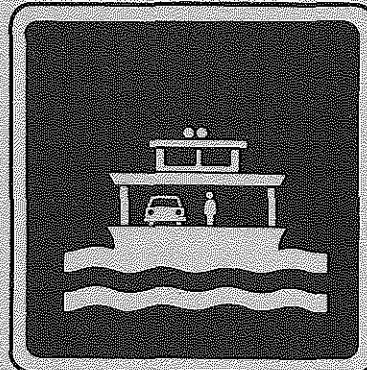
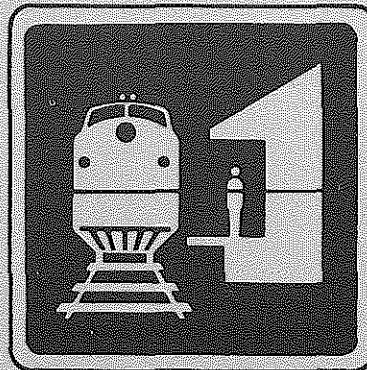
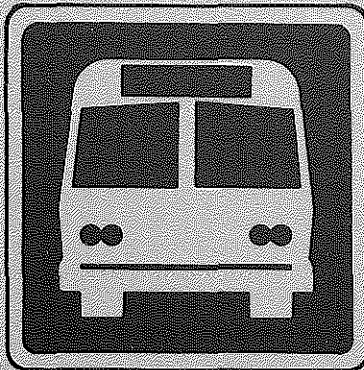


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# PUBLIC TRANSPORTATION IN MICHIGAN

Michigan  
Control Tower Airport  
Operations  
1981-1985

May 1986



**PASSENGER TRANSPORTATION PLANNING SECTION  
MICHIGAN DEPARTMENT OF TRANSPORTATION**

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OF  
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Bureau of Transportation Planning  
Intercity Transportation Planning Division  
Passenger Transportation Planning Section

This report represents the findings and/or professional opinions of the Michigan Department of Transportation staff and publication does not represent an official opinion of the State Transportation Commission.

STATE TRANSPORTATION COMMISSION

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## Control Tower Locations

Since 1981 the 15 airport control towers identified in Map 1 have operated in Michigan. Fourteen of the towers are located in the southern half of Michigan's lower peninsula. One control tower, Traverse City, is located in the northern part of the lower peninsula. There are no control towers in Michigan's upper peninsula. Two of the control towers were closed as a result of the PATCO strike. The tower in Ann Arbor was closed during 1982 and reopened in 1983. The Benton Harbor tower closed in 1982 and remains closed to date. On September 30, 1985, the Jackson tower was classified as a Level II Visual Flight Rule Tower.

## Control Tower Annual Operations and Trends

Table 1 identifies the itinerant, local and total operations at each of the 15 control tower airports for each year between 1981 and 1985. The percent change in total operations from the previous year is also identified. The 10 year trend is graphically portrayed in Figure 1.

Table 3 provides a detailed breakdown of operations for 1984 and 1985.

Table 4 illustrates the 1985 monthly breakdown of the tower statistics.

Refer to Table 2 for the hours that the control towers are open for operational counts. It is interesting to note that Pontiac is open only 18 hours a day, while the towers at Detroit City, Willow Run and Detroit Metropolitan are open 24 hours a day.

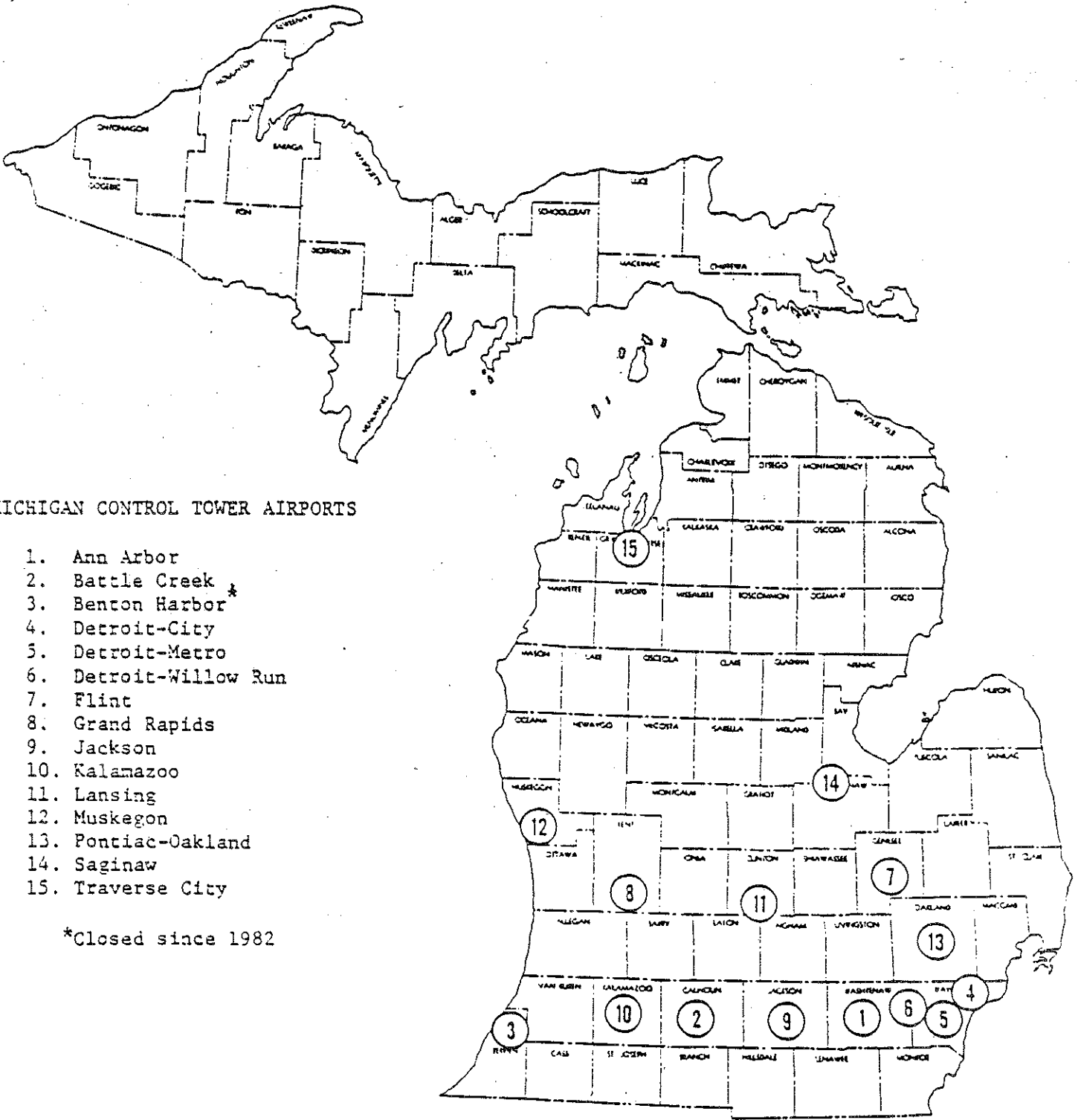
Between 1981 and 1982 there was a downward trend in total operations of 18.2 percent. In 1983 the declining trend in total operations was reversed and an increase of 18.6 percent occurred. The trend continued

in 1984 with a 6.3 percent increase and in 1985 with a 6.2 percent increase. Total annual operations from 1981 to 1985 have increased by more than 163,000 or 9.5 percent. Total operations in 1985 hit an all time high at Detroit Metropolitan because of Republic Airline's designated it as one of their regional hubs.

### Observations and Conclusions

Figures 2 through 15 identify the monthly trend in total operations at each of the 14 FAA governed control tower airports between 1981 and 1985. Seasonal variations and the yearly growth trends are clearly visible. Figures 16 through 20 depict the percent of total operations that each of the seven busiest control tower airports had of the total operational activity for each year 1981 to 1985. The seven busiest towers have held their percentage share from 69 percent in 1981 to 70 percent in 1985. The percentage share for the remaining seven locations increased total operation levels over 1981 levels. Three locations showed decreases in total operations from 1984 to 1985 - Saginaw, 9.9 percent; Pontiac, 3.4 percent; and Detroit Willow Run, 2.3 percent. A three year trend of increased statewide local and itinerant operations has been experienced with a 1983 increase of 18.6 percent, the 1984 increase of 6.3 percent, followed by the 1985 increase of 6.2 percent.

MAP 1



MICHIGAN CONTROL TOWER AIRPORTS

1. Ann Arbor
2. Battle Creek \*
3. Benton Harbor \*
4. Detroit-City
5. Detroit-Metro
6. Detroit-Willow Run
7. Flint
8. Grand Rapids
9. Jackson
10. Kalamazoo
11. Lansing
12. Muskegon
13. Pontiac-Oakland
14. Saginaw
15. Traverse City

\*Closed since 1982

Table 1

## ITINERANT, LOCAL AND TOTAL OPERATIONS AT CONTROL TOWER AIRPORTS, 1981-85

CITY	YEAR	ITINER OPERAT.	LOCAL OPERAT.	TOTAL OPERAT.	PERCENT CHANGE	
ANN ARBOR	1981	31763	47350	79113		
	1982	CONTROL TOWER CLOSED				
	1983	32336	47825	80161	1.3%	
	1984	35946	58056	94002	17.3%	
	1985	35289	63339	98628	4.9%	
BATTLE CREEK	1981	27868	18112	45980		
	1982	24603	15344	39947	-13.1%	
	1983	24977	18259	43236	8.2%	
	1984	25112	14728	39840	-7.9%	
	1985	27201	16378	43579	9.4%	
BENTON HARBOR	1981	13099	8927	22026		
	1982	CONTROL TOWER CLOSED				
	1983	CONTROL TOWER CLOSED				
	1984	CONTROL TOWER CLOSED				
	1985	CONTROL TOWER CLOSED				
DETROIT CITY	1981	97843	42856	140699		
	1982	72357	33280	105637	-24.9%	
	1983	84901	45767	130668	23.7%	
	1984	102772	41358	144130	10.3%	
	1985	100727	46818	147545	2.4%	
DETROIT - METRO	1981	261018	0	261018		
	1982	249138	0	249138	-4.6%	
	1983	282241	0	282241	13.3%	
	1984	326270	0	326270	15.6%	
	1985	380318	0	380318	16.6%	
DETROIT - WILLOW RUN	1981	67542	87462	155004		
	1982	58783	79458	138241	-10.8%	
	1983	68021	74934	142955	3.4%	
	1984	76961	76548	153509	7.4%	
	1985	79433	70567	150000	-2.3%	

cont.

CITY	YEAR	ITINER OPERAT.	LOCAL OPERAT.	TOTAL OPERAT.	PERCENT CHANGE
FLINT	1981	58626	65157	123783	
	1982	48048	41460	89508	-27.7%
	1983	54312	46857	101169	13.0%
	1984	59223	51680	110903	9.6%
	1985	59232	57166	116398	5.0%
GRAND RAPIDS	1981	86539	40965	127504	
	1982	80219	28657	108876	-14.6%
	1983	93683	35192	128875	18.4%
	1984	98558	33679	132237	2.6%
	1985	100958	36202	137160	3.7%
JACKSON	1981	37119	25012	62131	
	1982	29414	16584	45998	-26.0%
	1983	33430	21245	54675	18.9%
	1984	34753	23810	58563	7.1%
	1985	38561	32003	70564	20.5%
KALAMAZOO	1981	54727	43444	98171	
	1982	49777	36118	85895	-12.5%
	1983	55098	35534	90632	5.5%
	1984	57580	27897	85477	-5.7%
	1985	62865	34542	97407	14.0%
LANSING	1981	72496	53102	125598	
	1982	63727	48681	112408	-10.5%
	1983	74787	48479	123266	9.7%
	1984	71536	45258	116794	-5.3%
	1985	73612	67502	141114	20.8%

cont.

CITY	YEAR	ITINER OPERAT.	LOCAL OPERAT.	TOTAL OPERAT.	PERCENT CHANGE
MUSKEGON	1981	39282	29285	68567	
	1982	37350	25009	62359	-9.1%
	1983	40297	20496	60793	-2.5%
	1984	43958	19155	63113	3.8%
	1985	45938	19860	65798	4.3%
PONTIAC - OAKLAND	1981	127100	129554	256654	
	1982	110381	128201	238582	-7.0%
	1983	131090	157664	288754	21.0%
	1984	144627	160893	305520	5.8%
	1985	149652	145460	295112	-3.4%
SAGINAW	1981	41421	17929	59350	
	1982	37147	9916	47063	-20.7%
	1983	42317	12814	55131	17.1%
	1984	41754	14957	56711	2.9%
	1985	38593	12478	51071	-9.9%
TRAVERSE CITY	1981	44644	49483	94127	
	1982	40861	41804	82665	-12.2%
	1983	45509	40208	85717	3.7%
	1984	45957	40106	86063	0.4%
	1985	48909	39799	88708	3.1%
T O T A L	1981	1061087	658638	1719725	
	1982	901805	504512	1406317	-18.2%
	1983	1062999	605274	1668273	18.6%
	1984	1165007	608125	1773132	6.3%
	1985	1241288	642114	1883402	6.2%

SOURCE: MICHIGAN DEPARTMENT OF TRANSPORTATION, AVIATION PLANNING UNIT.

NOTES: THE ANN ARBOR PERCENTAGE CHANGE FOR 1983 WAS CALCULATED FROM 1981.



