DWG ISSUE	EE OR CD ISSUE	DATE ISSUED	DRAWN	APPD
1	1	3-5-63	TNC DHC	RNM PBF ARM

SHEET INDEX

OPTION INDEX

APP OR WRG	LOCATION
3	SHEETS 2,3,4B6,4B7,4D6,4D7
5	SHEET 2
6	SHEET 2
Z	2B2, 2D2, 2F3, 2G3, 3B8, 3E6, 3E8, 3H1, SHEET 4
Y	2B2, 2D2, 2F3, 2G3, 3F6, 3F8, 4E2, 4E3
X	SHEET 2
W	2D4, 2E4, 2E5, 2F4
V	SHEET 2, 3B2, 3B3, 3G2, 3G3, 4B6, 4B7, 4D6, 4D7
T	3E6, 3E7, 3E8, 4E1
S	SHEET 3, 4C2, 4F1
R	3E6, 3E7, 3E8

CIRCUIT NOTES:

101.

DESIG	FUSE AMP	POTENTIAL	ONE PER
A	2	-24V TALK	APP FIG.1 & ASSOC APP FIG.3
B	2	-24 SIG	ALL APP FIG. 2 ASSOC WITH SAME STA
C	2	-48V SIG	APP FIG. 1
A		GRD	APP FIG. 1 & ASSOC APP FIG.3
B		GRD	ALL APP FIG. 2 ASSOC WITH SAME STA
C		GRD	APP FIG. 1

BATTERY SYMBOL	VOLTAGE RANGE
-24	20-26V
-48	45-50V

102.

FEATURE OR OPTION			PROVIDE APP FIG.	APP OR WRG	QUANTITY
4-WIRE LINE CKT WITH E & M LEAD SIG USED WITH ROTARY DIAL SETS			1		1 PER 4-WIRE LINE
4-WIRE PICKUP RELAY			2		1 PER 4-WIRE LINE PER STA
4-WIRE EXCLUSION CONTROL CKT			3		1 PER 4-WIRE LINE
LAMP FUSE UNIT			4		AS REQD
4-WIRE LINE CKT USED	WITH AUX SERVICE TRFR			S	
	WITHOUT AUX SERVICE TRFR	WITH MULTI-SIG CONT CKT FOR RINGERS		T	
		WITHOUT MULTI-SIG CONT CKT FOR RINGERS		R	
NONEXCLUDED STA				V	
4-WIRE LINE ASSOC WITH KEY EQPT NO. 112A	REQD			Z	
	NOT REQD			Y	
PROVISION FOR SIDETONE WHEN LINE IS NOT ASSOC WITH KEY EQPT NO. 112A	NUMBER OF APPEAR-ANCES OF 4-WIRE LINE	SINGLE		W	
		MULTIPLE	6		1 PER 4-WIRE LINE
ATTENUATOR PAD CKT-FOR USE WHEN LINE IS NOT ASSOC WITH KEY EQPT NO. 112A, SEE NOTE 105	PROV		5		AS REQD
	NOT REQD			X	

103.

NETWORK VALUES		
NETWORK NO.	RESISTANCE IN OHMS	CAPACITANCE IN UF

CIRCUIT NOTES: (CONT)

104.

RECORD OF APP FIGURES, WIRING, AND APPARATUS CHANGES							
CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT STD	A&M	MD	

105. PROVIDE 89-TYPE RESISTORS IN ACCORDANCE WITH THE FOLLOWING TABLE:

RESISTOR CODE	PAD LOSS IN DB
89A	ZERO
89E	1
89J	2
89N	3
89T	4
89AA	5
89AE	6
89AJ	7
89AN	8
89AT	9
89BA	10
89BC	11
89BE	12
89BG	13
89BJ	14
89BL	15
89BN	16
89BR	17
89BT	18
89BW	19
89CA	20
89CC	21
89CE	22
89DK	23

SUPPORTING INFORMATION

CATEGORY	NO.

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS,
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY + (PLUS) OR
- (MINUS) ARE IN VOLTS.

