



Airfield Simulation Analyses



Washington Dulles International Airport (IAD)

Client Name: CH2M HILL & Carter Burgess for Metro Washington Airports Authority

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Washington Dulles International Airport (IAD) currently has three runways. The Metropolitan Washington Airports Authority (MWAA) identified the need for new runways at IAD to accommodate the forecasted activity on the airfield. This project involved airfield simulation analysis of IAD to evaluate the needs of the proposed taxiway complex and to determine the need for various taxiways to support the new north-south and east-west runways at IAD. The taxiway issues involved two major decision criteria: the location and number of high speed taxiway exits; and the location and number of cross-field connector taxiways between the new runways and the existing airfield.

Three taxiway schemes were developed for each of the proposed runways. Performance of each scheme was measured in terms of taxi-in and taxi-out time, taxi delay, and taxiway utilization. These metrics, in association with the visual animation of the simulations performed, provided appropriate information for assessing the utility of each proposed taxiway.

Based on the simulation analyses, it was recommended that four, FAA-standard, 30-degree high-speed exit taxiways (two for northbound arrivals and two for southbound arrivals) be constructed for the future north-south runway. Additionally, six cross-field taxiways were recommended for the new north-south runway complex. For the new east-west runway complex, two high-speed exits in both directions and two cross-field connector taxiways to support the runway complex were recommended. Severe congestion was observed around the proposed terminal complex for the forecasted activity levels. Hence, an additional diagonal cross-field taxiway was recommended to provide an alternative taxi route from the eastern half of the terminal complex to the new crosswind runway.