

NETWORK SWITCHING PERFORMANCE MEASUREMENT PLAN

DESCRIPTION

NETWORK SWITCHED SERVICES

NO. 3 "ESS*" SWITCH

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1. GENERAL

1.01 The Network Switching Performance Measurement Plan (NSPMP) described in this section addresses switching performance measurements for the No. 3 ESS switch. It is limited to those switches which perform an end office function, including end offices which are used less than 50 percent as tandem switches.

1.02 This section is being reissued to include additions and changes to the NSPMP for the No. 3 ESS switch. Since this reissue is a general revision, no revision arrows have been used.

- Clarification of rules that apply when data are lost from maintenance registers which measure components or indicators 24 hours per day
- Delete Code 8-Equipment from the measured components
- Adds Code 8-Found OK to the performance indicators
- Adds a note to paragraph 8.12 concerning failure deductions.

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 The performance indicators and measured components have been selected to indicate specific, as well as overall office performance. Impact on the customer is carefully assessed.

1.05 Responsibility for the efficient functioning of the switching entity is jointly shared by net-

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work administration, network maintenance, and engineering forces. Generally the performance of a switching entity is determined by how well the responsible forces are managed and how effectively they operate as a team. External factors such as severe weather or equipment facility failure, can be expected to cause depressed service levels for brief periods. However, a continuing efficient performance level remains the responsibility of the team.

1.06 The group that fills out the report is responsible for maintaining those items under their direct control and for referring those problems for which they do not have direct responsibility to the appropriate group. Form E-6422C is an optional form which may be used to document the referral of problems to other work forces for resolution.

2. OUTLINE

2.01 This plan is structured to critically evaluate switching machine performance. The performance indicators and measured components are sufficiently sensitive to monitor and assess the machine's internal maintenance efforts and switching activity. They may be also used for surveillance of external facilities and to track customer service. The switching machine is considered as a single entity. Despite the impact of external factors, the combined efforts of the responsible forces are considered adequate to maintain a well functioning switching machine.

2.02 Performance indicators and measured components have been defined to indicate their pertinence to the switching entity. Performance indicators provide a means of making early evaluations of possible adverse service trends. The measured components are intended to more directly measure the level of switching efficiency. The measured components have been grouped under four categories. These categories are:

- (a) Machine Access
- (b) Machine Switching
- (c) Billing
- (d) Customer Reports.

The measured components of (a), (b), and (c) are designed to measure technical factors of service within each broad category. Category (d) is a view of the service level as indicated by the customer.

2.03 The weighting of the components was based on the following considerations:

- (a) Impact of failures on the customer
- (b) Impact on revenue
- (c) Severity of equipment failure or outage.

2.04 In addition to the measured components upon which the index is based, the plan also calls for recording certain measurement items entitled performance indicators. These performance indicators are included for one or more of the following reasons:

- (a) Indicators that assist in analyzing the cause of poor service as shown by measured components
- (b) Indicators that measure aspects of service failures beyond the scope of the measured components
- (c) Indicators which identify potential service failures.

2.05 The plan includes two results reports; (1) a detailed results report (Form E-6422A) for use as the control group report, and (2) a summary report (Form E-6422B) for upper levels of management. It is not the intent of the plan to designate at which level of management the detailed results report should stop. The detailed report is designed for single office (control group) reporting and should be limited to that use. The summary report is to be used to consolidate two or more single entity reports to any desired management level and for any time period of 1 month or more.

2.06 The detailed results and summary reports employ a results banding technique in which performance levels are grouped into four bands for each component of the plan and for the overall index.

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BAND	INDEX LEVEL	MEANING
H	98.50 — 100.00	Higher than objective and possibly costly.
O	95.50 — 98.49	Objective level.
L	89.50 — 95.49	Lower than objective level.
U	Below 89.50	Unsatisfactory level requiring immediate attention.

2.07 The summary report provides management with two summaries:

- (a) The number and percentage of reported control groups by performance band for each measured component and the total index.
- (b) The number of control groups which exceed the threshold level in each performance indicator.

3. APPLICATION

3.01 The plan is fundamental in nature and will provide a general measurement of improving or deteriorating service. Proper application of this plan will assist management in identifying problem areas. Hence, the plan is intended to isolate areas where management attention can be effectively focused.

3.02 Although some machine switching and billing functions are included in the component descriptions, there is no intent to provide complete descriptions of No. 3 ESS switch operation. A full description is contained in Section 233-000-003.

3.03 This plan calls for use of measured components and performance indicators. These items have been selected to serve several purposes. Some will be useful to local managers in predicting and/or analyzing potential and actual areas of service difficulty. Some are indicative of conditions which may be related to service-affecting problems other than in the measured office. Still others will reflect problems affecting revenue. Some of these indicators have direct impact upon the quality of customer service; others are indirectly related. All of the

numerous indicators necessary to provide complete and detailed analysis of switching performance quality have not been included. Those selected are considered among the most important. They were selected carefully as those which require constant monitoring and management attention.

3.04 There are many other indicators useful to managers in the detection of adverse service conditions or trends. They should be used in addition to those contained in the plan to identify and analyze potential and actual trouble conditions.

3.05 Other indicators which are less representative of customer service yet are related to the troubles, problems, or conditions affecting service are available and must be used. These other indicators may sometimes prove to be more important than the indicators used in this plan. If these supplemental indicators are neglected, managers may be unaware of impending service deterioration until results worsen. The proper approach is to be sensitive to all indicators.

3.06 The following is a list of items not directly measured by the plan. These items are indicative of service provided by the control group and require constant attention. The list is not all inclusive:

- (a) Load balance
- (b) Certain network failures
- (c) Major alarms
- (d) Transient and bad address errors
- (e) Maintenance busy overflows
- (f) Cleanliness of the office
- (g) Links removed from service
- (h) Preventive maintenance backlog
- (i) Line insulation test failures
- (j) Percentage of engineered capacity
- (k) Internal initiated switches
- (l) Data validation
- (m) Class-of-service balance

(n) Individual component busy hour performance.

3.07 Much of the data required for this plan are restricted to the office busy hour. Therefore, it is strongly recommended that central office maintenance and network administration personnel exercise judgment in obtaining other hours and, where warranted, total day periods. Many measured components and performance indicators relate average monthly performance for the total office or specific equipment items. Therefore continued analysis of equipment subgroups to identify trouble conditions concentrated in specific time periods or subgroups is recommended.

4. OBJECTIVE

4.01 This plan is designed to provide a measurement of the quality of customer service provided by a No. 3 ESS switch control group. It is also designed to reflect the quality of the administration, maintenance, and engineering/provisioning effort which relates to the measured service quality.

4.02 Measured components have been included for each of the four major categories (ie, Machine Access, Machine Switching, Billing and Customer Reports). The measurements provide reflections sufficiently sensitive of the quality of service to the using customer. Performance indicators are designed to assist administration, maintenance, and engineering personnel in predicting and/or in analyzing areas of service concern related to the switching machine performance, and when required, in developing joint programs for corrective action.

4.03 Generally, the performance of a No. 3 ESS switch control group is related to the quality of the administration, maintenance, and engineering efforts brought jointly to bear on that control group. This plan is designed to measure the service quality resulting from those efforts and indicate the necessity of joint involvement by personnel charged with the different primary functional responsibilities.

5. INTERPRETATION AND USE OF RESULTS

5.01 The objective of the measured components of the plan is to represent actual failures or delays of the machine to properly complete a call or to provide accurate billing information. The performance indicators represent conditions which may seriously impact the machine's ability to satisfactorily perform its switching and billing function.

5.02 The measured components and performance indicators in this plan are of several different types. Some measurements are obtained from machine counts of failures caused by equipment malfunction. This type of measurement usually represents a lost call and is usually followed by a reinitiated customer attempt. Since regeneration also affects load-sensitive functions of the switching machine, the items of this type are critically indexed. Another type of measurement addresses blockage and delay experienced on equipment items which are engineered on a probability basis. With this type of measurement, it is expected and economical that a certain level of machine counts will be evaluated. The index levels and evaluation periods are designed to reflect this expected level of event occurrences. The customer trouble report category reflects central office customer line, equipment, and switching facility conditions that caused the customer to report a service failure.

5.03 Switching performance, as measured by this plan, is strongly dependent on the control of equipment failure rates, the availability of equipment for service, the administration of the available equipment, and the quality of work. There are few inherent reasons why the performance of an individual office, especially over long periods, should be appreciably different from the average performance of large groups of offices.

5.04 Performance levels obtained through the use of this plan are not comparable to performance levels in other types of switching machines under other measurement plans. The index tables used in this plan are based on a scientific sample of data from No. 3 ESS switches. Therefore, the index level obtained for a given No. 3 ESS switch can only be compared to other No. 3 ESS switches.

5.05 Performance indicator threshold levels have been established at a point considered to be generally valid on a broad basis. There may be instances where this level is inappropriate for a particular control group. In those instances, more stringent thresholds may be established for local management purposes.

5.06 Management should pay particular attention to the trend of office results in the various measured components and performance indicators of the plan. Improvement in the performance of any one item should be related directly to the corrective ac-

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tion taken. This point is significant not only in evaluating the performance of an office but also in evaluating a particular course of action as being worth the required effort and cost in view of the results improvement. Worsening results indicate the need for a stepped-up pace or a different tactic in pursuing corrective action.

5.07 Objectives should be established in such a manner that they are meaningful to and attainable by the managers involved in accomplishing the goals. For this reason, managers responsible for maintenance, administration, and provisioning should be involved in setting the objectives. An understanding of the interrelationship of the various functions is essential to attain overall satisfactory service levels. The plan is designed to foster this understanding.

5.08 It is the intent of this plan that the interdependency of service on functional group contribution be recognized, ie, the central office maintenance, network administration, and engineering/provisioning functional groups are equally responsible for analysis and for concerted corrective action.

5.09 Intelligent management action is essential to effectively utilize this plan. Continuous diagnostic analysis must be employed to assure problem correction prior to service deterioration.

6. GENERAL INSTRUCTIONS

6.01 The service month to be used for this plan will be from the twenty-third of the month preceding the report month through the twenty-second of the report month, (eg, February report begins January 23 and ends February 22.) When offices are being removed from service, the last full report month prior to removal is the last month required for reporting.

6.02 Each control group will prepare one report, Form E-6422A (Fig. 1), monthly from the first full report month after cutover and thereafter.

6.03 Most of the data required for this plan are obtained from administrative and maintenance registers or data systems. Actual peg counts or mechanized data printouts shall be used. If both systems are available, use the mechanized system.

6.04 Various administrative and maintenance printouts provide the data necessary for com-

puting the results of this plan. Table A contains a list of the measured components and performance indicators, along with the source printout for each. Downstream or remote data reporting and summarizing aids are encouraged.

6.05 Performance for those components and indicators which measure trouble conditions and customer reaction are measured by both 24-hour and office busy-hour measurements. Parts 7 and 8 explain each of these components and indicators.

6.06 Procedures for determining and changing office busy-hour periods shall be in accordance with instructions contained in Section 780-200-031. The determination of the office busy hour shall be the responsibility of the network administration group.

6.07 Rules for the inclusion (or exclusion) of administrative data, for the treatment of holiday data, and for the documentation of out-of-order conditions are as stated in Section 780-350-060. Generally stated, these rules provide for the inclusion of all valid data for 5 business days each week during the report period regardless of the local conditions (eg, storms, civil disturbances, impaired switching facilities, installation, or rearrangement activity). The only periods that may be excluded are those during which data are proven to be unavailable or inaccurate as covered in Section 233-020-210. Written documentation of these conditions, jointly signed by administration and maintenance personnel, is a requirement of this plan.

6.08 A minimum of 15 days' office busy hour data are required for each report month. This would include valid data from administrative registers for each measured component and performance indicator.

6.09 The following rules will apply when data are lost from maintenance registers which measure components or indicators 24 hours per day:

(a) All available valid data must be included in the results calculation regardless of the service conditions. Periods affected by events such as storms, civil disturbances, cable cuts, and switching machine emergency actions must be included.

(b) If a failure count or base is lost for a certain time period (eg, transmitter time-outs did not score for 2 days), the base data or failure count

used to calculate that component or indicator must be excluded for the same time period.

(c) A day's data (normally 24 hours) will be considered valid if all peg counts between the hours of 0800 and 2400 are obtained

(d) Data obtained for measurement purposes must contain valid data for 15 business days of the report month for any component or indicator.

6.10 If, due to a malfunction or error, results data for a measured component or a performance indicator are not available for the report period, the notation NA shall be entered in the failures, base, and performance columns of Form E-6422A. The notation NA is considered Band U or soft spot performance and will be reported as such on the control group report (Form E-6422A) and summary report (Form E-6422B).

6.11 The notation EMPTY shall be entered in the (1) Failures and Base columns where appropriate, (2) Performance column, (3) Soft Spot, or Band columns of Form E-6422A if the component is not applicable to the measured control group due to design limitations or the generic or if the feature is not installed. EMPTY is not considered Band U or soft spot performance. The notation *E* or *EMP* is an acceptable substitute entry for EMPTY.

6.12 Forms to be used for the compilation of register reading data and for the computation of applicable percentages and component indices shall be developed and prepared locally except as prescribed in the Stored Program Control Systems (SPCS) Switching Control Center (SCC) Controlled Maintenance Plan (Section 190-130-010) or as detailed in this plan.

6.13 Because of the importance of both measured components and performance indicators to the evaluation of the service rendered by the measured office, the district manager must assume responsibility for the validity and integrity of the data reported.

