Proactive Safety Management: Maintenance and Ramp Line Operations Safety Audit (LOSA)

Presented to: Regional Airline Association Conference

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ATA Maintenance and Ramp Human Factors Taskforce

Date: May 24-27, 2010



Federal Aviation Administration



→Who is involved?

→What is LOSA?

What has been accomplished?

→How it works?

→Where do we go next?

Proactive Safety Management: Maintenance and Ramp LOSA May 25-26, 2010



ATA Mx and Ramp Human Factors Task Force



























UNITED





Proactive Safety Management: Maintenance and Ramp LOSA May 25-26, 2010



What is LOSA?

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HING PROFILE

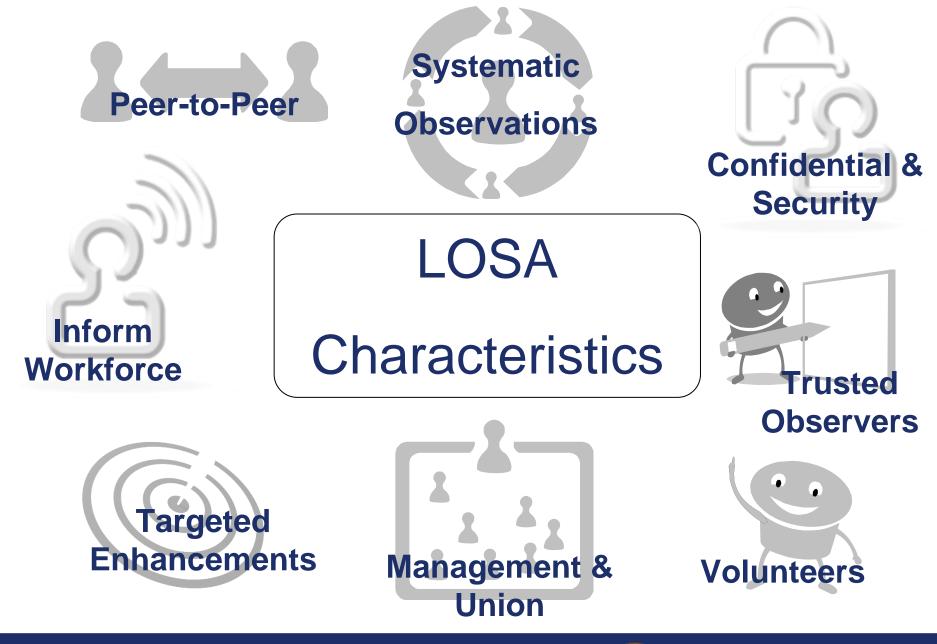
LOSA is....

• Line Operation Safety Audit



Proactive Safety Management: Maintenance and Ramp LOSA May 25-26, 2010







Accomplishments

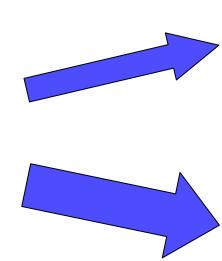
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FAA Tech Report

"A brief history of LOSA programs – from flight operations to maintenance and ramp operations"



