

OPS21LA003

## **AIR TRAFFIC CONTROL**

Specialist's Factual Report - Attachment 5

Event Investigations Manager Report

May 10, 2023



# Federal Aviation Administration

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## Memorandum

Date: 8/6/21

To: Timothy L. Arel, Deputy Chief Operating Officer, Air Traffic Organization, AJO-0

From: Glen A. Martin, Vice President, Safety and Technical Training, AJI-0

Prepared by: Anthony Schneider, Director of Safety, AJI-1

Subject: Event Investigations Manager Report: San Diego International Airport (SAN), June 16 - 17, 2021

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*This investigation report identifies the safety issues and establishes the facts, conditions, and circumstances surrounding the significant event involving SWA1648 and SKW3371 on June 10, 2021, and the air traffic facility's operational environment in general. The findings in this report are intended for use within the Air Traffic Organization to establish meaningful recommendations to prevent, mitigate, or reduce the possibility of recurrence, and are not intended to represent any determination of the event's probable cause or contributing factors. The investigation findings are not limited to the event and may include additional findings not related to the event. The National Transportation Safety Board has the sole responsibility for determining the probable cause and contributing factors of fatal aircraft accidents.*

### **Executive Summary**

On June 10, 2021, at 5:45 p.m. Pacific Daylight Time (PDT) (0045Z), SKW3371/E75L (SkyWest) was instructed to Line Up and Wait (LUAW) on Runway 27 and conflicted with SWA1648/B738 (Southwest), which was cleared to land on Runway 27. SWA1648 was instructed to go around on an approximate 0.7-mile final; however, the transmission was blocked and SWA1648 landed on Runway 27. The closest proximity was 0.18 miles laterally and 200 feet vertically.

SWA1648 established communication with the Local Control (LC) controller, was cleared to land on Runway 27, and was advised that there would be traffic holding in position. After an arrival aircraft landed on Runway 27, the LC controller instructed SKW3371 to LUAW and issued a traffic advisory for SWA1648 on a five-mile final. The controller then issued control instructions to uninvolved aircraft. When SWA1648 was on an approximately 1.2-mile final, the controller instructed SKW3371 to exit Runway 27 at Taxiway C2.

Subsequently, the controller instructed SWA1648 to go around; however, the transmission was blocked by SWA1648. The controller instructed SWA1648 not to overfly the aircraft on the runway. SWA1648 maneuvered and offset to the left of Runway 27, and then back to the right, and the aircraft aligned with and landed on Runway 27. SKW3371 was in the Runway Safety Area, between the runway edge line and the Taxiway C2 hold short line when SWA1648 was abeam Taxiway C2. The facility reported that the controller used the required memory aid for LUAW, and the Airport Surface Detection Equipment – Model X (ASDE-X) alerted.

An Event Response Team (ERT) was on site at San Diego International (SAN) Airport Traffic Control Tower (ATCT) on June 16 and 17, 2021. Interviews were conducted with the event LC controller and the Controller-in-Charge (CIC). The ERT toured the tower cab to observe the cab layout, Runway 27 operations, and use of the LUAW memory aid. The ERT was recalled on June 18, 2021, due to the holiday and recommenced with a virtual interview with the Air Traffic Manager (ATM) on June 23, 2021, and with the event Ground Control (GC) controller on June 30, 2021.

A similar event involving LUAW occurred at SAN on May 13, 2021, during the mid-shift. Due to the similarities between the May 13 and June 10 events, the two controllers working the May 13 event were also interviewed by the ERT. Similarities between the two events are discussed on pages 6 - 7.

The ERT determined that:

- Relevant tower equipment was functioning normally at the time of the event. The GC ASDE-X keyboard was out of service; this did not impact ASDE-X alert performance.
- SAN has an authorization to conduct LUAW, and the facility completed the annual review process on July 13, 2020. A Western Service Area (WSA) Director of Operations' memorandum including approval for SAN is dated August 9, 2020, as required per FAA Order JO 7210.3BB, paragraph 10-3-8. The facility last briefed controllers on LUAW procedures in December 2020.
- ASDE-X operated as expected between SKW3371 and SWA1648, providing an alert 20 seconds prior to the projected conflict per ASDE-X Record of Assistance Number 8-7-2021-13749.
- The facility memory aid for LUAW was used correctly as required by SAN ATCT Order 7110.1F, *Standard Operating Procedures*, paragraph 3-6-3, Coordination and Use of Placards/Memory Aids, subparagraph A.6.
- The aircraft was in LUAW in excess of 90 seconds without the additional control instructions as recommended by FAA Order JO 7110.65, paragraph 3-9-4.b.

