NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, D.C. 20594

# AIRPORT SPECIALIST'S FACTUAL REPORT

October 20, 2020

## A. ACCIDENT

| | | |
|---|---|---|
| NTSB # | : | DCA19FA089 |
| Airplane | : | EMB-145XR, Flight 4933 [N14171] |
| Location | : | Presque Isle Airport, ME |
| Date | : | March 4, 2019 |
| Time | : | 1129 eastern standard time (EST)[1] |
| Operator | : | CommutAir |

## B. AIRPORT SPECIALIST

Evan A. Byrne, C.M., ACE
National Transportation Safety Board
Washington, DC

## C. SUMMARY

On March 4, 2019, about 1129 eastern standard time, CommutAir flight 4933, dba United Express, an EMB-145XR, registration N14171, landed at Northern Maine Regional Airport at Presque Isle (PQI), Maine, to the right side of the runway 01, in light to moderate snow. On board were the captain, first officer, one flight attendant, and 28 passengers. Two passengers and one crewmember received minor injuries, and the airplane received substantial damage. The regularly scheduled domestic passenger flight was operating under the provisions of 14 Code of Federal Regulations Part 121 from Newark International Airport (EWR), Newark New Jersey.

## D. DETAILS OF THE INVESTIGATION

### D.1 Airport Information

Presque Isle International Airport (PQI)[2] was located approximately 1 nautical mile northwest of Presque Isle, Maine, and was a publicly-owned entity, operated by the City of Presque Isle. The airport property encompassed 1,489 acres at an elevation of 534 feet mean sea level. The airport reported 5,596 total operations (of which 1,743 were air carrier) for the 12 months ending

[1] All times herein are reported in local time except where otherwise noted.
[2] At the time of the accident the airport was known as Northern Maine Regional Airport at Presque Isle.

July 31, 2018. The FAA certified PQI under 14 CFR Part 139 as a Class I airport with Index A aircraft rescue and firefighting (ARFF) capabilities. The most recent FAA Part 139 inspection was completed on September 20, 2018 (with no issues applicable to the March 4 event).

The airport had 2 runways, runway 1/19 and runway 10/28. Runway 1/19 was 7439 feet in length by 150 feet wide, paved with asphalt, and had precision runway markings and high-intensity runway edge lighting installed. A medium intensity approach lighting system with runway alignment indicator lights (MALSR), and instrument landing system was available for operations on runway 1.[3] A precision approach path indicator (PAPI, on the left side of the runway set at 3.7 degrees) and runway end identifier lights were installed for operations on runway 19. Runway 10/28 was 6000 feet in length by 100 feet wide, paved with asphalt, and had nonprecision runway markings and medium intensity edge lighting installed. A PAPI (on the left side of the runway set at 3.0 degrees) was available for operations on runway 28.

The airport had a published common traffic advisory frequency (CTAF) shared with UNICOM on 122.8 MHz. An automated weather observing system (AWOS-3PT) was available on 118.025 MHz.[4] The runway 1 edge lights, runway end identifier lights, and the approach lighting system were pilot-controlled on the published frequency of 122.6 MHz.[5]

The airport director had held the position at PQI for about 15 years and was responsible for day to day operations, setting strategic direction, air service development marketing, among other duties. Among his 3 direct reports was the airfield maintenance foreman who had worked at PQI for about 30 years. According to the FAA-approved snow and ice control plan (SICP) the maintenance foreman was responsible for directing snow removal activities at the airport.

## D.2 Airport Conditions and Activities Before Accident

This section describes airfield condition and airport operational activities prior to the accident.

### D.2.1 Notices to Airmen (NOTAM)

Aerodrome NOTAMs for PQI in effect before the day of the accident, and those issued on the day of the accident through its post-accident closure are contained in table 1.

Multiple field condition report (FICON) NOTAMs were issued the morning of the accident reflecting the ongoing snow event and snow removal operations. The FICON issued at 0910 (about 2 hours and 19 minutes before the accident) was the most current and stated that the runway condition code (RCC) for runway 1 was 3/3/3 with an observed 100-percent coverage of ¼-inch dry snow.

