CROSS-CONNECTION STUDIES FOR EQUIPMENT ACCOUNT INVESTMENT INSTRUCTIONS AND METHODS DISTRIBUTING FRAMES

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1. GENERAL

1.01 This section provides instructions and methods for making cross-connection studies which satisfy the requirements of the Uniform System of Accounts and Accounting Letter M-189A. These procedures may be modified to satisfy specific local conditions with the concurrence of the operating company Comptrollers Organization.

1.02 Whenever this section is reissued, the reason for reissue will be included in this paragraph.

1.03 The title for each figure includes a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

1.04 Recommendations for changes, additions, or deletions to this section should be made on Form E-3973 as specified in Section 000-010-015.

1.05 Two separate studies must be performed for cross-connections that are associated with

Central Office Change ("M") work. One study must be performed for subscriber line cross-connects while the other study must be performed for trunks, special services, and carrier systems cross-connects. These studies are performed to support the Network Switching staff and Comptrollers interdepartmental responsibility to make adjustments between Account 604-07 (CO "M"), Accounts 221—Central Office Equipment (CO "C"), and 171—Depreciation Reserve (CO "X").

1.06 There are central office (CO) cross-connections associated with subscriber lines, trunks, special services, and carrier systems which are placed and removed under Account 604-07 (Rearrangements and Changes of CO Equipment, CO "M"). These accounts represent circuit turnover, gain, and loss. The Uniform System of Accounts and Accounting Letter M-189A requires that the net gain or net loss of lines placed under Account 604-07 (CO "M") be determined at each location (see note). This is to make adjustments between Account 604-07 (CO "M"), Account 221 (CO "C"), and Account 171 ("X").

Note: Lines are considered to be subscriber lines, trunks, special services, and carrier systems.

1.07 In order for the comptrollers to make the adjustments described in paragraph 1.06, it is necessary for the Network Switching staff to supply time and material data (time study) on inward orders that are the basis for the adjustment. The quantity data (Net Gain or Net Loss) are obtained by the Comptrollers from Customer Record Information System (CRIS) for station activity and from Forms E-4419 and E-4419A furnished by Network Services.

1.08 The addition or removal of cross-connections under Specific Estimates or other similar authorizations are charged to the proper subaccounts of Account 221 (CO "C") or Account 171 (CO "X") at the time the work is being done. Examples of such activity are as follows:

(a) Adding cross-connections is charged to Account 221 when a CO is first equipped and placed in service. This includes dial-to-dial conversions.

(b) Removing cross-connections is charged to Account 171 when a CO is taken out of service and retired.

(c) Cross-connections involved in area transfers not covered by service orders are to be charged to Account 221 and Account 171 as appropriate.

(d) Cross-connections added under a specific estimate or similar authorization when an addition is made to an existing CO are chargeable to Account 221.

(e) When there are cross-connections resulting from circuit orders identified with a specific estimate or similar authorization, Account 221 is charged.

Note: Do not include in this time study the time associated with the preceding items.

1.09 The Network Switching staff will supply the cross-connect study data biannually to the Comptrollers. The Network Switching staff should coordinate the schedule of time studies with the Comptrollers. The Network Switching staff notifies the accounting office each year whether or not any changes should be made in the study and will furnish any new or revised data which are to be made effective as of the current year.

2. GROUPING OFFICES BY FRAME SIZE AND FRAME TYPE

2.01 The Network Switching staff should determine which offices should be grouped for study. The Network Switching staff may elect to perform a separate study in an office when the cross-connection effort has unique differences or unusual activity.

2.02 The CO locations may be divided into groups as follows:

(a) Local CO (Wire Center) by Type of Main Frame

(1) Modular/COSMIC* main distributing frame

(2) Standard Frame

- Over 200 verticals
- Over 100 verticals
- Under 100 verticals
- Under 50 verticals.

Note: When the main distributing frame is equipped with a mezzanine, the vertical count

* Trademark of Western Electric Company.

shall be a total of the verticals on each level. An example would be a 100 vertical frame with mezzanine times 2 equals a 200 vertical frame. The vertical length will be to the end of the last equipped vertical or horizontal shelf if both sides are not fully equipped.

