

NETWORK SWITCHING PERFORMANCE MEASUREMENT PLAN
DESCRIPTION
NETWORK SWITCHED SERVICES
"DMS*"--100 FAMILY DIGITAL SWITCHING SYSTEMS

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1. GENERAL

- 1.01 The Network Switching Performance Measurement Plan (NSPMP) described in this practice addresses switching performance measurements for the DMS-100 family switching systems, which include the 100 and 100/200 switches. The plan is designed to measure switching performance of end offices having tandem traffic which is less than 50 per cent of the total traffic.
- 1.02 This practice has been reissued to reflect the change from Bellcore to a Southwestern Bell issue. Also, all references to OTC/CRS have been changed to INTEGRIS/FOCUS and TREAT to STAT to reflect system conversions.
- 1.03 The measured components and performance indicators included in this plan are those for which central office maintenance, network administration, and engineering forces are primarily responsible. These components and indicators are sufficiently sensitive to reflect changes in switching performance quality caused by maintenance, administration, and provisioning conditions.
- 1.04 The weighting of the components was accomplished based on the following considerations:
- (a) Impact of failure on customer
 - (b) Impact on revenue
 - (c) Severity of equipment failure or outage.
- 1.05 Since the level of performance of the control 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 results obtained.

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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 the following four categories to form the switching index:

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

The components of categories (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.

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

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

2.03 The plan includes two results reports: (1) a detailed results report (Form SW-3370) for use as the control group report, and (2) a summary report (Form SW-3371) for upper management. It is not the intent of the plan to designate at which level of management the detailed results report should stop. The severity of service problems and styles of management would be the deciding factors. The detailed report is designed for single entity (control group) reporting and should be limited to that use. The management summary is used to consolidate two or more single entity reports to any desired management level and for any time period of 1 month or more.

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

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Band	Index Level	Meaning
H	98.50 - 100.00	Higher than objective and possibly costly
O	95.50 - 98.49	Objective level
L	89.50 - 95.49	Lower than objective level
U	Below 89.50	Unsatisfactory level requiring immediate attention

2.05 The summary report also provides management with two summaries:

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

3. APPLICATION

- 3.01 The plan is fundamental in nature and is intended to provide a general measurement of improving or deteriorating service. Proper application of this plan will assist management in identifying engineering, administration, and maintenance problems. Correction of these problems can only be accomplished through proper 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 the DMS-100 family switching systems.
- 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

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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 used in this plan. If these supplemental indicators are neglected, managers may be unaware of impending service deterioration until results worsen. The proper approach is to be sensitive to all indicators.
- 3.06 The following is a list of items not directly measured by the plan. These items are indicators of service provided by the control groups and require constant attention. The list is not all-inclusive:
- (a) Major alarms
 - (b) Certain network failures
 - (c) Cleanliness of the office
 - (d) Preventive maintenance backlog
 - (e) Percentage of engineered capacity.
- 3.07 The administrative data requirements for this plan are restricted to the office busy hour. Therefore, it is strongly recommended that maintenance and network administration personnel exercise judgment in obtaining other hours and, where warranted, total day periods. Many measured components and performance indicators relate average monthly performance for the total office or specific equipment items. Hence, continued analysis of equipment subgroups to identify trouble conditions is recommended.
- 3.08 When an office converts from one switch type to another the following procedures should apply concerning the reporting of the central office results:
- (a) The last full report month the old office is in place should be input to INTEGRIS.

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(b) Any partial month on the old switch or new switch type should not be input.

(c) The first full report month on the new switch type should be input into INTEGRIS.

An INTEGRIS Control Form will have to be submitted prior to the effective month to allow for the changes which have to be made in the Switching Hierarchy.

(i.e. an office converts on the 9th of April, the results would be input under the old switch type for the March report month and there would not be any results input for the April month. The month of May would be the first month the results would be input under the new switch plan.)

4. OBJECTIVE

- 4.01 This plan is designed to provide a measurement of the quality of customer service provided by a DMS-100 family switching system control group. This plan is also designed to reflect the quality of the administrative, maintenance, and engineering/provisioning effort which relates to the measured service quality.
- 4.02 Measured components are included for each of the four major categories (i.e., machine access, machine switching, billing, and customer reports). The measurements provide reflections sufficiently sensitive of the quality of service to the customer. Performance indicators are designed to assist administrative, maintenance, and engineering personnel in predicting and/or in analyzing areas of service concern related to the switching machine performance, and when required, in developing joint programs for corrective action.
- 4.03 Generally, the performance of a DMS-100 family switching system control group is related to the quality of the administrative, maintenance, and engineering efforts brought jointly to bear on that control group. This plan is designed to measure the service quality resulting from those efforts and indicate the necessity of joint involvement by personnel charged with the different primary functional responsibilities.

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5. RESPONSIBILITIES

- 5.01 Responsibility for the efficient functioning of the switching entity is jointly shared by network central office operations, network administration, and engineering forces. Generally, the performance of a switching entity is determined by how well the responsible forces are managed and how effectively they operate as a team. External factors, such as severe weather, equipment or facility failures, on occasion, can be expected to cause deteriorated service levels for brief periods. However, the continuity of acceptable performance levels is the responsibility of the team.
- 5.02 Management should closely monitor the trend of office results in the various components and performance indicators of the plan. Improvements 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. Deteriorating results indicate the need for a stepped-up pace or different approach in pursuing corrective action.
- 5.03 It is the intent of this plan that the interdependency of service on functional group contribution be recognized. The central office maintenance, network administration, and engineering/provisioning functional groups are equally responsible for analysis and are held equally accountable for analysis and for concerted corrective action.
- 5.04 The management person having responsibility for a group of central offices also has responsibility for the integrity of the data being input.
- 5.05 The SCC manager has responsibility for getting the data input and report backs to the office supervisor for verification prior to the close of the base on the tenth of each month.
- 5.06 Due to the importance of the NSPMP data used to measure the level of service rendered by an office, the division manager is designated as being responsible for the validity and integrity of the data for his organization.

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6. INTERPRETATION AND USE OF RESULTS

- 6.01 The objective of the measured components is to represent actual failures or delays of the machine to properly complete a call or to provide accurate billing information. The performance indicators represent conditions which may seriously impact the machine's ability to satisfactorily perform its switching and billing functions.
- 6.02 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 is usually followed by a reinitiated customer attempt. Since regeneration also affects load-sensitive functions of the switching machine, the items of this type are critically indexed. Another type of measurement addresses blockage and delay experienced on equipment items which are engineered on a probability basis. The index levels and evaluation periods are designed to reflect this expected level of event occurrences. The customer trouble report category reflects central office customer line, equipment, and switching facility conditions that caused the customer to report a service failure.
- 6.03 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.
- 6.04 Performance levels obtained through the use of this plan are not comparable to performance levels in other types of switching machines under other measurement plans. Therefore, the service provided by a given DMS-100 family switching system office can only be compared to other DMS-100 family switching system offices.
- 6.05 Objectives are established in such a manner that they are meaningful to and attainable by the managers involved in accomplishing the goals. For this reason, managers responsible for maintenance, administration, and provisioning should be involved in setting the objectives. An understanding of the interrelationship of the various functions is essential to attain overall satisfactory service levels. The plan is designed to foster this understanding.

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- 6.06 The use of this measurement plan is not an adequate substitute for proper management. Continuous diagnostic analysis must be employed to ensure problem correction prior to service deterioration.

7. GENERAL INSTRUCTIONS

- 7.01 Source data for this plan are based on statistics collected by the Operational Measurement System. The statistics are collected daily, accumulated for month-to-day results, and evaluated in terms of ongoing daily index calculations. Registers are scored either individually each time an event occurs or when the state of an item is scanned (sampled) at regular intervals regardless of the time occurrence of an event. A register can be scored 65,536 times before the count is switched to an overflow register. The Operational Measurement Printout 2XX(OMPR2XX) supplies the necessary register readings.
- 7.02 The service month used for this plan is from the twenty-third of the month preceding the report month through the twenty-second of the report month (e.g., February report begins January 23 and ends February 22).
- 7.03 Each control group will prepare one report, Form SW-3370 (Figure 1), monthly from the first full report month after cutover and thereafter.
- 7.04 Failures on tests made in connection with the installation, modification, or rearrangement of control office equipment by installation forces are deductible on Form SW-3373 when the following conditions are met:
- (a) The test is in connection with work being performed as covered by a specific authorization (e.g., Method of Procedure [MOP], routing order or estimate, etc.)
 - (b) The failures registered as a result of the test 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 Switching Administrator, and the Installation Supervisor.

Form SW-3373 is submitted with Form SW-3370. See Figure 3 for an example of Form SW-3373.

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- 7.05 Most of the data required for this plan are obtained from administrative and maintenance registers or data systems. Actual peg counts or mechanized data printouts are used.
- 7.06 A table of active measurements with the associated register is referred to as a measurement group. All measurements in the group have the same table name. The group and register names are used to identify the operational measurement in the header sections of the output reports. Table A contains a listing of tables and registers covered in this document.
- 7.07 Procedures for determining and changing office busy hour periods are in accordance with instructions contained in Practice 780-200-031. The determination of the office busy hour is the responsibility of the network administration group.
- 7.08 A minimum of 15 days' office busy hour data are required for each report month. This includes valid data from administrative registers for each measured component.
- 7.09 The following rules apply when data are lost from maintenance registers which measure components or indicators 24 hours per day.
- (a) All available valid data must be included in the results calculation regardless of the service conditions. Periods affected by events such as storms, civil disturbances, cable cuts, and switching machine emergency actions must be included.
 - (b) If a failure count or base count is lost for a certain time period (e.g., transmitter time-outs did not score for 2 days), the base data used to calculate that component or indicator must be excluded for the same time period.
 - (c) One day of data (normally 24 hours) is considered valid if 85 percent of all peg counts between the hours of 0800 and 2400 are obtained.
 - (d) Data obtained for measurement purposes must contain valid data for 15 business days of the report month for any component or indicator.
- 7.10 If, due to a malfunction or error, results data for a measured component or a performance indicator are not available for the report period, the notation NAV (not available) is entered in the failures, base, and performance columns

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of the form. The notation NAV is considered Band U or soft spot performance and is reported as such on the control group report. The notation N or NAV (not available) is entered in the failures, base, and performance columns of the form. The notation NAV is considered Band U or soft spot performance and is reported as such on the control group report. The notation N or NAV is acceptable.

- 7.11 The notation EMPTY is entered in the failures, base, performance, soft spot, or band columns of the form if the component is not applicable to the measured control group due to design limitations or generic program. The notation EMPTY is not considered Band U. The notation E or EMP is an acceptable substitute entry for EMPTY.
- 7.12 Forms used for the compilation of register reading data for the computation of applicable percentages and component indices are developed and prepared locally. Forms SW-3372, SW-3370, SW-3371 and SW-3373 are available through your local forms management organization.
- 7.13 Daily printouts of data used for computation of the results reported on Forms SW-3370 and SW-3371 should be kept for the current report month and the previous 3 months. The monthly printouts should be retained for 1 year. It is recommended that a retention system similar to that described in Practice 190-130-010, SPCS/SCC Control Maintenance Plan, be used. The printouts and reports should be filed in the appropriate month's folder and retained until the results for the same month of the following year replace them.
- 7.14 Monthly reports should be submitted to the responsible results reporting organization (e.g., SSC's, etc.) at the earliest possible date, but no later than the fourth working day of the month following the report month.
- 7.15 A separate report is entered into INTEGRIS monthly for each switching entity. The INTEGRIS calculates and prepares all Forms SW-3371 on a monthly, quarterly, and annual basis as required.

