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HUMAN FACTORS ANALYSIS OF VOICE COMMUNICATIONS PRACTICES IN AIR TRAFFIC CONTROL

VOLUME II
SUPPORTING DATA

PREPARED FOR
HUMAN FACTORS BRANCH
RESEARCH DIVISION
BUREAU OF RESEARCH AND DEVELOPMENT
FEDERAL AVIATION AGENCY

UNDER CONTRACT FAA/BRD-44
BY
OPERATIONS RESEARCH GROUP

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CONVAIR/POMONA

CONVAIR DIVISION OF GENERAL DYNAMICS CORPORATION

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HUMAN FACTORS ANALYSIS OF VOICE COMMUNICATIONS PRACTICES IN AIR TRAFFIC CONTROL

VOLUME II SUPPORTING DATA

THIS REPORT HAS BEEN PREPARED BY CONVAIR/POMONA FOR THE AVIATION RESEARCH AND DEVELOPMENT SERVICE (FORMERLY BUREAU OF RESEARCH AND DEVELOPMENT), FEDERAL AVIATION AGENCY, UNDER CONTRACT NO. FAA/BRD-44. THE CONTENTS OF THIS REPORT REFLECT THE VIEWS OF THE CONTRACTOR, WHO IS RESPONSIBLE FOR THE FACTS AND FOR THE ACCURACY OF THE DATA PRESENTED HEREIN. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL POLICY OF THE ARDS OR THE FAA.

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INTRODUCTION

This is the second volume of a two-volume final report of a project performed under Contract FAA/BRD-44 for the Federal Aviation Agency by the Operations Research Group of Convair-Pomona. It presents a comprehensive compilation of processed data based on a series of communications measures defined for the purpose of analyzing and describing the Miami ATC complex. The scope of the project did not include a thorough statistical analysis of the data, but the data necessary for such an analysis are given in this volume in convenient tabular form.

For convenience in rapidly comparing position or facility descriptions, the data are presented in chart form as well as tabular form. The first two sections contain descriptive tables and charts based on R/T communications with pilots. Section III contains the data plots on which are based many of the conclusions discussed in Volume I. The report concludes with a section of coordination communications data.

The bulk of the data presented is based on a 1959 data collection program, with additional data collected in 1960 presented for comparison. The data are given in the form of "cycles" of tables and charts. That is, the data with respect to a particular measure are given first for the overall facility totals and then for individual positions. Each cycle of tables or charts is preceded by a brief description of the cycle and the measures used, in order to avoid misunderstanding. Unless otherwise specified, all charted data are based on the 1959 data samples. The charts for the Radar Approach Control position and the Radar Departure Control position represent only 1960 data and no further identification will be made. Detailed discussions of results and concepts will be found in Section I of Volume I. The present volume is restricted to the presentation of the data on which are based the discussions of Volume I.

SECTION IVOICE COMMUNICATIONS CONTENT

The analysis of the content of the communications recorded at Miami was based on a new approach created for this project. Since detailed data are available for frequency of message occurrence, word counts, etc., a generalized classification technique was formulated. Each R/T contact was defined to consist of essentially three phases:

Phase 1 - Call-up and response

Phase 2 - Interchange of messages

Phase 3 - Acknowledgment.

Since Phases 1 and 3 consist of purely stereotyped material, just Phase 2 messages were analyzed. The data in this Section, then, pertain only to messages following the call-up and response and preceding the final acknowledgment (or contact termination).

Each Phase 2 message delivered by a pilot or controller was classified as a "Data" message, an "Information" message, or a "News" message in accordance with the definitions of Figure I-1.

Figure I-1

MESSAGE CLASSIFICATION MATRIX

	Necessary System Input and/or Requires Action	Not a Necessary System Input and Requires No Action
100% EXPECTED	INFORMATION	DATA
NOT 100% EXPECTED	NEWS	DATA

Message "expectancy" refers to message type rather than message content, and "100% Expected" is interpreted to mean "100%, as nearly as can be determined".

"Requires action" refers to the necessity for a message recipient to take some definite, non-trivial action in response to the message. (Henceforth, "DIN" will be used to denote "Data, Information, and News" when used as an adjective. Further, the three message types will always be capitalized to distinguish them from usual meanings.)

To illustrate, a compulsory position report would be classified as Information because it is expected and a necessary system input. An instruction to change altitude immediately because of a potential confliction would be classified as News because it is unexpected and a necessary system input. Finally, if a local controller issues a "hold" and then gives the reason for the hold, the explanation would be classified as Data since it is not a necessary system input. (It must be pointed out, however, that good reasons do exist for giving such explanations to pilots.)

A. DIN TABLES

Tables I-1, I-2, and I-3 show the overall DIN statistics for each position in the Tower, Center, and Station, respectively. A further breakdown of the statistics is given for each control position in the Tower and Center in Tables I-4 through I-15. The latter statistics are based on the two-hour sample period which was basic in the sampling procedure. DIN data were examined for shorter time intervals, but no significant differences from the two-hour results were found.

In interpreting the tables, it should be noted that the DIN percentages for the pilot messages total 100%, as do those for the controller. The final column of each table gives the DIN percentages (or "DIN profiles") obtained at each position by combining pilot and controller messages to get an overall index. The data are further broken down by aviation category, and sample sizes in numbers of messages are given to indicate the reliability of the data.

Table I-1

TOWER

MESSAGE CLASSIFICATION TOTALS

POSITION AND SAMPLE SIZE	AVIATION CATEGORY	NUMBER OF MESSAGES PILOT CNTR TOTAL	CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)				
			DATA INFO NEWS			DATA INFO NEWS			DATA INFO NEWS				
			DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS		
GROUND CONTROL (10 Hours - 1959)	Air Carrier Military Gen Aviation Grnd Vehicles	573	949	1522	25.6	38.0	36.3	7.2	79.9	13.0	14.1	64.1	21.8
		125	187	312	14.4	32.0	53.6	8.0	69.5	22.5	10.6	54.5	34.9
		205	314	519	10.2	37.6	52.2	7.3	72.3	20.4	8.5	58.6	32.9
		216	256	472	9.3	34.7	56.0	8.2	75.8	16.0	8.7	57.0	34.3
	OVERALL	1119	1706	2825	18.4	36.6	45.0	7.4	76.7	15.8	11.8	60.8	27.4
GROUND CONTROL (4 Hours - 1960)	Air Carrier Military Gen Aviation Grnd Vehicles	305	462	767	41.0	38.7	20.3	7.1	81.6	11.3	20.6	64.5	14.9
		52	61	113	19.2	44.2	36.5	3.3	75.4	21.3	10.6	61.1	28.3
		134	282	416	17.2	31.3	51.5	9.6	73.4	17.0	12.0	59.9	28.1
		126	195	321	10.3	15.9	73.8	6.2	78.5	15.4	7.8	53.9	38.3
	OVERALL	617	1000	1617	27.7	32.9	39.4	7.4	78.3	14.3	15.2	61.0	23.9
LOCAL CONTROL (10 Hours - 1959)	Air Carrier Military Gen Aviation	893	1578	2471	32.0	41.2	26.8	12.4	69.3	18.3	19.5	59.2	21.3
		103	237	340	31.1	43.7	25.2	8.4	70.9	20.7	15.3	62.6	22.1
		302	555	857	34.1	34.4	31.5	11.0	67.0	22.0	19.1	55.6	25.3
		1298	2370	3668	32.4	39.8	27.7	11.7	68.9	19.4	19.0	58.6	22.3
	OVERALL	1298	2370	3668	32.4	39.8	27.7	11.7	68.9	19.4	19.0	58.6	22.3
LOCAL CONTROL (2 Hours - 1960)	Air Carrier Military Gen Aviation	310	655	965	25.5	58.7	15.8	15.6	66.1	18.3	18.8	63.7	17.5
		37	78	115	24.3	51.4	24.3	7.7	66.7	25.6	13.0	61.7	25.2
		182	383	565	18.1	63.7	18.1	14.4	59.8	25.8	15.6	61.1	23.4
		529	1116	1645	22.9	59.9	17.2	14.6	64.0	21.4	17.2	62.7	20.1
	OVERALL	529	1116	1645	22.9	59.9	17.2	14.6	64.0	21.4	17.2	62.7	20.1

Table I-1 (Cont'd)

TOWER

MESSAGE CLASSIFICATION TOTALS

POSITION AND SAMPLE SIZE	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT		CLASSIFICATION OF C. TROLLER		CLASSIFICATION OF TOTAL					
				MESSAGES (%)		MESSAGES (%)		MESSAGES (%)					
		PILOT	CONTROL TOTAL	DATA	INFO NEWS	DATA	INFO NEWS	DATA	INFO NEWS	DATA	INFO NEWS		
APPROACH CONTROL (ANC) (12 Hours - 1959)	Air Carrier	1325	1645	2971	52.3	37.9	9.8	14.6	53.6	31.8	31.4	46.6	22.0
	Military	98	188	286	42.8	41.8	15.3	20.2	45.7	34.0	28.0	44.4	27.6
	Gen Aviation	4	11	15	100.0	---	---	27.3	27.3	45.4	46.7	20.0	33.3
	OVERALL	1428	1844	3272	51.8	38.1	10.2	15.2	52.6	32.2	31.2	46.3	22.6
APPROACH CONTROL (RADAR) (5 Hours - 1960)	Air Carrier	813	1147	1960	64.7	24.7	10.6	29.1	54.4	16.5	43.9	42.1	14.0
	Military	56	92	148	51.8	37.5	10.7	31.5	38.0	30.4	39.2	37.8	23.0
	Gen Aviation	240	335	575	50.4	34.6	15.0	29.8	42.4	27.8	38.4	39.1	22.4
	OVERALL	1109	1574	2683	61.0	27.5	11.5	29.4	50.9	19.7	42.4	41.2	16.3
DEPARTURE CONTROL (ANC) (12 Hours - 1959)	Air Carrier	857	844	1701	49.6	46.0	4.4	10.0	49.0	11.0	29.9	47.5	22.6
	Military	18	18	36	33.3	66.7	---	5.6	38.9	55.5	19.4	52.8	27.8
	Gen Aviation	13	9	22	69.2	30.8	---	---	55.6	44.4	40.9	40.9	18.2
	OVERALL	888	871	1759	49.5	46.2	4.3	9.8	48.9	11.3	29.8	47.5	22.6
DEPARTURE CONTROL (RADAR) (4 Hours - 1960)	Air Carrier	320	407	727	57.2	20.6	12.2	33.7	46.7	19.7	48.4	35.2	16.4
	Military	3	3	6	100.0	---	---	33.3	66.7	---	66.7	33.3	---
	Gen Aviation	40	46	86	55.0	27.5	17.5	34.8	45.6	19.6	44.2	37.2	18.6
	OVERALL	363	456	819	66.1	21.2	12.7	33.8	46.7	19.5	48.1	35.4	16.5

CENTER

POSITION SAMPLE SIZE	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)					
				DATA		INFO	NEWS	DATA		INFO	NEWS	DATA		INFO	NEWS
				PILOT	CONTROLLER	TOTAL	PILOT	CONTROLLER	TOTAL	PILOT	CONTROLLER	TOTAL	PILOT	CONTROLLER	TOTAL
D2 RADIO CONTROL (14 Hours - 1959)	Air Carrier Military Gen Aviation OVERALL	893 105 46	1043 106 52	1936 211 98	47.0 43.8 56.5	41.3 40.0 32.6	11.6 16.2 10.9	23.0 16.0 46.2	38.2 34.0 26.9	38.8 50.0 26.9	34.1 29.9 51.0	39.6 37.0 29.6	26.3 33.2 19.4		
D2 RADIO CONTROL (4 Hours - 1960)	Air Carrier Military Gen Aviation OVERALL	1044 594 51 12	1201 584 53 9	2245 1178 104 21	47.1 42.6 39.2 33.3	40.8 44.9 29.4 25.0	12.1 12.5 31.4 41.7	23.4 23.1 11.3 ---	37.3 36.5 39.6 77.8	39.3 40.4 49.1 22.2	34.4 32.9 25.0 19.0	38.9 40.8 34.6 47.6	26.6 26.3 40.4 33.3		
D3 RADIO CONTROL (22 Hours - 1959)	Air Carrier Military OVERALL	657 402 65	646 455 70	1303 857 135	42.2 46.3 43.1	43.4 34.8 36.9	14.5 18.9 20.0	21.8 22.2 17.1	37.3 42.0 25.7	40.9 35.8 57.1	32.1 33.5 29.6	40.4 38.6 31.1	27.6 27.9 39.3		
D3 RADIO CONTROL (3 Hours - 1960)	Air Carrier Military Gen Aviation OVERALL	467 225 25 3	525 207 24 1	992 432 49 4	45.6 45.8 60.0 66.7	35.1 39.1 32.0 ---	19.1 15.1 8.0 33.3	21.5 14.5 12.5 ---	39.8 49.3 54.2 100.0	38.7 36.2 33.3 ---	33.0 30.8 36.7 50.0	37.6 44.0 42.9 25.0	29.4 25.2 20.4 25.0		
RADAR 1A CONTROL (10 Hours - 1959)	Air Carrier Military OVERALL	200 21 221	260 24 284	460 45 505	44.0 42.8 43.9	38.0 52.4 39.4	18.0 4.8 16.7	40.8 50.0 41.5	24.2 29.2 24.6	35.0 20.8 33.8	42.2 46.7 42.6	30.2 40.0 31.1	27.6 13.3 26.3		

Table I-2 (Cont'd)

CENTERMESSAGE CLASSIFICATION TOTALS

POSITION AND SAMPLE SIZE	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)		CLASSIFICATION OF CONTROLLER MESSAGES (%)		CLASSIFICATION OF TOTAL MESSAGES (%)	
		PILOT	CONTROLLER	DATA	INFO	DATA	INFO	DATA	INFO
RADAR 1B CONTROL (10 Hours - 1959)	Air Carrier Military	788	889	52.8	33.4	29.8	32.4	40.6	32.9
		14	20	50.0	35.7	40.0	30.0	44.1	32.4
RADAR 1B CONTROL (2 Hours - 1960)	Air Carrier Military Gen Aviation	802	909	52.7	33.4	30.0	32.3	40.7	32.8
		190	213	46.3	43.2	24.9	37.1	35.0	40.0
RADAR 2A CONTROL (10 Hours - 1959)	Air Carrier Military	160	203	48.1	33.1	35.1	27.4	40.8	29.9
		58	69	36.2	46.6	30.4	18.8	33.1	31.5
RADAR 2B CONTROL (8 Hours - 1959)	Air Carrier Military Gen Aviation	218	277	45.0	36.7	33.9	25.3	38.8	30.3
		284	313	44.0	38.0	31.9	20.4	37.7	28.8
	OVERALL	34	37	44.1	47.1	21.6	8.1	32.4	26.8
		23	22	34.8	30.4	22.7	36.4	28.9	33.3
	OVERALL	341	372	43.4	38.4	30.4	20.2	36.6	28.9

Table I-3

STATIONMESSAGE CLASSIFICATION TOTALS

(Ground-Air Communications)

POSITION AND SAMPLE SIZE	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES(%)			CLASSIFICATION OF COMMUNICATOR MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
					DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
		PILOT	CMCTR	TOTAL									
POSITION D (20 Hours - 1959)	Air Carrier Military Gen Aviation	172	164	336	5.8	36.6	57.6	14.0	15.2	70.7	9.8	26.2	64.0
		381	380	761	9.2	32.3	58.5	15.5	28.4	56.1	12.4	30.4	57.3
		37	27	64	8.1	37.8	54.1	11.1	22.2	66.7	9.4	31.2	59.4
	OVERALL	590	571	1161	8.1	33.9	58.0	14.9	24.3	60.8	11.4	29.2	59.3
POSITION C (18 Hours - 1959)	Air Carrier Military Gen Aviation	38	26	64	13.2	34.2	52.6	19.2	30.8	50.0	15.6	32.8	51.6
		68	51	119	8.8	33.8	57.4	25.5	19.6	54.9	16.0	27.7	56.3
		60	42	102	5.0	30.0	65.0	16.7	26.2	57.1	9.8	28.4	61.8
	OVERALL	166	119	285	8.4	32.5	59.0	21.0	24.4	54.6	13.7	29.1	57.2
POSITION B (24 Hours - 1959)	Air Carrier Military Gen Aviation	2	---	2	---	---	100.0	---	---	---	---	---	100.0
		3	5	8	---	66.7	33.3	---	20.0	80.0	---	37.5	62.5
		158	146	304	7.6	29.7	62.6	10.3	32.2	57.5	8.9	30.9	60.2
	OVERALL	163	151	314	7.4	30.1	62.6	9.9	31.8	58.3	8.6	30.9	60.5

Table I-4

TWO-HOUR DIN TOTALS FOR GROUND CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)			
				MESSAGES (%)			MESSAGES (%)			MESSAGES (%)			
		PILOT	CONTROLLER	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
15 May 1959 (0800-1000)	Air Carrier	112	198	310	30	25	46	9	82	9	17	58	24
	Military	72	94	166	17	25	58	8	63	18	12	52	36
	Gen Aviation	47	59	106	4	34	62	3	90	7	4	65	31
	Grnd Vehicles	56	76	132	5	27	68	5	79	16	5	57	38
	TOTALS	317	427	744	19	26	55	7	81	12	12	58	30
20 May 1959 (1400-1600)	Air Carrier	111	272	413	13	52	35	8	72	19	10	65	24
	Military	10	22	32	0	50	50	0	68	32	0	62	38
	Gen Aviation	67	117	184	4	42	54	9	64	26	8	56	36
	Grnd Vehicles	43	46	89	2	35	63	11	54	35	7	45	48
	TOTALS	261	457	718	9	46	45	8	68	23	9	60	31
23 May 1959 (0000-0200)	Air Carrier	77	114	191	32	30	38	5	86	9	16	63	20
	Military	--	--	--	--	--	--	--	--	--	--	--	--
	Gen Aviation	6	5	11	17	17	67	0	100	0	9	54	36
	Grnd Vehicles	43	37	80	21	32	46	11	84	5	16	56	28
	TOTALS	126	156	282	28	30	42	6	86	8	16	61	23
23 May 1959 (1400-1600)	Air Carrier	101	191	292	29	38	34	8	80	12	15	65	20
	Military	29	45	74	17	31	52	9	62	29	12	50	38
	Gen Aviation	44	87	131	20	36	43	6	78	16	11	64	25
	Grnd Vehicles	33	37	70	12	48	39	3	92	5	7	71	21
	TOTALS	207	360	567	23	38	39	7	78	15	13	64	24
23 May 1959 (1600-1800)	Air Carrier	112	174	286	29	44	28	4	84	11	14	68	18
	Military	14	26	40	7	57	36	12	69	19	10	65	25
	Gen Aviation	41	46	87	15	39	46	11	56	33	13	48	39
	Grnd Vehicles	41	60	101	7	36	56	12	73	15	10	58	32
	TOTALS	208	306	514	20	42	38	7	77	16	12	63	25

Table I-4 (Cont'd)

TWO-HOUR DIN TOTALS FOR GROUND CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES PILOT CNTRL TOTAL			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
					DATA INFO NEWS			DATA INFO NEWS			DATA INFO NEWS		
27 Feb 1960 (1400-1600)	Air Carrier	138	210	348	46	33	21	6	82	11	22	63	15
	Military	27	39	66	26	33	41	3	74	23	12	58	30
	Gen Aviation	78	163	241	15	31	54	10	72	18	12	59	30
	Grnd Vehicles	63	87	150	14	14	71	7	79	14	10	52	23
	TOTALS	306	499	805	30	28	42	7	78	15	16	59	25
27 Feb 1960 (1600-1800)	Air Carrier	167	252	419	36	44	20	8	81	11	19	66	15
	Military	25	22	47	12	56	32	4	77	18	8	66	26
	Gen Aviation	50	119	175	20	32	48	9	75	16	13	61	26
	Grnd Vehicles	63	108	171	6	18	76	6	78	17	6	56	39
	TOTALS	311	501	812	25	37	37	8	79	14	14	63	23

Table I-5
TWO-HOUR DIN TOTALS FOR LOCAL CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CNTR	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
21 May 1959 (1400-1600)	Air Carrier	254	443	697	39	31	31	11	73	16	21	56	21
	Military	17	42	59	18	70	12	10	62	28	12	64	24
	Gen Aviation	89	155	244	34	36	30	10	60	30	18	51	30
	TOTALS	360	640	1000	36	34	30	11	69	20	20	56	24
21 May 1959 (1600-1800)	Air Carrier	237	417	654	30	37	33	15	62	23	20	53	27
	Military	8	26	34	38	38	25	8	73	19	15	65	21
	Gen Aviation	111	198	309	43	24	32	12	70	18	23	54	23
	TOTALS	356	641	997	34	33	33	14	65	21	21	54	25
23 May 1959 (0000-0200)	Air Carrier	132	190	322	33	46	20	7	75	18	18	63	19
	Military	5	8	13	40	40	20	0	88	12	15	62	15
	Gen Aviation	1	3	4	0	100	0	33	67	0	25	75	0
	TOTALS	138	201	339	33	46	20	7	76	17	18	64	19
23 May 1959 (1400-1600)	Air Carrier	167	361	528	26	51	23	15	70	15	18	64	18
	Military	39	97	136	26	44	31	9	70	21	14	62	24
	Gen Aviation	52	112	164	25	46	29	12	68	20	16	61	23
	TOTALS	258	570	828	26	49	25	13	70	17	17	63	20
23 May 1959 (1600-1800)	Air Carrier	103	167	270	30	53	16	11	70	19	18	64	18
	Military	34	64	98	41	32	26	8	75	17	19	60	20
	Gen Aviation	49	87	136	24	41	35	9	71	20	15	60	25
	TOTALS	186	318	504	31	46	23	10	71	19	17	62	20

Table I-5 (Cont'd)

TWO-HOUR DIN TOTALS FOR LOCAL CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CONTROLLER	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
27 Feb. 1960 (1400-1600)	Air Carrier Military Gen Aviation	310	655	965	26	59	16	16	66	18	19	64	18
		37	78	115	24	51	24	8	67	26	13	62	25
		182	383	565	18	64	18	14	60	26	16	61	23
	TOTALS	529	1116	1645	23	60	17	15	64	21	17	63	20

Table I-6

TWO-HOUR DIN TOTALS FOR APPROACH CONTROL POSITION (ANC)

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CONTROLLER	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
20 May 1959 (1400-1600)	Air Carrier	444	547	991	50	41	9	7	56	37	26	50	24
	Military	8	14	22	38	38	25	21	57	21	27	50	23
	Gen Aviation	--	--	--	--	--	--	--	--	--	--	--	--
	TOTALS	452	561	1013	50	41	9	7	56	36	26	50	24
20 May 1959 (1600-1800)	Air Carrier	146	213	359	54	38	8	27	48	25	38	44	18
	Military	19	45	64	42	58	0	27	47	27	31	50	19
	Gen Aviation	2	3	5	100	0	0	67	0	33	80	0	20
	TOTALS	167	261	428	53	40	7	27	47	26	37	44	18
23 May 1959 (0000-0200)	Air Carrier	149	195	344	62	30	7	17	53	30	37	43	20
	Military	17	25	42	59	41	0	12	60	28	31	52	17
	Gen Aviation	--	--	--	--	--	--	--	--	--	--	--	--
	TOTALS	166	220	386	62	31	7	16	54	30	36	44	20
23 May 1959 (1400-1600)	Air Carrier	260	279	539	47	41	12	11	57	32	29	49	22
	Military	23	35	58	26	39	35	20	51	29	22	47	31
	Gen Aviation	1	2	3	100	0	0	0	100	0	33	67	0
	TOTALS	284	316	600	46	40	14	12	57	31	28	49	23
23 May 1959 (1600-1800)	Air Carrier	132	150	282	54	40	6	17	51	31	34	46	20
	Military	31	69	100	48	35	16	19	35	46	28	35	37
	Gen Aviation	1	6	7	100	0	0	17	17	67	29	14	57
	TOTALS	164	225	389	53	39	8	18	45	37	33	43	25

Table I-6 (Cont'd)

TWO-HOUR DIN TOTALS FOR APPROACH CONTROL POSTION (ANC)

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CNTR	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
24 May 1959 (1400-1600)	Air Carrier	195	261	456	53	31	16	21	50	30	35	42	24
	Military	0	0	0	--	--	--	--	--	--	--	--	--
	Gen Aviation	--	--	--	--	--	--	--	--	--	--	--	--
	TOTALS	195	261	456	53	31	16	21	50	30	35	42	24

Table I-7
TWO-HOUR TOTALS FOR APPROACH CONTROL POSITION (RADAR)

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
				PILOT		TOTAL	CONTROLLER		TOTAL	TOTAL		NEWS
		PILOT	CONTROLLER	DATA	INFO		DATA	INFO		DATA	INFO	
12 March 1960 (1200-1300)	Air Carrier Military Gen Aviation	80	119	69	22	199	9	18	35	47	18	14
		36	65	50	36	101	14	35	28	37	35	28
		156	234	54	32	390	14	27	32	41	27	22
	TOTALS	272	413	58	30	690	12	26	32	42	26	21
14 March 1960 (1100-1600)	Air Carrier Military Gen Aviation	483	717	64	25	1200	11	18	30	52	18	16
		--	--	--	--	--	--	--	--	--	--	--
		47	51	47	36	98	17	31	20	49	31	24
	TOTALS	530	768	62	26	1298	12	19	29	52	19	16
14 March 1960 (1600-1800)	Air Carrier Military Gen Aviation	250	311	65	25	561	10	12	25	63	12	11
		20	27	55	40	47	5	18	41	41	18	13
		37	50	40	43	87	16	26	30	44	26	22
	TOTALS	307	388	62	28	695	10	14	27	59	14	12

Table I-8

TWO-HOUR DIN TOTALS FOR DEPARTURE CONTROL POSITION (ANC)

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)			
		PILOT	CONTLR TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS	
20 May 1959 (1600-1800)	Air Carrier	193	170	363	48	49	3	8	54	39	29	51	20
	Military	--	--	--	--	--	--	--	--	--	--	--	--
	Gen Aviation	--	--	--	--	--	--	--	--	--	--	--	--
	TOTALS	193	170	363	48	49	3	8	54	39	29	51	20
23 May 1959 (0000-0200)	Air Carrier	78	79	157	62	37	1	24	52	24	43	45	13
	Military	--	--	--	--	--	--	--	--	--	--	--	--
	Gen Aviation	4	5	9	75	25	0	0	60	40	33	44	22
	TOTALS	82	84	166	62	37	1	23	52	25	42	45	13
23 May 1959 (1400-1600)	Air Carrier	141	159	300	38	55	6	10	40	50	23	47	30
	Military	11	12	23	36	64	0	8	42	50	22	52	26
	Gen Aviation	9	4	13	67	33	0	0	50	50	46	38	15
	TOTALS	161	175	336	40	55	6	10	40	50	24	47	29
23 May 1959 (1600-1800)	Air Carrier	191	185	376	42	54	4	4	46	50	23	50	27
	Military	7	6	13	29	71	0	0	33	67	15	54	31
	Gen Aviation	--	--	--	--	--	--	--	--	--	--	--	--
	TOTALS	198	191	389	41	54	4	4	46	50	23	50	27
24 May 1959 (1400-1600)	Air Carrier	101	96	197	61	38	1	9	54	36	36	46	18
	Military	--	--	--	--	--	--	--	--	--	--	--	--
	Gen Aviation	--	--	--	--	--	--	--	--	--	--	--	--
	TOTALS	101	96	197	61	38	1	9	54	36	36	46	18
24 May 1959 (1600-1800)	Air Carrier	153	155	308	58	33	8	13	52	35	35	43	22
	Military	--	--	--	--	--	--	--	--	--	--	--	--
	Gen Aviation	--	--	--	--	--	--	--	--	--	--	--	--
	TOTALS	153	155	308	58	33	8	13	52	35	35	43	22

Table I-9
TWO-HOUR DIN TOTALS FOR DEPARTURE CONTROL POSITION (RADAR)

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)				CLASSIFICATION OF CONTROLLER MESSAGES (%)				CLASSIFICATION OF TOTAL MESSAGES (%)			
		PILOT	CONTIN	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	DATA	INFO	NEWS	NEWS
23 Feb. 1960 (1400-1600)	Air Carrier Military Gen Aviation	159	220	379	58	27	14	34	41	25	44	35	21	21	
		--	--	--	--	--	--	--	--	--	--	--	--	--	
		19	25	44	37	42	21	32	40	28	34	41	25	25	
	TOTALS	178	245	423	56	29	15	34	41	25	43	36	21	21	
23 Feb. 1960 (1600-1800)	Air Carrier Military Gen Aviation	161	187	348	76	14	10	34	53	13	53	35	12	12	
		3	3	6	100	0	0	33	67	0	67	33	0	0	
		21	21	42	71	14	14	38	52	10	55	33	12	12	
	TOTALS	185	211	396	76	14	10	34	53	13	54	35	12	12	

Table I-10

TWO-HOUR DIN TOTALS FOR D2 RADIO CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)						
				DATA		INFO	NEWS	DATA		INFO	NEWS	DATA		INFO	NEWS	
		PILOT	CNTR	TOTAL												
15 May 1959 (0800-1000)	Air Carrier	57	50	107	47	30	23	12	50	38	31	39	30			
	Military	17	14	31	29	59	12	0	36	64	16	48	35			
	Gen Aviation	8	19	27	12	75	12	32	21	47	26	37	37			
	TOTALS	82	83	165	40	40	20	14	41	45	27	41	32			
20 May 1959 (1400-1600)	Air Carrier	190	209	399	51	32	17	11	50	38	30	41	28			
	Military															
	Gen Aviation															
	TOTALS	190	209	399	51	32	17	11	50	38	30	41	28			
23 May 1959 (1400-1600)	Air Carrier	178	209	387	51	44	5	28	35	36	38	40	22			
	Military	20	19	39	50	35	15	21	42	37	36	38	26			
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--			
	TOTALS	198	228	426	50	43	6	28	36	36	38	39	22			
24 May 1959 (1400-1600)	Air Carrier	98	115	213	43	44	13	22	33	45	31	38	31			
	Military	6	4	10	67	33	0	0	50	50	40	40	20			
	Gen Aviation	17	16	33	41	41	18	38	44	19	39	42	18			
	TOTALS	121	135	256	44	43	13	23	35	42	33	37	29			
24 May 1959 (1600-1800)	Air Carrier	95	121	216	44	46	9	26	31	43	34	38	28			
	Military	26	31	57	35	42	23	26	39	35	30	40	30			
	Gen Aviation	15	13	28	100	0	0	92	0	8	96	0	4			
	TOTALS	136	165	301	49	40	11	32	30	39	39	35	26			

Table I-10 (Cont'd)

TWO-HOUR D1N TOTALS FOR D2 RADIO CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
					PILOT	CONTN	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS
25 May 1959 (1400-1600)	Air Carrier	111	151	262	10	47	14	26	32	42	32	39	30
	Military	25	27	52	44	40	16	19	30	52	31	35	35
	Gen Aviation	6	4	10	50	33	17	0	75	25	30	50	20
	TOTALS	142	182	324	41	45	14	24	33	43	31	38	30
25 May 1959 (1600-1800)	Air Carrier	164	188	352	48	45	7	29	37	34	38	41	21
	Military	11	11	22	64	18	18	0	9	91	32	14	55
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	175	199	374	49	43	8	28	36	37	37	39	23
8 March 1960 (1400-1600)	Air Carrier	183	159	342	50	38	12	8	40	53	30	39	31
	Military	32	33	65	31	31	38	6	36	58	18	34	48
	Gen Aviation	11	9	20	36	18	45	--	78	22	20	45	35
	TOTALS	226	201	427	47	36	17	7	41	52	28	38	34
9 March 1960 (1400-1600)	Air Carrier	411	425	836	39	48	13	29	35	36	34	42	24
	Military	19	20	39	53	26	21	20	45	35	36	36	28
	Gen Aviation	1	--	1	--	100	--	--	--	--	--	100	--
	TOTALS	431	445	876	40	47	13	28	36	36	34	41	24

Table I-11
TWO-HOUR DIN TOTALS FOR D3 RADIO CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CNTRL	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
15 May 1959 (0800-1000)	Air Carrier	4	5	9	100	--	--	20	60	20	56	33	11
	Military	15	18	33	47	47	7	17	28	56	30	36	33
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	19	23	42	58	37	5	17	35	48	36	36	29
20 May 1959 (1400-1600)	Air Carrier	105	125	230	48	29	24	16	46	38	30	38	31
	Military												
	Gen Aviation												
	TOTALS	105	125	230	48	29	24	16	46	38	30	38	31
20 May 1959 (1600-1800)	Air Carrier	1	2	3	100	--	--	--	--	100	100	--	100
	Military	12	13	25	50	42	8	31	23	46	40	32	28
	Gen Aviation												
	TOTALS	13	15	28	54	38	8	27	20	53	39	29	32
21 May 1959 (1400-1600)	Air Carrier	61	79	140	51	44	5	20	39	41	34	41	25
	Military	8	10	18	38	13	50	10	30	60	22	22	56
	Gen Aviation												
	TOTALS	69	89	158	49	41	10	19	38	43	32	39	28
21 May 1959 (1600-1800)	Air Carrier	7	9	16	57	43	--	33	11	56	44	25	31
	Military	1	4	5	100	--	--	50	--	50	60	--	40
	Gen Aviation												
	TOTALS	8	13	21	62	38	--	38	8	54	48	19	33

Table I-11 (Cont'd)

TWO-HOUR DIN TOTALS FOR D3 RADIO CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CNTR	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
22 May 1959 (1600-1800)	Air Carrier	20	17	50	30	20	12	59	29	32	43	24
	Military	29	25	38	38	24	8	28	64	24	33	43
	Gen Aviation											
	TOTALS	49	42	43	35	22	10	40	50	27	37	36
23 May 1959 (0000-0200)	Air Carrier	21	22	71	29	--	18	45	36	44	37	19
	Military											
	Gen Aviation											
	TOTALS	21	22	71	29	--	18	45	36	44	37	19
23 May 1959 (1400-1600)	Air Carrier	75	74	33	43	24	31	41	28	32	42	26
	Military											
	Gen Aviation											
	TOTALS	75	74	33	43	24	31	41	28	32	42	26
24 May 1959 (1400-1600)	Air Carrier	53	57	40	36	25	23	40	37	31	38	30
	Military											
	Gen Aviation											
	TOTALS	53	57	40	36	25	23	40	37	31	38	30
24 May 1959 (1600-1800)	Air Carrier	11	16	45	45	9	6	44	50	22	44	33
	Military											
	Gen Aviation											
	TOTALS	11	16	45	45	9	6	44	50	22	44	33
25 May 1959 (1400-1600)	Air Carrier	44	49	45	27	27	37	37	27	41	32	27
	Military											
	Gen Aviation											
	TOTALS	44	49	45	27	27	37	37	27	41	32	27

Table I-11 (Cont'd)

TWO-HOUR DIN TOTALS FOR D3 RADIO CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CNTRL	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
7 March 1960 (1440-1540)	Air Carrier Military Gen Aviation	104	95	199	48	40	12	16	56	28	33	48	20
		25	24	49	60	32	8	12	54	33	37	43	20
		3	1	4	67	--	33	--	100	--	50	25	25
	TOTALS	132	120	252	51	38	11	15	56	29	34	46	20
10 March 1960 (1340-1540)	Air Carrier Military Gen Aviation	121	112	233	44	38	18	13	44	43	29	41	30
	TOTALS	121	112	233	44	38	18	13	44	43	29	41	30

Table I-12

TWO-HOUR DIN TOTALS FOR RADAR 1A CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)			
				DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS	
		PILOT	CNTRL	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
20 May 1959 (1600-1800)	Air Carrier	43	62	105	49	35	16	44	18	39	46	25	30
	Military Gen Aviation												
	TOTALS	43	62	105	49	35	16	44	18	39	46	25	30
23 May 1959 (1400-1600)	Air Carrier	9	12	21	33	56	11	42	17	42	38	33	29
	Military Gen Aviation	21 0	24 0	45 0	43 --	52 --	5 --	50 --	29 --	21 --	47 --	40 --	13 --
	TOTAL	30	36	66	40	53	7	47	25	28	44	38	18
24 May 1959 (1600-1800)	Air Carrier	86	108	194	44	40	16	37	15	48	40	26	34
	Military Gen Aviation												
	TOTAL	86	108	194	44	40	16	37	15	48	40	26	34
25 May 1959 (1400-1600)	Air Carrier	27	29	56	41	41	19	45	38	17	43	39	18
	Military Gen Aviation	0 0	0 0	0 0	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
	TOTAL	27	29	56	41	41	19	45	38	17	43	39	18
25 May 1959 (1600-1800)	Air Carrier	35	49	84	43	31	26	43	47	10	43	40	17
	Military Gen Aviation												
	TOTAL	35	49	84	43	31	26	43	47	10	43	40	17

TWO-HOUR DIN TOTALS FOR RADAR 1B CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES		CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)			
		PILOT	CNTR	TOTAL	DATA	INFO	NEWS	DATA	L.O	NEWS	DATA	INFO	NEWS
23 May 1959 (1400-1600)	Air Carrier	147	146	293	56	24	19	21	40	38	39	32	29
	Military	5	3	8	40	60	--	--	67	33	25	62	12
	Gen Aviation												
	TOTALS	152	149	301	56	26	18	21	41	38	39	33	28
23 May 1959 (1600-1800)	Air Carrier	189	187	376	58	25	17	23	47	30	41	36	24
	Military	0	0	0	--	--	--	--	--	--	--	--	--
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	189	187	376	58	25	17	23	47	30	41	36	24
24 May 1959 (1400-1600)	Air Carrier	140	137	277	62	23	15	33	36	31	48	30	23
	Military	0	0	0	--	--	--	--	--	--	--	--	--
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	140	137	277	62	23	15	33	36	31	48	30	23
25 May 1959 (1400-1600)	Air Carrier	107	152	259	33	59	8	41	21	38	38	37	26
	Military	3	8	11	67	33	--	75	--	25	73	9	18
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	110	160	270	34	58	8	43	20	38	39	36	26
25 May 1959 (1600-1800)	Air Carrier	205	267	472	49	41	9	31	22	46	39	31	30
	Military	6	9	15	50	17	33	22	44	33	33	33	33
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	211	276	487	49	41	10	31	23	46	39	31	30

Table I-13 (Cont'd)

TWO-HOUR DIN TOTALS FOR RADAR LB CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)				CLASSIFICATION OF CONTROLLER MESSAGES (%)				CLASSIFICATION OF TOTAL MESSAGES (%)			
					DATA		INFO		DATA		INFO		DATA		INFO	
		PILOT	CNTR	TOTAL												
8 March 1960 (1600-1800)	Air Carrier Military Gen Aviation	190	213	403	46	43	10	25	37	38	35	40	25			
		30	35	65	33	47	20	17	31	51	25	38	37			
		18	17	35	67	22	11	12	59	29	40	40	20			
	TOTALS	238	265	503	46	42	12	23	38	39	34	40	26			

Table I-11

TWO-HOUR DIN TOTALS FOR RADAR 2A CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CONTLR	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
15 May 1959 (0800-1000)	Air Carrier	32	40	72	72	25	3	32	25	42	50	25	25
	Military	11	9	20	--	64	36	11	--	89	5	35	60
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	43	49	92	53	35	12	29	20	51	40	27	33
20 May 1959 (1400-1600)	Air Carrier	52	70	122	56	29	15	29	31	40	40	30	30
	Military	18	17	35	56	33	11	24	29	47	40	31	29
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	70	87	157	56	30	14	28	31	41	40	31	29
21 May 1959 (1400-1600)	Air Carrier	27	33	60	33	26	41	49	21	30	42	23	35
	Military												
	Gen Aviation												
	TOTALS	27	33	60	33	26	41	49	21	30	42	23	35
23 May 1959 (1400-1600)	Air Carrier	22	29	51	32	36	32	34	34	31	33	35	31
	Military	19	26	45	53	47	--	35	12	54	42	27	31
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	41	55	96	41	41	17	35	24	42	38	31	31
25 May 1959 (1400-1600)	Air Carrier	27	36	63	33	56	11	39	22	39	36	36	27
	Military	10	17	27	10	50	40	41	29	29	30	37	33
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	37	53	90	27	54	19	40	25	36	34	37	29

Table I-15

TWO-HOUR DLY TOTALS FOR RADAR 2B CONTROL POSITION

DATE AND TIME	AVIATION CATEGORY	NUMBER OF MESSAGES			CLASSIFICATION OF PILOT MESSAGES (%)			CLASSIFICATION OF CONTROLLER MESSAGES (%)			CLASSIFICATION OF TOTAL MESSAGES (%)		
		PILOT	CNTR	TOTAL	DATA	INFO	NEWS	DATA	INFO	NEWS	DATA	INFO	NEWS
21 May 1959 (1400-1600)	Air Carrier	74	74	148	41	39	20	20	9	70	30	24	45
	Military	17	12	29	47	35	18	17	0	83	34	21	45
	Gen Aviation	0	0	0	--	--	--	--	--	--	--	--	--
	TOTALS	91	86	177	42	38	20	20	8	72	31	24	45
21 May 1959 (1600-1800)	Air Carrier	87	95	182	54	31	15	40	15	45	47	23	31
	Military	11	13	24	46	55	0	31	8	62	38	29	33
	Gen Aviation	1	1	2	0	0	100	0	0	100	0	0	100
	TOTALS	99	109	208	53	33	14	39	14	48	45	23	32
23 May 1959 (1400-1600)	Air Carrier	74	95	169	39	41	20	38	27	35	38	33	28
	Military	6	12	18	33	67	0	17	17	67	22	33	44
	Gen Aviation	4	3	7	25	75	0	67	33	0	43	57	0
	TOTALS	84	110	194	38	44	18	36	26	37	37	34	29
23 May 1959 (1600-1800)	Air Carrier	49	49	98	39	45	16	22	35	43	31	40	30
	Military	0	0	0	--	--	--	--	--	--	--	--	--
	Gen Aviation	18	18	36	39	22	39	17	39	44	28	31	42
	TOTALS	67	67	134	39	39	22	21	36	43	30	37	33

B. DIN CHARTS

The following six cycles of DIN charts are designed to permit ready evaluation of the parts played by the pilots in each aviation category and the controllers and communicators in each facility. The most general results are given first, with the following cycles presenting progressively more detailed data.

Since some of the charts are based on relatively small samples because of very detailed data breakdowns, the DIN tables should be consulted for sample size whenever extreme results are shown. The sample sizes for the air carrier category are usually the largest and, hence, the most reliable. (The exception is the Station Position B which seldom deals with commercial aircraft.)

1. Overall Facility and Position DIN Profiles

Figure I-2 shows the overall DIN profile for each facility. That is, the total message sample for all positions recorded in each facility was used, with pilot and controller/communicator messages lumped together. The Tower and Center profiles are further broken down by Functional Control Position in Figures I-3 and I-4. Overall DIN profiles for each position are given in Figures I-5 through I-11. In these, as in all of the DIN profiles, the sum of the percentages given in each profile is 100%.

Figure I-2
FACILITY DIN PROFILES

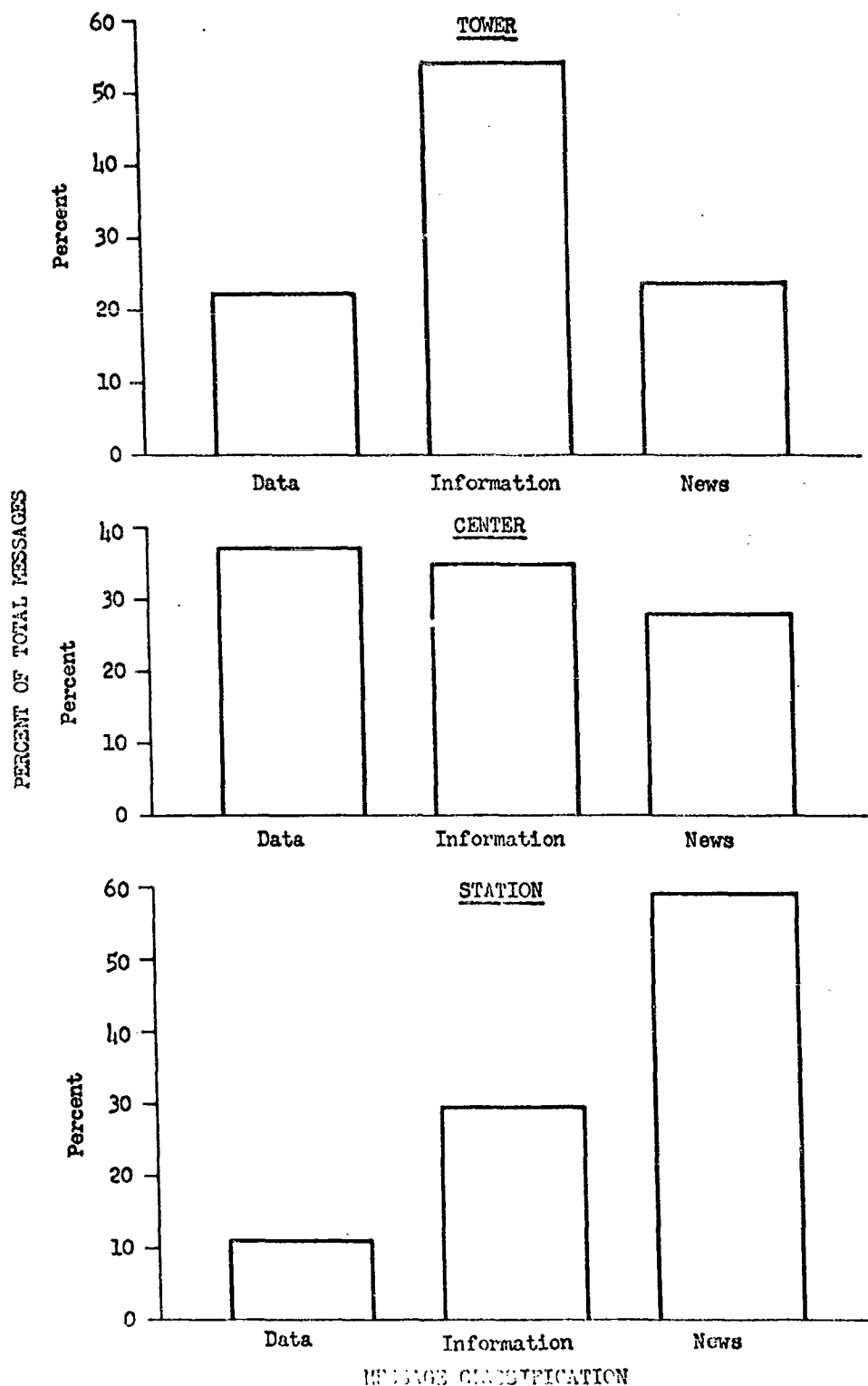
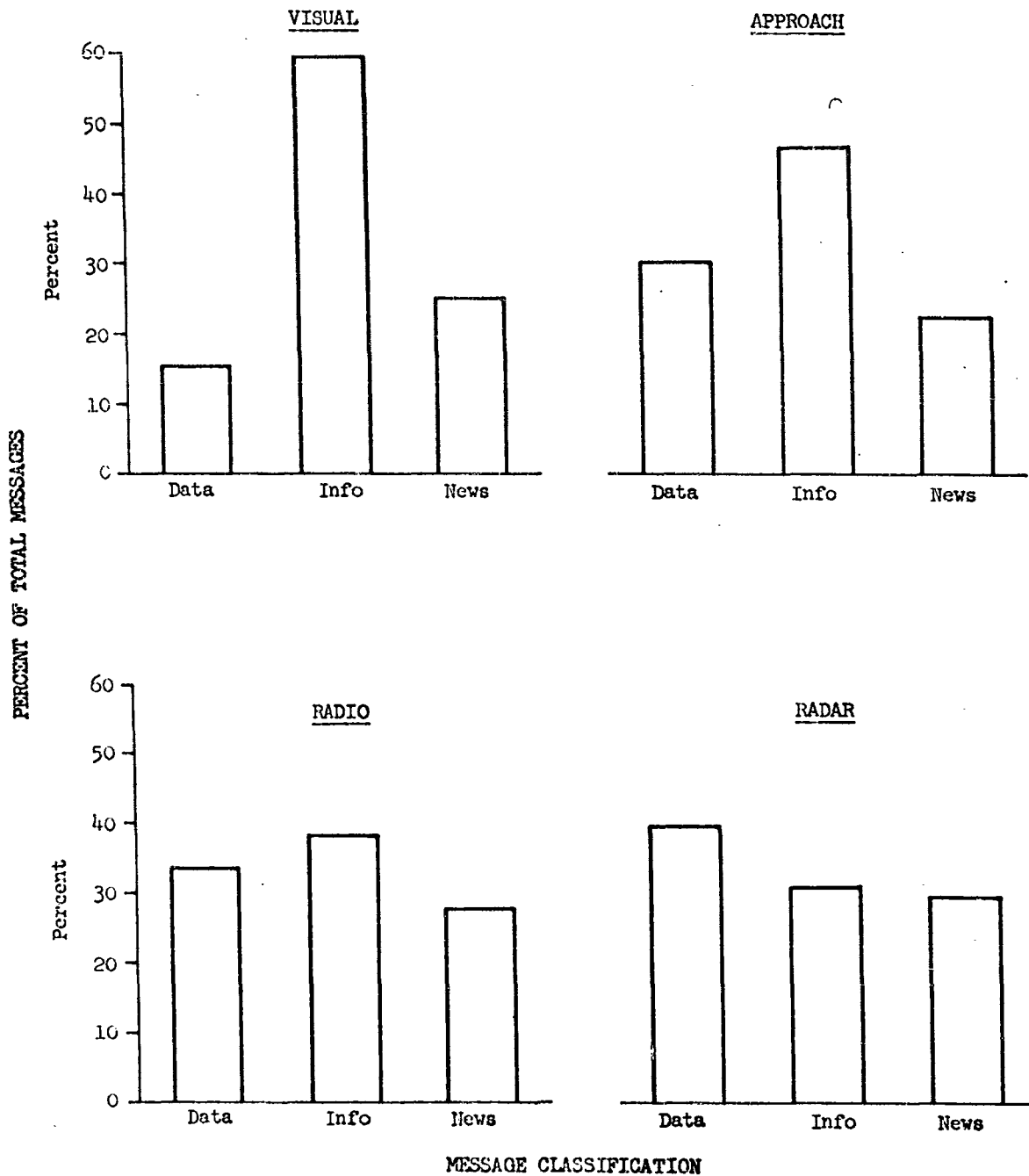


Figure I-3

DIN PROFILES FOR THE FUNCTIONAL CONTROL POSITIONS

(1959 Data)



DIN PROFILES FOR THE FUNCTIONAL CONTROL POSITIONS

(1960 Data)

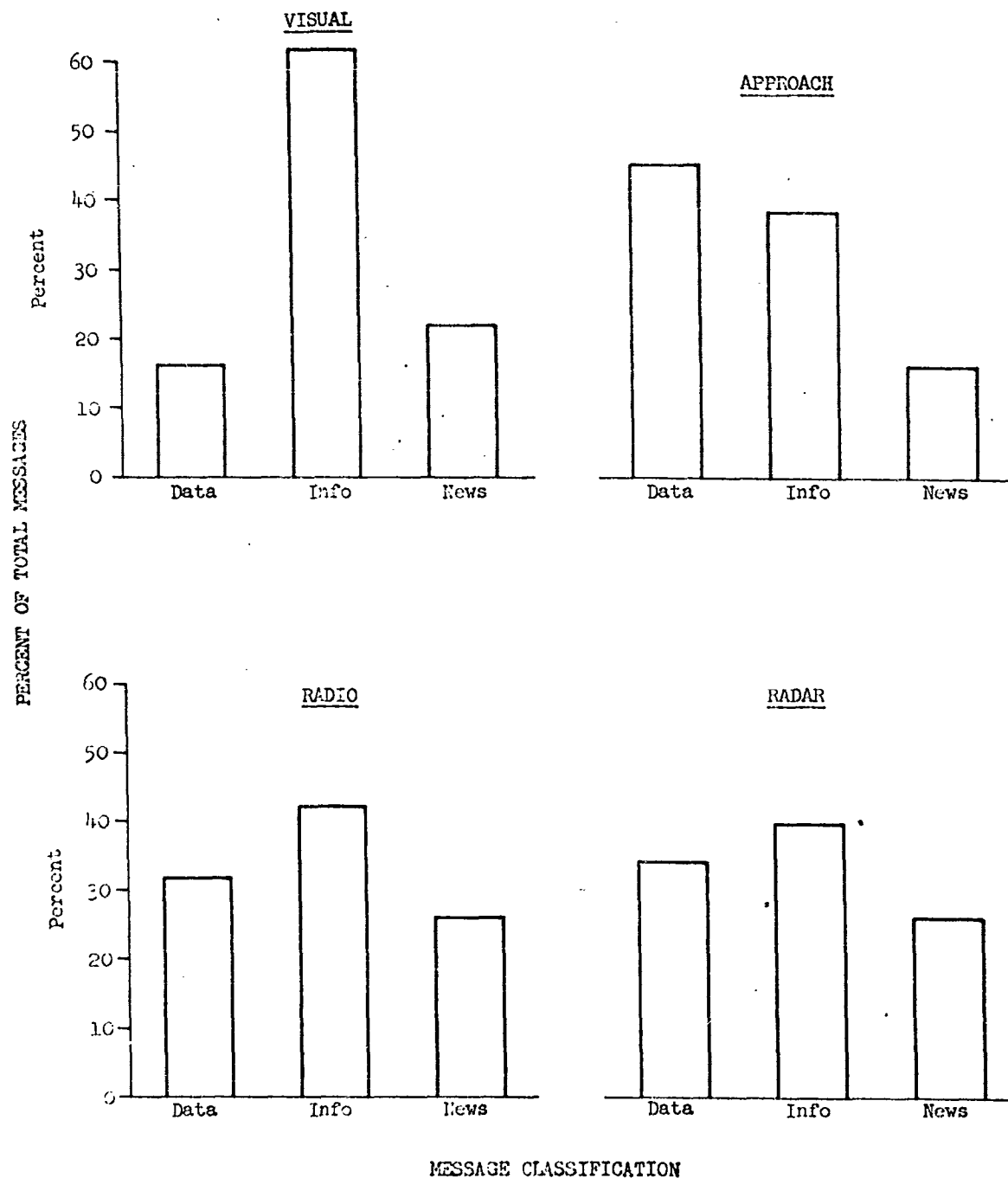


Figure I-5

OVERALL POSITION DIN PROFILES

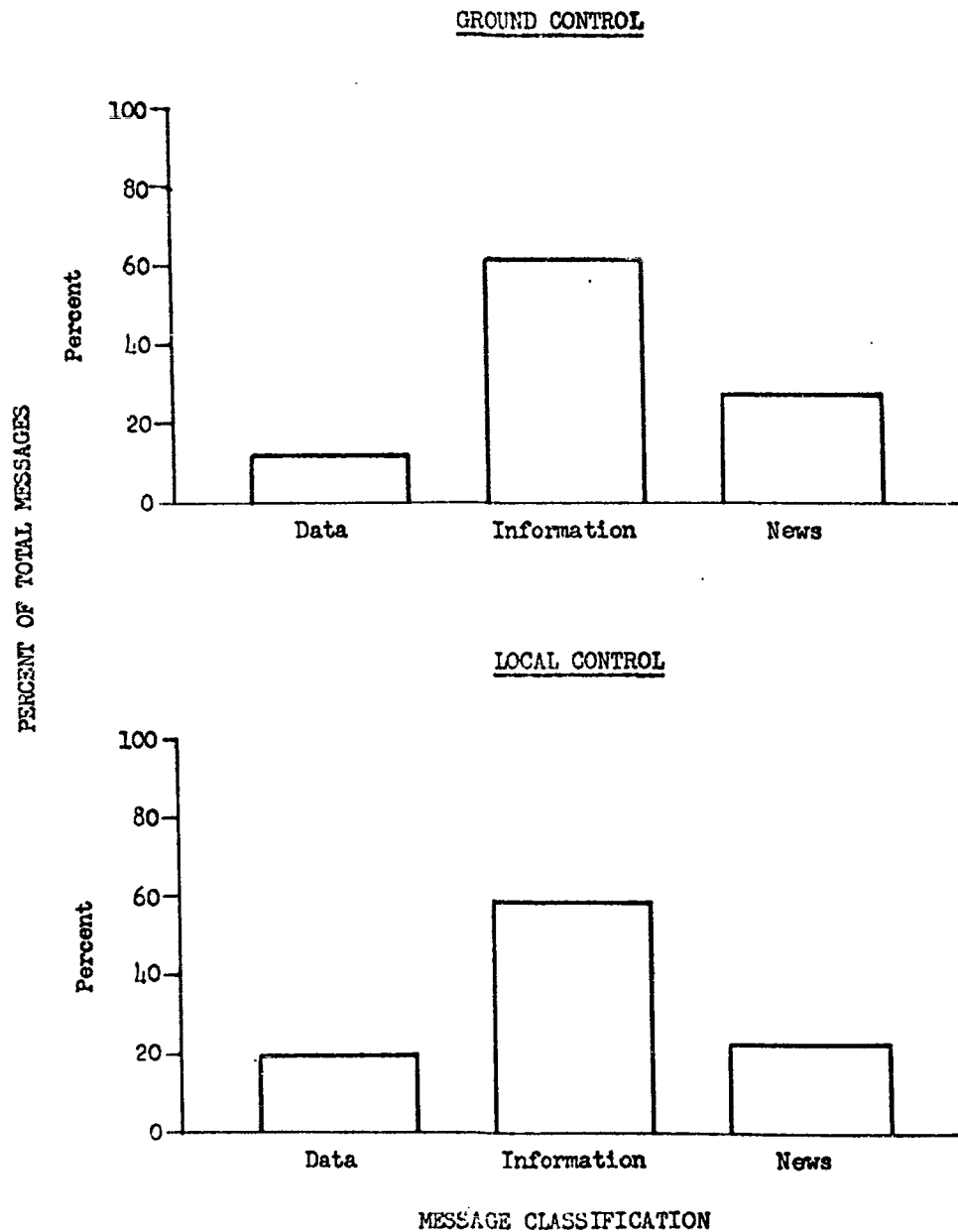


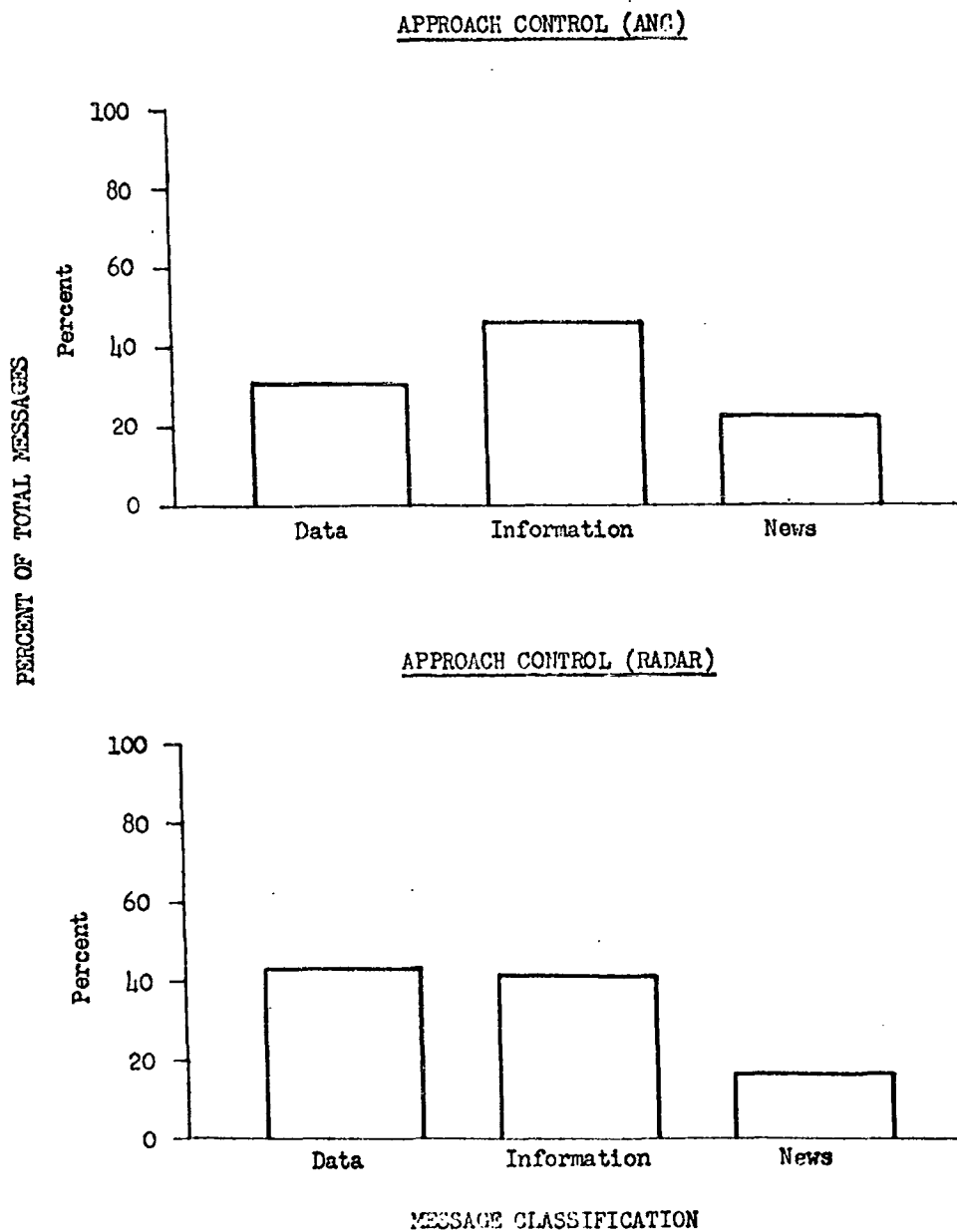
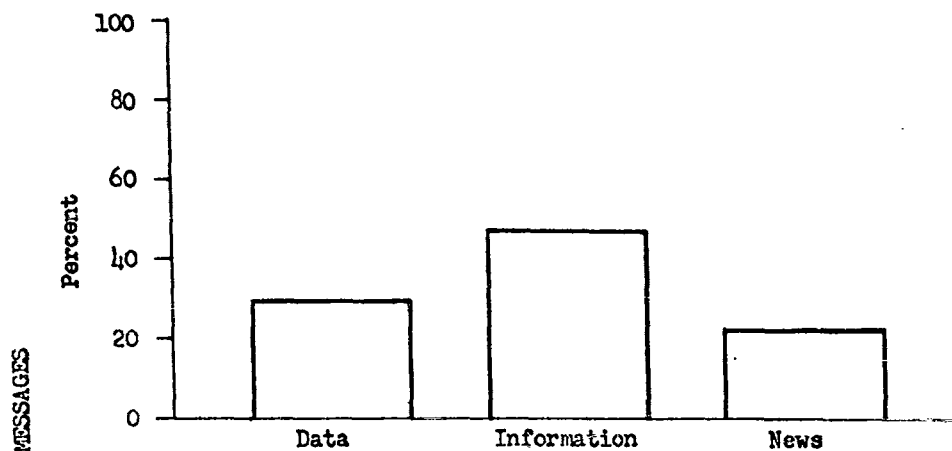
Figure I-6OVERALL POSITION DIN PROFILES

Figure I-7

OVERALL POSITION DIN PROFILES

DEPARTURE CONTROL (ANC)



DEPARTURE CONTROL (RADAR)

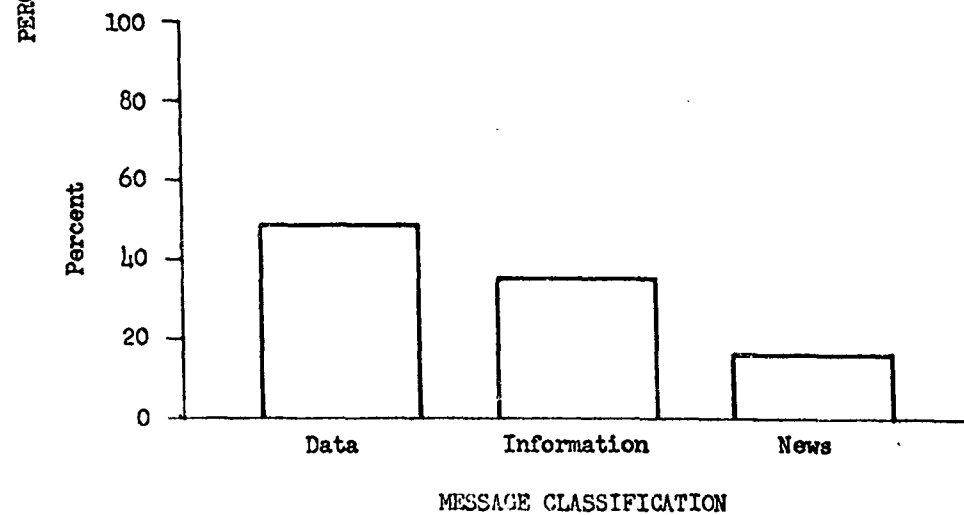


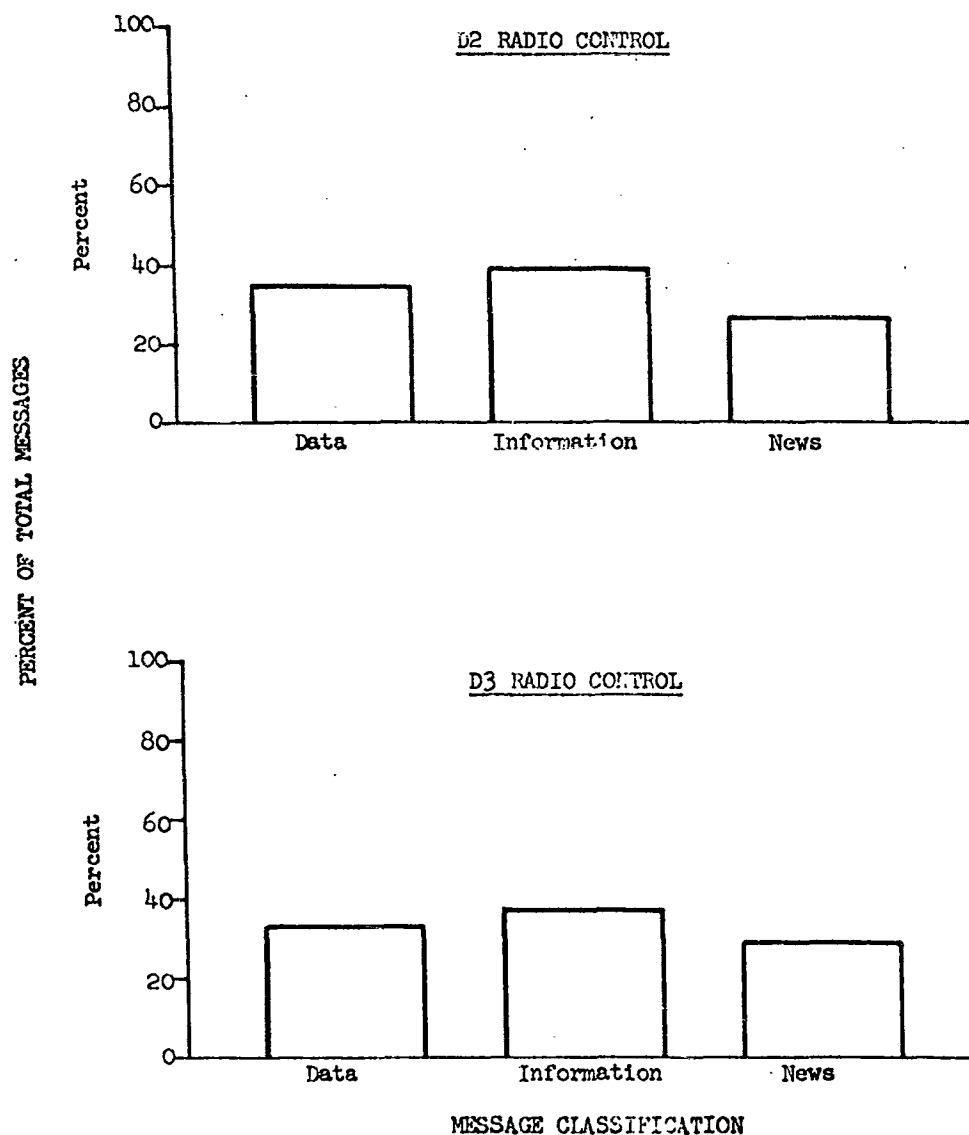
Figure I-8OVERALL POSITION DIN PROFILES

Figure I-9

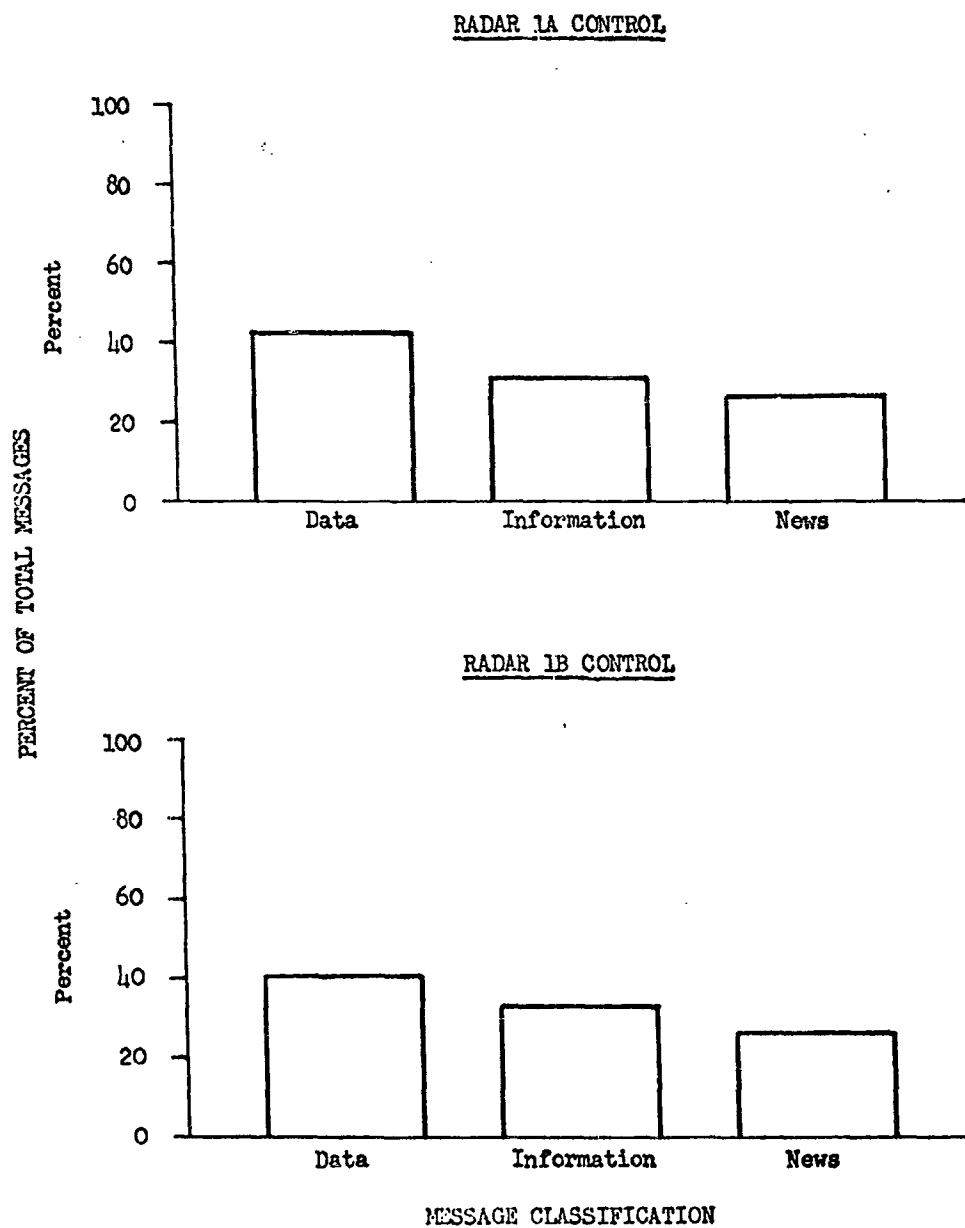
OVERALL POSITION DIN PROFILES

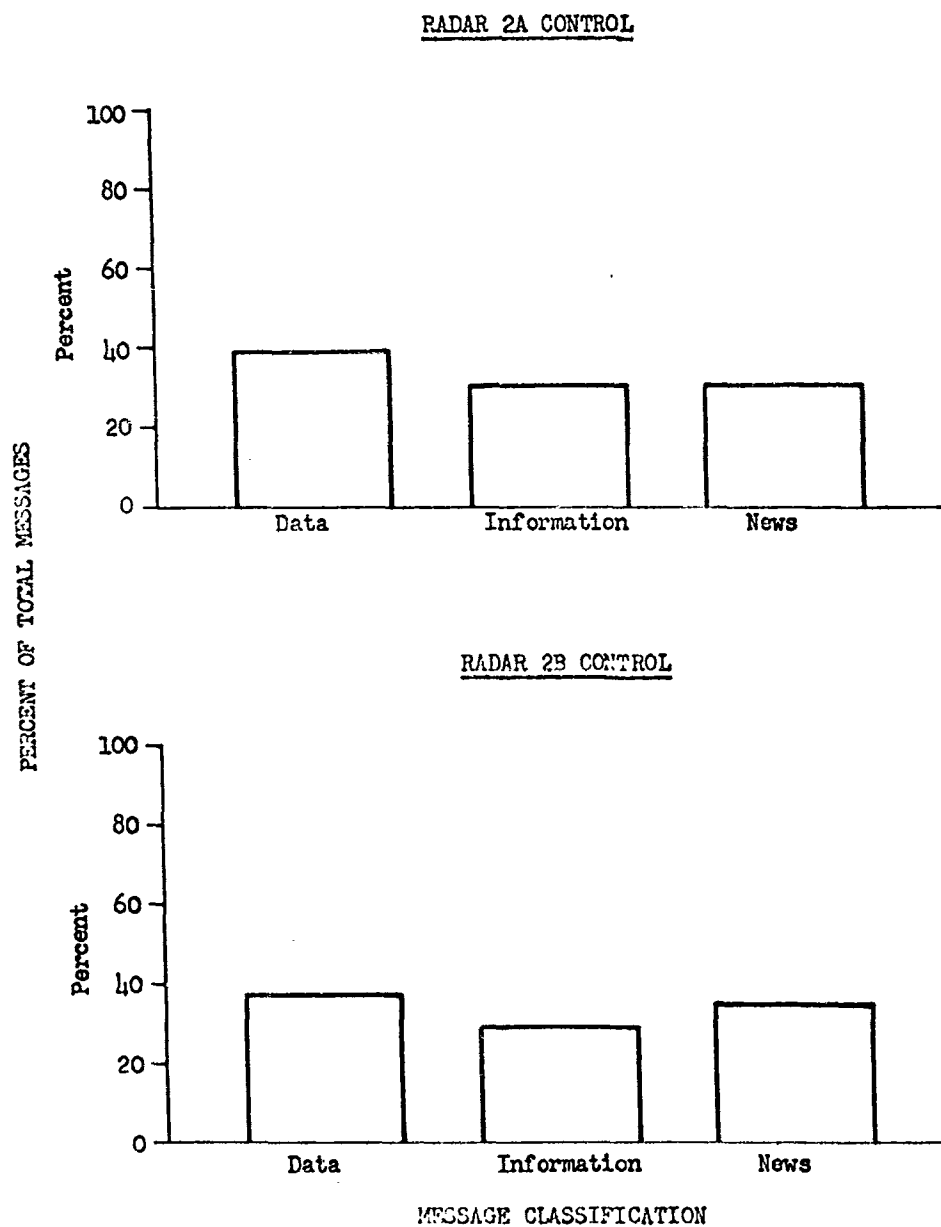
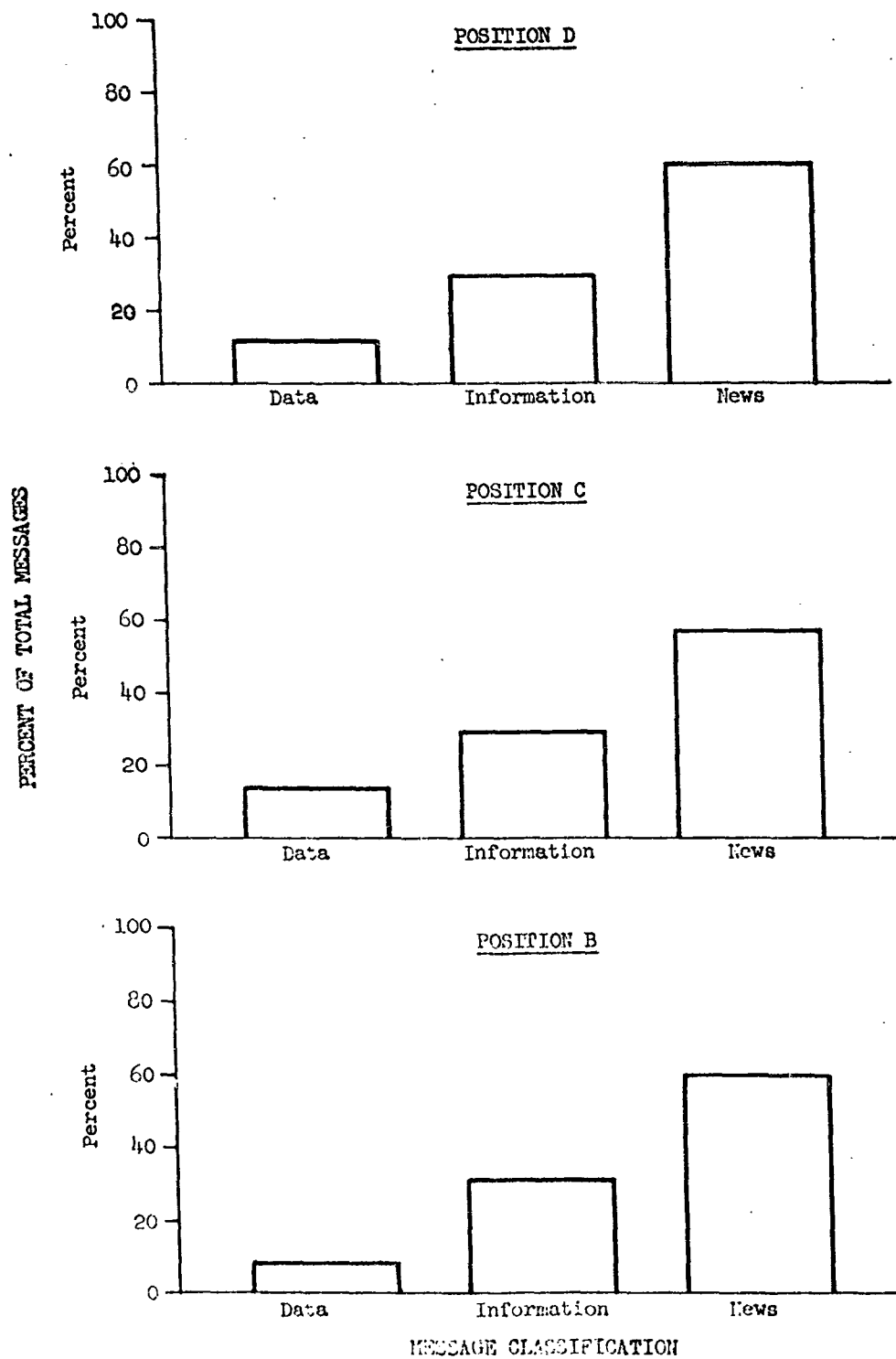
Figure I-10OVERALL POSITION DIN PROFILES

Figure I-11

OVERALL POSITION DIN PROFILES

2. DIN Profiles by Originator

Figures I-12 through I-29 show the DIN profiles for each facility and each position broken down by pilot and controller/communicator. That is, all messages originated by pilots in communicating with a particular facility or position constitute a message sample which is shown as a pilot profile. Similarly, the bottom profile in each figure is that for the controller/communicator message sample.

TOWER-DIN PROFILES BY ORIGINATOR

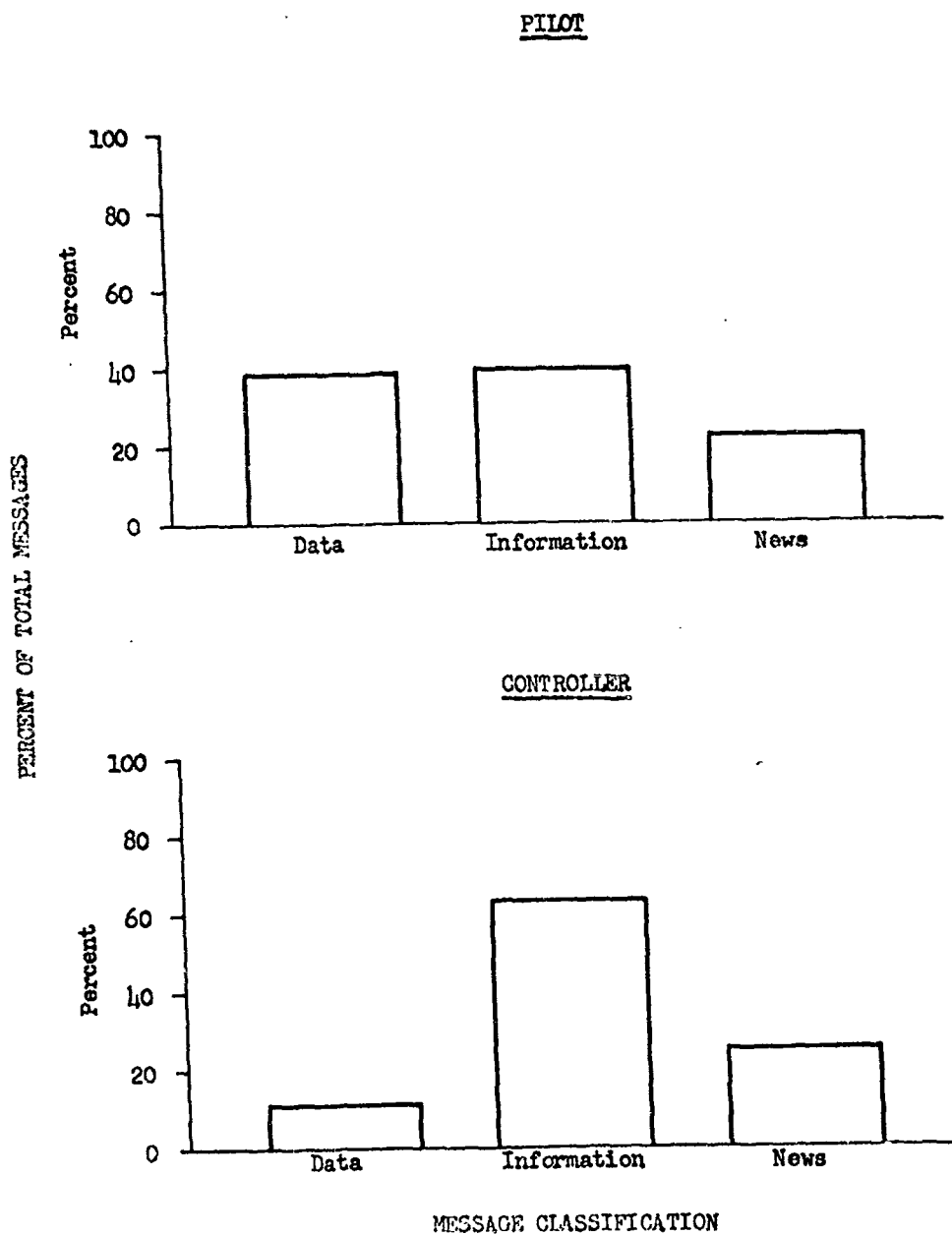


Figure I-13

GROUND CONTROL-DIN PROFILES BY ORIGINATOR

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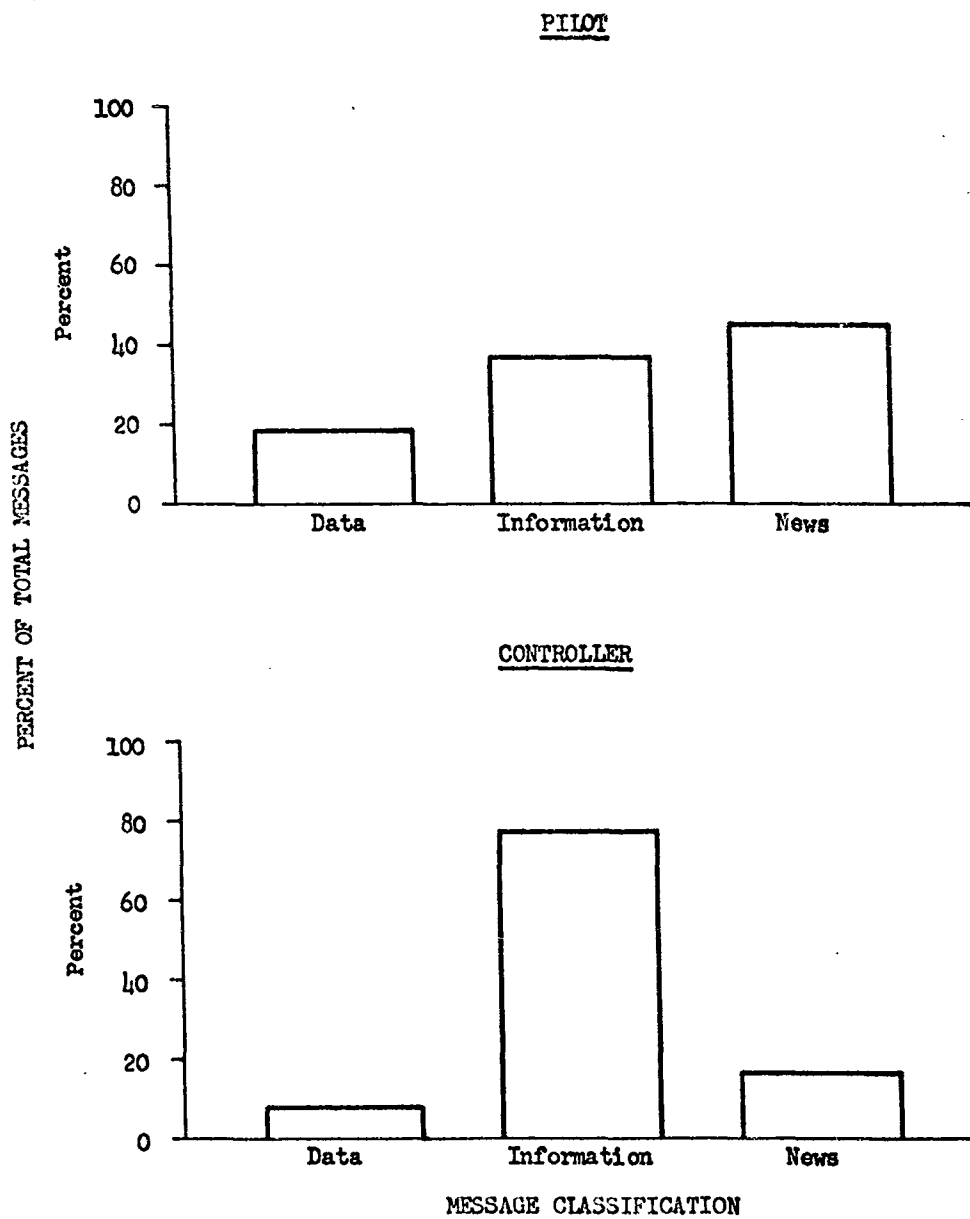


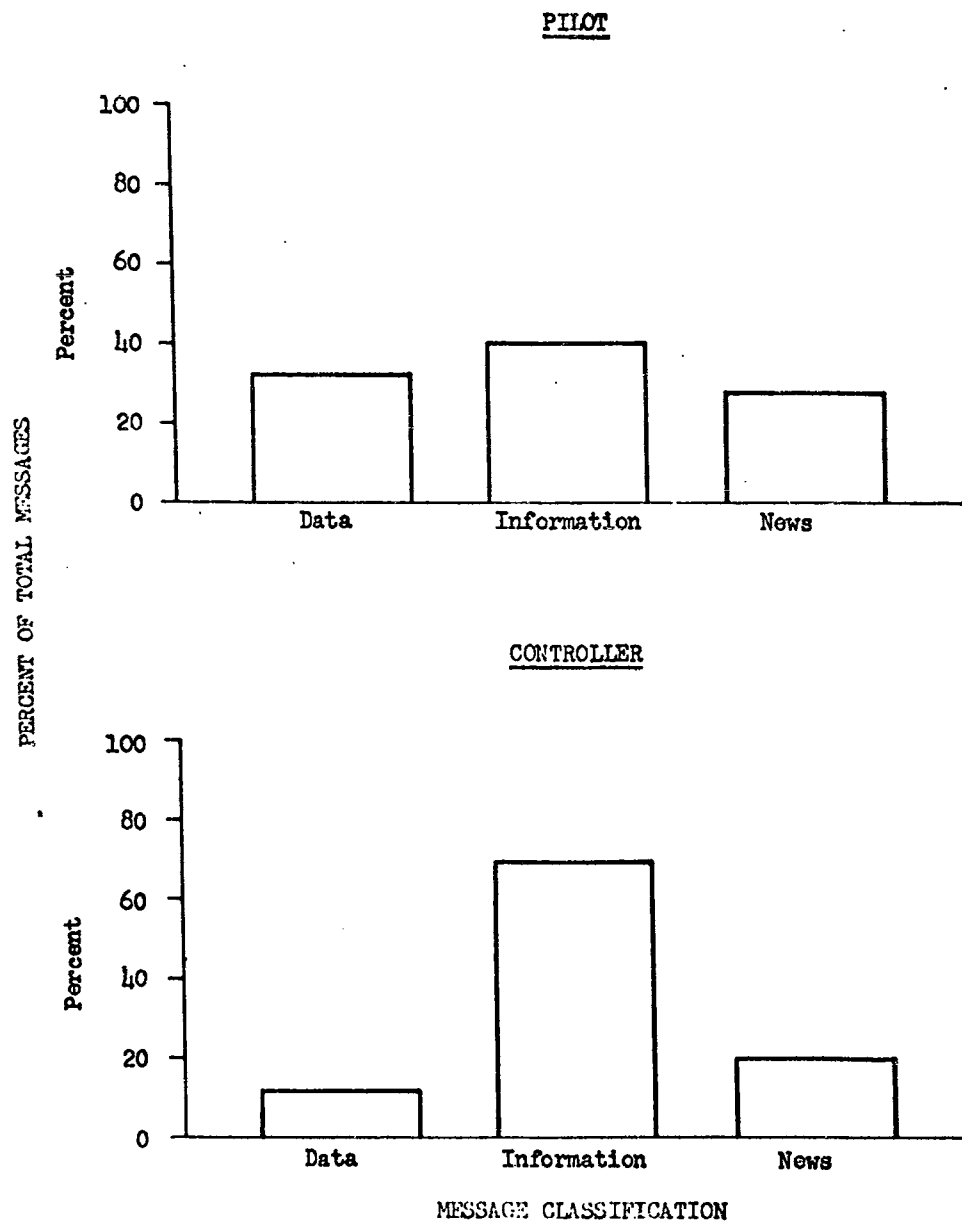
Figure I-14LOCAL CONTROL-DIN PROFILES BY ORIGINATOR

Figure I-15

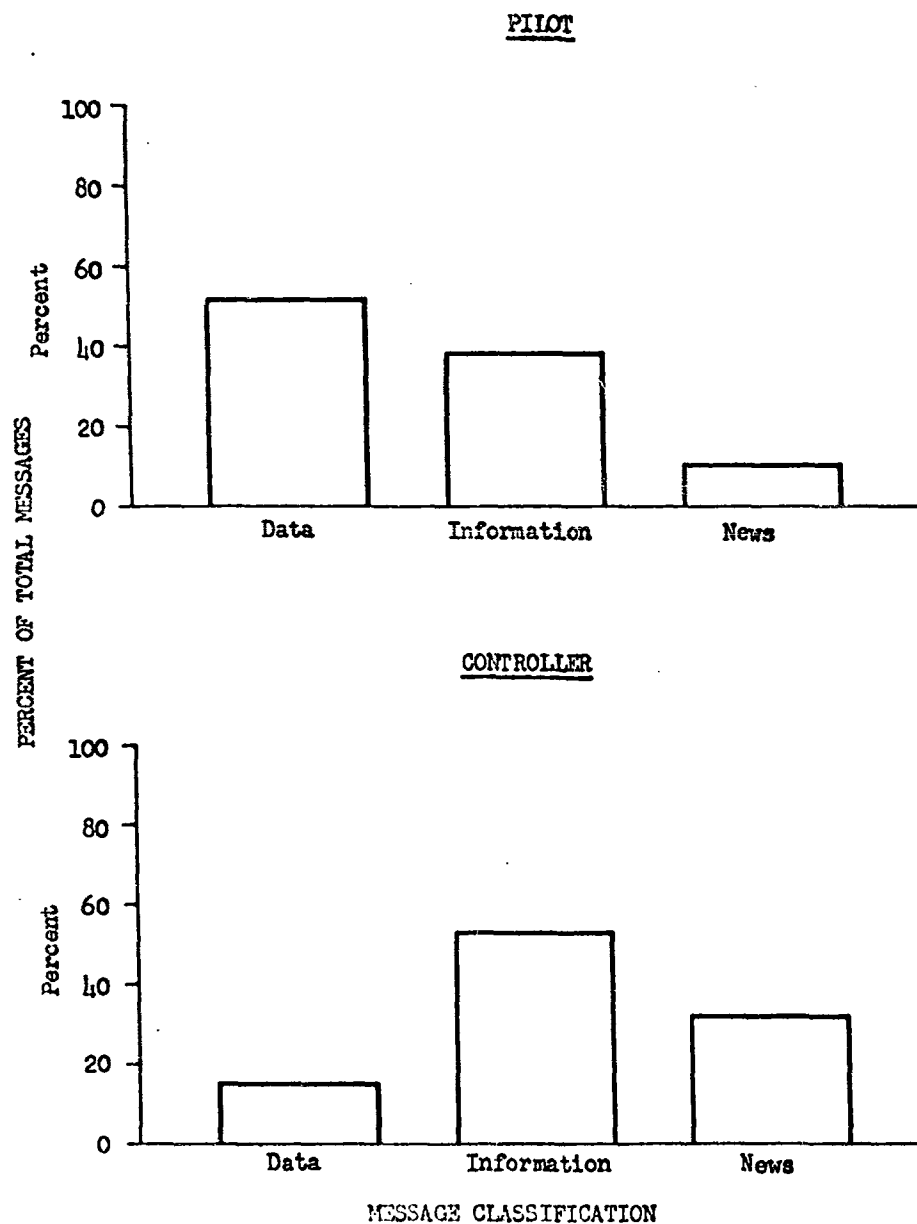
APPROACH CONTROL (ANC)-DIN PROFILES BY ORIGINATOR

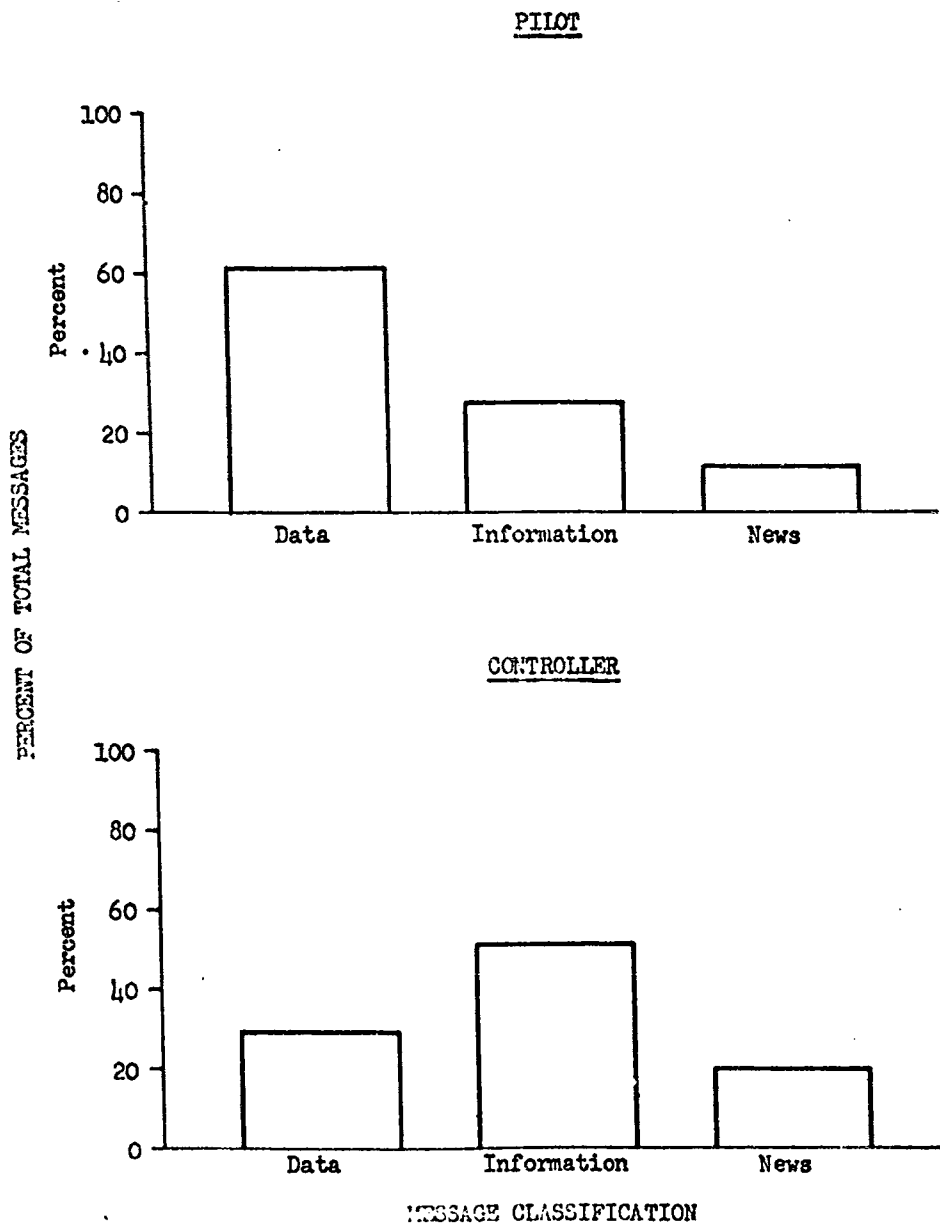
Figure I-16APPROACH CONTROL (RADAR)-DIN PROFILES BY ORIGINATOR

Figure I-17

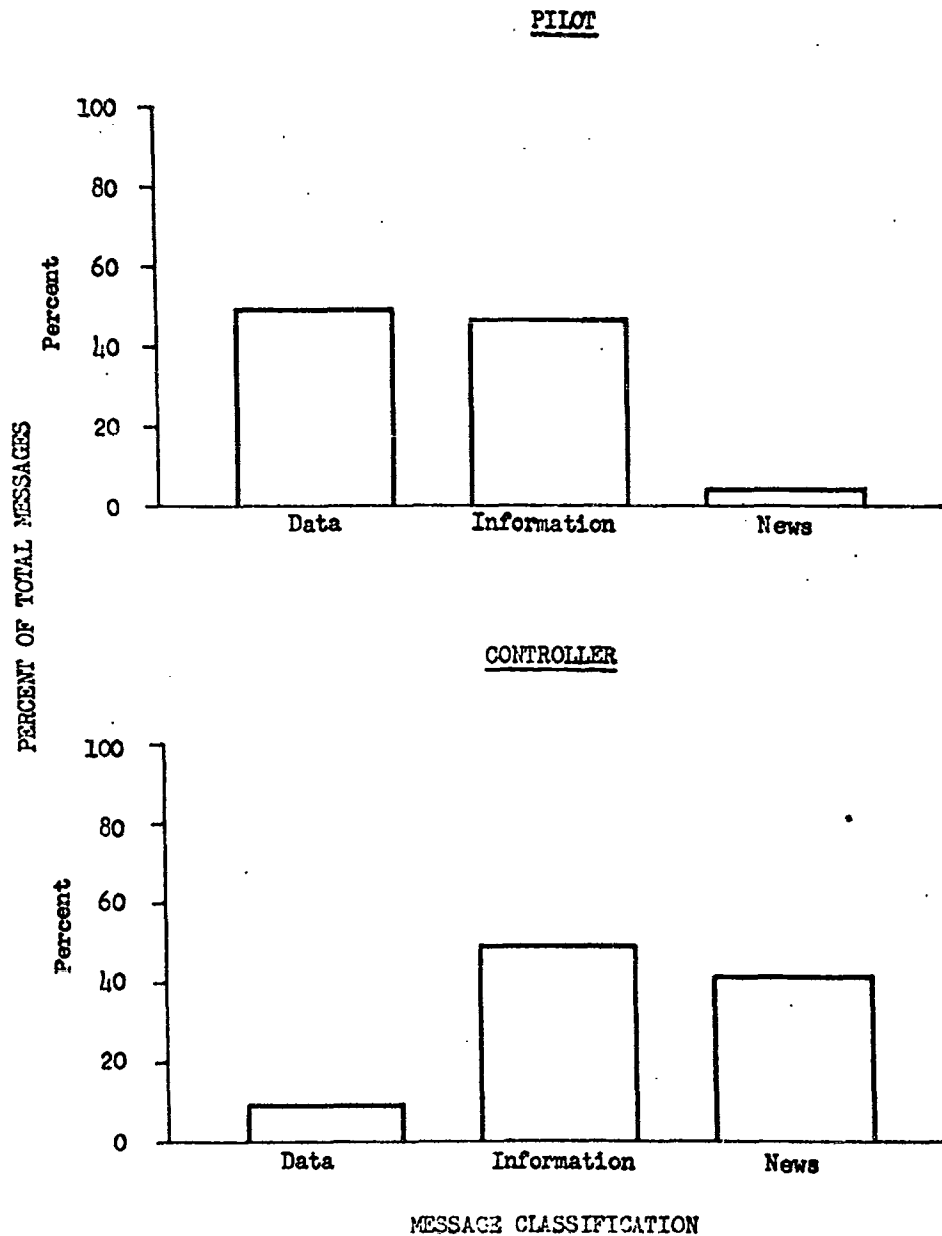
DEPARTURE CONTROL (ANC)-DIN PROFILES BY ORIGINATOR

Figure I-18

DEPARTURE CONTROL (RADAR)-DIN PROFILES BY ORIGINATOR

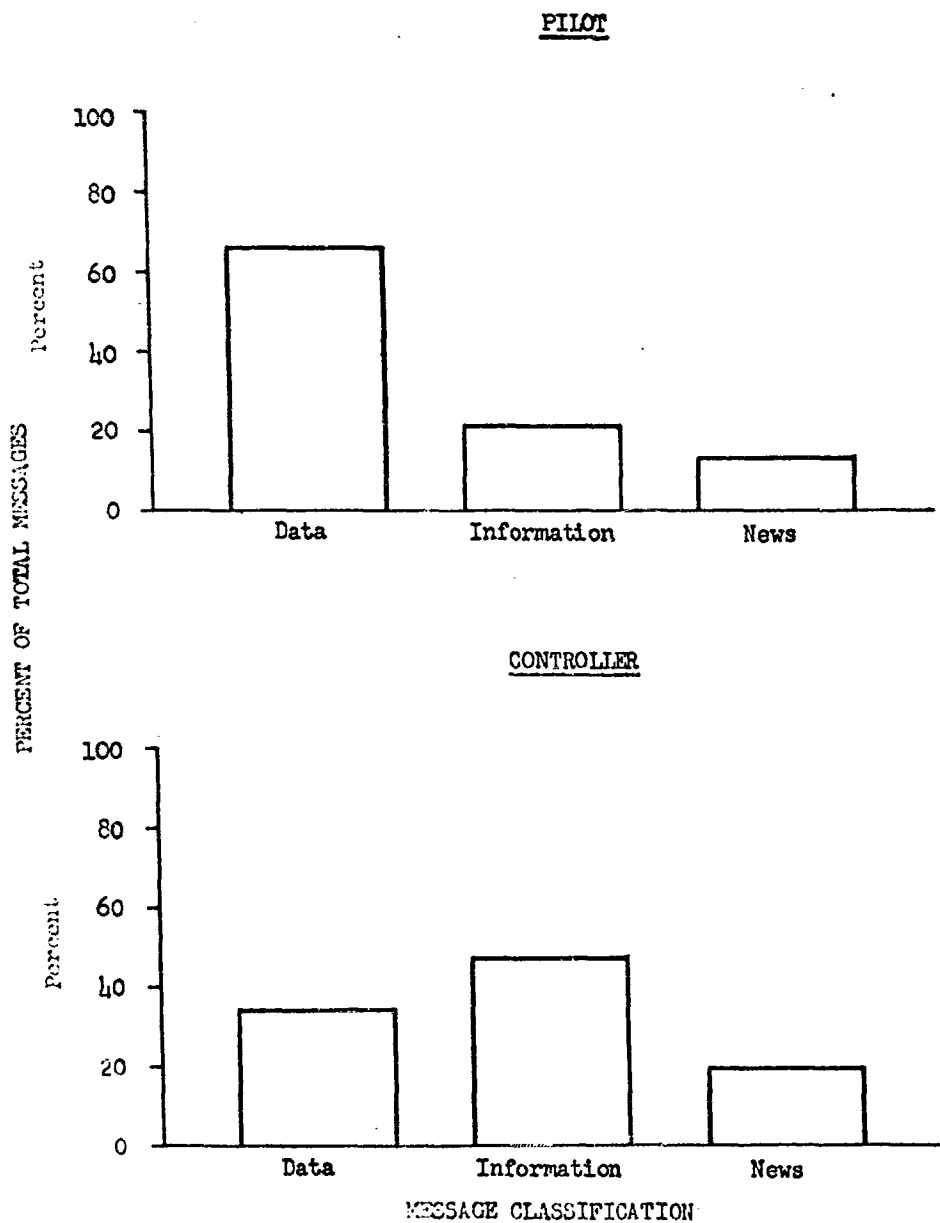


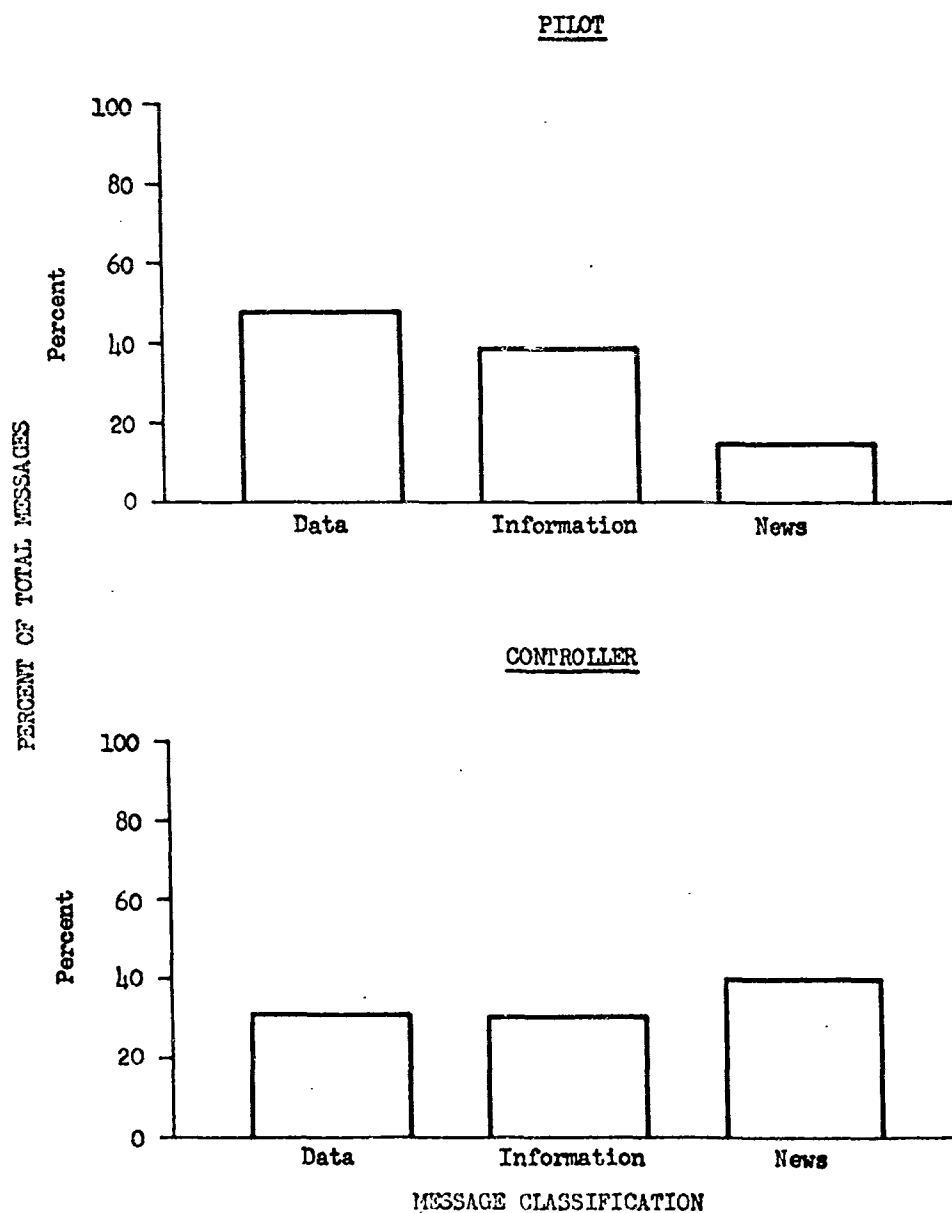
Figure I-19CENTER DIN PROFILES BY ORIGINATOR

Figure I-20

D2 RADIO CONTROL-DIN PROFILES BY ORIGINATOR

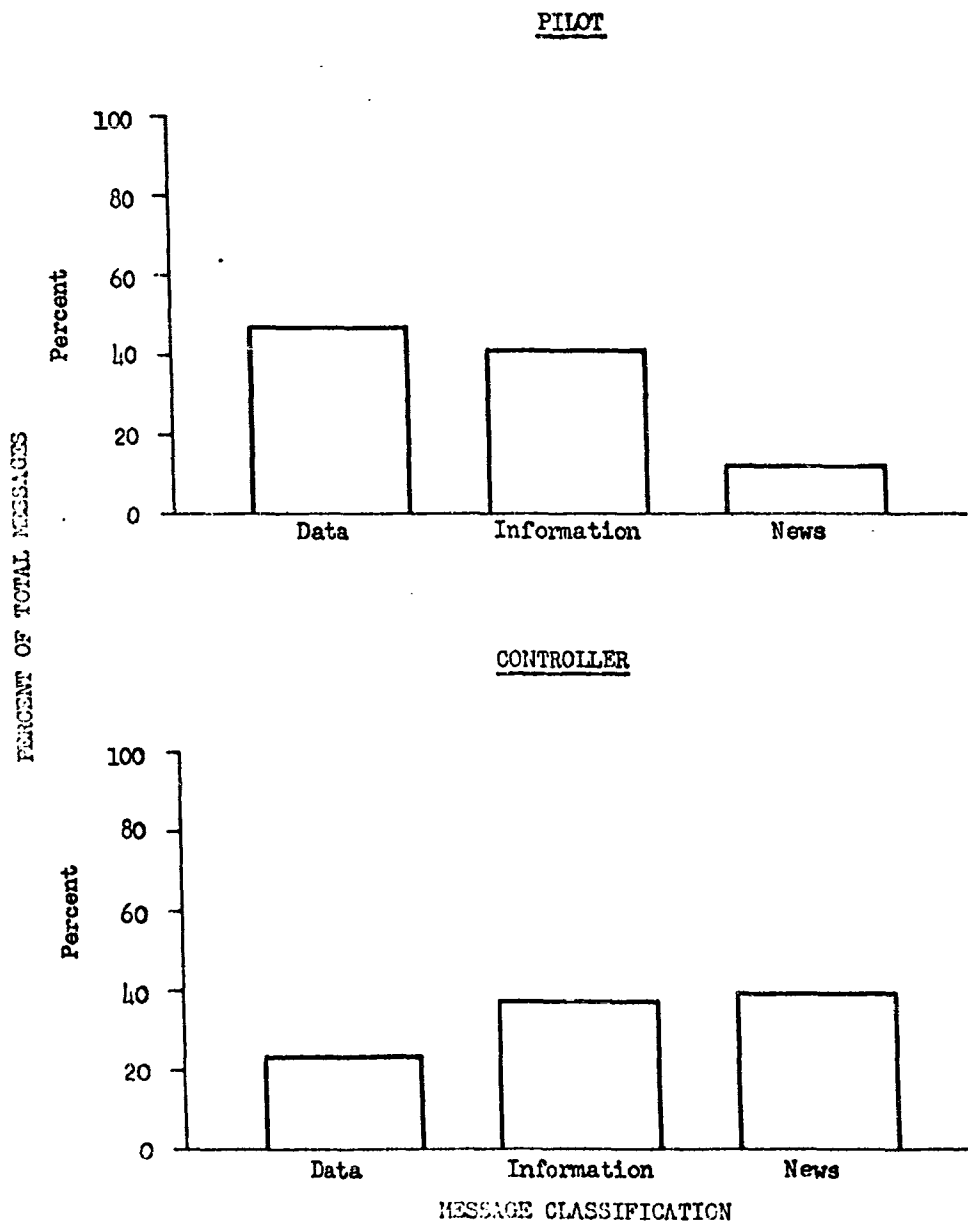


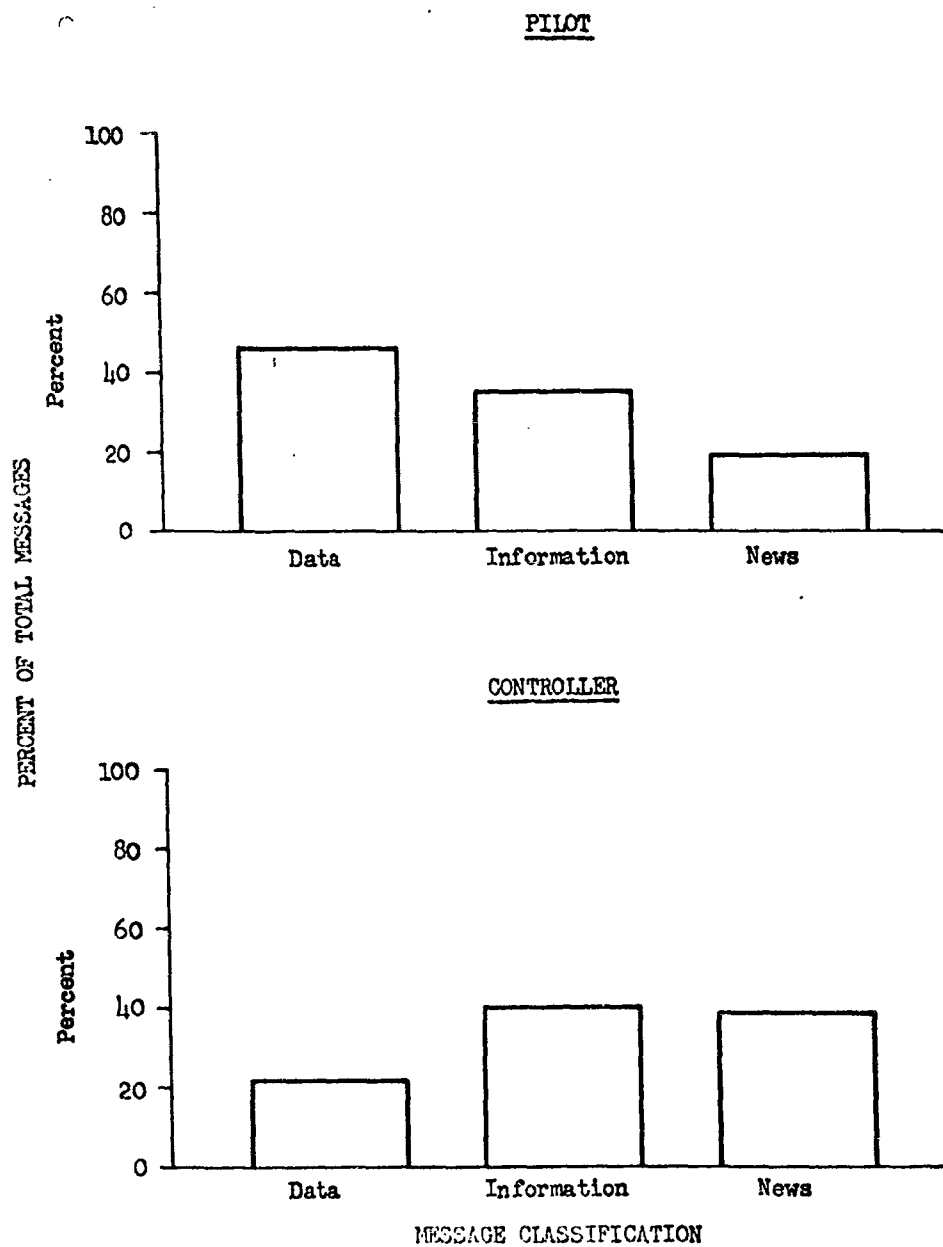
Figure I-21D3 RADIO CONTROL-DIN PROFILES BY ORIGINATOR

Figure 1-22

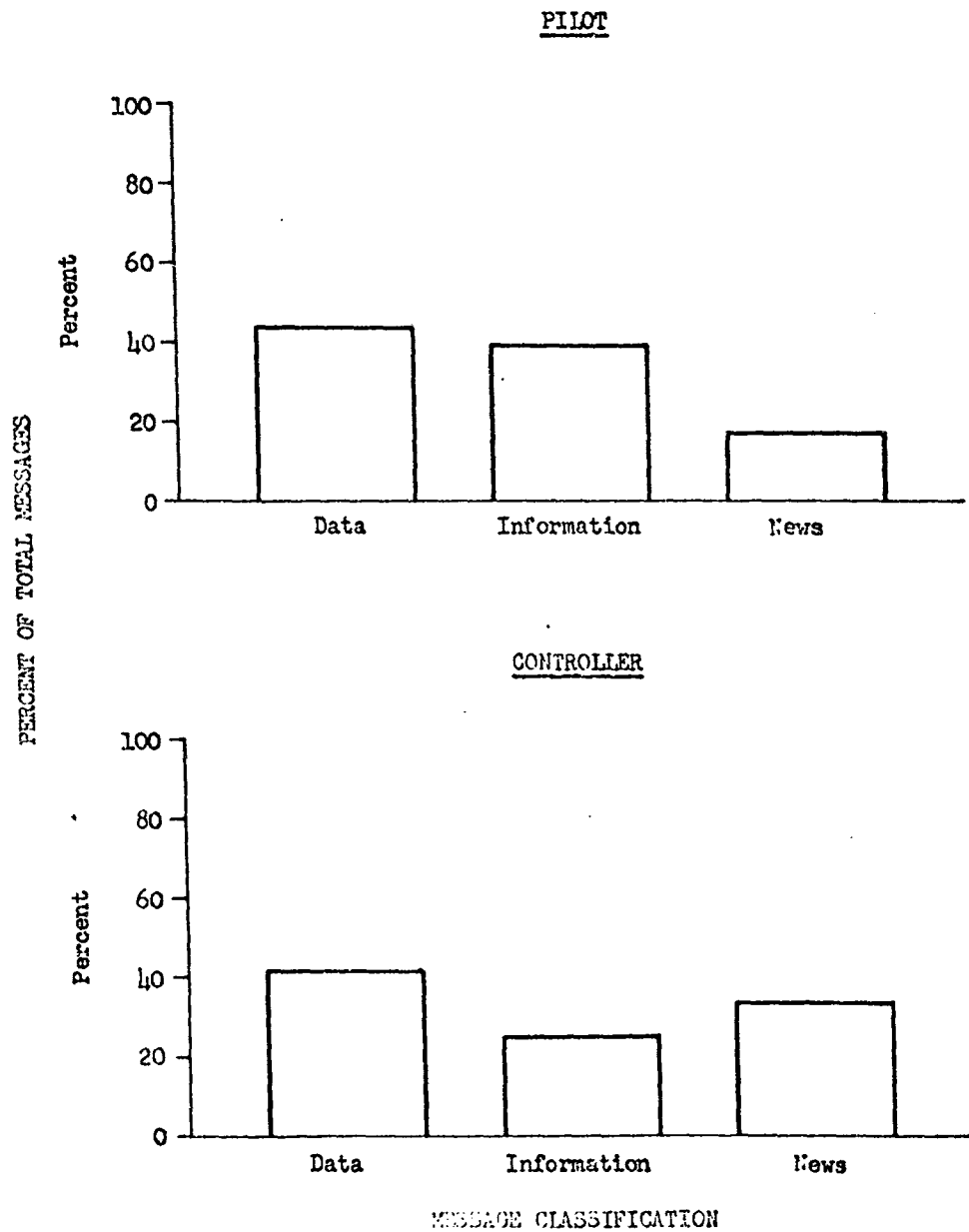
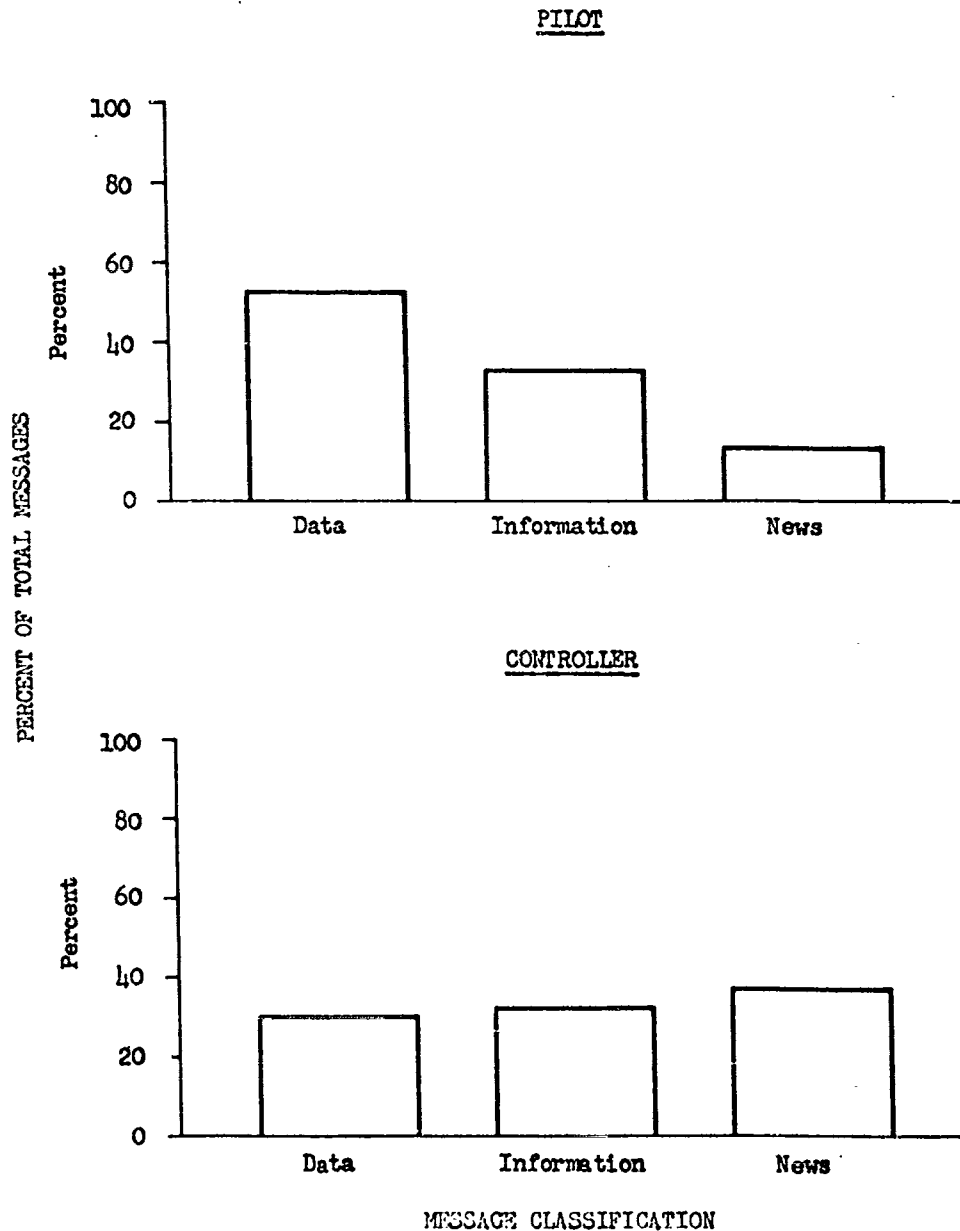
RADAR 1A CONTROL-DIN PROFILES BY ORIGINATOR

Figure I-23RADAR 1B CONTROL-DIN PROFILES BY ORIGINATOR

RADAR 2A CONTROL-DIN PROFILES BY ORIGINATOR

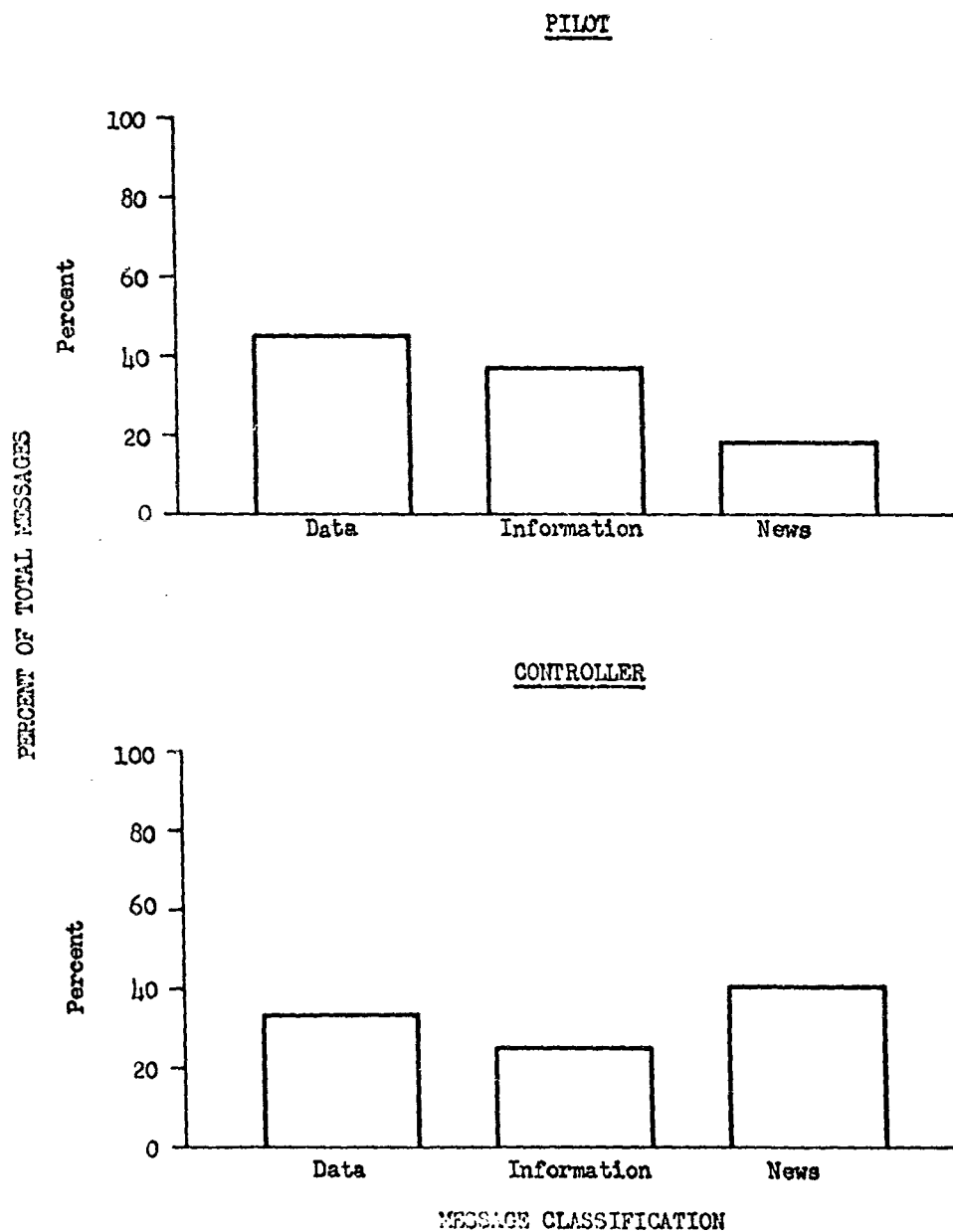


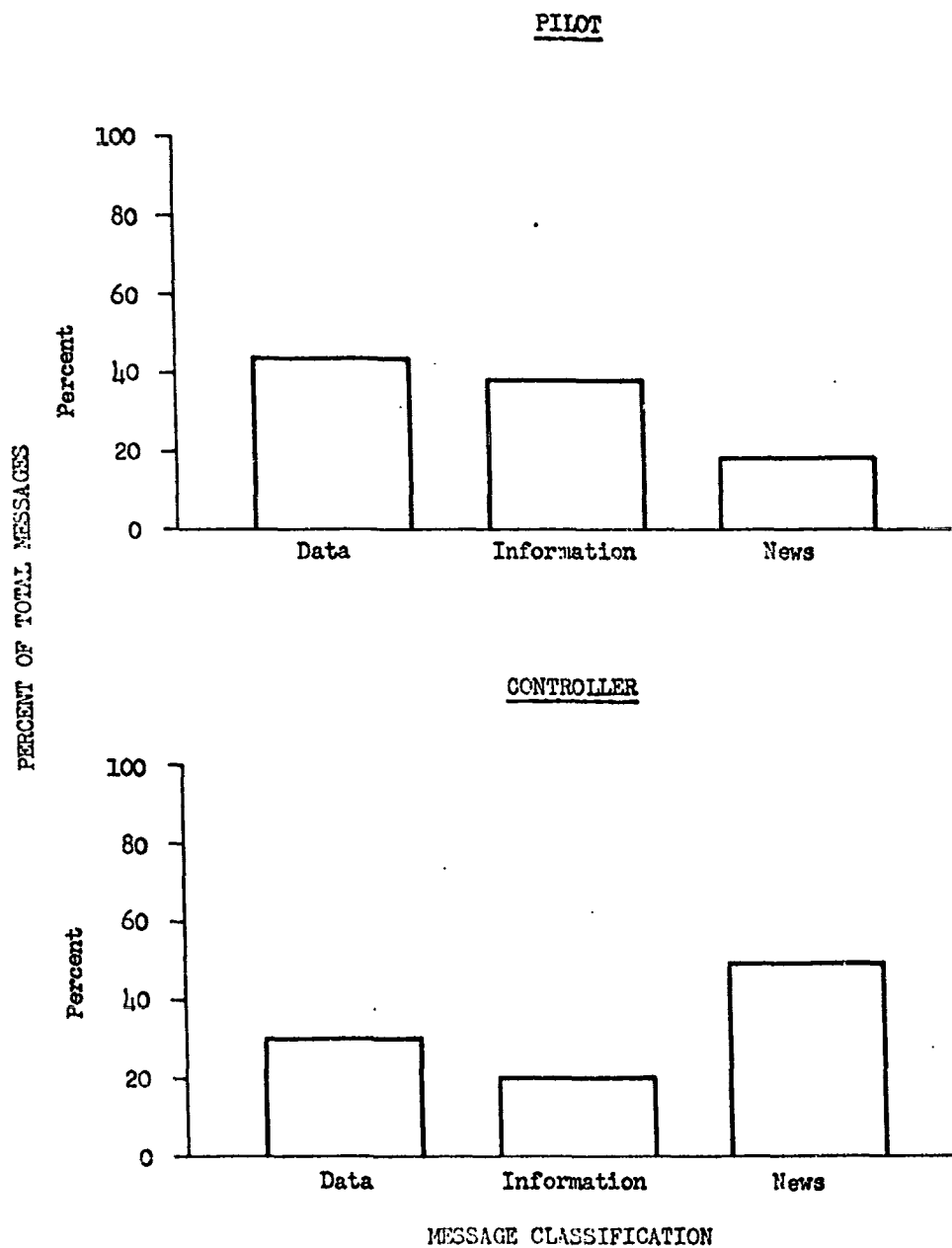
Figure I-25RADAR 2B CONTROL-DIN PROFILES BY ORIGINATOR

Figure I-26
STATION DIN PROFILES BY ORIGINATOR

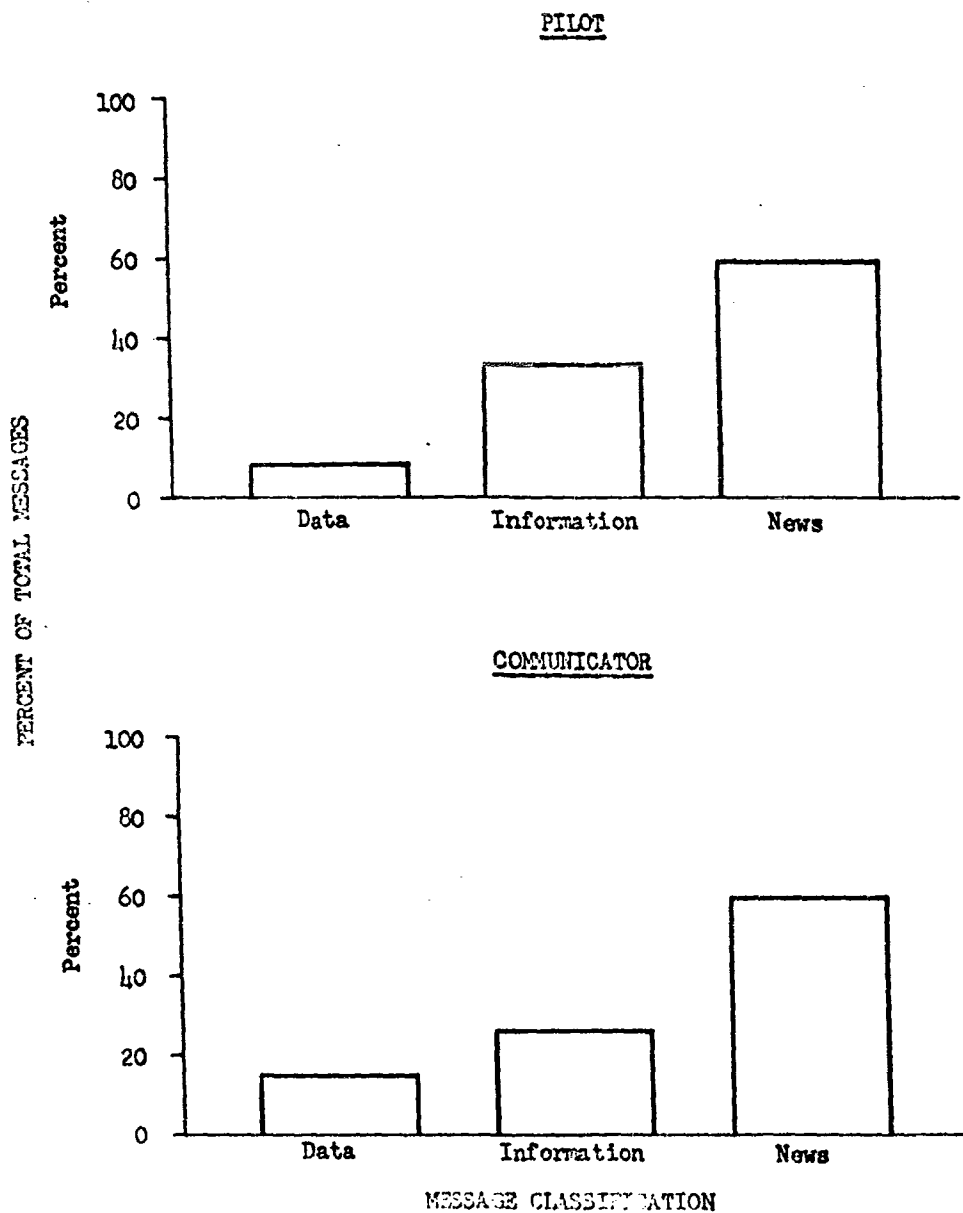


Figure I-27

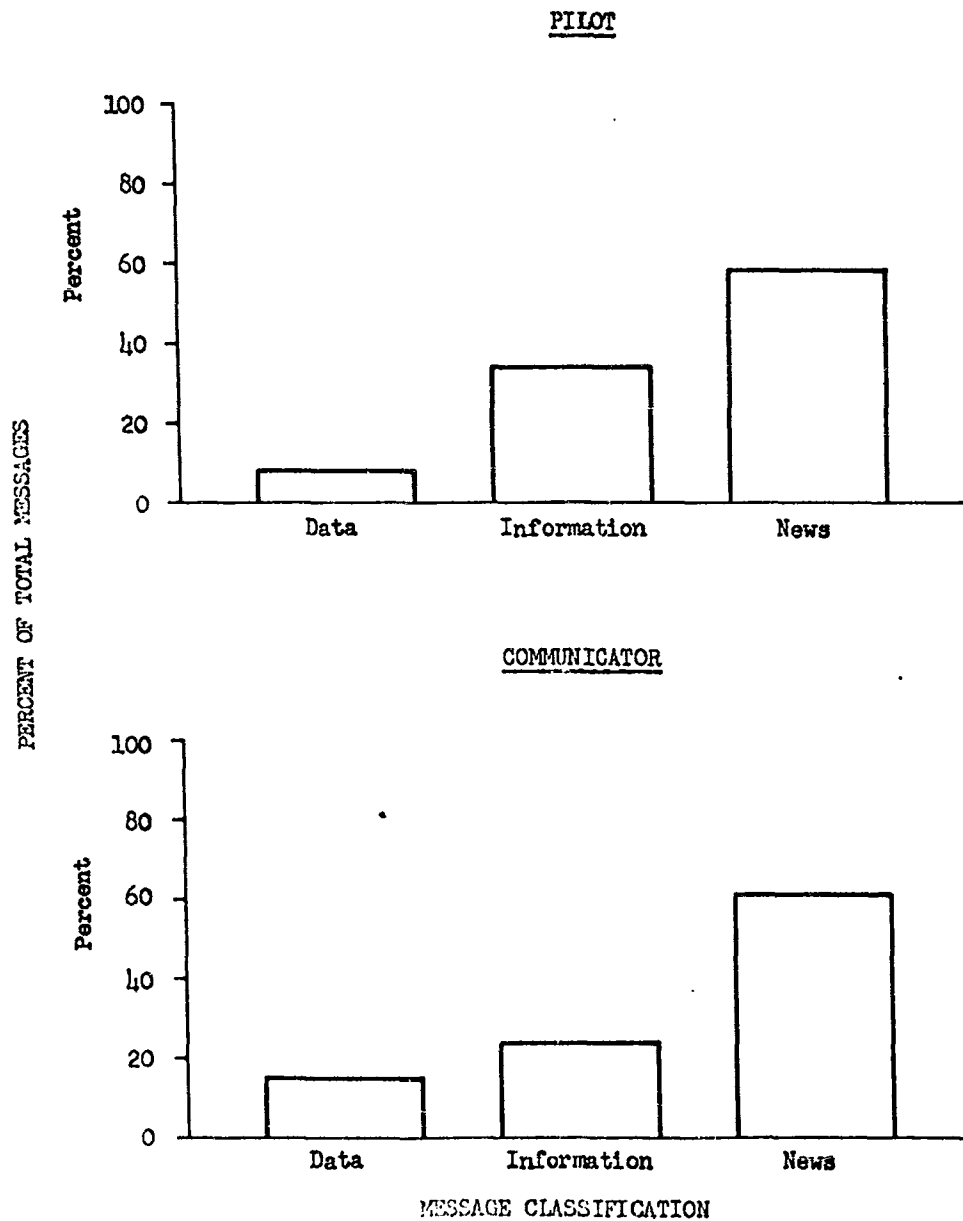
STATION POSITION D-DIN PROFILES BY ORIGINATOR

Figure I-28

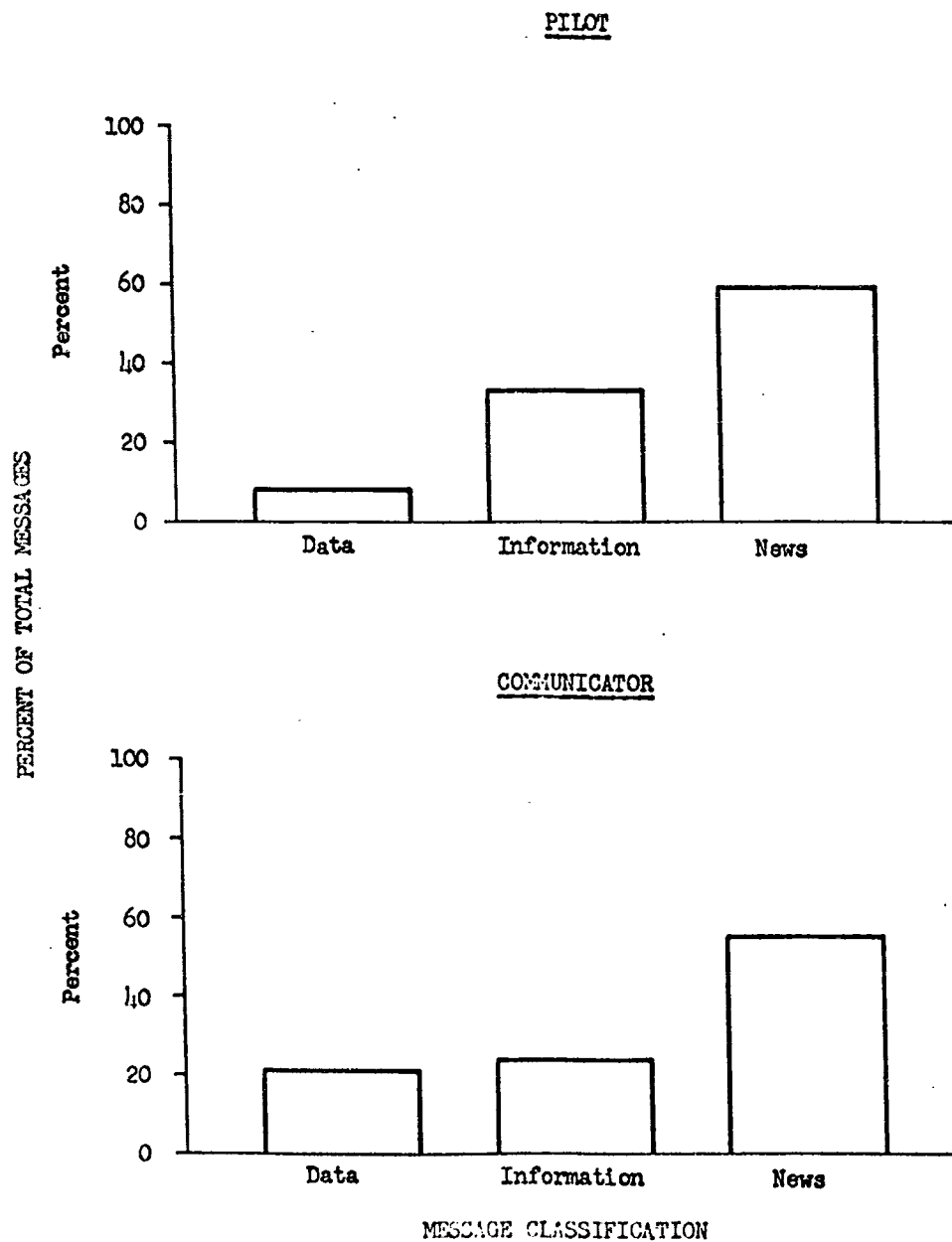
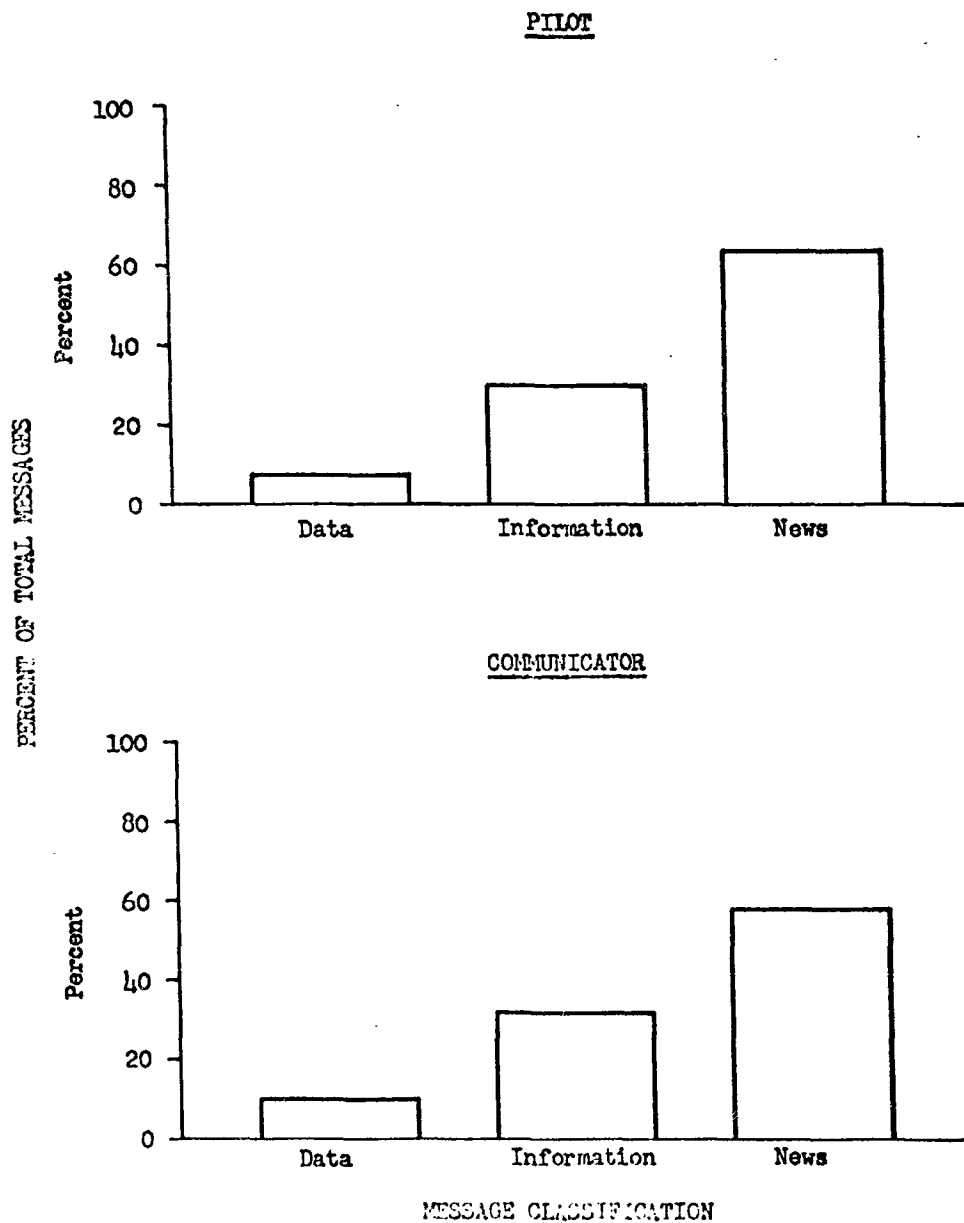
STATION POSITION C-DIN PROFILES BY ORIGINATOR

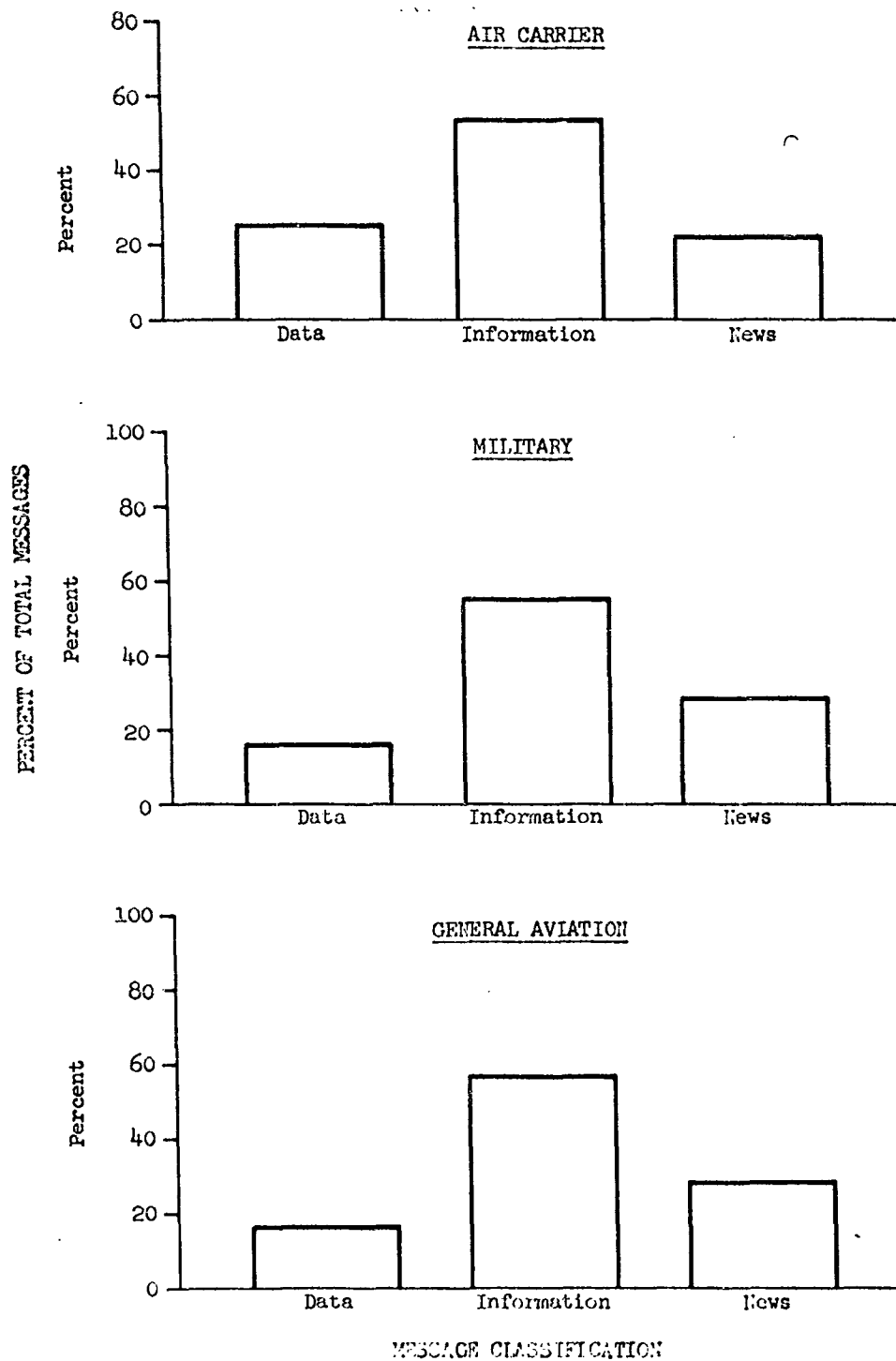
Figure I-29

STATION POSITION B-DIN PROFILES BY CATEGORY

3. DIN Profiles by Aviation Category

Figures I-30 through I-47 show the DIN profiles for each facility and each position broken down by aviation category. That is, all messages originated by pilots and controller/communicators within an aviation category are used to obtain the overall profile for that category. As before, the sum of the percentages shown in each profile is 100%.