6.14 Daily printouts of data used for computation of the results reported on Forms E-6422A and E-6422B shall be kept for the current report month and the previous 3 months. The monthly printouts shall be retained for 1 year. Forms E-6422A and E-

6422B shall be retained for at least 1 year. It is recommended that a retention system similar to that described in the Section 190-130-010 SPCS/SCC Control Maintenance Plan, be used. The printouts and reports should be filed in the appropriate month's folder and retained until the results for the same month of the following year replaces them.

6.15 Monthly reports should be submitted to the results organization of the BOC at the earliest possible date, but no later than the fourth working day of the month following the report month.

6.16 For companies that use the Operating Telephone Company (OTC) Centralized Results System (CRS), a separate report should be entered into OTC-CRS monthly for each switching entity. The OTC-CRS will calculate and prepare all Forms E-6422A and E-6422B on a monthly, quarterly, and annual basis as required.

6.17 Forms E-6422A, E-6422B, E-6422C, and E-6429 (Fig. 1, 2, 3, and 4) will be available through the local forms management organization.

7. PERFORMANCE INDICATORS

7.01 This part describes the performance indicators to be reported on Form E-6422A (Fig. 1). Included are brief descriptions of the indicators, the source of the data, and the applicable time period for which data are to be gathered and summarized. References to report forms and to detailed reference material which may serve to further describe data sources are also included.

A. Machine Access

Customer Digit Receiver Overflow

7.02 The customer digit receiver (CDR) overflow indicator is a count of the number of days in which either dial pulse (DP) or TOUCH-TONE® service CDRs experienced busy-hour overflow in excess of 5 percent.

7.03 Data required for this indicator will be recorded for each average business day dial tone speed busy hour.

7.04 Each day, obtain busy hour CDR overflows for both TOUCH-TONE service and DP groups (GP 64 and GP 65, SVC No. 4). Also, obtain busy hour

CDR peg count for both TOUCH-TONE service and DP groups (GP 64 and GP 65, SVC No. 2). Calculate the percentage of overflow for each day.

7.05 At the end of the report period, total the number of days the percentage overflow was 5 percent or greater for either the DP or TOUCH-TONE service group. If both groups overflowed 5 percent or greater on the same day, this counts as only one overflow day. Enter the number of days in column C of Form E-6422A.

Receiver Overflow

7.06 The receiver overflow component is the percentage of incoming multifrequency (MF) calls that experience overflow due to all MF receivers being busy. Data for this component will be obtained during the office busy hour.

7.07 The monthly results are computed as follows:

- (a) In column A, enter the total month's MF receiver overflows (GP 66, SVC No. 4) for the office busy hour.
- (b) In column B, enter the total month's MF receiver peg count (GP 66, SVC No. 02) for the office busy hour.
- (c) Divide column A by column B and enter the results, expressed as a percentage, in column C ($[A/B] \times 100 = C$).

B. Machine Switching

Trunk Outage

7.08 Trunk outage is defined as a trunk not available for customer or operator access. This outage is expressed as the normal business day (NBD) month and includes those trunks for which the office is designated control or assigned office as covered in Section 660-400-010, Trunk Outage Results Plan.

7.09 In column C, enter the trunk service index for the report month as reflected on Form E-3994, Trunk Outage Results Summary.

Continuity Failures

7.10 Continuity tests are performed on all calls (ie, originating, terminating, and tandem). This

test verifies continuity from the central office circuit attached through the network to the originating or terminating source.

7.11 The monthly results are computed as follows:

- (a) In column A, enter the month's continuity failures (PLT 49).
- (b) In column B, enter the total month's originating (PLT 59) plus incoming attempts (PLT 61), divided by 10,000.
- (c) Divide column A by column B, and enter the result in column C.

Network Matching Loss

7.12 The network matching loss indicator is a count of failures to find a network path to complete incoming intraoffice, outgoing, or tandem calls on the final (second) attempt. Section 233-020-034 contains additional information on this indicator.

7.13 The monthly results are computed as follows:

- (a) Each average business day, compute the percentage of total matching loss for the office busy hour by dividing the network path hunt failures by the total originating and incoming call attempts minus lines found busy incoming and intraoffice, partial dial abandons, ineffective originating signaling and multiplying by 100.
- (b) At the end of the report month, compute the month's average percentage of total matching loss by adding the daily percentage and dividing the total by the number of daily percentages.
- (c) Enter the month's average percentage in column C.

Call Audit Failures

7.14 Call audit failures are inconsistencies (found by audit programs) in redundant call store memory associated with individual calls and equipment-oriented information. Audit programs are associated with various memory blocks such as transient call records, terminal memory records, line status bits, busy service circuit A, test verticals, and network map.

7.15 The monthly results are computed as follows:

- (a) In column A, enter the total month's audit errors (PLT 27).
- (b) In column B, enter the total month's originating (PLT 59) plus incoming calls (PLT 61), divided by 10,000.
- (c) Divide column A by column B, and enter the result in column C.

Initializations

7.16 This indicator is the number of times the emergency action (EA) program is called to restore system stability. A detailed explanation of the initializations is contained in Section 233-153-130. It is important to note that while the performance indicator threshold for initialization is 5, specific management attention should be given to each individual initialization.

7.17 Data required for this indicator will be logged on the No. 3 ESS Control Record from the daily plant schedule printout. All memory reloads, past office data, and back date office data must be recorded as they occur since they are not included in the daily plant schedule printout at this time. Outage time for each initialization will be the difference in time between the first indication of initialization and the conclusion of such action.

7.18 Certain initializations are deductible under specific situations. All initializations caused by functions specified and qualified in the ETL per Section 233-001-011 may be deducted. The register for the initializations to be affected shall be read immediately prior to and after the ETL work to determine the number of initializations caused by the ETL. Initializations not associated with the ETL are not deductible.

7.19 Certain equipment frame additions and program changes cause initializations which are deductible. The register readings just prior to and just after such activity must be made to determine the initialization count. Initializations not associated with the growth addition or program changes are not deductible.

7.20 The number of initializations to be expected, which is the number deductible is specified in

the growth method of procedures or in the Bell System Practices, 233 Series. If the initialization count is greater than expected from the Bell System Practices or growth method of procedures (MOP), work should be stopped immediately. Corrective measures should be taken to eliminate the trouble prior to proceeding. These excess initializations are not to be deducted.

7.21 Each initialization, including those deducted, can potentially affect service. This fact should be appreciated whenever any growth work on initialization Equipment Test List (ETL) work is being planned. It is expected that the responsible supervisor will require justification for all initializations that are proposed for deduction. This justification will be documented on Form E-6429 which is signed by the central office supervisor, network administrator, and installation supervisor when appropriate, then submitted with Form E-6422A. In addition, all work which generates initializations will be scheduled out of the traffic busy period, preferably the least busy time of day.

7.22 The monthly results are computed as follows:

- (a) In column A enter the number of initializations which resulted in an outage greater than 2 minutes.
- (b) In column C of Form E-6422A, enter the total month's initialization counts (PLT 22 plus PLT 23 plus PLT 24 plus PLT 25 plus PLT 26), plus manual counts as listed in paragraph 7.17 minus any allowable deductions as specified in Part 6.

Equipment Outage

7.23 This indicator is a count of outage hours of the central processor (CUs), frame input output control (FIOC), peripheral pulse distributor (PPD), scanner (SC), network controller (NWC), tape data controller (TDC), and automatic message accounting (AMA).

7.24 The monthly results are computed as follows:

- (a) In column A, enter the total outage (to the nearest tenth of hour). Outage is obtained from PLT 11 but must be converted to tenths of hours. Register PLT 11 is scored for every scan interval of 100 seconds of outage.
- (b) In column B, enter the total count of each equipment item listed in paragraph 7.23.

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- (c) Divide column A by column B, and enter the result in column C.

C. Customer Reports

Code 8-Found OK

7.25 This performance indicator includes all customer trouble reports which result in disposition code 8. Disposition code 8 is defined in Section 660-169-013.

7.26 Code 8 reports should be obtained from the Trouble Report Evaluation Analysis Tool Number 2 (TREAT 02). Code 8 Network Customer Services subcodes 080X and 089X should be subtracted. The 080X and 089X subcodes apply when reports result from inaccurate or incomplete data base information for data base drive services.

7.27 The monthly results are computed as follows:

- (a) In column A, enter the total month's code 8 reports.
- (b) In column B, enter the total working lines as of the first day of the reporting month, divided by 100. Average working lines must be used if a change of more than 500 lines occurs during the report month.

Note: *Working lines are the total working line terminations (cable pairs) outside the central office, eg, working lines in the Computer System for Main Frame Operations (COSMOS) or F1 facility in Loop Maintenance Operations System (LMOS).*

- (d) Divide column A by column B and enter the result in column C.

8. MEASURED COMPONENTS

8.01 This part describes the measured components to be reported on Form E-6422A (Fig. 1). Included are brief descriptions of the components, the source of the data, and the applicable time period for which data are to be gathered and summarized. References to report forms and detailed reference material are also included.

A. Machine Access

Dial Tone Speed

8.02 Dial tone speed is a measurement of the machine's ability to provide dial tone within 3 seconds during the dial tone speed busy hour. It is used as the primary measurement for evaluating the capability of providing originating customer service.

8.03 The procedures for determining the busy hour to be measured and for gathering and summarizing the data are contained in Section 233-020-032.

- (a) In column F, enter the month's average accumulated percentage of delay (item 21) from Form E-4372. This item is provided for information only and is not used in developing the component index.
- (b) In column H, enter the month's total adjusted index points earned (item 27) from Form E-4372.

Line Restore Verify Failures

8.04 This test checks that the line ferros on idle subscriber lines are restored to normal after a call has been completed. This type of failure should be investigated as this indication could mean the customer's line is out of service.

8.05 The monthly results are computed as follows:

- (a) In column F, enter the month's restore/verify failures (PLT 52).
- (b) In column G, enter the total month's originating (PLT 59) plus incoming calls (PLT 61), divided by 10,000.
- (c) Divide column F by column G, and enter the results in column H.

B. Machine Switching

Transmitter Time-outs

8.06 A transmitter time-out occurs when a start pulse is not received from the distant office within a certain time interval. Transmitter time-outs on direct inward dialing (DID) trunk groups terminating on customer premise equipment (CPE) may be

deducted. The associated base count (outgoing calls) of these trunk groups should also be deducted. Form BS-1567 (Fig. 5) is provided to record adequate documentation reflecting the failure and base counts that were deducted per respective DID trunk group. The BS-1567 may be reproduced locally and completed forms should be retained as directed in paragraph 6.14.

8.07 The monthly results are computed as follows:

- (a) In column F, enter the total month's office transmitter time-outs (PLT 65) minus deductions of time-outs on DID trunk groups terminating on CPE.
- (b) In column G, enter the total month's office outgoing call attempts (PLT 64) minus deductible calls associated with deductions in item (a) divided by 10,000.
- (c) Divide column F by column G, and enter the result in column H.

Office Switching

8.08 This component measures the efficiency of the peripheral controller. Failures indicate the periphery could not establish or take down a network path while attempting to process tandem, incoming, outgoing, or intraoffice calls. These indicators should warrant immediate action to eliminate degradation of service.

8.09 The monthly results are computed as follows:

- (a) In column F, enter the total month's office busy hour connecting troubles (OFT 63 plus OFT 64 plus OFT 65).
- (b) In column G, enter the total month's office busy hour originating plus incoming call attempts (OFT 17 plus OFT 34) minus (incoming calls to busy lines plus intraoffice calls to busy lines [OFT 69 plus OFT 26]) divided by 10,000.
- (c) Divide column F by column G, and enter the results in column H.

False Cross and Ground Failures

8.10 The false cross and ground (FCG) failures are a measure of the switching network. These

failures indicate the presence of faulty paths which have a direct bearing on the efficient use of system real time and network capacity. In addition, faulty paths or unavailable paths will cause customer calls to fail, resulting in reorder tone, return to dial tone, or call failure with no tone. Prompt corrective action of any network failure is recommended.

8.11 The monthly results are computed as follows:

- (a) In column F, enter the total month's FCG failures (PLT 50).
- (b) In column G, enter the total month's originating (PLT 59) plus incoming call attempts (PLT 61), divided by 10,000.
- (c) Divide column F by column G, and enter the result in column H.

Equipment Blockage

8.12 This component measures the availability of service circuits, network paths, and outgoing trunks. No service circuits indicate that there were either no transmitters available, on an outgoing call, or no ringing circuits available, on an incoming or IAO call. No path indicates that there are no network paths to complete incoming, outgoing, tandem or IAO calls. No trunk indicates that there is no trunk available on a tandem or outgoing call. The monthly results are computed as follows:

Note: If the control group is equipped with common control switching arrangement (CCSA) trunk groups or equivalent (ie, trunk group size is dictated by customer purchase of trunks), or choke network (mass calling/media stimulated) trunk groups, the overflows on these trunk groups should be deducted from the total office overflow scorings and total originating peg count before computing the equipment blockage component. This does not apply to IC trunk groups.

- (a) In column F, enter the total month's office busy hour no service circuit (OFT 58 plus OFT 59 plus OFT 60) plus no path (OFT 55 plus OFT 56 plus OFT 57) plus no trunk (OFT 61 plus OFT 62).
- (b) In column G, enter the total month's office busy hour originating plus incoming call attempts (OFT 17 plus OFT 34).
- (c) Divide column F by column G, and enter the result, expressed as a percentage, in column H.

Ineffective Signaling

8.13 This component measures outpulser failures on outgoing or tandem calls and MF receiver failures on incoming calls due to permanent signal, false start, or mutilated digits and failures on incoming DP trunks. The monthly results are computed as follows:

- (a) In column F, enter the month's total office busy hour ineffective signaling counts (OFT 66 plus OFT 67 plus OFT 68).
- (b) In column G, enter the month's total office busy hour originating plus incoming call attempts (OFT 17 plus OFT 34), divided by 10,000.
- (c) Divide column F by column G, and enter the result in column H.

