



United States Department of Agriculture

# USDA Forest Service Aviation Strategic Plan: 2014–2018



Forest Service FS-1041 December 2014

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## Executive Summary

### An Aviation Strategy for the Future

Aviation resources of the Forest Service, an agency of the U.S. Department of Agriculture (USDA), are among the many tools available to accomplish land management objectives. The use of Forest Service aviation resources is of value only when it serves to accomplish these objectives. To maximize effectiveness and efficiency, aviation resources must be centrally coordinated, while aviation operations must be locally executed. Program leadership must provide clear direction so field personnel can carry out operations efficiently while actively participating in a continuous cycle of program evaluation and improvement.

Safety is defined as the state in which the possibility of harm to people or of property damage is reduced to, and maintained at or below, an acceptable level through continuing processes of hazard identification and risk management. As stated by Forest Service Chief Thomas L. Tidwell, “Our goal is to become a zero-fatality organization through a constant, relentless focus on safety in the way we work” (Fiscal Year 2013 Final Program Direction). An important step toward attaining that goal is to have an Aviation Safety Management System in place as part of the Forest Service’s day-to-day operations. The Safety Management System plays a key role at a time when Forest Service aviation faces major changes to its fleet. As budget allows, vintage aircraft from the Korean War era are being replaced with modern aircraft. Technology advancements will provide the organization with opportunities that will assist the agency in managing these changes.

This *USDA Forest Service Aviation Strategic Plan: 2014–2018* (Aviation Strategic Plan) provides an outline of how the agency will use aviation assets to accomplish the Forest Service mission: “To sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations.” It provides accountability and transparency on how well the agency can accomplish its mission. The plan defines Aviation Management’s vision, mission, values, and goals. To accomplish the Forest Service aviation mission, “To provide safe, efficient, and coordinated aviation support for agency operations; to support partnership agreements, and to meet current and future needs through innovation and technology in order to sustain the health, diversity, and productivity of the Nation’s forests and grasslands,” aviation goals are focused on safety, people, organization, and technologically advanced assets. These goals are characterized by specific objectives. Performance measures are used to define how well the agency has advanced toward accomplishing each objective. Strategies define the method or approach taken to accomplish the objectives and are reflective of opportunities and threats. Action plans will move the strategies forward and will be specific, measurable, and attainable. Progress will be reported in the annual aviation program report to assist the Forest Service with monitoring performance.

The Aviation Strategic Plan is the umbrella document that provides a strategic context for all aviation activities. The plan is not a stand-alone document, but rather it complements, enhances, and guides other plans and strategies. The plan is tied to higher level documents such as the Forest Service Strategic Plan. It is the long-term framework for guiding future Forest Service aviation activities. Aviation leadership will review the strategy twice annually, with one of those reviews used to make adjustments. Each year, a specific program of work will be developed as part of a regular discipline to act strategically.

## **Forest Service Mission and Goals**

### **Forest Service Aviation Mission**

To provide safe, efficient, and coordinated aviation support for agency operations; to support partnership agreements; and to meet current and future needs through innovation and technology in order to sustain the health, diversity, and productivity of the Nation's forests and grasslands.

### **Forest Service Aviation Goals**

#### ***Goal 1. Zero-Accident Organization***

Become a zero-fatality and zero-accident organization by implementing a Safety Management Systems agencywide approach to management and operations that includes safety management policy, safety risk management, safety assurance, and safety promotion.

#### ***Goal 2. Take Care of Our People***

Recruit and maintain a sufficient and highly qualified, trained, and motivated workforce.

#### ***Goal 3. Organize for Success***

Align the Forest Service aviation program to meet the needs of current and future operations.

#### ***Goal 4. Take Advantage of Technology***

Whenever feasible, deploy technologically advanced and cost-effective aircraft, equipment, and infrastructure to meet the agency's current and future mission.

## Signatures and Approval

**Prepared:** /s/ Ezequiel Parrilla **Date:** 1/15/2014

Ezequiel Parrilla, Aviation Strategic Planner

**Presented:** /s/ Art Hinaman **Date:** 1/15/2014

Art Hinaman, Assistant Director, Aviation

**Approved:** /s/ Tom Harbour **Date:** 4/15/2014

Tom Harbour, Director of Fire and Aviation Management

### Stakeholders' Signatures

**Reviewed:** /s/ Carlos Rodriguez-Franco **Date:** 1/15/2014

Associate Deputy Chief, Research & Development

**Reviewed:** /s/ Anne Hoover **Date:** 4/15/2014

Acting Director, Forest Health Protection

**Reviewed:** /s/ David Ferrell **Date:** 3/31/2014

Director, Law Enforcement and Investigations

**Reviewed:** /s/ Emily Blount **Date:** 2/27/2014

Director, Engineering

## Message From the Director of Fire and Aviation Management

The U.S. Department of Agriculture, Forest Service manages 154 national forests and 20 national grasslands in 44 States and the territory of Puerto Rico in carrying out its mission to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. Because of these management responsibilities, the Forest Service aviation program is responsible for the largest nonmilitary government aviation program in the world. During the past decade, the Forest Service's fleet of more than 1,000 owned, contracted, and leased aircraft averaged more than 75,000 flight hours annually, while safely and efficiently accomplishing missions related to our task of managing national forests and grasslands.

Our Aviation Management organization supports Forest Service resource management programs through a proactive and professional approach that includes leadership in achieving aviation safety assurance, aviation policy development, program management guidance, and the continual development and maintenance of a skilled workforce. The Forest Service suppresses approximately 10,000 fires per year on 193 million acres for which it has fire management responsibility. For the fires suppressed, 98 percent are contained during initial attack. This success is due, in part, to the dedicated efforts of the aviation organization. In addition to providing aerial firefighting support, the aviation organization also plays a key role in accomplishing forest health and all-hazard response objectives, as well as other agency resource management plans. These objectives and plans include more than 5,000 prescribed fires—a complex but invaluable preventive tool—and approximately 6,000 annual flight hours for aerial application, aerial photography, and aerial sketchmap surveys to ensure the health of our forests through programs such as the National Gypsy Moth Slow the Spread Program. The missions of the Law Enforcement and Investigation and Research and Development organizations require detailed coordination among different directorates of the Forest Service. This *USDA Forest Service Aviation Strategic Plan: 2014–2018* goes beyond aerial firefighting and addresses all areas of aviation. Efforts such as the Unmanned Aircraft Systems Advisory Group—with regional and area presence and representatives from Fire and Aviation Management, Forest Health Protection, Law Enforcement and Investigations, and Research and Development—show the agency's commitment to having different directorates and field representatives work together for an effective aviation program.

This Aviation Strategic Plan offers clear direction for the aviation program in accomplishing its mission. Safety is the foundation and core value of the plan, which addresses strategic values and outlines near-and long-term goals that will be the program's focus for fiscal years (FYs) 2014 through 2018. The Aviation Strategic Plan is intended to complement and supplement the Forest Service and USDA Strategic Plans.

I am happy to report that in FYs 2010 through 2013, the Forest Service did not have any helicopter accidents. FY 2011 was noteworthy as the first year in 50 years with no accidents throughout our aviation fleet. In FYs 2012 and 2013, there were no aviation accidents under Forest Service operational control, however, two airtankers crashed, resulting in the loss of six of our fellow aviators. Although these aircraft were not under operational control of the Forest Service, these tragic events remind us of the risks involved in our operations.

We have not had an aviation accident in any agency-owned aircraft since 2004. The largest part of this success is because of the work on the ground by employees, contractors, and partners. Our goal as an agency is to achieve and maintain a zero-accident rate. To sustain this success, we must go through a cultural transformation that recognizes employee safety as our first priority. This aviation management strategy recognizes safety as a prime concern and supports a system-wide approach to safety in the form of a Safety Management System as presented in the *Forest Service Aviation Safety Management System Guide*.

Aviation management is charged with a complex mission in a rapidly evolving environment. Our ability to safely, effectively and efficiently accomplish program objectives depends directly on the continued efforts of program personnel and our partners.

A handwritten signature in blue ink, appearing to read 'T. Harbour', with a long horizontal line extending to the right.

TOM HARBOUR

Director of Fire and  
Aviation Management

## Message From the Assistant Director, Aviation

My vision for U.S. Department of Agriculture, Forest Service aviation is to be the best aviation organization in the U.S. Government and the premiere aerial firefighting agency in the world. To be the best, we must continually assess ourselves; continually learn about ourselves and the environment in which we operate; and continually evaluate our mission, our equipment, and evolving technology.

The Washington Office is the entity that has responsibility to develop and oversee the national program and to assist the regional and area offices with regional implementation of the national program. I envision a relationship with the regional and area offices that enables us to develop policy and conduct operations based on inclusive participation. I also envision a relationship in which we establish standards that are in the best interest of efficient and safe aviation operations while respecting the independent chains of command. Forest Service aviation operates as a member of a larger team involving interagency Federal, State, and local partners. I envision oversight processes and procedures that respect our partners' sovereignty and expertise without sacrificing our national/Federal oversight responsibility.

Safety is paramount as we conduct our mission. I envision a system in which we assess the risks before conducting each mission and continually reassess the risks as we proceed with the mission and as conditions change. We implement mitigation measures before and during the mission, as appropriate, and, at mission completion, we conduct after-action reviews to aid in the learning and self-assessment process.

