SNC·LAVALIN

FINAL REPORT

2013 Noise Exposure Contours Report for Billy Bishop Toronto City Airport

Transport Canada

SNC-LAVALIN INC.

JUNE 2015

Final Report

O/Ref n° 626687-2011_FV-00

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Subject: 2013 Noise Exposure Contour Report for Billy Bishop Toronto City Airport
O/Ref.: 626687-2013_FV-00

Mrs. Canning,

SNC-Lavalin Inc. is pleased to provide you with the final report in PDF format for the above mentioned project. In a few days, you will also receive, by mail, ten paper copies of the present document.

Please do not hesitate to contact us should you require any additional information.

SNC♦LAVALIN INC.

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TEAM WORK

SNC-Lavalin Inc.

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EXECUTIVE SUMMARY

The noise exposure contours for Billy Bishop Toronto City Airport have been computed in accordance with Transport Canada's methodology for NEF (Noise Exposure Forecast). The surface area within contours was also compiled.

The analysis of the contours involved a review of the data to ascertain if the actual 28 Noise Exposure Contour is closer at any point, except in a direction westerly of the Billy Bishop Toronto City Airport between points "X" and "Y", to the official 25 NEF Contour for 1990, than to the official 28 NEF Contour for 1990 (reference Schedule F of the Tripartite Agreement). This condition pertains to Section 34 of the Tripartite Agreement on the preparation of NEF contours.

The Tripartite Agreement imposes a limit on the expansion of NEF contours. Section 27 of the Tripartite Agreement requires that the actual 28 NEF contour does not expand beyond the official 25 NEF contour for 1990, except between points "X" and "Y".

The analysis shows that the 28 NEF contour for calendar year 2013, with helicopters included in the calculation, slightly exceeds the 28 NEF Contour for 1990 for a small section of the contour to the north of the main runway. However, the extent of the actual 28 NEF contour is not sufficient to bring it closer at any point to the 25 NEF Contour for 1990, than to the 28 NEF Contour for 1990. The 28 NEF contour for calendar year 2013 does not expand beyond the official 25 NEF contour for 1990 and remains well within the limit set by the Tripartite Agreement for the expansion of the NEF contour.

When helicopters are excluded from the calculation, the NEF contours shrink slightly, achieving an even better compliance with the limits set in the Tripartite Agreement.

Table i Surface area inside 2013 noise contours

NEF	Surface area (km^2)	
	With helicopters	Without helicopters
35 +	0.28	0.27
30 - 35	0.54	0.49
28 - 30	0.43	0.41
25 - 28	1.10	1.07
Total	**2.34**	**2.24**

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1 INTRODUCTION

This document presents the noise contours for the year 2013 for Billy Bishop Toronto City Airport.

Environmental noise or community noise, including airports activities, is not regulated by Canada's government. Nevertheless Transport Canada has developed a methodology for assessing the perceived noise in the vicinity of airports. This method is established across Canada and is used for this study. The interpretation of results it produces will be used to establish the magnitude (intensity of noise) and extent (surface area) of areas affected by airport noise.

2 METHODOLOGY

2.1 METRICS AND PARAMETERS

The representation of noise generated by airport operations has been normalized by Transport Canada using NEF or "Noise Exposure Forecast" contours. The NEF methodology is not by itself a forecast, but a noise calculation based either on a forecast of future movements or on actual movements. The noise contours for 2013, presented in this report, have been produced using the NEF methodology on the basis of actual movements data from Transport Canada. The original data is provided to Transport Canada by Nav Canada, the country's civil air navigation services provider, for all airports where Nav Canada operates a control tower.

The index provided by the noise contours is used to show the public areas affected by airport noise. This single number rating is easy to interpret, but nevertheless, requires a complex evaluation process. It takes into account, for each movement of the whole year, the type of aircraft, the runway used, the flight path, the flight distance, and the period of day. Note that the night period is defined from 10 pm to 7 am.

Flight distances and departure flight path directions have been determined according to geographic coordinates of destination airports; themselves drawn from Transport Canada database and specialized publications.

The "Air Traffic Designators" entitled TP 143 published by Transport Canada, specialized databases published by aeronautical sector companies, as well as internal corporate databases, have been used to determine the aircraft caracteristics.

2.2 METHOD OF CALCULATION

NEF-Calc 2.0.6.1 software was used to produce the noise contours. It has been developed by the National Research Council for Transport Canada. Nef-Calc 2.0.6.1 processes operation-related

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data from airport and calculates noise levels for the receptor grid. Noise exposure contours are then drawn for the whole study area.

The NEF methodology developed by Transport Canada uses the parameter “Peak Planning Day”, which will be used to calculate the noise contours. The number of movements of the Peak Planning Day is estimated by averaging the seven busiest days of the three busiest months of the year. The detailed calculation of the Peak Planning Day is presented in Section 3.1.1. The calculated noise contours are representative of a near to worst case 24 hour period.

3 NOISE CONTOURS

3.1 CALCULATION ASSUMPTIONS

The aircraft movements’ database from Transport Canada for Billy Bishop Toronto City Airport for 2013 was used to calculate the Peak Planning Day. The composition of the fleet and the average annual runway use have also been computed from the Transport Canada database.

3.1.1 Calculation of Peak Planning Day

Tables 1 and 2 below present the results of the calculation of the Peak Planning Day for itinerant and local movements in 2013 for Billy Bishop Toronto City Airport.

The number of movements of the Peak Planning Day is found to be 331 for itinerant movements and 184 for local movements. In comparison, the **averages** for 2013 are 238 itinerant movements and 79 local movements per day.

The number of circuits is half the number of local movements. A movement is either an arrival or a departure; overflights are excluded from the calculation. Overflights are flights transiting in the control zone of the control tower, going to another destination without landing at the airport. Since they have no real operation at the airport, they are excluded from the calculations. Local movements show much more daily variability than itinerant movements.

The calculation of the noise contours has been made for 331 itinerant movements and 184 local movements (92 circuits), with a total of 515 aircraft movements.

Helicopters accounted for 5,840 movements in 2013, of which 2,065 were runway operations, mostly Ornge flights using AgustaWestland AW139 helicopters, and 3,775 were helipad operations, mostly Heli Tours with Robinson R44 helicopters.

Excluding helicopter movements, the number of movements of the Peak Planning Day is found to be 307 for itinerant movements, and 184 for local movements. In comparison, the **averages** for 2013 are 222 itinerant movements, and 79 local movements per day.

