HOLD SHORT FOR RUNWAY SAFETY

Runway RISKS

Reducing Incursions, Excursions, and Confusion

July 2008

Volume 1
Issue 6

This edition of the Runway Risks *newsletter will focus on the issue of runway excursions. We hope that you appreciate this component of our "Hold Short for Runway Safety Campaign." ALPA's safety structure will continue to address this diverse issue on multiple fronts, and we will keep you posted on our progress. Fly safe!*

Captain Rory Kay (UAL),
Executive Air Safety Chairman

Case Study—

JFK International Airport

On May 8, 1999, about 0703 EDT, a Saab 340 sustained minor damage while landing at John F. Kennedy International Airport (JFK), Jamaica, New York. The aircraft overran the runway end, entered the runway safety area, and was safely brought to a stop by the Engineered Material Arresting System (EMAS) in place at the end of the runway.

Weather at the time was reported as wind 090/11 kts; visibility ¼ sm; RVR runway 04R variable 1,600–2,000 ft; vertical visibility 100 ft; temp 58˚F; dew point 58˚F. The flight crew was scheduled in a Continuous Duty Overnight (CDO) operation. They reported for duty on May 7 at approximately 2200, and departed JFK for BWI at 2246. There was a takeoff delay due to weather in the New York area. The crew arrived at BWI at 0025 and got to the hotel for their "rest" at 0100. They had a scheduled 0530 van ride, so the crew requested wake-up calls for 0445. The captain had been up for 18 hours on the first day of the trip, and then only had about 3 hours to sleep before the accident flight. The F/O arrived at JFK at 1730 and rested, without sleeping, in the crew room until flight time.

> *"The captain replied, "We can take it." The controller then cleared Flight 4925 for the ILS approach to Runway 4R."*

Air traffic control had the Saab's flight crew on the localizer course at 4,000 feet MSL and 6.6 miles from the approach end of the runway when the controller stated: "Flight 4925, runway four right RVR is eighteen hundred, if you want to make it from there, or you might be too high. Just let me know . . ." The captain replied, "We can take it." The controller then cleared Flight 4925 for the ILS approach to Runway 4R. The first officer began the approach descent, but the captain extended the landing gear and took control of the airplane. Following is a partial transcript of the flight deck conversation and radio transmissions from that point forward.

continued on page 2

Working Together to Reduce Risks

FAA Runway Safety Summit in the Northwest Mountain Region

July 23–24, 2008
Holiday Inn–SEATAC Airport

Open to pilots, air traffic controllers, and airport operators, this runway safety summit offers participants an opportunity to exchange views and seek solutions-critical topics. The meeting is one in a series hosted by the FAA around the country. It will include workshops on these subjects: best ideas for pilots to avoid runway incursions; what airports can do to help avoid incursions; and how ATC can help to reduce incursions. An update will be offered on technology designed to aid in preventing runway incursions.

ALPA Air Safety Team
800.424.2470

Visit www.alpa.org to learn more about runway safety and ALPA initiatives to continuously improve aviation safety.

Lessons Learned

» **Clearances**—The captain must exercise his or her authority to reject any ATC clearance that will result in an unstable approach or other undesired aircraft state.

» **Fatigue**—A number of accidents and incidents can be directly attributed to fatigued flight crews. Pilots should take all necessary precautions against flying while fatigued and report those pairings that abnormally contribute to fatigue to the company and/or the MEC.

» **Training**—Crewmembers need "seat appropriate" training to ensure that they have sufficiently performed all of the duties and responsibilities associated with the specific seat qualification.

» **First officers** must make any safety concerns known to the captain in a timely fashion.

» **EMAS**—These frangible "foamcrete" beds are a valuable safety tool that can prevent overruns from becoming catastrophic. Had the EMAS not been at the end of JFK Runway 4R, the aircraft likely would have entered a water hazard preceding Rockaway Boulevard.