Table 2

Control Tower Hours of Operation

<u>Location</u>	<u>1984</u>	<u>1985</u>
Ann Arbor	7 days/week 8:00 a.m. - 8:00 p.m.	7 days/week 8:00 a.m. - 8:00 p.m.
Battle Creek	6:00 a.m. - 10:00 p.m.	6:00 a.m. - 10:00 p.m.
Benton Harbor	Closed	Closed
Detroit City	24 Hours	24 Hours
Detroit Metropolitan	24 Hours	24 Hours
Detroit Willow Run	24 Hours	24 Hours
Flint	6:30 a.m. - 11:00 p.m.	6:30 a.m. - 11:30 p.m. May 1985
Grand Rapids	6:00 a.m. - 12:00 p.m.	6:00 a.m. - 12:00 p.m.
Jackson	7:00 a.m. - 10:00 p.m.	7:00 a.m. - 10:00 p.m.
Kalamazoo	6:00 a.m. - 9:30 p.m. November 11, 1984 6:00 a.m. - 11:00 p.m.	6:00 a.m. - 11:00 p.m.
Lansing	6:30 a.m. - 11:00 p.m. November 1984 6:30 a.m. - 12:00 p.m.	6:30 a.m. - 12:00 p.m.
Muskegon	6:00 a.m. - 12:00 p.m.	6:00 a.m. - 12:00 p.m.
Pontiac	6:00 a.m. - 12:00 p.m.	6:00 a.m. - 12:00 p.m.
Saginaw	6:30 a.m. - 11:00 p.m.	6:30 a.m. - 11:00 p.m. April 15, 1985 6:30 a.m. - 12:00 p.m.
Traverse City	Winter/October 27 - April 27 7:00 a.m. - 9:00 p.m. Summer/April 28-October 26 7:00 a.m. - 10:00 p.m.	Winter/October 27-April 27 7:00 a.m. - 9:00 p.m. Summer/April 28-October 26 7:00 a.m. - 10:00 p.m.

Source: Control Tower Managers

Figure 1

TOTAL OPERATIONS AT CONTROL TOWER AIRPORTS  
1976 - 1985

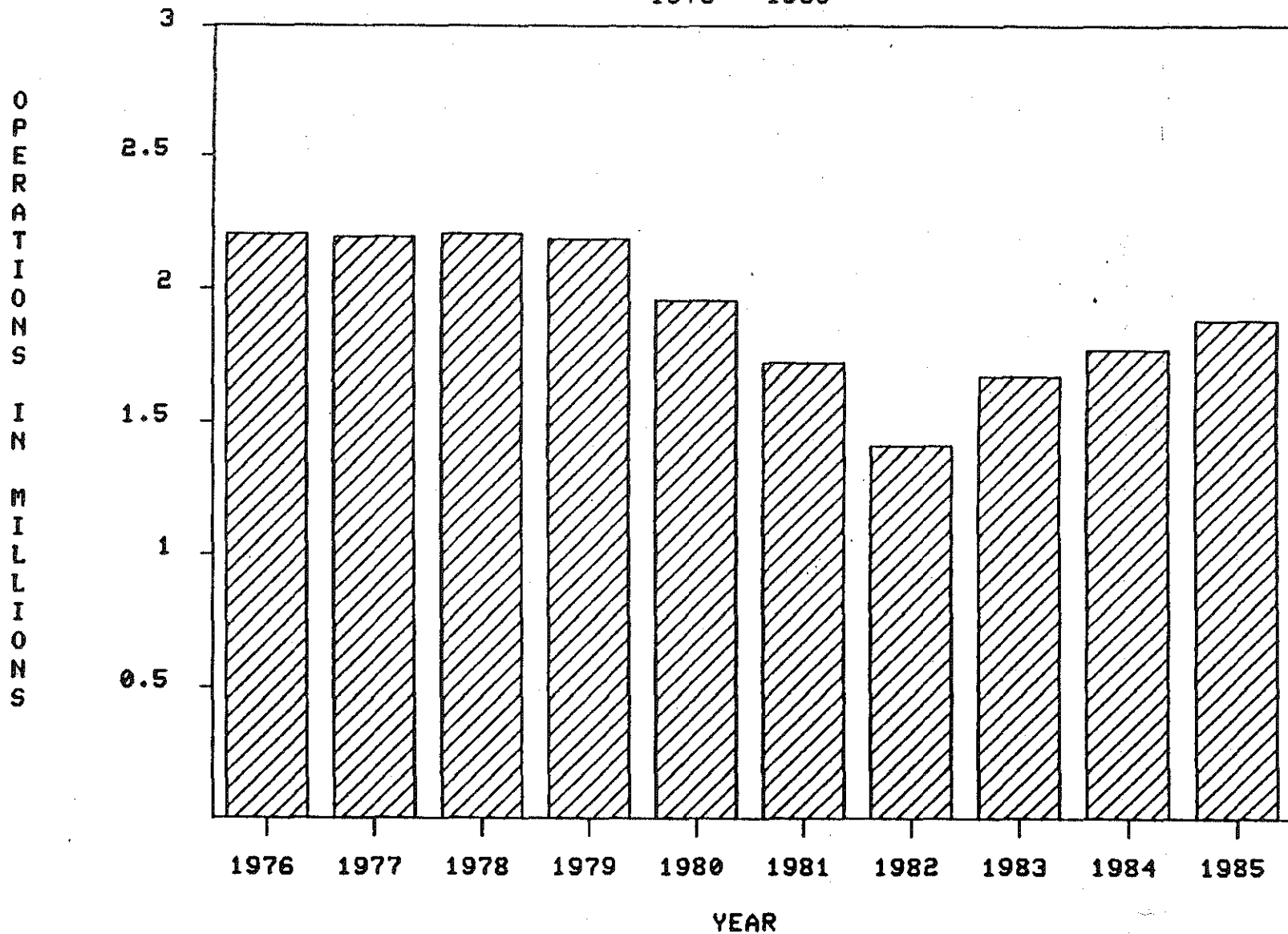


Table 3

CONTROL TOWER AIRPORT OPERATIONS  
1984 vs. 1985

AIRPORT		1984	1985	% CHANGE
ANN ARBOR	I	35946	35289	-1.8%
	L	58056	63339	9.1%
	T	94002	98628	4.9%
BATTLE CREEK	I	25112	27201	8.3%
	L	14728	16378	11.2%
	T	39840	43579	9.4%
DETROIT CITY	I	102772	100727	-2.0%
	L	41358	46818	13.2%
	T	144130	147545	2.4%
DETROIT METRO	I	326270	380318	16.6%
	L	0	0	
	T	326270	380318	16.6%
DETROIT WILLOW RUN	I	76961	79433	3.2%
	L	76548	70567	-7.8%
	T	153509	150000	-2.3%
FLINT	I	59223	59232	.0%
	L	51680	57166	10.6%
	T	110903	116398	5.0%
GRAND RAPIDS	I	98558	100958	2.4%
	L	33679	36202	7.5%
	T	132237	137160	3.7%
JACKSON	I	34753	38561	11.0%
	L	23810	32003	34.4%
	T	58563	70564	20.5%
KALAMAZOO	I	57580	62865	9.2%
	L	27879	34542	23.9%
	T	85477	97407	14.0%
LANSING	I	71536	73612	2.9%
	L	45258	67502	49.1%
	T	116794	141114	20.8%
MUSKEGON	I	43958	45938	4.5%
	L	19155	19860	3.7%
	T	63113	65798	4.3%

cont.

AIRPORT		1984	1985	% CHANGE
PONTIAC	I	144627	149652	3.5%
	L	160893	145460	-9.6%
	T	305520	295112	-3.4%
SAGINAW	I	41754	38593	-7.6%
	L	14957	12478	-16.6%
	T	56711	51071	-9.9%
TRAVERSE CITY	I	45957	48909	6.4%
	L	40106	39799	-0.8%
	T	86063	88708	3.1%
TOTALS	I	1165007	1241288	6.5%
	L	608125	642114	5.6%
	T	1773132	1883402	6.2%

SOURCE: MICHIGAN DEPARTMENT OF TRANSPORTATION, AVIATION PLANNING UNIT

NOTES: I = ITINERANT OPERATIONS  
L = LOCAL OPERATIONS  
T = TOTAL OPERATIONS

## STATE OF MICHIGAN 1985 CONTROL TOWER ACTIVITY

AIRPORT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
<b>ANN ARBOR</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR TAXI	12	24	26	21	12	20	25	23	24	11	17	19	234
GENERAL AVIATION	1,623	1,582	2,916	3,446	4,210	4,031	3,784	3,216	3,497	3,642	1,840	1,111	34,898
MILITARY	17	2	6	4	8	23	27	13	25	11	4	17	157
T O T A L	1,652	1,608	2,948	3,471	4,230	4,074	3,836	3,252	3,546	3,664	1,861	1,147	35,289
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	2,378	2,252	5,016	6,336	7,448	7,092	7,281	6,248	6,536	6,514	3,850	2,332	63,283
MILITARY	16	0	0	0	2	0	8	8	16	0	0	6	56
T O T A L	2,394	2,252	5,016	6,336	7,450	7,092	7,289	6,256	6,552	6,514	3,850	2,338	63,339
TOTAL OPERATIONS	4,046	3,860	7,964	9,807	11,680	11,166	11,125	9,508	10,098	10,178	5,711	3,485	98,628
INSTRUMENT OPERATIONS	358	313	337	370	451	449	483	471	551	585	597	371	5,336
APPROACHES	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>BATTLE CREEK</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	253	219	250	250	256	246	240	249	244	269	206	206	2,888
AIR TAXI	8	188	344	348	281	282	187	175	185	96	26	32	2,152
GENERAL AVIATION	745	818	1,239	1,384	1,623	1,841	3,097	2,016	1,466	1,717	1,114	803	17,863
MILITARY	246	204	394	347	495	477	452	333	402	437	263	248	4,298
T O T A L	1,252	1,429	2,227	2,329	2,655	2,846	3,976	2,773	2,297	2,519	1,609	1,289	27,201
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	462	718	1,044	1,072	1,194	1,320	2,189	1,232	1,145	1,468	884	390	13,118
MILITARY	124	190	266	246	464	420	392	246	332	298	142	140	3,260
T O T A L	586	908	1,310	1,318	1,658	1,740	2,581	1,478	1,477	1,766	1,026	530	16,378
TOTAL OPERATIONS	1,838	2,337	3,537	3,647	4,313	4,586	6,557	4,251	3,774	4,285	2,635	1,819	43,579
INSTRUMENT OPERATIONS	925	950	1,332	1,233	1,349	1,269	1,206	1,240	1,282	1,377	1,139	1,007	14,309
APPROACHES	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>DETROIT - CITY</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	199	197	213	214	223	202	306	442	436	464	231	211	3,338
AIR TAXI	1,046	914	964	1,109	1,235	1,217	1,414	1,256	1,268	1,357	1,126	1,200	14,106
GENERAL AVIATION	4,913	4,791	6,580	7,218	7,824	8,628	8,852	7,861	7,704	7,608	5,162	5,700	82,841
MILITARY	28	29	33	33	32	39	62	45	64	58	10	9	442
T O T A L	6,186	5,931	7,790	8,574	9,314	10,086	10,634	9,604	9,472	9,487	6,529	7,120	100,727
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	2,260	1,770	3,506	4,169	4,114	5,107	5,512	4,568	4,222	4,630	3,449	3,511	46,818
MILITARY	0	0	0	0	0	0	0	0	0	0	0	0	0
T O T A L	2,260	1,770	3,506	4,169	4,114	5,107	5,512	4,568	4,222	4,630	3,449	3,511	46,818
TOTAL OPERATIONS	8,446	7,701	11,296	12,743	13,428	15,193	16,146	14,172	13,694	14,117	9,978	10,631	147,545
INSTRUMENT OPERATIONS	3,968	4,010	3,814	3,660	3,753	3,762	210	4,441	4,361	4,683	4,042	3,860	44,564
APPROACHES	0	0	0	0	0	0	0	0	0	0	0	0	0

cont.

AIRPORT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
<b>DETROIT - METRO</b>													
ITINERANT OPERATIONS													
AIR CARRIER	18,634	16,538	18,247	18,961	20,838	20,452	21,832	22,034	20,787	22,038	20,732	21,742	242,835
AIR TAXI	4,527	4,572	5,315	5,772	6,355	6,114	6,363	6,540	5,996	6,171	5,764	5,613	69,102
GENERAL AVIATION	4,573	4,276	5,125	5,974	6,865	6,520	6,683	6,555	6,288	6,302	4,714	4,207	68,082
MILITARY	27	10	9	19	32	37	24	50	25	31	11	24	299
T O T A L	27,761	25,396	28,696	30,726	34,090	33,123	34,902	35,179	33,096	34,542	31,221	31,586	380,318
LOCAL OPERATIONS													
GENERAL AVIATION	0	0	0	0	0	0	0	0	0	0	0	0	0
MILITARY	0	0	0	0	0	0	0	0	0	0	0	0	0
T O T A L	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL OPERATIONS	27,761	25,396	28,696	30,726	34,090	33,123	34,902	35,179	33,096	34,542	31,221	31,586	380,318
INSTRUMENT OPERATIONS	44,184	40,383	44,068	46,269	51,368	50,156	54,188	55,287	51,826	55,172	48,206	46,909	588,016
APPROACHES	5,743	3,702	2,696	3,770	1,119	495	442	2,375	1,680	1,953	6,452	5,461	35,888
<b>DETROIT - WILLOW RUN</b>													
ITINERANT OPERATIONS													
AIR CARRIER	1,739	1,606	1,544	1,579	1,722	1,802	1,884	1,938	1,693	2,067	1,788	1,452	20,814
AIR TAXI	1,731	1,621	1,173	1,129	1,337	1,346	1,609	2,013	1,917	2,163	1,553	1,880	19,472
GENERAL AVIATION	2,397	2,226	3,217	2,944	3,552	3,559	3,918	4,152	4,216	4,034	2,537	2,168	38,920
MILITARY	4	6	8	5	45	11	6	68	30	20	9	15	227
T O T A L	5,871	5,459	5,942	5,657	6,656	6,718	7,417	8,171	7,856	8,284	5,887	5,515	79,433
LOCAL OPERATIONS													
GENERAL AVIATION	3,468	3,262	6,536	7,060	8,406	8,424	7,474	6,260	6,777	6,216	3,512	3,002	70,397
MILITARY	0	0	0	10	46	2	0	56	25	22	0	9	170
T O T A L	3,468	3,262	6,536	7,070	8,452	8,426	7,474	6,316	6,802	6,238	3,512	3,011	70,567
TOTAL OPERATIONS	9,339	8,721	12,478	12,727	15,108	15,144	14,891	14,487	14,658	14,522	9,399	8,526	150,000
INSTRUMENT OPERATIONS	4,280	4,003	3,432	3,242	3,546	3,436	3,707	4,165	3,666	4,337	3,826	3,570	45,218
APPROACHES	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>FLINT</b>													
ITINERANT OPERATIONS													
AIR CARRIER	340	287	326	324	331	378	372	395	368	399	368	365	4,253
AIR TAXI	1,364	1,245	1,340	1,357	1,299	1,247	1,182	1,173	1,072	1,092	1,059	1,114	14,544
GENERAL AVIATION	2,217	2,093	3,373	3,218	4,052	4,118	4,419	4,326	3,899	4,086	2,427	1,877	40,105
MILITARY	17	18	25	14	51	56	6	37	26	29	34	17	330
T O T A L	3,938	3,643	5,064	4,913	5,733	5,799	5,979	5,931	5,365	5,606	3,888	3,373	59,232
LOCAL OPERATIONS													
GENERAL AVIATION	2,004	2,723	4,642	4,586	5,062	5,984	6,373	5,239	5,508	6,732	3,897	3,430	56,180
MILITARY	54	34	82	22	98	347	11	110	52	56	80	40	986
T O T A L	2,058	2,757	4,724	4,608	5,160	6,331	6,384	5,349	5,560	6,788	3,977	3,470	57,166
TOTAL OPERATIONS	5,996	6,400	9,788	9,521	10,893	12,130	12,363	11,280	10,925	12,394	7,865	6,843	116,398
INSTRUMENT OPERATIONS	6,806	6,301	8,899	8,893	10,612	11,218	12,351	12,092	10,996	11,359	7,577	6,731	113,835
APPROACHES	460	469	376	144	159	123	48	206	279	226	839	545	3,874

cont.

