

LAHSO lassoed at last

BY LINDA JACOBSON, APA SAFETY DEPARTMENT

THE FAA INAUSPICIOUSLY announced the termination of its Land and Hold Short Operations (LAHSO) program upon issuance of FAA Order 7114.118. This concludes one of the most contentious airport capacity enhancement programs in U.S. aviation history. The end of LAHSO expansion, officially addressed on October 17, 2002, also signaled that APA's National Safety Committee was successful in bringing systems safety issues to the forefront although it took six years of patience and perseverance. To understand the implications of LAHSO, we need to take a backward look at the development of LAHSO. As always, there are important lessons to be learned — and applied in the future.

THE BEGINNING

LAHSO began its infancy innocuously at four U.S. airports in 1968 under the name "Simultaneous Operations on Intersecting Runways" (SOIR). SOIR required a landing aircraft to stop before reaching an intersecting runway — within specified guidelines. The program was initially birthed from the observation that some landings did not require the full runway length and that this fact could be exploited to increase airport acceptance rates.¹ Because the program was introduced

gradually on an airport-by-airport basis, and because the procedures were tightly regulated and applied, injurious effects on pilots using the program took years to become evident. In fact, it was not until 1972 that a formal complaint was even lodged with the Federal Aviation Administration (FAA) opposing the use of simultaneous landings on intersecting runways. However, the advantages emanating from the policy were the primary considerations; after all, the purpose of SOIR was to enhance airport capacity. Thus, in 1974, the FAA continued to expand SOIR by including simultaneous takeoffs on intersecting runways.

By 1992, the SOIR program was firmly established in a total of 260 U.S. airports, including more

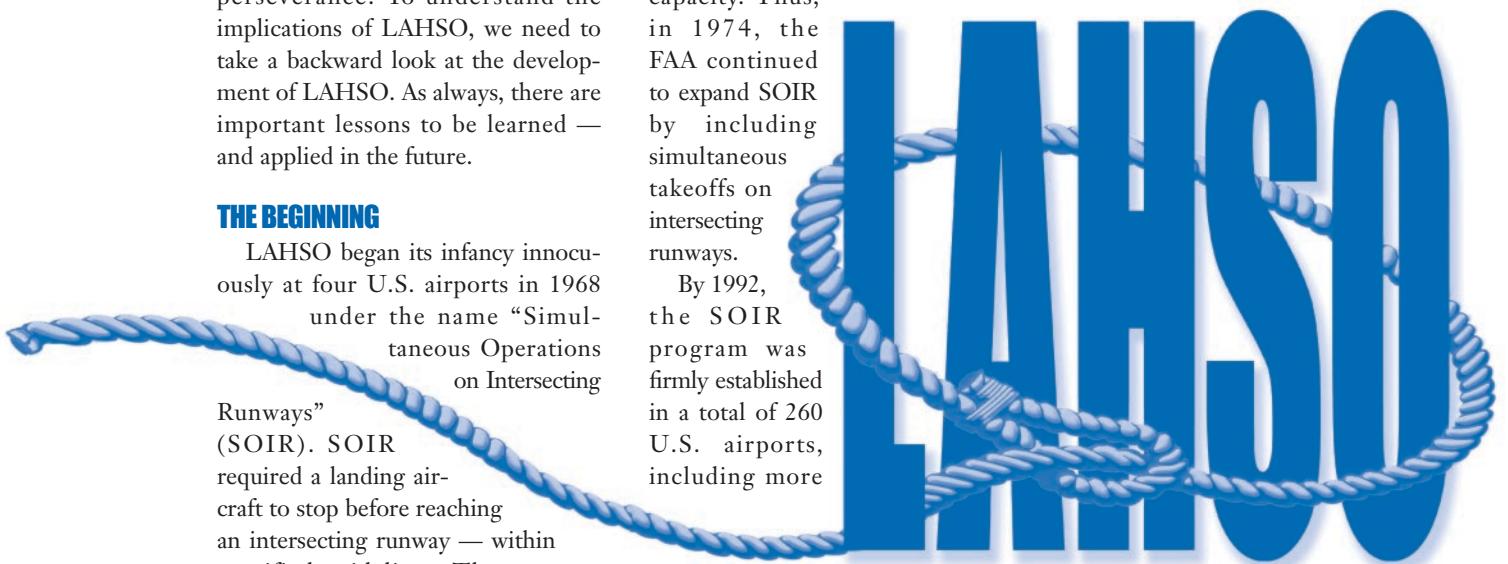
than 850 runway intersections, and pilots were left clamoring for the standardization of operational procedures to guide the burgeoning growth of SOIR². Clearly, it was the best of times for SOIR and the worst of times

