

AIRCRAFT NOISE LEVEL ANALYSIS PEGASUS AIRPARK QUEEN CREEK, ARIZONA

FINAL REPORT

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PREPARED FOR:

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INTRODUCTION

The Pegasus Airpark is a gated residential aviation community located approximately 30 miles southeast of Phoenix in Queen Creek, Arizona. The airpark’s asphalt runway, Runway 8/26, features a 5,000 foot by 60 foot lighted runway and dual parallel taxiways on both sides of Runway 8/26. The Pegasus Airpark is required to submit annual noise reports to the Town of Queen Creek, Arizona. The airpark’s Covenants, Conditions & Restrictions (CC&R’s) state that aircraft noise levels may not exceed a Day/Night Average Noise Level (DNL) of 65 at any point along the airpark’s perimeter. The airpark is requesting authorization from the Town to allow future operations by helicopter and light jet aircraft. The Town has in turn requested the airpark provide the existing and future DNL resulting from increased aircraft operations by existing and new aircraft types.

NOISE ANALYSIS

On behalf of Pegasus Airpark, Armstrong Consultants, Inc. (ACI) has calculated the airpark’s existing and future DNL resulting from increased operations by existing and new aircraft types. The existing DNL noise levels are based on the 2007 calendar year aircraft activity levels contained in Table 1. Table 2 contains the 10-year based aircraft forecast, provided to ACI by airpark management.

TABLE 1 2007 CALENDAR YEAR AIRCRAFT ACTIVITY LEVELS

Aircraft Make	INM Designator	Annual Operations Per Based Aircraft	Day		Night	
			Approach	Departures	Approach	Departures
1948 Stinson 108-3	CNA172	100	50	50	0	0
Aerostar 601P	BEC58P	78	24	24	15	15
Bonanza E35	GASPV	200	100	100	0	0
Cessna 150	CNA172	124	52	52	10	10
Cessna 152	CNA172	72	24	24	12	12
Cessna 182	CNA206	50	25	25	0	0
Cessna 210	CNA206	60	20	20	10	10
Cessna 310Q	BEC58P	110	40	40	15	15
Cessna T182RG	CNA206	36	12	12	6	6
Cirrus SR22	GASEPV	104	52	52	0	0
Columbia 400	GASEPV	312	156	156	0	0
PA28-140	GASEPF	14	7	7	0	0
Piper Lance II	GASEPV	50	25	25	0	0
Piper PA23	BEC58P	2	1	1	0	0
RV7a	GASEPV	108	50	50	4	4
Stearman	GASEPV	312	156	156	0	0
Unknown	GASEPV	58	25	25	4	4
Unknown	GASEPV	0	0	0	0	0
Total Annual Operations		1,790	819	819	76	76

Source: Airpark Management (April, 2008)



TABLE 2 10-YEAR BASED AIRCRAFT FORECAST

Aircraft Type	INM Designator	2007	2012	2017
Single-Engine Piston	GASEPF	1	2	3
Single-Engine Piston	CNA172	3	7	10
Single-Engine Piston	CNA206	3	6	9
Single-Engine Piston	GASEPV	8	17	26
Multi-Engine Piston	BEC58P	3	6	10
Rotorcraft	H500D	0	2	5
Turbo Jet	CNA55B	0	1	3
Total Based Aircraft		18	41	66

Source: Airpark Management (April, 2008)

ANNUAL AIRCRAFT OPERATIONS

In order to calculate future noise levels along the airpark’s property, it is necessary to estimate the airpark’s annual aircraft operations. Annual operations were determined by applying the existing Operations Per Based Aircraft (OPBA) of 99 (existing annual operations 1,790 ÷ existing based aircraft 18 = 99 OPBA) to the future based aircraft forecast, resulting in 4,059 annual operations (41 based aircraft x 99 OPBA = 4,059) in calendar year 2012 and 6,543 annual operations (66 based aircraft x 99 OPBA) in calendar year 2017 (See Table 3).

TABLE 3 10-YEAR AIRCRAFT OPERATIONS FORECAST

Aircraft Type	INM Designator	2007	2012¹	2017¹
Single-Engine Piston	GASEPF	14	29	45
Single-Engine Piston	CNA172	296	622	950
Single-Engine Piston	CNA206	146	307	468
Single-Engine Piston	GASEPV	1,144	2,404	3,670
Multi-Engine Piston	BEC58P	190	400	609
Rotorcraft	H500D	–	198	495
Turbo Jet	CNA55B	–	99	297
Total Annual Operations		1,790	4,059	6,534

¹Assumes existing operation percentages remain constant.

The annual operations were then input into the FAA Integrated Noise Model (INM) Version 7.0 to determine both the existing and future DNL noise levels at the eight (8) selected points along the airpark perimeter (See Table 4). The existing and future noise levels are those resulting from aircraft operations at the Pegasus Airpark and do not account for or include aircraft noise resulting from other nearby airports or aircraft overflights.



TABLE 4 FAA INTEGRATED NOISE MODEL (INM) VERSION 7.0 INPUT DATA

Aircraft Type	INM Designator ¹	Existing Operations ²			2012 Operations ³			2017 Operations ³		
		Annual Ops	Day	Night	Annual Ops	Day	Night	Annual Ops	Day	Night
Single-Engine Piston	GASEPF	14	14	0	29	29	0	45	45	0
	CNA 172	296	252	44	622	530	92	950	809	141
	CNA 206	146	114	32	307	240	67	468	365	103
	GASEPV	1,144	1,096	48	2,404	2,303	101	3,670	3,516	154
Multi-Engine Piston	BEC58P	190	130	60	400	274	126	609	417	192
Turbo Jet	CNA55B	–	–	–	198	182	16	495	455	40
Rotorcraft	H500D	–	–	–	99	91	8	297	273	24
Total Operations		1,790	1,606	184	4,059	3,649	410	6,534	5,880	654
Total Approaches to Runway 8 (25%)		448	402	46	1,015	912	103	1,634	1,470	164
Total Approaches to Runway 26 (25%)		447	402	46	1,015	912	102	1,633	1,470	163
Total Departures from Runway 8 (37.5%)		671	602	69	1,522	1,368	154	2,450	2,205	245
Total Departures from Runway 26 (12.5%)		224	201	23	507	456	51	817	735	82

¹ INM designators account for multiple aircraft.

² Existing operations based on 2007 operations provided by airpark management (April, 2008).

³ Future operations based on forecast provided by airpark management (April, 2008).

RESULTS

The results of the noise analysis at Pegasus Airpark reveals that no point at or beyond the airpark's perimeter reaches the 65 DNL threshold for the existing and 10-year operations forecast. The DNL results for the (8) selected points along the airpark's perimeter are depicted in Figure 1 and Table 5.

TABLE 5 EXISTING AND FUTURE DNL AT SELECTED LOCATION POINTS

Location Point	DNL Existing ¹	DNL 2012 ²	DNL 2017 ³	Maximum Allowable DNL
A	39.2	40.5	45.2	65.0
B	41.2	44.4	48.5	65.0
C	38.2	40.2	44.0	65.0
D	44.6	46.2	50.4	65.0
E	46.8	49.0	52.4	65.0
F	39.6	40.8	45.5	65.0
G	41.8	44.7	48.8	65.0
H	38.8	40.8	44.7	65.0

¹ Existing operations based on 2007 operations provided by airpark management (April, 2008)

² DNL 2012 based on 5-year forecast of 41 based aircraft.

³ DNL 2017 based on 10-year forecast of 66 based aircraft.