8. DESCRIPTION OF PERFORMANCE INDICATORS AND MEASURED COMPONENTS

- 8.01 This section describes the performance indicators and measured components. Included are brief descriptions of the indicators and components, the source of the data, and the applicable time period for which data are gathered and summarized.

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PERFORMANCE INDICATORS

A. Machine Access

Ineffective Machine Attempts (IMA)

- 8.02 This indicator measures the percentage of all originating and terminating calls that are not successfully connected to a trunk or line.
- 8.03 Data for this indicator are recorded for the time consistent busy hour based on originating plus incoming (O+I) peg count.
- 8.04 Each day, obtain the O+I peg count from the OMPR2XX. Calculate the percentage of IMA each day as follows:

$$\% \text{ IMA} = \frac{\text{Hardware} + \text{Software Failures}}{\text{Adjusted Attempts}} \times 100$$

o HARDWARE + SOFTWARE FAILURES = CPTRAP + CPSUIC + TRMTER + TRMTRS

o Adjusted = NIN + NORIG - [(PSIG - PSGM) + (PDIL - PDLM) + (INABNM + INABNC + ORIGABDN)]

Note - Adjusted attempts are the total attempts minus permanent signal/partial dial (PS/PD) treatment plus preroute abandons.

- 8.05 At the end of the report period, total the number of days the percentage of IMA was greater than 3 percent. Enter the number of days in Column C of Form SW-3370

Receiver Queue (MF + UTR)

- 8.06 This indicator is the percentage of incoming multifrequency (MF+UTR) calls placed in queue because all MF+UTR receivers are busy. Being placed on the queue list does not constitute a lost call. Data for this indicator are recorded for each average business day time consistent busy hour determined by incoming traffic.
- 8.07 Each day, obtain the MF receiver overflow and peg count from the OMPR2XX. register field name "DTC". For offices equipped with Universal Tone Receivers (UTRs) collect the UTR overflow and peg counts as well.

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Calculate the percentage of incoming receiver overflow (MFROVFL) as follows:

$$\begin{array}{l} \% \text{ Receiver} \\ \text{Queue} \\ \text{(incoming)} \end{array} = \frac{[(RCVOVFL + UTR OVFL) - (RCVQOVFL + UTRQOVFL)]}{RCVRSZRS + UTRSZRS + RCVRQOVFL + UTRQOVFL + RCVRQABDN + UTRQABDN} = 100$$

8.08 At the end of the report period, enter the result (expressed as a percentage) in column C of Form SW-3370

Receiver Queue (DGT + UTR)

8.09 This indicator is a count of the number of days in which the DGT+UTR receiver groups experienced busy hour overflow equal to or greater than 5 percent. Being placed on the queue list does not constitute a lost call.

8.10 Data required for this indicator are recorded for each average business day dial tone speed busy hour.

8.11 Each day obtain DGT receiver overflow and peg count from the OMPR2XX register field names "LGC" and "RCC" (for remotes). For offices equipped with Universal Tone Receivers collect the UTR overflow and peg counts as well.

Calculate the percentage of originating receiver overflow as follows:

$$\begin{array}{l} \% \text{ Receiver} \\ \text{Queue} \\ \text{(outgoing)} \end{array} = \frac{[(RCVOVFL + UTR OVFL) - (RCVQOVFL + UTRQOVFL)]}{RCVRSZRS + UTRSZRS + RCVQOVFL + UTRQOVFL + RCVRQABDN + UTRQABDN} \times 100$$

8.12 At the end of the report period, total the number of days the percentage of overflow was 5 percent or greater for the DGT+UTR receiver groups. Enter the number of days in Column C of Form SW-3370

B. Machine Switching

Transmitter 1st Trial Failure (1TF)

8.13 This indicator is the number of outgoing attempts that do not complete through the switching network on the first attempt.

8.14 The monthly results are computed from the total month's OMPR2XX as follows:

(a) Enter the total month's first trial failures (OUTOSF) in Column A.

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(b) Enter the total month's outgoing and tandem peg count (ORIGOUT + INOUT) in terms of 10,000 in Column B.

(c) Divide Column A by Column B. Enter the result in Column C.

Trunk Outage

8.15 Trunk outage is defined as a trunk not available for customer or operator access (excluding international and miscellaneous trunks). This outage is expressed as the normal business day (NBD) outage hours per trunk per month. It includes those trunks as covered in Practices 660-400-010, 660-630-010, and 795-400-100.

(a) The NBD for local trunks (intraoffice and interoffice) includes the period from 0900 to 2200 local time on weekdays (excluding Saturdays, Sundays, and holidays).

(b) The NBD for inter-Local Access and Transport Areas (inter-LATA), intra-LATA, and auxiliary trunks includes the period from 0900 to 2200 local time Sunday through Friday (excluding Saturdays and holidays).

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

Network Matching Loss

8.17 This indicator is a count of failures to find a network path on an outgoing or terminating basis to complete on the final (second) attempt during the Network Matching Loss (NML) time consistent busy hour.

8.18 The monthly results are computed as follows:

(a) In Column A, enter the sum of the total month's busy hour outgoing matching failures (OUTRMFL) and terminating matching failures (TRMMFL).

(b) In Column B, enter the sum of the total month's busy hour outgoing network attempts (OUTNWAT) and terminating network attempts (TRMNWAT).

(c) Divide Column A by Column B and enter the results expressed as a percentage in Column C.

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$$NML = \frac{OUTRMFL + TRMMFL}{OUTNWAT + TRMNWAT} \times 100$$

Line Mod Speech Link Blockage (LMSLB)

8.19 This indicator is a count of the failures to find a voice path from the network to a terminating line during LMSLB time consistent busy hour.

8.20 The monthly results are computed as follows:

(a) In Column A, enter the total month's busy hour terminating blockage (TRMBLK).

(b) In Column B, enter the total month's busy hour terminating network attempts (TRMNWAT).

(c) Divide Column A by Column B and enter the results expressed as a percentage in Column C.

$$LMSLB = \frac{TRMBLK}{TRMNWAT} \times 100$$

System Faults

8.21 This component measures faults of major units of network equipment. If major units of equipment are disabled or removed from service, call completion is jeopardized. For purposes of this component, the units included are:

- o Central Processor Unit (CPU)
- o Central Message Controller (CMC)
- o Disk Drive Unit (DDU)
- o Input/Output Controller (IOC)
- o Network Module Controller (NMC)
- o Magnetic Tape Unit (MTU).

8.22 The monthly results are computed from the total month's OMPR2XX as follows:

(a) Sum all the faults (CPUFLT + CMCFLT + DDUFLT + IOCFLT + NMCFLT + MTUFLT) for the equipment units listed in paragraph 8.21. Enter the results in Column F.

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(b) Sum the O+I (NORIG + NIN) peg count for the month. Enter the result in terms of 10,000 in Column G.

(c) Divide Column F by Column G. Enter the result in Column H.

Peripheral Faults

8.23 This component measures the faults of peripheral units as compared to the attempts made. For the purpose of this component, the units included are:

- o Line Module (LM)
- o Trunk Module (TM)
- o Digital Carrier Module (DCM)
- o Remote Line Module (RLM)
- o Digital Trunk Controller (DTC)
- o Line Group Controller (LGC)
- o Line Concentrating Module (LCM)
- o Remote Line Concentrating Module (RLCM).

8.24 The new peripherals (DTC, LGC, LCM, and RLCM) appear in the PM2 group of OMPR2XX.

8.25 The monthly results are computed from the total month's OMPR2XX as follows:

(a) Sum all the faults (LMFTL + TMFLT + DCMFLT + RLMFLT + DTCOM + LGCOM + LCMOM + RLCMOM) for the equipment listed in paragraph 8.23. Enter the results in Column F.

(b) Sum the O-I (NORIG + NIN) peg count for the month. Enter the result in terms of 10,000 in Column G.

(c) Divide Column F by Column G. Enter the result in Column H.

Equipment Outage

8.26 This indicator is a count of outage hours during the normal business day (NBD) or abbreviated normal business day (ANBD) of items of equipment listed in paragraph 8.27. Removal of equipment from service during busy periods will probably affect service and office reliability margins.

(a) Regular NBD includes the period from 0900 to 2200 local time on weekdays (excluding Saturdays, Sundays, and holidays).

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(b) The ANBD includes the period from 0900 to 1800 local time on weekdays (excluding Saturdays, Sundays, and holidays) and should only be used as instructed in Practice 201-114-001.

8.27 This measurement is obtained from the OMPR2xx. The outage time is measured in 10-second scan intervals (1 hour = 3600 seconds). The outage is measured separately for system busy and man-made busy equipment on the following:

- o Line Module (LM)
- o Trunk Module (TM)
- o Digital Carrier Module (DCM)
- o Remote Line Module (RLM)
- o Digital Trunk Controller (DTC)
- o Line Concentrating Module (LCM)
- o Remote Line Concentrating Module (RLCM)
- o Line Group Controller (LGC).
- o Remote Switching Center (RSC)

8.28 Refer to paragraph 8.24 for the equipment items which appear in the PM2 group of OMPR2XX.

8.29 The monthly results are computed as follows:

(a) Convert the measured outage usage (SBU, MBU, USBU, UMBU) to outage to the nearest tenth of an hour using one of the following methods:

10 Second Intervals =

$$\begin{array}{l} \text{Outage} \\ \text{Nearest tenth} \\ \text{of an hour} \end{array} = \frac{\text{(Scan Interval X 10)}}{3600 \text{ Seconds}}$$

OR 100 Second Intervals =

$$\begin{array}{l} \text{Outage} \\ \text{Nearest tenth} \\ \text{of an hour} \end{array} = \frac{\text{(Scan Interval X 100)}}{3600 \text{ Seconds}}$$

(b) Enter the total month's system busy, manual busy, and total equipment outage to the nearest tenth of an hour on their respective lines in Column A.

(c) Enter the total count of each equipment item listed in paragraph 8.27 as base data in Column B.

(d) Divide Column A by Column B. Enter the results in Column C.

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Planned/Unplanned Warm Restarts

- 8.30 Planned/unplanned warm restarts indicate the stability and health of call processing for the system. This is the first level of restart and is entered for the less severe detected abnormalities. Calls being processed are cleared but existing connected calls are retained. Data such as network connection maps, billing data, and error logs are retained. A warm start sequence requires an average of 90 to 240 seconds.
- 8.31 For this measurement plan, all planned warm starts are loads required by office growth jobs and generic retrofits or updates, limited to those specified in an MOP document. All other warm starts, whether induced manually or automatically by the processor, are considered unplanned.
- 8.32 The monthly results are computed from the total month's OMPR2XX (SYSWINIT). At the end of the measurement period:
- (a) In Column A, enter the number of planned warm restarts.
 - (b) In Column C, enter the number of unplanned warm restarts.

