

SWITCHING SYSTEMS MANAGEMENT
NO. 5 CROSSBAR (2-WIRE)
NETWORK SWITCHING PERFORMANCE MEASUREMENT PLAN

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1. GENERAL

1.01 This Plan addresses switching performance measurements for No. 5 Crossbar Systems. It is limited to those offices which perform an end office function (including end offices which are used partially as tandem switchers).

1.02 The measured components and performance indicators included in this Plan are those for which network maintenance, administrative, and engineering forces are primarily responsible. These components and indicators are sufficiently sensitive to reflect changes in switching performance quality caused by maintenance, administrative, and provisioning conditions.

1.03 Generally, the switching performance of a particular office is related to how well the network maintenance, network administration, and network design/engineering team is managed and how effectively they work together. One would expect that periodic short term situations may occur due to conditions beyond the control of the team (eg, extreme weather conditions, other acts of nature, severe equipment or facility failures external to the particular switching machine) that would

adversely affect service. The continuing performance levels are the responsibility of the team.

1.04 The weighting of the components and categories is necessarily judgmental. The following considerations were applied:

- (a) Impact of failure on customer
- (b) Relative magnitude of investment in the portion of switching machine being measured
- (c) Relative magnitude of effort to maintain and administer
- (d) Impact on revenue.

1.05 Since the level of performance of the marker group is the result of equipment maintenance, equipment administration, and provisioning, the results under the Plan are to a great extent a consequence of the management effort. The degree of cooperation, joint effort, and acceptance of joint responsibility will be evident in the result obtained.

2. OUTLINE

2.01 This Plan is structured to measure overall end office switching performance as it affects the customer. Therefore, the most pertinent available aspects have been included as measured components. The components are then combined into four categories. The four categories combine to form the switching index.

2.02 The four categories are:

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

The components of (a), (b), and (c) are technical measurements designed to measure different aspects of service within the broad category. Category (d) is an external view of service by the customer.

2.03 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 four reasons:

- (a) Indicators that assist in analyzing the cause of poor service as shown by a measured component
- (b) Indicators that measure aspects of service failure beyond the scope of the measured components
- (c) Indicators which are not universally available in all entities or in all data gathering systems, but which may in the future with increasing availability become measured components
- (d) Indicators which identify potential service failure.

2.04 The Plan includes two types of results reports; a detailed results report for use as the marker group report, and a results summary for upper levels of management. It is not the intent of this Plan to designate at which level of management the detailed results report should stop. One would expect that severity of service problems and styles of management would decide. The detailed report is designed for single office (marker group) reporting and should be limited to that use. The management summary is to be used to consolidate two or more single entity reports to any management level desired and for any time period of one to twelve months.

2.05 The summary report employs a results banding technique in which performance levels are grouped into four bands for each component of the Plan and for the overall index.

MEANING

Band A — 98.0-100	Excellent (or super-excellent) performance attainable only by very good work under very favorable conditions. For certain components this may be at or close to uneconomical operating levels.
Band B — 96.0-97-9	Fully satisfactory and economical performance range.
Band C — 90.0-95.9	Fair to mediocre performance.
Band D — Less than 90.0	Ranging from weak to definitely unsatisfactory performance.

The form provides for the entry of trend data for Band D in terms of actual results for a single office, or the number and percent of total offices within the echelon which have experienced Band D performance within each component and/or the overall index.

2.06 The 2-page summary report also provides upper management with two additional summaries:

- (a) The number of marker groups which are beyond the threshold level in each performance indicator.
- (b) A listing of offices experiencing Band D performance during the period covered by the report. A specific entry is required for each Band D office for each monthly report period. That entry will show the name of the office, the number of times in the previous twelve monthly report periods that this office has experienced Band D performance, and the index level of each Band D component for the report period.

3. LIMITATIONS

3.01 The Plan is fundamental in nature and intended to provide a general measurement of improving or deteriorating service. It is not intended to be and should not be regarded as a

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personnel evaluation plan or a panacea for improving performance in switching environments. Proper application of this Plan will assist management in identifying engineering, administration, and maintenance problems. Correction of these problems can only be accomplished through intelligent management action.

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. 5XB system operation. Full description is included in (a) the Bell System Practices, Section 958-110-100, No. 5XB General Descriptive Information; (b) the Dial Facilities Management Practices, Division H, Section 5A; (c) the Traffic Facilities Practices, Division D; and (d) the No. 5 Crossbar Circuit Descriptions.

3.03 This Plan calls for the 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 in 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 carefully selected 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 in the continuing identification and analysis of potential and actual trouble spots within the office.

3.05 Other indicators which are less representative of direct service effects, 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 of this Plan. If these supplemental indicators are neglected, managers may not be aware of impending service deterioration

until results worsen. The proper approach is to be sensitive to these other indicators.

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

- (a) Pretranslator failures
- (b) Coin supervisory overflows
- (c) Line insulation test failures
- (d) Total trouble recorder records
- (e) Automatic monitor failures
- (f) Failure to make second trial attempts after first trial failure
- (g) Traffic controller functions
- (h) Incoming reorders and delays
- (i) Dial tone marker failures
- (j) Major alarms
- (k) Test frame utilization
- (l) 101 ESS performance
- (m) AIOD performance
- (n) Cleanliness of the office
- (o) Preventive maintenance backlog
- (p) Percent of engineered capacity
- (q) Class of service balance
- (r) Data validation
- (s) Individual component busy hour performance
- (t) Proper use of administrative, maintenance, and design/provisioning methods and procedures.

3.07 Although the administrative data requirements of this Plan are restricted to busy hour periods, it is strongly recommended that network

administrative personnel exercise judgment in obtaining and analyzing other hours and, where warranted, total day periods. Since many measured components and performance indicators relate average monthly performance for the total office or specific equipment items, continued analysis of equipment subgroups to identify trouble hotspots is recommended.

3.08 This Plan will be modified as more precise measurements of switching performance become available and improved data gathering techniques become standard.

4. OBJECTIVE

4.01 This Plan is designed to provide a measurement of the quality of customer service provided by a No. 5XB marker group. It is also designed to reflect the quality of the administrative, maintenance, and design/provisioning efforts which relate to the measured service quality.

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

4.03 Generally, the performance of a No. 5XB marker group is related to the quality of the administrative, maintenance, and engineering efforts brought jointly to bear on that marker group. This Plan is designed to measure the service quality resulting from those efforts and to 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 upon the machine's ability to perform its switching and billing functions satisfactorily.

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 represents a lost call and usually is followed by an attempt by the customer to reinitiate. 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, it is expected and economic that a certain level of machine counts will be observed. The index levels and observation periods are designed to reflect this expected level of event occurrences. The customer trouble report category reflects central office customer line, equipment, and 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 Index levels obtained through the use of this Plan are not comparable to index 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 No. 5XB offices throughout the System. Therefore, the index level obtained for a given No. 5XB office can only be compared to other No. 5XB offices.

5.05 Performance indicator threshold levels have been established at a point considered to be generally valid on a broad basis throughout the System. There may be instances where this level is inappropriate for a particular marker group. In those instances, more stringent thresholds may be established for local management purposes. However, for System reporting of results, the threshold levels contained in the Plan should be used.

5.06 Management should pay particular attention to the trend of office results in the various

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components and performance indicators of the Plan. Improvement in the performance of any one item should be directly related to the corrective action 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 different tack 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 the maintenance, administration, and provisioning should be involved in the setting of 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 While it may be argued that responsibility for the measured components of this Plan should be assigned to functional groups or individuals who can exclusively control their performance, examination of the causes of any component failure reveals that such sterile isolation is impossible. It is the intent of this Plan that the interdependency of service on functional group contribution be recognized. In other words, the network maintenance, network administration, and network design/provisioning functional groups are equally responsible and should be held equally accountable for analysis and for concerted corrective action.

5.09 The use of this measurement Plan is not an adequate substitute for intelligent management. 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 23rd of the month preceding the report month through the 22nd of the report month (eg, the February report month begins January 23 and ends February 22).

6.02 Most of the data required for this Plan are obtained from administrative and maintenance registers. *Actual peg counts or mechanized data printouts shall be used. Expanded figures*

calculated from sample peg count data are not permitted. The expected error in using an expanded sample is more than is considered allowable for this Plan.

6.03 All register readings needed for this Plan shall be taken in as short a time as possible. Interruptions in the job of reading registers shall be avoided. This requirement is intended to minimize distortion of results due to mismatch of data which are related in performance ratios to one another.

6.04 It is important that readings of both maintenance and administrative registers be taken as near as possible to the beginning of the report month. Where these are read by different forces, a coordinated effort is required.

6.05 If the day of the report month falls on a day when a person qualified to read and record the registers is not scheduled to work in the office, these readings shall be taken at the time calculated to most closely approximate the report month. In no case shall the deviation be greater than plus or minus three calendar days from midnight of the first day of the report month. Thus, a period of six days is available within which register readings may be obtained.

6.06 Total month register readings taken at the beginning of one month shall be used for the end of the previous report month. There shall be no break in the register data between consecutive reporting periods.

6.07 Registers used in this Plan shall not be prevented from operating normally, and readings of such registers shall not be adjusted or changed either electrically or mechanically. When a register or its associated circuit used in the Plan fails to operate properly, the condition shall be repaired promptly and an entry shall be made in the remarks space of Form E-6420A (Fig. 1) for that report period, such as "LR register replaced."

6.08 Performance for those components and indicators which measure trouble conditions and customer reaction will be measured 24 hours a day for every day of the year. For those components and indicators which are design related and load sensitive, individually determined busy hour data will be reported in accordance with the material included in Part 7, Description of Components.

6.09 Procedures for determining and changing busy hour periods shall be in accord with instructions in the Traffic Service Observing Practices, Division F, Sections 2B and 2C. The determination of busy hour periods shall be the responsibility of the network administration group.

6.10 Equipment is or can be arranged so that marker first and second trial failure plant registers do not score when a marker is made busy at the master test or office test frame and a test call is placed. Although it is possible to score plant registers while conducting maintenance operations, the effort that would be required to validate test deductions is substantial. While it is recognized that register scores due to test calls may affect the results of a small marker group, it does not justify test deductions for the majority of central offices involved in the Plan. An explanatory note in the remarks space of Form E-6420A shall be made for those marker groups where test calls may have adversely influenced the results. The register scores resulting from test calls shall not be discounted except as outlined in this section.

6.11 Deductions may be made when testing register circuits for audit purposes. Details of the register audit must be signed by the auditor and attached to Form E-6420A.

6.12 An exception to the above no-discounts rule may be applied to AMA transverter second trial failures (DNKs) associated with left-in party lines. When a party station is disconnected and the other party remains working, it is necessary to leave the line working in the central office. However, to prevent unbillable toll calls from being made, the AMA translator cross-connection is removed when the service order is completed. Subsequently, if a toll call is attempted from the left-in station, transverter second trial failures result and the fraudulent call attempt is routed to reorder. Since this is not service affecting, deduction of these failures may be made if the transverter second trial failure trouble recorder cards (DNK) are associated with disconnected left-in party stations. The outward service order number must be retained in the office files for three months for audit purposes. The discounting of these failures shall be optional at the discretion of the Operating Company.

6.13 Another exception to the no-discounts rule is applicable to failures on tests made in connection with the installation, modification, or rearrangement of central office equipment by installation forces (Western Electric Company or equivalent) when the following conditions are met:

- (a) The testing is in connection with work being performed as covered by a specific authorization (eg, MOP, routine order or estimate, etc).
- (b) The failures registered as a result of the testing are not service affecting.
- (c) *The validity of the test is documented by having written certification attested to by the Central Office Supervisor, the Network (Dial) Administrator, and the Western Electric Company Supervisor. Form E-6429 (Fig. 3) will be submitted with the associated Form E-6420A.*

6.14 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 the Traffic Service Observing Practices, Division F, Sections 2B and 2C. Generally stated, these rules provide for the ***inclusion of all valid data for five 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. Written documentation of these conditions, jointly signed by administrative and maintenance personnel, is a requirement of this Plan.***

6.15 The components and indicators for which data are obtained from administrative registers require a minimum of 15 days' valid busy hour data for each report month.

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

- (a) If a failure count or base data count is lost for a certain time period (eg, transverter second trials did not score for two days of the report period), the base data or failure count used to calculate that component or indicator must be excluded for the same time period.

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(b) If the time period of lost data for a component or indicator exceeds eight calendar days during the report period, the component or indicator will be considered NA as outlined below.

6.17 If due to malfunction or error, results data for a measured component or a performance indicator are not available for the report period, NA shall be entered in the performance column of Form E-6420A. NA is considered Band D or soft spot performance and will be reported as such on the marker group report and Form E-6420B (Fig. 2).

6.18 The notations NE (not equipped) or NP (not provided) shall be entered in the (1) performance and (2) soft spot or band columns of Form E-6420A if the register is not installed, or the component is not applicable to the measured marker group due to design limitations. NE or NP is *not* considered Band D or soft spot performance.

6.19 All register readings taken by maintenance personnel shall be recorded on Form E-4744, Register Readings, or equivalent. Forms for the recording of administrative register readings shall be developed and prepared as locally required. Forms to be used for the compilation of register reading data and for the computation of applicable percentages and component indices shall also be developed and prepared locally except as prescribed in the detailed instructions.

6.20 Offices having more than one busy hour in which a measured component or performance indicator is to be calculated must compute the performance separately for each busy hour. The results reported on Form E-6420A must be the lowest of the calculated index values or poorest performance.

Example: The office overflow component is measured during the dial tone speed busy hour. If the office has two dial tone speed busy hours, office overflow must be measured during each busy hour separately. The data for the hour with the lowest index value must be reported on Form E-6420A.

6.21 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.

