BELL SYSTEM PRACTICES AT&TCo Standard

DIGITAL ALARM SCANNER (DAS)

MAINTENANCE

E2A TELEMETRY

This section is designed to maintain the operational status of the J1P056A E2A digital alarm scanner (DAS) remote. Contained in this section is a trouble diagnosis flowchart (Flowchart 1) for the E2A DAS remote. The trouble diagnosis flowchart is used to isolate failures to a specific area of the system. The procedural charts, contained in this section, test the validity of the area in question. There are various tables used to assist the maintenance procedures. Before performing any part of this section, the E2, E2A, Surveillance and Control of Transmission System (SCOTS), Telecommunications Alarm Surveillance and Control (TASC), T-Carrier Administration System (TCAS), or other Operations Support Systems (OSS) should be checked for failure. The OSS check should indicate whether or not the E2A DAS is suspected of being defective. If the E2A DAS is suspected of being defective, begin with the flowchart and proceed as directed to the appropriate chart.

This section is being reissued to correct errors found in the field test. Revision arrows are used to indicate the more significant changes. The equipment test lists are not affected.

Chart 1 is used independently to show the correct switch settings of the 202T data set. Chart 2 is used independently for voltage test. Chart 3 is used for complete operational testing. Once Chart 3 is entered, proceed directly through the chart until a point is reached at which a test fails. When this point is reached, refer back to the flowchart for recommended circuit pack replacement.

If a block is reached in the flowchart referring to a schematic drawing (SD), the failure is not in a circuit pack. Visually inspect the wiring, connectors, and terminal blocks for physical damage. Read the circuit description (CD) and study the SD. Using an oscilloscope, trouble shoot the circuits to find the wiring problem.

CHART																							P	AGE
1 – 202T Data Set Replacement	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	8
2 – Voltage Test	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	9
3 — Operational Tests	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	٠	11

NOTICE

Not for use or disclosure outside the Bell System except under written agreement

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Flowchart 1—Trouble Diagnosis (See Caution) (Sheet 1 of 6)



Flowchart 1—\$Trouble Diagnosis (See Caution) (Sheet 2 of 6)\$

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Flowchart 1—Trouble Diagnosis (See Caution) (Sheet 3 of 6)



Flowchart 1—Trouble Diagnosis (See Caution) (Sheet 4 of 6)



<u>Caution:</u> Before removing any circuit packs, the +5 volt supply must be removed. This may be done by turning the switch on the dc-to-dc converter to the OFF position. This action does not remove all potentials from the panel, so the office battery, alarm battery supply, and the user supply voltage fuses must be removed before any service is attempted on the panel. When replacing TM317 (MC-1P029-01), the new circuit pack must have a station constants EPROM in the IC14 position with the same serial number as the EPROM of the board it replaces. These numbers should agree with the number in the office records. *Scan points 1-64 in display 5 are on TM319. Scan points 65-160 in display 6 and first half of display 7 are on TM312 (slot B). Scan points 161-256 in second half of display 7 and display are 8 on TM312 (slot C).

Flowchart 1—Trouble Diagnosis (See Caution) (Sheet 5 of 6)



<u>Caution:</u> Before removing any circuit packs, the +5 volt supply must be removed. This may be done by turning the switch on the dc-to-dc converter to the OFF position. This action does not remove all potentials from the panel, so the office battery, alarm battery supply, and the user supply voltage fuses must be removed before any service is attempted on the panel. When replacing TM317 (MC-1P029-01), the new circuit pack must have a station constants EPROM in the IC14 position with the same serial number as the EPROM of the board it replaces. These numbers should agree with the number in the office records.

Flowchart 1-Trouble Diagnosis (See Caution) (Sheet 6 of 6)

CHART 1

202T DATA SET REPLACEMENT

The E2A remotes and associated centrals are connected via a 4-wire private line multipoint data network using a 202T-type data set. There are options or features available on the data set which are required for E2A operation. These options are checked and/or set in this chart. The remainder of the data set options should be determined at the installation site by local engineering. For actual data set switch settings, refer to Section 590-031-200.

APPARATUS:

Spare 202T Data Set Circuit Pack

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STEP	PROCEDURE
1	Remove the front cover from the 202T data set, and remove the data set circuit pack from its housing.
2	Verify the data set is set up with the following features or switch settings:
	• Switch S3 is set up for 4-wire operation (factory furnished).
	• Soft turnoff and squelch intervals (switch S2) are set for \emptyset , \emptyset (see Section 592-031-299).
	• Fast carrier detection is set for "in" (factory furnished).
	• Clear-to-send interval is set for "8 ms" (factory furnished).
	• Clamp is set for "in" (factory furnished).
	• Carrier detection reset is set for "in" (shorting plug).
	• Second shorting plug is set for "continuous carrier out" (factory furnished).
	• Grounding option (screw S1) is set for "signal ground not connected to frame ground"
3	Insert the new circuit pack into the data set housing, and replace the front cover.
4	Return to the flowchart.

CHART 2

VOLTAGE TEST

APPARATUS:

KS-14510, L1, Volt-Ohm-Milliammeter (VOM) or equivalent

39A DAS Test Extender Card

Note: Whenever the extender is used, the switches on it must be in the NORMAL (up) position unless otherwise specified.

TEP	PROCEDURE
1	Caution: Before removing any circuit packs, the +5 volt supply must be removed. This may be done by turning the switch on the dc-to-dc converter to the OFF posi- tion. This action does not remove all potentials from the panel; therefore the office battery, alarm battery supply, and the user supply voltage fuses must be removed before any service is attempted on the panel. When replacing TM317 (MC-1P029- 01), the new circuit pack must have a station constant erasable programmable read-only memory (EPROM) in the IC14 position with the same serial number as the EPROM of the board it replaces. These numbers should agree with the number in the office records.
2	Remove TM317 card from slot D.
3	Insert the circuit pack extender into slot D and insert the TM317 card into it.
4	Use pins 200, 201, 300, and 301 as a ground reference, and measure pins 000, 001, 100, and 101 for $+5$ volts ± 0.25 volts.
5	Check pin 032 for -5 volts ± 0.5 volts.
6	Replace the TM317 card in slot D.
7	Remove TM318 card from slot E.
8	Insert the circuit pack extender into slot E and insert the TM318 card into it.
9	Use pins 200, 201, 300, and 301 as a ground reference, and measure pins 000, 001, 100, and 101 for $+5$ volts ± 0.25 volts.
10	Check pin 032 for -5 volts ± 0.5 volts.
11	Check pin 056 for alarm battery supply $(-24 \text{ volts}, \text{ or } -48 \text{ volts})$.
12	Replace the TM318 card in slot E.

