



Aerial Survey Working Group Report January 17-18, 2018 Fort Collins, CO



The 2018 Aerial Survey Working Group (ASWG) meeting was hosted in the Rocky Mountain Region. This report is the responsibility of Jeff Mai, Forest Health Protection National Aviation Safety Manager and Aerial Detection Survey Program Manager (FHP NASM/ADSPM). We thank Brian Howell for his service as Acting FHP NASM/ADSPM and Chair for this meeting while Jeff was away on detail. The group also thanks Grace Moore and Lea Weinkauff, Fire and Aviation Management Rocky Mountain Region, for providing the 2017 Annual Mishap Review.

In attendance were:

1. Amanda Grady FHP, Southwestern Region
2. Ann Steketee FHP, Northeastern Area, MFO
3. Ben Smith FHP, Pacific Northwest Region
4. Bill Ciesla Forest Health Management International
5. Bill Frament FHP, Northeastern Area, DFO
6. Bill Monahan FHP, FHAAST, WO
7. Brian Howell FHP, Rocky Mountain Region
8. Brian Schwingle Minnesota Department of Natural Resources
9. Chad Nelson FHP, Intermountain Region
10. Chris Dietrich FHP, FHAAST, WO
11. Chris Hayes FHP, Northeastern Area, Morgantown
12. Crystal Tischler FHP, Southwestern Region
13. Daniel DePinte FHP, Southwestern Region
14. Dan Ryerson FHP, Southwestern Region
15. Danny Norlander Oregon Department of Forestry
16. Dan West Colorado State Forest Service
17. Erin Berryman FHP, FHAAST, Cherokee Nation Technologies
18. Eunice Hopman FHP, FHAAST, WO
19. Frank Krist FHP, FHAAST, WO
20. Frank Sapio FHP, FHAAST, WO
21. Glenn Kohler Washington Department of Agriculture
22. Gracie Moore FAM, Rocky Mountain Region
23. Jason Moan Alaska Department of Natural Resources
24. JD Mullen FHP, FHAAST, Cherokee Nation Technologies
25. Jeff Mai FHP, FHAAST, WO (on Detail and phoned in)
26. Jeff Moore FHP, Pacific Southwest Region
27. Jennifer Ross FHP, Rocky Mountain Region
28. Jeri Lyn Harris FHM, Rocky Mountain Region
29. Jim Yaussi FHP, FHAAST, Cherokee Nation Technologies
30. John Formby New Mexico State Forestry
31. Justin Backsen FHP, Rocky Mountain Region

32. Justin Hof	FHP, Pacific Northwest Region
33. Karen Hutten	FHP, Alaska Region
34. Karen Ripley	FHP, Pacific Northwest Region
35. Kathleen Matthews	FHP, Northern and Intermountain Regions
36. Lea Weinkauf	FAM, Rocky Mountain Region
37. Marc Roberts	FHP, Northeastern Area, SFO
38. Mark Zwiefler	FHP, FHAAST, Cherokee Nation Technologies
39. Matt Vernier	FHP, FHAAST, Cherokee Nation Technologies
40. Paul Zedeck	CIO, Rocky Mountain Region
41. Quinn Chavez	FHM, Northeastern Area, SPFO
42. Rick Cooksey	FHP, WO
43. Roy Mask	FHP, Rocky Mountain Region
44. Rusty Rhea	FHP, Southern Region
45. Scott Sontag	FHP, Northern Region
46. Sherry Hazelhurst	S&PF, Pacific Southwest Region
47. Sky Stephens	FHP, Rocky Mountain Region
48. Tom Coleman	FHP, Southwestern Region
49. Tom Eager	FHM, WO
50. Tom Heutte	FHP, Alaska Region

The ASWG Four Key Issues for 2018

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

Approximately 3720.6 flight hours were reported by FHP and State Cooperators conducting survey and remote sensing in 2017. The total hours break down as follows: 35% FHP, 52% State and 13% cooperatively flown (with both FHP and State on board). Automated Flight Following (AFF) was utilized 52% of the total survey flight time, a 9% decrease from last year. AFF is used on all FHP missions. Several cooperators in the Northeastern Area and Region 8 are not realizing the full benefit of this added safety measure. Digital mapping systems were used 91% of the total survey flight time, a 13% increase from what was reported last year. Digital Mobile Sketch Mapping (DMSM) systems were used predominantly with some Digital Aerial Sketch Mapping (DASM) use still occurring during the transition in Regions 6 and 8.

In addition to aerial survey, FHP and States cooperated to fly 912.3 hours aerial application. Total flight hours, all operations = 4,632.9. Unmanned Aircraft Systems (UAS) and manned remote sensing flights are included in survey hours.

