SWITCHING SYSTEMS MANAGEMENT
CROSSBAR TANDEM
ASSIGNMENT PRACTICES
SERVICE OBSERVING ASSIGNMENTS

CONTENTS PAGE

1. GENERAL

1.01 Service observing equipment is provided in crossbar tandem (XBT) switching systems to permit service observations on circuits assigned to one-way incoming, 2-way intertoll, and incoming end office relays. Incoming service observations are used to measure the quality of service on calls switching through a given machine and completing within its home numbering plan area (HNPA). Incoming service observations are also used to gauge service levels between switching systems, terminating end offices, HNPA networks, areas, companies, and as a measure of total system toll performance. This practice describes the service observing equipment provided in an XBT switching system and sets forth assignment practices for trunk selection for incoming intertoll and outgoing end office service observations.

2. SERVICE OBSERVING EQUIPMENT

2.01 One or more multiline automatic call distributing circuits are provided at each XBT switching system. Many XBT installations have two service observing circuits with 100 or more loop connectors. Each service observing circuit is relay rack mounted with a maximum of 50 loop connector sockets. The specific quantities provided can be found in the traffic order and in Western Electric Company wiring lists for the XBT office.

2.02 The quantity and type of one-way incoming, 2-way intertoll, and incoming end office relays cabled for service observing are specified in the traffic order. This information will usually be listed along with the sender link frame (SLF) information.

2.03 The relays designated for service observing will be cabled to 8-contact, Jones-type sockets. These will appear in the same bay or the adjacent bay to the service observing circuits. Figure 1 shows a typical equipment layout.

2.04 Connection of a given relay to the service observing circuit is made by the insertion of a patch cord into the socket of a particular relay and service observing circuit. Assignments of trunks to be observed are made by the service observing group.

2.05 The XBT service observing circuit can be connected to a No. 12 or a No. 7M service observing desk. The observer activates the circuit by key operation at the observing desk. Once activated, an incoming seizure of any one of the trunks patched to the 50 loops associated with this

circuit will be connected through to the service observing desk. A lamp display at the service observing desk will indicate which loop is being observed. With this display the observer can determine from the assignment records the trunk group name and trunk number being observed.

3. INCOMING TRUNK OBSERVING ASSIGNMENTS

3.01 Trunks must be assigned in a manner which will guarantee that the service observer will be able to meet the requirement for incoming trunk service observations as specified in the traffic service observing practice. These requirements call for 6000 observations per month on class 1, 2, and 3 offices and 2000 observations per month on class 4 offices, distributed over the time of day in proportion to traffic distribution. To meet these requirements the trunks assigned must be those which carry a heavy amount of incoming traffic on side-hours as well as during the busy hours.

3.02 The quantity of trunks per group to be assigned for service observing should be in "approximate proportion" to the size of the group. That is, if a group of 80 trunks has 6 trunks assigned to observing relays, a group having 240 trunks should have approximately 18. This is done so that the service observer can select trunks and obtain observations which will be in approximate proportion to the traffic offered by each group. However, it is not intended that the number of trunks assigned to service observing relays must be in a precise, constant ratio with the number of trunks in each group as this would be difficult to administer and would require constant plant rearrangements.

3.03 An adequate service observing base can best be provided if service observing equipped relays are assigned to trunks within the first 15 percent of the group, ***as selected at the distant end.*** This 15 percent rule applies to both one-way incoming and 2-way trunks. This is done to assure that all trunks are carrying about equal traffic and therefore observations will be well spread over all observed trunks.

3.04 The only exception to the approximate proportion rule is any large, final trunk group which is carrying little first-routed traffic, hence relatively light traffic in the side hours. Fewer trunks in these groups should be assigned to service observing equipped relays. This will result in fewer observations on a group which is actually carrying fewer messages per trunk on a total-day basis.

3.05 If possible, at least one trunk in each trunk group qualifying for service observing (3.06) should be assigned to an observing relay. This is desirable to achieve a mix of traffic arriving from different parts of the network.

3.06 The rules listed below should be followed to insure that the calls observed will be those which will complete within a switching system's serving (down-chain) area.

(a) Assign service observing equipped relays to incoming trunks from switching systems of equal or higher class (class 1, 2, and 3, etc) located within the system's HNPA.

(b) Assign service observing equipped relays to incoming trunks from any class system outside of the serving (dependent) area. ***Do not make assignments to trunks from the subtending network.***

For most conditions, these rules will assure that all observations will be on calls terminating down-chain to the machine's serving area.