6.22 All forms, both standard and locally developed, used in the preparation of results data reported on Forms E-6420A and E-6420B shall be retained for at least one year. It is recommended that a retention system similar to that described in the Bell System Practices Section 218-001-010, No. 5XB Switching Systems Controlled Maintenance Plan, be used. All forms, records, trouble tickets, and administrative data sheets should be filed in the appropriate month's folder and retained until the results report for the same month of the following year replaces them.

6.23 Each marker group will prepare one report (Form E-6420A) monthly from the first full report month after cutover and thereafter.

6.24 Each Area and Company will prepare a monthly, quarterly, and annual summary report, Form E-6420B.

6.25 One copy of Area and Company summary reports, Form E-6420B, shall be forwarded to the following address to arrive no later than the last day of the month following the report month (eg, the 4th quarter, annual, and December reports are due January 31).

Results Compilation
American Telephone and Telegraph Company
295 N. Maple Ave.
Room 1202M3
Basking Ridge, New Jersey 07920

6.26 Procedures for the summarization and forwarding of intracompany reports shall be locally prescribed.

6.27 Ordering information for Forms E-6420A, E-6420B, and E-6429 is as follows:

Forms must be ordered on a regular requisition from your local Western Electric Service Center. Forms should be ordered individually (on an *each* basis) in quantities that are multiples of the standard package as shown below.

ORDER WORDING	STANDARD PACKAGING
(Qty) E-6420A	25/Pad; 2 Pad/Pk.
(Qty) E-6420B	25/Pad; 2 Pad/Pk.
(Qty) E-6429	25/Pad; 2 Pad/Pk.

7. DESCRIPTION OF COMPONENTS

7.01 This part of the Plan describes the performance indicators and measured components to be reported on Form E-6420A. Included are brief descriptions of the components, the sources of the data to be gathered, the computation methods to be employed in preparing data for reporting at the marker group level, and the applicable time periods for which data are to be gathered and summarized. Sections will also include references to report forms and to detailed reference material which may serve to further describe data sources.

PERFORMANCE INDICATORS

A. Machine Access

All Originating Registers Busy

7.02 All originating registers busy (AORB) is an indicator of switching performance which can be used as a predictor of poor dial tone speed service, as an aid in determining ineffective dial tone marker utilization, and in determining shortages of originating registers due to inadequate provision or excessive maintenance outage. AORB registers are scored when a dial tone marker finds all originating registers in a group busy.

7.03 The monthly results are computed as follows:

- (a) Enter the total month's all originating register busy scorings for all types of originating registers during the dial tone speed busy hour in column A of Form E-6420A.

Note: See 6.20 for treatment of multicomponent busy hours.

- (b) Enter the total month's dial tone marker peg count for the dial tone speed busy hour in column D.
- (c) Divide column A by column D and enter the result, expressed as a percent, in column E ($A/D \times 100 = E$).

Dial Tone Matching Loss

7.04 Dial tone matching loss, sometimes referred to as dial tone second failure to match, is

an indicator which can assist in predicting and/or analyzing poor dial tone speed service. Excessive dial tone matching loss may be indicative of excessive loading of line link frame horizontal groups, of poor balance of customers' lines on LLF horizontal groups, or of poor balance in the assignment of originating registers to trunk link frames. Dial tone matching loss (DT2FTM) registers are scored by the dial tone markers when the marker is unable, on a second trial, to establish a channel between a line equipment and an available originating register.

7.05 The monthly results are computed as follows:

- (a) Each average business day, compute the percent DT2FTM for the dial tone speed busy hour ($DT2FTM \div DTMPC \times 100$).

Note: See 6.20 for treatment of multicomponent busy hours.

- (b) At the end of the report month, compute the month's *average percent* DT2FTM by adding the daily percents and dividing the total by the number of daily percents.
- (c) Enter the month's average failures, base and *average percent* in the appropriate columns of Form E-6420A.

Common Overflow Trunk Overflow

7.06 Common overflow trunk overflow is an indicator of switching performance which will assist administrative, maintenance, and engineering personnel in predicting and/or analyzing dial tone speed service. In No. 5XB marker groups, permanent signals caused by either receiver off-hook (ROH) or trouble conditions are routed to permanent signal holding trunks after a predetermined originating register time-out period. Permanent signals which cannot be connected to PSHTs are rerouted to common overflow trunks or overflow link circuits if provided. Permanent signals which cannot be connected to common overflow trunks or overflow link circuits are dropped by the serving dial tone marker and are treated as new initial bids for dial tone. As a result, ineffective dial tone marker and originating register usage is generated and dial tone speed service may be severely impacted. Insufficient quantities of permanent signal holding trunks and/or of common overflow trunks and overflow link circuits, poor maintenance of those

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lines and trunks, excessive ROH, and/or cable trouble conditions may be contributory factors in this indicator and all warrant joint investigation and corrective action.

7.07 The monthly results are computed as follows:

(a) Enter the total month's common overflow trunk overflows or overflow link circuit overflows plus coin tone trunk overflows for the dial tone speed busy hour in column A of Form E-6420A.

Note: See 6.20 for treatment of multicomponent busy hours.

(b) Enter the total month's dial tone marker peg count for the dial tone speed busy hour in column D.

(c) Divide column A by column D and enter the result, expressed as a percent, in column E ($A/D \times 100 = E$).

B. Machine Switching

Marker First Trial Failure

7.08 Completing (combined) marker first trial failure is an indicator of machine switching performance which should be used by maintenance personnel as a predictor of marker second trial failures. Marker first trial failure registers are scored when the marker fails on its first attempt to complete a required function.

7.09 The monthly results are computed as follows:

(a) Enter the total month's completing (combined) marker first trial failures (CMTR, MTR) in column A of Form E-6420A.

(b) Enter deductions authorized by Form E-6429 in column B.

(c) Subtract column B from column A and enter the result in column C.

(d) Enter the total month's completing (combined, completing function) marker peg count, in terms of 10,000, in column D.

(e) Divide column C by column D and enter the result in column E $[(A-B)/D=E]$.

Transverter First Trial Failure

7.10 Transverter first trial failures are included as a performance indicator to provide maintenance personnel with a means of detecting and predicting ineffective attempts due to transverter second trial failures. LAMA, CAMA, and ANI transverter TTR registrations are included in this indicator.

7.11 The monthly results are computed as follows:

(a) Enter the total month's transverter first trial failures (TTR) in column A of Form E-6420A.

(b) Enter authorized deductions from Form E-6429 in column B.

(c) Subtract column B from column A and enter the net failures in column C.

(d) Enter the total month's transverter peg count (TVPC), in terms of 10,000, in column D.

(e) Divide column C by column D and enter the result in column E $[(A-B)/D=E]$.

Outsender Group Overflows

7.12 Outsender group overflows are included as a performance indicator to assist administrative and provisioning personnel in anticipating and/or analyzing service problems related to excessive office overflows. Administrative registers, provided for each outsender group, are scored each time a marker fails to find an idle sender in an outsender group when attempting to establish an originating, through-switched, or terminating LLP call. Because of the alternate route capability in No. 5XB offices, outsender group overflows do not necessarily result in blocked calls. When a call is blocked, both the outsender group overflow and the office overflow register will be scored. Outsender group overflow registers will assist in identifying provisioning, maintenance, and trunk group assignment problems.

7.13 The monthly results are computed as follows:

(a) Enter the total month's outsender group overflows for all types of senders for the dial tone speed busy hour in column A of Form E-6420A.

Note: See 6.20 for treatment of multicomponent busy hours.

- (b) Enter the total month's outgoing sender group peg count plus outgoing sender group overflow for the dial tone speed busy hour in column D.
- (c) Divide column A by column D and enter the result, expressed as a percent, in column E ($A/D \times 100 = E$).

Originating Matching Loss

7.14 Originating matching loss, sometimes referred to as originating second failure to match, occurs when a completing or combined marker is unable to establish a channel between a line equipment and an available trunk on other than terminating class calls. Registrations of OML do not necessarily mean lost calls due to alternate route capabilities. In those cases where a call is blocked on a final route attempt, both the originating matching loss and office overflow registers will be scored. Use of the originating matching loss scorings in analyzing office overflow problems will assist network personnel in identifying problem causes.

7.15 The monthly results are computed as follows:

- (a) Each average business day, compute the percent OML for the dial tone speed busy hour by dividing the OML peg count by originating plus through switched peg count then multiplying by 100.

Note: See 6.20 for treatment of multicomponent busy hours.

- (b) At the end of the report month, compute the month's **average percent** OML by adding the daily percents and dividing the total by the number of daily percents.
- (c) Enter the month's average failures, base and **average percent** in the appropriate columns of Form E-6420A.

Final Trunk Groups Over 3 Percent NC

7.16 One principal System method for evaluating the adequacy of the trunk provisioning process is the Monthly Trunk Service Report as described

in GL 72-06-185. As one contributor to the office overflow, final trunk group overflows must be carefully monitored by network administrative and provisioning personnel. The Monthly Trunk Service Report shows, by trunk group category, Intertoll, Toll Access—Operator, Toll Access—Machine, Toll Completing, Interlocal and Auxiliary, the percentages of trunk groups blocking at 1 percent or less, at 1.1 percent to 3.0 percent and at 3.1 percent or more. For purposes of this Plan, the total final trunk groups over 3 percent NC will be reported as a performance indicator. This indicator, used in conjunction with the trunk outage indicator, will provide network personnel with an aid in analyzing performance as recorded in office overflow. All efforts to obtain current month's data should be employed. If current month's data are not obtainable, submit the most current available data.

7.17 Enter the number of measured trunk groups (for which valid measurements have been obtained during the report period) which are in the 3.1 percent or greater NC band in column E of Form E-642A. Definitions of **measured groups**, **valid measurements**, and of the **3.1 percent or greater NC band** are included in GL 72-06-185, New Monthly Trunk Service Report.

Trunk Outage

7.18 Trunk outage can be the cause of increased marker holding time and a prime source of overflows. The lost calls are reflected in percent office overflow. Trunk outage is included as a performance indicator to provide some information concerning the availability of trunks. Tracking of trunk outage information can be useful as an analysis tool in determining the possible source of office overflows. Trunk outage is expressed as the average normal business day outage hours per trunk per month and includes those trunks for which the office is designated control or assigned office as covered in the Trunk Service Results Plan, the Bell System Practices, Section 660-400-010.

7.19 Enter the trunk service index for the report month as reflected on Form E-3994, Trunk Service Results Summary, in column E of Form E-6420A.

Overflow Percent RO/NC

7.20 This indicator is based on service observations. Because service observations are made on

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an *end-to-end* basis and may therefore include failures occurring at locations other than the measured office, this item has been included as an indicator rather than as a measured component. As such, it is designed to assist administrative and maintenance personnel in evaluating overall network service to customers served by the measured No. 5XB office. Where observed results in this indicator show performance to be distinctly different from that apparent elsewhere in the Plan, detailed analysis will be required. Detailed description of this item is included in the Traffic Service Observing Practices, Division B, Section 1C.

7.21 The monthly results are computed as follows:

- (a) Enter the total number of local dial line service observed overflows charged to the measured marker group during the continuous 3-month period ending coincident with the end of the report period in column A of Form E-6420A.
- (b) Enter the total number of local dial line service observations made on the measured marker group during the continuous 3-month period ending coincident with the end of the report period in column D.
- (c) Divide the number of charges in column A by the number of observations in column D. Enter the result, expressed as a percent, in column E ($A/D \times 100 = E$).

Load Balance

7.22 The loading of customer lines into a No. 5XB marker group can have a distinct impact upon the quality of service rendered. The total traffic load carried by line link frame horizontal groups and the balanced application of that load bear upon the quality of dial tone, originating and incoming service provided. The Load Balance Index Plan will be the measurement provided to indicate trends, identify superior performances, and point up opportunities for improvement in load balance administration of dial central office line equipment. Division A of the Dial Facilities Management Practice contains instruction regarding load balance indexing; Division H outlines load balance procedures.

7.23 Enter the monthly load balance index as reflected on Form E-6402, Load Balance

Index (traffic unit report) in column E of Form E-6420A.

Equipment Outage

7.24 Switching equipment is provided to carry an estimated number of calls in the busy hours of the busy season at objective levels of service. When equipment is removed from service, the capacity available to handle traffic is reduced. As the call load reaches and exceeds the capacity of the reduced amount of equipment, calls are blocked or delayed.

7.25 Blocked calls are service failures which require the customer or operator to dial again. This causes an increase in attempts per call and aggravates the condition of overload. Calls which are delayed due to equipment outage, may increase the usage of other items of switching equipment or trunks. This further decreases the call-carrying capacity of this other equipment. The result is more blocked calls.

7.26 While it is true that a certain busy hour may be said to be the busy hour for given items of equipment, the call load on that equipment during other hours may be almost as great. This is especially true in the hours just preceding and following the designated busy hour.

7.27 Because of this variation in the load which is carried by the various items of equipment, it is generally not possible for maintenance forces to be certain that removing equipment from service during the normal business day (NBD) will not affect service. Therefore, it should be assumed that equipment outage during the normal business day will affect service even though this may not be true for a given outage. Accordingly, equipment outage is included as a performance indicator.

7.28 For the purpose of determining outage time of equipment, the instructions contained in the Bell System Practices, Section 201-114-001, Record of Equipment Out of Service, will be used.

7.29 The outage control form (E-4256) described in the Bell System Practices, Section 201-114-001 will be used for keeping accurate records of equipment removed from service so that the amount and duration of equipment outage is held to a minimum. This form shows the duration, the specific item of plant affected, and the serial

number of the trouble ticket which should show the details of the outage.

7.30 Only outage of major components of common control equipment will be included in the equipment outage performance indicator. This includes *all* markers, registers, senders, transverters, recorders, translators, pretranslators, channels, and coin supervisory circuits.