C. Billing

8.14 Lost billing is errors detected during the comptroller's processing of message billing data and include failures in the data acquisition, recording, and processing. All NSPMP data for this component will be supplied by the comptroller. Billing applies only to offices equipped with call charging software and interface to Automatic Message Accounting Recording Center (AMARC).

Equipment Failures

8.15 Equipment failures are a count of initial entries not made and lost calls detected by the No. 3 ESS switch. This count is put in the AMA buffer and is relayed to the AMARC when polled (tracer record). Lost calls are detected and recorded by the AMARC on the channel tracer record (initial entries not made and lost calls are Failure Code 212 as defined in Section 201-900-700, Pre-Billing Failure Performance Reporting.)

Partial Charges

8.16 Partial charges are messages for which part of the charges cannot be billed due to AMA recording errors (Code 224 as defined by Section 201-900-700, Pre-Billing Failure Performance Reporting). This count is produced by the comptroller during AMA data processing.

8.17 The monthly results are computed as follows:

- (a) In column F, enter the total month's billing equipment failures and partial charges on their respective lines.

- (b) In column F of the line entitled **Lost Billing**, enter the sum of equipment failures and partial charges.

- (c) In column G of the line entitled **Lost Billing**, enter the total month's AMA message volume (obtained from the comptroller), divided by 100,000.

- (d) Divide column F by column G, and enter the result in column H.

D. Customer Reports**Code 5 Equipment**

8.18 This component includes those customer trouble reports which result in disposition code 5, excluding distributing frame troubles, line translations errors, codes 0525 and 0526 and network customer service report codes 050X and 059X. Section 660-169-013 defines disposition code 5. Obtain the total customer trouble reports, code 5 equipment from the TREAT 02 report.

8.19 The monthly results are computed as follows:

- (a) In column F, enter the total month's equipment code 5s.

- (b) In column G, enter the total working lines as of the first day of the report month, divided by 100. Average working lines must be used if a change of more than 500 lines occurs during the report month.

Note: *Working lines are the total working line terminations (cable pairs) outside the central office, eg, working lines in the Computer System for Main Frame Operations (COSMOS) or F1 facility in Loop Maintenance Operations System (LMOS).*

- (c) Divide column F by column G, and enter the results in column H.

9. PREPARATION OF FORM E-6422A

9.01 This plan includes results data prepared by both administrative and maintenance personnel. Therefore, it is recommended that (a) Form

E-6422A be prepared jointly, and (b) all developed input data be retained in one location as described in Part 6. Organizational structures or geographic locations may dictate alternative methods of report preparation. If so, Form E-6422A should be used to transmit the maintenance and/or administrative data to a locally-arranged report preparation point. Figure 1 provides an example of an office monthly report.

9.02 All decimal figures recorded in the the performance columns of Form E-6422A shall be rounded to two places after the decimal point. Round upward if the third digit is five or greater; round down if the third digit is less than five, eg, 0.005 = 0.01, 0.096 = 0.10, 0.094 = 0.09, 0.003 = 0.00, etc.

9.03 The following subparagraphs define the column headings for the performance indicators section of Form E-6422A (Fig. 1).

(a) **Column A—Failures:** Entries in this column will include register scoring or averages of the number of times an event or failure occurred within the defined time frame during the report period, the number of reports, or the amount of outage experienced during the period. The notation NA or (not available) EMPTY will be entered, when applicable, according to the instructions in Part 6.

(b) **Column B—Base Data:** Entries in this column are described individually in the instructions in Part 7 or 8 of this plan. Certain entries will be in terms of 10,000 or 100 (rounded to two places after the decimal). The notation NA or EMPTY will be entered, when applicable, according to the instructions in Part 6.

(c) **Column C—Performance:** Entries in this column will be the integers, ratios, or percentages developed as prescribed in Part 7 or 8 of this plan. (Ratios or percentages will be rounded to two places after the decimal.) The notation NA or EMPTY will be entered, when applicable, according to the instructions in Part 6.

(d) **Column D—Threshold Level:** Entries in this column will be obtained from the list of threshold levels included in Part 11.

(e) **Column E—Soft Spot:** The numeral one will be entered in this column when the indica-

tor performance is worse than the threshold level or the data are not available (NA) for the report period. The notation EMPTY in the performance column is not considered a soft spot.

9.04 The following subparagraphs define the column headings for the measured components section of Form E-6422A (Fig. 1).

(a) **Column F—Failures:** Entries in this section will include register scorings of the number of times an event or failure occurred within the defined time frame during the report period, the number of observed failures, or the number of reports. The notation NA or EMPTY will be entered, when applicable, according to the instructions in Part 6.

(b) **Column G—Base Data:** Entries in this column will include the data which are used as the divisor to determine performance ratios or percentages. Certain entries will be in terms of 100,000 or 10,000 or 100 (rounded to two places after the decimal). The notation NA or EMPTY will be entered, when applicable, according to the instructions in Part 6.

(c) **Column H—Performance:** Entries in this column will be the ratios or percentages developed by dividing data entries in column F by base data entries in column G (rounded to two places after the decimal). The notation NA or EMPTY will be entered, when applicable, according to the instructions in Part 6.

(d) **Column J—Component Index:** Entries in this column will be obtained from the appropriate index table in Part 11.

(e) **Column K—Index Points:** Entries in this column will be obtained from the appropriate index table in Part 11.

(f) **Column L—Band:** Entries in this column will be the appropriate band (H, O, L, or U) for each component index.

Band H — 98.50 - 100.00

Band O — 95.50 - 98.49

Band L — 89.50 - 95.49

Band U — Below 89.50 or NA.

9.05 All lines on Form E-6422A (Fig. 1) are defined in the description of components section or are self-explanatory except the following:

- (a) **Line 10:** In column C, enter the total number of performance indicators applicable to the measured control group, including NAs. Enter the total number of soft spots in column E.
- (b) **Line 22—Total Points:** Enter the total points in column K.
- (c) **Line 23—Maximum Available Points:** Enter the total maximum points of all components for which results are measured. Exclude EMPTY and NA components.
- (d) **Line 24—Index:** Divide line 22 by line 23, and enter the result, expressed as a percentage, rounded to two places after the decimal.

10. PREPARATION OF FORM E-6422B

10.01 The Network Switching Performance Measurement Plan Office Summary Report (Form E-6422B) will provide all management echelons with a specific report to identify the number and percentage of offices performing in the satisfactory H and O bands, in the less than satisfactory L band, and in the unsatisfactory U band. It also provides the number and percentage of offices exceeding the threshold for each performance indicator. For companies on OTC-CRS; all E-6422B reports will be prepared by CRS.

10.02 All data recorded on Form E-6422B (except percentage calculations) are taken directly from the represented Form E-6422A reports. Percentage entries should be rounded to one decimal.

10.03 The form serves three purposes. Figure 2 is provided as an example of a Form E-6422B used for a multioffice, single month report.

- (a) Multioffice, single month
- (b) Multimonth, single office
- (c) Multioffice, multimonth.

10.04 The following subparagraphs define the column headings of Form E-6422B (Fig. 2) and provide the source data locations on Form E-6422A.

- (a) **Column C:** Enter the number of control groups reporting results in each component.
- (b) **Column D:** Enter the number of office month reports.
- (c) **Column E through H:** Enter the number and percentage of control groups in the appropriate band column for each component.
- (d) **Column J through T:** Enter the number of office months and soft spots one for each component from column E on Form E-6422A.

11. THRESHOLDS AND INDEX TABLES

11.01 This part contains a list of threshold levels for the performance indicators. Tables B through J contain the Measured Component Index Tables to be used to complete the monthly Form E-6422A.

PERFORMANCE INDICATORS

MACHINE ACCESS	THRESHOLD
Number of Days CDR Overflow 5 Percent or Greater	01.0
Receiver Overflow	0.10
MACHINE SWITCHING	THRESHOLD
Trunk Outage	95.00
Continuity Failures	200.00
Network Matching Loss	1.50
Audits	20.00
Initializations	5.00
Equipment Outage	1.00
CUSTOMER REPORTS	THRESHOLD
Code 8-Found OK	0.10

12. INTEGRITY REVIEW

A. General

12.01 The integrity review contained in this part provides the general guidelines for assuring

the validity of results submitted under the No. 3 Network Switching Performance Measurement Plan (NSPMP) for No. 3 ESS switches.

12.02 Figures 6 through 8 may be used independently or in any combination based on the type of review planned.

12.03 In order to provide accurate end results, the data used must be tested from its source through all phases of processing.

B. Limitations

12.04 The No. 3 ESS switch integrity review is designed so that it can be used effectively to review all or part of the Switching Control Center (SCC). It can also be used by local office supervision to identify trouble. However, the use of the review should not be limited to central office review functions.

12.05 The integrity review should not be regarded as a personnel evaluation plan. Proper application will assist management in identifying engineering, administration, and maintenance problems that distort the accuracy of the NSPMP.

12.06 A thorough integrity review should be used if machine performance does not correlate with data reported machine performance on the NSPMP or if the machine performance does not reflect the data produced by software.

C. Data Collection

12.07 The No. 3 ESS switch data registers are the primary source of data used for the NSPMP. If the daily collection is nonmechanized, locate the appropriate forms for logging hourly, daily, and/or monthly information.

12.08 Other inputs are provided by the AMA data processing group, and the equipment outage log. All source data for the NSPMP must cover the same time frame, from the 23rd of the month to the 22nd of the following month.

12.09 A method of assuring that data is properly collected is described in paragraphs 12.10 through 12.12 and illustrated in Fig. 6.

12.10 The following manual data collection must be performed.

(a) Check the data for transcription errors from the teletypewriter output to the logs. The No. 2 Switching Control Center System (SCCS) minicomputer should be used whenever possible.

(b) Compare data from the daily totals (see OM-3H300 for Message and Format) with the monthly totals.

(c) Look for trends in the data or any sudden changes.

(d) Randomly select several days data and compare all hourly totals with daily total. Ensure that the hourly totals are the corresponding hours that make up the daily total. These messages may be filtered and expanded by using the No. 2 SCCS minicomputer. If the SCC tapes are not available, use the history teletypewriter paper at the office. Was there a change in data with a new office data assembler (ODA) run, generic, or broadcasting warning message?

12.11 If the Engineering and Administration Data Acquisition System (EADAS) is the data collection tool, verify that all data used is correct. Check this with local network administrator. Look for transcription errors from the EADAS printout to Form E-6422A or any intermediate forms.

12.12 If the No. 2 SCCS minicomputer is used to collect and/or calculate totals from plant data, verify that the computer is adding the right registers. Perform a manual addition of one month's data for randomly selected items. Compare for accuracy.

D. Verification of Form E-6422A

12.13 Figure 7 provides a guideline to determine the accuracy of Form E-6422A. This guideline assumes that all source data is transcribed to Form E-6422A correctly and that the computations are corrected.

12.14 Obtain copies of Form E-6422A, Office Report from the staff, if the form is prepared manually, or from the Operating Telephone Company—Centralized Results System (OTC-CRS) for at least the 3 prior months.

12.15 Verify all EMPTY entries on Form E-6422A to validate that the office is not equipped for

the measurement, due to either an equipment or generic program. Documentation should be maintained to substantiate any EMPTY entries.

12.16 If any lines are NA (not available), there should be documentation available to validate the reason measured failures and/or base data is not available. The NA is considered softspot or Band U performance and should be indicated.

12.17 Performance Indicators Machine Switching: The entries on Form E-6422A indicate the following performance indicators machine switching:

(a) **Trunk Outage:** Verify the trunk outage using Section 660-400-010, Trunk Outage Results Plan.

(b) **Continuity Failures:** Filter all continuity failure printouts for several selected days and verify the count by comparing with the daily total. Continuity failures are only printed if "REPT:CKT TRBL" message has been used to activate the Trunk, Line, Service Circuit, and Network Line Error Analysis (PR-3H256 TSVEA) program. The "REPT TRF" printout for plant measurement register 49 contains the total of all continuity test and ringing continuity test failures for the previous 24 hours. These daily totals should be accurately recorded on the No. 3 ESS Control Record, Form E-6824 (Section 190-130-010). When filtering, assure the 24-hour period is the same period from which the daily totals were derived.

(c) **Network Matching Loss:** Refer to Section 233-020-034 for calculations and data required. Verify entries on Worksheet D (described in Section 233-020-034).

(d) **Audits:** Filter audit printouts for several days to verify the total with the daily total. Call audit failures are totaled in "REPT TRF" plant measurement register 27 and should be recorded accurately on Form E-6824. Message for audits is "RCOVRY AU."

(e) **Initializations:** Using the SCC minicomputer filter, all initializations for an index period. Refer to OM-3H300 for message format. Certain initializations must be recorded as they occur since they are not on the daily totals. (Refer paragraph 7.17.) Certain initializations are de-

ductible under specific situations (refer to paragraph 7.18). Deductions should be documented on Form E-6429. The message for initializations in No. 3 ESS switch is "RCOVRY CU INIT." Build a filter pattern for this message.

(f) **Equipment Outage:** Refer to Section 201-020-030, Record of Equipment Out-of-Service. Refer to Section 201-020-030 for equipment types that should be logged. Compare trouble tickets to outage logs and/or filter using SCC minicomputer to obtain equipment out-of-service and compare to outage logs.

12.18 Measured Components: The entries on Form E-6422A indicate the following measured components:

(a) **Dial Tone Speed:** Refer to Section 233-020-032, verify entries on Form E-4372.