302. ALL TERMINALS ON FS 1, FS 2, FS 4, FS 5, FS 6, FS 7, AND FS 8 APPEAR ON 255A KEY TELEPHONE UNIT UNLESS OTHERWISE SPECIFIED.

SD-69488-01

STATION SYSTEMS

4-WIRE SUBSCRIBER LINE CIRCUIT
WITH E AND M LEAD SIGNALING

ARRANGED FOR TERMINATING IN
2- AND 4-WIRE KEY TELEPHONE SETS

AT&TCO STANDARD

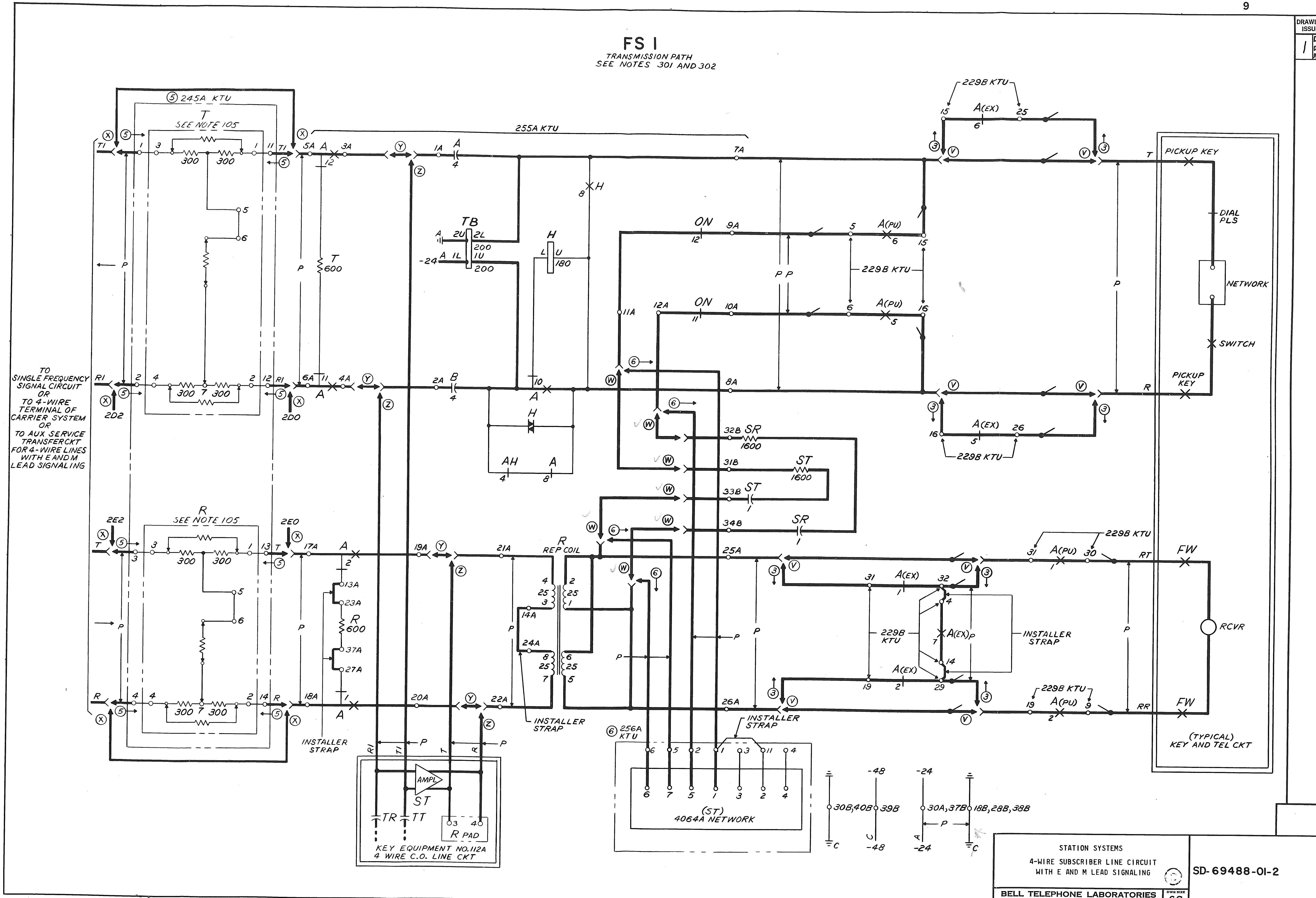
BELL TELEPHONE LABORATORIES INCORPORATED

DWG SIZE 6S

PRINTED IN U.S.A.