(b) Toll and Tandem Offices Group Considerations for Trunks, Special Services, and Carrier Systems

- Over 400 verticals of total frames (toll main frame, tie frames, equipment frames, etc)
- Under 400 verticals of total frames
- Under 150 verticals of total frames
- Modular/COSMIC main distributing frames.

(c) When a frame provides both subscriber lines and trunk, special services, and carrier terminations, two studies will be required. One study is for the subscriber lines and one study is for the Trunks, Special Services, and Carrier Systems. For the subscriber lines, do not include cross-connect or intraoffice test time of the toll circuits. For Trunks, Special Services, and Carrier Systems, do not include cross-connect or intraoffice test time of subscriber lines.

2.03 When selecting study offices within a group, consideration should be given to the following:

(a) All Accounts (17, 37, 47, 57, 77) require study data when these accounts are represented in the study grouping

(b) Account 157 must always be studied separately when it occurs

(c) The study office(s) should be an average office of the group size (not the largest office nor the smallest office).

2.04 A Cross-connect Study Work Sheet (Form BS-547) is available to assist in grouping offices and switching account data for the study. See Fig. 1 for an illustration of the work sheet.

3. SELECTING STUDY OFFICES

3.01 The Network Switching staff will select offices to be studied. The staff will not select the same office to be studied on two consecutive studies unless that office is the only office in the group.

3.02 Determining the offices in each group may be simplified if the Cross-connect Work Sheet is employed. See Fig. 2 for an example of the Cross-connect Study data. Once the group is determined, list the groups by account number and type frame on the Summary of Cross-connect Study, Form BS-549. See Fig. 3 for an illustration of Form BS-549. See Fig. 4 for an example of the entries on Form BS-549.

3.03 A minimum of one office in each group will be studied. Some groups may contain only one type office. However, other groups will contain several types of offices. In order to obtain representative data in the latter groups, it will be necessary to study more than one office. Refer to paragraph 2.03 (a). Study requirements are in Table A.

3.04 Study offices should be selected from Form BS-549. For each office selected, complete a Form BS-548 and forward to each study office.

4. PERFORMING THE TIME AND MATERIAL STUDY

4.01 Each CO designated as a study office will perform the time and material study using Form BS-548, Cross-connect Study Time and Material. See Fig. 5 for an illustration of the form and Fig. 6 for an example of inputs on the form. The time and material study will determine:

(a) The average time in minutes required to place and connect ***any*** jumper

(b) The average jumper length in feet.

4.02 A reasonable time period selected to develop a representative sample of inward service order activity should be used as the basis for the study data on Form BS-548. In small (low activity) offices, average wire length and work time may have to be estimated to provide the necessary sample. In all offices, the following factors should be included:

(a) The time necessary for the person running the cross-connect jumpers to analyze and handle the order including the completion process (order stroking only).

(b) The time to run and connect the jumpers on the order (Frame Force Management [FFM]

work time or Computer System for Main Frame Operations [COSMOS] Frame Work Management [FWM] work times may be used as a source).

(c) Applicable portion of relief time.

(d) Verification time in connection with (b).

(e) Unavoidable delay time in connection with (b) such as:

(1) Investigation of incorrect assignments

(2) Waiting for ladder, soldering iron, etc.

(f) Cross-office (intraoffice) tests required to assure that the equipment and the cross-connections function properly.

(g) Records work, layout work, or circuit analysis required to support placing of cross-connection shall be included in this study. (***Records work which is performed to support circuit maintenance or other activities shall not be included in this study.***)

(h) Time to place Special Safeguard Measures/ Special Service Protection (SSM/SSP) to all wiring locations shall be included in the study.

Note: Unpacking, placing, adjusting, and testing of plug-ins shall not be included in this study.

5. SUMMARIZING TIME AND MATERIAL STUDY DATA

5.01 Each CO performing the time and material study will forward the completed Cross-connect Study Time and Material (Form BS-548) to the district, division, Area, or Company staff that will be summarizing the reports. When these forms are received, they must be reviewed for completeness and accuracy.

