SACRAMENTO COUNTY AIRPORT SYSTEM

SMS Pilot Study Gap Analysis

Executive Summary:

Sacramento County Airport System (SCAS) was one of the airports selected by the Federal Aviation Administration (FAA) to conduct a Safety Management Systems (SMS) pilot program at Sacramento International Airport (SMF). This document serves as the first deliverable to the FAA under the pilot program, outlining those areas of the Safety Program benchmarks listed herein where SMF is capable, emergent or gapped. This is not intended to represent all areas typically found in a fully-capable SMS program, rather it specifically addresses those areas of interest to the FAA. SCAS engaged a consultant to facilitate the process and ensure rapid delivery (Faith Group, LLC).

Gap Assessment - SMF	Assessment	Comments
Safety Policy & Objectives	**Emergent**	
Policy		The County started a Safety Dept which is dedicated to SMF approximately 2 years prior. It needs non-punitive reporting and an explicit commitment statement to safety that meets AC-150/5200-37
Objectives		GAP
Safety Risk Management	**Gapped**	
Determine Risk(s)		GAP
ID Severity/Probability		GAP
Develop Mitigation Strategy		GAP
Apply, Track, Monitor Mitigation		Compliance Suite software
Assess & Modify as Necessary		GAP
Safety Assurance	**Emergent**	
Performance Indicators		GAP
Self-Auditing		Part 139 Compliant (Needs SMS auditing process)
Safety Oversight Resources		Commitment exists; needs structure to support SMS purpose.
Non-Punitive Safety Reporting		GAP
Review/Feedback Reporting		Part 139 Compliant
Communicate Findings		Part 139 Compliant
Promote Safety Integration		GAP
Safety Promotion	**Emergent**	
Training & Education		Training focused on SIDA/Driver/IIPP; Training has to expand to include SMS training
Safety Communications		Safety Committee monthly meeting
Continuous Improvement		Commitment needs to be in writing (to include SMS)

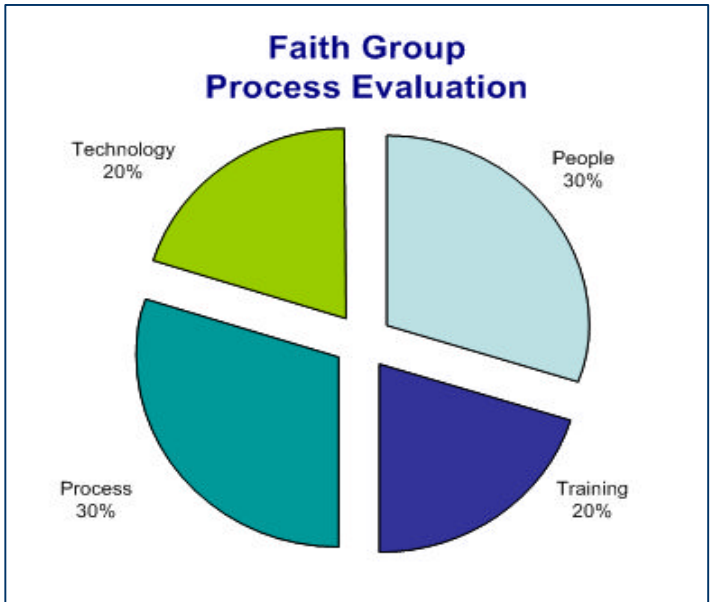
The SCAS has all the safety programmatic elements required by regulation today and has a demonstrated commitment for developing a leading SMS program. The gapped elements listed above are in essence, a confirmation that the US is heading into SMS for the first time.

SACRAMENTO COUNTY AIRPORT SYSTEM
SAFETY MANAGEMENT SYSTEM PILOT PROGRAM
GAP ANALYSIS

Introduction:
The FAA published a list of 20 airports eligible to receive Airport Improvement Program Grants (AIP) to develop pilot SMS programs in a preliminary effort to develop a nationwide standard and requisite regulation. In addition there are 5 airports participating in the pilot program without AIP grants. The airports with AIP grants included Sacramento International Airport (SMF) which awarded the contract to Faith Group, LLC in December of 2007. The SMS team, including members of SMF staff, airline tenants and stakeholder agencies, such as TSA and FAA, was introduced to the concept in a Kick-Off Meeting held in January of 2008. Work began immediately and this document serves as the first FAA deliverable; the Gap Analysis.