The Forest Service has a long and proud heritage of caring for the land and serving people. I envision Forest Service aviation as a multidisciplinary group of professionals dedicated to working together to accomplish its mission, accomplish it safely, and build upon that proud heritage in the process.



ART HINAMAN  
Assistant Director of Aviation

## **Mission, Vision, and Core Values**

### **Forest Service Aviation Mission**

To provide safe, efficient, and coordinated aviation support for agency operations; to support partnership agreements; and to meet current and future needs through innovation and technology in order to sustain the health, diversity, and productivity of the Nation's forests and grasslands.

### **Forest Service Aviation Vision**

Forest Service aviation leads the world in aviation, supporting natural resources and wildland firefighting.

### **Fire and Aviation Management Core Values**

Safety, integrity, treating people with mutual respect, and land stewardship.

### **Forest Service Aviation Core Values**

*To succeed in our mission as a public service organization, we believe that:*

- Uncompromising integrity is a nonnegotiable part of our daily work activities.
- Excellence is expected.
- Proactive safety is a condition of employment.
- Disagreement does not equal disrespect.
- Everyone is accountable for his or her actions.
- Honest mistakes are expected.
- We can overcome challenges through innovation, collaboration, and hard work.

## Planning Processes

Managing the U.S. Department of Agriculture (USDA), Forest Service aviation program requires complex integration within the agency, Congress, industry, and other Federal and State agencies. For a successful implementation, the *USDA Forest Service Aviation Strategic Plan: 2014–2018* (Aviation Strategic Plan) must be accompanied by three other plans: Business/Program, Unit, and Annual Work Plans. The following are the four planning phases in the Aviation Strategic Plan.

1. *Strategic planning* takes place at the highest level and identifies strategic priorities for the agency that are implemented over a period of time through annual agency budgets. The strategic priorities are based on national assessments of natural resources and are responsive to social and political trends. The Aviation Strategic Plan takes guidance from the USDA Forest Service Strategic Plan and the Interagency Aviation Strategy.
2. *Business/Program planning* by national programs, regions, research stations, and the Northeastern Area translates the broad strategic direction into the specific work that contributes to the agency's aviation goals and objectives. The specific Forest Service aviation program plans are provided through Forest Service Manual (FSM) 5711. Aviation program plans define the current and short-range programs in terms of planning, funding, contracts, sustainment, aircraft type and quantity, organization, logistics, and other program-specific information. Regions and program areas that use aviation will supplement national program plans.
3. *Unit planning* (e.g., land and resource management plans for national forests and grasslands) provides a current inventory and condition assessment of resources on a particular management unit. This inventory, coupled with the desired future condition for the resources, is the basis for annual work planning and budgeting. The National Aviation Safety and Management Plan provides a basis to cascade through different levels to unit-level aviation planning.
4. *Annual work planning* identifies the projects that all units propose for funding within a fiscal year. This level of planning involves the final application of strategic direction into a unit's annual budget to move its resources toward its desired future condition. Project Aviation Safety Plans with 14 elements are used for aviation work projects.

## **Goals and Objectives for Fiscal Years 2014–2018**

The Aviation Strategic Plan includes goals and objectives with specific performance measures and strategies to ensure those goals and objectives are met, by having detailed, measurable conditions that are periodically reviewed and reported. The Aviation Strategic Plan goals and objectives cascade from the USDA and the Forest Service strategic plan goals and objectives.

The Aviation Strategic Plan has four goals that address safety, people, organizational framework, and aviation assets for all aspects of Forest Service aviation.

**Goal 1:**  
**Zero-Accident Organization**

Become a zero-fatality and zero-accident organization by implementing a Safety Management System (SMS) agencywide approach to management and operations that includes safety management policy, safety risk management, safety assurance, and safety promotion.

**Outcome:** The Forest Service aviation achieved zero aircraft accidents and zero fatal accidents during 2011, 2012, and 2013 while introducing the SMS. Full implementation of SMS will be critical in maintaining this level of safety to ensure our outcome that “Everyone, every day, returns home safely” (Chief’s 2013 Letter of Intent).

**Objective 1.1**

Achieve and maintain a zero aircraft-accident rate and a zero fatal-accident rate.

***Performance Measure 1.1.1***

Safety principles place more emphasis on human and monetary values than on mission accomplishment.

Maintain zero aircraft-and fatal-accident rates.

**2014 Target:** Zero aircraft accidents and fatalities

**2018 Target:** Zero aircraft accidents and fatalities

**Strategy for Performance Measure 1.1.1:** The branch chief of Aviation SMS issues an annual Aviation Safety Summary addressing this measure.

**Objective 1.2**

Provide policy and doctrine conveyed by national, regional/area, forest/station and unit leaders with safety expectations and objectives being understood and incorporated by all Forest Service employees using aviation.

***Performance Measure 1.2.1***

Include SMS program in all Forest Service aviation manuals, handbooks, operational plans, and guides.

**2014 Baseline:** 25 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.2.1:** Include the branch chief of Aviation SMS in the approval process for aviation manuals, handbooks, operational plans, and guides to ensure SMS is included. The branch chief of Aviation SMS will ensure the Washington Office (WO) Annual Aviation Program Report will list how many manuals, handbooks, operational plans and guides have been updated with SMS.

### **Objective 1.3**

Proactively carry out risk management to mitigate the impacts of undesired events in terms of likelihood and severity.

#### ***Performance Measure 1.3.1***

Strategic/programmatic risk assessments will be maintained for all systems and flight missions, monitored for continuous improvement in operations, and implemented through a proactive change-management program.

**2014 Baseline:** 50 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.3.1:** The branch chief of Aviation SMS will ensure strategic risk assessments are conducted for all Forest Service aviation mission areas and provide a list of those assessments accomplished the previous fiscal year to the assistant director of Aviation and the assistant director of Risk Management by November 1st, annually.

#### ***Performance Measure 1.3.2***

Recommendations made based on strategic risk assessments will be reviewed through the Strategic Risk Assessment Close Out Working (SRACOW) Group process to ensure validation and completion/removal of recommendations, as necessary.

**2014 Baseline:** 10 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.3.2:** The SRACOW Group will ensure close outs are conducted for all Forest Service strategic risk assessments. The chair of the SRACOW Group will provide a list of those assessments accomplished the previous fiscal year to the assistant director, Aviation and the assistant director of Risk Management by November 1st, annually.

### **Objective 1.4**

Management at all levels requires feedback on safety performance to perpetuate the continuous improvement cycle. All aviation units will adopt “quality” as a primary cultural value, thereby improving decision making and ensuring that high standards are maintained.

#### ***Performance Measure 1.4.1***

Quality and performance feedback is accomplished through an internal program audit/evaluation in two regions/area per year to ensure evaluation occurs every 5 years, including one external evaluation (different directorate/line officer) per cycle.

**2014 Baseline:** 100 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.4.1:** The branch chief of Aviation SMS and the branch chief of Aviation Operations will develop a schedule for regional/area reviews. They will provide the assistant director of Aviation with reports on the review results, including best practices. The schedule and completed reviews will be included in the Aviation Program Annual Report.

**Performance Measure 1.4.2**

Quality and performance feedback is accomplished through an internal programmatic review of all aviation programs to ensure evaluation every 5 years, including one external evaluation (different directorate/line officer) per cycle.

**2014 Baseline:** 100 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.4.2:** The branch chief of Aviation SMS and the branch chief of Aviation Operations will develop a schedule for programmatic reviews. This schedule will include participation from other Forest Service deputy chiefs, directors, and staff areas with aviation programs. They will provide the assistant director of Aviation with reports on the review results, including best practices. The schedule and completed reviews will be included in the Aviation Program Annual Report. An International Standards-Business Aviation Operations (IS-BAO) audit coordinated with the Interagency Committee for Aviation Policy (ICAP) may be substituted for the requirement of an external programmatic review.

**Performance Measure 1.4.3**

Complete a Forest Service Aviation IS-BAO audit in coordination with the ICAP by the end of the calendar year (CY) in December 2014. Completing this measure may be considered as meeting the requirement of Performance Measure 1.4.2 for external review.

**CY 2014 Baseline:** 100 percent (stage I)

**CY 2016 Target:** 100 percent (stage II)

**Strategy for Performance Measure 1.4.3:** The branch chief of Aviation SMS and the branch chief of Aviation Operations will develop a schedule for an external audit using IS-BAO standards.

**Performance Measure 1.4.4**

Coordinate the contract process for implementing a service contract to facilitate data management for quality assurance and program evaluation in CY 2014.

**CY 2014 Target:** Schedule completion by December 2014

**Strategy for Performance Measure 1.4.4:** The branch chief of Aviation Operations will coordinate as needed to develop a database for collecting data from all reviews and quality assurance audits with the director of Acquisition Management and all assistant directors of aviation branches.

## **Objective 1.5**

Develop a proactive culture with a learning environment and open communication through promotion. This objective provides a sense of purpose and direction to the Aviation SMS by ensuring an open communications environment and that employees receive adequate training.

### ***Performance Measure 1.5.1***

Develop initial and refresher virtual SMS training for aviation personnel and personnel in leadership positions over aviation entities by the end of 2014. This training includes operational risk assessment and mission planning training for all aviation personnel, including personnel in leadership positions over aviation entities.

**2014 Baseline:** 20 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.5.1:** The branch chief of Aviation SMS will coordinate the development of this training and ensure its availability for all Forest Service entities with an aviation program.