for pilots who were feeling the steamroller effects from it.

IMPLICATIONS OF SOIR

With the magnitude of expansion came disorganization at almost every level. Specific guidelines quickly became outdated as U.S. commercial aviation growth outstripped airport infrastructure. In an attempt to play catch-up, SOIR was applied in non-standard fashion at individual airports. Additionally, stopping distances were not made clear nor were existing weather conditions taken into consideration. From the beginning, the onus for the procedure was placed on the pilot — to successfully maneuver the aircraft within the policy mandate. (Not until 1997 would a pilot officially gain the right to refuse SOIR/LAHSO clearance and not be questioned.) Unparalleled expansion and variable employment of the program resulted in clear outrage from the pilot community, with APA leading the charge.

Then, in December 1993, the FAA



requested that the Office of Aviation Safety (OAS and predecessor to the Office of System Safety) conduct a risk assessment of LAHSO in order to "build a firmer empirical justification for both a national LAHSO program

and for implementation of LAHSO at individual airports.³ The OAS was told to justify, from a numerical basis, the existence of a LAHSO program. Unfortunately, this initial risk assessment woefully lacked quantifiable risks that could be associated with a national LAHSO.

Although the preliminary study, completed in April 1995, lacked much, it did identify several areas of concern, including the potential for greater risk as the number of operations increased. It also noted the paucity of relevant data. A key recommendation of the study, then, was to “collect and document appropriate data to evaluate how safe and effective [LAHSO] operations are.”⁴

In response to the OAS’ stated concerns, the FAA began a demonstration program at BOS, DFW, and EWR in October 1995 to explore the possibility of extending hold-short operations to include intersecting taxiways. Both pilots and air traffic controllers were surveyed at these airports on the use of LAHSO procedures. This survey had four objectives:

- Determine if pilots were being advised in a timely manner that LAHSO was in effect;
- Determine whether lights, signs, and markings were visible and understandable;
- Identify communication problems between pilots-in-command and first officers, between pilots and controllers, or between pilots who landed on adjacent runways; and
- Determine whether LAHSO added stress, strain, or undue wear on pilots and controllers and/or wear and tear on aircraft equipment.

Amazingly, this survey became the empirical basis upon which FAA order 7110.114 was issued on July 17, 1997, which established Land and Hold Short Operations in this country.

Had the FAA waited before issuing the order 7110.114, or had their goal been to explore the most comprehensive —

and safest — methodology for increasing airport capacity, the battle cry sounded by APA might have been voided.

LAHSO PROBLEMS EMERGE

Beginning in the eighties, concern was voiced by pilots over the use of SOIR procedures that did not account for wet runways. Inadequate aircraft stopping and landing distances were a holdover problem from SOIR as were communication problems between pilots and controllers. U.S.-based pilots were becoming more concerned with the application of LAHSO by foreign pilots. With no mandated training on the procedure and, in many cases, only a cursory command

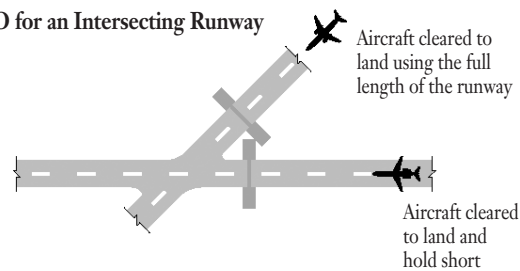
of the English language, U.S. commercial pilot groups — APA in particular — pointed to the erosion of systems safety.