7.31 The monthly results are computed as follows:

- (a) Enter the total month's measured equipment NBD outage hours (see 7.30) in column A of Form E-6420A.
- (b) Enter the total number of markers, registers, senders, transverters, recorders, translators, pretranslators, line link frames, and coin supervisory circuits in column D.
- (c) Divide column A by column D and enter the outage hours per equipment component in column E.

C. Billing

Bulk Billed Free

7.32 In the event of an AMA transverter second trial failure, the customer is given a reorder signal if the call requires detailed billing. If the call which failed on a second trial is bulk billed, the customer is given the call free. In this case a second register, bulk billed free (BBF), is also scored by the transverter. A significant loss of revenue may occur if a high volume of calls are allowed to complete on this basis. For this reason bulk billed free registrations are included as a performance indicator and should be monitored to detect problems.

7.33 The monthly results are computed as follows:

- (a) Enter the total month's bulk billed free registrations in column A of Form E-6420A.
- (b) Enter deductions authorized by Form E-6429 in column B.
- (c) Subtract column B from column A and enter the net failures in column C.

(d) Enter the total month's transverter peg count, in terms of 10,000, in column D.

(e) Divide column C by column D and enter the result in column E $[(A-B)/D = E]$.

Percent Single Time Line Entries

7.34 The equipment and billing accuracy control (EBAC) AMA tape analysis process provides a method of determining the number of times a disconnect entry failed to be recorded on the tape. This could be indicative of busy common control equipment when a trunk is ready to disconnect or a failure in the trunk itself. A failure to record a disconnect entry may result in loss of revenue.

7.35 The monthly results are computed as follows:

- (a) Enter the total month's single time line entries from the EBAC report in column A of Form E-6420A.
- (b) Enter the total calls from the EBAC report in column D.
- (c) Divide column A by column D and enter the result, expressed as a percent, in column E $(A/D \times 100 = E)$.

Coin Supervisory Troubles

7.36 Coin supervisory troubles occur when a coin supervisory circuit fails to complete functions pertinent to coin collect, coin return, no coin present, and stuck coins. These conditions after a timing interval will cause a link alarm or time alarm condition, score the trouble register, and transfer the call to another coin supervisory circuit. The operation of the HLD key prevents operation of the trouble register on link or time alarms.

7.37 The monthly results are computed as follows:

- (a) Enter the total month's coin supervisory trouble registrations (CSTR) in column A of Form E-6420A.
- (b) Enter deductions authorized by Form E-6429 in column B.
- (c) Subtract column B from column A and enter the result in column C.

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- (d) Enter total month's coin class of service peg count, in terms of 10,000, in column D.
- (e) Divide column C by column D and enter the result in column E [(A-B)/D = E].

D. Customer Reports

Customer Trouble Reports, Code 7

7.38 Code 7 reports (Test OKs) are included in this Plan as a performance indicator. Because these reports reflect trouble conditions in the entire network from end to end, they may be reflective of conditions other than those directly relatable to the measured office. In addition, because they may reflect conditions due to excessive temporary load, they can serve administrative, maintenance, and provisioning personnel with broad indications of service from the customer's viewpoint. The monitoring of trends and the use of analytical information derived from these reports will assist in developing joint programs of corrective action.

7.39 The monthly results are computed as follows:

- (a) Enter the total month's code 7 customer reports for the marker group in column A of Form E-6420A.
- (b) Enter the total count of working main stations, plus equivalent main stations, as of the first day of the report month, in terms of 100, in column D. Average main stations must be used if a change of more than 500 main stations occurs during the report month.
- (c) Divide column A by column D and enter the result in column E.

MEASURED COMPONENTS

A. Machine Access

Dial Tone Speed

7.40 Automatic dial tone speed measuring equipment is used to determine the incidents of dial tone delays over three seconds. The primary purpose of the dial tone speed equipment is to provide overall dial tone speed data for the marker group and separate data for each type of originating register (where more than one type is provided). These data are used to evaluate customer service

and are directly related to the design, provisioning, and loading of No. 5XB common control equipment in the dial tone switching path.

7.41 Detailed descriptions of automatic dial tone speed equipment for use in No. 5XB offices are included in the Traffic Service Observing Practices, Division F, Section 2B, Item 2, and the Bell System Practices, Section 951-901-100. Procedures for the assignment of test lines to automatic dial tone speed equipment are contained in the Traffic Service Observing Practices, Division F, Section 2B, Item 3.

7.42 Dial tone speed results will be compiled on Form E-4372 (and E-5575 where summarization is mechanized) as instructed in the Traffic Service Observing Practices Division F, Section 2B.

7.43 Enter the month's total adjusted index points earned (item 27) from Form E-4372 in column M of Form E-6420A.

B. Machine Switching

Stuck Senders

7.44 No. 5XB offices are equipped with senders which are used to transmit call-steering or billing information, as required. Several different types of sender circuits are provided according to the needs of the particular central offices to which the No. 5XB office connects.

7.45 When a sender is unable to successfully transmit the call-steering information within the period its timing circuit allows, the sender times out causing a condition referred to as a stuck sender. The calling customer receives a reorder signal and is required to make the call again. In addition, as an option, the stuck sender register is scored in trunk guard test failures. These occur during light traffic operation when the marker remains connected to the sender long enough to see the result of a trunk guard test. When the test fails, the marker routes the call to reorder. During heavy traffic, when the marker does not wait for trunk test, this failure causes a stuck sender.

7.46 The different types of No. 5XB sender circuits measured in this component are multifrequency (MF), dial pulse (DP), panel call

indicator (PCI), revertive pulse (RP), line link pulsing (LLP), 4-wire senders, and AIS senders.

7.47 Intermarker group (IMG), centralized automatic message accounting (CAMA), frequency shift pulsing (FSP), and coin zone dialing (CZ) senders are not included in this measurement.

7.48 The monthly results are computed as follows:

- (a) Enter the total month's stuck sender registrations in column H of Form E-6420A.
- (b) Enter deductions authorized by Form E-6429 in column J.
- (c) Subtract column J from column H and enter the net failures in column K.
- (d) Enter the total month's sender peg count, in terms of 10,000, in column L.
- (e) Divide column K by column L and enter the result in column M $[(H-J)/L = M]$.

Marker Second Trial Failures

7.49 Completing markers control connections within the office on such functions as outgoing calls, incoming calls, intraoffice calls, tandem switching calls, and certain kinds of special calls. When a completing marker encounters trouble, it should briefly connect to the trouble recorder in order to produce a punched card record of the failure, operate its first trial failure plant register (CMTR), signal the connector which is handling the service request to try again, and then disconnect. The connector immediately offers the demand to the completing markers. A different completing marker is preferred on this attempt and this marker is told that the call is a second trial. If this marker fails, it briefly connects to the trouble recorder in order to produce a punched card record of the failure, operates the second trial failure plant register (CMST), causes the customer or operator who originated the call to receive reorder signal, and then disconnects. The customer or operator is forced to place the call again.

7.50 In certain small No. 5XB offices, there are no dial tone markers. The completing markers establish dial tone connection by use of an originating line identifier. In these offices, the first and second trial failure plant registers count

failures which occur when the marker is establishing either dial tone or completing connections. Therefore, in these offices only the completing marker second trial failures are included in the measured component.

7.51 The earlier installations of No. 5XB offices had combined markers which established all connections. Most offices equipped with these markers have since had them converted to separate dial tone and completing markers. For those central offices that continue to be served by combined markers, modifications are available for first and second trial failure plant registers designated MTR and CMST, respectively, to score on marker failures during the completing function of the marker. In addition, this modification provides for the present DMTR and DMST failure registers to score only for failures during the dial tone function. The completing function failures are included in this Plan.

7.52 The monthly results are computed as follows:

- (a) Enter the total month's completing marker second trial failures in column H of Form E-6420A.
- (b) Enter deductions authorized on Form E-6429 in column J.
- (c) Subtract column J from column H and enter the net failures in column K.
- (d) Enter the total month's completing marker peg count, in terms of 10,000, in column L.
- (e) Divide column K by column L and enter the result in column M $[(H-J)/L = M]$.

Transverter Second Trial Failure

7.53 When a noncoin No. 5XB customer dials a call requiring machine billing, the necessary information is passed from the No. 5XB switching equipment to a transverter which is part of the automatic message accounting (AMA) system. The transverter controls the recording of billing information on paper or magnetic tape. Up to three separate entries are put on the tape for completed calls. The first (called the initial entry) consists of several lines which, on detail billed calls, identify the calling customer, called telephone, the billing index, and other required information. When

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the called telephone answers, an entry is put on the tape which identifies the call and records the time conversation started. When the call is completed, another entry is put on the tape which identifies the call and records the time the call ended. The transverter uses a translator, a call identity indexer, and an AMA recorder to perform the machine billing functions in the office.

7.54 There are three types of transverters available for No. 5XB offices. They are local automatic message accounting (LAMA), centralized automatic message accounting (CAMA), and automatic number identification (ANI). These transverters obtain the calling line directory number in different ways. The LAMA transverter obtains the calling line directory number from the AMA translator located in the same office. The CAMA transverter obtains the calling line directory number from the CAMA sender. The CAMA sender receives the number from either a CAMA operator who keys the number after receiving it from a query to the calling customer, or from the outgoing sender in the ANI office where the calling customer is served. The ANI transverter also obtains the calling line directory number from an AMA translator located in the same office as the ANI transverter.

7.55 If a transverter fails on a call, it causes a trouble recorder card to be produced, scores its first trial failure plant register (TTR), and disconnects from the equipment serving the call. The serving equipment immediately resubmits the demand to the group of transverters as a second attempt. A different transverter is preferred on the second attempt. If this attempt fails, the transverter produces a trouble card record of the failure and scores the second trial failure plant register (TST). If the call is to a toll point requiring detailed billing, the customer is given a reorder signal. If the call which failed on second trial is to a nontoll point (bulk billed), the customer is given the call free. In this case a second register, bulk billed free (BBF), is also scored by the transverter. Transverter first trial failures do not affect the call, but do provide an early warning of impending second trial failure problems. Therefore, they are a performance indicator in the Plan. Transverter second trial failures, which result in the customer getting reorder, are a measured component of the Plan.

7.56 In certain No. 5XB offices, transverter first trial failures do not result in a second trial

attempt or do not result in a lost call after a second trial attempt: (1) offices in which the automatic message accounting equipment is provided solely to sample calls to obtain customer cost-accounting information or division of revenue data and (2) offices equipped with one ANI transverter route calls to the CAMA operator in the event of a transverter failure. In these marker groups, the transverter second trial component shall be omitted from the Plan and shown as NE (not equipped) on Form E-6420A.

7.57 The monthly results are computed as follows:

- (a) Enter the total month's transverter second trial failures in column H of Form E-6420A.
- (b) Enter the total deductions authorized by Form E-6429 in column J.
- (c) Subtract column J from column H and enter the net failures in column K.
- (d) Enter the total transverter peg count (TVPC), in terms of 10,000, in column L.
- (e) Divide column K by column L and enter the result in column M $[(H-J)/L=M]$.

Office Overflow

7.58 Office overflow registers are scored by completing or combined markers when an originating call is routed to a combination tone trunk from which an overflow signal (120 IPM) will be returned, and will also score when a call encounters all tone and common overflow trunks busy. In addition to combination tone and overflow trunks, these registers will be scored when, on the final route, all outsenders are busy, all trunks are busy, or when an originating matching loss occurs. Scorings on these registers will show customer calls which were ineffective.

7.59 Because of the alternate routing capability of No. 5XB switching equipment, outsender group overflows, originating matching losses and trunk group overflows will only result in an overflow to the customer on final route second attempt failures. Network management analysis of office overflow problems will require analysis of the individual portions. For this reason, outsender group overflows, originating matching loss and

final trunk group overflows have been included as performance indicators in this Plan.

Note: If the marker group is equipped with CCSA trunk groups or equivalent (ie, trunk group size is dictated by customer purchase of trunks) or choke network (mass calling restriction) 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 office overflow component.

7.60 The monthly results are computed as follows:

- (a) Enter the total month's office overflow scorings minus CCSA and choke network trunk group overflows for the dial tone speed busy hour in column H of Form E-6420A.

Note: See 6.20 for treatment of multicomponent busy hours.

- (b) Enter the total month's originating peg count minus CCSA and choke network trunk group overflows for the dial tone speed busy hour in column L.
- (c) Divide column H by column L and enter the result, expressed as a percent, in column M ($H/L \times 100 = M$).

Link Release

7.61 Incoming trunks to a No. 5XB office must be connected through an incoming register link to an incoming register. The incoming register receives, counts, and stores the call-steering information. When an incoming trunk fails to connect to an incoming register, a link release failure occurs, and the link release (LR) register is scored by the marker. The originating customer or operator must dial again. LR registers are provided in offices with wire spring markers as well as marker groups with flat spring markers that have been modified to add the register.

7.62 On certain centrex calls involving a transfer of a call from one centrex station to another, a special register circuit (transfer register) is required. It is connected to the trunk through a link circuit. Failures occurring in this link connection, and certain other transfer register failures, will also result in link release failures. A transfer

register link release register (TLR) is provided for analysis purposes. The TLR register is scored by the marker whenever a link release failure occurs in the transfer register. There is no second attempt to complete the call unless the failure occurs within the transfer register. The originating customer receives reorder and must make another attempt.

7.63 The rate of occurrence of link release failures is an important measurement of the incoming service to No. 5XB offices and is therefore included as a measured component of the Plan.

7.64 The monthly results are computed as follows:

- (a) If all markers are equipped with LR registers, enter the total month's LR scorings in column H of Form E-6420A.
- (b) If some markers are equipped with LR registers, divide the total LR scorings by the number of markers equipped with LR registers, then multiply by the total number of markers and enter the result in column H.
- (c) Enter deductions authorized by Form E-6429 in column J. If applicable, the deductions must be inflated as in (b) above.
- (d) Subtract column J from column H and enter the net failures in column K.
- (e) Enter the total month's incoming register peg count, in terms of 10,000, in column L.
- (f) Divide column K by column L and enter the result in column M [$(H-J)/L = M$].

