

NATIONAL PARK SERVICE

Reference Manual #60: Aviation Management

Chapter 3 – Aviation Safety

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3 Aviation Safety

3.1 Safety Management Systems

The NPS Aviation Safety Program is modeled after the aviation industries and FAA's Safety Management Systems (SMS). SMS is an approach to managing risk that includes systematic procedures, practices, and policies for the management of risk. It also includes the monitoring of policies, practices, and control measures and the system itself for effectiveness.

The intent of NPS adopting SMS is to advance aviation safety by identifying hazards, analyzing and reducing risk, adopting a growth mindset, monitoring effectiveness and making corrections to practices and procedures as needed to prevent a mishap from occurring. SMS establishes a practice of open communication throughout the organization that is comprehensive and transparent and an organizational culture that continuously strives to improve.

SMS organizes existing safety processes around the concept of a dynamic system and the four components of aviation safety: Policy, Risk Management, Safety Assurance, and Safety Promotion. Additional information regarding SMS is available from the FAA. See [Safety Management System](#).

Note: Operational Leadership is documented in [RM-50B, Occupational Safety and Health Program](#), Chapter 46. Operational Leadership is a component of the Safety Management System of the NPS.

3.2 Aviation Safety Roles and Responsibilities

3.2.1 Park Level

- The park superintendent is considered the accountable executive for the aviation operations at their park. Superintendents have overall responsibility, oversight, and leadership for management of aviation programs and missions in the park, including supporting and maintaining effective safety management systems.
- The PAM serves as the park superintendent's aviation manager, providing subject matter expertise on aviation in the park and ensuring aviation operations are in compliance with policies, regulations, and laws, including effective safety management.
- Employees planning and executing aviation missions are responsible for identifying safety hazards, engaging in risk management, and complying with policy.

3.2.2 Regional Level

- Each RAM provides technical and policy oversight for aviation safety within their respective region.

3.2.3 National Level

- The Chief, DFAM is the accountable executive of the NPS aviation safety program.
- The Chief, DFAM provides management oversight of the NPS aviation safety program.

- The NAM provides oversight on all aspects of NPS aviation management, including establishing an effective safety management system at a servicewide level.
- The NASM is the principal safety advisor and lead for implementing an effective SMS program at a servicewide level.

Note: Additional responsibilities for aviation personnel are listed in Chapter 1.6, Organizational Responsibilities.

3.3 Policy

The NPS is committed to aviation safety with a professional aviation program that supports NPS missions. In all aviation operations, safety is the priority. All management levels are accountable for safety performance and are committed to providing safe flight operations, work conditions and attitudes that support the objective of an accident-free aviation program. NPS regions and superintendents will provide appropriate oversight, personnel, training, and equipment to ensure safe aviation operations to complete mission objectives. SMS will be used to identify hazards, assess and reduce risk, monitor effectiveness, and makes corrections to practices and procedures as needed to prevent a mishap.

All employees are responsible for reporting unsafe conditions or actions, policy violations, or other hazardous situations/circumstances. See [352 DM 3.3](#) and Chapter 17.6.2, *Aircraft Mishap Information System* for additional SAFECOM information.

Aviation managers should actively seek recommendations from the field to improve aviation efficiency in the following areas:

3.3.1 Policy Elements

FAA, DOI, and NPS aviation management policies describe authorities, roles and responsibilities, acceptable operating practices, and administrative procedures. These directives provide the structure for effectively implementing SMS. Continual reassessment of aviation safety policy through monitoring for effectiveness and compliance results in safe and efficient operations.

3.3.2 Aviation Life Support Equipment (ALSE)

All personnel engaged in aviation activities must wear approved Personal Protective Equipment (PPE). Requirements are listed in [351 DM 1.7](#) and outlined in the [ALSE Handbook](#) and mission specific guides and handbooks. Aviation managers must ensure that appropriate and adequate ALSE is available. See Chapter 7.2, *Personal Protective Equipment Waiver Authority* for PPE waiver request information.

3.3.3 Project Aviation Safety Plan (PASP)

[OPM-6, DOI National Aviation Management Plan and Project Aviation Safety Plan](#) requires a PASP for all special use activities. A PASP is an in-depth analysis of an aviation project that focuses on all elements of the mission. The PASP identifies hazards that are anticipated with the project or mission and mitigates those hazards to an acceptable risk level.

NPS has developed a standardized PASP to be utilized for missions under the operational control of the NPS, unless otherwise approved by the RAM. See Appendix 3, NPS Standardized PASP.

See Chapter 11.5, *Project Aviation Safety Plan* for additional information on PASPs.

