

SAGE DATA TRANSMISSION SYSTEMS — SAGE SERVICES

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1. GENERAL

1.01 The Cross-Connection Running List - SAGE, Form E-4461 has the following purposes:

- (a) To detail the cross connections required at the time of installation.
- (b) To simplify the changing of cross connections after installation.
- (c) To provide a convenient record of the existing cross connections.
- (d) To provide complete maintenance information in a convenient form.

1.02 The Cross-Connection Running List - SAGE is commonly abbreviated "XRL" and will be referred to as such in this Section.

1.03 To realize the maximum benefits of the XRL procedure outlined herein, ready access to a reproduction machine is essential.

2. DESCRIPTION OF FORM E-4461

2.01 Form E-4461 is printed on translucent paper stock, 14 $\frac{3}{4}$ inches wide and 9 $\frac{7}{8}$ inches from top to bottom. A facsimile of the form is shown in Fig. 1.

3. MATERIALS REQUIRED

3.01 To accomplish the objectives described in this section, the following items will be needed:

- (a) Cross-Connection Running List - SAGE Form E-4461. These forms are supplied through Western Electric in pads of 25 each, packed 4 pads per package. They may be ordered in multiples of 25 forms as follows:

(Quantity) Form E-4461

- (b) Cellulose acetate envelopes for storing the master XRL's. These may be ordered from Western Electric as follows:

(Quantity), Envelope, Transparent (Size 10" x 15") (Opening on 15" dimension) (Not punched)

- (c) A reproduction machine capable of handling paper 10 inches wide.

- (d) Sensitized paper (10" x 15"). The type of paper required will depend on the reproduction process used.

4. INITIAL PREPARATION AND USE OF CROSS-CONNECTION RUNNING LIST - SAGE, FORM E-4461

4.01 In general, the use of Cross-Connection Running List - SAGE (XRL) will be limited to installations at Direction Centers (DC) and Combat Centers (CC). The usage of the XRL technique is applicable at such centers to all SAGE Services as follows: Private Line Telephone Service, Telegraph Service, Telephotograph Service, SAGE Data Service, SAGE Air-Ground Service, and Primary Signaling Service.

4.02 The XRL for each type of service will be prepared initially by the group or agency responsible for equipment assignment at the time of installation. In all cases, the equipment inventory log must be posted concurrently by the person responsible for preparing the XRL. Form E-2307, Record of Central Office Equipment, described in Bell System Practices Section E14.106 may be used for this purpose. (See Fig. 2.) The XRL's prepared at this time will be kept as master copies for the Center. Maintenance of these master copies is described in Paragraph 5.01.

4.03 The original XRL for each type of circuit will be prepared on Form E-4461 using a No. 2 or 3 lead pencil.

- (a) For posting the permanent information, i.e., Station Number, Type of Circuit, wiring schematic, and etc, a sheet of carbon paper should be used against the back of the form to imprint a reverse impression. This will improve the quality of the reproduced copies. It is suggested that a non-smear orange carbon be used for this purpose.

- (b) The items on the XRL which are subject to change, such as equipment assignments, should be marked in pencil without the carbon backing.

4.04 After all entries have been made on Form E-4461 (see Fig. 3) sufficient copies of the XRL may be made by a contact reproduction machine and distributed. The number of copies prepared may vary depending on local requirements. It is expected that a copy will be provided at the Testboard, Carrier Bay, and at equipment locations. When the Western Electric Company is responsible for cross connections at the time of installation, two copies of each XRL should be provided for their use. At least one extra copy should be filed with the master copy for use as a work copy.

4.05 The master XRL (Form E-4461) should be kept on file in a transparent envelope for future use in making XRL changes due to equipment or facility trouble, reassignment, and etc, as outlined in Paragraphs 5.01 and 5.02.

4.06 A block diagram showing the relationship of the circuit components should be prepared and distributed with each set of XRL's. The block diagram should indicate the equipment items and the number and designation of all interconnecting leads. (See Fig. 4.)

