"DIMENSION®" 100/400 PBX
BUSINESS SERVICES DESIGN ENGINEERING
TRAFFIC MEASUREMENTS

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1. GENERAL

1.01 This section details the traffic measurement plan used in the DIMENSION 100/400 PBX.

1.02 This section is being reissued primarily because of Feature Package (FP) 15 enhancements and the compatibility of the Remote Maintenance Administration, and Traffic System (RMATS), Issue 3. Since this reissue is a general revision, no revision arrows have been used to denote significant changes.

1.03 The traffic measurement program for DIMENSION 100/400 PBX is provided with the capability of effective traffic engineering and administration. The RMATS 1, Issue 3, traffic measurement program is compatible with all DIMENSION 100/400 PBX feature packages (FP1, Issue 2, through FP15, Issue 1, and later) with the exception of FP1, Issue 1.

1.04 References in this section to methods, planning, data requirements, service levels, and equipment quantities are based on American Telephone and Telegraph Company recommendations.

1.05 Recommendations for changes to this section should be submitted on Form E-3973 as specified in Section 000-010-015, How To Comment on Bell System Practices.

2. RMATS TRAFFIC MEASUREMENT PROGRAM

2.01 The traffic measurement program for DIMENSION 100/400 PBX is provided with both fixed and flexible (assignable) traffic registers. The RMATS I, Issue 3, is designed to poll hourly or daily, store, summarize, and format DIMENSION PBX traffic data. It also is used to provide remote maintenance and administration of DIMENSION PBX.

3. TRAFFIC REGISTER TYPES

A. General

3.01 The DIMENSION 100/400 PBX internal software program performs data collection and storage routines hourly. Peg-count, usage, and overflow data are collected for the various traffic items and features assigned. The data collected are stored in the output buffer which has a capacity of 250 registers. The following paragraphs will discuss the various types of registrations that are available.

B. Accumulated Registers

3.02 The accumulated collection/output buffer stores 60 preassigned accumulated register values which record feature peg count and administrative data. The register assignments and definitions are listed in Fig. 1.

3.03 In the accumulated buffer section are two administrative indicators. The first is for system flags; ie, translation changes made in the DIMENSION PBX which could affect traffic data. These are reported as major or minor translation changes. A major translation change flag will occur when any peak or time-coincident (TC) assignment, automatic route selection (ARS) pattern assignment, or carrier usage assignment is changed. Minor translation change flags are generated when trunk-group sizes, line assignments, or queue sizes are altered. The RMATS will indicate in which poll the change occurred and will continue to generate the Traffic Summary Report. The second administrative indicator records the number of hours since the last poll. The accumulated registers are fixed, and provide feature peg count information. Accumulated values are zeroed after each poll. A reinitialization request from RMATS will also zero the accumulated values as will a system reload at the DIMENSION PBX.

C. Peak and Time-Coincident Registers

3.04 One hundred and fifty (150) registers are available in the traffic buffer for assignment as either peak or time-coincident registers. The types of registers are shown in Fig. 2.

Peak Registers

3.05 Fifty (50) peak registers may be assigned to record peak usage, peg count, and overflow on various traffic items and features. Each hour, the DIMENSION 100/400 PBX Traffic Measurement Program collects data on the traffic items and/or features assigned to peak registers, compares the current hourly value with the stored hourly value, and retains the higher value as the peak. The retained peak value is then used for the next hourly comparison. This data comparison routine is performed each hour (stored hourly value versus current hourly value); thus, the peak hourly value is always retained.

Time-Coincident Register

3.06 One-hundred (100) time-coincident registers may be assigned to record peg count, usage, and overflow on various traffic items and features which are to be measured coincident with a peak registration.

3.07 Time-coincident registers must always be associated with peak registers. This association is necessary, because the peak register controls data storage on the TC registers. Only TC registers may be associated with a peak value. A maximum of 100 TC registers may be assigned to a peak register.

3.08 The result of the data comparison routine for the peak register determines whether the stored hourly value or the current hourly value for the time-coincident register is retained. For example, if the peak busy hour for the day is between 9:00 a.m. and 10:00 a.m., the time-coincident data (stored value) reflects the same hour. Time-coincident values always reflect the data for the hour in which the peak occurred.

3.09 Eight categories of traffic measurement types are provided for peak and time-coincident register assignments. Only the traffic types and items listed in Fig. 2 may be studied. Any single measurement item can be assigned as both peak and time coincident. Also, any single measurement item can be assigned time coincident to several peaks. The peak measurement is printed first followed by all its associated TC measurements on the Traffic Summary Report. The printout of the TC measurements is indented by two from the peak measurements. Time-of-day (PBX time) can be assigned TC with any peak measurement. When assigned, it provides the time of day that the peak occurred (FP15 only) (Fig. 3).

D. Automatic Route Selection Registers

3.10 The ARS measurements are accumulative type (ie, collection occurs from poll to poll). These measurements are summed by RMATS and represent the total occurrence of all polls in the Traffic Summary Report. The DIMENSION 100/400 PBX can measure six patterns with ten registers per ARS pattern. These registers record peg count data on each trunk group in an ARS pattern. These counts will generally be higher than their corresponding trunk group peg counts in the TRUNK GROUP SUMARY section since the ARS peg counts are summed over all polls.

E. Trunk-Group Busy-Out Map

3.11 The trunk-group busy-out map buffer provides a bit map which corresponds with each of the trunk groups. Each time one or more trunks in a trunk group are made busy for maintenance purposes, the appropriate bit in the trunk-group busy-out map is set. The trunk-group busy-out map assignments are fixed in the collection buffer.

3.12 The trunk-group busy-out map represents the accumulation of all trunk groups in which one or more trunks have been busied-out at some time between traffic polls. The maintenance busy CCS (hundred call seconds) will not be included in the usage data for the trunk group. The TRAFFIC SUMMARY REPORT indicates the trunk group and poll in which one or more trunks in a trunk group have been busied-out. If no busied-out trunks are found, the summary report will print "NO MAINTENANCE BUSYOUTS PRESENT".

4. TRAFFIC REGISTER ASSIGNMENTS

A. General

4.01 The types of traffic data assignable to peak and time-coincident registers are detailed in Fig. 2. Each item to be studied must be assigned to a peak or time-coincident register by way of translation procedures. Traffic register assignments should be made via the questionnaire (form 8124) at the time that the DIMENSION 100/400 PBX is ordered.

4.02 When a DIMENSION 100/400 PBX is shipped, Western Electric Company translates a set of default registers as an integral (fixed) part of the traffic program. The default assignment consists of 4 peak register assignments and 19 time-coincident register assignments as shown in Fig. 4. The defaults provide traffic information on a subset of network items and attendant administrative items. The purpose of the default measurement is neither to provide detailed traffic information nor to serve as a model for DIMENSION PBX studies. It does provide, however, some indication of network and attendant administrative traffic which may be used until a complete traffic study has been configured. A traffic study may be configured by (a) using defaults as a foundation and beginning the additional register assignments with peak register 5 and time-coincident register 20 or (b) overwriting the default assignments by reassigning the 4 peak and 19 time-coincident registers.

B. Peak and Time-Coincident Register Assignments

4.03 Figure 5 illustrates a threeway split and how, with the minimum number of traffic register assignments, the threeway split can be maintained to meet the customer's requested quality of service. In the threeway split arrangement, the 1-way incoming and the 1-way outgoing central office (CO) trunk groups overflow to the 2-way CO trunk group. All data are time-coincident with the peak register assigned in the trunk combination arrangement. A trunk group combination consists of two or more trunk groups which have a community of interest, ie, trunk groups which route advance.

4.04 COMBO CCS (type 1, item 1) is assigned as the peak register. Time-coincident with the peak register are CO1WO CCS (type 5), CO1WO PEG (type 6), and CO1WO OVL (type 7) which are associated with trunk group 18. Also time coincident with the peak register are the registers assigned to trunk groups 19 and 20. These registers are CO2W CCS (type 5), CO2W PEG (type 6), CO2W CCSI (type 8) for trunk group 19; and CO1WI CCS (type 5) and CO1WI PEG (type 6) for trunk group 20. The time-of-day register is also assigned time-conicident with the peak register in FP15 only. In this example, an overflow (type 7) register was not assigned to the 2-way CO trunk group in order to show the necessary minimum assignments. However, it is recommended that it be assigned to all working customers to ensure that they are within their service objective. A "quick-look" engineering determination and register assignment validation of this arrangement can be found in Parts 6 and 7 of this section.

5. TRAFFIC SUMMARY REPORT

5.01 This part details the format of the RMATS I, Issue 3, TRAFFIC SUMMARY REPORT for DIMENSION 100/400 PBX. The TRAFFIC SUMMARY REPORT summarizes the most recent or the last 8 hours or 5 days of data stored. If the data stored are less than 8 hours or 5 days, the summary will reflect the total number of hours/days of data stored.

5.02 The TRAFFIC SUMMARY REPORT summarizes, averages, and prints eight columns of polled data. If there are no data for a measurement (features, trunk group, etc) during the poll, a zero will be printed for that measurement. Some measurements discussed do not appear on the sample printout of the TRAFFIC SUMMARY REPORT (Fig. 6), however they are all described in Fig. 1.

5.03 The TRAFFIC SUMMARY REPORT is produced by an RMATS using data collected at the PBX. The traffic information is formatted, summarized, and averaged as Fig. 6 indicates. The beginning of each page of the TRAFFIC SUMMARY REPORT contains the page number, date, and time the report was requested by RMATS, and the title, "TRAFFIC SUMMARY REPORT". The reason for the report, GENERATED BY REQUEST, appears on the first page only. The summary report may also be generated, because a threshold was reached or exceeded. The TRAFFIC SUMMARY REPORT begins with the header information.

A. Header Information

5.04 The following is the header information:

(a) ***RMATS FACILITY:*** The facility name and unit number.

(b) ***PBX ID:*** Assigned by the RMATS/Customer Administration Center System (CACS) to identify each PBX.

(c) ***COMPANY NAME:*** Can be up to 26-character company name entered on the DIMENSION PBX tape by the Western Electric Company. On the same line and to the right of the

company name is the PBX serial number (usually the serial number of module zero, cabinet zero).

(d) ***SYSTEM CONFIGURATION:*** Includes a 10-digit encoding which indicates the type of PBX, feature package, memory configuration, and feature package tape issue (ie, 1E 002-032.0 is a DIMENSION 100/400 PBX, FP2, with a "C" memory configuration, and the 2.0 tape issue of FP2).

