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FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATL--ETC F/G 1/2
MIAMI INTERNATIONAL AIRPORT DATA PACKAGE NUMBER 6. AIRPORT IMPR--ETC(U)
MAY 80

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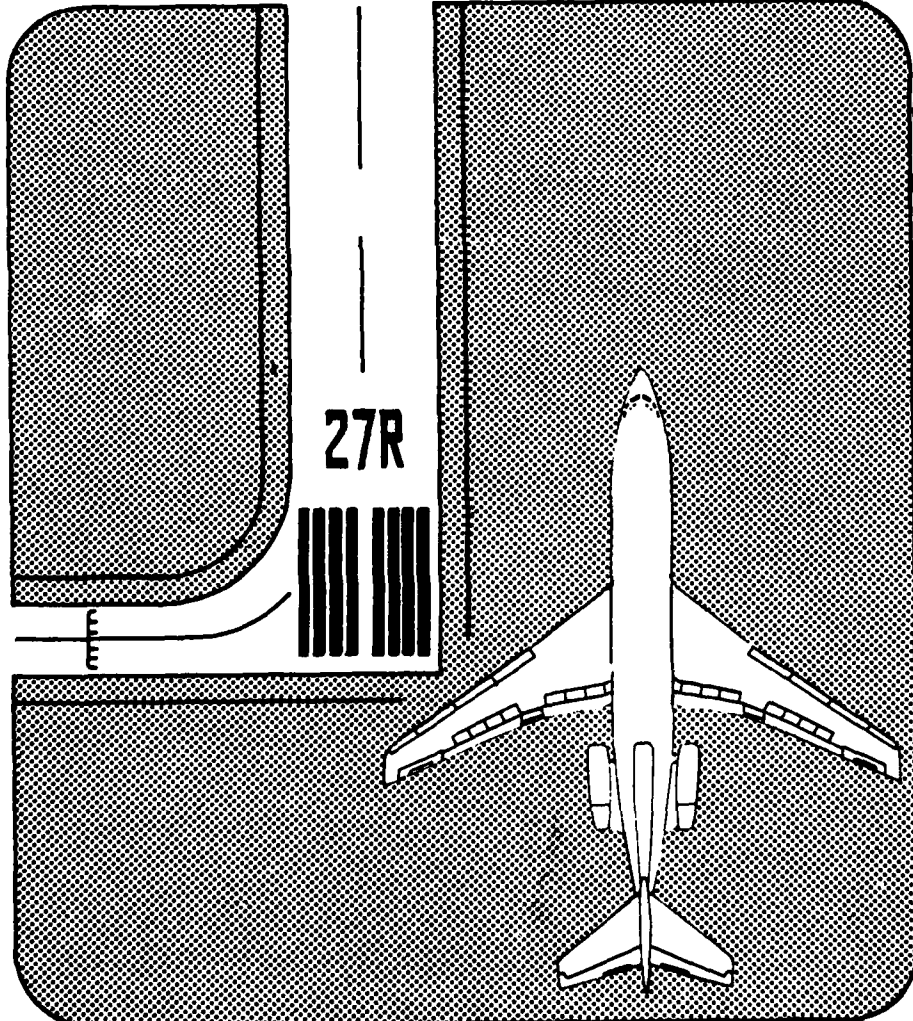
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MIAMI INTERNATIONAL AIRPORT

DATA PACKAGE NO. 6

AIRPORT IMPROVEMENT
TASK FORCE DELAY STUDIES

AD A099967



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MIAMI INTERNATIONAL AIRPORT.

DATA PACKAGE 6.

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AIRPORT IMPROVEMENT TASK FORCE DELAY STUDIES.

11 MAY 1980

Prepared by:

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422863

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Attachment A

MIAMI DELAY EXPERIMENTS
STAGE 1 and STAGE 2

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TABLE 1
MIAMI DELAY EXPERIMENTS*
STAGE 1

Experiment Number	Model	Study Case	Arrival Runways	Departure Runways	Weather	Demand	ATC System Scenario	Near-term Improvements ^c
1	ASM ^d	1	9L, 9R, 12	9L, 9R, 12	VFR1	Today's	Today's	None
7	ASM	1	9L, 9R, 12	9L, 9R, 12	VFR1	1983 ^l	Today's	None (Full G. A.)
11	ASM	1	9L, 9R, 12	9L, 9R, 12	VFR1	1983 ^l	1983	1983 ^e (Full G. A.)
14	ASM	1	9L, 9R, 12	9L, 9R, 12	VFR1	1983 ^m	1983	1983 ^e , g (50% G. A. Reduction)
4	ASM	4	9L, 9R	9L, 9R, 12	IFR1	Today's	Today's	None
34	ASM	4	9L, 9R	9L, 9R, 12	IFR1	1983 ^l	Today's	None (Full G. A.)
9	ASM	4	9L, 9R	9L, 9R, 12	IFR1	1983 ^m	1983	g (50% G. A. Reduction)
35	ASM	4	9L, 9R	9L, 9R, 12	IFR1	1983 ^m	1983	1983 ^e , g (50% G. A. Reduction)
6	ASM	8	None	9L	IFR2	Today's	Today's	None
10	ASM	8	None	9L	IFR2	1983 ^m	1983	g (50% G. A. Reduction)
21	ASM	9	9L, 9R	9L, 9R, 12	IFR2	1983 ^m	1983	1983 ^e , g (50% G. A. Reduction)
2	ASM	2	27L, 27R, 30	27L, 27R, 30	VFR1	Today's	Today's	None
8	ASM	2	27L, 27R, 30	27L, 27R, 30	VFR1	1983 ^l	Today's	None (Full G. A.)
36	ASM	2	27L, 27R, 30	27L, 27R, 30	VFR1	1983 ^l	1983	1983 ^e (Full G. A.)
37	ASM	2	27L, 27R, 30	27L, 27R, 30	VFR1	1983 ^m	1983	1983 ^e , g (50% G. A. Reduction)
3	ASM	3	27L, 27R	27L, 27R, 30	VFR2	Today's	Today's	None
38	ASM	3	27L, 27R	27L, 27R, 30	VFR2	1983 ^l	Today's	None (Full G. A.)
17	ASM	3	27L, 27R	27L, 27R, 30	VFR2	1983 ^m	1983	g (50% G. A. Reduction)
12	ASM	7	27R, 30	27L, 27R	VFR2	1983 ^m	1983	1983 ^e , g (50% G. A. Reduction)
5	ASM	5	27L, 27R	27L, 27R	IFR1	Today's	Today's	None
39	ASM	5	27L, 27R	27L, 27R	IFR1	1983 ^l	Today's	None (Full G. A.)
15	ASM	5	27L, 27R	27L, 27R	IFR1	1983 ^l	1983	1983 ^e (Full G. A.)
20	ASM	5	27L, 27R	27L, 27R	IFR1	1983 ^m	1983	1983 ^e , g (50% G. A. Reduction)
12A	ASM	7	27R, 30	27L, 27R	VFR2	1983 ^m	1983	1983 ^P , g (50% G. A. Reduction)
40	ASM	5	27L, 27R	27L, 27R	VFR1	1983 ^l	Today's	None (Full G. A.)

^a Study cases are defined in Figure III-1 of the Miami International Airport Technical Plan (Oct. 1978).

^b FAA will describe impact of pre-1985 and post-1985 ATC systems on model inputs (as per report No. FAA-EM-78-8).

^c Near-term improvements are described in Appendix B of the Miami International Airport Technical Plan.

^d Airfield Simulation Model.

^e Improvement items 1, 2, 3, 7, 9, and 10 as defined by the Miami Delay Studies' Task Force on 3/16/79 are modeled in these experiments.

^g 50% reduction in general aviation achieved by upgrading Opa Locka and Tamiami General Aviation Reliever Airports.

^h Improvement #6 is the use of 2 mile in-trail staggered parallel approaches.

^l 1983 full schedule assumes no G. A. relocation out of Miami between 1978 and 1983.

^m 1983 limited schedule assumes a 50% G. A. reduction at Miami due to upgrading of reliever airports.

^p All improvements of footnote "e" except for improvement item #10 (aircraft are being towed instead of taxied in 12A).

*Stage 1 experiments as revised by discussions with the Miami Delay Studies' Task Force since 1/24/79

TABLE 2
MIAMI DELAY EXPERIMENTS*
STAGE 2

Experiment Number	Model	Study Case	Arrival Runways	Departure Runways	Weather	Demand	ATC System		Near-term Improvements
							Scenario	Improvements	
16	ADM ^h	n.a.	n.a.	n.a.	n.a.	Today's	Today's	None	
29	ADM	n.a.	n.a.	n.a.	n.a.	Pre-1985 ^m	Today's	None	
27	ADM	n.a.	n.a.	n.a.	n.a.	Pre-1985 ^m	Pre-1985	None	
28	ADM	n.a.	n.a.	n.a.	n.a.	Pre-1985 ^m	Today's	Pre-1985 ^{e, g}	
26	ADM	n.a.	n.a.	n.a.	n.a.	Pre-1985 ^m	Pre-1985	Pre-1985 ^{e, g}	
33	ADM	n.a.	n.a.	n.a.	n.a.	Post-1985 ^q	Today's	None	
30	ADM	n.a.	n.a.	n.a.	n.a.	Post-1985 ^q	Post-1985	None	
32	ADM	n.a.	n.a.	n.a.	n.a.	Post-1985 ^q	Today's	Post-1985 ^r	
31	ADM	n.a.	n.a.	n.a.	n.a.	Post-1985 ^q	Post-1985	Post-1985 ^r	

^eImprovement items 1, 2, 3, 7, 9, and 10 as defined by the Miami Delay Studies' Task Force on 3/16/79.

^g50% reduction in general aviation achieved by upgrading Opa Locka and Tamiami General Aviation Reliever Airports.

^hAnnual Delay Model

^m1983 limited schedule assumes a 50% G. A. reduction at Miami due to upgrading of reliever airports.

^qPost-1985 Demand to be provided by the Miami Delay Studies' Task Force.

^rPost-1985 Improvement Package to be provided by the Miami Delay Studies' Task Force.

* Stage 2 experiments as revised by discussions with the Miami Delay Studies' Task Force since 1/24/79

Attachment B

1983 AIRPORT IMPROVEMENT SUMMARY

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

This section summarizes the Miami International Airport near-term improvement items as they were applied to various experiments in this report. The improvements were developed by the Miami Delay Studies Task Force from a list originally presented in the 'Miami Interim Report' (Oct. 1977), and have been numbered accordingly as a result.

Figure 1 shows Miami's 1983 physical airfield layout as defined by improvement nos. 1, 3 and 9 below. Figure 2 shows the corresponding link-node diagram used to develop the taxi-way route structures for experiments utilizing the 1983 airfield layout.

The specific application of these improvement items to each experiment is shown in the experimental design summary of Attachment A.

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May 1980

1983 Airport Improvements

Summary

Improvement No. 1:

Improve the taxiway system of runway 9L/27R. Install runway centerline lighting and touch down zone lighting on runway 9L. Install dual, 250 foot baseline RVR systems on runway 9L/27R.

Improvement No. 2:

Install runway centerline lighting and dual, 250 foot baseline RVR systems on runway 9R/27L.

Improvement No. 3:

Install High Intensity Runway Lights, an Instrument Landing System and an Approach Lighting System on runway 30. Provide paved, blast protection shoulders on runways 12/30 and 9R/27L. Implement operational procedures to make greater use of the intersection take-off position on runway 30 and simultaneous use of runways 12 and 9R.

Improvement No. 4:

Upgrade Opa Locka and Tamiami General Aviation Reliever Airports, to encourage low performance general aviation aircraft to relocate out of MIA.

Improvement No. 6:

Use two-mile, in-trail staggered parallel approaches at MIA, to improve capacity without the extra tower staff required for full, independent parallel approaches.

Improvement No. 7:

Install Vortex Advisory System (VAS) monitors at both ends of all three runways at MIA.

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Airport Improvement Task Force Delay Studies
May 1980

Improvement No. 9:

Extend runway 9R/27L by 3650 feet. Relocate the easterly and westerly landing thresholds on runway 9R/27L to positions 2200 feet down the runway, for the purpose of noise abatement. Provide a dual parallel taxiway system and new exit taxiways on runway 9R/27L.

Improvement No. 10:

Ask the airlines to taxi, rather than tow their aircraft between their bases and their gates, and vice versa, during peak traffic periods.

Attachment C

CONFIGURATIONS A and B MODEL INPUT DATA
1983 TIME FRAME

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Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

This section presents the Airfield Simulation Model input data as applied to those experiments utilizing Miami's 1983 physical airfield improvements and the 1983 ATC system scenario. Variation of the inputs (1) controlled the experiments to reflect the desired conditions of each test.

Primarily, aircraft demand schedules (2) and separations were varied in accordance with the runway configuration, weather and ATC system scenario of each experiment.

The basic Configuration A (easterly) and Configuration B (westerly) model input data for the 1983 improvement experiments follow. Aircraft separations are listed under each configuration for all weather conditions used in the experiments.

(1) See Attachment B of Miami Data Package No. 5 for model input data as applied to "today's" ATC system scenario and airfield layout.

(2) See Miami Data Package No. 4 for demand schedule summaries.

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Part I

CONFIGURATION A MODEL INPUT DATA
(1983 TIME FRAME)

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INFLUENTIAL

DEMAND-43

ROUTE 1483 LUNFIC-A

MIAMI INFO. AIRPORT

NUMBER OF RANDOM NUMBER SEEDS

2

RAND IN NUMERICAL SERIES

5.651	91921	6.9011	92157	14577	10493	27011	40961	15011	63661
-------	-------	--------	-------	-------	-------	-------	-------	-------	-------

SYACT YIME 247 F1W150 TIME

11 0 20 0

PRINT DUTIES

F F F F F F F

NUMBER OF AIRLINES

27

SALELINE CROSS

IA	LA	OC	FF	GG	HH	CI	C2	F1	F2
53	64	11	01	31	41	GA			

NUMBER OF RUNWAYS

3

SEYMOUR HAYES

71 76

RUNWAY (IN) LINK NUMBERS

405 418 417

LINKS--CLEARANCE TIMES FOR A/C CROSSING ACTIVE RUNWAY
CROSSING LINK RUNWAY ARRIVAL ON R/W DEPARTURE ON R/W ARRIVAL ON FINAL

549	2	27.	33.	30.	20.	22.	25.	30.	30.
548	2	27.	33.	30.	20.	22.	25.	30.	30.

515	2	47.	51.	55.	66.	41.	44.	46.	30.	40.	30.	30.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

ANG LINK FORMAT ARRIVAL UN R/H DEPARTURE IN R/H ARRIVAL UN FINAL

ARRIVAL ON R/W DEPARTURE UN R/W ARRIVAL ON FINAL

LINK RUNWAY ARRIVAL ON R/W DEPARTURE ON R/W APPROX:1 ON EIGHT

344	33.	36.	42.	50.	32.	33.	30.	30.	30.
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

545	3	31.	34.	42.	44.	50.	52.	53.	57.	50.	10.	30.
545	3	31.	34.	42.	44.	50.	52.	53.	57.	50.	10.	30.

551	3	46.	40.	35.	04.	40.	41.	46.	51.	10.	30.	30.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

TIME	SINK	CONF	ARRIVAL	IN	W/	DEFECTURE	IN	W/	ARRIVAL	UN	FINAL
240	2	60	21	42	21	42	21	42	21	42	21

ANG LINK RUMDAY ARRIVAL IN K/M DEPARTURE: ON 2/2 ARRIVAL ON FINAL

ARRIVAL ON R/H DEPARTURE ON R/H ARRIVAL ON FINAL

[illegible]

346	3	25.	29.	65.	73.	48.	51.	56.	66.	39.	30.	30.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

131	66. 69. 71. 77. 52. 57. 62. 77. 30. 30. 30.
-----	---

NO	DATE	DESCRIPTION	AMOUNT	CHECK NO	BANK	INITIALS	REMARKS
1	10/10/19	DEPOSIT	100.00				
2	10/15/19	PAYROLL	50.00				
3	10/20/19	RENT	25.00				
4	10/25/19	UTILITIES	15.00				
5	10/30/19	SALES	75.00				
6	11/05/19	DEPOSIT	120.00				
7	11/10/19	PAYROLL	55.00				
8	11/15/19	RENT	25.00				
9	11/20/19	UTILITIES	15.00				
10	11/25/19	SALES	80.00				
11	11/30/19	DEPOSIT	130.00				
12	12/05/19	PAYROLL	60.00				
13	12/10/19	RENT	25.00				
14	12/15/19	UTILITIES	15.00				
15	12/20/19	SALES	85.00				
16	12/25/19	DEPOSIT	140.00				
17	12/30/19	PAYROLL	65.00				
18	01/05/20	RENT	25.00				
19	01/10/20	UTILITIES	15.00				
20	01/15/20	SALES	90.00				
21	01/20/20	DEPOSIT	150.00				
22	01/25/20	PAYROLL	70.00				
23	01/30/20	RENT	25.00				
24	02/05/20	UTILITIES	15.00				
25	02/10/20	SALES	95.00				
26	02/15/20	DEPOSIT	160.00				
27	02/20/20	PAYROLL	75.00				
28	02/25/20	RENT	25.00				
29	02/28/20	UTILITIES	15.00				
30	03/05/20	SALES	100.00				

RUNWAY ADJACENT TO THE WATER AT THE END OF THE FIELD

ENDING LINE "AFTER VAL IN PALACE" IN VAL IN FINAL

152 3 60. 69. 71. 73. 52. 57. 62. 73. 30. 30. 30. 30.
ANG LINA RUNWAY ARRIVAL ON S/W DEPARTURE ON S/W ARRIVAL ON FINAL
153 3 60. 69. 71. 73. 52. 57. 62. 73. 30. 30. 30. 30.

KUMAY CROSSING LINKS--OCCUPANCY TIMES (SECS)

CLASS TIME

1 20.00

2 20.00

3 20.00

4 20.00

RUNWAY CROSSING TIME AND INTERVALAL GAP

LINK	DELAY	MEAN	STD DEV
549	1.50	1.00	.50
522	1.50	1.00	.50
536	1.50	1.00	.50
532	1.50	1.00	.50
544	1.50	1.00	.50
545	1.50	1.00	.50
551	1.50	1.00	.50
340	1.50	1.00	.50
500	1.50	1.00	.50
347	1.50	1.00	.50
346	1.50	1.00	.50
131	1.50	1.00	.50
556	1.50	1.00	.50
557	1.50	1.00	.50
152	1.50	1.00	.50
153	1.50	1.00	.50

NUMBER OF EXITS

13

DISTANCE IN FEET FROM THRESHOLD TO THE EXIT TAXIWAY (EXIT LINK NO. VERSUS DISTANCE)

540	2640.0	563	3300.0	550	4820.0	537	4920.0	560	5060.0
339	5500.0	521	6000.0	347	6560.0	344	6660.0	524	7060.0
557	7400.0	153	7600.0	559	8080.0				

NUMBER OF HOLDING AREAS

1

HOLDING AREA NUMBERS

99

NUMBER OF G/A RASING AREAS

6

G/A RASING AREA NUMBERS

9 16 17 18 19 20

AIRLINE GATES

IA	4	5	6	17	18	19	20	21	22	23
EA	1	2	3							
DO	3	4								
FF	6	7	21							
GG	5	6	7	8						
HH	7	8	9	10						
CI	3	4	9	17						
C2	6	8	9	17						
F1	17	18	19	20						
F2	14	15	16	16						
F3	21	22	23							
F4	17	18	19	20	21	22	23			
IT	24	2								
OT	2	24								
JT	12	7								
PT	7	12								
GA	0									

TRUNCATION LIMITS

UPPER LIMIT = 3.00
LOWER LIMIT = 3.00

DEPARTURE QUEUE LENGTH AND INTERARRIVAL GAP
QUEUE = 6 MEAN = 2.00 STD DEV = 0.00

LENGTHS OF COMMON APPROACH PATHS FROM OUTER MARKER TO THRESHOLD IN NAUTICAL MILES (RUNWAY NO., A/C CLASS, LENGTH)

1	1	7.00
1	2	7.00
1	3	3.00
1	4	3.00
2	1	7.00
2	2	7.00
2	3	3.00
2	4	3.00
3	1	7.00
3	2	7.00
3	3	3.00
3	4	3.00

VECTORED DELAY INPUTS

FIX	DELAY EVALUATION LEVEL	HOLDING PCT.	MAXIMUM VECTORED DELAY	MINIMUM HOLDING DELAY
TAKE-OFF	QUEUE SWITCH FOR RUNWAY	1 = 99	ALTERNATE RUNWAYS ARE	0 0 0 0 0
TAKE-OFF	QUEUE SWITCH FOR RUNWAY	2 = 99	ALTERNATE RUNWAYS ARE	0 0 0 0 0
TAKE-OFF	QUEUE SWITCH FOR RUNWAY	3 = 99	ALTERNATE RUNWAYS ARE	0 0 0 0 0
GATE HOLD LIMIT = 4 HOLD TIME = .50				
GATE HOLD LIMIT = 6 HOLD TIME = .50				
GATE HOLD LIMIT = 3 HOLD TIME = .50				

AIRSPACE DELAYS

FIX	OCCURRENCE	PERCENTAGE	HOLD MEAN	HOLD SIGMA
A/C DEPARTURE	RUNWAY OCCUPANCY TIME IN SECONDS (A/C CLASS, MEAN, AND STD. DEV.)			
1	39.00	4.00		
2	39.00	4.00		
3	34.00	4.00		
4	34.00	4.00		

TOUCH-AND-GO RUNWAY OCCUPANCY TIME IN SECONDS (A/C CLASS, MEAN, AND STD. DEV.)

1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00

STATE SERVICE TIME DISTRIBUTION (PROBABILITY VS TIME)

[illegible]

W/C ADDU-1/ACH SPEED IN KNITS (A/C CLASS, MEAN, STD. DEV.)

W/C APPROACH SPEED IN KNOTS INTO OBSTACLE		
1	140.00	5.00
2	130.00	5.00
3	120.00	5.00
4	109.00	5.00

STATION, IN EACH AIR CLASS AND BY EACH RUNWAY IF IT LINK NO. VERSUS PROBABILITY)

RUNWAY EXIT SELECTION--USAGE PERCENTAGE BY EACH A/C CLASS AND BY EACH RUNWAY CATEGORY			
CLASS	1 RMY	2 RMY	3 RMY
CLASS 1 RMY	1.00	.90	.90
CLASS 2 RMY	.90	1.00	.90
CLASS 3 RMY	.90	.90	1.00
CLASS 4 RMY	.90	.90	.90
CLASS 5 RMY	.90	.90	.90
CLASS 6 RMY	.90	.90	.90
CLASS 7 RMY	.90	.90	.90
CLASS 8 RMY	.90	.90	.90
CLASS 9 RMY	.90	.90	.90
CLASS 10 RMY	.90	.90	.90
CLASS 11 RMY	.90	.90	.90
CLASS 12 RMY	.90	.90	.90
CLASS 13 RMY	.90	.90	.90
CLASS 14 RMY	.90	.90	.90
CLASS 15 RMY	.90	.90	.90
CLASS 16 RMY	.90	.90	.90
CLASS 17 RMY	.90	.90	.90
CLASS 18 RMY	.90	.90	.90
CLASS 19 RMY	.90	.90	.90
CLASS 20 RMY	.90	.90	.90
CLASS 21 RMY	.90	.90	.90
CLASS 22 RMY	.90	.90	.90
CLASS 23 RMY	.90	.90	.90
CLASS 24 RMY	.90	.90	.90
CLASS 25 RMY	.90	.90	.90
CLASS 26 RMY	.90	.90	.90
CLASS 27 RMY	.90	.90	.90
CLASS 28 RMY	.90	.90	.90
CLASS 29 RMY	.90	.90	.90
CLASS 30 RMY	.90	.90	.90
CLASS 31 RMY	.90	.90	.90
CLASS 32 RMY	.90	.90	.90
CLASS 33 RMY	.90	.90	.90
CLASS 34 RMY	.90	.90	.90
CLASS 35 RMY	.90	.90	.90
CLASS 36 RMY	.90	.90	.90
CLASS 37 RMY	.90	.90	.90
CLASS 38 RMY	.90	.90	.90
CLASS 39 RMY	.90	.90	.90
CLASS 40 RMY	.90	.90	.90
CLASS 41 RMY	.90	.90	.90
CLASS 42 RMY	.90	.90	.90
CLASS 43 RMY	.90	.90	.90
CLASS 44 RMY	.90	.90	.90
CLASS 45 RMY	.90	.90	.90
CLASS 46 RMY	.90	.90	.90
CLASS 47 RMY	.90	.90	.90
CLASS 48 RMY	.90	.90	.90
CLASS 49 RMY	.90	.90	.90
CLASS 50 RMY	.90	.90	.90
CLASS 51 RMY	.90	.90	.90
CLASS 52 RMY	.90	.90	.90
CLASS 53 RMY	.90	.90	.90
CLASS 54 RMY	.90	.90	.90
CLASS 55 RMY	.90	.90	.90
CLASS 56 RMY	.90	.90	.90
CLASS 57 RMY	.90	.90	.90
CLASS 58 RMY	.90	.90	.90
CLASS 59 RMY	.90	.90	.90
CLASS 60 RMY	.90	.90	.90
CLASS 61 RMY	.90	.90	.90
CLASS 62 RMY	.90	.90	.90
CLASS 63 RMY	.90	.90	.90
CLASS 64 RMY	.90	.90	.90
CLASS 65 RMY	.90	.90	.90
CLASS 66 RMY	.90	.90	.90
CLASS 67 RMY	.90	.90	.90
CLASS 68 RMY	.90	.90	.90
CLASS 69 RMY	.90	.90	.90
CLASS 70 RMY	.90	.90	.90
CLASS 71 RMY	.90	.90	.90
CLASS 72 RMY	.90	.90	.90
CLASS 73 RMY	.90	.90	.90
CLASS 74 RMY	.90	.90	.90
CLASS 75 RMY	.90	.90	.90
CLASS 76 RMY	.90	.90	.90
CLASS 77 RMY	.90	.90	.90
CLASS 78 RMY	.90	.90	.90
CLASS 79 RMY	.90	.90	.90
CLASS 80 RMY	.90	.90	.90
CLASS 81 RMY	.90	.90	.90
CLASS 82 RMY	.90	.90	.90
CLASS 83 RMY	.90	.90	.90
CLASS 84 RMY	.90	.90	.90
CLASS 85 RMY	.90	.90	.90
CLASS 86 RMY	.90	.90	.90
CLASS 87 RMY	.90	.90	.90
CLASS 88 RMY	.90	.90	.90
CLASS 89 RMY	.90	.90	.90
CLASS 90 RMY	.90	.90	.90
CLASS 91 RMY	.90	.90	.90
CLASS 92 RMY	.90	.90	.90
CLASS 93 RMY	.90	.90	.90
CLASS 94 RMY	.90	.90	.90
CLASS 95 RMY	.90	.90	.90
CLASS 96 RMY	.90	.90	.90
CLASS 97 RMY	.90	.90	.90
CLASS 98 RMY	.90	.90	.90
CLASS 99 RMY	.90	.90	.90
CLASS 100 RMY	.90	.90	.90

THRESHOLD TO EXIT TAXIWAY VERSUS TIME)

THE ARRIVAL BUREAU OCCUPANCY TIME IN SECONDS BY A/C CLASS DISTANCE IN FEET FROM AIRCRAFT TO GATE						
CLASS 1						
6000.0	45.00	6500.0	48.00	6000.0	62.00	7000.0
7000.0	71.00					
CLASS 2						
4000.0	35.00	5500.0	44.00	4000.0	55.00	5500.0
7000.0	48.00	7400.0	64.00	7000.0	74.00	8000.0
CLASS 3						
7000.0	35.00	8100.0	40.00	4900.0	49.00	5000.0
						53.00

6500.0	69.00	6000.0	63.00	7000.0	54.00	7400.0	60.00	8000.0	72.00
CLASS 4									
2650.0	43.00	3300.0	45.00	5000.0	51.00	6000.0	70.00	6500.0	76.00
7000.0	75.00	7400.0	34.00						

TAXIING SPEEDS IN MPH
5.00 10.00 15.00 20.00 25.00 30.00 35.00
A/C LATENCY DISTRIBUTION IN MINUTES (RANDOM NUMBER VERSUS TIME)
0.00

FIX TRAVEL TIMES		CLASS	FIX TO R/W DIST.	AVERAGE SPEED
FIX	RUNWAY			
1	1	1	34.50	188.20
1	1	2	34.50	180.00
1	2	1	25.50	139.10
1	2	2	25.50	139.10
1	2	3	25.50	160.00
1	2	4	25.50	160.00
1	3	1	18.00	180.00
2	1	1	33.00	198.00
2	1	2	33.00	198.00
2	1	3	33.00	180.00
2	2	1	37.50	204.50
2	2	2	37.50	195.70
2	2	3	37.50	180.00
2	2	4	37.50	180.00
3	1	1	28.50	190.00
3	1	2	28.50	180.00
3	1	3	28.50	180.00
3	2	1	27.00	190.00
3	2	2	27.00	160.00
3	2	3	27.00	180.00
3	2	4	27.00	225.00
4	1	1	30.00	225.00
4	1	2	30.00	180.00
4	1	3	30.00	180.00
4	2	1	31.50	222.40
4	2	2	31.50	222.40
4	2	3	31.50	160.00
4	2	4	31.50	180.00
4	3	1	24.00	160.00
4	3	2	24.00	180.00
4	3	3	24.00	180.00
5	1	1	25.50	180.00
5	2	1	18.00	160.00
5	2	2	18.00	160.00
5	2	3	18.00	160.00
5	3	1	34.50	160.00
5	3	2	21.00	180.00
5	3	3	21.00	180.00
6	1	1	21.00	160.00
6	2	1	37.50	180.00
6	2	2	37.50	180.00
6	2	3	37.50	180.00
6	3	1	18.00	180.00
6	3	2	18.00	180.00
6	3	3	18.00	180.00
7	1	1	18.00	180.00
7	1	2	18.00	180.00
7	1	3	18.00	180.00
7	2	1	28.50	180.00
7	2	2	28.50	180.00
7	2	3	28.50	180.00
8	1	1	28.50	180.00
8	1	2	28.50	180.00
8	1	3	28.50	180.00
8	2	1	28.50	180.00
8	2	2	28.50	180.00
8	2	3	28.50	180.00
8	3	1	18.00	180.00
8	3	2	18.00	180.00
8	3	3	18.00	180.00
8	4	1	28.50	180.00
8	4	2	28.50	180.00
8	4	3	28.50	180.00
8	4	4	28.50	180.00
8	5	1	28.50	180.00
8	5	2	28.50	180.00
8	5	3	28.50	180.00
8	5	4	28.50	180.00
8	5	5	28.50	180.00
8	6	1	28.50	180.00
8	6	2	28.50	180.00
8	6	3	28.50	180.00
8	6	4	28.50	180.00
8	6	5	28.50	180.00
8	6	6	28.50	180.00
8	6	7	28.50	180.00
8	6	8	28.50	180.00
8	6	9	28.50	180.00
8	6	10	28.50	180.00
8	6	11	28.50	180.00
8	6	12	28.50	180.00
8	6	13	28.50	180.00
8	6	14	28.50	180.00
8	6	15	28.50	180.00
8	6	16	28.50	180.00
8	6	17	28.50	180.00
8	6	18	28.50	180.00
8	6	19	28.50	180.00
8	6	20	28.50	180.00
8	6	21	28.50	180.00
8	6	22	28.50	180.00
8	6	23	28.50	180.00
8	6	24	28.50	180.00
8	6	25	28.50	180.00
8	6	26	28.50	180.00
8	6	27	28.50	180.00
8	6	28	28.50	180.00
8	6	29	28.50	180.00
8	6	30	28.50	180.00
8	6	31	28.50	180.00
8	6	32	28.50	180.00
8	6	33	28.50	180.00
8	6	34	28.50	180.00
8	6	35	28.50	180.00
8	6	36	28.50	180.00
8	6	37	28.50	180.00
8	6	38	28.50	180.00
8	6	39	28.50	180.00
8	6	40	28.50	180.00
8	6	41	28.50	180.00
8	6	42	28.50	180.00
8	6	43	28.50	180.00
8	6	44	28.50	180.00
8	6	45	28.50	180.00
8	6	46	28.50	180.00
8	6	47	28.50	180.00
8	6	48	28.50	180.00
8	6	49	28.50	180.00
8	6	50	28.50	180.00
8	6	51	28.50	180.00
8	6	52	28.50	180.00
8	6	53	28.50	180.00
8	6	54	28.50	180.00
8	6	55	28.50	180.00
8	6	56	28.50	180.00
8	6	57	28.50	180.00
8	6	58	28.50	180.00
8	6	59	28.50	180.00
8	6	60	28.50	180.00
8	6	61	28.50	180.00
8	6	62	28.50	180.00
8	6	63	28.50	180.00
8	6	64	28.50	180.00
8	6	65	28.50	180.00
8	6	66	28.50	180.00
8	6	67	28.50	180.00
8	6	68	28.50	180.00
8	6	69	28.50	180.00
8	6	70	28.50	180.00
8	6	71	28.50	180.00
8	6	72	28.50	180.00
8	6	73	28.50	180.00
8	6	74	28.50	180.00
8	6	75	28.50	180.00
8	6	76	28.50	180.00
8	6	77	28.50	180.00
8	6	78	28.50	180.00
8	6	79	28.50	180.00
8	6	80	28.50	180.00
8	6	81	28.50	180.00
8	6	82	28.50	180.00
8	6	83	28.50	180.00
8	6	84	28.50	180.00
8	6	85	28.50	180.00
8	6	86	28.50	180.00
8	6	87	28.50	180.00
8	6	88	28.50	180.00
8	6	89	28.50	180.00
8	6	90	28.50	180.00
8	6	91	28.50	180.00
8	6	92	28.50	180.00
8	6	93	28.50	180.00
8	6	94	28.50	180.00
8	6	95	28.50	180.00
8	6	96	28.50	180.00
8	6	97	28.50	180.00
8	6	98	28.50	180.00
8	6	99	28.50	180.00
8	6	100	28.50	180.00

10	2	4	.01	180.00
10	3	1	.01	180.00
10	3	2	.01	180.00
10	3	3	.01	180.00
10	3	4	.01	180.00

LEAD A/C PUNWAY 3	LEAD A/C FIX 0	TRAIL A/C PUNWAY 1	TRAIL A/C FIX 0
120 SEPARATION VALUES IN 4 SETS OF 30 A/A (IN MILES), U/A (IN MILES), D/D (MINUTES) AND A/D (MINUTES)			
3.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00
0.03	0.00	0.00	0.00
0.09	0.00	0.00	0.00
1.69	1.57	1.44	1.20
1.63	0.00	0.00	0.00
1.47	0.00	0.00	0.00
1.47	0.00	0.00	0.00
1.50	2.00	2.03	0.08
1.00	1.00	0.93	0.08
0.3	0.75	0.54	0.08
0.3	0.75	0.04	0.08
0.96	0.96	0.96	0.13
0.67	0.00	0.00	0.00
0.90	0.00	0.00	0.00
1.03	0.00	0.00	0.00

[illegible]

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[illegible]

A/C SEPARATIONS
 128 SEPARATION VALUES IN 4 SETS OF 32, ARRIVAL / DEPARTURE / DEPARTURE AND ARRIVAL / DEPARTURE
 EACH SET OF 32 IS COMPOSED OF 16 PAIRS OF MEAN AND STANDARD DEVIATION
 THE 16 SETS ARE POSSIBLE WAYS OF A/C CLASS X FOLLOWED BY A/C CLASS Y
 THERE ARE 4 A/C CLASSES -- 1 J D CLASS
 2 J C CLASS
 3 J B CLASS
 4 J A CLASS

THE ORDER OF SETS OF (X,Y) IS 1

(1,1), (1,2), (1,3), (1,4), (2,1), (2,2), (2,3), (2,4)
 (3,1), (3,2), (3,3), (3,4), (4,1), (4,2), (4,3), (4,4)

LEAD A/C RUNWAY 0 LEAD A/C FIX 0 TRAIL A/C RUNWAY 0 TRAIL A/C FIX 0
 128 SEPARATION VALUES IN 4 SETS OF 32, A/A (IN MILES), D/A (IN MILES), D/D (MINUTES) AND A/D (MINUTES)

4.00	.43	3.93	.40	4.86	.37	4.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.22	.14	2.22	.13	2.22	.12	2.22	.11
2.22	.14	2.22	.13	2.22	.12	2.22	.11
1.50	.08	2.00	.04	2.00	.08	2.00	.08
1.00	.03	1.00	.08	.83	.08	.83	.08
.83	.04	.75	.08	.58	.09	.58	.08
.83	.04	.75	.08	.58	.08	.58	.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C-19

LEAD A/C RUNWAY 1 LEAD A/C FIX 0 TRAIL A/C RUNWAY 3 TRAIL A/C FIX 0
 128 SEPARATION VALUES IN 4 SETS OF 32, A/A (IN MILES), D/A (IN MILES), D/D (MINUTES) AND A/D (MINUTES)

4.00	.43	3.93	.40	4.86	.37	4.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.22	.14	2.22	.13	2.22	.12	2.22	.11
2.22	.14	2.22	.13	2.22	.12	2.22	.11
1.50	.08	2.00	.08	2.00	.08	2.00	.08
1.00	.03	1.00	.08	.83	.08	.83	.08
.83	.04	.75	.08	.58	.08	.58	.08
.83	.04	.75	.08	.58	.08	.58	.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 4