STEP	PROCEDURE
13	Remove TM319 card from slot A (if equipped).
14	Insert the circuit pack extender into slot A and insert the TM319 card into it.
15	Use pins 200, 201, 300, and 301 as ground reference, and measure pins 000, 001, 100, and 101 for $+5$ volts ± 0.25 volts.
16	Check pin 056 for the user supply voltage (-24 or -48 volts).
17	Replace the TM319 in slot A.
18	Remove TM312 card from slot B (if equipped).
19	Insert the circuit pack extender in slot B and insert the TM312 card into it.
20	Repeat Steps 15 and 16.
21	Replace the TM312 card into slot B.
22	Remove TM312 card from slot C (if equipped).
23	Insert the circuit pack extender in slot C and insert the TM312 card into it.
24	Repeat Steps 15 and 16.
25	Replace the TM312 card into slot C.
26	Remove TM313 card from slot F (if equipped).
27	Insert the circuit pack extender in slot F and insert the TM313 card into it.
28	Repeat Step 15.
29	Replace the TM313 card into slot F.
30	If any voltage is not correct, refer to SD-1P185-01 and determine the faulty circuit pack, convert- er, or wiring.
31	Return to Flowchart 1.

CHART 3

OPERATIONAL TESTS

APPARATUS:

KS-20937, L1, E-Telemetry Station Test Set

KS-20937, L4, General Purpose Plug-In

KS-20937, L6, E2A Test Cable

KS-14510, L1, Volt-Ohm-Milliammeter (VOM) or equivalent

Spare Circuit Packs

39A DAS Test Extender Card

Note: Whenever the extender is used, the switches on it must be in the NORMAL (up) position unless otherwise specified.

STEP

PROCEDURE

A. Initial Setup

1 Caution: Before removing any circuit packs, the +5 volt supply must be removed. This may be done by turning the switch on the dc-to-dc converter to the OFF position. This action does not remove all potentials from the panel; therefore, the office battery, alarm battery supply, and the user supply voltage fuses must be removed before any service is attempted on the panel. When replacing TM317 (MC-1P029-01), the new circuit pack must have a station constant EPROM in the IC14 position with the same serial number as the EPROM of the board it replaces. These numbers should agree with the number in the office records.

- 2 Disconnect P1 from the 202T data set, and connect the E2A test cable between P1 and the station test set.
- 3 Insert the general purpose plug-in into the station test set.
- 4 Record the station address and communication data rate.

		CHART 3 (Contd)	
STEP		PROCEDURE	
5	Set the station test s	et switches as follows:	
	SWITCHES	POSITION	
	SYSTEM	E2A if data rate is 1200 bits/sec.	
		E2 if data rate is 600 bits/sec.	
	PARITY	В	
	BIT RATE	Station data rate (600 or 1200 bits/sec)	
	MODE	Once	
	ENABLE	Normal	
	DISPLAY WORD ERROR	OFF	
	DISPLAY WORD SELECT	1	
	RCU	OFF	
	MESSAGE LENGTH	1	
		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	
	* WORD 1	0 0 0 Station Address 0 0 0 0 0 0	
	WORD 2 through WORD 4	All down	
	POWER	ON	
	MASTER CLEAR	Depress and release	

* See Table A for address switch setting.

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STEP	PROCEDURE
6	Depress and release the RESTART switch on TM317
	B. Alarm Poli Test
7	Depress and release the station test set START switch.
	Requirement: RECEIVE INFORMATION indicators 1, 2, and 7 will light and all others will go off with the possible exception of indicator 13.
	Note: If indicator 13 is lighted, an error occurred. Record this fact and presend
	C. Group Report Test
8	Make the following changes to the station test set switch positions:
	SWITCHES POSITION
	DISPLAY WORD 16 SELECT
	WORD 1 0 1 0 1 12 13 14 15 16 17
	RECEIVER CLEAR Depress and release
9	Depress and release the station test set START switch.
	Requirement: RECEIVE INFORMATION indicators 1 and 2 will light and all others will go off.
10	If indicator 13 was lighted in Step 7, repeat Steps 8 and 9 with the DISPLAY WORD SELECT switch set to 9; otherwise, go to Step 11.
	Requirement: Record the RECEIVE INFORMATION indicators that light, and refer to Table B to determine the type of error.

STEP

PROCEDURE

D. Display Report Test

11 Make the following changes in the station test set switch positions:

SWITCHES

POSITION

DISPLAY WORD 4 SELECT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WORD 1	0	1	♦1€			Sta	tion	Ad	dre	ss		0	0	0	0	0	0
WORD 2	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
MESSAGE LENGTH	2																
RECEIVER CLEAR	De	pre	ss a	nd	rele	ase											

12 Depress and release the station test set START switch.

Requirement: Indicator 1 will be the only RECEIVE INFORMATION indicator that will light.

13 If the DAS is equipped with the combined I/O card (TM319), perform Steps 14 through 20; if equipped with the relay card (TM313), perform Steps 21 through 27, also. If the DAS has neither of these cards, perform Step 28.

E. Remote Switch Test for Combined I/O Card

14 Choose a discrete control point from 1 through 16 that is unused and connect the VOM between the CC and CCR points. Set the VOM to read OHMS, and set the range switch to X1.

STEP

PROCEDURE

15

Make the following changes in the station test set switch positions:

SWITCHES						POS		M									
DISPLAY WORD SELECT	1																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WORD 1	0	1	0			Sta	tion	Ac	ldre	SS		0	0	0	0	0	0
WORD 2	1		Po	int		0	0	0	0	0	0	1	0	0	0	0	0
RECEIVER CLEAR	D	epro	ess	and	l re	leas	se										

Note: Refer to Table C for point switch settings.

Depress and release the station test set START switch. 16

> **Requirement:** The VOM needle will momentarily deflect, and the station test set RECEIVE INFORMATION indicators 1 and 12 will light. All other information indicators will go off.

