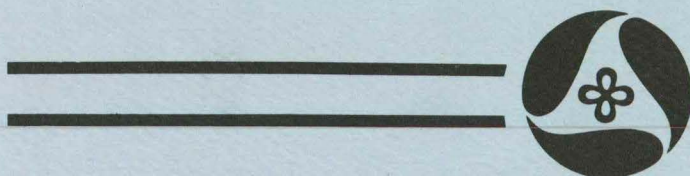


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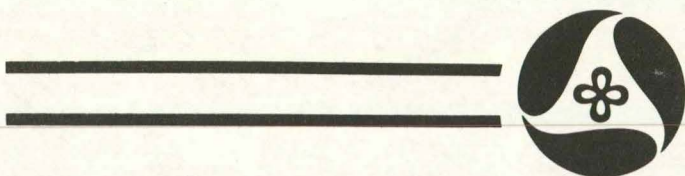


Iowa Department
of Transportation

1983 Airport Operations Survey

Published November 1983

Office of Transportation Inventory
Telephone: 515-239-1289



**Iowa Department
of Transportation**

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PREFACE

The Iowa Department of Transportation is responsible for intermodal transportation planning. Airport planning is an important consideration in the development of intermodal transportation facilities. An essential part of airport planning is aircraft operations.

Primary sources for aircraft operations include the Federal Aviation Administration (FAA) for airports that have control towers, estimates from managers at airports that do not have control towers and from manual observation of aircraft operations at airports. This report addresses the latter of these primary sources.

Following creation of the Iowa Department of Transportation in 1974, the Department entered into a contract with the Engineering Research Institute (ERI), Iowa State University, for a 1976 update of the Iowa State Airport System Plan.⁽¹⁾ In 1975, ERI conducted manual observation counts of aircraft useage at 15 airports throughout Iowa. The Iowa Department of Transportation conducted counts at ten of these airports in 1976.

In 1977, the Department initiated a longer term airport survey program to establish a data base on flight operations and airport usage. This data base would be used in the establishment of a model to predict flight operations for airports throughout Iowa. The survey program covered a minimum period of three years from 1977 through 1979. A maximum of 20 weeks were allotted each year for field survey work. In 1980, the Department in cooperation with the Federal Aviation Administration of the United States Department of Transportation conducted surveys at 17 airports. The results of all airport surveys taken since 1976 have been published and are available from the Office of Transportation Inventory, Iowa Department of Transportation, Ames, Iowa, 50010.

In 1983, 2 airports were surveyed in northwest Iowa. This report presents the information gathered in 1983.

SURVEY PROCEDURE

General

This report presents the data gathered at two municipal airports during the summer of 1983. The purpose of these surveys was to gather data pertaining to the number and type of flight operations and based aircraft at each airport. Flight operations were observed and recorded from 6:00 a.m. to 10:00 p.m. for seven consecutive days at each airport.

Currently, 79 airports comprise the Iowa Aviation System Plan.⁽²⁾ These airports are classified into four categories according to present usage and aircraft weight handling capabilities. Included in the State Aviation System Plan are four general transport, sixteen basic transport, thirty-two general utility, and twenty-seven basic utility airports. One new general utility airport is proposed.

The airports surveyed in 1983 are included in the current Aviation System Plan.

The following information was obtained by manual observation, supplemented by personal interviews when required:

1. Based Aircraft
 - a. Class
 - b. Seating Capacity
 - c. Primary usage (business or pleasure)
2. Flight Operations
 - a. Date and Time of Day
 - b. Class of Aircraft
 - c. Aircraft passenger capacity and number of passengers
 - d. Type of operation
 - e. Origin or destination by city and state for itinerant flights
3. General Weather Conditions - Weather conditions are noted only when they appear to have influenced flight operations.

Based Aircraft

By definition, "based aircraft" are those which are normally kept or hangared by the owner at a specific airport. For purposes of this survey, the number of based aircraft were those which were being kept at a given airport during the survey period. The number of aircraft based at an airport may vary from week to week as a result of the changing needs of aircraft owners.