AIRCRAFT SEPARATIONS
 1983 IFRL, EASTERLY CONFIGURATION

LEAD A/C RUNWAY 3	LEAD A/C FIX 0	TRAIL A/C RUNWAY 1	TRAIL A/C FIX 0
128 SEPARATION VALUES IN 4 SETS OF 32, A/A (N-MILES), D/A (N-MILES), D/D (MINUTES) AND A/D (MINUTES)			
4.00	.43	3.93	.40
4.00	.43	3.93	.40
4.00	.43	3.93	.40
4.00	.43	3.93	.40
2.24	.14	2.22	.11
2.24	.14	2.22	.11
2.22	.14	2.22	.11
2.22	.14	2.22	.11
1.50	.04	2.00	.04
1.00	.03	1.00	.03
.83	.08	.75	.08
.83	.08	.75	.08
.90	.13	.96	.13
.97	.13	.97	.13
.90	.13	.90	.13
1.03	.13	1.03	.13

[illegible][illegible]

TABLE 4
(continued)

A/C SEPARATIONS

128 SEPARATION VALUES IN 4 SETS OF 32, ARRIVAL / ARRIVAL, DEPARTURE / DEPARTURE AND ARRIVAL / DEPARTURE

EACH SET OF 32 IS COMPOSED OF 16 PAIRS OF MEAN AND STANDARD DEVIATION

THE 16 SETS ARE POSSIBLE WAYS OF A/C CLASS X FOLLOWED BY A/C CLASS Y

THERE ARE 4 A/C CLASSES -- 1 D CLASS

2 I C CLASS

3 I B CLASS

4 I A CLASS

THE ORDER OF SETS OF (X,Y) IS 1

(1,1), (1,2), (1,3), (1,4), (2,1), (2,2), (2,3), (2,4)

(3,1), (3,2), (3,3), (3,4), (4,1), (4,2), (4,3), (4,4)

LEAD A/C RUNWAY 0 LEAD A/C FIX 0 TRAIL A/C RUNWAY 0 TRAIL A/C FIX 0

128 SEPARATION VALUES IN 4 SETS OF 32, A/A (N.MILES), D/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)

4.00 .43 3.93 .40 3.86 .37 3.72 .31

4.00 .43 3.93 .40 3.86 .37 3.72 .31

4.00 .43 3.93 .40 3.86 .37 3.72 .31

4.00 .43 3.93 .40 3.86 .37 3.72 .31

2.24 .14 2.22 .13 2.22 .12 2.22 .11

2.24 .14 2.22 .13 2.22 .12 2.22 .11

2.22 .14 2.22 .13 2.22 .12 2.22 .11

2.22 .14 2.22 .13 2.22 .12 2.22 .11

1.50 .08 2.00 .08 2.00 .08 2.00 .08

1.00 .08 1.00 .08 .83 .08 .83 .08

.83 .08 .75 .08 .58 .08 .58 .08

.83 .08 .75 .08 .58 .08 .58 .08

0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

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0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

TABLE 5

AIRCRAFT SEPARATIONS
1983 IFR2, EASTERLY CONFIGURATION

LEAD A/C RUN-AY	3	LEAD A/C FIX 0	TRAIL A/C RUNWAY 1	TRAIL A/C FIX 0
120 SEPARATION VALUES IN 4 SETS OF 32, A/A (N-MILES), D/A (N-MILES), D/D (MINUTES) AND A/D (MINUTES)				
4.00	.43	3.93	.40	4.86
4.00	.43	3.93	.40	3.86
4.00	.43	3.93	.40	3.72
4.00	.43	3.93	.40	3.72
4.00	.43	3.93	.40	3.86
4.00	.43	3.93	.40	3.86
2.24	.14	2.22	.13	2.22
2.24	.14	2.22	.13	2.22
2.24	.14	2.22	.13	2.22
2.22	.14	2.22	.13	2.22
2.22	.14	2.22	.13	2.22
1.50	.09	2.00	.08	2.00
1.00	.08	1.00	.08	.83
.83	.04	.75	.08	.58
.93	.09	.75	.08	.58
1.04	.13	1.04	.13	1.04
.96	.13	.96	.13	.96
.95	.13	.98	.13	.98
1.12	.13	1.12	.13	1.12

[illegible][illegible]

Note that the arrival runway occupancy times for IFR2 conditions are set 5 seconds greater than for IFR1.
The adjusted IFR2 runway clearance times and occupancy times are as follows:

RWY XING LINKS														
RWY XING LINKS MIA CONFIGURATION A IFR2 1983														
2	549	32	43	38	35	20	22	22	25	30	30	30	30	30
2	535	52	56	60	71	41	44	46	54	30	30	30	30	30
2	536	52	56	60	71	41	44	46	54	30	30	30	30	30
2	532	58	58	74	85	63	70	78	93	30	30	30	30	30
3	544	38	41	47	49	30	32	33	37	30	30	30	30	30
3	545	38	41	47	49	30	32	33	37	30	30	30	30	30
3	551	51	45	60	69	40	43	46	53	30	30	30	30	30
3	340	55	54	64	76	43	47	50	58	30	30	30	30	30
3	500	60	64	70	78	48	52	56	66	30	30	30	30	30
3	347	60	64	70	78	48	52	56	66	30	30	30	30	30
3	346	60	64	70	78	48	52	56	66	30	30	30	30	30
3	131	65	74	76	78	52	57	62	73	30	30	30	30	30
3	558	65	74	76	78	52	57	62	73	30	30	30	30	30
3	557	65	74	76	78	52	57	62	73	30	30	30	30	30
3	152	65	74	76	78	52	57	62	73	30	30	30	30	30
-3	153	65	74	76	78	52	57	62	73	30	30	30	30	30
RWY ARRIVAL OCCUPANCY TIMES CONFIGURATION A IFR2 1983														
1	6000	50	6560	53	6660	67	7060	53	7400	60				
8080	76													
2	4820	40	5500	49	6000	50	6560	59	6660	64				
7060	53	7400	69	7800	69	8080	8080	72						
3	10													
2640	40	3300	45	4920	54	5060	56	6000	6000	58				
6560	65	6660	68	7060	69	7400	7400	71	8080	77				
-4	7													
2640	48	3300	50	5060	66	6000	6000	75	6560	81				
7060	80	7400	89											

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

Part II

CONFIGURATION B MODEL INPUT DATA
(1983 TIME FRAME)

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

MIAMI INTER. AIRPORT

NUMBER OF PANTS NUMBED 55111

20

57735 2300000 KILOVATTS

Year	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100																																												
Population	1,000,000	1,050,000	1,100,000	1,150,000	1,200,000	1,250,000	1,300,000	1,350,000	1,400,000	1,450,000	1,500,000	1,550,000	1,600,000	1,650,000	1,700,000	1,750,000	1,800,000	1,850,000	1,900,000	1,950,000	2,000,000	2,050,000	2,100,000	2,150,000	2,200,000	2,250,000	2,300,000	2,350,000	2,400,000	2,450,000	2,500,000	2,550,000	2,600,000	2,650,000	2,700,000	2,750,000	2,800,000	2,850,000	2,900,000	2,950,000	3,000,000	3,050,000	3,100,000	3,150,000	3,200,000	3,250,000	3,300,000	3,350,000	3,400,000	3,450,000	3,500,000	3,550,000	3,600,000	3,650,000	3,700,000	3,750,000	3,800,000	3,850,000	3,900,000	3,950,000	4,000,000	4,050,000	4,100,000	4,150,000	4,200,000	4,250,000	4,300,000	4,350,000	4,400,000	4,450,000	4,500,000	4,550,000	4,600,000	4,650,000	4,700,000	4,750,000	4,800,000	4,850,000	4,900,000	4,950,000	5,000,000	5,050,000	5,100,000	5,150,000	5,200,000	5,250,000	5,300,000	5,350,000	5,400,000	5,450,000	5,500,000	5,550,000	5,600,000	5,650,000	5,700,000	5,750,000	5,800,000	5,850,000	5,900,000	5,950,000	6,000,000	6,050,000	6,100,000	6,150,000	6,200,000	6,250,000	6,300,000	6,350,000	6,400,000	6,450,000	6,500,000	6,550,000	6,600,000	6,650,000	6,700,000	6,750,000	6,800,000	6,850,000	6,900,000	6,950,000	7,000,000	7,050,000	7,100,000	7,150,000	7,200,000	7,250,000	7,300,000	7,350,000	7,400,000	7,450,000	7,500,000	7,550,000	7,600,000	7,650,000	7,700,000	7,750,000	7,800,000	7,850,000	7,900,000	7,950,000	8,000,000	8,050,000	8,100,000	8,150,000	8,200,000	8,250,000	8,300,000	8,350,000	8,400,000	8,450,000	8,500,000	8,550,000	8,600,000	8,650,000	8,700,000	8,750,000	8,800,000	8,850,000	8,900,000	8,950,000	9,000,000	9,050,000	9,100,000	9,150,000	9,200,000	9,250,000	9,300,000	9,350,000	9,400,000	9,450,000	9,500,000	9,550,000	9,600,000	9,650,000	9,700,000	9,750,000	9,800,000	9,850,000	9,900,000	9,950,000

START TIME AND FINISH TIME

02 0 11

PRINT OPTIONS

[illegible]

NUMBER OF AIRLINES

27

AIRLINE CONES

I A	E A	D G	F F	G C	H H	C I	C Z	F I	F Z
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

NUMBER OF RUNWAYS

3

RUNWAY NAMES

270	270	30
-----	-----	----

RUNWAY AND LINK NUMBERS

25 401

RUNWAY CROSSING LINES--CLEARANCE TIMES FOR A/C CROSSING ACTIVE RUNWAY

ANG LINK RUNWAY ARRIVAL ON R/W DEPARTURE UN R/W ARRIVAL ON FINAL

242	1	0.	0.	0.	0.	0.	0.	0.	0.	35.	36.	37.	38.
-----	---	----	----	----	----	----	----	----	----	-----	-----	-----	-----

XNG LINK RUNWAY ARRIVAL IN R/W DEPARTURE ON R/W ARRIVAL ON FL

[illegible]

XING LINK RUNWAY ARRIVAL ON R/W DEPARTURE ON R/W ARRIVAL ON FI

535 1 46. 51. 54. 71. 43. 47. 49. 58. 30. 30. 30.

XNG LINK RUNWAY ARRIVAL ON R/W DEPARTURE ON R/A ARRIVAL ON F

537	1	46.	21.	22.	71.	43.	47.	49.	28.	30.	30.	30.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

KING LINK RUNWAY ARRIVAL OR R/W DEPARTURE ON R/W ARRIVAL ON FL

544	1	74.	62.	64.	78.	54.	65.	72.	85.	90.	30.	50.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

ANG LINK RUNWAY ARRIVAL ON R/W DEPARTURE ON R/W ARRIVAL ON FL

549	1	74.	62.	64.	78.	59.	65.	72.	85.	30.	30.	30.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

XMC LINKS PUNJAY ARRIVAL IN R/H DEPARTURE ON R/H ARRIVAL ON FRI

[illegible]

XING LING PUNAY ARRIVAL IN S/W DEPARTURE ON R/W ARRIVAL ON FRI

131	3	22.	34.	37.	26.	28.	28.	30.	30.	30.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----

ARC LINK RUNWAY ARRIVAL ON 7/14/74 8/14/74 ARRIVAL ON 7/14/74

3	30.	44.	46.	51.	54.	54.	50.	30.	30.
346,	3	30.	44.	46.	51.	54.	54.	50.	30.

ANG LINA SUN-JAY ARRIVAL IN S/W DEFERENTIAL UN K/A ARRIVAL ON FRI

337	46.	44.	51.	37.	37.	41.	47.	50.	50.	50.
337	46.	44.	51.	37.	37.	41.	47.	50.	50.	50.

EXNG LNK RUNDAY ARRIVAL (IN I/W DEPARTURE IN R/W ARRIVAL ON FID

544	3	65.	64.	63.	14.	49.	54.	58.	61.	30.	30.	30.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

INX LINK RUN+AY ARRIVAL ON A/W DEPARTURE ON P/H ARRIVAL ON P/H

545	3	65.	64.	63.	14.	41.	24.	58.	64.	50.	50.	50.
-----	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

100

RUNWAY CROSSING LINKS--OCCUPANCY TIR. 5 (BLOS)

CLASS	TIME
1	20.00
2	20.00
3	20.00
4	20.00

RUNWAY CROSSING TIME AND INTERARRIVAL GAP

LINK	DELAY	MEAN	STD DEV
249	1.50	1.00	.50
250	1.50	1.00	.50
535	1.50	1.00	.50
537	1.50	1.00	.50
543	1.50	1.00	.50
549	1.50	1.00	.50
182	1.50	1.00	.50
131	1.50	1.00	.50
346	1.50	1.00	.50
339	1.50	1.00	.50
544	1.50	1.00	.50
545	1.50	1.00	.50

NUMBER OF EXITS
11

DISTANCE IN FEET FROM THRESHOLD TO THE EXIT TAXIWAY (EXIT LINK NO. VERSUS DISTANCE)

500	2990.0	560	3300.0	339	3990.0	568	4340.0	550	4620.0
563	5040.0	536	5460.0	564	6680.0	544	6780.0	540	7780.0
546	8120.0								

NUMBER OF HOLDING AREAS
1

HOLDING AREA NUMBERS

99

NUMBER OF G/A PAVING AREAS
6

G/A PAVING AREA NUMBERS

9 16 17 18 19 20

AIRLINE GATES

1A	2A	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A	19A	20A	21A	22A	23A
EA	1	2	3																			
DD	3	4																				
FF	6	7	21																			
GG	5	6	7	8																		
MH	7	3	9	10																		
CI	3	4	9	17																		
C2	6	8	9	17																		
F1	17	18	19	20																		
F2	14	15	16	18																		
F3	21	22	23																			
F4	17	18	19	20	21	22	23															
IT	24	2																				
UT	2	24																				
GT	12	7																				
PT	7	12																				
GA	0																					

TRUNCATION LIMITS

UPPER LIMIT = 3.00
LOWER LIMIT = 3.00

DEPARTURE QUEUE LENGTH AND INTERARRIVAL GAP
QUEUE = 4 MEAN = 2.00 STD DEV = 0.00

LENGTHS OF COMMON APPROACH PATHS FROM QUIET MARKER TO THRESHOLD IN NAUTICAL MILES (RUNWAY NO., A/C CLASS, LENGTH)

1	1	7.00
1	2	7.00
1	3	3.00
1	4	3.00
2	1	7.00
2	2	7.00
2	3	3.00
2	4	3.00
3	1	7.00
3	2	7.00
3	3	3.00
3	4	3.00

LINKS 2	156	117	
LINKS 2	117	356	
LINKS 2	511	392	
LINKS 2	392	511	
LINKS 2	535		
LINKS 2	257	256	
LINKS 3	366	325	326
LINKS 3	388	327	391
LINKS 3	389	313	314
LINKS 3	326	325	386
LINKS 3	391	327	388
LINKS 3	372	525	377
LINKS 3	250	249	248
LINKS 3	314	313	389
LINKS 3	248	249	250
LINKS 3	377	525	372
LINKS 4	357	556	555
LINKS 4	359	555	556
LINKS 4	360	176	175
LINKS 5	544	364	543
LINKS 5	258	259	260
LINKS 5	354	179	180
LINKS 6	366	542	543
LINKS 6	544	364	161
LINKS 6	545	544	364
LINKS 6	257	258	259
LINKS 7	384	267	268
LINKS 7	385	271	270
LINKS 7	256	257	258
LINKS 7	158	159	160

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VECTING DELAY INPUTS
 FIX RELAY EVALUATION LEVEL HOLDING PCT. MAXIMUM VECTING DELAY MINIMUM HOLDING DELAY

TAKE-OFF QUEUE SWITCH FOR RUNWAY 1 = 99 ALTERNATE RUNWAYS ARE 0 0 0 0 0

TAKE-OFF QUEUE SWITCH FOR RUNWAY 2 = 99 ALTERNATE RUNWAYS ARE 0 0 0 0 0

TAKE-OFF QUEUE SWITCH FOR RUNWAY 3 = 99 ALTERNATE RUNWAYS ARE 0 0 0 0 0

GATE HOLD LIMIT = 6 HOLD TIME = .50

GATE HOLD LIMIT = 6 HOLD TIME = .50

GATE HOLD LIMIT = 6 HOLD TIME = .50

AIRSPACE DELAYS

FIX OCCURRENCE PERCENTAGE HOLD MEAN HOLD SIGMA

A/C DEPARTURE RUNWAY OCCUPANCY TIME IN SECONDS (A/C CLASS, MEAN, AND STD. DEV.)

1	39.00	4.00
2	39.00	4.00
3	34.00	4.00
4	34.00	4.00

TOUCH-AND-GO RUNWAY OCCUPANCY TIME IN SECONDS (A/C CLASS, MEAN, AND STD. DEV.)

1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00

GATE SERVICE TIME DISTRIBUTION (PROBABILITY VS TIME)

CLASS 1									
.001	31.00	.023	34.00	.007	35.50	.159	37.00	.308	38.50
.401	39.25	.452	37.64	.500	40.00	.548	40.36	.599	40.75
.692	41.50	.841	43.00	.933	44.50	.977	46.00	1.000	47.00
CLASS 2									
.001	21.00	.023	24.00	.067	25.50	.159	27.00	.308	28.50
.401	29.25	.452	29.64	.500	30.00	.548	30.36	.599	30.75
.692	31.50	.841	33.00	.933	34.50	.977	36.00	1.000	39.00
CLASS 3									
.001	14.00	.023	16.00	.067	17.00	.159	18.00	.308	19.00
.401	19.50	.452	19.76	.500	20.00	.548	20.24	.599	20.50
.692	21.00	.841	22.00	.933	23.00	.977	24.00	1.000	26.00
CLASS 4									
.001	14.00	.023	16.00	.067	17.00	.159	18.00	.308	19.00
.401	19.50	.452	19.76	.500	20.00	.548	20.24	.599	20.50
.692	21.00	.841	22.00	.933	23.00	.977	24.00	1.000	26.00

A/C APPROACH SPEED IN KNOTS (A/C CLASS, MEAN, STD. DEV.)

1	140.00	5.00
2	130.00	5.00
3	120.00	5.00
4	100.00	5.00

RUNWAY EXIT SELECTION--USAGE PERCENTAGE BY EACH A/C CLASS AND BY EACH RUNWAY (EXIT LINK NO. VERSUS PROBABILITY)

CLASS 1 PMY 1									
540.	.90	536.	1.00						
CLASS 2 PMY 1									
536.	.90	540.	1.00						
CLASS 3 PMY 1									
569.	.63	540.	.87	536.	1.00				
CLASS 4 PMY 1									
568.	.50	540.	1.00						
CLASS 1 PMY 2									
564.	.90	563.	1.00						
CLASS 2 PMY 2									
563.	.90	564.	1.00						
CLASS 3 PMY 2									
560.	.60	563.	1.00						
CLASS 4 PMY 2									
560.	.60	563.	1.00						
CLASS 1 PMY 3									
544.	.87	546.	1.00						
CLASS 2 PMY 3									
544.	.83	550.	.92	500.	.97	339.	1.00		
CLASS 3 PMY 3									
546.	.43	509.	.70	544.	.90	550.	1.00		
CLASS 4 PMY 3									
546.	.40	500.	.70	544.	.90	550.	1.00		

THE SURVIVAL RUNWAY OCCUPANCY TIME IN SECONDS BY A/C CLASS (DISTANCE IN FEET FROM THRESHOLD TO EXIT TAXIWAY VERSUS TIME)

CLASS 1									
5040.0	52.00	5400.0	41.00	6680.0	62.00	6760.0	58.00	7780.0	61.00
9120.0	70.00								
CLASS 2									
2890.0	37.00	3920.0	43.00	4620.0	47.00	5040.0	44.00	5400.0	47.00
CLASS 3									
6050.0	54.00	6780.0	53.00	7780.0	57.00				
CLASS 4									
2890.0	39.00	3300.0	40.00	4340.0	47.00	4620.0	50.00	5040.0	51.00
5400.0	54.00	6780.0	64.00	7700.0	69.00	8120.0	73.00		

TAXIING SPEEDS IN MPH

5.00	10.00	15.00	20.00	25.00	30.00	35.00
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A/C LATENCY DISTRIBUTION IN MINUTES (RANDOM NUMBER VERSUS TIME)

0.00						
------	--	--	--	--	--	--

FIX TRAVEL TIMES		CLASS	FIA TO N/M DIST.	AVERAGE SPEED
FIX	RUNWAY			
1	1	1	28.50	180.00
1	1	2	28.50	180.00
1	1	3	28.50	180.00
1	2	2	28.50	180.00
2	1	2	25.50	186.00
2	2	1	28.50	180.00
2	2	2	28.50	180.00
2	3	1	27.00	202.50
2	3	2	27.00	202.50
2	3	3	27.00	180.00
3	1	1	28.50	180.00
3	2	2	42.00	180.00
3	3	1	31.50	198.00
3	3	2	31.50	180.00
4	1	1	30.00	180.00
4	1	2	30.00	180.00
4	2	1	31.50	180.00
4	3	1	28.50	180.00
4	3	2	28.50	180.00

A/C SEPARATIONS

124 SEPARATION VALUES IN 4 SETS OF 32, ARRIVAL / DEPARTURE / ARRIVAL, DEPARTURE / DEPARTURE AND ARRIVAL / DEPARTURE

EACH SET OF 32 IS COMPOSED OF 16 PAIRS OF MEAN AND STANDARD DEVIATION

THE 16 SETS ARE POSSIBLE MAY, IF A/C CLASS A FOLLOWED BY A/C CLASS Y

THERE ARE 4 A/C CLASSES -- 1 1 D CLASS

2 1 C CLASS

3 1 B CLASS

4 1 A CLASS

THE ORDER OF SETS OF (4,4) IS 1

(1,1), (1,2), (1,3), (1,4), (2,1), (2,2), (2,3), (2,4)

(3,1), (3,2), (3,3), (3,4), (4,1), (4,2), (4,3), (4,4)

LEAD A/C RUNWAY 0 LEAD A/C FIX 0 TRAIL A/C RUNWAY 0 TRAIL A/C FIX 0
128 SEPARATION VALUES IN 4 SETS OF 32, A/A (N.MILES), D/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)

3.70	.43	3.93	.40	4.86	.37	4.72	.31
2.90	.43	2.43	.40	3.56	.37	3.42	.31
2.90	.43	2.83	.40	2.76	.37	2.62	.31
2.90	.43	2.83	.40	2.76	.37	2.62	.31
1.69	.14	1.57	.13	1.44	.12	1.20	.11
1.69	.14	1.57	.13	1.44	.12	1.20	.11
1.47	.14	1.37	.13	1.25	.12	1.04	.11
1.47	.14	1.37	.13	1.25	.12	1.04	.11
1.50	.04	2.00	.08	2.00	.08	2.00	.08
1.00	.03	1.00	.08	.93	.09	.83	.08
.83	.08	.75	.05	.58	.05	.58	.08
.83	.08	.75	.05	.58	.05	.58	.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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LEAD A/C RUNWAY 1 LEAD A/C FIX 0 TRAIL A/C RUNWAY 3 TRAIL A/C FIX 0
128 SEPARATION VALUES IN 4 SETS OF 32, A/A (N.MILES), D/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.50	.04	2.00	.04	2.00	.04	2.00	.08
1.00	.04	1.00	.04	.83	.08	.83	.08
.83	.04	.75	.04	.58	.08	.58	.08
.83	.04	.75	.04	.58	.08	.58	.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 6

AIRCRAFT SEPARATIONS
1983 VFR1, WESTERLY CONFIGURATION

[illegible]

LEAD A/C RUNWAY	2	LEAD A/C FIX	0	TRAIL A/C RUNWAY	3	TRAIL A/C FIX	0
128 SEPARATION VALUES IN 4 SECS OF	32.5	A/A (N.MILES)	0.7A (N.MILES)	0.7D (MINUTES)	AND	A/D (MINUTES)	
3.70	.43	3.93	.40	4.06	.37	4.72	.31
2.90	.43	2.83	.40	3.50	.37	3.42	.31
2.90	.43	.3	.40	2.76	.37	2.62	.31
2.90	.43		.40	2.76	.37	2.62	.31
.91	.14		.13	.78	.12	.65	.11
.91	.14		.13	.73	.12	.65	.11
.79	.14		.13	.68	.12	.56	.11
.79	.14		.13	.63	.12	.56	.11
.50	.09		.08	.60	.09	.66	.08
.33	.08	.33	.03	.27	.08	.27	.08
.27	.09	.25	.08	.19	.08	.14	.08
.27	.03	.25	.08	.19	.08	.19	.08
.32	.13	.32	.13	.32	.13	.32	.13
.29	.13	.29	.13	.29	.13	.29	.13
.30	.13	.30	.13	.30	.13	.30	.13
.34	.13	.34	.13	.34	.13	.34	.13

[illegible]

[illegible]

LEAD A/C RUNWAY 2		LEAD A/C FIX 0		TRAIL A/C RUNWAY 3		TRAIL A/C FIX 0	
128 SEPARATION VALUES IN 4 SETS OF 32, A/A (MILES), D/D (MINUTES), D/D (MINUTES) AND A/D (MINUTES)							
4.00	.43	3.93	.40	3.86	.37	3.72	.31
4.00	.41	3.93	.40	3.86	.37	3.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
4.00	.43	3.93	.40	3.86	.37	3.72	.31
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.22	.14	2.22	.13	2.22	.12	2.22	.11
2.22	.14	2.22	.13	2.22	.12	2.22	.11
5.0	.08	.66	.08	.66	.08	.08	.08
.33	.09	.33	.06	.27	.03	.27	.08
.27	.09	.25	.09	.19	.09	.19	.06
.27	.08	.25	.08	.19	.09	.19	.06
.32	.13	.32	.13	.32	.13	.32	.13
.29	.13	.29	.13	.29	.13	.29	.13
.30	.13	.30	.13	.30	.13	.30	.13
.34	.13	.34	.13	.34	.13	.34	.13

LEAD A/C RUNWAY 5		LEAD A/C FIX 0		TRAIL A/C RUNWAY 2		TRAIL A/C FIX 0	
120 SEPARATION VALUES IN 4 SETS OF 32, A/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)				120 SEPARATION VALUES IN 4 SETS OF 32, A/A (N.MILES), D/D (MINUTES) AND A/D (MINUTES)			
4.00	.41	3.93	.40	3.86	.37	4.72	.31
4.00	.41	3.93	.40	3.86	.37	3.72	.31
4.00	.41	3.93	.40	3.86	.37	3.72	.31
4.00	.41	3.93	.40	3.86	.37	3.72	.31
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.24	.14	2.22	.13	2.22	.12	2.22	.11
2.24	.14	2.22	.13	2.22	.12	2.22	.11
5.0	.08	.66	.08	.66	.08	.66	.08
.33	.04	.33	.06	.27	.08	.27	.06
.27	.03	.25	.03	.19	.03	.19	.03
.27	.08	.25	.06	.19	.03	.19	.08
.32	.13	.32	.13	.32	.13	.32	.13
.29	.13	.29	.13	.29	.13	.29	.13
.30	.13	.30	.13	.30	.13	.30	.13
.34	.13	.34	.13	.34	.13	.34	.13

TABLE 7
(continued)

Attachment D

EXPERIMENTAL RESULTS
MIAMI STAGE 1 DELAY EXPERIMENTS

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

This section presents the results of all Miami Stage 1 experiments that were not previously included in Miami Data Package No. 5. These results include new experiment Nos. 40, 11A, 35M1, 35M2 and 21M, as well as a re-run of Experiment No. 6 for which preliminary results were shown in Data Package No. 5.

Experiment No. 40 was added at the request of the Delay Studies Task Force. Experiment No. 11A (Reliever upgrading without airfield physical improvements) was added to contrast against Experiment No. 11 (Airfield physical improvements without Reliever upgrading), once the high significance of Reliever upgrading was observed. Experiments 35M1 and 21M were added to demonstrate the effect of the displaced landing threshold location on runway 9R, which was found to be very significant in the 1983 IFR situation. Experiment 35M2 was added to examine an alternate solution to the displaced landing threshold location problem, by showing the effect of increasing the inter-arrival gap to allow departures to be released.

The results are arranged in sets to illustrate various comparisons requested by Task Force members. VFR and IFR weather conditions have been separated along with each configuration:

Set 1: VFR EAST- Exp. Nos. 11, 11A and 14.

Set 2: IFR EAST- Exp. Nos. 9, 35, 35M1, 35M2, 6, 10, 21 and 21M.

Set 3: VFR WEST- Exp. Nos. 40, 36, 37, 17, 12 and 12A.

Set 4: IFR WEST- Exp. Nos. 15 and 20.

Each experiment's summary contains a description of the objective, the runway configuration, the related comparison experiments and a table of results. Plots are also included which illustrate key comparisons between experiments.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 8

SET 1 DEMAND
VFR, EASTERLY FLOW

EXPERIMENT NUMBER		RUNWAY 9R	RUNWAY 9L	RUNWAY 12	TOTAL
11 (7)	ARRIVALS	196	194	5	395
	DEPARTURES	130	200	40	370
	TOTAL	326	394	45	765
14	ARRIVALS	188	161	5	354
	DEPARTURES	131	161	37	329
	TOTAL	319	322	42	683
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				

EXPERIMENT NO. 11

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under VFR1 conditions, assuming the improved (1983) ATC system scenario and all Miami near-term improvements except for Reliever Airport upgrading:

Arrival Runways

9L,9R,12

Departure Runways

9L,9R,12

Related Comparison Experiments:

Prior experiment 7 (Data Package No. 5) serves as the 1983 demand level baseline for comparison to this experiment. Experiment 14 assesses the expected delays after reducing the G.A. traffic of this study case by 50-percent.

VFR1- Ceiling above 1500 ft. and visibility over 5 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 9

EXPERIMENT 11 RESULTS

MIAMI INTER. AIRPORT EXPER.-11 ROUTES-1983 CONFIG-A SEPAR-83VFR1 DEMAND-83

AVERAGE FLOW RATES

TIME	ARRIVALS				DEPARTURES				DIF	AVERAGE TRAVEL TIMES TO			
	RWY 9R	RWY 9L	RWY 12	RWY 12	RWY 9R	RWY 9L	RWY 12	RWY 12		FIX TO THRESH	THRESH TO GATE	GATE TO ROLL	ROLL
1100-1200	24.4	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.89	2.69	5.06	5.06
1200-1300	32.6	29.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	16.23	2.79	15.07	15.07
1300-1400	20.5	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.64	3.06	18.61	18.61
1400-1500	23.6	25.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	14.97	2.93	19.34	19.34
1500-1600	31.8	26.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	12.38	2.79	10.69	10.69
1600-1700	26.1	23.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	14.22	2.81	12.38	12.38
1700-1800	21.0	21.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.28	2.98	11.30	11.30
1800-1900	16.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.10	2.60	10.07	10.07
1900-2000	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.95	3.20	6.35	6.35
AVERAGE DELAYS										GRAND TOTAL			
										ARR	DEL	DEP	DEL

AVERAGE DELAYS

AVERAGE DELAYS

TIME	ARRIVALS				DEPARTURES				DIF	AVERAGE TRAVEL TIMES TO			
	RWY 9R	RWY 9L	RWY 12	RWY 12	RWY 9R	RWY 9L	RWY 12	RWY 12		FIX TO THRESH	THRESH TO GATE	GATE TO ROLL	ROLL
1100-1200	3.3	.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.89	2.69	5.06	5.06
1200-1300	9.1	4.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	16.23	2.79	15.07	15.07
1300-1400	1.1	17.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.64	3.06	18.61	18.61
1400-1500	1.4	8.9	.7	0.0	0.0	0.0	0.0	0.0	0.0	14.97	2.93	19.34	19.34
1500-1600	2.5	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.38	2.79	10.69	10.69
1600-1700	5.7	4.0	.1	0.0	0.0	0.0	0.0	0.0	0.0	14.22	2.81	12.38	12.38
1700-1800	3.0	.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.28	2.98	11.30	11.30
1800-1900	.3	.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.10	2.60	10.07	10.07
1900-2000	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.95	3.20	6.35	6.35
AVERAGE DELAYS										GRAND TOTAL			
										ARR	DEL	DEP	DEL

EXPERIMENT 11A RESULTS

AVERAGE FLOW RATES

[illegible]

VFRI East Comparison:
All Improvements but Reliever Airport Upgrading,
with 1983 Demand
versus
No Improvements, with 1983 Demand

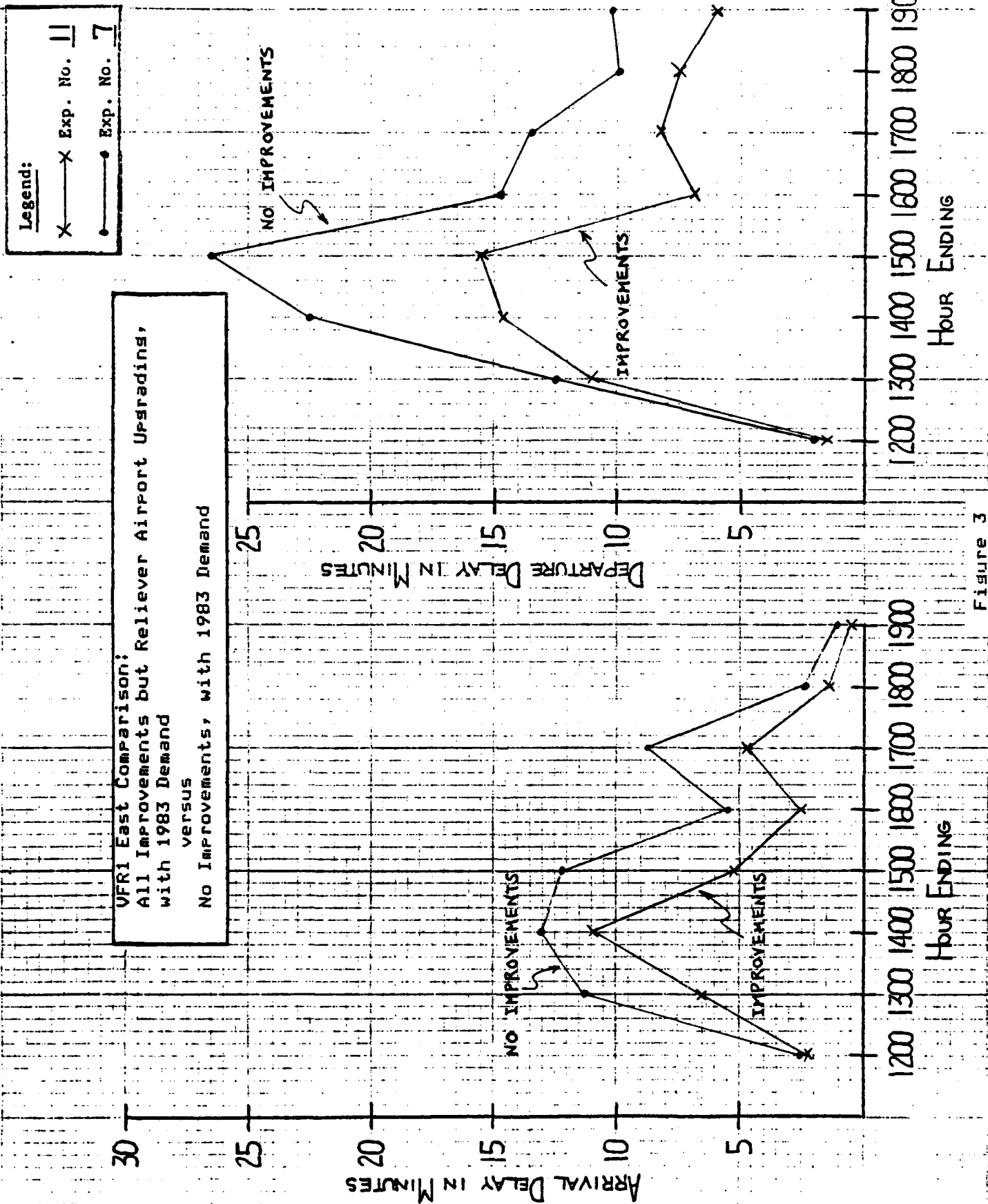


Figure 3

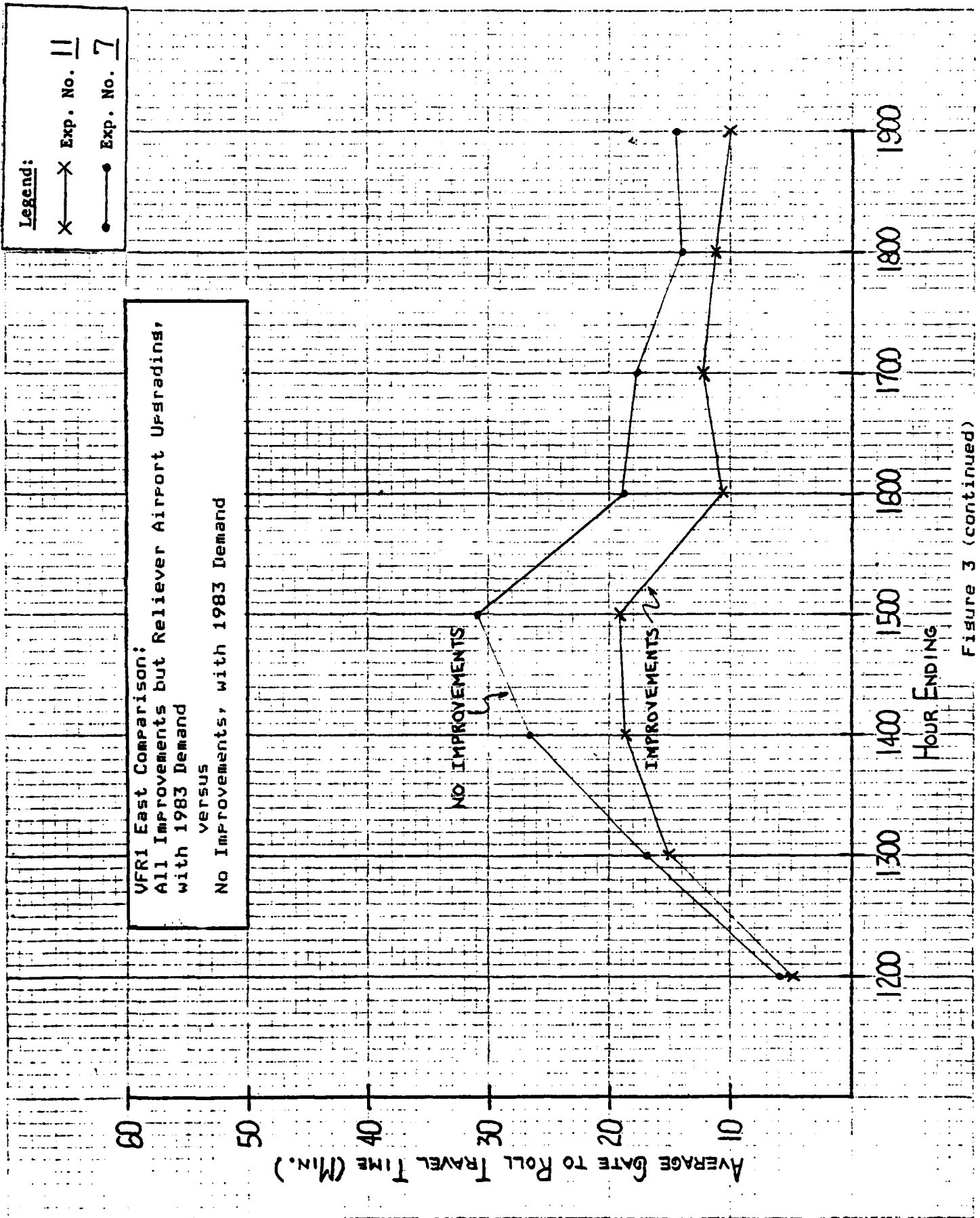


Figure 3 (continued)