3.3.4 Aircraft Accident Investigation Process

The NTSB has the responsibility to investigate all aviation accidents except those involving military aircraft. The OAS Aviation Safety, Training, Program Evaluations & Quality Management Division Chief serves as a partner to the NTSB for DOI accident investigations; however, the NTSB is still the controlling authority. NPS will have an employee assigned as an investigation team member. Policy, including responsibilities and procedures concerning DOI aircraft mishaps, is contained in [352 DM 3](#). Additional information regarding aircraft mishap procedures can be found in Chapter 17, *Aircraft Mishap Procedures*.

3.4 Risk Management

The process of risk management applies to programs and operational missions. The risk management process is designed to mitigate risk to acceptable levels through the identification, assessment, and prioritization of risks followed by coordinated application of resources to minimize, monitor, and control the probability and/or impact of accidents.

The following basic decision-making principles must be applied before any anticipated job, tasks, or mission is performed:

- **Accept no unnecessary risk.** Accept no risk that carries no commensurate return in terms of benefits or opportunities. Strive for an operation that accomplishes all requirements with minimum acceptable risk.
- **Make risk decisions at the appropriate level.** Superintendents are responsible for approving risk decisions unless delegated in writing. Making decisions regarding risk at the appropriate level establishes clear levels of responsibility and accountability. Those responsible and accountable for the success or failure of a mission must be included in the risk decision process. Supervisors at all levels must ensure subordinates know how much risk they can accept and when they must elevate the decision to a higher level.
- **Accept risk when benefit outweighs cost.** Weighing risks against opportunities and benefits helps to maximize unit capability. Even high-risk missions may be undertaken when there is clear knowledge that the totality of the benefits exceeds the totality of the potential costs.
- **Integrate risk management into planning and execution at all levels.** To effectively apply risk management, leaders at all levels must dedicate time and resources to incorporate risk management principles into the planning and execution phases of all operations. Integrating risk management into planning as early as possible provides the decision maker with the greatest opportunity to apply risk management principles.

Risk assessment can be divided into four time-based categories:

- **Strategic:** Strategic risk management is conducted at the highest levels of the organization and is typically applied to multiple system type complexities and requires professional reviews. It involves an analysis of risk vs. benefit, and mitigations. The strategic process produces a more permanent record of findings and decisions used for long term planning and organizational decision-making.
- **Deliberate:** This method is used when planning time permits. It involves systematic risk identification, risk assessment and analysis, consideration of control options and risk decision making, implementation of controls, and supervision. (Example: This category would be used when developing a PASP).
- **Day of Operations:** A risk assessment will be conducted prior to operations utilizing a Green, Amber, Red (GAR) assessment or other RAM approved risk assessment determinations. This risk assessment should include input by all employees involved in the operation.
- **Emergency/Urgent Operations (Time Critical):** This method utilizes a mental or verbal review of the situation using the risk management process without necessarily documenting the information. The process is used to consider and evaluate risk while making decisions in a time limited situation. Rapid risk assessment requires an identified risk assessment system, involvement of trained personnel, effective operational practices and a thorough understanding of the objectives of the mission (Example: GAR, Go/No-Go).

Risk Management Process: The process by which risk is evaluated and managed is ongoing throughout the mission. It starts in the planning stage, continues to the approval and scheduling phase, is evaluated and adapted during the execution phase and is analyzed and collected as lessons learned in the post flight phase. Elements of the process can be found below:

- **Identify hazards.** The first step in risk management is to identify hazards. The hazards are the potential sources of danger that could be encountered while performing an aviation task or mission. Hazards include, but are not limited to weather, time of flight, terrain, equipment, airspace and proficiency level of personnel.
- **Assess hazards/Assign risk.** A risk assessment can range from simple to complex but must be detailed. The process of assessing hazards causes personnel to analyze the degree of risk associated with each threat, and place these in perspective relative to the objectives of the mission and organization.
- **Develop mitigations.** Starting with the highest threat, identify the risk mitigation options that reduce exposure to the threats for all of those identified in the previous steps to an acceptable level of residual risk.
- **Implement mitigations, execute, and monitor.** Implement the plan and ensure that the mitigations are understood by all personnel and that they are utilized. Continually evaluate the effectiveness of the mitigations and ensure that the risk remains in balance with the benefits.
- **Supervise and evaluate.** Ensure that people know and do what is expected of them. Note any changes to the operation, equipment, environment, and/or people and how they may affect the initial assessment. It is important to remember that risk management is a continuous process. Adjust to changes in the situation in real time by remaining vigilant and maintaining situational awareness to identify unexpected as well as known hazards.

