2009 Annual Summary

✈ AVCO
Tempe Aviation Commission

Noise

Mitigation Monitoring Summary

Hot Button Issues!

Contents:

● Most compliant airline during 2009:
Aero Mexico

● Overall compliance with the Tempe Corridor stayed below 50%,
p. 3

● Annual average aircraft noise decreases registered in areas outside the Sky Harbor noise exposure contour lines in 2007 and 2008 continued, but to a lesser degree at most monitors in 2009, p. 5

● Reductions in both day- and nighttime departure activity over Tempe

Report prepared for TAVCO by the City of Tempe, 255 East Marigold Lane, Tempe AZ 85281

1. Introduction

This summary is assembled for the Tempe Aviation Commission (TAVCO) to summarize annual compliance of airline operations at Phoenix Sky Harbor International Airport with noise mitigation flight procedures over the City of Tempe. TAVCO consists of 13 Tempe residents appointed by the Tempe Mayor with approval of the City Council to assist and advice on aviation noise and other issues relating to the Phoenix Sky Harbor International Airport. The City of Tempe is located directly east of the Phoenix Sky Harbor International Airport. The airport has 3 parallel runways and is owned and operated by the City of Phoenix. After the FAA suspended a side step visual approach procedure to Runway 25L, the following flight procedures are implemented to mitigate noise impact from large aircraft over Tempe:
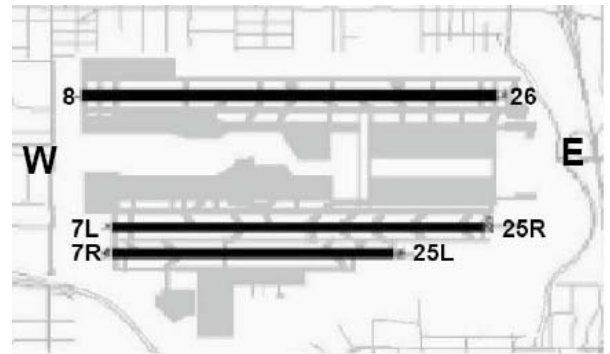
- The 4-DME Standard Instrument Departure Procedure to keep all jet and large turboprop aircraft that depart to the east over the Salt River/Tempe Town Lake area before they make turns towards their route destinations.
- Equalization of all jet and large turboprop aircraft departures east and west during daytime and nighttime hours on an annual basis.

2. Departure Compliance

Compliance Rates
After the cities of Tempe and Phoenix entered into an intergovernmental agreement in 1994 on noise mitigation flight procedures, a measure was developed to identify how large aircraft complied with the 4-DME departure procedure to the east. The City of Phoenix implemented a "4-DME gate" to identify aircraft that violate the procedure. This is an imaginary line used as a filter in the Noise and Flight Track Monitoring System for the Phoenix Sky Harbor International Airport. TAVCO developed a "Corridor", which was based on Standard Instrument Departure procedures that were in use when the intergovernmental agreement with the City of Phoenix was made.
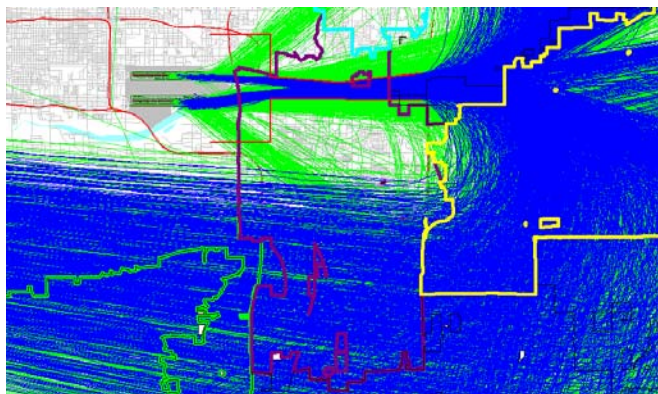
Flight tracks over a month period inside the Tempe Corridor depicted as blue tracks.
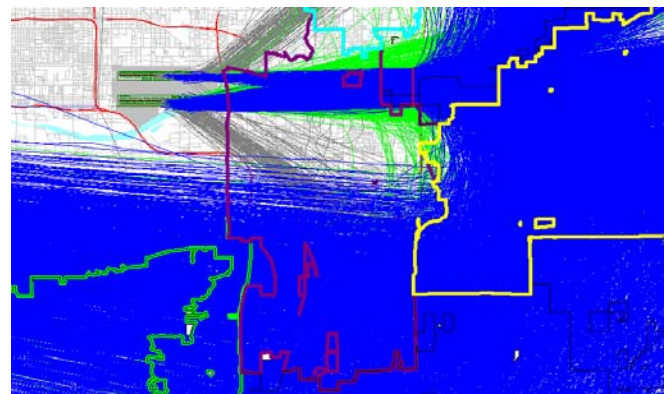
Flight tracks over the same period inside the Phoenix Gate depicted as blue tracks.

