Aerial Survey Working Group Report
January 23-24, 2013 Nashville, Tennessee

The Aerial Survey Working Group (ASWG) meeting was hosted in the Southern Region, coordinated by Rusty Rhea and Marc Roberts. The group thanks Marc and Rusty for their work to help secure a cost-effective location and Jim Truitt, USFS Regional Aviation Safety Manager, for his participation during the meeting and for providing the 2012 National Aviation Accident Review. This report is the responsibility of Jeff Mai, Forest Health Protection (FHP) National Aviation Safety Manager (NASM).

In attendance were:

1.	Amanda Grady	FHP, Southwestern Region
2.	Bill Frament	FHP, Northeastern Area
3.	Brian Howell	FHP, Rocky Mountain Region
4.	Crystal Tischler	FHP, Southwestern Region
5.	Charlie Schrader	RSAC, Bend, Oregon
6.	Dan Twardus	FHP, Northeastern Area
7.	*Daniel Ryerson	FHP, Southwestern Region
8.	*Don Ewing	FHP, FHTET, WO
9.	*Doug Daoust	FHP, Pacific Northwest Region
10.	Frank Sapio	FHP, FHTET, WO
11.	Harold Thistle	FHP, FHTET, WO
12.	*JD Mullen	FHP, FHTET, WO
13.	Jeff Mai	FHP, FHTET, WO
14.	Jeff Moore	FHP, Pacific Southwest Region
15.	Jim Truitt	FAM, Southern Region
16.	Kathleen Matthews	FHP, Northern and Intermountain Regions
17.	Keith Sprengel	FHP, Pacific Northwest Region
18.	Kyle Lombard	New Hampshire Division of Forests and Lands
19.	Kevin Carlin	Pennsylvania Department of Conservation and Natural Resources
20.	Les Koch	Wyoming State Forestry Division
21.	Marc Roberts	FHP, Northeastern Area
22.	Rusty Rhea	FHP, Southern Region
23.	Sky Stephens	Colorado State Forest Service
24.	Tom Heutte	FHP, Alaska Region

* attending virtual (several others dialed in but did not identify)
The group welcomes Tom Heutte as the new Unit Aviation Officer for the Alaska Region.

The ASWG Four Key Issues for 2013

1. Flight Hours, Automated Flight Following (AFF) and Digital Aerial Sketch Mapping (DASM)

Approximately 3,749 flight hours were reported by FHP and state cooperators conducting aerial survey in 2012. The total aerial survey hours break down as follows: 50% FHP, 36% State and 14% cooperatively flown (both FHP and State on board). AFF was utilized 73% of the total survey flight time, an increase from last year. AFF is used on all FHP missions. Several cooperators in the Northeastern Area and Region 8 do not appear to be realizing the full benefit of this added safety measure. DASM systems were used 85% of the total survey flight time, a slight increase from last year. Proportions of both AFF and DASM use are often skewed due inconsistent reporting.

In addition to aerial survey, FHP and States cooperated to fly 1,166 hours aerial application; FHP and PSW 123 hours aerial photography. Total flight hours, all operations = 5,038.

FHP and cooperators had no accidents, incidents or incidents with potential in 2012. Using flight hours reported during the last decade, the calculated 10-year average accident rate is 5.33 accidents per 100,000 hours flown for all FHP and cooperator operations; this compares to the 2012 Safety Summary 10-year average accident rate of 4.15 accidents per 100,000 hours flown for all USFS and cooperator operations. Additional National and Regional/Area statistical information is available at www.fs.fed.us/foresthealth/aviation/safety/safety-statistics.shtml.