STEP

PROCEDURE

F. Relay Output Test for Combined I/O Card

17 Make the following changes in the station test set switch positions:

SWITCHES

POSITION

WORD 2

WORD 3

	Z	J	4	Э	0	-6	ð	9	10	11	12	13	14	19	10	17
0	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1
1	0	0			Sta	tion	Ac	ldre	ss		0	0	1	1	1	1
1	1	0	0	0		Po	int	<u>.</u>	0	0	0	0	0	0	0	0

RECEIVER CLEAR Depress and release

MESSAGE LENGTH 3

Note: Refer to Table D for point switch settings.

18 Depress and release the station test set START switch.

Requirement: The VOM needle will deflect upwards and remain high. The station test set RECEIVE INFORMATION indicators 1 and 12 will light. All other information indicators will go off.

STEP					PRO	CED	URE								
19	Make the following cha	nges	in the	e sta	ation te	est s	et s	wit	ch p	ositio	ons:				
	SWITCHES				<u>PO5</u>	ITIO	<u>ı</u>								
		1	2 3	4	56	7	8	9	10	11	12	13	14	15	16
	WORD 3	1	0 0	0	0	Po	int		0	0	0	0	0	0	0
	RECEIVER CLEAR	D	epress	and	l releas	se									
		- **	tion to	oet a	et ST/	ART	swi	tch	•						
20	Depress and release th	e sta	uon u												
20	Depress and release th Requirement: The RECEIVE INFORMAT go off.	VOM TION	needl indica	le w itor:	ill retu s 1 and	rn t 12 v	o th vill]	e n ligh	orma it. A	al po ll otl	sitio 1er i1	n, ar nforr	id the natio	e stat n ind	ion ica
20	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test f	VOM TION	I needl indica	le w itor: rd	ill retu s 1 and	rn t 12 v	o th vill]	e n ligh	orm: it. A	al po ll otł	sitio 1er i1	n, ar nforr	id the natio	e stat n ind	ion ica
20 21	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test for Choose a discrete contr the CC and CCR points	VOM FION for Re	indica indica lay Ca int fro	le w itors rd 0m 1 VOM	ill retu s 1 and 7 throu I to rea	rn t 12 v gh 8 d O	o th vill 30 th HM	e n ligh at [:] S, a	orma it. A is un and s	al po il oth used set th	sitio ner in and ne ra	n, an nforr conr	nd the natio nect t swite	e stat n ind he V(ion ica OM X1.
20 21 22	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test for Choose a discrete contr the CC and CCR points Make the following character	VOM TION or Re ol po s. Set anges	I need indica lay Ca int fro t the V s in th	le w htor: rd 0m 1 70M e st	ill retu s 1 and 7 throu I to rea ation t	rn t 12 v gh 8 d O	o th vill 1 60 th HM set s	e n ligh at : S, a	orma it. A is un and s cch p	al po ll oth used set th positi	sitio her in and he ra ons:	n, an nforr conr	nd the natio nect t swite	e stat n ind he V(ion ica OM X1.
20 21 22	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test for Choose a discrete contr the CC and CCR points Make the following char <u>SWITCHES</u>	VOM TION or Re ol po s. Set anges	I need indica int fro t the V s in th	le w ators r d 70M e st	ill retu s 1 and 7 throu I to rea ation t	rn t 12 v gh & d O est s sino	o th vill 1 80 th HM set s	e n ligh at : S, a	orma it. A is un and s cch p	al po ll oth used het th	sitio ner in and ne ra ons:	n, ar nforr conr nge	nd the natio nect t swite	e stat n ind he V(ion ica OM X1.
20 21 22	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test for Choose a discrete contr the CC and CCR points: Make the following cha <u>SWITCHES</u>	VOM FION or Re rol po s. Set ange:	I need indica lay Ca int fro the V s in th	le w htors rd m 1 VOM e st	ill retu s 1 and 7 throu I to rea ation t \underline{PO} 5 6	rn t 12 v agh 8 ad 0 est s sino	o th vill : 30 th HM set s N	en ligh s. a s. a swit	orma it. A is un and s cch p	al po ll oth used het th positi	sitio ner in and ne ra ons:	n, an nforr conr nge	nd the natio	e stat n ind he V(h to 15	ion ica OM X1.
20 21 22	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test for Choose a discrete contr the CC and CCR points Make the following char <u>SWITCHES</u> WORD 1	VOM TION or Re ool po s. Set anges	I need indica lay Ca int fro the V s in th 2 3 1 1	le w ator: rd 0m 1 70M e st	ill retu s 1 and 7 throu I to rea ation t <u>PO</u> 5 6 Sta	rn t $12 v$ agh ϵ ad O est s sitio	o th vill : 30 th HM set s N 8	e n ligh at : S, a swit 9 dre	orma it. A is un and s tch p 10 ss	al po ll oth used het th positi	sitio her in and he ra ons:	n, an nforr conr nge	nd the natio	e stat n ind he V(h to 15 0	ion ica DM X1.
20 21 22	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test for Choose a discrete contr the CC and CCR points Make the following char <u>SWITCHES</u> WORD 1 WORD 1 WORD 2	VOM FION or Re ol po s. Set anges	indica indica int fro t the V in the s in th 2 3 1 1 Poi	e w ntor: rd 0m 1 70M e st	ill retu s 1 and 7 throu to rea ation t <u>PO</u> 5 6 Sta P/O	rn t 12 v agh & d O est s sino 7 tion SG	o th vill 30 th HM set s N 8 Ad	e n ligh sat: S, a swit 9 dre	orma is un and s tch p 10 ss	al po ll oth used et th positi	sitio her in and he ra ons: 12 0 1	n, ar nforr conr nge	nation nect t switc 14 0 DSG	e stat n ind he V(h to 15 0	ion ica OM X1.
20 21 22	Depress and release th Requirement: The RECEIVE INFORMAT go off. G. Remote Switch Test for Choose a discrete contr the CC and CCR points Make the following cha SWITCHES WORD 1 WORD 1 WORD 2 RECEIVER CLEAR	VOM FION or Re col po s. Set anges 1 0 1 D	indica indica int fro the V in the in the a in the 2 3 1 1 Poi epress	e w rd om 1 70M e st 4 nt and	ill retu s 1 and 7 throu I to rea ation t <u>PO</u> 5 6 Sta P/O d relea	rn t 12 v agh & ad O est s sino 7 tion SG se	o th vill 60 th HM set s N 8 Ad	e n ligh s, a s, a wit 9 dre 0	orma is un and s tch p 10 ss	al po ll oth used et th oositi	sitio ner in and ne ra ons: 12 0 1	n, ar nforr conr nge	14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	e stat n ind he V(h to 15 0	ion icat OM X1. 16 0

STEP	PROCEDURE

POSITION

23 Depress and release the station test set START switch.

Requirement: The VOM needle will momentarily deflect upward and the station test set RECEIVE INFORMATION indicators 1 and 12 will light. All other information indicators will go off.