We have had no aerial application accidents for the last 14 years but FHP is charged with a hard landing accident occurring in Albuquerque during a reposition of the survey aircraft and pilot, no injuries and no one on board other than the pilot. Using flight hours reported during the last decade, the calculated 10-year average accident rate is 3.75 accidents per 100,000 hours flown for all FHP and cooperator operations. NOTE: the comparison to Fire and Aviation Management's (FAM) 10-year average normally included in this report is not available at this time. FAM is currently auditing and updating historic Agency and cooperator flight stats and the 2017 Safety Summary will be distributed when complete.

Accurate tracking and timely reporting of hours is critical, not only as a responsibility to measure our safety performance and production rates, but as an indicator of oversight in monitoring progress and accomplishments among Agency and partner aviation users locally and nationally. All aircraft users must track and report to FHP UAOs; UAOs report to FHP NASM/ADSPM using the standardized template distributed annually. Use "2018_Survey_RemSens_Application_Stats.xlsx" for all 2018 FHP and cooperator missions and fully report no later than November 15th. This due date is consistent with the due date for reporting Insect and Disease Survey (IDS) data to Forest Health Assessment and Applied Sciences Team (FHAASST, formerly known as FHTET). Aerial application is usually completed much earlier in the year and the FHP NASM/ADSPM will typically request interim reporting of aerial application hours in September, in advance of and in preparation for the Fall Aerial Application Safety Council (AASC) and Annual Gypsy Moth Review (AGMR) meetings.

Additional National and Regional/Area statistical information is available at www.fs.fed.us/foresthealth/aviation/safety/safety-statistics.shtml. Strategic planning, leadership support and effective implementation of Safety Management Systems (SMS) are essential to further accident rate reduction. Our goal is to strive for zero accidents.

2. Directors Challenge

This Key Issue is based on Acting FHP Director Rick Cooksey's Dec. 2017 document "Leaders Intent – A discussion about ADS Program improvements". This document provides guidance to the ASWG to help consider ways to incorporate new technology, clarify customer needs and meet user expectations, identify practices to improve efficiency, and approaches to improve consistency across the program with limited resources. Help is specifically requested to:

- Maintain National trend data adequately by defining a core program within expected levels of resources and options for additional surveys as needed/funded,
- Acknowledge value of the full range of tools available to identify and track forest health conditions with the appropriate role for ADS defined among them,
- Identify efficiencies that can reduce costs of the ADS program to stay in line with expected funding levels while maintaining and enhancing commitment to safe operations,
- Operate as one program nationally, working together, to explore efficiencies of operating across state and regional boundaries where effective to meet local and national needs, and
- Articulate the trade-offs (what we gain and what we give up) for any options.

The document further identifies next steps:

- Gather information from each region to understand the costs and investments we are making in the ADS program. Please provide the following information to Frank Sapio and Brian Howell by January 5.
 - Estimated fixed costs for everything needed to produce the ADS end product broken out into categories: aircraft, salary (fed and non-fed salary covered by FHP), analysis/processing costs, and others not noted here.
- Hold a set of discussions - with ASWG, resource and technical specialists, and partners. These conversations are intended to identify practices, strategies and methods to improve the ADS program and its delivery into the future.

During ASWG the following subcommittee members were identified and an ASWG Response was formulated, excerpt from the final meeting notes:

- Jeff Moore – R5
- Crystal Tischler – R3
- Ben Smith – R6
- Bill Frament – NA, DFO
- Rusty Rhea – R8
- Marc Roberts – NA, SFO
- Jennifer Ross – R2
- FHAAST – persons TBD
- Dan Norlander – ODF
- Tom Huette – R 10
- Brian Howell – R2
- Invite to SE states

- Desire to maintain trend data – fly core areas
 - If forced by budget cuts may fly fewer areas rather than sample
 - Should prioritize areas in advance
 - Sapio – recommends performing simulation to perform econometric analysis of the different options (sampling, prioritizing, etc)
- Core area – still disagreement among regions regarding definition
- East vs West US – different survey challenges and strategies
- Define customers and needs (again)
- UAO’s to compile a list of known customers
 - How data currently used and what other data may be helpful
 - Look at google analytics for web pages
- Analyses to address pros and cons of sampling and flying less
 - Every other flightline and report map every 2 years
 - Determine pros and cons
- Determine how many other programs are dependent on annual survey data
- Are there other areas that we fund that could absorb more cuts
- FHP is here and exists to perform surveys
- Initially proposed to “nationalize” the ADS program
- Suggestion that we need to tell our aerial survey program story better
- What would “acres of” as opposed to “acres with” do to funding?
- Challenged to acknowledge the value of the full range of tools (Remote Sensing)
 - Shows promise for future
 - Not mature technology for immediate large scale use
- Many folks receiving questions about UAS use
 - Industry is looking for work and make large promises
 - Initial analysis shows an increase in cost for marginal quality
- Should be able to show ADS history of efficiency gains and improvements through time
- Should we explore alternate funding sources
 - Risk further budget decreases if it is assumed you can find money elsewhere
- Operate as one program nationally
 - May be too much variability between areas for complete standardization
 - Possible to share some resources (GIS – share surveyors)
 - Pointed out that this already occurs in some cases
 - Convert contour to grid
 - Only in areas where it makes sense to do so
 - Ability to fly across regional boundaries
 - Some definite opportunities
 - Need to work through technological hurdles and other details