SD-69488-01-1

6 SHEETS



STATION SYSTEMS

4-WIRE SUBSCRIBER LINE CIRCUIT WITH E AND M LEAD SIGNALING

SD-69488-01-2

BELL TELEPHONE LABORATORIES INCORPORATED

DWG SIZE 6S

PRINTED IN U.S.A.

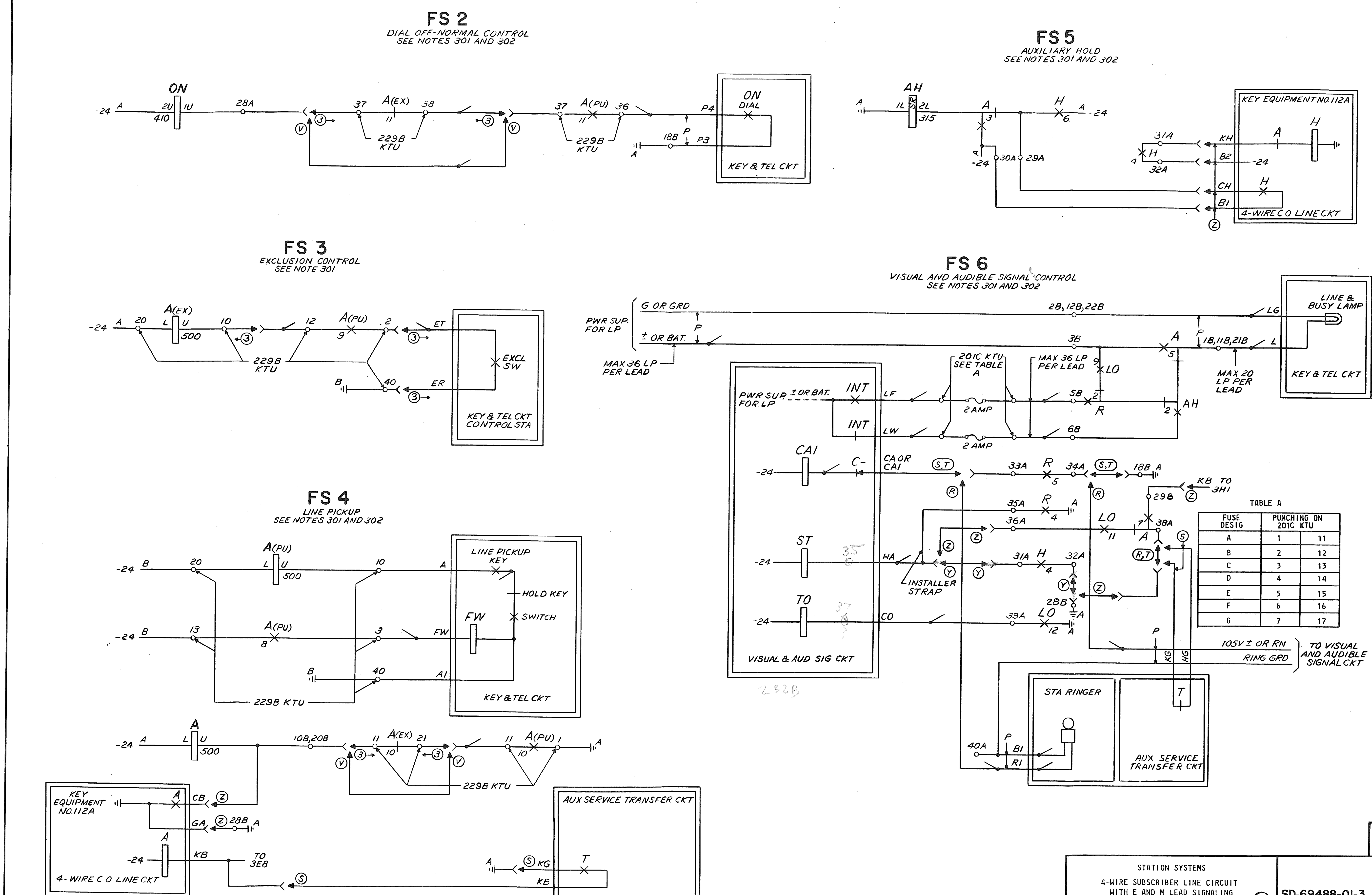


TABLE A

FUSE DESIG	PUNCHING ON 201C KTU	
A	1	11
B	2	12