[3] The ILS (consisting of a localizer and glideslope) was the only navigational aid located at the airport.
[4] According to the airport director the lightning arrester on the AWOS wind sensor pole was found bent after the accident and the FAA subsequently issued a NOTAM stating the wind sensor was unreliable. The FAA installed a new wind sensor on March 13. Before the accident the AWOS was functioning normally except for an unreliable temperature sensor which had been NOTAMed.
[5] When activated the pilot-controlled lighting stayed on for 15 minutes.

There were no NOTAMs applicable to the runway 1 ILS before the accident. After the accident NOTAM 03/032 was issued, "NAV ILS RUNWAY 01 LOC/GP OUT OF SERVICE 1903041734-1903131900EST."[6]

Table 1. NOTAMs Applicable to PQI for March 4.

| NOTAM # | Issue Date (UTC) | Cancel Date (UTC) | NOTAM Text |
|---|---|---|---|
| 12/270 | 12/28/2018 1602 | | RWY 19 PAPI OUT OF SERVICE 1812281602-1907102000EST |
| 02/331 | 02/22/2019 2029 | | SVC AUTOMATED WX BCST SYSTEM T UNREL 1902222029-1903292359 |
| 03/009 | 03/02/2019 0143 | | TWY E HLDG PSN SIGN FOR RWY 19 NOT LGTD 1903020143-1906032300 |
| 03/020 | 03/04/2019 0950 | 03/04/2019 1634 | AD AP CLSD EXC 10 MIN PPR 122.8 1903040950-1903052200 |
| 03/021 | 03/04/2019 0951 | 03/05/2019 0052 | AD AP ALL SFC WIP SN REMOVAL 1903040951-1903052200 |
| 03/022 | 03/04/2019 0953 | 03/04/2019 1124 | RWY 01 FICON 3/3/3 100 PCT 1/2IN DRY SN OBS AT 1903040953. 1903040953-1903050953 |
| 03/023 | 03/04/2019 0954 | 03/05/2019 0052 | RWY 10/28 CLSD 1903040954-1903052200 |
| 03/024 | 03/04/2019 0955 | 03/04/2019 11:26 | TWY ALL FICON 1/2IN DRY SN BA MEDIUM OBS AT 1903040955. 1903040955-1903050955 |
| 03/025 | 03/04/2019 0956 | 03/05/2019 00:52 | APRON ALL FICON 1/2IN DRY SN BA MEDIUM OBS AT 1903040956. 1903040956-1903050956 |
| 03/026 | 03/04/2019 1124 | 03/04/2019 14:10 | RWY 01 FICON 3/3/3 100 PCT 1/4IN DRY SN OBS AT 1903041124. 1903041124-1903051124 |
| 03/027 | 03/04/2019 1126 | 03/05/2019 00:52 | TWY ALL FICON 1/4IN DRY SN BA MEDIUM OBS AT 1903041125. 1903041125-1903051125 |
| 03/028 | 03/04/2019 1410 | 03/05/2019 00:52 | RWY 01 FICON 3/3/3 100 PCT 1/4IN DRY SN OBS AT 1903041410. 1903041410-1903051410 |
| 03/029 | 03/04/2019 1634 | 03/04/2019 16:34 | AD AP CLSD EXC 10 MIN PPR 122.8 1903041634-1903052200 |
| 03/030 | 03/04/2019 1634 | 03/05/2019 00:54 | AD AP CLSD 1903041634-1903052200 |
| 03/031 | 03/04/2019 1643 | 03/05/2019 00:59 | AD AP CLSD 1903041643-1903051642 |

### D.2.2 Self-Inspection Logs

Airport self-inspection logs were reviewed for the 2 days before the accident and showed satisfactory conditions (no discrepancies) for inspection items associated with runway 1 and its approach lighting system, except a runway edge light was identified as not working on March 3.[7]

[6] The ILS was put back in service March 14, 2019.

[7] According to the airport director, PQI did not conduct a nighttime inspection the night before the accident because the air carrier flight was canceled that evening. The March 4 daily inspection had not been completed before the accident. The airport did a special inspection on March 4 after the accident.

Review of open work orders applicable to runway 1 and its approach lighting system showed that one edge light was reported inoperative on February 21, and 3 lights in the MALSR were out of service (2 identified on February 20, 1 identified on February 28). According to the work orders the inoperative lights in the MALSR array had been reported to the FAA.