H. Relay Output Test for Relay Card

SWITCHES

24 Make the following changes in the station test set switch positions:

	♦1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
WORD 1	0	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1
WORD 2	1	0	0			Sta	tion	n Ad	ldre	SS		0	0	1	1	1	1
WORD 3	1	1	0	0	0		Po	int			Block	K	0	0	0	0	0
MESSAGE LENGTH	3																
RECEIVER CLEAR	\mathbf{D}	epre	ess :	and	rel	ease	9										

Note: Refer to Table D for point and block switch settings.

25 Depress and release the station test set START switch.

Requirement: The VOM needle will deflect upward and remain high. The station test set RECEIVE INFORMATION indicators 1 and 12 will light. All other information indicators will go off.

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STEP						PR	OCE	DUR	E						·		
26	Make the following	g change	es in	the	stat	ion	test	; set	swi	itch :	posit	ions:					
	SWITCHES								<u>P(</u>	OSITIC	N						
		1	2	3 4	5	6	7	8	9	10	11	12	13	14	15	16	17
	WORD 3 1 0 0 0 0 Point Block 0 0 0 0 0																
	RECEIVER CLEA	WORD 3 1 0 0 0 Point Block 0 0 0 0 RECEIVER CLEAR Depress and release															
	<i>Note:</i> Refer to Ta	ble D f	or po	int a	and	bloo	ck s	witc	h s	ettin	gs.						
	Note: Refer to Table D for point and block switch settings.																
27	Depress and release the station test set START switch. Requirement: The VOM needle will return to the normal position, and the station test a RECEIVE INFORMATION indicators 1 and 12 will light. All other information indicators w																
27	Depress and releas Requirement: RECEIVE INFOR go off.	se the s The VO MATIO	tatio M ne N inc	n tes edle licat	t se will ors	t SI l ret l an	ΓAR turn id 12	CT sv 1 to t 2 wil	vitc he l lig	ch. norn ght. A	nal p All ot	ositi her i	on, a infor	ind t	he st ion ii	atio ndica	n te ator
27	Depress and releas Requirement: RECEIVE INFOR: go off. I. Test 1s	se the s The VO MATIO	tatio M ne N inc	n tes edle licat	t se will ors	t SI l ret l an	FAR turn id 12	CT sv 1 to t 2 wil	vitc he l lig	eh. norn ght. <i>I</i>	nal po All ot	ositi her i	on, a infor	ind t rmat	he st ion ii	ation ndica	n te ator
27 28	Depress and releas Requirement: RECEIVE INFOR: go off. I. Test 1s Record the bay-eq	se the s The VO MATIO	tatio M ne N inc displ	n tes edle licat	t se wil ors	t S7 l ret l an olay	ΓAR turn id 12	T sv to t wil thro	witc the l lig ugh	ch. norn ght. <i>1</i> (64).	nal p All ot	ositi her i	on, a infoi	and t rmat	he st ion ii	ation ndica	n te ator
27 28 29	Depress and releas Requirement: RECEIVE INFOR: go off. I. Test 1s Record the bay-eq Make the following	se the s The VO MATIO uipped g chang	tatio M ne N inc displ	n tes edle licat ays (t se will ors disg	t SI l ret l an olay	TAR turn id 12 rs 5 f	T sv to t wil thro t set	vitc the l lig ugh	ch. norn ght. 4 1 64). vitch	nal p All ot posit	ositi heri	on, a infoi	and t	he st ion ii	ation ndica	n te: ator
27 28 29	Depress and releas Requirement: RECEIVE INFOR: go off. I. Test 1s Record the bay-eq Make the following	se the s The VO MATIO uipped g chang	tatio M ne N inc displ ges in	n tes edle licat ays (t se will ors : (disp stat	t SI l ret l an blay	rAR ad 12 s 5 f	T sv to t 2 wil thro t set	vitc the l lig ugh	ch. norn ght. 4 1 64). ritch	nal posit	ositi her ions	on, a Infor	and t	he st ion ii	ation ndica	n te ator
27 28 29	Depress and releas Requirement: RECEIVE INFOR: go off. I. Test 1s Record the bay-eq Make the following <u>SWITCHES</u>	se the s The VO MATIO uipped g chang	tatio M ne N inc displ	n tes eedle licat ays (t se will ors disp stat	t SJ l ret l an blay tion	FAR turn id 12 is 5 f i test	T sv to t 2 wil thro t set	vitc the l lig ugh	h. norn ght. 1 (64). ritch	nal posit	ositic her i	on, a infor	and t	he st ion ii	ation ndica	n te
27 28 29	Depress and releas Requirement: RECEIVE INFOR: go off. I. Test 1s Record the bay-eq Make the following <u>SWITCHES</u>	se the s The VO MATIO uipped g chang	tatio M ne N inc displ ges in 2 3	n tes eedle licat ays (. the	t se will ors (disp stat	t SI l ret l an blay tion $\overline{6}$	FAR turn ad 12 rs 5 f : test	T sv to t wil thro t set	vitc the l lig ugh ; sw	h. norn ght. 1 10	nal po All ot posit	ositi her ions	on, and a second	and t	he st ion ii	ation ndica	
27 28 29	Depress and releas Requirement: RECEIVE INFOR: go off. I. Test 1s Record the bay-eq Make the following <u>SWITCHES</u> WORD 3	se the s The VO MATIO	tatio M ne N inc displ ges in 2 3 1 0	n tes eedle licat ays (. the	t se will ors (disp stat) 5 0	t SI l ret l an blay tion <u>ositi</u>	rAR turn id 12 rs 5 f test ion 7	T sv to t 2 wil thro t set 8	vitc the l lig ugh ; sw 9 1	h. norn ght. 1 10 1	nal po All ot posit	ions	on, a infor : 13 1	and tr rmat	he st ion ii 15	ation ndica	n te: ator