(b) **Restore Verify Failures:** Compare daily printouts to daily total for validity. Compare daily printout to control record. Compute sum of daily totals and compare to Form E-6422A total.

(c) **False Cross Ground (FCG) Failures:** Filter using SCC minicomputer and compare the sum of FCG failures of several select days to daily total in order to validate. Compare the sum of control record to total on Form E-6422A.

(d) **Equipment Blockage:** Obtain logs for all overflow registers that make up the equipment blockage component. Add and compare to entry on Form E-6422A. Check all computations.

(e) **Ineffective Signaling:** Again obtain logs, perform all computations, and validate data.

(f) **Billing:** Obtain comptrollers records and compare a billing entries data on Form E-6422A.

12.19 The reviewer should obtain data for previous 3 months for all performance indicators and measured components prior to office visit.

12.20 If errors are found while checking records and if using OTC-CRS, correct data base.

12.21 Checking Form E-6422B is not required if using OTC-CRS. All data is taken from Form E-6422A.

E. Verification of Form E-6422B

12.22 Figure 8 provides guidelines for checking results reporting and record retention for Form E-6422A.

12.23 The No. 3 ESS NSPMP Summary Report (Form E-6422B) will provide all management with a specific report to identify the number and percentage of offices performing in the H, O, L, and U bands. It also provides the number and percentage of offices exceeding the threshold for each performance indicator. All data recorded on Form E-6422B (except percentage calculations) are taken directly from the represented Form E-6422A reports. Percentage entries should be rounded to one decimal. The form serves three purposes:

- Multioffice, single month
- Multimonth, single office
- Multioffice, multimonth.

12.24 It is imperative that all personnel involved with any discrepancies in preparing the NSPMP be thoroughly instructed to prevent any further errors.

12.25 Daily printouts of data used for computation of the results reported on Forms E-6422A and E-6422B shall be kept for the current report month and the previous 3 months. The monthly printouts shall be retained for 1 year. Forms E-6422A and E-6422B shall be retained for at least 1 year. It is recommended that a retention system similar to that described in the Section 190-130-010, SPC/SCC Control Maintenance Plan, be used. The printouts and reports should be filed in the appropriate month's folder and retained until the results for the same month of the following year replaces them.



No. 3 ESS* Network Switching Performance Measurement Plan

E-6422A
(4-83)

Office Occidental	District South	Division Upstate	Manager D. Kupsik	
Areas Northern	Company Any	Generic	Month Jan	Year 1984

Performance Indicators

Indicator	A	B		C	D	E
	Failures	Base	Data	Performance	Threshold	Soft Spot
Machine Access						
1 # Days CDR OFL 5% Or Greater				0	1	1
2 Receiver Overflow	0	Rec. PC BH	9873	0.00	0.10	2
Machine Switching						
3 Trunk Outage				94.00	95.00	1
4 Continuity Failures	2220	O + I/10K	19.36	114.67	200.00	4
5 Network Matching Loss				1.35	1.50	5
6 Audits	129	O + I/10K	19.36	6.66	20.00	6
7 Initializations	0			0	5.00	7
8 Equipment Outage	0	Total Equipment	10	0.23	1.00	8
Customer Reports						
9 Code 8	0	Wkg. Lns./100	8.03	0.00	.10	9
10	Total No. Of Indicators			8	Total No. Soft Spots (1)	1
						10

Measured Components

Component	Max Points	F	G		H	J	K	L
		Failures	Base	Data	Performance	Component Index	Index Points	Band
Machine Access								
11 Dial Tone Speed	15	0			35.00	100.00	15.00	H
12 Restore Verify Failures	10	1	O + I/10K	19.36	0.05	100.00	10.00	H
Machine Switching								
13 Transmitter Timeouts	10	23	OGT/10K	.52	44.23	93.00	9.30	L
14 Office Switching	15	25	O + I/10K BH	1.38	18.12	98.50	14.87	H
15 FCG Failures	10	91	O + I/10K	19.36	4.70	96.00	9.60	O
16 Equipment Blockage	15	41	O + I BH	13824	0.30	99.50	14.93	H
17 Ineffective Signaling	5	76	O + I/10K BH	1.38	55.07	97.50	4.87	O
Billing								
18 Equipment Failures		E						18
19 Partial Charges		E						19
20 Lost Billing	10	E	Messages/100K	E	E	E	E	E
Customer Reports								
21 Code 5 Equipment	10	8	Wkg. Lns./100	8.03	1.00	92.00	9.20	L
					22 Total Points		87.77	
					23 Max. Available Points		90.00	
					24 Total Index		97.52	O

Remarks

*Trademark Of WECO.

FCC Item No. 47

Fig. 1—Example of Form E-6422A (6.02, 6.17, 7.01, 8.01, 9.01, 9.03, 9.04, 9.05)



No. 3 ESS*

E 6422B
(4-83)

Network Switching Performance
Measurement Plan Office Summary

Office	District	South	Division	Upstate	Manager	O. Smith
Area	Company	Any	Generic	Month	Year	1983
Northern						

Measured Components

A	B	C	D	E				G	H
				Number And % Of Office Month Reports By Index Band					
Measured Component	Weight	Total No. Of Offices	Total No. Of Office Month Reports	H	O	L	U		
				100-98.50	98.49-95.50	95.49-89.50	< 89.50		
1 Machine Access	Dial Tone Speed	15	5	5		5		1	
			% Of Total		100.00			2	
3 Machine Access	Restore Verify Failures	10	5	5		5		3	
			% Of Total		100.00			4	
5 Machine Access	Transmitter Timeouts	10	5	5		5		5	
			% Of Total		100.00			6	
7 Machine Access	Office Switching	15	5	5		5		7	
			% Of Total		100.00			8	
9 Machine Switching	FCG Failures	10	5	5	1	4		9	
			% Of Total		20.00	80.00		10	
11 Machine Switching	Equipment Blockage	15	5	5		5		11	
			% Of Total		100.00			12	
13 Machine Switching	Ineffective Signaling	5	5	5	1	4		13	
			% Of Total		20.00	80.00		14	
15 Bill	Lost Billing	10	2	2		2		15	
			% Of Total		100.00			16	
17 Cust. Rpt.	Code 5 Equipment	10	5	5		3	2	17	
			% Of Total		60.00	40.00		18	
19	Total Index	100	5	5	1	3	1	19	
20			% Of Total		20.00	60.00	20.00	20	

Performance Indicators

	J	K	L	M	N	P	R	S	T	
	Machine Access		Machine Switching			Cust. Rpt.				
	CDR Overflow	Receiver Overflow	Trunk Outage	Continuity Failures	Network Matching Loss	Audits	Initializations	Equip. Outage	Code 8	
21 # Office Months	5	5	5	5	5	5	5	5	5	21
22 # Soft Spots	0	0	0	2	0	0	0	0	1	22

Remarks

*Trademark Of WECo

FCC Item No. 47

Fig. 2—Example of Form E-6422B (6.17, 10.03, 10.04)



Network Switching Performance Measurement Plan Report Of Weakspot Performance

E-6422C
(6-80)

1	Office NIWOT	Division UPTOWN	Company ANYCO	
	Manager H. SMITH	Area NORTH	Month SEPTEMBER	
	District LONGMONT	Generic 3E3	Year 1980	
2	Prepared By-Date L. FOREMAN	Tel. No. 201-555-1234	Co Manager Reviewing Report-Date H. SMITH	Tel. No. 201-555-4321
	Measured Component		Total Office Band	Performance Indicator
3	This Period	TRANS TIMEOUTS	CODE 5	TRUNK OUTAGE
4	Previous 9 Months	0	1	0
5	Specific Cause Of This Period Weakspot Or Soft Spot Result And Action Taken		Manager To Whom Referred For Correction	Times Repeated
	Trunk outages results low due to toll cable being cut by local contractor		J. Facility	0
	Transmitter timeouts due to toll cable trouble			0
	Code 5 - 4 code 5s received due to translation error on #555-7893		D. Administrator	1
	Estimated Date Of Correction			9-1-80
				9-1-80
				9-18-80
6	District Manager T. Brown	Comments		Date
	Tel. No. 201-555-7777			9-25-80

Fig. 3—Example of Form E-6422C (6.17)

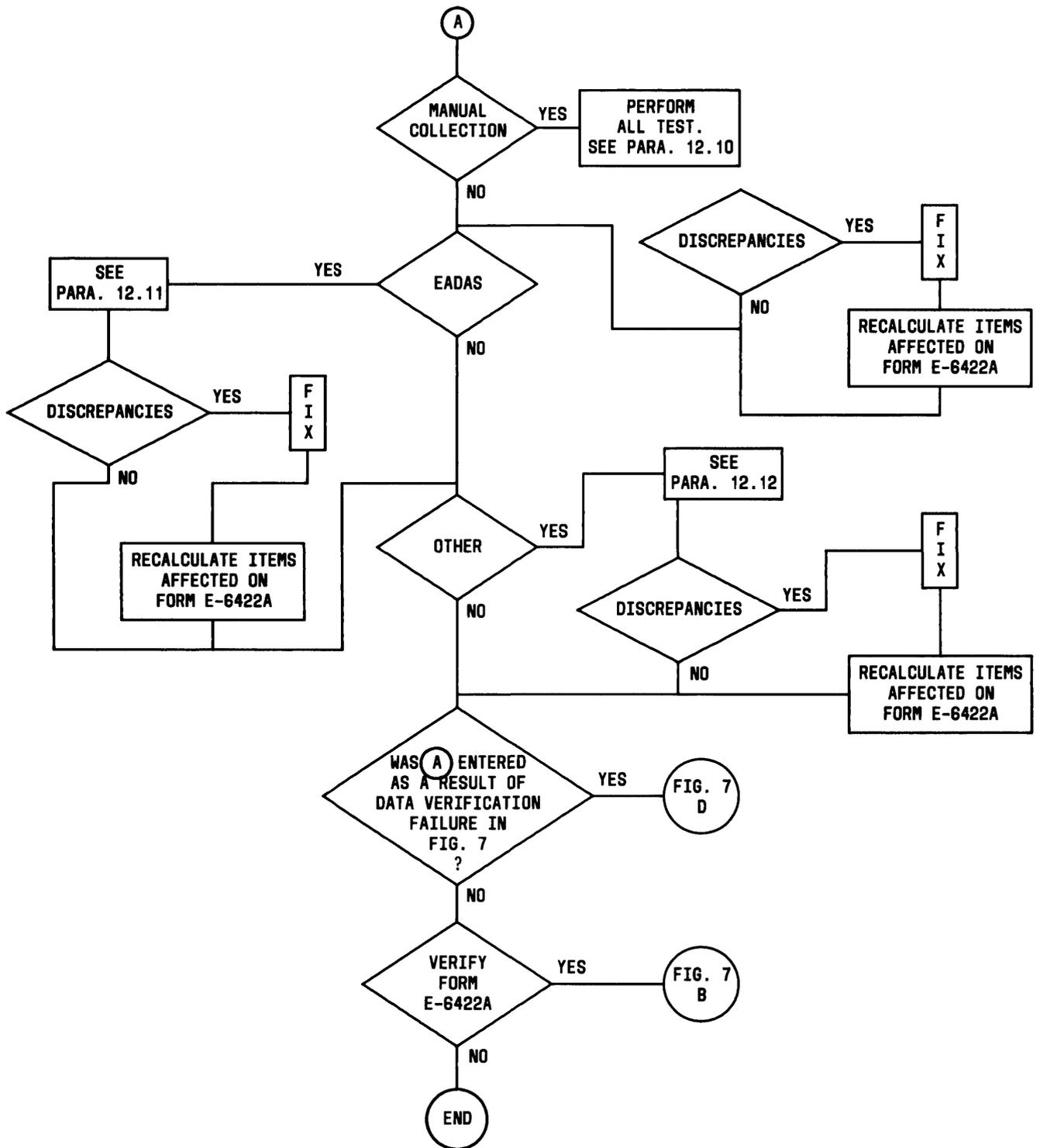


Fig. 6—Data Collection Flowchart (12.02, 12.09)