Following ASWG, the following steps have been taken toward responding to the Challenge:

1. The Subcommittee has held two conference calls. Many of the ongoing successful efforts that have gained efficiencies resulting in cost savings that have been implemented by regions were discussed. Any further cost savings therefore would be gained primarily through reductions in coverage. This could be accomplished in a variety of ways, each impacting the resulting trend data differently. For this reason, the

first step in responding to the Director’s Challenge was determined to be a client questionnaire to better understand client needs for ADS data. The subcommittee became aware of and provided input on a questionnaire effort in the interior west that focused on all FHP products to avoid duplication of efforts. To date, that questionnaire has been responded to by 248 individuals representing both federal and state clients primarily in regions 1, 2, 3 and 4. The results are interesting and useful and have been shared among select FHP WO staff, Regional leadership and the subject matter experts involved in developing and distributing the survey. The intent was initially to survey ADS clients nationally by early to mid-April but is now to distribute results among FHP leadership prior to the Spring Directors Meeting and determine next steps. The ASWG subcommittee is available to help further shape and distribute the survey as requested by leadership. The next subcommittee call is scheduled for late April/early May and will respond to any further direction.

2. ADS 2017 Cost Summary completed; including all fixed costs, overhead and flight time the total cost per acre remains less than 1 cent per acre (note subtotals for some units are not available but Total Cost does include all costs):

Region	Surveyor, Supervision and Travel	Post-processing	Aircraft	Total Cost	Acres Flown	Cost/Acre
1 and 4	\$118,150	\$57,420	\$266,530	\$442,100	84,400,000	\$0.005
2	\$224,667	\$75,000	\$174,467	\$474,133	43,060,000	\$0.011
3	\$137,078	\$62,752	\$141,289	\$341,119	26,241,020	\$0.013
5	\$330,000	\$32,000	\$125,000	\$487,000	40,686,360	\$0.012
6	\$260,625	\$95,750	\$193,820	\$550,195	60,000,000	\$0.009
8	\$80,000	\$30,000	\$200,000	\$310,000	92,000,000	\$0.003
NA St. Paul				\$225,000	63,529,100	\$0.004
NA Durham	\$193,152	\$65,944	\$178,186	\$437,282	31,100,000	\$0.014
NA Morgantown				\$175,000	33,000,000	\$0.005
10	\$99,915	\$51,986	\$105,000	\$256,901	27,000,000	\$0.010
Total	\$1,443,587	\$470,852	\$1,384,292	\$3,698,730	501,016,480	\$0.007

It should be noted that most of the issues identified in the Challenge and the ASWG Response (above) are not unfamiliar, many are routinely addressed as part of annual planning and continuous improvement, and/or have been directly addressed in previous ASWG Reports, briefing papers, and through a variety of chartered team efforts and associated reports over the last decade. The story is told repeatedly, what is needed is a final Business Plan and/or updated FHP Strategic Plan to align the organization encompassing change management and decision protocol for regional and national leadership to move us forward. The ASWG remains supportive of developments and changes to improve consistency, utility and safety and will answer the Directors Challenge. We are at your service.

3. Strategic Planning and Alignment Across Regions/Area/States

This Key Issue is carried forward from several previous reports and included again with increasing emphasis on the need for program stability now and into the future (please see those reports at <https://www.fs.fed.us/foresthealth/aviation/aerialsurvey.shtml>). The issue will not be fully reiterated here except to state the aerial survey program, once standardized, is now perpetually evaluating multiple technologies and alternative methods. Some are FHAASST-driven and others Region/Area or State driven. While we appreciate and need to make measured improvements toward increased safety and efficiency, nationally speaking we now have more variety in current methods than ever before (nearly all in a state of flux and continuing to evolve). In order to allow the program to perform safely and efficiently, changes from current standards and practices need to flow along a structured “propose-analyze-implement” track with decision space known and executed (similar to the NEPA model); as potential changes mature to improve FHP mission accomplishment, with clear decision protocol they could be metered into the system on a regular interval and then documented in safety and operations plans. Efforts to redefine and adopt survey classes and core coverage are still needed as a basis to FHP Aviation Operations Plans. In short, we need to plan what we do and do what we plan.