- Digits 1 and 2—1E—DIMENSION 100/400 PBX - 5E—DIMENSION 600/2000 PBX
- Digits 3, 4, and 5—001—Feature Packages 1 through 015—FP15
- Digits 6 and 7—02 through 06 corresponding to memory configurations B through F.
- Character digits 8, 9, and 10—feature package tape issue. Character digit 8 is used to designate a feature package tape issue still under BTL-controlled introduction (L).

DAYS (HOURS) STUDIED is the number of days or hours represented by the summary report. Traffic can be set up for hourly polling or daily polling. This field indicates which has been set up and how many hours or days are contained in the study. Figure 6 shows the daily polling format where the report analyzes only the most recent five polls of data with zero data printed for the last three columns. When the PBX is hourly polling, the report analyzes the most recent eight polls of data. Following the ***DAYS (HOURS) STUDIED*** is a breakdown of installed equipment items. These include number of station lines, DIMENSION PBX Electronic Custom Telephone Service (ECTS) lines, ECTS stations, attendant positions, network modules, line carriers, and trunk carriers. No data indicates the equipment/feature is not installed.

(e) ***POLLING SCHEDULE:*** An "X" indicates the days on which polling is in effect.

(f) ***POLL (numbered 1 through 8):*** Formats the eight columns of the most recent data.

(g) ***TRANSLATION CHANGE (MAJOR/MINOR):*** When a translation change occurs, an "X" is indicated under the poll number and "MAJOR or MINOR" is printed to indicate the change. The translation change message will print in the report header and indicates whether the change was major or minor. The RMATS I Central Facility should be reinitialized in order to update the system configuration information. This ensures that the study results include the correct number of traffic facilities.

(h) ***POLLING INTERVAL (HRS):*** Polling interval hours represent the number of hourly traffic updates that have occurred since the last poll.

(i) ***POLL TIME RMATS:*** Time of poll as reflected by RMATS system clock.

(j) ***DATE:*** Reflects the date that poll occurred. On the next line, centered between polls 3 and 6, ***DATE OF LAST POLL*** is printed. This is the last date the RMATS polled the PBX, whether it is an hourly or daily study.

B. System Activity and Feature Usage Peg Counts

5.05 These measurements are accumulative measurements and are an indicator of the use of the feature and are not to be used for engineering purposes. The accumulated feature peg counts are no longer computed for the entire polling period (ie, study period). After each poll, the accumulated value item is collected, and the accumulation buffer is intialized to zero in preparation for the next collection interval. The data are printed to reflect daily accumulation for a given polling period (ie, 24 hours) or 1 hour of accumulated data for hourly studies. The feature count section was modified to suppress printing feature counts with all zero data. Thus, a report can be generated with feature count headings and no features printed.

(a) ***STATION FEATURE COUNTS:*** The count indicated in the TRAFFIC SUMMARY REPORT is the number of times the corresponding feature access code was dialed, not necessarily the number of times the feature was properly activated. The Code Calling and Paging features are accessed somewhat differently (ie, Code Calling and Paging features are accessed by dialing the associated trunk dial access code). Therefore, the peg count for these two station features is incremented each time their associated trunk dial access code is dialed.

(b) ***SYSTEM FEATURE COUNTS:*** The traffic measurements described in this section are also accumulative-type measurements (the polling agrees with the collection interval). The following is a description of each of the system measurements:

- ***PROC LOAD IND A:*** DIMENSION PBX maintenance routines are given the opportunity to run when all call processing work is completed. If a maintenance routine has not been run for 225 ms (DIMENSION 100/400 PBX), then the maintenance routine will be forced into operation. Each time this occurs, the PROC LOAD IND A (processor overload) count will be incremented. Small overload counts may begin to appear at processor occupancies as low as 40 percent.

- ***TAAS CALL:*** Trunk Answer From Any Station (TAAS) is incremented each time the TAAS access code is dialed by a station user.

- ***TAAS CALL ABANDON:*** When TAAS is active, TAAS abandon is incremented each time an incoming trunk call abandons before being answered. All calls are routed through the incoming call queue; therefore, ***INCQ ABANDON*** is also incremented.

- ***REM ACCESS RT CD:*** This count is the number of times a remote access trunk user dialed the proper barrier code.

- ***REM ACCESS WG CD:*** This count is the number of times a remote access trunk user dialed an invalid barrier code.

- ***SMDR BLOCKAGE:*** This is the count of blockages trying to access a station message detail recording (SMDR) record. For outgoing calls, this blockage represents a blocked call.

- ***CALL WT ORIG:*** This is the count of "camp-on" to a busy station. This measurement includes all sources of "camp-on" (ie, station, attendant, direct inward dialing [DID] trunk). This measurement appeared as part of the attendant feature measurements prior to RMATS, Issue 2.

- ***VALID SEC CODE:*** This is an accumulative-type register of legal remote access to the DIMENSION PBX. This is an aid in the security of RMATS-equipped DIMENSION PBXs (FP15 only).

- ***INVALID SEC CODE:*** This is a peg count of illegal remote access attempts (FP15 only).

(c) ***ATTENDANT FEATURE COUNTS:*** The following measurements are listed as attendant feature measurements on the TRAFFIC SUMMARY REPORT. These measurements are accumulative-type measurements. The following is a description of each of the attendant feature measurements:

- ***ACTIVATE ACOT:*** Activate Attendant Control of Trunk Group Access is incremented by one each time the attendant dials the feature code to activate attendant control of a trunk group.

- ***DEACT ACOT:*** Deactive Attendant Control of Trunk Group Access is incremented by one each time the attendant dials the feature code to deactivate attendant control of a trunk group.

- ***CONF CALL:*** This measurement is incremented by one each time an attendant presses the CONF (conference) key and establishes a conference call.

- ***CALLS ORIGINATED:*** This measurement is incremented each time the attendant uses the START key to originate a call.

(d) ***ECTS STATION FEATURE COUNTS:*** These counts are analogous to the station feature counts and are incremented each time the associated feature key is pressed at an ECTS station.

(e) ***UCD WARNING GRP (1-8) COUNT:*** The Uniform Call Distribution (UCD) Group count is a measurement of the time spent at or above threshold level for the queue. The traffic count is pegged once every 2 seconds as long as the queue is at or above its assigned threshold level. A maximum of eight groups can be measured.

(f) ***NETWORK COMPLETION ACCUMULATED COUNT:*** Network completion mea-

surements are indicators of the performance of the PBX in completing incoming calls from the message network. This section will also reflect the number of ringing group block pegs and time-slot mismatch block pegs when they occur.

- ***DID TO BUSY STA:*** This count is incremented by one each time an incoming DID trunk call is directed to a busy station.

- ***DID UNANSWERED:*** This count is incremented by one each time an incoming DID trunk call abandons before being answered.

- ***IN CALLS ABANDON:*** All calls directed to the attendant pass through the incoming call queue. This count is incremented by one each time an incoming trunk call abandons while in the incoming call queue.

- ***RNG BLKD GP#:*** Ringing group blockage is an accumulative count and is recorded by ringing group. Blockage occurs when more than four lines on a single half carrier require ringing simultaneously. Only the 14 highest ringing group block pegs will be printed.

- ***CAS ABDN:*** This count is incremented by one each time a call abandons from the centralized attendant service (CAS) queue before being serviced (before a release link trunk [RLT] becomes available).

C. Network Administration

5.06 If any of the following traffic items are assigned as a peak measurement, the peak and the associated TC measurement will appear in the ***network administration*** portion of the summary report:

- ***TIMESLOT CCS:*** The time slot CCS is the total PBX time-slot usage. The maximum time-slot usage is approximately 1662 CCS.

- ***TIMESLOT PEG:*** The number of times a time slot was selected. This is not the number of busy-hour calls.

- ***TNDM TRF:*** The usage measurement for all trunk-to-trunk calls through the PBX.

D. Processor Occupancy

5.07 If any of the following traffic items are assigned as a peak measurement, the peak and the associated TC measurement will appear in the ***processor occupancy*** portion of the summary report:

- ***OCCUPNCY PCT:*** This is the percent of time spent doing call processing work. Audit or maintenance activity, CACS, RMATS, and traffic polling are not included.

- ***LD IND B × 10 PEG:*** This measurement was previously labeled ***Processor Overflow Peg Count.*** All DIMENSION PBX activities are scheduled over a fixed interval of time (25 ms for DIMENSION 100/400 PBX). Call processing work is scheduled to occur at the beginning of each interval of time. If all call processing work is completed before the time interval is up, then maintenance-type work is allowed to execute. The overflow measurement is the number of times that call processing used all of the time in an interval. A healthy system with occupancies below 30 percent may show overflow counts. As the PBX occupancy increases, so will the overflow counts. Systems with overflow counts of 50 percent or less should not result in any service degradation. LD IND B× 100 PEG is the same measurement as described above but is for FP15 only.

- ***CALL PRC × 10 PEG:*** This is the number of times the processor recognized a stimulus (ie, digit done, time-out, sequence done, etc). At high occupancies (60 percent and above), this count tends to average approximately ten stimuli per busy-hour call. Approximate calls in the system may be estimated by multiplying the processor pegs by 10, and dividing by an average of ten stimuli per call.

- ***ECTS STM × 10 PEG:*** This measurement is the count of ECTS stimuli measured.

E. Attendant Position Administration

5.08 If any of the following are assigned as a peak measurement, the peak and the associated TC measurements will appear in the ***attendant measurement*** portion of the summary report. With

these measurements, it is possible to determine speed of answer, work time, attendant-handled calls, attendant busy time, and attendant busy hour. The time-of-day measurement is for FP15 only.

- ***WRKD GRP CCS:*** This represents the time spent on a switched loop. Attendant activity not requiring a switched loop is not measured.

- ***ACTV GRP CCS:*** Activity group CCS is the total manned (attended) time for all attendant positions. This is a measurement of attendant positions with the headsets plugged in. Position busy is not measured by traffic programs.

- ***WRKD GRP PEG:*** This represents the number of attendant-handled calls. In general, it is the count of loop activations. This measurement is summed over all attendants.

- ***WK CNS PEG and CCS:*** These are per-console measurements equivalent to the worked-group counts.

- ***INCALL "Q" CCS:*** This is the total time spent by calls waiting in the incoming call queue (all calls pass through queue.)

- ***INCALL "Q" PEG:*** This is the count of calls directed toward the attendant (placed in the ***INCALL Q***); all calls pass through queue.

- ***INCALL ABNDN PEG:*** This is the trunk calls which abandon the incoming call queue before being served. Station dial "0" abandons are not included in this count.

- ***LDN CALL ANS PEG:*** This is the number of incoming CO and DID trunk calls answered by the attendant.

- ***NON LDN ANS PEG:*** This is the sum of all other (non-CO and DID) trunk-answered calls by the attendant.

- ***ATND RECALL PEG:*** Attendant recall is the count of recalls answered by the attendant.

