Seattle-Tacoma International Airport

SMS Self-Inspection Program

Prepared For: Federal Aviation Administration
Office of Airports
Airport Safety and Operations Division

Prepared By: Landry Consultants LLC, on behalf of Seattle-Tacoma International Airport and Operations Senior Manager, Mark Coates

Date: 11/25/2009

Revision History

Date	Version	Summary
11/15/09	v.0.1	Initial draft for SEA review
11/17/09	v.0.2	Review with Ramp Manager and revisions included.
11/19/09	v.0.3	Revisions included; new review
11/25/09	v.1.0	Final

Prepared in Support of Statement of Work Section C – Safety Assurance, Task 3

Develop a ramp and bagwell (if applicable) self-inspection program that ensures safety is maintained.

While FAA currently does not regulate airport ramp areas, the increase in safety related incidents in the ramp and bagwell areas on airports is disturbing. Self-inspection techniques required under Part 139 for movement areas may be useful to an airport to decrease the number of incidents in non-movement areas. Under this task, the airport will review Part 139 to determine if requirements for self-inspection in the movement areas would be useful for self-inspection in the non-movement areas including the ramp and bagwell (if applicable); develop maps of the non-movement area; create an audit checklist/self-inspection form for the given airport; create forms for reporting/documenting hazards and incidents/accidents; and, develop processes for reporting, tracking, and trending safety issues on the ramp and bagwell (if applicable).

Table of Contents

List of Tables

List of Figures

1. Introduction

Under the Federal Aviation Administration's (FAA's) Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139), airports that obtain an Operating Certificate are required to perform regular (daily or more frequently) self inspections (139-327) of the airfield with a focus on the movement area including runways and taxiways. Many airports conduct additional inspections of the ramp or apron areas for concerns such as pavement conditions, lighting, markings, wildlife attractants, and foreign object debris (FOD). Currently at Sea-Tac inspections are conducted thrice daily, and findings are logged into an electronic application (Sea-Tac Inspector) by Airport Operations Specialists (AOSs), reviewed by Airport Duty Managers (ADMs), compiled, and approved daily. Hazards are recorded and routed to maintenance, or other appropriate resources for resolution in compliance with Part 139 regulations.

Today no formal ramp inspections exist within Part 139 compliance. Airports and tenants typically agree to certain airport Rules and Regulations and Lease Agreements for ramp safety. In some cases airports operate common use gates at which a joint responsibility exists to maintain safety.

At Sea-Tac the current ramp safety program includes daily sweeping, installation of Sea-Tac FOD cans, and routing of safety issues to operations and maintenance. For detailed information on the current and future FOD program, see the FOD Program Manual. It should be noted that the FOD program includes an inspection checklist assigned to individual ADMs by area. The FOD Coordinator role is filled by an ADM assigned to coordinate all FOD activities and will co-coordinate FOD issues with the FOD Sub Committee chaired by an airline representative. While FOD is considered a separate program, opportunities exist to share responsibilities with the proposed ramp, cargo, and bagwell self-inspection program. Additional ramp and bagwell inspections are conducted by the Sea-Tac Fire department to ensure fire hydrants, fire extinguishers, and fueling operations are in compliance with both fire and Part 139 oversight.

Recently Sea-Tac has begun the process of requiring all Ground Service Providers (GSPs) to participate in the IATA Safety Audit for Ground Operations (ISAGO) program as a measure to improve safety on the ramp. This requirement has been added to GSP License Agreements which are renewed on an annual basis. While Sea-Tac anticipates that the ISAGO implementation will improve safety on the ramp, it is a compliance program and does not require that Sea-Tac conduct inspections as part of the program.

In February of 2009, Sea-Tac requested the participation of the Regional Office of the Federal Aviation Administration (FAA) Runway Safety Action Team (RSAT) to assist in developing a comprehensive ramp safety checklist and inspection process. The RSAT and Sea-Tac Ramp Manager jointly conducted a 2-hour inspection of the ramp and taxi lane areas using a draft checklist. The checklist has since been modified to include additional elements. See Section 4 for reference to the checklist. The inspection resulted in a number of findings and recommendations which were reported to Sea-Tac management.