Incoming Matching Loss

7.65 Incoming matching loss is a measured component reflecting the number of incoming calls which are not completed because of the inability of the completing or combined markers to find a channel between an incoming (or 2-way) trunk and an idle called line. Calls encountering an incoming matching loss are ineffective and the calling customer receives an overflow. In No. 5XB, incoming matching loss is a failure on the first attempt except on calls to PBX lines in offices arranged for marker recycle. Incoming matching loss registers do not score on intraoffice calls. In

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No. 5XB offices with some paired and some nonpaired line link frames, two loading divisions exist. Each loading division must be measured separately for both peg count and incoming matching loss. IML in No. 5XB offices is the principal measurement of line link and trunk link frame loading and balance.

7.66 The monthly results are computed as follows or taken directly from Form E-5267:

- (a) Each average business day, compute the percent IML for the IML busy hour ($\text{IML} \div \text{incoming peg count} \times 100$).
- (b) At the end of the report month, compute the month's *average percent* IML by adding the daily percents and dividing the total by the number of daily percents.

Note: If two loading divisions exist, the month's average percent IML must be computed by weighting the loading divisions as instructed in the Traffic Service Observing Practices, Division F, Section 2C.

- (c) Enter the month's average failures, base *average percent* in the appropriate columns of Form E-6420A.

Equipment Irregularities

7.67 Equipment irregularities are included in this Plan because they encompass lost call conditions not reflected elsewhere in the Plan. The four categories of observed equipment failures which result in an ineffective customer attempt, but do not result in the return of a register recorded failure peg count, are included in this component. They are no ring, wrong number—equipment, misdirected, and other. Detailed descriptions of the observing procedures related to equipment irregularities are included in the Traffic Service Observing Practices, Division B, Section 1C.

7.68 Since service observed attempts are on an end-to-end basis, observed equipment irregularities may include equipment failures which occurred at intermediate or terminating offices other than the office measured by this Plan. Although this poses analytical problems for the network personnel concerned, the provision of acceptable service to the customers served by the

measured office requires continuing joint investigation and, when required, corrective action.

7.69 The monthly results are computed as follows:

- (a) In column H of Form E-6420A, enter the total number of local dial line service observed equipment irregularities charged to the measured office during the continuous 3-month period ending coincident with the end of the report period.
- (b) In column L, enter the total number of local dial line service observations made on the measured office during the continuous 3-month period ending coincident with the end of the report period.
- (c) Divide column H by column L and enter the result, expressed as a percent, in column M ($\text{H/L} \times 100 = \text{M}$).

C. Billing

AMA Recorder Failures

7.70 AMA recorders produce the punched paper or magnetic tape record of calls for which customers are to be billed. An initial entry failure causes a transverter second trial. When an AMA recorder fails to record the subsequent transactions properly on the AMA tape, it scores the AMA recorder trouble record register (RTR) and connects to the trouble recorder to produce a trouble record of the equipment used and information associated with the call in progress. When AMA recorders fail, there is no second trial and the call is completed. Billing information incorrectly recorded on the tape may or may not be in such condition as to be billed properly. Recorder failures may cause stoppages to occur in the accounting center billing process or may be the cause of lost revenue.

7.71 The monthly results are computed as follows:

- (a) Enter the total month's AMA recorder failures in column H of Form E-6420A.
- (b) Enter deductions as authorized by Form E-6429 in column J.
- (c) Subtract column J from column H and enter the net failures in column K.

- (d) Enter the total month's AMA recorder peg count, in terms of 10,000, in column L.
- (e) Divide column K by column L and enter the result in column M [(H-J)/L = M].

D. Customer Reports

Customer Trouble Reports, Codes 5 and 8 Equipment

7.72 Customer reported troubles which are tested or referred into the central office and which are subsequently found and cleared, and those which are tested or referred to the central office and not found are included as a measured component of this Plan. These specific trouble disposition codes are described in detail in the Bell System Practices, Section 660-100-013. The trouble conditions measured in this component exclude distributing frame and No. 101 ESS caused trouble.

7.73 When a code 5 or 8 is assigned as a disposition code to a service not having a directory number, which cannot be associated with a particular switching entity in the office where the trouble was found or referred (ie, local private line or FX line), the code 5 shall be charged arbitrarily to the oldest entity on the main distributing frame. The repair service center should be advised on how to charge these troubles. Separate records by switching entity are required for service measurement.

7.74 Some No. 5XB offices have a No. 101 ESS control unit associated with it in the same building. The unit is generally located there to provide a central point from which to serve several PBX customers with the same control equipment. For the purpose of computing the customer trouble component index, any code 5 reports attributable to the ESS equipment will be excluded. The point of division between the No. 101 ESS equipment and the No. 5XB equipment shall be at the terminal strip which provides central office access for the PBX trunks. The cross-connections from this terminal strip toward the No. 5XB line relay shall be considered No. 5XB equipment. The equipment from this terminal strip back to the No. 101 ESS, including MDF cross-connections for the data links and trunks to the switch units, shall be considered No. 101 ESS equipment.

7.75 Trouble reports generated by the No. 101 ESS equipment and properly chargeable to

disposition code 5 will be counted on the Form E-2700 as such. A central office trouble ticket (E-5479) will be completed for each such No. 101 ESS trouble. The information on the ticket will include the number of customer trouble reports chargeable to this trouble. The sum of these code 5s will constitute the number of customer trouble reports excluded for measurement purposes from the code 5 component index.

7.76 The monthly results are computed as follows:

- (a) Obtain from the Plant Service Center or Test Bureau the total number of disposition codes 5 and 8 customer reports attributable to the measured marker group. Since the Plant Service Center does not differentiate the code 5 troubles as equipment, frame, or No. 101 ESS, it will be necessary to determine the number of each from the No. 5XB trouble tickets, Form E-5479. Enter the total month's equipment codes 5 plus 8 in column H of Form E-6420A.
- (b) Enter the total count of working main stations, plus equivalent main stations as the first day of the report month, in terms of 100, in column L. Average main stations must be used if a change of more than 500 main stations occurs during the report month.
- (c) Divide column H by column L and enter the result in column M.

Customer Trouble Reports, Code 5 Frame

7.77 This component includes only those customer reported troubles which are subsequently found and cleared on a distributing frame as outlined in the Bell System Practices, Section 660-100-013.

7.78 A code 5 frame shall include all troubles cleared on the various frames used for cross-connecting purposes such as main distributing frame, number group frame, etc, involving broken wires, loose connections, missing jumpers, defective heat coils, and any other troubles that are cleared on a cross-connect frame.

7.79 The monthly results are computed as follows:

- (a) Enter the total month's code 5 frame customer trouble reports in column H of Form E-6420A.

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- (b) Enter the total count of working main stations, plus equivalent main stations as of the first day of the report month, in terms of 100, in column L. Average main stations must be used if a change of more than 500 main stations occurs during the report month.
- (c) Divide column H by column L and enter the result in column M.

8. PREPARATION OF FORM E-6420A

8.01 This Plan includes results data prepared by both administrative and maintenance personnel. Therefore, it is recommended (a) that Form E-6420A be prepared jointly and (b) that 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-6420A should be used to transmit the maintenance or administrative data to a locally arranged report preparation point.

8.02 All decimal figures recorded in the performance columns of Form E-6420A shall be rounded to two places after the decimal point.

8.03 The following subparagraphs define the column headings for the performance indicator section of Form E-6420A. (See Attachment 1.)

- (a) **Column A—Failures:** Entries in this column will include register scorings 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, and the amount of outage experienced during the period.
- (b) **Column B—Deductions:** Entries in this column will include only those nonservice affecting deductions permitted in the instructions included in Parts 6 and 7 of this Plan.
- (c) **Column C—Net Failures:** Entries in this column are the result of subtracting the deductions in column B from the failures recorded in column A.
- (d) **Column D—Base Data:** Entries in this column are individually prescribed in the instructions in Part 7 of this Plan. Certain entries will be in terms of 10,000 or 100. This

is computed by dividing the appropriate total count by the term (10,000 or 100) prescribed.

(e) **Column E—Performance:** Entries in this column will be the ratios or percentages developed as prescribed in Part 7 of this Plan. NA, NE, or NP will be entered when applicable according to the instructions in Part 6 of this Plan.

(f) **Column F—Threshold Level:** Entries in this column will be obtained from the threshold level table included in Part 10.

(g) **Column G—Soft Spot:** A check mark (✓) will be entered in this column when the indicator performance is worse than the threshold level, or the data are NA for the report period. NE will be entered when the office is not equipped; NP will be entered when the indicator was not provided.

8.04 The following subparagraphs define the column headings for the measured component section of Form E-6420A.

- (a) **Column H—Failures:** Entries in this column 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, and the number of reports.
- (b) **Column J—Deductions:** Entries in this column will include only those nonservice affecting deductions permitted in the instructions included in Parts 6 and 7 of this Plan.
- (c) **Column K—Net Failures:** Entries in this column are the net result of subtracting the deductions in column J from the failures recorded in column H.
- (d) **Column L—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 10,000 or 100. This is computed by dividing the appropriate total count by the term (10,000 or 100) prescribed.
- (e) **Column M—Performance:** Entries in this column will be the ratios or percentages developed by dividing data entries in column

H or K by base data entries in column L. NA, NE, or NP will be entered when applicable according to the instructions in Part 6 of this Plan.

(f) **Column N—Component Index:** Entries in this column will be obtained from the appropriate index table for the measured item in Part 10.

(g) **Column P—Index Points:** Entries in this column will be obtained from the appropriate index table in Part 10.

(h) **Column R—Band:** Entries in this column will be the appropriate Band (A, B, C, or D) for each component index.

Band A—98.0 - 100

Band B—96.0 - 97.9

Band C—90.0 - 95.9

Band D—less than 90 or NA.

8.05 All lines on Form E-6420A are defined in the description of components section or are self-explanatory except the following:

(a) **Line 17:** Enter the total number of performance indicators applicable to the measured marker group (including NAs) in column E. Enter the total number of soft spots (✓) in column G.

(b) **Line 29—Total Points:** Enter the total points in column P.

(c) **Line 30—Maximum Available Points:** Enter the total maximum points of all components for which results are measured. Exclude NE, NP, and NA components.

(d) **Line 31—Total Index:** Divide line 29 by line 30 and enter the result expressed as a percent ($L29/L30 \times 100 = L31$).

**NO. 5XB
NETWORK SWITCHING PERFORMANCE
MEASUREMENT PLAN**

Performance Indicators

		A	B	C	D		E	F	G
Indicator		Failures	Deductions	Net Failures	Base		Performance	Threshold Level	Soft Spot
					Item	Data			
1	Machine Access				DTM-PC	442876	.18	5.00	-
2	DTML	797			DTS-BH	442876	NE	8.00	NE
3	Com Ovfl Overflow	310			DTM-PC	442876	.07	.01	✓
4	Mkr 1TF	8629	83	8546	CMPC	694.6	12.30	40.00	-
5	Transverter 1TF	1464	0	1464	70K	86.6	16.91	31.00	-
6	OSG Overflow	491			ORIG-PC	254320	.19	1.50	-
7	OML	387			DTS-BH	269680	.14	.90	-
8	Final Gp > 3% NC				INC-PC		0	0	-
9	Trunk Outage						98.5	95.00	-
10	% RO/NC	5			# OF	921	.54	.80	-
11	Load Balance						NP	94.00	NP
12	Equipment Outage	106			LO	197	.54	1.00	-
13	Bulk Billed Free	63	0	63	70K	86.6	.73	4.00	-
14	Sgl Tm Ln Entries	1019			CALLS	434992	.23	.19	✓
15	Coin Supv Tbl Reg	327	0	327	CMCS	58.7	5.57	100.00	-
16	C.T.R. Code 7	150			MS	183.2	.82	2.40	-
17							Total No. Of Indicators	14	Total No. Soft Spot

Measured Components

		H	J	K	L		M	N	P	R	
Component		Max. Points	Failures	Deductions	Net Failures	Base		Performance	Component Index	Index Points	
						Item	Data				
Machine Access											
18	Dial Tone Speed	15						33.95	97.00	14.55	B
Machine Switching											
19	Stuck Sender	10	5143	41	5102	70K	292.8	17.42	87.00	8.70	D
20	Marker 2TF	15	2540	0	2540	CMPC	694.6	3.66	96.50	14.47	B
21	Transv 2TF	5	283	32	251	70K	86.6	2.90	98.00	4.90	A
22	Office Overflow	10	2635			ORIG-PC	367402	.72	97.50	9.75	B
23	Link Release	5	1264	0	1264	DTS-BH	285.3	4.43	91.50	4.57	C
24	IML	10	908			INC-BH	140131	.65	100.00	10.00	A
25	Equip Irregs	5	4			# OF	921	.43	95.50	4.77	C
Billing											
26	AMA Recorder	10	-	-	-	REC-PC	156.1	NA	-	-	D
Customer Reports											
27	Equip Code 5+8	10	15			MS	183.2	.08	97.50	9.75	B
28	Frame Code 5	5	18			MS	183.2	.10	95.00	4.75	C

Remarks

Total Pts.	86.21	29
Max. Avail. Pts.	90.00	30
Total Index	95.79	C 31

		S	T	U		V	
Prepared by	R. E. Tipte	Office/MG	Uptown	Division	South	Company	Some Co
Checked by	I. M. Ayes	District	Northwest	Area	East	Period	October 1975
32							
33							

Attachment 1

9. PREPARATION OF FORM E-6420B

9.01 Form E-6420B is a 2-page summary report. It will provide all management echelons with a summary of the switching performance of the No. 5XB offices within their area of responsibility.

