DMS-100 Family

TOPS IWS
Force Management Guide

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DMS-100 Family

TOPS IWS

Force Management Guide

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About this document

This document defines force management for the TOPS IWS applications, describes the typical force management office configuration, and explains how the DMS switch distributes calls. It also explains force management measurements, features, positions, reports, and forms.

Note that this document does not contain ACD information. If you need information on ACD, please refer to an earlier release of this document (release 13 or earlier).

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01. The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

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This document is written for all DMS-100 Family offices. More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in *DMS-100 Family Guide to Northern Telecom Publications*, 297-1001-001.

References in this document

The following TOPS IWS documents are referred to in this document:

- *TOPS IWS Operator Guide,* 297-2251-304
- *TOPS IWS Audio Card Configuration and Diagnostics,* 297-2251-202
- *TOPS IWS Base Platform User's Guide,* 297-2251-010

The following DMS-100 document is referred to in this book. The middle section of the document number is represented by *nnnn* because the NTP version is determined by the PCL to which it belongs.

- *DMS-100 Translations Guide,* 297-nnnn-350

1.0 What is force management?

In a call distribution system, the operators who handle calls make up the workforce. The term *force management* (FM) refers to the functions and responsibilities of managing an operator workforce. Effective FM ensures that enough operators are available to handle call traffic for every quarter hour of every day throughout the year. In addition, FM involves monitoring the quality of service, including the speed with which operators answer calls.

The Traffic Operator Position System (TOPS) uses an electronic call processor with internal counting and scanning abilities. This provides the FM statistics that help supervisors determine how many operators are needed and monitor the quality of service.

You can send FM statistics to a teletypewriter (TTY) or an off-board computer. These statistics include the number of calls that operators handled in a given period of time, the types of calls that operators received, and usage measurements. This guide explains these statistics. Statistics can also be reported through an outside vendor's management information system (MIS).

An operator workforce can be organized into single or multiple offices (known as single-traffic and multi-traffic offices). The configuration depends on the size of the operator workforce and the geographic distribution of the operating company's serving area. The office organization is based strictly on the operating company's decisions, not on any requirements imposed by TOPS software. The configuration of the office, however, can cause slight differences in the TOPS functions available. Throughout this document, any feature available only in a certain configuration is noted; otherwise, features are available in both single-traffic and multi-traffic office configurations. For further information on office configurations, see Chapter 2.0, "Workforce office configurations," on page 19.

In this document, references to operators are general and not specific; that is, the personnel referred to as an operator by one service provider might be called a customer agent by another.

1.1 The force management hierarchy

At the top of the hierarchy, a force supervisor is responsible for high-level decision making and control of the software features that affect the TOPS IWS (Intelligent Work Station) workforce as a whole. The force supervisor typically does not focus on the performance of individual operators, but instead monitors the relative performance of teams of operators grouped into separate traffic offices. These traffic offices can be geographically distant from the central Digital Multiplex System (DMS) office. TOPS supports up to 30 traffic offices.

1.1.1 CSEs

Using TOPS QMSCASE (Queue Management System Customer Assistance Service Enhancements), you can create a class of operator, called the customer service expert (CSE), who can assist other operators (even completing their calls) as their primary task and optionally serve subscriber-initiated operator traffic as their secondary task. Unlike service assistants, CSEs can serve subscriber-initiated traffic and complete the calls to which they provide assistance. CSEs are at the level below the force supervisor.

In the QMSCASE environment, operators have other, expanded capabilities based on datafill. For information about these capabilities, see Chapter 3.0, "QMSCASE," on page 23.

1.1.2 In-charge manager and service assistants

At the level below force supervisor is the in-charge manager of each individual traffic office. A specific traffic office can contain any number of operators, but usually contains about 30. The size of the traffic office is determined by the type of calls handled, the complexity of the operator's job, the amount of assistance normally required from management, and the administrative costs. The in-charge manager is responsible for the efficiency of one particular group of operators and has control of features that affect that particular office. Therefore, in-charge managers are concerned with information about individual operators. The in-charge manager uses an IC position to help operators requiring assistance, to monitor and page operators, and to see the status of the traffic office displayed in real time. Each TOPS IWS traffic office supports one IC position.

Between the in-charge manager and the operators can be a number of service assistants, whose main task is to assist operators as needed. Service assistants use SA positions to help operators handle calls and to monitor and page operators. Assistance positions also reflect certain events taking place in the traffic office (for example, calls being deflected or the calls-waiting value exceeding a specified threshold). TOPS can support up to 126 assistance positions. The effective limit is determined through an office parameter.

1.1.2.1 Differences between CSEs and in-charge managers/service assistants

Table 1 explains the differences between in-charge managers/service assistants and CSEs.

Table 1. Capabilities of CSEs and in-charge managers/service assistants

Capability	CSEs	In-charge managers/service assistants
Receive alarms, warnings, statistics, and query functions	Assigned to operator profiles in switch datafill	Assigned to position types in switch datafill
Fulfill supervisory responsibilities	Unlimited operators can have CSE capabilities	Limited to one in-charge manager per team

Table 1. Capabilities of CSEs and in-charge managers/service assistants (Continued)

Capability	CSEs	In-charge managers/service assistants
Monitor	• Can continue monitoring sessions through queue status and other alarm conditions, because these alarms do not cause the DMS switch to terminate the monitoring session at a CSE's position. • Can display position number and operator ID of the monitored operator	• Cannot continue monitoring sessions through alarms, because various conditions cause the DMS switch to terminate IC monitoring. • Cannot display position number and operator ID of the monitored operator
Use Sonalert	Controlled by the position	Controlled by the DMS switch
Log in	Can log into any supported operator position, because the DMS switch uses the CSE's operator profile, not the position's characteristics, to determine what alarms to send	Can log into IC positions only, because only IC positions receive alarms
Queue	With QINFO capability, can query which call queues have calls deflecting or arriving with no operator logged in to serve the queue	Cannot use queueing
Receive directed assistance calls	To receive only directed assistance calls, can log on with an operator ID whose call queue profile includes no queues. With that capability set, can receive pages and directed assistance calls but not general assistance requests or subscriber traffic.	• Can enter a command to receive only directed assistance calls • Cannot complete directed assistance calls
Serve non-assistance traffic	Can take regular calls	Cannot take regular calls
Page	Can receive and send a page	Can send a page

Regardless of their datafilled capabilities, CSEs do not receive certain information sent to IC positions. The following information is sent to IC positions but not to CSEs:

- An alarm when 25% of logged-in operators are datafilled on the DMS switch to receive controlled traffic. This alarm is not needed in QMSCASE, because CSEs with STATS capability receive near-realtime information about the number of logged-in operators who can receive controlled traffic. They can query to learn the operator IDs.

- An alarm when no study registers are available for assignment. In-charge managers can query which operators in the team have study registers assigned. Study registers are administered at the QTADS TTY (QMS Traffic Administration Data System Teletypewriter). This device supports a command to list the team's operators who have study registers assigned. Also, as explained in Chapter 6.0, "TTY reports and commands," on page 87, the QTADS output to the study register assignment and query commands includes the total number of available and assigned study registers.

- Team monitor status, which tells the in-charge manager when a service assistant on the team is monitoring. (The in-charge manager is notified when another service assistant or in-charge manager is monitoring, but not when a CSE is monitoring.)

- Team assistance position information, including:

    - a warning when no assistance position is available to serve general assistance requests

    - the number of assistance positions on the team

    - the position numbers of the team's assistance positions

    - the number of assistants connected to operators

    - the IDs of operators receiving assistance

    - the state of the assistance queue

1.2 The force management objective

The objective of FM is to provide subscribers with consistently prompt operator service by managing the following factors:

- offered load

- number of operators

- speed of answer

- average work time (AWT)

- timer for make busy and withhold calls

1.2.1 Offered load

Offered load is the number of people waiting for operator service at a given time. Offered load is always tied to a specific time.

Calls occupy operators for an interval of time, making them unavailable to handle new calls. This busy time, called work volume (WV), is the number of incoming calls (the offered load) multiplied by the time taken to handle each call.

Work volume is measured in tenths of seconds and reported in seconds.

1.2.2 Number of operators

The number of operators needed depends on two factors:

- the amount of operator time required to handle the work volume

- the amount of additional operator time, known as ready-to-serve time, required to answer calls as quickly as planned

1.2.3 Speed of answer

Speed of answer (ANS) is the average number of seconds subscribers must wait for the operator to answer. The operating company's general goal of a consistently prompt ANS must be translated into precise objectives for discrete time periods, such as quarter hours and half hours. For example, a target ANS might be an average of 2.1 seconds.

When the system is overloaded (meaning five-percent increase in the offered load), the average ANS should not exceed ten seconds.

1.2.4 Average work time

Average work time (AWT) is the average time it takes an operator to process one call. AWT has a direct effect on the cost of handling customer calls, and it also helps determine the required number of operators.

The shorter the AWT, the more often each operator becomes available to handle a new call. For example, to handle a given offered load, an AWT of 65 seconds requires one more operator than an AWT of 40 seconds (assuming the ANS objectives are the same).

1.2.5 Timer for make busy and withhold calls

Telephone company personnel can set a timer that determines how long an operator can be in the make-busy or calls-withheld state. The operator is placed into the accept-calls state at the end of the allotted time period.

Toggling the **{Withld Calls}** softkey (or using Withhold Calls from the Functions menu) or changing states deactivates the timer.

The timer can be activated only for operators (described in Section 3.1, "Customer service expert (CSE)," on page 23) who do not have the following capabilities:

- monitoring

- performing statistics and query

- providing assistance

- transferring to a queue already served

- performing queue status and query

2.0 Workforce office configurations

A force administration system is made up of a DMS switch and all the positions it serves. Within that system, a traffic office is a group of related operator positions for which separate administrative data is provided.

Generally, an entire workforce contained in one location constitutes a single-traffic office; very large offices can be divided into multiple teams. A workforce divided into geographically separate groups constitutes a multi-traffic office. This chapter describes the equipment used in each type of office configuration.

QMS has a QFADS TTY and a QTADS TTY. A single-traffic office has QTADS only. For more information about these devices, see Chapter 6.0, "TTY reports and commands," on page 87.

TOPS IWS does not include a force management cathode-ray tube (FMCRT) application. However, TOPS supports an FMCRT in a TOPS IWS configuration.

2.1 Single-traffic office configuration

In a single-traffic office configuration, operators and force administration personnel are all located in the same group or office.

The minimal equipment for a single-traffic office is the following:

- CSE or in-charge (IC) position
- CSE or service assistance (SA) positions
- operator positions

The optional equipment in a single-traffic office depends on the services the office provides. For specific information on the kinds of equipment available, refer to Table 3 on page 21.

Up to a combined total of 126 CSE, SA, and IC positions can be datafilled for the traffic offices. If 126 positions are datafilled for one traffic office, none can be datafilled for any other traffic office. Currently, up to 1023 operator positions can be datafilled in DMS table TOPSPOS, depending on how heavily the DMS switch is loaded.

2.2 Multi-traffic office configuration

In a multi-traffic office configuration, the operator workforce is divided administratively into different groups or offices, and these offices are generally located in different geographical areas. Each individual office is referred to as a traffic office.

The minimal equipment in a multi-traffic office is the following:

- FMCRT
- CSE or IC position
- CSE or SA positions
- operator positions

- QFADS TTY (optional)
- QTADS TTY

Other optional equipment in the multi-traffic office includes the QMFADS, which is discussed in Chapter 10.1, "QMFADS reports," on page 135.

An FM center can cover up to 30 traffic offices. In this example, operator positions 100 through 199 are accounted for in traffic offices 2 through 29.

Up to a combined total of 126 CSE, SA, and IC positions can be datafilled for the traffic offices in the system. If 126 positions are datafilled for one traffic office, none can be datafilled for any other traffic office. Currently, up to 1023 operator positions can be datafilled in table TOPSPOS, depending on how heavily the DMS switch is loaded. There is no limit to the number of CSEs.

There are some functional differences between single-traffic and multi-traffic offices, depending on the office configuration. For example, in a multi-traffic office, the force supervisor must be able to poll each individual office; this capability is not required in a single-traffic office. In a multi-traffic configuration, statistics must be attributed to a given traffic office. Such differences are indicated in this document where appropriate.

2.3 Equipment

Each position consists of a personal computer (PC), with a monitor and keyboard, located in the traffic office. Table 2 shows enhanced TOPS devices that can be used as telnet IP clients in a multi-traffic office.

Table 2. Additional equipment found in a multi-traffic office configuration

Equipment	Description
FMCRT	A specially configured TOPS MP (multi-purpose) position that is located in the FM center and used to display FM statistics. Does not support IWS.
QFADS TTY	• A TTY in the FM center used to activate and deactivate FM features and to print information about the system and the various traffic offices. • This TTY manages the system as a whole and provides periodic hardcopy reports of system-wide performance. The force supervisor displays and modifies system information without having to refer to individual operators. • "FM measurement definitions" on page 119 explains the measurements that this TTY provides.
QTADS TTY	• A TTY used in individual traffic offices to activate and deactivate FM features and to print system information for specific traffic offices. This TTY provides periodic statistical reports for only one traffic office. Through this TTY, operators are given controlled traffic call sets and assigned to the study register system. • QTADS TTY can be datafilled as an IP device to which the user can open a telnet session.

Table 3 describes the additional equipment in both single- and multi-traffic office configurations.

Table 3. Equipment found in both single- and multi-traffic office systems

Equipment	Definition
Autoquote (AQ) TTY	A TTY at a hotel or attended pay station (APS). When a call ends, all call details are transmitted to the AQ TTY. There can be one receive-only TTY for each hotel and a maximum of 512 for each TOPS host.
Voicequote (VQ) TTY	A TTY at a hotel billing information center (HOBIC). If there is no AQ TTY on the premises, the operator telephones the hotel or APS when the guest's call ends and quotes the call details and billing information. There can be one or two VQ TTYs in an IWS configuration. [a]
Hotel administration data system (HADS) TTY	A send and receive TTY located in the HOBIC. The operator uses this device to enter TOPS IWS billing information to be sent to the AQ, VQ, and REC TTY. HOBIC personnel also use it to place an AQ, VQ, and REC TTY in or out of service. In addition, the HADS TTY receives service alarm messages, HOBIC operational measurement information, and hotel charge-adjust (credit) messages generated by TOPS IWS operators.
Record (REC) TTY	A receive-only TTY in the HOBIC. It receives a copy of messages sent to AQ and VQ TTYs and charge-adjust messages sent to the HADS TTY. It also receives all other charge-adjust messages. The TTY alarm messages and measurements are not duplicated on the REC TTY. [b]

a. More than one VQ device can be datafilled. Billing records alternate between in-service VQ devices.

b. More than one record device can be datafilled and in service; however, only one record device can be active at any given time. Billing records are sent to the active device until either the device's queue becomes full, the device runs out of paper (TTY-based devices only), or the device is busied at the MAP. If any of these events occur, activity switches to the alternate record device.

Each TTY (except the REC TTY) is equipped with a standard QWERTY keyboard. It is used to enter commands or queries into the DMS switch, which then uses the printer to confirm these entries or to provide the requested information. The DMS switch sends measurement statistics to the TTY at the rate of 300 baud. The TTYs have impact printers that send messages to the DMS switch at a speed of 300 baud. However, the FMCRT receives no input from the keyboard.

A TTY is used for DMODEM-based TOPS devices. Note, however, that any terminal that can emulate a TTY can be used at much higher data rates when connected to an IP network.

2.4 Office provisioning

Table 4 provides a list of all the equipment for each office type.

Table 4. Equipment provisioning

Single	Multi	Equipment	Requirement
√	√	Operator position	1023 for each TOPS host (varies depending on real-time considerations)
√	√	CSE / SA position	0 to 125 for each office
√	√	CSE / IC position	0 to1 for each office
√	√	AQ TTY	1 for each hotel, maximum of 512 for each TOPS host
√	√	VQ TTY	2 (includes optional backup TTY)
√	√	REC TTY	2 (includes optional backup TTY)
√	√	HADS TTY	1 for each TOPS host
	√	QTADS TTY	1 for each office, maximum of 30 for each TOPS host
	√	QFADS TTY	1 for each TOPS host
	√	FMCRT	1 for each TOPS host
√	√	QMFADS	1 for each TOPS host
√	√	Network operation trunking information system (NOTIS)	1 for each TOPS host

3.0 QMSCASE

With TOPS QMSCASE software in the IWS position and the DMS switch, general operator positions can handle assistance requests and perform other functions of service assistants and in-charge managers. These general operators with QMSCASE capabilities are referred to as customer service experts (CSEs).

Without QMSCASE, service assistants and in-charge managers log on to positions datafilled as SA or IC positions. They can assist operators, but they cannot receive subscriber calls directly or complete subscriber calls referred to them for assistance. While providing assistance, they do not have access to full call details. Assistance requests cannot be queued by type or priority, so operators cannot direct assistance requests. They cannot give higher priority to an emergency request. Nor are statistics available to measure their performance for use in managing the assistance work force. The CSE role does not have these limitations.

With QMSCASE, CSEs have the same call handling capability as other operators for both assistance requests and subscriber calls. On assistance requests, they have access to the same call details as the operator requesting assistance.

Since assistance requests are queued like subscriber calls, the switch can be datafilled to give assistance call queues priority over subscriber call queues. Datafilling call queues in this way ensures that an operator who handles both assistance requests and subscriber calls always gets queued assistance requests before new subscriber calls.

3.1 Customer service expert (CSE)

A CSE is a general operator who can handle assistance requests and also has one or more TOPS capabilities (INTEROPR, MON, QINFO, and STATS) datafilled in DMS switch tables. These capabilities are discussed in the following sections. From a general operator position, the CSE with all capabilities can do the following:

- view team statistics and office alarms

- view warnings about call queue status

- query queue and statistical information for up to 56 total positions, operators, and queues

- monitor or page a specific operator or position

- receive a page from another operator

- receive a directed assistance request from another operator

- provide operator assistance, directory assistance (DA), and intercept calls

- initiate a directed assistance call to another operator

- speak with the requesting operator and the subscriber while sharing control of the call with the requesting operator

- complete calls for which the CSE is providing assistance

- handle subscriber traffic

For more information, refer to Table 1, "Capabilities of CSEs and in-charge managers/ service assistants," on page 14.

With QMSCASE, CSEs can have both call-handling and FM capabilities, so that some CSEs who mainly view team statistics, offer assistance, and monitor other operators can also handle calls.

To avoid receiving general assistance requests or subscriber calls, a CSE can log on with an ID that has an office-wide call queue profile with an empty call queue list. An empty call queue profile prevents a CSE from receiving general assistance and subscriber calls, but it does not block directed calls from other CSEs.

Chapter 4.0, "Administrative operator positions," on page 45 describes the SA and IC administrative positions.

3.1.1 Setting up CSE capabilities

A CSE's datafilled capability set determines what supervisory capabilities (such as monitoring and viewing team statistics) the CSE can perform.

The CSE's capability set does not determine whether the operator can receive general assistance requests from other operators. That capability is determined by the call queues the CSE serves and the queues to which assistance requests are routed. For more information about routing assistance requests to CSEs, refer to the *Translations Guide*.

Through datafill, a CSE can have any combination of INTEROPR, MON, QINFO, and STATS capabilities. These capabilities are described in the following sections.

3.1.1.1 INTEROPR

For operators on the same switch, a CSE with inter-operator communication (INTEROPR) capability can do the following:

- initiate, receive, and respond to a page
- initiate and receive a directed assistance call

Each of these actions can be performed if at least one of the CSEs has the INTEROPR capability.

3.1.1.2 MON

A CSE with monitor (MON) capability can monitor another operator if the monitoring CSE is in the calls-withheld state and the monitored operator does not have MON capability. During the monitoring session, a display shows the monitoring CSE which position is being monitored. This display can be toggled on or off with a softkey.

With the IWS billing application, a CSE with MON capability can also override any enhanced calling card restrictions for a toll call.

3.1.1.3 QINFO

A CSE with queue information (QINFO) capability receives warnings under any of the following conditions:

- when calls in queues are waiting longer than allowed by a datafilled threshold
- when the number of calls in queue exceeds a datafilled threshold
- when calls deflect to treatment
- when calls are queued with no operator logged in to serve the queue

To learn which queues have these conditions, the CSE can query QCD, QCQ, or QCA, as described in Section 3.2.1, "Statistics and Alarms window," on page 27.

3.1.1.4 STATS

A CSE with statistics (STATS) capability can do the following:

- receive information, updated every ten seconds, about the number of positions in the team that are in states (such as occupied, made-busy, and out-of-service) and about the number of logged-in operators in the team who are receiving controlled traffic
- query which positions are in the indicated states and which operators are receiving controlled traffic
- receive alarms indicating that all datafilled time and charges devices are out of service, or that operator services are suspended

A CSE's datafilled capability set cannot be changed while the CSE is logged on. When a CSE logs on to an IWS position, the DMS switch looks up the CSE's capability set in datafill and communicates it to the position.

This happens regardless of the software optionality control (SOC) state for QMSCASE. However, if the SOC state is set to IDLE, the DMS switch does not allow the CSE to exercise the datafilled capabilities. Because changes in the SOC state are immediately effective, if the SOC state is IDLE when the CSE logs on but is subsequently changed to ON, the CSE can exercise the datafilled capabilities.

3.1.2 Datafilling operator numbers, positions, and capabilities

The positions used by CSEs are datafilled as OPR positions in DMS table TOPSPOS. Operator numbers for all operators, including CSEs, are datafilled in DMS table TQOPROF. Tables TQOPROF and TQCQPROF together specify the mix of assistance requests and subscriber calls each CSE can handle. DMS table TQCAPROF defines capability sets that can be associated with operator IDs.

Datafill for positions, operators, and capability sets is discussed in detail in the *Translations Guide*.

3.2 Accessing the QMSCASE application

CSE operators with INTEROPER or MON capability can use the Functions menu to handle assistance requests, monitor, and page without accessing the QMSCASE application. However, CSEs with QINFO and STATS capabilities must access the QMSCASE application.

After logon, the QMSCASE application can be accessed through the Applications menu or datafilled hot key. The *TOPS IWS Operator Guide,* 297-2251-304, explains how to use the menus, hot keys, and other functions of the IWS operator applications. Figure 1 shows the QMSCASE application window. The QMSCASE application window contains the Statistics and Alarms window (described in Section 3.2.1 on page 27) and the Query Results window (described in Section 3.2.2 on page 29).

Figure 1. QMSCASE application window

When the QMS application window is displayed, the CSE can access all IWS menus through the QMSCASE softkeys (described in Section 3.2.4, "QMSCASE softkeys," on page 30).

3.2.1 Statistics and Alarms window

The Statistics and Alarms window displays alarms and statistics about operators, services, and queues. The DMS switch constantly updates this information, even when the window does not have focus. CSEs who have any combination of the STATS or QINFO logon capabilities can view the information presented in this window. Figure 2 shows the fields in the Statistics and Alarms window.

Figure 2. Statistics and Alarms window
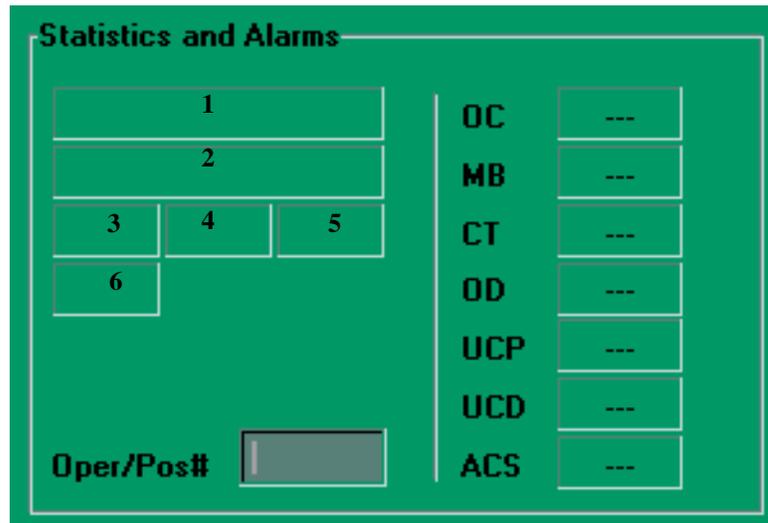
The numbered fields shown in Figure 2 display alarm text. This text remains until the condition is cleared. The text for each alarm can be changed through datafill.

- Field 1 displays the text `Opr Svcs Suspended` when calls are not being routed to operators but are being completed where possible, regardless of whether billing has been satisfied. This display appears for CSEs with STATS login capability.

- Field 2 displays the text `All T&C OD` when all time and charges devices are out of order. This display appears for CSEs with STATS login capability.

- Field 3 displays the text `QCQ` when there are calls in QMS queues for which no operators are logged on. When the DMS switch detects that the condition has ended, the field is cleared. The QCQ condition is also cleared when an operator logs in and receives a call from the queue in question. This display appears for CSEs with STATS login capability. CSEs with QINFO capability receive queue status warning information about the office.

- Field 4 displays the text `QCD` when calls are being deflected from one or more queues. When the DMS switch detects that the condition has ended, the field is cleared. This display appears for CSEs with STATS login capability. CSEs with QINFO capability receive queue status warning information about the office.

- Field 5 displays the text QCW when the number of calls to be handled is greater than the calls-waiting-on threshold (QCAON) value for one or more queues. When the DMS switch detects that the condition has ended, the field is cleared. This display appears for CSEs with STATS login capability. CSEs with QINFO capability receive queue status warning information about the office.

- Field 6 displays the text QCA when the number of calls to be handled is greater than the QCAON value for one or more alerting queues. When the DMS switch detects that the condition has ended, the field is cleared. This display appears for CSEs with QINFO capability.

When the QMSCASE application has focus, the audible alarm sounds for the following alarms:

- Opr Svcs Suspended
- All T&C OD
- QCD
- QCQ
- QCA

The audible alarm beeps until the CSE presses the **{Stop Bell}** softkey or selects Stop Bell from the Functions menu.