The following lists non-standardized survey activities in development or in practice throughout FHP and partner units which we struggle to accommodate during annual planning and operations (nationally and at the unit level) and during the post-season reconciliation of data into annual conditions reports:

- 1) New variations in area interval coverage and annual wall-to-wall frequency (Core Coverage Map was never approved by FHP Director and sent via correspondence, the IDS Reporting Timeline was however and we’ve deviated from both of these significantly)
- 2) Every-other-year alternating grid line schemes, would reduce flight time by relatively minor amounts (these are being run by the regions now for 2018 flight planning)
- 3) Sampling grid cells by ferrying from core areas being surveyed to scattered sample cells in order to collect sample observations for expansion (attempted in AK, costly with unsatisfactory results)
- 4) Intensity metric for percent of treed area affected built into DMSM but the decision to move away from trees per acre as a standard has not been formally made.
- 5) Laborious oversight and control over what host/agent codes are applicable and where; quick key management and support is important during pre-mission planning and during operations (areas and pests important to survey change over time, invasive plants are important to some units and we need to remain nimble)
- 6) How and when to use points and buffer size remains varied across regions (perhaps as it should be), double attribution and other DMSM enhancements in debate and not yet realized.
- 7) Polygons and grid cells are both deemed appropriate modes of capture, contributing to analysis and reporting challenges but apparently not insurmountable.
- 8) DASM and DMSM data are continuing to both be reported, contributing to analysis and reporting challenges but apparently not insurmountable.
- 9) Utilizing DMSM Ground and other platforms (Collector and Survey 123) to provide on-the-fly QA to aerial survey and/or capture new data for IDS; field use is varied, standards and guidelines to integrate are needed.
- 10) Certain aerial signatures are reportedly challenging or impossible, so mapping all dead trees regardless of when they died is an approach considered; many units have never held calibration and conformity (C&C) sessions to hone aerial calls collectively and combined with

- ground checks to improve skills, share in the problem solving and become better surveyors (C&Cs need to be held regularly as part of a robust quality and safety assurance program).
- 11) Mapping only the front of a particular advancing pest and leaving other areas behind unsurveyed (for same reasons as #10).
 - 12) Not flying survey but using MODIS to determine if ground checks should be done, then doing “some amount” of ground check to then report polygons derived from MODIS pixels; we lack standards for the amount to ground check or for which pixels should be checked, also assuming the area is “surveyed” when MODIS pixels are not lit is not always appropriate.
 - 13) Accommodating Operational Remote Sensing (ORS) proposals over the years to help label remotely sensed data during conventional aerial survey but not really seeing definitive results; progress is reported to have been made recently and we are optimistic but support for ground checks and additional labelling is needed to determine specifically under what circumstances this tool will meet survey standards and reporting timeframe for production.
 - 14) Delimiting areas where ORS might detect that one pest that is detectable and we’re interested in, then potentially not flying those areas for other damage that may/may not be present.
 - 15) Delimiting areas where ORS will not provide the answers we’re looking for, then programing those for some other detection method.
 - 16) Exploring Unmanned Aircraft Systems (UAS) utility through Special Technology Development Proposals (STDP) and other cooperative arrangements, developing/executing the first Agency UAS contract in 2016 for spruce aphid and other agent detection in Region 3 (not yet processed by FHAAST, Amanda Grady in R3 currently working to develop analysis and timelines for results); these efforts need reporting and evaluation to determine effectiveness and inform future opportunities for UAS and ORS.

Much of this entails important QA work and also important to determine if flights are necessary in first place (basic principle of Risk Management) but lack a true baseline or solid program to change from and lack change management protocol to meter in any given change as is reasonable and decided. Establish the program, implement and monitor, make course corrections as necessary and adopt alternative methods as approved.

4. Safety Performance and Safety Management Systems (SMS)

SMS is a comprehensive system of safety and business management to minimize aviation risk, extremely effective when engaged and supported. Deputy Chief, James Hubbard, approved the 2016 National Aviation SMS Guide stating: “The 2016 NASMSG documents Fire and Aviation Management (FAM) leaders’ intent and describes authority, roles, and responsibilities, programs, and activities for the application, implementation, and maintenance of Aviation Safety Management System (SMS) in the FS and for its aviation service providers.” The purpose of the guide is to assist in fulfilling the requirements of FSM 5700 and the National Aviation Safety and Management Plan (NASMP), with respect to the implementation of SMS. The guide provides best practices for the application of SMS in the Forest Service and for its service providers.

Opportunities for improvement and FHP accomplishments are highlighted within each of the four components of our Agency SMS Policy:

- A. Policy – The Forest Service is committed to developing, implementing and continuously improving the aviation operation. Our number one job is to protect our most valuable resource—our employees. Unless we do that, we cannot be a world-class leader in natural resource management.*

Every line officer, manager, supervisor, and employee has the responsibility to manage risk exposure. That means identifying and abating hazards, refusing to accept unnecessary risk, and making risk-related decisions at the appropriate level.