Whereas SOIR contained a minimum of 50 waivers as follow-ons to its original rules, LAHSO contained no such waivers. From the beginning, APA took the position that LAHSO affected systems safety, and, in fact, had identified 18 areas of concern. These concerns could be classified within the following categories:

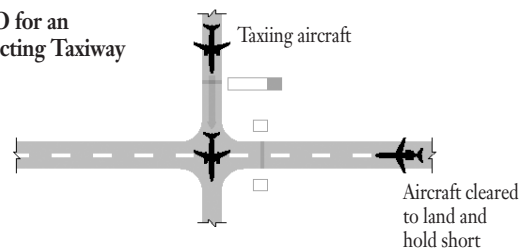
- **Inadequate aircraft stopping and landing distances.** The FAA stated that 6,000 feet of runway would be adequate. (APA balked at that figure and immediately suggested 8,000 feet.)
- **Runway surface.** LAHSO did not address wet versus dry runways.
- **Communications problems between pilots and controllers.** One concern focused on foreign-speaking pilots being able to understand the procedures involved in LAHSO, absent any training. (Indeed, even with U.S. general aviation pilots, the order did not specify training or compliance on LAHSO.)

LAHSO TAKEOFF AND LANDING PROCEDURES

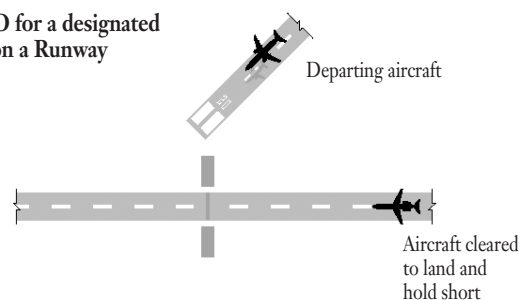
LAHSO for an Intersecting Runway



LAHSO for an Intersecting Taxiway



LAHSO for a designated Point on a Runway



- **Rejected landing procedures (RLPs).** LAHSO did not address this issue; separation modeling that included industry-accepted safety standards of all possible variations had not been done.
- **Vertical guidance.** LAHSO did not address how an aircraft executing an RLP would be expected to “remain clear of clouds” when weather minimums for LAHSO were set at a ceiling of 1,000 feet and/or a minimum visibility of three miles. Leveling off below a 1,000 foot ceiling during a critical go-around and while maneuvering to avoid another aircraft raised another set of problems.
- **Consideration of aircraft type.**

Undoubtedly, the perpetual tension between airport capacity and aircraft safety had reached an all-time high.

As LAHSO-related events became more common, APA, ALPA, and SWAPA, along with the FAA’s own Air Traffic Procedures Advisory Committee (ATPAC) and the National Air Traffic Controllers Association (NATCA)

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ramped up their efforts to be heard by the FAA. Fundamentally, however, the primary issue for pilots centered on RLPs and the lack of industry-specified modeling — the quantifiable risk assessment that had been missing even as SOIR was expanding.

APA SAFETY COMMITTEE EFFORTS



The APA Safety Committee's ATPAC representative from 1996-2000, Captain Ben Rich, was becoming increasingly alarmed at the invasion into systems safety. With a bulldog ferocity, Rich "methodically pushed, and rightfully so, for the FAA to quantify LAHSO or rather, the

CA Ben Rich, was instrumental in pushing the FAA to quantify LAHSO procedures.

facts emanating from the procedure's usage," according to FO Ron Stefanik, Rich's assistant on ATPAC and current APA National Safety Committee member. "A lot is owed to Ben. He hammered away at the FAA. I really think that if it were not for...Captain Ben Rich, much of what is in the order on LAHSO would just be a pipe dream," says Stefanik.