- ***ATND ORIG PEG:*** This is the number of attendant-originated calls using the START key. The direct station selection (DSS) and direct trunk group selection (DTGS) key calls are not included in this count.

F. Retail Measurements

5.09 Centralized Attendant Service (CAS) eliminates or minimizes the need for attendant service at branch locations. Therefore, with CAS the ***main*** provides all or most attendant service. Calls that come into a ***branch*** or originate at the branch are passed to the main attendant across RLTs. All calls destined for the attendant at the main pass through the CAS queue at the branch. Calls wait in the CAS queue until an idle RLT to the main is made available.

5.10 Each branch location can have up to four RLTs. These trunks are administered and measured in the same manner as standard tie lines. The total wait time and number of calls in queue (waiting for an RLT) can be measured by assigning type 5 and type 4 registers (Fig. 2), respectively, to the queue group associated with the RLT group. The CAS calls that abandon are measured by the accumulated register 57 (Fig. 1). These measurements are applicable to the branch location.

5.11 The Uniform Call Distribution (UCD) service permits incoming DID, CO, FX, and INWATS calls to be terminated directly to the most idle of a prearranged group of stations without attendant assistance. If all stations are busy, the call is placed in queue and processed on a first-in, first-out basis. Calls that abandon from queue can be measured by assigning the overflow register (type 7) of the queue trunk group. RMATS I, Issue 3, and later will print Q TRK ABAN on the TRAFFIC SUMMARY REPORT for this measurement.

G. Trunk Group Maintenance Busyout at Poll Time

5.12 A Trunk-Group Maintenance Busy-Out MAP list is provided and precedes the TRUNK GROUP SUMMARY section of the report. This section lists trunk group(s) which have maintenance-busied facilities during a given poll. This section represents the accumulation of all trunk groups in which one or more trunks have been busied out at some time between traffic polls. Maintenance busy CCS will not be included in the usage data for the trunk group.

H. Trunk Group Combination

5.13 A Trunk-Group Combination section is provided and lists the trunk groups assigned in each trunk-group combination under Combo 1, Combo 2, and Combo 3. A maximum of six trunk groups can be measured per trunk group combination. The same trunk group may be a member of more than one trunk group combination.

I. Trunk Group Summary

5.14 With these measurements, it is possible to determine average call hold time, carried CCS, offered and carried peg, and trunk-group blockage. The trunk-type encodes are defined in Fig. 7. If any of the following are assigned as a peak measurement, the peak and the associated TC measurements will appear in the TRUNK GROUP SUMMARY portion of the summary report:

- ***TRK GRP CCS:*** This is the carried load for a trunk group and includes setup time and restore time for a trunk.
- ***TRK GRP PEG:*** The number of carried calls (trunk seizures) for the trunk group.
- ***TRK GRP OVL:*** This is the number of blockages (overflows) or delayed calls. Without queuing, this is the number of blocked calls. With queuing, this is the number of calls that were offered to queue (delayed).
- ***TRK GRP CCSI:*** Incoming CCS for a 2-way trunk group.
- ***Q ENTRY:*** This is the total peg count for specified queue trunk group.
- ***DNT ANS:*** This is the don't answer peg count on call-back from specified queue trunk group.
- ***BUSY:*** This is the busy peg count on call-back from specified queue trunk group.

5.15 Trunk-group usage can be studied for trunk groups 8 through 99. If trunk groups 8 through 11 are studied, they should be studied as a queue group and not a physical trunk group. Trunk groups 12 through 14 are automatic number identification (ANI) queues and are rarely measured. If the ANI queues are studied, they should also be studied as queues. Trunk groups 15, 16, and 17 are the intercom trunks, dial pulse registers, and TOUCH-TONE® dialing registers. All other trunk groups (18 through 99) can be assigned as desired.

J. Trunk Group Combinations Associated Trunk Groups

5.16 Up to six trunk groups can be combined for each trunk-group combination, and three trunk-group combinations can be defined. A trunk-group combination consists of two or more trunk groups which have a community of interest (ie, trunk groups which route advance). Trunk-group combination measurements are hourly peak or time-coincident measurements. For each trunk-group combination, the incoming CCS, outgoing CCS, and total CCS for all trunks in the trunk-group combination may be measured. Many times, route advance groups are combined into trunk-group combinations to get the total load for a route advance group.

K. Automatic Route Selection

5.17 With ARS measurements, it is possible to study pattern usage. The ARS measurements are accumulative type (ie, collection occurs from poll to poll). These measurements are summed by RMATS and represent the total occurrence of all polls in the TRAFFIC SUMMARY REPORT. In the DIMENSION 100/400 PBX, there is a maximum of 32 ARS patterns, and each pattern contains up to ten trunk groups. Of these, six ARS patterns can be studied at one time, and these six patterns will be measured across each of the ten trunk groups. Figure 3 shows four patterns being studied. The plan number printed on the TRAFFIC SUMMARY REPORT does not apply to the DIMENSION 100/400 PBX. The heading is printed, because of the standardization of the RMATS I traffic program. The ten trunk groups per pattern are shown as PREFERENCE 1 through 10. The peg count register is an indication of the carried call volume per each preference within the studied ARS pattern. These counts will generally be higher than their corresponding trunk-group peg counts in the TRUNK GROUP SUMMARY section since the ARS PEG is summed over all polls.

6. EVALUATING ENGINEERED COMPONENTS

A. General

6.01 Data obtained from the output of an RMATS TRAFFIC SUMMARY REPORT can be used to evaluate the service performance of various engineered components of a DIMENSION 100/400 PBX. The following material provides guidelines for evaluating the performance of certain critical components using the data from a TRAFFIC SUMMARY REPORT. These guidelines are not intended to supercede the detailed engineering methodology presented in other DIMENSION PBX component engineering sections; however, service problems can be avoided by the information acquired using these procedures.

B. Network Administration

6.02 The DIMENSION 100/400 PBX provides 64 time slots which are approximately 1662 CCS of network capacity with 1 percent blocking. Figure 6 shows the average bouncing busy hour (ABBH) with a time-slot CCS measurement of 464 CCS. This example indicates the time-slot usage is well below the network capacity of 1662 CCS. The threshold value for time-slot usage should be set at 1600 CCS. Equaling or exceeding the selected threshold value will cause an exception report to be generated. Therefore, any exceptions to the time-slot threshold value should be investigated immediately.

C. Processor Occupancy

6.03 The processor peg measurement (Call PRC × 10 PEG) when multiplied by 10 represents the total processor pegs during the measured hour. An average call requires 8 to 12 pegs per call. Therefore, approximate calls in the system can be established by multiplying the processor pegs by 10 and dividing by an average of 10 pegs per call. The DIMENSION 100/400 PBX processor can handle up to 1800 busy-hour calls.

$$\text{System Calls} = \frac{(\text{CALL PRC X 10 PEG}) \text{ X } 10}{10}$$

Example:

The summary report shows 622 CALL PRC × 10 PEG for the ABBH measurement. To find the number of calls, apply the above formula:

$$\frac{622 \text{ x } 10}{10} = 622 \text{ Calls}$$

D. Attendant Engineering

6.04 The attendant facilities may be evaluated by the TRAFFIC SUMMARY REPORT data on an individual or group basis. Using the measurements from the summary report, it is possible to evaluate attendant performance such as average work time, speed of answer, and attendant-offered load.

6.05 The data required to determine the average work time are the number of attendant-handled calls and the time spent doing this work. The following formula is used to calculate this performance:

$$\text{Average Work Time} = \frac{\text{WRKD GRP CCS X 100}}{\text{WRKD GRP PEG}}$$

Example:

Figure 6 indicates the WRKD GRP CCS for the ABBH is 22 CCS and the WRKD GRP PEG is 136. The average work time is:

$$\frac{22 \text{ X } 100}{136} = 16.1 \text{ Seconds}$$

6.06 The formula can be applied to find the individual console performance:

$$\text{Average Work Time} = \frac{\text{WKD CNS\_\_\_CCS X 100}}{\text{WKD CNS\_\_\_PEG}}$$

6.07 All calls directed toward the attendant pass through the incoming call queue. The INCALL Q PEG is the count of all calls directed toward the attendant, and the INCALL Q CCS is the sum of the wait time for all calls that waited in the incoming call queue. By dividing INCALL Q CCS × 100 by INCALL Q PEG, the average speed of answer is determined:

$$\text{Average Speed of Answer} = \frac{\text{INCALL Q CCS X 100}}{\text{INCALL Q PEG}}$$

Note: Average speed of answer is also referred to as average delay ($\bar{d}$)—or the time a call is expected to wait before being served.

Example:

Figure 6 shows the INCALL Q CCS for the ABBH is 9 CCS and the INCALL Q PEG is 111. The average speed of answer is:

$$\frac{9 \text{ X } 100}{111} = 8.1 \text{ Seconds}$$

6.08 Now, the average delay of delayed calls can be determined by applying the above information (average speed of answer [$\bar{d}$]), average work time (AWT), and Table C in Section 788-100-142. By dividing the average speed of answer by the average work time, the average delay in multiples of average holding time ($\bar{d}$) (AHT) is found:

$$\bar{d}\ (\text{AHT}) = \frac{\bar{d}}{\text{AWT}}$$

$$0.71 = \frac{8.1}{11.3}$$

6.09 Enter Table C (Section 788-100-142) with the average delay in multiples of average holding time 0.71 (use column 0.700) and one server (console). Table C predicts an average delay of delayed calls in multiples of AHT equal to 1.70 (AHT). Since the average work time is 16.1 seconds, this equates to an average delay of delayed calls of 27.4 seconds:

$$\text{AHT X AWT} = \bar{d} \text{ Seconds}$$

$$1.70 \text{ X } 16.1 = 27.4 \text{ Seconds}$$

6.10 In order to determine attendant-offered load, the attendant overflow CCS must be found. The attendant overflow CCS is calculated by multiplying the average work time by INCALL ABNDN PEG divided by 100:

$$\text{Attendant Overflow CCS} = \frac{\text{AWT X INCALL ABNDN PEG}}{100}$$

6.11 Add the attendant overflow CCS to the WRKD GRP CCS to calculate the attendant-offered load.

Example:

The ABBH of Fig. 6 indicates four INCALL ABNDN PEG and from the previous calculation, the AWT is 16.1 seconds. The WRKD GRP CCS is 22 CCS.

$$\frac{16.1 \text{ X } 4}{100} = 0.6 \text{ (Attendant Overflow)}$$

22.0	WRKD GRP CCS
+0.6	Attendant Overflow
22.6	Attendant Offered Load

E. Threeway Split

6.12 The following example shows how to determine that the quality of service the customer requested is being maintained. This method is used as a "quick-look" at the threeway split. If customer requirements are not satisfied, then a detailed engineering method, as shown in Section 788-100-202, should be initiated.

