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To: **Kelly Johnson, Tim House** cc: **Mani Bhargava, LeighFisher**
**Northwest Arkansas Regional
Airport Authority**
From: **Michael Floyd, LeighFisher**
Subject: **PAL Analysis for the 2024 Gate Modeling Scenario**
Northwest Arkansas Regional Airport

INTRODUCTION

An element of the Gate Utilization and Modeling Analysis performed for the Northwest Arkansas Regional Airport Authority (NWARAA) at the Northwest Arkansas Regional Airport (XNA) was to determine future demand scenarios specifically focused on assessing activity growth. LeighFisher developed two future growth scenarios beyond current year 2019: one scenario was intended to assess a 2-year horizon, while a second scenario would evaluate a 5-year horizon.

Ultimately this analysis would determine the adequacy of the current compliment of gates provided at the Airport and assess if these gates could reasonably support continued growth beyond this future timeframe. If the current gate facilities were deemed to pose a risk to growth, actions needed to remedy the future situation would be recommended.

APPROACH

Passenger Activity Levels

The June 2017 Terminal Renovation and Improvement Project (TRIP) Final Report, prepared by Mead & Hunt, introduced the Passenger Activity Level (PAL) metric as a fundamental way to express enplanement level milestones that could cover a range of growth scenarios. Rather than orient future facility planning toward specific years, which are highly dependent on forecasts being accurate from year to year, PALs establish benchmarks for development which coincide with reasonable demand levels at XNA. Focusing future development plan on activity levels, rather than specific years, largely removes the fluctuations of activity from year to year and allows the Authority to initiate advance planning, design and construction to right-time development and deliver facility enhancements that are more sensitive to our changing aviation world.

In the case of XNA, the PALs were rounded to the nearest hundred thousand enplanements. Table 1 presents the annual PAL enplanement levels recommended for terminal planning purposes in the TRIP report.

**Table 1
Passenger Activity Levels**

PAL/Phase	Enplanement Levels	Selected Scenario Corresponding Year	FAA TAF Scenario Corresponding Year
I	700,000	2017	2017
II	900,000	2024	2028
III	1,100,000	2029	>2035
IV	1,300,000	2034	>2035

SOURCE: Mead & Hunt.

The objective of this memorandum is to review the future 2024 scenario activity and to compare the potential levels of enplanements supported by the assumptions in that scenario to the PAL intervals in Table 1. Certainly, another objective of this review is to ensure that the activity levels supported by the 2024 scenario that was modeled for gate utilization, is capable of supporting growth consistent with PAL/Phase III and possibly even PAL/Phase IV, associated with the terminal expansion plans.

2024 Activity Projections

The design day flight schedules utilized in the gate utilization analysis for XNA were largely based on the busy month of the year (October) and further on the busiest day of that month (October 24, 2019 - Thursday). This approach was taken to ensure that the chosen design day would evaluate the adequacy of the gates under a stressed event. To further correlate this peak event to an annualized total, to enable direct comparison to the PALs presented in Table 1, more detailed study of activity was required. This analysis took into account the following variables and factors for historical and current year activity:

- Utilizing the full month of October’s published airline schedules, a determination was made of the total number of flights by aircraft type and carrier
- A total number of departing seats was determined from this data
- Based on an analysis of previous year’s air carrier flights, the peak month’s operations represented approximately 10.01% of the annual total
- An assumed Load Factor of 80% was utilized.

To establish an estimate of the activity requiring gate occupancy during the peak periods at the Airport, a 2014 activity scenario was developed. To develop the demand profile, the 2019 baseline air carrier activity was grown by approximately 7.5% over the following two years, then after 2022 and through 2024 activity was assumed to moderate down slightly to approximately 5% annually over the next three years through 2024.