Based on the success and important findings of the RSAT event, Sea-Tac plans, as part of the SMS, to perform ramp inspections on a scheduled and formal basis. The

inspections will be conducted by the AOSs (or equivalent staff) daily by area (see Figure 1 Ramp and Cargo Area Map) on a rotating basis. Inspections will include bagwell walk-throughs as well (see Figure 2 – Bagwell Area Map). Additional inspections will occur during construction activities, weather events such as high wind or snow, and after ramp or bagwell accidents/incidents occur.

AOSs (or equivalent staff) will be instructed to identify and collect safety information (hazards) through formal and hands on training. Staff will be trained to conduct inspections and to report findings in a consistent manner. See the SMS Training and Orientation Documentation for more information on staff training and Section 3.0 Inspection Program Procedures.

As part of the formal communication plan, tenants will be alerted to the new SMS inspection program prior to the start. Tenants will be asked to comment on the program and to commit to supporting the new safety initiative.

2. Inspection Program Schedule

The schedules on the following pages provide a comprehensive airfield-wide inspection program for ramp and cargo areas and include the bagwell. Each ramp, cargo, and bagwell area will be inspected at least once a week. Based on the size and complexity of the inspection durations are provided for daily planning. These inspections will be conducted independent of the Part 139 Movement Area daily inspections and *may* be combined with the FOD inspections as described in the FOD Program Manual.

Areas (weeks 1 & 3)	Day of Inspection	Specific Locations	Estimated Duration	Shift (mid, day, swing)	AOS or Equivalent Staff
1	Monday	South Satellite NWA Hangar ASA Hangar	1 hour	Mid	As per scheduled
2	Tuesday	Cargo 7 A& B Gates	1 hour	Day	As per scheduled
3	Wednesday	C & D Gates	2 hours	Swing	As per scheduled
4	Thursday	North Satellite Cargo 6	2 hours	Mid	As per scheduled
5	Friday	Cargo 4 UAL Maintenance	1 hour	Day	As per scheduled
6	Saturday	Cargo 1, 2, 3	1 hour	Swing	As per scheduled
As Needed	Sunday	As Needed	As Needed	As Needed	As per scheduled

Table 1 - Ramp/Cargo Inspection Schedule

Note: at least one inspection per month needs to be conducted during night time operations (hours of darkness). Inspections are conducted in vehicles and on foot as necessary to capture all checklist items.

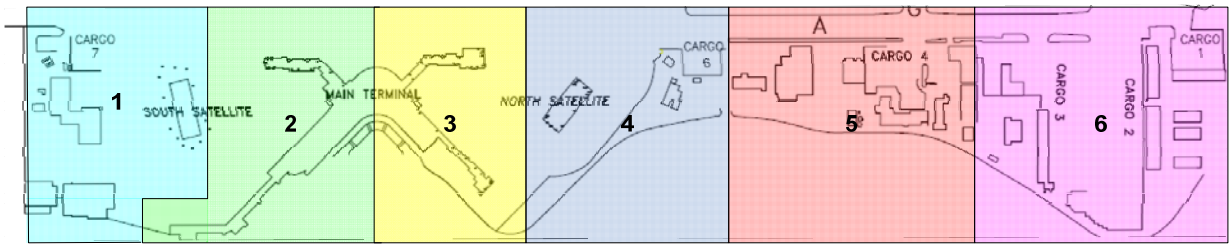

Figure 1 - Ramp and Cargo Area Map

Areas	Bagwell Areas (weeks 2 & 4)	Day of Inspection	Estimated Duration	Shift (mid, day, swing)	AOS or Equivalent Staff
1	Main Terminal North	Monday	1.5 hours	Mid	As per scheduled
2	Main Terminal Mid	Tuesday	1.5 hours	Day	As per scheduled
3	Main Terminal South	Wednesday	1.5 hours	Swing	As per scheduled
4	North Satellite	Thursday	1 hour	Mid	As per scheduled
5	South Satellite	Friday	1 hour	Day	As per scheduled
TBD	As Needed	Saturday	As Needed	As Needed	As per scheduled
TBD	As Needed	Sunday	As Needed	As Needed	As per scheduled

Table 2 - Bagwell Inspection Schedule
Note: Bagwell inspections are conducted on foot not in vehicles to ensure thoroughness.