Example:

STEP 1

In order to evaluate the threeway split, the service levels the customer requested must be

known. Through office records, it is determined that the customer requested blocking levels of 7 percent average outgoing, 1 percent average incoming, and 50 percent of the outgoing traffic is to be served on the 1-way outgoing group. The following peak and time-coincident measurements were taken from Fig. 6, poll 2, TRUNK GROUP COMBO 1 on the customer's TRAFFIC SUMMARY REPORT.

TRK GRP	MEASUREMENT		TRK SIZE	CCS/PEG
1	COMBO	CCS		380
18	C01WO	CCS	3	84
18	C01WO	PEG	3	43
18	C01WO	OVL	3	43
19	C02W	CCS	6	100
19	C02W	PEG	6	50
19	C02W	CCSI	6	16
20	C01WI	CCS	9	196
20	C01WI	PEG	9	86

STEP 2

(a) Determine the total outgoing carried CCS by subtracting CO2W CCSI from CO2W CCS and adding the difference to C01WO CCS (100-16 = 84 + 84 = 168.

(b) The objective outgoing blocking is B.07 (customer request).

(c) The objective overflow level is 50 percent (customer request).

(d) Enter the Apparent Load Adjustment Factor Table (AAF) (shown in part, Fig. 8) with the percent blocking (7 percent). The factor for this problem is 1.052.

(e) The apparent outgoing CCS is determined next by multiplying the total outgoing carried CCS by the AAF, or 168 CCS × 1.052 = 177 CCS.

(f) Enter the Peakedness of Apparent Load Table (shown in part, Fig. 8) with the apparent outgoing CCS. Use the table value of 200 CCS (this is the closest to the problem value of 177 CCS) and 10 percent blocking. The outgoing peakedness at 7 percent blocking is approximately 1.12, between 1.11 (5 percent blocking) and 1.14 (10 percent blocking).

(g) The number of 1-way outgoing trunks can now be determined by using the information from (e), (f), and the objective blocking level (0.50). Enter the Expanded Alternate Routing Capacity Tables (shown, in part, Fig. 8). At a peakedness of 1.10 (closest to actual peakedness of 1.12), 177 CCS require three trunks. The result is 53 percent expected blocking with a carried load of 83 CCS. This meets the customer's requirements, since three trunks have been installed.

(h) The required blocking on the 2-way trunk group is determined at this time by dividing the objective outgoing blocking by the expected overflow (blocking) level of the 1-way outgoing trunk group (0.07 ÷ 0.53 = 0.13).

STEP 3

(a) Determine the total incoming carried CCS by adding the CO2W CCSI and the C01WI CCS measurements (16 + 196 = 212).

(b) The AAF for 1 percent blocking (customer request) is given in Fig. 8 as 1.007.

(c) The apparent incoming load is equal to the incoming carried CCS × AAF or 212 CCS × 1.007 = 213 CCS.

(d) The incoming load peakedness of 200 CCS (closest to 212 CCS) at 1 percent blocking is 1.06.

(e) The required 2-way blocking was found to be 0.13 (Step 2 [h]). The 1-way overflow level is determined by dividing the objective incoming blocking by the required 2-way blocking level (0.01 ÷ 0.13 = 0.08).

(f) The incoming trunks are determined by entering the Expanded Alternate Routing Capacity Tables with 1.05 peakedness (closest to 1.06) and 216 CCS incoming (clos-

est to 213 CCS); nine trunks provide 8 percent blocking with a carried load of 198 CCS. Since the customer has nine trunks installed, this meets his requirements.

STEP 4

(a) Next, the 2-way trunk group requirements are determined by finding the total overflow CCS.

(b) The overflow CCS of the 1-way outgoing trunk is 177; CCS apparent load minus 83 CCS carried load as determined in Step 2 (g) equals 94 CCS overflow.

(c) The 1-way incoming overflow CCS is 15 CCS, 213 CCS apparent load minus 198 CCS carried load as determined in Step 3 (f).

(d) The total overflow CCS is 109 CCS (94 CCS + 15 CCS).

(e) The required 2-way blocking is found by dividing the objective outgoing blocking by the expected overflow level of the 1-way outgoing trunk group (0.07 ÷ 0.53 = 0.13).

(f) Next, the total overflow variance is determined by multiplying the 1-way incoming and 1-way outgoing overflow CCS by their respective peakedness or 94 CCS × 1.48 + 15 CCS × 1.93 = 168 CCS.

(g) The 2-way overflow peakedness is then determined by dividing the overflow variance by the total overflow CCS or 168 ÷ 109 = 1.5.

(h) Enter the Neal-Wilkinson Trunk Capacity Tables (Fig. 8) with peakedness factor 1.5, 13 percent blocking (Step 4[e]), and 109 CCS (Step 4[d]). The required number of trunks is six. Since the number installed is six, the customer's requirements are satisfied.

6.13 This example shows all customer requirements are met (blocking, overflow level, and trunks); therefore, the threeway split is sized properly. Refer to Section 788-100-202 for more detailed information on engineering design of threeway splits.

7. VALIDATION

A. General

7.01 Before any traffic register data are used for engineering analysis or design, the measurements must be validated. Incorrect data can be the cause of poor service and unnecessary expense for the customer. Proper validation of the TRAFFIC SUMMARY REPORT measurements is necessary to develop engineering data on all customers.

B. Trunk Group Combination

7.02 Figure 5 indicates a threeway split assigned as a trunk group combination. The traffic register assignments are sufficient to validate and give the proper data to engineer the threeway split. The following procedure explains the validation shown in Fig. 5. The measurements used are from Fig. 6, POLL 1, TRUNK GROUP COMBO 1 on the customer's TRAFFIC SUMMARY REPORT.

Example:

STEP 1

(a) COMBO CCS is the total CCS measurement of all the trunk groups assigned in the trunk combination; therefore, COMBO CCS = CO2W CCS + CO1WO CCS + CO1WI CCS:

$$380 = 100 + 84 + 196$$

STEP 2

(a) By dividing CO1WO CCS by CO1WO PEG × 100, the holding time for trunk group 18 (ht18) is established.

$$\frac{84 \times 100}{43} = 195 \text{ Seconds}$$

(b) The outgoing CCS on the CO2W trunk group (X) is found by (X) = CO2W CCS − CO2W CCSI:

$$(X) = 84 = 100 - 16$$

(c) (X) is validated by dividing ht18 × CO1WO OVL by 100:

$$\frac{195 \times 43}{100} = 84 = (X)$$

Note: The CO1WO OVL ht is assumed rightly the same as the ht18.

STEP 3

(a) The 2WCO incoming peg count (Y) is found by subtracting CO2W PEG from CO1WO OVL:

$$(Y) = \text{CO2W PEG} - \text{CO1WO OVL}$$
$$7 = 50 - 43$$

(b) The holding time for the incoming portion of the CO2W trunk group (ht2WI) is found by dividing CO2W CCSI by CO2W INPG (Y) × 100:

$$\text{ht2WI} = \frac{\text{CO2W CCSI} \times 100}{\text{CO2W INPG (Y)}}$$

$$228 \text{ Seconds} = \frac{16 \times 100}{7}$$

(c) The holding time for trunk group 20 (ht20) is found by dividing CO1WI CCS by CO1WI PEG ×100:

$$\text{ht20} = \frac{\text{CO1WI CCS} \times 100}{\text{CO1WI PEG}}$$

$$228 \text{ Seconds} = \frac{196 \times 100}{86}$$

(d) If ht20 and ht2WI are equal, then all measurements used to compute the holding times are valid.

C. Attendant Facilities Measurements

7.03 Attendant data validation in some cases will not be equal because of program anomalies in the DIMENSION 100/400 PBX traffic measurements. Although in some cases they are very close, they may not equal, because station-to-attendant calls are counted as calls in queue but not as calls that abandon from queue. Calls that bridge the measurement interval and ***any*** use of the loop key at the console distort the relationships among totals.

7.04 The following attendant data validation check is an aid in determining the reliability of the attendant facilities measurements of the summary report.

(a) ***WRKD GRP PEG + INCALL Q ABNDN PEG ≥ INCALL Q PEG:*** Any use of the loop key will score only the WRKD GRP PEG and further distort totals (example: attendant originates an outgoing call or answers a timed reminder recall on an incoming call extended to a station that is busy or does not answer).

(b) ***WRKD GRP CCS:*** Equals total of all WK CNS (1-4) CCS.

(c) ***WRKD GRP PEG:*** Equals total of all WK CNS (1-4) PEG.

(d) ***INCALL Q PEG ≥ INCALL Q ABNDN + LDN CALLS ANS PEG + NON-LDN CALLS ANS PEG + ATT RECALLS:*** The INCALL Q PEG may be greater than the total of the other measurements, because station-to-attendant calls are counted in the INCALL Q PEG, and if they abandon, they are not included in the INCALL Q ABNDN measurement. This applies to FP2, Issue 3.6; FP3, Issue 2.1; FP4, Issue 2.5; FP5, Issue 2.3; FP10, Issue 1.3, and FP15 Issue 1.0 and later.

REG	NAME	EXPLANATION
1	Processor Load Indicator A — Processor Overload	Scores once when the processor is too busy to call in the maintenance program for nine consecutive 25-ms cycles. ***Note:*** This peg count will only print when an overload condition occurs.
2-15	Ringing Group Block — Peg Count	Scores when four lines ring simultaneously in a ringing group and an attempt is made to ring another line within the same ringing group. Reorder tone is returned to the calling party. ***Note:*** This peg count will print only when blockage occurs. Only the 14 highest ringing group block pegs will be printed.
16	DID Busy Peg Count	Scores when a DID call encounters busy tone.
17	DID DA Peg Count	Scores when a DID call is camped onto a busy station, call abandons, and station does not answer.
18	Incoming Attendant Call Queue Abandoned	Scores when a call is abandoned before the attendant answers and when a Trunk Answer From Any Station Call is abandoned. (Does not include DID or intercom calls).
19	Trunk Answer From Any Station Call	Scores when the code for Trunk Answer From Any Station is dialed.
20	Trunk Answer From Any Station Call Abandoned	Scores when a call is abandoned before the code for Trunk Answer From Any Station is dialed.
21	Remote Access — Right Code	Scores when the correct Remote Access authorization code is dialed.
22	Remote Access — Wrong Code	Scores when an incorrect Remote Access authorization code is dialed. Dial tone time-outs are also recorded.
23	Station Message Detail Recording (SMDR) — Record Blockage	Scores when SMDR feature cannot access a record.
24	Automatic Callback — Calling	Scores when the access code for Automatic Callback — Calling is dialed.
25	Call Hold	Scores when the Call Hold feature code is dialed.
26	Call Pickup	Scores when the Call Pickup feature code is dialed.
27	Originating Call Waiting by Station	Scores when a station user dials the Originating Call Waiting code.
28	Answer Hold	Scores when the answer hold code for the Call Waiting feature is dialed.

