Transport Canada / Transports Canada

Ontario Region
Programs
4900 Yonge Street, 4th Floor
Toronto ON M2N 6A5

Région de l'Ontario
Programmes
4900, rue Yonge., 4ème étage
Toronto ON M2N 6A5

RDIMS 7824367
Our file Notre référence
7150-1

October 1, 2012

Ms. Gwen McIntosh
Director, Waterfront Secretariat
City of Toronto
100 Queen Street West
City Hall, 12th Floor, East Tower
Toronto ON M5H 2N2

And

Mr. Geoffrey Wilson
President & CEO
Toronto Port Authority
60 Harbour Street,
Toronto ON M5J 1B7

Dear Ms. McIntosh & Mr. Wilson:

RE: TRIPARTITE AGREEMENT – NOISE CONTOUR STUDY

Enclosed please find the final 2010 Noise Contour Study for the Billy Bishop Toronto City Airport, which was prepared by Genivar Consulting Inc.

As you are aware, helicopter flight paths were established effective October 22nd, 2009; these movements have been included in the 2010 Noise Contour report.

You will note that the report finds the Toronto Port Authority Airport is in compliance with the Tripartite Agreement, in this regard.

Should you have any questions, please feel free to contact me at (416) 952-0489, or Mary Louise Canning at (416) 952-0484.

Yours truly,

John Higham
A/Regional Director,
Programs & Pickering Lands Branch

cc: Debra Taylor, Regional Director General

2012101001
456-T-2
20-N-3

GENIVAR

AIRPORT NOISE STUDY
BILLY BISHOP TORONTO CITY AIRPORT
FINAL REPORT

TRANSPORT CANADA

Project No. 10527
August 2012

GENIVAR Inc.
1300 Yonge St.
Suite 801
Toronto, ON M4T 1X3
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James Lindsey
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APPENDICES

1. INTRODUCTION AND GUIDING PRINCIPLES

1.1 INTRODUCTION

The Billy Bishop Toronto City Airport (BBTCA) is a Transport Canada Certified Aerodrome, located on the shores of downtown Toronto's waterfront at the foot of Bathurst Street. The Airport is served by three (3) runways; Runway 08-26, Runway 06-24 and Runway 15-33. Runway 08-26 is the primary runway and is the only runway capable of serving night-time operations.

In 2010, the Airport was served by a single commercial air carrier, Porter Airlines and by a number of general aviation, commercial, corporate and recreational operators. The Airport is also base to Ornge, who operates a small fleet of rotary-wing aircraft (helicopters) providing air ambulance medical services to the southern Ontario region.

According to Statistics Canada publication TP577, in 2010 BBTCA had 113,685 aircraft movements including 4,845 helicopter movements, serving a total of 1.13 million passengers.

1.2 BACKGROUND

Operation of BBTCA is governed by a Tripartite Agreement between the following signatories: Toronto Port Authority, the City of Toronto and Her Majesty the Queen in right of Canada represented by the Minister of Transport (i.e. Transport Canada). BBTCA is operated by the Toronto Port Authority.

In accordance with the Tripartite Agreement, the Toronto Port Authority is required to maintain certain restrictions with respect to the operation of aircraft at the Airport. These include the following:

- All flights into and out of the Airport shall operate between the hours of 06:45h and 23:00h, with the exception to medical evacuations and other emergency uses.
- No jet-powered aircraft are permitted to operate from the Airport with the exception of medical evacuations and other emergency use required, and during the period of the annual National Exhibition Airshow.
- Regulate the overall frequency of aircraft movements in order to contain the actual 28 NEF (Noise Exposure Forecast) contour within the boundary of the official 25 NEF contour for 1990 as shown on the 1990 Contour map dated 1978, attached to the Tripartite Agreement as Schedule F.

GENIVAR Inc., a Canadian engineering consultancy has been retained by Transport Canada to complete a Noise Study of the Billy Bishop Toronto City Airport to generate NEF contours based on actual aircraft movements during the 2010 calendar year.

1.3 PROJECT SCOPE

In accordance with the Request for Proposal dated February 2, 2012, the scope of this assignment is:

> *"To provide actual Noise Exposure Contours of the Toronto City Centre Airport based on the 95-percentile level of aircraft movements for the 2010 calendar year".*

1.4 GUIDING PRINCIPLES

The following documents were used as guiding principles during the development of the NEF contours:

- TP1247 – Aviation Land Use Planning in the Vicinity of Airports.
- The 1983 Consolidated Tripartite Agreement excerpts as provided by Transport Canada.
- Transport Canada Noise Exposure Software (NEFcalc) ver.2.0.6.1.
- Canada Air Pilot and Canada Flight Supplement (Appendix A) effective during the study period.

2. METHODOLOGY

2.1 NCAMS DATA

NCAMS data (i.e. tower logs) is a detailed summary of all itinerant and local aircraft movements which operated from Airport. This data is originally collected by NAV CANADA through the Air Traffic Control Tower (ATCT) and is subsequently sent to Statistics Canada for review.

1. Itinerant and local NAV CANADA Aircraft Movement Statistics (NCAMS) were obtained directly from Statistics Canada through Transport Canada for the 2010 calendar year.
2. The following information is contained in the itinerant NCAMS data:
    a. Reporting Date
    b. Air Carrier Code
    c. Aircraft Type
    d. Arrival or Departure
    e. Runway Identifier
    f. Origin / Destination Airport
    g. IFR or VFR
3. The following information is contained in the local NCAMS data:
    a. Reporting Date
    b. Type of Aircraft Movement
    c. Count of Movement
4. The itinerant and local NCAMS data were imported into a proprietary GENIVAR Microsoft Access database and processed to obtain the airport traffic statistics and to organize the data such that it could be imported into Transport Canada's NEFcalc computer software.

2.2 KEY AIRPORT TRAFFIC STATISTICS

The following key airport traffic statistics were extracted from the NCAMS data:

1. Aircraft Fleet Mix
2. Runway Utilization
3. Day/Night Distribution
4. Peak Planning Day Inputs

2.2.1 Aircraft Fleet Mix

Aircraft fleet mix is obtained directly from the NCAMS data and is used by the NEFcalc computer program to model aircraft noise. The NEFcalc computer program does not have a noise characterisitcs for all aircraft; therefore it uses equivalent 'substitutions' of one aircraft by another.

In the case of the latest NEFcalc software, there is no Bombardier Dash 8-Q400 and therefore it was modelled as a Bombardier Dash 8-300. As this is the largest and most frequent aircraft utilizing the Airport, it is important that it is modelled correctly.

There is the ability to input 'custom' aircraft, in which the various aircraft performance and noise characteristics are populated into the program. Typically these 'custom' aircraft are inputted using the Federal Aviation Administration (FAA) Integrated Noise Model (IMN) program, which GENIVAR has and

is familiar with. Upon review of the latest software (FAA IMN ver7.c), the Bombardier Dash 8-Q400 neither specifically modelled nor is an official substitution provided.

In order to validate that this substitution was appropriate, a review of Type Certificate Data Sheet for Noise as developed by Bombardier and published by the European Aviation Safety Agency was reviewed for both the Bombardier Dash 8-Q400 and Dash 8-300. This analysis determined that the EPNL Limit noise levels for Lateral, Flyover and Approach of both aircraft are identical, as shown in Appendix B. In fact under level conditions the noise levels for the Dash 8-300 are greater than those of the Dash 8-Q400.

Therefore, it was concluded that the Bombardier Dash 8-Q400 being modelled as a Bombardier Dash 8-300 is appropriate for this analysis.

In addition to the Bombardier Dash 8-Q400 aircraft movements, helicopter aircraft are also difficult to model within the latest NEFcalc computer software. Unlike the latest FAA INM ver 7.c, NEFcalc has no helicopter module and has no helicopters stored by default. Therefore, in order to accurately model the 4,845 helicopter movements, a custom helicopter model must be generated.

According to the Request for Proposal, helicopter noise values were said to be available from the FAA Advisory Circular No.36-1H, Appendix 10. Upon review of this document, the EPNL noise values for the helicopters are not available in a format that is compatible with the NEFcalc program. As a result, it is not possible to transfer the values contained therein into the NEFcalc program.