Planned/Unplanned Cold Restarts

- 8.33 Planned/unplanned cold restarts indicate the call processing ability and condition of the system. This level of restart is entered directly if the system detects an abnormality of a severe nature or is entered after a second warm restart has failed to resume normal system operation within a 3-minute time interval. The second warm restart is initiated whenever the first fails to establish normal system operation, again with a 3-minute time interval. As with warm restart, calls being processed are lost. Since network connection maps are cleared and both lines and trunks are set to the idle state in Central Control on a cold restart, established calls may be disconnected due to reuse of network paths or reuse of terminals as terminators in new calls before the original calls disconnect. Log system and automatic message accounting (AMA) billing records are retained. A cold restart sequence (call processing) requires an average of 90 to 240 seconds.
- 8.34 For this measurement plan, all planned cold restarts are loads required by office growth jobs and generic retrofits or updates, limited to those specified in an MOP document. All other cold restarts, whether induced manually or automatically by the processor, are considered unplanned.

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8.35 The monthly results are computed from the total month's OMPR2XX (SYSCINIT).
At the end of the measurement period:

(a) In Column A, enter the number of planned cold restarts.

(b) In Column C, enter the number of unplanned cold restarts.

Planned/Unplanned Reloads

8.36 This reinitialization is used after a reload of an office image tape and can be either manually initiated or caused by auto-reload. Office configuration and translation data are overwritten by the office image tape data. All dynamic data, including error logs, are cleared. For this measurement plan, all planned reloads are reloads required by office growth jobs and generic retrofits or updates, limited to those specified in an MOP document or Bulk Change Supplement (BCS). Planned reloads do not include action of last resort (i.e., system load to return to old generic). All other reloads, whether induced manually or automatically by the processor, are considered to be unplanned. A manual record must be posted for each reload occurrence.

8.37 At the end of the measurement period:

(a) Enter the total month's planned reloads in Column A.

(b) Enter the total month's unplanned reloads in Column C.

Note: An Inactive system Timing Circuit (ISTC), NT5X69, is located in a miscellaneous equipment frame. The ISTC measures the time (in seconds) that the DMS-100 switching system is disabled from call processing. The ISTC is inactive during normal switching activity and becomes active when a signal is present on the Inactive System Timing (IAST) lead. This lead activates a relay which requires - 48V. This relay activates a timer that is driven via protected ac. The timing circuit can be driven by an inverter used by the Maintenance and Administration Position (MAP) or any other protected device. The timer has a recording range from 0000 to 9999 seconds. This circuit is not presently included in this measurement plan, but it does have future considerations.

C. Customer Reports

Customer Trouble Reports, Code 8 (Found OK)

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- 8.38 This indicator includes all customer trouble reports (including Remote Line Modules) that result in Disposition Code 8. Disposition Code 8 is defined in Practice 660-169-013.
- 8.39 Code 8 reports are obtained from the Southwestern Trouble Analysis and Tracking No. 2 (STAT 02 report). Code 8 Network Customer Services subcodes 080X and 089X are subtracted. The 080X and 089X subcodes apply when reports result from inaccurate or incomplete data base information from the data base driven services.
- 8.40 The monthly results are computed as follows:
- (a) In Column A, enter the total month's Code 8 Found OK.
 - (b) In Column B, enter the total working lines as of the first day of the report month divided by 100. The Traffic Summary Line (TSL) report of the computer system for main frame operations (COSMOS) provides a working line count. A central office entity E-2700 report excluding lines for Outward Wide Area Telephone Service (OUTWATS), 800 Service (Inward Wide Area Telephone Service [INWATS]), Mobile, Special Services Telephone, Video, Data Private Line, and Data Switched Service also provides a working line count. This E-2700 uses the F1 facility in the Loop Maintenance Operations System (LMOS) as the base for a line count. If neither of these reports are available, a comparable report providing the same base count should be used. Average working lines must be used if a change of more than 500 working lines occurs during the report month.
 - (c) Divide Column A by Column B. Enter the result in Column C.

MEASURED COMPONENTS

A. Machine Access

Dial Tone Speed

- 8.41 Dial tone speed is a measurement of the machine's ability to provide dial tone within 3 seconds during the busy hour. It is used as the primary measurement for evaluating the capability of providing originating customer service. The DMS-100 family switching systems measure the speed of dial tone on all originations from either dial pulse (DP) or DIGITONE* service customers.

* Registered service mark of Northern Telecom, Ltd.

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8.42 The procedures for determining the busy hour to be measured and for gathering and summarizing the data are contained in Practice 780-350-060.

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

(b) In Column H, enter the month's total adjusted index points earned (Item 27) from Form E-4372.

Receiver Queue Full Condition (RCVQOVFL)

8.43 This component is a count of the number of times an attempt is made to access an MF, DGT, and UTR (if equipped) receiver, but the attempt is unsuccessful. Data required for this component are recorded for each average business day during the time consistent busy hour as determined by the incoming busy hour (MF+UTR) or originating busy hour (DGT+UTR) component. These two components are measured separately and the register readings are contained on the OMPR2XX.

8.44 Compute the incoming and originating receiver queue overflow using register field names "LGC", "DTC" and "RCC" as appropriate.

(a) Each day, obtain the incoming (MF) and originating (DGT) busy hour receiver and UTR (if equipped) overflow, seizures and abandons.

(b) Separately calculate the percentage of overflow for incoming and originating as follows, and enter in Column C:

$$\begin{array}{l} \% \text{ OVFL} \\ \text{Queue} \\ \text{(Incoming} \\ \text{or} \\ \text{Originating)} \end{array} = \frac{\text{RCVQOVFL} + \text{UTRQOVFL}}{\text{RCVRSZRS} + \text{UTRSZRS} + \text{RCVQOVFL} + \text{UTRQOVFL} + \text{RCVQABDN} + \text{UTRQABDN}} \times 100$$

B. Machine Switching

Transmitter Timeouts

8.45 This component measures second attempts for connections that do not complete through the network. It is defined as the number of outgoing calls that fail and are treated as a start signal timeout (SSTO). The failure could be the result of:

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- o A reversed trunk
- o A failure to receive or recognize a start-dial
- o An unexpected stop-dial
- o A time-out before the expected stop-dial.

Transmitter Timeouts which occur on Direct Inward Dialing (DID) trunk groups terminating on customer premise equipment (CPE) associated with short duration failures may be deducted along with the associated basecount (outgoing calls). These are CPE failures which are infrequent and large in number and could significantly impact the normal monthly failure performance. It remains to be good practice to make affected DID trunks busy in stored program offices until the CPE failure is removed. Form SW-3372 (Figure 4) is provided to record adequate documentation reflecting the failure and base counts that were deducted per the respective DID trunk group. Form SW-3372 should be retained as directed in paragraph 7.13.

8.46 The monthly results are computed from the OMPR2XX as follows:

- (a) In Column F, enter all second-trial failures recorded in register OUTROSF of the OFZ group.
- (b) In Column G, enter the total month's outgoing and tandem peg count in terms of 10,000.
- (c) Divide Column F by Column G. Enter the result in Column H.

Receiver Timeouts

8.47 A receiver timeout occurs whenever a pulse-receiving circuit cannot complete its function for any reason. Network blockage and partial dials are excluded. This failure can be caused by the receiving office, the sending office, or the interconnecting facility. The measurement also excludes incoming DP timeouts due to a high incidence of subscriber-caused permanent signal (PS) and partial dial (PD) incoming timeouts.

8.48 The monthly results are computed from the OMPR2XX as follows:

- (a) In Column F, enter all timeouts charged for the month.
- (b) In Column G, enter the total months MF RCVSZRS and/or DTC plus UTR RCVSZRS peg count in terms of 10,000.

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(c) Divide Column F by Column G. Enter the result in Column H.

C. Billing

Lost Billing

8.49 This component measures the ability of the machine to properly record AMA information on AMA magnetic tape or disk. The AMA errors included are those unbillable messages that are written off as uncollectable. Further definitions of these failures are provided in Practice 201-900-700, Pre-Billing Failure Performance Reporting. Total AMA errors and entries are supplied by the AMA data processing group. The AA870-300 report is the source document used for this component.

8.50 The monthly results are computed as follows:

(a) Enter the total month's AMA errors in Column F.

(b) Enter the total month's AMA entries in terms of 100,000 in Column G.

(c) Divide the total failures in Column F by Column G. Enter the performance ratio in Column H.

D. Customer Reports

Customer Trouble Reports, Code 5 Equipment

8.51 This component includes all customer trouble reports (including Remote Line Modules) that result in Disposition Code 5, excluding distributing frame and line translation troubles. Disposition Code 5 is defined in Practice 660-169-013.

8.52 Code 5 reports are obtained from the STAT 02 report. Code 5 distributing frame troubles, line translation reports (0525 and 0526), and network customer service subcodes 050X and 059X are subtracted. The 050X and 059X subcodes apply when reports result from inaccurate or incomplete data base information for data base driven services. Refer to Practice 660-169-013.

8.53 The monthly results are computed as follows:

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

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(b) In Column G, enter the total working lines as of the first day of the report month, divided by 100. The TSL report of COSMOS provides a working line count. A central office entity E-2700 report excluding lines for OUTWATS, 800 Service (INWATS), Mobile, Special Services Telephone, Video, Data Private Line, and Data Switched Service also provides a working line count. This E-2700 uses the F1 facility in LMOS as the base for a line count. If neither of these reports are available, a comparable report providing the same base count should be used. Average working lines must be used if a change of more than 500 working lines occurs during the report month.

(c) Divide Column F by Column G. Enter the result in Column H.

9. PREPARATION OF FORM SW-3370

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

(a) Form SW-3370 be prepared jointly.

(b) All developed input data be retained in one location as described in Section 7.

9.02 All decimal figures recorded in the performance Columns of Form SW-3370 are rounded to two places after the decimal point. Round upward if the third digit is five or greater; round down if the third digit is less than five (e.g., 0.005 = 0.01, 0.096 = 0.10, 0.094 = 0.09, 0.003 = 0.00, etc.).

9.03 The following subparagraphs define the Column headings for the performance indicators section of Form SW-3370 (Figure 1).

(a) Column A - Failures: Entries in this Column 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 reports, or the amount of outage experienced during the period. The notation NAV (not available) or EMPTY is entered, when applicable, according to the instructions in Section 7.

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- (b) Column B - Base Data: The entries in this Column include the data that are used as the divisor to determine performance ratios or percentages. Certain entries will be in terms of 100,000 or 10,000 or 100 (rounded to two places after the decimal). The notation NAV or EMPTY is entered, when applicable, according to the instructions in Section 7.
- (c) Column C - Performance: Entries in this Column are the ratios or percentages developed by divided data base entries in Column B (rounded to two places after the decimal). The notation NAV or EMPTY is entered, when applicable, according to the instructions in Section 7.
- (d) Column D - Threshold: Entries in this Column are obtained from the list of threshold levels included in Section 11.
- (e) Column E - Soft Spot: The numeral one is entered in this Column when the indicator performance is worse than the threshold level or the data are NAV for the report period.

9.04 The following subparagraphs define the Column headings for the measured components section of Form SW-3370 (Figure 1).

- (a) Column F - Failures: Entries in this section include register scorings of the number of times an event or failure occurred within the defined time frame during the report period, the number of observed failures, or the number of reports. The notation NAV or EMPTY is entered when applicable, according to the instructions in Section 7.
- (b) Column G - Base Data: The entries in this Column include the data that are used as the divisor to determine performance ratios or percentages. Certain entries will be in terms of 100,000 or 10,000 or 100 (rounded to two places after the decimal). The notation NAV or EMPTY is entered, when applicable, according to the instructions in Section 7.
- (c) Column H - Performance: Entries in this Column are the ratios or percentages developed by dividing data base entries in Column G (rounded to two places after the decimal). The notation NAV or EMPTY is entered, when applicable, according to the instructions in Section 7.
- (d) Column J - Component Index: Entries in this column are obtained from the appropriate index table for the measured item in Section 7.

