

**T1 CARRIER SYSTEM
TERMINAL AND REPEATERED LINE
CENTRAL OFFICE RECORD CARDS**

CONTENTS	PAGE
1. GENERAL	1
2. T1 CARRIER—SPAN LINE RECORD—FORM E-4941—FIGURE 1	1
3. T1 CARRIER—SPAN LINE REPEATER CASE RECORD—FORM E-4942—FIGURE 2	3
4. T1 CARRIER—TERMINAL RECORD—FORM E-4944—FIGURE 3	4
5. T1 CARRIER—OFFICE REPEATER BAY RECORD FOR J98710J, J98710K, AND J98710L—FORM E-5416—FIGURE 4	4
6. T1 CARRIER—SYSTEM LAYOUT RECORD—FORM E-4940—FIGURE 5	4

1. GENERAL

1.01 In a T1 carrier system, a definite method of identifying terminal equipment and repeatered line with associated equipment must be made available to the Plant personnel for ready servicing and maintenance. The method prescribed in this section requires that information be recorded on cards which can be kept with office records. These cards will contain pertinent terminal and repeatered line information. They are supplementary to the designations shown on the repeater bay equipment and are necessary in troubleshooting and emergency patching. Samples of these cards are shown in Fig. 1 through 5. These T1 Carrier Layout Record Cards are imprinted with the basic required data headings and conform with Section E14.108.

1.02 This section is reissued to include the newest type repeater information and to make minor corrections. Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

2. T1 CARRIER—SPAN LINE RECORD—FORM E-4941—FIGURE 1

A. Line A

2.01 SPAN and AND: A span line is defined as a series of regenerators from one central office repeater bay to the next central office repeater bay. Each T1 carrier repeater has two separate circuits within its cover. In all repeaters except the 206-type, the two circuits are regenerators; in the 206-type office repeater, one circuit is a regenerator and the other passive. These two circuits are identified as side 1 and side 2. Each side will be a part of a span line between two central offices or stations. The aggregate of all span lines between two central office buildings is called a span between these buildings. After SPAN and AND, show the assigned span number and the names of the terminating offices (e.g., SPAN AH-1 Mt. Vernon AND Scarsdale).

2.02 CABLE OPERATION: Enter numeral 1 or 2 to indicate whether 1- or 2-cable operation is used on this span.

2.03 Cable: Enter the cable number used in this span.

B. Line B

2.04 TRANS. TOWARD A and TRANS. TOWARD B: After TRANS. TOWARD A or TRANS. TOWARD B, as applicable, show the name of the span terminating office that will receive the signals.

C. Line C

2.05 (A) AT: For 2-cable operation, show the name of the span terminating office that will transmit the signal. For one-cable operation, show the name of one of the span terminating offices that will transmit the signal.

SECTION 365-000-010

2.06 (B) AT: For 2-cable operation, show the name of the span terminating office that will receive the signal. For one-cable operation, show the span terminating office, opposite from (A) AT above, that will receive the signal.

2.07 SPAN CONTROL: Show the name of the office assigned overall responsibility for clearing troubles in this span. This, generally, is the transmitting office. However, local conditions will govern this assignment.

D. Line D

2.08 POWER: Indicate all power options required, as outlined in Section 365-223-500. The left side of the card will serve office A and the right side of the card will serve office B. Show the voltages required to power the repeaters in this span in reference to power punchings A, B, C, and D. These voltages are combinations of -48V, -130V, +130V, and ground. Power looping straps are indicated directly, e.g., S12-P12.

E. Line E

2.09 MAINTENANCE SPARE REPEATER: Show the assignment of the span terminating assembly or shelf and the slot at both office A and office B for this particular span. It should be noted that with 2-cable operation, maintenance spares of associated span lines will be terminated on the same slot at opposite ends. Therefore, the assignments will be transposed for the associated spans.

F. Line F

2.10 BRIDGING REPEATER: When 2-cable operation is used show the assignment of the span terminating assembly and slot at office A only. When one-cable operation is used, show the assignment at both A and B offices. The bridging repeater is used to apply a source of bipolar pulses to the maintenance spare at the originating end of the span. This signal is required to prevent free-running repeaters from producing objectionable noise on the fault locating pair.