### D.2.3 Operational Events at Airport Before Accident

This section describes events at the airport before the accident using information from CTAF recordings, surveillance video, and interviews with the PQI airport director and maintenance foreman.[8]

According to the maintenance foreman PQI was experiencing light snow throughout the day of the accident. He estimated 1-2 inches of snow had fallen that morning before the accident (with possibly 4-5 inches total for the day). Snow removal operations were underway throughout the morning using three 20-foot displacement plows and a rotary plow (blower). He said they were maintaining runway conditions to no more than ¼-inch dry snow (RCC 3/3/3).

About 1054 flight 4933 contacted PQI on CTAF giving notice that they were about 9 minutes away.[9] PQI asked flight 4933 to call when 2 to 3 minutes out so that they could be sure that equipment was clear of runway 1 and the flight acknowledged. About 1105:46 flight 4933 gave a position report on the CTAF stating they were 2 miles from FEROG and inbound runway 1. PQI acknowledged that they would be clear of runway 1 and flight 4933 stated they were 4 minutes out. About 1107:47 flight 4933 provided a position report on CTAF that they were at EXCAL and landing runway 1.

About 1110:29 flight 4933 reported they were conducting a missed approach on runway 1. The maintenance foreman stated that they finished plowing the runway about 10 minutes before flight 4933's first approach. He estimated that at that time there was about 1/8-inch snow on the runway. He said the runway was not entirely snow covered and estimated there was about 20-25 percent of pavement visible. According to the airport director, at the time of the accident flight's first approach, two displacement plows were clearing the general aviation ramp, a displacement plow was next to the hangars on the ramp at the end of taxiway E, and the maintenance pickup and the rotary plow were parked outside the maintenance shed.

[8] PQI had a recording system funded by Maine Department of Transportation (G.A.R.D. – General Audio Recording Device) that captured time-stamped recordings of transmissions on its CTAF. Recordings covered the period from about 0934 to 1426 (see attachment 2 for a transcript of CTAF recordings). Surveillance video from the terminal building directed SW across the ramp and towards the runway was also reviewed from about 1035 to 1210 was reviewed (see attachment 3). Interview summaries are contained in attachment 1.

[9] Times reported in this report from the CTAF recordings, surveillance video, and documents, have not been aligned with ATC and FDR data sources.


**Photo 1. Surveillance video frame showing rotary plow casting snow traveling down runway 19 about 22 minutes before missed approach.**


**Photo 2. Surveillance video frame showing displacement plow traveling north on taxiway A about 11 minutes before missed approach.**


**Photo 3. Surveillance video frame showing rotary plow traveling north on taxiway A about 11 minutes before missed approach.**


**Photo 4. Surveillance video frame showing flight 4933 overflying the airport on first approach (about 1110:37 per ADS-B track data).**

About 1116 flight 4933 told PQI they would come back for another approach and PQI acknowledged they would be clear of runway 1. Flight 4933 asked PQI to make sure, "those lights are on for us." The maintenance foreman, who acknowledged the request, turned the lights up to high intensity.[10] About 5 minutes later flight 4933 informed PQI they were going to FEROG (approach waypoint) and about 7 minutes out. The PQI maintenance foreman replied, "yeah, we'll be clear runway one and the lights are on bright."[11] Flight 4933 made multiple position reports on the CTAF for the ILS inbound with the last at 1126:48 when they reported 4 miles to the runway.

At the time of the second approach, two displacement plows were clearing the general aviation ramp, another was on taxiway E about 50 feet behind the hold line for runway 1-19, the maintenance pickup was parked on taxiway C outside of the hold short line for runway 1-19, and the rotary plow remained outside the maintenance shed.

The maintenance foreman who was in a pickup truck behind the hold short line on taxiway C saw the airplane headed for him just after it had touched down in the infield snow. He drove his truck onto the runway to get away and saw the airplane had stopped about 150-200 feet from his original position on taxiway C. He estimated that at the time of the accident the visibility was about ½ mile based on what he could see from his truck and said that the accident happened about 30 minutes after they had last plowed the runway.


**Photo 5. Surveillance video frame about the time flight 4933 stopped in the infield.**

## D.3 Emergency Response

[10] He stated that after the first approach the runway lights were not on.
[11] He stated that he activated the lights again to high intensity about 10 minutes after the pilots' first request.