STEP							PR	OCE	DUR	RE								
30	Depress and release th	ne s	tati	on t	test	t se	t ST	'AR'	T sv	vitc	h.							
	Requirement: REG go off.	CEI	VE	INF	FOI	RM.	ATI(ON i	indi	cate	ors 1	and	12 w	vill li	ght a	nd a	ll ot	hers
31	Make the following ch	ang	ges i	n tl	ne i	stat	ion	test	set	sw	itch	posit	tions	•				
	SWITCHES		·							<u>P</u>	Ositic	<u>N</u>						
	MESSAGE LENGTH	1																
		Г				Τ_					1.0							
			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	WORD 1	0	0	0			Sta	tion	Ac	ldre	SS		0	0	0	0	0	0
	WORD 2	A	ll d	owi	n													
	WORD 3	A	All d	owi	n													
	WORD 4	A	ll d	owi	n													
	RECEIVER CLEAR	Ι	Depr	ess	an	d ro	eleas	se										
32	Depress and release th	ie s	tati	on f	test	t se	t ST	'AR'	T sv	vitc	h.							
	Requirement: REC and all others will go	CEI off.	VE	INF	OI	RM	ATI(DN i	indi	cato	ors 1	and	6 	and j	possi	bly 1	.3) (1	will li
33	Change the station tes	st s	et M	ES	SA	GE	LE	NG	TH :	swi	tch t	o 2.						
34	Refer to Table E and s and release the STAR	et t T s'	he s witc	tati h.	ion	tes	t set	swi	itch	es f	or th	ne ap	prop	riate	e disp	lay;	then	, dep
	Requirement: All	RE	CEI	VE	IN	FO	RM/	ATI(ON	ind	icato	rs li	ght.					
35	Set the station test set test set RECEIVER CI	: DI LEA	ISPI AR s	.AY wit	Y W ch,	/OR and	D S dej	ELE pres	ECT s an	'sw id re	itch eleas	to 2, le the	depr e stat	ess ation t	and r test s	eleas et ST	se th FAR'	e stat T swi

Requirement: All RECEIVE INFORMATION indicators light.

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ST EP							PRC	CEL	DUR	E								
36	Repeat Step 35 with th	e sta	atic	on to	est	set	DIS	SPL	AY	w	ORD	SEI	ECI	' swi	tch s	et to	3, tl	nen to 4
	Requirement: All	REC	EIV	E I	NF	OR	MA	TIC	N i	indi	cato	rs lig	ght.					
37	Repeat Steps 33 throug	zh 30	6 fo	r ea	ich	dis	play	, eq	uip	ped.	•							
	Requirement: All]	REC	EIV	7E 1	NF	OR	:MA	- TIC	N i	- indi	cato	rs lie	zht.					
	L Test Or					•							5					
90	J. Italia the fallowing ch		_ :-			!		4			:			_				
38	Make the following ch	ange	S 11	ı tn	e s	tati	on	est	set	SW.	Itcn	posn	tions	:				
	SWITCHES									<u>P</u>	OSITH	<u>ON</u>						
	MESSAGE LENGTH	3																
			-			<u> </u>	<u> </u>	[<u> </u>				1	1	<u> </u>		
			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	WORD 1	0	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1
	WORD 2	1	0	0		 .	Sta	tion	Ad	ldre	ess		0	0	1	1	1	1
	WORD 3	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
	RECEIVER CLEAR	$\mathbf{D}_{\mathbf{f}}$	epr	ess	anc	l re	leas	se										
39	Depress and release th	e R	ESI	ſAF	T s	swit	tch (on I	Ma	817.								
40	Depress and release th	ie st	atio	on t	est	set	ST	AR	[sv	vitc	h.							
	Requirement: REC go off.	EIV	ΈI	NF	OR	MA	TIC)N i	ndi	cato	ors 1	and	12 w	ill li	ght, a	and a	ll ot	hers wi
41	Repeat Steps 31 throu	gh 3	7 fo	or e	ach	dis	pla	y eq	uip	ped	•							
	Requirement: Indi light in each step.	cato	r 1	wil	l bo	e th	.e oi	nly [RE	CEI	VE	INF(ORM	ATI	ON ii	ndica	tor	that wi
49	Donness and volumes +1	~ D	F Q1	рат	эт.		hah	on 1	יאר	217								

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STEP PROCEDURE K. Polling Serial Ports Failure Bit Test 43 Turn the POWER switch on the dc-to-dc converter to OFF. Remove TM317 card from slot D. 44 45 Insert the circuit pack extender into slot D and insert the TM317 card into it. 46 Place all switches on the circuit pack extender in the OPEN CKT (center) positions. 47 Turn the POWER switch on the dc-to-dc converter to ON. 48 Depress and release the RESTART switch on TM317. 49 For remotes controlled by a TCAS central, use Steps 50, 51, and 52. For TASC or SCOTS, use Steps 53, 54, and 55. 50 Set the station test switches as follows: POSITION SWITCHES DISPLAY WORD SELECT ♦15€ MESSAGE LENGTH 1 2 3 5 6 $\overline{7}$ 8 9 12 16 4 10 11 1314 15171 0 0 0 0 0 *WORD 1 0 1 Station Address 0 0

WORD 2 through All down WORD 4

RECEIVER Depress and release CLEAR

* See Table A for address switch setting.

51 Depress and release the station test set START switch.

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STEP		PROCEDURE
52	Record the RECEIVE INFOR	MATION indicators that light.
	Requirement: All indicat Table F.	ors associated with equipped ports will be lighted. Refer to
53	Set the station test set switch	nes as follows:
	SWITCHES	POSITION
	DISPLAY WORD SELECT	4
	MESSAGE LENGTH	2
	WORD 3 and WORD 4	All down
	RECEIVER CLEAR	Depress and release
54	Set the station test set WORI through 64) according to Tabl	D 1 and WORD 2 switches for the first equipped serial display (9 le E.
55	Depress and release the static	on test set START switch.
	Requirement: Indicators	1 and 17 will light.
56	Repeat Steps 54 and 55 for ea	ch equipped serial display.
	L. Polling Serial Port Operationa	il Test
57	For each equipped serial port through 6) in the LOOPBACE	(1 through 6), put its associated circuit pack extender switch (1 K (down) position.
58	If port 7 is equipped for use in tender switch 7 in the LOOP	n the RS422 mode (switch 2 on TM317 in the 422 position), put ex- BACK position.
59	If port 7 is equipped for use in 9 on the extender to the LOO	the RS232 mode (switch 2 on TM317 in the 232 position), set switch PBACK position.
60	If port 8 is equipped for use in tender switch 8 in the LOOP	n the RS422 mode (switch 3 on TM317 in the 422 position), put ex- BACK position.
61	If port 8 is equipped for use in 10 on the extender to the LO	the RS232 mode (switch 3 on TM317 in the 232 position), set switch OPBACK position.
62	Depress and release the RES	TART switch on TM317.