2. Safety Management Systems (SMS) Performance

FHP was actively involved with Fire and Aviation Management (FAM) in the development of SMS which became policy on June 20th, 2011. The General Services Administration and Interagency Committee for Aviation Policy awarded the Agency with the Gold Standard Certificate for meeting aviation safety requirements last year. Implementation of SMS continues including documenting compliance through the International Standard for Business Aircraft Operations (IS-BAO) audit process; the Agency is currently scheduling its first external IS-BAO audit. FHP continues to work closely internally, with cooperators and with FAM communicating accomplishments and prioritizing additional areas for improvement within all SMS components:

a) Policy - FSM and FSH chapters in phased revision, interim stop-gap portions are somewhat responsive to incidents, accidents and reviews; 2013 National Aviation Safety and Management Plan to be used fsweb.wo.fs.fed.us/fire/fam/aviation/plans_guides.htm; updated 2013 SMS Guide is final draft and will be available soon; focused efforts to address policy gaps continue (aircraft performance, aviation positions, training, UAS, etc.).

b) Risk Management – Risk assessments for FHP aviation program areas are periodically and cooperatively updated based on operational feedback, task groups and safety assurance www.fs.fed.us/foresthealth/aviation/safety/safety-riskmgmt.shtml; Region 2, 6 and FHTET are examining three methods of modeling risk in terms of aircraft performance and environmental factors in spatial context, interim tools and concepts are available now to aid planning with continued refinement in process. Project Aviation Safety Plans must document risk assessment approved by Line and should reference program assessments. Daily operational risk assessment to include flight crew and to mitigate additional hazards is responsibility of the flight manager.

c) Assurance – Safety and quality assurance needs improvement; internal evaluations and field visits have been conducted regularly for aerial application (entering fourth year of safety assurance reviews) but similar reviews and field visits have not been nationally implemented for aerial detection survey (ADS); the joint FHP/FAM WO aviation program review for R9 and NA was completed and outbriefed on 12/7/12 but findings and recommendations have not been responded to, the status of any action items is unknown. Preseason workshops and postseason after action reviews are also key assurance components. Accident/incident investigation action items are not made available in a timely manner; the USFS Management Evaluation Report and Accident Investigation Report on FHP's June 21, 2010 fatal accident has not been released, therefor, the action plan and responsibilities for action items remain unknown.

d) Promotion – ASWG supports training standards higher than IAT minimums for aviation positions and use of the position task book for Fixed Wing Flight Manager Special-Use, current FHP requirements are at www.fs.fed.us/foresthealth/aviation/training.shtml; the FHP training matrix will be updated and vetted though ASWG this year; a proposal for revised supervisor training was briefed to Directors as requested, met with mixed support and a new discussion-based approach to engaging supervisors is being developed. Safety communication needs improvement fostering a healthier reporting culture for the purpose of information sharing and accident prevention, SAFECOM is underutilized on some FHP units. The third recipient of the national FHP Aviation Safety Award will be announced soon; the R6 FHP, ODF, WDNR aviation staff were recognized with Regional Forester's Team Safety Award for excellence and 66 years of accident-free ADS.

3. Strategic Insect and Disease Survey (IDS) Development

The ASWG discussed opportunities and limits of tools to augment ADS, survey standards team accomplishments/pitfalls and next steps, methods, hardware and software development. There needs to be alignment on FHP's mission for survey and reporting temporally, spatially and to best meet informational needs of the Agency, cooperators and customers. It is difficult at best, practically impossible to reorganize for safety and efficiency without a commitment from leadership to adhere to a productive process of change management that empowers assigned subject matter experts to evaluate and recommend opportunities for improvement and yet remain sensitive to existing protocols and hierarchy. Quality assurance and a commitment of time and resources are necessary for basic mission accomplishment and critical to facilitate improvements. Mixed agendas without sideboards and decision points are proven stumbling blocks that have been cause for great frustration and cost. The following outlines the status of efforts to better define mission, area of operation, reporting and standardization:

a) Aerial Survey Standards Team – January 2010 FHM resolution for team to review ADS standards and develop QA/QC guidelines; team chartered November 2010 with scheduled completion September 2012. Team worked for a year to define business needs, gaps in current standards in meeting those needs with intent then to revise survey standards. There are 17 business needs but these are not universally accepted among advisors to the team. Additionally, the team is too large and not empowered to efficiently and independently arrive at recommendations to leadership. Another resolution to audit and roll up historic survey data into damage groupings was accomplished and utilized in http://foresthealth.fs.usda.gov/portal. April 2012 FHM resolutions indicated a need to broaden reporting standards to include all forest health surveys, investigate grid approach to pest detection and ordinal damage classes "percent of forest area". (There were additional Survey Resolutions from both 2010 and 2012 FHM.)