At 1129:14 the CTAF recording captured a transmission stating, “remain seated remain seated remain seated. Remain seated remain seated.”

After the accident, the maintenance foreman radioed his personnel that a plane was down and they needed the fire department, called the airport director to let him know that flight 4933 was in the infield, and issued a NOTAM closing the airport.

About 1131:31 the on-airport fire truck reported on CTAF they were traveling to runway 1/19 via taxiway alpha. About 1132:00 flight 4933 and United operations at PQI made contact via CTAF and discussed evacuating out the left side of the airplane, that emergency services had been dispatched and were inbound. About 1132:34 the on-airport fire truck reported being on runway 1/19.[12]

Both United operations and the on-airport fire truck attempted to solicit information about the well-being of occupants from the crew of flight 4933, but no reply was captured in the recorded CTAF transmissions. Communications from the airplane revealed they would be using the left side main entry door to evacuate. About 1134:57 flight 4933 informed United operations at PQI of the number of passengers on board and that they were turning off their batteries.

Surveillance video showed that about 3 minutes after the on-airport fire truck had stopped on the runway near the airplane the rotary plow arrived and started to cast snow. According to the maintenance foreman it was attempting to cut a road from the runway to the airplane in the infield but the snowbank was too hard. To help, the maintenance foreman retrieved a John Deer tractor with a 16-foot blade from the shop building. When he arrived about 3 minutes later he started clearing snow for the road to the airplane. He reported that when he arrived, the on-airport fireman had walked to the airplane, and while he was clearing snow the off-airport first responders arrived and boarded the airplane. The airport director had used the FBO pickup to go out to the airplane. He called the FAA regional operations center to alert them to the event and verify with them that the airport was closed. The first responders waited for the plowing of the access road to be completed before taking people off the airplane.

According to the PQI airport emergency checklist log, notifications were made to the fire and police departments at 1134 and the on-scene coordinator from the fire department arrived at 1142 (approximately 13 minutes after the accident). According to the PQI accident report form[13] completed by the airport director, personnel and agencies involved in the response included PQI, the Presque Isle Fire Department and the Presque Isle Police department. Of the 31 occupants, 5 were sent to the hospital with minor injuries.[14] The runway was reopened at 0500 on March 5.

[12] CTAF recording times and surveillance video times are offset. A truck appeared on the surveillance video traveling down runway 19 about 1136:38 (video time stamp) and stopped north of the airplane about 1137:00. The video timestamp when the airplane came to a stop was 1132:51.
[13] Appendix D to the ACM page 13-79.
[14] The 6120.1 submitted by the operator stated the first officer had a head laceration.


**Photo 6. Surveillance video frame about the time when John Deer tractor (left of pole) starts to cut access. Rotary plow casting snow behind airplane and airport fire truck on runway.**


**Photo 7. Surveillance video frame when additional vehicles arrived on the runway approximately 13 minutes after the accident.**

### D.3.1 Post-Accident Events in Cabin

The operator-submitted 6120.1 form contained information about the sequence of events after the airplane came to a stop. Specifically, a statement from the flight attendant.

The flight attendant was seated in her aft-facing jumpseat and described the landing as rough and violent with cushions and miscellaneous passenger belongings moving about the cabin as the plane came to a stop. A passenger stood to open an over wing exit and the flight attendant shouted, “do not open that door, stay seated, everyone stay seated with your seat belts on.” The flight attendant called the flight deck and got no answer but heard the crew in the cockpit and decided to wait for the captain to contact her as she did not see a need to evacuate immediately.

She got up and looked out the 1A window and saw snow and also saw snow from the R1 galley door. She walked to the back to check on the passengers and remove items that had fallen into the aisle. Some passengers were crying, some said they had hit their heads, but all were conscious. She told the passengers that everything is OK and to stay calm. When she got to the front of the cabin the captain had opened the flight deck door. The first officer was bleeding from his head. The captain told her they will be evacuating. She looked out of 1A and the main cabin door porthole window to ensure it was safe to open the door. She got the first aid kit in case it would be needed. She told everyone they would be evacuating and to leave everything and come to the main cabin door when she called.