Figure I-30

TM 339-84
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Page 64TOWER DIN PROFILES BY AVIATION CATEGORY

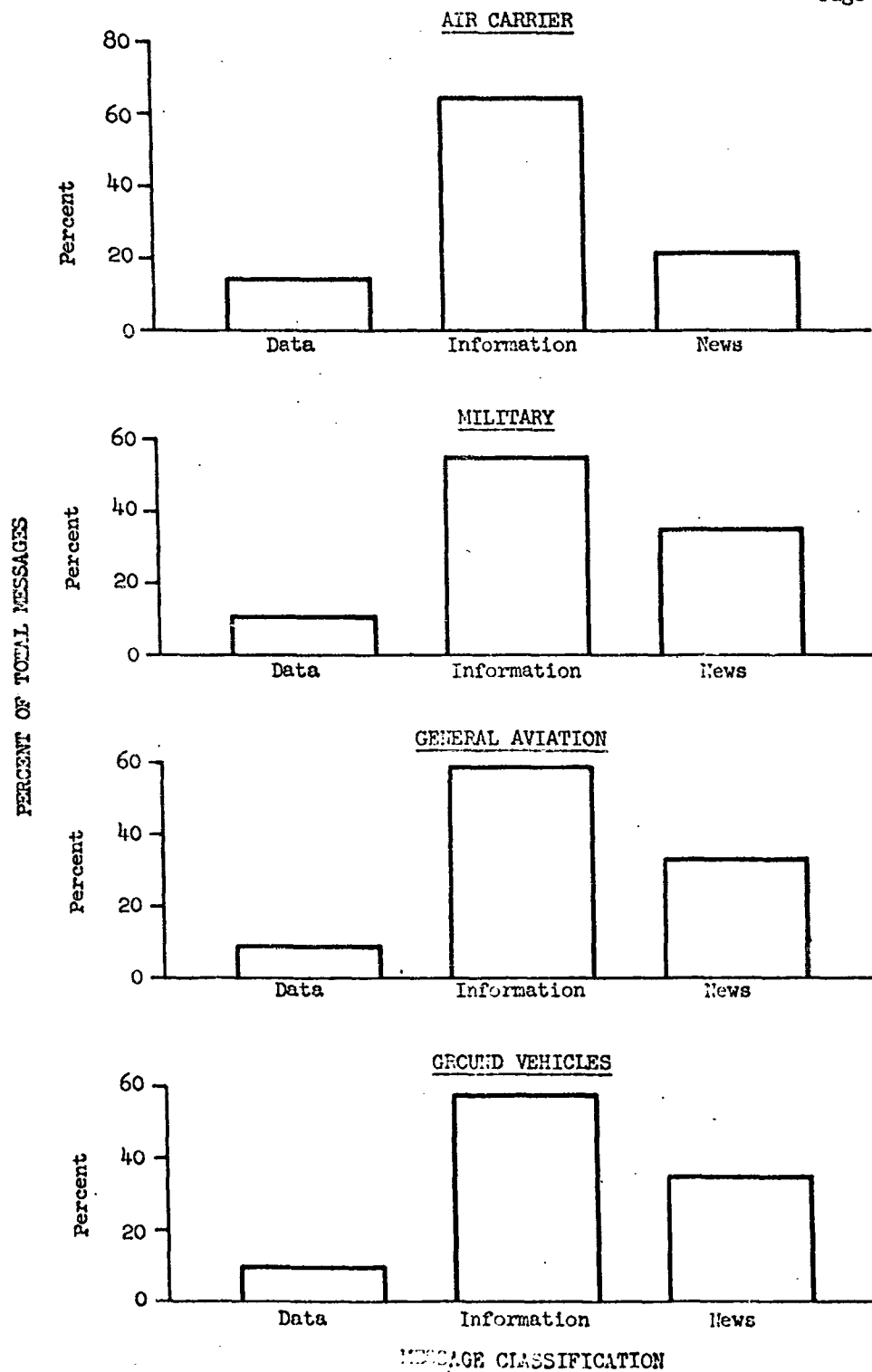
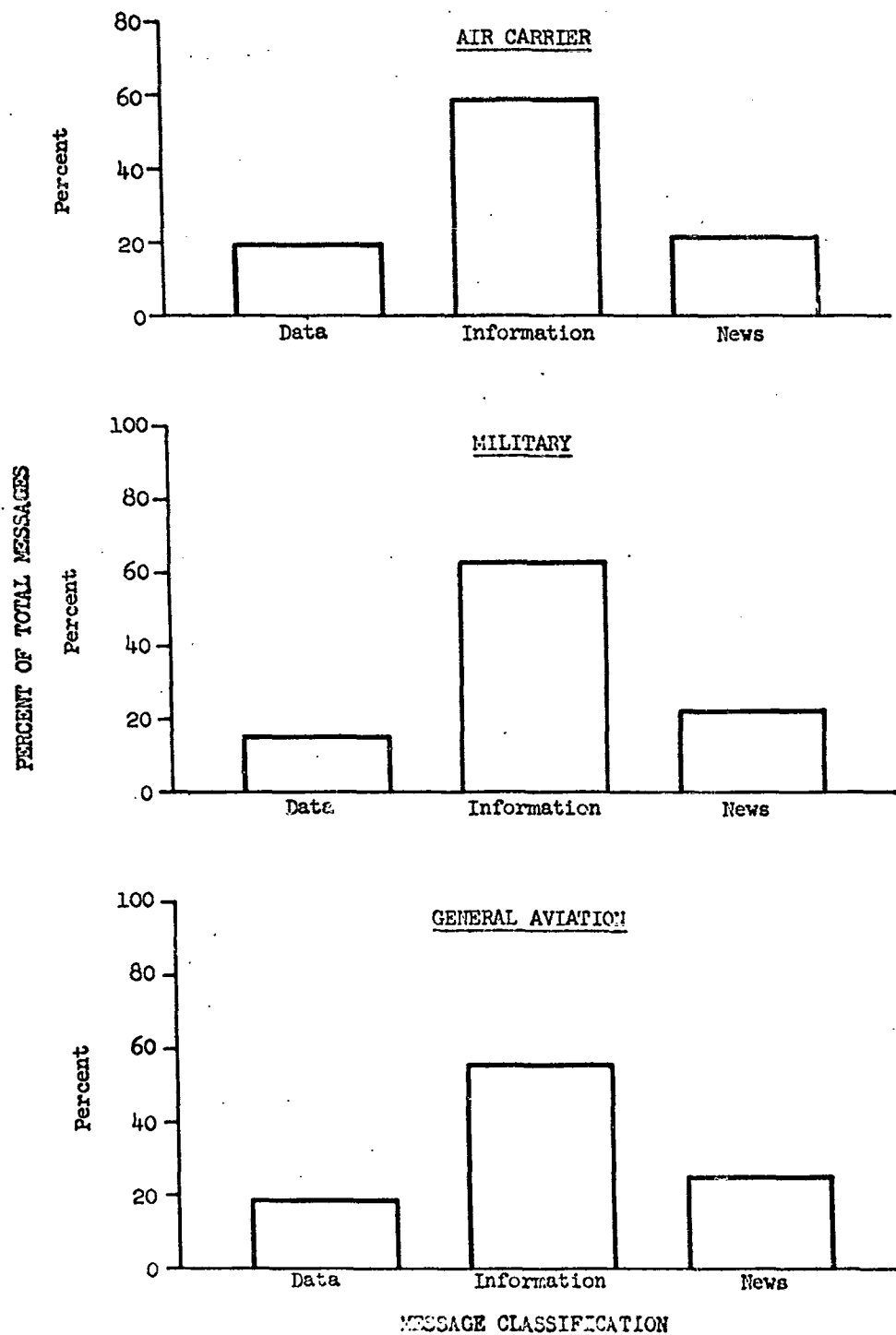
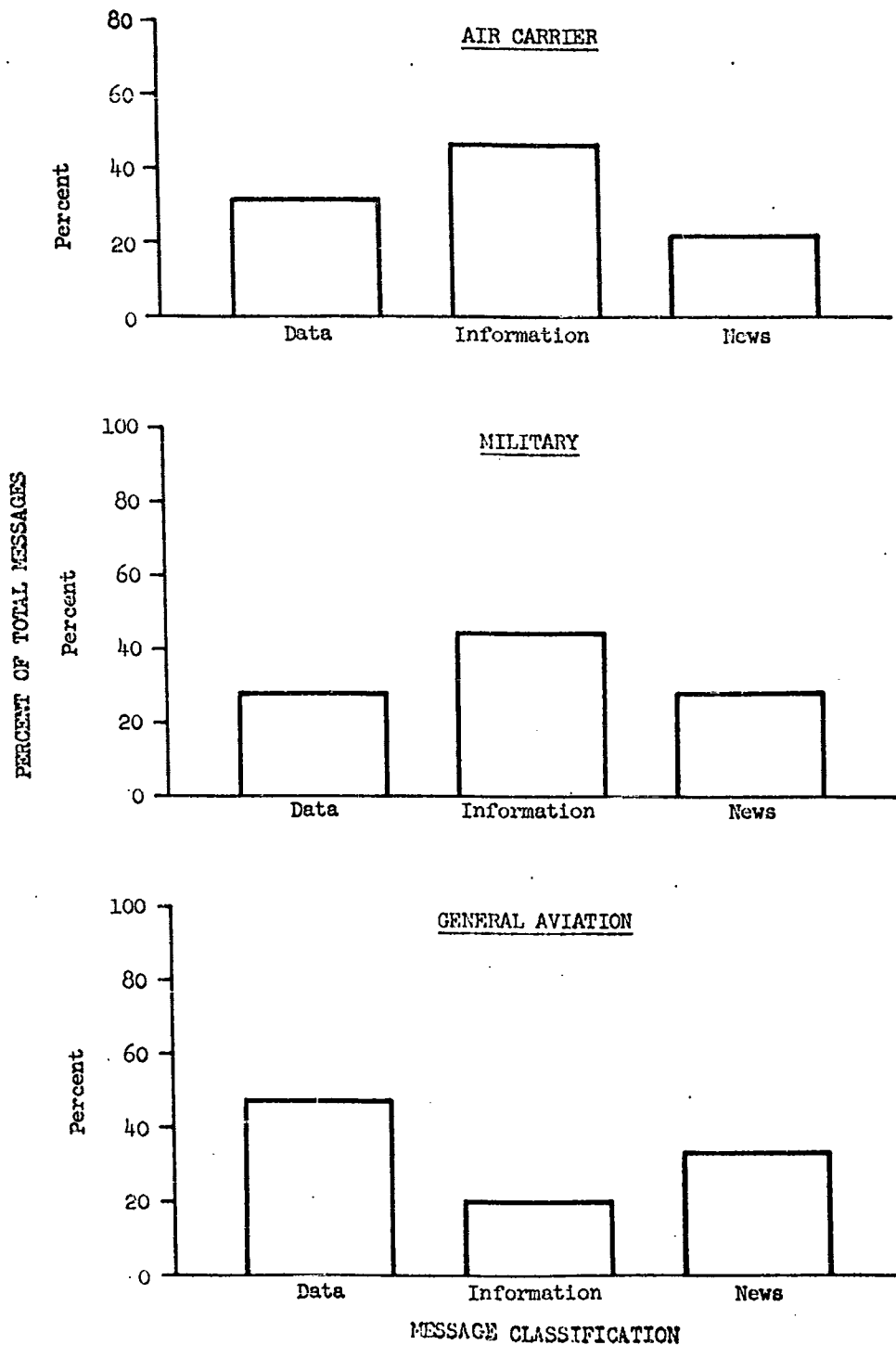
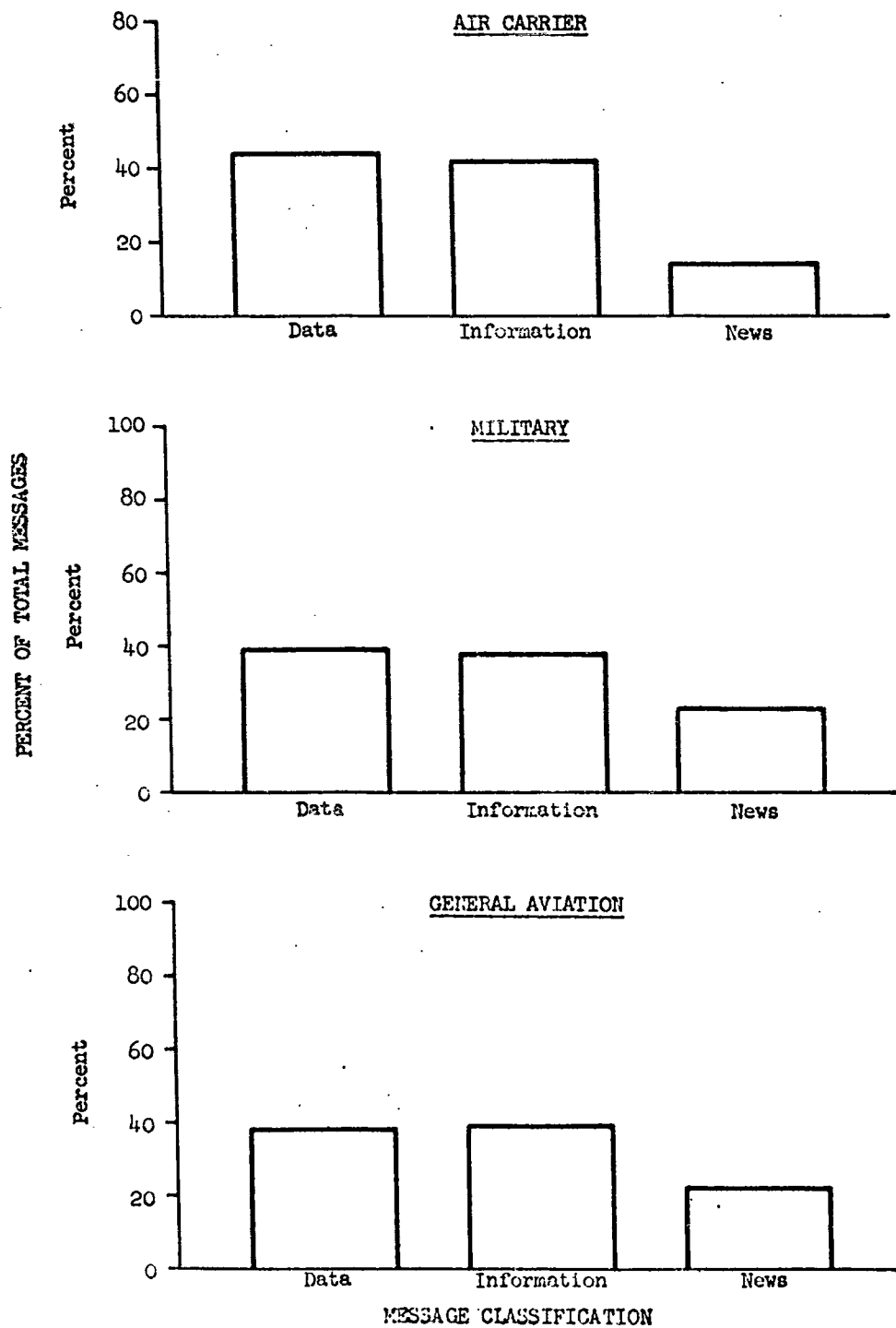
GROUND CONTROL - DIN PROFILES BY AVIATION CATEGORY

Figure I-32

LOCAL CONTROL - DIN PROFILES BY AVIATION CATEGORY

APPROACH CONTROL (ANC) - DIN PROFILES BY AVIATION CATEGORY

APPROACH CONTROL (RADAR) - DIN PROFILES BY AVIATION CATEGORY

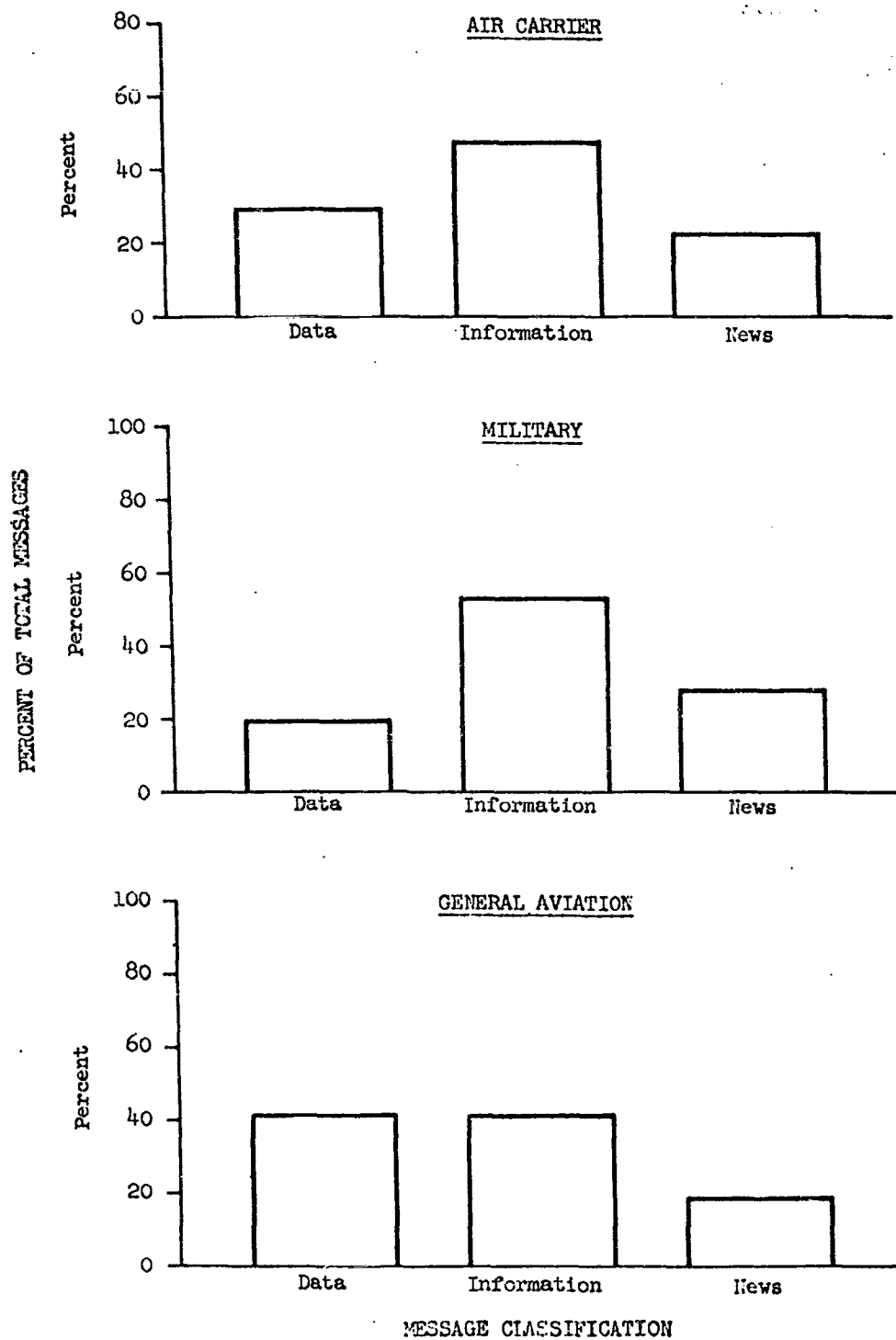
DEPARTURE CONTROL (ANC) - DIN PROFILES BY AVIATION CATEGORY

Figure I-36

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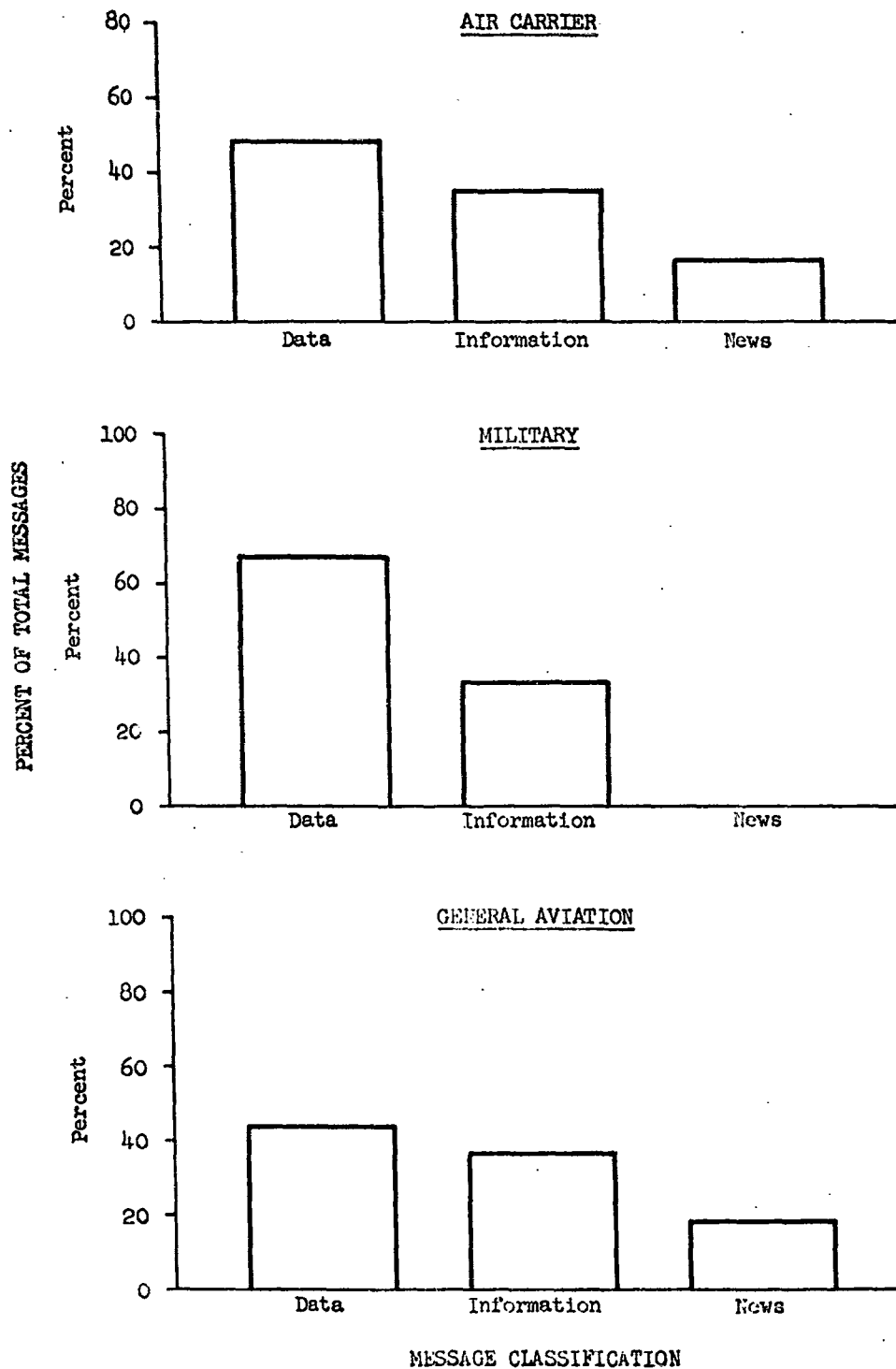
DEPARTURE CONTROL (RADAR) - DIN PROFILES BY AVIATION CATEGORY

Figure I-37

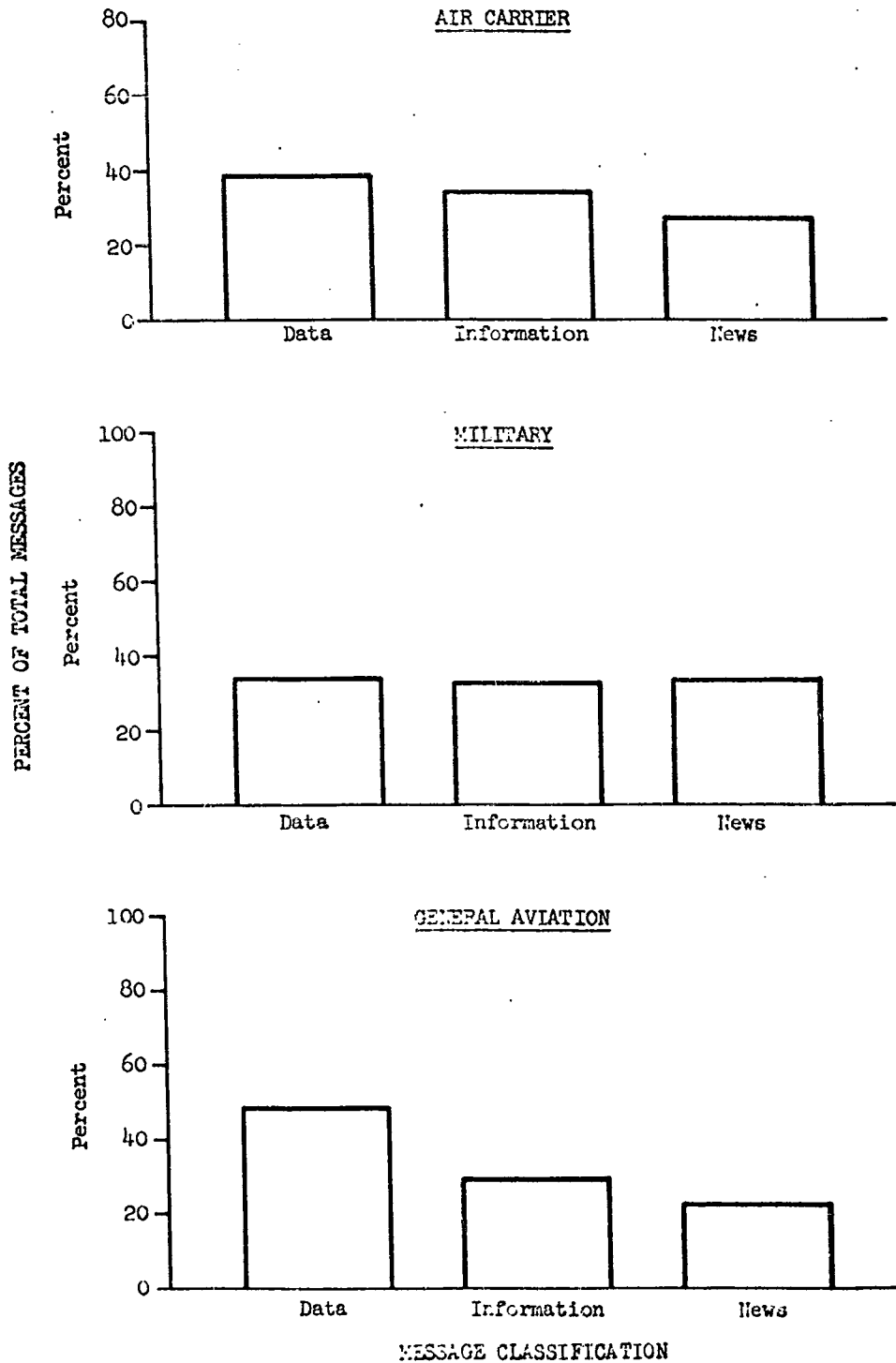
CENTER DIN PROFILES BY AVIATION CATEGORY

Figure I-38

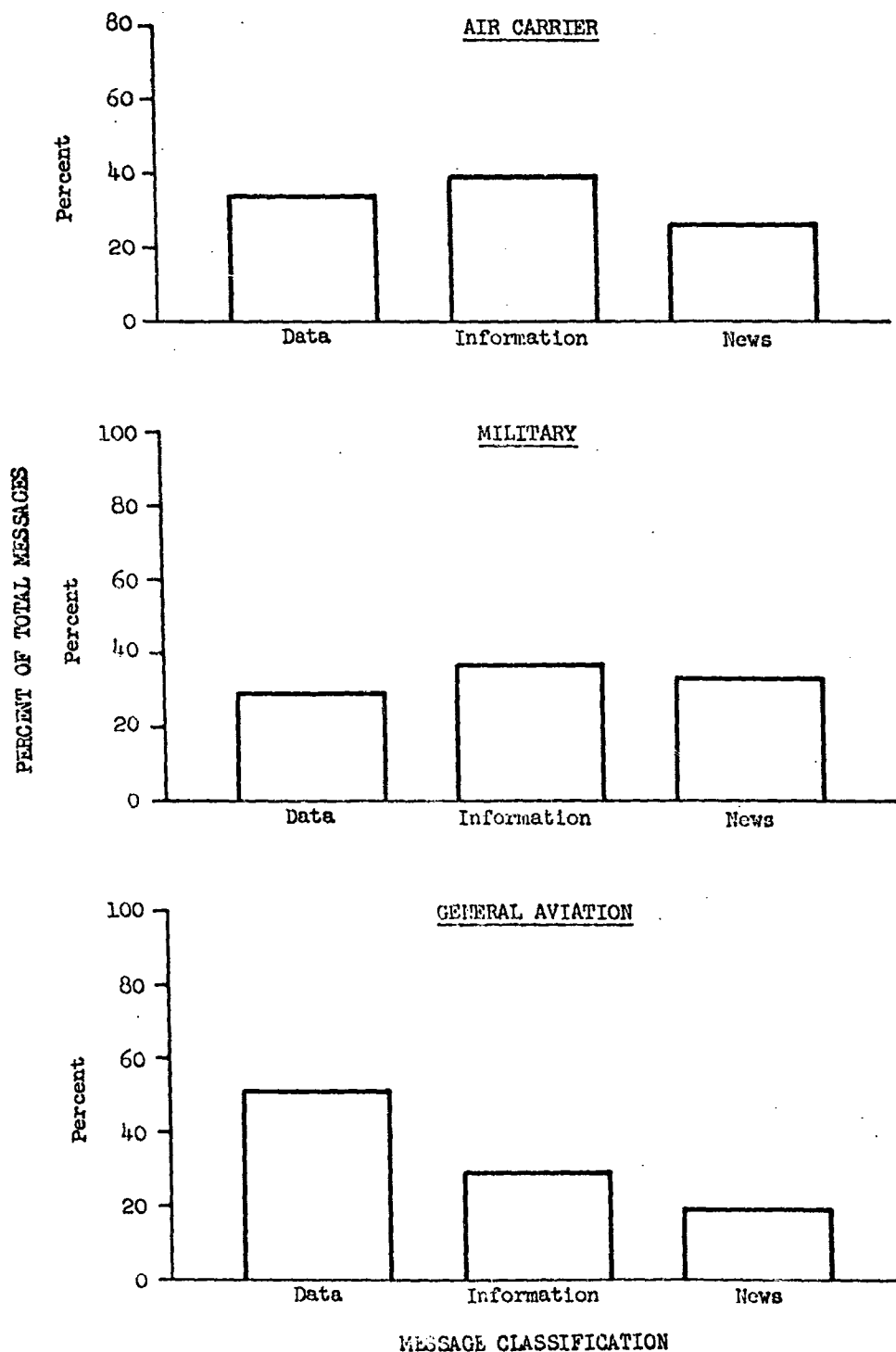
TM 339-84
Volume II
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Page 72D2 RADIO CONTROL - DIN PROFILES BY AVIATION CATEGORY

Figure I-39

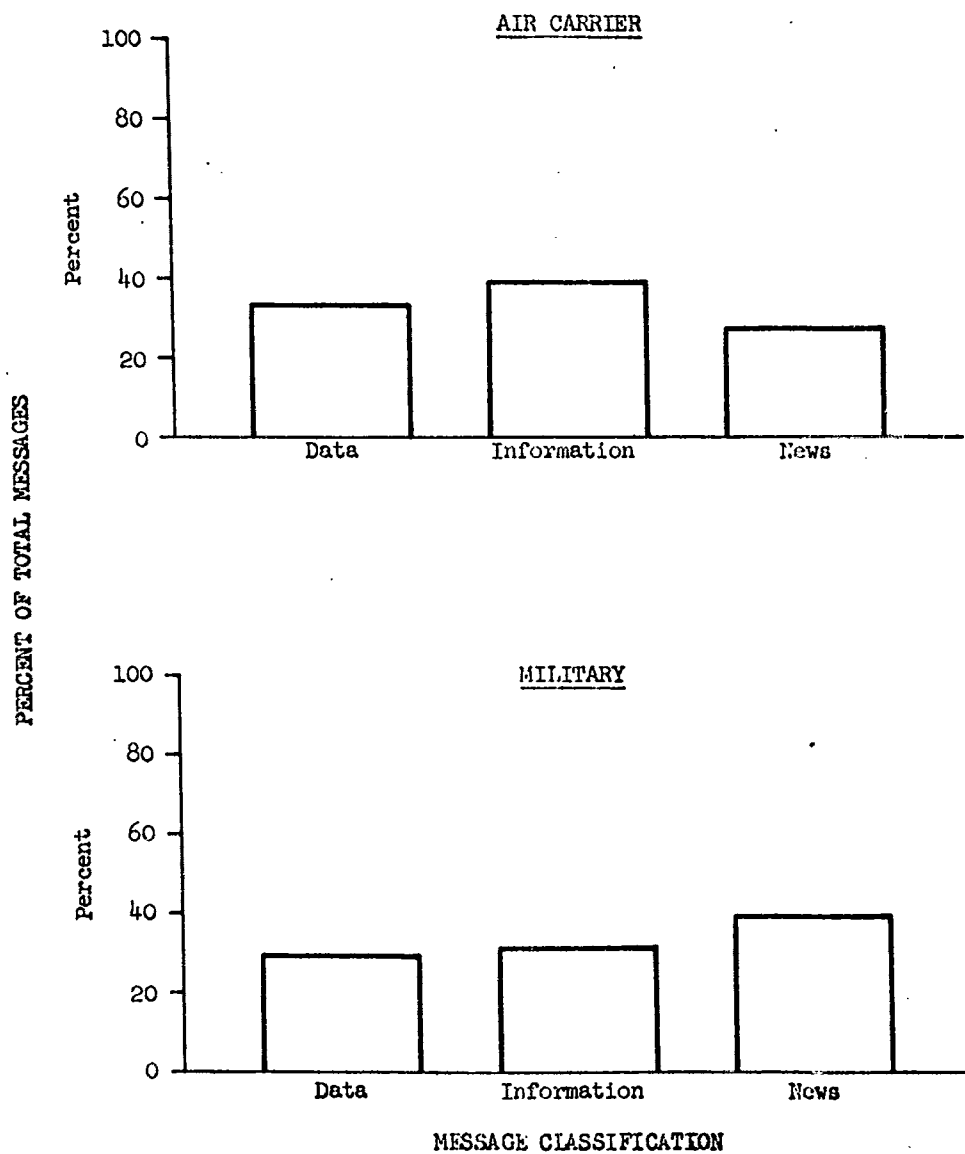
D3 RADIO CONTROL - DIN PROFILES BY AVIATION CATEGORY

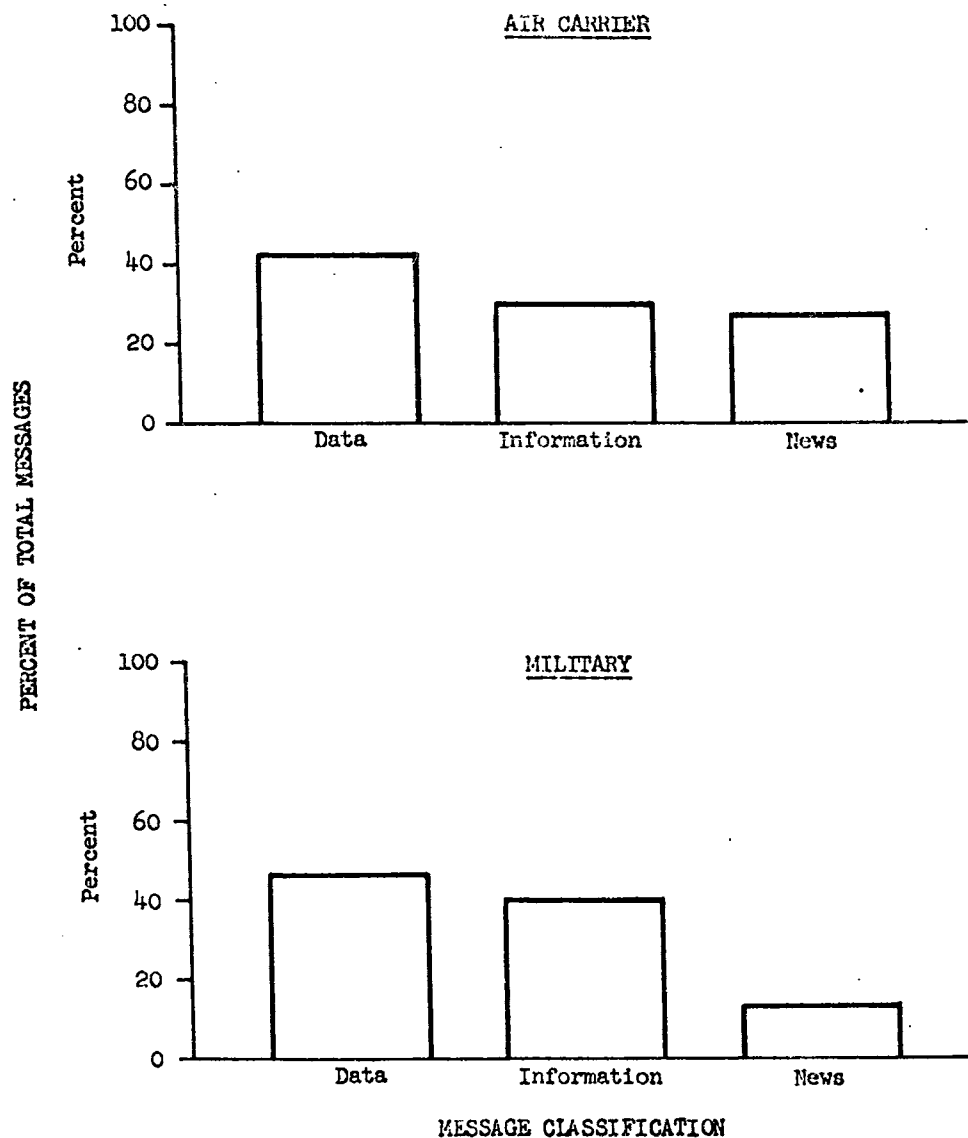
Figure I-40RADAR 1A CONTROL - DIN PROFILES BY AVIATION CATEGORY

Figure I-41

RADAR 1B CONTROL - DIN PROFILES BY AVIATION CATEGORY

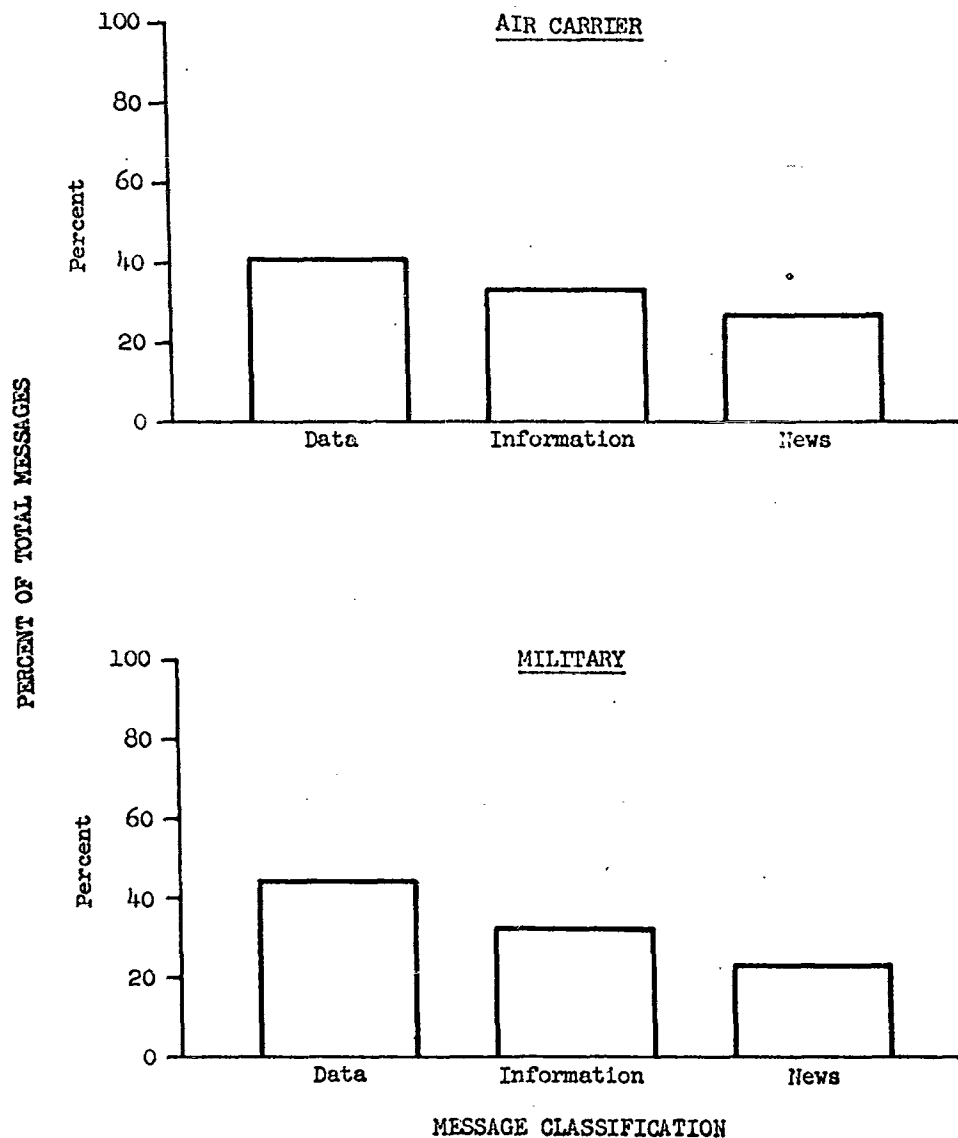


Figure I-42

RADAR 2A CONTROL - DIN PROFILES BY AVIATION CATEGORY

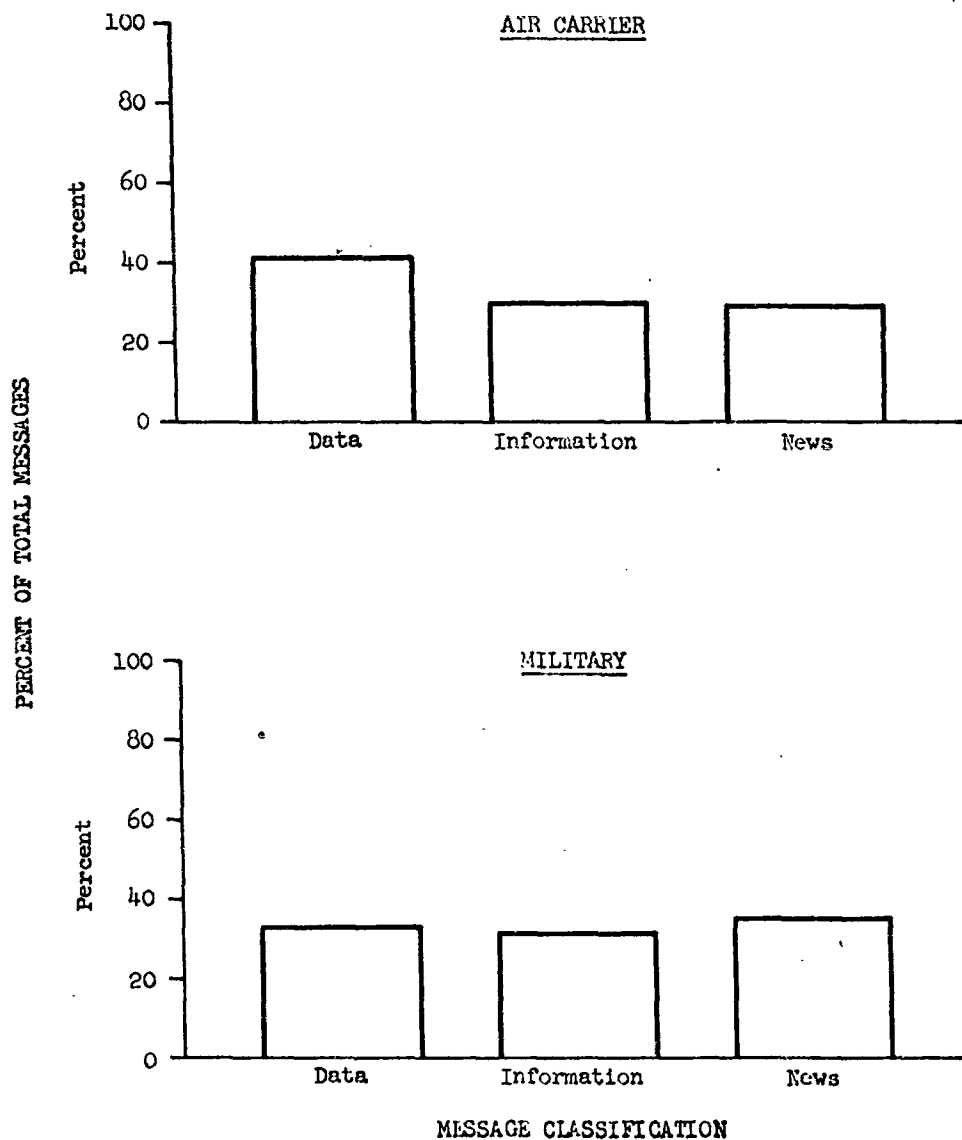


Figure I-43

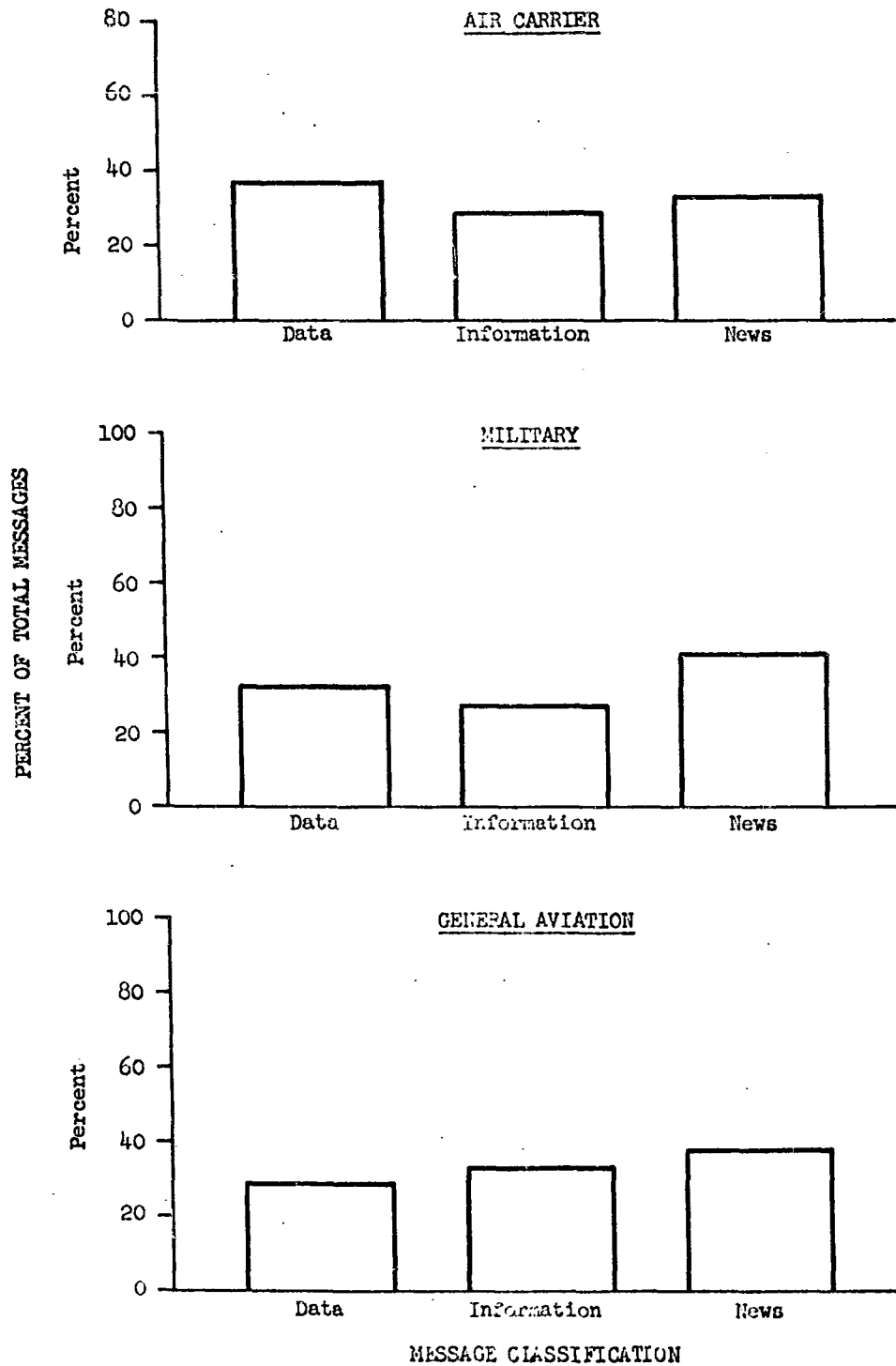
RADAR 2B CONTROL - DIN PROFILES BY AVIATION CATEGORY

Figure I-44

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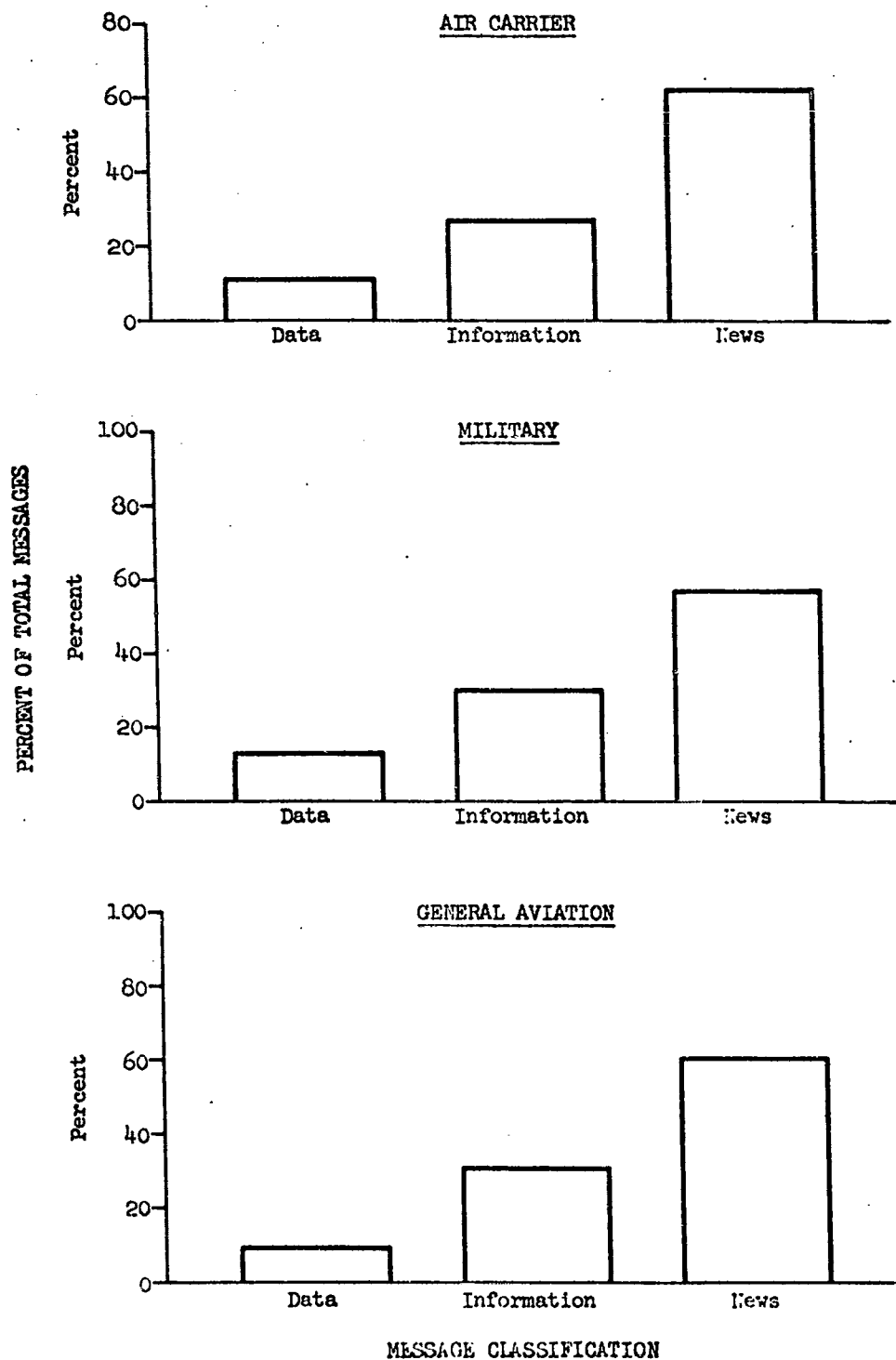
STATION DIN PROFILES BY AVIATION CATEGORY

Figure I-45

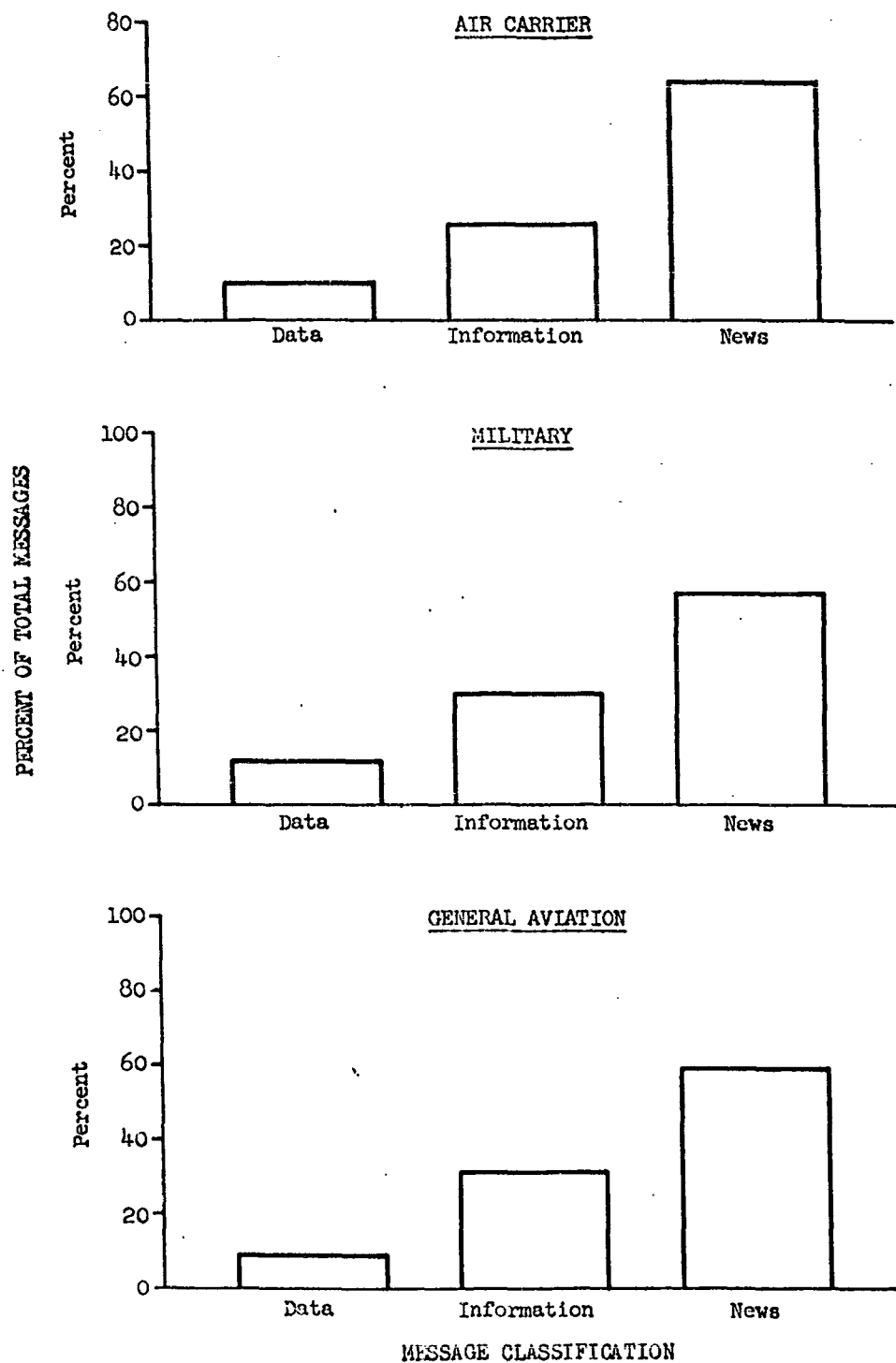
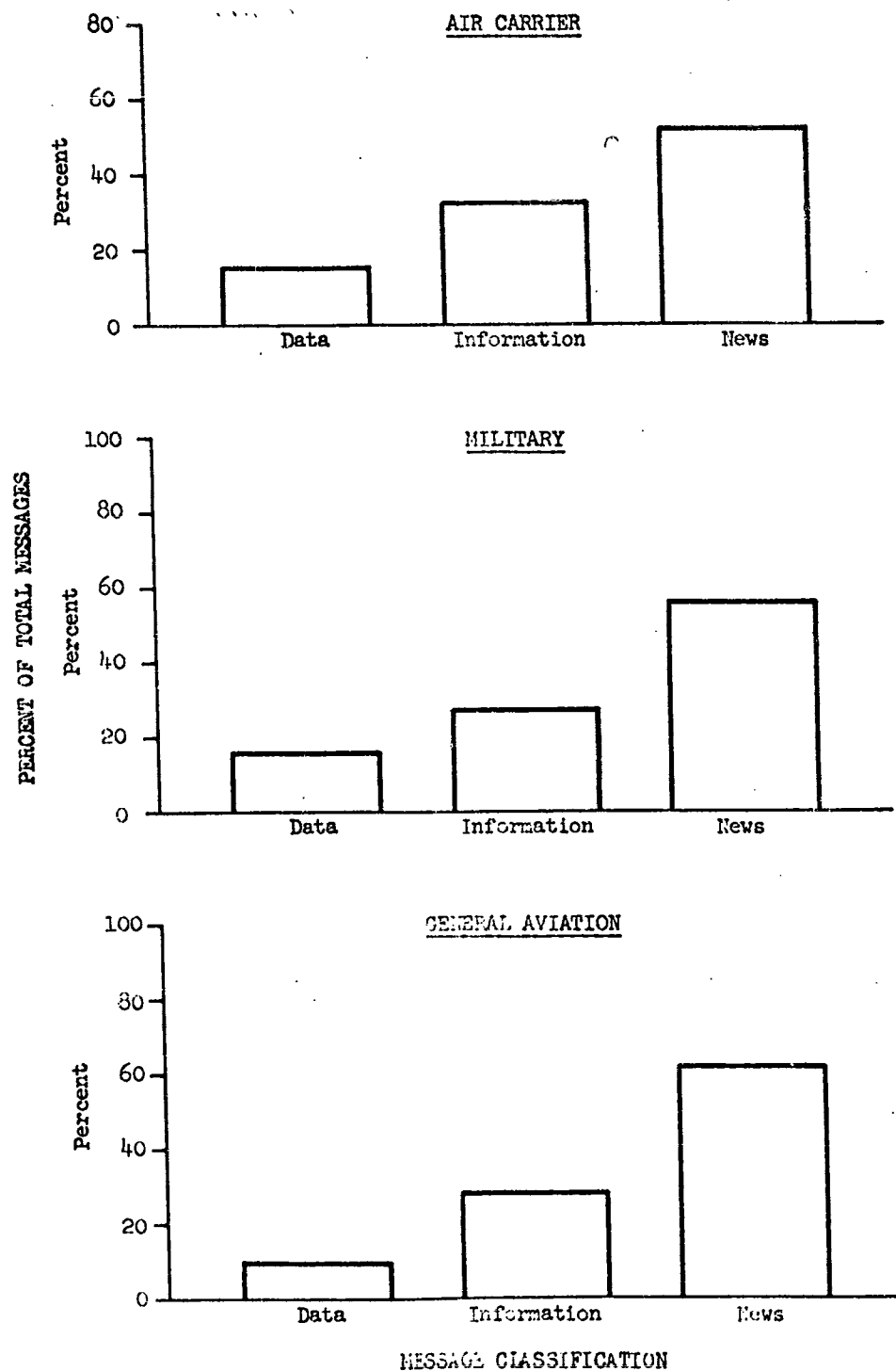
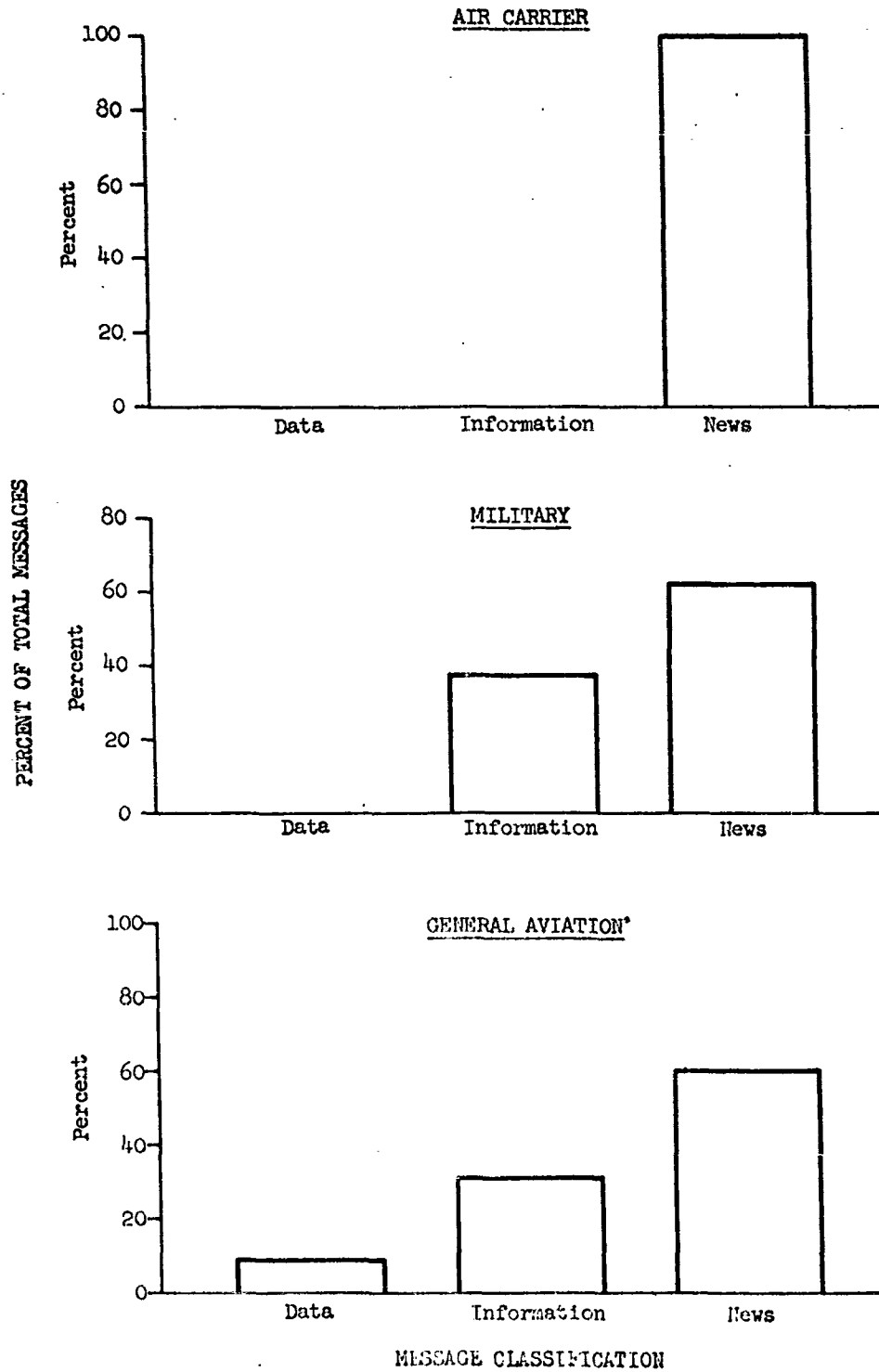
TM 339-84
Volume II
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Page 79STATION POSITION D - DIN PROFILES BY AVIATION CATEGORY

Figure I-46

TM 339-84
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June 1960
Page 80STATION POSITION C - DII PROFILES BY AVIATION CATEGORY

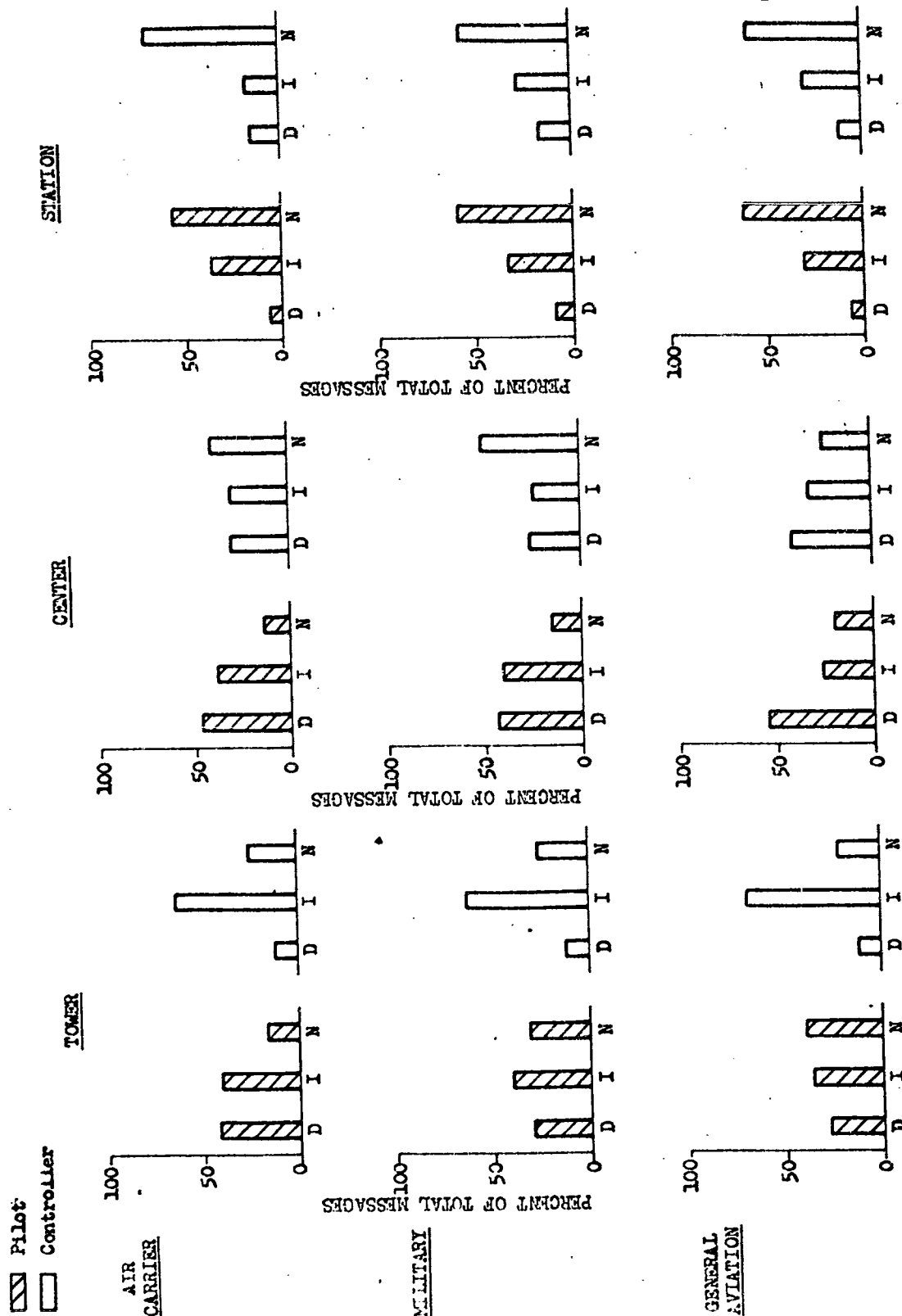
STATION POSITION B - DIN PROFILES BY AVIATION CATEGORY

4. DIN Profiles by Originator and Aviation Category

In this cycle of charts the DIN profiles are shown in the most detailed breakdown which was made. Figure I-48 gives an overall comparison of the three facilities, while Figures I-49 through I-66 show the same type of profiles separately for each facility and each position. This cycle of DIN charts presents all of the tabular DIN data, with the exception of sample size. It must be noted, therefore, that the tables should be consulted for sample size before making firm conclusions based on charted differences.

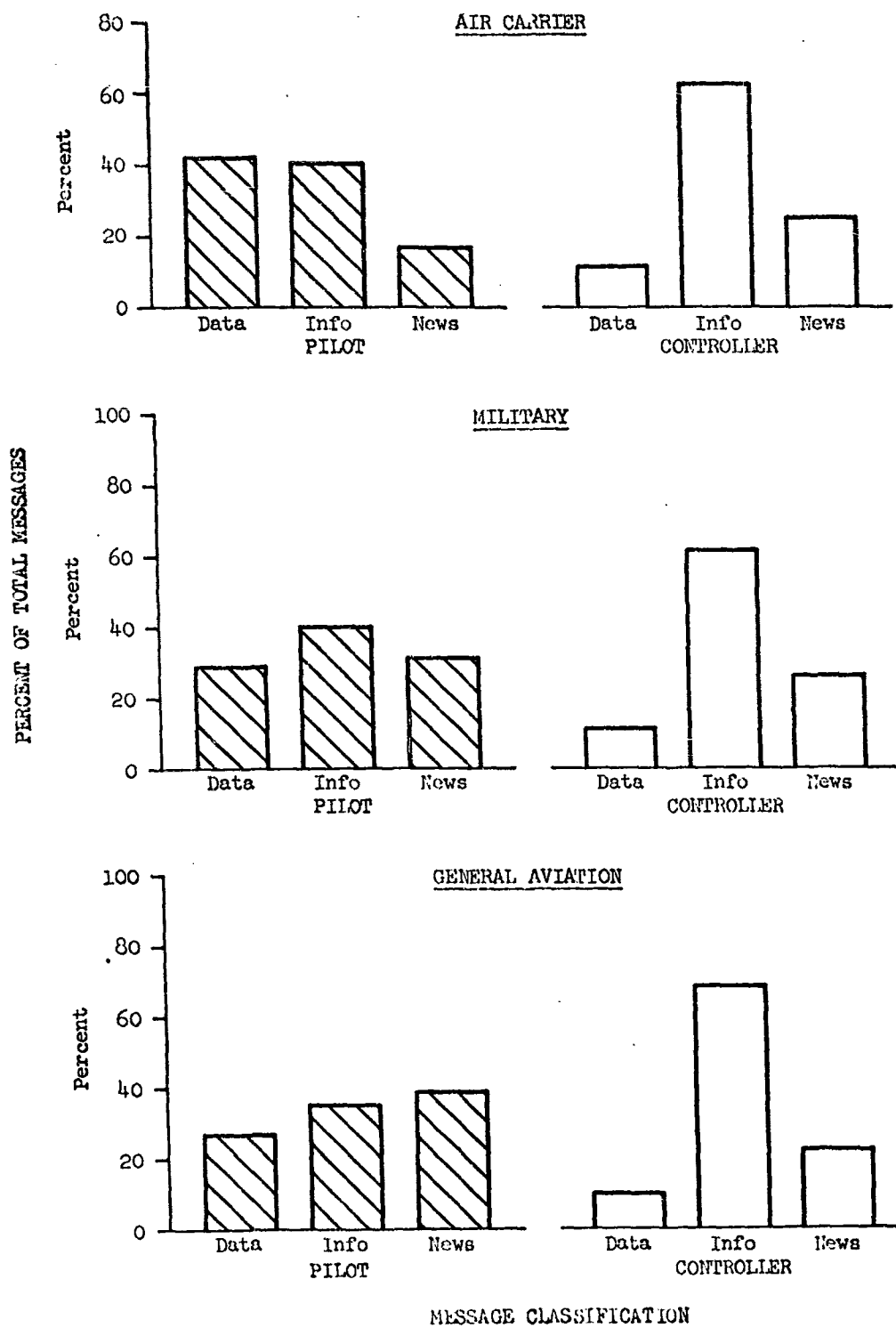
Figure I-48

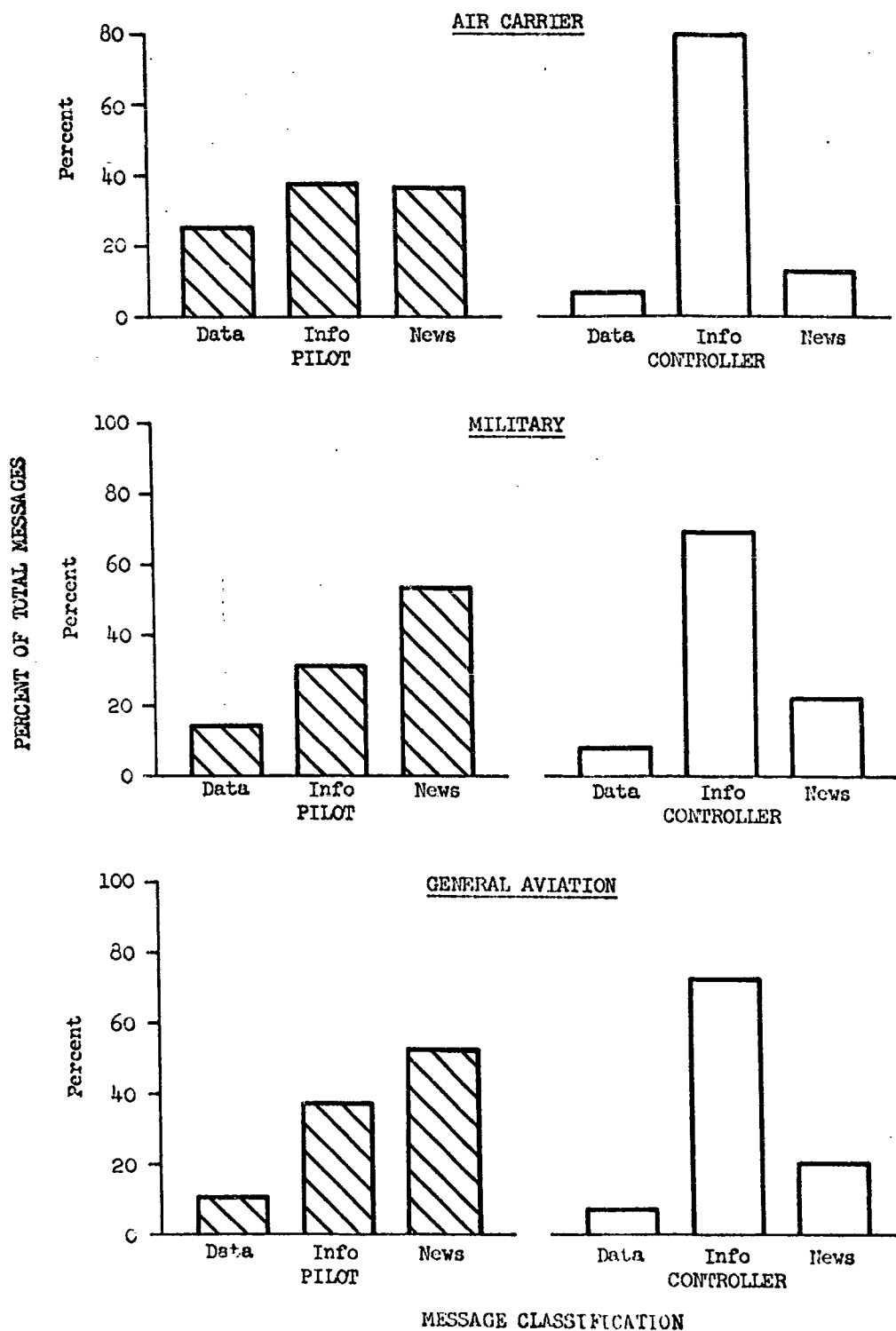
DTN PROFILE COMPARISONS



MESSAGE CLASSIFICATION

Figure I-49

TOWER DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

GROUND CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

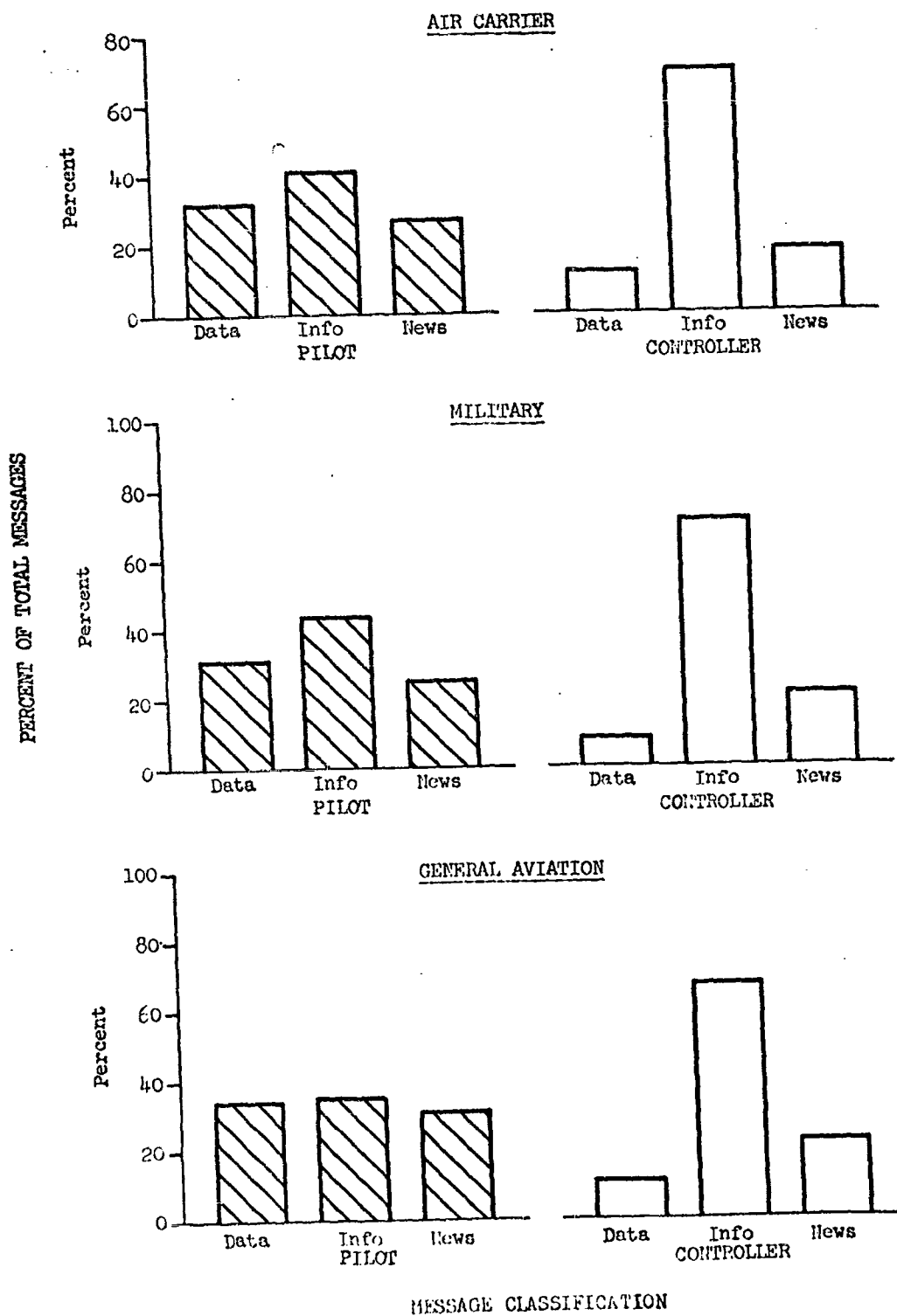
LOCAL CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-52

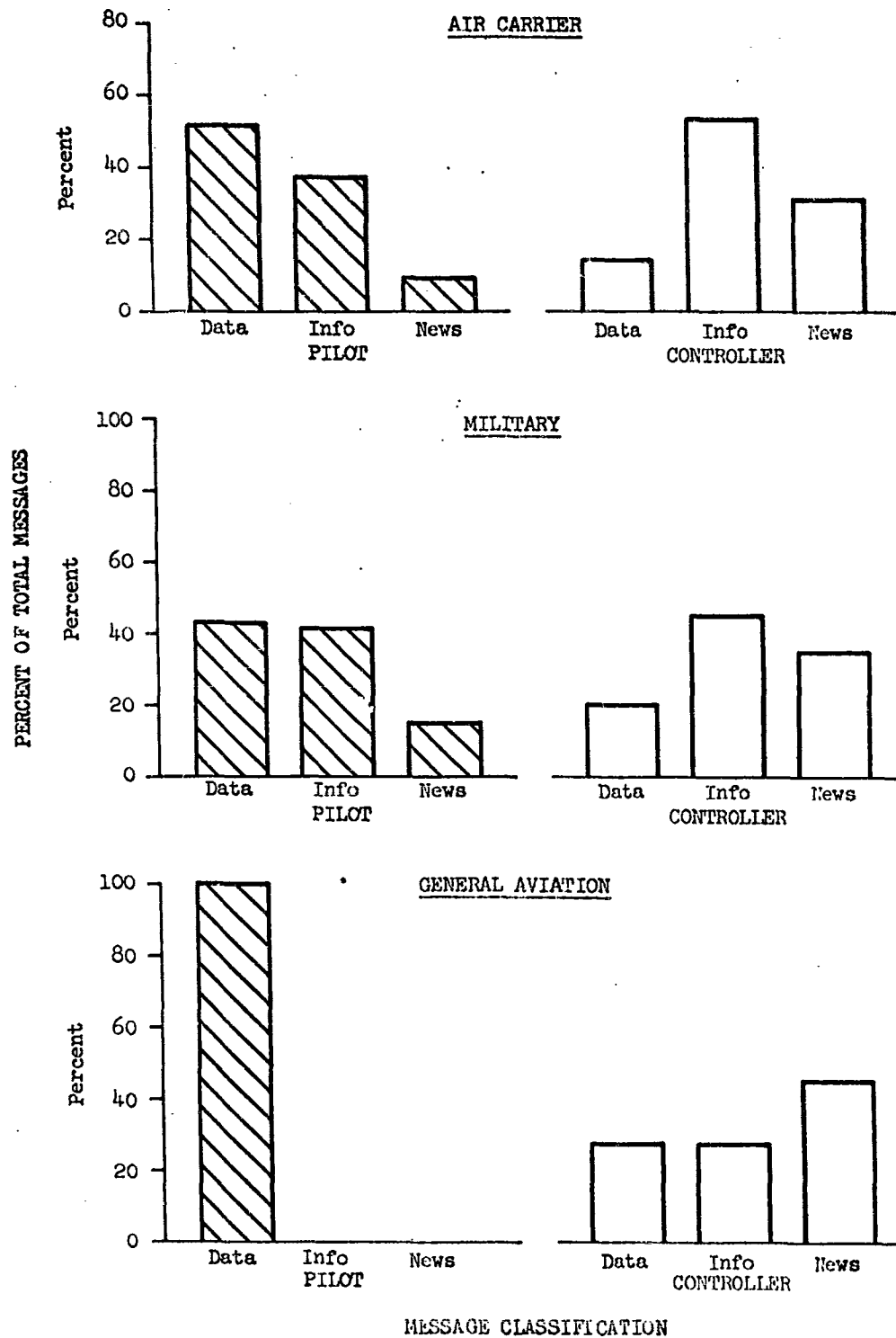
APPROACH CONTROL (ANC) - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-53

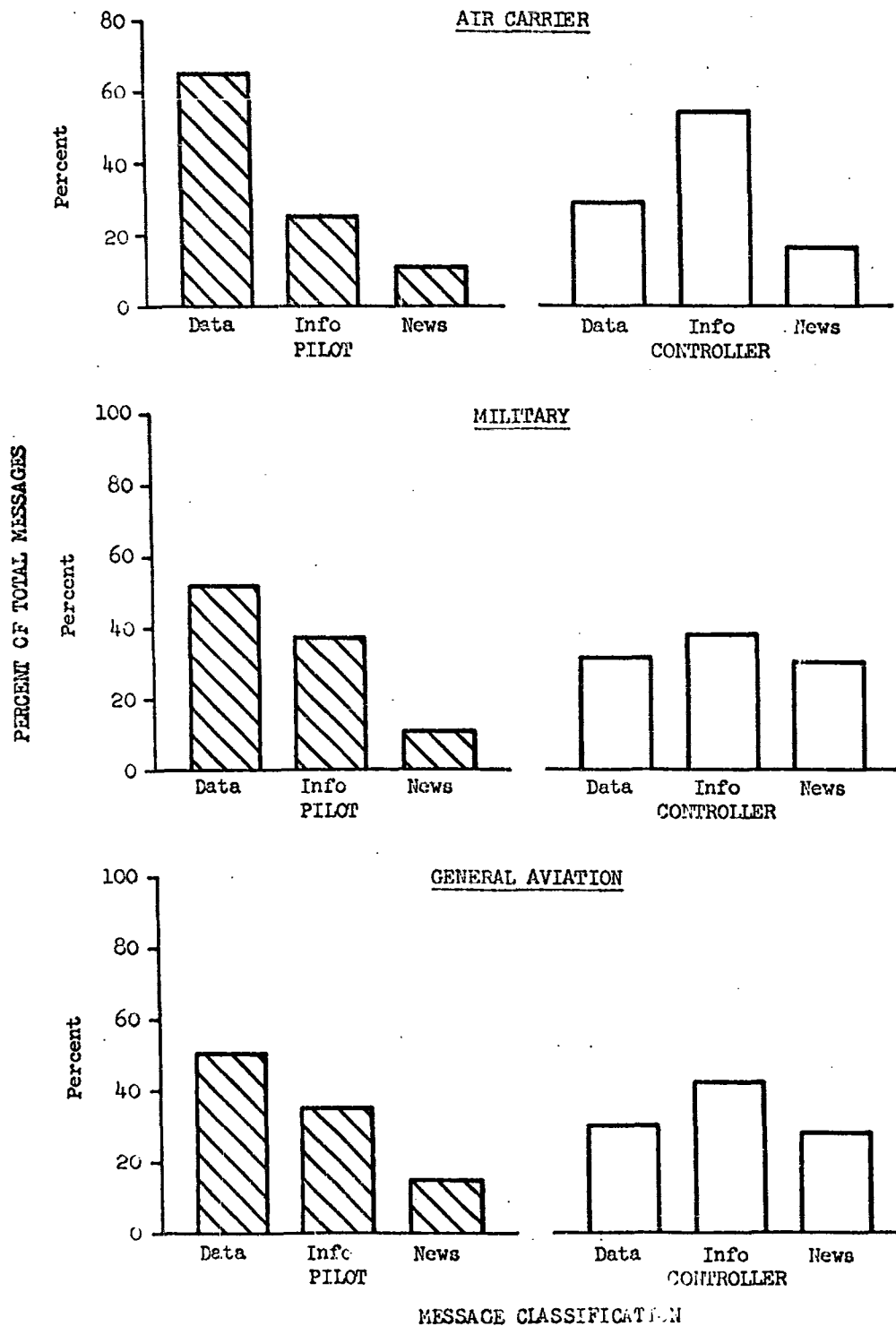
APPROACH CONTROL (RADAR) - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-54

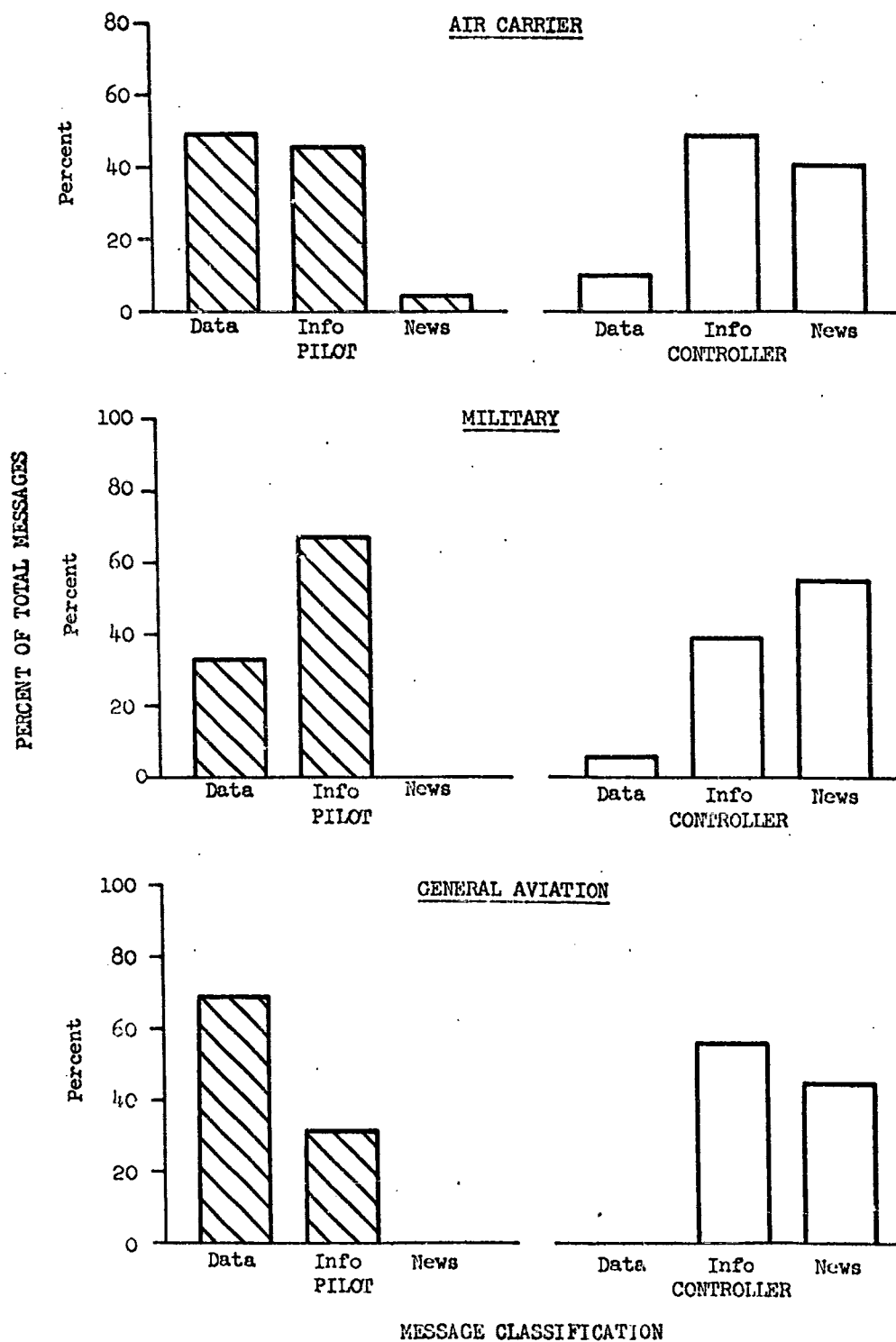
DEPARTURE CONTROL (ANC) - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-55

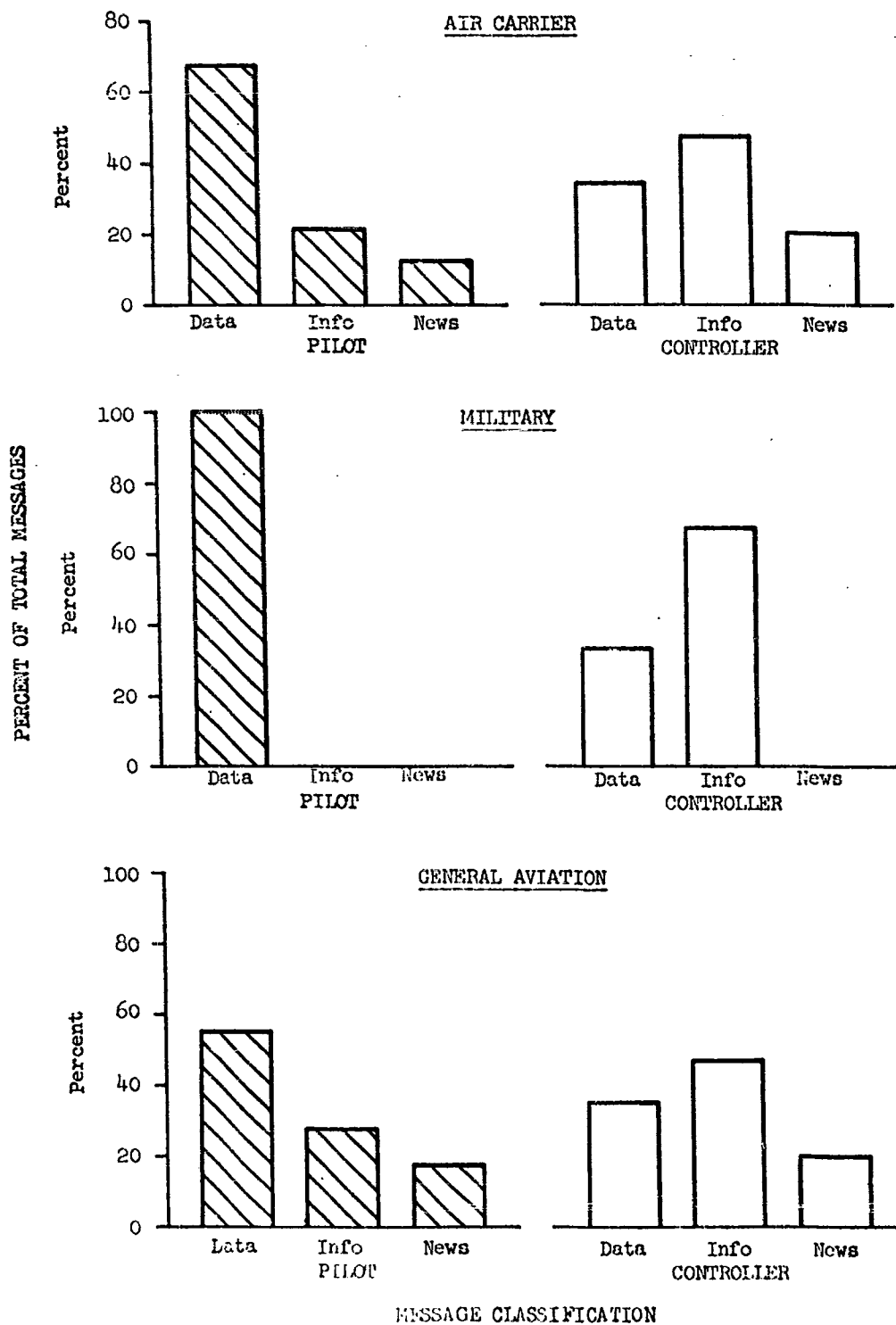
DEPARTURE CONTROL (RADAR) - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-56

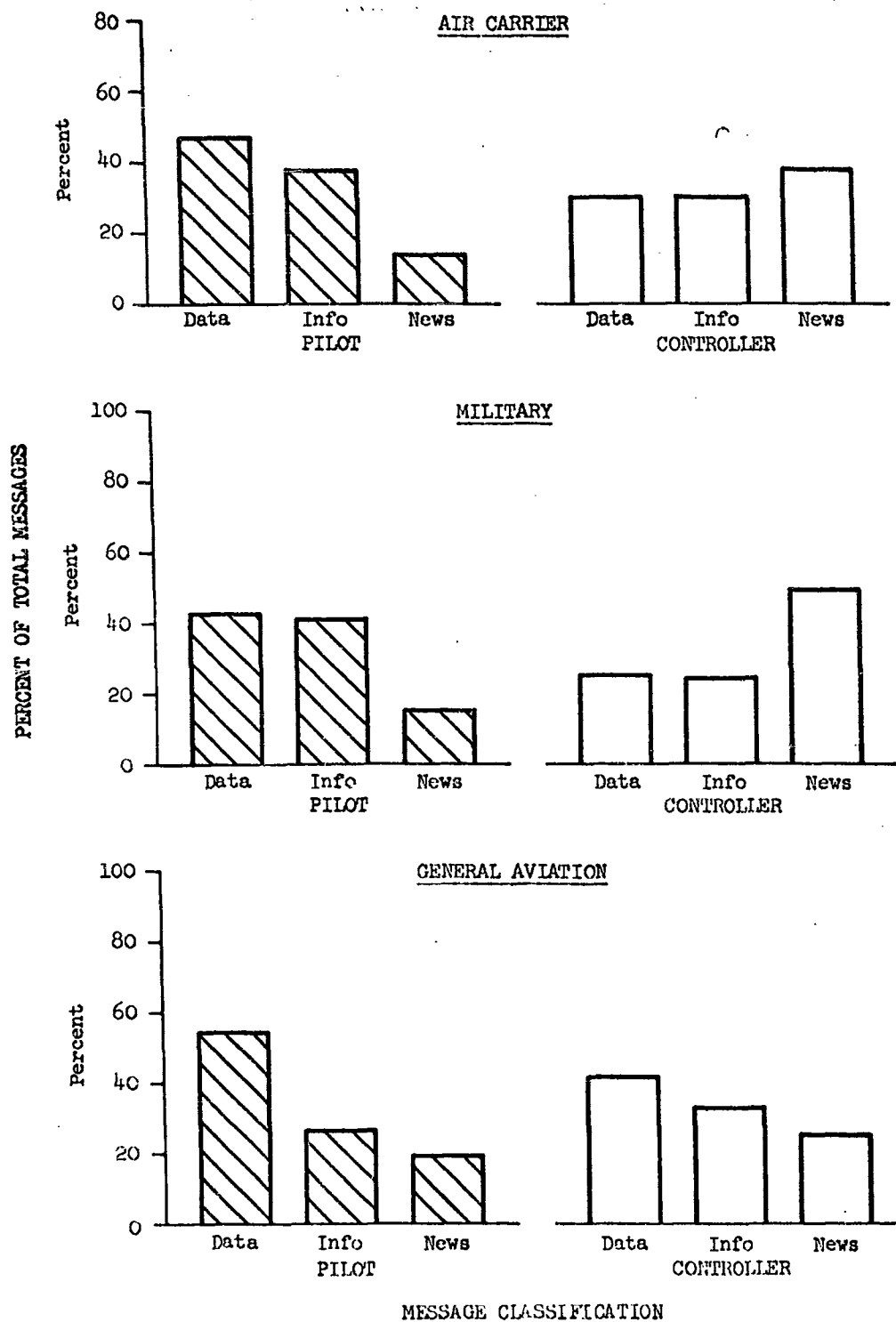
CENTER DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-57

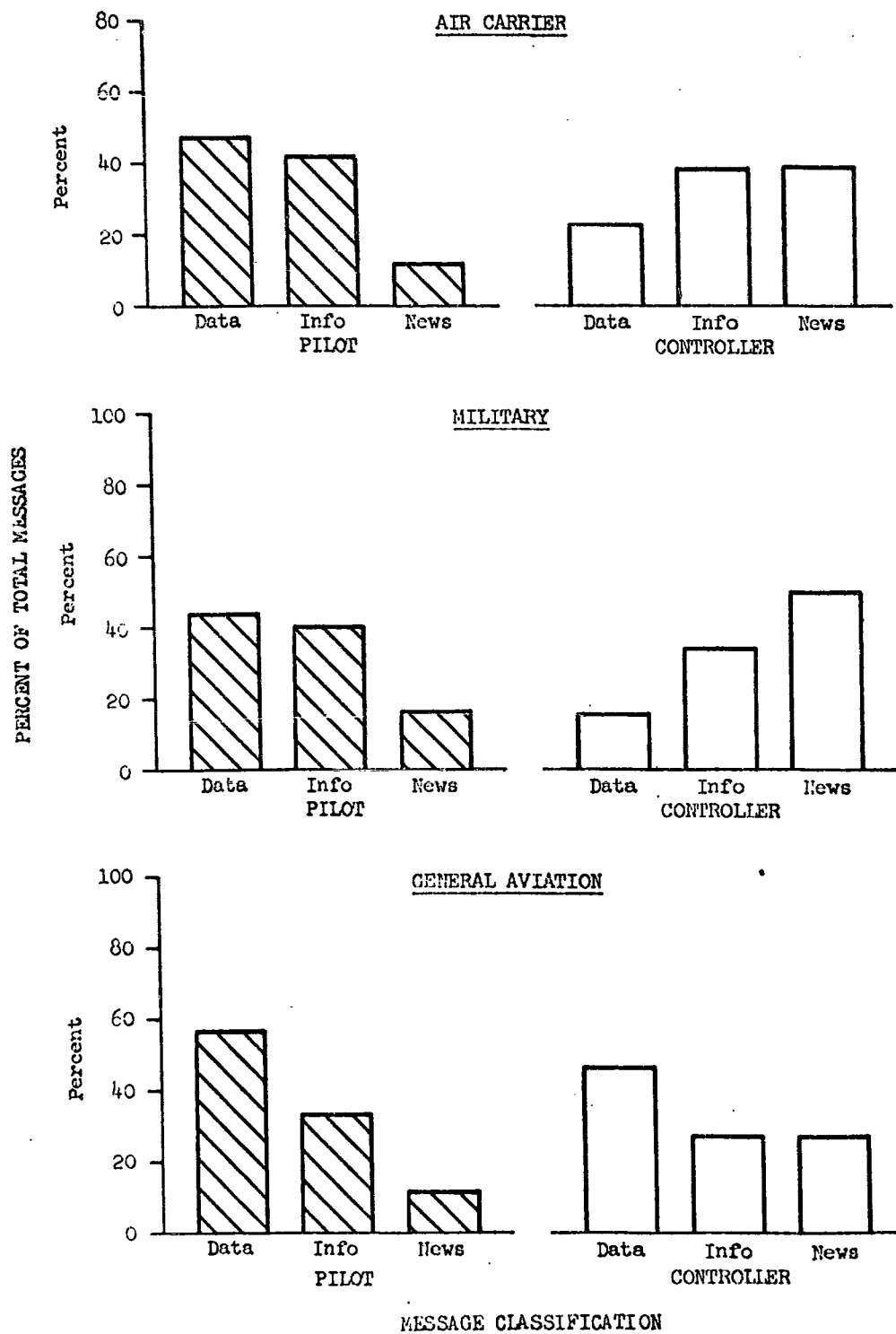
D2 RADIO CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-58

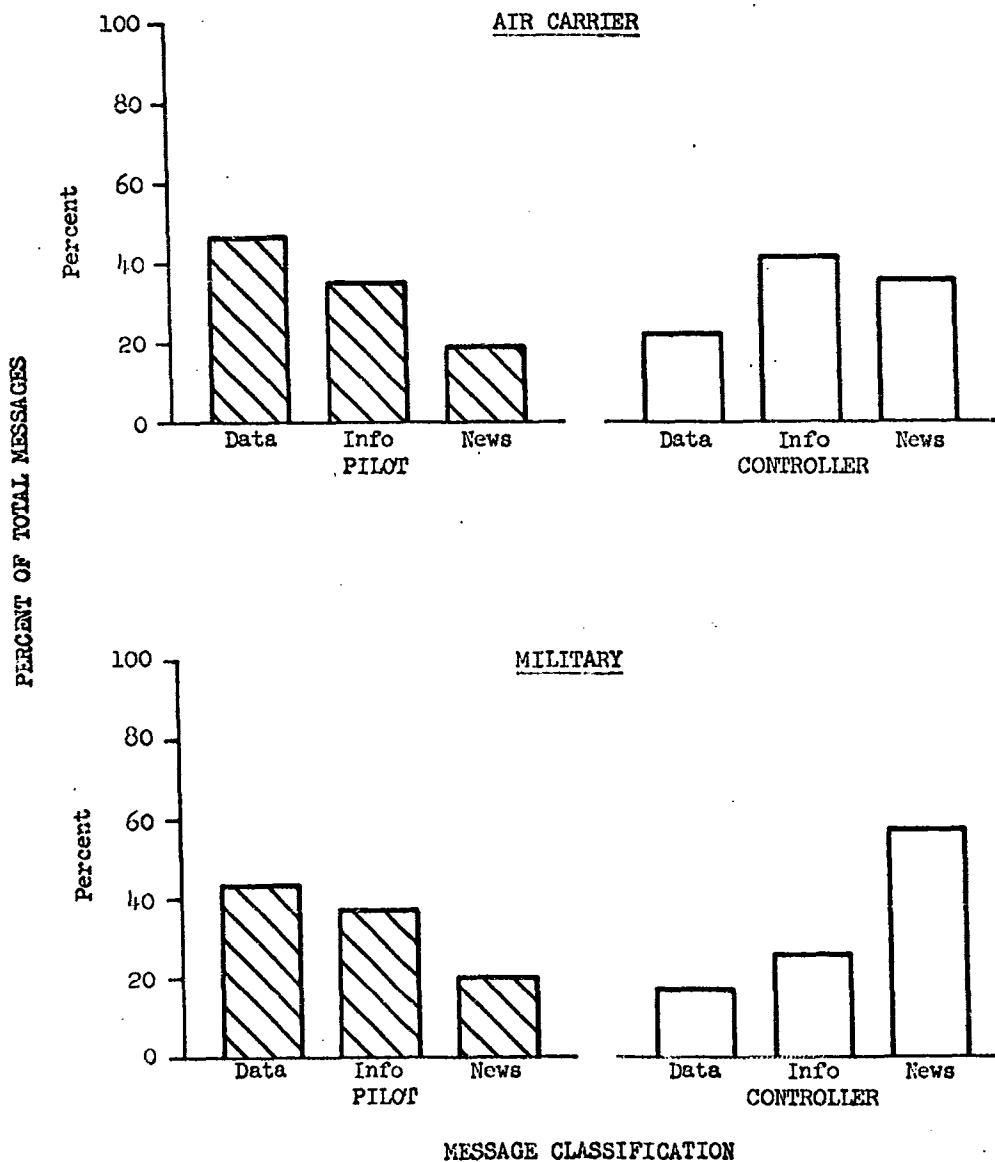
D3 RADIO CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-59

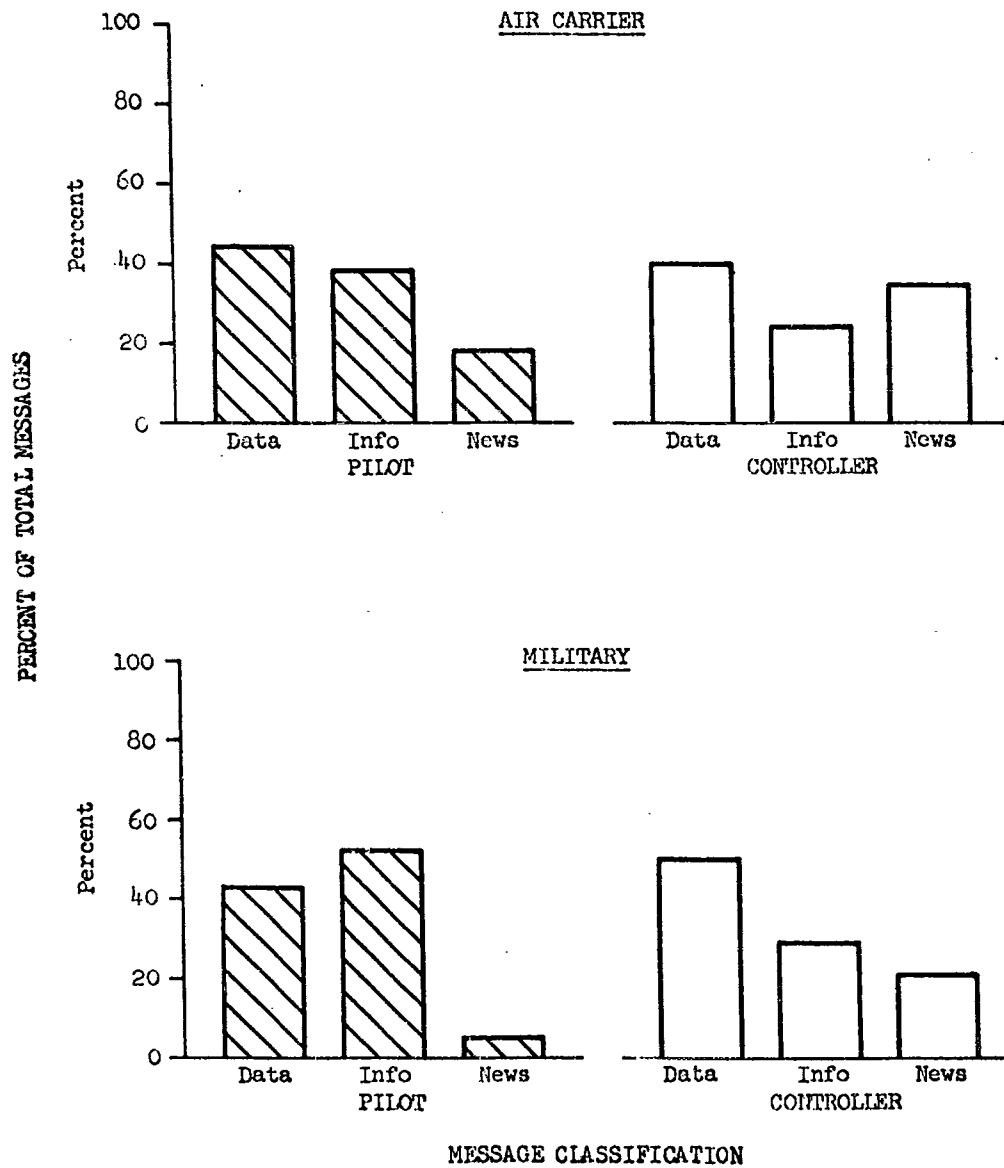
RADAR 1A CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

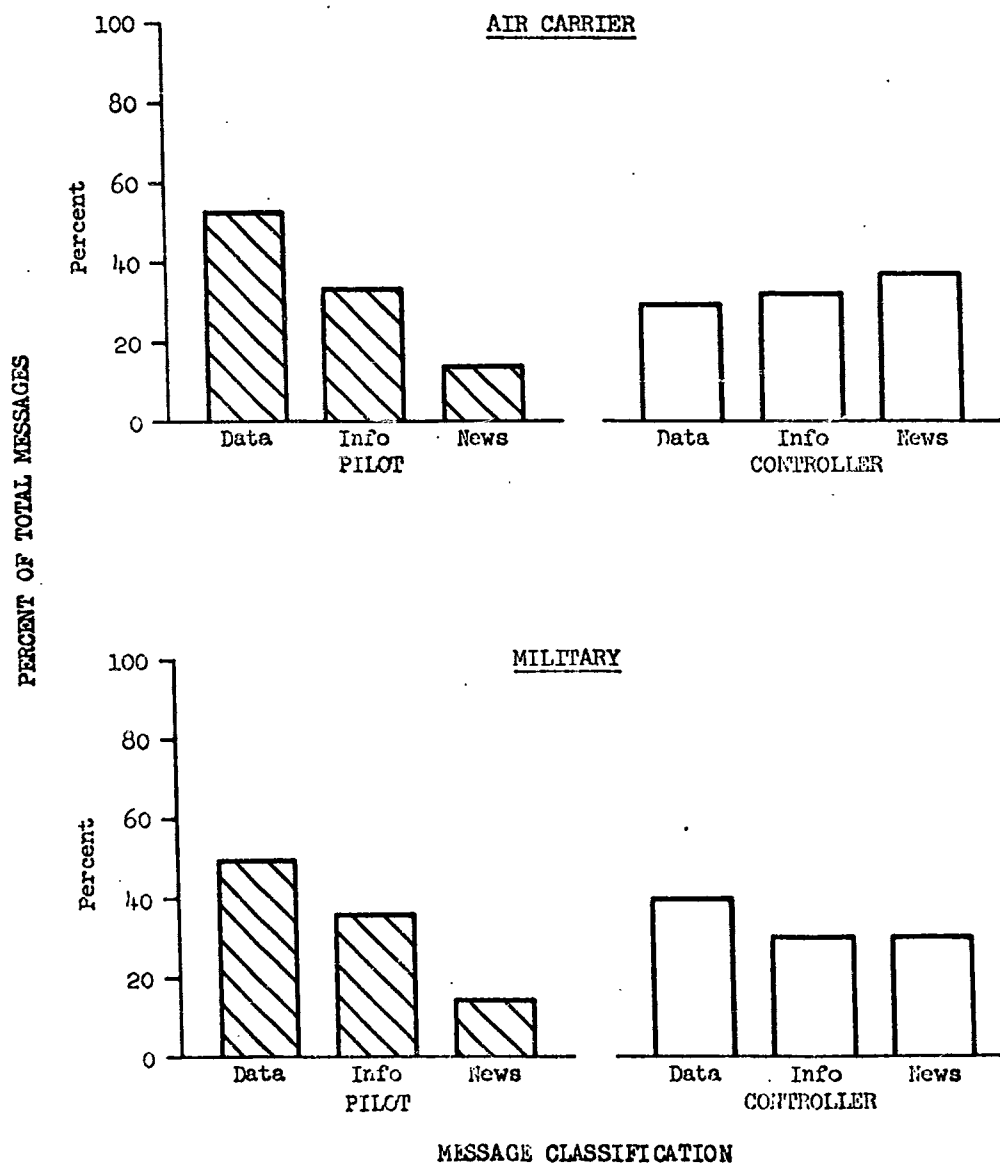
Figure I-60RADAR 1B CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-61

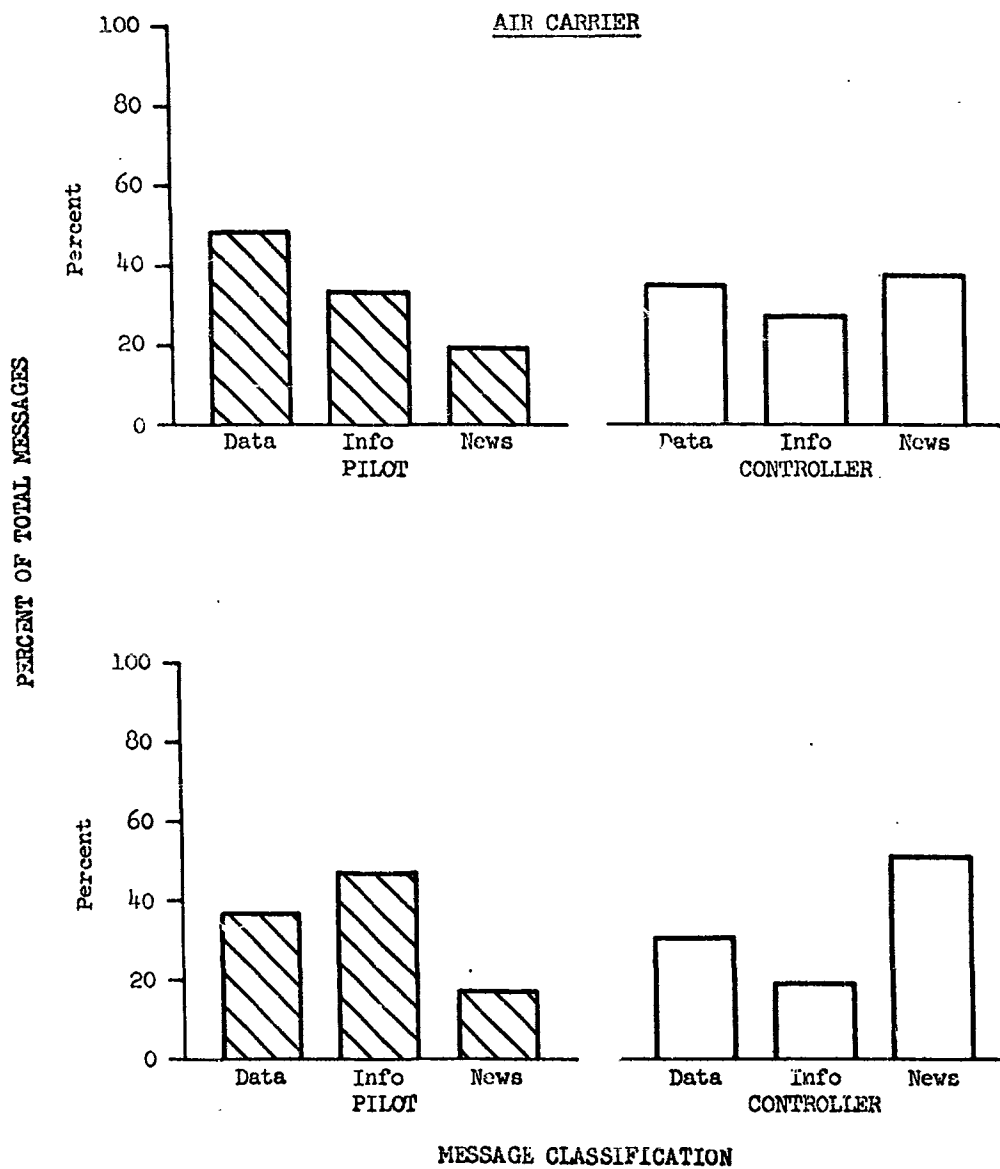
RADAR 2A CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-62

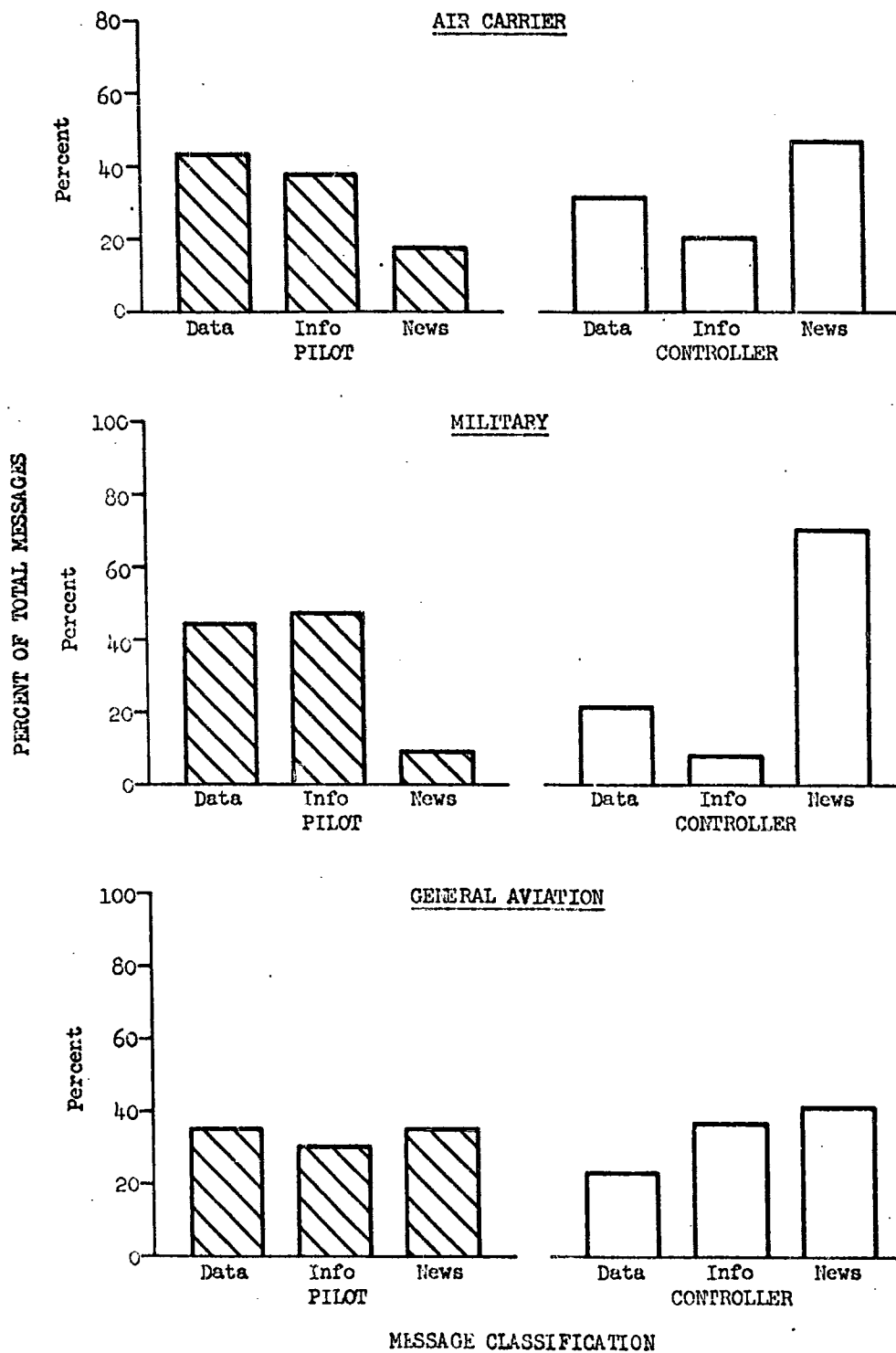
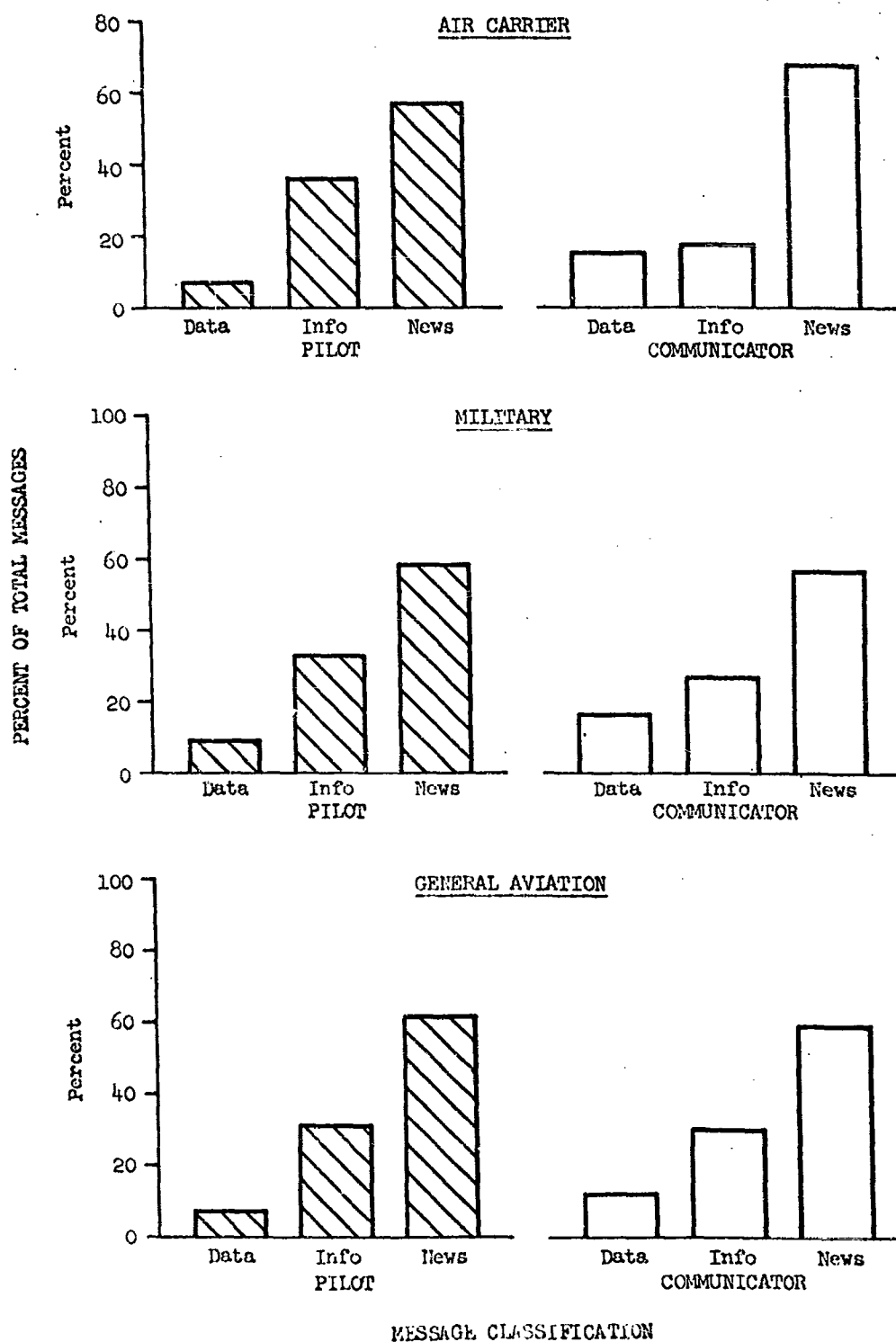
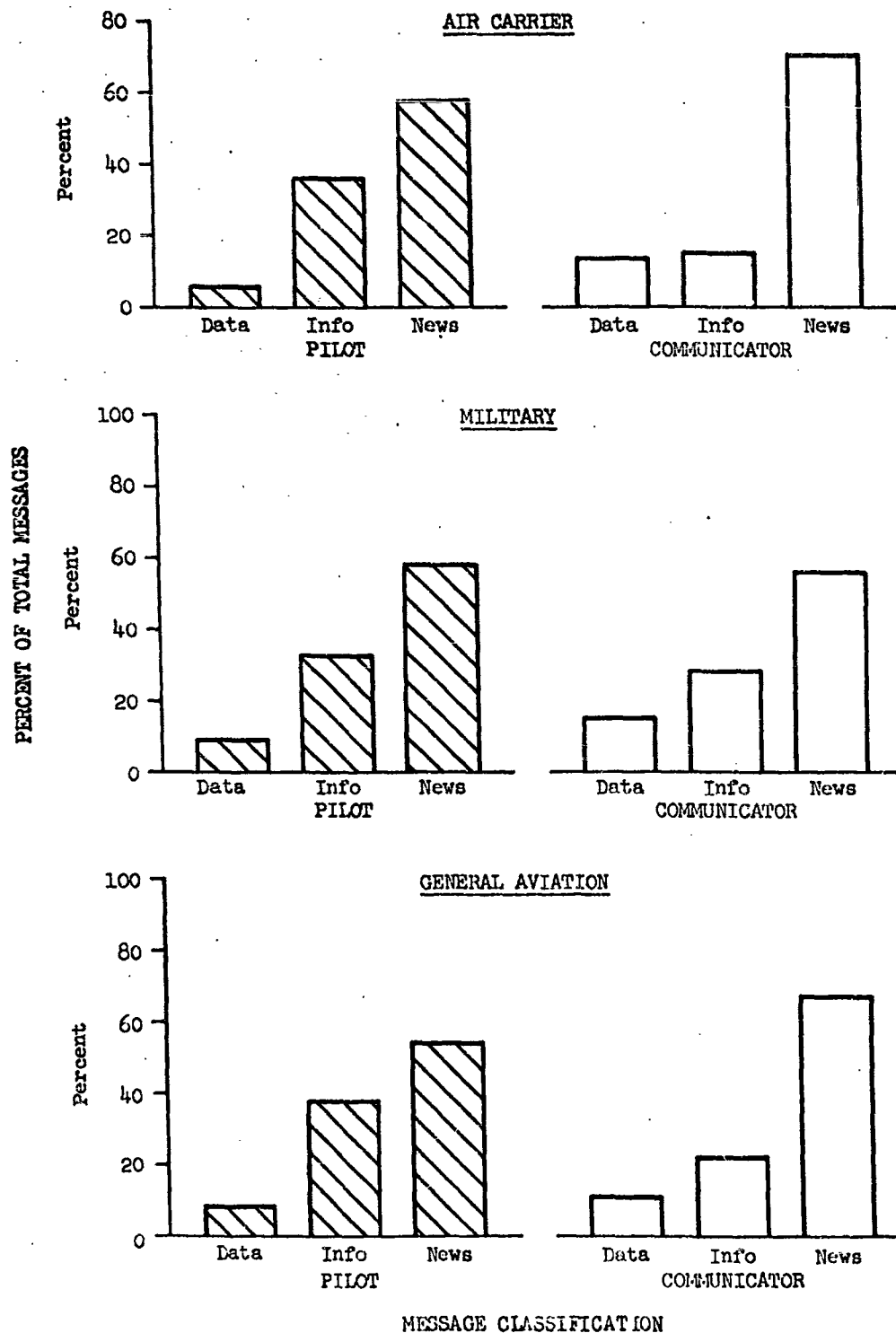
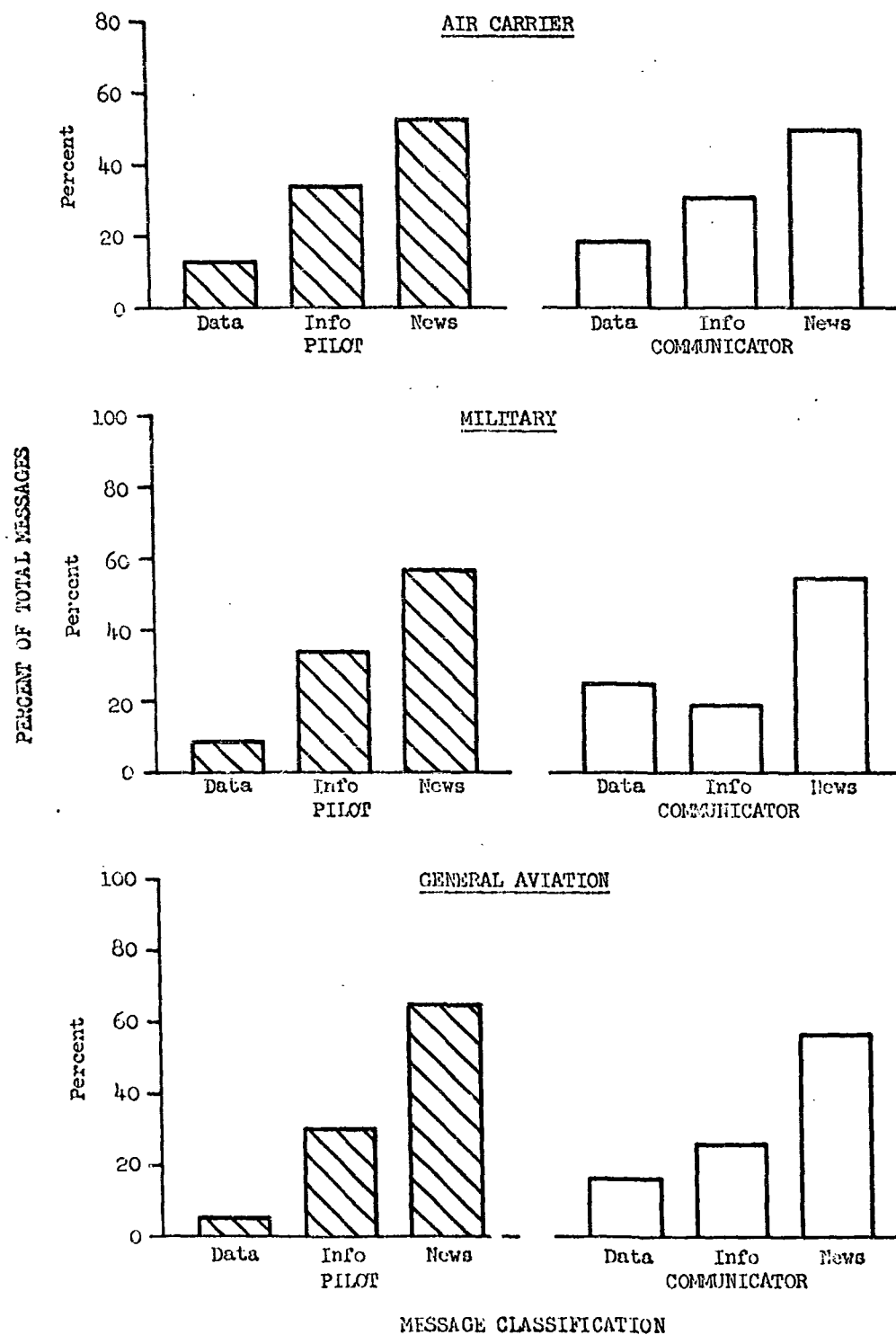
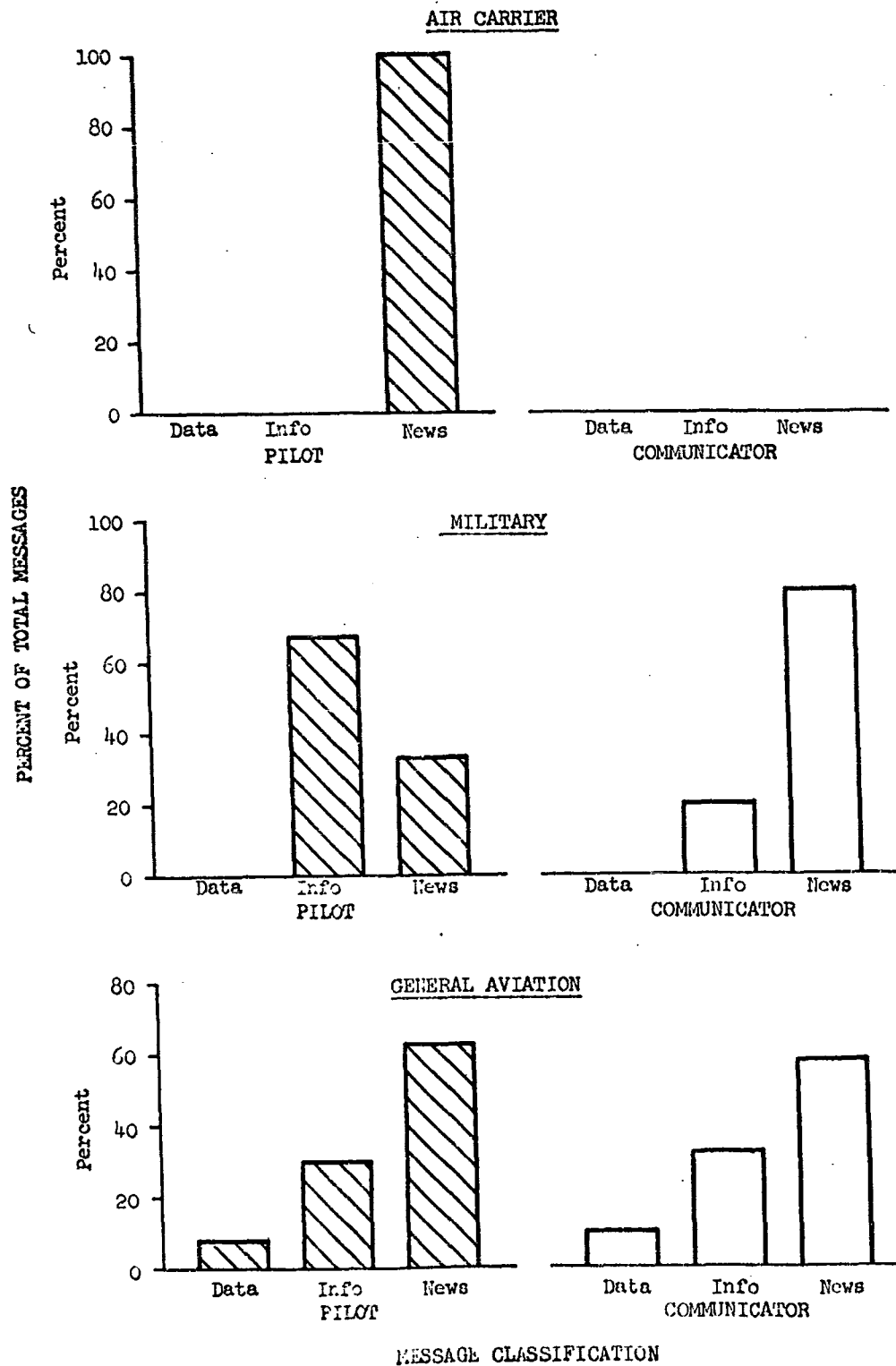
TM 339-84
Volume II
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Page 98RADAR 2B CONTROL - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

Figure I-63

STATION - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

STATION POSITION D - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

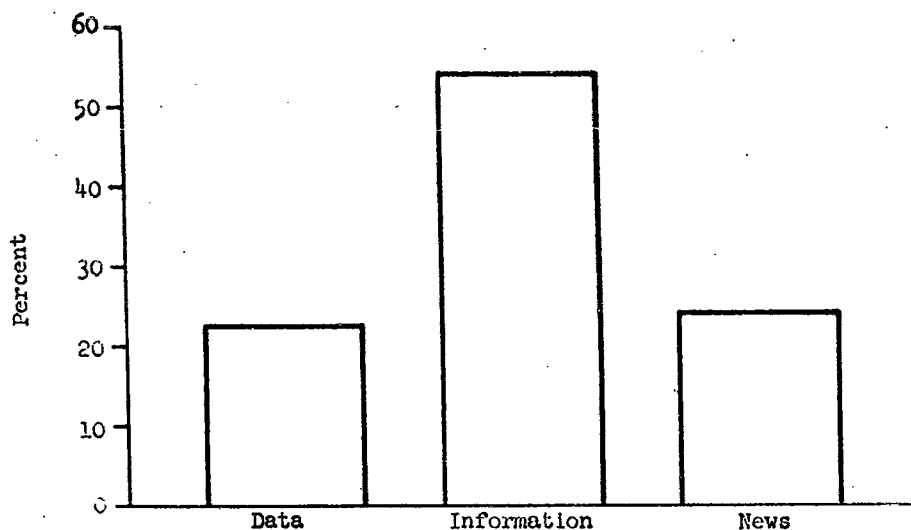
STATION POSITION C - DIN PROFILES BY ORIGINATOR AND AVIATION CATEGORY

STATION POSITION B - DIT PROFILES BY ORIGINATOR AND AVIATION CATEGORY

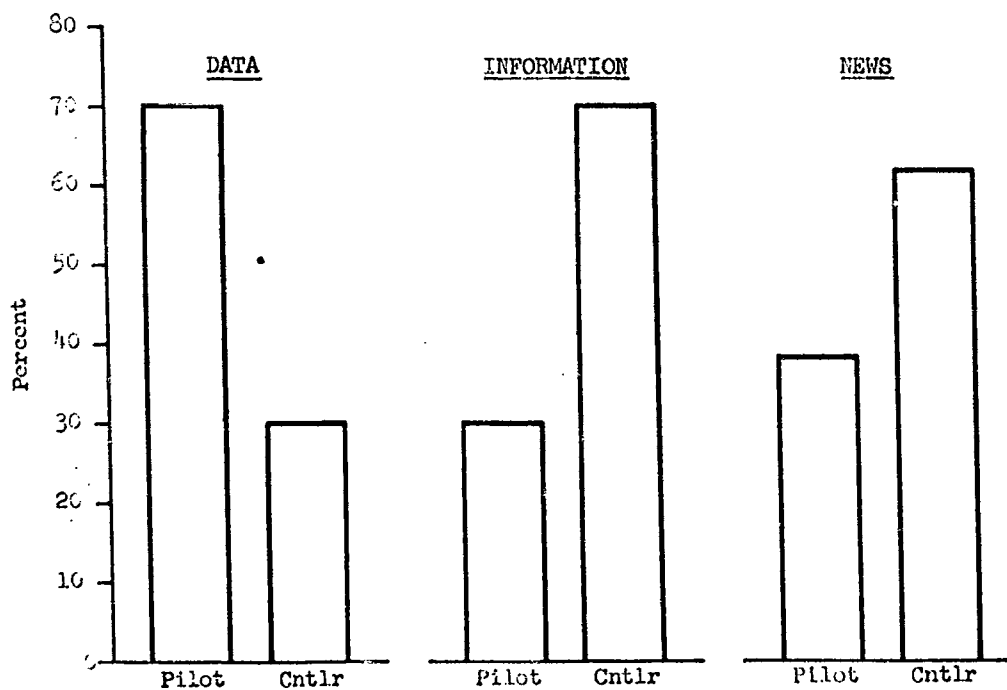
5. DIN Message Classification Proportions by Originator

In each of Figures I-67 through I-84 the top chart shows the overall DIN profiles for each facility or position while the bottom chart shows the contribution to each of the DIN percentages made by the pilot and the controller/communicator. For example, Figure I-66 shows that 70% of all messages classified as Data in the Tower sample were originated by pilots, whereas 70% of all messages classified as Information were originated by Tower controllers. Note the sum of the two proportion-of-messages percentages for each classification is 100%.

