

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

AIRPORT SPECIALIST'S FACTUAL REPORT

October 15, 2021

A. ACCIDENT

NTSB # : DCA20LA013
Airplane : EMB-145, Flight 4125 [N619AE]
Location : Chicago, IL
Date : November 11, 2019
Time : 0743 central standard time (CST)¹
Operator : Envoy Air

B. AIRPORT SPECIALIST

Evan A. Byrne
National Transportation Safety Board
Washington, DC

C. SUMMARY

On November 11, 2019, about 0742 central standard time (CST), Envoy Air flight 4125, an Embraer ERJ-145 LR, registration N619AE, experienced a right main landing gear collapse during landing on runway 10L at O'Hare International Airport (ORD), Chicago, Illinois. There was blowing snow at the time of the event. There were no injuries to the 41 passengers and crew onboard, however the airplane was substantially damaged. The flight was operating under the provisions of 14 *Code of Federal Regulations* (CFR) Part 121 as a regularly scheduled passenger flight from Piedmont Triad International airport (GSO), Greensboro, North Carolina.

D. DETAILS OF THE INVESTIGATION

D.1 Airport Information

Chicago O'Hare International Airport (ORD) was located approximately 14 nautical miles northwest of Chicago, Illinois, and was a publicly owned entity, operated by the City of Chicago. The airport property encompassed 7,627 acres at an elevation of 680 feet mean sea level. The airport reported 1,284,411 total operations (of which 921,784 were air carrier) for the 12 months

¹ All times herein are reported in local time except where otherwise noted.

ending December 31, 2019. The FAA certified ORD under 14 CFR Part 139 as a Class I airport with Index E aircraft rescue and firefighting (ARFF) capabilities.

The airport had 8 runways, including runway 10L/28R on which the accident happened.² Runway 10L/28R was 13,000 feet in length by 150 feet wide, paved with asphalt/concrete in good condition with grooved surface treatment, and had precision runway markings, high-intensity runway edge lighting, and centerline and touchdown zone lighting installed. A high-intensity approach lighting system with sequenced flashing lights (ALSF-2), a 4-light precision approach path indicator (PAPI) on the left side of the runway set at 3.0 degrees, and an instrument landing system (ILS) was available for operations on runway 10L.

D.2 Airport Conditions and Operational Activities Before Accident

This section describes airfield condition and airport operational activities pertaining to the south parallel runways (10L/28R, 10C/28C, 10R/28L) before the accident and is based on self-inspection reports, snow logs, and personnel statements provided by Chicago Department of Aviation (CDA).

Pavement surface temperature data for the runway 10L touchdown zone showed temperatures decreased from a high of 35.6 degrees F at 0004 to 32.5 at 0154. The temperature remained between 32.5 and 32.4 through 0559. At 0604 the temperature dropped below freezing to 28.8 and ranged from 28.0-29.1 degrees during the period before the accident. Airport operations personnel reported that snow accumulation on the pavement started to occur around 0415 as light wet snow. Logs noted that total snow accumulation at 0600 was 1.6 inches.

About 0537, with runways 10C and 10R open, runway 10L was closed for snow removal operations which were conducted from about 0546-0621. According to the southside coordinator working in the CDA tower after the runway was cleaned two airport operations supervisors (AOS) conducted a runway surface assessment. The condition was reported as 90% wet and 10% 1/8-inch wet snow across all three runway zones (takeoff, midpoint, rollout). A friction assessment conducted about 0615 reported Mu readings of 61/45/61 (56 average). The southside coordinator stated that as the friction assessment correlated with the surface conditions, he issued a field condition report NOTAM (FICON) reporting 10L as runway condition code (RCC) 5/5/5, and he informed the AOS in the air traffic control tower (ATCT) who was serving as the Federal Aviation Administration (FAA) ATCT southside snow coordinator to reset the 90-minute inspection timer.³ According to a recording of ATCT communications for the southside runways, one airplane took off before departures were stopped on that runway to accommodate arriving aircraft.

While runway 10L was opening, runway 10C was closed for snow removal from about 0616-0656. After it was cleaned its condition was reported as 10% 1/8-inch dry snow 90% wet for

² Runway 10L/28R was one of four runways south of the terminal that also included runways 10C/28C, 10R/28L, and 04R/22L. The four runways located north of the terminal were 09R/27L, 09C/27C, 09L/27R, and 04L/22R.

