

NETWORK MEASUREMENT PLANS INCOMING TRUNK OBSERVATIONS

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1.03 The purpose of obtaining direct distance dialing (DDD) incoming trunk observations is to secure basic service facts on incoming traffic handled at toll switching machines which in turn may be summarized, analyzed, and appraised for management use. The basic objective for measuring DDD incoming service is to obtain data on individual calls coming into or going through a given toll switching machine which:

- Measure the grade of service being rendered to customers
- Measure the quality of equipment performance by switching machine and by terminating end offices
- Provide completion data on incoming calls
- Provide information as to the possible location of maintenance problems
- Provide data for engineering and administrative purposes.

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

1. GENERAL

1.01 This section describes the purpose and methods of obtaining incoming trunk service observations. The service observing bureau is responsible for making the observations and preparing summary measurement reports. The network administrator is responsible for the trunk assignments and office data necessary to assure that the required number of observations can be obtained and that they will accurately reflect total office performance.

1.02 When this section is reissued, this paragraph will contain the reason for reissue.

2. TYPE OF TRAFFIC OBSERVED

2.01 DDD incoming trunk service observations are to be taken at all regional, sectional, and primary switching machines and for those switching machines ranking lower than primary which meet minimum quota requirements. The observed trunks (incoming to the switching machine) are either from equal or higher-ranking offices or from offices outside the region, section, or primary area being observed, thus ensuring that observed calls will terminate in the respective region, section, or numbering plan area (NPA) served by the observed machine.

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2.02 Only incoming attempts with all the digits required to reach a customer station will be considered an observed attempt. Observations are classified as DDD home company numbering plan area (HNPA), as home company-foreign numbering plan area (H-FNPA), or other company (OTH CO).

2.03 HNPA: DDD calls are classified HNPA whenever the switching machine being observed and the terminating end office are in the same NPA. This type of call will be observed at all types of switching machines.

2.04 H-FNPA: DDD calls will be classified H-FNPA whenever the switching machine being observed and the terminating end office are in different NPAs but both NPAs are within the same Bell Company territory. This type of call will generally be observed at regional and sectional centers only. They may also be observed at those primary centers which serve both the HNPA and portions of an adjacent NPA.

2.05 OTH CO: DDD calls will be classified other company whenever the terminating end office is in a different Bell Company territory than the switching machine being observed. This type of call will generally be observed at regional and sectional centers only.

2.06 DDD calls placed to Independent Company points will be classified in the same manner as calls terminating at points operated by a Bell Company.

2.07 The following types of calls are not included in incoming trunk observations:

- (a) **Hit:** Hits are false starts of senders. The incoming trunk is seized but no digits are received.
- (b) An insufficient number of digits is received.
- (c) Any attempt to reach the repair service, universal operator, mobile service operator, teletypewriter exchange service (TWX) assistance operator, etc.
- (d) DDD calls which are to an NNX **dedicated** for mass calling including special Area Code 900, regardless of the disposition of the call. It is intended that the dedicated NNXs to be excluded be within a reasonable dialing area

and to points where the service observer can keep the NNX list up-to-date.

- (e) Attempts made for test purposes.
- (f) Whenever trouble is found in the service observing equipment which would affect the reliability of results or interfere with service.

3. OBSERVING QUOTAS

3.01 The quota of DDD incoming trunk observations, per month, for each type of switching machine is as follows:

- (a) **Regional and Sectional Switching Machine:** 6000 observations on calls to HNPA, H-FNPA, and other company.
- (b) **Primary Switching Machine:** 6000 observations on calls to HNPA.
- (c) **Switching Machine Ranking Lower Than Primary:** 2000 observations on calls to HNPA. This quota should be adequate for these switching machines due to the lesser number of terminating end offices served by these machines.

3.02 In those locations where two or more switching machines are observed, no attempt will be made to apportion the quota between two (or more) machines, including cases where the switching machines handle incoming traffic to the same terminating end offices.

3.03 Some No. 4 type machines are provided with two service observing circuits with 100 loop connectors. The quota for this type of machine is apportioned between the two circuits.

3.04 It is important that the monthly quotas be met to ensure accurate measurement of DDD incoming service and to provide information in sufficient volume to appraise the performance on inward calls terminating in each end office of the NPA served by a given switching machine.

3.05 The network administrator can assist the observing bureau in meeting these quotas by the proper selection of trunks wired for service observing. Selection of trunks which are first-choice for usage **at the distant office** will ensure maximum incoming observing potential.

4. DISTRIBUTION OF OBSERVATIONS

4.01 In order for the sample of DDD incoming trunk observations to be representative of the actual traffic handled by a given switching machine, the percentage of observations taken in the observing periods must be in proportion to the traffic handled in these periods.

4.02 The quantity of observations to be taken in each of the periods should be in the same proportion as the number of machine peg counts as determined by the network administrator. For switching machines served by a No. 12 service observing desk, the observing day is broken down into three periods (morning, afternoon, and evening) as shown below:

Morning: 7 am—12 noon

Afternoon: 12 noon—6 pm

Evening: 6 pm—10 pm

4.03 For those machines served by a Service Evaluation System, the observing day is divided into seven segments to permit more precise tracking of fluctuating call volumes. These segments are set up as follows:

Morning: 7 am—10 am

10 am—12 noon

Afternoon: 12 noon—2 pm

2 pm—4 pm

4 pm—6 pm

Evening: 6 pm—8 pm

8 pm—10 pm

4.04 The network administrator should obtain machine peg counts for each hour from 7 am to 10 pm. They need not be reviewed more frequently than once a year unless there is a substantial change in traffic volumes and distribution.