Figure I-67

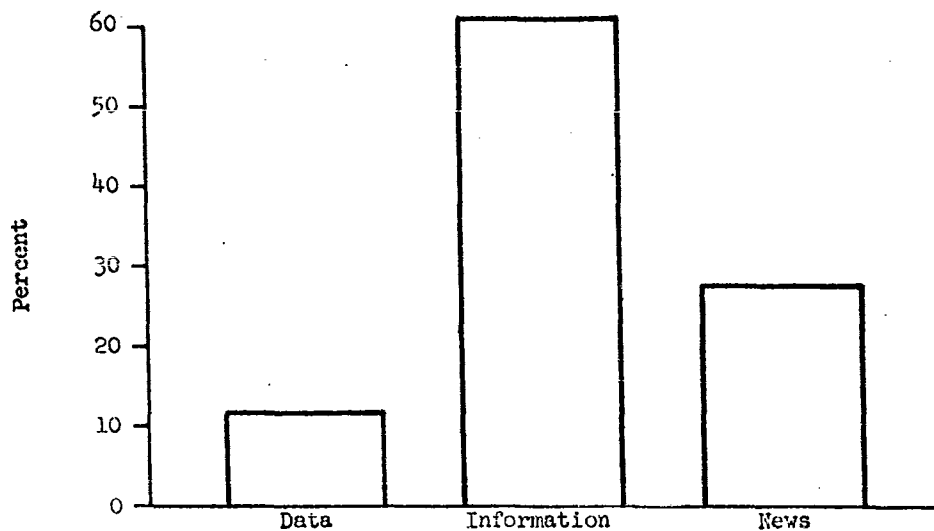
TM 339-84
Volume II
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Page 104OVERALL TOWER DIN PROFILE

PERCENT OF TOTAL MESSAGES

PILOT/POWER CONTROLLER PROPORTION OF MESSAGES WITHIN EACH CLASSIFICATION

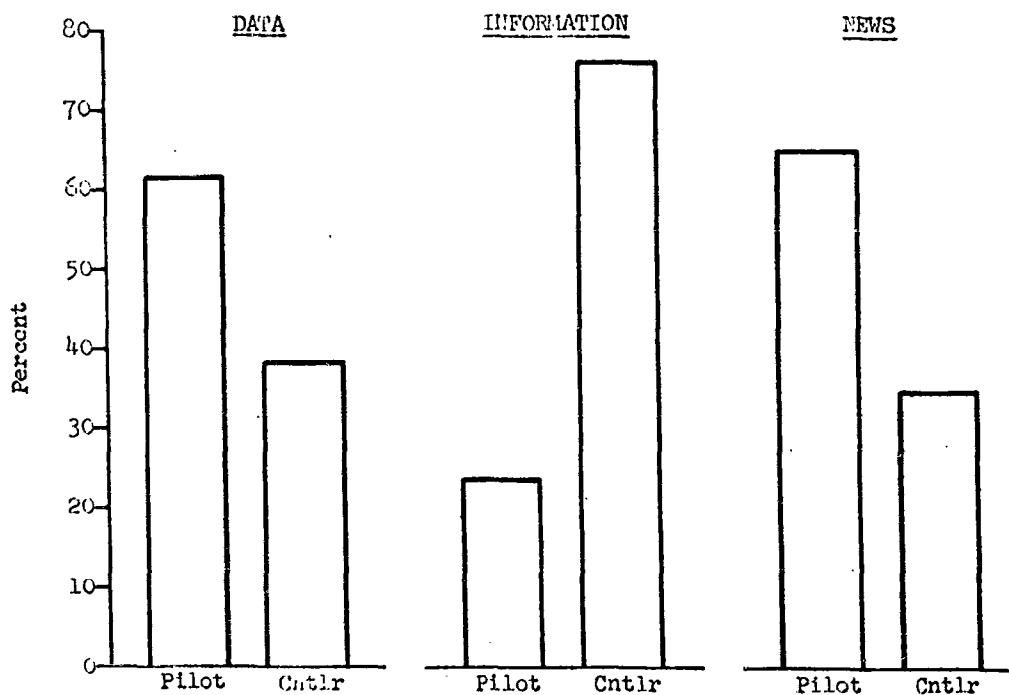
MESSAGE CLASSIFICATION

OVERALL GROUND CONTROL DIN PROFILE



PERCENT OF TOTAL MESSAGES

PILOT/GROUND CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION



MESSAGE CLASSIFICATION

Figure I-69

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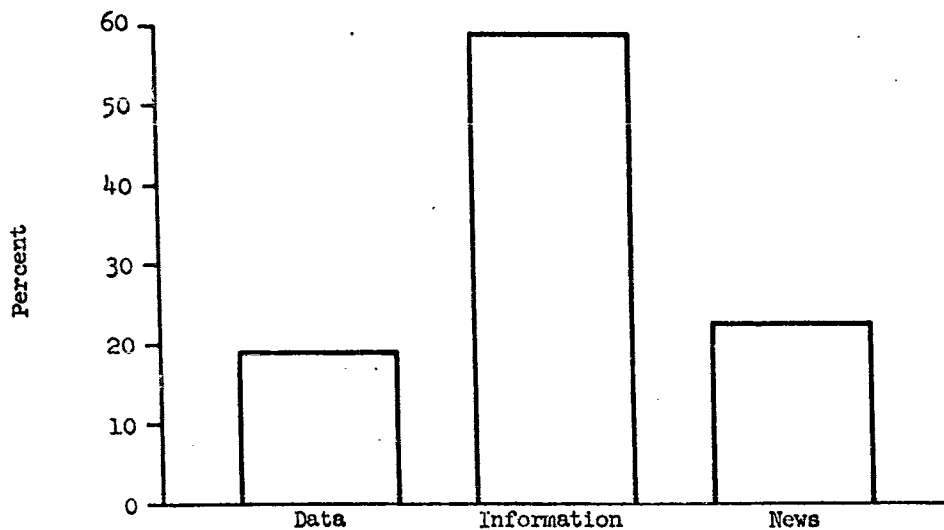
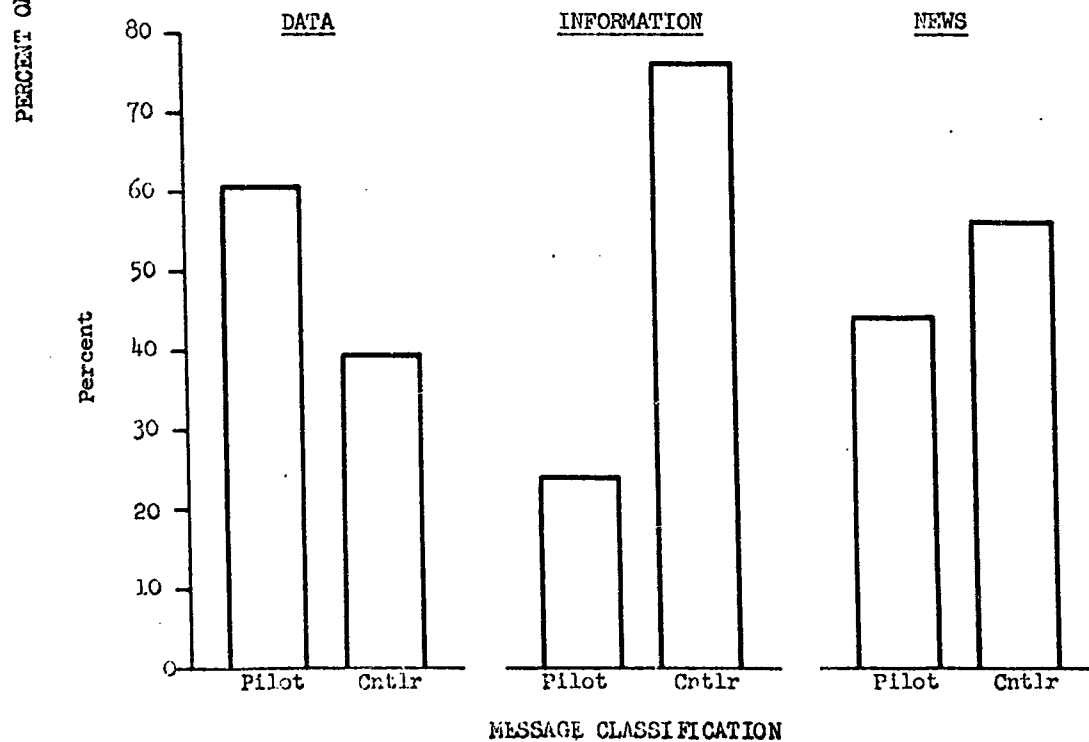
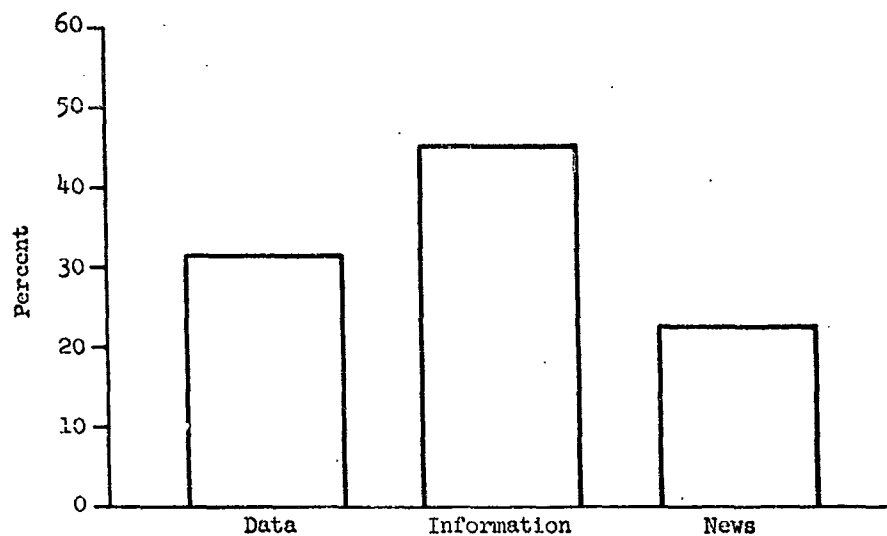
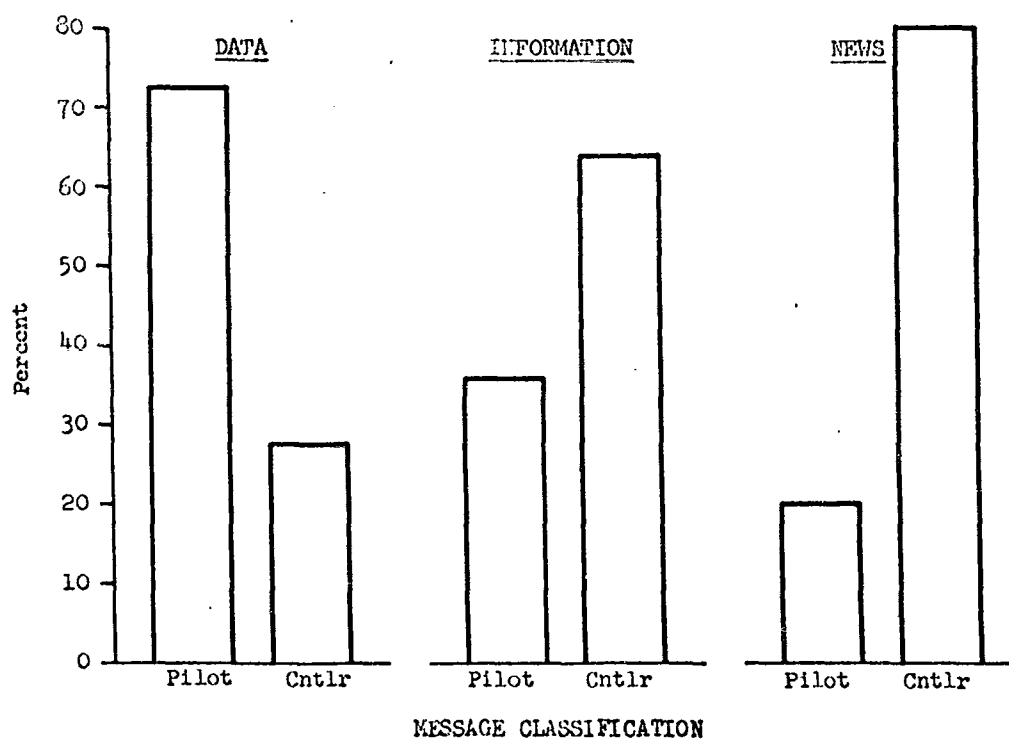
OVERALL LOCAL CONTROL DIN PROFILEPILOT/CONTROLLER PROPORTION OF MESSAGES WITHIN EACH CLASSIFICATION

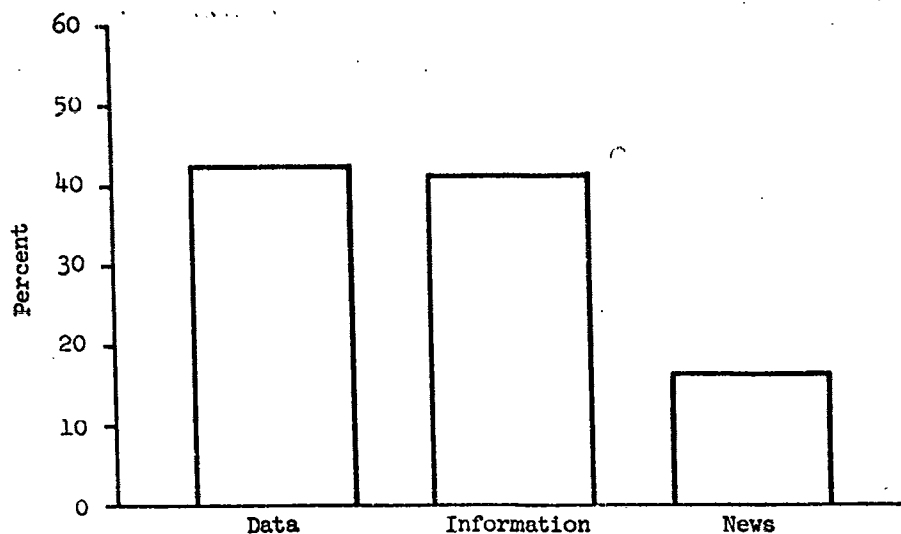
Figure I-70

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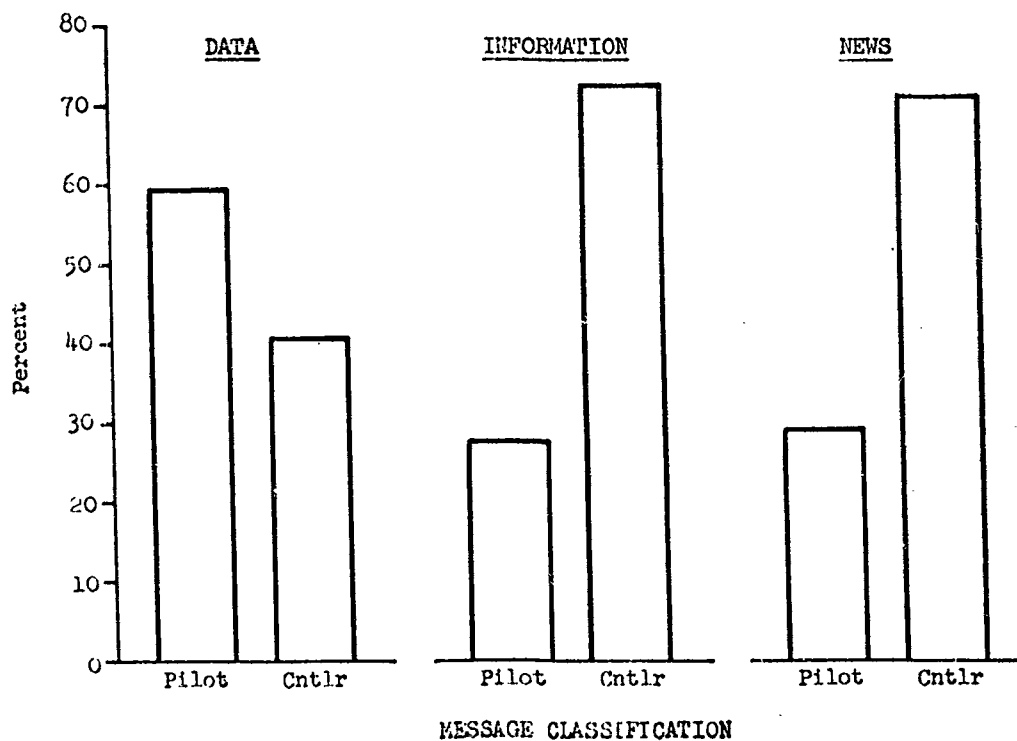
OVERALL ANC APPROACH CONTROL DIN PROFILEPILOT/ANC APPROACH CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION

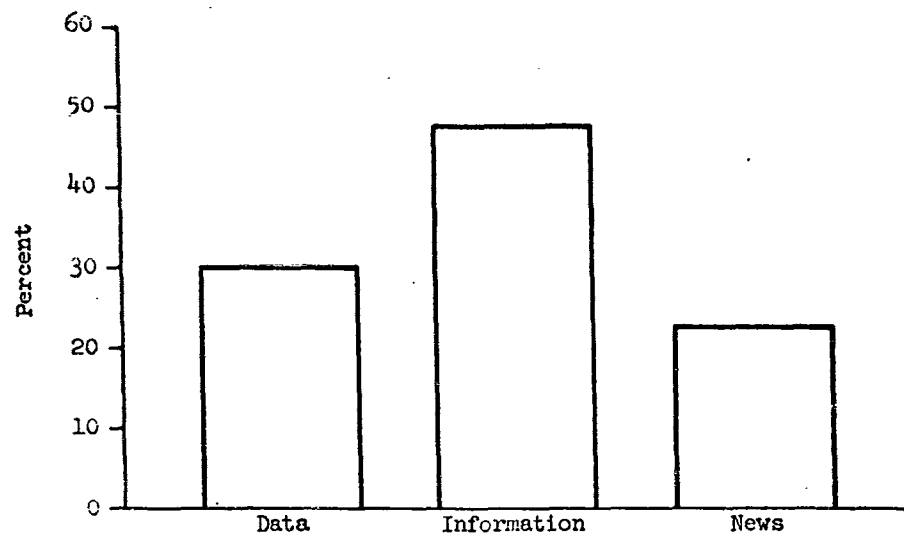
PERCENT OF TOTAL MESSAGES



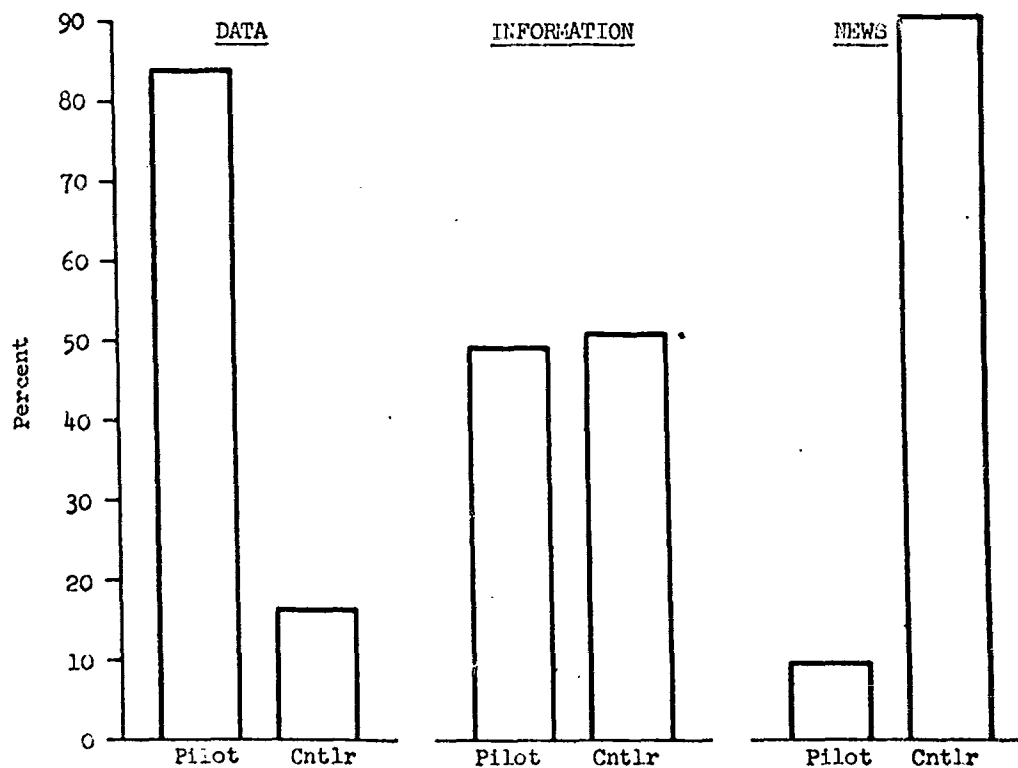
OVERALL RADAR APPROACH CONTROL DIN PROFILEPILOT/RADAR APPROACH CONTROLLER PROPORTION OF
MESSAGES WITHIN EACH CLASSIFICATION

PERCENT OF TOTAL MESSAGES

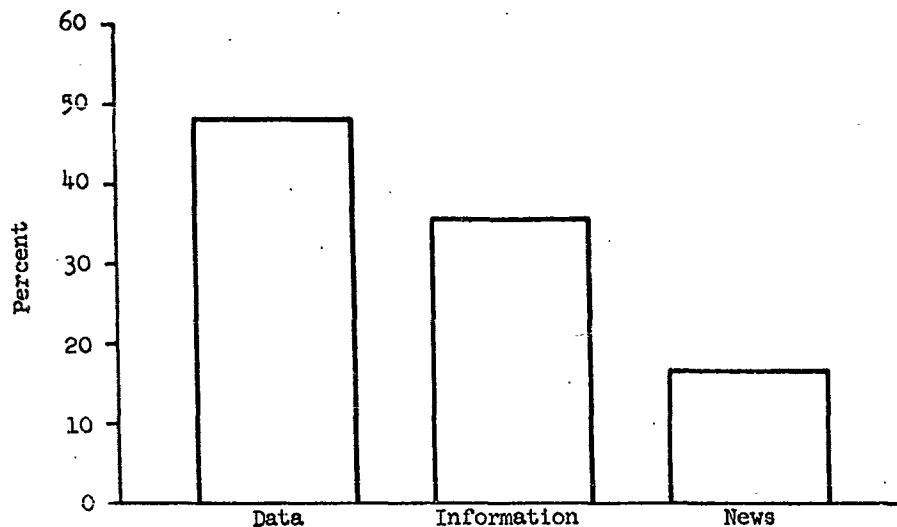


OVERALL ANC DEPARTURE CONTROL DIN PROFILEPILOT/ANC DEPARTURE CONTROLLER PROPORTION OF MESSAGES WITHIN EACH CLASSIFICATION

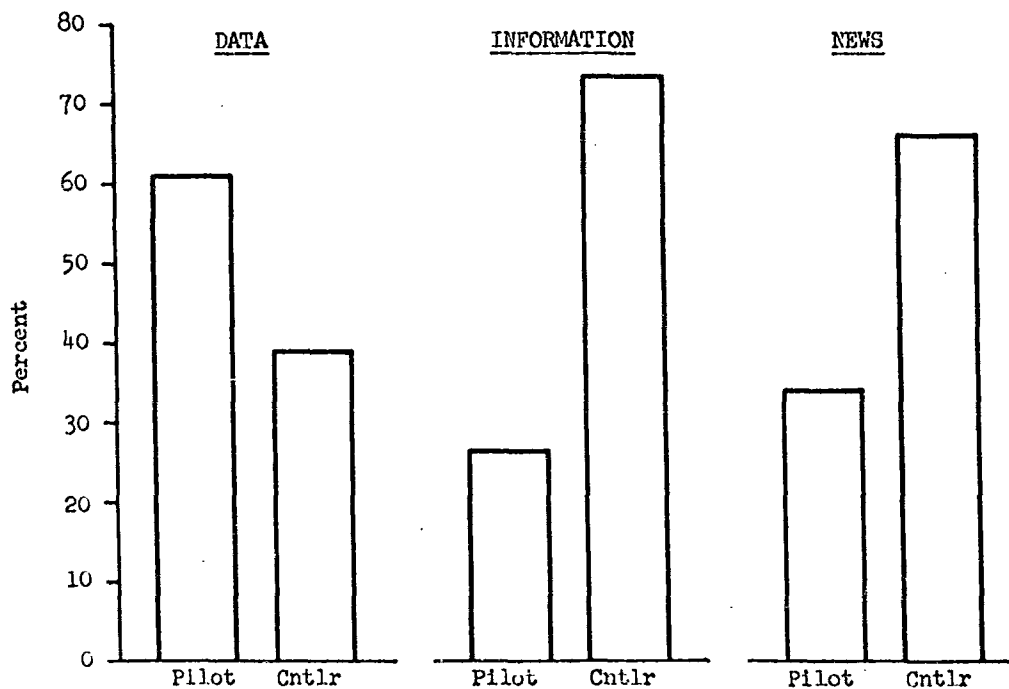
PERCENT OF TOTAL MESSAGES



MESSAGE CLASSIFICATION

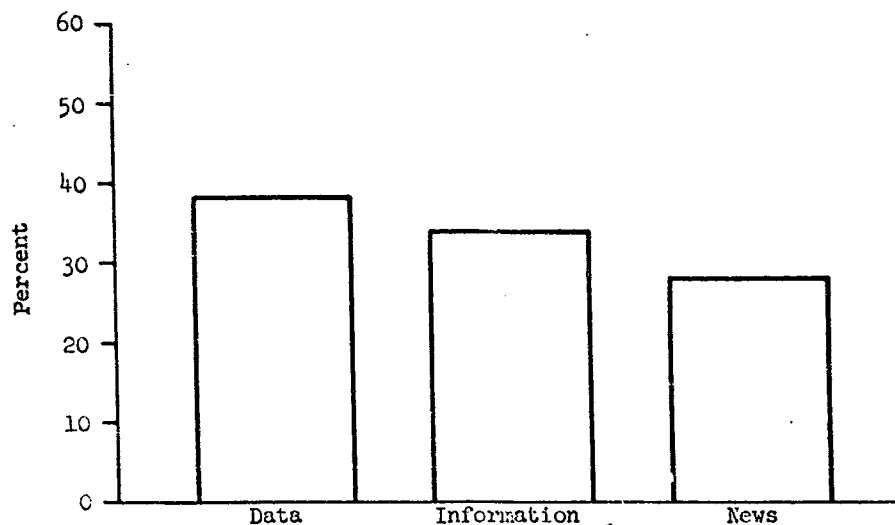
OVERALL RADAR DEPARTURE CONTROL DIN PROFILEPILOT/RADAR DEPARTURE CONTROLLER PROPORTION OF
MESSAGE WITHIN EACH CLASSIFICATION

PERCENT OF TOTAL MESSAGES



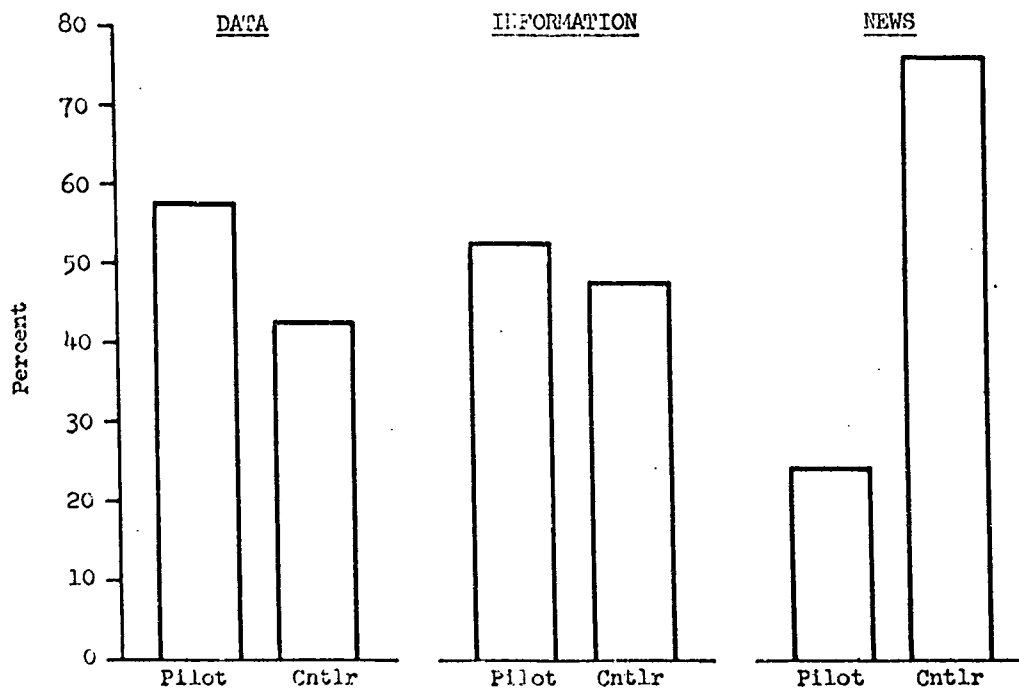
MESSAGE CLASSIFICATION

OVERALL CENTER DIN PROFILE

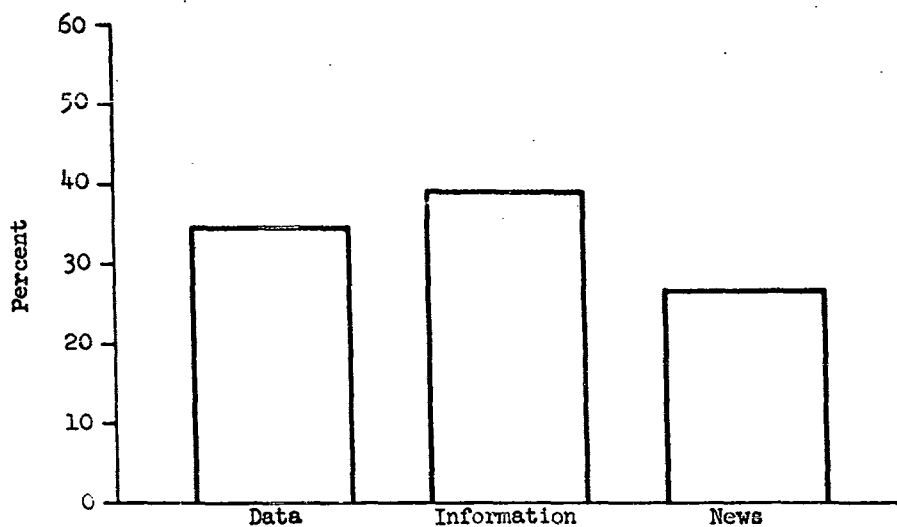


PERCENT OF TOTAL MESSAGES

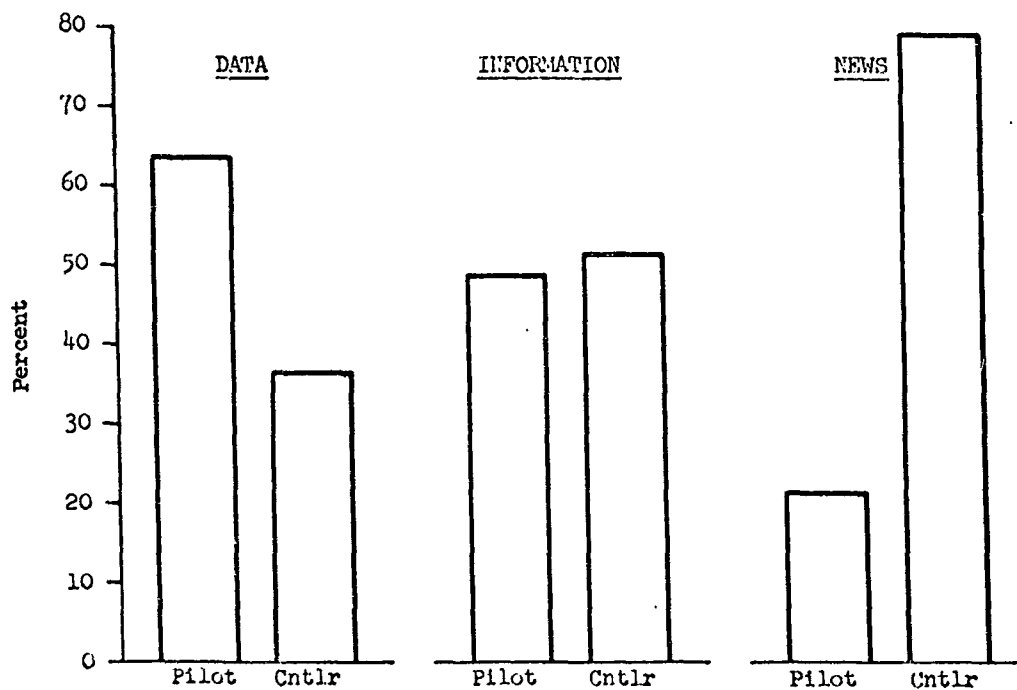
PILOT/CENTER CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION



MESSAGE CLASSIFICATION

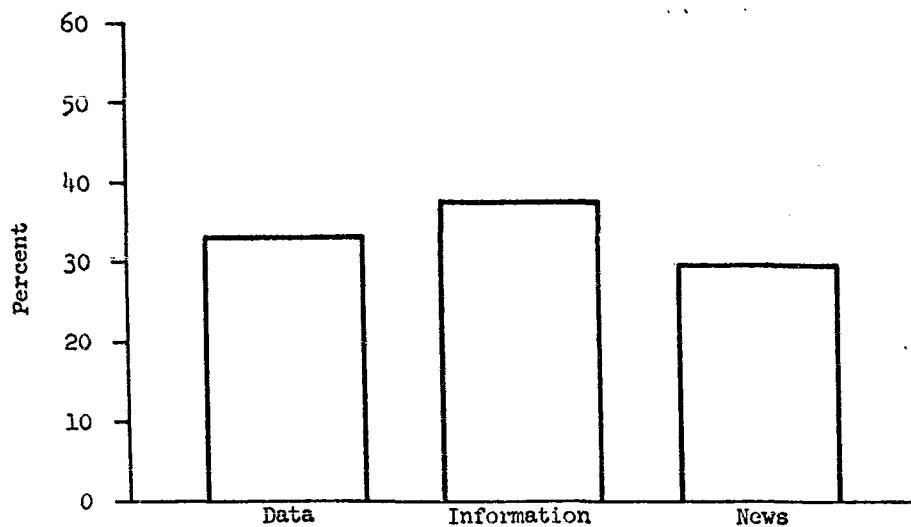
OVERALL D2 RADIO CONTROL DIN PROFILEPILOT D2 RADIO CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION

PERCENT OF TOTAL MESSAGES



MESSAGE CLASSIFICATION

Figure 1-76

OVERALL D3 RADIO CONTROL DIN PROFILEPILOT/D3 RADIO CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION

PERCENT OF TOTAL MESSAGES

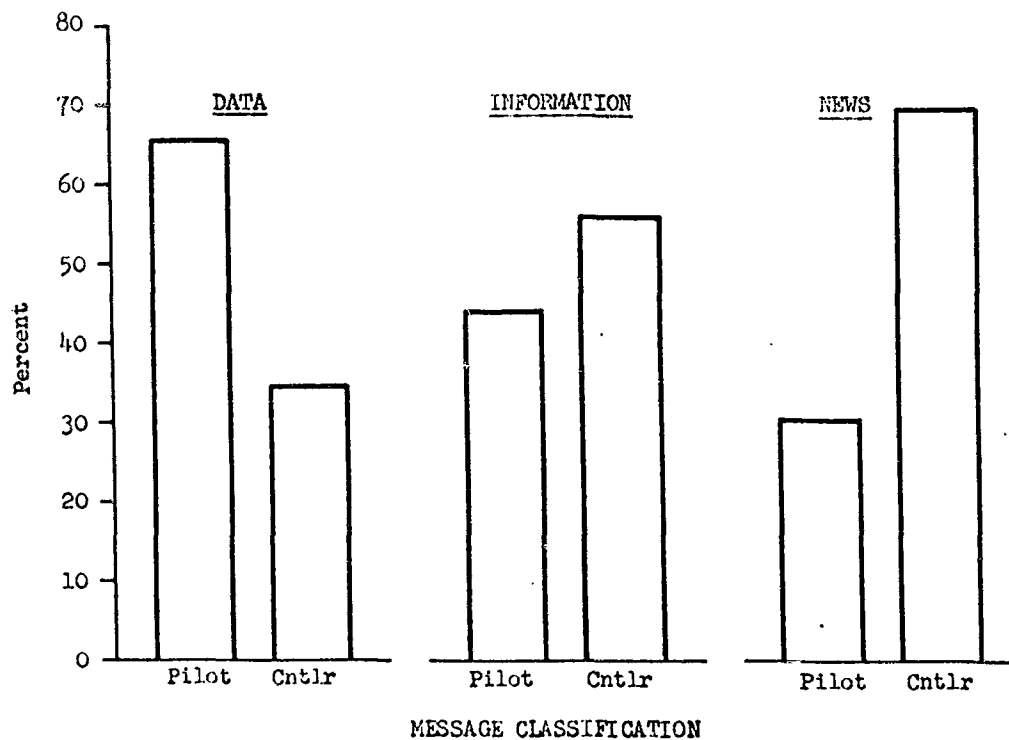
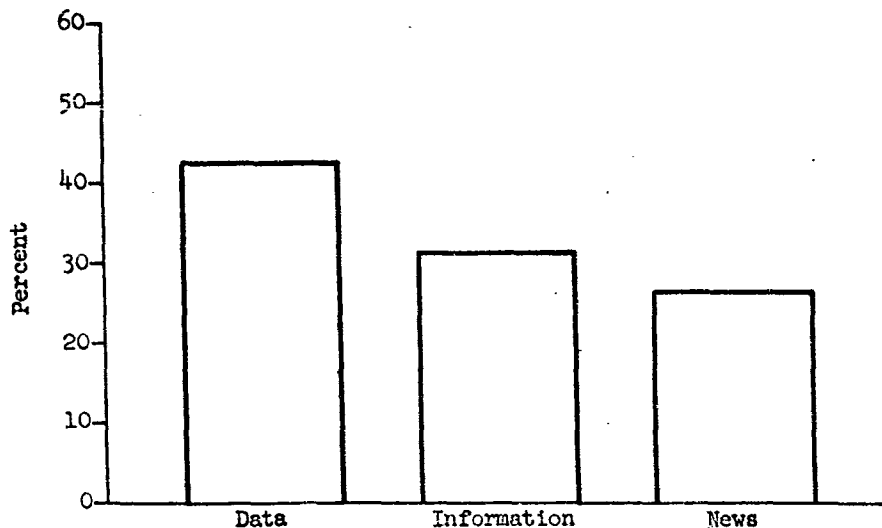


Figure I-77

OVERALL RADAR 1A CONTROL DIN PROFILE



PERCENT OF TOTAL MESSAGES

PILOT/RADAR 1A CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION

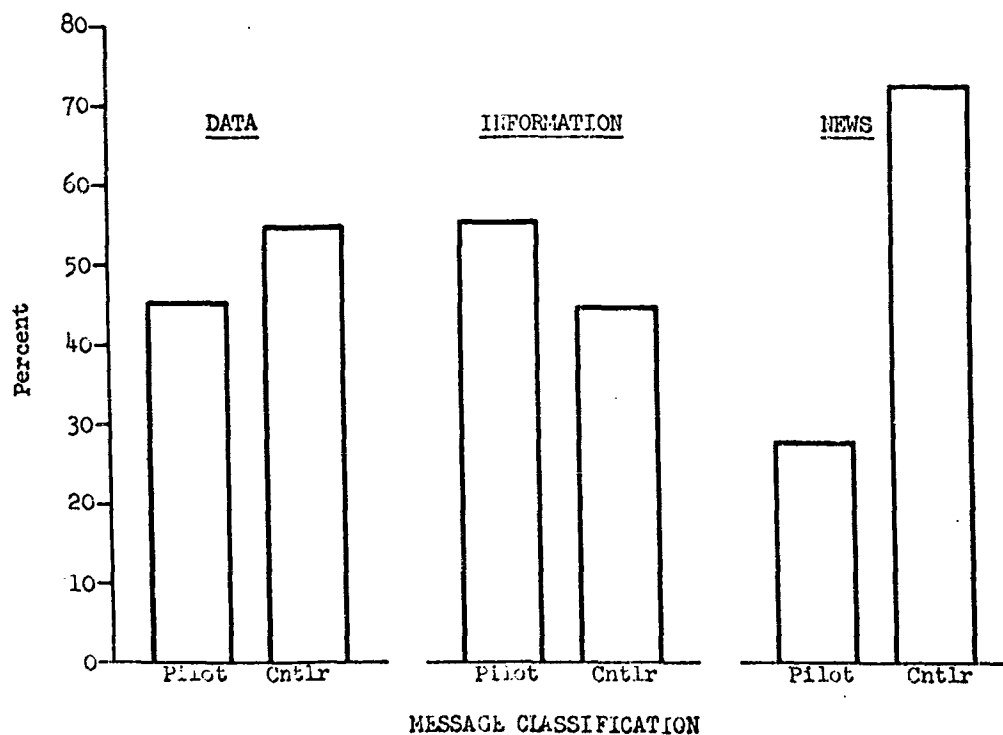
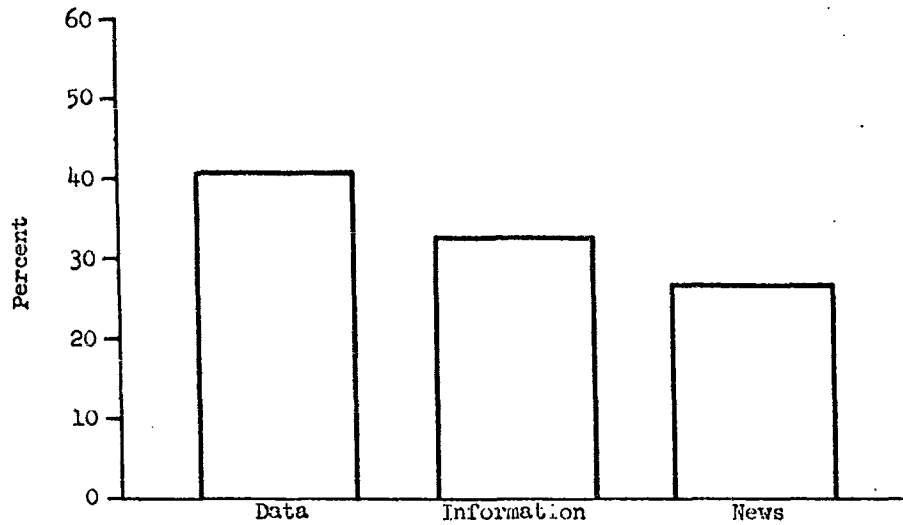
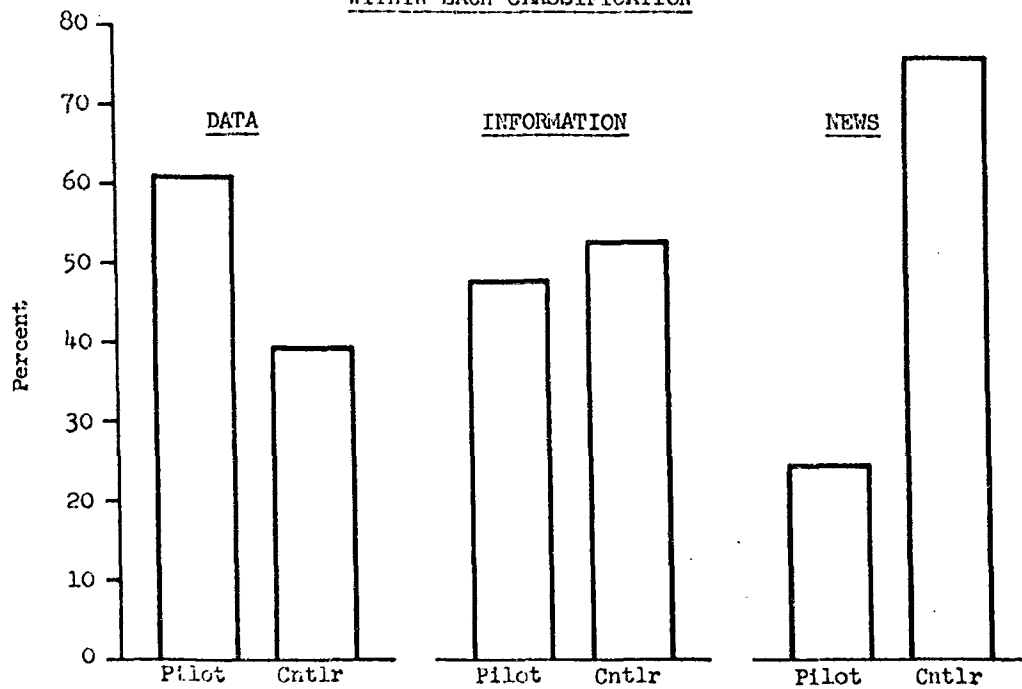


Figure I-78

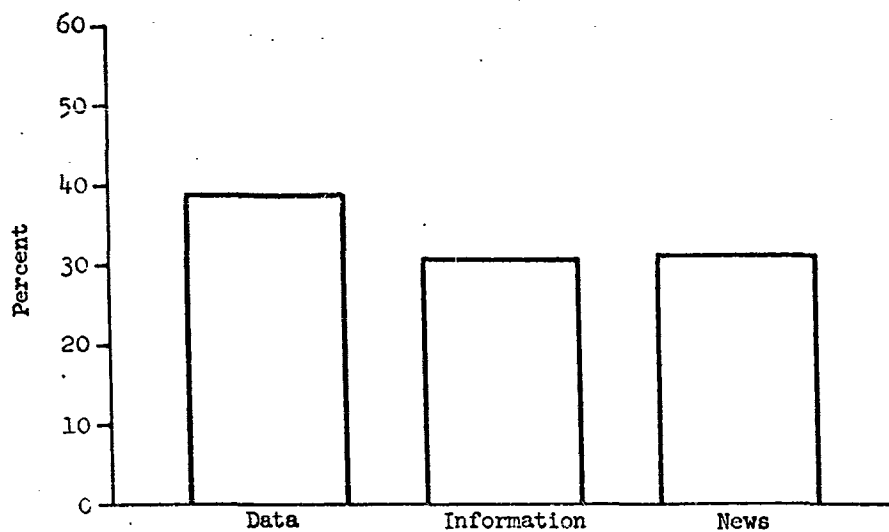
OVERALL RADAR 1B CONTROL DIN PROFILE

PERCENT OF TOTAL MESSAGES

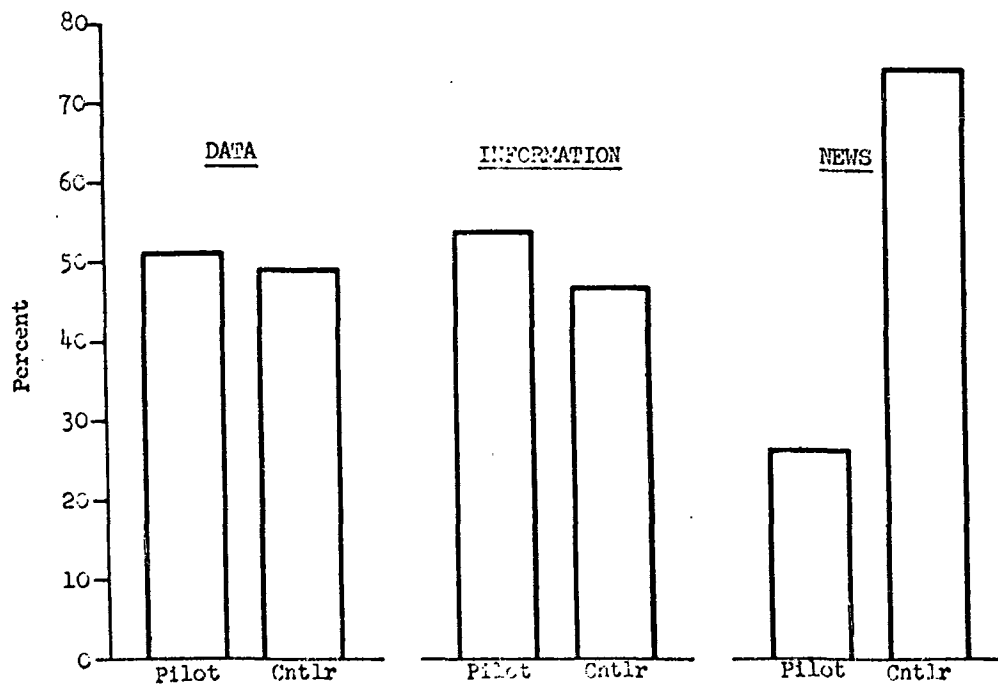
PILOT/RADAR 1B CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION

MESSAGE CLASSIFICATION

Figure I-79

OVERALL RADAR 2A CONTROL DIN PROFILE

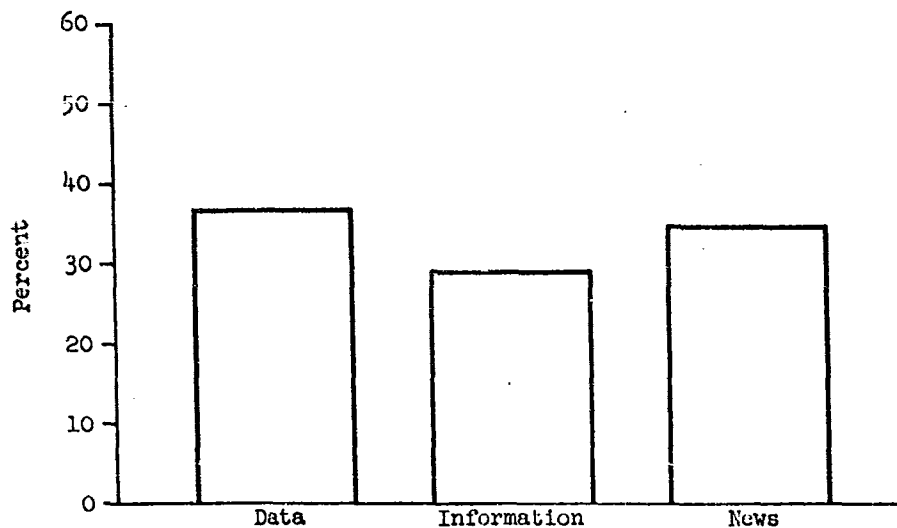
PERCENT OF TOTAL MESSAGES

PILOT/RADAR 2A CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION

MESSAGE CLASSIFICATION

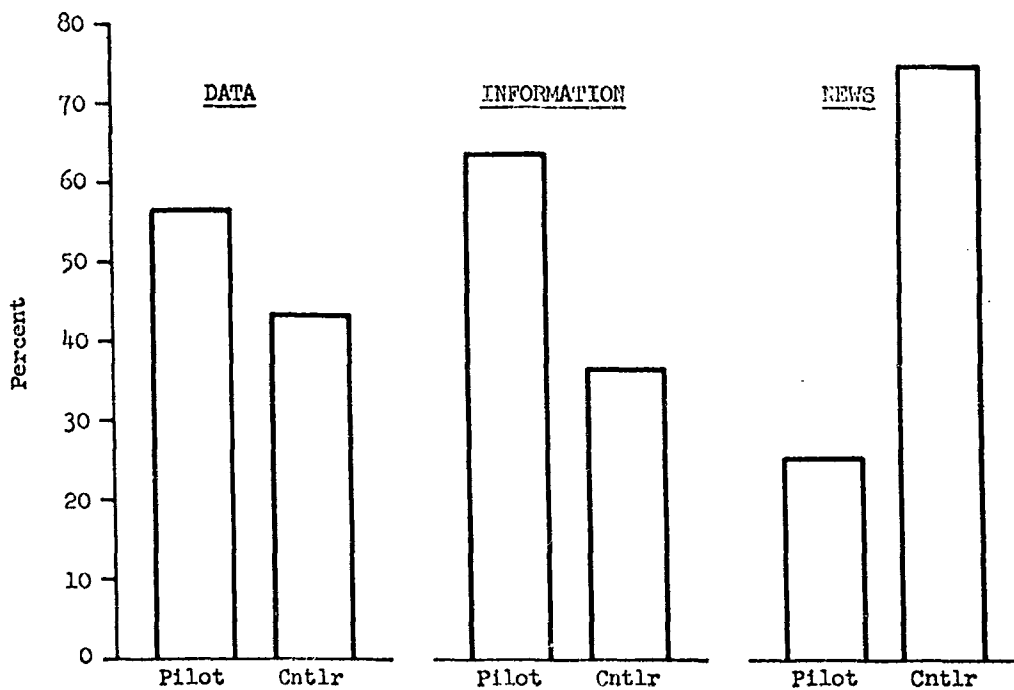
Figure I-80

OVERALL RADAR 2B CONTROL DIN PROFILE



PERCENT OF TOTAL MESSAGES

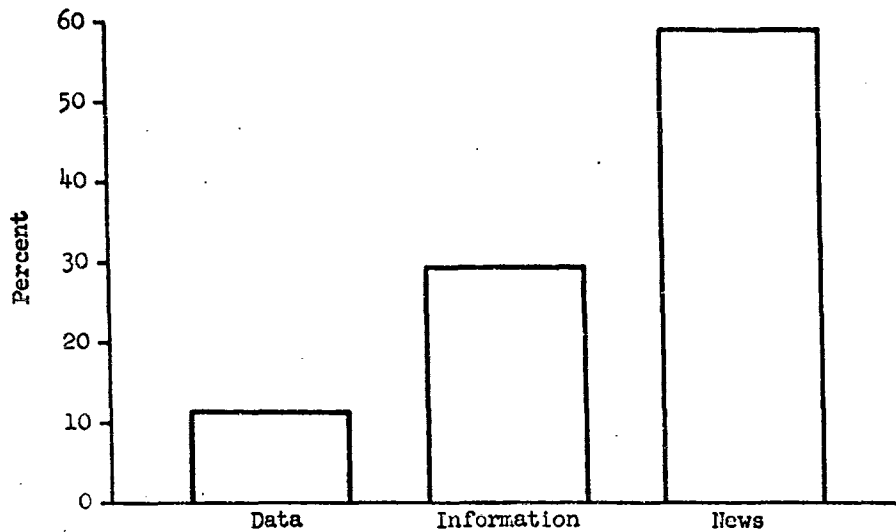
PILOT/RADAR 2B CONTROLLER PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION



MESSAGE CLASSIFICATION

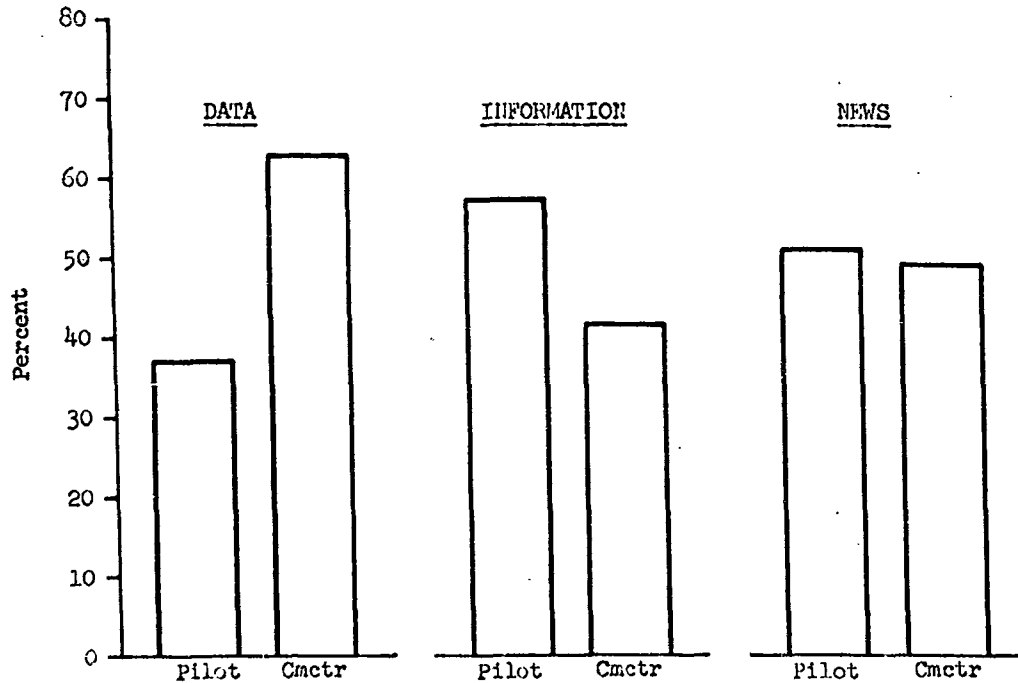
Figure I-81

OVERALL STATION DIN PROFILE



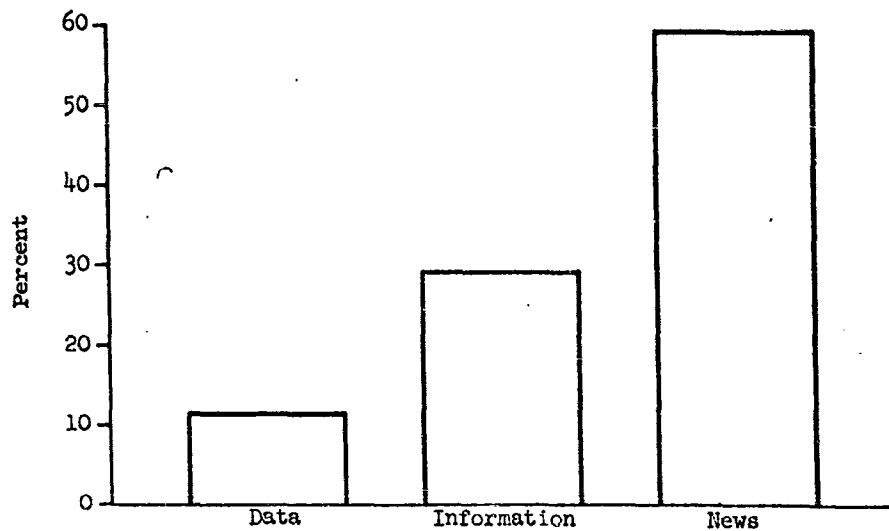
PERCENT OF TOTAL MESSAGES

PILOT/STATION COMMUNICATION PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION



MESSAGE CLASSIFICATION

OVERALL STATION POSITION D DIN PROFILE



PERCENT OF TOTAL MESSAGES

PILOT/POSITION D COMMUNICATOR PROPORTION OF
MESSAGES WITHIN EACH CLASSIFICATION

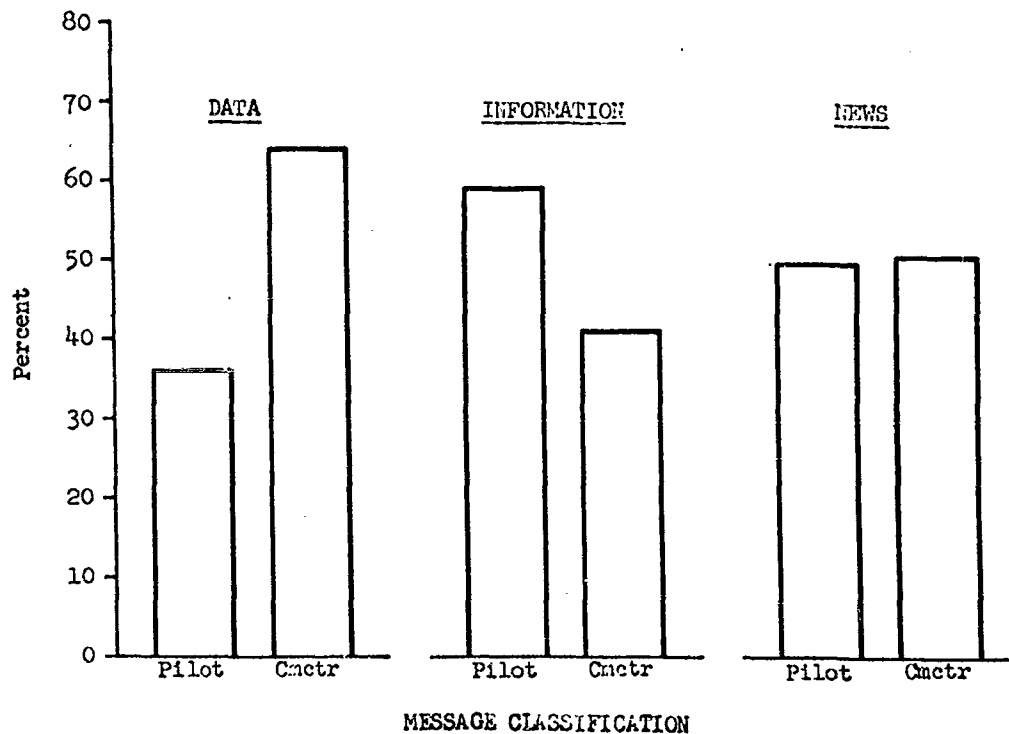
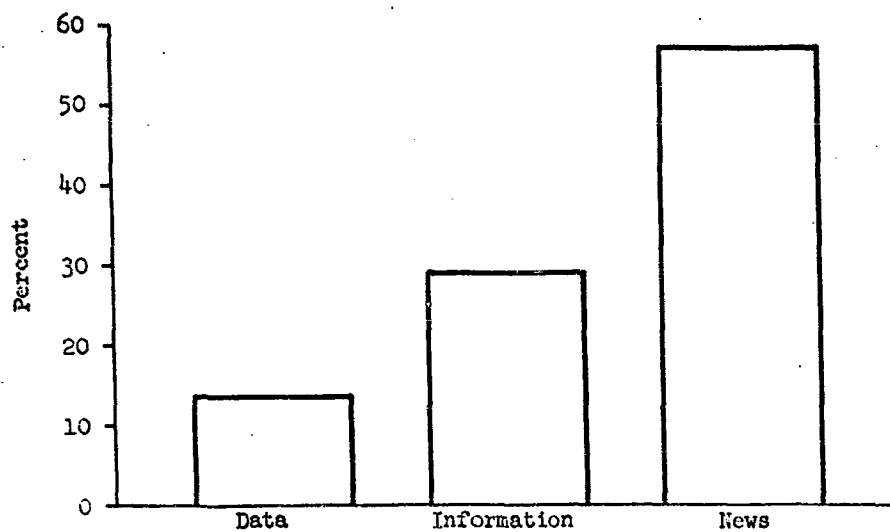
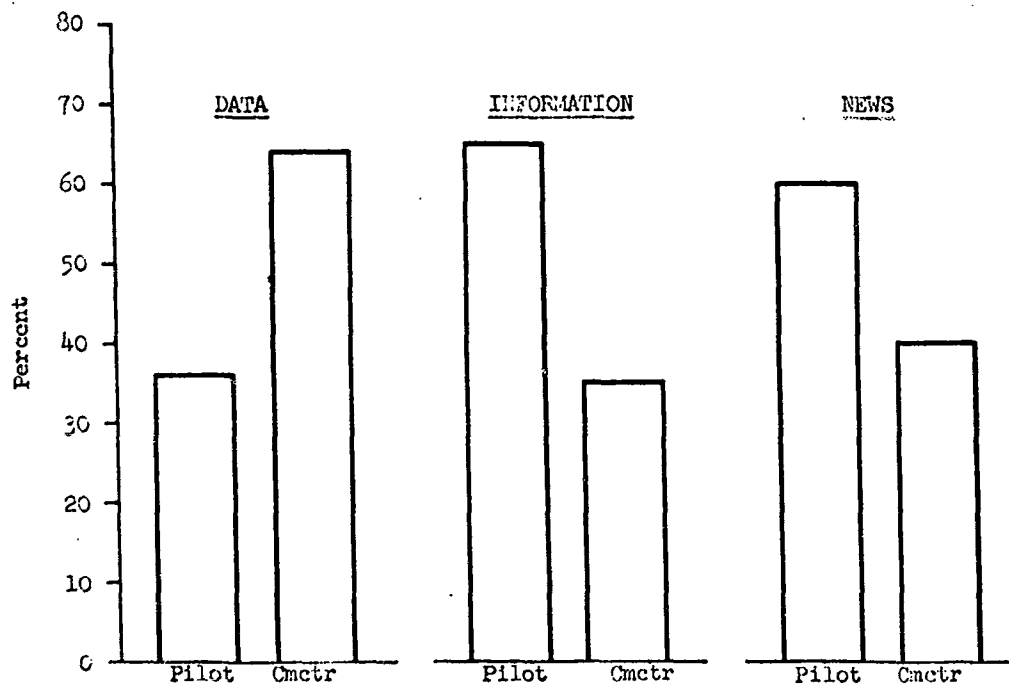


Figure I-83

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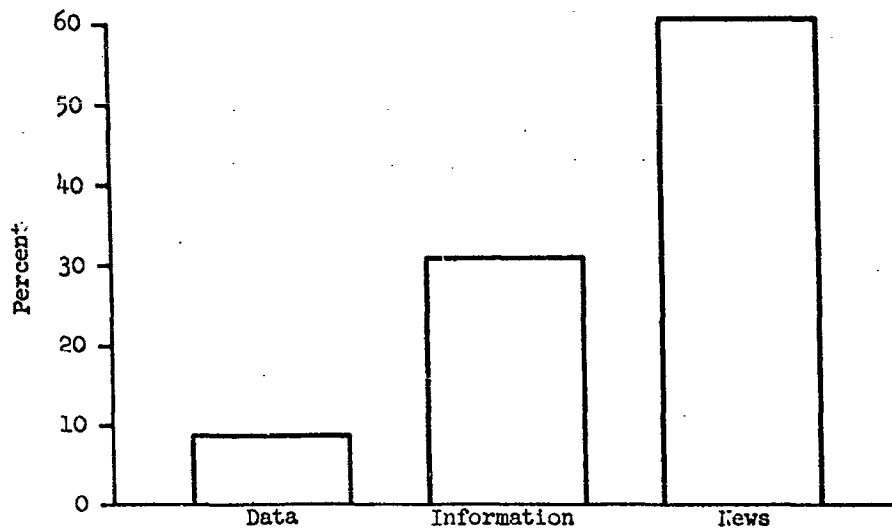
OVERALL STATION POSITION C DIN PROFILEPILOT/POSITION C COMMUNICATOR PROPORTION OF MESSAGES
WITHIN EACH CLASSIFICATION

PERCENT OF TOTAL MESSAGES



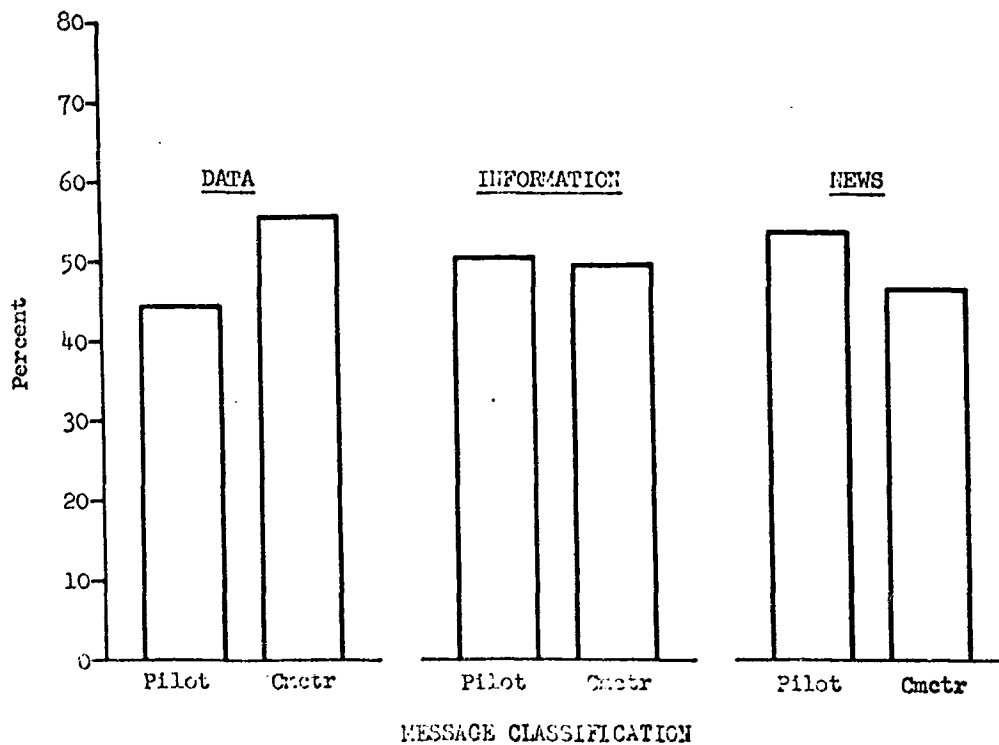
MESSAGE CLASSIFICATION

OVERALL STATION POSITION B DIN PROFILE



PERCENT OF TOTAL MESSAGES

PILOT/POSITION B COMMUNICATOR PROPORTION OF
MESSAGES WITHIN EACH CLASSIFICATION



6. DIN Message Classification Proportions by Originator and Aviation Category

The data of the previous cycle are further broken down in Figures I-85 through I-102 to show pilot/controller proportions of messages within each classification by aviation category. The data are given on an overall basis for each facility and by individual position. As before, the sum of the two percentages in each classification breakdown is 100%.

Figure I-85

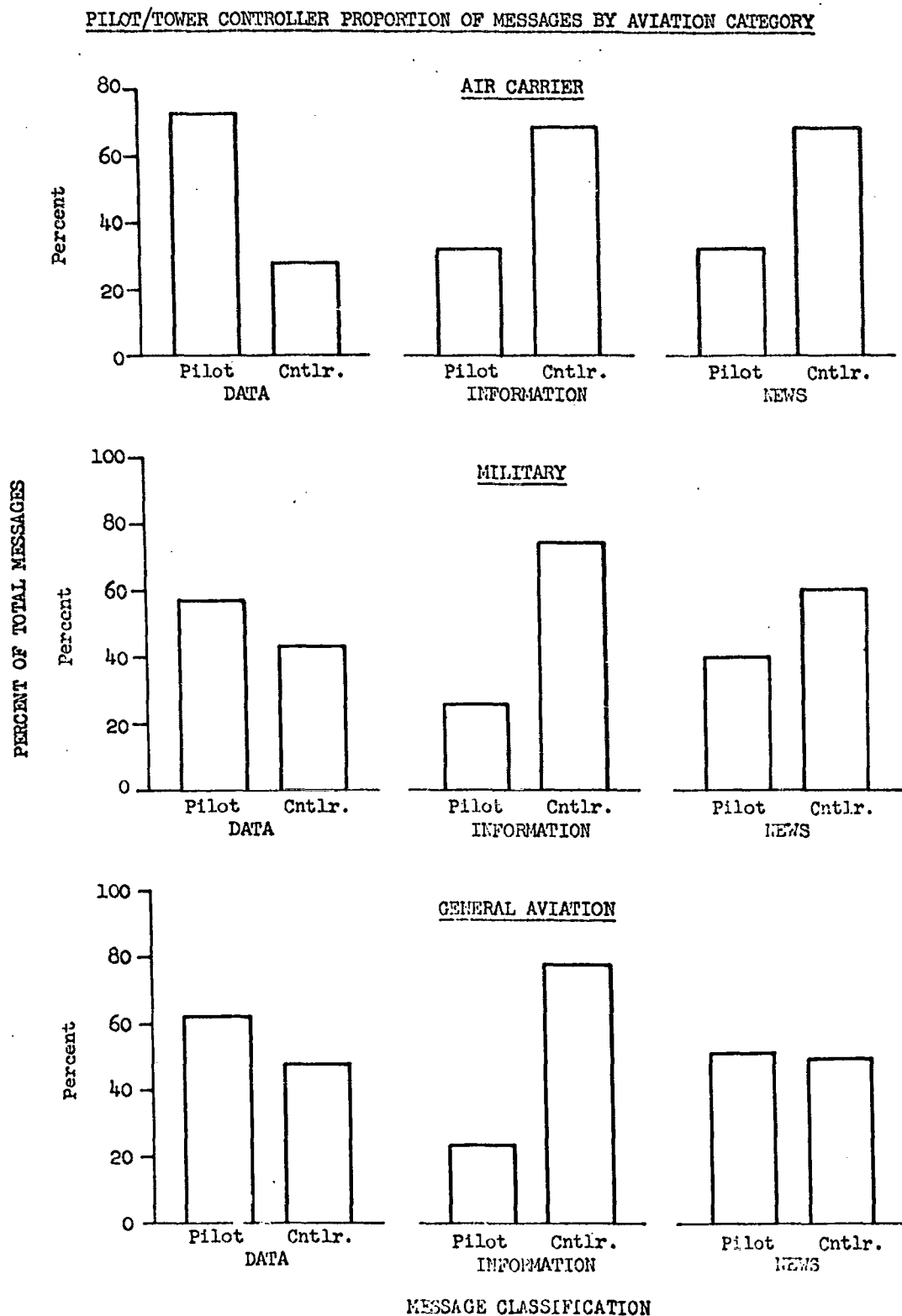
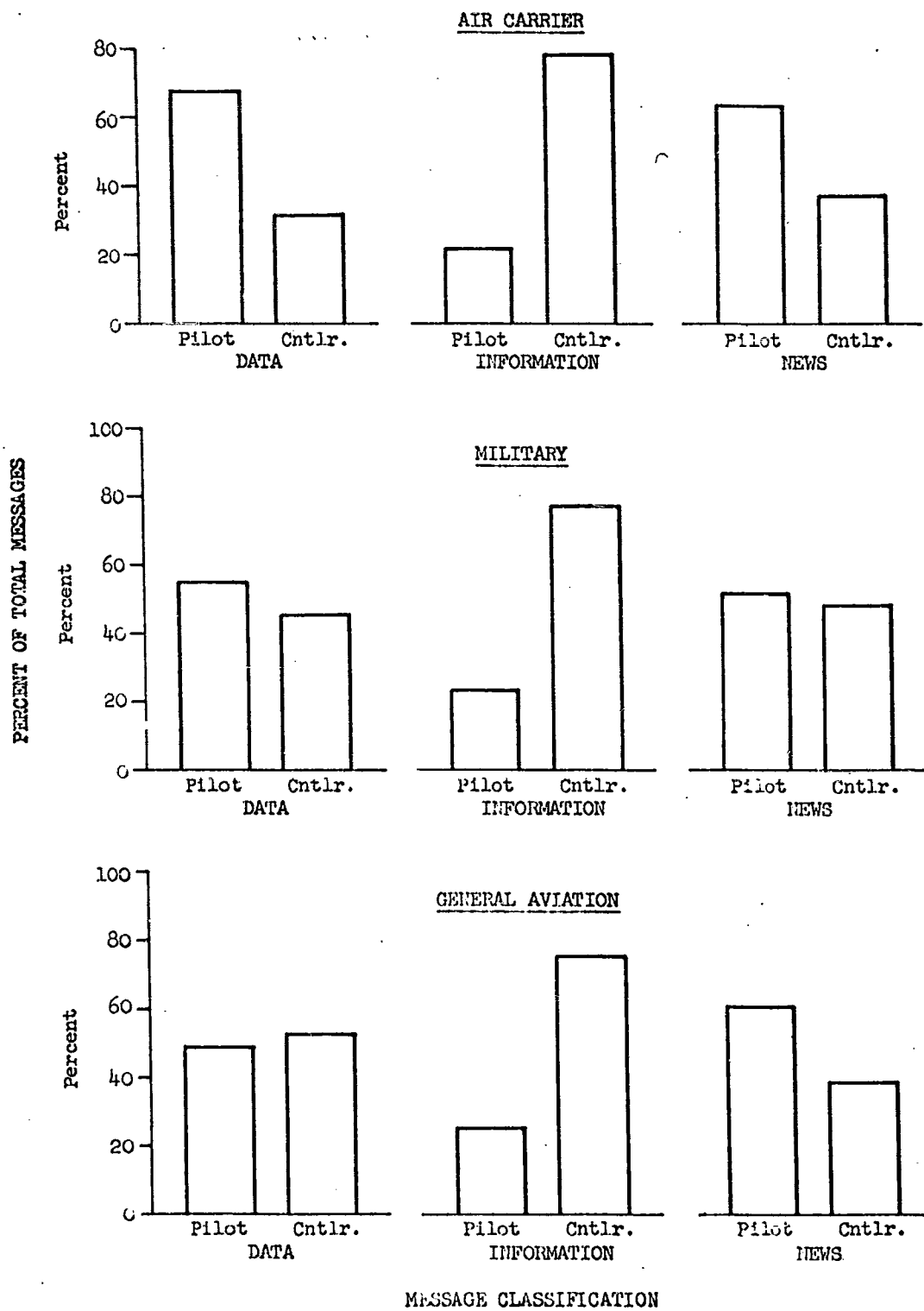
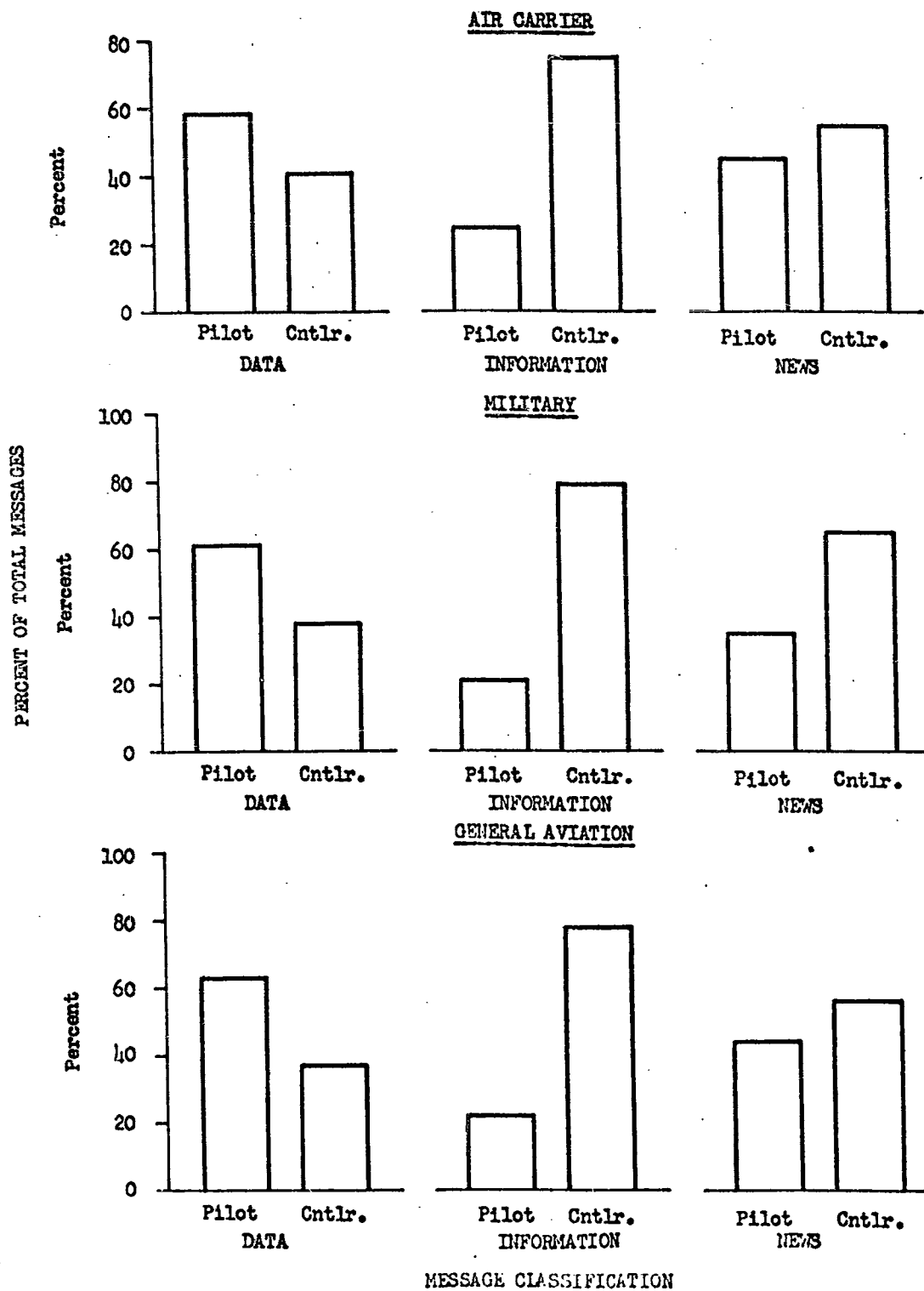
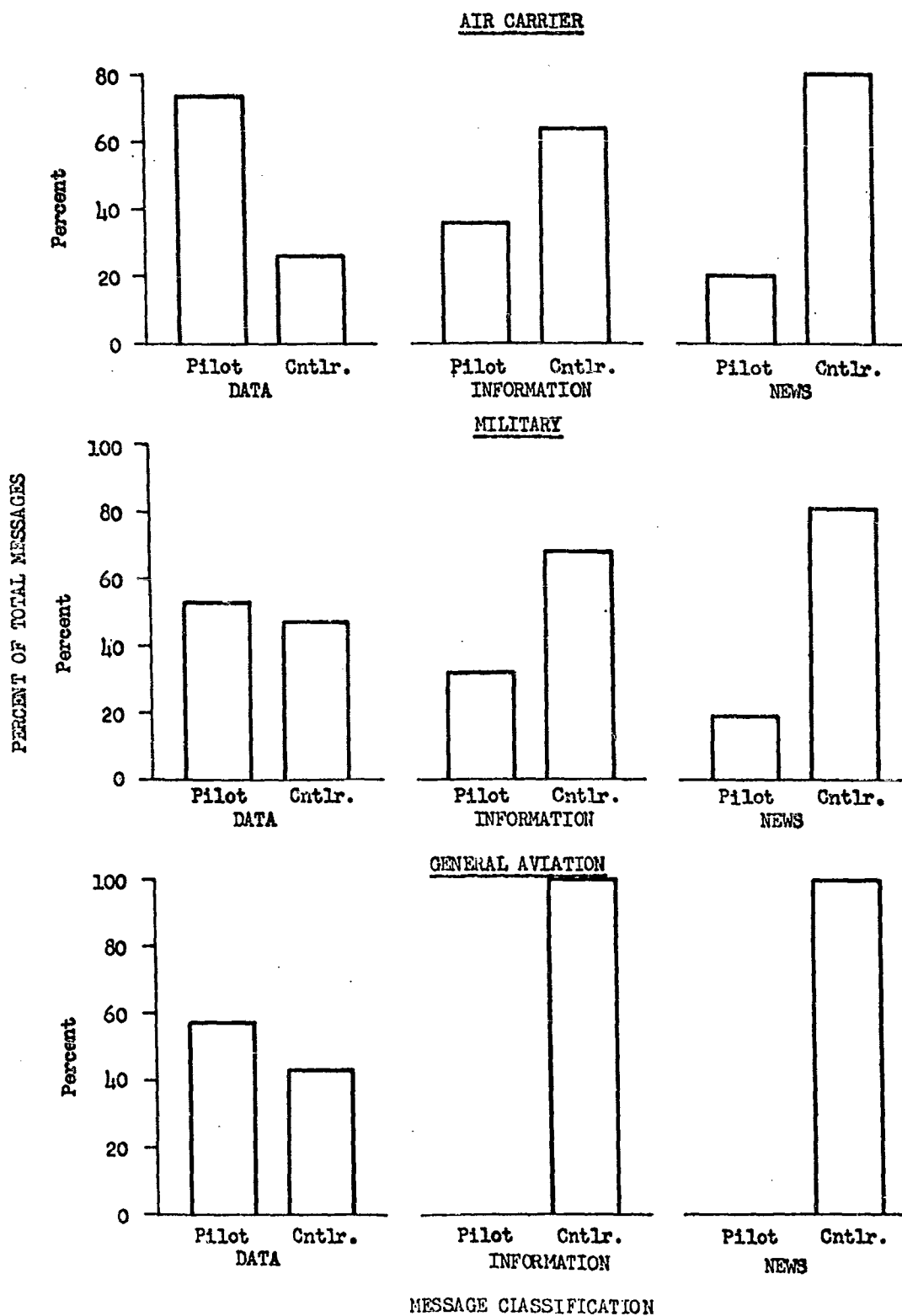
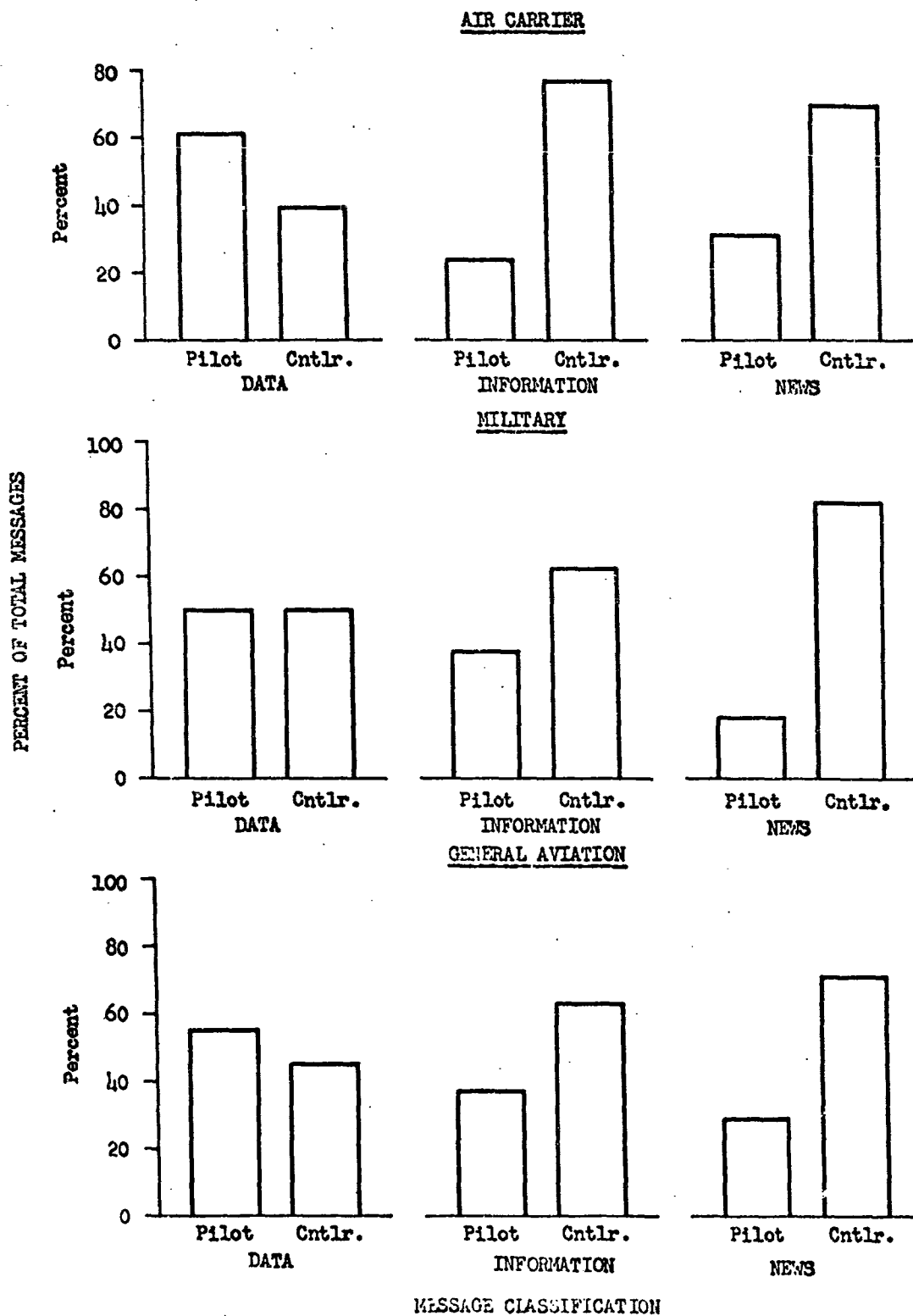


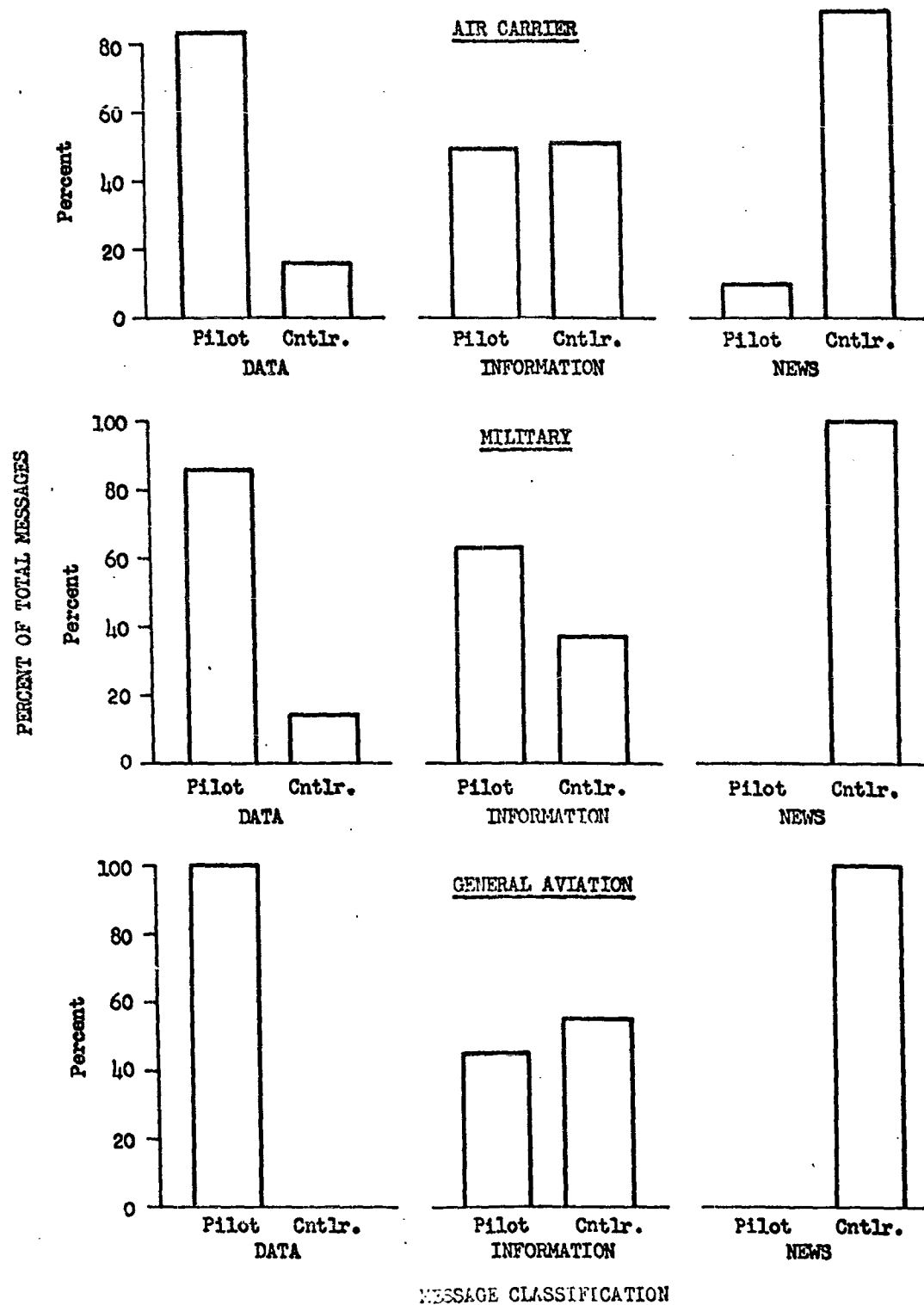
Figure I-86

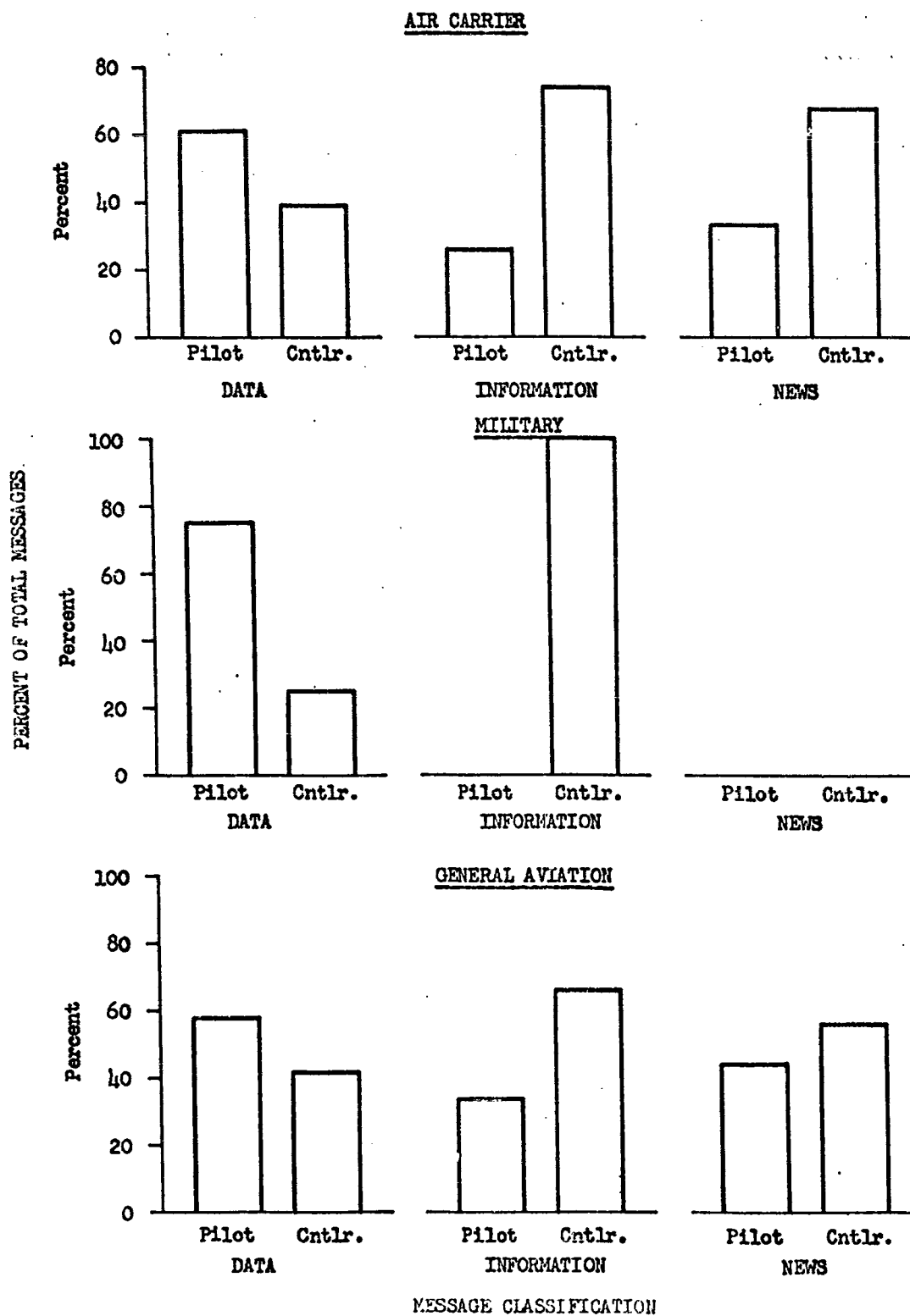
PILOT/GROUND CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/LOCAL CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/ANC APPROACH CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/RADAR APPROACH CONTROLLER PROPORTION OF MESSAGES BY ORIGINATOR

PILOT/ANC DEPARTURE CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/RADAR DEPARTURE CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/CENTER CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

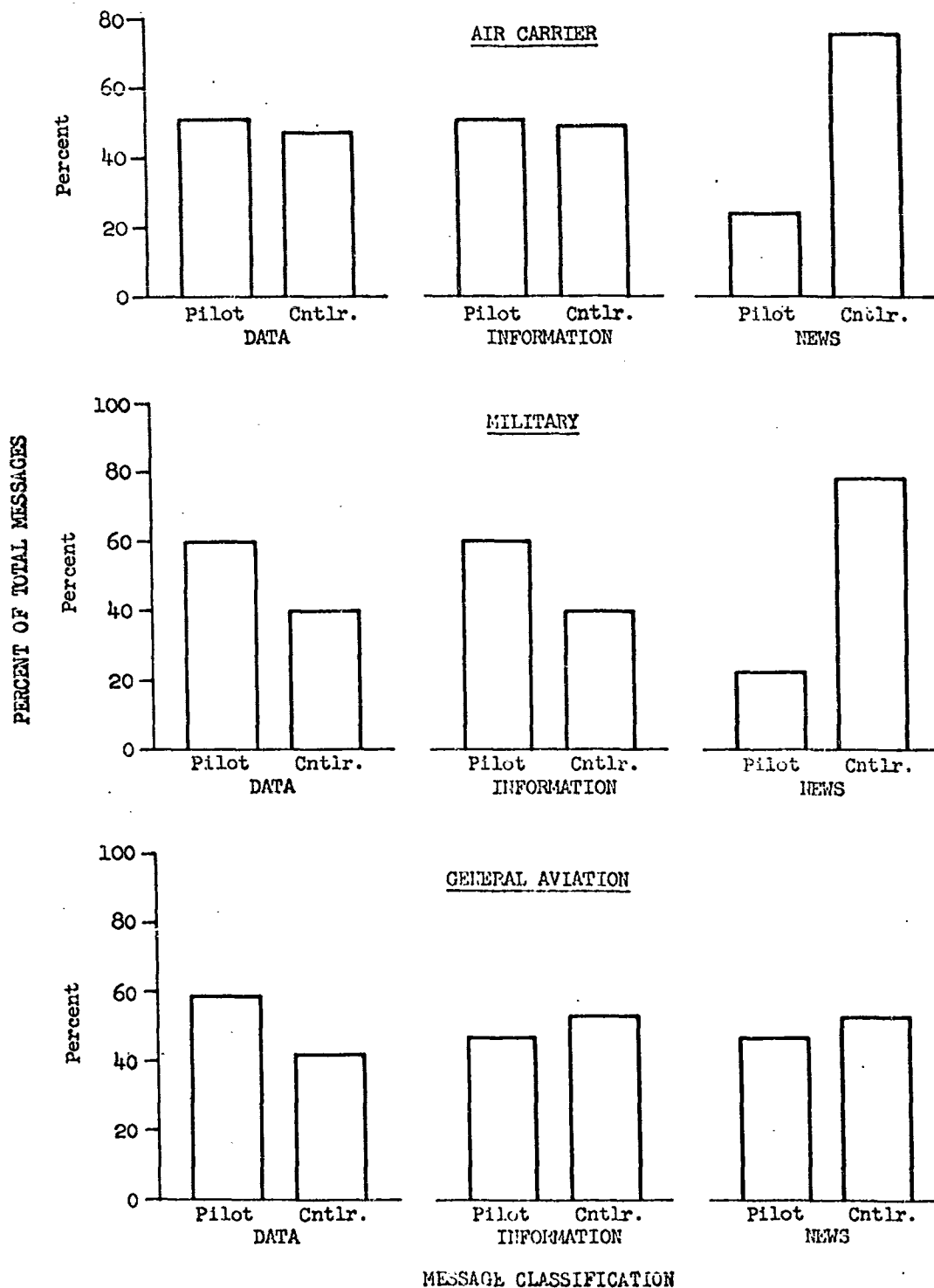


Figure I-93

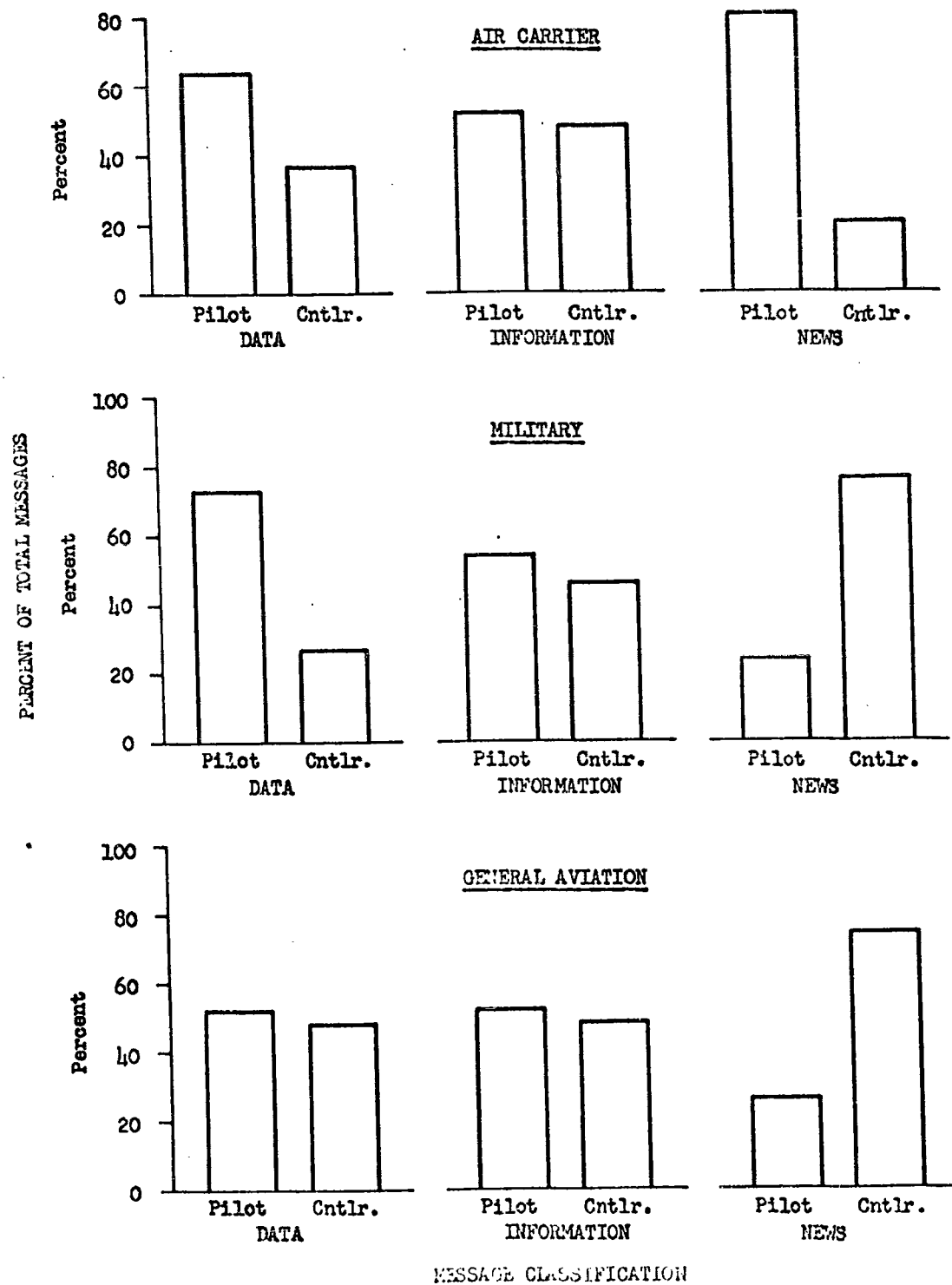
PILOT/D2 RADIO CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

Figure I-94

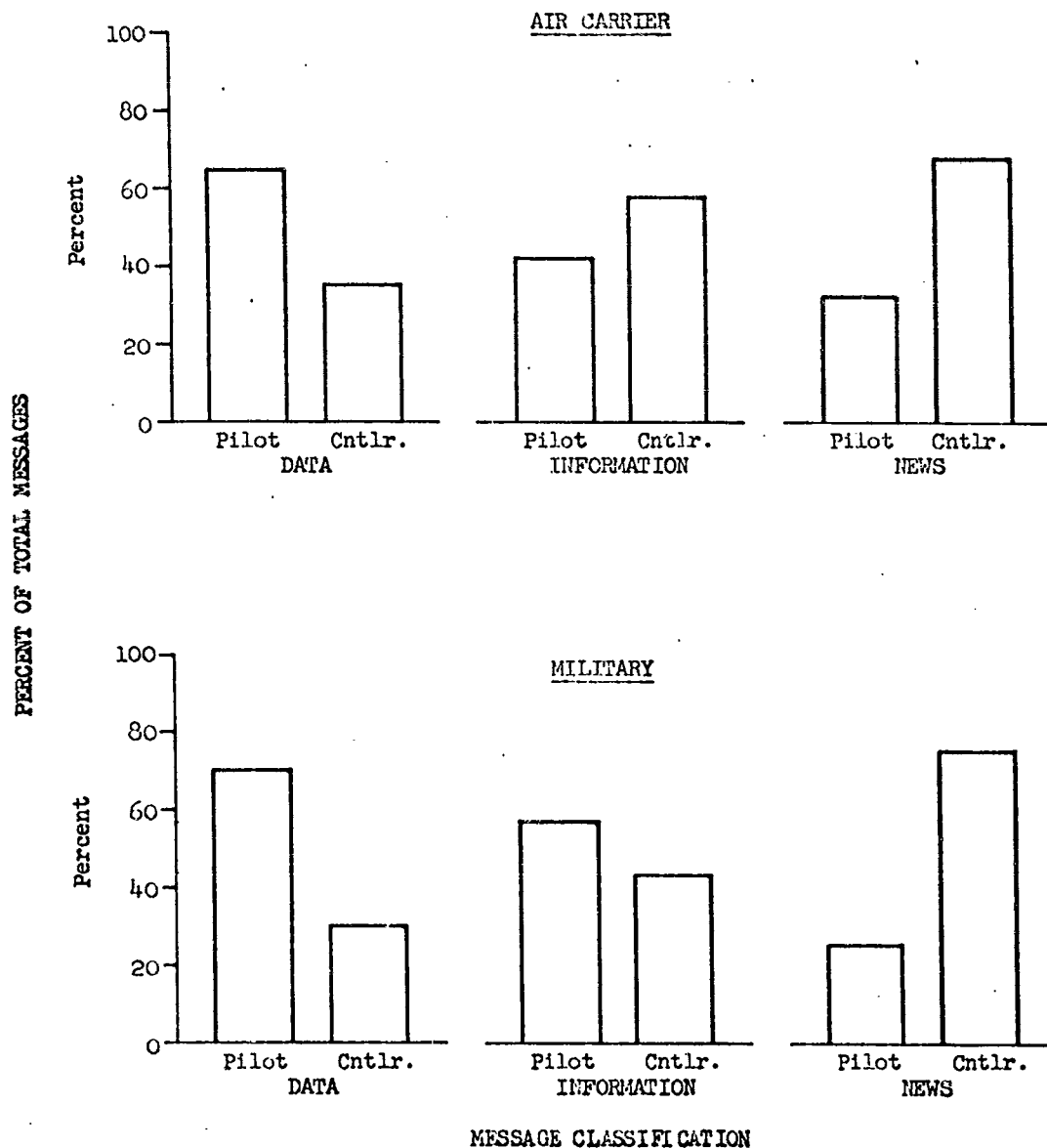
PILOT/D3 RADIO CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

Figure I-95

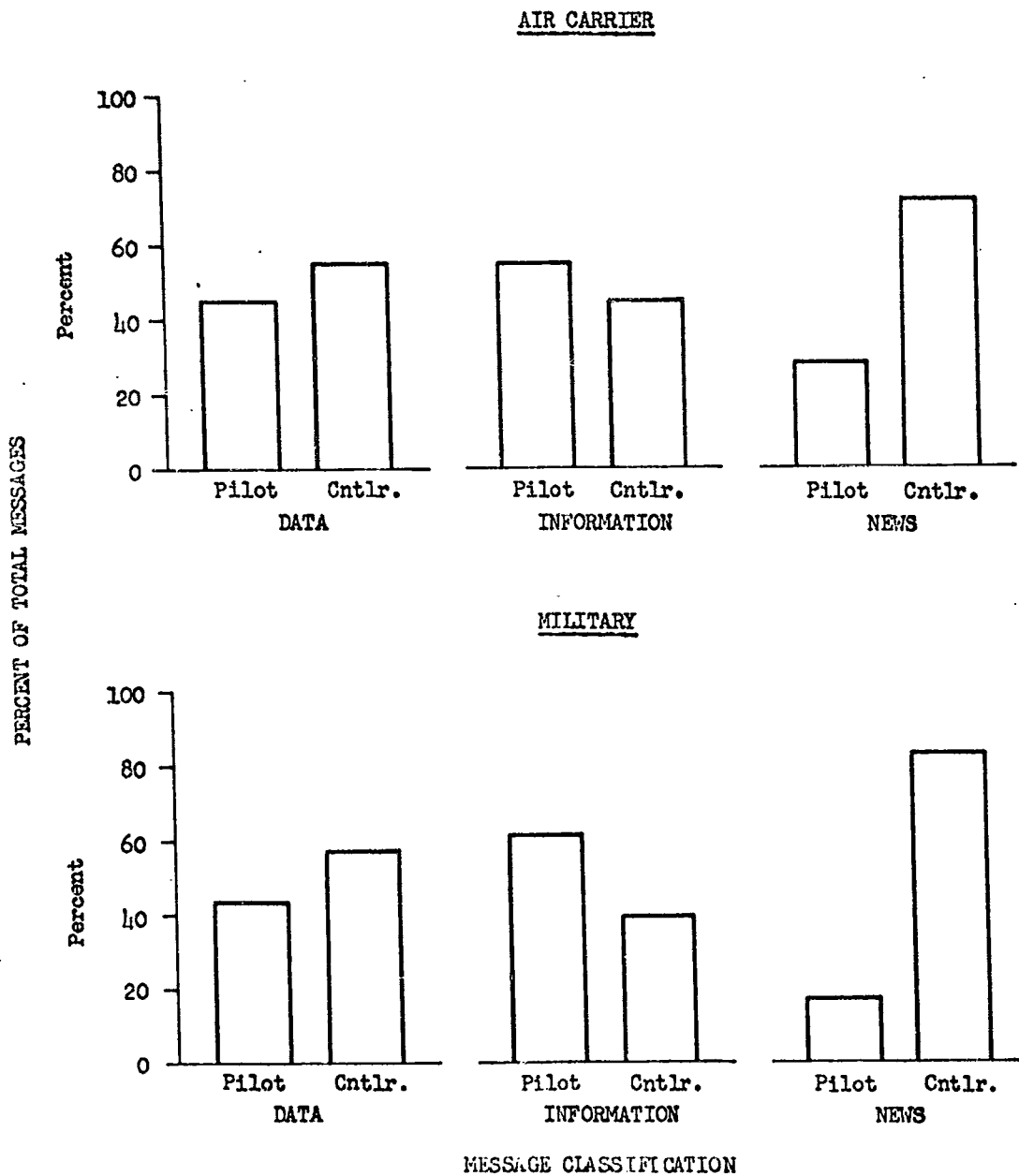
PILOT/RADAR 1A CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

Figure I-96

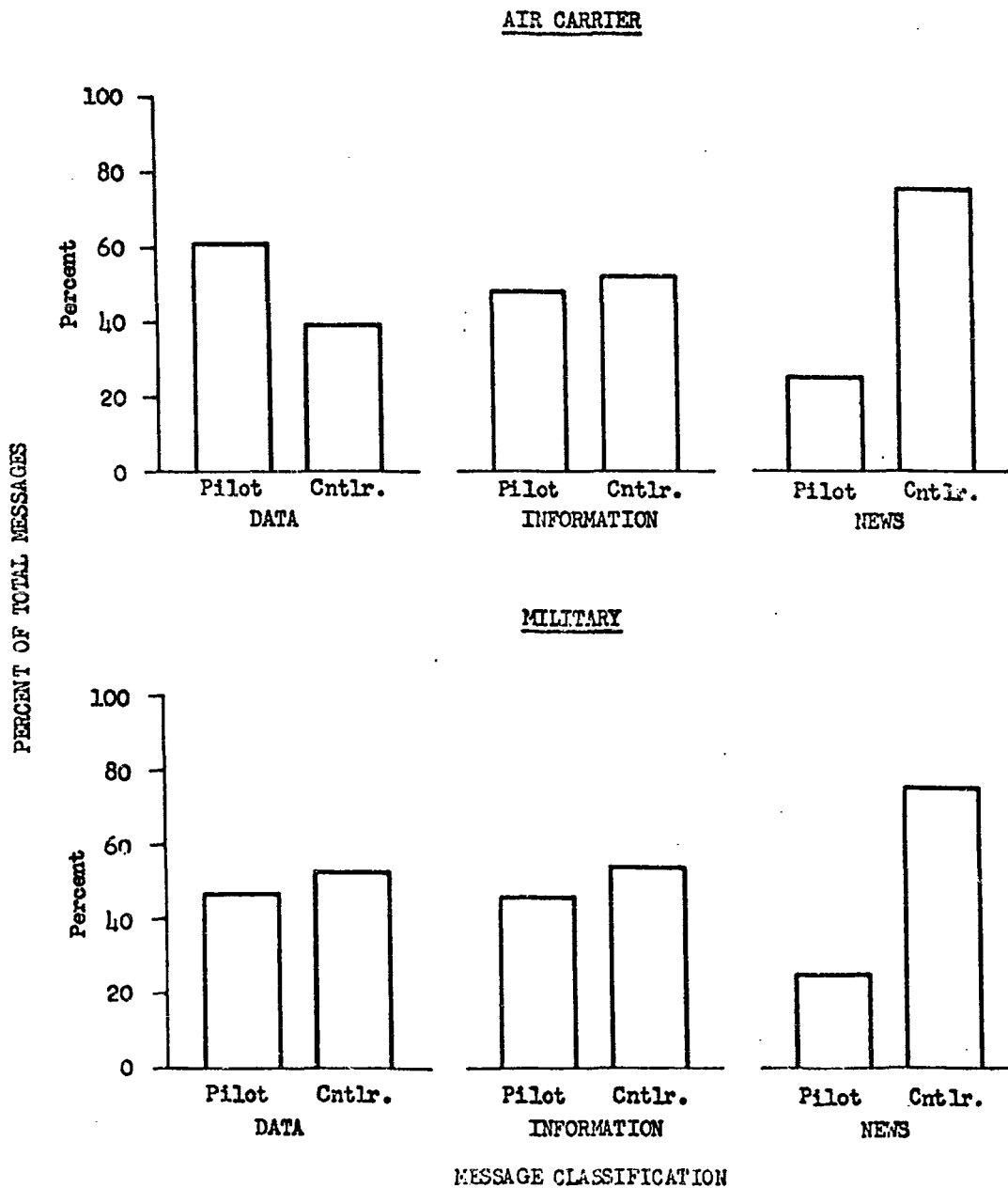
PILOT/RADAR 1B CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

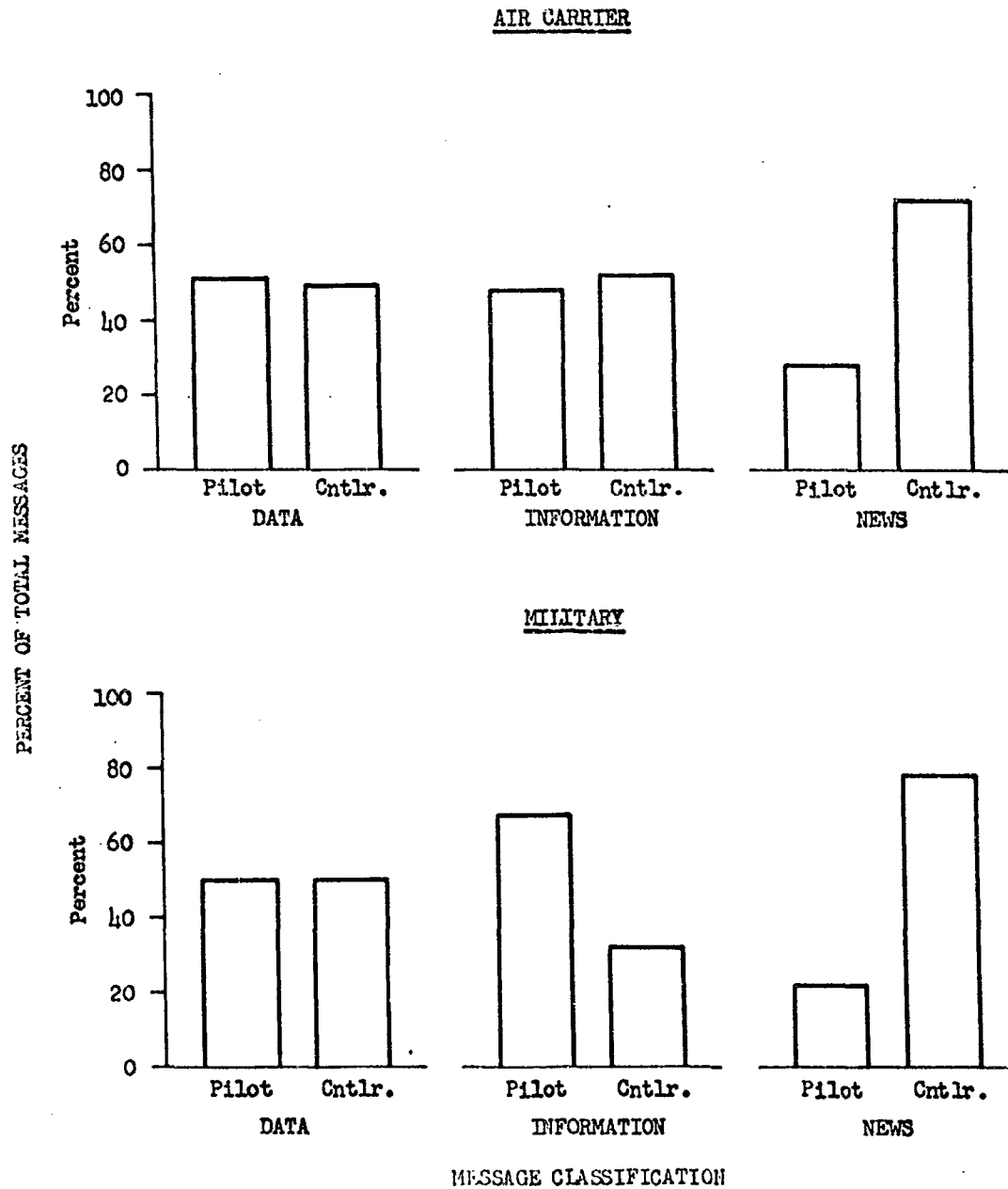
Figure I-97PILOT/RADAR 2A CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

Figure I-98

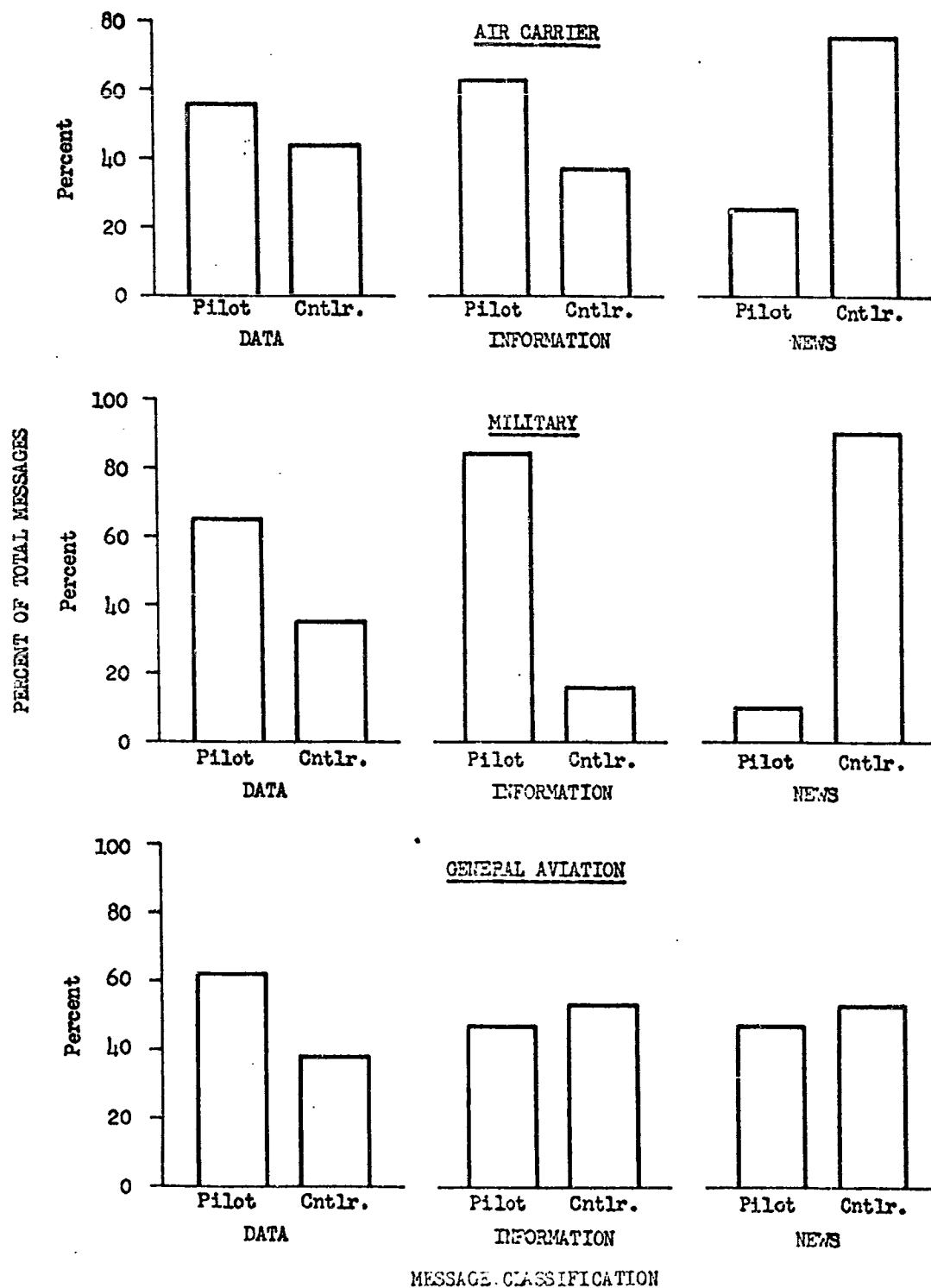
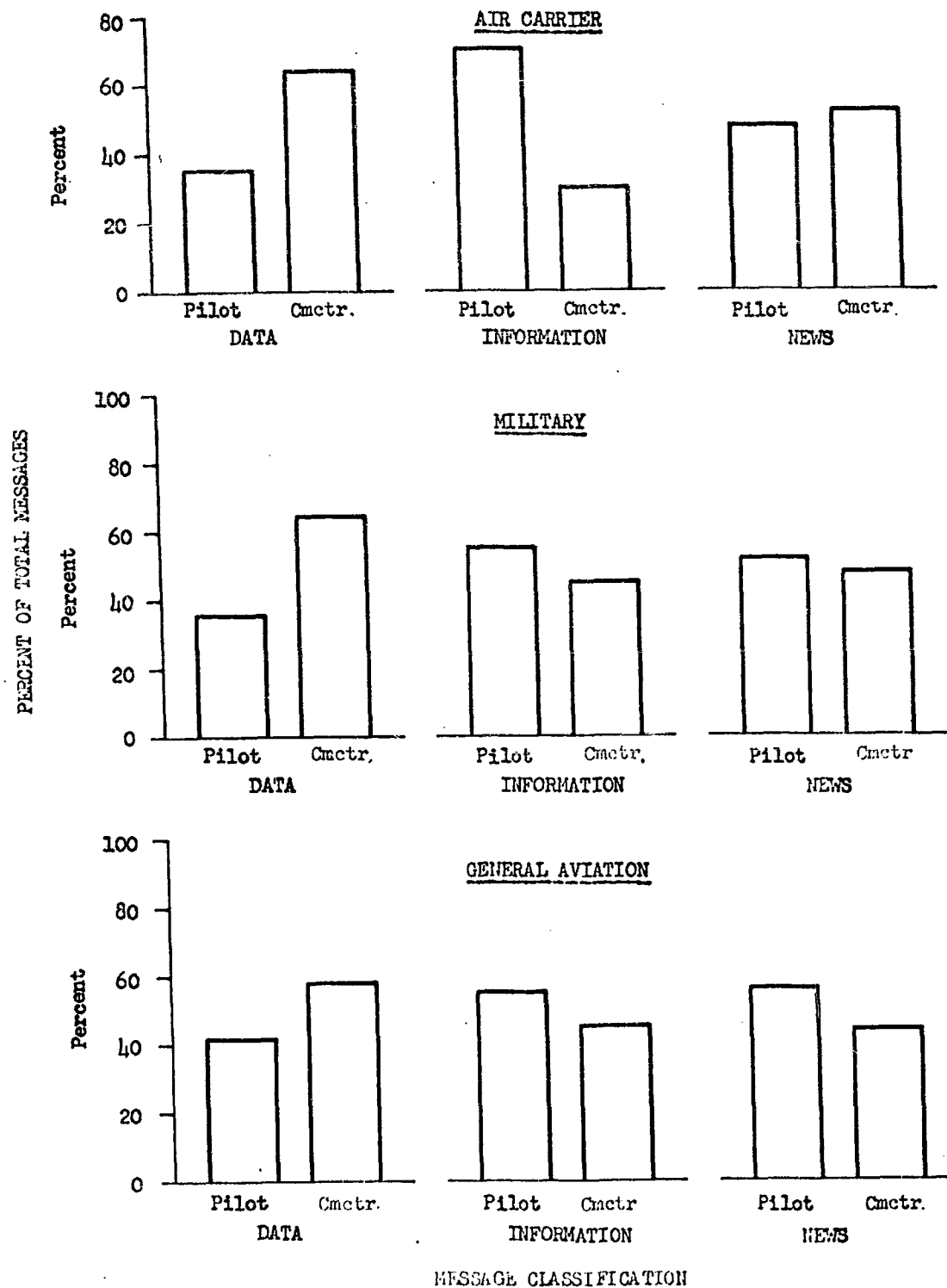
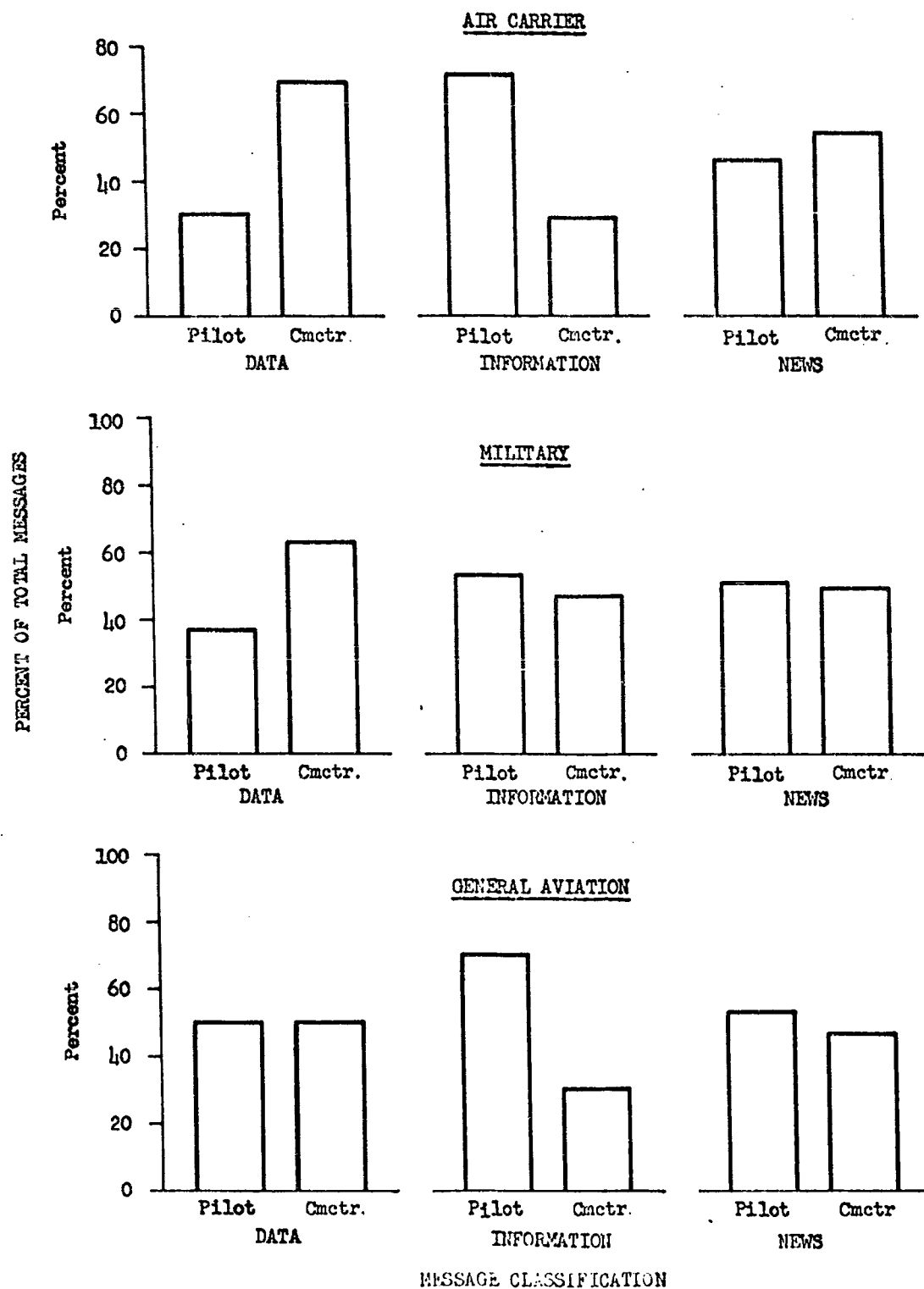
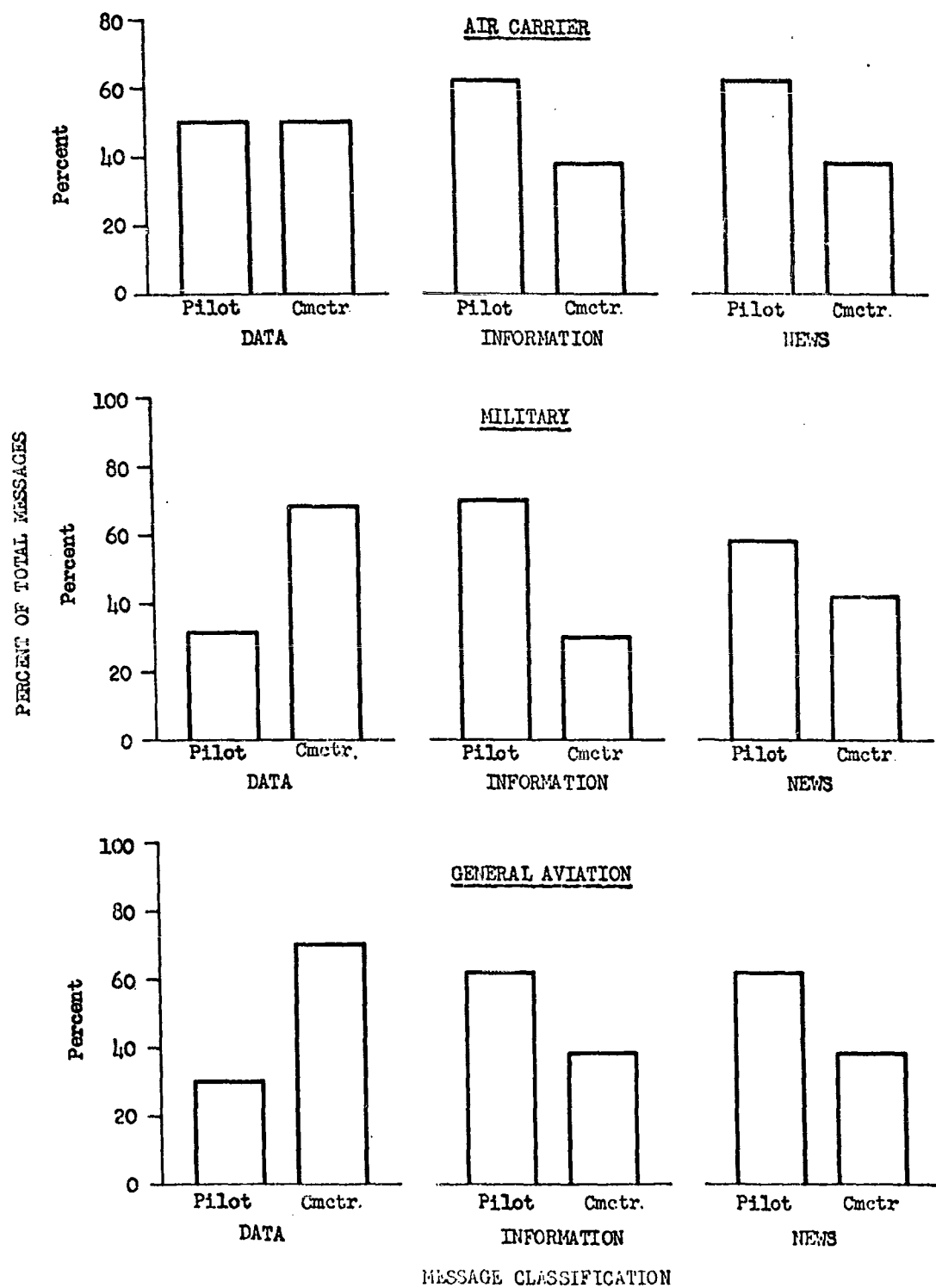
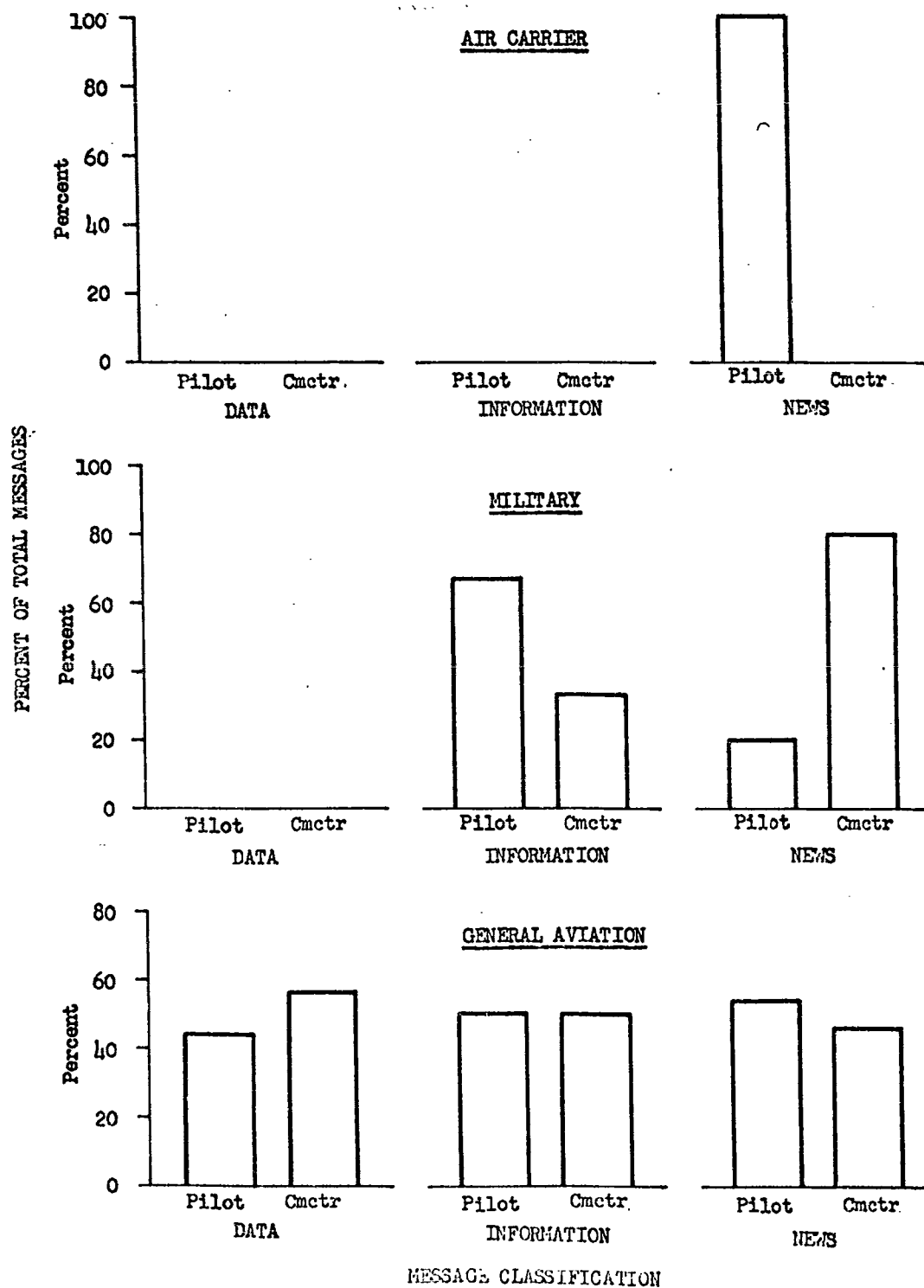
TM 339-84
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Page 137PILOT/RADAR 2B CONTROLLER PROPORTION OF MESSAGES BY AVIATION CATEGORY

Figure I-99

PILOT/STATION COMMUNICATOR PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/STATION POSITION D COMMUNICATOR PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/STATION POSITION C COMMUNICATOR PROPORTION OF MESSAGES BY AVIATION CATEGORY

PILOT/STATION POSITION B COMMUNICATOR PROPORTION OF MESSAGES BY AVIATION CATEGORY

SECTION II

TIME-RELATED VOICE COMMUNICATIONS MEASURES

Since the time intervals involved in transferring information to air traffic of varying density are clearly necessary in analyzing and describing an ATC voice communications system, considerable effort was devoted to obtaining time-related and traffic density data. These basic data are presented in this section in both tabular and chart form.

A. TIME-RELATED DATA TABLES

The basic data were obtained by measuring the length of each recorded contact, the number of contacts in a given time interval, and the number of aircraft contacted in a given time interval. (A contact is defined to commence with the initial call-up and to terminate with the final acknowledgment.) A number of measures, normalized with respect to length of sample interval, were then obtained.

An overall view of the totals for the control positions is given in Tables II-1, II-2, and II-3. For these tables the basic time interval was the total-sample time interval. For example, Table II-1 shows that the total Ground Control data sample for 1959 was 10 hours. The statistics are broken down by aviation category, with an overall statistic also given for each measure. The first column shows the percentage of all R/T communications time which was consumed in dealing with each aviation category. It should be noted here that the R/T communications time includes both talking and listening time for the controller (or pilot) in the course of a contact. The remaining columns in these three tables are self-descriptive.

Tables II-4 through II-18 yield a detailed breakdown of the time-related data by aviation category and with respect to three time intervals: one-half hour, one hour, and two hours. The data and time for each sample are given and the half-hour and one-hour data are presented chronologically within each two-hour sample period.

CONVAIR/POMONA

Table I

TOWER

R/T COMMUNICATIONS

POSITION AND SAMPLE SIZE	% COMPOSITION OF COMMUNICATIONS TIME				NUMBER OF CONTACTS					AVERAGE PER V	
	AC	MIL	GA	GV	AC	MIL	GA	GV	TOTAL	AC	MIL
GROUND CONTROL (10 Hours - 1959)	56.6	13.5	16.5	13.4	673	128	232	224	1257	12.2	15.2
GROUND CONTROL (4 Hours - 1960)	50.2	6.5	25.8	17.6	327	31	141	137	636	9.6	13.1
LOCAL CONTROL (10 Hours - 1959)	62.5	11.0	26.5		1012	154	317		1483	8.7	10.0
LOCAL CONTROL (2 Hours - 1960)	57.7	7.8	34.4		440	42	227		709	6.7	9.9
APPROACH CONTROL (ANC) (12 Hours - 1959)	87.8	11.4	0.8		777	69	6		852	12.6	18.4
APPROACH CONTROL (RADAR) (5 Hours - 1960)	74.6	5.3	21.0		533	32	137		702	11.6	13.9
DEPARTURE CONTROL (ANC) (12 Hours - 1959)	95.1	3.4	1.5		554	11	5		570	10.0	17.9
DEPARTURE CONTROL (RADAR) (4 Hours - 1960)	89.5	1.0	9.5		274	3	32		309	10.4	11.0

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Table II-1

TOWER

R/T COMMUNICATIONS MEASURES TOTALS

NUMBER OF CONTACTS					AVERAGE CONTACT TIME PER VEHICLE (SECONDS)					NUMBER OF PLANES CONTACTED				AV. TOTAL TIME PER PLANE CONTACTED (SECONDS)				AV. N PER	
AC	MIL	GA	GV	TOTAL	AC	MIL	GA	GV	OVERALL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL
673	128	232	224	1257	12.2	15.2	10.3	8.6	11.5	277	41	73	391	29.6	47.6	32.6	32.0	2.43	3.4
327	31	141	137	636	9.6	13.1	11.5	8.0	9.9	169	11	64	244	18.6	36.9	25.3	21.2	1.93	2.4
1012	154	317		1483	8.7	10.0	11.7		9.4	261	29	83	373	33.6	53.1	44.8	37.6	3.88	5.4
440	42	227		709	6.7	9.5	7.8		7.2	86	8	46	140	34.0	50.1	38.3	36.6	5.12	5.4
777	69	6		852	12.6	18.4	16.1		13.1	142	11	5	158	69.0	115.2	19.3	70.6	5.47	6.4
533	32	137		702	11.6	13.9	12.9		12.0	74	3	20	97	83.6	148.3	88.1	86.5	7.20	10.4
554	11	5		570	10.0	17.9	17.4		10.3	144	3	2	149	38.7	65.6	43.5	39.3	3.85	3.4
274	3	32		309	10.4	11.0	9.5		10.4	70	1	7	78	40.9	32.9	43.4	41.0	3.91	3.4

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Table II-1

TOWER

COMMUNICATIONS MEASURES TOTALS

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	AVERAGE CONTACT TIME PER VEHICLE (SECONDS)					NUMBER OF PLANES CONTACTED				AV. TOTAL TIME PER PLANE CONTACTED (SECONDS)				AV. NUMBER OF CONTACTS PER PLANE CONTACTED			
	AC	MIL	GA	CV	OVERALL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
57	12.2	15.2	10.3	8.6	11.5	277	41	73	391	29.6	47.6	32.6	32.0	2.43	3.12	3.18	2.64
36	9.6	13.1	11.5	8.0	9.9	169	11	64	244	18.6	36.9	25.3	21.2	1.93	2.82	2.20	2.05
83	8.7	10.0	11.7		9.4	281	29	83	373	33.6	53.1	44.8	37.6	3.88	5.31	3.82	3.98
09	6.7	9.5	7.8		7.2	86	8	46	140	34.0	50.1	38.3	36.6	5.12	5.25	4.93	5.06
52	12.6	18.4	16.1		13.1	142	11	5	158	69.0	115.2	19.3	70.6	5.47	6.27	1.20	5.39
02	11.6	13.9	12.9		12.0	74	3	20	97	83.6	148.3	88.1	86.5	7.20	10.67	6.85	7.24
570	10.0	17.9	17.4		10.3	144	3	2	149	38.7	65.6	43.5	39.3	3.85	3.67	2.50	3.82
309	10.4	11.0	9.5		10.4	70	1	7	78	40.9	32.9	43.4	41.0	3.91	3.00	4.57	3.96

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CONVAIR/POMONA

Table I

CENTE

R/T COMMUNICATIONS

POSITION AND SAMPLE SIZE	% COMPOSITION OF COMMUNICATIONS TIME			NUMBER OF CONTACTS				AVERAGE P (	
	AC	MIL	GA	AC	MIL	GA	TOTAL	AC	MIL
D2 RADIO CONTROL (14 Hours - 1959)	83.0	12.2	4.8	598	61	23	682	18.2	26
D2 RADIO CONTROL (4 Hours - 1960)	86.3	11.6	2.1	361	33	5	399	16.7	24
D3 RADIO CONTROL (22 Hours - 1959)	72.7	27.2	--	253	37	--	290	17.1	43
D3 RADIO CONTROL (3 Hours - 1960)	65.4	8.7	25.9	115	15	19	149	14.7	15
RADAR 1A CONTROL (10 Hours - 1959)	89.1	10.9	--	128	14	--	142	21.2	23
RADAR 1B CONTROL (10 Hours - 1959)	97.2	2.8	--	529	15	--	544	17.0	17
RADAR 1B CONTROL (2 Hours - 1960)	76.6	15.6	7.7	125	16	12	153	15.4	24
RADAR 2A CONTROL (10 Hours - 1959)	75.1	24.8	--	117	51	--	168	24.3	18
RADAR 2B CONTROL (8 Hours - 1959)	80.4	13.3	6.3	172	26	7	205	24.0	26

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Table II-2

CENTERR/T COMMUNICATIONS MEASURES TOTALS

OF TIME GA	NUMBER OF CONTACTS				AVERAGE CONTACT TIME PER PLANE (SECONDS)				NUMBER OF PLANES CONTACTED				AVERAGE TOTAL TIME PER PLANE CONTACTED (SECONDS)			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
4.8	598	61	23	682	18.2	26.2	27.3	19.2	123	19	6	148	88.5	84.2	104.5	88.6
2.1	361	33	5	399	16.7	24.5	29.6	17.5	59	11	3	73	102.0	73.5	49.3	95.5
--	253	37	--	290	17.1	43.8	--	20.5	63	11	--	74	68.7	147.4	--	80.4
25.9	115	15	19	149	14.7	15.0	35.1	17.3	27	3	2	32	62.4	75.2	333.9	80.6
--	128	14	--	142	21.2	23.7	--	21.5	33	2	--	35	82.4	165.6	--	87.1
--	529	15	--	544	17.0	17.1	--	17.0	79	3	--	82	113.6	85.7	--	112.6
7.7	125	16	12	153	15.4	24.5	16.2	16.4	25	4	1	30	76.9	98.2	194.4	83.7
--	117	51	--	168	24.3	18.5	--	22.5	30	14	--	44	94.9	67.2	--	86.1
6.3	172	26	7	205	24.0	26.2	46.0	25.1	37	6	3	46	111.7	113.7	107.2	111.7

2

Table II-2

CENTER

COMMUNICATIONS MEASURES TOTALS

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AVERAGE CONTACT TIME PER PLANE (SECONDS)				NUMBER OF PLANES CONTACTED				AVERAGE TOTAL TIME PER PLANE CONTACTED (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED			
AC	MIL	GA	OVERALL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
18.2	26.2	27.3	19.2	123	19	6	148	88.5	84.2	104.5	88.6	4.86	3.21	3.83	4.61
16.7	24.5	29.6	17.5	59	11	3	73	102.0	73.5	49.3	95.5	6.12	3.00	1.67	5.47
17.1	43.8	--	20.5	63	11	--	74	68.7	147.4	--	80.4	4.02	3.36	--	3.92
14.7	15.0	35.1	17.3	27	3	2	32	62.4	75.2	333.9	80.6	4.26	5.00	9.50	4.66
21.2	23.7	--	21.5	33	2	--	35	82.4	165.6	--	87.1	3.88	7.00	--	4.06
17.0	17.1	--	17.0	79	3	--	82	113.6	85.7	--	112.6	6.70	5.00	--	6.63
15.4	24.5	16.2	16.4	25	4	1	30	76.9	98.2	194.4	83.7	5.00	4.00	12.00	5.10
24.3	18.5	--	22.5	30	14	--	44	94.9	67.2	--	86.1	3.90	3.64	--	3.82
24.0	26.2	46.0	25.1	37	6	3	46	111.7	113.7	107.2	111.7	4.65	4.33	2.33	4.46

3

POSITION AND SAMPLE SIZE	% COMPOSITION OF COMMUNICATIONS TIME			NUMBER OF CONTACTS				AVERAGE PER (SE	
	AC	MIL	GA	AC	MIL	GA	TOTAL	AC	MIL
POSITION D (20 Hours - 1959)	27.5	67.0	5.5	151	391	27	569	34.4	32.4
POSITION C (18 Hours - 1959)	12.6	60.8	26.6	29	64	38	131	24.6	53.7
POSITION B (24 Hours - 1959)	0.6	3.7	95.7	2	5	100	107	15.6	36.8

1

Table II-3

STATION

R/T COMMUNICATIONS MEASURES TOTALS

NUMBER OF CONTACTS				AVERAGE CONTACT TIME PER PLANE (SECONDS)				NUMBER OF PLANES CONTACTED				AVERAGE TOTAL TIME PER PLANE CONTACTED (SECONDS)				
AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	
151	391	27	569	34.4	32.4	38.8	33.2	46	108	19	173	112.9	117.3	55.2	109.3	3
29	64	38	131	24.6	53.7	39.5	43.2	19	29	27	75	37.6	118.5	55.6	75.4	1
2	5	100	107	15.6	36.8	47.7	46.6	2	3	75	80	15.6	61.4	63.6	62.3	1

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Table II-3

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STATIONCOMMUNICATIONS MEASURES TOTALS

STATION	AVERAGE CONTACT TIME PER PLANE (SECONDS)				NUMBER OF PLANES CONTACTED				AVERAGE TOTAL TIME PER PLANE CONTACTED (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED			
	AC	MIL	GA	OVERALL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
69	34.4	32.4	38.8	33.2	46	108	19	173	112.9	117.3	55.2	109.3	3.28	3.62	1.42	3.29
31	24.6	53.7	39.5	43.2	19	29	27	75	37.6	118.5	55.6	75.4	1.53	2.21	1.41	1.75
07	15.6	36.8	47.7	46.6	2	3	75	80	15.6	61.4	63.6	62.3	1.00	1.67	1.33	1.34

3

Table II-4
R/T COMMUNICATIONS MEASURES FOR GROUND CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER VEHICLE WITHIN INTERVAL (SECONDS)			
		AC MIL GA GV				AC MIL GA GV				AC MIL GA GV			
		AC	MIL	GA	GV	AC	MIL	GA	GV	AC	MIL	GA	GV
30 Min. Intervals 15 May 1959 (0800-1000)	44 71 67 56	54 50 55 37	32 20 22 23	6 20 12 15	8 10 11 25	33 43 44 19	13 24 28 12	4 21 12 8	8 15 16 20	12.7 14.9 15.2 16.8	19.6 18.3 9.3 16.4	12.6 12.1 12.4 16.2	7.5 8.7 8.4 10.7
20 May 1959 (1400-1600)	44 48 45 45	63 74 61 51	3 4 1 12	30 10 29 24	4 11 10 13	45 54 39 34	3 4 1 7	23 8 28 20	6 9 13 13	11.2 11.9 12.6 12.1	7.1 8.4 6.3 14.2	10.4 10.8 8.3 9.7	5.0 11.5 6.1 7.9
23 May 1959 (0000-0200)	32 27 9 6	68 85 90 51	— — — —	8 4 — —	24 12 10 49	32 34 10 4	— — — —	4 1 — —	18 7 2 6	12.2 12.2 14.4 13.4	— — — —	11.2 17.2 — —	7.7 8.0 7.7 8.5
23 May 1959 (1400-1600)	35 52 46 40	56 53 44 61	14 17 18 20	20 21 26 12	10 9 12 7	36 43 37 32	5 9 9 5	13 18 24 6	6 10 17 5	9.8 11.5 9.8 10.1	17.0 17.4 16.2 21.1	9.8 11.0 8.9 10.6	11.0 8.6 6.0 7.1
23 May 1959 (1600-1800)	45 51 43 8	69 58 33 72	6 12 15 19	9 8 27 7	17 22 24 1	53 41 28 12	1 9 7 1	10 5 25 2	15 22 15 1	10.5 13.0 9.2 17.8	46.3 12.0 16.6 57.5	7.1 15.7 8.5 10.0	9.1 9.2 12.5 3.9
27 Feb. 1960 (1400-1600)	35 42 42 47	49 44 42 44	3 10 7 12	38 25 34 29	10 20 17 15	32 40 39 39	1 3 4 7	22 18 23 24	10 19 15 16	9.7 8.4 8.3 9.3	19.6 26.5 13.4 13.9	11.0 10.5 11.2 9.8	6.2 8.2 8.4 7.9
27 Feb. 1960 (1600-1800)	44 58 48 33	62 50 51 60	4 6 5 2	5 21 39 17	28 23 6 20	45 35 54 43	4 4 6 2	4 17 24 9	26 25 8 18	11.0 15.0 8.1 8.3	9.0 15.9 7.1 6.8	9.5 12.7 14.0 11.5	8.6 9.7 5.9 6.6

Table II-4 (continued)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL						NUMBER OF CONTACTS PER INTERVAL						AVERAGE CONTACT TIME PER VEHICLE WITHIN INTERVAL (SECONDS)					
		AC			GV			AC			GV			AC			GV		
		MIL	GA	GV	MIL	GA	GV	MIL	GA	GV	MIL	GA	GV	MIL	GA	GV	MIL	GA	GV
1 Hr. Intervals 15 May 1959 (0800-1000)	57 62	51 48	25 22	15 14	9 17	76 63	27 40	25 20	23 36	151 159	13.9 15.6	18.9 11.4	12.2 14.0	8.3 9.7	13.7 13.0				
20 May 1959 (1100-1600)	46 47	69 56	3 6	20 26	8 11	99 73	7 8	31 48	15 26	152 155	11.5 12.4	7.8 13.1	10.5 8.8	8.9 7.0	10.9 10.4				
23 May 1959 (0000-0200)	29 8	76 75	-- --	6 --	18 25	66 14	-- --	5 --	25 8	96 22	12.2 14.1	-- --	12.4 --	7.8 8.3	11.0 12.0				
23 May 1959 (1100-1600)	44 43	54 51	15 19	21 21	10 10	79 69	14 14	31 30	16 22	140 135	10.7 9.9	17.3 18.0	10.5 9.3	9.5 6.2	11.2 10.0				
23 May 1959 (1600-1800)	48 30	63 44	9 16	9 22	19 18	94 40	10 8	15 27	37 16	156 91	11.6 11.8	15.4 21.7	10.0 8.6	9.1 12.0	11.1 11.7				
27 Feb. 1960 (1400-1600)	39 45	46 43	7 10	31 31	16 16	72 78	4 11	40 47	29 31	145 167	9.0 8.8	24.8 13.7	10.8 10.5	7.5 8.1	9.6 9.5				
27 Feb. 1960 (1600-1800)	51 40	56 55	5 4	14 30	25 11	80 97	8 8	21 33	51 26	160 164	12.8 8.2	12.4 7.1	12.1 13.3	9.1 6.4	11.5 8.9				
2 Hr. Intervals 15 May 1959	60	49	23	14	13	139	67	45	59	310	14.7	14.4	13.0	9.1	13.3				
20 May 1959	46	62	5	23	10	172	15	79	41	307	11.9	10.7	9.5	7.7	10.6				
23 May 1959	19	76	--	5	20	80	--	5	33	118	12.5	--	12.4	7.9	11.2				
23 May 1959	43	52	17	21	10	148	28	61	38	275	10.3	17.6	9.9	7.6	10.6				
23 May 1959	40	56	12	14	19	134	18	42	53	247	11.6	18.2	9.2	10.0	11.3				
27 Feb. 1960	42	45	8	31	16	150	15	87	60	312	8.9	16.7	10.6	7.8	9.5				
27 Feb. 1960	46	55	5	21	19	177	16	54	77	324	10.3	9.7	12.8	8.2	10.2				

Table II-4 (continued)
R/T COMMUNICATIONS MEASURES FOR GROUND CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	MIL		GA		MIL		GA		MIL		GA	
	AC	TOTAL	AC	TOTAL	AC	TOTAL	AC	TOTAL	AC	TOTAL	AC	TOTAL
30 min. Intervals												
15 May 1959 (0800-1000)	15	4	3	22	28.0	63.5	16.9	33.0	2.20	3.25	1.33	2.27
	20	7	7	34	32.0	36.6	36.4	33.9	2.15	2.00	3.00	2.29
	19	6	6	31	35.1	43.4	24.9	34.7	2.32	4.66	2.00	2.71
	10	4	6	20	31.9	49.1	21.7	32.2	1.90	3.00	1.33	1.95
20 May 1959 (1400-1600)	18	3	6	27	27.9	7.1	39.6	28.2	2.50	1.00	3.83	2.63
	23	1	3	27	27.9	33.4	28.9	28.2	2.35	4.00	2.67	2.52
	20	1	8	29	24.6	6.3	28.9	25.2	1.95	1.00	3.50	2.34
	12	2	5	19	34.3	49.6	38.6	37.0	2.83	3.50	4.00	3.21
23 May 1959 (0000-0200)	17	-	2	19	23.0	-	22.3	22.9	1.88	-	2.00	1.89
	18	-	1	19	23.0	-	17.2	22.7	1.89	-	1.00	1.84
	8	-	-	8	18.0	-	-	18.0	1.25	-	-	1.25
	3	-	-	3	17.9	-	-	17.9	1.33	-	-	1.33
23 May 1959 (1400-1600)	16	3	4	23	21.9	28.4	31.8	24.5	2.25	1.67	3.25	2.35
	22	3	6	31	22.5	52.1	33.1	29.0	1.95	3.00	3.00	2.26
	16	3	9	28	22.6	48.8	23.8	25.8	2.31	3.00	2.67	2.50
	15	2	2	19	21.6	52.9	31.8	32.9	2.13	2.50	3.00	2.26
23 May 1959 (1600-1800)	19	1	3	23	29.3	46.3	23.5	29.3	2.79	1.00	3.33	2.78
	17	3	3	23	31.2	35.9	26.2	31.2	2.41	3.00	1.67	2.39
	11	3	7	21	23.4	38.8	30.2	27.9	2.54	2.33	3.57	2.86
	6	1	1	8	35.6	57.5	20.1	36.4	2.00	1.00	2.00	1.87
27 Feb. 1960 (1400-1600)	22	1	14	37	14.0	19.6	17.2	15.4	1.45	1.00	1.57	1.49
	22	2	9	33	15.3	39.8	21.0	18.3	1.82	1.50	2.00	1.85
	24	2	12	38	13.5	26.8	21.4	23.3	1.62	2.00	1.92	1.75
	22	3	11	36	16.5	32.4	21.4	19.3	1.77	2.33	2.18	1.94
27 Feb. 1960 (1600-1800)	25	2	4	31	19.8	17.9	9.5	18.4	1.80	2.00	1.00	1.71
	19	1	8	28	27.7	63.6	27.1	28.8	1.84	4.00	2.12	2.00
	25	1	12	38	17.6	42.8	28.0	21.5	2.16	6.00	2.00	2.21
	20	2	4	26	17.9	6.8	25.8	18.3	2.15	1.00	2.25	2.08

Table II-4 (continued)
R/T COMMUNICATIONS MEASURES FOR GROUND CONTROL POSITION

DATE AND TIME	NUMBER OF PLANES CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
2 Hr. Intervals												
15 May 1959 (0300-1000)	32 27	8 9	10 10	50 46	33.2 36.5	63.8 50.8	30.6 27.9	33.3 37.4	2.38 2.33	3.37 4.44	2.50 2.00	2.56 2.67
20 May 1959 (1400-1600)	37 21	4 3	8 12	49 46	30.9 29.1	13.6 35.1	40.6 35.4	31.1 31.1	2.68 2.35	1.75 2.67	3.87 4.00	2.79 2.80
23 May 1959 (0000-0200)	32 11	- -	2 --	34 11	25.2 17.9	-- --	30.9 --	25.4 17.9	2.06 1.27	-- --	2.50 --	2.09 1.27
23 May 1959 (1400-1600)	37 28	6 5	9 10	52 43	22.9 24.5	40.2 50.4	36.2 27.8	27.1 28.2	2.14 2.46	2.33 2.80	3.44 3.00	2.38 2.62
23 May 1959 (1600-1800)	32 15	4 4	6 8	42 27	33.9 31.4	38.5 43.4	24.8 29.0	33.1 32.5	2.94 2.67	2.50 2.00	2.50 3.37	2.83 2.78
27 Feb. 1960 (1400-1600)	43 44	2 4	21 20	66 68	15.0 15.6	49.6 37.6	20.5 24.6	17.8 19.5	1.67 1.77	2.00 2.75	1.90 2.35	1.76 2.00
27 Feb. 1960 (1600-1800)	41 44	3 3	11 15	55 62	24.9 18.1	33.1 16.6	23.1 29.3	25.0 20.8	1.95 2.20	2.67 2.67	1.91 2.20	1.98 2.23
2 Hr. Intervals												
15 May 1959	59	17	20	96	34.7	56.9	29.2	37.5	2.36	3.94	2.25	3.23
20 May 1959	66	7	20	93	31.0	22.8	37.5	31.8	2.61	2.14	3.95	3.30
23 May 1959	42	-	2	44	23.8	--	30.9	24.1	1.90	--	2.50	2.68
23 May 1959	64	10	17	91	23.9	49.4	35.5	28.8	2.31	2.80	3.60	3.02
23 May 1959	46	7	14	67	33.9	46.8	27.2	33.6	2.91	2.57	3.00	3.69
27 Feb. 1960	87	6	39	132	15.3	41.6	23.7	19.0	1.72	2.50	2.23	1.91
27 Feb. 1960	82	5	25	112	22.2	31.2	27.7	23.8	2.16	3.20	2.16	2.21

Table II-5
R/T COMMUNICATIONS MEASURES FOR LOCAL CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)							
		AC		MIL		GA		TOTAL		AC		MIL		GA		OVERALL	
		AC	MIL	GA	TOTAL	AC	MIL	GA	TOTAL	AC	MIL	GA	TOTAL				
30 min. Intervals																	
21 May 1959 (1100-1600)	60 58 49 41	81 55 46 70	1 10 13 —	18 35 40 30	105 64 37 54	2 12 12 —	18 35 9 18	125 111 58 72	8.3 8.9 11.1 9.6	5.0 9.0 9.8 —	11.0 10.3 39.8 12.2	8.6 9.3 15.3 10.2					
21 May 1959 (1600-1800)	56 52 42 41	67 69 65 46	7 3 4 —	25 28 31 54	75 92 61 40	5 3 5 —	32 23 21 36	112 118 87 76	9.1 7.0 8.1 8.5	14.8 8.3 6.3 —	8.0 11.4 11.1 11.2	9.1 7.9 8.7 9.8					
23 May 1959 (0000-0200)	26 31 5 7	94 82 100 100	1 18 — —	5 — — —	62 62 13 10	1 6 — —	3 — — —	66 68 13 10	7.1 7.5 6.4 12.0	3.3 16.8 — —	8.4 — — —	7.1 8.3 6.4 12.0					
23 May 1959 (1100-1600)	46 58 46 43	61 71 46 63	26 11 22 13	13 18 32 24	46 78 39 62	23 11 21 12	11 21 22 17	80 110 82 91	11.1 9.5 9.9 7.8	9.5 10.3 8.8 8.4	9.6 9.1 12.1 10.9	10.4 9.5 10.2 8.5					
23 May 1959 (1600-1800)	50 39 22 6	70 26 29 71	11 35 27 —	19 39 44 29	70 18 18 6	5 24 12 —	11 21 16 3	86 63 46 9	9.0 10.0 6.3 13.2	19.1 10.3 8.9 —	15.5 13.1 10.8 10.9	10.4 11.2 8.6 12.4					
27 Feb. 1960 (1400-1600)	69 55 81 79	63 70 52 51	3 10 9 10	34 20 39 40	111 97 98 134	1 11 13 17	41 32 63 91	153 140 174 242	7.1 7.2 7.7 5.4	31.7 9.2 10.2 8.0	10.4 6.2 9.2 6.2	8.1 7.1 8.4 5.9					

R/T COMMUNICATIONS MEASURES FOR LOCAL CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC		MIL		AC		MIL		AC		MIL	
		GA	MIL	GA	MIL	GA	MIL	GA	MIL	GA	MIL	GA	MIL
1 Hr. Intervals 21 May 1959 (1400-1600)	59 45	68 57	6 7	26 36	169 91	14 12	53 27	236 130	8.5 10.2	8.5 9.8	10.5 21.4	9.0 12.5	
21 May 1959 (1600-1800)	54 42	68 56	5 2	27 42	167 101	8 5	55 57	230 163	7.9 8.3	12.3 6.3	9.5 11.2	8.4 9.2	
23 May 1959 (0000-0200)	29 6	88 100	10 —	2 —	124 23	7 —	3 —	134 23	7.3 8.8	14.3 —	8.4 —	7.7 8.8	
23 May 1959 (1400-1600)	52 47	66 54	18 18	16 28	124 101	34 33	32 39	190 173	10.1 8.6	9.7 8.7	9.3 11.6	9.9 9.3	
23 May 1959 (1600-1800)	44 18	51 38	22 21	28 41	88 24	29 12	32 19	149 55	9.2 8.0	11.3 8.9	13.9 10.8	10.7 9.2	
27 Feb. 1960 (1400-1600)	62 80	66 51	6 9	28 40	208 232	12 30	73 154	293 416	7.1 6.4	11.0 9.3	8.5 7.4	7.6 6.9	
2 Hr. Intervals 21 May 1959	52	63	6	30	260	26	80	366	9.1	9.1	14.1	10.2	
21 May 1959	48	63	4	34	268	13	112	393	8.1	10.0	10.3	8.8	
23 May 1959	18	90	8	2	147	7	3	157	7.6	14.8	8.4	7.9	
23 May 1959	50	61	18	21	225	67	71	363	9.4	9.2	10.5	9.6	
23 May 1959	33	48	21	31	112	41	51	204	8.9	11.0	12.8	10.3	
27 Feb. 1960	71	58	8	34	440	42	227	709	6.7	9.5	7.8	7.2	

Table II-5 (continued)
R/T COMMUNICATIONS MEASURES FOR LOCAL CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	INTERVAL				INTERVAL				INTERVAL			
	AC	NIL	GA	TOTAL	AC	NIL	GA	OVERALL	AC	NIL	GA	OVERALL
30 min. Intervals												
21 May 1959 (1400-1600)	25	1	7	33	34.8	9.9	28.2	32.6	4.20	2.00	2.57	3.79
	22	2	8	32	25.8	54.3	14.9	32.4	2.91	6.00	1.38	3.47
	16	3	4	23	25.8	39.1	89.6	38.6	2.31	4.00	2.25	2.52
	15	-	5	20	34.5	-	14.1	36.9	3.60	-	3.60	3.60
21 May 1959 (1600-1800)	19	1	6	26	36.0	73.9	42.9	39.0	3.95	5.00	5.33	4.30
	23	1	5	29	27.9	24.8	52.5	32.0	4.00	3.00	4.60	4.07
	16	1	7	24	31.0	31.3	33.2	31.7	3.81	5.00	3.00	3.62
	13	-	11	24	26.0	-	36.6	30.9	3.08	-	3.27	3.17
23 May 1959 (0000-0200)	14	1	1	16	31.6	3.3	25.1	29.4	4.43	1.00	3.00	4.12
	20	1	0	21	23.3	100.7	-	27.0	3.10	6.00	-	3.24
	8	-	-	8	10.4	-	-	10.4	1.62	-	-	1.62
	5	-	-	5	23.9	-	-	23.9	2.00	-	-	2.00
23 May 1959 (1400-1600)	16	5	6	27	31.8	43.7	17.7	30.9	2.88	4.60	1.83	2.96
	23	3	6	32	32.4	37.6	32.0	32.8	3.39	3.67	3.50	3.44
	16	6	7	29	24.1	31.0	38.0	28.9	2.44	3.50	3.14	2.83
	15	3	6	24	32.3	33.8	30.8	32.1	4.13	4.00	2.83	3.79
23 May 1959 (1600-1800)	19	2	6	27	33.0	47.8	28.3	33.1	3.68	2.50	1.83	3.18
	9	7	6	22	20.0	35.1	45.8	32.0	2.00	3.42	3.50	2.86
	9	2	6	17	12.6	53.6	28.9	23.2	2.00	6.00	2.67	2.70
	4	-	2	6	19.8	-	16.3	18.6	1.50	-	1.50	1.50
27 Feb. 1960 (1400-1600)	25	1	14	40	31.3	31.7	30.4	31.0	4.44	1.00	2.93	3.82
	26	2	14	42	26.7	50.4	14.1	23.6	3.73	5.50	2.29	3.33
	23	2	14	39	32.8	66.6	41.2	37.6	4.26	6.50	4.50	4.46
	28	5	16	49	25.8	21.9	35.1	29.0	4.79	3.40	5.69	4.94

Table II-2 (continued)
R/T COMMUNICATIONS MEASURES FOR LOCAL CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL					AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)					AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL				
	AC	MIL	GA	TOTAL		AC	MIL	GA	OVERALL		AC	MIL	GA	OVERALL	
1 Hr. Intervals 21 May 1959 (1400-1600)	42 27	2 3	11 6	55 36		34.2 34.4	59.3 39.2	50.6 96.5	38.4 45.2		4.02 3.37	7.00 4.00	4.82 4.50	4.29 3.61	
21 May 1959 (1600-1800)	35 27	2 1	10 16	47 44		37.8 30.9	49.4 31.3	52.0 39.7	41.3 34.1		4.77 3.74	4.00 5.00	5.50 3.56	4.89 3.70	
23 May 1959 (0000-0200)	29 13	2 -	1 -	32 13		31.3 15.6	52.0 -	25.1 -	32.4 15.6		4.28 1.77	3.50 -	3.00 -	4.19 1.77	
23 May 1959 (1100-1600)	36 28	7 7	12 12	55 47		34.8 31.1	47.3 41.1	24.8 37.5	34.2 34.2		3.44 3.61	4.86 4.71	2.67 3.25	3.45 3.68	
23 May 1959 (1600-1800)	26 13	7 2	11 7	44 22		31.1 11.8	49.0 53.6	40.5 29.4	36.2 23.0		3.38 1.85	4.14 6.00	2.91 2.71	3.38 2.50	
27 Feb. 1960 (1400-1600)	44 44	2 6	26 23	72 73		33.6 33.6	61.2 44.8	24.0 49.5	31.0 39.5		4.73 5.27	6.00 5.00	2.81 6.70	4.07 5.70	
2 Hr. Intervals 21 May 1959	65	4	17	86		36.4	59.0	66.8	43.5		4.00	6.50	4.71	4.26	
21 May 1959	59	3	26	88		36.6	29.0	44.4	39.1		4.54	4.33	4.30	4.46	
23 May 1959	39	2	1	42		28.4	52.0	25.1	29.5		3.77	3.50	3.00	3.74	
23 May 1959	61	12	23	96		34.8	51.6	32.5	36.4		3.69	5.58	3.09	3.78	
23 May 1959	37	8	16	61		27.0	56.3	40.7	34.4		3.02	5.12	3.19	3.34	
27 Feb. 1960	86	8	46	140		34.4	50.1	38.3	36.6		5.12	5.25	4.93	5.06	

Table II-6

R/T COMMUNICATIONS MEASURES FOR APPROACH CONTROL POSITION (ANC)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
30 Min. Intervals													
20 May 1959 (1100-1600)	54 64 45 21	98 100 88 100	2 -- 12 --	-- -- -- --		77 99 48 20	1 -- 4 --	-- -- -- --	78 99 52 20	12.3 11.6 14.9 17.0	19.9 -- 23.8 --	-- -- -- --	12.4 11.6 15.6 17.0
20 May 1959 (1600-1800)	24 17 23 22	76 88 100 64	24 7 -- 35	-- 5 -- 1		25 28 33 15	6 1 -- 4	-- 1 -- 1	31 30 33 20	13.0 9.4 12.7 14.1	17.5 21.3 -- 29.1	-- 14.7 -- 2.4	13.9 10.0 12.7 16.5
23 May 1959 (0000-0200)	32 15 12 12	81 75 100 100	19 25 -- --	-- -- -- --		42 14 19 17	7 6 -- --	-- -- -- --	49 20 19 17	11.2 14.3 11.9 12.2	15.7 11.3 -- --	-- -- -- --	11.8 13.4 11.9 12.2
23 May 1959 (1100-1600)	45 41 18 17	89 76 100 93	11 21 -- 7	-- 3 -- --		56 49 35 22	9 13 -- 1	-- 1 -- --	65 63 35 23	13.0 11.4 9.5 12.9	9.8 11.9 -- 20.2	-- 21.7 -- --	12.6 11.6 9.5 13.3
23 May 1959 (1600-1800)	28 25 19 21	86 2 100 88	14 90 -- --	-- 8 -- 12		36 2 28 12	5 12 -- --	-- 2 -- 1	41 16 28 13	12.1 5.1 12.1 13.4	14.3 33.1 -- --	-- 18.2 -- 21.3	12.3 27.8 12.1 14.0
24 May 1959 (1100-1600)	29 30 7 15	100 100 100 100	-- -- -- --	-- -- -- --		35 40 7 18	-- -- -- --	-- -- -- --	35 40 7 18	15.0 13.6 18.0 15.0	-- -- -- --	-- -- -- --	15.0 13.6 18.0 15.0

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)				
		AC		GA		AC		GA		AC		GA		
		MIL	GA	MIL	GA	MIL	GA	MIL	GA	MIL	GA	MIL	GA	
1 Hr. Intervals 20 May 1959 (1100-1600)	59 34	99 92	1 8	---	---	176 68	1 4	---	---	177 72	11.9 15.5	19.9 23.8	---	12.0 16.0
20 May 1959 (1600-1800)	20 23	81 84	17 15.5	2 0.5	---	53 48	7 4	1 1	---	61 53	11.1 13.1	18.0 29.1	14.7 2.4	12.0 14.1
23 May 1959 (0000-0200)	24 12	79 100	21 ---	---	---	56 36	13 ---	---	---	69 36	12.0 12.0	13.7 ---	---	12.3 12.0
23 May 1959 (1100-1600)	43 18	83 97	16 3	1 ---	---	105 57	22 1	1 ---	---	128 58	12.3 10.9	11.1 20.2	21.7 ---	12.1 11.0
23 May 1959 (1600-1800)	26 15	47 96	49 ---	4 4	---	38 40	17 ---	2 1	---	57 41	11.7 12.5	27.6 ---	18.2 21.3	16.7 12.7
24 May 1959 (1100-1600)	30 11	100 100	---	---	---	75 25	---	---	---	75 25	14.2 15.9	---	---	14.2 15.9
2 Hr. Intervals 20 May 1959	47	96	4	---	---	244	5	---	---	249	12.9	23.0	---	13.1
20 May 1959	21	82	16	1	---	101	11	2	---	114	12.1	22.0	8.6	13.0
23 May 1959	18	86	14	---	---	92	13	---	---	105	12.0	13.7	---	12.2
23 May 1959	31	87	12	1	---	162	23	1	---	186	11.8	11.5	21.7	11.8
23 May 1959	21	64	32	4	---	78	17	3	---	98	12.1	27.6	19.1	15.0
24 May 1959	20	100	---	---	---	100	---	---	---	100	14.6	---	---	14.6

Table II-6 (continued)

R/T COMMUNICATIONS MEASURES FOR APPROACH CONTROL POSITION (ANC)

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC		MIL		GA		OVERALL		AC		MIL	
	TOTAL		TOTAL		TOTAL		TOTAL		TOTAL		TOTAL	
30 min. Intervals												
20 May 1959 (1400-1600)	12 14 9 6	1 - 1 -	- - - -	13 14 10 6	78.9 82.4 79.5 56.8	19.9 - 95.0 -	- - - -	74.4 82.4 81.1 56.8	6.42 7.07 5.33 3.33	1.00 - 4.00 -	- - - -	6.00 7.07 5.2 3.33
20 May 1959 (1600-1800)	5 5 6 4	1 1 - 1	- 1 - 1	6 7 6 6	65.1 52.9 69.6 52.9	104.8 21.3 - 116.3	- 14.7 - 2.4	71.8 42.9 69.6 55.0	5.00 5.60 5.50 3.75	6.00 1.00 - 4.00	- 1.00 - 1.00	5.17 4.29 5.50 3.33
23 May 1959 (0000-0200)	9 5 3 3	1 1 - -	- - - -	10 6 3 3	52.2 40.1 75.3 69.1	109.7 68.0 - -	- - - -	58.0 44.8 75.3 69.1	4.67 2.80 6.33 5.67	7.00 6.00 - -	- - - -	4.90 3.33 6.33 5.67
23 May 1959 (1400-1600)	12 9 6 7	2 2 - 1	- 1 - -	14 12 6 8	60.9 61.9 55.6 40.7	44.3 77.4 - 20.2	- 21.7 - -	58.5 61.2 55.6 38.2	4.67 9.00 5.83 3.14	4.50 6.50 - 1.00	- 1.00 - -	4.64 5.25 5.83 2.88
23 May 1959 (1600-1800)	7 1 4 3	1 2 - -	- 1 - 1	8 4 4 4	62.1 10.2 84.7 53.6	71.5 198.8 - -	- 36.3 - 21.3	63.2 111.0 84.7 45.5	5.14 2.00 7.00 4.00	5.00 6.00 - -	- 2.00 - 1.00	5.12 4.00 7.00 3.25
24 May 1959 (1400-1600)	12 10 5 7	- - - -	- - - -	12 10 5 7	43.6 54.5 25.2 38.7	- - - -	- - - -	43.6 54.5 25.2 38.7	2.92 4.00 1.40 2.57	- - - -	- - - -	2.92 4.00 1.40 2.57

Table II-6 (continued)
R/T COMMUNICATIONS MEASURES FOR APPROACH CONTROL POSITION (AMC)

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	NIL	GA	TOTAL	AC	NIL	GA	OVERALL	AC	NIL	GA	OVERALL
1 Hr. Intervals 20 May 1959 (1100-1600)	23 14	1 1	- -	24 15	91.3 75.5	19.9 95.0	- -	88.3 76.8	7.65 4.86	1.00 4.00	- -	7.38 4.80
20 May 1959 (1600-1800)	10 9	2 1	1 1	13 11	59.0 69.9	63.0 116.3	14.7 2.4	56.2 68.0	5.30 5.33	3.50 4.00	1.00 1.00	4.69 4.82
23 May 1959 (0000-0200)	11 6	1 -	- -	12 6	61.0 72.2	177.7 -	- -	70.7 72.2	5.09 6.00	13.00 -	- -	5.75 6.00
23 May 1959 (1100-1600)	18 13	2 1	1 -	21 14	71.6 47.6	121.7 20.2	21.7 -	74.0 45.6	5.83 4.38	11.00 1.00	1.00 -	6.10 4.14
23 May 1959 (1600-1800)	7 7	2 -	1 1	10 8	63.5 71.3	234.6 -	36.3 21.3	95.0 65.1	5.43 5.71	8.50 -	2.00 1.00	5.70 5.12
24 May 1959 (1100-1600)	21 10	- -	- -	21 10	50.9 39.8	- -	- -	50.9 39.8	3.57 2.50	- -	- -	3.57 2.50
2 Hr. Intervals 20 May 1959	33	2	-	35	95.6	57.4	-	93.5	7.39	2.50	-	7.11
20 May 1959	19	3	2	24	64.2	80.8	8.6	61.6	5.32	3.67	1.00	4.75
23 May 1959	17	1	-	18	64.9	177.7	-	71.2	5.41	13.0	-	5.83
23 May 1959	30	3	1	34	63.6	87.9	21.7	64.5	5.40	7.67	1.00	5.47
23 May 1959	14	2	2	18	67.4	234.6	28.8	81.7	5.57	8.50	1.50	5.44
24 May 1959	29	-	-	29	50.5	-	-	50.5	3.45	-	-	3.45