3.07 Trunks assigned to service observing relays must be those which are among the first choice (first 15 percent) at the distant end. The recommended procedure for sequence of trunk selection depends upon the two offices' common language location identification (CLLI) codes. The office with the alphabetically lower CLLI code will start its trunk selection with the low-numbered trunk and select in an ascending order (1, 2, 3, etc). The office with the alphabetically higher CLLI code will start its selection with the highest number trunk and select in descending order (9, 8, 7, etc). Examples of trunk selection and relays to be selected for service observing at each office are shown in Figure 2.

3.08 Offices which are making their service observing assignments to the high-numbered trunks will have to be alert to trunk changes to be sure that (1) as circuits are added, the observed trunks remain in the first 15 percent of the group, and (2) as circuits are discontinued, sufficient trunks in the group remain assigned to service observing relays.

3.09 Preferably, only trunks in the one-way portion of one-way/2-way trunk groups should be assigned to observing relays. However, if the one-way portion is small it may be necessary to assign some 2-way trunks to have an adequate number of trunks assigned for the size of the combined groups.

3.10 Individual final and common final trunk groups should be considered as separate groups and the preceding rules should be applied to each group.

4. OUTGOING TRUNK OBSERVING ASSIGNMENTS

4.01 An XBT office which serves CAMA may also be required to provide observations on incoming end office trunk groups. This arrangement allows the service observer to take outgoing observations on several end offices using only one or two service observing circuits at one central location. These incoming CAMA trunks are patched up in the same manner as the intertoll trunks.

4.02 The dial administrator should insure that enough service observing equipped relays are assigned to each incoming trunk group. This will help the service observer to select a quantity of relays for each group that will be in approximate proportion to the size of the trunk group and the available loops. To help determine the minimium observable circuits for each group, divide the total quantity of all assigned trunks into the number of equipped service observing loop sockets: 50 for one service observing circuit, 100 for two service observing circuits, etc. This will give a percent figure that can be applied to each trunk group.

Example:

1 circuit 50 loops
26 trunk groups

trunk group A	23 trunks
B	57 trunks
.	.
.	.
.	.
Y	71 trunks
Z	32 trunks
	783 trunks

$\frac{50 \text{ loops}}{783 \text{ trunks}} = 6.4\%$

6.4% applied to each trunk group:

trunk group A	23 x 6.4 = 2
trunk group B	57 x 6.4 = 4
.	.
.	.
.	.
trunk group Y	71 x 6.4 = 5
trunk group Z	32 x 6.4 = 2
	50 trunks

5. ASSIGNMENT FORMS

5.01 Separate records must be maintained for incoming and outgoing trunk assignments. Form E-6466 (Fig. 3) has been designed for listing the trunks assigned to relays equipped for incoming service observing. All trunks within a group should be listed together as shown. This will enable the service observer to make trunk selections in proportion to the number of trunks assigned to observed relays and to the size of the trunk group (3.02). Trunk assignments should be entered in pencil to facilitate record changes. It is desirable, for ease in updating, that trunk groups be listed in alphabetical order. Additional instructions for completing this form are shown in Figure 3.

5.02 Copies of these forms should be sent to the service observing group for their use in selecting trunks to be patched to the 50 connectors associated with each incoming service observing loop. Updating copies should be submitted on a monthly basis, or as arranged locally, and whenever a large number of changes have been made to observable relays.

5.03 Form E-6466 is stocked by the Western Electric Company distributing houses. Forms in packages of 25 can be obtained by requisition.

5.04 Figure 4 shows the form on which service observing personnel assign the 50 relays they wish patched up for incoming observing. This form is sent to the switching system maintenance group for connection or rearrangment of the patch cords. The moving of patch cords is usually done after 10:00 pm on the last day of each quarter. This will vary locally due to office coverage and the ability to obtain an adequate observing base.

5.05 Form E-6538 (Fig. 5) may be used to convey to the service observer the trunk relays that have been assigned to trunk groups and are observable for outgoing direct distant dialed observations. This form should be filled in and distributed in accordance with instructions given in 5.01 and 5.02.

5.06 Entries on the assignment of trunks for service observing form E-6538 shall be as follows.

Office	Enter the common langauge name of the office. Care should be taken to identify each machine if there is more than one in the same building.
AMAT FR—CKT	Enter the AMAT frame and circuit number for the trunk equipment being listed.
Group	Enter the trunk group name (CLLI).
Trunk/Number	Enter the circuit number assigned within the trunk group.
ONI/ANI	Enter whether the group is operator number identified (ONI) or automatic number identified (ANI).
SO Jack	Enter jack number to which this particular relay is cabled.
Weight	Enter the weighting of the trunk as H, M, or L according to incoming usage.