5.02 The Cross-connect Study Time and Material, Form BS-548, should be associated with the Summary of Cross-connect Study and Report to Comptrollers, Form BS-549, for the particular group. Enter the data from the BS-548 in the area labeled "Central Offices Studied."

5.03 Complete the summary portion of Form BS-549 and forward the completed copies of the forms to the Comptrollers Department (Property and Cost Accounting). Retain Forms BS-548 and BS-549 until the completion of the subsequent study.

6. FORMS

A. Availability

6.01 Forms BS-547, BS-548, and BS-549 are not stocked by Western Electric due to limited usage. A master copy of these forms may be obtained from your local company's Forms Management group for reproduction.

B. Cross-connect Study Work Sheet (Form BS-547)

6.02 The Cross-connect Study Work Sheet, Form BS-547, is used to identify the groups of offices being studied. Figure 1 contains the instructions for entries, while Fig. 2 is a working example. Form BS-547 is used to transfer information to the Cross-connect Study Time and Material, Form BS-549.

C. Cross-connect Study Time and Material (Form BS-548)

6.03 The Cross-connect Study Time and Material, Form BS-548, will provide a standard form for obtaining the necessary data required by the Comptrollers Department.

6.04 Form BS-548 will provide a method for determining the time required to run, connect, and test the jumper(s) and the length of the jumper(s) on inward orders. See Fig. 5 for the instructions to complete the form.

D. Summary of Cross-connect Study and Report to Comptrollers (Form BS-549)

6.05 Form BS-549, Summary of Cross-connect Study and Report to Comptrollers (Fig. 3) is designed to be used to provide a list of offices that are in a particular group and the associated study data. When completed, this form is to be forwarded to the Comptrollers Department. This form can be used for either subscribers lines ***or*** for trunks, special service and carrier systems. One BS-549 form must be used to transmit data for each type of study. It is not intended to transmit data for both studies even if the same office(s) would have to be used in both studies.

6.06 The information required for the BS-549, Summary of Cross-connect Study and Report to Comptrollers, is obtained by Account from the prepared work sheet, Form BS-547 (Fig. 1), and the BS-548 work sheets of offices (Fig. 5) studied for that ***account***. Form BS-549 entries are described in Fig. 4.

(A) Enter the Central Office and Area Code of office being studied.

(B) Score appropriate account number.

(C) Enter appropriate All Number Codes (ANC) of office being studied.

(D) Score the type of frame studied. Refer to paragraph 2.02 if further explanation is required.

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Cross-connect Study Worksheet

BS 547 (11 81)

Page ____ Of ____

Central Office (A)	Area Code (A)	Account (B)					ANC (NXX) (C)	Mod/COSMIC Pots MDF	Standard Pots MDF				Trunk, Toll, CXR, Special					
		37	47	77	57	157			Under 51 Vert	51-100 Vert	101-200 Vert	Over 200 Vert	Mod/ COSMIC (D)	Under 150 Vert	150-400 Vert	Over 400 Vert	Add'l Info.

Dist./Div.	Prepared By	Tel. No.	Date

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Fig. 1—Cross-connect Study Work Sheet (Form BS-547) (2.04, 6.02, 6.06)

BSP 201-200-002

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Cross-connect Study Worksheet

BS 547 (11 81)

Page 1 Of 2

Central Office	Area Code	Account 37	Account 47	Account 77	Account 57	Account 157	ANC (NXX)	Mod/COSMIC Pots MDF	Standard Pots MDF: Under 51 Vert	Standard Pots MDF: 51-100 Vert	Standard Pots MDF: 101-200 Vert	Standard Pots MDF: Over 200 Vert	Trunk, Toll, CXR, Special: Mod/ COSMIC	Trunk, Toll, CXR, Special: Under 150 Vert	Trunk, Toll, CXR, Special: 150-400 Vert	Trunk, Toll, CXR, Special: Over 400 Vert	Add'l Info.
BK RDG	221		✓							X							
BEDMTR	222		✓							X							
BNRVLE	223		✓							X							
LNGLLY	224			✓							X						
HHKTS	225			✓													
NBRFD	226			✓													
GULFD	227			✓													
MDSN	288		✓							X							
A-D	289		✓							X							
WSTVLLE	322			✓													
PTRVLLE	331		✓							X							
OLDWK	332			✓						X							
PRRSNY	333			✓													
RKVLLE	334		✓														
RKAWAY	335		✓														
DVR	344			✓													
DNVLLE	346			✓													
NTCG	348			✓													
NWTN	475			✓													
CRNY	476			✓													
NARLNTN	477	✓							X								
TM RVR	481		✓							X							
OCN BCH	482	✓								X							