C	3	13
D	4	14
E	5	15
F	6	16
G	7	17

STATION SYSTEMS
4-WIRE SUBSCRIBER LINE CIRCUIT
WITH E AND M LEAD SIGNALING

2

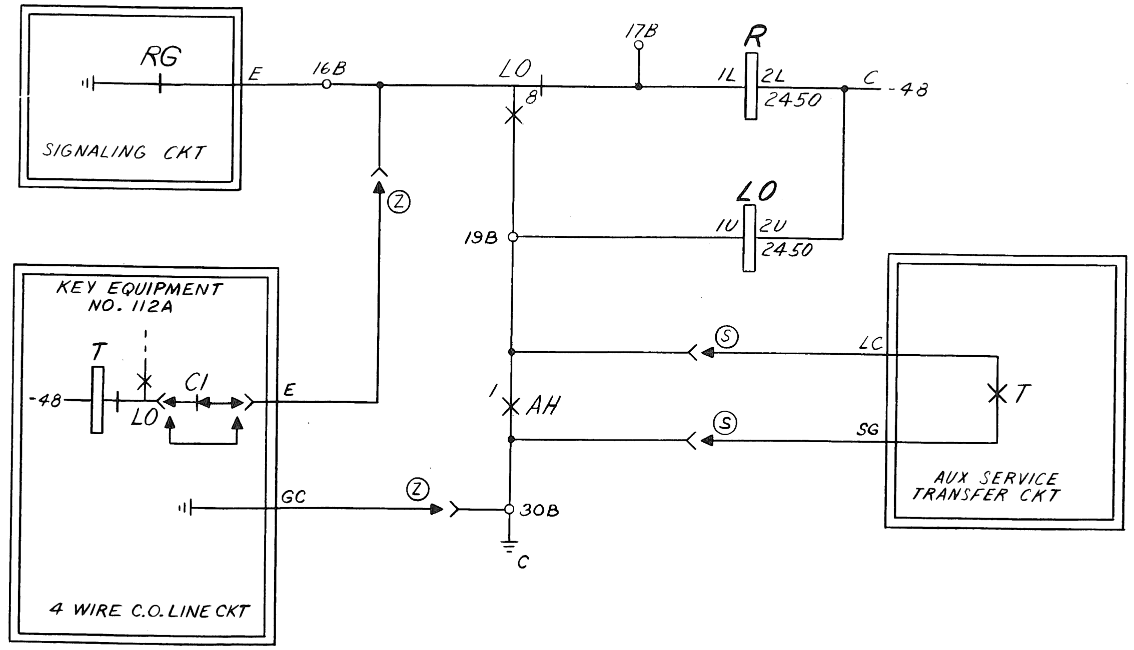
SD-69488-01-3

BELL TELEPHONE LABORATORIES INCORPORATED

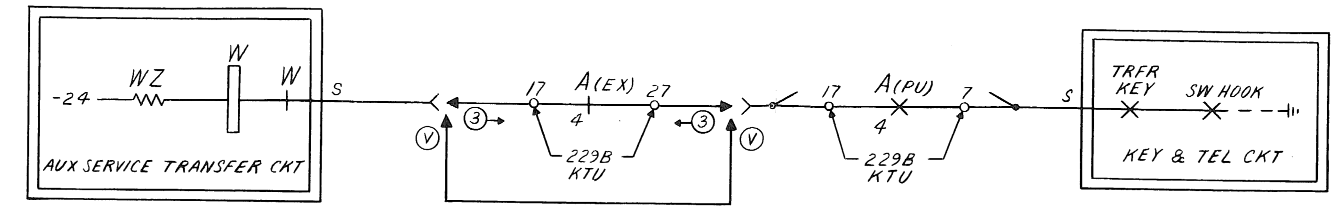
DWG SIZE 6S

PRINTED IN U.S.A.