Based aircraft were summarized by class according to standard FAA classifications.⁽³⁾ Most based aircraft at the surveyed airports were Class D or E. The primary usage of based aircraft was determined from contact with the airport manager or aircraft owners. Primary usage was classified as business or pleasure.

The number of aircraft registered with the FAA in a given county is not related to the number of based aircraft since they may be based anywhere following registration. For example, the Ames Airport had 92 based aircraft and 115 aircraft were registered in Story County.

Flight Operations

Flight operations were summarized by type of operation and class of aircraft. Operations were divided into three groups: local flights, itinerant flights, and touch-and-go operations. Since each touch-and-go operation consists of two elements (landing and takeoff), these operations were counted accordingly.

Classification of aircraft was determined on the basis of make, model, horsepower ratings and number of engines. Most flight operations were made by Class D or E aircraft according to standard FAA classification.⁽³⁾

It will be noted that in some instances flight origins or destinations are indicated as "unknown", as are some trip purposes. This "unknown" data resulted when the interviewer was unable to obtain the desired information.

Summary

The total number of flight operations observed at the Ames Airport was 1,287, and 248 at the Emmetsburg Airport.

The Ames Airport had 92 based aircraft, while the Emmetsburg Airport had 18 based aircraft during the survey periods.

The field data summarized in this report has not been adjusted in any manner.

Detailed information for each of the airports surveyed in 1983 is provided in the charts and tables on the following pages.

AMES MUNICIPAL AIRPORT

Ames is located in Central Iowa approximately 30 miles north of Des Moines on U.S. 69. The municipal airport is located two miles south of the city.