### ***Performance Measure 1.5.2***

Develop classroom initial and refresher SMS training for aviation personnel and personnel in leadership over aviation entities by the end of 2014.

**2014 Baseline:** 100 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.5.2:** The branch chief of Aviation SMS will coordinate the development of this training and ensure its availability for all Forest Service entities with an aviation program. All WO Aviation branch chiefs (Airworthiness, Aviation Operations, Aviation Business Operations, Pilot Standardization, and Strategic Planner) will require their staff to include this training in individual development plans and ensure its availability in fiscal year (FY) 2014.

### ***Performance Measure 1.5.3***

Each region, research station, and area, as well as the WO, will promote and maintain a safety recognition and award program that raises awareness of a safe working environment, and that values individual health and wellness.

**2014 Baseline:** 50 percent

**2018 Target:** 100 percent

**Strategy for Performance Measure 1.5.3:** The Fire and Aviation Management (FAM) aviation strategic planner will coordinate with the regions, research stations and areas to provide nominations for national aviation management awards.

**Goal 2:**  
**Take Care of Our People**

Recruit and maintain a sufficient number of highly qualified, trained, and motivated workforce members.

**Outcome:** “We continue our focus on providing an inclusive work environment where everyone is respected, valued, treated fairly, and feels welcome” (Chief Tidwell, FY 2013 Final Program Direction). Our organization will incorporate standardization in training and qualifications with a forward-looking philosophy to meet future missions for the Forest Service and other agencies, while creating a sense of belonging and setting the benchmark for professional qualifications. The organization will be streamlined for safety while recognizing the value in our Forest Service decentralization and diversity. This goal aims for a diverse, highly qualified, trained, and motivated workforce.

**Objective 2.1**

Fill positions with high-quality applicants who can bring an experienced and diverse perspective to successfully promote the agency’s mission and vision.

***Performance Measure 2.1.1***

Set the example for all levels of the organization by ensuring WO recruitment actions include outreach for a diverse applicant pool.

**2014 Target:** 100 percent of WO aviation recruitment actions include outreach to diversity sources

**2018 Target:** 100 percent of WO aviation recruitment actions include outreach to diversity sources

**Strategy for Performance Measure 2.1.1:** Aviation branch chiefs will ensure the recruitment process includes outreach to organizations that will provide a diversity of experience and perspectives, such as civil rights, veterans’ affairs, and Forest Service special emphasis programs. The assistant director of Aviation will verify actions before giving approval to finalizing outreach, recruitment, and hiring actions.

## **Objective 2.2**

Create an aviation career development plan that provides career path requirements, training, and mentoring while improving the qualifications of individuals and vacancy fill rates. To maintain proficiency and professionalism in the aviation program, the organization must have qualified individuals in aviation positions.

### ***Performance Measure 2.2.1***

Develop an aviation career path with a comprehensive orientation for new employees, career broadening, and promotion opportunities with succession planning and training opportunities at all levels. This review will include experience and employee availability requirements and address all aspects of Forest Service aviation.

**December 2014 Target:** Appoint an Aviation Career Path Working Group

**FY 2015 Target:** Develop an Aviation Career Path

***Strategy for Performance Measure 2.2.1:*** The assistant director of Aviation will appoint a working group to provide a suggested aviation career path. This working group will implement a program to include an orientation program and training for aviation and aviation-related duties, such as project management, budgeting, planning, promotion options, and suggested succession-planning process.

### ***Performance Measure 2.2.2***

Provide mentoring opportunities by developing a mentoring program.

**December 2014 Target:** Appoint an Aviation Workforce Working Group

**CY 2015 Target:** Develop a mentoring program

***Strategy for Performance Measure 2.2.2:*** The assistant director of Aviation will appoint a working group to develop an aviation mentoring program.

### ***Performance Measure 2.2.3***

Review the Forest Service aviation training program to include all aspects of an aviation career path, such as project management training and IS-BAO auditor certification.

**December 2014 Target:** Appoint an Aviation Training Program Working Group

**CY 2015 Target:** Develop an updated training program for all aspects of aviation

***Strategy for Performance Measure 2.2.3:*** The assistant director of Aviation will appoint a working group to provide a suggested training program for aviation and aviation management-related duties, such as project management, budgeting, and planning.

**Goal 3:**  
**Organize for Success**

Align the Forest Service aviation program and organization to meet the needs of current and future operations.

Outcome: Policy is a critical component of the Forest Service aviation program. The agency is committed to providing high-quality aviation policy that is effective and meets the needs of the user. A comprehensive, long-term, aviation policy framework is necessary for the continuing development of this aviation program. Current issues with policy, revisions, and interim directives will continue to be resolved while the framework is being developed. Risk-assessment techniques will be used to determine whether the status quo is acceptable or whether changes are necessary. The outcome of this goal is to have a clear framework to work within.

**Objective 3.1**

Aviation program leaders at all levels will engage in a continuous review of existing policy: revising, deleting, or adding new policy to meet emerging needs. Policy will be developed as a result of leaders' intent, after completion of critical planning and with consideration of impacts from risk and change.

***Performance Measure 3.1.1***

The FSM 5700 and Forest Service Handbook (FSH) 5709.16 will be updated by the end of CY 2014 and placed on a continuous review cycle, no longer than 3 years.

***CY 2014 Baseline:*** 100 percent updated

***FY 2018 Target:*** 100 percent reviewed

***Strategy for Performance Measure 3.1.1:*** The branch chief of Aviation Business Operations will form an Aviation Policy Team composed of the WO Aviation branch chiefs, the branch chief of Aviation SMS, two Regional Aviation Officers Council representatives, and two National Aviation Safety Council representatives. The Aviation Policy Team will coordinate an annual review of policy, document field requests for changes and edits, coordinate FAM and other staff area reviews, and coordinate with the Office of Regulatory and Management Services. The branch chief of Aviation Business Operations will ensure the Aviation Program Annual Report provides a status update on policy review.

***Performance Measure 3.1.2***

Complete program plans for all aviation missions (e.g., smokejumper, light fixed-wing, infrared, rappelling, and aerial application; Reference 5711 provides a complete list of aviation programs) within 1 year of the Aviation Strategic Plan signature.

***FY 2014 Baseline:*** 20 percent

***FY 2018 Target:*** 100 percent updated

**Strategy for Performance Measure 3.1.2:** The assistant director of Aviation will assign program plans to the Aviation Management staff. These plans will be submitted to the aviation strategic planner for archiving and processing as required. Coordination will also be made with other Director and Deputy Chief areas to ensure all aviation programs have a program plan. These program plans will be made available to aviation personnel as required.

### **Objective 3.2**

Become a learning organization by incorporating industry best practices and recommendations from Forest Service aviation studies, as applicable.

#### **Performance Measure 3.2.1**

Include applicable best industry practices into policy and reorganization actions.

**CY 2014 Baseline:** 100 percent; include review of best practices

**CY 2018 Baseline:** 100 percent; include review of best practices

**Strategy for Performance Measure 3.2.1:** Policy updates and reorganization initiatives will include a review of industry best practices, such as those listed on the Federal Aviation Administration or National Transportation Safety Board Web pages, or as part of IS-BAO procedures. Coordination with the Fire and Aviation Management directors will occur through the regional aviation officer and Regional Aviation Safety Manager Councils. Adopted best practices will be included by the branch chief of Aviation SMS in the Aviation Program Annual Report and may be translated into agency policy.

#### **Performance Measure 3.2.2**

Designate a working group to review past and future Forest Service aviation studies/reports to determine applicability and feasibility of recommendations.

**CY 2014 Target:** Appoint a working group

**CY 2018 Target:** Working group complete review of Forest Service aviation studies and reports Strategy for Performance Measure 3.2.2: The assistant director of Aviation will appoint a working group that will conduct periodic reviews of studies and reports on Forest Service aviation.

## Goal 4:

### Take Advantage of Technology

Where feasible, deploy technologically advanced and cost-effective aircraft, equipment, and infrastructure to meet the agency's current and future mission.

Outcome: Forest Service operations are not possible without a diverse fleet of well-maintained Forest Service-owned and contracted aircraft, which are equipped to perform in an efficient manner. The agency seeks an appropriate balance of aircraft and leverage on new technology to meet current and future needs. The outcome from this goal is to use modern technology to safely and effectively accomplish our mission.

#### Objective 4.1

Restore, sustain, and modernize the Forest Service aviation fleet.

##### *Performance Measure 4.1.1*

Complete a schedule to determine priorities and the timeline issued by the Office of Management and Budget, OMB Circular A-11, Part 7, Aviation Business Case for Agency Missions and submit them to the assistant director of Aviation by December 2014.

**CY 2014 Target:** Schedule completion by December 2014

**Strategy for Performance Measure 4.1.1:** The branch chief of Airworthiness will coordinate with WO branch chiefs, regional aviation officers, and regional aviation safety managers to develop this schedule. It will be published in the Aviation Program Annual Report.

##### *Performance Measure 4.1.2*

Complete a schedule to transition to a turbine-powered aircraft fleet.

**FY 2014 Target:** Complete the schedule by December 2014 Strategy for Performance Measure 4.1.2: The assistant director of Aviation will appoint a working group to develop a schedule for transition to turbine-powered aircraft.

##### *Performance Measure 4.1.3*

Develop a detailed Large Airtanker Modernization Action Plan by CY 2015 and include as an appendix to the USDA Forest Service Large Airtanker Modernization Strategy.