³ NOTAM 11/394 issued at 0624 local stated, "RWY 10L FICON 5/5/5 10 PCT 1/8IN WET SN AND 90 PCT WET OBS AT 191111224. 191111224-1911121224." This NOTAM replaced 11/392 issued about 6 minutes earlier that reported the same RCC and conditions over the first two-thirds of the runway but described conditions in the rollout zone as "90 PCT WET AND 10 PCT 1/8IN WET SN OVER COMPACTED SN." See attachment 1 for NOTAMs issued for the southside parallel runways that day.

the takeoff zone and 20% 1/8-dry snow 80% wet for the midpoint and rollout zones. Friction assessment showed mu readings of 31/36/28 (average 32) resulting in a downgraded runway condition code (RCC) of 3/2/2. Deicing activities on the runway began about 0713. Airport personnel described that about this time the light wet snow was changing to moderate wet snow. After treatment the runway 10C condition improved to 25% 1/8-inch wet snow 75% wet for the touchdown zone, 25% 1/8-inch wet snow 75% wet for the midpoint zone, and 50% 1/8-inch wet snow 50% wet for the rollout zone. Friction assessment Mu readings were 50/46/52 (average 49) and the runway reopened about 0739.⁴

The AOS serving as the FAA ATCT southside snow coordinator reported that after runway 10C had opened he was monitoring the status of runway 10L “with alternating reports of Medium and Poor braking (did not hear 2 Poors in a row⁵).” He stated that the snow timer had been set at 90 minutes. He dispatched two AOSs (C-29/C-39⁶) to conduct a runway assessment on 10L. The AOS in C-39 stated he recalled receiving the dispatch call about 0730.⁷

When both vehicles arrived at the runway 10L departure end the AOS in C-39 who was conducting the friction assessment radioed the ATCT with a request to proceed onto runway 10L/28R when able; and he was told to hold short south of runway 10L/28R on taxiway Z. While waiting for clearance onto the runway they observed a “few” airplanes land. The AOS in C-39 stated that while holding short he noticed the friction tester did not have the runway designator in its memory. While working with the other AOS in C-29 to resolve the issue they heard the communications over the radio between the Envoy 4125 pilot and ATCT after the accident.

D.3 Conditions and Activities After the Accident

The two AOSs in C-29 and C-39 were dispatched to the accident and cleared onto the runway by ATCT. The AOS in C-29 stated he remembered the runway having complete coverage of snow, and while approaching the airplane he had a hard time coming to a stop. He did not conduct a runway assessment at that time as he was focused on responding to the event. The AOSs reported seeing the airplane’s right wing with its right main gear collapsed in the north side grass runway safety area (RSA) east of taxiway N1. According to event logs, the Chicago Fire Department ARFF was reported on scene about 0747. No passengers requested medical assistance and ARFF helped to deplane passengers and crew using a rescue ramp into two busses for transport to the terminal. The busses arrived at gate G9 about an hour after the accident.

⁴ During this period, runway 10R closed for snow removal, however, Mu values from friction assessments remained low and it remained closed.

⁵ The senior operations manager stated he had heard a braking action report of medium to poor braking on the ATCT frequency of 132.75.

⁶ Vehicle callsigns City 29 and City 39.

⁷ The AOS serving as the FAA ATCT snow coordinator stated that the two AOSs were waiting to get clearance to proceed onto the runway “30min. prior to the timer’s expiring, around 0730 hrs. TRACON had a gap for the 10L runway assessment, it was missed (not sure why).” He stated he heard two more arrivals/departures and the accident airplane was off the runway at N1.

The runway surface assessment performed after the accident (about 0801) reported conditions for runway 10L as 100% 1/8-inch wet snow for the touchdown and midpoint zones, and 100% ¼-inch wet snow for the rollout zone.⁸ The friction assessment recorded Mu readings of 24/22/23 (average 23).⁹

D.4 Notices to Airmen (NOTAM)

Aerodrome NOTAMs for the south parallel runways at ORD issued on the day of the accident through its post-accident closure are contained in table 1.

Multiple FICON NOTAMs were issued the morning of the accident reflecting the ongoing snow event and snow removal operations. The FICON for runway 10L issued at 0624 (about 1 hour and 18 minutes before the accident) was the most current and stated that the RCC for runway 10L was 5/5/5 with an observed 10-percent coverage of 1/8-inch wet snow and 90-percent coverage wet.