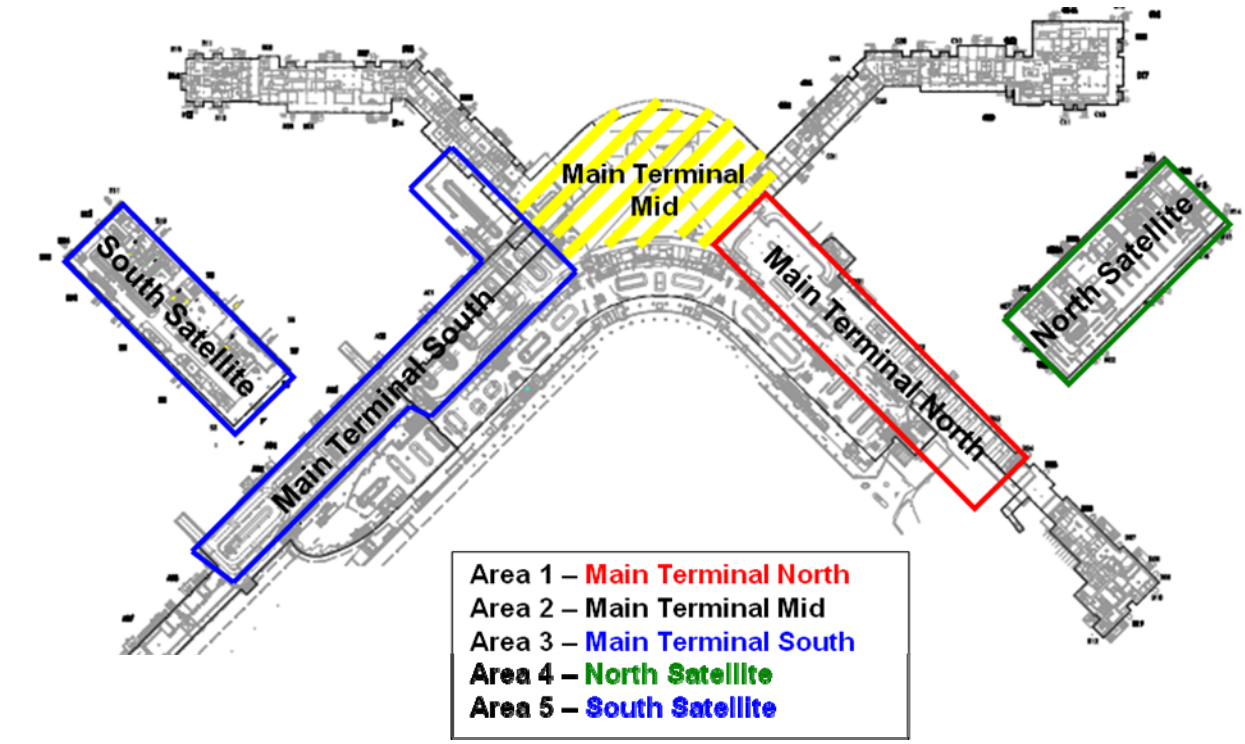

Figure 2 - Bagwell Area Map

3. Inspection Program Procedures

To ensure a consistent level of quality control in all inspections, the following procedures have been designed and developed to guide staff conducting inspections.

3.1 Preparation and Equipment

Staff conducting inspections will be expected to compile necessary equipment prior to the event to ensure the most effective and efficient gathering of information. In the early stages of the inspection program a paper-based checklist will be used; eventually, as part of the Sea-Tac data system upgrades, an electronic version of the checklist will be integrated into the Sea-Tac Inspector application.

