CONTINUITY
ELECTRONIC LEAD VERIFICATION SYSTEM - ESS #1

CONTENTS

1. GENERAL

1.1 Scope of Section

1.11 This section provides information and methods to be employed for verifying the continuity of switchboard cable leads associated with the Telephone Central Office bulk wiring operations on ESS - No. 1/1A Frames. The verification procedures covered herein are applicable to both new and additions to ESS No. 1/1A Frames.

1.12 The methods of this section cover the application of the "Electronic Lead Verification System" as a vehicle for performing cable lead verification operations.

1.2 Precautions Against Personal Injury, Equipment Damage and Service Interruptions

1.21 General precautions to be taken against personal injury, equipment damage and service interruptions are covered in Handbook 0 and are to be observed at all times as they apply to the operations being performed.

1.3 Reference Information

1.31 Refer to G.I.C.-1.01 and Handbook 9, Section 910 for the method of operation of the test sets used in this section.

1.32 The terminations for cable leads as shown in this section, were obtained from circuit schematic drawings, typical equipment layout drawings, and CCED's. For each specific job, the particular wiring lists should be used. (See Reference Chart for associated drawings.)

1.33 Refer to Handbook 275, Section 101 for additional information concerning continuity testing in #1 ESS.

2. TEST EQUIPMENT

2.1 Equipment

Amt.	ITE	Description
1	5420	Test Accessory Set
1	5421	Analyzer Test Set
1	5422	Encoder, Master
1	5423	200 Circuit Encoder
	or	
1	5424	1000 Circuit Encoder
*1	4137A	Continuity Test Set A.C.
As reqd.	R-3436	Flags
1	9650	Operator's Telephone Set

*Cords and accessories are furnished with test set.

2.2 Cords and Accessories

Amt.	ITE	Description
1	9214A	Interconnect Cable (30 ft.)
1	9214B	Interconnect Cable (60 ft.)
1	9214C	Interconnect Cable (100 ft.)
*1	5909	78 Type Connector Adapter (COSMIC Frame ESS Portion)
1	9229	Remreed Connector Cord
1	9231	Junctor/Universal Trunk Frame Cord
1	9230	Trunk Distributing Frame Cord
1	5421 Det 7	Program Plug
1	9421	Test Cord (Probe)
*4	9276C	Test Cord, 12' Long, 50 Conductors

*Required only if MDF is "COSMIC" type distributing frame.

3. APPLICATION

3.1 General

3.11 The electronic lead verification system is designed to provide wire identification, wire search, short circuit and open circuit verification of installer wiring. The system is used for continuity verification and circuit analysis in Telephone Central Office bulk wiring operations. In general there are three major components required for the ESS Frames bulk wiring verification as follows (see Figs. 1 and 2):

3.12 The Analyzer and Master Test Encoder provide readout and control functions respectively. These units are located near the frame under test. For identification purposes, this location will be considered as "END A" or the point of origin.

3.13 The 200 or 1000 circuit encoder provides test access at the far end of the wiring being tested and for identification purposes, this end will be considered as "END B" or the point of destination.

3.14 Test cords are designed to follow assigned numbering when feasible. When it becomes impractical to have an exact match between the apparatus terminal number and the analyzer display image, a compromise is used which has a pattern that can be readily recognized as described below.

Example - Fig. 15 shows the location of test sets and frames under test. Figs. 16 and 17 show the display image numbers associated with each of the 78 A1-64 connector block terminals (Trunk Distributing Frame, ITE-9230, Fig. 17), and 288 H type terminal strip terminals (Universal Trunk Frame, ITE-9231, Fig. 16) for the frames under test as shown in Fig. 15 "N" representing any number from 0 to 7, the following pattern will occur.

Location	Image
Tip	ONN (e.g. 000,001--077)
Ring	1NN (e.g. 100,101--177)

3.15 Conductor colors should not be employed during verification operations. Continuity verification must be performed as a terminal-to-terminal check disregarding the associated lead color information listed on CCED's or running sheets. Terminal-to-terminal checking not only provides for continuity checking of the leads, but verifies the integrity of functional lead assignments within a circuit. This type of checking thereby eliminates the change of missing slipped terminals that can readily occur when checking by color code.

3.16 ITE-5421 Det. 7 Program Plug for ESS application is designed to override the alarm on 8 and 9 units and digits. In other words, due to the octal system of ESS, only 0 to 7 units and digit contacts in four Amphenol plugs are connected. All of the ESS cords have 128 leads connected at both ends. The scan limit thumb wheel switches on ITE-5422 should be set at 177 when used in ESS. When only half cords (64 leads) are in test, the thumb wheel should be set at 077. The Zone Switch should be in zone 1 (000-199).

3.2 Method of Operation

3.21 Tests in this section may be performed after all interbay leads have been run and connected as well as the switchboard cable.

3.22 It is recommended that these continuity tests be performed before power application tests are performed.

3.23 For test set operation, refer to the Handbook 9, Section 910. It is recommended that tests in Handbook 9, Section 910 be performed on the test set prior to continuity testing.

3.24 Referring to Table "A" set the equipment as follows:

3.241 For automatic scanning, set up the ITE-5421 Analyzer and the ITE-5422 Master Test Encoder at the originating frame. At the terminating frame locate the ITE-5423 Encoder. See FIG. 1 and Table "A" for correct test set-up.

3.242 For manual scanning, set up the ITE-5421 Analyzer at the originating frame. At the terminating frame locate the ITE-5423 Encoder. The leads at the originating frames are to be hand probed. Interconnect the test sets using cords provided. See FIG. 2 and Table "A" for correct test set up.

3.25 Continuity tests for items not verified by procedures in this section are covered in Handbook 275, Section 101.

3.26 Example: Testing cables from Trunk Distributing Frames (78 A1-64 connector block) to the Universal Trunk Frame (288 H type terminal strip).

3.261 Set up equipment as shown in FIG. 15 at end "B", plug the one test cord (ITE-9231) on the 288H Terminal Strip as universal trunk frame so as to contact the mounting plates 1 to 4 and 5 to 8 or 9 to 12 and 13 to 16 (T & R contacts). Insert the other end of the test cord into the connectors designated as L1, R2, L3, R4 on ITE-5423 or ITE-5424. Interconnect the 200 circuit or 1000 circuit encoder to the Master Test Encoder or the Analyzer in accordance with the method outlined in Handbook 9, Section 910.

3.262 At end "A" plug the one test cord (ITE-9230) on to the Trunk Distributing Frame 78 A1-64 type connector (front) at the appropriate location. (Since first vertical is only half equipped, it should be verified with tone buzzer - ITE-4525A). Insert the other end of the test cord into the connectors designated as L1, R2, L3, R4 on Master Test Encoder. Interconnect the Master Test Encoder and the Analyzer in accordance with the method outlined in Handbook 9, Section 910.

3.27 Verification of other cables can also be carried out in a similar manner as outlined in PAR. 3.3 Continuity and Lead Verification Tests (see FIG. 3 to 23) and Table "A" for correct test set-up.

3.271 The following procedure may be employed to plug and unplug ITE-5909 Adapter:

A. Press both anchor release plates towards Amphenol Connectors.

B. Insert adapter so that it interfaces all 128 contacts on COSMIC block from the front (i.e., cross-connections side).

C. Press adapter slightly towards COSMIC block and then release "Anchor Release Plates" so that they are anchored in the grooves of fanning strips of COSMIC block. All four stoppers should be engaged.

D. For unplugging the Adapter reverse procedure may be employed. CARE SHOULD BE OBSERVED THAT ANCHOR RELEASE PLATES STOPPERS ARE COMPLETELY OUT OF FANNING STRIPS GROOVES BEFORE REMOVING ADAPTER FROM COSMIC BLOCK.

3.272 The following procedure may be employed to use ITE-9229 Cord:

A. Unplug 951A Connector to be tested for wiring verification from frame.

B. Plug appropriate DUMMY 951A connector (in the cord) in place of 951A connector unplugged in A above.

C. Plug 951A Connector (unplugged in A above) to connector in the cord. When all four connectors in the cords have been plugged, proceed for testing.

D. When testing is over, follow reverse procedure so that appropriate 951A Connector is in its place in the frame.

3.272 The following procedure may be employed to plug and unplug ITE-9230 Cord.

A. Press both anchor release plates towards fixture.

B. Insert fixture so that it interfaces all 128 contacts on TDF block from the front (i.e., cross-connections side).

C. Press fixture slightly toward TDF block so that anchor release plates are locked-in by the grooves of fanning strips.

D. For unplugging the fixture reverse procedure may be employed. CARE SHOULD BE OBSERVED THAT ANCHOR RELEASE PLATES ARE COMPLETELY OUT OF FANNING STRIPS GROOVES BEFORE REMOVING FIXTURE FROM TDF BLOCK.

3.3 Continuity and Lead Verification Tests

3.31 Line Link Network (Remreed) to Distributing Frame

3.311 Test set-up of equipment is arranged as shown in FIG. 3 (COSMIC) and Table "A".

3.312 Connections are made to the front of the 78 type twin clip 64 pair connecting block of the COSMIC distributing frame and to the 951A stage 0 connectors of the Line Switch half of the Line Link Network. FIG. 5, 6, and 7 show display readouts corresponding to terminals on connectors.

3.313 If distributing frame is not COSMIC type, terminals at the distributing frame are to be hand probed (see FIG. 4).

3.32 Junctor Grouping Frame to Line Link Network (Remreed)

3.321 Test set-up of equipment is arranged as shown in FIG. 8 and Table "A".

3.322 Connections are made to the 951A, Stage 1 connectors of junctor half of the Line Link Network. The terminals at the Junctor Grouping Frame are to be hand probed. FIG. 9 shows Display readouts corresponding to terminals on 951A connectors.