- The FSM 5700 and FSH 5709.16 Re-Write is complete and currently moving to the Executive Level for approval. The FHP NASM/ADSPM has been actively involved throughout the multi-year process including submitting comments to proposed policy, direct communications with the Re-Write Team, extensive edits through the National Aviation Safety Council (NASC), and briefing the FHP Director in 2017. Review of the latest FSM/FSH versions was removed from the ASWG 2018 Agenda and no additional comments were provided by the latest January 31st deadline. Significant changes to aircraft performance requirements, mission planning and risk management process and documentation, positions and responsibilities are on the immediate horizon. Further interpretation to the field and leadership, with changes to training curricula and operational/planning processes will be necessary with new directives. The NASC is challenged to ensure the quality work done in the past is what gets ultimately approved in policy. The process used for this re-write created extra work because policy language and direction was getting changed after NASC input (reference previous ASWG Reports for policy development history and implications). Future revisions will be influenced by a Sharepoint site to collect comments after implementation, these comments will be vetted by the NASC and used to make adjustments to policy on an annual basis.
- Unmanned Aircraft Systems (UAS) policy and procedures continue to mature within the Agency under the second detailed UAS Program Manager and in coordination with the UAS Advisory Group. Aided in part by our first UAS contract in 2016, a draft Request for Proposals (RFP) for small UAS has been routed and comments compiled toward development of a new USFS Call When Needed (CWN) RFP developed which should be out soon. By letter from the FAM Director to OAS Director, the USFS now recognizes Form OAS-30U as a valid card for UAS remote pilots, the USFS will not require re-inspection of UAS remote pilots who hold a current OAS-30U in order to perform missions on NFS lands or in support of USFS units. An agreement is also in place with DOI to allow USFS to purchase FireFlyPro6 platforms but would remain as DOI property and the USFS can participate in DOI UAS training (required prerequisite is UAS Pilot certificate under Part 107). The Draft Small UAS Aviation Business Case is still in the hands of the Aviation Branch Chiefs pending approval and all aircraft purchases, including UAS, must be approved by the WO FAM Director. Reference the UAS Desk Guide for current process to plan for and operate UAS, submit UAS Mission Requests to the appropriate RAO/AAO. The Mission Tracking Application electronically incorporates the Mission Request Form and Process, is nearing completion and should be available this year. FHP UAOs are to notify the FHP NASM/ADSPM of any planned or proposed UAS operations and track all FHP and cooperator operations using FHP's flight statistics tracking sheet (distributed in March).

B. Risk Management – *Risk is an expression of the impact of an undesired event in terms of event severity and event likelihood. Throughout the risk management process, hazards are identified, risks analyzed, assessed, prioritized, and results documented for decision-making. The continuous*

loop process provides for validation of decisions and evaluation for desired results and/or the need for further action. The goal is risk management is not eliminate all risk, but to manage those risks that cannot be eliminated so the mission can be accomplished with minimum negative impact. Risk management is a robust component of the Agency's SMS and shall occur throughout Agency aviation operations.

- Updates to Aviation Risk Assessments (RAs) for Aerial Application, Aerial Detection Survey and Remote Sensing were initiated in 2017 with the intent to finalize during Fall and Winter. The FHP NASM/ADSPM was away on detail and this task was removed from the ASWG Agenda, remains a past-due action item to be completed over the coming months. The Agency has recently provided direction on “helicopter doors off” operation but the direction is not clear regarding applicability to the types of missions FHP and partners conduct, nor the applicability of FAA order N 8900.456 to our operations (additional interpretation and direction is forthcoming). Current RAs may be downloaded from www.fs.fed.us/foresthealth/aviation/safety/safety-riskmgmt.shtml.
- The FS is transitioning to a turbine fleet (FS Aviation Strategic Plan 2014-2018). Consistent with that plan and as determined through risk management efforts, FHP has identified relatively higher risk flight environments providing justification and mission profile definitions to the national replacement effort. Region 2 has just taken delivery of the first Quest Kodiak 100, Region 6 is following soon. Funds for the purchase of these aircraft were secured from the working capital funds for aircraft replacement, which FAM and FHP have been paying into for decades. No “new” FHP funds were required for these purchases. Neither of these multi-mission aircraft are delivered with a camera port on the plane and would need modification for sensor(s) determined by FHP. Agency pilot training is underway to support these aircraft and FHP missions among other Agency missions.
- A Sharepoint site has been developed and implemented April 1st to aid scheduling fleet aircraft. This effort was completed in coordination with FHP UAOs and FAM Pilots and, combined with the new national interagency agreement (IAA) for 11 USFWS aircraft, will significantly improve scheduling and utilization of survey platforms nationally. The site is intended for internal use by select FAM Pilots and FHP UAOs to identify and confirm scheduling; coordination through the use of this calendar will facilitate smooth, safe operations and optimize aircraft use https://ems-team.usda.gov/sites/fs-spf-fas/_layouts/15/start.aspx#/ (please direct any questions on its use to the FHP NASM/ADSPM).
- Regions 2, 5 and 6 have in place IAAs with the DOI office of aviation services (OAS) to utilize fish and wildlife service FWS managed aircraft to support FHP missions. FWS has a fleet of aircraft including Cessna 206, Cessna 182, Partenavia Observer, and Quest Kodiak 100s based around the nation. FWS's primary need for their fleet is during the spring and fall bird migrations leaving these resources underutilized during the summer months. These aircraft are all excellent aerial survey platforms, are flown by professional government pilots with low-level flight experience and are available to FHP at below market rates. For these reasons, a national IAA was established in 2018 between USFS and OAS to facilitate use of these resources to support FHP flights nationally. This IAA serves as an umbrella agreement to which individual regions can