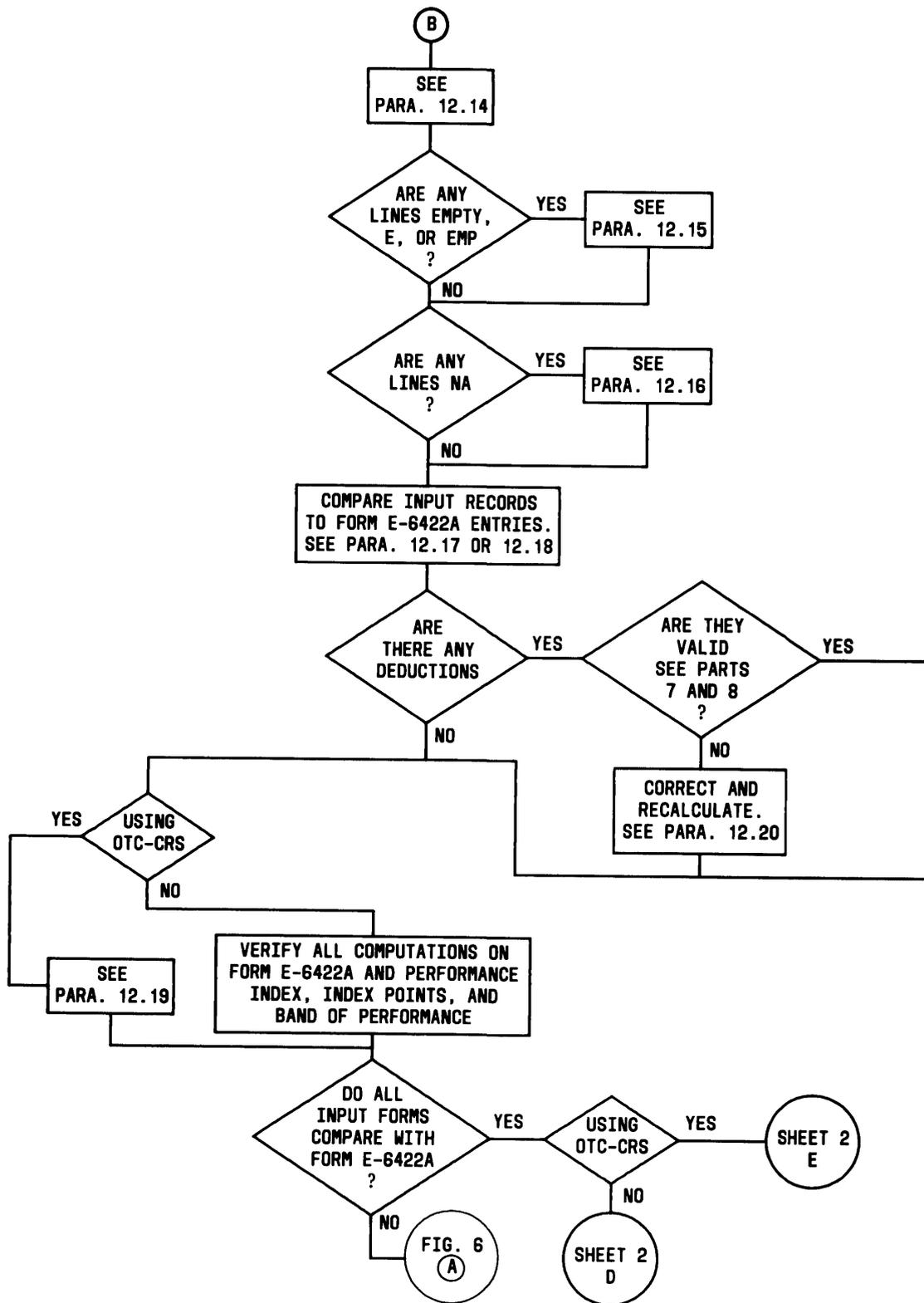


Fig. 7—Form E-6422A Verification Flowchart (Sheet 1 of 2) (12.02, 12.13)

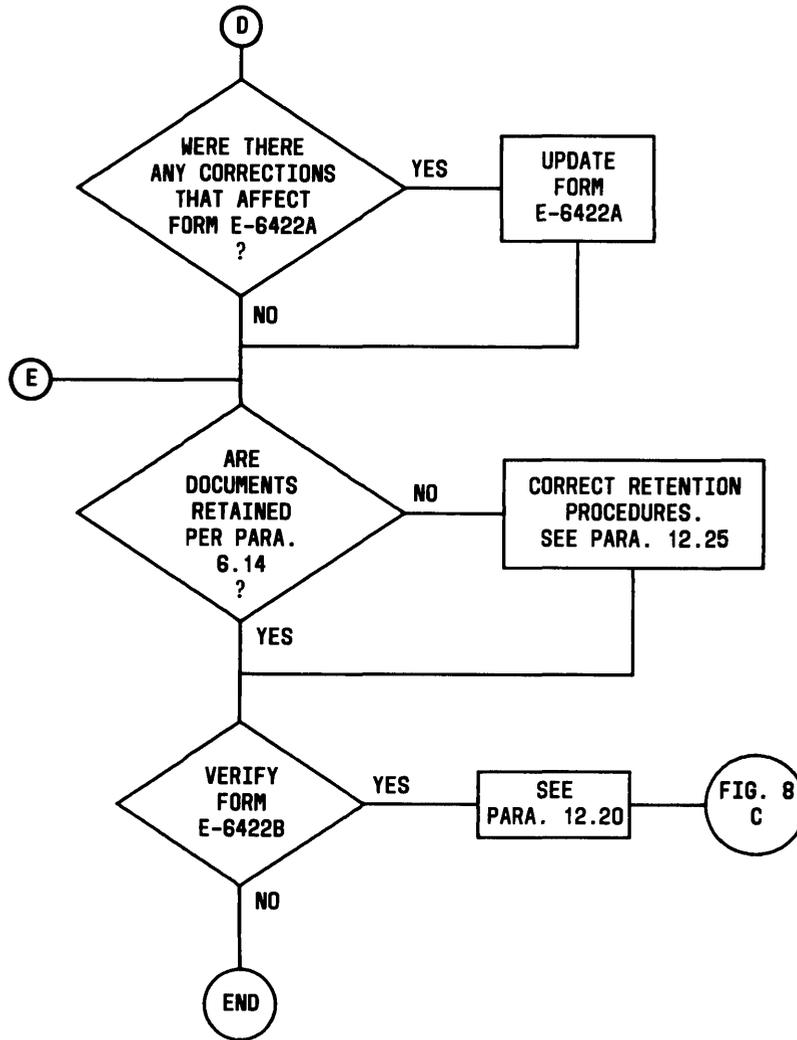


Fig. 7—Form E-6422A Verification Flowchart (Sheet 2 of 2) (12.02, 12.13)

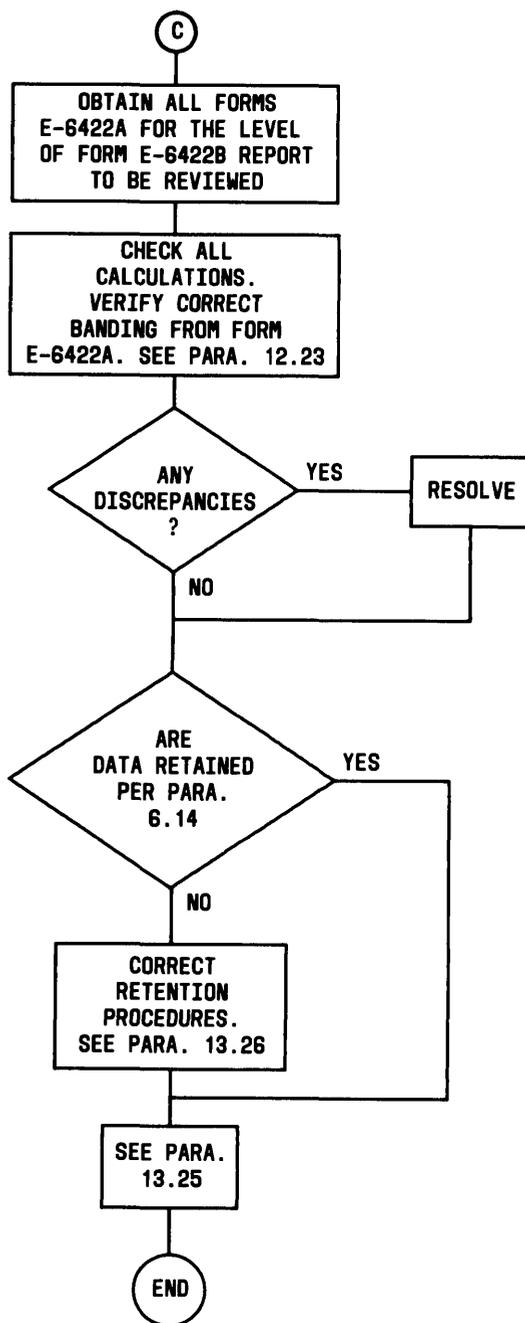


Fig. 8—Form E-6422B Verification Flowchart (12.02, 12.22)

TABLE A

DATA SOURCE FOR PERFORMANCE INDICATORS AND MEASURED COMPONENTS

INDICATOR/COMPONENT	COUNTER	MNEMONIC	SCHEDULE	DESCRIPTION
Customer Digit Receiver	SVC 02		H	TT CDR PC (TGN 064)
	SVC 02		H	DP CDR GP PC (TGN 065)
Peg Count	SVC 04		H	TT CDR GP OVFL (TGN 064)
Overflow	SVC 04		H	DP CDR GP OVFL (TGN 065)
Receiver Overflow				
Peg Count	SVC 02		H	MF Receiver PC (GP66)
Overflow	SVC 04		H	MF Receiver OVFL (GP66)
Continuity Failures	PLT 49	MMCTF	P	Continuity Test Failures
	PLT 59	MMTLO	P	Originating Calls
	PLT 61	MMTOICA	P	Incoming Attempts
Network Matching Loss	OFT 17		H	Total Originating Calls
	OFT 23		H	Partial Dial Abandons
	OFT 26		H	IAO Calls to Busy Lines
	OFT 34		H	Incoming Call Attempts
	OFT 52		H	Ineffective Originating Signaling
	OFT 55		H	No Path-Tandem
	OFT 56		H	No Path-Incoming Terminating
	OFT 57		H	No Path-Outgoing and IAO
	OFT 69		H	Incoming Calls to Busy Lines
Audits	PLT 27	MMCA	P	Call Audit Failures
	PLT 59	MMTLO	P	Originating Calls
	PLT 61	MMTICA	P	Incoming Attempts
Initializations	PLT 22	MMIC1	P	Initialization Count 1
	PLT 23	MMICA2	P	Initialization Count 2
	PLT 24	MMICA3	P	Initialization Count 3
	PLT 25	MMICA4	P	Initialization Count 4
	PLT 26	MMMI	P	Manual Initialization
Equipment Outage	PLT 11	MMSYC00S	P	System Controller (SYC) Out-of-Service Duration
Dial Tone Speed	OFT 03		H	DP Originations
	OFT 04		H	DP Delay >3 Seconds
	OFT 07		H	TT Originations
	OFT 08		H	TT Delay >3 Seconds
Restore Verify Failures	PLT 52	MMRVF	P	Restore Verify Failures
	PLT 59	MMTLO	P	Originating Calls
	PLT 61	MMTICA	P	Incoming Attempts
Transmitter Time-out	PLT 64	MMTOCA	P	Outgoing Attempts
	PLT 65	MMTTO	P	Transmitter Time-outs
Office Switching	OFT 17		H	Total Originating Calls
	OFT 26		H	Intraoffice Calls to Busy Lines
	OFT 34		H	Total Incoming Attempts
	OFT 63		H	Connecting Trouble Tandem
	OFT 64		H	Connecting Trouble Incoming
	OFT 65		H	Connecting Trouble Outgoing/Intraoffice
	OFT 69		H	Lines Found Busy Incoming

TABLE A (Contd)

DATA SOURCE FOR PERFORMANCE INDICATORS AND MEASURED COMPONENTS

INDICATOR/COMPONENT	COUNTER	MNEMONIC	SCHEDULE	DESCRIPTION
False Cross and Grounds	PLT 50 PLT 59 PLT 61	MMFC6F MMTLD MMTOICA	P P P	False Cross and Ground Failures Originating Calls Incoming Attempts
Equipment Blockage	OFT 17 OFT 34 OFT 55 OFT 56 OFT 57 OFT 58 OFT 59 OFT 60 OFT 61 OFT 62		H H H H H H H H H H	Total Originating Calls Total Incoming Attempts No Path Tandem No Path Incoming Terminating No Path Outgoing and Intraoffice No Service Circuit Tandem No Service Circuit Incoming No Service Circuit Outgoing/Intraoffice No Trunk Tandem No Trunk Outgoing/Intraoffice
Ineffective Signaling	OFT 17 OFT 34 OFT 66 OFT 67 OFT 68		H H H H H	Total Originating Calls Total Incoming Attempts Ineffective Tandem Signaling Ineffective Outgoing Signaling Ineffective Incoming Signaling

TABLE B

DIAL TONE SPEED MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
35.00 — 34.98	100.00	15.00	29.33 — 29.27	72.00	10.80
34.97 — 34.79	99.50	14.92	29.26 — 29.19	71.00	10.65
34.78 — 34.61	99.00	14.85	29.18 — 29.12	70.00	10.50
34.60 — 34.42	98.50	14.77	29.11 — 29.05	69.00	10.35
34.41 — 34.24	98.00	14.70	29.04 — 28.98	68.00	10.20
34.23 — 34.06	97.50	14.62	28.97 — 28.92	67.00	10.05
34.05 — 33.88	97.00	14.55	28.91 — 28.85	66.00	9.90
33.87 — 33.70	96.50	14.47	28.84 — 28.79	65.00	9.75
33.69 — 33.52	96.00	14.40	28.78 — 28.72	64.00	9.60
33.51 — 33.35	95.50	14.32	28.71 — 28.66	63.00	9.45
33.34 — 33.17	95.00	14.25	28.65 — 28.60	62.00	9.30
33.16 — 32.99	94.50	14.17	28.59 — 28.54	61.00	9.15
32.98 — 32.82	94.00	14.10	28.53 — 28.48	60.00	9.00
32.81 — 32.65	93.50	14.02	28.47 — 28.42	59.00	8.85
32.64 — 32.47	93.00	13.95	28.41 — 28.37	58.00	8.70
32.46 — 32.30	92.50	13.87	28.36 — 28.31	57.00	8.55
32.29 — 32.13	92.00	13.80	28.30 — 28.26	56.00	8.40
32.12 — 31.96	91.50	13.72	28.25 — 28.20	55.00	8.25
31.95 — 31.79	91.00	13.65	28.19 — 28.15	54.00	8.10
31.78 — 31.63	90.50	13.57	28.14 — 28.10	53.00	7.95
31.62 — 31.46	90.00	13.50	28.09 — 28.04	52.00	7.80
31.45 — 31.31	89.50	13.42	28.03 — 27.99	51.00	7.65
31.30 — 31.19	89.00	13.35	27.98 — 27.94	50.00	7.50
31.18 — 31.08	88.50	13.27	27.93 — 27.84	48.00	7.20
31.07 — 30.98	88.00	13.20	27.83 — 27.73	46.00	6.90
30.97 — 30.89	87.50	13.12	27.72 — 27.62	44.00	6.60
30.88 — 30.80	87.00	13.05	27.61 — 27.51	42.00	6.30
30.79 — 30.72	86.50	12.97	27.50 — 27.40	40.00	6.00
30.71 — 30.65	86.00	12.90	27.39 — 27.28	38.00	5.70
30.64 — 30.58	85.50	12.82	27.27 — 27.16	36.00	5.40
30.57 — 30.51	85.00	12.75	27.15 — 27.03	34.00	5.10
30.50 — 30.44	84.50	12.67	27.02 — 26.90	32.00	4.80
30.43 — 30.38	84.00	12.60	26.89 — 26.76	30.00	4.50
30.37 — 30.32	83.50	12.52	26.75 — 26.61	28.00	4.20
30.31 — 30.26	83.00	12.45	26.60 — 26.46	26.00	3.90
30.25 — 30.21	82.50	12.37	26.45 — 26.30	24.00	3.60
30.20 — 30.15	82.00	12.30	26.29 — 26.12	22.00	3.30
30.14 — 30.10	81.50	12.22	26.11 — 25.93	20.00	3.00
30.09 — 30.05	81.00	12.15	25.92 — 25.73	18.00	2.70
30.04 — 29.99	80.50	12.07	25.72 — 25.50	16.00	2.40
29.98 — 29.95	80.00	12.00	25.49 — 25.23	14.00	2.10
29.94 — 29.85	79.00	11.85	25.22 — 24.90	12.00	1.80
29.84 — 29.76	78.00	11.70	24.89 — 24.42	10.00	1.50
29.75 — 29.67	77.00	11.55	24.41 — 23.75	8.00	1.20
29.66 — 29.58	76.00	11.40	23.74 — 23.06	6.00	0.90
29.57 — 29.50	75.00	11.25	23.05 — 22.36	4.00	0.60
29.49 — 29.42	74.00	11.10	22.35 — 21.64	2.00	0.30
29.41 — 29.34	73.00	10.95	BELOW 21.64	0.00	0.00