3.2.1.1 Operator and position number

The operator and position number field accepts data entry as follows:

- When the CSE presses a softkey to page an operator number, the window label changes to Operator.

- When the CSE presses a softkey to page a position number, the window label changes to Position.

- When the CSE presses the **Start** key to terminate data entry and send it to the DMS switch, the window label changes to the default, Oper/Pos #.

- CSEs with either MON or INTEROPR capability can enter data in this field. The page is issued only if the paged or paging CSE has INTEROPR capability.

3.2.1.2 Position states

CSEs with STATS logon capability can receive information from the DMS switch about the number of positions in any of the states listed in Table 5. If no information is available, a dashed string (- - -) displays in the field.

Table 5. Position states

Position state	Definition
OC	occupied
MB	made busy

Table 5. Position states (Continued)

Position state	Definition
CT	controlled traffic
OD	out of service
UCP	unoccupied with a call in progress
UCD	unoccupied with a call disconnected
ACS	loop accessed with no connected, off-hook party

A CSE with STATS capability can query the DMS switch for the operator numbers of operators in the CT state and the position numbers of positions in all states except OC.

3.2.2 Query Results window
The Query Results window displays information about positions, operators, or call queues. The CSE can invoke a query by pressing one of the query softkeys (described in Section 3.2.4, "QMSCASE softkeys," on page 30). The CSE must have STATS capability to access the position state query softkeys and QINFO capability to access the queue query softkeys. Figure 3 shows the Query Results window.

Figure 3. Query Results window
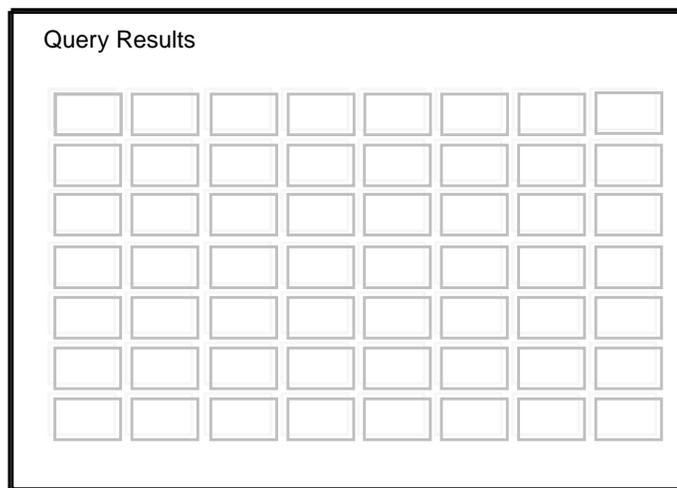
When a CSE queries the state of a position, the title of the Query Results window changes to match the query. For example, if the CSE presses the **{Qry MB}** softkey, a window such as the one shown in Figure 4 displays, identifying positions that are in the made-busy state.

Figure 4. Made-Busy Query Results window

MB Positions

| 1 | 1 | 1 | 1 | 2 | 6 | 8 | |

If the CSE presses the **{Qry CT}** softkey, operator numbers instead of position numbers display in the window. If the CSE presses the **{Qry QCQ}**, **{Qry QCD}**, or **{Qry QCA}** softkey, queue numbers display in the window. If the CSE presses the **{Clear}** softkey, the information in the query results window is erased.

3.2.3 Release operator

The Release operator function allows an operator who has requested assistance from another operator to cancel the assistance request while remaining on the call. In addition, if two operators are currently attached to the call, this function allows one operator to drop the other from the call.

3.2.4 QMSCASE softkeys

The QMSCASE application has two sets of softkeys to activate functions. In each set, some softkeys have two functions. One is activated when the the softkey alone is pressed, and the other is activated when **Shift** plus the softkey is pressed.

The softkey strings are two rows of up to seven characters each.

3.2.4.1 QMSCASE first softkey set

Figure 5 shows the softkeys in the first set. On the softkey labels, the shifted softkeys appear above the unshifted ones.

Figure 5. First QMSCASE softkey set

| PageOpr
PagePos | Mon Opr
Mon Pos | | StpBell | | | Query | Clear |

Table 6 defines the first set of QMSCASE softkeys.

Table 6. QMSCASE first softkey set

Softkey	Action
{PageOpr}	Initiates a page to another operator by specifying the login ID of the paged operator. The cursor moves to field 6 of the Statistics and Alarms window.
{PagePos} (shifted softkey)	Initiates a page to another operator by specifying the position number of the paged operator. The cursor moves to field 6 of the Statistics and Alarms window.
{MonOpr}	Monitors another operator by specifying the login ID of the monitored operator. The cursor moves to field 6 of the Statistics and Alarms window.
{MonPos} (shifted softkey)	Monitors another operator by specifying the position number of the monitored operator. The cursor moves to field 6 of the Statistics and Alarms window.
{StpBell}	Deactivates the audible alarm, if activated
{Query}	Queries information from DMS switch about operators, positions, or queues. This softkey activates a second set of QMSCASE softkeys.
{Clear}	Clears any data entered into a data entry field and removes the cursor from the field. This softkey also clears the cursor from a data entry field after a page or monitor softkey has been pressed if data has not yet been terminated and sent to the switch. If the cursor is not active in a data entry field, this softkey clears the query results window and restores the original title.

If the CSE does not have MON capability, the **{Mon Pos}** and **{Mon Opr}** softkeys are blank. If the CSE does not have QINFO or STATS capability, the **{Query}** softkey is blank.

3.2.4.2 QMSCASE second softkey set

When the CSE presses the **{Query}** softkey in the default set, the second softkey set appears.

The second set includes eight softkeys that allow specific information to be displayed in the query results window. When the CSE presses one of the softkeys, the request is sent to the DMS switch, and the softkey display returns to the first set. Figure 6 shows the second softkey set. On the softkey labels, the shifted softkeys appear above the unshifted ones.

Figure 6. Second QMSCASE softkey set

| Qry MB | Qry OD | Qry CT | Qry UCP | | Qry UCD | Qry ACS | Qry QCQ | Qry QCA / Qry QCD |
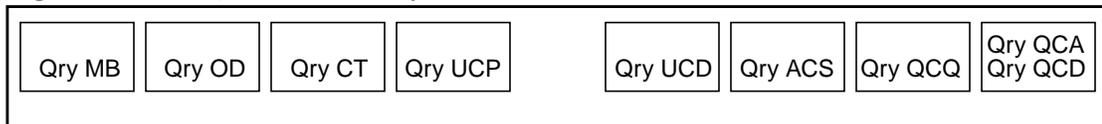
Table 7 defines the second set of softkeys.

Table 7. QMSCASE second softkey set

Softkey	Action
{Qry MB}	Queries up to 56 made-busy positions
{Qry OD}	Queries up to 56 out-of-service positions
{Qry CT}	Queries up to 56 operators who are receiving controlled traffic
{Qry UCP}	Queries up to 56 positions that are either unoccupied or have a call in progress
{Qry UCD}	Queries up to 56 positions that are unoccupied or have a call disconnected
{Qry ACS}	Queries up to 56 positions that have a loop accessed with no connected, off-hook party.
{Qry QCQ}	Queries up to 56 queues with calls queued but no serving agent to answer calls
{Qry QCD}	Queries up to 56 queues with calls deflecting to treatment.
{Qry QCA}	Queries up to 56 designated alerting queues (shifted softkey)

If the CSE does not have STATS capability, the **{Qry MB}**, **{Qry OD}**, **{Qry CT}**, **{Qry UCP}**, and **{Qry UCD}** softkeys are blank. If the CSE does not have QINFO capability, the **{Qry QCQ}** and **{Qry QCD}** softkeys are blank.

3.3 Monitoring an operator or position

CSEs monitor just as service assistants and in-charge managers do, except for the following differences:

- Monitoring can be assigned to datafilled individual operator IDs rather than automatically associated with operator types.

- Monitoring can be available on all positions that are datafilled as QMS OPR rather than automatically available on fixed position types. Whether the function is used depends on the datafilled capabilities of the operator.

- CSEs can be monitored (if they do not have MON capability), because they are datafilled as QMS OPR and use positions datafilled as QMS OPR. CSEs cannot be monitored by a service assistant or in-charge manager. Service assistants and in-charge managers cannot be monitored.

- A CSE with MON capability can monitor operators in all teams datafilled in the DMS switch. Service assistants and in-charge managers can monitor only within a team (traffic office).

- No position other than the monitoring one and (optionally) the monitored one is informed that a CSE is monitoring an operator in the team.

The data is presented to the monitoring operator (that is, the monitoring operator receives screen updates). The monitoring voice connection is reestablished on the next call not involving more than two operators.

3.3.1 The monitoring session

The CSE uses the following softkeys or selections from the Functions menu to begin monitoring:

- **{Mon Opr}** softkey or Monitor Operator
  The cursor is placed in the Oper/Pos# field, and the CSE types the operator number. When the CSE presses the **Start** key, the monitoring session begins. If the CSE does not have MON capability, or if the operator to be monitored has MON capability, no action occurs and the reason displays in the message status area (MSA).

- **{Mon Pos}** softkey or Monitor Position
  The cursor is placed in the Oper/Pos# field, and the CSE types the position number. When the CSE presses the **Start** key, the monitoring session begins. If the CSE does not have MON capability, or if the operator to be monitored has MON capability, no action occurs and the reason displays in the MSA.

- Monitor Display Toggle
  This function allows a CSE to toggle the display of the monitor string that specifies the monitored operator's position and operator numbers. If the string is displayed, this function toggles the display off. If the monitor string is not currently displayed, this function toggles the display on. If the operator is not currently monitoring, this function does nothing.

When the CSE begins a monitoring session, the DMS switch sends to the CSE's position all the screen update messages that it sends to the monitored operator position. For example, the CSE receives updates to the Operator Assistance window, even if the CSE does not have operator assistance capability. Therefore, the CSE's position should be datafilled with a superset of the services of the operators who are likely to be monitored.

The service text datafill in IWS file XSERVS.TBL should be the same for each operator and for the CSE. Position datafill should be the same, except for services. Otherwise, the information from the monitored operator's windows might not be meaningful to the CSE, and the CSE's keyboard might not respond as expected (for example, context change keys could be ignored).

When the CSE is monitoring DA calls, if the CSE has the same DA services as the operator, the DA system is informed that monitoring is taking place. Then, the DA system sends duplicate window update messages to the monitored and monitoring positions. However, if the CSE and operator do not have the same DA service, the DA system is not informed that monitoring is occurring, and the monitoring position does not receive window updates.

Some screen updates at the monitored position occur with no involvement of the DMS switch or DA system. The DMS switch cannot make these updates at the monitoring position. The following updates occur without involvement of the DMS switch or DA system:

- local echoing of keystrokes before they are sent to the DMS switch

- OIA (Open Information Access) displays, including those from an Operator Reference Database

- changes between the billing and the search screen on DA calls
- updates that result from messages sent directly to the position by some entity outside the DMS switch

The DMS switch ignores all keystroke input messages from a monitoring position except for a request to terminate the monitoring session.

If a monitoring session is initiated with an operator who has a call in progress, the monitoring CSE's display for the call in progress is incomplete until there are updates from the DMS switch.

If the monitoring operator is datafilled to receive alarm or warning messages (such as QCW, QCQ, or QCA) or position state messages (such as the number of positions occupied or made busy), the DMS switch continues to send these messages to the CSE during the session.

The CSE must have MON capability, but the operator to be monitored does not have MON capability. If the session is allowed by the DMS switch, the QMSCASE application window and softkeys are removed, and the following message displays in the MSA of the IWS window:

> `Mon Opr:number1 Pos:number2`
>
> This string displays on the monitoring position when connected to the monitored position. The display is a combination of three datafilled strings that indicate that the CSE is monitoring another operator whose operator number is `number1` and position number is `number2`. This display can be toggled on or off using the Monitor Display Toggle from the Functions menu. If the DMS switch changes the monitored position's state, the display either changes or clears. When the session ends, the display is cleared. This string is datafilled in IWS file POSMSA.LNG.

3.3.2 Ending the monitoring session
The monitoring session ends when any of the following events occur:

- The monitoring CSE selects Quit Monitoring from the Functions menu to end the monitoring session.
- The monitoring CSE cancels the session by pressing the **{Clear}** softkey while the cursor is in the data entry field.
- The monitoring or monitored operator logs out.
- The monitored position is taken out of service.

3.4 Paging and directed assistance

Operators can contact other operators by paging the operator or the position, or by requesting directed assistance. The following list shows the differences between paging and directed assistance:

- Response to a page requires keystrokes from the paged operator. Response to a directed assistance call is automatic, with no keystrokes.

- Paging permits the requested operator to respond when convenient.

- A directed assistance call is the fastest way to contact another operator, because the connection is either immediate or occurs as soon as the requested operator releases the current call. If the requested operator is not immediately available, however, the requesting operator cannot put the request on hold or handle other calls while waiting. Also, if the requested operator is not a CSE, service assistant, or in-charge manager, directed assistance can be done only on a delay (non-customer-initiated) call.

3.4.1 Paging an operator or position

An operator uses the following softkeys or selections from the Functions menu to page another operator:

- **{Page Opr}** softkey or Page Operator
  The cursor is placed in the Oper/Pos# field, and the operator types the operator number. When the operator presses the **Start** key, the DMS switch displays the page on the paged operator's IWS window. If the switch does not allow paging, no action occurs and the MSA displays the reason.

- **{Page Pos}** softkey or Page Position
  The cursor is placed in the Oper/Pos# field, and the operator types the position number. When the operator presses the **Start** key, the DMS switch displays the page on the IWS window of the paged position. If the switch does not allow the directed assistance requests, no action occurs and the MSA displays the reason.

The page is successful if either operator is a CSE with INTEROPR capability. The paged operator can select Paged Assistance from the Functions menu to respond to the operator who initiated the page.

If an operator initiates a page and then receives a page from another operator before responding to the first page, both pages are active. If an operator receives a page and then initiates another page to another operator before responding, both pages are active.

Depending on whether a position or an operator is being paged, one of the following messages is displayed in the MSA. The strings are datafilled in file POSMSA.LNG.

> Page To Pos *number*
>
>> This message displays on the paging operator's screen when that operator pages another operator at a specific position. The *number* is the position number paged. The maximum text string length is 27 characters, allowing five characters for the position number.
>
> Page To Opr *number*
>
>> This message displays on the paging operator's screen when that operator pages a specific operator. The *number* is the number of the paged operator. This number is the same as the operator's login ID. The maximum text string length is 27 characters, allowing five characters for the operator number.

3.4.2 Directed assistance

An operator cannot request directed assistance on a subscriber call. So the operator who requests directed assistance is perhaps calling another operator for information or permission of some sort.

A directed assistance call is the fastest way to contact another operator, because the connection is either immediate or occurs as soon as the requested operator releases the current call.

Because assistance requests can be routed to CSEs based on expertise, operators do not have to use directed assistance to request help from a particular SA or IC position. However, an operator can reach a particular CSE, service assistant, or in-charge manager by using directed assistance on an operator-initiated delay call.

A supervisor can use directed assistance to reach another supervisor.

Directed assistance is available to a CSE with INTEROPR capability and to an operator who requests assistance from a CSE with INTEROPR capability.

A directed assistance request can be made either to an operator number or to a position number. For directed assistance by a service assistant or in-charge manager, all requests must be by position number.

The CSE accesses a loop and uses the following selections from the Functions menu to request directed assistance:

- `Dir. Asst. by Position`
  The cursor is placed in the Oper/Pos# field, and the operator types the position number. When the operator presses the **Start** key, the DMS switch connects the operator to that position as soon as there is no current call at the position. If the operator presses the **Start** key without entering a position number, a general assistance request is issued. If the switch does not allow the directed assistance requests, no action occurs and the MSA displays the reason.

- Dir. Asst. by Operator
  The cursor is placed in the Oper/Pos# field, and the operator types the operator number. When the operator presses the **Start** key, the DMS switch connects the requesting operator to the specified operator as soon as that operator has no current call. If the requesting operator presses the **Start** key without entering an operator number, a general assistance request is issued. If the switch does not allow the directed assistance requests, no action occurs and the MSA displays the reason.

The following strings are displayed in the page field of the MSA to indicate directed assistance information. These strings are datafilled in file POSMSA.LNG.

`Dir Pos:`*number* `Opr:` *number*

These strings appear on both the requesting and the requested operators' positions when they are connected. On the requested operator's position, these strings indicate the position and operator numbers of the requesting operator. On the requesting operator's position, they indicate the position and operator numbers of the requested operator.

`Queued`

If an operator requests a directed assistance connection and the requested operator is handling a call, this string is displayed to indicate that the operator is in queue for the directed assistance connection. The maximum string length of this display is six characters.

3.4.2.1 Denying a directed assistance request
A directed assistance request can be denied for any of the following reasons:

- Neither the requesting nor the requested operator has INTEROPR capability.

- The requesting or the requested position is not supported by QMSCASE.

- The active call of the requesting operator is not an operator-initiated delay call.

- The requested operator is handling a call, and one directed assistance request is already waiting.

- The requesting operator tried to reach a position number that is not datafilled, is not logged in, is out-of-service, or has calls withheld.

- The requesting operator tried to reach an operator number that is not datafilled, is not logged in, or is logged in but has calls withheld.

3.4.2.2 Ending a directed assistance request or connection

While waiting in queue, the requesting operator can cancel the request either by selecting Release Operator from the Functions menu or by pressing the **Pos Rls** key. Either action frees the loop so the operator can receive calls again.

After the two operators are connected, if either operator presses the **Pos Rls** key or selects Release Operator from the Functions menu, both operators are disconnected and their loops freed unless a calling or called party is attached.

3.5 General assistance requests

CSEs can receive general assistance requests at their positions if they are datafilled to serve a general assistance queues. An assistance request can arrive on either loop as an active call to the position. An operator can get assistance while the called party is present; both operators can enter keystrokes on the call. However, service assistants and in-charge managers cannot have the called party present. The arrival of an assistance call does not activate the audible alarm.

Operators request general assistance by selecting General Assistance from the Functions menu. Because the CSE is an operator, the CSE can also request general assistance. An operator who has requested assistance can stay on the call and talk with the CSE, release the call to queue for assistance, or cancel the request by selecting Release Operator from the Functions menu.

When an assistance call arrives at the CSE's position, the operator ID and position number of the operator who made the request are displayed. If the operator who made the request remains on the call until the CSE is connected, the CSE's position number and operator ID are displayed to the requesting operator.

The following strings are displayed in the pending field of the MSA to indicate that the current call is a general assistance request. These strings are datafilled in file POSMSA.LNG.

> `Gen Pos: `*`number`*` Opr: `*`number`*
>
>> On the CSE's window, these strings indicate the position and operator numbers of the requesting operator. On the requesting operator's window, they indicate the position and operator numbers of the CSE.
>
> `Queued`
>
>> If an operator requests assistance and all CSEs who can provide assistance are busy, this string is displayed in the pending field of the MSA on the requesting operator's screen to indicate that the operator is in queue for assistance. The maximum string length of this display is six characters.
>
> `Rlsd Opr: `*`number`*
>
>> If an operator who has been queued for assistance releases the call, this string is displayed in the CSE's MSA to indicate that the call is an assistance request and that it has been released to queue. This string is also displayed in the requesting operator's message status area if the CSE is released. The *`number`* is the number of the operator who released the call to queue.

3.5.1 When a CSE is immediately available

If the CSE who serves the call queue for an assistance request is idle when the request is processed, the CSE is connected immediately.

If traffic is heavy in an operator centralization host-remote environment, a short delay can occur between the time the request is made and the time the idle CSE is connected. This delay is the time needed for messaging between the host and the remote to add the CSE to the call. To keep a consistent call state while this messaging is in progress, the system ignores keystrokes from the requesting operator while the CSE is connecting.

Therefore, when a CSE is immediately available to serve the request, the requesting operator cannot cancel the request or release it to queue. Also, while both operators are attached, neither operator can put the call on hold. When the CSE is connected, the requesting operator can drop out of the call.

3.5.2 When queued for a CSE

If no CSE is available to serve an assistance request, the operator can wait, cancel the request by selecting Release Operator from the Functions menu or pressing the **Rls Opr** key, or release the call to queue to be presented to the first available CSE who serves that queue.

In an operator centralization host-remote environment under heavy traffic, a short delay can occur while the host and remote exchange messages to queue the request. Keystrokes from the requesting operator, including the **Pos Rls** key, are ignored.

3.5.3 Processing input from two positions

When two operators are on a call, both can enter keystrokes on the call and see the results on their positions, with the following restrictions and conditions:

- The DMS switch denies the following requests:

    — to put the call on hold

    — for assistance

    — to change the service to one not supported by both operators

- Position-specific keystrokes apply only to the position where the keystrokes occur, as follows:

    — If either operator makes the position busy or withholds calls, only that operator's position becomes busy-pending or calls-withheld-pending.

    — If either operator invokes the time function, the time displays only on that operator's position.

3.5.4 Releasing connected operators

If an operator presses the **Pos Rls** key, that operator is released. The remaining operator has full control of the call.

If one operator presses the **Pos Rls** key when the call is marked for transfer and two operators are connected, the system does not transfer the call. The call is still marked for transfer, but it is not actually transferred until the second operator also presses the **Pos Rls** key.

If a call is marked to be handed off to an automated system or canceled, it remains marked but is not actually handed off or taken down when one of two connected operators presses the **Pos Rls** key. No action occurs until the second operator also presses the **Pos Rls** key.

If one operator presses the **Rls Opr** key, the other operator is released. The operator who pressed the key operator has full control of the call. The DMS switch informs that operator that the other operator is released from the call.

3.5.5 Position release with DA

When an operator selects a listing and presses the **Pos Rls** key, the Directory Assistance System (DAS) forwards the requested number, which the listing represents, to the DMS switch for automatic inclusion in the Automatic Message Accounting (AMA) record.

If the operator presses the **Pos Rls** key before selecting a listing, however, the keystroke is sent to the DMS switch. For example, the operator might quote the requested number from memory and enter it. The switch ends the call and generates an AMA record.

To release a call to queue, the operator must do so before selecting a listing. Otherwise, selecting the listing cancels the queued request and ends the DA call. A call released to queue for a CSE resembles a transfer call.

Pressing the **Rls Opr** key releases the operator, whether or not a listing is selected. If the assistance request was queued, pressing the **Rls Opr** key cancels the request. The DA call remains at the position.

3.5.6 Reasons for denial of an assistance request

A general assistance request can be denied for any of the following reasons:

- The Call Agent Manager (CAM) determines that the wait will be too long.

- There are insufficient resources for queueing the request.

- No three-port circuits are available.

- No operator centralization resources are available.

- The positions are incompatible.

- There is a hardware or network connection failure.

3.5.7 Ending an operator assistance session

A requesting operator who has been placed in queue can cancel the request, release the call to queue, or wait for the CSE.

To cancel the assistance request directly, the requesting operator selects Release Operator from the Functions menu or press the **Rls Opr** key. This action has no effect on the subscriber. Pressing the **Rls Cld** key does not break the assistance connection as it does for service assistants and in-charge managers.

The operator presses the **Pos Rls** key to release the call to queue. If no subscriber is present, the key press is interpreted as a request to cancel the assistance request and end the call.

Either of the two connected operators can press the **Pos Rls** key and be disconnected. Unless it is a delay call, the call itself is not affected.

3.6 FM statistics on CSEs

TOPS collects FM statistics on CSEs requesting assistance or receiving assistance requests. These statistics are made available to QMS basic statistics and to the QMS MIS, if one is present.

When the CSE begins handling an assistance request, the following statistics accumulate:

- Call busy work volume (CBWV) is pegged for the call queue used to reach the CSE.

- CBWV is pegged for the FM call class of the call type for queueing (CT4Q) used to reach the CSE.

- Service work volume (SWV) is pegged for the service associated with the call queue used to reach the CSE.

When CSEs and general operators are on the same team, team statistics such as AWT reflect assistance requests and subscriber calls. Therefore, if an assistance request takes more or less time than a typical subscriber call, the team AWT is affected.

When the CSE finishes handling an assistance request, CBWV and SWV stop accumulating and the following statistics begin to accumulate:

- A transfer position seizure (TPS) is pegged for the call queue used to reach the CSE.
- A TPS is pegged for the force management call class (FMCC) of the CT4Q used to reach the CSE.
- A service initiation (SI) is pegged for the service associated with the call queue used to reach the CSE.

When the CSE is waiting or unavailable to service an assistance request, the following statistics accumulate:

- idle time (IDLT) while the CSE waits to service a request
- non-call work volume (NCWV) while the CSE is unavailable to handle a request, unless the CSE is handling a call

Sometimes an operator remains with the call and waits for the CSE. While waiting, the requesting operator continues to accumulate CBWV and SWV. The CSE is brought into the call, and if the service of the call queue used to reach the operator is different from the service of the call queue used to reach the CSE, the service of the actual call changes, in an implicit service switch. When this switch occurs, the operator stops accumulating SWV towards the original service and begins accumulating SWV towards the new service, even if the new service is not in that operator's service profile.

Because a CSE is an operator, CSE work volume is reported with the work volume of other operators. A CSE who is monitoring must have calls withheld, so the time a CSE spends monitoring is pegged and reported to a QMS MIS system as NCWV.

With QMS basic statistics, this added NCWV is indistinguishable from NCWV accumulated by general operators in the same operator team (traffic office). Separate operator teams can be assigned for CSEs to help distinguish the added NCWV.

3.7 Alternate FM statistics on assistance

QMSCASE provides a way to collect CSE statistics that eliminates their potential skewing effect on system and team statistics.

A CSE's work time consists of CBWV, NCWV, and IDLT. The QMSCASE Enhancements feature divides CBWV into two new work volumes:

- assistance call busy work volume (ACBWV)
- subscriber call busy work volume (SCBWV)

ACBWV is the time CSEs spend handling assistance requests; SCBWV is the time CSEs spend handling subscriber calls. Unlike CBWV, ACBWV and SCBWV do not appear on reports generated at the QTADS and QFADS (QMS Force Administration Data System) devices.