3.33 Junctor Grouping Frames to Trunk Link Network (Remreed)

3.331 Test set-up of equipment is arranged as shown in FIG. 10 and Table "A".

3.332 Connections are made to the 951A, Stage 1 connectors on the junctor half of the Trunk Link Network. The terminals at the Junctor Grouping Frame are to be hand probed. FIG. 11 shows display readouts corresponding to terminals on 951A connectors.

3.34 Trunk Distributing Frame (TDF) to Trunk Link Network (Remreed)

3.341 Test set-up of equipment is arranged as shown in FIG. 12 and Table "A".

3.342 Connections are made on the front of 78 type single clip 64 pair connecting block of TDF and to the 951A, stage 0 connectors on the Trunk half of the Trunk Link Network. FIGS. 13 and 14 show display readouts corresponding to terminals on connectors.

3.35 Trunk Distributing Frame (TDF) to Universal Trunk Frame (UT)

3.351 Test set-up of equipment is arranged as shown in FIG. 15 and Table "A".

3.352 Connections are made to the front o 78 type single clip 64 pair connecting block of TDF and to the T and R terminals of the 288H Terminal Strips on the front of the UT frame. FIG. 16 and 17 show display readouts corresponding to terminals on connectors.

3.36 MDF/IDF to Universal Trunk Frame

3.361 Test set-up of equipment is arranged as shown in FIG. 18 and Table "A".

3.362 Connections are made to the A, B, C D terminals of the 288H terminal strips on the front of the UT frame. The terminals at the MDF/IDF are to be hand probed. FIG. 19 shows display readouts corresponding to terminals on 288H Terminal Strips.

3.37 Junctor Frame to Junctor Grouping Frame

3.371 Test set-up of equipment is arranged as shown in FIG. 20 (T & R leads) and FIG. 22 (T & R leads) and Table "A".

3.372 Connections are made to the front of the T & R or T1 & R1 terminals of the 288 H terminal strips on the front of the Junctor Frame. The terminals at the Junctor Grouping Frame are to be hand probed. FIG. 21 (T & R leads) and FIG. 23 (T1 & R1 leads) show display readouts corresponding to terminals on 288 H terminal strips.

3.4 Wiring Errors

3.411 If a wiring error and/or reversal is located during verification, affected lead(s) should be reconnected to the proper termination(s immediately according to handbook requirements. If not corrected immediately, leads should be clearly identi with R-3436 flags. An accurate record of a wiring errors must be kept on SD-97-1313.

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ATTACHMENT:

REFERENCE CHART

FRAME	ABBREV.	DRAWINGS			REFERENCE SECTION NUMBER
		J-	CCED's	SD-	
LINE SWITCHING	LS	1A080A	1A283-12	1A324-01	HB 275
		1A081A	1A285-10	1A325-01	SEC 101
REMREED		1A079A		1A328-01	
				1A332-01	
TRUNK SWITCHING	TS	1A075A	1A283-10	1A324-01	HB 275
		1A078A	1A283-11	1A327-01	SEC 101
REMREED		1A079A		1A328-01	
				1A329-01	
				1A348-01	
UNIVERSAL TRUNK	UT	1A032D	1A170-17	T-591001	HB 275T
				1A215-01	SEC 125
JUNCTOR	J	1A031D	1A170-16	1A110-01	HB 275T
(BASIC)					SEC 108
(SUPPLEMENTARY)					
MDF + IDF (ESS)		ED-1A222-30 -31	1A194-12		
(8' - 0")				T-591000	HB 275
IDF (ESS)		ED-1A224-30 -31			SEC 101
(7' - 0")					
TDF (ESS)		ED-1A224-30 31	1A194-13		

TABLE A

ORIGINATING FRAME	CORD	QTY.	TERMINATING FRAME	CORD	QTY.	REMARKS
DF 78C1A-64 (COSMIC)	ITE-5909 ADAPTER	1	LINE SWITCH FRAME (REMREED)	ITE-9229	1	FIGS. 3,4,5, 6,7
JUNCTOR GROUPING FRAME	TEST PROBE	1	LINE JUNCTOR SWITCH FRAME (REMREED)	ITE-9229	1	FIGS. 8,9
			TRUNK JUNCTOR SWITCH FRAME (REMREED)	ITE-9229	1	FIGS. 10,
TDF 78A1-64 (FRONT)	ITE-9230	1	TRUNK SWITCH FRAME (REMREED)	ITE-9229	1	FIGS. 12,13, 14
TDF 78A1-64 (FRONT)	ITE-9230	1	UNIVERSAL TRUNK FRAME	ITE-9231	1	T & R LEADS FIGS. 15,16, 17
MDF/IDF	TEST PROBE	1	UNIVERSAL TRUNK FRAME	ITE-9231	1	A,B,C,D LEADS FIGS. 18 & 19
JUNCTOR FRAME	ITE-9231	1	JUNCTOR GROUPING FRAME	TEST PROBE	1	T & R LEADS FIGS. 20,21
JUNCTOR FRAME	ITE-9231	1	JUNCTOR GROUPING FRAME	TEST PROBE	1	T1 & R1 LE FIGS. 22,2

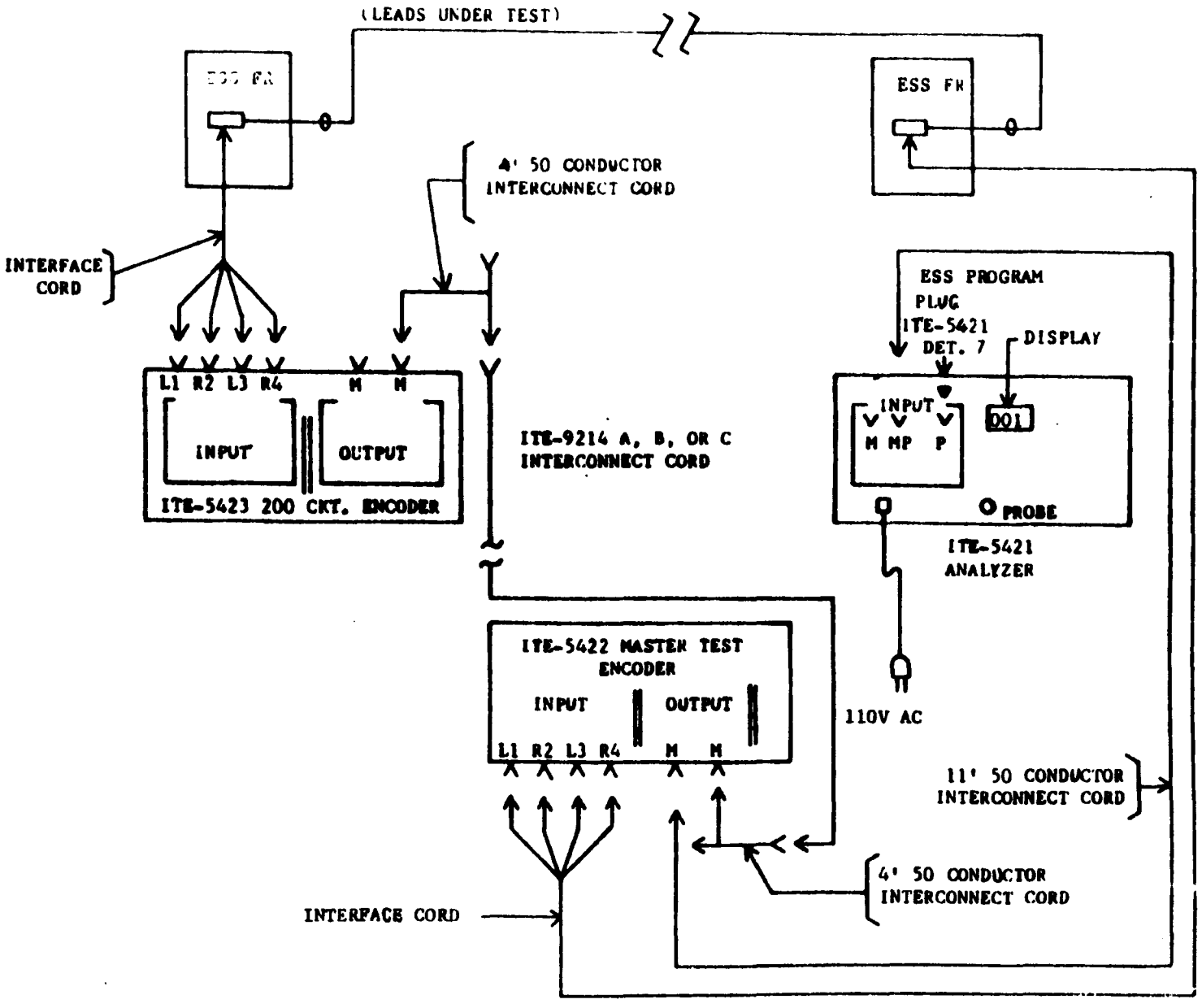


FIG. 1 TYPICAL TEST SETUP
(AUTOMATIC MODE SCAN)