Fig. 1—Accumulated Registers (Sheet 1 of 3)

REG	NAME	EXPLANATION
29	Activate Call Forwarding — All Calls	Scores when the access code to activate Call Forwarding — All Calls is dialed.
30	Call Forwarding — Busy/DA	Scores when the access code to activate Call Forwarding — Busy/Don't Answer is dialed.
31	Cancel Call Forwarding	Scores when the code to cancel the Call Forwarding feature is dialed.
32	Speed Call	Scores when the Speed Calling feature code is dialed.
33	Code Calling	Scores when the code for the Code Calling Access feature is dialed.
34	Paging Code	Scores when the dial access code for Paging is dialed.
35	Paging — Answer-Back	Scores when the Paging — Answer-Back code is dialed.
36	Cancel Outgoing Trunk Queue	Scores when the code to cancel Outgoing Trunk Queuing and/or Automatic Callback — Calling is dialed.
37	Activate Attendant Control of Trunk Group Access	Scores when the attendant activates Attendant Control of Trunk Group Access.
38	Deactivate Attendant Control of Trunk Group Access	Scores when the attendant deactivates Attendant Control of Trunk Group Access.
39	Conference Call	Scores when the attendant adds a station or a trunk to a conference arrangement.
40	Call Waiting — Total	Scores whenever a Call Waiting code is dialed by a station or attendant and CAS attendant camp-on is activated.
41	Attendant Calls Originated — START Key	Scores when an attendant presses the START key.
42	ECTS — Automatic Callback — Calling	Scores when the Automatic Callback — Calling feature is activated by an ECTS button depression.
43	ECTS — Call Hold	Scores when Call Hold is activated by an ECTS button depression.
44	ECTS — Call Pickup	Scores when Call Pickup is activated by an ECTS button depression.
45	ECTS — Call Waiting — Originating	Scores when Originating Call Waiting is activated by an ECTS button depression.

Fig. 1—Accumulated Registers (Sheet 2 of 3)

REG	NAME	EXPLANATION
46	ECTS — Answer Hold	Scores when the ECTS Answer HOLD button of the Call Waiting feature is pressed.
47	ECTS — Call Fowarding — All Calls	Scores when Call Fowarding — All Calls is activated by an ECTS button depression.
48	ECTS — Call Forwarding — Busy/DA	Scores when Call Forwarding — Busy/Don't Answer is activated by an ECTS button depression.
49-56	Uniform Call Distribution (UCD) Warning Queue Peg (Groups 1-8)	Scores when the UCD exceeds the established value for each 2-second scan interval.
57	Centralized Attendant Service (CAS) — Incoming Calls Abandoned	Scores when a CAS call is abandoned before the CAS attendant answers. Station calls to the CAS attendant are not included.
58	VALID Security Code	Scores each time a legal Remote Access code is accepted by the DIMENSION PBX. This is to aid in the security of RMATS-equipped DIMENSION PBXs (FP15 only).
59	INVALID Security Code	Scores each time an illegal Remote Access code is received by the DIMENSION PBX (FP15 only).
60	SPARE	Unassigned

Fig. 1—Accumulated Registers (Sheet 3 of 3)

Type 1 — Trunk-Group Combination

ITEM	NAME	EXPLANATION
1, 4, 7	Trunk-Group Combination — Total CCS	Records the total usage on trunk groups within a trunk-group combination.
2, 5, 8	Trunk-Group Combination — Incoming CCS	Records the total incoming usage on trunk groups within a trunk-group combination
3, 6, 9	Trunk-Group Combination — Outgoing CCS	Records the total outgoing usage on trunk groups within a trunk-group combination.

Type 2 — Attendant Features

ITEM	NAME	EXPLANATION
1	Worked CCS (Group)	Records attendant time-slot usage for all attendant positions while handling calls.
2	Activity CCS (Group)	Records the usage when the attendant headset is plugged in; for all attendant positions.
3	Worked Peg (Group)	Records the number of times the attendant presses a loop key or a START key; for all attendant positions.
4	Worked CCS — Console 1	Records attendant time-slot usage for console 1.
5	Worked CCS — Console 2	Records attendant time-slot usage for console 2.
6	Worked CCS — Console 3	Records attendant time-slot usage for console 3.
7	Worked CCS — Console 4	Records attendant time-slot usage for console 4.
8	Worked Peg — Console 1	Scores each time the loop key is pressed for console 1.
9	Worked Peg — Console 2	Scores each time the loop key is pressed for console 2.
10	Worked Peg — Console 3	Scores each time the loop key is pressed for console 3.
11	Worked Peg — Console 4	Scores each time the loop key is pressed for console 4.
12	Incoming Attendant Call Queue CCS	Scores usage in CCS for all incoming attendant call queues. The measurement reflects the total wait time for all calls placed in the incoming attendant call queue.
13	Incoming Attendant Call Queue Peg	Scores each time an incoming attendant call is placed in queue.

Fig. 2—Peak and Time-Coincident Traffic Measurement Items (Sheet 1 of 4)

Type 2 — Attendant Features (Contd)

ITEM	NAME	EXPLANATION
14	Incoming Attendant Call Queue Abandoned	Scores when a trunk call is abandoned in queue before the attendant answers and includes Trunk Answer From Any Station calls abandoned. Station-to-attendant calls are not counted.
15	LDN Calls Answered Peg	Scores after an LDN call is answered and includes calls to the attendant from CO or DID trunks. (Does not include WATS, FX, CCSA, and tie trunks.)
16	Non-LDN Calls Answered Peg	Scores after the attendant answers a call other than LDN. (Does not include station calls to the attendant.)
17	Attendant Recall Peg	Scores when an attendant answers a station call when the station has a third party on soft hold.
18	Attendant-Originated Calls — START Key	Scores whenever the attendant originates a call using the START key.

Type 3 — Network and Processor Occupancy

ITEM	NAME	EXPLANATION
1	Time-Slot CCS	Records time-slot usage in CCS.
2	Tandem Traffic CCS	Records tandem traffic usage in CCS (trunk-to-trunk).
3	Time-Slot Peg	Scores when a time slot is seized.
4	Percent Processor Occupancy	Records the percentage of time that the processor is busy with call processing and scanning. ***Note:*** Reading will be a 4-digit percent. If calls are not being processed, the register will read 50.00 = 50% for scanning.
5	Processor Load Indicator B (Processor Overflow)	Scores on each 25-ms cycle when the processor is too busy to call in the maintenance program.
6	Call Processor Stimulus Peg	Scores each time a call processor stimulus is handled.
7	ECTS Controller Stimulus Peg	Scores each time an ECTS controller stimulus is handled.
10	Time of Day	Records the time of day (PBX time) that the peak occurred. ***Note:*** This measurement may be assigned time coincident with any peak measurement (FP15 only).

Fig. 2—Peak and Time-Coincident Traffic Measurement Items (Sheet 2 of 4)

Type 4 — Queue Measurement - Outgoing Trunk Queuing

ITEM	NAME	EXPLANATION
1	Queue Study Group 1 Peg	Scores when an outgoing trunk call is placed in queue.
2	Queue Study Group 2 Peg	Same as item 1.
3	Queue Study Group 3 Peg	Same as item 1.
4	Queue Study Group 4 Peg	Same as item 1.
5	Queue Study Group 5 Peg	Same as item 1.
6	Queue Study Group 6 Peg	Same as item 1.
7	Queue Study Group 1 DA Peg	Scores when an outgoing trunk queue calls a station and the station does not answer.
8	Queue Study Group 2 DA Peg	Same as item 7.
9	Queue Study Group 3 DA Peg	Same as item 7.
10	Queue Study Group 4 DA Peg	Same as item 7.
11	Queue Study Group 5 DA Peg	Same as item 7.
12	Queue Study Group 6 DA Peg	Same as item 7.
13	Queue Study Group 1 Busy Callback Peg	Scores when an outgoing trunk queue calls a busy station.
14	Queue Study Group 2 Busy Callback Peg	Same as item 13.
15	Queue Study Group 3 Busy Callback Peg	Same as item 13.
16	Queue Study Group 4 Busy Callback Peg	Same as item 13.
17	Queue Study Group 5 Busy Callback Peg	Same as item 13.
18	Queue Study Group 6 Busy Callback Peg	Same as item 13.

Fig. 2—Peak and Time-Coincident Traffic Measurement Items (Sheet 3 of 4)

Type 5 — Trunk-Group Usage

ITEM	NAME	EXPLANATION
8-63	Trunk Group Usage	Records total usage in CCS on a specified trunk group.

Type 6 — Trunk-Group Peg

ITEM	NAME	EXPLANATION
15-63	Trunk Group Peg	Scores each time a trunk within a trunk group is accessed.

Type 7 — Trunk-Group Overflow

ITEM	NAME	EXPLANATION
18-63	Trunk-Group Overflow	Scores when an attempt is made to seize a trunk within a trunk group and all trunks are busy.

Type 8 — Trunk-Group Usage — Incoming for Two-Way Facility

ITEM	NAME	EXPLANATION
18-63	Trunk-Group Incoming Usage	Records incoming usage in CCS for 2-way trunk facilities.