The sum of IDLT and NCWV is non-queue work volume (NQWV). NQWV is the time CSEs spend when they are not handling assistance requests or subscriber calls.

CSEs who handle only assistance requests accumulate only ACBWV. CSEs who only monitor operators and observe alarms and statistics accumulate only NQWV. The SCBWV of these operators counts toward call queue, team, and system statistics, just as the SCBWV of general operators does.

Datafill in the DMS switch table TQOPROF determines how ACBWV and NQWV are counted and controls the CSE's impact on team and system statistics. For detailed information on how to datafill table TQOPROF, refer to the *Translations Guide*. For example, a CSE's ACBWV can be set to count always toward call queue statistics but never toward system statistics. Alternatively, ACBWV can be set not to count toward team statistics. NQWV can be set not to count toward team or system statistics. Table 8 summarizes the choices available for making a CSE's work volume count toward call queue, team, and system statistics.

Table 8. Ways a CSE's work volume may be counted

Work volume	Toward call queue statistics	Toward team statistics	Toward system statistics
SCBWV	Always	Always	Always
ACBWV	Always	Datafillable	Never
NQWV	--------	Datafillable	Datafillable

4.0 Administrative operator positions

This chapter describes the following administrative operator positions:

- force management cathode ray tube (FMCRT)
- in-charge (IC) position
- service assistance (SA) position

This chapter defines the information that appears on each position window and the call processing keys used on the SA and IC position keyboards. It also explains the procedures that service assistants and in-charge managers follow to log on and off, answer assistance requests, page and monitor operators, and initiate outgoing calls.

Note that CSEs can take the place of service assistants and in-charge managers. The abilities and duties of the CSE are described in Chapter 1.1.1, "CSEs," on page 14.

Because TOPS supports an FMCRT in a TOPS IWS configuration, the descriptions for TOPS MP FMCRTs and an ANSI (telnet) FMCRT are included in this chapter.

For further details about the administrative operator windows and keys, refer to the *TOPS IWS Operator Guide,* 297-2251-304.

4.1 Common displays

All the displays defined in this section appear on more than one of the administrative windows discussed in this chapter. Displays that appear on only one type of window are defined in the discussion of that window, not in this section.

4.1.1 Position status displays

The displays listed in Table 9 are updated every ten seconds with the number of positions in those states throughout the system. These displays appear on the FMCRT and IC windows but not on the SA windows. The displays on the IC windows are datafillable; the displays on the FMCRT are not.

Table 9. Position status displays

Displays	Definition
OC	Number of occupied positions for the whole system (all traffic offices)
MB	Number of occupied positions that are in operator make-busy mode for any of the following reasons: • The headset is seated, but logon is not complete. • The operator selected Make Busy from the Functions menu. • The operator selected Withhold Calls from the Functions menu.
OD	Number of positions that are out of service, either because a command was entered from the MAP terminal or TTY, or because the DMS switch automatically removed the position from service
CT	Number of positions occupied by operators placed in controlled traffic mode
UCP	Number of unoccupied positions with a call in progress. In a mixed TOPS MP and TOPS IWS office, this statistic is not valid.
UCD	Number of unoccupied positions with a call that has terminated. In a mixed TOPS MP and TOPS IWS office, this statistic is not valid.
ACS	Number of positions that have a loop accessed but neither a calling nor a called party attached and off-hook

The following display fields are updated in ten-second scans with the number of positions in that particular office: OC, MB, OD, CT, UCP, UCD, ACS.

4.1.2 Miscellaneous displays

Table 10 shows the displays that provide miscellaneous information about the system. All displays appear on the FMCRT and IC windows, except for the datafillable messages NO ASST POS and Calls Withheld, which display on the SA and IC windows.

Table 10. Miscellaneous displays

Display	Definition
QCQ	Displays when there are calls in queues without operators logged on. Displays for positions on the FMCRT, IC, and SA windows. This display is datafillable for SA and IC positions only, not for the FMCRT.
QCW	Displays when the ratio of queued general calls to the occupied positions reaches the threshold. When the queue length falls below the threshold, the QCW display is erased. Displays on FMCRT, IC, and SA windows when calls are waiting in a queue for an operator.

Table 10. Miscellaneous displays (Continued)

Display	Definition
QCD	Displays when the number of queued general calls reaches a predefined threshold and new calls are deflecting to treatment. An audible alarm accompanies this display on the FMCRT only if there is one datafilled. Otherwise, it displays on the IC only.
	Calls can be deflected for the following reasons:
	• The sum of the number of calls of the same transfer type (general, transfer 1, transfer 2, or transfer 3) in the call and recall queues is equal to or greater than the relevant deflect threshold. The threshold is based on predicted wait time (when exceeded) for the queue.
	• An overflow occurred. Calls overflow when all queuing resources are exhausted for the queue. (For more information, refer to "TTY reports and commands" on page 87.)
TAC POS OD	Displays when all Time & Charges positions are out of order.
25% QCT	Displays when the number of positions occupied by operators in the controlled traffic mode reaches 25 percent of all occupied positions. An audible alarm accompanies this display.
CAMA SUSPEND	Displays when machine accDisplays on the FMCRT, IC, and SA windows. This display is datafillable on the SA and IC windows, but not on the FMCRT. oDisplays on the FMCRT, IC, and SA windows. This display is datafillable on the SA and IC windows, but not on the FMCRT. unting has been suspended. Accompanied by the audible alarm.
No Asst Pos	Displays on the IC or SA position when no SA positions are logged on and the IC position is not in accept-calls mode. An audible alarm accompanies this display.
Calls Withheld	Displays on the IC or SA position when the position is placed in quit-calls mode. It is erased automatically when the **{Accept Calls}** softkey is pressed.
NO QST REG	Displays when all operator study data registers datafilled in parameter TOPS_NUM_STUDY_REG in DMS table OFCENG are in use.
Mon	Displays on the IC or SA position window when an operator position is being monitored by a service assistant or in-charge manager.
(*broadcast message*)	Displays on the top line of the window when a broadcast message is transmitted from the QTADS or QFADS TTY.

4.2 Force management CRT (FMCRT)

In a multitraffic office, the force supervisor has one of the following specially configured positions:

- MP FMCRT - TOPS MP-based operator position

- ANSI FMCRT - Telnet FMCRT emulation

In either case, the FMCRT window contains the following components:

- The top area of the window, known as the MSA (message status area), displays any broadcast messages transmitted from the QFADS TTY.

- The lower part of the MSA displays the status of the operator positions for the entire system.

- The area beneath the system display provides the status of the operator positions in each traffic office.

- The area beneath the traffic office display area provides warning messages regarding various components in the system.

- For the MP FMCRT, the area at the bottom of the window provides the softkey definitions. ANSI FMCRT does not support softkeys.

Figure 7 shows an example MP FMCRT window. Figure 8 shows an example ANSI FMCRT window. These windows display information about a traffic office that does not provide DA. Displays on the FMCRT, IC, and SA windows. This display is datafillable on the SA and IC windows, but not on the FMCRT.

Figure 7. MP FMCRT window
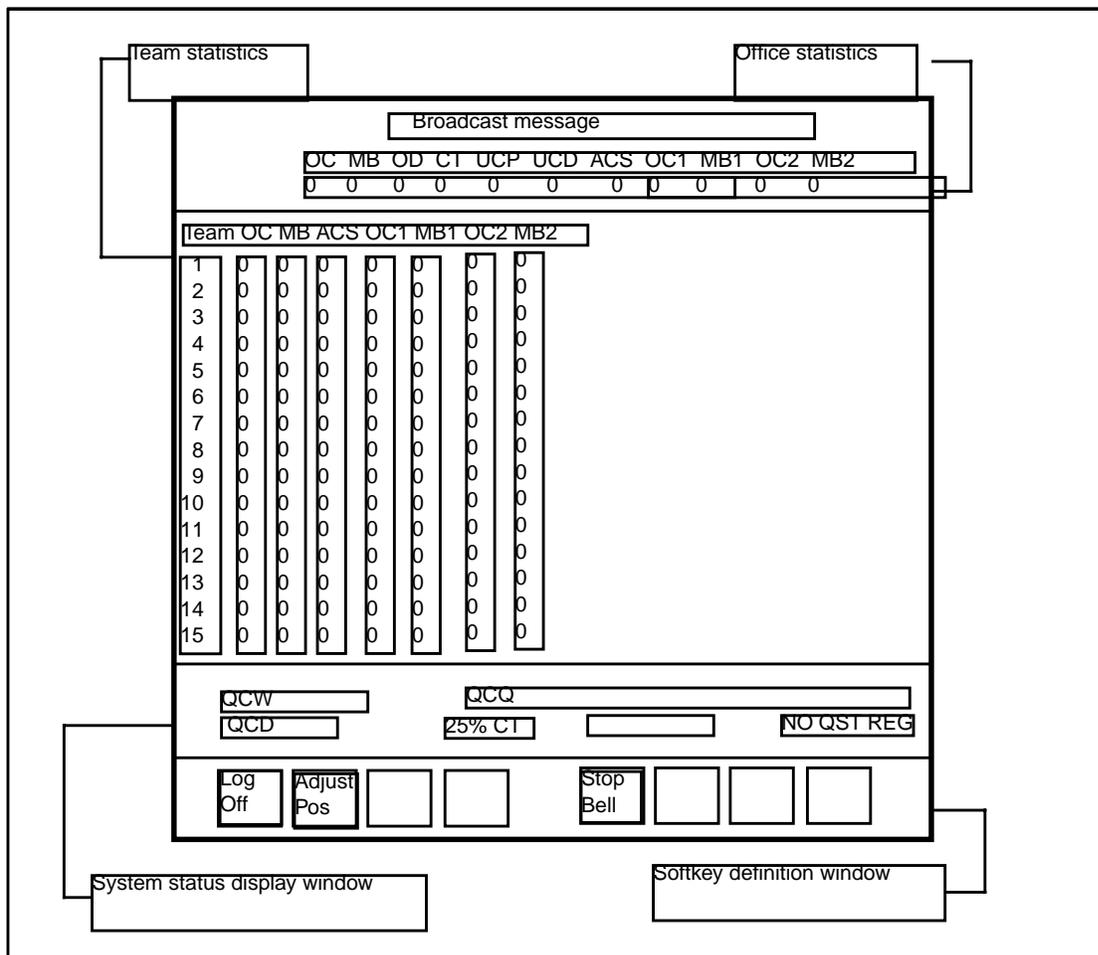
Figure 8. ANSI FMCRT window

4.2.1 Position status displays for the system
The following displays are updated in ten-second scans with the number of positions in those states throughout the system: OC, MB, OD, CT, UCP, UCD, ACS.

4.2.2 Sanity timer
During call processing, all attached parties in a call can go on-hook, yet remain attached to an unoccupied position. This might happen, for example, because the operator logged out before releasing the call or because the datapath was lost when the local area network (LAN) went down.

When this happens and the operator does not press a key on the position, a sanity timer goes into effect and takes the call down after a set period of time has expired. To use the sanity timer, parameter POSITION_SANITY_TIMER in DMS table TOPSPARM must be set.

When the sanity timer goes into effect, the UCP display appears on the FMCRT and IC windows. If the timer expires, the call is taken down and the UCP display disappears. The sanity timer can be reset by pressing any key, which indicates to the system that the operator has not abandoned the call. If either of the attached parties goes off-hook again, the sanity timer is cleared.

4.2.3 Calls-deflected displays

Calls can be deflected to an announcement or treatment for the following reasons:

- The sum of the number of calls of the same transfer type in the call and recall queues is equal to or greater than the relevant deflect threshold. The threshold is based on predicted wait time (when exceeded) for the queue.

- An overflow occurs. Calls overflow when all queuing resources have been exhausted. (For more information, refer to "TTY reports and commands" on page 87.)

When the ratio of queued calls to occupied positions able to handle the calls reaches a defined threshold, the CD indicator for that queue displays on the window. An audible alarm reports customer-dialed calls being refused entry into the queue (that is, of calls being deflected).

4.2.4 Miscellaneous displays

Miscellaneous displays that appear on the FMCRT window include the following messages:

```
25% QCT
TAC POS OD
CAMA SUSPEND
NO QST REG
QCW
QCD
QCQ
```

Note the following:

- The office statistics are team totals and do not contain data about individual queues.

- The per team statistics also contain no individual queue data.

- Entering the CW, CD, and CQ commands from the QTADS TTY causes the TTY to identify specific queues that have calls waiting or deflecting or that have calls but have no operator assigned. These commands are explained in Chapter 6.0, "TTY reports and commands," on page 87.

4.3 CSE, IC, and SA positions

Note that a CSE position can replace both the IC and SA positions, taking on their functionality.

One IC position and several SA positions can be located in each traffic office. The IC position window displays information about the current status of operator positions and other system information.

The CSE, IC, and SA positions can perform the following tasks:

- log on and off

- accept assistance requests

- monitor an operator

- page an operator

- initiate outgoing calls

- perform administrative searches

- quote search results

- enter the calling number for ONI (Optical Network Interface) and ANIF (Automatic Number Identification Failure) calls

- initiate a service change between operator assistance (OA) and DA

- release the position

A system flow diagram for the displays is shown in Figure 9.

Figure 9. System flow diagram
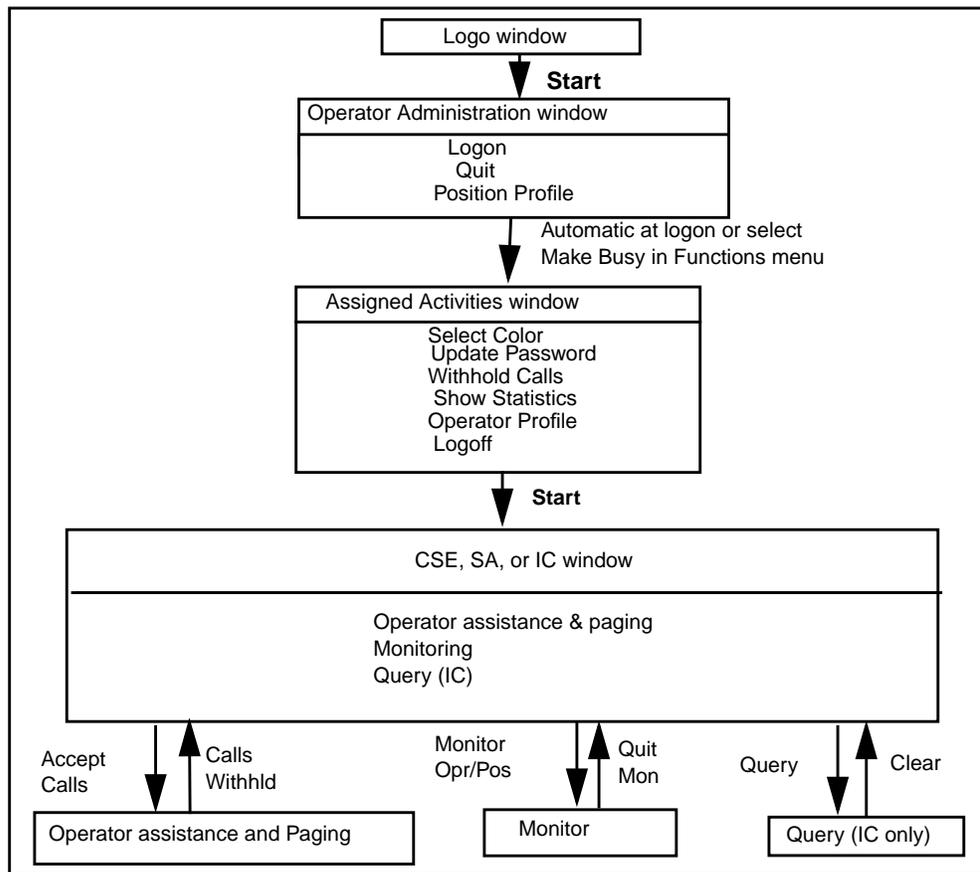
The TOPS IWS screen saver application helps prevent screen burn-in on the operator position display screen. When the Logo window or Operator Administration window is displayed, and the position is in the unoccupied state, the screen saver blanks out the screen after a period of inactivity and then displays a scrolling marquee that reads "TOPS IWS," if the default screen saver is used. The time delay for the period of inactivity is user-defined. The screen saver becomes dormant after a key is pressed or after the position is returned to service or made busy.

4.4 Logo window

Before logon, when the position is unoccupied and cannot receive calls, it displays the Logo window, shown in Figure 10. The position returns to the Logo window when the operator quits the Operator Administration window.

Figure 10. Example Logo window
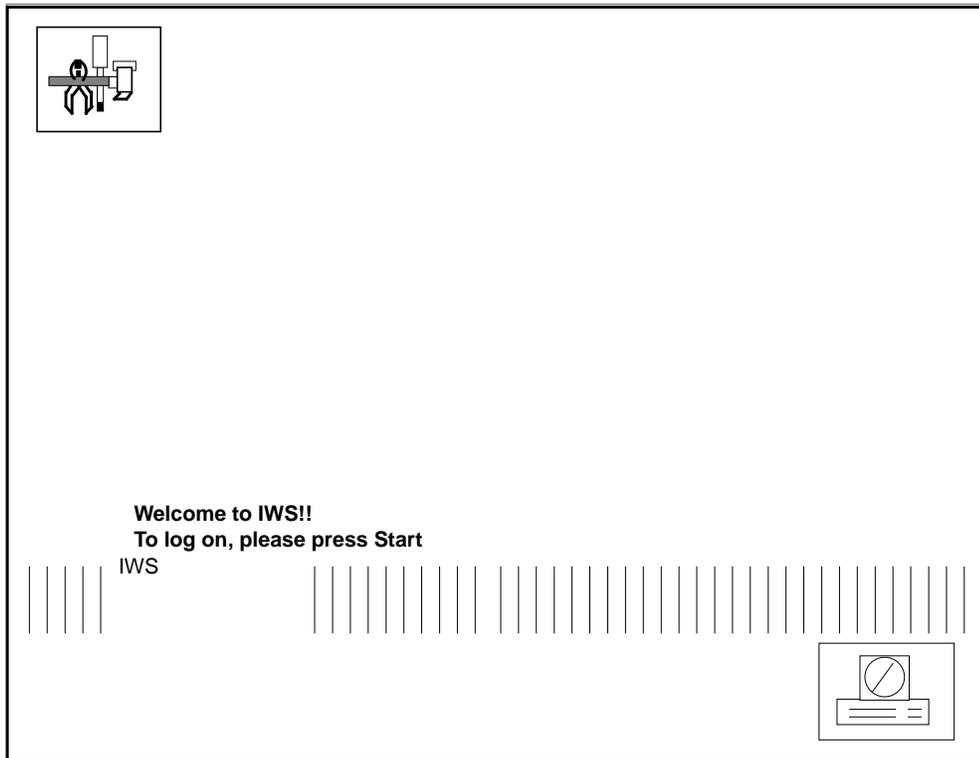
The Logo window is identical for the different position types (operator, service assistant, in-charge manager, and CSE). The only valid key in this window is the **Start** key, which displays the Operator Administration window.

4.5 Operator Information window

Figure 11 shows the basic Operator Information window, which is composed of the MSA, Loop State window, Port Status window, application area, and softkey label area. Service-specific windows are displayed in the application area.

Figure 11. Operator Information window areas
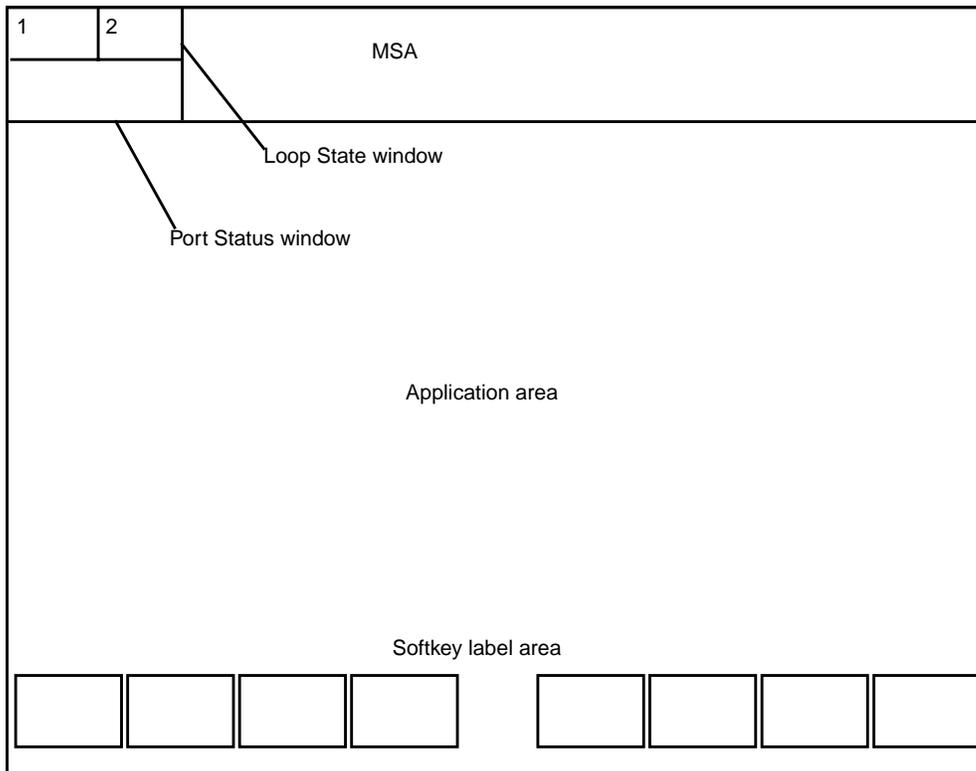
4.5.1 Message status area (MSA)

The MSA displays system- and service-specific information. It is composed of a text display area, two loop information blocks, and a port status information block.

The text display area has four lines that display text strings that provide information to the operator. Each line is subdivided into several display fields. Each field displays a specific type of message. The following sections provide descriptions of the fields.

4.5.1.1 Line 0 (the top line)

Figure 12 shows the fields displayed on the top line of the MSA. Refer to this figure when reading the following field description sections.

Figure 12. MSA line 0 with page, pending, and time fields

4.5.1.1.1 Page field

The page field is located on the left side of the line. (See Figure 12.) The text in the page field varies with position type. It is displayed in alert colors if a broadcast message is also to be displayed. Table 11 lists the display messages.

Table 11. Page field display

Display	Indicates that
Page Pos *number*	The CSE, service assistant, or in-charge manager paged an operator at a position number.
Page Opr *number*	The CSE, service assistant, or in-charge manager paged an operator number.
Invalid Page	The CSE, service assistant, or in-charge manager performed an invalid page request. For example, the position or operator number is incorrect, the position is not occupied, or the operator is not logged on.
Loop 2: *number1* Opr: *number2*	A directed assistance request was made by operator *number2* at position *number1* to the CSE, service assistant, or in-charge manager. Also, an on-hook telephone icon displays in the loop 2 display area and the audible alarm sounds.
(Position Unoccupied)	The monitored position was placed into the unoccupied state by the DMS switch.
(Position Occupied)	The monitored position was placed into the occupied state by the DMS switch.
(Position Busy)	The monitored position was placed into the busy state by the DMS switch.
(Position Forced Maintenance)	The monitored position was placed into the forced-maintenance state by the DMS switch.

4.5.1.1.2 Pending field

The pending field is located in the middle of the line. (See Figure 12.) It displays the pending states of the position; however, information might vary depending on position type. The text is displayed in alert colors if a broadcast message is also to be displayed.

Table 12 lists the display messages.

Table 12. Pending field displays

Display	Indicates that
Withhold Calls pending...	The CSE, service assistant, or in-charge manager, in the accept-calls state, pressed the **{Calls Withhld}** softkey or selected Withhold Calls from the Functions menu while handling a call. The position is put in calls-withheld state at the completion of the current call.
Calls withheld	The position is currently in the calls-withheld state.
Make busy pending...	The CSE, service assistant, or in-charge manager, in the accept-calls state, selected Make Busy from the Functions menu while handling a call. The position is put in the made-busy state at the completion of the current call.
Forced busy pending...	A maintenance condition requires trtion to a maintenance-busy state at completion of the current call.
Log off pending...	The CSE, SA, or IC position, in the accept-calls state, has unseated the headset from the position while handling a call. The CSE, service assistant, or in-charge manager is logged off the position at the completion of the current call.
Loop 1: Pos: number1 Opr: number2	A general assistance request has arrived at the first available CSE, SA, or IC position from operator number2 at position number1. Also, an on-hook telephone icon is presented in the loop 1 display area.
Loop 1: Rel by Opr: number	A general assistance request has arrived and been released by operator number to the CSE, SA, or IC position queue. Also, an on-hook telephone icon is presented in the loop 2 display area.

4.5.1.1.3 Time field

The time field is located on the right side of the line. (See Figure 12.) It displays the frozen time from the DMS switch when the operator requests the appropriate function in the Functions menu. It is displayed in the following format:

        hh:mm:ss

where hh is the hour (0-23), mm is the minutes (0-59), and ss is the seconds (0-59).

4.5.1.1.4 Broadcast field

When the broadcast field is displayed, it overlays both the page and pending fields (shown in Figure 12), as shown in Figure 13.

Figure 13. MSA line 0 with broadcast and time fields

The broadcast field displays a broadcast message from one of the FM TTYs: QFADS or QTADS. The message remains displayed until cancelled by the force manager. Broadcast messages from the QFADS TTYs overwrite messages broadcast from the QTADS. The broadcast message field has the same display and functionality for operators, service assistants, in-charge managers, and CSEs.

4.5.1.2 Line 1 (the upper middle line)

Figure 14 shows the fields that are displayed on the upper middle line of the MSA. Refer to this figure when reading the following field description sections.