It was therefore proposed that a custom aircraft, as described above for the Bombardier Dash 8-Q400, would be utilized to generate the noise profiles for the helicopter activity. This custom aircraft was obtained by Transport Canada for use in the former NEFcalc ver.1.8 software and is of the Bell 212. The Bell 212 is one of the largest helicopters utilized at BBTCA and is larger than the Sikorsky S76 utilized by Ornge in 2010 which equals nearly 60% of all helicopter activity.

Therefore, it was concluded that the custom Bell 212 data, as previously provided by Transport Canada, is appropriate for this analysis.

2.2.2 Runway Utilization

The runway utilization for itinerant aircraft movements are obtained directly from the NCAMS data. It should be noted that there is no runway utilization provided for local aircraft movements. Therefore, the calculated itinerant runway utilization is used for local movements.

2.2.3 Day / Night Distribution

According to the NEF model, night-time is defined as being between the hours of 22:00h and 07:00h. Night-time aircraft movements are weighted 16.67x an equivalent daytime aircraft movement to account for the increased annoyance of night-time flights. The day/night distribution is obtained directly from the NCAMS data for both itinerant and local aircraft movements.

2.2.4 Peak Planning Day

According to Transport Canada, the Peak Planning Day is intended to equate to the number of aircraft movements (arrivals or departures) observed at the Airport during a typical busy day in the year. This is also referred to as the busy day or the 95th percentile, where only 5% of the days are busier.

There are a number of different ways to calculate the Peak Planning Day, however in accordance with the Request for Proposal, the following method was used:

1. During the year the three (3) busiest months are isolated and of those months, the seven (7) busiest days are isolated, for a total of twenty-one (21) days.
2. The Peak Planning Day is then calculated as the average number of movements over these twenty-one (21) days, where:

$$NP = (1/21) \times (N1 + N2 + N3... + N21)$$

NP = Peak Planning Day

Therefore, based on the above, the following summarizes the annual movement summary for both itinerant and local movements used to develop their respective Peak Planning Day:

Table 2-1 Peak Planning Day Analysis Summary

Itinerant			Local		
Month	Day	Movements	Month	Day	Movements
May	17	469	July	13	240
May	10	465	July	15	230
May	16	461	July	14	208
May	15	459	July	12	202
May	25	421	July	31	194
May	20	417	July	2	189
May	19	398	July	10	184
July	2	438	March	16	276
July	13	421	March	17	232
July	6	380	March	18	227
July	12	376	March	19	224
July	8	373	March	24	222
July	4	372	March	30	214
July	10	369	March	6	210
April	29	480	May	15	295
April	14	427	May	10	232
April	30	398	May	17	232
April	10	372	May	16	231
April	13	366	May	3	182
April	23	361	May	26	181
April	11	360	May	18	172
	Average	*409*		*Average*	*218*

Source : NCAMS Data.

2.3 NEFCALC MODEL SETUP

The following information is inputted into the NEFcalc computer software and is necessary to generate the NEF contours. This information is based on the physical and operational characteristics of the Airport in accordance with published data specific to BBTCA.

1. Runways
2. Flight Paths

2.3.1 Runways

Runway data for BBTCA was obtained directly from the Canada Flight Supplement and Canada Air Pilot (effective November 18, 2010) and is as follows:

- Runway 08-26 3,988' x 150'
- Runway 06-24 2,933' x 150'
- Runway 15-33 2,979' x 150'

Using an electronic AutoCAD file obtained from an actual airport survey by GENVIAR, the real world threshold co-ordinates for each of the runway thresholds were determined and input into the model.

2.3.2 Flight Paths

All approach, departure and circuit flight paths, including those flown by helicopters, were modelled in accordance with the published procedures per the Canada Flight Supplement and Canada Air Pilot (effective November 18, 2010). The following summarizes those inputs:

- Approach Slopes

Runway 08	3.5° (ILS/DME RWY 08)
Runway 26	4.8° (ILS/DME RWY 26 – RCAP)
Runway 06	3.0° (standard approach slope)
Runway 24	3.0° (standard approach slope)
Runway 15	5.5° (APAPI)
Runway 33	3.0° (standard approach slope)

- Departure Procedures

Runway 08	Climb runway heading to 1.9 DME. Turn right heading 141°
Runway 15	Climb runway heading to 650' ASL. Turn right heading 201°
Runway 24	Climb runway heading to 650' ASL. Turn left heading 201°
Runway 26	Climb runway heading to 650' ASL. Turn left heading 201°

- Circuit Procedures

Runway 08	Right hand circuit and final approach slope 3.9°.
Runway 26	Left hand circuit and final approach slope 4.8°.
Runway 06	Right hand circuit and final approach slope 3.0°.
Runway 24	Left hand circuit and final approach slope 3.0°.
Runway 15	Right hand circuit and final approach slope 5.5°.
Runway 33	Left hand circuit and final approach slope 3.0°.

2.4 NEFCALC INPUT DATA

Once the NCAMS data were processed and the Peak Planning Day determined, two (2) export data sheets were generated which consolidate all 2010 aircraft movements into an equivalent peak planning day value. This therefore provides the noise environment of all flight operations during the entire year condensed into a single 'busy day'.

The following data elements are exported by the proprietary GENIVAR Microsoft Access database such that they can be imported into NEFcalc 2.0.6.1:

1. Aircraft Code
2. Flight Path
3. NEF Stage Length
4. Summary of Day Movements
5. Summary of Night Movements

3. TRAFFIC STATISTICS

3.1 HISTORICAL ANNUAL TRAFFIC STATISTICS

The following details the historical annual aircraft statistics for BBTCA between 2001 and 2010:

Table 3-1 Historical Aircraft Movements

Year	Itinerant	Local	Total	Annual Variation
2001	57,643	71,862	129,505	
2002	53,439	62,035	115,474	-10.8%
2003	41,739	51,104	92,843	-19.6%
2004	34,070	34,359	68,427	-26.3%
2005	34,781	33,135	67,916	-0.7%
2006	37,167	40,414	77,581	14.2%
2007	47,678	42,521	90,199	16.3%
2008	51,416	41,837	93,253	3.4%
2009	58,445	47,871	106,316	14.0%
2010	78,822	34,863	113,685	6.9%

Source : Transport Canada TP577

Table 3-2 Itinerant Movements by Type of Power Plant

Year	Jet	Turboprop	Piston	Helicopters	Total
2001	16	13,396	39,557	4,664	57,643
2002	53	14,112	34,122	5,139	53,439
2003	94	10,135	26,685	4,814	41,739
2004	36	8,357	20,692	4,971	34,070
2005	31	7,663	21,850	5,218	34,781
2006	30	6,282	24,703	6,136	37,167
2007	34	14,548	27,450	5,621	47,678
2008	21	20,269	25,980	5,141	51,416
2009	55	29,911	23,763	4,711	58,445
2010	20	41,505	32,447	4,845	78.822

Source : Transport Canada TP577

As required by the Tripartite Agreement, when annual helicopter activity exceeds 4,000 movements, they shall be included within the NEF contour. Therefore, with 4,845 movements in 2010 all helicopter activity was modelled within the study.

As discussed in Section 1.2, jet traffic is prohibited from operation from BBTCA except as required for medical transport or emergency purposes. However, this limited number of movements still form part of the overall noise environment for the Airport and are therefore modelled in the study.

3.2 TIME OF DAY DISTRIBUTION

As discussed in Section 2.2.3, night-time aircraft movements are weighted 16.67x an equivalent daytime aircraft movement. Therefore, accounting for the number of night-time movements is critical to generating a noise model that correctly reflects the noise environment at the Airport.

The following summarizes the day/night distribution of itinerant and local traffic based on the statistics extrapolated from the NCAMS data:

Table 3-3 Aircraft Movements by Time of Day

Time of Day	Itinerant	Local	Total
Day (07:00h-22:00h)	66.9%	30.1%	97.1%
Night (22:00h-07:00h)	2.4%	0.5%	2.9%
Total	69.3%	30.7%	100%

Source : Statistics Canada NCAMS Data

3.3 RUNWAY DISTRIBUTION

The level of activity on each runway will impact the size and shape of the NEF contours, where runways with greater utilization will have larger contours associated with them. Runways with a higher percentage of departure traffic over arrival traffic will also result in larger NEF contours.