Fig. 2—Peak and Time-Coincident Traffic Measurement Items (Sheet 4 of 4)

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TRAFFIC SUMMARY REPORT

GENERATED BY REQUEST

RMATS FACILITY-RMATS ISSUE 3 UNIT 4

PBX ID # 50 COMPANY NAME- 68285

SYSTEM CONFIGURATION 1E015-03L1.1

DAYS STUDIED	5	STA LINES	87
ECTS LINES	0	ECTS STA	1
ATND POSN	1	MODULES	1
LINE CARR	2	TRUNK CARR	2

POLLING SCHEDULE:

MON	TUE	WED	THU	FRI	SAT	SUN
X	X	X	X	X		X

POLL	1	2	3	4	5	6	7	8
TRANSLATION CHANGED AT 19:01 ON 9/ 8								
POLLING INTERVAL(HRS)	12	24	24	24	73	0	0	0
POLL TIME RMATS	19:18	19:19	19:11	19:12	19:15	00:00	00:00	00:00
DATE	10/20	10/21	10/22	10/23	10/26	00/00	00/00	00/00

DATE OF LAST POLL 10/26

SYSTEM ACTIVITY AND FEATURE USAGE PEG COUNTS

MEASUREMENT	POLL 1	2	3	4	5	6	7	8	AVG
STATION FEATURE COUNTS									
AUTO CALL BACK	3	3	2	1	5	0	0	0	3
CALL HOLD	15	29	16	16	14	0	0	0	18
CALL PICKUP	254	270	255	267	340	0	0	0	277
ANSWER HOLD	0	1	0	0	0	0	0	0	0
CALL FWD(ALL)	7	8	15	18	15	0	0	0	12
CALL FWD(BY/DA)	1	0	0	0	0	0	0	0	0
CALL FWD(DEACT)	14	13	14	21	27	0	0	0	17
SPEED CALL	27	38	34	46	28	0	0	0	34
CNCL OGT QUE/ACB	1	1	0	0	0	0	0	0	0
SYSTEM FEATURE COUNTS									
TAAS CALL	34	42	48	73	136	0	0	0	66
TAAS CALL ABANDON	4	3	2	8	11	0	0	0	5
REM ACCESS WG CD	0	1	0	0	0	0	0	0	0
CALL WAITING	131	116	127	142	134	0	0	0	130
ATTENDANT FEATURE COUNTS									
CONF CALL	1	6	4	6	5	0	0	0	4
CALLS ORIG/START	850	839	829	952	1066	0	0	0	907

Fig. 3—Traffic Summary Report—FP15 Format (Sheet 1 of 6)

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T R A F F I C S U M M A R Y R E P O R T

SYSTEM ACTIVITY AND FEATURE USAGE PEG COUNTS

MEASUREMENT	POLL 1	2	3	4	5	6	7	8	AVG

ECTS STATION FEATURE COUNTS

NETWORK COMPLETION ACCUMULATED COUNT

MEASUREMENT	POLL 1	2	3	4	5	6	7	8	AVG
DID TO BUSY STA	0	0	0	0	0	0	0	0	0
DID UNANSWERED	0	0	0	0	0	0	0	0	0
IN CALLS ABANDON	34	52	37	63	52	0	0	0	47
CAS INCALL ABNDN	0	0	0	0	0	0	0	0	0
RINGING BLKD GP# 0	0	1	0	0	0	0	0	0	0

NETWORK ADMIN

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
	TIMESLOT CCS		464	575	528	553	579	0	0	0	539
	ECTS STM X10 PEG		0	0	0	0	0	0	0	0	0
	CALL PRC X10 PEG		662	706	677	762	710	0	0	0	703
	LD IND B X100PEG		16	19	17	17	15	0	0	0	16
	OCCUPNCY PCT		46.26	46.26	46.25	46.39	46.49	0.00	0.00	0.00	46.33
	TIMESLOT PEG		441	458	434	460	463	0	0	0	451

PROCESSOR OCCUPNCY

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
	OCCUPNCY PCT		46.67	46.77	46.83	46.90	46.68	0.00	0.00	0.00	46.76
	ECTS STM X10 PEG		0	0	0	0	0	0	0	0	0
	CALL PRC X10 PEG		464	537	540	541	740	0	0	0	564
	LD IND B X100PEG		13	13	14	14	16	0	0	0	14
	TIMESLOT PEG		322	328	353	368	492	0	0	0	372
	TIMESLOT CCS		379	402	431	292	529	0	0	0	406

ATTENDANT POSN ADMIN

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
	WRKD GRP CCS		23	34	22	25	30	0	0	0	26
	WK CNS 1 PEG		121	160	153	113	98	0	0	0	129
	WK CNS 1 CCS		23	34	22	25	30	0	0	0	26
	ATND ORG/STRT PEG		85	94	129	62	52	0	0	0	84
	ATND RECALL PEG		0	0	3	1	0	0	0	0	0

Fig. 3—Traffic Summary Report—FP15 Format (Sheet 2 of 6)

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T R A F F I C S U M M A R Y R E P O R T

ATTENDANT POSN ADMIN

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBM
	NON LDN ANS PEG		0	2	1	2	2	0	0	0	1
	LDN CALL ANS PEG		84	92	90	54	47	0	0	0	73
	INCALL ABNIN PEG		2	1	3	6	3	0	0	0	3
	INCALL Q PEG		88	94	98	63	61	0	0	0	81
	INCALL Q CCS		0	0	0	0	0	0	0	0	0
	WRKD GRP PEG		121	160	153	113	98	0	0	0	129
	ACTV GRP CCS		36	36	36	36	36	0	0	0	36
	WK CNS 1 CCS		23	34	22	25	30	0	0	0	26
25	BCSACS CCSI	1	0	0	0	0	0	0	0	0	0
25	BCSACS OVF	1	0	0	0	0	0	0	0	0	0
25	BCSACS PEG	1	0	0	0	0	0	0	0	0	0
25	BCSACS CCS	1	0	0	0	0	0	0	0	0	0
22	CO_1WI PEG	2	3	5	2	2	2	0	0	0	2
22	CO_1WI CCS	2	22	21	2	22	14	0	0	0	16
	WK CNS 3 CCS		0	0	0	0	0	0	0	0	0
	WK CNS 2 CCS		0	0	0	0	0	0	0	0	0

Fig. 3—Traffic Summary Report—FP15 Format (Sheet 3 of 6)

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T R A F F I C S U M M A R Y R E P O R T

TRUNK GROUP MAINTENANCE BUSYOUTS AT POLL TIME

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8

NO MAINTENANCE BUSYOUTS PRESENT

TRUNK GROUP COMBINATIONS

COMBO 1		COMBO 2		COMBO 3	
TRK GRP	TRK TYPE	TRK GRP	TRK TYPE	TRK GRP	TRK TYPE
23	CO_1WI	22	CO_1WI		
19	CO_2W	25	BCSACS		
18	CO_1WO				

Fig. 3—Traffic Summary Report—FP15 Format (Sheet 4 of 6)

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TRAFFIC SUMMARY REPORT

TRUNK GROUP SUMMARY

TRK GRP	MEASUREMENT		TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
15	INCOM	CCS	118	46	49	42	35	38	0	0	0	42
15	INCOM	PEG	118	118	128	125	137	108	0	0	0	123
16	DP_DR	CCS	10	1	0	0	0	0	0	0	0	0
16	DP_DR	PEG	10	7	0	0	0	0	0	0	0	1
17	TT_DR	CCS	4	36	43	38	37	37	0	0	0	37
17	TT_DR	PEG	4	361	387	358	390	364	0	0	0	372
24	FX_2W	CCS	1	9	10	14	13	13	0	0	0	11
24	FX_2W	CCSI	1	3	0	13	5	3	0	0	0	4
24	FX_2W	OVF	1	0	4	0	7	6	0	0	0	3
24	FX_2W	PEG	1	1	9	3	4	8	0	0	0	5
20	CO_1WI	CCS	2	0	0	0	0	0	0	0	0	0
20	CO_1WI	PEG	2	0	0	0	0	0	0	0	0	0
21	CO_1WI	CCS	3	57	61	51	55	66	0	0	0	58
21	CO_1WI	PEG	3	28	18	22	12	22	0	0	0	20

TRUNK GROUP COMBO 1 ASSOC TRK GRPS: 23 19 18

1	COMBO	CCS		355	427	417	413	413	0	0	0	403
18	CO_1WO	OVL	5	108	66	81	97	65	0	0	0	83
18	CO_1WO	PEG	5	133	112	114	113	103	0	0	0	115
18	CO_1WO	CCS	5	151	148	131	147	149	0	0	0	145
19	CO_2W	CCSI	7	13	37	52	29	44	0	0	0	35
19	CO_2W	OVL	7	31	5	22	15	4	0	0	0	15
19	CO_2W	PEG	7	91	84	92	104	84	0	0	0	91
19	CO_2W	CCS	7	104	141	144	131	141	0	0	0	132
23	CO_1WI	PEG	5	68	56	68	73	63	0	0	0	65
23	CO_1WI	CCS	5	100	138	142	135	123	0	0	0	127
1	COMBO	CCSO		242	252	223	249	246	0	0	0	242
1	COMBO	CCSI		113	175	194	164	167	0	0	0	162

Fig. 3—Traffic Summary Report—FP15 Format (Sheet 5 of 6)

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T R A F F I C S U M M A R Y R E P O R T

AUTOMATIC ROUTE SELECTION

ACCUMULATED PEG COUNTS

PLAN	PATTERN	PREFERENCE 1	2	3	4	5	6	7	8	9	10
1	1 PEG	0	0	0	0	0	0	0	0	0	0
1	2 PEG	597	22	0	0	0	0	0	0	0	0
1	3 PEG	97	2	0	0	0	0	0	0	0	0
1	4 PEG	459	0	0	0	0	0	0	0	0	0

FILE ID 62 SUMMARY REPORT COMPLETE

Fig. 3—Traffic Summary Report—FP15 Format (Sheet 6 of 6)

Peak Register Assignments

PEAK REGISTER	TRAFFIC TYPE	ITEM NUMBER	MEASUREMENT ITEM
1	3	3	Time-Slot Peg
2	3	1	Time-Slot CCS
3	2	12	Incoming Attendant Call Queue CCS
4	2	1	Worked CCS — Group

Time-Coincident Register Assignments

TIME COINCIDENT REGISTER	TRAFFIC TYPE	ITEM NUMBER	MEASUREMENT ITEM	PEAK REGISTER VALUE
1	3	4	Processor Occupancy-Percent	Time-Slot Peg
2	3	5	Processor Overflow Peg	Time-Slot Peg
3	3	6	Call Processor Peg	Time-Slot Peg
4	3	7	ECTS Controller Stimulus Peg	Time-Slot Peg
5	3	3	Time-Slot Peg	Time-Slot CCS
6	3	2	Tandem Traffic CCS	Time-Slot CCS
7	2	13	Incoming Attendant Call Queue Peg	Incoming Attendant Call Queue CCS
8	2	1	Worked CCS-Group	Incoming Attendant Call Queue CCS

Fig. 4—Default Traffic Measurement Items (Sheet 1 of 2)

Time-Coincident Register Assignments (Contd)

TIME COINCIDENT REGISTER	TRAFFIC TYPE	ITEM NUMBER	MEASUREMENT ITEM	PEAK REGISTER VALUE
9	2	3	Worked Peg-Group	Incoming Attendant Call Queue CCS
10	2	14	Incoming Attendant Call Queue Abandoned	Incoming Attendant Call Queue CCS
11	2	15	LDN Calls Answered Peg	Incoming Attendant Call Queue CCS
12	2	16	Non-LDN Calls Answered Peg	Incoming Attendant Call Queue CCS
13	2	17	Attendant Recall Peg	Incoming Attendant Call Queue CCS
14	2	18	Attendant Originating Calls Peg	Incoming Attendant Call Queue CCS
15	2	2	Manned CCS — Group	Worked CCS — Group
16	2	12	Incoming Attendant Call Queue CCS	Worked CCS — Group
17	2	13	Incoming Attendant Call Queue Peg	Worked CCS — Group
18	2	4	Worked CCS — Console 1	Worked CCS — Group
19	2	8	Worked Peg — Console 1	Worked CCS — Group

