

Attachment 18

External Safety Audits (DOD and TOPS)



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS AIR MOBILITY COMMAND

HQ AMC/A3B  
[REDACTED]

Scott AFB IL 62225-5302

NOV 22 2011

[REDACTED]  
Chief Executive Officer  
Sundance Helicopters, Inc.

[REDACTED]  
Las Vegas NV 89119

Dear Mr. Pietropaulo

Thank you for your cooperation during our 12-16 September 2011 survey of your company. The Department of Defense (DOD) Commercial Airlift Review Board has approved Sundance Helicopters, Inc., for continued participation in the DOD Air Transportation Program. A copy of our survey report is attached.

Sincerely

[REDACTED]  
MERLIN L. LYMAN  
Chief, DOD Commercial Airlift Division

Attachment:  
Survey Report

cc:  
FAA

**DEPARTMENT OF DEFENSE  
CAPABILITY SURVEY OF  
SUNDANCE HELICOPTERS INC.**

**SEPTEMBER 2011**



The integrity and objectivity of the information presented in this capability survey is the responsibility of the Department of Defense Commercial Airlift Division (HQ AMC/A3B). This office maintains a system composed of inspection and internal data collection. All data is obtained from public sources, those provided by the carrier and officials of the Department of Transportation. The review was conducted in accordance with the guidance contained in the Department of Defense Directive 4500.53, the Air Mobility Command supplements, and the pertinent HQ AMC/A3B operating instructions.

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FOR OFFICIAL USE ONLY

SUMMARY

Personnel from the Department of Defense (DOD) Commercial Airlift Division conducted a biennial survey of Sundance Helicopters, Inc., on 14-15 September 2011. The following matrix summarizes results of the survey:

OPERATIONS (O)	DOES NOT MEET STANDARDS	MEETS STANDARDS AFTER CORRECTIVE ACTION	MEETS STANDARDS	MAINTENANCE (M)
MANAGEMENT			O,M	MANAGEMENT
SAFETY			O,M	PERSONNEL
FLIGHT OPS		M*	O	QUALITY ASSURANCE
CREW HIRING			O,M	INSPECTION ACTIVITY
TRAINING			O,M	TRAINING
CAPT UPGRADE			O,M	CONTROL & PLANNING
SCHEDULING			O,M	ACFT MX PROGRAM
IN-FLIGHT PERF			O,M	ACFT RECORDS
OPS CONTROL			O,M	ACFT APPEARANCE
CHARTERS			O,M	FUELING & SERVICING
SECURITY			O,M	MANUALS
CONTRACT REQ			O,M	FACILITIES/CAPABILITIES

\* Denotes Meets Standards after Letter of Concern (LOC) follow up.

The following is a list of discrepancies that required corrective actions by Sundance Helicopters, Inc., to meet the DOD Commercial Air Transportation Quality and Safety Requirements (Plain text discrepancies were corrected on-site, bold text required LOC follow-up):

Maintenance

Quality Assurance/Maintenance Inspection

- The system to continuously analyze the performance and effectiveness of maintenance activities was inadequate.
- **The required system to evaluate contract vendors, suppliers, and their products was not sufficient.**

**FACTUAL DATA**  
**SUNDANCE HELICOPTERS, INC.**

- Main Base of Operations: Las Vegas NV
- Main Base of Maintenance: Las Vegas NV
- Type of Survey: Biennial
- Date of Survey: 14-15 September 2011
- Certificate Number: KBMA477F, authorized FAR Part 135 On-Demand Rotorcraft  
(Pax/Cargo)
  - Certificate Status: Active as of 18 November 1985
- Employs:
  - 42 line pilots and 4 staff pilots
  - 17 certified mechanics
- Type of Equipment: 18 AS-350s and 4 EC-130s
- Type of Service Provided to DOD: Provides rotary-wing passenger charter.

**MANAGEMENT**

**OPERATIONS MANAGEMENT**

**Evaluation: Meets Standards**

- Managers are highly qualified and have many years of flight and management experience.

**Internal Audit Program**

- Company's method of identifying in-house deficiencies and measuring compliance with policies and procedures consists of quarterly audits followed by an annual audit contracted and conducted by Tour Operators Program of Safety approved auditors.
  - Discrepancies are tracked to closure and analyzed to determine the root cause of the deficiency.

**MAINTENANCE MANAGEMENT**

**Evaluation: Meets Standards**

- Maintenance management team is highly experienced.
  - Personnel average more than 25 years in the aviation industry.
- Company structure and lines of authority are well defined.
- Excellent communications exist with both operations and mechanics.

**OPERATIONS**

**SAFETY PROGRAM**

**Evaluation: Meets Standards**

- The director of safety is the primary focal point for all safety issues and has some formal safety training.
  - He reports to the chief executive officer for all safety matters, interacts with other staff through meetings, and the pilot force through daily informal contact.
- Awareness of safety program features is bolstered by the operations manual and a safety manual outlining the program's key functions.

**FLIGHT CREW HIRING**

**Evaluation: Meets Standards**

**Pilots**

- Screening process for new-hires includes background checks and an interview by both operations management and a senior pilot. Usually, they are dealing with someone they have knowledge of or someone recommended to them by a competent source.
- The minimum experience requirement is 1,000 hours pilot-in-command helicopter time.
- Company usually hires around 12 pilots a year; hiring is usually done in the spring in order to train pilots and have them ready for the busy summer season.

**TRAINING**

**Evaluation: Meets Standards**

**Facilities**

- Ground and flight training is accomplished at company headquarters.
- Flight training is accomplished by company instructors in company aircraft.
- All pilots go through contracted specialized landing training annually.

**Pilots**

- Company has seven instructors, three of which are also check airmen.
- Pilots accomplish single-pilot crew resource management training on a recurring basis.
- HAZMAT recognition training is completed annually.
- Cargo-sling and mountain operations have a specialized training curriculum; only the most experienced pilots obtain this training.

