

CENAC BACKGROUNDER

Propeller Aircraft Turns and Early Jet Turns

Objective

To provide historical data on Propeller Aircraft Turns and Early Jet Turns departure procedures, from Runways 24 Left and Right.

The request was the result of inquiries by Applewood Heights community members regarding the status and frequency of these procedures. The community feels that there has been an increase in turns made over their neighbourhood since 2011. They are mainly impacted by early turns of aircraft departing from Runways 24 Left and Right.

Overview - Propeller Aircraft Turns and Early Jet Turns Departure Procedures

Propeller Aircraft Turns and Early Jet Turns are departure procedures, undertaken in collaboration with the airline industry and NAV Canada.

These two procedures are specifically designed to:

- Allow aircraft to take a more direct route towards their destination, getting aircraft enroute sooner
- Increase runway capacity and efficiency
- Reduce line-ups on the ground
- Reduce fuel consumption and Greenhouse Gas Emissions

Propeller Aircraft Turns "Prop Turns"	Early Jet Turns "Early Turns"
<ul style="list-style-type: none"> – Slower departing propeller aircraft are permitted to make immediate departure turns after takeoff – Utilized on <u>all runways</u> – Standard procedure since the 1970's <p>Hours</p> <ul style="list-style-type: none"> – 7:00 am – 11:00 pm – Not used during the restricted hours (12:30 am – 6:30 am) <p>Propeller Aircraft Turn - Extended Hours Trial</p> <ul style="list-style-type: none"> – Extension of hours of the propeller aircraft turns by half an hour (from 7:00 am to 11:00 pm) to 6:30 am to 11:30 pm – Began in March 2008 and currently under review – Noise complaints related to the trials are tracked and recorded – Regular updates to our Community Environment and Noise Advisory Committee 	<ul style="list-style-type: none"> – Certain smaller jet aircraft are permitted to make immediate departure turns after takeoff – Procedure was initiated on the <u>east/west runways</u> in 2000 – Became a formalized and published procedure in 2005 <p>Hours</p> <ul style="list-style-type: none"> – 7:00 am - 11:00 pm – Not used during the restricted hours (12:30 am – 6:30 am) <p>Early Jet Turn – North/South Runways Trial</p> <ul style="list-style-type: none"> – Expansion of the procedure to the north/south runways (Runways 15 Left and 15 Right, and 33 Left and 33 Right). – Began in March 2008 and currently under review – Noise complaints related to the trials are tracked and recorded – Regular updates to our Community Environment and Noise Advisory Committee

CENAC BACKGROUNDER Propeller Aircraft Turns and Early Jet Turns

Overview – Current Tracking

The Noise Management Office compiles and reports on statistics related to Trial Procedures at Toronto Pearson (ie. Propeller Aircraft Turns during the extended hours and Early Jet Turns on the North/South runways).

The following statistics are reported:

- The number of aircraft conducting the trial
- The numbers of complaints and callers relative to each trial
- Complaints related to a Trial Procedure are indicated as such when registered

Once a trial procedure has been formalized and becomes a regular operation, the Noise Management Office records and reports complaints related to the procedures but no longer tracks the number of aircraft conducting them.

Statistics - Propeller Aircraft Turns and Early Jet Turns Departure

For the purpose of responding to the inquiry made at the CENAC meeting, a spreadsheet was developed to report Propeller Aircraft Turns and Early Jet Turns

Early turn data for the period from 2004 through April 2012 was compiled using the following method:

- Data was retrieved from the early turn trials for 2004 through 2005 for early jet turns on Runways 24 Left and Right.
- Using the Noise Management system, flight tracks were filtered for departures of eligible jets for the early turn (for the years not included above) and the props for all years on Runways 24 Left and Right. The number of aircraft and the number of turns were recorded.
- Turns to the south were counted as the inquiry was specific to the Applewood Heights community.