4.07 A copy of the block diagram should be kept with each set of associated XRL's at the testboards, equipment and frame locations.

5. METHOD OF INITIATING CHANGES IN CROSS-CONNECTION RUNNING LIST—SAGE, FORM E-4461

5.01 The master XRL and a working copy for each type of circuit in the Direction Center should be kept in a transparent envelope as described in Paragraph 4.05. This will afford clean storage and ready access to the master copies when needed for changes or verification.

5.02 When equipment or facility reassignments are necessary at a Direction Center, the XRL can be used as a "Cut" or transfer sheet. A copy of the existing XRL should be marked with red pencil to show the present assignments to be changed. The changes should then be made on the master XRL, the issue number changed and copies made for distribution. The old XRL, marked in red, and a copy of the new XRL should be sent to the group responsible for making the cross-connection changes.

5.03 Only the latest issue number of each XRL should be kept at each file location.

6. TYPICAL EXAMPLES

6.01 Attached are typical examples of the use of an XRL at a Direction Center as follows:

- (a) SAGE Data Circuit Block Diagram (Fig. 4)
- (b) SAGE Data Circuit (Fig. 4A)
- (c) SAGE Air-Ground Circuit (Fig. 5)
- (d) SAGE Voice Circuit (Fig. 6)

Attached:

Figs. 1 to 6, inclusive

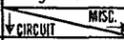
Type of Circuit _____		CROSS CONNECTION RUNNING LIST - SAGE		FORM E-4461
		STATION NO. _____		Page ____ of ____ Pages
				Issue No. _____ File No. _____
				Date _____
	LEADS			
	Jumper			
	T. S. Location			
LINE	L	Frame		LINE
	I	Dwg. No.		
	N	Figure		
	E			
	1			1
	2			2
	3			3
	4			4
	5			5
	6			6
	7			7
	8			8
	9			9
	10			10
	11			11
	12			12
	13			13
	14			14
	15			15
	16			16
	17			17
	18			18
	19			19
	20			20
	21			21
	22			22
	23			23
	24			24
	25			25
	26			26
	27			27

Fig. 1

FORM E-4461
 Page 1 of 1 Pages
 Issue No. 1 File No. 2
 Date DEC 12, 1956

CROSS CONNECTION RUNNING LIST - SAGE
 STATION NO. 35

Type of Circuit DIGITAL DATA
SINGLE CKT. OPER. (DUAL EQUIP)
TRANS. AT D.C.

Enter No. Assigned to D.C. or C.C.: 35, 37, etc.

Enter Information to Meet D.C. or C.C. Filing Requirements.

Enter Lines to Indicate X Connections Required to Interconnect Desired Equipment.

Enter Circuit Type: Digital Data,
Air-Ground, etc.