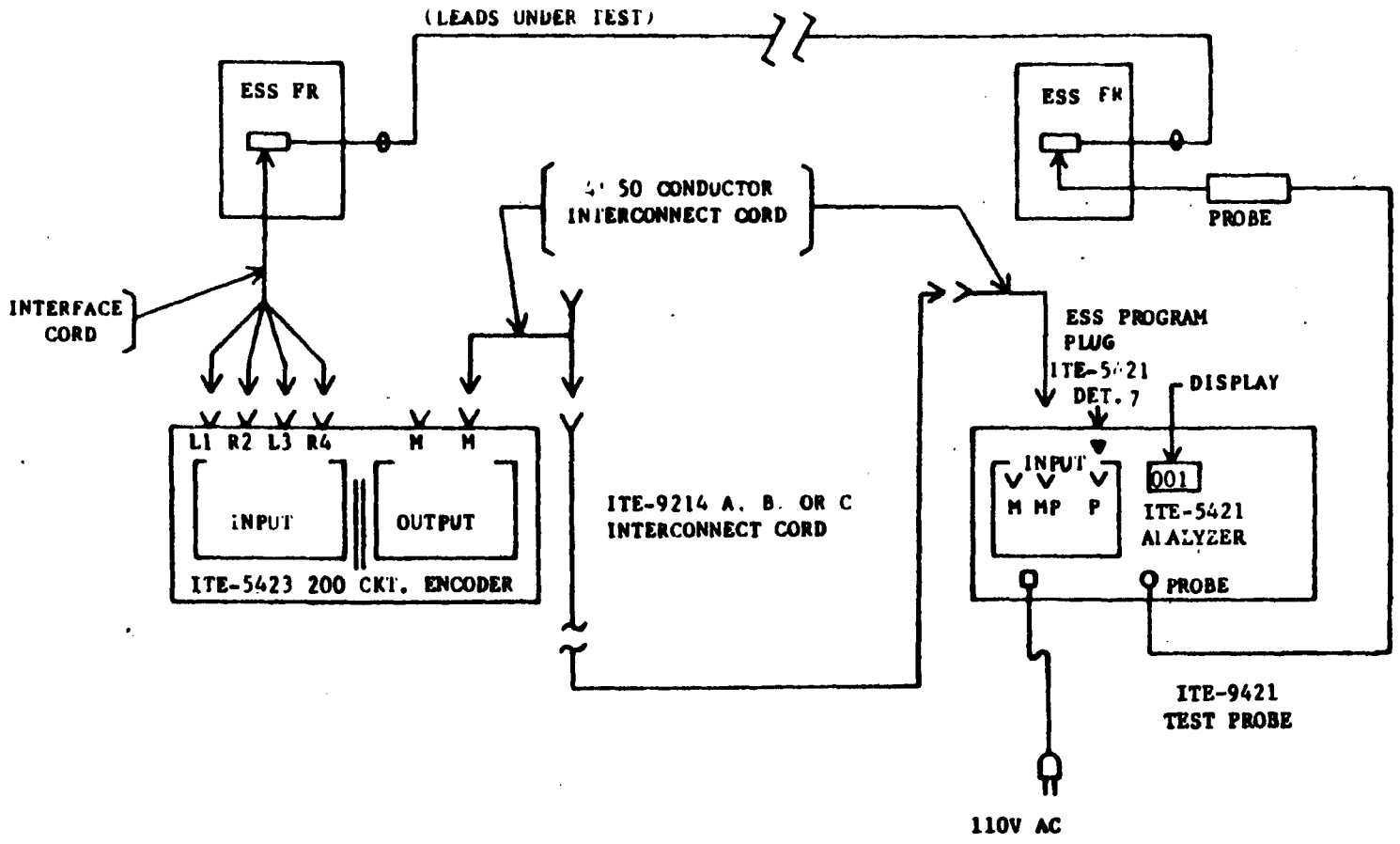


FIG. 2 TYPICAL TEST SETUP
(MANUAL MODE SCAN)

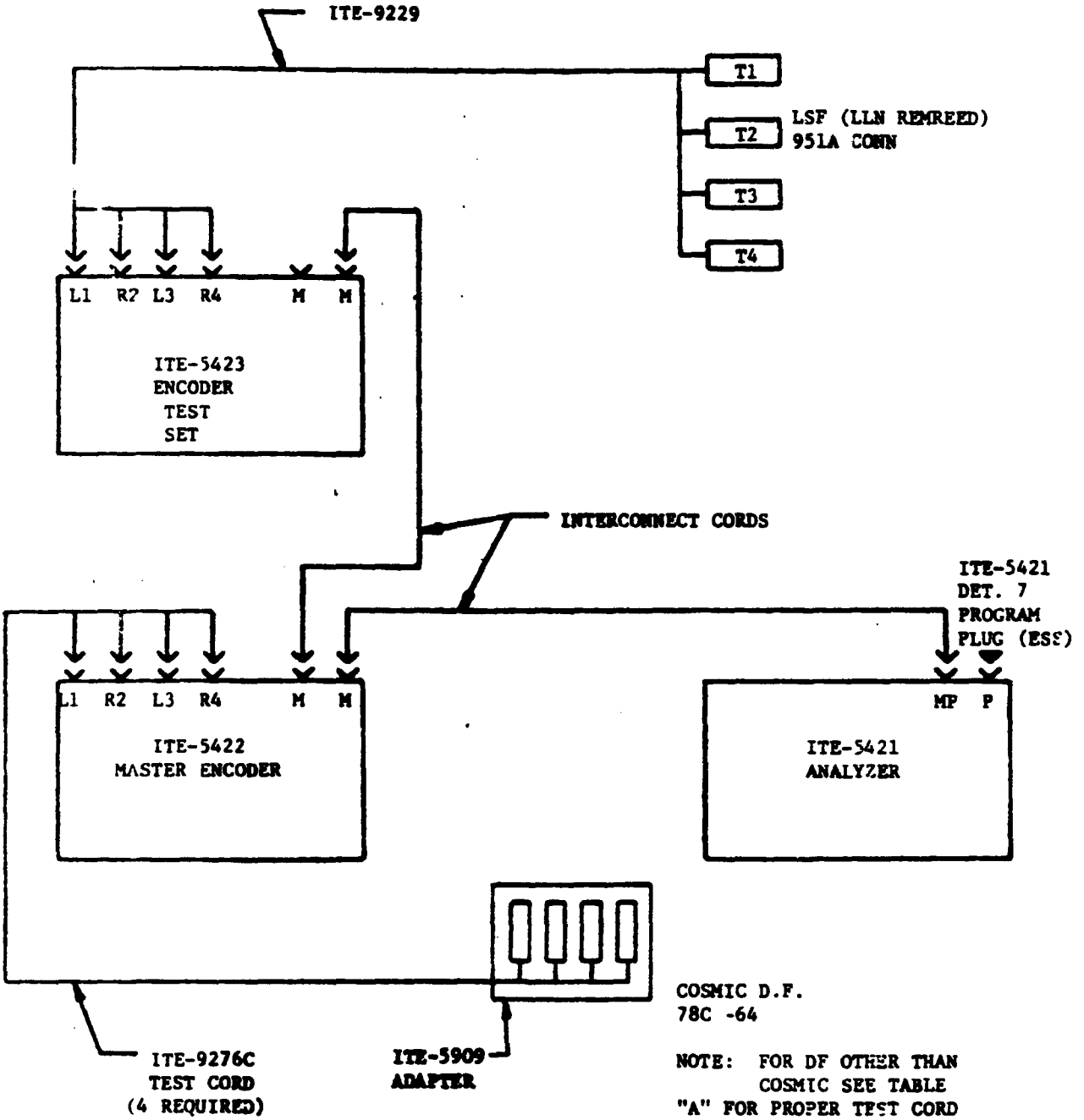


FIG. 3
LSF (LLN REMREED) TO MDF

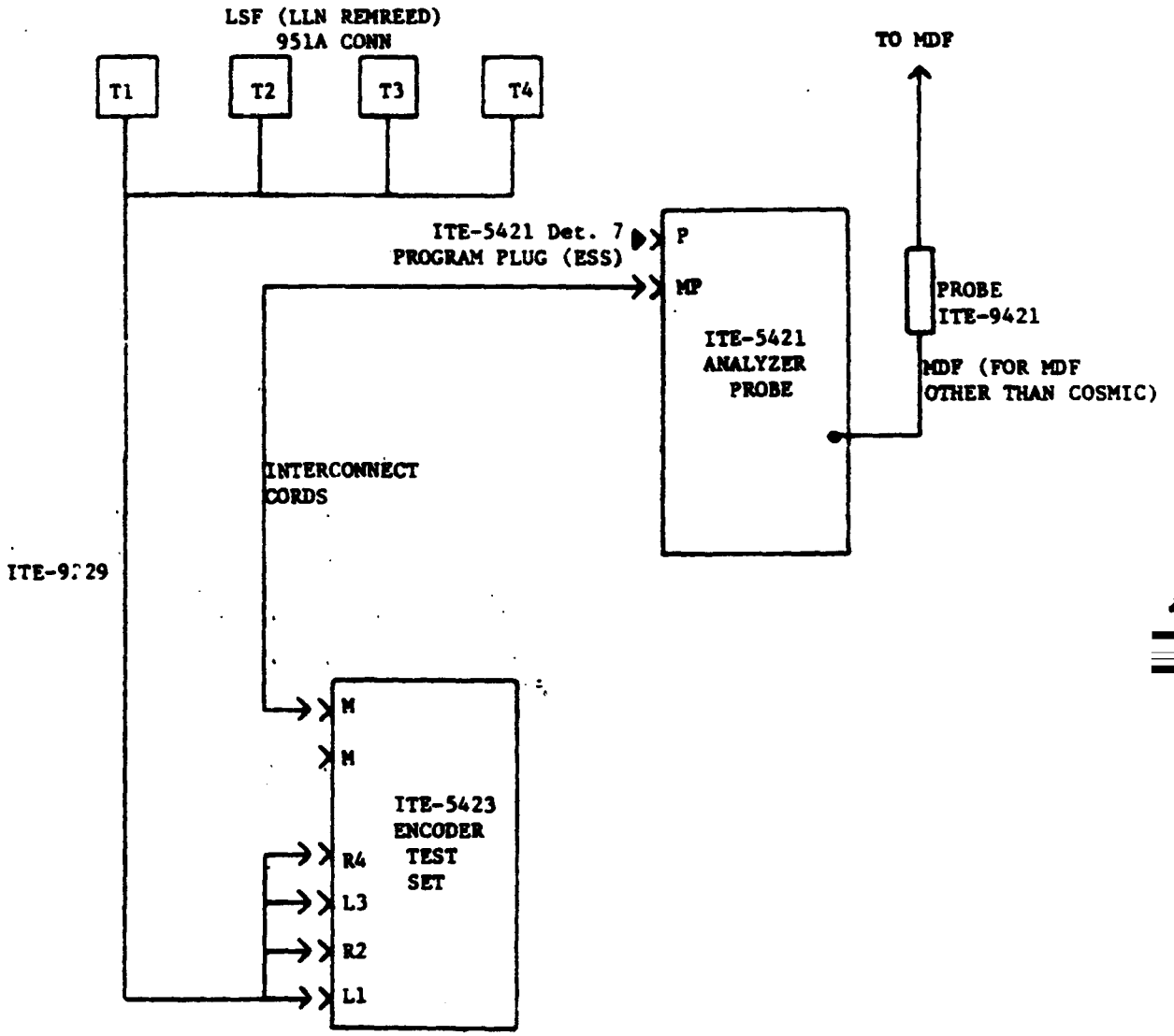


FIG. 4
MDF TO LSF (LLN REMREED)