Legend:

- X Exp. No. 11
- Exp. No. 7

VFR1 East Comparison:
All Improvements but Reliever Airport Upgrading,
with 1983 Demand
versus
No Improvements, with 1983 Demand

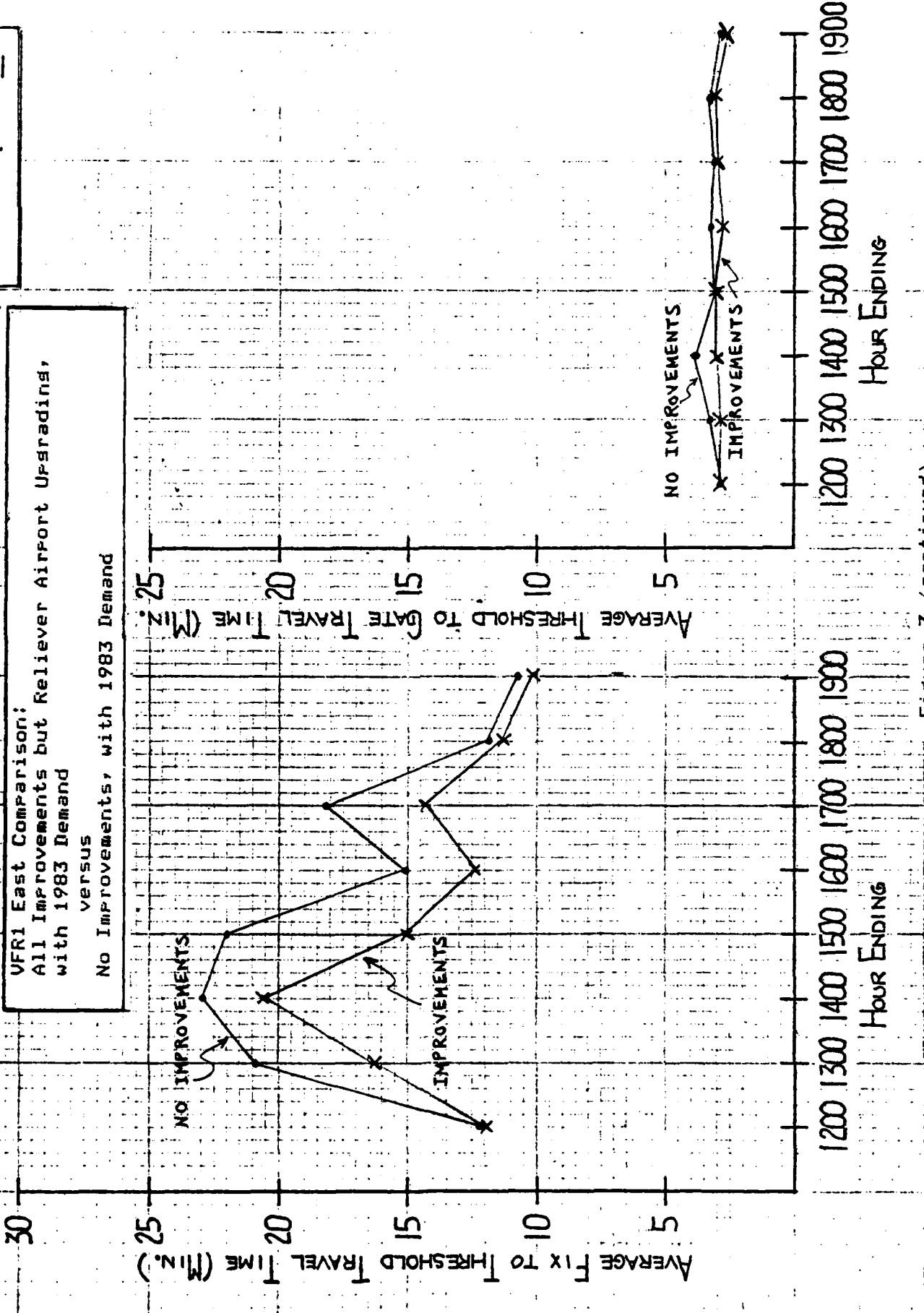


Figure 3 (continued)

VFR1 East Comparison:
No Improvements but Reliever Airport Upgrading and
the 1983 ATC System Scenario, with 1983 Demand
versus
All Improvements but Reliever Airport Upgrading,
with 1983 Demand

Legend:
X Exp. No. IIA
● Exp. No. II

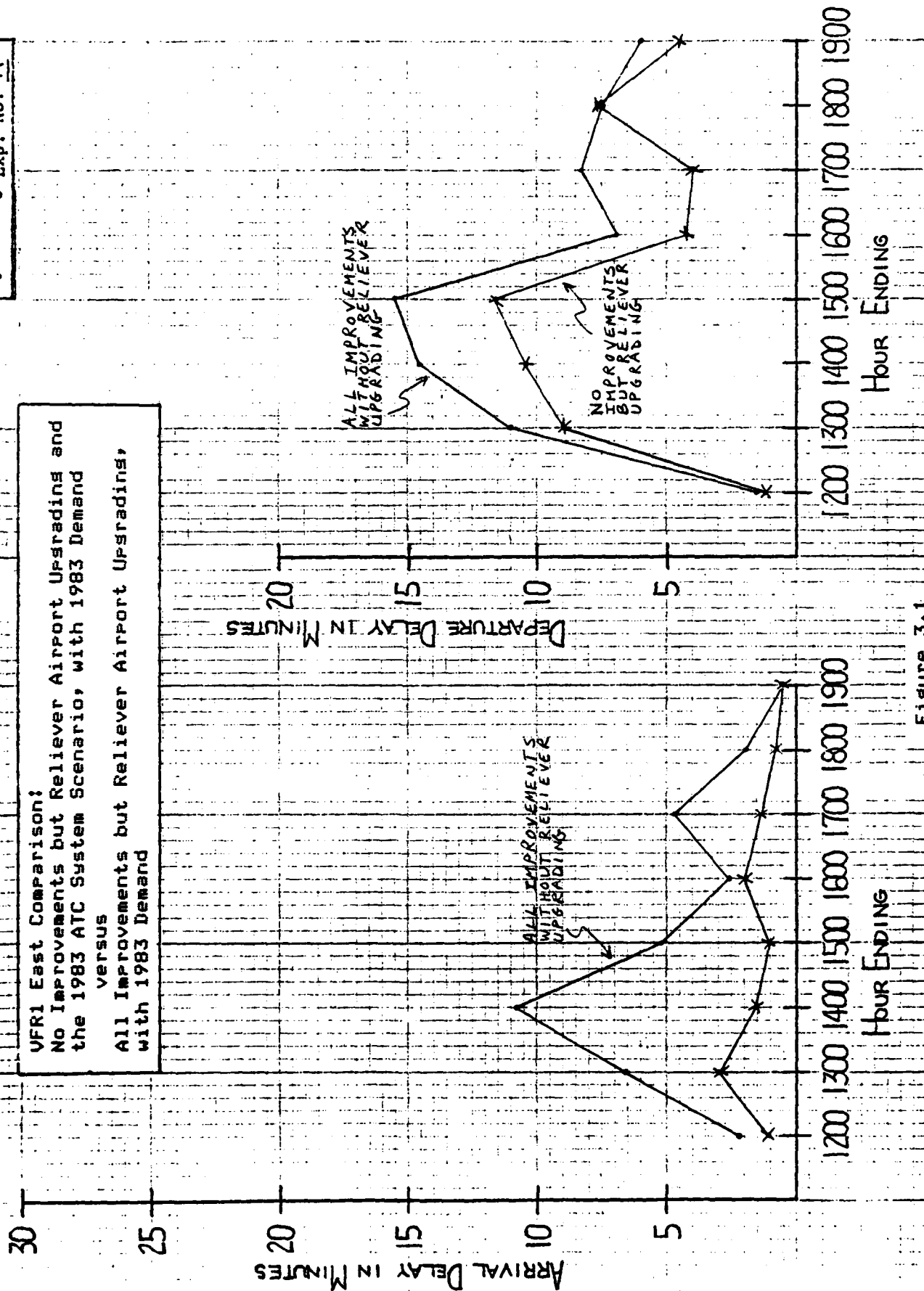


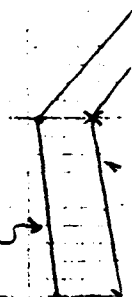
Figure 3.1

GATE TO ROLL TRAVEL TIME (Min.)

VFR1 East Comparison:
 No Improvements but Reliever Airport Upgrading and
 the 1983 ATC System Scenario, with 1983 Demand
 versus
 All Improvements but Reliever Airport Upgrading,
 with 1983 Demand

Legend:
 X — Exp. No. IIA
 • — Exp. No. II

ALL IMPROVEMENTS
 WITHOUT RELIEVER
 UPGRADING



VFR1 East Comparison:
 No Improvements but Reliever Airport Upgrading and
 the 1983 ATC System Scenario, with 1983 Demand
 versus
 All Improvements but Reliever Airport Upgrading,
 with 1983 Demand

Legend:
 X — Exp. No. 11A
 • — Exp. No. 11

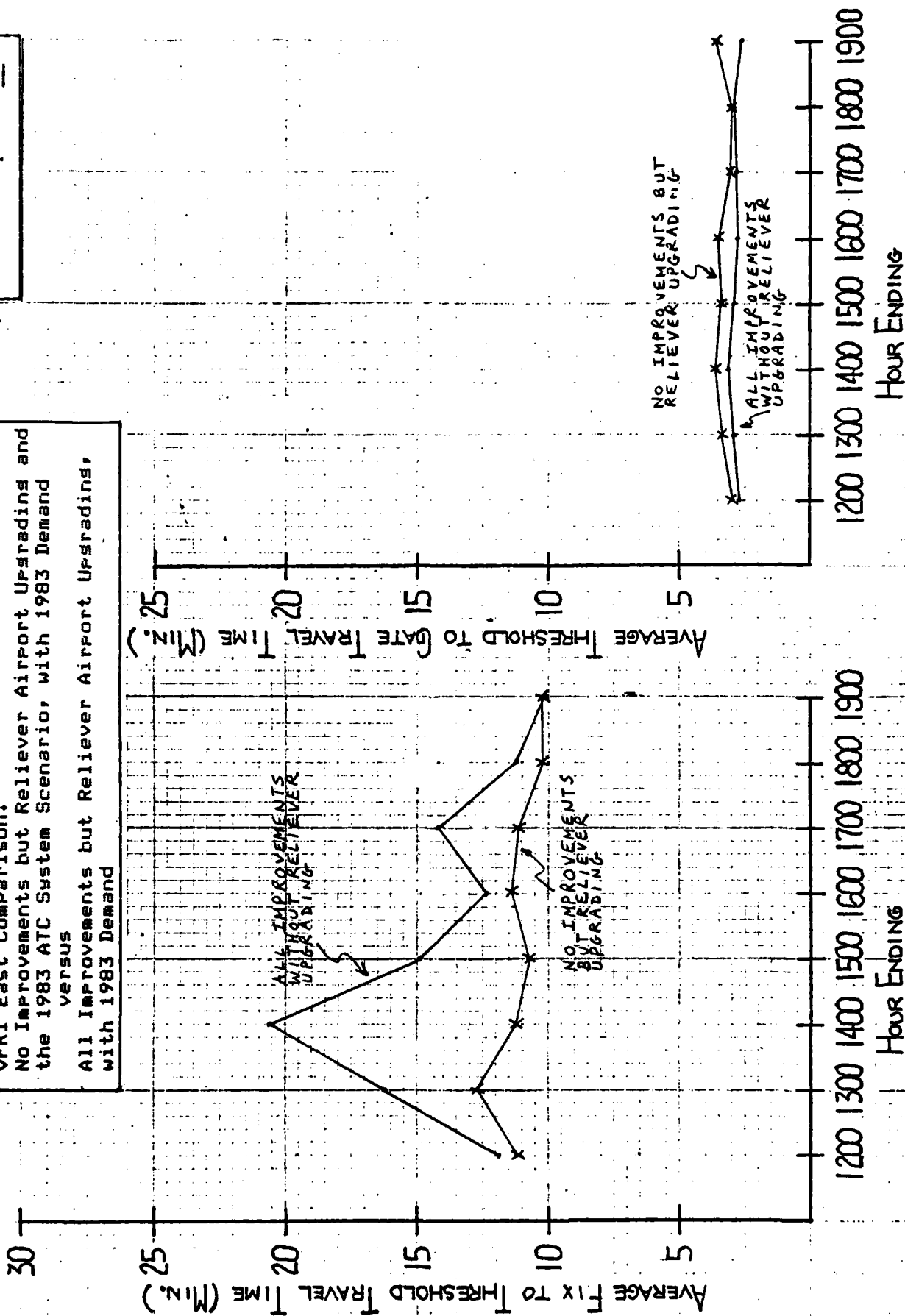


Figure 3.1 (continued)

EXPERIMENT NO. 14

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under VFR1 conditions, assuming the improved (1983) ATC system scenario and all Miami near-term improvements including a 50-percent reduction in G.A. traffic due to Reliever Airport upgradings:

Arrival Runways

Departure Runways

9L,9R,12

9L,9R,12

Related Comparison Experiments:

Prior experiment 11 serves as the basis for comparison to this experiment, wherein the conditions of this study case were identical except for the 50-percent reduction in G.A. traffic due to the upgradings of Opa Locka and Tamiami.

VFR1- Ceiling above 1500 ft. and visibility over 5 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 10

EXPERIMENT 14 RESULTS

MIAMI INTER. AIRPORT EXPER.-14 ROUTES-1983 CONFIG-A SEPAR-83VFR1 DEMAND-83

AVERAGE FLOW RATES

TIME	ARRIVALS			DEPARTURES			DE- MAND			DIF	AVERAGE TRAVEL TIMES		
	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	TOT	RWY	TOT		FIX TO THRESH	THRESH TO GATE	ROLL GATE TO
1100-1200	26.7	20.4	0.0	0.0	0.0	3.5	47.1	50.0	2.9	-2.9	11.18	2.69	4.69
1200-1300	29.2	24.6	0.0	0.0	0.0	19.8	53.8	54.0	-3.1	-3.1	12.62	2.71	13.64
1300-1400	26.5	20.0	0.0	0.0	0.0	23.1	46.5	46.0	-2.6	-2.6	11.27	3.06	15.20
1400-1500	25.6	16.0	1.0	0.0	0.0	21.1	43.6	41.0	-1.0	-1.0	10.79	3.11	16.90
1500-1600	26.9	27.0	1.5	0.0	0.0	12.6	55.4	59.0	-4.6	-4.6	11.39	2.95	8.37
1600-1700	23.1	19.0	.5	0.0	0.0	13.9	42.6	38.0	-.0	-.0	11.18	2.88	9.36
1700-1800	13.8	18.0	1.0	0.0	0.0	18.9	32.8	33.0	-1.2	-1.2	10.26	2.74	11.58
1800-1900	15.4	15.8	.9	0.0	0.0	13.5	32.1	33.0	-1.1	-1.1	10.10	3.22	8.22
1900-2000	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	-1.1	-1.1	0.00	0.00	12.47
AVERAGE DELAYS											GRAND TOTAL		

AVERAGE DELAYS

TIME	ARRIVALS			DEPARTURES			DE- MAND			DIF	AVERAGE DELAYS		
	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	TOT	RWY	TOT		ARR DELAY	DEP DELAY	
1100-1200	1.5	.6	0.0	0.0	0.0	.6	1.1	0.0	1.1	.0	1.1	1.2	
1200-1300	2.5	3.2	0.0	0.0	0.0	13.6	2.8	0.0	9.1	.0	2.8	9.3	
1300-1400	1.7	1.5	0.0	0.0	0.0	18.8	1.6	0.0	9.9	.0	1.6	11.1	
1400-1500	1.5	.5	3.8	0.0	0.0	19.1	1.2	0.0	10.9	.0	1.2	12.4	
1500-1600	1.2	2.7	2.1	0.0	0.0	5.9	2.0	0.0	4.1	.0	2.0	4.3	
1600-1700	1.4	1.1	3.9	0.0	0.0	10.0	1.3	0.0	5.3	.0	1.3	5.4	
1700-1800	.3	1.2	0.0	0.0	0.0	6.9	.8	0.0	7.2	.0	.8	7.4	
1800-1900	.4	.6	0.0	0.0	0.0	6.5	.4	0.0	3.7	.0	.6	4.1	
1900-2000	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	4.5	0.0	0.0	7.2	

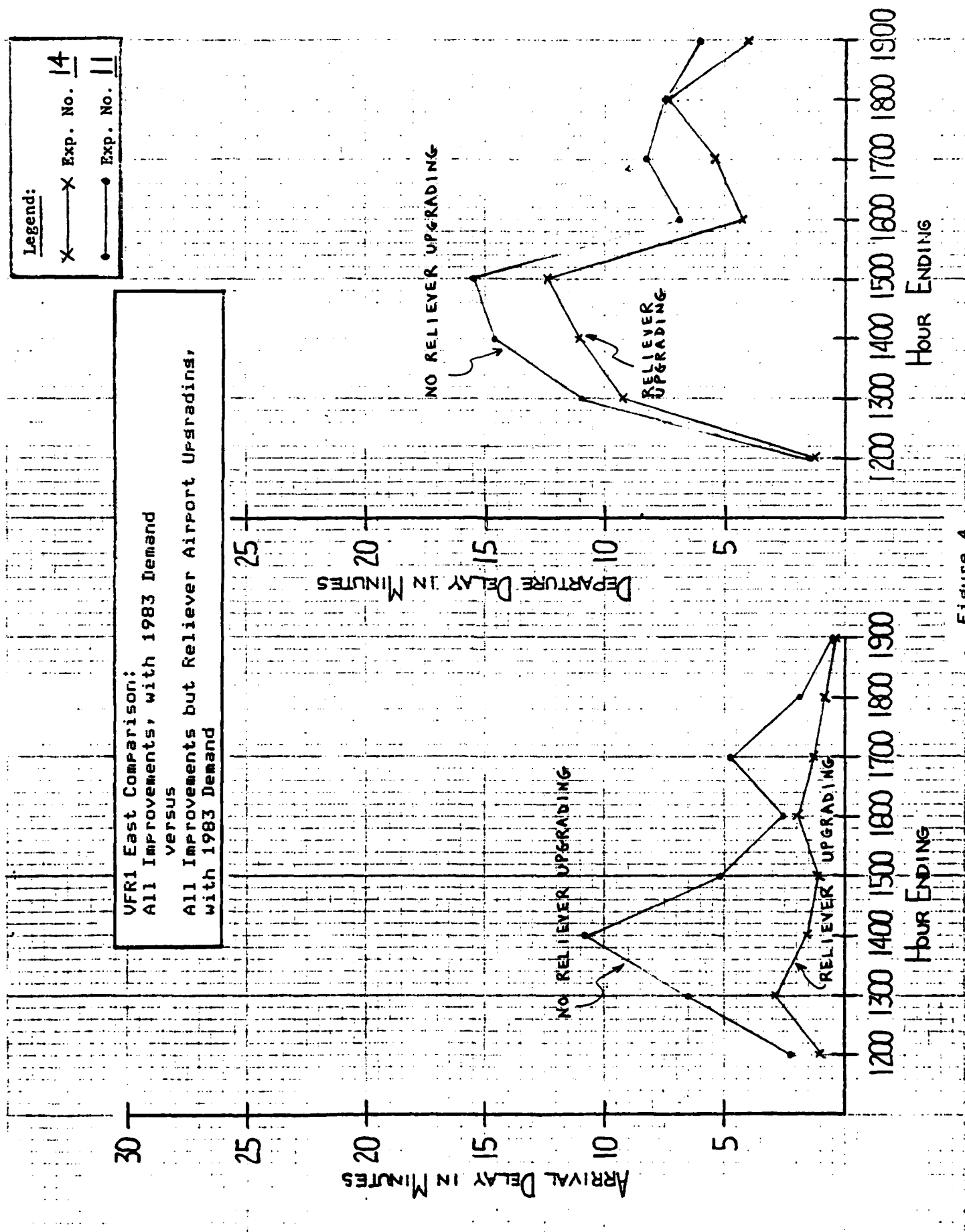


Figure 4

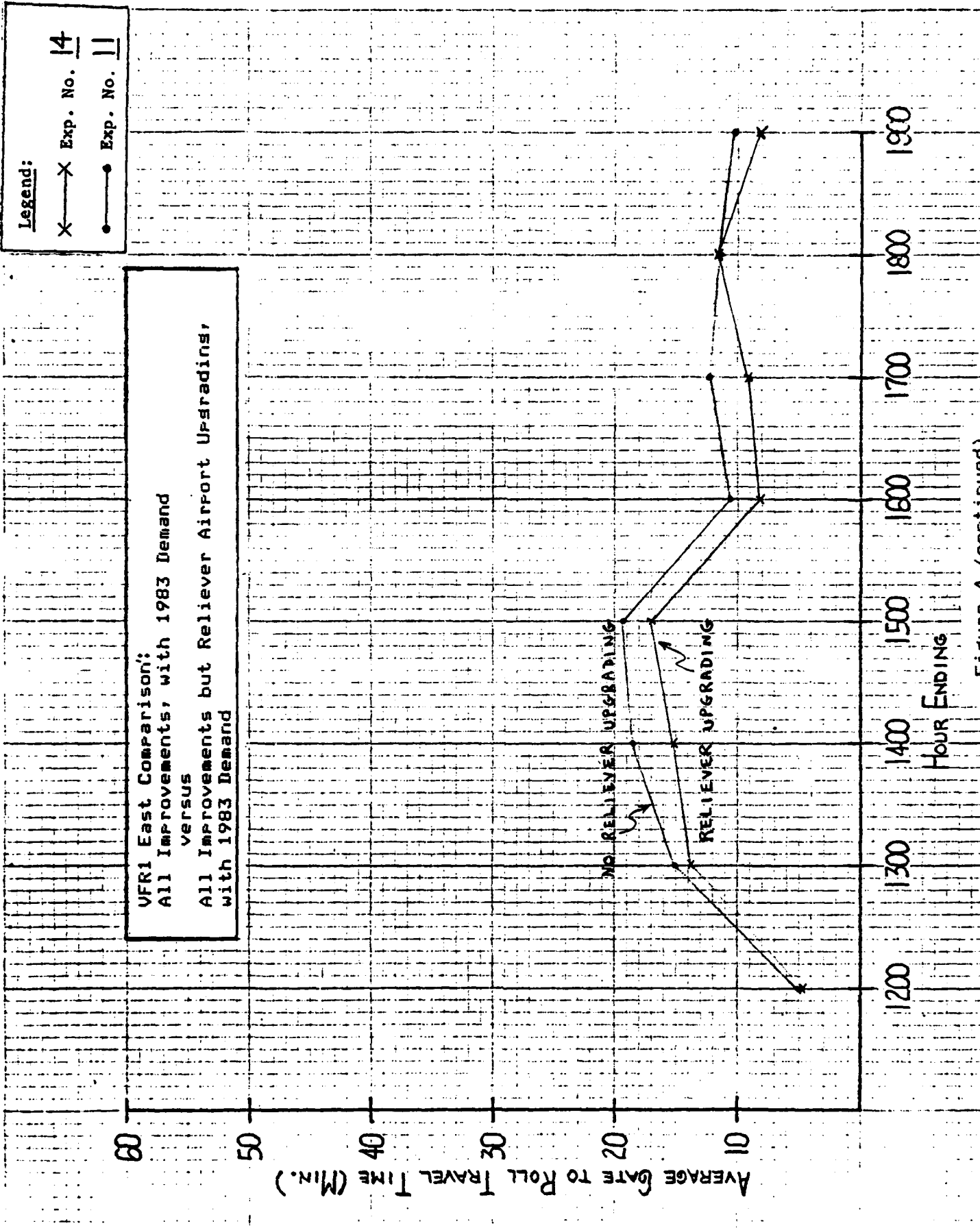


Figure 4 (continued)

VFR1 East Comparison:
All Improvements, with 1983 Demand
versus
All Improvements but Reliever Airport Upgrading,
with 1983 Demand

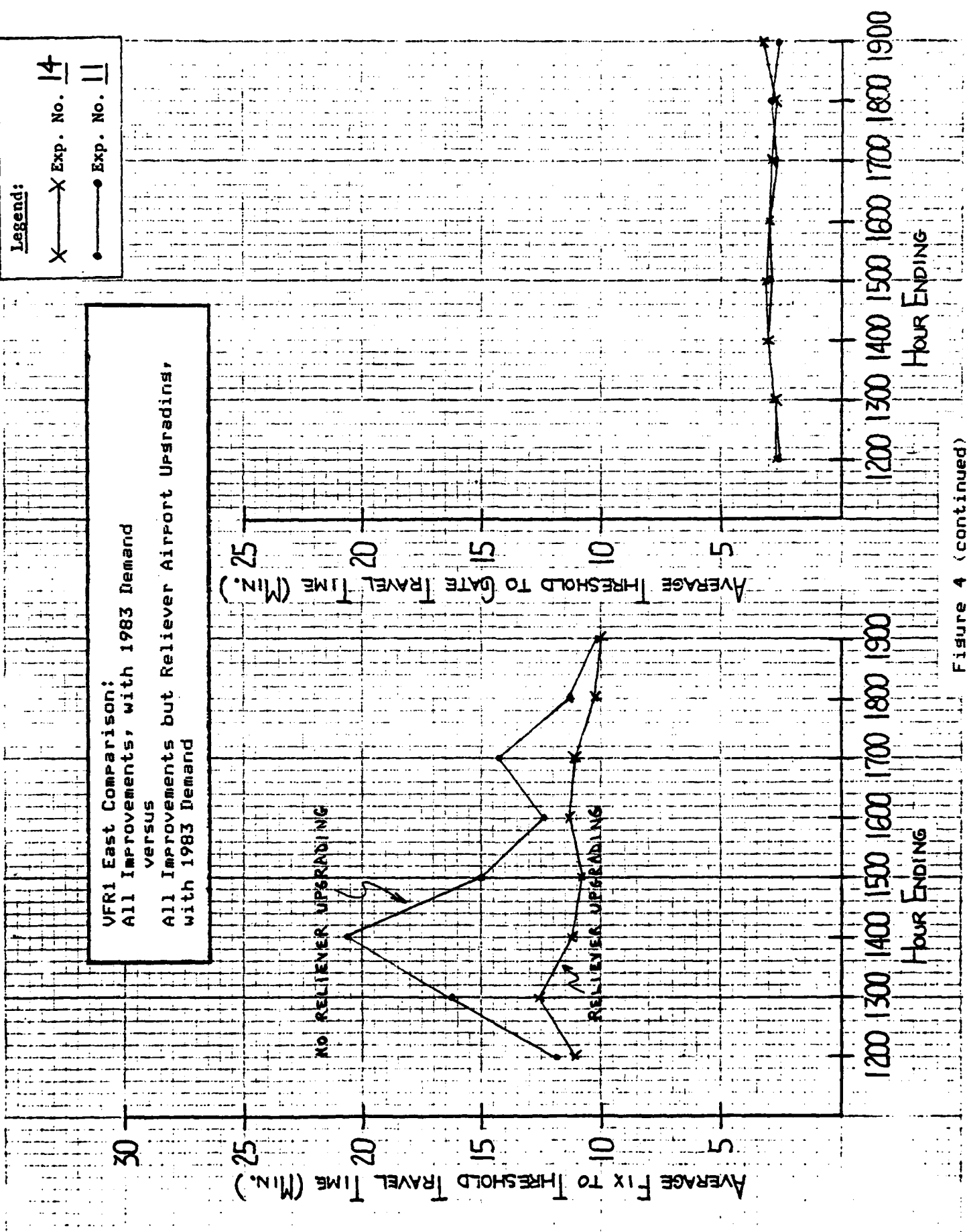


Figure 4 (continued)

TABLE 11

SET 2 DEMAND
IFR, EASTERLY FLOW

EXPERIMENT NUMBER		RUNWAY 9R	RUNWAY 9L	RUNWAY 12	TOTAL
9,35,10 AND 21	ARRIVALS	189	148	0	337
	DEPARTURES	129	149	37	315
	TOTAL	318	297	37	652
6 (4)	ARRIVALS	133	135	0	268
	DEPARTURES	102	139	29	270
	TOTAL	235	274	29	538
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				

Note: Runway closure during the IFR2 time period in Experiment Nos. 10 and 6 is performed by the model.

EXPERIMENT NO. 9

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under IFR1 conditions, assuming the improved (1983) ATC system scenario and no Miami near-term improvements except for a 50-percent reduction in G.A. traffic due to Reliever Airport upgrading:

Arrival Runways

9L,9R

Departure Runways

9L,9R,12

Related Comparison Experiments:

Prior experiment 34 (Data Package No. 5) serves as the 1983 demand level baseline for comparison to this experiment. Experiment 35 assesses the expected delays after adding the Miami-specific improvements to this study case.

IFR1- Ceilings between 200 ft. and 1000 ft. and/or
visibility between 2400 ft. RVR and 3 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 12
EXPERIMENT 9 RESULTS

MIAMI INTER. AIRPORT EXPER.-9 ROUTES=1978 CONFIG-A SEPAR-831FR1 DEMAND=83
AVERAGE FLOW RATES

TIME	ARRIVALS										DEPARTURES										AVERAGE TRAVEL TIMES			
	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	FIX TO THRESH	THRESH TO GATE	GATE TO ROLL	ROLL
1100-1200	24.7	21.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.36	3.00	4.26	
1200-1300	29.2	21.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.40	3.08	16.43	
1300-1400	27.1	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.65	4.10	21.36	
1400-1500	27.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.38	5.00	36.04	
1500-1600	25.2	26.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.69	3.57	38.30	
1600-1700	25.8	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.40	3.21	20.94	
1700-1800	14.1	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.83	2.92	10.46	
1800-1900	15.9	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.10	3.77	17.96	
1900-2000	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.00	2.74	9.28	
GRAND TOTAL																								
TIME	ARRIVALS										DEPARTURES										AVERAGE DELAYS			
	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	ARR	DEP	DEL	DEL
1100-1200	2.5	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.5	2.5	
1200-1300	5.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	11.6	11.6	
1300-1400	5.4	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	17.1	17.1	
1400-1500	2.7	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	31.3	31.3	
1500-1600	2.1	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	33.5	33.5	
1600-1700	6.5	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	16.5	16.5	
1700-1800	.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	5.8	5.8	
1800-1900	.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	13.3	13.3	
1900-2000	0.0	.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.5	.5	.5	

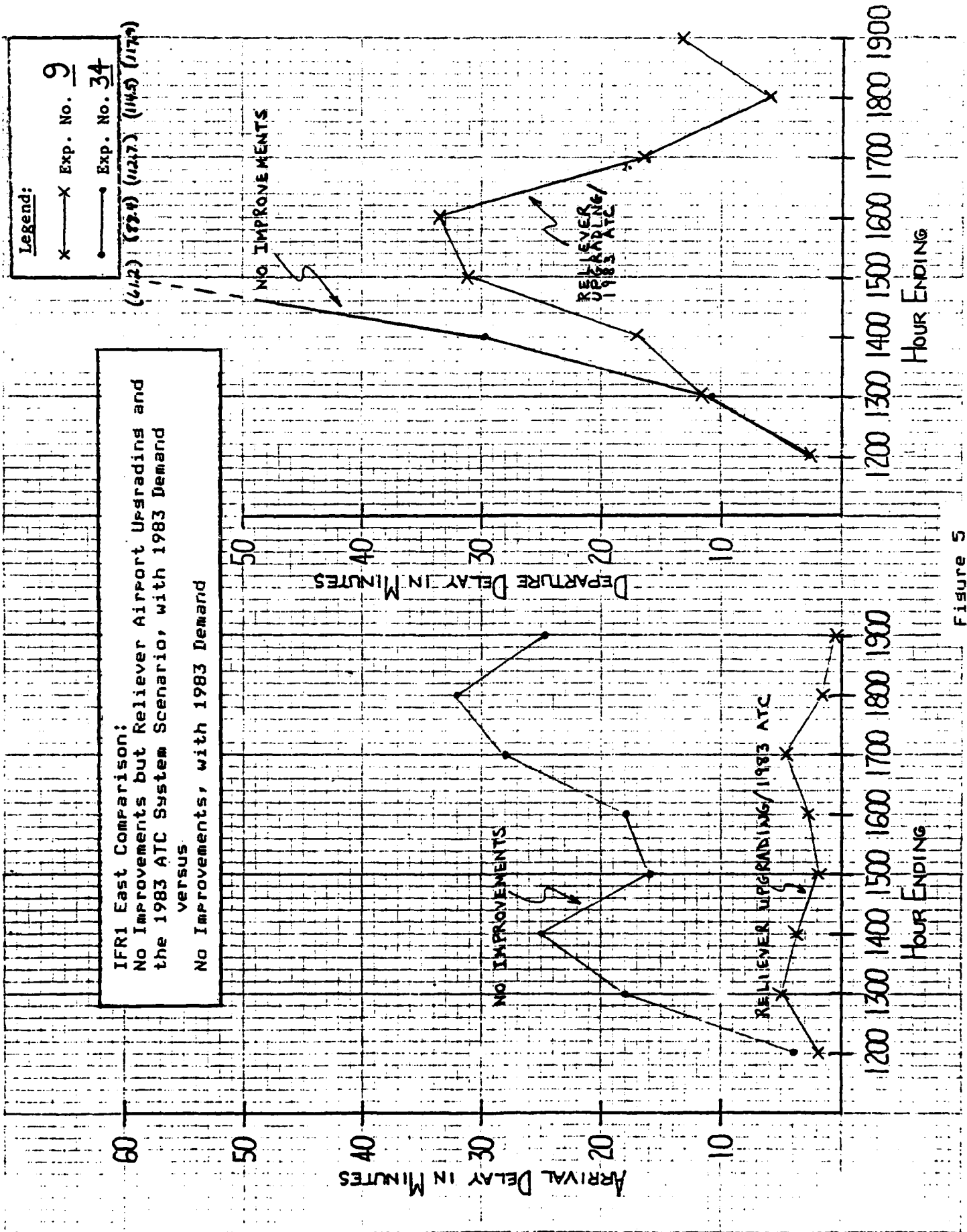


Figure 5

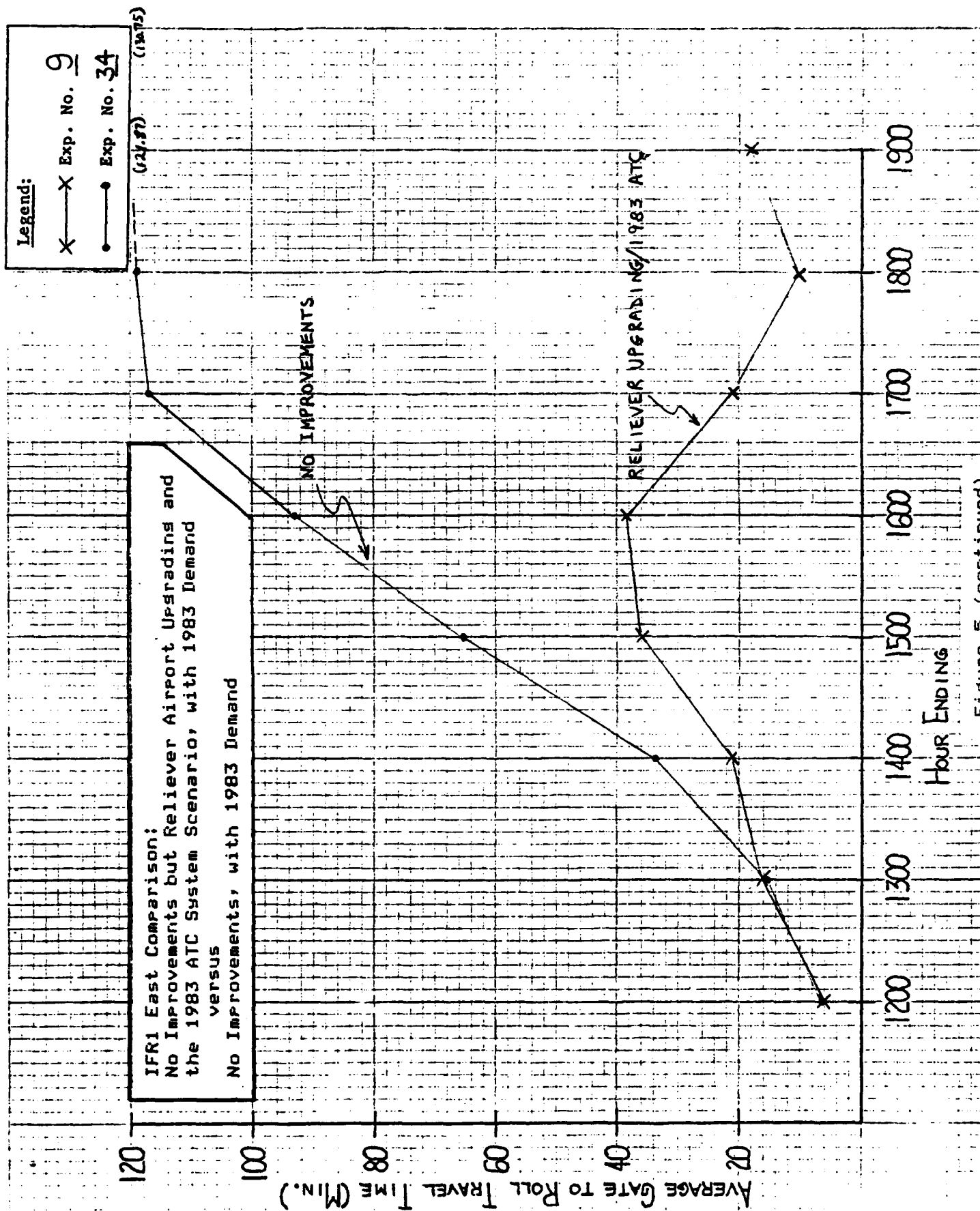


Figure 5 (continued)