Approach:
The FAA published a requirement stating that the SMS Manual and program should "…identify which elements of the airport operator's existing practices and guidance materials currently meet SMS requirements, which elements do not, and how these latter practices and documents will be revised in the future for consistency with an SMS Plan."[1] The FAA requires a Gap Analysis or benchmark study to determine gaps in (a) Safety Policy and Objectives, (b) Safety Risk Management, (c) Safety Assurance and (d) Safety Promotion. These areas were evaluated using the list of 21 deliverables required by the SMS Pilot. Therefore, the initial Gap Analysis undertook an assessment of the organizational capabilities at SMF as it pertains to the guiding principals of SMS. The method of determining the existent capabilities considered a combination of stakeholder interviews, document search and review, and a preliminary operational review (observation). This process reviewed over 20 documents, interviewed key staff at SMF and spent several days on the ground at the airport monitoring ramp operations.

Faith Group uses a proprietary approach to investigate an airport's operating characteristics. This process considers four key areas; People, Process, Technology and Training. These four areas are inseparable and any program determined to be successful must ensure it addresses each of these organizational elements. In brief, the technology is usually the simplest element to address; Technology is cheap and relatively simple to install. Process is more difficult, especially if it is addressing new approaches to a task, using new technology, but can be simply documented to ensure it addresses all



[1] Office of Airport Safety and Standards, Airport Certification Program, Safety Management Systems (SMS) Pilot Study Participant's Guide, April 6, 2007

stakeholder needs. People are the hardest element to identify because of legacy organizational bias and in some cases, resistance to change. Finally, training is the most neglected element, but surprisingly the most cost-beneficial of the elements. A dollar invested in effective training will continue to pay dividends, while technology needs to be replaced every several years.

Using this process, SMF moved forward to identify the key gaps which exist today as they pursue a fully-capable SMS program. The goal was to complete a gap analysis which will invigorate the development of the Safety Management Plan using the 21 deliverables listed below.

FAA 21- Pilot Program Mandatory Deliverables
1 - Safety Policy Statement and communication
2 - Airport Safety Goals
3 - Plan for employee SMS indoctrination/training
4 - Process to identify training requirements
5 - Plan to validate training effectiveness
6 - Process to communicate policies/objectives
7 - Plan and description of employee non punitive reporting
8 - Organizational chart of all key personnel
9 - Description safety risk management process (SRM)
10 - Guidance on use of SRM and trend analysis
11 - Process for documenting SRM results
12 - Management follow up on SRM
13 - Description of quality mgmt/risk mgmt
14 - Plan to integrate apron safety into SMS
15 - Method to document self auditing and findings
16 - Method to document self inspection
17 - Plan to integrate SMS program to overall operation
18 - Plan for training, education, communication, competency
19 - Procedures to promote safety awareness
20 - Process to document and review lessons learned
21 - Schedule for implementation and anticipated costs

Gap Analysis Process:
The process involved an in-depth review of existing documentation at the airport, supported by a vetting process during stakeholder interviews. The team reviewed the following documents at SMF:

139 Inspection Reports
Airport Certification Manual (ACM)
Airport Emergency Plan (AEP)
Aircraft Emergency Response documentation
Sign Layout Plan
Operations Daily Log
Emergency Response Reports
Ops Daily Inspection Reports

Sacramento County Airport System Organizational Chart
Airport Security Plan
Safety Reports

Upon initial completion of the document review, the team met with the following staff personnel to survey (see Attachment A) current safety program status:

SMF SMS GAP ANALYSIS INTERVIEW PARTICIPANT LIST							
Company	Department	Contact Name	Contact Title	Phone Number	Cell Phone	E-Mail Address	Notes
SCAS	Construction and Planning	John Febbo	Airport Planner	916-874-0775	916-806-5435	febboj@saccounty.net	1/10/2008
SCAS	Operations	Sheri Thompson-Duarte	Operations Manager	916-874-0560	916-8065429	thompson-duartes@saccounty.net	1/11/2008
SCAS	Facilities	Fred Greco	Deputy Dir Facilities/Maint	916-874-0604	916-806-5303	grecof@saccounty.net	1/7/2008
SCAS	Operations	Lance McCasland	Fire Chief	874-0651		mccaslandl@saccounty.net	1/23/2008
SCAS	Police	Don Jones	Commander	916-874-0675	916-606-1659	donjones@sacsheriff.com	1/14/2008
SCAS	Operations	Bonnie Hankins	Manager Airport Security	916-874-0736		hankinsb@saccounty.net	1/14/2008
SCAS	HR	Matt Doyle	Safety Specialist	916-874-0708	916806-5387	doylema@saccounty.net	1/7/2008
SCAS	Risk Management	David Scott		916-876-5018		scottd@saccounty.net	1/11/2008

After completing the survey a results matrix was developed (see Attachment B).