Table II-7

R/T COMMUNICATIONS MEASURES FOR APPROACH CONTROL POSITION (RADAR)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA	TOTAL	AC	MIL	GA	AC	MIL	GA	OVERALL	
<u>30 min. Intervals</u>													
12 March 1960 (1200-1300)	16	35	20	45	55	18	10	27	16.4	16.5	14.0	15.2	
	70	30	12	58	108	38	11	59	9.9	14.2	12.3	11.6	
14 March 1960 (1400-1600)	58	92	—	8	91	82	—	9	11.7	—	8.8	11.4	
	36	100	—	1	58	57	—	1	11.1	—	3.5	11.0	
	66	88	—	12	104	94	—	10	11.0	—	14.4	11.4	
	51	92	—	8	90	83	—	7	10.0	—	10.9	10.1	
14 March 1960 (1600-1800)	25	82	—	18	31	29	—	2	13.0	—	11.2	14.8	
	23	69	31	—	28	17	11	—	16.6	11.3	—	14.5	
	14	76	—	24	61	47	—	14	12.6	—	13.3	12.8	
	19	90	—	10	76	68	—	8	11.7	—	11.3	11.6	
<u>1 Hr. Intervals</u>													
12 March 1960 (1200-1300)	58	32	15	53	163	56	21	86	12.0	15.3	12.8	12.8	
	17	95	—	5	149	139	—	10	11.5	—	8.3	11.3	
14 March 1960 (1400-1600)	58	90	—	10	194	177	—	17	10.6	—	13.0	10.1	
	24	76	14	10	59	46	11	2	14.3	11.3	11.2	14.7	
14 March 1960 (1600-1800)	17	83	—	17	137	115	—	22	12.1	—	12.6	12.2	
<u>2 Hr. Intervals</u>													
14 March 1960 (1400-1600)	52	92	—	8	343	316	—	27	11.0	—	11.2	11.0	
	35	81	5	14	196	161	11	24	12.7	11.3	15.0	12.9	

Table II-7 (continued)
R/T COMMUNICATIONS MEASURES FOR APPROACH CONTROL POSITION (RADAR)

DATE AND TIME	NUMBER OF PLANES CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
30 min. Intervals 12 March 1960 (1200-1300)	3	1	5	9	98.2	164.8	75.4	92.9	6.00	10.00	5.40	6.11
	6	1	8	15	62.5	155.7	65.9	48.3	6.33	11.00	7.38	7.20
14 March 1960 (1400-1600)	14	--	1	15	68.6	--	79.4	69.4	5.86	--	9.00	6.07
	11	--	1	12	57.7	--	3.5	53.2	5.18	--	1.00	4.83
	16	--	1	17	64.9	--	144.0	69.5	5.83	--	10.00	6.12
	1	--	2	13	75.8	--	38.2	70.0	7.55	--	3.50	6.92
14 March 1960 (1600-1800)	6	--	1	7	62.6	--	82.4	65.4	4.83	--	2.00	4.43
	4	1	--	5	70.5	124.3	--	81.3	4.25	11.00	--	5.60
	6	--	2	8	99.0	--	93.3	97.6	7.83	--	7.00	7.62
	10	--	1	11	79.5	--	90.2	80.5	6.80	--	8.00	6.91
1 Hr. Intervals 12 March 1960 (1200-1300)	8	2	13	23	83.7	160.2	84.6	90.9	7.00	10.05	6.62	7.09
14 March 1960 (1400-1600)	23	--	2	25	69.4	--	41.4	67.1	6.04	--	5.00	5.96
	25	--	2	27	74.9	--	110.3	77.5	7.08	--	8.50	7.19
14 March 1960 (1600-1800)	9	1	1	11	73.1	124.3	82.4	78.6	5.11	11.00	2.00	5.36
	5	--	2	17	92.6	--	138.4	98.0	7.67	--	11.00	8.06
2 Hr. Intervals 14 March 1960 (1400-1600)	43	--	4	47	80.6	--	75.8	80.2	7.35	--	6.75	7.30
14 March 1960 (1600-1800)	23	1	3	27	89.0	124.3	119.7	93.7	7.00	11.00	8.00	7.26

Table II-3

R/T COMMUNICATIONS MEASURES FOR DEPARTURE CONTROL POSITION (AMC)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		PER INTERVAL				PER INTERVAL				PER INTERVAL			
		AC	MIL	GA	TOTAL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
30 Min. Intervals													
20 May 1959 (1600-1800)	19	100	--	--	42	42	--	--	42	8.2	--	--	8.2
	16	100	--	--	37	37	--	--	37	7.8	--	--	7.8
	15	100	--	--	29	29	--	--	29	9.1	--	--	9.1
	12	100	--	--	18	18	--	--	18	9.9	--	--	9.9
23 May 1959 (0000-0200)	8	100	--	--	15	15	--	--	15	10.2	--	--	10.2
	11	77	--	23	16	16	--	2	18	9.2	--	22.0	10.6
	10	100	--	--	19	19	--	--	19	9.4	--	--	9.4
	--	--	--	--	--	--	--	--	--	--	--	--	--
23 May 1959 (1100-1600)	24	90	--	10	21	21	--	3	24	18.2	--	14.3	17.7
	13	100	--	--	28	28	--	--	28	8.6	--	--	8.6
	17	65	35	--	21	21	7	--	28	9.4	15.2	--	10.8
	14	100	--	--	24	24	--	--	24	9.9	--	--	9.9
23 May 1959 (1600-1800)	18	100	--	--	38	38	--	--	38	8.3	--	--	8.3
	33	100	--	--	53	53	--	--	53	11.2	--	--	11.2
	12	58	42	--	15	15	4	--	19	8.3	22.6	--	11.3
	9	100	--	--	14	14	--	--	14	11.4	--	--	11.4
24 May 1959 (1100-1600)	5	100	--	--	12	12	--	--	12	7.7	--	--	7.7
	5	100	--	--	12	12	--	--	12	7.8	--	--	7.8
	15	100	--	--	21	21	--	--	21	13.1	--	--	13.1
	10	100	--	--	20	20	--	--	20	9.3	--	--	9.3
24 May 1959 (1600-1800)	20	100	--	--	32	32	--	--	32	11.2	--	--	11.2
	27	100	--	--	43	43	--	--	43	11.4	--	--	11.4
	10	100	--	--	17	17	--	--	17	11.1	--	--	11.1
	4	100	--	--	7	7	--	--	7	10.8	--	--	10.8

Table II-8 (continued)
R/T COMMUNICATIONS MEASURES FOR DEPARTURE CONTROL POSITION (ANG)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA	TOTAL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
1 Hr. Intervals													
20 May 1959 (1600-1800)	18 14	100 100	-- --	-- --		79 47	-- --	-- --	79 47	8.0 9.4	-- --	-- --	8.0 9.4
23 May 1959 (0000-0200)	10 5	87 100	-- --	13 --		31 19	-- --	2 --	33 19	9.7 9.4	-- --	22.0 --	10.4 9.4
23 May 1959 (1100-1600)	18 16	94 80	-- 20	6 --		49 45	-- 7	3 --	52 52	12.7 9.6	-- 15.2	14.3 --	12.8 10.4
23 May 1959 (1600-1800)	25 10	100 76	-- 24	-- --		91 29	-- 4	-- --	91 33	10.0 9.8	-- 22.6	-- --	10.0 11.4
24 May 1959 (1100-1600)	5 13	100 100	-- --	-- --		24 41	-- --	-- --	24 41	7.8 11.3	-- --	-- --	7.8 11.3
24 May 1959 (1600-1800)	24 7	100 100	-- --	-- --		75 24	-- --	-- --	75 24	11.4 10.9	-- --	-- --	11.4 10.9
2 Hr. Intervals													
20 May 1959	16	100	--	--		126	--	--	126	8.5	--	--	8.5
23 May 1959	7	92	8	--		50	--	2	52	9.6	--	22.0	10.1
23 May 1959	17	88	9	4		94	7	3	104	11.2	15.2	14.3	11.6
23 May 1959	18	93	7	--		120	4	--	124	9.9	22.6	--	10.3
24 May 1959	9	100	--	--		65	--	--	65	10.0	--	--	10.0
24 May 1959	15	100	--	--		99	--	--	99	11.3	--	--	11.3

Table II-8 (continued)

R/T COMMUNICATIONS MEASURES FOR DEPARTURE CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC		MIL		GA		OVERALL		AC		MIL	
	GA	INTERVAL	GA	INTERVAL	GA	INTERVAL	GA	INTERVAL	GA	INTERVAL	GA	INTERVAL
30 min. Intervals												
20 May 1959 (1600-1800)	9	-	-	-	-	-	38.4	-	4.67	-	-	4.67
	11	-	-	-	-	-	26.1	-	3.36	-	-	3.36
	9	-	-	-	-	-	29.4	-	3.22	-	-	3.22
	8	-	-	-	-	-	22.2	-	2.25	-	-	2.25
23 May 1959 (0000-0200)	4	-	-	-	-	-	38.2	-	3.75	-	-	3.75
	5	-	-	-	-	-	29.5	-	3.20	-	-	3.20
	7	-	-	-	-	-	25.6	-	2.71	-	-	2.71
	-	-	-	-	-	-	-	-	-	-	-	-
23 May 1959 (1400-1600)	4	-	-	-	-	-	95.6	-	5.25	-	-	5.25
	6	-	-	-	-	-	39.9	-	4.67	-	-	4.67
	6	-	-	-	-	-	32.7	53.2	3.50	3.50	-	3.50
	6	-	-	-	-	-	39.6	-	4.00	-	-	4.00
23 May 1959 (1600-1800)	8	-	-	-	-	-	39.4	-	4.75	-	-	4.75
	12	-	-	-	-	-	49.4	-	4.42	-	-	4.42
	5	-	-	-	-	-	24.9	90.6	3.00	4.00	-	3.17
	5	-	-	-	-	-	32.0	-	2.80	-	-	2.80
24 May 1959 (1400-1600)	3	-	-	-	-	-	31.0	-	4.00	-	-	4.00
	5	-	-	-	-	-	18.7	-	2.40	-	-	2.40
	8	-	-	-	-	-	34.4	-	2.62	-	-	2.62
	6	-	-	-	-	-	31.2	-	3.33	-	-	3.33
24 May 1959 (1600-1800)	9	-	-	-	-	-	39.9	-	3.56	-	-	3.56
	13	-	-	-	-	-	37.9	-	3.31	-	-	3.31
	7	-	-	-	-	-	26.9	-	2.43	-	-	2.43
	3	-	-	-	-	-	25.2	-	2.33	-	-	2.33

Table II-3 (continued)
R/T COMMUNICATIONS MEASURES FOR DEPARTURE CONTROL POSITION (ANC)

DATE AND TIME	NUMBER OF PLANES CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	NIL	GA	TOTAL	AC	NIL	GA	OVERALL	AC	NIL	GA	OVERALL
1 Hr. Intervals 20 May 1959 (1600-1800)	18	-	-	18	35.2	-	-	35.2	4.39	-	-	4.39
	15	-	-	15	29.5	-	-	29.5	3.13	-	-	3.13
23 May 1959 (0000-0200)	9	-	1	10	33.3	-	44.0	34.4	3.44	-	2.00	3.30
	7	-	-	7	25.6	-	-	25.6	2.71	-	-	2.71
23 May 1959 (1400-1600)	9	-	1	10	69.1	-	43.0	66.5	5.44	-	3.00	5.20
	11	2	-	13	39.5	53.2	-	41.6	4.09	3.50	-	4.00
23 May 1959 (1600-1800)	19	-	-	19	47.8	-	-	47.8	4.79	-	-	4.79
	9	1	-	10	31.6	90.6	-	37.5	3.22	4.00	-	3.30
24 May 1959 (1400-1600)	8	-	-	8	23.3	-	-	23.3	3.00	-	-	3.00
	14	-	-	14	33.0	-	-	33.0	2.93	-	-	2.93
24 May 1959 (1600-1800)	22	-	-	22	38.7	-	-	38.7	3.41	-	-	3.41
	10	-	-	10	26.4	-	-	26.4	2.40	-	-	2.40
2 Hr. Intervals 20 May 1959	33	-	-	33	32.6	-	-	32.6	3.82	-	-	3.82
23 May 1959	14	-	1	15	34.2	-	44.0	34.9	3.57	-	2.00	3.49
23 May 1959	20	2	1	23	52.8	53.2	43.0	52.4	4.70	3.50	3.00	4.52
23 May 1959	28	1	-	29	42.6	90.6	-	44.2	4.28	4.00	-	4.28
24 May 1959	19	-	-	19	34.1	-	-	34.1	3.42	-	-	3.42
24 May 1959	30	-	-	30	37.2	-	-	37.2	3.30	-	-	3.30

Table II-9 (continued)
R/T COMMUNICATIONS MEASURES FOR DEPARTURE CONTROL POSITION (RADAR)

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
30 Min. Intervals 23 Feb. 1960 (1400-1600)	9	-	1	10	69.3	-	61.9	68.6	4.33	-	6.00	4.50
	9	-	1	10	43.3	-	73.0	46.3	4.11	-	8.00	4.50
	5	-	-	5	32.7	-	-	32.7	3.60	-	-	3.60
	13	-	-	13	28.5	-	-	28.5	3.54	-	-	3.54
23 Feb. 1960 (1600-1800)	10	-	2	12	29.2	-	36.6	30.4	2.60	-	3.50	2.75
	11	1	2	14	27.4	32.9	22.7	27.1	2.91	3.00	3.00	2.93
	12	-	1	13	31.8	-	21.3	31.0	3.50	-	2.00	3.38
	9	-	1	10	37.6	-	28.7	36.7	3.78	-	3.00	3.70
	16	-	2	18	63.4	-	67.4	63.8	4.75	-	7.00	5.00
1 Hr. Intervals 23 Feb. 1960 (1400-1600)	18	-	-	18	29.7	-	-	29.7	3.56	-	-	3.56
	20	1	3	24	29.7	32.9	39.5	31.0	2.90	3.00	4.33	3.08
	20	-	2	22	36.0	-	25.0	35.0	3.80	-	2.50	3.68
	32	-	2	34	48.4	-	67.4	49.5	4.38	-	7.00	4.53
2 Hr. Intervals 23 Feb. 1960 (1400-1600)	38	1	5	44	34.6	32.9	33.7	34.4	3.53	3.00	3.60	3.52
	38	1	5	44	34.6	32.9	33.7	34.4	3.53	3.00	3.60	3.52

Table II-10

R/T COMMUNICATIONS MEASURES FOR D2 RADIO CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL			NUMBER OF CONTACTS PER INTERVAL			AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)		
		AC	MIL	GA	AC	MIL	GA	AC	MIL	GA
30 Min. Intervals										
15 May 1959	16	59	41	--	12	3	0	14.6	40.4	--
(0800-1000)	21	69	12	19	16	2	2	15.9	22.4	35.3
	16	34	26	40	6	4	4	15.8	18.6	28.2
	10	100	--	--	5	0	0	32.2	--	--
20 May 1959	47	100	--	--	55	0	0	14.9	--	--
(1400-1600)	32	100	--	--	32	0	0	18.1	--	--
	27	100	--	--	26	0	0	18.8	--	--
	15	100	--	--	12	0	0	21.0	--	--
23 May 1959	61	75	25	--	59	12	0	13.9	23.3	--
(1400-1600)	21	100	--	--	24	0	0	15.8	--	--
	16	100	--	--	12	0	0	24.3	--	--
	25	100	--	--	21	0	0	19.5	--	--
24 May 1959	32	69	10	21	15	2	5	26.1	28.6	24.1
(1400-1600)	14	100	--	--	8	0	0	31.0	--	--
	24	89	1	11	8	1	4	47.3	2.4	11.6
	28	87	3	10	16	1	4	24.8	11.8	11.6
24 May 1959	29	27	47	26	6	11	2	23.1	22.3	66.8
(1600-1800)	36	66	34	--	15	3	0	29.0	73.0	--
	29	100	--	--	24	0	0	22.0	--	--
	12	100	--	--	9	0	0	20.7	--	--
25 May 1959	26	79	--	21	19	0	2	19.1	--	48.4
(1400-1600)	26	52	48	--	21	10	0	11.8	22.7	--
	21	100	--	--	21	0	0	17.7	--	--
	37	70	30	--	19	3	0	22.8	61.3	--

Table II-10 (continued)

R/T COMMUNICATIONS MEASURES FOR D2 RADIO CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
30 min. Int. Cont. 25 May 1959 (1600-1800)	13	96	4	--		14	2	0	16	22.8	6.4	--	20.7
	32	100	--	--		31	0	0	31	18.6	--	--	18.6
	36	100	--	--		37	0	0	37	17.4	--	--	17.4
	41	80	20	--		55	7	0	62	9.0	17.2	--	10.0
8 March 1960 (1400-1600)	62	87	--	13		61	--	4	65	15.8	--	35.3	17.0
	39	58	42	--		28	11	--	39	14.3	26.8	--	17.9
	25	65	35	--		18	4	--	22	16.0	38.5	--	20.1
	11	61	36	--		9	6	--	15	18.0	15.2	--	16.9
9 March 1960 (1430-1630)	83	96	3	0		81	3	1	85	18.0	15.9	6.6	17.8
	68	95	5	--		62	4	--	66	18.6	15.4	--	18.5
	62	95	5	--		69	3	--	72	15.4	18.7	--	15.6
	35	81	16	--		33	2	--	35	15.8	19.2	--	17.8
1 Hour Intervals 15 May 1959 (0800-1000)	18	64	25	11		28	5	2	35	15.3	33.2	35.3	19.0
	13	58	17	25		11	4	4	19	23.2	18.6	28.2	23.3
	40	100	--	--		87	--	--	87	16.1	--	--	16.1
	21	100	--	--		38	--	--	38	19.4	--	--	19.4
20 May 1959 (1400-1600)	41	81	19	--		83	12	--	95	14.5	23.3	--	15.6
	21	100	--	--		33	--	--	33	21.3	--	--	21.3
24 May 1959 (1400-1600)	23	78	7	15		23	2	5	30	27.8	28.6	24.1	27.3
	26	88	2	11		24	2	8	34	32.3	7.1	11.6	26.0
24 May 1959 (1600-1800)	33	49	40	11		21	14	2	37	27.3	33.2	66.8	31.7
	21	100	--	--		33	--	--	33	21.6	--	--	21.6

Table II-10 (continued)

Table II-10 (continued)
R/T COMMUNICATIONS MEASURES FOR D2 RADIO CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA		AC	MIL	GA	
2 Hr. Int. Cont. 25 May 1959 (1600-1800)	31	94	6	--		137	9	--	146	14.9	14.8	--	14.9
8 March 1960 (1100-1600)	35	73	22	6		116	21	4	141	15.7	25.7	35.3	17.7
9 March 1960 (1130-1630)	62	94	6	0		245	12	1	258	17.1	22.3	6.6	17.3

Table II-10 (continued)

R/T COMMUNICATIONS MEASURES FOR D2 RADIO CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	INTERVAL				INTERVAL				INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
30 min. Intervals												
15 May 1959 (0800-1000)	4	1	0	5	43.8	121.3	--	59.3	3.00	3.00	0	3.00
	3	1	2	6	34.7	44.9	35.3	61.6	5.33	2.00	1.00	3.33
	4	2	1	7	23.7	37.1	112.6	40.2	1.50	2.00	4.00	2.00
	5	0	0	5	32.2	--	--	32.2	1.00	--	--	1.00
20 May 1959 (1400-1600)	11	0	0	11	74.7	--	--	74.7	5.00	--	--	5.00
	7	0	0	7	82.8	--	--	82.8	4.57	--	--	4.57
	5	0	0	5	97.5	--	--	97.5	5.20	--	--	5.20
	6	0	0	6	41.9	--	--	41.9	2.00	--	--	2.00
23 May 1959 (1400-1600)	9	3	0	12	91.3	93.3	--	91.8	6.56	4.00	--	5.75
	6	0	0	6	63.1	--	--	63.1	4.00	--	--	4.00
	4	0	0	4	73.0	--	--	73.0	3.00	--	--	3.00
	6	0	0	6	68.4	--	--	68.4	3.50	--	--	3.50
24 May 1959 (1400-1600)	4	1	1	6	98.0	57.1	120.4	94.9	3.75	2.00	5.00	3.67
	2	0	0	2	124.1	--	--	124.1	4.00	--	--	4.00
	4	1	1	6	94.6	2.4	46.2	71.2	2.00	1.00	4.00	2.17
	8	1	1	10	49.6	11.8	46.6	45.6	2.00	1.00	4.00	2.10
24 May 1959 (1600-1800)	4	2	1	7	34.8	122.7	133.6	74.0	1.50	5.50	2.00	2.71
	7	3	0	10	62.0	73.0	--	65.3	2.14	1.00	--	1.80
	8	0	0	8	66.0	--	--	66.0	3.00	--	--	3.00
	6	0	0	6	31.0	--	--	31.0	1.50	--	--	1.50
25 May 1959 (1400-1600)	4	0	1	5	90.7	--	96.9	91.9	4.75	--	2.00	4.20
	4	2	0	6	62.2	113.3	--	79.2	5.25	5.00	--	5.17
	4	0	0	4	93.0	--	--	93.0	5.25	--	--	5.25
	7	1	0	8	61.8	183.3	--	77.1	2.71	3.00	--	2.75

Table II-10 (continued)

R/T COMMUNICATIONS MEASURES FOR D2 RADIO CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
30 Min. Int. Cont. 25 May 1959 (1600-1800)	5 6 12 11	1 0 0 2	0 0 0 0	6 6 12 13	63.7 95.9 53.8 45.2	12.8 -- -- 60.4	-- -- -- --	55.2 95.9 53.8 47.5	2.80 5.17 3.08 5.0	2.0 -- -- 3.5	-- -- -- --	2.67 5.17 3.08 4.77
8 March 1960 (1400-1600)	13 7 4 4	-- 2 2 3	2 -- -- --	15 9 6 7	74.3 57.4 72.1 40.4	-- 117.4 77.0 30.4	70.6 -- -- --	73.8 77.4 73.7 36.1	4.69 4.00 4.50 2.25	-- 5.50 2.00 2.00	2.00 -- -- --	4.33 4.33 3.67 2.11
9 March 1960 (1430-1630)	16 16 15 10	2 2 2 1	1 -- -- --	19 18 17 11	91.0 72.3 70.9 52.3	28.9 32.8 28.0 98.5	1.6 -- -- --	79.5 67.9 65.9 56.5	5.06 3.88 4.60 3.30	1.50 2.00 1.50 2.00	1.00 -- -- --	4.47 3.67 4.24 3.18
1 Hr. Intervals 15 May 1959 (0800-1000)	6 7	2 2	2 1	10 10	71.6 36.5	83.1 37.1	35.3 112.6	66.6 44.2	4.33 1.57	2.5 2.0	1.0 4.0	3.5 1.9
20 May 1959 (1400-1600)	14 9	-- --	-- --	14 9	100.1 82.1	-- --	-- --	100.1 82.1	6.21 4.22	-- --	-- --	6.21 4.22
23 May 1959 (1400-1600)	13 10	3 --	-- --	16 10	92.3 70.3	93.3 --	-- --	92.5 70.3	6.38 3.3	4.0 --	-- --	5.94 3.3
24 May 1959 (1400-1600)	5 8	1 2	1 1	7 11	128.1 96.9	57.1 7.1	120.4 92.8	116.8 80.2	4.6 3.0	2.0 1.0	5.0 8.0	4.29 3.1
24 May 1959 (1600-1800)	10 10	4 --	1 --	15 10	57.3 71.4	116.1 --	133.6 --	78.1 71.4	2.1 3.3	3.5 --	2.0 --	2.47 3.3
25 May 1959 (1100-1600)	7 8	2 1	1 --	10 9	87.4 100.6	113.3 183.3	96.9 --	93.5 105.9	5.71 5.0	5.0 3.0	2.0 --	5.2 4.78

Table II-10 (continued)

R/T COMMUNICATIONS MEASURES FOR D2 RADIO CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
1 Hr. Int. Cont. 25 May 1959 (1600-1800)	11	1	--	12	81.3	12.8	--	75.6	4.1	2.0	--	3.92
	17	2	--	19	67.2	60.4	--	66.5	5.41	3.5	--	5.21
8 March 1960 (1400-1600)	17	2	2	21	80.4	117.4	70.6	85.9	5.24	5.50	2.00	4.95
	7	4	--	11	64.3	61.3	--	63.2	3.86	2.50	--	3.36
9 March 1960 (1430-1630)	24	3	1	28	108.8	37.8	6.6	97.6	5.96	2.33	1.00	5.39
	21	3	--	24	75.5	51.5	--	72.5	4.86	1.67	--	4.46
2 Hr. Intervals 15 May 1959 (0800-1000)	13	3	2	18	52.7	80.1	91.6	61.6	3.0	3.0	3.0	3.0
20 May 1959 (1400-1600)	21	--	--	21	101.9	--	--	101.9	5.95	--	--	5.95
23 May 1959 (1400-1600)	21	3	--	24	90.6	93.3	--	91.0	5.52	4.0	--	5.33
24 May 1959 (1400-1600)	13	3	2	18	108.9	23.8	106.6	94.5	3.62	1.33	6.5	3.56
24 May 1959 (1600-1800)	16	4	1	21	80.5	116.1	133.6	89.8	3.38	3.5	2.9	3.33
25 May 1959 (1400-1600)	14	3	1	18	101.2	136.8	96.9	106.9	5.71	4.33	2.0	5.28
25 May 1959 (1600-1800)	25	3	--	28	81.5	44.5	--	77.5	5.48	3.0	--	5.21

Table II-10 (continued)
R/T COMMUNICATIONS MEASURES FOR D2 RADIO CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL			AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)			AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL					
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
2 Hr. Int. cont. 8 March 1960 (1400-1600)	22	6	2	30	82.6	90.0	70.6	83.3	5.27	3.50	2.00	4.70
9 March 1960 (1430-1630)	37	5	1	43	113.5	53.6	6.6	104.0	6.62	2.40	1.00	6.00

Table II-11
R/T COMMUNICATIONS MEASURES FOR D3 RADIO CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
30 Min. Intervals 15 May 1959 (0800-1000)	8 11 3 --	-- 39 -- --	100 61 100 --	-- -- -- --		0 5 -- --	2 5 4 --	0 -- -- --	2 10 4 --	-- 14.9 -- --	73.6 23.3 14.0 --	-- -- -- --	73.6 19.1 14.0 --
20 May 1959 (1400-1600)	23 36 3 10	100 100 100 100	-- -- -- --	-- -- -- --		23 41 8 6	-- -- -- --	-- -- -- --	23 41 8 6	18.1 15.7 7.1 26.9	-- -- -- --	-- -- -- --	18.1 15.7 7.1 26.9
20 May 1959 (1600-1800)	1 3 8 --	100 -- -- --	-- 100 100 --	-- -- -- --		1 -- -- --	-- 1 5 --	-- -- -- --	1 1 5 --	15.9 -- -- --	-- 45.5 29.5 --	-- 45.5 -- --	15.9 45.5 29.5 --
21 May 1959 (1400-1600)	23 5 -- 25	100 74 -- 23	-- 26 -- 77	-- -- -- --		32 3 4 --	-- 1 -- 3	-- -- -- --	32 4 -- 7	12.7 21.0 -- 22.8	-- 22.1 -- 99.6	-- -- -- --	12.7 21.3 -- 55.7
21 May 1959 (1600-1800)	2 4 -- --	100 100 -- --	-- -- -- --	-- -- -- --		-- 3 -- --	4 -- -- --	-- -- -- --	4 3 -- --	-- 24.1 -- --	10.1 -- -- --	-- -- -- --	10.1 24.1 -- --
22 May 1959 (1600-1800)	-- 14 29 9	-- 54 8 100	-- 46 92 --	-- -- -- --		-- 7 2 --	-- 1 8 3	-- -- -- --	-- 8 10 3	-- 19.0 21.7 --	-- 115.0 60.7 49.1	-- -- -- --	-- 31.0 52.9 49.1

Table II-11 (continued)
R/T COMMUNICATIONS MEASURES FOR D3 RADIO CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL			NUMBER OF CONTACTS PER INTERVAL			AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)		
		AC	MIL	GA	AC	MIL	GA	AC	MIL	GA
30 Min. Int. Cont.										
23 May 1959 (0000-0200)	4 9 9	100 100 100	-- -- --	-- -- --	3 9 9	-- -- --	-- -- --	21.8 18.6 --	-- -- --	21.8 18.6 --
23 May 1959 (1100-1600)	12 11 4 13	100 100 100 100	-- -- -- --	-- -- -- --	15 11 4 8	-- -- -- --	-- -- -- --	14.1 17.6 18.6 27.4	-- -- -- --	14.1 17.6 18.6 27.4
24 May 1959 (1100-1600)	9 21 -- --	100 100 -- --	-- -- -- --	-- -- -- --	17 21 -- --	-- -- -- --	-- -- -- --	10.0 18.0 -- --	-- -- -- --	10.0 18.0 -- --
24 May 1959 (1600-1800)	-- -- 9	-- -- 100	-- -- --	-- -- --	-- -- 7	-- -- --	-- -- --	-- -- 19.6	-- -- --	-- -- 19.6
25 May 1959 (1100-1600)	12 15 -- --	100 100 -- --	-- -- -- --	-- -- -- --	15 8 -- --	-- -- -- --	-- -- -- --	14.9 34.4 -- --	-- -- -- --	14.9 34.4 -- --
7 March 1960 (1440-1540)	29 32	92 61	8 31	-- 7	33 32	3 12	-- 2	14.7 11.2	14.2 15.3	-- 21.8
10 March 1960 (1341-1541)	16 29 28 9	100 38 39 100	-- -- -- --	-- 62 61 --	19 15 9 7	-- -- -- --	-- 6 11 --	15.4 13.1 21.9 22.7	-- -- -- --	15.4 24.5 25.1 22.7

Table II-11 (continued)

R/T COMMUNICATIONS MEASURES FOR D3 RADIO CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA	TOTAL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
1 Hr. Intervals													
15 May 1959 (0800-1000)	9 2	22	78	--		5	7	--	12	14.9	37.6	--	28.2
		--	100	--		--	4	--	4	--	14.0	--	14.0
20 May 1959 (1400-1600)	29 6	100	--	--		64	--	--	64	16.6	--	--	16.6
		100	--	--		14	--	--	14	15.6	--	--	15.6
20 May 1959 (1600-1800)	2 5	26	74	--		1	1	--	2	15.9	45.5	--	30.7
		--	100	--		--	5	--	5	--	29.5	--	29.5
21 May 1959 (1400-1600)	14 12	95	5	--		35	1	--	36	13.4	22.1	--	13.6
		23	77	--		4	3	--	7	22.8	99.6	--	55.7
21 May 1959 (1600-1800)	3 --	64	36	--		3	4	--	7	24.7	10.1	--	16.1
		--	--	--		--	--	--	--	--	--	--	--
22 May 1959 (1600-1800)	7 20	54	46	--		7	1	--	8	19.0	115.0	--	31.0
		6	94	--		2	11	--	13	21.7	57.5	--	52.0
23 May 1959 (0000-0200)	2 5	100	--	--		3	--	--	3	21.8	--	--	21.8
		100	--	--		9	--	--	9	18.6	--	--	18.6
23 May 1959 (1400-1600)	11 8	100	--	--		26	--	--	26	15.6	--	--	15.6
		100	--	--		12	--	--	12	24.5	--	--	24.5
24 May 1959 (1400-1600)	15 --	100	--	--		38	--	--	38	14.4	--	--	14.4
		--	--	--		--	--	--	--	--	--	--	--
24 May 1959 (1600-1800)	-- 4	--	--	--		--	--	--	--	--	--	--	--
		100	--	--		7	--	--	7	19.6	--	--	19.6
24 May 1959 (1400-1600)	14 --	100	--	--		23	--	--	23	21.7	--	--	21.7
		--	--	--		--	--	--	--	--	--	--	--
7 March 1960 (1440-1540)	31	75	20	4		65	15	2	82	13.0	15.0	21.8	13.6

Table II-11 (continued)
R/T COMMUNICATIONS MEASURES FOR D3 RADIO CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
1 Hr. Int. Cont. 10 March 1960 (1341-1541)	22 18	60 54	-- --	39 46		34 16	-- --	6 11	40 27	14.4 22.2	-- --	53.1 27.8	20.2 24.5
2 Hr. Intervals 15 May 1959	6	19	81	--		5	11	--	16	14.9	29.0	--	24.6
20 May 1959	18	100	--	--		78	--	--	78	16.4	--	--	16.4
20 May 1959	3	8	92	--		1	6	--	7	15.9	32.2	--	29.9
21 May 1959	13	64	36	--		39	4	--	43	14.3	80.2	--	20.5
21 May 1959	2	64	36	--		3	4	--	7	24.1	10.1	--	16.1
22 May 1959	13	19	81	--		9	12	--	21	19.6	62.3	--	14.0
23 May 1959	3	100	--	--		12	--	--	12	19.4	--	--	19.4
23 May 1959	10	100	--	--		38	--	--	38	18.4	--	--	18.4
24 May 1959	8	100	--	--		38	--	--	38	14.4	--	--	14.4
24 May 1959	2	100	--	--		7	--	--	7	19.6	--	--	19.6
25 May 1959	7	100	--	--		23	--	--	23	21.7	--	--	21.7
10 March 1960	20	57	--	43		50	--	17	67	16.9	--	36.7	21.9

Table II-11 (continued)

R/T COMMUNICATIONS MEASURES FOR D3 RADIO CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	INTERVAL				INTERVAL				INTERVAL			
	AC	NIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
30 Min. Int. Cont. 23 May 1959 (0000-0200)	2	--	--	2	32.7	--	--	32.7	1.50	--	--	1.50
	--	--	--	--	--	--	--	--	--	--	--	--
	3	--	--	3	55.8	--	--	55.8	3.00	--	--	3.00
	--	--	--	--	--	--	--	--	--	--	--	--
23 May 1959 (1100-1600)	5	--	--	5	42.2	--	--	42.2	3.00	--	--	3.00
	5	--	--	5	38.7	--	--	38.7	2.20	--	--	2.20
	2	--	--	2	37.2	--	--	37.2	2.00	--	--	2.00
	3	--	--	3	73.0	--	--	73.0	2.67	--	--	2.67
24 May 1959 (1100-1600)	4	--	--	4	42.7	--	--	42.7	4.25	--	--	4.25
	4	--	--	4	94.4	--	--	94.4	5.25	--	--	5.25
	--	--	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--	--	--
24 May 1959 (1600-1800)	--	--	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--	--	--
	2	--	--	2	68.6	--	--	68.6	3.50	--	--	3.50
25 May 1959 (1100-1600)	3	--	--	3	74.6	--	--	74.6	5.00	--	--	5.00
	2	--	--	2	137.7	--	--	132.7	4.00	--	--	4.00
	--	--	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--	--	--
7 March 1960 (1440-1540)	8	1	--	9	60.6	42.5	--	58.6	4.12	3.00	--	4.00
	9	3	1	13	40.0	61.0	43.5	45.0	3.56	4.00	2.00	3.54
10 March 1960 (1341-1541)	5	--	--	5	58.3	--	--	58.3	3.80	--	--	3.80
	6	--	1	7	32.7	--	318.6	73.6	2.50	--	6.00	3.00
	3	--	1	4	65.6	--	305.7	125.6	3.00	--	11.00	5.00
	3	--	--	3	53.0	--	--	53.0	2.33	--	--	2.33

Table II-11 (continued)

R/T COMMUNICATIONS MEASURES FOR D3 RADIO CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
<u>1 Hr. Int. Cont.</u> 7 March 1960 (1440-1540)	14	3	1	18	60.2	75.2	43.5	61.8	4.64	5.00	2.00	4.56
10 March 1960 (1341-1541)	9	--	1	10	54.2	--	318.6	80.7	3.78	--	6.00	4.00
	6	--	1	7	59.3	--	305.7	94.5	2.67	--	11.00	3.86
<u>2 Hr. Intervals</u> 15 May 1959	2	3	--	5	37.3	106.4	--	78.8	2.5	3.67	--	3.2
20 May 1959	12	--	--	12	106.5	--	--	106.5	6.5	--	--	6.5
20 May 1959	1	2	--	3	15.9	96.6	--	69.7	1.0	3.0	--	2.33
21 May 1959	12	1	--	13	46.6	320.9	--	67.7	3.25	4.0	--	3.31
21 May 1959	1	1	--	2	72.3	40.4	--	56.4	3.0	4.0	--	3.5
22 May 1959	3	4	--	7	58.7	187.0	--	132.0	3.0	3.0	--	3.0
23 May 1959	5	--	--	5	46.6	--	--	46.6	2.4	--	--	2.4
23 May 1959	13	--	--	13	53.7	--	--	53.7	2.92	--	--	2.92
24 May 1959	7	--	--	7	78.3	--	--	78.3	5.43	--	--	5.43
24 May 1959	2	--	--	2	68.6	--	--	68.6	3.5	--	--	3.5
25 May 1959	5	--	--	5	99.9	--	--	99.9	4.6	--	--	4.6
10 March 1960	13	--	1	14	64.9	--	624.3	104.8	3.85	--	17	4.79

Table II-12
R/T COMMUNICATIONS MEASURES RADAR LA CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
30 Min. Intervals 20 May 1959 (1600-1800)	9	100	--	--		6	0	0	6	27.3	--	--	27.3
	19	100	--	--		11	0	0	11	31.1	--	--	31.1
	15	100	--	--		7	0	0	7	37.5	--	--	37.5
	2	100	--	--		1	0	0	1	19.6	--	--	19.6
23 May 1959 (1400-1600)	--	--	--	--		--	--	--	--	--	--	--	--
	6	53	47	--		2	2	0	4	27.0	23.7	--	25.4
	12	14	86	--		1	9	0	10	30.0	20.5	--	21.4
	24	--	100	--		0	3	0	3	--	33.2	--	33.2
24 May 1959 (1600-1800)	12	100	--	--		11	0	0	11	19.1	--	--	19.1
	24	100	--	--		32	0	0	32	13.6	--	--	13.6
	19	100	--	--		19	0	0	19	17.8	--	--	17.8
	5	100	--	--		2	0	0	2	39.0	--	--	39.0
25 May 1959 (1400-1600)	1	100	--	--		2	0	0	2	13.2	--	--	13.2
	--	--	--	--		--	--	--	--	--	--	--	--
	4	100	--	--		4	0	0	4	19.0	--	--	19.0
	6	100	--	--		5	0	0	5	20.5	--	--	20.5
25 May 1959 (1600-1800)	9	100	--	--		5	0	0	5	34.2	--	--	34.2
	14	100	--	--		12	0	0	12	20.4	--	--	20.4
	1	100	--	--		1	0	0	1	29.3	--	--	29.3
	8	100	--	--		7	0	0	7	18.6	--	--	18.6
1 Hr. Intervals 20 May 1959 (1600-1800)	14	100	--	--		17	0	0	17	29.8	--	--	29.8
	9	100	--	--		8	0	0	8	35.3	--	--	35.3

Table II-12 (continued)

R/T COMMUNICATIONS MEASURES RADAR 1A CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
1 Hr. Int. Cont.													
23 May 1959 (1400-1600)	3 14	53 10	47 90	-- --		2 1	2 12	0 0	4 13	27.0 30.0	23.7 23.7	-- --	25.4 24.1
24 May 1959 (1600-1800)	18 12	100 100	-- --	-- --		43 21	0 0	0 0	43 21	15.2 19.8	-- --	-- --	15.2 19.8
25 May 1959 (1400-1600)	1 5	100 100	-- --	-- --		2 9	0 0	0 0	2 9	13.2 19.7	-- --	-- --	13.2 19.7
25 May 1959 (1600-1800)	12 5	100 100	-- --	-- --		17 8	0 0	0 0	17 8	24.2 19.8	-- --	-- --	24.2 19.8
2 Hr. Intervals													
20 May 1959 (1600-1800)	12	100	--	--		25	0	0	25	31.5	--	--	31.5
23 May 1959 (1400-1600)	7	20	80	--		3	14	0	17	28.0	23.7	--	24.4
24 May 1959 (1600-1800)	15	100	--	--		64	0	0	64	16.7	--	--	16.7
25 May 1959 (1400-1600)	3	100	--	--		11	0	0	11	18.4	--	--	18.4
25 May 1959 (1600-1800)	8	100	--	--		25	0	0	25	23.0	--	--	23.0

Table II-12 (continued)

R/T COMMUNICATIONS MEASURES RADAR 1A CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
30 Min. Intervals 20 May 1959 (1600-1800)	4	--	--	4	40.9	--	--	40.9	1.50	--	--	1.50
	3	--	--	3	114.0	--	--	114.0	3.67	--	--	3.67
	2	--	--	2	131.2	--	--	131.2	3.50	--	--	3.50
	1	--	--	1	19.6	--	--	19.6	1.00	--	--	1.00
23 May 1959 (1400-1600)	--	--	--	--	--	--	--	--	--	--	--	--
	1	1	0	2	54.0	47.4	--	50.7	2.00	2.00	--	4.00
	1	2	0	3	30.0	92.1	--	71.4	1.00	4.50	--	3.33
	0	1	0	1	--	99.7	--	99.7	--	3.00	--	3.00
24 May 1959 (1600-1800)	2	0	0	2	108.2	--	--	108.2	5.50	--	--	5.50
	6	0	0	6	72.8	--	--	72.8	5.33	--	--	5.33
	5	0	0	5	67.6	--	--	67.6	3.80	--	--	3.80
	2	0	0	2	39.0	--	--	39.0	1.00	--	--	1.00
25 May 1959 (1400-1600)	1	0	0	1	26.5	--	--	26.5	2.00	--	--	2.00
	--	--	--	--	--	--	--	--	--	--	--	--
	2	0	0	2	38.0	--	--	38.0	2.00	--	--	2.00
	2	0	0	2	50.5	--	--	50.5	2.50	--	--	2.50
25 May 1959 (1600-1800)	1	0	0	1	170.7	--	--	170.7	5.00	--	--	5.00
	4	0	0	4	60.9	--	--	60.9	3.00	--	--	3.00
	1	0	0	1	29.3	--	--	29.3	1.00	--	--	1.00
	2	0	0	2	64.7	--	--	64.7	3.50	--	--	3.50
1 Hr. Intervals 20 May 1959 (1600-1800)	6	--	--	6	84.3	--	--	84.3	2.83	--	--	2.83
	2	--	--	2	141.0	--	--	141.0	4.00	--	--	4.00
23 May 1959 (1400-1600)	1	1	0	2	54.0	47.4	--	50.7	2.00	2.00	--	4.00
	1	2	0	3	30.0	142.0	--	104.6	1.00	6.00	--	4.33

Table II-12 (continued)

R/T COMMUNICATIONS MEASURES RADAR 1A CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL					AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)					AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL				
	AC	NIL	GA	TOTAL		AC	NIL	GA	OVERALL		AC	MIL	GA	OVERALL	
1 Hr. Int. Cont. 24 May 1959 (1600-1800)	7	0	0	7		93.3	--	--	93.3		6.14	--	--	6.14	
	6	0	0	6		69.4	--	--	69.4		3.50	--	--	3.50	
25 May 1959 (1400-1600)	1	0	0	1		26.5	--	--	26.5		2.00	--	--	2.00	
	4	0	0	4		44.2	--	--	44.2		2.30	--	--	2.30	
25 May 1959 (1600-1800)	5	0	0	5		82.7	--	--	82.7		3.40	--	--	3.40	
	3	0	0	3		53.0	--	--	53.0		2.70	--	--	2.70	
2 Hr. Intervals 20 May 1959 (1600-1800)	8	0	0	8		98.5	--	--	98.5		3.12	--	--	3.12	
23 May 1959 (1400-1600)	1	2	0	3		84.0	165.6	--	138.4		3.00	7.00	--	5.67	
24 May 1959 (1600-1800)	11	--	--	11		97.2	--	--	97.2		5.82	--	--	5.82	
25 May 1959 (1400-1600)	5	0	0	5		40.5	--	--	40.5		2.20	--	--	2.20	
25 May 1959 (1600-1800)	8	0	0	8		71.7	--	--	71.7		3.10	--	--	3.10	

Table II-13

R/T COMMUNICATIONS MEASURES FOR RADAR 1B CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA	TOTAL	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
30 Min. Intervals 23 May 1959 (1400-1600)	22	100	--	--	21	21	--	--	21	18.7	--	--	18.7
	16	76	24	--	11	7	4	--	11	31.1	17.7	--	26.2
	35	100	--	--	42	42	--	--	42	14.9	--	--	14.9
	21	100	--	--	9	9	--	--	9	16.3	--	--	16.3
23 May 1959 (1600-1800)	31	100	--	--	45	45	--	--	45	12.2	--	--	12.2
	36	100	--	--	38	38	--	--	38	17.2	--	--	17.2
	28	100	--	--	34	34	--	--	34	14.8	--	--	14.8
	5	100	--	--	5	5	--	--	5	16.4	--	--	16.4
24 May 1959 (1400-1600)	17	100	--	--	22	22	--	--	22	13.7	--	--	13.7
	12	100	--	--	17	17	--	--	17	12.6	--	--	12.6
	35	100	--	--	46	46	--	--	46	13.8	--	--	13.8
	12	100	--	--	9	9	--	--	9	13.0	--	--	13.0
25 May 1959 (1400-1600)	16	100	--	--	10	10	--	--	10	29.0	--	--	29.0
	22	97	3	--	14	14	1	--	15	28.0	10.5	--	26.8
	43	92	8	--	32	32	6	--	38	22.1	10.9	--	20.3
	28	100	--	--	31	31	--	--	31	16.3	--	--	16.3
25 May 1959 (1600-1800)	27	77	23	--	20	20	4	--	24	18.5	27.6	--	20.0
	49	100	--	--	48	48	--	--	48	18.2	--	--	18.2
	44	100	--	--	44	44	--	--	44	17.8	--	--	17.8
	37	100	--	--	36	36	--	--	36	18.3	--	--	18.3
8 March 1960 (1500-1800)	38	97	3	--	40	40	1	--	41	16.8	18.2	--	16.8
	38	76	22	--	35	35	11	--	46	15.3	13.1	--	14.9
	35	64	36	--	23	23	4	--	27	17.2	56.8	--	23.1
	29	62	--	38	27	27	--	12	39	11.8	--	16.2	13.2

Table II-13 (continued)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL. (PERCENT)			
		AC		GA		AC		GA		AC		GA	
		MIL	GA	MIL	GA	MIL	GA	MIL	GA	MIL	GA	MIL	GA
1 Hr. Intervals													
23 May 1959 (1400-1600)	19 31	90 100	-- --	28 51	4 --	-- --	32 51	21.8 15.2	17.7 --	-- --	21.3 15.2		
23 May 1959 (1600-1800)	33 16	100 100	-- --	83 39	-- --	-- --	83 39	14.5 15.0	-- --	-- --	14.5 15.0		
24 May 1959 (1400-1600)	14 27	100 100	-- --	39 54	-- --	-- --	39 54	13.2 13.9	-- --	-- --	13.2 13.9		
25 May 1959 (1400-1600)	19 36	98 95	-- --	24 63	1 6	-- --	25 69	28.0 19.2	10.5 10.9	-- --	27.7 18.5		
25 May 1959 (1600-1800)	38 39	92 100	-- --	68 80	4 --	-- --	72 80	18.3 17.5	27.6 --	-- --	18.8 17.5		
8 March 1960 (1600-1800)	38 32	88 63	-- 17	75 50	12 4	-- 12	87 66	16.1 14.3	13.3 56.8	-- 16.2	15.8 17.2		
2 Hr. Intervals													
23 May 1959 (1400-1600)	24	95	5	79	4	--	83	17.5	17.7	--	17.5		
23 May 1959 (1600-1800)	25	100	--	122	--	--	122	14.7	--	--	14.7		
24 May 1959 (1400-1600)	20	100	--	93	--	--	93	13.6	--	--	13.6		
25 May 1959 (1400-1600)	27	96	4	87	7	--	94	21.8	10.9	--	20.9		

Table II-13 (continued)

R/T COMMUNICATIONS MEASURES FOR RADAR IB CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC		GA		AC		GA		AC		GA	
	AC	NIL	GA	TOTAL	AC	NIL	GA	OVERALL	AC	NIL	GA	OVERALL
30 Min. Intervals												
23 May 1959 (1400-1600)	4	--	--	4	98.2	--	--	98.2	5.25	--	--	5.25
	4	1	--	5	54.4	70.6	--	57.7	1.75	4.00	--	2.20
	6	--	--	6	104.5	--	--	104.5	7.00	--	--	7.00
	4	--	--	4	36.7	--	--	36.7	2.25	--	--	2.25
23 May 1959 (1600-1800)	7	--	--	7	78.7	--	--	78.7	6.43	--	--	6.43
	10	--	--	10	65.4	--	--	65.4	3.80	--	--	3.80
	8	--	--	8	63.1	--	--	63.1	4.25	--	--	4.25
	2	--	--	2	41.0	--	--	41.0	2.50	--	--	2.50
24 May 1959 (1400-1600)	5	--	--	5	60.2	--	--	60.2	4.40	--	--	4.40
	5	--	--	5	43.0	--	--	43.0	3.40	--	--	3.40
	6	--	--	6	105.6	--	--	105.6	7.67	--	--	7.67
	2	--	--	2	58.6	--	--	58.6	4.50	--	--	4.50
25 May 1959 (1400-1600)	4	--	--	4	72.5	--	--	72.5	2.50	--	--	2.50
	4	1	--	5	97.9	10.5	--	80.4	3.50	1.00	--	3.00
	8	1	--	9	88.4	65.6	--	85.8	4.00	6.00	--	4.22
	6	--	--	6	84.0	--	--	84.0	5.17	--	--	5.17
25 May 1959 (1600-1800)	3	1	--	4	123.5	110.4	--	120.2	6.67	4.00	--	6.00
	9	--	--	9	97.0	--	--	97.0	5.33	--	--	5.33
	9	--	--	9	87.1	--	--	87.1	4.89	--	--	4.89
	6	--	--	6	110.0	--	--	110.0	6.00	--	--	6.00
8 March 1960 (1600-1800)	11	1	--	12	61.0	18.2	--	57.4	3.64	1.00	--	3.12
	8	3	--	11	67.1	49.0	--	62.2	4.38	3.67	--	4.18
	8	3	--	11	49.4	75.8	--	56.6	2.88	1.33	--	2.45
	6	--	1	7	53.2	--	194.4	73.4	4.50	--	12	5.57

Table II-13 (Continued)
R/T COMMUNICATIONS MEASURES FOR RADAR IB CONTROL POSITION

DATE AND TIME	NUMBER OF PLACES CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	NIL	GA	TOTAL	AC	NIL	GA	OVERALL	AC	NIL	GA	OVERALL
1 Hr. Intervals 23 May 1959 (1400-1600)	7	1	--	8	87.2	70.6	--	85.2	4.00	4.00	--	4.00
	8	--	--	8	96.7	--	--	96.7	6.38	--	--	6.38
23 May 1959 (1600-1800)	15	--	--	15	80.3	--	--	80.3	5.53	--	--	5.53
	9	--	--	9	65.2	--	--	65.2	4.33	--	--	4.33
24 May 1959 (1400-1600)	7	--	--	7	73.7	--	--	73.7	5.57	--	--	5.57
	8	--	--	8	93.8	--	--	93.8	6.75	--	--	6.75
25 May 1959 (1400-1600)	6	1	--	7	113.6	10.5	--	98.9	4.00	1.00	--	3.57
	11	1	--	12	110.1	65.6	--	106.4	5.73	6.00	--	5.75
25 May 1959 (1600-1800)	11	1	--	12	113.0	110.4	--	112.8	6.18	4.00	--	6.00
	13	--	--	13	107.6	--	--	107.6	6.15	--	--	6.15
8 March 1960 (1600-1800)	16	3	--	19	75.5	55.1	--	72.3	4.69	4.00	--	4.58
	11	3	1	15	65.0	75.8	194.4	75.8	4.55	1.33	12	4.40
2 Hr. Intervals 23 May 1959 (1400-1600)	13	1	--	14	106.5	70.6	--	103.9	6.08	4.00	--	5.93
23 May 1959 (1600-1800)	19	--	--	19	94.3	--	--	94.3	6.42	--	--	6.42
24 May 1959 (1400-1600)	14	--	--	14	90.5	--	--	90.5	6.64	--	--	6.64
25 May 1959 (1400-1600)	15	1	--	16	126.2	76.1	--	123.0	5.80	7.00	--	5.88

R/T COMMUNICATIONS MEASURES FOR RADAR 1B CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC		GA		AC		GA		AC		GA	
		MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL
2 Hr. Int. Cont.- 25 May 1959 (1600-1800)	38	96	4	--	148	4	--	152	17.9	27.6	--	18.1	
8 March 1960 (1600-1800)	35	77	16	8	125	16	12	153	15.4	24.5	16.2	16.4	

Table II-13 (continued)

R/T COMMUNICATIONS MEASURES FOR RADAR 1B CONTROL POSITION

DATE AND TIME	NUMBER OF PLANES CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	NIL	GA	TOTAL	AC	NIL	GA	OVERALL	AC	NIL	GA	OVERALL
2 Hr. Int. Cont. 25 May 1959 (1600-1800)	18	1	--	19	146.8	110.4	--	144.9	8.22	4.00	--	8.00
8 March 1960 (1600-1800)	25	4	1	30	76.9	98.2	194.4	83.7	5.00	4.00	12	5.10

Table II-14 (continued)
R/T COMMUNICATIONS MEASURES FOR RADAR 2A CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL			NUMBER OF CONTACTS PER INTERVAL			AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA	AC	MIL	GA	AC	MIL	GA	OVERALL
1 Hr. Int. Cont. 21 May 1959 (1400-1600)	8	100	--	--	16	0	0	17.1	--	--	17.1
	2	100	--	--	4	0	0	16.6	--	--	16.6
	10	63	37	--	10	9	0	21.8	14.3	--	18.3
	16	60	40	--	9	11	0	23.4	13.0	--	17.7
	17	57	43	--	17	8	0	20.4	32.3	--	24.2
2 Hr. Intervals 15 May 1959	15	92	8	--	12	1	0	41.1	42.6	--	41.2
	9	71	29	--	18	9	0	23.4	19.4	--	22.0
	15	81	19	--	31	13	0	26.4	14.9	--	23.0
	5	100	--	--	20	0	0	17.0	--	--	17.0
	15	61	39	--	19	20	0	22.6	13.6	--	17.9
25 May 1959	16	74	26	--	29	9	0	28.9	33.4	--	30.0

Table II-14 (continued)

E/T COMMUNICATIONS MEASURES FOR NADAF 2A CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC		MIL		GA		MIL		AC		MIL	
	TOTAL		TOTAL		TOTAL		TOTAL		OVERALL		OVERALL	
30 min. Intervals 15 May 1959 (0800-1000)	3	1	0	0	4	66.6	99.0	75.7	3.0	7.0	4.0	5.0
	1	0	0	0	1	121.4	---	121.4	5.0	---	---	1
	0	1	0	0	1	---	44.5	44.5	---	1	---	2.50
	1	1	0	0	2	99.2	31.0	65.1	4.0	1.0	---	---
20 May 1959 (1100-1600)	2	4	0	0	6	229.7	21.6	90.9	7.50	1	---	3.17
	2	2	0	0	4	44.6	50.0	47.3	3.0	4.0	---	3.50
	2	1	0	0	3	30.2	7.5	22.6	1.50	1	---	1.33
	3	0	0	0	3	69.5	0	69.5	2.33	---	---	2.33
21 May 1959 (1100-1600)	3	0	0	0	3	91.2	---	91.2	5.33	---	---	5.33
	1	0	0	0	1	---	---	---	---	---	---	---
	1	0	0	0	1	27.2	---	27.2	1.0	---	---	1.0
	1	0	0	0	1	39.1	---	39.1	3.0	---	---	3.0
23 May 1959 (1100-1600)	2	1	0	0	3	71.0	29.0	90.3	2.50	9.0	---	4.67
	1	0	0	0	1	76.5	---	76.5	5.0	---	---	5.0
	2	1	0	0	3	60.4	143.0	87.9	2.50	11.0	---	5.33
	2	0	0	0	2	44.7	---	44.7	2.0	---	---	2.0
25 May 1959 (1100-1600)	2	3	0	0	5	93.5	56.2	71.1	6.0	1.33	---	3.20
	2	3	0	0	5	79.9	29.9	49.9	2.50	1.33	---	1.80
	3	1	0	0	4	82.9	42.6	72.8	3.33	1.0	---	2.75
	2	0	0	0	2	122.1	---	122.1	1.0	---	---	1.0
1 Hr. Intervals 15 May 1959 (0800-1000)	4	1	0	0	5	80.3	99.0	84.1	3.50	7.0	---	4.20
	1	2	0	0	3	99.2	37.8	58.2	4.0	1.0	---	2.0
20 May 1959 (1100-1600)	3	4	0	0	7	182.8	46.6	105.0	7.0	3.0	---	4.71
	5	1	0	0	6	53.8	7.5	46.1	2.0	1.0	---	1.83

Table II-14 (continued)

R/T COMMUNICATIONS MEASURES FOR RADAR 2A CONTROL POSITION

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL					AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)					AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL				
	AC		NIL		GA	AC		NIL		GA	AC		NIL		GA
1 Hr. Int. Cont. 21 May 1959 (1400-1600)	3	0	0	0	3	91.2	--	--	--	91.2	5.33	--	--	--	5.33
	1	0	0	0	1	66.3	--	--	--	66.3	4.00	--	--	--	4.00
	3	1	0	0	4	72.8	129.0	--	--	86.9	3.33	9.0	--	--	4.75
	4	1	0	0	5	52.5	143.0	--	--	70.6	2.25	11.0	--	--	4.0
	3	4	0	0	7	115.5	64.6	--	--	86.4	5.67	2.0	--	--	3.57
2 Hr. Intervals 15 May 1959	5	3	0	0	8	84.1	58.2	--	--	74.4	3.60	3.0	--	--	3.38
	7	4	0	0	11	116.8	48.4	--	--	91.9	4.43	3.25	--	--	4.0
	4	0	0	0	4	85.0	--	--	--	85.0	5.00	--	--	--	5.00
	7	2	0	0	9	61.2	136.0	--	--	77.9	2.71	10.0	--	--	4.33
	7	5	0	0	12	119.9	60.2	--	--	95.0	4.14	1.80	--	--	3.17

Table II-15
R/T COMMUNICATIONS MEASURES FOR RADAR 23 CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC		GA		AC		GA		AC		GA	
		MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL	MIL
30 Min. Intervals 21 May 1959 (1400-1600)	23	39.0	61.0	--	--	7	9	--	--	22.6	27.5	--	25.4
	13	100.0	--	--	--	13	--	--	--	17.8	--	--	17.8
	16.1	100.0	--	--	--	12	--	--	--	24.1	--	--	24.1
	24.8	100.0	--	--	--	14	--	--	--	28.3	--	--	28.3
	27.1	100.0	--	--	--	13	--	--	--	37.6	--	--	37.6
	28.0	100.0	--	--	--	21	--	--	--	24.0	--	--	24.0
	24.0	73.1	26.9	--	--	15	5	--	--	20.6	22.8	--	21.2
	17.2	36.0	48.7	15.3	--	4	2	1	--	27.8	75.2	47.2	44.1
	31.9	81.1	9.5	9.3	--	23	2	2	--	20.2	27.3	26.8	21.2
	18.4	75.3	24.7	--	--	14	6	--	--	17.8	13.6	--	16.5
23 May 1959 (1600-1800)	23.8	92.0	8.0	--	--	15	2	--	--	26.3	17.1	--	25.2
	9.3	100.0	--	--	--	3	--	--	--	16.8	--	--	16.8
	1.1	100.0	--	--	--	1	--	--	--	19.9	--	--	19.9
	7.0	100.0	--	--	--	4	--	--	--	33.6	--	--	33.6
	12.3	--	--	100.0	--	--	--	4	--	--	--	55.2	55.2
	21.0	100.0	--	--	--	13	--	--	--	25.5	--	--	25.5
	17.7	61.1	38.9	--	--	20	9	--	--	19.4	27.5	--	21.9
	20.2	100.0	--	--	--	26	--	--	--	26.4	--	--	26.4
	27.5	100.0	--	--	--	34	--	--	--	29.2	--	--	29.2
	20.3	57.4	36.1	6.4	--	19	7	1	--	22.1	37.8	47.2	27.1
1 Hr. Intervals 21 May 1959 (1400-1600)	25.1	79.0	15.1	5.9	--	37	8	2	--	19.3	17.0	26.8	19.2
	21.0	92.9	7.1	--	--	18	2	--	--	24.8	17.1	--	24.0

Table II-15 (continued)
P/T COMMUNICATIONS MEASURES FOR RADAR 2B CONTROL POSITION

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL			NUMBER OF CONTACTS PER INTERVAL			AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)		
		AC	MIL	GA	AC	MIL	GA	AC	MIL	GA
1 Hr. Int. Cont. 23 May 1959 (1600-1800)	4.3 16.2	100.0 60.0	-- --	-- 40.0	5 13	-- --	-- 4	30.9 25.5	-- --	-- 55.2
2 Hr. Intervals 21 May 1959	18.9	81.3	18.7	--	46	9	--	23.3	27.5	--
21 May 1959	23.9	81.9	15.3	2.7	53	7	1	26.6	37.8	47.2
23 May 1959	23.0	83.8	12.3	3.9	55	10	2	21.1	17.5	26.8
23 May 1959	10.1	68.7	--	31.3	18	--	4	27.0	--	55.2
					22			32.1		

Table II-15 (continued)

R/T COMMUNICATIONS MEASURES FOR RADAR 2B CONTROL POSITION

DATE AND TIME	NUMBER OF PLANES CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	INTERVAL				GA				GA			
	AC	NIL	GA	TOTAL	AC	NIL	GA	OVERALL	AC	NIL	GA	OVERALL
30 Min. Intervals												
21 May 1959 (1400-1600)	1	2	—	3	158.0	123.8	—	135.2	7.00	4.50	—	5.33
	3	—	—	3	76.9	—	—	76.9	4.33	—	—	4.33
	4	—	—	4	72.4	—	—	72.4	3.00	—	—	3.00
	4	—	—	4	98.9	—	—	98.9	3.50	—	—	3.50
21 May 1959 (1600-1800)	4	—	—	4	122.0	—	—	122.0	3.25	—	—	3.25
	4	—	—	4	125.8	—	—	125.8	5.25	—	—	5.25
	4	—	—	4	103.1	113.8	—	105.8	5.00	—	—	5.00
	3	1	—	4	37.0	150.5	47.2	61.8	1.33	2.00	1.00	1.40
23 May 1959 (1400-1600)	3	1	1	5	155.2	54.6	53.6	114.8	7.67	2.00	2.00	5.40
	3	2	—	5	83.0	40.8	—	66.1	4.67	3.00	—	4.00
	4	1	—	5	98.8	34.2	—	85.8	3.75	2.00	—	3.40
	1	—	—	1	50.5	—	—	50.5	3.00	—	—	3.00
23 May 1959 (1600-1800)	1	—	—	1	19.9	—	—	19.9	1.00	—	—	1.00
	2	—	—	2	67.3	—	—	67.3	2.00	—	—	2.00
	—	—	1	1	—	—	220.9	220.9	—	—	4.00	4.00
	6	—	—	6	55.2	—	—	55.2	2.17	—	—	2.17
1 Hr. Intervals												
21 May 1959 (1400-1600)	4	2	—	6	97.2	123.8	—	106.1	5.00	4.50	—	4.83
	7	—	—	7	97.9	—	—	97.9	3.71	—	—	3.71
21 May 1959 (1600-1800)	6	—	—	6	165.3	—	—	165.3	5.67	—	—	5.67
	4	2	1	7	105.1	132.2	47.2	104.6	4.75	3.50	1.00	3.86
23 May 1959 (1400-1600)	5	2	1	8	142.9	68.2	53.6	113.1	7.40	4.00	2.00	5.88
	4	1	—	5	111.4	34.2	—	95.9	4.50	2.00	—	4.00

Table II-15 (continued)

R/T COMMUNICATIONS MEASURES FOR RADAR 2B CONTROL POSITION

DATE AND TIME	NUMBER OF PLANES CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
1 Hr. Int. Cont. 23 May 1959 (1600-1800)	3	-	-	3	51.5	-	-	51.5	1.67	-	-	1.67
	6	-	1	7	55.2	-	220.9	78.9	2.17	-	4.00	2.43
2 Hr. Intervals 21 May 1959	10	2	-	12	107.4	123.8	-	110.1	4.60	4.50	-	4.58
21 May 1959	10	2	1	13	141.2	132.2	47.2	132.6	5.30	3.50	1.00	4.69
23 May 1959	8	2	1	11	145.0	85.2	53.6	125.8	6.88	5.00	2.00	6.90
23 May 1959	9	-	1	10	54.0	-	220.9	70.7	2.00	-	4.00	2.20

Table II-16 (continued)

R/T COMMUNICATIONS MEASURES FOR STATION POSITION D

(Two-Hour Intervals)

DATE AND TIME	NUMBER OF PLANTS CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
20 April 1959 (1400-1600)	8	14	4	26	182.3	90.7	48.3	112.4	5.75	3.43	1.00	3.77
15 May 1959 (0800-1000)	4	8	5	17	52.0	168.8	52.5	107.1	1.00	7.12	1.40	4.00
20 May 1959 (1100-1600)	3	13	1	17	22.4	135.9	7.9	108.4	2.33	3.69	1.00	3.29
20 May 1959 (1600-1800)	5	8	2	15	103.5	40.4	24.8	59.3	2.80	1.62	2.50	2.13
21 May 1959 (1600-1800)	6	11	1	18	59.0	250.4	304.5	189.6	1.50	3.91	3.00	3.06
22 May 1959 (1600-1800)	6	15	1	22	56.9	157.3	63.9	125.7	2.00	4.00	1.00	3.32
23 May 1959 (0000-0200)	5	5	1	11	178.9	127.0	45.6	143.2	4.60	3.80	1.00	3.91
23 May 1959 (1400-1600)	3	9	3	15	389.1	112.5	30.0	151.4	9.67	3.11	1.33	4.07
23 May 1959 (1600-1800)	5	8	--	13	31.4	110.8	--	80.3	1.00	3.38	--	2.77
24 May 1959 (1400-1600)	1	17	1	19	26.5	17.9	31.6	19.1	2.00	2.59	1.00	2.47

Table II-17 (continued)
R/T COMMUNICATIONS MEASURES FOR STATION POSITION C
(Two-Hour Intervals)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC		GA		AC		GA		AC		GA	
		AC	MIL	GA	GA	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
20 April 1959 (1400-1600)	12	12	52	36	6	15	10	31	17.9	30.2	30.8	28.0	
15 May 1959 (0800-1000)	18	3	89	8	2	7	5	14	16.7	161.9	21.6	91.1	
20 May 1959 (1400-1600)	14	2	57	41	1	5	2	8	23.8	112.6	201.7	123.7	
20 May 1959 (1600-1800)	11	7	49	44	2	11	7	20	22.2	35.5	51.9	39.9	
21 May 1959 (1400-1600)	3	48	30	21	3	2	1	6	35.2	33.1	46.5	36.4	
21 May 1959 (1600-1800)	2	--	29	71	--	3	5	8	--	12.7	18.7	16.4	
22 May 1959 (1600-1800)	11	33	53	14	6	7	6	19	42.3	53.1	17.8	40.3	
24 May 1959 (1400-1600)	6	18	73	9	4	12	1	17	19.3	26.9	40.0	25.9	
24 May 1959 (1600-1800)	2	42	38	20	5	2	1	8	13.9	31.5	33.1	20.7	

Table II-17
R/T COMMUNICATIONS MEASURES FOR STATION POSITION C

DATE AND TIME	NUMBER OF PLANS CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
20 April 1959 (1400-1600)	5	7	5	17	21.5	64.8	61.6	51.1	1.20	2.14	2.00	1.82
15 May 1959 (0800-1000)	1	5	5	11	33.4	226.6	21.6	115.9	2.00	1.40	1.00	1.27
20 May 1959 (1400-1600)	1	3	1	5	23.8	187.6	403.3	197.9	1.00	1.67	2.00	1.60
20 May 1959 (1600-1800)	2	4	5	11	22.2	97.6	72.7	72.6	1.00	2.75	1.40	1.82
21 May 1959 (1400-1600)	2	2	1	5	52.8	33.1	46.5	43.6	1.50	1.00	1.00	1.20
21 May 1959 (1600-1800)	--	1	4	5	--	38.1	23.4	26.3	--	3.00	1.25	1.60
22 May 1959 (1600-1800)	4	2	4	10	63.4	203.5	26.7	76.7	1.50	3.50	1.50	1.90
24 May 1959 (1400-1600)	2	4	1	7	38.6	80.8	40.0	63.1	2.00	3.00	1.00	2.43
24 May 1959 (1600-1800)	2	1	1	4	34.8	62.9	33.1	41.4	2.50	2.00	1.00	2.00

Table II-10

R/T COMMUNICATIONS MEASURES FOR STATION POSITION B

(Two-Hour Intervals)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				NUMBER OF CONTACTS PER INTERVAL				AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)			
		AC	MIL	GA		AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL
20 April 1959 (1100-1600)	4	--	--	100		--	--	--	9	--	--	28.9	28.9
20 May 1959 (1100-1600)	0.6	--	--	100		--	--	--	2	--	--	19.6	19.6
20 May 1959 (1600-1800)	2	--	--	100		--	--	--	3	--	--	39.4	39.4
21 May 1959 (1100-1600)	6	--	35	65		--	--	4	8	--	39.8	37.3	38.1
21 May 1959 (1600-1800)	8	--	--	100		--	--	--	14	--	--	38.7	38.7
22 May 1959 (1600-1800)	8	--	5	95		--	--	1	11	--	24.8	48.1	46.2
23 May 1959 (0000-0200)	0	--	--	--		--	--	--	--	--	--	--	--
23 May 1959 (1030-1230)	10	--	--	100		--	--	--	14	--	--	49.9	49.9
23 May 1959 (1100-1600)	8	6	--	94		2	--	--	10	15.6	--	52.4	46.2
23 May 1959 (1600-1800)	10	--	--	100		--	--	--	10	--	--	75.1	75.1

Table II-18 (continued)
R/T COMMUNICATIONS MEASURES FOR STATION POSITION B
(Two-Hour Intervals)

DATE AND TIME	% TIME SPENT ON R/T COMM. PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL			NUMBER OF CONTACTS PER INTERVAL			AVERAGE CONTACT TIME PER PLANE WITHIN INTERVAL (SECONDS)		
		AC	MIL	GA	AC	MIL	GA	AC	MIL	GA
24 May 1959 (1400-1600)	2	--	--	100	--	--	5	--	--	34.2
24 May 1959 (1600-1800)	12	--	--	100	--	--	14	--	--	60.0

Table II-18 (continued)
R/T COMMUNICATIONS MEASURES FOR STATION POSITION B
(Two-Hour Intervals)

DATE AND TIME	NUMBER OF PLANE CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC	MIL	GA	TOTAL	AC	MIL	GA	OVERALL	AC	MIL	GA	OVERALL
20 April 1959 (1400-1600)	--	--	7	7	--	--	37.2	37.2	--	--	1.29	1.29
20 May 1959 (1100-1600)	--	--	2	2	--	--	19.6	19.6	--	--	1.00	1.00
20 May 1959 (1600-1800)	--	--	2	2	--	--	59.0	59.0	--	--	1.50	1.50
21 May 1959 (1100-1600)	--	2	7	9	--	79.7	42.6	50.8	--	2.00	1.14	1.33
21 May 1959 (1600-1800)	--	--	10	10	--	--	54.2	54.2	--	--	1.40	1.40
22 May 1959 (1600-1800)	--	1	11	12	--	24.8	48.1	46.2	--	1.00	1.00	1.00
23 May 1959 (0000-0200)	--	--	--	--	--	--	--	--	--	--	--	--
23 May 1959 (1030-1230)	--	--	8	8	--	--	87.3	87.3	--	--	1.75	1.75
23 May 1959 (1400-1600)	2	--	8	10	15.6	--	65.5	55.5	1.00	--	1.25	1.20
23 May 1959 (1600-1800)	--	--	8	8	--	--	93.8	93.8	--	--	1.25	1.25
24 May 1959 (1400-1600)	--	--	4	4	--	--	42.8	42.8	--	--	1.25	1.25

DATE AND TIME	NUMBER OF PLANTS CONTACTED WITHIN INTERVAL				AVERAGE TOTAL TIME PER PLANE CONTACTED WITHIN INTERVAL (SECONDS)				AVERAGE NUMBER OF CONTACTS PER PLANE CONTACTED WITHIN INTERVAL			
	AC		GA		AC		GA		AC		GA	
	TOTAL		OVERALL		AC		GA		AC		GA	
24 May 1959 (1600-1800)	---	---	8	8	---	---	105.0	105.0	---	---	1.75	1.75

B. TIME-RELATED DATA CHARTS

A pictorial display of the data presented in the preceding tables is given in the following six cycles of charts.

1. Sequential Variation in R/T Communications Load

Much has been said by controllers and communicators about the large variations in R/T communications loads which they experience. Knowledge of these variations is important because the design of voice communications systems and the assignment of control areas is more dependent upon peak communications loads than upon average communications loads.

Figures II-1 to II-6 illustrate the variation found in each of the positions studied. The percent of time spent on R/T communications is plotted for each of twenty-four consecutive five-minute intervals. The time period selected in each case was 1400 to 1600 EST.

Figure II-1

SEQUENTIAL VARIATION IN R/T COMMUNICATIONS LOAD

(Five-Minute Intervals, 23 May 1959)

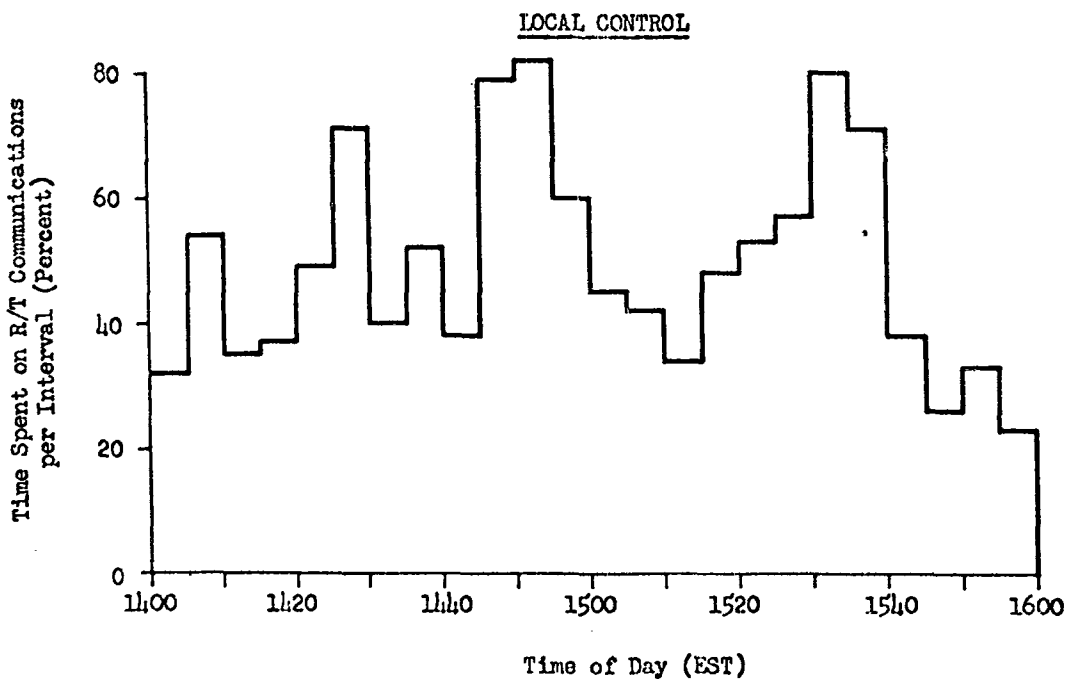
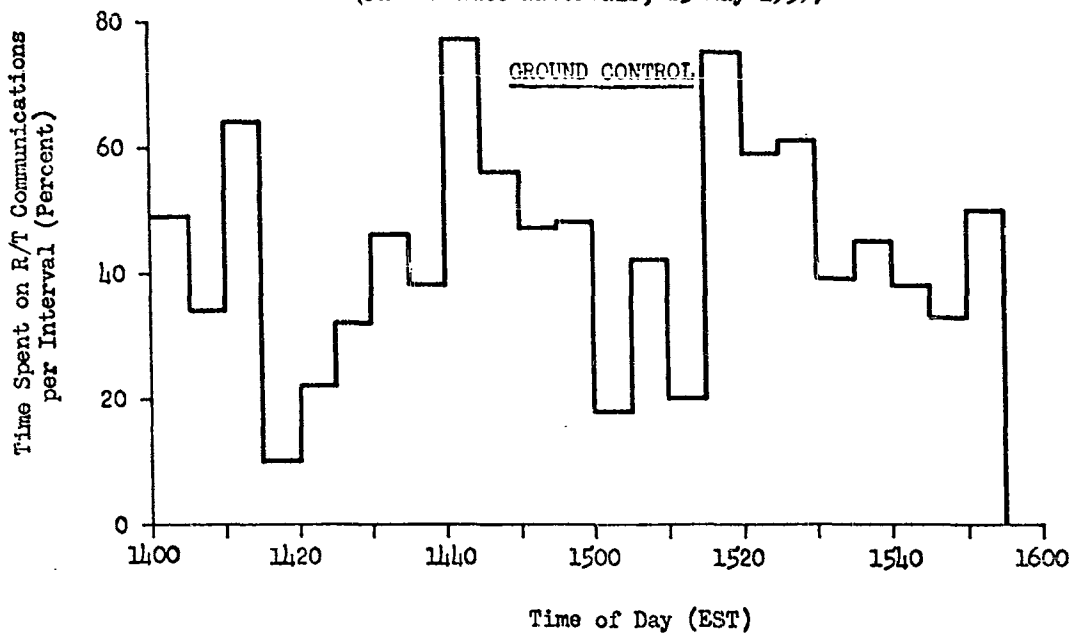
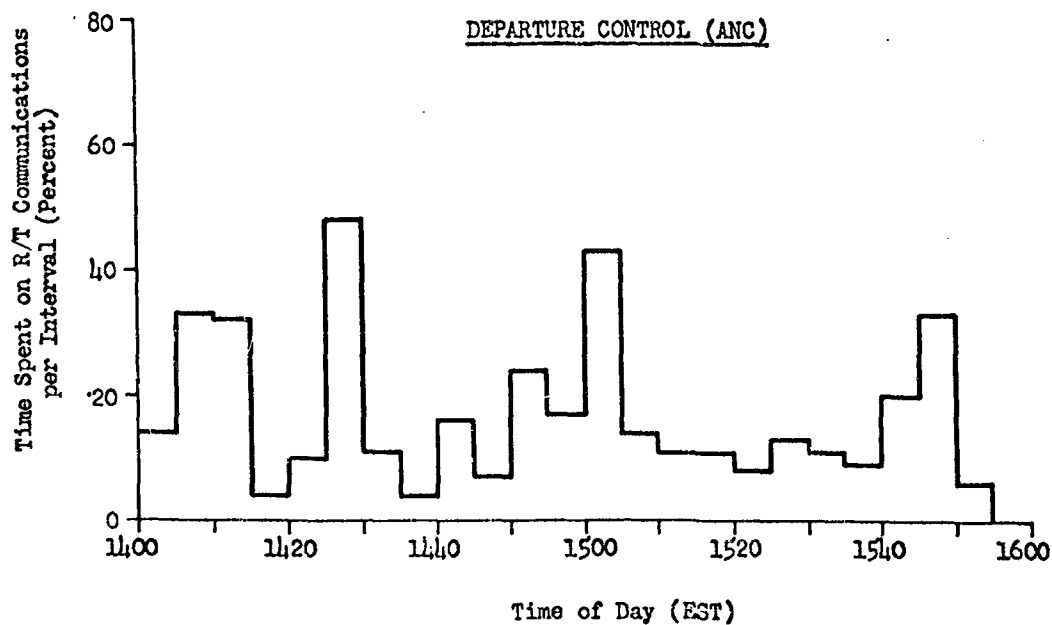
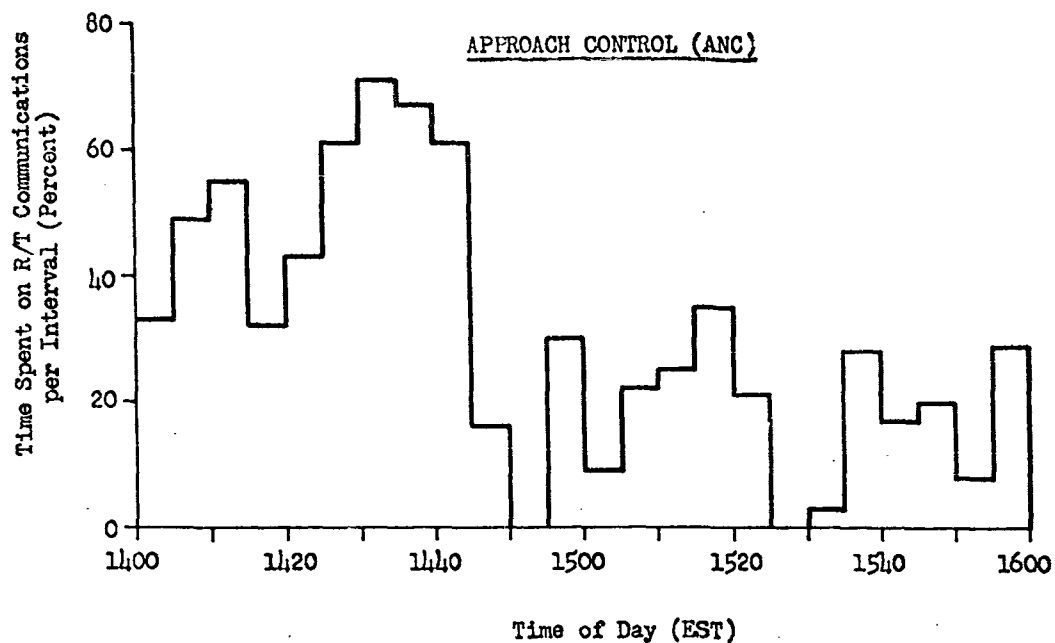
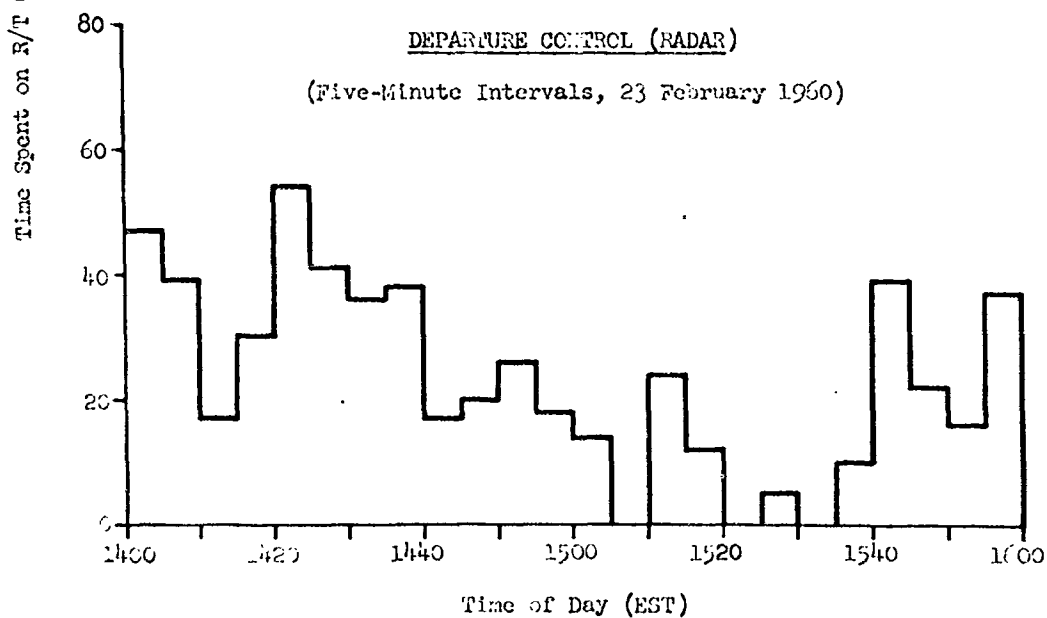
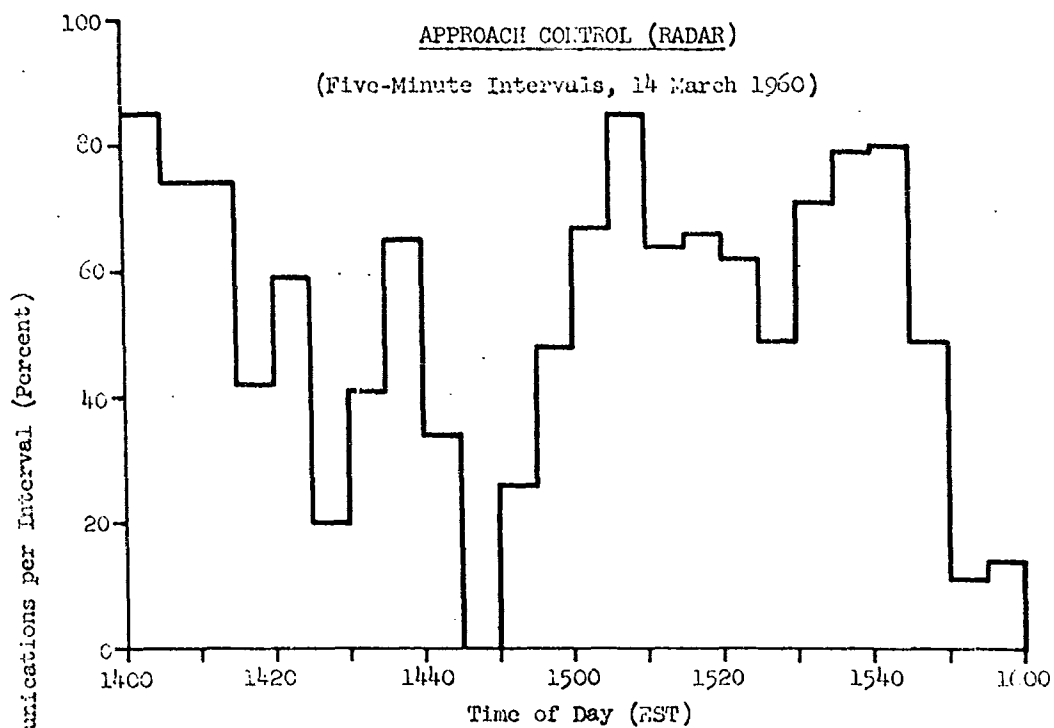


Figure II-2

SEQUENTIAL VARIATION IN R/T COMMUNICATIONS LOAD

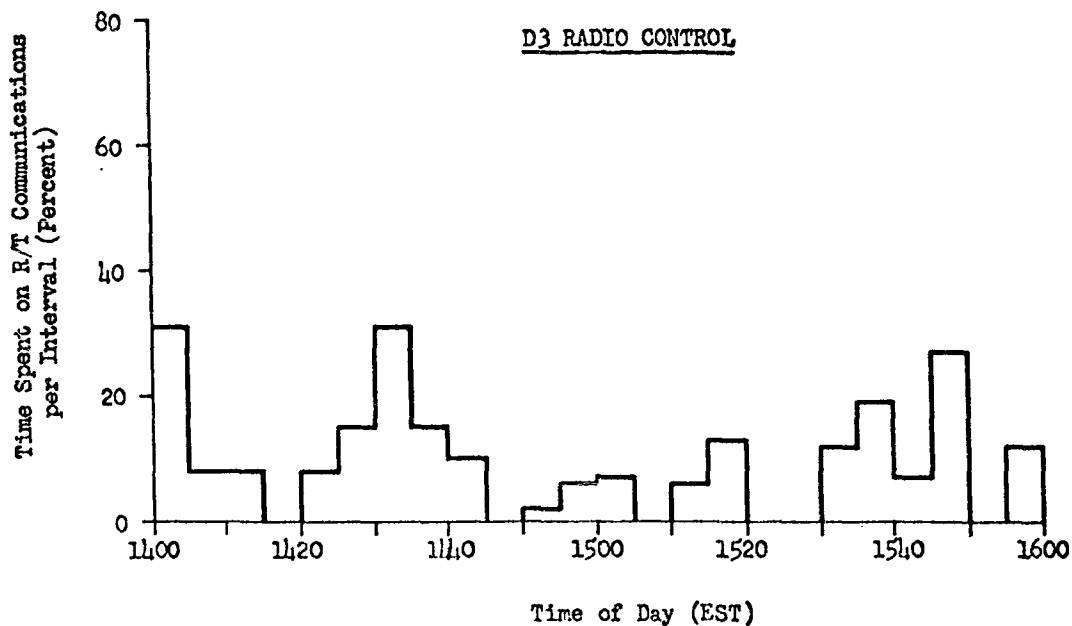
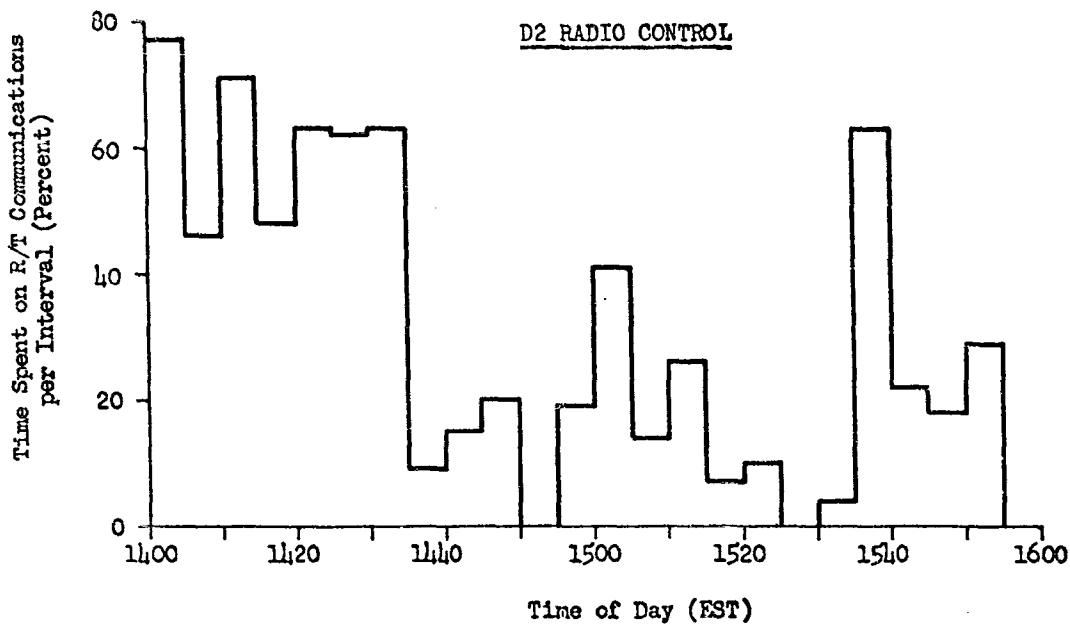
(Five-Minute Intervals, 23 May 1959)



SEQUENTIAL VARIATION IN R/T COMMUNICATIONS LOAD

SEQUENTIAL VARIATION IN R/T COMMUNICATIONS LOAD

(Five-Minute Intervals, 23 May 1959)



SEQUENTIAL VARIATION IN R/T COMMUNICATIONS LOAD

(Five-Minute Intervals, 23 May 1959)

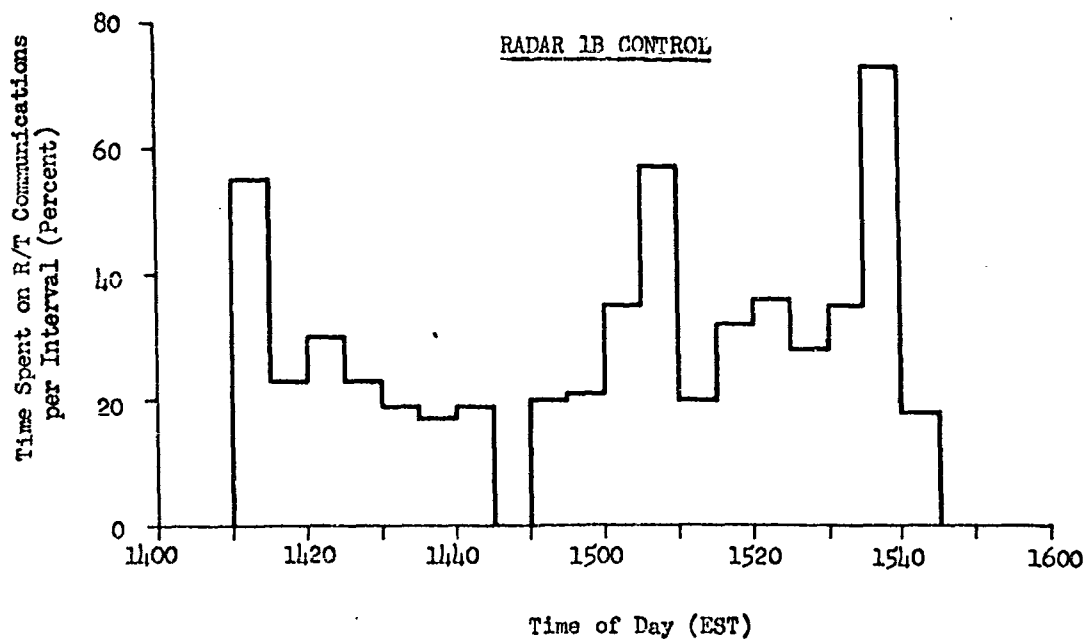
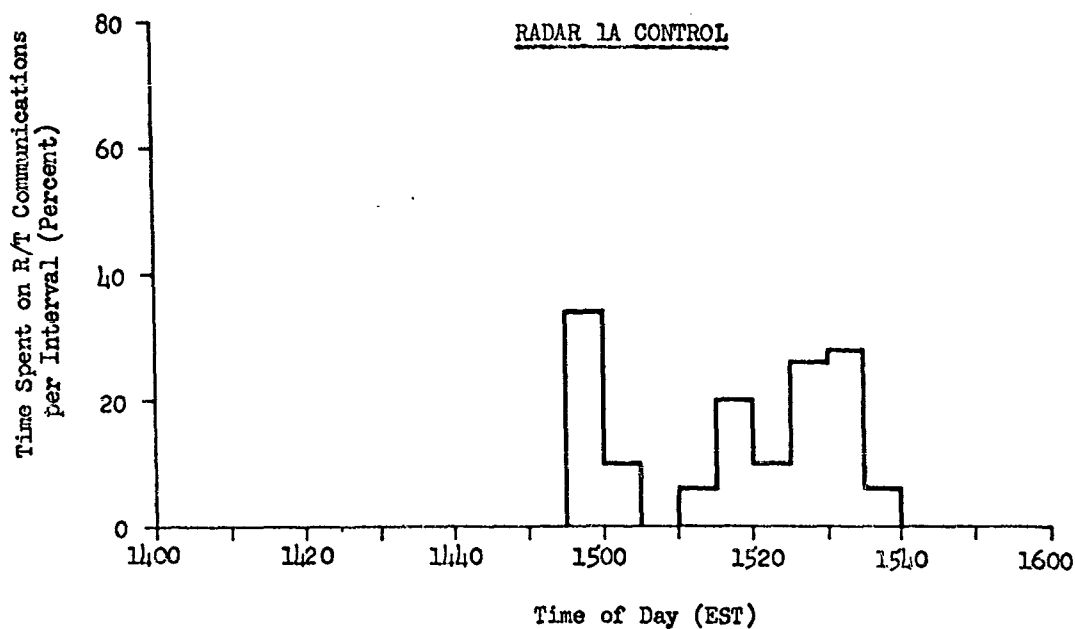
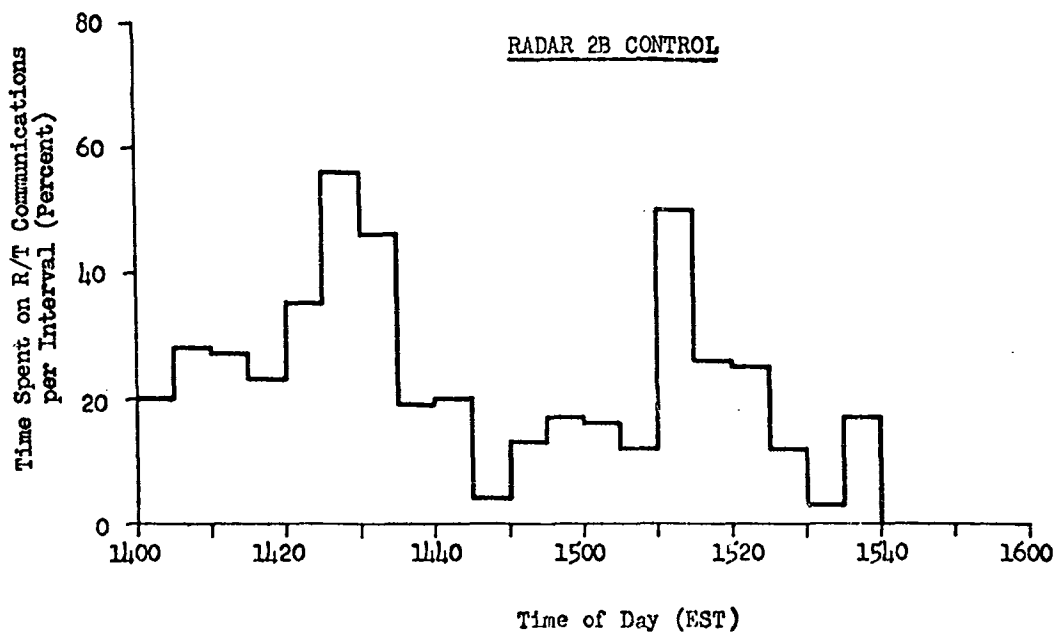
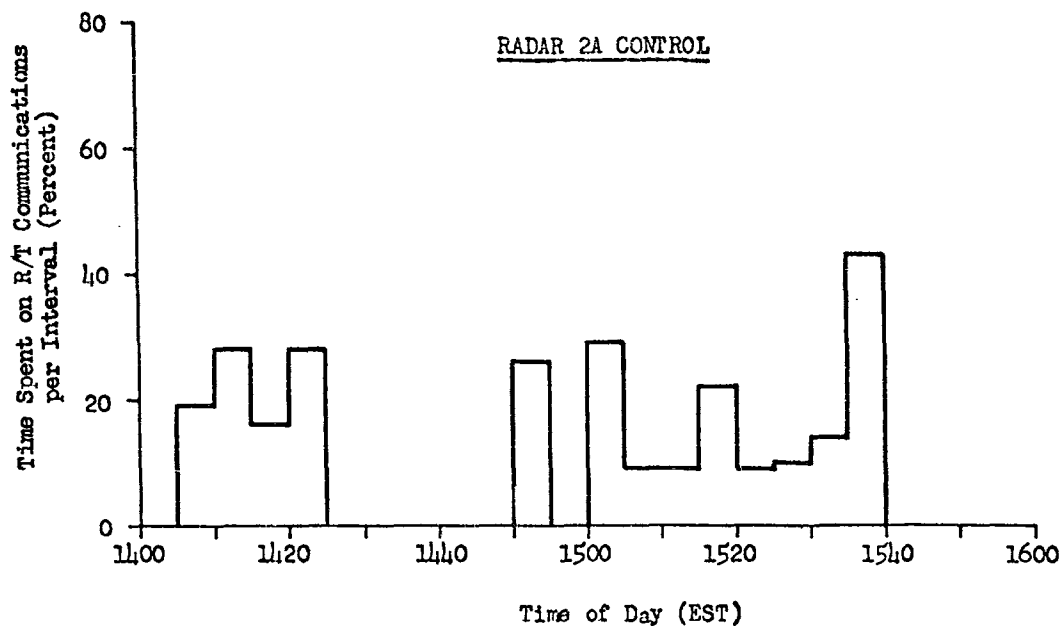


Figure II-6

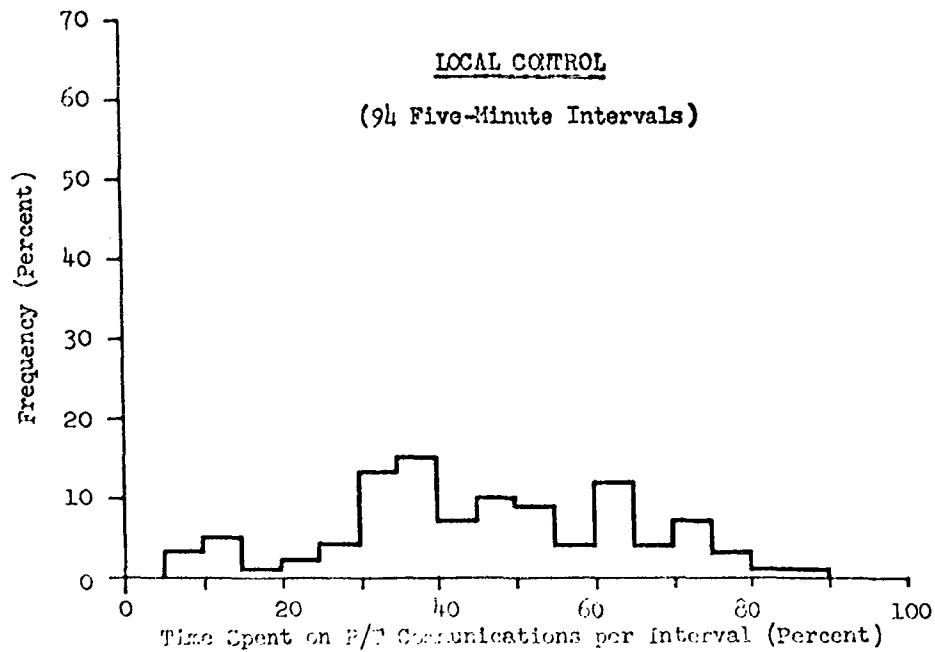
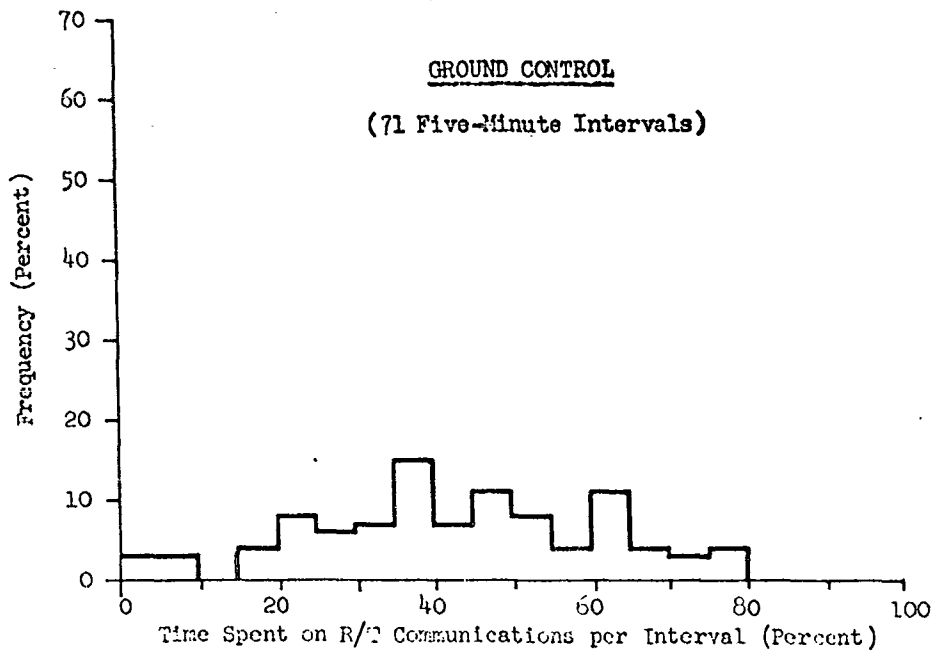
SEQUENTIAL VARIATION IN R/T COMMUNICATIONS LOAD

(Five-Minute Intervals, 23 May 1959)



2. Frequency Functions for Percent of Time Spent on R/T Communications

Figures II-7 to II-12 show the R/T communications load for each position in the form of frequency histograms. The ordinate represents the proportion of five-minute intervals in which occurred each of the R/T communications load percentages on the abscissa. These charts thus give an indication of the range of conditions encountered during the study as well as the average conditions.

FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON R/T COMMUNICATIONS

FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON R/T COMMUNICATIONS

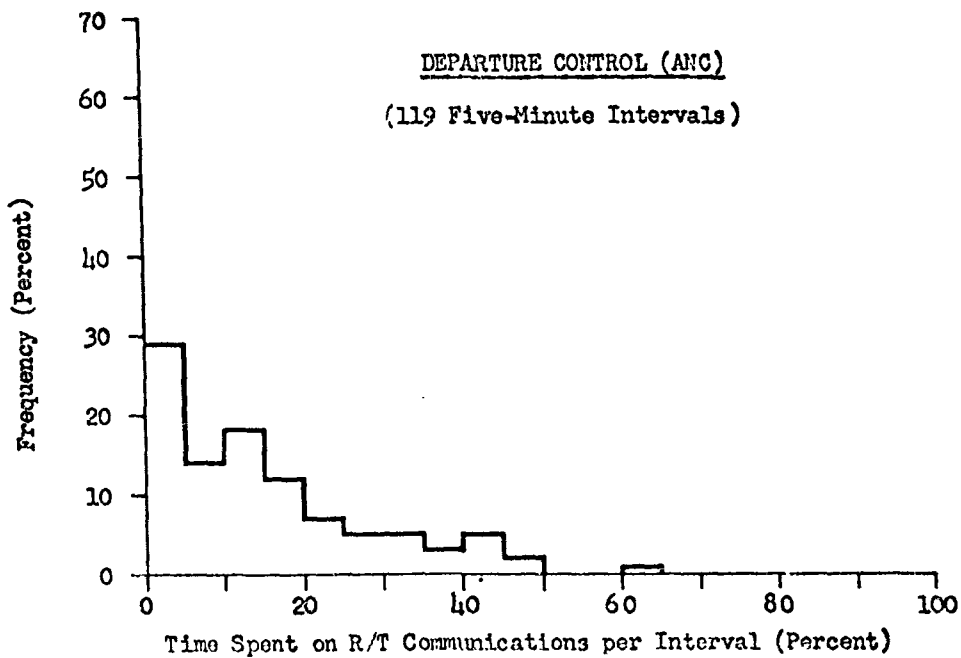
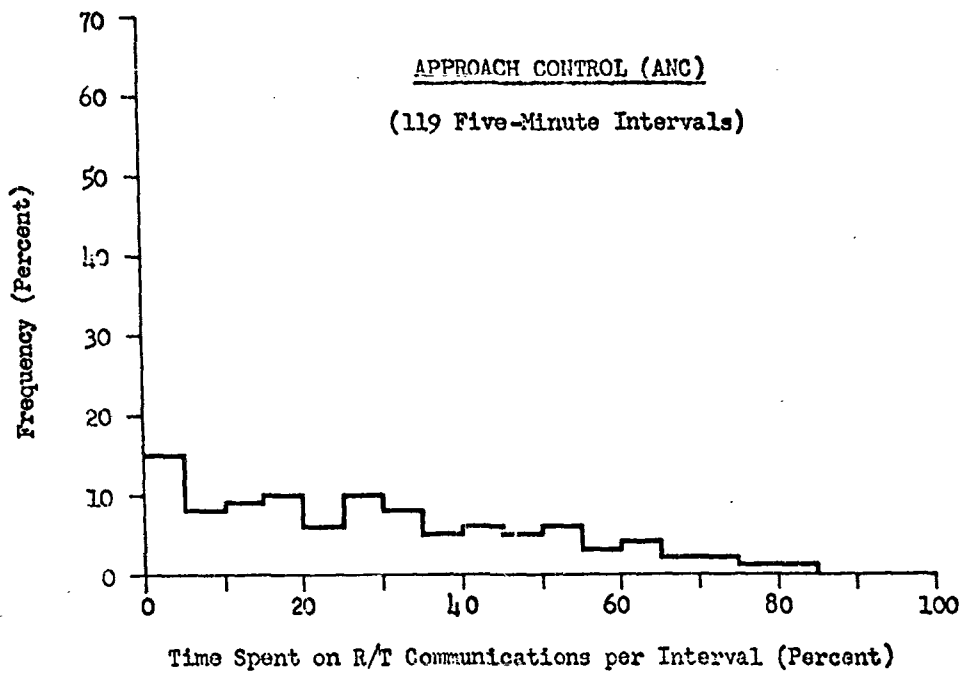
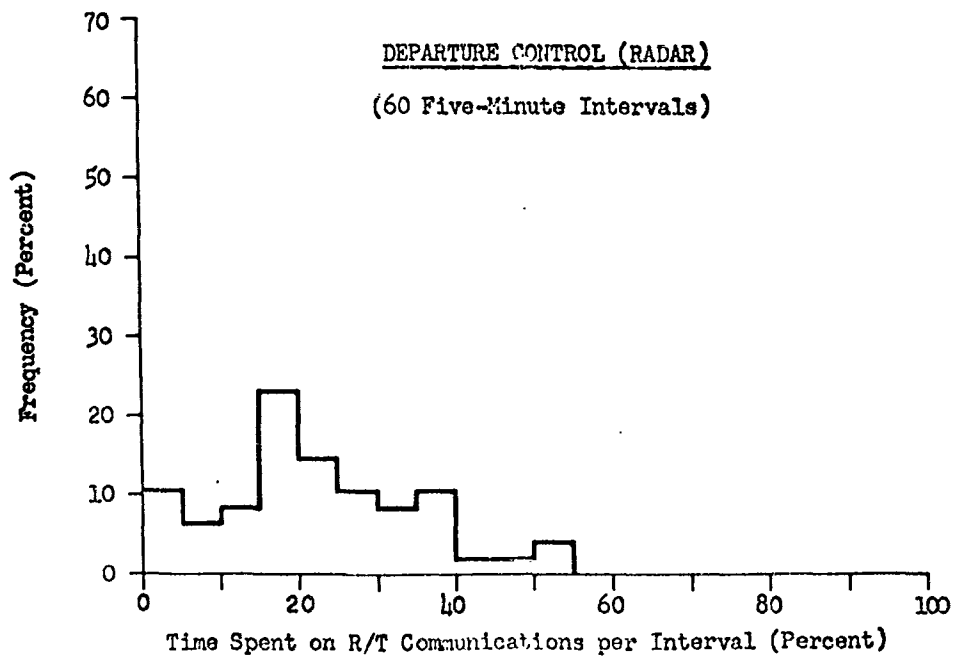
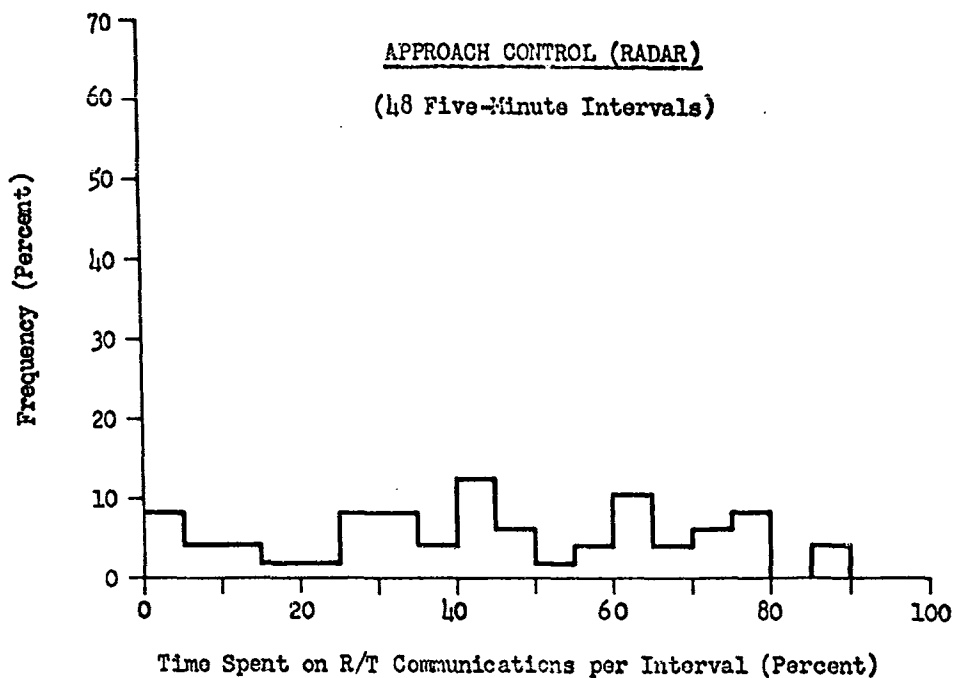


Figure II-9FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON R/T COMMUNICATIONS

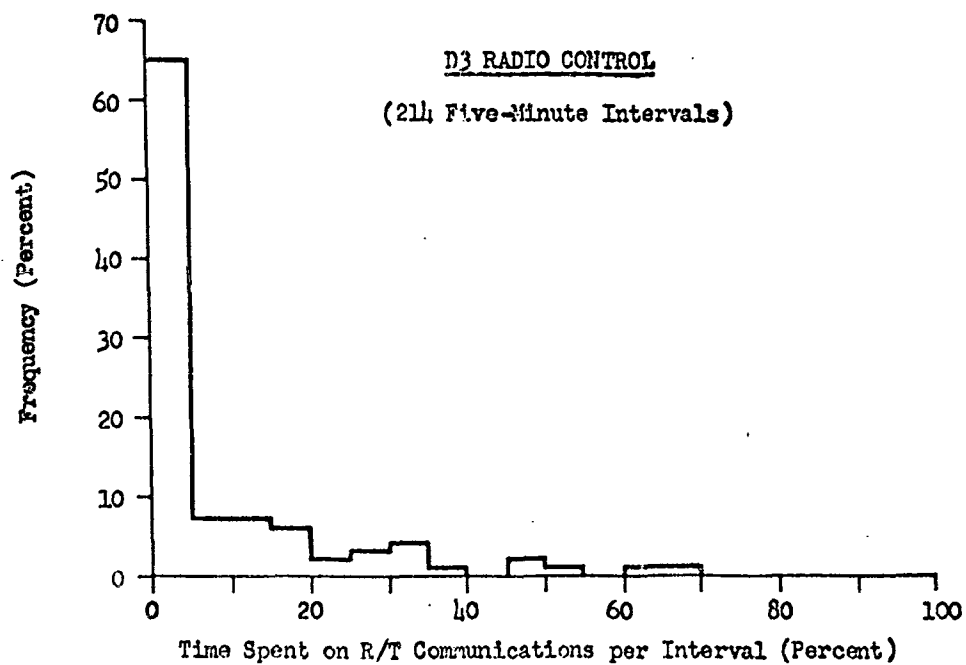
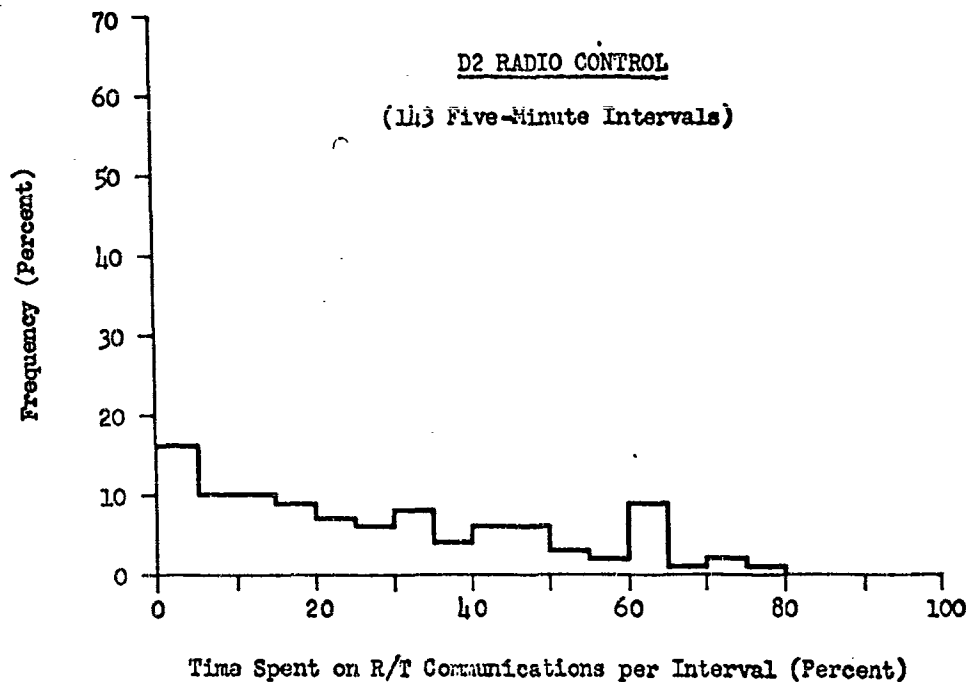
FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON R/T COMMUNICATIONS

Figure II-11

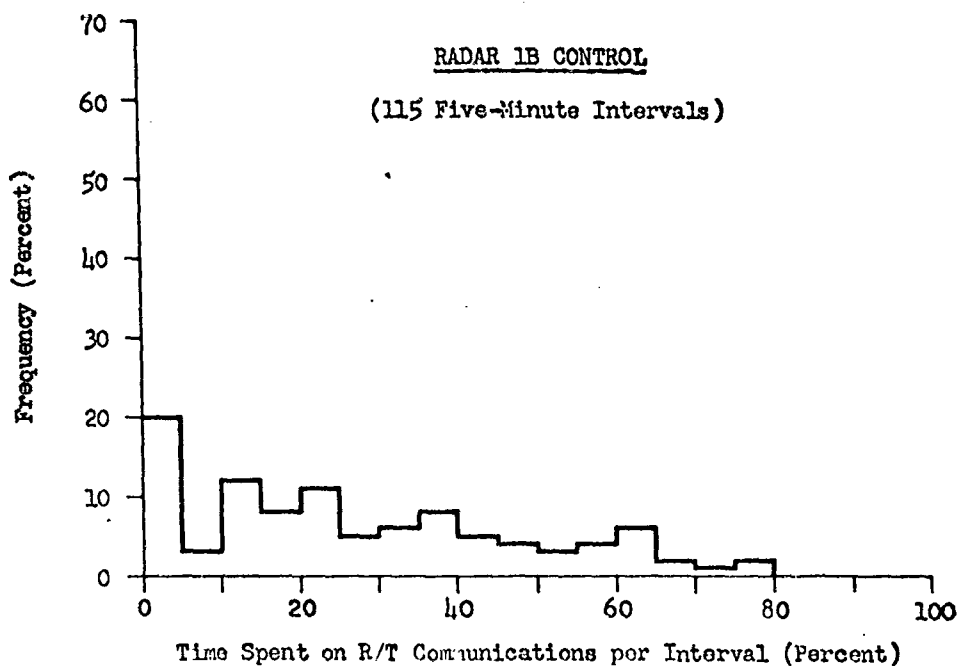
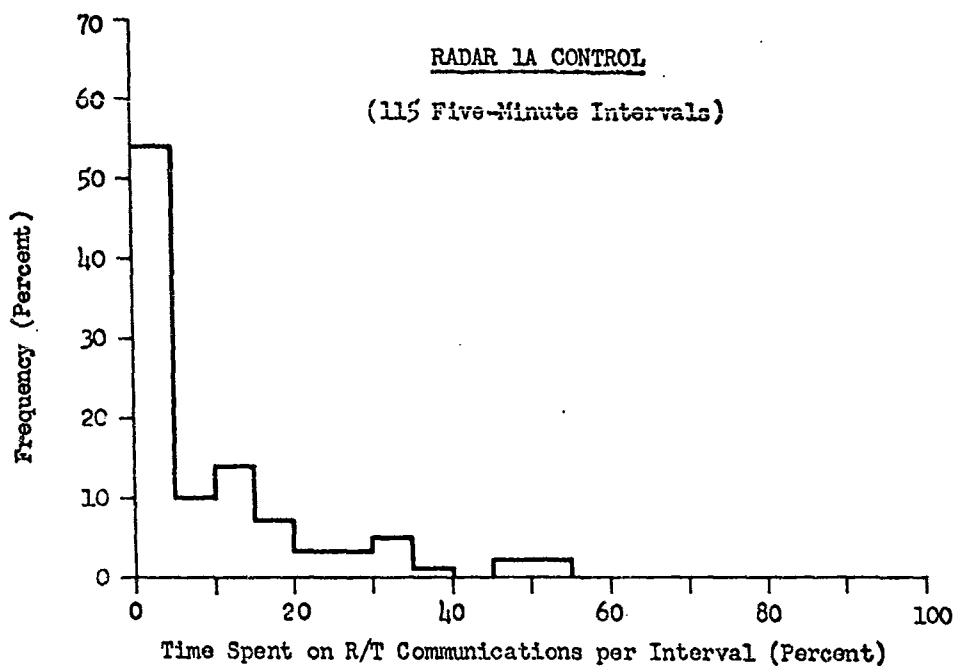
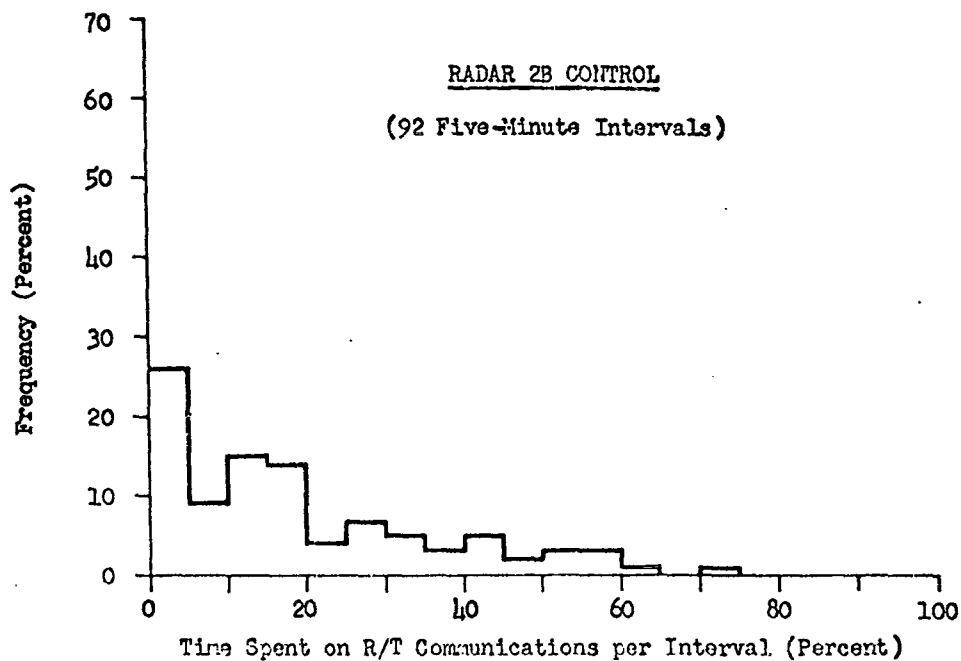
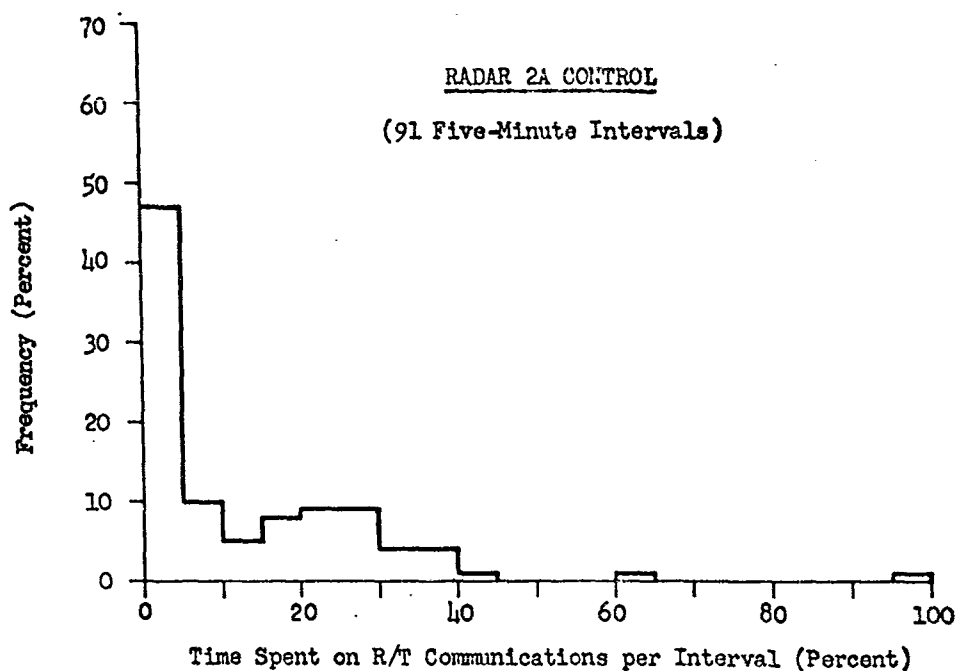
FREQUENCY FUNCTION FOR PERCENT OF TIME SPENT ON R/T COMMUNICATIONS

Figure II-12

FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON R/T COMMUNICATIONS

3. Time-Related Measures

The three primary time-related measures are:

- Average total communications time per aircraft per interval
- Average communications time per contact per interval
- Average number of contacts per aircraft per interval.

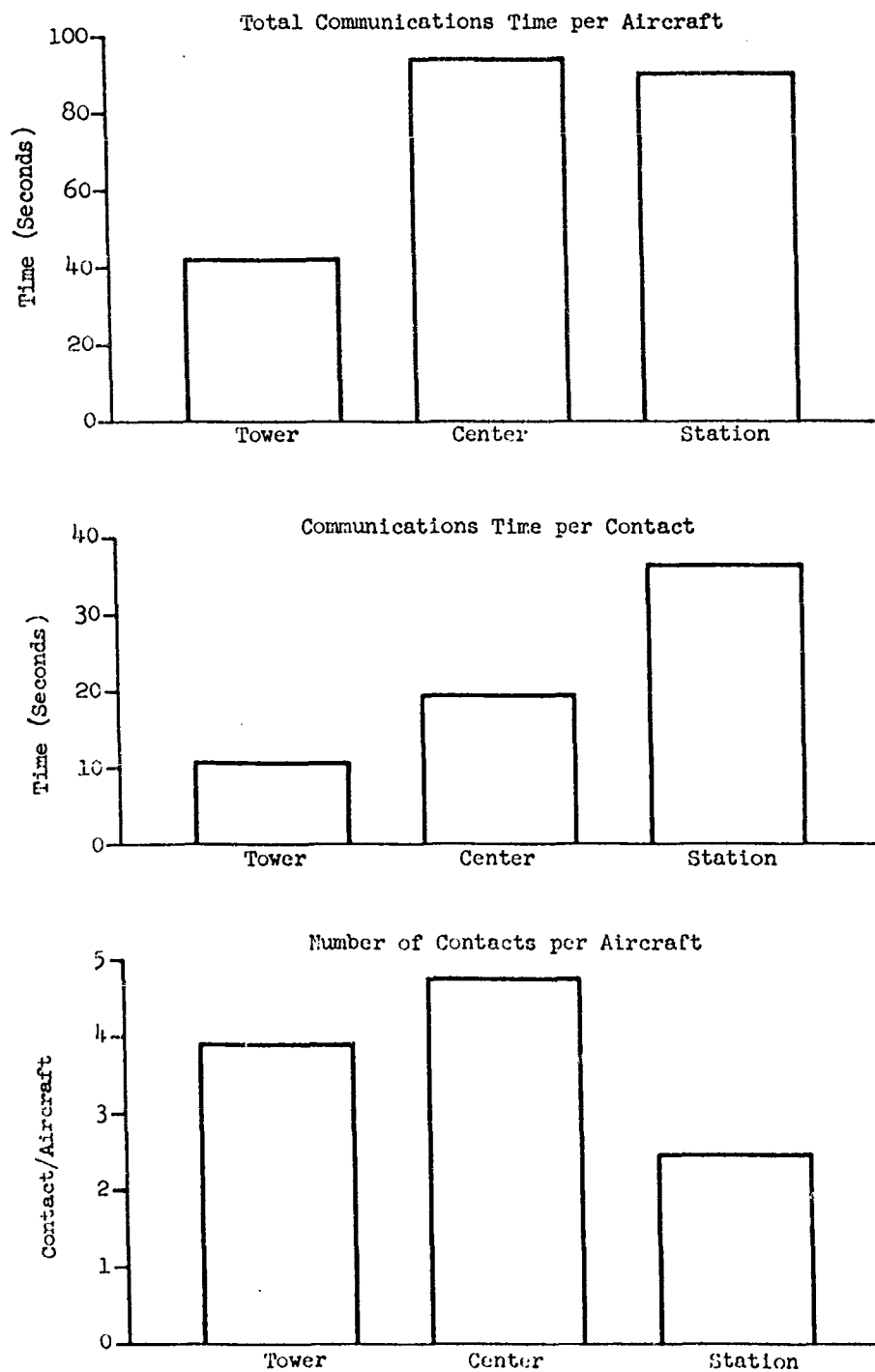
The average communications time per contact per interval was the basic unit of time measured in the study. The average total communications time per aircraft per interval was obtained by summing all contact times and dividing by the number of aircraft contacted during the selected time interval. Note that it is thus the product of the average contact time per aircraft and the average number of contacts per aircraft in the interval.

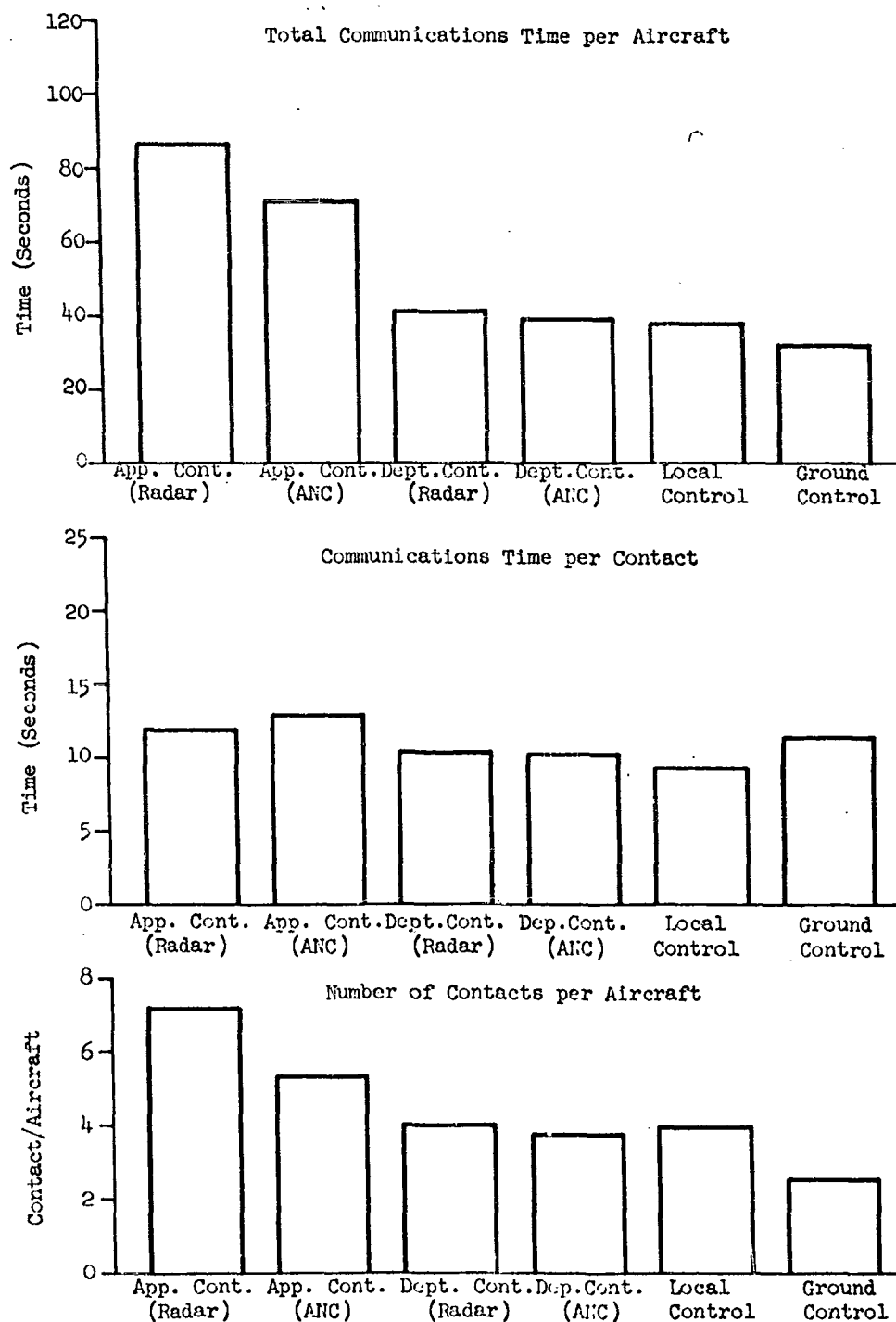
Figure II-13 shows a comparison of the time-related measures for the three facilities. These measures characterize the type of communications peculiar to each facility. For example, the Tower with its smaller control area and relatively high rate of information transfer is characterized by a short average time per contact.

Figures II-14, II-15, and II-16 show the same three measures by position for the Tower, Center, and Station, respectively.

TIME-RELATED MEASURES BY FACILITY

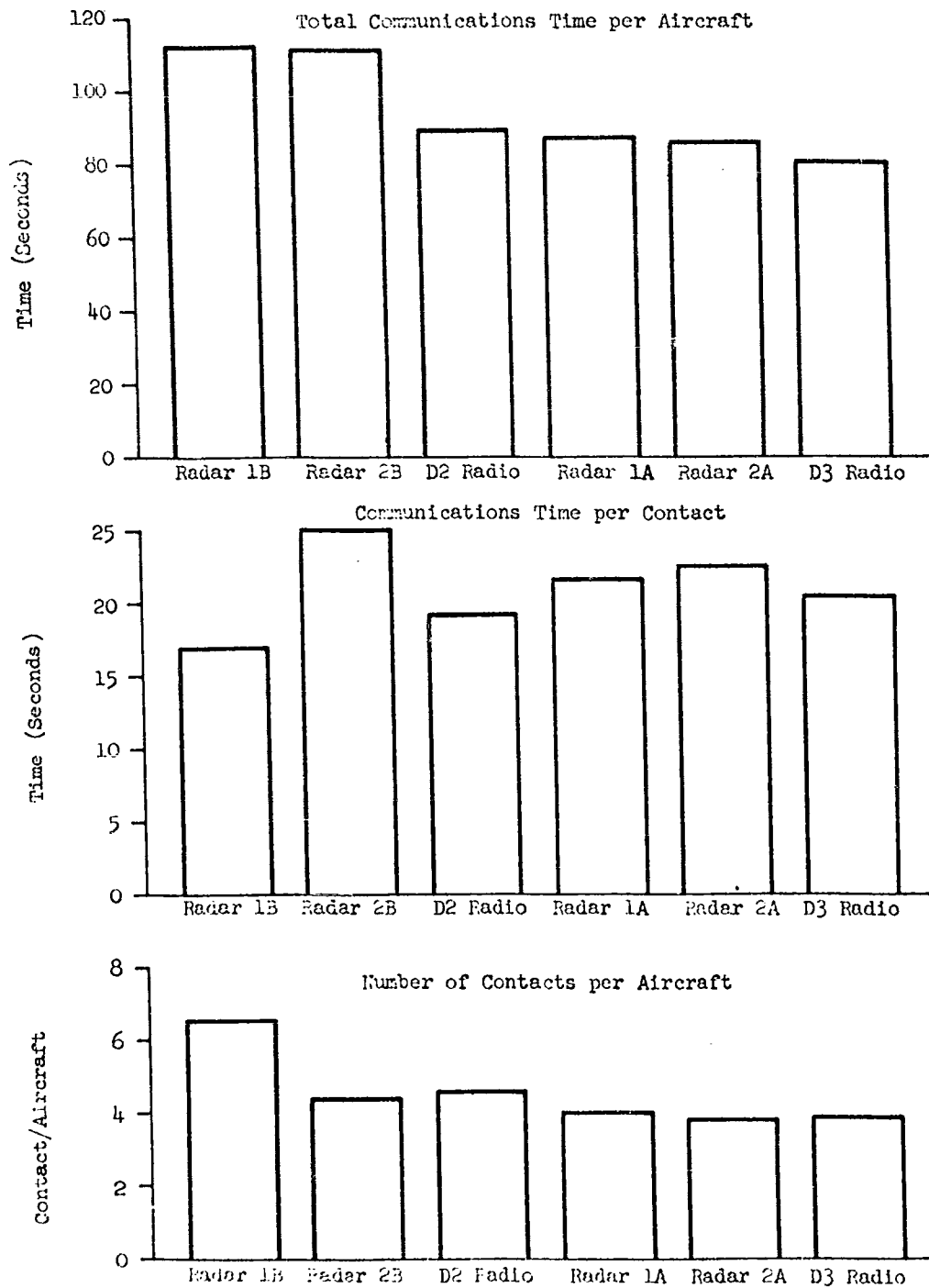
(1959 Data)



TIME-RELATED MEASURES BY TOWER POSITION(1960 Data for Radar Positions, 1959 Data for Others)

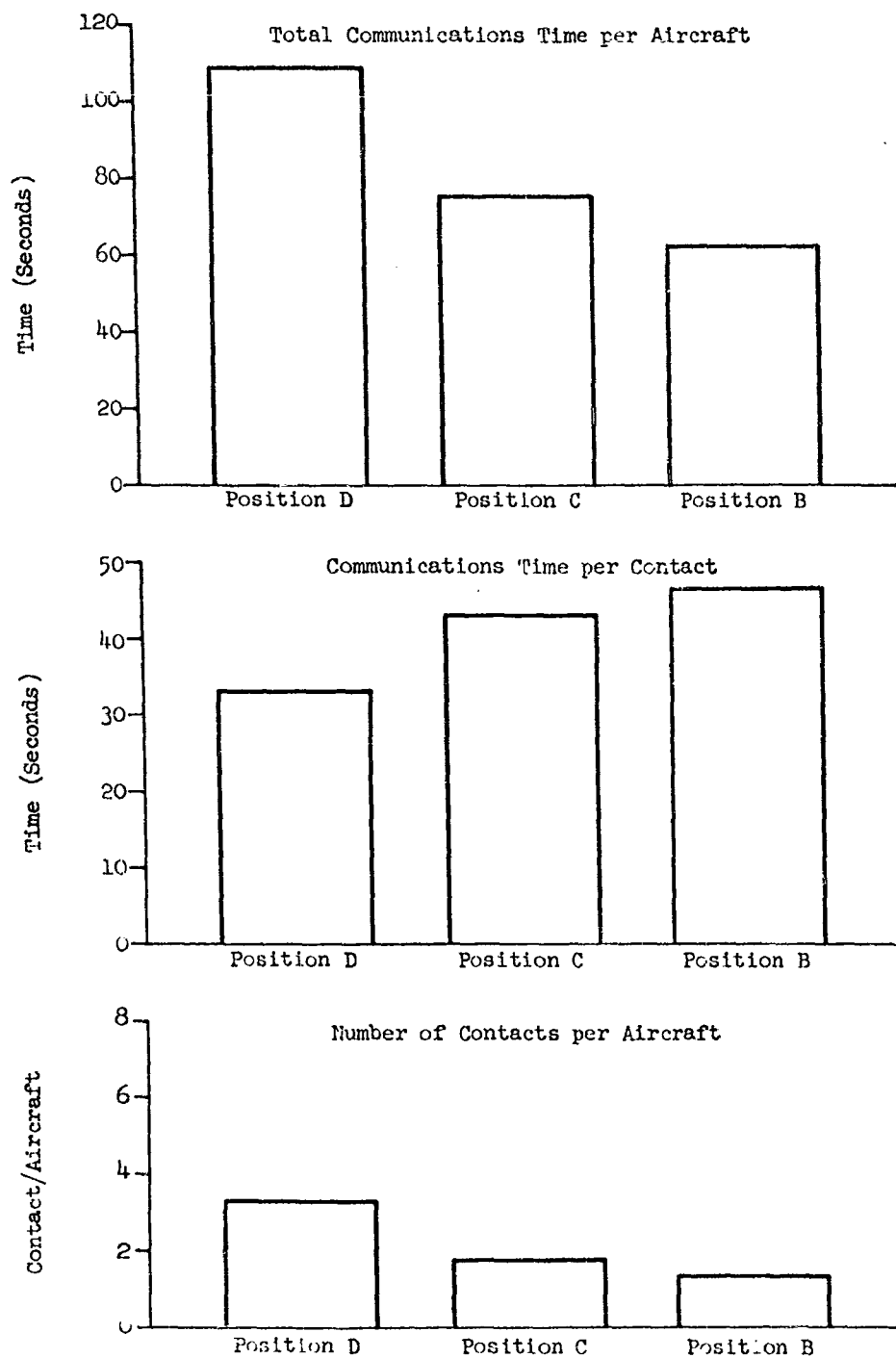
TIME-RELATED MEASURES BY CENTER POSITION

(1959 Data)



TIME-RELATED MEASURES BY STATION POSITION

(1959 Data)



4. Average Total Communications Time per Aircraft by Aviation Category.

Figures II-17 to II-23 show a comparison of the average total communications time per aircraft per two-hour interval for the various aviation categories. A bar and a reference line indicating the overall value has been included for ease of comparison.

While the finer category breakdown does permit a more detailed comparison, it does result in relatively small sample sizes in some instances. The R/T Communications Measures Tables should be consulted whenever extreme results are encountered, to determine if a small sample size might account for the results.

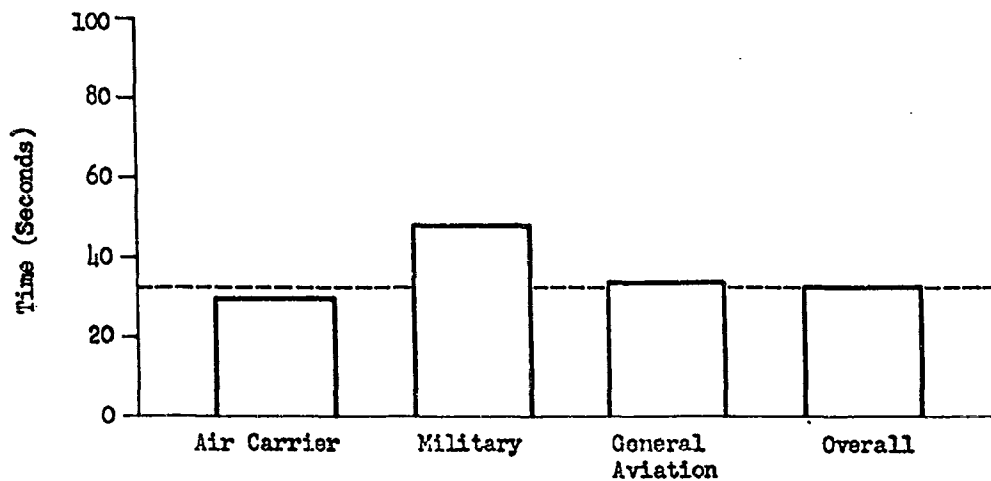
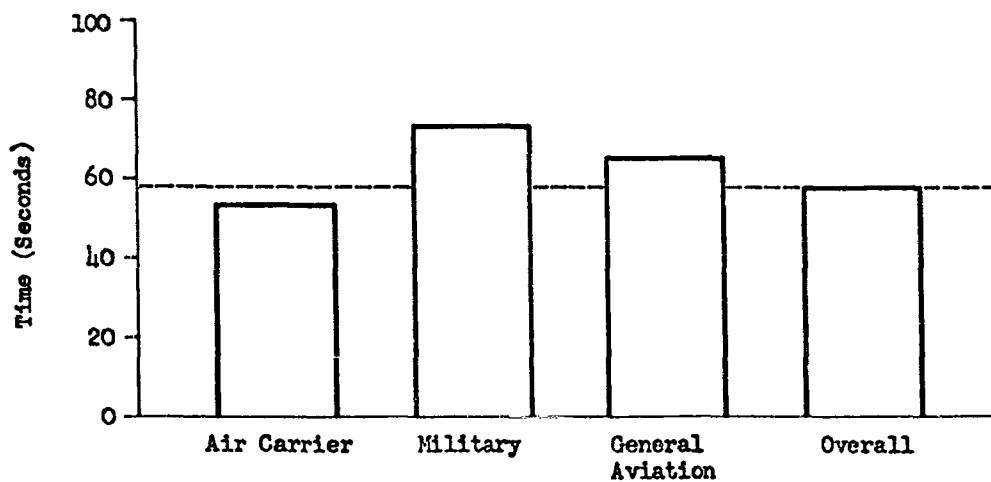
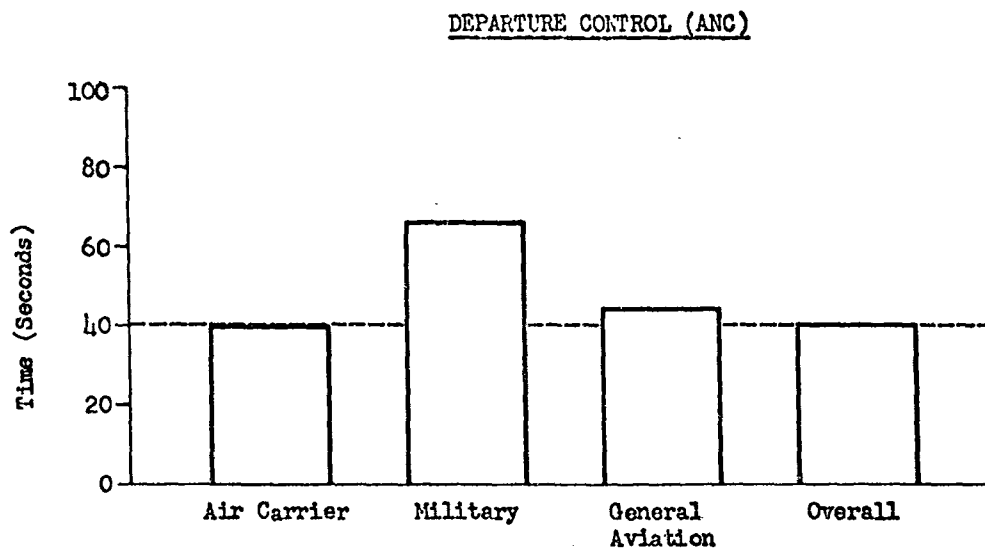
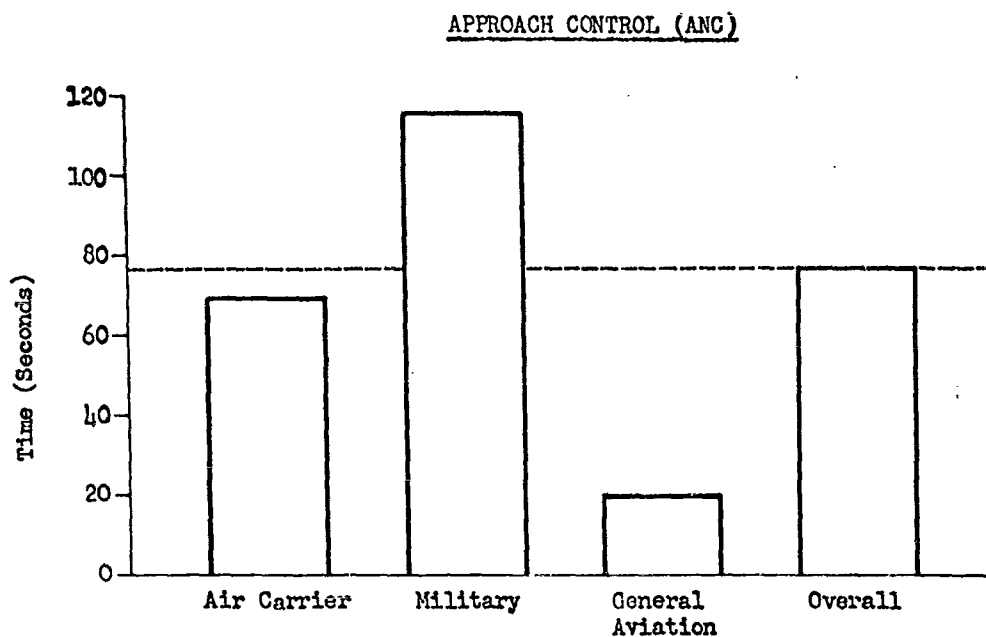
Figure II-17AVERAGE TOTAL COMMUNICATIONS TIME PER AIRCRAFT BY AVIATION CATEGORYGROUND CONTROLLOCAL CONTROL

Figure II-18

AVERAGE TOTAL COMMUNICATIONS TIME PER AIRCRAFT BY AVIATION CATEGORY

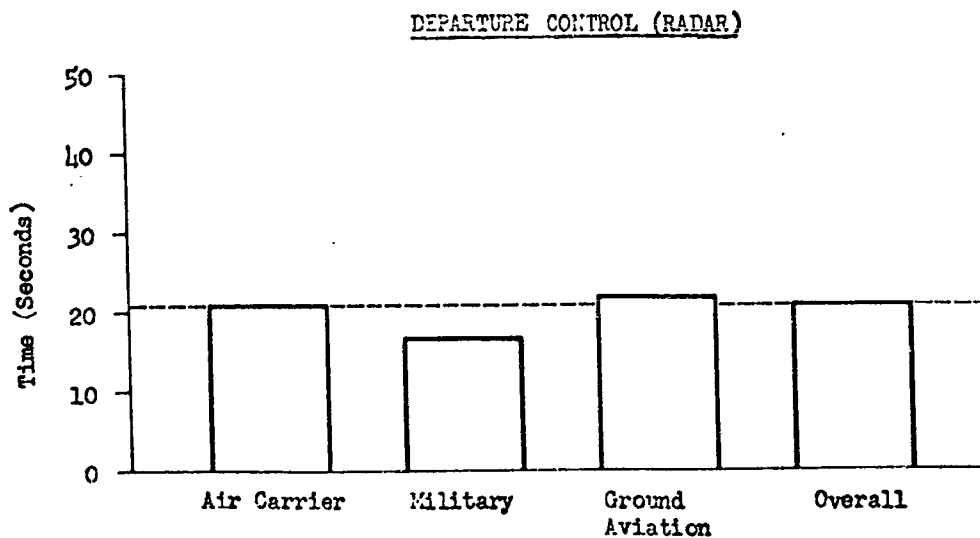
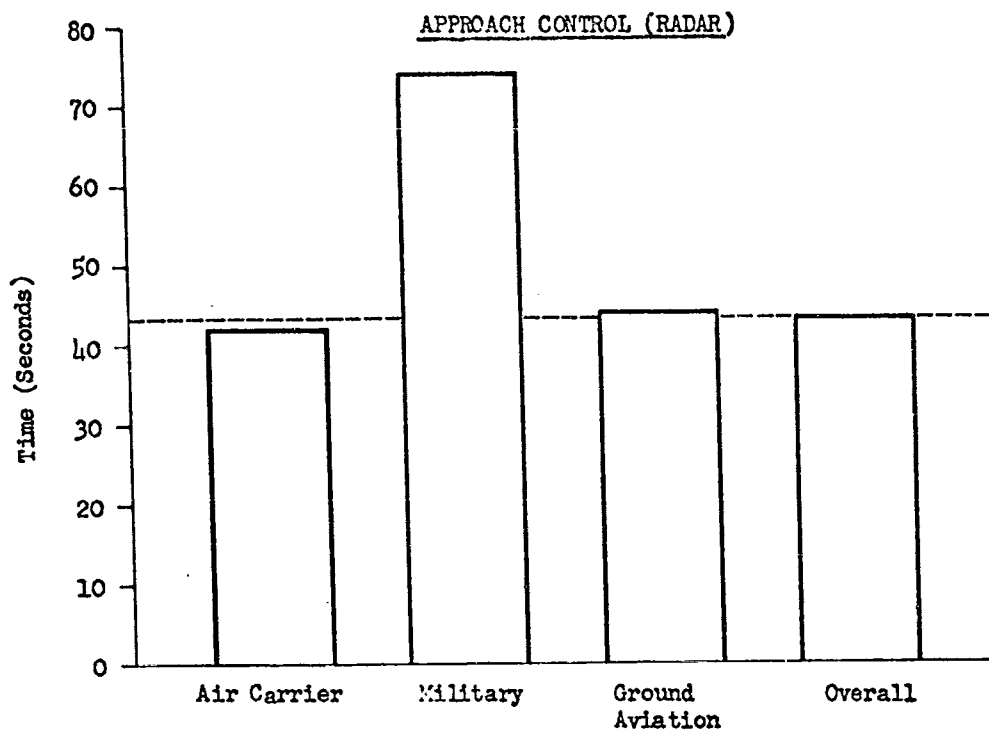
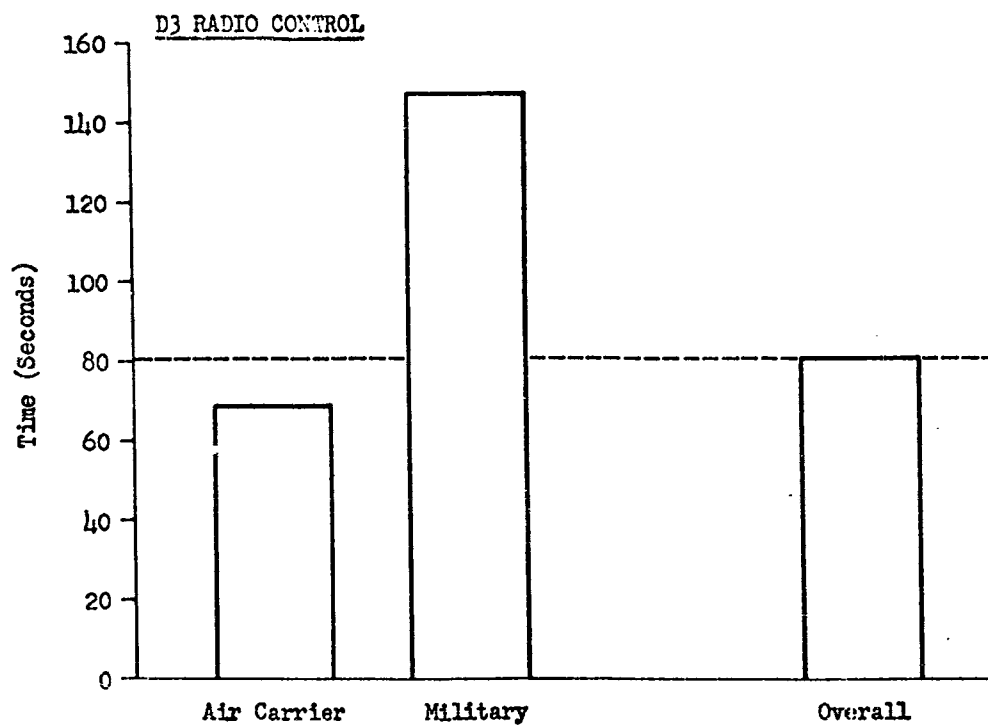
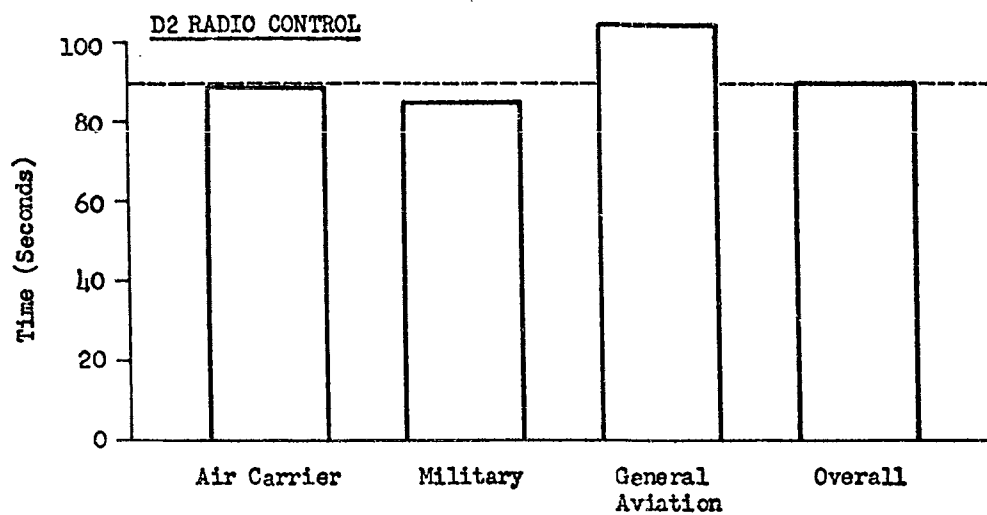
AVERAGE TOTAL COMMUNICATIONS TIME PER AIRCRAFT BY AVIATION CATEGORY

Figure II-20

CM 330-04
Volume II
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Page 243AVERAGE TOTAL COMMUNICATIONS TIME PER AIRCRAFT BY AVIATION CATEGORY

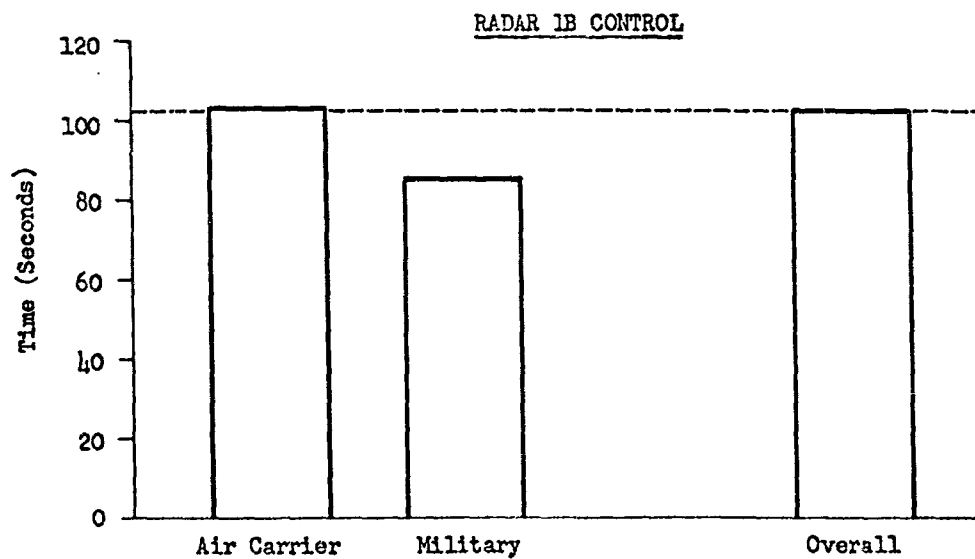
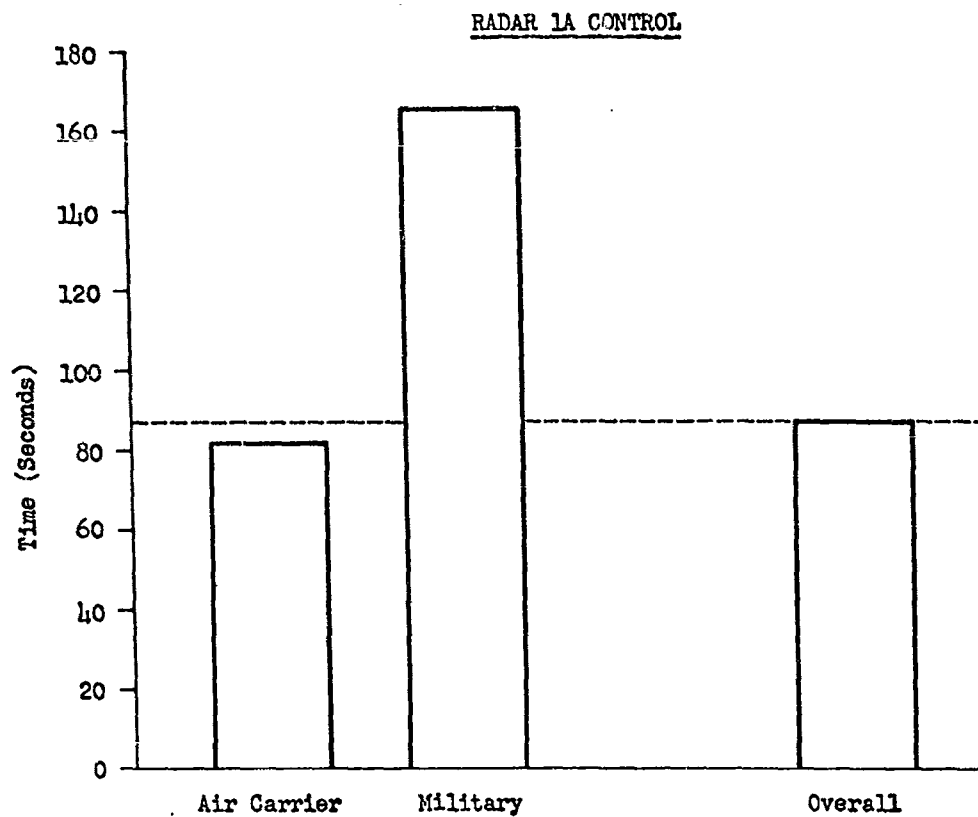
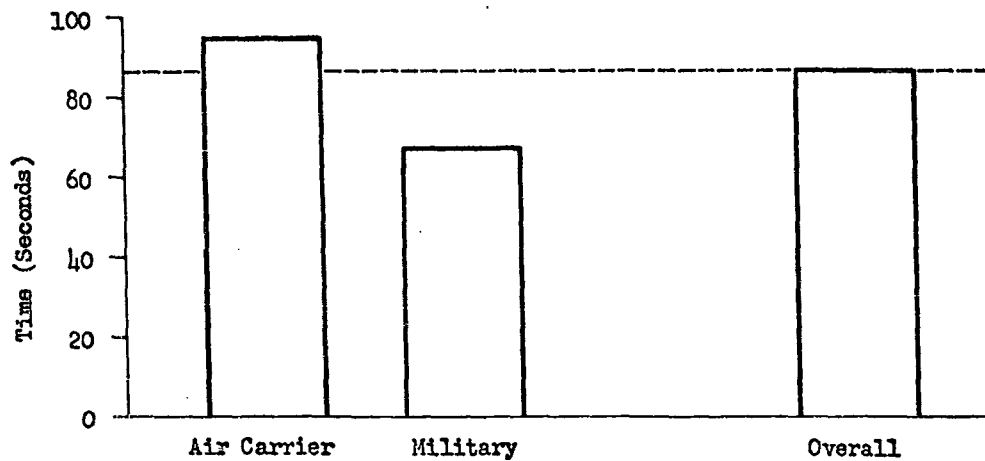
AVERAGE TOTAL COMMUNICATIONS TIME PER AIRCRAFT BY AVIATION CATEGORY

Figure II-22

AVERAGE TOTAL COMMUNICATIONS TIME PER AIRCRAFT BY AVIATION CATEGORY

RADAR 2A CONTROL



RADAR 2B CONTROL

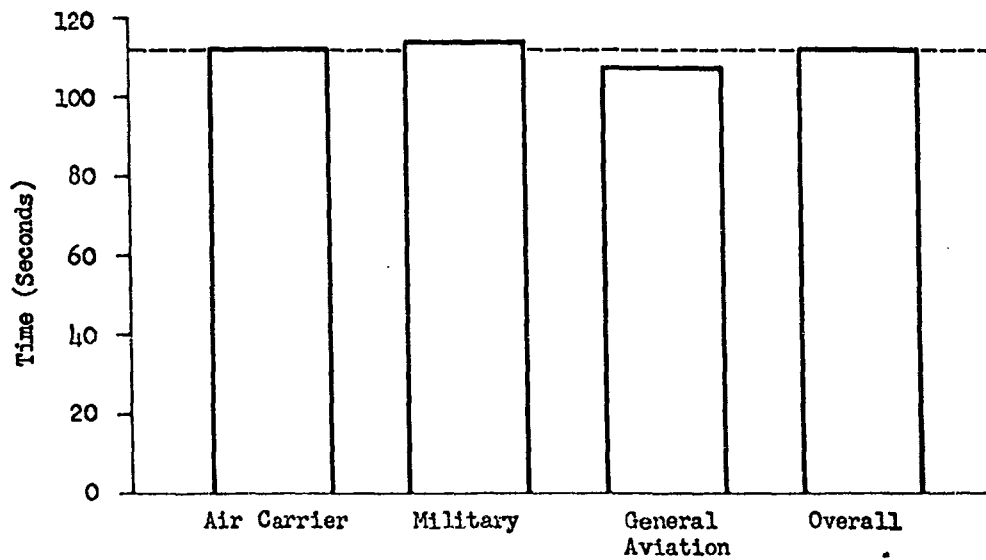
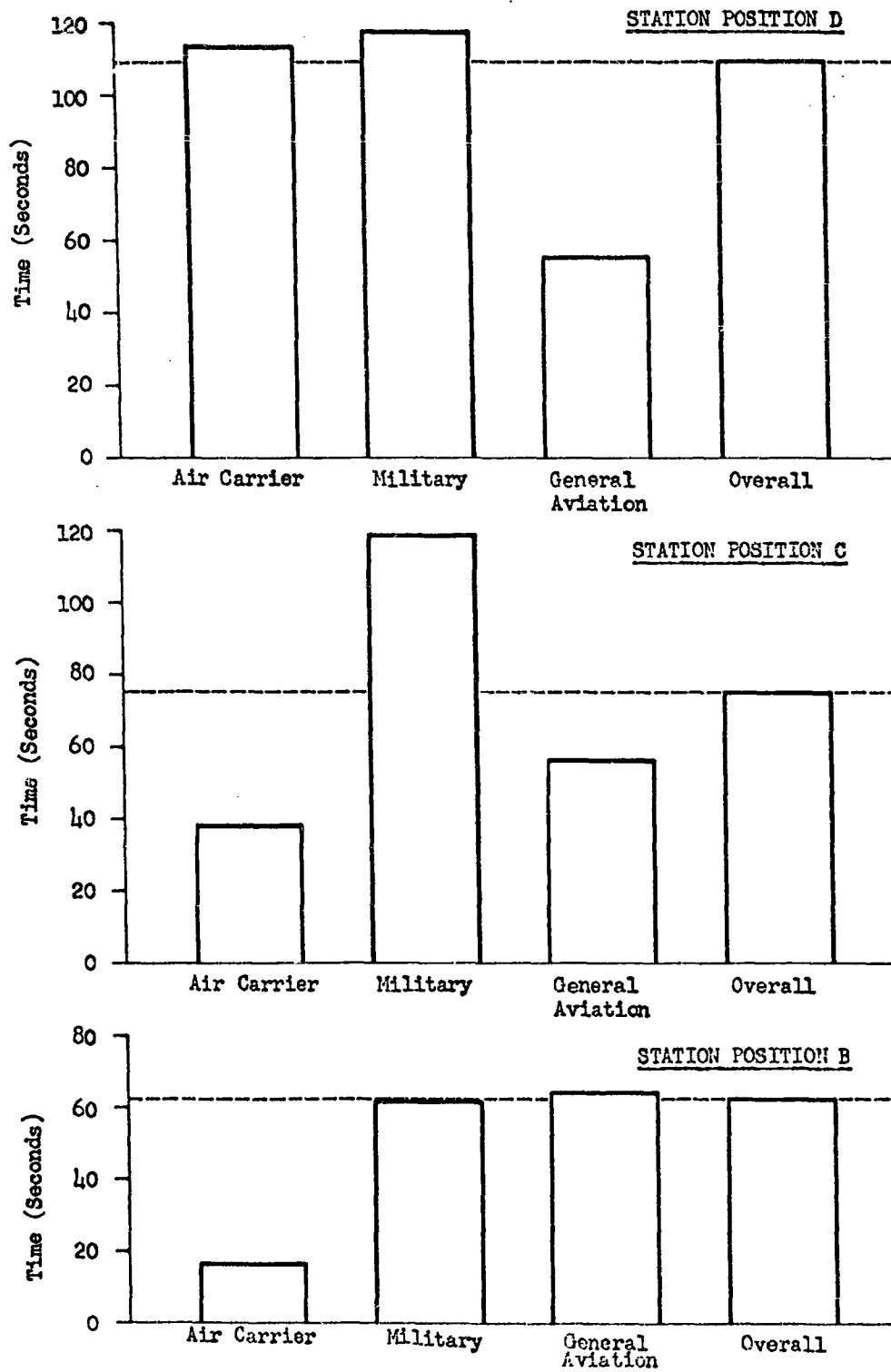


Figure II-23AVERAGE TOTAL COMMUNICATIONS TIME PER AIRCRAFT BY AVIATION CATEGORY

5. Average Communications Time Per Contact by Aviation Category.

The second primary communications measure is shown by aviation category in figures II-24 to II-30. The reference interval length is two-hours, as before. The average contact time for ground vehicles handled by the Ground Control position is also included. A presentation of the number of contacts per vehicle and the total time per vehicle has not been made. These measures would be meaningless in this case since the ground vehicles operate continuously in the area.