Large turboprop aircraft are not included in the depiction showing compliance with the 4-DME gate. These aircraft are routinely routed outside the 4-DME gate on approximate departure angles of 120° towards the southeast and 60° towards the northeast.

The annual average compliance rates are based on monthly numbers from the TAVCO Noise Mitigation Monitoring Reports. The November and December 2005 reports did not include exclusions of aircraft deviations because of weather as done for previous months and years due to missing data provided by the City of Phoenix Aviation Department. In 2006 cross winds of 10 knots or more was used to filter out deviations due to weather. In 2007 the department resumed registering hours with weather conditions assumed to have negatively impacted large commercial jets' climb trajectory over Tempe.

Compared to 2008 airline departures towards the east decreased 5.2% in 2009 including large turboprops. Airline arrival operations coming in from the west over Tempe decreased 7.4%. In 2009 overall compliance for commercial carriers was close to the historic low reached last year. The gap to the 4-DME gate measure rate increased. Compliance rates for some of the airport's busiest airlines show little change from last year except for the months of May and June when overall compliance rates went above 50%.
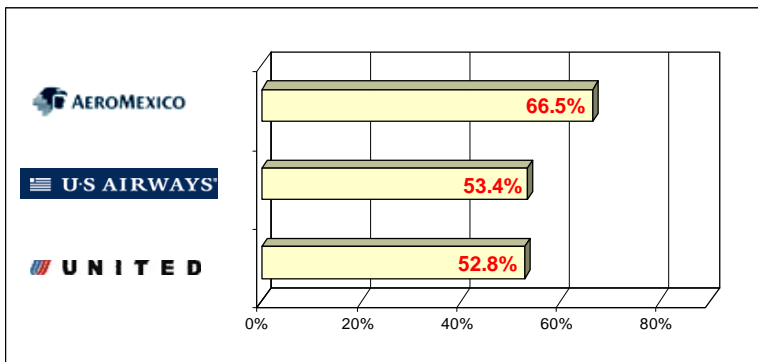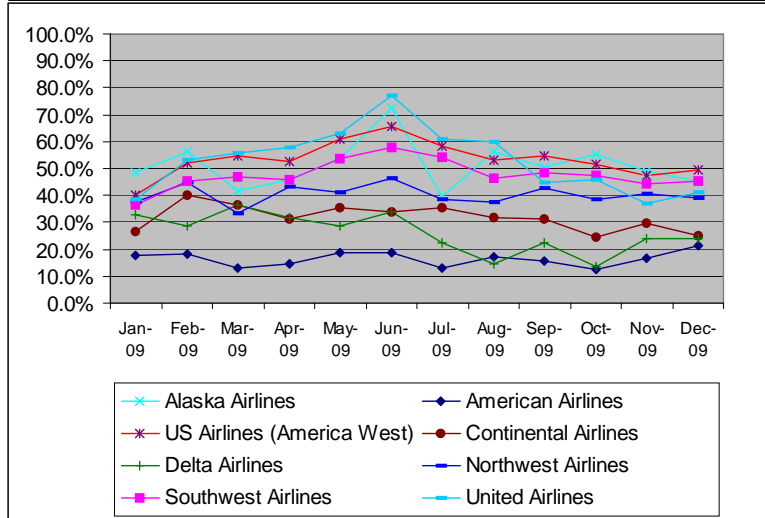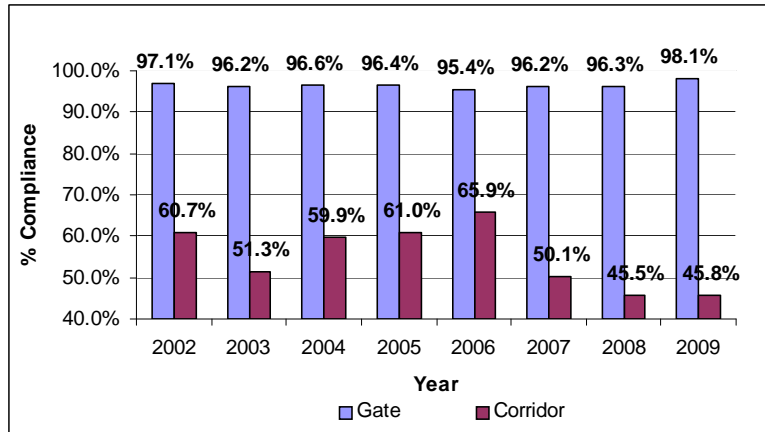
Top Airlines
Among the larger carriers Aero Mexico had on average best compliance with the Tempe Corridor during 2009.
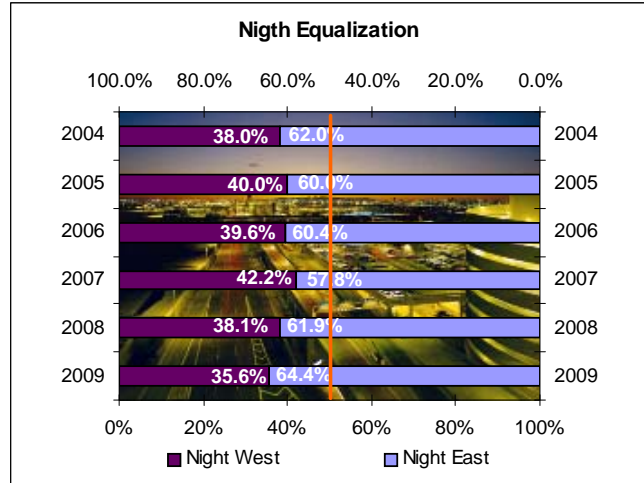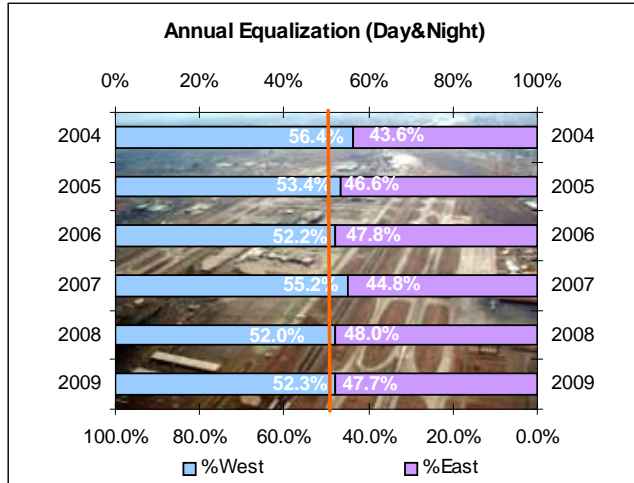
Top All Cargo Carriers
Among the larger all cargo carriers Capital Cargo had on average best compliance with the Tempe Corridor in 2009. This was the second year since recording started in 2000, that the top 3 cargo airlines did not reach 50% or higher compliance with the Tempe Corridor.
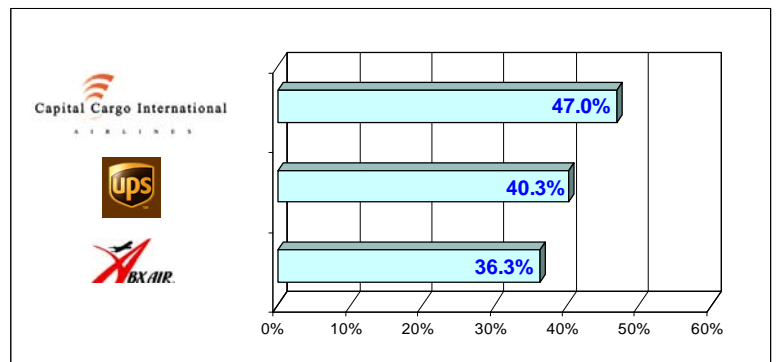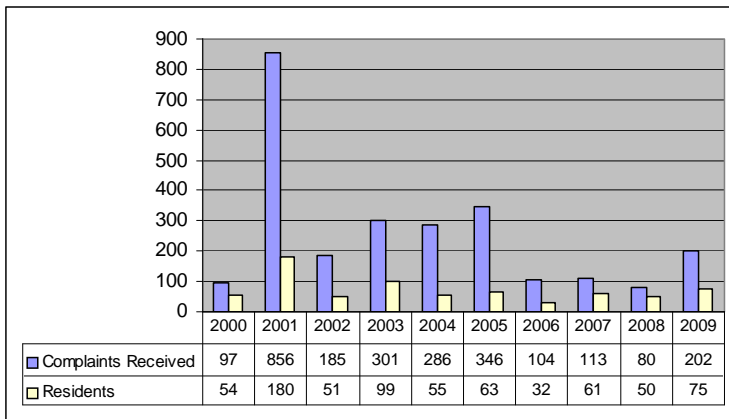
3. East/West Departure Split