AIRPORT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
<b>GRAND RAPIDS</b>													
ITINERANT OPERATIONS													
AIR CARRIER	2,506	2,189	2,608	2,583	2,116	1,675	2,105	2,090	2,061	2,199	1,980	2,205	26,317
AIR TAXI	821	749	857	882	830	944	1,122	1,161	1,177	1,079	1,024	1,081	11,727
GENERAL AVIATION	4,178	3,907	5,391	4,968	6,025	6,654	6,633	6,438	5,300	5,761	3,543	3,029	61,827
MILITARY	62	24	109	73	104	144	117	97	97	87	104	69	1,087
T O T A L	7,567	6,869	8,965	8,506	9,075	9,417	9,977	9,786	8,635	9,126	6,651	6,384	100,958
LOCAL OPERATIONS													
GENERAL AVIATION	1,868	2,120	3,768	2,782	3,006	4,592	3,956	4,492	2,638	3,120	1,638	1,178	35,158
MILITARY	30	28	78	62	98	120	82	116	160	126	54	90	1,044
T O T A L	1,898	2,148	3,846	2,844	3,104	4,712	4,038	4,608	2,798	3,246	1,692	1,268	36,202
TOTAL OPERATIONS	9,465	9,017	12,811	11,350	12,179	14,129	14,015	14,394	11,433	12,372	8,343	7,652	137,160
INSTRUMENT OPERATIONS	9,615	8,989	11,606	11,215	12,189	12,450	14,168	14,136	12,246	12,925	9,322	8,482	137,343
APPROACHES	1,214	869	638	297	272	146	225	473	516	480	1,057	1,390	7,577
<b>JACKSON</b>													
ITINERANT OPERATIONS													
AIR CARRIER	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR TAXI	126	177	193	208	222	226	130	186	133	134	123	117	1,975
GENERAL AVIATION	1,937	1,795	2,889	3,120	4,059	4,257	4,273	3,850	3,365	3,322	1,853	1,260	35,980
MILITARY	12	8	16	49	110	12	69	276	17	24	0	13	606
T O T A L	2,075	1,980	3,098	3,377	4,391	4,495	4,472	4,312	3,515	3,480	1,976	1,390	38,561
LOCAL OPERATIONS													
GENERAL AVIATION	1,994	1,370	2,402	2,814	3,254	3,624	3,606	3,710	3,132	2,946	1,942	954	31,748
MILITARY	6	2	28	40	44	4	22	51	38	16	0	4	255
T O T A L	2,000	1,372	2,430	2,854	3,298	3,628	3,628	3,761	3,170	2,962	1,942	958	32,003
TOTAL OPERATIONS	4,075	3,352	5,528	6,231	7,689	8,123	8,100	8,073	6,685	6,442	3,918	2,348	70,564
INSTRUMENT OPERATIONS	1,584	1,573	1,846	1,776	1,979	1,864	2,045	2,228	1,401	692	830	654	18,472
APPROACHES	122	104	100	37	34	53	46	93	96	0	0	0	685
<b>KALAMAZOO</b>													
ITINERANT OPERATIONS													
AIR CARRIER	1,003	881	1,078	1,082	917	872	932	1,019	976	1,001	885	936	11,582
AIR TAXI	548	613	754	809	686	707	501	513	464	457	298	320	6,670
GENERAL AVIATION	2,406	2,899	3,874	3,904	3,973	5,012	4,523	4,059	4,270	4,787	2,646	1,939	44,292
MILITARY	10	13	24	23	19	85	41	21	22	35	21	7	321
T O T A L	3,967	4,406	5,730	5,818	5,595	6,676	5,997	5,612	5,732	6,280	3,850	3,202	62,865
LOCAL OPERATIONS													
GENERAL AVIATION	1,515	2,280	3,311	3,316	2,726	3,498	3,421	2,659	3,560	4,488	2,317	1,376	34,467
MILITARY	2	2	4	0	6	52	0	0	3	2	2	2	75
T O T A L	1,517	2,282	3,315	3,316	2,732	3,550	3,421	2,659	3,563	4,490	2,319	1,378	34,542
TOTAL OPERATIONS	5,484	6,688	9,045	9,134	8,327	10,226	9,418	8,271	9,295	10,770	6,169	4,580	97,407
INSTRUMENT OPERATIONS	7,585	7,907	9,993	9,931	10,343	10,544	11,137	10,749	10,585	11,915	8,414	6,903	116,006
APPROACHES	618	525	382	229	149	105	2	240	222	276	554	582	3,884

cont.

AIRPORT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
<b>LANSING</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	626	567	669	613	1,054	1,103	1,351	1,367	1,099	1,236	1,217	1,262	12,164
AIR TAXI	814	719	914	1,080	704	472	455	530	481	572	460	541	7,742
GENERAL AVIATION	3,085	3,178	4,411	4,814	5,435	5,188	5,220	4,958	4,379	5,518	3,132	2,657	51,975
MILITARY	147	154	184	143	121	131	172	175	126	150	106	122	1,731
T O T A L	4,672	4,618	6,178	6,650	7,314	6,894	7,198	7,030	6,085	7,476	4,915	4,582	73,612
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	3,328	3,551	6,155	7,256	7,253	6,195	6,472	6,270	5,622	6,777	3,314	2,596	64,789
MILITARY	146	120	269	371	134	141	238	239	256	242	238	319	2,713
T O T A L	3,474	3,671	6,424	7,627	7,387	6,336	6,710	6,509	5,878	7,019	3,552	2,915	67,502
TOTAL OPERATIONS	8,146	8,289	12,602	14,277	14,701	13,230	13,908	13,539	11,963	14,495	8,467	7,497	141,114
INSTRUMENT OPERATIONS	7,925	7,798	10,130	10,844	11,723	11,080	12,743	12,100	10,795	12,203	8,458	7,766	123,565
APPROACHES	450	440	677	138	134	158	127	323	254	307	845	483	4,336
<b>MUSKEGON</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	803	767	825	806	639	689	876	843	793	833	752	690	9,316
AIR TAXI	891	886	687	509	327	469	553	584	437	379	572	529	6,823
GENERAL AVIATION	1,683	1,682	2,308	2,235	2,662	3,203	3,817	3,115	2,449	2,437	1,688	900	28,179
MILITARY	58	93	111	122	129	211	215	162	147	135	173	64	1,620
T O T A L	3,435	3,428	3,931	3,672	3,757	4,572	5,461	4,704	3,826	3,784	3,185	2,183	45,938
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	868	1,170	1,144	2,004	1,964	2,367	1,832	2,527	1,340	1,388	1,292	378	18,274
MILITARY	220	158	98	102	162	224	203	68	124	92	115	20	1,586
T O T A L	1,088	1,328	1,242	2,106	2,126	2,591	2,035	2,595	1,464	1,480	1,407	398	19,860
TOTAL OPERATIONS	4,523	4,756	5,173	5,778	5,883	7,163	7,496	7,299	5,290	5,264	4,592	2,581	65,798
INSTRUMENT OPERATIONS	4,907	4,950	6,247	6,278	7,291	8,156	10,014	9,077	7,722	7,302	5,596	3,930	81,470
APPROACHES	388	418	215	116	32	25	99	84	145	143	338	463	2,466
<b>PONTIAC</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	92	64	67	57	107	96	105	62	92	101	51	67	961
AIR TAXI	566	542	738	691	814	623	703	887	797	730	588	588	8,267
GENERAL AVIATION	7,058	7,475	10,655	11,139	12,965	14,466	14,514	16,246	15,638	15,040	8,001	6,765	139,962
MILITARY	31	26	26	65	27	36	54	58	48	25	30	36	462
T O T A L	7,747	8,107	11,486	11,952	13,913	15,221	15,376	17,253	16,575	15,896	8,670	7,456	149,652
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	7,264	8,260	13,793	13,728	13,748	16,480	11,704	17,186	15,850	14,396	7,430	5,460	145,299
MILITARY	12	30	40	19	0	14	4	20	2	8	12	0	161
T O T A L	7,276	8,290	13,833	13,747	13,748	16,494	11,708	17,206	15,852	14,404	7,442	5,460	145,460
TOTAL OPERATIONS	15,023	16,397	25,319	25,699	27,661	31,715	27,084	34,459	32,427	30,300	16,112	12,916	295,112
INSTRUMENT OPERATIONS	3,283	3,037	3,060	3,122	3,397	3,501	3,777	4,127	3,928	4,253	3,935	3,427	42,847
APPROACHES	0	0	0	0	0	0	0	0	0	0	0	0	0

cont.



AIRPORT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
<b>SABINAW</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	620	503	608	617	465	394	670	668	627	688	613	654	7,127
AIR TAXI	722	758	884	880	787	698	626	613	538	697	595	700	8,498
GENERAL AVIATION	1,440	1,456	1,687	1,997	2,011	2,144	2,438	2,158	2,108	2,390	1,580	1,287	22,696
MILITARY	26	14	29	23	20	31	24	52	5	22	11	15	272
T O T A L	2,808	2,731	3,208	3,517	3,283	3,267	3,758	3,491	3,278	3,797	2,799	2,656	38,593
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	784	994	1,148	1,395	1,202	902	1,040	1,126	1,301	1,164	734	520	12,310
MILITARY	10	8	16	6	8	10	32	18	2	16	28	14	168
T O T A L	794	1,002	1,164	1,401	1,210	912	1,072	1,144	1,303	1,180	762	534	12,478
TOTAL OPERATIONS	3,602	3,733	4,372	4,918	4,493	4,179	4,830	4,635	4,581	4,977	3,561	3,190	51,071
INSTRUMENT OPERATIONS	4,890	4,490	5,752	6,265	6,830	7,361	8,793	8,767	7,543	7,761	5,283	4,926	78,661
APPROACHES	419	335	263	240	117	55	100	204	212	235	490	399	3,069
<b>TRAVERSE CITY</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	408	376	495	559	872	870	1,004	1,001	843	809	676	642	8,555
AIR TAXI	732	650	724	698	602	668	846	815	497	518	511	497	7,758
GENERAL AVIATION	1,014	1,253	1,879	2,557	3,130	3,336	4,357	4,060	2,837	3,441	1,272	565	29,701
MILITARY	165	189	251	271	284	258	378	263	232	267	158	179	2,895
T O T A L	2,319	2,468	3,349	4,085	4,888	5,132	6,585	6,139	4,409	5,035	2,617	1,883	48,909
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	1,210	2,246	2,382	3,198	4,118	3,802	3,443	2,764	2,454	4,884	1,870	384	32,755
MILITARY	638	336	456	352	398	438	452	386	1,254	756	710	868	7,044
T O T A L	1,848	2,582	2,838	3,550	4,516	4,240	3,895	3,150	3,708	5,640	2,580	1,252	39,799
TOTAL OPERATIONS	4,167	5,050	6,187	7,635	9,404	9,372	10,480	9,289	8,117	10,675	5,197	3,135	88,708
INSTRUMENT OPERATIONS	1,607	1,366	1,482	1,593	1,878	2,074	2,589	2,786	1,964	1,825	1,538	1,566	22,268
APPROACHES	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>T O T A L</b>													
<b>ITINERANT OPERATIONS</b>													
AIR CARRIER	27,223	24,194	26,930	27,645	29,540	28,779	31,677	32,108	30,019	32,104	29,499	30,432	350,150
AIR TAXI	13,908	13,658	14,913	15,493	15,491	15,033	15,716	16,469	14,986	15,456	13,716	14,231	179,070
GENERAL AVIATION	39,269	39,431	55,544	58,918	68,386	72,957	76,528	73,010	67,416	70,085	41,509	34,268	697,321
MILITARY	850	790	1,225	1,191	1,477	1,551	1,647	1,650	1,266	1,331	934	835	14,747
T O T A L	81,250	78,073	98,612	103,247	114,894	118,320	125,568	123,237	113,687	118,976	85,658	79,766	1,241,288
<b>LOCAL OPERATIONS</b>													
GENERAL AVIATION	29,403	32,716	54,847	59,716	63,495	69,387	64,303	64,281	60,085	64,723	36,129	25,511	624,596
MILITARY	1,258	908	1,337	1,230	1,460	1,772	1,444	1,318	2,264	1,634	1,381	1,512	17,518
T O T A L	30,661	33,624	56,184	60,946	64,955	71,159	65,747	65,599	62,349	66,357	37,510	27,023	642,114
TOTAL OPERATIONS	111,911	111,697	154,796	164,193	179,849	189,479	191,315	188,836	176,036	185,333	123,168	106,789	1,883,402
INSTRUMENT OPERATIONS	101,925	96,070	111,998	114,691	126,709	127,320	137,411	141,666	128,866	136,389	108,763	100,102	1,431,910
APPROACHES	9,414	6,862	5,347	4,971	2,016	1,160	1,089	3,998	3,404	3,620	10,575	9,323	61,779

