INTRODUCTION TO AVIATION RISK MANAGEMENT

Objective: The objective of a Safety Management System (SMS) is to provide structure to control risk and assure quality in operations. A formal system of hazard identification and safety risk management is essential in controlling risk to acceptable levels. System Safety is centered on an organized approach to hazard identification and risk management with intent to minimize the effect on property, financial, environmental, human and societal losses.

Participants in System Safety continually challenge the processes, the culture, and the systems to identify weaknesses that can be mitigated toward the greater purpose of mishap prevention.

The foundation of SMS consists of four "components," they are **Policy, Risk Management, Assurance and Safety Promotion**. When fully implemented SMS provides and promotes a Positive Safety Culture. The desired positive Safety Culture is informed, flexible, learning, just and a reporting culture that captures the operational knowledge and experience of the employees. The end result of this cultural shift is to achieve the status of a High Reliability Organization (HRO). ** Weick and Sutcliff, Managing the Unexpected

Following your review of the stated Objective and Description of System Safety**,** you probably have questions on how to best utilize the Guide, as well as how this fits into "the big picture". First the big picture; the agencies started looking into System Safety in 2005. The findings were positive and in 2006 the BLM and USFS partnered in their work on Aviation Safety Assessments. The first assessments were completed by Interagency Subject Matter Experts (SME) in March of 2007 and were made available on line in May of 2007. This fourth revision, completed in August of 2011, is posted online and has been distributed in hard copy as the **Aviation Risk Management Workbook.** Revised sections can be downloaded on-line and printed to replace the old version.

This workbook helps to establish the Risk Management portion of SMS. Adoption of SMS also brings the agencies into alignment with the minimum aviation safety standards agreed to internationally within guidelines of the International Civil Aviation Organization. (ICAO 9859).

What are the four “components” that will achieve the SMS goal?

1. **Safety Policy**. We have existing policy in place that supports the foundation of SMS in our aviation safety programs. This policy is reflected in the Interagency Standards for Fire and Fire Aviation Operations (Red Book), Forest Service Manuals, Departmental Manuals, Forest Service Handbooks and agency Safety Management System Guides.

2. **Safety Risk Management**. This workbook contains the completed operational risk assessments on Helicopter Operations, Rappel/RADs, External Loads, Aerial Supervision, SEATs, Heavy Airtankers, Infra-Red, EHELL, and Forest Health programs.

3. **Safety Assurance.** Accident Investigation, Program Reviews, Fire Aviation Safety Teams (FAST), Aviation Safety Technical Assistance Teams (STAT), Aviation Safety Assistance Teams (ASAT), and numerous other tools monitor and report the health of our prevention efforts. Currently we are working towards implementation of an Aviation Lessons Learned web site and work towards a “Reporting Culture”.

4. **Safety Promotion**. We have the ability to implement very positive change in this area by creating a positive “Learning Culture”. Communication is the key to success in this component. Training systems are being updated to reflect the principles and procedures being implemented in SMS. Other tools include SAFECOMs, Safety Alerts, Technical Bulletins, Lessons Learned, Accident Prevention Bulletins, Read Files, SAFECOM trending, safety memoranda, Aviation Safety Committees, tailgate sessions and video clips such as the Six Minutes for Safety series.

How should I use this workbook as a Risk Management tool?

Local action plans should incorporate some or all of the best practices that will effectively accomplish hazard mitigation. These assessments can and should be used for briefing tools, tailgate safety sessions, Project Aviation Safety Plans (PASP), and especially during periods of increased fire activity. Area Command, Aviation Safety Assistance Teams (ASAT), Incident Management Teams (IMT), Contractor/Vender employees, as well as all aviation users can benefit from reviewing and utilizing this valuable information. We encourage Interagency personnel to request pilots to participate in morning briefings and After Action Reviews (AAR) utilizing the applicable mission assessments.

How do I use this workbook on my local unit?

Risk Management Workbook: This workbook is intended for use in the management of flight operations**.** Each section is designed to provide you with information regarding the hazards, risks, and suggested mitigations for most of the agencies aviation missions.

Operational Risk Management. The tabbed sections contain individual Hazard Logs developed by an SME Team for each mission. These sections depict mission sub-systems, hazards, risk assessments and suggested mitigations associated with each hazard. The workbook is designed for local use to determine if the suggested mitigation is accomplished.
Follow these steps during your review:

1. Review the description of each hazard, risk level and mitigation.
2. Determine if your local unit complies with the suggested mitigation(s). Log your answer by checking the YES/NO column.
3. If you checked NO; and if the associated risk level is Yellow or RED; you need to assure that the risk is mitigated to an acceptable level.
4. Blank forms are provided in the back of the book to enter any additional local hazards that require mitigation.
5. Enter new or additional hazards not identified, assess the level of risk, and enter the new mitigation to be completed.

Risk Assessment Matrix. This section contains the risk assessment matrix used by the SME teams. The matrix is accompanied by the definitions of each of the levels of Severity and Probability that result a final risk level stated as Low, Medium, Serious, or High.

