



Federal Aviation Administration

Memorandum

Date: December 18, 2023

To: Richard M Kula, AGL-610 Planning/Programing Branch

From: Kent Duffy, APP-410;
Anna Walker, AGL-610 Regional Planner

Cc: Deb Bartell, Chicago ADO Manager

Subject: Merrill Municipal Airport (RRL)- Runway 16/34 Crosswind Eligibility

Purpose: The Merrill Municipal Airport (RRL), in Merrill, WI, has requested FAA's review of the primary Runway 7/25 wind coverage, in consideration of the need for a crosswind runway. In accordance with FAA Order 5100.38D Change 1, *AIP Handbook*, the ADO must make a specific determination if a crosswind runway is required for the operation of the airfield under established 95% crosswind coverage criteria. Therefore, the specific question for this memo is to validate if the Sponsor's weighted hourly operations wind coverage calculation has been correctly applied.

Background: RRL has two runways, Runway 7/25 is the primary runway (5,100ft x 75ft) and Runway 16/34 (2,997ft x 75ft) which was constructed as a crosswind runway. The wind data was analyzed to determine if the primary runway provides adequate wind coverage for the airport.

The wind coverage was reevaluated in 2019, after the RRL AWOS had been operational for 10 years, using the using the common ADIP wind tool. The analysis indicated that the primary runway provided greater than 95% wind coverage, which per AIP criteria means the crosswind runway does not meet eligibility criteria using common methodologies.

Additional coordination resulted in the Sponsor submitting a memo utilizing a weighted-hourly operations evaluation of the wind coverage, which is permitted by AC 150/5300-13B. This higher-fidelity analysis evaluated the historical times that aircraft were operating and comparing that to the corresponding wind conditions at the time of those operations. As is common, wind velocity and variability is higher during daytime heating, which is also when most aircraft operations occur. This analysis resulted in a primary runway wind coverage of 94.8%. FAA reviewed the Sponsor's analysis and determined that the Sponsor had applied proper use of this weighted-hourly operations methodology.

The weighted-hourly operations calculation of 94.8% wind coverage uses 10+ years of continuous wind data, which is the minimum requirement per the AC. While using all of the available wind data (2001-2021) brings the wind coverage of the primary runway, to 95.08%, it's still true that the minimum threshold criterion with of 10 contiguous years showing wind coverage need has been met.

The Sponsor also submitted additional discussion on the potential use of wind gusts as part of the analysis. FAA reviewed this specific portion of the analysis for proper utilization. Wind gusts are generally conditions that have a duration of less than 20 seconds, whereas the sustained wind velocities recorded by NOAA and used in the wind coverage analysis are the highest 2-minute recorded value during the period of observation. The sustained wind metric effectively covers much of the variation in wind velocity that is occurring at the airport, since it is using the peak sustained value. In contrast, applying a wind velocity with a duration of 20 seconds or less to a full hour (3,600 seconds) of operations is not mathematically valid. Accordingly, as stated in AC 150/5300-13B Appendix B (B.2.1), the FAA does not consider other conditions (including wind gusts) in reviewing wind coverage.

Determination: AGL and APP-410 concur that the Sponsor's weighted-hourly operations analysis is correctly calculated, indicating that the primary runway currently has less than 95% wind coverage for A-I/B-I aircraft. Therefore, the ADO can determine that Runway 16/34 is an eligible crosswind runway. Because there are long-term changes in wind patterns, this wind coverage determination is valid only for the crosswind runway once reconstructed. As is standard practice, re-evaluation of crosswind coverage is needed for future rehabilitation and other related projects.

This concurrence does not provide project-level justification for Runway 16/34 as it is only validation of the airport's primary runway's wind coverage and subsequent crosswind eligibility.

Per the Order 5100.38, Table 3-18 row (b), the AIP-justified width and length of the Runway 16/34 will need to be assessed based upon the current, validated operations data, including regular use by the critical aircraft, when considering the need for reconstruction of the runway prior to grant issuance.