The following summarizes the runway distribution based on the statistics extrapolated from NCAMS data:

Table 3-4 Itinerant Runway Distribution

Runway	Day	Night	Total
Runway 08	25.7.%	1.0%	26.7%
Runway 26	62.7%	2.4%	65.1%
Runway 06	0.4%	0.0%	0.4%
Runway 24	2.0%	0.0%	2.0%
Runway 15	0.5%	0.0%	0.5%
Runway 33	2.1%	0.1%	2.2%
Total	93.4%	3.5%	96.9%
Runway 08-26	**Departure**	**Arrival**	**Total**
Runway 08	13.3%	13.4%	26.7%
Runway 26	32.4%	32.7%	65.1%

Source : Statistics Canada NCAMS Data
Notes: Does not equal 100% due to missed approaches and overflights.
Missed approaches (99) were re distributed amongst existing runways as per relative utilization.
Overflights (88) do not contribute to an NEF model.

3.4 PEAK PLANNING DAY

As detailed in Section 2.2.4, the following summarizes the Peak Planning Day:

Table 3-5 Peak Planning Day

Movement	Itinerant Fixed Wing	Itinerant Rotary Wing	Local	Total
Annual	73,977	4,845	34,863	113,685
Peak Planning Day	384	25	218	627

Source : Transport Canada TP577 and GENIVAR Analysis

4. NOISE STUDY ASSESSMENT AND SUMMARY

4.1 CONTOURS MODELLED

In accordance with the Request for Proposal, two (2) noise contours were modelled based on the input data detailed in previous sections. A single 2010 noise contour was modelled for all actual 2010 traffic and a second model was generated where helicopter traffic was removed. These two (2) NEF contours are enclosed as Appendix C and D, respectively.

As indicated in TP1247, the NEF contours are depicted on a 1:50,000 scaled drawing and show the 28, 30 and 35 NEF contours. Although recommended per TP1247, the 40 NEF was omitted from the figures as it remained within the runway system and does not impact noise sensitive land uses.

4.2 2010 ACTUAL

As shown in Appendix C, the 28 NEF generated from actual 2010 aircraft movement statistics remains within the 1990 Official 25 NEF, except between points X & Y as permitted per the Tripartite Agreement.

4.3 2010 ACTUAL – NO HELICOPTER TRAFFIC

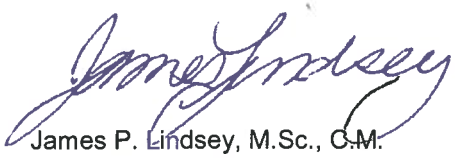
Since the 28 NEF contours as generated by actual 2010 aircraft movement statistics remains within the 1990 Official 25 NEF, the removal of the twenty-five (25) Planning Day helicopter movements reduce the size of the 28 NEF contours.

4.4 SUMMARY

Based on the forgoing analysis undertaken by GENIVAR, it was determined that the 28 NEF contours prepared for the Billy Bishop Toronto City Airport using actual aircraft movement statistics for the 2010 calendar year comply with the requirements per the Tripartite Agreement. In all areas, except those between points X & Y, the 28 NEF contours remain within the 1990 Official 25 NEF contours, attached to the Tripartite Agreement as Schedule F.

All of which is respectfully submitted,

GENIVAR INC.



James P. Lindsey, M.Sc., C.M.
Aviation Consultant

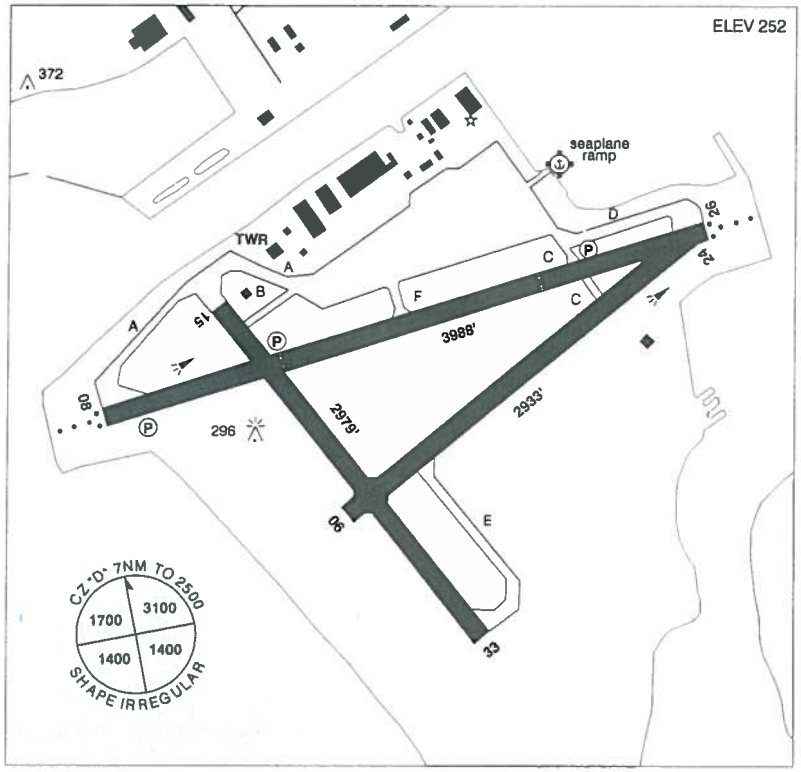
Enclosure

R:\PSMI-Operations\Working_Files\Projects\10527 - BBTCA - NEF Contour - 2010 Actual Traffic\Reports\10527 - Airport Noise Study BBTCA ver1a 20120824.doc

Appendix A

Canada Flight Supplement and Canada Air Pilot

TORONTO / BILLY BISHOP TORONTO CITY AIRPORT ON — CYTZ



REF	N43 37 39 W79 23 46 Adj S 11°W UTC-5(4) Elev 252′ VTA A5000 LO6 T2 CAP RCAP
OPR	Toronto Port Authority 416-203-6942 Cert Ldg fees
PF	A-1 B-2,3,6 C-4,5
CUST	AOE/15 888-226-7277 13-01Z‡
FLT PLN	NOTAM FILE CYTZ Pilots to open/ close VFR flt plan with London rdo 123.15 or by phone.
FIC	London 866-WXBRIEF (Toll free within Canada) or 866-541-4104 (Toll free within Canada & USA)
ACC	Toronto 905-676-4590/4591/4592 or 888-217-1241
WX	METAR H24 AWOS. WxCam TAF H24, issue times: 02, 08, 14, 20Z.
DUAT	Porter FBO