Figure 14. MSA **line 1**

1	2	
		(Maintenance)(CSE-SA-IC info)(Asst CW) CW CT ST Mon

4.5.1.2.1 Maintenance field

The maintenance field is located on the left side of the line. (See Figure 14.) It displays position maintenance information. If maintenance text is overwritten by text in the transient field, the maintenance field text is restored when the transient field is removed after three seconds.

4.5.1.2.2 CSE-SA-IC information field

The CSE-SA-IC information field is located in the middle of the line. (See Figure 14.) It displays information for the CSE, SA, or IC position.

4.5.1.2.3 Asst CW field

The Asst CW (assistance calls waiting) field is located toward the right of the line. (See Figure 14.) The Asst CW is displayed on only the CSE or IC position. Table 13 lists the display messages.

Table 13. Asst CW field displays

Display	Indicates that
ACW *nn*	There are *nn* assistance requests waiting in the CSE, SA, or IC assistance queue. This message is displayed only on the CSE or IC position.
ACW Full	The CSE, SA, or IC assistance request queue is full. The message is displayed only on the CSE or IC position. When this display is presented to the CSE or in-charge manager and required DMS switch datafill is provided, an audible alarm sounds at the CSE or IC position. The audible alarm can be disabled by pressing the **{Stop Bell}** softkey each time it occurs.

4.5.1.2.4 CW field

The call waiting (CW) field is located toward the right of the line. (See Figure 14.) In the call waiting field, a CW is displayed to signal the operator that calls are waiting in a queue that the operator can access. If no calls are waiting, this field is blank. This display appears only when the CSE, service assistant, or in-charge manager is in a monitoring session.

4.5.1.2.5 CT field (or CA field)

The controlled traffic (CT) field is located toward the right of the line. (See Figure 14.) In the controlled traffic field, a CT is displayed if the position is in controlled traffic mode, meaning that the operator receives only certain types of traffic, determined by input at the TADS TTY. This display appears only when the CSE, service assistant, or in-charge manager is in a monitoring session.

When calls are waiting in designated alerting queues, the audible alarm sounds, and the message CA (call alerting) appears in the controlled traffic field.

4.5.1.2.6 ST field

The study (ST) field is located to the right of the line. (See Figure 14.) An ST is displayed in the study field if the operator number used at logon is assigned to a register for operator statistics categorized by call type. This field is blank if the operator is not handling traffic under study. This display appears only when the CSE, service assistant, or in-charge manager is in a monitoring session.

4.5.1.2.7 Mon field

The monitor (Mon) field is located to the right of the line. (See Figure 14.) Table 14 lists messages for the monitor field.

Table 14. Mon field displays

Display	Indicates that
Mon	The CSE, service assistant, or in-charge manager is monitoring an operator or operator position.
mon	A CSE or service assistant who belongs to the DMS switch operator team of this in-charge manager (or CSE) is monitoring an operator or operator position within that DMS switch operator team.

4.5.1.2.8 Transient field

The transient field displays system information for approximately three seconds. It can temporarily override text that is displayed in the maintenance field. (Any text that is overwritten is redisplayed.) Figure 15 shows the transient field overlaying the maintenance field.

Figure 15. MSA **line 1 with transient fiel**

1	2	
		(Transient) (Position) (Asst CW) CW CT ST Mon

The messages that display in this field are no-action reasons. The Base HMI application displays messages to the operator to describe the reason TOPS took no action in response to an operator action request. This function is the same for operators, service assistants, in-charge managers, and CSEs. For more information, refer to the *TOPS IWS Base Platform User's Guide,* 297-2251-010.

Table 15 lists the display messages. These displays appear only when the CSE, service assistant, or in-charge manager is in a monitoring session.

Table 15. Transient field displays

Display	Indicates that
Gen AMA	An AMA record was generated.
Rls Calling	An operator initiated a request to release the position from the calling party.
Rls Called	An operator initiated a request to release the position from the called party.
Ring Calling	An operator attempted to re-ring an on-hook calling telephone or another operator on a back connection.
Ring Called	An operator attempted to re-ring an on-hook called telephone or another operator on a forward connection.
Coin Collect	An operator initiated a request to collect coins at a coin telephone.
Coin Return	An operator initiated a request to return coins to a coin telephone.
PCB Error	The person call back function was used after entering a station class charge.
Denied	An operator-initiated service change was denied by the DMS switch.
(reasons)	The DMS switch took no action in response to a CSE, service assistant, or in-charge manager action request. This field displays messages describing the reason. The responses are contained in TOPS IWS table PANOACT.LNG.

4.5.1.3 Line 2 (the lower middle line)

Figure 16 shows the fields displayed on the lower middle line of the MSA. Refer to this figure when reading the following field description sections.

Figure 16. MSA line 2

1	2	
		(Logon Denied / CSE-SA-IC pos state) (Appl msg I) (Appl msg II)

4.5.1.3.1 Logon Denied field

The Logon Denied field is located to the left of the line. (See Figure 16.) It contains text to inform the operator that the DMS switch logon process has failed for the reason indicated.

4.5.1.3.2 CSE-SA-IC position state field

The CSE-SA-IC position state field is located toward the left of the line. (See Figure 16.) It informs the CSE, service assistant, or in-charge manager of the current state of that position with respect to the DMS switch.

4.5.1.3.3 Appl message I and II fields

The Application (Appl) message I and II fields are located to the right of the line. (See Figure 16.) These fields are controlled by the currently active application. The active application can use these fields if it needs more display space. It is the responsibility of the currently active application to clear or restore text in these fields when the application becomes active.

4.5.1.4 Line 3 (the bottom line)

Figure 17 shows the fields displayed on the bottom line of the MSA. Refer to this figure when reading the following field description sections.

Figure 17. MSA line 3

1	2	
		(Appl msg III) (Appl msg IV) (Appl msg V)

4.5.1.4.1 Appl message III, IV, and V fields

The Application message III, IV, and V fields are located to the left of the line. (See Figure 17.) Line 3 of the MSA is controlled by the currently active application. The active application can use these fields if it needs more display space. It is the responsibility of the currently active application to clear or restore text in these fields when the application becomes active.

4.5.2 Loop State window

The Loop State window displays information for the two loops. Each loop information block has two display fields: the label field and the icon field. The label fields in the blocks (1 and 2) identify the loop (loop 1 or loop 2) for which the information is provided.

The Loop State window for the loop on which the currently active call is being handled is outlined with a bold black box, as shown in Figure 18.

Figure 18. Loop State window

The icon on the left indicates the calling party; the one on the right indicates the called party. Figure 19 shows these icons. If no icon is displayed for the calling or called party, the party is not connected to the operator position.

Figure 19. Loop state icons
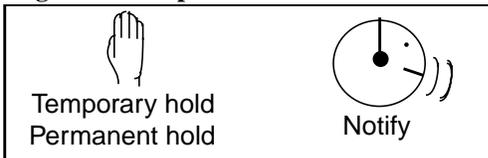
Loop state icons are as follows:

- Temporary hold
  A yellow hand icon (white in color-blind mode) indicates that the call on the loop is on temporary hold. The background behind the temporary hold icon is highlighted if the operator is processing a call on the other loop and one of the parties (calling or called) on the held loop goes on-hook.

- Permanent hold
  A cyan hand icon (grey in color-blind mode) indicates that the call on the loop is on permanent hold. If an operator requests assistance with no supervisor available, places the request on hold, and presses the position release key, the request is put on permanent hold. When the supervisor becomes available and accepts the request by accessing the loop, the background behind the operator position's loop icon is highlighted.

- Notify
  A notify icon, a talking operator, is displayed whenever a notify comes due on a call held at the position.

4.5.3 Port Status window

The Port Status window, below the Loop State window, displays the current status of the calling and called parties of the currently active loop. The icon on the left indicates the calling party; the one on the right indicates the called party. Figure 20 shows these icons. If no icon is displayed for the calling or called party, the party is not connected to the operator position.

Figure 20. Port status icons
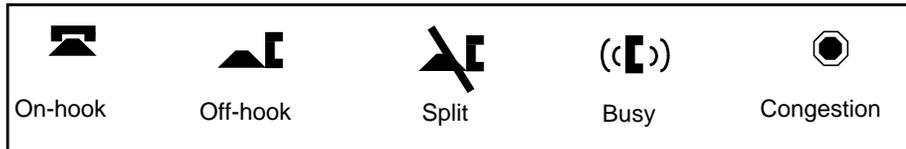
Port status icons are as follows:

- On-hook
  Indicates that the port status of a party of the call is on-hook

- Off-hook
  Indicates that the port status of a party of the call is off-hook

- Split (off-hook with a diagonal bar through it)
  Indicates that the voice path of the calling or called party was split off the line and the audio connection is broken. The location of the split icon indicates which party has been split.

- Busy and congestion icons
  Associated with international networks. In these networks, the operator may not be able to differentiate a subscriber busy tone from a network fast-busy tone. Although the tones sound the same, the DMS distinguishes between the them. The busy icon indicates that the line is subscriber busy. The congestion icon indicates network congestion.

The Port Status window also displays the current status of the operator port of the currently active loop. If the operator port is joined (with a two-way connection for the operator, both hearing and speaking), the background around the calling and called port icon areas is displayed as normal. If the operator port is split (with a one-way connection established for the operator, hearing but not speaking), the background around the calling and called port icon areas is inverted.

4.5.4 Application area

The area between the MSA and the softkeys is called the application area. This space is used by applications running on the position.

4.5.5 Softkey label area

Eight softkey labels occupy the softkey label area. Each label corresponds to a key on the TOPS IWS keyboard. Each softkey label area has two rows of text that identify the function that is activated when the CSE, service assistant, or in-charge manager presses the corresponding keyboard softkey. The softkeys are never overlaid by any other windows. If a softkey feature is not enabled in the DMS switch, the softkey is not labeled.

If the CSE, service assistant, or in-charge manager holds the **Shift** key down while pressing a softkey, the softkey function is invoked as if the Shift key were not held down. However with QMSCASE, there are shifted softkeys, described in Section 3.2.4, "QMSCASE softkeys," on page 30.

4.6 Operator Administration window

The Operator Administration window is reached in one of the following ways:

- pressing the **Start** key while the Logo window is displayed

- pressing the **{Logoff}** softkey from the Assigned Activities window

- unseating the headset, if the headset driver option in the IWS file MPXINI.INI is set to cause logoff. If the headset driver option is not set, unseating the headset does not cause logoff.

Figure 21 shows the Operator Administration window.

Figure 21. Operator Administration window

Two messages can appear in this window:

```
Link problems encountered....
```
> This message indicates that the position has not received a return-to-service message from the DMS switch or that the link to the DMS switch is out-of-service. When this message is displayed, the operator cannot log on.

```
Headset unseated....
```
> This message informs the operator that there is no headset seated at the position. The display of this message depends on the type of audio card used in the position or on whether an audio card is required in the position.

No windows are immediately displayed within the Operator Administration window. Only softkeys are displayed. The three softkeys allow the operator to access information about the position profile, log on to the DMS switch, or quit and return to the Logo window.

4.6.1 Applications menu window

The Applications menu is available in the Operator Administration window. The Application menu allows the use of administration applications sessions (such as DA administrative searches) or access to applications that do not require logon to the DMS switch. Pressing the **Appl** key twice displays the Applications menu window. Each available application is displayed in the menu with an associated menu item number. Figure 22 shows the Applications menu window with examples of applications displayed.

Figure 22. Applications menu window
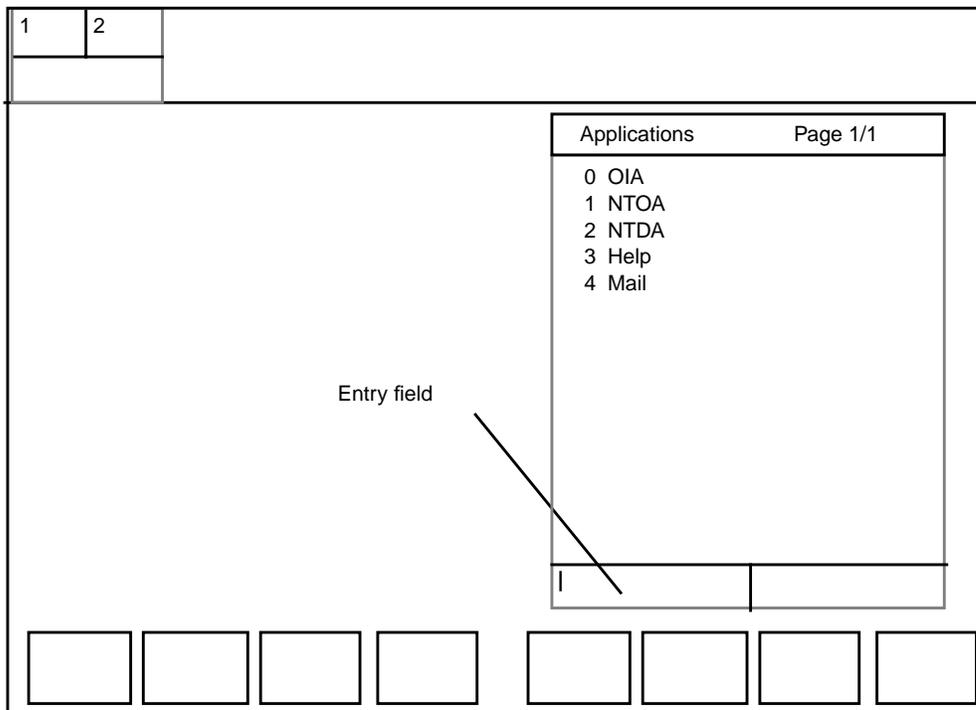
4.6.2 Position Profile window

The user presses the **{Position Profile}** softkey in the Operator Administration window to display the Position Profile window, shown in Figure 23. This window contains information specific to the position, including the IWS Base application, the Internet Protocol (IP) address for the position, any active applications and their application versions, and the application programming interface (API) version used to create the active applications. Only the **{Quit}** softkey is valid in this window. It returns the user to the Operator Administration window.

Figure 23. Position Profile window
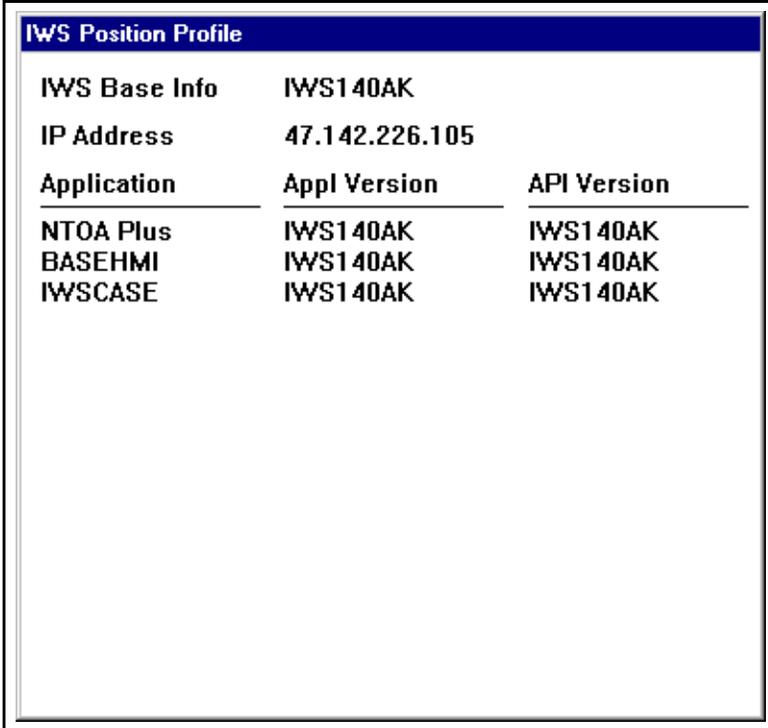
```
IWS Position Profile

IWS Base Info      IWS140AK

IP Address         47.142.226.105

Application        Appl Version      API Version

NTOA Plus          IWS140AK          IWS140AK
BASEHMI            IWS140AK          IWS140AK
IWSCASE            IWS140AK          IWS140AK
```

4.6.3 Logon window

The Logon window is reached from the Operator Administration window when the operator presses the **{Logon}** softkey.

The operator's type and capabilities are determined by the logon ID and the datafill for the position in the switch. Figure 24 shows the Logon window.

Figure 24. Logon window

```
┌──────┬──────┬─────────────────────────────────────┐
│ 1    │ 2    │                                     │
├──────┴──────┤                                     │
│             │                                     │
├─────────────┴─────────────────────────────────────┤
│                                                    │
│                                                    │
│                                                    │
│                                                    │
│                                                    │
│                                                    │
│                                                    │
│                                                    │
│          ┌──────────────────────────────┐          │
│          │ Id        ┌─────────────┐    │          │
│          │           │ |           │    │          │
│          │           └─────────────┘    │          │
│          │ Password  ┌─────────────┐    │          │
│          │           └─────────────┘    │          │
│          └──────────────────────────────┘          │
│                                                    │
│ ┌────┐┌────┐┌────┐┌────┐  ┌────┐┌────┐┌────┐┌────┐ │
│ │    ││    ││    ││    │  │    ││    ││    ││Quit│ │
│ └────┘└────┘└────┘└────┘  └────┘└────┘└────┘└────┘ │
└────────────────────────────────────────────────────┘
```

4.6.4 Assigned Activities window

If logon is successful, the Assigned Activities window appears. The Assigned Activities window identifies the CSE, service assistant, or in-charge manager capabilities by displaying the supervisor's role, available services, and unavailable services for which logon might have failed.

To display the Assigned Activities window, do one of the following:

- Log on successfully. The window is displayed automatically after a successful logon.

- Select Make busy on the Functions menu. After completing processing of any call currently at the position, TOPS IWS automatically enters the Assigned Activities window.

The Functions menu text can be datafilled in the IWS file XFNCTS.TBL. Make busy is the default text.

In the Assigned Activities window, sets of softkeys are displayed. If a softkey is selected, other keys are made available to the CSE, service assistant, or in-charge manager for input, depending upon the softkey selected.

4.6.4.1 Assigned activities

QMS provides enhanced capabilities for the management of call queues. Operators can be assigned to a profile, based on their capabilities and load requirements, such as the following example:

- Profile 1- toll and assistance (English)

- Profile 2- toll and assistance (Spanish)

QMS provides for up to 255 individual queues, such as the following:

- Call queue 1- toll and assistance (English)

- Call queue 3- toll and assistance (Spanish)

QMS matches the call queue to the operator's profile. The items displayed under the services header in the Assigned Activities window indicate the type of services that the supervisor and the TOPS IWS position are capable of handling. The services for which the CSE, service assistant, or in-charge manager are logged in are highlighted. The TOPS IWS position can support up to 63 services. The services are displayed on four pages. Each page consists of 16 services, displayed in two columns of eight, as shown in Figure 25.

Figure 25. Assigned Activities window

The CSE, service assistant, or in-charge manager can cycle through the available pages by pressing the Pg Fwd and Pg Bwd keys. Each time the Pg Fwd key is pressed, the next page is displayed. If the last available page is displayed when the Pg Fwd key is pressed, the key is ignored and no activity occurs. Each time the Pg Bwd key is pressed, the previous page is displayed. If the first page is displayed when the Pg Bwd key is pressed, the key is ignored and no activity occurs.

4.6.4.2 {Select Color} softkey

During the position-busy state, selecting softkeys alters the display mode. Figure 26 shows the softkeys that are available after the **{Select Color}** softkey is pressed, which provide up to seven color arrangements. The CSE, service assistant, or in-charge manager can press each softkey to see the color arrangements. These softkeys are not present if only one color set has been datafilled. When a color arrangement is chosen, pressing the **{Quit}** softkey implements the color change for all Operator Assistance windows at that position.

Figure 26. Assistance Activities window after the select color key is pressed

1	2	

```
                    Assistance Assigned Activities

        Services                        Transfers
        _____             _____
        Toll and Assistant                 0,1,2,3
        Directory Assistant
         Intercept
```

Color Set A	Color Set B	Color Set C	Color Set D		Color Set E	Color Set F	Color Set G	Quit

4.6.4.3 {Update Passwrd} softkey

This softkey is displayed only if the password option is enabled in the DMS switch. The CSE, service assistant, or in-charge manager uses this softkey to initiate a change of password, as described in Section 4.6.5, "Password Update window," on page 69. If the password option is not enabled in the DMS switch, the label of this softkey is blank.

4.6.4.4 {Oper Profile} softkey

This softkey allows operators to view their own profiles. The information presented in the Operator Profile window consists of the operator ID and the position ID. When the operator presses {**Oper Profile**}, the Operator Profile window is displayed. The softkeys associated with the Operator Profile window replace the initial Assigned Activities softkeys on the window. The functions associated with operator profile softkeys become active.

4.6.4.5 {Enable Colorbl} or {Disable Colorbl} softkey

This softkey is displayed if the color-blind support option is enabled in the DMS switch.

 When the operator logs on, color-blind support is not enabled and the key label displays {**Enable Colorbl**}. When the operator enables color-blind support, the error and alert text appear in colors that are more recognizable to color-blind people, and the key on the window becomes {**Disable Colorbl**}. Icons that use color to convey a message are also assigned new colors. Text and icons might also flash.

4.6.4.6 {Logoff} softkey

This softkey allows the operator to log off the DMS switch and return to the Operator Administration window.

4.6.5 Password Update window

If a password is not required during logon, the {**Update Passwrd**} softkey label is blank in the Assigned Activities window. If a password is required, the {**Update Passwrd**} softkey label displays and, when the softkey is pressed, the Password Update window is displayed.

Updating the password is not supported when the position is in the calls-withheld state in the Assigned Activities window.

Figures 27, 28, and 29 show the Password Update windows. The Assigned Activities window is also shown in Figure 27 to identify the location of the Password Update window. This password window is available when the Assigned Activities window is active.

Following

The Password window has three associated displays. Each display is shown sequentially as the password update procedure progresses. (See Figures 27, 28, and 29.) Pressing the **{Update Passwrd}** softkey causes the Password Update window to be displayed. This window accepts up to seven alphabetic characters. After a new password is entered and **Start** is pressed, a new window appears for password confirmation. Enter the new password again and press **Start**. This action causes one of three responses:

```
Password update successful
```
This message is displayed when the password is successfully updated. (See Figure 27).

```
Password entries did not match
```
This message is displayed if the same password is not entered in the new password and the Confirm Password windows.

```
Password update failed
```
This message is displayed if for some reason the DMS switch cannot successfully update the password.

The **{Quit}** softkey is provided to exit the update password procedure.

Figure 27. Password Update window

Figure 28. Confirm Password window

Password Update
Reenter to confirm and press Start

Figure 29. Password successful update window

Password Update
Password update successful

4.6.6 CSE, SA, and IC windows

The QCW, QCD, and QCA displays, updated on a ten-second basis, are individual queue displays. The text strings are datafilled by the customer. An FM command is provided at QMS FM TTYs to query which queue is in the CW, CD, or CA state. A queue reaches CW, CD, or CA state based on datafill in DMS tables TQCQINFO, QMSCQDEF, and QAPLNDEF.

Real-time statistics are displayed at CSE and IC positions indicating the total statistics for the positions in their respective teams. The team statistics displayed include the number of positions made busy, the number occupied, and the number out of order. CSE, SA, and IC positions also include a real-time display, QCQ, which appears when there are calls in a queue that is not in any logged-in operator's profile.

CSE and IC positions do not display statistics for each queue. Figures 30 and 31 show the CSE, SA, and IC windows for QMS positions. Tables 9 on page 46 and 10 on page 46 define the display messages.

When the CSE, service assistant, or in-charge manager presses the **Start** key in isolation (that is, the **Start** key is not used to terminate data during an activity such as updating a password) while the Activities window is active, the following actions occur:

- The Call Information window and the CSE, SA, or IC window displays in the Operator Information window. (For information on the Call Information window, refer to the *TOPS IWS Operator Guide,* 297-2251-304.)

- The Assigned Activities window goes away.

- The position goes to the calls-withheld state.

During monitoring, the CSE, SA, or IC window is removed from the display.

Figure 30. SA window

1	2	Calls Withheld

```
                    Assistance
         ┌─────────────────────────────┐
         │                             │
         │   QCQ                       │
         │   QCD                       │
         │   QCW                       │
         │                             │
         └─────────────────────────────┘
```

Page Pos	Page Opr	Monitor Pos	Monitor Opr		Stop Bell	Accept Calls		Clear

Figure 31. IC window

1	2	Calls Withheld

```
                        In Charge

   All T&C Pos OD              OC   2
   No QSt Reg                  MB   0
   CAMA SUSPEND                CT   1
   25% QCT                     OD   0
   QCQ                         UCP  1
   QCD                         UCD  0
   QCW                         ACS  0
```

Page Pos	Page Opr	Monitor Pos	Monitor Opr		Stop Bell	Accept Calls	Query	Clear

5.0 Operator procedures

This chapter describes the following commonly used operator procedures:

- handling assistance requests
- monitoring and paging
- initiating an outgoing call
- billing
- responding to the audible alarm (stop bell)
- handling assistance requests queues

5.1 Handling assistance requests

When an operator is unable to handle a call, a CSE, service assistant, or in-charge manager can provide assistance by answering operator questions or by talking to the customer directly. Operators can make the following types of requests for assistance:

- directed assistance (call goes to a specific CSE, in-charge manager, or service assistant)
- general assistance (call goes to the first available CSE, in-charge manager, or service assistant)
- page (call goes to a specific operator)

To make a directed assistance request, an operator or service assistant selects Directed Assistance from the Functions menu. The call goes to the service operator to whom that number is assigned.

To make a general assistance request, the operator presses the **OGT** key, presses the **0** key, then presses the **Start** key twice. The call goes to the first available supervisor.