951A CONNECTOR	ELVS DISPLAY	
0 15 1	017	117
	016	116
	015	115
	014	114
	013	113
	012	112
	011	111
08	010	110
07	007	107
	006	106
	005	105
	004	104
	003	103
	002	102
	001	101
0 00 1	000	100
	0(T) SW00	1(R)

T_1 (Fixture)

951A CONNECTOR	ELVS DISPLAY	
0 15 1	037	137
	036	136
	035	135
	034	134
	033	133
	032	132
	031	131
08	030	130
07	027	127
	026	126
	025	125
	024	124
	023	123
	022	122
	021	121
0 00 1	020	120
	0(T) SW01	1(R)

T_2

951A CONNECTOR	ELVS DISPLAY	
0 15 1	057	157
	056	156
	055	155
	054	154
	053	153
	052	152
	051	151
08	050	150
07	047	147
	046	146
	045	145
	044	144
	043	143
	042	142
	041	141
0 00 1	040	140
	0(T) SW02	1(R)

T_3

951A CONNECTOR	ELVS DISPLAY	
0 15 1	077	177
	076	176
	075	175
	074	174
	073	173
	072	172
	071	171
08	070	170
07	067	167
	066	166
	065	165
	064	164
	063	163
	062	162
	061	161
0 00 1	060	160
	0(T) SW03	1(R)

T4

FIG. 5 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-9229 LSF 4:1 (LCR)

951A CONNECTOR	ELVS DISPLAY	
0 15 1	017	117
	016	116
SW03	015	115
	014	114
	013	113
SW02	012	112
	011	111
08	010	110
07	007	107
	006	106
SW01	005	105
	004	104
	003	103
SW00	002	102
	001	101
0 00 1	000	100
	0(T)	1(R)

T_1 (Fixture)

951A CONNECTOR	ELVS DISPLAY	
0 15 1	037	137
	036	136
SW07	035	135
	034	134
	033	133
SW06	032	132
	031	131
08	030	130
07	027	127
	026	126
SW05	025	125
	024	124
	023	123
SW04	022	122
	021	121
0 00 1	020	120
	0(T)	1(R)

T_2

951A CONNECTOR	ELVS DISPLAY	
0 15 1	057	157
	056	156
SW03	055	155
	054	154
	053	153
SW02	052	152
	051	151
08	050	150
07	047	147
	046	146
SW01	045	145
	044	144
	043	143
SW00	042	142
	041	141
0 00 1	040	140
	0(T)	1(R)

T_3

951A CONNECTOR	ELVS DISPLAY	
0 15 1	077	177
	076	176
SW07	075	175
	074	174
	073	173
SW06	072	172
	071	171
08	070	170
07	067	167
	066	166
SW05	065	165
	064	164
	063	163
SW04	062	162
	061	161
0 00 1	060	160
	0(T)	1(R)

T4

FIG. 6 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-9229 LSF (2:1) LCR

LEVEL NO.	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
SWITCH	←			0				1				2				3 →
T	000	001	002	003	004	005	006	007	010	011	012	013	014	015	016	017
R	100	101	102	103	104	105	106	107	110	111	112	113	114	115	116	117
SWITCH	←			4				5				6				7 →
T	020	021	022	023	024	025	026	027	030	031	032	033	034	035	036	037
R	120	121	122	123	124	125	126	127	130	131	132	133	134	135	136	137
SWITCH	←			0				1				2				3 →
T	040	041	042	043	044	045	046	047	150	151	152	153	154	155	156	157
R	140	141	142	143	144	145	146	147	150	151	152	153	154	155	156	157
SWITCH	←			4				5				6				7 →
T	060	061	062	063	064	065	066	067	070	071	072	073	074	075	076	077
R	160	161	162	163	164	165	166	167	170	171	172	173	174	175	176	177

78C2A-64 CONNECTING BLOCK (COSMIC)
READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-5909 ADAPTER (LSP 2:1 LCR) REMREED LLN

LEVEL NO.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SWITCH	←							0								→
T	000	001	002	003	004	005	006	007	010	011	012	013	014	015	016	017
R	100	101	102	103	104	105	106	107	110	111	112	113	114	115	116	117
SWITCH	←							1								→
T	020	021	022	023	024	025	026	027	030	031	032	033	034	035	036	037
R	120	121	122	123	124	125	126	127	130	131	132	133	134	135	136	137
SWITCH	←							2								→
T	040	041	042	043	044	045	046	047	050	051	052	053	054	055	056	057
R	140	141	142	143	144	145	146	147	150	151	152	153	154	155	156	157
SWITCH	←							3								→
T	060	061	062	063	064	065	066	067	070	071	072	073	074	075	076	077
R	160	161	162	163	164	165	166	167	170	171	172	173	174	175	176	177

78C1A-64 CONNECTING BLOCK (COSMIC)
FIG. 7 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-5909 ADAPTER (LSP 4:1 LCR) REMREED LLN

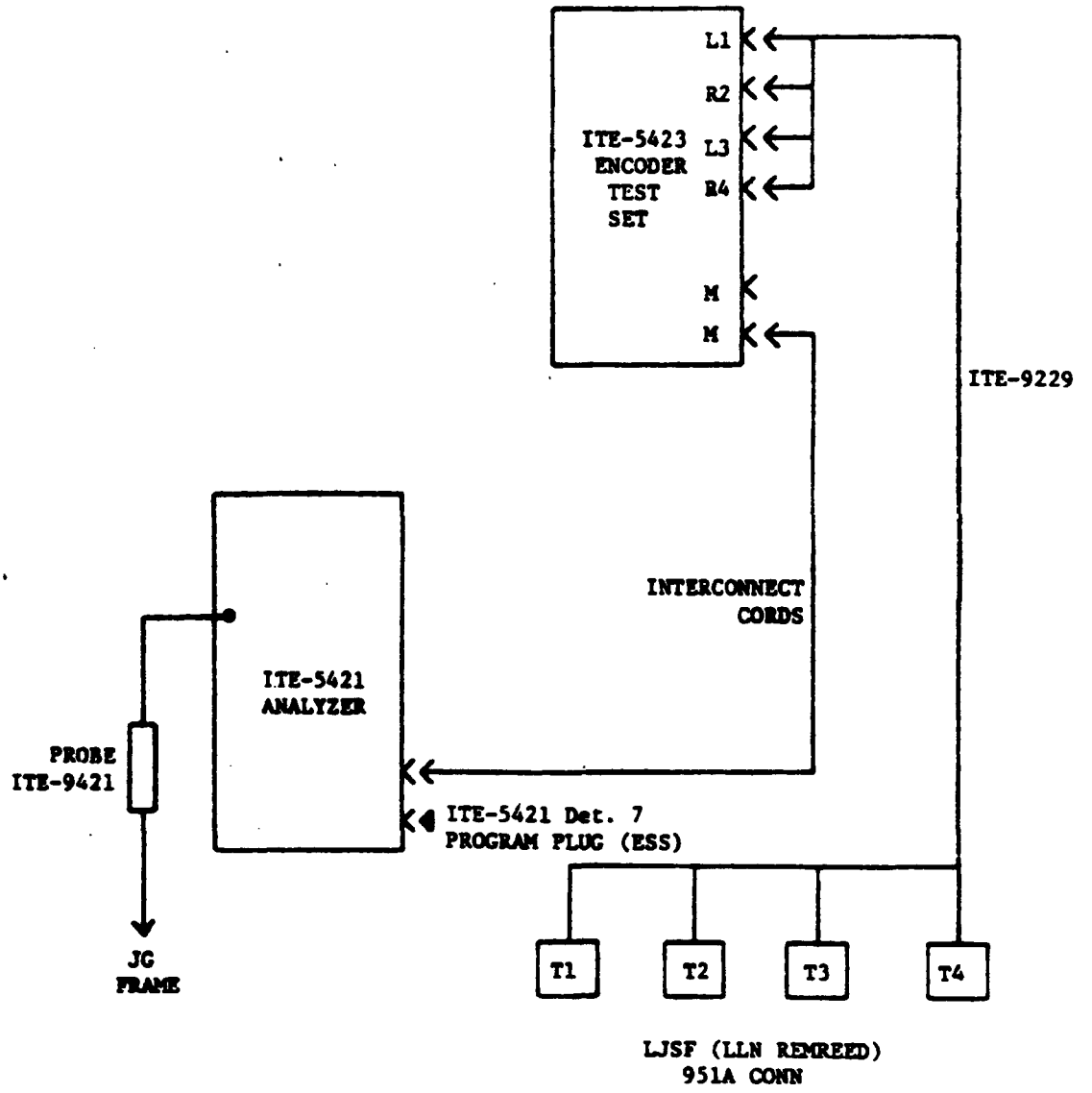


FIG. 8
LJSF (LLN REMREED) TO JUNCTOR GROUPING FRAME

951A CONNECTOR	ELVS DISPLAY	
0 15 1	017	117
	016	116
	015	115
	014	114
SW11	013	113
	012	112
	011	111
08	010	110
07	007	107
	006	106
	005	105
SW10	004	104
	003	103
	002	102
	001	101
0 00 1	000	100
	0(T)	1(R)