Once the door was open she noticed the snow depth was just about up to the bottom of the belly of the airplane. There were a few fire fighters walking through the snow who came on board. One attended to the first officer and one walked down the aisle to check on the passengers. A snow plow was clearing the snow to create a walk way so they did not have to walk in deep snow.

After the snow was cleared the firefighters brought a ladder to assist passengers. The emergency personnel took the first officer out first and then the flight attendant directed everyone off the airplane. After the passengers were off, she walked the aisle to ensure no one was left behind. The captain and the flight attendant were last out of the airplane. They were guided to the bus with the rest of the passengers and proceeded to the terminal.

## D.4 Damage to the Airport

According to the airport director the lightning arrester on the AWOS wind sensor pole was found bent after the accident and the FAA issued a NOTAM stating the wind sensor was unreliable. The FAA installed a new wind sensor on March 13. An edge light was damaged during aircraft removal.

**Photo 8. Bent lightning arrestor on AWOS wind sensor pole (courtesy PQI).**

## D.5 Actions to Restore ILS Localizer and Glideslope

The runway 1 localizer and glideslope were NOTAMed out of service at 1234 on the day of the accident.[15] On March 7 a FAA flight inspection was conducted and found that the localizer alignment was out of tolerance and a glideslope reversal was present at 890 feet.[16] Subsequently snow removal was conducted around the areas around and in front of the localizer antenna, and the glideslope antenna.

Photos 9 and 10 show the snowfield around and in front of the localizer array the afternoon of March 4. Surveys taken in that area 2 days after the accident show snow depths ranging from 2.1 to 4.9 feet (see attachment 4).

[15] NOTAM 03/32 – PQI NAV ILS RWY 01 LOC/GP OUT OF SERVICE 1903041734-1903131900EST.
[16] See attachment 6 for the flight inspection reports from March 7 and March 13.

After the March 7 flight inspection, PQI scraped snow from the areas around the localizer array and glideslope antenna using 3 rented bulldozers and their own John Deer tractor. According to airport operations personnel the FAA did not know exactly how much snow needed to be removed. The airport cleared an area in front of the localizer array approximately 250 feet either side of runway centerline to the runway threshold (about 1000 feet in length). The area outside of the runway lights along the length of the runway was also cleared of snow.[17] The glideslope snow clearance area was also scraped of snow per FAA Advisory Circular 150/5200-30D. According to the maintenance foreman the snow clearing effort took between 15-16 hours. Photos 11 and 12 show the area cleared of snow around the localizer antenna and along the runway.

On March 13, after the snow clearing operation was completed, a flight inspection found the localizer and glideslope signals to be within specified tolerances and the NOTAMs applicable to the ILS approach being out of service were canceled.

**Photo 9. Snowfield between localizer antenna and runway looking north from the approach end of runway 19 (courtesy PQI).**

[17] The maintenance foreman stated that they typically cleared this area 150-200 feet either side of runway centerline.

**Photo 10. Snowfield around the localizer antenna from the localizer shack looking W-NW (courtesy PQI).**

**Photo 11. Snow cleared from around the localizer antenna (courtesy PQI).**

**Photo 8. Snow cleared between the localizer antenna and runway (courtesy PQI).**

## D.6 Prior Localizer Signal Problems at PQI

Airport operations personnel at PQI stated that localizer signal problems have occurred in prior years. PQI does not have the ability to monitor the signal quality of the localizer. In the past, the airport was alerted to localizer signal problems by FAA technical operations personnel who would conduct a ground check of the signal at the airport either as a routine check or in response to a reported problem.[18] After a failed check the airport would remove snow but how much snow to remove was not known in advance – when the signal came back into compliance they had cleared enough. The airport director stated that in his opinion operational requirements for landing from a Category I ILS have kept this accident from happening previously when the localizer signal was not correct.

[18] Before the accident in March 2019 there were no reports to PQI about problems with the runway 1 localizer signal made by either the FAA or airport users (pilot reports).