**CAPTAIN UPGRADE**

**Not Applicable**

- Pilots are hired as captains; all operations are single seat.

**Mission Monitoring**

- Monitoring is accomplished utilizing an extremely effective automated system; Spider Tracks System provides real-time notification of overdue aircraft to all managers automatically.
- Flight followers provide effective daylight coverage, 7 days a week.
- Company had available a copy of the current DOD notification procedures.

**Load Manifests**

- Actual weights are used for all company flights, including all DOD charters.
- A review of load manifests from the 3-month file revealed no discrepancies.

**CHARTER PROCEDURES**

**Evaluation: Meets Standards**

- Charter procedural guidance ensures compliance with DOD requirements.

**SECURITY**

**Evaluation: Meets Standards**

- Security is bolstered by roving airport security, fenced ramp, night watchman, locking gas caps on helicopters, and lockout controls and pedals on contract and charter helicopters.

**CONTRACT REQUIREMENTS**

**Evaluation: Meets Standards**

- Company satisfies the specific aircrew and equipment requirements of their DOD contract.

**MAINTENANCE**

**PERSONNEL**

**Evaluation: Meets Standards**

- Highly qualified mechanic workforce is in place with low turnover.
  - Airframe and powerplant licenses are verified through the FAA by quality assurance manager (QAM).



**TRAINING**

**Evaluation: Meets Standards**

- Sundance's training program provides highly qualified mechanics to support maintenance operations.
  - The QAM tracks training using a computer, provides new employees formal indoctrination, and monitors special authorizations for critical tasks.
  - Aircraft technical training is accomplished through on-the-job training.
    - Initial and documented annual recurrent engine-run training is provided to mechanics by the chief pilot.
  
- Review of training records was satisfactory.

**CONTROL & PLANNING**

**Evaluation: Meets Standards**

- Production manager is responsible for monitoring and controlling maintenance.
  - Process utilizes a computerized database to monitor current maintenance status.
  
- Director of Maintenance provides strong management of minimum equipment list (MEL) discrepancies.
  
- Maintenance forecasting and planning are the responsibility of the production manager.
  - Daily reports and monthly forecasts are generated electronically.

**AIRCRAFT MAINTENANCE PROGRAM**

**Evaluation: Meets Standards**

- Sundance maintains its aircraft under the manufacturer's program.
  - All inspections are normally performed by company maintenance personnel.
  
- Mechanical-performance monitoring is accomplished through an adequate daily review of maintenance actions.
  
- Production manager and QAM are responsible for control and oversight of FAA-issued airworthiness directives (AD).
  - Applicable ADs and service bulletins are tracked via a computerized database; review of AD compliance records was satisfactory.

- Facilities are maintained in good condition and provide satisfactory support.
- Receiving inspection procedures verify that parts are only received from approved vendors.
- Review of components found all to be properly tagged, environmentally protected, and traceable to an FAA-approved source.
- Documented shelf-life program is in place; no overdue items were available for issue.
  
- Management of scrap components is satisfactory.

# AMC COCKPIT MISSION OBSERVER PROGRAM

(Commercial Air Carrier Operational Checkride)

## AUTHORITY

The authority for this inspection is contained in the Defense Authorization Act as amended Nov 86 (Public Law 99-6611).  
The inspection will be accomplished in accordance with the guidance provided in HQ AMC/XOBS operating instructions.

SEND COPY TO: (Check (X) appropriate addressee(s))

MTMC

FAA/POI

CARRIER

## CARRIER

1. NAME OF CARRIER SUNDANCE HELICOPTERS INC - KBMA	2. MISSION NUMBER AND DATE 65 15-SEP-2011	3. TYPE OF AIRCRAFT / TAIL NUMBER AS-350 / N507SH
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4. ROUTE (ICAO) KLAS-Grand Canyon Bluff-KLAS	5. TOTAL FLIGHT TIME 1.3
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## 6. CREW MEMBERS

a. CAPTAIN'S NAME LOUIS HALL	b. FIRST OFFICER'S NAME	c. SECOND OFFICER'S NAME	d. SENIOR FLT ATTENDANT'S NAME
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## 7. OBSERVER

a. NAME Mr Guy Dempsey	b. SIGNATURE 
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## LEGEND

U = Unsatisfactory (Explain)      S = Satisfactory      E = Exceeds General Industry Practices  
P = Potential Problem (May need further investigation)      I = Information      N = Not observed

CODE	AREA OBSERVED	BRIEF COMMENTS
<b>Mission</b>		
S	Predeparture Crew Activities	
S	Passenger Boarding	
S	Aircraft Exterior Appearance	
N	Cabin Condition	
N	Walk-Around Inspection	
<b>Flight Deck</b>		
S	Cleanliness	
S	Operations and Maintenance Manuals	
S	Registration and Airworthiness Certificates	
S	Maintenance Log	
S	Instrumentation	
S	Emergency Equipment	
S	Planned Fuel Load	
S	Weight and Balance	
S	Manifest / Hazmat	

**AMC RAMP INSPECTION CHECKLIST**

JULIAN/CALENDAR DATE 15-SEP-2011	TIME AIRCRAFT INSPECTION COMPLETE 12:55	SCHEDULED DEPARTURE TIME	INSPECTION LOCATION AND STATION CODE KLAS-MC CARRAN INTL	INSPECTION <input checked="" type="checkbox"/> DEPARTURE <input type="checkbox"/> EN ROUTE
CAM/MISSION NUMBER NA	CARRIER SUNDANCE HELICOPTERS INC - KBMA	AIRCRAFT TYPE EC-130	TAIL NUMBER N399SH	