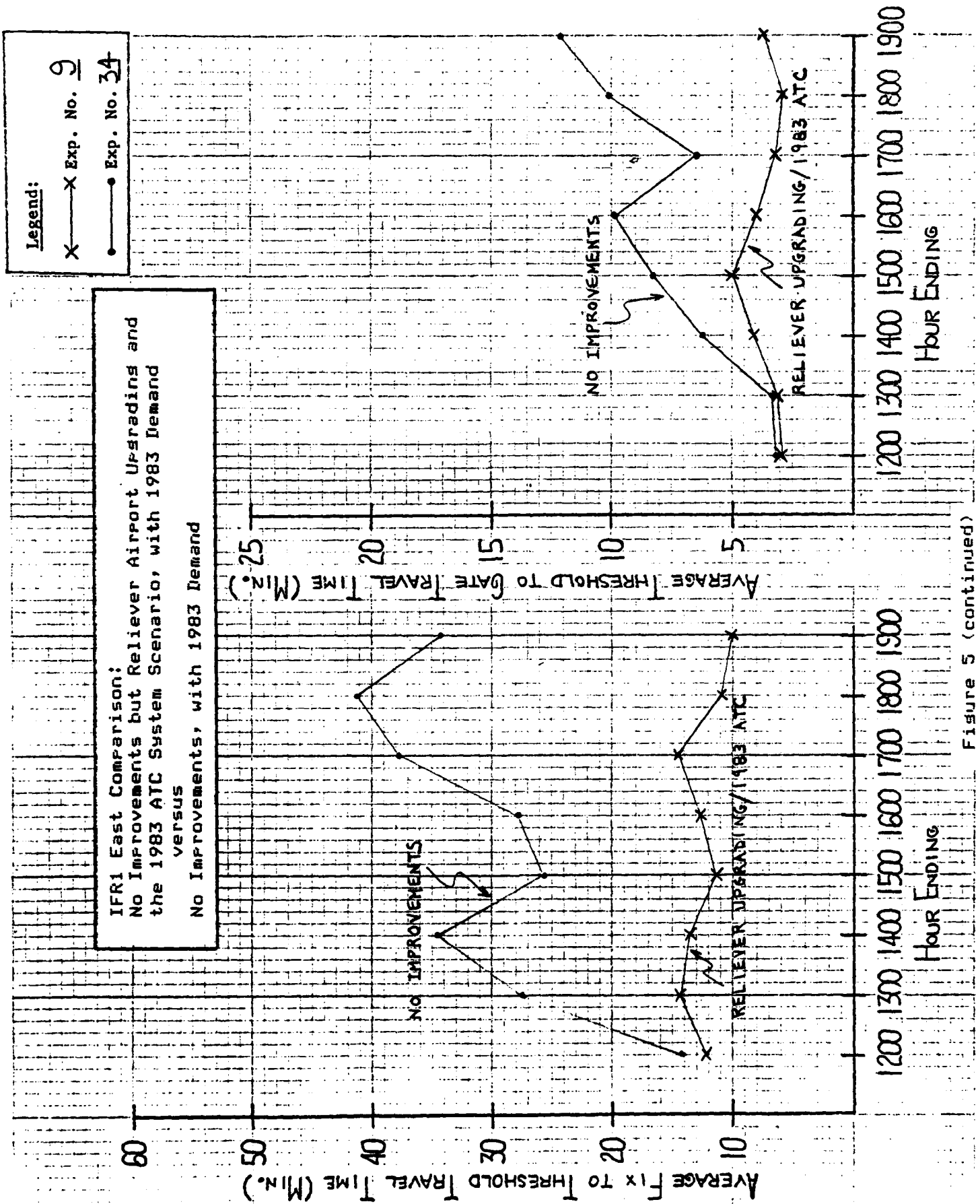


Figure 5 (continued)

EXPERIMENT NO. 35

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under IFR1 conditions, assuming the improved (1983) ATC system scenario and all Miami near-term improvements including a 50-percent reduction in G.A. traffic due to Reliever Airport upgradings:

Arrival Runways

Departure Runways

9L,9R

9L,9R,12

Related Comparison Experiments:

Prior experiment 9 serves as the basis for comparison to this experiment, wherein the Miami-specific improvements were not included.

IFR1- Ceilings between 200 ft. and 1000 ft. and/or visibility between 2400 ft. RVR and 3 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

EXPERIMENT 35 RESULTS

D-21

TABLE 13.1

EXPERIMENT 35M1 RESULTS

MIAMI INTER. AIRPORT EXPER.-35M1 ROUTES-1983 CONFIG-A SEPAR-83JFR1 DEMAND-83

AVERAGE FLOW RATES

TIME	ARRIVALS			DEPARTURES			DIF			TOT DE-			DIF			AVERAGE TRAVEL TIMES		
	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	FIX TO THRESH	THRESH TO GATE	GATE TO ROLL
1100-1200	24.5	21.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.32	2.82	5.63
1200-1300	29.5	21.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.38	2.65	15.13
1300-1400	27.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.66	2.99	20.33
1400-1500	27.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.32	2.86	33.82
1500-1600	25.0	28.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.65	2.92	34.75
1600-1700	26.0	18.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.59	2.98	23.33
1700-1800	13.9	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.74	2.64	10.44
1800-1900	16.1	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.08	3.14	10.31
1900-2000	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.91	2.71	9.18

AVERAGE DELAYS

TIME	ARRIVALS			DEPARTURES			DIF			TOT			DIF			AVERAGE DELAYS		
	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	RWY 9R	RWY 12	RWY 9L	ARR	DEP	GRAND TOTAL
1100-1200	2.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.2	2.2
1200-1300	5.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	10.8	10.8
1300-1400	5.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	16.3	16.3
1400-1500	2.6	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	29.2	29.2
1500-1600	2.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	30.5	30.5
1600-1700	6.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	19.1	19.1
1700-1800	.9	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	6.0	6.0
1800-1900	.4	.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6	6.0	6.0
1900-2000	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	3.8	3.8

TABLE 13.2

EXPERIMENT 35M2 RESULTS

MIAMI INTER. AIRPORT EXPER.-35M2 ROUTES-1983 CONFIG-A SEPAR-831FR1 DEMAND-83
AVERAGE FLOW RATES

TIME	ARRIVALS				DEPARTURES				DIF	TOT DE- HAND	TOT DE- HAND	AVERAGE TRAVEL TIMES			
	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12				FIX TO THRESH	THRESH TO GATE	GATE TO ROLL	
1100-1200	24.6	21.9	0.0	0.0	0.0	0.0	0.0	0.0	-5.5	44.5	52.0	12.41	2.90	5.43	
1200-1300	28.5	21.1	0.0	0.0	0.0	0.0	0.0	0.0	-2.9	49.6	47.0	14.53	2.73	15.67	
1300-1400	27.3	17.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.6	44.3	44.0	15.13	3.08	19.53	
1400-1500	27.4	13.0	0.0	0.0	0.0	0.0	0.0	0.0	-2	40.4	38.0	12.13	3.10	33.40	
1500-1600	24.4	25.9	0.0	0.0	0.0	0.0	0.0	0.0	-9.9	50.3	60.0	12.95	2.94	43.77	
1600-1700	24.8	19.1	0.0	0.0	0.0	0.0	0.0	0.0	-0	45.9	36.0	16.27	3.06	28.85	
1700-1800	13.7	14.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.3	29.7	31.0	10.92	2.69	13.68	
1800-1900	14.3	12.0	0.0	0.0	0.0	0.0	0.0	0.0	-0	28.3	27.0	10.21	3.19	11.56	
1900-2000	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	-0	2.0	2.0	9.00	2.68	10.05	
AVERAGE DELAYS															
TIME	ARRIVALS				DEPARTURES				TAXI IN	TOT CRS	TOT	AVERAGE DELAYS			
	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12				ARR DELAY	DEP DELAY		
1100-1200	2.6	1.3	0.0	0.0	0.0	0.0	3.6	3.9	.0	2.0	2.0	2.0	2.1		
1200-1300	5.2	4.7	0.0	0.0	0.0	0.0	20.8	6.1	.0	5.0	5.0	5.0	11.3		
1300-1400	7.9	1.2	0.0	0.0	0.0	0.0	33.8	2.9	.0	5.3	5.3	5.3	15.6		
1400-1500	3.7	.4	0.0	0.0	0.0	0.0	51.0	4.0	.2	2.6	2.6	2.8	29.0		
1500-1600	2.7	3.3	0.0	0.0	0.0	0.0	42.4	1.8	.0	3.0	3.0	3.0	39.3		
1600-1700	9.6	2.1	0.0	0.0	0.0	0.0	36.1	3.3	.0	6.5	6.5	6.5	24.6		
1700-1800	1.0	2.2	0.0	0.0	0.0	0.0	9.8	7.1	.0	1.6	1.6	1.7	9.2		
1800-1900	.6	.8	0.0	0.0	0.0	0.0	12.4	2.4	.0	.7	.7	.7	7.3		
1900-2000	0.0	.5	0.0	0.0	0.0	0.0	4.4	0.0	.0	.5	.5	.5	4.6		

IFR1 East Comparison:

All Improvements, with 1983 Demand

versus

No Improvements but Reliever Airport Upgrading and the 1983 ATC System Scenario, with 1983 Demand

Note:

Experiment 35 employs the 2200 ft. displaced landing threshold on runway 9R.

Experiment 35M1 employs a 3650 ft. displaced landing threshold on runway 9R, thus repositioning the threshold back to the "today's" airport position.

Average Runway 9R Arrival Runway Occupancy Time by Class:

A. With 2200 Ft. Displaced Threshold:

Class 1	Class 2	Class 3	Class 4
70.1 s.	59.8 s.	57.1 s.	45.2 s.

B. With 3650 Ft. Displaced Threshold:

Class 1	Class 2	Class 3	Class 4
62.8 s.	51.8 s.	46.3 s.	29.1 s.

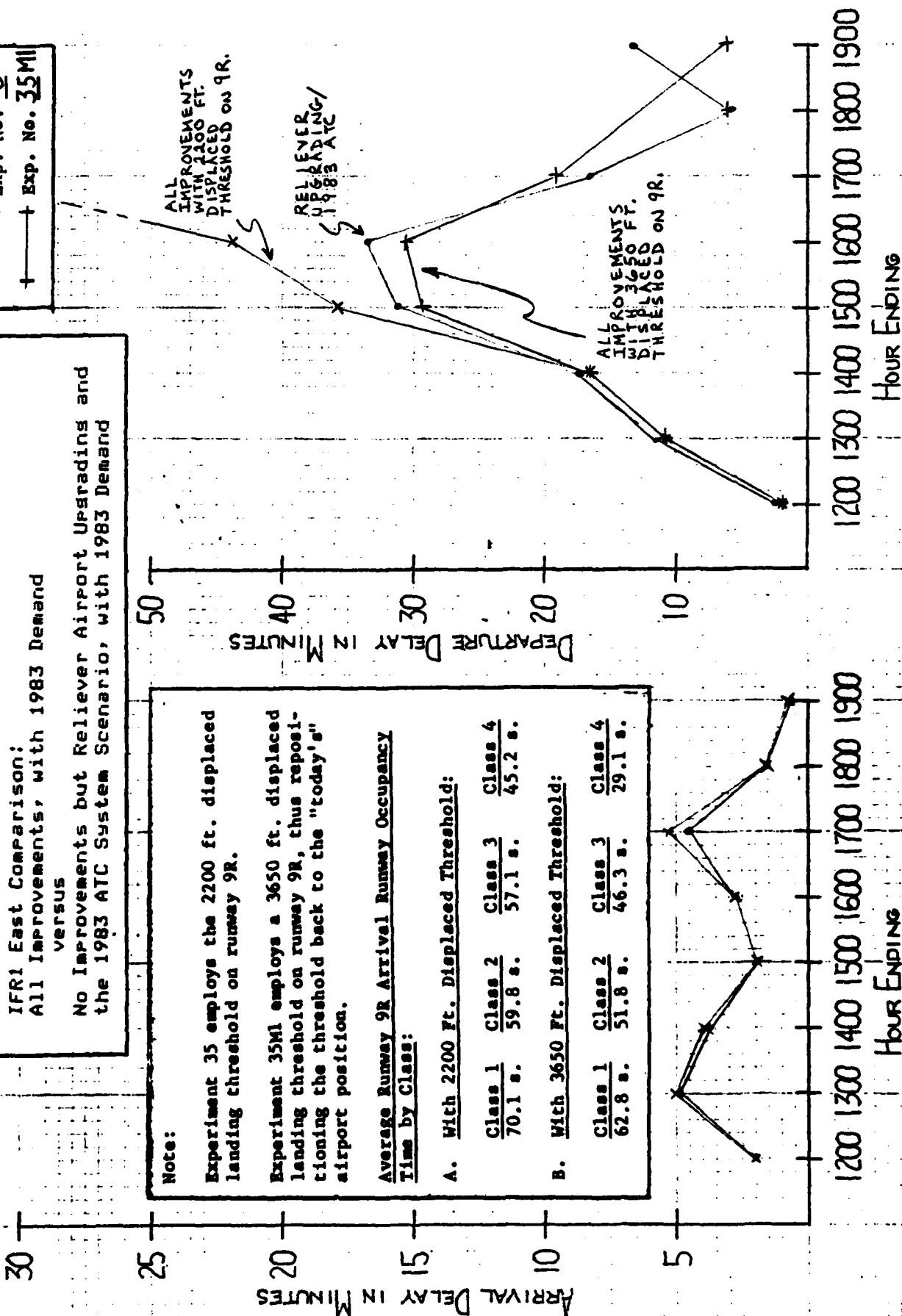


Figure 6

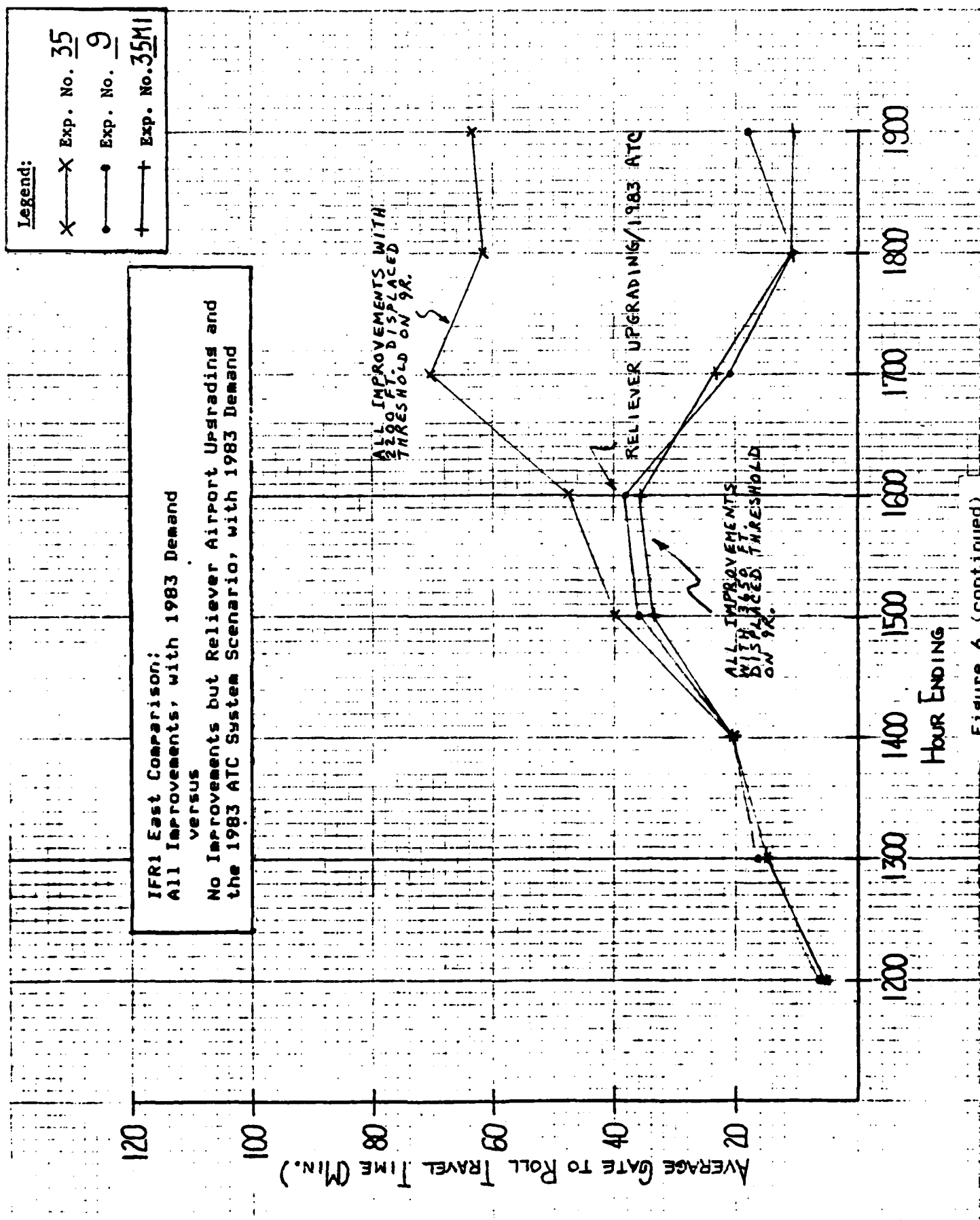


Figure 6 (continued)

Legend:

X Exp. No. 35

• Exp. No. 9

+ Exp. No. 35MI

IFR1 East Comparison:
All Improvements, with 1983 Demand
versus
No Improvements but Reliever Airport Upgrading and
the 1983 ATC System Scenario, with 1983 Demand

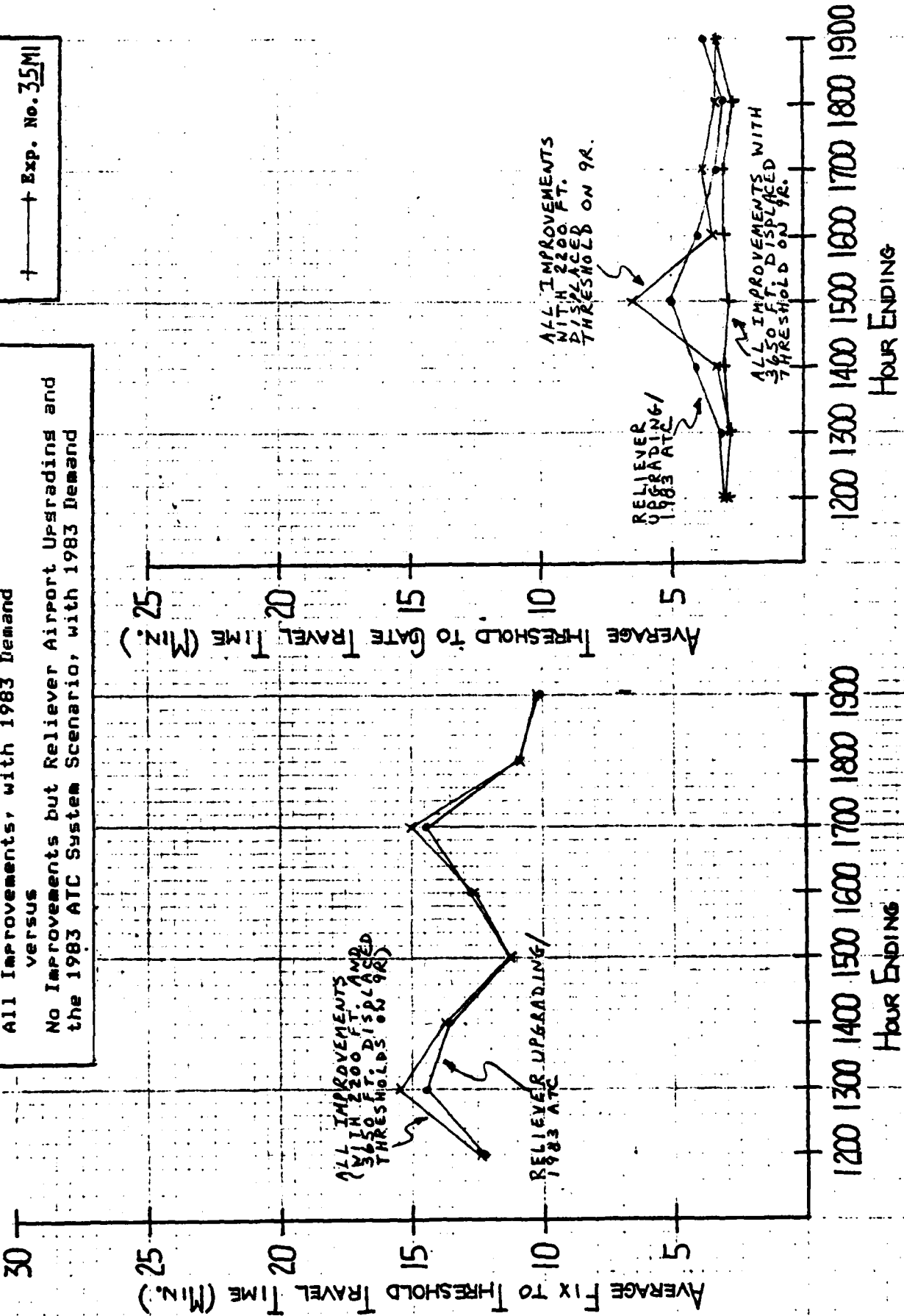


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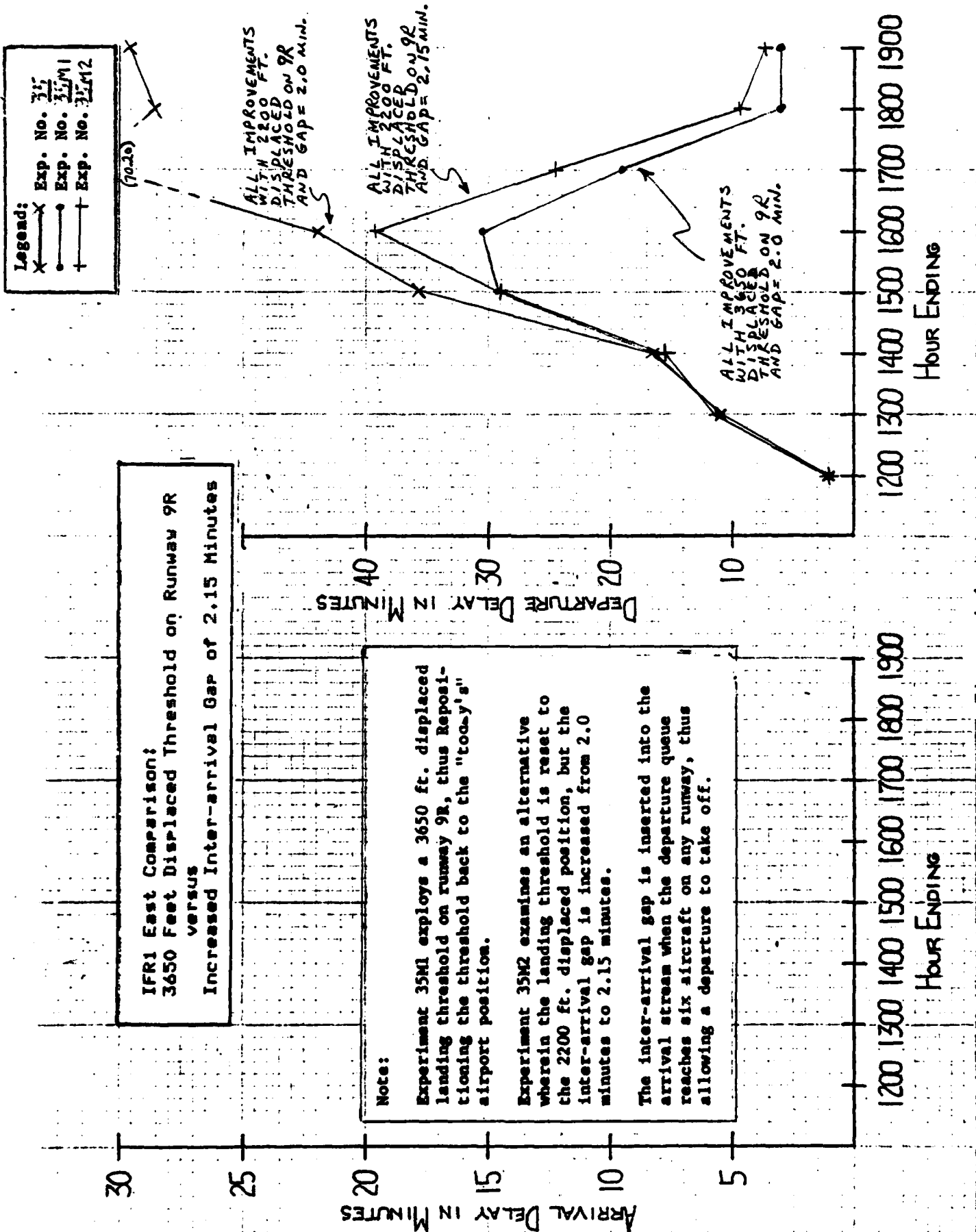


Figure 6.1

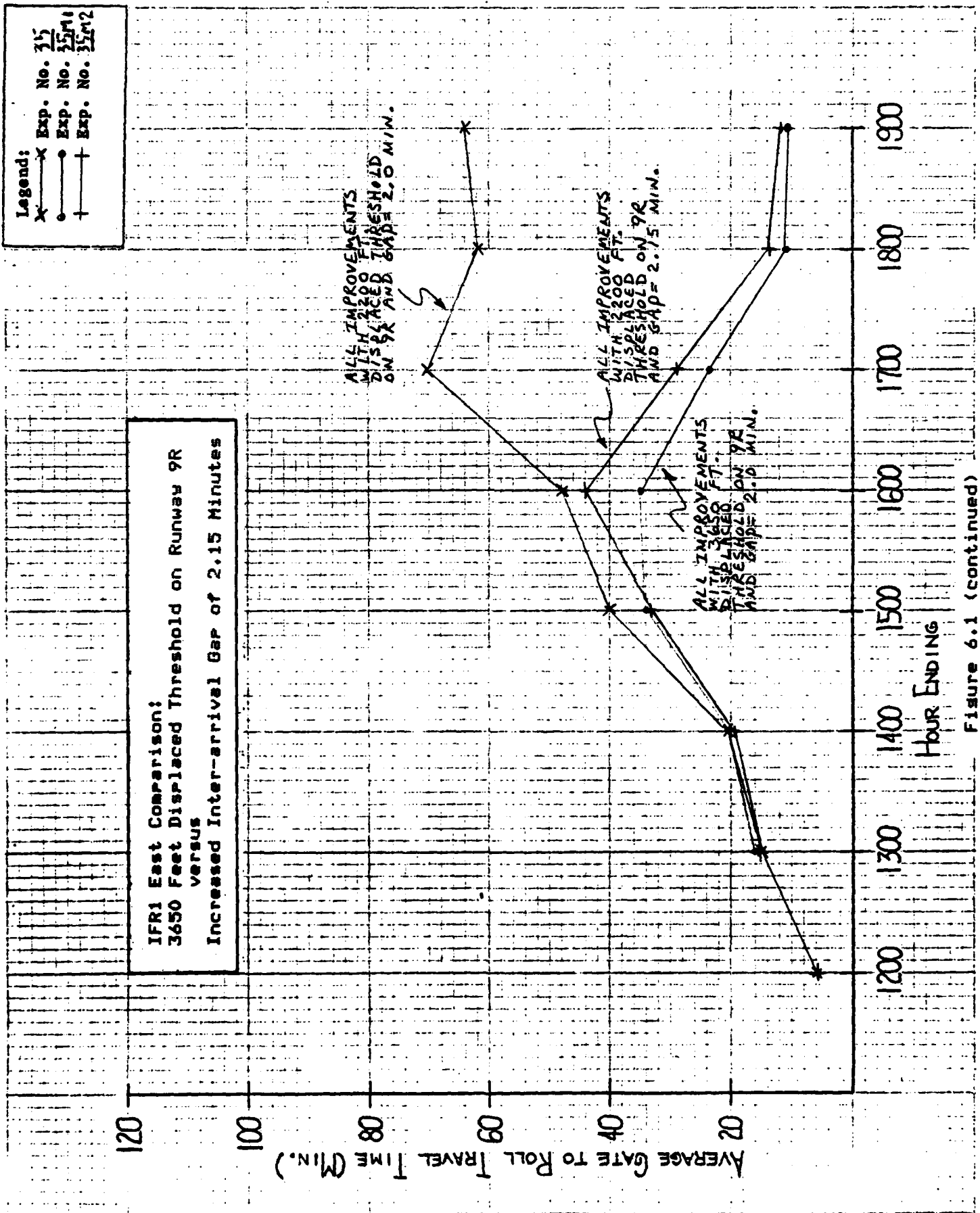


Figure 6.1 (continued)

EXPERIMENT NO. 6

Objective:

To assess the delay impact to aircraft in 1978 for the following runway configuration under IFR2 conditions:

Arrival Runways	Departure Runways
None	9L

Related Comparison Experiments:

Prior experiment 4 (Data Package No. 5) examines this configuration with IFR1 weather and 1978 demand.

Experiment 10 assesses the delay impact of increased, 1983 demand with no improvements except for G.A. Reliever Airport upgrading.

(An IFR1/IFR2/IFR1 situation was used for this experiment, with the IFR2 conditions lasting from 1300 to 1400 hours. This enables the recovery of the airport from the IFR2 deterioration to be studied.)

IFR1- Ceiling between 200 ft. and 1000 ft. and/or visibility between 2400 ft. RVR and 3 mi.