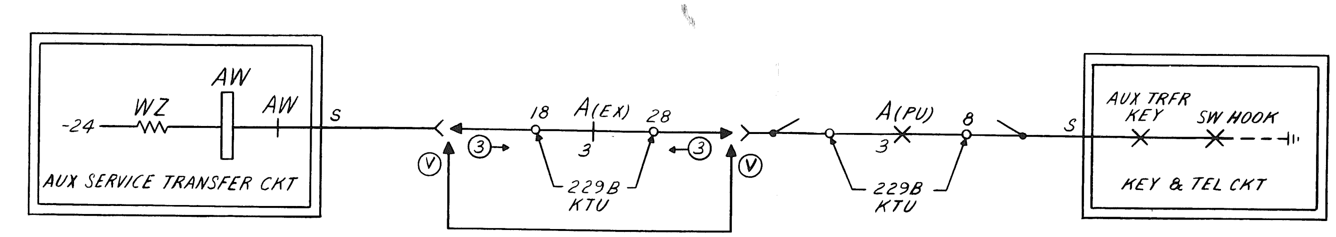
FS 7
INCOMING SIGNALING



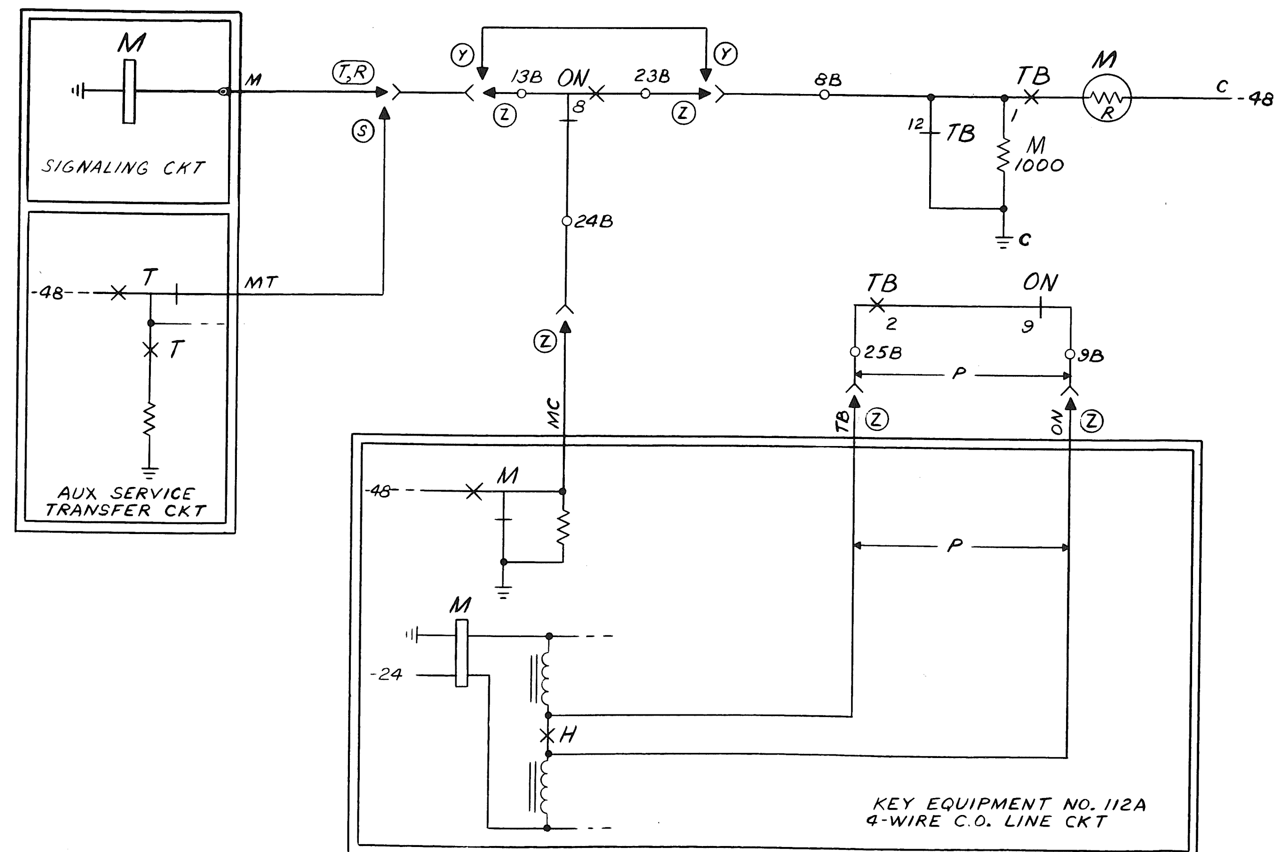
FS 9
TRANSFER CONTROL



FS 10
AUXILIARY TRANSFER CONTROL



FS 8
OUTGOING SIGNALING



STATION SYSTEMS
4-WIRE SUBSCRIBER LINE CIRCUIT WITH E AND M LEAD SIGNALING

SD-69488-01-4

BELL TELEPHONE LABORATORIES INCORPORATED

DWG SIZE 6S

PRINTED IN U.S.A.

DRAWING ISSUE 1 RB DHC ARM

APP FIG.1

255A KEY TEL UNIT

RELAY

DESIG	A		AH		ON		H		LO		R		TB	
CODE	AJ43		AK1				AJ100		AK4				AJ102	
OPTION														
	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC	CONT ARR	LOC
12	EBM	2B2			EBM	2B5			M	3F7			B	4F4
11	EBM	2D2			EBM	2C5			EBM	3E7				
10	EBM	2D3			M	4H2			EBM					
9	EBM				B	4F4			EMB	3D7				
8	EMB	2E4			EMB	4E2	M	2B4	EMB	4B2				