2.11 MILEAGE: Show the mileage of this span to the nearest tenth of a mile. This information is used primarily for engineering.

G. Line G

2.12 O.W. FIGURE and O.W. PAIR: Show the assignment of each order-wire figure and pair used. Description of these circuits is covered in Section 365-320-100.

H. Lines H Through T

2.13 Lines H through T are used for span repeater and fault locating equipment information. This data is recorded in columns, using as many lines as required in each column.

2.14 Column 1—IDENTIFICATION AND ADDRESS: Show the location of the repeaters in order, using the first line for the office name. The second line will be the first repeater case location outside the central office. This procedure should be used up to and including the name of the central office having the last repeater in the span. The address should be complete enough that the reader can direct another person to that location or go there himself. When the address is lengthy, use additional lines rather than abbreviate to the point where clarification will be required.

2.15 Column 2—MAINTENANCE RESPONSIBILITY: Local practice will determine the maintenance force responsible for the clearing of trouble in the repeater case. The identification of that force should be shown in this column.

2.16 Column 3—TYPE RPTR: If this span is operated as a one-cable system, the line repeater type will be 201A or 205A. If this span is operated as a 2-cable system, the line repeater type will be 201B or 205B. The office repeater will be either the 201- or 206-type depending on the bay used.

2.17 Column 4—POWER—SOURCE: The name of the office which supplies the power to operate the line repeaters should be shown in column 4.

2.18 Column 5—POWER—T-L: Show the abbreviation T for through (series fed) power or L for looped power.

2.19 Columns 6 and 7—BUILD OUT—SIDE 1 and SIDE 2: Show the 836-type networks

used to build out the line between repeaters to meet transmission requirements. Generally, the same type of network will be used for all side 1 regenerators in a repeater case. Similarly, side 2 of these repeaters will have the same type of network. The 836-type network used should be shown. These networks are coded 836A through 836M.

2.20 Column 8—FAULT LOC—FILTER: Each repeater case location in a span is assigned a fault locating filter. There are 12 filters, coded 598A through 598M, depending on the frequency, as shown below. Show only the filter type in column 8.

598A—832 cycles

598B—928 cycles

598C—1048 cycles

598D—1206 cycles

598E—1340 cycles

598F—1508 cycles

598G—1722 cycles

598H—2008 cycles

598J—2193 cycles

598K—2413 cycles

598L—2680 cycles

598M—3017 cycles

2.21 Column 9—FAULT LOC—PAIR: All repeaters in a case are bridged through the fault locating filter. The output of this filter is bridged to a loaded pair called the fault locating pair. This pair number should be shown in column 9. When the proper frequency is applied to a system that is in trouble, a return signal should appear on the fault locating pair.

2.22 Columns 8 and 9—FAULT LOC—COMPL: Show the fault locating complement number in the space at the head of columns 8 and 9.

I. Bottom Line

2.23 The bottom line of this card has space provided for miscellaneous information as follows.

2.24 C.O.: Show the circuit order number.

2.25 ISS: Show the issue number of this card.

2.26 DATE: Show the date that this card was issued.

2.27 CARD NO.: Show the number of this card with regard to the total number of cards used for this particular span line.

2.28 ISS. BY: Show the name or initials and telephone number of the person issuing this order.

2.29 ENGRD. BY: Show the name or initials and telephone number of the person engineering this order.

2.30 REF. NO.: Show the reference number of this order.

2.31 A typical layout of this form is shown in Fig. 1.

3. T1 CARRIER—SPAN LINE REPEATER CASE RECORD—FORM E-4942—FIGURE 2

3.01 This form has been designed to be used in connection with T1 Carrier—Span Line Record—Form E-4941. Information on this card will include assignment of cable pairs spliced into each side of a repeater in a given span. This form is divided into two parts. The left part is for information for one span line, which includes all side 1 regenerators. The right side of this form is for information for another span line, which includes all side 2 regenerators.