b) Survey Standards Team – Renamed and a new co-chair assigned in April 2012 but not formally rechartered; the first order of business to determine core survey area. May 2012 the FHP NASM queried FHP Unit Aviation Officers, select Group Leaders and FHM Coordinators to determine the base area of aerial coverage essential for mission planning, safety management and consistency. Most units responded within the requested one-month timeframe, others took six months. The Survey Standards Team reconvened immediately to work with information available, meeting monthly to refine and agree to core survey area (taking a full year to accomplish). The result includes two survey classes, Annual Full ADS and Annual Full IDS, which combine to become the core survey area. These classes represent the repeatable area of coverage and if agreeable to Directors, would provide a consistent basis for forest health trend information. Four other survey classes evolved to represent the variety of spatial and temporal coverage needed in forest health. (A separate briefing paper and poster will be provided to the FHP Directors Meeting).

c) Survey Methods – The ASWG reviewed non-standard methods deployed at the unit level, e.g. MODIS, aerial photography and ordinal percent mortality classification. With four approaches at least and only one the national standard, there exists a laundry list of interpretation and reporting challenges. Pros and cons were discussed including misclassification of damage, missing coverage or missing events, costs on the order of ten times that of aerial survey (for photography alone, much more for reporting and interpretation), incongruence in methodologies exacerbating problems with trending and annual reporting. If there is change, it needs to be controlled otherwise we could have as many methods as regions, or forests, or states. The ASWG reviewed current national standards relative to a "pilot" method of ordinal percent mortality classification and supports continued evaluation of that method in R2 and R3, with a closer look to consider breaking down the low-intensity (less than 10% mortality) class, enabling capture of single-tree or small groups and determining how best to capture damage types other than mortality. The ASWG supports chartering a new, small, functional standards group to synthesize and resolve survey methods recommendations to Directors in an unprecedented timely manner and formally revise national standards as needed.

d) Annual Reporting – There is a need to improve coordination with other IDS reporting streams and logical to have ADS data come in before Pest Event Reporting (PER) deadline. The ASWG supported organizing a scheduling committee to recommend improved reporting timelines as necessary. Earlier "release" of survey data potentially has political ramifications for regional leadership and later has ramifications for data users, there is a desire to have public availability of data early, earlier ADS reporting impacts post processing and areas that may still be flying in the Fall. The ADS/PER Reporting Schedule Committee considered these and other issues to arrive at the following preliminary recommendations: Establish reporting window and end ADS data capture October 31st, ADS November 15th reporting deadline, initial PER reports January 31st, promotion of PER reports February 15th; however, these recommendations need further vetting and agreement.

e) Technology – Related to strategy are technology developments for the new digital aerial sketchmapping systems (DASM) to evaluate grid concept, satellite or aircraft remotely sensed imagery and data, current aircraft availability and future needs, and unmanned aircraft systems. Several new tablets and operating systems have been evaluated preliminarily. A new RFQ could be in place after October depending on budget, preliminary estimates indicate several companies show promise. Alternative tools to augment conventional aircraft methods should be considered alongside aviation risk. Based upon interim aviation risk modeling products and concepts, and

survey coverage needs in key areas, several opportunities exist where alternative techniques may be deployed. Manned aircraft-mounted sensors are being tested by FHP. The combination of UAS and sensors to meet our needs is not yet defined. Costs of these systems to acquire the quality information we need may be prohibitive. FHP is on the UAS Advisory Group and currently working on aviation risk assessment, interim Agency protocol, short and long-term strategies. Standard procedures and costs of UAS are not yet available for FHP to consider in the production environment. However, satellite and airborne remote sensing technology has matured to the point where it is now possible to support insect and disease survey with remote sensing technology. IRPM funding is programmed to first fill a remote sensing specialist and accommodate this need, with two more following and should be in place by FY 2015. FHP is also on the Light Fixed Wing Multi Mission Aircraft Replacement Integrated Project Team examining current lease, replacement and technological needs for a variety of resource areas.