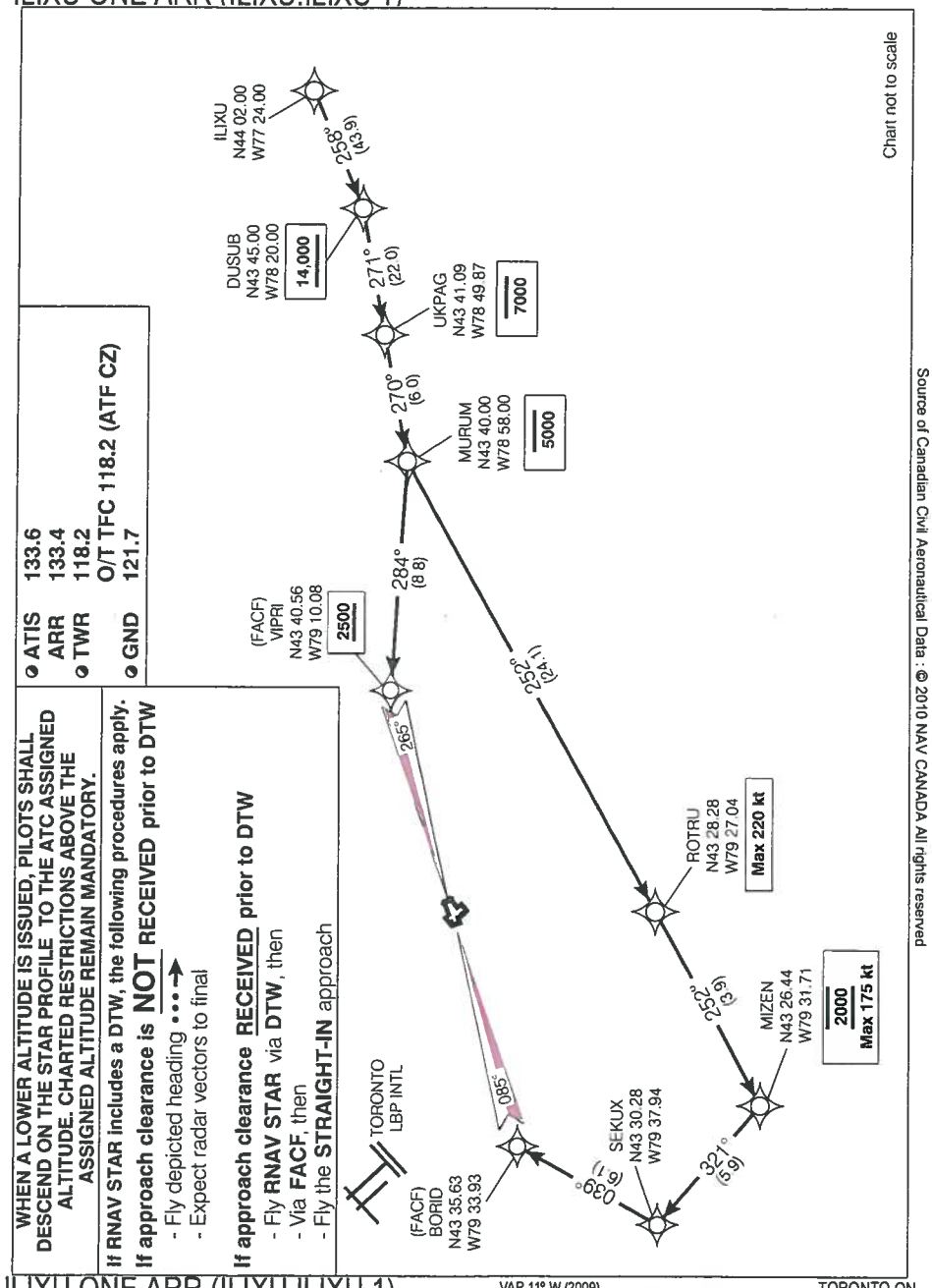
TORONTO / BILLY BISHOP TORONTO CITY AIRPORT ON (Cont'd) CYTZ

SERVICES	1145-0400Z‡ dly When ferry not running no access to aprt. Hrs of ferry operation are 1030-05Z‡.
FUEL	100LL, JA-1
OIL	All
S	1,3
ARFF	6 1145-0400Z‡ O/T call out chg 2 hrs PN
PVT ADV	Esso Aviation 416-361-1100 123.2 12-23Z‡; Porter FBO 416-203-2424 123.35 1130-0345Z‡; Esso (Toronto City Aviation) 416-361-1100 12-23Z‡ Opr Seaplane dock/ramp
RWY DATA	Rwy 08(082°)/26(262°) 3988x150 asphalt Rwy 08 RVR 1200(1/4sm)/26 RVR 1200(1/4sm) Rwy 06(061°)/24(241°) 2933x150 asphalt Rwy 15(151°)/33(331°) 2979x150 asphalt
RCR	Opr 1145-0345Z‡ CRFI/RSC avbl ltd hrs. PLR/PCN
LIGHTING	08-AS(TE HI) P1 3.9°, 26-AZ(TE HI) AP 4.8° MEHT 63´,15-AP 5.5° See CAUTION PAPI P1 apch Rwy 08 and APAPI apch Rwy 26. Rwys 08 & 26 - three white inset pre-thld centerline lgts. Two pairs of inset white lgts 1099´ upwind of each thld mark end of TDZ. Yellow rwy edge lgts for final 1362´ Rwy 26 and final 1289´ Rwy 08.
COMM	
ATIS	133.6 1130-0400Z‡ dly
GND	121.7 1130-0400Z‡ dly
TWR	City 118.2 119.2 (V) 1130-0400Z‡ dly (emerg only 416-973-9240)
ATF	tfc 118.2 0400-1130Z‡ dly within CZ 7NM SHAPE IRREGULAR 2500 ASL
ARR	Toronto 133.4
DEP	Toronto 133.4
NAV	
NDB	GIBRALTAR POINT TZ 257 (L) N43 36 46 W79 23 08 343° 1.0NM to A/D
DME	TORONTO CITY ITZ 110.15 Ch 38(Y) N43 37 38 W79 23 58 (296') at A/D. ITZ DME unmonitored when twr clsd. DME not usable within 1.0 DME.
ILS	ITZ 110.15 (Rwy 08) Ch 38(Y) RVR. ITZ ILS unmonitored when twr clsd. ICR 110.15 (Rwy 26) RVR. ICR ILS unmonitored when twr clsd. LOC reliable only within 10° either side of centerline.
PRO	No arr/dep btwn 0400-1145Z‡ dly exc MEDEVAC & emerg. Rgt hand circuits Rwys 06, 08 & 15 (CAR 602.96). Rotary wing acft are to conform to established circuit pattern, unless auth by ATC.
NOISE ABATEMENT	All jet acft (exc MEDEVAC flts) and certain types of propeller acft are proh fr utilizing the aprt. Pilots should check with aprt ops prior to arr. Pilots are requested to maintain 2000 ASL or above over Metropolitan Toronto Zoo (N43 49 05 W79 11 15). Avoid overflight of noise sensitive areas, see Toronto/Billy Bishop Toronto City Airport VTPC for east VFR routing.
CAUTION	All arr/dep acft to avoid flt over CNE/Ontario Place. For details see Toronto/Billy Bishop Toronto City Airport VTPC and Toronto/Billy Bishop Toronto City Airport sketch. Frequent banner towing activity over CNE in fixed pattern 1500 ASL and below. Vessels up to 120´ (366 ASL) in vic of final apch to all rwys. PAPI P1 apch slope Rwy 08 will ensure clearance over tall vessels. DME/glidepath antenna 296 ASL (45 AGL) at A/D, see sketch. APAPI Rwy 15 apch slope 5.5°. APAPI Rwy 26 apch slope 4.8°. APAPI apch slope Rwy 26 will ensure clearance over vessels and chimney (N43 38 45 W79 19 59, 954 ASL (700 AGL) 2.6NM fr Thld 26. Secondary ERS subject to availability of ferry ops. Flagpole 372 ASL (121 AGL) located 0.3NM N of thld Rwy 15 & adj W of extended rwy centreline. Wind turbine aprx 1NM W of aprt at CNE 584 ASL (323 AGL) N43 37 52 W79 25 29. Extv bird activity on A/D.

STAR (RNAV)

TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
TORONTO ON

ILIXU ONE ARR (ILIXU.ILIXU 1)



ILIXU ONE ARR (ILIXU.ILIXU 1)

VAR 11° W (2009)

TORONTO ON
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT

EFF 29 JUL 10 CHANGE: New procedure

NAD83

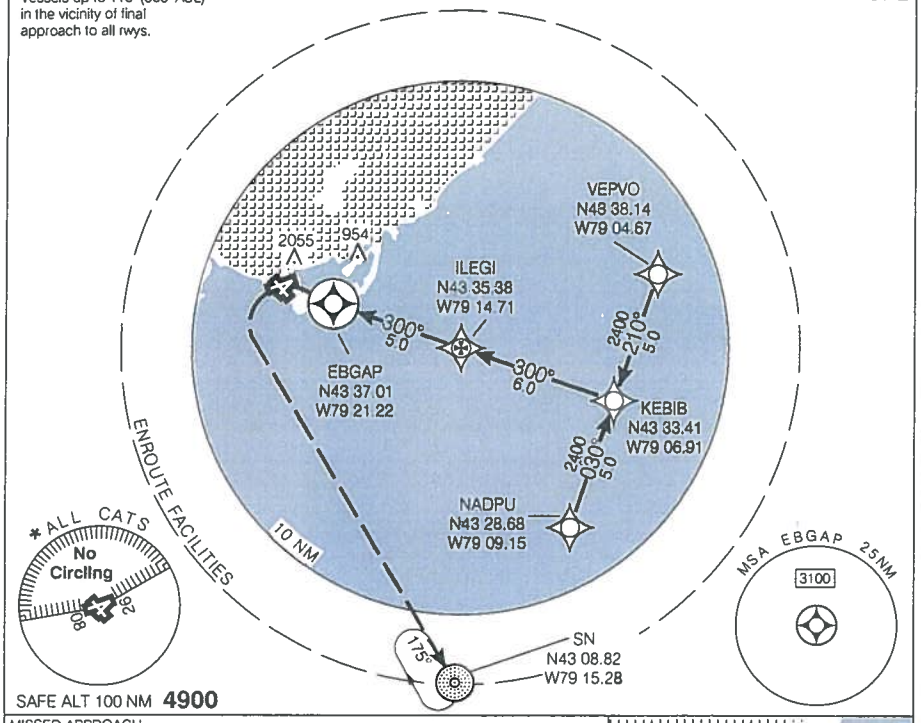
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
TORONTO ON