On the CSE, SA, and IC positions, pressing the **{Accept Calls}** softkey informs the system that the position is available to handle assistance requests. The in-charge manager (or CSE) handles general requests; the service assistant (or CSE) handles general and directed requests. Pressing **{Accept Calls}** erases the message and allows new assistance requests to arrive at the position. If the CSE, SA, and IC positions are in the calls-withheld state and not available to receive new assistance requests, the following message is displayed at all assistance positions and the CSE and IC positions:

        NO ASST POS

In the message area, `Available` is displayed and `Calls Withheld` is removed. Figure 32 shows the displayed softkey set.

Figure 32. SA softkey set in available state

Page Pos	Page Opr		Calls Withhld	Stop Bell		Query	Clear
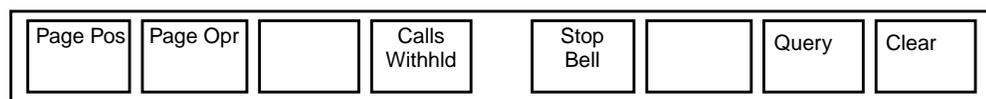
On the CSE or IC position, after pressing **{Accept Calls}**, the previous state determines the next state, as follows:

- If the CSE or IC position is in the accept-limited-calls state and receives a directed assistance call from an operator, `Calls Withheld` is removed from the MSA and replaced by `Dir Calls`. Figure 33 shows the displayed softkey set. The in-charge manager (or CSE) can change to the general assistance calls state by pressing the **{Gen Calls}** softkey.

Figure 33. CSE / IC softkey set in directed calls state

Page Pos	Page Opr	Gen Calls	Calls Withhld		Stop Bell		Query	Clear
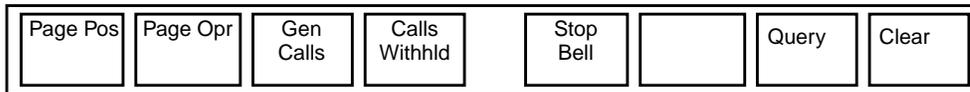
- If the CSE or IC position is in the accept general calls state and receives general calls from an operator, `Calls Withheld` is removed from the MSA and replaced by `Available`. The in-charge manager (or CSE) can change to the directed calls state by pressing the **{Dir Calls}** softkey. Figure 34 shows the displayed softkey set.

Figure 34. CSE / IC softkey set in available state
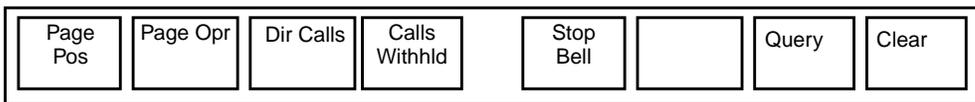
Page Pos	Page Opr	Dir Calls	Calls Withhld		Stop Bell		Query	Clear

If the CSE, SA, and IC positions are in the calls-withheld state and not available to receive new assistance requests, `NO ASST POS` is displayed at all CSE, SA, and IC positions.

The CSE, service assistant, or in-charge manager can select Call Details in the Functions menu at call arrival to recover from lost messages, if the call begin message from the DMS switch is lost. If any messages are lost during the call, the CSE, service assistant, or in-charge manager must put the call on hold and re-access the loop to force the DMS switch to re-send the call information.

To stop accepting assistance requests, the CSE, service assistant, or in-charge manager can press the {Calls Withhld} softkey or the calls withhold function in the Functions menu. `Calls Withheld` replaces `Available` or `Dir Calls` in the MSA and the prior softkey set for a CSE, service assistant, or in-charge manager. The {Calls Withhld} softkey toggles the position between the calls-withheld state and the available or directed calls state for a CSE or in-charge manager. The {Calls Withhld} softkey toggles the position between the calls-withheld state and the available call state for a CSE or service assistant.

5.1.1 Handling directed assistance requests

The following procedure describes how the service assistant or in-charge manager responds to a directed assistance request. An audible alarm is generated at the position receiving the request. Note that a CSE can function as an in-charge manager or service assistant.

If	Go to
this is an SA position	step 1
this is an IC position	step 2

1. If the SA position is not in Accept Calls mode, press the **{Accept Calls}** softkey. The system puts the position into Accept Calls mode. Go to step 3.

2. Press the **{Dir Calls}** softkey.

3. Choose Access Loop 2 from the Functions menu. The system accesses loop 2, which is the loop on which directed assistance requests arrive.

4. Answer the operator's questions.

5. Press the **Pos Rls** key. The request is released.

To respond to an assistance request, the service assistant or in-charge manager must share service types with the requesting operator.

5.1.2 Handling general assistance requests

Operators can also request help from any available supervisory position. An audible alarm is generated at the position receiving the request. The following procedure describes how a service assistant or in-charge manager responds to a general request. Note that a CSE can function as an in-charge manager or service assistant.

If the position is not in Accept Calls mode, press the **{Accept Calls}** softkey. The system puts the position into Accept Calls mode.

If	Go to
this is an SA position	step 1
this is an or IC position	step 2

1. Press the **{Gen Calls}** softkey.

2. Choose Access Loop 1 from the Functions menu. The system accesses loop 1, which is the loop on which general assistance requests arrive.

3. Answer the operator's questions.

4. Press the **Pos Rls** key. The request is released.

The CSE or in-charge manager can operate in direct mode or in general mode. When the **{Gen Calls}** softkey is pressed at the IC position keyboard, the IC position is enqueued along with the SA positions to receive general assistance requests. Calls requiring general assistance do not access the IC position unless no SA positions are available. When the IC position is operating in direct mode, the operator must direct the call specifically to the IC position by entering the IC position number.

5.1.3 IC queries

The current status of the operator positions in the office is continuously available in the IC window. However, additional information becomes available when the operator presses the **{Query}** softkey. The displayed softkey set is shown in Figure 35.

Figure 35. IC query softkey set

Query MB	Query OD	Query CT	Query UCP		Query UCD	Query Asst	Query ST	Query ACS
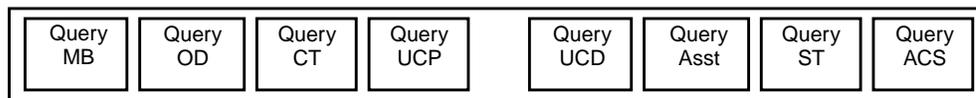
Softkey labels are datafillable. Table 16 defines the query softkeys.

Table 16. Query softkey

Softkey	Display
{Query MB}	Position numbers of the occupied positions in the traffic office in an operator-make-busy (MB) state or calls-withheld state
{Query OD}	Position numbers of the out-of-service (OD) positions in the traffic office
{Query CT}	Operator numbers of the operators in the traffic office in the controlled traffic mode
{Query UCP}	Position numbers of the unoccupied positions in the traffic office with a call in progress. A position is considered unoccupied if the headset is unseated and an operator is not logged onto the position.
{Query UCD}	Position numbers of the unoccupied positions in the traffic office that have unreleased terminated calls
{Query Asst}	• Number of SA positions in the traffic office available to accept assistance requests (for example, SA positions in the accept-calls state) • Number of assistance requests connected to SA positions in the traffic office • Operator position numbers generating the assistance requests in the traffic office
{Query ST}	Operator numbers of the operators in the traffic office who are logged on and assigned to study registers in the DMS switch
{Query ACS}	Position numbers of the positions in the traffic office that have accessed a loop but there is no calling or called party attached

When a soft key is pressed, the title of the Query window changes to the name of the softkey. For example, Figure 36 shows an assistance query display when the **{Query Asst}** softkey is pressed. Note that the window title is Asst. The IC query window is removed from the screen by pressing the **{Clear}** softkey.

Figure 36. IC assistance query window when the {Query Asst} softkey is pressed

1	2	
		Calls Withheld

In Charge

OC   2
MB   0
CT   1
OD   0
UCP   1
UCD   0
ACS   0

Asst:

Avail: 2   Calls: 2   Pos:

315 400

				Stop Bell			Clear

Figure 37 shows a sample display for a make-busy query when the **{Query MB}** softkey is pressed. Note that the window title is MB.

Figure 37. IC make-busy query window

MB:
Pos:
315 40 230 235 100 550 317 425 129

Table 17 explains the query messages displayed in the Query and In-Charge windows.

Table 17. Query messages

Message	Is displayed
Avail:*xxx*	when the **{Query Asst}** softkey is pressed. The *xxx* is the number of CSEs or service assistants available to accept assistance requests.
Opr	when the **{Query CT}**, **{Query ST}**, or **{Query Asst}** softkey is pressed. Gives the position numbers.
Calls:*xxx*	when the **{Query Asst}** softkey is pressed. The *xxx* is the number of CSEs and service assistants connected to operators.
Pos:	in the upper-right corner of the Query window when the **{Query Asst}** softkey is pressed. Gives the position numbers generating assistance requests. An example is shown in Figure 38.
MB	at the top of the Query window when the **{Query MB}** softkey is pressed.
OD	at the top of the Query window when the **{Query OD}** softkey is pressed.
CT	at the top of the Query window when the **{Query CT}** softkey is pressed.
UCP	at the top of the Query window when the **{Query UCP}** softkey is pressed.
UCD:	at the top of the Query window when the **{Query UCD}** softkey is pressed.
Asst	at the top of the Query window when the **{Query Asst}** softkey is pressed.
ST	at the top of the Query window when the **{Query ST}** softkey is pressed.
ACS	at the top of the Query window when the **{Query ACS}** softkey is pressed.

5.1.4 Handling a page

The following procedure describes how a CSE, service assistant, or in-charge manager responds to a page:

1. Press the **{Calls Withhld}** softkey.   The system puts the position into the Call Withheld Pending state, which allows the paged position to complete the current call but prevents any new calls.

2. Finish the current call and press the **Pos Rls** key. The system releases that call.

3. Choose either Access Loop 1 or Access Loop 2 from the Functions menu. The system accesses that loop.

4. Choose Paged Assistance from the Functions menu.

5. Answer the operator's questions.

6. Press the **Pos Rls** key. The request is released.

To page an operator position, refer to Section 5.2.3, "Paging an operator position," on page 81.

5.2 Monitoring and paging operators

CSE, SA, and IC positions can monitor and page operators. The datafillable keys, screen displays, and procedures involved are the same. CSE and SA positions can be monitored.

5.2.1 Monitoring an operator position

Monitoring an operator's calls to determine efficiency is part of managing the workforce. CSEs, service assistants, and in-charge managers can monitor individual operator progress. To monitor an operator, do the following:

1. Press the **{Withhld Calls}** softkey if the system is in an accept-calls state.
   Calls withheld is displayed in the service status field of the Operator Information window.

2. Press the **{Monitor Opr}** or **{Monitor Pos}** softkey.

3. Type the number of the operator or position to be monitored (for example, 113). To discontinue before pressing the **Start** key in the next step, press the **{Clear}** softkey.

4. Press **Start**.
   The CSE, SA, and IC windows are removed from the screen and all call information that appears on the operator position window also appears on the CSE, IC, or SA position window. The CSE, service assistant, or in-charge manager can hear the operator's and customer's conversation. The message Mon, which is datafillable text, appears on the CSE, SA, or IC window.

To stop monitoring, do one of the following:

* Press the **{Quit Mon}** softkey. This returns the position to the regular window.

* Unseat the headset. This puts the position into an unoccupied state.

The monitoring process does not stop if the operator logs out. The only way to drop the monitor connection is to stop monitoring the operator.

If the audible alarm is activated, the CSE, service assistant, or in-charge manager can press the **{Stop Bell}** softkey to terminate the audible alarm tone. If the in-charge manager is monitoring, the monitoring session is dropped.

Figure 38 shows the **{Quit Mon}** and **{Stop Bell}** softkeys.

Figure 38. Softkey set when monitoring

				Stop Bell			Quit Mon
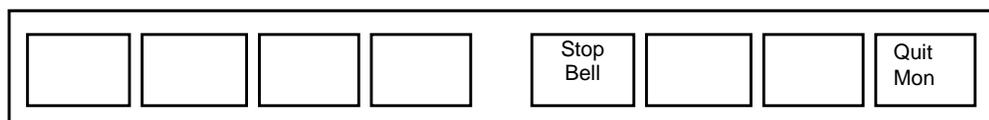
If a monitoring session is initiated while an operator is handling a call, the CSE, SA, or IC display might be incomplete.

When an operator or position is being monitored and the Call Information window is displayed, no monitored operator keystrokes are shown on the CSE, SA, or IC position display. Therefore, the monitoring CSE, service assistant, or in-charge manager does not see what keys are pressed by the monitored operator.

The CSE, SA, or IC position should be datafilled with a superset of the team services. The service text datafill in the TOPS IWS XSERVS.TBL file should be the same for each operator providing that service and also for the supervisor.

Position datafill, such as XCASTS.TBL and PCCCINFO.LNG, should contain the same datafill. Otherwise, when monitoring, the supervisor displays might not reflect what is presented to the monitored operator position and might experience keyboard functionality differences (for example, context change keys might be ignored).

The supervisor can use the functions, services, and outgoing trunk menu keys to look at menus while in a monitoring session. No other menu activity is allowed. That is, the supervisor can look at the Functions menu but cannot use it.

The CSE, SA, or IC position is normally used to monitor operators and positions; it cannot be monitored itself. However, if a monitored operator places a call to a supervisor who is not monitoring, the monitoring supervisor can hear the verbal exchange between the connected operator and the other supervisor.

5.2.2 Monitoring a DA operator position

A CSE or SA position can monitor a DA operator if the assistance service set includes DA. When a CSE or SA position with DA capability monitors a DA operator position, the DA service window might be shown on the CSE or SA position window. If the operator position receives an operator assistance call while being monitored, the CSE or SA position window is updated to reflect the arrival of the operator assistance call.

The CSE or SA position window is updated to reflect any changes on the Operator Position window as long as the changes on the window are requested by the DMS switch. Local window changes performed by the operator are not reflected on the CSE or SA position window.

For example, if a DA call is presented to the operator in the DA window, the DA window also displays at the SA position window. If the operator switches to the Operator Assistance window by pressing one of the context keys, the SA position window still displays the billing screen unless the CSE or in-charge manager presses a context change key to change to the Operator Assistance window locally.

If a CSE or SA position without DA capability monitors a DA operator position, only the Operator Assistance window displays on the CSE or SA position window, even if the operator receives a DA call while being monitored.

If a CSE or SA position with DA capability monitors an operator position with only operator assistance capability, only the Operator Assistance window displays on the CSE or SA position window.

5.2.3 Paging an operator position

All administrative positions can page a specific operator and request that the operator call back.

The operator position to be paged can be specified by position number or by operator number. The position number represents the location of the operator position in the traffic office position. The operator number represents the identity of the particular operator being paged, regardless of position location.

The following procedure describes how to page an operator from a CSE, IC, or SA position:

1. Press the **{Page Opr}** or **{Page Pos}** softkey.

2. Type the position or operator number (for example, 113). To discontinue before pressing the **Start** key in the next step, press the **{Clear}** softkey.

3. Press **Start**. The CSE, IC, or SA message area displays `Page OPR xxxx` or `Page POS xxxx`. This text string is datafillable.

When a CSE, IC, or SA position pages an operator position, the request is displayed on the Operator Position window and the operator answers by selecting Page Assistance from the Functions menu. A directed set call is a call made to a specific supervisory position.

If the CSE or SA position is in make-busy mode, the operator cannot call the position to answer the page.

To cancel a page, a supervisor does the following:

1. Press the **{Page Pos}** softkey.

2. Press either the **Start** key or the **{Page Opr}** softkey.

3. Press the **Start** key.

The operator position cannot page but can only respond to pages.

5.3 Initiating an outgoing call

The following procedure describes how to initiate an outgoing call from the CSE, IC, or SA position:

1. Press the **Fncts** key.

2. Type 1 (for loop 1) or 2 (for loop 2). (These numbers can be changed by datafill.)

3. Press **Start**. An idle loop is accessed.

4. Press the **Cld** key.

5. Type the called number.

6. Press **Start**. The outgoing call is initiated.

5.4 Billing

The CSE, service assistant, or in-charge manager cannot provide billing for calls. If billing is required for the call that the supervisor is handling and wishes to release, a manual billing ticket must be filled out by the supervisor.

5.5 Responding to the audible alarm (stop bell)

The audible alarm is an audible signal generated at the SA, IC, CSE, or FMCRT positions. Regarding FMCRT positions, note that the MP FMCRT supports audible alarms; the ANSI FMCRT rings a chime at the start of an alarm condition. Table 18 lists conditions that cause the audible alarm tone to sound, the positions at which the audible alarm sounds, and the accompanying message that displays.

Table 18. Conditions that generate an audible alarm

Condition	Position	Display
All Time and Charges positions are out-of-order	CSE and IC	`TAC POS OD`
Assistance request arrival	CSE, IC, or SA position at which the assistance request arrived	`Loop 1 Opr:` *xxxx* `Pos` *xxxx* or `Loop 2 Opr:` *xxxx* `Pos:` *xxxx* (at top of window)
Call in queue with no position occupied	CSE, IC, and SA	`QCQ`
CAlls in call-waiting state in TOPS	CSE, IC, and SA	`QCW`
Assistance request queued	CSE or IC	`ACW` *nn* (in MSA)
Calls deflected	CSE, IC (in a single-traffic office) and FMCRT	`QCD`
CAMA SUSPEND	CSE, IC, SA, FMCRT	`CAMA SUSPEND`
25% controlled traffic	CSE and IC	`25% QCT`
Call alerting in designated queue	CSE, IC, and SA	`QCA`

To silence the audible alarm at the CSE, SA, or IC position, press the **{Stop Bell}** softkey for the position where the audible alarm is being generated. However, if the situation is not handled promptly, the DMS switch can reactivate the audible alarm.

For the MP FMCRT, to silence the audible alarm, enter S. If the bell was caused by a calls-deflected condition, it ceases automatically when the queue length drops below the calls-deflected threshold. The tone returns when the threshold is passed again.

5.6 Handling assistance request queues

When general operators request assistance and no supervisors are available to answer them, these requests are queued. Up to 16 operator requests can be queued for assistance.

5.6.1 Queue depth

DMS table SAQSIZE allows operating companies to datafill the depth of the queue for assistance requests. The maximum allowable depth is 16. This table also allows the company to determine when the audible alarm should be activated. When the number of requests in queue exceeds the datafilled value, the audible alarm is activated. When the number of queued requests falls below this value, the audible alarm is deactivated.

If a team is not datafilled in this table, its queue size defaults to one. The audible alarm for that team is activated whenever assistance requests are in queue.

5.6.2 Cross-team routing

Parameter TOPS_CROSS_TEAM_ROUTING in DMS table OFCVAR controls whether an operator in one team can receive assistance from a supervisor in another team. This parameter applies to both general and directed requests.

When TOPS_CROSS_TEAM_ROUTING is set to Y:

- An operator can press the **OGT** key, type the menu option number, and press the **Start** key twice to connect with the first available supervisor. The search starts with the operator's team. Service assistants (or CSEs) are checked first, then the in-charge manager (or CSE). If no one is available, the search proceeds to the next team. This process is repeated until a supervisor is found. If none is found, the request is queued, and the queueing indication appears on the original team's CSE or IC position.

- An operator can press the **OGT** key, type the menu option number, press the **Start** key, type the assistance position number, and press the **Start** key to be connected to a particular CSE, service assistant, or in-charge manager in any team. If the CSE, service assistant, or in-charge manager is not available, the operator hears a busy tone. There is no queueing. The operator must release the call and try again.

- A supervisor can press the **OGT** key, type the menu option number, press the **Start** key, type the assistance position number, and press the **Start** key to be connected to a particular supervisor in any team. The same indicators apply for CSEs, service assistants, and in-charge managers.

When TOPS_CROSS_TEAM_ROUTING is set to N:

- An operator can press the **OGT** key, type the menu option number, and press the **Start** key twice to connect with the first available supervisor. The search starts with the operator's team. Service assistants (or CSEs) are checked first, then the in-charge manager (or CSE). If no available supervisor is found, the request is queued. The queueing indication appears on the CSE or IC position of the general operator's team. Supervisors becoming available in other teams do not get the queued request. It can be serviced only by a supervisor from the same team. The general operator cannot connect to a supervisor in another team.

- An operator can press the **OGT** key, type the menu option number, press the **Start** key, type the assistance position number, and press the **Start** key to be connected to a particular supervisor in that operator's team. The operator cannot connect to a supervisor in another team.

- A supervisor can press the **OGT** key, type the menu option number, press the **Start** key, type the assistance position number, and press the **Start** key to be connected to a particular supervisor in any team. Supervisors are not affected by parameter TOPS_CROSS_TEAM_ROUTING.

Operators cannot request assistance from supervisors in other DMS switches without dialing an outside number.

5.6.3 Queuing by request age

Parameter SA_QUEUEING_BY_REQUEST_AGE in DMS table TOPSPARM allows the operating company to queue assistance requests strictly by the age of the request. This parameter applies to general requests. When this office parameter is set to yes (Y), the DMS switch searches each team's request queue. It connects the oldest request in the entire switch to the next available CSE, SA, or IC position that has compatible service types.

5.7 Datafilling positions

A maximum of 126 CSE, SA, and IC positions can be datafilled in DMS table TOPSPOS. These 126 positions can be divided among teams, or up to 126 positions can be datafilled for a single team. (Only one of these can be an IC position, if used.) If a team is datafilled with 126 CSE, SA, and IC positions, then no other CSE, SA, and IC positions can be datafilled in any other teams.

5.8 Releasing calls to queue

When an operator requests assistance and is queued, the supervisor does not answer immediately. The on-hook icon for the called phone appears on the operator window to indicate that the request is in queue. If the operator is no longer needed, the operator can press the **Pos Rls** key to release the call into queue. At this time, the operator is released from the call and is free to handle the next call.

When the CSE, SA, or IC position is connected to the call, the position receives a message.

If the operator is no longer attached, the message on the CSE, SA, or IC position reads:

> Loop1: Rel by Opr:*number*

If the operator is still attached, the message reads:

> Loop1: Pos:*number1* Opr:*number2*

The CSE or IC display also shows how many calls are in queue and whether the queue is full. When supervisor requests are in queue, a display appears on the CSE or IC window, indicating that requests are queued. The CSE or in-charge manager can become available to assist or can note that more supervisors are required during that particular time of day. When operators are queued, the display ACW *nn* appears (where *nn* is the number of operators in queue). When the queue is full, the display ACW nn changes to ACW FULL.

5.9 Handling out-of-service positions

When moving a CSE, SA, or IC position from one outlet jack to another, first remove the position from service. At the TTY, enter O, followed by the position number of the CSE, SA, or IC position.

When all requested CSE or SA positions have been removed from service, No Asst Pos displays on the other CSE or IC position window.

To place a CSE, SA, or IC position back in service, enter I and the position number of the position at the TTY.

To query the status of CSE, SA, or IC positions, enter O.

5.10 Restoring communication with the DMS switch

Either of the following events shows that a CSE, SA, or IC position has lost contact with the DMS switch:

- There is no response to keystrokes.

- A call-arrival tone sounds but there is no window update.

In such a situation, selecting Call Details in the Functions menu refreshes the window and re-establishes the call.

5.11 Headset requirements

The volume control keys allow an operator to raise and lower the volume of the headset audio by as much as 16 dB above or below the initial default level. Each keypress raises or lowers the volume incrementally by a size determined through datafill in the AUDIOINI.INI file.

The volume control keys must be included in the IWS keyboard datafill file. By default, the key combinations **Shift** + **Pg Fwd** and **Shift** + **Pg Bwd** raise and lower the volume.

When an IWS position is initialized, its headset volume reverts to a predetermined default level, which is the starting point for the operator's volume adjustments. On all positions, this default is initially set a 0 dB. The service provider, however, can reset the default to any level within the company's specified volume adjustment range. If the default setting is changed, then at initialization the position reverts to the new volume level rather than to 0 dB, and the operator's subsequent volume adjustments are applied to that new default level.

If the operator logging in is the same one who last logged off, the position does not return to the default volume level, but instead retains that person's volume adjustments.

For information on changing the default setting and on the relationship between volume range limits and volume adjustments, refer to *TOPS IWS Audio Card Configuration and Diagnostics,* 297-2251-010.

6.0 TTY reports and commands

This chapter describes the commands entered at the QFADS and QTADS TTYs, as well as the reports generated by these TTYs. The TTYs referred to in this chapter are defined in Chapter 2.0, "Workforce office configurations," on page 19.

Table 19 lists QMS functions and the commands that control them.

Table 19. QMS functions and commands

Function	Command
Operator feedback system	FD, FI, FZ
Operator study data system	RA, RR, RQ, RD, RT
Broadcast message	B, BX, BE
Password administration	WP, WI, WD, WA, WR
Position control	O, I
Information on operators	L, P
Silence audible alarm tone	S
Report call queue conditions	CD, CW, CQ

In this chapter, an input prompt (>) indicates that the subsequent information is a command. Capital letters represent commands and fixed parameters (constants). At the TTY, enter this information exactly as it appears on the page. Lowercase italic letters represent variables. Enter the information that the variable represents. Type the command and any parameters and press the **Enter** key. When any part of a command is not accepted by the system, a question mark (?) is printed at the TTY on which the command was issued, and no action is taken.

Some commands are not available on a particular TTY type. For example, a command can be available at a QFADS TTY but not at a QTADS TTY. Such restrictions are indicated in the command description. These restrictions are based on the office configuration in use. Table 20 provides a list of the TTY devices and the commands they accept.

Table 20. QMS device to command cross-reference

Device	Commands it accepts
QTADS	FD, FI, FZ, RA, RR, RQ, RD, B, BX, BE, WP, WI, WD, WA, O, I, L, P, CW, CD, CQ
QFADS	RT, B, BX, BE, WP, WR, S, CW, CD, CQ

6.1 QMS reports

TOPS QMS generates FM reports that are printed at the QFADS and QTADS devices, as follows:

- The QFADS report pegs data about traffic offices, teams, queues, services, and call classes. The QFADS report (except for traffic office data) prints data that is summed over all traffic offices.

- The QTADS report pegs data about queues, services, and call classes. The QTADS report prints only data accumulated by operators in the team to which that QTADS device belongs.