In contrast to past years where localizer signal problems have occurred during the spring thaw when the weather was warming (with rain and snow melt leading to water underneath the snow), this event happened when it was still very cold. The maintenance foreman said there were no changes in the way airport personnel conducted snow removal operations at PQI in the 2018-2019 winter season compared to prior winter seasons. They had more snow in 2018-2019 than in prior years and as a result had been spending more time clearing snow than tapering it, yet the berms were still within the requirements outlined in the AC.[19] Personnel stated they had plowed that way for years and the banks and the snow depths have been higher with no localizer signal disturbance. Operations personnel asserted that based on their experience with past events the problem was not snow depth related as they have seen it with depths as much as 4 feet to as little as 12 inches.

In 2003-2004 the localizer antenna array was moved to its current location (about 1000 feet from the runway end from its prior location about 500 feet off the end of the runway). After that change the airport thought it mitigated the signal problems that could occur in the winter. However, three to four years later the problems resumed.

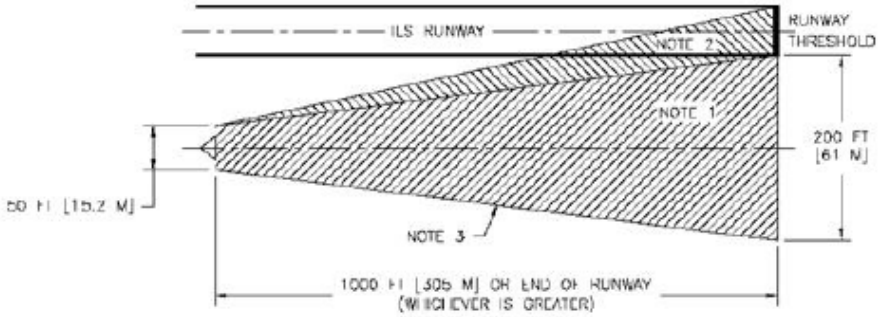
The airport director stated specific criteria on how to clear snow around the glideslope antenna was outlined in their SICP and AC 150/5200-30D. The airport monitors the snow depth in the defined area around the glideslope to prevent snow-induced signal problems. However, similar guidance does not exist for the localizer. Based on discussions with FAA personnel he understood the reason was because its signal requires more site-dependent tuning accounting for the local topography. Having more specific and prescriptive guidance for snow removal around the localizer would be helpful. However, airport operations personnel stated that if they implemented a requirement to clear the area in front of the localizer antenna it would likely affect their ability to satisfy clearance times for the other airport surfaces because of their current snow removal resources (personnel and equipment).[20]

## D.7 FAA Guidance on Snow Removal Around ILS Components[21]

Advisory Circular 150/5200-30D, Airport Field Condition Assessments and Winter Operations Safety, issued July 29, 2016 provided guidance to airports in developing their SICP, including clearing snow around ILS components. The version current at the time of the accident stated, "…any snow or ice that affects the signal of electronic NAVAIDs should be removed."[22] However, it only discussed glideslope snow clearance areas (see figure 1).

[19] According to the airport director the FAA found that the airport was in compliance with snowbank profiles outlined in their SICP after the accident.
[20] According to the airport director, during the 2019/2020 winter season the ILS localizer snow depth was monitored on a regular basis (area 300 feet wide, 50 feet behind, and 1000 feet in front of the localizer antenna). When snow depths approached 2 feet snow was removed using a bulldozer which allowed snow bank edges to be tapered.
[21] See attachment 5 for guidance outlined in this section.
[22] Paragraph 4.2.2.4.

**Figure 4-2. ILS CAT I and CAT II/III Snow Clearance Area Depth Limitations**




NOTES:

1. CATEGORY I GLIDE SLOPE SNOW CLEARANCE AREA.
2. CATEGORY II AND III GLIDE SLOPE SNOW CLEARANCE AREA. THE AREA DEPICTED UNDER NOTE 1 SHALL ALSO BE CLEARED.
3. THE DEPTH OF SNOWBANKS ALONG THE EDGES OF THE CLEARED AREA SHALL BE LESS THEN 2 FEET.

