TRUCKEE TAHOE AIRPORT DISTRICT - INTEROFFICE MEMORANDUM

TO: BOARD OF DIRECTORS

FROM: KEVIN SMITH, GENERAL MANAGER

SUBJECT: RUNWAY UTILIZATION REPORTING TOOL – PROJECT UPDATE

DATE: MAY 22, 2020

At the July 2019 Board of Directors Meeting, Director Hetherington requested Board consideration of a request for a report that compares the runway utilization before and after TTAD installed an air traffic control tower to better understand what impact the Tower has had on runway selection. At the August 2019 meeting staff brought forward a proposal for $29,100 to build the software and $2,200 annually to run the report. At that meeting the Board reviewed and approved the request to create the tools and report back to the Board. The Board also approved Director Hetherington to participate with Staff on the Working Group. The working group includes Director Hetherington, Kevin Smith, Hardy Bullock, David Van Quest, and David Diamond. The project objective is twofold. Identify what effect the tower had on runway utilization and selection and develop a runway utilization baseline for further procedure and NAP enhancements and modifications.

This first phase of work is complete, and the Working Group has reviewed preliminary data. Early data results show there was a increase in utilization of Runway 29 between pre and post tower years to the tune of 6% for Departures and 7% for arrivals. There was also a 29% increase in traffic between the two reporting periods we studied. These increases in traffic are consistent with what we have seen over the past 15 years. Since 2005 operations have tripled, however annual growth rates have slowed over the past 3 years.

While the results of this new reporting tool demonstrate interesting future applications and usable information, the Working Group has identified a few important components that are still missing. We are still working on the reporting tool and would like to finish this work prior to presenting the full report to the Board and public. The Working Group is in process of working with Vector to consider options to add wind/weather data, hour by hour report capabilities, as well as IFR arrival and departure data. This data is necessary to isolate operations where the Tower and Pilot had an opportunity to assign or select any of our existing four runway options.

Essentially, we need to know when calm wind (less than 5 knots) conditions existed and what was the runway utilization during those periods. When winds are above 3 to 5 knots or aircraft are assigned the Truck 4 Departure by Oakland Center, the Tower does not have the ability to move aircraft to more noise friendly runways. In these conditions the tower moves to implementation of Noise Abatement Procedure instructions to pilots. In discussion with the Working Group it is apparent that additional data can answer some of the fundamental questions particularly related to pilot runway selection and tower assignment during calm wind conditions.

WHAT IS HAPPENING NEXT: The working group is in process of meeting with Tom Breen from Vector to add the additional data and information needed. We have currently expended just under $20,000 of the approved $29,100 Budget. It is our goal to bring back the final product to the Board for review and discussion at the July 2020 Board Meeting.

For additional insight into our discussion, I have attached a letter from our past Tower Manager, Karen Hardiman titled “How are Runway Decisions Made at TRK?”

We have also provided a staff generated information sheet helping to understand Runway Selection.

Please let me know if you have any questions.

Thank You

To: Truckee-Tahoe Airport District
From: Karin Hardiman, TRK NFCT ATM
Date: March 24, 2020
Subject: How are Runway Decisions Made at TRK?

The air traffic controllers at TRK rely on a combinations of runways, or a single runway configuration, to efficiently and safely direct the landing and departure of aircraft. They also follow the strict guidelines set forth by the Federal Aviation Administration (FAA) which can be found in FAA Order JO7110.65Y which states:

Section 5. Runway Selection
3−5−1. SELECTION

a. Except where a "runway use" program is in effect, use the runway most nearly aligned with the wind when 5 knots or more or the "calm wind" runway when less than 5 knots unless use of another runway:
1. Will be operationally advantageous, or
2. Is requested by the pilot

NOTE−
1. *If a pilot prefers to use a runway different from that specified, the pilot is expected to advise ATC.*
2. *At airports where a "runway use" program is established, ATC will assign runways deemed to have the least noise impact. If in the interest of safety a runway different from that specified is preferred, the pilot is expected to advise ATC accordingly.*

Weather is an integral factor in airport operations, aircraft performance, and determining runway selection and flight paths. Factors such as surface winds, winds aloft, cloud height, cloud type, precipitation, temperature, sea level pressure, and density altitude are considered by pilots and air traffic controllers before a runway determination is made.

Under ideal conditions aircraft takeoffs and landings should be conducted into the wind. However, other considerations such as delay and capacity issues, FAA-mandated separation requirements, runway length, available instrument approaches, noise abatement procedures, and other factors may require aircraft operations to be conducted on runways not directly aligned into the wind. Aircraft land into the wind to slow to a speed capable of a controlled touch-down on a runway. Therefore, the wind direction and speed at TRK is the foundation for many operational decisions. While aircraft may operate with limited tail winds, it is not ideal because higher ground speeds may lead to unsafe conditions upon landing. As the wind changes at TRK throughout the day, the runways in use and flight paths change accordingly.

Air temperature also has an impact on the performance capabilities of aircraft. Colder temperatures lead to better aircraft performance and allow aircraft to climb faster when departing. Warmer temperatures can cause aircraft to climb slower. These calculations are critical in mountainous terrain and an important factor in runway selection for an aircraft departing TRK. Additionally, aircraft flight paths and runway selection may change in order to

avoid severe weather such as thunderstorms, snow storms, icing, turbulence, wind shear, or lighting.

Because of the unique influences and dynamics associated with TRK airport, electing which runway(s) to use for aircraft departing and arriving can be a complex task. Decisions about airport configuration and runway use at TRK are made carefully on a continuous basis by the Midwest ATCS air traffic controllers. When selecting runway(s) in use, the air traffic controllers take into consideration numerous factors including:

- Safety
- Efficiency
- Wind direction and wind speed (on the surface and aloft)
- Aircraft weight and performance
- Noise abatement
- The number of inbound and outbound aircraft
- Direction aircraft are arriving from / departing to.
- Special activities such as gliders, skydivers, training flights, etc.

TRK air traffic controllers take pride in being partners with the Truckee-Tahoe Airport in helping reduce noise annoyance due to air traffic flying in and out of the TRK airport. The controllers utilize calm wind runways whenever possible and direct aircraft to fly over roads in lieu of houses when able. They issue specific instructions to each arriving and departing aircraft with this in mind. The phraseology utilized by the TRK air traffic controllers to direct pilots away from neighborhoods is often lengthy and arduous during busy periods, however they are committed to fulfill the contractual agreement to provide this service and do so professionally and transparently.