TYPE INSPECTION

<input checked="" type="checkbox"/> PAX	<input type="checkbox"/> CARGO	<input type="checkbox"/> INTERNATIONAL	<input checked="" type="checkbox"/> DOMESTIC	<input type="checkbox"/> SAAM/EXERCISE
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LEGEND: N/R = NOT REQUIRED, MD = MINOR DISCREPANCY S = SATISFACTORY, U = UNSATISFACTORY	N/R	S	MD	U	REMARKS
<b>I. FLIGHT DECK INSPECTION ITEMS</b>					45. EXPLAIN ALL UNSATISFACTORY, MINOR DISCREPANCY, NOT REQUIRED ITEMS AND CORRECTIVE ACTION TAKEN BY CARRIER. NOTIFY THE CREW OF ALL DISCREPANCIES NOTED AND OPEN MEL ITEMS. UPON REQUEST, GIVE A COMPLETED COPY TO MAINTENANCE CREW. (ITEMS MARKED WITH (1) WILL BE CONFIRMED BY FLIGHT CREW)
1. REVIEW LOG BOOK FOR MEL, REPEAT TREND ITEMS AND AIRWORTHINESS CERTIFICATE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. OPERATIONS AND MAINTENANCE MANUALS AVAILABLE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. FLIGHT DECK FOR CLEANLINESS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. WINDSHIELDS AND WINDOWS FOR CONDITION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. CREW SEATS AND SAFETY BELTS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. INSTRUMENTS - FLIGHT / ENGINE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. CREW / SMOKE AND OXYGEN MASKS FOR CONDITION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. FLIGHT DECK / FIRE EXTINGUISHER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. EMERGENCY AX - FLIGHT DECK	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. CREW CHECKLISTS / NORMAL AND EMERGENCY	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. OXYGEN QUANTITY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. WEATHER AVOIDANCE RADAR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13. RADIOS NAV / COMM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14. DE-ICING SYSTEM OPERATION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15. HEATING AND COOLING SYSTEM	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16. PRESSURIZATION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>II. MAIN CABIN INSPECTION ITEMS</b>					1. RATED: MEETS STANDARDS MEL: 0
17. GENERAL CONDITION / CLEANLINESS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
18. SECURITY OF SEATS IN TRACK	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
19. SAFETY BELTS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
20. MAIN CABIN FIRE EXTINGUISHER	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
21. FLASHLIGHTS (1 PER CREW MEMBER)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
22. PASSENGER OXYGEN EQUIPMENT AND QUANTITY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
23. EMERGENCY EXITS - MARKINGS AND ACCESSIBILITY	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
24. ESCAPE SLIDES AND ROPES	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
25. EMERGENCY LIGHTING FOR OPS AND INTENSITY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
26. MEGAPHONE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
27. LIFE RAFTS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
28. SIGNAL FLARES	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
29. EMERGENCY RADIO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
30. LIFE VESTS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
31. SECURITY OF MISCELLANEOUS EQUIPMENT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>III. AIRCRAFT EXTERIOR INSPECTION ITEMS</b>					
32. GENERAL AIRFRAME CONDITION / CLEANLINESS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
33. SECURITY OF DOORS AND PANELS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
34. EMERGENCY EXIT - MARKINGS / INSTRUCTIONS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
35. LIGHTS / LANDING, NAV AND ANTI-COLLISION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
36. ENGINE CONDITION AND COWLING INSTALLATION	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
37. LEAKS / FUEL, OIL, HYDRAULIC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
38. FLIGHT CONTROL SURFACES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
39. WHEEL WELL AREAS FOR CONDITION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
40. TIRES AND BRAKES FOR CONDITION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>IV. OTHER INSPECTION ITEMS NOT LISTED ABOVE</b>					
41.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

NAME, GRADE, EMPLOYEE #, UNIT, PHONE NUMBER Roberts, Lonny Mr ,HQ AMC/A3BS , 779-2091	SIGNATURE
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**AMC RAMP INSPECTION CHECKLIST**

JULIAN/CALENDAR DATE 15-SEP-2011	TIME AIRCRAFT INSPECTION COMPLETE 12:30	SCHEDULED DEPARTURE TIME	INSPECTION LOCATION AND STATION CODE KLAS-MC CARRAN INTL	INSPECTION <input checked="" type="checkbox"/> DEPARTURE <input type="checkbox"/> EN ROUTE
CAMMISSION NUMBER NA	CARRIER SUNDANCE HELICOPTERS INC - KBMA	AIRCRAFT TYPE AS-350	TAIL NUMBER N53SH	

TYPE INSPECTION				
<input checked="" type="checkbox"/> PAX	<input type="checkbox"/> CARGO	<input type="checkbox"/> INTERNATIONAL	<input checked="" type="checkbox"/> DOMESTIC	<input type="checkbox"/> SAAM/EXERCISE

LEGEND: N/R = NOT REQUIRED, MD = MINOR DISCREPANCY  
S = SATISFACTORY, U = UNSATISFACTORY

	N/R	S	MD	U	REMARKS
<b>I. FLIGHT DECK INSPECTION ITEMS</b>					
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2. OPERATIONS AND MAINTENANCE MANUALS AVAILABLE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. FLIGHT DECK FOR CLEANLINESS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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41.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

NAME, GRADE, EMPLOYEE #, UNIT, PHONE NUMBER  
 Roberts, Lonny Mr ,HQ AMC/A3BS, 779-2091  
 AMC FORM 234, 20020601

SIGNATURE

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member:**

**Date:**

OUT-BRIEFING		DATE:
Name	Title	
KYLE REYNOLDS	DIRECTOR OF MAINTENANCE	
LAWRENCE PIETRAPAULO	CEO	
LARRY HALL	TRAINING CAPTAIN	
KURT BARTON	DIRECTOR OPS	
BURL BOYD	CHIEF PILOT	