SOURCE: Michigan Department of Transportation, Aviation Planning Unit

Figure 2

TOTAL OPERATIONS AT ANN ARBOR MUNICIPAL AIRPORT - ANN ARBOR  
1981 - 1985

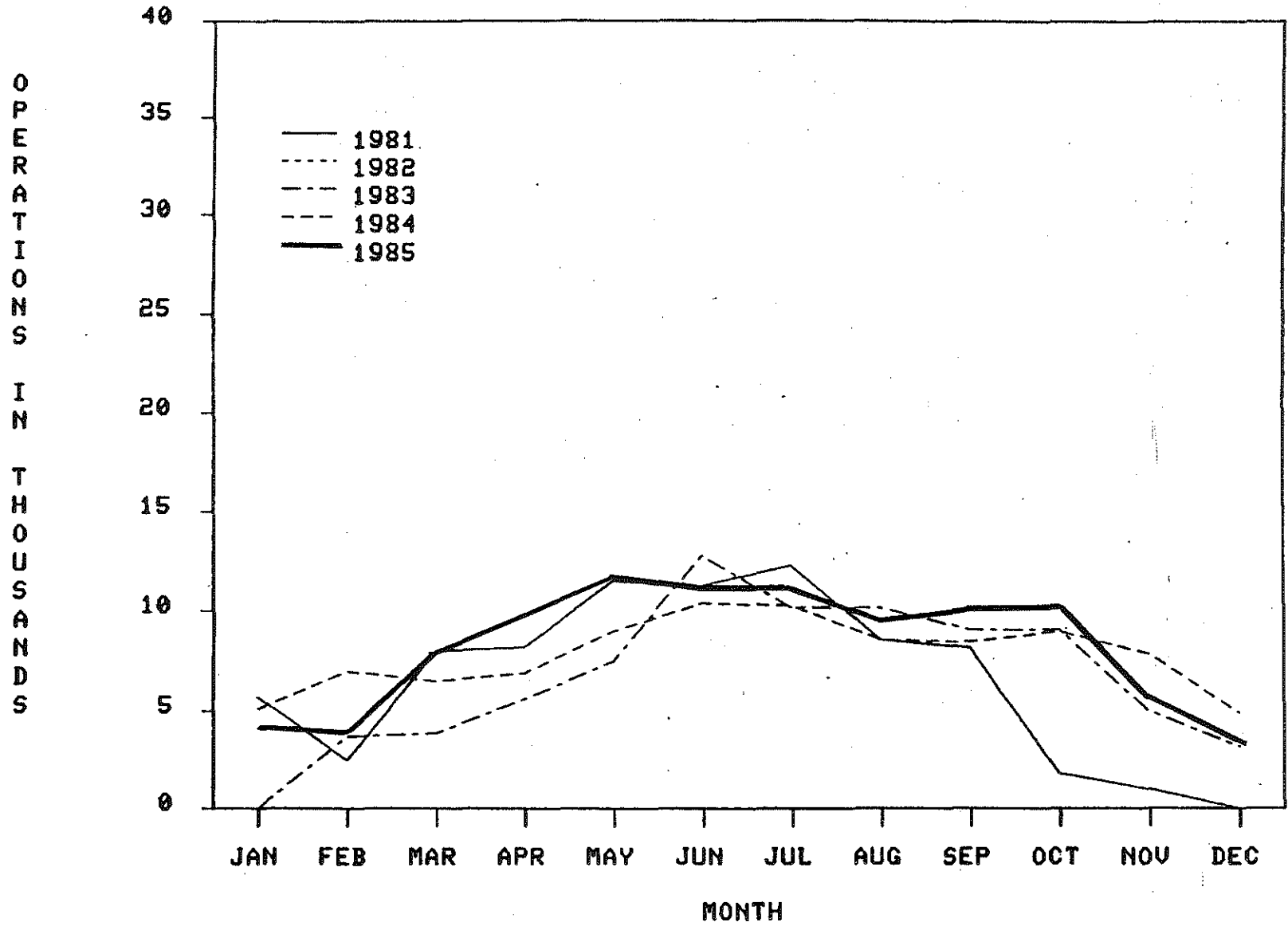


Figure 3

TOTAL OPERATIONS AT KELLOGG REGIONAL AIRPORT - BATTLE CREEK  
1981 - 1985

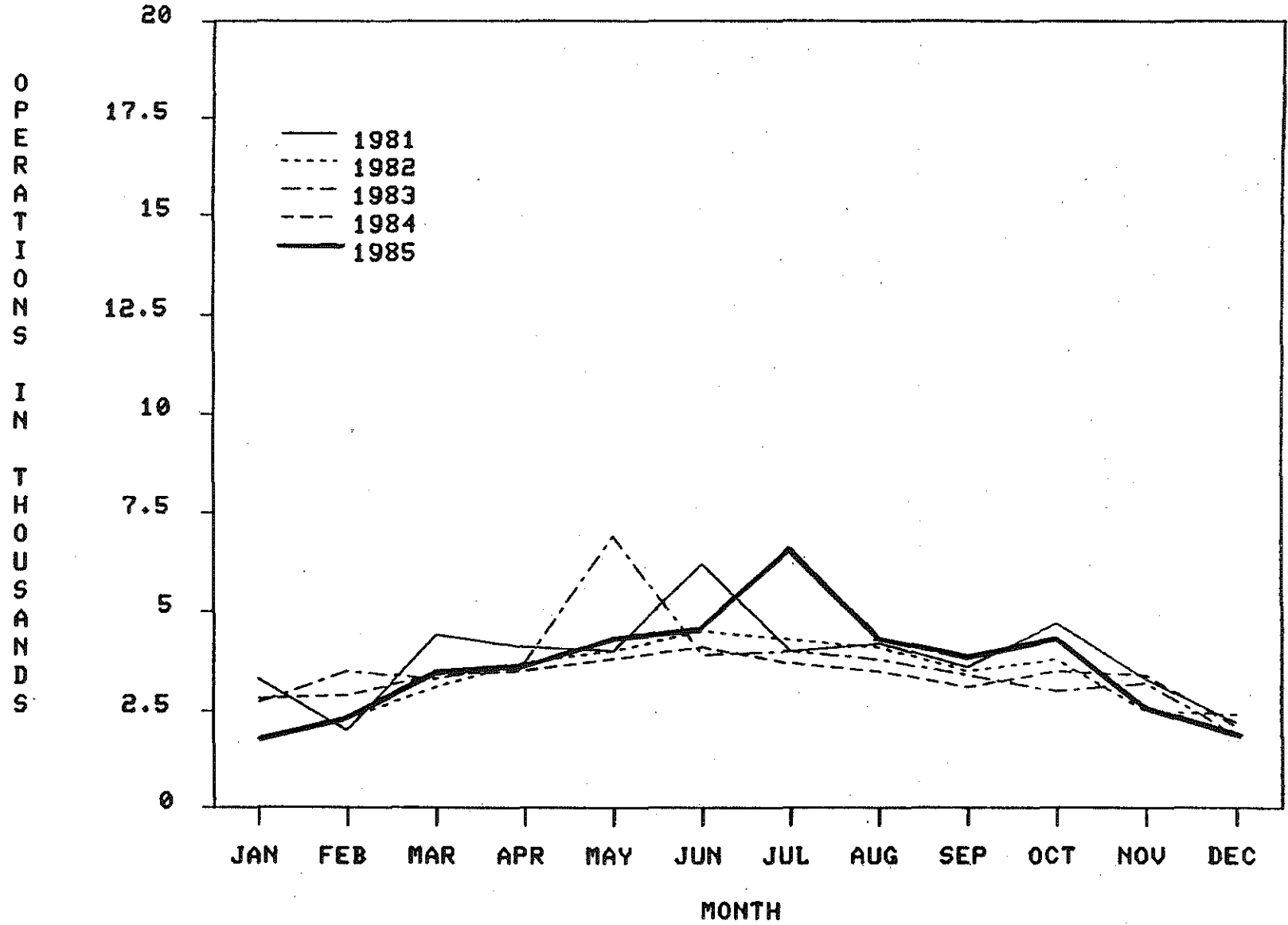


Figure 4

TOTAL OPERATIONS AT CITY AIRPORT - DETROIT  
1981 - 1985

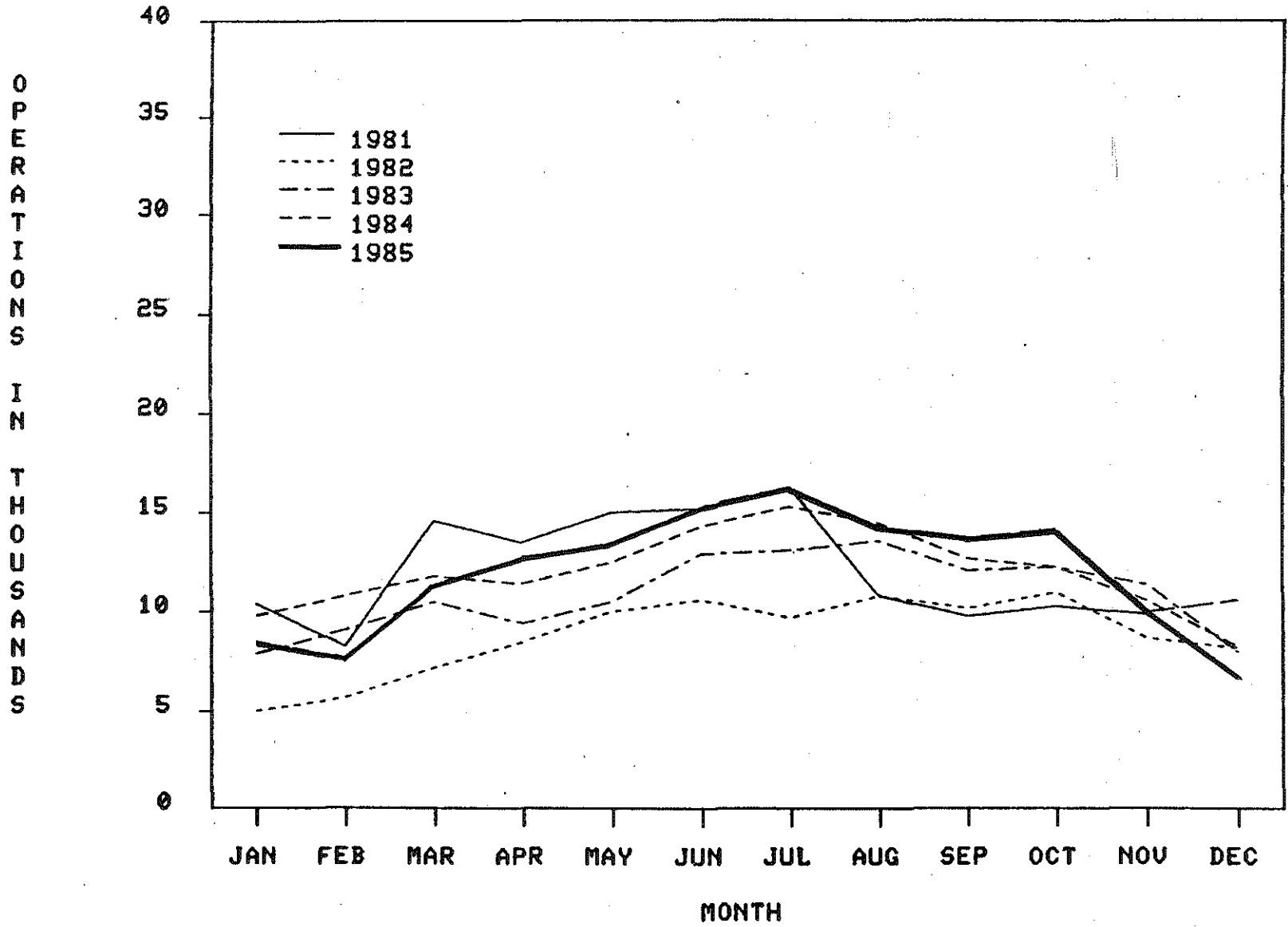


Figure 5

TOTAL OPERATIONS AT METROPOLITAN AIRPORT - DETROIT  
1981 - 1985

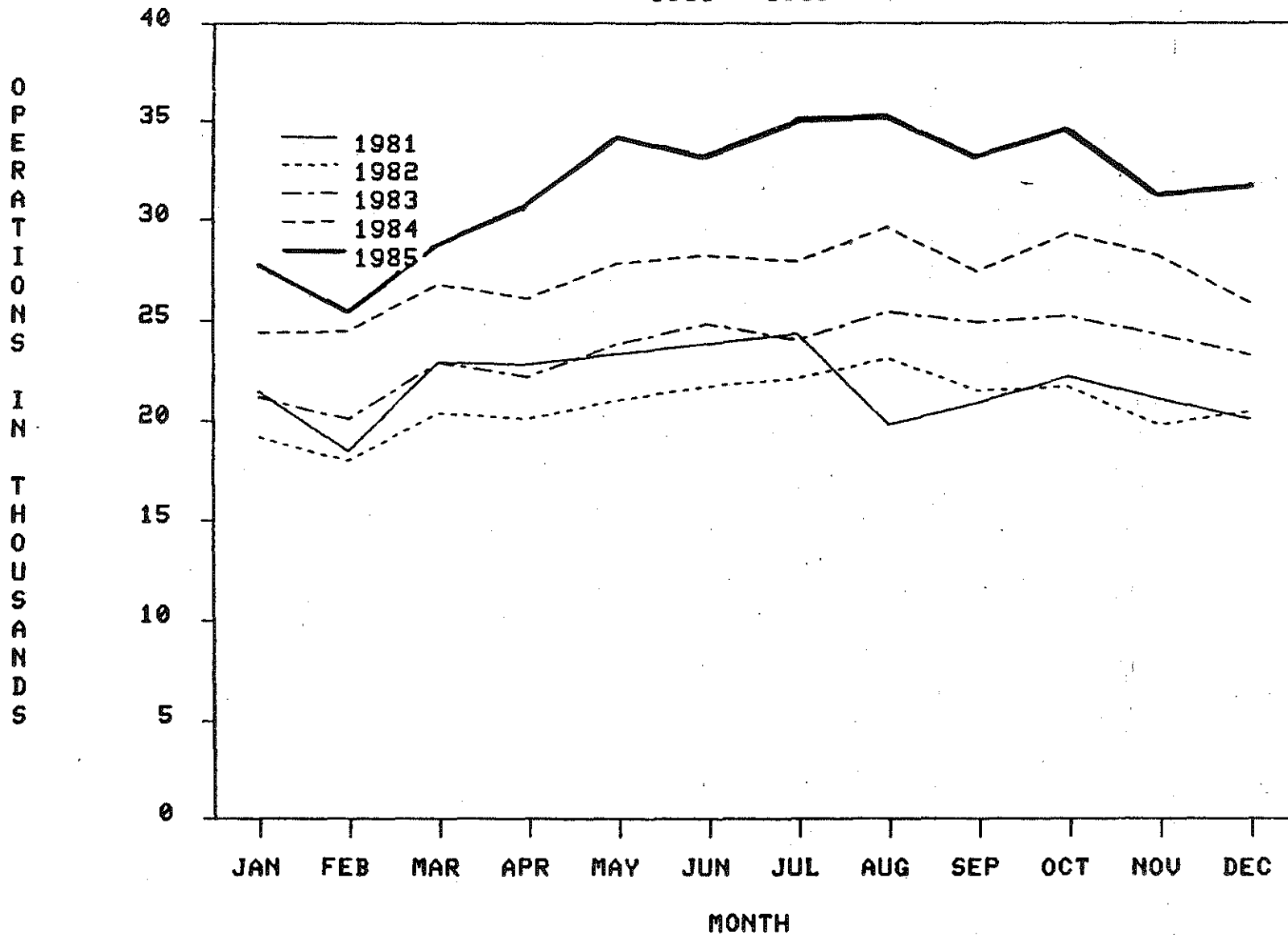