Table 1. NOTAMs applicable to ORD south parallel runways for November 11.

NOTAM	Issue Date (UTC)	Cancel Date (UTC)	NOTAM Text
11/356	11/11/2019 0241	11/11/2019 0357	RWY 10R FICON 5/5/5 100 PCT WET OBS AT 1911110241. 1911110241-1911120241
11/359	11/11/2019 0242	11/11/2019 0546	RWY 10C FICON 5/5/5 100 PCT WET OBS AT 1911110241. 1911110241-1911120241
11/361	11/11/2019 0243	11/11/2019 0655	RWY 10L FICON 5/5/5 100 PCT WET OBS AT 1911110242. 1911110243-1911120243
11/365	11/11/2019 0357	11/11/2019 1105	RWY 10R/28L CLSD 1911110357-1911111200
11/369	11/11/2019 0546	11/11/2019 0759	RWY 10C FICON 5/5/5 100 PCT WET OBS AT 1911110546. 1911110546-1911120546
11/370	11/11/2019 0644	11/11/2019 0746	RWY 10L/28R CLSD 1911110644-1911110900
11/372	11/11/2019 0747	11/11/2019 0914	RWY 10L FICON 5/5/5 100 PCT WET OBS AT 1911110747. 1911110747-1911120747
11/373	11/11/2019 0759		RWY 10C/28C CLSD 1911110759-1911111000
11/374	11/11/2019 0914	11/11/2019 1048	RWY 10L FICON 5/5/5 100 PCT WET OBS AT 1911110914. 1911110914-1911120914
11/378	11/11/2019 1009	11/11/2019 1131	RWY 10C/28C CLSD 1911111009-1911111200
11/379	11/11/2019 1046	11/11/2019 1051	RWY 10L FICON 3/2/2 50 PCT 1/8IN WET SN, 50 PCT 1/8IN WET SN, 100 PCT 1/8IN WET SN OBS AT 1911111046. 1911111046-1911121046
11/380	11/11/2019 1051	11/11/2019 1117	RWY 10L FICON 3/2/3 50 PCT 1/8IN WET SN, 50 PCT 1/8IN WET SN, 100 PCT 1/8IN WET SN OBS AT 1911111051. 1911111051-1911121051
11/381	11/11/2019 1108	11/11/2019 1242	RWY 10R FICON 5/5/5 100 PCT WET, 10 PCT 1/8IN WET SN AND 90 PCT WET, 10 PCT 1/8IN WET SN AND 90 PCT WET OBS AT 1911111108. 1911111108-1911121108
11/382	11/11/2019 1117	11/11/2019 1138	RWY 10L FICON 3/2/3 50 PCT 1/8IN WET SN AND 50 PCT WET, 50 PCT 1/8IN WET SN AND 50 PCT WET, 100 PCT 1/8IN WET SN OBS AT 1911111051. 1911111117-1911121117
11/383	11/11/2019 1123	11/11/2019 1216	RWY 10C FICON 5/2/4 10 PCT 1/4IN WET SN AND 90 PCT WET, 40 PCT 1/8IN WET SN AND 60 PCT WET, 20 PCT 1/8IN WET SN AND 80 PCT WET OBS AT 1911111123. 1911111123-1911121123
11/385	11/11/2019 1139	11/11/2019 1218	RWY 10L/28R CLSD 1911111139-1911111600
11/391	11/11/2019 1216	11/11/2019 1253	RWY 10C/28C CLSD 1911111216-1911111600
11/392	11/11/2019 1218	11/11/2019 1224	RWY 10L FICON 5/5/5 10 PCT 1/8IN WET SN AND 90 PCT WET, 10 PCT 1/8IN WET SN AND 90 PCT WET, 90 PCT WET AND 10 PCT 1/8IN WET SN OVER COMPACTED SN OBS AT 1911111218. 1911111218-1911121218

⁸ The field conditions block in the ORD incident report form stated 50% 1/8-inch wet snow 50% 1/8-inch dry snow.

⁹ Snow operation log showed the inspection started 0801 and ended 0811 and contained a comment that friction assessment was completed full length for runway 10L accompanied by a time of 0811. The printout from the Bowmonk device containing Mu readings recorded after the accident started at 0816 and ended at 0820.