Print list of all Operator personnel present

TOPS AUDIT RESULTS		
<b>AUDIT RESULTS</b>	<input checked="" type="checkbox"/>	Recommended for TOPS membership
	<input type="checkbox"/>	Recommended for TOPS membership (After items listed above have been corrected to TOPS standards).
	<input type="checkbox"/>	Not Recommended for TOPS membership (Operator does not meet TOPS Standards. Re-audit recommended.) See attached list of discrepancies
<b>OPERATOR REPRESENTATIVE:</b>	<b>SIGNATURE:</b>	
	<b>NAME:</b>	[REDACTED]
		Please Print
	<b>TITLE:</b>	Auditor
		Please Print
<b>TOPS AUDITOR:</b>	<b>SIGNATURE:</b>	[REDACTED]
	<b>NAME:</b>	Lawrence L. Pietrapaulo
		Please Print

FOR INTERNAL USE ONLY		
<b>Approved by the Membership Review Committee</b>	Signature	Date
<b>Approved by the TOPS Board of Directors</b>	Signature	Date

Findings, comments and narrative to be provided in Audit Report to be submitted with this audit form.

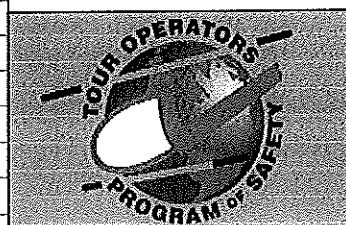
JEN - Please attach to  
SUNDANCE AUDIT

# TOPS AUDIT FORM REGULAR MEMBER – 2011

TOPS Member: Sundance Helicopters

Date: 7/11-12/2011

Date:	July 11-12, 2011
Company:	Sundance Helicopters
Address:	[REDACTED]
City, State, Zip	Las Vegas, NV. 89119
Telephone:	[REDACTED]
FAX:	[REDACTED]



IN-BRIEFING: Name/Title: **Kurt Barton, Director of Operations**

AREAS OF INTEREST: **All**

Key Personnel			
Title	Name	How long in position (yrs)?	How long with company (yrs)?
CEO/President:	Lawrence Pietropaule	3	3
Director of Operations:	Kurt Barton	8	8
Director of Maintenance:	Kyle Reynolds	1	11
Safety Manager:	Michael Flaherty	4	6

## GENERAL OPERATIONS

1. Regional areas of operation: **Contiguous United States and District of Columbia**
2. Who has operational control? **Operational management team**
3. List air tour bases include name of Base Manager and Field Elevation

Base	Elevation	Manager	Aircraft Make/Model Assigned	Number
KLAS	2100 Ft.	Kurt Barton	AS-350	18
			As-130	4
1G4	4825	Ray Medina	Aircraft based in KLAS	

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

## Audit Areas

*Bullet points under the audit categories summarize TOPS Program requirements and indicate areas required to be reviewed during the audit. Refer to the TOPS Program of Safety for specific requirements.*

*For each section, use the 1-4 scale. 1 Non-compliance with TOPS Standards, 2 Meets TOPS Standards with areas for improvement, 3 Meets TOPS standards, 4 Meets TOPS standards with areas that exceed. Comments are required for each audit category.*

<b>A.</b>	<b>MANAGEMENT</b>			
	<b>1. Non-compliance with TOPS Standards</b>	<b>2. Areas for improvement</b>	<b>3. Meets TOPS standards</b>	<b>4. Exceeds TOPS standards</b>
	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
<b>1.</b>	Key Personnel Qualification			<i>Area audited?</i> X
<b>2.</b>	Establishment of Clear Operating Standards based on safe and professional procedures			<i>Area audited?</i> X
<b>3.</b>	Coordination of routes, position reporting and other safety procedures with other operators and appropriate agencies			<i>Area audited?</i> X
<p><b>Comment: Very well experienced management team with experience not only with Sundance but with other operators. These members of management bring a broad level of experience to the company.</b></p>				



# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<b>B.</b>	<b><i>SAFETY</i></b>			
	1. Non-compliance with TOPS Standards	2. Areas for improvement	3. Meets TOPS standards	4. Exceeds TOPS standards
	<input type="checkbox"/>	<input type="checkbox"/>	X	X
<b>1.</b>	Top Management demonstrates a clear and consistent commitment to Safety as the primary standard by which operations are conducted			Area audited? X
<b>2.</b>	Safety Manager as part of top management			Area audited? X
<b>3.</b>	Effective Safety Management Program including a safety reporting program to identify hazards before an incident or accident happens			Area audited? X
<b>4.</b>	Emergency Response Plan			Area audited? X
<b>5.</b>	Safety Training including Human Factors Training			Area audited? X
<p>Comments: <b>The SMS program is new as of Jan 11, 2011.</b></p> <p><b>Human factors is taught through the company training captain on a regular basis.</b></p> <p><b>All top managers are taught the SMS program and buy into it.</b></p> <p><b>Spider tracks are incorporated on the flight following process and are overlaid over Google Earth.</b></p> <p><b>The company has secret shoppers that are experienced in aviation ride along and report their findings on a quarterly basis. The passengers are unknown to the employees they come in contact with.</b></p> <p><b>NOTE: It was suggested that TOPS adopt a standard TOPS SMS program dealing with all four subjects. TOPS is a safety orientated group and I feel this suggestion warrants discussion.</b></p>				