Figure 6

TOTAL OPERATIONS AT WILLOW RUN AIRPORT - DETROIT  
1981 - 1985

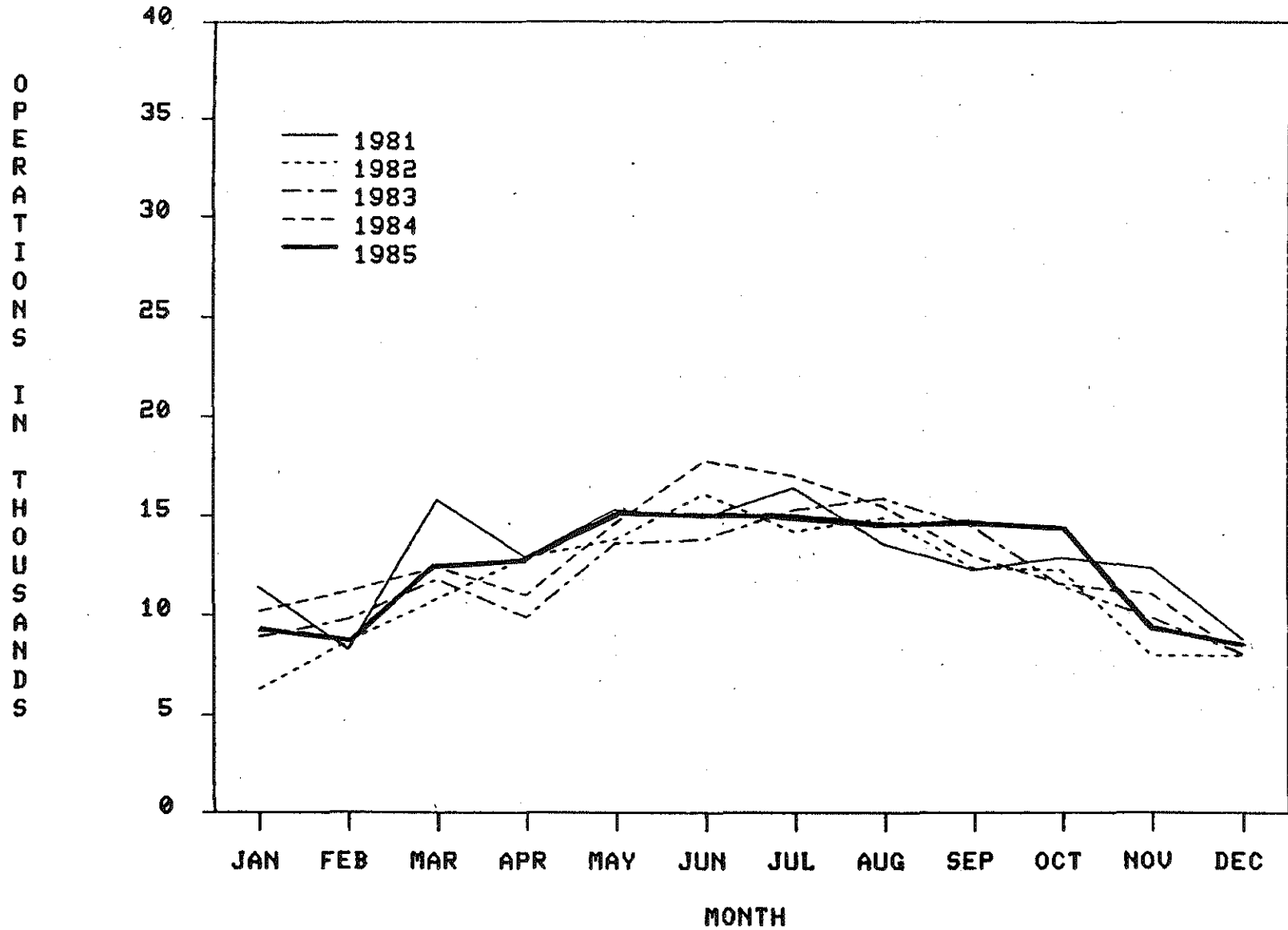


Figure 7

TOTAL OPERATIONS AT BISHOP AIRPORT - FLINT  
1981 - 1985

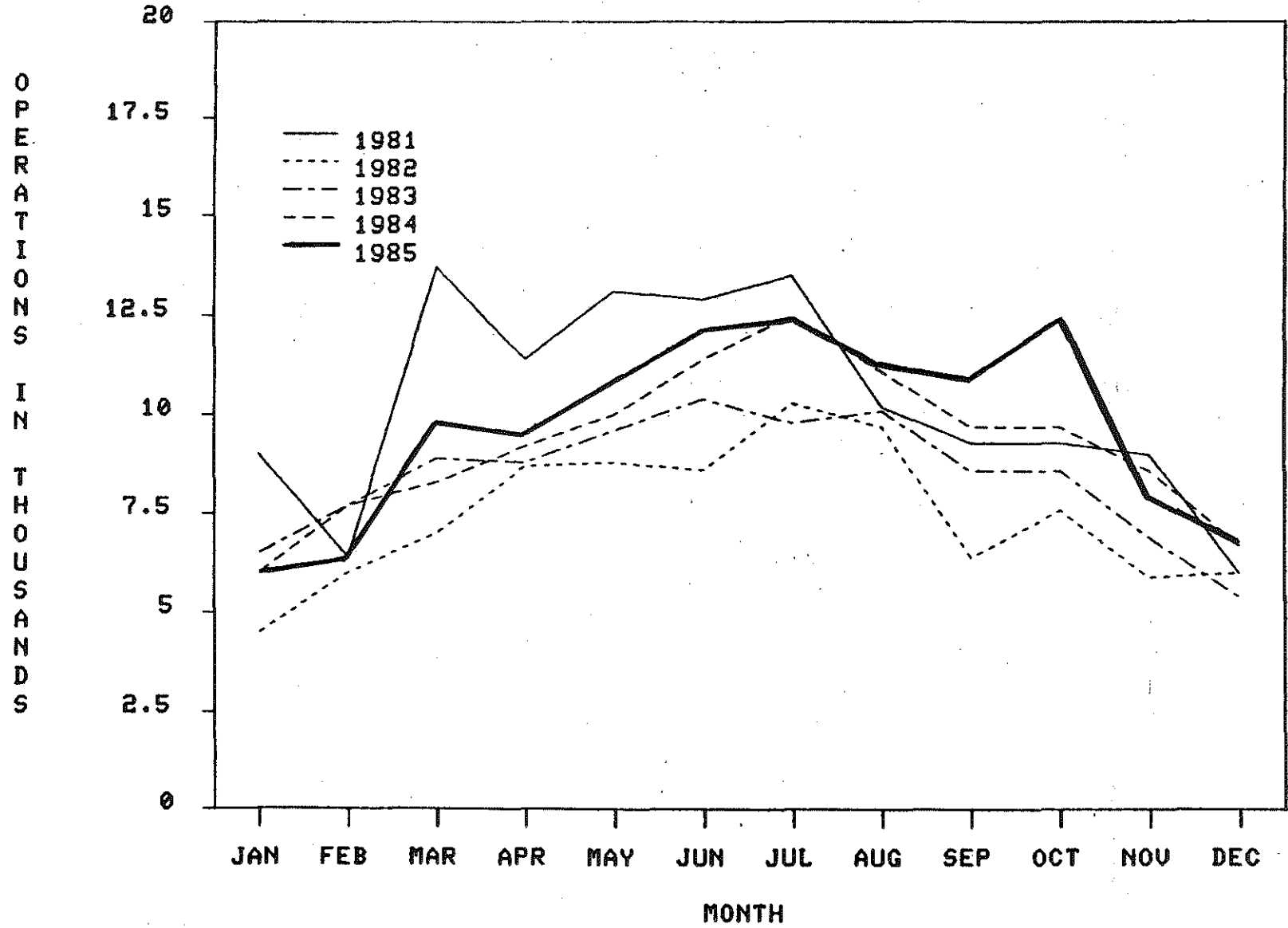


Figure 8

TOTAL OPERATIONS AT KENT CO. INTL. AIRPORT - GRAND RAPIDS  
1981 - 1985

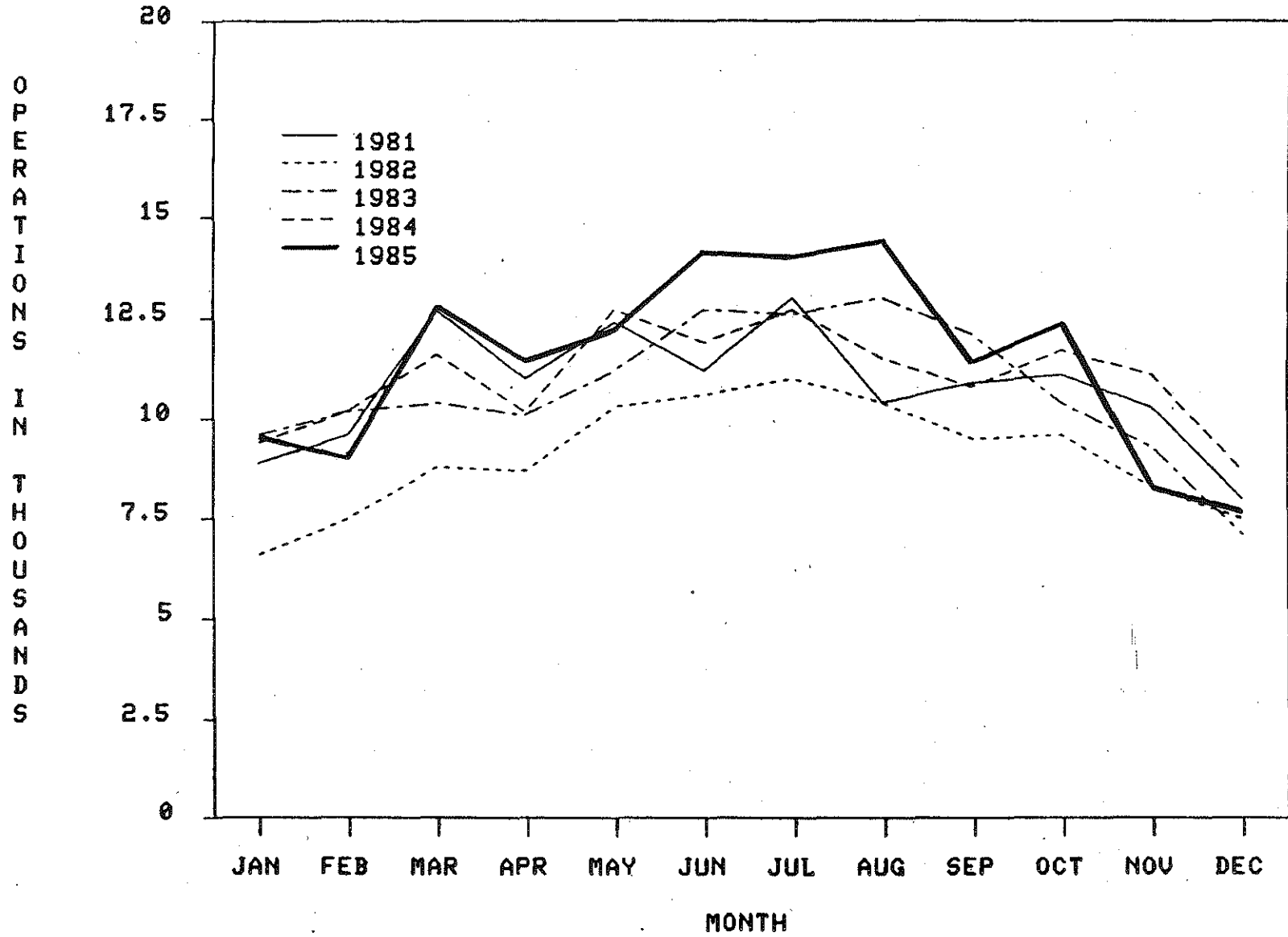




Figure 9

TOTAL OPERATIONS AT JACKSON COUNTY REYNOLDS FIELD - JACKSON  
1981 - 1985

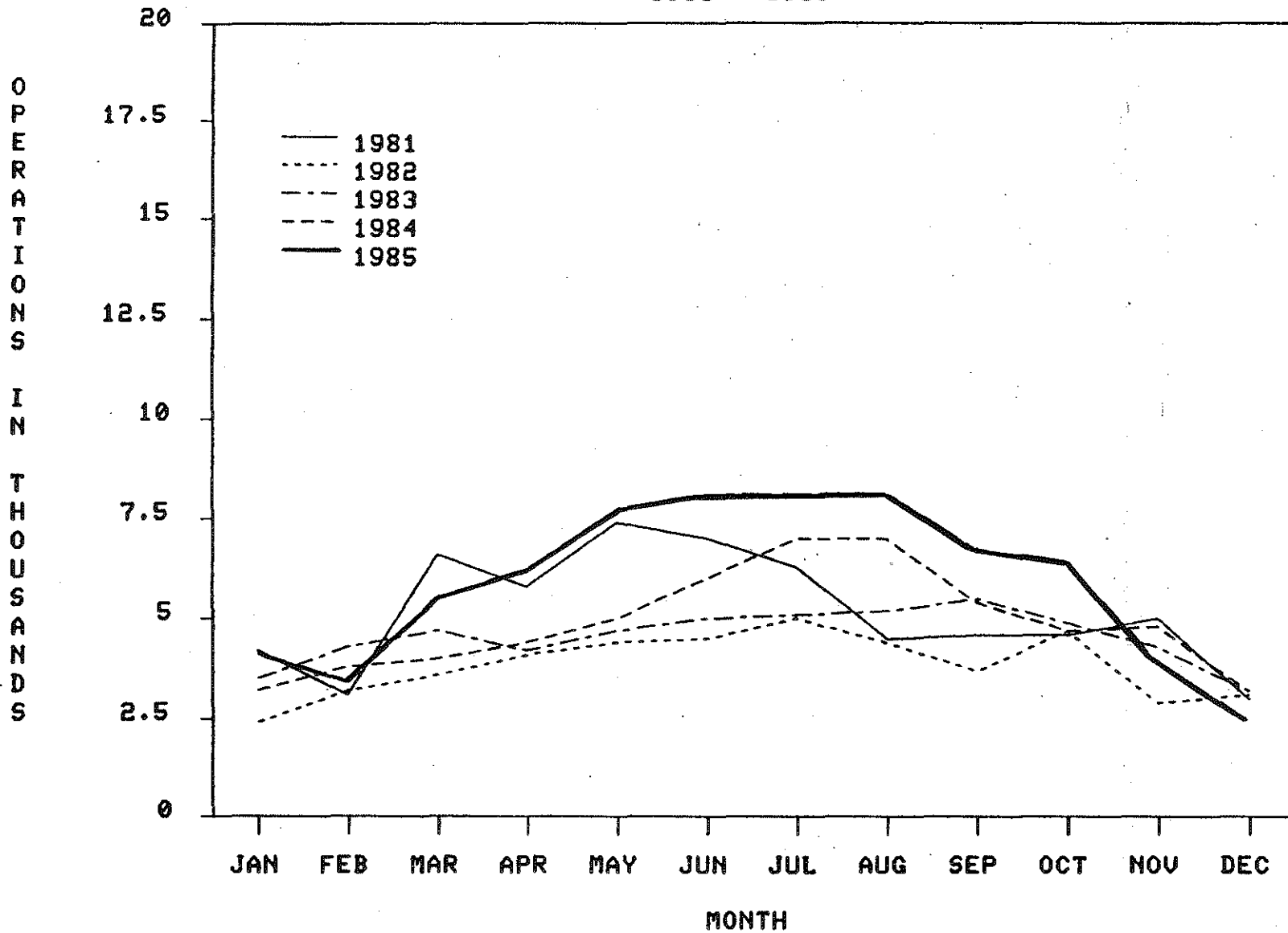
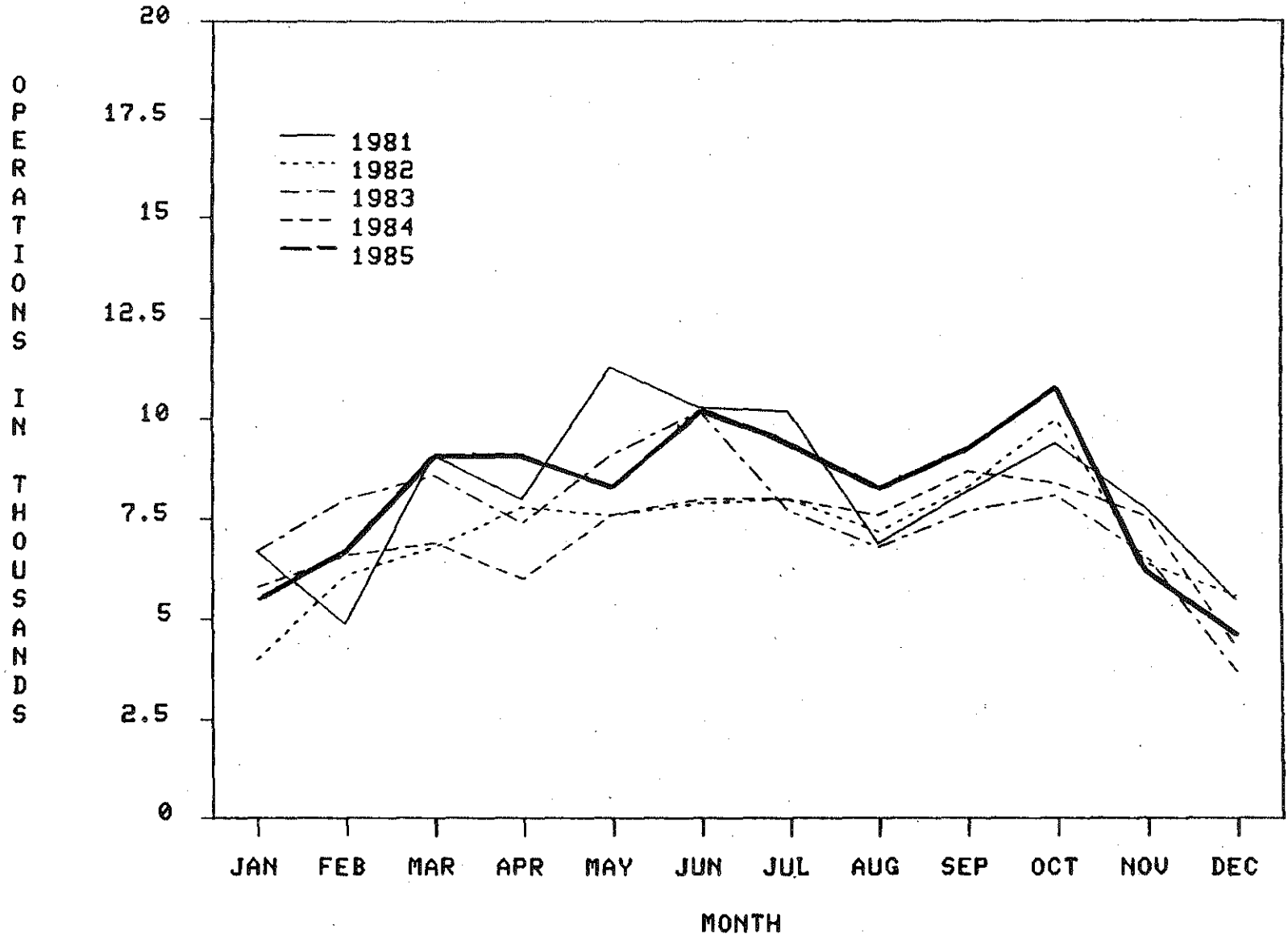