IFR2- Ceiling between 200 ft. and 1000 ft. and/or visibility between 1800 ft. RVR and 2300 ft. RVR.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
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EXPERIMENT 6 RESULTS

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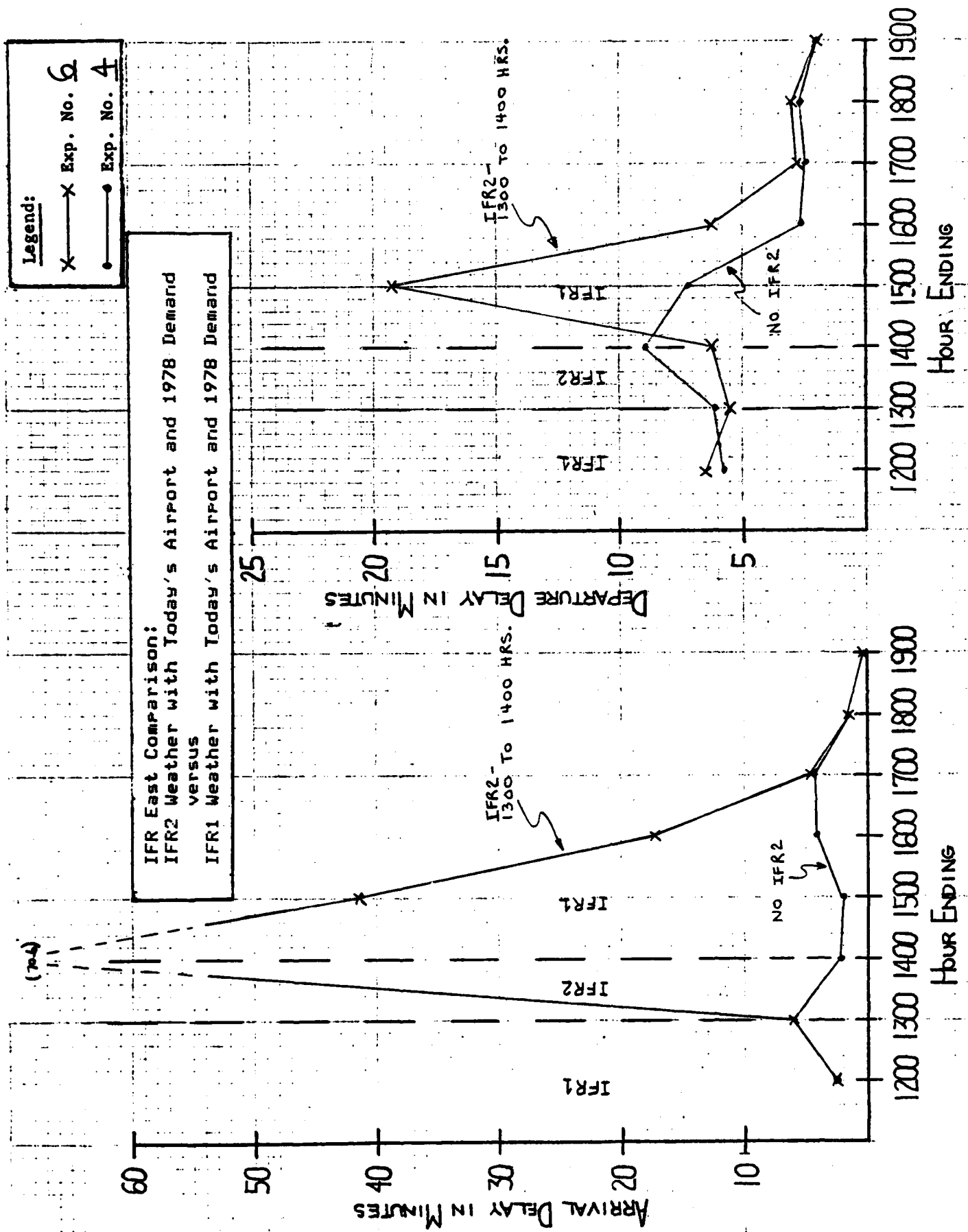


Figure 7

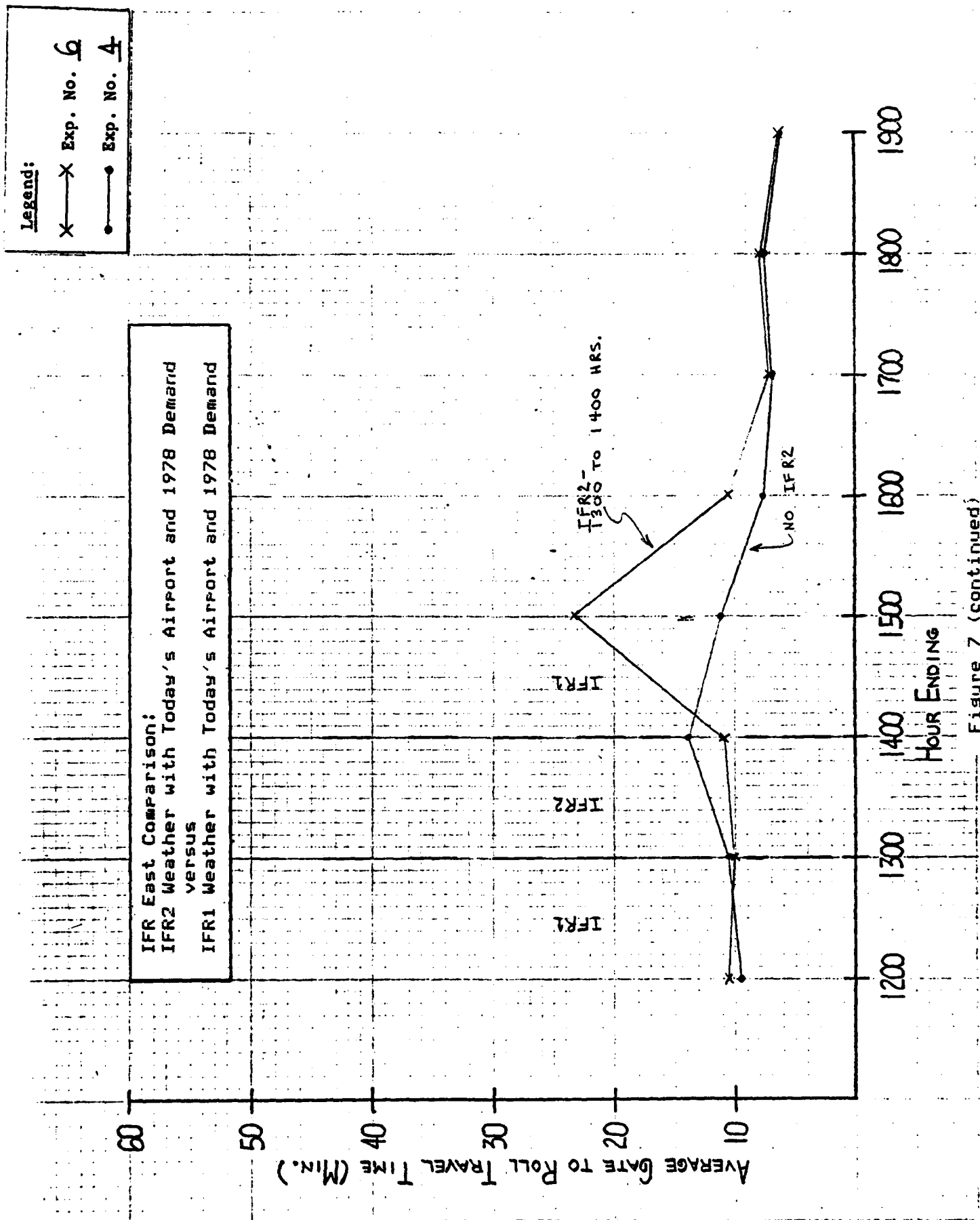


Figure 7 (continued)

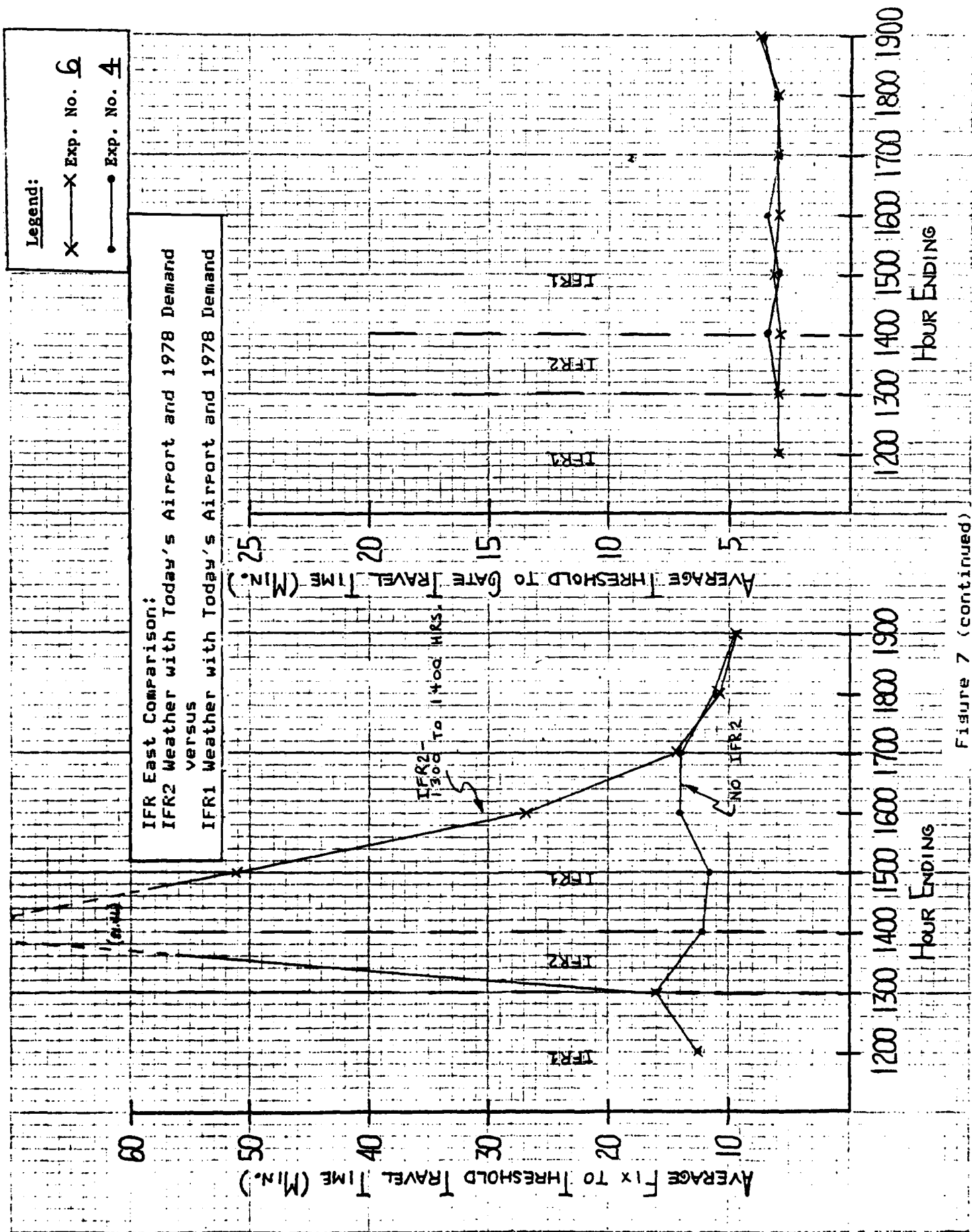


Figure 7 (continued)

EXPERIMENT NO. 10

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under IFR2 conditions, assuming the improved (1983) ATC system scenario and no Miami near-term improvements except for a 50-percent reduction in G.A. traffic due to Reliever Airport upgrading:

Arrival Runways

Departure Runways

None

9L

Related Comparison Experiments:

Prior experiment 6 serves as the 1978 demand level baseline for comparison to this experiment.

Experiment 21 assesses the expected delays after adding the Miami-specific improvements to this study case.

(An IFR1/IFR2/IFR1 situation was used for this experiment, with the IFR2 conditions lasting from 1300 to 1400 hours. This enables the recovery of the airport from the IFR2 deterioration to be studied.)

IFR1- Ceiling between 200 ft. and 1000 ft. and/or visibility between 2400 ft. RVR and 3 mi.

IFR2- Ceiling between 200 ft. and 1000 ft. and/or visibility between 1800 ft. RVR and 2300 ft. RVR.

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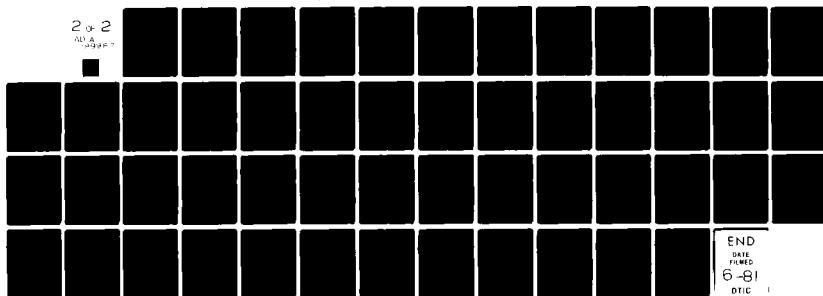
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FEDERAL AVIATION ADMINISTRATION TECHNICAL CENTER ATL--ETC F/G 1/2
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TABLE 15

EXPERIMENT 10 RESULTS

MIAMI INTER. AIRPORT EXPER.-10 ROUTES-1978 CONFIG-A SEPAR-831FR1-IFR2 DEMAND-83

AVERAGE FLOW RATES

TIME	ARRIVALS			DEPARTURES			TOT DE- MAND	DIF	AVERAGE TRAVEL TIMES					
	RWY 9R	RWY 9L	RWY 12	RWY 9R	RWY 9L	RWY 12			FIX TO THRESH	THRESH TO GATE	ROLL			
1100-1200	24.7	21.9	0.0	0.0	0.0	0.0	46.6	52.0	-5.4	2.6	11.8	12.38	3.01	6.22
1200-1300	29.2	21.1	0.0	0.0	0.0	0.0	50.3	47.0	-2.1	15.1	20.2	3.3	3.08	16.30
1300-1400	1.0	0.0	0.0	0.0	0.0	0.0	1.0	44.0	-45.1	0.0	38.6	1.1	40.78	16.24
1400-1500	29.3	24.4	0.0	0.0	0.0	0.0	53.8	38.0	-29.3	14.1	23.4	4.9	3.52	51.62
1500-1600	30.1	31.0	0.0	0.0	0.0	0.0	61.1	60.0	-28.2	15.0	18.1	2.9	4.00	31.80
1600-1700	30.6	19.6	0.0	0.0	0.0	0.0	50.1	36.0	-14.1	14.3	19.9	4.2	3.46	25.65
1700-1800	27.0	16.0	0.0	0.0	0.0	0.0	43.0	31.0	-2.1	16.8	25.2	4.8	3.33	23.47
1800-1900	17.1	12.0	0.0	0.0	0.0	0.0	29.1	27.0	-0.0	20.6	22.1	8.1	3.58	24.86
1900-2000	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	-0.0	3.9	1.2	.3	2.97	12.45
2000-2100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.00	0.00
2100-2200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.00	0.00
2200-2300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.00	0.00
2300-2400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.00	0.00
2400-2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.00	0.00

GRAND TOTAL

AVERAGE DELAYS

TIME	ARRIVALS			DEPARTURES			TOT	CRS	TAXI OUT	RWY CNG	ARR DELAY	DEP DELAY
	RWY 9R	RWY 9L	RWY 12	RWY 9R	RWY 9L	RWY 12	TOT	CRS	TAXI OUT	RWY CNG	ARR DELAY	DEP DELAY
1100-1200	2.5	1.4	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.4
1200-1300	5.0	4.8	0.0	0.0	0.0	0.0	10.9	0.0	0.5	0.0	5.1	11.5
1300-1400	35.6	0.0	0.0	0.0	0.0	0.0	7.5	0.0	4.3	0.0	36.4	12.0
1400-1500	61.2	55.6	0.0	0.0	0.0	0.0	39.9	0.0	4.0	3.0	59.5	46.9
1500-1600	51.1	14.1	0.0	0.0	0.0	0.0	21.6	0.0	2.5	3.1	32.7	27.2
1600-1700	43.8	2.9	0.0	0.0	0.0	0.0	17.5	0.0	1.8	2.0	28.2	21.3
1700-1800	24.7	2.3	0.0	0.0	0.0	0.0	15.4	0.0	2.4	1.2	17.0	19.0
1800-1900	1.2	.8	0.0	0.0	0.0	0.0	14.0	0.0	3.6	2.5	1.5	20.1
1900-2000	0.0	.4	0.0	0.0	0.0	0.0	5.3	0.0	.3	1.2	.4	6.9
2000-2100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2100-2200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2200-2300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2300-2400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2400-2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

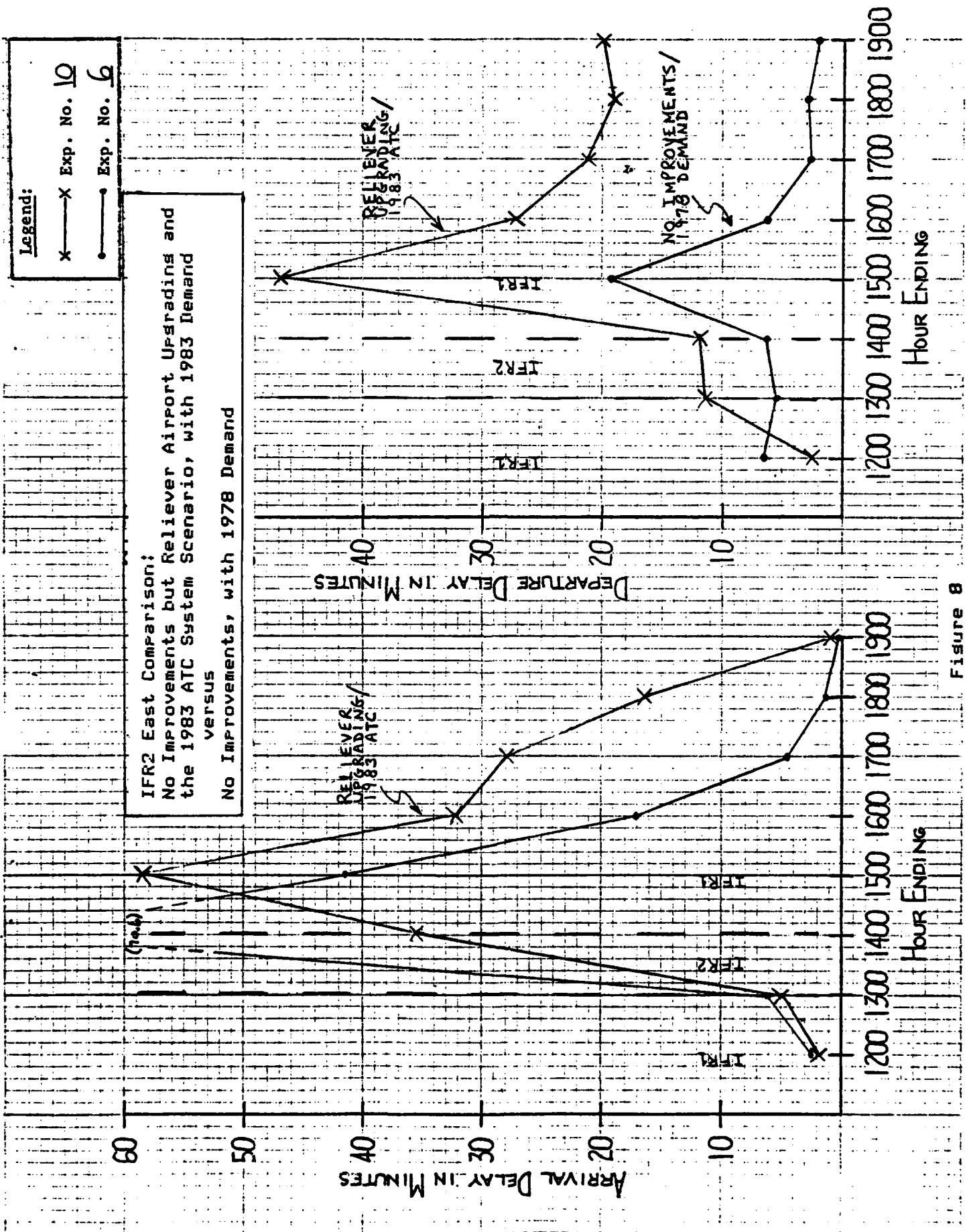


Figure 8

IFR2 East Comparison:
No Improvements but Reliever Airport Upgrading and
the 1983 ATC System Scenario, with 1983 Demand
versus
No Improvements, with 1978 Demand

Legend:
X Exp. No. 10
• Exp. No. 6

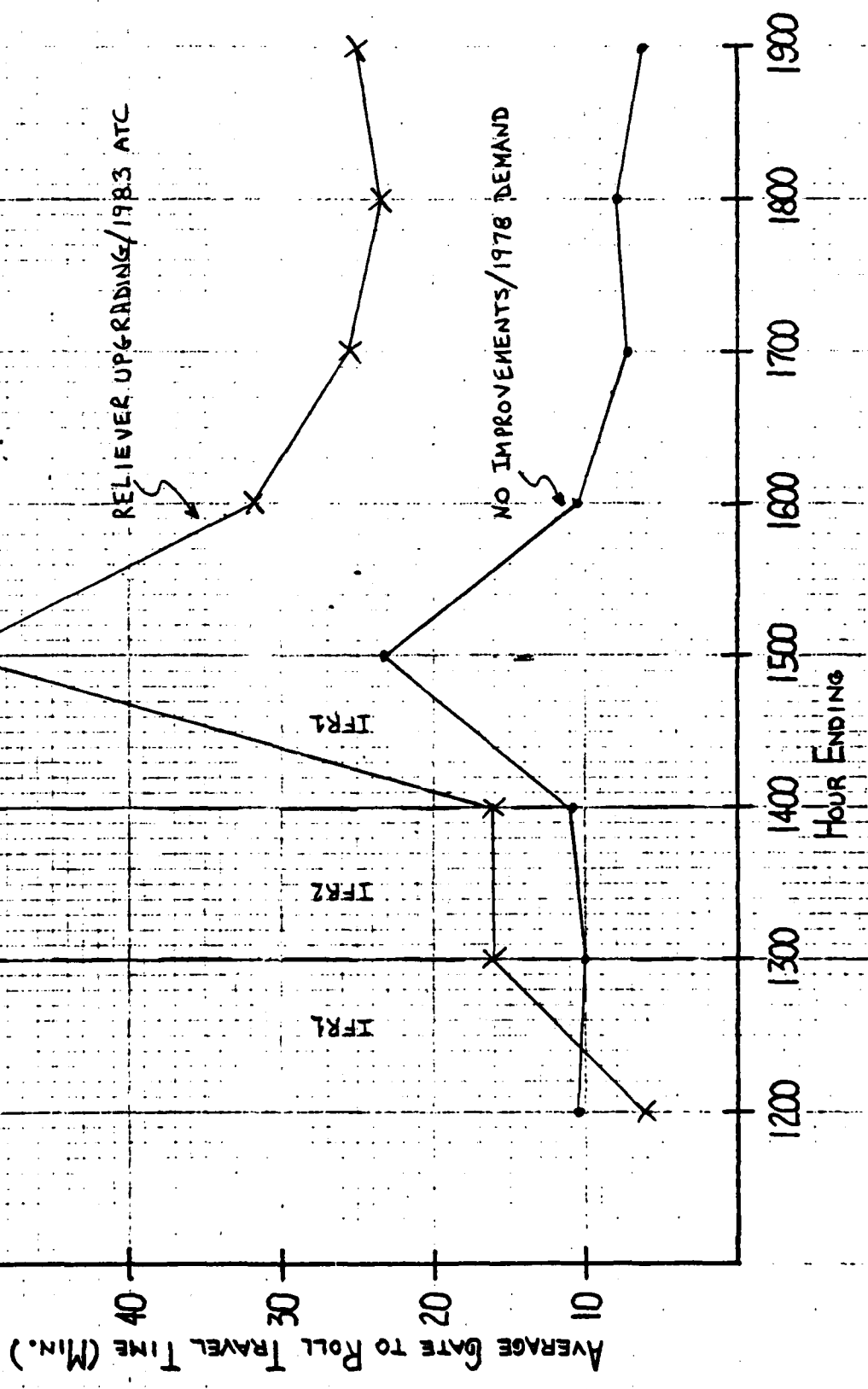


Figure 8 (continued)

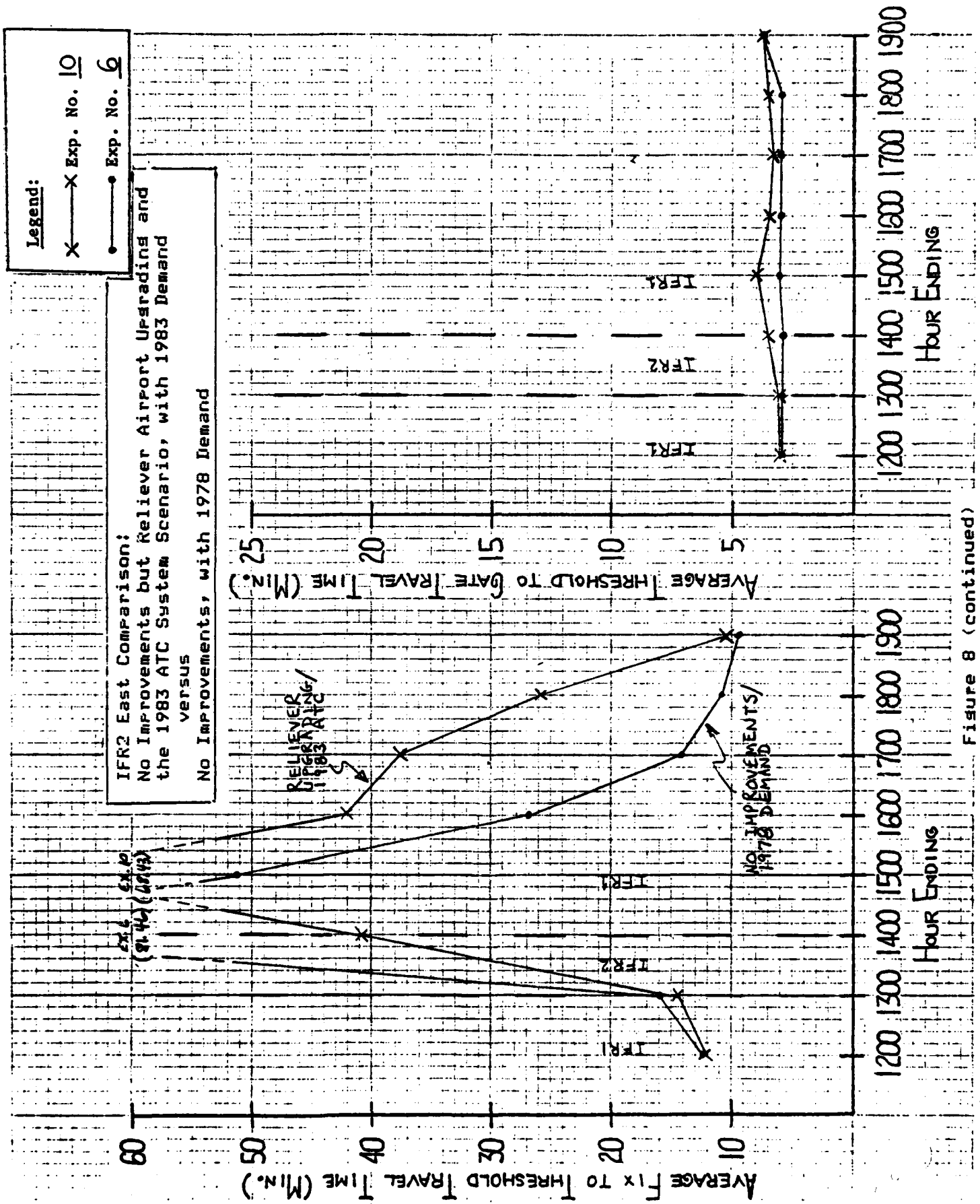


Figure 8 (continued)

EXPERIMENT NO. 21

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under IFR2 conditions, assuming the improved (1983) ATC system scenario and all Miami improvements including a 50-percent reduction in G.A. traffic due to Reliever Airport upgradings:

Arrival Runways

9L,9R

Departure Runways

9L,9R,12

Related Comparison Experiments:

Prior experiment 10 serves as the basis for comparison to this experiment, wherein the Miami-specific improvements were not included.

(An IFR1/IFR2/IFR1 situation was also used in this experiment, in order to allow direct comparison to experiment No. 10.)

IFR1- Ceiling between 200 ft. and 1000 ft. and/or visibility between 2400 ft. RVR and 3 mi.

IFR2- Ceiling between 200 ft. and 1000 ft. and/or visibility between 1800 ft. RVR and 2300 ft. RVR.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 16

EXPERIMENT 21 RESULTS

MIAMI INTER. AIRPORT EXPER.-21 ROUTES-1983 CONFIG-A SEPAR-83IFR1-IFR2 DEMAND-83
AVERAGE FLOW RATES

TIME	ARRIVALS				DEPARTURES				AVERAGE TRAVEL TIMES			
	RWY 9R	RWY 9L	RWY 12	RWY 12	RWY 9R	RWY 9L	RWY 12	RWY 12	FIX TO THRESH	THRESH TO GATE	GATE TO ROLL	
1100-1200	25.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	12.35	2.88	5.66	
1200-1300	28.3	21.0	0.0	0.0	0.0	0.0	0.0	0.0	14.37	2.71	15.68	
1300-1400	27.7	17.0	0.0	0.0	0.0	0.0	0.0	0.0	13.80	3.12	16.12	
1400-1500	27.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	11.31	5.45	43.26	
1500-1600	25.0	25.3	0.0	0.0	0.0	0.0	0.0	0.0	12.57	4.10	56.13	
1600-1700	24.0	19.7	0.0	0.0	0.0	0.0	0.0	0.0	15.02	5.85	62.33	
1700-1800	13.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	10.80	3.90	78.46	
1800-1900	17.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	10.32	3.21	63.10	
1900-2000	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	9.17	2.71	117.23	
2000-2100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
2100-2200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
2200-2300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
2300-2400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
2400-2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
GRAND TOTAL												
AVERAGE DELAYS												
ARRIVALS				DEPARTURES				AVERAGE DELAYS				
TIME	RWY 9R	RWY 9L	RWY 12	RWY 12	RWY 9R	RWY 9L	RWY 12	RWY 12	ARR DELAY	DEP DELAY		
1100-1200	2.5	1.3	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.3		
1200-1300	5.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	4.9	11.5		
1300-1400	5.4	1.1	0.0	0.0	0.0	0.0	0.0	0.0	3.9	12.6		
1400-1500	2.6	.3	0.0	0.0	0.0	0.0	0.0	0.0	4.4	39.1		
1500-1600	2.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	3.8	52.2		
1600-1700	7.4	2.4	0.0	0.0	0.0	0.0	0.0	0.0	8.1	58.3		
1700-1800	1.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	2.8	74.0		
1800-1900	.9	.8	0.0	0.0	0.0	0.0	0.0	0.0	.9	58.7		
1900-2000	0.0	.7	0.0	0.0	0.0	0.0	0.0	0.0	.7	111.7		
2000-2100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2100-2200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2200-2300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2300-2400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
2400-2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

TABLE 16.1

EXPERIMENT 21M RESULTS

MIAMI INTER. AIRPORT EXPER. -21M ROUTES-1983 CONFIG-A SEPAR-83IFR1-IFR2 DEMAND-83
AVERAGE FLOW RATES

TIME	ARRIVALS				DEPARTURES				AVERAGE DELAYS				AVERAGE TRAVEL TIMES					
	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	ARR DELAY	DEP DELAY	FIX TO THRESH	THRESH TO GATE	DATE TO ROLL	
1100-1200	24.5	21.9	0.0	0.0	0.0	0.0	0.0	46.4	52.0	-5.6	2.7	11.7	2.8	0.0	0.0	0.0	17.2	19.0
1200-1300	29.5	21.1	0.0	0.0	0.0	0.0	0.0	50.6	47.0	-2.0	15.0	20.3	2.8	0.0	0.0	0.0	38.1	50.0
1300-1400	27.0	17.0	0.0	0.0	0.0	0.0	0.0	44.0	44.0	-2.0	15.0	26.0	4.5	0.0	0.0	0.0	45.5	56.0
1400-1500	27.0	13.0	0.0	0.0	0.0	0.0	0.0	40.0	38.0	-2.0	19.3	11.5	3.4	0.0	0.0	0.0	34.2	32.0
1500-1600	25.0	26.0	0.0	0.0	0.0	0.0	0.0	51.0	60.0	-9.0	17.1	15.2	6.4	0.0	0.0	0.0	38.7	31.0
1600-1700	24.0	19.0	0.0	0.0	0.0	0.0	0.0	45.0	34.0	-1.0	19.5	20.3	3.6	0.0	0.0	0.0	43.4	34.0
1700-1800	13.8	16.0	0.0	0.0	0.0	0.0	0.0	29.8	31.0	-1.2	22.0	24.0	6.1	0.0	0.0	0.0	52.1	59.0
1800-1900	16.2	12.0	0.0	0.0	0.0	0.0	0.0	28.2	27.0	-1.0	15.4	20.0	7.2	0.0	0.0	0.0	42.6	34.0
1900-2000	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	-0.0	3.0	0.0	0.2	0.0	0.0	0.0	3.2	0.0
2000-2100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2100-2200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2200-2300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2300-2400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2400-2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRAND TOTAL																		
TIME	ARRIVALS				DEPARTURES				AVERAGE DELAYS				AVERAGE TRAVEL TIMES					
	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	RWY 9R	RWY 12	RWY 9L	RWY 12	TAXI OUT	RWY CRS	TOT	RWY CRS	DE-MAND	DIF
1100-1200	2.6	1.2	0.0	0.0	0.0	0.0	0.0	1.9	2.4	1.6	4.5	0.0	0.0	0.0	2.2	0.0	0.0	0.0
1200-1300	5.0	4.7	0.0	0.0	0.0	0.0	0.0	4.9	18.9	4.7	8.8	0.0	0.0	0.0	10.6	0.0	1.1	1.1
1300-1400	5.3	1.2	0.0	0.0	0.0	0.0	0.0	3.7	37.0	3.3	15.9	0.0	0.0	0.0	15.4	0.0	1.7	1.7
1400-1500	2.7	.4	0.0	0.0	0.0	0.0	0.0	1.9	39.3	1.6	41.3	0.0	0.0	0.0	26.8	0.0	5.8	2.0
1500-1600	2.2	3.4	0.0	0.0	0.0	0.0	0.0	2.9	38.2	4.3	41.9	0.0	0.0	0.0	28.3	0.0	2.3	8.3
1600-1700	7.0	2.1	0.0	0.0	0.0	0.0	0.0	5.0	32.9	3.4	42.7	0.0	0.0	0.0	28.0	0.0	2.2	5.0
1700-1800	.9	1.9	0.0	0.0	0.0	0.0	0.0	1.4	6.8	7.5	11.5	0.0	0.0	0.0	8.1	0.0	1.6	1.5
1800-1900	.4	.9	0.0	0.0	0.0	0.0	0.0	.6	8.1	2.1	18.7	0.0	0.0	0.0	7.2	0.0	1.1	0.0
1900-2000	0.0	.4	0.0	0.0	0.0	0.0	0.0	.4	3.2	0.0	1.2	0.0	0.0	0.0	3.3	1.1	1.1	0.0
2000-2100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2100-2200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2200-2300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2300-2400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2400-2500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

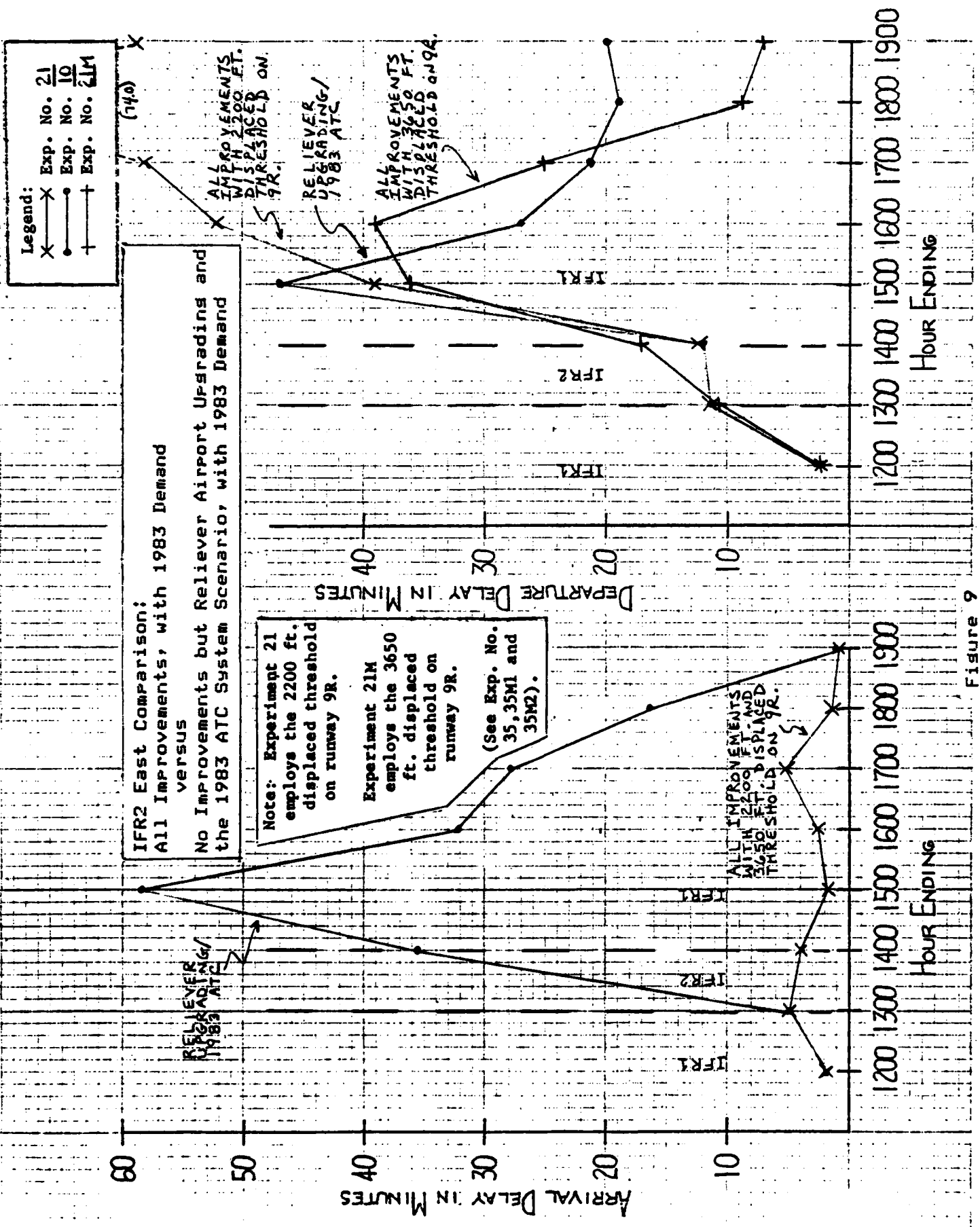


Figure 9

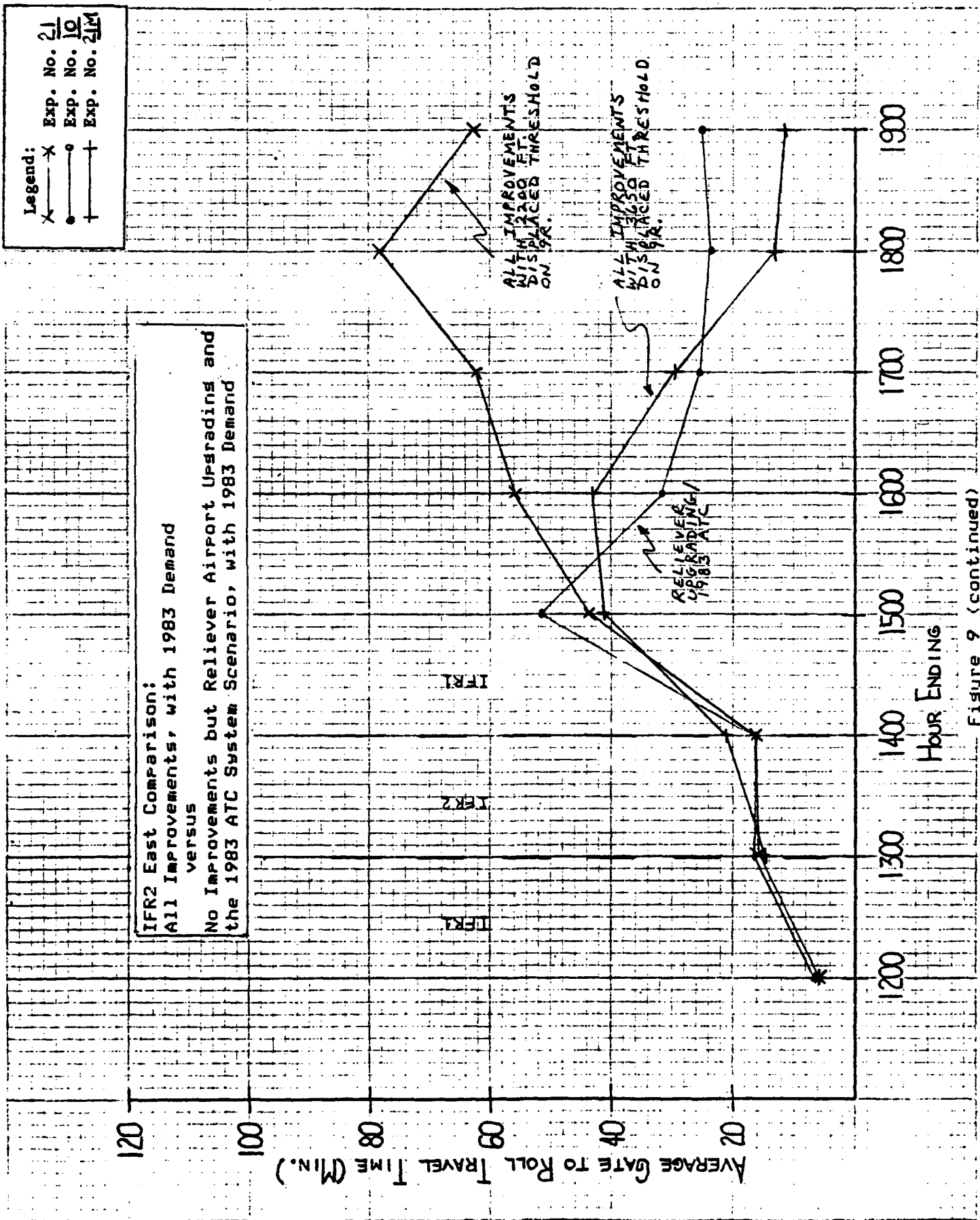


Figure 9 (continued)