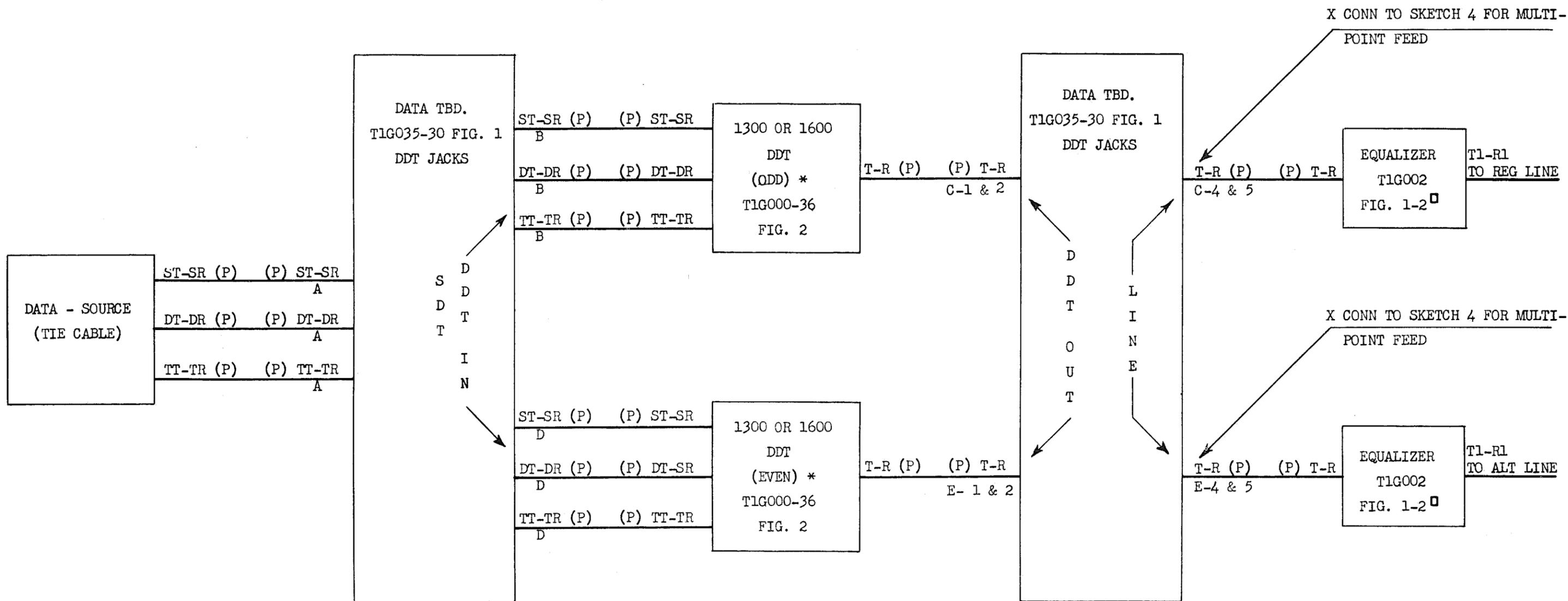
Use Single Line to Separate Leads Within Equipment on X.R.L.
 Use Double Line to Separate Various Types of Equipment on X.R.L.

LEADS	ST	DT	TT	ST	DT	TT	ST	DT	TT	ST	DT	TT	T-R	T-R	T-R	T-R	ST	DT	TT	L I N E				
	SR	DR	TR	SR	DR	TR	SR	DR	TR	SR	DR	TR	LUG	LUG	LUG	LUG	SR	DR	TR					
Jumper	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W			
T.S. Location	A34-36															25A & B								
L Frame	HCDF																							
I Dwg. No.	TIG035-30															TIG000-36								
N Figure	FIG. 1															FIG. 2								
E																								
1			76						1A & 1B									1	1					
2			77						2A & 2B									2	2					
3			78						3A & 3B									3	3					
4																			4					
5																			5					
6																			6					
7																			7					
8																			8					
9																			9					
10																			10					
11																			11					
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25																			25					
26																			26					
27																			27					
TIE CABLE		D.D. Tbd. D.D.T. Jack Ckt.															D.D.T.				* Not Used in Single Ckt. Operation			

Use this Space for Type of Equipment, Wiring Options, Notes, and Etc.

Fig. 3

DIGITAL DATA SIGNALLING SYSTEM: DUAL OPERATION TRANSMITTING FROM D.C.



