August 4, 2014

David Frommer
Planning and Construction, Executive Director
University of Nevada, Las Vegas
4505 S. Maryland Parkway
Box 451027
Las Vegas, NV 89154-1027

RE: AIRPORT INFORMATION FOR THE CAMPUS IMPROVEMENT AUTHORITY

Dear Mr. Frommer:

At the July 23, 2014, University of Nevada, Las Vegas (UNLV) Campus Improvement Authority meeting, the Campus Improvement Authority Board (CIAB) asked for information regarding runway use at McCarran International Airport (LAS). This contains that information, in addition to other supplemental data that the CIAB may find beneficial.

**Airspace Use**

Although Clark County owns and operates LAS, the Federal Aviation Act of 1958 assigned the Federal Aviation Administration (FAA) to ensure the safe and expeditious flow of air traffic in the United States. The FAA is responsible for assigning control instructions for air traffic within the Las Vegas Valley, and retains sole authority over aircraft in flight. Neither the State of Nevada nor Clark County exercises any authority over aircraft in flight.

**Typical Runway Use**

The FAA is responsible for designating runway use and assigns control instructions for air traffic. Runway use is determined by the FAA and mostly predicated on current and/or forecast wind direction. Since aircraft must land and take off into the wind, and because westerly wind conditions are most prevalent within the Las Vegas Valley, LAS’s east-west runways (Runway 07L/25R and Runway 07R/25L) are used most frequently. Runway O1R/19L (the north-south runway closest to the main terminal), has also been used for arrivals and departures during periods of heavy traffic and when dictated by wind direction or weather conditions ever since its construction in the early 1960s. The second north-south runway (Runway 01L/19R), upgraded in 1997, is used primarily for arrivals by large air carrier aircraft and is the preferred general aviation runway. On a typical day and under normal operations and wind conditions permitting, all four runways are used concurrently for arrivals and departures - large aircraft typically departing to the west and south, while landing from the east and north.

**Arrivals from the North**

On average, over the last three (3) years large aircraft runway use resulted in arrivals from the north occurring 11% of the time. Usage can vary dramatically from year to year, and month to month, based on ever-changing weather conditions or airport construction activity. As shown in Figure 1, landings from
the north increase during the summer months due to runway configurations accommodating an east-bound departure flow (caused by temperature conditions typically greater than 100°Fahrenheit, with the east-west runways sloping downhill towards the east).

Departures to the North

As noted above, since aircraft must land and take off into the wind, winds from the northwest, north, or northeast will require the FAA to depart aircraft to the north. On average, over the last three years large aircraft runway use resulted in departures to the north occurring 12% of the time. As stated previously, monthly percentages can vary due to weather conditions or airport construction activity. For example, in March 2011, approximately 9% of the large air carrier aircraft departed to the north whereas this figure was 23% in March 2014. As shown in Figure 2, departures to the north increase during the cooler months, typically due to winds from the north.

In summary, large aircraft typical use the north-south runways 15% to 20% of the time, either for arrivals or departures. To accommodate future traffic demands, as air traffic operations increase in future years, so will the use of the north-south runways.
Flight Direction

For various planning purposes, the Clark County Department of Aviation (CCDOA) has reviewed which direction aircraft turn, when departing to the north. In 2004, approximately 60% of the large aircraft turned east while the remaining 40% turned west. These percentages remained almost unchanged in 2008 and in 2014.

Additionally, as shown in Figures 3 and 4, it should be noted that aircraft departing to the north are required to turn almost immediately to the east or west to avoid conflicts with airspace reserved for Nellis Air Force Base operations.
Figure 3 – Typical Large Aircraft Departure Tracks from Runway 01L and 01R

Figure 4 – Typical Large Aircraft Departure Tracks from Runway 01L and 01R (Detail)
Operations by Day of the Week

The FAA reports that in 2014, on average there are more than 1,400 operations per day at LAS (arrivals and departures). Large aircraft make up more than 65% of these movements, with an average of more than 920 arrivals and departures per day. Historically, Thursdays have been the busiest day for operations and passenger movements at LAS. Data for large aircraft arrivals, by day of the week, from January through June 2014 are displayed in Figure 5.

![Figure 5 - Large Aircraft Arrivals by Day of the Week](image)

Operations by Time of Day

The time when aircraft operations occur at LAS are dependent on many factors, and like runway usage, can vary from year to year, and month to month, depending on individual airline schedules. LAS has historically had very few operations from 1 AM to 6 AM. Figure 6 depicts hourly operation counts for large aircraft, for three days with heavy northern departures and for three days with heavy arrivals from the north. The six days are representative of our 2014 large aircraft traffic activity. As operations continue to increase to pre-recession figures, it is expected that the growth in operations will be distributed from 6 AM to 1 AM.
Federal Aviation Regulations (FAR), Part 150 – Airport Noise Compatibility Planning define how aircraft noise should be modeled for land use compatibility planning purposes. The model requires an average day of airport activity levels, including runway use, aircraft type, flight track utilization, and day-time versus night-time operation splits. The day-night annual average noise levels from 65 decibels (65 DNL or AE-65) and greater is depicted in 5 decibel increments, as Noise Exposure Maps (NEMs). Clark County adopted its first NEMs for LAS as part of the Clark County Development Code, Airport Environ Overlay District (AEOD) regulation in 1986. The maps contained within the AEOD were subsequently updated in 1990 and 2008.

The 2008 AEOD update is derived from the latest (2006) FAR Part 150 Noise Compatibility Program (NCP) for LAS. NEMs for 2011 and 2017 included in the 2006 FAR Part 150 NCP were approved and validated by the FAA. Figure 7 depicts the projected 2017 NEMs for LAS, as adopted by Clark County in 2008, and the general location of potential stadium sites.
PleasenotethattheDNL,expressedindecibels(dB),isa24-houraveragenoiselevelusedtodefinetheliveaufnoiseexposureacommunityexperiences.Althoughsingle-eventnoiselvelsareusedinthecreationoftheDNL,thenoisecontourrepresentstheaveragesoundexposureduringa24-hourperiodanddoesnotrepresentthesoundlevelforaspecificnoisevent.A10dBcorrectionisappliedtonighttime(10:00p.m.and7:00a.m.)soundlevelstoaccountforincreasedannoyanceduetonoiseduringthenighthours.Thererearemanyothermetricsthattancanbeusedtodescribeaircraftnoiselvels;howeverDNLhasbeenwidelyacceptedasthepreferredmetricfordeterminingnoiselvel-exposureatairportsintheUnitedStates.

**LandUseCompatibilityforNoisePurposes**

Please note that the FAR Part 150 NCP regulations address neither height-related airport compatibility, nor vehicle traffic compatibility (where stadiums and airport facilities are within close proximity to one another).

If you or any members of the CIAB have any further questions regarding airport operations, please contact me at (702) 261-5510 or jeffj@mccarran.com.

Sincerely,

JEFFREY M. JACQUART
Airport Program Administrator

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