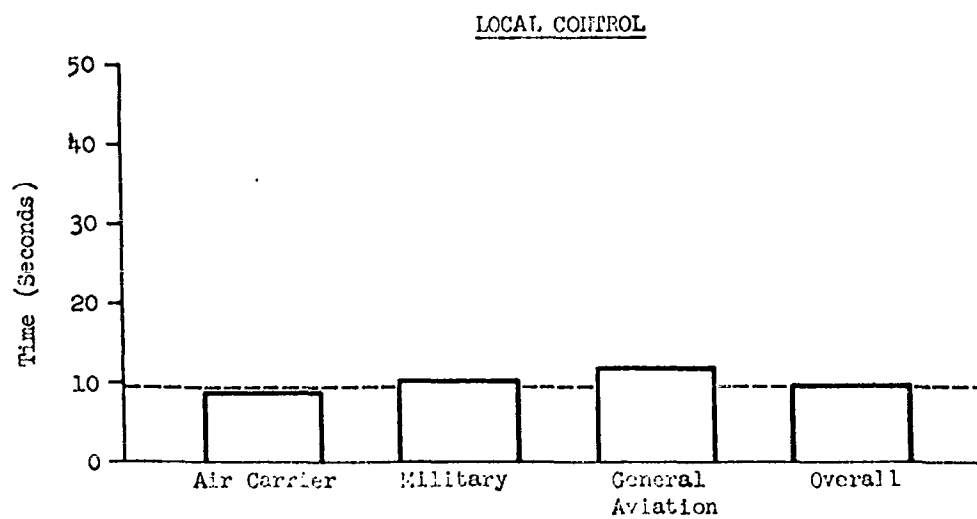
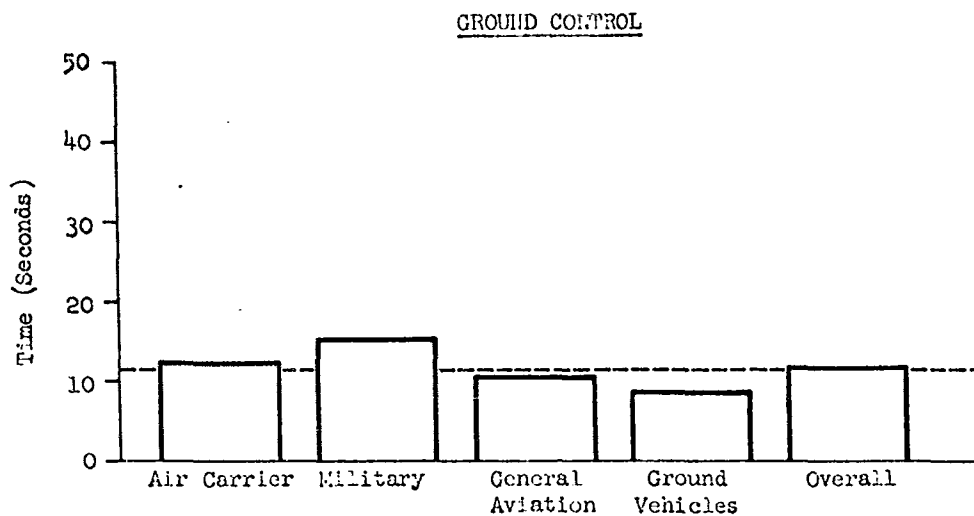
Figure II-24AVERAGE COMMUNICATIONS TIME PER CONTACT BY AVIATION CATEGORY

Figure II-25

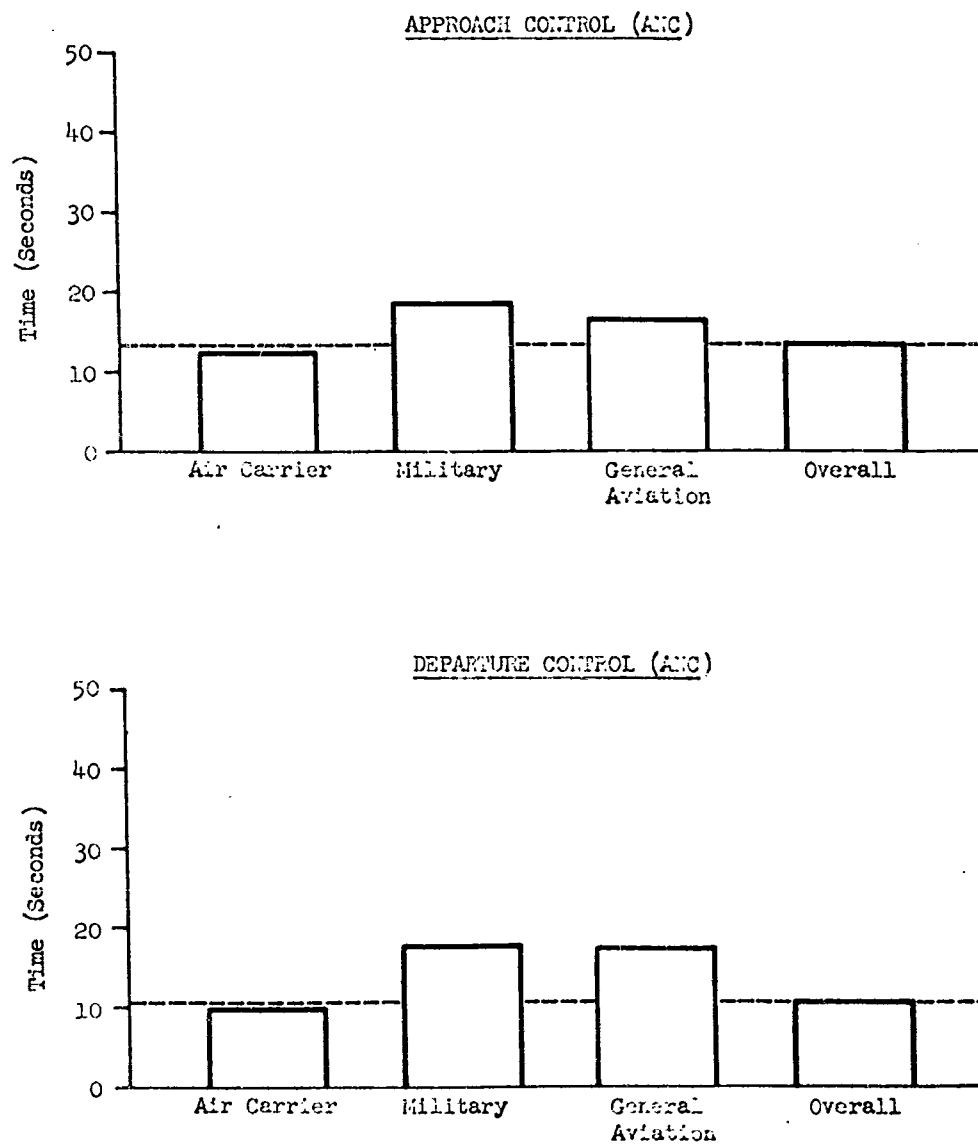
AVERAGE COMMUNICATIONS TIME PER CONTACT BY AVIATION CATEGORY

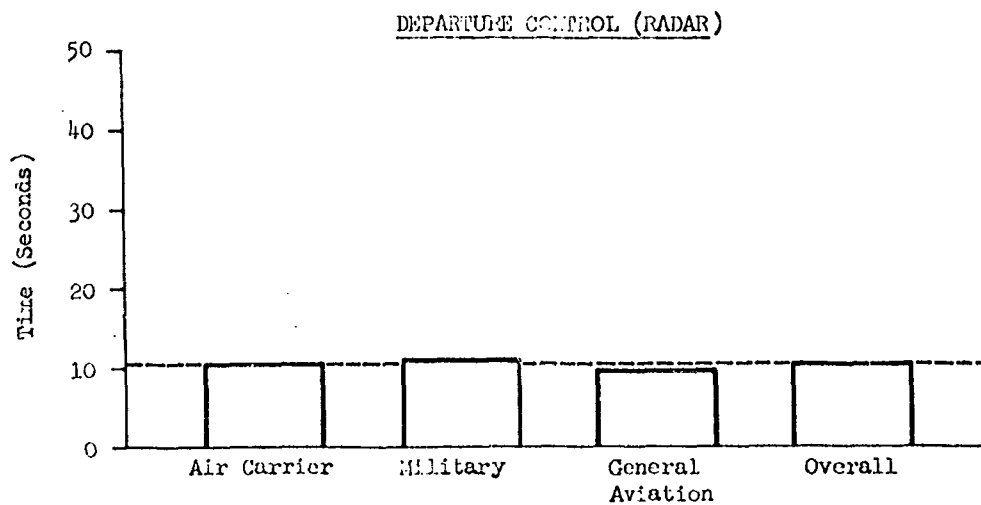
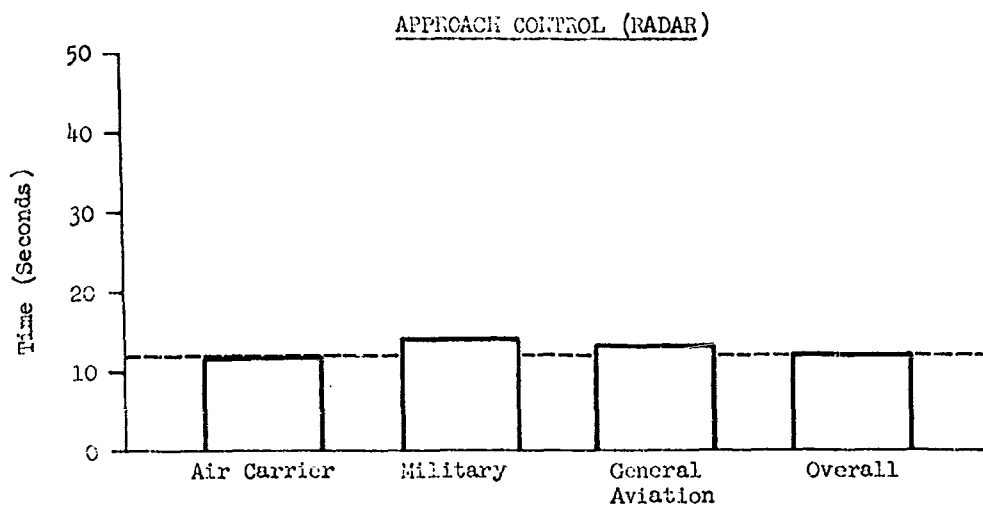
Figure II-26AVERAGE COMMUNICATIONS TIME PER CONTACT BY AVIATION CATEGORY

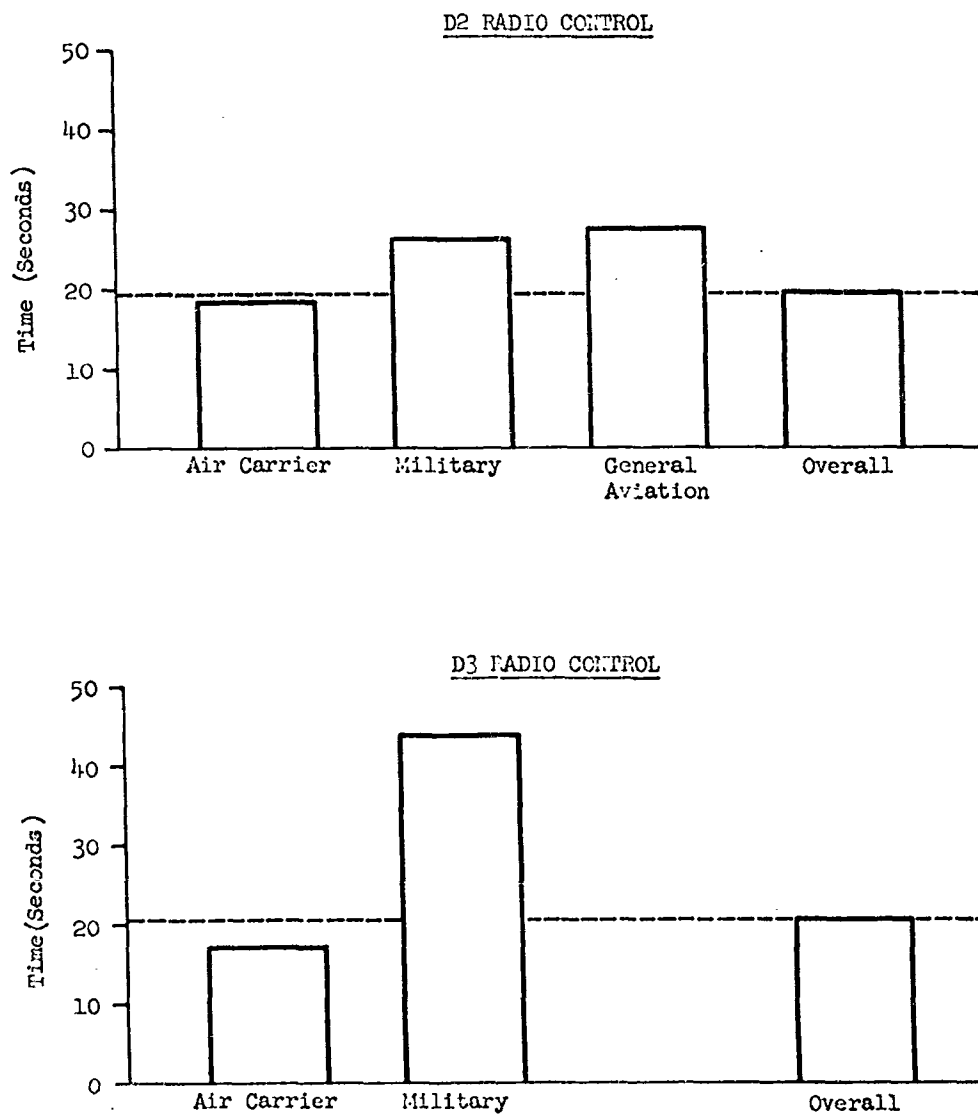
Figure II-27AVERAGE COMMUNICATIONS TIME PER CONTACT BY AVIATION CATEGORY

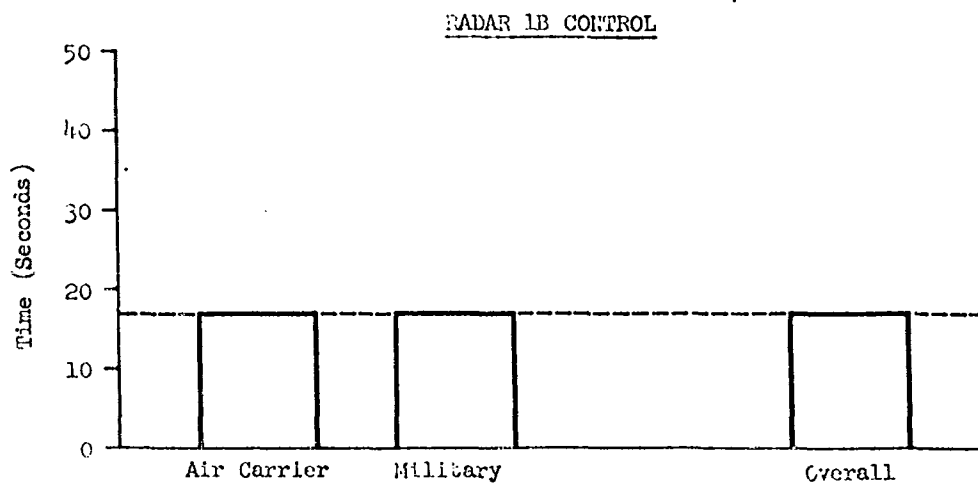
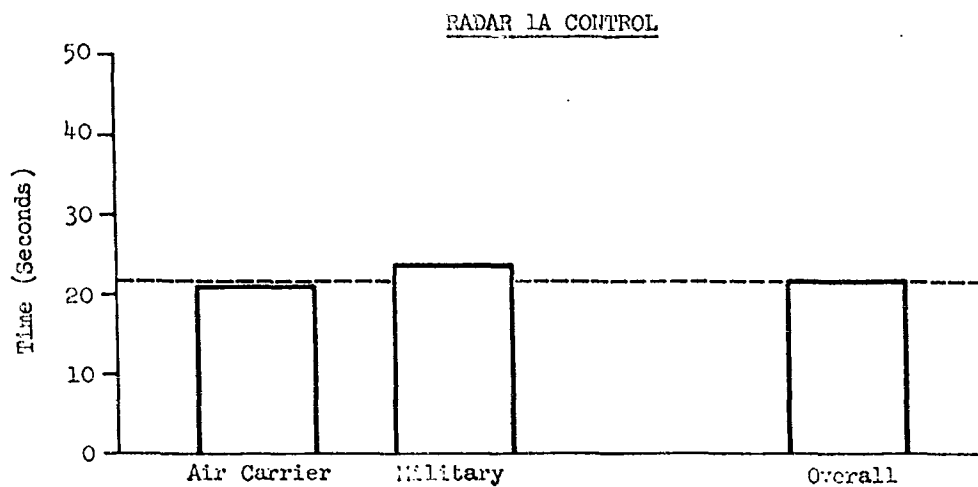
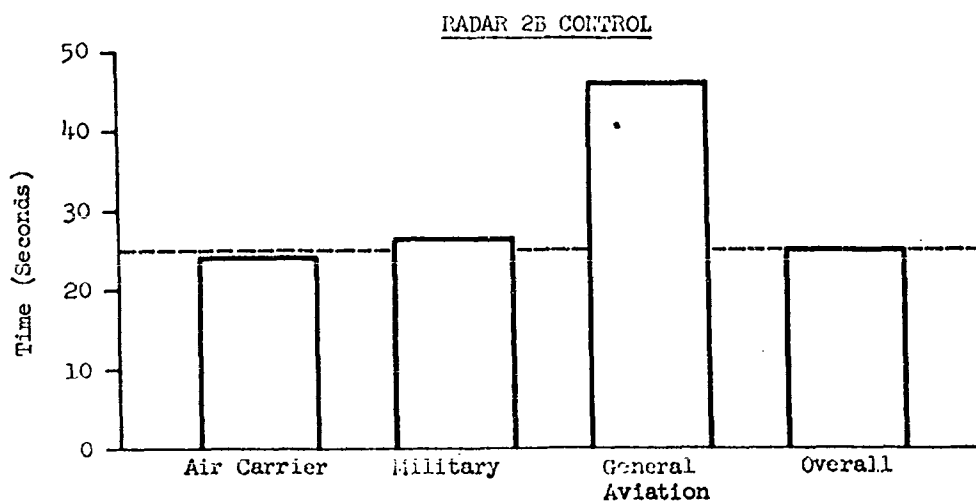
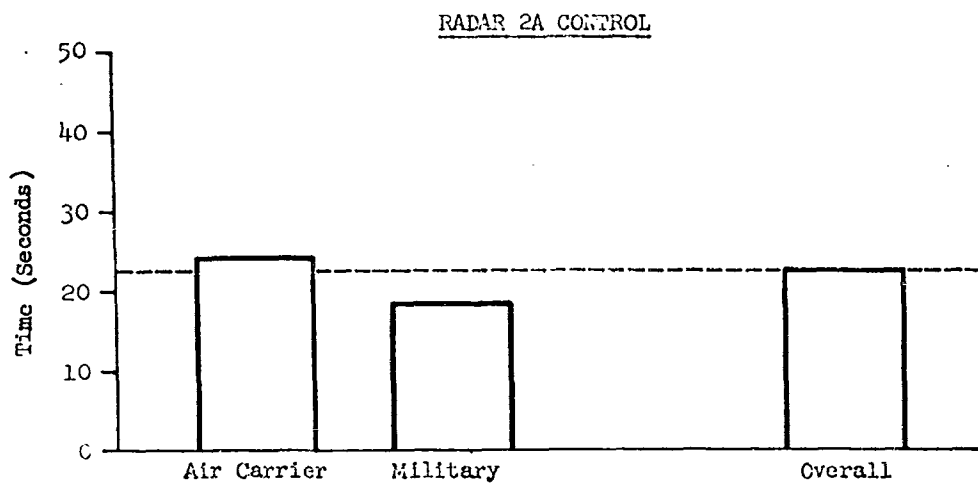
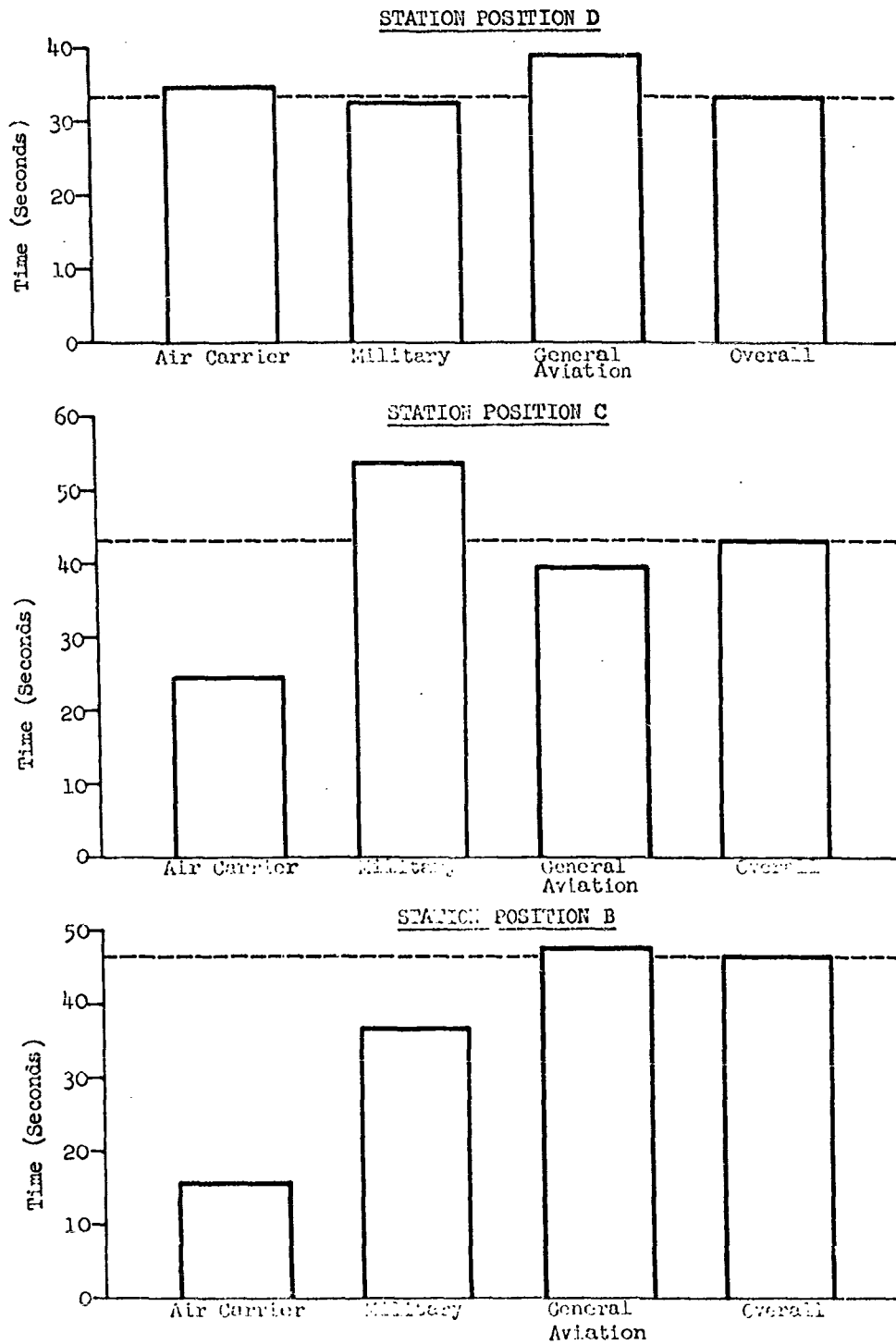
Figure II-28AVERAGE COMMUNICATIONS TIME PER CONTACT BY AVIATION CATEGORY

Figure II-29

AVERAGE COMMUNICATIONS TIME PER CONTACT BY AVIATION CATEGORY

AVERAGE COMMUNICATIONS TIME PER CONTACT BY AVIATION CATEGORY

6. Average Number of Contacts Per Aircraft By Aviation Category.

Figures II-31 through II-37 show the average number of contacts per two-hour interval established between the controller/communicator and pilots in the various aviation categories.

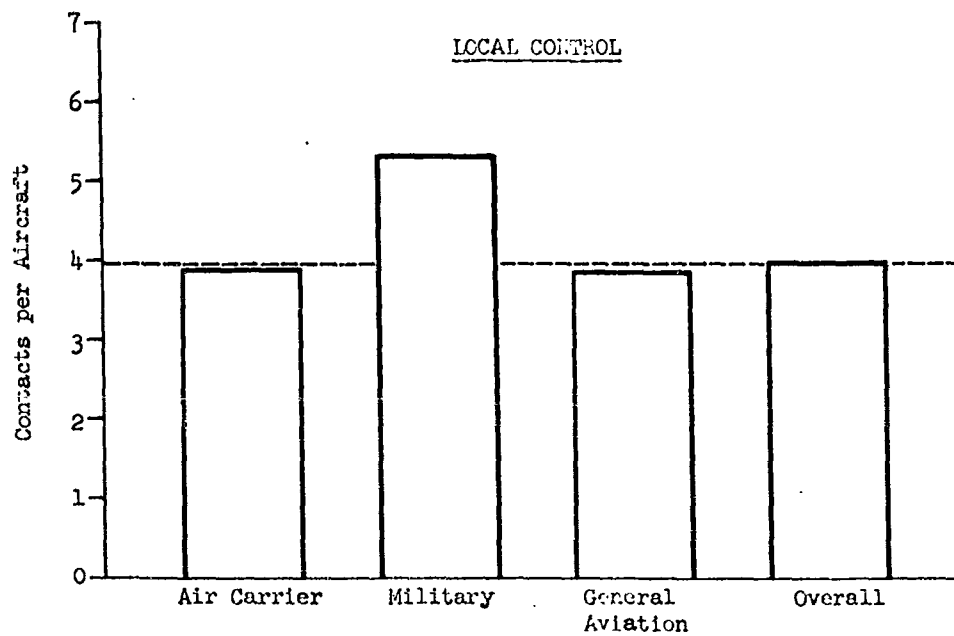
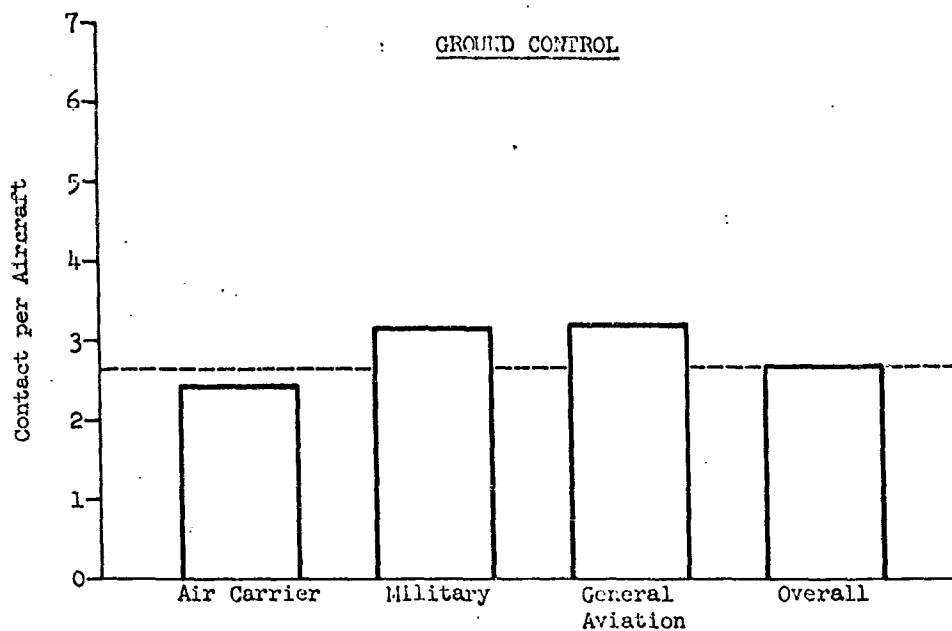
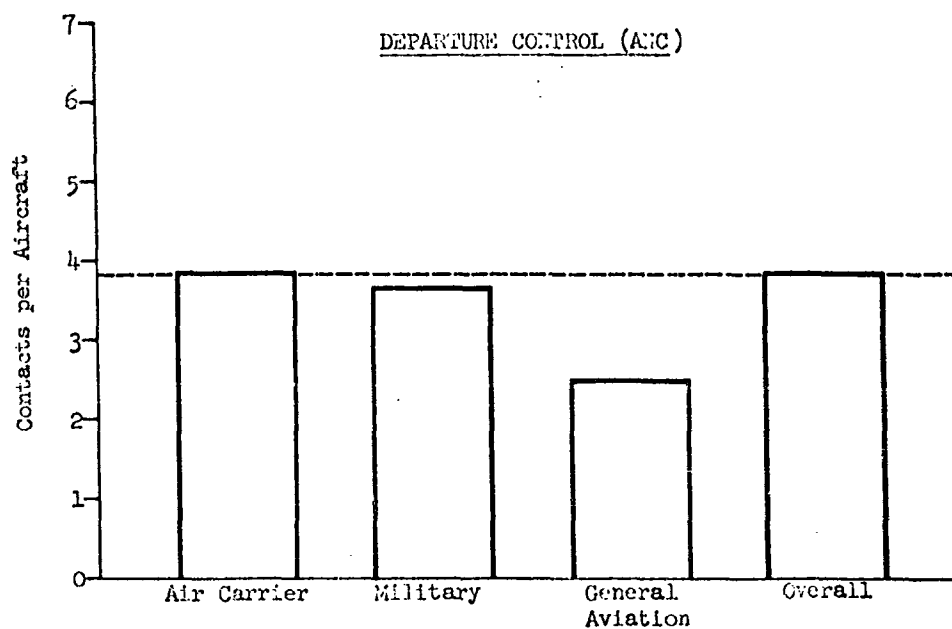
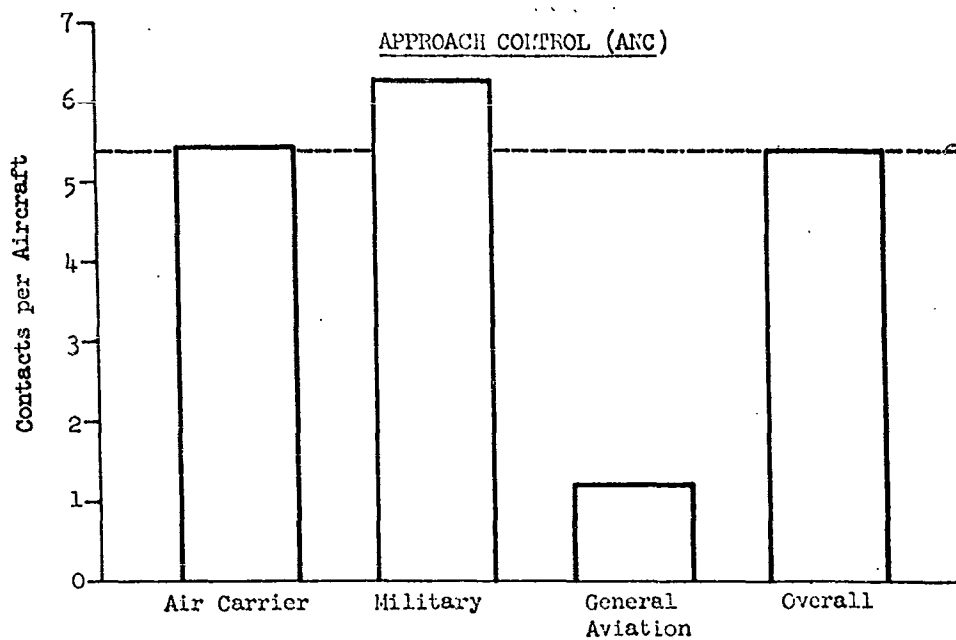
AVERAGE NUMBER OF CONTACTS PER AIRCRAFT BY AVIATION CATEGORY

Figure II-32

AVERAGE NUMBER OF CONTACTS PER AIRCRAFT BY AVIATION CATEGORY



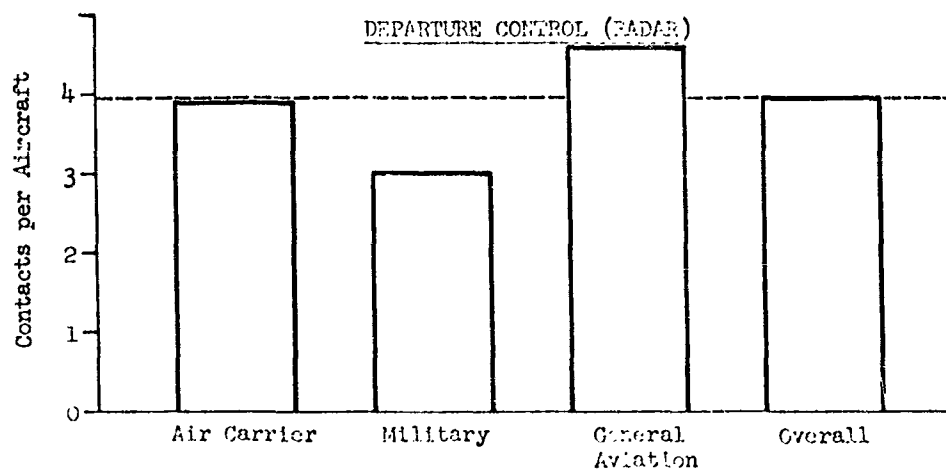
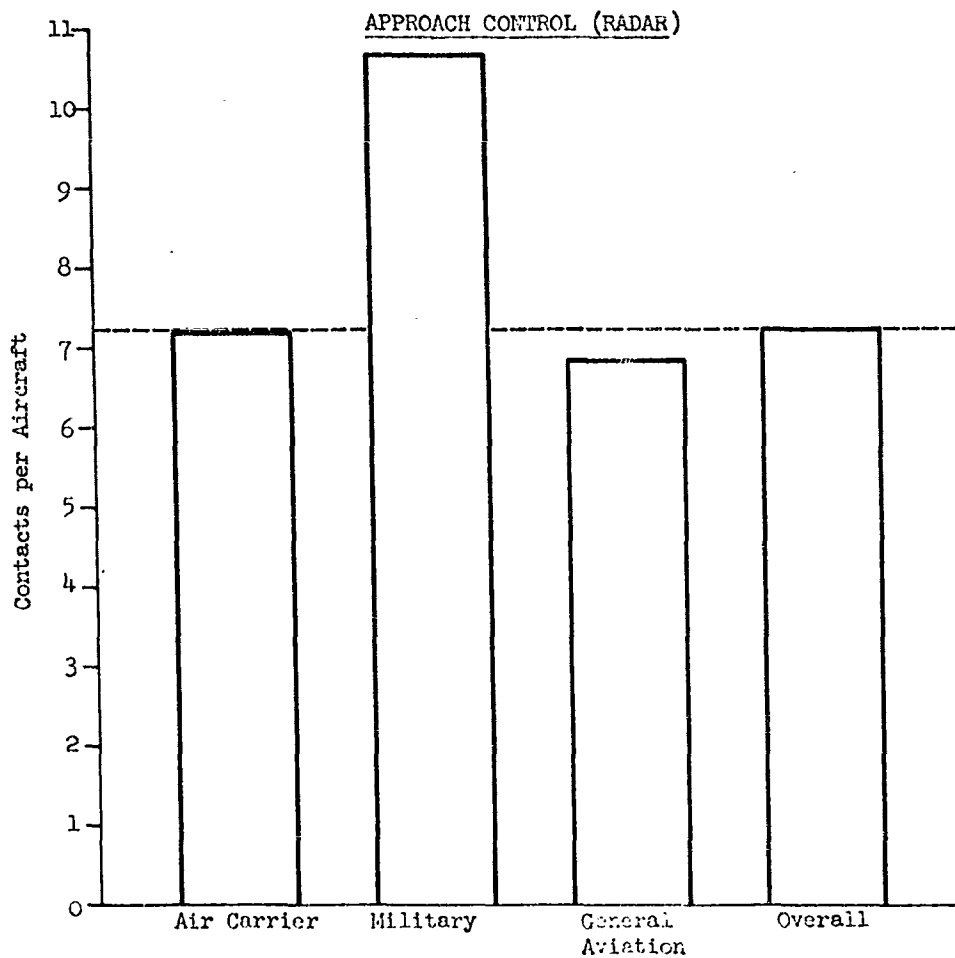
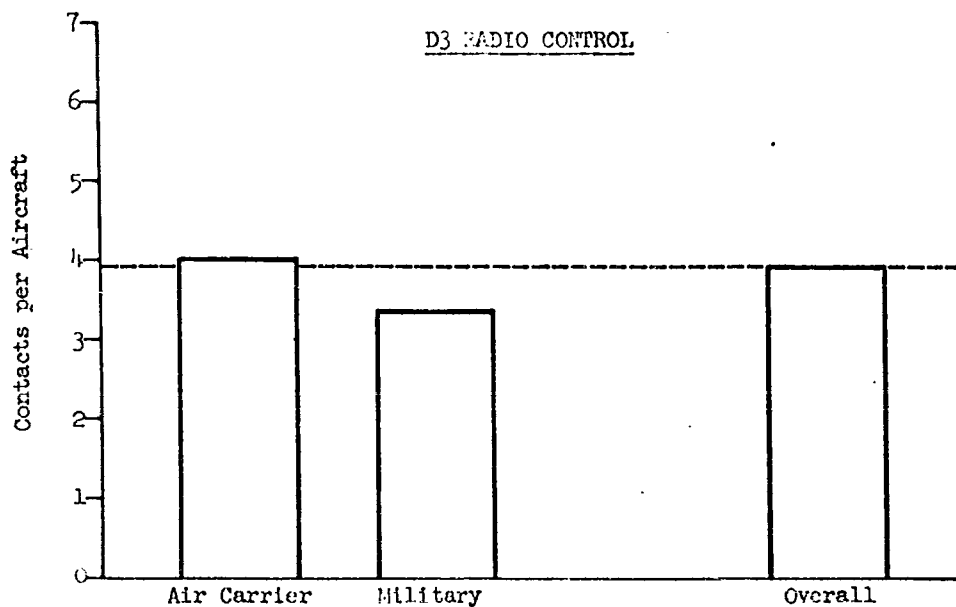
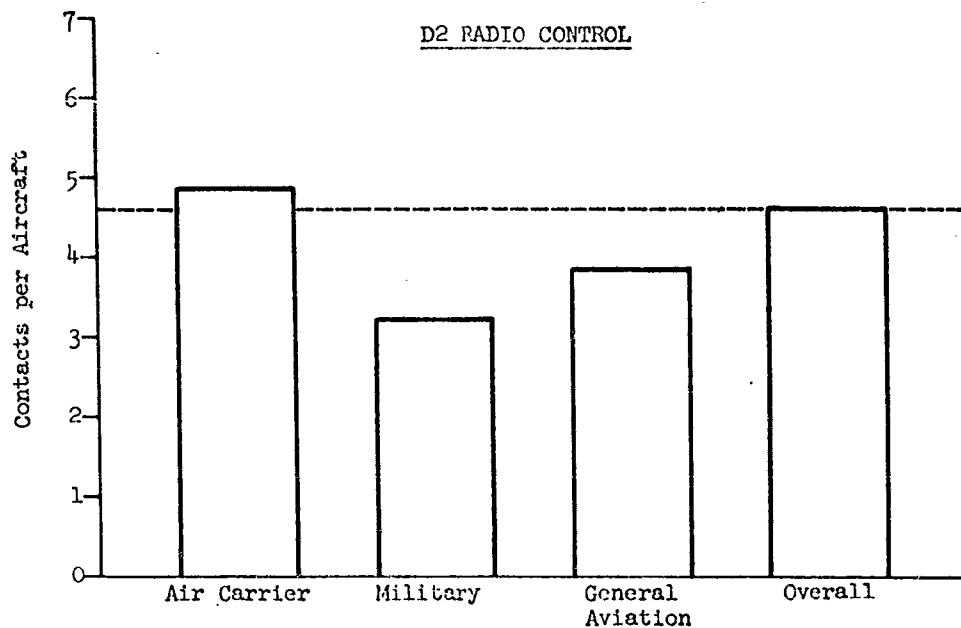
AVERAGE NUMBER OF CONTACTS PER AIRCRAFT BY AVIATION CATEGORY

Figure II-34

AVERAGE NUMBER OF CONTACTS PER AIRCRAFT BY AVIATION CATEGORY

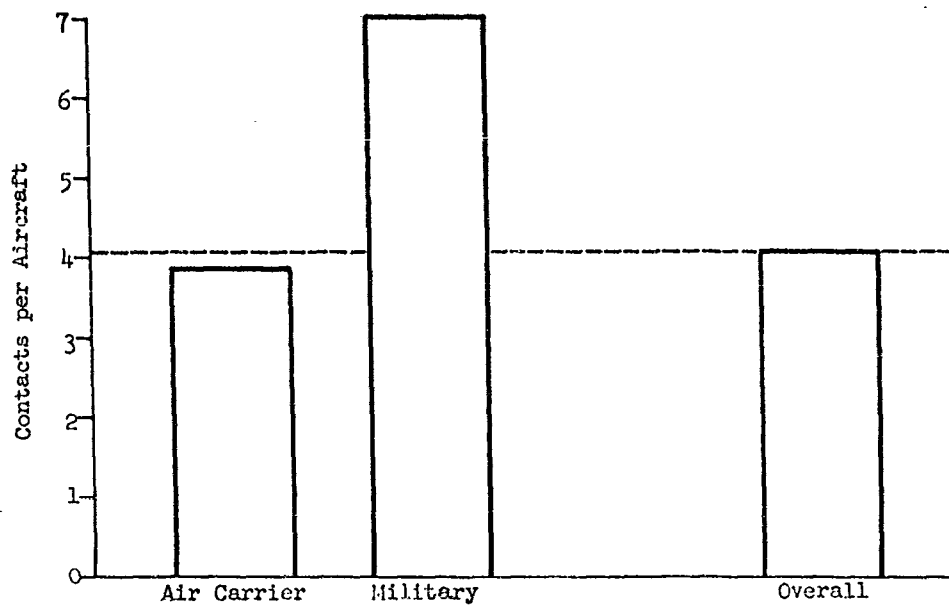
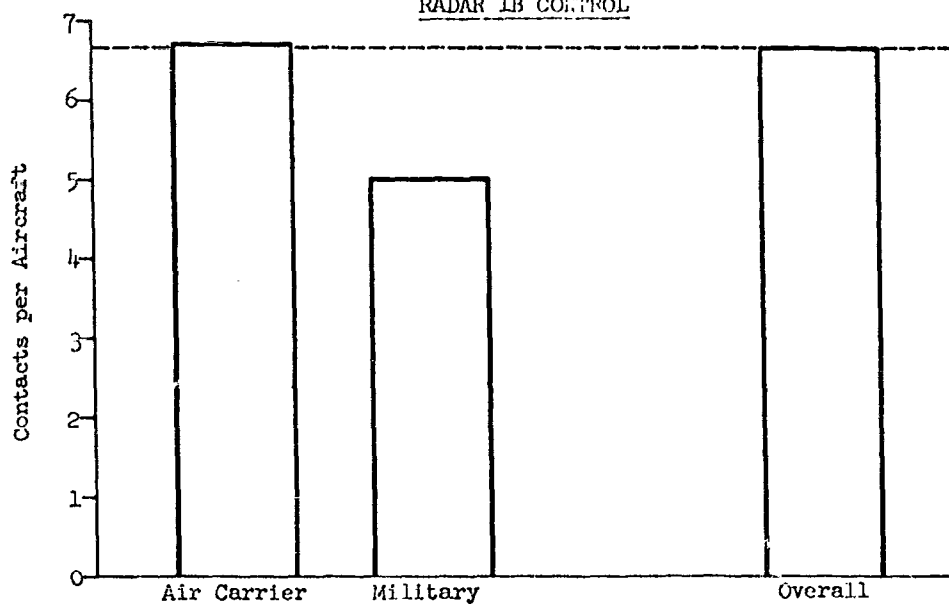
AVERAGE NUMBER OF CONTACTS PER AIRCRAFT BY AVIATION CATEGORYRADAR 1A CONTROLRADAR 1B CONTROL

Figure II-36

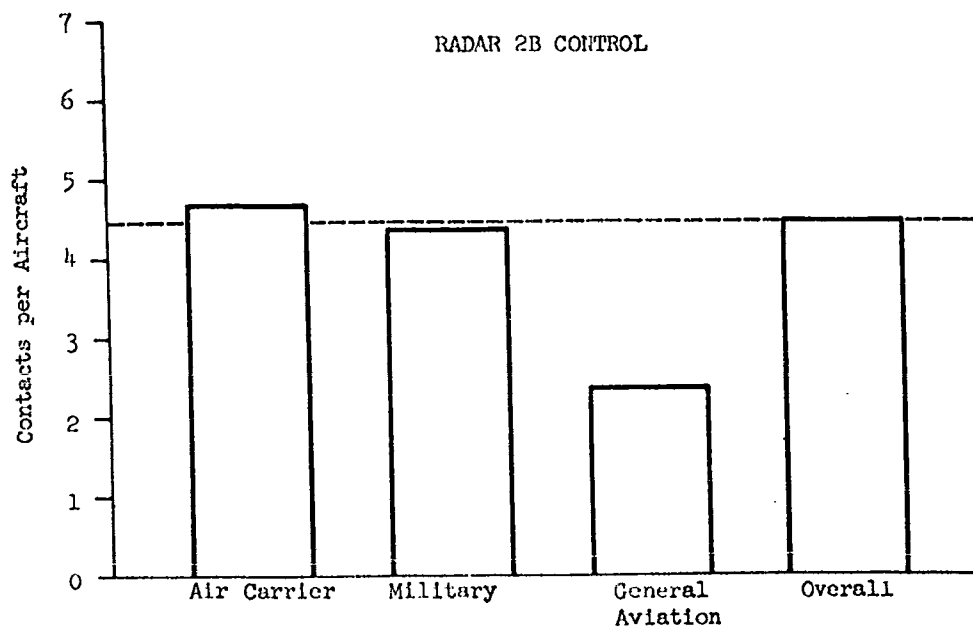
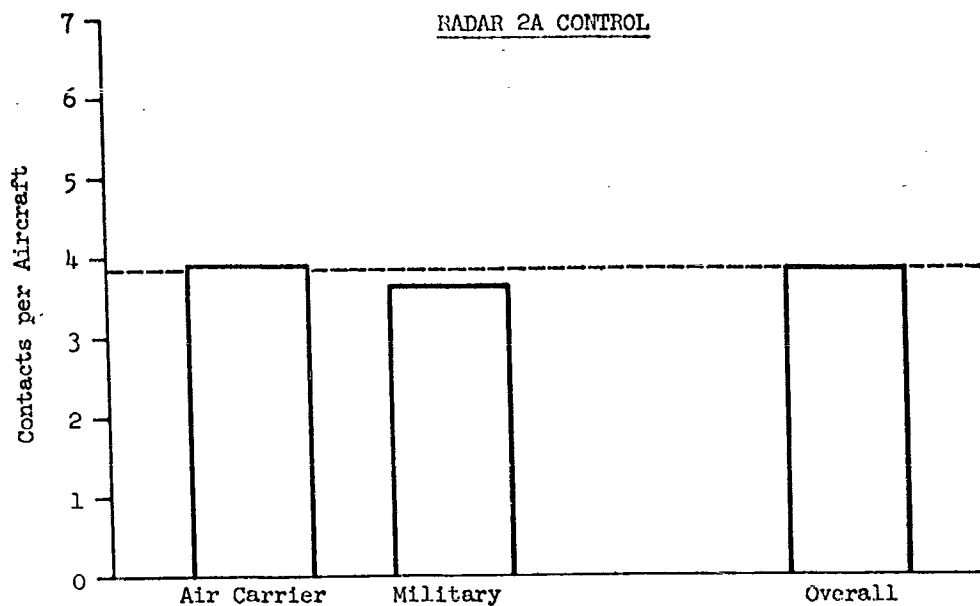
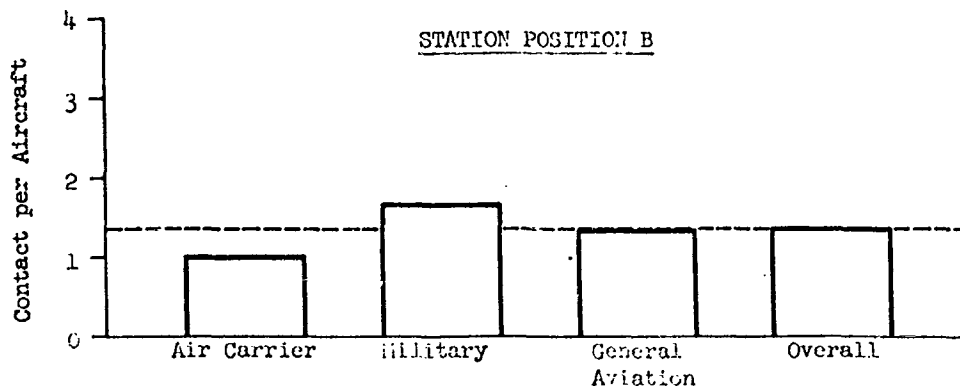
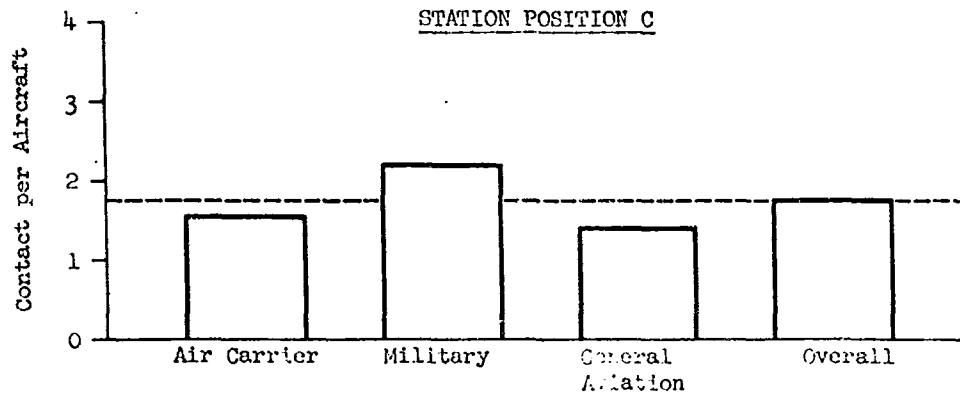
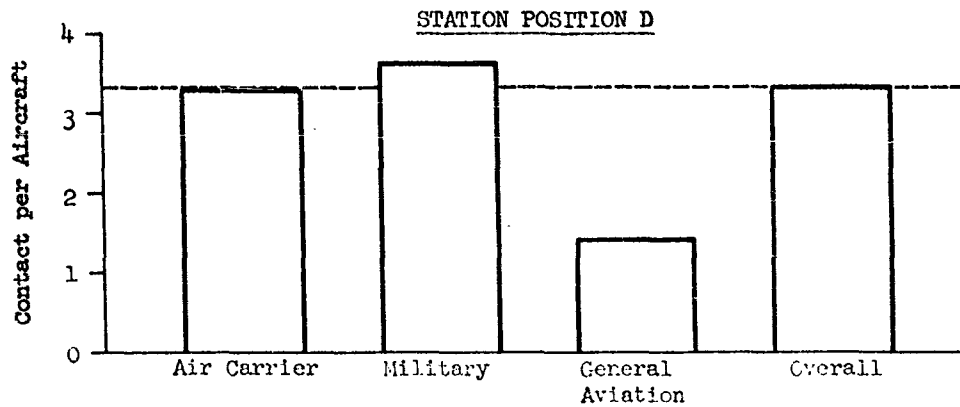
AVERAGE NUMBER OF CONTACTS PER AIRCRAFT BY AVIATION CATEGORY

Figure II-37

AVERAGE NUMBER OF CONTACTS PER AIRCRAFT BY AVIATION CATEGORY

SECTION IIIANALYSIS OF DATA

The time-related measures described in Section II are further analyzed in the seven cycles of charts presented here. The charts represent attempts to isolate meaningful correlations between the variables. The presence of certain relationships such as decreasing time per contact with increasing traffic load are believed to exist by almost all FAA controllers. The establishment of these relationships on a quantitative basis would have yielded meaningful system parameters, but the findings were negative. The data are presented by facility and position in most cases. In addition, time intervals of different lengths were used in order to obtain appropriate levels of sensitivity.

A section of miscellaneous analytical tables is presented in Part 3. These tables do not relate directly to the charts presented in this section.

A. ANALYTICAL CHARTS

The first four cycles show the effects of traffic density, R/T communications load, and controller facility experience on the normalized time-related measures. The fifth cycle shows the effect of traffic density on message count.

Considerable variation in the time-related measures was observed within a given position. This variation was not, however, found to be significantly correlated to the density and experience measures.

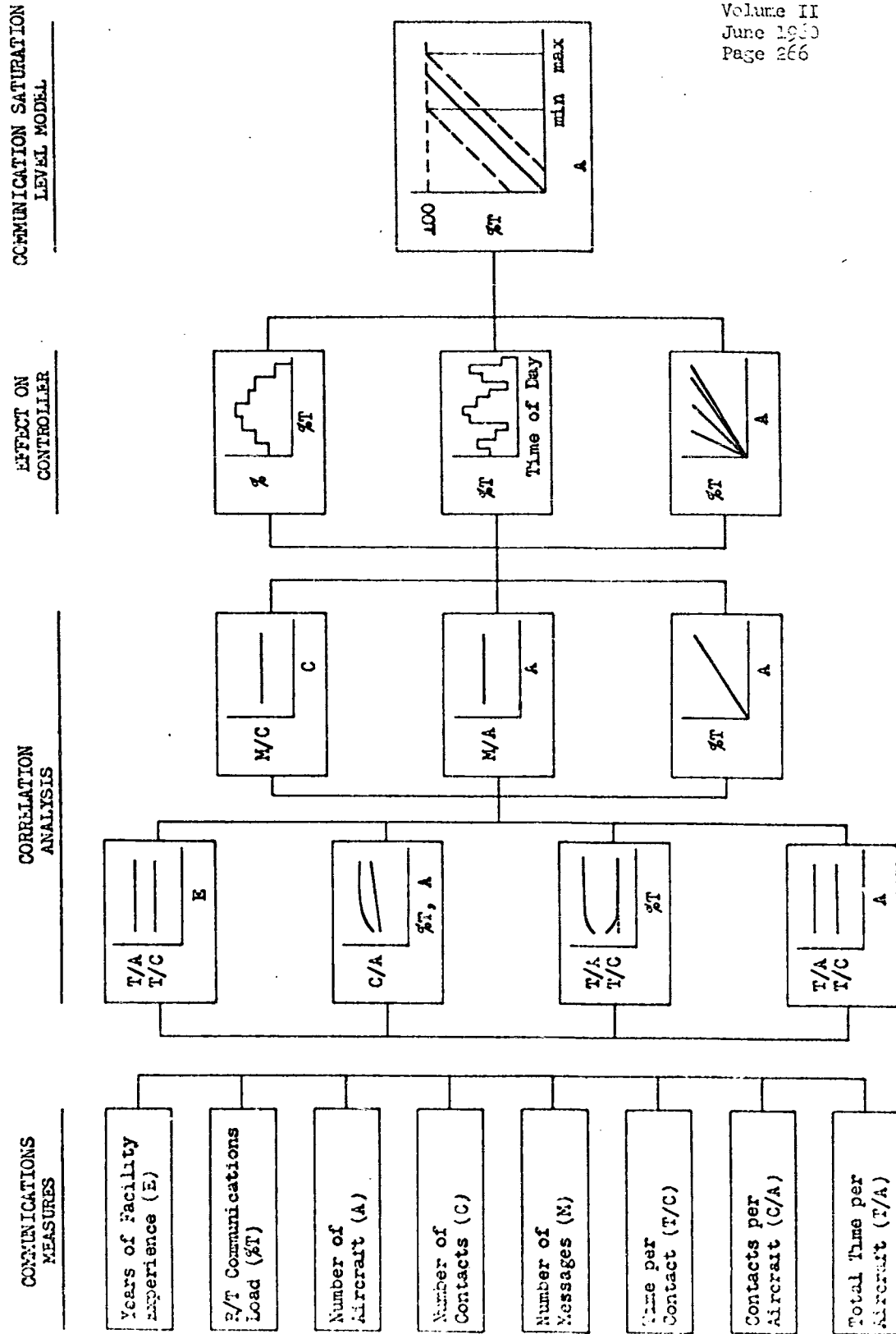
The net effect of this lack of correlation is presented in the last two cycles of charts. The relationship between message load and R/T communications load and between traffic load and R/T communications load was found to be essentially linear throughout the range of conditions encountered. A linear extrapolation of the traffic load versus R/T load charts yielded an estimate of the R/T communications saturation level for all positions. The analysis of the time-related measures is presented schematically in Figure III-1.

The symbols used in plotting all data in this section are defined as follows:

- ◇ All Hours 1960
- 1400-1800 Hours 1959
- △ 0800-1000 Hours 1959
- 0000-0200 Hours 1959

Figure III-1

SCHEMATIC OF ANALYSIS OF TIME-RELATED MEASURES



1. Effect of Traffic Density on Time-Related Measures.

Figures III-2 to III-37 show the relationships between traffic density as represented by the number of aircraft handled in a given time interval and the three time-related measures for the corresponding interval. Half-hour, one-hour, and two-hour intervals were all used for the analysis.

The sum of the number of aircraft handled in two consecutive half-hour intervals does not always equal the number handled in the resulting one-hour interval. That is, when one aircraft appears in both half-hour intervals, that plane would be included in each half-hour interval but would be included just once in the one-hour tally. A similar tallying procedure was used in going from the one-hour to the two-hour intervals.

Whenever a significant difference between 1959 and 1960 data occurred, a separate dotted line was used to represent the 1960 data. If no significant difference existed, a single solid line was used to represent the data from both years.

Figure III-2

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT GROUND CONTROL
(Half-Hour Intervals)

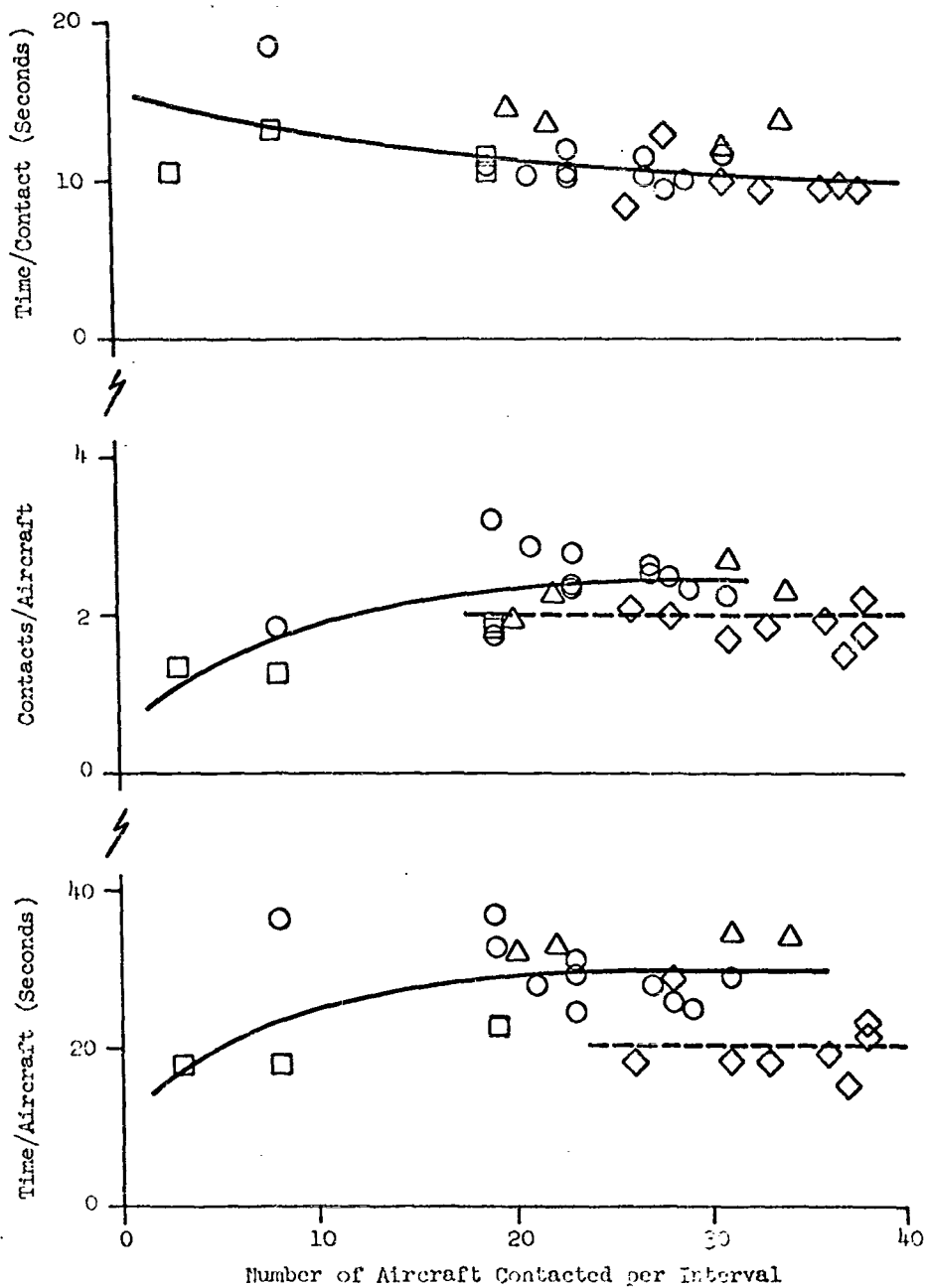
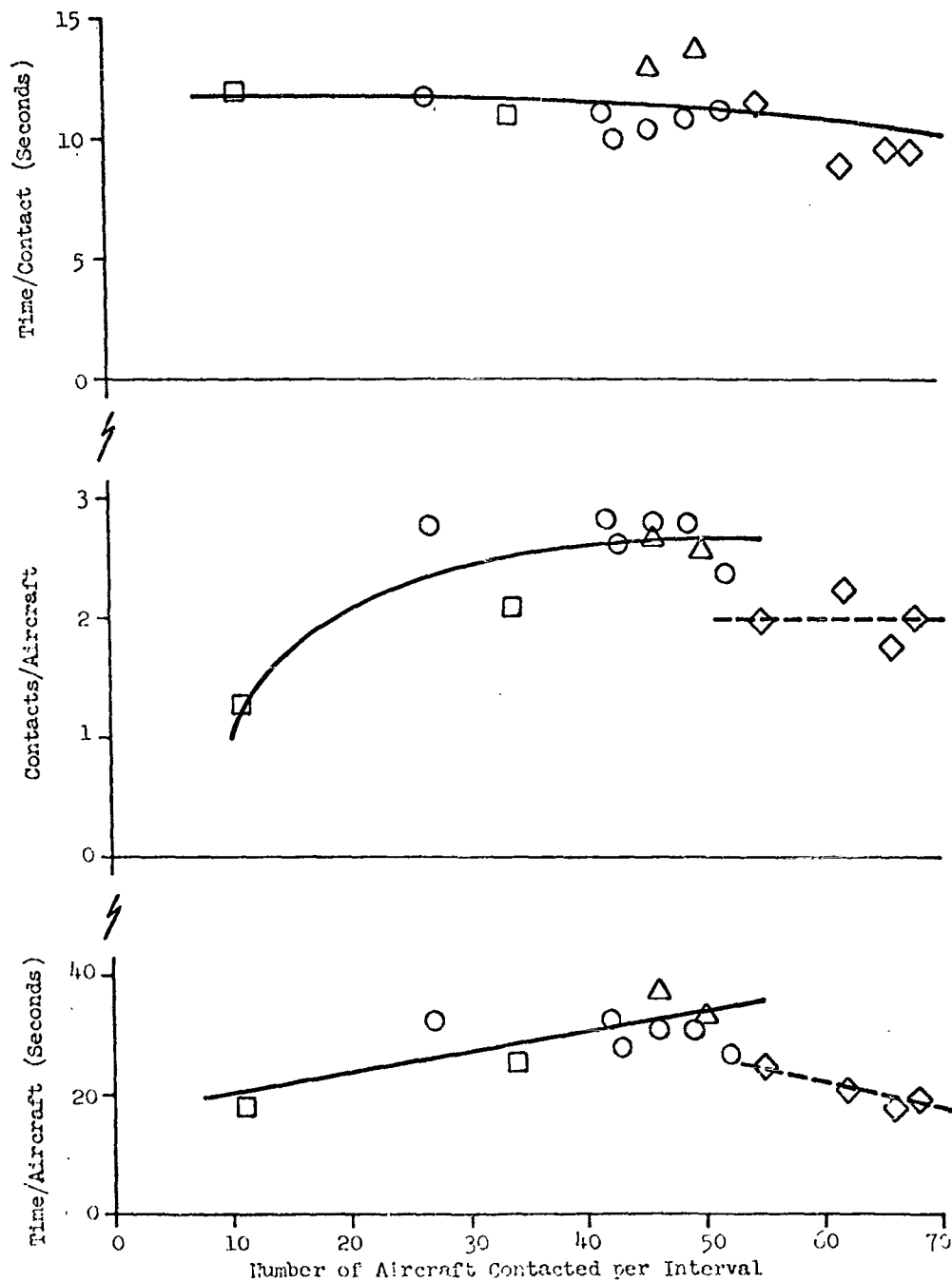


Figure III-3

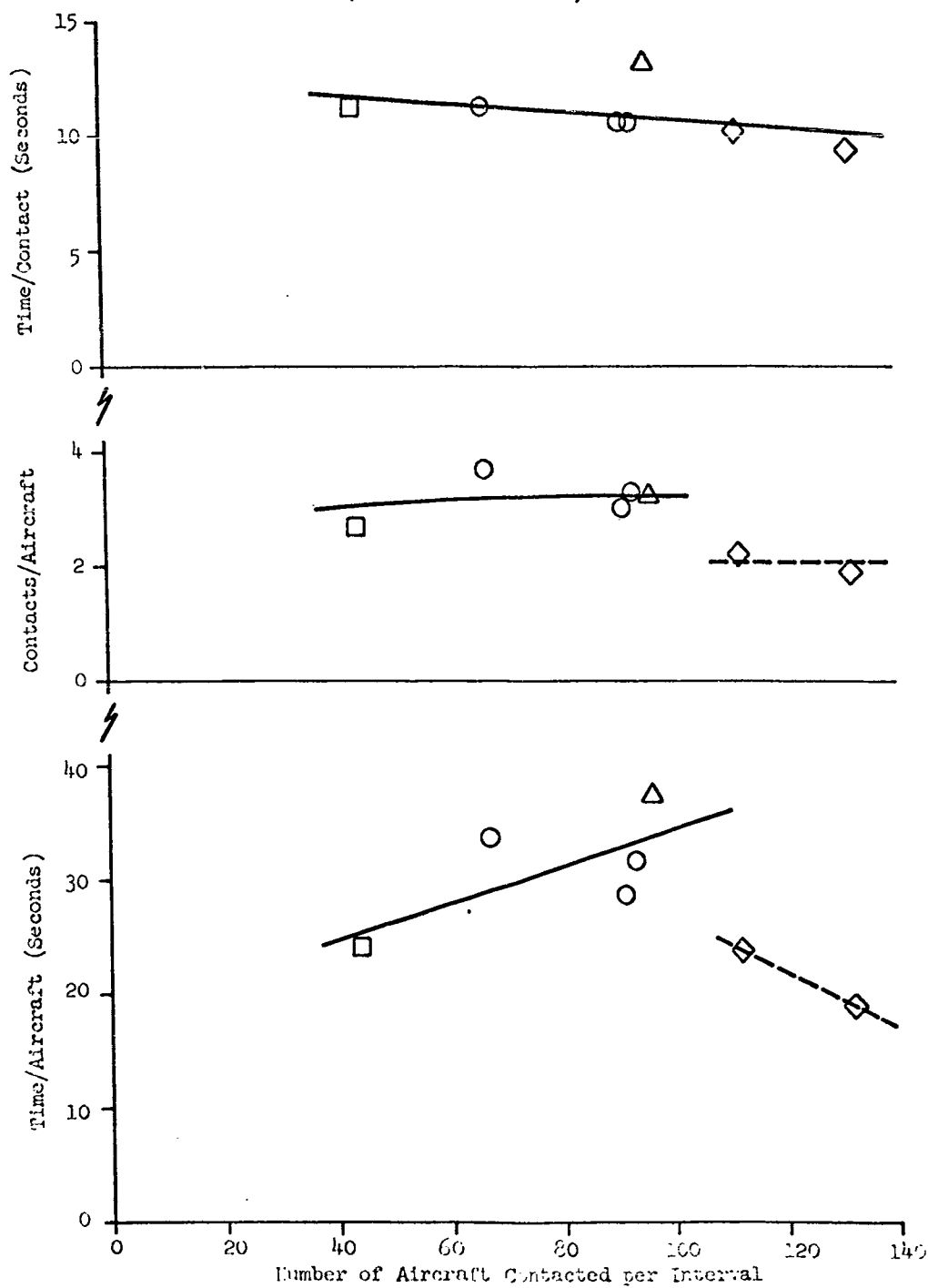
EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT GROUND CONTROL

(One-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT GROUND CONTROL

(Two-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT LOCAL CONTROL

(Half-Hour Intervals)

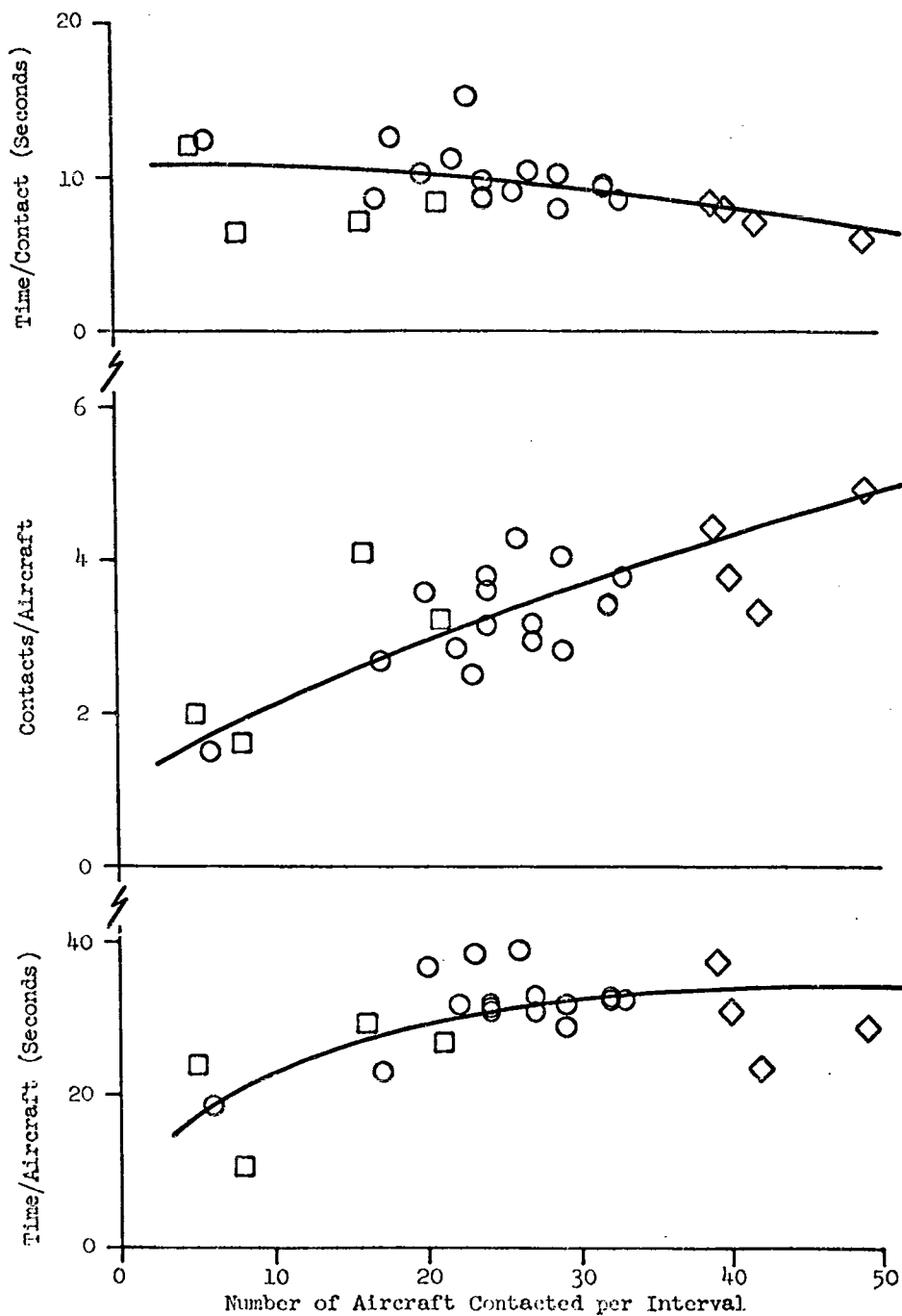


Figure III-6

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT LOCAL CONTROL

(One-Hour Intervals)

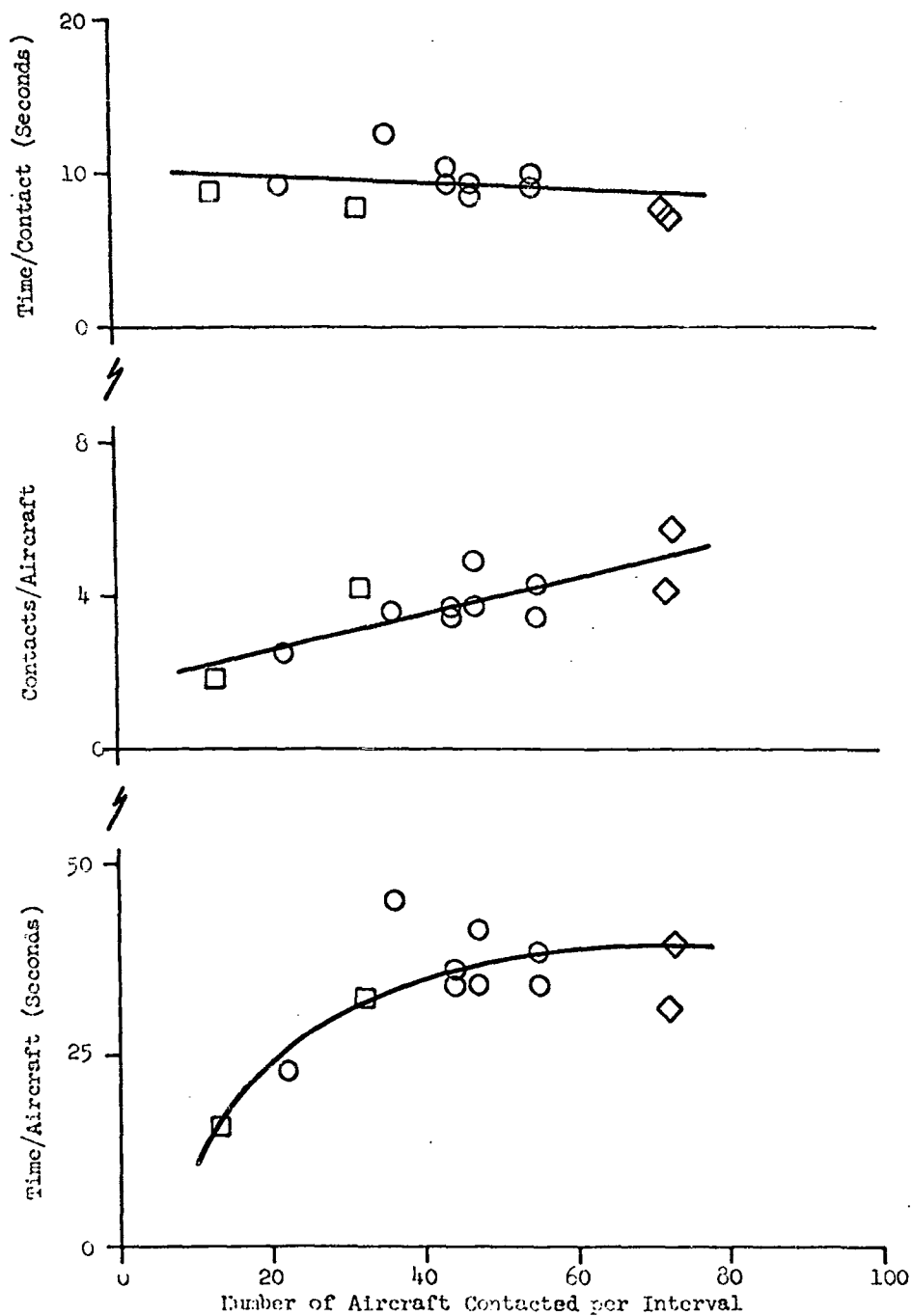


Figure III-7

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT LOCAL CONTROL

(Two-Hour Intervals)

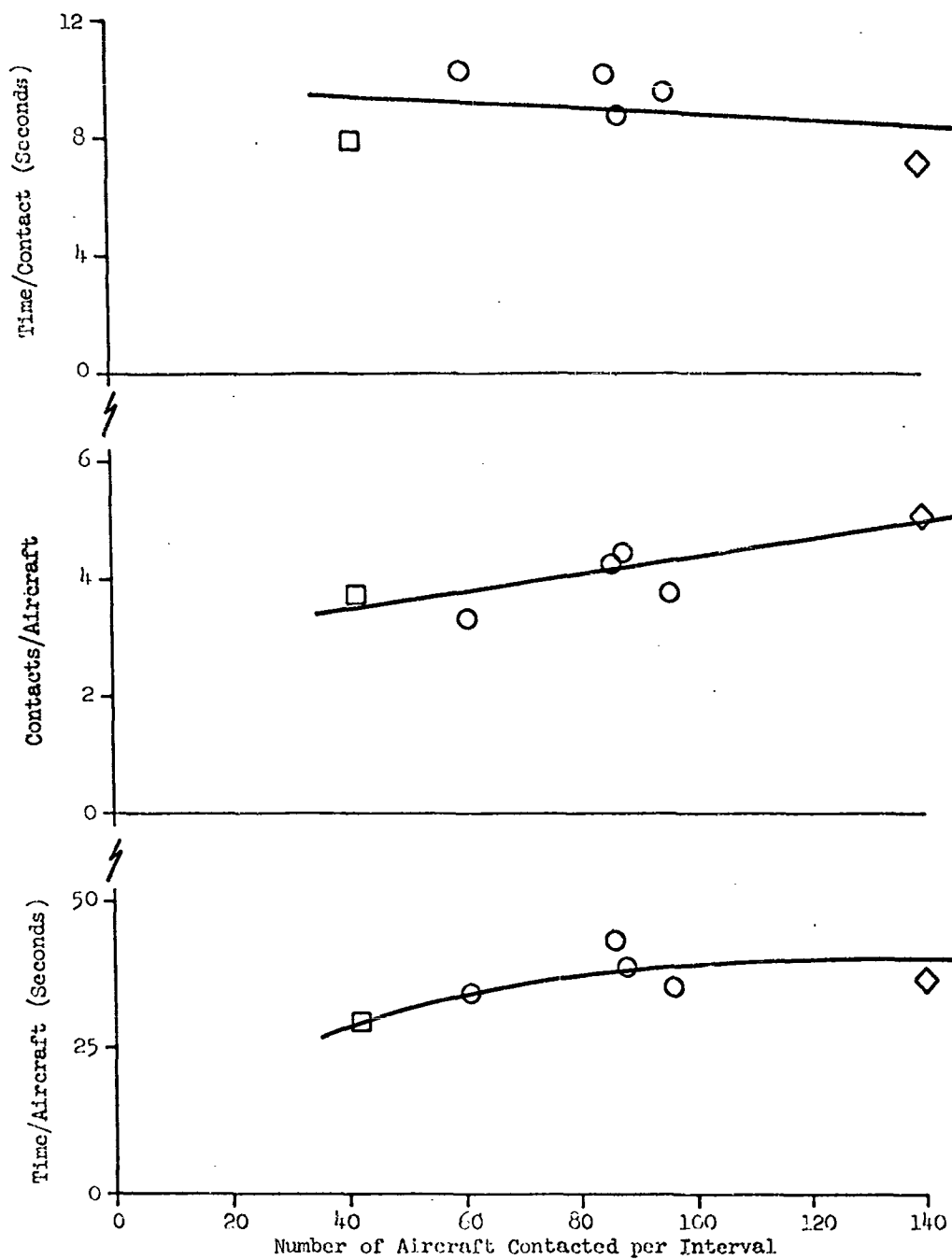
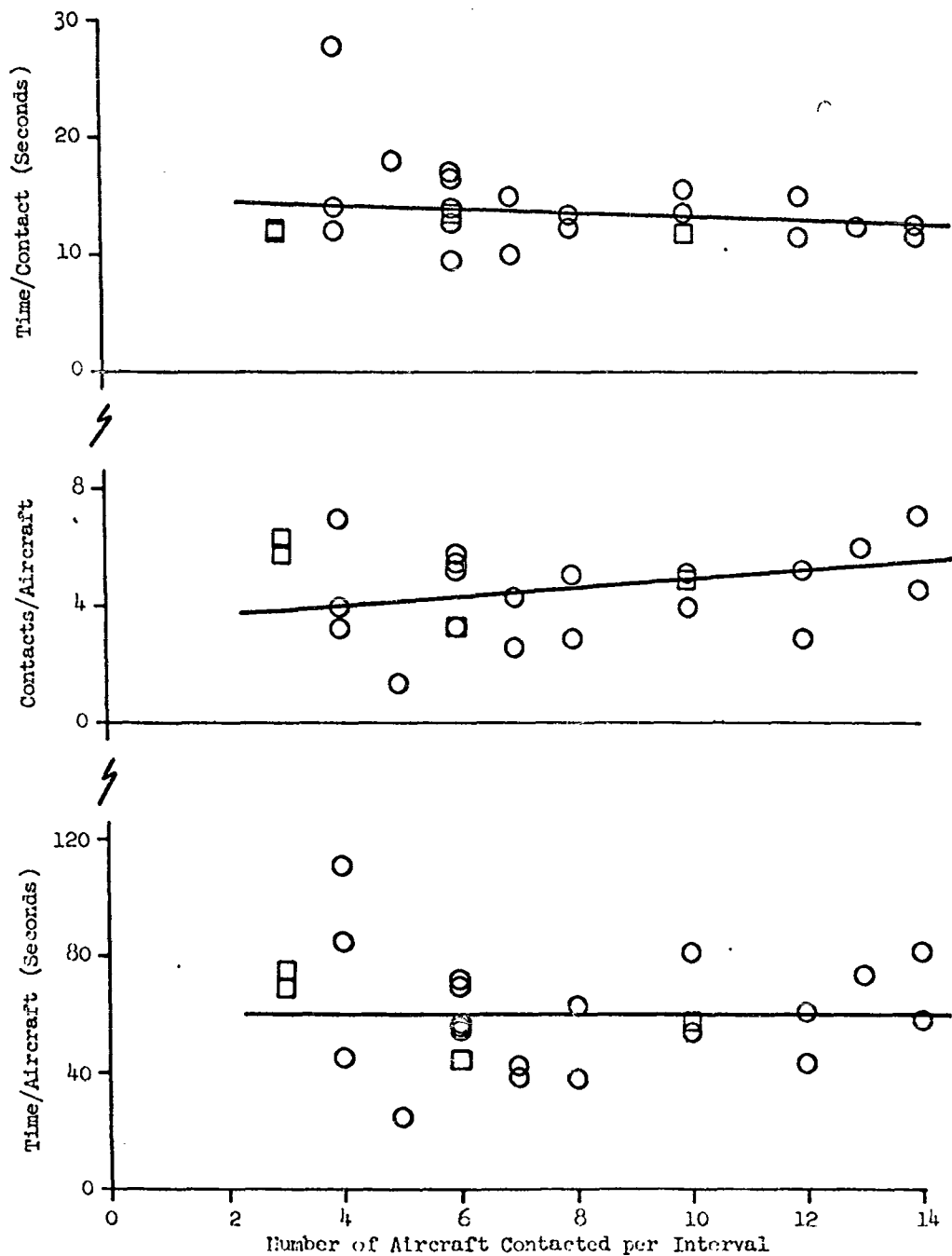


Figure III-8

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT APPROACH CONTROL (AFC)

(Half-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT APPROACH CONTROL (A/C)

(One-Hour Intervals)

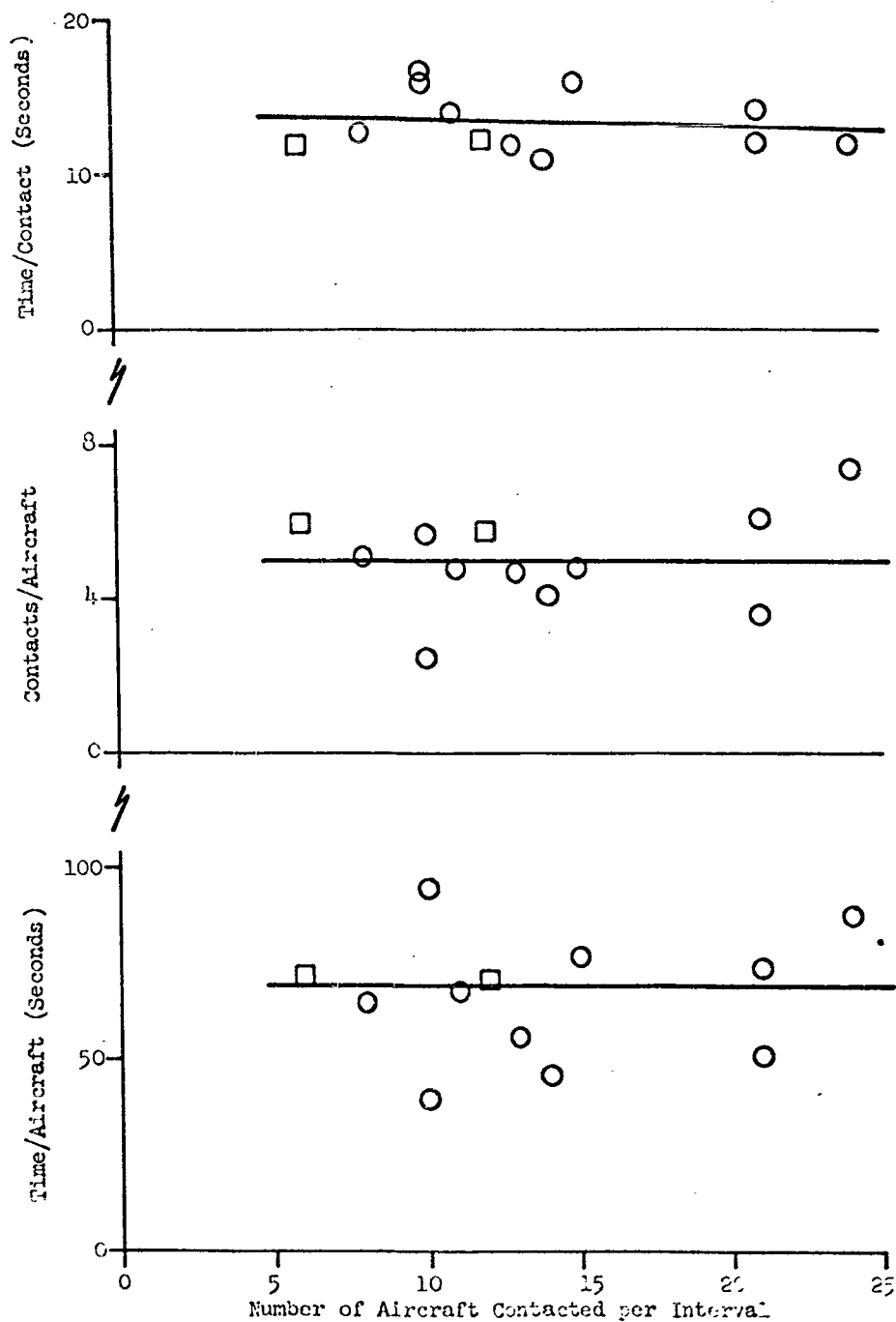


Figure III-10

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT APPROACH CONTROL (ANC)

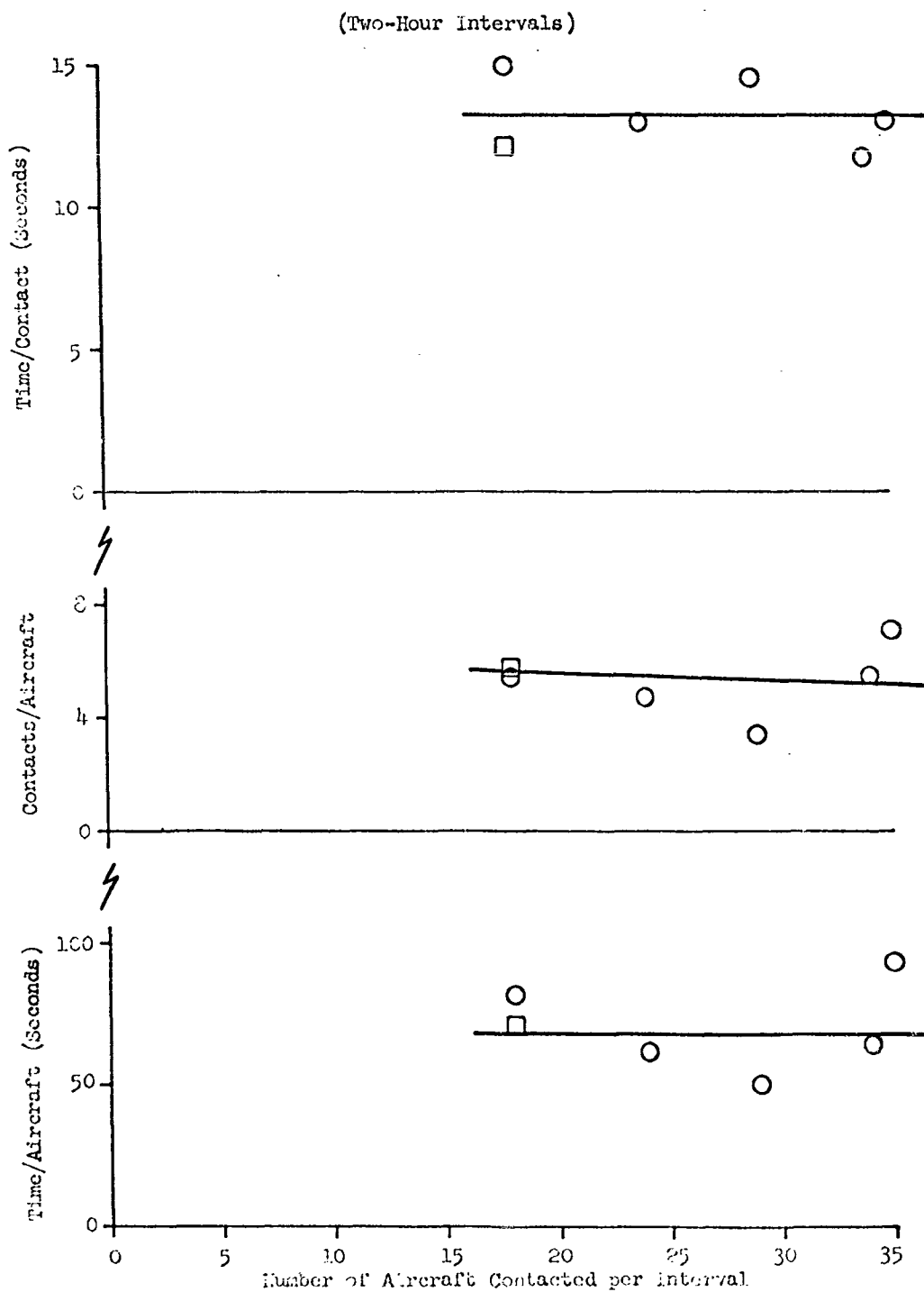


Figure III-11

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT APPROACH CONTROL (RADAR)

(Half-Hour Intervals)

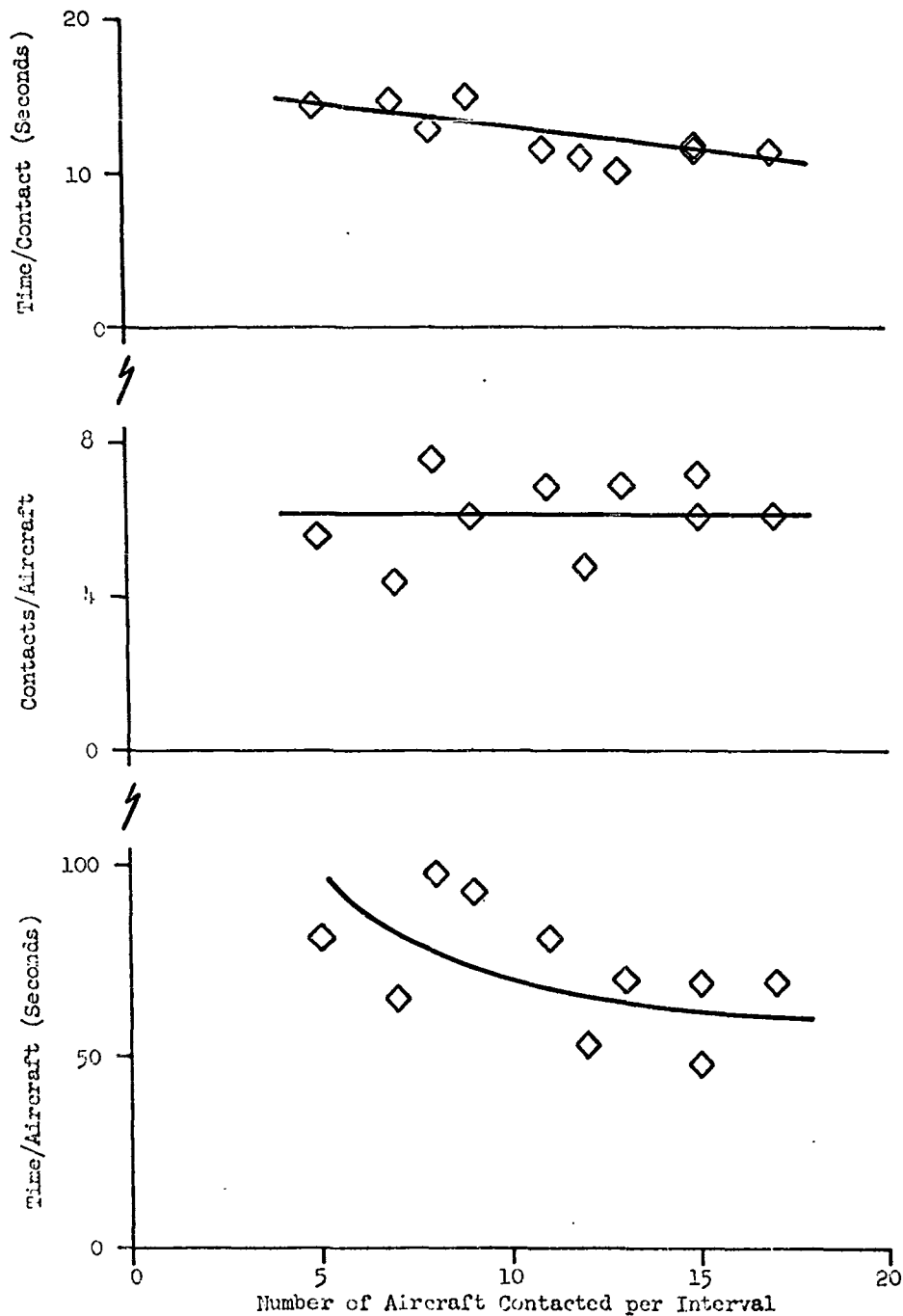
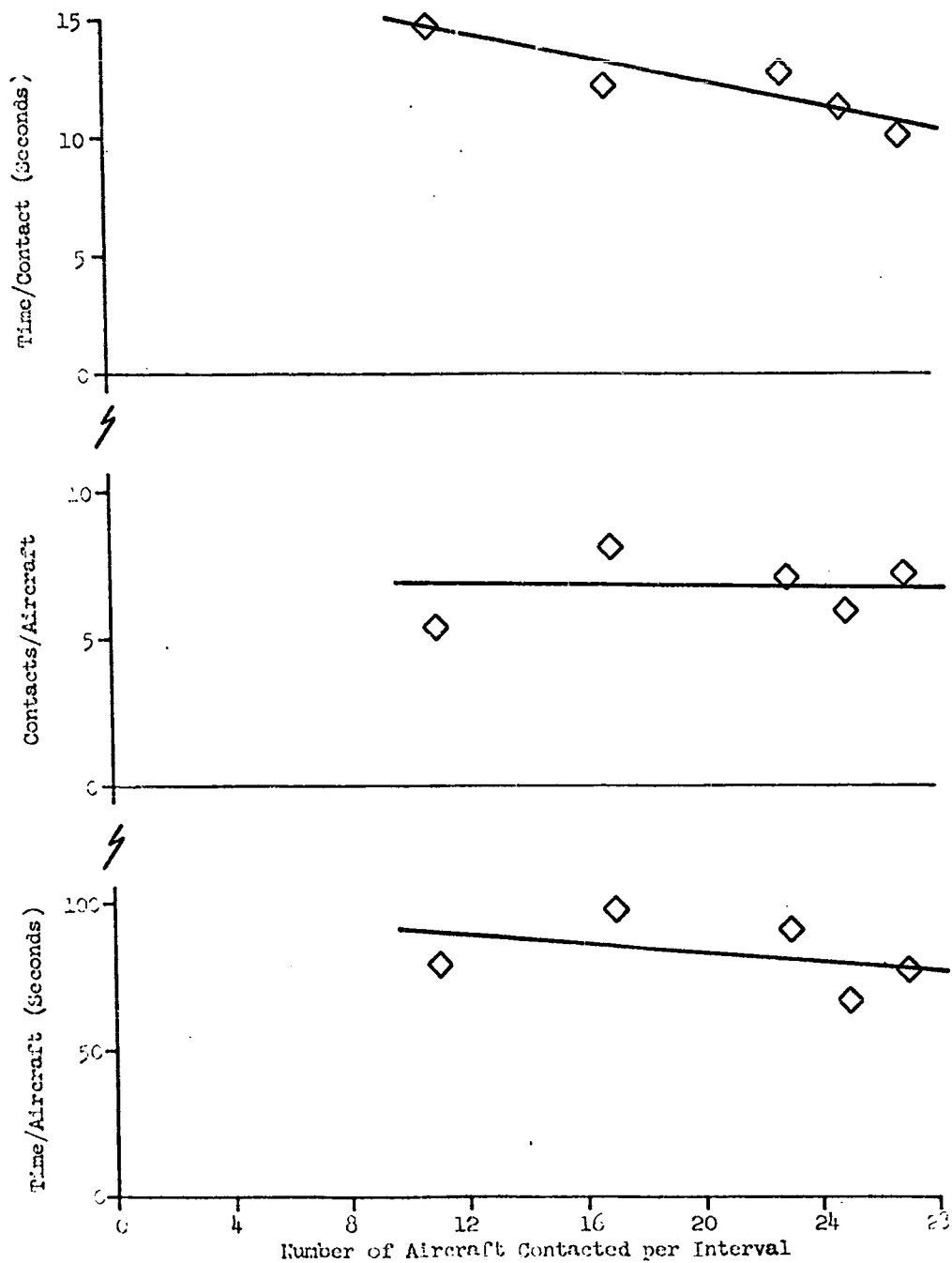


Figure III-12

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT APPROACH CONTROL (RADAR)

(One-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT APPROACH CONTROL (RADAR)

(Two-Hour Intervals)

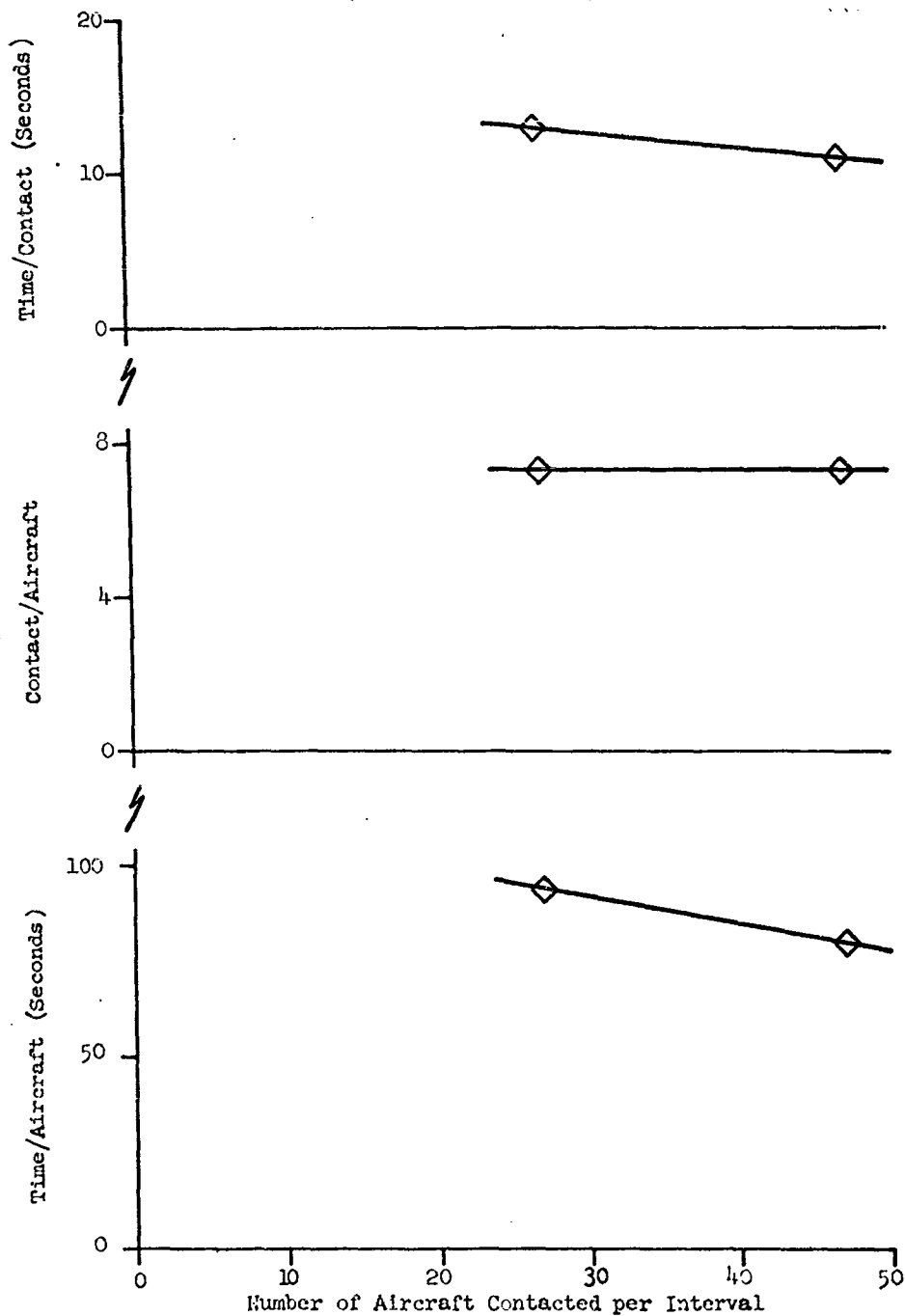


Figure III-14

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT DEPARTURE CONTROL (AIC)

(Half-Hour Intervals)

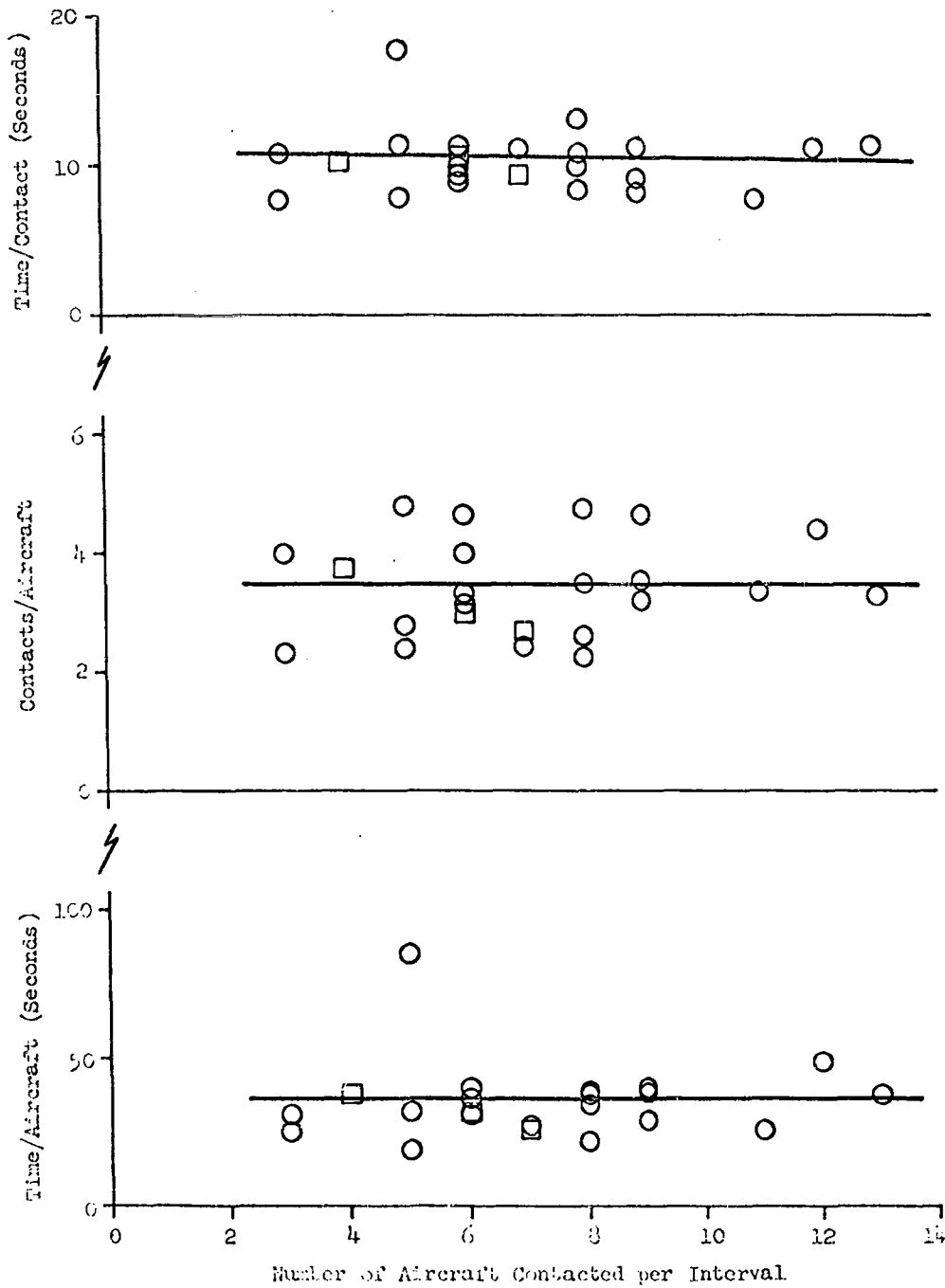


Figure III-15

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT DEPARTURE CONTROL (ANC)

(One-Hour Intervals)

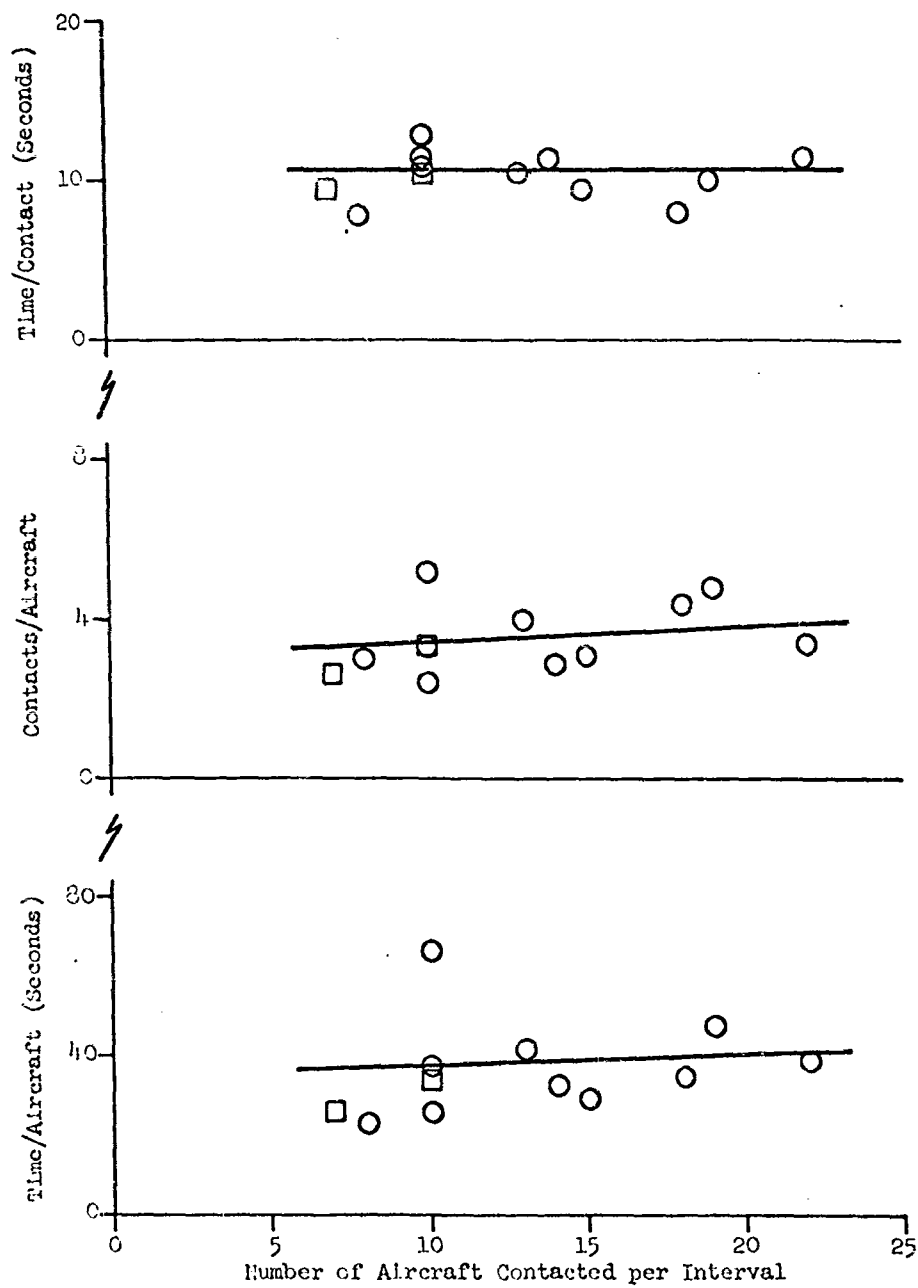


Figure III-16

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT DEPARTURE CONTROL (ANC)

(Two-Hour Intervals)

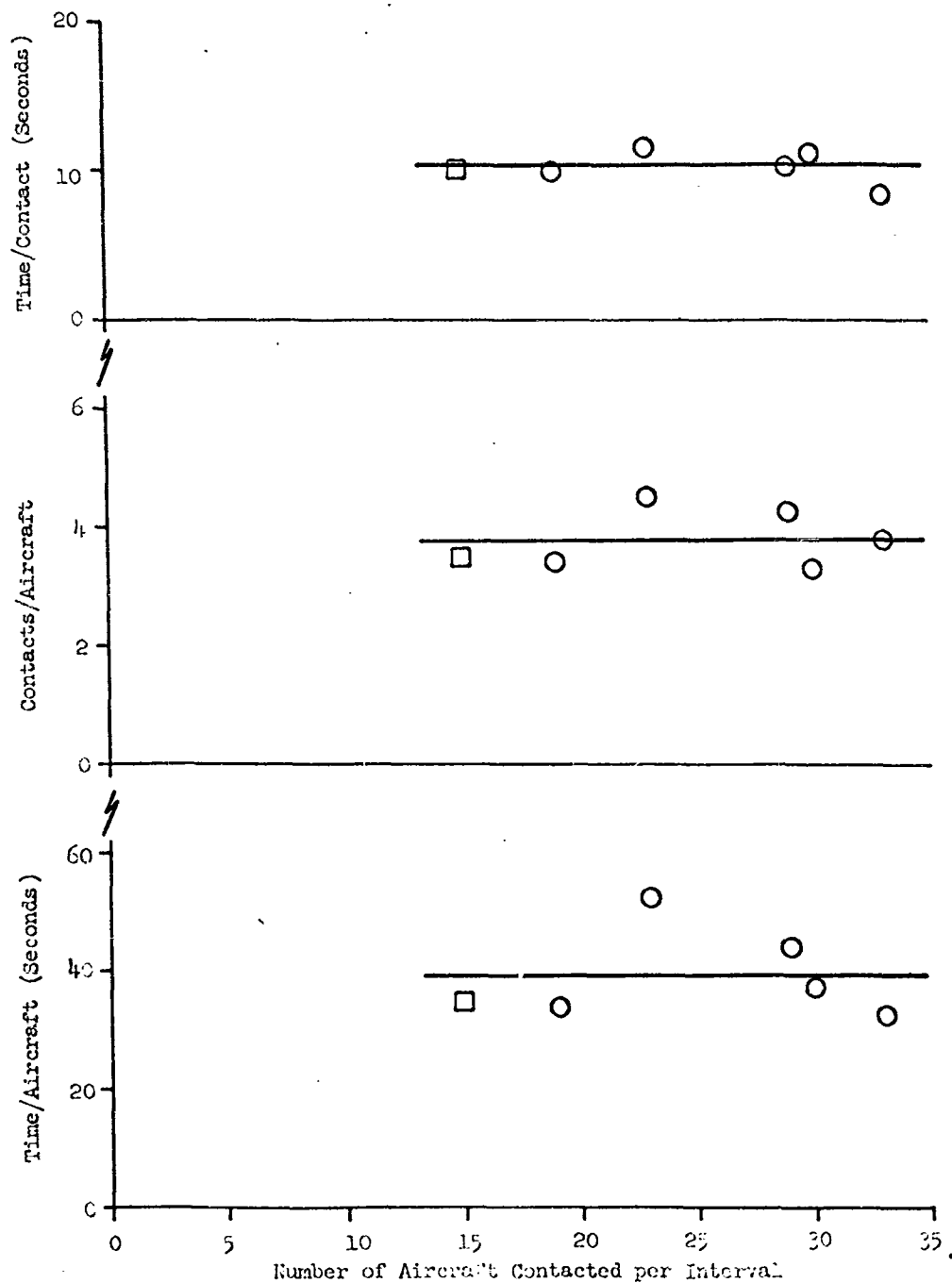
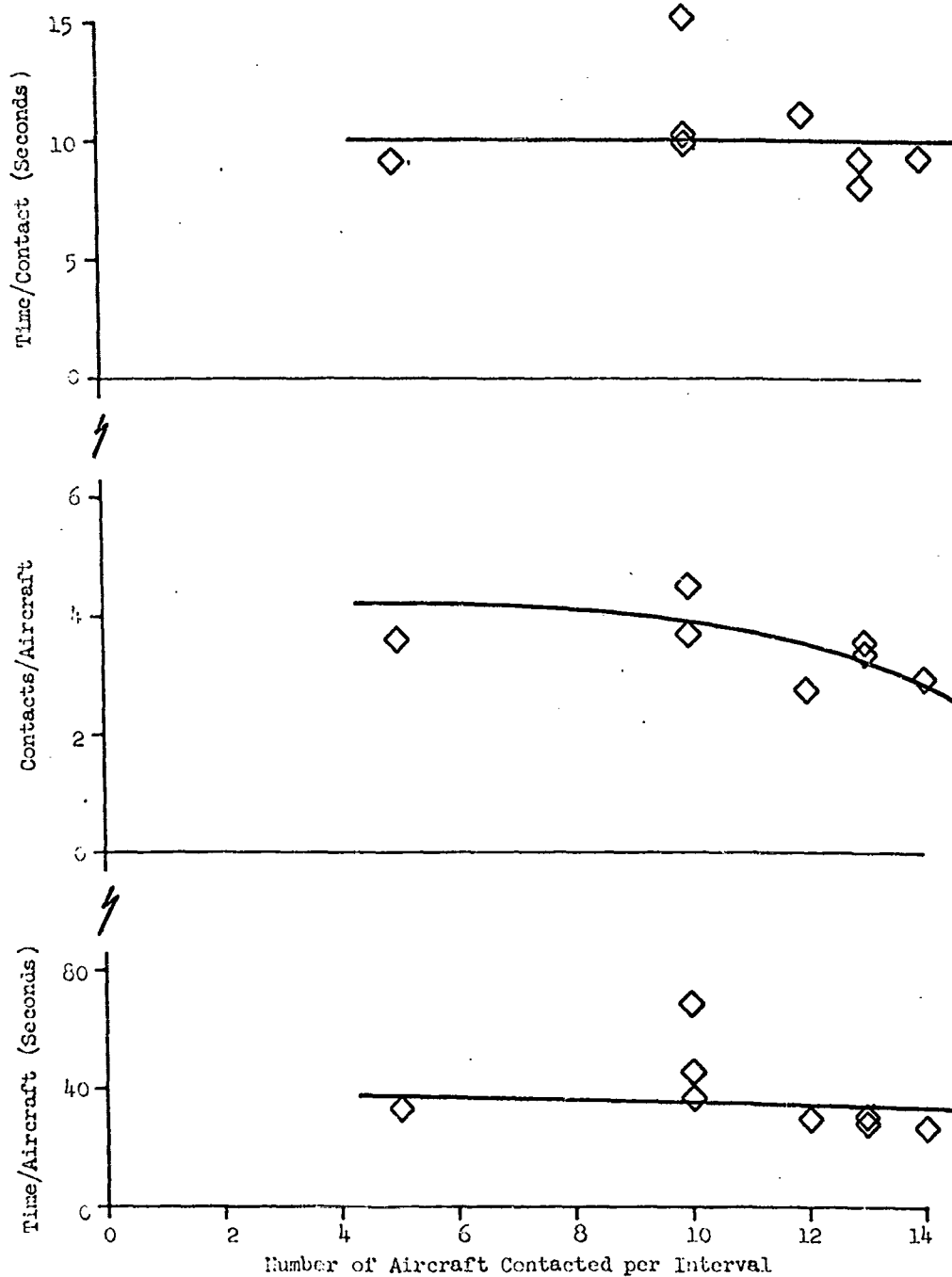


Figure III-17

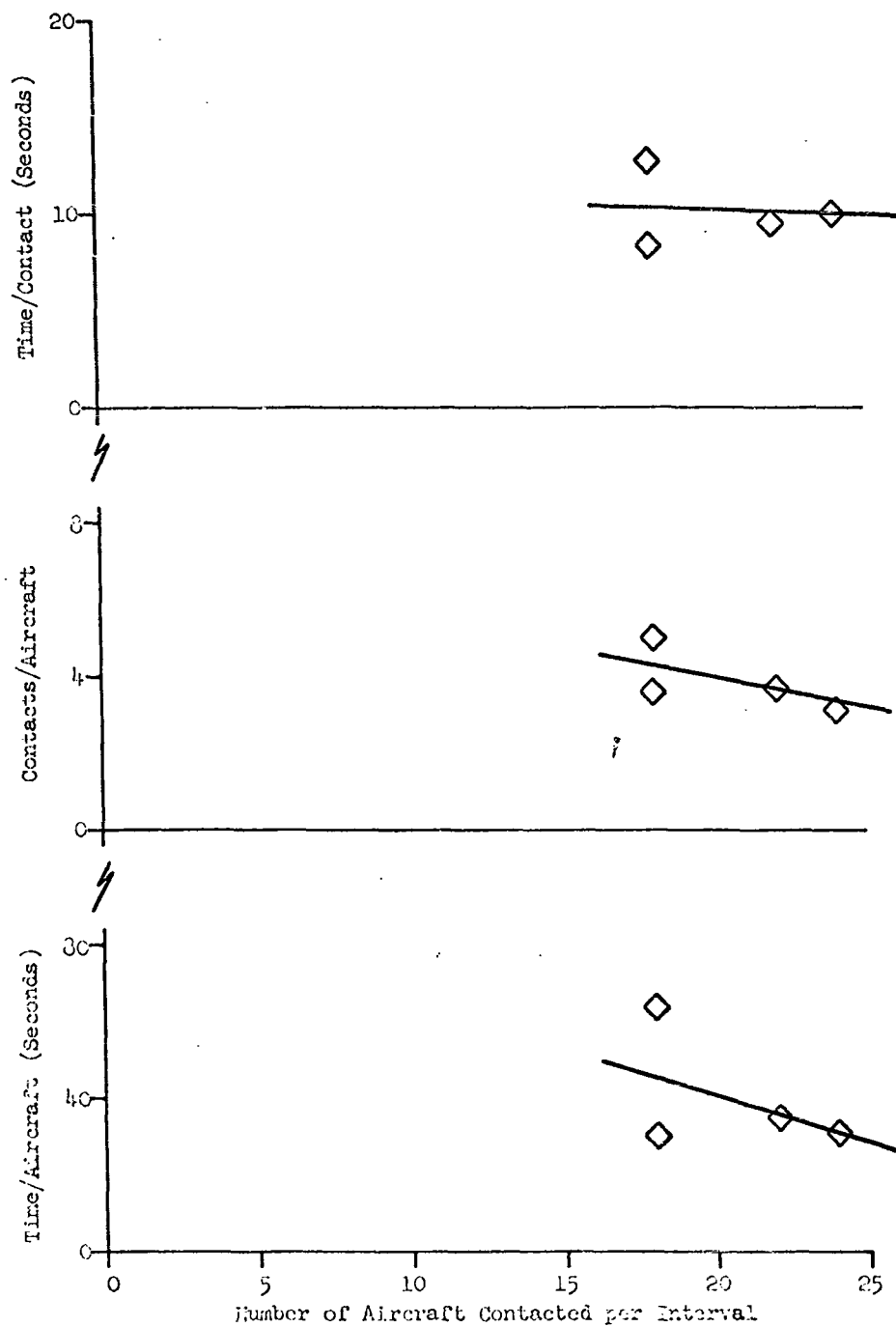
EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT DEPARTURE CONTROL (RADAR)

(Half-Hour Intervals)



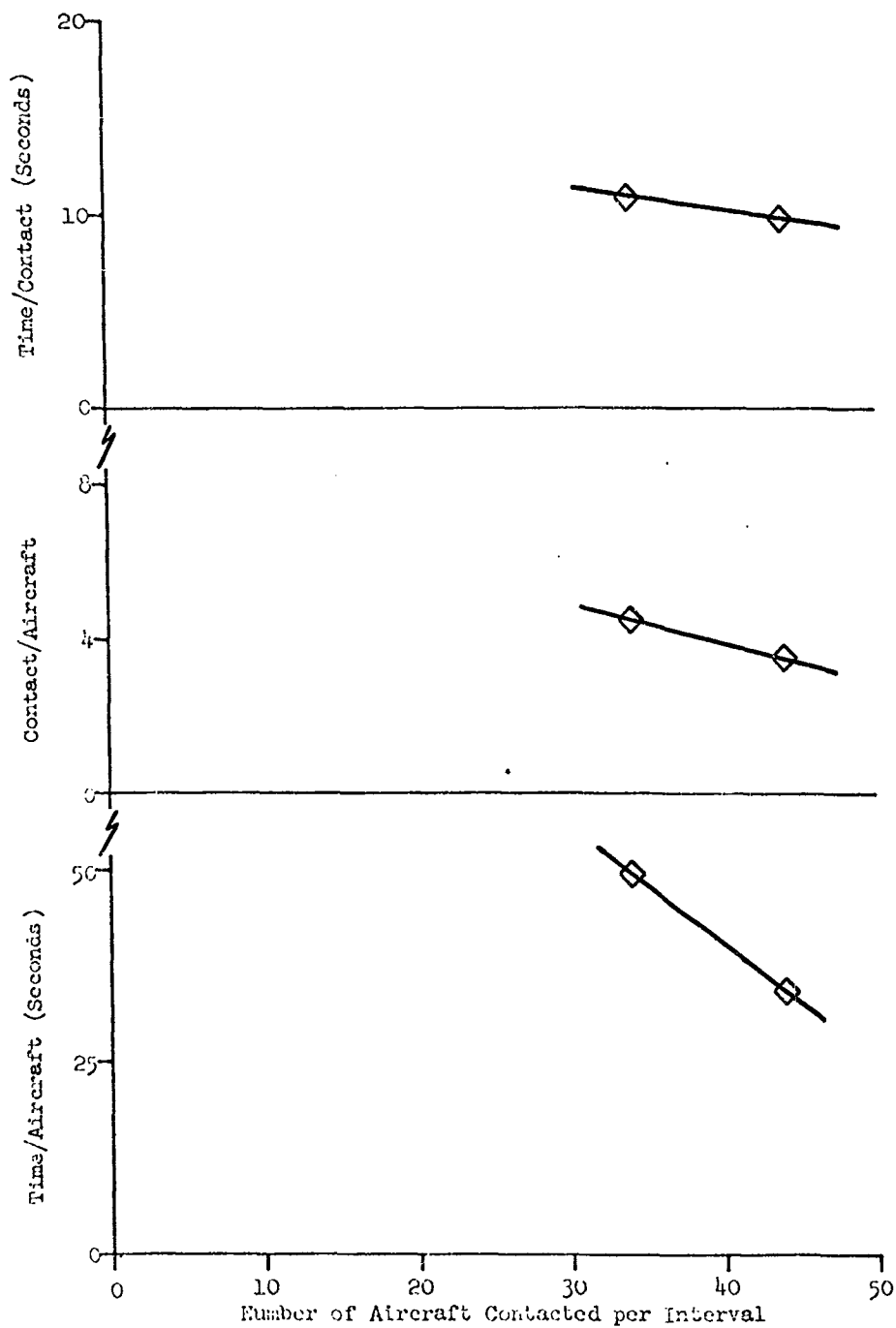
EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT DEPARTURE CONTROL (RADAR)

(One-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT DEPARTURE CONTROL (RADAR)

(Two-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT D2 RADIO CONTROL

(Half-Hour Intervals)

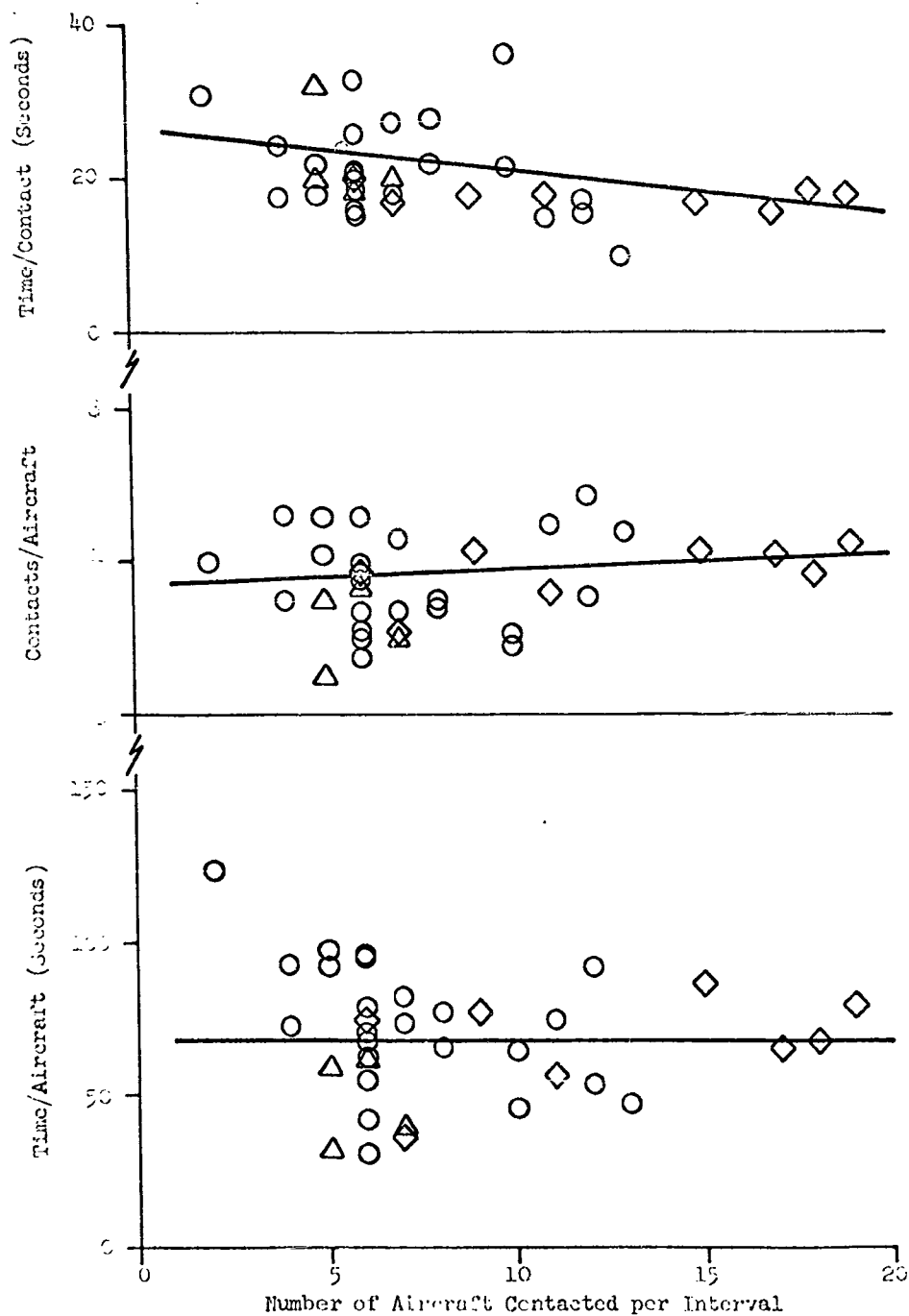
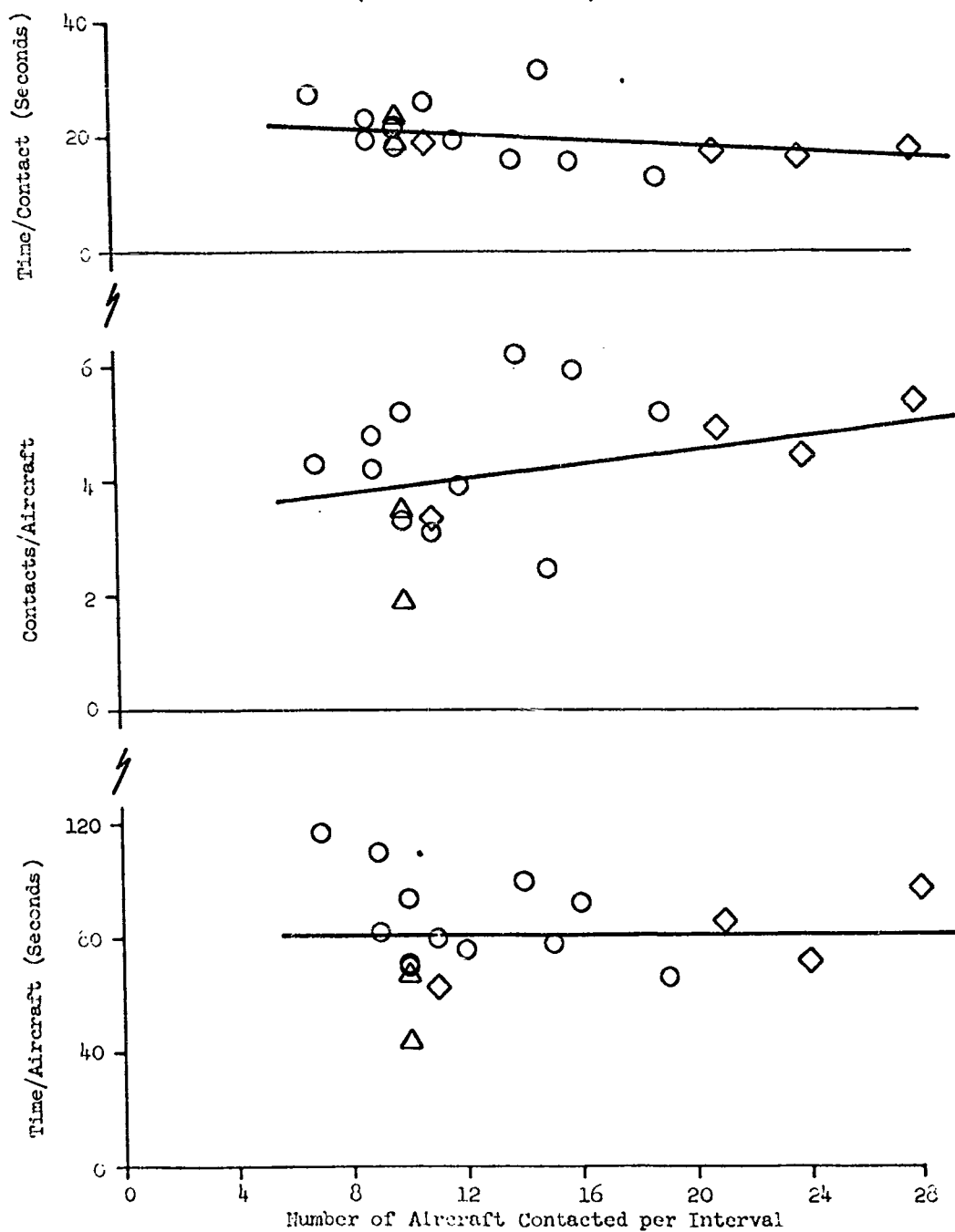


Figure III-21

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT D2 RADIO CONTROL

(One-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT D2 RADIO CONTROL

(Two-Hour Intervals)

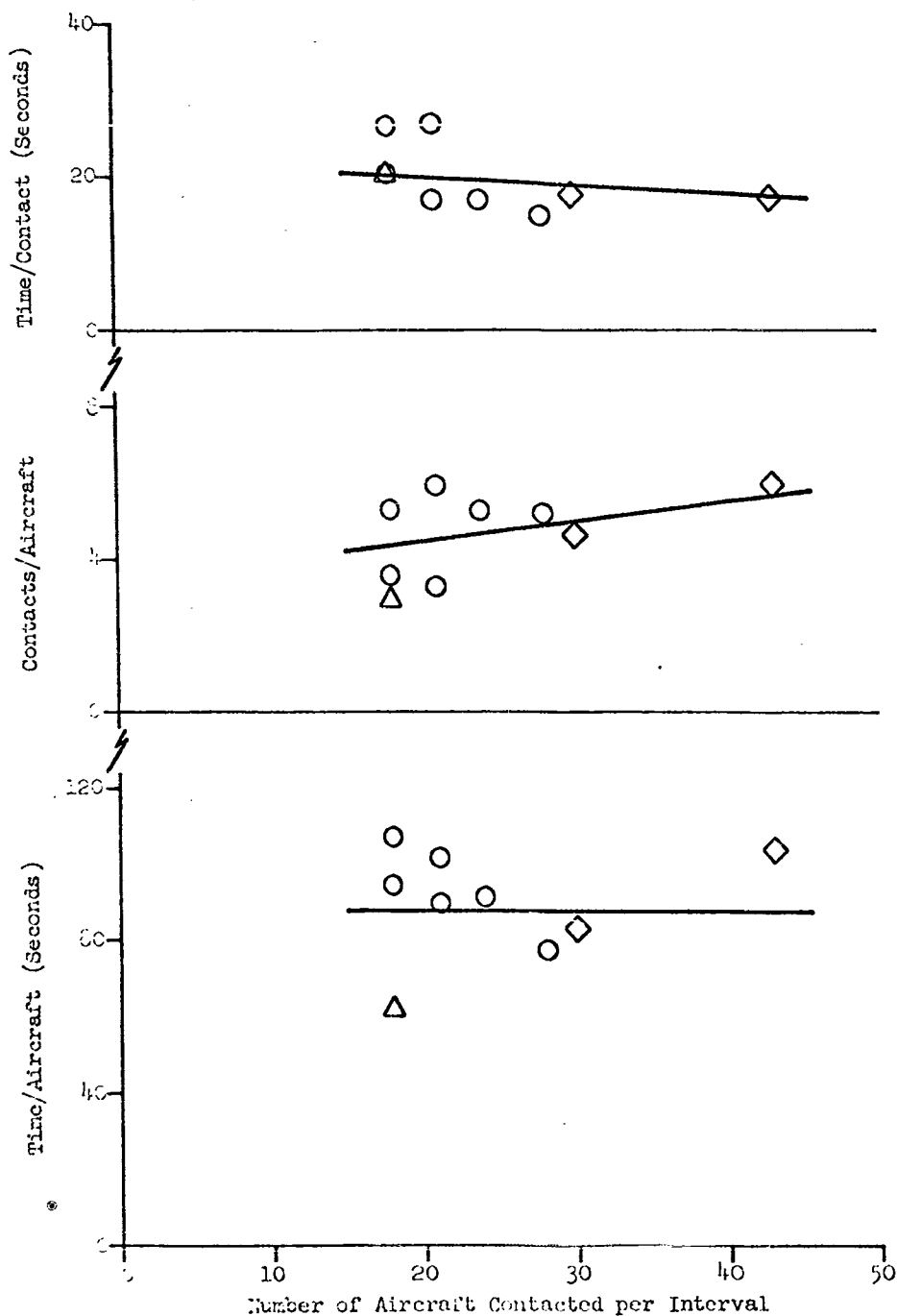
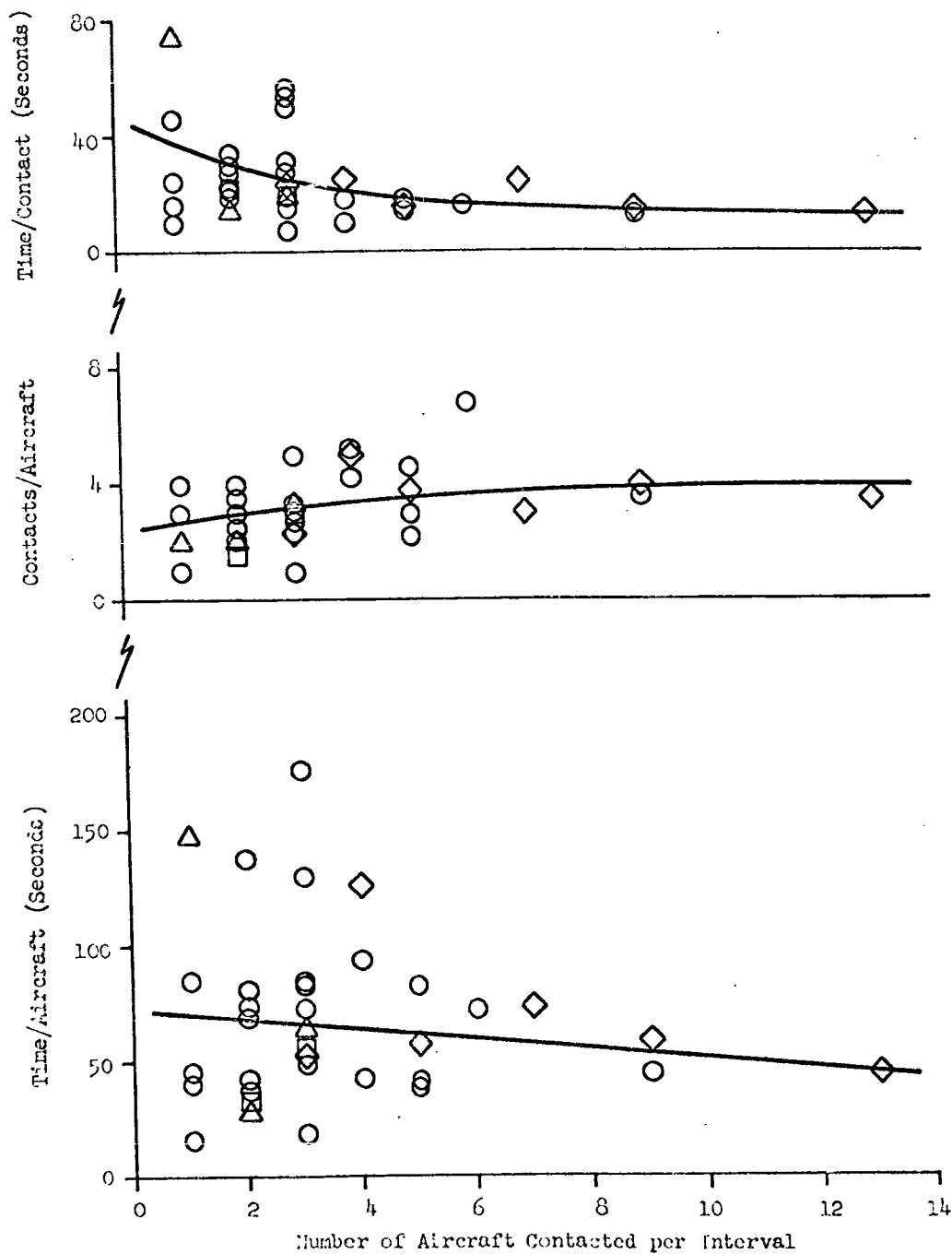


Figure III-23

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT D3 RADIO CONTROL

(Half-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT D3 RADIO CONTROL

(One-Hour Intervals)

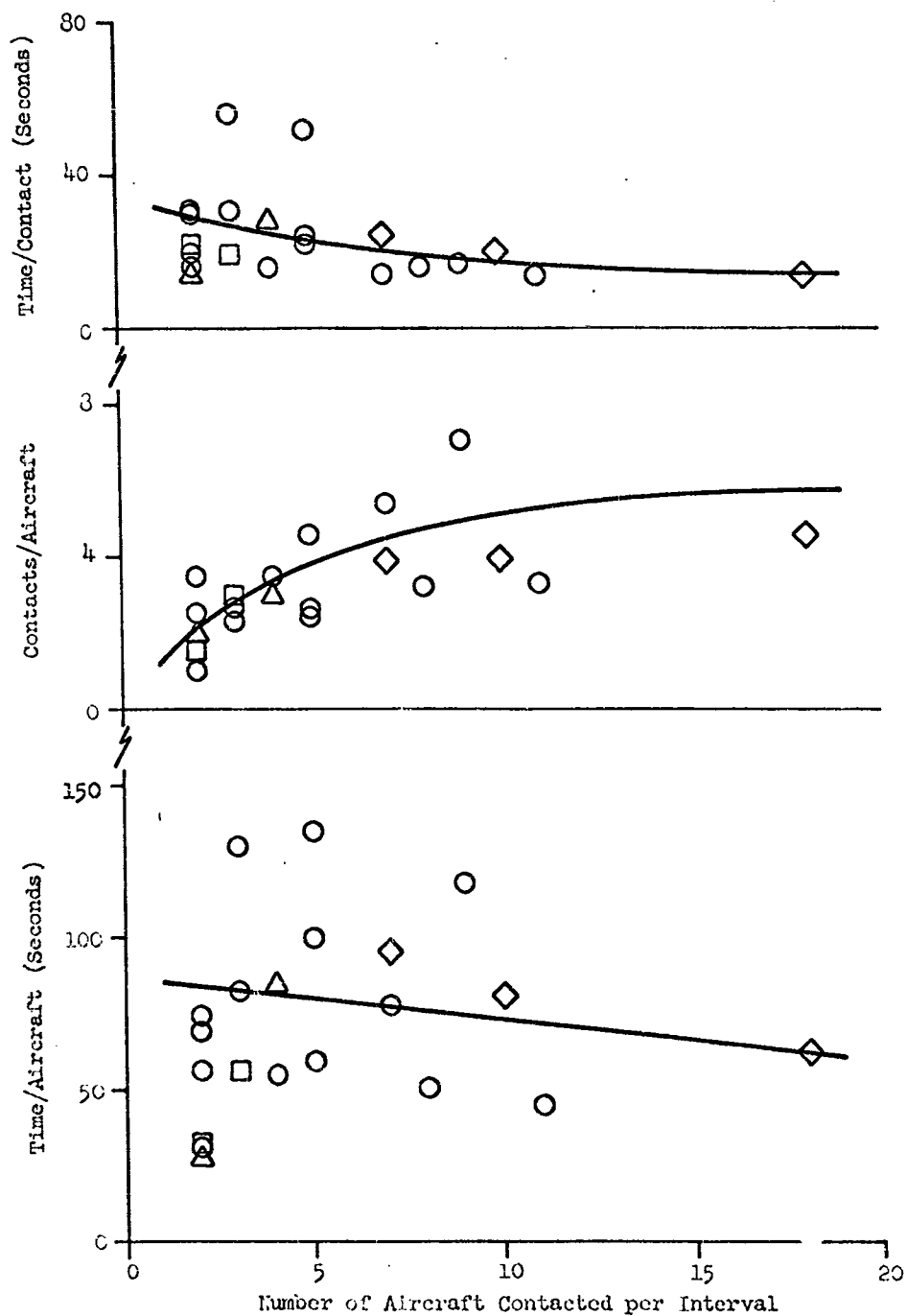


Figure III-25

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT D3 RADIO CONTROL

(Two-Hour Intervals)