# TOPS AUDIT FORM REGULAR MEMBER – 2011

TOPS Member: Sundance Helicopters Date: 7/11-12/2011

C.	<i><b>FLIGHT OPERATIONS</b></i>			
	1. Non-compliance with TOPS Standards	2. Areas for improvement	3. Meets TOPS standards	4. Exceeds TOPS standards
	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
1.	Operational Control			Area audited? X
2.	Crew and flight procedures standardized to include crew coordination, routes, weather minimums, IMC recovery procedures, and appropriate flight			Area audited? X
3.	Passenger briefings and escorting during ramp operations			Area audited? X
4.	Aircraft properly equipped for the mission and the area being flown			Area audited? X
5.	Emergencies Procedures unique to the mission profile flown			Area audited? X
6.	Operator plan for ongoing oversight of tour routes and flight operations			Area audited? X
<p><b>Comments: Operational control is obviously in the hands of the people who are required to maintain operational control over the fleet.</b></p> <p><b>Flight locating and tracking is done by Spider Tracks. This makes positive identification of flight tracks and aircraft location at any time. Back up and supplemental flight following is two way voice.</b></p> <p><b>Passengers are escorted to and from aircraft on every flight.</b></p> <p><b>Only one aircraft is allowed to hover on the ramp at any given time.</b></p> <p><b>The company uses secret shoppers at a minimum of once a quarter to identify problems if they exist. These shoppers are aviation savvy and are reliable. Also searches of U-Tube bring out some interesting items to be investigated.</b></p>				

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<b>D.</b>	<b>PILOTS</b>			
	1. Non-compliance with TOPS Standards	2. Areas for improvement	3. Meets TOPS standards	4. Exceeds TOPS standards
	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
<b>1.</b>	Pilot qualifications, staffing and crew rest			<i>Area audited?</i> <b>X</b>
<b>2.</b>	Pilot Training and documentation			<i>Area audited?</i> <b>X</b>
<b>3.</b>	Pilot Professionalism			<i>Area audited?</i> <b>X</b>
<p><b>Comments: Pilot qualifications meet TOPS standards. At this time the pilot staff is relatively stable and the average age of the pilots and total flight times are above the norm, for past years.</b></p> <p><b>Professionalism among the pilot staff is very high.</b></p> <p><b>Pilot training is above what is required by the FAA and is done in house with outside instructors visiting and training the pilots each year.</b></p>				

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<i>E.</i>	<i>FLIGHT COORDINATION</i>			
	1. Non-compliance with TOPS Standards	2. Areas for improvement	3. Meets TOPS standards	4. Exceeds TOPS standards
	<input type="checkbox"/>	<input type="checkbox"/>	X	X
1.	Manifesting procedures			<i>Area audited?</i> X
2.	Flight Following			<i>Area audited?</i> X
3.	Emergency Response Plan			<i>Area audited?</i> X
4.	Flight following personnel training and documentation			<i>Area audited?</i> X
<p><b>Comments: Manifesting is done and all passengers are weighed at check in. The weight and balance is checked and each passenger is loaded to meet the CG criteria.</b></p> <p><b>Flight following is done with Spider Tracks and voice.</b></p> <p><b>There is a trained person who directs the aircraft on the heliport. This person has a radio and over sees all ramp activities, clears aircraft and supervises ramp activities.</b></p> <p><b>The emergency response plan is part of the SMS program and is effective.</b></p>				

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<b>F.</b>	<b>HELIPORT</b>			
<b>1. Non-compliance with TOPS Standards</b>	<b>2. Areas for improvement</b>	<b>3. Meets TOPS standards</b>	<b>4. Exceeds TOPS standards</b>	
<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	
<b>1.</b>	Meets FAA standards		<i>Area audited?</i>	X
<b>2.</b>	Properly equipped and maintained		<i>Area audited?</i>	X
<b>3.</b>	Provides a safe and functional area for passenger movement and flight operations		<i>Area audited?</i>	X
<p><b>Comments: The landing areas meet FAA standards and are clear of FOD and are safe. They are supervised and all loading is done with assistance of ground personnel or the pilot if the aircraft is shut down.</b></p> <p><b>The aircraft are all properly equipped for the type flying they do.</b></p> <p><b>3. See previous pages.</b></p> <p><b>Fueling at KLAS is done using Signature and fueling at Grand Canyon West is and in house activity.</b></p>				

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<b>G.</b>	<b>MAINTENANCE</b>			
<b>1. Non-compliance with TOPS Standards</b>	<b>2. Areas for improvement</b>	<b>3. Meets TOPS standards</b>	<b>4. Exceeds TOPS standards</b>	
<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	
<b>1.</b>	Maintenance areas and shops		<i>Area audited?</i>	X
<b>2.</b>	Technical publications and manuals		<i>Area audited?</i>	X
<b>3.</b>	Parts and supplies		<i>Area audited?</i>	X
<b>4.</b>	Maintenance quality assurance (company size appropriate)		<i>Area audited?</i>	X
<p><b>Comments: Maintenance areas are in the process of being improved by the addition of a new hangar that will house and allow more floor space for spares and shops. The company has limited shops which will be more secure and have their own designated areas. The parts and supplies will also have increased floor space and security. The work areas will be separated and be able to function on a non-interference basis.</b></p> <p><b>A quality assurance person has been placed in the maintenance system to oversee work and records.</b></p> <p><b>Publications are both Paper and electronic hence there is very little chance of inspection forms not being current.</b></p>				

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<i>H.</i>	<i>MAINTENANCE PERSONNEL</i>			
	1. Non-compliance with TOPS Standards	2. Areas for improvement	3. Meets TOPS standards	4. Exceeds TOPS standards
	<input type="checkbox"/>	<input type="checkbox"/>	X	X
1.	Mechanic qualifications, staffing and crew rest			<i>Area audited?</i> X
2.	Mechanic training and documentation			<i>Area audited?</i> X
<p><b>Comments: Maintenance personnel have EuroCopter training each year. Training is documented and is generally 40 hours per year. This training is done on site.</b></p> <p><b>The maintenance staff is generally stable and well experienced.</b></p>				