Common denominators and basic program needs essential for success on this key issue include: 1) finalizing mission needs and strategy, 2) identifying tools, technology and people to meet objectives, 3) invest and build capacity for safety, efficiency and effectiveness.

4. Capital Investment in People, Aircraft and Management

Reinvestment in a program that supports all aviation functions (aerial application, survey, aerial photography/remote sensing) is long overdue and desperately needed in order to adequately address key issues in this report and more, creating a long-term sustainable infrastructure to meet mission needs. The issue predates but is consistent with the Safety Journey's "Hard Truths, Agreements, Vision, Aspirations and Agreements". FHP's chronic challenges to improve efficiency, safety and effectiveness stem from a dysfunctional and lukewarm dedication to program management at national and local levels. Development and mentoring needs are raised by the field year after year. Small improvements have been made but come woefully short relative to complexity and demands on the system. The ASWG has provided position descriptions for many of the Region/Area aviation positions to the FHP NASM, classification and recruitment efforts in Region 10 carefully considered and were responsive to skill sets needed, other regions recognized and filled program managers to more closely match current local demands. We have successfully developed qualified IAT instructors (two FHP and one state cooperator) to assist with FHP and FAM-sponsored aviation training events.

National program management remains understaffed, underfunded and thusly not empowered to guide the critical issues we have faced for some time. FHP has the second largest aviation program in the Agency yet there is no aviation management or survey budget and no safety management budget. Management decisions including but not limited to travel restrictions prevent effective FHP NASM interaction and leadership at all organizational levels and with cooperators. As a model and per policy FAM national and regional aviation operations and regional aviation safety are separated for an effective autonomy, an issue frequently raised in program reviews (in both an overall management and SMS context).

Contract and WCF aircraft are limited in number and capability. Aircraft performance and technological improvement costs are increasing. The national light fixed wing (LFW) contract template is currently in revision to include new SMS requirements, address specialized equipment and varied mission environments for fire and resource operations. Fleet aircraft are shared and repositioned from coast to coast to help meet resource needs including aerial survey and remote sensing. Local decisions challenging aircraft performance and mission requirements preclude the use of aircraft that have been available for more than a decade. FHP has identified areas of high aviation

risk and gaps in coverage that would be addressed by procurement of at least two high performance turbine or twin-engine aircraft. The FHP NASM is currently working with FAM's LFW Multi Mission Aircraft Replacement Integrated Project Team examining lease and replacement options.

Additional Information

A. Previous recipients of the FHP Aviation Safety Award are Ken Zogas, Alaska Region 2011 and Dan Zimmerman, Northeastern Area 2012 for their outstanding efforts and achievements in the areas of safety promotion, supporting forest health, building efficiency and effectiveness among partners. Nominees for the 2013 Award have been evaluated and the recipient will soon be announced.

B. Safety assurance reviews for aerial spray programs have been conducted in Indiana, Minnesota and Ohio with Illinois scheduled this year; aerial survey reviews proposed have not been supported due to a variety of reasons including travel. Travel restrictions are affecting field visits, key meeting attendance, increasing aircraft ferry time to avoid per diem and significantly impacting the ability to conduct ground checks. Leader and travel support is needed for program improvements, promotion and assurance (Key Issue 2c emphasizes other assurance needs).