11/394	11/11/2019 1224	11/11/2019 1345	RWY 10L FICON 5/5/5 10 PCT 1/8IN WET SN AND 90 PCT WET OBS AT 1911111224. 1911111224-1911121224
11/397	11/11/2019 1238	11/11/2019 1243	RWY 10R FICON 3/3/3 90 PCT 1/4IN WET SN AND 10 PCT WET, 100 PCT 1/4IN WET SN, 100 PCT 1/4IN WET SN OBS AT 1911111238. 1911111238-1911121238
11/398	11/11/2019 1242	11/11/2019 1242	RWY 10R FICON 5/5/5 100 PCT WET, 10 PCT 1/8IN WET SN AND 90 PCT WET, 10 PCT 1/8IN WET SN AND 90 PCT WET DEICED LIQUID AND DEICED SOLID OBS AT 1911111242. 1911111242-1911121242
11/399	11/11/2019 1243	11/11/2019 1247	RWY 10R FICON 3/3/3 90 PCT 1/4IN WET SN AND 10 PCT WET, 100 PCT 1/4IN WET SN, 100 PCT 1/4IN WET SN DEICED LIQUID AND DEICED SOLID OBS AT 1911111243. 1911111243-1911121243
11/400	11/11/2019 1247		RWY 10R/28L CLSD 1911111247-1911111800
11/401	11/11/2019 1255	11/11/2019 1300	RWY 10C FICON 3/3/2 10 PCT 1/8IN DRY SN AND 90 PCT WET, 20 PCT 1/8IN DRY SN AND 80 PCT WET, 20 PCT 1/8IN DRY SN AND 80 PCT WET OBS AT 1911111255. 1911111255-1911121255
11/402	11/11/2019 1301	11/11/2019 1342	RWY 10C/28C CLSD 1911111301-1911111800
11/408	11/11/2019 1342	11/11/2019 1343	RWY 10C FICON 5/5/5 25 PCT 1/8IN WET SN AND 75 PCT WET, 25 PCT 1/8IN WET SN AND 75 PCT WET, 50 PCT 1/8IN WET SN AND 50 PCT WET OBS AT 1911111342. 1911111342-1911121342
11/409	11/11/2019 1343	11/11/2019 1512	RWY 10C FICON 5/5/5 25 PCT 1/8IN WET SN AND 75 PCT WET, 25 PCT 1/8IN WET SN AND 75 PCT WET, 50 PCT 1/8IN WET SN AND 50 PCT WET DEICED LIQUID OBS AT 1911111343. 1911111343-1911121343
11/410	11/11/2019 1344	11/11/2019 1627	RWY 10L/28R CLSD 1911111344-1911111800 ¹⁰
11/411	11/11/2019 1346	11/11/2019 1627	TWY N1 CLSD 1911111346-1911111800 ¹¹

D.5 FAA Air Traffic Control Tower Communications Review

This section describes communications recorded on the FAA ATCT frequency that was being used by the local controller (LC) after runway 10L was reopened. Communications between the LC and arriving/departing airplanes concerning braking action and the CDA vehicles C-29 and C-39 holding short to conduct an assessment are presented below (see attachment 1 for the audio recording).

Runway 10L was opened about 18 minutes into the 1 hour and 54-minute recording as a shift changeover briefing was being conducted by the outgoing LC. One airplane took off before departures were stopped for arrivals¹² and the two airplanes waiting to take off were instructed to taxi the full length of the runway to clear the area.

Skywest 1534 was the first airplane to land. When issuing the landing clearance, the LC stated the RCC was, “555” and added, “no braking action report yet, you’re the first arrival.” The controller provided the same information to the next arrival United 2116. After Skywest 1534 landed, the pilot stated “braking’s poor...” in response to the LCs query for a pilot report (PIREP). The LC relayed the braking action report to United 2116, stating it had come from a CRJ200. When the next arriving airplane Republic 3568 (“Brickyard”) checked in on frequency, the LC provided the braking action report and added that another airplane was touching down.

When United 2116 landed, the LC instructed the pilot to exit the runway using the N3 high speed taxiway¹³ and asked for a braking action report. After the pilot acknowledged the exit

¹⁰ Replaced with NOTAM 11/433 issued at 1627, RWY 10L/28R CLSD 1911111627-1911112200.

¹¹ Replaced with NOTAM 11/432 issued at 1627, TWY N1 CLSD 1911111627-1911112300.

¹² The LC stated this was to accommodate airplanes that had previously gone missed approach.