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Table 1 Peak Planning Day with helicopters

Itinerant		Local	
Date	Movements	Date	Movements
May 17	340	June 4	200
May 3	318	June 3	198
May 2	301	June 18	188
May 30	295	June 20	188
May 7	291	June 8	186
May 27	290	June 26	178
May 1	290	June 12	166
July 12	414	July 6	272
July 26	370	July 28	230
July 11	347	July 21	210
July 14	340	July 29	188
July 25	339	July 31	174
July 21	328	July 25	172
July 30	316	July 17	166
August 23	377	August 17	202
August 29	350	August 5	182
August 18	331	August 19	168
August 16	330	August 25	168
August 8	329	August 18	152
August 11	328	August 6	142
August 9	328	August 21	136

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Table 2 Peak Planning Day without helicopters

Itinerant		Local	
Date	Movements	Date	Movements
May 17	314	June 4	200
May 3	296	June 3	198
May 2	289	June 18	188
May 30	287	June 20	188
May 14	284	June 8	186
May 1	279	June 26	178
May 7	278	June 12	166
July 12	348	July 6	272
July 11	329	July 28	230
July 25	328	July 21	210
July 26	323	July 29	188
July 30	307	July 31	174
July 14	298	July 25	172
July 29	292	July 17	166
August 29	336	August 17	202
August 23	330	August 5	182
August 8	317	August 19	168
August 15	308	August 25	168
August 21	301	August 18	152
August 16	299	August 6	142
August 19	297	August 21	136

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3.1.2 Fleet composition and runway use

The data on the composition of the fleet of all operations at Billy Bishop Toronto City Airport in 2013 is presented in Appendix A, including helicopters. The document TP-143 – Air Traffic Designators from Transport Canada is the primary source of information for the identification of aircraft types. Other sources, such as Transport Canada's aircraft registration database and commercial databases have also been used.

Figure 1 shows the configuration of runways, taken from the Canada Air Pilot. Figures 2 and 3 summarize the composition of fleet and runway use for the airport in 2013, compiled from the itinerant movements database from Transport Canada. Detailed data is presented in Appendix B.

The total number of movements in 2013 was 111,428, divided into 86,988 itinerants movements and 27,440 local movements.

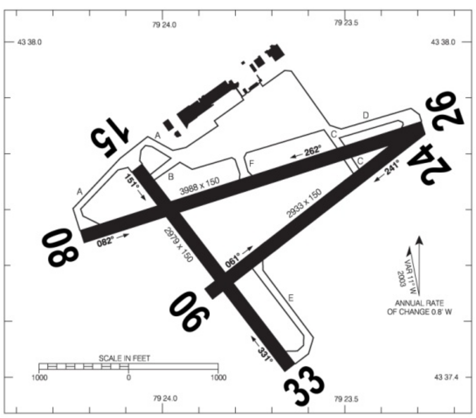

Figure 1 Runway identification

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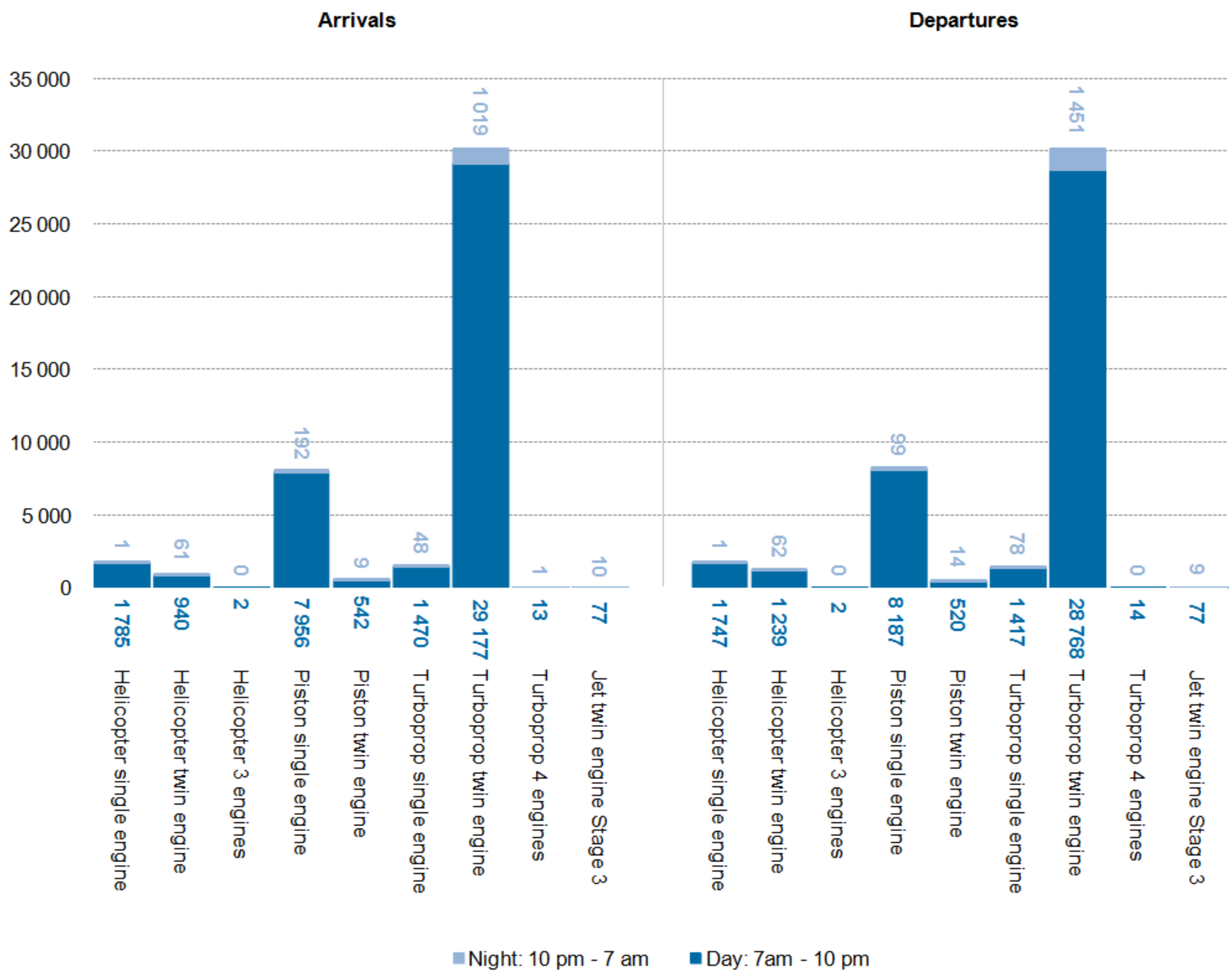

Figure 2 Summary of fleet composition

The movements during the night (10 pm to 7 am) accounted for 3.2% of total movements in 2013. For the calculation of noise contours, using the methodology of Transport Canada, each night-time movement is equivalent to 16.67 daytime movements. The 3,663 night-time movements recorded in 2013 are equivalent to 61,050 daytime movements. The night-time movements represent an important contribution to the noise contours.