**CY 2014 Target:** Schedule completion

**CY 2015 Target:** Include appendix to the USDA Forest Service Large Airtanker Modernization Strategy

**Strategy for Performance Measure 4.1.3:** The branch chief of Aviation Operations and the Airtanker program manager will develop this performance measure.

***Performance Measure 4.1.4***

Work with industry to develop a modern airtanker retardant-delivery system.

***CY 2014 Target:*** Contract with industry to begin production

***FY 2016 Target:*** Begin delivery of new delivery system

***Strategy for Performance Measure 4.1.4:*** The assistant director of Aviation will coordinate with the branch chief of Aviation Business Operations, the branch chief of Airworthiness, and Acquisition Management staff to develop this performance measure.

***Performance Measure 4.1.5***

Place 18 to 28 large airtankers (LATs) on exclusive-use contracts.

***FY 2014 Target:*** Award contract with industry for next-generation LATs

***FY 2018 Target:*** Contract 18 to 28 large airtanker exclusive-use contracts

***Strategy for Performance Measure 4.1.5:*** Forest Service FAM will work with stakeholders (Forest Service Strategic Planning, Budget, and Accountability; USDA Office of Budget and Program Analysis; Office of Management and Budget; Forest Service Acquisition Management; and the U.S. Department of the Interior) to place between 18 and 28 LATs on exclusive-use contracts.

**Objective 4.2**

Explore and adopt emerging technology to more effectively achieve the aviation mission.

***Performance Measure 4.2.1***

Evaluate agency use of Unmanned Aircraft Systems (UAS) in all Forest Service aviation areas in CY 2014.

***CY 2014 Target:*** Evaluation complete by December 2014

***Strategy for Performance Measure 4.2.1:*** The Forest Service UAS Advisory Group will develop this evaluation.

***Performance Measure 4.2.2***

Develop UAS strategic plan, review policy, and make recommendations to leadership in CY 2014.

***CY 2014 Target:*** Complete above process by December 2014

***Strategy for Performance Measure 4.2.2:*** The aviation strategic planner will coordinate as necessary to develop this performance measure with the Forest Service UAS Advisory Group.

***Performance Measure 4.2.3***

Evaluate the agency's future technology requirements and incorporate them into a Forest Service 2025 strategic plan that will provide recommendations to leadership for agency use of UAS.

***CY 2015 Target:*** Complete by December 2015

***Strategy for Performance Measure 4.2.3:*** The aviation strategic planner will coordinate as necessary to develop this performance measure.

***Performance Measure 4.2.4***

Implement technology to report real-time fire suppressant drop assessment on all airtankers.

***FY 2015 Target:*** Implementation plan completion by September 30, 2015

***FY 2018 Target:*** Complete Implementation

***Strategy for Performance Measure 4.2.4:*** The branch chief of Aviation Business Operations will coordinate with other entities as necessary to develop this performance measure through the Aerial Firefighting Use and Efficiency study group.

***Performance Measure 4.2.5***

Implement human-aiding technology to improve the effectiveness and safety of aerial supervision aircraft and airtankers.

***FY 2015 Target:*** Implementation plan completion by September 30, 2015

***FY 2018 Target:*** Complete Implementation

***Strategy for Performance Measure 4.2.5:*** The branch chief of Aviation Operations will coordinate with other entities as necessary to develop this performance measure through the Aerial Supervision Steering Committee. Development will include testing and evaluating systems such as electronic flight bags, daylight displays, airborne electro-optical/infrared cameras and wireless data links on both agency-owned and agency-contracted aircraft.

***Performance Measure 4.2.6***

Research the requirements to develop a common information technology capability through all Forest Service aviation areas.

***FY 2015 Target:*** Implementation plan completion by September 30, 2015

***FY 2018 Target:*** Complete Implementation

***Strategy for Performance Measure 4.2.6:*** The aviation strategic planner will coordinate with other Forest Service staff, directorates, and deputy chief areas to conduct this research.

***Performance Measure 4.2.7***

Develop a remote-sensing technology strategic plan, review policy and make recommendations to leadership in FY 2014.

***FY 2015 Target:*** Implementation plan completed by September 30, 2015

***FY 2018 Target:*** Complete Implementation

***Strategy for Performance Measure 4.2.7:*** The aviation strategic planner will coordinate with other entities as necessary to develop this performance measure with other Forest Service Aviation staff, directorates, and deputy chief areas.

## **Program Evaluations**

The Government Performance and Results Modernization Act of 2010 requires a description of the program evaluations used in establishing or revising general goals and objectives and a schedule of future program evaluations. The Forest Service conducts program evaluations, described in the following section. Most of the evaluations are applied to all aspects of agency programs, but they commonly occur in different years. Review schedules are established annually so that most programs are reviewed within a 3-to 5-year span.

### **Evaluations Used To Revise Goals and Objectives**

The process to revise and update strategic direction for the Forest Service includes a review of the previous Forest Service Aviation Strategy, the Interagency Aviation Strategy, Fire and Aviation Management Strategic Plan, the Forest Service Strategic Plan, and the USDA FY 2010–2015 Strategic Plan, as updated.

### **Future Program Evaluations**

The Forest Service regularly conducts program evaluations at various levels of the organization from the executive level to individual project or site reviews. As necessary, the agency conducts additional studies and evaluations directed by agency leadership, the Administration, or Congress. The following schedule identifies significant planned evaluations projected during the next 5 years. The branch chief of Aviation Operations will develop the Management Review and Quality Assurance Guide in 2014, and will subsequently coordinate the actual evaluation dates with the appropriate region, area, or directorate.

#### ***Schedule of Regional/WO Reviews***

IS-BAO Stage 1—2014

Regions 1 and 2—2014

Regions 3 and 4—2015

Regions 5 and 8—2016

IS-BAO Stage II—2016

Region 6 and 10—2017

Region 9 and Northeastern Area—2018

## ***Schedule of Program Evaluations***

### *2013 (Accomplished)*

- Aerial Supervision
- Airtanker
- Night Flying

### *2014*

- Smokejumper
- Aerial Ignition
- Rappelling

### *2015*

- Forest Health Protection
- Law Enforcement and Investigation
- Research and Development

## What's Next?

After approval of the Aviation Strategic Plan, the Aviation Program will develop the program plans and associated work plans necessary to implement the goals and objectives.

The assistant director of Aviation will assign program plans to his or her staff (Performance Measure 3.1.2). Program plans will be developed within 1 year of the Aviation Strategic Plan signature. Program plans will be submitted to the assistant director of Aviation and compiled and archived by the aviation strategic planner. The plans will be made available to aviation personnel, as needed.

The Aviation Strategic Plan is crafted as a “living document” and will be updated annually. The aviation strategic planner will establish reporting requirements and incorporate them into the program plans and into Aviation Strategic Plan updates, as required. The aviation strategic planner also will monitor the progress of the action items and provide an annual report to the assistant director of Aviation at the beginning of the fiscal year. Deliverables will be reported as part of the agency’s annual performance measure reporting process. In addition, the Aviation Strategic Plan will be linked to future budget requests and justifications.

Communicating the vision, mission, values, goals, and objectives within and outside the agency will be a critical next step in successfully implementing all the goals identified. As this plan provides the aviation organization with the roadmap to successfully reach our destination, the external communication plan will also enable aviation to be more accountable and transparent in its planning, operations, and budget not only with stakeholders, including the regulatory agencies and Congress, but also with the American people. Once finalized, the plan and annual action plan reports will be published on the Internet and Intranet.

## **Appendixes**

### Appendix A: Concept of Forest Service Aviation Operations

A.1. Wildland Fire Management

A.2. Forest Health Protection

A.3. Law Enforcement and Investigation Aviation

A.4. Research and Development

A.5. Engineering

### Appendix B: Aviation Asset Strategy

### Appendix C: Contracted and Leased Aircraft

### Appendix D: Working Capital Fund Aircraft

## Appendix A: Concept of Forest Service Aviation Operations

Airplanes and helicopters are critical tools for accomplishing agency operations, including wildland fire management, Forest Health Protection, Law Enforcement and Investigation, Engineering, and Research and Development. The U.S. Department of Agriculture, Forest Service is studying the options available for future use of Unmanned Aircraft Systems (UAS) and further developing remote-sensing technologies for aviation operations. The many commonalities of Forest Service aviation with operations of other Federal and State agencies require interagency coordination to prevent duplication of effort. Acquisition and employment of assets will take into account Forest Service requirements and the capabilities provided through coordination with other agencies. An example of this coordination is the division of responsibilities so that the Forest Service coordinates the acquisition of large airtankers (LATs), the U.S. Department of the Interior coordinates the acquisition of single-engine airtankers (SEATs), and the National Interagency Coordination Center coordinates the employment of these assets based on incident priorities. Specific items for each program area are found in the respective program's interagency operations guide and program plan. This appendix introduces the different aspects of Forest Service aviation operations.