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<i>I.</i>	<i>GROUND SUPPORT PERSONNEL</i>			
	1. Non-compliance with TOPS Standards	2. Areas for improvement	3. Meets TOPS standards	4. Exceeds TOPS standards
	<input type="checkbox"/>	X	X	<input type="checkbox"/>
1.	Training and documentation			<i>Area audited?</i> X
2.	Passenger briefing			<i>Area audited?</i> X
3.	Loading and unloading helicopters			<i>Area audited?</i> X
<p><b>Comments: Training of ramp personnel is both done and documented. All passengers are escorted and handled by ramp personnel or pilots while outside the building on the Ramp side.</b></p> <p><b>The passenger briefing tape is excellent and the briefing is thorough.</b></p> <p><b>One observation during the audit was that the passengers were called out to register at the counter during the briefing and one pilot called out his passenger during the briefing. These items were corrected on the spot and changes in the procedures have been made, there is no outstanding finding.</b></p>				



# TOPS AUDIT FORM REGULAR MEMBER – 2011

TOPS Member: Sundance Helicopters

Date: 7/11-12/2011

<i>J.</i>	<i>AREAS OF SPECIAL INTEREST</i>		
<b>Instructions:</b> Comments are required for each area of special interest.			
1.	Flight Coordination – flight following systems/methods	<i>Area audited?</i>	X
2.	Emergency Response Plan – plan suitability and training	<i>Area audited?</i>	X
3.	Ground Support Personnel – Passenger briefing system (live, PP, video, visual aids)	<i>Area audited?</i>	X
4.	Maintenance – Quality Assurance methods scaled for the operator size	<i>Area audited?</i>	X
5.	Management – Process for passenger complaints about safety or safety of flight issues, including follow up procedure.	<i>Area audited?</i>	X
<p><b>Comments:</b> Items 1 thru 4 previously covered in this report.</p> <p>There is a system in place where passengers and employees can bring problems, complaints or situations to the attention of Safety and Management. Negative items are acted upon and brought to a successful conclusion.</p>			

# TOPS AUDIT FORM REGULAR MEMBER – 2011

TOPS Member: Sundance Helicopters

Date: 7/11-12/2011

<i>K.</i>	<i>BASES VISITED</i>		
	Location	Manager	Date
1.	KLAS	Kurt, Barton	7-11-11
2.	Grand Canyon West	Ray Medina	7-12-11
3.			
4.			

Comments: Both bases are well run and standard with company procedures and policies.

# TOPS AUDIT FORM REGULAR MEMBER – 2011

TOPS Member: Sundance Helicopters

Date: 7/11-12/2011

<i>L.</i>	<i>FLIGHT OBSERVATIONS</i>		
	Location	Tour	Date
1.	KLAS	Twilight	7-11-11
2.	Grand Canyon West		7-12-11
3.			

Comments: All below listed items were checked and in compliance. Very standardized flights.

## TOPS INFLIGHT OBSERVATION GUIDELINES

The following are areas for review and evaluation during In-flight Observations:

1. Manifesting, Briefing and Aircraft Loading
2. Ramp/Airport Operations
3. Takeoff and Landing
4. Cruise Flight
  - Routes
  - Terrain
  - Altitudes
  - Traffic
5. Offsite Landing Areas

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

<b>TOPS AUDIT RECOMMENDATIONS, BEST PRACTICES AND DISCREPANCIES</b>	
<b>Instructions: Identify each item as a discrepancy, recommendation or best practice</b>	
ITEM	RECOMMENDATIONS, BEST PRACTICES AND DISCREPANCIES
<b>General Comments</b>	There are no outstanding negative items
<b>Safety</b>	The company has secret shoppers that are experienced in aviation ride along and report their findings on a quarterly basis. The passengers are unknown to the employees they come in contact with.
<b>Safety</b>	<b>NOTE: It was suggested that TOPS adopt a standard TOPS SMS program dealing with all four subjects. TOPS is a safety orientated group and I feel this suggestion warrants discussion</b>
<b>Flight Opns</b>	The company uses secret shoppers at a minimum of once a quarter to identify problems is they exist. These shoppers are aviation savvy and are reliable. Also searches of U-Tube bring out some interesting items to be investigated
<b>Flight Opns</b>	The company uses secret shoppers at a minimum of once a quarter to identify problems is they exist. These shoppers are aviation savvy and are reliable. Also searches of U-Tube bring out some interesting items to be investigated
<b>Maintenance</b>	Maintenance personnel have EuroCopter training each year. Training is documented and is generally 40 hours per year. This training is done on site.
<b>Ground Support Personnel</b>	One observation during the audit was that the passengers were called out to register at the counter during the briefing and one pilot called out his passenger during the briefing. These items were corrected on the spot and changes in the procedures have been made, there is no outstanding finding.

# TOPS AUDIT FORM REGULAR MEMBER – 2011

**TOPS Member: Sundance Helicopters**

**Date: 7/11-12/2011**

OUT-BRIEFING		DATE:
Name	Title	
Kyle Reynolds	Director of Maintenance	
Louis Hall	Training Captain	
Kurt Barton	Director of Operations	
Burl Boyd	Chief Pilot	
<i>Print list of all Operator personnel present</i>		

TOPS AUDIT RESULTS		
<b>AUDIT RESULTS</b>	<input checked="" type="checkbox"/>	Recommended for TOPS membership
	<input type="checkbox"/>	Recommended for TOPS membership (After items listed above have been corrected to TOPS standards).
	<input type="checkbox"/>	Not Recommended for TOPS membership ( <i>Operator does not meet TOPS Standards. Re-audit recommended.</i> ) See attached list of discrepancies
OPERATOR REPRESENTATIVE:	SIGNATURE:	
	NAME:	
		<i>Please Print</i>
	TITLE:	
		<i>Please Print</i>
TOPS AUDITOR:	SIGNATURE:	[REDACTED]
	NAME:	Vernon Albert
		<i>Please Print</i>

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<b>Approved by the Membership Review Committee</b>			
	Signature		Date
<b>Approved by the TOPS Board of Directors</b>			
	Signature		Date

Findings, comments and narrative to be provided in Audit Report to be submitted with this audit form.