RNAV (GNSS) A

ATIS 133.6	ARR TORONTO 133.4	TWR 118.2 O/T TFC 118.2 (ATF CZ)	GND 121.7	DEP TORONTO 133.4	ELEV 252

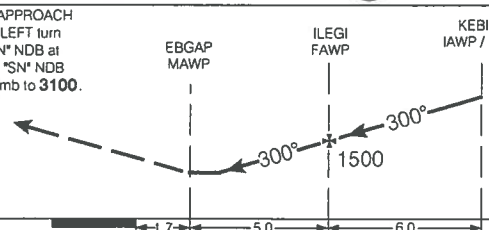
Vessels up to 116' (363' ASL) in the vicinity of final approach to all rwys.

CYTZ



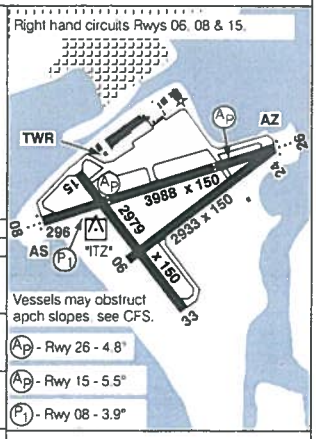
SAFE ALT 100 NM **4900**

MISSED APPROACH
Climbing LEFT turn direct "SN" NDB at **2000**. At "SN" NDB shuttle climb to **3100**.



CATEGORY	A	B	C	D
* CIRCLING	**760**	(508)	2	NOT AUTHORIZED

Right hand circuits Rwys 06, 08 & 15.



Knots					
Min:Sec					

RNAV (GNSS) A
VAR 11° W (2006)
TORONTO ON
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT

EFF 23 SEP 10 CHANGE: Ops note
433739N 792346W
NAD83

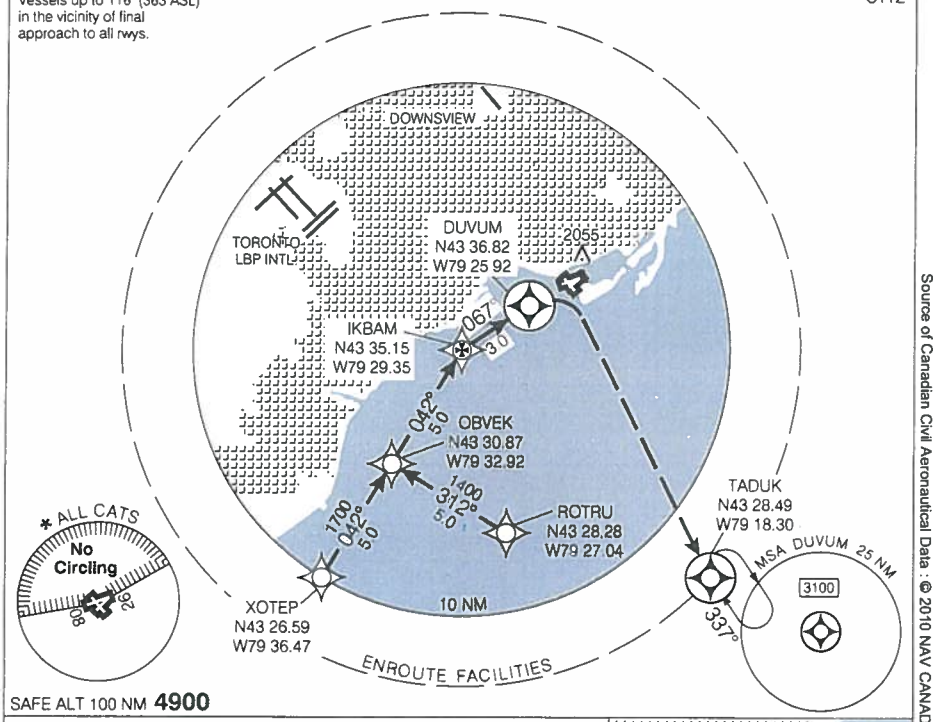
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
TORONTO ON

RNAV (GNSS) RWY 08

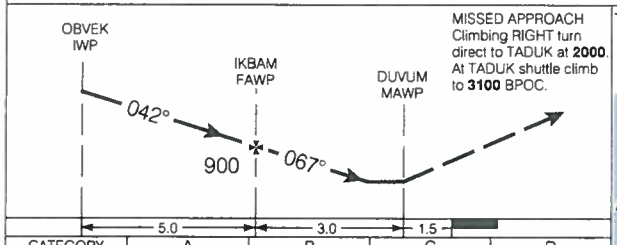
ATIS 133.6	ARR TORONTO 133.4	TWR 118.2 O/T TFC 118.2 (ATF CZ)	GND 121.7	DEP TORONTO 133.4	ELEV 252 / TDZE 08 251

CYTZ

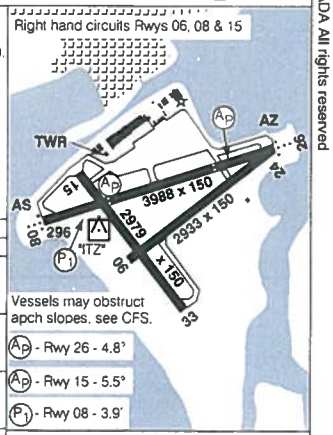
Vessels up to 116' (363 ASL) in the vicinity of final approach to all rwys.



SAFE ALT 100 NM **4900**



CATEGORY	A	B	C	D
LPV	NOT AUTHORIZED			
LNAV / VNAV	NOT AUTHORIZED			
LNAV	720 (469) 1¾		NOT AUTHORIZED	
* CIRCLING	760 (508) 1¾		NOT AUTHORIZED	



Knots	70	90	110	130	150
Min:Sec					

RNAV (GNSS) RWY 08

VAR 11° W (2008)
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
433739N 792346W
TORONTO ON
NAD83

EFF 23 SEP 10 CHANGE: Ops note

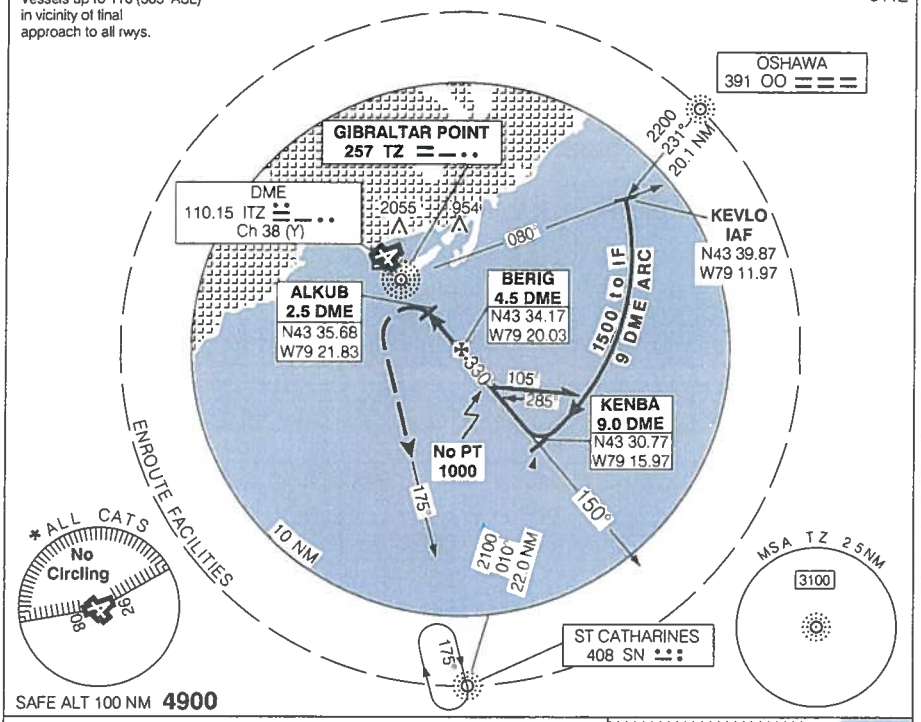
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
TORONTO ON

NDB/DME B (GNSS)

ATIS 133.6	ARR TORONTO 133.4	TWR 118.2 O/T TFC 118.2 (ATF CZ)	GND 121.7	DEP TORONTO 133.4	ELEV 252

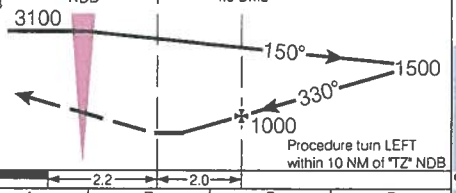
CYTZ

Vessels up to 116'(363' ASL) in vicinity of final approach to all rwys.