establish tiered sub-agreements to fund regional usage. Regions 1, 4, 9 and NA are exploring this option. The agreement allows qualified USFS pilots to fly FWS aircraft at a substantially lower rate. Currently USFS pilots intending to fly FWS aircraft must be carded by OAS, however an interagency agreement to accept carding equivalency for resource reconnaissance between USFS and OAS is in development and would remove the OAS carding requirement.

- FHP continues to implement DMSM while giving the necessary time to safely plan and conduct surveys; this requires advance familiarization with software functionality, methods, and post-survey workflow. Additional time may be necessary to generate background maps (TPKs) and quick keys, brief pilots/crew, make adjustments during survey operations, and provide for post-flight data synchronization and editing (users must manage workloads and duty time). There have been several contract staffing changes at FHAASST and the addition of a detailer to provide continued support to DMSM set-up, operation and post-processing.
- C. Assurance - *Safety management requires feedback on safety performance to perpetuate the safety management cycle. Through monitoring and feedback, SMS performance can be evaluated and any necessary changes to the system effected. In addition, safety assurance provides employees an indication of the level of safety performance affected by the safety management system.*
- FAM and FHP conducted the USFS Aviation Incident Review (AIR) in December 2017 for our 2010 and 2017 FHP accidents. Recommendations and action items were finalized over winter with final documents approved for distribution late March 2018. FHP has been responsive to the AIR team and Branch Chief of Aviation SMS providing action item follow-up. The FHP NASM/ADSPM produced a summary document and briefed the Assistant Director FHP and Acting FHP Director in April outlining current status of the 15 action items and identifying the staff specifically responsible for ensuring completion of each item. Further coordination with FAM was requested by the Acting FHP Director to gather additional status details from FAM, determine routing through FAM thus far and set a follow-on meeting with the BC-ASMS, Acting FHP Director, Assistant Director FHP and the Assistant Director Doctrine, Learning and Risk WO FAM prior to distributing the summary and associated Final Recommendations and Action Plan to the field. Previous A-200 Mishap Reviews and FHP Accident Reviews have provided factual details and probable causes for both of these accidents to our aviation users and supervisors. NTSB's Final Reports and Data Summaries for N30266 are available at https://www.nts.gov/_layouts/nts.gov/Results.aspx?queryId=73c2e559-cad9-4c13-8e23-312dbeefa435 and N166Z is available at https://www.nts.gov/_layouts/nts.gov/Results.aspx?queryId=af6f3796-f041-4283-bb53-8c0c1ce5a71b.
 - The Agency continues to work toward certification through International Standard for Business Aviation Operations (IS-BAO) SMS Audits, an IS-BAO checklist is available and has been utilized during a number of reviews conducted elsewhere in the FS. The USDA Forest Service Aviation Strategic Plan identifies a schedule of Regional/WO Reviews and Program Evaluations including FHP but has yet to be fully supported and accomplished. Although draft, the Agency Management Review and Quality

Assurance Guide (AMRQAG) is a useful document in determining the types and levels of reviews and other QA. The FHP NASM/ADSPM has recommended finalizing the AMRQAG during the Spring NASC Meeting (agenda currently being developed). Assurance remains our greatest opportunity for safety and management improvement!