Population of Area Served: (1980 Census)⁽⁶⁾

Ames	45,775
Story County	72,326
Boone County	26,184

Iowa Airport System Classification: Basic Transport

Third Level Air Carrier Service: None

Registered Aircraft⁽⁴⁾ in Story County (1982): 115

Registered Airmen⁽⁵⁾ in Story County (1979): 454

Runways:⁽⁷⁾ Two; Elevation: 929 Feet

Runway 13/31, paved, 3,500 feet long, 100 feet wide, lighted

Runway 01/19, turf, 3,800 feet long, 150 feet wide, unlighted

Survey Period: 6:00 a.m. to 10:00 p.m., July 11-17, 1983

Number of Based Aircraft: 92

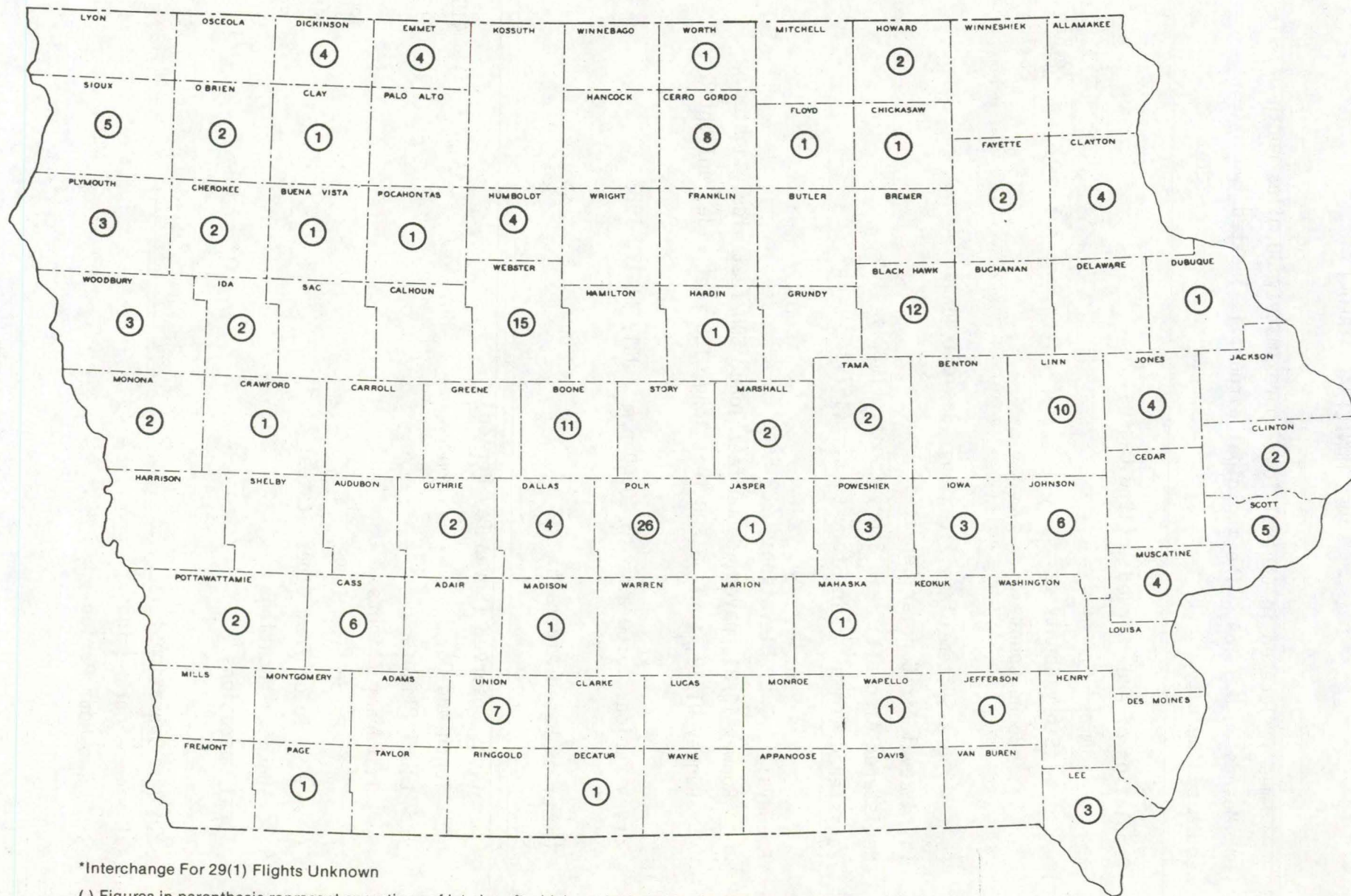
Operations Observed (Seven-Day Period):

Touch-and-Go.	410
Local Flights	510
Itinerant Flights:	
To or From Iowa.	192
To or From Other States.	146
Unknown Locations	29
Total Operations	1,287

Maximum Operations:

One-Hour Period	32
Two-Hour Period	55

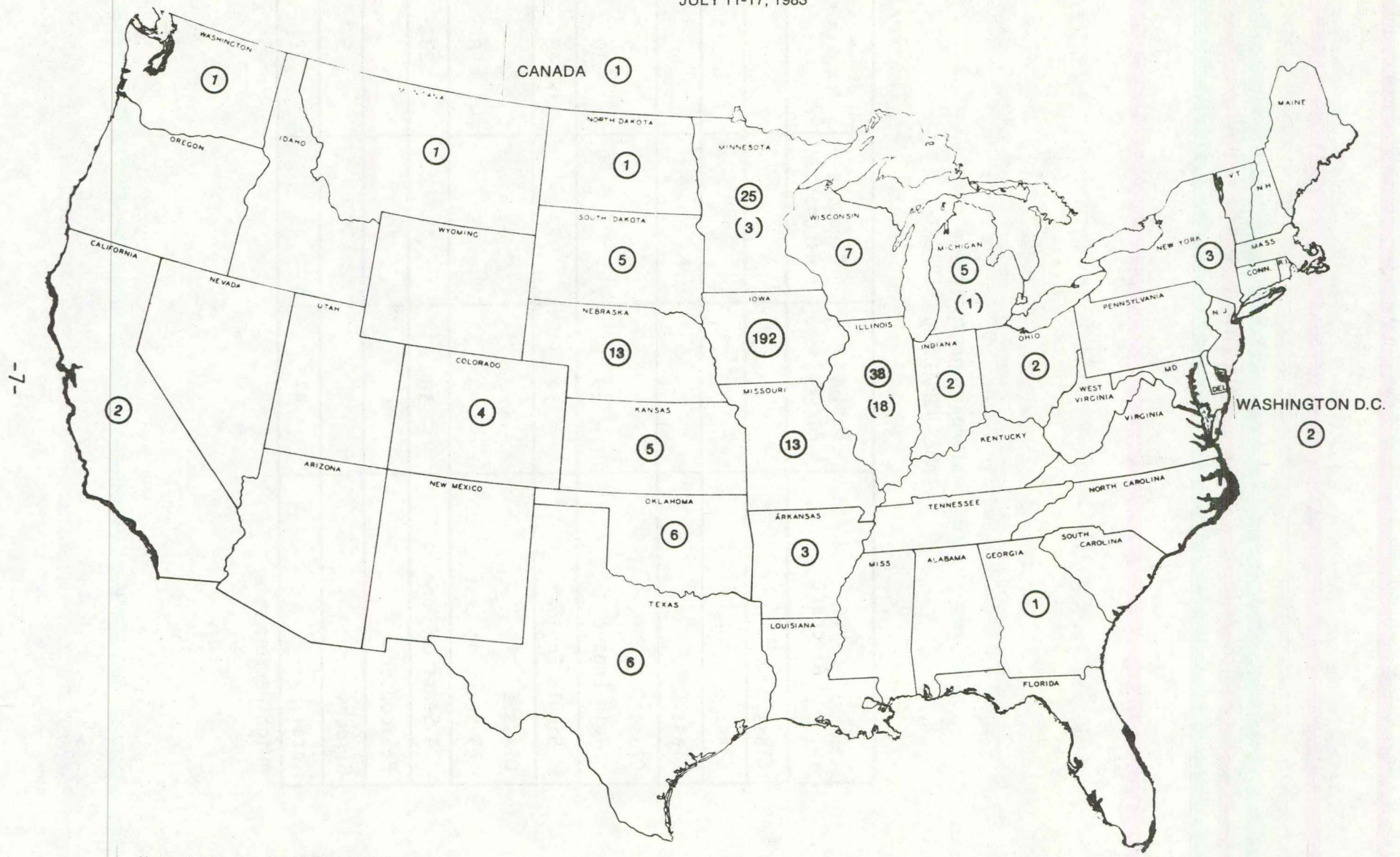
FIGURE 1-1
 ITINERANT FLIGHT INTERCHANGE*
 AMES AND IOWA COUNTIES
 JULY 11-17, 1983



*Interchange For 29(1) Flights Unknown

() Figures in parenthesis represent operations of jet aircraft which are included in the corresponding total operations

FIGURE 1-2
 ITINERANT FLIGHT INTERCHANGE*
 AMES AND STATES
 JULY 11-17, 1983



*Interchange For 29(1) Flights Unknown

() Figures in parenthesis represent operations of jet aircraft which are included in the corresponding total operations

Table 1-1
 AIRCRAFT BASED AT THE
 AMES MUNICIPAL AIRPORT

Type Aircraft	Business Aircraft	Pleasure Aircraft	Total
Class A			
Class B			
Class C			
Class D			
Twin Engine	10		10
Single Engine*	24	22	46
Class E			
3 Seats or Less	3	5	8
4 Seats or More	10	13	23
Helicopters			
Gliders		5	5
Total	47	45	92