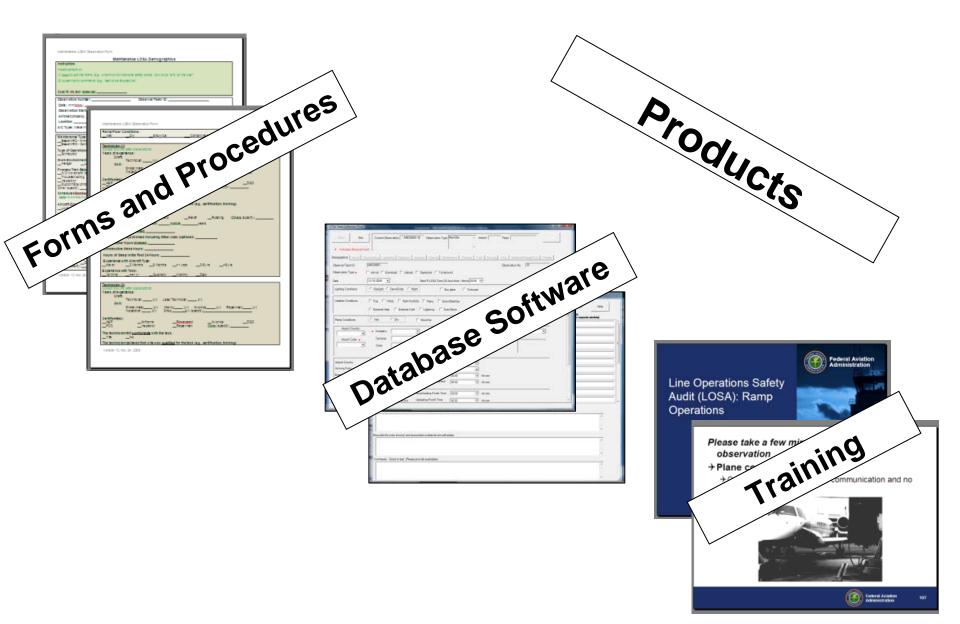




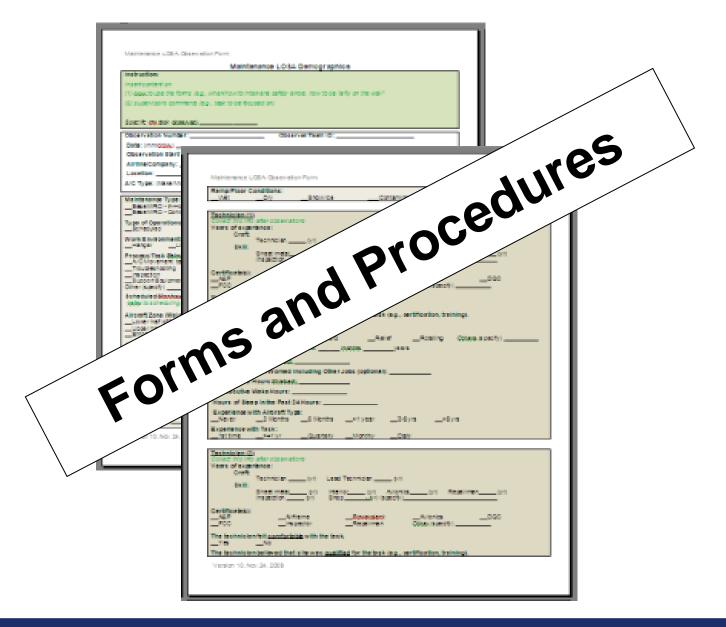


Proactive Safety Management: Maintenance and Ramp LOSA May 25-26, 2010











LOSA Forms



- Developed by reviewing and aggregating audit forms of Maintenance and Ramp LOSA (or similar programs) and related references
- Refined during taskforce discussions & beta testing

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General Guidelines

The form is a guide and a place to record data for later analysis

- → Do not need to observe everything on the forms
 - →Observing and taking "samples" of behaviors on the ramp
 - →Form is not in the spirit of a starting engine or pre-takeoff checklist
- The observer as a Subject Matter Expert (SME) will probably notice threats and errors without needing the form as a cue
- →Can take notes on the ramp and then fill in the forms later



Form Sections

- 1. Arrival
- 2. Downloading
- 3. Lavatory/Potable Water Service
- 4. Catering
- 5. Cleaning Service
- 6. Fuel Service
- 7. Uploading
- 8. Departure
- 9. A/C Maintenance (Mx)
- 10. De-Ice/Anti-Ice
- 11. Pilot Walkaround



Ramp LOSA Observation Form

ARRIVAL

Observation Number:								□Did not observ	ve this section
Scheduled Time of Arrival:			Est	imated	Time of	Arrival: _	Actual Time of Arrival:		
	(S)	, At Ris	sk N/A, S sk (AR), erve (Df	Did	Error Code	Threat Code	Threat Effectively Managed Y/N	Error Outcome 1.Inconsequential 2.Undesired state 3.Additional error	Remarks
Pre-flight briefing (a.k.a. huddle) held	S	AR	DNO	N/A					
Ramp crew ready prior to A/C arrival	S	AR	DNO	N/A					
Arrival FOD/trash walk complete	S	AR	DNO	N/A					
Gate area cleared (clean and orderly)	S	AR	DNO	N/A					



Instructions for Use:

1. The following categories provide a number for the "Error Code" column in the Ramp LOSA Observation Form.

2. Select a letter and number combination (e.g., E/A-1= General Safety – Safety vests not used, improperly used, or in poor condition)

3. More than 1 code per item is possible

Definitions:

Threat – any condition that increases complexity of the operations and if not managed properly can decrease the safety margin.

