Support (Natural Resources and Fuel Management Missions)

#### *Long-Term Recommendations*

Recommend that research be completed on the feasibility of utilizing Unmanned Aerial Vehicles (UAVs) for data collection.

### Business Area E – Aviation Contract Management and Quality Assurance

#### *Short-Term Recommendations*

Increase Aviation Contract Management and Quality Assurance oversight.

Increase the contract length for select aircraft contracts.

Optimize the mix of Exclusive Use and CWN Contracts to minimize total costs (preparedness and suppression combined).

Maintain a minimum core cadre of 59 agency personnel (24.06 FTE) for quality assurance of pilots and aircraft contracts that should be organized to work under the guidance of their respective national program standardization officer.

#### *Long-Term Recommendations*

Aviation contracts should be reviewed in greater detail for conformance with the new performance-based contract criteria and to improve the balance between Government and contractor risk. This has the potential of reduced contract costs.

## Business Area and Description of Recommendation

### Business Area F – Aviation Program Management

#### ***Short-Term Recommendations***

Continue to participate in the ongoing effort to develop interagency strategy and align operational policies.

Utilize National Shared Resources more efficiently by establishing two specific resource coordinator roles (helicopter and fixed-wing) to work with the National Interagency Coordination Center during fire season.

The Forest Service should continue moving toward standardized and Indefinite Delivery Indefinite Quantity (IDIQ) contracts.

The Forest Service should increase the use of End Product contracts for greater cost containment and to shift agency liability to contracted work. The emphasis should support continuation of Forest Service End Product contracts where appropriate.

Further explore the possibility of centralizing aviation management certain Regional aviation management roles into geographic hubs. National aviation management staff will be responsible for overall program management.

#### ***Long-Term Recommendations***

Establish Unit Aviation Officers (UAO) as collateral duty positions in each Research Station to provide supervision and oversight.

### General Recommendations – Comments

#### ***Short-Term Recommendations***

Utilize the Exhibit 300 process to evaluate the cost effectiveness of owning versus leasing aircraft to be used in support of Agency missions as identified throughout the Business Areas.

Conduct a program review of the Helicopter Inspector Pilot, rotor pilots and supporting platforms.

Review National Type II Helicopter Program.