QMS reports on the first 32 queues only. However, QMS can print up to 255 queue records, if it is used with an external vendor's management information system (MIS) report package.

The number of queue records printed in both the QFADS and QTADS reports equals the value of parameter QMSFM_NUM_QUEUES in DMS table OFCENG. The number of service records printed in both the QFADS and QTADS reports equals the value parameter QMSFM_NUM_SERVICES. The system limits the number of service records printed to 16.

QMS can provide reports at 15-minute, 30-minute, 6-hour, and 24-hour intervals. In parameter QMSFM_REPORT_INTERVALS in DMS table TQMSOPTS, you can specify that the QFADS and QTADS devises print any or all of these reports. You can specify any combination of 15-minute, 30-minute, 6-hour, and 24-hour intervals. You can also specify NONE or ALL of the reports intervals. The *Translations Guide* explains how to datafill DMS table TQMSOPTS. All QMS reports have the same format. The header shows the time interval.

QFADS and QTADS reports are generated automatically and should print within 15 minutes. If a report requires too much time, the QFADS or QTADS prints a message to indicate that you should reduce the number of queues.

6.1.1 Character counts
Table 21 specifies the number of characters in each part of the QFADS and QTADS reports.

Table 21. Character counts

Report section	Number of characters
Traffic office report heading	73
Traffic office record	73
By-system queue report heading	59
By-system queue record (containing CW and ANS)	59
Service report heading	31
Service	31

Table 21. Character counts (Continued)

Report section	Number of characters
FM call class report heading	49
FM call class record	49

6.1.2 QFADS printed report

The QFADS reports data about traffic offices, teams, queues, services, and call classes. The queues, services, and call classes data is summed over all traffic offices. Figure 39 shows an example of a six-hour QFADS report. All time measurements are reported in seconds.

Figure 39. Sample QFADS report

```
>QFADS FM6  HR 00:00:00 - 6:00:00 98/11/03

QMS TEAMS



            IPS     RPS     TPS     CBWV    NCWV    IDLT    AWT    AOP %OCC
SYST          0       0       0       0       0       0  0.0    0.0     0

TO  2         0       0       0       0       0       0  0.0    0.0     0
TO  4         0       0       0       0       0       0  0.0    0.0     0
TO  6         0       0       0       0       0       0  0.0    0.0     0

QMS QUEUES


            IPS     RPS     TPS     CBWV    AWT      CW     ANS
CQ  0         0       0       0       0  0.0       0     0.0
CQ  1         0       0       0       0  0.0       0     0.0
CQ  2         0       0       0       0  0.0       0     0.0

QMS SERVICES


           SI     SWV    SAWT
SRV  0      0       0     0.0
SRV  1      0       0     0.0
SRV  2      0       0     0.0

QMS CALL CLASSES


            IPS     RPS     TPS     CBWV    AWT
CLAS_REFND    0       0       0       0  0.0
REST_REFND    0       0       0       0  0.0
CLDT_REFND    0       0       0       0  0.0

>
```

6.1.3 QTADS printed report

The QTADS reports data about queues, services, and call classes. The QTADS TTY prints statistics compiled over the last report period by operators in the team to which that QTADS device belongs.

The QTADS report does the following:

- Sorts data by queue, service, and FM call class
- Prints one line of system totals and one line of team totals for IPS, RPS, TPS, CBWV, NCWV, IDLT, AOP, and %OCC.
- Prints totals for each call queue, service, and FM call class included in the QTADS reports.

System totals are printed directly above the team totals.

Figures 40 and 41 show parts one and two of a sample 15-minute QTADS report. All time measurements are reported in seconds.

Figure 40. Sample QTADS report, part 1

```
QTADS FM15 MIN 00:00:00 - 00:15:00 98/11/03

QMS TEAMS
          IPS    RPS    TPS    CBWV    NCWV    IDLT    AWT    AOP    %OCC
   SYST   618    224    80     19695   1700    2200    21.4   26.2   90

TO 1

QMS
          IPS    RPS    TPS    CBWV    AWT     CW     ANS
   CQ4    160    112    40     11509   13.6    265    0.8
   CQ5     40      0    20      2400   20.0     39    0.7
   CQ6    234     50     0      1223   10.8    355    1.2
   CQ7    126     46    18      2689   15.2    190    1.0


TO1
          IPS    RPS    TPS    CBWV    AWT
   CQ4    156      0     4      4219   26.3
   CQ5     40      0     0      1398   34.9
   CQ6    114      1     0      2238   19.4
   CQ7      0     46     0       629   13.7


QMS SERVICES
          SI     SWV    SAWT
   SRV 0  463    7037   15.2
   SRV 1  318    6868   21.6
   SRV 2

TO1 SERVICES
          SI     SWV    SAWT
   SRV 0  120    3490   29.1
   SRV 1  276    7292   24.6
   SRV 2
```

Figure 41. Sample QTADS report, part 2

```
QMS CALL CLASS-

             IPS     RPS     TPS    CBWV     AWT
UNDEFINED      0       0       0       0     0.0
DELAY         76       0       0     605     8.0
COIN_RECALL    0     112       0    1589    14.1
DA_RECALL      0     112       0    1952    17.4
CAMA          40       0       0     200     5.0
OVERSEAS      14       0      10    2000    83.3
NCN-0MINUS   138       0      44    4256    23.4
CN-0-1PLUS    58       0       4    1362    22.0
NCN-0PLUS    144       0      12    3562    22.8
CN-0MINUS     90       0      10    3162    31.6
INWARDS       44       0       0     367     8.3
DA            70       0       0     640     9.1


TO1 CALL CLASS-

             IPS     RPS     TPS    CBWV     AWT
UNDEFINED      0       0       0       0     0.0
DELAY         20       0       0     257    12.8
COIN_RECALL    0      40       0     689    17.2
DA_RECALL      0       0       0       0     0.0
CAMA          24       0       0     101     4.2
OVERSEAS      14       0      10    2000    66.7
NCN-0MINUS    54       0      22    1857    24.4
CN-0-1PLUS    34       0       4     765    20.1
NCN-0PLUS    102       0       6    2361    21.9
CN-0MINUS     68       0       6    2248    30.4
```

6.2 QMS MIS interface

QMS FM devices, report formats, and data are fixed for all offices. A TOPS office can customize its FM system, however, through the QMS MIS interface and an external vendor's FM software. For example, an office can use the QMS MIS interface to generate graphical reports, generate reports on a flexible basis, or create new types of FM devices.

Real-time and periodic reports are calculated from the same set of base queue and operator events. With the QMS MIS interface, however, the DMS switch gives an external vendor the appropriate information about these base events, continuously and within a few seconds of the event. The external vendor can then choose, based on the event information, which real-time statistics and periodic reports to generate.

This interface sends queue and position event information to an outside device through a high-speed datalink within a datafillable time after the event occurs. The external device then decides what real-time calculations to make, what data to use for periodic reports, what kind of output devices receive real-time and periodic reports, and how these reports are formatted and displayed.

The external device controls the display and collation of FM data. The DMS switch off-loads to the outside MIS the responsibility for calculating and maintaining reports and statistics, outputting to various devices, and formatting and displaying reports. It provides only the event information that the MIS needs to generate reports.

By sending event messages, the external MIS system can break down information to a finer level of detail. For example, the MIS can monitor:

- individual operators over a wide range of detailed criteria, including the AWT for each FM call type or operator

- performance, in detail, of each individual queue, including the AWT of calls from the queue, the average answer time of calls in the queue, and the number of calls in queue at any one time

- performance of up to 2047 detailed call types

- disposition of calls released from an operator (for example, whether a call was transferred to automated alternate billing service or to some other feature)

- billing class of calls serviced by an operator

The MIS can also produce reports on the traffic originating from a specific geographical area, based on incoming trunk group.

With QMS MIS and call queue assignment processing, the MIS can provide statistics for each new possible service provided by TOPS by changing datafill. QMS MIS requires no changes to DMS software to quickly manipulate data into any kind of format, report, graph, or chart. With QMS MIS, the operating company can implement a wide variety of display terminals, printers, and computers that can collect and display data with minimal DMS switch interaction. For example, a TOPS office can have separate devices for reporting on operators, queues, teams, and services, without new development on the DMS switch side.

6.3 QMS TTY commands

The commands discussed in this section are grouped according to their function, as follows:

- operator feedback system

- operator study data system

- broadcast messages

- password administration

- position control

- operators information

- audible alarm tone silencing

- call queue conditions report

6.3.1 Operator feedback system commands

The online individual operator feedback provides the raw total of the number of position seizures and the AWT of any operator. There are two software registers for each operator, as follows:

- One register pegs the number of position seizures (PS) accumulated by the operator.

- The other register pegs the amount of CBWV generated by each operator.

Operators can display their accumulated PS and AWT (calculated from their accumulated CBWV) at their terminal. They can also print that information at the QTADS.

Parameter QMSFM_BASIC in DMS table TQMSOPT enables or disables the collection and reporting of TOPS QMS basic statistics.

When this parameter is set to N, the following occurs:

- The DMS switch does not generate reports at QMFADS, QFADS, or QTADS devices.

- The DMS switch does not update real-time QMS information on the FMCRT, IC, or SA positions.

- Operator feedback statistics are frozen.

- The operator feedback, operator study register, operator information, and queue condition commands are disabled.

Setting QMSFM_BASIC to N saves CPU time that would have been spent collecting, collating, and reporting system data.

When QMSFM_BASIC is set to Y (the default), the DMS switch generates real-time displays and reports and enables QMS FM commands.

The traffic office manager can enter commands at the QTADS TTY to print the operator feedback data and allow the operator to zero the content of the registers. If the parameter QMSFM_DISPLAY_AWT in DMS table TQMSOPT is set to Y, the system AWT can be displayed and printed along with the operator statistics. The system AWT for both display and print as the system AWT for the prior reporting period.

The TTY commands listed in Table 22 are used to administer the operator feedback system.

Table 22. TTY commands

Command	Purpose
FD	Prints the feedback data for a specific operator
FI	Prevents an operator from zeroing out the feedback registers
FZ	Restores the operator's ability to zero out the feedback registers

6.3.1.1 FD command

Operator feedback data can be printed by entering the FD command, along with an operator number, at a QTADS device. The system responds by printing the following:

- operator number

- date and time

- operator's number of position seizures

- operator's AWT (calculated from the number of position seizures and the amount of CBWV accumulated by the operator and stored by the DMS switch)

The display of the system AWT is controlled by parameter QMSFM_DISPLAY_AWT in DMS table TQMSOPT. This is the AWT from the prior reporting period. Printed operator and system AWT are provided to an extra decimal point of accuracy over that displayed at an operator's terminal, where the values are rounded.

To print feedback data about an operator, enter the following command at a QTADS TTY:

```
>FD operator_number
```

For example:

```
>FD319
```

The TTY responds in the following way:

```
OPR # 319 98/10/24 14:37

PS   672
AWT   27.8
SYS   28.3
```

6.3.1.2 FI command

The team administrator can use the FI command to prevent operators from zeroing feedback registers from the operator position.

To prevent an operator from zeroing out the feedback data, enter the following command at a QTADS TTY:

```
>FI operator_number
```

For example:

```
>FI272
```

The TTY responds in the following way:

```
F OK
```

If parameter QMSFM_ZERO_FB_REG in DMS table TQMSOPT is set to N, zeroing of all QMS operator registers is disabled, as are the FI and FZ QTADS commands.

6.3.1.3 FZ command

The team administrator can use the FZ command to allow operators to zero feedback registers from the operator position.

To allow an operator to zero out the feedback data, enter the following command at a QTADS TTY:

```
>FZ operator_number
```

For example:

```
>FZ272
```

The TTY responds in the following way:

```
F OK
```

If parameter QMSFM_ZERO_FB_REG in DMS table TQMSOPT is set to N, zeroing of all QMS operator registers is disabled, as are the FI and FZ QTADS commands.

6.3.2 Operator study data system commands

The operator study data system collects data on the total number of position seizures and amount of work volume generated by an operator, segregated by the FM call classes found in table TQCLSNAM. Study registers are not automatically allocated to each operator; they are assigned to operators through a command at the QTADS device. The DMS switch can allocate up to 450 study registers. The number of study registers allocated is determined by parameter QMSFM_NUM_STUDY_REG in table OFCENG. The operator feedback system applies only to general operator IDs. It does not apply to the SA or IC positions.

The TTY commands in Table 23 are used to administer operator study data.

Table 23. Operator study data system commands

Command	Purpose
RA	Assigns an operator number to the operator study data system
RR	Releases the study register assigned to an operator number
RT	Releases all study data registers assigned to a given traffic office team
RQ	Lists the operator numbers assigned to a study register. Also, at the QFADS TTY, this command prints the number of study data registers assigned to each traffic office.
RD	Prints an operator's accumulated study data

6.3.2.1 RA command

The RA command is used to assign an operator number to the operator study data system.

To assign an operator to the study data system, enter the following command at a QTADS TTY:

```
>RA operator_number
```

For example:

```
>RA229
```

The TTY responds in the following way:

```
R OK assigned available
```

where

assigned is the number of registers assigned to operators in the team, and *available* is the number of registers that are available for assignment to operators.If no study registers are available to assign to the operator, the system response is NO ST REG. The display messages are datafillable on the TOPS IWS.

The DMS begins accumulating study data for operator 299. The characters ST are displayed at the operator's terminal unless the parameter QMSFM_DISPLAY_ST in DMS table TQMSOPT is set to N. For example, suppose that a total of 100 study registers are allocated in the switch, four of them are in use by team 2, and 20 are in use by other teams. The RA command is used at team 2's QTADS to assign a register to an operator in that team.

Without enhancements, the response is:

```
R OK
0000000000011111111112222222222233333333333
0123456789012345678901234567890123456789
```

With enhancements, the response is:

```
R OK    5   75
0000000000011111111112222222222233333333333
0123456789012345678901234567890123456789
```

Therefore, after the request was executed, team 2 had five study registers assigned. 75 study registers were available for assignment.

The characters ST are displayed at the operator's terminal unless parameter QMSFM_DISPLAY_ST in DMS table TQMSOPT is set to N. If no study registers are available to assign to the operator, the system response is NO ST REG.

Service assistants and IC managers receive alarm messages at their positions when no study registers are available for assignment, but CSEs do not. The enhancement to the RA command that is shown here modifies the QTADS response to give the force manager ongoing information about the number of assigned and available study registers.

The enhancement can be disabled by parameter TOPS06_DEVICE_ENHANCEMENTS in table TOPSPARM. This parameter has the value Y by default, meaning the enhancement is enabled.

6.3.2.2 RR command

The RR command releases the study register assigned to an operator number. When the RR command is issued, the system releases the study register associated with the specified operator number and prints the study data accumulated up to that point. The printed data shows operator number, date and time, and a breakdown of the number of position seizures and AWT by FM call class. The system also totals the position seizures and averages AWTs over all QMS force management call classes.

When the RR command is issued, data ceases to be accumulated for the given operator number, and the study register becomes available for reassignment.

To release a study register, enter the following command at a QTADS TTY:

>RR *operator_number*

For example:

>RR333

The TTY responds in the following way:

```
TO STUDY OPR 333 00/10/17 15:09


QMS CALL CLASS        PS      AWT     SYST
TOTAL                 675     39.1    39.0


UNDEFINED             0       0.0     0.0
DELAY                 0       0.0     0.0
COIN RECALLS          28      42.5    45.5
CAMA                  55      9.1     8.7
NCN-0MINUS            160     48.3    44.6
NCN-0PLUS             234     38.2    38.2
CN-0MINUS             38      56.8    58.3
CN-0PLUS              45      49.4    47.2
CN-1PLUS              92      45.7    46.3
HOTEL                 23      22.4    23.9
```

The system AWT is printed only if parameter QMSFM_DISPLAY_AWT in DMS table TQMSOPT is set to Y. The system AWT values are those for the prior reporting period.

6.3.2.3 RT command

The RT command releases all of the study registers assigned to a particular traffic office team. When the RT command is issued, all study registers assigned to the given team are immediately released and available for reassignment.

The RT command can be used to release study registers only when no operator positions are logged on. This command is normally used if a traffic office has been shut down. If the RT command is issued and positions are logged in, the system responds with a question mark and takes no action.

To release all the study registers, enter the following command at the QFADS TTY:

>RT *team_number*

For example:

>RT3

The TTY responds in the following way:

```
RT 3 OK
```

6.3.2.4 RQ command

The RQ command prints a list of the operators assigned to study registers within the team and the total number of study registers available for assignment (defined in parameter QMSFM_NUM_STUDY_REG in table OFCENG) and the number of study register in use by each traffic office.

The number of registers available for assignment is an enhancement that can be disabled by parameter TOPS06_DEVICE_ENHANCEMENTS in table TOPSPARM. This parameter has the Y value by default, meaning the enhancement is enabled.

To list all the operator numbers assigned to the operator study data system in one traffic office, enter the following command at the QTADS TTY:

```
>RQ
```

Without enhancements, the TTY responds in the following way:

```
00000000001111111111222222222233333333333
01234567890123456789012345678901234567890123456789
TO 2      5

 289
 571
  92
1133
 311
00000000001111111111222222222233333333333
01234567890123456789012345678901234567890123456789
```

With enhancements, the TTY responds in the following way:

```
00000000001111111111222222222233333333333
01234567890123456789012345678901234567890123456789
TO 2      5      75

 289
 571
  92
1133
 311
00000000001111111111222222222233333333333
01234567890123456789012345678901234567890123456789
```

In these examples, 2 is the team (or traffic office) number, 5 is the number of study registers currently assigned to operators in team 2, and 75 is the number of study registers available for assignment. The list of numbers is the operator IDs in team 2 that have study registers assigned.

6.3.2.5 RD command

The RD command prints an operator's accumulated study data, which includes operator number, date, time, the number of position seizures and the AWT accumulated by the operator's study register, segregated by QMS force management call class. It also prints a total number of position seizures and average AWT over all the QMS force management call classes, the operator number, the time, and the date.

The parameter QMSFM_DUMP_STUDY_REG in DMS table TQMSOPT controls what is printed when an operator assigned to a study register presses the **{Print Stats}** softkey. If this parameter is set to Y, pressing the **{Print Stats}** key prints the operator's study data. If it is set to N, pressing this key prints the operator's feedback data.

The display of system AWT is controlled by the parameter QMSFM_DISPLAY_AWT in DMS table TQMSOPT. System AWT is displayed for the prior reporting period.

To print an operator's accumulated study data, enter the following command at the QTADS TTY:

>RD *operator_number*

For example:

RD293

The TTY responds in the following way:

```
TO STUDY OPR #  293 00/12/5  18:37


QMS CALL CLASS          PS      AWT     SYST
TOTAL                   744     32.8    32.9


UNDEFINED               0       0       0
DELAY                   0       0       0
COIN RECALLS            56      34.1    35.7
CAMA                    75      9.2     8.9
NCN-0MINUS              163     36.4    37.1
NCN-0PLUS               172     33.2    30.8
CN-0MINUS               74      45.1    44.9
CN-0PLUS                80      40.5    40.9
CN-1PLUS                102     37.3    38.0
HOTEL                   22      27.0    27.0
```

6.3.3 Broadcast messages

Broadcast messages allow managers to transmit important information to operators quickly and efficiently. These messages typically concern network conditions. From them, operators get the information they need to protect the network against overloads and ineffective attempts, and to use their time effectively during periods of network congestion.

A message of up to 60 characters or spaces can be entered at the TTY keyboard of a QFADS or a QTADS, transmitted to QMS positions, and then erased from the positions. The broadcast TTY commands are defined in Table 24.

Table 24. Broadcast message command

Command	Purpose
B	Allows the manager to enter and print the message to be sent, verifying that it was entered correctly
BX	Transmits the broadcast message to all operator and administrative position screens
BE	Erases the broadcast message from all operator and administrative position screens

A broadcast message sent from the QFADS TTY overwrites any message already transmitted from the QTADS TTY and remains until it is erased at the QFADS TTY.

6.3.3.1 B command

The B command allows the manager to enter a broadcast message at the TTY and have it echoed back to verify accuracy before sending it to all operators and administrators.

A broadcast message of up to 60 characters or spaces can be entered at the TTY keyboard.

The system response echoes the message entered. This allows the manager to reenter the message if necessary. If corrections are required, the message must be re-entered, starting with the B command. Re-entering the message overwrites the previous entry.

To enter a broadcast message, enter the following command at the QTADS or QFADS TTY:

```
>B broadcast_message
```

For example:

```
>BLIDB DATABASE IS DOWN
```

The TTY responds in the following way:

```
LIDB DATABASE IS DOWN
```

Broadcast messages entered at a QFADS devise are stored in DMS memory but not sent out to operators until the transmit command (BX) is entered; these messages are sent to all positions. Broadcast messages entered at a QTADS device are stored in the broadcast message area of that traffic office; these messages are sent to positions in that traffic office only.

6.3.3.2 BX command

The BX command transmits the broadcast message stored in the system broadcast message area to all of the occupied positions on the DMS switch. When this command is issued, the broadcast message displays immediately on the administration positions. The broadcast message displays on the operator positions when the operator receives a call or selects Make Busy from the functions menu. Broadcast messages are not displayed at unoccupied operator positions.

To send a broadcast message, enter the following command at the QFADS or QTADS TTY:

```
>BX
```

The TTY responds in the following way:

```
BX OK
```

Entering BX at a QTADS device transmits the broadcast message stored in the particular traffic office's broadcast message area to all of the occupied positions within that traffic office and to the IC and SA positions.

Broadcast messages from a QFADS are also displayed immediately at the FMCRT. The FMCRT broadcast message display area is shared by QFADS and FADS broadcasts. If only the QFADS is broadcasting a message, that message is displayed at the FMCRT. The same is true for a FADS-only broadcast. If both are broadcasting a message, only the more recent broadcast message is displayed.

6.3.3.3 BE command

The BE command erases broadcast messages from operator positions after the make-busy function is toggled or upon call arrival. Broadcast messages are erased from administrative positions as soon as the BE command is entered.

To erase a broadcast message, enter the following command at a QFADS or QTADS TTY:

```
>BE
```

The TTY responds in the following way:

```
BE OK
```

6.3.4 Password administration

There are two types of passwords: one associated with a device and one associated with an operator. Password administration commands are available only when parameter QMSFM_PASSWORD_ENABLE in DMS table TQMSOPT is set to Y. The device password must precede any of the W commands entered at a QTADS or QFADS TTY.

Passwords are administered using the TTY commands defined in Table 25.

Table 25. Password administration commands

Command	Purpose
WP	Changes the password associated with a device
WI	Resets an operator password
WR	Resets a device password to its initial value (on QFADS TTY only)
WD	Disables operator logon
WA	Enables operator logon

The password for the QFADS device can be reset to TOPS by entering QMSPW followed by a carriage return at a MAP (maintenance and administration position) terminal.

6.3.4.1 WP command

The WP command changes the password associated with the device on which the command is entered. If this is the first time that the password is being changed, the initial password is TOPS.

To change a device password, enter the following command at a QTADS or QFADS TTY:

```
>WP current_password new_password
```

The current password field must be separated from both the WP and the new password by exactly one space.

For example:

```
>WP TOPS DEVPW
```

The TTY responds in the following way:

```
WP OK
```

This changes the password necessary for using password administration at that TTY.

6.3.4.2 WI command

The WI command resets the password of the specified operator to the initial value, TOPS.

To reset an operator password, enter the following command at the QFADS or QTADS TTY:

```
>WI device_password operator_number
```

For example:

```
>WI DEVPW 12
```

The TTY responds in the following way

```
WI OK
```

6.3.4.3 WR command

The WR command resets a team password.

This command can be issued only from the QFADS TTY. To reset a team password, enter the following command at the QFADS TTY:

```
>WR device_password team_number
```

For example:

```
>WR DEVPW 19
```

The TTY responds in the following way:

```
WR OK
```

This resets the QTADS password for that team.

6.3.4.4 WD command

The WD command disables an operator number and, therefore, the password. This prevents an operator from using that password to log on to any positions in the office.

There are three ways to use the WD command. The office manager can specify that a particular operator number be disabled, that all operator numbers for a given traffic office be disabled (multi-traffic configuration only), or that unused operator numbers be disabled system-wide.

To disable operator numbers, enter the following command at the QFADS or QTADS TTY:

```
>WD password option
```

where:

option is one of the following:

operator number	disables a given operator number
*	disables all operator numbers in the traffic office (multi-traffic office configuration only)

For example:

```
>WD DEVPW 121
```

or

```
>WD DEVPW *
```

In either case, the TTY responds in the following way:

```
WD OK
```

When the WD command is entered at a QTADS TTY with an asterisk (*) as the parameter, all operators in the team are disabled from logging in. When the WD command is entered at a QFADS TTY with * as the parameter, all operators datafilled for the entire DMS switch are disabled from logging in.

6.3.4.5 WA command

The WA command allows operator numbers that have previously been disabled to be enabled again. To enable operator numbers, enter the following command at the QFADS or QTADS TTY:

>WA *password option*

where:

option is one of the following:

operator number	enables a given operator number
*	enables all operator numbers in the traffic office (multi-traffic office configuration only)

For example

<WA DEVPW 121

or

>WA DEVPW *

In either case, the TTY responds in the following way:

WA OK

6.3.4.6 QMSPW CI command

The password for the QFADS device can be reset to TOPS by entering QMSPW followed by a carriage return at a MAP terminal.

To reset the QFADS device password to TOPS, enter the following command at the CI level of a MAP:

>QMSPW

The MAP responds in the following way:

QFADS PASSWORD RESET

6.3.5 Position control commands

 SA and IC positions can be removed from and returned to service by issuing the O or I command from a QTADS TTY. These commands affect only SA and IC positions within the same traffic office as the QTADS administrator. The O command can also print a list of all out-of-service SA and IC positions.

Table 26 lists the TTY position control commands.