9.02 The form provides four summaries of results information:

- (a) The number and percent of offices by index band in each measured component
- (b) The trend of Band D offices in each measured component
- (c) The number of offices beyond threshold in each performance indicator
- (d) Actual results of offices in each Band D measured component.

9.03 All data recorded on Form E-6420B (except percentage calculations) are taken directly from the represented E-6420A reports.

9.04 A dash (-) or no entry should be made in the Band D Trends section of Form E-6420B if all offices exceeded Band D performance during the applicable preceding report period.

9.05 The form serves three purposes. Attachments are provided as examples to follow when preparing Form E-6420B for each of the purposes:

- (a) Multioffice, single month—Attachment 2
- (b) Multimonth, single office—Attachment 3
- (c) Multioffice, multimonth—Attachment 4.

9.06 The following subparagraphs define the column headings of Form E-6420B and provide the source data locations on Form E-6420A:

- (a) **Column C:** Enter the number of marker groups measured in each component.
- (b) **Column D:** Enter the number of office month reports (see attachments).

(c) **Columns E Through H:** Enter the number and percent of marker groups in the appropriate band column for each component from columns R on Forms E-6420A.

(d) **Column L:** Enter the number and percent of marker groups which experienced Band D performance in any of the twelve preceding report periods. These data are obtained from the previous E-6420B report.

(e) **Column AL:** Enter the office name of those marker groups which experienced Band D performance in any measured component. If the report is a multimonth report, enter the appropriate months.

(f) **Column AM:** Enter the number of times in the twelve previous periods in which the listed office experienced any component Band D performance. If the report is a multimonth report, make no entries.

(g) **Columns AN Through AZ:** Enter the Band D component index levels for each office listed. If the report is a multioffice-multimonth report, enter the number of Band D offices in each component.

(h) **Column BA:** Enter the number of soft spot performance indicators for each listed office from line 17G of Form E-6420A.

(i) **Column BB:** Enter the number of measured performance indicators for each listed office from line 17E of Form E-6420A.

(j) **Line 50, # Offices Months:** Enter the number of office report months for each of the performance indicators from columns G of Forms E-6420A.

(k) **Line 51, # Soft Spot:** Enter the number of office months in which soft spot performance was experienced from Forms E-6420A, columns G.

NO. 5XB NETWORK SWITCHING PERFORMANCE MEASUREMENT PLAN

E-6420B
(1)

	A	B	C	D	E F G H			
					Number and % of Office Month Reports by Index Band			
Measured Component	WEIGHT	Total No. of Offices	Tot. No. of Ofc. Month Reports	A	B	C	D	
				98-100	96-97.9	90-95.9	<90	
1 MACH. ACC.	Dial Tone Speed	15	10	10	2	3	3	2
	% of Total				20.0	30.0	30.0	20.0
3	Stuck Sender	10	10	10	7	2	-	1
	% of Total				70.0	20.0	-	10.0
5	Comp Marker 2nd TF	15	10	10	3	6	1	-
	% of Total				30.0	60.0	10.0	-
7	Transverter 2nd TF	5	10	10	3	6	1	-
	% of Total				30.0	60.0	10.0	-
9	Office Overflow	10	10	10	5	4	1	-
	% of Total				50.0	40.0	10.0	-
11	Link Release Failure	5	10	10	5	4	1	-
	% of Total				50.0	40.0	10.0	-
13	Incoming Matching Loss	10	10	10	7	2	-	1
	% of Total				70.0	20.0	-	10.0
15	Equipment Irregularities	5	10	10	6	3	-	1
	% of Total				60.0	30.0	-	10.0
17	AMA Recorder Failure	10	9	9	-	8	-	1
	% of Total				-	88.9	-	11.1
19	Code 5 & 8 Equipment	10	10	10	2	6	1	1
	% of Total				20.0	60.0	10.0	10.0
21	Code 5 Frame	5	10	10	2	5	2	1
	% of Total				20.0	50.0	20.0	10.0
23	Total Index	100	10	10	2	6	1	1
	% of Total				20.0	60.0	10.0	10.0

BAND D TRENDS

	J	K	L											
			Preceding Periods											
Measured Component	Number	%	Jun. 1st	May 2nd	Apr. 3rd	Mar. 4th	Feb. 5th	Jan. 6th	Dec. 7th	Nov. 8th	Oct. 9th	Sep. 10th	Aug. 11th	Jul. 12th
			25 MACH. ACC.	Dial Tone Speed	Number	1	-	-	1	-	1	2	1	-
	%		10.0	-	-	10.0	-	10.0	20.0	10.0	-	-	-	10.0
27	Stuck Sender	Number	-	-	1	-	-	-	-	-	-	1	1	2
	%		-	-	10.0	-	-	-	-	-	-	10.0	10.0	20.0
29	Comp Marker 2nd TF	Number	-	-	-	-	1	-	-	-	-	-	1	-
	%		-	-	-	-	10.0	-	-	-	-	-	10.0	-
31	Transverter 2nd TF	Number	1	-	-	-	-	-	-	-	1	2	1	-
	%		10.0	-	-	-	-	-	-	-	10.0	20.0	10.0	-
33	Office Overflow	Number	-	-	-	-	-	-	2	2	3	1	-	-
	%		-	-	-	-	-	-	20.0	20.0	30.0	10.0	-	-
35	Link Release Failure	Number	1	-	-	-	2	3	2	-	-	1	-	-
	%		10.0	-	-	-	20.0	30.0	20.0	-	-	10.0	-	-
37	Incoming Matching Loss	Number	1	-	-	-	-	2	1	-	-	-	-	1
	%		10.0	-	-	-	-	20.0	10.0	-	-	-	-	10.0
39	Equipment Irregularities	Number	1	2	3	2	1	-	-	-	-	1	-	-
	%		10.0	20.0	30.0	20.0	10.0	-	-	-	-	10.0	-	-
41	AMA Recorder Failure	Number	-	-	-	-	1	-	2	-	-	1	-	-
	%		-	-	-	-	11.1	-	22.2	-	-	11.1	-	-
43	Code 5 & 8 Equipment	Number	1	1	2	1	1	-	1	1	1	2	1	1
	%		10.0	10.0	20.0	10.0	10.0	-	10.0	10.0	10.0	20.0	10.0	10.0
45	Code 5 Frame	Number	1	-	1	1	2	-	1	-	1	1	-	-
	%		10.0	-	10.0	10.0	20.0	-	10.0	-	10.0	10.0	-	-
47	Total Index	Number	1	1	2	-	-	1	-	1	-	2	-	-
	%		10.0	10.0	20.0	-	-	10.0	-	10.0	-	20.0	-	-

M	N	P	R	S	T
Office -	District -	Division Town	Area City	Company Somco	Report Period July 1975

SECTION 5f

NO. 5XB NETWORK SWITCHING PERFORMANCE MEASUREMENT PLAN

E-6420B
(1)

	A	B	C	D	E F G H				
					Number and % of Office Month Reports by Index Band				
Measured Component		WEIGHT	Total No. of Offices	Tot. No. of Ofc. Month Reports	A 98-100	B 96-97.9	C 90-95.9	D <90	
1	MACH.	Dial Tone	1	3	2	1	-	-	1
2	ACC.	Speed	15	% of Total	66.7	33.3	-	-	2
3	S W A I C H I N I N E N G	Stuck	1	3	2	1	-	-	3
4		Sender	10	% of Total	66.7	33.3	-	-	4
5		Comp Marker	1	3	3	-	-	-	5
6		2nd T F	15	% of Total	100	-	-	-	6
7		Transverter	1	3	3	-	-	-	7
8		2nd T F	5	% of Total	100	-	-	-	8
9		Office	1	3	3	-	-	-	9
10		Overflow	10	% of Total	100	-	-	-	10
11		Link Release	1	3	3	-	-	-	11
12		Failure	5	% of Total	100	-	-	-	12
13		Incoming	1	3	1	2	-	-	13
14		Matching Loss	10	% of Total	33.3	66.7	-	-	14
15		Equipment	1	3	2	1	-	-	15
16		Irregularities	5	% of Total	66.7	33.3	-	-	16
17		BILL	AMA Recorder	1	3	-	2	-	1
18	Failure	10	% of Total	-	66.7	-	33.3	18	
19	C R U P S T. T.	Code 5 & 8	1	3	1	2	-	-	19
20	Equipment	10	% of Total	33.3	66.7	-	-	20	
21	Code 5	1	3	1	2	-	-	21	
22	Frame	5	% of Total	33.3	66.7	-	-	22	
23	Total	1	3	2	1	-	-	23	
24	Index	100	% of Total	66.7	33.3	-	-	24	

BAND D TRENDS

	J	K	L	Preceding Periods													
				2Q 1st	1Q 2nd	4Q 3rd	3Q 4th	5th	6th	7th	8th	9th	10th	11th	12th		
25	MACH.	Dial Tone	Number	-	-	-	-										25
26	ACC.	Speed	%	-	-	-	-										26
27	S W A I C H I N I N E N G	Stuck	Number	-	-	-	-										27
28		Sender	%	-	-	-	-										28
29		Comp Marker	Number	-	-	-	-										29
30		2nd T F	%	-	-	-	-										30
31		Transverter	Number	-	-	-	-										31
32		2nd T F	%	-	-	-	-										32
33		Office	Number	-	-	-	-										33
34		Overflow	%	-	-	-	-										34
35		Link Release	Number	-	-	-	-										35
36		Failure	%	-	-	-	-										36
37		Incoming	Number	-	-	-	-										37
38		Matching Loss	%	-	-	-	-										38
39		Equipment	Number	-	-	-	-										39
40		Irregularities	%	-	-	-	-										40
41		BILL	AMA Recorder	Number	1	2	1	-									41
42	Failure	%	33.3	66.7	33.3	-										42	
43	C R U P S T. T.	Code 5 & 8	Number	-	-	-	-									43	
44	Equipment	%	-	-	-	-										44	
45	Code 5	Number	-	-	-	1										45	
46	Frame	%	-	-	-	33.3										46	
47	Total	Number	-	1	-	-										47	
48	Index	%	-	33.3	-	-										48	
49	M	N	P	R	S	T											49
	Office	775	District	East	Division	Town	Area	City	Company	Somco	Report	3Q75	Period				

SECTION 5f

10. INDEX TABLES

10.01 This part of the Plan contains performance indicator threshold levels and measured component index tables to be used to complete the monthly E-6420A form.

Threshold Levels

<i>Machine Access</i>	<i>Threshold</i>
(a) All Originating Registers Busy	5.00
(b) Dial Tone Matching Loss—	
Non-Paired LLF	1.50
Paired LLF	8.00
(c) Common Overflow Trunk Overflow	.01

Machine Switching

(a) Marker 1st Trial Failure	40.00
(b) Transverter 1st Trial Failure	31.00

(c) Outsender Group Overflows	1.50
(d) Originating Match Loss	.90
(e) Final Trunk Groups over 3% NC	0
(f) Trunk Outage	95.00
(g) Overflow Percent RO/NC	.80
(h) Load Balance	94.00
(i) Equipment Outage	1.00

Billing

(a) Bulk Billed Free	4.00
(b) Percent Single Time Line Entries	.19
(c) Coin Supervisory Troubles	100.00

Customer Trouble Reports

(a) Customer Trouble Reports— Code 7	2.40
---	------

DIAL TONE SPEED

PERFORMANCE FROM	TO	COMP. INDEX	INDEX POINTS	PERFORMANCE FROM	TO	COMP. 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

Measured Component Index Table
(Sheet 1 of 10)

SECTION 5f

STUCK SENDERS

PERFORMANCE		COMP.	INDEX	PERFORMANCE		COMP.	INDEX
FROM	TO	INDEX	POINTS	FROM	TO	INDEX	POINTS
0.00	- 0.62	100.00	10.00	23.70	- 24.00	72.00	7.20
0.63	- 1.34	99.50	9.95	24.01	- 24.29	71.00	7.10
1.35	- 2.06	99.00	9.90	24.30	- 24.59	70.00	7.00
2.07	- 2.78	98.50	9.85	24.60	- 24.87	69.00	6.90
2.79	- 3.50	98.00	9.80	24.88	- 25.15	68.00	6.80
3.51	- 4.22	97.50	9.75	25.16	- 25.42	67.00	6.70
4.23	- 4.94	97.00	9.70	25.43	- 25.69	66.00	6.60
4.95	- 5.66	96.50	9.65	25.70	- 25.95	65.00	6.50
5.67	- 6.38	96.00	9.60	25.96	- 26.20	64.00	6.40
6.39	- 7.10	95.50	9.55	26.21	- 26.45	63.00	6.30
7.11	- 7.82	95.00	9.50	26.46	- 26.70	62.00	6.20
7.83	- 8.54	94.50	9.45	26.71	- 26.94	61.00	6.10
8.55	- 9.25	94.00	9.40	26.95	- 27.18	60.00	6.00
9.26	- 9.97	93.50	9.35	27.19	- 27.42	59.00	5.90
9.98	- 10.69	93.00	9.30	27.43	- 27.65	58.00	5.80
10.70	- 11.41	92.50	9.25	27.66	- 27.87	57.00	5.70
11.42	- 12.13	92.00	9.20	27.88	- 28.10	56.00	5.60
12.14	- 12.85	91.50	9.15	28.11	- 28.32	55.00	5.50
12.86	- 13.56	91.00	9.10	28.33	- 28.54	54.00	5.40
13.57	- 14.28	90.50	9.05	28.55	- 28.75	53.00	5.30
14.29	- 15.00	90.00	9.00	28.76	- 28.96	52.00	5.20
15.01	- 15.63	89.50	8.95	28.97	- 29.17	51.00	5.10
15.64	- 16.16	89.00	8.90	29.18	- 29.38	50.00	5.00
16.17	- 16.61	88.50	8.85	29.39	- 29.80	48.00	4.80
16.62	- 17.02	88.00	8.80	29.81	- 30.22	46.00	4.60
17.03	- 17.39	87.50	8.75	30.23	- 30.66	44.00	4.40
17.40	- 17.74	87.00	8.70	30.67	- 31.11	42.00	4.20
17.75	- 18.07	86.50	8.65	31.12	- 31.58	40.00	4.00
18.08	- 18.37	86.00	8.60	31.59	- 32.06	38.00	3.80
18.38	- 18.66	85.50	8.55	32.07	- 32.56	36.00	3.60
18.67	- 18.94	85.00	8.50	32.57	- 33.07	34.00	3.40
18.95	- 19.21	84.50	8.45	33.08	- 33.61	32.00	3.20
19.22	- 19.46	84.00	8.40	33.62	- 34.17	30.00	3.00
19.47	- 19.71	83.50	8.35	34.18	- 34.76	28.00	2.80
19.72	- 19.95	83.00	8.30	34.77	- 35.39	26.00	2.60
19.96	- 20.18	82.50	8.25	35.40	- 36.05	24.00	2.40
20.19	- 20.40	82.00	8.20	36.06	- 36.75	22.00	2.20
20.41	- 20.62	81.50	8.15	36.76	- 37.52	20.00	2.00
20.63	- 20.83	81.00	8.10	37.53	- 38.36	18.00	1.80
20.84	- 21.04	80.50	8.05	38.37	- 39.30	16.00	1.60
21.05	- 21.24	80.00	8.00	39.31	- 40.39	14.00	1.40
21.25	- 21.63	79.00	7.90	40.40	- 41.74	12.00	1.20
21.64	- 22.01	78.00	7.80	41.75	- 43.76	10.00	1.00
22.02	- 22.37	77.00	7.70	43.77	- 46.63	8.00	0.80
22.38	- 22.71	76.00	7.60	46.64	- 49.51	6.00	0.60
22.72	- 23.05	75.00	7.50	49.52	- 52.38	4.00	0.40
23.06	- 23.37	74.00	7.40	52.39	- 55.26	2.00	0.20
23.38	- 23.69	73.00	7.30	ABOVE	55.26	0.00	0.00