Error – a mistake that is made when threats are mismanaged.



Error Codes

- E/A General Safety
- E/B Driving/Parking Errors
- E/C Events Usually Occurring During Prearrival and Arrival
- E/D Events Usually Occurring During Download/Upload/Servicing
- E/F Events Usually Occurring During Pushback/Departure



Ramp LOSA Observation Reference 1 – Threat Codes

Instructions for Use:

1. The following categories provide a number for the "Threat Code" column in the Ramp LOSA Observation Form.

- 2. Select a letter and number combination (e.g., A1= Aircraft A/C configuration).
- 3. More than 1 code per item is possible

Definitions:

Threat – any condition that increases complexity of the operations and if not managed properly can decrease the safety margin.

Error – a mistake that is made when threats are mismanaged.



Threat Codes

- T/A Aircraft
- T/B Ground Equipment
- T/C Communication/Interactions
- T/D Documents
- T/E Ground Based
- T/F Human Factors
- T/G Operational
- T/H Leadership & Commitment
- T/I Environmental Threats



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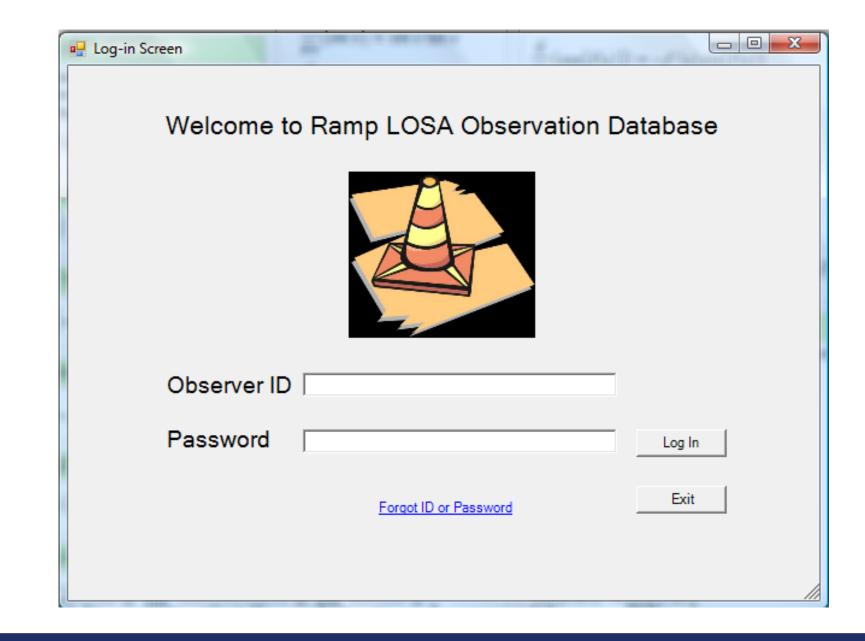
LOSA Database Software

- Basic information about the observation
- Supports all information from forms
- Analysis and report generation
- Data exportable to Excel and other statistical software
- Data will contain no identifying information on the observer or those being observed