Overall, twin engine turboprops (mostly DASH-8) are the most frequent aircrafts at Billy Bishop Toronto City Airport with 53% of all movements. They are followed by single engine piston aircrafts with 38,% of operations.

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Figure 3 shows the summary of runway use and Table 2 presents the runway use by aircraft type.

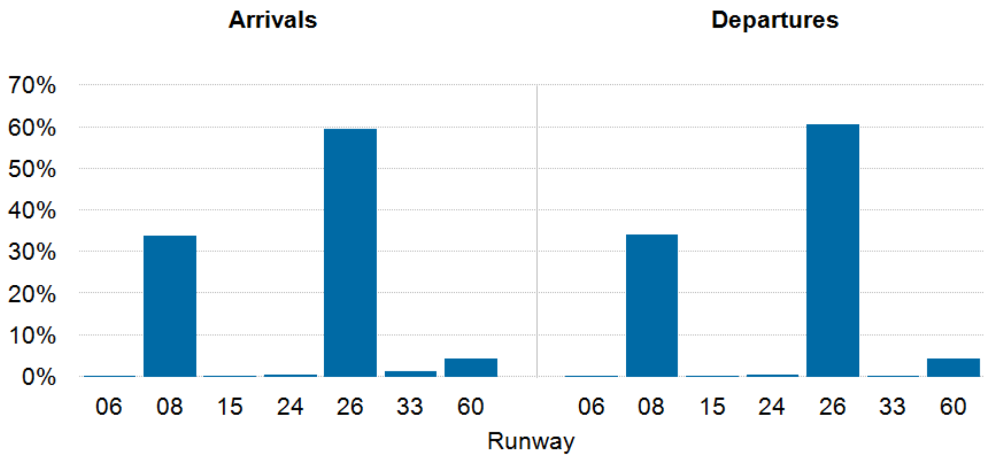

Figure 3 Summary of runway use

Table 3 Runway use by aircraft category

Runway	Global		Jets		Pistons		Turboprops	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
06	44 0.1%	3 0.01%	0 0%	0 0%	41 0.4%	2 0.02%	3 0.01%	1 0.003%
08	14,703 34%	14,928 34%	27 31%	28 33%	3,402 33%	3,477 33%	11,274 34%	11,423 34%
15	47 0.1%	65 0.1%	0 0%	0 0%	8 0.1%	56 1%	39 0.1%	9 0.03%
24	192 0.4%	229 1%	0 0%	0 0%	177 2%	223 2%	15 0.05%	6 0.02%
26	25,790 60%	26,554 61%	60 69%	58 67%	4,532 44%	5,043 48%	21,198 65%	21,453 65%
33	631 1%	27 0.1%	0 0%	0 0%	541 5%	26 0.2%	90 0.3%	1 0.003%
60	1,896 4%	1,879 4%	0 0%	0 0%	1,689 16%	1,643 16%	207 1%	236 1%
Total	43,303 100%	43,685 100%	87 100%	86 100%	10,390 100%	10,470 100%	32,826 100%	33,129 100%

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Table 4 shows the main types of aircraft in most represented categories defined in the calculation. Aircraft with a small number of movements in 2013 are not shown in this table; they can be found in detail in Appendix A.

Table 4 Aircraft categories

Aircraft categories	Aircraft types
Helicopter single engine	Robinson R44, Bell 206, etc.
Helicopter twin engine	AgustaWestland AW139, etc.
Piston single engine	Cessna series 150/152/172/182/206, Piper PA-28/46, Cirrus SR22, Diamond DA40, Mooney M20, etc.
Piston twin engine	Piper PA-27/30/31, Cessna 414/421, etc.
Turboprop single engine	Pilatus PC-12, Cessna 208, Socata TBM-700, etc.
Turboprop twin engine	Dash 8, Mitsubishi MU-2, Piaggio P-180, Beech 200/350, Jetstream 31, etc.
Jet twin engine Stage 3	Dassault Falcon 10, etc.

3.1.3 Flight paths

Flight paths for departures, arrivals and circuits have been modelled from information gathered from the Canada Air Pilot and the Canada Flight Supplement.

Departure flight paths:

- Runways 06 and 08: right turn at 1.9 DME, heading 141
- Runway 15: right turn at 650' ASL, heading 201
- Runways 24, 26 and 33: left turn at 650' ASL, heading 201

Approach slopes:

- Runways 06, 15, 24 and 33: 3.0°
- Runway 08: 3.5°
- Runway 26: 4.8°

Runways 24, 26, and 33 have left hand circuits while runways 06, 08, and 15 have right hand circuits.

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3.2 RESULTS

Figure 4 shows the noise contours for Billy Bishop Toronto City Airport, year 2013 actual movements including helicopters, along with the 1990 NEF contours. The 1990 NEF contours were prepared in April 1978 by the Canadian Air Transport Administration of the Ministry of Transport for the Canada Mortgage and Housing Corporation. The noise contours without helicopters are shown on Figure 5.

The analysis of the contours involved a review of the data to, in the language of the Tripartite Agreement, ascertain if the actual 28 Noise Exposure Contour is closer at any point, except in a direction westerly of the Billy Bishop Toronto City Airport between points “X” and “Y”, to the official 25 NEF Contour for 1990, than to the official 28 NEF Contour for 1990 (reference Schedule F of the Tripartite Agreement).

The analysis shows that the 28 NEF Contour for calendar year 2013, with helicopters included in the calculation, slightly exceeds the 28 NEF Contour for 1990 for a small section of the contour to the north of the main runway. However, the extent of the actual 28 NEF contour is not sufficient to bring it closer at any point to the 25 NEF Contour for 1990, than to the 28 NEF Contour for 1990. The 28 NEF contour for calendar year 2013 does not expand beyond the official 25 NEF contour for 1990 and remains well within the limits set by the Tripartite Agreement for the expansion of the NEF contour.