3.1.1 Pre Electronic Checklist Process

Prior to inspections, the following list of items will be collected:

- Checklist (ramp and bagwell depending on the scheduled activity – See Schedules in Section 2)
- Clipboard for paper checklist
- Camera
- Personal Protective Equipment (PPE) including reflective safety vest and hearing protection. For the Bag Room gloves and safety glasses are recommended. Also, it is recommended staff wear steel toed foot wear for both types of inspections
- Radio

3.1.2 Electronic Checklist Process

- Laptop or handheld device with checklist (ramp and bagwell depending on the scheduled activity – See Schedules in Section 2)
- Camera
- Personal Protective Equipment (PPE) including safety vest and hearing protection. For the Bag Room gloves and safety glasses are recommended. Also, it is recommended that staff wear steel toed foot wear for both types of inspections
- Radio

3.2 Conducting Inspections - Purpose

Inspections are considered critical to the success of the SMS and are part of the collaborative effort to ensure safety on the ramp and in the bagwell. The role of inspections in SMS for airports is to continuously review the environment in which staff and tenants operate. The intent of inspections is not to deliver punitive citations, but to indicate areas where hazards or hazardous behavior is present. The outcome and findings of the inspections are to alert tenants and staff to potential accidents and incidents and to jointly resolve the findings in a productive and corrective manner. However, if inspection findings do not result in changed actions or changes in activities, then appropriate citations and associated fines will be delivered to the responsible party.

3.3 Conducting Inspections - Procedures

While conducting inspections (ramp, cargo, and bagwell) using the paper-based checklists, staff will provide detailed information on the conditions for that particular inspection including weather, time (using a 24-hour method), and location.

Ramp, cargo, and bagwell operations at Sea-Tac have both busy and slow periods relating to inbound and outbound flight schedules; strategically, inspections should be conducted at different times to ensure the most broad and thorough scope of findings. It is recommended that inspections be rotated by one of the three AOS shifts (See schedules in Section 2) to provide comprehensive monitoring.

Depending on ramp, cargo, or bagwell inspections, staff will select the appropriate checklist and complete all areas listed. Staff are expected to conduct a thorough and detailed survey of the identified ramp, cargo or bagwell area and report any findings.

3.3.1 Ramp and Cargo Areas

Inspections of the ramp and cargo areas will be conducted by vehicle and by foot. Staff will perform the inspection beginning at one end of the designated area and thoroughly inspect all aspects of the gate or cargo areas including entrances to the bagwell. As part of the inspection, staff will make observations on facility and staff issues such as fire safety, proper PPE, Ground Service Equipment (GSE) chocked, parked, or stowed, and will also address issues such as speeding, smoking, etc. If challenged by tenant staff or management, the AOS will provide a brief overview of the program and contact information. If tenants are interested in participating in the inspection, they will be allowed as long as they do not interfere with the assessment.

3.3.2 Bagwell

Inspections of the bagwell by areas will be conducted on foot. Staff will begin at one end of the designated area and will ensure that the entire facility will be inspected including stairwells and exits to the ramp. As part of the inspection, staff will make observations on facility and staff issues such as fire safety, proper PPE, Ground Service Equipment (GSE) chocked, parked, or stowed, and will also address issues such as speeding, smoking, etc. If challenged by tenant staff or management, the AOS will provide a brief overview of the program and contact information. If tenants are interested in participating in the inspection, they will be allowed as long as they do not interfere with the assessment.

3.4 Inspection Hazard Reporting

During ramp and bagwell inspections if a hazard is observed, staff will record the following information:

- Location – will include as much information as possible such as gate or carousel number
- Responsible party for correction - this is typically tenant information such as airline, GSP, or in certain cases, the appropriate Sea-Tac department
- Photo – the photo or photos are expected to provide additional documentation on location and the particular deficiency identified

- If staff believe the hazard requires immediate action, the responsible party will be contacted immediately; alternatively if the responsible party cannot be found, the Airport Duty Manager will be called and the hazard process will be initiated (see Roles and Responsibilities Figure 2 – Hazard Flow by SMS Role. In some cases, the responsible party will be Sea-Tac and calls will be routed to the communication center for proper dispatch.
- If a potentially new or undocumented hazard (not on the checklist) is observed or if staff are unsure of the status, a photo will be taken and comments will be included at the bottom of the form for review with the Safety Manager.
- At the end of the inspection, the checklist and any associated photos will be delivered to the Safety Specialist who will compile checklist information into a master spreadsheet and link photos to the hazard. When the inspection program is automated, these tasks will be completed electronically much like the current, Part 139 airport inspection program.