Forms in MSWord and PDF format



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LOSA Observation	Database	ObserverID: AMC00001					
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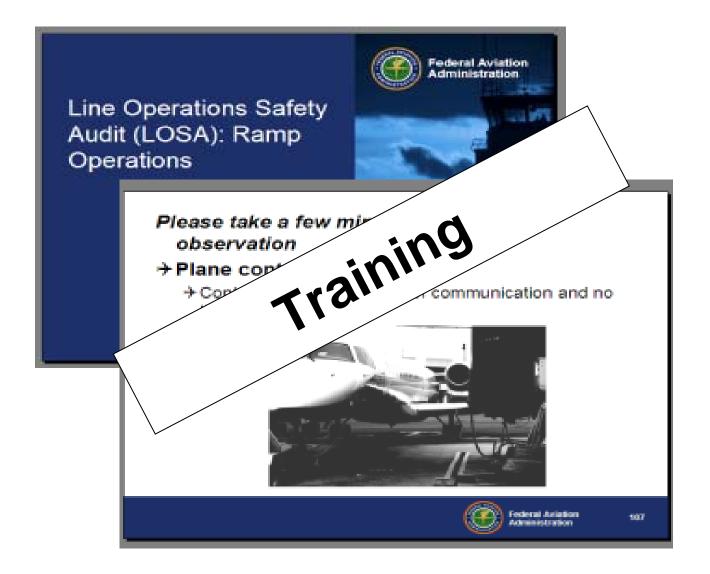


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Expected Time of Arrival	00:00	hh;mm	Expected Time of Departure	00:00	hh:mm		
Actual Time of Arrival	00:00	hh:mm	Actual Time of Departure	00:00	hh:mm		
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	Arrival	Safety Risk	Error Code		Threat Code		Effectiv Manac		Error Outcome		Remarks (Double Click to edit in separate window)
	Pre-flight briefing (a.k.a. huddle) held	N/A 💌	N/A	•	N/A	_	N/A	•	N/A	•	
	Ramp crew ready prior to A/C arrival	N/A 💌	N/A	•	N/A	-	N/A	•	N/A	•	
	Arrival FOD/trash walk complete	N/A 💌	N/A	•	N/A	-	N/A	•	N/A	•	
	Gate area cleared (clean and orderly)	N/A 💌	N/A	•	N/A	-	N/A	•	N/A	•	
	Loading bridge staged/stowed properly	N/A 💌	N/A	•	N/A	•	N/A	•	N/A	•	
	Equipment staged properly outside clearance area	N/A 💌	N/A	•	N/A	•	N/A	•	N/A	•	
	Marshaler/wingwalkers in position for A/C arrival with proper wands	N/A 💌	N/A	•	N/A	•	N/A	•	N/A	•	
	Stop line identified	N/A 💌	N/A	•	N/A	-	N/A	•	N/A	•	
	Proper hand signals used or automatic guidance system set up to marshal A/C on arrival	N/A 💌	N/A	•	N/A	-	N/A	•	N/A	•	
	A/C was "safe to approach" (e.g., engines spooled down, rotating beacon off)	N/A 💌	N/A	•	N/A	-	N/A	•	N/A	•	
	A/C properly chocked	N/A 💌	N/A	•	N/A	-	N/A	•	N/A	•	
	ibe the threat(s). How did the crew manage or mismanage be the crew error(s) and associated undesired aircraft s		?								م ب
cri	be the Grew error(s) and associated undesired alfCraft s	lates									۵ ۳
	nents - Good or bad (Please provide examples)										











>Threat and Error Management (TEM)

→ LOSA Procedures

Scenario-based Practice





Beta Testing

→ Forms

→ Maintenance – August 2009
→ Ramp – October 2009
→ Cargo – March 2010

→ Software



Observation Example

Proactive Safety Management: Maintenance and Ramp LOSA May 25-26, 2010



Situation

- On December 16, 2009, a B737-700 departed Tampa, FL en route to Edmonton, AB. The Captain reported smoke in the cockpit and was diverted to OKC for maintenance at 9:30 am.
- Captain had waited 2 minutes before the ramp crew arrived at the gate to be marshaled to the gate. There was no huddle before the aircraft arrived, wingwalkers were not in place prior to arrival, and no FOD walk was completed.