When helicopters are excluded from the calculation, the NEF contours shrink slightly, achieving an even better compliance with the limits set in the Tripartite Agreement.

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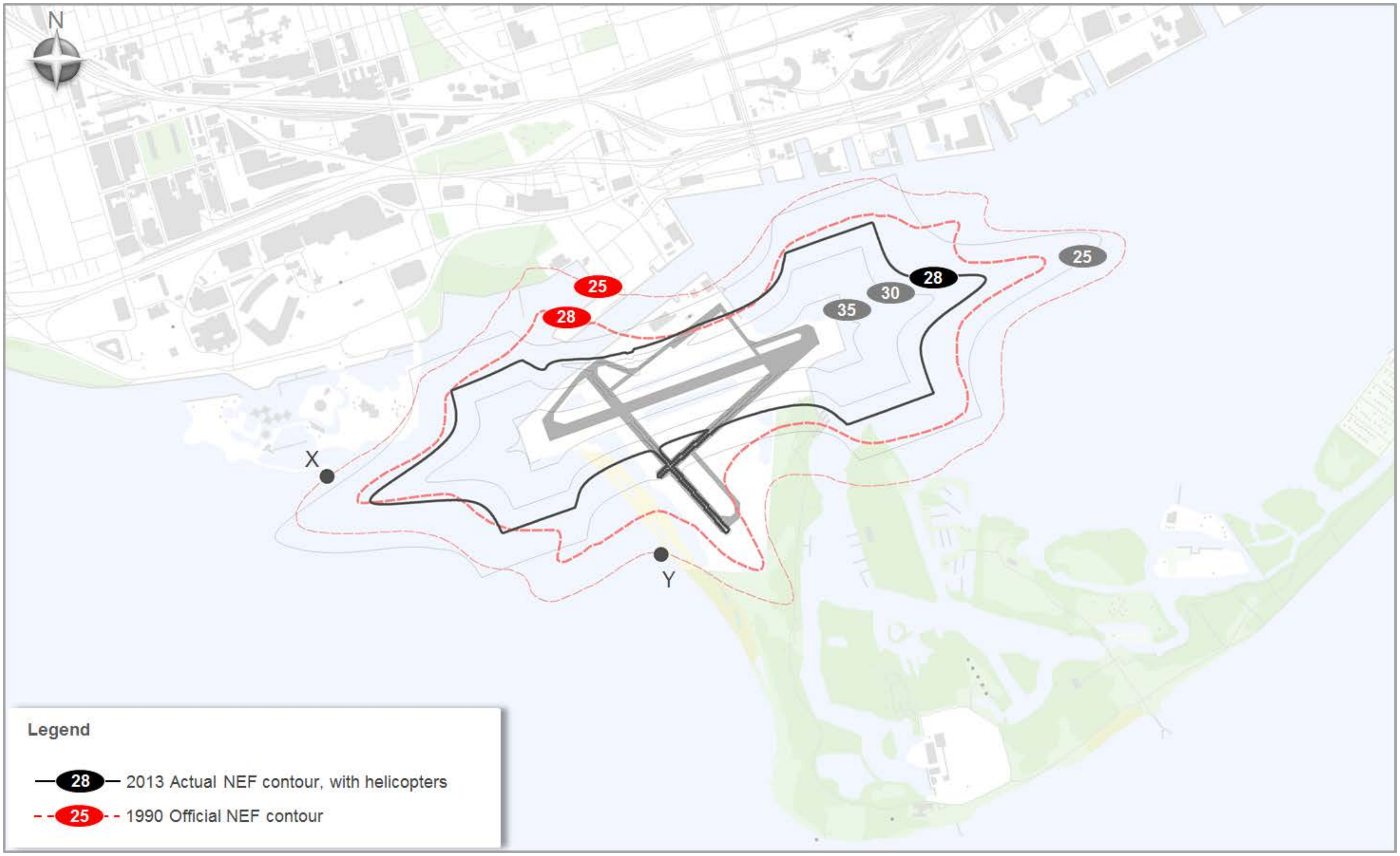

Figure 4 NEF Contours with helicopters

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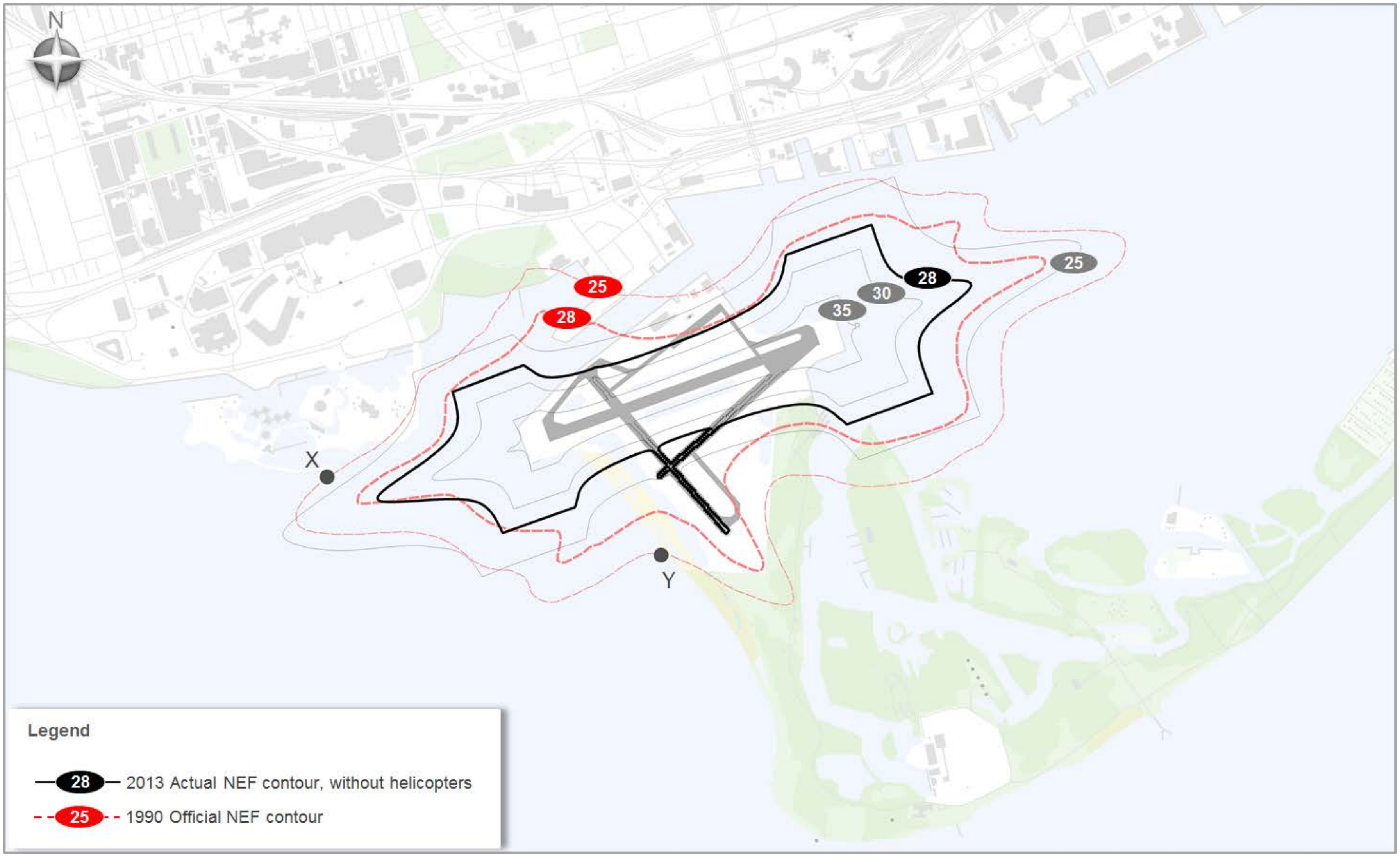