T_1 (Fixture)

951A CONNECTOR	ELVS DISPLAY	
0 15 1	037	137
	036	136
	035	135
	034	134
SW13	033	133
	032	132
	031	131
08	030	130
07	027	127
	026	126
	025	125
SW12	024	124
	023	123
	022	122
	021	121
0 00 1	020	120
	0(T)	1(R)

T_2

951A CONNECTOR	ELVS DISPLAY	
0 15 1	057	157
	056	156
	055	155
	054	154
SW15	053	153
	052	152
	051	151
08	050	150
07	047	147
	046	146
	045	145
	044	144
SW14	043	143
	042	142
	041	141
0 00 1	040	140
	0(T)	1(R)

T_3

951A CONNECTOR	ELVS DISPLAY	
0 15 1	077	177
	076	176
	075	175
	074	174
SW17	073	173
	072	172
	071	171
08	070	170
07	067	167
	066	166
	065	165
	064	164
SW16	063	163
	062	162
	061	161
0 00 1	060	160
	0(T)	1(R)

T4

FIG. 9 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-9229 LJSF

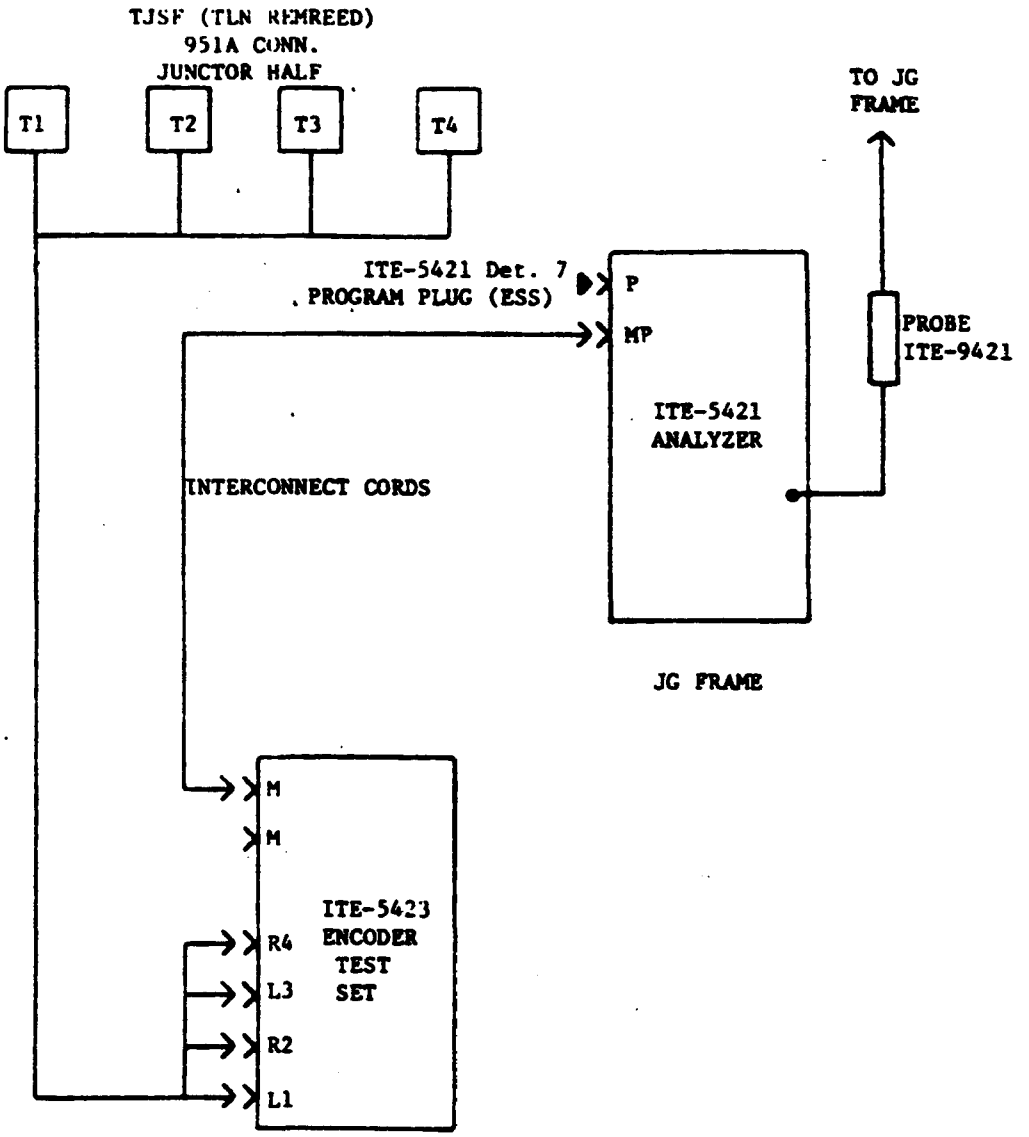


FIG. 10
LJSF (TLN REMREED) TO JUNCTOR GROUPING FRAME

951A CONNECTOR	ELVS DISPLAY	
0 15 1	017	117
	016	116
	015	115
	014	114
SW11	013	113
	012	112
	011	111
08	010	110
07	007	107
	006	106
	005	105
SW10	004	104
	003	103
	002	102
	001	101
0 00 1	000	100
	0(T)	1(R)

T_1 (Fixture)

951A CONNECTOR	ELVS DISPLAY	
0 15 1	037	137
	036	136
	035	135
	034	134
SW13	033	133
	032	132
	031	131
08	030	130
07	027	127
	026	126
	025	125
SW12	024	124
	023	123
	022	122
	021	121
0 00 1	020	120
	0(T)	1(R)

T_2

951A CONNECTOR	ELVS DISPLAY	
0 15 1	057	157
	056	156
	055	155
	054	154
SW15	053	153
	052	152
	051	151
08	050	150
07	047	147
	046	146
	045	145
SW14	044	144
	043	143
	042	142
	041	141
0 00 1	040	140
	0(T)	1(R)

T_3

951A CONNECTOR	ELVS DISPLAY	
0 15 1	077	177
	076	176
	075	175
	074	174
SW17	073	173
	072	172
	071	171
08	070	170
07	067	167
	066	166
	065	165
SW16	064	164
	063	163
	062	162
	061	161
0 00 1	060	160
	0(T)	1(R)

T4

FIG. 11 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-9229 TJSF

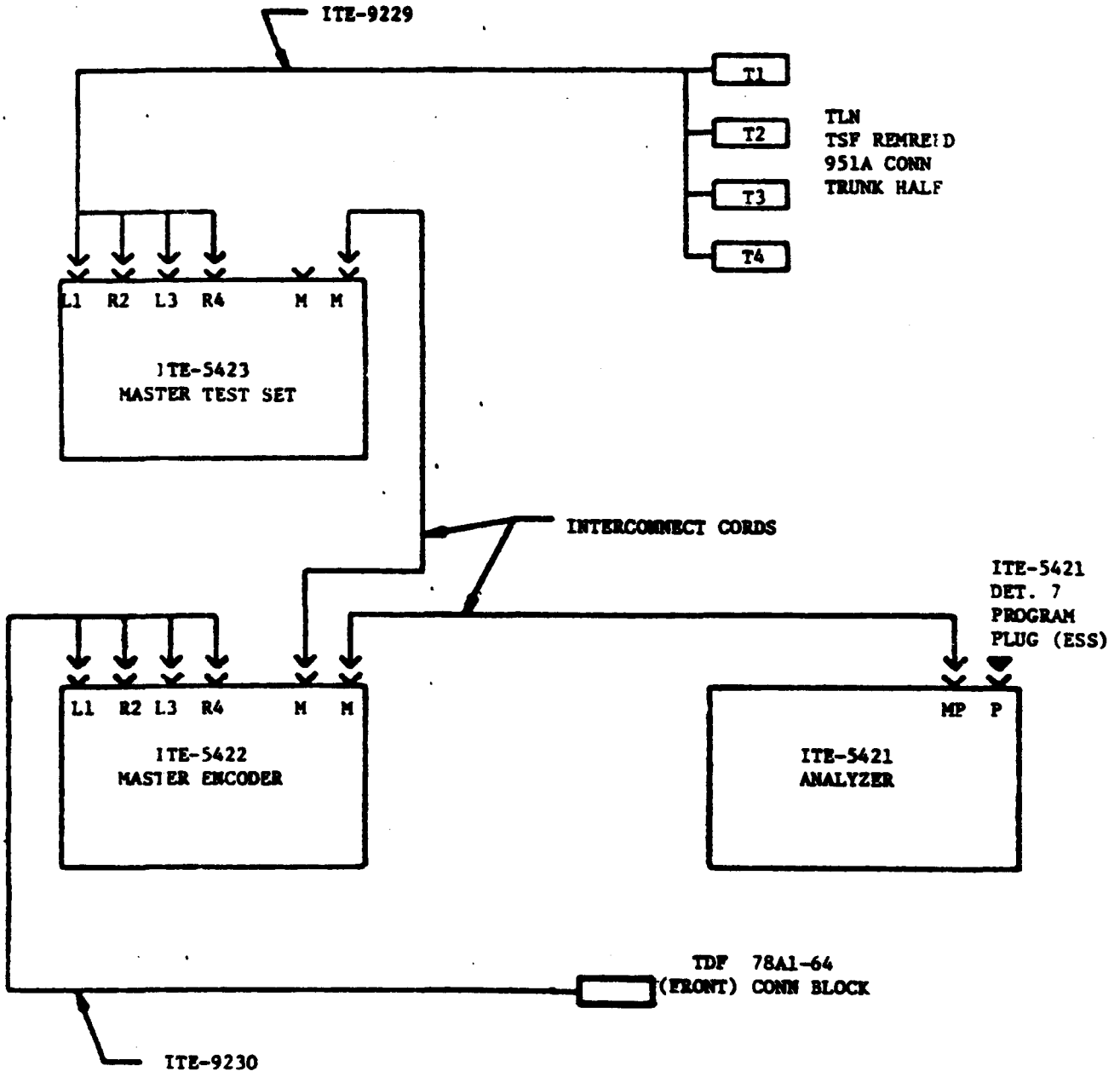


FIG. 12
TLN (REMREED) TO TDF

951A CONNECTOR	ELVS DISPLAY	
0 15 1	017	117
	016	116
	015	115
	014	114
SW01	013	113
	012	112
	011	111
08	010	110
07	007	107
	006	106
	005	105
	004	104
SW00	003	103
	002	102
	001	101
0 00 1	000	100
	0(T)	1(R)