Confirmation - USAIG - Sundance Helicopter 02152011

Tuesday, February 22, 2011 8:29 PM

From:

To:

Cc:

5 Files (133KB)



Regarding: Loss Control Activity  
Reference Number: 14818825

Dear Larry:

This is a confirmation of the lunch appointment with Mike Flaherty (Director of Safety) and John Grob (Broker) on February 1<sup>st</sup> to review the Safe Performance and Conditions Standards (SPCS) assessment, which is required for all USAIG clients. Mike is currently implementing the SMS program through the coming year.

The attached SPCS Assessment provides a score to prioritize the critical risks and focus the loss control activities. Although the business is not a Fixed Base Operation (FBO), the assessment is the closest match for all USAIG clients. The Maintenance, Repair and Overhaul assessment is also included for the maintenance hanger. A confirmation email was sent on February 15<sup>th</sup> to provide the requested 2011 Seminar and Webinar brochures.

**CONCLUSIONS:**

In the assessment, each critical risk is scored from 1 to 5 based on the frequency that the task is performed, likelihood for an incident, and severity of the potential injuries. The scores are multiplied, and the higher the score, the greater the critical risk to the employees.

For FBO, the highest risk is Aircraft Marshalling with a score of 18. For the maintenance hanger, the highest risk is Working on Ladders with a score of 27 and Working on Top of Aircraft at 18. The risks are described below.

**DISCUSSION**

2010 has been a banner year for the helicopter tour company. There are no temporary or seasonal pilots used over the past year. An effective control for the pilots is the ability of the lead pilot to cancel the sightseeing trips due to acclimate weather. The pilots are still paid for the day but try to avoid canceling trips to encourage business. The following critical behaviors were reviewed.

Aircraft Marshalling: Usually a lead pilot performs the air marshalling and ramp control duties. The air marshall stands on the tarmac to direct the aircraft using the aviation radio. They take turns with the duty and participate in annual training to review the procedures. Employees on the tarmac wear bright orange vests and safety glasses for protection.

Working on Ladders: Multiple ladders are used when removing the blades from the helicopters. The blades are very fragile so great care is taken to handle the parts.

Working on Top of Aircraft: Movable stairs are used to access the top of the helicopters. No fall protection is worn when standing on the aircraft.

Other risk tasks were also discussed. The only baggage handling that occurs is the lunch kits that are loaded into the helicopter cargo area. For refueling, an FBO is contracted at McCarran. No additional refueling occurs at the Grand Canyon West airport if flying straight back to Las Vegas. Otherwise, a FBO is utilized. The GCW staff is flown to the airport and back every day. The operations have recently been moved from the Sky Bridge ticketing area to the GCW airport. In addition, the helicopter fuel tanks are plastic and do not require welding if a repair is needed. The only paint operations that are performed are touch up only.

Thank you for your time and assistance during my visit. Please let me know if there is anything we can assist you with.

Sincerely,



**Ron Klapperich, CSP, CHST**  
Senior Consultant  
Loss Control Advisory Services  
Liberty Mutual Group, Las Vegas NV

Office:

Email:

**Helping People Live Safer, More Secure Lives.**

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*Our loss control service is advisory only. We assume no responsibility for management or control of customer safety activities nor for implementation of recommended corrective measures. This report is based on information supplied by the customer and observations of conditions and practices at the time of the visit. We have not tried to identify all hazards. We do not warrant that requirements of any federal, state, or local law, regulation or ordinance have or have not been met. Please be advised that you may be selected to complete an electronic customer survey for services performed. Completing the survey is voluntary. If you wish not to participate, simply delete the e-mail.*