Measured Component Index Table
(Sheet 2 of 10)

MARKER 2ND TRIAL FAILURES

PERFORMANCE		COMP.	INDEX	PERFORMANCE		COMP.	INDEX
FROM	TO	INDEX	POINTS	FROM	TO	INDEX	POINTS
0.00	- 1.36	100.00	15.00	13.46	- 13.62	72.00	10.80
1.37	- 1.74	99.50	14.92	13.63	- 13.77	71.00	10.65
1.75	- 2.12	99.00	14.85	13.78	- 13.92	70.00	10.50
2.13	- 2.50	98.50	14.77	13.93	- 14.07	69.00	10.35
2.51	- 2.87	98.00	14.70	14.08	- 14.22	68.00	10.20
2.88	- 3.25	97.50	14.62	14.23	- 14.36	67.00	10.05
3.26	- 3.63	97.00	14.55	14.37	- 14.50	66.00	9.90
3.64	- 4.01	96.50	14.47	14.51	- 14.64	65.00	9.75
4.02	- 4.39	96.00	14.40	14.65	- 14.77	64.00	9.60
4.40	- 4.76	95.50	14.32	14.78	- 14.90	63.00	9.45
4.77	- 5.14	95.00	14.25	14.91	- 15.03	62.00	9.30
5.15	- 5.52	94.50	14.17	15.04	- 15.16	61.00	9.15
5.53	- 5.89	94.00	14.10	15.17	- 15.29	60.00	9.00
5.90	- 6.27	93.50	14.02	15.30	- 15.41	59.00	8.85
6.28	- 6.65	93.00	13.95	15.42	- 15.53	58.00	8.70
6.66	- 7.02	92.50	13.87	15.54	- 15.65	57.00	8.55
7.03	- 7.40	92.00	13.80	15.66	- 15.77	56.00	8.40
7.41	- 7.77	91.50	13.72	15.78	- 15.88	55.00	8.25
7.78	- 8.15	91.00	13.65	15.89	- 16.00	54.00	8.10
8.16	- 8.52	90.50	13.57	16.01	- 16.11	53.00	7.95
8.53	- 8.90	90.00	13.50	16.12	- 16.22	52.00	7.80
8.91	- 9.23	89.50	13.42	16.23	- 16.33	51.00	7.65
9.24	- 9.51	89.00	13.35	16.34	- 16.44	50.00	7.50
9.52	- 9.74	88.50	13.27	16.45	- 16.66	48.00	7.20
9.75	- 9.96	88.00	13.20	16.67	- 16.88	46.00	6.90
9.97	- 10.15	87.50	13.12	16.89	- 17.11	44.00	6.60
10.16	- 10.34	87.00	13.05	17.12	- 17.35	42.00	6.30
10.35	- 10.51	86.50	12.97	17.36	- 17.59	40.00	6.00
10.52	- 10.67	86.00	12.90	17.60	- 17.85	38.00	5.70
10.68	- 10.82	85.50	12.82	17.86	- 18.11	36.00	5.40
10.83	- 10.97	85.00	12.75	18.12	- 18.38	34.00	5.10
10.98	- 11.10	84.50	12.67	18.39	- 18.66	32.00	4.80
11.11	- 11.24	84.00	12.60	18.67	- 18.96	30.00	4.50
11.25	- 11.37	83.50	12.52	18.97	- 19.26	28.00	4.20
11.38	- 11.49	83.00	12.45	19.27	- 19.59	26.00	3.90
11.50	- 11.61	82.50	12.37	19.60	- 19.94	24.00	3.60
11.62	- 11.73	82.00	12.30	19.95	- 20.31	22.00	3.30
11.74	- 11.85	81.50	12.22	20.32	- 20.71	20.00	3.00
11.86	- 11.96	81.00	12.15	20.72	- 21.15	18.00	2.70
11.97	- 12.07	80.50	12.07	21.16	- 21.64	16.00	2.40
12.08	- 12.17	80.00	12.00	21.65	- 22.21	14.00	2.10
12.18	- 12.38	79.00	11.85	22.22	- 22.92	12.00	1.80
12.39	- 12.57	78.00	11.70	22.93	- 23.98	10.00	1.50
12.58	- 12.76	77.00	11.55	23.99	- 25.48	8.00	1.20
12.77	- 12.94	76.00	11.40	25.49	- 26.99	6.00	0.90
12.95	- 13.12	75.00	11.25	27.00	- 28.49	4.00	0.60
13.13	- 13.29	74.00	11.10	28.50	- 30.01	2.00	0.30
13.30	- 13.45	73.00	10.95	ABOVE	30.01	0.00	0.00

Measured Component Index Table
(Sheet 3 of 10)

TRANSVERTER 2ND TRIAL FAILURES

PERFORMANCE		COMP. INDEX	INDEX POINTS	PERFORMANCE		COMP. INDEX	INDEX POINTS
FROM	TO			FROM	TO		
0.00	- 0.10	100.00	5.00	25.60	- 25.93	72.00	3.60
0.11	- 0.90	99.50	4.97	25.94	- 26.26	71.00	3.55
0.91	- 1.69	99.00	4.95	26.27	- 26.58	70.00	3.50
1.70	- 2.49	98.50	4.92	26.59	- 26.90	69.00	3.45
2.50	- 3.28	98.00	4.90	26.91	- 27.20	68.00	3.40
3.29	- 4.08	97.50	4.87	27.21	- 27.50	67.00	3.35
4.09	- 4.87	97.00	4.85	27.51	- 27.80	66.00	3.30
4.88	- 5.66	96.50	4.82	27.81	- 28.09	65.00	3.25
5.67	- 6.46	96.00	4.80	28.10	- 28.37	64.00	3.20
6.47	- 7.25	95.50	4.77	28.38	- 28.65	63.00	3.15
7.26	- 8.05	95.00	4.75	28.66	- 28.92	62.00	3.10
8.06	- 8.84	94.50	4.72	28.93	- 29.19	61.00	3.05
8.85	- 9.64	94.00	4.70	29.20	- 29.45	60.00	3.00
9.65	- 10.43	93.50	4.67	29.46	- 29.71	59.00	2.95
10.44	- 11.23	93.00	4.65	29.72	- 29.96	58.00	2.90
11.24	- 12.02	92.50	4.62	29.97	- 30.22	57.00	2.85
12.03	- 12.81	92.00	4.60	30.23	- 30.46	56.00	2.80
12.82	- 13.61	91.50	4.57	30.47	- 30.71	55.00	2.75
13.62	- 14.40	91.00	4.55	30.72	- 30.95	54.00	2.70
14.41	- 15.20	90.50	4.52	30.96	- 31.19	53.00	2.65
15.21	- 15.99	90.00	4.50	31.20	- 31.42	52.00	2.60
16.00	- 16.69	89.50	4.47	31.43	- 31.65	51.00	2.55
16.70	- 17.27	89.00	4.45	31.66	- 31.88	50.00	2.50
17.28	- 17.77	88.50	4.42	31.89	- 32.34	48.00	2.40
17.78	- 18.22	88.00	4.40	32.35	- 32.81	46.00	2.30
18.23	- 18.64	87.50	4.37	32.82	- 33.30	44.00	2.20
18.65	- 19.02	87.00	4.35	33.31	- 33.80	42.00	2.10
19.03	- 19.38	86.50	4.32	33.81	- 34.31	40.00	2.00
19.39	- 19.72	86.00	4.30	34.32	- 34.84	38.00	1.90
19.73	- 20.04	85.50	4.27	34.85	- 35.39	36.00	1.80
20.05	- 20.35	85.00	4.25	35.40	- 35.96	34.00	1.70
20.36	- 20.64	84.50	4.22	35.97	- 36.56	32.00	1.60
20.65	- 20.92	84.00	4.20	36.57	- 37.18	30.00	1.50
20.93	- 21.20	83.50	4.17	37.19	- 37.83	28.00	1.40
21.21	- 21.46	83.00	4.15	37.84	- 38.52	26.00	1.30
21.47	- 21.72	82.50	4.12	38.53	- 39.25	24.00	1.20
21.73	- 21.96	82.00	4.10	39.26	- 40.03	22.00	1.10
21.97	- 22.20	81.50	4.07	40.04	- 40.87	20.00	1.00
22.21	- 22.44	81.00	4.05	40.88	- 41.80	18.00	0.90
22.45	- 22.67	80.50	4.02	41.81	- 42.84	16.00	0.80
22.68	- 22.89	80.00	4.00	42.85	- 44.04	14.00	0.70
22.90	- 23.32	79.00	3.95	44.05	- 45.54	12.00	0.60
23.33	- 23.73	78.00	3.90	45.55	- 47.77	10.00	0.50
23.74	- 24.13	77.00	3.85	47.78	- 50.95	8.00	0.40
24.14	- 24.51	76.00	3.80	50.96	- 54.12	6.00	0.30
24.52	- 24.88	75.00	3.75	54.13	- 57.30	4.00	0.20
24.89	- 25.24	74.00	3.70	57.31	- 60.48	2.00	0.10
25.25	- 25.59	73.00	3.65	ABOVE	60.48	0.00	0.00

Measured Component Index Table
(Sheet 4 of 10)

OFFICE OVERFLOW

PERFORMANCE		COMP. INDEX	INDEX POINTS	PERFORMANCE		COMP. INDEX	INDEX POINTS
FROM	TO			FROM	TO		
0.00	- 0.05	100.00	10.00	4.78	- 4.83	72.00	7.20
0.06	- 0.21	99.50	9.95	4.84	- 4.89	71.00	7.10
0.22	- 0.37	99.00	9.90	4.90	- 4.95	70.00	7.00
0.38	- 0.53	98.50	9.85	4.96	- 5.01	69.00	6.90
0.54	- 0.69	98.00	9.80	5.02	- 5.07	68.00	6.80
0.70	- 0.85	97.50	9.75	5.08	- 5.13	67.00	6.70
0.86	- 1.00	97.00	9.70	5.14	- 5.18	66.00	6.60
1.01	- 1.15	96.50	9.65	5.19	- 5.24	65.00	6.50
1.16	- 1.30	96.00	9.60	5.25	- 5.29	64.00	6.40
1.31	- 1.45	95.50	9.55	5.30	- 5.34	63.00	6.30
1.46	- 1.60	95.00	9.50	5.35	- 5.39	62.00	6.20
1.61	- 1.75	94.50	9.45	5.40	- 5.44	61.00	6.10
1.76	- 1.89	94.00	9.40	5.45	- 5.49	60.00	6.00
1.90	- 2.03	93.50	9.35	5.50	- 5.54	59.00	5.90
2.04	- 2.17	93.00	9.30	5.55	- 5.59	58.00	5.80
2.18	- 2.32	92.50	9.25	5.60	- 5.64	57.00	5.70
2.33	- 2.45	92.00	9.20	5.65	- 5.68	56.00	5.60
2.46	- 2.59	91.50	9.15	5.69	- 5.73	55.00	5.50
2.60	- 2.73	91.00	9.10	5.74	- 5.77	54.00	5.40
2.74	- 2.87	90.50	9.05	5.78	- 5.82	53.00	5.30
2.88	- 3.00	90.00	9.00	5.83	- 5.86	52.00	5.20
3.01	- 3.12	89.50	8.95	5.87	- 5.91	51.00	5.10
3.13	- 3.22	89.00	8.90	5.92	- 5.95	50.00	5.00
3.23	- 3.31	88.50	8.85	5.96	- 6.04	48.00	4.80
3.32	- 3.40	88.00	8.80	6.05	- 6.13	46.00	4.60
3.41	- 3.47	87.50	8.75	6.14	- 6.22	44.00	4.40
3.48	- 3.54	87.00	8.70	6.23	- 6.31	42.00	4.20
3.55	- 3.61	86.50	8.65	6.32	- 6.41	40.00	4.00
3.62	- 3.67	86.00	8.60	6.42	- 6.51	38.00	3.80
3.68	- 3.73	85.50	8.55	6.52	- 6.61	36.00	3.60
3.74	- 3.79	85.00	8.50	6.62	- 6.72	34.00	3.40
3.80	- 3.84	84.50	8.45	6.73	- 6.83	32.00	3.20
3.85	- 3.89	84.00	8.40	6.84	- 6.95	30.00	3.00
3.90	- 3.94	83.50	8.35	6.96	- 7.07	28.00	2.80
3.95	- 3.99	83.00	8.30	7.08	- 7.20	26.00	2.60
4.00	- 4.04	82.50	8.25	7.21	- 7.33	24.00	2.40
4.05	- 4.09	82.00	8.20	7.34	- 7.48	22.00	2.20
4.10	- 4.13	81.50	8.15	7.49	- 7.64	20.00	2.00
4.14	- 4.18	81.00	8.10	7.65	- 7.81	18.00	1.80
4.19	- 4.22	80.50	8.05	7.82	- 8.01	16.00	1.60
4.23	- 4.26	80.00	8.00	8.02	- 8.23	14.00	1.40
4.27	- 4.34	79.00	7.90	8.24	- 8.50	12.00	1.20
4.35	- 4.42	78.00	7.80	8.51	- 8.90	10.00	1.00
4.43	- 4.49	77.00	7.70	8.91	- 9.45	8.00	0.80
4.50	- 4.57	76.00	7.60	9.46	- 10.01	6.00	0.60
4.58	- 4.63	75.00	7.50	10.02	- 10.60	4.00	0.40
4.64	- 4.70	74.00	7.40	10.61	- 11.21	2.00	0.20
4.71	- 4.77	73.00	7.30	ABOVE	11.21	0.00	0.00