- The LC controller's transmission was blocked by a simultaneous transmission by SWA1648. The pilot of SWA1648 did not hear the go-around instruction. The pilot of SKW3371 reported they also heard only the transmission from SWA1648.
- The CIC position was combined with Clearance Delivery, and the controller was occupied with tasks relating to that position while the LC controller was using LUAW. FAA Order JO 7210.3BB, paragraph 10-3-8.a.6, states, "the OS/CIC position should not be combined with any other position". The CIC controller was not monitoring the LC frequency, nor was the Local Assist position staffed as recommended in SAN ATCT Order 7110.3C, *Line Up and Wait (LUAW) Procedures*.
- The LC controller responded to a helicopter request, which took the controller's attention away from SKW3371 in LUAW.
- The controllers who were interviewed described a common decision point when the arriving aircraft reaches about a two-mile final. The controllers told the ERT that the first option when an arrival gets too close is to taxi the aircraft in LUAW off the runway at Taxiway C2, which is approximately 500 feet down the runway. If the proximity of the inbound aircraft is not sufficient for the aircraft in LUAW to exit, sending the arrival around is the second option. One controller described this as facility expectation, and stated that they train this technique.

### **Findings**

Based on the briefings, interviews, and review of available data, the ERT found the following:

**Staffing** – Staffing at the time of the event was three controllers in the tower cab, working LC, GC, and CIC combined with Clearance Delivery and Flight Data. Three controllers were on break at the time of the event. The ATM stated that position staffing on the swing shift on June 10 was not typical and did not meet expectation.

The Operations Supervisor (OS) on shift is responsible for writing the work assignments, which includes scheduling time for on-the-job training (OJT) sessions, OJT debriefing, and Learning Management System courses, in addition to staffing positions. When an OS is not on shift, the CIC assigned as Watch Supervisor is responsible for writing the work assignment sheet, which is what occurred on June 10.

**Weather/Visibility/Airport** – Weather was Visual Flight Rules (VFR). The CIC controller described it as "a beautiful Thursday." The Aviation Routine Weather Report from the previous hour (2351Z) reported few clouds at 1,000 feet, no restrictions to visibility, and no reported ceiling.

**Traffic Volume** – The LC controller rated traffic volume at the time of the event as light-to-moderate and traffic complexity as routine. The GC and CIC controllers rated the traffic similarly.

The ATM reported that traffic volume at SAN had increased significantly in recent months. Two interviewed controllers echoed that statement, saying the last one to two months were getting busier, and that evening departures had picked up in the last few weeks. Tower operations counts in Operations Network for SAN corroborate these reports, showing a 47 percent increase in overall traffic between February and May of 2021. Air carrier operations, which increased 66 percent in the same time period, account for the majority of the change.

All controllers interviewed told the ERT that they felt proficient in the framework of three-crew and two-crew schedules and reduced traffic for 2020 and the first part of 2021. However, with the recent traffic increase, most controllers described feelings and actions consistent with indicators of degraded performance such as feeling “rusty”, feeling like their timing was off, being distracted by lower-priority duties, and needing to look up or ask for information that they would have known from memory before.

**Communications** – The LC controller stated that after they put SKW3371 in LUAW, they became distracted by communication with a helicopter off of North Island. The helicopter’s radio was difficult to hear, which increased the number of transmissions required to satisfy the pilot’s request.

Once the LC controller had finished with the helicopter, they observed that SWA1648 was “too close to work out,” and instructed SKW3371 to exit the runway at Taxiway C2. They then instructed SWA1648 to go around and heard SWA1648 give their call sign, which the LC controller understood to be acknowledgement of the go-around instruction. Next, the LC controller instructed SKW1648 to “offset” to prevent an overflight of SKW3371.

The LC controller stated that after the go-around instruction, they observed SWA1648 “veer south,” and the aircraft appeared to be in a nose-up attitude, which looked like the pilot had initiated a go-around as instructed. Regarding the question from the pilot, “How are we going to do that?”, the LC controller stated that they thought that SWA1648 had understood the go-around, but were confused by the offset instruction. The LC controller observed SWA1648 offsetting as instructed and continued their visual scan. When their scan returned to SWA1648, the aircraft was over the runway surface touching down.

The LC controller realized later while reviewing the audio that they had probably stepped on a transmission from SWA1648 and that the pilot was not able to hear the go-around instruction. As the ATM described it, “you only have to listen twice” to catch the blocked communication, and that, “in the heat of the battle,” the LC controller did not identify the possibility of a blocked transmission.

Regarding the use of the “offset” instruction, the LC controller said it was the first time they had used this instruction in the FAA. (The controller entered on duty in 2018.) They had previously used it regularly in the military. The LC controller said they were worried about the tail of SKW3371 not being able to clear the runway in time and proximity would have been closer without offset.