7	EBM	3E8												
6	EMB						M	3B7						
5	EMB	3D8	B								EMB	3E7		
4	EBM		B	2E3			M	a			EMB	3E7		
3	EBM	3B7									EBM			
2	EBM	2E2	EBM	3D8							EBM	3D7	M	4F3
1	EBM	2G2	M	4C2							M		M	4E4
COIL		3G1		3A6		3A1		2C4		4B3		4B3		2C3

a Y 3E7
Z 3B8

CAPACITOR

DESIG	LOC	CODE
A	2B3	437A
B	2D3	437A
SR	2E5	440A
ST	2E6	440A

LAMP

DESIG	LOC	CODE
M	4E4	13A

RESISTOR

DESIG	LOC	CODE
M	4F4	18BH
R	2F2	18AE
SR	2D5	18AT
ST	2E6	18AT
T	2C2	18AE

TRANSFORMER

DESIG	LOC	CODE
R	2E4	202A REP COIL

VARISTOR

DESIG	LOC	CODE
H	2D3	317B

APP FIG.2

229B KEY TEL UNIT (AUX RELAY UNIT)

RELAY

DESIG	A(PU)	
CODE	AJ44	
OPTION		
	CONT ARR	LOC
12	EBM	
11	EBM	3B4
10	EBM	3G3
9	EBM	3C2
8	EMB	3F1
7	EBM	
6	EMB	2B6
5	EMB	2C6
4	EBM	4B8
3	EBM	4C8
2	EBM	2G8
1	EBM	2E8
COIL		3E1