Figure 10

TOTAL OPERATIONS AT MUNICIPAL AIRPORT - KALAMAZOO  
1981 - 1985



### TOTAL OPERATIONS AT CAPITAL CITY AIRPORT - LANSING 1981 - 1985

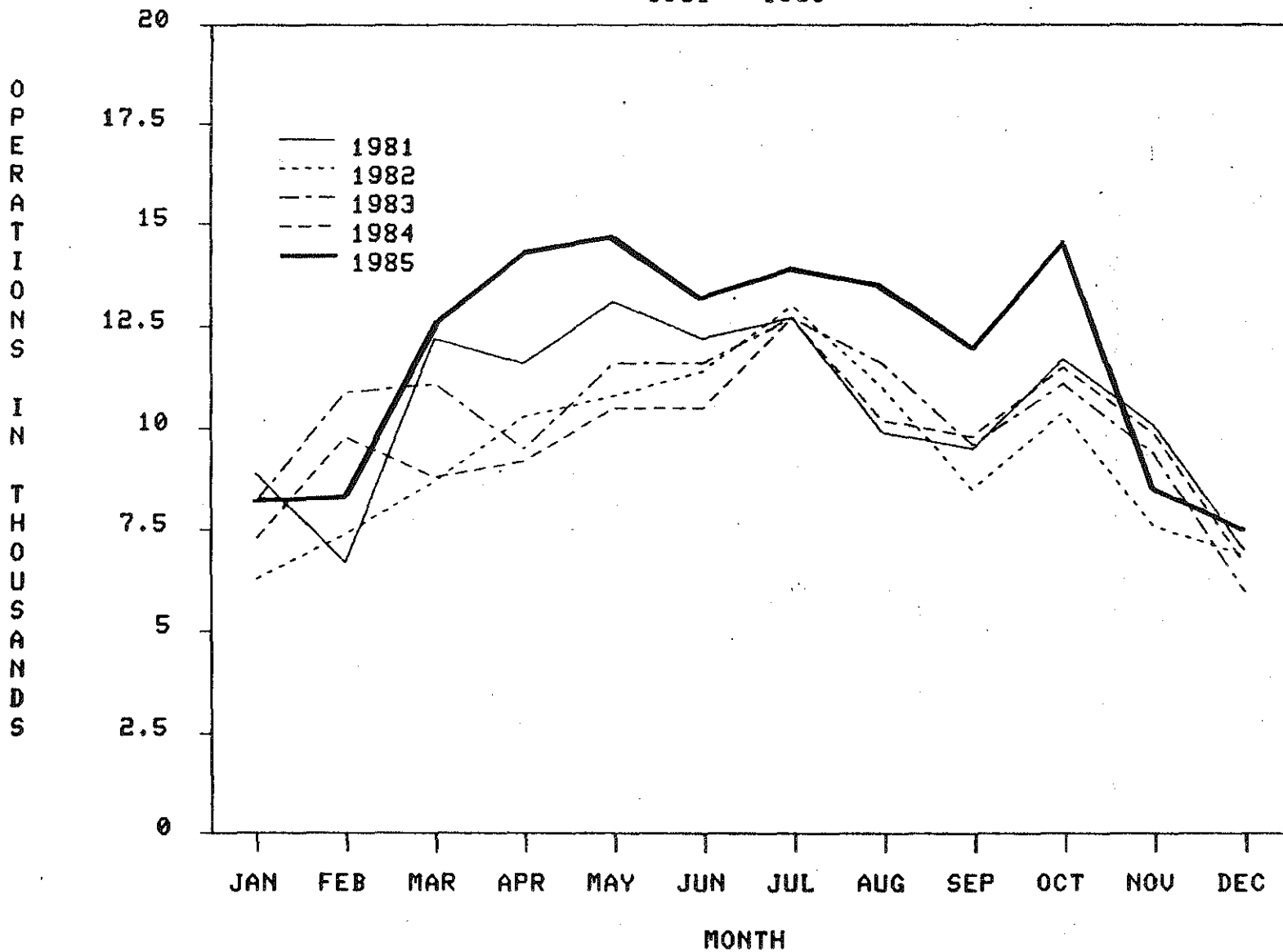


Figure 12

### TOTAL OPERATIONS AT MUSKEGON COUNTY AIRPORT - MUSKEGON 1981 - 1985

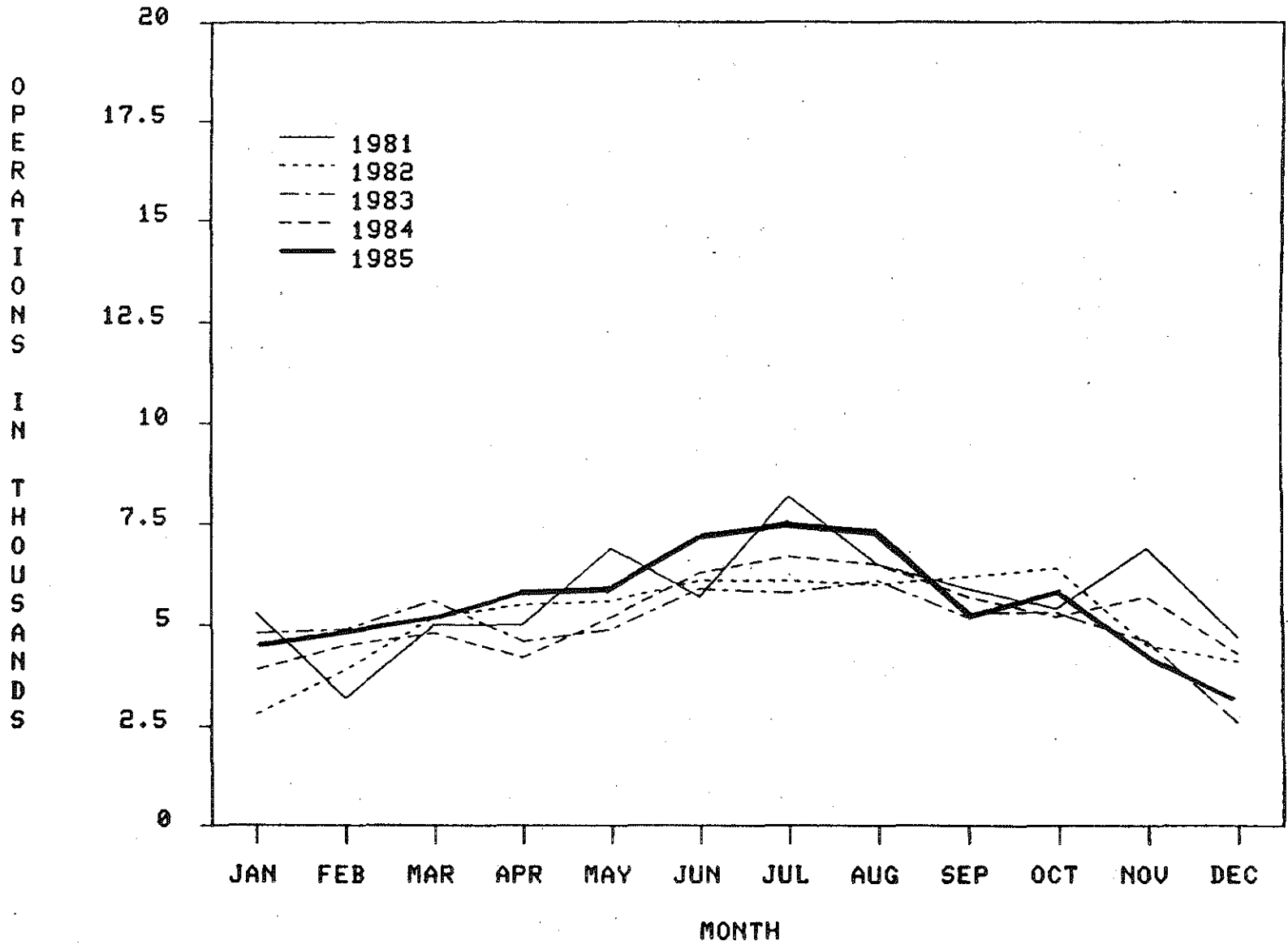


Figure 13

TOTAL OPERATIONS AT OAKLAND PONTIAC AIRPORT - PONTIAC  
1981 - 1985