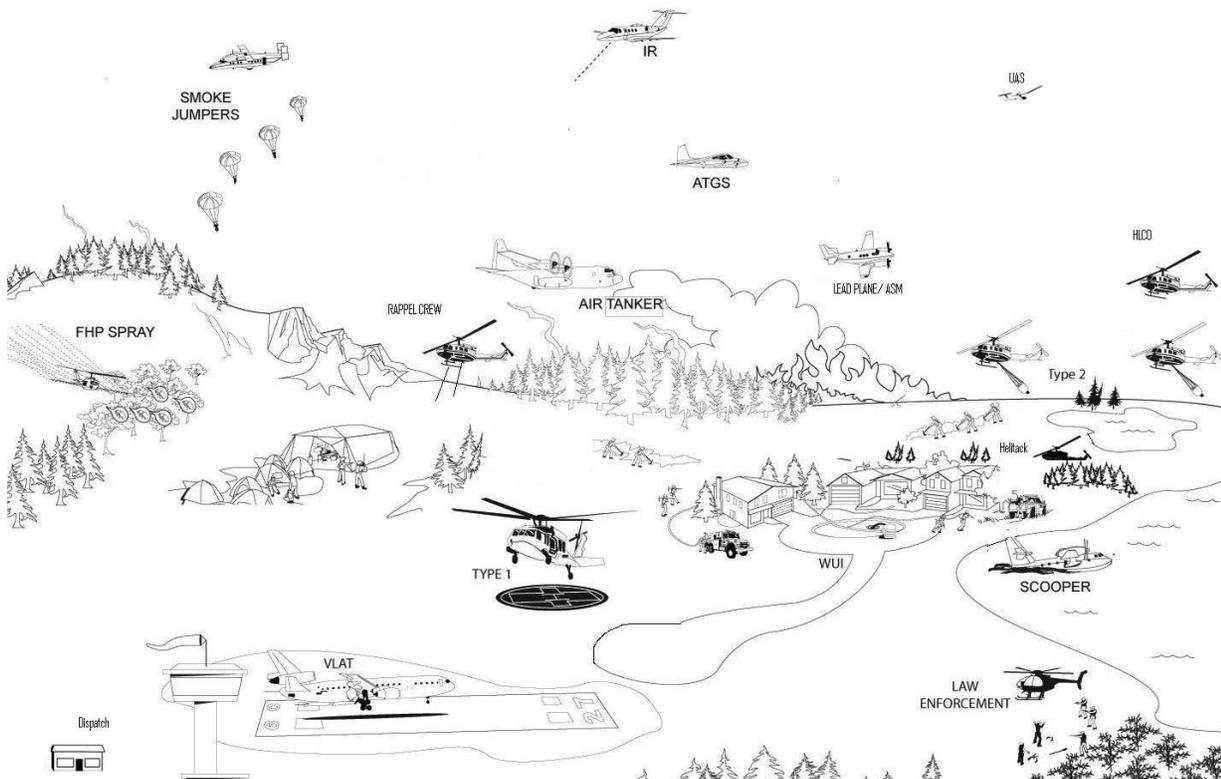


Figure A.1.—Forest Service aviation operations.

## **A.1 Wildland Fire Management**

Airplanes and helicopters are critical tools in managing wildland fire. Although aircraft are often used to fight wildfires, aircraft alone cannot put them out. Firefighters rely on airplanes and helicopters to—

- Deliver equipment and supplies
- Deploy smokejumpers and rappellers to a fire
- Transport firefighters
- Provide reconnaissance of new fires, fire locations, and fire behavior
- Provide aerial supervision of incident aircraft and coordinate with ground resources
- Drop fire retardant or water to slow down a fire so firefighters can contain it
- Ignite prescribed fires

The Forest Service uses Government-owned, Government-leased, and contractor-owned aircraft. Operation and maintenance of the aircraft can be contractor-owned or Government-owned.

### ***A.1.1 Doctrine***

As outlined in the National Interagency Aviation Council Interagency Aviation Strategy, the following doctrine will guide the acquisition and management of aviation resources for wildland fire operations:

- An aviation resource is one of a number of tools available to accomplish fire-related land-management objectives. Using aviation resources has value only when it helps accomplish the mission.
- To maximize effectiveness and efficiency, aviation resources must be centrally controlled and decentrally executed.
- Aviation resources very seldom work independently of ground-based resources. When aviation and ground resources are jointly engaged, the effect must be complementary and serve as a force multiplier.
- The effect of aviation resources on a fire is directly proportional to the speed at which the resource(s) can initially engage the fire and the effective capacity of the aircraft. These factors are magnified by flexibility in prioritization, mobility, positioning, and the versatility of using many types of aircraft.
- Decision makers must prioritize aviation resources based on predetermined management objectives and probability of success.
- Risk management is a necessary requirement for the use of any aviation resource. That risk-management process must include the risk to ground resources, the risk of not performing the mission, and the risk to the aircrew.

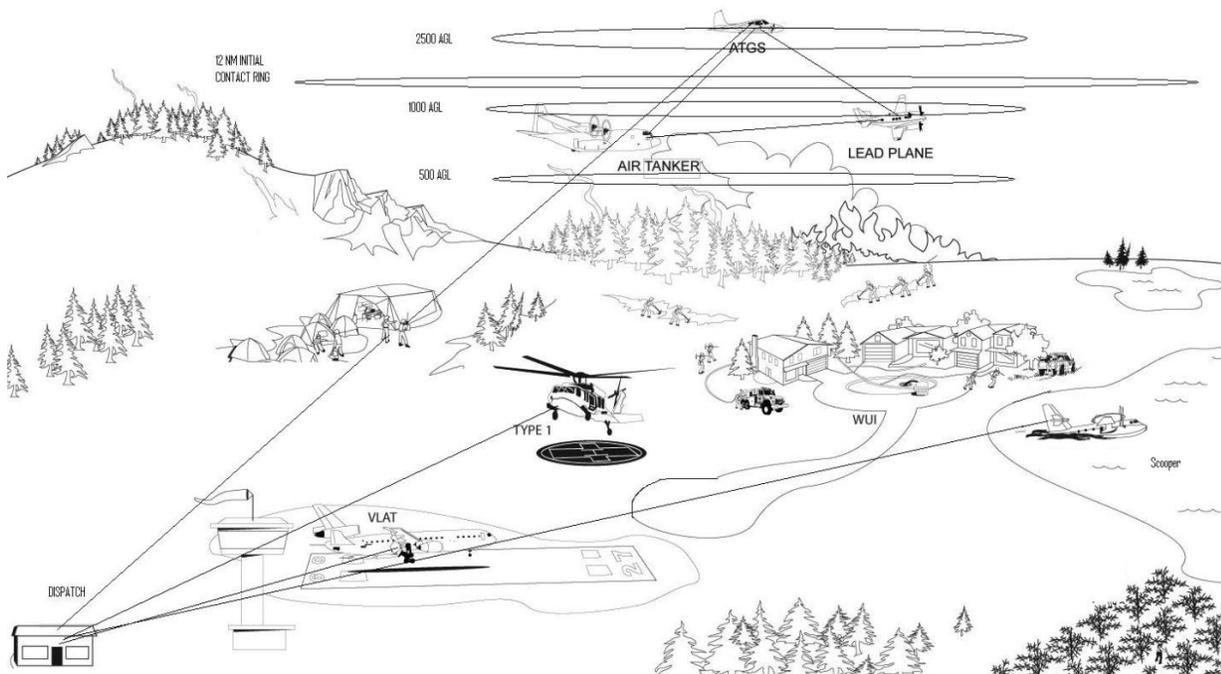


Figure A.1.1.—Aerial delivery operations.

### A.1.2 Aerial Delivery of Retardant/Fire Suppression: Airtankers, Helicopters, and Water Scoopers

Aerial delivery of retardant/fire suppression provides direct or indirect support to ground firefighters through the use of approved fire retardants for fireline building or suppressants for direct attack on wildland fires by airtankers and helicopters. LATs, SEATs, water scoopers, and helicopters can deliver water, water with foam, or other water enhancers and retardant to the fireline. These products are intended to either extinguish the fire or retard fire growth. Airtankers can be Type 1, 2, or 3 according to the plane's payload. The planes can have multiple engines or a single engine. Most planes perform takeoffs and landings on land, but scooper aircraft can operate from bodies of water. The most effective use of airtankers is conducting the initial attack. Aircraft are requested by incident commanders (ICs) through local dispatch centers to geographic area coordination center dispatchers, who then dispatch the aircraft to the fire, based on geographic and national priorities. All airtankers, helicopters, and water scoopers that the Forest Service currently uses for firefighting are contractor-owned/contractor-operated aircraft.

### A.1.3 Diversity of the Fleet

Diversity of aircraft provides a mix of types of fixed- and rotary-wing aircraft with specific mission strengths that provide a toolbox for fire managers to use in specific fire situations. Factors that determine which aviation resources are used on a particular fire include speed, range, firefighting capacity, suitability for the terrain, direct or indirect attack, operating altitude, cost, and suitability for the mission. The diversity model enables managers to apply the right tool for the job.

LATs have the advantage of a faster speed and providing a larger firefighting capacity to the target. The airplane's range allows for rapid deployment across long distances, enabling them to reinforce operations across

geographic boundaries. The airplanes also deliver large amounts of water or fire retardant in one mission, often in locations where other options are unavailable.

SEATs have the advantage of mobility and maneuverability. The infrastructure required to fuel and load SEATs is relatively minimal in terms of size and cost. These features enable SEATs to operate near the fire, which shortens turnaround times and thereby increases effectiveness. SEATs are capable of considerable accuracy in rough terrain because of their small size and aerodynamics.

Water scoopers have the advantage of speed and firefighting capacity when appropriate water sources are near the fire site.