LOSA Observation Form

ARRIVAL

Observation Number: <u>12-03-01</u>								□Did not observ	ve this section	
Scheduled Time of Arrival:			<u>Esti</u>	mated	Time of	Arrival:	<u>A</u>	Actual Time of Arrival:		
	(S)	, At Ris	sk N/A, S sk (AR), erve (DN	Did	Error Code	Threat Code	Threat Effectively Managed Y/N	Error Outcome 1.Inconsequential 2.Undesired state 3.Additional error	Remarks	
Pre-flight briefing (a.k.a. huddle) held	S	AR	DNO	N/A						
Ramp crew ready prior to A/C arrival	S	AR	DNO	N/A						
Arrival FOD/trash walk complete	s (AR	DNO	N/A						
Gate area cleared (clean and orderly)	s	AR	DNO	N/A						



LOSA Observation Form

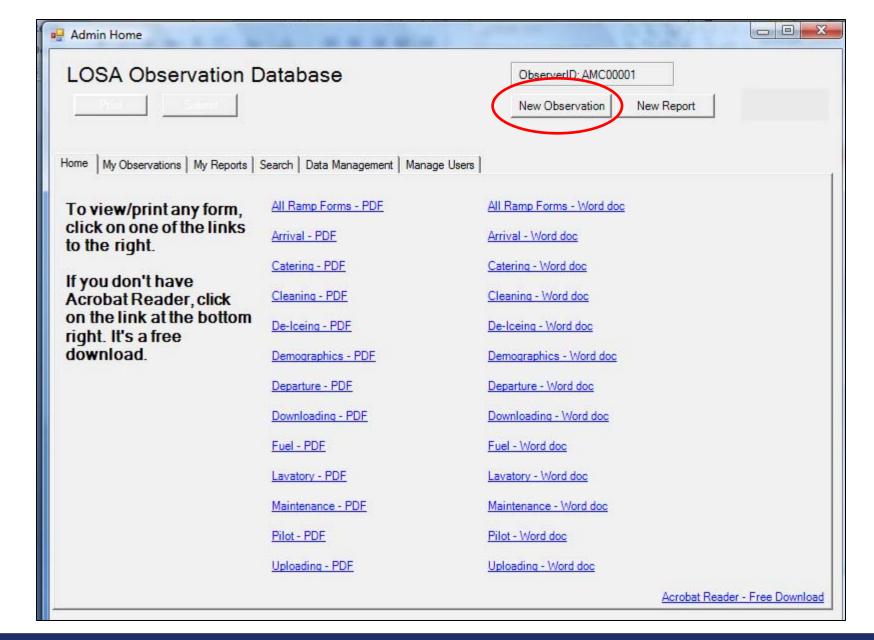
ARRIVAL

Observation Number:_____

Did not observe this section

Scheduled Time of Arri	Scheduled Time of Arrival: Estimation						<u>A</u>	<u>ctual</u> Time of Arriv	al:
	S	afe (S (AR),	Risk N 6), At R Did No ve (DN	isk ot	Error Code	Threat Code	Threat Effectively Managed Y/N	Error Outcome 1.Inconsequential 2.Undesired state 3.Additional error	Remarks
Pre-flight briefing (a.k.a. huddle) held	S	AR	DN O	N/A	E/C-1			1	
Ramp crew ready prior to A/C arrival	S	AR	DN O	N/A	€/C-5.2	T/G-2	N	3	No one there to marshal
Arrival FOD/trash walk complete	S	AR	DN O	N/A	€/C-2			1	
Gate area cleared (clean and orderly)	S	AR	DN O	N/A					







