



MEMORANDUM

Airport Development

TO: LTCP Technical Advisory Group

FROM: Bridget Rief, Assistant Director – Airside Development
Audrey Wald, HNTB

DATE: November 1, 2006

RE: **Registered Aircraft Used for LTCP Forecasts**

Concern has been raised by members of the Technical Advisory Group regarding the accuracy of the based aircraft numbers presented in the LTCP Forecasts for Airlake, Lake Elmo and Crystal Airports. These concerns relate to the difference between the FAA registration database and the Mn/DOT database. Further, the information used from the Mn/DOT database was also questioned.

The based aircraft data MAC is using for the forecasts and presented in summary information to the communities, tenants, and Commissioners includes pilots/aircraft from the Mn/DOT database that register one of the three airports as the “base” airport. This is the same information that Mn/DOT provides to the MAC Reliever Airport Department for tracking of historical based aircraft numbers.

1. FAA Database discrepancy. According to the based aircraft numbers MAC received in February 2006, there are 1,404 more aircraft in the FAA database than in the Mn/DOT database when sorting by County and the 7-county metro area.

No one from the Tech Group can explain why the difference exists. One possible explanation is that FAA data is not updated as frequently as Mn/DOT data, as FAA does not actively solicit the data in the way that Mn/DOT does. MAC asked the FAA for any insights. To date, no response has been received.

It is not within the scope of the MAC LTCP process to investigate and analyze the differences between databases.

2. The Mn/DOT database includes a registration category for “base airport”. Not all registrants include this information. Therefore, an analysis was done to sort the database by address instead, and assign any aircraft with an address in the 7-county metro area to an airport. This was done using Mn/DOT database information from October 2006.

The analysis concluded that there are no significant differences in the estimated number of annual operations using the revised based aircraft numbers, and in fact, the estimated number of annual operations actually decreases in some cases we reviewed.

Analysis Results

The attached summary details the two different methods used to assign aircraft that did not designate a base airport. One method used GIS and owner addresses to assign aircraft within a certain drive times to an airport, and the other used the county distribution percentages to assign aircraft.

The following table summarizes the three different numbers of based aircraft at each of the study airports using the different analyses.

Based Aircraft Summary

Airport	February 2006 Data	October 2006 Data			
		Using Drive Times	Difference	Using County Distribution	Difference
Crystal	260	288	28	290	30
Airlake	158	188	30	187	29
Lake Elmo	236	249	13	264	28

Base year operations were calculated using information from the towered MAC airports where annual operations are recorded. Those annual operations were divided by the number of based aircraft to obtain an annual number of operations per based aircraft. That number was then multiplied by the based aircraft at those airports where no records are kept. The Flying Cloud operations per based aircraft were used to estimate the Airlake Airport operations and an average from Crystal and Anoka County operations per based aircraft were used for Lake Elmo.

With the October data, the based aircraft numbers increased at each of the MAC airports. This results in a decrease in the operations per based aircraft numbers. Annual operations for Crystal do not change because the number came from the Air Traffic Control Tower count.

The base year annual operations were recalculated for Lake Elmo and Airlake using the updated data from Mn/DOT. Annual operations are summarized below.

Annual Operations Summary

Airport	February 2006 Data	October 2006 Data			
		Using Drive Times	Difference	Using County Distribution	Difference
Crystal	72,205	72,205	0	72,205	0
Airlake	57,001	56,800	-201	57,601	600
Lake Elmo	57,667	55,274	-2,393	57,438	-229

Conclusions

- The overall results are not significantly different from the original MAC numbers.
- The original MAC number used for based aircraft in the 7-county metro area is almost identical to the number Mn/DOT used in their 2006 State Aviation System Plan (1,921 vs 1,923).
- The inclusion of additional aircraft does not significantly change the number of estimated annual operations, and for Lake Elmo, they actually drop using both analysis methods.
- The results do not materially change the recommended alternatives for development.
- The results will not impact the noise analysis for each airport.
- The results will be acknowledged and summarized in the forecast chapter for each airport and discussed as a “sensitivity analysis”.
- The high and low forecasts prepared more than encompass the differences from the two analyses.

