

CABLE TROUBLE ANALYSIS PLAN
CABLE TROUBLE ANALYSIS
SUMMARY OF TROUBLE DATA FORM E-5408
SUBGROUP CODES FORM E-5040
DETAIL CODES FORM E-5119

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1. GENERAL	
1.01 This is one of a group of Plant Series Bell System Practices on the Cable Trouble Analysis Plan. This section covers the analysis of cable troubles leading to a decision on the corrective action to be taken.	
1.02 This section is reissued to provide for revisions of Form E-5408 and Form E-5040.	
2. WHAT IS ANALYSIS	
2.01 Analysis, as described in this section, is the evaluation of data recorded on cable trouble reports. Simply stated, it is the sorting out of information about many cable troubles and the reassembling of this information to give a clue to a source of trouble.	
2.02 Some form of trouble analysis should be going on all the time. Those persons responsible for cable maintenance should analyze	

reports every day as a part of their regular work. Reviewing completed trouble tickets—recording information from trouble tickets—the study of the trouble found—the cause of the report—the action to be taken to eliminate future troubles—all are important cable maintenance functions.

3. WHY ANALYZE

3.01 Analysis is needed to ensure that maintenance dollars are being spent effectively. Analysis provides basic facts needed to reach intelligent conclusions about past and current performances. With this knowledge, we can develop better methods and procedures designed to improve performance.

4. WHEN TO ANALYZE

4.01 The Cable Trouble Analysis Plan provides the basic data for a continuous broad analysis of cable trouble. Cable Trouble Analysis Summary Form E-5408 (Fig. 1) provides a means of accumulating and analyzing the basic data which is compiled for Form E-3626A. Data should be entered monthly on Form E-5408 to ensure that any adverse trends are not overlooked and also to have a cumulative record of the information required for quarterly entry on Form E-3626A.

4.02 It is essential that this trend analysis of general trouble codes be carried out to determine where further attention is warranted and where corrective action should be directed.

4.03 The continuous broad information provided by codes 1 through 9 is a good barometer of the condition of cable plant, but it

may not point to the particular preventive maintenance effort required to counteract deteriorating conditions. This probably will be indicated, however, by the more detailed information which is available through an analysis of the Subgroup Codes, the Detail Codes and, where a study has been set up, the Special Study Codes.

5. HOW TO ANALYZE

5.01 Cable trouble analysis falls into four main categories: the analysis of General Codes Form E-5408 (Fig. 1); the analysis of Subgroup Codes Form E-5040 (Fig. 2); the analysis of Detailed Codes Form E-5119 (Fig. 3); and, *when required*, the analysis of special study code data. Form E-5119 may also be used for summarizing special study data.

5.02 *Cable Trouble Analysis—Summary of Trouble Data Form E-5408:* The analysis of General Codes will indicate where poor trends are developing and the areas in which further information is required. For example, an increase in service-affecting sheath breaks resulting from structural defects (General Code 1) would indicate a need for further study of the Subgroup Codes involved. Fig. 1 shows typical entries on Form E-5408.

5.03 *Cable Trouble Analysis—Subgroup Codes Form E-5040:* Having determined the need for more information on structural defects, examine Subgroup Codes 11, 12, 13, and 14. This study may indicate that most of the structural troubles are occurring as the result of cracks in lead sheath (Subgroup Code 11). This may be sufficient data on which to develop corrective action, or you may wish to obtain additional information from the Detail Codes under Subgroup Code 11. Fig. 2 shows an analysis of Subgroup Codes under several General Codes on Form E-5040.

5.04 *Cable Trouble Analysis—Detail Codes Form E-5119:* A study of Detail Codes 1 through 8 will indicate where most of the troubles occurred, as illustrated in Fig. 3. This information will pinpoint where corrective action is required.

5.05 When even more detail than that provided by the General, Subgroup, and Detail Codes is required, it may be obtained by punching the additional information into the Special Study spaces on Form E-5039. A definite period should be established for the study, so that the information will not be collected needlessly beyond the study period. Form E-5119 may be used to analyze the information obtained through the special study.

6. USING THE ANALYSIS DATA

6.01 The corrective action determined as a result of analysis of trouble data should be appraised after a short period of time to determine if it has been effective. Maintenance effort that is not reducing trouble rates should be discontinued.

7. ADMINISTRATIVE CROSS-CHECK

7.01 Periodic cross-checks should be made between service-affecting cable troubles and customer trouble reports. Individual customer trouble report tickets (E-4732 or equivalent) charged to Outside Plant should be reviewed and compared with the Service-Affecting Cable Trouble Tickets (E-5039) for the same period. In the case of multiple pair cable troubles, several customer reports may be charged to a single cable trouble. However, each customer report charged to cable trouble should be covered by a prepared Cable Trouble Ticket. If this is not the case, a need for corrective procedures is indicated.