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(e) Column K - Index Points: Entries in this Column are obtained from the appropriate index table located at the end of this Practice.

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

Band	Index Level
H	98.50 - 100.00
O	95.50 - 98.49
L	89.50 - 95.49
U	Below 89.50 or NAV

9.05 All lines on Form SW-3370 (Figure 1) are defined in the description of components section or are self-explanatory except the following.

(a) Line 15: In Column C, enter the total number of performance indicators applicable to the measured control group, including NAVs. Enter the total number of soft spots in Column E.

(b) Line 25 - Total Points: Enter the total points in in Column K.

(c) Line 26 - Maximum Available Points: Enter the total maximum points of all components for which results are measured. Exclude EMPTY or NAV components.

(d) Line 27 - Total Index: Divide line 25 by line 26. Enter the result, expressed as a percentage, on line 27 ($L25 \div L26 \text{ 'times' } 100 = L27$).

10. PREPARATION OF FORM SW-3371

10.01 The DMS-100 family switching system Network Switching Performance Measurement Plan Office Summary Report (Form SW-3371) provides all management levels with a specific report to identify the number and percentage of offices performing in the satisfactory H and O bands, in the less than satisfactory L band, and in the unsatisfactory U band. It also provides the number and percentage of offices exceeding the threshold for each performance indicator. All SW-3370 reports are prepared by INTEGRIS.

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10.02 All data recorded on Form SW-3371 (except percentage calculations) are taken directly from the represented Form SW-3370 reports. Percentage entries are rounded to one decimal.

10.03 The form serves three purposes. Figure 2 is provided as an example of a multioffice, single month Form SW-3371.

(a) Multioffice, single month

(b) Multimonth, single office

(c) Multioffice, multimonth

10.04 The following subparagraphs define the Column headings of Form SW-3371 (Figure 2) and provide the source data locations on Form SW-3370.

(a) Column A: Enter the number of control groups reporting results in each component.

(b) Column B: Enter the number of office report months.

(c) Columns C through F: Enter the number and percentage of control groups in the appropriate band Column for each component.

(d) Column G through U: Enter the number of office months and soft spots, one for each component from Column E on Form SW-3370.

11. THRESHOLDS AND INDEX TABLES

11.01 This section contains a list of threshold levels for the performance indicators. Tables B through H contain the measured component index tables used to complete the monthly Form SW-3370.

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Performance Indicators

<u>Machine Access</u>	Threshold
Ineffective Machine Attempts	1.00
Receiver Queue (MF+UTR)	1.00
Receiver Queue (DGT+UTR)	0.00
<u>Machine Switching</u>	
Transmitter 1TF	8.00
Trunk Outage	95.00
NSML	0.10
LMSLB	1.90
System Faults	15.00
Peripheral Faults	25.00
Equipment Outage	1.00
Warm Restarts-Unplanned	0.00
Cold Restarts-Unplanned	0.00
Reload - Unplanned	0.00
<u>Customer Reports</u>	
Code 8 (Found OK)	0.10

12. INTEGRITY REVIEW

12.01 The integrity review contained in this section provides general guidelines for ensuring the validity of results submitted under the DMS-100 family switching system NSPMP.

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- 12.02 Figures 5 through 7 may be used independently or in any combination based on the type of review planned.
- 12.03 In order to provide accurate end results, the data used must be tested from its source through all phases of processing.
- 12.04 The DMS-100 family switching system integrity review is designed so that it can be used effectively to review all or part of the SCC. It can also be used by local office supervision to identify trouble. However, the use of the review should not be limited to central office review functions.
- 12.05 The integrity review should not be regarded as a personnel evaluation plan. Proper application will assist management in identifying engineering, administration, and maintenance problems that distort the accuracy of the DMS-100 family switching systems.
- 12.06 A thorough integrity review should be used if machine performance does not correlate with data reported machine performance on the NSPMP or if the machine performance does not reflect the data produced by software.
- 12.07 The DMS-100 family switching system operational measurements are the primary source of data used for the NSPMP. If the daily collection is nonmechanized, locate the appropriate forms for logging hourly, daily and/or monthly information.
- 12.08 Other inputs are provided by the data processing group (comptrollers). All source data for the NSPMP must cover the same time frame (from the 23rd of the month to the 22nd of the following month).
- 12.09 A method of assuring that data is properly collected is described in paragraphs 12.10 through 12.12 and illustrated in Figure 5.
- 12.10 The following manual data collection must be performed:
- (a) Check the data for transcription errors from the teletypewriter output to the logs. The No. 2 SCCS minicomputer should be used whenever possible.
 - (b) Compare data from the daily totals with the monthly totals.
 - (c) Look for trends in the data or for any sudden changes.

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- (d) Randomly select several days data and compare all hourly totals with the daily total. Ensure that the hourly totals are the corresponding hours that make up the daily total. These messages may be filtered and expanded by using the No. 2 SCCS minicomputer. If the SCC tapes are not available, use the history teletypewriter paper at the office. Was there a change in data with a new office data run, generic, or broadcasting warning message?
- 12.11 If the Engineering and Administrative Data Acquisition System (EADAS) is the data collection tool, verify that all data used is correct. Check this with the local network switching administrator. Look for transcription errors from the EADAS printout to Form SW-3370 or any intermediate forms.
- 12.12 If the No. 2 SCCS minicomputer is used to collect and/or calculate totals from plant data, verify that the computer is adding the right registers. Perform a manual addition of one month's data for randomly selected items. Compare for accuracy.
- 12.13 Figure 6 provides a guideline to determine the accuracy of Form SW-3370. This guideline assumes that all source data is transcribed to Form SW-3370 correctly and that the computations are correct.
- 12.14 Obtain copies of Form SW-3370, Office Report, from the staff if the form is prepared manually, or from INTEGRIS for at least the 3 prior months.
- 12.15 Verify all EMPTY entries on Form SW-3370 to validate that the office is not equipped for the measurement, due to either an equipment or generic program. Documentation should be maintained to substantiate any EMPTY entries.
- 12.16 If any lines are NAV (not available), there should be documentation available to validate the reason measured failures and/or base data is not available. The NAV is considered softspot or Band U performance and should be indicated.
- 12.17 The reviewer should access INTEGRIS prior to the office visit and request data for the previous 3 months for all performance indicators and measured components. Various programs are available in the INTEGRIS library file on how to use instructions.
- 12.18 If errors are found while checking records from INTEGRIS, correct the data base.
- 12.19 Checking Form SW-3371 is not required if using INTEGRIS. All data is taken from Form SW-3370.

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- 12.20 Figure 7 provides guidelines for checking results reporting and record retention for Form SW-3371.
- 12.21 The DMS-100 family switching system NSPMP Summary Report (FORM SW-3371) provides all management with a specific report to identify the number and percentage of offices performing in the H, O, L, and U bands. It also provides the number and percentage of offices exceeding the threshold for each performance indicator. All SW-3371 reports are prepared by INTEGRIS. Check that all offices reporting results are using the SW-3371. All data recorded on SW-3371 (except percentage calculations) are taken directly from the represented SW-3370 reports. Percentage entries should be rounded to one decimal. The form serves three purposes:
- o Multioffice, single month
 - o Multimonth, single office
 - o Multioffice, multimonth
- 12.22 It is imperative that all personnel involved with any discrepancies in preparing the NSPMP be thoroughly instructed to prevent any further errors.
- 12.23 Daily printouts of data used for computation of the results reported on Forms SW-3370 and SW-3371 should be kept for the current report month and the previous 3 months. The monthly printouts should be retained for 1 year. Forms SW-3370 and SW-3371 should be retained for at least 1 year. It is recommended that a retention system similar to that described in Practice 190-130-010, SPCS/SCC Control Maintenance Plan, be used. The printouts and reports should be filed in the appropriate month's folder and retained until the results report for the same month of the following year replaces them.

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**Network Switching Performance
Measurement Plan For DMS*-100
Family Digital Switching Systems**

SW-3370
(4-90)
Ref: SW241-240-900

Retain 1 year, until _____

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Office	District	Division	Manager	
Area		Generic	Month	Year

Performance Indicators

Indicator	A	B		C	D	E
	Failures	Base Data Item	Data	Performance	Threshold	Soft Spot
Machine Access						
1	IMA				1.00	1
2	Receiver Queue (MF + UTR)				1.00	2
	Receiver Queue (DGT + UTR)				0	3
Machine Switching						
4	Transmitter Timeouts (1TF)		OGT PC/10K		8.0	4
5	Trunk Outage				95.00	5
6	NML		OUTN + TRMN BH		0.10	6
7	LM Speech Link Block		TRMNWAT BH		1.9	7
8	System Faults		O + 1PC/10K		15.00	8
9	Peripheral Faults		O + 1PC/10K		25.00	9
10	Equipment Outage	System				
		Manual				
		Total	Total Eqp.		1.00	
11	Warm Restart				0	11
12	Cold Restart				0	12
13	Reloads				0	13
Customer Reports						
14	Code 8		Wkg. Lns./100		0.10	14
15	Total Indicators				Total Soft Spots (1)	15

Measured Components

Component	Max. Pts.	F	G		H	J	K	L
		Failures	Base Data Item	Data	Performance	Component Index	Index Points	Band
Machine Access								
16	Dial Tone Speed	15						16
17	Receiver Queue Full (MF + UTR)	10						17
	Receiver Queue Full (DGT + UTR)	10						18
Machine Switching								
19	Transmitter Timeouts (2TF)	15		OGT PC/10K				19
20	Receiver Timeouts	15		Inc. PC/10K				20
Billing								
21	Equipment Failures							21
22	Partial & Cancel Charges							22
23	Lost Billing	10		Messages/100K				23
Customer Reports								
24	Code 5 Equipment	25		Wkg. Lns./100				24
Remarks						25 Total Points		25
						26 Max. Available Points		26
						27 Total Index		27

Figure 1 - Example of Form SW-3370 (7.03, 9.03, 9.04, 9.05)

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Retain 1 year, until _____

**Network Switching Performance
Measurement Plan For DMS*-100
Family Digital Switching Systems
Office Summary**

Office	District	Division	Manager
Area		Month	Year

Measured Components

Measured Component	WEIGHT	A	B	C	D	E	F
		Total No. Of Offices	Total No. Of Office Month Reports	No. And % Of Office Month Reports By Index Band	H	O	L
				100-98.50	98.49-95.50	95.49-89.50	89.50
Machine Access							
1 Dial Tone	15						1
2 Speed		% Of Total					
3 Receiver Queue	10						3
4 Full (MF + UTR)		% Of Total					
5 Receiver Queue	10						5
6 Full (DGT + UTR)		% Of Total					
Machine Switching							
7 Transmitter Timeouts	15						7
8		% Of Total					
9 Receiver Timeouts	15						9
10		% Of Total					
Billing							
11 Lost Billing	10						11
12		% Of Total					
Customer Reports							
13 Code 5 Equipment	25						13
14		% Of Total					
15 Total Index	100						15
16		% Of Total					