		CHART 3 (Contd)	/
STEP	·	PROCEDURE	/
63	Set the station test switches as	follows:	
	SWITCHES	POSITION	
	♦DISPLAY WORD SELECT	2	
	RECEIVER CLEAR	Depress and release	
64	Set the station test set for the f E.	irst equipped display for the port under test according to Table	
65	Depress and release the station	test set START switch.	
	Requirement: Refer to Tabl	e G.	
66	Repeat Steps 64 and 65 for each	a equipped display for the port.	
67	Repeat Steps 64 through 66 for	each port.	
	M. Clearing Alarms		
68	Refer to Table E and set the sta Transmit this command four ti then to 2, then 3, and then to 4, 1, that light.	ation test set switch positions for the NEW INDEX command. mes, first with the DISPLAY WORD SELECT switch set to 1,) Record all RECEIVE INFORMATION indicators, other than	
69	Refer to Table E for the display 1 = displays \$4\$ through 16 [bit play WORD 3 = displays 33 thr	numbers associated with the lighted indicators (display WORD is 5 through 17], display WORD 2 = displays 17 through 32, dis- ough 48, display WORD 4 = displays 49 through 64).	~
70	For each indicated display, tran to transmit this command one	smit the appropriate DISPLAY command. It is only necessary time.	
71	Repeat Steps 68 through 70 for	the ANY INDEX.	

STEP							PR	OCE	DUI	RE									
72	Make the following cha	ange	es to	th	e s	tati	on 1	test	set	sv	vitc	h p	osit	ions				<u> </u>	
	SWITCHES										POSI	TIO	N						
	MESSAGE LENGTH	1																	
					_														
		1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17
	WORD 1	0	0	0			Sta	tion	Ad	ldr	ess			0	0	0	0	0	0
	DISPLAY WORD SELECT	1					•												
	RECEIVER CLEAR	D	epre	88	anc	l re	leas	se											
73	Depress and release th	e st	atio	n t	est	set	ST	AR'	ſ sv	vit	ch.								
	Requirement: Indicators that light.	cato	r 1 (and	l po	ossil	bly	7) v	vill 1	be	the	on	ly R	ECE	IVE	INF	ORM	ATI	ON
74	Return to Flowchart 1.																		

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TABLE A

STATION ADDRESS SWITCH SETTINGS

e	NT SI	WITCI	HES	BIT SWITCHES								TO PO	SITION							
8	9	10	11	4	0	1	0	1	0	1	0	1	0	. 1	0	1	0	1	0	1
				5	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
	4	L		6	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
T) P()SIT	ION	7	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
									FOR	STA	TION	AD	DRES	S						
0	0	0	0		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	0	0	0		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
0	1	0	0		33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
1	1	0	0		49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
0	0	1	0		65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
1	0	1	0	_	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
0	1	1	0		97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
1	1	1	0		113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
0	0	0	1		129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
1	0	0	1		145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
0	1	0	1		161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176
1	1	0	1		177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192
0	0	1	1		193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208
1	0	1	1		209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224
0	1	1	1		225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
1	1	1	1		241	242	243	244	245	246	247	248	249	250	251	252	253	254		U

TABLE B

ERROR INDICATIONS

INDICATOR	ERROR
2	Communication error
3	Tone drop out
4	No sync bit
5	No clear to send
6	Clear to send did not drop
7	Remote error
8	Illegal central data received
9	Illegal carrier detect interrupt
10-17	Communication error count