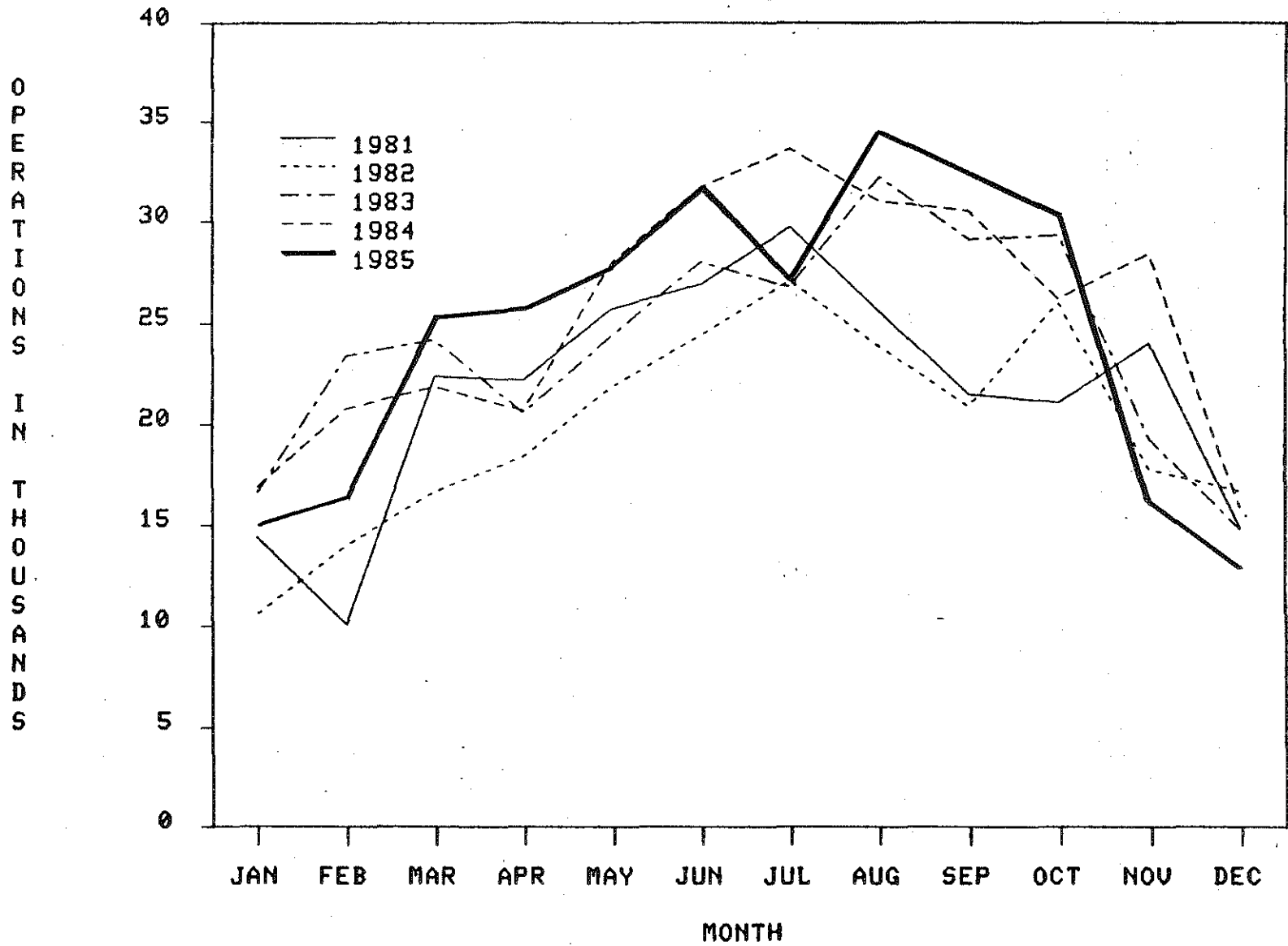


Figure 14

TOTAL OPERATIONS AT TRI-CITY INTERNATIONAL AIRPORT - SAGINAW  
1981 - 1985

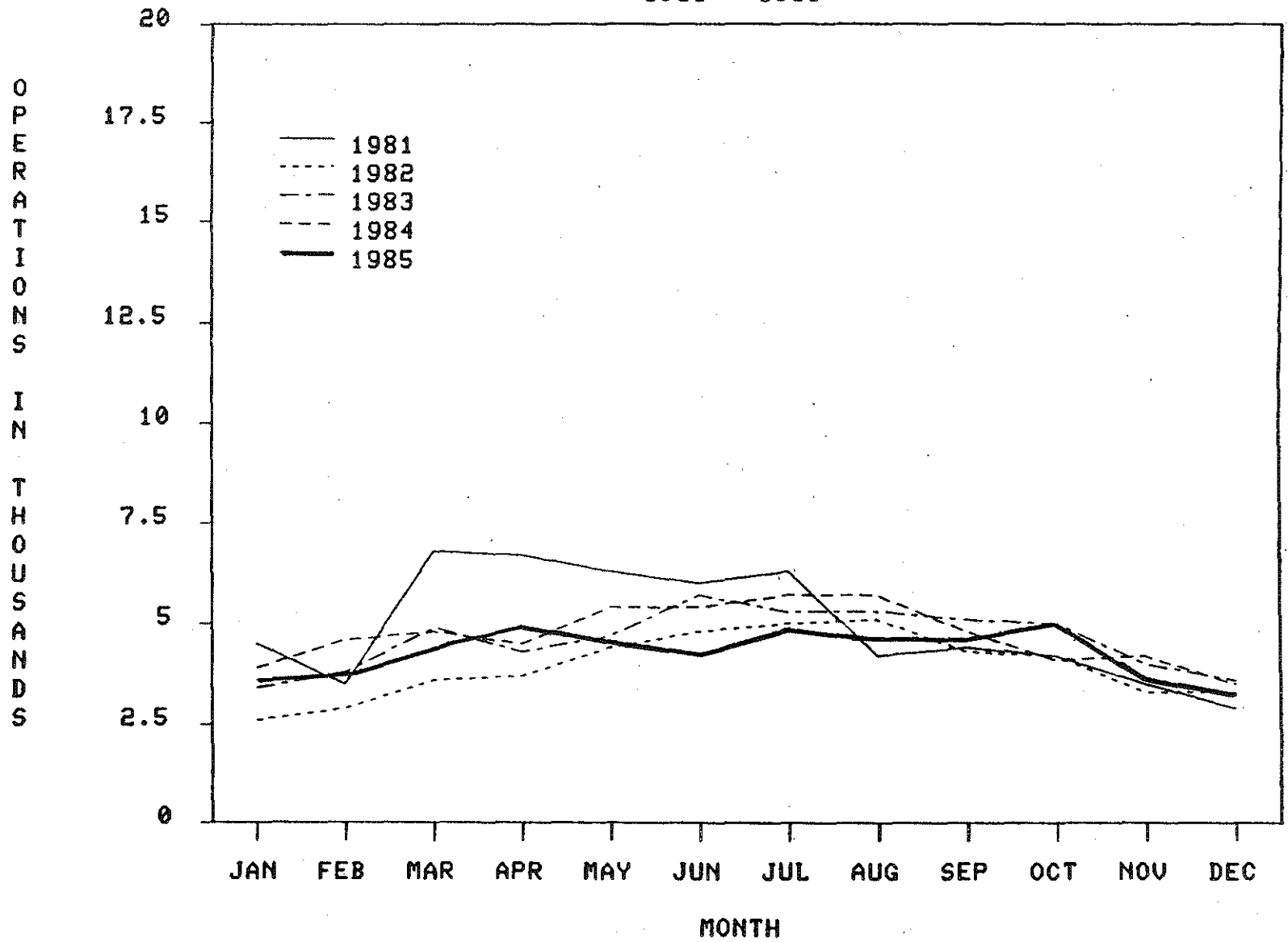


Figure 15

TOTAL OPERATIONS AT CHERRY CAPITAL AIRPORT - TRAVERSE CITY  
1981 - 1985

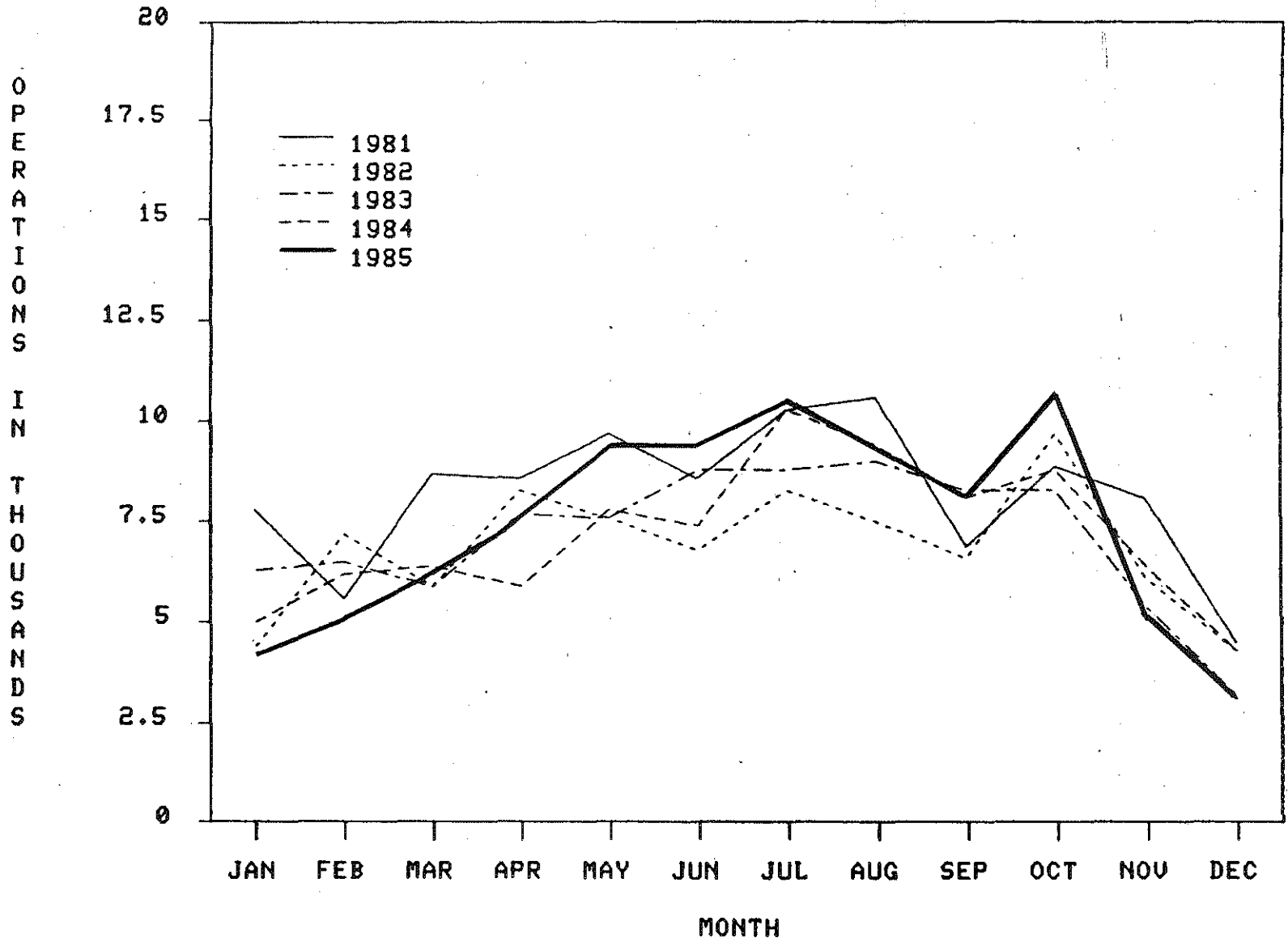


Figure 16

PERCENT OF TOTAL OPERATIONS BY CONTROL TOWER AIRPORT  
1985

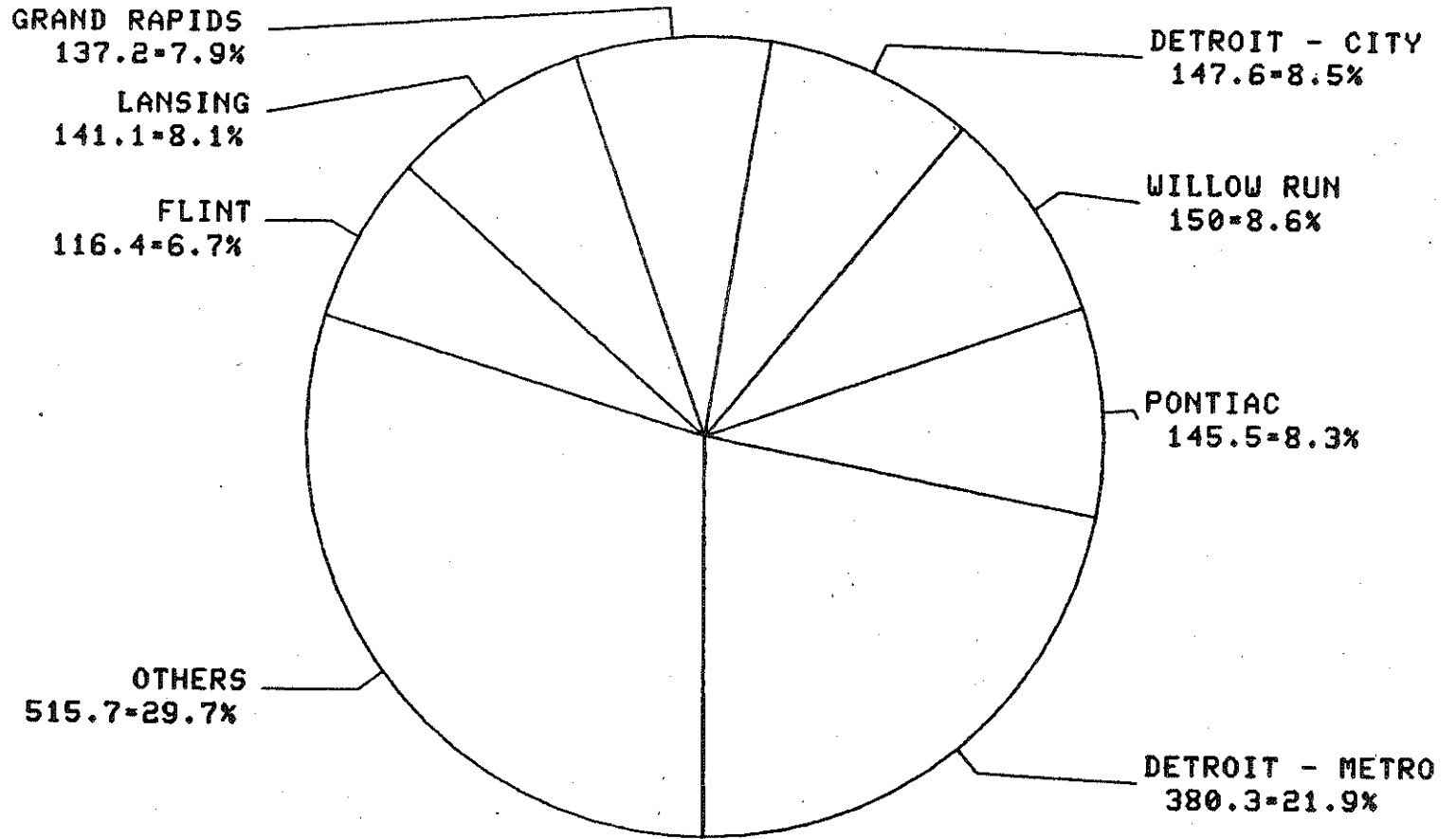




Figure 17