TABLE C

LINE RESTORE VERIFY FAILURES MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
0.00 — 0.64	100.00	10.00	56.12 — 56.83	60.00	6.00
0.65 — 1.25	99.50	9.95	56.84 — 57.55	59.00	5.90
1.26 — 1.84	99.00	9.90	57.56 — 58.27	58.00	5.80
1.85 — 2.40	98.50	9.85	58.28 — 58.99	57.00	5.70
2.41 — 3.06	98.00	9.80	59.00 — 59.71	56.00	5.60
3.07 — 3.83	97.50	9.75	59.72 — 60.43	55.00	5.50
3.84 — 4.63	97.00	9.70	60.44 — 61.15	54.00	5.40
4.64 — 5.45	96.50	9.65	61.16 — 61.87	53.00	5.30
5.46 — 6.50	96.00	9.60	61.88 — 62.59	52.00	5.20
6.51 — 7.78	95.50	9.55	62.60 — 63.31	51.00	5.10
7.79 — 9.23	95.00	9.50	63.32 — 64.03	50.00	5.00
9.24 — 10.85	94.50	9.45	64.04 — 64.75	49.00	4.90
10.86 — 14.24	94.00	9.40	64.76 — 65.47	48.00	4.80
14.25 — 19.40	93.50	9.35	65.48 — 66.19	47.00	4.70
19.41 — 23.82	93.00	9.30	66.20 — 66.91	46.00	4.60
23.83 — 27.51	92.50	9.25	66.92 — 67.62	45.00	4.50
27.52 — 30.46	92.00	9.20	67.63 — 68.34	44.00	4.40
30.47 — 32.67	91.50	9.15	68.35 — 69.06	43.00	4.30
32.68 — 34.14	91.00	9.10	69.07 — 69.78	42.00	4.20
34.15 — 34.88	90.50	9.05	69.79 — 70.50	41.00	4.10
34.89 — 35.25	90.00	9.00	70.51 — 71.22	40.00	4.00
35.26 — 35.61	89.50	8.95	71.23 — 71.94	39.00	3.90
35.62 — 35.97	89.00	8.90	71.95 — 72.66	38.00	3.80
35.98 — 36.33	88.50	8.85	72.67 — 73.38	37.00	3.70
36.34 — 36.69	88.00	8.80	73.39 — 74.10	36.00	3.60
36.70 — 37.05	87.50	8.75	74.11 — 74.82	35.00	3.50
37.06 — 37.41	87.00	8.70	74.83 — 75.54	34.00	3.40
37.42 — 37.77	86.50	8.65	75.55 — 76.26	33.00	3.30
37.78 — 38.13	86.00	8.60	76.27 — 76.98	32.00	3.20
38.14 — 38.49	85.50	8.55	76.99 — 77.70	31.00	3.10
38.50 — 38.85	85.00	8.50	77.71 — 78.42	30.00	3.00
38.86 — 39.21	84.50	8.45	78.43 — 79.14	29.00	2.90
39.22 — 39.57	84.00	8.40	79.15 — 79.86	28.00	2.80
39.58 — 39.93	83.50	8.35	79.87 — 80.57	27.00	2.70
39.94 — 40.29	83.00	8.30	80.58 — 81.29	26.00	2.60
40.30 — 40.65	82.50	8.25	81.30 — 82.01	25.00	2.50
40.66 — 41.01	82.00	8.20	82.02 — 82.73	24.00	2.40
41.02 — 41.37	81.50	8.15	82.74 — 83.45	23.00	2.30
41.38 — 41.72	81.00	8.10	83.46 — 84.17	22.00	2.20
41.73 — 42.08	80.50	8.05	84.18 — 84.89	21.00	2.10
42.09 — 42.44	80.00	8.00	84.90 — 85.61	20.00	2.00
42.45 — 43.16	79.00	7.90	85.62 — 86.33	19.00	1.90
43.17 — 43.88	78.00	7.80	86.34 — 87.05	18.00	1.80
43.89 — 44.60	77.00	7.70	87.06 — 87.77	17.00	1.70
44.61 — 45.32	76.00	7.60	87.78 — 88.49	16.00	1.60
45.33 — 46.04	75.00	7.50	88.50 — 89.21	15.00	1.50
46.05 — 46.76	74.00	7.40	89.22 — 89.93	14.00	1.40
46.77 — 47.48	73.00	7.30	89.94 — 90.65	13.00	1.30
47.49 — 48.20	72.00	7.20	90.66 — 91.37	12.00	1.20
48.21 — 48.92	71.00	7.10	91.38 — 92.09	11.00	1.10
48.93 — 49.64	70.00	7.00	92.10 — 92.81	10.00	1.00
49.65 — 50.36	69.00	6.90	92.82 — 93.52	9.00	0.90
50.37 — 51.08	68.00	6.80	93.53 — 94.24	8.00	0.80
51.09 — 51.80	67.00	6.70	94.25 — 94.96	7.00	0.70
51.81 — 52.52	66.00	6.60	94.97 — 95.68	6.00	0.60
52.53 — 53.24	65.00	6.50	95.69 — 96.40	5.00	0.50
53.25 — 53.96	64.00	6.40	96.41 — 97.12	4.00	0.40
53.97 — 54.67	63.00	6.30	97.13 — 97.84	3.00	0.30
54.68 — 55.39	62.00	6.20	97.85 — 98.56	2.00	0.20
55.40 — 56.11	61.00	6.10	98.57 — 99.28	1.00	0.10
			ABOVE 99.28	0.00	0.00

TABLE D

TRANSMITTER TIME-OUTS MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
0.00 — 2.31	100.00	10.00	71.04 — 71.51	60.00	6.00
2.32 — 3.76	99.50	9.95	71.52 — 71.98	59.00	5.90
3.77 — 4.87	99.00	9.90	71.99 — 72.46	58.00	5.80
4.88 — 5.66	98.50	9.85	72.47 — 72.93	57.00	5.70
5.67 — 6.82	98.00	9.80	72.94 — 73.41	56.00	5.60
6.83 — 8.37	97.50	9.75	73.42 — 73.88	55.00	5.50
8.38 — 10.11	97.00	9.70	73.89 — 74.36	54.00	5.40
10.12 — 12.04	96.50	9.65	74.37 — 74.83	53.00	5.30
12.05 — 14.78	96.00	9.60	74.84 — 75.31	52.00	5.20
14.79 — 18.31	95.50	9.55	75.32 — 75.78	51.00	5.10
18.32 — 21.93	95.00	9.50	75.79 — 76.26	50.00	5.00
21.94 — 25.62	94.50	9.45	76.27 — 76.73	49.00	4.90
25.63 — 30.73	94.00	9.40	76.74 — 77.21	48.00	4.80
30.74 — 37.24	93.50	9.35	77.22 — 77.68	47.00	4.70
37.25 — 42.83	93.00	9.30	77.69 — 78.16	46.00	4.60
42.84 — 47.49	92.50	9.25	78.17 — 78.63	45.00	4.50
47.50 — 51.21	92.00	9.20	78.64 — 79.10	44.00	4.40
51.22 — 54.00	91.50	9.15	79.11 — 79.58	43.00	4.30
54.01 — 55.86	91.00	9.10	79.59 — 80.05	42.00	4.20
55.87 — 56.79	90.50	9.05	80.06 — 80.53	41.00	4.10
56.80 — 57.26	90.00	9.00	80.54 — 81.00	40.00	4.00
57.27 — 57.50	89.50	8.95	81.01 — 81.48	39.00	3.90
57.51 — 57.73	89.00	8.90	81.49 — 81.95	38.00	3.80
57.74 — 57.97	88.50	8.85	81.96 — 82.43	37.00	3.70
57.98 — 58.21	88.00	8.80	82.44 — 82.90	36.00	3.60
58.22 — 58.45	87.50	8.75	82.91 — 83.38	35.00	3.50
58.46 — 58.68	87.00	8.70	83.39 — 83.85	34.00	3.40
58.69 — 58.92	86.50	8.65	83.86 — 84.33	33.00	3.30
58.93 — 59.16	86.00	8.60	84.34 — 84.80	32.00	3.20
59.17 — 59.40	85.50	8.55	84.81 — 85.28	31.00	3.10
59.41 — 59.63	85.00	8.50	85.29 — 85.75	30.00	3.00
59.64 — 59.87	84.50	8.45	85.76 — 86.23	29.00	2.90
59.88 — 60.11	84.00	8.40	86.24 — 86.70	28.00	2.80
60.12 — 60.35	83.50	8.35	86.71 — 87.18	27.00	2.70
60.36 — 60.58	83.00	8.30	87.19 — 87.65	26.00	2.60
60.59 — 60.82	82.50	8.25	87.66 — 88.13	25.00	2.50
60.83 — 61.06	82.00	8.20	88.14 — 88.60	24.00	2.40
61.07 — 61.30	81.50	8.15	88.61 — 89.08	23.00	2.30
61.31 — 61.53	81.00	8.10	89.09 — 89.55	22.00	2.20
61.54 — 61.77	80.50	8.05	89.56 — 90.03	21.00	2.10
61.78 — 62.01	80.00	8.00	90.04 — 90.50	20.00	2.00
62.02 — 62.48	79.00	7.90	90.51 — 90.98	19.00	1.90
62.49 — 62.96	78.00	7.80	90.99 — 91.45	18.00	1.80
62.97 — 63.43	77.00	7.70	91.46 — 91.93	17.00	1.70
63.44 — 63.91	76.00	7.60	91.94 — 92.40	16.00	1.60
63.92 — 64.38	75.00	7.50	92.41 — 92.88	15.00	1.50
64.39 — 64.86	74.00	7.40	92.89 — 93.35	14.00	1.40
64.87 — 65.33	73.00	7.30	93.36 — 93.83	13.00	1.30
65.34 — 65.81	72.00	7.20	93.84 — 94.30	12.00	1.20
65.82 — 66.28	71.00	7.10	94.31 — 94.78	11.00	1.10
66.29 — 66.76	70.00	7.00	94.79 — 95.25	10.00	1.00
66.77 — 67.23	69.00	6.90	95.26 — 95.73	9.00	0.90
67.24 — 67.71	68.00	6.80	95.74 — 96.20	8.00	0.80
67.72 — 68.18	67.00	6.70	96.21 — 96.68	7.00	0.70
68.19 — 68.66	66.00	6.60	96.69 — 97.15	6.00	0.60
68.67 — 69.13	65.00	6.50	97.16 — 97.63	5.00	0.50
69.14 — 69.61	64.00	6.40	97.64 — 98.10	4.00	0.40
69.62 — 70.08	63.00	6.30	98.11 — 98.58	3.00	0.30
70.09 — 70.56	62.00	6.20	98.59 — 99.05	2.00	0.20
70.57 — 71.03	61.00	6.10	99.06 — 99.53	1.00	0.10
			ABOVE 99.53	0.00	0.00