Figure 5 NEF Contours without helicopters

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Table 5 shows the surface area within the contours in 2013. It is the total surface area in each range of NEF values.

Table 5 Surface area (km²)

NEF	Surface area (km²)	
	With helicopters	Without helicopters
35 +	0.28	0.27
30 - 35	0.54	0.49
28 - 30	0.43	0.41
25 - 28	1.10	1.07
Total	**2.34**	**2.24**

4 CONCLUSION

The 2013 noise exposure contours for Billy Bishop Toronto City Airport have been computed in accordance with Transport Canada methodology. The surface area within contours was also compiled. These contours cover a total area of 2.34 square kilometers if helicopters are included in the calculation, and 2.24 square kilometers if helicopters are excluded. NEF 28 contour covers an area of 1.25 square kilometers if helicopters are included in the calculation, and 1.17 square kilometers if helicopters are excluded.

The actual (2013) 28 Noise Exposure Contours, with and without helicopters, are not closer at any point, including in a direction westerly of the Toronto City Centre Airport between points “X” and “Y”, to the 25 NEF Contour for 1990 than to the 28 NEF Contour for 1990.

The 28 NEF contours for calendar year 2013, with and without helicopters, do not expand beyond the official 25 NEF contour for 1990 and remains well within the limit set by the Tripartite Agreement for the expansion of the NEF contour.

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APPENDIX A

Fleet composition

Aircraft	D1*	D2*	D3*	D4*	Chap.	MTOW	Manufacturer	Model	Equivalent	Number
A109	L	2	T	R		3,000	AGUSTA	A-109, Power	AS350	12
A139	M	2	T	R		6,400	AGUSTAWESTLAND	AW-139	AS332	2 209
AA5	L	1	P	F		1,000	AMERICAN	AA-5 Traveler	GASEPF	19
AC11	L	1	P	R		2,000	ROCKWELL	112, 114 Commander, Alpine Commander	RWCM14	11
AC90	L	2	T	R		5,000	ROCKWELL	690 Turbo Commander, Jetprop Commander 840	RWCM69	2
AEST	L	2	P	R		3,000	PIPER	PA-60, Aerostar	PA60	6
AR15	L	1	P	F		2,000	AERONCA	15 Sedan	GASEPF	4
AS50	L	1	T	F		3,000	AEROSPATIALE	AS-350/550 Ecureuil, Astar, SuperStar, Fennec	AS350	6
AS55	L	2	T	F		3,000	AEROSPATIALE	AS-355/555 Ecureuil 2, TwinStar, Fennec	AS350	2
AS65	L	2	T	R		4,250	EUROCOPTER	AS365 Dauphin 2	AS332	2
B06	L	1	T	F		2,000	BELL	206A/B/L, 406, LongRanger (CH-139 JetRanger)	AS350	102
B190	M	2	T	R		8,000	BEECH	1900 Airliner (C-12J)	BEC190	22
B350	M	2	T	R		6,000	BEECH	B300 Super King Air 350	DHC6	173
B407	L	1	T	F		3,000	BELL	407	AS350	5
B412	L	2	T	F		6,000	BELL	412, Griffon (CH-146)	AS350	39
B429	L	2	T	F		3,175	BELL	GlobalRanger	AS350	23
B430	L	2	T	R		5,000	BELL	430	AS332	4
BE10	L	2	T	R		6,000	BEECH	100 King Air (U-21F)	BEC100	97
BE18	L	2	P	R		4,000	BEECH	18 (C-45 Expeditor)	BEC18	16
BE19	L	1	P	F		1,000	BEECH	19 Musketeer Sport, Sport	GASEPF	2
BE20	L	2	T	R		6,000	BEECH	200, 1300 Super King Air, Commuter (C-12A)	BEC200	253
BE23	L	1	P	F		2,000	BEECH	23 Musketeer, Sundowner	GASEPF	6
BE24	L	1	P	R		2,000	BEECH	24 Musketeer Super, Sierra	GASEPF	14
BE30	M	2	T	R		7,000	BEECH	300 Super King Air	BEC300	33
BE33	L	1	P	R		2,000	BEECH	33 Bonanza (E-24)	BEC33	9
BE35	L	1	P	R		2,000	BEECH	35 Bonanza	GASEPV	22
BE36	L	1	P	R		2,000	BEECH	36 Bonanza	GASEPV	52
BE55	L	2	P	R		3,000	BEECH	55 Baron (T-42)	BEC55	3
BE56	L	2	P	R		3,000	BEECH	56 Turbo Baron	BEC58P	1
BE58	L	2	P	R		3,000	BEECH	58 Baron	BEC58	69
BE60	L	2	P	R		4,000	BEECH	60 Duke	BEC60	4
BE76	L	2	P	R		2,000	BEECH	76 Duchess	BEC76	6
BE9L	L	2	T	R		5,000	BEECH	90, A90-E90 King Air (T-44, VC-6)	BEC90	67
BE9T	L	2	T	R		5,000	BEECH	F-90 King Air	BEC9F	12
BL17	L	1	P	R		2,000	BELLANCA	17 Viking, Super Viking, Turbo Viking	BL26	4
BL8	L	1	P	F		2,000	BELLANCA	8 Decathlon, Scout	GASEPF	22