Monitor progress by taking note of intermediate accomplishments that will lead to the completion of the objective. Additionally, after action reviews (AARs) are a valuable tool to assure that the supervision and monitoring of the mission are effective and that lessons learned are captured for the future.

Risk Assessment Tool: A good source for a variety of risk assessment tools can be found at [NWCG Aviation Risk Management Workbook, PMS 530-1](#).

3.5 Assurance

The safety assurance component involves processes for quality control, mishap investigation, and program reviews. Assurance emphasizes:

- Continuous monitoring and evaluation
- Standards for evaluations
- Internal/external audits and evaluations
- Investigations
- Emergency preparedness and response
- Reporting, feedback, and corrective action(s)

Quality assurance techniques are used to provide a structured process for evaluating whether policies and practices are being effectively utilized to achieve mission and safety objectives.

3.5.1 Aviation Safety Reporting - SAFECOM

NPS utilizes SAFECOM to document and communicate aviation safety related incidents. All personnel involved in aviation activities are responsible for reporting via SAFECOM any condition, observation, act, maintenance problem, unscheduled maintenance, or circumstance involving personnel or the aircraft, that has the potential to cause an aviation-related mishap. See www.safecom.gov to enter or review submissions.

SAFECOMs will be addressed in a non-punitive manner, except in the event of deliberate and intentional policy violations. A tenet of the NPS SMS program is for open and free communication where employees have confidence that, while they will be held accountable for their actions, the organization will treat them fairly. If appropriate, a corrective action will be identified to mitigate the likelihood of future occurrences and provide lessons learned for NPS personnel and interagency partners.

Below are the responsibilities for NPS employee regarding SAFECOM submissions:

- Individual submitting the SAFECOM: Completes the SAFECOM factually and accurately as soon as practical. Discuss the incident with the PAM or RAM when submitting a SAFECOM, if possible.
- Park Aviation Manager: Coordinates with the RAM to ensure the submission is factual and accurate and ensures that any corrective actions are implemented.
- Regional Aviation Manager: Receives an e-mail from the SAFECOM system of all initial and modified submissions under the operation control of NPS within their region. May request additional information from individuals to ensure all available information is included in the submission. Ensures the corrective actions are

identified and released in the publicly available version without personally identifiable information (PII) included. Regional Aviation Manager conducts final processing of SAFECOM and makes public, if applicable.

- National Aviation Manager and National Aviation Safety Manager: Receives an e-mail from the SAFECOM system of all initial and modified submissions under the operation control of NPS. Coordinates with the RAM and other National Aviation Office staff to ensure SAFECOM is accurate and released with corrective actions. May request additional information from individuals to ensure all available information is included in the submission. The authority to classify the SAFECOM as complete is delegated to the RAMs. The NASM will identify all NPS SAFECOM account holders to ensure they have accurate permissions within the SAFECOM system to ensure submission completion. Share relevant SAFECOMs with NPS staff to ensure wide distribution. More information on SAFECOMs can be found in [352 DM 3](#) and Chapter 17, *Aviation Mishap Procedures*.

3.5.2 Program Evaluations and Reviews

Aviation program evaluations/reviews are an integral part of the SMS program. NPS aviation program reviews are conducted at multiple levels within NPS to ensure that safety standards, policy compliance and bureau objectives are being met. See Chapter 1.7 for program evaluations and reviews requirements.

3.6 Promotion

The NPS promotes safety as a core value with practices that support a positive safety culture. All NPS employees are encouraged to promote aviation safety and accident prevention at every opportunity. Managers at the highest level and at the operational level play a critical role in establishing safety culture at the region and park levels. Safety promotion can be accomplished through:

- Training
- Communication
- Reporting and feedback
- Sharing safety and mishap information
- Employee recognition and awards related to safety

3.6.1 Lessons Learned

National and regional level aviation program managers are responsible for providing input into training curriculum development, lessons learned messages, development of new procedures and operational methodologies.

RAMs are responsible for disseminating pertinent aviation safety information and actively engaging aviation managers, pilots, and users throughout the year.

Additional information is available at the following Lessons Learned websites:

[DOI & Interagency Aviation "Lessons Learned"](#) and [Wildland Fire Lessons Learned Center](#).

3.6.2 Aviation Safety Awards Program

Aviation safety awards are a positive part of the aviation program and are available at all organization levels. NPS awards and criteria can be found in Chapter 18, *Aviation Awards Program*. OAS also recognizes employees annually for contributions to a safe aviation program. The NASM will disseminate the nomination information from OAS on a yearly basis.