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Save Exit Current Observation AMC00001-10 Observation Type New-Obs Airport H • Indicates Required Field	lelp
Demographics Arrival Downloading Uploading Departure Lavatory Catering Maintenance Cleaning Fuel De-icing Pilot Threats/Error Summary	
Observer/Team ID AMC00001 Conservation Number:	•
Observation Type 🔹 🦷 Arrival 🗍 Download 🗍 Upload 📄 Departure 🦷 Turnaround	
Date of Observation: * 3/31/2010 🔹 Observation Start Time (24 hour-time - hhmm) * 🛄 00:00 🚊 Observation End Time: * 🗐 00:00	
Type of Operation INormal IRROP Domestic International	
Lighting Conditions 🖸 Daylight O Dawn/Dusk O Night 🗖 Sun glare 🗖 Overcast 🗖 Artificial Light	
Weather Conditions Clear Fog Windy High Humidity Rainy Snow/Sleet/Ice Extreme Heat Extreme Cold Lightning Dust Storm Others(Specify):	E
Ramp Conditions C Wet C Dry Snow/Ice C Contaminated N/A	
Airport Country: Company Country: United States of Ame ▼ Gate: Irregular Operations:	
Airport Code: Company: Aircraft #: Irregular Operations	
Terminal: Aircraft Type: Explanation:	
Zone: Aircraft Series:	
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Arriving From Departing To	
Scheduled Time of Arrival	
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Save Exit Current Observation AMC00001-10 Observation Type Arrival Airport KOKC Indicates Required Field Additional Threat	
Demographics Arrival Downloading Uploading Departure Lavatory Catering Maintenance Cleaning Fuel De-icing Pilot Threats/Error Summary	
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Date of Observation: * 3/31/2010 🗸 Observation Start Time (24 hour-time - hhmm)* 🔽 14:00 🚊 Observation End Time: * 🕅 14:45 🚊	
Type of Operation 🔽 Normal 🔲 IRROP 🔲 Domestic 🦳 International	
Lighting Conditions 🕞 Daylight C Dawn/Dusk C Night 🗌 Sun glare 🔲 Overcast 🔲 Artificial Light	
Weather Conditions Image: Clear in Fog in Windy in High Humidity in Rainy in Snow/Sleet/Ice Image: Extreme Heat in Extreme Cold in Lightning in Dust Storm in Others (Specify):	III
Ramp Conditions O Wet O Dry Snow/Ice O Contaminated N/A	
Airport Country: Company Country: United States of Ame Gate: Irregular Operations:	
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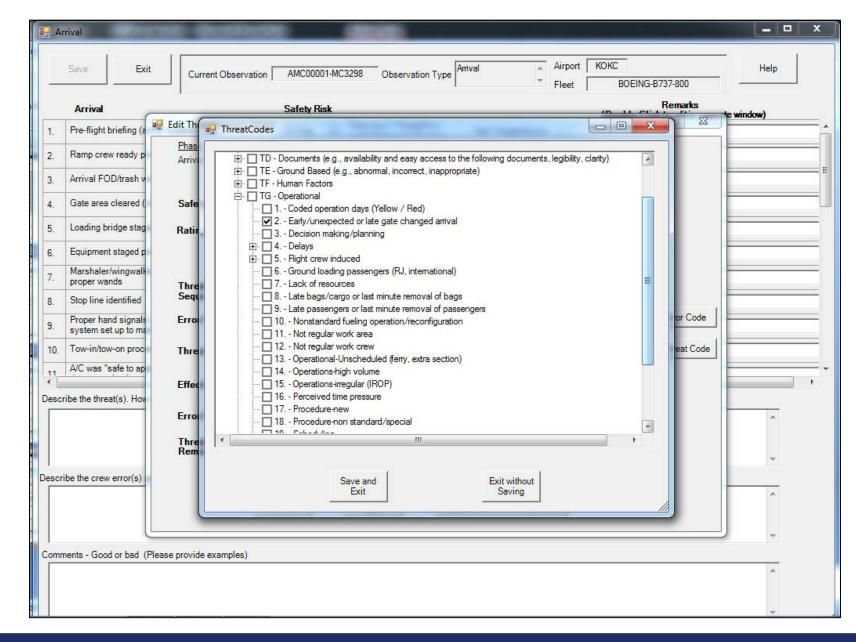


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			Aircraft Series:	B737-700	
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	(Agent 1)		(Agent 2)		
Ramp Crew Shift Start Time	00:00	hh:mm	00:00	h:mm	
Length of Shift		-			
Time Into Shift					
Trainee	No	7			