PERCENT OF TOTAL OPERATIONS BY CONTROL TOWER AIRPORT  
1984

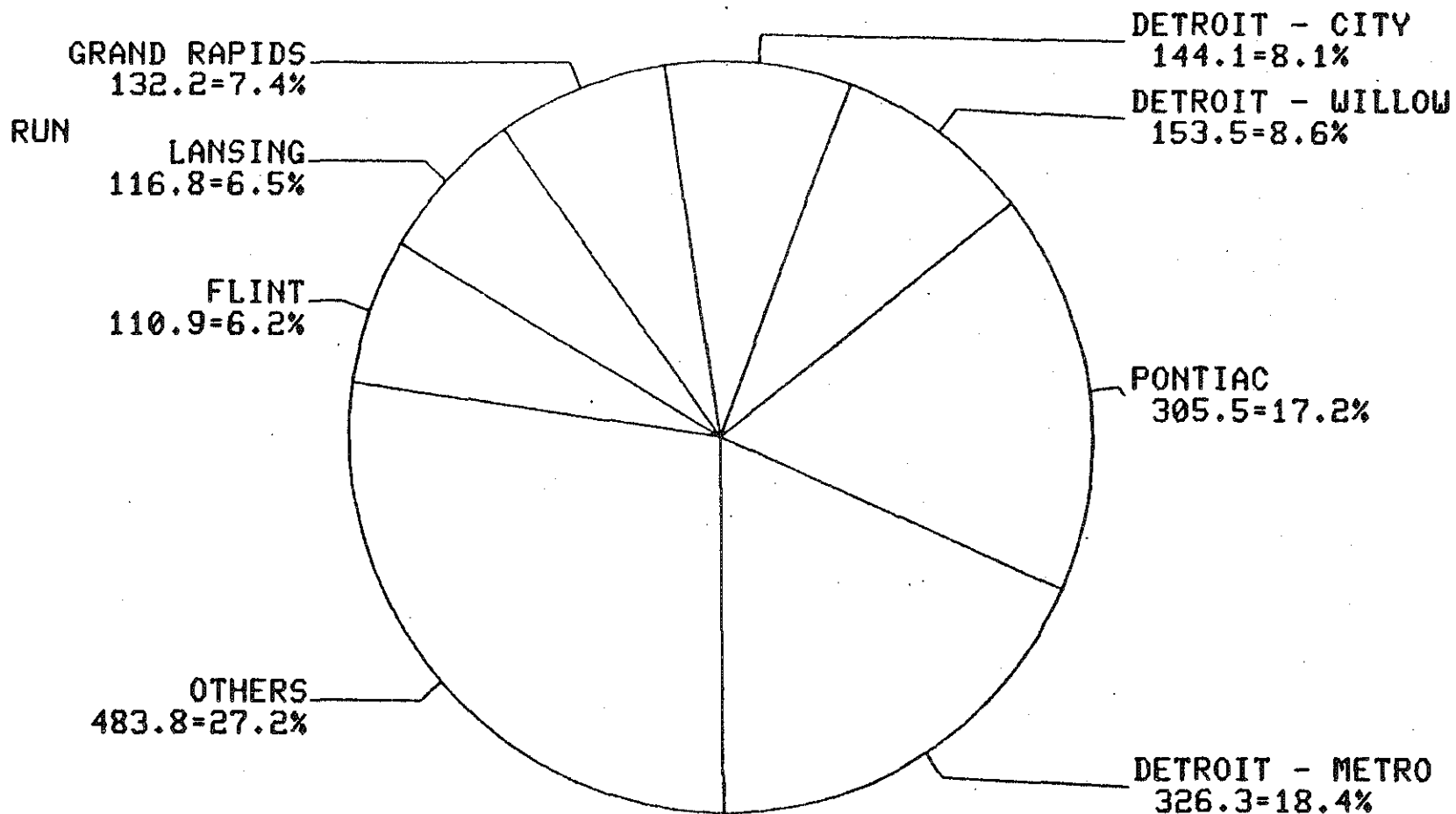


Figure 18

PERCENT OF TOTAL OPERATIONS BY CONTROL TOWER AIRPORT  
1983

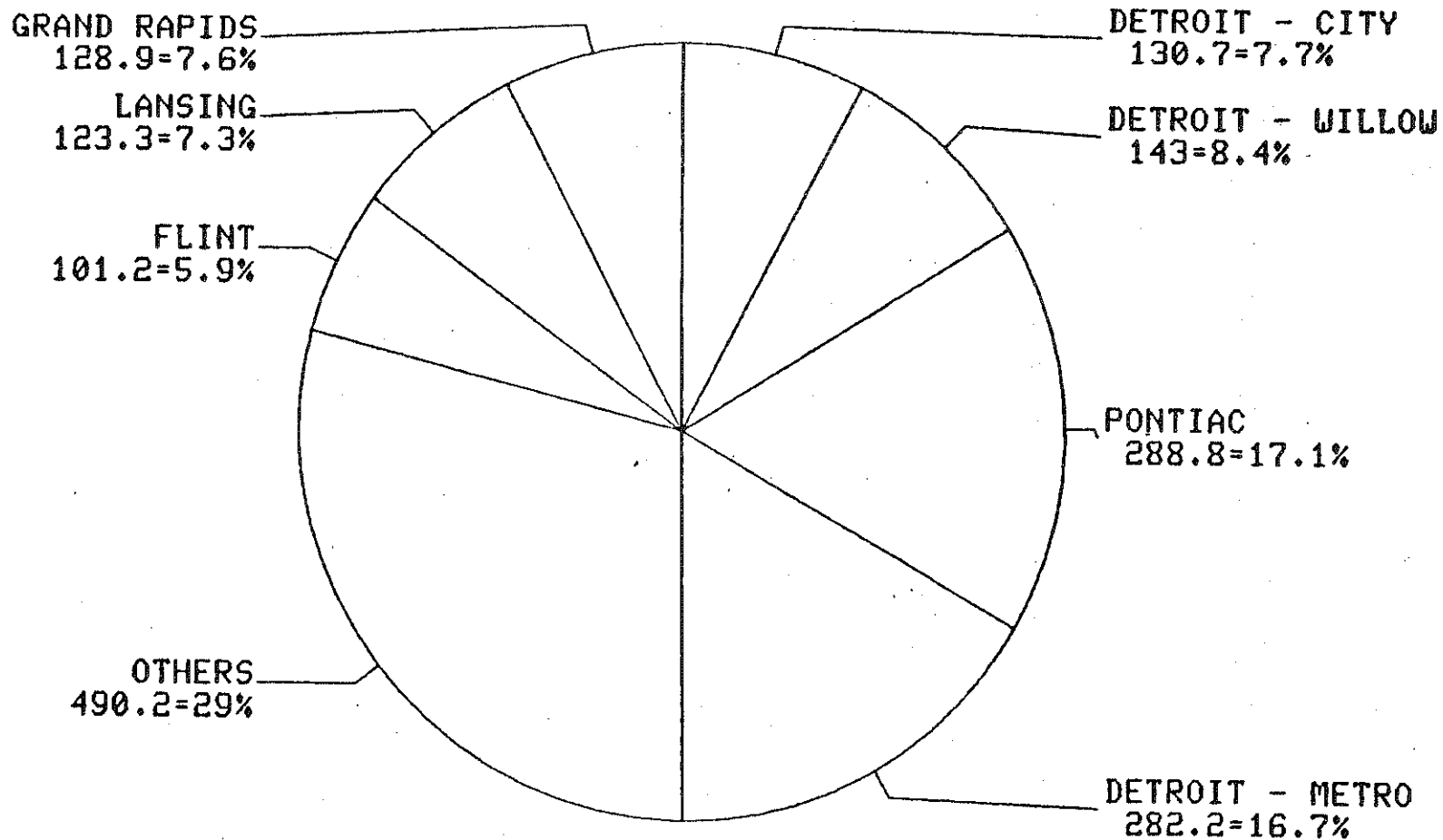


Figure 19

PERCENT OF TOTAL OPERATIONS BY CONTROL TOWER AIRPORT  
1982

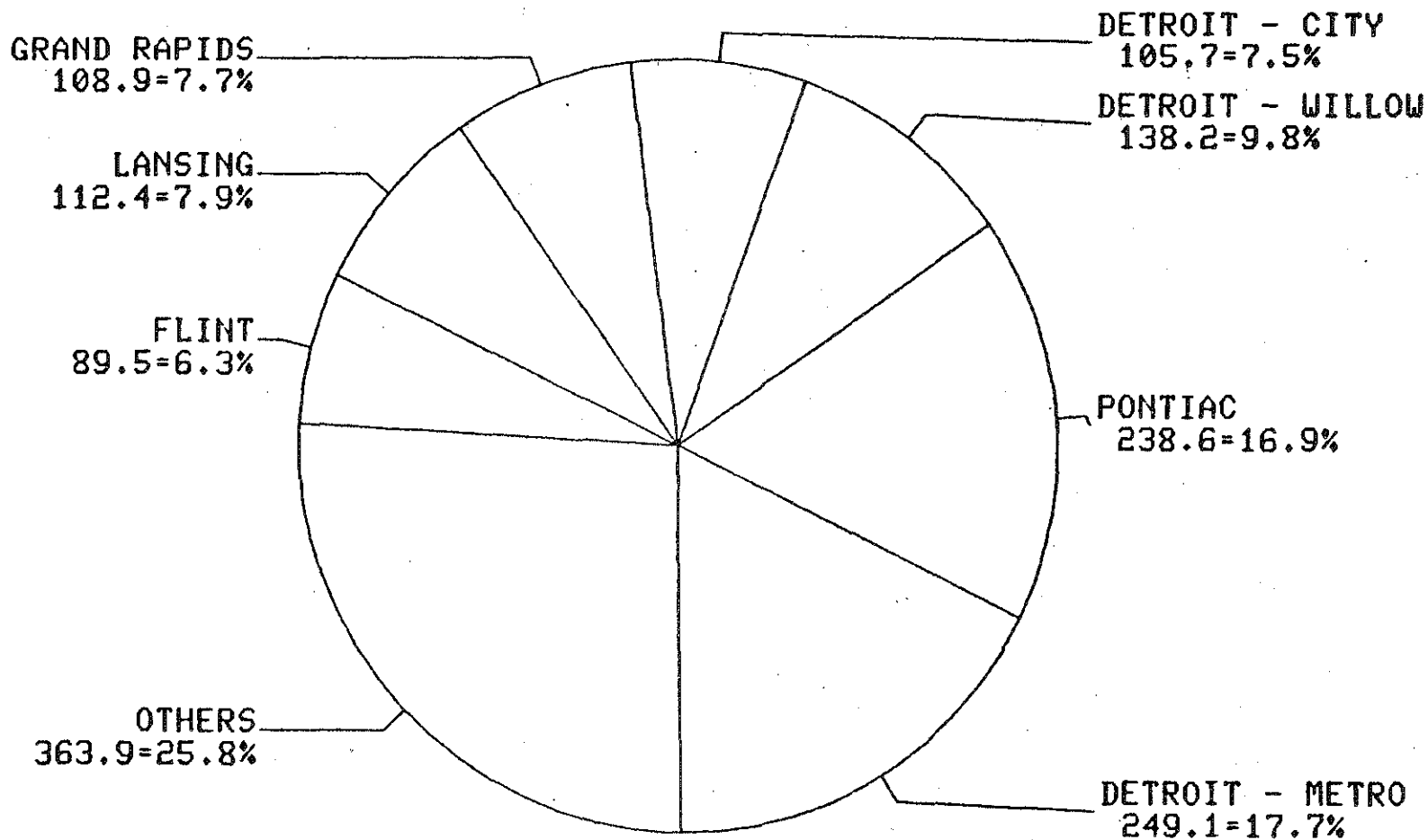


Figure 20

PERCENT OF TOTAL OPERATIONS BY CONTROL TOWER AIRPORT  
1981