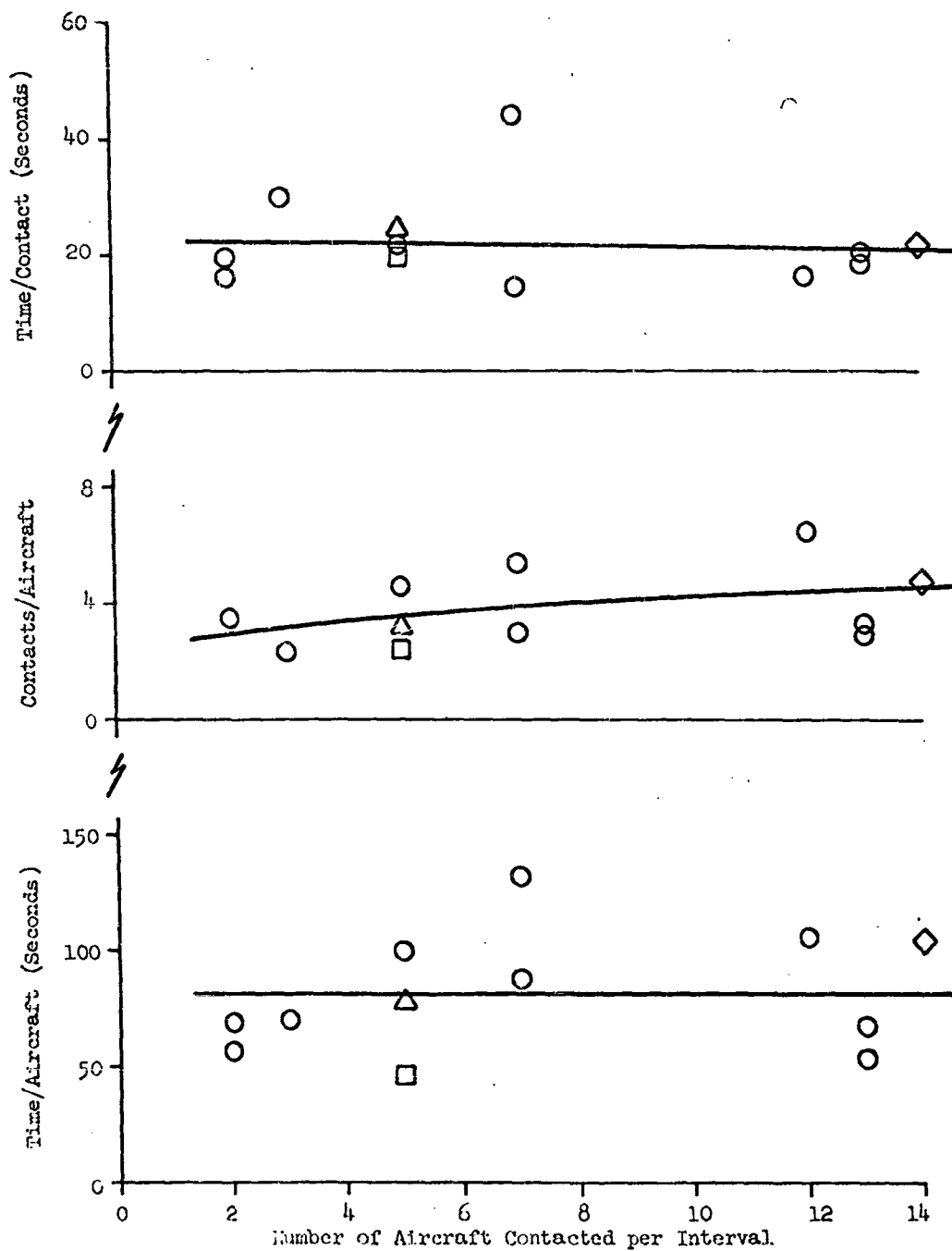


Figure III-26

EFFECT OF TRAFFIC DENSITY OF TIME-RELATED MEASURES AT RADAR 1A CONTROL

(Half-Hour Intervals)

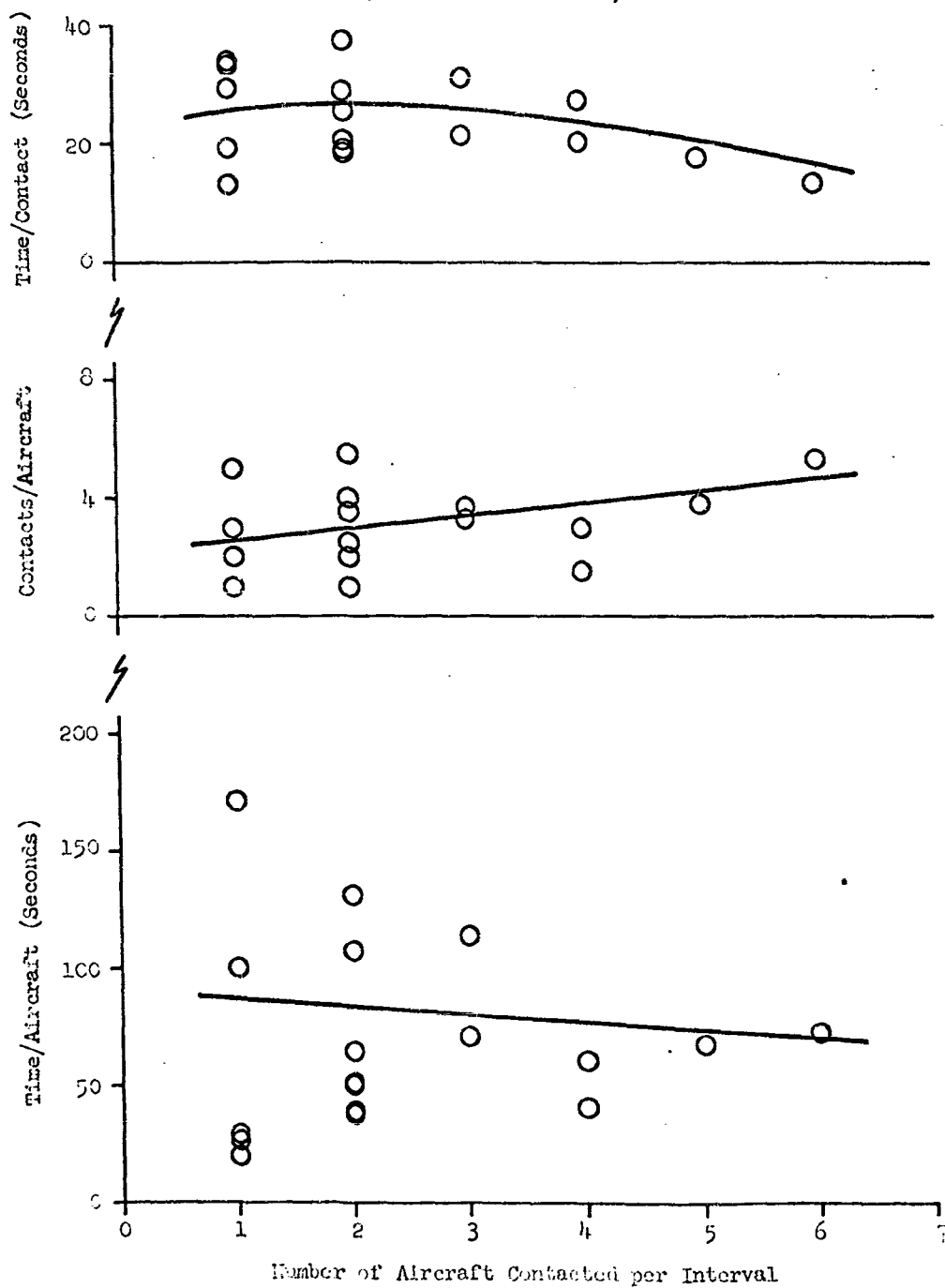


Figure III-27

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 1A CONTROL

(One-Hour Intervals)

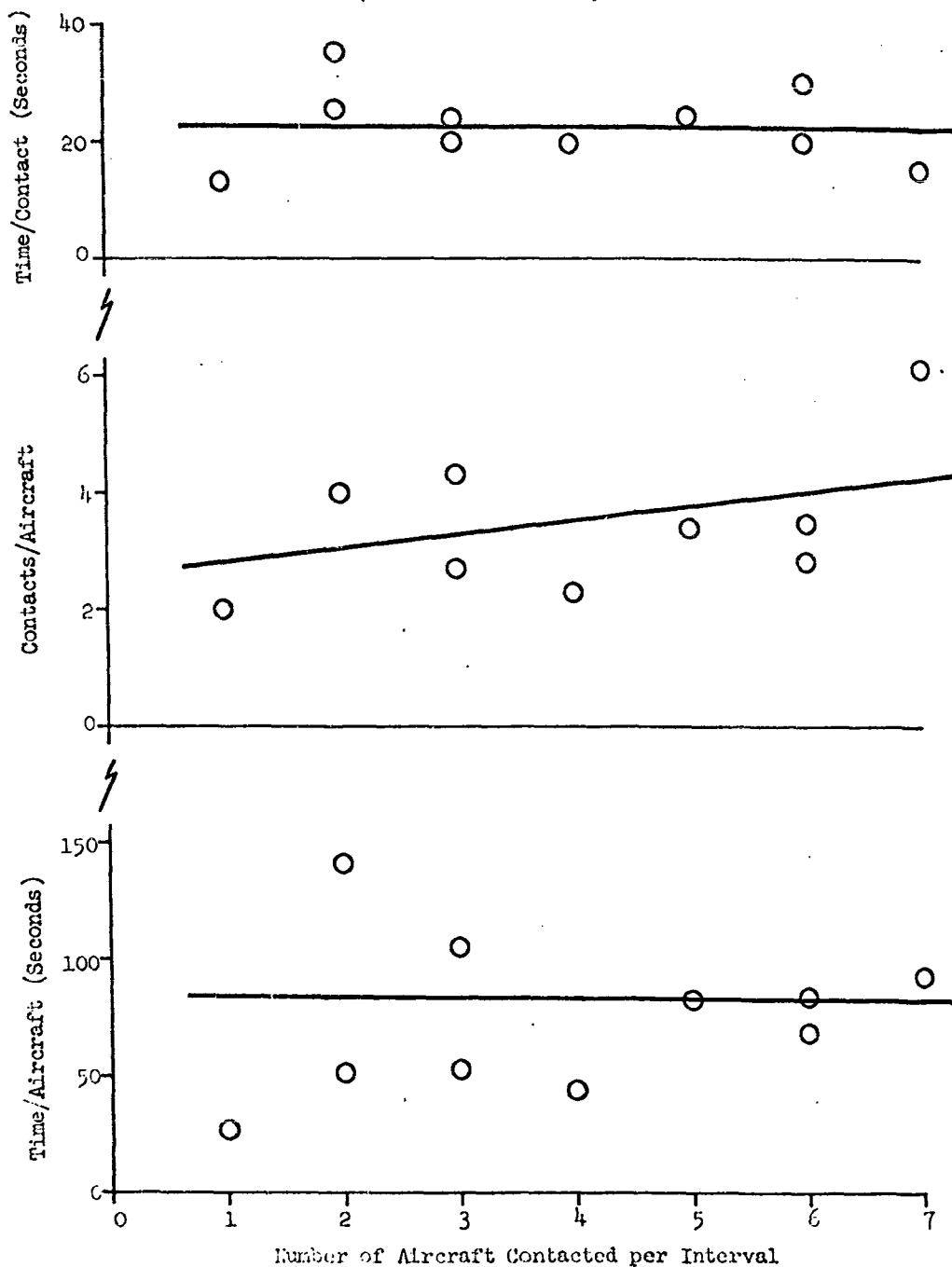


Figure III-28

EFFECT OF TRAFFICE DENSITY ON TIME-RELATED MEASURES AT RADAR 1A CONTROL

(Two-Hour Intervals)

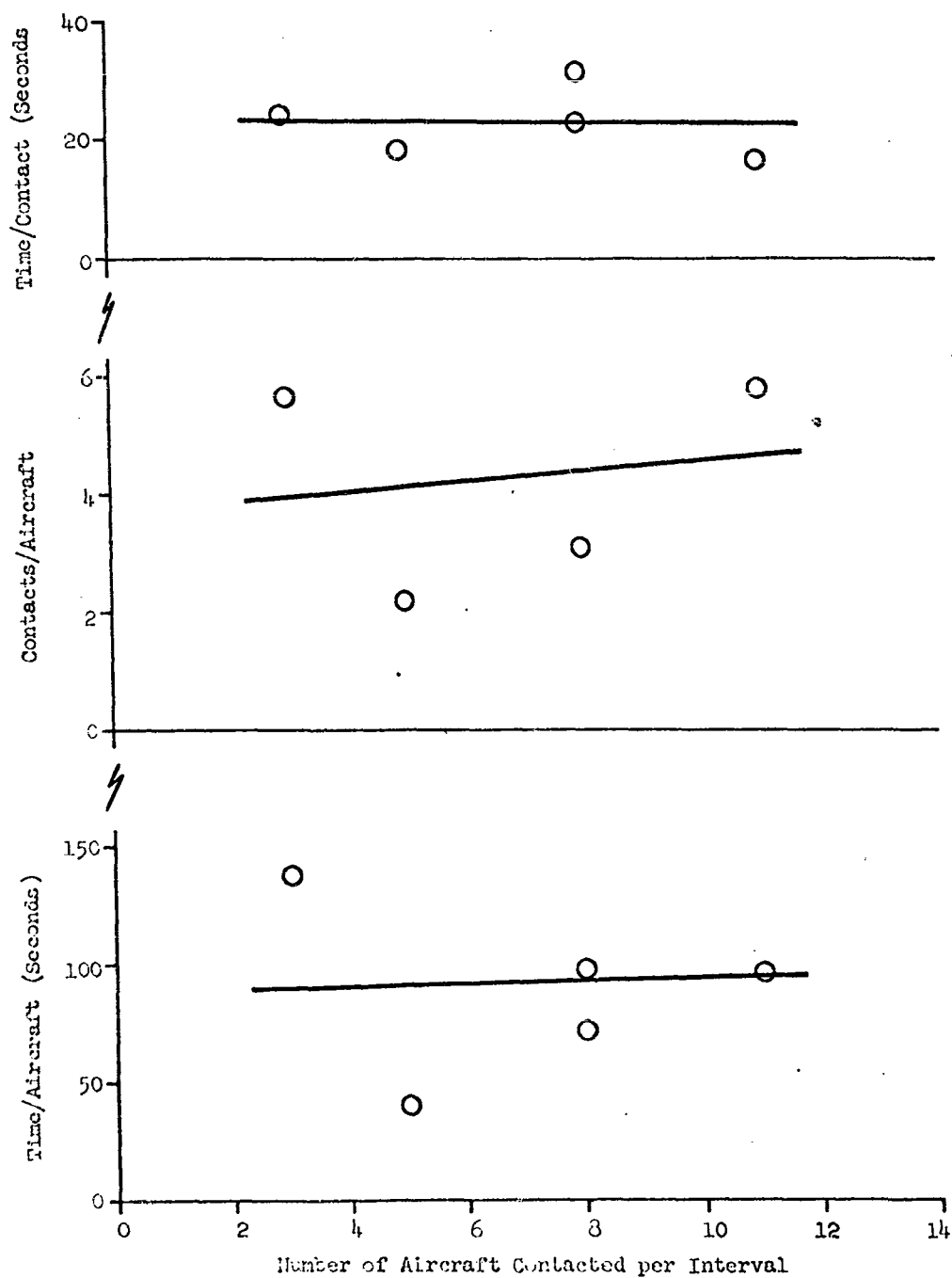


Figure III-29

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR LB CONTROL

(Half-Hour Intervals)

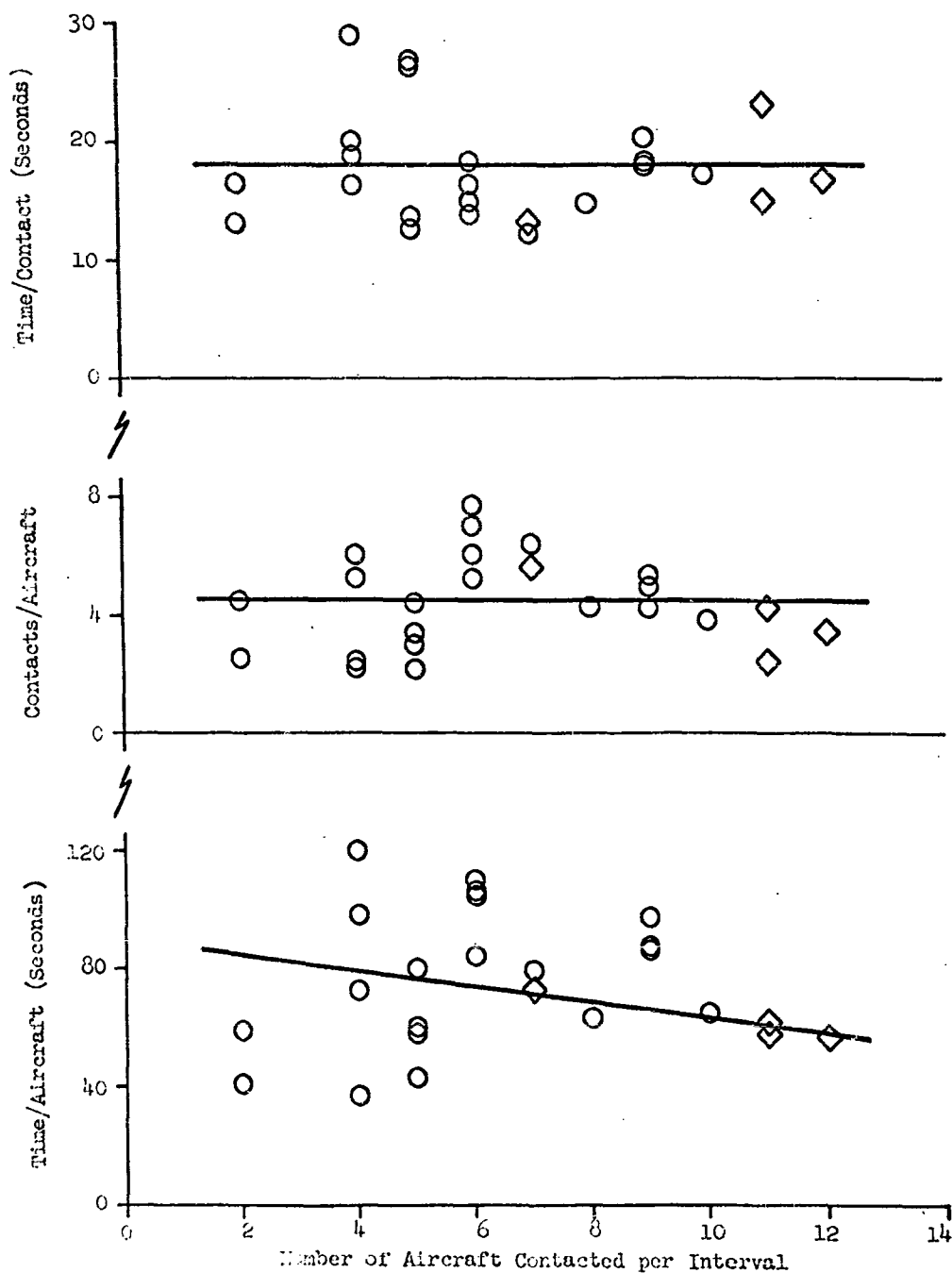


Figure III-30

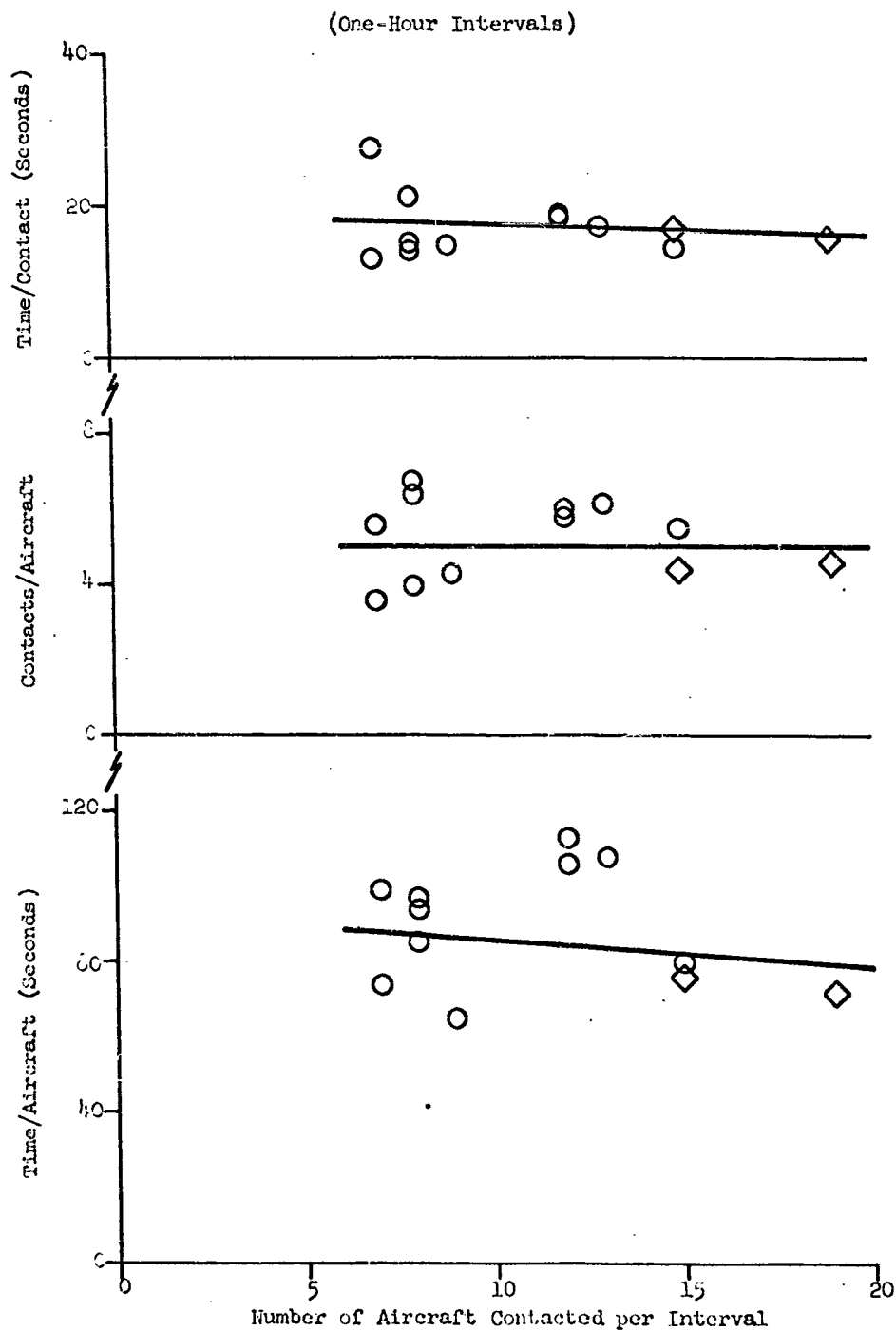
EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR LB CONTROL

Figure III-31

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 1B CONTROL

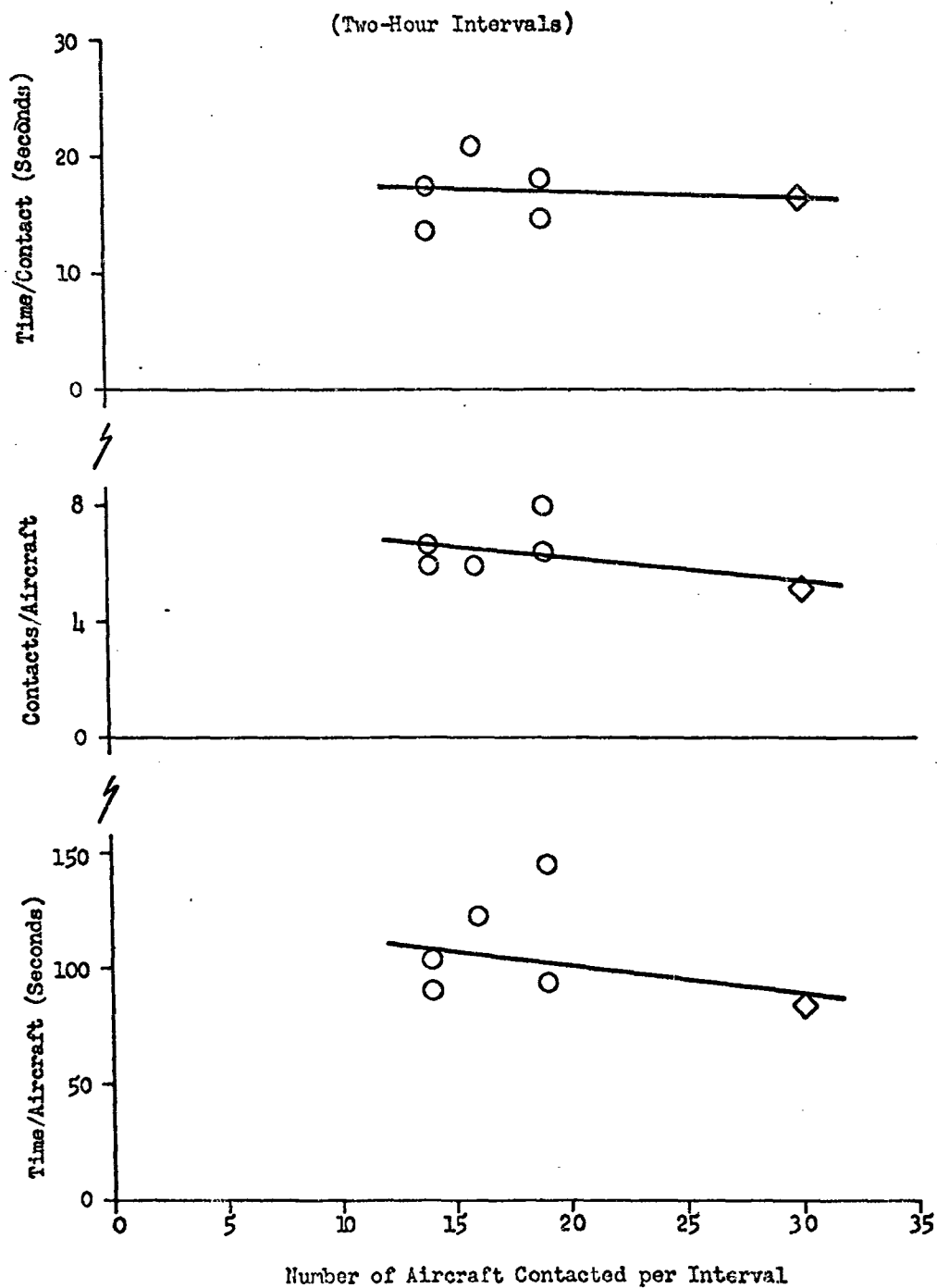


Figure III-32

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 2A CONTROL

(Half-Hour Intervals)

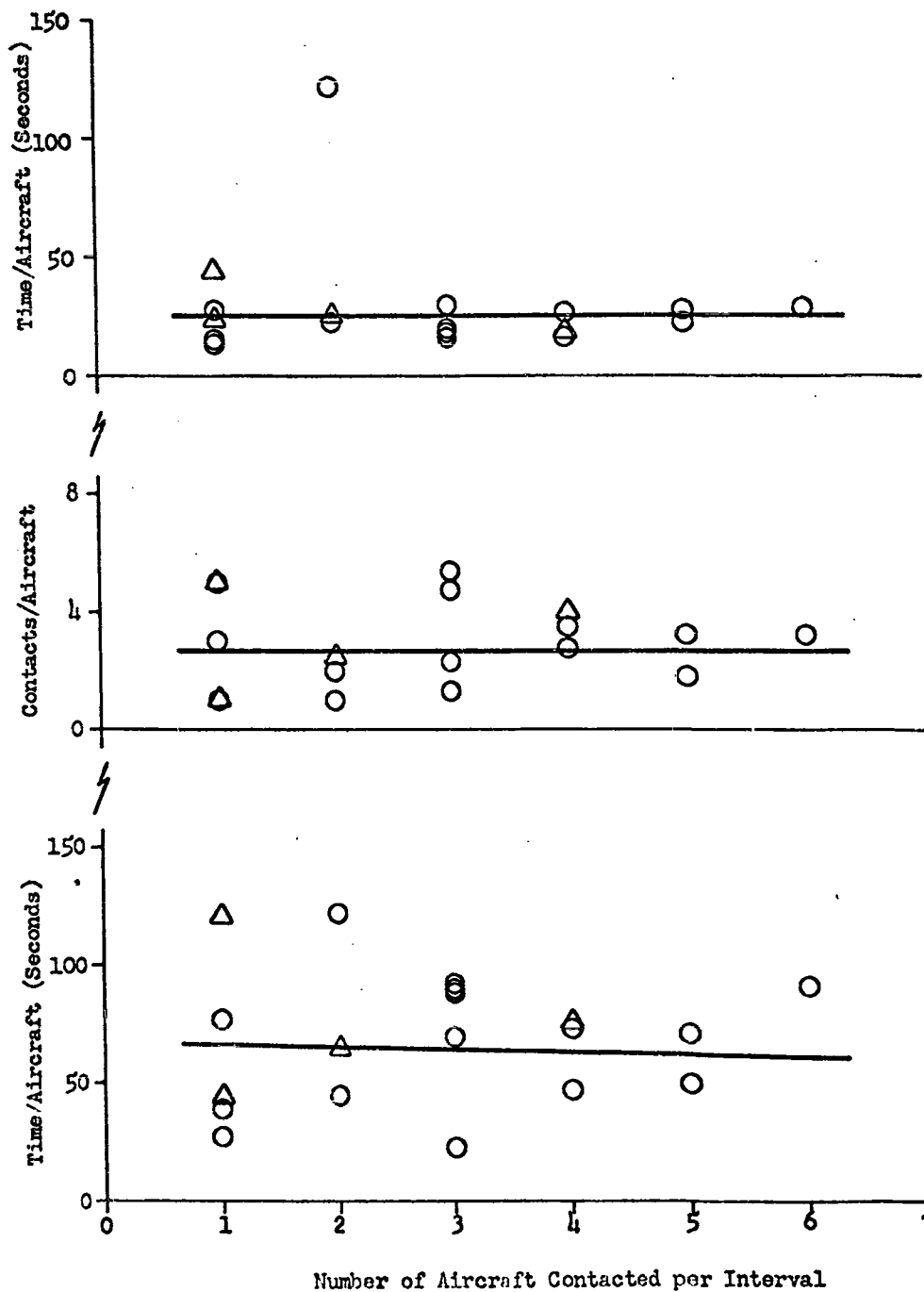


Figure III-33

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 2A CONTROL

(One-Hour Intervals)

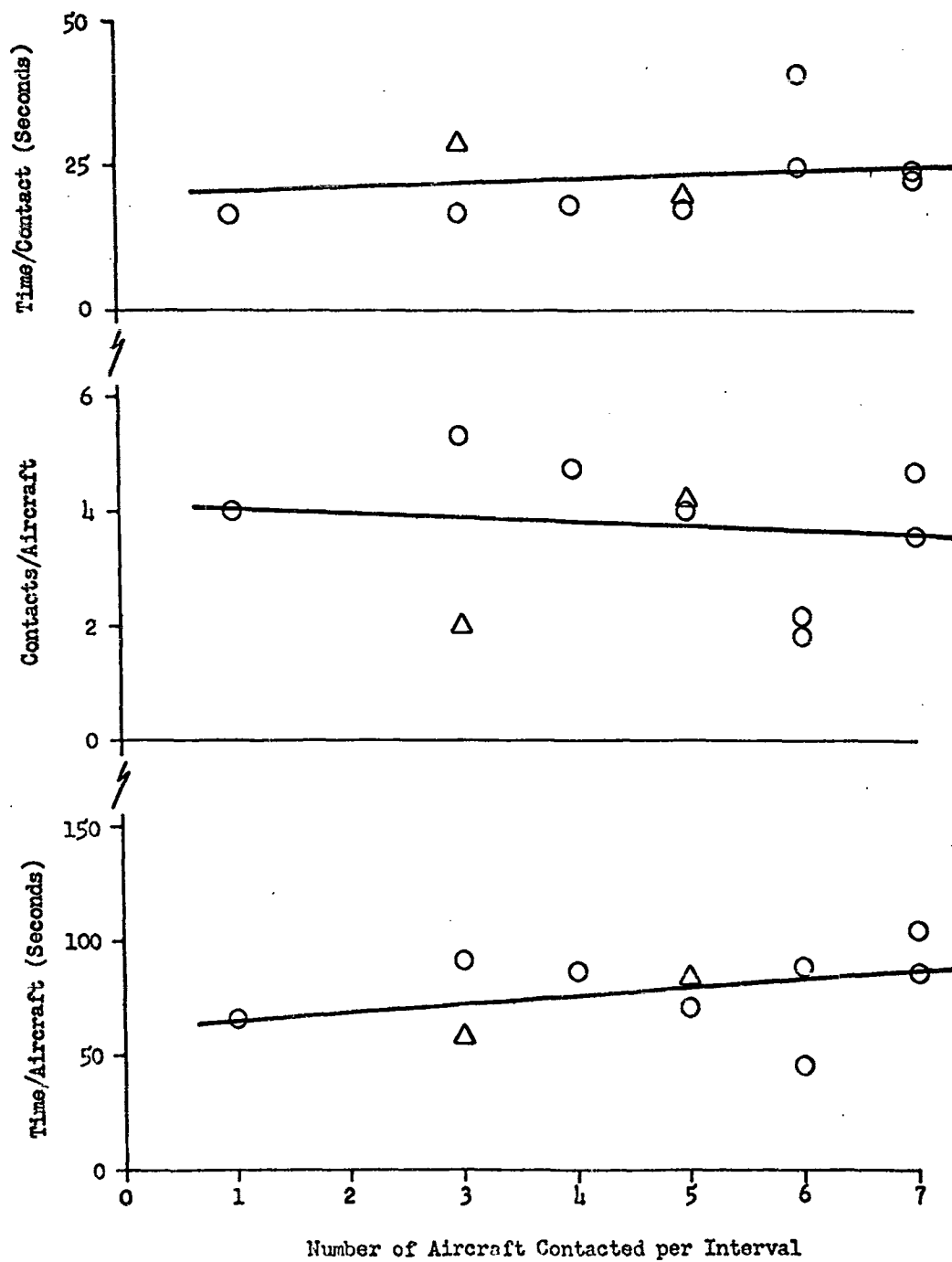


Figure III-34

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 2A CONTROL

(Two-Hour Intervals)

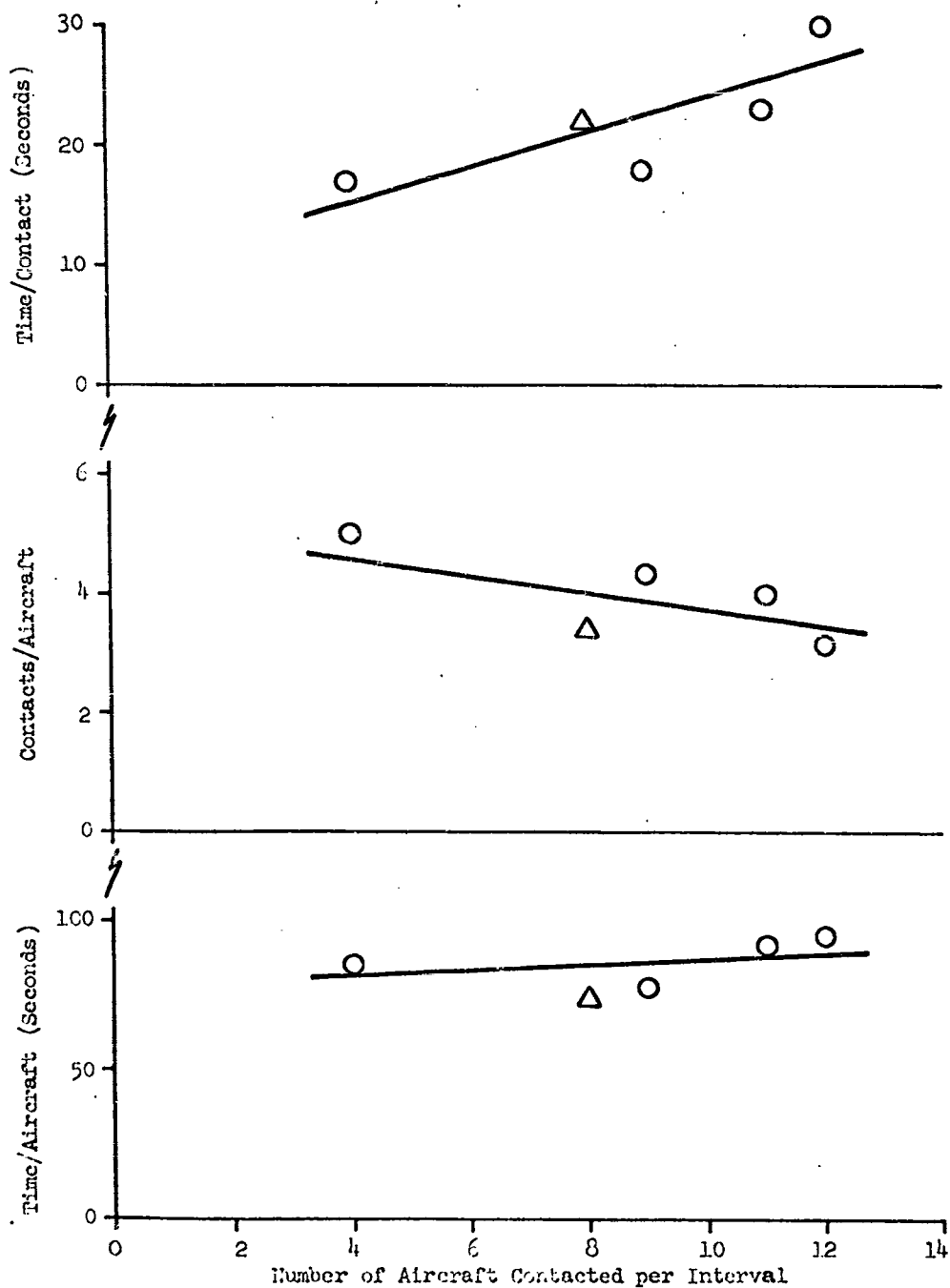
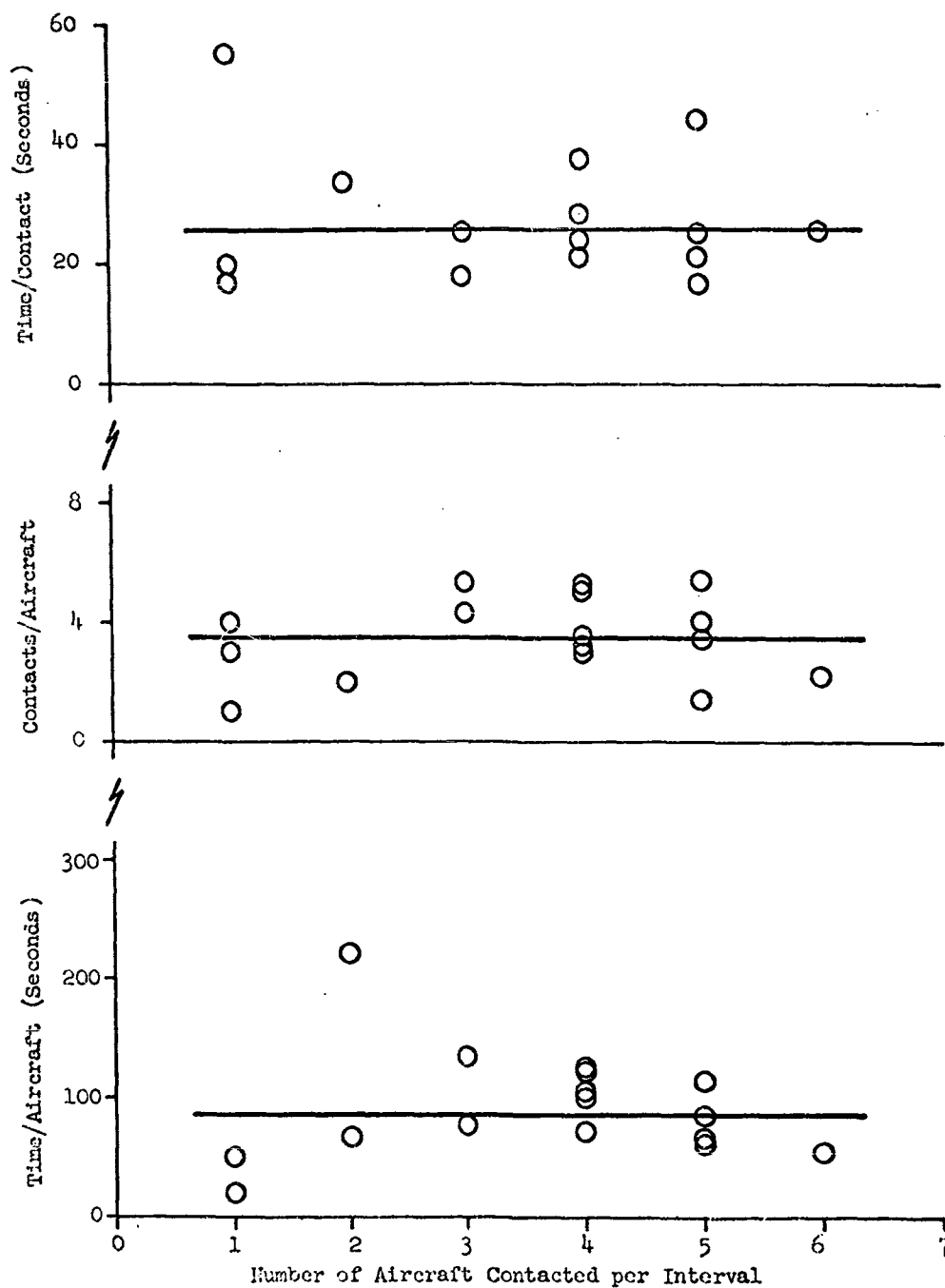


Figure III-35

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 2B CONTROL

(Half-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 2B CONTROL

(One-Hour Intervals)

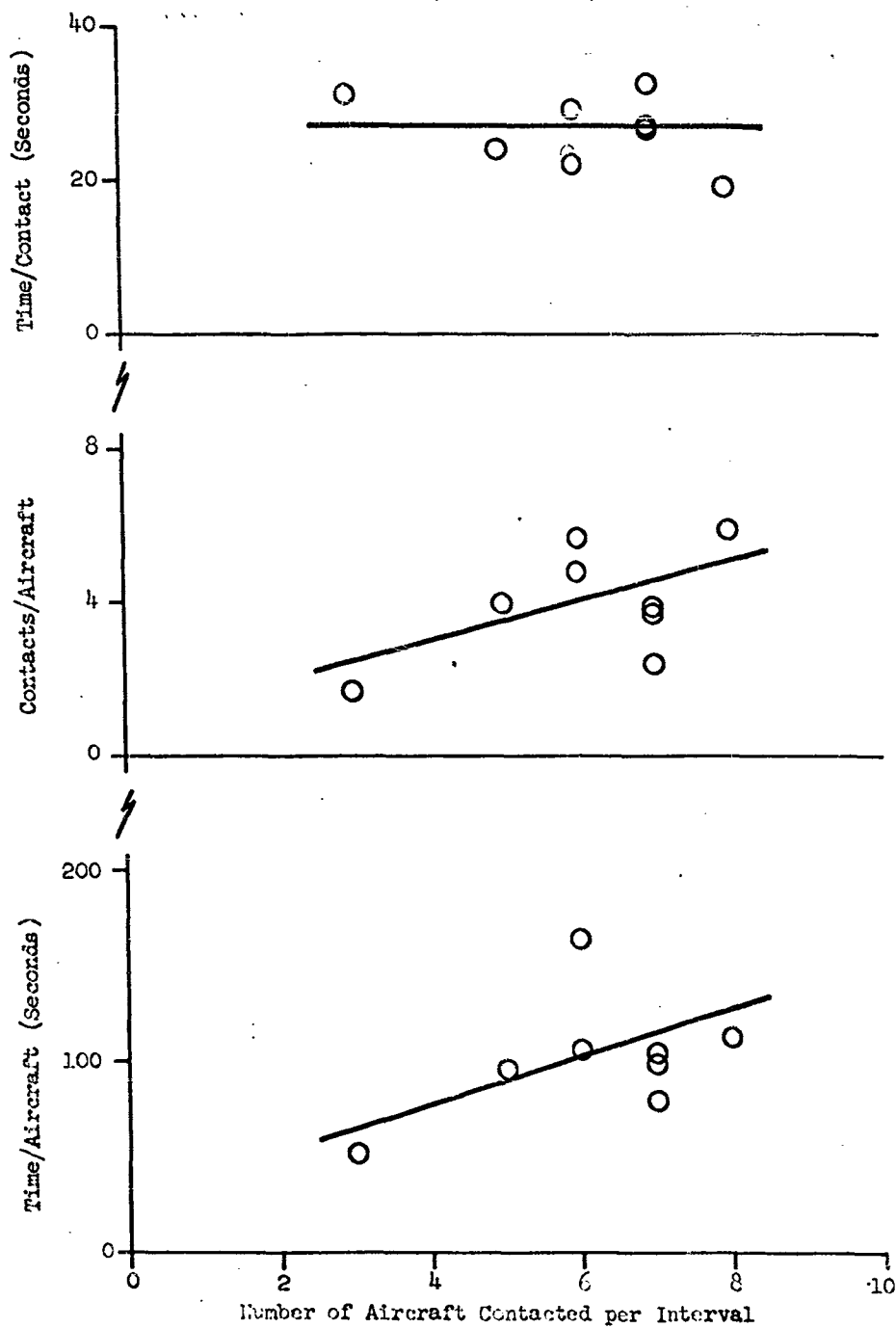
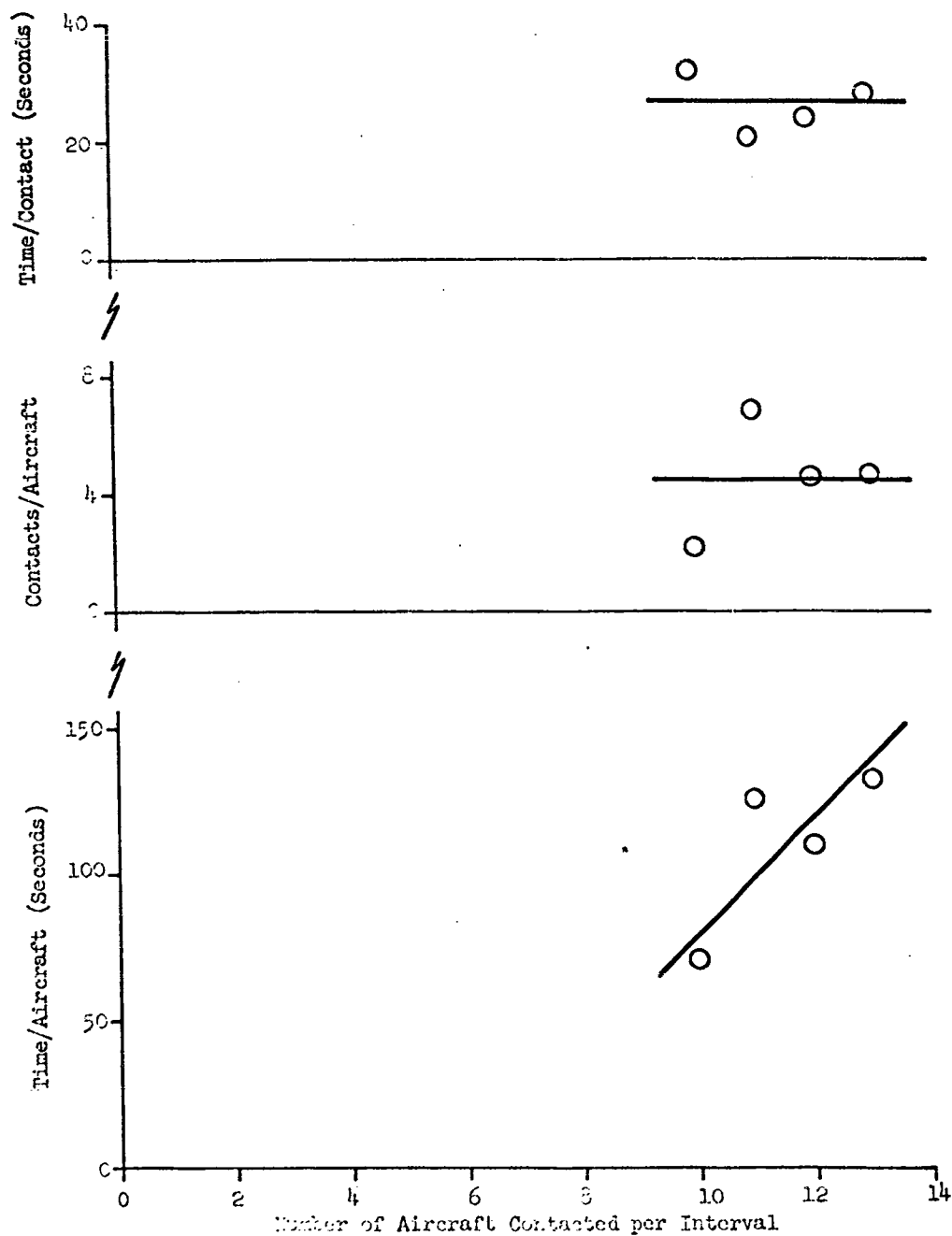


Figure III-37

EFFECT OF TRAFFIC DENSITY ON TIME-RELATED MEASURES AT RADAR 2B CONTROL

(Two-Hour Intervals)



2. Effect of R/T Communications Load on Time-Related Measures.

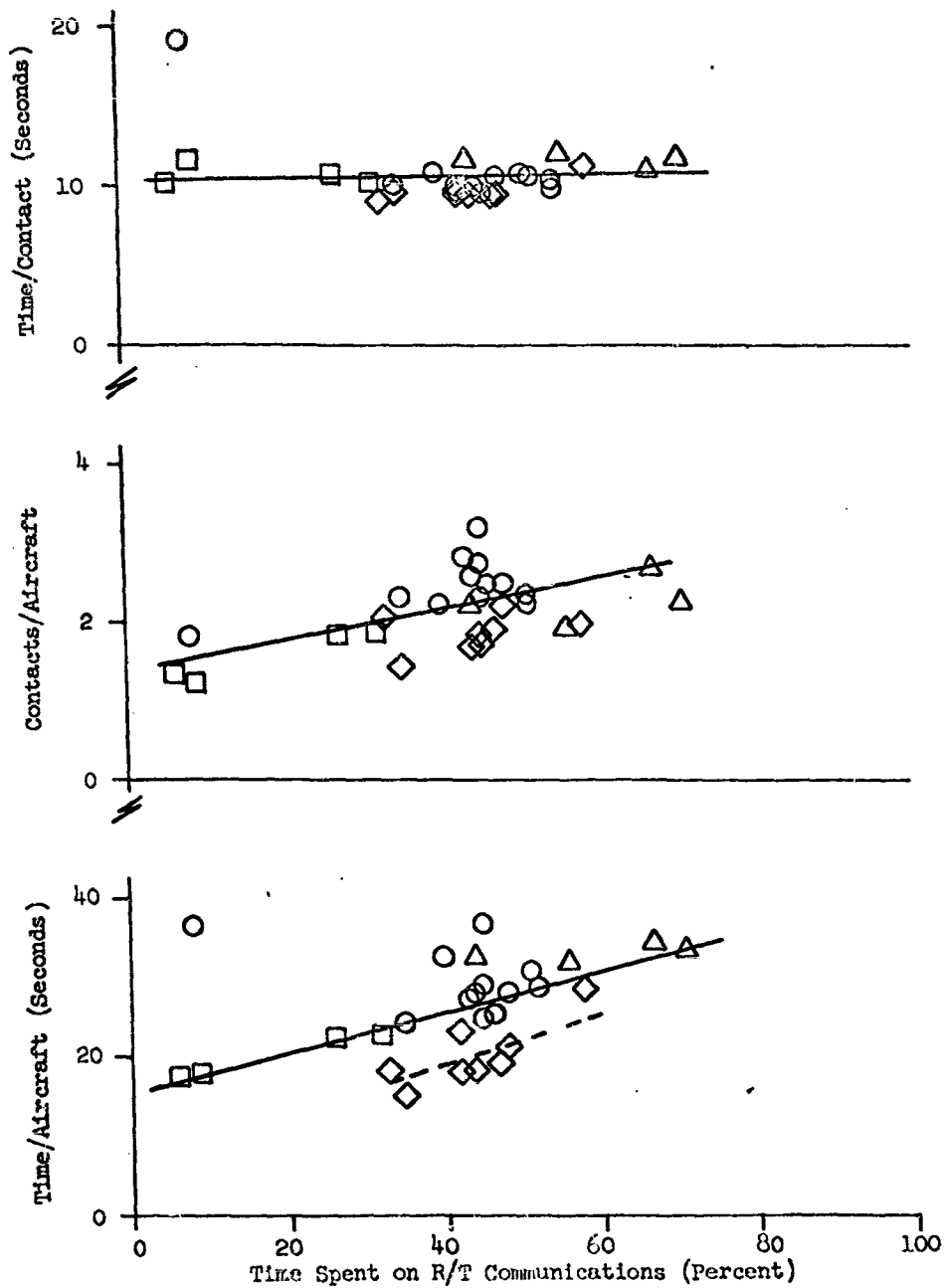
Figures III-38 to III-73 show the relationships between the R/T communications level in a given interval and each of the three time-related measures computed for the corresponding interval.

Half-hour, one-hour and two-hour intervals were all used for the analysis. Significant differences between 1959 and 1960 data are indicated by solid and dotted lines.

Figure III-38

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT GROUND CONTROL

(Half-Hour Intervals)



EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT GROUND CONTROL

(One-Hour Intervals)

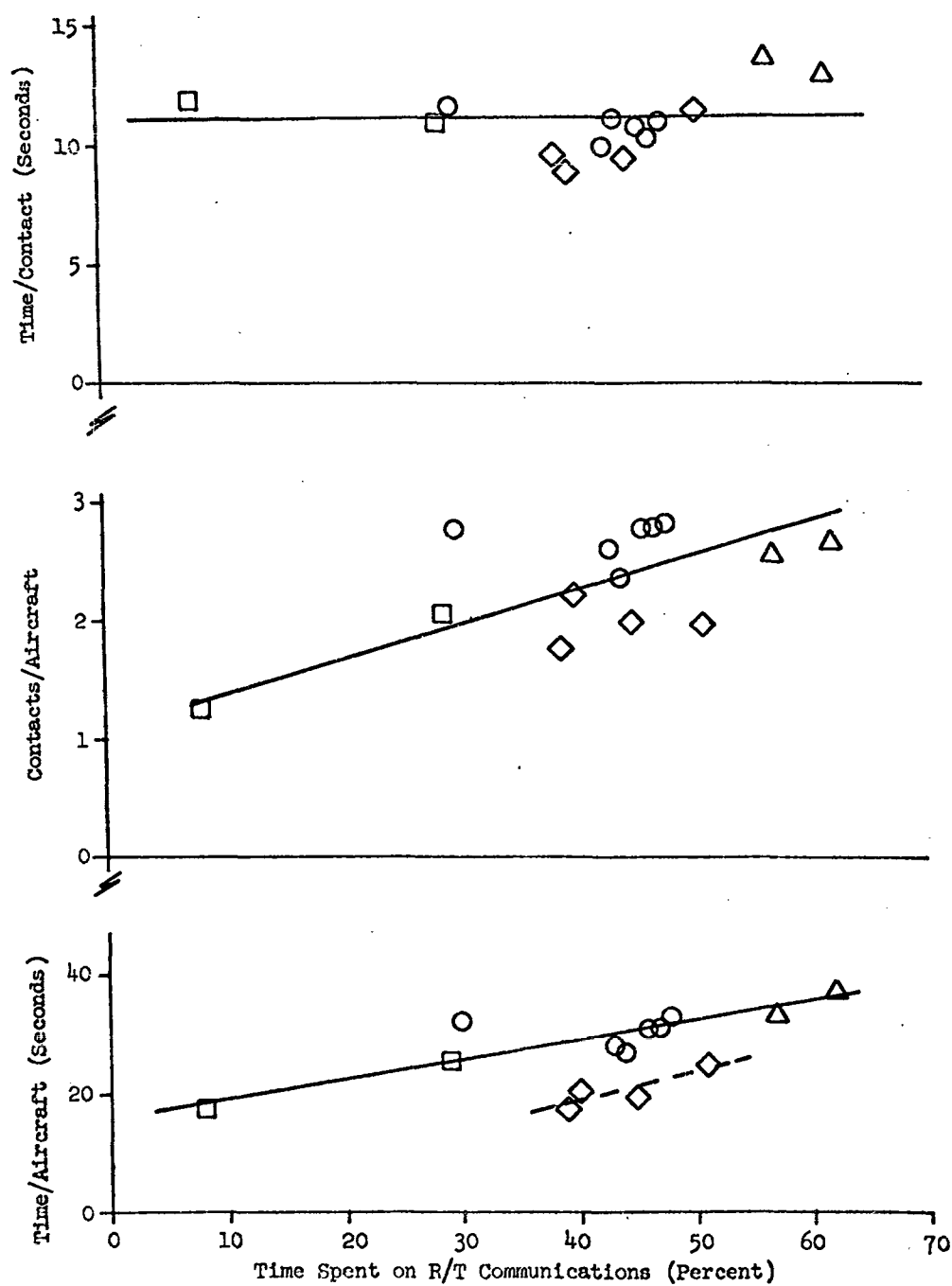


Figure III-40

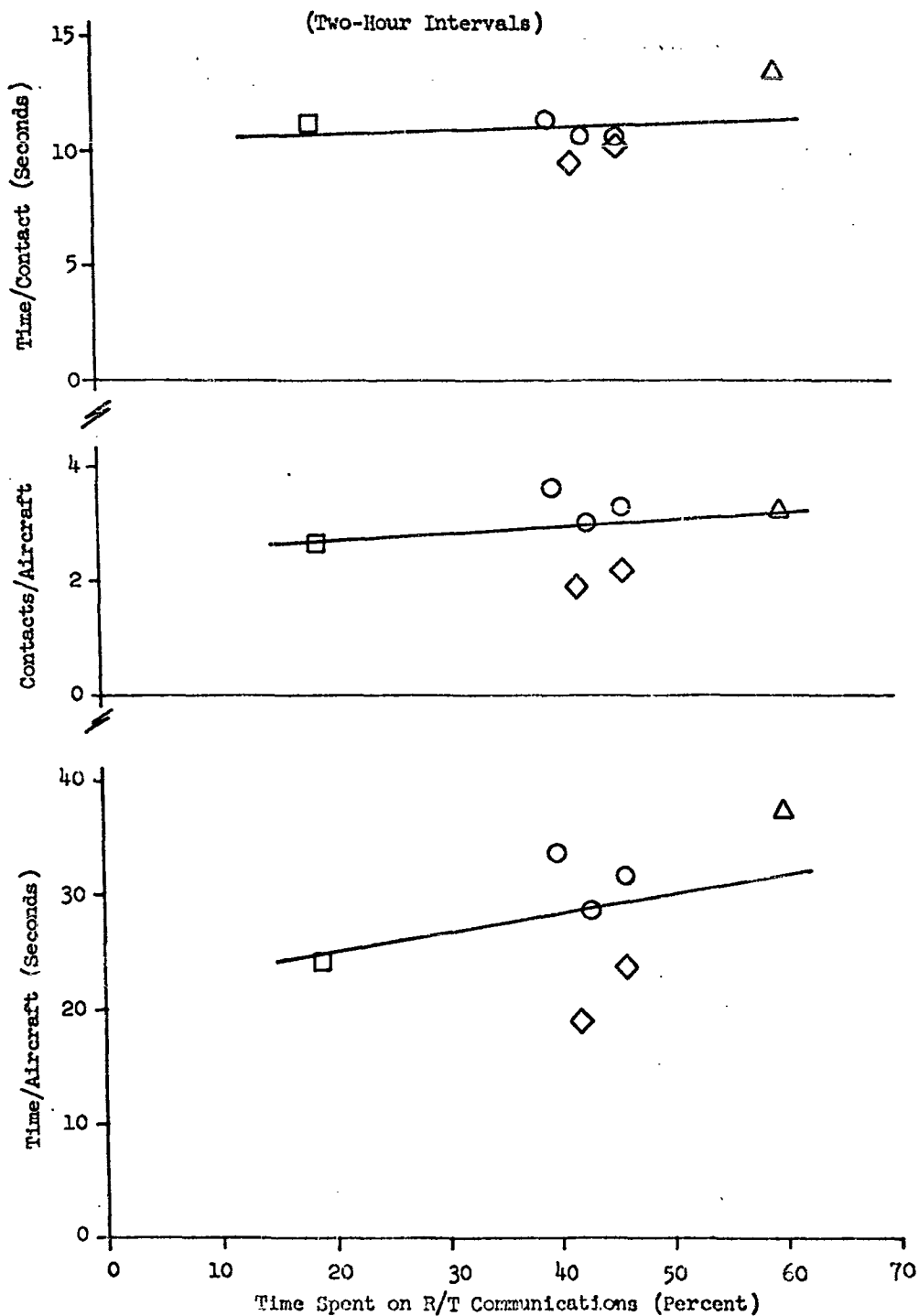
EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT GROUND CONTROL

Figure III-41

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT LOCAL CONTROL

(Half-Hour Intervals)

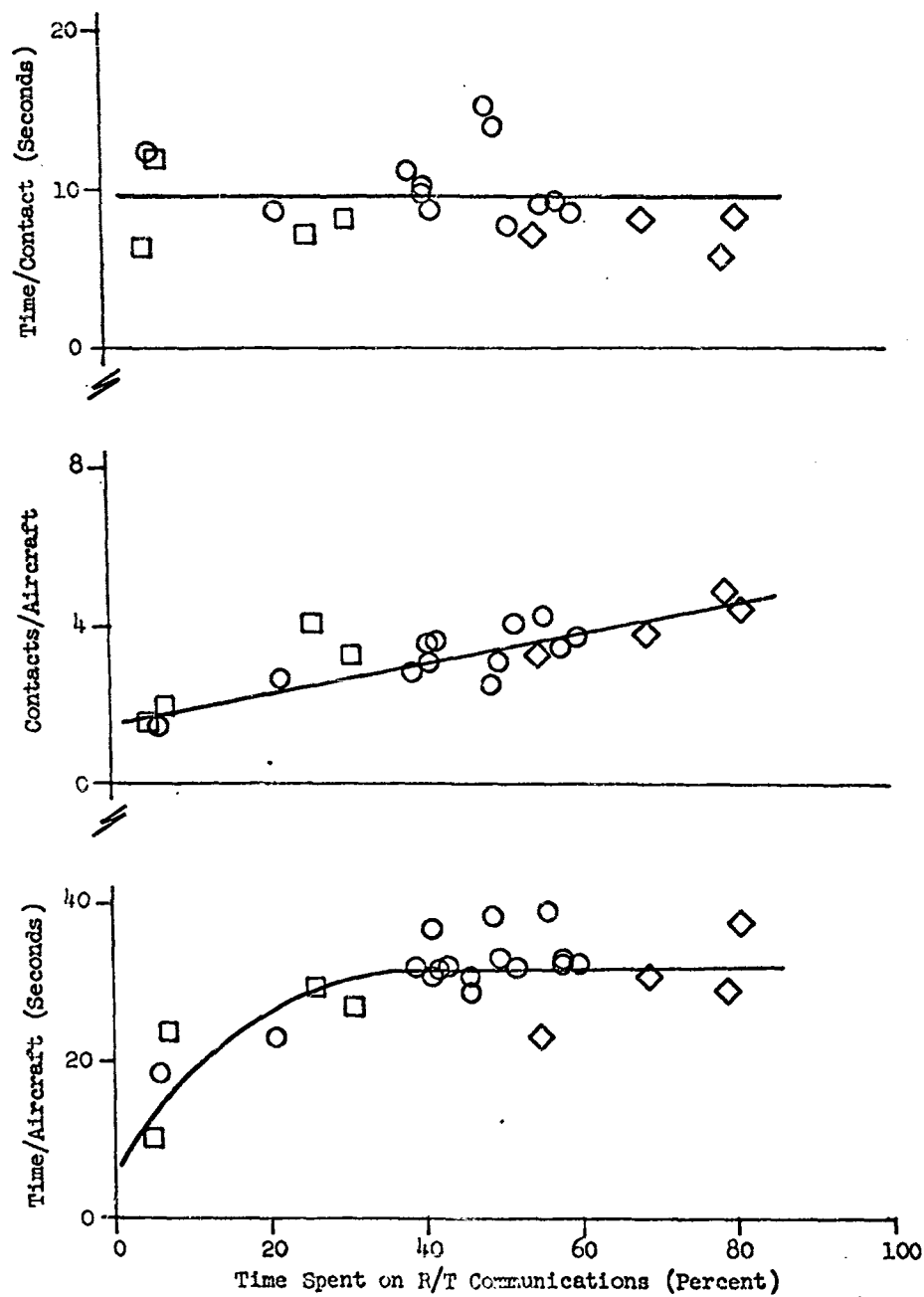


Figure III-42

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT LOCAL CONTROL

(One-Hour Intervals)

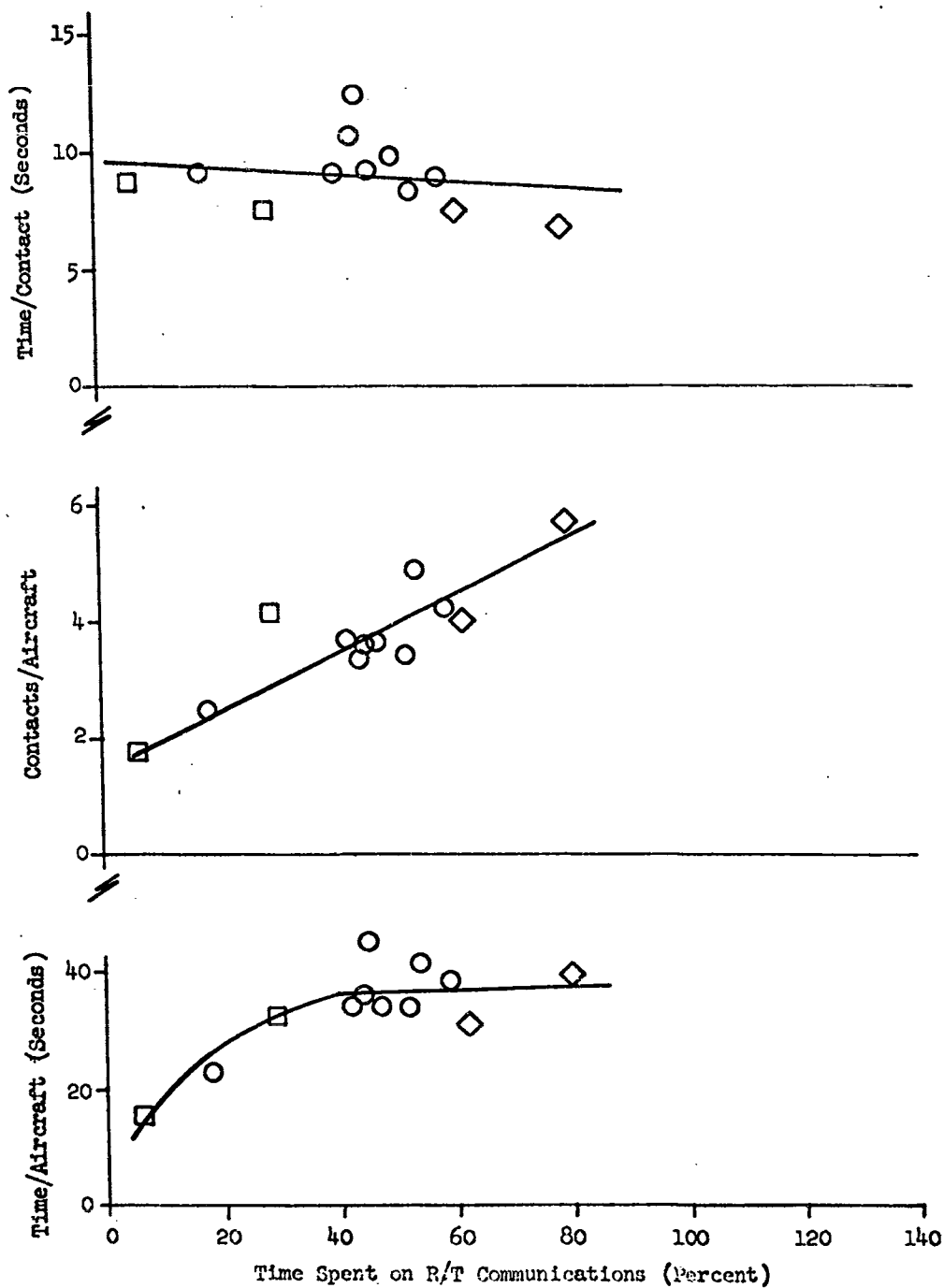
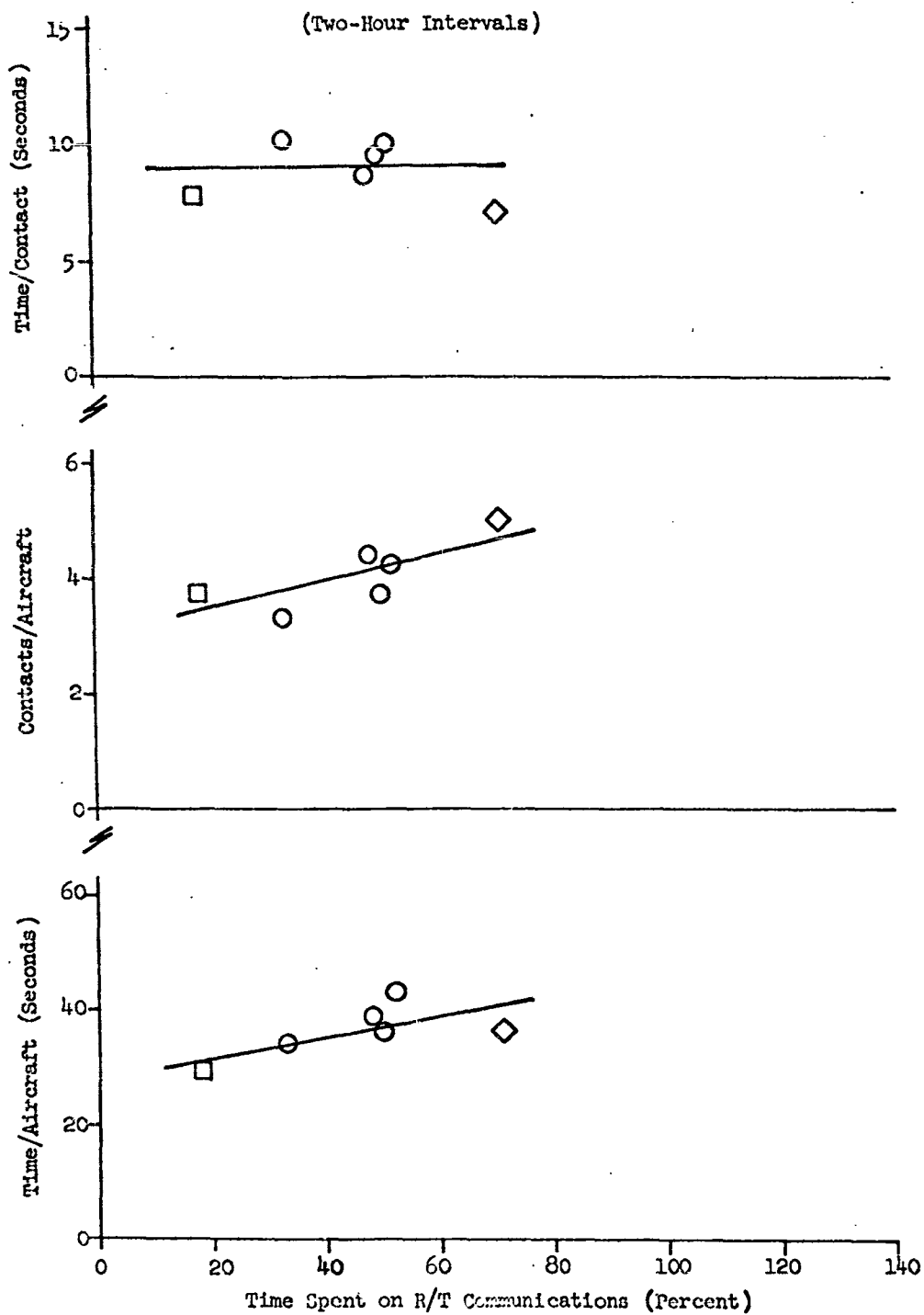
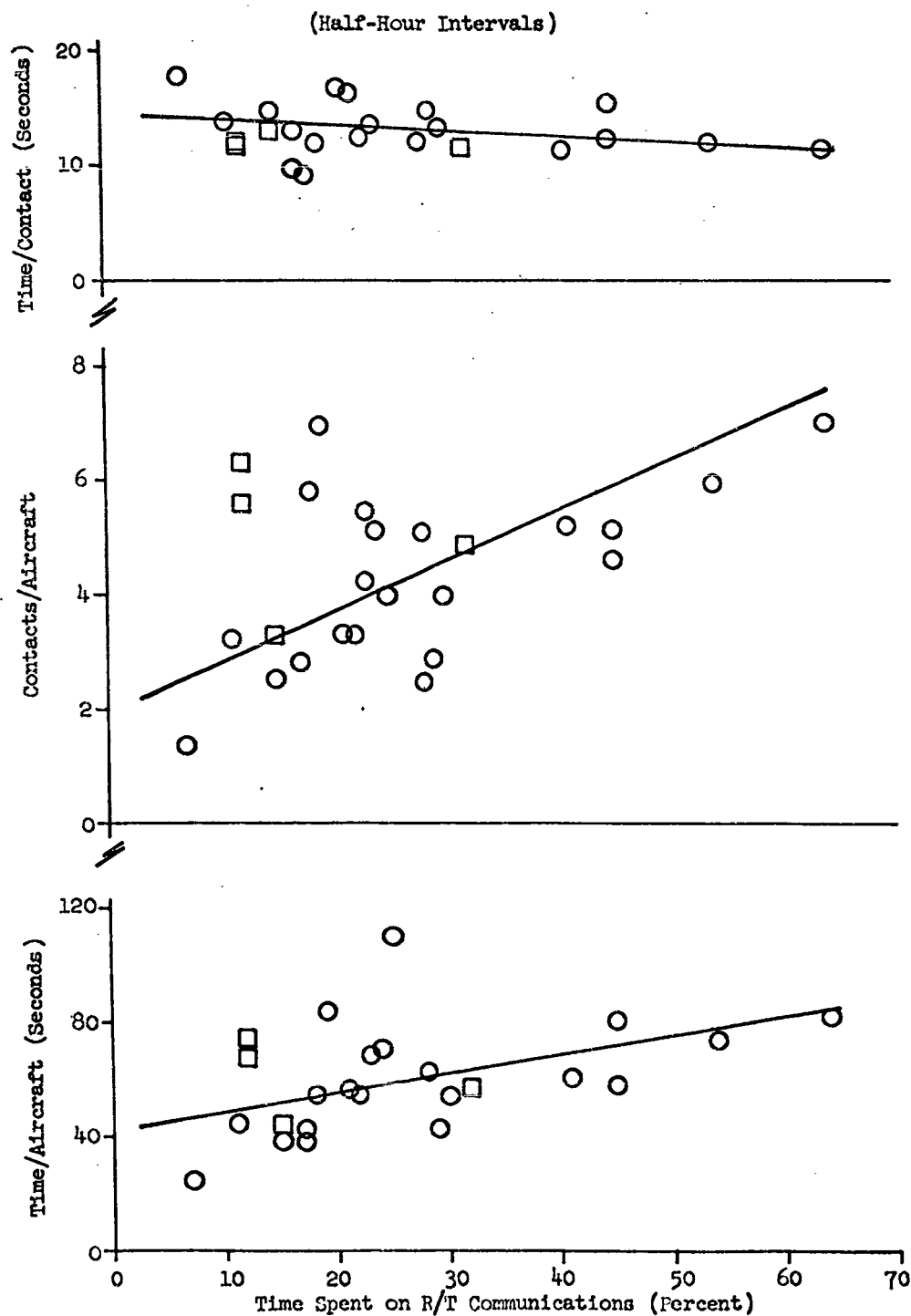


Figure III-43

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT LOCAL CONTROL

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT APPROACH CONTROL (ANC)

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT APPROACH CONTROL (ANC)

(One-Hour Intervals)

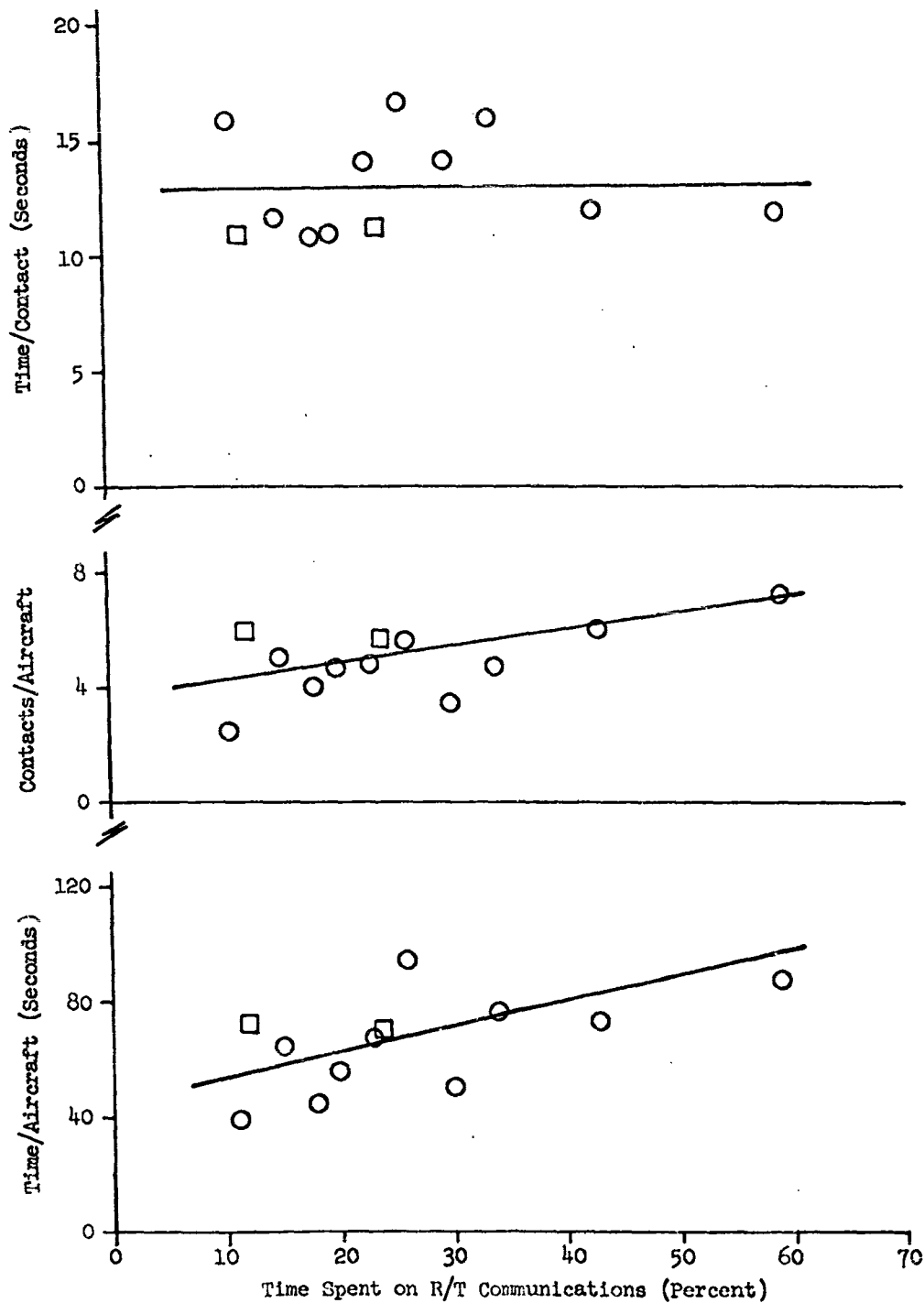


Figure III-46

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT APPROACH CONTROL (ANC)

(Two-Hour Intervals)

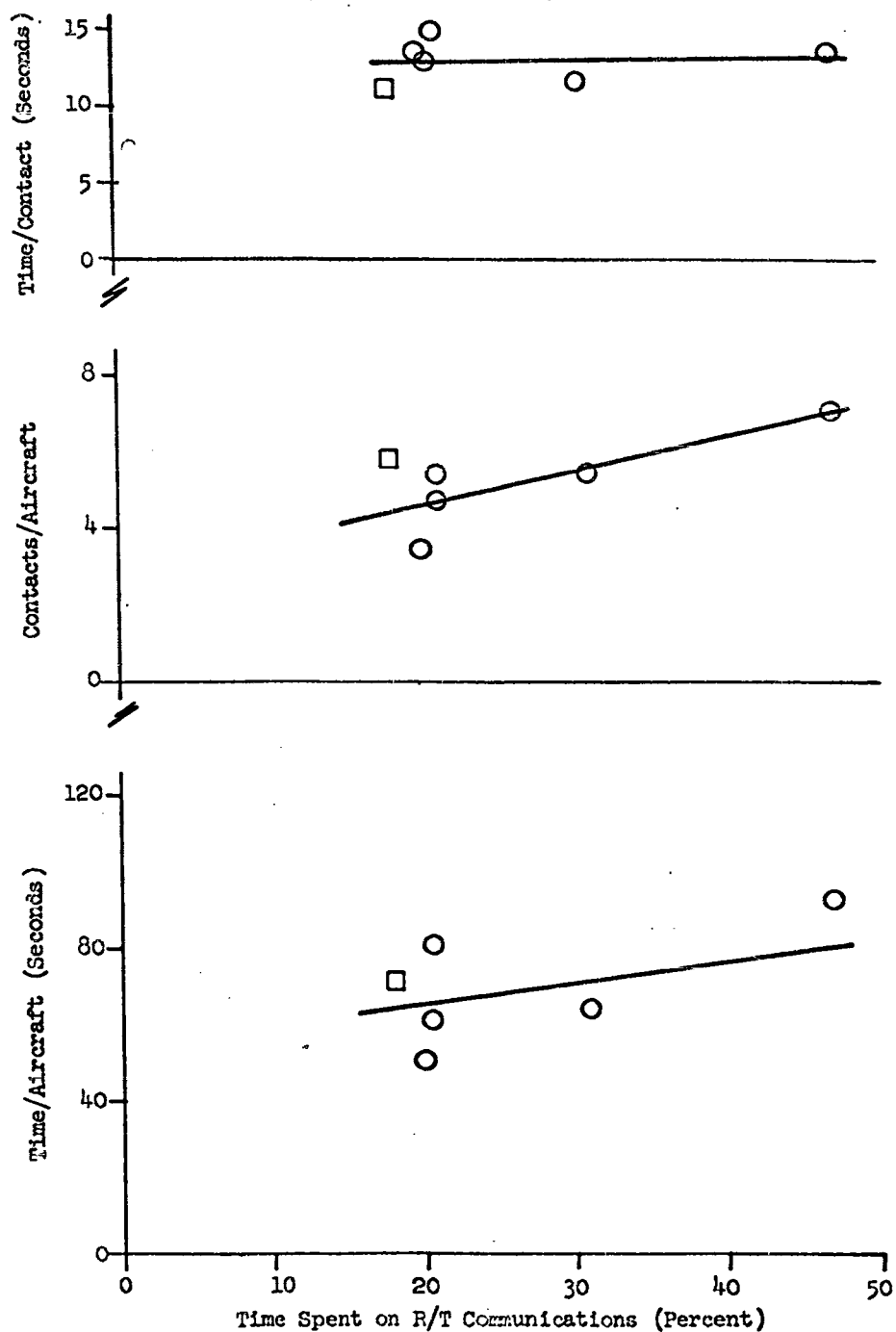


Figure III-47

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT APPROACH CONTROL RADAR

(Half-Hour Intervals)

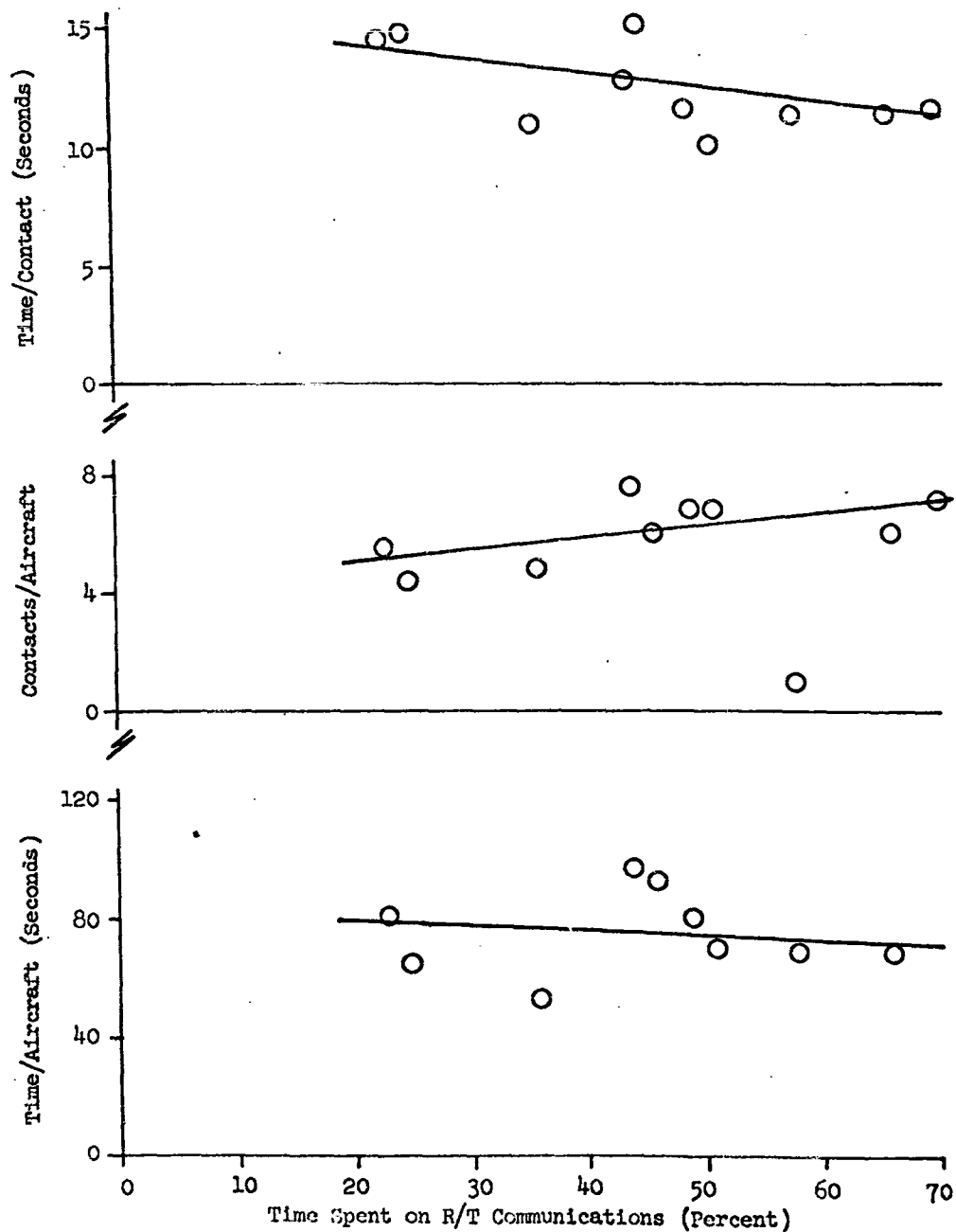


Figure III-48

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT APPROACH CONTROL RADAR

(One-Hour Intervals)

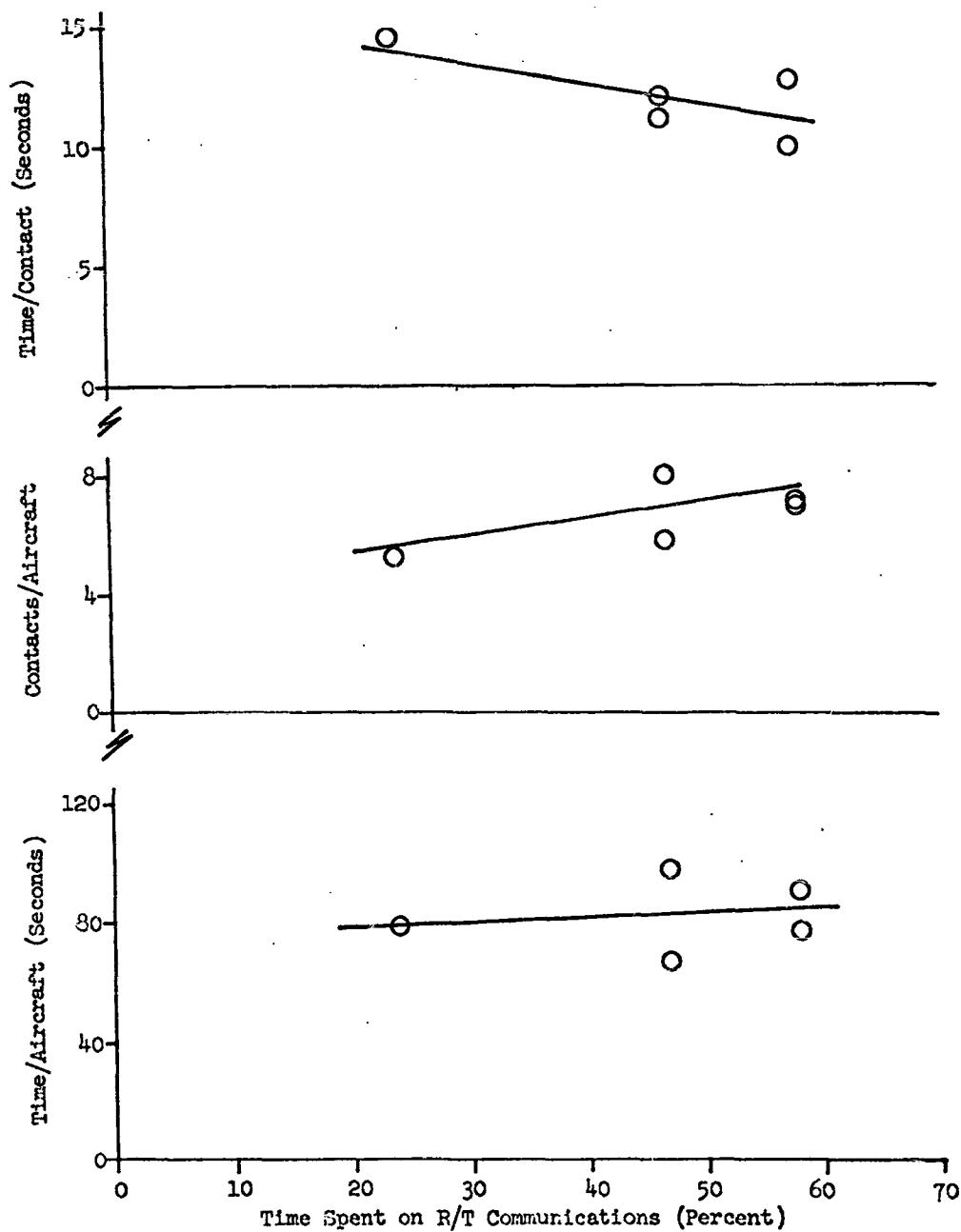


Figure III-49

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT APPROACH CONTROL RADAR

(Two-Hour Intervals)

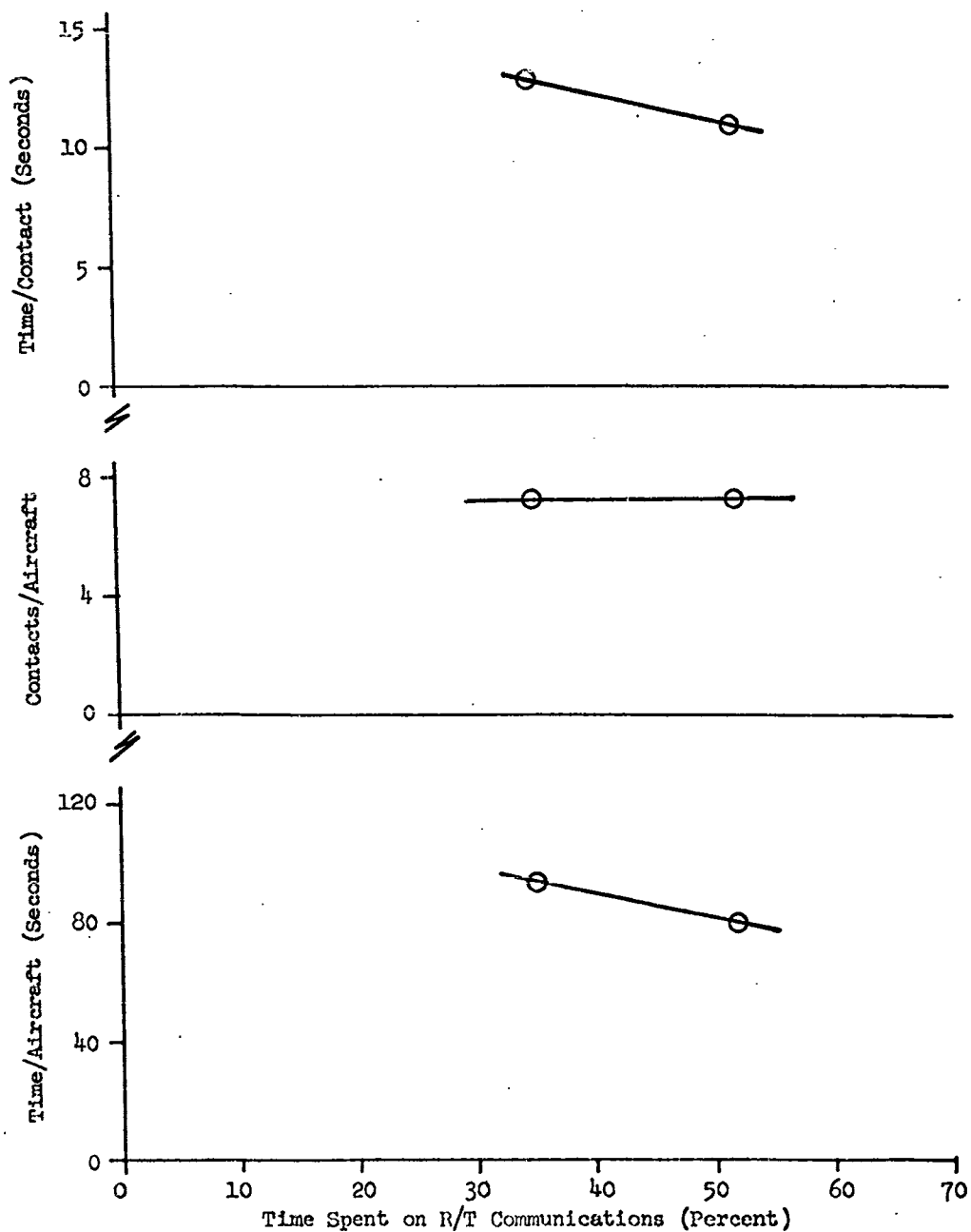
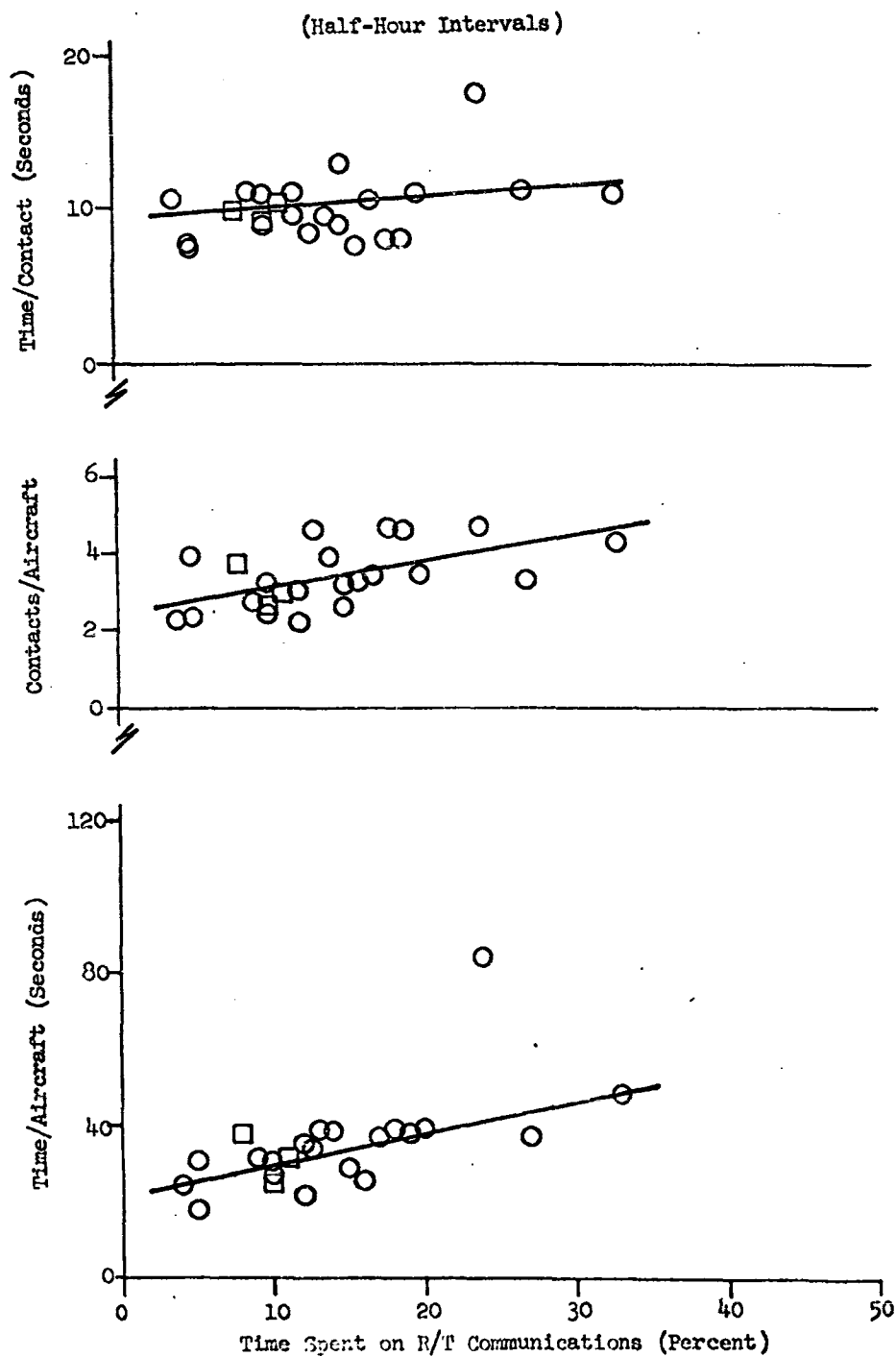
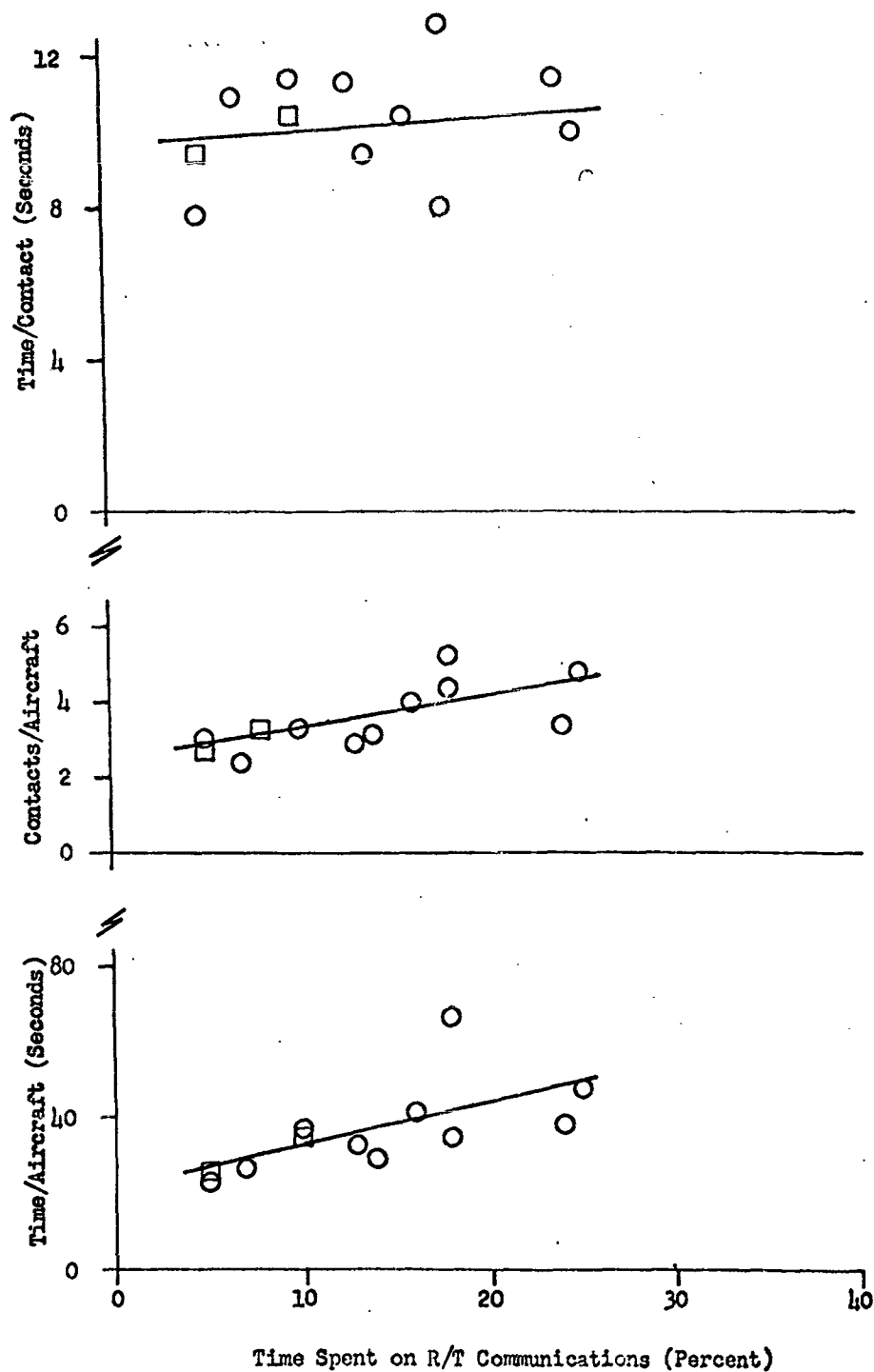


Figure III-50

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT DEPARTURE CONTROL (ANC)

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT DEPARTURE CONTROL POSITION (ANG)

(One-Hour Intervals)



EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT DEPARTURE CONTROL POSITION (ANC)

(Two-Hour Intervals)

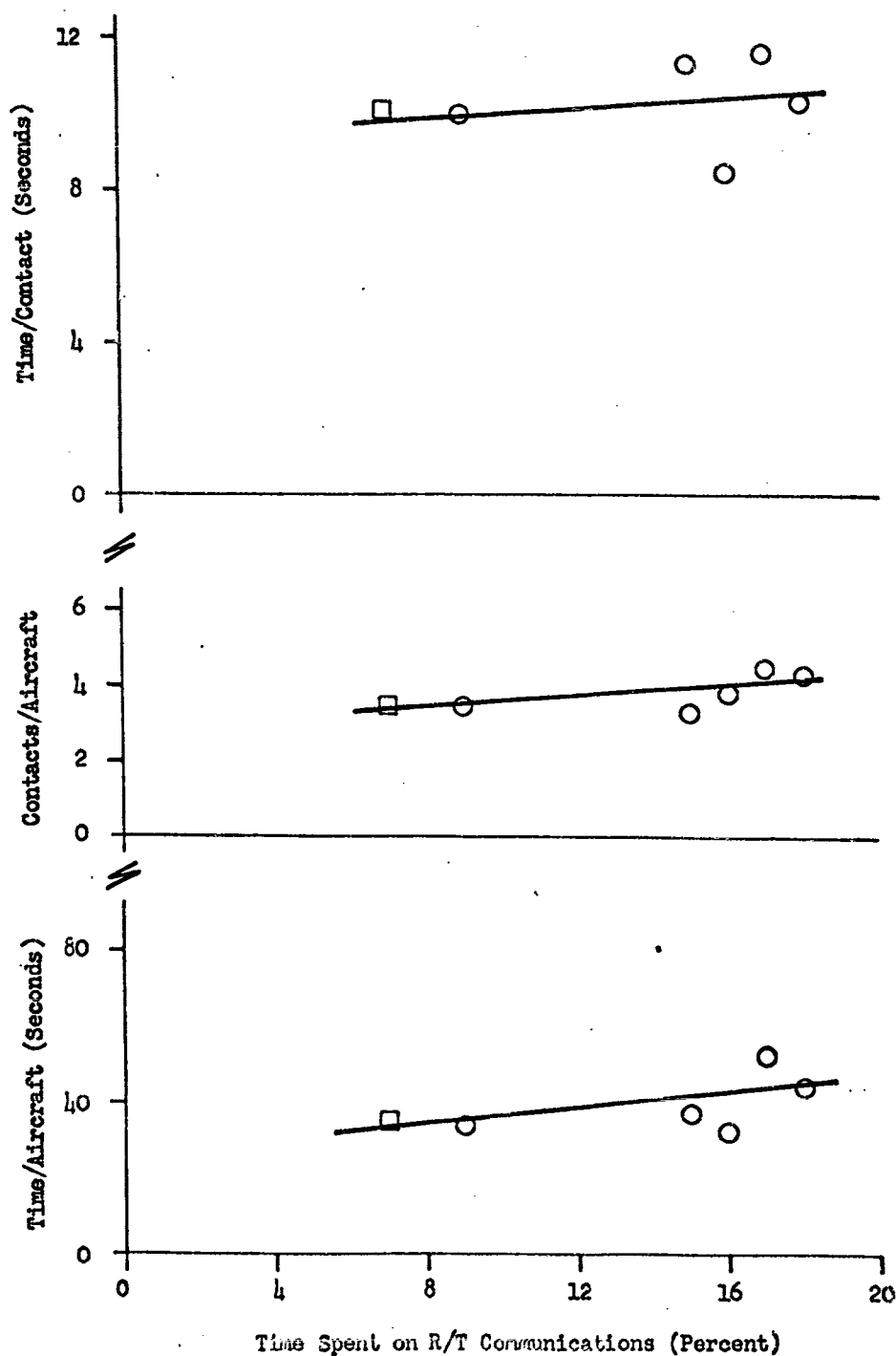


Figure III-53

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT DEPARTURE CONTROL RADAR

(Half-Hour Intervals)

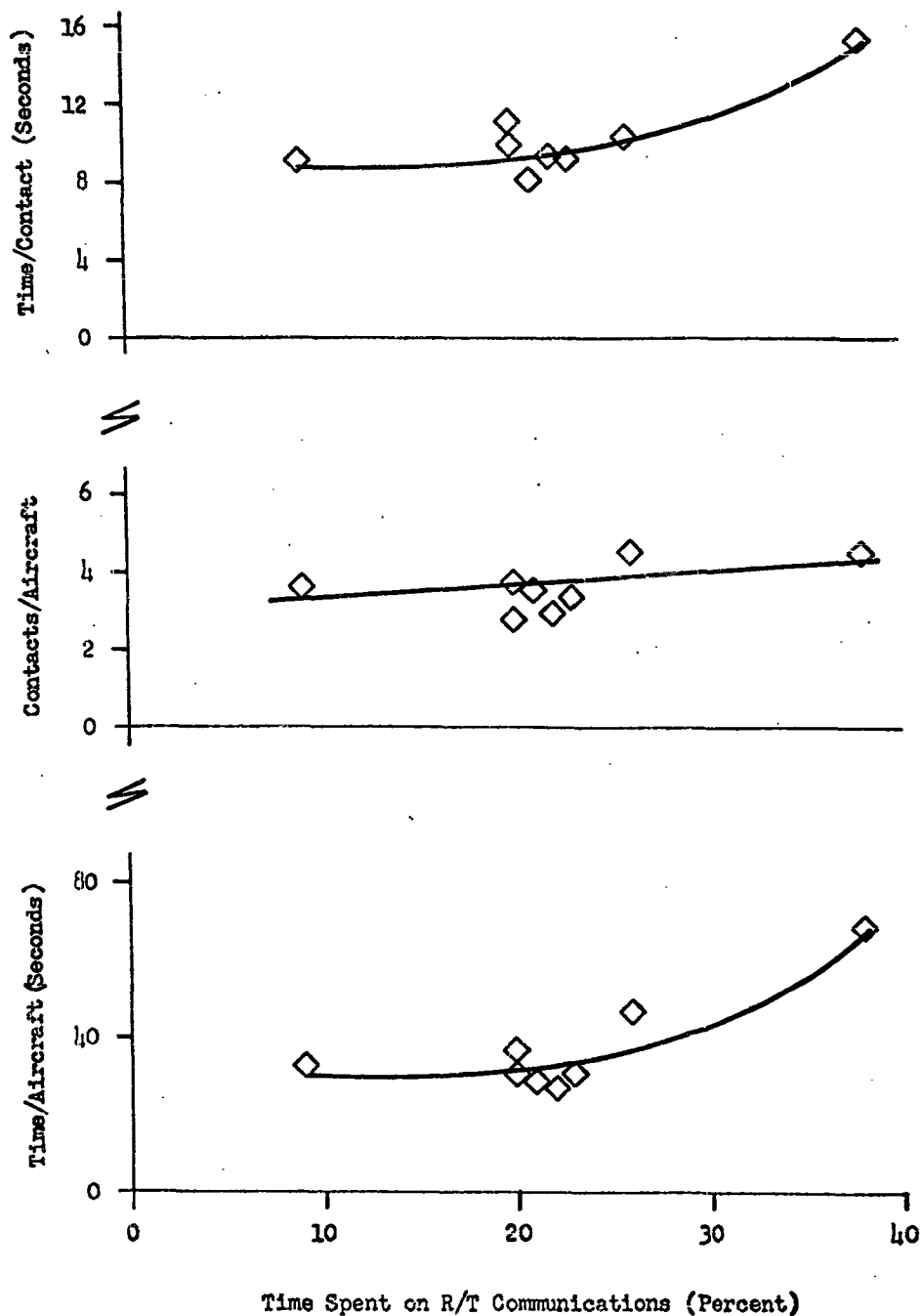


Figure III-54

EFFECT OF COMMUNICATION LOAD ON TIME-RELATED MEASURES AT DEPARTURE CONTROL POSITION RADAR

(One-Hour Intervals)

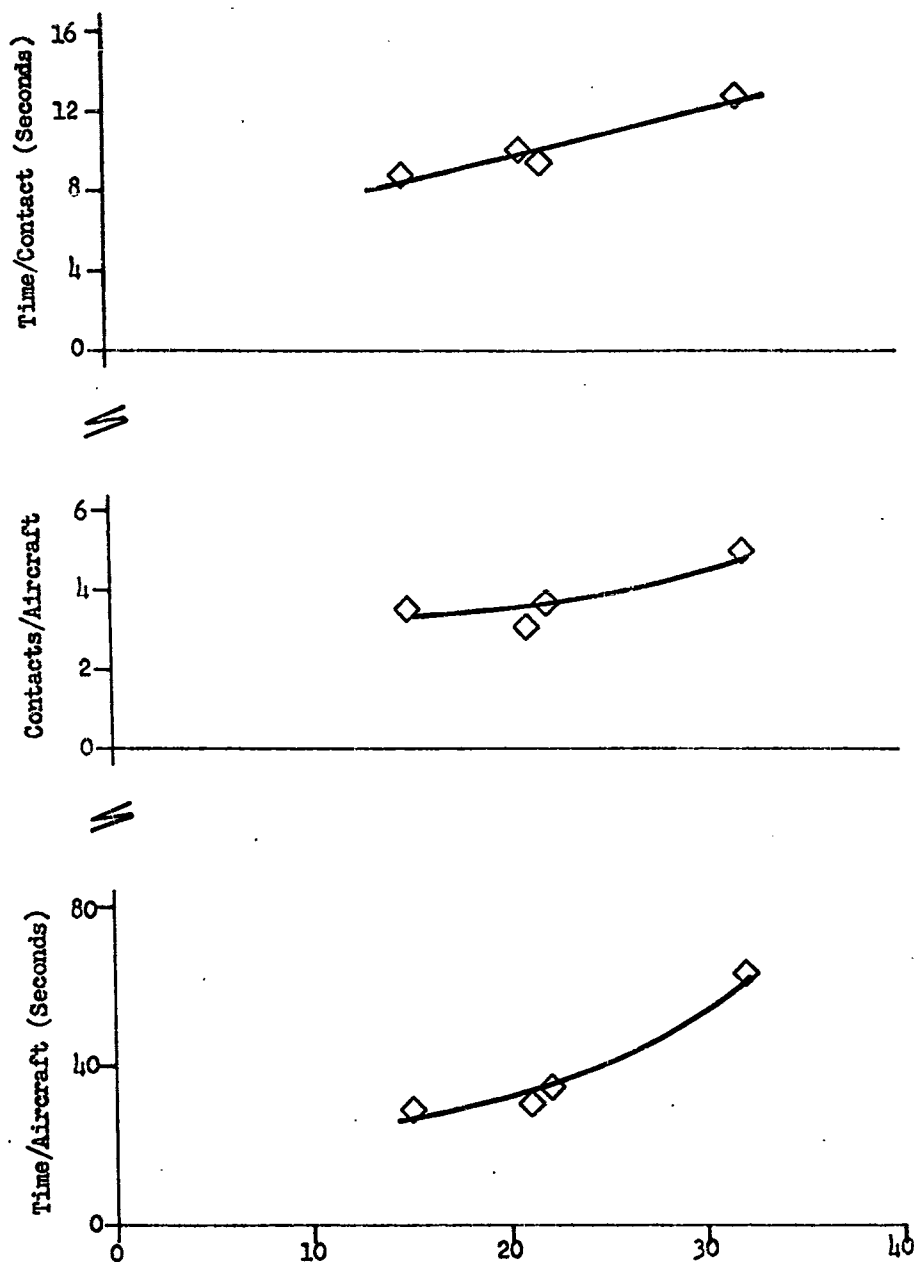
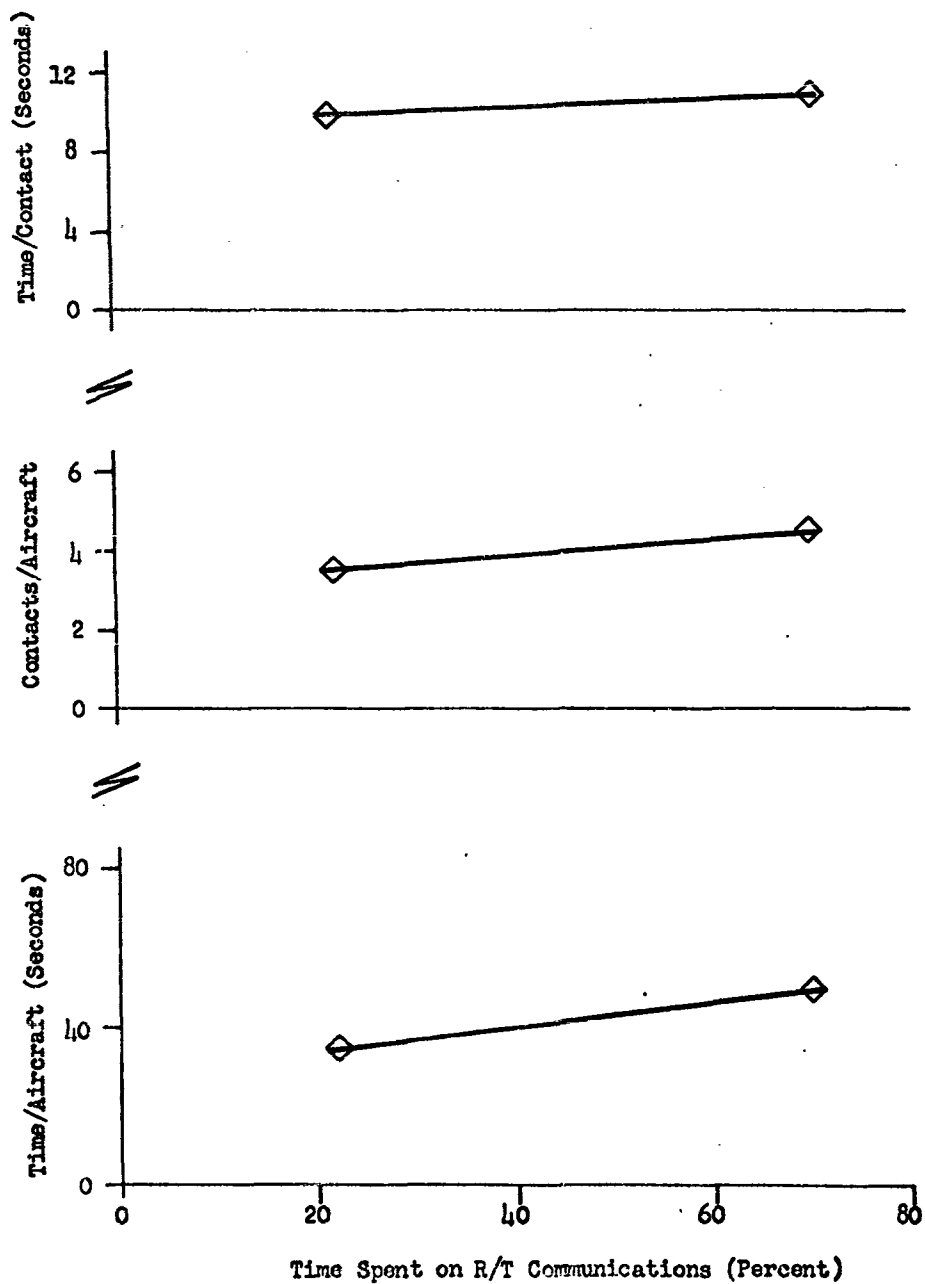


Figure III-55

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT DEPARTURE CONTROL POSITION RADAR

(Two-Hour Intervals)



EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT D2 RADIO CONTROL

(Half-Hour Intervals)

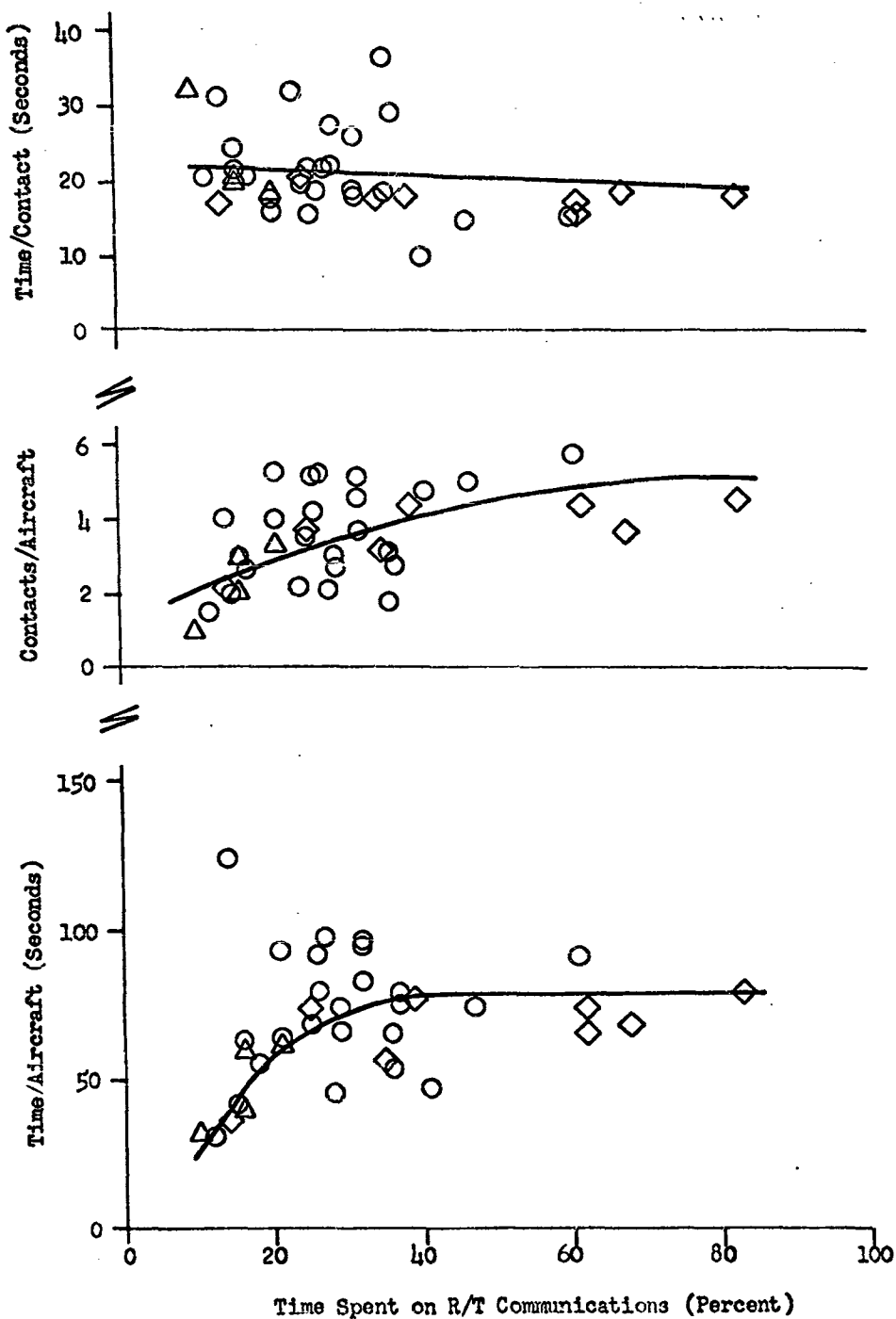
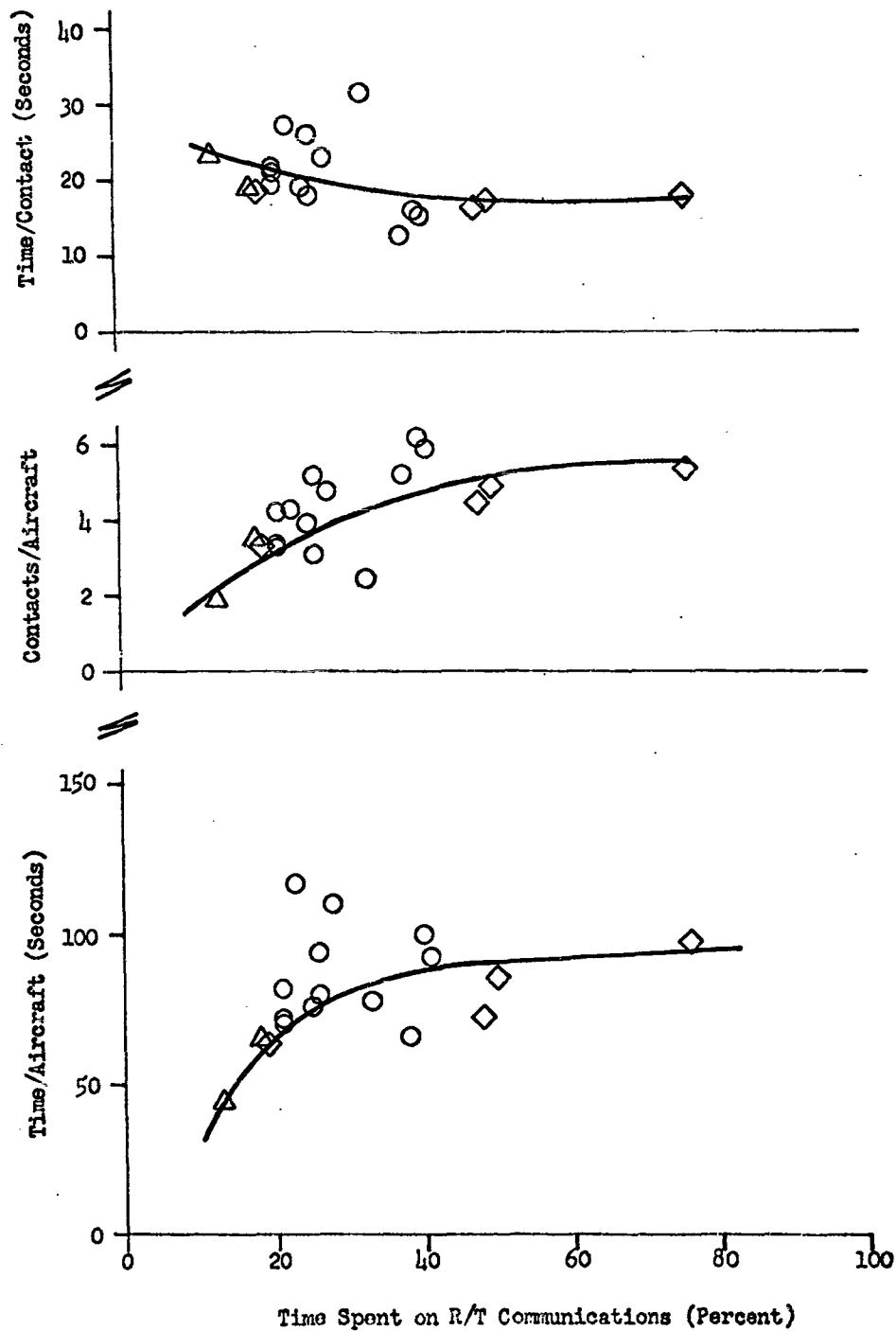


Figure III-57

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT D2 CONTROL

(One-hour Intervals)



EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT D2 CONTROL

(Two-Hour Intervals)

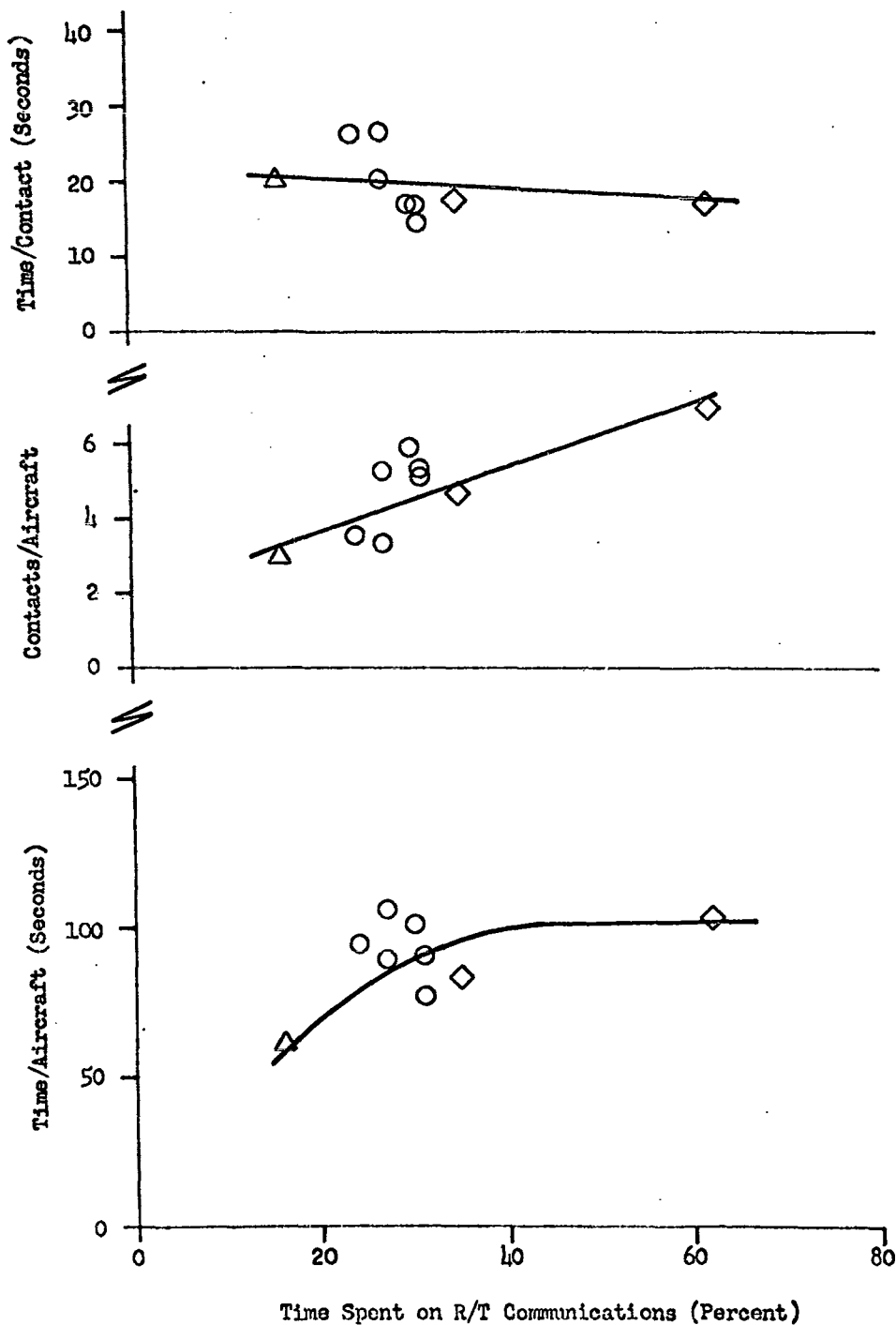
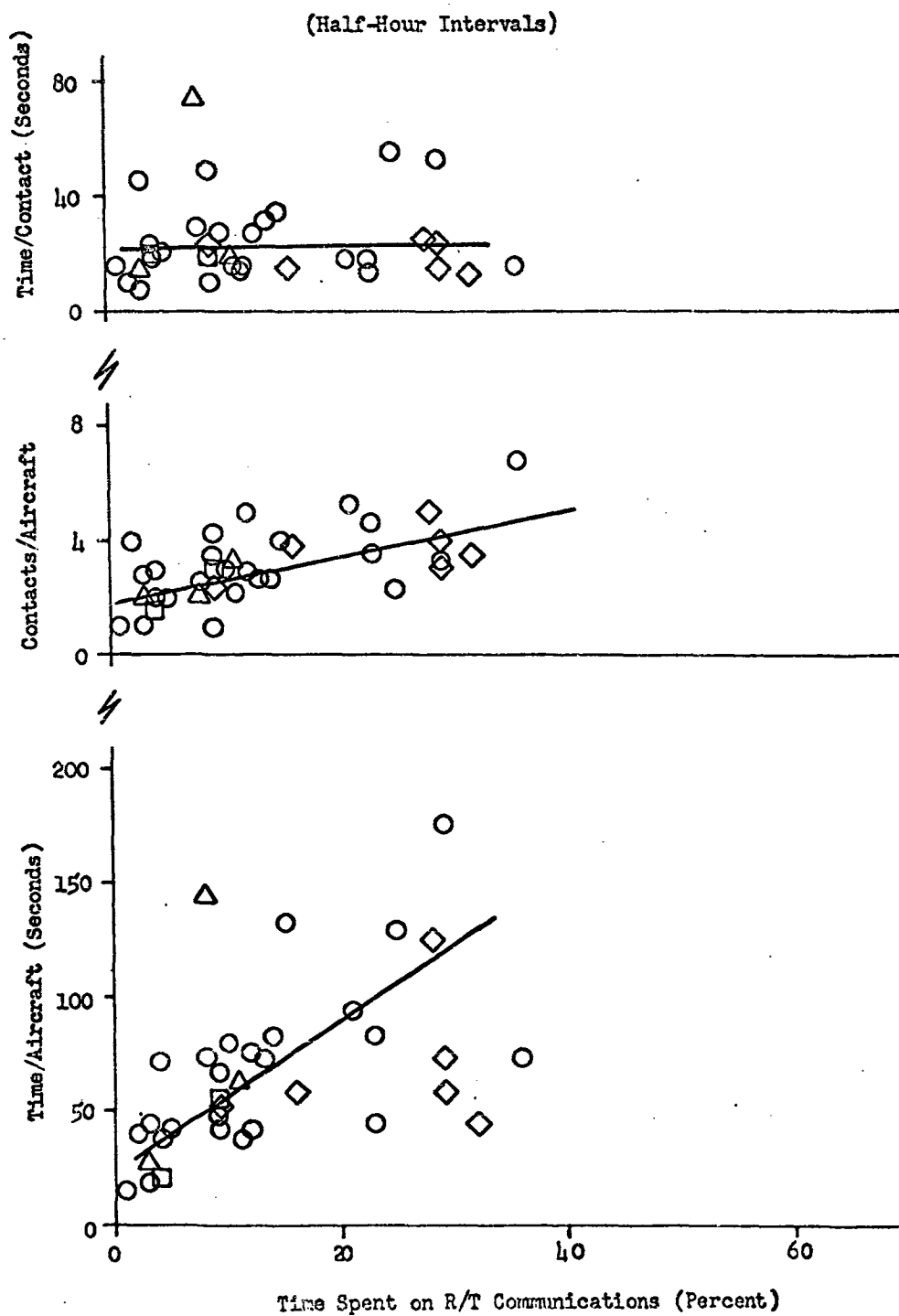


Figure III-59

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT D3 RADIO CONTROL

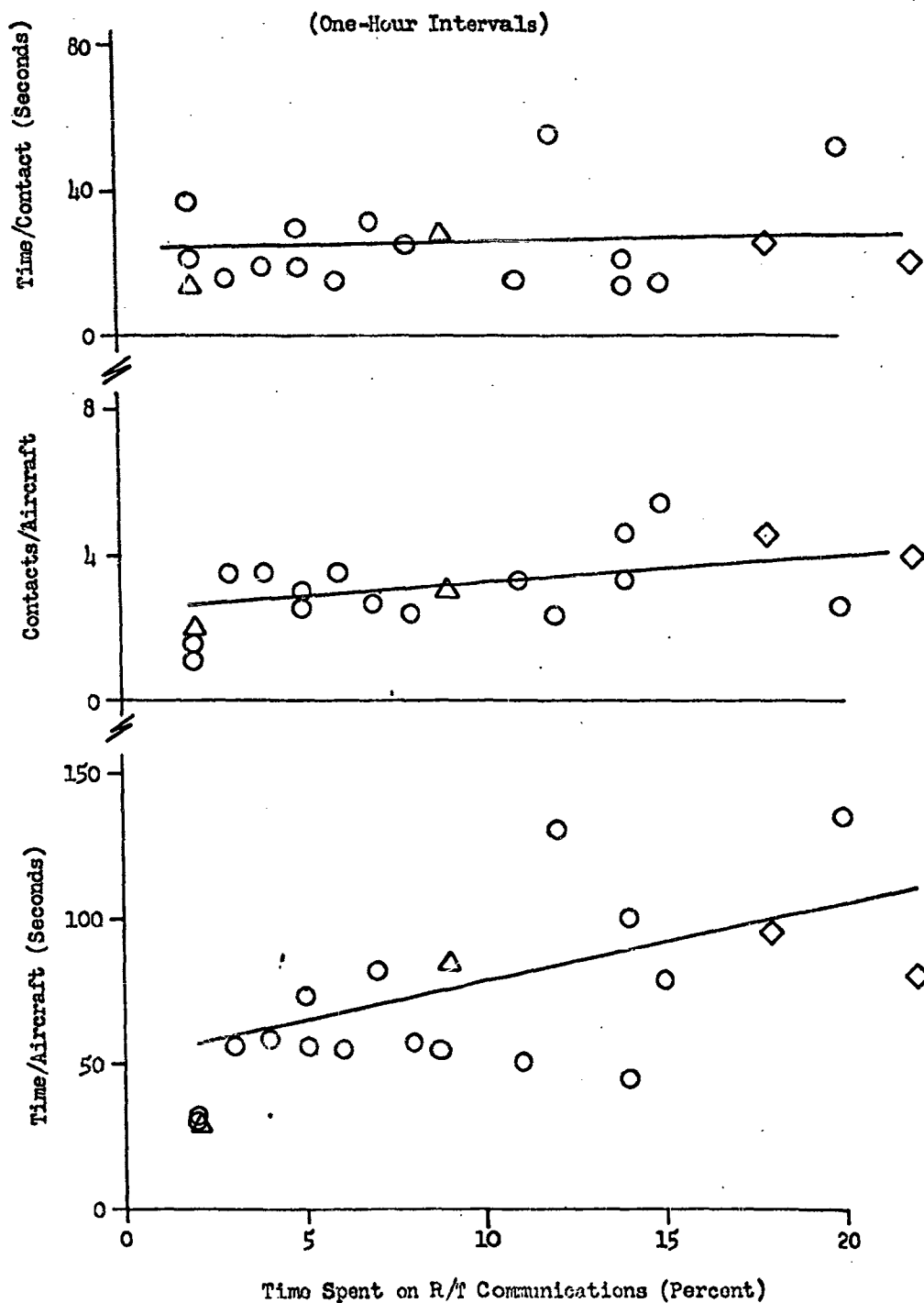
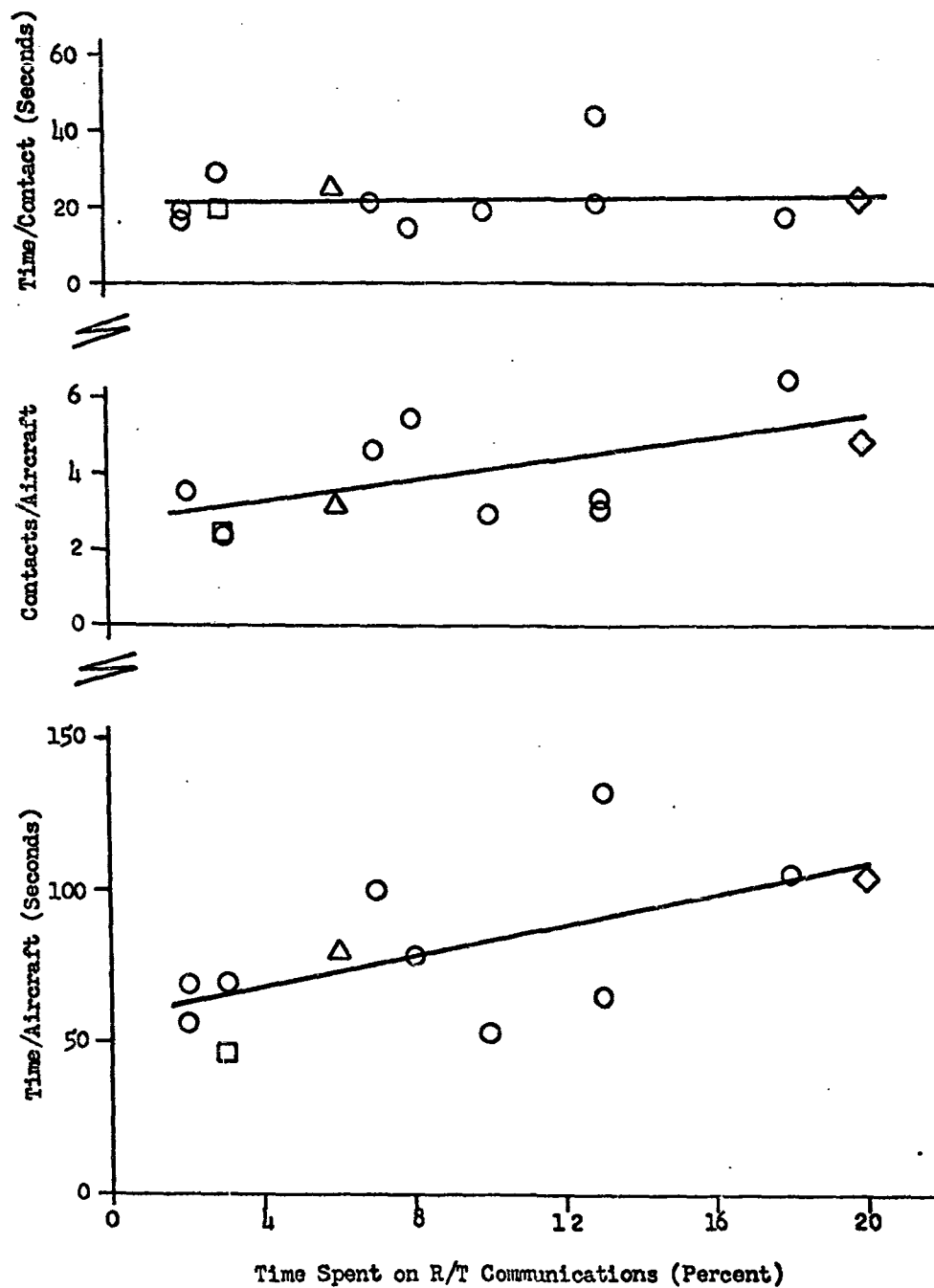
EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT D3 RADIO CONTROL

Figure III-61

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT D3 RADIO CONTROL

(Two-Hour Intervals)



EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR LA CONTROL

(Half-Hour Intervals)

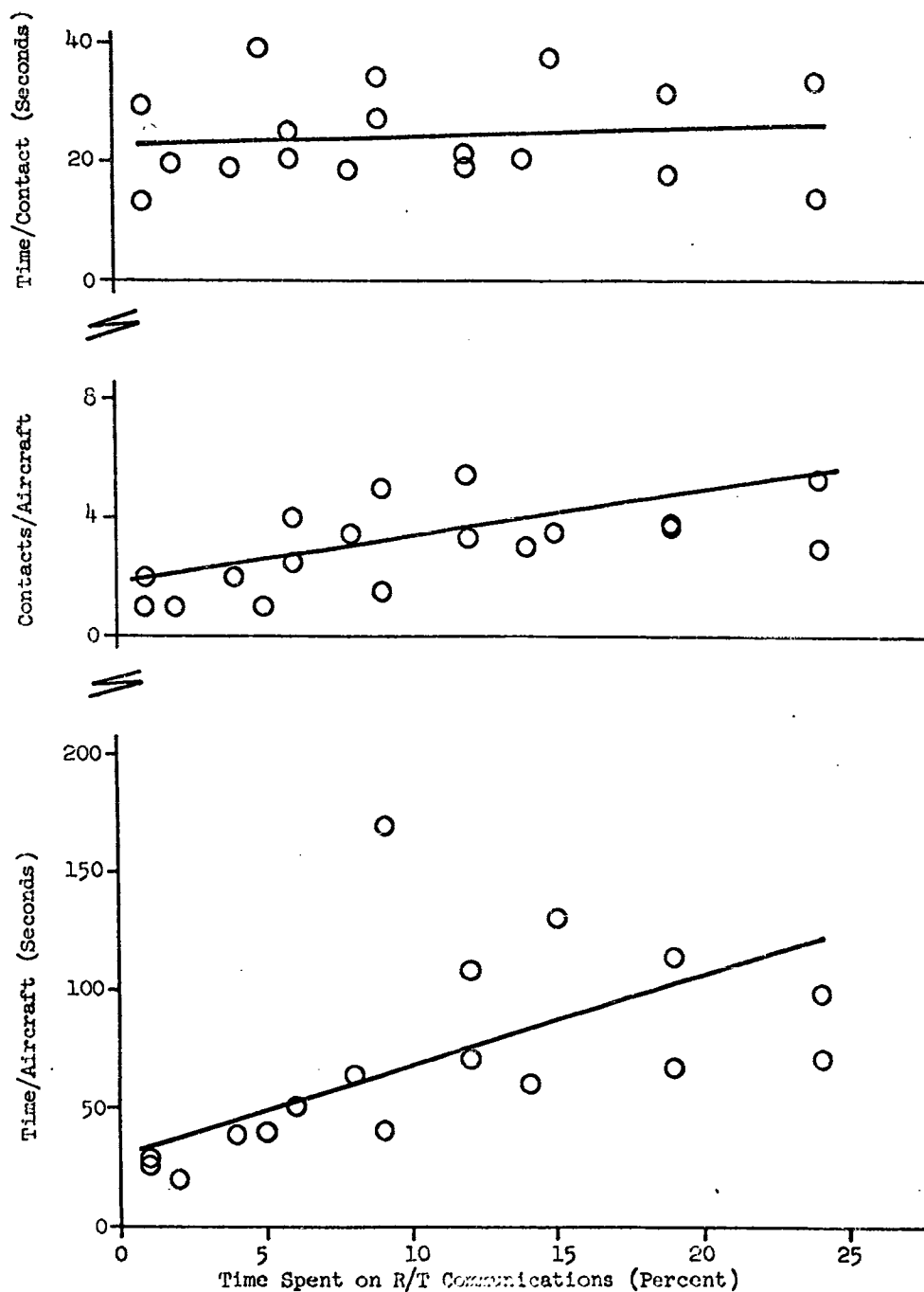


Figure III-63

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR LA CONTROL

(One-Hour Intervals)

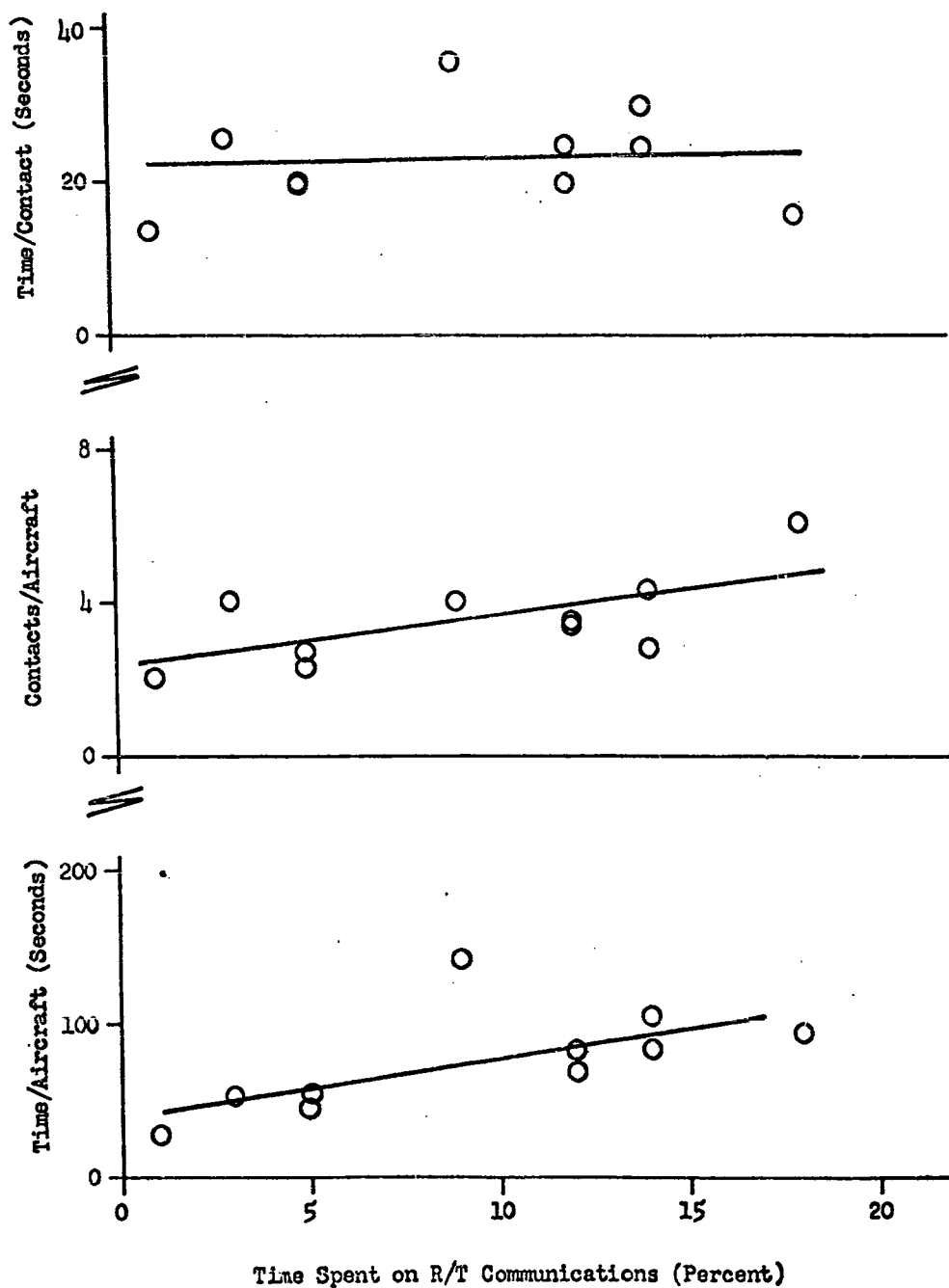
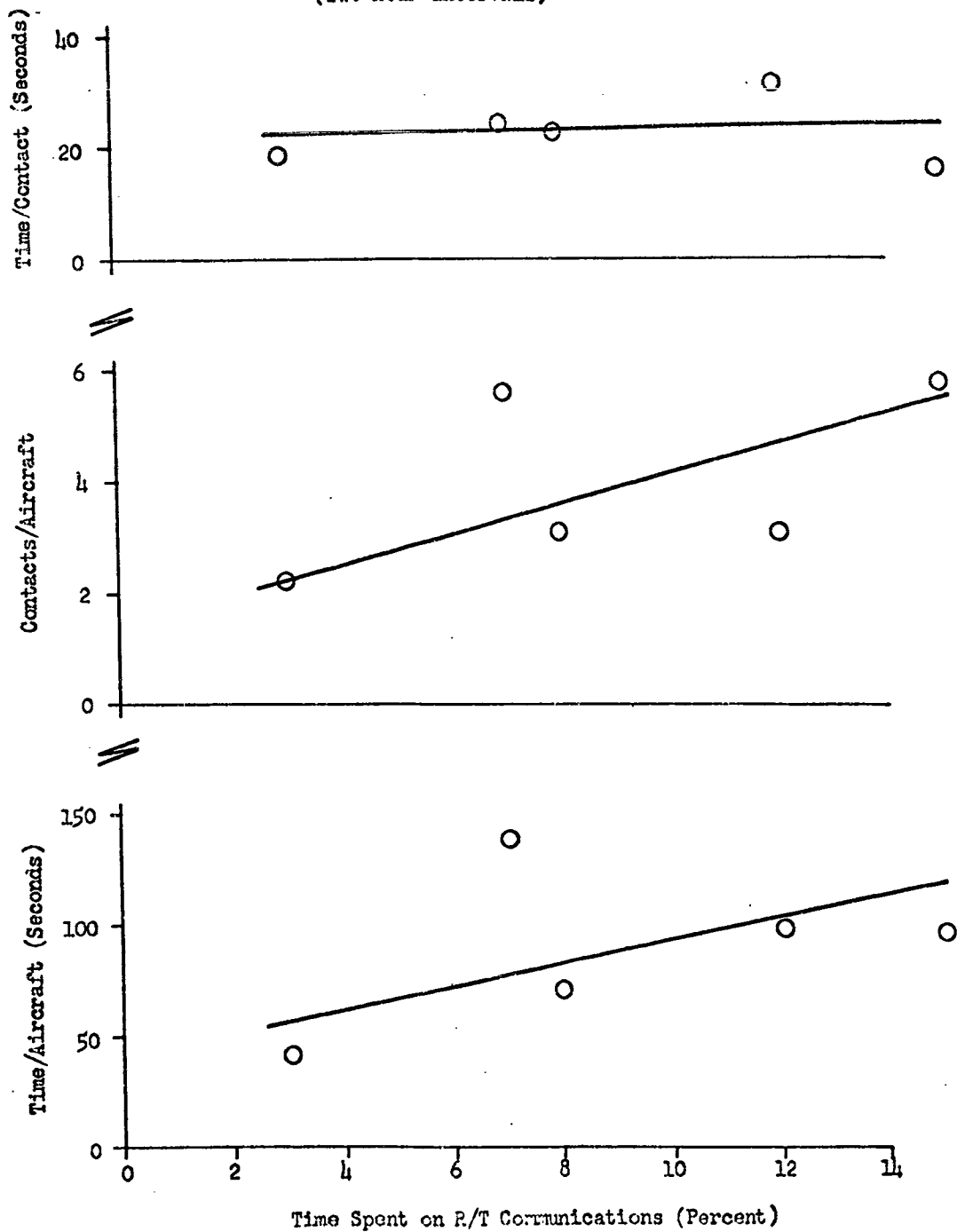


Figure III-64

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR LA CONTROL

(Two-Hour Intervals)



EFFECT OF COMMUNICATIONS LOAD TIME-RELATED MEASURES AT RADAR 1B CONTROL

(Half-Hour Intervals)

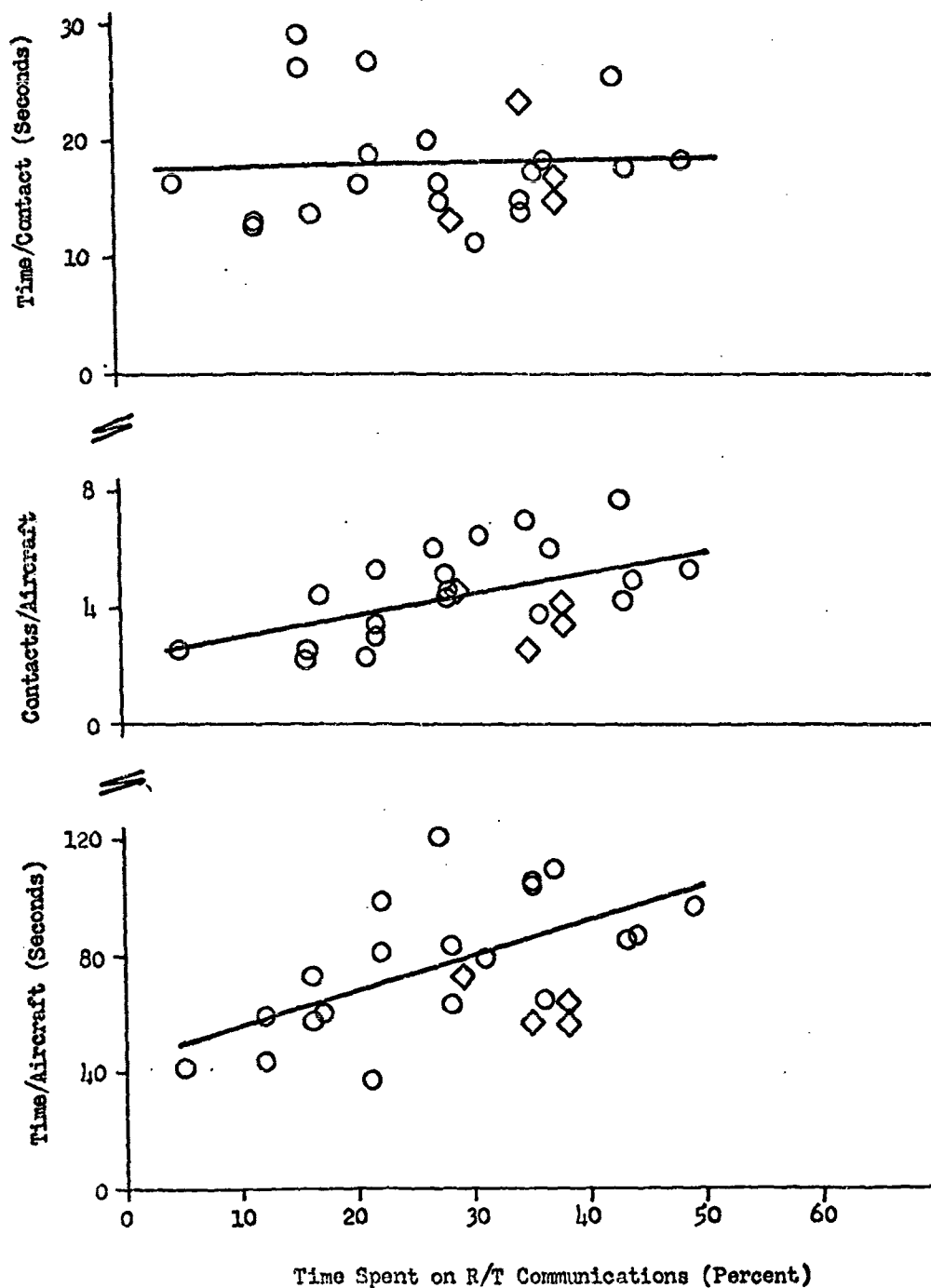


Figure III-66

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR LB CONTROL

(One-Hour Intervals)