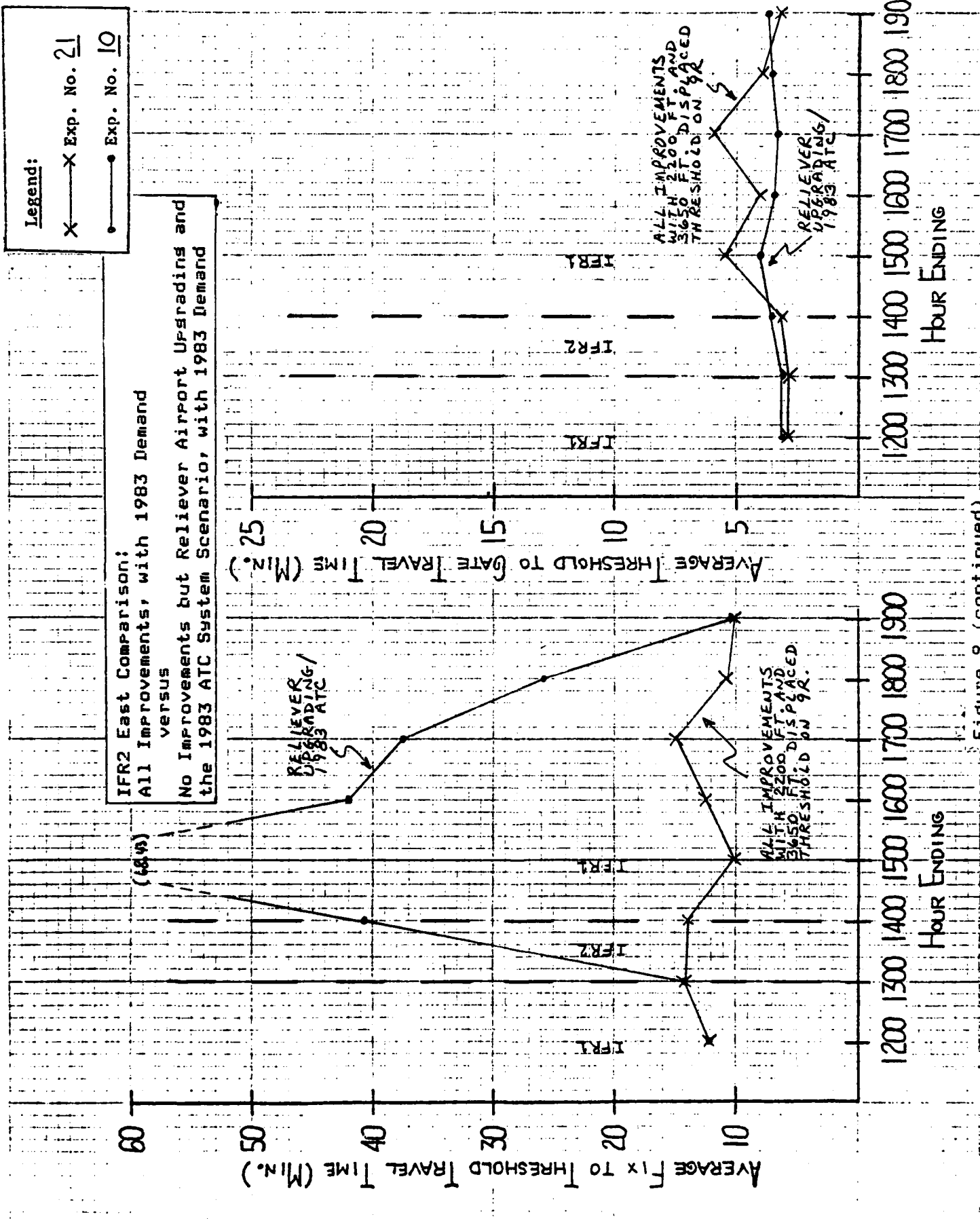


Figure 9 (continued)

TABLE 17
SET 3 DEMAND
VFR, WESTERLY FLOW

EXPERIMENT NUMBER		RUNWAY 27R	RUNWAY 27L	RUNWAY 30	TOTAL
40	ARRIVALS	239	156	0	395
	DEPARTURES	198	172	0	370
	TOTAL	437	328	0	765
36 (8)	ARRIVALS	192	31	172	395
	DEPARTURES	195	172	3	370
	TOTAL	387	203	175	765
37	ARRIVALS	166	30	158	354
	DEPARTURES	167	160	2	329
	TOTAL	333	190	160	683
17	ARRIVALS	212	142	0	354
	DEPARTURES	167	160	2	329
	TOTAL	379	302	2	683
12 AND 12A	ARRIVALS	165	0	189	354
	DEPARTURES	167	162	0	329
	TOTAL	332	162	189	683
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				

EXPERIMENT NO. 40

Objective:

To assess delays to aircraft in 1978 for the following runway configuration under VFR1 conditions, assuming no airport or ATC system improvements have been implemented:

Arrival Runways

27L, 27R

Departure Runways

27L, 27R

Related Comparison Experiments:

Prior experiment 8 (Data Package No. 5) serves as the basis for comparison to this experiment, wherein the conditions of this study case were identical except for the use of runway 30.

VFR1- Ceiling above 1500 ft. and visibility over 5 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

EXPERIMENT 40 RESULTS

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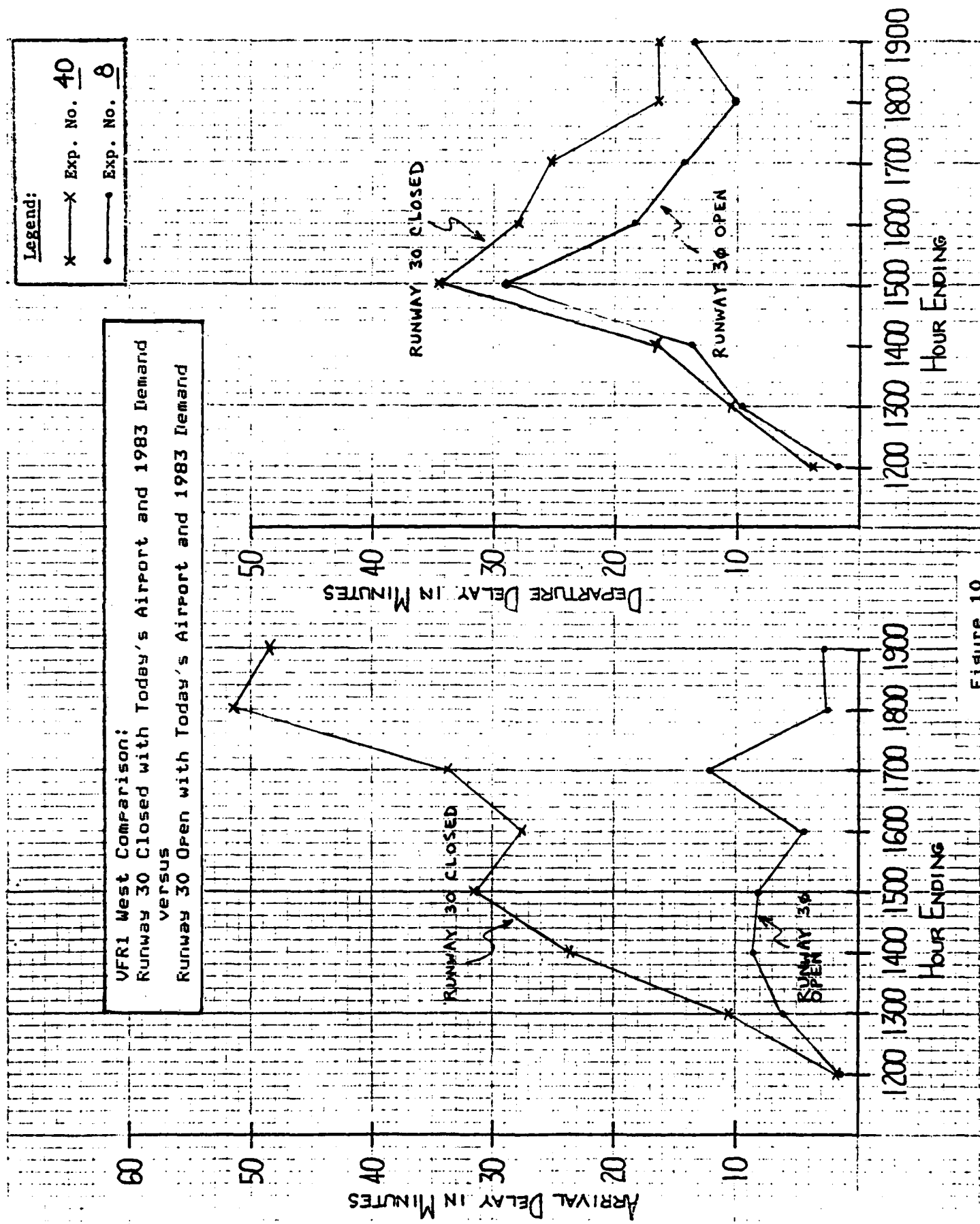


Figure 10

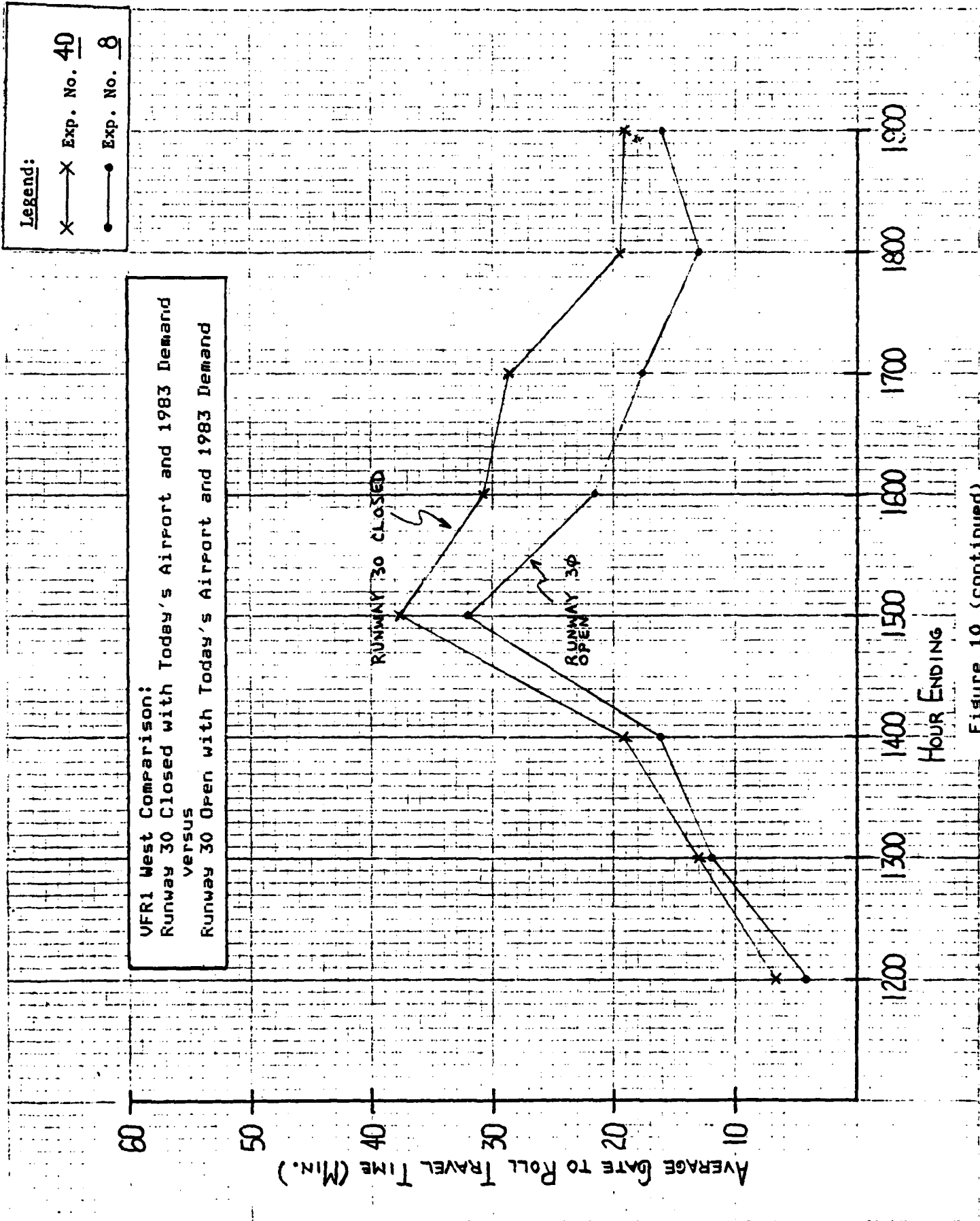


Figure 10 (continued)

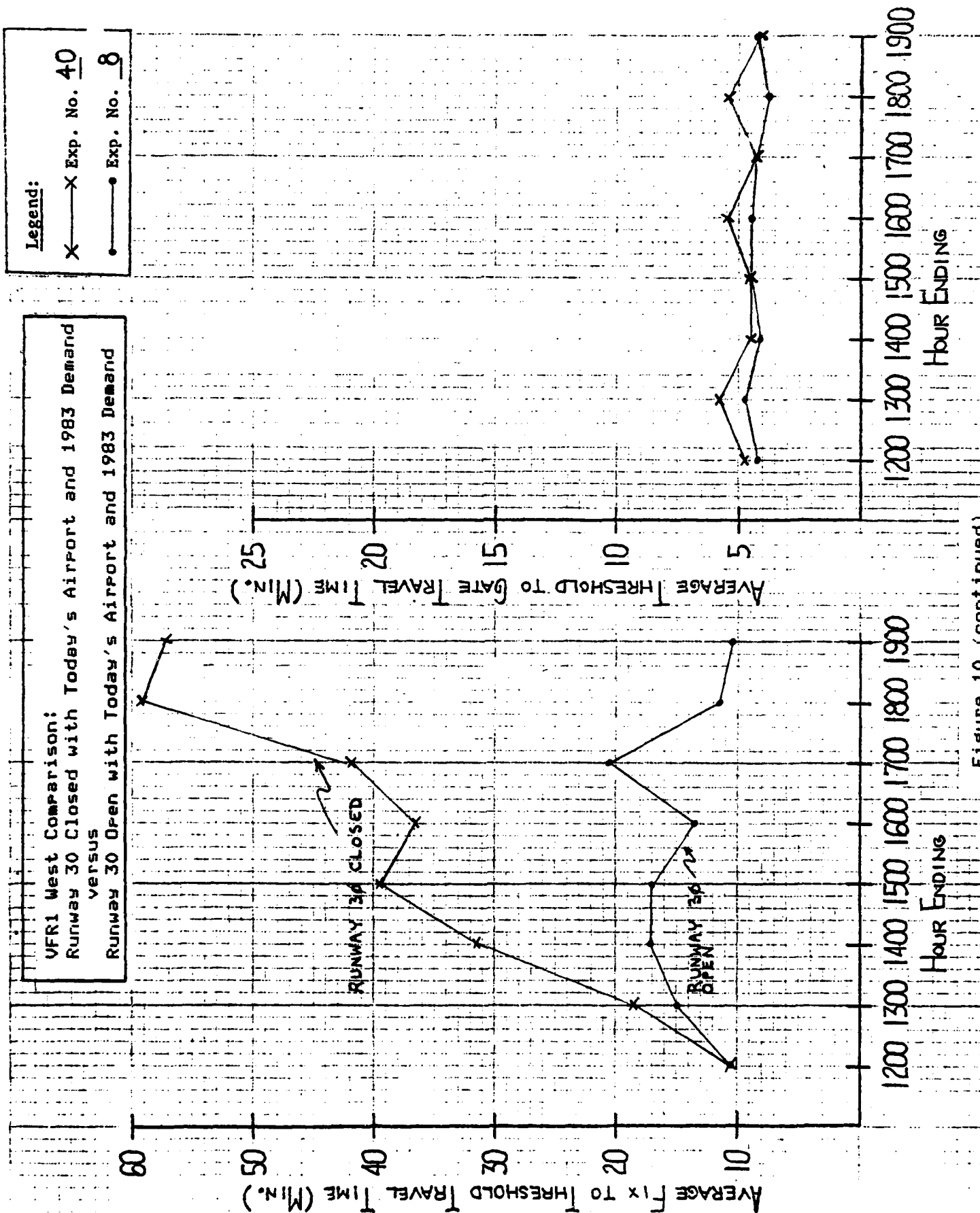


Figure 10 (continued)

EXPERIMENT NO. 36

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under VFR1 conditions, assuming the improved (1983) ATC system scenario and all Miami near-term improvements except for Reliever Airport upgrading:

Arrival Runways

27L, 27R, 30

Departure Runways

27L, 27R, 30

Related Comparison Experiments:

Prior experiment 8 (Data Package No. 5) serves as the 1983 demand level baseline for comparison to this experiment. Experiment 37 assesses the expected delays after reducing the G.A. traffic of this study case by 50-percent.

VFR1- Ceiling above 1500 ft. and visibility over 5 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 19

EXPERIMENT 36 RESULTS

MIAMI INTER. AIRPORT EXPR.-36 ROUTES=1983 CONFIG=B SEPAR=BSVFR1 DEMAND=83

AVERAGE FLOW RATES

TIME	ARRIVALS				DEPARTURES				DIF	AVERAGE TRAVEL TIMES			
	RWY 27R	RWY 27L	RWY 30	RWY 30	RWY 27R	RWY 27L	RWY 30	RWY 30		FIX TO THRESH	THRESH TO GATE	GATE TO ROLL	
1100-1200	23.0	5.3	23.8	0.0	0.0	0.0	0.0	0.0	-2.9	10.6	7.0	0.0	0.0
1200-1300	31.6	5.7	23.2	0.0	0.0	0.0	0.0	0.0	-4.4	22.9	32.7	1.0	0.0
1300-1400	27.4	3.0	18.0	0.0	0.0	0.0	0.0	0.0	-4.0	28.6	30.2	1.0	0.0
1400-1500	21.0	5.2	21.0	0.0	0.0	0.0	0.0	0.0	-8.8	33.6	13.1	0.0	0.0
1500-1600	26.0	3.8	30.1	0.0	0.0	0.0	0.0	0.0	-11.9	21.2	22.8	0.0	0.0
1600-1700	23.0	4.0	22.9	0.0	0.0	0.0	0.0	0.0	-0.0	23.1	12.2	1.0	0.0
1700-1800	24.1	2.0	16.0	0.0	0.0	0.0	0.0	0.0	-3.9	30.1	35.0	0.0	0.0
1800-1900	15.5	2.0	15.0	0.0	0.0	0.0	0.0	0.0	-2.0	24.9	19.0	0.0	0.0
1900-2000	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0
AVERAGE DELAYS										GRAND TOTAL			
										11.69	3.27	0.00	

AVERAGE DELAYS

TIME	ARRIVALS				DEPARTURES				DIF	AVERAGE DELAYS			
	RWY 27R	RWY 27L	RWY 30	RWY 30	RWY 27R	RWY 27L	RWY 30	RWY 30		ARR	DEP	DEL	
1100-1200	.6	1.8	.9	0.0	0.0	0.0	0.0	0.0	.1	1.9	1.9	0.0	
1200-1300	3.6	3.0	1.5	0.0	0.0	0.0	0.0	0.0	.1	2.9	8.5	0.0	
1300-1400	8.5	.7	.7	0.0	0.0	0.0	0.0	0.0	.4	5.1	11.5	0.0	
1400-1500	5.8	.8	.7	0.0	0.0	0.0	0.0	0.0	.2	3.1	17.9	0.0	
1500-1600	2.1	1.6	3.5	0.0	0.0	0.0	0.0	0.0	.1	2.9	3.9	0.0	
1600-1700	1.3	5.1	12.8	0.0	0.0	0.0	0.0	0.0	.1	6.9	3.4	0.0	
1700-1800	2.5	.7	.8	0.0	0.0	0.0	0.0	0.0	.2	1.8	7.0	0.0	
1800-1900	2.3	1.4	.8	0.0	0.0	0.0	0.0	0.0	.2	1.6	6.5	0.0	
1900-2000	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	.3	2.2	0.0	0.0	

VFR1 West Comparison:
 All Improvements but Reliever Airport Upgradings,
 with 1983 Demand
 versus
 No Improvements, with 1983 Demand

Legend:
 X — Exp. No. 36
 • — Exp. No. 8

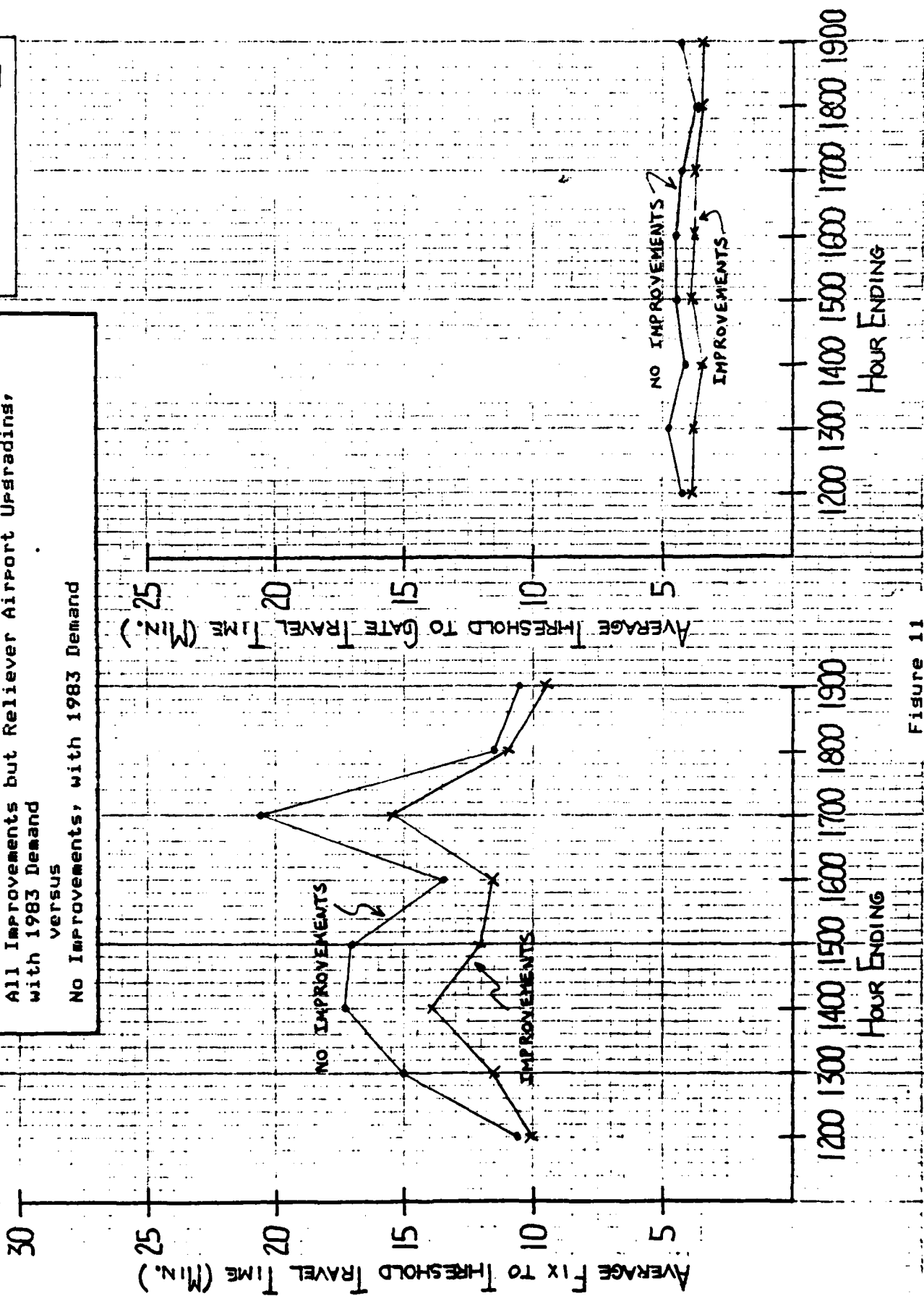


Figure 11

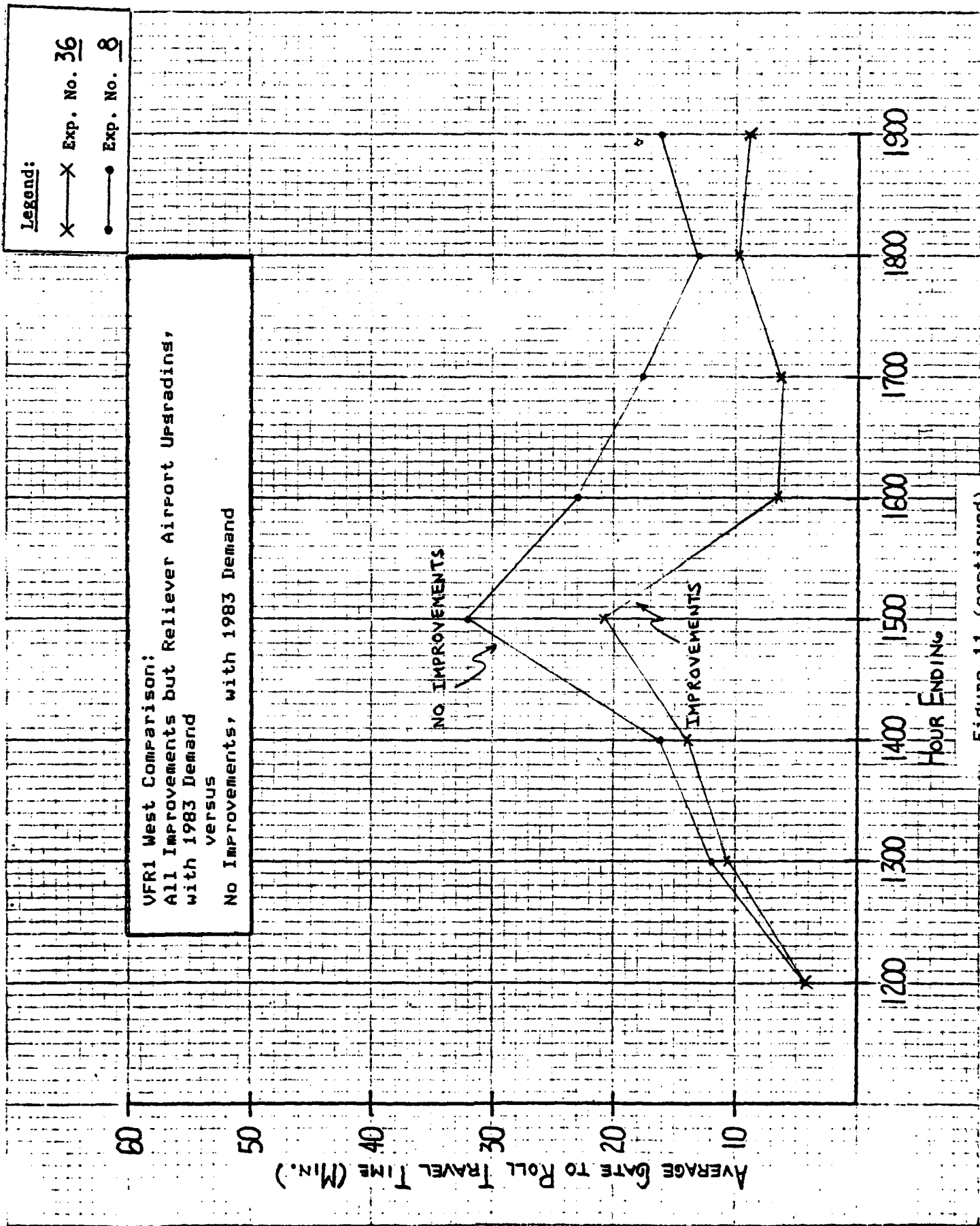


Figure 11 (continued)

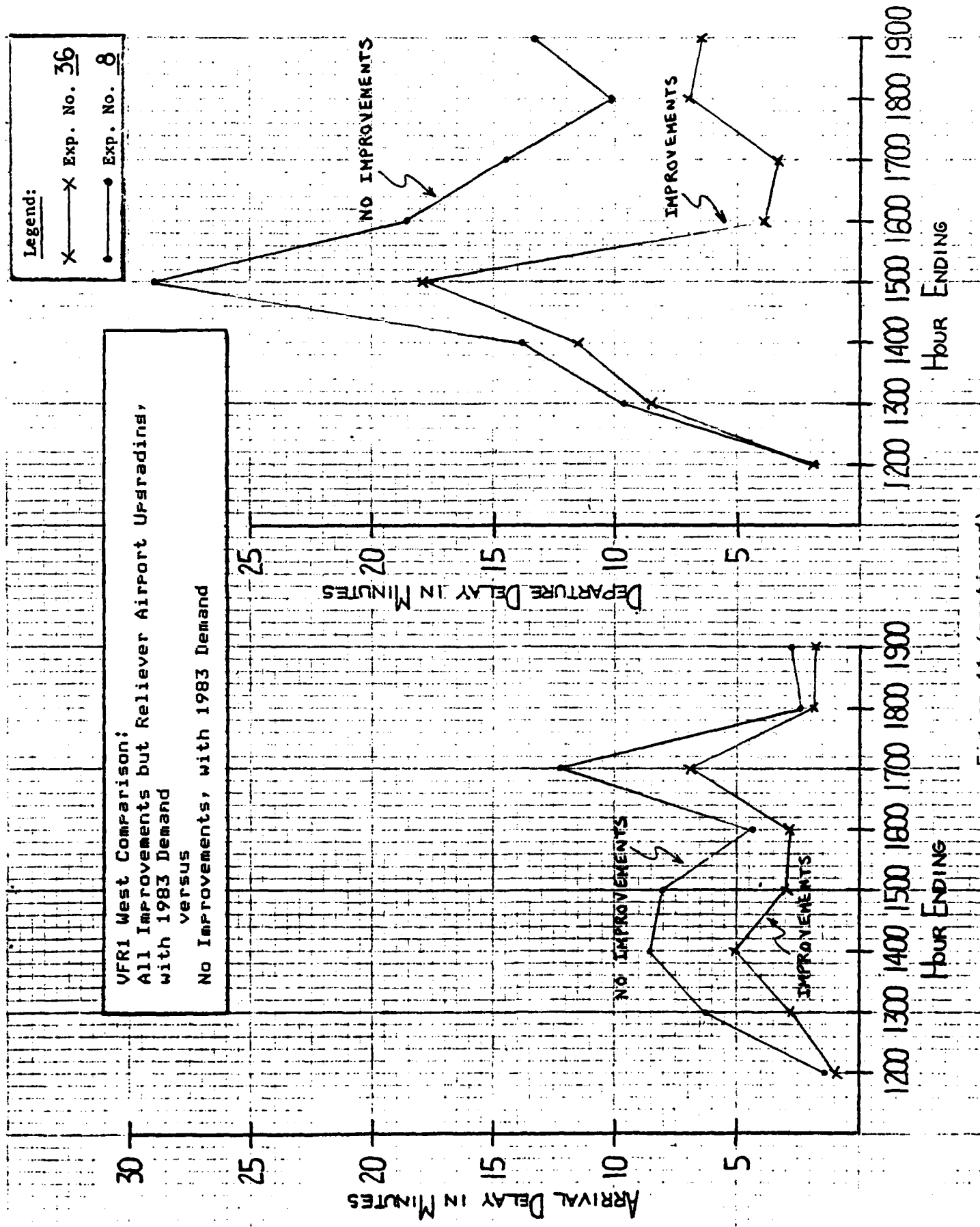


Figure 11 (continued)

EXPERIMENT NO. 37

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under VFR1 conditions, assuming the improved (1983) ATC system scenario and all Miami improvements including a 50-percent reduction in G.A. traffic due to Relievert Airport upgradings:

Arrival Runways

27L, 27R, 30

Departure Runways

27L, 27R, 30

Related Comparison Experiments:

Prior experiment 36 serves as the basis for comparison to this experiment, wherein the conditions of this study case were identical except for the 50-percent reduction in G.A. traffic due to the upgradings of Opa Locka and Tamiami.