Attached:
Figs. 1, 2, and 3

PRESSURIZED
 NON-PRESSURIZED
 COMBINED

FORM E-5040
 (1-72)

CABLE TROUBLE ANALYSIS - SUBGROUP CODES

LOCATION: **UPTOWN**

PERIOD: **1-1-71 to 3-31-71**

REF. 660-003-013

TROUBLE CLASSIFICATION (A)	CODE NO. (B)	AERIAL		UNDERGROUND		BURIED		SUBMARINE	
		SERVICE-AFFECT (C)	ROUT. (D)	SERVICE-AFFECT (E)	ROUT. (F)	SERVICE-AFFECT (G)	ROUT. (H)	SERVICE-AFFECT (I)	ROUT. (J)
SHEATH BREAK	LEAD SHEATH-CRACK	11	///	1		1			
	LEAD SHEATH - SUPPORT CUT	12	///	1					
	LEAD SHEATH - OTHER CHAFE	13		1					
	POLY SHEATH-CRACKS, CUTS, CHAFES	14		1					
	STRUCTURAL (11-14 INCL.)	1	6	3		1			
	BULLET	21							
	BRUISE	22	1		1				
	BELL WORKMEN	23							
	OTHER WORKMEN	24					1		
	EXT. PHYS. CONTACT (21-24 INCL.)	2	1		1		1		
	FIRE	31	1						
	ACC. - FALLING & FLYING OBJECTS	32							
	RODENTS AND INSECTS	33			1				
	OTHER PHYS. ACTIVITY (31-33 INCL.)	3	1		1				
	CORROSION	41				1			
	LIGHTNING	42	1						
	FOREIGN WIRE	43							
	SHEATH-ELECTRICAL (41-43 INCL.)	4	1			1			
	LEAD SLEEVE	51			1				
	SPLICE AND TERMINAL CASES	52							
	PRESSURE FITTING	53							
	TAPED OPENING	54				1			
	VENTS	55							
	SHEATH-CLOSURES (51-55 INCL.)	5			1	1			
SHEATH-OTHER (61)	6								
TOTAL SH. BREAK (1+2+3+4+5+6)	1T	9	3	3	3	1	-	-	-
NO SHEATH BREAK	SPLICING-PAPER AND PULP	71	1		///				
	SPLICING-PLASTIC AND OTHER	72							
	PRESSURE PLUG	73	1						
	SPLICING (71-73 INCL.)	7A	2		3				
	READY ACCESS TERMINATIONS	74	///	///			///		
	FIXED TERMINALS	75	1						
	TERMINATING (74-75 INCL.)	7B	4	3			2		
	LIGHTNING	81							
	FOREIGN WIRE	82							
	CORE-ELECTRICAL (81-82 INCL.)	8							
	DEF. INSULATION-PAPER & PULP	91	1						
	DEF. INSULATION-PLASTIC & OTHER	92							
	WATER IN CABLE	93			1				
	CORE - ALL OTHER CAUSES	94				1			
CORE-OTHER (91-94 INCL.)	9	1		1	1				
TOTAL NO SH. BREAK (7A+7B+8+9)	2T	7	3	4	1	2	-	-	-
TOTAL - ALL TYPES (1T + 2T)	3T	16	6	7	4	3	-	-	-

Fig. 2 - Some Typical Entries on Form E-5040

PRESSURIZED
 NON-PRESSURIZED

CABLE TROUBLE ANALYSIS DETAIL CODES

ITEM	DETAIL CODE	NUMBER OF TROUBLES				TOTALS
		<i>Aerial</i>		<i>U.G.</i>	<i>Buried</i>	
<i>LEAD SHEATH CRACK - (11)</i>	<i>1</i>	<i>11</i>		<i>1</i>		<i>4</i>
	<i>1</i>					<i>1</i>
	<i>1</i>					<i>1</i>
<i>R/A TERMINATIONS (34)</i>	<i>1</i>	<i>11</i>				<i>2</i>
	<i>1</i>	<i>11</i>		<i>1</i>		<i>4</i>
	<i>1</i>			<i>1</i>		<i>1</i>
	<i>1</i>					<i>1</i>
	TOTALS	<i>11</i>		<i>1</i>	<i>2</i>	<i>14</i>
REMARKS:					PLANT SERVICE CENTER <i>UPTOWN</i> FROM <i>1-1-71</i> TO <i>3-31-71</i>	

Fig. 3 - Some Typical Entries on Form E-5119