A. Line 1

3.02 SPAN and AND: After SPAN and AND, show the assigned span number and the names of the terminating offices. Enter the side 1 data on the left side, and that for side 2 on the right side. This information will be the same as that entered on Line 1 of form E-4941.

SECTION 365-000-010

3.03 REP. CASE: Show the identifying number or symbol for this repeater case.

B. Line 2

3.04 CABLE: Indicate the cable number assigned between the two offices in this span. Enter the side 1 cable number on the left side and the side 2 number on the right side of this form.

3.05 COMPL: Indicate the cable group complement from which the pairs were spliced, using the designated sides of the form.

C. Columns A and E—SYSTEM

3.06 When a repeater case is placed in Plant, 50 pairs are spliced in and out. Each pair is wired to the input or output of one-half (one side) of a repeater. Not all 25 sockets (50 sides) are necessarily used immediately for T1 carrier systems. The 180A1 coil cases may be plugged in for VF circuits, and 904A connectors may be plugged in the socket for through use. There are 25 lines provided showing side 1 and side 2. On each side of the 25 lines, show the assignment of each socket under the System column. For a T1 system, indicate the number and the names of the terminating offices. For a loaded VF pair, show the loading or circuit number and name. For a strapped through unit, show "strapped" and, when desired, circuit name, number, or spare.

D. Columns B and D—CA. PR.

3.07 Show the cable pair number spliced to the designated socket and side.

3.08 A typical layout of this form is shown in A and B of Fig. 2.

4. T1 CARRIER—TERMINAL RECORD—FORM E-4944—FIGURE 3

4.01 This designation card is used only by the field forces. It shows the 24 channel assignments for the T1 carrier terminal. This card is posted in the designations holder provided alongside of each D1 terminal bank.

4.02 Show the system number and terminating offices on the first line. On the second line, show the assigned D1 bank number. The channels are listed 1 through 24. Indicate the circuit assignment and type signaling assigned to

each channel. This information will assist personnel when replacement of a channel unit is necessary.

4.03 A typical layout of this form is shown in Fig. 3.

5. T1 CARRIER—OFFICE REPEATER BAY RECORD FOR J98710J, J98710K, AND J98710L—FORM E—5416—FIGURE 4

5.01 This card is used only by the field forces and only with 206-type repeater bays. It shows the repeater powering conditions on the designated span.

5.02 The card is divided into four sections. Enter the indicated information as follows.

(a) **SPAN:** Show the span number.

(b) **OFF. RPTR:** Check the applicable block to show repeater type and method of powering.

(c) **POWER LOOP VOLTAGE:** Check the applicable block to show the voltage conditions.

(d) **RPTR PWR OPTIONS:** Check the block showing the strapping option used on this span.

5.03 A typical layout of this form is shown in Fig. 4.

6. T1 CARRIER—SYSTEM LAYOUT RECORD—FORM E-4940—FIGURE 5

6.01 This part describes the use of Form E-4940 which shows the layout details for type T1 carrier channel groups. The blocks of numbers to be used for T1 channel groups are as follows:

LONG LINES

1T through 50T

ASSOC CO.

101T through 300T

A. Line A

6.02 CHANNEL GROUP: Show the number of the channel group, followed alphabetically by the names of the terminal offices.

6.03 CONTROL OFFICE: Show the name of the office assigned service responsibility for the entire system, regardless of whether or not the system extends beyond the maintenance area in which the control office is located.

B. Line B

6.04 AREA MI: Show the T1 channel group mileage in each area.

6.05 TOTAL MI: Show the total mileage of the areas listed.

6.06 CKT ORDER NO.: Show the circuit order and item number on which this system was established.

6.07 DATE IN EFFECT: Record the date this system was placed in service, as covered by the circuit order for which the card was issued.

6.08 ISSUE NO.: Show the issue number when this card was issued.

6.09 CARD NO.: If a system route extends beyond 7 spans, an additional T1 Carrier—System Layout Record Card will be required. Show the number of this card with regard to the total number of cards used.