Dist./Div.: METRO/SOUTH | Prepared By: JANE BATE | Tel. No.: X 2261 | Date: 12/15/79

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Fig. 2—Cross-connect Study Work Sheet (Form BS-547) Example (3.02, 6.02, 6.06)

(A) Enter as appropriate:

- Account Code
- Prepared By
- Telephone Number
- Approved By
- District/Division (Dist/Div)
- Area/Company (Area/Co)
- Date
- Group, ie, over 10,000 stations, over 100 verticals, etc.

(B) Enter the NXX of offices which were determined to be of the same relative size and technology.

(C) NXX and Time (minutes) from BS-548, column O.

(D) Jumper Length (Ft) from BS-548, column P.

(E) Determine the Number of Offices that were Studied (A), the Total Time-minutes (B), and Jumper Length feet (C).

(F) To compute the Average Time-minutes (X), divide the Total Time-minutes (B) by the Number of Offices Studies (A).

(G) To compute the average Jumper Length (Y), divide the total Jumper Length-minutes (C) by the Number of Offices Studied.

Note: The switching office studied would include the 57M time in their Switching Account Study.

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Summary Of Cross-connect Study & Report To Comptrollers BS-549 (11-81)

☐ Subscriber Lines
☐ Trunks, Special Services And Carrier Systems

			Account Code
Prepared By	Tel. No.	Area/Co (A)	Period
Approved By	Dist/Div	Frame Study Group	Date

Central Offices In This Group By Account Location Codes/NXX

(B)

EXHIBIT

Central Offices Studied

	Account Loc. Code/ NXX	Time (Min)	Length X-Wire (Ft)		Account Loc. Code/ NXX	Time (Min)	Length X-Wire (Ft)
1	(C)		(D)	8	(C)		(D)
2				9			
3				10			
4				11			
5				12			
6				13			
7				14			

Summary

No. Of Ofc's Studied	Total Time (Min)	Total Length (Ft)	Average B÷A Time (Min)	Average C÷A Length (Ft)
A	B (E)	C	X (F)	Y (G)

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Fig. 3—Summary of Cross-connect Study and Report to Comptrollers (Form BS-549) (3.02, 6.05)

BSP 201-200-002

Bell System

Summary Of Cross-connect Study & Report To Comptrollers

BS-549 (11-81)

☒ Subscriber Lines
☐ Trunks, Special Services And Carrier Systems

Account Code

Prepared By	Tel. No.	Area/Co	Period
G. Anderson	X 8379	STATE/ALPHA	JAN 1980
Approved By	**Dist/Div**	**Frame Study Group**	**Date**
B Banks	METRO/SOUTH	UNDER 100 VERT	1/15/80

Central Offices In This Group By Account Location Codes/NXX

221	771			
222	772			
223	773			
288	774			
289	775			
331	798			
334	881			
335	888			
481	889			
488	991			
562	992			
563	993			
564	994			
565	995			
566				
567				
661				
662				
663				
664				

Central Offices Studied

	Account Loc. Code/ NXX	Time (Min)	Length X-Wire (Ft)		Account Loc. Code/ NXX	Time (Min)	Length X-Wire (Ft)
1	288	31	86	8			
2	335	33	94	9			
3	488	37	74	10			
4	773	44	81	11			
5	889	38	80	12			
6				13			
7				14			

Summary

No. Of Ofc's Studied	Total Time (Min)	Total Length (Ft)	Average B÷A Time (Min)	Average C÷A Length (Ft)
A	B	C	X	Y
5	183	415	37 min	83 FT

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Fig. 4—Summary of Cross-connect Study and Report to Comptrollers (Form BS-549) Example (3.02, 6.06)

(A) In upper left corner, check appropriate study block for either Trunk, Special Services and Carrier Systems or Subscriber Lines.