¹³ The runway centerline turnoff for taxiway N3 was about 7,160 feet from the threshold and within the middle third of the 13,000 foot runway. See figure 3 in the Operational Factors Specialist’s Report for the airport diagram.

instruction he stated "... we'll call the braking action medium..." A few seconds later, the LC transmitted, "United 2116 looks like you missed N3, the next turn off is to the right there, can you make a right turn for me at foxtrot?" The pilot replied, "all right we'll make the right turn at fox, the braking was medium until we got to about alpha 3 (sic) and then it went down to poor."

The next airplane to check in on the approach was China Southern 431 heavy. When issuing the landing clearance, the LC stated that the braking action was medium up to N3 and poor past that. After Republic 3568 landed the LC asked the pilot, "would you agree with the medium up to N3?" The pilot replied "yeah, it was pretty solid up to N3 and pretty poor after that." A short while the LC told an airplane holding for takeoff, "it's going to be a few minutes I don't trust that this heavy (China Southern 431) is not going to roll down to the end with the ah poor braking action..." The LC continued to provide inbound airplanes with RCCs of 5/5/5 and braking action reports of medium up to taxiway N3 and poor after that, while soliciting braking action reports after the airplanes landed.

After about an hour of takeoff and landing operations on runway 10L, the LC cleared United 342 onto the runway to line up and wait for takeoff clearance. Another airplane rolling out after landing had missed the N3 turnoff and was directed to N5. Shortly after United 2043 was cleared for takeoff a statement without identification was broadcast on the frequency, "takeoffs not a good idea slide sideways." Another voice asked "who said that?" United 2043 replied "we just took off, United." The LC confirmed United 2043 made the call and thanked them for the report. United 203 who was already on the approach was told by the LC, "...that was your company departure, winds 360 at 21 gusting to 25..." and she provided the RCC and braking action reports (medium to N3 and poor beyond).

When the LC asked the pilot of United 203 for a braking action report after landing the pilot stated, "ah, we're still ah sliding down the runway a little bit here, United 203 braking is poor... N3 is not going to work 203." American 140 holding for departure then told the LC they were unable to depart runway 10L due to poor braking. Skywest 3208 on the approach then transmitted to the LC that they were going around (the LC later asked if it was due to the braking action report which the pilot confirmed). After United 203 was off the runway the LC asked them "would you agree braking action is medium up to N3 and got slick at that point?" The pilot responded, "yeah, that sounds like it would make sense United 203, it gets really hard to hold the centerline after that because of the crosswind."

The LC cleared additional airplanes to land (continuing to relay the medium to N3 and poor past braking action report along with the RCC); and also worked with airplanes on the ground waiting to depart to coordinate clearing them to different runways or back to the gate. After Delta 851 landed and was instructed to turn left on N3 they called the LC and stated, "just a braking action PIREP, maybe medium." However, the next airplane to arrive was provided the original braking action report of medium to N3 and poor past that location. When Skywest 3115 landed the LC said, "turn left at N3 or if you have it T, you have traffic a mile and a half out behind you, I know it's slick, he has minimum fuel." After Trans States 4790 ("Waterski") landed they told the LC, "braking action on ah 10L poor." The next airplane checking on for a landing clearance, All Nippon flight 112 heavy, was told by the LC "braking action poor reported by an E145."

The remaining communication exchanges relevant to this accident are presented in table 2 which notes the elapsed time in the ATCT recording with the information exchanged. The table starts when C-29 requested access to runway 10L and ends when Envoy 4125 was assigned a different frequency.

Table 2. ATCT communications.