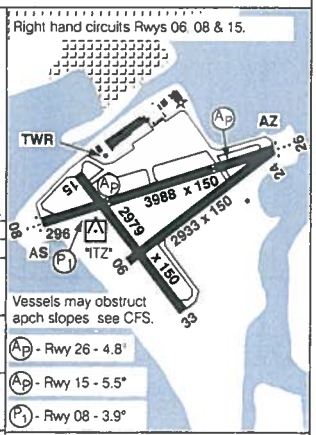
SAFE ALT 100 NM **4900**

MISSED APPROACH
LEFT climbing turn to track **175°** to "SN" NDB at **2000**. At "SN" NDB shuttle climb to **3100**.



CATEGORY	A	B	C	D
✱ CIRCLING	**760**	(508)	2 ½	NOT AUTHORIZED

Right hand circuits Rwys 06 08 & 15.



Knots					
Min:Sec					

TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
TORONTO ON

ILS/DME RWY 08

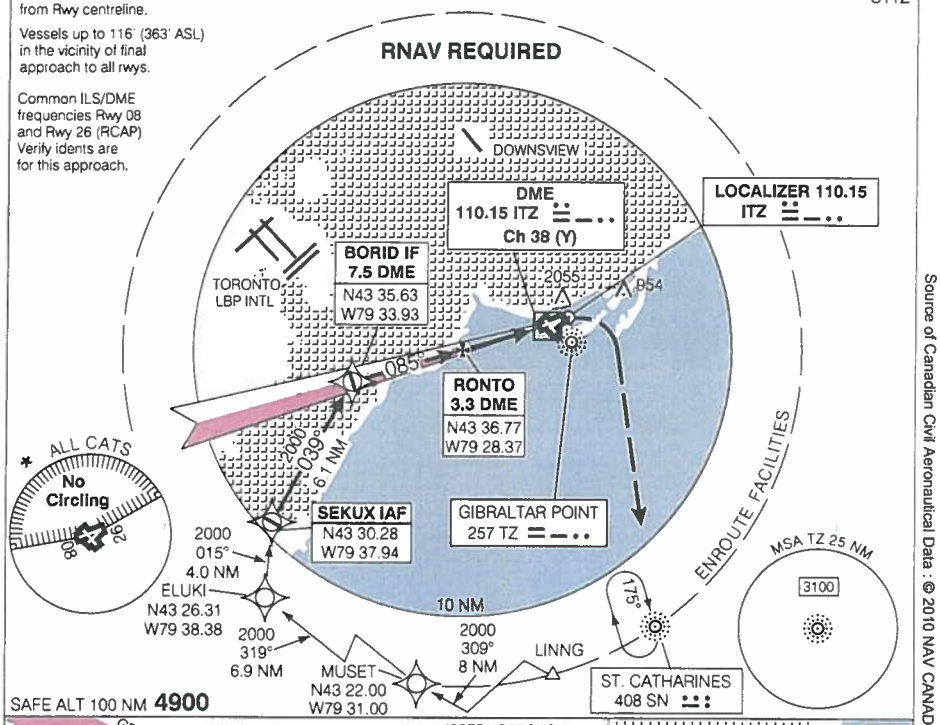
ATIS 133.6	ARR TORONTO 133.4	TWR 118.2 O/T TFC 118.2 (ATF CZ)	GND 121.7	DEP TORONTO 133.4	ELEV 252 / TDZE 08 251

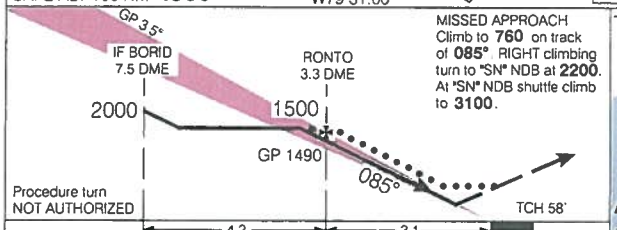
CYTZ

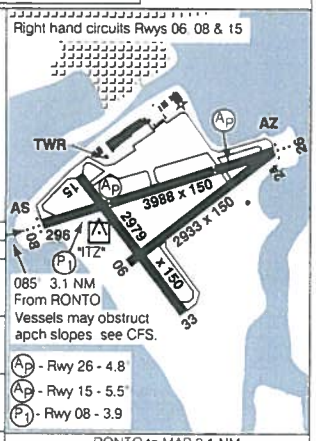
Localizer offset 3.0° from Rwy centreline.

Vessels up to 116' (363' ASL) in the vicinity of final approach to all rwys.

Common ILS/DME frequencies Rwy 08 and Rwy 26 (RCAP) Verify idents are for this approach.







CATEGORY	A	B	C	D
ILS/DME	560	(309) 1		NOT AUTH
LOC/DME	620	(369) 1 ¼		NOT AUTH
* CIRCLING	760	(508) 1 ½	760 (508) 2	NOT AUTH

RONTO to MAP 3.1 NM

Knots	70	90	110	130	150
Min:Sec	2:41	2:05	1:42	1:27	1:15

ILS/DME RWY 08

VAR 11°W
TORONTO ON
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT

EFF 23 SEP 10 CHANGE: Ops note

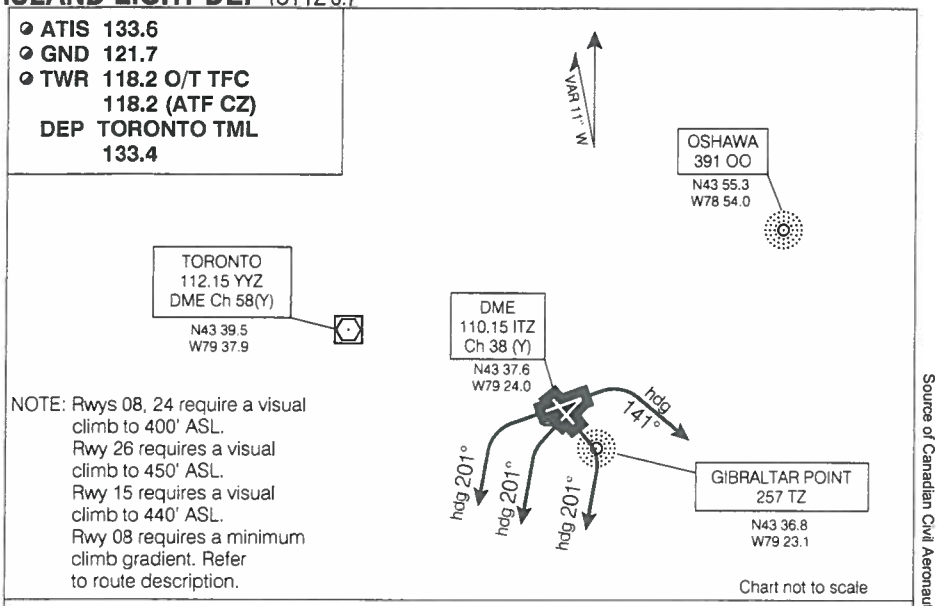
433739N 792346W NAD83

SID (VECTOR)

ISLAND EIGHT DEP (CYTZ 8.)

TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
TORONTO ON

- **ATIS 133.6**
- **GND 121.7**
- **TWR 118.2 O/T TFC**
  118.2 (ATF CZ)
  DEP TORONTO TML
  133.4



NOTE: Rwys 08, 24 require a visual climb to 400' ASL.
Rwy 26 requires a visual climb to 450' ASL.
Rwy 15 requires a visual climb to 440' ASL.
Rwy 08 requires a minimum climb gradient. Refer to route description.

DEPARTURE ROUTE DESCRIPTION

RUNWAY 08: Requires a minimum climb gradient of 310 ft/NM to 1100' ASL. Climb rwy hdg to 1.9 DME (Ch 38 (Y)). Turn RIGHT hdg 141° for vectors to assigned route or depicted fix. Maintain 2000' ASL.

NOTE: For noise abatement, no turns prior to 1.9 DME (Ch 38 (Y)).

RUNWAY 15: Climb rwy hdg to 650' ASL. Turn RIGHT to hdg 201° for vectors to assigned route or depicted fix. Maintain 2000' ASL.

RUNWAY 24: Climb rwy hdg to 650' ASL. Turn LEFT to hdg 201° for vectors to assigned route or depicted fix. Maintain 2000' ASL.

RUNWAY 26: Climb rwy hdg to 650' ASL. Turn LEFT to hdg 201° for vectors to assigned route or depicted fix. Maintain 2000' ASL.

COMMUNICATIONS FAILURE

On recognition of communication failure 5 minutes or less after take-off and in IMC, proceed as follows:

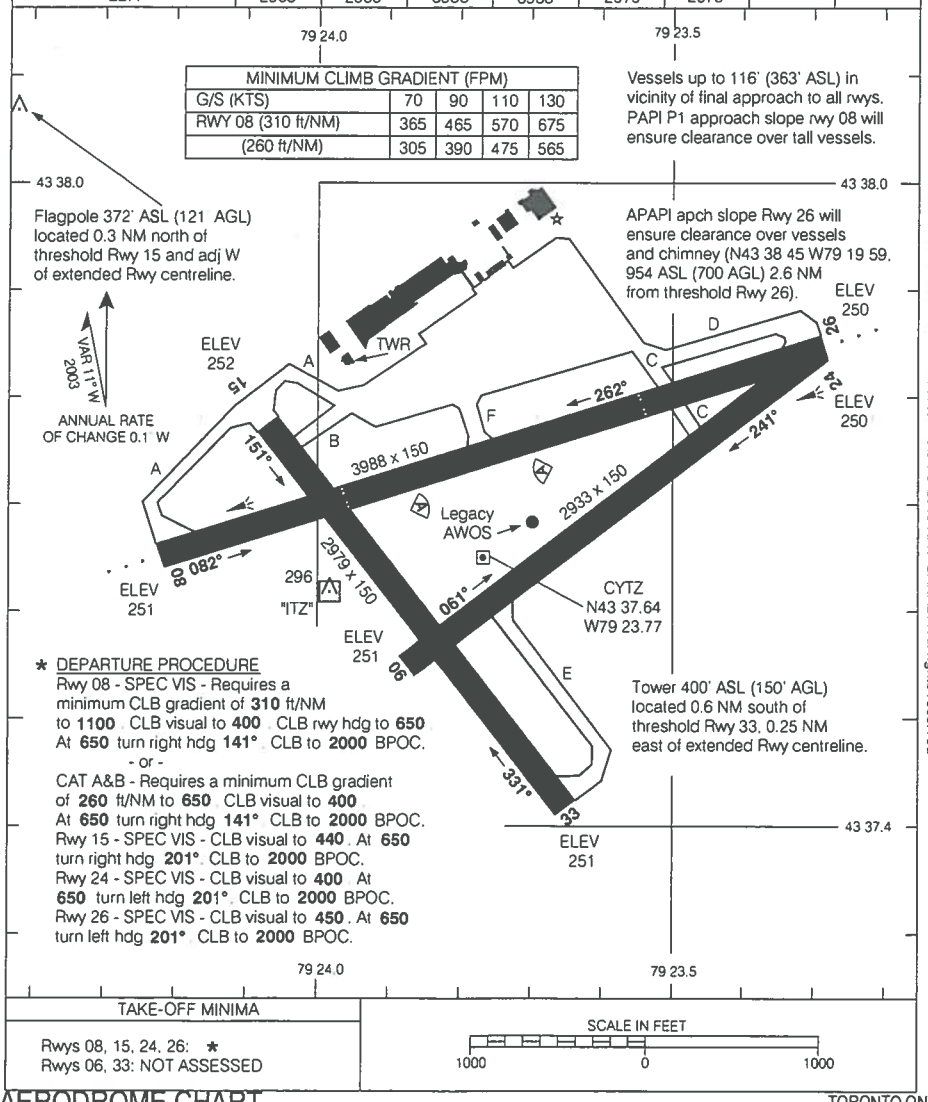
1. Transpond Mode A/3 Code 7600
2. Climb to 3100' ASL on assigned heading
3. Proceed on course and maintain 4000' ASL or last assigned altitude whichever is higher
4. Climb to flight planned altitude 5 minutes after recognition of the communication failure

AERODROME CHART

TORONTO/BILLY BISHOP TORONTO CITY AIRPORT
TORONTO ON

ATIS 133.6	GND 121.7	TWR 118.2 O/T TFC 118.2 (ATF CZ)	DEP TORONTO TML 133.4

DECLARED DISTANCES	06	24	08	26	15	33		
TORA	2933	2933	3988	3988	2979	2979		
TODA	3233	3383	4338	4338	3429	3179		
ASDA	2933	2933	3988	3988	2979	2979		
LDA	2933	2933	3988	3988	2979	2979		



TAKE-OFF MINIMA
Rwys 08, 15, 24, 26: *
Rwys 06, 33: NOT ASSESSED

SCALE IN FEET
1000 0 1000

AERODROME CHART

TORONTO ON
TORONTO/BILLY BISHOP TORONTO CITY AIRPORT

EFF 23 SEP 10 CHANGE: Annual rate of change

NAD83

Appendix B

Bombardier Dash 8 Noise Data

Type Certificate Holder[1] **Bombardier Inc.** Aircraft Type Designation[1] **DHC-8-301**

Engine Manufacturer[1] **Pratt & Whitney Canada** Engine Type Designation[1] **PW123**

Additional modifications essential to meet the requirements or needed to attain the certificated noise levels[1] **None**

Noise Certification Basis **ICAO Annex 16, Volume I** Edition / Amendment **2 Edition** Chapter[1] **3**

EASA Record No.	Propeller Manufacturer [1]	Propeller Type Designation [1]	Maximum Mass		Lateral/Full Power EPNL		Flyover EPNL		Approach EPNL		See Note
			Take-off [1] (kg)	Landing [1] (kg)	Level [1]	Limit	Level [1]	Limit	Level [1]	Limit	
B1004	**Hamilton Standard**	**14SF-15**	**18,643**	**18,144**	**87.4**	**94.0**	**84.3**	**89.0**	**98.9**	**98.0**	-
B996	**Hamilton Standard**	**14SF-23**	**18,643**	**18,144**	**87.4**	**94.0**	**84.3**	**89.0**	**98.9**	**98.0**	-

[1] See Note 1.