(B) Enter as appropriate:

- Prepared By
- Telephone Number
- Approved By
- District/Division (Dist/Div)
- Area/Company (Area/Co)
- Reporting Unit (Central Office Name)
- Date of Study
- NXX Code of the office.

(C) ***Inward Order Number:*** Enter the Inward Order Numbe of the order being studied. These orders must be reportable and inventoried under Part 442 (E-4420) of the Network Cost Results Plan.

(D) Check the appropriate subsystem for the Inward Order Number.

(E) ***Circuit Layout Time:*** Enter the administrative time to lay out each circuit (in minutes).

(F) ***Time to Run and Connect Jumpers on an Order (Min.):*** This column provides space to tally and total the minutes that were required to run the jumper(s) on this order. There is space to enter time for a total of 7 jumpers per line.

(G) ***Intraoffice Test Time:*** Enter the time required to perform the Intraoffice (within the office only) tests required to assure that the cross-connects and the equipment in the office are functioning properly.

(H) ***Total time (C + D + E):*** This is the sum of columns C, D, and E and is the total time to lay out Run, Connect, and Test (Intraoffice) the order.

(I) ***Number of Circuit Lines Established on Order:*** Enter the number of lines for which time was recorded in column D. Enter one (1) for each Inward Service order studied.

(J) ***Actual Length of Jumper(s) (In Feet) for Circuits in Column A:*** Provides space to tally each jumper and total the length of jumper wire (in feet) to establish the circuit line in column A.

Note 1: The length of the jumpers will be based on the jumper pair. If there is a single wire jumper, the equivalent length would be one-half. The triple wire jumper would be 1-1/2 times the actual length. The quad jumper would be 2 times the actual length. An example of this is to run 10 feet of triple wire. The length recorded would be 15 feet.

Note 2: There are entry spaces for up to 7 jumpers.

(K) ***Remarks Column:*** Enter appropriate remarks.

(L) ***Total Time:*** Enter in column J the total time of all entries in column F.

(M) ***Total Circuits:*** Total of all entries in column G.

(N) ***Total Jumper Length (Feet):*** Total the length of jumpers (in feet) of all entries in column H.

(O) ***Average Time Per Circuit (J÷K):*** Computed by dividing column J by column K. The result will be in minutes.

(P) ***Average Jumper Length (L÷K):*** Computed by dividing column L by column K. The result will be in feet.

(Q) In the lower left-hand corner, enter a check (X) for the appropriate study and number of verticals.

Bell System

Cross-connect Study Time And Material

BS 548 (11-81)

(A) ☐ Trunks, Special Services & Carrier Systems ☐ Subscriber Lines

Account Code

Prepared By | Tel. No. | Area/Co. (B) | Date

Approved By | Dist/Div. | Central Office | Accounting Location/NXX Code

A	B				C	D		E	F	G	H		I
Inward Order Number	(✓) One				Circuit Layout Time	Time To Run And Connect Jumpers On An Order (Min)		Total	Intra Ofc Test Time	Total Time (C+D+E)	No. Of Ckts Est. On Order	Actual Length Of Jumper(s) (In Feet) For Ckts In Col. A	Total	Remarks
	Subs	Trk	S/S	CXR		1 2 3 4 5 6 7						1 2 3 4 5 6 7		
(C)	←		(D)	→	(E)	←	(F)	→	(G)	(H)	(I)	←	(J)	(K)

EXHIBIT

J	K	L	M
Tot. Time	Tot. Ckts	Total Jumper Length (Feet)	Avg. Time Per Cir. (J÷K)
(L)	(M)	(N)	(O)

N Avg. Jumper Lnth. (L÷K) (P)

(Q)

Subscriber
☐ Modular/COSMIC
☐ Standard Frame
☐ Under 51 Verticals
☐ 51-100 Verticals
☐ 101-200 Verticals
☐ Over 200 Verticals

Trunk Special Service Carrier*
☐ Modular/COSMIC
☐ Under 150 Verticals
☐ 150-400 Verticals
☐ Over 400 Verticals

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*For Purposes Of This Study Count One Special Service Being Added For Each Customer Location That The X-Connects Were Placed For.