Elapsed Time	Paraphrased communication
1:37:22	C-29 – Tower City 29 and company on Zulu request 10L. LC – City 29 hold short of 10L.
1:37:31	LC – All Nippon 112 heavy turn left at EE.
1:38:15	LC – All Nippon now turn left at GG, I need you off the runway please, traffic’s in position waiting to go.
1:38:31	United 1290 – Tower medevac United 1290 on the ILS 10L. LC – United 1290 continue, traffic holding in position landing clearance in another couple miles.
1:39:00	LC – United 1708 cleared for takeoff.
1:39:11	LC – United 1290 winds 360 at 20 gusting 24, RVR 4000, RCC 555, braking action reported medium up to N3 and poor past, runway 10L cleared to land.
1:39:32	C-39 – Tower City 39er and company holding short of runway 10L on Zulu. LC – City 29er and 39er I understand you’re both holding short of 10L, hold short of 10L.
1:39:52	LC - Air Canada you go after this next arrival.
1:40:14	LC - United 1708 contact departure.
1:40:44	LC – Air Canada 4362, RVR 3000, RCC 555, next arrival 7-mile final, runway 10L line up and wait.
1:41:15	LC – Medivac United 1290 looks like first available turn for you is Tango, if not on the high speed. United 1290 – We can make tango.
1:41:40	Envoy 4125 – At BUGSE. LC – Envoy 4125 RVR 4000, RCC 555, braking medium to poor up to N3 and poor past, will have landing clearance in a couple miles traffic holding in position.
1:42:25	LC – Air Canada 4362 cleared for takeoff.
1:42:36	LC – Envoy 4125 traffic’s on a roll, runway 10L cleared to land current winds 360 at 17 gusts 24.
1:43:50	LC – Air Canada 4362 contact departure.
1:44:39	LC – Envoy 4125 do you require assistance? Envoy 4125 – Need assistance Envoy 4125 LC – Roger we’ll call.
	LC – Multiple go-around instructions issued.
1:45:15	LC – (on interphone) runway 10L is closed, 4125 went off the runway.
1:45:39	LC – City 29er runway is now closed proceed on 10L.
1:46:51	LC – Envoy 4125 we have emergency assistance on the way.
1:47:55	LC – Instructed 4125 to change to 119.25 to talk with emergency vehicles.

D.6 Snow Ice Control Plan

The ORD Snow and Ice Control Plan (SICP) in effect at the time of the accident¹⁴ was developed as part of ORD's airport certification manual to adhere to guidance outlined in the version of AC 150/5200-30 Airport Field Condition Assessments and Winter Operations Safety current at the time of its approval. Included in the areas covered in the SICP were personnel responsibilities, procedures for conducting runway condition assessments, triggers for initiating snow removal operations.

Section 3.1.3 Triggers for Initiating Snow Removal Operations, stated:

Initial snow removal operations commence at the onset of snowfall, after there is sufficient snow on the runway and before a ¼ to ½ inch of snow accumulates. When ice or freezing rain is imminent, CDA-AAO will determine when runways and taxiways will be pre-treated. Reports of poor breaking (sic) will trigger pavement assessments.

Section 3.2.1 Airport Airfield Operations, discussed staffing and personnel responsibilities during a snow event:

Airfield Snow Supervisors: AOS's are assigned to the North and South side of the Airfield. Dependent on runway configuration, once the Continuous Runway Monitoring Procedures are in effect (See Section 5.4), Field AOS's will complete a runway assessment on the Priority 1 arrival runways and departure runways currently in use, and also on the Priority 2 runways and taxiways along with those not currently being utilized by ATCT, for any change in field conditions. Airfield AOS's monitor the appropriate air traffic frequencies for PIREPs and changes to those reports. After a runway is cleared, the AOS, will report a friction measurement reading, or vehicle braking action report, and a surface assessment by type and depth of contaminant, completing the Snow Operations Form in order to produce a FICON and RCC when appropriate (See Section 5.2). The airfield AOS is responsible for monitoring the multi-use snow equipment, plow, broom, and deicer teams prior to completion of an assigned area. An airfield AOS will coordinate all condition reporting and required work with the AOS's assigned to the ATCT and the City tower as part of the Continuous Runway Monitoring Procedure.

FAA ACTC Snow Coordinator: Experienced AAO Staff Members, CDA Staff members are assigned to the FAA ATCT when runway and taxiway movements of snow equipment occur. These individuals serve as liaisons between the CDA snow removal operation and the FAA, and will inform the FAA Air Traffic Control Area Manager of runway and taxiway snow removal operation requirements, facilitating runway availability. PIREPs are relayed by the CDA liaison to the AAO Supervisor of snow removal operations, which, in turn is referenced in producing RCCs, utilized by the airport users via the US NOTAM system. The CDA Staff in the FAA ATCT coordinate snow removal operations around air traffic movement. This will include:

¹⁴ SICP cover page showing original date of July 29, 2009, revision date of November 15, 2017, and FAA approval date of November 28, 2017.