- QA needs are also indicated within the AIR recommendations and action items to be distributed soon. FHP UAOs and the FHP NASM/ADSPM do provide some amount of QA in a number of ways but have room to improve and must to adopt a rigorous QA program including: IS-BAO audits, site visits and operational reviews, functional assistance trips, mishap response drills, preseason Calibration & Conformity, and postseason After Action Reviews throughout our system. Some success has been realized through the Aerial Application Safety Council's (AASC) Safety Assurance Reviews (SAR) in having accomplished reviews of state and federal aerial application programs during 6 of the last 8 years. The FHP NASM/ADSPM did not conduct any functional assistance trips or reviews for aerial survey. Plans to conduct a preliminary IS-BAO/aerial survey operational review were developing for Region 8 but were curtailed, due in part to taking an Acting RASM assignment in Region 3 and then upon return having a minimal survey window available to coordinate successfully with Region 8. The "Quality Assurance Plan Development and Review" topic was removed from the 2018 ASWG Agenda but remains an action item and needs to be scheduled within at least one FHP unit during each flight season. Generally speaking, oversight activities must continue and expand to routinely include FS and state aviation managers in order to attain robust quality and safety assurance throughout all FHP mission areas and operational units to include evaluation of new sketchmapping technology and procedures in the operational environment.
- Special thanks to the organizers and participants of the 2017 Salida, Colorado Fly-in. This event was a tremendous success and should be replicated throughout FHP. Attendees were provided with a DMSM refresher, addressed unique signatures and mapping challenges, conducted mishap review, and performed practical flight exercises followed by ground checks for calibration and conformity. Fly-in feedback to FHAASST regarding DMSM functionality and repeat enhancement requests was provided in June (many of the most important items remain unaddressed including double attribution and finalizing the DMSM and GIS survey standards). A similar event is developing in Region 3 for 2018 and other preseason workshops are planned within some units. Please notify the FHP NASM/ADSPM of any planned events so that we may promote these throughout FHP, increase attendance from neighboring units and provide technical assistance regarding DMSM, flight operations and safety.
- Use of SAFECOM <https://www.safecom.gov/> as a reporting system fulfills both the assurance and promotion roles in accident prevention, lessons learned and safety communication. FHP and cooperator use of the system needs continued emphasis. UAOs were provided with database query results mid-season and the ASWG reviewed six 2017 FHP SAFECOMs. Categories included maintenance items, hazards, incidents and one accident (see N166Z above). As SAFECOMs are submitted, the FHP NASM/ADSPM and Area Aviation Officer or Regional Aviation Safety Manager are notified by email which precipitates follow-on communications with the UAO and others as needed to address any issue(s) and finalize the SAFECOM. A mobile web application is available for convenience www.safecom.gov/mobile/#/. The open

communication fostered by this system regarding safety of flight is invaluable and frequently SAFECOMs help generate Safety Alerts and a variety of bulletins www.fs.fed.us/fire/av_safety/promotion/index.html. Thanks for utilizing the system and future efforts to expand its effectiveness as a communication and accident prevention tool.

- D. Promotion** – *The safety efforts cannot succeed by mandate or strictly through implementation of policies. Safety promotion sets the tone and enhances the organization’s policies, procedures and processes, providing a sense of purpose and direction. Aviation Managers must make every effort to communicate objectives, as well as the current status of SMS activities and significant events. Likewise, we must strive to create and maintain a channel of upward communication in an environment of openness.*
- A primary function of the ASWG and the AASC is safety promotion throughout all FHP and cooperator aviation operations, charters for these groups were renewed by the Acting FHP Director and National Gypsy Moth Management Board in 2017 and 2018 respectively. Thanks for the continued support and to the membership of both groups for their enduring commitment to aviation safety and management throughout FHP and partner organizations, continuing to provide valuable services enhancing state and federal program operational effectiveness and safety management www.fs.fed.us/foresthealth/aviation/aviationprogram.shtml.
 - FHP proudly announced Donna Leonard, Region 8 Entomologist, as the recipient of the 2017 FHP Aviation Safety Award during the 2017 Gypsy Moth Program Managers Meeting in Utica, IL. The meeting was very well attended by federal and state partners, essentially providing an after action review including operational and safety topics and contract review for federal and state program managers involved with aerial application. Donna was presented the award by Dan Zimmerman, Northeastern Area Aviation Officer and Jeff Mai, FHP NASM/ADSPM. Acting FHP Director, Rick Cooksey, also joined remotely in making the presentation. We thank Donna for her years of exemplary service, her success with Slow the Spread, and for the safety and management improvements she has brought to regional, national and state aerial application programs across the country. It is because of efforts like this and people like her that we also acknowledge 14 years of accident-free aerial application. Congratulations Donna and to everyone contributing to an excellent safety record in FHP and partner aviation programs!
 - The FHP Aviation Safety Award is structured for one state or federal nominee per Area/Region; individuals are evaluated based on 1) promoting a positive safety culture, 2) contributing to forest health activities directly benefitting the resource, and 3) building efficiency and effectiveness among partners in forest health aviation safety. The call letter for the 2018 Award was delayed in correspondence and due date for nominees extended until April 30th. Area and Regional responses are currently being received by the FHP NASM/ADSPM, after which the panel will convene to make the 2018 selection. Thanks to everyone taking the time to discuss and nominate their top state and federal performers.
 - Training accomplishments include Aerial Survey Aviation Safety and Management (AS2M) in Atlanta, GA and in Westminster, CO (in 2017 and 2018 respectively). The

ASWG recommends AS2M for all state and FHP aerial observers and flight managers on a three-year recurrence. Aviation Program Overview for Agency Administrators (A-314) was provided to FHP first and second-level supervisors via webinar in 2017, additional supervisor training shall be scheduled in 2018 as needed (currently looking at late May/early June TBA). During the 2017 Gypsy Moth Program Managers meeting, courses in Helicopter Operations and Automated Flight Following were provided. The AASC has promoted training with an operational component including calibration flights for some time; subsequent Regional and Area coordination has resulted in offering Aerial Pesticide Application Training (APAT) in 2017 and 2018. APAT 2017 was held in Ovid, MI and APAT 2018 was held in Davis, CA. Advanced aviation training also continues to be made available each Fall, Winter and Spring quarter through Treasure Valley Community College (TVCC). TVCC scholarships are available for federal employees but all are welcome to attend this training. Contact your RASM/AAO and the FHP NASM/ADSPM if interested.