C. Line C

6.10 The information to be recorded on Line C is for both offices. Use the left side for office A information and the right side for office B. This information represents the assignments of equipment at opposite ends of the system. Show these assignments in the same order as listed under CHANNEL GROUP.

6.11 OFFICE A AND B: Show the names of the *terminal* offices from which signals will be transmitted.

6.12 TERM. BAY: At each T1 channel group terminal, a D-type bank is assigned for channelizing. Show the bank position number assigned to this channel group.

6.13 BTA: Show the assigned number of the bank terminating assembly at both office A and B. Leave blank if a 206-type repeater bay is used.

6.14 POSITION: Show the assigned *position* of the bank terminating assembly at both office A and B. Leave blank if a 206-type repeater bay is used.

D. Lines D through T

6.15 Lines E through T are used for recording office A and B span information on a column basis. The column headings are on Line D.

6.16 Columns 1 and 7—TRANS FROM A (or B)—CABLE: Show the assigned cable number for the span.

6.17 Columns 2 and 8—TRANS FROM A (or B)—PAIR: Show the assigned pair number for the span.

6.18 Columns 3 and 9—CASE SKT: Show the number of the repeater socket located in all repeater apparatus cases in the span. Each repeater socket has two sides which are designated side 1 and side 2. Show the side which is being used for this channel group. This information generally is the same for all repeaters in a particular span.

6.19 Columns 4 and 10—SPAN TERMINATION—INPUT: Show the span termination assignments for the channel group incoming to the particular office on this line. This column is divided into the two parts listed below.

(a) **RR BAY NO.:** Indicate the relay rack bay portion of the assignment.

(b) **POS:** Indicate which of the six span terminating assemblies, socket and side, this channel group is assigned on the above bay. Two or three digits, as required, will be shown. The first digit will denote the span terminating assembly, the second digit will denote the socket, and the third digit will denote the side, when this designation is required. For 206-type repeater bays, only the repeater shelf and socket need be recorded.

6.20 Columns 5 and 11—SPAN TERMINATION—OUTPUT: Show the span termination assignments for the channel group outgoing from the particular office on this line. Show the RR Bay No. and Pos assignments as covered in 6.19.

SECTION 365-000-010

6.21 Column 6—OFFICE OR STATION—SPAN:

Starting with the first of the two terminal offices in alphabetical order on the first line, show the office name. On the second line, show the identification number of this span. Note that both directions of transmission are shown on one card. The left side of the card, reading down, indicates one direction and the right side, reading up, indicates the other. Arrows are provided in this column as a guide to direction. Show on subsequent lines the span terminating offices and span identification numbers as they appear sequentially. Span identification numbers should be the same on all repeater cases in the particular span where a T1 channel group operates.

E. Bottom Line

6.22 The bottom line of this card has space provided for:

- (a) **ISS. DATE:** Show the date this card was issued.
- (b) **ISS. BY:** Show the name or initials and telephone number of the person issuing this order.
- (c) **ENGRD. BY:** Show the name or initials and telephone number of the person engineering this order.
- (d) **REF. NO.:** Show the reference number of this order.

6.23 A typical layout of this form is shown in Fig. 5.

T CARRIER-SPAN LINE RECORD

A.	SPAN AH-1 MT. VERNON AND SCARSDALE		CABLE OPERATION 2 CABLE 5181	
B.	TRANS. TOWARD A SCARSDALE		TRANS. TOWARD B	
C.	(A) AT MT. VERNON	SPAN CONTROL SCARSDALE	(B) AT SCARSDALE	SPAN CONTROL SCARSDALE
D.	(A) POWER SIMPLEX PER 365-223-500 FIG.	2C	(A) POWER SIMPLEX PER 365-223-500 FIG.	3C
	(B) POWER FEED OPTION	C-48 D+130	(B) POWER FEED OPTION	—
	(C) POWER LOOP OPTION		(C) POWER LOOP OPTION	S12 P12
	(D) RESISTANCE STRAPPED	R3	(D) RESISTANCE STRAPPED	NONE
E.	MAINTENANCE SPARE REPEATER	115.07-6-5	MAINTENANCE SPARE REPEATER	120.06-6-5
F.	BRIDGING REPEATER	115.07-6-1	BRIDGING REPEATER	MILEAGE: 6.8
G.	O.W. FIGURE	102	O.W. PAIR	5181-201
			O.W. FIGURE	105