TABLE E

OFFICE SWITCHING MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
0.00 — 1.54	100.0	15.00	45.92 — 46.69	72.0	10.80
1.55 — 2.78	99.5	14.92	46.70 — 47.45	71.0	10.65
2.79 — 3.68	99.0	14.85	47.48 — 48.25	60.0	10.50
3.69 — 4.26	98.5	14.77	48.26 — 49.03	69.0	10.35
4.27 — 4.78	98.0	14.70	49.04 — 49.80	68.0	10.20
4.79 — 5.24	97.5	14.61	49.81 — 50.58	67.0	10.05
5.25 — 5.69	97.0	14.55	50.59 — 51.36	66.0	9.90
5.70 — 6.13	96.5	14.47	51.37 — 52.14	65.0	9.75
6.14 — 6.90	96.0	14.40	52.15 — 52.92	64.0	9.60
6.91 — 8.03	95.5	14.32	52.93 — 53.70	63.0	9.45
8.04 — 9.58	95.0	14.25	53.71 — 54.47	62.0	9.30
9.59 — 11.56	94.5	14.17	54.48 — 55.25	61.0	9.15
11.57 — 14.75	94.0	14.10	55.26 — 56.03	60.0	9.00
14.76 — 19.16	93.5	14.02	56.04 — 56.81	59.0	8.85
19.17 — 22.93	93.0	13.95	56.82 — 57.59	58.0	8.70
22.94 — 26.08	92.5	13.87	57.60 — 58.37	65.0	8.55
26.09 — 28.59	92.0	13.80	58.38 — 59.14	56.0	8.40
28.60 — 30.48	91.5	13.72	59.15 — 59.92	55.0	8.25
30.49 — 31.74	91.0	13.65	59.93 — 60.70	54.0	8.10
31.75 — 32.36	90.5	13.57	60.71 — 61.48	53.0	7.95
32.37 — 32.68	90.0	13.50	61.49 — 62.23	42.0	7.80
32.69 — 33.07	89.5	13.42	62.24 — 63.04	51.0	7.65
33.08 — 33.46	89.0	13.35	63.05 — 63.82	50.0	7.50
33.47 — 33.84	88.5	13.27	63.83 — 65.37	48.0	7.20
33.86 — 34.24	88.0	13.20	65.38 — 66.93	46.0	6.90
24.35 — 34.63	87.5	13.12	66.94 — 68.49	44.0	6.60
34.64 — 35.02	87.0	13.05	68.50 — 70.04	42.0	6.30
35.03 — 35.40	86.5	12.97	70.05 — 71.60	40.0	6.00
35.41 — 35.79	86.0	12.90	71.61 — 73.16	38.0	5.70
35.80 — 36.13	85.5	12.82	73.17 — 74.71	36.0	5.40
36.19 — 36.57	85.0	12.75	74.72 — 76.27	34.0	5.10
36.58 — 36.96	84.5	12.67	76.28 — 77.83	32.0	4.80
36.97 — 37.35	84.0	12.60	77.84 — 79.38	30.0	4.50
37.36 — 37.74	83.5	12.52	79.39 — 80.94	28.0	4.20
37.75 — 38.13	83.0	12.45	80.95 — 82.50	26.0	3.90
38.14 — 38.52	82.5	12.37	82.51 — 84.05	24.0	3.60
38.53 — 38.91	82.0	12.30	84.06 — 85.61	22.0	3.30
38.92 — 39.29	81.5	12.22	85.62 — 87.17	20.0	3.00
39.30 — 39.68	81.0	12.15	87.18 — 88.72	18.0	2.70
39.69 — 40.07	80.5	12.07	88.73 — 90.28	16.0	2.40
40.08 — 40.46	80.0	12.00	90.29 — 91.84	14.0	2.10
40.47 — 41.24	79.0	11.85	91.85 — 93.39	12.0	1.80
41.25 — 42.02	78.0	11.70	93.40 — 94.95	10.0	1.50
42.03 — 42.80	77.0	11.55	94.96 — 96.51	8.0	1.20
42.81 — 43.58	76.0	11.40	96.52 — 98.06	6.0	0.90
43.59 — 44.36	75.0	11.25	98.07 — 99.62	4.0	0.66
44.37 — 45.13	74.0	11.10	99.63 — 101.18	2.0	0.30
45.14 — 45.91	73.0	10.95	ABOVE 101.18	0.00	0.0

TABLE F

FALSE CROSS AND GROUND MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
0.00 — 0.06	100.00	10.00	13.54 — 13.73	60.00	6.00
0.07 — 0.11	99.50	9.95	13.74 — 13.92	59.00	5.90
0.12 — 0.17	99.00	9.90	13.93 — 14.12	58.00	5.80
0.18 — 0.24	98.50	9.85	14.13 — 14.31	57.00	5.70
0.25 — 0.31	98.00	9.80	14.32 — 14.51	56.00	5.60
0.32 — 0.38	97.50	9.75	14.52 — 14.70	55.00	5.50
0.39 — 0.47	97.00	9.70	14.71 — 14.90	54.00	5.40
0.48 — 0.57	96.50	9.65	14.91 — 15.09	53.00	5.30
0.58 — 0.71	96.00	9.60	15.10 — 15.29	52.00	5.20
0.72 — 0.90	95.50	9.55	15.30 — 15.48	51.00	5.10
0.91 — 1.10	95.00	9.50	15.49 — 15.68	50.00	5.00
1.11 — 1.32	94.50	9.45	15.69 — 15.87	49.00	4.90
1.33 — 2.13	94.00	9.40	15.88 — 16.07	48.00	4.80
2.14 — 3.54	93.50	9.35	16.08 — 16.26	47.00	4.70
3.55 — 4.75	93.00	9.30	16.27 — 16.46	46.00	4.60
4.76 — 5.76	92.50	9.25	16.47 — 16.65	45.00	4.50
5.77 — 6.56	92.00	9.20	16.66 — 16.85	44.00	4.40
6.57 — 7.17	91.50	9.15	16.86 — 17.04	43.00	4.30
7.18 — 7.57	91.00	9.10	17.05 — 17.24	42.00	4.20
7.58 — 7.77	90.50	9.05	17.25 — 17.43	41.00	4.10
7.78 — 7.87	90.00	9.00	17.44 — 17.63	40.00	4.00
7.88 — 7.97	89.50	8.95	17.64 — 17.82	39.00	3.90
7.98 — 8.07	89.00	8.90	17.83 — 18.02	38.00	3.80
8.08 — 8.16	88.50	8.85	18.03 — 18.21	37.00	3.70
8.17 — 8.26	88.00	8.80	18.22 — 18.41	36.00	3.60
8.27 — 8.36	87.50	8.75	18.42 — 18.61	35.00	3.50
8.37 — 8.46	87.00	8.70	18.62 — 18.80	34.00	3.40
8.47 — 8.55	86.50	8.65	18.81 — 19.00	33.00	3.30
8.56 — 8.65	86.00	8.60	19.01 — 19.19	32.00	3.20
8.66 — 8.75	85.50	8.55	19.20 — 19.39	31.00	3.10
8.76 — 8.85	85.00	8.50	19.40 — 19.58	30.00	3.00
8.86 — 8.94	84.50	8.45	19.59 — 19.78	29.00	2.90
8.95 — 9.04	84.00	8.40	19.79 — 19.97	28.00	2.80
9.05 — 9.14	83.50	8.35	19.98 — 20.17	27.00	2.70
9.15 — 9.24	83.00	8.30	20.18 — 20.36	26.00	2.60
9.25 — 9.33	82.50	8.25	20.37 — 20.56	25.00	2.50
9.34 — 9.43	82.00	8.20	20.57 — 20.75	24.00	2.40
9.44 — 9.53	81.50	8.15	20.76 — 20.95	23.00	2.30
9.54 — 9.63	81.00	8.10	20.96 — 21.14	22.00	2.20
9.64 — 9.72	80.50	8.05	21.15 — 21.34	21.00	2.10
9.73 — 9.82	80.00	8.00	21.35 — 21.53	20.00	2.00
9.83 — 10.02	79.00	7.90	21.54 — 21.73	19.00	1.90
10.03 — 10.21	78.00	7.80	21.74 — 21.92	18.00	1.80
10.22 — 10.41	77.00	7.70	21.93 — 22.12	17.00	1.70
10.42 — 10.60	76.00	7.60	22.13 — 22.31	16.00	1.60
10.61 — 10.80	75.00	7.50	22.32 — 22.51	15.00	1.50
10.81 — 10.99	74.00	7.40	22.52 — 22.70	14.00	1.40
11.00 — 11.19	73.00	7.30	22.71 — 22.90	13.00	1.30
11.20 — 11.38	72.00	7.20	22.91 — 23.09	12.00	1.20
11.39 — 11.58	71.00	7.10	23.10 — 23.29	11.00	1.10
11.59 — 11.77	70.00	7.00	23.30 — 23.48	10.00	1.00
11.78 — 11.97	69.00	6.90	23.49 — 23.68	9.00	0.90
11.98 — 12.16	68.00	6.80	23.69 — 23.88	8.00	0.80
12.17 — 12.36	67.00	6.70	23.89 — 24.07	7.00	0.70
12.37 — 12.55	66.00	6.60	24.08 — 24.27	6.00	0.60
12.56 — 12.75	65.00	6.50	24.28 — 24.46	5.00	0.50
12.76 — 12.94	64.00	6.40	24.47 — 24.66	4.00	0.40
12.95 — 13.14	63.00	6.30	24.67 — 24.85	3.00	0.30
13.15 — 13.34	62.00	6.20	24.86 — 25.05	2.00	0.20
13.35 — 13.53	61.00	6.10	25.06 — 25.24	1.00	0.10
			ABOVE 25.24	0.00	0.00

TABLE G

EQUIPMENT BLOCKAGE MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
0.00 — 0.50	100.00	15.00	3.52 — 3.56	72.00	10.80
0.51 — 1.00	99.50	14.92	3.57 — 3.61	71.00	10.65
1.01 — 1.25	99.00	14.85	3.62 — 3.66	70.00	10.50
1.26 — 1.42	98.50	14.77	3.67 — 3.70	69.00	10.35
1.43 — 1.55	98.00	14.70	3.71 — 3.75	68.00	10.20
1.56 — 1.66	97.50	14.62	3.76 — 3.80	67.00	10.05
1.67 — 1.75	97.00	14.55	3.81 — 3.84	66.00	9.90
1.76 — 1.83	96.50	14.47	3.85 — 3.89	65.00	9.75
1.84 — 1.91	96.00	14.40	3.90 — 3.93	64.00	9.60
1.92 — 1.97	95.50	14.32	3.94 — 3.98	63.00	9.45
1.98 — 2.04	95.00	14.25	3.99 — 4.02	62.00	9.30
2.05 — 2.10	94.50	14.17	4.03 — 4.06	61.00	9.15
2.11 — 2.15	94.00	14.10	4.07 — 4.10	60.00	9.00
2.16 — 2.20	93.50	14.02	4.11 — 4.14	59.00	8.85
2.21 — 2.25	93.00	13.95	4.15 — 4.19	58.00	8.70
2.26 — 2.30	92.50	13.87	4.20 — 4.23	57.00	8.55
2.31 — 2.34	92.00	13.80	4.24 — 4.27	56.00	8.40
2.35 — 2.38	91.50	13.72	4.28 — 4.31	55.00	8.25
2.39 — 2.42	91.00	13.65	4.32 — 4.35	54.00	8.10
2.43 — 2.46	90.50	13.57	4.36 — 4.39	53.00	7.95
2.47 — 2.50	90.00	13.50	4.40 — 4.42	52.00	7.80
2.51 — 2.54	89.50	13.42	4.43 — 4.46	51.00	7.65
2.55 — 2.57	89.00	13.35	4.47 — 4.50	50.00	7.50
2.58 — 2.61	88.50	13.27	4.51 — 4.58	48.00	7.20
2.62 — 2.64	88.00	13.20	4.59 — 4.65	46.00	6.90
2.65 — 2.68	87.50	13.12	4.66 — 4.73	44.00	6.60
2.69 — 2.71	87.00	13.05	4.74 — 4.81	42.00	6.30
2.72 — 2.74	86.50	12.97	4.82 — 4.90	40.00	6.00
2.75 — 2.78	86.00	12.90	4.91 — 4.98	38.00	5.70
2.79 — 2.81	85.50	12.82	4.99 — 5.07	36.00	5.40
2.82 — 2.84	85.00	12.75	5.08 — 5.16	34.00	5.10
2.85 — 2.87	84.50	12.67	5.17 — 5.25	32.00	4.80
2.88 — 2.90	84.00	12.60	5.26 — 5.34	30.00	4.50
2.91 — 2.94	83.50	12.52	5.35 — 5.44	28.00	4.20
2.95 — 2.97	83.00	12.45	5.45 — 5.54	26.00	3.90
2.98 — 3.00	82.50	12.37	5.55 — 5.64	24.00	3.60
3.01 — 3.03	82.00	12.30	5.65 — 5.75	22.00	3.30
3.04 — 3.05	81.50	12.22	5.76 — 5.86	20.00	3.00
3.06 — 3.08	81.00	12.15	5.87 — 5.97	18.00	2.70
3.09 — 3.11	80.50	12.07	5.98 — 6.10	16.00	2.40
3.12 — 3.14	80.00	12.00	6.11 — 6.22	14.00	2.10
3.15 — 3.20	79.00	11.85	6.23 — 6.36	12.00	1.80
3.21 — 3.25	78.00	11.70	6.37 — 6.50	10.00	1.50
3.26 — 3.31	77.00	11.55	6.51 — 6.66	8.00	1.20
3.32 — 3.36	76.00	11.40	6.67 — 6.85	6.00	0.90
3.37 — 3.41	75.00	11.25	6.86 — 7.09	4.00	0.60
3.42 — 3.46	74.00	11.10	7.10 — 7.45	2.00	0.30
3.47 — 3.51	73.00	10.95	ABOVE — 7.45	0.00	0.00