Aircraft	D1*	D2*	D3*	D4*	Chap.	MTOW	Manufacturer	Model	Equivalent	Number
C10T	L	1	T	R		1,814	CESSNA	P210	CNA210	2
C130	M	4	T	R		71,000	LOCKHEED	C-130	C130	16
C150	L	1	P	F		1,000	CESSNA	150, A150, Commuter, Aerobat	CNA150	14,955
C152	L	1	P	F		1,000	CESSNA	152, A152, Aerobat	CNA152	393
C170	L	1	P	F		1,000	CESSNA	170	CNA170	4
C172	L	1	P	F		2,000	CESSNA	172, P172, R172, Skyhawk, Cutlass (T-41)	CNA172	23,150
C175	L	1	P	F		2,000	CESSNA	175, Skylark	GASEPV	2
C177	L	1	P	F		2,000	CESSNA	177, Cardinal	CNA177	21
C180	L	1	P	F		2,000	CESSNA	180, Skywagon 180 (U-17C)	CNA180	73
C182	L	1	P	F		2,000	CESSNA	182, Skylane	CNA182	1,757
C185	L	1	P	F		2,000	CESSNA	185, A185 Skywagon, Skywagon 185 (U-17A/B)	CNA185	83
C195	L	1	P	F		2,000	CESSNA	195 (LC-126)	GASEPV	4
C205	L	1	P	F		2,000	CESSNA	205	CNA205	2
C206	L	1	P	F		2,000	CESSNA	206, P206, T206, TP206, (Turbo) Super Skywagon	CNA206	640
C208	L	1	T	F		4,000	CESSNA	208 Caravan 1, (Super)Cargomaster (C-98, U-27)	CNA208	573
C210	L	1	P	R		2,000	CESSNA	210, T210, (Turbo)Centurion	CNA210	40
C303	L	2	P	R		3,000	CESSNA	T303 Crusader	CNA303	4
C310	L	2	P	R		3,000	CESSNA	310, T310 (U-3, L-27)	CNA310	36
C336	L	2	P	F		2,000	CESSNA	336 Skymaster	CNA336	1
C337	L	2	P	R		2,000	CESSNA	337, M337 (Turbo)Super Skymaster (O-2)	CNA337	9
C340	L	2	P	R		3,000	CESSNA	340	CNA340	72
C414	L	2	P	R		3,000	CESSNA	414, Chancellor	CNA414	111
C421	L	2	P	R		4,000	CESSNA	421, Golden Eagle, Executive Commuter	CNA421	168
C425	L	2	T	R		4,000	CESSNA	425 Corsair, Conquest 1	CNA425	2
C441	L	2	T	R		5,000	CESSNA	441 Conquest, Conquest 2	CNA441	28
C550	M	2	J	R	3	7,000	CESSNA	550, S550, 552 Citation 2/S2/Bravo (T-47, U-20)	CNA550	20
C72R	L	1	P	R		2,000	CESSNA	172RG Cutlass RG	GASEPV	21
C77R	L	1	P	R		2,000	CESSNA	177RG Cardinal RG	CNA17B	75
C82R	L	1	P	R		2,000	CESSNA	R182, TR182 (Turbo)Skylane RG	CNA182	11
CH30	L	1	P	F		1,000	ZENAIR	CH-300 Tri-Zenith, Tri-Z	GASEPF	2
CH60	L	1	P	F		1,000	ZENAIR	CH-600/601 Zodiac, Super Zodiac	GASEPV	10
CH7A	L	1	P	F		2,000	CHAMPION	7EC/ECA/FC/JC Citabria, Traveler, Tri-Con, Tri-Traveler	GASEPF	4
CH7B	L	1	P	F		2,000	BELLANCA	7GCBC/KCAB Citabria	BLCH10	3
COL3	L	1	P	F		1,500	LANCAIR	LC40-550FG	BEC58P	4

Aircraft	D1*	D2*	D3*	D4*	Chap.	MTOW	Manufacturer	Model	Equivalent	Number
COL4	L	1	P	F		1,633	CESSNA AIRCRAFT CO.	400 Corvalis TT	BEC58P	20
DA40	L	1	P	F		1,150	DIAMOND	DA40	GASEPF	148
DA42	L	2	P	R		1,700	DIAMOND	DA42	GASEPV	2
DH2T	L	1	T	F		3,000	DE HAVILLAND	DHC-2 Mk3 Turbo Beaver	CNA441	83
DH8	M	2	T	R		19,000	DE HAVILLAND AIRCRAFT	Dash 8	DHC8	1
DH8A	M	2	T	R		16,000	DE HAVILLAND	DHC-8-100 Dash 8 (E-9, CT-142, CC-142)	DHC8	27
DH8C	M	2	T	R		20,000	DE HAVILLAND	DHC-8-300 Dash 8	DHC830	3
DH8D	M	2	T	R		26,000	DE HAVILLAND	DHC-8-400 Dash 8	DHC830	58,762
DHC2	L	1	P	F		3,000	DE HAVILLAND	DHC-2 Mk1 Beaver (U-6, L-20)	DHC2	2
DHC7	M	4	T	R		20,000	DE HAVILLAND	DHC-7 Dash 7 (O-5, EO-5)	DHC7	12
DR1	L	1	P	F		600	FOKKER	Fokker Dr.I	GASEPF	7
DV20	L	1	P	F		1,000	DIAMOND	DA-20/22, DV-20 Katana, Speed Katana	GASEPF	78
EC20	L	1	T	F		2,000	EUROCOPTER	EC-120 Colibri	AS350	67
EC30	L	1	T	F		2,370	AEROSPATIALE	AS350 B3	AS350	5
EH10	M	3	T	R		15,000	WESTLAND	EH-101, Merlin, Heliliner, Cormorant	AS332	4
EVOL	L	1	T	R		2,000	LANCAIR	Lancair Evolution	GASEPV	52
EVSS	L	1	P	F		550	AEROTECHNIK	SPORTSTAR	GASEPF	8
EXPR	L	1	P	F		1,406	AURIGA	PHOENIX	GASEPF	2
FA10	M	2	J	R	3	9,000	DASSAULT	Falcon 10, Mystere 10	FAL10	153
FBA2	L	1	P	F		2,000	FOUND	FBA-2, Bush Hawk	GASEPV	5
FDCT	L	1	P	F		560	FLIGHT DESIGN	CTSW	GASEPF	4
G115	L	1	P	R		2,000	GROB	G-115A/B/C/D/E, Bavarian (Heron, Tutor)	GASEPF	22
G159	M	2	T	R		16,000	GRUMMAN	G-159 Gulfstream 1 (TC-4 Academe, VC-4)	GULF1	4
G202	L	1	P	F		726	G202	G202	GASEPF	4
GLAS	L	1	P	F		1,043	GLASAIR	GLASAIR 11S-RG	GASEPF	1
GLST	L	1	P	F		889	GLASTAR	GLASTAR	GASEPF	3
GYRO	L	1	P	F		500	MTOSPORT	ultralight/microlight autogyro/autogire ultra-léger	GASEPV	2
H500	L	1	T	F		2,000	MCDONNELL DOUGLAS	MD-500, MD-530F/MG, Defender, Nightfox	AS350	2
HMBD	L	1	P	F		1,000	HOMEBUILT	Homebuilt	GASEPF	5
HUSK	L	1	P	F		1,000	CHRISTEN	A-1 Husky	GASEPV	2
J3	L	1	P	F		1,000	PIPER	J-3 Cub (L-4, NE)	GASEPF	1
JS31	M	2	T	R		7,000	BRITISH AEROSPACE	BAe-3100 Jetstream 31 (T.Mk.3)	BAEJ31	229
JS32	M	2	T	R		8,000	BRITISH AEROSPACE	BAe-3200 Jetsream Super 31	BAEJ31	2
L8	L	1	P	F		1,000	LUSCOMBE	8, T8, 50, Master, Silvaire, Observer	GASEPF	2