Table 26. Position control commands

Command	Purpose
O	Removes an IC or SA position from service or lists out-of-service SA and IC positions
I	Returns an IC or SA position to service

6.3.5.1 O command

To remove an SA or IC position from service, enter the following command at a QTADS TTY:

```
>O position_number
```

For example:

```
>O111
```

If the position number is for an SA position, the TTY responds in the following way:

```
POS #111 OFF ASS
```

If the position number is for an IC position, the TTY responds in the following way:

```
POS #111 OFF IC
```

To print a list of all out-of-service SA and IC positions within the team, enter the following command at a QTADS TTY:

```
>O
```

The TTY responds in the following way, for example:

```
OS POS
POS #112 OFF ASST
POS #120 OFF IC
```

6.3.5.2 I command

To return an SA or IC position to service, enter the following command at a QTADS TTY:

```
>I position_number
```

For example:

```
>I123
```

If the position number is for an SA position, the TTY responds in the following way:

```
POS #123 ON ASST
```

If the position number is for an IC position, the TTY responds in the following way:

```
POS #123 ON IC
```

6.3.6 Information about operators

Table 27 shows the commands used to solicit information from the DMS switch.

Table 27. Information about operators

Command	Purpose
L	Prints a list of all operators and SA positions logged on
P	Prints a list of the status of all QMS positions

6.3.6.1 L command

The L command creates a listing of all operators currently logged on. The system lists their operator numbers (OPR), the position numbers they are logged into, the QMS call queue profile number or QMS controlled traffic profile number, and the QMS service profile index. To create a listing of operators currently logged on, enter the following command at a QTADS TTY:

```
        >L
```

The TTY responds in the following way (for example):

```
    OPR    POS     CQPROF     CTPROF     SRVPROP
    114   21      2                      1
    90    108     13                     2
    283   186                3           1
    925   145     7                      1
```

6.3.6.2 P command

The P command lists the current status of the QMS positions. The system response lists the number of positions in each condition. The overall system status is printed, as well as the individual traffic office statistics for the status displays shown in Table 28.

Table 28. P Commands

Display	Definition
OC	Occupied positions (headset seated), excluding those in maintenance-busy mode
MB	Occupied positions that are in the make-busy mode
OD	Positions that are not in-service
CT	Occupied positions that are in controlled traffic mode
UCP	Unoccupied positions with a call at position and some parties off-hook
UCD	Unoccupied positions with a call at position and all parties o- hook
ACS	Positions at which the operator accessed a loop without a call in progress

To print a report on the current status of operator positions, enter the following command at the QFADS TTY:

```
>P
```

The TTY responds in the following way (for example):

```
QMS POS
```

	OC	MB	OD	CT	UCP	UCD	ACS
SYST	87	14	5	3	2	1	2
TO1	29	5	2	0	0	0	0
TO2	31	4	0	2	1	0	1
TO3	12	3	1	0	1	1	0
TO6	15	2	2	1	0	0	1

Because data is printed only for teams datafilled as QMS in table TEAMACD, team numbers are not necessarily printed in numerical order.

6.3.7 Silence audible alarm tone command

A audible alarm tone sounds at a QFADS position when one of a number of critical system events occurs. Entering the S command at a QFADS TTY silences the audible alarm at that position command. To silence the audible alarm tone at a QFADS TTY, enter the following command at that QFADS TTY:

```
>S
```

It is not necessary to press the **Enter** key.

The TTY responds in the following way:

```
>
```

That is, the system silences the audible alarm but does not display or print anything.

6.3.8 QMS call queue report commands
Force managers should be aware when three special queue conditions occur:

- calls deflecting (QCD)

- calls waiting (QCW)

- calls in queue without operator (QCQ)

- calls in designated alerting queue (QCA)

Every ten seconds, the DMS switch updates which queues have calls deflecting, calls waiting, or calls queued without an operator, as shown in Table 29.

Table 29. QMS call queue report commands

Command	Purpose
CD	Lists queues that are deflecting calls
CWI	List queues that have calls waiting
CQ	Lists queues that have calls in queue without an operator or clears the condition
CA	Lists designated alerting queues

6.3.8.1 CD command

A force manager can determine which call queues are deflecting calls by entering the CD command at a QFADS or QTADS TTY. The system replies by printing the date, the time, and the call queues that are deflecting calls.

To print the call queues that are deflecting calls, enter the following command at a QFADS or QTADS TTY:

```
>CD
```

The TTY responds in the following way, for example:

```
QMS QUEUES  98/11/23  3:34:07

CQ1
CQ11
```

6.3.8.2 CW command

A force manager can determine which call queues have calls waiting by entering the CW command at a QFADS or QTADS TTY. The system replies by printing the date, the time, and the call queues that have calls waiting.

To print the call queues that have calls waiting, enter the following command at a QFADS or QTADS TTY:

```
>CW
```

The TTY responds in the following way, for example:

```
QMS QUEUES  98/11/18  21:34:56

CQ7
CQ12
```

6.3.8.3 CQ command

A force manager can determine which call queues have the QCQ condition by entering the CQ command at a QFADS or QTADS TTY. The system replies by printing the date, the time, and the call queues that have calls but no operators assigned.

The QCQ condition is automatically cleared when an operator is assigned to a call in that call queue. After a call queue is cleared, it is no longer displayed when the CQ command is issued, unless another call arrives in that call queue and no operator is assigned to the call.

To print the call queues that have the QCQ condition, enter the following command at a QFADS or QTADS TTY:

```
>CQ
```

The TTY responds in the following way, for example:

```
QMS QUEUES  98/11/18  21:34:56

CQ4
CQ8
```

Entering a call queue number with the CQ command allows the force manager to clear the QCQ condition manually. If another call arrives in the call queue and no operator is assigned to the call, the call queue reverts back to the QCQ condition.

To clear the QCQ condition manually, enter the following command at a QFADS or QTADS TTY:

```
>CQ call queue number
```

For example:

```
>CQ26
```

The TTY responds in the following way:

```
CQ26          OK
```

7.0 How the DMS switch distributes calls

This chapter explains how the DMS switch distributes calls to operator positions. Features that affect call distribution are also identified.

7.1 QMS call distribution

The TOPS call-processing application performs the following functions associated with queueing TOPS positions and calls:

- defining and undefining positions to the QMS call and agent manager (CAM)
- making positions available and unavailable
- assigning a call queue to each call that arrives at TOPS
- requesting and canceling positions

When an operator logs in at a position, TOPS defines that position to the CAM. Defining the position tells the CAM which call queues the position can serve while that operator is logged in. It also identifies the queue to which the position belongs when it is idle. Call processing also undefines positions from the CAM during operator logout. This tells the CAM to cancel any data associated with the position.

Call processing tells the CAM whether a position is available or unavailable to accept calls. An available position becomes unavailable to serve calls when an operator selects Make Busy from the Functions menu or when a call arrives at the position. An unavailable position becomes available when an operator selects Make Busy from the Functions menu or when an operator at the position releases a call.

Each call that arrives at a position is assigned to a call queue based on varying criteria specified by the service provider. When an operator position is required for a call, call processing asks the CAM for an operator position capable of serving the particular call queue assigned to the call.

Call processing determines if an operator position is required for a call. If a position is required, TOPS asks the CAM for a position capable of serving the call queue assigned to the call. Call processing can also cancel a previous request for an operator. This occurs if a calling party goes on-hook while waiting for an operator.

When an operator selects Request CAM from the Functions menu at a position, call processing requests a CAMA call from the CAM. In response to a request for a CAMA call, the CAM searches the CAMA call queue for a call. If it finds one, it dequeues the CAMA call and informs call processing of the action taken. It also informs call processing if there is no call in the CAMA queue.

7.2 Operator profiles

With QMS, operating companies can create call queues, controlled traffic, and service profiles for operators through the use of profile tables, as follows:

- Call queue profiles specify the call queues an operator can serve by associating a particular call queue profile with an operator number.

- Controlled traffic profiles specify the types of calls an operator can serve. They are used mainly for operator training.

- Service profiles associate a list of service names with a service profile number. The service profiles are then associated with operators and positions to indicate their service-handling capabilities. During login and datafill, TOPS software checks to ensure that the service profiles match the equipment and operator profiles.

When you add operator IDs to accommodate QMS, it is crucial that you give the database vendor the correct updated lists of operator and position IDs, so that the vendor can assign permissions appropriately.

7.3 TOPS call queue assignment

An office can have up to 255 call queues that can segregate traffic. Office datafill in a group of DMS tables defines how QMS uses these queues. Call queues are assigned as follows:

1. TOPS uses a series of tables to refine sequentially the call type for queueing (CT4Q) associated with a call.

2. TOPS maps the CT4Q purposes into the call queue and service values understood by CAM for final call queue assignment.

7.3.1 Phase 1: Initial call type assignment

Operator-handled calls encounter the first phase of call queue assignment in DMS table QMSTOPS. Table QMSTOPS is indexed by the same range of call origination types that are used as indices to table TOPS. Unlike table TOPS, table QMSTOPS does not map call origination type directly to a call queue. Instead, for each call origination type, table QMSTOPS provides a CT4Q. The tables in CT4Q refinement are based on the range of CT4Q values. The range of CT4Q values is defined in DMS table CT4QNAMS, which associates each external, symbolic name with an internal integer index. Table QMSTOPS provides an initial CT4Q value for each call. This initial CT4Q is the starting point for the second phase of call queue assignment: the refinement of call types for queueing.

Table QMSTOPS assigns initial CT4Q values for each call origination type. The range of allowable values for call types for queueing is defined in table CT4QNAMS, which allows an alphabetic name (a string range) to be associated with an internal integer value. An optional eight-character display for presentation to the operator can be datafilled against each call type for queueing.

For more information about datafilling these tables, refer to the *Translations Guide*.

7.3.2 Phase 2: Refinement of CT4Q

In phase 2, the call types assigned in phase 1 can be refined by successively comparing the characteristics of the call against datafillable queueing criteria. This refining phase allows the office to divide incoming traffic into separately manageable categories based on different call attributes, according to office-specific criteria.

After passing through all the criteria of CT4Q refinement, a given call can have its CT4Q changed several times or it can still have its initial CT4Q. In either case, the CT4Q associated with the call at the completion of phase 2 of call queue assignment is the CT4Q that determines the call queue and service to be assigned to the call in phase 3.

Each office can have a different mix of categories that are optimal for the traffic in that office, just as each office has different translations datafill for the traffic in that office. To allow for the expected variation in the ways different offices use QMS, you can select the order in which the tables are scanned and the criteria that are used.

QMS provides the following criteria, each with its corresponding DMS table:

- class of service (table CT4QCLAS)

- restricted billing index (table CT4QREST)

- inter-LATA (local access and transport area) carrier (table CT4QCAR)

- prefix call type (table CT4QPFXT)

- dialed digits (table CT4QCLD)

- originating location (table CT4QORIG)

- time of day (table CT4QTIME)

- partially automated service (table CT4QAUTO)

- language (table CT4QLANG)

7.3.2.1 Class of service

Class of service modifies the CT4Q purposes by class of service information associated with the calling number. For example, a call can be designated as coin, hotel, station, or restricted. If this information is missing or incomplete, the call is designated as unknown class.

DMS tables TQCLSNAM and TQCLSDEF are used to set up controlled traffic for QMS.

7.3.2.2 Restricted billing index

TOPS software provides for 100 varieties of restricted telephones. Often these telephones require special treatment, which might involve a different queue. If a match is found in table CT4QREST, this table overrides any previous determination of call type for queueing.

7.3.2.3 Inter-LATA carrier

A service provider can provide operator services on a per-carrier basis through a TOPS software package called TOPS inter-LATA carrier service (TICS). If TICS is in the office, this table allows all calls for a particular carrier to be routed to a particular CT4Q, which can then map to a call queue number staffed by operators dedicated to the particular carrier.

7.3.2.4 Prefix call type

DMS table CT4QPFXT refines the CT4Q by the prefix type of call: operator-assisted or direct-dialed (DD). This information is not available based on dialed digits, because the prefix information is taken off at an end office. It is, however, available from signaling. This differentiation is useful when offices have positions with different capabilities. For example, a TOPS basic position can process a call dialed 1+555-1212, but cannot process a call dialed 0+555-1212, because that requires alternate billing capabilities it does not have. Therefore, 1+555-1212 calls are routed to a different queue from 0+555-1212 calls.

7.3.2.5 Dialed digits

QMS can route traffic based on the digits dialed by the subscriber. Because the range of possible dialed digits is quite large, data store and run-time efficiency are potential problems. To provide maximum flexibility without sacrificing efficiency, a two-step process segregates calls by dialed digit.

The first step associates groups of dialed digits with symbolic names in DMS table TQCLDDIG. The symbolic names are used as criteria for traffic segregation in DMS table CT4QCLD. You can use the dialed digits criterion to streamline the workforce by including business office functions in the operator service center. Or you can prototype new services (such as weather forecasts, hotel and restaurant guides, or operator-assisted yellow pages) on the basis of the dialed digits, routing these calls to a special team of operators.

7.3.2.6 Originating location

Table CT4QORIG can route traffic from disabled subscribers to operators with enhanced training or equipment to serve these subscribers. This table can also segregate traffic based on predominant language needs of different locations. If a group of dialing numbers or a trunk group is known to be populated by a group of subscribers who predominantly speak a given language, this origination criterion can be used to select a CT4Q staffed primarily by operators who speak that language.

Just as with the dialed-digits feature, TOPS uses a two-step process to provide maximum flexibility without sacrificing efficiency. The first step associates groups of originating digits with symbolic names, in DMS table TQORGDIG. Then, when an originating location is determined for the call, table CT4QORIG is referenced.

7.3.2.7 Time of day

The time-of-day feature allows for the dynamic segregation of traffic on the basis of time of day. A set of tables allows differently treated times of day to be specified for each day of the week and for holidays. When a call arrives, the current date and time are translated through these tables into a value. DMS table CT4QTIME allows any type of traffic to be diverted to a new CT4Q based on the value determined upon call arrival.

This can consolidate several different types of traffic into a smaller number of call types for queueing at known low-traffic periods of the day or night, providing savings in staffing requirements for low-traffic periods. For example, all coin and hotel traffic could be routed to a particular team at night, and the other teams could be staffed with operators not yet trained for coin or hotel. Used with host/remote networking by queue type, QMS provides for operator centralization by allowing any type of traffic to be routed to other switches in the operator centralization network by any of the call type refinement criteria.

7.3.2.8 Partially automated service

You can segregate traffic that has already received automated service. An example of a partially automated call is a calling card call that initially routes to a mechanized calling card service (MCCS) or automated calling card service (ACCS), but for which the subscriber does not enter the calling card number. When this happens, TOPS tries to connect the call to an operator. Different groups of operators can handle different types of partially automated calls. DMS table CT4QAUTO allows all the automated services TOPS provides to be used as a criterion for queueing, as follows:

- MCCS/ACCS
- automated alternate billing service (AABS)
- automated coin telephone service (ACTS)
- automated directory assistance call completion (ADACC)
- automated directory assistance service (ADAS)

7.3.2.9 Language

DMS table TOPSLANG defines a language attribute for TOPS calls. A language value is assigned to a call either by the operator or by an automated service. When a language is assigned to a call, it can be used as a criterion for queueing in DMS table CT4QLANG. Because language is not assigned until the call comes to an operator or an automated service, this table is useful only for those two types of calls.

7.3.3 Phase 3: Final call queue assignment

The refinement phase ends when the characteristics of the call have been applied to all the CT4Q tables in the appropriate order. The refined call type is used in phase 3 as the basis for the assignment of the QMS queue number in DMS table TQMSFCQA. The final CT4Q is used as an index to this table, which returns a numeric value that can be identified by the CAM component of QMS.

For QMS, the priorities for recalls must be datafilled in table TQMSFCQA. This table provides flexibility in handling recall priorities through explicit specification for each potential type of recall.

The call routes to an operator who serves that call queue. When that operator releases the call, it might recall to TOPS, requiring further operator assistance. For example, on a DA call, a subscriber might remain off-hook to return to an operator after listening to a recorded announcement. Because relative priorities are expressed on the basis of call queues, recalls can route to different call queues. For traffic that recalls to the operator, when a recall has been refined by the CT4Q tables, a different call queue can be associated with the final CT4Q.

7.4 Thresholds for calls deflection

The deflection of calls is controlled through the QMS call queue definition table, DMS table QMSCQDEF. The datafill in this table determines whether, and at what point, calls are deflected. The following fields are involved:

- Field ALLOWDEF indicates whether calls marked for this call queue are deflected if the predicted wait for a given call exceeds a threshold.
  If ALLOWDEF is set to Y (yes), the deflect threshold must be specified in field CQCDTIME.

- Field CQCDTIME indicates when calls are deflected from queue (as 0 through 32766 tenths of seconds). If the predicted wait time for newly arriving calls exceeds the CQCDTIME value, new calls are deflected from the queue until the predicted wait time drops below this threshold.

  The predicted wait time is determined by monitoring the rate at which calls are being served from the given queue (for the preceding 60 seconds, updated every ten seconds), along with the number of calls in queue. For example, if 120 calls were served in the previous 60 seconds (that is, calls are being served at the rate of two calls per second), and the queue holds 29 calls, then the projected wait time for a newly arriving call is $(29 + 1)/2$, or 15 seconds. Calls served includes both calls presented to an operator and calls abandoned.

  If no calls were served for a given call queue in the preceding 60 seconds, the CAM cannot predict the wait time of an arriving call. In this case, the CAM does not deflect calls from the queue until a call is served (and the 60-second tally is updated to reflect it) and a valid predicted wait time is obtained.

For example, if calls in TOPS call queue 1 are being served at the rate of two calls per second, and 124 calls are in the queue when a new call arrives, the new call is deflected, because the projected wait time (124/2, or 62 seconds) exceeds the CQCDTIME value (60.0 seconds).

There is an exception to this procedure. In its message to the CAM requesting an agent for the call, the application can explicitly indicate that a call should not be deflected. In this case, the CAM tries to place the call in the call queue regardless of the CQCDTIME threshold.

- Field MINODEFL specifies a minimum number of calls in queue (as 0 through 32766 tenths of seconds) below which calls are not deflected. For example, if the MINODEFL field is set to five, and TOPS call queue 0 contains four calls, a call that arrives when no agent is free is placed in queue even if the predicted wait time exceeds the CQCDTIME threshold. If five calls are already in the queue when the new call arrives, the threshold applies. This mechanism prevents calls from being prematurely deflected from call queues with very low or erratic throughput.

8.0 FM measurement definitions

This chapter defines the FM measurements and statistics printed by the DMS switch and explains how they are derived. TOPS QMS provides basic FM statistics produced by the DMS switch for monitoring performance. This feature collects measurements against the following criteria:

- traffic office
- TOPS QMS queue
- TOPS QMS service
- TOPS QMS FM call class

If the available QMS MIS interface is used, the measurements defining real time and period in this chapter can be presented in any format provided by an external vendor's reporting software package.

Some of the following measurements are changed in the QMSCASE environment. For more information, see Chapter 3.0, "QMSCASE," on page 23.

8.1 Traffic office measurements

Each team datafilled in the DMS switch has measurements pegged against it. These measurements are printed at the following FM devices:

- QMFADS TTY
- QFADS TTY
- QTADS TTY

The following measurements are reported:

- initial position seizures (IPS)
  number of calls initially routed to operators in a particular team

- recall position seizures (RPS)
  number of recalls routed to operators in a particular team

- transfer position seizures (TPS)
  number of transfer calls routed to operators in a particular team

- call-busy work volume (CBWV)
  amount of call work volume generated by operators in a particular team

- non-call work volume (NCWV)
  amount of time operators in a particular team spent in a made-busy or calls-withheld state

- idle time (IDLT)
  amount of time operators in a particular team spent not made busy or calls withheld, but with no call at the position

- average work time (AWT)
  amount of CBWV generated by operators in a particular team divided by the number of total position seizures generated by calls routed to operators in that team. The formula for this calculation is CBWV / (IPS + RPS + TPS).

- average occupied positions (AOP)
  average number of operators at position in a particular team during a period

- percent occupancy (%OCC)
  percentage of time that operators on a team were unable to accept new calls

The QMFADS report includes the following base measurements needed for AWT, AOP, and %OCC calculations:

- AOP idle time (AOPIDLT)

- AOP work volume (AOPWV)

The actual AWT, AOP, and %OCC calculations are not printed at the QMFADS TTY.

8.2 Queue measurements

All QMS call queues can have measurements pegged against them. These measurements are printed at QMFADS, QFADS, and QTADS devices. The following measurements are included:

- number of IPS made by calls assigned to each queue
  A call can be assigned to a queue type without actually being queued. If a call arrives when there are idle operators capable of servicing the call, the call is immediately routed to an operator position without being queued. However, even when this happens, the system internally tracks which queue the call would have been placed in if no idle operators had been available.

- number of RPS made by calls assigned to each queue

- number of TPS made by calls assigned to each queue

- amount of CBWV accumulated by calls assigned to each queue
  While a call is at a position, CBWV is generated against the queue from which the call came. For example, a call is initially assigned to queue 1 and receives operator service for 30 seconds. Then the call is released from position and is assigned to queue 2. The call then re-accesses a position for 30 seconds and is released. The time the call spent at the position after being assigned to queue 2 is pegged against the WV for queue 2. CBWV is always pegged against the last queue to which a call was assigned before it accesses the position.

- AWT
  CBWV associated with the queue, divided by the total position seizures associated with the queue

- CW
  total amount of time calls spent waiting in each queue

- Average answer (ANS)
  average amount of time it took for an operator to answer a call from a particular queue

The ANS time calculation is not sent to the QMFADS device. Instead the QMFADS TTY receives the base measurements that can be used to make the calculation.

8.3 Service measurements

The service measurements feature pegs three measurements against up to 16 services and prints them at the QMFADS, QFADS, and QTADS devices. TOPS QMS services are datafilled in table TQMSSERV. The three measurements are defined as follows:

- service initiations (SI)
  number of times a particular service was provided

- service work volume (SWV)
  amount of work time generated by calls receiving a particular service

- service average work time (SAWT)
  average work time generated by each service initiation. The formula for this calculation is SWV/SI.

Note the following:

- SWV begins accumulating either when a call is connected to an operator position or when the operator keys to initiate a new service.

- WV for a particular service is accumulated either until the call is released from position or until the operator keys to initiate a new service.

- Both SWV and SI are pegged either when the call with the particular service leaves the position or when a new service is initiated by the operator.

- SWV for a call includes only that portion of the call that received a particular service.

Figure 42 shows an example of how multiple services are pegged.

Figure 42. Pegging multiple services
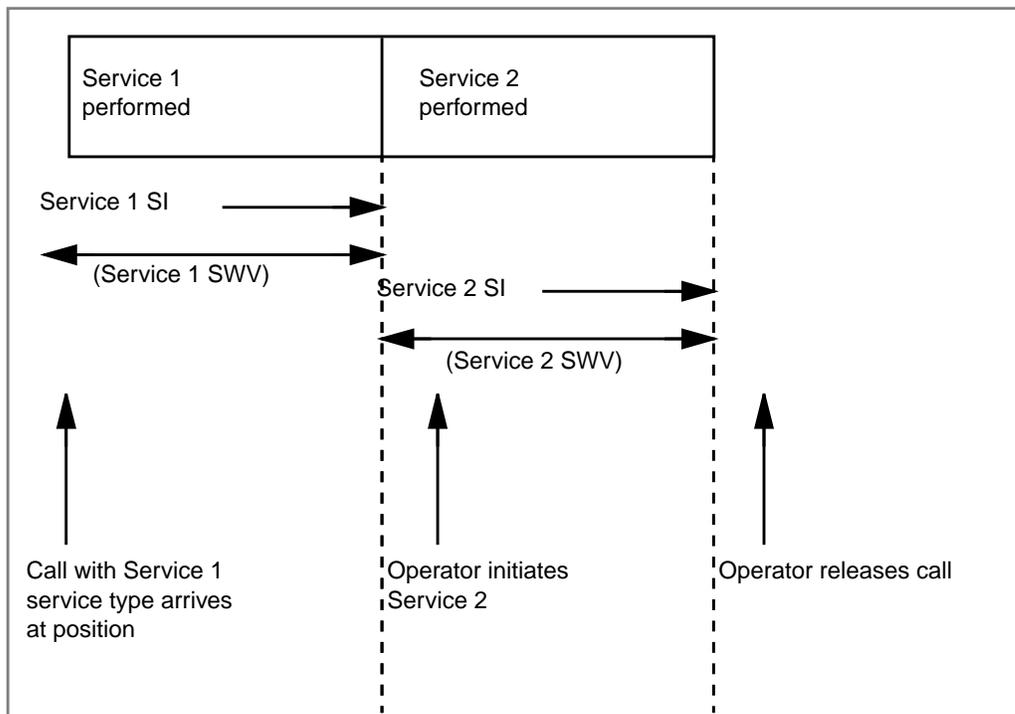
8.4 Call class measurements

This feature also prints the following measurements for up to 15 service provider-defined FM call classes at QFADS and QTADS devices. The following FM call classes are defined in table TQCLSDEF:

- IPS
  number of initial position seizures generated by each call class

- RPS
  number of recall position seizures generated by calls of each call class

- TPS
  number of transfer position seizures generated by calls of each call class

- CBWV
  amount of call work volume

- AWT
  average work time generated by a call belonging to a particular call class

QMS can have up to 2047 FM call types. However, reporting the IPS, RPS, TPS, CBWV, and AWT for 2047 call types every 15 minutes would require enormous bandwidth and take a long time to print. Therefore, to conserve bandwidth, this feature provides a mechanism to reduce the call types to 15 call classes. A sixteenth call class, UNDEFINED, is reserved for calls not associated with a class.

Reducing the number of call types involves the following steps:

1. naming call classes (in DMS table TQCLSNAM)

2. mapping call types into call classes (in DMS table TQCLSDEF)

For information about datafilling these tables, see the *Translations Guide*.