C. Average annual ADS production rates typically exceed 100,000 acres per hour but vary widely. Factors contributing to unit-level variations were discussed including contour vs. grid flight, multi vs. single observer, ferry time, environmental limitations and more. Adjustments to improve efficiency are being made as needed, such as transitioning to grid patterns where feasible.

D. Data quality was generally very good, on time and complete. A new DCA Appendix E was released with 47 new codes, moving sucking insects into sap feeding insects category and many common or scientific name changes www.fs.fed.us/foresthealth/technology/ads_standards.shtml. The group discussed specific data standard issues including: problems with data not processed and reported through regional GIS coordinator, using both the TPA/number of trees and pilot mortality class methods (combined in-region and reconciling nationally), finite polygons generated from photo interpretation (100,000 polygons in the Black Hills vs. 35,000 in the rest of the Region), some so small they drop from acreage calculation and character of the data overall significantly differs, difficulty expressing relative intensity with mixed methods, MODIS polygons with corrections needed to acres field underestimating impacts by 50%, lack of standards for use, needs for ground checking and metadata.

E. Tools for enhanced communication and product delivery including the Forest Health Conditions Portal have been successfully implemented; the new portal URL is foresthealth.fs.usda.gov/portal. Varied agent/host range audit techniques have been developed locally and nationally. Error checking has value real-time during survey, to prioritize immediate ground checks and also has value to audit annual datasets prior to reporting. Methods should employ authoritative data such as FHTET's tree mask which is an improvement over current methods and provides national coverage; a standard tool will be available nationally for flight season summaries.

F. Each year there are several significant aerial detections, some from 2012 include: increased winter moth activity in the Northeastern Area, mountain pine beetle decreases/dramatic spruce beetle increases in the Rockies, substantial increases in extent and intensity of SOD on the west coast, new GSOB finds, emerald ash borer expanding into new areas of Virginia, and more (see portal). Though tamerisk leaf beetle damage in the Southwest was not discovered from ADS, defoliated tamerisk is visible from the air and will be mapped as requested by local land managers.

G. The ASWG continues to coordinate with FHM through this meeting and was briefed regarding FHM Resolutions, some of which have progressed through both groups to varying degrees as described in this report.

H. DASM updates include a new version of GeoLink 6.2.11.16, now version 6.4. Patch for Windows 7 will be posted to the DASM page; stability issues with Windows were discussed; there are too many variations in operating systems, hardware and software to manage well. ADS Tools 1.2 is available and new version of Sketchtools in ArcToolbox format. How to build background maps using ERDAS, tools and upgrades for DASM are on www.fs.fed.us/foresthealth/technology/dasm.shtml.

I. Agency aviation contracts for CWN and Exclusive-Use Light Fixed Wing must adhere to minimums in the national template. Safety evaluation scoring and SMS contract criteria have been further developed; section "C" provisions requesting bidder synopsis of operator safety program (organization, safety systems, accident history, etc) have been provided to NIFC Contracting for use in all new contracts.

J. There is a continuing need for qualified IAT Instructors to assist with a variety of F&AM, FHP and externally-sponsored training. This is a great opportunity for state and federal employee development and sharing resource aviation expertise, personnel are encouraged to take advantage and assist with training events.

K. Pre/post-season workshops and reviews are paramount to improving safety and quality. Calibration flights coupled with ground checks are recommended annually. R1, R2, R4, R5 are planning calibration with ground checks; NA typically holds state coordination meetings and DASM classroom training. R5 also plans to host pinch-hitter training. Announcements have been requested and will be posted www.fs.fed.us/foresthealth/aviation/news.shtml.

L. Assistance across Region/Area boundaries is encouraged for employee development, teamwork and achieving FHP mission goals. There are state observer vacancies in R1 and R10. R5 will likely contract an observer. R3 will have an FHP aerial observer vacancy later this year. Contact individual UAOs for more information.

M. The 2014 ASWG meeting will be held January 22nd – 23rd, Zack Heath is exploring options to host in California.

Meeting notes are available and questions will be answered upon request - End of Report.