*High Performance

Table 1-2
 AIRPORT OPERATIONS
 AMES MUNICIPAL AIRPORT

Day of Week	Type of Operation				
	Touch & Go	Landings & Take-Offs			All Operations
		Local	Itinerant	Total	
Sunday	24	117	43	160	184
Monday	70	37	63(4)	100(4)	170(4)
Tuesday	82	62	59(4)	121(4)	203(4)
Wednesday	68	53	58(8)	111(8)	179(8)
Thursday	38	60	51(2)	111(2)	149(2)
Friday	50	42	56(5)	98(5)	148(5)
Saturday	78	139	37	176	254
Total	410	510	367(23)	877(23)	1287(23)
Average Day	59	73	52	125	184

Table 1-3
 MAXIMUM OPERATIONS
 FOR 1 and 2 HOUR PERIOD

Day of Week	1-Hour Period	2-Hour Period
Sunday	26	45
Monday	27	51
Tuesday	32	55
Wednesday	26(1)	51(1)
Thursday	24	42(1)
Friday	28	48
Saturday	29	49
Highest Period	32	55

() Figures in parenthesis represent operations of jet aircraft which are included in the corresponding total operations.

Table 1-4
CLASSIFICATION OF FLIGHTS
TO OR FROM AMES

Flight Classification		Number of Flights	Percent of Total Operations	Passengers	
				Total	Average Per Flight
Local	Touch-and-Go	410	31.86	768	1.87
	Business	1	0.08	2	2.00
	Pleasure	343	26.65	651	1.90
	Training	166	12.90	334	2.01
	Unknown				
Iowa	Business	99	7.69	221	2.23
	Pleasure	93	7.23	160	1.72
	Training				
	Unknown				
Out of Iowa	Business	120(23)	9.32	313(79)	2.61
	Pleasure	26	2.02	31	1.19
	Training				
	Unknown				
Unknown Locations		29	2.25	53	1.83
Total Operations		1287(23)	100.00	2533(79)	1.97

Table 1-5
DISTRIBUTION OF OPERATIONS BY CLASS OF AIRCRAFT
AMES MUNICIPAL AIRPORT

Aircraft Class	Number of Operations	Percent of Operations
A		
B		
C	23(23)	1.79
D	357	27.74
E	830	64.49
Helicopter	4	0.31
Gliders	73	5.67
All	1287(23)	100.00

() Figures in parenthesis represent operations of jet aircraft which are included in the corresponding total operations.

EMMETSBURG MUNICIPAL AIRPORT

Emmetsburg is located in Northwest Iowa approximately 24 miles east of Spencer on U.S. 18. The municipal airport is located one mile southwest of the city.

Population of Area Served: (1980 Census)⁽⁶⁾

Emmetsburg	4,621
Palo Alto County	12,721

Iowa Airport System Classification: Basic Utility

Third Level Air Carrier Service: None

Registered Aircraft⁽⁴⁾ in Palo Alto County (1982): 25

Registered Airmen⁽⁵⁾ in Palo Alto County (1979): 71

Runways:⁽⁷⁾ Three; Elevation: 1,205 feet

Runway 14/32, paved, 3,000 feet long, 50 feet wide, lighted

Runway 04/22, turf, 3,190 feet long, 130 feet wide, unlighted

Runway 17/35, turf, 2,555 feet long, 150 feet wide, unlighted

Survey Period: 6:00 a.m. to 10:00 p.m., August 24-30, 1983

Number of Based Aircraft: 18

Operations Observed (Seven-Day Period):

Touch-and-Go	98
------------------------	----

Local Flights.	103
------------------------	-----

Itinerant Flights:

To or From Iowa	31
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To or From Other States	16
-----------------------------------	----

Total Operations.	248
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Maximum Operations:

One-Hour Period.	14
--------------------------	----

Two-Hour Period.	27
--------------------------	----

FIGURE 2-1
 ITINERANT FLIGHT INTERCHANGE
 EMMETSBURG AND IOWA COUNTIES
 AUGUST 24-30, 1983

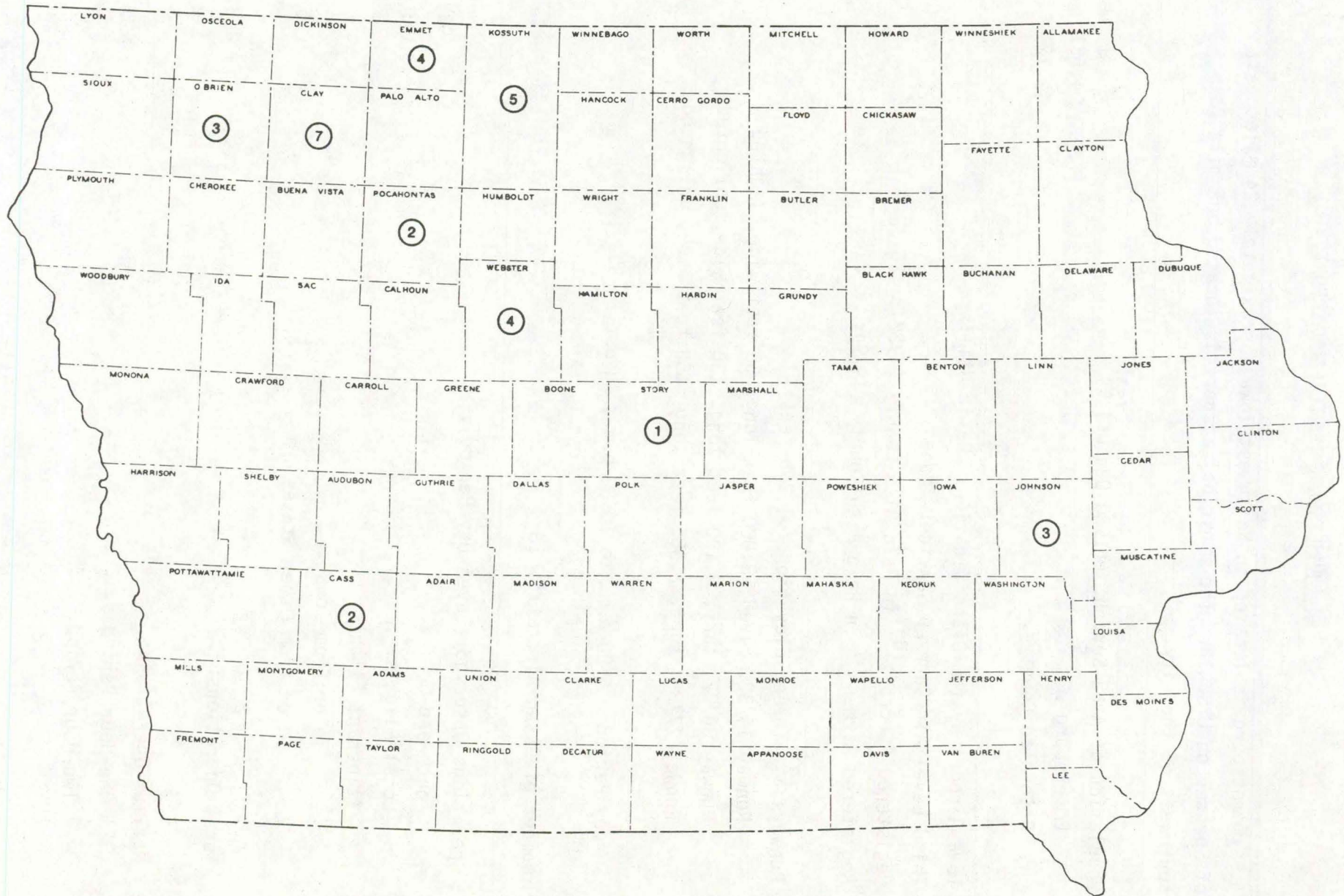


FIGURE 2-2
ITINERANT FLIGHT INTERCHANGE
EMMETSBURG AND STATES
AUGUST 24-30, 1983