SPAN REPEATER LOCATION AND INFORMATION							FAULT LOC.	
IDENTIFICATION AND ADDRESS 1	MAINTENANCE RESPONSIBILITY 2	TYPE REP. 3	POWER		BUILD OUT		COMPL. 5181	
			SOURCE 4	T-L 5	SIDE 1 6	SIDE 2 7	FILTER 8	PAIR 9
H. MT. VERNON C.O.	MT. VERNON			L	836-	836-	598-	
I. MH. T17R-W/O WESTCHESTER-E/O DEVONIA	CABLE TEST FORCE	201B	MT. V	T	D	D	A	202
J. MH. T39-MIDLAND & TANGLEWYLDE				T	E	E	B	
K. MH. T46-MIDLAND & WINTER HILL				T	J	J	C	
L. MH. T55R-WHITE PLAINS & FISHER				T	J	J	D	
M. MH. T66R-WHITE PLAINS S/O SWIFT				T	D	D	E	
N. MH. T R-WHITE PLAINS & EDGEWATER				T	D	D	F	
O. SCARSDALE C.O.	SCARSDALE			L	G	G	-	
P.								
Q.								
R.								
S.								
T.								

C.O. 65-3005 ISS. 1 DATE 11-12-65 CARD NO. 1 OF 1 ISS. BY T.W.Z. ENGRD. BY M.L.B. REF. NO. 2367
 219-932-9960 212-393 2130

Fig. 1 — Span Line Record

PRINTED IN U.S.A. **T-1 CARRIER SPAN LINE REPEATER CASE RECORD** FORM E-4942
BSP 365-000-010

1. SPAN 1-HAM'D. W. AND HAM'D. E. REP. CASE 001 | SPAN 2 HAM'D. E AND HAM'D. W.

2. CABLE 5811 COMPL. 401-425 SIDE ONE | SIDE TWO CABLE 5811 COMPL. 701-725

SYSTEM (A)	CA. PR. (B)	SOCKET	CA. PR. (D)	SYSTEM (E)
101T-GARY N. - HAMMOND W.	401	1	701	101T-GARY N. - HAMMOND W.
102T	402	2	702	102T
103T	403	3	703	103T
104T	404	4	704	104T
105T	405	5	705	105T
106T	406	6	706	106T
107T	407	7	707	107T
108T	408	8	708	108T
109T	409	9	709	109T
110T	410	10	710	110T
111T	411	11	711	111T
SPARE	412	12	712	SPARE
	413	13	713	
	414	14	714	
	415	15	715	
	416	16	716	
	417	17	717	
	418	18	718	
	419	19	719	
	420	20	720	
	421	21	721	
	422	22	722	
MAINTENANCE SPARE-2	423	23	723	MAINTENANCE SPARE-2
MAINTENANCE SPARE-1	424	24	724	MAINTENANCE SPARE-1
	425	25	725	