Performance Indicators

	G	H	J	K	L	M	N	O
	Machine Access			Machine Switching				
	IMA	Receiver Queue (MF + UTR)	Receiver Queue (DGT + UTR)	Transmitter Timeouts (1TF)	Trunk Outage	NML	LM Speech Link Block	System Faults
17 # Office Months								17
18 # Soft Spots								18
	P	Q	R	S	T	U		
	Machine Switching					Customer Reports		
	Peripherals Faults	Equipment Outage	Warm Restart	Cold Restart	Reloads	Code 8		
19 # Office Months								19
20 # Soft Spots								20

Remarks

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Figure 2 - Example of Form SW-3371 (10.03, 10.04)

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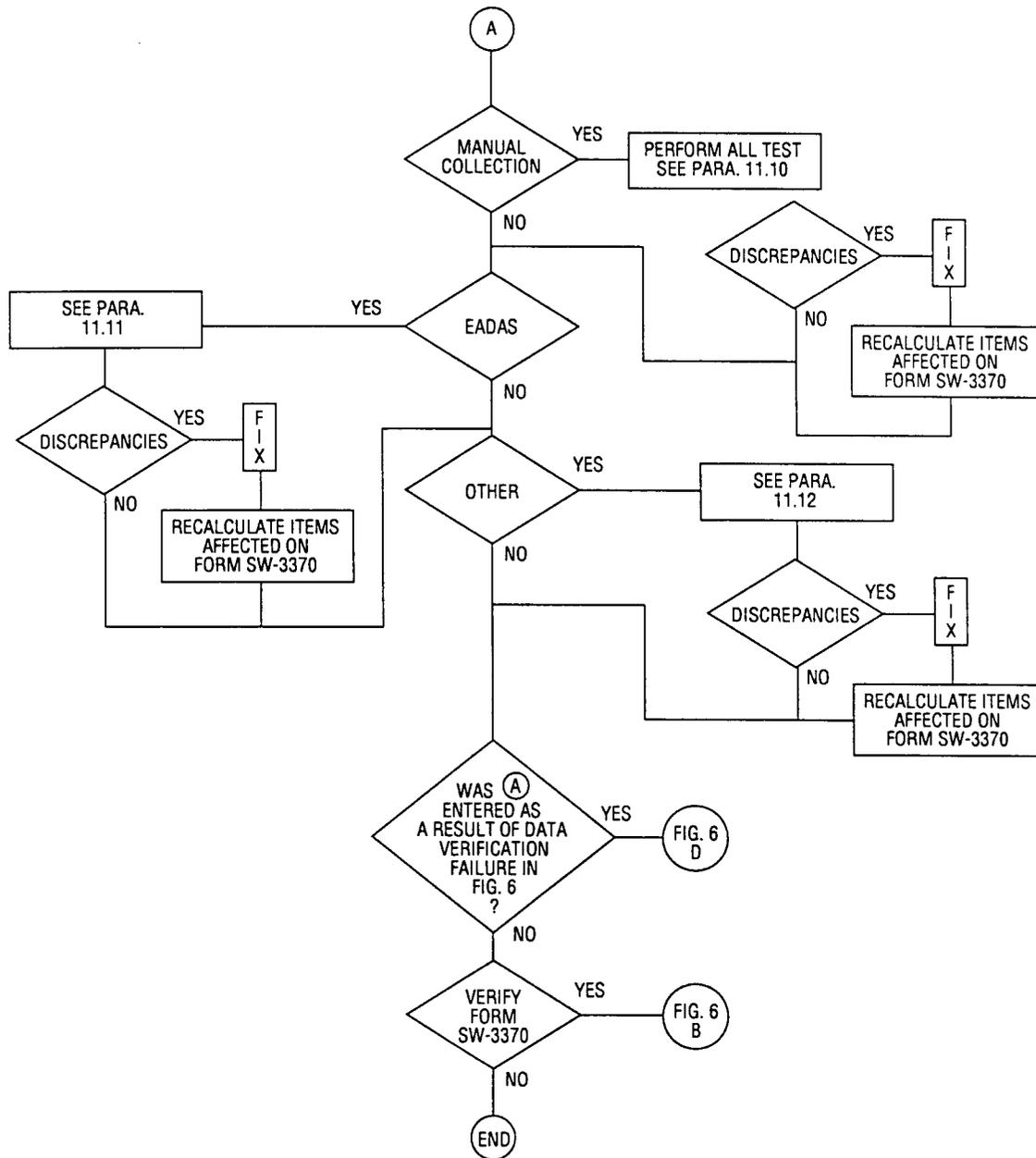


Figure 5 - Data Collection Flowchart (12.02, 12.09)

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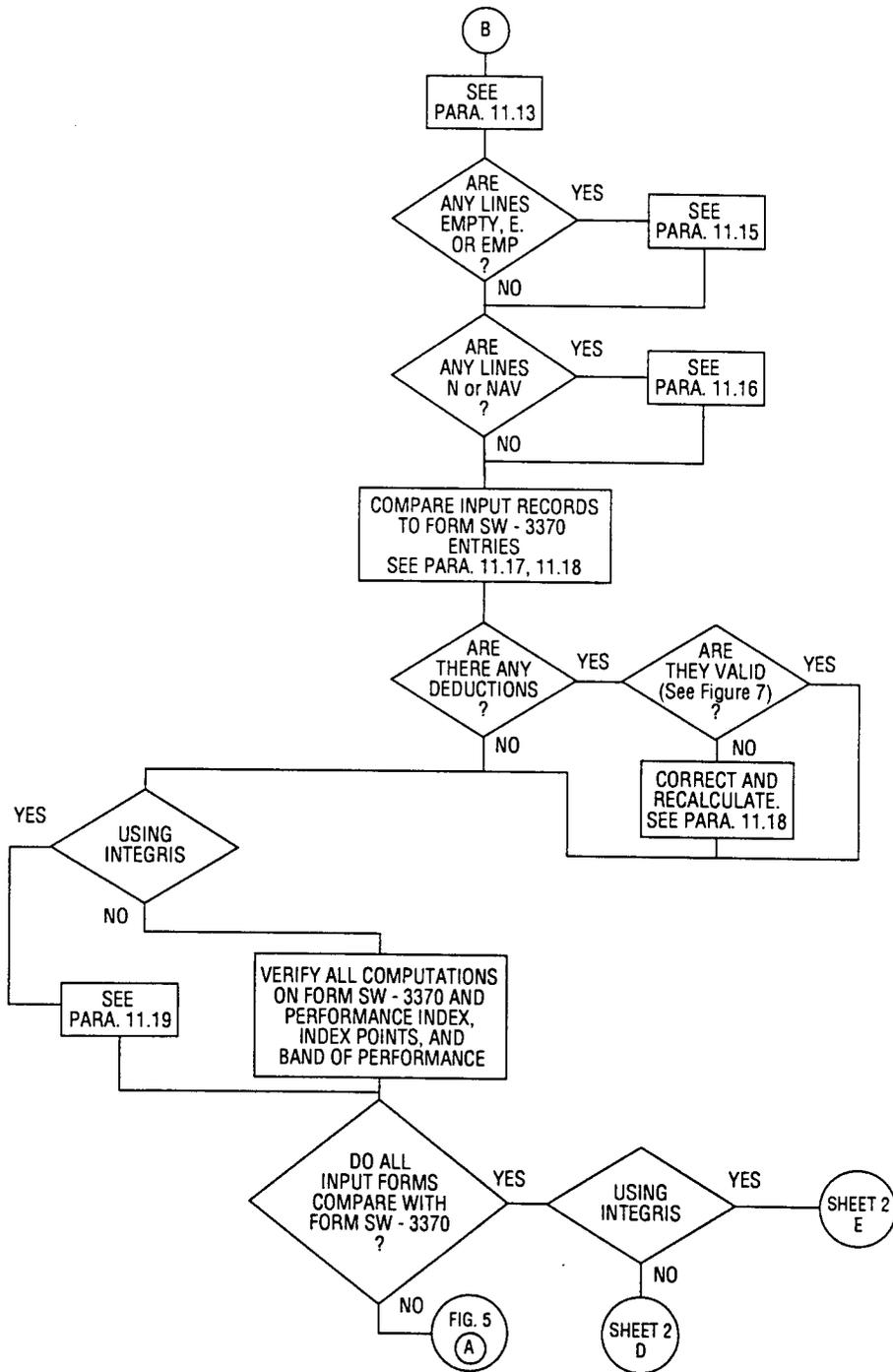


Figure 6 - Form SW-3370 Verification Flowchart (sheet 1 of 2) (12.02, 12.13)

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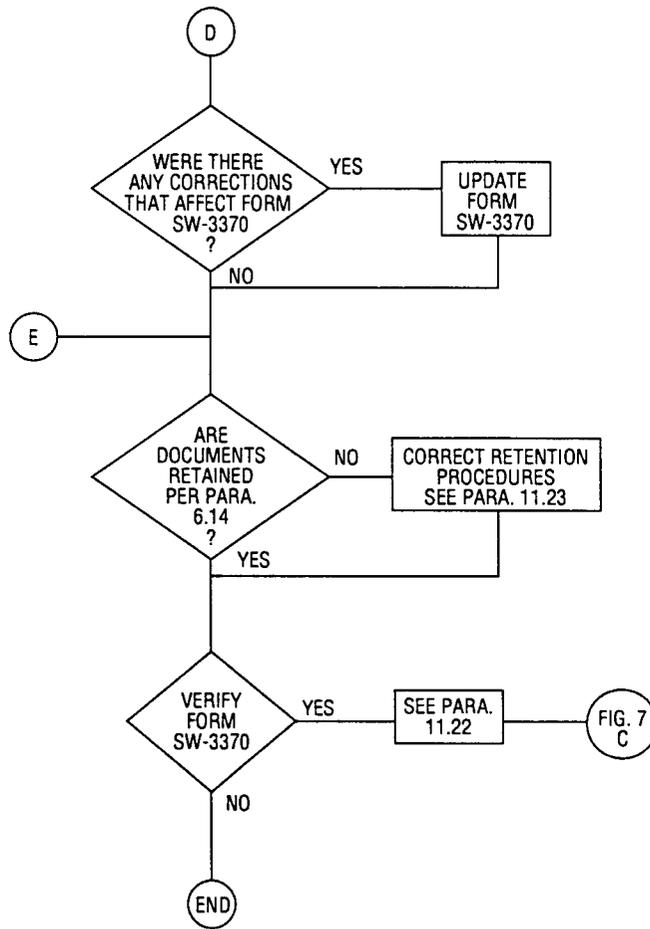


Figure 6 - Form SW-3370 Verification Flowchart (Sheet 2 of 2) (12.02, 12.13)