Case Study—JFK International Airport

continued from page 1

LOCAL TIME	PARTY	STATEMENT OR TRANSMISSION
6:59:18	CVR/Capt	OK, we gotta get down
6:59:28	CVR/Capt	Ah, we'll drop your gear out for you
6:59:32	CVR/Capt	Cause we gotta get . . . we're way high on the localizer
6:59:36	ATC	Eagle 925, you good for the approach from there?
6:59:38	4925	We're gonna give it our best
6:59:40	ATC	All right, contact tower
6:59:51	CVR/Capt	Actually no, no . . . I'm . . . let me take this
6:59:56	CVR	Sound of AP Disconnect
7:00:09	CVR	Sound similar to altitude alert signal
7:00:36	CVR/Capt	And you got check-in with tower
7:00:42	4925	Uh, 925's with you inbound
7:00:45	ATC	Eagle 925 4R cleared to land 1,800
7:00:48	CVR	Sink rate, sink . . . too low terrain
7:00:58	CVR	Sound similar to Morse code identifier
7:01:03	CVR	Sound similar to middle marker identifier
7:01:05	CVR/F/O	OK, there's glide slope
7:01:14	CVR/F/O	OK, there's 300 feet
7:01:18	CVR/F/O	Approach lights, runway in sight
7:01:21	CVR/Capt	OK, before landing check is . . .
7:01:24	CVR/F/O	Three green, flaps zero
7:01:41	CVR	Sound of impact
7:01:51	CVR	Sound similar to aircraft coming to a stop

During the descent, the crew received four audible warnings, including sink rate and three terrain warnings. They were significantly above the glide slope and crossed the threshold at 400 feet AGL. The aircraft landed about 7,000 feet down the 8,400-foot runway, entered the Engineered Material Arresting System (EMAS) at about 75 knots, and stopped in 248 feet of the 400-foot long EMAS bed with no injuries to anyone on board and minimal damage to the aircraft.

A Message to ALPA Pilots

From Mr. Wes Timmons

Director, Office of Runway Safety, Federal Aviation Administration

As aviation professionals, we all share a history in aviation. No matter where we work or what our role is within the industry, we are united in a common cause: to make aviation as safe as possible.

Over the years, runway incursions have always been a critical aspect of aviation safety. We tend to consider the risk associated with a flight as beginning with the takeoff and ending with a successful landing. We view the ground portion of the flight, right after we close the door and make our way "into position," as the preamble to the "actual" flight. This phase of flight is an extremely busy time. We accomplish many last-minute tasks and make sure we are ready to go. Ironically, our focus on these tasks only raises the risks associated with the flight since our attention may be diverted away from the actual movement of the aircraft.

It's been said many times that the flight begins at pushback and ends at the destination gate. The investment we make in a successful ground operation will offer safety dividends and allow for a successful takeoff and landing. Clearly, this is a simplification of a complex issue, but occasionally complex solutions begin with a simple concept.

We have learned a lot about runway safety from the experience of others who were involved in incursions and accidents. Continuous system improvement is good, but we must try to stop learning at the expense of others who have been involved in incidents. Ultimately, we must become aggressive in searching for solutions, both in the short and long term.

In the short term, we can break this incident chain through education, training, and awareness. A technology solution, which will hold the ultimate key for the future, is the long-term goal.

My organization, the FAA Office of Runway Safety, plans on accelerating our efforts along these lines and will be working with all parties within the industry to enhance safety. We cannot do it alone and will be depending on our colleagues to join in these efforts.

Although the probability of any one of us being involved in a surface incident is, thankfully, very low, the potential consequences are very high. So let us continue to work together, focusing on training and awareness, while we jointly develop technological solutions to support the future.

Runway Veer-Offs and Overruns

According to the Flight Safety Foundation, runway veer-offs and overruns were involved in 20 percent of the 76 worldwide approach-and-landing accidents and serious incidents from 1984 to 1997. Veer-offs (also known as "excursions") and overruns were attributed to weather, crew technique, and aircraft system anomalies. Primary causal factors fell into six categories of events:

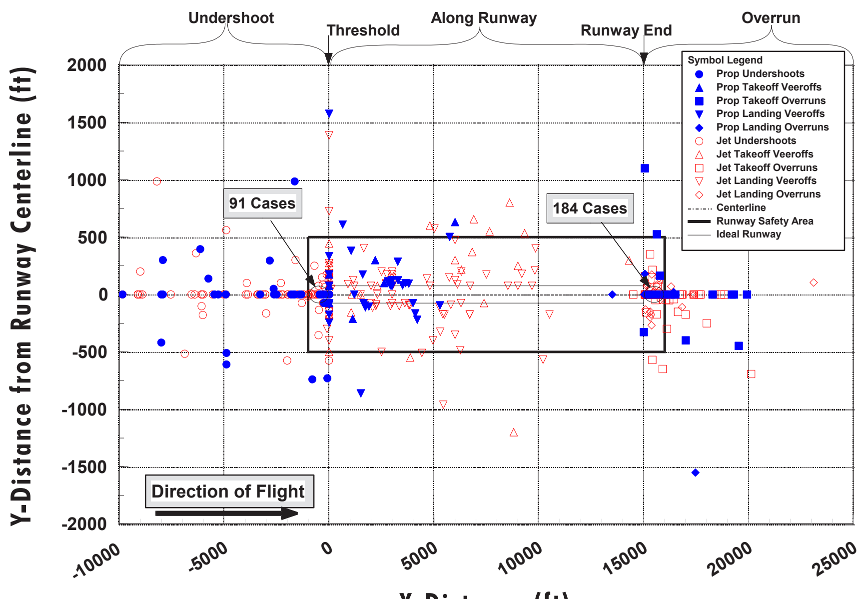
- Unstabilized approaches
- Incorrect flare technique
- Unanticipated or more-severe-than-expected weather
- Reduced or loss of braking capability
- Abnormal aircraft configuration
- Incorrect crew action and coordination under adverse conditions