Aircraft	D1*	D2*	D3*	D4*	Chap.	MTOW	Manufacturer	Model	Equivalent	Number
LA25	L	1	P	A		2,000	LAKE	LA-250/270 (Turbo)Renegade, Seawolf, Seafury	GASEPF	6
LA4	L	1	P	A		2,000	LAKE	LA-4/200, Buccaneer	LA42	62
LNC4	L	1	P	R		2,000	LANCAIR	Lancair 4	GASEPV	2
LNCE	L	1	P	F		1,565	LANCAIR	LANCAIR INTL ES	GASEPV	2
M20P	L	1	P	R		2,000	MOONEY	M-20, M-20A-J/L/R (non-turbocharged)	M20J	131
M20T	L	1	P	R		2,000	MOONEY	M-20K/M, Bravo, Encore (turbocharged)	M20K	19
MU2	L	2	T	R		5,000	MITSUBISHI	MU-2, Marquise, Solitaire (LR-1)	MU2	339
NAVI	L	1	P	R		2,000	NORTH AMERICAN	NA-145/154 Navion (L-17, U-18)	GASEPV	2
P180	L	2	T	R		6,000	PIAGGIO	P-180 Avanti	SD330	321
P210	L	1	P	R		2,000	CESSNA	P210 Pressurized Centurion	CNA206	4
P28A	L	1	P	F		2,000	PIPER	PA-28-140/150/160/180 Archer, Cadet, Cherokee	PA28CA	335
P28B	L	1	P	F		2,000	PIPER	PA-28-201T/235/236 Cherokee, Dakota	PA28CA	13
P28R	L	1	P	R		2,000	PIPER	PA-28R-180/200/201 Cherokee Arrow, Turbo Arrow	PA28CA	54
P28T	L	1	P	R		2,000	PIPER	PA-28RT Arrow 4, Turbo Arrow 4	PA28CA	10
P32R	L	1	P	R		2,000	PIPER	PA-32R Cherokee Lance, Saratoga SP, Turbo	GASEPV	12
P32T	L	1	P	R		2,000	PIPER	PA-32RT Lance 2, Turbo Lance 2	GASEPV	57
P46T	L	1	T	R		2,000	PIPER	PA-46T Malibu Meridian	PA46	15
PA16	L	1	P	F		1,000	PIPER	PA-16 Clipper	GASEPF	2
PA18	L	1	P	F		1,000	PIPER	PA-18 Super Cub (L-18C, L-21, U-7)	PA18	22
PA23	L	2	P	R		2,000	PIPER	PA-23-150/160 Apache	PA23AZ	6
PA24	L	1	P	R		2,000	PIPER	PA-24 Comanche	PA24	85
PA27	L	2	P	R		3,000	PIPER	PA-23-235/250 Aztec, Turbo Aztec (U-11)	PA23AZ	982
PA30	L	2	P	R		2,000	PIPER	PA-30/39 Twin Comanche, Turbo Twin Comanche	PA30	101
PA31	L	2	P	R		4,000	PIPER	PA-31/31P Navajo, Chieftain, Mojave, T-1020	PA31	108
PA32	L	1	P	F		2,000	PIPER	PA-32 Cherokee Six, Saratoga, Turbo Saratoga	GASEPV	33
PA34	L	2	P	R		3,000	PIPER	PA-34 Seneca	PA34	40
PA38	L	1	P	F		1,000	PIPER	PA-38 Tomahawk	PA38	4
PA44	L	2	P	R		2,000	PIPER	PA-44 Seminole, Turbo Seminole	PA44	8
PA46	L	1	P	R		2,000	PIPER	PA-46 Malibu, Malibu Mirage	PA46	131
PAY1	L	2	T	R		5,000	PIPER	PA-31T1-500 Cheyenne 1	PA31T	2
PAY2	L	2	T	R		5,000	PIPER	PA-31T-620/T2-620 Cheyenne, Cheyenne 2	CNA441	2