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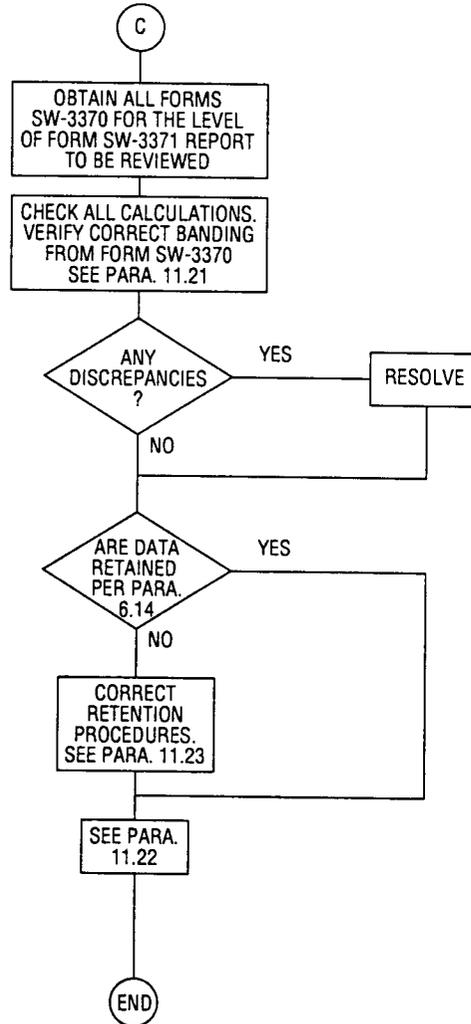


Figure 7 - Form SW-3371 Verification Flowchart (12.02, 12.20)

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TABLE A - Data Source Performance Indicators and Measured Components

Indicator/ Component	Group	Field (Register)	Description	Source	Log Message
IMA	OFZ	NIN	Incoming	OMPR2XX	
	OFZ	NORIG	Originating	OMPR2XX	
	OFZ	INABNM	Incoming Machine Abandon	OMPR2XX	
	OFZ	INABNC	Incoming Customer Abandon	OMPR2XX	
	OFZ	ORIGABDN	Originating Abandon	OMPR2XX	
	OFZ	INOUT	Tandem	OMPR2XX	
	OFZ	ORIGOUT	Originating Outgoing	OMPR2XX	
	OFZ	INTRM	Incoming Terminating	OMPR2XX	
	OFZ	ORIGTRM	Originating Terminating	OMPR2XX	
	TRMT1	PSIG	Permanent Signal Time-out	OMPR2XX	
	TRMT1	PDIL	Partial Dial Time-out	OMPR2XX	
	OFZ2	PSGM	Permanent Signal-Machine Dialed	OMPR2XX	TRK117
	OFZ2	PDLM	Partial Dial-Machine Dialed	OMPR2XX	TRK116
Receiver QUEUE (MF, UTR or DGT) or Receiver Queue Full	RCVR	RCVSZRS	Receiver Seizure	OMPR2XX	
	UTR	UTRSZRS	UTR Seizure	OMPR2XX	
	RCVR	RCVOVFL	Receiver Overflow	OMPR2XX	
	UTR	UTROVFL	UTR Overflow	OMPR2XX	
	RCVR	RCVQOVFL	Receiver Queue Overflow	OMPR2XX	
	UTR	UTRQOVFL	UTR Queue Overflow	OMPR2XX	
	RCVR	RCVQABAN	Receiver Queue Abandon	OMPR2XX	
	UTR	UTRQABAN	UTR Queue Abandon	OMPR2XX	
Transmitter Time-outs (1TF)	OFZ	OUTOSF	First Trial Seizure Failure	OMPR2XX	TRK121
	OFZ	ORIGOUT	Originating Outgoing	OMPR2XX	
	OFZ	INOUT	Tandem	OMPR2XX	
	TRK	OUTFAIL	Outgoing Failure	OMPR2XX	TRK121

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Indicator/ Component	Group	Field (Register)	Description	Source	Log Message
Trunk Outage	TRK	SBU	System Busy Usage Count	OMPR2XX/ E-3994	TRK106 TRK110
	TRK	SBU	Manual Busy Usage Count	OMPR2XX/ E-3994	TRK106 TRK110
Network Matching Loss	OFZ	OUTRMFL	Outgoing Failures	OMPR2XX	
	OFZ	TRMMFL	Terminating Failures	OMPR2XX	
	OFZ	OUTNWAT	Outgoing Attempts	OMPR2XX	
	OFZ	TRMNWAT	Terminating Attempts	OMPR2XX	
Line Mod Speech Link Block	OFZ	TRMBLK	Terminating Blockage	OMPR2XX	
	OFZ	TRMNWAT	Terminating Attempts	OMPR2XX	
System Faults	CPU	CPUFLT	CPU Fault	OMPR2XX	CC100, C101 CC112, CC120
	CMC	CMCFLT	CMC Fault	OMPR2XX	CMC107
	DDU	DDUFLT	DDU Fault	OMPR2XX	
	IOC	IOCFLT	IOC Fault	OMPR2XX	IOD109, IOD113 IOD118, IOD129
	NMC	NMCFLT	NMC Fault	OMPR2XX	
	MTU	MTUFLT	MTU Fault	OMPR2XX	IOD204, IOD210 IOD212, IOD213
Peripheral Faults	LM	LMFLT	LM Fault	OMPR2XX	PM100, PM101 PM102, PM114 PM117

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Indicator Component	Group	Field (Register)	Description	Source	Log Message
Peripheral Faults (continued)	TM	TMFLT	TM Fault	OMPR2XX	Same as LMFLT
	DCM	DCMFLT	DCM Fault	OMPR2XX	Same as LMFLT
	RLM	RLMFLT	RLM Fault	OMPR2XX	Same as LMFLT
	PM2	DTCOM	PM2 Fault	OMPR2XX	
	PM2	LGCOM	PM2 Fault	OMPR2XX	
	PM2	LCMOM	PM2 Fault	OMPR2XX	
	PM2	RLCMOM	PM2 Fault	OMPR2XX	
Equipment Outage	LM	LMSBU, LMMBU	LM System or Manual Busy	OMPR2XX	
	TM	TMSBU, TMMBU	TM System or Manual Busy	OMPR2XX	
	DCM	DCMSBU, DCMMBU	DCM System or Manual Busy	OMPR2XX	
	RLM	RLMBSU, RLMMBU	RLM System or Manual Busy	OMPR2XX	
	PM2	PM2USBU	System Busy on DTC, LGC, LCM, or RLCM	OMPR2XX	
	PM2	PM2UMBU	Manual Busy on DTC, LGC, LCM, or RLCM	OMPR2XX	
Warm Restart	CPU	SYSWINIT	System Initialization	OMPR2XX	CC107
Cold Restart	CPU	SYSCINIT	System Initialization	OMPR2XX	CC107
Reloads			Reinitialization	Manual Log	
Code 8			Found OK	STAT 02	
Dial Tone Speed	DTSR	DTSOLYPC	DTS Delay Peg Count	OMPR2XX	
	DTSR	DTSTESTC	DTS Test Calls	OMPR2XX	

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Indicator/ Component	Group	Field (Register)	Description	Source	Log Message
Transmitter Time-outs	OFZ	OUTROSF	Outgoing Seize Failure (2TF)	OMPR2X	TRK121
	OFZ	ORIGOUT	Originating Outgoing	OMPR2XX	
	OFZ	INOUT	Tandem	OMPR2XX	
Receiver Time-outs	RCVR	RCVSZRS	MF Receiver Seizures	OMPR2XX	
	RCVR	UTRQSZRS	UTR Receiver Seizures	OMPR2XX	
	OFZ2	PSGM	Permanent Signal-Machine Dialed	OMPR2XX	TRK117
	OFZ2	PDLM	Partial Dial-Machine Dialed	OMPR2XX	TRK116
Lost Billing	AMA	AMAENT	AMA Call Entry	OMPR2XX AMA Data Processing Group	
Code 5 Equipment			Equipment Trouble Reports	STAT 02	

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TABLE B -- Dial Tone Speed Measured Component Index Table

Performance Range	Component Index	Index Points	Performance Range	Component Index	Index Points
35.00 - 34.98	100.00	15.00	29.33 - 29.27	72.00	10.80
34.97 - 34.79	99.50	14.92	29.26 - 29.19	71.00	10.65
34.78 - 34.61	99.00	14.85	29.18 - 29.12	70.00	10.50
34.60 - 34.42	98.50	14.77	29.11 - 29.05	69.00	10.35
34.41 - 34.24	98.00	14.70	29.04 - 29.98	68.00	10.20
34.23 - 34.06	97.50	14.62	29.97 - 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	21.63 - Below	0.00	0.00

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TABLE C - Receiver Queue Full (MF + UTR) Measured Component Index Table

Performance Range	Component Index	Index Points	Performance Range	Component Index	Index Points
0.00 - 0.10	100.00	10.00	7.87 - 7.97	72.00	7.20
0.11 - 0.47	99.50	9.95	7.98 - 8.08	71.00	7.10
0.48 - 0.82	99.00	9.90	8.09 - 8.18	70.00	7.00
0.83 - 1.14	98.50	9.85	8.19 - 8.28	69.00	6.90
1.15 - 1.44	98.00	9.80	8.29 - 8.38	68.00	6.80
1.45 - 1.73	97.50	9.75	8.39 - 8.48	67.00	6.70
1.74 - 2.00	97.00	9.70	8.49 - 8.58	66.00	6.60
2.01 - 2.26	96.50	9.65	8.59 - 8.67	65.00	6.50
2.27 - 2.51	96.00	9.60	8.68 - 8.76	64.00	6.40
2.52 - 2.75	95.50	9.55	8.77 - 8.85	63.00	6.30
2.76 - 2.99	95.00	9.50	8.86 - 8.94	62.00	6.20
3.00 - 3.21	94.50	9.45	8.95 - 9.03	61.00	6.10
3.22 - 3.43	94.00	9.40	9.04 - 9.11	60.00	6.00
3.44 - 3.65	93.50	9.35	9.12 - 9.19	59.00	5.90
3.66 - 3.85	93.00	9.30	9.20 - 9.28	58.00	5.80
3.86 - 4.06	92.50	9.25	9.29 - 9.36	57.00	5.70
4.07 - 4.25	92.00	9.20	9.37 - 9.44	56.00	5.60
4.26 - 4.45	91.50	9.15	9.45 - 9.52	55.00	5.50
4.46 - 4.63	91.00	9.10	9.53 - 9.60	54.00	5.40
4.64 - 4.82	90.50	9.05	9.61 - 9.67	53.00	5.30
4.83 - 5.00	90.00	9.00	9.68 - 9.75	52.00	5.20
5.01 - 5.17	89.50	8.95	9.76 - 9.83	51.00	5.10
5.18 - 5.32	89.00	8.90	9.84 - 9.90	50.00	5.00
5.33 - 5.46	88.50	8.85	9.91 - 10.05	48.00	4.80
5.47 - 5.58	88.00	8.80	10.06 - 10.20	46.00	4.60
5.59 - 5.70	87.50	8.75	10.21 - 10.36	44.00	4.40
5.71 - 5.81	87.00	8.70	10.37 - 10.52	42.00	4.20
5.82 - 5.92	86.50	8.65	10.53 - 10.69	40.00	4.00
5.93 - 6.02	86.00	8.60	10.70 - 10.86	38.00	3.80
6.03 - 6.12	85.50	8.55	10.87 - 11.04	36.00	3.60
6.13 - 6.21	85.00	8.50	11.05 - 11.22	34.00	3.40
6.22 - 6.30	84.50	8.45	11.23 - 11.42	32.00	3.20
6.31 - 6.39	84.00	8.40	11.43 - 11.62	30.00	3.00
6.40 - 6.47	83.50	8.35	11.63 - 11.83	28.00	2.80
6.48 - 6.56	83.00	8.30	11.84 - 12.05	26.00	2.60
6.57 - 6.64	82.50	8.25	12.06 - 12.28	24.00	2.40
6.65 - 6.71	82.00	8.20	12.29 - 12.53	22.00	2.20
6.72 - 6.79	81.50	8.15	12.54 - 12.80	20.00	2.00
6.80 - 6.86	81.00	8.10	12.81 - 13.09	18.00	1.80
6.87 - 6.93	80.50	8.05	13.10 - 13.41	16.00	1.60
6.94 - 7.00	80.00	8.00	13.42 - 13.78	14.00	1.40
7.01 - 7.14	79.00	7.90	13.79 - 14.22	12.00	1.20
7.15 - 7.27	78.00	7.80	14.23 - 14.80	10.00	1.00
7.28 - 7.40	77.00	7.70	14.81 - 15.55	8.00	0.80
7.41 - 7.52	76.00	7.60	15.56 - 16.37	6.00	0.60
7.53 - 7.64	75.00	7.50	16.38 - 17.29	4.00	0.40
7.65 - 7.75	74.00	7.40	17.30 - 18.36	2.00	0.20
7.76 - 7.86	73.00	7.30	Above 18.36	0.00	0.00