From the beginning, Rich became concerned about the lack of empirical data on the procedure.⁵ As he noted, there were no certificated stopping distances for aircraft on wet runways; the FAA had calculated figures using erroneous wind data and had used flawed database information when calculating stopping distances. Also, LAHSO all but removed the missed approach from the pilot's options when requiring hold-short clearances because of departures on a crossing runway.

With a change in command coming to the FAA — Jane Garvey was scheduled to take over the reins in Spring 1997 — Rich was told that the LAHSO order would be formally issued in July 1997. Immediately, a meeting with other industry groups

who held similar concerns was scheduled for mid-June. The purpose of the gathering was to find all areas of the order that all parties agreed were faulty and to take these areas of concern to the FAA. Eight to 10 items were agreed upon by APA, SWAPA, ATA, and ALPA.

One week later, all interested parties were present at a meeting with the FAA, with the exception of the SWAPA representative. As Rich describes it, he will never forget what happened on June 25, 1997.

"John O'Brien [ALPA] and Al Prest [ATA] stood together on the statement, 'We support the release of the order, because we know the FAA is committed to fixing the problems.'" APA — represented by Rich — was the lone dissenter in the room.

APA's Safety Committee had been in contact with Captain Cecil Ewell, AA Vice President of Flight and Chief Pilot, who had also expressed several concerns about the program. According to Rich, "I told them [FAA] that American would never agree to it, but I was told that I did not...represent American."

The FAA issued the LAHSO order three weeks later — against the advice of its own OAS. Back in Dallas, as the FAA was announcing the LAHSO order, AA issued a statement declaring that AA pilots would not participate in the program until AA had an opportunity to study LAHSO more closely.

The APA Safety Committee, under the helm of Captain Don Pitts, continued to hold the position that the FAA needed to model LAHSO to produce quantifiable data that would show acceptable levels of risk.⁶ Problems were especially evident at ORD. APA Safety Committee member Captain Kevin Elmore, who was ORD-based, worked continually on LAHSO at that airport because of the challenging runway configurations. And always, unrelenting, there was Captain Ben Rich.

INCIDENTS FROM LAHSO PROCEDURES

It is worth noting that in 1998, American ceded to pressures being exerted by the ATA and the FAA and "allowed" AA pilots to participate in LAHSO, using the shorter stopping distances of 6,000 feet rather than the 8,000 foot stopping distance advocated by APA. Within days, AA experienced a near-incident in ORD on Runway 27L when an American B727 failed to hold short and narrowly missed colliding with a United B777. United made an emergency go-around and flew over the B727 as it went through the intersection. Gusty winds were found to be a contributing factor in the failure of the AA jet to hold short. American immediately returned to the 8,000 feet distance — and has held to this distance since then.

Also in 1998, public consciousness of LAHSO issues was raised, fueled in part because of a LAHSO-related incident between two air carrier aircraft at Charlotte, NC. A US Airways plane narrowly missed a F-100 by 30 to 50 feet when, with winds gusting, the US Airways aircraft failed to stop short before the intersecting runway.⁷ An intense and abrupt shift in concern about the program was now being voiced by the traveling public. Additionally, the Cincinnati/Northern Kentucky International Airport had decided to discontinue LAHSO there, citing safety concerns raised by Delta Air Lines pilots.⁸

This shift in attitude forced the FAA to do an updated risk analysis of LAHSO. The OSS initiated a review of SOIR/LAHSO event data drawn from the Aviation Safety Reporting System (ASRS), NAIMS, NTSB accident reports, and FAA accident/incident reports. This review revealed an increase in the number of LAHSO events. On the basis of this review, the FAA finally formed a LAHSO risk assessment team in Fall 1998, a full year after promising ALPA and ATA it would do risk assessment to "fix problems."

FAA ENGAGES IN SYSTEMS ANALYSIS

According to Rich, the results that came back from this assessment did not meet industry-accepted levels of safety. Rich also asserts that the FAA began to try to change the criteria for the tests.