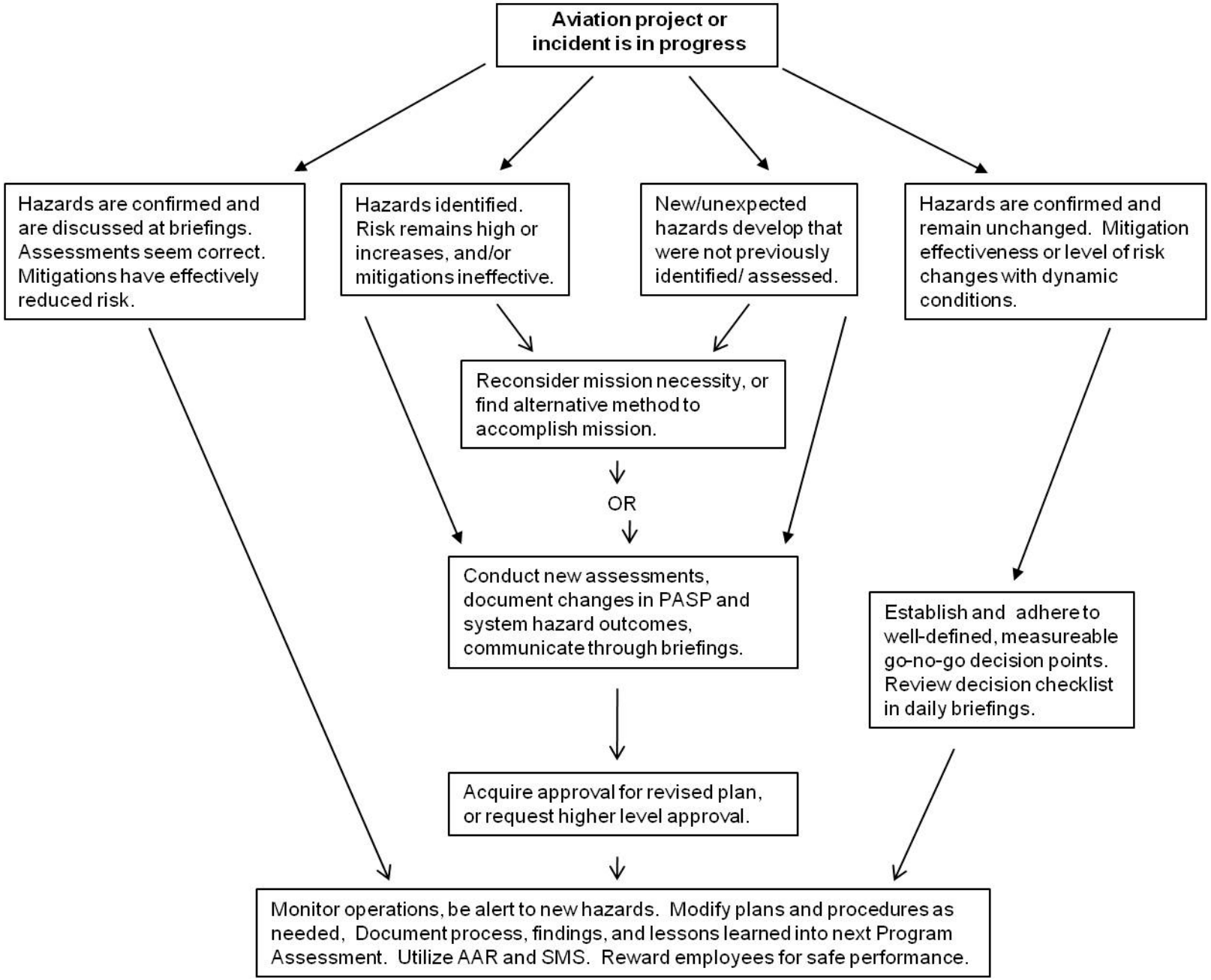
This workbook was developed by the US Forest Service and DOI Bureau of Land Management Aviation Safety staff. Your feedback is critical to improve these assessments. You are encouraged to contact Ron Hanks at rhanks@fs.fed.us 208-387-5607 or Kirk Rothwell at mrothwell@blm.gov 208-387-5879 with any comments, questions or ideas.

Risk Assessment Matrix				
	Severity			
Likelihood	Negligible IV	Marginal III	Critical II	Catastrophic I
Frequent A				
Probable B				*High 4*
Occasional C			*Serious 3*	
Remote D		*Medium 2*		
Improbable E	*Low 1*			

Severity Scale Definitions	
Catastrophic	Results in fatalities and/or loss of the system.
Critical	Severe injury and/or major system damage.
Marginal	Minor injury and/or minor system damage.
Negligible	Less than minor injury and/or less than minor system damage.

Likelihood Scale Definitions		
Frequent	Individual Fleet	Likely to occur often. Continuously experienced.
Probable	Individual Fleet	Will occur several times. Will occur often.
Occasional	Individual Fleet	Likely to occur sometime. Will occur several times.
Remote	Individual Fleet	Unlikely to occur, but possible. Unlikely but can reasonably be expected to occur.
Improbable	Individual Fleet	So unlikely, it can be assumed it will not occur. Unlikely to occur, but possible.

Appropriate Management Level for Operational Risk Decisions		
Risk Level	**Fire**	**Project**
High	Incident Commander or Operations Sections Chief	Line Officer/Manager
Serious	Incident Commander or Operations Sections Chief	Line Officer/Manager
Medium	Air Operations Branch Director	Project Aviation Manager
Low	Base Manager	Helicopter or Flight Manager


Aviation project or incident is in progress
Hazards are confirmed and are discussed at briefings. Assessments seem correct. Mitigations have effectively reduced risk.
Hazards identified. Risk remains high or increases, and/or mitigations ineffective.
New/unexpected hazards develop that were not previously identified/ assessed.
Hazards are confirmed and remain unchanged. Mitigation effectiveness or level of risk changes with dynamic conditions.
Reconsider mission necessity, or find alternative method to accomplish mission.
OR
Conduct new assessments, document changes in PASP and system hazard outcomes, communicate through briefings.
Establish and adhere to well-defined, measureable go-no-go decision points. Review decision checklist in daily briefings.
Acquire approval for revised plan, or request higher level approval.
Monitor operations, be alert to new hazards. Modify plans and procedures as needed, Document process, findings, and lessons learned into next Program Assessment. Utilize AAR and SMS. Reward employees for safe performance.