8.5 Position seizures, work volume, and AWT

QMS calculates AWT by dividing the amount of CBWV by the total number of position seizures, as follows: CBWV / (IPS+RPS+TPS).

More than one position seizure can be associated with each call. Different position seizures associated with the same call can be associated with different traffic offices and different queues. For example, a call is assigned to queue 1. The call is serviced for 30 seconds by an operator in team A and released from the position. The call is then assigned to queue 2 and recalls to an operator in team B. The operator in team B services the call for 20 seconds and then releases it.

Figure 43 shows the sequence of events involved in multiple position seizures.

Figure 43. Multiple position seizures
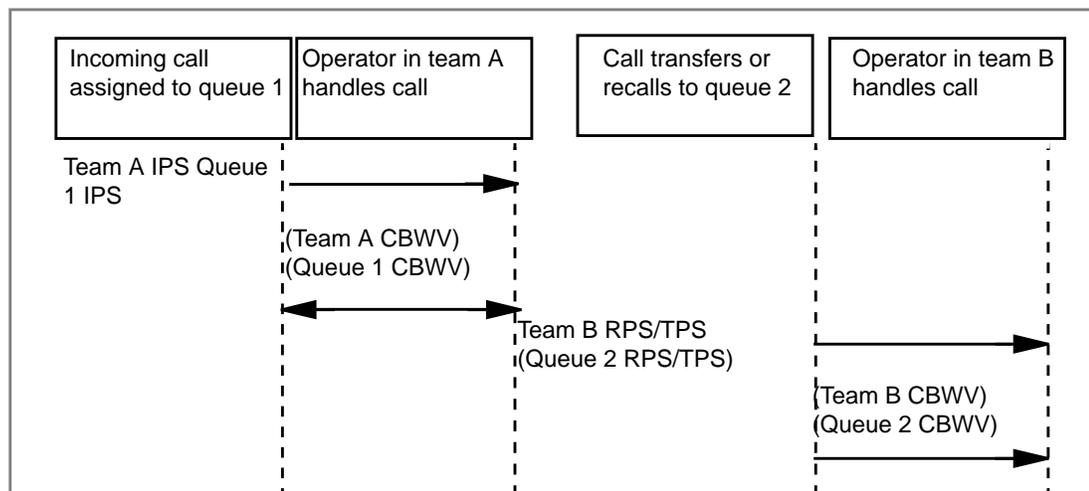
The following example AWT calculation uses two teams and two queues. The basic QMS statistics feature does not use NCWV to calculate AWT.

The 30 seconds the call spent being serviced by the operator in team A after being assigned to queue 1 is pegged against the WV for team A and queue 1. In addition, because team A was the first queue to which the call was assigned, an IPS is pegged against team A and queue 1.

The 20 seconds the call spent being serviced by the operator in team B after being assigned to queue 2 is pegged against the WV of team B and queue 2. Because the call was transferred or recalled to queue 2 and then serviced by team B, a TPS or RPS is pegged against team B and queue 2.

$$\frac{\text{Team A CBWV}}{\text{Team A IPS} + \text{Team A RPS} + \text{Team A TPS}} = \frac{30 \text{ seconds}}{1 + 0 + 0} = 30 \text{ seconds}$$

$$\frac{\text{Team B CBWV}}{\text{Team B IPS} + \text{Team B RPS} + \text{Team B TPS}} = \frac{20 \text{ seconds}}{0 + 1 + 0} = 20 \text{ seconds}$$

$$\frac{\text{Queue 1 CBWV}}{\text{Queue 1 IPS} + \text{Queue 1 RPS} + \text{Queue 1 TPS}} = \frac{30 \text{ seconds}}{1 + 0 + 0} = 30 \text{ seconds}$$

$$\frac{\text{Queue 2 CBWV}}{\text{Queue 2 IPS} + \text{Queue 2 RPS} + \text{Queue 2 TPS}} = \frac{20 \text{ seconds}}{0 + 1 + 0} = 20 \text{ seconds}$$

8.6 Service initiation and service work volume

A service initiation is pegged whenever one of the following events happens:

- A position seizure (IPS, RPS, or TPS) occurs.

- An operator successfully initiates a new service for a call already at a position.

8.7 Pegging position seizures and work volume

If a call extends over the bounds of a 15-minute report period, the associated WV and often the associated position seizure are pegged during the terminating report period, even though the call arrived during the previous report period. The AWT calculations also use data that is pegged during this period.

IDLT and NCWV generated by an operator are pegged at the end of the idle period or the position busy period, respectively. Therefore, if a period of continuous idle time spans more than one accumulation period, all the idle time generated is pegged against the last period. Similarly, a continuous period of NCWV accumulation is all pegged against the period in which the accumulation terminates.

8.8 Calculating AOP and %OCC

With QMS basic statistics, AOP is calculated by summing up the total WV and IDLT generated by operators at positions during a measuring period and then dividing by the measuring time. The %OCC is calculated by dividing the total WV by the sum of the total WV and the total IDLT.

9.0 FM features

This chapter describes the following FM features that can be activated and deactivated by issuing commands at a TTY or TTY emulator:

- operator feedback system
- operator study data system
- broadcast messages
- password administration

Call transfer and controlled traffic are handled through the MAP system.

9.1 Operator feedback

TOPS has an online individual operator feedback system. A pair of software registers is provided in DMS memory for each operator. Software registers are associated with operators and operator positions through DMS tables TOPSPOS and OPRDAT.

The DMS switch associates feedback registers corresponding to the logged-on operator number to the position at which the operator is logged on. One register accumulates position seizure information, a second register accumulates work volume usage for that position, and another register accumulates idle time.

Each operator is identified to the DMS switch by an operator logon procedure. When an operator leaves the position (unplugs the headset), the DMS switch ceases to accumulate position seizures information and work volume.

When an operator returns to any position, the logon process is repeated and the DMS switch reconnects those feedback registers to the logged-on position. In this way, the registers accumulate the operator's total-day IPS or PS and work volume. The accumulation is based on a correlation of the numbered registers with various positions at which the operator has worked throughout the day.

The DMS switch automatically initializes all individual operator feedback registers daily, at the system start-of-day.

An operator can request feedback data on the screen, erase the data from the screen, print the data at the QTADS TTY, and zero out the feedback registers. The operator can use these systems as follows:

- if the position is in the make-busy state (that is, the Assigned Activities screen is displayed)
- if the operator is identified by the logon procedure
- if is no call at the position

To show feedback data while in the make-busy state, the operator presses the **{Show Stats}** softkey. This displays the Operator Statistics window containing the softkeys defined in Table 30.

Table 30. Operator Statistics window softkeys

Softkey	Purpose
{Print Stats}	From the operator position, requests a hard copy of feedback data printed at the TTY. This request resets the operator's feedback registers to zero if parameter TOPS_ZERO_FB_REG in table OFCVAR is set toY and the supervisor has not entered the FI command at the TTY.
{Reset Stats}	Resets feedback registers to zero only if parameter TOPS_ZERO_FB_REG in table OFCVAR set to Y and the supervisor has not entered the FI command at the TTY.
{Quit}	Removes the Operator Statistics window from the screen.

The feedback data consist of the operator's accumulation of IPS or PS and the calculated AWT value for the operator.

The DMS switch calculates AWT whenever an on-screen display or TTY feedback is requested for an operator. The calculation is shown rounded to the nearest whole number and is taken from the operator's register contents.

9.1.1 TTY commands for operator feedback

The operator feedback feature is administered through TTY commands, as shown in Table 31.

Table 31. TTY commands for operator feedback

Command	Purpose
FD	Prints the feedback data for a specific operator
FI	Prevents an operator from zeroing out the feedback registers
FZ	Allows an operator to zero out the feedback registers

For further details about the TTY commands, refer to Chapter 6.0, "TTY reports and commands," on page 87.

9.1.2 Operator feedback guidelines

An individual operator's AWT is affected by the type of calls routed to the operator position. The distribution of calls by type is beyond the operator's control. The following factors influence the AWT:

- length of time an operator has been accumulating feedback data
- percent occupancy

In a short period of time, the operator can receive a disproportionate number of short or long work time calls. Percent occupancy (%OCC) of each operator rises as the team size increases. Because the distribution of service times varies significantly from installation to installation, this chapter does not specify, for all TOPS, the number of hours of IPS or PS that are sufficient to provide statistically reliable WT for the individual operator. This variance has a critical impact on the statistical reliability of AWT.

The system AWT shown on the operator feedback output report is subject to less variation in reliability, because all calls handled in the TOPS are included in the calculation of AWT. The hours worked by an operator might not coincide with those used as the base for the calculation of the system AWT (from the system start-of-day each day to the time a request is made for a printout of the data). The extent to which call mix varies throughout the day, and the variation of individual call type holding times according to the time of day, influence the validity of comparisons between an individual operator's AWT and the corresponding system AWT.

9.1.3 Trending operator feedback data

By trending feedback data, operators and supervisors can compare the operator's current performance with the following:

- operator's own previous performance

- objectives resulting from joint target-setting sessions with the supervisor

- average performance of the group

Comparisons between individual operator and system AWT should be made with the following considerations:

- statistical considerations discussed in Section, 9.1.2, "Operator feedback guidelines," on page 126

- change in the mix of calls throughout the day, which can have significant impact on AWT comparisons and should be made for similar time periods

The system and traffic office AWT for a time period similar to that worked by an operator can be derived from several sources:

- QMS reports

- operator feedback message, including the optionally available system AWT in the feedback message. The operator feedback message value is calculated using data continuously calculated from the start-of-day. It might not always provide as accurate a comparison as other sources listed here.

- manual calculation

If manual calculation is used to derive the office (or system) AWT for the same period as that worked by an operator, add the work volume hundred call seconds (WV-CCS) and the IPS or PS for the appropriate half-hours, and divide the sum of WV (multiplied by 100) by the sum of IPS or PS. The operator productivity ratio (OPR) emphasizes self-competition and provides a reliable standard by which improvements can be recognized. It is calculated using the following formula:

$$\frac{\text{Operator (or system) ATW}}{\text{Individual operator}} = \text{OPR}$$

Example:
43 / 38 = 1.13

A monthly or weekly weighted AWT is derived from several total-day operator feedback accumulations, as shown in the following example:

Example:

IPS	AWT	WV seconds
480 / 36	= 17,280
446 / 35	= 15,610
509 / 34	= 17,306
467 / 35	= 16,345
2,394	83,269

Weighted AWT: 83,269 / 2,394 = 34.8

A monthly or weekly weighted OPR is calculated from several total-day ratios, as shown in the following example:

Example:

IPS	AWT	WV seconds
480 / 1.06	= 508.80
446 / 1.06	= 472.76
509 / 1.09	= 554.81
467 / 1.06	= 495.02
2,394	2,562.75

Weighted OPR: 2,562.75 / 2,394 = 1.07

Figures 44 and 45 show an example form, front and back, that can be used for recording operator feedback data. Either operator AWT or OPR can be trended on the scaled reverse side of the form. This can be done on a monthly or weekly basis, as appropriate.

Figure 44. Basic operator feedback form (front)

TOPS Individual Operator Feedback					
Operator_____			Office_____		
Group Mgr_____			Year_____		

Date	Time	Number of IPS	Operator AWT	Office AWT (QFADS)	O.P.R Office AWT Operator AWT

Figure 45. Basic operator feedback form (back)

OPR.														AWT
1.44														
1.40														
1.36														
1.32														
1.28														
1.24														
1.20														
1.16														
1.12														
1.08														
1.04														
1.00														
.96														
.92														
.88														
.84														
.80														
.76														
.72														
.68														
.64														
.60														
.56														
.52														

9.2 Operator study data

The operator study data system can collect detailed productivity and efficiency data from up to 450 operators. The following operational elements of the operator study data system are similar to those of the operator feedback system:

- Table OPRDA at the DMS switch defines the operator number.

- Table TOPSPOS associates the software registers that accumulate data with the position at which the operator is working.

- Data cease to be accumulated when the operator leaves the position.

- Study data registers are automatically reset to zero at the start-of-day.

- The contents of the study data registers are not written to magnetic tape.

The differences between the feedback and the study data system are:

- The feedback system incorporates registers for the maximum coincident number of operators on the payroll during the engineered life of the installation. The study data system incorporates registers for up to 450 operators at any given time.

- The feedback system provides accumulated operator IPS or PS and AWT. The study data system provides the same data in a maximum of 15 call type groups. These call type groups (assigned in DMS tables TQCLSNAM and TQCLSDEF) are the same as those assigned to DMS memory for controlled traffic purposes. Table 32 shows a typical assignment of call type groups.

Table 32. Typical assignment of call type groups

Group number	Call type
1	Recalls (NFY, OVT, RCL)
2	CAMA (ONI and ANI FAIL)
3	01+, 011+ DDO (overseas coin, noncoin, hotel)
4	0- Noncoin
5	0- Coin
6	0+ Noncoin
7	0+, 1+ Coin
8	0+, 1+, 0- Hotel
9	Combined or undefined
10	Delay
11	411 (local directory assistance
12	555-For (foreign NPA)
13	DA-Rcl (directory assistance recall)
14	Int-ONI (intercept operator number identification)
15	Int-Rcl (intercept recall)

If an operator has been assigned to the operator study data system, a printout of study data register contents at the QTADS TTY can be generated as follows:

1. Select Make Busy from the Functions menu.

2. Press the **{Show Stats}** softkey in the Assigned Activities window.

3. Press the **{Print Stats}** softkey in the Operator Statistics window.

These study register data are printed instead of the feedback message.

This feature can be modified through a data modification order (DMO) routine so that the operator can generate only individual operator feedback data, even if assigned to the operator study data system.

9.2.1 TTY commands for operator study data

The force supervisor assigns study registers to operators through commands entered at a QTADS or QFADS TTY. Table 33 lists the TTY commands that are used to administer the operator study data system.

Table 33. TTY commands for operator study data

Command	Purpose
RA	Assigns an operator number to the operator study data system
RD	Prints an operator's accumulated study data without zeroing out the registers
RQ	Lists the operator numbers assigned to the operator study data system in each traffic office. The report content differs, depending on whether the command was entered from a QTADS or QFADS TTY.
RR	Releases the study registers assigned to the operator number
RT	• Applies the multi-traffic office configurations only and is issued from a QFADS TTY • Releases all of the study data registers assigned to the given traffic office

9.3 Broadcast messages

Broadcast messages allow supervisors to quickly and efficiently transmit important information to operators. The broadcast message typically concerns network conditions and provides operators with network information for the following purposes:

• to protect the network against overloads and ineffective attempts

• to make most effective use of operator time during periods of network congestion

Broadcast messages are issued at the TTY. They can be up to 60 characters or spaces long. Table 34 lists the broadcast TTY commands.

Table 34. Broadcast TTY commands

Command	Purpose
B	Allows the supervise to enter and print a message to be sent, verifying that it was entered correctly
BX	Transmits the broadcast message to all operator and administrative position screens
BE	Erases the broadcast message from all operator and administrative position screens

For further details about the TTY commands, refer to Chapter 6.0, "TTY reports and commands," on page 87.

9.4 Information about operators

The operator information commands provide supervisors with a listing of all operators currently logged on, and a listing of the status of all TOPS IWS positions in the system. Table 35 lists the commands used to solicit information about operators from the DMS switch.

Table 35. Operator information commands

Command	Purpose
L	Prints a listing of all operators (including supervisors) currently logged on
P	Prints a listing of the status of all TOPS positions

For further details about the TTY commands, refer to Chapter 6.0, "TTY reports and commands," on page 87.

9.5 Password administration

The password administration feature requires operators and administrators to enter a password when logging on or when issuing commands at the TTY. The password administration feature is activated by setting parameter TOPS_PASSWORD_ENABLE in DMS table OFCENG to Y.

Table 36 lists the TTY commands used to administer the password feature. These commands are available only when the password feature is active in the office.

Table 36. Password administration TTY commands

Command	Purpose
WP	Changes the password of the device
WI	Resets an operator password
WR	Resets a device password (multitraffic office only)

Table 36. Password administration TTY commands (Continued)

Command	Purpose
WD	Disables operator logon
WA	Enables operator logon

For further details about the TTY commands, refer to Chapter 6.0, "TTY reports and commands," on page 87.

10.0 QMFADS

This chapter explains how the QMS mechanized force administration data system (QMFADS) works. It describes the QMFADS report and explains the additional measurements available on the enhanced QMFADS report.

10.1 QMFADS reports

QMS reports are printed on the QMFADS device. The following section describes the format used to print the QMFADS mechanized reports.

Parameter QMSFM_BASIC in table TQMSOPT enables or disables the collection and reporting of TOPS QMS basic statistics. When this parameter is set to N, the following occurs:

- The DMS switch does not generate reports at QMFADS, QFADS, or QTADS devices.

- The DMS switch does not update real-time QMS information on the FMCRT or supervisor positions.

- Operator feedback statistics are frozen.

- L, P, F, R, and C commands are disabled.

Setting QMSFM_BASIC to N saves CPU time that would have been spent collecting, collating, and reporting system data. When parameter QMSFM_BASIC is set to Y (the default), the DMS switch generates real-time displays and reports, and enables FM commands.

Parameter QMSFM_REPORT_INTERVAL in table TQMSOPT specifies the report intervals. You can specify any combination of 15-minute, 30-minute, 6-hour, and 24-hour intervals. You can also specify NONE or ALL of the reports intervals.

10.2 QMFADS report format

Data in a QMFADS report is presented in fixed-length ASCII fields. When required, numeric fields are padded with leading zeros.

QMFADS reports are encapsulated within report begin and end characters. Each report contains report and system general information, as well as information about queues, teams, and services.

The report and system information portion of a QMFADS report includes a TOPS office identifier, the time and date of the report transmission, and the length of the report period.

Table 37 describes the QMFADS report format.

Table 37. QMFADS report format

Field number	Number of characters	Field description
1	1	Start of QMFADS transmission character, indicated by an ASCII <
2	8	TOPS office identifier datafilled in parameter OFFICE_ID_ON_AMA_TAPE in table OFCENG
3	4	Starting time of QMFADS report transmission in a 24-hour (hhmm) format
4	4	Starting date of QMFADS report transmission in a month-day (mmdd) format
5	4	QMFADS period, identifying the actual reporting period of the QMADS report, in seconds
6	2	Number of call queues (the total number of QMS call services reported on)
		Call waiting record (eight characters per record)
7	2	Number of traffic office (team) records sent with the report
		Traffic office record
8	1	End of QMFADS transmission character, indicated by an ASCII >

At the specified intervals, FM statistics are collected into one of two alternating sets of buffers. At any given time, one buffer contains data currently being collected; the other contains measurements for the preceding period. This second buffer is used in all the FM reports. The buffers are switched after every interval. The actual time when this switch occurs is subject to small system discrepancies and might not happen exactly on the interval boundary. Thus, the measurements in a QMFADS report might represent data collected over a period slightly greater or less than the specified interval. Field 5 shows the actual reporting period, which is the measurement used in calculating AOP.

CW is the total amount of time (in seconds) that calls spent waiting in a particular queue. The number of call queues is needed to determine the number of CW records. One CW record is sent for each call queue, recording the total amount of CW time pegged against a queue during the last QMFADS report period. The QMFADS report sends CW records for call queues 0 to (QMSFM_NUM_SERVICES-1), in numerical order.

10.3 Traffic office record format

Table 38 shows the format of a traffic office (team) record. One traffic office record is sent for each traffic office that is datafilled as QMS in table TEAMACD.

Table 38. Traffic office record format

Field number	Number of characters	Field Description
1	2	Traffic office: a two-digit ID between one and 30, identifying the traffic office to which this record corresponds
2	8	Amount of NCWV pegged against this traffic office during the report period, measured in seconds
3	8	Amount of IDLT pegged against this traffic office during the report period, measured in seconds
4	8	Average occupied positions work volume (AOPWV)
5	8	Average occupied positions idle time (AOPIDLT)
6	2	Number of call queue records sent in the traffic office record. The value in this field equals the value of parameter QMSFM_NUM_SERVICES in table OFCENG.
		Call queue records (26 characters per call queue record)
7	2	Number of service records sent in the traffic office record. The value of this field equals the value of parameter QMSFM_NUM_SERVICES in table OFCENG.
		Service records (14 characters per service record)

The AOPWV measurement (field 4), in seconds, is necessary to accurately calculate the average occupied positions and percent occupancy for the traffic office. The AOPWV differs from the sum of the NCWV and CBWV generated by operators in the traffic office. For more information about how AOPWV is measured, see "Calculating AOP and %OCC" on page 124.

The AOPIDLT measurement (field 5), in seconds, is necessary to accurately calculate the average occupied positions and percent occupancy for the traffic office. The AOPIDLT differs from the value of the IDLT measurement.

10.3.1 Queue record format

Table 39 shows the format of a call queue record.

Table 39. Queue record format

Field number	Number of characters	Field description
1	6	Number of initial position seizures (IPS) pegged against the queue in the report period
2	6	Number of recall position seizures (RPS) pegged against the queue in the report period

Table 39. Queue record format (Continued)

Field number	Number of characters	Field description
3	6	Number of transfer position seizures (TPS) pegged against the queue in the report period
4	8	Amount of call busy work volume (CBWV) pegged against the queue in the report period, measured in seconds

The first queue record contains data for call queue 0, the second contains data for call queue 1, the third contains data for call queue 2, and so forth. The number of call queue records sent for each traffic office equals the value of parameter QMSFM_NUM_QUEUES in table OFCENG.

The data sent in a queue record is accumulated only for calls of that queue type that were handled by operators in the associated team. Data for calls handled by other teams is sent to the queue records for those teams.

10.3.2 Service record format
Table 40 shows the format of a service record.

Table 40. Service record format

Field number	Number of characters	Field description
1	6	Number of times a service initiation (SI) was pegged against this service during the report period
2	8	Service work volume (SWV), the total amount of call work volume pegged against this service during the report period, measured in seconds

The first service record contains data for service 0, the second contains data for service 1, the third contains data for service 2, and so forth. The number of service records sent to the QMFADS device equals the value of parameter QMSFM_NUM_SERVICES in table OFCENG.

10.4 Using the QMFADS device

A QMFADS report is sent to the QMFADS device that parameter QMSFM_POLLING_ID in table TQMSOPT specifies. Each report contains data gathered during the preceding interval. For example, a 15-minute report printed at 1:17 contains the data accumulated from between 1:00 and 1:15.

After the polling ID is received, the DMS switch formats a buffer with the FM data collected from the previous period and sends it to the QMFADS device. The DMS switch can transmit data at either 300 or 1200 bps. If the entire report cannot be sent during 15 minutes, there is a risk of missing some reports. This should be noted when datafilling services and traffic offices, and when determining a modem baud rate.

If a report requires too much time, the QMFADS prints a message. Receiving this message indicates that the number of queues needs to be reduced.

11.0 List of terms

AMA

Automatic Message Accounting

ANI

Automatic Number Identification

API

Application Programmer's Interface

Automatic Message Accounting (AMA)

An automatic recording system that documents all the necessary billing data of subscriber-dialed long distance calls.

Automatic Number Identification (ANI)

A system whereby a calling number is identified automatically and transmitted to the AMA office equipment for billing.

calling card database (CCDB)

A database that stores card holder profiles for an enhanced calling card. Information from the CCDB determines whether or not restrictions apply to an enhanced calling card call, and can help detect potentially fraudulent calls.

CAMA

Centralized Automatic Message Accounting

CCDB

Calling card database

Centralized Automatic Message Accounting (CAMA)

A system that produces itemized billing details for subscriber-dialed long distance calls. Details are recorded at a central facility serving a number of exchanges. In exchanges not equipped for ANI, calls are routed to a CAMA operator who gets the calling number and enters it into a computer for billing.

CSE

Customer service expert

CT4Q

Call type for queueing

customer service expert (CSE)

A class of operator who can assist other operators (even completing their calls) as their primary task and optionally serve subscriber-initiated operator traffic as their secondary task.

DA

Directory Assistance

DAS

Directory Assistance System

Digital Multiplex System (DMS)

A central office switching system in which all external signals are converted to digital data and stored in assigned time slots. Switching is performed by reassigning the original time slots.

directory assistance (DA)

A service that allows a caller to ask an operator to look up information from a telephone listing database.

Directory Assistance System (DAS)

A system that provides DA information and information for intercept calls.

directory number (DN)

The complement of digits required to designate a caller's station within one numbering plan area; usually a three-digit central office code followed by a four-digit station number.

DMS

Digital Multiplex System

DN

Directory number

inter-LATA carrier

Any carrier that provides telecommunication services between a point inside a local access and transport area (LATA) and another point either outside that LATA or inside another LATA.

IWS

Intelligent Workstation

LAN

Local area network

LATA

Local access transport area

local access transport area (LATA)

A geographic area within which a service provider may offer telecommunications-related services.

local area network (LAN)

A network that permits the connection and communication of multiple computers, primarily for the sharing of resources such as data storage devices and printers.

NPA

Numbering Plan Area

NT

Nortel Networks

NTDA

Nortel Networks Directory Assistance

numbering plan area (NPA)

Any of the designated geographic divisions of the United States, Canada, Bermuda, the Caribbean, Northwestern Mexico, and Hawaii, within which no two telephones have the same, seven-digit number. Each NPA is assigned as a unique, three-digit area code.

QFADS

Force Administration Data System

QMS

Queue Management System

QMS Force Administration Data System (QFADS)

Data derived from TOPS operational measurements used for force management and for calculating operating performance.

QMSCASE

Queue Management System Customer Assistance Service Enhancements

Queue Management System (QMS)

A software package that provides enhanced capabilities for the management of call queues in the DMS 100/200 Family of switches.

Queue Management System Customer Assistance Service Enhancements

A software feature that provides improvements to customer service by supporting a new group of customer agents.

TOPS

Traffic Operator Position System

Traffic Operator Position System (TOPS)

The Nortel traffic operator position system, consisting of a DMS switch and TOPS peripherals (such as the TOPS operator terminal).

Symbols

Q

DMS-100 Family

TOPS IWS

Force Management Guide

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