Smokejumper aircraft have the advantage of increased range, mobility, and accuracy, and can be easily positioned near known or expected fire activity. The aircraft deliver firefighters and supplies quickly, especially to remote fires. The airplane's mobility enables rapid reinforcement of emerging fires.

Helicopters have the advantage of large and sustained personnel and cargo movement capacities. Using a helicopter to deliver firefighters (either helitack or rappellers) and supplies provides the advantage of speed and accuracy. Helicopters have the versatility for multiple missions—including personnel and cargo movement—command and control, and aerial ignition operations.

Helicopter delivery of water/retardant has the advantage of accuracy, speed, and capacity if water resources are near the fire site.

Recon/aerial supervision aircraft have the advantage of speed, range, flight time, and accuracy.

#### **A.1.4 Aerial Initial Attack**

The National Wildfire Coordination Group defines Initial Attack as an aggressive action to put the fire out, consistent with firefighter and public safety and values to be protected. It describes the initial response used on most fires in which the intent from the onset is to put the fire out as quickly and cost effectively as possible. The type of asset used will be determined by variables such as location, type of fire, terrain, and asset availability. Aerial supervision is not always available.

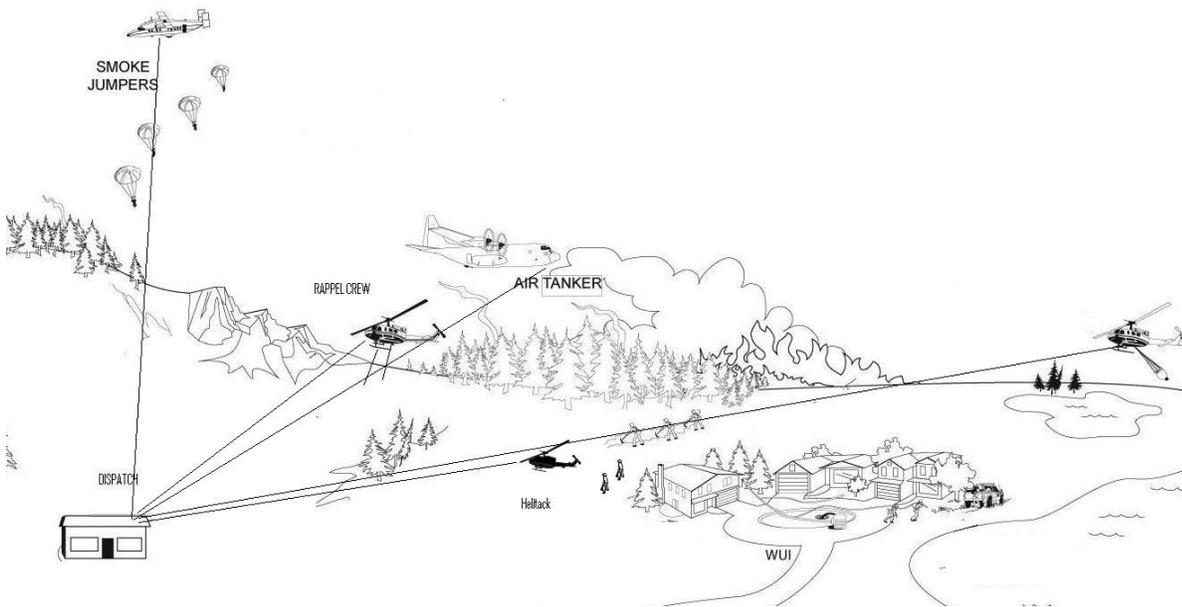


Figure A.1.2.—*Initial attack.*

### A.1.5 Aerial Supervision

The Aerial Supervision Steering Committee is reviewing the aerial supervision mission while this Aviation Strategic Plan is being published. The intent is to streamline functions, simplify operations, and leverage technology that allows aerial supervision to adapt to the most complex fire incidents as needed. Incremental changes will be included in future updates to the Aviation Strategic Plan. This mission currently uses a mixture of solo pilots flying lead planes and a lead-qualified pilot paired with an Air Tactical Group Supervisor (ATGS) in the Aerial Supervision Module (ASM) configuration.

ATGSs or Helicopter Coordinators (HLCOs) provide command and control of aerial resources assigned to the fire, while coordinating and directing ground forces engaged in suppression operations. Forest Service aerial supervision operations may be operated by Government aircrew in a Government-leased aircraft (leadplanes, ASM) or a contracted aircraft and pilot with a Government ATGS in charge (ATGS, HLCO).

**Air Tactical Group Supervisor.** The ATGS manages incident airspace and controls incident air traffic. The ATGS is a highly qualified airborne firefighter who coordinates, assigns, and evaluates the use of aerial resources in support of incident objectives. The ATGS is the critical link between ground personnel and incident aircraft.

The ATGS must collaborate with ground personnel to develop and implement tactical and logistical missions on an incident. The ATGS must also work with dispatch staff to coordinate the ordering, assignment, and release of incident aircraft in accordance with the needs of fire management and incident command personnel. On initial attack incidents the ATGS will size up, prioritize, and coordinate the response of aerial and ground resources until a qualified IC arrives. On complex incidents the ATGS will coordinate and prioritize the use of aircraft based on incident priorities among several divisions and groups, while maintaining communication with

operations personnel and aircraft bases (fixed and rotor) and managing the fire traffic area for collision avoidance.

In the Incident Command System (ICS), the ATGS works for the IC on initial attack and the operations section chief, air operations branch director (AOBD), or operational designee on extended attack. The ATGS supervises the pilot in the aerial supervision aircraft and may supervise both the HLCO and ASM positions when activated.

**Helicopter Coordinator.** The HLCO coordinates, directs, and evaluates tactical and logistical helicopter operations. The HLCO works under the ATGS. This position is typically activated on complex incidents to which several helicopters are assigned. An HLCO can reduce the span of control of the ATGS by managing all the helicopters involved in an incident. If no ATGS is present, the HLCO may work for the IC, AOBD, or other designee on the line.

**Aerial Supervision Module.** An ASM is a two-person crew functioning as the low-level airtanker lead and ATGS from the same aircraft. The ASM crew is qualified in each person's respective position and has received additional training and authorization. An ASM may be used as a lead, ATGS, or both, depending on the needs of incident management personnel.

**Air Tactical Pilot.** The ATP is a qualified agency pilot who has received specialized training and authorization to function as an ASM crewmember. The ATP functions as the low-level lead plane for airtanker operations and uses crew resource management skills to evaluate and share the incident workload with the ATGS. Lead tactics may be used when necessary to ensure that airtanker operations safely avoid traffic and terrain, to minimize exposure to turbulence and weather, and to improve retardant drop accuracy and effectiveness in congested areas.

**Air Tactical Supervisor.** ATS is simply a designator that identifies an ATGS that is additionally qualified to operate in an ASM operation with authority for the low-level lead tactic.

Additional information is available in the *Interagency Aerial Supervision Guide*.

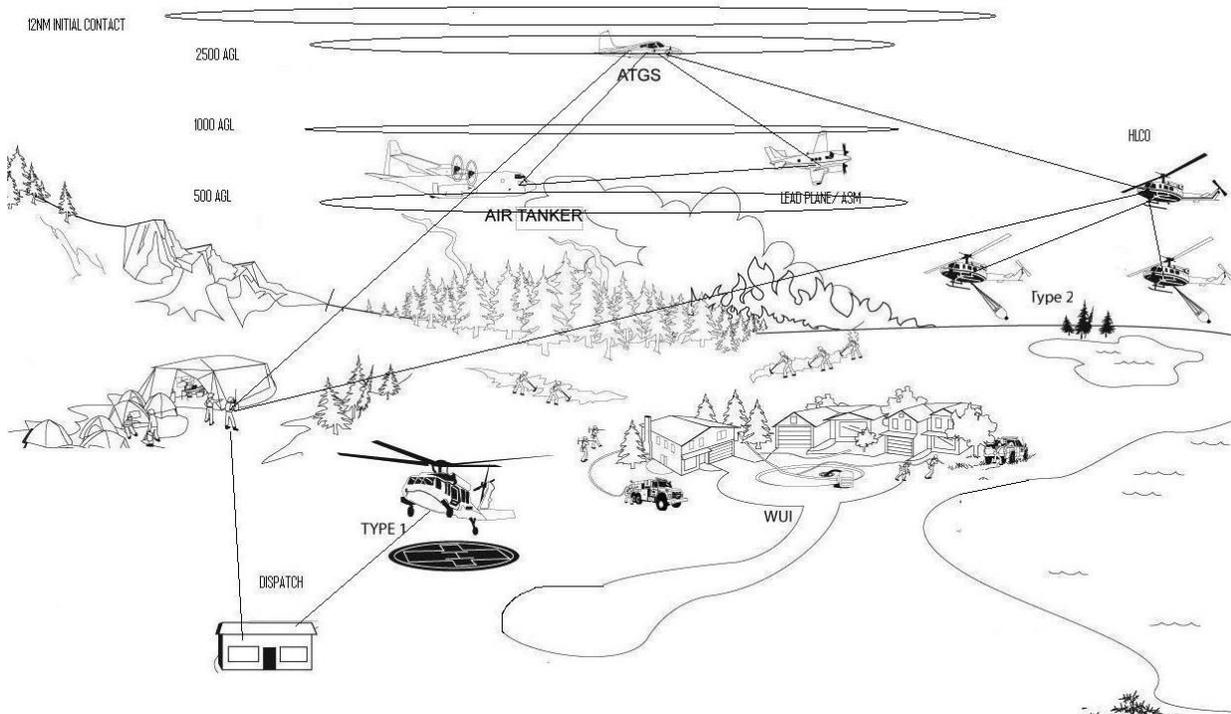


Figure A.1.3.—Aerial supervision operations.