- National funding for training events, instructor development and travel is critical to the continued success and development of quality training and instructors, further reductions to accident rates, and increased operational efficiencies for FHP and partners.
- Three Fixed Wing Flight Manager – Special Use Task Books were signed off for state and federal FHP flight managers in 2017. Congratulations go out to Karen Hutten (Region 10), Wyatt Williams (ODF) and Christine Buhl (ODF) on their diligence in working toward certification!
- The National Interagency Aviation Committee (NIAC) formally adopted the Interagency Aviation Training (IAT) Guide into policy October 2017 https://www.iat.gov/docs/IAT_Guide_2017_10.pdf. Several important changes are included, including the ability to qualify individuals as “Flight Followers” to address our challenges with dispatch coverage in remote locations or where communications trailers follow operations. Additionally, lithium batteries are now considered hazmat and A-110 is required. Updating the corresponding FHP IAT Matrix was bumped from the ASWG agenda but will be done soon. The ASWG did vote to accept a “progressive version” of our new FHP Fixed-Wing Flight Manager – Special Use and Aerial Observer Task Book. An action item remaining is for FHP UAOs to convene and update the matrix and formally adopt both the matrix and task book, these will soon be posted to <https://www.fs.fed.us/foresthealth/aviation/training.shtml>.
- The IAT Steering Committee has been conscientiously working to make AT.2.0 www.iat.gov more user-friendly and powerful. Unit Aviation Training Administrator access has been provided to all FHP UAOs for the purpose of monitoring training compliance and generating reports (as one of the new functions in AT2.0). Instructions have been provided to all FHP and, presumably, all cooperators for how to update their profiles to the appropriate organizational unit. Once the FHP Matrix is updated, it will be linked to the position compliance functionality of AT2.0 and queries can be made by training plan and by unit. Direct any questions on profile set up or use of the website to your FHP UAO or the FHP NASM/ADSPM. Technical difficulties will continue to be addressed through IAT Steering.

Additional Information

- A. DASM systems continue to be use to varying degrees in the Northwest and Southern Regions which is complicating FHAAST post-processing and delivery of final data. Continued training and support is available from FHAAST to assist the field with DMSM survey and reporting. The DMSM version we are currently operating is v2.0.5 available through <https://usfs.maps.arcgis.com/home/index.html>.
- B. FHAAST has produced the DMSM User's Manual v2.0, DMSM tutorial, Code Lists and Draft Updates to Forest Health Survey with DMSM documents available at <https://www.fs.fed.us/foresthealth/applied-sciences/mapping-reporting/gis-spatial-analysis/digital-mobile-sketch-mapping.shtml>. The Draft Updates to Forest Health Survey with DMSM document needs additional review and approval in order to finalize, addressing remaining standards-related issues, and formally replace Aerial Survey Standards https://www.fs.fed.us/foresthealth/technology/pdfs/standards_1099.pdf
- C. ASWG indicated several recurring issues in DMSM that are critical to high performance mapping, some of which can be addressed now and others as funding is available (e.g. multiple attributes). The group appeals to FHAAST to make these changes asap, preferably before flight season. Please continue to utilize the DMSM Forum located at <https://fsdmsm.blogspot.com/> to share troubleshooting and process tips, products and announcements among the DMSM user community.
- D. There is a continuing need for qualified IAT Instructors to assist with a variety of FAM, FHP and externally-sponsored training. These are great opportunities for state and federal employee development and sharing resource aviation expertise. Personnel are encouraged to take advantage of, and assist with, training events currently being planned for aerial application, remote sensing and aerial survey programs.
- E. The ASWG recommends pinch-hitter training for flight managers on a two-year cycle and currency for all aviation positions, including Fixed Wing Flight Manager-Special Use, per the FHP Matrix.
- F. Tom Heutte has left FHP for a GIS Program Manager position on the Tongass National Forest, we sincerely thank Tom for his years of service; Garret Dubois is currently Acting UAO for the Alaska Region.
- G. Assistance across Region/Area boundaries is strongly encouraged for employee development, teamwork, data quality and achieving FHP mission goals. Regional and Area UAO contacts www.fs.fed.us/foresthealth/aviation/regionalaviation.shtml.
- H. Not all information from the ASWG meeting is expanded upon within this report, there are 24 Action items listed in the ASWG Meeting Notes which are prioritized to address over the coming months. Responsibilities to those action items are dispersed among: Subgroups/Individuals, the FHP NASM/ADSPM, All members, or FHAAST. Thanks in advance for shepherding those through to completion.
- I. The 2019 ASWG meeting will be held January 23rd – 24th, locations being considered include Fort Collins, CO, Albuquerque, NM, Rancho Bernardo, CA.

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