VFR1- Ceiling above 1500 ft. and visibility over 5 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 20

EXPERIMENT 37 RESULTS

MIAMI INTER. AIRPORT EXPER.-37 ROUTES=1983 CONFIG=B SEPAR=83VFR1 DEMAND=83

AVERAGE FLOW RATES

TIME	ARRIVALS						DEPARTURES						AVERAGE TRAVEL TIMES TO FIX							
	RWY 27R	RWY 27L	RWY 30	RWY	RWY	RWY	TOT DE- MAND	DIF	RWY 27R	RWY 27L	RWY 30	RWY	RWY	RWY	TOT DE- MAND	DIF	THRESH TO GATE	FIX TO THRESH	ROLL	
1100-1200	19.8	4.0	23.9	0.0	0.0	0.0	47.7	56.0	-8.3	15.0	6.0	0.0	0.0	0.0	0.0	21.0	0.0	-11.25	4.11	4.36
1200-1300	28.2	3.0	25.3	0.0	0.0	0.0	56.5	49.0	-8	21.6	30.0	0.0	0.0	0.0	0.0	51.6	-1.4	11.61	3.88	6.92
1300-1400	21.0	4.0	17.8	0.0	0.0	0.0	42.8	44.0	-2.0	29.1	26.0	0.0	0.0	0.0	0.0	55.1	-2.3	10.15	3.96	6.24
1400-1500	26.5	1.0	15.0	0.0	0.0	0.0	42.5	41.0	-5	19.3	15.0	0.0	0.0	0.0	0.0	34.3	-1.0	11.15	3.67	6.28
1500-1600	27.6	5.0	22.3	0.0	0.0	0.0	54.9	59.0	-4.6	15.2	18.0	1.0	0.0	0.0	0.0	34.2	-1.8	11.35	3.86	5.04
1600-1700	19.9	3.0	20.7	0.0	0.0	0.0	43.6	39.0	-0	20.8	13.8	1.0	0.0	0.0	0.0	35.6	-2	11.05	3.89	5.76
1700-1800	12.0	5.0	17.0	0.0	0.0	0.0	34.0	34.0	-0	25.0	34.0	0.0	0.0	0.0	0.0	59.0	-3.2	9.92	3.69	6.45
1800-1900	11.0	5.0	15.0	0.0	0.0	0.0	31.0	31.0	-0	21.0	17.2	0.0	0.0	0.0	0.0	38.2	-0	9.75	3.87	4.29
1900-2000	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	-0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0	9.50	3.14	0.00
AVERAGE DELAYS																				
TIME	ARRIVALS						DEPARTURES						AVERAGE DELAYS							
	RWY 27R	RWY 27L	RWY 30	RWY	RWY	RWY	TOT	TAXI IN	RWY 27R	RWY 27L	RWY 30	RWY	RWY	RWY	TOT	CRS	TAXI OUT	ARR DELAY	DEP DELAY	
1100-1200	.9	1.9	2.2	0.0	0.0	0.0	1.7	.1	2.0	1.1	0.0	0.0	0.0	0.0	1.8	.0	.0	1.7	1.8	
1200-1300	1.5	2.2	3.1	0.0	0.0	0.0	2.3	.0	7.5	2.4	0.0	0.0	0.0	0.0	4.5	.0	.3	2.3	4.8	
1300-1400	.6	.7	.9	0.0	0.0	0.0	.7	.1	5.3	1.6	0.0	0.0	0.0	0.0	3.5	.0	.3	.8	3.8	
1400-1500	2.2	0.0	1.1	0.0	0.0	0.0	1.8	.0	5.6	.6	0.0	0.0	0.0	0.0	3.4	.0	.0	1.8	3.5	
1500-1600	2.2	.8	2.2	0.0	0.0	0.0	2.1	.1	3.0	1.6	1.7	0.0	0.0	0.0	2.3	.0	.4	2.1	2.7	
1600-1700	1.8	.5	1.7	0.0	0.0	0.0	1.7	.1	3.2	1.5	5.1	0.0	0.0	0.0	2.6	.0	.2	1.8	2.8	
1700-1800	.0	.5	.7	0.0	0.0	0.0	.4	.0	2.1	4.7	0.0	0.0	0.0	0.0	3.6	.0	.4	.5	4.0	
1800-1900	.3	.3	.8	0.0	0.0	0.0	.5	.0	1.7	1.3	0.0	0.0	0.0	0.0	1.5	.0	.3	.5	1.9	
1900-2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.0	.0	0.0	

VFR1 West Comparison:
All Improvements, with 1983 Demand
versus
All Improvements but Reliever Airport Upgradings,
with 1983 Demand

Arrival Delay in Minutes

Departure Delay in Minutes

Hour Ending

Hour Ending

Legend:

X Exp. No. 37

• Exp. No. 36

NO RELIEVER UPGRADING

RELIEVER UPGRADING

NO RELIEVER UPGRADING

RELIEVER UPGRADING

Figure 12

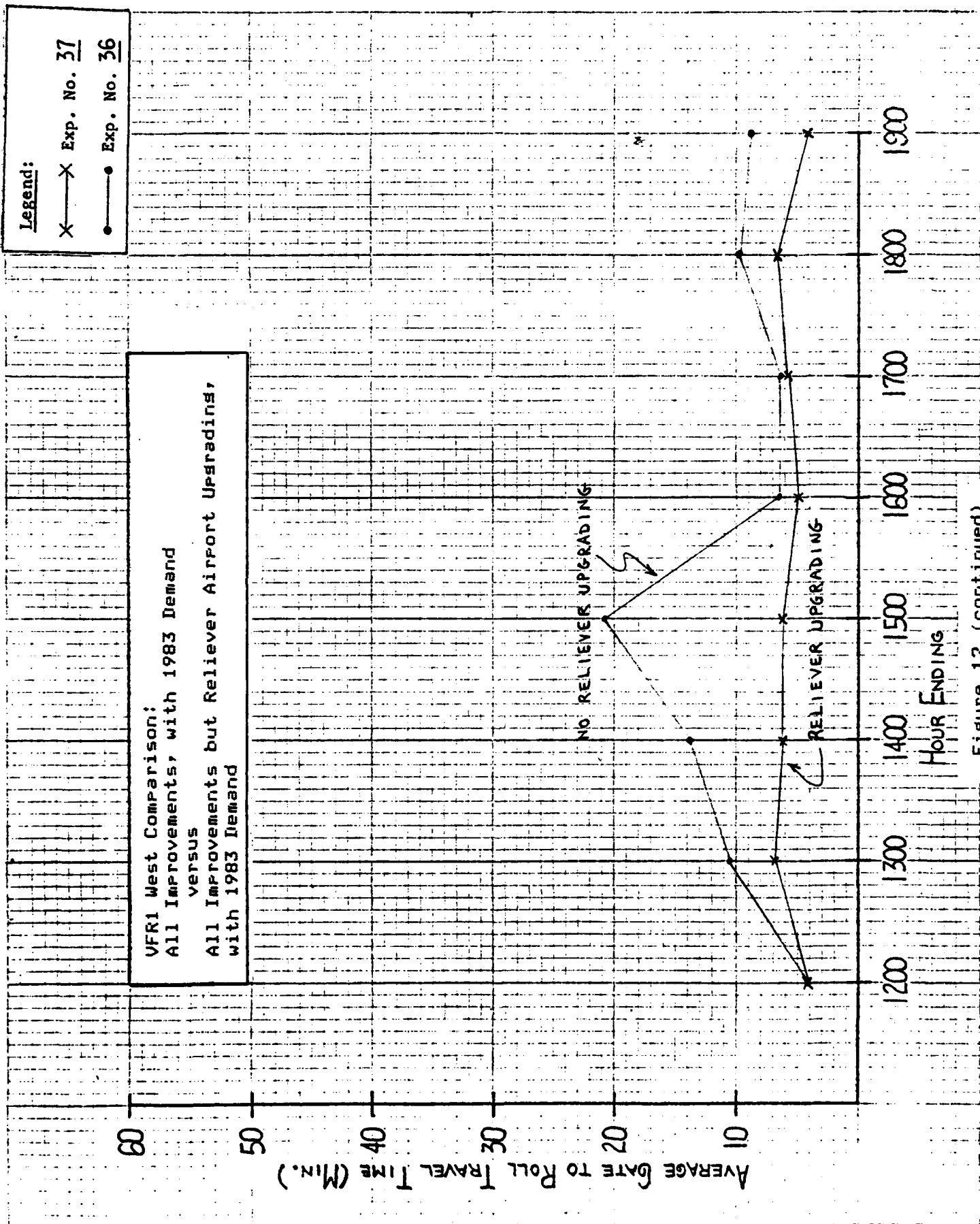


Figure 12 (continued)

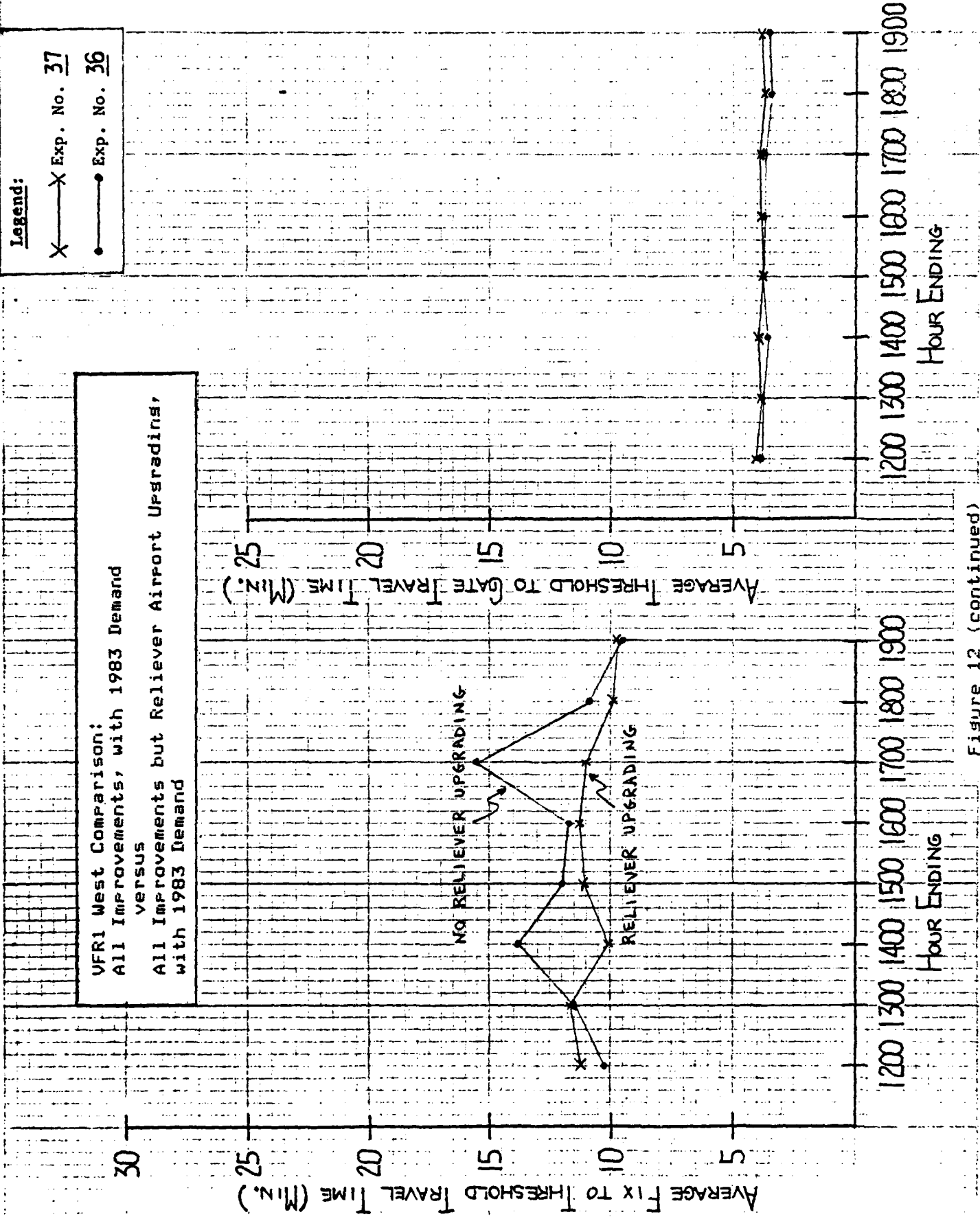


Figure 12 (continued)

EXPERIMENT NO. 17

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under VFR2 conditions, assuming the improved (1983) ATC system scenario and no Miami near-term improvements except for a 50-percent reduction in G.A. traffic due to Reliever Airport upgrading:

Arrival Runways

27L, 27R

Departure Runways

27L, 27R, 30

Related Comparison Experiments:

Prior experiment 38 (Data Package No. 5) serves as the 1983 demand level baseline for comparison to this experiment. Experiment 12 assesses the expected delays after adding the Miami-specific improvements to this study case.

VFR2- Ceiling between 1000 ft. and 1500 ft. and
visibility between 3 and 5 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 21

MIAMI INTER. AIRPORT EXPER.-17 ROUTES=1978 CONFIG=B SEPAR=83VFR1 DEMAND=83

[illegible]

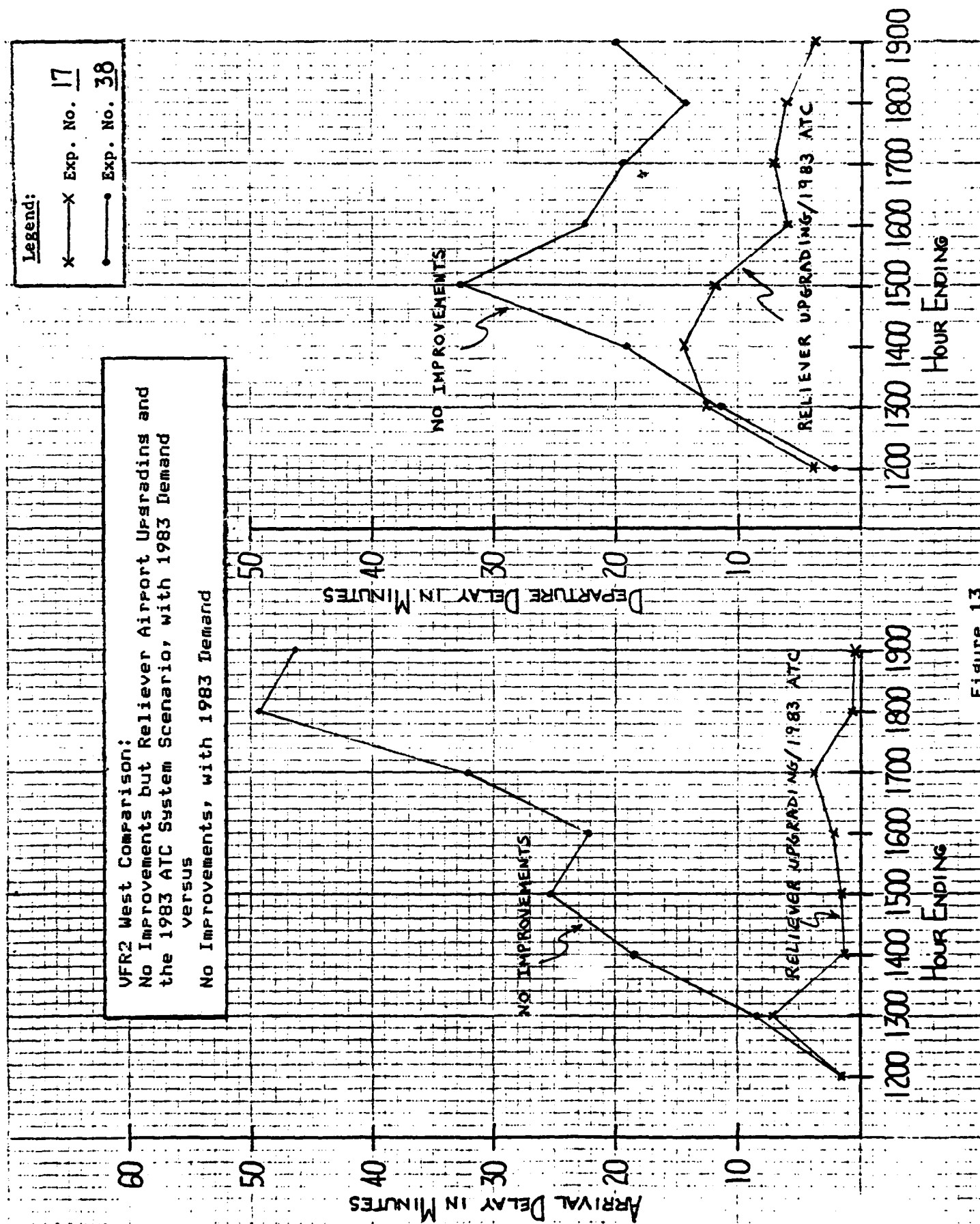


Figure 13

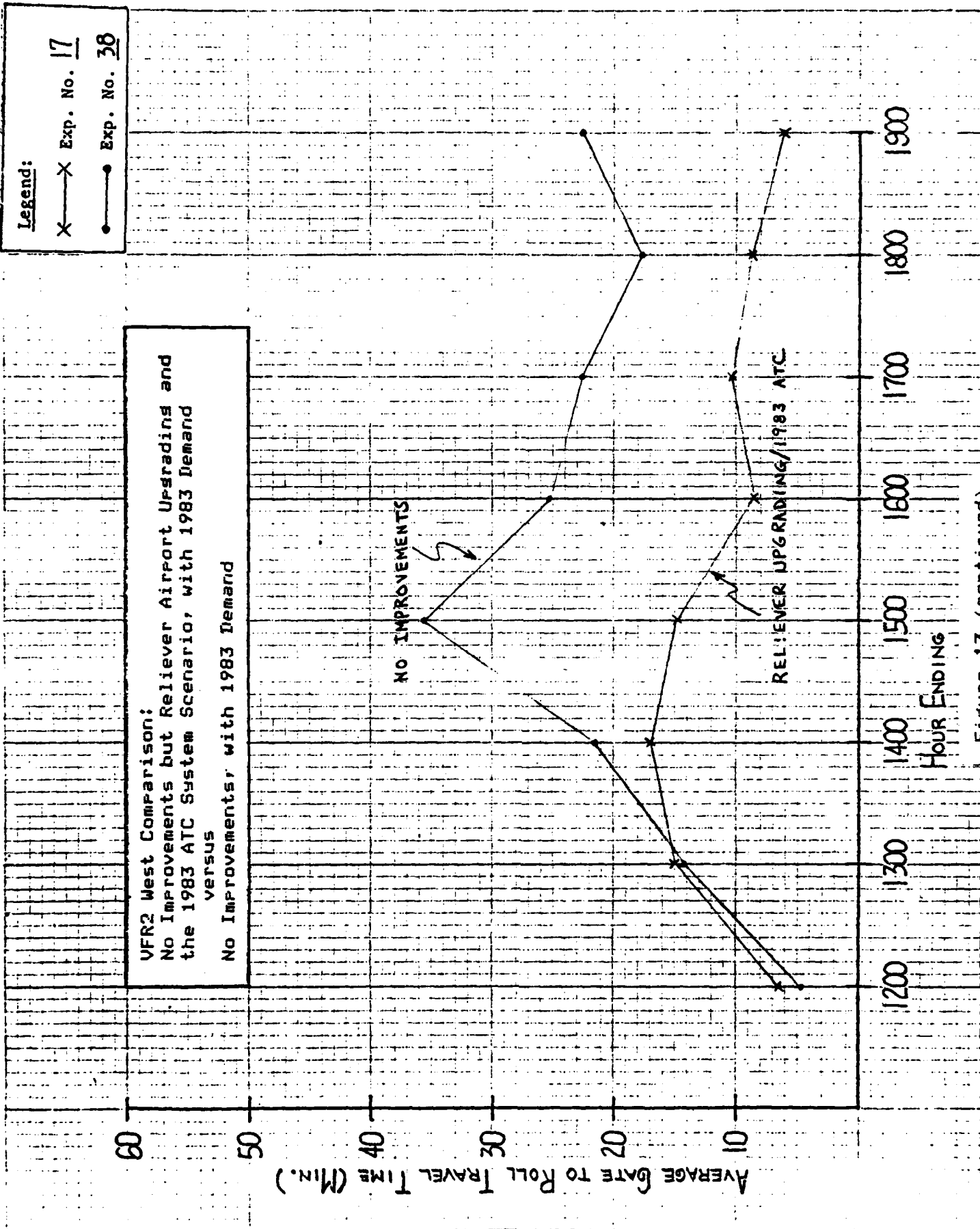


Figure 13 (continued)

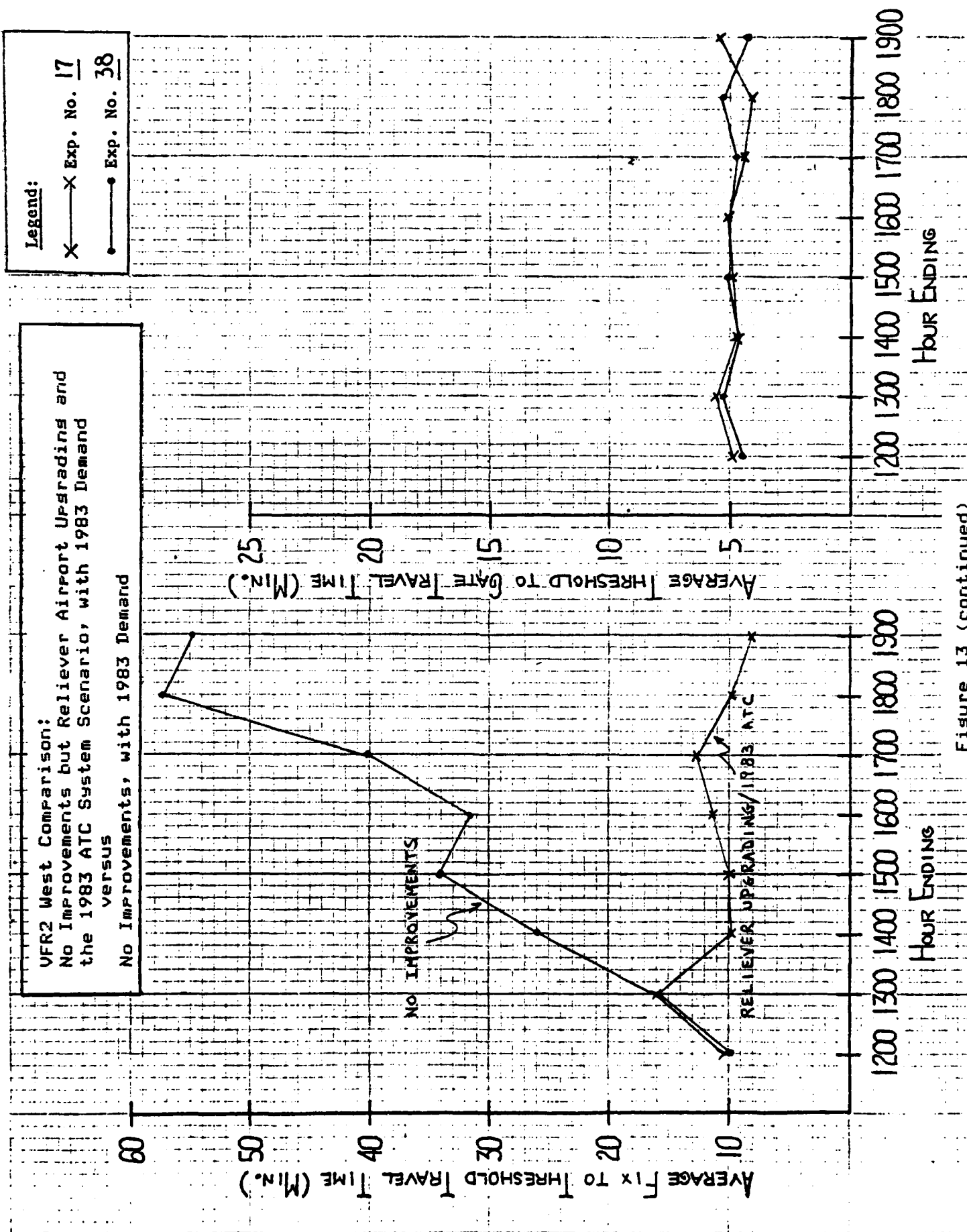


Figure 13 (continued)

EXPERIMENT NO. 12

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under VFR2 conditions, assuming the improved (1983) ATC system scenario and all Miami improvements including a 50-percent reduction in G.A. traffic due to Reliever Airport upgradings:

Arrival Runways

27R,30

Departure Runways

27L,27R

Related Comparison Experiments:

Prior experiment 17 serves as the basis for comparison to this experiment, wherein the Miami-specific improvements were not included.

VFR2- Ceilings between 1000 ft. and 1500 ft. and
visibility between 3 and 5 mi.

Data Package No. 4
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

EXPERIMENT 12 RESULTS

MIAMI INTER. AIRPORT EXP. -12 ROUTES=1983 CONFID-B SEPAR=83UFR1 DEMAND=83
AVERAGE FLOW RATES

[illegible]

VFR2 West Comparison:
All Improvements, with 1983 Demand
versus
No Improvements but Reliever Airport Upgradings and
the 1983 ATC System Scenario, with 1983 Demand

ARRIVAL DELAY IN MINUTES

DEPARTURE DELAY IN MINUTES

RELIEVER UPGRADING/1983 ATC

ALL IMPROVEMENTS

1200 1300 1400 1500 1600 1700 1800 1900

Hour Ending

RELIEVER UPGRADING/1983 ATC

ALL IMPROVEMENTS

1200 1300 1400 1500 1600 1700 1800 1900

Hour Ending

Legend:

X Exp. No. 12

• Exp. No. 17

Figure 14

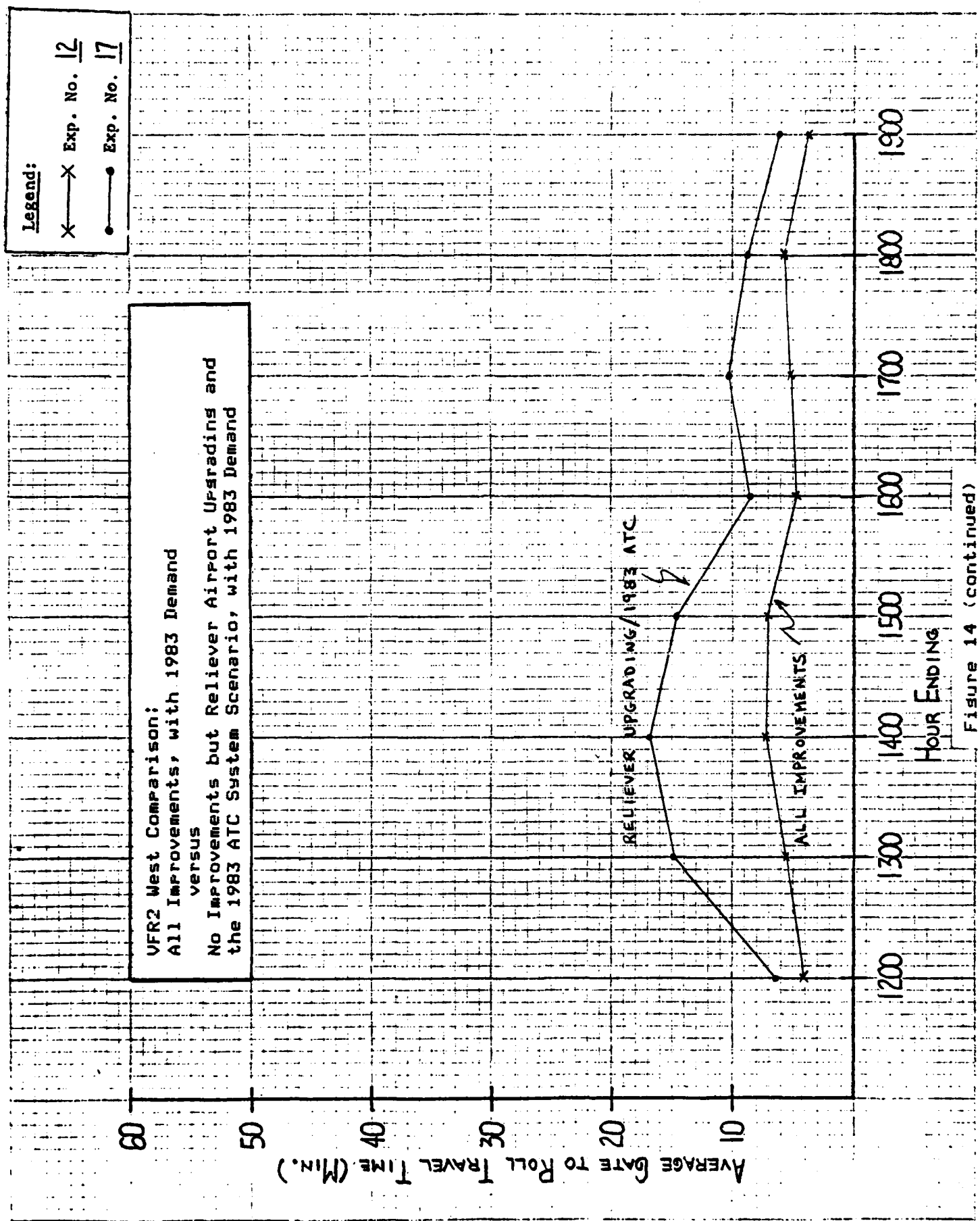


Figure 14 (continued)

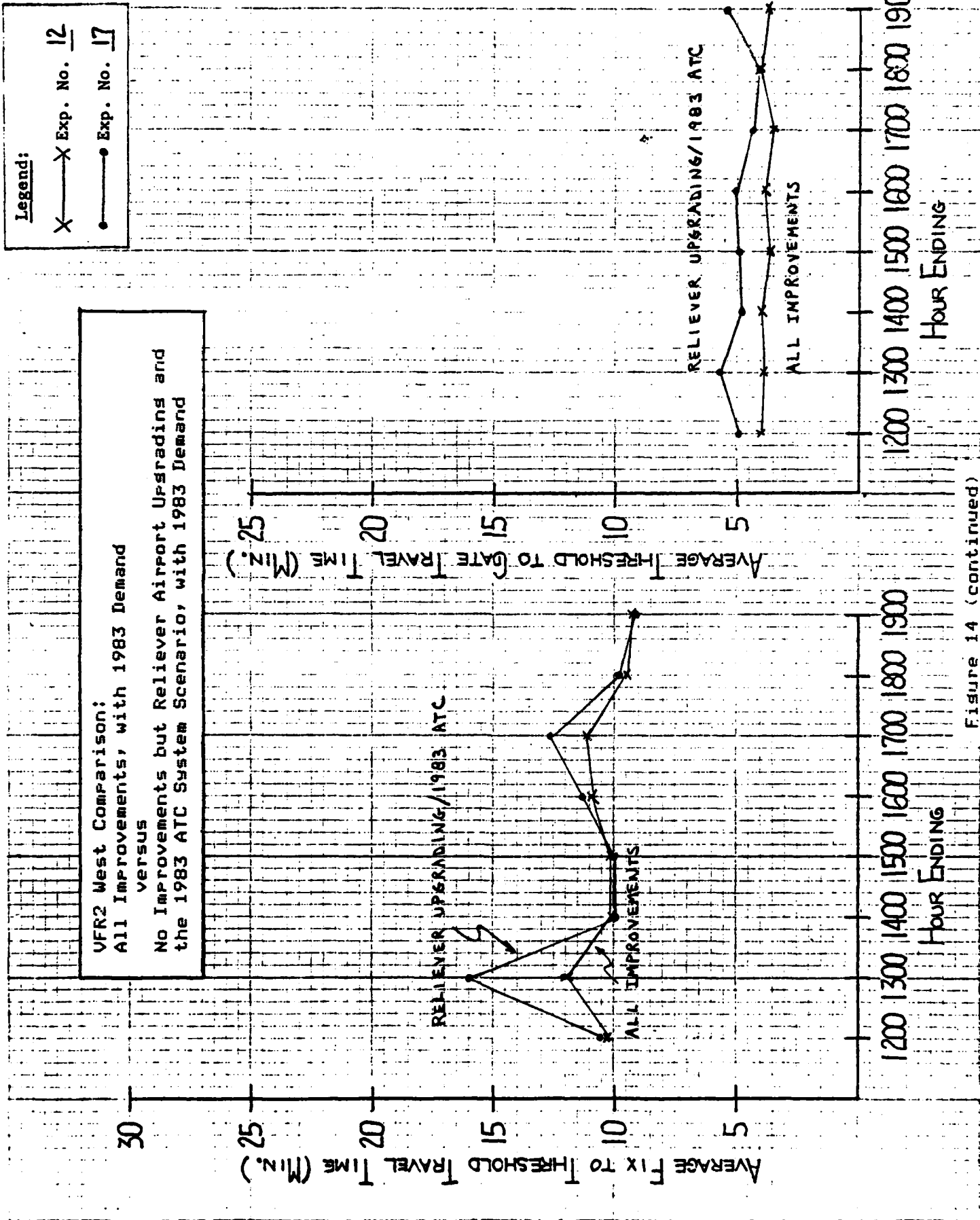


Figure 14 (continued)

EXPERIMENT NO. 12A

Objective:

To assess the delay impact of towing aircraft to and from maintenance areas in 1983 instead of taxiing them as defined by improvement item No. 10.

Arrival Runways

27R,30

Departure Runways

27L,27R

Related Comparison Experiments:

Prior experiment 12 serves as the basis for comparison to this experiment, wherein the conditions of this study case were identical except that aircraft are being taxied instead of towed in experiment No. 12.

VFR2- Ceilings between 1000 ft. and 1500 ft. and
visibility between 3 and 5 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 23

EXPERIMENT 12A RESULTS

MIAMI INTER. AIRPORT EXPER.-12A ROUTES=1983 CONFIG=B SEPAR=B3VFR1 DEMAND=83
AVERAGE FLOW RATES

TIME	ARRIVALS					DEPARTURES					AVERAGE TRAVEL TIMES TO								
	RWY 27R	RWY 27L	RWY 30	RWY	RWY	TOT DE- MAND	DIF	RWY 27R	RWY 27L	RWY 30	RWY	RWY	TOT DE- MAND	DIF	FIX TO THRESH	THRESH TO GATE	GATE TO ROLL		
1100-1200	20.0	0.0	27.4	0.0	0.0	0.0 47.4 54.0	-6.6	15.0	6.0	0.0	0.0	0.0	0.0 21.0 21.0	0.0	10.29	4.06	4.29		
1200-1300	25.0	0.0	30.6	0.0	0.0	0.0 55.6 50.0	-1.0	22.0	29.9	0.0	0.0	0.0	0.0 51.9 52.0	-1.1	11.91	4.44	5.80		
1300-1400	24.0	0.0	19.0	0.0	0.0	0.0 43.0 44.0	-2.0	26.2	26.1	0.0	0.0	0.0	0.0 52.3 57.0	-4.8	10.12	4.20	7.74		
1400-1500	24.0	0.0	19.0	0.0	0.0	0.0 43.0 42.0	-1.0	21.8	15.0	0.0	0.0	0.0	0.0 36.8 33.0	-1.0	10.12	3.97	8.08		
1500-1600	30.1	0.0	26.8	0.0	0.0	0.0 56.9 64.0	-8.1	15.0	19.0	0.0	0.0	0.0	0.0 34.0 34.0	-1.0	10.97	4.20	4.78		
1600-1700	17.9	0.0	25.2	0.0	0.0	0.0 43.1 35.0	-0.0	21.0	15.0	0.0	0.0	0.0	0.0 36.0 35.0	-0.0	11.13	4.09	6.39		
1700-1800	14.0	0.0	17.0	0.0	0.0	0.0 31.0 32.0	-1.0	25.0	34.0	0.0	0.0	0.0	0.0 59.0 62.0	-3.0	9.46	4.22	6.67		
1800-1900	9.0	0.0	23.0	0.0	0.0	0.0 32.0 31.0	-0.0	21.0	17.0	0.0	0.0	0.0	0.0 38.0 35.0	-0.0	9.21	4.18	4.02		
1900-2000	1.0	0.0	1.0	0.0	0.0	0.0 2.0 2.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0 0.0	-0.0	9.50	3.28	0.00		
AVERAGE DELAYS																		GRAND TOTAL	
TIME	ARRIVALS					DEPARTURES					AVERAGE DELAYS								
	RWY 27R	RWY 27L	RWY 30	RWY	RWY	TOT	TAXI IN	RWY 27R	RWY 27L	RWY 30	RWY	RWY	TOT	CRS	TAXI OUT	RWY CNG	ARR DELAY	DEP DELAY	
1100-1200	1.1	0.0	1.4	0.0	0.0	0.0 1.3 .0	.0	2.1	.5	0.0	0.0	0.0	0.0 1.6 0.0	.1	.1	0.0	1.3	1.7	
1200-1300	2.1	0.0	3.5	0.0	0.0	0.0 2.9 .0	.6	4.1	1.7	0.0	0.0	0.0	0.0 2.7 .1	.9	.0	0.0	3.5	3.7	
1300-1400	1.6	0.0	.4	0.0	0.0	0.0 1.1 .0	.3	7.7	1.1	0.0	0.0	0.0	0.0 4.4 .0	.9	.0	0.0	1.4	5.3	
1400-1500	1.2	0.0	.6	0.0	0.0	0.0 1.0 .1	.3	7.6	.5	0.0	0.0	0.0	0.0 4.7 .0	.5	.0	0.0	1.4	5.3	
1500-1600	2.2	0.0	1.2	0.0	0.0	0.0 1.7 .0	.4	2.7	1.4	0.0	0.0	0.0	0.0 2.0 .1	.4	.0	0.0	2.1	2.5	
1600-1700	.6	0.0	3.1	0.0	0.0	0.0 2.1 .0	.6	3.4	1.1	0.0	0.0	0.0	0.0 2.4 .0	1.0	.0	0.0	2.6	3.5	
1700-1800	.1	0.0	.6	0.0	0.0	0.0 .4 .1	.2	2.9	3.0	0.0	0.0	0.0	0.0 3.0 .1	1.1	.0	0.0	.6	4.2	
1800-1900	.1	0.0	.3	0.0	0.0	0.0 .3 0.0	.4	1.2	.9	0.0	0.0	0.0	0.0 1.1 .0	.5	.0	0.0	.7	1.6	
1900-2000	0.0	0.0	0.0	0.0	0.0	0.0 0.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0 0.0	0.0	.0	0.0	0.0	0.0	

VFR2 West Comparison:
All Improvements but taxiing, with 1983 Demand
versus
All Improvements, with 1983 Demand

Arrival Delay in Minutes

30

25

20

15

10

5

Departure Delay in Minutes

25

20

15

10

5

1200 1300 1400 1500 1600 1700 1800 1900

Hour Ending

TAXIING/TOWING

1200 1300 1400 1500 1600 1700 1800 1900

Hour Ending

TOWING

TAXIING

Legend:

X Exp. No. 12A

• Exp. No. 12

Figure 15

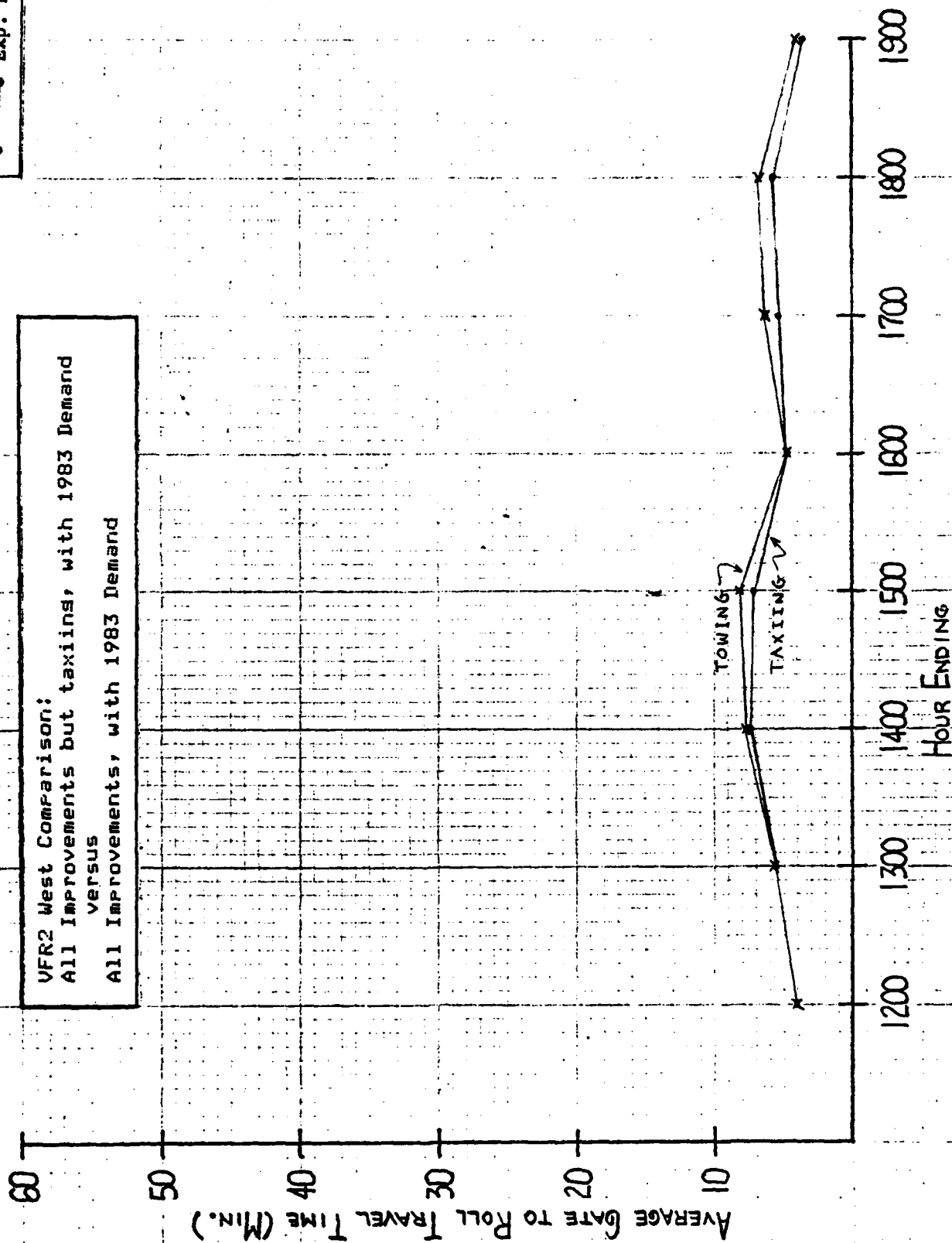


Figure 15 (continued)