A-ONE-CABLE OPERATION

PRINTED IN U.S.A. **T-1 CARRIER SPAN LINE REPEATER CASE RECORD** FORM E-4942
BSP 365-000-010

1. SPAN AH-1-MT. VERNON AND SCARSDALE REP. CASE OC1 | SPAN AH-1-MT. VERNON AND SCARSDALE

2. CABLE 5181 COMPL. 1-25 SIDE ONE | SIDE TWO CABLE 5181 COMPL. 26-50

SYSTEM (A)	CA. PR. (B)	SOCKET	CA. PR. (D)	SYSTEM (E)
MAINTENANCE SPARE	1	1	26	MAINTENANCE SPARE
101T-E 175 ST. - WHITE PLAINS	2	2	27	102T-E 175 ST - WHITE PLAINS
103	3	3	28	104T
105	4	4	29	106T
107	5	5	30	108T M.
101T MT. VERNON - WHITE PLAINS	6	6	31	102T MT. VERNON - WHITE PLAINS
103T	7	7	32	104T
105T	8	8	33	106T
107T	9	9	34	108T
109T	10	10	35	110T
111T	11	11	36	112T
113T	12	12	37	114T
115T	13	13	38	116T
SPARE	14	14	39	SPARE
	15	15	40	
	16	16	41	
	17	17	42	
	18	18	43	
9WLF-10 (DATA)(904 A-CONN)	19	19	44	
H-88 - FUTURE T	20	20	45	H-88 - FUTURE T
	21	21	46	
	22	22	47	
	23	23	48	
DEAD	24	24	49	DEAD
	25	25	50	

B-TWO-CABLE OPERATION

Fig. 2-Span Line Repeater Case Record

**T-1 CARRIER
TERMINAL**

SYSTEM		
DI BANK NUMBER		
CH	TRUNK	SIG
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		

FORM E-4944
PRINTED IN U.S.A.

Fig. 3 — Terminal Record

SPAN	
OFF-RPTR	
206A	206B
<input type="checkbox"/>	<input type="checkbox"/>
LOCAL PWR	PWR LOOP
<input type="checkbox"/>	<input type="checkbox"/>
POWER LOOP VOLTAGE	
-48 GRD	+130 GRD
<input type="checkbox"/>	<input type="checkbox"/>
+130 -48	+130 -130
<input type="checkbox"/>	<input type="checkbox"/>
RPTR PWR OPTIONS	
CEK	AGM
<input type="checkbox"/>	<input type="checkbox"/>
DK	BEHN
<input type="checkbox"/>	<input type="checkbox"/>
AFHN	HJN
<input type="checkbox"/>	<input type="checkbox"/>

E-5416(3-68) PRINTED IN U.S.A.

**Fig. 4 — Office Repeater Bay Record
for J98710J, J98710K, and
J98710L**

E-4940 (11-66)		T CARRIER—SYSTEM LAYOUT RECORD										BSP 365-000-010					
A CHANNEL GROUP 101T MOUNT VERNON-WHITE PLAINS											CONTROL OFFICE WHITE PLAINS						
B AREA MI. N.Y. 10.5		AREA MI. _____		AREA MI. _____		TOTAL MI. 10.5		CKT. ORDER NO. 59-3005		DATE IN EFFECT 12-13-66		ISSUE NO. 1	CARD NO. 1 OF 1				
C OFFICE A MT. VERNON			TERM BAY 115.08-1		BTA 115.07-1		POSITION 1		OFFICE B WHITE PLAINS			TERM BAY 349.14-9		BTA 349.14-9		POSITION 9	
D TRANS. FROM A		CASE SKT	SPAN TERMINATION				OFFICE OR STATION		TRANS. FROM B		CASE SKT	SPAN TERMINATION					
			INPUT		OUTPUT		↓ ↑					INPUT		OUTPUT			
CABLE	PAIR		RR BAY NO POS		RR BAY NO POS		SPAN	SPAN	CABLE	PAIR		RR BAY NO POS		RR BAY NO POS			
1	2	3	4		5		6	6	7	8	9	10		11			
E					115.07 1-11		MOUNT VERNON					115.07 1-12					
F	5181	6	6-1				AH-1 AH-2		5180	6	6-1						
G			120.06 3-31		120.06 3-42		SCARSDALE					120.06 3-41		120.06 3-32			
H	6581	6	6-1				HJ-1 HJ-2		6580	6	6-1						
I			349.08 1-51				WHITE PLAINS					349.08 1-52					
J																	
K																	
L																	
M																	
N																	
O																	
P																	
Q																	
R																	
S																	
T																	

ISS. DATE **11-12-66** ISS. BY **T. W. Z.** ENGRD. BY **M. L. B.** REF. NO. **2376**
 219-932-9960-212-393-2130

Fig. 5 — System Layout Record