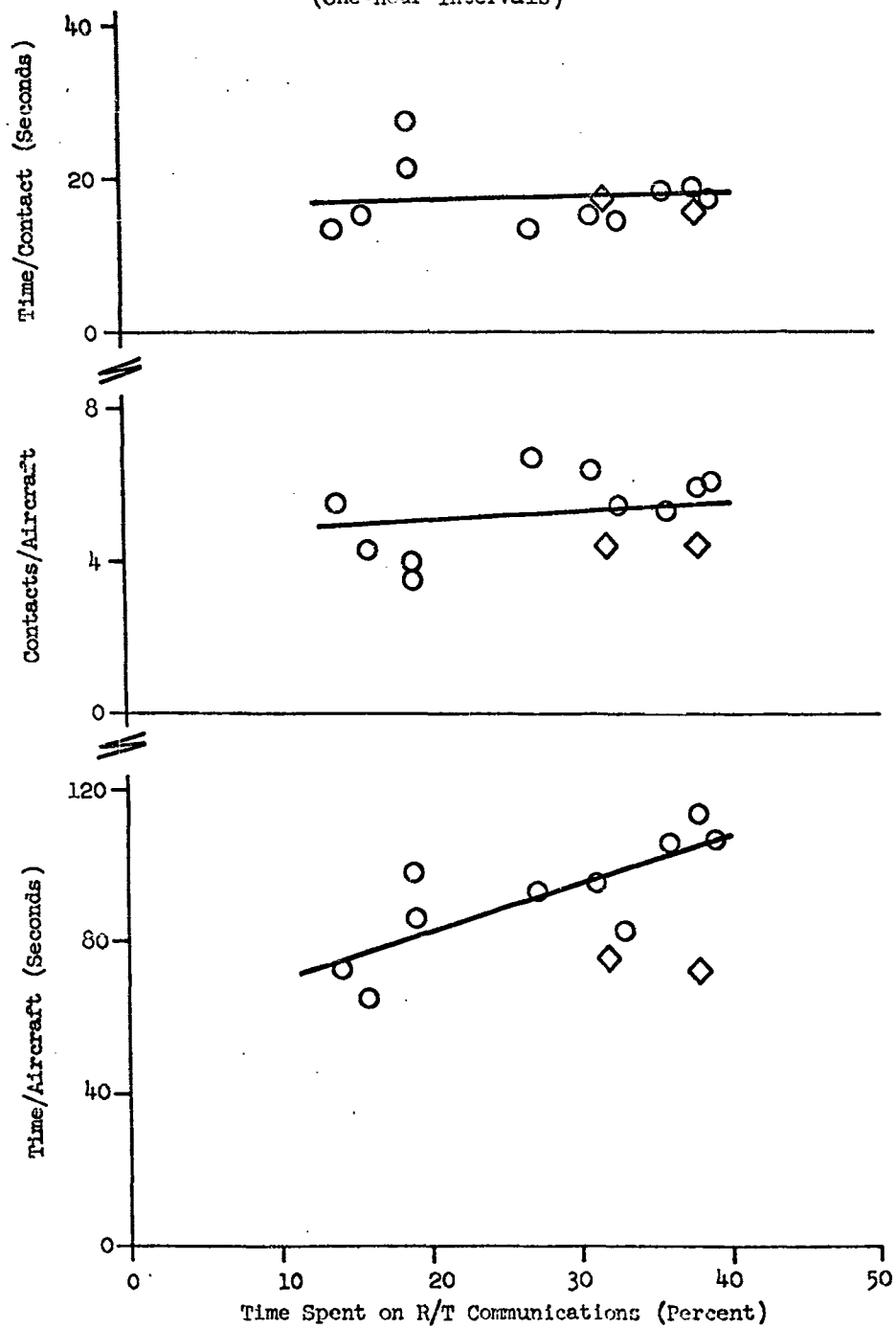


Figure III-67

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR 1B CONTROL

(Two-Hour Intervals)

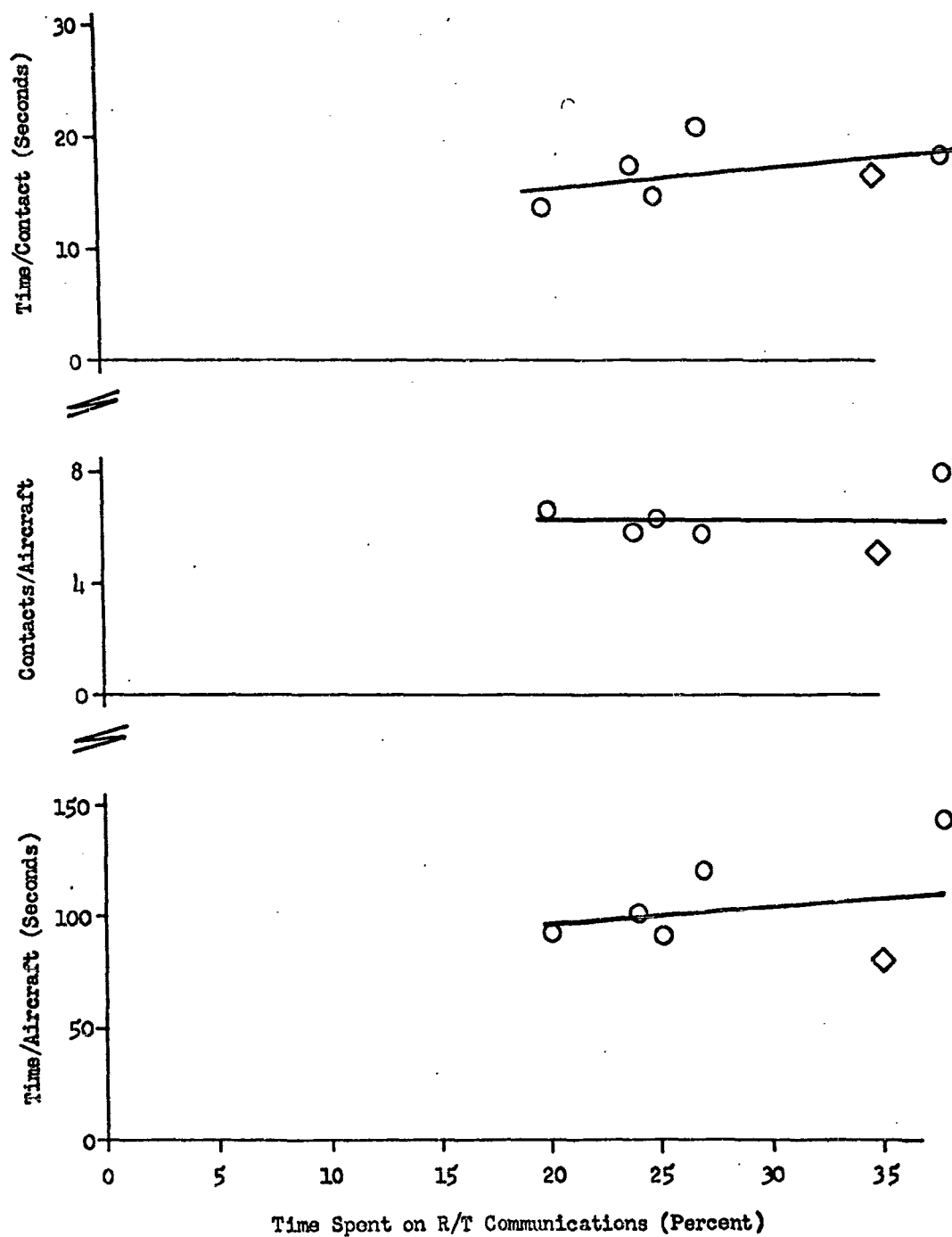


Figure III-68

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR 2A CONTROL

(Half-Hour Intervals)

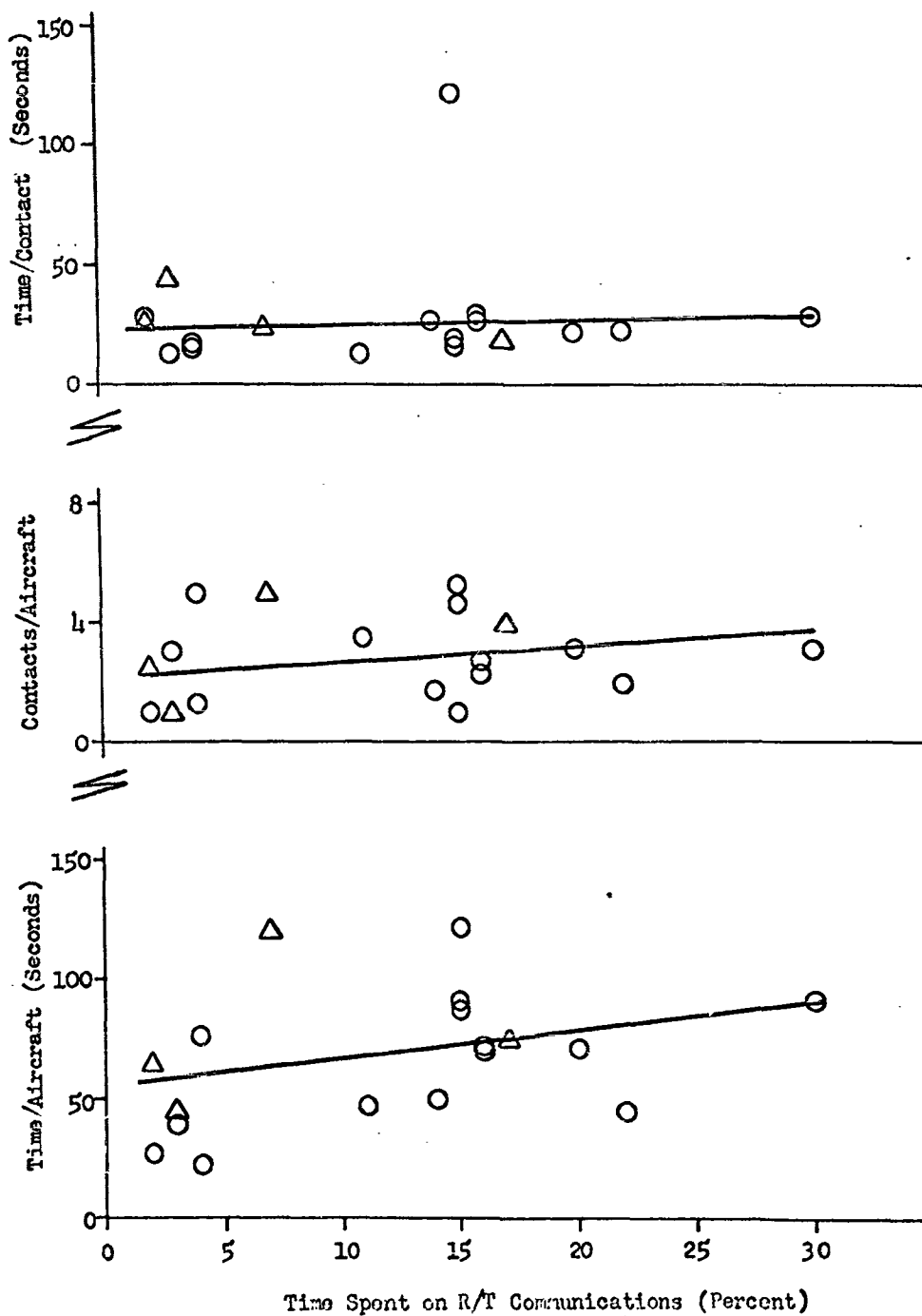


Figure III-69

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR 2A CONTROL

(One-Hour Intervals)

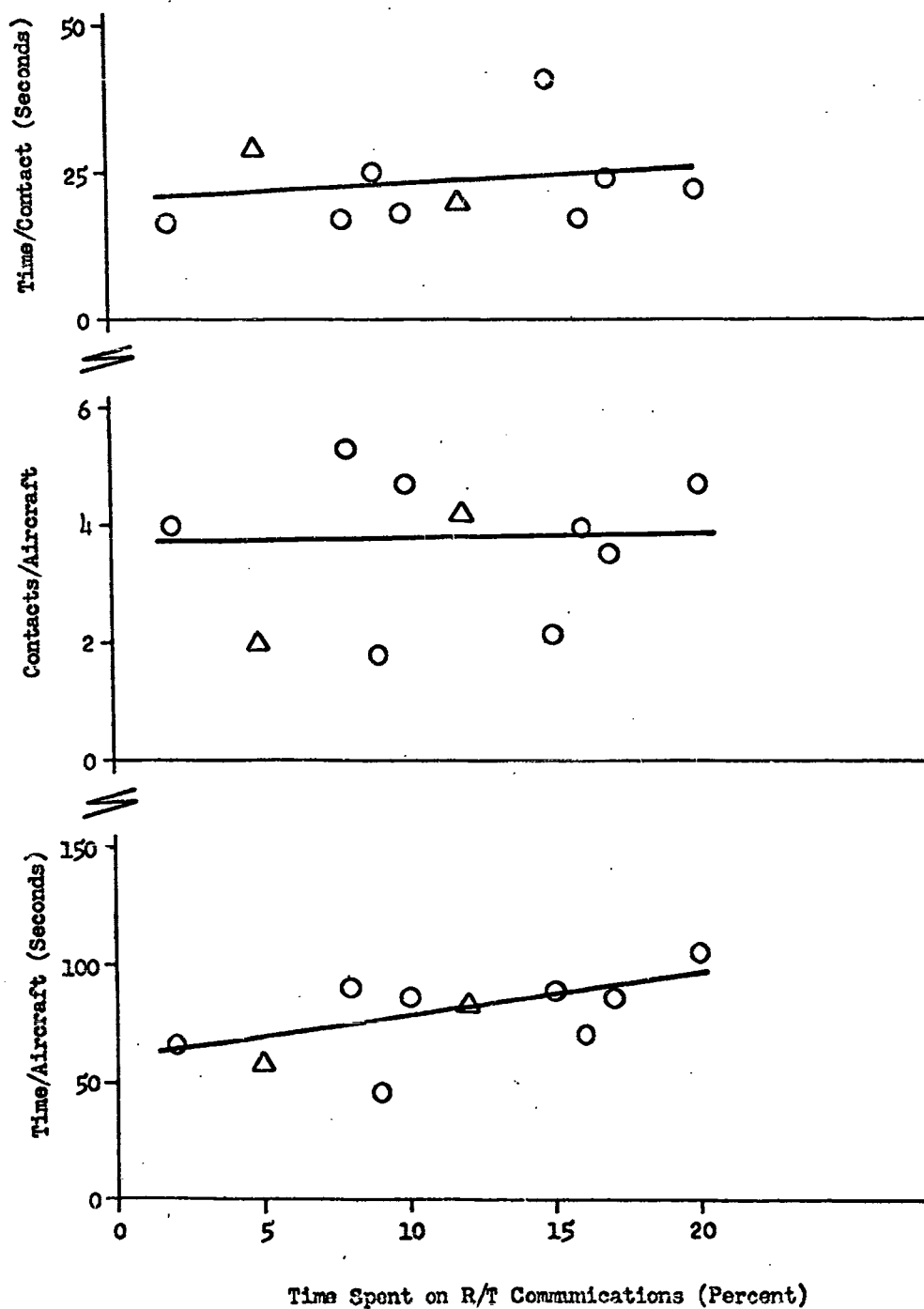


Figure III-70

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR 2A CONTROL

(Two-Hour Intervals)

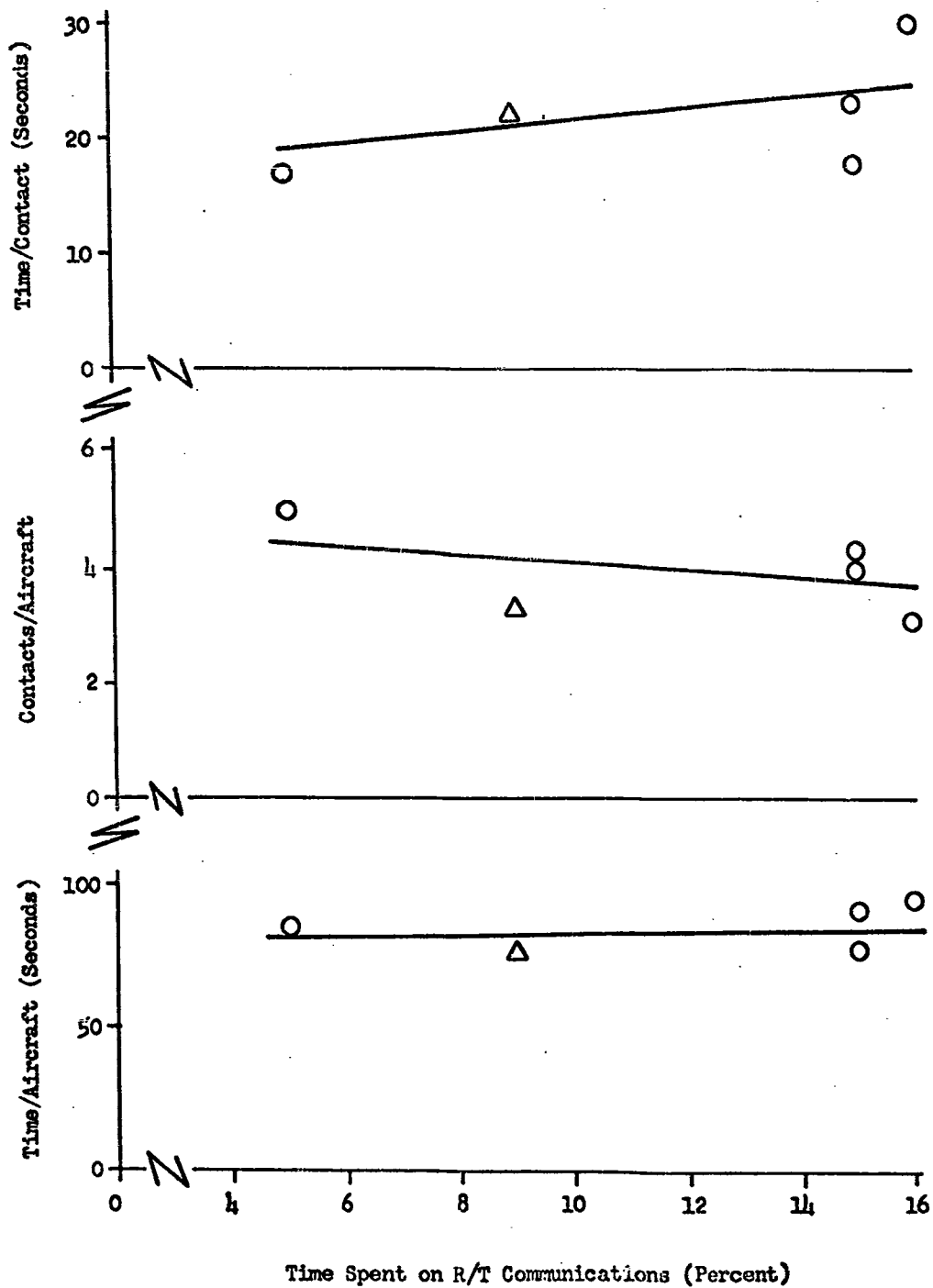


Figure III-71

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR 2B CONTROL

(Half-Hour Intervals)

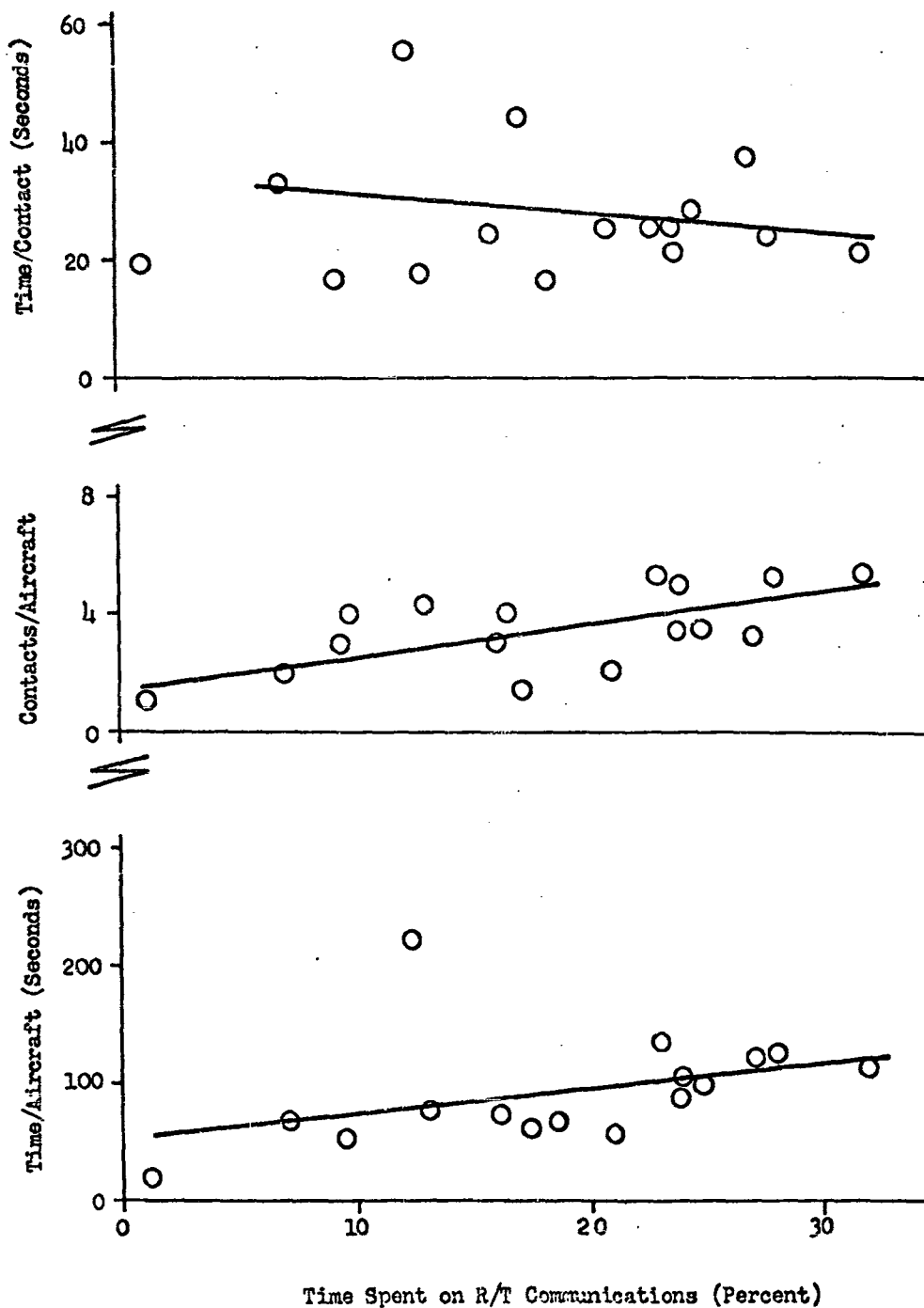


Figure III-72

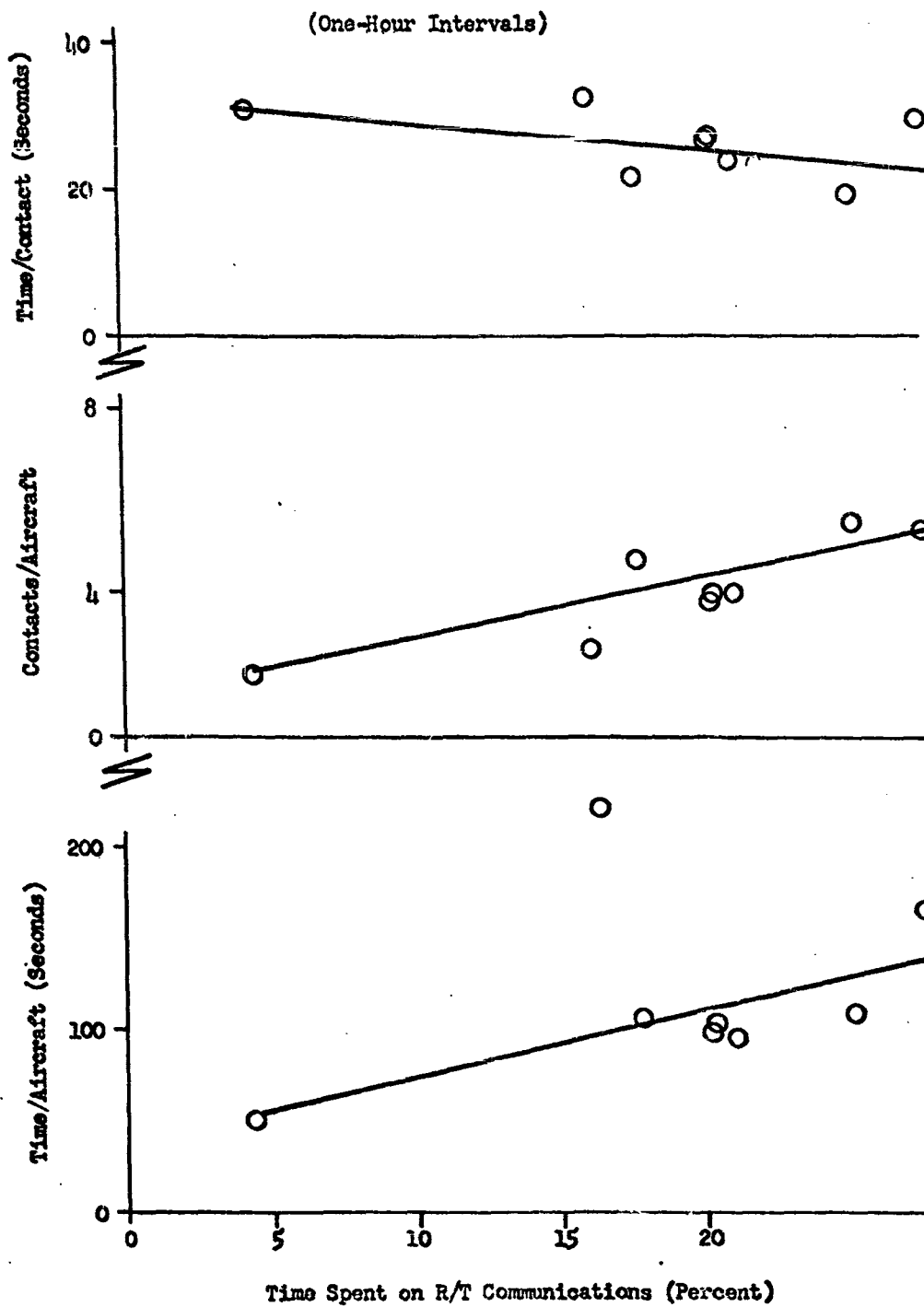
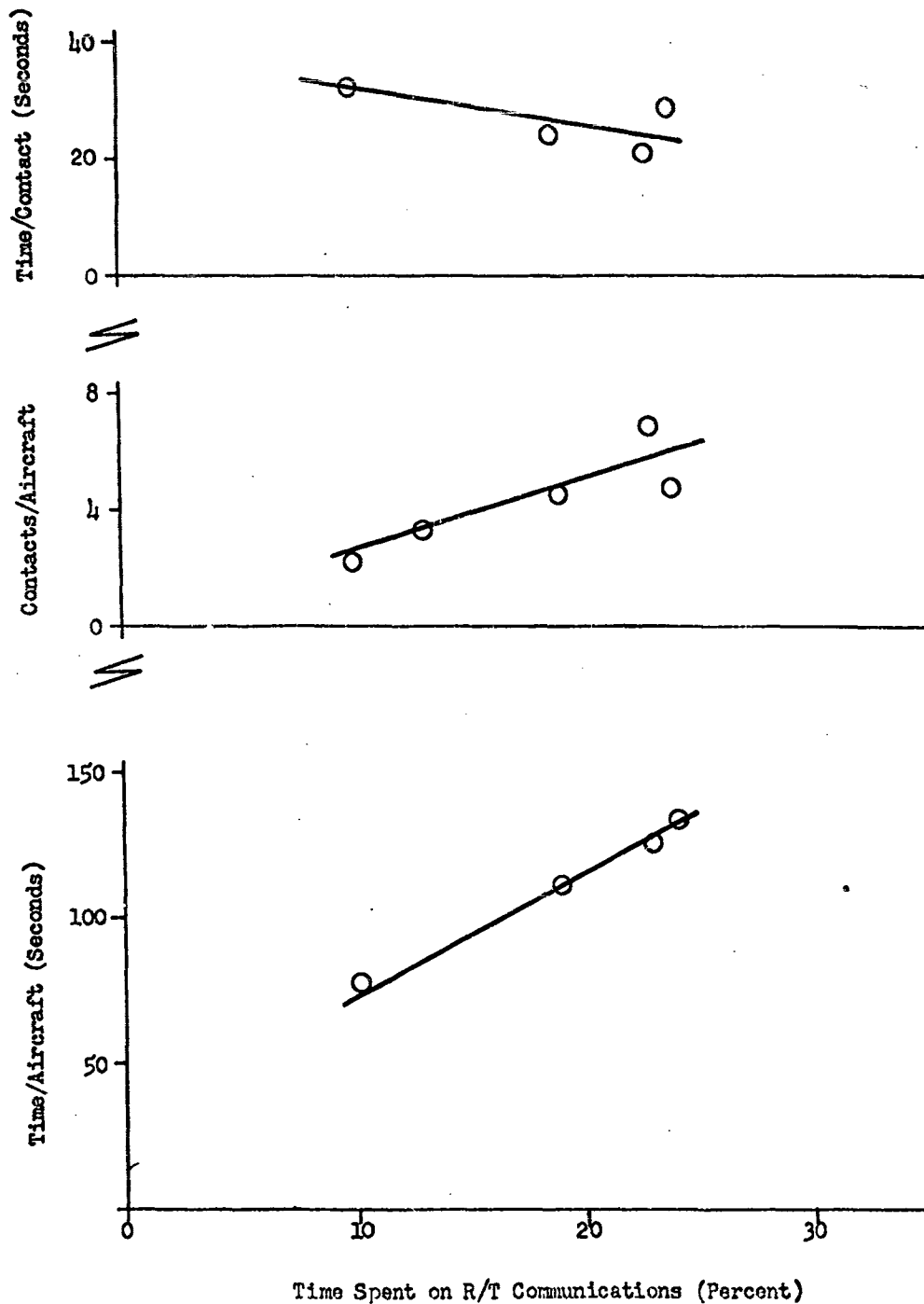
EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR 2B CONTROL

Figure III-73

EFFECT OF COMMUNICATIONS LOAD ON TIME-RELATED MEASURES AT RADAR 2B CONTROL

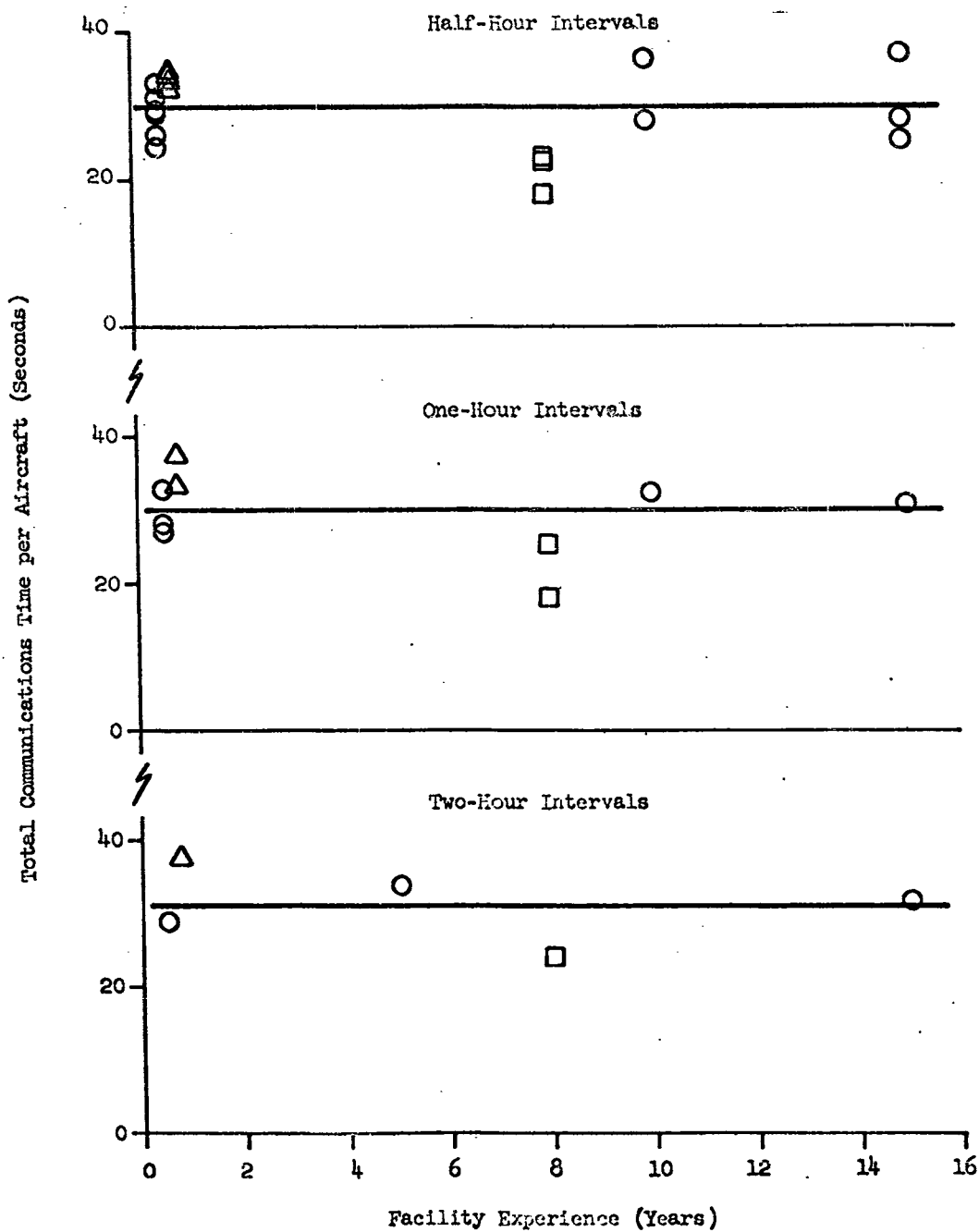
(Two-Hour Intervals)

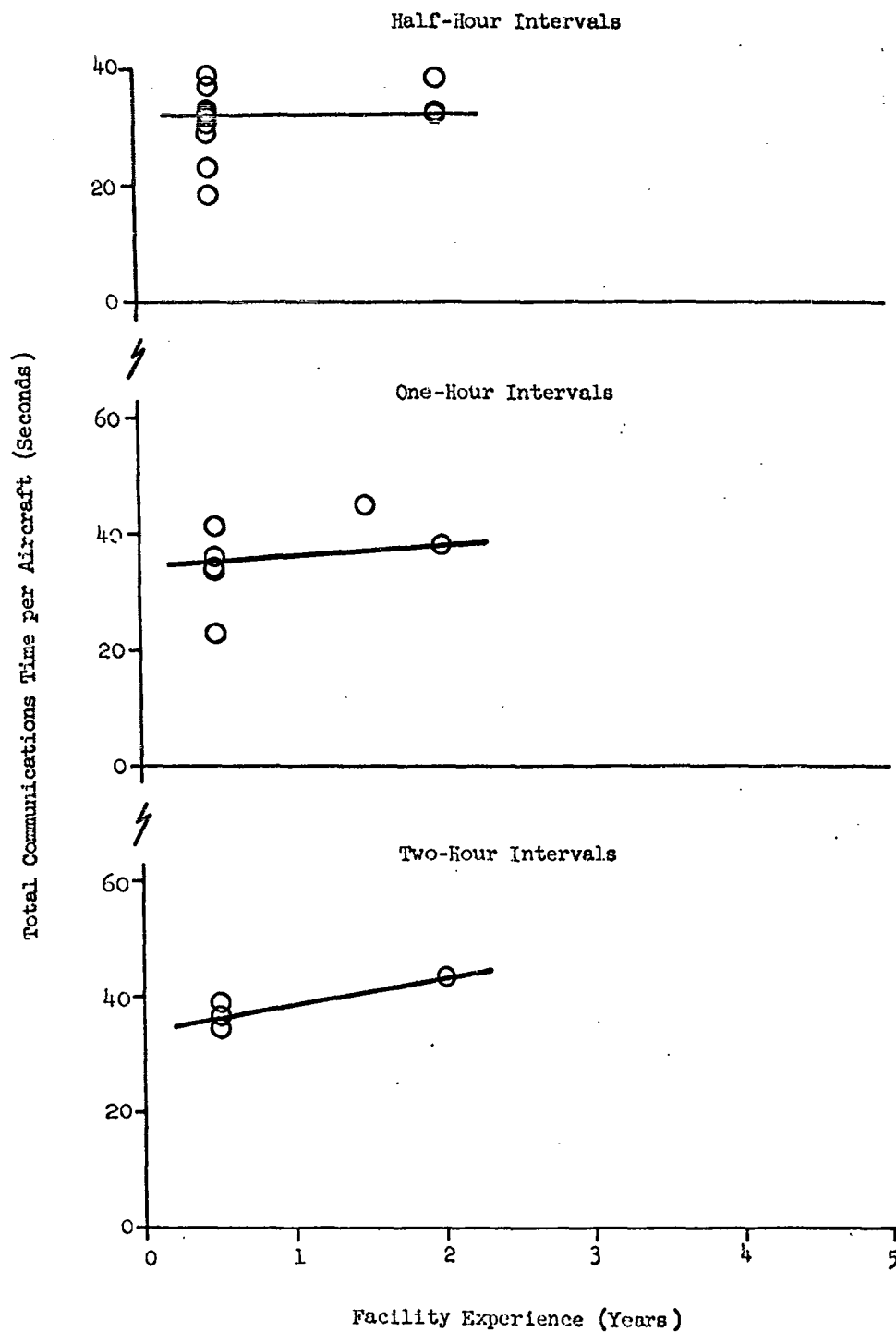


3. Effect of Experience on Total Communications Time.

In Figures III-74 to III-83 the controller facility experience in years has been plotted against the total communications time per aircraft in seconds. Data for half-hour, one-hour, and two-hour intervals have been plotted for each control position. Note that the column of points above a given experience level in each chart of this cycle represents an individual controller in most cases.

Figure III-74

EFFECT OF EXPERIENCE ON GROUND CONTROL TOTAL COMMUNICATIONS TIME

EFFECT OF EXPERIENCE ON LOCAL CONTROL TOTAL COMMUNICATIONS TIME

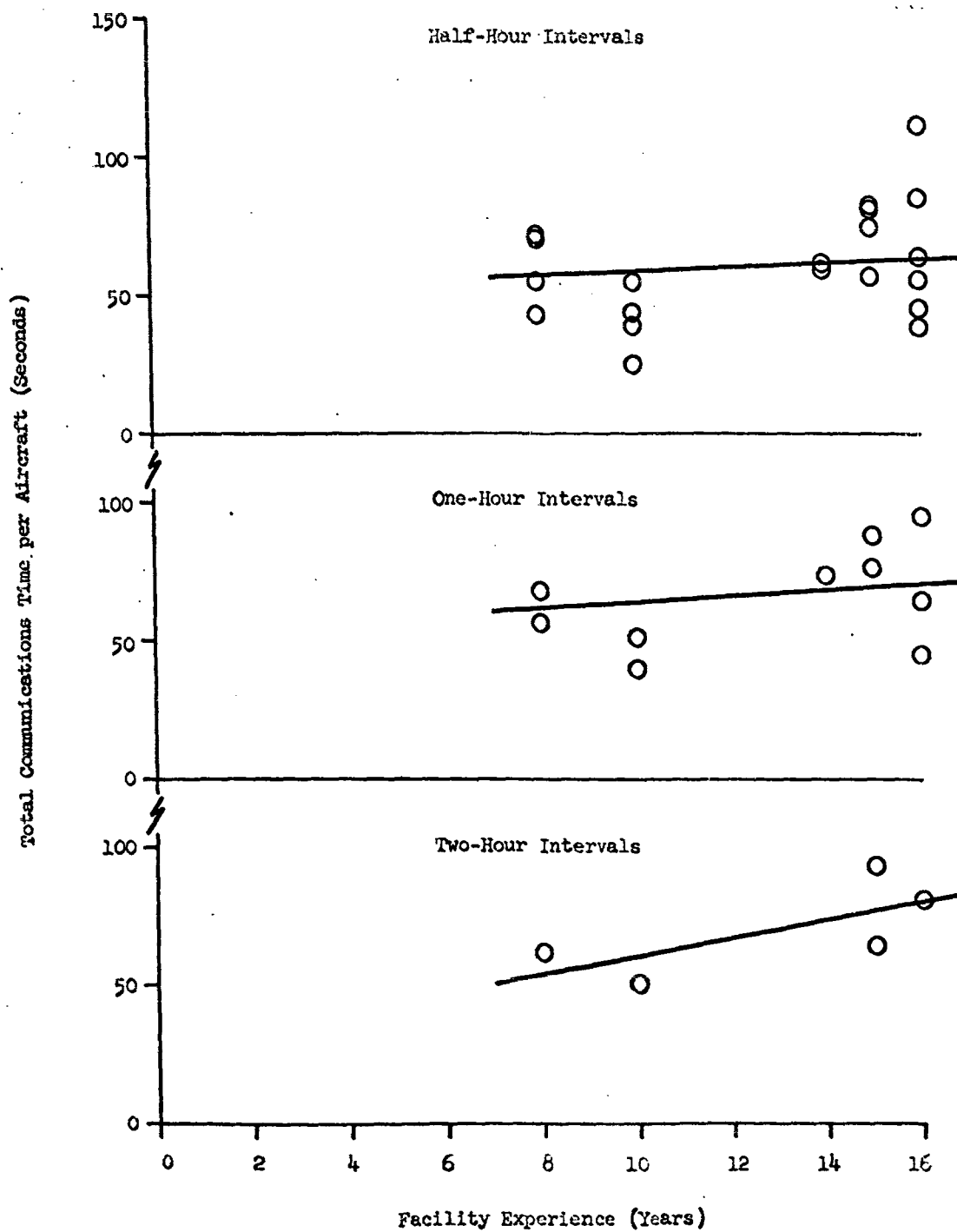
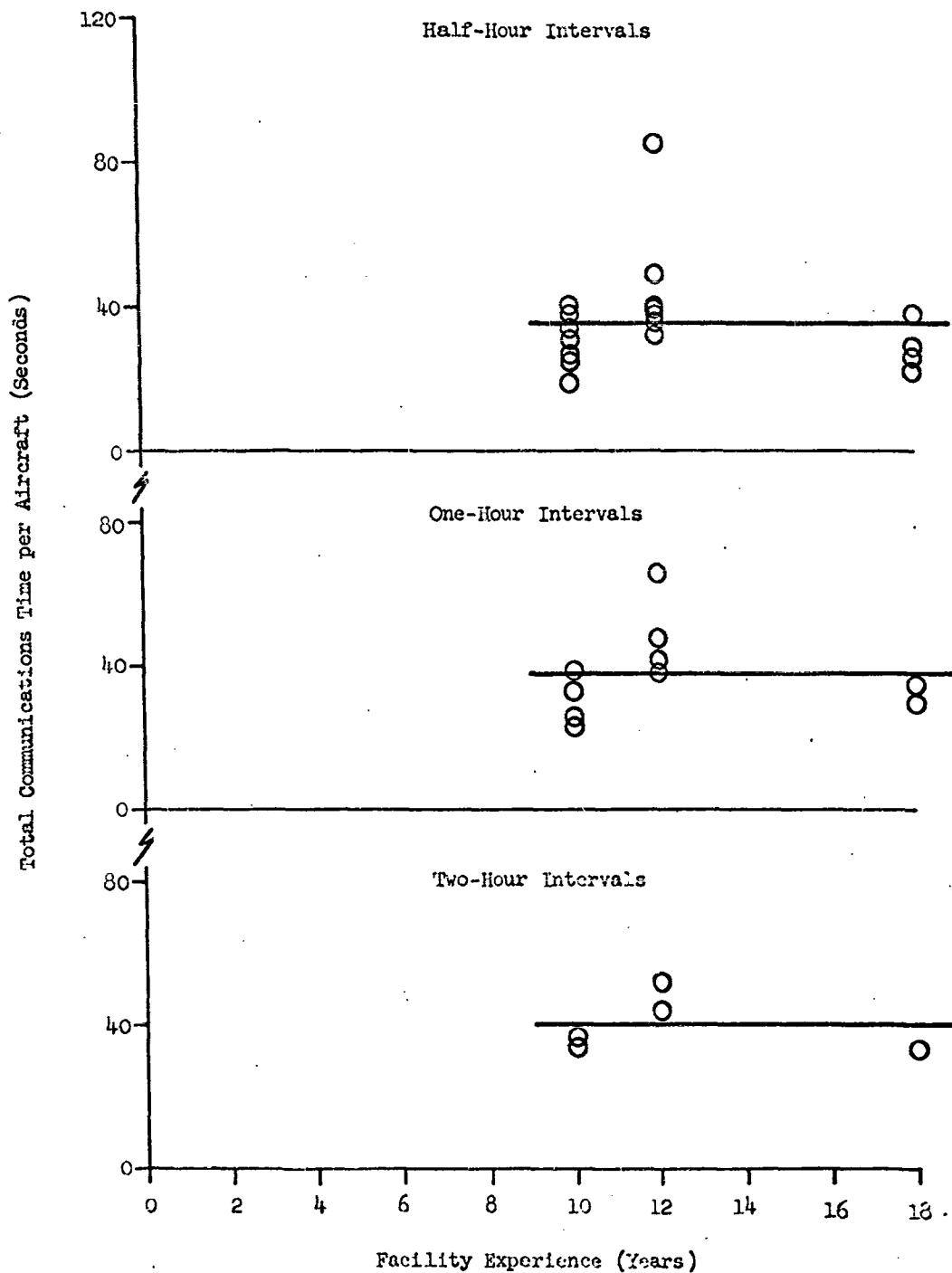
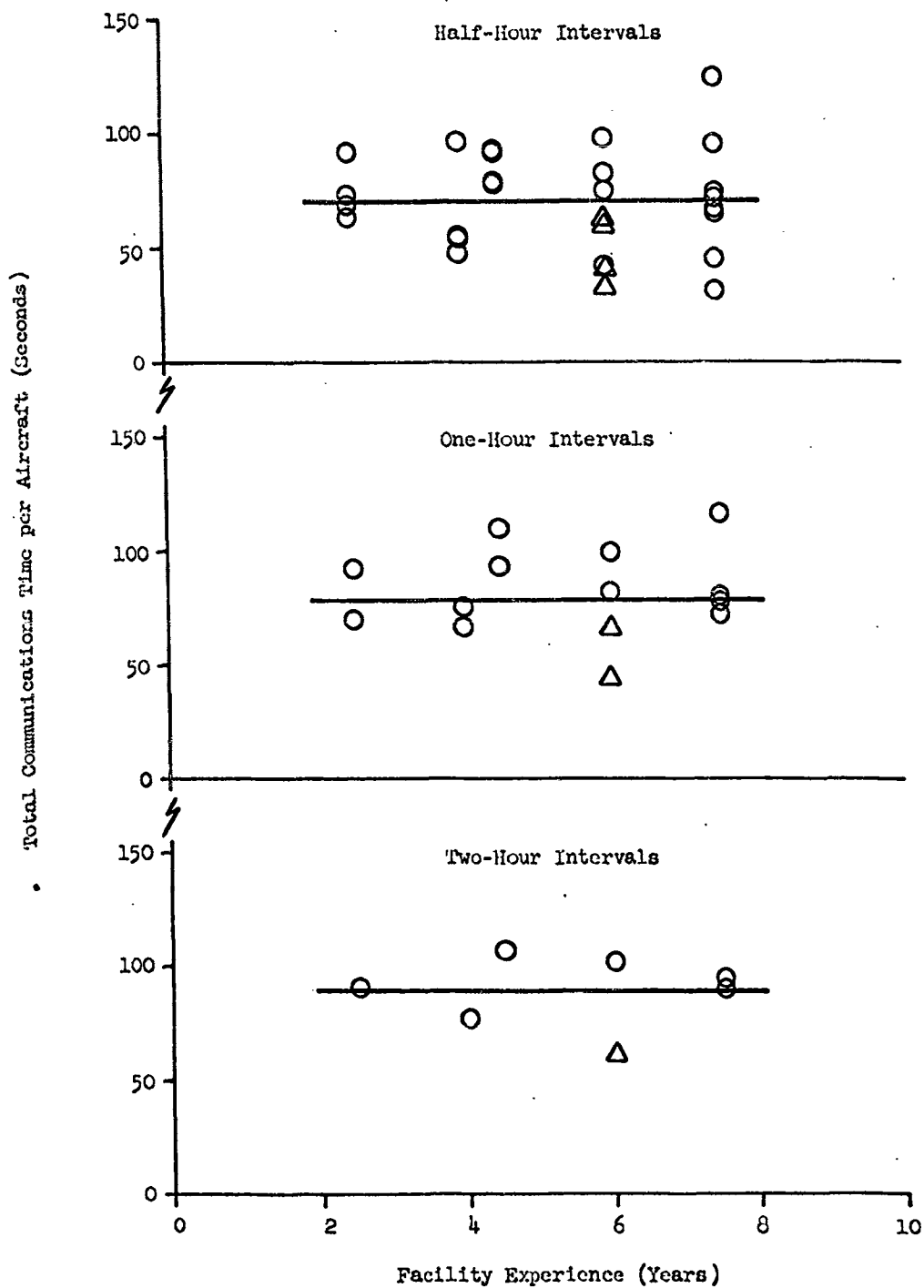
EFFECT OF EXPERIENCE ON ANC APPROACH CONTROL TOTAL COMMUNICATIONS TIME

Figure III-77

EFFECT OF EXPERIENCE ON ANC DEPARTURE CONTROL TOTAL COMMUNICATIONS TIME

EFFECT OF EXPERIENCE ON D2 RADIO CONTROL TOTAL COMMUNICATIONS TIME

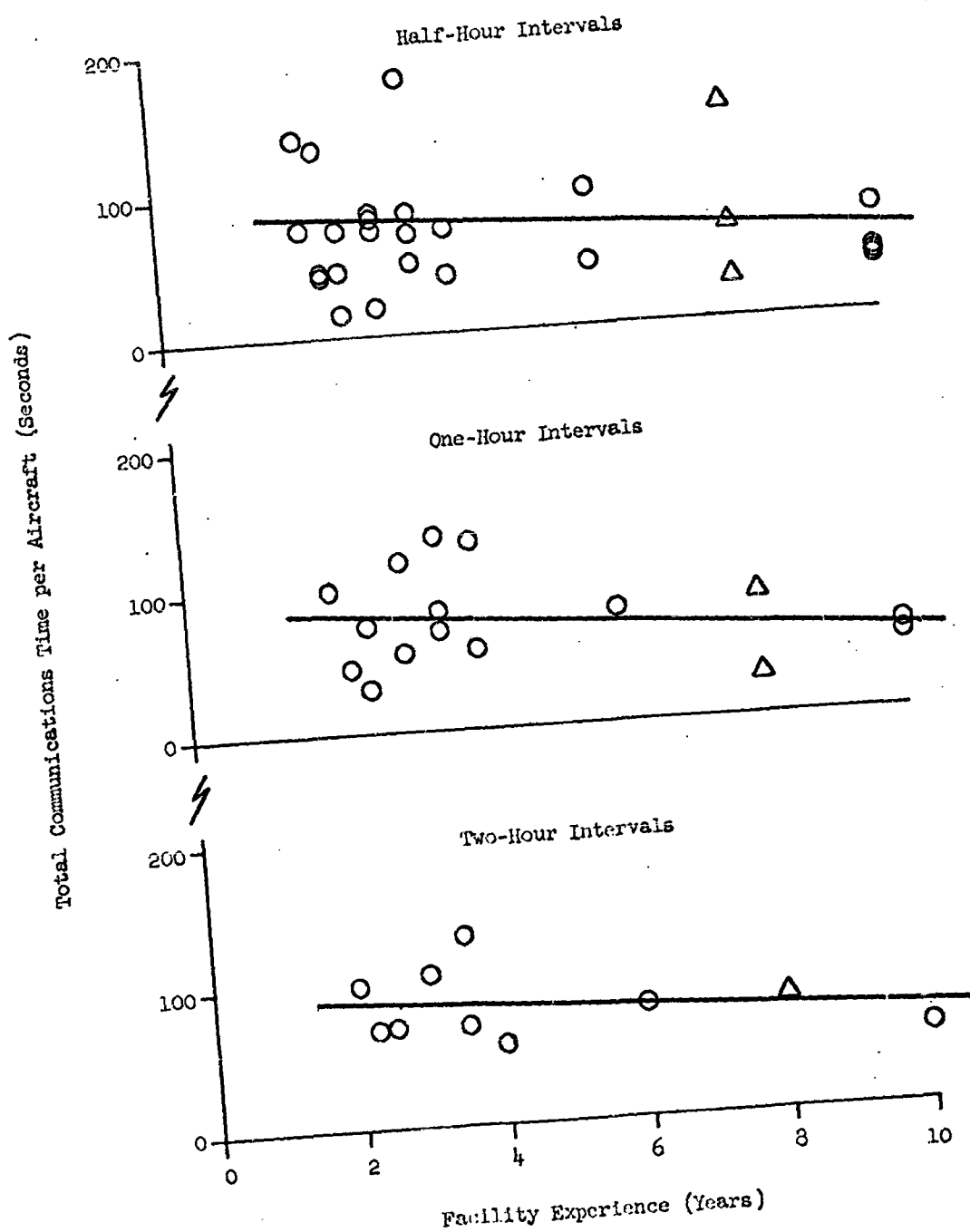
EFFECT OF EXPERIENCE ON D3 RADIO CONTROL TOTAL COMMUNICATIONS TIME

Figure III-80

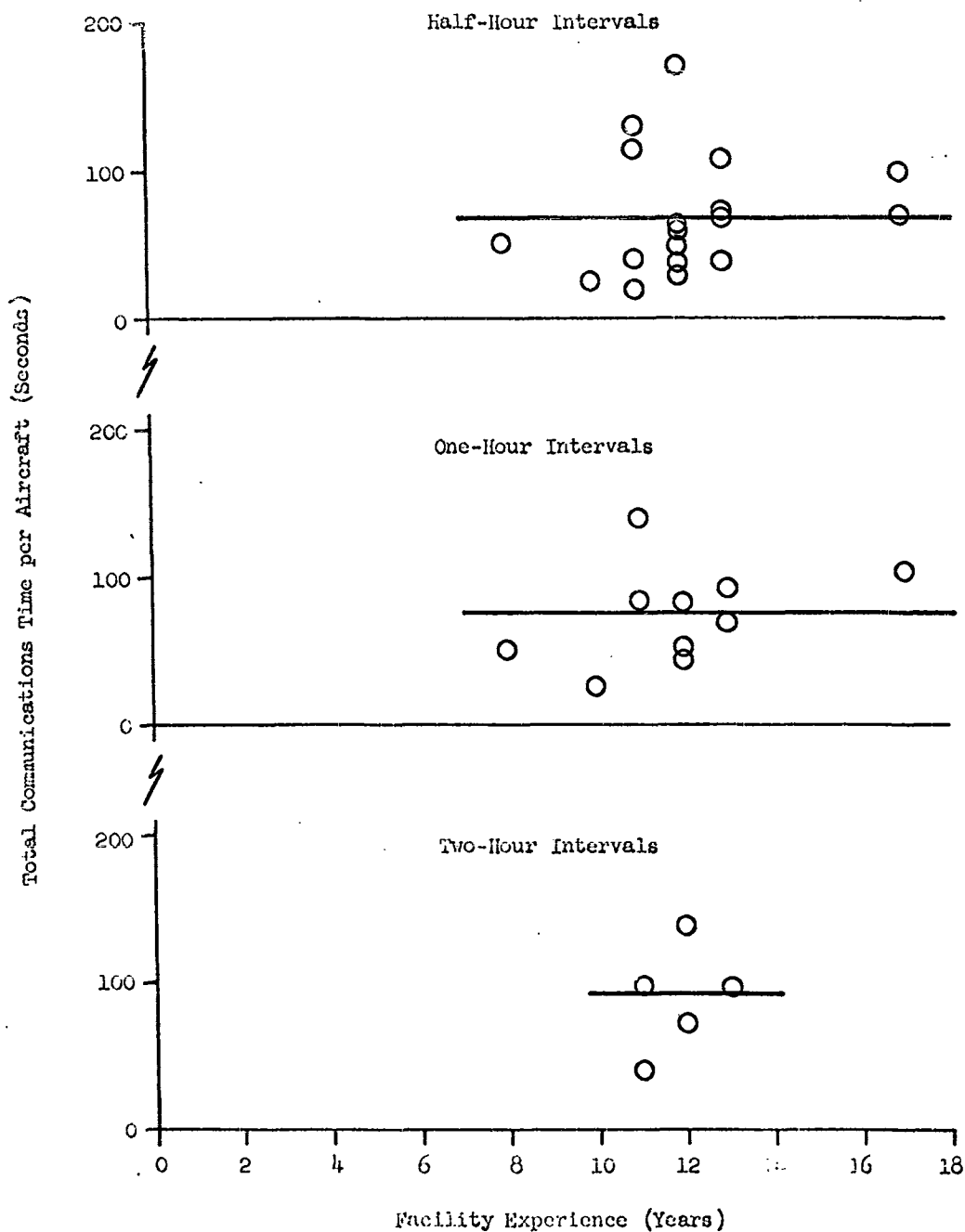
EFFECT OF EXPERIENCE ON RADAR 1A CONTROL TOTAL COMMUNICATIONS TIME

Figure III-81

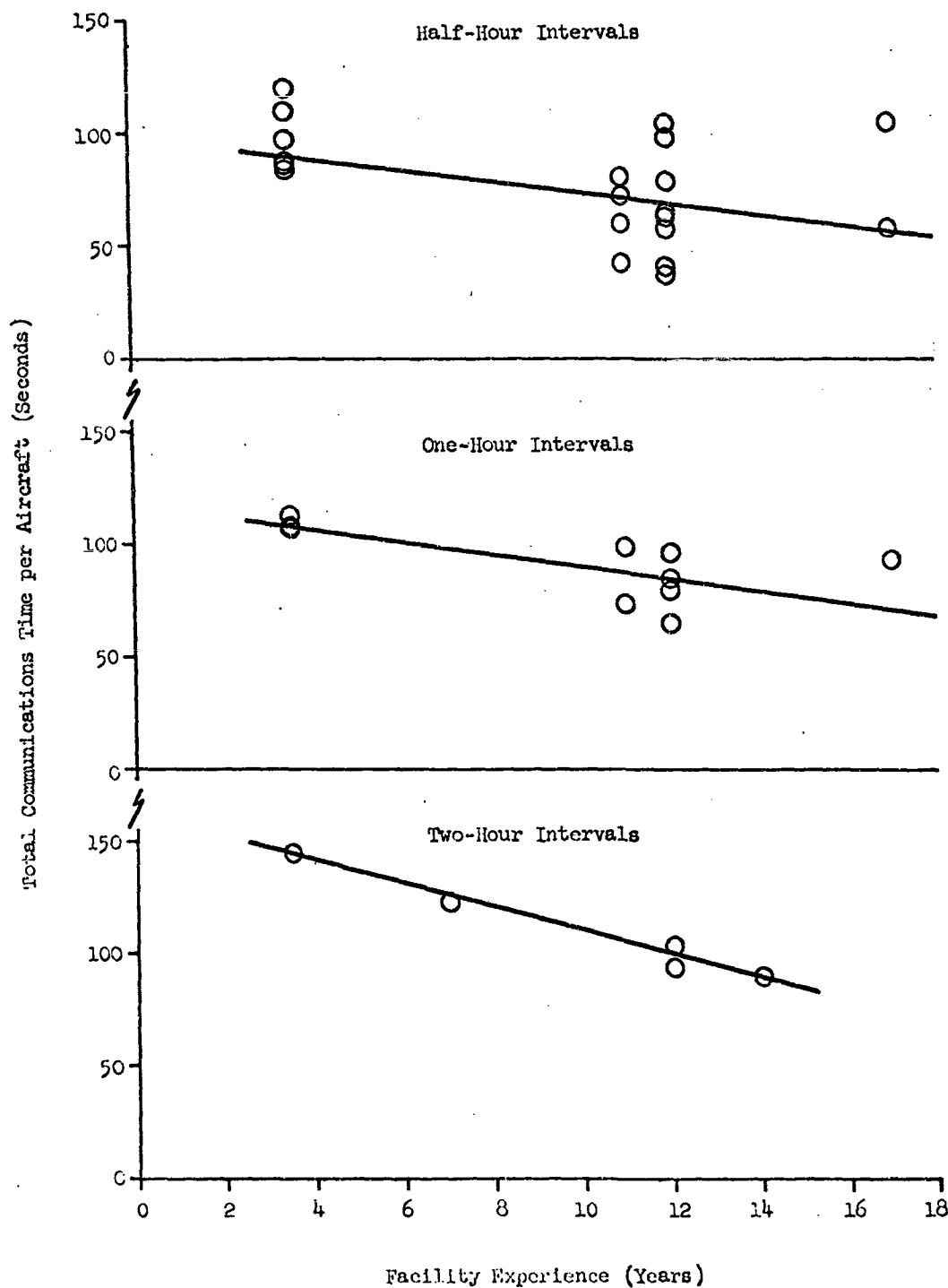
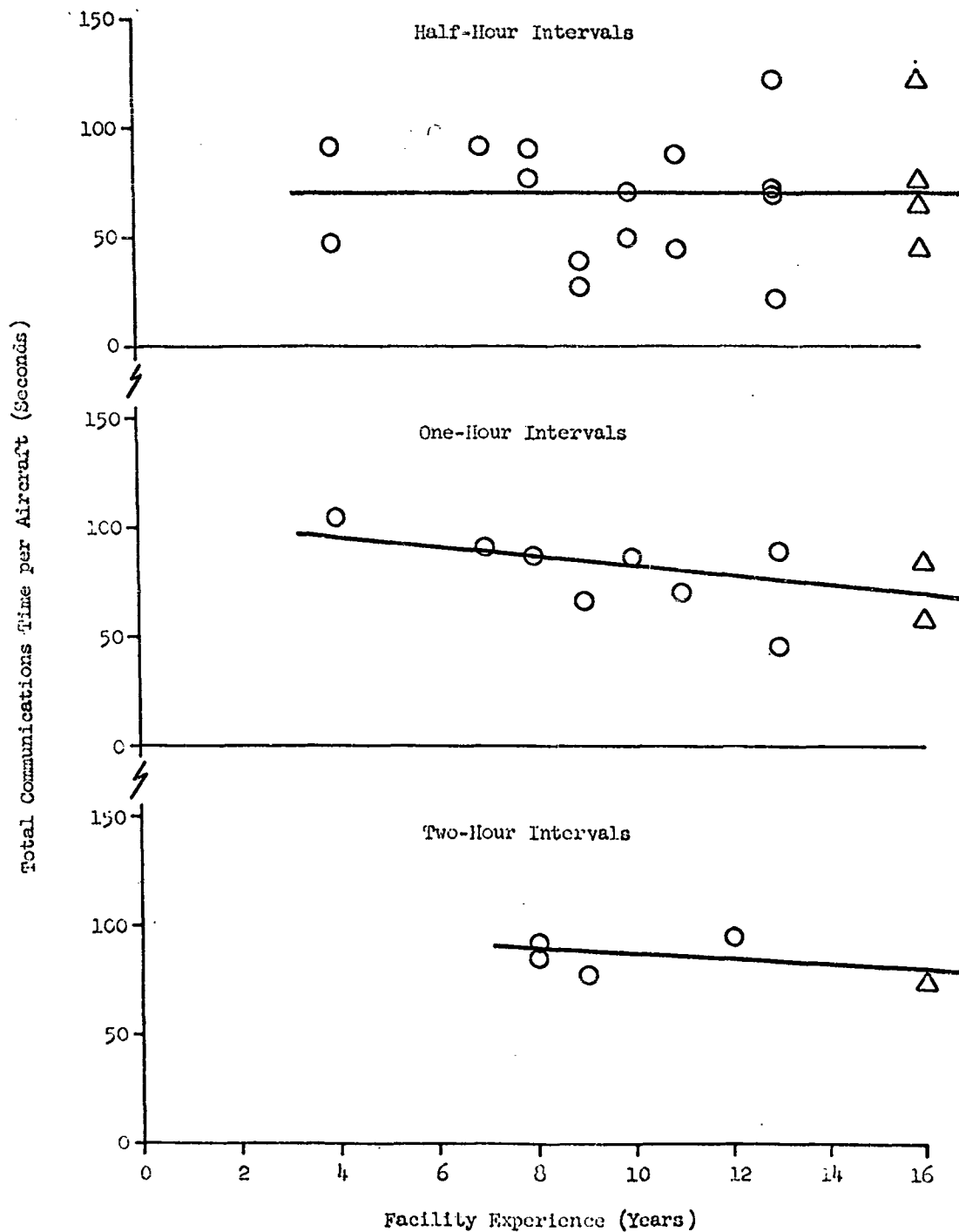
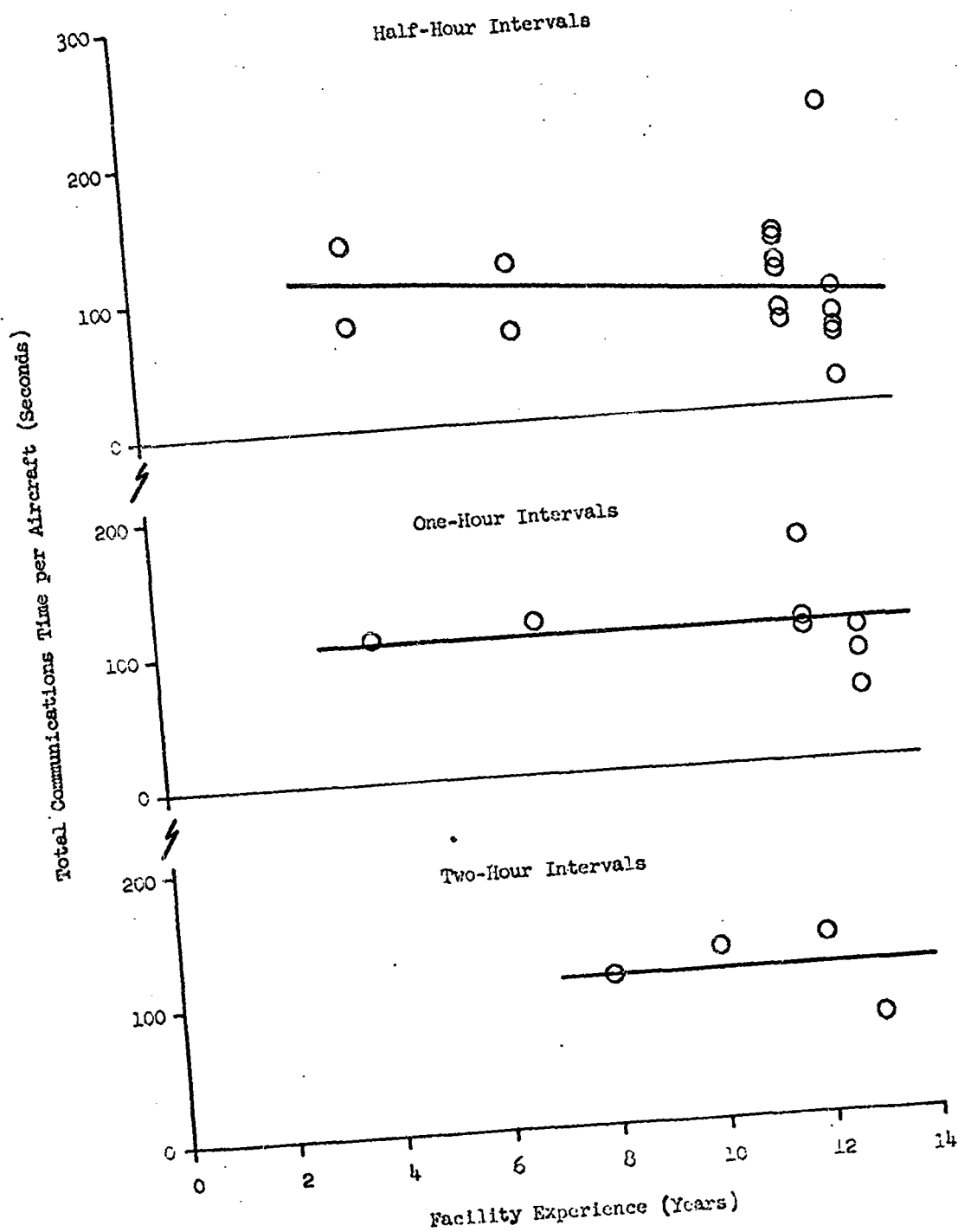
EFFECT OF EXPERIENCE ON RADAR LB CONTROL TOTAL COMMUNICATIONS TIME

Figure III-82

EFFECT OF EXPERIENCE ON RADAR 2A CONTROL TOTAL COMMUNICATIONS TIME

EFFECT OF EXPERIENCE ON RADAR 2B CONTROL TOTAL COMMUNICATIONS TIME

4. Effect of Experience on Contact Time.

Figures III-84 to III-93 show the relationships between controller facility experience in years and the average time per contact per interval. Once again half-hour, one-hour, and two-hour intervals have been used for the analysis. Note that the column of points above a given experience level in each chart of this cycle represents an individual controller in most cases.

Figure III-84

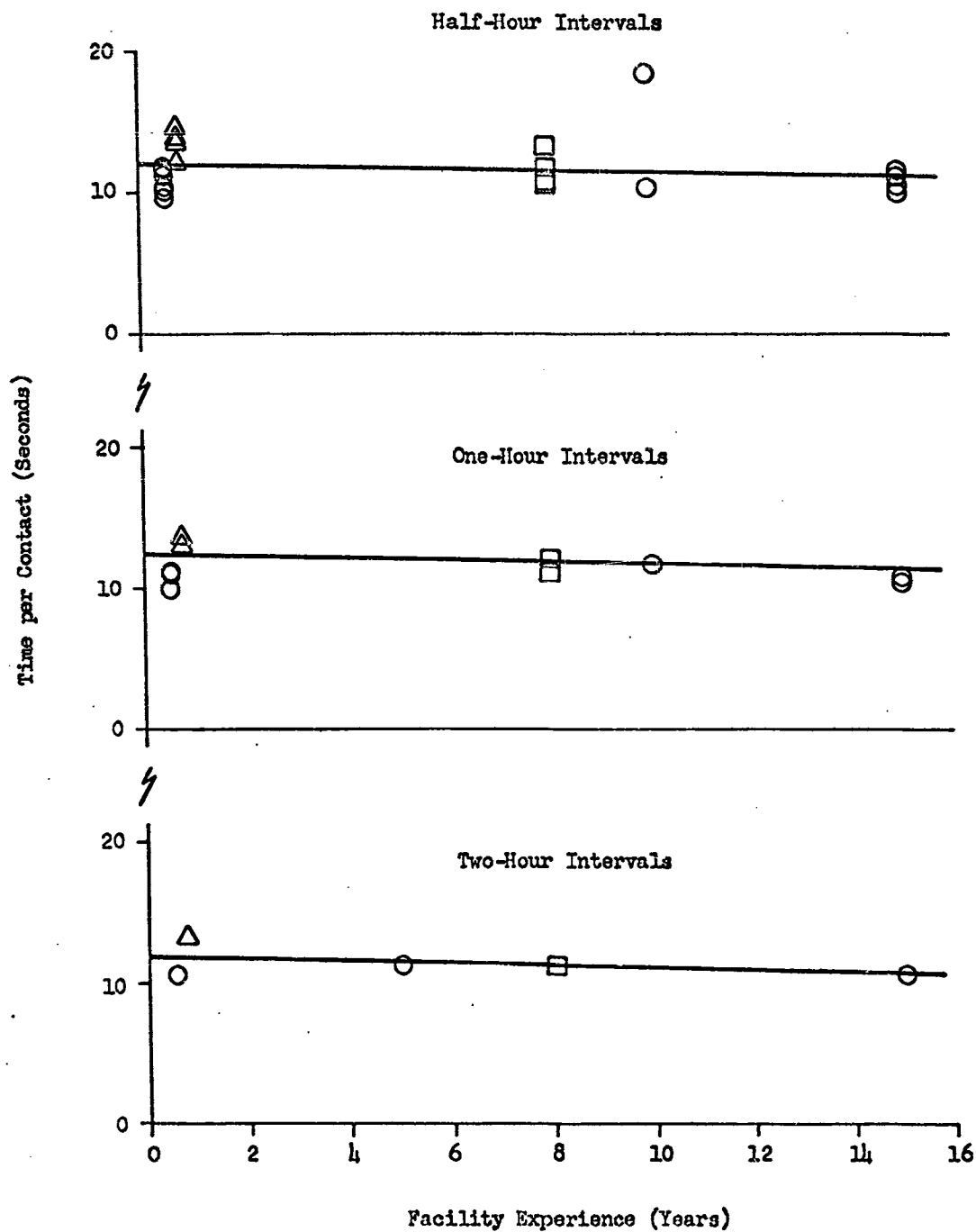
EFFECT OF EXPERIENCE ON GROUND CONTROL CONTACT TIME

Figure III-85

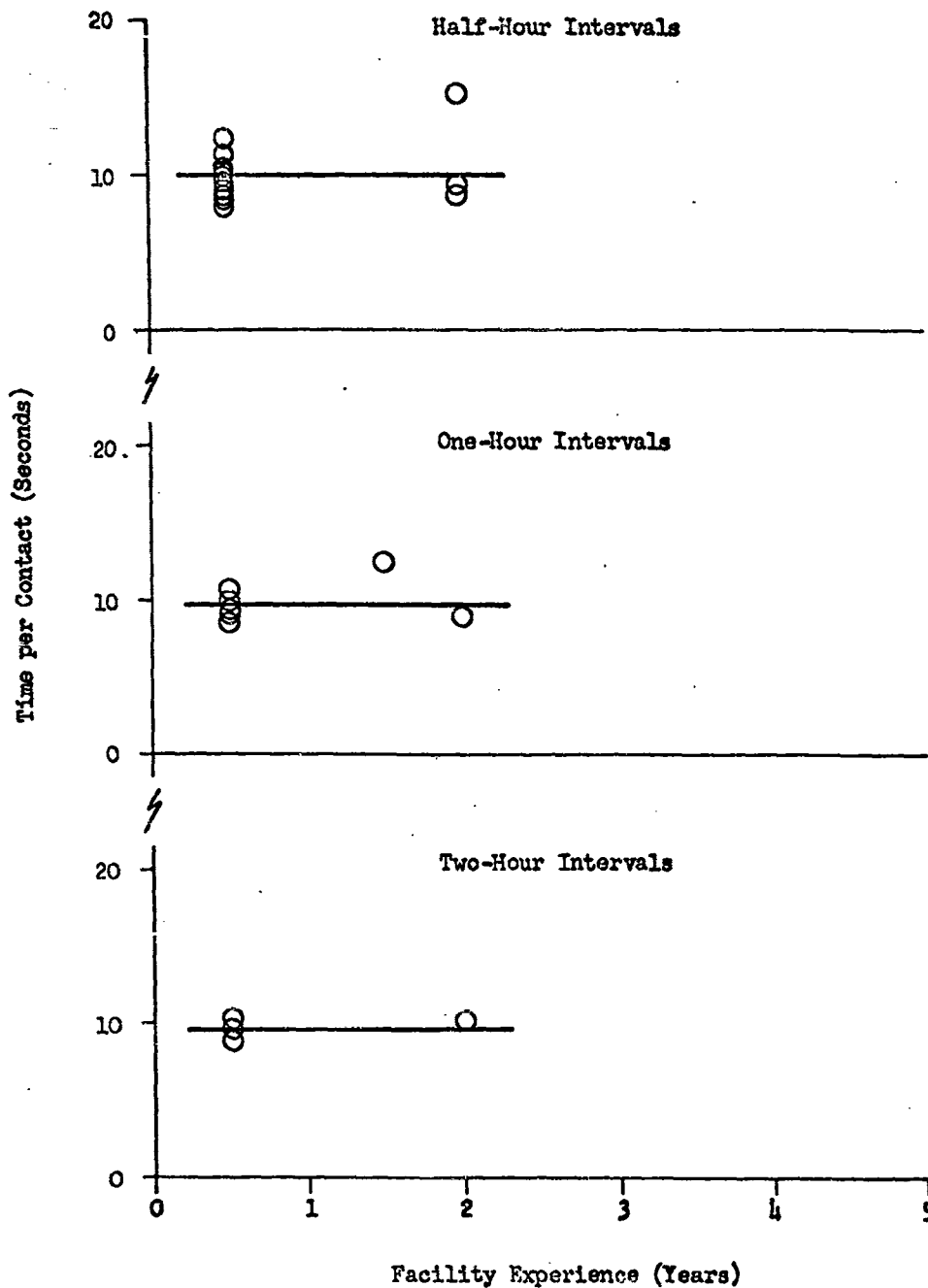
EFFECT OF EXPERIENCE ON LOCAL CONTROL CONTACT TIME

Figure III-86

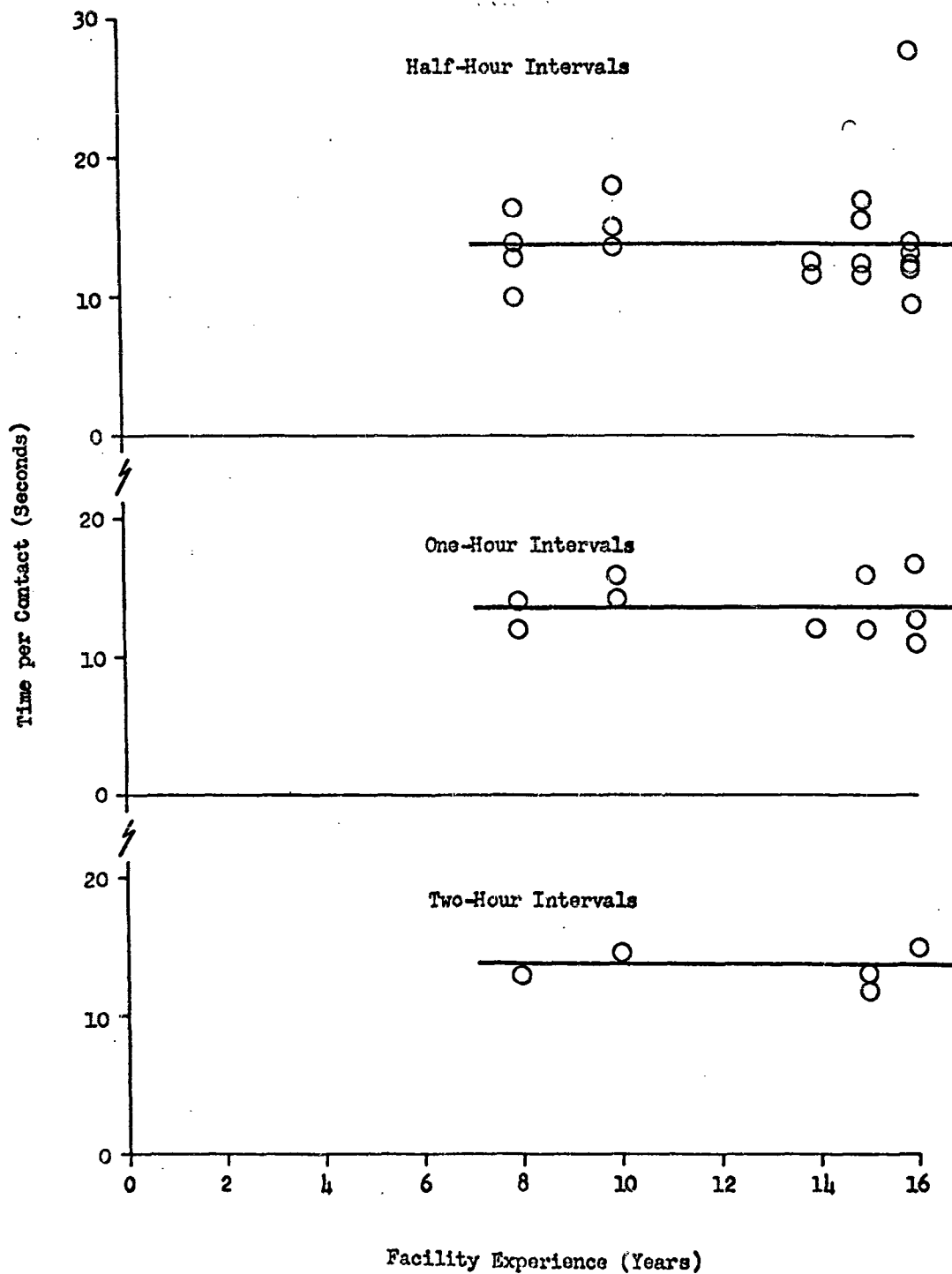
EFFECT OF EXPERIENCE ON ANC APPROACH CONTROL CONTACT TIME

Figure III 87

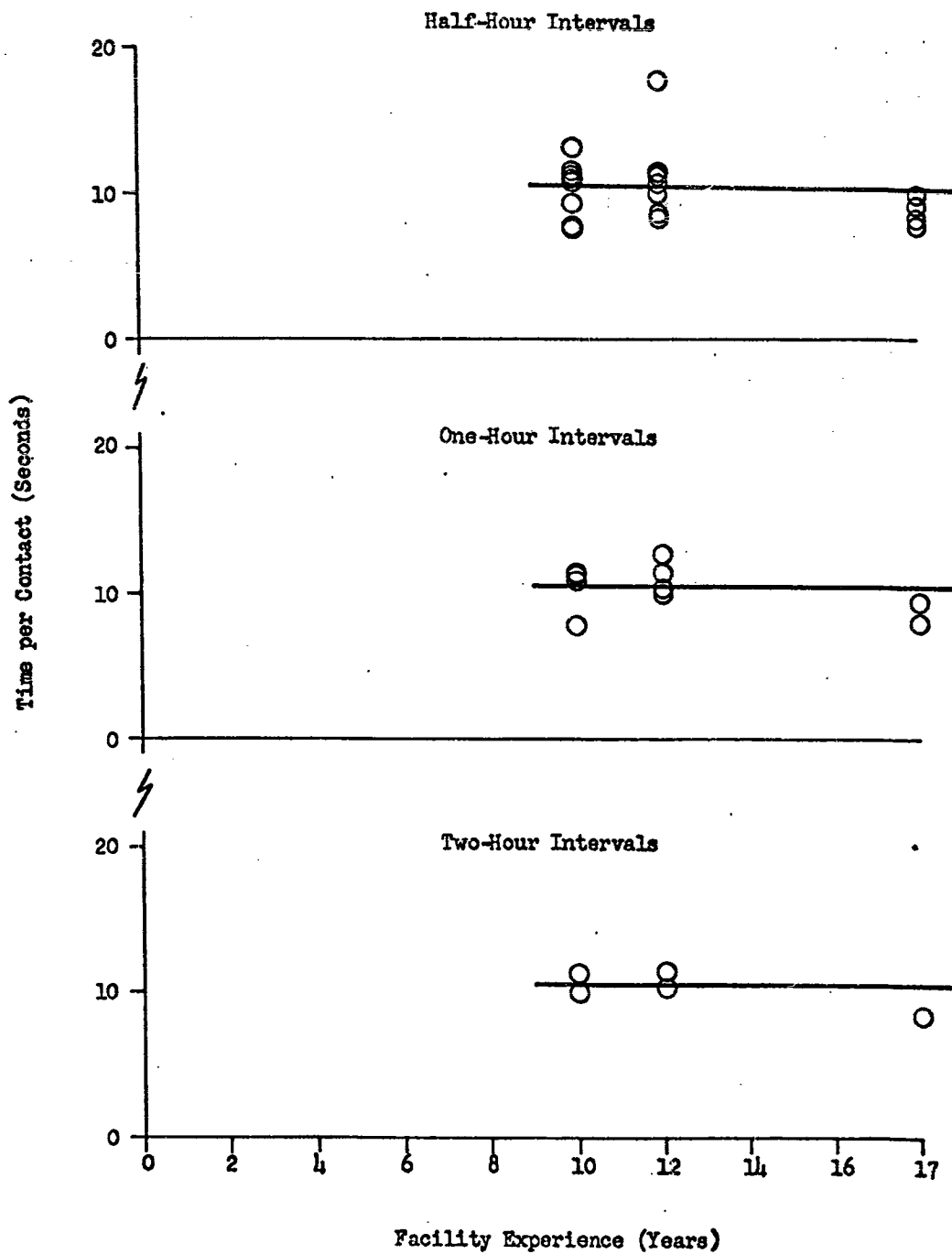
EFFECT OF EXPERIENCE ON ANC DEPARTURE CONTROL CONTACT TIME

Figure III-88

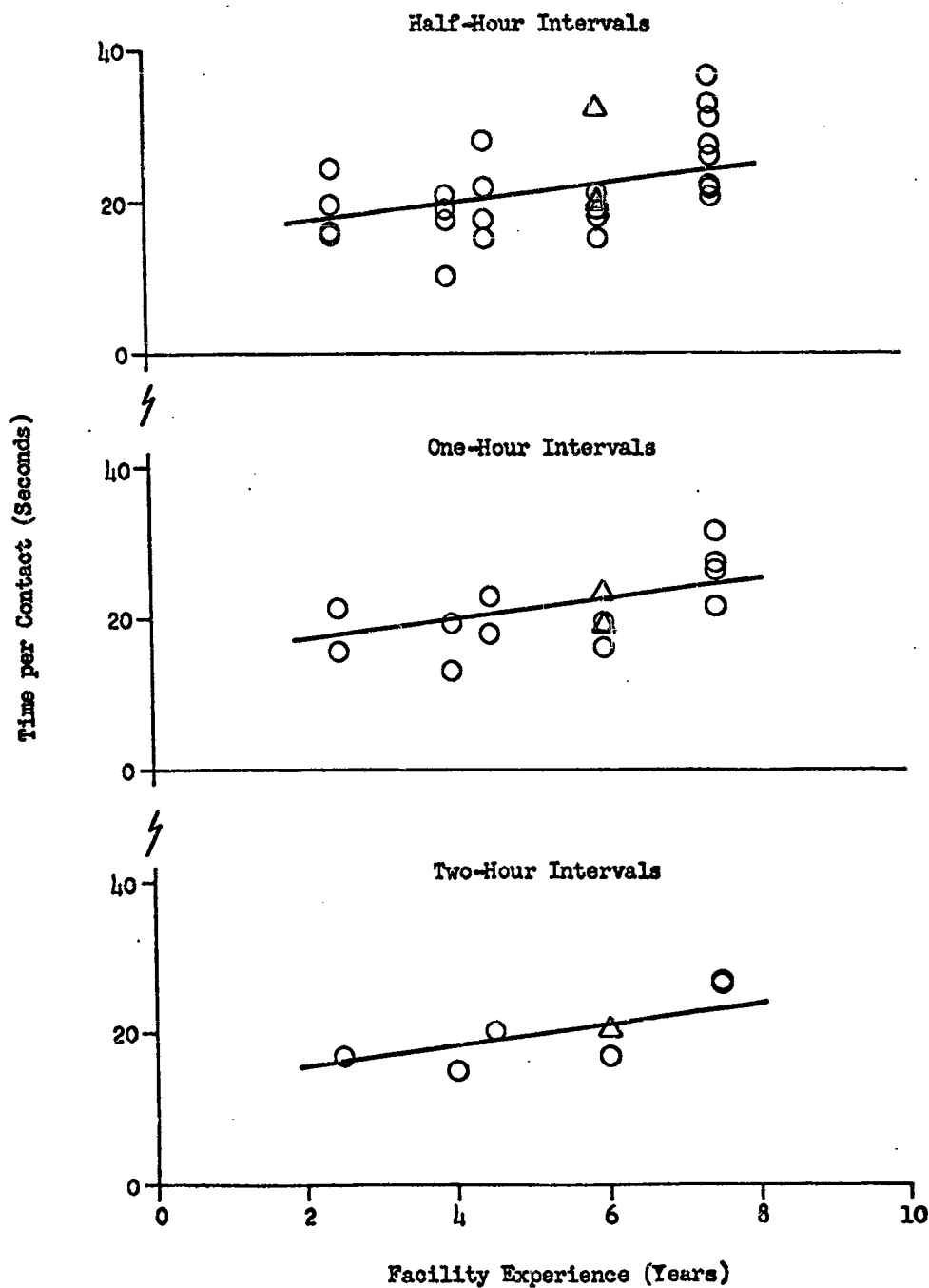
EFFECT OF EXPERIENCE ON D2 RADIO CONTROL CONTACT TIME

Figure III-89

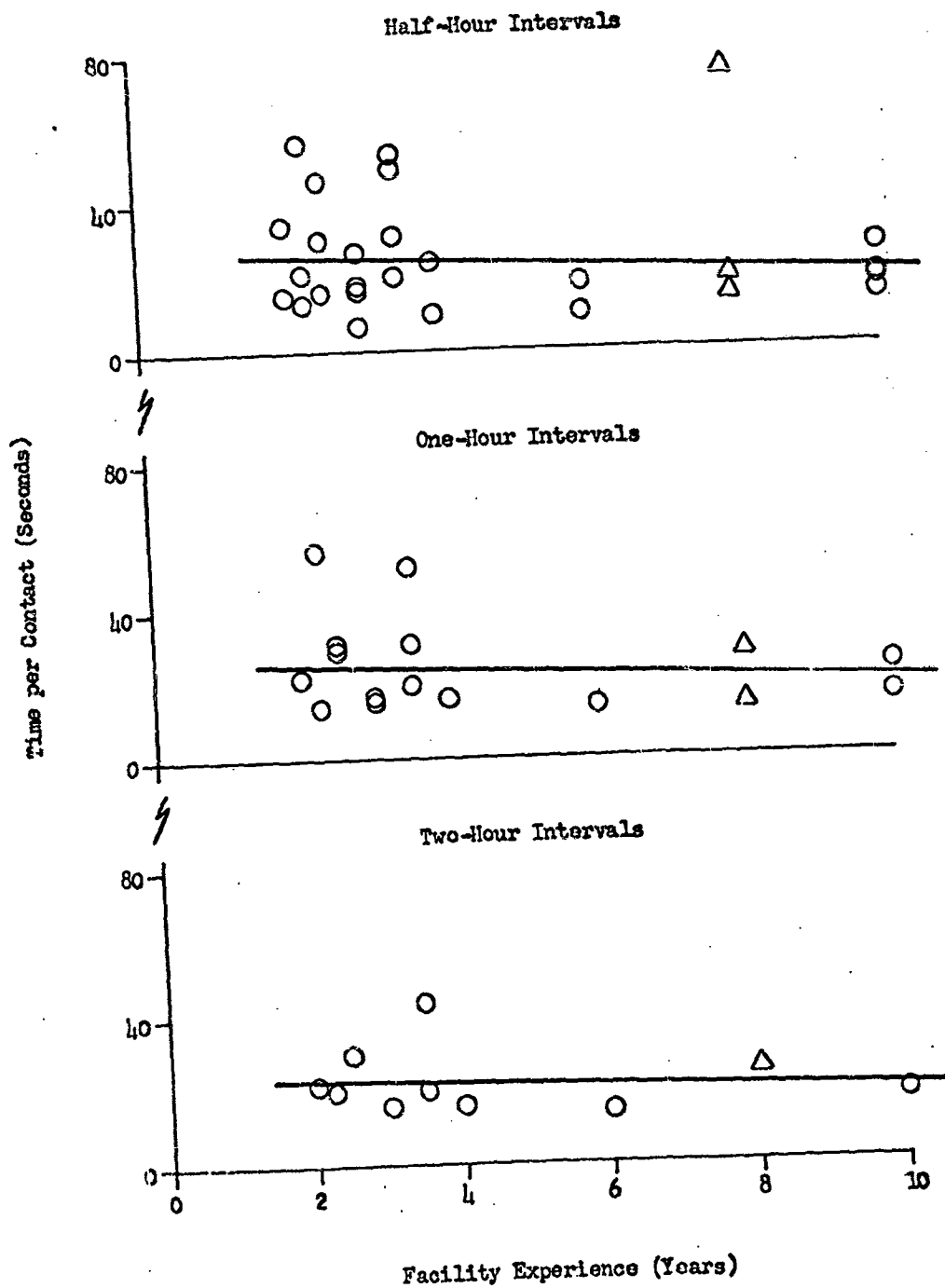
EFFECT OF EXPERIENCE ON D3 RADIO CONTROL CONTACT TIME

Figure III-90

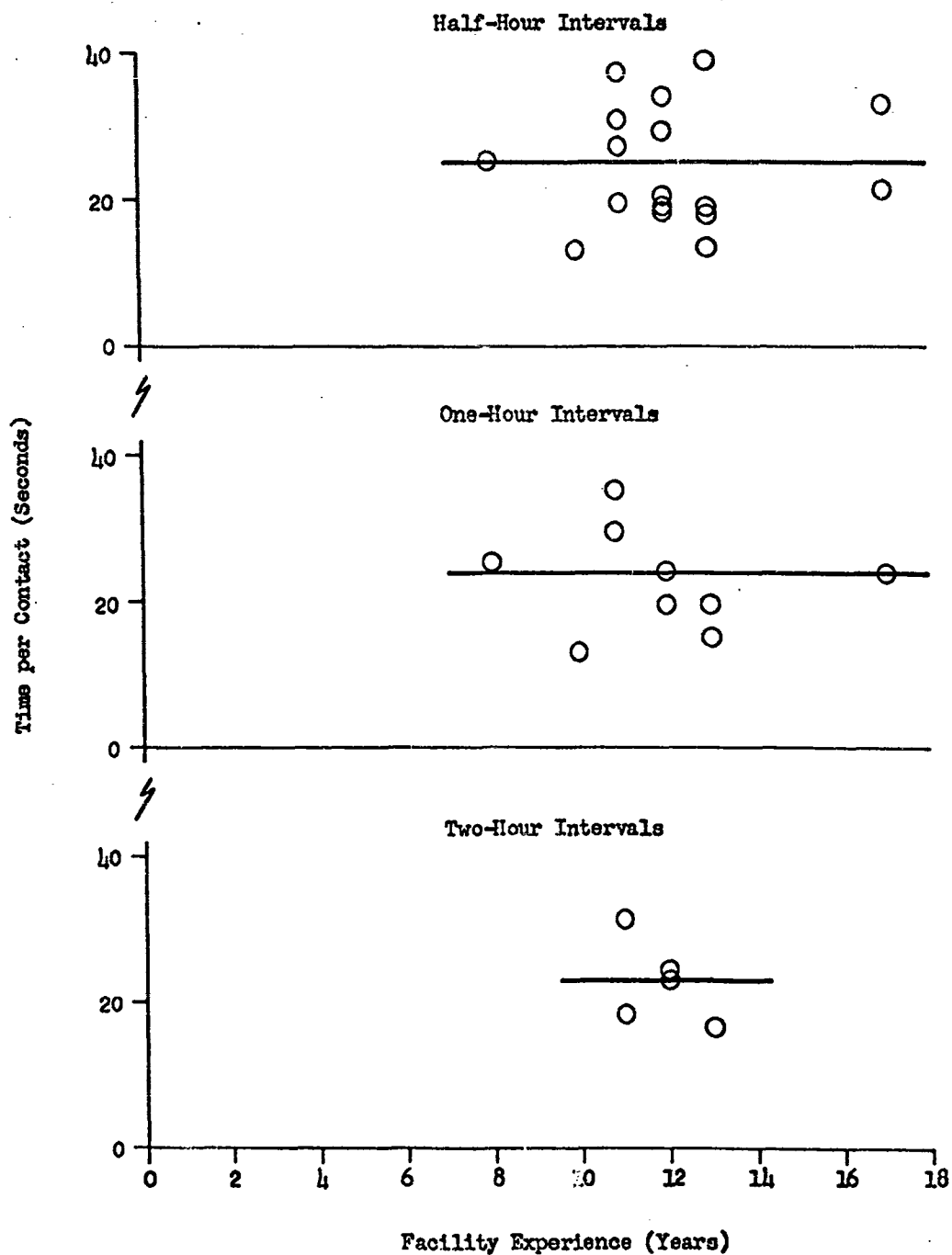
EFFECT OF EXPERIENCE ON RADAR LA CONTROL CONTACT TIME

Figure III-91

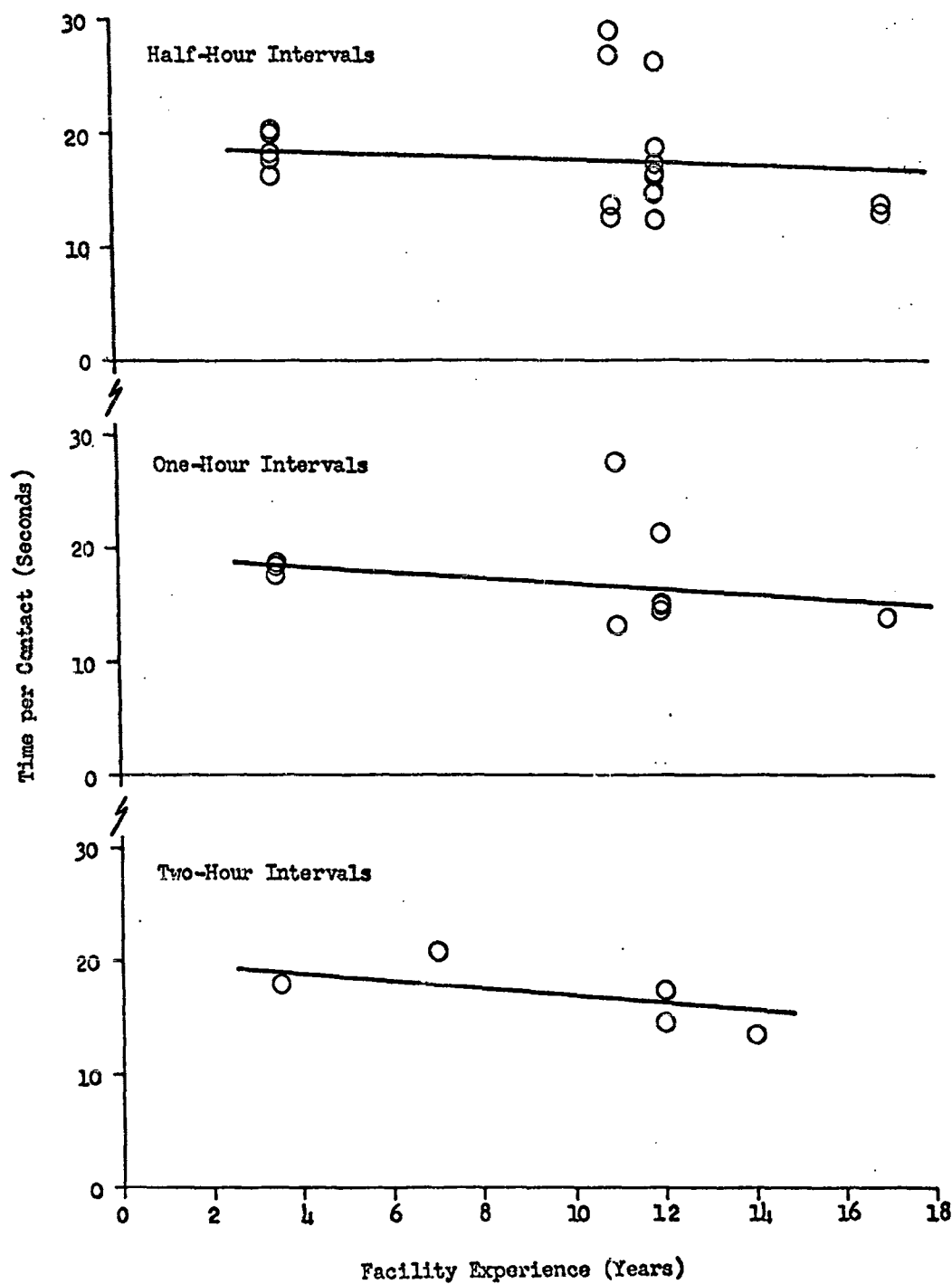
EFFECT OF EXPERIENCE ON RADAR LB CONTROL CONTACT TIME

Figure III-92

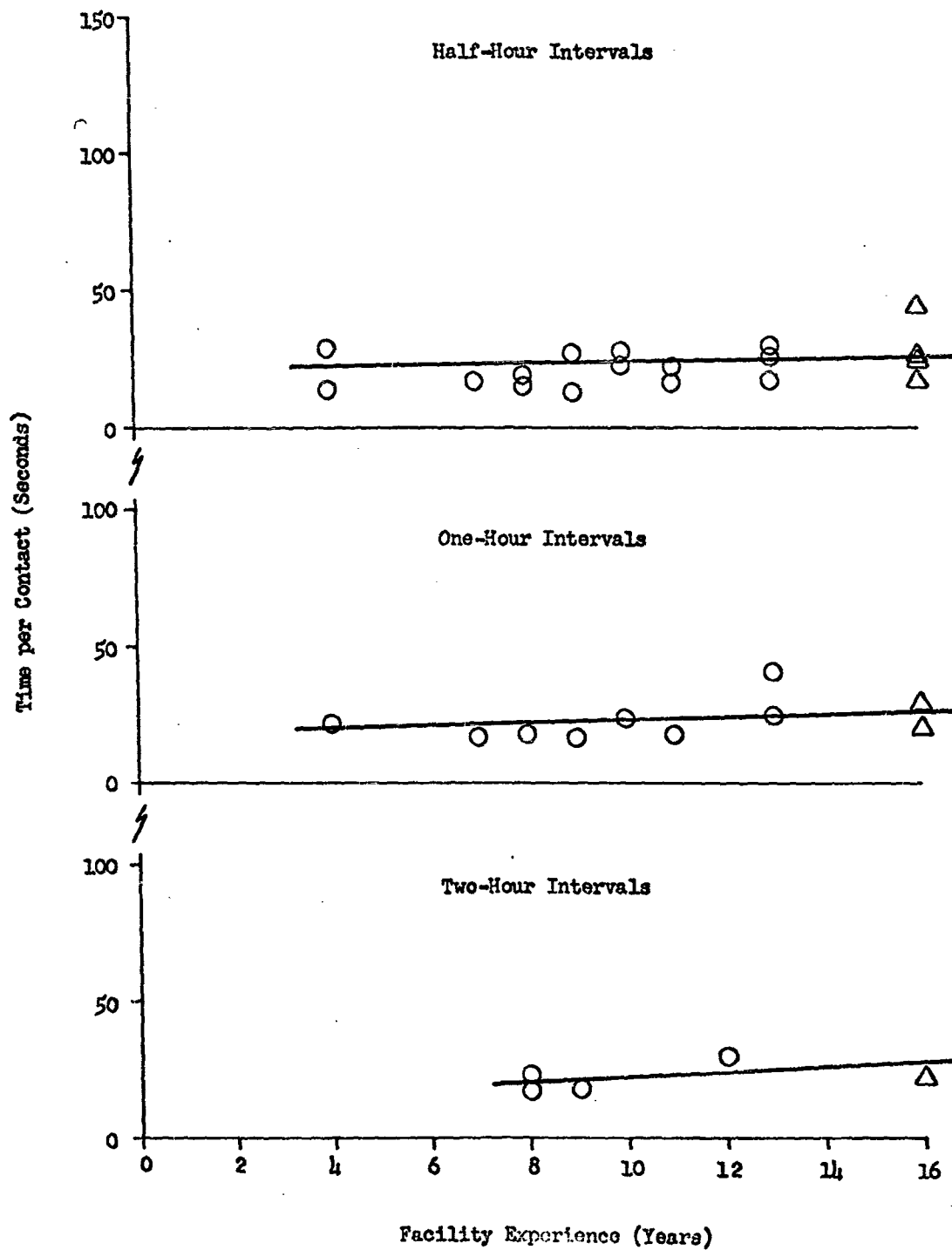
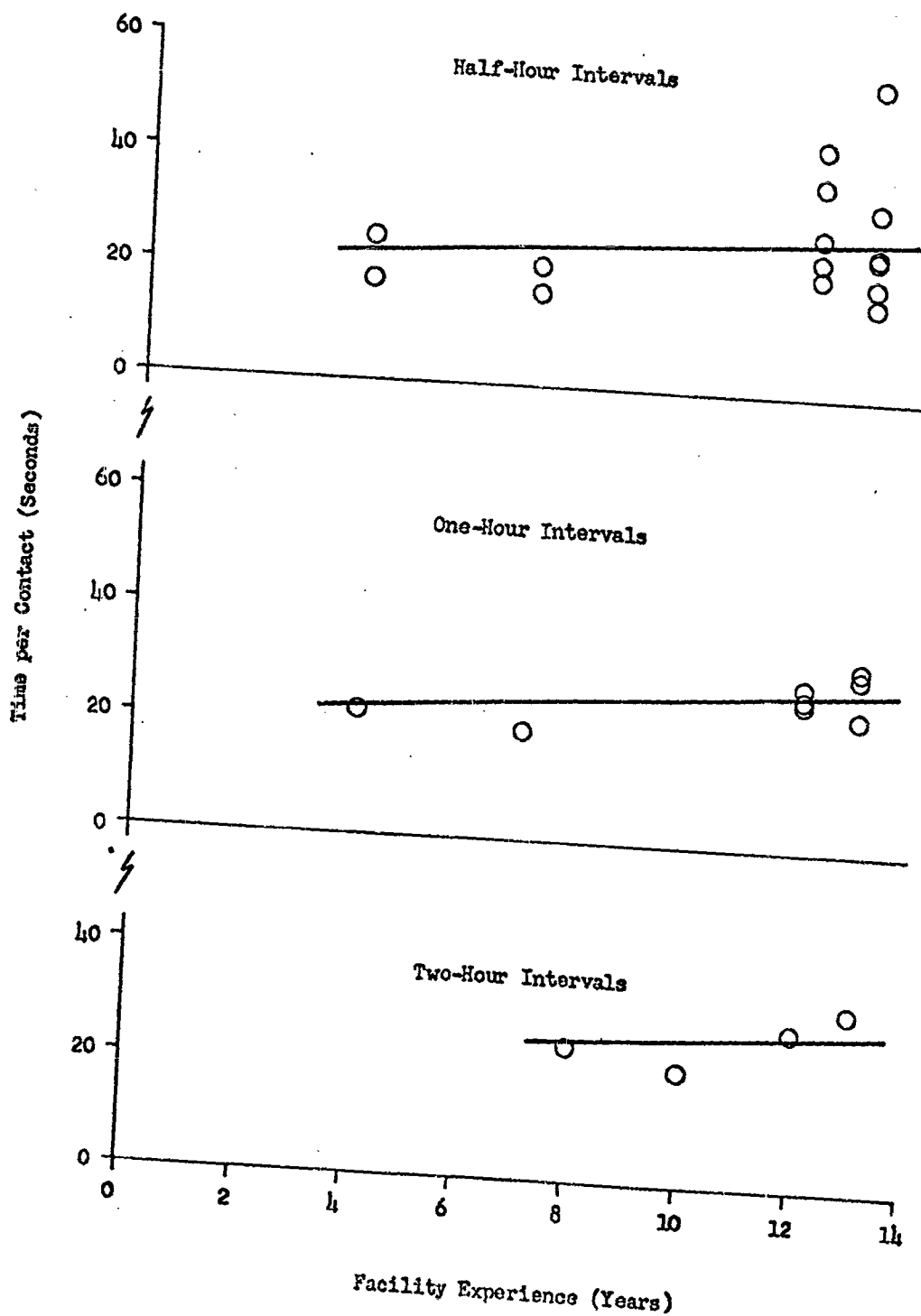
EFFECT OF EXPERIENCE ON RADAR 2A CONTROL CONTACT TIME

Figure III-93

EFFECT OF EXPERIENCE ON RADAR 2B CONTROL CONTACT TIME

5. Effect of Traffic Density on Message Count.

Figures III-94 to III-103 were prepared to explore the relationship between the density measures and the message rate. The top chart on each figure shows the average number of messages per contact over two-hour intervals plotted against the total number of contacts in the corresponding intervals. The lower chart shows the average number of messages per aircraft over two-hour intervals plotted against the total number of aircraft contacted in the corresponding two-hour intervals.

Figure III-94

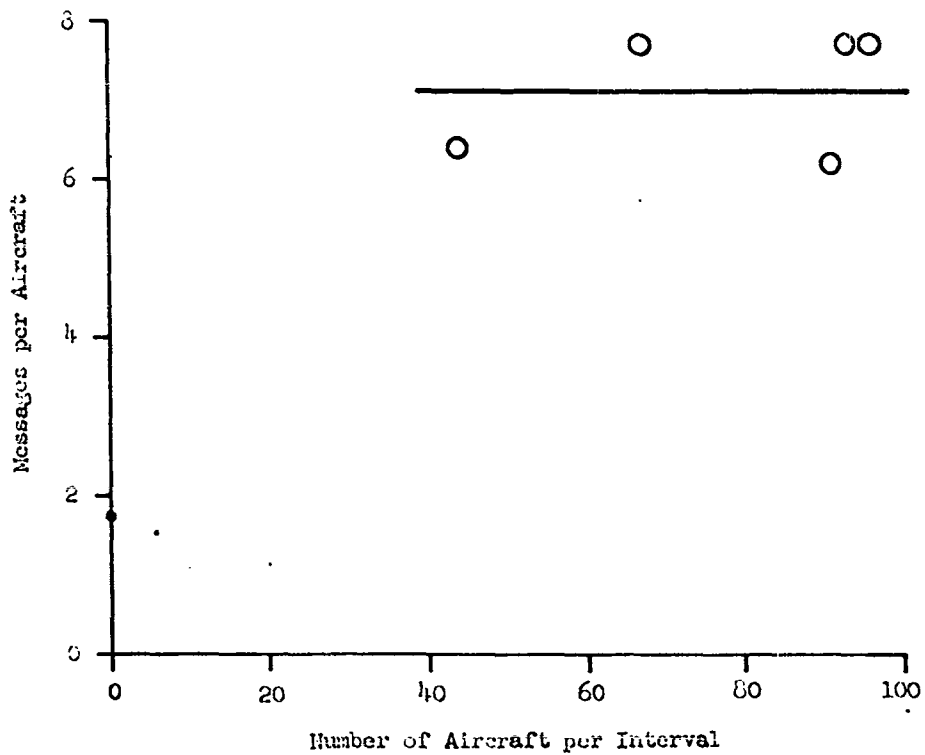
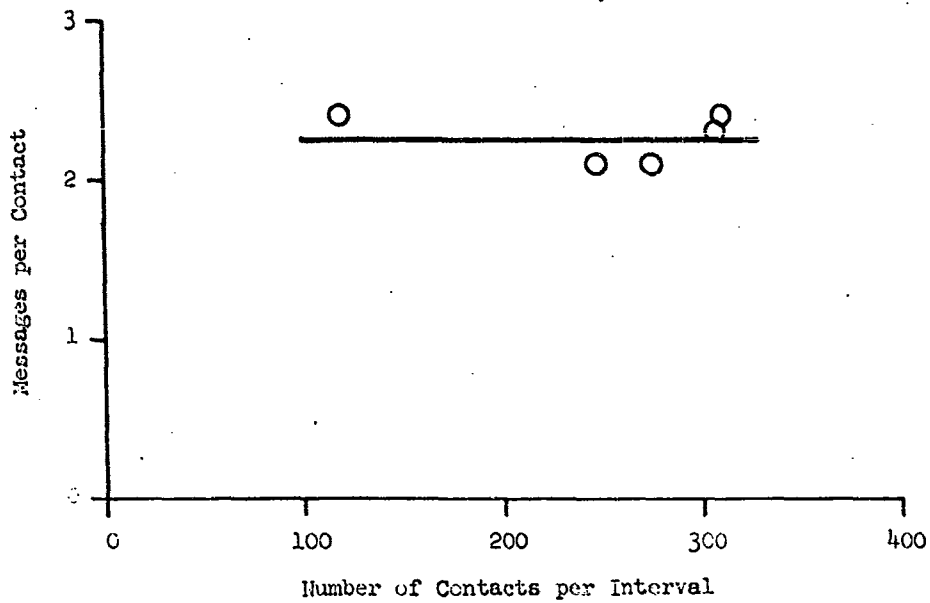
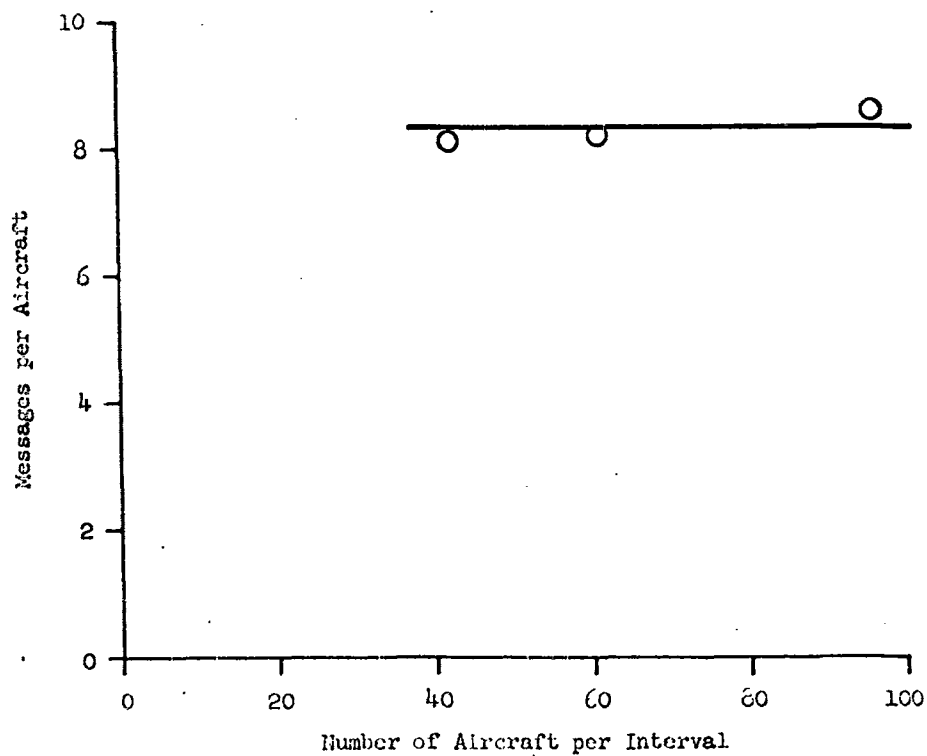
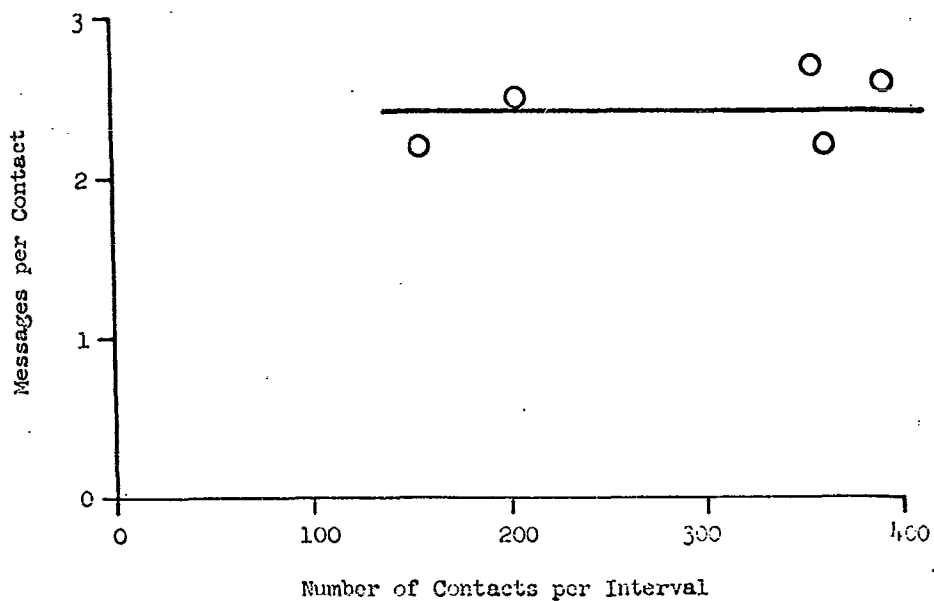
EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT GROUND CONTROL
(Two-Hour Intervals)

Figure III-95

EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT LOCAL CONTROL

(Two-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT ANC APPROACH CONTROL

(Two-Hour Intervals)

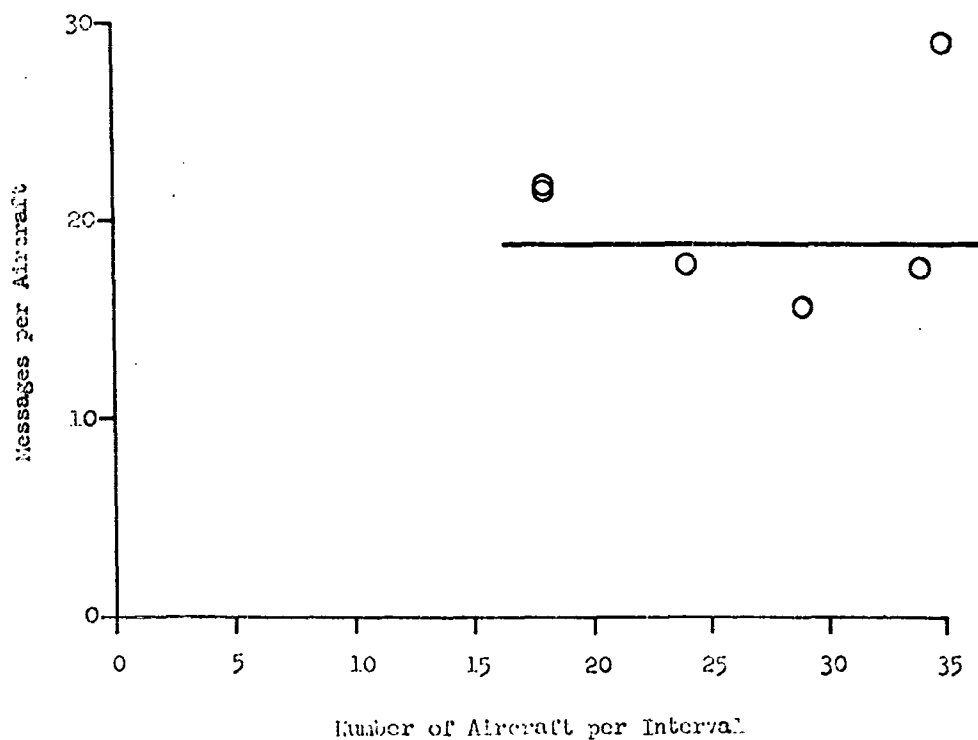
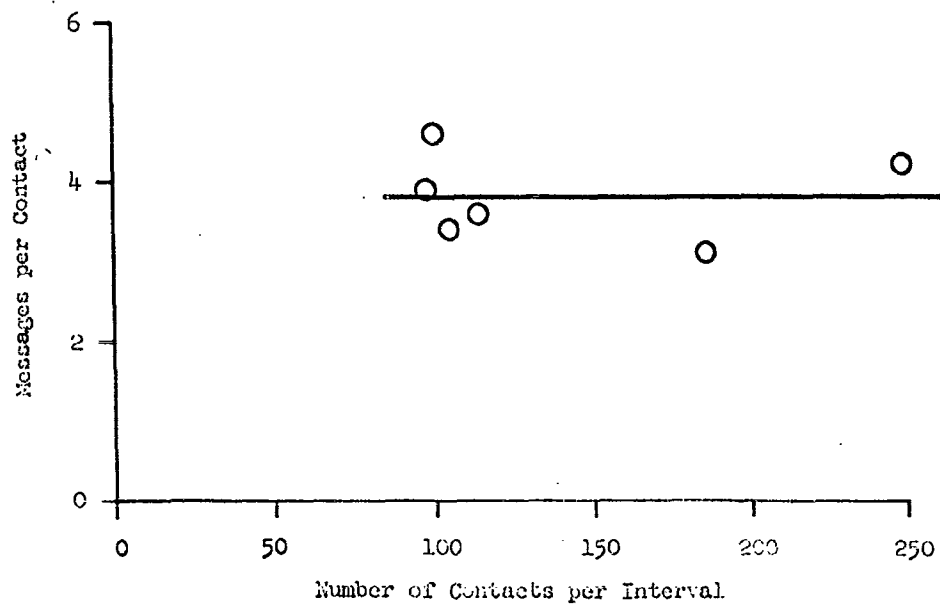
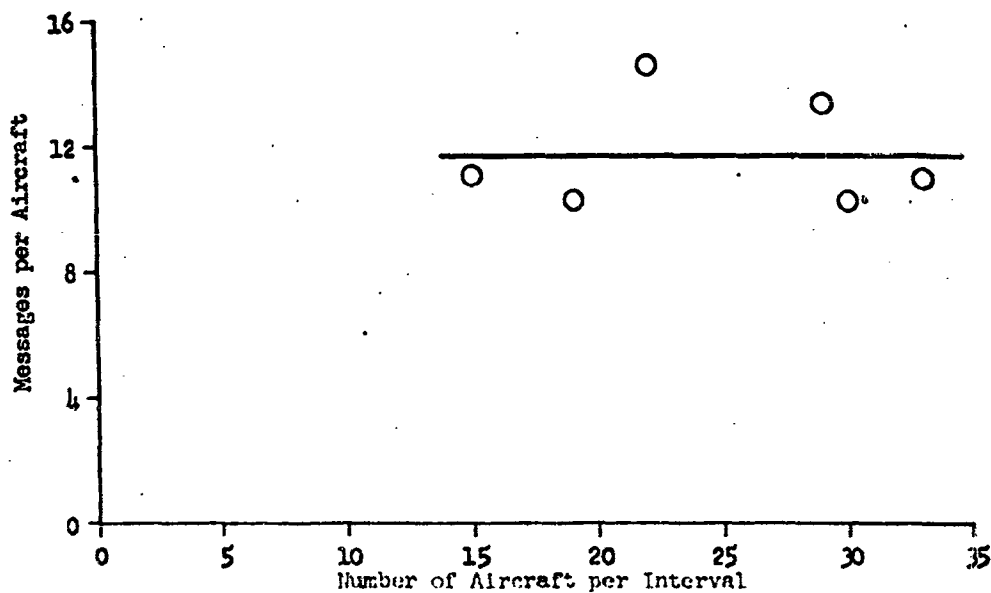
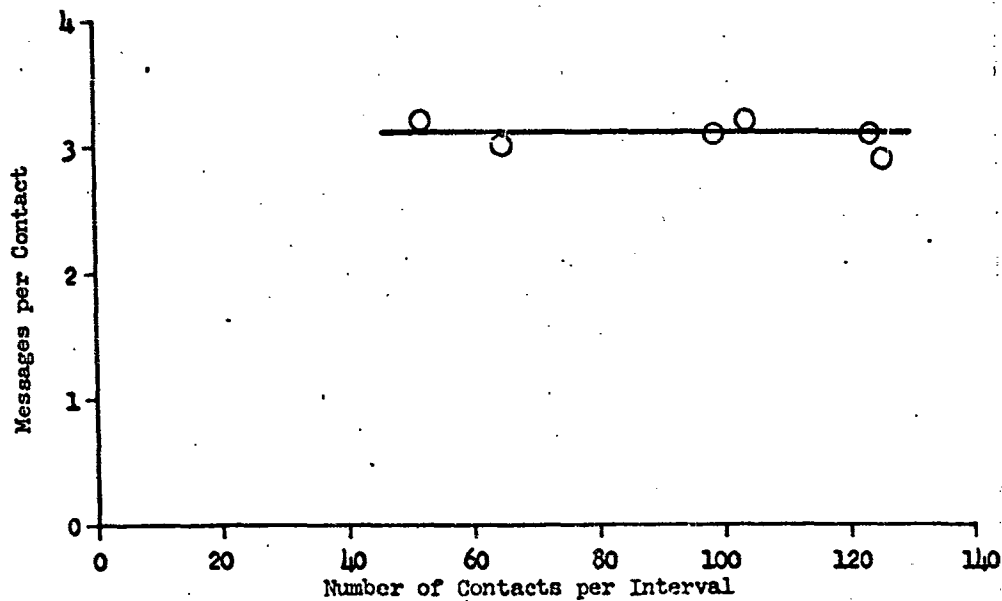


Figure III-96

EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT ANC DEPARTURE CONTROL

(Two-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT D2 RADIO CONTROL

(Two-Hour Intervals)

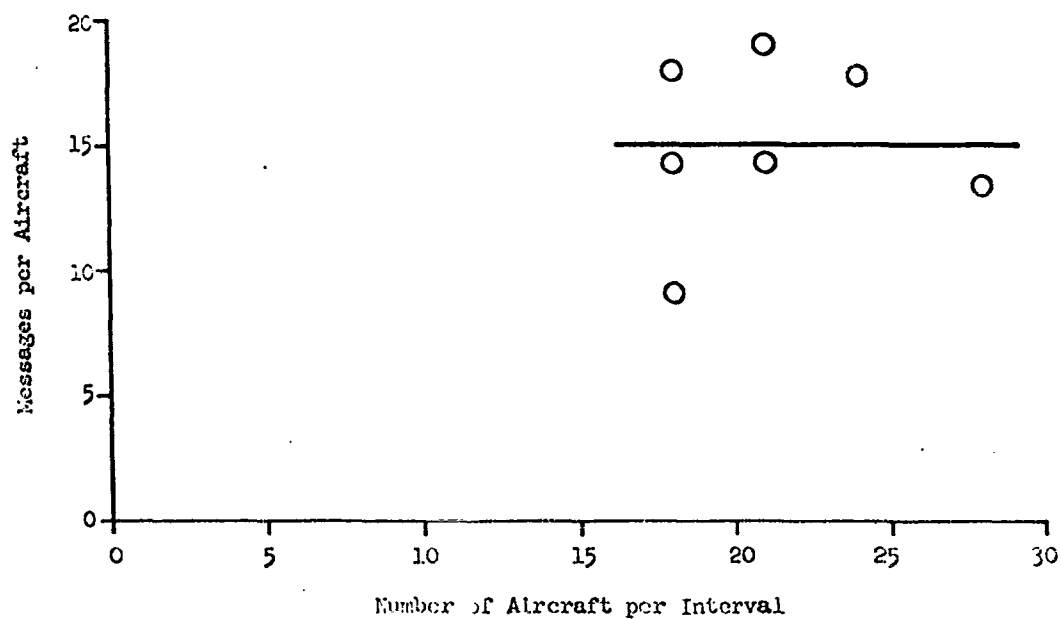
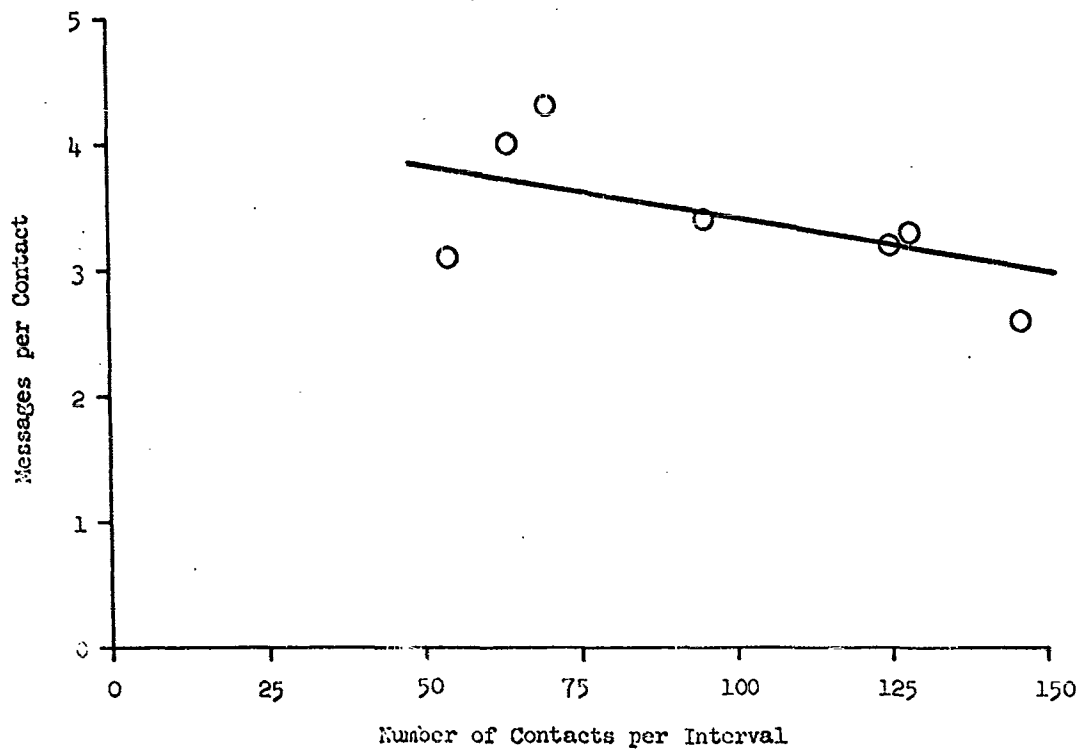


Figure III-99

EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT D3 RADIO CONTROL

(Two-Hour Intervals)

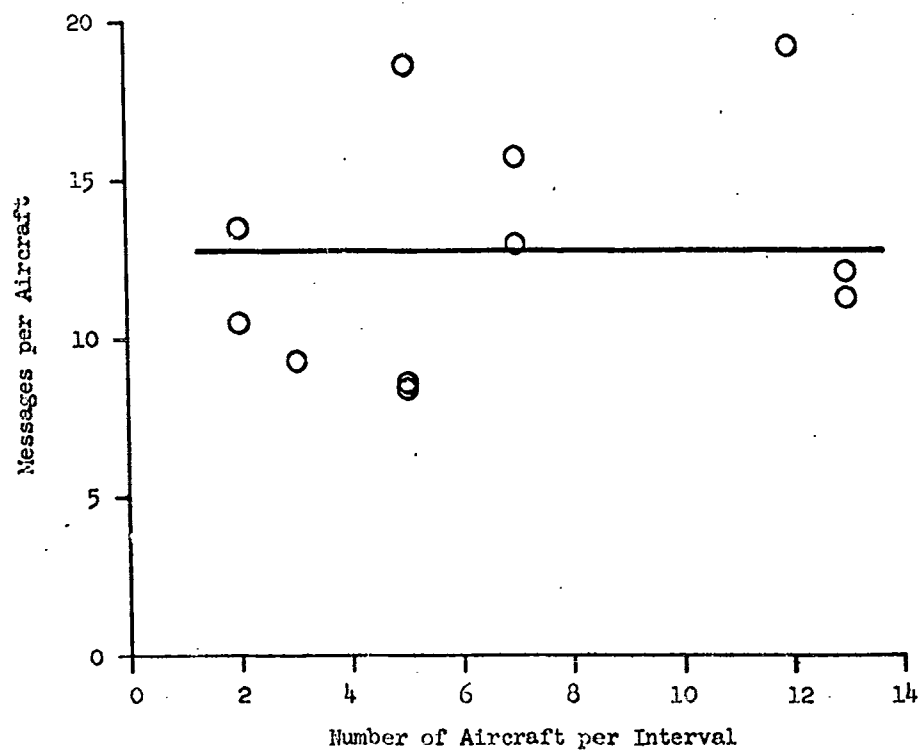
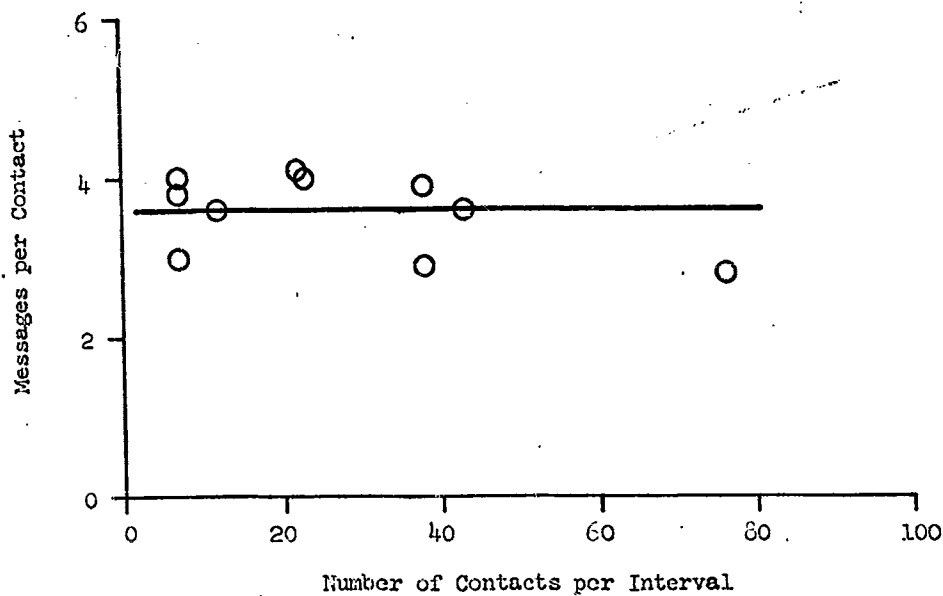
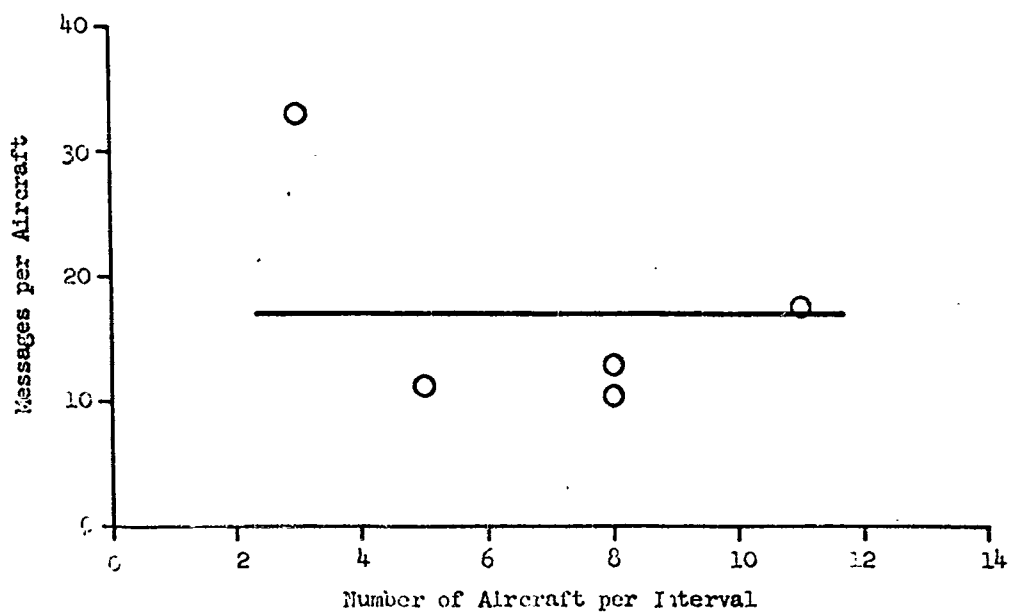
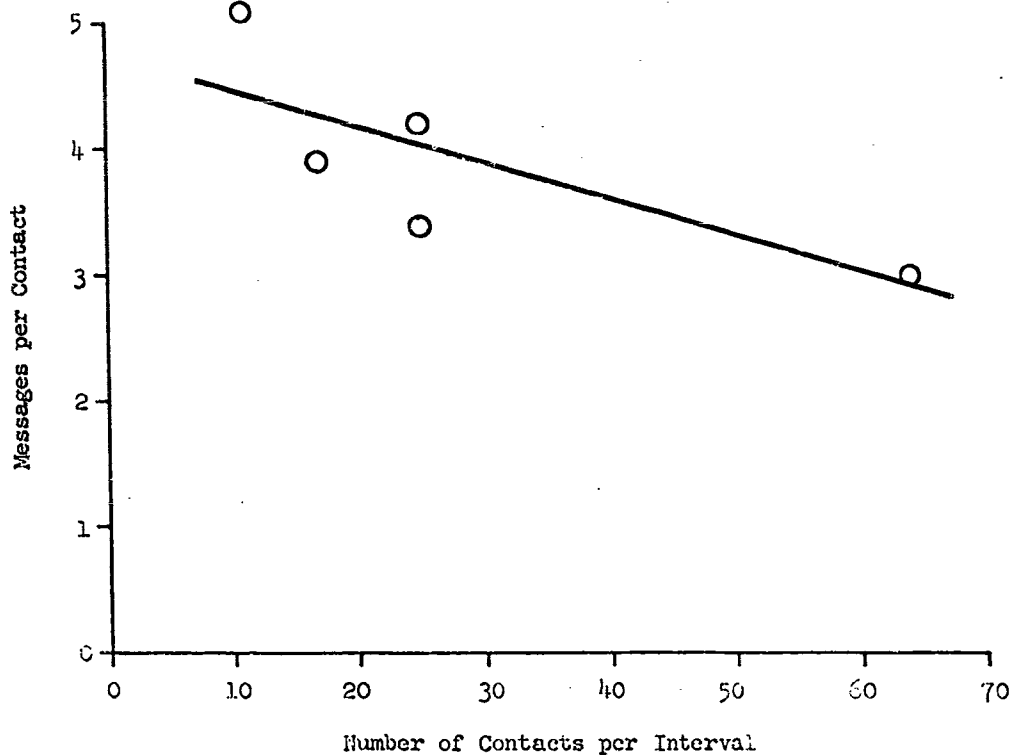


Figure III-100

EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT RADAR 1A CONTROL

(Two-Hour Intervals)



EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT RADAR 1B CONTROL

(Two-Hour Intervals)

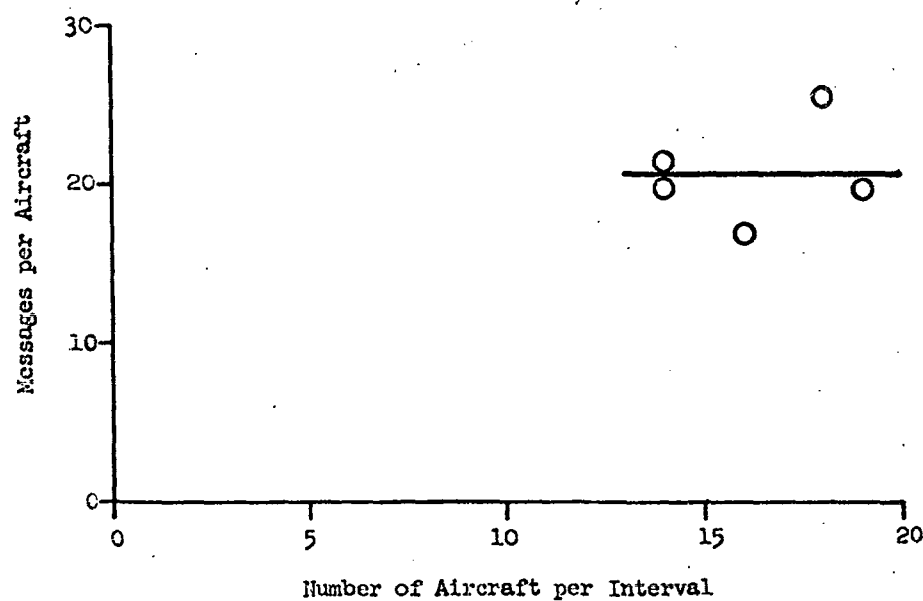
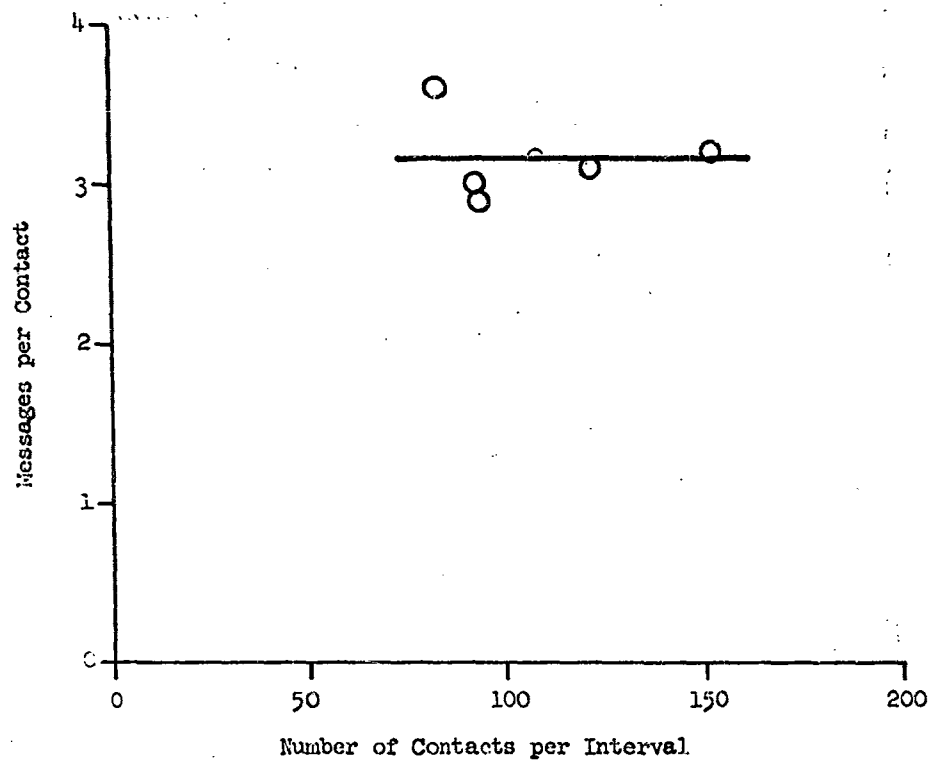


Figure III-102

TM 339-84
Volume II
June 1960
Page 376EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT RADAR 2A CONTROL

(Two-Hour Intervals)

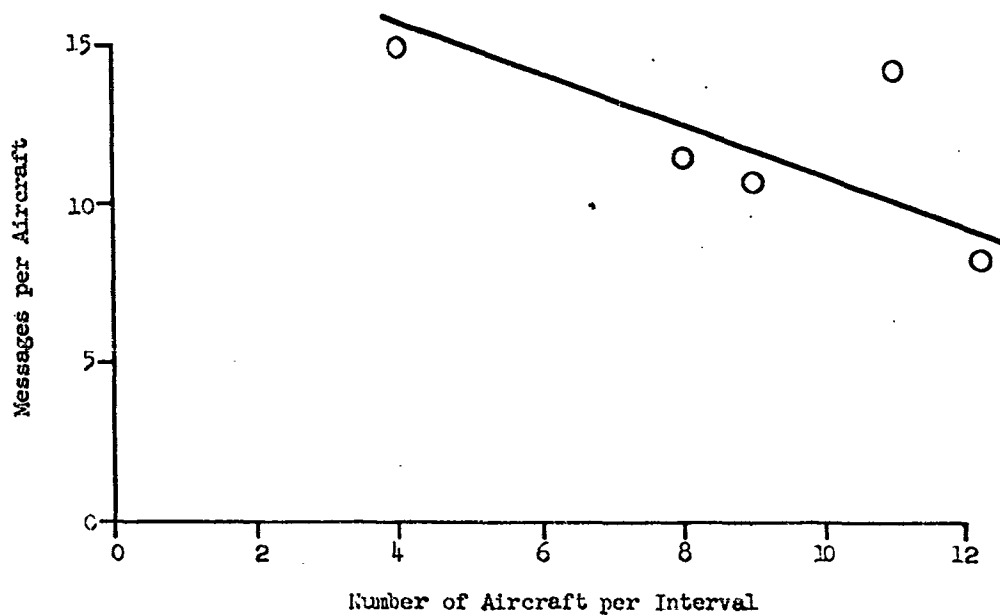
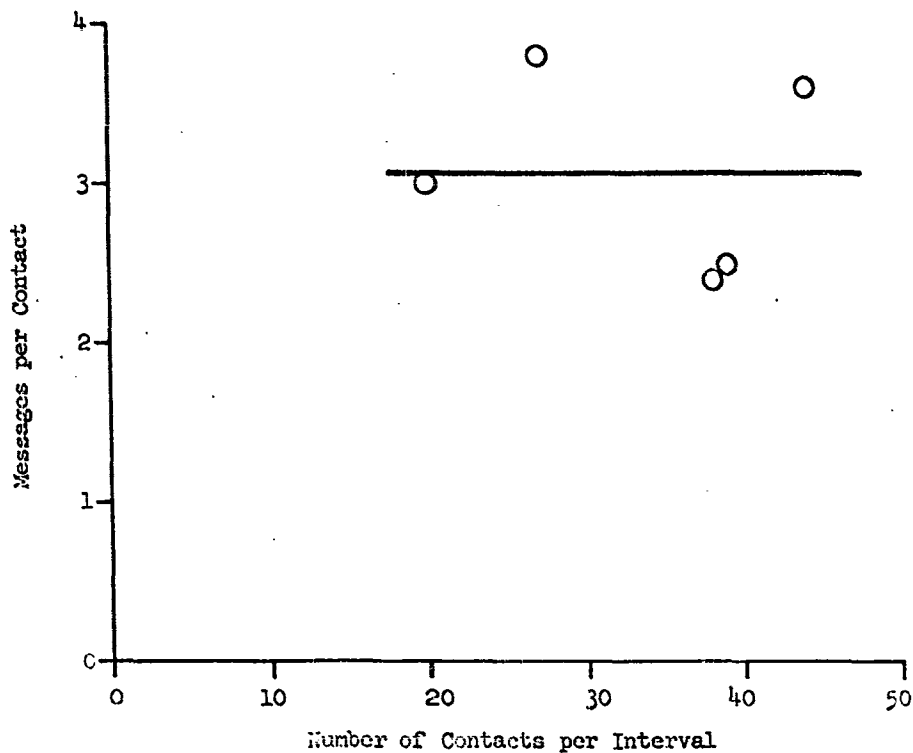
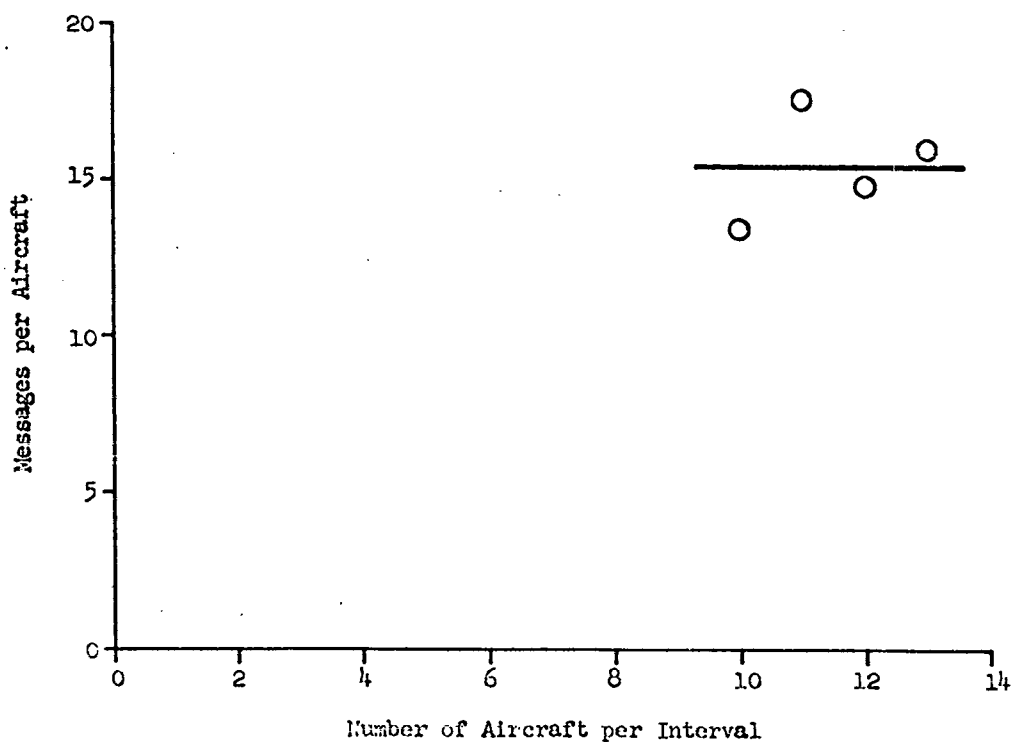
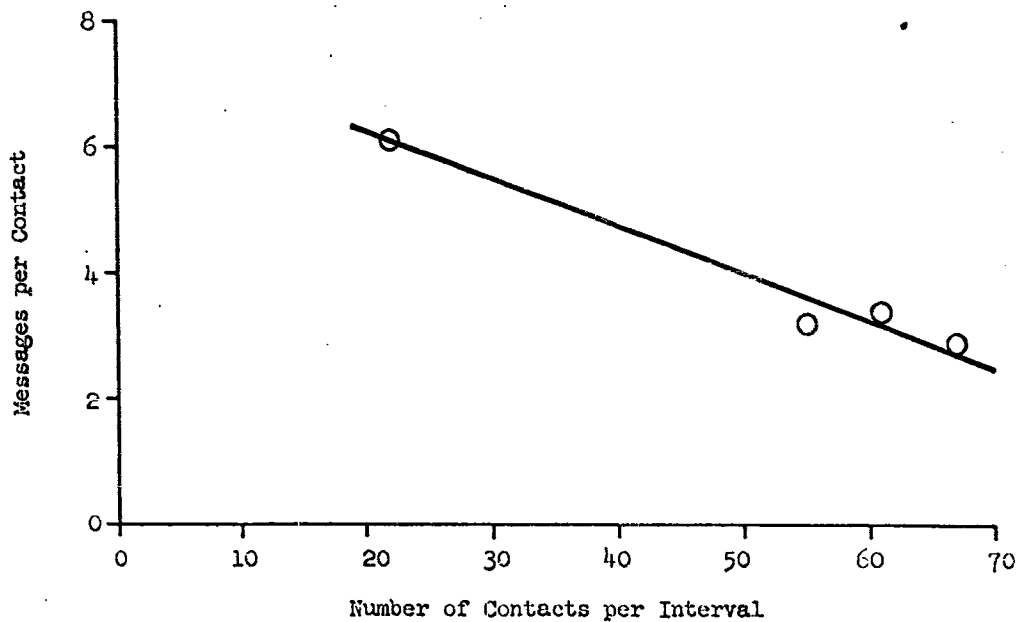


Figure III-103EFFECT OF TRAFFIC DENSITY ON MESSAGE COUNT AT RADAR 2B CONTROL

(Two-Hour Intervals)



6. R/T Communications Load Versus Message Count.

The relationships between communications load and message count are further illustrated in Figures III-104 to III-108. In the chart cycle the average number of messages per half-hour interval is related to the average R/T communications load in the corresponding interval.