Type Certificate Holder[1] **Bombardier Inc.** Aircraft Type Designation[1] **DHC-8-402**

Engine Manufacturer[1] **Pratt & Whitney Canada** Engine Type Designation[1] **PW150A**

Additional modifications essential to meet the requirements or needed to attain the certificated noise levels[1] **None**

Noise Certification Basis **ICAO Annex 16, Volume I** Edition / Amendment **4 Edition / Amendment 8** Chapter[1] **4**

EASA Record No.	Propeller Manufacturer [1]	Propeller Type Designation [1]	Maximum Mass		Lateral/Full Power EPNL		Flyover EPNL		Approach EPNL		See Note
			Take-off [1] (kg)	Landing [1] (kg)	Level [1]	Limit	Level [1]	Limit	Level [1]	Limit	
B1061	**Dowty Rotol**	**R408/6-123-F/17**	**29,574**	**28,123**	**84.0**	**94.0**	**78.6**	**89.0**	**94.8**	**98.0**	-
B1059	**Dowty Rotol**	**R408/6-123-F/17**	**29,257**	**28,009**	**84.0**	**94.0**	**78.3**	**89.0**	**94.8**	**98.0**	-
B1057	**Dowty Rotol**	**R408/6-123-F/17**	**28,998**	**28,009**	**84.0**	**94.0**	**78.0**	**89.0**	**94.8**	**98.0**	-
B1055	**Dowty Rotol**	**R408/6-123-F/17**	**28,690**	**27,783**	**84.1**	**94.0**	**77.8**	**89.0**	**94.9**	**98.0**	-
B1053	**Dowty Rotol**	**R408/6-123-F/17**	**27,987**	**27,442**	**84.1**	**94.0**	**77.1**	**89.0**	**94.9**	**98.0**	-

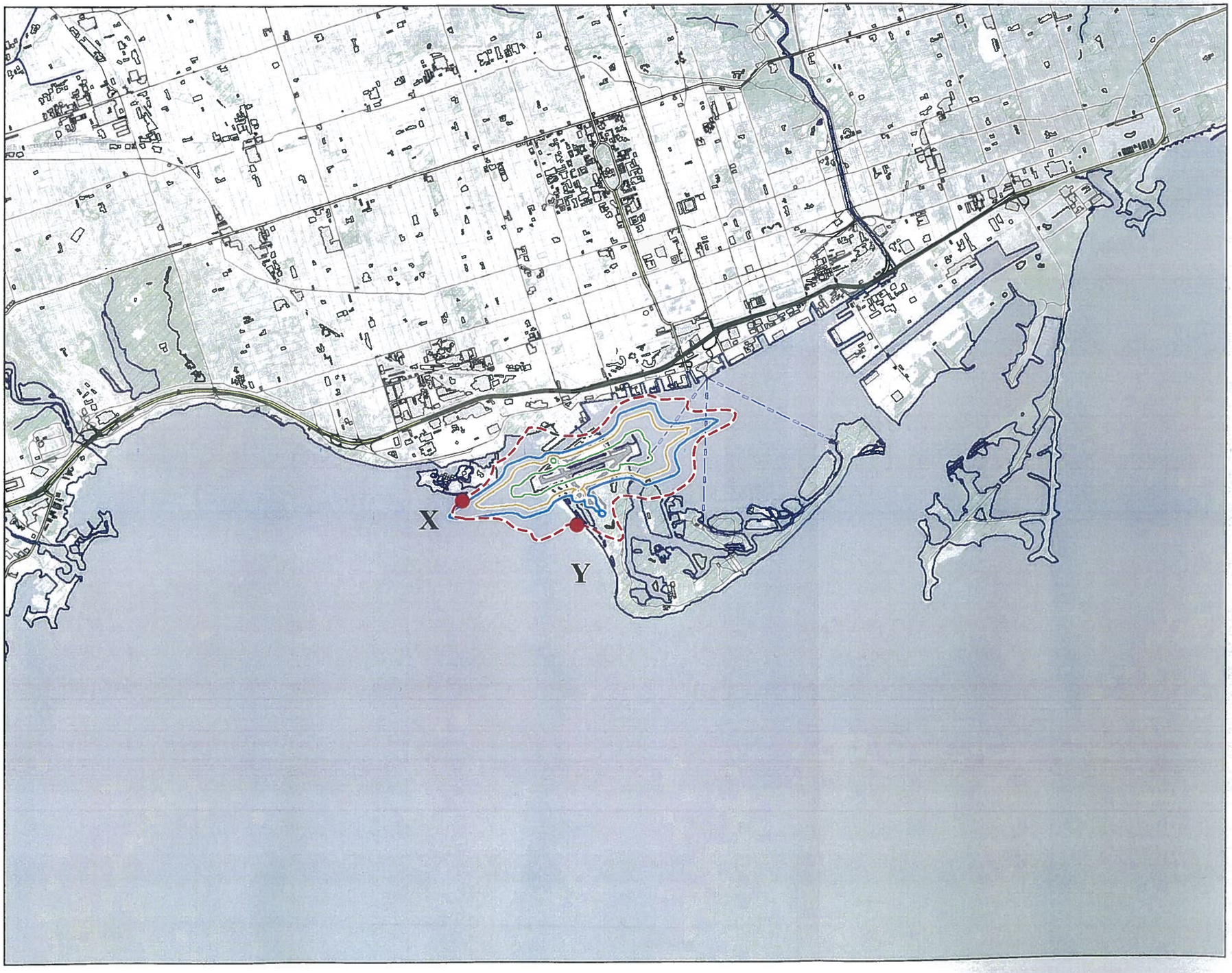
[1] See Note 1.

Appendix C

Noise Contour Map
2010 Actual

Canada

APPENDIX C - ACTUAL (2010) ALL AIRCRAFT
NOISE STUDY - BILLY BISHOP TORONTO CITY AIRPORT



LEGEND

NEF CONTOURS - 2010 ACTUAL
- 28-NEF
- 30-NEF
- 35-NEF

NEF CONTOURS - 1990 OFFICIAL
- 25-NEF

N
W E
S

PEAK PLANNING DAY DETAILS:

ITINERANT: 384
LOCAL: 218
HELICOPTER: 25
TOTAL: 627

NOTES:

ACTUAL 28 NEF SHALL NOT EXCEED OFFICIAL 1990 25 NEF CONTOUR EXCEPT BETWEEN POINTS X AND Y AS SHOWN.

SOURCES:

OFFICIAL NOISE EXPOSURE FORECAST CONTOURS (1990) DIGITIZED BY GENIVAR FROM SCHEDULE F OF THE TRIPARTITE AGREEMENT.

NOISE NEF CONTOURS GENERATED USING NEFCALC VER.2.0.6.1.

NOISE CONTOURS GENERATED USING ACTUAL 2010 AIRCRAFT TRAFFIC DATA OBTAINED FROM TRANSPORT CANADA

ELECTRONIC BASE MAP AND IMAGARY OBTAINED FROM NATURAL RESOURCES CANADA.

PROJECT DETAILS:

PROJECT NAME
NOISE EXPOSURE FORECAST ANALYSIS

AIRPORT
BILLY BISHOP TORONTO CITY AIRPORT

CLIENT
TRANSPORT CANADA

DATE
AUGUST 2012

0 500 1,000 2,000 3,000 4,000
METRES (SCALE 1:50,000)

GENIVAR

Appendix D

Noise Contour Map
2010 No Helicopters

Canada

APPENDIX D - ACTUAL (2010) NO HELICOPTER
NOISE STUDY - BILLY BISHOP TORONTO CITY AIRPORT

LEGEND

NEF CONTOURS - 2010 ACTUAL

- 28-NEF
- 30-NEF
- 35-NEF

NEF CONTOURS - 1990 OFFICIAL

- 25-NEF

N
W E
S

PEAK PLANNING DAY DETAILS:

ITINERANT: 384
LOCAL: 218
HELICOPTER: NONE
TOTAL: 602

NOTES:

ACTUAL 28 NEF SHALL NOT EXCEED OFFICIAL 1990 25 NEF CONTOUR EXCEPT BETWEEN POINTS X AND Y AS SHOWN.

SOURCES:

OFFICIAL NOISE EXPOSURE FORECAST CONTOURS (1990) DIGITIZED BY GENIVAR FROM SCHEDULE F OF THE TRIPARTITE AGREEMENT.

NOISE NEF CONTOURS GENERATED USING NEFCALC VER.2.0.6.1.

NOISE CONTOURS GENERATED USING ACTUAL 2010 AIRCRAFT TRAFFIC DATA OBTAINED FROM TRANSPORT CANADA

ELECTRONIC BASE MAP AND IMAGARY OBTAINED FROM NATURAL RESOURCES CANADA.

PROJECT DETAILS:

PROJECT NAME
NOISE EXPOSURE FORECAST ANALYSIS

AIRPORT
BILLY BISHOP TORONTO CITY AIRPORT

CLIENT
TRANSPORT CANADA

DATE
AUGUST 2012

0 500 1,000 2,000 3,000 4,000

METRES (SCALE 1:50,000)

GENIVAR