Measured Component Index Table
(Sheet 5 of 10)

LINK RELEASE

PERFORMANCE		COMP. INDEX	INDEX POINTS	PERFORMANCE		COMP. INDEX	INDEX POINTS
FROM	TO			FROM	TO		
0.00	- 0.00	100.00	5.00	8.83	- 8.94	72.00	3.60
0.01	- 0.28	99.50	4.97	8.95	- 9.05	71.00	3.55
0.29	- 0.55	99.00	4.95	9.06	- 9.16	70.00	3.50
0.56	- 0.82	98.50	4.92	9.17	- 9.27	69.00	3.45
0.83	- 1.10	98.00	4.90	9.28	- 9.38	68.00	3.40
1.11	- 1.38	97.50	4.87	9.39	- 9.48	67.00	3.35
1.39	- 1.65	97.00	4.85	9.49	- 9.59	66.00	3.30
1.66	- 1.93	96.50	4.82	9.60	- 9.69	65.00	3.25
1.94	- 2.20	96.00	4.80	9.70	- 9.78	64.00	3.20
2.21	- 2.47	95.50	4.77	9.79	- 9.88	63.00	3.15
2.48	- 2.75	95.00	4.75	9.89	- 9.97	62.00	3.10
2.76	- 3.02	94.50	4.72	9.98	- 10.07	61.00	3.05
3.03	- 3.30	94.00	4.70	10.08	- 10.16	60.00	3.00
3.31	- 3.57	93.50	4.67	10.17	- 10.25	59.00	2.95
3.58	- 3.85	93.00	4.65	10.26	- 10.34	58.00	2.90
3.86	- 4.12	92.50	4.62	10.35	- 10.42	57.00	2.85
4.13	- 4.40	92.00	4.60	10.43	- 10.51	56.00	2.80
4.41	- 4.67	91.50	4.57	10.52	- 10.59	55.00	2.75
4.68	- 4.95	91.00	4.55	10.60	- 10.68	54.00	2.70
4.96	- 5.22	90.50	4.52	10.69	- 10.76	53.00	2.65
5.23	- 5.50	90.00	4.50	10.77	- 10.84	52.00	2.60
5.51	- 5.74	89.50	4.47	10.85	- 10.92	51.00	2.55
5.75	- 5.94	89.00	4.45	10.93	- 11.00	50.00	2.50
5.95	- 6.12	88.50	4.42	11.01	- 11.16	48.00	2.40
6.13	- 6.27	88.00	4.40	11.17	- 11.32	46.00	2.30
6.28	- 6.42	87.50	4.37	11.33	- 11.49	44.00	2.20
6.43	- 6.55	87.00	4.35	11.50	- 11.66	42.00	2.10
6.56	- 6.67	86.50	4.32	11.67	- 11.84	40.00	2.00
6.68	- 6.79	86.00	4.30	11.85	- 12.02	38.00	1.90
6.80	- 6.90	85.50	4.27	12.03	- 12.21	36.00	1.80
6.91	- 7.01	85.00	4.25	12.22	- 12.41	34.00	1.70
7.02	- 7.11	84.50	4.22	12.42	- 12.62	32.00	1.60
7.12	- 7.21	84.00	4.20	12.63	- 12.83	30.00	1.50
7.22	- 7.30	83.50	4.17	12.84	- 13.06	28.00	1.40
7.31	- 7.39	83.00	4.15	13.07	- 13.29	26.00	1.30
7.40	- 7.48	82.50	4.12	13.30	- 13.55	24.00	1.20
7.49	- 7.57	82.00	4.10	13.56	- 13.82	22.00	1.10
7.58	- 7.65	81.50	4.07	13.83	- 14.11	20.00	1.00
7.66	- 7.73	81.00	4.05	14.12	- 14.43	18.00	0.90
7.74	- 7.81	80.50	4.02	14.44	- 14.79	16.00	0.80
7.82	- 7.89	80.00	4.00	14.80	- 15.21	14.00	0.70
7.90	- 8.04	79.00	3.95	15.22	- 15.72	12.00	0.60
8.05	- 8.18	78.00	3.90	15.73	- 16.50	10.00	0.50
8.19	- 8.32	77.00	3.85	16.51	- 17.60	8.00	0.40
8.33	- 8.45	76.00	3.80	17.61	- 18.70	6.00	0.30
8.46	- 8.58	75.00	3.75	18.71	- 19.80	4.00	0.20
8.59	- 8.70	74.00	3.70	19.81	- 20.90	2.00	0.10
8.71	- 8.82	73.00	3.65	ABOVE	20.90	0.00	0.00

Measured Component Index Table
(Sheet 6 of 10)

INCOMING MATCHING LOSS

PERFORMANCE		COMP.	INDEX	PERFORMANCE		COMP.	INDEX
FROM	TO	INDEX	POINTS	FROM	TO	INDEX	POINTS
0.00	- 1.70	100.00	10.00	3.44	- 3.45	72.00	7.20
1.71	- 1.82	99.50	9.95	3.46	- 3.48	71.00	7.10
1.83	- 1.92	99.00	9.90	3.49	- 3.50	70.00	7.00
1.93	- 2.00	98.50	9.85	3.51	- 3.52	69.00	6.90
2.01	- 2.07	98.00	9.80	3.53	- 3.55	68.00	6.80
2.08	- 2.14	97.50	9.75	3.56	- 3.57	67.00	6.70
2.15	- 2.20	97.00	9.70	3.58	- 3.59	66.00	6.60
2.21	- 2.26	96.50	9.65	3.60	- 3.61	65.00	6.50
2.27	- 2.31	96.00	9.60	3.62	- 3.63	64.00	6.40
2.32	- 2.36	95.50	9.55	3.64	- 3.66	63.00	6.30
2.37	- 2.41	95.00	9.50	3.67	- 3.68	62.00	6.20
2.42	- 2.45	94.50	9.45	3.69	- 3.70	61.00	6.10
2.46	- 2.50	94.00	9.40	3.71	- 3.72	60.00	6.00
2.51	- 2.54	93.50	9.35	3.73	- 3.74	59.00	5.90
2.55	- 2.58	93.00	9.30	3.75	- 3.75	58.00	5.80
2.59	- 2.62	92.50	9.25	3.76	- 3.77	57.00	5.70
2.63	- 2.66	92.00	9.20	3.78	- 3.79	56.00	5.60
2.67	- 2.69	91.50	9.15	3.80	- 3.81	55.00	5.50
2.70	- 2.73	91.00	9.10	3.82	- 3.83	54.00	5.40
2.74	- 2.77	90.50	9.05	3.84	- 3.85	53.00	5.30
2.78	- 2.80	90.00	9.00	3.86	- 3.87	52.00	5.20
2.81	- 2.83	89.50	8.95	3.88	- 3.88	51.00	5.10
2.84	- 2.86	89.00	8.90	3.89	- 3.90	50.00	5.00
2.87	- 2.89	88.50	8.85	3.91	- 3.93	48.00	4.80
2.90	- 2.92	88.00	8.80	3.94	- 3.97	46.00	4.60
2.93	- 2.94	87.50	8.75	3.98	- 4.01	44.00	4.40
2.95	- 2.97	87.00	8.70	4.02	- 4.05	42.00	4.20
2.98	- 2.99	86.50	8.65	4.06	- 4.08	40.00	4.00
3.00	- 3.01	86.00	8.60	4.09	- 4.12	38.00	3.80
3.02	- 3.03	85.50	8.55	4.13	- 4.17	36.00	3.60
3.04	- 3.05	85.00	8.50	4.18	- 4.21	34.00	3.40
3.06	- 3.07	84.50	8.45	4.22	- 4.25	32.00	3.20
3.08	- 3.09	84.00	8.40	4.26	- 4.30	30.00	3.00
3.10	- 3.11	83.50	8.35	4.31	- 4.35	28.00	2.80
3.12	- 3.13	83.00	8.30	4.36	- 4.40	26.00	2.60
3.14	- 3.15	82.50	8.25	4.41	- 4.45	24.00	2.40
3.16	- 3.16	82.00	8.20	4.46	- 4.51	22.00	2.20
3.17	- 3.18	81.50	8.15	4.52	- 4.57	20.00	2.00
3.19	- 3.20	81.00	8.10	4.58	- 4.64	18.00	1.80
3.21	- 3.21	80.50	8.05	4.65	- 4.71	16.00	1.60
3.22	- 3.23	80.00	8.00	4.72	- 4.79	14.00	1.40
3.24	- 3.26	79.00	7.90	4.80	- 4.88	12.00	1.20
3.27	- 3.29	78.00	7.80	4.89	- 5.00	10.00	1.00
3.30	- 3.32	77.00	7.70	5.01	- 5.14	8.00	0.80
3.33	- 3.35	76.00	7.60	5.15	- 5.30	6.00	0.60
3.36	- 3.38	75.00	7.50	5.31	- 5.49	4.00	0.40
3.39	- 3.40	74.00	7.40	5.50	- 5.73	2.00	0.20
3.41	- 3.43	73.00	7.30	ABOVE	5.73	0.00	0.00

Measured Component Index Table
(Sheet 7 of 10)

EQUIPMENT IRREGULARITIES

PERFORMANCE		COMP.	INDEX	PERFORMANCE		COMP.	INDEX
FROM	TO	INDEX	POINTS	FROM	TO	INDEX	POINTS
0.00	- 0.00	100.00	5.00	1.45	- 1.46	72.00	3.60
0.01	- 0.05	99.50	4.97	1.47	- 1.48	71.00	3.55
0.06	- 0.10	99.00	4.95	1.49	- 1.49	70.00	3.50
0.11	- 0.15	98.50	4.92	1.50	- 1.51	69.00	3.45
0.16	- 0.20	98.00	4.90	1.52	- 1.53	68.00	3.40
0.21	- 0.25	97.50	4.87	1.54	- 1.55	67.00	3.35
0.26	- 0.30	97.00	4.85	1.56	- 1.56	66.00	3.30
0.31	- 0.35	96.50	4.82	1.57	- 1.58	65.00	3.25
0.36	- 0.39	96.00	4.80	1.59	- 1.60	64.00	3.20
0.40	- 0.44	95.50	4.77	1.61	- 1.61	63.00	3.15
0.45	- 0.48	95.00	4.75	1.62	- 1.63	62.00	3.10
0.49	- 0.53	94.50	4.72	1.64	- 1.64	61.00	3.05
0.54	- 0.57	94.00	4.70	1.65	- 1.66	60.00	3.00
0.58	- 0.61	93.50	4.67	1.67	- 1.67	59.00	2.95
0.62	- 0.66	93.00	4.65	1.68	- 1.69	58.00	2.90
0.67	- 0.70	92.50	4.62	1.70	- 1.70	57.00	2.85
0.71	- 0.74	92.00	4.60	1.71	- 1.72	56.00	2.80
0.75	- 0.78	91.50	4.57	1.73	- 1.73	55.00	2.75
0.79	- 0.82	91.00	4.55	1.74	- 1.75	54.00	2.70
0.83	- 0.86	90.50	4.52	1.76	- 1.76	53.00	2.65
0.87	- 0.90	90.00	4.50	1.77	- 1.77	52.00	2.60
0.91	- 0.94	89.50	4.47	1.78	- 1.79	51.00	2.55
0.95	- 0.97	89.00	4.45	1.80	- 1.80	50.00	2.50
0.98	- 0.99	88.50	4.42	1.81	- 1.83	48.00	2.40
1.00	- 1.02	88.00	4.40	1.84	- 1.85	46.00	2.30
1.03	- 1.04	87.50	4.37	1.86	- 1.88	44.00	2.20
1.05	- 1.06	87.00	4.35	1.89	- 1.91	42.00	2.10
1.07	- 1.08	86.50	4.32	1.92	- 1.94	40.00	2.00
1.09	- 1.10	86.00	4.30	1.95	- 1.97	38.00	1.90
1.11	- 1.12	85.50	4.27	1.98	- 2.00	36.00	1.80
1.13	- 1.14	85.00	4.25	2.01	- 2.04	34.00	1.70
1.15	- 1.15	84.50	4.22	2.05	- 2.07	32.00	1.60
1.16	- 1.17	84.00	4.20	2.08	- 2.11	30.00	1.50
1.18	- 1.19	83.50	4.17	2.12	- 2.14	28.00	1.40
1.20	- 1.20	83.00	4.15	2.15	- 2.18	26.00	1.30
1.21	- 1.21	82.50	4.12	2.19	- 2.23	24.00	1.20
1.22	- 1.23	82.00	4.10	2.24	- 2.27	22.00	1.10
1.24	- 1.24	81.50	4.07	2.28	- 2.32	20.00	1.00
1.25	- 1.26	81.00	4.05	2.33	- 2.37	18.00	0.90
1.27	- 1.27	80.50	4.02	2.38	- 2.43	16.00	0.80
1.28	- 1.28	80.00	4.00	2.44	- 2.50	14.00	0.70
1.29	- 1.31	79.00	3.95	2.51	- 2.58	12.00	0.60
1.32	- 1.33	78.00	3.90	2.59	- 2.70	10.00	0.50
1.34	- 1.35	77.00	3.85	2.71	- 2.86	8.00	0.40
1.36	- 1.37	76.00	3.80	2.87	- 3.03	6.00	0.30
1.38	- 1.40	75.00	3.75	3.04	- 3.21	4.00	0.20
1.41	- 1.42	74.00	3.70	3.22	- 3.40	2.00	0.10
1.43	- 1.44	73.00	3.65	ABOVE	3.40	0.00	0.00