T_1 (Fixture)

951A CONNECTOR	ELVS DISPLAY	
0 15 1	037	137
	036	136
	035	135
	034	134
SW03	033	133
	032	132
	031	131
08	030	130
07	027	127
	026	126
	025	125
	024	124
SW02	023	123
	022	122
	021	121
0 00 1	020	120
	0(T)	1(R)

T_2

951A CONNECTOR	ELVS DISPLAY	
0 15 1	057	157
	056	156
	055	155
	054	154
SW05	053	153
	052	152
	051	151
08	050	150
07	047	147
	046	146
	045	145
	044	144
SW04	043	143
	042	142
	041	141
0 00 1	040	140
	0(T)	1(R)

T_3

951A CONNECTOR	ELVS DISPLAY	
0 15 1	077	177
	076	176
	075	175
	074	174
SW07	073	173
	072	172
	071	171
08	070	170
07	067	167
	066	166
	065	165
	064	164
SW06	063	163
	062	162
	061	161
0 00 1	060	160
	0(T)	1(R)

T4

FIG. 13 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-9229 TSF

	T	R	T	R	T	R	T	R	
SW00	000	100	001	101	010	110	011	111	SW01
	002	102	003	103	012	112	013	113	
	004	104	005	105	014	114	015	115	
	006	106	007	107	016	116	017	117	
SW02	020	120	021	121	030	130	031	131	SW03
	022	122	023	123	032	132	033	133	
	024	124	025	125	034	134	035	135	
	026	126	027	127	036	136	037	137	
SW04	040	140	041	041	050	150	051	151	SW05
	042	142	043	143	052	152	053	153	
	044	144	045	145	054	154	055	155	
	046	146	047	147	056	156	057	157	
SW06	060	160	061	161	070	170	071	171	SW07
	062	162	063	163	072	172	073	173	
	064	164	065	165	074	174	075	175	
	066	166	067	167	076	176	077	177	

FIG. 14 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-9230 CORD TRUNK DISTRIBUTING FRAME

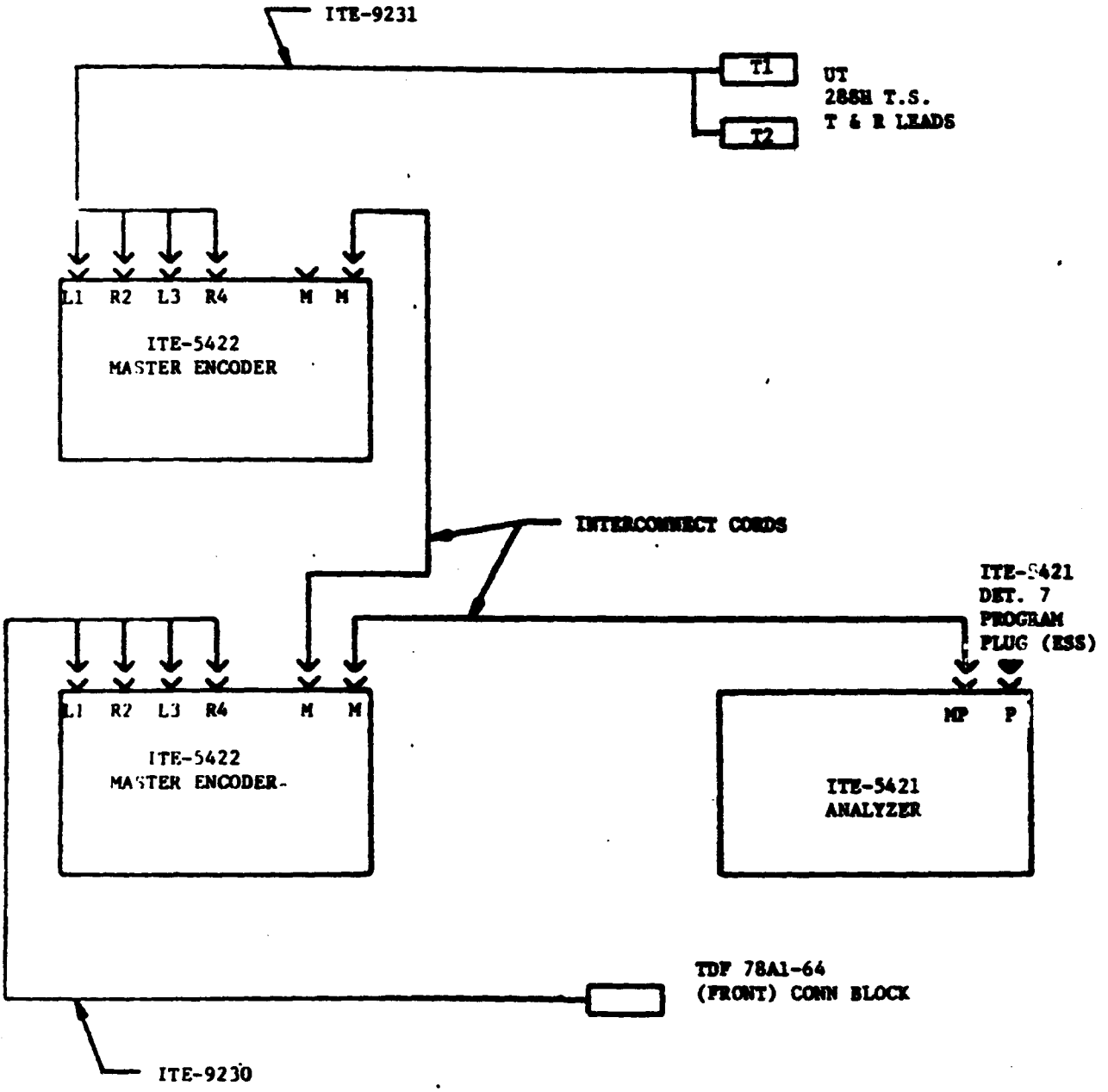


FIG. 15
UT TO TDF

									PLT
R	130	131	132	133	134	135	136	137	4
T	030	031	032	033	034	035	036	037	
R	120	121	122	123	124	125	126	127	3
T	020	021	022	023	024	025	026	027	
R	110	111	112	113	114	115	116	117	2
T	010	011	012	013	014	015	016	017	
R	100	101	102	103	104	105	106	107	1
T	000	001	002	003	004	005	006	007	

0 1 0 1 0 1 0 1

0 1 2 3

288H TERMINAL STRIP
T_1 FIXTURE

									PLT
R	170	171	172	173	174	175	176	177	8
T	070	071	072	073	074	075	076	077	
R	160	161	162	163	164	165	166	167	7
T	060	061	062	063	064	065	066	067	
R	150	151	152	153	154	155	156	157	6
T	050	051	052	053	054	055	056	057	
R	140	141	142	143	144	145	146	147	5
T	040	041	042	043	044	045	046	047	

0 1 0 1 0 1 0 1

0 1 2 3

288H TERMINAL STRIP
T_2 FIXTURE

Use T_1 on PLT 9, 10, 11 and 12
T_2 on PLT 13, 14, 15 and 16 to verify other (T & R) leads

FIG. 16 READOUT DISPLAY ASSOCIATED WITH ITE-9231 CORD AT UNIVERSAL TRUNK FRAME

	T	R	T	R	T	R	T	R	
PLT 1	000	100	001	101	010	110	011	111	PLT 2
	002	102	003	103	012	112	013	113	
	004	104	005	105	014	114	015	115	
	006	106	007	107	016	116	017	117	
PLT 3	020	120	021	121	030	130	031	131	PLT 4
	022	122	023	123	032	132	033	133	
	024	124	025	125	034	134	035	135	
	026	126	027	127	036	136	037	137	
PLT 5	040	140	041	141	050	150	051	151	PLT 6
	042	142	043	143	052	152	053	153	
	044	144	045	145	054	154	055	155	
	046	146	047	147	056	156	057	157	
PLT 7	060	160	061	161	070	170	071	171	PLT 8
	062	162	063	163	072	172	073	173	
	064	164	065	165	074	174	075	175	
	066	166	067	167	076	176	077	177	

78A1-64 CONNECTOR BLOCK FIXTURE
USE SAME FIXTURE FOR PLT 9-16.