The annual split in all jet and large turboprop aircraft departures to the east and west of the Phoenix Sky Harbor International Airport differs between night and day time hours. Departure directions are not favorable for Tempe during the nighttime hours. Combining day and night time hours, most jet and large turboprop departures goes towards the west.
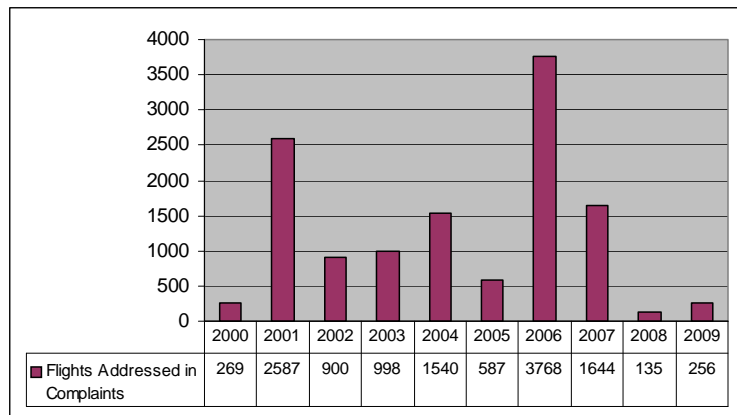
Annual Equalization (Day&Night)

Year	%West	%East
2004	56.4%	43.6%
2005	53.4%	46.6%
2006	52.2%	47.8%
2007	55.2%	44.8%
2008	52.0%	48.0%
2009	52.3%	47.7%

Nigth Equalization

Year	Night West	Night East
2004	38.0%	62.0%
2005	40.0%	60.0%
2006	39.6%	60.4%
2007	42.2%	57.8%
2008	38.1%	61.9%
2009	35.6%	64.4%

Day = 7: 00 a.m. to 9:59:59 p.m. local time and Night = 9:59:59 p.m. to 7:00 a.m.

4. Complaints

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Complaints Received	97	856	185	301	286	346	104	113	80	202
Residents	54	180	51	99	55	63	32	61	50	75

The City of Tempe started registering aircraft noise complaints from Tempe residents in October 2000 after the opening of the third runway at Phoenix Sky Harbor International Airport. The numbers have come down, but more complaints are coming in from central and southern parts of the City. The large numbers of disturbing aircraft shown in the graph below are largely identified by residents in northern neighborhoods of Tempe where aircraft are at lower altitudes.

In 2009 60.8% of all flights identified in complaints to the City were low flying helicopters.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Flights Addressed in Complaints	269	2587	900	998	1540	587	3768	1644	135	256

5. Averaged Noise Levels

Annual (Day-Night) average sound levels (Ldna) registered by the airport Noise and Flight Track Monitoring System, which decreased significantly at all monitoring sites in Tempe during 2008, on average did not differ much from 2008 levels in 2009 except at sites closest to the runways on the south side of the Rio Salado riverbed, which registered small increases.

LDNA Annual Energy Average

	NMS09	NMS10	NMS11	NMS12	NMS13	NMS14	NMS15	NMS16
2009	61.3	55.5	62.5	59.1	41.7	44.2	53.2	41.3
2008	60.1	53.5	60.3	55.2	40.8	44.9	51.9	41.9
2007	64.8	58.4	65.8	61.1	46.1	49.5	57.4	46.6
2006	66.1	62.4	67.9	65.7	54.6	61.4	60.9	57.8
2005	66.2	63.3	67.5	65.0	55.1	60.0	61.4	56.8
2004	66.9	62.7	66.6	64.1	51.0	55.7	60.2	53.6
2003	65.0	61.7	65.5	64.7	48.8	55.9	61.0	50.8
2002	65.8	62.4	66.1	64.7	50.4	57.2	59.7	52.2
2001	68.2	64.9	68.5	65.8	49.3	59.4	61.1	52.5
2000	67.5	64.8	68.3	66.3	49.6	59.1	62.5	52.2

Noise Monitoring Sites