APP FIG.3

229B KEY TEL UNIT (AUX RELAY UNIT)

RELAY

DESIG	A(EX)	
CODE	AJ43	
OPTION		
	CONT ARR	LOC
12	EBM	
11	EBM	3B2
10	EBM	3G2
9	EBM	
8	EMB	
7	EBM	2F7
6	EMB	2A7
5	EMB	2D7
4	EBM	4B6
3	EBM	4C6
2	EBM	2G6
1	EBM	2F6
COIL		3C1

RELAY

DESIG	
CODE	
OPTION	
	CONT ARR / LOC
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	
1	
COIL	

APP FIG.4

201C KEY TEL UNIT

FUSES

DESIG	LOC	CODE
A,B,C, D,E,F, OR G	3D6	24C

APP FIG.5

245A KEY TEL UNIT

PAD

DESIG	LOC	CODE
T	2A1	1C
R	2E1	1C

APP FIG.6

256A KEY TEL UNIT

NETWORK

DESIG	LOC	CODE
ST	2H5	4064A

DRAWING ISSUE 1 TNC DHC ARM

STATION SYSTEMS

4-WIRE SUBSCRIBER LINE CIRCUIT WITH E AND M LEAD SIGNALING

2

SD-69488-01-5

BELL TELEPHONE LABORATORIES INCORPORATED

DWG SIZE 6S

PRINTED IN U.S.A.

SD-69488-01

CIRCUIT REQUIREMENTS

4-WIRE SUBSCRIBER LINE CIRCUIT WITH E AND M LEAD SIGNALING

APPARATUS					MECH REQT			CIRCUIT PREPARATION					DIRECT CURRENT FLOW REQT						DRAWING ISSUE
DESIG	CODE	OPT.	FIG.		BSP FIG.	CONT PRES	ARM. TRVL	BLOCK OR INSULATE	TEST CLIP DATA CONN BAT.	TEST CLIP DATA CONN GRD	TEST SET PREP	SEE TEST NOTE	TEST WDG	TEST FOR	AFTER SOAK MA	TEST MA	READJ MA	REMARKS	/ DJG
RELAYS																			
229B KTU																			
A(EX)	AJ43		3		249					U(A)	GRD			0		24.5	23.0		
A(PU)	AJ43		2		249					U(A)	GRD			0		24.5	23.0		
255A KTU																			
A	AJ43		1		249					U(A)	GRD			0		24.5	23.0		
AH	1/2 AK1		1		201					2L(AH)	BAT.	1		0	46	38.5	36.5	MTD WITH (ON)	
														H	46	5.2	4.9		
H	AJ100		1		46			(AH)O	L(H)	U(H)	B/G	2,3		0		10.5	10.0		
								10B(A)						NO		5.0	5.3		
LO	1/2 AK4		1		202					1U(LO)	GRD			0		11.8	11.3	MTD WITH (R)	
ON	1/2 AK1		1		201					1U(ON)	GRD			0		26.0	24.5	MTD WITH (AH)	
R	1/2 AK4		1		202					1L(R)	GRD			0		11.8	11.3	MTD WITH (LO)	
TB	AJ102		1		75				2L(TB)	1U(TB)	M	2,3,4	P/S	0		15.5	14.0	SER AID	
													P/S	R		5.8	6.1	SER AID	

TEST NOTES:

1. MINIMUM RELEASE TIME 60 M/S.
2. CONTACT MAKE 5, NO MAKE 8.5, READJUST; MAKE 3.5, NO MAKE 10, TEST.
3. ARMATURE BACK TENSION MINIMUM 20 GRAMS READJUST, 15 GRAMS TEST.
4. CONTACT BREAK 13, READJUST, 11.5 TEST; NO BREAK 16.5, READJUST, 18 GRAMS TEST.

STATION SYSTEMS

4-WIRE SUBSCRIBER LINE CIRCUIT WITH E AND M LEAD SIGNALING

SD-69488-01-6

BELL TELEPHONE LABORATORIES INCORPORATED