| ACTION TAKEN | SNOW DEPTH | | |
|---|---|---|---|
| | SBR <6 IN [15 cm]<br>NR. CEGS <18 IN [45 cm] | SBR 6 TO 8 IN [15 TO 20 cm]<br>NR. CEGS 18 TO 24 IN [45 TO 60 cm] | SBR >8 IN [20 cm]<br>NR. CEGS <24 IN [60 cm] |
| SNOW REMOVAL (SEE ABOVE FIGURE) | REMOVAL NOT REQUIRED RESTORE FULL SERVICE AND CATEGORY. | ILS CATEGORY I<br>REMOVE SNOW 50 FT [15M] WIDE AT MAST WIDENING TO 200 FT [60M] WIDE AT 1000 FT [300M] OR END OF RUNWAY TOWARD MIDDLE MARKER.<br>ILS CATEGORIES II AND III<br>AS ABOVE PLUS WIDEN THE AREA TO INCLUDE A LINE FROM THE MAST TO THE FAR EDGE OF RUNWAY THRESHOLD. | |
| NO SNOW REMOVAL | RESTORE FULL SERVICE AND CATEGORY. | ALL CATEGORIES<br>RESTORE TO CATEGORY I SERVICE. CATEGORY D AIRCRAFT MINIMA RAISED TO LOCALIZER ONLY.<br>TYPICAL NOTAM TEXT:<br>"DUE TO SNOW ON THE IXXX (APPROPRIATE IDENTIFER) GLIDE SLOPE, MINIMA TEMPORARILY RAISED TO LOCALIZER ONLY FOR CATEGORY D AIRCRAFT" IF APPLICABLE, "CAILGORY II NA"* OR "CATEGORY II/III NA". | ALL CATEGORIES<br>APPROACH RESTRICTED TO LOCALIZER ONLY MINIMA.<br>TYPICAL NOTAM TEXT:<br>"DUE TO SNOW ON THE IXXX (APPROPRIATE IDENTIFER) GLIDE SLOPE, MINIMA TEMPORARILY RAISED TO LOCALIZER ONLY. |

* NA (NOT AUTHORIZED)

**Figure 1. Glideslope snow clearance area requirements outlined in AC 150/5200-30D.**

On December 19, 2019 the FAA published Draft Change 2 to AC 150/5200-30D. This draft change incorporated additional language and guidance to airport operators on snow removal around NAVAIDs. It contained the following information:

> "The accumulation of large amounts of snow can change the surface area in front of the Localizer and consequentially may affect its radiated signal. A snow accumulation level of two (2) feet is the limit at which point the system specialist needs to start observing the condition of the Localizer signal…"

The guidance continued,

> "**Note:** [emphasis in original] There is no substitute for the specialist's skill in observation and analysis of the LOC critical area for snow/ice depths, drifts, piling, or obstruction to signals, and exercising prudent judgments regarding requisite action. When a determination is made that snow or ice accumulations jeopardize signal strength from the Localizer or GS antenna, ensure a NOTAM is issued by the individual with NOTAM authority."[23]

Industry comments on the change were due by January 17, 2020. On October 29, 2020 the FAA published a revised version of AC 150/5200-30D containing the language outlined in Draft Change 2.[24]

A November, 2015 Engineering Tips "Snow Removal Clarification for ILS Facilities" published by the FAA for its technical operations personnel also addressed snow effects on localizer signals. It referenced JO 6750.49A and stated that course shifts could occur with asymmetrical accumulation in front of the localizer antenna and described that changes in ground contour of 1 feet in the defined critical area of the localizer are of concern – although not a hard tolerance. It stated the area within 1000 feet of the localizer antenna within 35 degrees of its course azimuth is where snow clearing and snow bank removal should take place. The Engineering Tips stated that a ground check should be completed to determine the actual effects of a ground contour change resulting from snow on the radiated signal.

Evan A. Byrne
Airport Operations Investigator

Attachments
Attachment 1 – Interview summaries
Attachment 2 – CTAF transcript
Attachment 3 – Ramp surveillance video
Attachment 4 – Snow depth information measurements
Attachment 5 – FAA guidance
Attachment 6 – Flight inspection reports

[23] Proposed paragraph 4.2.2.4.1.
[24] This guidance was aligned with guidance outlined in a interim change to Joint Order (JO) 6750.49B, Maintenance of Instrument Landing Systems (ILS) Facilities, which provided a localizer snow evaluation and action procedure for FAA ILS system specialists. A November 1, 2019 letter to airport sponsors transmitted the updated JO. The version of AC 150-5200-30D published in October 2020 containing change 2 can be found at https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5200-30D-chg-2-consolidated.pdf