TABLE H

INEFFECTIVE SIGNALING MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
0.00 — 3.45	100.0	5.00	205.46 — 208.34	59.0	2.95
3.46 — 7.89	99.5	4.97	208.35 — 211.22	58.0	2.90
7.90 — 11.55	99.0	4.95	211.23 — 214.11	57.0	2.85
11.56 — 14.42	98.5	4.92	214.12 — 217.00	56.0	2.80
14.43 — 17.08	98.0	4.90	217.01 — 219.88	55.0	2.75
17.09 — 19.54	97.5	4.87	219.89 — 222.77	54.0	2.70
19.55 — 22.30	97.0	4.85	222.78 — 225.65	53.0	2.65
22.31 — 25.36	96.5	4.82	220.66 — 228.54	52.0	2.60
25.37 — 29.38	96.0	4.80	228.55 — 231.42	51.0	2.55
29.39 — 34.35	95.5	4.77	231.43 — 234.31	50.0	2.50
34.36 — 39.98	95.0	4.75	234.31 — 237.20	49.0	2.45
39.99 — 46.27	94.5	4.72	237.21 — 240.08	48.0	2.40
46.28 — 57.02	94.0	4.70	240.09 — 242.97	47.0	2.35
57.03 — 72.21	93.5	4.67	242.98 — 245.85	46.0	2.30
72.22 — 85.24	93.0	4.65	245.86 — 248.74	45.0	2.25
85.25 — 96.09	92.5	4.62	248.75 — 251.62	44.0	2.20
96.10 — 104.77	92.0	4.60	251.63 — 254.51	43.0	2.15
104.78 — 111.28	91.5	4.57	254.52 — 257.40	42.0	2.10
111.29 — 115.62	91.0	4.55	257.41 — 260.28	41.0	2.05
115.63 — 117.80	90.5	4.52	260.29 — 263.17	40.0	2.00
117.81 — 118.88	90.0	4.50	263.18 — 266.05	39.0	1.95
118.89 — 120.32	89.5	4.47	266.06 — 268.94	38.0	1.90
120.33 — 121.77	89.0	4.45	268.95 — 271.82	37.0	1.85
121.78 — 123.21	88.5	4.42	271.83 — 274.71	36.0	1.80
123.22 — 124.65	88.0	4.40	274.72 — 277.60	35.0	1.75
124.66 — 126.09	87.5	4.37	277.61 — 280.48	34.0	1.70
126.10 — 127.54	87.0	4.35	280.49 — 283.37	33.0	1.65
127.55 — 128.98	86.5	4.32	283.36 — 286.25	32.0	1.60
128.99 — 130.42	86.0	4.30	286.26 — 289.14	31.0	1.55
130.43 — 131.87	85.5	4.27	289.15 — 292.03	30.0	1.50
131.88 — 133.31	85.0	4.25	292.04 — 294.91	29.0	1.45
133.31 — 134.75	84.5	4.22	294.92 — 297.80	28.0	1.40
134.76 — 136.20	84.0	4.20	297.81 — 300.68	27.0	1.35
136.21 — 137.64	83.5	4.17	300.69 — 303.57	26.0	1.30
137.65 — 139.08	83.0	4.15	303.58 — 306.45	25.0	1.25
139.09 — 140.52	82.5	4.12	306.46 — 309.34	24.0	1.20
140.53 — 141.97	82.0	4.10	309.35 — 312.23	23.0	1.15
141.98 — 143.41	81.5	4.07	312.24 — 315.12	22.0	1.10
143.42 — 144.85	81.0	4.05	315.13 — 318.00	21.0	1.05
144.86 — 146.30	80.5	4.02	318.00 — 320.88	20.0	1.00
146.31 — 147.74	80.0	4.00	320.89 — 323.77	19.0	0.95
147.75 — 150.62	79.0	3.95	323.78 — 326.65	18.0	0.90
150.63 — 153.51	78.0	3.90	326.66 — 329.54	17.0	0.85
153.52 — 156.40	77.0	3.85	329.55 — 332.43	16.0	0.80
156.41 — 159.28	76.0	3.80	332.44 — 335.31	15.0	0.75
159.29 — 162.17	75.0	3.75	335.32 — 338.20	14.0	0.70
162.18 — 165.05	74.0	3.70	338.21 — 341.08	13.0	0.65
165.06 — 167.94	73.0	3.65	341.09 — 343.97	12.0	0.60
167.95 — 170.82	72.0	3.60	343.98 — 346.85	11.0	0.55
170.83 — 173.71	71.0	3.55	346.86 — 349.74	10.0	0.50
173.72 — 176.60	70.0	3.50	349.75 — 352.63	9.0	0.45
176.61 — 179.48	69.0	3.45	352.64 — 355.51	8.0	0.40
179.49 — 182.37	68.0	3.40	355.51 — 358.40	7.0	0.35
182.38 — 185.25	67.0	3.35	358.41 — 361.28	6.0	0.30
185.26 — 188.14	66.0	3.30	361.29 — 364.17	5.0	0.25
188.15 — 191.02	65.0	3.25	364.18 — 367.05	4.0	0.20
191.03 — 193.91	64.0	3.20	367.06 — 369.94	3.0	0.15
193.92 — 196.80	63.0	3.15	369.95 — 372.83	2.0	0.10
196.81 — 199.68	62.0	3.10	372.84 — 375.71	1.0	0.05
199.69 — 202.57	61.0	3.05	ABOVE — 375.71	0.00	0.00
202.58 — 205.45	60.0	3.00			

TABLE I

LOST BILLING MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE			COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE			COMPONENT INDEX	INDEX POINTS
0.0	—	0.0	100.00	10.00	478.96	—	485.45	72.00	7.20
0.01	—	17.47	99.50	9.95	485.46	—	491.79	71.00	7.10
17.48	—	34.59	99.00	9.90	491.80	—	497.97	70.00	7.00
34.60	—	51.39	98.50	9.85	497.98	—	504.01	69.00	6.90
51.40	—	67.88	98.00	9.80	504.02	—	509.91	68.00	6.80
67.89	—	84.08	97.50	9.75	509.92	—	515.69	67.00	6.70
84.09	—	100.00	97.00	9.70	515.70	—	521.35	66.00	6.60
100.01	—	115.66	96.50	9.65	521.36	—	526.90	65.00	6.50
115.67	—	131.07	96.00	9.60	526.91	—	532.34	64.00	6.40
131.08	—	146.24	95.50	9.55	532.35	—	537.68	63.00	6.30
146.25	—	161.19	95.00	9.50	537.69	—	542.93	62.00	6.20
161.20	—	175.91	94.50	9.45	542.94	—	548.09	61.00	6.10
175.92	—	190.43	94.00	9.40	548.10	—	553.16	60.00	6.00
190.44	—	204.75	93.50	9.35	553.17	—	558.16	59.00	5.90
204.76	—	218.88	93.00	9.30	558.17	—	563.07	58.00	5.80
218.89	—	232.82	92.50	9.25	563.08	—	567.92	57.00	5.70
232.83	—	246.59	92.00	9.20	567.93	—	572.69	56.00	5.60
246.60	—	260.18	91.50	9.15	572.70	—	577.39	55.00	5.50
260.19	—	273.61	91.00	9.10	577.40	—	582.03	54.00	5.40
273.62	—	286.88	90.50	9.05	582.04	—	586.61	53.00	5.30
286.89	—	300.00	90.00	9.00	586.62	—	591.13	52.00	5.20
300.01	—	311.88	89.50	8.95	591.14	—	595.59	51.00	5.10
311.89	—	322.06	89.00	8.90	595.60	—	600.00	50.00	5.00
322.07	—	331.13	88.50	8.85	600.01	—	608.87	48.00	4.80
331.14	—	339.37	88.00	8.80	608.88	—	617.97	46.00	4.60
339.38	—	346.98	87.50	8.75	617.98	—	627.31	44.00	4.40
346.99	—	354.09	87.00	8.70	627.32	—	636.93	42.00	4.20
354.10	—	360.78	86.50	8.65	636.94	—	646.84	40.00	4.00
360.79	—	367.13	86.00	8.60	646.85	—	657.07	38.00	3.80
367.14	—	373.17	85.50	8.55	657.08	—	667.66	36.00	3.60
373.18	—	378.95	85.00	8.50	667.67	—	678.65	34.00	3.40
378.96	—	384.50	84.50	8.45	678.66	—	690.09	32.00	3.20
384.51	—	389.84	84.00	8.40	690.10	—	702.03	30.00	3.00
389.85	—	395.00	83.50	8.35	702.04	—	714.55	28.00	2.80
395.01	—	400.00	83.00	8.30	714.56	—	727.74	26.00	2.60
400.01	—	404.84	82.50	8.25	727.75	—	741.72	24.00	2.40
404.85	—	409.55	82.00	8.20	741.73	—	756.67	22.00	2.20
409.56	—	414.13	81.50	8.15	756.68	—	772.80	20.00	2.00
414.14	—	418.59	81.00	8.10	772.81	—	790.45	18.00	1.80
418.60	—	422.95	80.50	8.05	790.46	—	810.16	16.00	1.60
422.96	—	427.20	80.00	8.00	810.17	—	832.87	14.00	1.40
427.21	—	435.43	79.00	7.90	832.88	—	860.63	12.00	1.20
435.44	—	443.33	78.00	7.80	860.64	—	900.00	10.00	1.00
443.34	—	450.94	77.00	7.70	900.01	—	953.41	8.00	0.80
450.95	—	458.28	76.00	7.60	953.42	—	1009.57	6.00	0.60
458.29	—	465.38	75.00	7.50	1009.58	—	1068.93	4.00	0.40
465.39	—	472.26	74.00	7.40	1068.94	—	1132.12	2.00	0.20
472.27	—	478.95	73.00	7.30	ABOVE	1132.12	0.0	0.0	0.0

TABLE J

CODE 5 EQUIPMENT MEASURED COMPONENT INDEX TABLE

PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS	PERFORMANCE RANGE	COMPONENT INDEX	INDEX POINTS
0.00 — 0.05	100.00	10.00	2.58 — 2.62	72.00	7.20
0.06 — 0.15	99.50	9.95	2.63 — 2.66	71.00	7.10
0.16 — 0.21	99.00	9.90	2.67 — 2.70	70.00	7.00
0.22 — 0.24	98.50	9.85	2.71 — 2.75	69.00	6.90
0.25 — 0.26	98.00	9.80	2.76 — 2.79	68.00	6.80
0.27 — 0.29	97.50	9.75	2.80 — 2.84	67.00	6.70
0.30 — 0.31	97.00	9.70	2.85 — 2.88	66.00	6.60
0.32 — 0.32	96.50	9.65	2.89 — 2.93	65.00	6.50
0.33 — 0.33	96.00	9.60	2.94 — 2.97	64.00	6.40
0.34 — 0.34	95.50	9.55	2.98 — 3.01	63.00	6.30
0.35 — 0.39	95.00	9.50	3.02 — 3.06	62.00	6.20
0.40 — 0.46	94.50	9.45	3.07 — 3.10	61.00	6.10
0.47 — 0.64	94.00	9.40	3.11 — 3.15	60.00	6.00
0.65 — 0.93	93.50	9.35	3.16 — 3.19	59.00	5.90
0.94 — 1.18	93.00	9.30	3.20 — 3.24	58.00	5.80
1.19 — 1.39	92.50	9.25	3.25 — 3.28	57.00	5.70
1.40 — 1.55	92.00	9.20	3.29 — 3.32	56.00	5.60
1.56 — 1.68	91.50	9.15	3.33 — 3.37	55.00	5.50
1.69 — 1.76	91.00	9.10	3.38 — 3.41	54.00	5.40
1.77 — 1.80	90.50	9.05	3.42 — 3.46	53.00	5.30
1.81 — 1.82	90.00	9.00	3.47 — 3.50	52.00	5.20
1.83 — 1.84	89.50	8.95	3.51 — 3.55	51.00	5.10
1.85 — 1.86	89.00	8.90	3.56 — 3.59	50.00	5.00
1.87 — 1.89	88.50	8.85	3.60 — 3.68	48.00	4.80
1.90 — 1.91	88.00	8.80	3.69 — 3.77	46.00	4.60
1.92 — 1.93	87.50	8.75	3.78 — 3.86	44.00	4.40
1.94 — 1.95	87.00	8.70	3.87 — 3.94	42.00	4.20
1.96 — 1.97	86.50	8.65	3.95 — 4.03	40.00	4.00
1.98 — 2.00	86.00	8.60	4.04 — 4.12	38.00	3.80
2.01 — 2.02	85.50	8.55	4.13 — 4.21	36.00	3.60
2.03 — 2.04	85.00	8.50	4.22 — 4.30	34.00	3.40
2.05 — 2.06	84.50	8.45	4.31 — 4.39	32.00	3.20
2.07 — 2.09	84.00	8.40	4.40 — 4.47	30.00	3.00
2.10 — 2.11	83.50	8.35	4.48 — 4.56	28.00	2.80
2.12 — 2.13	83.00	8.30	4.57 — 4.65	26.00	2.60
2.14 — 2.15	82.50	8.25	4.66 — 4.74	24.00	2.40
2.16 — 2.17	82.00	8.20	4.75 — 4.83	22.00	2.20
2.18 — 2.20	81.50	8.15	4.84 — 4.92	20.00	2.00
2.21 — 2.22	81.00	8.10	4.93 — 5.01	18.00	1.80
2.23 — 2.24	80.50	8.05	5.02 — 5.09	16.00	1.60
2.25 — 2.26	80.00	8.00	5.10 — 5.18	14.00	1.40
2.27 — 2.31	79.00	7.90	5.19 — 5.27	12.00	1.20
2.32 — 2.35	78.00	7.80	5.28 — 5.36	10.00	1.00
2.36 — 2.40	77.00	7.70	5.37 — 5.45	8.00	0.80
2.41 — 2.44	76.00	7.60	5.46 — 5.54	6.00	0.60
2.45 — 2.48	75.00	7.50	5.55 — 5.63	4.00	0.40
2.49 — 2.53	74.00	7.40	5.64 — 5.71	2.00	0.20
2.54 — 2.57	73.00	7.30	ABOVE 5.71	0.00	0.00