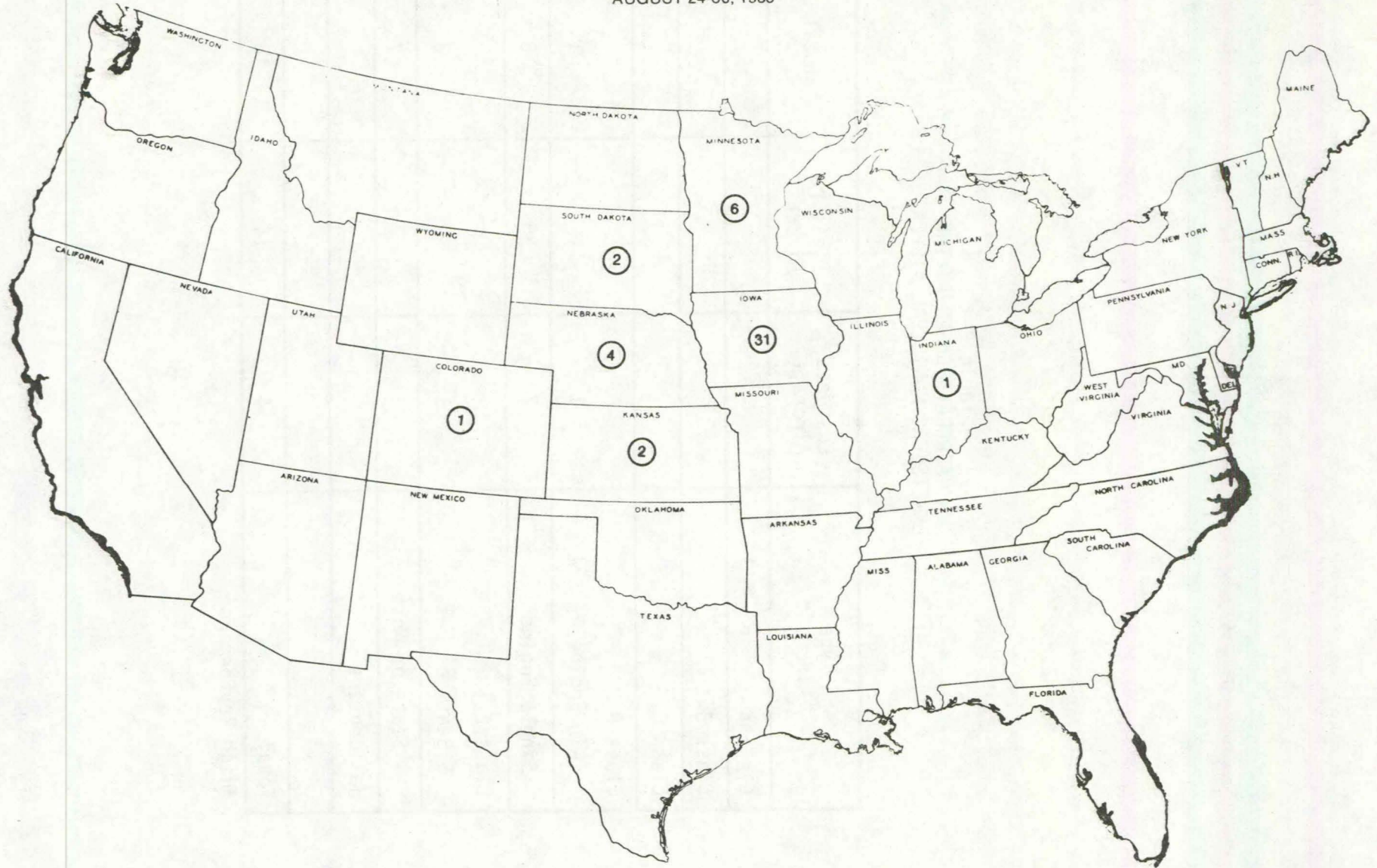


Table 2-1
 AIRCRAFT BASED AT THE
 EMMETSBURG MUNICIPAL AIRPORT

Type Aircraft	Business Aircraft	Pleasure Aircraft	Total
Class A			
Class B			
Class C			
Class D			
Twin Engine	1		1
Single Engine*	2	6	8
Class E			
3 Seats or Less	1	1	2
4 Seats or More		7	7
Helicopters			
Total	4	14	18