3.5 Post Inspection Procedures

After inspections are completed, hazard information will be routed electronically to the responsible party. As mentioned above, the inspection staff will complete the checklist and drop off the information to the Safety Specialist for processing. The Safety Specialist will compile the information and forward it to the responsible party by email. The hazard and any associated photos will be included with a proposed correction date and other relevant information. The responsible party will be asked to respond by the proposed due date and will be provided a contact number for questions or further discussion. The Safety Specialist will monitor due dates and provide alerts to the Safety Manager if hazards are not resolved within the proposed timeframe.

3.6 Tracking and Resolving Hazards

All hazards collected during the inspection process will be logged and tracked initially in an Excel spreadsheet. Eventually, as part of the proposed electronic system, hazards will be tracked and associated maintenance requests (if necessary) will be integrated into a report that will be available to all AOSs, ADMs, and the Safety Manager for tracking and trending. If multiple or repeat hazards are recorded, the Safety Manager will contact the appropriate Airlines or GSP to discuss resolutions and timelines. If collaboration with Sea-Tac groups is necessary, the Safety Manager will coordinate a resolution meeting. The Safety Specialist will monitor the program and provide updates to AOSs, ADMS, Maintenance (as needed) and upper management. If necessary, a formal escalation process to airport operations upper management will ensure that deficiencies are addressed and resolved quickly.

In some cases, findings will be considered identified hazards and the risk process will address these potential hazards. See the Guide to Safety Risk Management for more information on hazard identification and processes.

When hazards are resolved, staff will re-inspect the area and report back through the checklist the hazard status as closed. The hazard information will be archived and used for future tracking and trending especially if there is a re-occurrence.

4. Inspection Checklist

The inspection checklist is comprised of an Excel spreadsheet which eventually will be automated as part of the Sea-Tac Inspector application. The spreadsheet contains two tabs including a ramp checklist and a bagwell checklist. Also, note that separate FOD inspection checklists exist and will be conducted in addition to the ramp and bagwell inspections. If FOD issues are identified as part of the ramp and bagwell inspections, appropriate ADMS (by area) will be notified during the inspection. The figures below present the contents of the Excel spreadsheet.

Ramp Inspection Checklist

Date: _____

Inspector: _____ **Location** _____

Time: _____ **General Conditions:** _____

For FOD Issues, please refer to FOD Checklist **H - Hazard**

Hazard Category	Conditions	H	Location	Party Responsible for Correction	Reported To (Date/Name)	Date Corrected (Date/Name)	Inspected By (Date/Initials)
Human Factors	Personnel wearing reflective outer garment	☐					
	Driving without a blue badge on ramp						
	Other personnel hazard	☐					
Fire Safety	Open flames	☐					
	Smoking	☐					
	Blocking fire hydrants	☐					
	Wheeled fire extinguisher at POS gates	☐					
	Other fire safety hazards	☐					
Environmental	HAZMAT spills/leaks	☐					
	Illegal discharge into storm drain	☐					
	Flammables not stored in a fire storage locker	☐					
	Open containers with HAZMAT material	☐					
	Used absorbent not properly disposed of	☐					
	Damaged containers w/o secondary containment	☐					
	Wildlife hazards/attractants	☐					
	Other environmental hazards	☐					
Vehicular Movement	Failure to give way to aircraft and or emergency vehicles	☐					
	Crossed zipper lines	☐					
	Movement area violation	☐					
	Driving between aircraft and marshaller	☐					
	Towing too many carts (6 max)	☐					
	Failure to secure cargo, mail, or FOD producing	☐					
	Driving outside designated driving lanes	☐					
	Other operational safety Issues	☐					
Aircraft Servicing	Failure to give way to wing walkers	☐					
	Deicing	☐					
	Failure to secure cargo, mail, or FOD producing	☐					
	Above idle engine run-up at gate	☐					
	Other operational safety Issues	☐					