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TABLE C

REMOTE SWITCH COMMANDS

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MOND	, L		2	3	4	5	6	7	8	9	10	11	12	13	3 1	4	15	16	1:
	0		1	1				ADDR	ESS				0	0	Τ		GR	OUP	
					<u>GR</u>	OUP			GRO	OUP	•								
						1	0	000	10	001		1001							
						3	0	010	11			1010							
						4 5	0	011	12			1011							
						5 6	0	100	13 14			1100							
						7	0	110	15			1110							
						8	0	111	16			1111							
						9	10	000											
	<u> </u>					<u> </u>													
ORD 2	1	7	2	3	4	5	6	7 1	3 g	•	10	11	12	13	14		15	16	
	1) INT		T													
			• • •				- r/u) N		0	0	1	D	5		•		
							SG		, ()		0	U U	1	P,	/0		0	0	0
							SG				- <u>-</u>			P S	/O G 		0	0	0
							SG						1	P, S	/O /G 			0	0
				····			SG						1	Р, 	/U /G 		U 	0	0
	POI	NT	OR		 		SG		 					P, S	/U /G		U 	0	0
	POIL	NT	OR DUP		6	SUB 7	SG GROUF			2	P(1		/0 /G			0	0
	POI	NT C GRC	OR DUP		6	SUB 7 0	SG GROUF 13			2	P(5	S	/0 /G			0	0
	POII	NT GRC	OR		6 0 1	SUB 7 0 0	SG GROUF 13 0 0	14 0 0		2 0 1	P(3 0		1 5 0		/0 /G		0	0	0
	POI	NT (GRC 1 2 3	OR DUP		6 0 1 0	SUB 7 0 0 1	SG GROUE 13 0 0 0 0	14 0 0 0		2 0 1 0	Pe 3 0 0 1	DINT 4 0 0 0	1 5 0 0 0 0		/U /G 			0	0
	POIL	NT (GR(1 2 3 4 5	OR		6 0 1 0 1 0	SUB 7 0 0 1 1	SG GROUF 13 0 0 0 0 1	14 0 0 0 0		2 0 1 0 1	Pe 3 0 0 1 1	DINT 4 0 0 0 0 0 0	1 5 0 0 0 0 0		G			0	0
	POII	NT 6 GRC 1 2 3 4 5 6	OR		6 0 1 0 1 0 1 0	SUB 7 0 0 1 1 1 0 0	SG GROUE 13 0 0 0 0 0 1 1	14 0 0 0 0 0 0		2 0 1 0 1 0	P(3 0 0 1 1 0	DINT 4 0 0 0 0 1	1 5 0 0 0 0 0 0 0		G G			0	0
	POII	NT 6 GRC 1 2 3 4 5 6 7	OR		6 0 1 0 1 0 1 0	SUB 7 0 0 1 1 0 0 1	SG GROUE 13 0 0 0 0 1 1 1 1	14 0 0 0 0 0 0 0 0 0 0 0 0 0		2 0 1 0 1 0 1 0	P(3 0 1 1 0 0	DINT 4 0 0 0 0 0 1 1	1 5 0 0 0 0 0 0 0 0 0		/0 /G			0	0
	POI	NT 6 GRC 1 2 3 4 5 6 7 8	OR		6 0 1 0 1 0 1 0 1	SUB 7 0 0 1 1 0 0 1 1 1	SG GROUF 13 0 0 0 0 1 1 1 1 1 1	14 0 0 0 0 0 0 0 0 0 0 0 0 0		2 0 1 0 1 0 1 0 1	Pe 3 0 0 1 1 0 0 1 1	DINT 4 0 0 0 0 1 1 1 1	1 5 0 0 0 0 0 0 0 0 0 0 0		/U /G 			0	0
	POI	NT 6 GRC 1 2 3 4 5 6 7 8 9	OR		6 0 1 0 1 0 1 0 1 0	SUB 7 0 0 1 1 0 0 1 1 0 0 1	SG GROUF 13 0 0 0 0 1 1 1 1 0	14 0 0 0 0 0 0 0 0 0 0 0 1		2 0 1 0 1 0 1 0 1 0	Pe 3 0 0 1 1 0 0 1 1 0 0 1 1 0	DINT 4 0 0 0 0 1 1 1 1 0	1 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		/U /G			0	0
		NT 6 GRC 1 2 3 4 5 6 7 8 9 10	OR		6 0 1 0 1 0 1 0 1 0 1	SUB 7 0 0 1 1 0 0 1 1 1 0 0	SG GROUE 13 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1		2 0 1 0 1 0 1 0 1 0 1 0 1	Pe 3 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	DINT 4 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	1 5 0 0 0 0 0 0 0 0 0 0 1 1		/U /G 			0	0
		NT 6 GRC 1 2 3 4 5 6 7 8 9 0 1 2	OR DUP		6 0 1 0 1 0 1 0 1 0 1 0	SUB 7 0 0 1 1 0 0 1 1 0 0 1 1	SG GROUF 13 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1		2 0 1 0 1 0 1 0 1 0 1 0	Pe 3 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	DINT 4 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	1 5 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1		/U /G			0	0
		NT 6 GRC 1 2 3 4 5 6 7 8 9 10 1 2 3	OR		6 0 1 0 1 0 1 0 1 0 1 0 1 0	SUB 7 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1	SG GROUF 13 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	14 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <		2 0 1 0 1 0 1 0 1 0 1 0 1 0	Pe 3 0 0 1 1 0 0 1 1 0 0 1 1 1	DINT 4 0 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	1 5 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1		/U /G			0	0
		NT 6 GRC 1 2 3 4 5 6 7 8 9 10 1 2 3 4	OR		6 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	SUB 7 0 0 1 1 0 0 1 1 0 0 1 1 1 0 0	SG GROUF 13 0 0 0 0 1 1 1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	14 0 1 1 1 1		2 0 1 0 1 0 1 0 1 0 1 0 1 0 1	Pe 3 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	DINT 4 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	1 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		/U /G			0	0
	POI SUB0 1 1 1 1 1 1 1 1	NT 6 GRC 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5	OR DUP		6 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	SUB 7 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1	SG GROUF 13 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1		2 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	Pet 3 0 0 1 1 0 0 0 1 1 0 0 0 1 1 1 0 0 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	DINT 4 0 0 0 0 0 1 1 1 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	1 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		/U /G			0	0

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TABLE D

RELAY OUTPUT COMMANDS

		CP		wo	ORD 3	SWIT	CHES		_	
BLOCK	RELAY				PO			В	LOCK	
NUMBER	NUMBER	NUMBER	LOC	6	7	8	9	10	11	12
1	1	TM319	A	0	0	0	0	0	0	0
	2			1	0	0	0	0	0	0
	3			0	1	0	0	0	0	0
	4			1	1	0	0	0	0	0
	5		1	0	0	1	0	0	0	0
	6			1	0	1	0	0	0	0
	7			0	1	1	0	0	0	0
	8			1	1	1	0	0	0	0
!	9	TM319	A	0	0	0	1	0	0	0
	10			1	0	0	1	0	0	0
	11			0	1	0	1	0	0	0
	12]	1	1	0	1	0	0	0
	13			0	0	1	1	0	0	0
	14			1	0	1	1	0	0	0
	15			0	1	1	1	0	0	0
	16			1	1	1	1	0	0	0
2	17	TM313	F	0	0	0	0	1	0	0
	18			1	0	0	0	1	0	0
	19			0	1	0	0	1	0	0
	20			1	1	0	0	1	0	0
	21			0	0	1	0	1	0	0
	22			1	0	1	0	1	0	0
	23			0	1	1	0	1	0	0
	24			1	1	1	0	1	0	0
	25	TM313	F	0	0	0	1	1	0	0
	26			1	0	0	1	1	0	0
	27			0	1	0	1	1	0	0
	28			1	1	0	1	1	0	0
	29			0	0	1	1	1	0	0
	30	1		1	0	1	1	1	0	0
ļ	31	1		0	1	1	1	1	0	0
	32	i		1	1	1	1	1	0	0

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TABLE D (Contd)

RELAY OUTPUT COMMANDS

		СР		WORD 3 SWITCHES										
BLOCK	RELAY				PC	INT		BLOCK						
NUMBER	NUMBER	NUMBER	LOC	6	7	8 9		10	11	12				
3	33	TM313	F	0	0	0	0	0	1	0				
	34			1	0	0	0	0	1	0				
	35			0	1	0	0	0	1	0				
	36			1	1	0	0	0	1	0				
	37			0	0	1	0	0	1	0				
	38			1	0	1	0	0	1	0				
	39			0	1	1	0	0	1	0				
	40			1	1	1	0	0	1	0				
	41	TM313	F	0	0	0	1	0	1	0				
	42			1	0	0	1	0	1	0				
	43			0	1	0	1	0	1	0				
	44			1	1	0	1	0	1	0				
	45			0	0	1	1	0	1	0				
	46			1	0	1	1	0	1	0				
	47			0	1	1	1	0	1	0				
	48			1	1	1	1	0	1	0				
4	49	TM313	F	0	0	0	0	1	1	0				
	50			1	0	0	0	1	1	0				
	51			0	1	0	0	1	1	0				
	52			1	1	0	0	1	1	0				
	53		· · ·	0	0	1	0	1	1	0				
	54			1	0	1	0	1	1	0				
	55			0	1	1	0	1	1	0				
	56			1	1	1	0	1	1	0				
	57	TM313	F	0	0	0	1	1	1	0				
	58			1	0	0	1	1	1	0				
	59			0	1	0	1	1	1	0				
	60			1	1	0	1	1	1	0				
	61			0	0	1	1	1	1	0				
	62			1	0	1	1	1	1	0				
	63			0	1	1	1	1	1	0				
	64				1	1	1	1	1	0				

