



Southern Illinois Airport Authority



Safety Risk Assessment 1

FAA Part 139 SMS Implementation Study



Southern Illinois University Carbondale

LANDRY

Table of Contents

1.0 Describe the System	1
2.0 Identify Hazards	2
3.0 Determine Risk	4
4.0 Assess and Analyze Risk	5
5.0 Treat and Monitor Risk	7
6.0 Residual Risk	8
Attachment 1	Airport Diagram
Attachment 2	Blind Spot Photos
Attachment 3	SRA 1 Attendants

Southern Illinois Airport Safety Risk Assessment

1.0 Describe the System:

The Southern Illinois Airport (SIA or Airport) identified six potential aircraft/vehicle/pedestrian “blind spots” on the airside portion of the airport (see Attachment 1). As aircraft/vehicles/personnel operate and/or proceed on the ramp during normal operations, the airport manager is concerned with hazards these potential blind spots may represent (see Attachment 2). The SIA is a general aviation airport without scheduled, commercial service. However, the Southern Illinois University Carbondale (SIUC) Aviation Flight Program is located on the SIA and serves as the airport’s major tenant. Aviation flight Instructors, flight students, support personnel: including SIUC line service and airport support personnel; and additional tenants that hangar and operate aircraft throughout the airport, populate the ramp area and are among the airport’s major safety stakeholders. The airport manager, in conjunction with the Safety Management System (SMS) Implementation Project team members (see Attachment 3), identified the approximate number of daily aircraft/vehicle/pedestrian operations at all six individual locations (see Table 1).

Characteristics commonly associated with blind spots 1, 4, 5 and 6 include:

1. Minimal pedestrian activity on the part of SIU personnel, “other” airport tenants, transient individuals and airport authority personnel
2. Minimal vehicular and aircraft traffic
3. Control tower observance of blind spot 1 is somewhat limited

Characteristics associated with blind spot 2 include:

1. High pedestrian traffic area - the area is populated by SIUC students and staff, airport authority personnel (security), “other” tenants, and transient individuals
2. Varied vehicle operations including: SIUC vehicles, FBO fuel trucks and airport support vehicles. Blind spot 2 also maintains a potentially high level of opposite direction aircraft traffic (based on runway usage)
3. Control tower observance of blind spot 2 is limited

Characteristics associated with blind spot 3 include:

1. High pedestrian traffic area - the area is populated by SIU students and staff, airport authority personnel (security), “other” tenants, and transient individuals
2. Varied vehicle operations including: SIUC vehicles, FBO fuel trucks and airport support vehicles
3. Potentially high level of opposite direction aircraft traffic (based on runway usage)
4. Majority of SIUC aircraft operations occur in this blind spot area

Table 1

Daily Operations

Blind Spot	1	2	3	4	5	6
A/C Taxi	5	66	30	0	4	8
A/C Tow	4	46	60	10	0	0
V Known	9	160	82	58	58	45
V Unknown	2	2	0	8	8	20
Pedestrian	10	100	60	0	0	0

Legend:

A/C Taxi = Aircraft involved in autonomous taxi operation

A/C Tow = Aircraft involved in assisted tow operation

V Known = Vehicle involved in a "known" or scheduled operation

V Unknown = Vehicle involved in a necessary, but random operation

Pedestrian = Pedestrian traffic

2.0 Identify Hazards:

All suspected blind spots were examined and it was determined by the airport manager and SMS implementation team members that all six blind spots represented **sight obstruction hazards** of varying degrees to aircraft, vehicles and personnel. It was also determined that while blind spots 1, 4, 5, and 6 require continued observation, low levels of exposure coupled with historically zero accidents or incidents, these blind spots represented very little risk. In contrast, significantly higher levels of exposure, due to a larger number of varied operations, identified blind spots 2 and 3 as hazardous and requiring additional analysis (see Table 2).

Table 2 Daily Operations for Blind Spots 2 and 3 Highlighted

Blind Spot	1	2	3	4	5	6
A/C Taxi	5	66	30	0	4	8
A/C Tow	4	46	60	10	0	0
V Known	9	160	82	58	58	45
V Unknown	2	2	0	8	8	20
Pedestrian	10	100	60	0	0	0

Legend:

A/C Taxi = Aircraft involved in autonomous taxi operation

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V Known = Vehicle involved in a "known" or scheduled operation

V Unknown = Vehicle involved in a necessary, but random operation

Pedestrian = Pedestrian traffic

3.0 Determine Risk:

Following extensive discussion between the airport manager and SMS Implementation team members, risk associated with hazards linked to blind spots # 2 and 3 are listed below (See Table 3).