Based on these points, MAC will not change the original based aircraft or forecast numbers. We welcome any information the FAA has to offer regarding their database, and will take that information into account in next year’s LTCP updates for the other three Reliever Airports. In addition, MAC is already modifying our processes to keep better track of aircraft stored at our airports. While these efforts are already underway, the process will not be complete in time for next year’s LTCP updates.

ATTACHMENT
Aircraft Distribution Methodology

There are two different sources that are available to obtain information about registered aircraft and owners of those aircraft. The two sources are the FAA and Mn/DOT. Each database contains slightly different information, but both contain the N-number of the aircraft, the owner of the aircraft and his/her address. Both databases are able to be sorted by county of aircraft owner. Mn/DOT's information contains additional information such as the type of use and where the aircraft is based, if the owner chooses to supply that information. Discrepancies exist between these two sources of information.

Initially there was a table in the LTCP forecast section that combined these sources and showed which airport the aircraft designated as their based airport according to Mn/DOT's data but used the FAA data as the total by County of owner. FAA data does not contain based airport information. In doing this, there were a number of aircraft that were not assigned to an airport in the metro area. These aircraft were assigned to an "other" airport category, meaning they could be based at a private field or outside the metro area or not at an airport at all. The total number of these aircraft was 1,405, almost 41% of the total. MAC's forecasts do not include these 1,405 aircraft. This raised concerns about the accuracy of the based aircraft numbers that are being used for the LTCP. Further investigation was done.

The data that was received in February, 2006 from Mn/DOT Aircraft Registration only contained those aircraft that designated a based airport. New data was obtained in October, 2006 containing only the aircraft owners in the seven county Metropolitan Area. The total numbers varied slightly because pilots are required to register their aircraft by the end of the fiscal year (June 30). The data was from two different fiscal years. Also, the February data contained aircraft owners that do not reside in the seven county Metropolitan Area. These owners accounted for 158 aircraft.

According to this most recent information, there are still substantial differences between FAA and Mn/DOT records of the number of aircraft registered in the seven county Metropolitan Area, especially for Hennepin and Ramsey Counties. The table below summarizes the two different sources both obtained in October, 2006.

Number of Aircraft Owners Registered in County		
October, 2006		
	FAA Data Base	Mn/DOT Data Base
Anoka	295	300
Carver	101	76
Dakota	440	437
Hennepin	1598	962
Ramsey	847	391
Scott	186	155
Washington	302	277
Totals	3769	2598

The following analysis was done using the Mn/DOT data since it contains the based airport designated for most of the aircraft and appears to be an accurate representation of the aircraft in the area.

First, new records were obtained from Mn/DOT Registered Aircraft Database in October, 2006. The records combined all categories from Mn/DOT's database for the seven county Metropolitan Area which includes, Air Ambulance, Antique, Classic, Dealer, Exempt, Inactive, Non-Use, Recreational, Standard (2,782 records). Then duplicates of N-Numbers were deleted from the database. Of the 2,598 total aircraft, 184 were deleted. The information was sorted by based airport. Note, these are only the aircraft with owners that live in the seven county Metropolitan Area. There were 158 additional aircraft (from February, 2006 data) that reported basing at a metro area airport where the owners did not live in the area. This information was not included in the October data because they reside outside the seven county Metropolitan Area but are added into the final numbers presented on the Distribution of Based Aircraft tables below. Here is a summary of the October, 2006 data for the known based airports.

a. Crystal	246
b. Airlake	148
c. Lake Elmo	212
d. Anoka County	444
e. Flying Cloud	406
f. MSP	15
g. St. Paul Downtown	86
h. Forest Lake	19
i. South St. Paul	187
j. Not Designated	383
k. Other Airports	<u>452</u>
l. Total # Aircraft	2,598

Note that using this new data, the "other" airports amount to 17% (452/2,598) of the total versus 41% (1,405/3,459) using the combined FAA and Mn/DOT data from the old Table 4 of the LTCP Forecasts. Approximately 15% (383/2,598) did not designate a based airport. This percent closely matches the "no airport identified" from Exhibit 4-6 of the 2006 Minnesota Aviation System Plan which reports 17% of the owners did not designate a based airport.