The GC controller, who was the only person in the tower cab who saw SWA1648’s full maneuver described it as a “crazy maneuver to the right [from the tower vantage point],” and something they would expect to see from a fighter jet. The Falcon replay shows SWA1648’s track approximately 140 feet left of runway centerline – beyond the runway edge line (100 feet from centerline) – as the aircraft passed abeam SKW3371. SWA1648’s track then overcorrects to 50 feet right of centerline before returning to center in the vicinity of Taxiway C4, just beyond the touchdown zone markings, approximately 1,200 feet from the displaced threshold of Runway 27.

**Memory Aid Usage** – The required facility memory aid for LUAW was used correctly. The memory aid is described as a blue strip with white letters that reads “LUAW ACCEPTED”. The memory aid is placed above the departure flight progress strips at the LC controller’s workstation. When an aircraft is instructed to LUAW, and the aircraft accepts this instruction, the flight progress strip is moved above the memory aid (SAN ATCT Order 7110.1F, paragraph 3-6-3.A.6).



*Image: SAN LUAW Memory Aid*

Despite the correct application of the LUAW memory aid, SKW3371 was in LUAW in excess of 90 seconds without the additional instructions as recommended in FAA Order JO 7110.65, paragraph 3-9-4.b. The 90-second parameter is referenced in both pilot and controller guidance. Advisory Circular 120-74, Parts 91, 121, 125, and 135, Flightcrew Procedures During Taxi Operations, advises pilots to question the controller if no additional instructions have been received within 90 seconds of the aircraft taxiing onto the runway (AC 120-74, paragraph 7.(c)(9)). Though not a requirement, the 90-second parameter is a check to ensure the controller has not overlooked the aircraft on the runway.

**Position Combination** – The CIC position was combined with another position, and the CIC was occupied with tasks relating to that position while the LC controller was using LUAW. Though this is not prohibited, FAA Order 7210.3BB, paragraph 10-3-8.a.6, states that “the OS/CIC position should not be combined with any other position”. This language is included in SAN ATCT Order 7110.3C. The CIC controller was not monitoring LC frequency, nor was the Local Assist position staffed as recommended in SAN ATCT 7110.3C.

**Go-Arounds Relating to Aircraft in LUAW** – The controllers interviewed consistently described a decision point when the arriving aircraft reaches about a two-mile final. The controllers told the ERT that the first option when an arrival gets too close is to taxi the aircraft in LUAW off the runway at Taxiway C2, which is approximately 500 feet down the runway. If the proximity of the inbound aircraft is not sufficient for the aircraft in LUAW to exit, sending the arrival around is the second option. One controller described this as facility expectation, and stated that they train this technique.

The controllers described awareness that a go-around at SAN makes more work for the approach controller and may affect the traffic for surrounding airports. Controllers described feeling a need to push departure traffic with limited space between arrivals. Several controllers used the term “squeeze play” when describing this operation, and agreed that a squeeze play was more the norm than the exception at SAN. One controller estimated that they use a “squeeze play” approximately 20 times per shift, and responded that they did not view a “squeeze play” as a risky operation.

**Overflight** – Several controllers stated that they were aware to some extent of the previous event on May 13, 2020, and that the direct overflight had been an issue in that event. The controllers also shared that there is no good way for them to avoid an overflight unless they taxi the departure aircraft off the runway. The missed approach procedures for Runway 27 are initially runway heading (275 degrees), and aircraft going around off visual approaches are assigned the same (runway heading). SAN does not have ability to vector below 900 feet above Mean Sea Level.

**Previous LUAW Event on May 13, 2021, at 10:39 p.m. PDT** – (Delta) DAL2249/H/A332 was instructed to LUAW on Runway 27 and conflicted with (SkyWest) SKW3446/E75L, which was cleared to land on Runway 27.

SKW3446 established communication with the LC controller on the RNAV Z Runway 27 Approach. The controller cleared SKW3446 to land on Runway 27, and issued them a Traffic Advisory and a cautionary Wake Turbulence Advisory reference DAL2249. DAL2249 was in communication with the controller, was issued a Traffic Advisory reference SKW3446 on an eight-mile final, and was instructed to LUAW on Runway 27. When SKW3446 was on a 0.4-mile final, the controller instructed them to go around and fly the published missed approach procedure. SKW3446 executed the missed approach procedure and overflew DAL2249 by 300 feet.

Similarities between LUAW events on May 13, 2021, and June 10, 2021 are discussed below.