# Safe Performance and Conditions Standards (SPCS) Assessment for Critical Risks

## Class of Business: Fixed Base Operations

<b>Company:</b>	Sundance	<b>Date of Assessment:</b>	2/1/2011	<b>Average Risk Index</b>	8
<b>Total Employee Count:</b>	140-145				
<b>Work Activity</b>	<b>Critical Risk</b>	<b>Environment</b>	<b>Capability</b>	<b>Motivation</b>	
Baggage Handling	Muscle strains to ramp agents performing transfer of baggage from carts to belt conveyor for loading baggage onto the plane.	Low point on belt conveyor is adjustable in height. Cart bottom at or near waist height for lowest lift point. Bags stacked on cart are shoulder height or lower. Observation form with critical expectations for baggage handling has been developed to define safe performance and conditions standards.	Written protocol for baggage handling. Promote stretching exercises between flights and shifts. Promote safe lift awareness at pre-shift briefing meetings. Supervisors trained to perform behavior observations.	Maintain back but not a chaotic pace between flights to load/unload baggage system for awarded observed safe work behaviors. Perform and record routine observations of baggage handling to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.	Risk Index 3
<b>Work Activity</b>	<b>Critical Risk</b>	<b>Environment</b>	<b>Capability</b>	<b>Motivation</b>	
Baggage Handling	Muscle strains to ramp agents performing transfer of baggage from top of conveyor into the cargo hold of the plane.	Conveyor belt extends up and into the cargo hold itself. Knee pads are available for working in a crouched position. Observation form with critical expectations for baggage handling has been developed to define safe performance and conditions standards.	Written protocol for baggage handling. Promote stretching exercises between flights and shifts. Promote safe lift awareness at pre-shift briefing meetings. Supervisors trained to perform behavior observations.	Maintain back but not a chaotic pace between flights to load/unload baggage system for awarded observed safe work behaviors. Perform and record routine observations of baggage handling to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.	Risk Index 3
<b>Work Activity</b>	<b>Critical Risk</b>	<b>Environment</b>	<b>Capability</b>	<b>Motivation</b>	
Baggage Handling	Strains to guest loading agents performing transfer of baggage from bagwell or scale a the ticket counter onto the conveyor belt behind them.	Conveyor belt is adequate knee height. Provide portable roller conveyor or a metal slide crossover to conveyor belt to eliminate lifting. Observation form with critical expectations for baggage handling has been developed to define safe performance and conditions standards.	New hire training on baggage handling includes technique to move feet with load centered between toes. Employees get help for heavy loads. Written protocol for baggage handling. Promote stretching exercises between shifts. Supervisors trained to perform behavior observations.	Perform and record routine observations of baggage handling to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.	Risk Index 3
<b>Work Activity</b>	<b>Critical Risk</b>	<b>Environment</b>	<b>Capability</b>	<b>Motivation</b>	
Working within Large Aircraft Cargo Pits	Bursts and cuts to ramp agents who slip and fall on roller balls, guides, clips and holes while working with the bulk cargo pit or larger (e.g. Boeing 747) aircraft.	Adequate lighting. Employees wear leather, slip resistant work boots. Employees wear knee and shin guards.	New hire training on the hazardous footing within cargo pits. Defined boot route/path to step safely into the cargo pit while attaching or unloading clips. Written protocol for working in cargo pits.	Incentive system for awarded observed safe work behaviors. Reinforce work at a controlled pace when attaching or unloading container locks.	Risk Index 3
<b>Work Activity</b>	<b>Critical Risk</b>	<b>Environment</b>	<b>Capability</b>	<b>Motivation</b>	
De-icing Operations	Falls from elevation	Manufacturer of the boom truck has designated a safety harness anchor point in the aerial lift bucket. Safety harness and tie-off lanyards are provided to employees who de-ice planes. Observation form with critical expectations for de-icing has been developed to define safe performance and conditions standards.	Written operations and safety protocols for de-icing. Employees trained on the boom truck, aerial bucket, harness and lanyard in accordance with the written protocols. Current certification record of fall protection training exists and is used to authorize who is allowed to de-ice planes. Supervisors trained to perform behavior observations.	Perform and record routine observations of de-icing to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.	Risk Index 3
<b>Work Activity</b>	<b>Critical Risk</b>	<b>Environment</b>	<b>Capability</b>	<b>Motivation</b>	
De-icing Operations	Falls from elevation	Manufacturer of the boom truck has designated a safety harness anchor point in the aerial lift bucket. Safety harness and tie-off lanyards are provided to employees who de-ice planes. Observation form with critical expectations for de-icing has been developed to define safe performance and conditions standards.	Written operations and safety protocols for de-icing. Employees trained on the boom truck, aerial bucket, harness and lanyard in accordance with the written protocols. Current certification record of fall protection training exists and is used to authorize who is allowed to de-ice planes. Supervisors trained to perform behavior observations.	Perform and record routine observations of de-icing to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.	Risk Index 3



De-fueling and Fueling Operations	Eye injuries from back spray of de-fueling liquid and fuel in respective operations.	Appropriate eye protection (PPE) is provided to employees. Observation forms with critical expectations for de-fueling and fueling have been developed to define safe performance and conditions standards.	Written procedures exist for the selection of PPE, training of employees, use and maintenance of the PPE. Supervisors trained to perform behavior observations.	Perform and record routine observations of de-fueling and fueling to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.
Aircraft Marshalling	Struck by mis-directed aircraft, particularly propellers during marshalling and chocking. Also, struck by other traffic on the ramp.	Employees wear brightly colored vests. At night, employees use lighted beacons to signal planes. No hats or caps are worn unless secured with a chin strap. No other clothing or paperwork can be loose or have the ability to fly to prevent unimpeded movement and thus minimal signaling or reaching into moving parts (propellers). Speed limits are set and enforced on the ramp. Observation form with critical expectations for marshalling aircraft has been developed to define safe performance and conditions standards.	All affected employees are trained.	Perform and record routine observations of aircraft marshalling to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.
Fueling Operations	Falls from heights.	Ladders of adequate height available for over-the-wing refueling so that employees do not have to stand on the top or second from top rung. Booms or sissors lift with fall protection available to assist employees in the fueling of under-the-wing, larger aircraft. Observation form with critical expectations for refueling has been developed to define safe performance and conditions standards.	Policy prohibits climbing on the top of refueling ladders for refueling under-the-wing larger aircraft. Policy prohibits climbing on the top or second from top of ladder. Supervisors trained to perform behavior observations.	Perform and record routine observations of fueling operations to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.
Fueling Operations	Potential explosion and burn/seriousity while refueling aircraft or loading fuel onto tanker truck from tank farm.	Refueling rig is properly grounded. Refueling rig has operable dead-man controls. Locking nozzles are operable. Formal step-by-step procedures exist that define which valves need to be opened and shut and in what order. Critical valves and shut off devices at the tank farm are color-coded and labeled. Electric motors at the fuel farm are higher than the top of the dike level. Observation forms with critical expectations for refueling operations have been developed to define safe performance and conditions standards.	All affected employees are trained and certified on aircraft fueling and tank farm loading procedures before being assigned such duties. Supervisors are trained to perform behavior observations.	Perform and record routine observations of fueling operations to reinforce safe behaviors. Use of observation data to measure performance and set improvement goals.
All operations on the ramp.	Heat stress to ramp agents.	Provide water for employees. Provide ice machine. Provide emergency shower.	Ramp agents are trained to recognize the symptoms of heat stress in themselves and their fellow employees. Ramp agents are encouraged to drink a bottle of water at the start of the shift.	Employees routinely look out for heat stress symptoms. Supervisors routinely ask employees about their hydration status and needs.