Fig. 4—Default Traffic Measurement Items (Sheet 2 of 2)

PEAK REGISTERS				TIME-COINCIDENT REGISTERS				
REG NO.	TYPE	TRUNK GROUP	MEASUREMENT	REG NO.	TYPE	TRUNK GROUP	MEASUREMENT	VALIDATION
(1)	1	1	COMBO CCS	(2)	5	18	CO1WO CCS	(1) = (2) + (5) + (8)
				(3)	6	18	CO1WO PEG	CO2W OUT = (X) = (5) − (8) (X) = ht18 X (4) / 100 where: ht18 = (2) X 100 / (3)
				(4)	7	18	CO1WO OVL	
				(5)	5	19	CO2W CCS	
				(6)	8	19	CO2W PEG	CO2W INPG = (y) (y) = (6) − (4) ht 2WI = (7) X 100 / (y)
				(7)	9	19	CO2W CCSI	
				(8)	5	20	CO1WI CCS	ht20 = (8) X 100 / (9)
				(9)	6	20	CO1WI PEG	ht 2WI = ht20
				(10)	2		TIME	FP15 Only

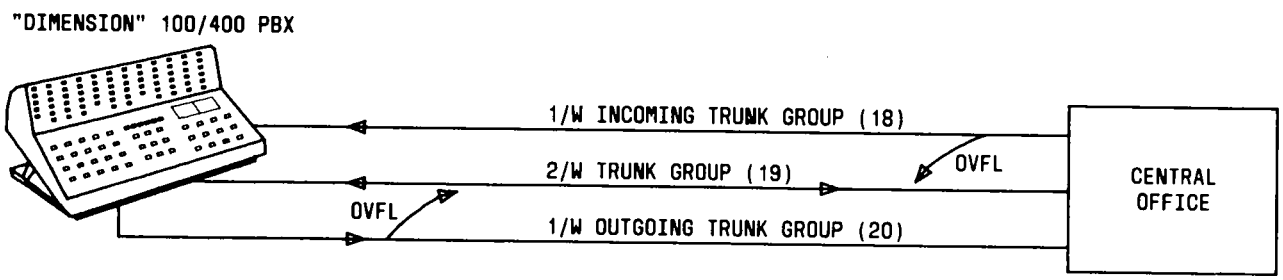

Fig. 5—Peak and Time-Coincident Register Assignments

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T R A F F I C S U M M A R Y R E P O R T

GENARATED BY REQUEST

RMATS FACILITY-GEORGIA 3 UNIT 3

PBX ID # 155 COMPANY NAME- 13409

SYSTEM CONFIGURATION 1E010-02 1.1

DAYS STUDIED	5	STA LINES	109
ECTS LINES	0	ECTS STA	0
ATND POSN	1	MODULES	1
LINE CARR	2	TRUNK CARR	2

POLLING SCHEDULE:	MON	TUE	WED	THU	FRI	SAT	SUN
	X	X	X	X	X		

POLL	1	2	3	4	5	6	7	8
RELOAD OCCURRED		X						
POLLING INTERVAL(HRS)	-24	7	25	48	24	0	0	0
POLL TIME RMATS	20:55	20:52	20:56	21:05	20:58	00:00	00:00	00:00
DATE	08/14	08/17	08/18	08/20	08/21	00/00	00/00	00/00

DATE OF LAST POLL 08/21

SYSTEM ACTIVITY AND FEATURE USAGE PEG COUNTS

MEASUREMENT	POLL 1	2	3	4	5	6	7	8	AVG
STATION FEATURE COUNTS									
AUTO CALL BACK	3	0	0	9	2	0	0	0	2
CALL HOLD	3	1	2	5	0	0	0	0	2
CALL PICKUP	205	94	187	414	202	0	0	0	220
CALL FWD(ALL)	3	0	8	15	3	0	0	0	5
CALL FWD(BY/DA)	0	0	1	1	0	0	0	0	0
CALL FWD(DEACT)	3	1	7	14	5	0	0	0	6
SYSTEM FEATURE COUNTS									
TAAS CALL ABANDON	1	1	2	1	0	0	0	0	1
REM ACCESS RT CD	5	5	5	8	13	0	0	0	7
CALL WAITING	94	75	64	169	122	0	0	0	104
ATTENDANT FEATURE COUNTS									
CALLS ORIG/START	0	0	0	13	0	0	0	0	2

Fig. 6—Traffic Summary Report—Non-FP15 Format (Sheet 1 of 6)

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T R A F F I C S U M M A R Y R E P O R T

NETWORK COMPLETION ACCUMULATED COUNT

MEASUREMENT	POLL 1	2	3	4	5	6	7	8	AVG
DID TO BUSY STA	0	0	0	0	0	0	0	0	0
DID UNANSWERED	0	0	0	0	0	0	0	0	0
IN CALLS ABANDON	23	18	35	56	25	0	0	0	31
CAS INCALL ABNDN	0	0	0	0	0	0	0	0	0

NETWORK ADMIN

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
	TIMESLOT CCS		479	572	395	428	448	0	0	0	464
	LD IND B X10 PEG		2851	4338	2978	3648	2832	0	0	0	3329
	OCCUPNCY PCT		52.47	54.74	51.53	52.88	51.57	0.00	0.00	0.00	52.63
	TIMESLOT PEG		368	697	358	482	365	0	0	0	454
	TNDM TRF CCS		0	8	4	8	0	0	0	0	4

PROCESSOR OCCUPNCY

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
	TIMESLOT PEG		368	697	381	482	365	0	0	0	438
	TIMESLOT CCS		479	572	395	428	448	0	0	0	464
	OCCUPNCY PCT		52.47	54.73	51.55	52.88	51.57	0.00	0.00	0.00	52.64
	LD IND B X10 PEG		2851	4338	2872	3648	2832	0	0	0	3308
	CALL PRC X10 PEG		535	770	576	670	559	0	0	0	622
	ECTS STM X10 PEG		0	0	0	0	0	0	0	0	0

ATTENDANT POSN ADMIN

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
	WRKD GRP CCS		22	23	20	24	25	0	0	0	22
	ATND ORG/STRTPEG		0	0	0	0	0	0	0	0	0
	ATND RECALL PEG		1	4	0	2	2	0	0	0	1
	NON LDN ANS PEG		0	0	0	0	0	0	0	0	0
	LDN CALL ANS PEG		103	142	81	76	81	0	0	0	96
	INCALL ABNDN PEG		5	6	8	2	2	0	0	0	4
	WRKD GRP PEG		137	177	101	140	126	0	0	0	136
	ACTV GRP CCS		36	36	36	36	36	0	0	0	36
	INCALL Q CCS		9	14	10	6	8	0	0	0	9
	INCALL Q PEG		121	162	93	88	91	0	0	0	111
	WK CNS 1 CCS		22	23	20	24	25	0	0	0	22

Fig. 6—Traffic Summary Report—Non-FP15 Format (Sheet 2 of 6)

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T R A F F I C S U M M A R Y R E P O R T

TRK GRP	MEASUREMENT	ATTENDANT POSN ADMIN TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
	WK CNS 1	PEG	137	177	101	140	126	0	0	0	1

Fig. 6—Traffic Summary Report—Non-FP15 Format (Sheet 3 of 6)

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T R A F F I C S U M M A R Y R E P O R T

TRUNK GROUP MAINTENANCE BUSYOUTS AT POLL TIME

TRK GRP	MEASUREMENT	TRK SIZE	POLL 1	2	3	4	5	6	7	8

NO MAINTENANCE BUSYOUTS PRESENT

TRUNK GROUP COMBINATIONS

COMBO 1		COMBO 2		COMBO 3	
TRK GRP	TRK TYPE	TRK GRP	TRK TYPE	TRK GRP	TRK TYPE
20	CO_1WI				
18	CO_1WO				
19	CO_2W				

Fig. 6—Traffic Summary Report—Non-FP15 Format (Sheet 4 of 6)

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T R A F F I C S U M M A R Y R E P O R T

TRUNK GROUP SUMMARY

TRK GRP	MEASUREMENT		TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
15	INCOM	CCS	57	26	36	36	44	43	0	0	0	37
15	INCOM	PEG	57	50	119	54	80	71	0	0	0	74
16	DP_DR	CCS	6	1	1	2	2	1	0	0	0	1
16	DP_DR	PEG	6	14	2	8	10	1	0	0	0	7
17	TT_DR	CCS	5	26	41	27	34	24	0	0	0	30
17	TT_DR	PEG	5	246	577	281	396	235	0	0	0	347
18	CO_1WO	CCS	3	107	94	87	90	88	0	0	0	93
9	Q_TRK	BUSY PEG	5	0	1	0	0	0	0	0	0	0
9	Q_TRK	DNT APEG	5	0	0	0	0	0	0	0	0	0
9	Q_TRK	Q ENTPEG	5	1	4	0	0	0	0	0	0	1
9	Q_TRK	CCS	5	0	1	0	0	0	0	0	0	0
18	CO_1WO	OVL	3	30	18	11	12	10	0	0	0	16
18	CO_1WO	PEG	3	76	83	59	79	70	0	0	0	73
19	CO_2W	CCS	6	166	193	131	112	171	0	0	0	154
19	CO_2W	CCSI	6	122	183	121	89	157	0	0	0	135
19	CO_2W	OVL	6	1	5	0	0	2	0	0	0	1
19	CO_2W	PEG	6	93	119	83	64	126	0	0	0	97
20	CO_1WI	CCS	9	60	66	58	59	63	0	0	0	61
20	CO_1WI	PEG	9	37	21	36	32	26	0	0	0	30
22	WT_1WO	CCS	1	61	76	73	78	77	0	0	0	73
8	Q_TRK	Q ENTPEG	5	11	4	5	20	23	0	0	0	12
8	Q_TRK	BUSY PEG	5	2	1	2	4	2	0	0	0	2
8	Q_TRK	DNT APEG	5	3	0	1	4	0	0	0	0	1
8	Q_TRK	CCS	5	12	5	10	18	27	0	0	0	14
22	WT_1WO	OVL	1	16	10	8	22	32	0	0	0	17
22	WT_1WO	PEG	1	162	34	139	93	58	0	0	0	117
23	BCSACS	CCS	1	5	4	5	17	7	0	0	0	7
23	BCSACS	CCSI	1	5	4	5	17	7	0	0	0	7
23	BCSACS	OVL	1	0	0	0	0	0	0	0	0	0
23	BCSACS	PEG	1	1	1	1	5	3	0	0	0	2
24	TT_2WDR	CCS	2	65	54	46	61	30	0	0	0	51
10	Q_TRK	BUSY PEG	5	3	1	3	2	2	0	0	0	2
10	Q_TRK	DNT APEG	5	2	0	1	3	0	0	0	0	1
10	Q_TRK	Q ENTPEG	5	12	4	5	9	8	0	0	0	7