- *Coordination for expeditious runway crossings of snow removal equipment;*
- *Creating gaps in landing and arrival patterns to permit snow removal operations between aircraft movements;*
- *Monitoring air traffic plans for snow removal on Priority 1 areas;*
- *Ensuring Priority 2 areas are cleared and assessed prior to opening;*
- *Supervision of vehicular movements of snow equipment by visual or ground radar to avoid incidents.*

Chapter 5 described procedures for surface assessment reporting. Section 5.1.1 discussed issuance of NOTAMs during snow events. It stated that CDA-AAO will initiate its Continuous Runway Monitoring Procedure (CRMP) when braking action has been reported to be less than good; PIREPs will be reported anytime reports have deteriorated to medium, poor, nil, or have improved to good; and ORD ATCT shall report to CDA-AAO in a timely manner runway braking action reports received from pilots whenever reports have deteriorated to medium, poor, or nil, or have improved to good. Section 5.1.2 outlined the pavement inspection timers used to track when a runway assessment should occur. It stated that the proposed minimum times outlined in the table would be validated against actual PIREPs, observations of snow fall rates and the visibility (see table 3).

Table 3. Pavement Inspection Timers from ORD SICP.

Snow Fall Rate and Type to be Applied to Timers		
Rate of Snow Fall	Wet Snow	Dry Snow
Light	< 90 minutes	< 120 minutes
Moderate	< 45 minutes	< 80 minutes
Heavy	< 30 minutes	< 50 minutes

Section 5.1.3 was titled Conducting Surface Assessments – Runway Inspections. It stated: *O’Hare ATCT will expect a CDA-AAO request for a runway assessment after the second “Poor” braking action report. If after the CDA-AAO runway assessment the runway remains open for aircraft use, O’Hare ATCT and CDA-AAO will closely coordinate runway closures for snow removal...*

- *When a runway assessment or inspection is required without delay the CDA will request a “Critical Runway Assessment (Inspection).” When this type of assessment or inspection is requested ORD ATCT will stop all departures that have not begun takeoff roll on that runway. Landing aircraft within two miles of the runway will be allowed to land. CDA will only request a “Critical Runway Assessment (Inspection)” under extreme or unusual circumstances, which includes winter precipitation events, and understands significant delays will result. Note: the full length and width of the runway will be inspected.*
- *ORD ATCT will expect a CDA request for a RCA after the second consecutive “Poor” braking action report. If after the CDA RCA the runway remains open for aircraft use, ORD ATCT and CDA will closely coordinate runway closures for snow removal.*
- *A “Normal Runway Inspection” will be made in conjunction with normal operations. Note: The full length and width of the runway will be inspected.*

Section 5.2.3 discussed validating runway condition codes (RCC) as part of the RCAM process. Regarding downgrade assessment criteria it stated:

NOTE: temperatures near and above freezing (e.g., at 26.6 deg F... and warmer) may cause contaminants to behave more sippery than indicated by the runway condition code given in the RCAM. At these temperatures, airport operators should exercise a heightened awareness of airfield conditions, and should downgrade the RCC if appropriate.

Section 5.3.3. stated that friction assessments should be conducted immediately after any aircraft incident or accident on the runway.

Section 5.8 discussed requirements for closures and the Continuous Runway Monitoring Procedure (CRMP). It stated that 2 consecutive poor braking action reports was a trigger to close a runway if CRMP was not in effect but would be a trigger for a runway assessment when in CRMP. Section 5.8.1 described CRMP monitoring functions that would occur in the CDA airfield operations tower cab and on the airfield:

CRMP will include:

- *Monitoring the weather forecast and radar,*
- *Monitoring the air traffic control frequency for pilot braking action reports,*
- *When visibility allows, keep an eye out for where the aircraft are touching down and turning off.*

The preceding monitoring functions would take place in the CDA AAO tower cab.

...CRMP can also be done by the AOS's in the vehicles on the airfield. While on the Movement Area, the Airport Operations Supervisor, AOS, will monitor the PIREP Braking Action reported for that arrival runway(s) on the side of the airport they are patrolling and make occasional observations of where the aircraft touch down and turn off the arrival runway. Coordinating a runway check to assess the runway condition is always an option.

The Experienced AAO Staff Members in the FAA ATCT will also keep an eye out for where the arriving aircraft are touching down and clearing the runway. The AOS will also be made aware of the PIREP's and monitor the deteriorating runway. This AOS will have access to the FAA D-Brite Radar and will be able to see the number of aircraft in the arrival stream. This AOS will also be able to coordinate with the Area Manager when a "gap" will be needed to do a runway assessment or when to close the runway for snow removal"

Evan A. Byrne
Airport Operations Investigator

Attachments

Attachment 1 – ATCT recording