CENAC BACKGROUNDER
Propeller Aircraft Turns and Early Jet Turns

Statistics - Propeller Aircraft Turns and Early Jet Turns Departure

	2004	2005	2006	2007	2008	2009	2010	2011	Jan-Apr 2012
Departures 24L/R	42580	50864	50485	54014	60504	53359	48244	52864	19180
Props (Approved Hours)	5770	6482	6579	8126	8565	8713	7704	8425	3413
Prop Turns (south)	5023	5344	6045	7490	7513	7419	6848	7567	3213
% Prop Turns	11.80%	10.51%	11.97%	13.87%	12.42%	13.90%	14.19%	14.31%	16.75%
% Prop Turns To Eligible	87.05%	82.44%	91.88%	92.17%	87.72%	85.15%	88.89%	89.82%	94.14%
Eligible Jets (Jet Turn Hours)	8250	11856	11925	14404	13830	12377	9081	7405	1959
Jet Turns (south)	708	1005	2678	3971	4179	3372	2123	1550	238
% Early Jet Turns	1.66%	1.98%	5.30%	7.35%	6.91%	6.32%	4.40%	2.93%	1.24%
% Early Jet Turns to Eligible	8.58%	8.48%	22.46%	27.57%	30.22%	27.24%	23.38%	20.93%	12.15%
Total Prop and Jet Turns (south)	5731	6349	8723	11461	11692	10791	8971	9117	3451
% Turns	13.46%	12.48%	17.28%	21.22%	19.32%	20.22%	18.60%	17.25%	17.99%

Prop Turn Hours (2004 to Feb 2008): 7:00 am to 11:00 pm

Prop Turn Hours Trial (March 2008 to current): 6:30 am to 11:30 pm

Early Jet Turn Hours: 7:00 am to 11:00 pm

Early Jet Turn Trial: on N/S runways only

CENAC BACKGROUNDER Propeller Aircraft Turns and Early Jet Turns

Related Complaints Propeller Aircraft Turns and Early Jet Turns Departure

With 2-Hour Rule Applied

Operation		2004	2005	2006	2007	2008	2009	2010	2011	Jan - Apr 2012
Prop Turns	Complaints	110	30	6	0	5	28	1	4	141
	Callers	3	3	2	0	5	10	1	3	9
Prop Turn Trial 6:30-7:00 am	Complaints	N/A	N/A	N/A	N/A	0	1	0	1	25
	Callers	N/A	N/A	N/A	N/A	0	1	0	1	1
Prop Turn Trial 11:00-11:30 pm	Complaints	N/A	N/A	N/A	N/A	0	0	0	2	0
	Callers	N/A	N/A	N/A	N/A	0	0	0	2	0
Early Jet Turn	Complaints	N/A	N/A	2	2	6	8	1	1	4
	Callers	N/A	N/A	2	1	3	5	1	1	1
Early Jet Turn Trial 2000-2005	Complaints	0	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Callers	0	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Without 2-Hour Rule

Operation		2004	2005	2006	2007	2008	2009	2010	2011	Jan - Apr 2012
Prop Turns	Complaints	177	39	6	0	13	34	1	4	484
	Callers	3	3	2	0	5	10	1	3	9
Prop Turn Trial 6:30-7:00 am	Complaints	N/A	N/A	N/A	N/A	0	1	0	1	36
	Callers	N/A	N/A	N/A	N/A	0	1	0	1	1
Prop Turn Trial 11:00-11:30 pm	Complaints	N/A	N/A	N/A	N/A	0	0	0	2	0
	Callers	N/A	N/A	N/A	N/A	0	0	0	2	0
Early Jet Turn	Complaints	N/A	N/A	2	2	8	10	1	1	4
	Callers	N/A	N/A	2	1	3	5	1	1	1
Early Jet Turn Trial 2000-2005	Complaints	0	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Callers	0	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A (Not Applicable) applies when complaints were not recorded because the Trial Procedure was not yet implemented or the Trial was concluded and the procedure was formalized and tracked separately, as with the Jet Turn Trial for 2000-2005.

The current Early Jet Turn trial complaints are not reported as they do not pertain to Runways 24 Left and Right departures.

CENAC BACKGROUNDER Propeller Aircraft Turns and Early Jet Turns

Conclusion

In reviewing the statistics for Propeller Aircraft Turns and Early Jet Turns Departure:

- An increase in overall turns between 2004 and 2008 is observed
- From 2008 onwards the number of prop turns remained consistent while the number of early jet turns decreased.
- As a result there was an overall decrease in the number of aircraft turning to the south.
- The data does not reveal a cause for the increase in complaints in 2012 against the turns.
- The complaints against turns are mainly related to propeller aircraft turns