Fig. 6—Traffic Summary Report—Non-FP15 Format (Sheet 5 of 6)

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TRAFFIC SUMMARY REPORT

TRUNK GROUP SUMMARY

TRK GRP	MEASUREMENT		TRK SIZE	POLL 1	2	3	4	5	6	7	8	ABBH
10	Q_TRK	CCS	5	36	8	5	20	14	0	0	0	22
24	TT_2WDR	CCSI	2	51	41	32	26	1	0	0	0	30
24	TT_2WDR	OVL	2	16	7	5	11	9	0	0	0	9
24	TT_2WDR	PEG	2	141	43	47	82	141	0	0	0	92
25	TT_1IDR	CCS	4	0	0	0	0	0	0	0	0	0
25	TT_1IDR	PEG	4	0	0	0	0	0	0	0	0	0
26	CO_1WI	CCS	3	0	0	0	0	0	0	0	0	0
26	CO_1WI	PEG	3	0	0	0	0	0	0	0	0	0

TRUNK GROUP COMBO 1 ASSOC TRK GRPS: 20 18 19

1	COMBO	CCS		349	380	353	351	375	0	0	0	362
19	CO-2W	CCSI	6	12	16	14	11	13	0	0	0	13
19	CO-2W	PEG	6	44	50	42	42	42	0	0	0	45
19	CO-2W	CCS	6	92	100	89	89	94	0	0	0	93
20	CO-1WI	PEG	9	76	86	78	82	92	0	0	0	83
20	CO-1WI	CCS	9	183	196	185	180	198	0	0	0	188
18	CO-1WO	OVL	3	39	43	36	37	39	0	0	0	39
18	CO-1WO	PEG	3	36	43	38	39	41	0	0	0	39
18	CO-1WO	CCS	3	74	84	79	82	83	0	0	0	80

FILE ID 155 SUMMARY REPORT COMPLETE

Fig. 6—Traffic Summary Report—Non-FP15 Format (Sheet 6 of 6)

TRUNK-TYPE ENCODE MESSAGES

TRUNK TYPE MESSAGE	TRUNK-TYPE DESCRIPTION
MISCELLANEOUS	
INCOM	Intercom
DP-DR	Dial Pulse Digit Register
TT-DR	TOUCH-TONE Dialing Digit Register
AT-DR	Attendant Digit Register
SLOOP	Switched Loop
6-WAY	Attendant Conference
Q-TRK	General Purpose Queuing Trunks
CCSA	
CCSA2WDD	2-Way CCSA Delay Dial In/Out
CCSA2WOD	2-Way CCSA Delay Dial Out/Wink In
CCSA2WOD	2-Way CCSA Dial Tone Out/Delay Dial In
CCSA2W	2-Way CCSA Dial Tone Out/Wink In
REGULAR CO	
CO-1WI	1-Way Incoming Attendant Completing
CO-1WO	1-Way Outgoing DOD
CO-1WOP	1-Way Out DOD With Party Test
CO-2W	2-Way Attendant Completing In/DOD
CO-2WP	2-Way With Party Test
FOREIGN EXCHANGE	
FX-1WI	1-Way Incoming Attendant Completing
FX-1WO	1-Way Outgoing DOD
FX-1WOP	1-Way Out DOD With Party Test
FX-2W	2-Way Attendant Completing In/DOD
FX-2WP	2-Way With Party Test
WATS	
WT-1WI	1-Way Incoming Attendant Completing
WT-1WO	1-Way Outgoing DOD
WT-1WOP	1-Way Out DOD With Party Test
WT-1WA	Automatic INWATS
DID	
DID-IS	Immediate Start DID
DID-WS	Wink Start DID

Fig. 7—Trunk-Type Encode Messages (Sheet 1 of 3)

TRUNK-TYPE ENCODE MESSAGES (Contd)

TRUNK TYPE MESSAGE	TRUNK-TYPE DESCRIPTION
TIE TRUNKS	
TT1IDR	1-Way In Dialing Repeating
TT-1OAU	1-Way Out Automatic
TT-1ODR	1-Way Out Dial Repeating
TT-1IAU	1-Way In Automatic
TT-2WDR	2-Way Dial Repeating Both Ways
TT-2WDA	2-Way Dial Repeating In/Auto Out
TT-2WAD	2-Way Auto In/Dial Repeating Out
TT-2WAU	2-Way Auto Both Ways
TT1IDR-D	1-Way In Dial Repeating—Delay Dial
TIE2DDW	2-Way, Wink In/Delay Dial or Wink Out
TIE1IW	1-Way In, Wink
TIE1ODDW	1-Way Out, Delay Dial or Wink
TT2WDR-D	2-Way Dial Repeating—Delay Dial In
TT2WDA-D	2-Way Dial RPTG In/Auto Out—Delay Dial In
TIE TM	2-Way Delay Dial or Wink Out/Dial Repeating Delay Dial In
TIE DRA CLASS	Dial Repeating/Auto Trunk Class
TIE DD CLASS	Delay Dial Trunk Class
SPECIAL TRUNKS AND INTERFACES	
GWTRK	Guest Wakeup Trunk
BCSACS	Remote BCS Access Trunk
TELDIC	Telephone Dictation Interface
RECANC	Recorded Announcement Interface
LC-13	
LS-PAGE	Loudspeaker Paging Interface
CAS-LINK	CAS AMP Interface
RLS-LINK	Release Link Trunk for CAS
NICKT	ANI Interface
S-MS-INT	STA MSG REG Interface
TOL-TRM	Toll Terminal Trunk
UCD-LINT	UCD Lamp Interface
MUC-INTE	Music on Hold Interface
CODECALL	Code Call Interface
TT_SEND	TOUCH-TONE Dialing Sender

Fig. 7—Trunk-Type Encode Messages (Sheet 2 of 3)

TRUNK-TYPE ENCODE MESSAGES (Contd)

TRUNK TYPE MESSAGE	TRUNK-TYPE DESCRIPTION
SPECIAL TRUNKS AND INTERFACES (Contd)	
HW_DGCOL	Hardware Digit Collection
REM_ACC	Remote Access Voice Switched Gain Trunk
CON_INT	LC15 Contact Interface
INC_RLS	CAS Incoming Release Link Trunk
AUDIO	Audio Interface
REC_ANN	UCD Recorded Announcement
MS_1WI	Main/Satellite 1-Way In Immediate Start
MS_1WOI	Main/Satellite 1-Way Out Immediate Start
MS_2W	Main/Satellite 2-Way Immediate Start
MS_1WI	Main/Satellite 1-Way In Wink
MS_1WO	Main/Satellite 1-Way Out Wink
MS_2W	Main/Satellite 2-Way Wink
MS_1WI	Main/Satellite 1-Way In Delay Dial
MS_1WO	Man/Satellite 1-Way Out Delay Dial
MS_2W	Main/Satellite 2-Way Delay Dial
VSG_2W	Voice Switched Gain 2-Way (CO or WATS)
VSG_1W	Voice Switched Gain 1-Way (CO or WATS)

Fig. 7—Trunk-Type Encode Messages (Sheet 3 of 3)

TABLE A1

APPARENT LOAD ADJUSTMENT FACTOR

PERCENT BLOCKING	AAF
1	1.007
2	1.017
3	1.021
4	1.029
5	1.036
6	1.044
7	1.052
8	1.059

TABLE A2

PEAKEDNESS OF APPARENT LOAD DUE TO RETRIALS

APPARENT CCS	BLOCKING LEVEL .001	.01	.03	.05	.10	.20	.40
100	1.03	1.05	1.08	1.10	1.13	1.16	1.19
200	1.03	1.06	1.09	1.11	1.14	1.18	1.19
300	1.03	1.06	1.10	1.12	1.15	1.18	1.19
400	1.03	1.06	1.10	1.12	1.16	1.19	1.18

EXPANDED ALTERNATE ROUTING CAPACITY TABLES

PEAKEDNESS OF OFFERED LOAD: 1.10

	TRUNK 2					TRUNK 3				
BL	OFFD CCS	CARRIED LT	CARRIED TOTL	OVERFLOW CCS	OVERFLOW PF	OFFD CCS	CARRIED LT	CARRIED TOTL	OVERFLOW CCS	OVERFLOW PF
.51	97	22	48	5Ø	1.39	166	25	81	84	1.49
.52	1Ø1	22	48	52	1.39	171	25	82	89	1.49
.53	1Ø4	23	49	55	1.39	176	26	83	93	1.48
.54	1Ø8	23	5Ø	58	1.39	181	26	83	98	1.48
.55	111	24	5Ø	61	1.39	187	26	84	1Ø3	1.48

PEAKEDNESS OF OFFERED LOAD: 1.05

	TRUNK 8					TRUNK 9				
BL	OFFD CCS	CARRIED LT	CARRIED TOTL	OVERFLOW CCS	OVERFLOW PF	OFFD CCS	CARRIED LT	CARRIED TOTL	OVERFLOW CCS	OVERFLOW PF
.Ø6	167	8	157	1Ø	1.79	198	8	186	12	1.88
.Ø7	175	9	163	12	1.82	2Ø7	9	192	15	1.91
.Ø8	183	1Ø	169	15	1.85	216	1Ø	198	17	1.93
.Ø9	191	11	174	17	1.87	224	11	2Ø4	2Ø	1.96
.1Ø	198	12	178	2Ø	1.89	232	12	2Ø9	23	1.97

NEAL-WILKINSON TRUNK CAPACITY TABLES
FULL-ACCESS TRUNK GROUPS
LOW DAY-TO-DAY VARIATION ALLOWANCE

TABLE NUMBER PEAKEDNESS FACTOR: 1.6

NO. TRKS.	B.11	B.12	B.13	B.14	B.15
1	Ø	Ø	Ø	Ø	Ø
2	Ø	Ø	Ø	Ø	Ø
3	Ø	Ø	Ø	Ø	36
4	52	55	58	62	65
5	81	85	89	92	96
6	1Ø9	114	12Ø	125	13Ø
7	14Ø	146	152	158	164
8	172	179	186	192	199
9	2Ø5	212	22Ø	227	235
1Ø	238	247	255	264	272
11	272	281	291	3ØØ	3Ø9
12	3Ø7	317	327	336	346

Fig. 8—Load Adjustment and Capacity Tables