(S) = SINGLE
 (P) = PAIR
 (T) = TRIPLE
 (Q) = QUAD

* FOR DUAL CKT OPER ASSIGN: ODD NO. DDT TO REG LINE & EVEN TO ALTERNATE LINE.
 A, B, C, D & E INDICATE ROW #5 ON DD TBD JACKS ON FRAME
 1-2-3-4-5 ETC. " LUG # IN ROW

□ FURTHER EQUALIZER AND PAD X CONNS WILL BE REQUIRED ON THE T.S. ON BAY ACCORDING TO CIRCUIT REQUIREMENTS (SEE T1G002-30 FIG. 1 & 2)

Type of Circuit		CROSS CONNECTION RUNNING LIST - SAGE																				FORM E-4461						
AIR GROUND		STATION NO. 35																				Page 2 of 3 Pages						
SITE 4																						Issue No. 1 File No. 4						
																						Date Dec 12, 1956						
																						TO XRL FILE NO. 7, PAGE 2						
LEADS	TT TR TS	P	TT TR TS	TT TR TS	P	TT TR TS	P	RT RR	RTI RRI	AT AR	ATI ARI	FA A	ARA ARR	GA	FR R	GR	F *	RT RR	RTI RRI	AT AR	ATI ARI	FA A	ARA ARR	GA	FR R	GR		
Jumper	3W	1W	3W	3W	1W	3W		2W	2W	2W	2W	2W	2W	1W	2W	1W	1W	2W	2W	2W	2W	2W	2W	1W	2W	1W		
T.S. Location	G 44-45	G 38	H16-22	J26-28	J16			J 33-36										H16-22		J26-28		SPARE J16						
L Frame								T 95804 - 30										T 16039 - 30										
I Dwg. No.	TIG040-30		TIG037-30				T 95804 - 30										T 16039 - 30											
N Figure	FIG. 3		FIG. 1				FIG. 3										FIG. 1											
E																												
1	1	1	Spare	1	Spare							1																
2	2	2		2								2																
3	3	3		3								3																
4	4	4		4								4																
5	5	5		5								5																
6	6	6		6								6																
7	7	7		7								7																
8	8	8		8								8																
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14	14	14		14								14																
15	15	15		15								15																
16	16	16		16								16																
17	17	17		17								17																
18	18	18		18								18																
19	19	19		19								19																
20	20	20		20								20																
21	21	21		21								21																
22	22	22		22								22																
23																												
24																												
25																												
26																												
27																												
TEST & PATCH RELAY			JK, LP, KEY A/G TBD.				D.F. TRUNK										JACK, LAMP AND KEY CKT. A/G TBD.					* LEAD NOT USED * LEAD USED ON FIRST CKT. ONLY.						

Fig. 5

Type of Circuit		CROSS CONNECTION RUNNING LIST - SAGE																		FORM E-4461				
<u>PRIVATE LINE VOICE</u> <u>E/M LEAD SIGNALING</u>		STATION NO. <u>35</u>																		Page <u>1</u> of <u>1</u> Pages				
																				Issue No. <u>1</u> File No. <u>5</u>				
																				Date <u>DEC 12, 1956</u>				
LEADS	T R	LUGS1-2 LUGS3-4	E M	T R	T R	T R	T R	T R	T R	T R	T R	T R	T R	E/ M	T R	T R	T R	T R	E/ M					
Jumper	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W					
T.S. Location	D37-43		D44-48	4A-D			5A-F		5L-P		B39-48		C42-48		C37-41	A 1-10								
L I N E	TIG050-30		TIG050-30	T 96463-34			T96463-34		TIG050-30		T 56292-31													
N E	FIG. 9		FIG. 11	FIG. 2			FIG. 6		FIG. 4					FIG. 1										
1	1	1	1				21		21	1				1							17	1		
2	2	2	2				22		22	2				2							18	2		
3	3	3	3				23		23	3				3							19	3		
4	4	4	4				24		24	4				4							20	4		
5	5	5	5				25		25	5				5							21	5		
6	6	6	6				26		26	6				6							22	6		
7																						7		
8																						8		
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24																						24		
25																						25		
26																						26		
27																						27		
		TRANS. TEST JK.		E/M TEST JK.		4 W.T.S.			4 W.T.S. Net		NETWORK		TRANSMISSION AND E/M PATCH JK.			2600 ~ S.F.			* X-Conn. as needed					

Fig. 6