A based airport was assigned to aircraft that did not designate one (383 aircraft). The breakdown by County is shown here.

	<u>Breakdown by County of Owner</u>	
	Includes Non-Use/Inactive	Non-Use/Inactive Removed
Anoka	41	31
Carver	18	11
Dakota	75	50
Hennepin	117	83
Ramsey	50	44
Scott	33	18
Washington	<u>49</u>	<u>31</u>
Total # Aircraft	383	268

The 268 active aircraft not designating a base airport were assigned one using two different methods. The first method used was to analyze drive times and assign a based airport according to which airport was located closest to the aircraft owner's residence. These results are summarized on the first table below.

**Distribution of Based Aircraft by Airport and County
Using Drive Times for those Not Designated**

Airport	County of Registration								Sub Total	Add Not Desig.	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Wash.	Other			
Crystal	10	3	2	207	21	2	1	12	258	30	288
Airlake	0	1	100	17	3	27	0	11	159	29	188
Lake Elmo	2	0	10	8	51	0	141	20	232	17	249
Anoka County/Blaine	195	0	10	102	116	2	19	35	479	45	524
Flying Cloud	0	23	26	318	6	31	2	45	451	71	522
MSP	0	0	0	15	0	0	0	2	17	2	19
St. Paul Downtown	0	0	5	21	53	0	7	9	95	33	128
Total MAC Airports	207	27	153	688	250	62	170	134	1691	227	1918
Forest Lake	1	0	0	0	2	0	16	5	24	12	36
South St. Paul	0	0	121	16	21	6	23	19	206	29	235
Total	208	27	274	704	273	68	209	158	1921	268	2189

Sources: Minnesota Department of Transportation Based Aircraft Reports (October, 2006) and MAC/HNTB analysis.

HNTB also looked at distributing the "not designated" aircraft according to the way the known counties of owners are distributed instead of drive times. For example, if 5% of the owners that reside in Anoka County base their aircraft at Crystal, then 5% of the "not designated" aircraft owners that reside in Anoka County were assigned to the Crystal Airport. These results are summarized on the table below.

Aircraft owners residing outside the seven county Metropolitan Area from the February, 2006 data were added under the "other" county column. This information was not obtained in October and probably has not changed very much since February.

**Distribution of Based Aircraft by Airport and County
Using October Distribution by County of Owner for those Not Designated**

Airport	County of Registration								Sub Total	Add Not Desig.	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Wash.	Other			
Crystal	10	3	2	207	21	2	1	12	258	32	290
Airlake	0	1	100	17	3	27	0	11	159	28	187
Lake Elmo	2	0	10	8	51	0	141	20	232	32	264
Anoka County/Blaine	195	0	10	102	116	2	19	35	479	65	544
Flying Cloud	0	23	26	318	6	31	2	45	451	61	512
MSP	0	0	0	15	0	0	0	2	17	2	19
St. Paul											
Downtown	0	0	5	21	53	0	7	9	95	13	108
Total MAC Airports	207	27	153	688	250	62	170	134	1691	233	1924
Forest Lake	1	0	0	0	2	0	16	5	24	3	27
South St. Paul	0	0	121	16	21	6	23	19	206	32	238
Total	208	27	274	704	273	68	209	158	1921	268	2189

Sources: Minnesota Department of Transportation Based Aircraft Reports (October, 2006) and MAC/HNTB analysis.

The subtotal number of aircraft in the Metropolitan Area (1,921 aircraft) very closely matches the total registered aircraft presented on Table 4-24 of the 2006 Minnesota Aviation System Plan (SASP) for 2005 showing 1,923 registered aircraft in the Seven County Metropolitan Area. The SASP reported 1,510 aircraft remaining in the State that did not identify a based airport. Our study of the October, 2006 Mn/DOT records indicate 268 are in the seven county Metro Area which leaves 1,242 owners residing outside the area.