	An	ival								
		Save Exit Current Observation	AMC00001-MC3298 Observation Type Arrival Airport KOKC Fleet BOEING-B737-800	Help						
		Arrival	Safety Risk Remarks (Double Click to edit in separate	window)						
	1.	Pre-flight briefing (a.k.a. huddle) held	N/A There are 0 Threat/Error combinations for this line.	^						
	2.	Ramp crew ready prior to A/C arrival	N/A e are 0 Threat/Error Safe binations for this line. Edit Threats/Errors							
	3.	Arrival FOD/trash walk complete	At Risk re are 0 Threat/Error Edit Threats/Errors	======================================						
	4.	Gate area cleared (clean and orderly)	N/A There are 0 Threat/Error combinations for this line.							
	5.	Loading bridge staged/stowed properly	N/A There are 0 Threat/Error combinations for this line.							
	6.	Equipment staged properly outside clearance area	N/A There are 0 Threat/Error combinations for this line.							
	7.	Marshaler/wingwalkers in position for A/C arrival with proper wands	N/A There are 0 Threat/Error combinations for this line.							
	8.	Stop line identified	N/A There are 0 Threat/Error combinations for this line.							
	9.	Proper hand signals used or automatic guidance system set up to marshal A/C on arrival	N/A There are 0 Threat/Error combinations for this line.							
	10.	Tow-in/tow-on procedures followed	N/A There are 0 Threat/Error combinations for this line.							
	11 ∢	A/C was "safe to approach" (e.g., engines spooled	There are 0 Threat/Error Edit Threats/Errors							
1	Describe the threat(s). How did the crew manage or mismanage the threat(s)?									
C	escri	be the crew error(s) and associated undesired aircraft s	tates							
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Comments - Good or bad (Please provide examples)										
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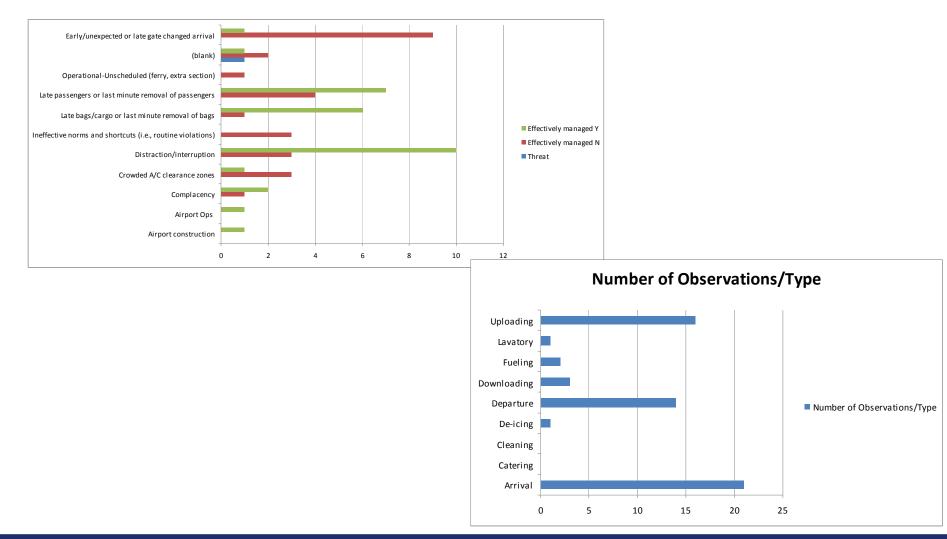
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2.	Ramp crew ready p	Phase Line Numbe Arrival 2	r <u>Description</u> Ramp crew ready prior	r to A/C arrival				
3.	Arrival FOD/trash							
4.	Gate area cleared	Safety Risk	At Risk					
5.	Loading bridge sta	Rating Remarks			~			
6.	Equipment staged				+			
7.	Marshaler/wingwal proper wands	Threat/Error	1					
8.	Stop line identified	Sequence Number					1	
9.	Proper hand signal system set up to m					Select an Error cod		
10.	and the second second second	1 2010/07/07/07/07	TG2 Early/unexpecte	ed or late gate changed arrival		Select a Threat cod	e Clear Threat Code	
11 ∢ Desc	A/C was "safe to an cribe the threat(s). Ho	Effectively Managed	No					
		Error Outcome	N/A N/A	•				^
		Threat/Error Remarks	Inconsequential Undesired State Additional Error		*			
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9.	system set u									
10.	Tow-in/tow-o	P								
11	A/C was "saf									-
	ribe the threat(
Descr	ibe the crew er	18								
										*
Com	n <mark>ents - Good</mark> o	or bad (P	lease provide examp	les)						
										*
		_	16	11						*



Reporting Features





Next Step

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Next Steps

Beta Tests

- Regional Carriers
- International
- Complete Training
- Complete Software



Questions?

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