Aircraft	D1*	D2*	D3*	D4*	Chap.	MTOW	Manufacturer	Model	Equivalent	Number
PAY3	L	2	T	R		6,000	PIPER	PA-42-720 Cheyenne 3	CNA441	8
PAY4	L	2	T	R		6,000	PIPER	PA-42-1000 Cheyenne 400	CNA441	2
PC12	L	1	T	R		5,000	PILATUS	PC-12, Eagle	CNA20T	2,036
PTS1	L	1	P	F		1,000	PITTS	S-1 Special	GASEPF	1
PTS2	L	1	P	F		1,000	PITTS	S-2 Special	GASEPF	7
PTSS	L	1	P	F		700	PITTS	Super Stinker	GASEPV	8
R22	L	1	P	F		1,000	ROBINSON	R-22	AS350	8
R44	L	1	P	F		2,000	ROBINSON	R-44 Astro	AS350	3,333
R66	L	1	T	F		1,225	ROBINSON	R66	AS350	5
RC3	L	1	P	A		2,000	REPUBLIC	RC-3 Seabee	GASEPF	2
RV10	L	1	P	F		1,200	VAN'S	RV-10	GASEPV	2
RV4	L	1	P	F		1,000	VAN'S	RV-4	GASEPF	2
RV6	L	1	P	F		1,000	VAN'S	RV-6	GASEPF	2
RV7	L	1	P	F		816	VAN'S	RV-7A	GASEPV	4
RV8	L	1	P	F		816	VAN'S	RV 8A	GASEPF	6
RV9	L	1	P	F		794	VAN'S	RV 9	GASEPF	6
S1	L	1	P	F		900	ARCTIC	S-1B2 Arctic Tern / Interstate Cadet	GASEPF	17
S108	L	1	P	F		2,000	STINSON	108 Voyager, Station Wagon	GASEPF	2
S76	L	2	T	R		5,000	SIKORSKY	S-76, H-76, AUH-76, Spirit, Eagle (HE-24)	AS332	5
S92	M	2	T	R		12,000	SIKORSKY	S-92 Helibus	AS332	6
SKIM	L	1	P	A		975	COLONIAL	C 1	GASEPV	1
SR20	L	1	P	F		2,000	CIRRUS	SR-20	GASEPF	53
SR22	L	1	P	F		1,500	CIRRUS	SR22	GASEPF	229
STRI	L	1	P	F		2,000	CESSNA	172, P172, R172, Skyhawk, Cutlass (T-41)	CNA172	6
SW3	M	2	T	R		6,000	FAIRCHILD SWEARINGEN	SA-226TB, SA-227TT Merlin 3	SAMER3	2
SW4	M	2	T	R		7,000	FAIRCHILD SWEARINGEN	Merlin 4C, Metro2/2A, Metro 3, Metro 3A, Expediter, Merlin 23, 4	SAMER4	22
T28	L	2	P	R		4,000	NORTH AMERICAN	T-28, AT-28, Trojan	BEC58P	70
T6	L	1	P	R		4,000	NORTH AMERICAN	T-6, AT-6, BC-1, SNJ, Texan, Harvard	GASEPF	7
TAMP	L	1	P	F		2,000	SOCATA	TB-9 Tampico	GASEPF	3
TBM7	L	1	T	R		3,000	SOCATA	TBM-700	CNA441	131
TBM8	L	1	T	R		7,400	SOCATA	TBM850	CNA441	41
TEX2	L	1	T	R		4,000	RAYTHEON	T-6 Texan 2, CT-156 Harvard 2	GASEPV	13
TOBA	L	1	P	F		1,150	SOCATA	TB 200	GASEPF	2
TRIN	L	1	P	R		2,000	SOCATA	TB-20/21 Trinidad	GASEPF	21
UH1	L	1	T	F		5,000	BELL	204, 205 (UH-1A-M Huey)	AS332	1
YK52	L	1	P	R		2,000	YAKOVLEV	Yak-52	GASEPV	6

Aircraft	D1*	D2*	D3*	D4*	Chap.	MTOW	Manufacturer	Model	Equivalent	Number
Z42	L	1	P	F		2,000	ZLIN	Z-42/142/242	GASEPV	20
ZZZ1	L	1	T	A		1,996	BERNIER	G-BAIR 6T	CNA206	67
ZZZ2	L	1	P	F		925	EVO	EVO 1	GASEPV	2
ZZZ3	L	1	P	A		1,633	PILGRIM	PILGRIM 4000	CNA206	2
ZZZZ	L	1	P	F		2,000	CESSNA	172, P172, R172, Skyhawk, Cutlass (T-41)	CNA172	5

*D1: Weight:
L – light
M – medium
H – heavy

*D2: Number of engine

*D3: Engine type:
P – pistons
T – turboprops
J – jets

*D4: Landing gear:
F – fixed
R – removable
A – amphibious

APPENDIX B

Movements summary

Fleet summary

Aircraft	Arrivals			Departures			Total
	Day	Night	Total	Day	Night	Total	
Helicopter single engine	1,785	1	1,786	1,747	1	1,748	3,534
Helicopter twin engine	940	61	1,001	1,239	62	1,301	2,302
Helicopter 3 engines	2	0	2	2	0	2	4
Piston single engine	7,956	192	8,148	8,187	99	8,286	16,434
Piston twin engine	542	9	551	520	14	534	1,085
Turboprop single engine	1,470	48	1,518	1,417	78	1,495	3,013
Turboprop twin engine	29,177	1,019	30,196	28,768	1,451	30,219	60,415
Turboprop 4 engines	13	1	14	14	0	14	28
Jet twin engine Stage 3	77	10	87	77	9	86	173
Total	**41,962**	**1,341**	**43,303**	**41,971**	**1,714**	**43,685**	**86,988**

- Day: 7 am - 10 pm
- Night: 10 pm - 7 am

Runway use - Arrivals

Aircraft	06		08		15		24		26		33		60	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Helicopter single engine			2						4				1,779	1
Helicopter twin engine			269	20	39		5		506	40	6		115	1
Helicopter 3 engines									2					
Piston single engine	41		3,114	95	6	2	172		4,110	95	513			
Piston twin engine			191	1			5		318	8	28			
Turboprop single engine			524	17			4		872	31	70			
Turboprop twin engine	3		10,074	365			6		19,082	654	12			
Turboprop 4 engines			4						7	1	2			
Jet twin engine Stage 3			25	2					52	8				
Total	**44**	**0**	**14,203**	**500**	**45**	**2**	**192**	**0**	**24,953**	**837**	**631**	**0**	**1,894**	**2**

Runway use - Departures

Aircraft	06		08		15		24		26		33		60	
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
Helicopter single engine			2				6		1				1,738	1
Helicopter twin engine	1		423	21	1		2		675	37	1		136	4
Helicopter 3 engines			1						1					
Piston single engine	2		3,226	48	51		213		4,669	51	26			
Piston twin engine			196	6	5		4		315	8				
Turboprop single engine			496	27	7		3		911	51				
Turboprop twin engine			9,952	498	1		1		18,814	953				
Turboprop 4 engines			4						10					
Jet twin engine Stage 3			23	5					54	4				
Total	**3**	**0**	**14,323**	**605**	**65**	**0**	**229**	**0**	**25,450**	**1 104**	**27**	**0**	**1,874**	**5**


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