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TABLE D - Receiver Queue Full (DGT + UTR) Measured Component Index Table

Performance Range	Component Index	Index Points	Performance Range	Component Index	Index Points
0.00 - 0.10	100.00	10.00	7.87 - 7.97	72.00	7.20
0.11 - 0.47	99.50	9.95	7.98 - 8.08	71.00	7.10
0.48 - 0.82	99.00	9.90	8.09 - 8.18	70.00	7.00
0.83 - 1.14	98.50	9.85	8.19 - 8.28	69.00	6.90
1.15 - 1.44	98.00	9.80	8.29 - 8.38	68.00	6.80
1.45 - 1.73	97.50	9.75	8.39 - 8.48	67.00	6.70
1.74 - 2.00	97.00	9.70	8.49 - 8.58	66.00	6.60
2.01 - 2.26	96.50	9.65	8.59 - 8.67	65.00	6.50
2.27 - 2.51	96.00	9.60	8.68 - 8.76	64.00	6.40
2.52 - 2.75	95.50	9.55	8.77 - 8.85	63.00	6.30
2.76 - 2.99	95.00	9.50	8.86 - 8.94	62.00	6.20
3.00 - 3.21	94.50	9.45	8.95 - 9.03	61.00	6.10
3.22 - 3.43	94.00	9.40	9.04 - 9.11	60.00	6.00
3.44 - 3.65	93.50	9.35	9.12 - 9.19	59.00	5.90
3.66 - 3.85	93.00	9.30	9.20 - 9.28	58.00	5.80
3.86 - 4.06	92.50	9.25	9.29 - 9.36	57.00	5.70
4.07 - 4.25	92.00	9.20	9.37 - 9.44	56.00	5.60
4.26 - 4.45	91.50	9.15	9.45 - 9.52	55.00	5.50
4.46 - 4.63	91.00	9.10	9.53 - 9.60	54.00	5.40
4.64 - 4.82	90.50	9.05	9.61 - 9.67	53.00	5.30
4.83 - 5.00	90.00	9.00	9.68 - 9.75	52.00	5.20
5.01 - 5.17	89.50	8.95	9.76 - 9.83	51.00	5.10
5.18 - 5.32	89.00	8.90	9.84 - 9.90	50.00	5.00
5.33 - 5.46	88.50	8.85	9.91 - 10.05	48.00	4.80
5.47 - 5.58	88.00	8.80	10.06 - 10.20	46.00	4.60
5.59 - 5.70	87.50	8.75	10.21 - 10.36	44.00	4.40
5.71 - 5.81	87.00	8.70	10.37 - 10.52	42.00	4.20
5.82 - 5.92	86.50	8.65	10.53 - 10.69	40.00	4.00
5.93 - 6.02	86.00	8.60	10.70 - 10.86	38.00	3.80
6.03 - 6.12	85.50	8.55	10.87 - 11.04	36.00	3.60
6.13 - 6.21	85.00	8.50	11.05 - 11.22	34.00	3.40
6.22 - 6.30	84.50	8.45	11.23 - 11.42	32.00	3.20
6.31 - 6.39	84.00	8.40	11.43 - 11.62	30.00	3.00
6.40 - 6.47	83.50	8.35	11.63 - 11.83	28.00	2.80
6.48 - 6.56	83.00	8.30	11.84 - 12.05	26.00	2.60
6.57 - 6.64	82.50	8.25	12.06 - 12.28	24.00	2.40
6.65 - 6.71	82.00	8.20	12.29 - 12.53	22.00	2.20
6.72 - 6.79	81.50	8.15	12.54 - 12.80	20.00	2.00
6.80 - 6.86	81.00	8.10	12.81 - 13.09	18.00	1.80
6.87 - 6.93	80.50	8.05	13.10 - 13.41	16.00	1.60
6.94 - 7.00	80.00	8.00	13.42 - 13.78	14.00	1.40
7.01 - 7.14	79.00	7.90	13.79 - 14.22	12.00	1.20
7.15 - 7.27	78.00	7.80	14.23 - 14.80	10.00	1.00
7.28 - 7.40	77.00	7.70	14.81 - 15.55	8.00	0.80
7.41 - 7.52	76.00	7.60	15.56 - 16.37	6.00	0.60
7.53 - 7.64	75.00	7.50	16.38 - 17.29	4.00	0.40
7.65 - 7.75	74.00	7.40	17.30 - 18.36	2.00	0.20
7.76 - 7.86	73.00	7.30	Above 18.36	0.00	0.00

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TABLE E - Transmitter Timeouts Measured Component Index Table

Performance Range	Component Index	Index Points	Performance Range	Component Index	Index Points
0.0 - 0.22	100.00	15.00	26.09 - 26.43	72.00	10.80
0.23 - 1.17	99.50	14.92	26.40 - 26.77	71.00	10.65
1.18 - 2.09	99.00	14.85	26.78 - 27.11	70.00	10.50
2.10 - 3.00	98.50	14.77	27.12 - 27.43	69.00	10.35
3.01 - 3.89	98.00	14.70	27.44 - 27.75	68.00	10.20
3.90 - 4.77	97.50	14.62	27.76 - 28.07	67.00	10.05
4.78 - 5.63	97.00	14.55	28.08 - 28.37	66.00	9.90
5.64 - 6.48	96.50	14.47	28.38 - 28.67	65.00	9.75
6.49 - 7.31	96.00	14.40	28.60 - 28.96	64.00	9.60
7.32 - 8.13	95.50	14.32	28.97 - 29.25	63.00	9.45
8.14 - 8.93	95.00	14.25	29.26 - 29.54	62.00	9.30
8.94 - 9.73	94.50	14.17	29.55 - 29.82	61.00	9.15
9.74 - 10.51	94.00	14.10	29.83 - 30.09	60.00	9.00
10.52 - 11.29	93.50	14.02	30.10 - 30.36	59.00	8.85
11.30 - 12.05	93.00	13.95	30.37 - 30.63	58.00	8.70
12.06 - 12.80	92.50	13.87	30.64 - 30.89	57.00	8.55
12.81 - 13.54	92.00	13.80	30.90 - 31.14	56.00	8.40
13.55 - 14.27	91.50	13.72	31.15 - 31.40	55.00	8.25
14.28 - 15.00	91.00	13.65	31.41 - 31.65	54.00	8.10
15.01 - 15.71	90.50	13.57	31.66 - 31.90	53.00	7.95
15.72 - 16.42	90.00	13.50	31.91 - 32.14	52.00	7.80
16.43 - 17.06	89.50	13.42	32.15 - 32.38	51.00	7.65
17.07 - 17.61	89.00	13.35	32.39 - 32.62	50.00	7.50
17.62 - 18.10	88.50	13.27	32.63 - 33.10	48.00	7.20
18.11 - 18.54	88.00	13.20	33.11 - 33.59	46.00	6.90
18.55 - 18.95	87.50	13.12	33.60 - 34.10	44.00	6.60
18.96 - 19.34	87.00	13.05	34.11 - 34.61	42.00	6.30
19.35 - 19.70	86.50	12.97	34.62 - 35.15	40.00	6.00
19.71 - 20.04	86.00	12.90	35.16 - 35.70	38.00	5.70
20.05 - 20.37	85.50	12.82	35.71 - 36.28	36.00	5.40
20.38 - 20.68	85.00	12.75	36.29 - 36.87	34.00	5.10
20.69 - 20.98	84.50	12.67	36.88 - 37.49	32.00	4.80
20.99 - 21.27	84.00	12.60	37.50 - 38.13	30.00	4.50
21.28 - 21.55	83.50	12.52	38.14 - 38.81	28.00	4.20
21.56 - 21.82	83.00	12.45	38.82 - 39.52	26.00	3.90
21.83 - 22.08	82.50	12.37	39.53 - 40.28	24.00	3.60
22.09 - 22.33	82.00	12.30	40.29 - 41.08	22.00	3.30
22.34 - 22.58	81.50	12.22	41.09 - 41.95	20.00	3.00
22.59 - 22.82	81.00	12.15	41.96 - 42.91	18.00	2.70
22.83 - 23.06	80.50	12.07	42.92 - 43.97	16.00	2.40
23.07 - 23.29	80.00	12.00	43.98 - 45.20	14.00	2.10
23.30 - 23.73	79.00	11.85	45.21 - 46.70	12.00	1.80
23.74 - 24.16	78.00	11.70	46.71 - 48.82	10.00	1.50
24.17 - 24.57	77.00	11.55	48.83 - 51.70	8.00	1.20
24.58 - 24.96	76.00	11.40	51.71 - 54.73	6.00	0.90
24.97 - 25.35	75.00	11.25	54.74 - 57.93	4.00	0.60
25.36 - 25.72	74.00	11.10	57.94 - 61.35	2.00	0.30
25.73 - 26.08	73.00	10.95	Above 61.35	0.00	0.00

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TABLE F - Receiver Timeouts Measured Component Index Table