The team also sent questionnaires (survey primers) to other key stakeholders, outside the airport organization, to gauge the level of SMS activity outside the immediate domain of the airport (see attached survey form). For example, while the tenant airline SMS capabilities is outside the scope, it is indeed useful to understand their corporate systems as it pertains to operations on the SMF ramp and non-movement areas, a key element of this study.

Once the preliminary assessment was completed, a Gap Matrix was developed using the 21 FAA SMS Pilot Deliverables as a guide. Each was given a subjective “go/no-go” determination, however further discussion on each topic is provided in order to fully understand the situation which exists at the airport. For example, while the airport may have a safety policy in place, it may want to consider amending their overall SCAS Mission Statement to incorporate mention of its safety commitment.

Gap Analysis Findings:
On the outset it was noted that every member of the SMF team was both committed and enthusiastic in the pursuit of a well-organized SMS program. Actively using the latest technologies to support training objectives in security and ground vehicle operations, SMF was already taking steps to provide the highest levels of safety practicable. Clearly, the SMS program will provide a means of better situational awareness capture on a host of safety issues which affect the airport.

The initial findings in the Gap Matrix are captured in the graph below. Each deliverable was measured against three subjective descriptors:

Capable: The airport is actively implementing this element.
Emergent: The airport has some elements of this programmatic requirement.
Gapped: The airport does not have evidence of elements of this requirement.

Gap Assessment - SMF	Assessment	Comments
Safety Policy & Objectives	**Emergent**	
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While these descriptors are subjective in nature, they do offer the potential means for trend identification. The team used the FAA Advisory Circular 150/5200-37, the FAA SMP Outline, and IATA SMS as a guideline for making these determinations. The focus of this investigation has been airport-specific (SCAS non-movement area and personnel). It does not provide the opportunity to

assess tenant safety programs much beyond anecdotal information and observation. While many of the tenants of SMF have freely offered advice and survey response, there is some resistance to releasing details regarding their corporate safety programs. The intent is to provide a more detailed assessment with respect to integrating tenant safety programs with the SMF SMS in the body of the SMP. It should suffice to say at this point that the range of safety programs associated with various tenants spans from nearly non-existent for some, to highly sophisticated SMS implementation for major air carriers operating on the airport. We believe this information will be a key element to establishing a comprehensive SMS program, and expect to share lessons learned among all tenants operating at the airport. The promotion of a single integrated SMP would be advocated as it would assist to achieve standardization and common understanding and implementation of SMS across the board amongst the airport and its tenants ensuring a bigger safety net.

The focus of this gap analysis, as required by the FAA SMS Pilot Study Participant's Guide[2] has been

- **Safety Policy and Objectives**
- **Safety Risk Management**
- **Safety Assurance**
- **Safety Promotion**

Safety Policy and Objectives

Generally accepted industry standards promotes Commitment of Senior Management to Implement SMS; Commitment to continual safety improvement and International Civil Aviation Organization (ICAO) guidance describe Safety Management Systems in terms of four distinct elements. They include:

Safety Policy[3]

Management's commitment to safety should be formally expressed in a statement of the organization's safety policy. This policy should reflect the organization's safety philosophy and become the establishment of the SMS. The safety policy outlines the methods and processes that the organization will use to achieve desired safety outcomes. A safety policy will be signed by Top Management and will typically contain the following attributes:

- *The commitment of senior management to implement SMS*
- *A commitment to continual safety improvement*
- *The encouragement of employees to report safety issues without fear of reprisal*
- *A commitment to provide the necessary safety resources*

[2] Office of Airport Safety and Standards, Airport Certification Program, Safety Management Systems (SMS) Pilot Study Participant's Guide, April 6, 2007