Accident prevention strategies identified include:

- Adherence to SOPs
- Enhanced awareness of environmental factors
- Enhanced understanding of aircraft performance and handling techniques
- Enhanced alertness for flight-parameter monitoring, deviation calls, and crew cross-check

Further information is available on this subject via ***this link.***

Locations of Landing and Takeoff Accidents



Data Spans 1952–2007

ALPA has developed a special website dedicated solely to runway safety. There you will find links to runway safety educational material and video recreations of several high-profile incidents. Material on this website is being added on a regular basis, so stop by for the latest information on runway safety. Previous issues of this newsletter can also be found there. The website address is **holdshort.alpa.org.**

Our Goals

While our main goal of distributing this newsletter is to increase your knowledge and awareness of runway safety hazards, ALPA is also committed to providing access to educational resources on our website. In addition, we strive to:

1. immediately provide you with awareness tools,
2. conduct this educational campaign to provide information to line pilots,
3. continue the pursuit of long-term system mitigations of runway collision hazard.

Approach and Landing Accident Reduction (ALAR) Tool Kit

(Excerpted from a Flight Safety Foundation (FSF) article, **FSF Flight Safety Digest***, August–November 2000)*

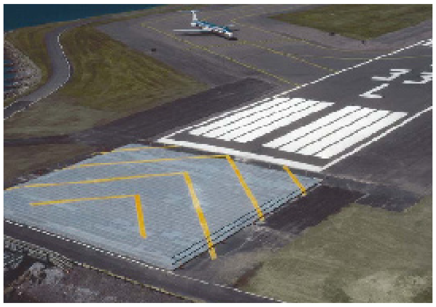
The FSF ALAR Tool Kit is available as a multimedia resource on compact disc (CD) for safety professionals and training organizations working to prevent the leading causes of fatalities in commercial aviation: approach-and-landing accidents (ALAs), including those involving controlled flight into terrain (CFIT). The CD contains a wide range of textual and graphic material based largely on the data-driven studies of the FSF Approach-and-Landing Accident Reduction (ALAR) Task Force. The Tool Kit has 2,600 searchable pages and is available at ***this link*.**

Engineered Materials Arresting System (EMAS)

Numerous airports around the world that are unable to install the required 1,000-foot runway end safety area are installing EMAS in order to provide an improved overrun area for those runways with hazardous terrain beyond the runway end.

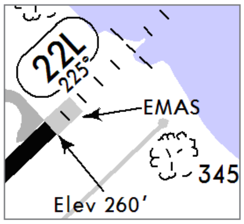
EMAS is designed to safely stop the largest aircraft that normally serves the airport at a bed-entrance speed of 70 knots. It uses materials of closely controlled strength and density placed at the end of a runway to stop or greatly slow an aircraft that overruns the runway. The best material found to date is an aerated, crushable concrete, also called "foamcrete." When an aircraft rolls into an EMAS arrestor bed, the tires of the aircraft sink into the lightweight concrete and the aircraft is decelerated by rolling through the material. The system is designed to be benign to undershoots.

The FAA cites studies that estimate that EMAS will stop 90 percent of overruns and accommodate 90 percent of undershoots. Even if there is not sufficient

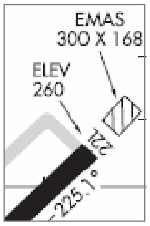


space for installation of a recommended 600-foot EMAS area, it still can be beneficial to install the system in the available space. EMAS may not be capable of stopping aircraft moving at high speeds. Maximum braking should be used to minimize entry speeds and improve stopping capability.

EMAS is depicted on airport diagrams as shown in the diagrams below.



Jepp Chart



NACO Diagram

Do you have a best practices recommendation for safe airport operations?

Through personal experience, many pilots have learned or developed their own best practices for safe operations. If you have a suggestion regarding safe operating procedures in the airport environment, please share it with us by sending an email to runway-safety@alpa.org, or clicking on the button below. ***Thank you for your contribution.*** SUBMIT