Performance Range	Component Index	Index Points	Performance Range	Component Index	Index Points
0.00 - 0.69	100.00	15.00	38.05 - 38.54	72.00	10.80
0.70 - 2.03	99.50	14.92	38.55 - 39.04	71.00	10.65
2.04 - 3.34	99.00	14.85	39.05 - 39.52	70.00	10.50
3.35 - 4.63	98.50	14.77	39.53 - 39.99	69.00	10.35
4.64 - 5.90	98.00	14.70	40.00 - 40.45	68.00	10.20
5.91 - 7.16	97.50	14.62	40.46 - 40.89	67.00	10.05
7.17 - 8.39	97.00	14.55	40.90 - 41.33	66.00	9.90
8.40 - 9.61	96.50	14.47	41.34 - 41.77	65.00	9.75
9.62 - 10.80	96.00	14.40	41.78 - 42.19	64.00	9.60
10.81 - 11.99	95.50	14.32	42.20 - 42.60	63.00	9.45
12.00 - 13.15	95.00	14.25	42.61 - 43.01	62.00	9.30
13.16 - 14.30	94.50	14.17	43.02 - 43.41	61.00	9.15
14.31 - 15.44	94.00	14.10	43.42 - 43.81	60.00	9.00
15.45 - 16.56	93.50	14.02	43.82 - 44.20	59.00	8.85
16.57 - 17.67	93.00	13.95	44.21 - 44.58	58.00	8.70
17.68 - 18.77	92.50	13.87	44.59 - 44.96	57.00	8.55
18.78 - 19.85	92.00	13.80	44.97 - 45.33	56.00	8.40
19.86 - 20.92	91.50	13.72	45.34 - 45.69	55.00	8.25
20.93 - 21.98	91.00	13.65	45.70 - 46.05	54.00	8.10
21.99 - 23.03	90.50	13.57	46.06 - 46.41	53.00	7.95
23.04 - 24.07	90.00	13.50	46.42 - 46.76	52.00	7.80
24.08 - 25.01	89.50	13.42	46.77 - 47.11	51.00	7.65
25.02 - 25.81	89.00	13.35	47.12 - 47.45	50.00	7.50
25.82 - 26.52	88.50	13.27	47.46 - 48.14	48.00	7.20
26.53 - 27.16	88.00	13.20	48.15 - 48.85	46.00	6.90
27.17 - 27.76	87.50	13.12	48.86 - 49.57	44.00	6.60
27.77 - 28.31	87.00	13.05	49.58 - 50.32	42.00	6.30
28.32 - 28.84	86.50	12.97	50.33 - 51.09	40.00	6.00
28.85 - 29.33	86.00	12.90	51.10 - 51.89	38.00	5.70
29.34 - 29.80	85.50	12.82	51.90 - 52.71	36.00	5.40
29.81 - 30.25	85.00	12.75	52.72 - 53.57	34.00	5.10
30.26 - 30.68	84.50	12.67	53.58 - 54.45	32.00	4.80
30.69 - 31.10	84.00	12.60	54.46 - 55.38	30.00	4.50
31.11 - 31.50	83.50	12.52	55.39 - 56.36	28.00	4.20
31.51 - 31.89	83.00	12.45	56.37 - 57.38	26.00	3.90
31.90 - 32.27	82.50	12.37	57.39 - 58.47	24.00	3.60
32.28 - 32.64	82.00	12.30	58.48 - 59.63	22.00	3.30
32.65 - 32.99	81.50	12.22	59.64 - 60.89	20.00	3.00
33.00 - 33.34	81.00	12.15	60.90 - 62.26	18.00	2.70
33.35 - 33.68	80.50	12.07	62.27 - 63.80	16.00	2.40
33.69 - 34.01	80.00	12.00	63.81 - 65.57	14.00	2.10
34.02 - 34.65	79.00	11.85	65.58 - 67.74	12.00	1.80
34.66 - 35.27	78.00	11.70	67.75 - 70.83	10.00	1.50
35.28 - 35.86	77.00	11.55	70.84 - 75.05	8.00	1.20
35.87 - 36.43	76.00	11.40	75.06 - 79.46	6.00	0.90
36.44 - 36.98	75.00	11.25	79.47 - 84.10	4.00	0.60
36.99 - 37.52	74.00	11.10	84.11 - 89.00	2.00	0.30
37.53 - 38.04	73.00	10.95	Above 89.00	0.00	0.00

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TABLE G – Lost Billing Measured Component Index Table

Performance Range	Component Index	Index Points	Performance Range	Component Index	Index Points
0.00 - 0.10	100.00	10.00	200.43 - 203.09	72.00	7.20
0.11 - 6.40	99.50	9.95	203.10 - 205.69	71.00	7.10
6.41 - 12.69	99.00	9.90	205.70 - 208.22	70.00	7.00
12.70 - 18.98	98.50	9.85	208.23 - 210.99	69.00	6.90
18.99 - 25.25	98.00	9.80	210.70 - 213.10	68.00	6.80
25.26 - 31.53	97.50	9.75	213.11 - 215.47	67.00	6.70
31.54 - 37.80	97.00	9.70	215.48 - 217.18	66.00	6.60
37.81 - 44.06	96.50	9.65	217.79 - 220.95	65.00	6.50
44.07 - 50.32	96.00	9.60	220.06 - 222.27	64.00	6.40
50.33 - 56.58	95.50	9.55	222.28 - 224.46	63.00	6.30
56.59 - 62.82	95.00	9.50	224.47 - 226.60	62.00	6.20
62.83 - 69.06	94.50	9.45	226.61 - 228.71	61.00	6.10
69.07 - 75.30	94.00	9.40	228.72 - 230.78	60.00	6.00
75.31 - 81.53	93.50	9.35	230.79 - 232.82	59.00	5.90
81.54 - 87.76	93.00	9.30	232.83 - 234.83	58.00	5.80
87.77 - 93.98	92.50	9.25	234.84 - 236.81	57.00	5.70
93.99 - 100.19	92.00	9.20	236.82 - 238.76	56.00	5.60
100.20 - 106.40	91.50	9.15	238.77 - 240.68	55.00	5.50
106.41 - 112.61	91.00	9.10	240.69 - 242.57	54.00	5.40
112.62 - 118.81	90.50	9.05	242.58 - 244.44	53.00	5.30
118.82 - 125.00	90.00	9.00	244.45 - 246.28	52.00	5.20
125.01 - 130.48	89.50	8.95	246.29 - 248.10	51.00	5.10
130.49 - 135.01	89.00	8.90	248.11 - 249.90	50.00	5.00
135.02 - 138.95	88.50	8.85	249.91 - 253.52	48.00	4.80
138.96 - 142.50	88.00	8.80	253.53 - 257.23	46.00	4.60
142.51 - 145.74	87.50	8.75	257.24 - 261.04	44.00	4.40
145.75 - 148.75	87.00	8.70	261.05 - 264.97	42.00	4.20
148.76 - 151.57	86.50	8.65	264.98 - 269.02	40.00	4.00
151.58 - 154.24	86.00	8.60	269.03 - 273.20	38.00	3.80
154.25 - 156.76	85.50	8.55	273.21 - 277.53	36.00	3.60
156.77 - 159.18	85.00	8.50	277.53 - 282.02	34.00	3.40
159.19 - 161.49	84.50	8.45	282.03 - 386.70	32.00	3.20
161.50 - 163.71	84.00	8.40	286.70 - 291.58	30.00	3.00
163.72 - 165.85	83.50	8.35	291.59 - 296.71	28.00	2.80
165.86 - 167.93	83.00	8.30	296.72 - 302.12	26.00	2.60
167.94 - 169.93	82.50	8.25	302.13 - 307.85	24.00	2.40
169.94 - 171.88	82.00	8.20	307.86 - 314.00	22.00	2.20
171.89 - 173.77	81.50	8.15	314.01 - 320.64	20.00	2.00
173.78 - 175.61	81.00	8.10	320.65 - 327.92	18.00	1.80
175.62 - 177.41	80.50	8.05	327.93 - 336.09	16.00	1.60
177.42 - 179.16	80.00	8.00	336.10 - 345.56	14.00	1.40
179.17 - 182.55	79.00	7.90	345.57 - 357.30	12.00	1.20
182.56 - 185.80	78.00	7.80	357.31 - 374.80	10.00	1.00
185.81 - 188.93	77.00	7.70	374.81 - 399.61	8.00	0.80
188.94 - 191.94	76.00	7.60	399.62 - 424.50	6.00	0.60
191.95 - 194.86	75.00	7.50	424.51 - 449.48	4.00	0.40
194.87 - 197.68	74.00	7.40	449.49 - 474.54	2.00	0.20
197.69 - 200.42	73.00	7.30	Above 474.54	0.00	0.00

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TABLE H - Code 5 Equipment Measured Component Index Table

Performance Range	Component Index	Index Points	Performance Range	Component Index	Index Points
0.00-0.01	100.00	25.00	1.30-1.31	72.00	18.00
0.02-0.05	99.50	24.88	1.32-1.32	71.00	17.75
0.06-0.09	99.00	24.75	1.33-1.34	70.00	17.50
0.10-0.14	98.50	24.63	1.35-1.36	69.00	17.25
0.15-0.18	98.00	24.50	1.37-1.37	68.00	17.00
0.19-0.22	97.50	24.38	1.38-1.39	67.00	16.75
0.23-0.26	97.00	24.25	1.40-1.40	66.00	16.50
0.27-0.30	96.50	24.13	1.41-1.42	65.00	16.25
0.31-0.34	96.00	24.00	1.43-1.43	64.00	16.00
0.35-0.38	95.50	23.88	1.44-1.45	63.00	15.75
0.39-0.42	95.00	23.75	1.46-1.46	62.00	15.50
0.43-0.46	94.50	23.63	1.47-1.47	61.00	15.25
0.47-0.50	94.00	23.50	1.48-1.49	60.00	15.00
0.51-0.54	93.50	23.38	1.50-1.50	59.00	14.75
0.55-0.58	93.00	23.25	1.51-1.51	58.00	14.50
0.59-0.62	92.50	23.13	1.52-1.53	57.00	14.25
0.63-0.66	92.00	23.00	1.54-1.54	56.00	14.00
0.67-0.70	91.50	22.88	1.55-1.55	55.00	13.75
0.71-0.73	91.00	22.75	1.56-1.56	54.00	13.50
0.74-0.77	90.50	22.63	1.57-1.57	53.00	13.25
0.78-0.81	90.00	22.50	1.58-1.59	52.00	13.00
0.82-0.84	89.50	22.38	1.60-1.60	51.00	12.75
0.85-0.87	89.00	22.25	1.61-1.61	50.00	12.50
0.88-0.90	88.50	22.13	1.62-1.63	48.00	12.00
0.91-0.92	88.00	22.00	1.64-1.66	46.00	11.50
0.93-0.94	87.50	21.88	1.67-1.68	44.00	11.00
0.95-0.96	87.00	21.75	1.69-1.71	42.00	10.50
0.97-0.98	86.50	21.63	1.72-1.73	40.00	10.00
0.99-0.99	86.00	21.50	1.74-1.76	38.00	9.50
1.00-1.01	85.50	21.38	1.77-1.79	36.00	9.00
1.02-1.03	85.00	21.25	1.80-1.82	34.00	8.50
1.04-1.04	84.50	21.13	1.83-1.85	32.00	8.00
1.05-1.06	84.00	21.00	1.86-1.88	30.00	7.50
1.07-1.07	83.50	20.88	1.89-1.91	28.00	7.00
1.08-1.08	83.00	20.75	1.92-1.95	26.00	6.50
1.10-1.11	82.50	20.63	1.99-1.98	24.00	6.00
1.10-1.11	82.00	20.50	1.99-2.02	22.00	5.50
1.12-1.12	81.50	20.38	2.03-2.07	20.00	5.00
1.13-1.13	81.00	20.25	2.08-2.11	18.00	4.50
1.14-1.14	80.50	20.13	2.12-2.16	16.00	4.00
1.15-1.15	80.00	20.00	2.17-2.23	14.00	3.50
1.16-1.18	79.00	19.75	2.24-2.30	12.00	3.00
1.19-1.20	78.00	19.50	2.31-2.41	10.00	2.50
1.21-1.22	77.00	19.25	2.42-2.56	8.00	2.00
1.23-1.24	76.00	19.00	2.57-2.72	6.00	1.50
1.25-1.26	75.00	18.75	2.73-2.88	4.00	1.00
1.27-1.27	74.00	18.50	2.89-3.04	2.00	0.50
1.28-1.29	73.00	18.25	ABOVE-3.04	0.00	0.00

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