FIG. 17 READOUT DISPLAY (T & R) ASSOCIATED WITH ITE-9230 CORD TRUNK DISTRIBUTING FRAME

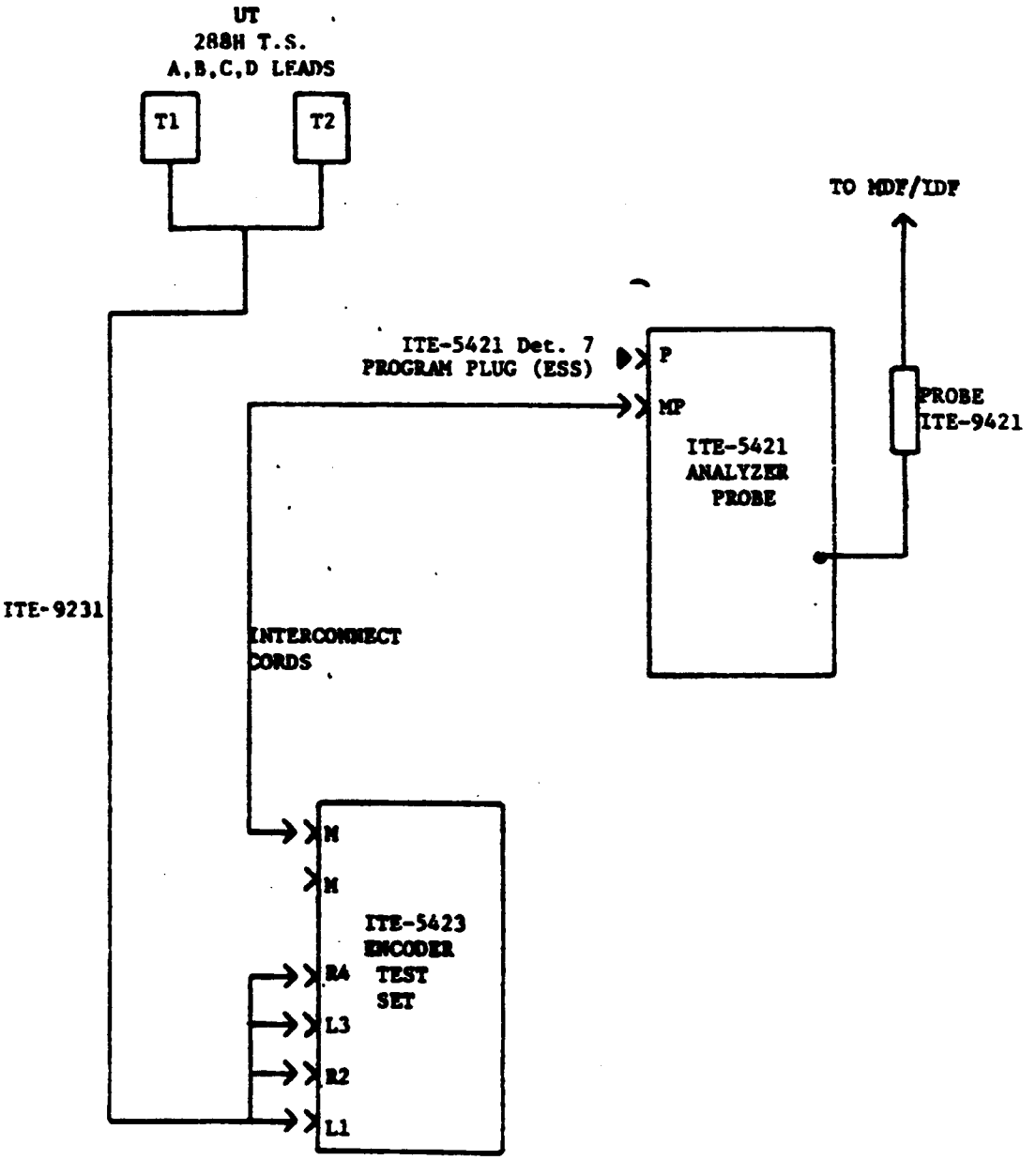
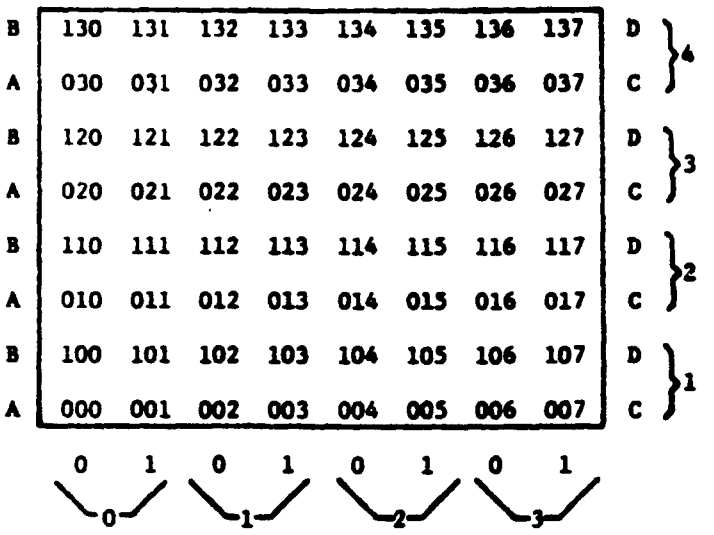
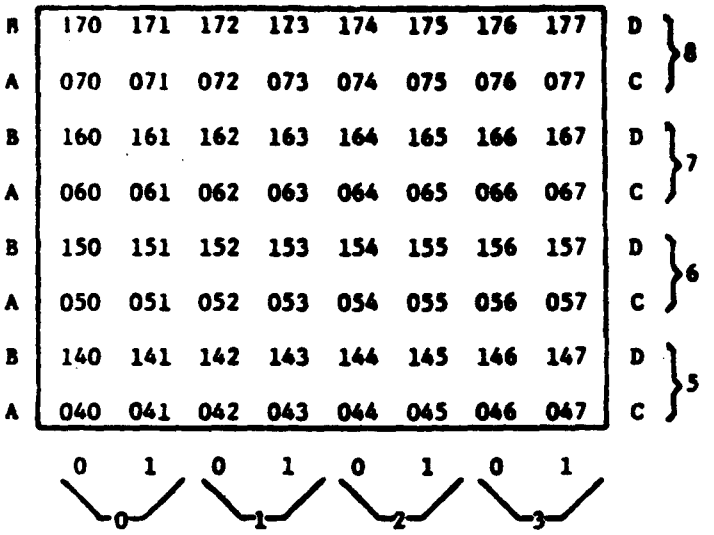


FIG. 18
UT TO MDF/IDF



T1 FIXTURE



288H TERMINAL STRIP
T2 FIXTURE

Use T1 on PLT 9, 10, 11, 12
T2 on PLT 13, 14, 15, 16 to verify other (A,B,C,D) leads.

FIG. 19 READOUT DISPLAY ASSOCIATED WITH ITE-9231 CORD AT UNIVERSAL TRUNK FRAME

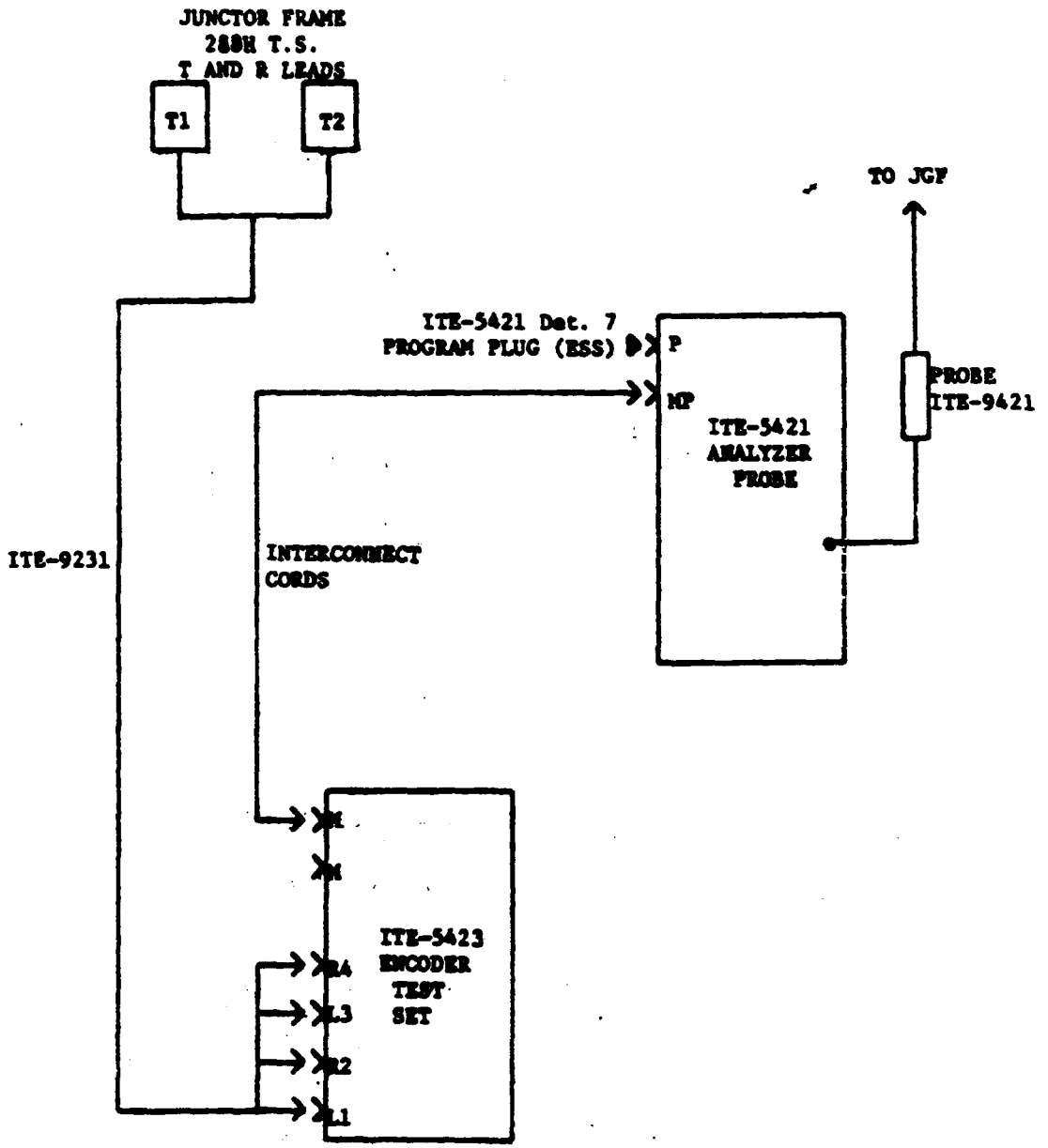
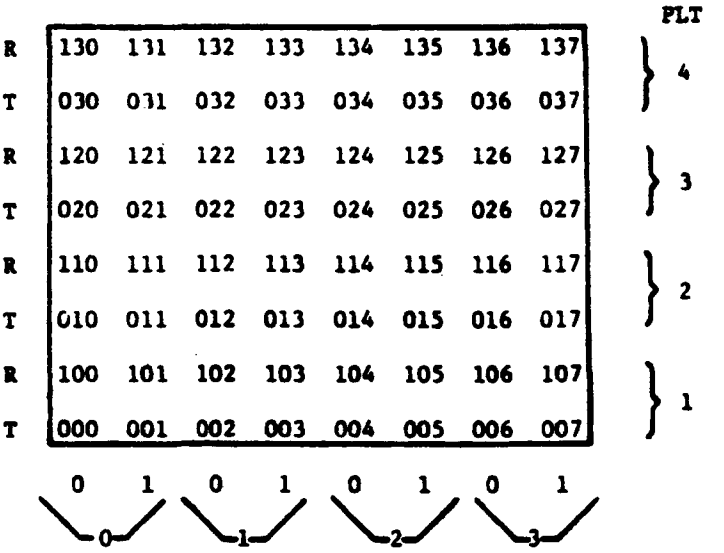
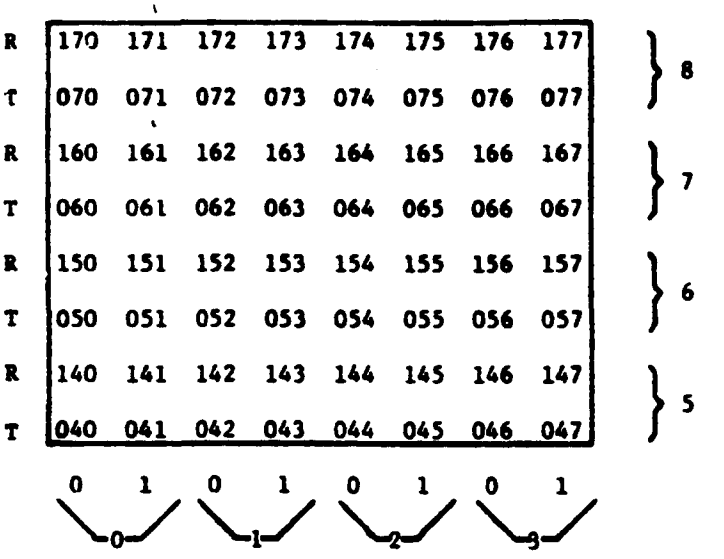