Measured Component Index Table
(Sheet 8 of 10)

AMA RECORDER FAILURES

PERFORMANCE		COMP. INDEX	INDEX POINTS	PERFORMANCE		COMP. INDEX	INDEX POINTS
FROM	TO			FROM	TO		
0.00	- 0.10	100.00	10.00	7.81	- 7.90	72.00	7.20
0.11	- 0.34	99.50	9.95	7.91	- 8.00	71.00	7.10
0.35	- 0.58	99.00	9.90	8.01	- 8.10	70.00	7.00
0.59	- 0.82	98.50	9.85	8.11	- 8.19	69.00	6.90
0.83	- 1.06	98.00	9.80	8.20	- 8.29	68.00	6.80
1.07	- 1.30	97.50	9.75	8.30	- 8.38	67.00	6.70
1.31	- 1.54	97.00	9.70	8.39	- 8.47	66.00	6.60
1.55	- 1.78	96.50	9.65	8.48	- 8.55	65.00	6.50
1.79	- 2.02	96.00	9.60	8.56	- 8.64	64.00	6.40
2.03	- 2.26	95.50	9.55	8.65	- 8.72	63.00	6.30
2.27	- 2.50	95.00	9.50	8.73	- 8.80	62.00	6.20
2.51	- 2.74	94.50	9.45	8.81	- 8.88	61.00	6.10
2.75	- 2.98	94.00	9.40	8.89	- 8.96	60.00	6.00
2.99	- 3.22	93.50	9.35	8.97	- 9.04	59.00	5.90
3.23	- 3.46	93.00	9.30	9.05	- 9.12	58.00	5.80
3.47	- 3.70	92.50	9.25	9.13	- 9.20	57.00	5.70
3.71	- 3.94	92.00	9.20	9.21	- 9.27	56.00	5.60
3.95	- 4.18	91.50	9.15	9.28	- 9.34	55.00	5.50
4.19	- 4.42	91.00	9.10	9.35	- 9.42	54.00	5.40
4.43	- 4.66	90.50	9.05	9.43	- 9.49	53.00	5.30
4.67	- 4.90	90.00	9.00	9.50	- 9.56	52.00	5.20
4.91	- 5.11	89.50	8.95	9.57	- 9.63	51.00	5.10
5.12	- 5.29	89.00	8.90	9.64	- 9.70	50.00	5.00
5.30	- 5.44	88.50	8.85	9.71	- 9.84	48.00	4.80
5.45	- 5.57	88.00	8.80	9.85	- 9.98	46.00	4.60
5.58	- 5.70	87.50	8.75	9.99	- 10.13	44.00	4.40
5.71	- 5.81	87.00	8.70	10.14	- 10.28	42.00	4.20
5.82	- 5.92	86.50	8.65	10.29	- 10.43	40.00	4.00
5.93	- 6.03	86.00	8.60	10.44	- 10.59	38.00	3.80
6.04	- 6.12	85.50	8.55	10.60	- 10.76	36.00	3.60
6.13	- 6.22	85.00	8.50	10.77	- 10.93	34.00	3.40
6.23	- 6.30	84.50	8.45	10.94	- 11.11	32.00	3.20
6.31	- 6.39	84.00	8.40	11.12	- 11.30	30.00	3.00
6.40	- 6.47	83.50	8.35	11.31	- 11.49	28.00	2.80
6.48	- 6.55	83.00	8.30	11.50	- 11.70	26.00	2.60
6.56	- 6.63	82.50	8.25	11.71	- 11.92	24.00	2.40
6.64	- 6.70	82.00	8.20	11.93	- 12.16	22.00	2.20
6.71	- 6.78	81.50	8.15	12.17	- 12.41	20.00	2.00
6.79	- 6.85	81.00	8.10	12.42	- 12.69	18.00	1.80
6.86	- 6.92	80.50	8.05	12.70	- 13.01	16.00	1.60
6.93	- 6.98	80.00	8.00	13.02	- 13.37	14.00	1.40
6.99	- 7.11	79.00	7.90	13.38	- 13.82	12.00	1.20
7.12	- 7.24	78.00	7.80	13.83	- 14.50	10.00	1.00
7.25	- 7.36	77.00	7.70	14.51	- 15.46	8.00	0.80
7.37	- 7.47	76.00	7.60	15.47	- 16.42	6.00	0.60
7.48	- 7.59	75.00	7.50	16.43	- 17.38	4.00	0.40
7.60	- 7.69	74.00	7.40	17.39	- 18.34	2.00	0.20
7.70	- 7.80	73.00	7.30	ABOVE	18.34	0.00	0.00

Measured Component Index Table
(Sheet 9 of 10)

SECTION 5f

CODES 5 & 8 EQUIPMENT

PERFORMANCE		COMP.	INDEX
FROM	TO	INDEX	POINTS
0.00	- 0.00	100.00	10.00
0.01	- 0.02	99.50	9.95
0.03	- 0.04	99.00	9.90
0.05	- 0.05	98.50	9.85
0.06	- 0.07	98.00	9.80
0.08	- 0.09	97.50	9.75
0.10	- 0.10	97.00	9.70
0.11	- 0.11	96.50	9.65
0.12	- 0.13	96.00	9.60
0.14	- 0.14	95.50	9.55
0.15	- 0.15	95.00	9.50
0.16	- 0.17	94.50	9.45
0.18	- 0.18	94.00	9.40
0.19	- 0.19	93.50	9.35
0.20	- 0.20	93.00	9.30
0.21	- 0.22	92.50	9.25
0.23	- 0.23	92.00	9.20
0.24	- 0.24	91.50	9.15
0.25	- 0.25	91.00	9.10
0.26	- 0.26	90.50	9.05
0.27	- 0.27	90.00	9.00
0.28	- 0.29	89.00	8.90
0.30	- 0.30	88.00	8.80
0.31	- 0.32	87.00	8.70
0.33	- 0.33	86.00	8.60
0.34	- 0.35	84.00	8.40
0.36	- 0.37	82.00	8.20
0.38	- 0.38	80.00	8.00
0.39	- 0.40	78.00	7.80
0.41	- 0.41	76.00	7.60
0.42	- 0.43	72.00	7.20
0.44	- 0.46	68.00	6.80
0.47	- 0.48	64.00	6.40
0.49	- 0.50	60.00	6.00
0.51	- 0.51	56.00	5.60
0.52	- 0.53	52.00	5.20
0.54	- 0.55	48.00	4.80
0.56	- 0.57	44.00	4.40
0.58	- 0.58	40.00	4.00
0.59	- 0.60	36.00	3.60
0.61	- 0.62	32.00	3.20
0.63	- 0.65	28.00	2.80
0.66	- 0.67	24.00	2.40
0.68	- 0.70	20.00	2.00
0.71	- 0.73	16.00	1.60
0.74	- 0.78	12.00	1.20
0.79	- 0.85	8.00	0.80
0.86	- 0.95	4.00	0.40
ABOVE	0.95	0.00	0.00

CODE 5 FRAME

PERFORMANCE		COMP.	INDEX
FROM	TO	INDEX	POINTS
0.00	- 0.00	100.00	5.00
0.01	- 0.01	99.50	4.97
0.02	- 0.02	99.00	4.95
0.03	- 0.03	98.50	4.92
0.04	- 0.04	98.00	4.90
0.05	- 0.05	97.50	4.87
0.06	- 0.06	97.00	4.85
0.07	- 0.07	96.50	4.82
0.08	- 0.08	96.00	4.80
0.09	- 0.09	95.50	4.77
0.10	- 0.10	95.00	4.75
0.11	- 0.11	94.50	4.72
0.12	- 0.12	94.00	4.70
0.13	- 0.13	93.50	4.67
0.14	- 0.14	93.00	4.65
0.15	- 0.15	92.50	4.62
0.16	- 0.16	92.00	4.60
0.17	- 0.17	91.50	4.57
0.18	- 0.18	91.00	4.55
0.19	- 0.19	90.50	4.52
0.20	- 0.20	90.00	4.50
0.21	- 0.21	89.00	4.45
0.22	- 0.23	88.00	4.40
0.24	- 0.24	87.00	4.35
0.25	- 0.25	86.00	4.30
0.26	- 0.26	84.00	4.20
0.27	- 0.27	82.00	4.10
0.28	- 0.29	80.00	4.00
0.30	- 0.30	78.00	3.90
0.31	- 0.31	76.00	3.80
0.32	- 0.32	72.00	3.60
0.33	- 0.34	68.00	3.40
0.35	- 0.35	64.00	3.20
0.36	- 0.37	60.00	3.00
0.38	- 0.38	56.00	2.80
0.39	- 0.39	52.00	2.60
0.40	- 0.40	48.00	2.40
0.41	- 0.42	44.00	2.20
0.43	- 0.43	40.00	2.00
0.44	- 0.44	36.00	1.80
0.45	- 0.46	32.00	1.60
0.47	- 0.47	28.00	1.40
0.48	- 0.49	24.00	1.20
0.50	- 0.51	20.00	1.00
0.52	- 0.54	16.00	0.80
0.55	- 0.57	12.00	0.60
0.58	- 0.64	8.00	0.40
0.65	- 0.72	4.00	0.20
ABOVE	0.72	0.00	0.00

Measured Component Index Table
(Sheet 10 of 10)

11. AUDIT PROCEDURES (to be furnished later)

12. COMPILATION OF REGISTER READINGS

12.01 The use of output reports from computerized data processing systems should be used for this Plan whenever possible.

12.02 If, however, a specified busy hour for one or more performance indicators or measured components is not available from the data processing system or the specified calculation differs from that of the data processing system, then manual recording and summarization will be required.

12.03 Attached to this section on an unnumbered page is a form (*No. 5 Crossbar—Network Switching Performance Measurement Plan*) which may be used by the network administrator for manual compilation of register reading data and the calculation of performance results for the following items in this Plan:

(a) Performance Indicators

All Originating Registers Busy

Dial Tone Matching Loss

Common Overflow Trunk Overflow

Outsender Group Overflows

Originating Matching Loss

(b) Measured Component

Office Overflow

Note: This form may be reproduced locally as required.

12.04 Space has been provided on the form for any combination of entries for the above mentioned items.

12.05 Forms E-4372 and E-5267 (which are included in the Traffic Service Observing Practices, Division F, Section 2) should be used for compiling Dial Tone Speed and Incoming Matching Loss results.

NO. 5XB NETWORK SWITCHING PERFORMANCE MEASUREMENT PLAN

E-6420B
(1)

A		B	C	D	E	F	G	H
Measured Component	W E I G H T	Total No. of Offices	Tot. No. of Ofc. Month Reports	Number and % of Office Month Reports by Index Band				
				A 98- 100	B 96- 97.9	C 90- 95.9	D <90	
1 MACH. 2 ACC.	Dial Tone Speed	15	% of Total					1
3	Stuck Sender	10	% of Total					2
4	Comp Marker	15	% of Total					3
5	2nd T F							4
6	Transverter	5	% of Total					5
7	2nd T F							6
8	Office Overflow	10	% of Total					7
9	Link Release	5	% of Total					8
10	Failure							9
11	Incoming Matching Loss	10	% of Total					10
12	Equipment Irregularities	5	% of Total					11
13	AMA Recorder Failure	10	% of Total					12
14	Code 5 & 8 Equipment	10	% of Total					13
15	Code 5 Frame	5	% of Total					14
16	Total Index	100	% of Total					15

BAND D TRENDS

J		K	L												
Measured Component			Preceding Periods												
			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	
25 MACH. 26 ACC.	Dial Tone Speed	Number													
		%													
27	Stuck Sender	Number													
28		%													
29	Comp Marker	Number													
30	2nd T F	%													
31	Transverter	Number													
32	2nd T F	%													
33	Office Overflow	Number													
34		%													
35	Link Release	Number													
36	Failure	%													
37	Incoming Matching Loss	Number													
38		%													
39	Equipment Irregularities	Number													
40		%													
41	AMA Recorder Failure	Number													
42		%													
43	Code 5 & 8 Equipment	Number													
44		%													
45	Code 5 Frame	Number													
46		%													
47	Total Index	Number													
48		%													
49	Office	District	Division	Area	Company	Report Period									

Fig. 2—Form E-6420B (Sheet 1 of 2)