By 2001, Jim Willson, an aeronautical system safety engineer, had begun his employment with APA in the Safety Department. Rich declares, “Jim was the impetus behind getting the FAA to do modeling.” Upon arriving at APA, Willson immediately pointed out many of the flawed assumptions of the desktop modeling that was being developed by the FAA, ATA, and ALPA. (ALPA so welcomed Willson as part of the labor team that they withdrew their engineer from the meetings, leaving APA as the sole liaison with FAA AFS-420 during the testing phase.)

With APA input, risk management techniques were finally employed to determine if LAHSO met targeted levels of safety. Armed now with hard numbers, it was Willson who stood before the industry LAHSO working group, leading them in an Operational Risk Management (ORM) session in Oklahoma City in August 2001.

Not being able to produce the hard scientific numbers meeting the target level of safety, Howard Swancy, FAA Flight Standards, finally conceded in October 2002, “...the FAA is divorcing itself of LAHSO and has no intention of fixing or repairing any RLP issues.” The change in the old order to the new Order 7110.118 resulted in a loss of benefits for 18 airports and 32 different runway configurations around the country, according to Pitts.

LESSONS FOR OUR FUTURE

What can be learned from this 35-year history? To begin with, safety MUST be our first consideration. The accommodation to other concerns should be applied, if at all, to

*AA
flight crew
in a DC6.
circa 1956.
FO Wilson
is second
from right.*



Captain Wilson

(from page 13)

fly the entire trip. But the union protested and struck. When the 25-day strike ended, business was slow. And a number of pilots, including Wilson, were laid off.

“I was really upset. I was bent out of joint. But you can’t cry over spilled milk. You’ve got to move on.”

He had three young daughters and a wife to support. So he took any work he could find — including delivering telephone books in Great Neck, NY. He got paid two cents for every book he delivered. He eventually got a job selling new Ford Thunderbirds. He did so well at that the owners of the dealership put him in charge of their used car lot.

But selling cars didn’t hold the same allure as flying. “Being an airline pilot is the best job in the world,” he says. When American called a few months later asking him to return to work, he quit the car business. “I was grounded less than a year — but it seemed like a long time.”

He tells today’s furloughed pilots to “hang in there. We may have to sacrifice. We all may have to bite the bullet and tighten the belt. I know it’s tough.”

And he sees a lot of similarities between the past and today. The “observations” he submitted to *Flight Deck* for their March 1979 issue resonate today:

“We are all good pilots, there is no question of that. But being a good pilot is not enough. Having the best safety record is not enough. Giving smooth rides and making good landings is not enough. Being number one for on time performance and passenger preference is not enough. We run the factory. We produce the only product American Airlines has to sell. Like corporate managers everywhere, we must run our multi-million dollar production plant in the most efficient manner.” ✈

Jeannette S. Keton is a freelance writer based in Rockwall, TX whose work has appeared in Ladies’ Home Journal, Parents magazine, The Philadelphia Inquirer, The Dallas Morning News, The National Law Journal and D magazine, among others.

areas far less unyielding. Systems safety is successful because of our intransigence to proven, tested procedures.

Secondly, it is imperative that pilots stand in unity on our successes. Safety has continued to improve throughout aviation history because of the pilot’s systematic adherence to procedures and the pilot’s recognition of unsafe methodologies. The advent of systems safety processes into aviation is providing tools for the aviation industry to model issues that are called into question. The results show increasingly that pilots’ gut instinct is more often than not very accurate.

Third, make sure you have capable, persistent professionals addressing the issue. These volunteers are invaluable to our union and our profession. We applaud the efforts of these pilots who maintained the cause of safety for our group and for the public. ✈

¹ *Land and Hold Short Operations Risk Assessment, Federal Aviation Administration, page 21.*

² *Ibid, p. 23.*

³ *Ibid, p. 23.*

⁴ *Ibid, p. 25.*

⁵ *Flightline, July/August 1997, “You Bet Your License!!”*

⁶ *APA Special Report on LAHSO, June 9, 2000.*

⁷ *USA Today, “Pilots Protest Procedure After Air Scare,” December 9, 1998.*

⁸ *The Kentucky Post, “Airport Halts Risky Landing Method,” July 17, 1998.*