*High Performance

Table 2-2
AIRPORT OPERATIONS
EMMETSBURG MUNICIPAL AIRPORT

Day of Week	Type of Operation				
	Touch & Go	Landings & Take-Offs			All Operations
		Local	Itinerant	Total	
Sunday	8	8	12	20	28
Monday	32	18	2	20	52
Tuesday	36	18	5	23	59
Wednesday		8	3	11	11
Thursday		16	5	21	21
Friday		10	9	19	19
Saturday	22	25	11	36	58
Total	98	103	47	150	248
Average Day	14	15	6	21	35

Table 2-3
MAXIMUM OPERATIONS
FOR 1 AND 2 HOUR PERIODS

Day of Week	1-Hour Period	2-Hour Period
Sunday	8	12
Monday	14	22
Tuesday	14	27
Wednesday	4	6
Thursday	10	14
Friday	5	6
Saturday	14	26
Highest Period	14	27

Table 2-4
 CLASSIFICATION OF FLIGHTS
 TO OR FROM EMMETSBURG

Flight Classification		Number of Flights	Percent of Total Operations	Passengers	
				Total	Average Per Flight
Local	Touch-and-Go	98	39.52	196	2.00
	Business	54	21.77	65	1.20
	Pleasure	11	4.43	22	2.00
	Training	38	15.32	76	2.00
	Unknown				
Iowa	Business	17	6.86	40	2.35
	Pleasure	14	5.65	30	2.14
	Training				
	Unknown				
Out of Iowa	Business	11	4.43	26	2.36
	Pleasure	5	2.02	8	1.60
	Training				
	Unknown				
Unknown Locations					
Total Operations		248	100.00	463	1.87

Table 2-5
 DISTRIBUTION OF OPERATIONS BY CLASS OF AIRCRAFT
 EMMETSBURG MUNICIPAL AIRPORT

Aircraft Class	Number of Operations	Percent of Operations
A		
B		
C		
D	78	31.45
E	170	68.55
Helicopter		
All	248	100.00

GLOSSARY

Aircraft Class⁽³⁾ - A system of dividing aircraft into different groups based primarily on size. For this survey, the classes are:

- Class A - Heavy four-engine jets
- Class B - Smaller jets in excess of 25,000 pounds and piston or turboprop aircraft having a weight of 36,000 pounds or more
- Class C - Heavy twins and small executive jets in excess of 8,000 pounds
- Class D - Light twins and high-performance singles (200 HP or more)
- Class E - All other single-engine aircraft
- Helicopter - All types
- Special - Autogyro, sailplane, balloons, etc.

Aircraft Operations:

Local Operations - Aircraft departures or arrivals with both trip origin and destination at the airport surveyed.

Itinerant Operations - All arrivals and departures of aircraft other than local or touch-and-go operations.

Touch-and-Go Operations - Aircraft which land and take off in a continuous straight-ahead operation, normally used during training flights.

Total Operations - The total operations performed at an airport including local, touch-and-go, and itinerant operations.

Airport Classification:

General Transport - Airports able to accommodate all aircraft weighing 150,000 pounds or less and major airline turbojet aircraft.

Basic Transport - Airports able to accommodate all aircraft weighing 60,000 pounds or less and commuter airline aircraft.

General Utility - Airports able to accommodate all aircraft weighing 12,500 pounds or less including air taxi aircraft.

Basic Utility - Airports able to accommodate ninety-five percent (95%) of all aircraft weighing 12,500 pounds or less.

Third Level Air Carrier Service - Service provided by commuter airlines rather than by regularly scheduled certificated air carrier.

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* See Glossary for Aircraft Class Description.

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