[3] AC 150/5200-37, page 3

- *A commitment to make safety the highest priority*

SMF has an established Safety Policy statement that is essentially compatible with the intent of SMS, in that it is indeed documented in the County's Injury and Illness Prevention Program (IIPP) (see Attachment C). SMF has also established a full time Safety Specialist. The executive leadership of SCAS is clearly committed to the establishment of SMS and as such is ready to take the necessary steps to fully implement this program. The policy calls out specific language to its commitment:

> "It is the policy of the Sacramento County Airport System to provide a safe work environment for all employees, to the extent feasible, which is free of recognized hazards. The goal of this policy is to eliminate work related illnesses & injuries and to ensure compliance with CAL-OSHA Rules and Regulations." [4]

The Policy must be expanded to explicitly indicate the company's intention to commit to safety in everything that it does – all staff must become aware that their daily work must be conducted in a safe manner.

While employees appear to be encouraged to work safely, there is no formal non-punitive reporting program in place and requires more effort to establish such a program. The airport appears to be committed to providing reasonable resources to support its safety programs, and states such in its current Safety Policy Statement (see Attachment C). In the initial meetings with Senior Management, it was made abundantly clear that SCAS is committed to making safety its highest priority.

Assessment: Emergent (non-punitive reporting gapped)

Required Effort:

1. The Policy Statement should include verbiage to improve best safe practices to prevent illness, injury as well as preservation of assets.
2. Specific language needs to be included for non-punitive reporting, as well as information or pointers to more specific direction for the program.

Safety Objectives [5]

SMS requires the support of senior management. SMS also requires that Top Management in the organization, one with the authority to adequately control resources, be assigned SMS responsibilities. In addition to having a basic understanding of the SMS, effective decision-makers understand how to use SMS outputs as inputs to the SMS lifecycle as described in Figure 2-1. Executives and managers also understand when safety risk management is necessary, and when to elevate decisions and the supporting information to a higher level. Some key elements of accountability within an organization are:

- *The organization's policy concerning responsibility and accountability, including written guidance regarding the safety authorities and responsibilities of all key personnel assigned to the airport*

[4] Sacramento County Airport System, Illness and Injury Prevention Program (IIPP)
[5] AC 150/5200-37, page 3

- *Identification within the system of someone responsible for administration of the overall SMS. Often, that one responsible person will be the Safety Manager. This person reports to the highest level of management to assure appropriate consideration of all reports, recommendations, and issues*

- *At larger airports, operations may support the Safety Manager being a full-time permanent employee and in some cases having a support staff. Some airports may have an existing risk management office that could substantially meet SMS safety management requirements*

- *The responsibilities of the Safety Manager are clearly defined along with identified lines of communication within the organization*

- *Depending on the size and complexity of the airport's operation, it may be useful to establish a safety committee. The safety committee acts as a source of expertise for the Safety Manager and is chaired by the Safety Manager*

The written policy does outline specific responsibility and accountability. There is an airport safety committee; however it only includes SCAS employees, no outside stakeholders. Additionally, safety objectives should be set for the airport during the annual planning cycle with specific individuals being responsible, and should be tied to their performance monitoring system. There is no safety auditing system in place. SCAS has recently started tracking incident reports and applying remediation to prevent future incidents but it is not formalized.

Assessment: Gapped

Requirements:

1. The existing policy does not adequately address the level of detail requisite in a fully capable SMS program. As such, specific written guidance and an organization chart must be put into place to clearly outline authority, responsibility and lines of communication associated with SMS.
2. The airport safety committee should determine goals and objectives for its continued operation in support of a complete SMS program and include outside stakeholders in reporting, tracking and trending of hazards.
3. Safety objectives setting; implementing upon completion of the SMP

Overall Assessment Policy & Objectives: Emergent

Safety Risk Management[6]

SRM is a fundamental component of SMS. To be truly effective a SMS must have a formal risk assessment program that identifies and documents hazards on the airport. An SMS:

- *determines associated risk(s)*

- *identifies the severity and probability of the occurring risk(s)*

[6] AC 150/5200-37, page 9

- *develops mitigation strategies as appropriate*
- *applies, tracks, and monitors the mitigation strategy*
- *assesses and modifies strategies as necessary*

There a partially organized SRM process is in place. It appears that safety programs existent at SMF are based upon Human Resource and County practices of responding to regulation or incident. It is the corporate commitment to SMS that will lead the organization towards a successful pilot program as the first step followed by a fully encapsulating SMS program that will actually measure hazards and implement steps to reduction. It will also need to embrace an auditing program to ensure measures are successful.