- **Airport conditions.** Weather was VFR with no restrictions to visibility. Traffic was rated as light volume and routine complexity. Aircraft were landing on and departing from Runway 27.
- **Correct application of LUAW memory aid.** Despite its correct application, the LUAW memory aid does not appear to have been effective in reminding the LC controller in either event of the aircraft in LUAW.
- **Position combination.** During the May 13 event, the LC position was standalone, with CIC working all other tower positions. This position combination was typical of mid-shift operations. In the June 10 event, the CIC controller was combined with and performing functions related to the Clearance Delivery position. In both events, the CIC controller was not actively monitoring the LC frequency.
- **Aircraft in LUAW in excess of 90 seconds.** DAL2249 was in LUAW for more than three minutes.
- **Operational Distraction.** At the time of the May 13 event, the LC controller was assisting the CIC controller in resolving a communications equipment issue (intermittent push-to-talk contact on CIC handset). The LC controller had turned away from the runway and tower displays to do so. The CIC controller had taken a phone call from the sheriff's office regarding a reported laser event from the previous evening (non-mission critical).

The LC controllers in both events described distractions they would not have allowed to distract them during the peak of traffic before COVID-19. The LC controller in the June 10 event stated that previously they would not have allowed the helicopter request to distract them with an aircraft in LUAW. The LC controller in the May 13 event told the ERT that they felt they had more time than they actually did to resolve a communications equipment issue.

**Facility Quality Control (QC) Processes** – While QC Operational Skills Assessments (OSAs) were being recorded in the Comprehensive Electronic Data Analysis and Reporting system, the ERT was concerned with the quality of information being captured, specifically as it relates to the issue of LUAW.

- A high number of QC OSAs were completed by indirect monitor – that is, not directly observing the controller in the operation. This method of monitoring performance does not permit the evaluator to observe whether the appropriate



memory aid was being used or whether the procedures associated with LUAW were being applied correctly.

- The QC OSAs did not have a bookmark attached as required in FAA Order 7210.634A, paragraph 3-2.b(7).
- One group of QC OSAs in particular was concerning. Eight OSAs were performed by indirect monitor on the same date, by the same evaluator, for the same time span (30 minutes), and had 50–51 items marked “Met Requirements” or “Exemplary.” No comments were provided in these OSAs.

### **Facility Follow-up**

In response to the event:

- Immediately after the June 10 event, the WSA Director of Operations required a stand-alone CIC to be staffed any time LUAW was used.
- A Corrective Action Plan (CAP) was drafted in response to the event on May 13, 2021. The ATM tasked the Local Safety Council with reviewing the proposed actions, and determining whether they were sufficient in response to the additional LUAW event. Current facility CAP actions are:
  - Create a briefing for facility personnel on FAA Order JO 7110.65, paragraph 3-9-4.b. language relating to “imminent departure,” with emphasis on situational awareness and visual scanning.
  - Amend SAN ATCT Standard Operating Procedures to reflect the above.
  - Educate users regarding appropriate use of unlisted tower cab phone number.
  - Create a briefing on appropriate response to non-mission critical phone calls.
  - Confirm there are no alternate go-around instructions besides the published missed approach.
  - Inquire whether ASDE-X alert parameters are configured correctly in regards to the steep glideslope.
  - Restrict use of LUAW when positions are combined.
  - Evaluate the need for more prominent memory aid.
- Quality Control Group (QCG) follow-up activities:

- Perform an on-site External Compliance Verification (scheduled for July 2021).

### **ERT Members and Activities**

- The ERT conducted a combination of in-person interviews on June 16 and 17, 2021, and virtual interviews for the remaining personnel.
  - ERT on-site activities consisted of:
    - An in-briefing, which included the ATM, National Air Traffic Controllers Association Facility Representative, and the Assistant General Manager for Los Angeles District. The ATM played Falcon replays of the May 13 and June 10 events and described mitigations put in place since the two events. The Event Investigations Manager provided an overview of the ERT process and what to expect over the next few days.
    - Interviews with four controllers and the staff specialist.
    - Tour of the tower cab.
  - ERT follow-up activities were conducted virtually and included interviews with the ATM and the GC controller from the June 10 event, who had been on leave during the on-site visit.
- The ERT collected and reviewed the following data:
  - Services Rendered Teleconference recordings
  - SAN ATCT Order 7110.1F, *Standard Operating Procedures*, and SAN ATCT Order 7110.3C, *Line Up and Wait (LUAW) Procedures*
  - FAA Order JO 7210.3BB, *Facility Operation and Administration*
  - Falcon replays of the events on May 13, 2021, and June 10, 2021
  - Form 7230-4 Daily Log dated June 10, 2021
  - Position logs for June 10, 2021
  - The facility Corrective Action Plan
- The ERT included:
  - An Event Investigations Manager;

- A WSA Runway Safety Team Manager; and
- A WSA QCG Representative.

If you have questions or need additional information, please contact James Fee, Safety Intelligence and Response Group Manager, AJI-13, [REDACTED] or [REDACTED]

cc: Jeffrey U. Vincent, Vice President, Air Traffic Services, AJT-0