Table 3 Risk Determination

Hazards	Main Components	Possible Consequences
Vehicle Traffic	Tenant vehicles, fuel trucks, line service trucks, equipment and aircraft tow vehicles	Vehicle to Vehicle Collision/Accident V to V
Vehicle and Aircraft Traffic	Tenant vehicles, fuel trucks, line service trucks, equipment and aircraft tow vehicles, tenant aircraft including SIUC flight training aircraft	Vehicle to Aircraft Collision/Accident V to A/C
Aircraft Traffic	Tenant aircraft including SIUC flight training aircraft	Aircraft to Aircraft Collision/Accident A/C to A/C
Pedestrian Traffic	SIUC flight training personnel, airport personnel, "Other" tenant personnel	Pedestrians could be involved in an accident involving vehicles or aircraft PED to ALL

4.0 Assess and Analyze Risk:

Table 4

Blind Spot #2 Risk Analysis

Event	Likelihood	Likelihood Classification	Severity	Severity Classification	Risk Ranking
V to V	One accident in the last year and many “close calls” warrant a Probable rating.	Probable	An accident could result in minor damage to equipment and minor discomfort to personnel.	Minor	Medium
V to AC	An accident has never occurred at blind spot #2.	Remote	It should be expected that any type of damage would result in an A/C out of service. An accident with an aging A/C could render it useless.	Major	Medium
AC to AC	An A/C to A/C collision has never occurred at this airport. In addition, most A/C operations are under the auspices of the control tower, but tower observance is limited.	Extremely Improbable	An accident of this type would be considered catastrophic. It would result in the loss of valuable equipment resources and possible personal injury.	Catastrophic	Medium /High
PED to ALL	A vehicle or aircraft has never injured a pedestrian at this airport.	Extremely Improbable	Injury or death to personnel.	Catastrophic	Medium /High

Table 5

Blind Spot #3 Risk Analysis

Event	Likelihood	Likelihood Classification	Severity	Severity Classification	Risk Ranking
V to V	Traffic congestion is significantly less at the blind spot; greatly reducing exposure.	Extremely Remote	An accident could result in minor damage.	Minor	Medium
V to AC	Individuals are well trained and familiar with the environment.	Remote	An accident may result in major damage to equipment.	Major	Medium
AC to AC	An accident of this type has never occurred at this airport.	Extremely Improbable	An accident of this type would be considered catastrophic. It would result in the loss of valuable equipment resources and possible personal injury.	Catastrophic	Medium /High
PED to ALL	A vehicle or aircraft has never injured a pedestrian at this airport.	Extremely Improbable	Injury or death to personnel.	Catastrophic	Medium /High

5.0 Treat and Monitor Risk:

In this section of the SRA, the airport manager and SMS Implementation team “brainstormed” and explored mitigation strategies that would assist in preventing the likelihood hazardous events of this nature would ever be permitted to occur. Risk mitigation strategies are listed below (see Table 6). Monitoring of risk mitigation implementation strategies shall be conducted through the use of Omni Air Group’s Incident Reporter tracking software.

Table 6 Listing of Mitigation Strategies

Definitely Pursue	“Look Into”	Risk Mitigation Strategies
X		**Vehicle lanes, dedicated driver lanes
X		Signage or enhanced signage including lights for blind spots
X		**Taxi-lane reconfiguration (flow, layout)
X		Flight student orientation (standardized)
X		**Aircraft tie-down reconfigurations/parking
X		Improve and expand communication throughout the airport community (link to speed limit enforcement)
	X	Mandatory driver training for airside (non-movement)
	X	Speed limit enforcement, etc. (link with communication)
	X	Convex mirror installation
	X	Vehicular lights (amber lights for all airport vehicles)
	X	Vehicle escort policy