VFR2 West Comparison:
All Improvements but taxiing, with 1983 Demand
versus
All Improvements, with 1983 Demand

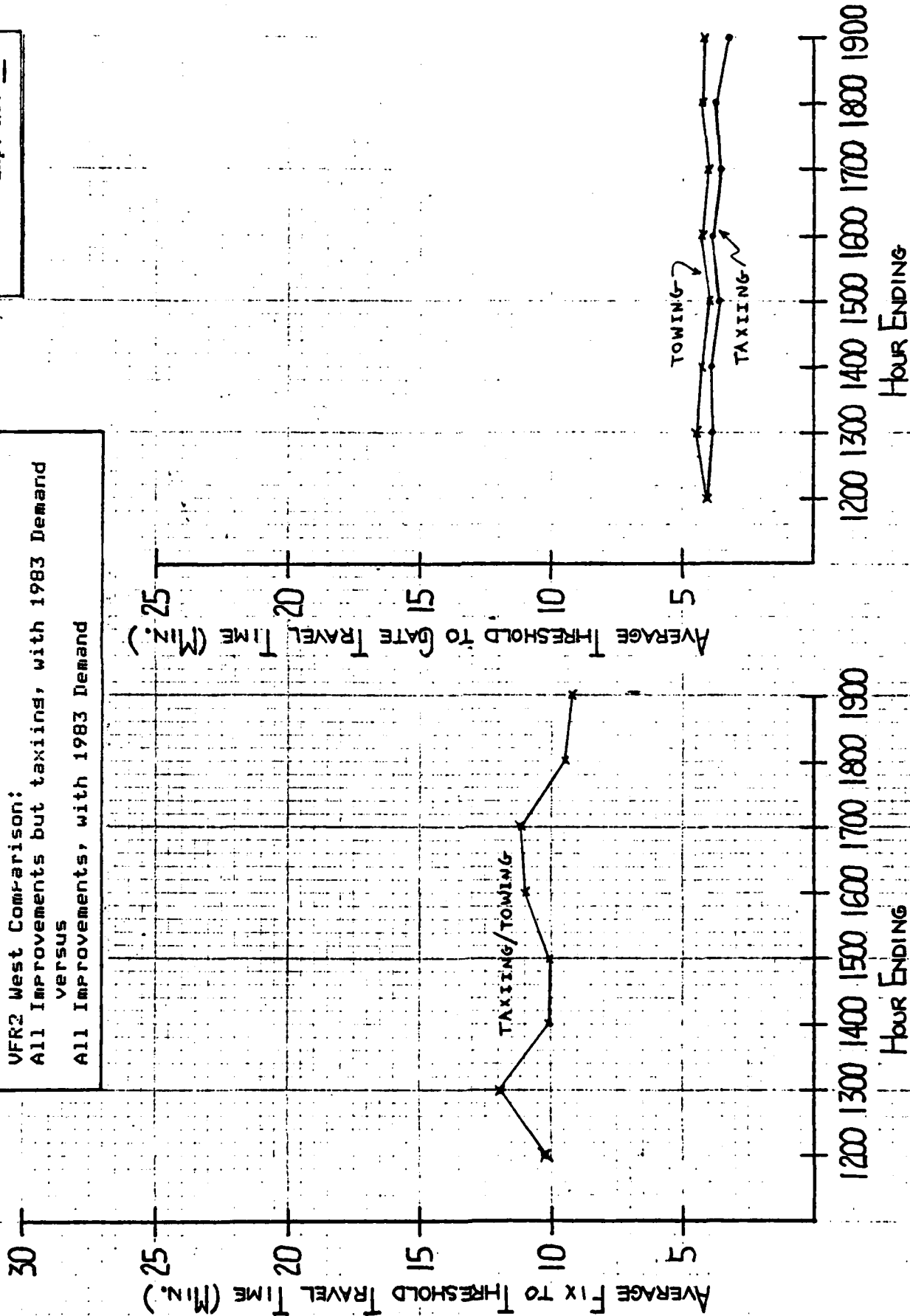


Figure 15 (continued)

TABLE 24

SET 4 DEMAND
IFR, WESTERLY FLOW

EXPERIMENT NUMBER		RUNWAY 27R	RUNWAY 27L	RUNWAY 30	TOTAL
15 (39)	ARRIVALS	197	150	0	347
	DEPARTURES	165	167	0	332
	TOTAL	362	317	0	679
20	ARRIVALS	197	141	0	338
	DEPARTURES	153	161	0	314
	TOTAL	350	302	0	652
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				
	ARRIVALS				
	DEPARTURES				
	TOTAL				

EXPERIMENT NO. 15

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under IFR1 conditions, assuming the improved (1983) ATC system scenario and all Miami improvements except for Reliever Airport upgrading:

Arrival Runways

27L, 27R

Departure Runways

27L, 27R

Related Comparison Experiments:

Prior experiment 39 (Data Package No. 5) serves as the 1983 demand level baseline for comparison to this experiment.

Experiment 20 assesses the expected delays after reducing the G.A. traffic of this study case by 50-percent.

IFR1- Ceiling between 200 ft. and 1000 ft. and/or
visibility between 2400 ft. RVR and 3 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 25

EXPERIMENT 15 RESULTS

MIAMI INTER. AIRPORT EXPER.-15 ROUTES=1983 CONFIG=B SEPAR=831FR1 DEMAND=83

AVERAGE FLOW RATES

TIME	ARRIVALS			DEPARTURES			DIF	AVERAGE DELAYS			DIF	AVERAGE TRAVEL TIMES		
	RWY 27L	RWY 30	RWY 27L	RWY 30	RWY 27L	RWY 30		TOT DE-	TOT	TOT		FIX TO THRESH	THRESH TO GATE	ROLL
1100-1200	22.3	23.5	0.0	0.0	0.0	0.0	-4.2	45.8	50.0	15.3	22.0	10.62	4.69	5.22
1200-1300	30.3	22.2	0.0	0.0	0.0	0.0	-5.7	52.5	54.0	41.1	54.0	12.35	4.99	14.20
1300-1400	25.4	19.3	0.0	0.0	0.0	0.0	-0.0	44.7	39.0	51.4	61.0	12.14	4.20	20.65
1400-1500	23.9	16.0	0.0	0.0	0.0	0.0	-1.1	39.9	41.0	51.8	32.0	13.90	4.58	32.38
1500-1600	29.4	24.3	0.0	0.0	0.0	0.0	-7.4	53.7	60.0	34.5	39.0	13.75	4.73	17.71
1600-1700	26.7	20.7	0.0	0.0	0.0	0.0	-1.0	47.4	41.0	35.8	32.0	14.36	4.59	17.55
1700-1800	21.0	12.0	0.0	0.0	0.0	0.0	-2.0	33.0	34.0	57.2	64.0	10.22	4.33	12.87
1800-1900	18.0	12.0	0.0	0.0	0.0	0.0	-0.0	30.0	28.0	42.4	32.0	10.92	4.12	11.21
1900-2000	0.0	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	0.0	0.0	0.00	0.00	2.45

AVERAGE DELAYS

TIME	ARRIVALS			DEPARTURES			DIF	AVERAGE DELAYS			DIF	AVERAGE TRAVEL TIMES		
	RWY 27L	RWY 30	RWY 27L	RWY 30	RWY 27L	RWY 30		TOT DE-	TOT	TOT		FIX TO THRESH	THRESH TO GATE	ROLL
1100-1200	2.6	1.1	0.0	0.0	0.0	0.0	.2	1.8	0.0	2.6	.0	2.0	2.8	2.8
1200-1300	5.1	2.1	0.0	0.0	0.0	0.0	.7	3.9	.0	9.7	.0	4.6	12.1	12.1
1300-1400	5.8	1.0	0.0	0.0	0.0	0.0	.2	3.8	.0	13.4	.0	3.9	18.2	18.2
1400-1500	6.1	.6	0.0	0.0	0.0	0.0	.3	3.9	.0	10.8	0.0	4.2	30.0	30.0
1500-1600	5.2	2.7	0.0	0.0	0.0	0.0	.3	4.1	.0	12.7	.0	4.4	15.2	15.2
1600-1700	9.2	1.8	0.0	0.0	0.0	0.0	.1	6.0	.0	13.7	.0	6.1	14.7	14.7
1700-1800	1.4	.4	0.0	0.0	0.0	0.0	.2	1.0	0.0	9.4	.0	1.2	10.2	10.2
1800-1900	2.5	1.3	0.0	0.0	0.0	0.0	.0	2.0	.0	7.7	.0	2.0	8.8	8.8
1900-2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.8	1.8

IFR1 West Comparison:
All Improvements but Reliever Airport Upgradings,
with 1983 Demand
versus
No Improvements, with 1983 Demand

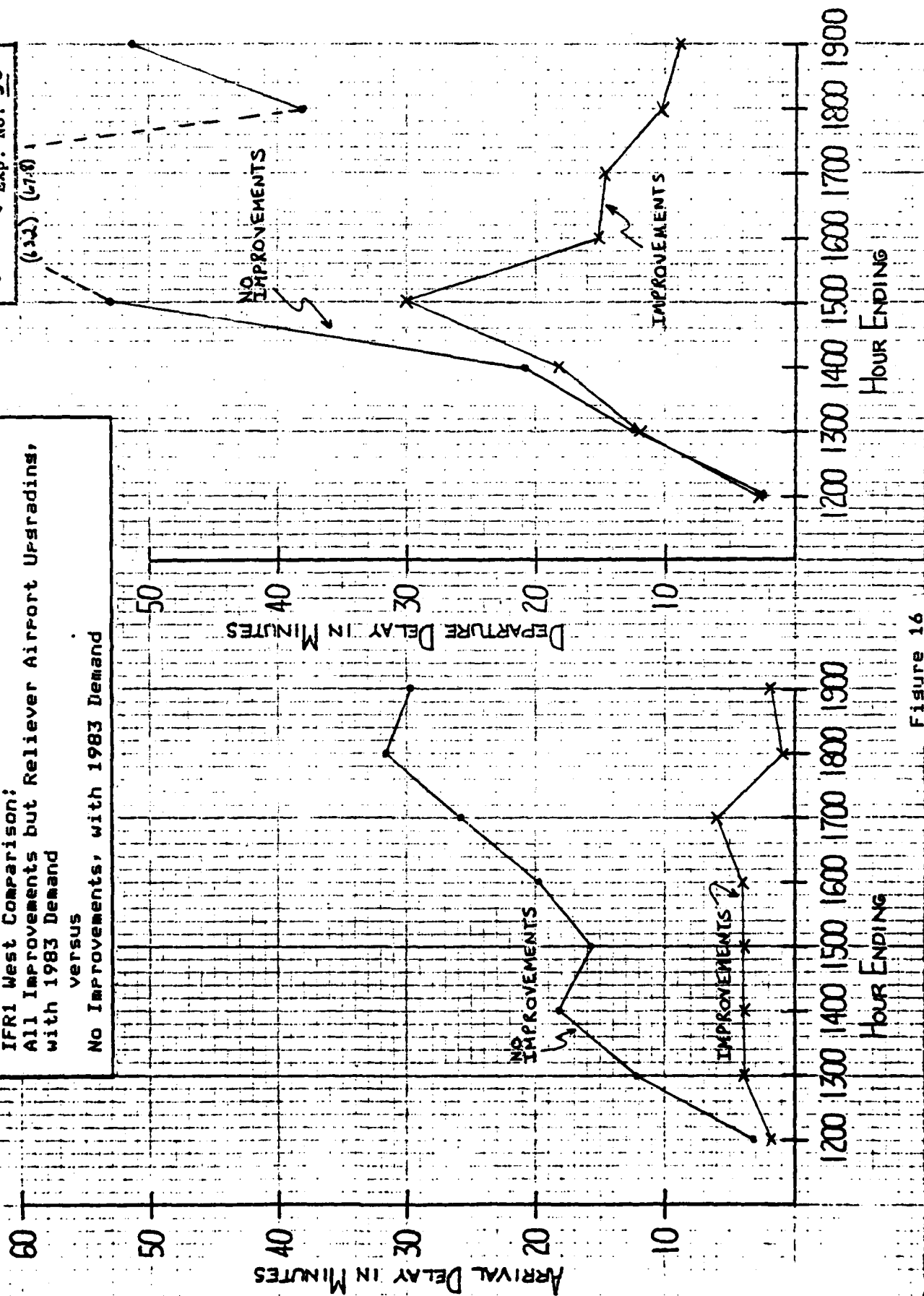


Figure 16

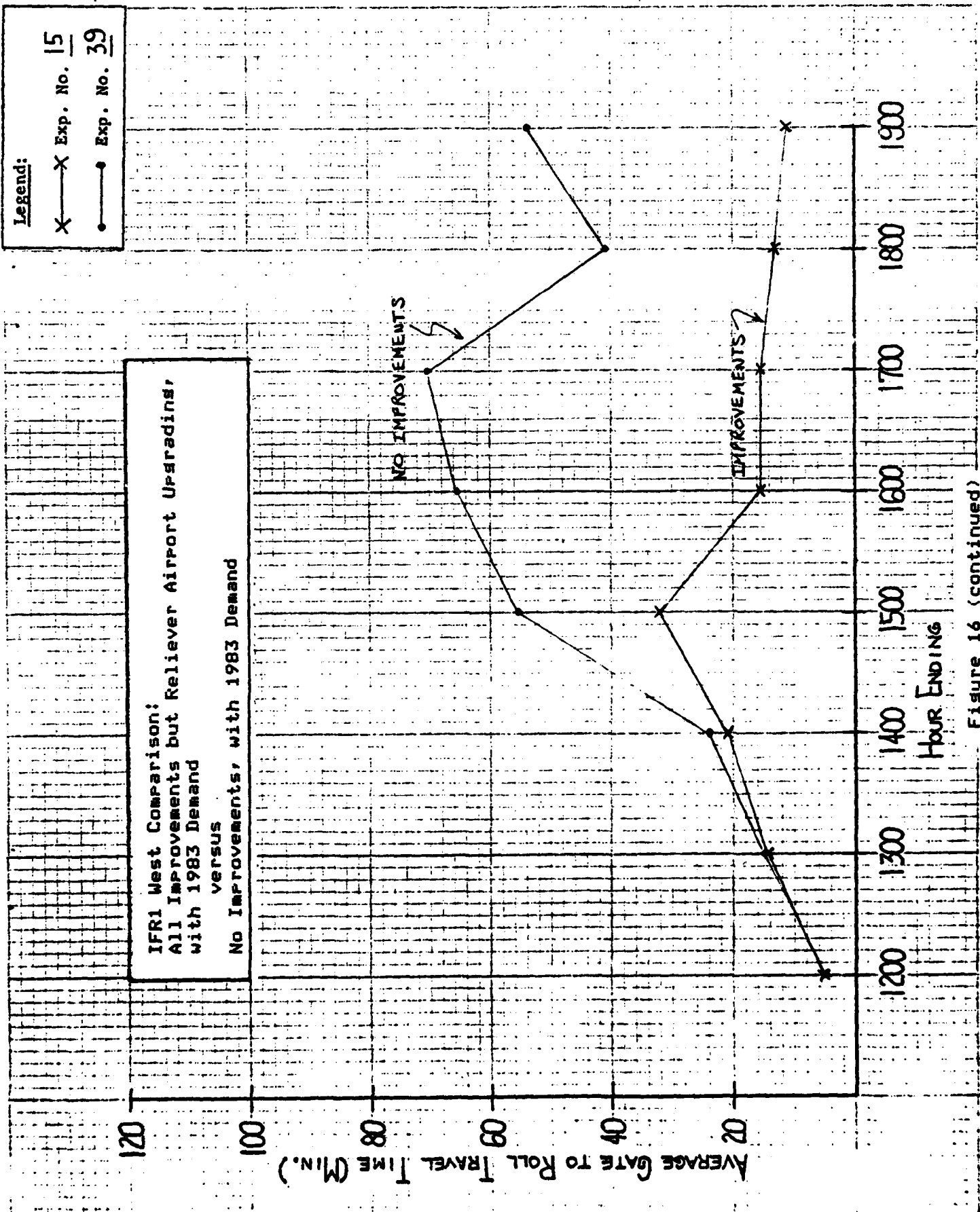


Figure 16 (continued)

IFR1 West Comparison:
All Improvements but Reliever Airport Upgrading,
with 1983 Demand
versus
No Improvements, with 1983 Demand

Legend:

X — Exp. No. 15

• — Exp. No. 39

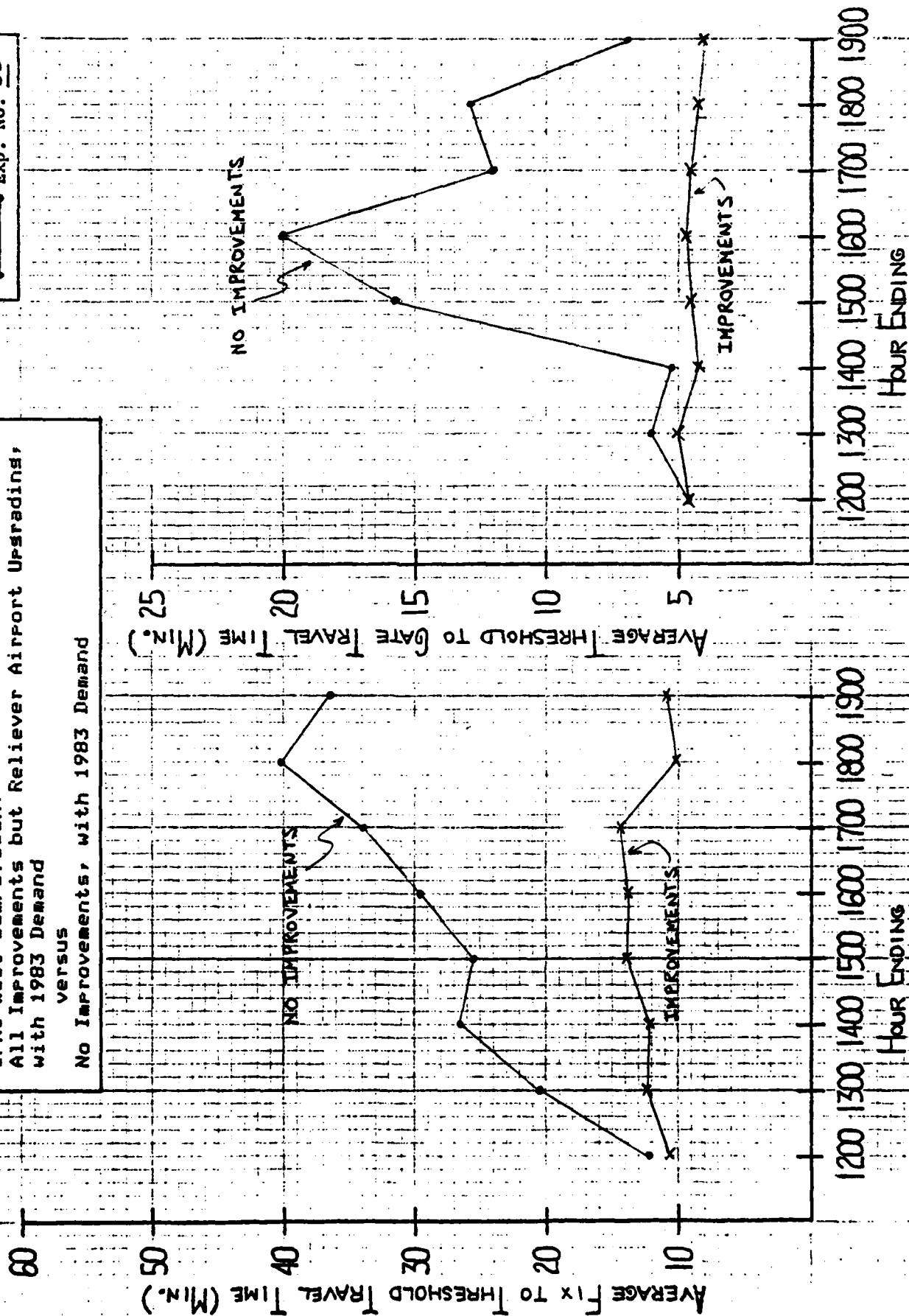


Figure 16 (continued)

EXPERIMENT NO. 20

Objective:

To assess delays to aircraft in 1983 for the following runway configuration under IFR1 conditions, assuming the improved (1983) ATC system scenario and all Miami improvements including a 50-percent reduction in G.A. traffic due to Reliever Airport upgrading:

Arrival Runways

Departure Runways

27L, 27R

27L, 27R

Related Comparison Experiments:

Prior experiment 15 serves as the basis for comparison to this experiment, wherein the conditions of this study case were identical except for the 50-percent reduction in G.A. traffic due to the upgrading of Opa Locks and Tamiami.

IFR1- Ceilings between 200 ft. and 1000 ft. and/or visibility between 2400 ft. RVR and 3 mi.

Data Package No. 6
Miami International Airport
Airport Improvement Task Force Delay Studies
May 1980

TABLE 26

EXPERIMENT 20 RESULTS

MIAMI INTER. AIRPORT EXPER.-20 ROUTES=1983 CONFIG=B SEPAR=831FR1 DEMAND=B3
AVERAGE FLOW RATES

TIME	ARRIVALS				DEPARTURES				DIF	AVERAGE TRAVEL TIMES			
	RWY 27R	RWY 27L	RWY 30	RWY 30	RWY 27R	RWY 27L	RWY 30	RWY 30		FIX TO THRESH	THRESH TO GATE	GATE TO ROLL	
1100-1200	25.7	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.78	4.38	5.63	
1200-1300	31.2	27.0	0.0	0.0	0.0	15.8	18.2	0.0	0.0	20.39	6.27	16.41	
1300-1400	28.5	15.0	0.0	0.0	0.0	21.9	30.8	0.0	0.0	13.22	4.62	21.67	
1400-1500	20.6	19.0	0.0	0.0	0.0	27.0	22.0	0.0	0.0	10.27	4.49	26.82	
1500-1600	31.6	16.8	0.0	0.0	0.0	12.8	18.0	0.0	0.0	12.41	4.28	9.26	
1600-1700	27.4	17.2	0.0	0.0	0.0	19.5	15.0	0.0	0.0	17.10	4.23	10.49	
1700-1800	18.7	12.0	0.0	0.0	0.0	23.4	31.1	0.0	0.0	9.78	4.34	8.51	
1800-1900	13.3	16.0	0.0	0.0	0.0	18.6	19.3	0.0	0.0	9.79	4.62	6.98	
1900-2000	0.0	1.0	0.0	0.0	0.0	0.0	.5	0.0	0.0	14.00	5.80	2.88	
AVERAGE DELAYS													
GRAND TOTAL													
TIME	ARRIVALS				DEPARTURES				DIF	AVERAGE DELAYS			
	RWY 27R	RWY 27L	RWY 30	RWY 30	RWY 27R	RWY 27L	RWY 30	RWY 30		ARR DELAY	DEP DELAY		
1100-1200	5.6	.4	0.0	0.0	0.0	4.0	.6	0.0	0.0	3.6	3.1		
1200-1300	20.3	1.3	0.0	0.0	0.0	14.3	12.4	0.0	0.0	13.1	14.2		
1300-1400	6.2	.5	0.0	0.0	0.0	20.8	7.3	0.0	0.0	4.5	19.4		
1400-1500	2.2	1.4	0.0	0.0	0.0	20.0	5.9	0.0	0.0	1.9	24.3		
1500-1600	3.9	.7	0.0	0.0	0.0	12.2	2.1	0.0	0.0	2.8	7.0		
1600-1700	12.5	.9	0.0	0.0	0.0	11.0	2.7	0.0	0.0	8.1	7.6		
1700-1800	.4	.3	0.0	0.0	0.0	4.9	6.3	0.0	0.0	.5	6.0		
1800-1900	.6	.4	0.0	0.0	0.0	3.9	3.7	0.0	0.0	.5	4.7		
1900-2000	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	2.1		

IFR1 West Comparison:
All Improvements, with 1983 Demand
versus
All Improvements but Reliever Airport Upgradings,
with 1983 Demand

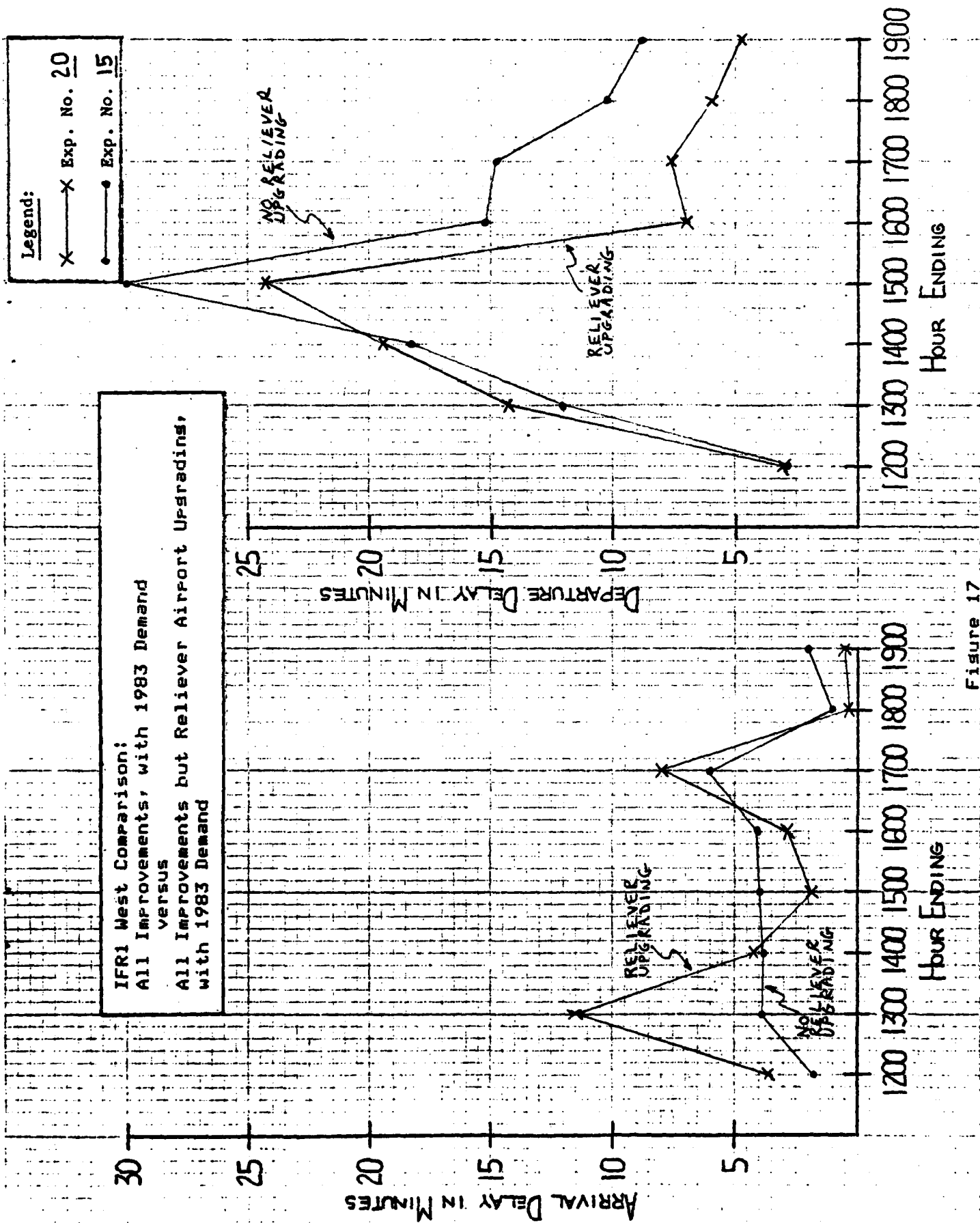


Figure 17

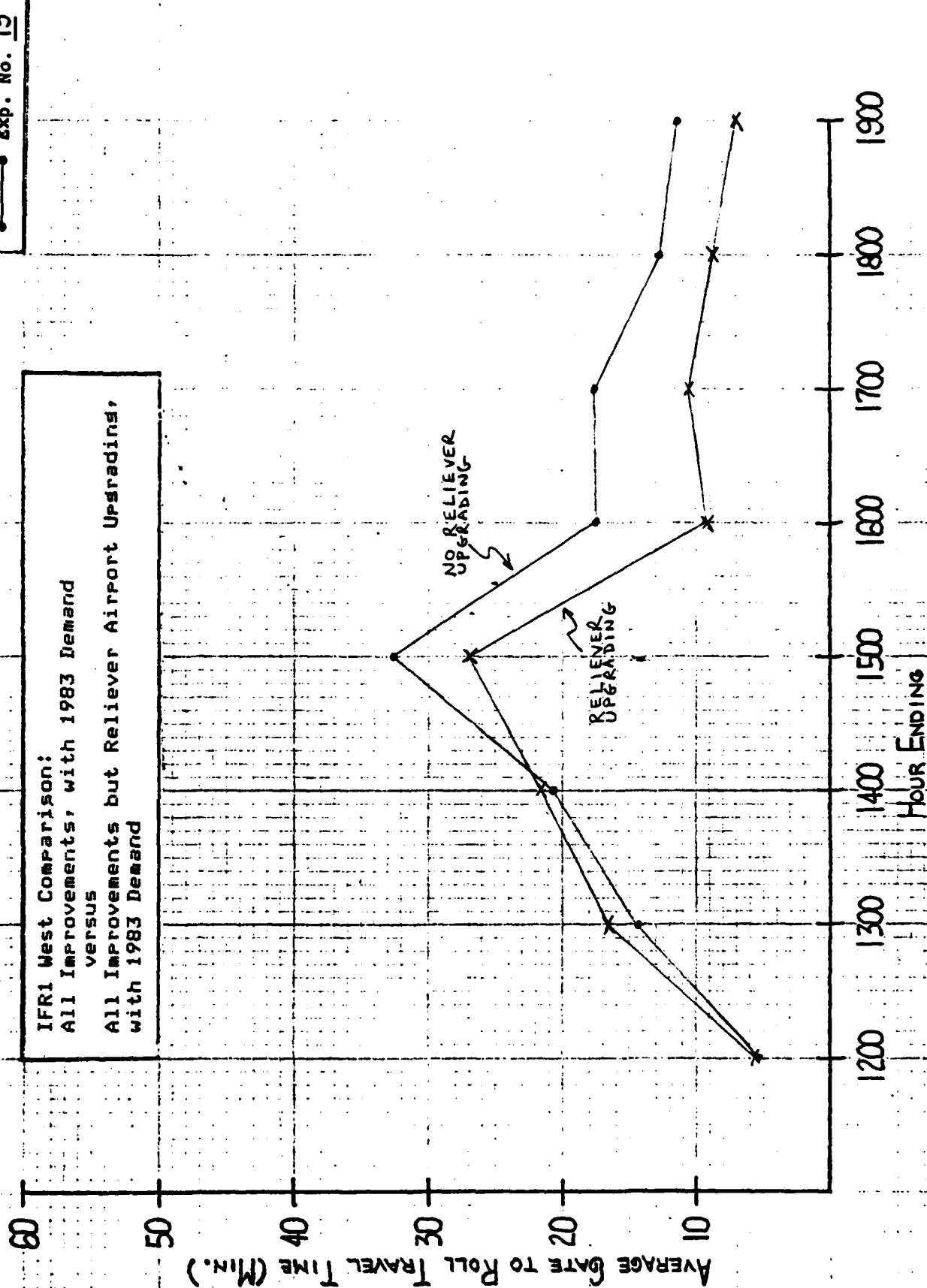


Figure 17 (continued)

IFR1 West Comparison:
All Improvements, with 1983 Demand
versus
All Improvements but Reliever Airport Upgrading,
with 1983 Demand

Legend:
X Exp. No. 20
● Exp. No. 15

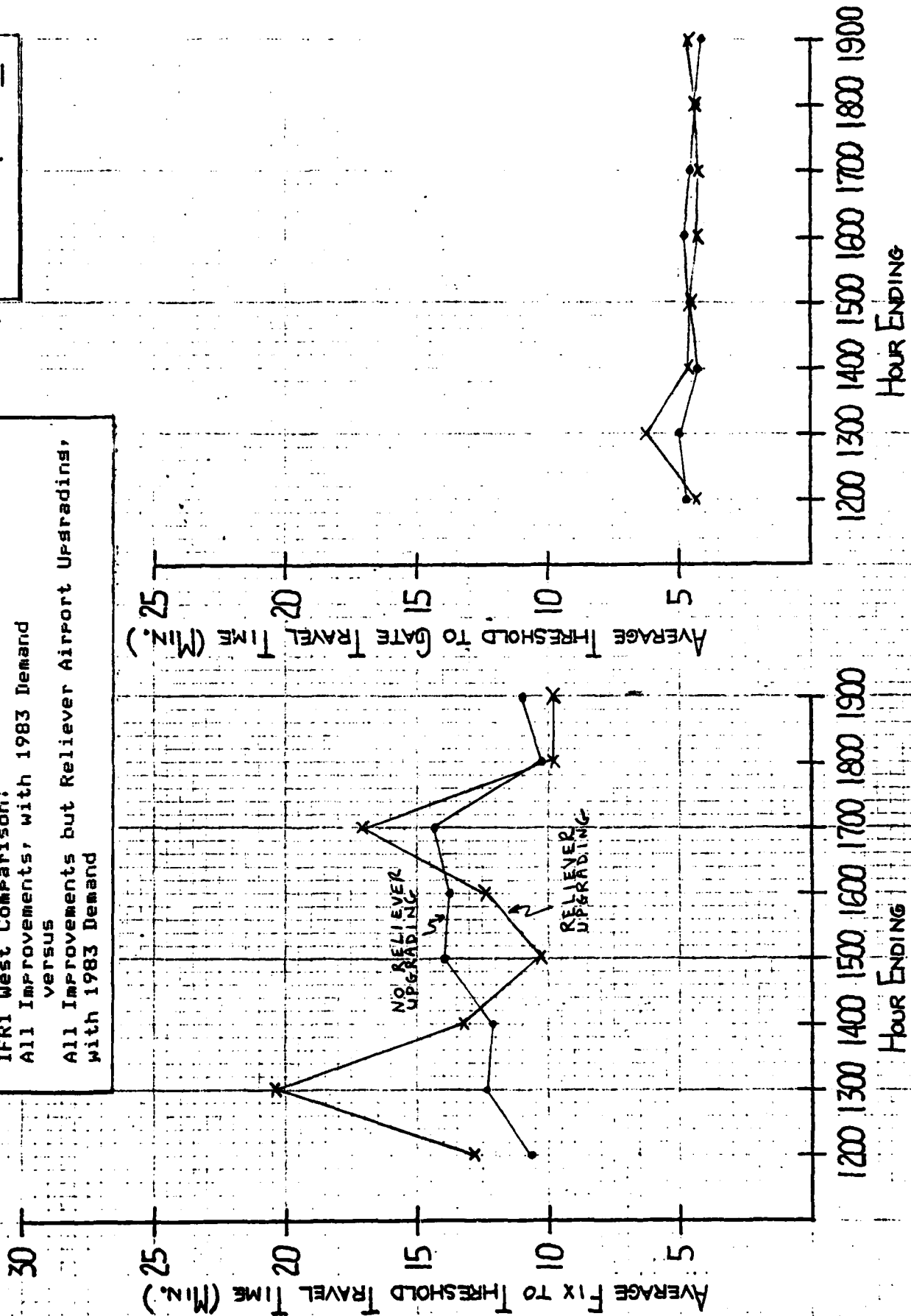


Figure 17 (continued)