Figure III-104

R/T COMMUNICATIONS LOAD VERSUS MESSAGE COUNT

(Half-Hour Intervals)

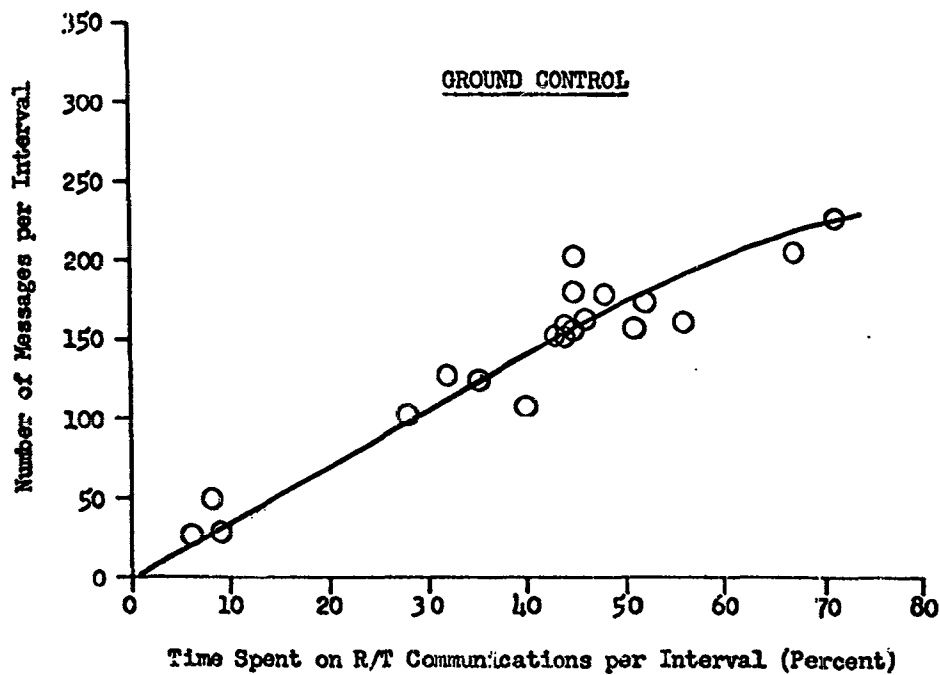
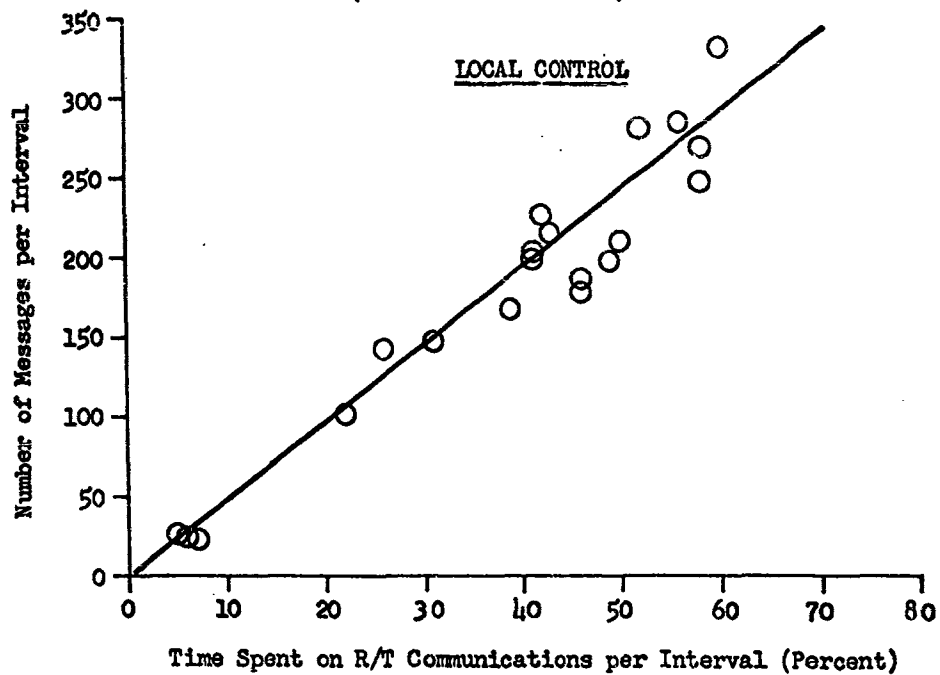


Figure III-105

R/T COMMUNICATIONS LOAD VERSUS MESSAGE COUNT

(Half-Hour Intervals)

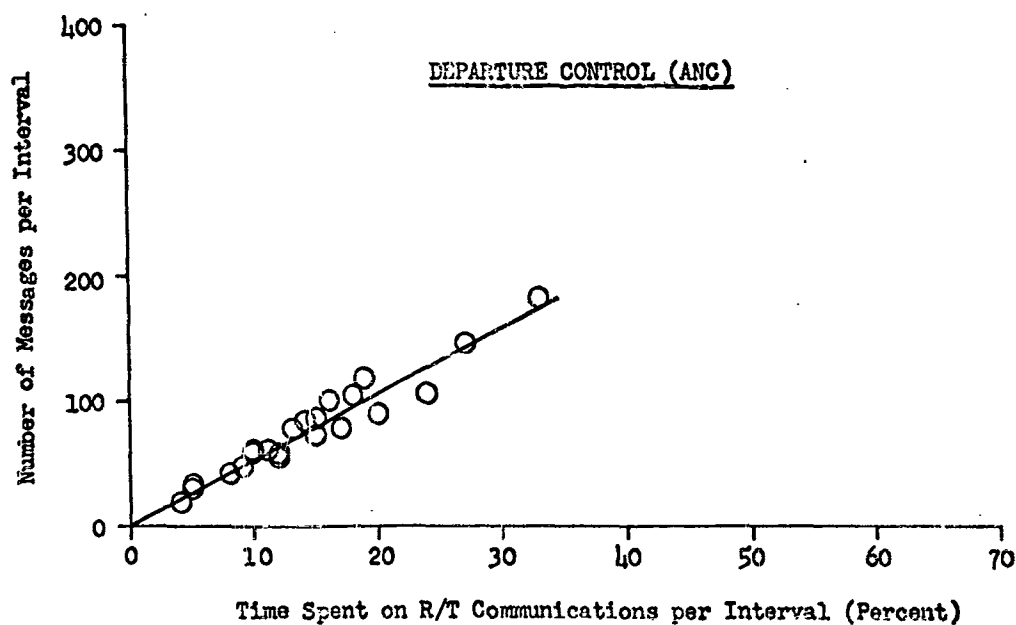
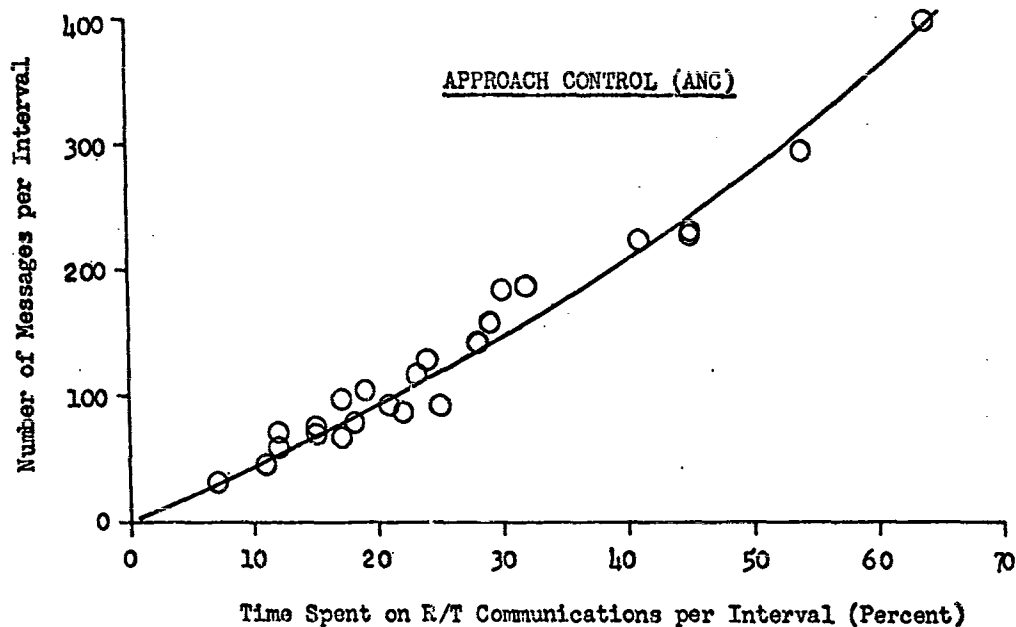


Figure III-106

R/T COMMUNICATIONS LOAD VERSUS MESSAGE COUNT

(Half-Hour Intervals)

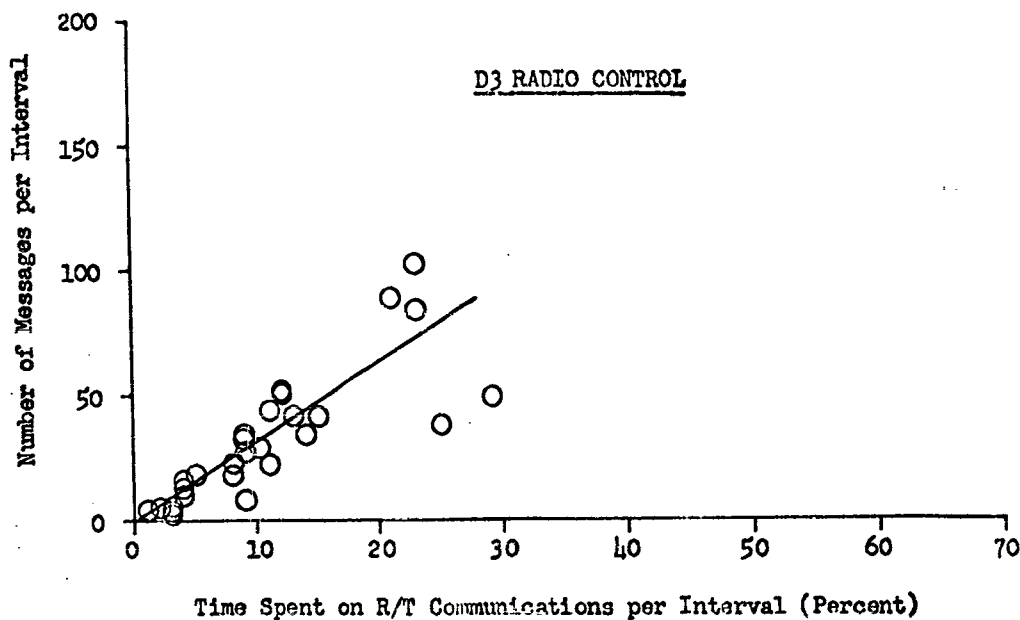
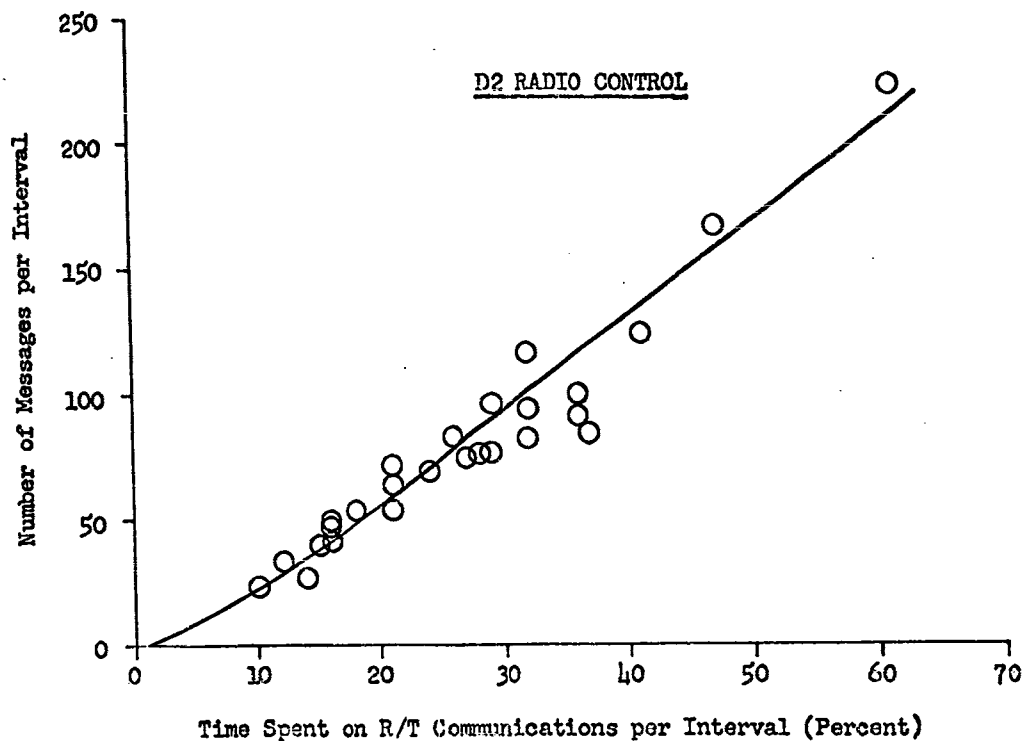


Figure III-107

R/T COMMUNICATIONS LOAD VERSUS MESSAGE COUNT

(Half-Hour Intervals)

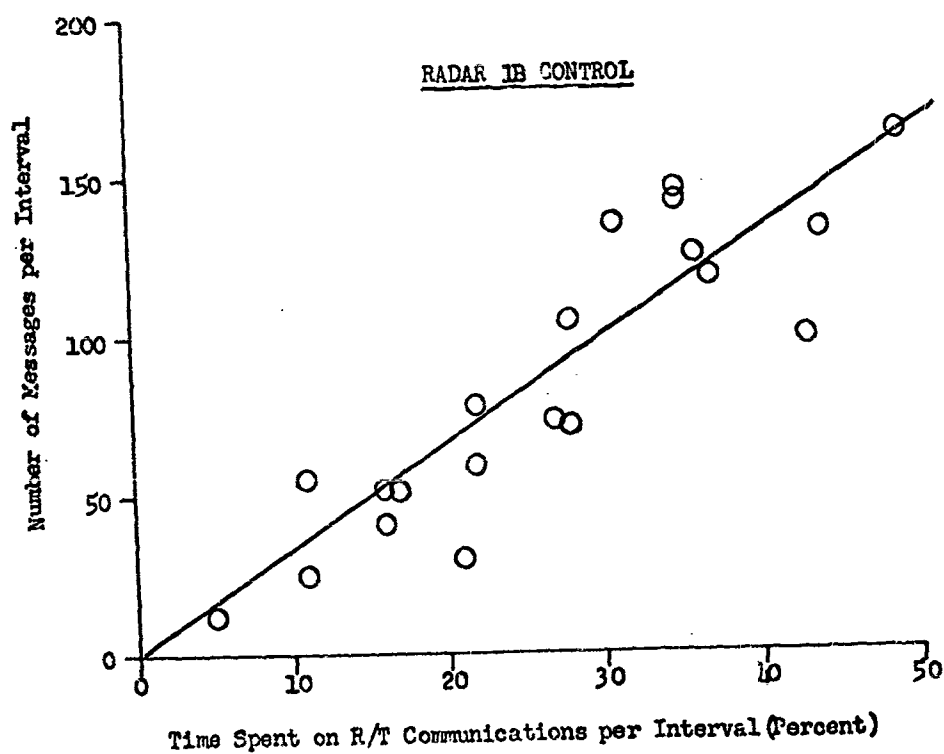
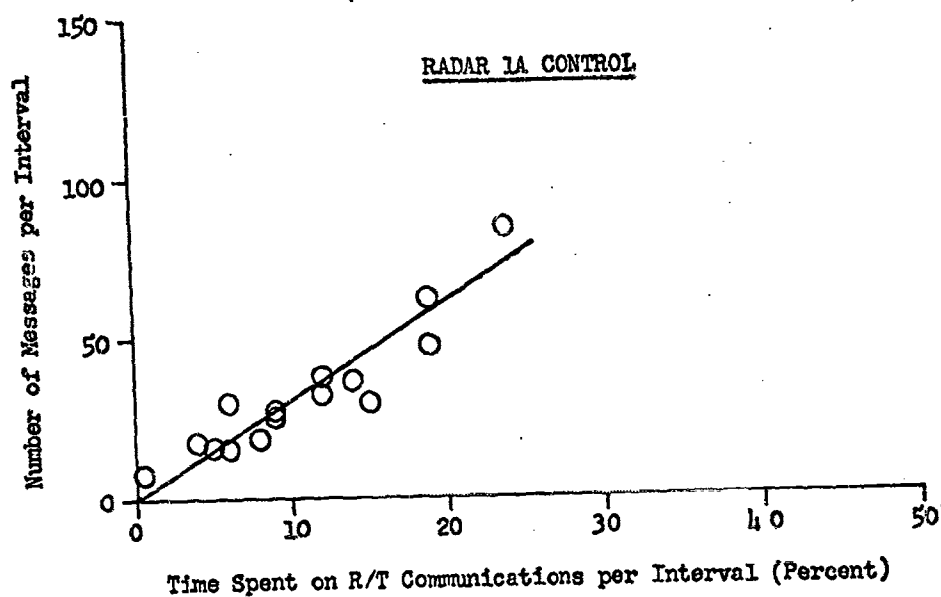
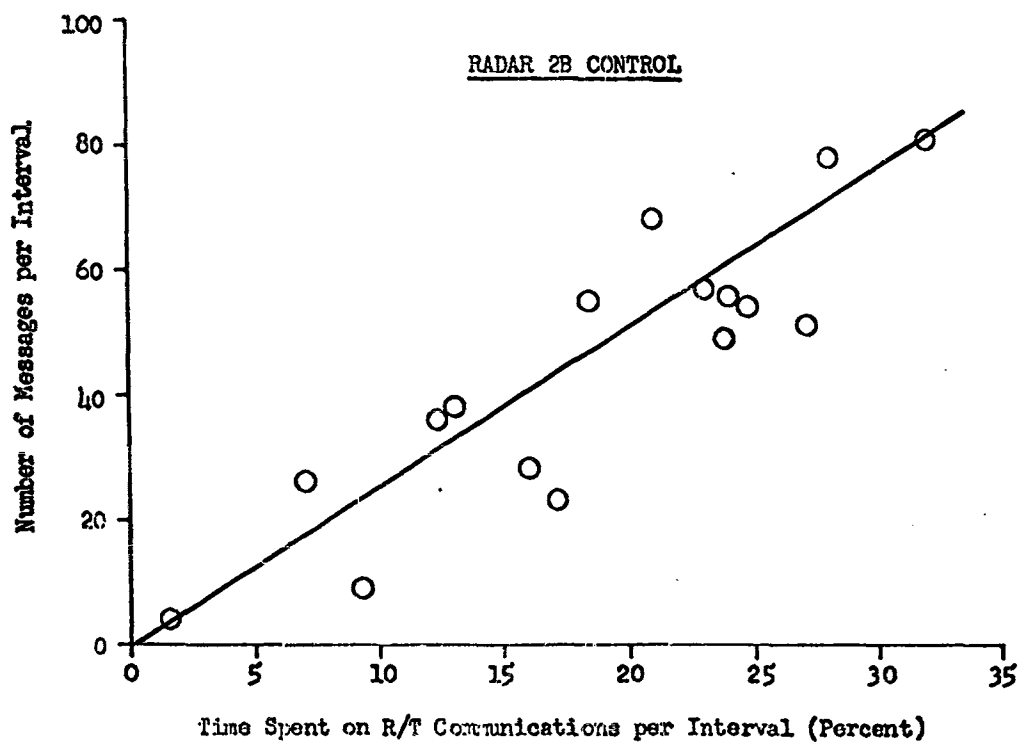
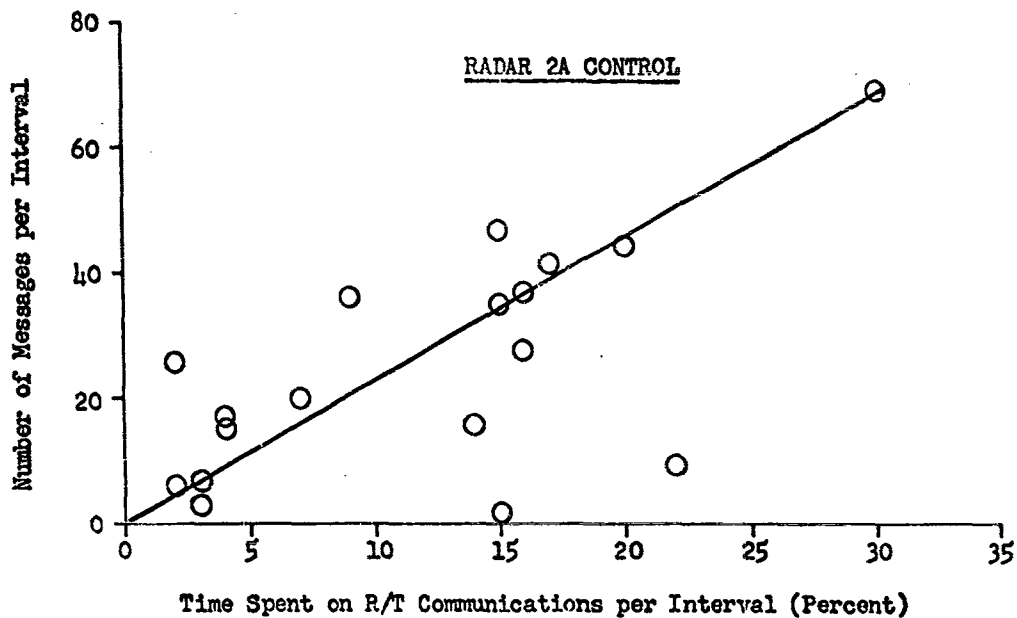


Figure III-108

R/T COMMUNICATIONS LOAD VERSUS MESSAGE COUNT

(Half-Hour Intervals)



7. Traffic Load Versus R/T Communications Load

Figure III-109 summarizes the relationships between traffic load and R/T communications load for all of the control positions which were studied. Linear extrapolation to the 100% communications level was made and the dotted portion of each line represents the extrapolation. The point at which these lines reach the 100% communications level represents the number of aircraft which would normally result in communications saturation for the controller. Because of variation in the number of aircraft which can produce a given R/T communications load, and because of some uncertainty in the behavior of the graphs at the near-saturation level, it is more meaningful and accurate to express this saturation as a range of values rather than a single value. The range from the minimum to the maximum number of planes which could produce R/T communications saturation is shown in Table III-1.

Figures III-110 to III-115 illustrate the absolute minimum and maximum communications saturation levels which were established by drawing a boundary line through the extreme point on each side of the mean line.

Figure III-109

TRAFFIC LOAD VERSUS R/T COMMUNICATIONS LOAD AT ALL POSITIONS

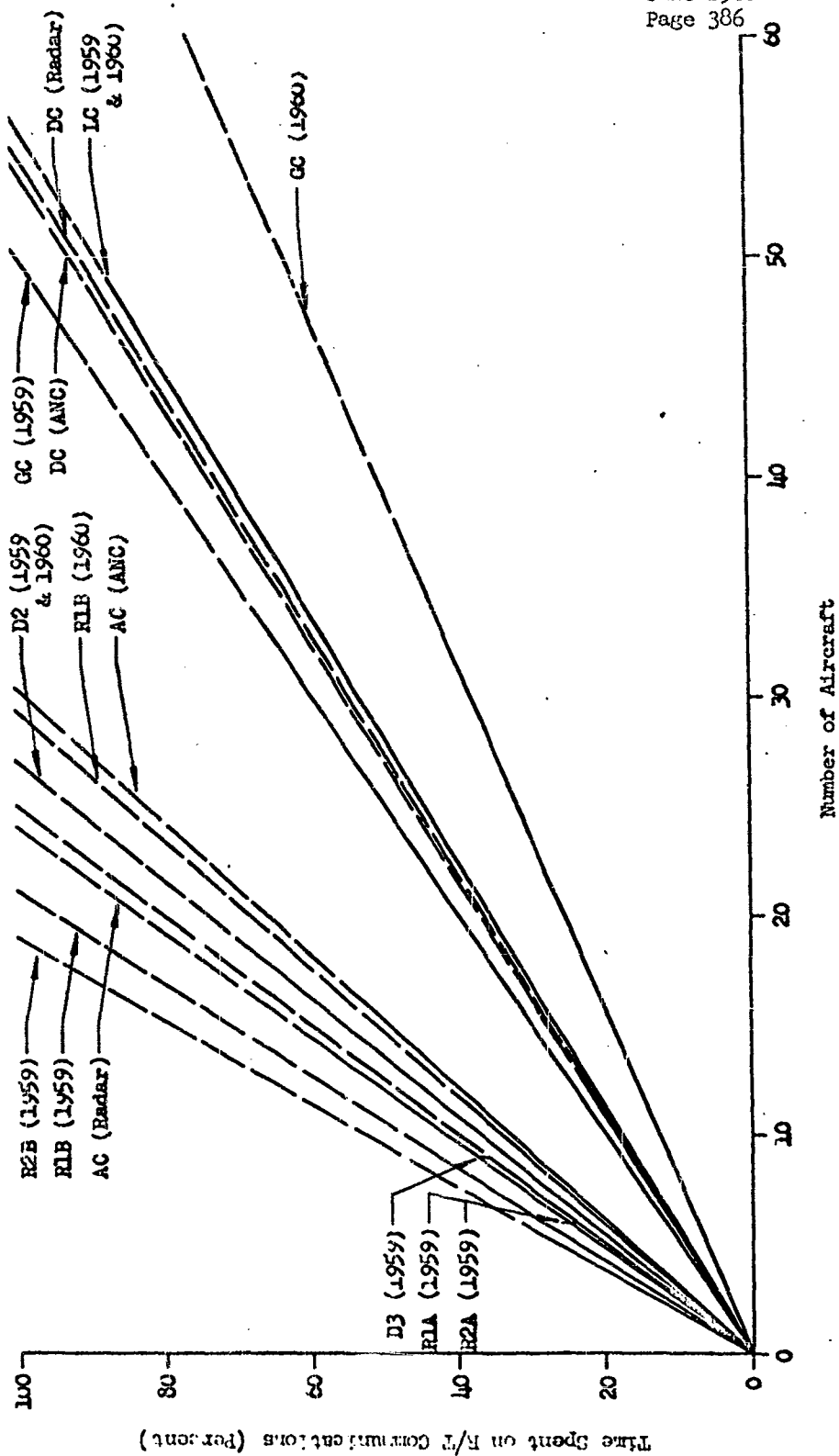


Table III-1MINIMUM AND MAXIMUM R/T COMMUNICATIONS SATURATION LEVELS IN
NUMBER OF AIRCRAFT CONTACTED PER HALF-HOUR INTERVAL

POSITION	NUMBER OF AIRCRAFT	
	MINIMUM	MAXIMUM
<u>TOWER</u>		
Ground Control (without Cl.Del.Pos.,1959)	42.0	56.6
Ground Control (with Cl.Del.Pos.,1960)	61.4	88.5
Local Control (1959 and 1960)	49.4	67.3
Approach Control (ANG, 1959)	25.2	33.5
Approach Control (Radar, 1960)	21.5	27.4
Departure Control (ANG, 1959)	46.3	60.4
Departure Control (Radar, 1960)	43.5	56.8
<u>CENTER</u>		
D2 Radio Control (1959 and 1960)	23.0	30.6
D3 Radio Control (1959)	20.8	27.9
D3 Radio Control (1960)	-----	-----
Radar 1A Control (1959)	20.0	26.8
Radar 1B Control (1959)	19.3	23.6
Radar 1B Control (1960)	27.8	30.3
Radar 2A Control (1959)	20.2	27.1
Radar 2B Control (1959)	17.0	21.0

Figure III-110

TRAFFIC LOAD VERSUS R/T COMMUNICATIONS LOAD

(Half-Hour Intervals)

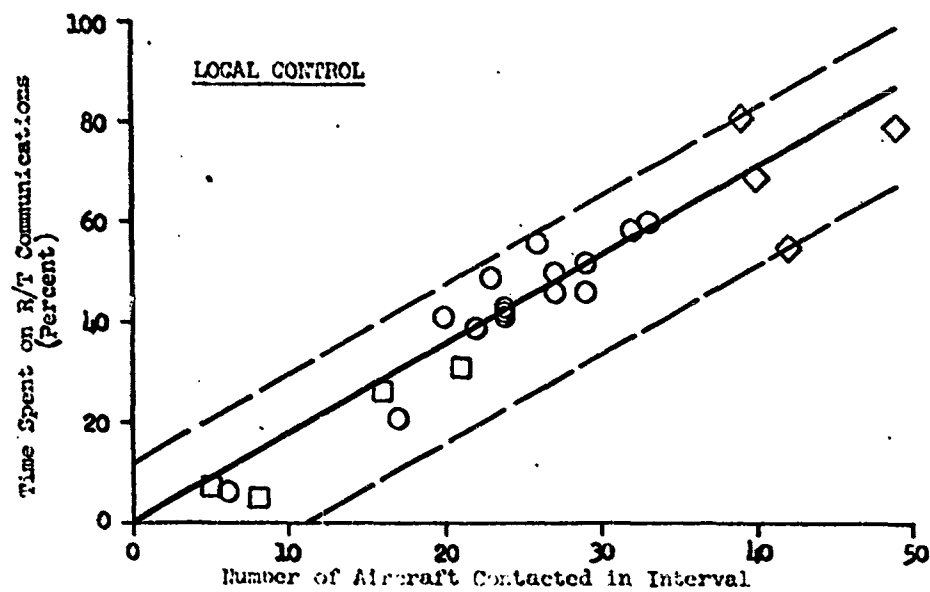
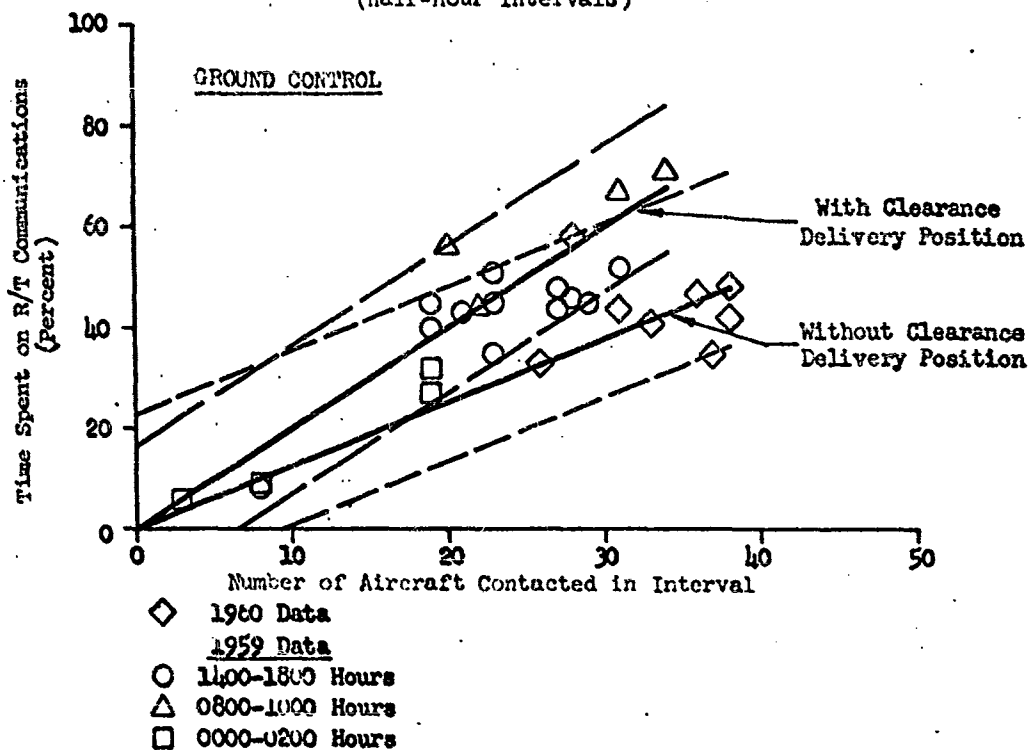


Figure III-111

TRAFFIC LOAD VERSUS R/T COMMUNICATIONS LOAD

(Half-Hour Intervals)

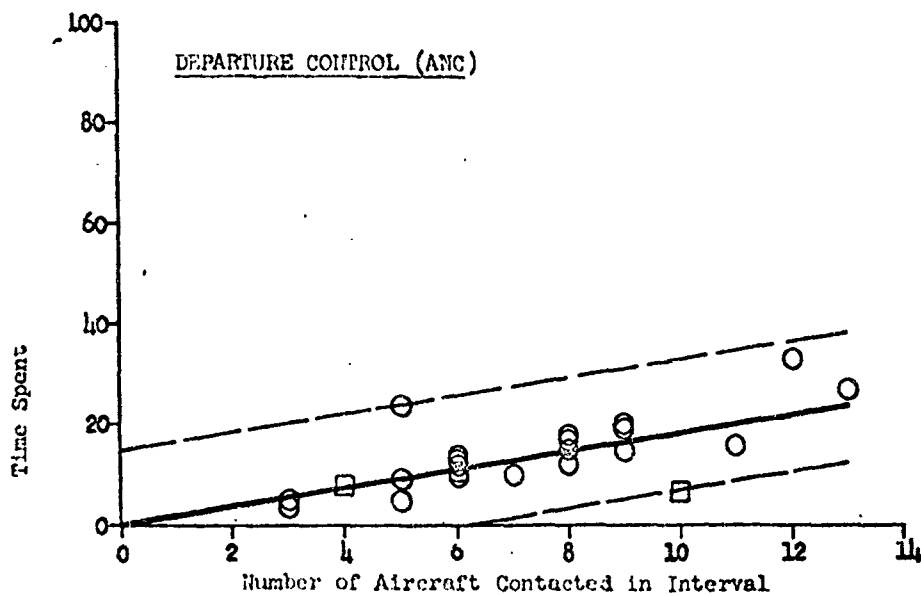
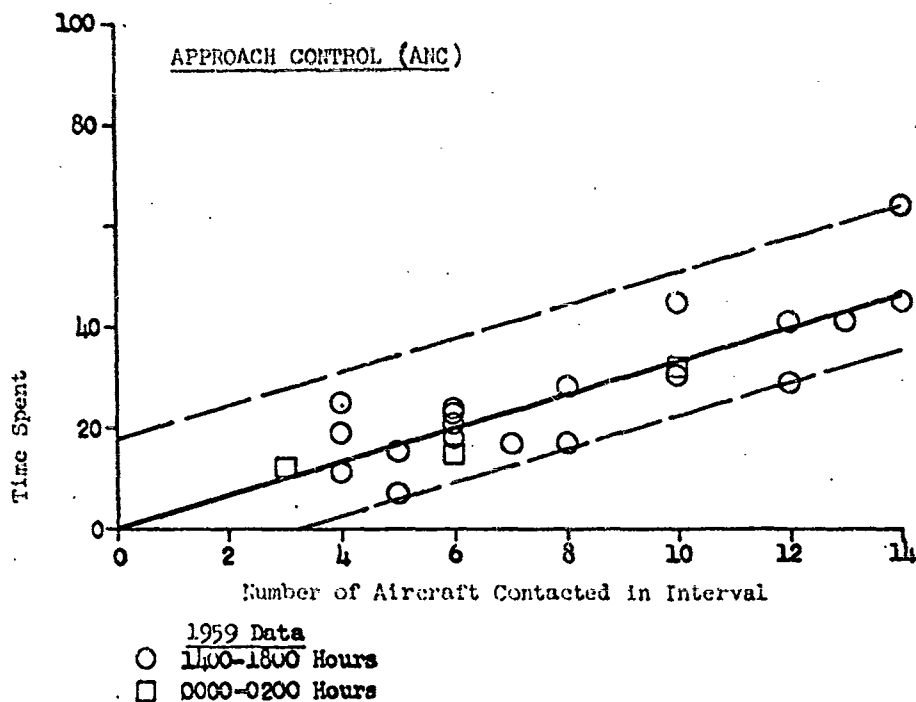


Figure III-112

TRAFFIC LOAD VERSUS R/T COMMUNICATIONS LOAD

(Half-Hour Intervals-1960 Data)

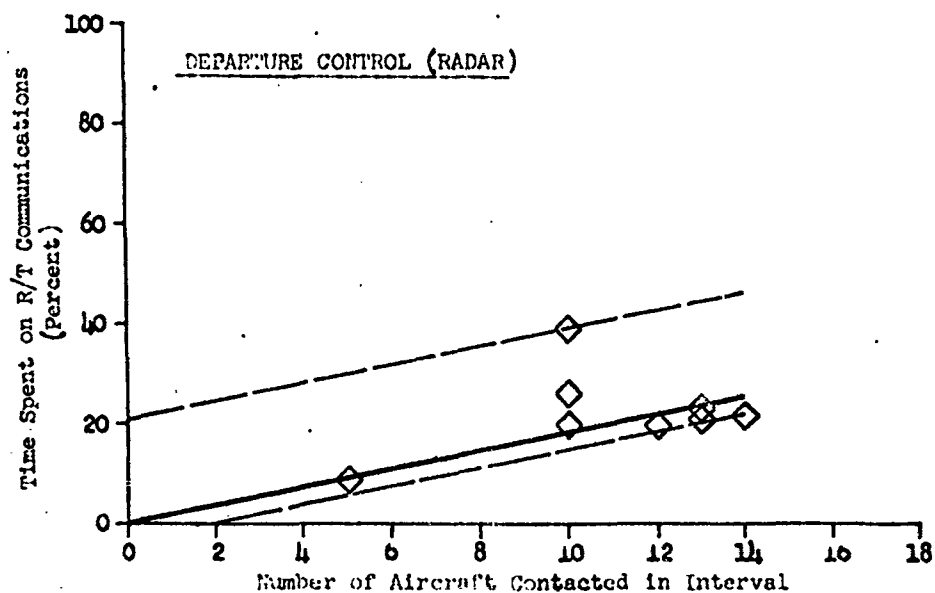
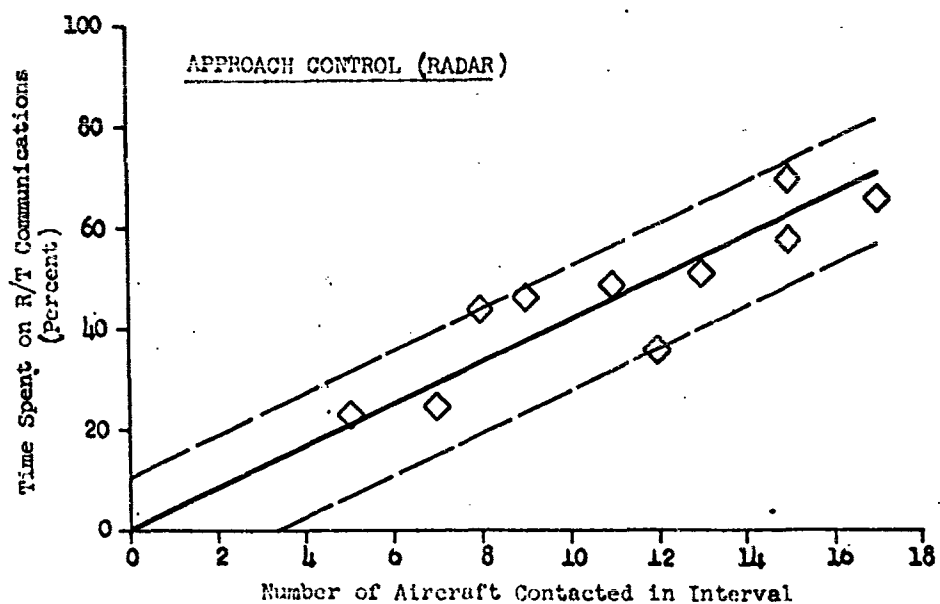


Figure III-113

TRAFFIC LOAD VERSUS R/T COMMUNICATIONS LOAD

(Half-Hour Intervals)

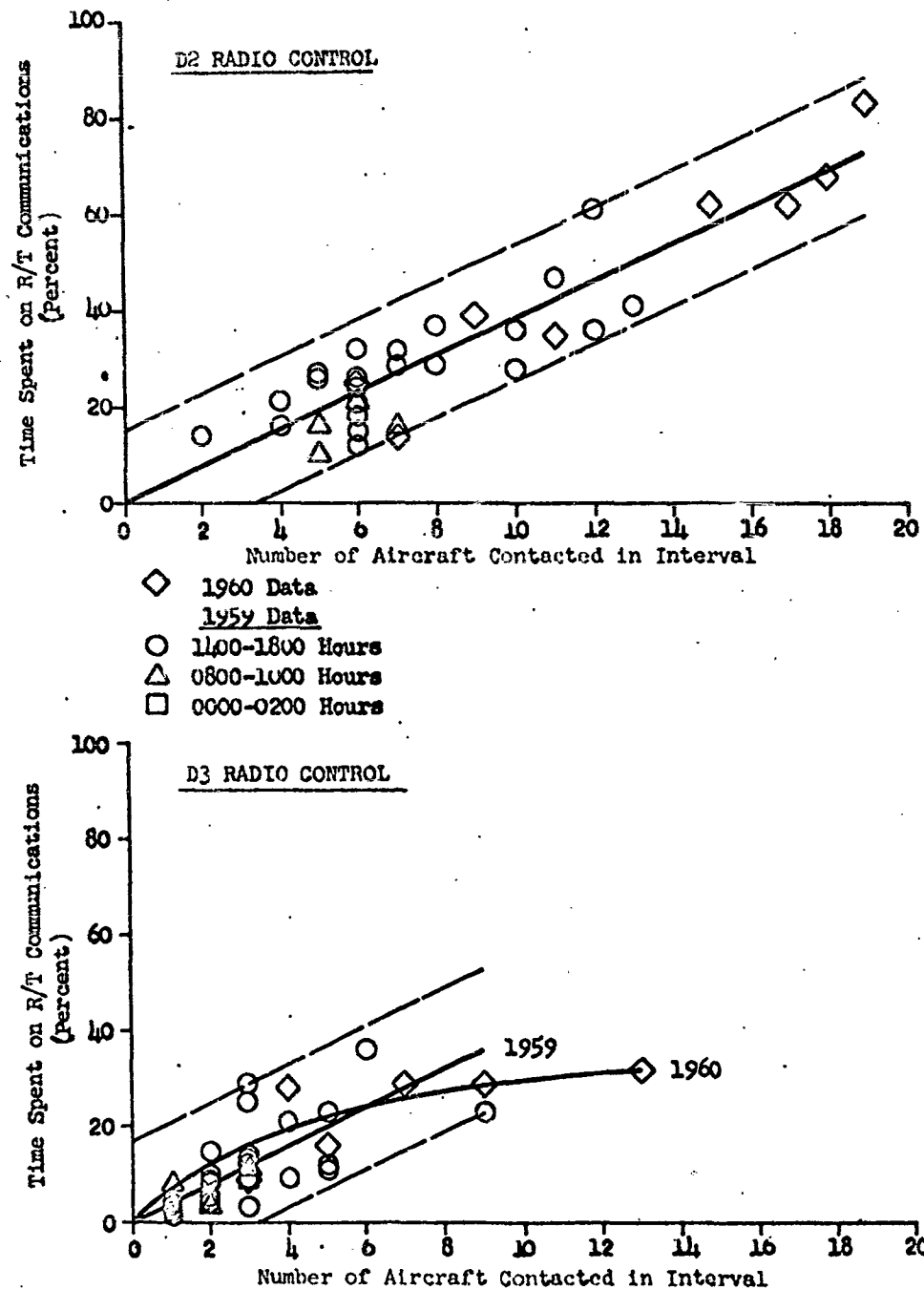
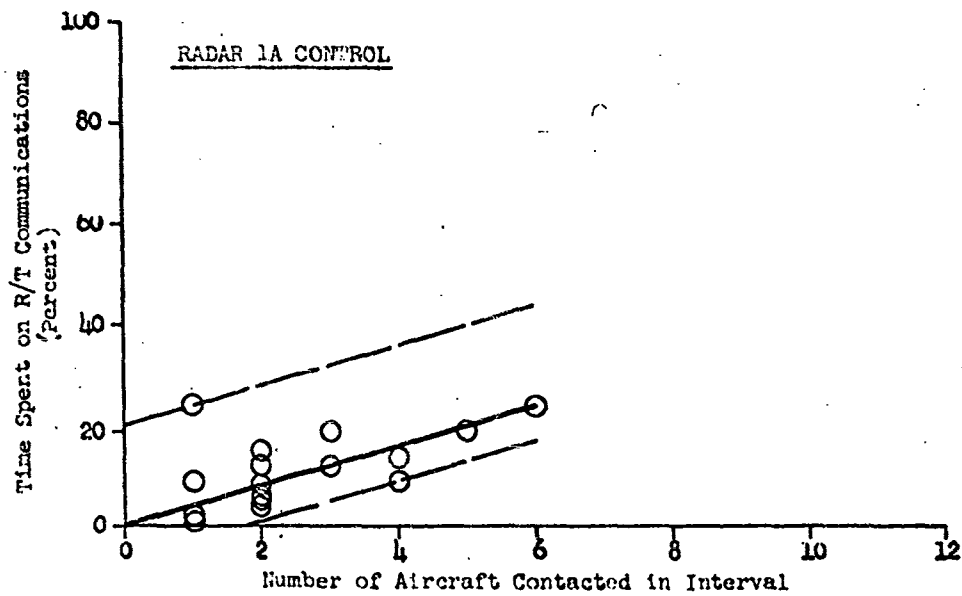


Figure III-114

TRAFFIC LOAD VERSUS R/T COMMUNICATIONS LOAD

(Half-Hour Intervals)



- ◇ 1960 Data
○ 1959 Data
○ 11:00-1800 Hours

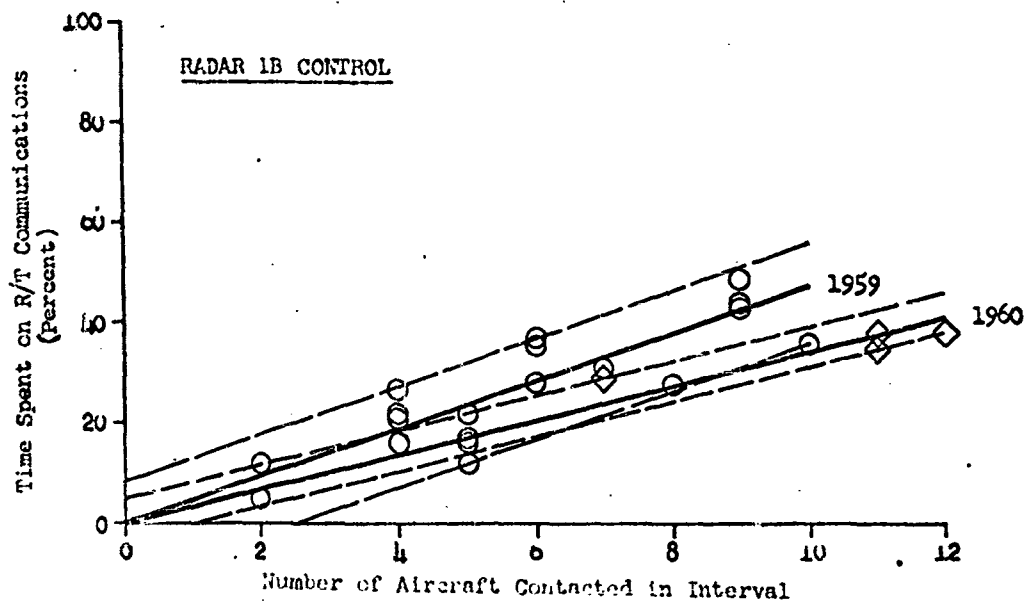
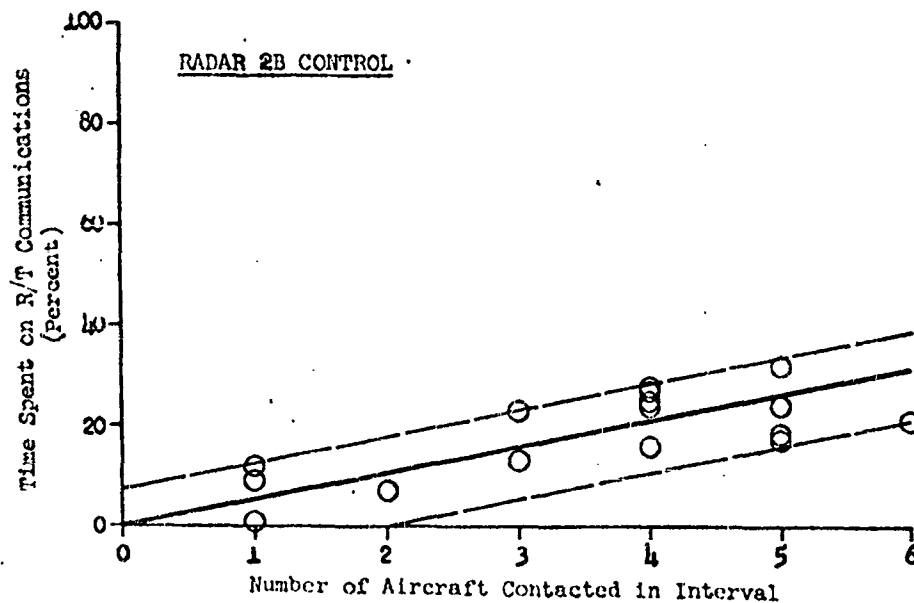
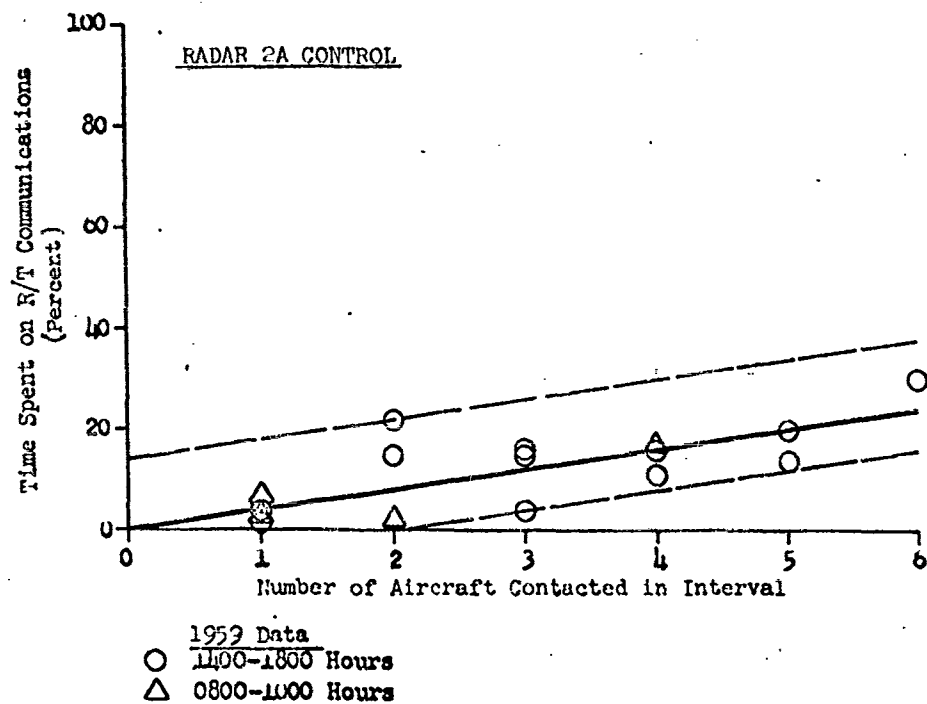


Figure III-115

TRAFFIC LOAD VERSUS R/T COMMUNICATIONS LOAD

(Half-Hour Intervals)



B. ANALYTICAL TABLES1. Comparative Communications Statistics

Tables III-2, III-3 and III-4 present some comparative communications statistics. The first numerical column - Composition of Number of Planes Contacted - should be used as the reference column in making comparisons. For example, Table III-2 shows that the Air Carrier category represented 70.8% of the planes contacted by the Ground Control position. Comparing this to the next column it can be seen that the Air Carrier category occupied a smaller percentage of the communications time (65.4%). This is another way of illustrating that the Air Carrier group on the average required less communications time per plane at the Ground Control position. Note that the composition percentages for the three aviation categories add to 100%.

COMPARATIVE TOWER COMMUNICATION

POSITION AND SAMPLE SIZE	AVIATION CATEGORY	COMPOSITION OF NUMBER OF PLANES CONTACTED (PERCENT)	COMPOSITION OF COMMUNICATIONS TIME (PERCENT)	COMPOSITION OF NUMBER OF CONTACTS (PERCENT)
GROUND CONTROL (10 Hours 1959)	Air Carrier	70.6	65.4	65.2
	Military	10.5	15.6	12.4
	Gen. Aviation	18.7	19.0	22.4
LOCAL CONTROL (10 Hours 1959)	Air Carrier	70.0	62.5	68.2
	Military	7.8	11.0	10.4
	Gen. Aviation	22.2	26.5	21.4
APPROACH CONTROL (ANC) (12 Hours 1959)	Air Carrier	89.9	87.8	89.9
	Military	7.0	11.4	7.0
	Gen. Aviation	3.2	0.8	3.2
DEPARTURE CONTROL (ANC) (12 Hours 1959)	Air Carrier	96.6	95.1	97.2
	Military	2.0	3.4	1.9
	Gen. Aviation	1.3	1.5	0.9
LOCAL CONTROL (2 Hours 1960)	Air Carrier	67.6	66.3	61.2
	Military	7.2	8.9	10.1
	Gen. Aviation	25.2	24.8	28.6
GROUND CONTROL (4 Hours 1960)	Air Carrier	69.3	60.9	65.5
	Military	4.5	7.8	6.2
	Gen. Aviation	26.2	31.2	28.3
APPROACH CONTROL (RADAR) (5 Hours 1960)	Air Carrier	76.3	74.6	75.9
	Military	3.0	5.3	4.6
	Gen. Aviation	20.7	21.0	19.5
DEPARTURE CONTROL (RADAR) (4 Hours 1960)	Air Carrier	89.7	89.5	88.7
	Military	1.3	1.0	1.0
	Gen. Aviation	9.0	9.5	10.3

Table III-2

COMPARATIVE TOWER COMMUNICATIONS STATISTICS BY AVIATION CATEGORY

COMPOSITION OF COMMUNICATIONS TIME (PERCENT)	COMPOSITION OF NUMBER OF CONTACTS (PERCENT)	COMPOSITION OF DATA MESSAGES (%)			COMPOSITION OF INFORMATION MESSAGES (%)			P
		PILOT	CONTROLLER	OVERALL	PILOT	CONTROLLER	OVERALL	
65.4	65.2	79.0	64.2	73.6	65.1	68.0	67.3	1
15.6	12.4	9.7	14.2	11.3	11.9	11.7	11.7	
19.0	22.4	11.3	21.7	15.1	23.0	20.4	21.0	
62.5	68.2	67.9	70.8	69.1	71.2	67.0	67.9	
11.0	10.4	7.6	7.2	7.4	8.7	10.3	9.9	
26.5	21.4	24.5	22.0	23.5	20.1	22.7	22.2	
87.8	89.9	93.8	85.4	91.5	92.5	90.8	91.4	
11.4	7.0	5.7	13.5	7.8	7.5	8.9	8.4	
0.8	3.2	0.5	1.1	0.7	--	0.3	0.2	
95.1	97.2	96.6	98.3	97.0	96.1	97.2	96.7	
3.4	1.9	1.4	1.2	1.3	2.9	1.6	2.3	
1.5	0.9	2.0	--	1.7	1.0	1.2	1.0	
66.3	61.2	65.3	62.6	63.7	57.4	60.6	59.7	
8.9	10.1	7.4	3.7	5.3	6.0	7.3	6.9	
24.8	28.6	27.3	33.7	31.0	36.6	32.1	33.4	
60.9	65.5	79.1	53.2	71.8	64.5	59.8	60.9	
7.8	6.2	6.3	3.2	5.5	12.6	7.3	8.5	
31.2	28.3	14.5	43.6	22.7	22.9	32.9	30.6	
74.6	75.9	82.7	78.6	81.1	71.2	83.4	80.1	
5.3	4.6	3.4	4.0	3.6	5.1	3.0	3.6	
21.0	19.5	13.9	17.4	15.3	23.7	13.6	16.4	
89.5	88.7	89.6	88.9	89.3	85.7	89.2	88.2	
1.0	1.0	1.3	0.6	1.0	0.0	0.9	0.7	
9.5	10.3	9.1	10.4	9.7	14.3	9.9	11.0	

2

Table III-2

COMMUNICATIONS STATISTICS BY AVIATION CATEGORY

COMPOSITION OF NUMBER OF CONTACTS (PERCENT)	COMPOSITION OF DATA MESSAGES (%)			COMPOSITION OF INFORMATION MESSAGES (%)			COMPOSITION OF NEWS MESSAGES (%)		
	PILOT	CONTROLLER	OVERALL	PILOT	CONTROLLER	OVERALL	PILOT	CONTROLLER	OVERALL
65.2	79.0	64.2	73.6	65.1	68.0	67.3	54.4	53.7	52.5
12.4	9.7	14.2	11.3	11.9	11.7	11.7	17.5	18.3	20.4
22.4	11.3	21.7	15.1	23.0	20.4	21.0	28.0	28.0	27.1
68.2	67.9	70.8	69.1	71.2	67.0	67.9	66.4	62.7	64.3
10.4	7.6	7.2	7.4	8.7	10.3	9.9	7.2	10.7	9.2
21.4	24.5	22.0	23.5	20.1	22.7	22.2	26.4	26.6	26.5
89.9	93.8	85.4	91.5	92.5	90.8	91.4	89.6	88.4	88.6
7.0	5.7	13.5	7.8	7.5	8.9	8.4	10.3	10.8	10.7
3.2	0.5	1.1	0.7	--	0.3	0.2	--	0.8	0.7
97.2	96.6	98.8	97.0	96.1	97.2	96.7	100.0	96.1	96.5
1.9	1.4	1.2	1.3	2.9	1.6	2.3	--	2.8	2.5
0.9	2.0	--	1.7	1.0	1.2	1.0	--	1.1	1.0
61.2	65.3	62.6	63.7	57.4	60.6	59.7	53.8	50.2	51.2
10.1	7.4	3.7	5.3	6.0	7.3	6.9	9.9	8.4	8.8
28.6	27.3	33.7	31.0	36.6	32.1	33.4	36.3	41.4	40.0
65.5	79.1	53.2	71.8	64.5	59.8	60.9	41.3	46.0	43.3
6.2	6.3	3.2	5.5	12.6	7.3	8.5	12.7	11.5	12.2
28.3	14.5	43.6	22.7	22.9	32.9	30.6	46.0	42.5	44.5
75.9	82.7	78.6	81.1	71.2	83.4	80.1	69.9	65.9	67.1
4.6	3.4	4.0	3.6	5.1	3.0	3.6	4.4	8.1	7.0
19.5	13.9	17.4	15.3	23.7	13.6	16.4	25.7	26.0	25.9
88.7	89.6	88.9	89.3	85.7	89.2	88.2	84.8	89.9	88.1
1.0	1.3	0.6	1.0	0.0	0.9	0.7	0.0	0.0	0.0
10.3	9.1	10.4	9.7	14.3	9.9	11.0	15.2	10.1	11.9

3

COMPARATIVE CENTER COMMUNIC

POSITION AND SAMPLE SIZE	AVIATION CATEGORY	COMPOSITION OF NUMBER OF PLANES CONTACTED (PERCENT)	COMPOSITION OF COMMUNICATIONS TIME (PERCENT)	COMPOSITI NUMBER OF C (PERCENT)
D2 RADIO (14 Hours 1959)	Air Carrier	81.7	81.7	86.3
	Military	14.7	13.8	10.3
	Gen. Aviation	3.6	4.5	3.4
D3 RADIO (22 Hours 1959)	Air Carrier	82.8	66.8	83.3
	Military	17.2	33.2	16.7
	Gen. Aviation	--	--	--
1A RADAR (10 Hours 1959)	Air Carrier	94.3	89.1	90.1
	Military	5.7	10.9	9.9
	Gen. Aviation	--	--	--
1B RADAR (10 Hours 1959)	Air Carrier	96.3	97.2	97.2
	Military	3.7	2.8	2.8
	Gen. Aviation	--	--	--
2A RADAR (10 Hours 1959)	Air Carrier	68.2	75.1	69.6
	Military	31.8	24.8	30.4
	Gen. Aviation	--	--	--
2B RADAR (8 Hours 1959)	Air Carrier	80.4	80.4	83.9
	Military	13.0	13.3	12.7
	Gen. Aviation	6.5	6.3	3.4
D2 RADIO (4 Hours 1960)	Air Carrier	80.8	86.3	90.5
	Military	15.1	11.6	8.3
	Gen. Aviation	4.1	2.1	1.2
D3 RADIO (3 Hours 1960)	Air Carrier	84.4	65.4	77.1
	Military	9.4	8.7	10.1
	Gen. Aviation	6.2	25.9	12.8
1B RADAR (2 Hours 1960)	Air Carrier	92.8	92.8	93.8
	Military	6.3	5.5	4.4
	Gen. Aviation	0.9	1.7	1.8

Table III-3

COMPARATIVE CENTER COMMUNICATIONS STATISTICS BY AVIATION CATEGORY

R	COMPOSITION OF COMMUNICATIONS TIME (PERCENT)	COMPOSITION OF NUMBER OF CONTACTS (PERCENT)	COMPOSITION OF DATA MESSAGES (%)			COMPOSITION OF INFORMATION MESSAGES (%)		
			PILOT	CONTROLLER	OVERALL	PILOT	CONTROLLER	OVERALL
	81.7	86.3	85.4	85.4	85.4	86.6	88.8	87.8
	13.8	10.3	9.3	6.0	8.1	9.9	8.0	8.9
	4.5	3.4	5.3	8.5	6.5	3.5	3.1	3.3
	66.8	83.3	86.9	89.4	87.7	85.4	91.4	88.7
	33.2	16.7	13.1	10.6	12.3	14.6	8.6	11.3
	--	--	--	--	--	--	--	--
	89.1	90.1	90.7	89.8	90.2	87.4	90.0	88.5
	10.9	9.9	9.3	10.2	9.8	12.6	10.0	11.5
	--	--	--	--	--	--	--	--
	97.2	97.2	98.3	97.1	97.8	98.1	98.0	98.0
	2.8	2.8	1.7	2.9	2.2	1.9	2.0	2.0
	--	--	--	--	--	--	--	--
	75.1	69.6	78.6	77.6	78.1	66.2	81.4	73.3
	24.8	30.4	21.4	22.3	21.9	33.8	18.6	26.7
	--	--	--	--	--	--	--	--
	80.4	83.9	84.5	88.5	86.2	82.4	85.3	83.5
	13.3	12.7	10.1	7.1	8.8	12.2	4.0	9.2
	6.3	3.4	5.4	4.4	5.0	5.3	10.7	7.3
	86.3	90.5	91.3	95.7	92.8	93.7	88.4	91.3
	11.6	8.3	7.2	4.3	6.2	5.3	8.7	6.8
	2.1	1.2	1.4	--	1.0	1.0	2.9	1.9
	65.4	77.1	85.8	90.9	86.9	91.7	87.9	89.6
	8.7	10.1	12.5	9.1	11.7	8.3	11.2	9.9
	25.9	12.8	1.7	--	1.3	--	0.8	0.5
	92.8	93.8	80.0	86.9	82.5	82.0	79.0	81.0
	5.5	4.4	9.1	9.8	9.3	14.0	11.0	22.0
	1.7	1.8	10.9	3.2	8.2	4.0	10.0	7.0

Table III-3

R COMMUNICATIONS STATISTICS BY AVIATION CATEGORY

COMPOSITION OF NUMBER OF CONTACTS (PERCENT)	COMPOSITION OF DATA MESSAGES (%)			COMPOSITION OF INFORMATION MESSAGES (%)			COMPOSITION OF NEWS MESSAGES (%)		
	PILOT	CONTROLLER	OVERALL	PILOT	CONTROLLER	OVERALL	PILOT	CONTROLLER	OVERALL
86.3	85.4	85.4	85.4	86.6	88.8	87.8	82.5	85.8	85.1
10.3	9.3	6.0	8.1	9.9	8.0	8.9	13.5	11.2	11.7
3.4	5.3	8.5	6.5	3.5	3.1	3.3	4.0	3.0	3.2
83.3	86.9	89.4	87.7	85.4	91.4	88.7	85.4	80.3	81.8
16.7	13.1	10.6	12.3	14.6	8.6	11.3	14.6	19.7	18.2
--	--	--	--	--	--	--	--	--	--
90.1	90.7	89.8	90.2	87.4	90.0	88.5	97.3	94.8	95.5
9.9	9.3	10.2	9.8	12.6	10.0	11.5	2.7	5.2	4.5
--	--	--	--	--	--	--	--	--	--
97.2	98.3	97.1	97.8	98.1	98.0	98.0	98.2	98.2	98.2
2.8	1.7	2.9	2.2	1.9	2.0	2.0	1.8	1.8	1.8
--	--	--	--	--	--	--	--	--	--
69.6	78.6	77.6	78.1	66.2	81.4	73.3	75.0	69.0	70.6
30.4	21.4	22.3	21.9	33.8	18.6	26.7	25.0	31.0	29.4
--	--	--	--	--	--	--	--	--	--
83.9	84.5	88.5	86.2	82.4	85.3	83.5	82.3	81.0	81.3
12.7	10.1	7.1	8.8	12.2	4.0	9.2	4.8	14.1	11.8
3.4	5.4	4.4	5.0	5.3	10.7	7.3	12.9	4.9	6.9
90.5	91.3	95.7	92.8	93.7	88.4	91.3	77.9	89.4	86.4
8.3	7.2	4.3	6.2	5.3	8.7	6.8	16.8	9.8	11.7
1.2	1.4	--	1.0	1.0	2.9	1.9	5.3	0.8	1.9
77.1	85.8	90.9	86.9	91.7	87.9	89.6	91.9	90.4	90.8
10.1	12.5	9.1	11.7	8.3	11.2	9.9	5.9	9.6	8.3
12.8	1.7	--	1.3	--	0.8	0.5	--	--	0.8
93.8	80.0	86.9	82.5	82.0	79.0	81.0	71.4	77.9	76.5
4.4	9.1	9.8	9.3	14.0	11.0	22.0	21.4	17.3	18.2
1.8	10.9	3.2	8.2	4.0	10.0	7.0	7.2	4.8	5.3

3

CONVAIR-POMONA

COMPARATIVE STATION COM

POSITION AND SAMPLE SIZE	AVIATION CATEGORY	COMPOSITION OF NUMBER OF PLANES CONTACTED (PERCENT)	COMPOSITION OF COMMUNICATIONS TIME (PERCENT)	COMPOSITI NUMBER OF C (PERCENT)
D POSITION (20 Hours 1959)	Air Carrier	26.6	27.5	26.5
	Military	62.4	67.0	68.7
	Gen Aviation	11.0	5.5	4.8
C POSITION (18 Hours 1959)	Air Carrier	25.3	12.6	22.1
	Military	38.7	60.8	48.9
	Gen Aviation	36.0	26.6	29.0
B POSITION (24 Hours 1959)	Air Carrier	2.5	0.6	1.9
	Military	4.0	3.7	4.7
	Gen Aviation	93.5	95.7	93.4

1

Table III-4

COMPARATIVE STATION COMMUNICATIONS STATISTICS BY AVIATION CATEGORY

ER	COMPOSITION OF COMMUNICATIONS TIME (PERCENT)	COMPOSITION OF NUMBER OF CONTACTS (PERCENT)	CLASSIFICATION OF DATA MESSAGES (%)			COMPOSITION OF INFORMATION MESSAGES (%)			P
			PILOT	COMMUNICATOR	OVERALL	PILOT	COMMUNICATOR	OVERALL	
	27.5	26.5	20.8	27.1	24.8	31.5	18.0	26.0	
	67.0	68.7	72.9	69.4	70.7	61.5	77.7	68.1	
	5.5	4.8	6.3	3.5	4.5	7.0	4.3	5.9	
	12.6	22.1	35.7	20.0	25.6	24.1	27.6	25.3	
	60.8	48.9	42.8	52.0	48.7	42.6	34.5	39.8	
	26.6	29.0	21.5	28.0	25.6	33.3	37.9	34.9	
	0.6	1.9	--	--	--	--	--	--	
	3.7	4.7	--	--	--	4.1	2.1	3.1	
	95.7	93.4	100.0	100.0	100.0	95.9	97.9	96.9	

2

Table III-4

AVIATION COMMUNICATIONS STATISTICS BY AVIATION CATEGORY

COMPOSITION OF NUMBER OF CONTACTS (PERCENT)	CLASSIFICATION OF DATA MESSAGES (%)			COMPOSITION OF INFORMATION MESSAGES (%)			COMPOSITION OF NEWS MESSAGES (%)		
	PILOT	COMMUNICATOR	OVERALL	PILOT	COMMUNICATOR	OVERALL	PILOT	COMMUNICATOR	OVERALL
26.5	20.8	27.1	24.8	31.5	18.0	26.0	28.9	33.4	31.7
68.7	72.9	69.4	70.7	61.5	77.7	68.1	65.2	61.4	64.2
4.8	6.3	3.5	4.5	7.0	4.3	5.9	5.9	5.2	4.1
22.1	35.7	20.0	25.6	24.1	27.6	25.3	20.4	20.0	20.2
48.9	42.8	52.0	48.7	42.6	34.5	39.8	39.8	43.0	41.1
29.0	21.5	28.0	25.6	33.3	37.9	34.9	39.8	37.0	38.7
1.9	--	--	--	--	--	--	2.0	--	1.1
4.7	--	--	--	4.1	2.1	3.1	1.0	4.5	2.6
93.4	100.0	100.0	100.0	95.9	97.9	96.9	97.0	95.5	96.3

3

2. Pilot/Controller Contact Initiation Percentages

Table III-5 shows the percentage of contacts which were initiated by the pilot or controller. The percentages are based upon a representative sample of contacts for each control position.

Table III-5PILOT/CONTROLLER CONTACT INITIATION PERCENTAGES

POSITION	NUMBER OF CONTACTS:		PERCENTAGE OF CONTACTS:	
	Initiated by Pilot	Initiated by Controller	Initiated by Pilot	Initiated by Controller
<u>TOWER</u>				
Ground Control	195	154	56	44
Local Control	197	206	49	51
Approach Control (ANC)	233	176	57	43
Approach Control (Radar)	170	245	41	59
Departure Control (ANC)	347	60	85	15
Departure Control (Radar)	145	164	47	53
<u>CENTER</u>				
D2 Radio Control	240	163	60	40
D3 Radio Control	177	116	60	40
Radar 1A Control	62	80	44	56
Radar 1B Control	194	214	48	52
Radar 2A Control	80	90	47	53
Radar 2B Control	105	91	54	46

SECTION IVCOORDINATION COMMUNICATIONS

The data obtained from the interphone positions did not, in general, permit the same descriptive and analytical techniques used for the air-to-ground type position data. For that reason all interphone data are presented separately in this Section. Since ground-to-ground R/T is essentially a type of interphone, the generic term "coordination communications" is used. No DIN statistics are presented because the technique was found to be inappropriate. An attempt was made to apply the classification system, but the conversational nature of the interphone contacts yields a fluid language structure which gives essentially meaningless DIN statistics.

The time-related measures, with appropriate modifications, were calculated for the interphone and ground-to-ground R/T positions. Time per interphone (or ground-to-ground R/T) contact has the same meaning for coordination communications as for ground-air communications, but one interphone contact might include conversation about two or more aircraft. Communications time per plane had a different meaning because the conversations were being conducted about planes and not with planes. The measure is therefore called average total time per plane treated instead of total time per plane contacted to differentiate it from the air-to-ground communications time. When more than one plane was discussed, the correct portion of total contact time was assigned to each plane in order to obtain the total time per plane.

A. COORDINATION COMMUNICATIONS TABLES

The modified time-related measures are presented in Tables IV-1 to IV-14. Ground-to-ground R/T communications are included with the interphone data in these tables whenever both occur at a position.

Table IV-1

TIMING STATISTICS - TOWER POSITION TOTALS

POSITION AND SAMPLE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL			AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)					
		GEN'L ATC INFO			AC			MIL	GA	AC	MIL	GA	AC	MIL	GA	OVER- ALL
		AC	MIL	GA												
TOWER IFR FOS. (14 Hours-1959)	20	78.2	11.0	2.3	8.5	75	22.1	46.9	3.3	0.9	5.1	19.8	46.7	38.1	25.2	
TOWER FLIGHT DATA FOS. (12 Hours-1959)	18	71.0	13.0	8.9	7.1	41	33.7	25.7	3.0	2.7	31.3	34.6	52.4	48.5	36.8	

Table IV-2

TIMING STATISTICS - CENTER POSITION TOTALS

POSITION AND SATELITE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL			AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)				
		AC	MIL	GA	GEN'L ATC INFO			AC	MIL	GA	TOTAL	AC	MIL	GA	OVER- ALL
D2 CONTROLLER (12 Hours-1959)	23	61.1	34.6	4.0	0.3	58	64.8	17.5	6.7	1.0	25.2	56.4	83.7	63.1	63.2
A2 ASST. CONTRL. (8 Hours-1959)	18	63.7	26.2	17.8	0	32	78.7	11.8	4.3	0.8	16.8	70.2	80.3	173.4	77.4
D3 CONTROLLER (12 Hours-1959)	29	8.4	1.6	0.3	0	68	46.1	38.8	4.0	0.3	43.2	43.4	67.3	20.4	45.4
A3 ASST. CONTRL. (10 Hours-1959)	12	59.6	39.2	0	1.2	26	41.8	16.8	3.8	0	20.6	29.9	108.2	--	41.3
D7 CONTROLLER (8 Hours-1959)	14	59.8	37.4	2.7	0	38	71.0	9.5	4.2	0.8	14.5	63.2	87.3	35.8	68.8

DATE AND TIME	% TIME SPENT ON COORDINATION COMMUNICATIONS PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL		NUMBER OF CONTACTS PER INTERVAL		AVERAGE CONTACT TIME WITHIN INTERVAL (SECONDS)	
		GRND TO GRND R/T	INTERPHONE	GRND TO GRND R/T	INTERPHONE TOTAL	GRND TO GRND R/T	INTER- PHONE ALL
FLIGHT DATA 4 (8 Hours)	10	78.2	21.8	6.5	4.5	11.0	81.0 32.0 61.0

Table IV-3

TIMING STATISTICS - STATION POSITION TOTALS

POSITION AND SAMPLE SIZE	% TIME SPENT ON COORDINATION COMMUNICATIONS PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL		NUMBER OF CONTACTS PER INTERVAL		AVERAGE CONTACT TIME WITHIN INTERVAL (SECONDS)	
		GRND TO GRND R/T	INTERPHONE	GRND TO GRND R/T	INTERPHONE TOTAL	GRND TO GRND R/T	INTER- PHONE ALL
D POSITION (20 Hours)	10	18.9	81.1	8.4	23.4	16.6	24.3
C POSITION (16 Hours)	8	3.4	96.6	0.9	17.4	19.2	31.2
							22.1
							22.1

DATE AND TIME	% TIME SPENT ON WEATHER AND NOTAM BROADCASTS	NUMBER OF BROADCASTS PER INTERVAL	AVERAGE BROADCAST TIME WITHIN INTERVAL (SECONDS)	% TIME SPENT ON COORDINATION COMMUNICATIONS ON INTERPHONE	NUMBER OF INTERPHONE CONTACTS PER INTERVAL	AVERAGE INTERPHONE CONTACT TIME (SECONDS)
B POSITION (24 Hours)	14	54	178.8	2.2	7.7	92.9

Table IV-4
TIMING STATISTICS - TOWER IFR COORDINATOR POSITION
(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL			IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL			AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)					
		GEN'L ATC INFO					AC	MIL	GA	TOTAL	AC	MIL	GA	OVER- ALL	
		AC	MIL	GA											
15 May 1959 (0800-1000)	19	70	17	3	10	78	16.9	39	6	1	46	23.5	37.0	43.6	25.7
20 May 1959 (1500-1800)	18	88	2	2	8	82	22.5	52	2	2	56	21.4	12.6	12.8	20.8
22 May 1959 (1600-1800)	21	73	25	-	2	69	21.8	51	4	-	55	21.6	94.9	-	26.9
23 May 1959 (0000-0200)	14	76	6	13	5	51	19.5	32	1	1	34	23.7	59.9	125.5	27.7
23 May 1959 (1400-1600)	29	82	10	2	7	97	30.0	59	5	2	66	27.6	33.1	16.8	28.1
23 May 1959 (1600-1800)	18	70	8	-	22	58	24.9	45	3	-	48	18.6	29.8	0	19.3
24 May 1959 (1400-1600)	23	86	7	-	7	87	17.7	50	2	-	52	26.6	53.6	-	27.6

Table IV-5

TIMING STATISTICS - TOWER FLIGHT DATA POSITION

(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL			AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)				
					IP CONTACTS PER INTERVAL										
		AC	MIL	GA				AC	MIL	GA	AC	MIL	GA	OVER- ALL	
15 May 1959 (0800-1000)	24	49	23	20	8	60	27.9	28	9	7	44	29.6	41.9	48.0	35.0
20 May 1959 (1400-1600)	24	83	4	7	7	49	35.2	28	1	2	31	50.8	68.4	58.0	51.9
20 May 1959 (1600-1800)	16	75	3	7	15	42	27.0	31	1	4	36	27.6	32.1	19.6	26.8
23 May 1959 (0000-0200)	7	90	-	7	3	17	28.2	17	-	1	18	25.5	-	32.9	25.9
23 May 1959 (1400-1600)	19	68	26	6	0.4	41	46.8	24	2	1	27	36.0	60.9	74.5	46.6
23 May 1959 (1600-1800)	18	78	12	2	8	35	36.9	26	5	1	32	35.4	28.6	21.9	33.9

Table IV-6
TIMING STATISTICS - CENTER D2 CONTROLLER POSITION
(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL				AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)					
		GEN'L ATC			AC			MIL	GA	AC	MIL	GA	TOTAL	AC	MIL	GA	OVER- ALL
		GEN'L	ATC	INFO													
15 May 1959 (0800-1000)	34	50	40	9	--	78	88.0	13	11	3	27	92.4	87.3	72.1	88.0		
20 May 1959 (1400-1600)	22	26	65	6	2	31	76.0	13	6	1	20	30.9	155.2	93.4	69.1		
22 May 1959 (1600-1800)	30	79	19	2	--	81	64.4	22	10	1	33	76.5	40.5	39.2	64.4		
23 May 1959 (0000-0200)	11	72	24	4	--	38	49.5	13	2	1	16	43.9	95.6	29.8	49.5		
23 May 1959 (1400-1600)	18	67	33	--	--	51	56.4	17	6	--	23	51.5	70.4	--	56.4		
23 May 1959 (1600-1800)	22	77	23	--	--	70	48.9	27	5	--	32	43.9	75.8	--	48.9		

Table IV-7

TIMING STATISTICS - CENTER A2 ASSISTANT CONTROLLER POSITION

(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL				AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)			
		GEN'L ATC INFO		OVER-				INTERVAL		OVER-		INTERVAL (SECONDS)			
		AC	MIL	GA	INFO			AC	MIL	GA	ALL	AC	MIL	GA	ALL
15 May 1959 (0800-1000)	25	47	32	21	--	37	88.8	11	7	2	20	75.8	82.3	183.8	88.8
20 May 1959 (1400-1600)	23	63	37	--	--	34	102.5	10	6	--	16	104.1	99.8	--	102.5
22 May 1959 (1600-1800)	15	63	17	14	--	36	51.8	16	4	1	21	46.5	47.6	152.7	51.8
23 May 1959 (0000-0200)	10	100	--	--	--	21	68.2	10	--	--	10	68.2	--	--	68.2

Table IV-8

POSITION STATISTICS - CENTER D3 CONTROLLER POSITION

(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	TIME SPENT ON INTERPHONE COMM PER INTERVAL	COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL			AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)				
		GEN'L ATC INFO			AC			MIL	GA	AC	MIL	GA	OVER- ALL		
		AC	MIL	GA											
15 May 1959 (0800-1000)	29	72	27	0.7	-	70	57.9	27	7	1	35	54.1	78.9	12.1	57.9
20 May 1959 (1400-1600)	35	96	4	-	-	47	43.3	45	2	-	47	43.1	50.6	-	43.3
20 May 1959 (1600-1800)	28	91	9	-	-	73	41.9	41	3	-	44	40.9	55.6	-	41.9
22 May 1959 (1600-1800)	35	84	16	-	-	79	52.7	41	5	-	46	49.4	80.0	-	52.7
23 May 1959 (0000-0200)	18	95	5	-	-	54	43.3	29	1	-	30	42.6	63.6	-	43.3
23 May 1959 (1400-1600)	30	83	16	1	-	86	37.3	50	6	1	57	35.3	55.4	28.6	37.3

(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL				AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)		OVER- ALL	
		AC	MIL	GA	GEN'L ATC INFO			AC	MIL	GA	TOTAL	AC	MIL		GA
15 May 1959 (0800-1000)	9	40	60	--	--	26	34.8	10	9	--	19	18.6	52.9	--	34.8
20 May 1959 (1400-1600)	21	46	54	--	--	32	52.4	23	5	--	28	29.6	157.2	--	52.4
20 May 1959 (1600-1800)	10	82	18	--	--	15	58.6	10	1	--	11	53.2	113.0	--	58.6
22 May 1959 (1600-1800)	11	65	35	--	--	31	40.7	19	3	--	22	30.7	104.5	--	40.7
23 May 1959 (1400-1600)	9	79	12	--	8	25	26.6	22	1	--	23	24.0	82.1	--	25.6

Table IV-10
TIMING STATISTICS - CENTER D7 CONTROLLER POSITION
(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON INTERPHONE COMM PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL				IP CONTACTS PER INTERVAL	AVERAGE IP CONTACT TIME (SECONDS)	NUMBER OF PLANES TREATED WITHIN INTERVAL				AV. TOT. TIME PER PLANE TREATED WITHIN INTERVAL (SECONDS)			
		GEN'L ATC INFO		OVER-											
		AC	MIL	GA	INFO			AC	MIL	GA	ALL	AC	MIL	GA	ALL
(15 May 1959 (.0800-1.000))	4	58	36	5	--	26	25.4	7	3	1	11	23.3	33.9	14.6	25.4
20 May 1959 (1.400-1.600)	25	58	42	--	--	52	94.3	11	7	--	18	90.2	100.8	--	94.3
23 May 1959 (1.400-1.600)	24	62	36	2	--	56	79.4	14	6	1	21	74.3	99.8	29.3	79.4
23 May 1959 (1.600-1.800)	5	59	22	18	--	18	43.3	6	1	1	8	34.2	77.2	63.5	43.3

(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON COORDINATION COMMUNICATIONS PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL			NUMBER OF CONTACTS PER INTERVAL			AVERAGE CONTACT TIME WITHIN INTERVAL (SECONDS)			
		GRND TO		INTERPHONE	GRND TO		INTERPHONE	GRND TO		INTERPHONE	
		GRND R/T	INTERPHONE		GRND R/T	INTERPHONE		GRND R/T	INTERPHONE		OVERALL
15 May 1959 (0600-1000)	18	89	11		11	5	16		102.5	26.9	78.9
22 May 1959 (1600-1800)	7	99	1		9	1	10		54.8	6.6	50.0
23 May 1959 (1400-1600)	8	38	62		4	9	13		51.9	38.2	42.4
23 May 1959 (1600-1800)	6	75	25		2	3	5		138.5	30.5	73.7

Table IV-12

TIMING STATISTICS - STATION POSITION D

(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON COORDINATION COMMUNICATIONS PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL		NUMBER OF CONTACTS PER INTERVAL		AVERAGE CONTACT TIME WITHIN INTERVAL (SECONDS)	
		GRND TO GRND R/T	INTERPHONE	GRND TO GRND R/T	INTERPHONE TOTAL	GRND TO GRND R/T	INTER- PHONE ALL OVER-
20 April 1959 (1400-1600)	7	47	53	10	11	23.6	24.5 24.1
15 May 1959 (0800-1000)	13	19	81	13	33	13.9	22.8 20.3
20 May 1959 (1400-1600)	13	20	80	7	20	27.5	38.1 35.4
20 May 1959 (1600-1800)	9	19	81	12	24	10.2	21.1 17.4
21 May 1959 (1600-1800)	9	2	98	1	27	13.5	23.3 23.0
22 May 1959 (1600-1800)	13	14	86	5	22	25.9	36.8 34.8
23 May 1959 (0000-0200)	9	34	66	19	20	11.2	20.7 16.0
23 May 1959 (1400-1600)	9	5	95	5	34	6.6	17.4 16.0
23 May 1959 (1600-1800)	8	24	76	9	20	14.8	21.3 19.3
24 May 1959 (1400-1600)	9	14	86	3	23	28.2	23.3 23.9

Table IV-13
TIMING STATISTICS - STATION POSITION C
(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON COORDINATION COMMUNICATIONS PER INTERVAL	% COMPOSITION OF COMMUNICATIONS TIME WITHIN INTERVAL		NUMBER OF CONTACTS PER INTERVAL		AVERAGE CONTACT TIME WITHIN INTERVAL (SECONDS)	
		GRND TO GRND R/T	INTERPHONE	GRND TO GRND R/T	INTERPHONE TOTAL	GRND TO GRND R/T	INTER- PHONE ALL
20 April 1959 (1400-1600)	20	1	99	1	59	60	11.2 24.6 24.4
15 May 1959 (0800-1000)	3	-	100	-	8	8	-- 31.3 31.3
20 May 1959 (1400-1600)	7	-	100	-	7	7	-- 67.6 67.6
20 May 1959 (1600-1800)	5	8	92	2	12	14	14.5 29.7 27.6
21 May 1959 (1400-1600)	3	-	100	-	10	10	-- 19.6 19.6
21 May 1959 (1600-1800)	9	4	96	2	14	16	12.7 45.6 41.5
22 May 1959 (1600-1800)	13	-	100	-	28	28	-- 32.7 32.7
24 May 1959 (1400-1600)	4	22	78	1	8	9	55.1 26.4 29.9
24 May 1959 (1600-1800)	5	10	90	2	11	13	16.6 28.1 26.3

Table IV-14

TIMING STATISTICS - STATION POSITION B

(Two-Hour Intervals)

POSITION AND SAMPLE SIZE	% TIME SPENT ON WEATHER AND NOTAM BROADCASTS	NUMBER OF BROADCASTS PER INTERVAL	AVERAGE BROADCAST TIME WITHIN INTERVAL (SECONDS)	% TIME SPENT ON COORDINATIONS COMMUNICATIONS ON INTERPHONE	NUMBER OF INTERPHONE CONTACTS PER INTERVAL	AVERAGE INTERPHONE CONTACT TIME (SECONDS)
20 April 1959 (1400-1600)	10	9	77.3	3	15	15.1
20 May 1959 (1400-1600)	18	4	323.3	0.2	2	7.3
20 May 1959 (1600-1800)	21	6	256.8	1	15	6.4
21 May 1959 (1400-1600)	13	5	184.8	5	11	34.1
21 May 1959 (1600-1800)	14	5	198.6	2	7	23.2
22 May 1959 (1600-1800)	11	6	126.4	10	25	288.1
23 May 1959 (0000-0200)	8	4	151.6	0.9	1	64.5
23 May 1959 (1030-1230)	14	7	139.4	1	5	21.1
23 May 1959 (1400-1600)	12	4	214.5	0.4	3	9.5
23 May 1959 (1600-1800)	14	6	173.1	2	3	59.6
24 May 1959 (1400-1600)	13	5	187.2	0.5	2	18.8
24 May 1959 (1600-1800)	14	4	251.1	0.7	3	17.5

B. COORDINATION COMMUNICATIONS CHARTS

It is possible to classify interphone and ground-to-ground R/T communications in two distinct ways. This fact may be best illustrated by an example. A Miami Sector Controller may call the Miami Tower and request information about a specific military aircraft. This contact may be classified according to the party contacted (the Tower) or according to the aviation category discussed (military). The first cycle of charts shows schematically the distribution of coordination time based upon the party contacted. The final cycle shows the coordination time per plane based upon the aviation category classification scheme.

1. Coordination Communications Schematics

Figure IV-1 is a schematic of the Miami ATC communications network. It shows in general terms the communications links between the three facilities and other individuals and agencies.

Figures IV-2 to IV-12 show the composition of communications time for the individual interphone positions. The percentages in the small boxes were obtained from the actual tape transcriptions and represent the conditions that existed during the recording periods.

Once again the ground-to-ground R/T communications have been included. In the case of the three Station positions, which have both air-to-ground and ground-to-ground R/T communications, just the ground-to-ground R/T data were used for their respective schematics.

Figure IV-1

SCHEMATIC OF MIAMI ATC COMMUNICATIONS COMPLEX

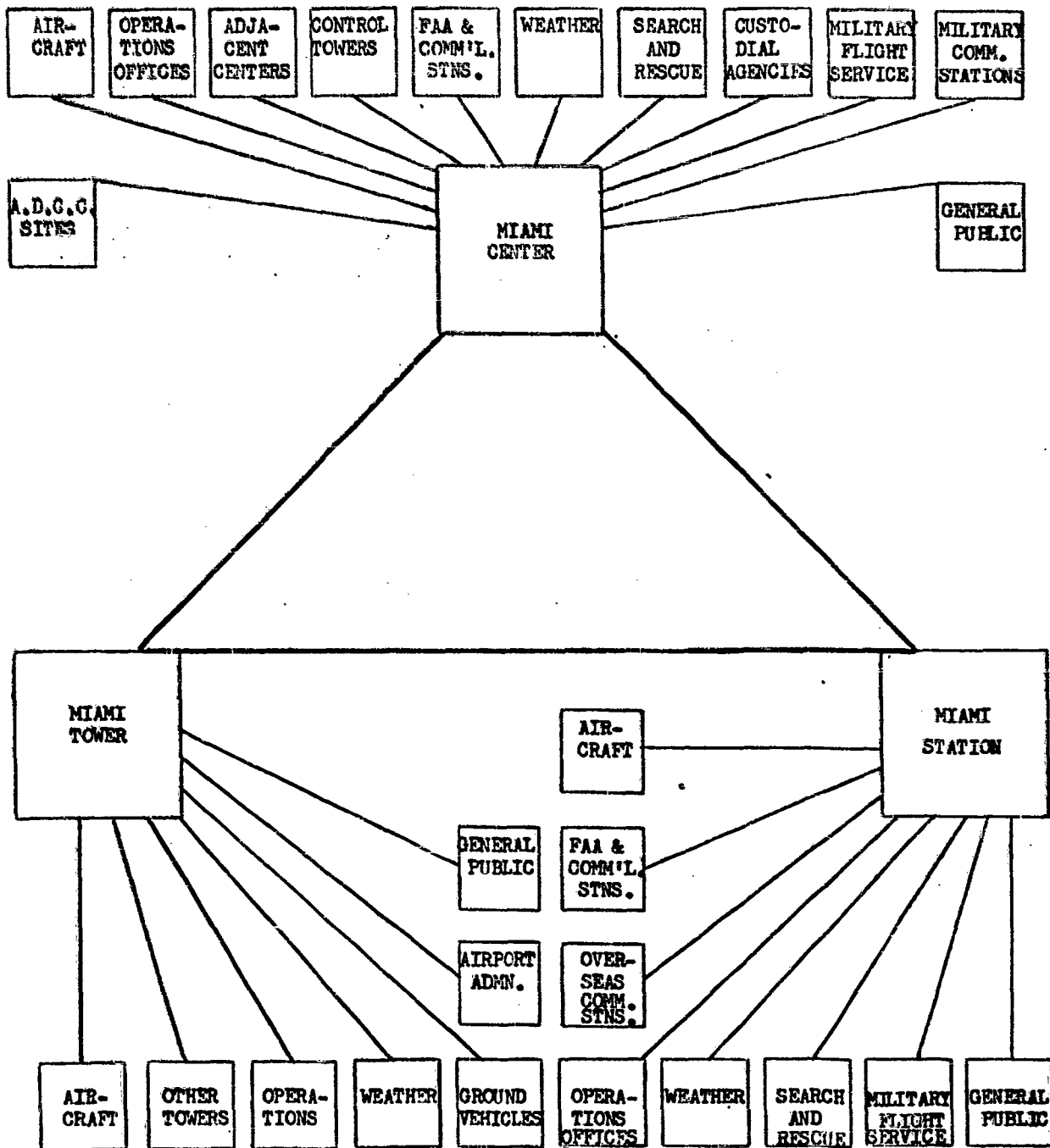


Figure IV-2

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME

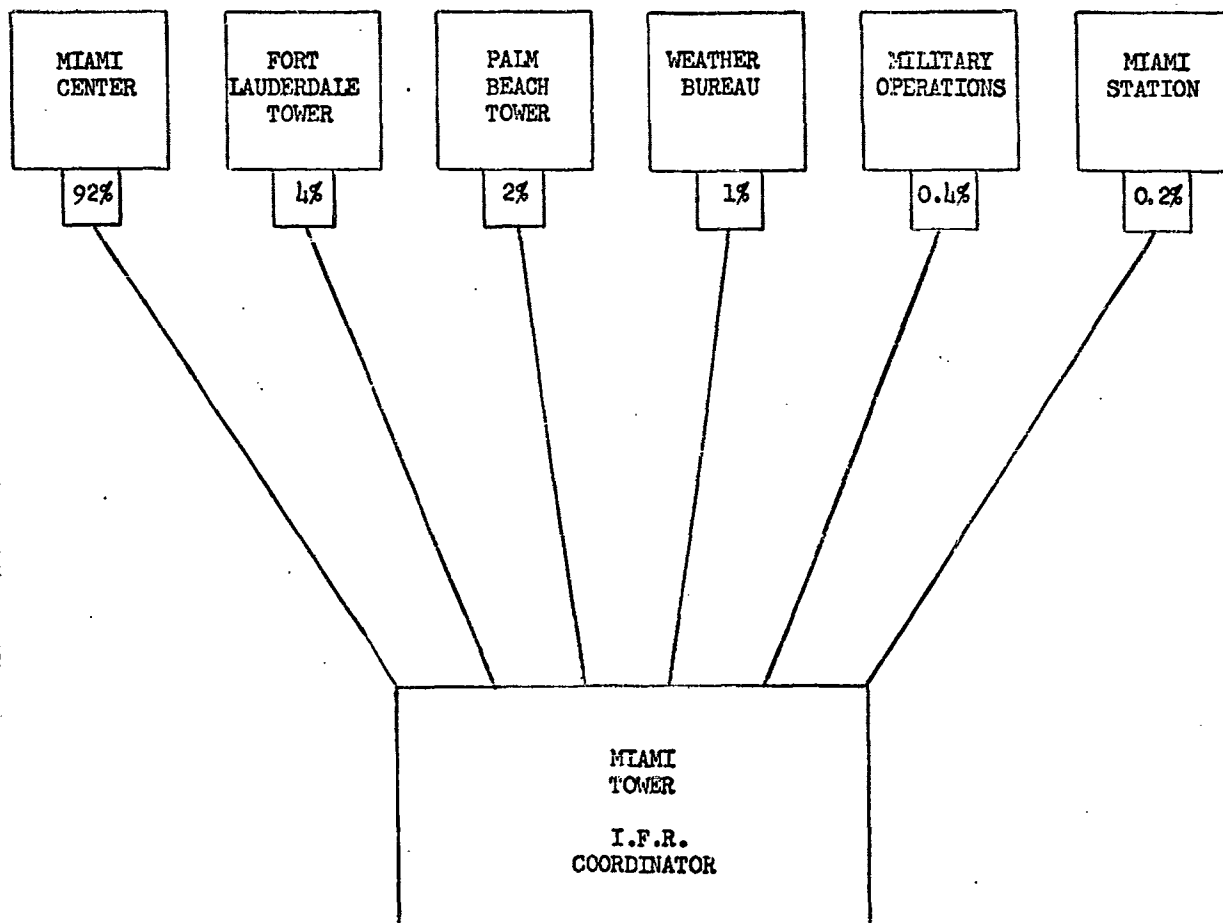


Figure IV-3

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME

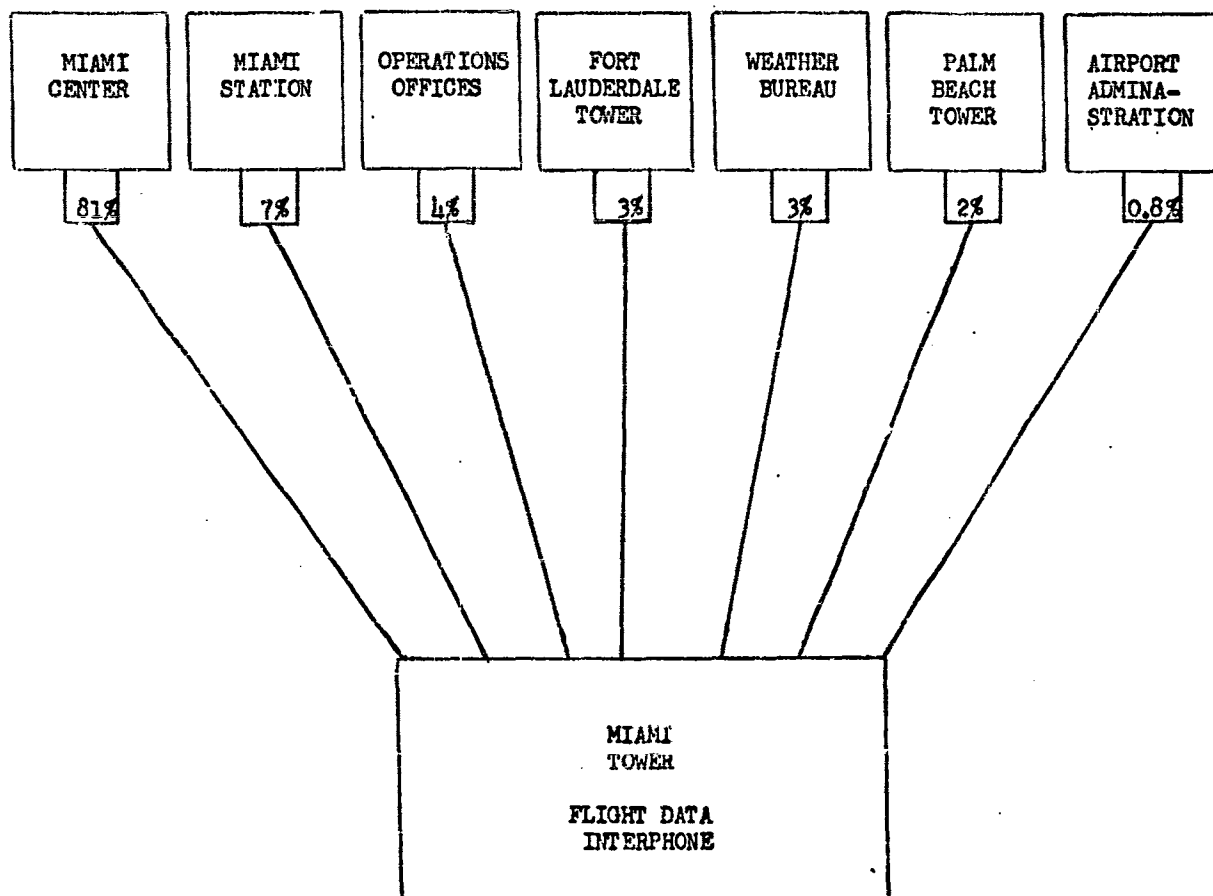


Figure IV-4

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME

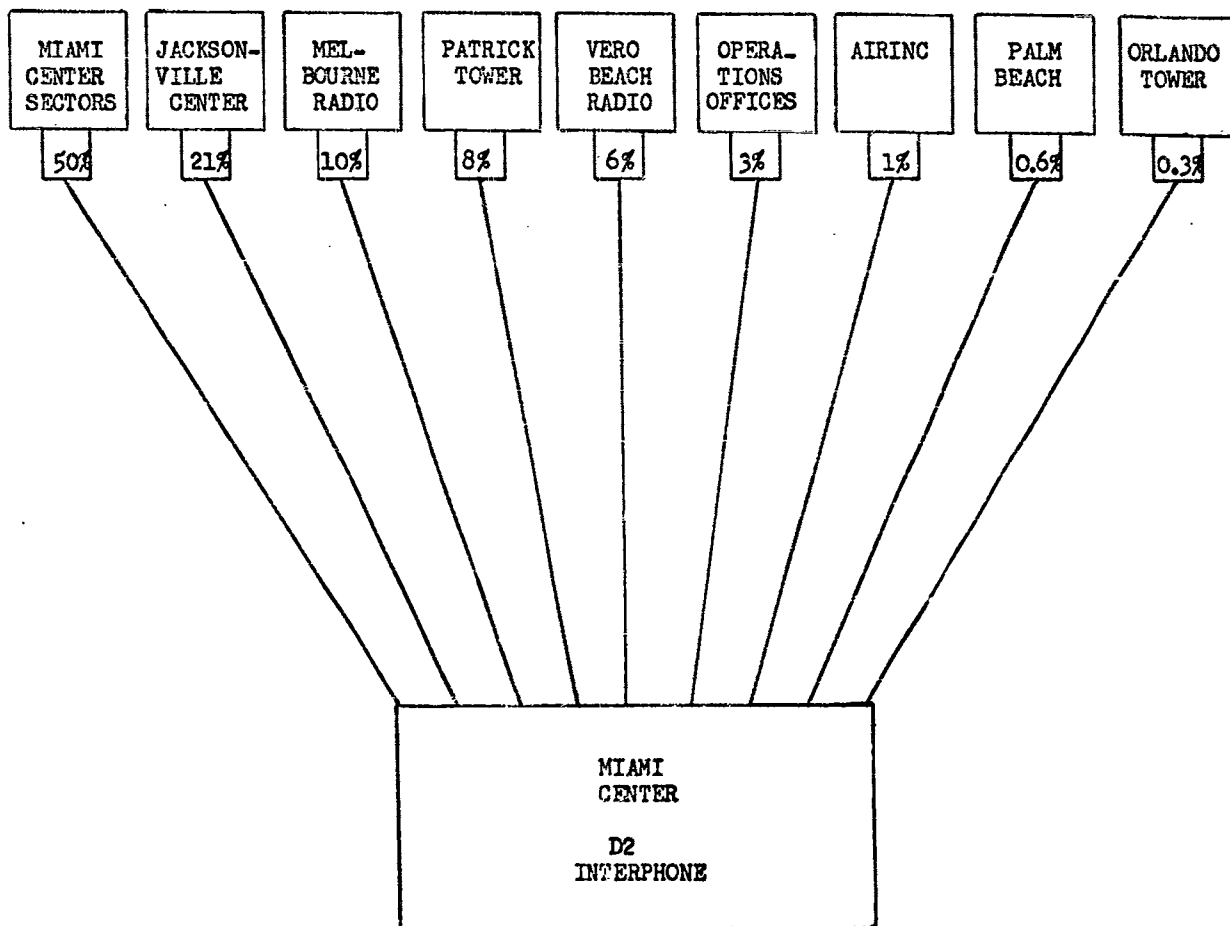


Figure IV-5

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME

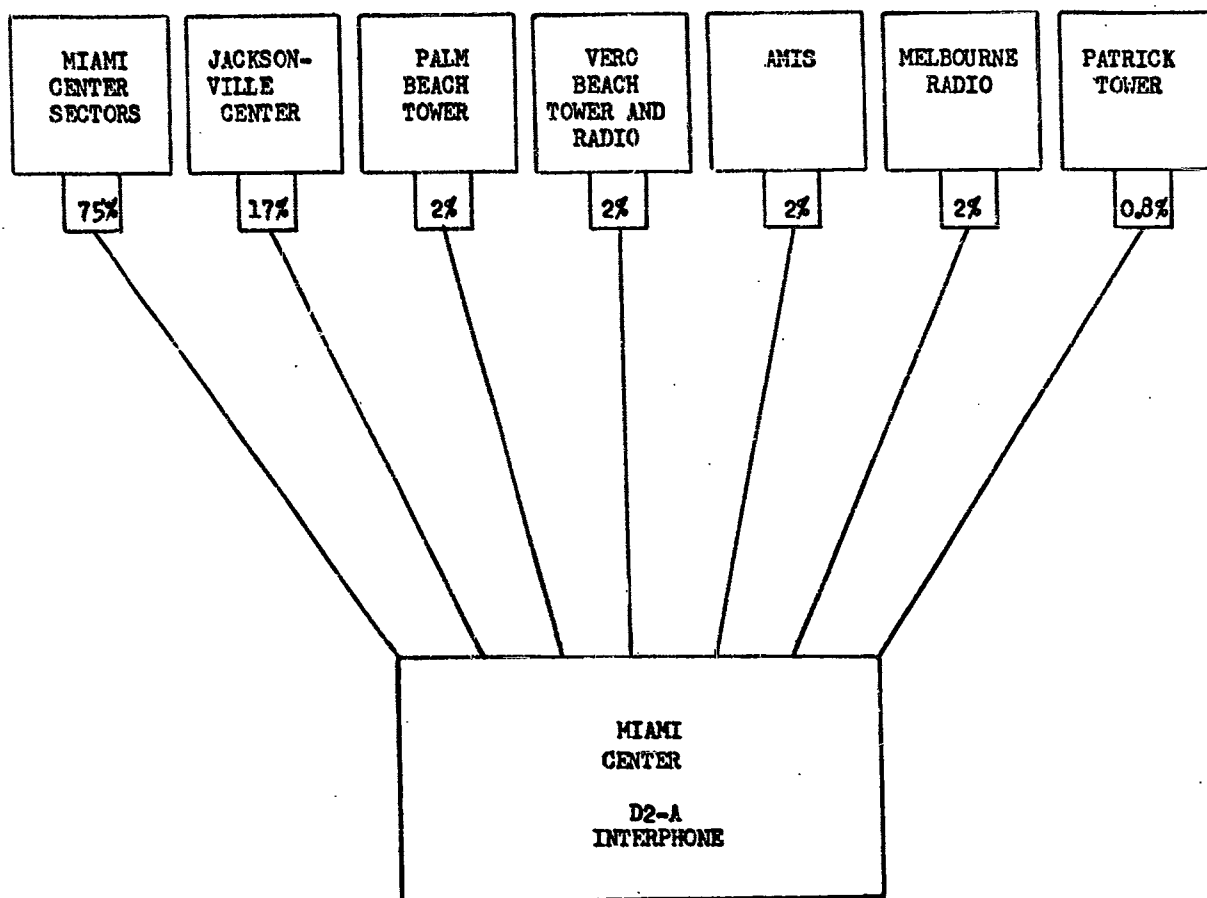


Figure IV-6

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME

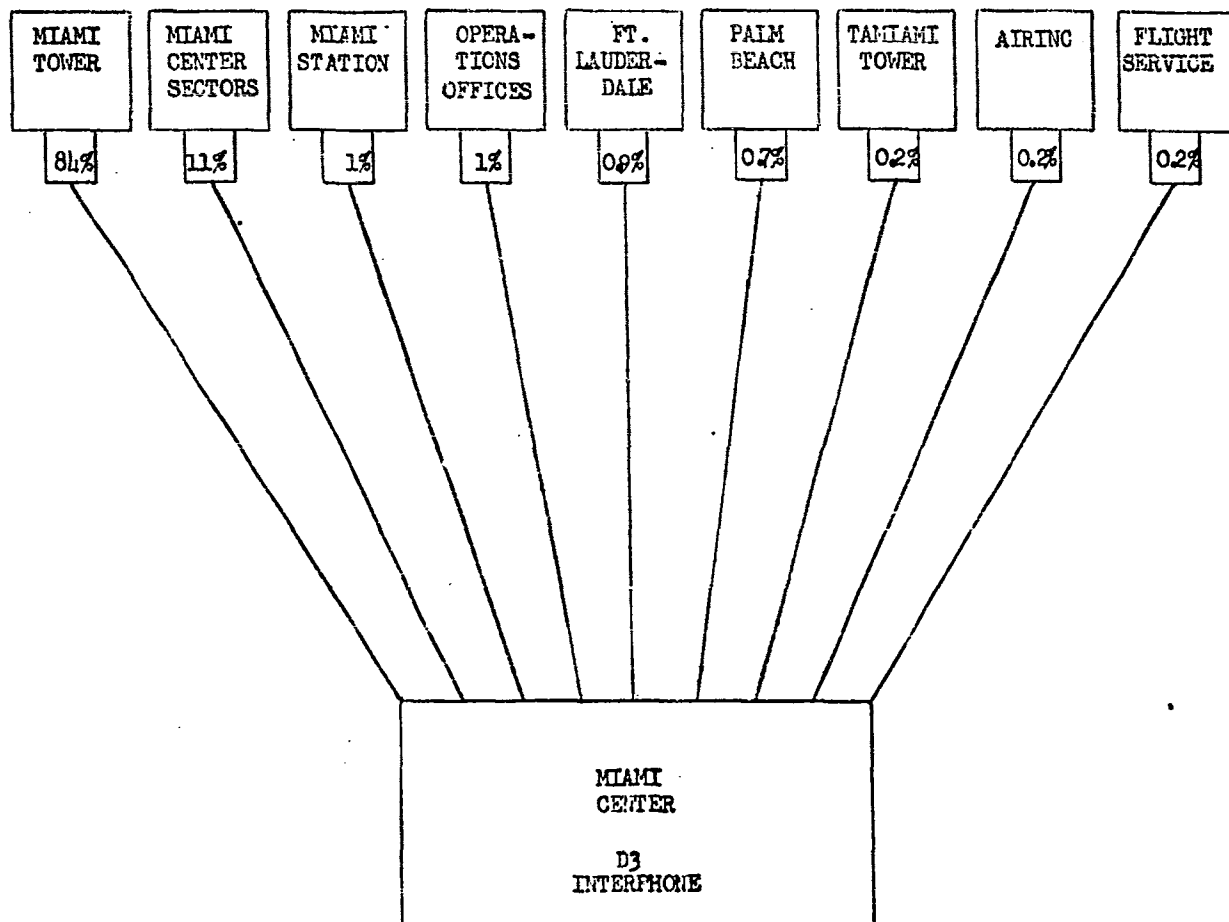


Figure IV-7

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME

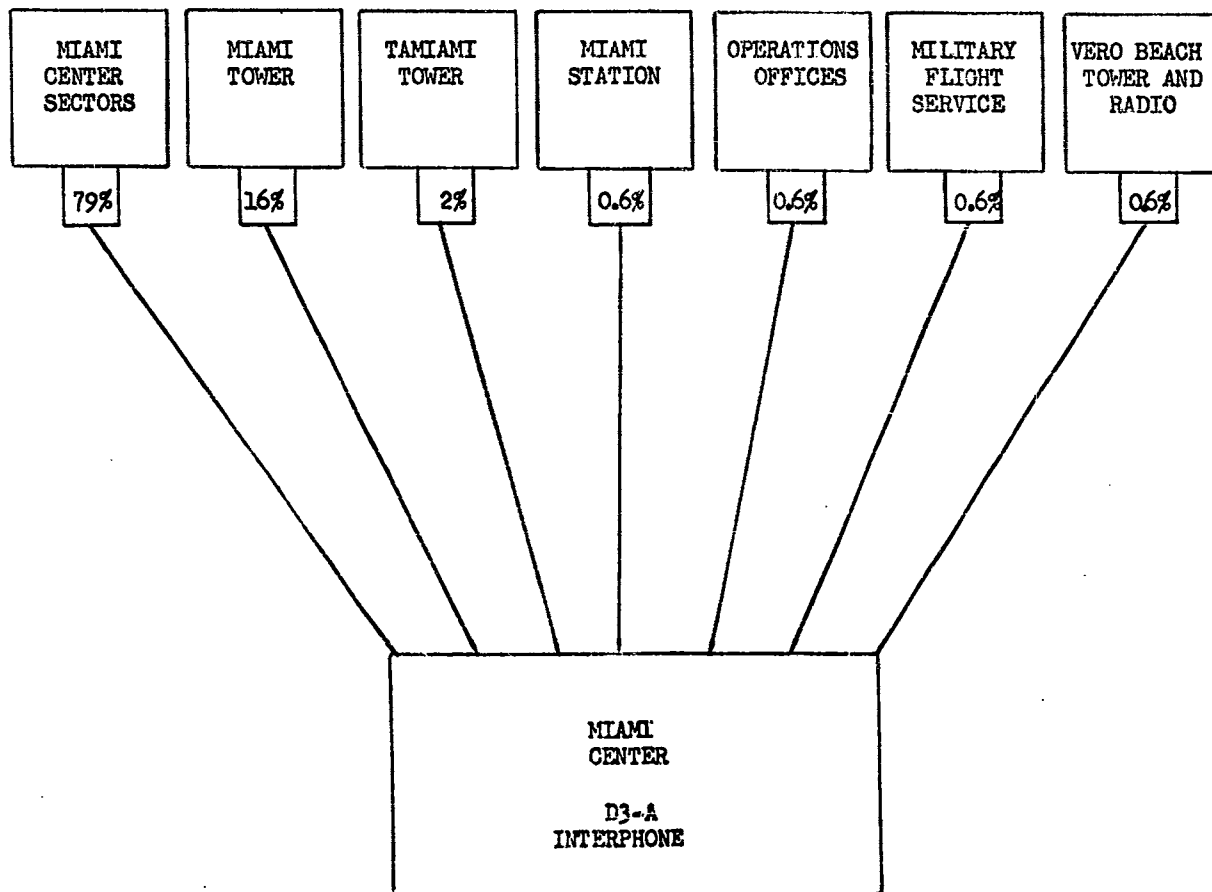


Figure IV-8

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME

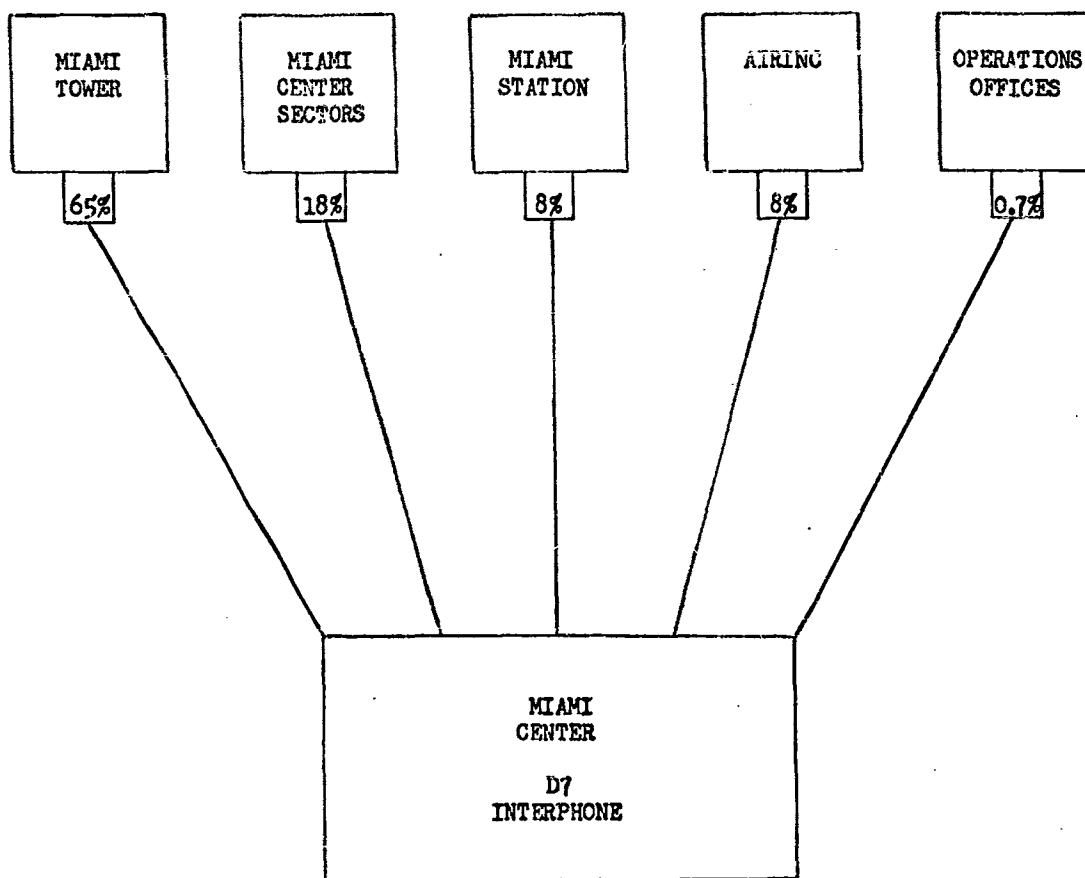


Figure IV-9

COMPOSITION OF R/T AND IP COMMUNICATIONS TIME

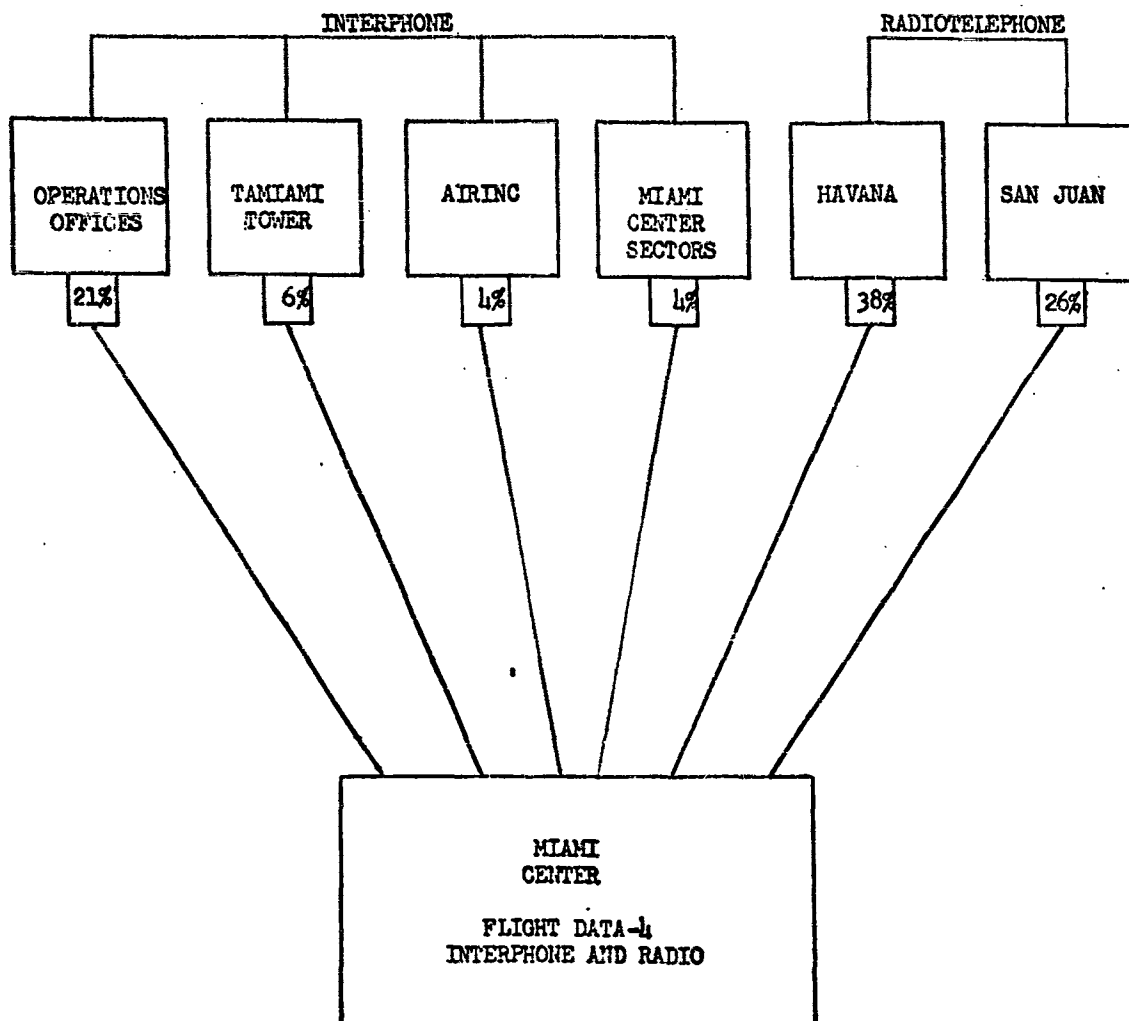


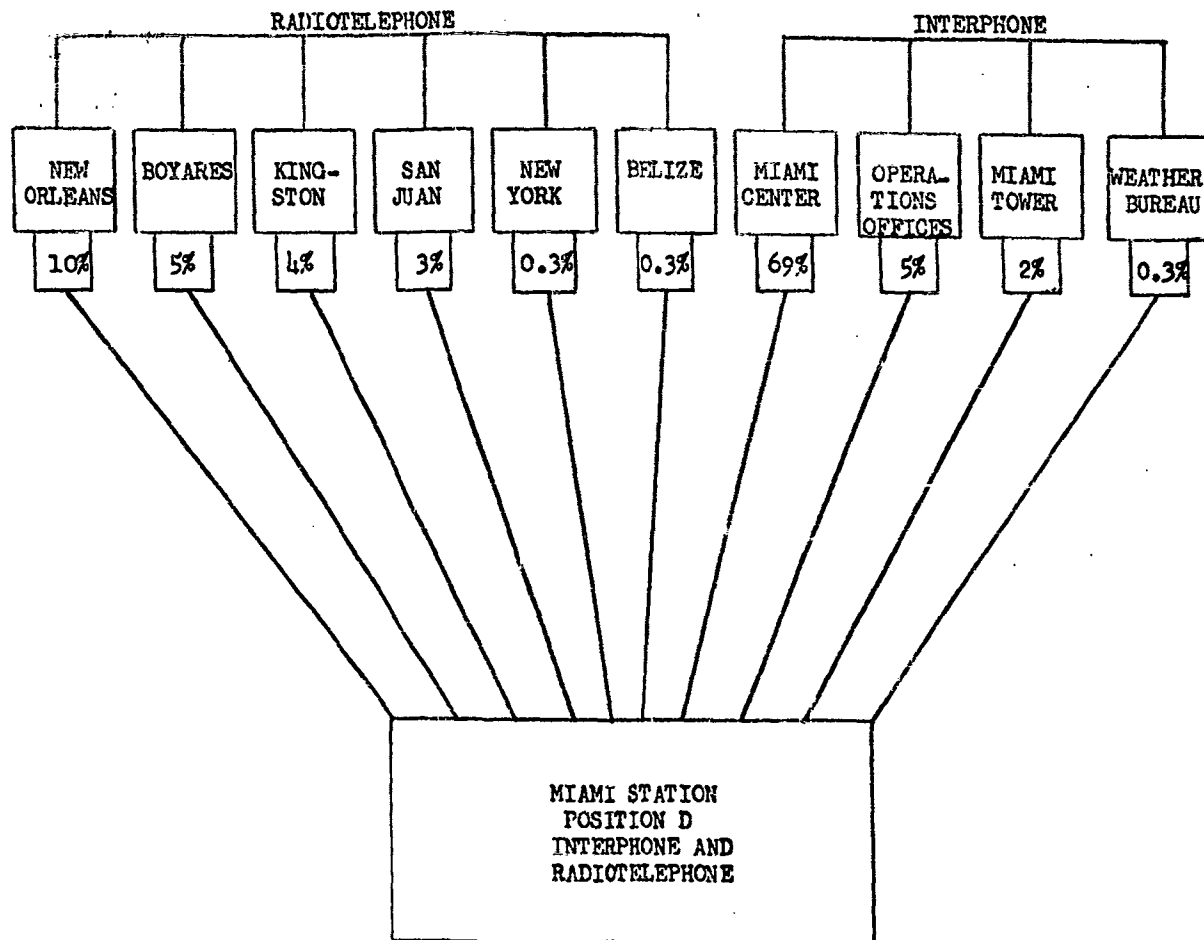
Figure IV-10COMPOSITION OF R/T AND IP COMMUNICATIONS TIME

Figure IV-11

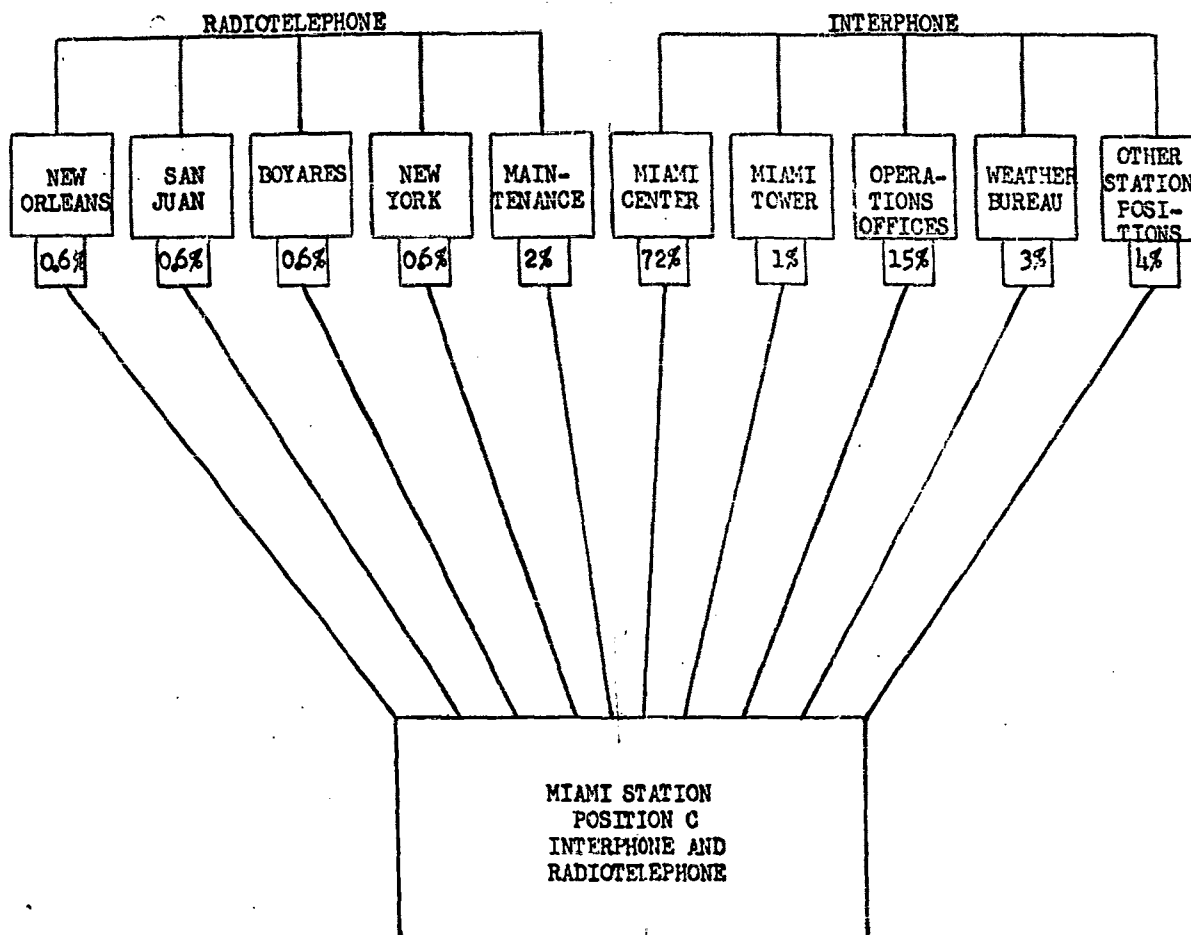
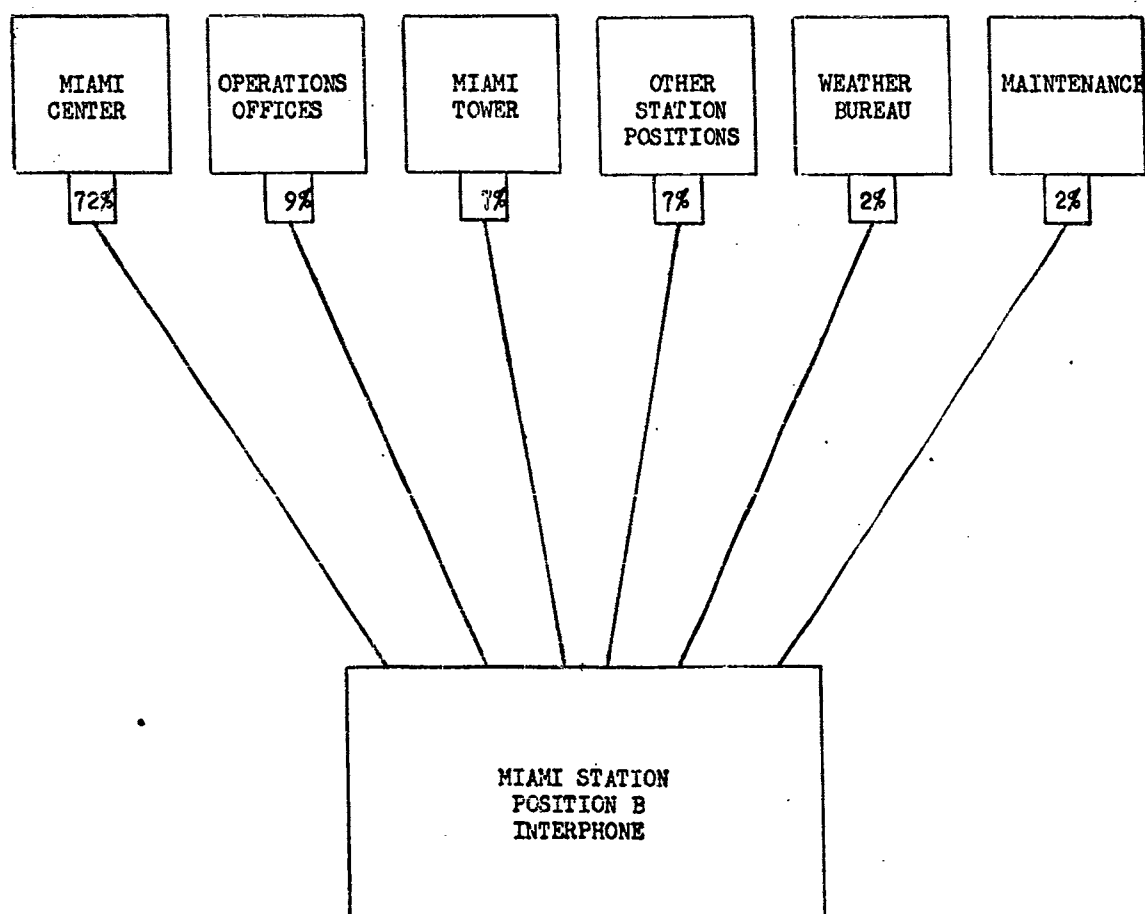
COMPOSITION OF R/T AND IF COMMUNICATIONS TIME

Figure IV-12

COMPOSITION OF INTERPHONE COMMUNICATIONS TIME



2. Frequency Functions for Percent of Time Spent on Coordination Communications

Figures IV-13 to IV-16 show the percentage of time spent on coordination communications in frequency histogram forms. The charts give an indication of the range of conditions encountered during the study as well as the average conditions. The percentages do not include any face-to-face coordination time for adjacent positions within a facility.

Figure IV-13

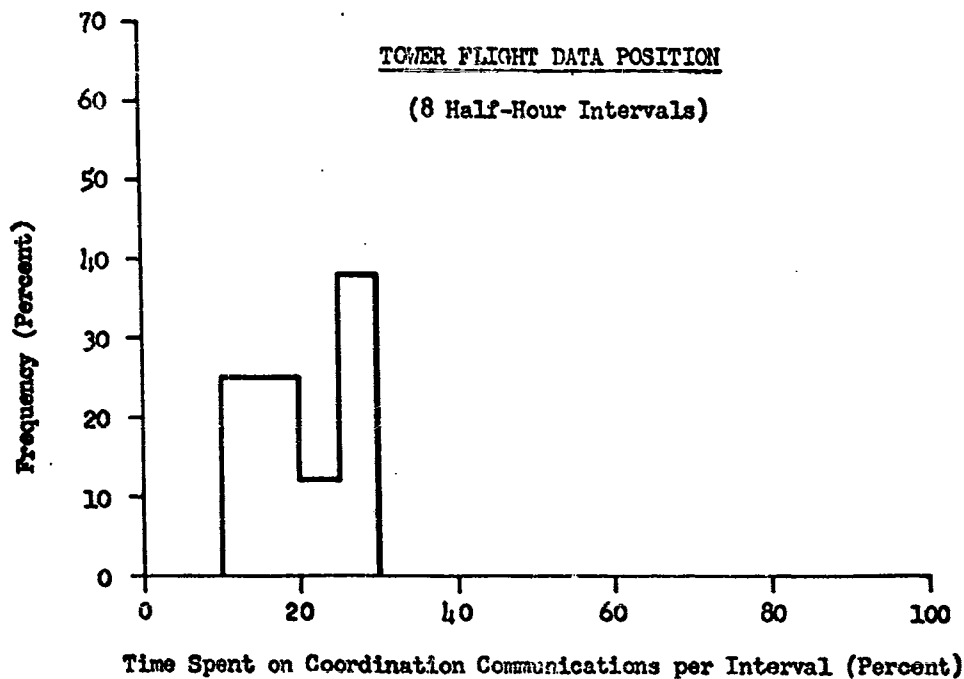
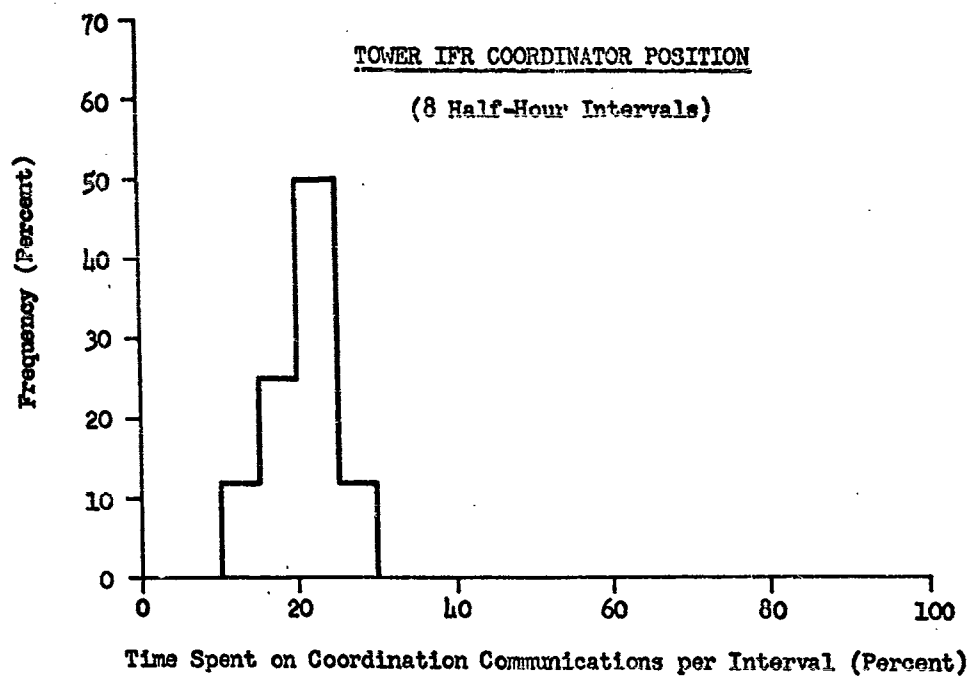
FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON COORDINATION COMMUNICATIONS

Figure IV-14

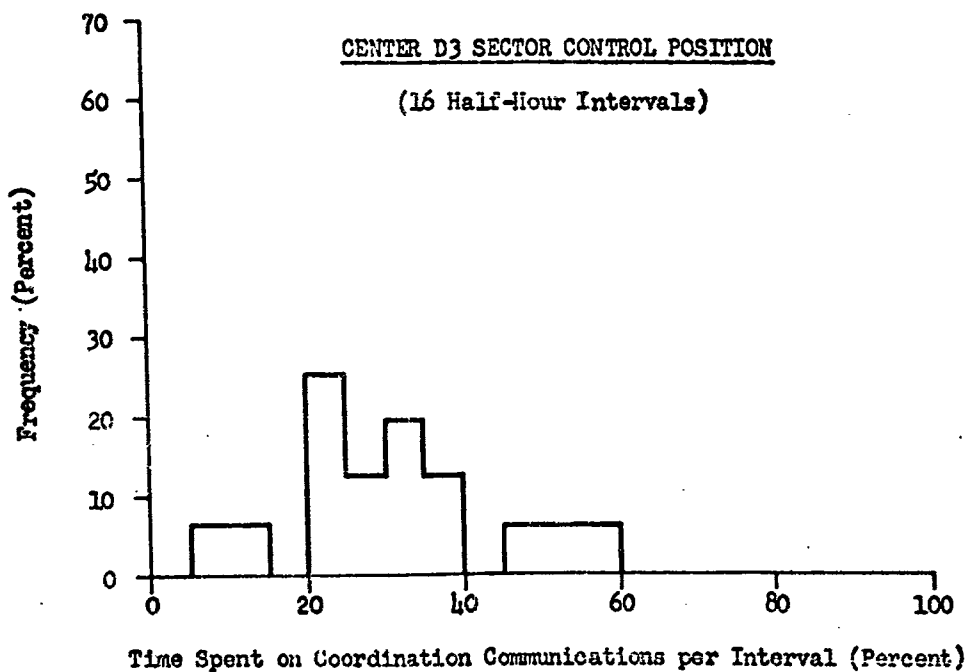
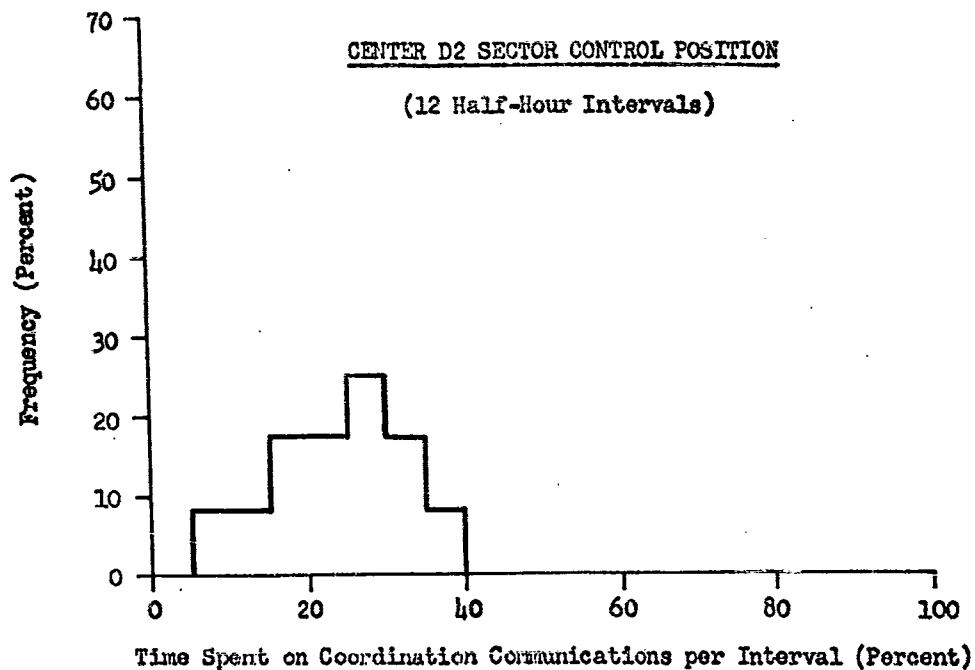
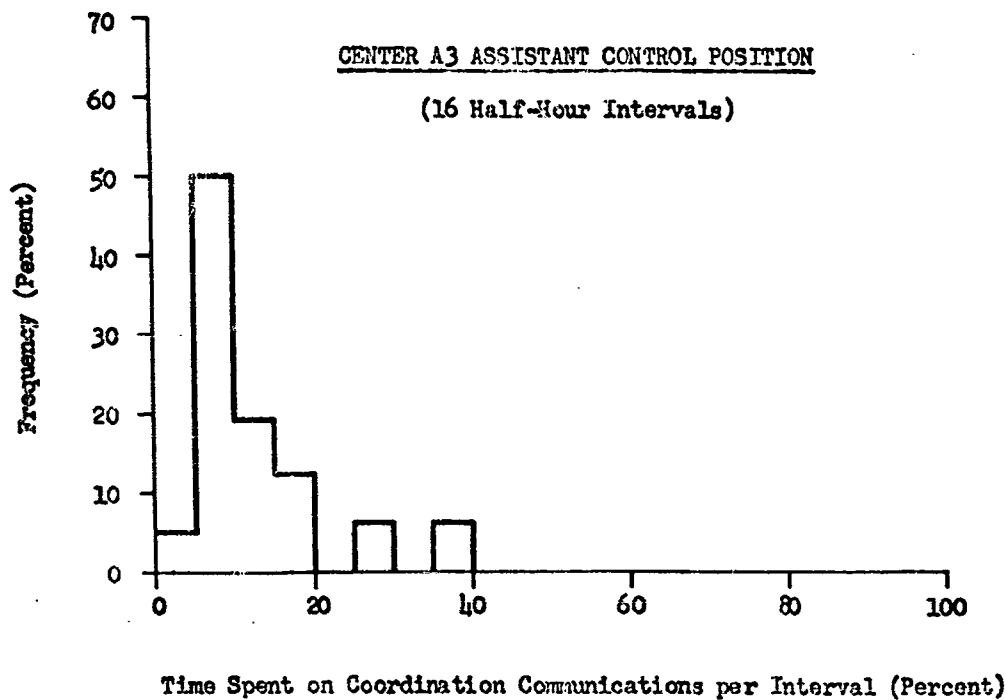
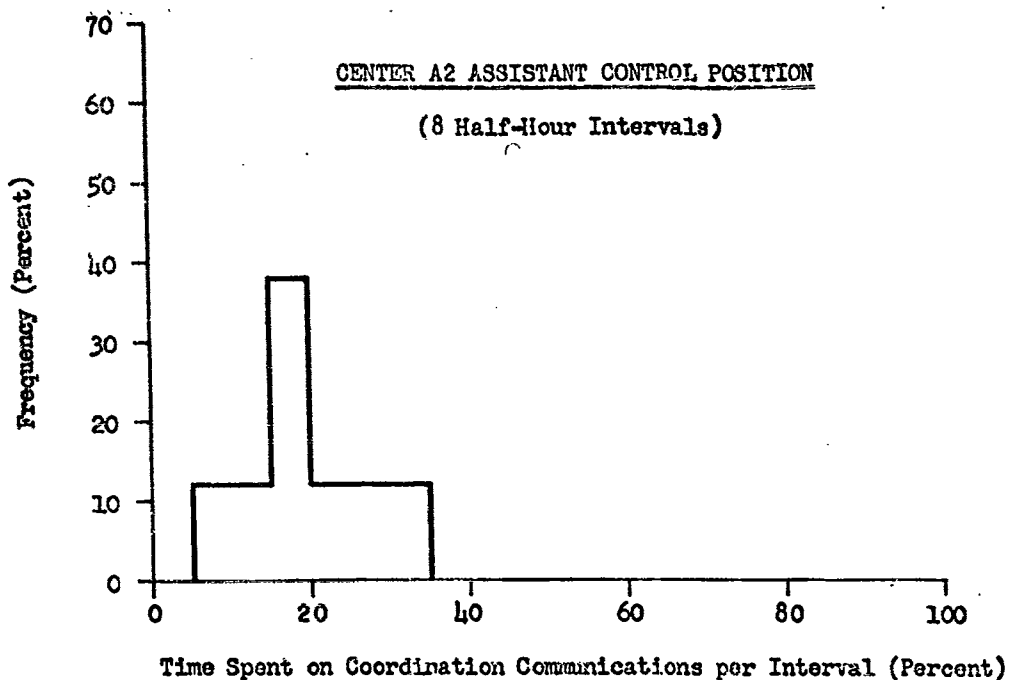
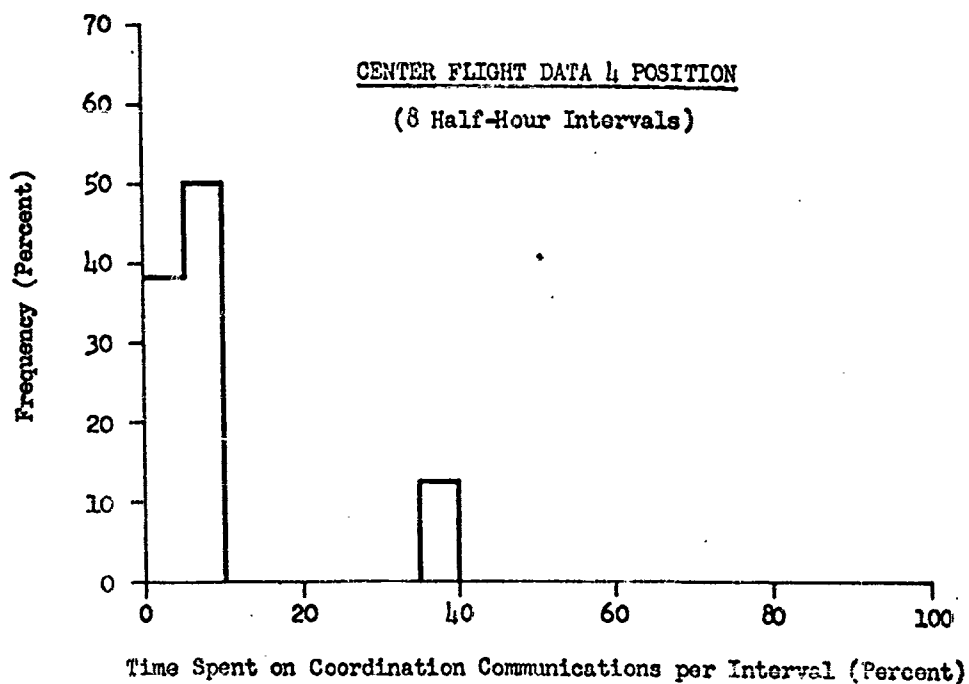
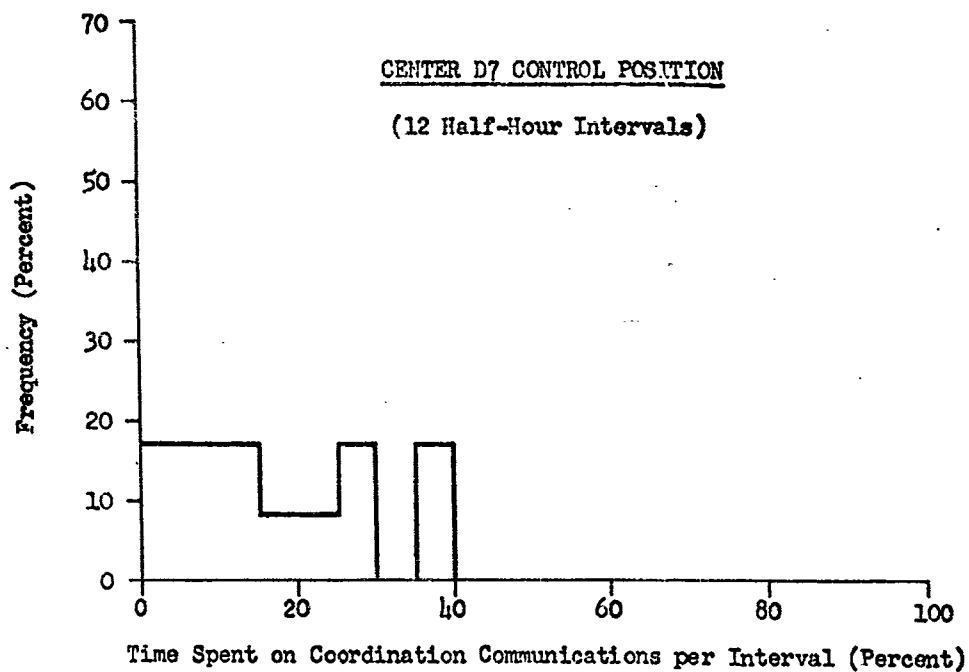
FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON COORDINATION COMMUNICATIONS

Figure IV-15

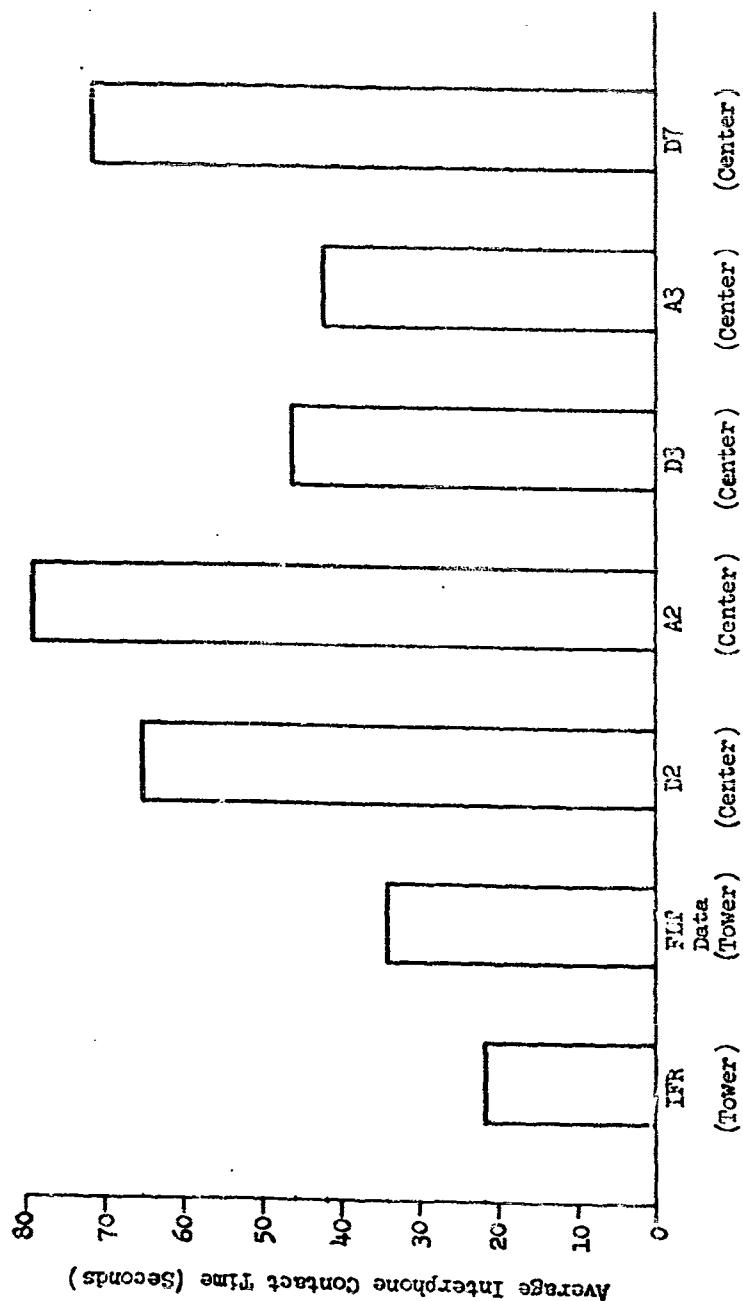
FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON COORDINATION COMMUNICATIONS

FREQUENCY FUNCTIONS FOR PERCENT OF TIME SPENT ON COORDINATION COMMUNICATIONS

3. Average Interphone Communications Time Per Contact

Figure IV-17 shows the overall average time per contact for each interphone position studied.

Figure IV-17
AVERAGE INTERPHONE COMMUNICATIONS TIME PER CONTACT



4. Average Total Interphone Communications Time Per Plane Treated
(by Interphone Position)

Figures IV-18 through IV-21 show the average interphone coordination communications time used by the various positions. The data have been broken down by aviation category. In almost all cases the average handling time for military aircraft was found to be the greatest.

Figure IV-18

AVERAGE TOTAL INTERPHONE COMMUNICATIONS TIME PER PLANE TREATED

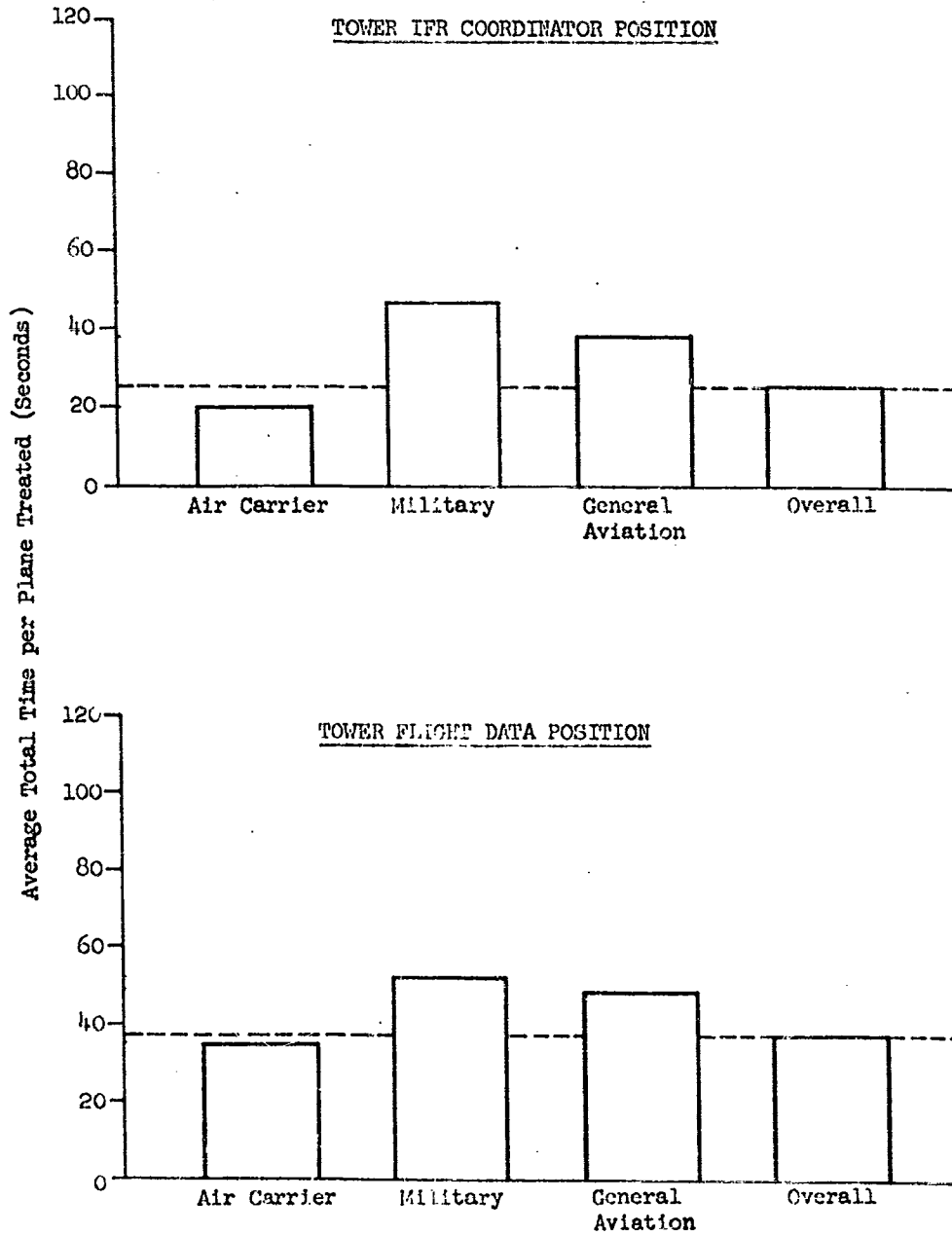


Figure IV-19

AVERAGE TOTAL INTERPHONE COMMUNICATIONS TIME PER PLANE TREATED

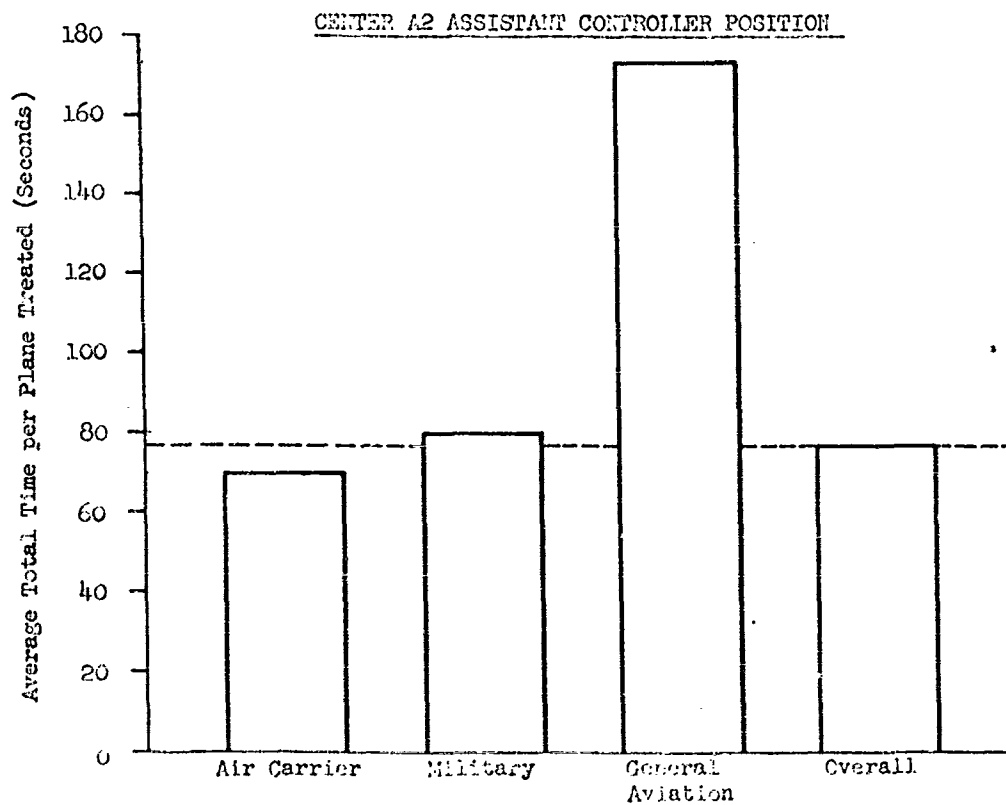
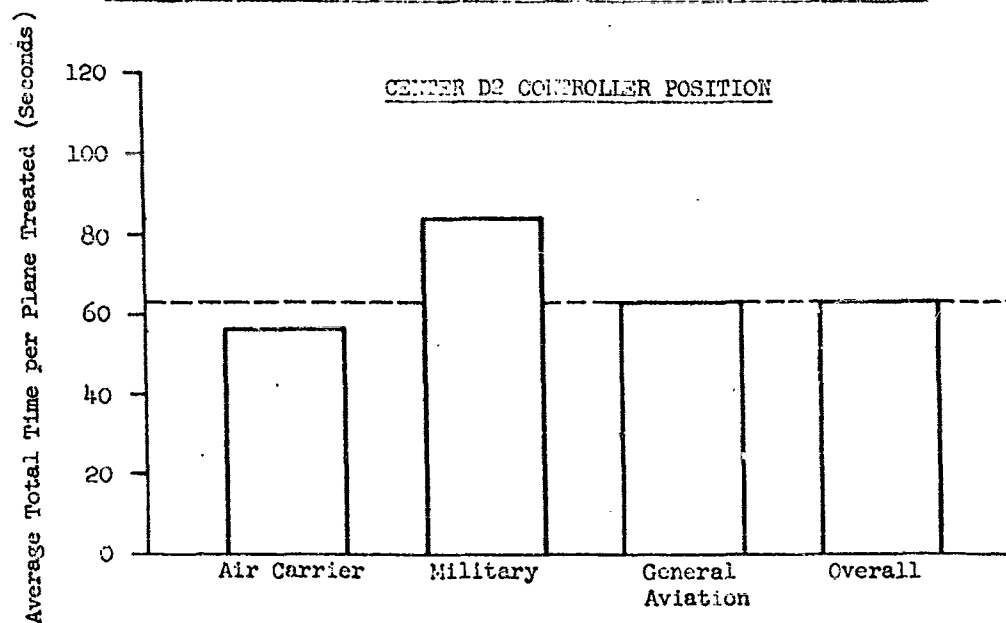


Figure IV-20

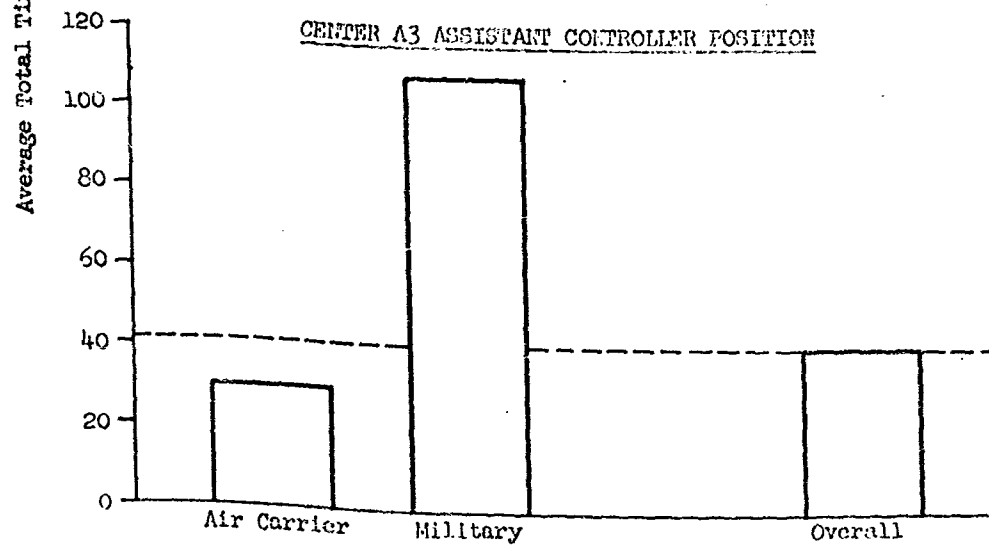
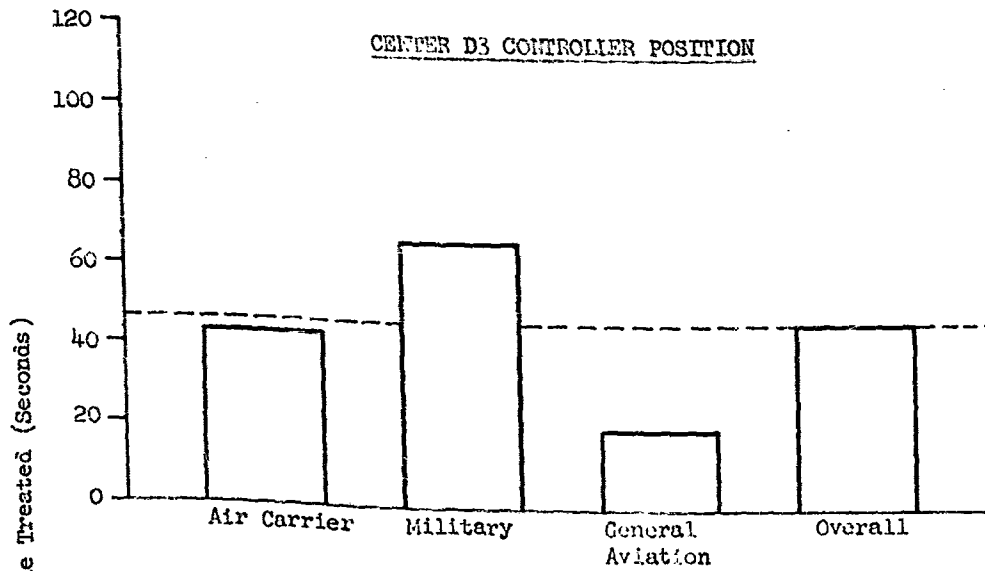
AVERAGE TOTAL INTERPHONE COMMUNICATIONS TIME PER PLANE TREATED

Figure IV-21

AVERAGE TOTAL INTERPHONE COMMUNICATIONS TIME PER PLANE TREATED