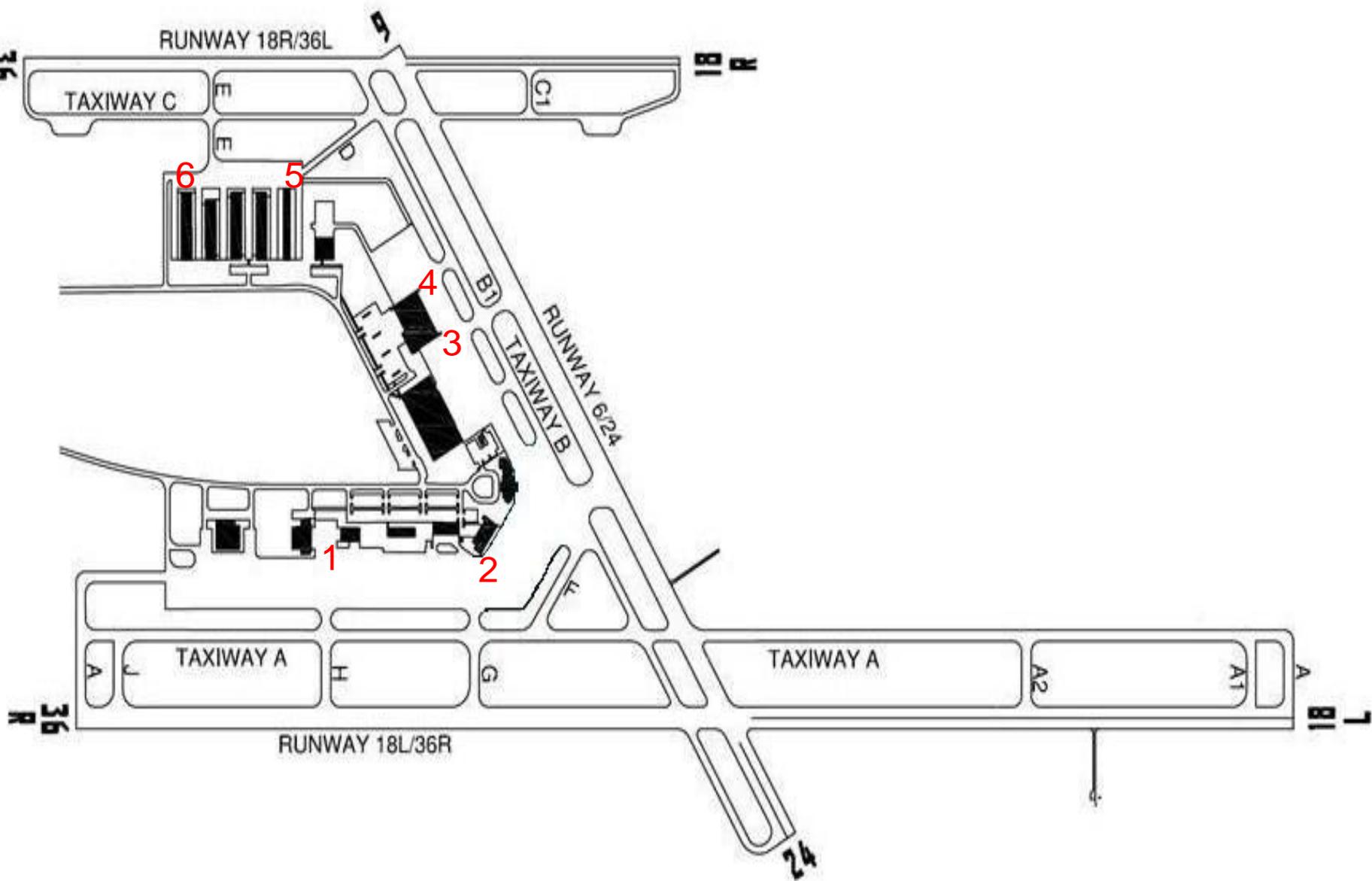
**See Attachments 1 and 2 (ramp diagram and blind spot photos)

6.0 Residual Risk:

Risk is a constant. The mitigation efforts discussed in this SRA only serve to reduce the risk associated with hazardous SIA blind spot areas. However, coupled with increased vigilance on the part of airport employees and tenants, the abovementioned mitigation strategies and activities should significantly curtail risk associated with hazardous SIA blind spot areas. Although it was determined that airport blind spots 1, 4, 5 and 6 presented little risk, the airport manager shall also pursue implementation of applicable risk mitigation strategies at those locations.

Attachment 1

SIA SRA No. 1 Blind Spots



Attachment 2

Blind Spot 1



Blind Spot 1



11.30.2010

Blind Spot 2



11.30.2010

Blind Spot 2



11.30.2010

Blind Spot 3



11.30.2010

Blind Spot 4



11.30.2010

Blind Spot 4



11.30.2010

Blind Spot 5



11.30.2010

Blind Spot 5



11.30.2010

Blind Spot 6



Blind Spot 6



11.30.2010

Attachment 3

SIA SRA1 Meeting Attendants

- Mr. Gary Shafer, SIA Manager
- Dr. José R. Ruiz, SIUC - Co-Principal Investigator
- Dr. Bill Caldwell - Co-Principal Investigator
- Ms. Joanne Landry - Consultant and Team Member
- Mr. Dave Fleet - Consultant and Team Member
- Mr. John Voges, SIUC - Team Member
- Mr. Mike Robertson, SIUC - Team Member
- Mr. Matt Romero, SIUC - Graduate Student
- Mr. John Dixon, SIUC - Undergraduate Student