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TABLE D (Contd)

RELAY OUTPUT COMMANDS

		CP		WORD 3 SWITCHES									
BLOCK	RELAY				PO			8	LOCK				
NUMBER	NUMBER	NUMBER	LOC	6	7	8	9	10	11	12			
5	65	TM313	F	0	0	0	0	0	0	1			
-	66			1	0	0	0	0	0	1			
	67			0	1	0	0	0	0	1			
	68			1	1	0	0	0	0	1			
	69			0	0	1	0	0	0	1			
	70			1	0	1	0	0	0	1			
	71			0	1	1	0	0	0	1			
	72			1	1	1	0	0	0	1			
	73	TM313	F	0	0	0	1	0	0	1			
	74			1	0	0	1	0	0	1			
	75			0	1	0	1	0	0	1			
	76			1	1	0	1	0	0	1			
	77			0	0	1	1	0	0	1			
	78			1	0	1	1	0	0	1			
	79			0	1	1	1	0	0	1			
	80			1	1	1	1	0	0	1			

•

♦TABLE E

DISPLAY COMMAND SWITCH SETTINGS

DISPLAY COMMA	ND FORMA	Т				ĺ
SWITCH -1 2	$3 \ 4 \ 5 \ 6$	7 8 9 10	11 12 13	3 14 15 1	6 17	
WORD 1 -0 1	1 /	ADDRESS	0	0 X X .	X X	
WORD 2 -1 0	0 0 0 0	0 0 1 0	0 0 2	K X 0	0 0	
		WORD 1	SWITCHES		WORD 2 S	SWITCHES
DISPLAY	14	15	16	17	13	14
NEW INDEX	0	0	0	0	0	0
ANY INDEX	Ő	0 0	0	0	1	0
4	Ő	Ő	ů N	Ő	1	1
5	Ő	Ŏ	Ő	1	0	0
6	Ő	Ő	Ő	1	1	0
7	0	0	0	1	0	1
8	0	Ŏ	0	1	1	
q	0	Ŏ	1	0	0	
10	0	ů ů	1	0	1	
11	0	0	1	0	0	1
19	0	0	1	0	1	1
12	0		1	1		
10	0	0	1	1	1	0
14 -	0	0	1	1		0
16	· 0	l 0	1	1	1	
10						
17	0	1	0	0	0	0
18	0	1	0	0	1	0
19	0	1	0	0	0	1
20	0	1	0	0	1	1
21	0	1	0	1	0	0
22	0	1	0	1	1	0
23	0	1	0	1	0	1
24	0	1	· 0	1	1	1
25	0	1	1	0	0	0
26	0	1	1	0	1	0
27	0	1	1	0	0	1
28	0	1	1	0	1	1
29	0	1	1	1	0	0
30	0	1	1	1	1	0
31	0	1	1	1	0	1
32	0	1	1	1	1	1
	1	Ō	Ō	Ō	Ō	ō
34	1	Ō	Ő	Ŏ	l j	Ŏ
35	1	0	0	Ō	Ō	1
36	1	0	Ō	0	1	1
	-					-

DISPLAY COMMAND SWITCH SETTINGS

DISPLAY COMMA SWITCH1 2 WORD 10 1 WORD 21 0	ND FORMA 3 4 5 6 1 4 5 6 0 0 0 0	T 7 8 9 10 ADDRESS 0 0 1 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 14 15 1 0 X X 1 K X 0	$\begin{bmatrix} 6 & 17 \\ X & X \\ 0 & 0 \end{bmatrix}$	
		WORD 1 9	SWITCHES		WORD 2 S	WITCHES
DISPLAY	14	15	16	17	13	14
37	1	0	0	1	0	0
38	1 1	0	0		1	0
39	1 1	0	0		0	1
40	1	0	0	1	1	1
41	1	0	1	0	0	0
42	1	0	1	0	1	0
43		0	1 1	0	0	1
44	1	0	1	0	1	1
45	1	0	1	1	0	0
46	1	0	1	1	1	0
47	1	0	1	1	0	1
48		0	1	1	1	1
49		1	0	0	0	0
50		1	0	0	1	0
51		1	0	0	0	1
52	1	1	0	0	1	1
53	1	1	0	1	0	0
54	1	1	0	1	1	0
55	1	1	0	1	0	1
56	1	1	0	1	1	1
57	1	1	1	0	0	0
58	1	1	1	0	1	0
59	1	1	1	0	0	1
60	1	1	1	0	1	1
61	1	1	1	1	0	0
62	1	1	1	· 1	1	1
63	1	1 1	l ī		0	
50	1	1 *	_ ▲	1 *		· •

♦TABLE F ♦

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7*	Port 8*	0	0	0	0	0	0	0	0

PORT INDICATOR ASSOCIATIONS

* Check switch 2 or 3 on TM317 for associated port. If in 232 position and if loopback test is alright, check data set and associated circuit.

♦TABLE G€

SERIAL DISPLAY RESPONSES (NOTE)

DISPLAY NUMBER									BIT N	IUMBER							
POR SERIAL PORT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1st	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
2nd	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	1
3rd	1	0	0.	0	1	0	0	1	0	0	0	0	1	0	0	1	1
4th	1	0	0	0	1	1	0	1	0	0	0	0	1	1	0	1	1
5th	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	1
6th	1	0	0	1	0	1	0	1	0	0	0	1	0	1	0	1	1
7th	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	1	1
8th	1	0	0	1	1	1	0	1	0	0	0	1	1	- 1	0	1	1

Note: Each and every port must start with display 1 of this table; eg, if port 1 has starting display number 9 and is equipped for 3 displays (9 through 11), the following responses will occur:

• Display 9 response should look like the first display number for serial port.

• Display 10 responses should look like the second display number for serial port.

• Display 11 response should look like the third display number for serial port.