Additionally, based on results from the recent Traffic Retention and Leakage Study, prepared by Volaire Aviation Consulting, it was determined that the Northwest Arkansas market potentially loses upwards of 35% of its market share to other airports, such as Kansas City, Tulsa, Springfield MO, and to a lesser degree Dallas-Fort Worth. The 2024 scenario in the gate utilization analysis challenged the notion that a new entrant air carrier could begin service to/from XNA by year 5 (2024) and successfully capture a significant share of the lost market if the fares are competitive and the city pairs offered are aligned with the more significant destinations chosen by the travelers from the catchment area of Northwest

Arkansas, Northeast Oklahoma and Southwest Missouri. Therefore, the 2024 scenario was supplemented with the following activity:

- The entrant carrier could be either a low-cost carrier or a new mainline carrier.
- The carrier would initiate service at 2-3 new city pairs with a total of seven additional flights per day.
- Aircraft utilized would be larger narrow-body equipment, consistent with the Boeing 737-700/737-Max 8 or the Airbus A319, with seating of between 143-175 seats.

Utilizing these assumptions about future growth both by current carriers and a new potential entrant carrier, levels of enplanements were calculated and are presented in Table 2.

Table 2						
Resulting 2024 Scenario Demand						
	YEARLY TOTALS (EST)					
	2019	2020	2021	2022	2023	2024
October Departures	1,449	1,558	1,675	1,758	1,846	1,938
Total Departing Seats (Oct)	118,724	127,628	137,200	144,060	151,263	158,827
Avg Seats/Departure	81.9	81.9	81.9	81.9	81.9	81.9
Oct % of Annual	10.01%	10.01%	10.01%	10.01%	10.01%	10.01%
Total Annual Departing Seats	1,186,054	1,275,008	1,370,634	1,439,165	1,511,124	1,586,680
Load Factor %	80%	80%	80%	80%	80%	80%
Annual Growth %	n/a	7.5%	7.5%	5.0%	5.0%	5.0%
Total Departing Passengers	948,843	1,020,006	1,096,507	1,151,332	1,208,899	1,269,344
	NEW ENTRANT CARRIER					
	2019	2020	2021	2022	2023	2024
Avg Monthly Departures	0	0	0	0	0	210
Avg Seats/Departure	0	0	0	0	0	150
Total Departing Seats/Month	0	0	0	0	0	31,500
Total Annual Departing Seats	0	0	0	0	0	378,000
Load Factor %	0%	0%	0%	0%	0%	80%
Annual Growth %	n/a	n/a	n/a	n/a	n/a	n/a
Total Departing Passengers	0	0	0	0	0	302,400
	YEARLY TOTALS (EST) w/NEW ENTRANT CARRIER					
	2019	2020	2021	2022	2023	2024
Total Annual Departing Seats	1,186,054	1,275,008	1,370,634	1,439,165	1,511,124	1,964,680
Load Factor %	80%	80%	80%	80%	80%	80%
Total Departing Passengers	948,843	1,020,006	1,096,507	1,151,332	1,208,899	1,571,744

Source: LeighFisher analysis, September 2019.

CONCLUSIONS AND FINDINGS

The projection of activity potentially represented by the 2024 scenario prepared in the gate utilization analysis reveals that this level of activity may be capable of exceeding the PAL/Phase IV levels (1.3 million enplanements) presented in the TRIP study. The resulting enplanement level, based on these assumptions, is in excess of 1.57 million enplanements. As noted in both the technical memorandum and in the presentation to the NWARAA Board, the activity levels generated by the 2024 scenario are believed to likely stress the utilization of the existing complement of gates at XNA and points to the need to consider increasing overall gate capacity at the Airport. This is further supported by the analysis of operations per gate, per day by the carriers (presented in Table 2 of LeighFisher's "Aircraft Gate Utilization Analysis Technical Memorandum", dated 9/7/19), where in several instances (approximately five of the gate positions) per gate utilization was at or above 6 turns or flights per gate per day. For a smaller hub air carrier origin-destination airport this suggests a higher utilization than may be supported at those gates. Given the existing lease constraints on several of the exclusive use gates, planning and design for near term gate capacity increases appears to be supported.