5.07 Figure 6 shows the form on which service observing personnel enter 50 relays which they wish patched up for outgoing trunk DDD observing. This form is sent to the XBT maintenance force for connection, rearrangement, or patch cords.

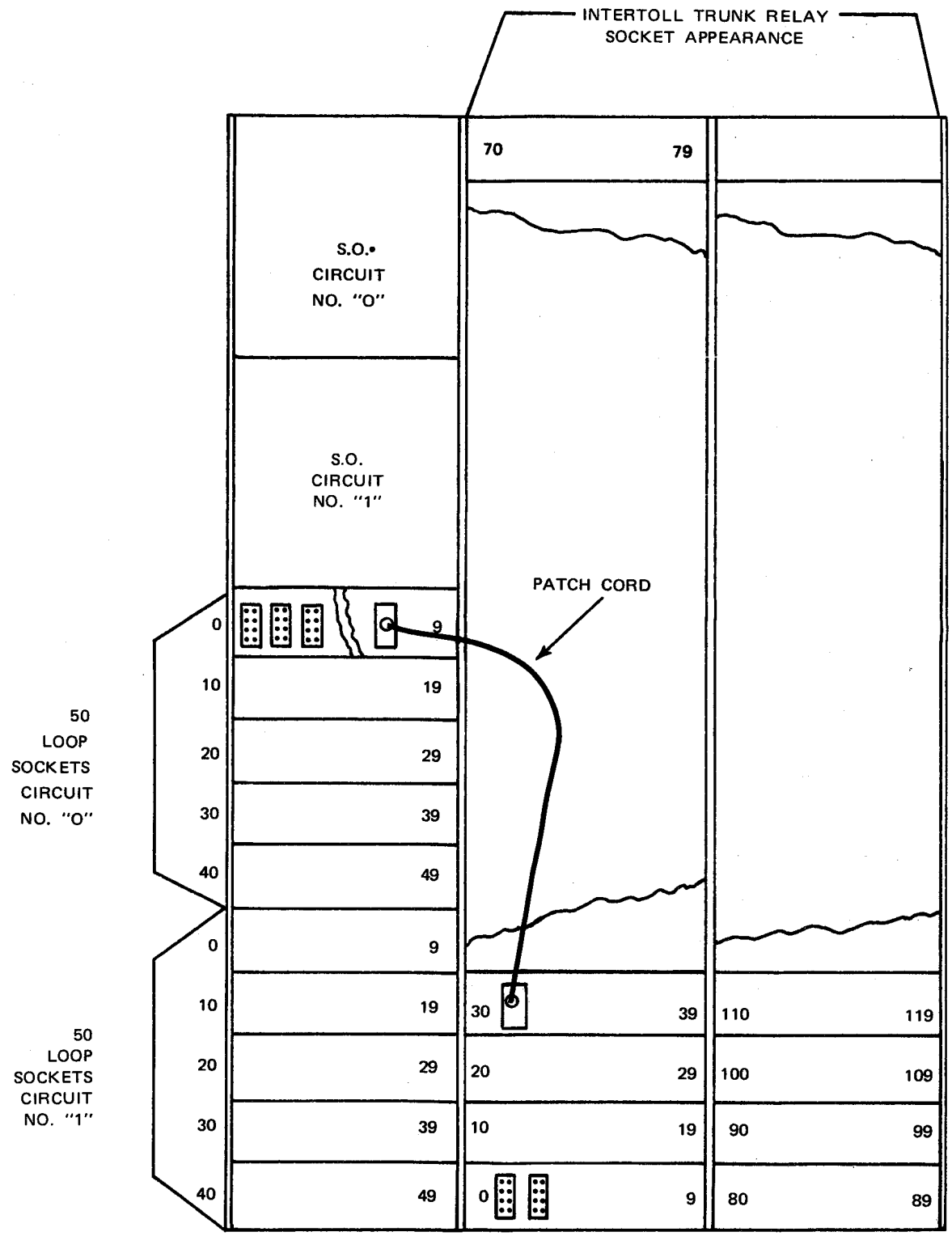

Fig. 1—Service Observing Equipment

TWO-WAY TRUNKS

Numeric sequential selection of two-way trunks within a trunk group depends on the alphabetic order of the terminal cities' CLLI codes. See Div. H, Sec. 13c(5).