FIG. 20
JUNCTOR FRAME TO JGF



T1 FIXTURE



288H TERMINAL STRIP
T2 FIXTURE

Use T1 on PLT 9, 10, 11, 12
T2 on PLT 13, 14, 15, 16 to verify other (T & R) leads.

FIG. 21 READOUT DISPLAY ASSOCIATED WITH ITE-9231 CORD AT JUNCTOR FRAME

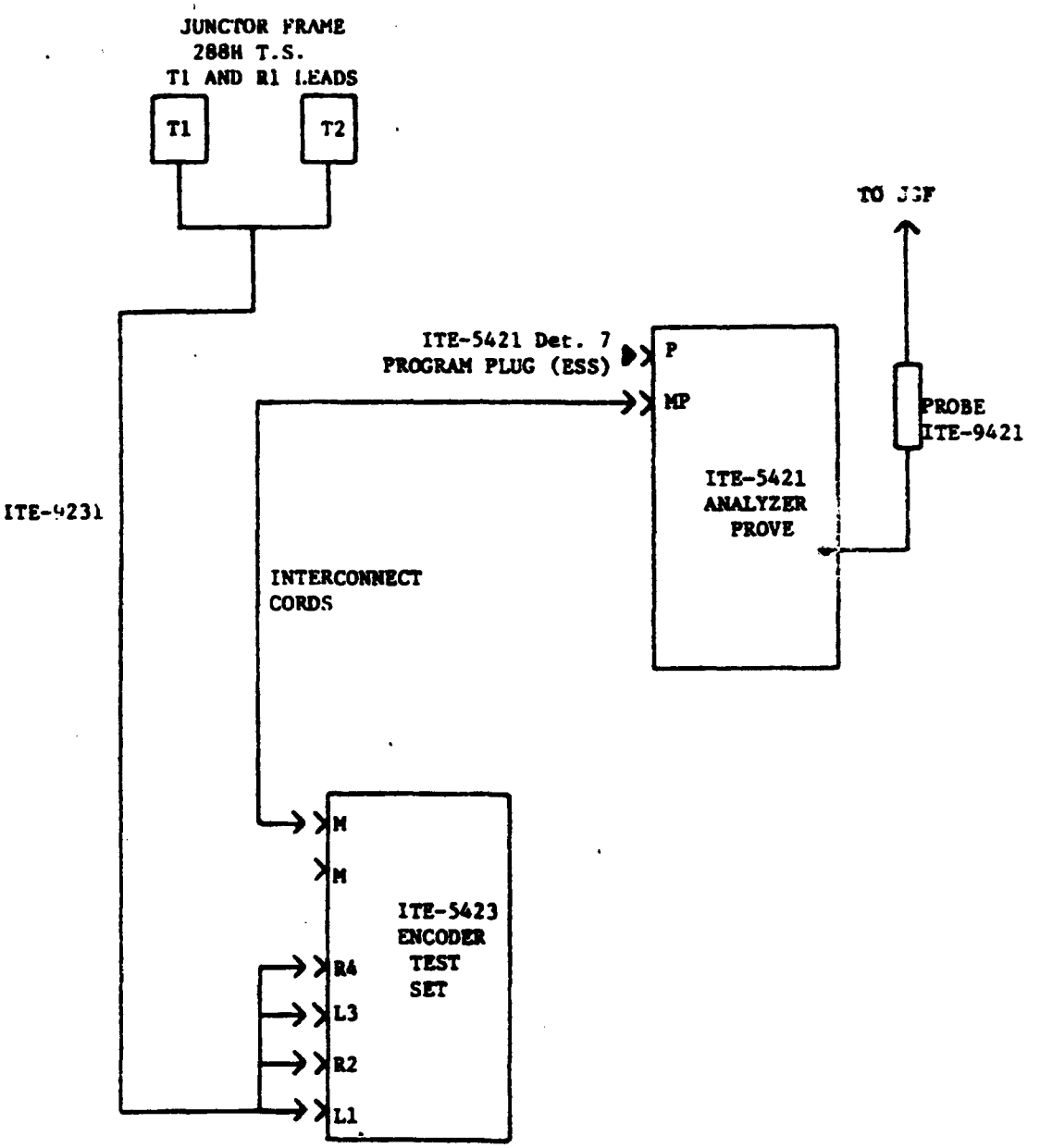
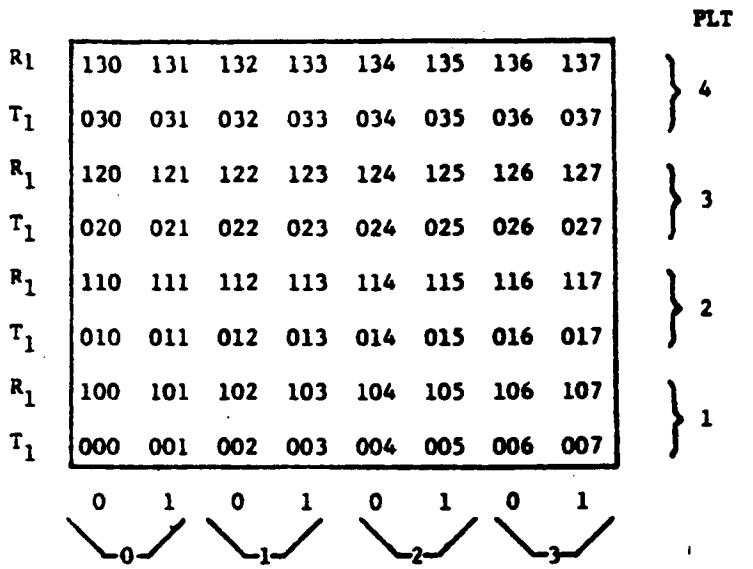
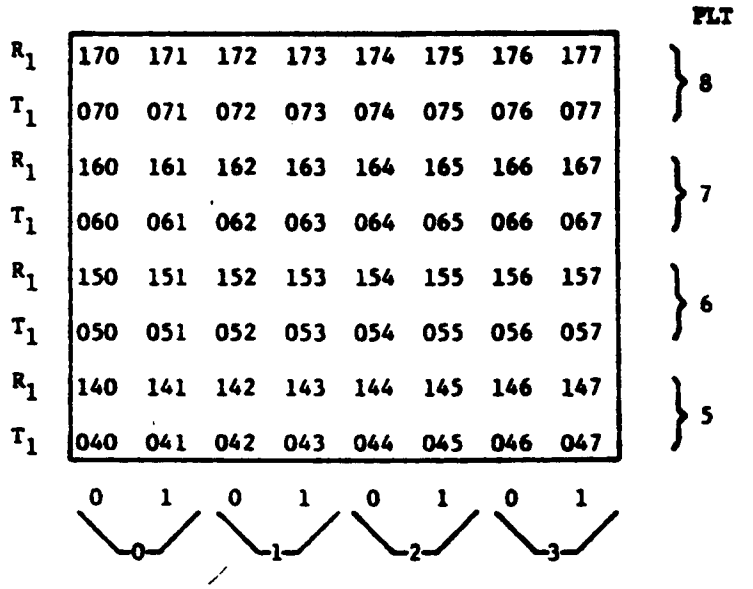


FIG. 22
JUNCTOR FRAME TO JGF



T1 FIXTURE



288H TERMINAL STRIP
T2 FIXTURE

Use T1 on PLT 9, 10, 11, 12
T2 on PLT 13, 14, 15, 16 to verify other (T_1 & R_1) leads

FIG. 23 READOUT DISPLAY ASSOCIATED WITH ITE-9231 CORD AT JUNCTOR FRAME