Fig. 5—Cross-connect Study Time and Material (Form BS-548) (4.01, 6.04, 6.06)

Bell System

Cross-connect Study
Time And Material

BS 548
(11 81)

☐ Trunks, Special Services & Carrier Systems ☒ Subscriber Lines

Account Code

Prepared By L. A. WORKER | Tel. No. 3637 | Area/Co. STATE/ALPHA | Date 1/2/80

Approved By D. FOREMAN | Dist/Div. METRO/SOUTH | Central Office BRFD | Accounting Location/NXX Code 488

A	B				C	D		E	F	G	H		I
Inward Order Number	(✓) One				Circuit Layout Time	Time To Run And Connect Jumpers On An Order (Min) 1 2 3 4 5 6 7	Total	Intra Ofc Test Time	Total Time (C+D+E)	No. Of Ckts Est. On Order	Actual Length Of Jumper(s) (In Feet) For Ckts In Col. A 1 2 3 4 5 6 7	Total	Remarks
	Subs	Trk	S/S	CXR									
1-1131	✓					8 10 6 3	27	3	30	1	30 40 10 5	85	
1-4311	✓					7 9 5 5	26	4	30	1	25 25 10 5	65	
1-2322	✓					11 15 6 6	38	4	42	1	30 40 10 5	85	
1-3233	✓					10 11 7 4	32	7	39	1	25 25 10 5	65	WIRE BROKE
1-3438	✓					8 10 6 3	27	5	32	1	30 40 10 5	85	
1-3978	✓					7 9 5 5	26	6	32	1	25 25 10 5	65	
1-3876	✓					11 15 6 6	38	3	41	1	30 40 10 5	85	
1-8976	✓					10 11 7 4	32	4	36	1	25 25 10 5	65	
1-7987	✓					8 10 6 3	27	6	33	1	30 40 10 5	85	
1-6968	✓					7 9 5 5	26	9	35	1	25 25 10 5	65	
1-6466	✓					11 15 6 6	38	9	47	1	30 40 10 5	85	
1-7687	✓					10 11 7 4	32	11	43	1	25 25 10 5	65	CLASH
1-6633	✓					8 10 6 3	27	3	30	1	30 40 10 5	85	
1-3498	✓					7 9 5 5	26	4	30	1	25 25 10 5	65	
1-4444	✓					11 15 6 6	38	4	42	1	25 25 10 5	65	

J Tot. Time	K Tot. Ckts	L Total Jumper Length (Feet)	M Avg. Time Per Ckt. (J ÷ K)
542	15	1115	36 MIN.

N Avg. Jumper Lgth. (L ÷ K): 74 FT.

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Subscriber
- ☐ Modular/COSMIC
- ☐ Standard Frame
- ☐ Under 51 Verticals
- ☒ 51-100 Verticals
- ☐ 101-200 Verticals
- ☐ Over 200 Verticals

Trunk Special Service Carrier
- ☐ Modular/COSMIC
- ☐ Under 150 Verticals
- ☐ 150-400 Verticals
- ☐ Over 400 Verticals

*For Purposes Of This Study Count One Special Service Being Added For Each Customer Location That The X-Connects Were Placed For.

Fig. 6—Cross-connect Study Time and Material (Form BS-548) Example (4.01)

TABLE A

STUDY REQUIREMENTS

NUMBER OF OFFICES IN CENTRAL OFFICE GROUP	NUMBER OF OFFICES TO STUDY IN GROUP
1 — 5	1
6 — 10	2
11 — 20	3
21 — 30	4
31 — 50	5
51 — 75	6
76 — 100	7