Example:

Trunk Group	Order of Selection at "A" Office	Order of Selection at "Z" Office
ALBQ NM ⟷ ANHM CA		
"A" Office = ALBQ	1,2,3....39,40	
"Z" Office = ANHM		40,39,....3,2,1

Assignment of trunks to Service Observing relays at these offices would be:

Office	Select From Trk No.'s*
ALBQ	40 – 35
ANHM	1 – 6

Note: Where the distant terminal does not select in numeric sequence, trunks assigned for service observing should be those which are last choice outgoing at the No. 4 office.

ONE-WAY TRUNKS

Trunk selection sequence of One-Way trunks depends upon assignment procedure at originating terminal.

Example:

Trunk Group	Order of Selection at "A" Office	Order of Selection at "Z" Office
JCVL FL TAMP FL		
"A" Office = JCVL	2,3,4....20,1	
"Z" Office = TAMP		None

Assignment of trunks to Service Observing relays at these offices would be:

Office	Select From Trk No.'s*
JCVL	None
TAMP	2,3,4

* Represent first 15% Trunk Selection at Distant Offices

Fig. 2—Selection of Trunks for Service Observing

ITEM	INFORMATION
<u>Heading</u> Switching	Enter switching system name or CLLI. Be specific if there are multiple entities in the same building.
<u>Assignment</u> Trunk Group	Enter the CLLI (All or sufficient for identification) of the trunk group.
TRK No.	Enter the number of the trunk assigned to the observing relay. List together all trunks in each trunk group.
WT	(a) Enter a check (√) if trunk is within first choice 15% as selected at distant end. There usually will be a check for each entry unless a shortage of relays necessitates assigning to a lower choice trunk. or (b) If locally preferred, enter the weighting (H,M,L) of the trunk assigned. Entries usually will be "H"
Patch Bay Patch Jack	Enter bay number, if necessary, and S.O. Jack to which the relay assigned to this circuit is cabled.

<u>Example</u>

Trunk Group	TRK No.	WT	Patch	
			Bay	Jack
Atla GA	1	√		28
	3	√		109
	6	√		72
Balt MD	2	√		98
	3	√		16

FORM E-6466
(AUG. 1974)

INCOMING TRUNK SERVICE OBSERVING
PATCHING BAY ASSIGNMENTS

Switching System ____________________ Date __________

TRUNK GROUP	TRK. NO.	WT	PATCH		TRUNK GROUP	TRK. NO.	PATCH	
			BAY	JACK			BAY	JACK

PAGE ____ OF ____

Fig. 3—Incoming Trunk Service Observing Patching Bay Assignments

SAMPLE FORM (3-74)

DDD INCOMING TRUNK LOOP ASSIGNMENT

SHEET NO. _____

SWITCHING SYSTEM _____ CITY _____

PREPARED BY _____ DATE _____

TO BE COMPLETED BY _____ A.M. P.M. ON _____ 19_____

PLANT WORK: CONNECTED BY _____ NAME _____ DATE _____ TIME

LOOP NUMBER	INCOMING TRUNK GROUP	INCOMING TRUNK NUMBER	LOCATION ON PATCHING BAY		
00					
01					
02					
03					
04					
05					
06					
07					
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Fig. 4—Service Observing Trunk Selection

OUTGOING TRUNK SERVICE OBSERVING PATCHING BAY ASSIGNMENTS

FORM E-6538
12-74

OFFICE ______________________________ PAGE ______ OF ______

AMAT		TRUNK			SO JACK	WT	REMARKS
FR	CKT	GROUP	TRK NO.	ONI OR ANI			

Fig. 5—Outgoing Trunk Service Observing Patching Bay Assignments

SAMPLE FORM – TO BE REPRODUCED LOCALLY

(11/74)

LOOP ASSIGNMENT LIST

DIRECT DISTANCE DIALED – OUTGOING TRUNK

CITY_____ AMA CENTER OR CAMA INSTALLATION _____ CONNECT DATE _____

LOOP NUMBER	SVC. OBS. JACK NO.	TRUNK NAME (NNX)	TRUNK NUMBER	
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01				
02				
03				
04				
05				
06				
07				
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Fig. 6—Loop Assignment List

DIAL FACILITIES MANAGEMENT PRACTICES – USER COMMENTS

Form E-6366
(11-73)

D.F.M.P. Div._____ Sec. _____

Note: This form is provided for use in submitting user comments on the above numbered practice. Comments should be as specific as possible. Include the number of the particular page, paragraph, figure and exhibit if applicable.

Mail Directly To:

Dial Facilities Management Practices Coordinator
American Telephone and Telegraph Company
195 Broadway, Room 1834B
New York, New York 10007

Date:

Comment: (Please Type or Print)

Submitted by: (Please Type or Print)

Name: Title: Tel. No.:

Company: Address:

Zip Code

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