4.05 The service observer will periodically review the hourly distribution of observations to ensure that their distribution within each observing

period is comparable to the distribution of the switching machine peg counts.

5. INCOMING TRUNK OBSERVING CIRCUIT

5.01 The incoming trunk service observing circuit is a multiline call-distributing circuit designed for observing on incoming trunks to No. 4 type toll switching systems, No. 5 crossbar, step-by-step, and crossbar tandem systems.

5.02 The incoming trunks selected for service observing are wired to an equipment bay with patching facilities where they terminate in multicontact sockets. A maximum of 200 trunks can be wired to these patching facilities. The number of trunks may be expanded to 700 by adding adjacent bays. The maximum number of trunks should be wired for observing.

5.03 A maximum of 50 loop connectors for each service observing trunk is also wired to multicontact sockets mounted in the same patching panel. Any loop connector can be patched to any incoming trunk by means of a patch cord. The service observing trunk can be patched to 50 incoming trunks.

5.04 The network administrator is responsible for selecting trunks to be wired to the equipment bay which will represent a cross-section of trunks originating from switching systems of equal or higher class (class 1, 2, 3, etc) located within the HNPA and from trunks originating from any class system outside the serving area of the observed switching machine. The purpose for selecting these trunks is to ensure that all observations will be on incoming calls destined for completion within the observed switching center area.

5.05 Procedures for selecting incoming trunks to be wired to the equipment bay for service observing are detailed in Dial Facilities Management Practices, Division H, Section 13, for No. 4 type switching machines and in Division H, Section 12, for crossbar tandem switching machines. Division H has not been updated to cover these procedures for No. 5 crossbar or step-by-step systems.

5.06 The network administrator is responsible for selecting trunks to be wired for service observing. Form E-6466 (Fig. 1) is designed for listing all trunks wired to these facilities. Copies

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of these forms should be sent to the observing group for their use in selecting trunks to be assigned to the 50 loops associated with each incoming trunk observing circuit. Form E-6466 should be updated and forwarded to service observing at least quarterly and any time a large number of changes (additions and/or deletions) have been made to observable relays.

5.07 A panel call indicator (PCI) pulsing arrangement is included within the service observing circuit for loop identification. The PCI pulses cause lamps to light, giving the number of the loop. The observer may then identify the incoming trunk by consulting the record of loop assignments.

5.08 When a call on an incoming trunk is connected to the service observing circuit, a seizure signal is sent to the observer to indicate the start of an observation and to identify the service observing circuit over which the call has been received.

6. LOOP ASSIGNMENTS

6.01 The service observer will assign all of the 50 loops for each incoming trunk observing circuit. Some No. 4 type machines may have two service observing circuits with 100 loop connectors. The specific quantities of loops provided can be found in the traffic order and in Western Electric Company wiring lists for the No. 4 office.

6.02 The service observing group is responsible for the selection of trunks to be observed. The loop assignments can be made from the list of trunks wired to the patching bay as shown on Form E-6466.

6.03 Loops will be assigned in proportion to the size of the trunk groups wired to the patching bay. Generally, the loops assigned should represent a cross-section of the total trunk groups wired for observing. However, switching systems with large trunk groups may have loops assigned to a large

trunk group(s) on a continuing basis, while rotating a loop(s) over smaller trunk groups.

6.04 All of the 50 DDD incoming trunk observing loops should be changed *at least once each quarter* in order that proper representation of facilities may be obtained. Where 200 trunks are wired to the patching bay, all trunks wired for observing generally will be observed over a one-year period.

6.05 Figure 2, the DDD Incoming Trunk Loop Assignment Form, may be used to list the trunks to be patched up for observing. Service observing will prepare two copies of this form for each incoming trunk observing circuit. The original copy of this form is to be forwarded to the switching system maintenance group for connection or rearrangement of the loops. The copy is retained by service observing.

6.06 Service observing will make periodic studies to determine the number of attempts observed from each loop. Loops with fewer than the expected number of observations will be referred to the network administration group to determine the cause of the low number of observations and, if necessary, for wiring new trunks to the patching bay.

7. REFERENCES

7.01 Service observing instructions for incoming trunks observations are contained in Traffic Service Observing Practices, Division B, Section 3.

7.02 Detailed network administration instructions for each type of switching system will be contained in various sections of Division H of the Dial Facilities Management Practices. Sections available at this time are:

- (1) Section 12c(4)—Crossbar Tandem
- (2) Section 13c(7)—No. 4A/4M.

Switching System _____

Date _____

[illegible]

PAGE _____ OF _____

Fig. 1—Incoming Trunk Service Observing Patching Bay Assignments—Form E-6466 (5.06)

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					
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Fig. 2—DDD Incoming Trunk Loop Assignment Form (6.05)