### A.1.6 Helicopter Operations

Helicopter operations include Type 1, 2, and 3 airtankers that can deliver water, gel, foam, or retardants; support rappelling platforms; and deliver personnel and support items, aerial ignition, law enforcement, shorthaul, reconnaissance and intelligence, and HLCOs for command and control. Forest Service helicopters are currently a mix of Government-owned and contractor-owned aircraft. Helitack crews provide initial attack and aerial-delivered firefighter capability with Type 2 and 3 helicopters.

Additional information is available in the *Interagency Helicopter Operations Guide*.

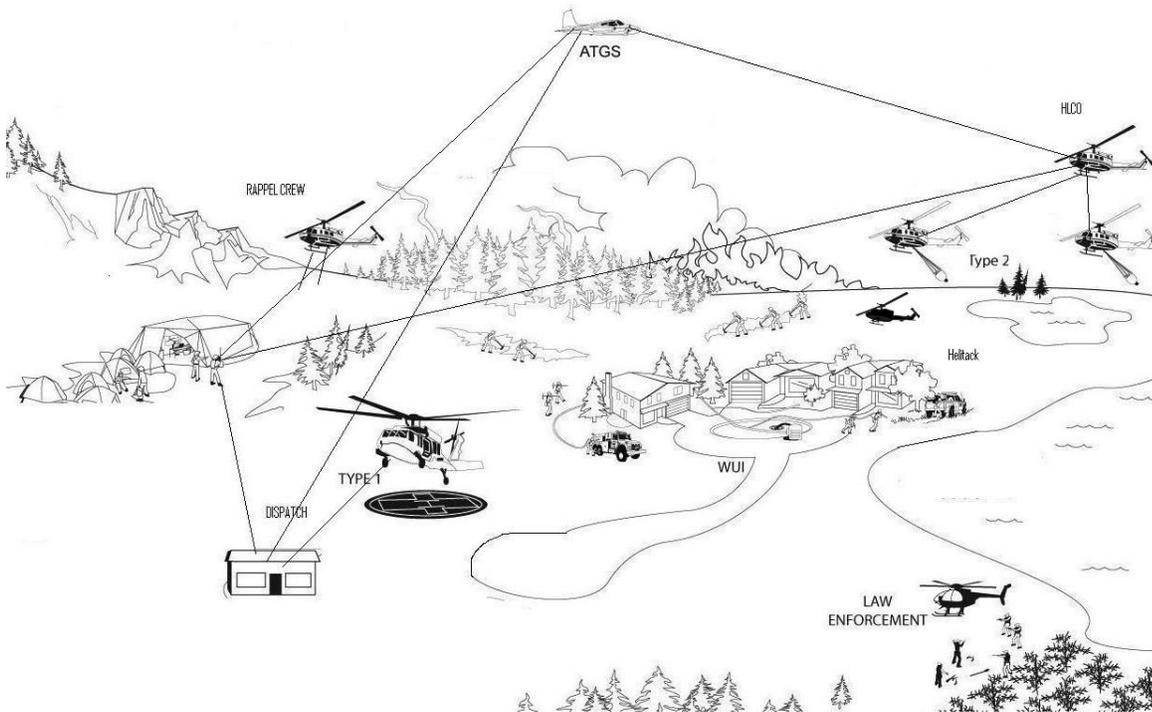


Figure A.1.4.—Helicopter operations.

### A.1.7 Aerial Ignition

Using plastic sphere dispensers or helitorches, helicopters conduct aerial ignitions in both suppression and prescribed fire operations. These operations are mostly done with Type 3 helicopters.

*Prescribed fire* is a wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which National Environmental Policy Act requirements (where applicable) have been met before ignition (see planned ignition in the next paragraph).

*Planned ignition* is the intentional initiation of a wildland fire by hand-held, mechanical, or aerial device in which the distance and timing between ignition lines or points and the sequence of igniting them is determined by environmental conditions (weather, fuel, and topography), firing technique, and other factors that influence fire behavior and fire effects (see prescribed fire in the previous paragraph). All aerial ignition platforms are currently a combination of agency-owned and contractor-owned/contractor-operated equipment.

Additional information is available in the *Interagency Aerial Ignition Guide*.

### A.1.8 Smokejumper

A smokejumper's primary mission is initial attack. While most effective at providing rapid initial response, smokejumpers are well equipped to respond to extended attack incidents and short-term critical-needs missions on large fires providing Type 3 helicopter IC management. Smokejumpers are normally configured by planeload, with

each load ranging from 2 to 20 smokejumpers, depending on aircraft type and smokejumper availability. Smokejumpers may be configured as wildland fire use modules or as single-resource overhead for ICS positions.

Aircraft currently used in the Forest Service for smokejumpers include C-23A/SD-330 Sherpa, Douglass DC-3TP, Dornier 228, CASA 212, and DHC-6 Twin Otter. Other aircraft being considered for future use include C-23 Aircraft, which would be certificated for multimission use in smokejumping, paracargo, freight transport, and passenger/crew transport. Forest Service smokejumpers currently use both Government-owned/Government operated aircraft and contractor-owned/contractor-operated aircraft. Our intent is to gradually transition to a Government-owned/contractor-operated fleet.

Additional information is available in the *Interagency Smokejumper Operations Guide*.

#### **A.1.9 Rappelling**

Rappelling of firefighters expands the flexibility of the helicopter and crew and may enhance the overall safety of an operation. Initial response on an incident can be expedited when travel time by conventional methods is time intensive and arduous. Rappelling can be used to access various terrain conditions that are otherwise inaccessible. Forest Service firefighters use Type 2 helicopters for rappelling. Most helicopters used for rappelling are contract or owned, carrying Government firefighters.

Additional information is available in the *Interagency Helicopter Rappel Guide*.

#### **A.1.10 Incident Awareness and Assessment**

This mission includes fire detection, ongoing fire assessment, fuels assessment, resource location and placement, and safety lookout. Forest Service assets include a C-550 Citation II, two AH-1H Cobra helicopters, and a number of contracted smaller aircraft. The Forest Service is studying the options available for future use of UAS in its operations.

## A.2. Forest Health Protection Aviation

The State and Private Forestry (S&PF), Forest Health Protection (FHP) Program has primary responsibility for monitoring forest pests and providing financial and technical assistance for lessening pest-caused damages. Its personnel provide unique technical expertise in this area. FHP's mission is to protect and improve the health of America's forests; its vision is to work with partners to bring together all stakeholders to protect and improve the health of the Nation's forested lands. Aircraft play a major role in FHP's strategies, using rotor and fixed-wing aircraft for aerial application, aerial imagery, and aerial sketchmap surveys (<http://www.fs.fed.us/foresthealth/aviation/>). Operational requirements and flight times vary according to resource needs within each mission type, flight profile, and geographic area. During a typical year, approximately 6,000 hours total are flown in nearly all 50 States.

Unit aviation officers appointed within each region and the Northeastern Area serve as the primary aviation contacts for that unit. The S&PF Area aviation officer provides oversight within the Northeastern Area with the same duties as that of a regional aviation officer. The FHP national aviation safety manager provides aviation and aerial survey expertise and field support for safety and training. Personnel in these positions coordinate with Fire and Aviation Management (FAM) and are also members of a variety of interagency and State cooperator working groups, councils, and committees dedicated to the safety and quality of aviation operations.

Aircraft use varies widely by mission area with a heavy reliance on single-engine airplanes, such as C182, C206, C210, and DHC-2, and, to a lesser extent, on twin-engine aircraft, such as the P68, C336, C337, and helicopters B206/L for aerial survey; on the King Air A100 and C206 for aerial imagery; and on turbineairplanes—such as the Ayers Thrush S-2R, Air Tractors ranging from AT402-AT802, and helicopters such as the B204, B206, and B212—for aerial application. Many more makes, models, and variants are used. Most aircraft are contracted with nearly one-half of all operations conducted by State cooperators. Annual summaries and statistics for FHP operations are available at <http://www.fs.fed.us/foresthealth/aviation/safety/safetystatistics.shtml>. Strategic planning is being initiated to identify and deploy improved technology and, combined with risk-management processes, program areas in which high-performance aircraft or alternative methods will more safely and efficiently meet mission objectives.

FHP works closely with cooperators to advocate minimum contract specifications and operating procedures similar to agency procedures, provide joint Federal and State training, and promote Safety Management Systems. Remote-sensing, aerial-mapping, and aerial application-treatment technology development and support are provided internally and externally, e.g., digital aerial mapping systems, image and data acquisition, calibration, and new spray methods (<http://www.fs.fed.us/foresthealth/technology/>). FHP produces a variety of forest condition-related information (<http://foresthealth.fs.usda.gov/portal>), analyses, and funding to support management, control, and restoration strategies of the agency and its partners.