Tenant Construction	Improper construction barricading	□					
	FOD produced by construction	□					
	Damaged barricades or lighting	□					
	Other construction hazards	□					
Properties	Damage to airport property	□					
	Equipment not stowed properly	□					
	Other property Issues	□					
GSE	GSE with appropriate markings identifying	□					
	GSE brakes/chocks utilized	□					
	Operational headlights or brake lights	□					
	Jet bridges and jetway stairs stowed properly	□					
	Jet bridge roll up doors closed between operations	□					
	Leaking or malfunctioning equipment	□					
	Illegally parked vehicle/equipment	□					
	Other GSE/vehicle Issues	□					
Lighting Conditions	Gate designation lighting operational if present	□					
	Light pole and ramp lighting functioning	□					
Roadway Markings	Drivelane markings	□					
	Speed limit markings	□					
	Non-movement area boundary markings	□					
Gate/Hardstand/Directional Markings	Gate ID signs/box visible	□					
	Object free area (OFA) lines visible	□					
	J lines visible	□					
	Taxi lane lines visible	□					
	Nose stops visible	□					
	Aircraft parking areas /aircraft safety envelope	□					
	Pedestrian pathways	□					
	Aircraft parking walkways	□					
	Equipment restraint lines	□					
	Equipment parking areas	□					
	No parking areas	□					
	Multi use parking positions	□					
Other Deficiencies/Comments:							

Bagwell Inspection Checklist

Date:		**Location**	
Inspector:		**General Conditions:**	
Time:			

For FOD Issues, please refer to FOD Checklist — **H - Hazard**

Hazard Category	Component	H	Location	Party Responsible for Correction	Reported To (Date/Name)	Date Corrected (Date/Name)	Inspected By (Date/Initials)
Human Factors	Personnel wearing reflective outer garment	□					
	Other personnel hazards	□					
Fire Safety	Open flames	□					
	Smoking	□					
	Blocking fire hydrants	□					
	Other fire safety hazards	□					
Environmental	HAZMAT spills/leaks	□					
	Flammables not stored in a fire storage locker	□					
	Open containers with HAZMAT material	□					
	Used absorbent not disposed of properly	□					
	Damaged containers w/o secondary containment	□					
	Other environmental hazards	□					
Vehicular Movement	Towing too many carts (4 max)	□					
	Driving without a blue badge	□					
	Failure to secure cargo, mail, or FOD producing items	□					
	Speeding	□					
	Other operational safety Issues	□					
Construction	Improper construction barricading/coning	□					
	Garbage produced by construction	□					
	Other construction hazards	□					
Properties	Damage to airport property	□					
	Equipment not stowed properly	□					
	Other property issues	□					
GSE	GSE with appropriate markings identifying co.	□					
	GSE in good working order	□					
	Brakes on GSE equipment utilized	□					
	Leaking or malfunctioning equipment	□					
	Operational headlights and brake lights	□					
	Illegally parked vehicle/equipment	□					
	Other GSE/vehicle Issues	□					
Lighting	Adequate lighting for operations	□					
	Lights missing or damaged	□					
Surface Signs	Location signs	□					
	Direction signs	□					
	Other sign issues	□					

Other Deficiencies/Comments:

5. Summary of Findings

Adding a self inspection program to the ramp, cargo, and the bagwell areas to support SMS should not require additional staffing, with the exception of the Safety Manager and Safety Specialist positions which will be newly created in support of SMS. Existing AOSs will require additional classroom and hands on training to ensure consistent assessments are conducted and documentation is collected. Today the AOSs and ADMs informally monitor the ramp but with SMS and the associated ramp, cargo, and bagwell self inspection program, consistent safety reviews and documentation will result in a comprehensive safety program for both the movement and non movement areas.