Assessment: **Gapped**

Requirements: A fully implemented SRM process must be built from the ground up, which is the primary focus of this pilot program effort. While SCAS has begun some reporting and tracking, it is missing several key elements. The Safety Management Plan (SMP) will document a comprehensive Hazard Assessment (HA), hazard mitigation development, risk modeling, and assessment strategy as a deliverable from this pilot study process.

Safety Assurance[7]

Safety Assurance includes self-auditing, external auditing, and safety oversight. Safety oversight can be achieved through auditing and surveillance practices, given the diverse activities at commercial airports. In addition to the airport operator's existing responsibilities for self-inspection and correction of discrepancies under 14 CFR Part 139, an effective airport SMS audit program should:

- *Develop identified safety performance indicators and targets*
- *Monitor adherence to safety policy through self-auditing*
- *Allocate adequate resources for safety oversight*
- *Solicit input through a non-punitive safety reporting system*
- *Systematically review all available feedback from daily self-inspections, assessments, reports, safety risk analysis, and safety audits*
- *Communicate findings to staff and implement agreed-upon mitigation strategies (14 CFR Part 139 already requires this for actions covered by that regulation)*
- *Promote integration of a systems approach to safety into the overall operation of the airport*

SMF has various safety programs associated with Part 139 requirements, as well as others which include self-inspection and third-party inspection (OSHA, FAA, etc.). There is also the IIPP safety program Countywide but there is no current program which promotes integration of various safety

[7] AC 150/5299-37, page 12

initiatives; there are no formal non-punitive reporting mechanisms; allocation of safety resources is through HR and select staff on the Safety Committee. This needs to expand to be a collateral duty by all employees and include a formal self-auditing process.

Assessment: **Emergent**

Requirement:

1. The SCAS will have to take the results of the SRM process and integrate it into a new Safety Assurance program, to include:
    a. Non-punitive reporting through use of a web-based tool (currently under development by consultant)
    b. Establish a means of collecting and trend analyzing disparate reports and data to identify issues.
    c. Develop and codify safety performance indicators.
    d. Formalize their self auditing process,
    e. Provide for resources for assurance functions (whether combined or separate to their QMS assurance functions).

Safety Promotion[8]

Safety Promotion includes:

- *Training and education*
- *Safety communication*
- *Safety competency and continuous improvement*

The Safety Manager provides current information and training relating to safety issues relevant to the specific operation of the airport. The provision of appropriate training to all staff, regardless of their level in the organization, is an indication of management's commitment to an effective SMS. Safety training and education should consist of the following:

- *A documented process to identify training requirements*
- *A validation process that measures the effectiveness of training*
- *Initial (general safety) job-specific training*
- *Recurrent safety training*
- *Indoctrination/initial training incorporating SMS*
- *Training that includes human factors and organizational factors*

[8] AC 150/5200-37, page 7

There does not appear to be an integrated safety training system that would allow SCAS to monitor and assess training effectiveness or compliance, outside the Part 139 requirement for driver training for apron drivers, and the security training. Any new program should also integrate the various stakeholder safety programs (FAA, Airline, others) in order to share lessons learned and best management practices.

There does not appear to be a formal general safety communication. SCAS does have limited personnel in place but promotion needs to be accepted organizationally wide as a philosophy not just a Federal/OSHA, State or County requirement. SCAS's commitment to continuous improvement must also be formalized to support a robust SMS program.

Assessment: **Emergent**

Requirement: The following should be accomplished at the end of this pilot study.

1. Based upon the SRM process and the integration of various safety programs on the airport, SCAS will document training requirements with measurable milestones for evaluation.
2. Training must be initiated for indoctrination training, recurrent training and job specific (specialized) processes.
3. All training efforts will consider human factors in the process of reducing risk to as low as possible (ALARP).
4. A robust safety communication means should be developed and managed, including lessons learned assessments.
5. Safety Committee staff should have job specifications which outline their duties and be held to performance standards, after proper training on safety and SMS has been provided to ensure that staff understands what is expected from them.
6. SCAS needs to build and support a continuous improvement program .

Conclusion:

The Sacramento County Airport System has taken the first significant step to address each of the areas listed as "GAP" in order to prepare one of the first fully operational SMS programs in the US. None of the elements listed above face significant obstacles ahead in terms of drafting programs, establishing processes or future implementation. The project continues to be on time and on budget.