### **A.3. Law Enforcement and Investigation Aviation**

Law Enforcement and Investigations (LEI) is an integral part of the overall management of the National Forest System (NFS). LEI personnel, line officers, and appropriate staff ensure that prevention, investigation, enforcement, and program management requirements are fully integrated into all NFS resource management programs. LEI personnel operate as full partners within the Forest Service organization in carrying out the agency's mission, especially in upholding Federal laws and regulations that protect natural resources, agency employees, and the public. Accomplishment of the Forest Service law enforcement mission is a product of trust, cooperation, and collaboration between LEI personnel and other agency employees. Law enforcement officers and special agents enforce Federal laws and regulations governing NFS lands and resources. LEI drug enforcement efforts continue to be aimed at stopping the illegal cultivation of marijuana, preventing the establishment of clandestine laboratories, and curtailing the smuggling of controlled substances across all NFS lands. The Forest Service will remain the leader in domestic drug enforcement on this country's public lands. LEI aviation activities are coordinated with regional aviation officers.

#### A.4. Research and Development

Research and Development (R&D) employs a wide range of aircraft that support individual research projects and major programs, such as Forest Inventory and Analysis (FIA) and LANDFIRE. Aircraft are most commonly used for data collection, but they are also used to transport personnel. For example, the Alaska FIA program uses rotor-wing aircraft to access most of their plots. Airborne data collection by R&D units ranges from various kinds of remote-sensing data to smoke sampling. Important remote-sensing data include Light Detection and Ranging (LIDAR), wildland fire infrared, aerial photos, and multispectral and hyperspectral data. In addition to collecting their own data, R&D units use other available airborne data, benefiting from Forest Service corporate data (e.g., National Agriculture Imagery Program, or NAIP, aerial photography), data available from commercial sources (e.g., Digital Globe, Google Earth, and Bing Maps), and data collected by other Forest Service units and agencies. Satellite imagery is often complemented by, or used instead of, airborne imagery. Specific aircraft used in a given R&D application are determined by availability and the requirements of the measurements. For instance, presence or absence mapping of invasive species may require visual observations from a rotor-wing aircraft. Most airborne remote-sensing measurements require an observation port in the bottom of the fuselage of a fixed-wing aircraft above which instruments are mounted and through which measurements are made. High-accuracy fire infrared measurements are often conducted from twin-engine, fixed-wing aircraft to avoid artifacts from exhaust heat to avoid exposing artifacts to exhaust heat. Funding for airborne data collection comes from base funding, the National Fire Plan, and competitive grants (e.g., the Joint Fire Science Program, the USDA Agriculture and Food Research Initiative, and various National Aeronautics and Space Administration [NASA] programs). Use of aircraft by R&D is primarily accomplished through contracts.

Evolving needs, technology, and funding trends will determine trends in R&D aircraft use. Understanding and managing the impacts of major trends in climate, forest health, and wildland fire will benefit from more comprehensive airborne datasets that are now within the realm of the possible—owing to better sensors, more computing power, new kinds of aircraft, and ongoing research and development. For instance, LIDAR-based mapping of fuels, forest structure, geomorphology, and forest biomass has advanced rapidly and provides unprecedented detail. Nationwide maps of fuel and forest structure derived from LIDAR would be particularly useful for a range of initiatives, but acquiring the expensive map would require cooperation across all areas of government. Developments in the use of radar (e.g., Interferometric Synthetic Aperture Radar) and aerial photography (e.g., three-dimensional structure from motion) to map forest structure may provide some of what LIDAR can provide, but at a lower cost. Multispectral data (both nadir and oblique) have important applications in mapping the effects of extensive drought and insect and disease outbreaks. The Autonomous Modular Sensor (AMS), a multispectral set of instruments recently transferred to the Forest Service from NASA, is being tested on the Forest Service citation and will soon be available for active fire mapping, fire effects mapping, and many nonfire remote-sensing applications. The AMS sensor matches satellite data used in a wide variety of fire (e.g., Monitoring Trends in Burn Severity, Rapid Assessment of Vegetation Condition After Wildfire) and nonfire (e.g., forest health and land cover change) applications, but at higher resolution. Developments in UASs provide a range of new measurement opportunities through the use of existing technology (e.g., digital cameras and radiotelemetry) and new technology (e.g., miniaturized fire sensors).

## **A.5. Engineering**

The Engineering Directorate provides support to aviation operations through Geospatial Management Office(GMO) in Washington, DC, together with the four technology and development centers: the Remote Sensing Applications Center (RSAC), the Geospatial Service and Technology Center (GSTC), the San Dimas Technology and Development Center (SDTDC), and the Missoula Technology and Development Center (MTDC).

The GMO considers fire support to be one of the highest priorities for mapping and remote-sensing support within the agency. The GMO continues to engage collectively with FAM and the fire community to fully understand mission needs and information gaps that can be addressed with geospatial technologies. This coordination ensures that GMO technology evaluations, technology transfer efforts, application development, and ongoing operations conform to current and evolving operational geospatial requirements and needs.

RSAC provides national assistance to agency field units in applying the most advanced geospatial technology to improve monitoring and mapping of natural resources. RSAC's principal goal is to develop and implement less costly ways for the Forest Service to obtain needed forest resource information. RSAC provides operational support for firefighting by producing active fire maps for wildland fire activity using airborne imager, satellite imagery. Remote-sensing technology is also applied to aid the Burned Area Emergency Rehabilitation teams in mapping fire severity.

GSTC is colocated with RSAC, and the two centers provide the Forest Service with a range of geographic information products and related technical and training services. GSTC employs a uniquely skilled and equipped staff dedicated to providing a variety of geospatial services—from Geographic Information System, orGIS, data integration, analysis, and tools development to Web-enabled applications, data production and dissemination, cartographic publishing, technical assistance, and training.

MTDC makes equipment, information, concepts, and ideas available so Federal and State agencies can better manage the millions of acres of public land.

MTDC interviews Forest Service personnel to help identify real needs; surveys commercial markets and tests promising products; designs, builds, and tests prototype equipment; cooperates with private industry to develop commercial sources; maintains specifications and standards for fire and safety equipment; and disseminates publications, fabrication drawings, project films, and audiovisual programs.

SDTDC has a cadre of personnel with far-reaching skills. Engineers, technicians, foresters, draftsmen, writers, and desktop publishers all work as project team members to support the problem-solving goals of the center. Program areas include fire and aviation, recreation, engineering, watershed, and timber. The SDTDC team approach to creative problem-solving has resulted in some unique and innovative projects. The center occupies state-of-the-art facilities designed to support the wildland-urban interface and to provide opportunities to test applications and products under real-time conditions. Office spaces were specially designed to accommodate the laboratory-to-field transition.

## **Appendix B:** **Airtanker Strategy**

The *Airtanker Strategy, Fiscal Year 2014–2018* is being coordinated and will be published at a later time as an update to the Aviation Strategic Plan.

## Appendix C: Contracted and Leased Aircraft

### Background

The Forest Service Aerial Supervision Steering Committee is coordinating a plan that will present how the Forest Service will conduct aerial supervision missions and what assets will be necessary. Table C-1 shows the current list of assets, which may change, based on the steering committee's approved recommendations.

Table C-1.—*Contracted and leased aircraft.*

|  | 2014 | 2015 | 2016 | 2017 | 2018 |
|--|------|------|------|------|------|
| <b>Contracted smokejumpers</b>                   | 6    | 6    | 3    | 3    | 3    |
| <b>Leased air supervision module</b>             | 15   | 15   | 15   | 15   | 15   |
| <b>Contracted air tactical group supervision</b> | 14   | 14   | 14   | 14   | 14   |
| <b>Interagency helicopters</b>                   | 33   | 33   | 33   | 33   | 33   |
| <b>Contracted type 3 helicopters</b>             | 58   | 58   | 58   | 58   | 58   |
| <b>Contracted large-transport jet</b>            | 1    | 1    | 1    | 1    | 1    |

**Appendix D:**  
**Working Capital Fund Aircraft (Agency Owned)**

**Background**

The Forest Service is considering the use of C-130J aircraft and is slated to receive seven C-130H aircraft. The numbers in table D-1 could change.

The information in table D-1 is based on the Forest Service Aviation Working Capital Fund Replacement Plan.

Table D-1.— *Working Capital Fund aircraft.*

|                           | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> | <b>2018</b> |
|---------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>B-206</b>              | 1           | 1           | 1           | 1           | 1           |
| <b>AH-1 Cobra</b>         | 2           | 2           | 2           | 2           | 2           |
| <b>Cessna 206</b>         | 3           | 3           | 3           | 3           | 3           |
| <b>DNC-2 Beavers</b>      | 4           | 4           | 4           | 4           | 4           |
| <b>DHC-6 Twin Otters</b>  | 2           | 2           | 2           | 2           | 2           |
| <b>C-23A Sherpas</b>      | 4           | 4           | 0           | 0           | 0           |
| <b>C23B/C/C Sherpa</b>    | 0           | 15          | 15          | 15          | 15          |
| <b>DC-3T</b>              | 1           | 1           | 0           | 0           | 0           |
| <b>C-185</b>              | 1           | 1           | 1           | 1           | 1           |
| <b>Super Cub</b>          | 1           | 1           | 1           | 1           | 1           |
| <b>Aero Commander</b>     | 1           | 1           | 1           | 1           | 1           |
| <b>B-200 Super King</b>   | 2           | 2           | 2           | 2           | 2           |
| <b>Cessna 550 Cita</b>    | 1           | 1           | 1           | 1           | 1           |
| <b>C0130H Large Airta</b> | 0           | 1           | 1           | 4           | 7           |

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