

FEATURE DOCUMENT
BUSY/IDLE STATUS INDICATOR FEATURE
2-WIRE NO. 1 AND NO. 1A ELECTRONIC SWITCHING SYSTEMS

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NOTICE

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INTRODUCTION

1. GENERAL INFORMATION

SCOPE

1.01 This document describes the Busy/Idle Status Indicator (BISI) feature for the No. 1 and No. 1A Electronic Switching Systems (ESS).

REASON FOR REISSUE

1.02 When this document is reissued, the reason for reissue will be stated in this paragraph.

FEATURE AVAILABILITY

1.03 The BISI feature is initially available with the 1E7 (No. 1 ESS) and 1AE7 (No. 1A ESS) generic programs. The BISI feature is optionally loaded and requires the verify message improvements phase 1 (VMI1) feature group and one of the following feature groups:

- CILC—Local common channel interoffice signaling
- CI2W—Toll common channel interoffice signaling 2-wire
- CIHL—Toll common channel interoffice signaling HILO.

1.04 The BISI feature group contains the following feature packages:

- Busy/idle status indicator feature package (BISI)
- Customer originated recent change log feature package (CLOG)
- Recent change administration feature package (RCAD).

2. DEFINITION/BACKGROUND

DEFINITION

2.01 The BISI feature monitors the busy/idle status of simulated facilities groups and reports changes in status to a remote data base by means of common channel interoffice signaling (CCIS) direct signaling messages.

BACKGROUND

2.02 Application of the BISI feature is limited to the monitoring of the busy/idle status of 800 Service feature line groups in a terminating end office. The BISI feature reports the status of these line groups to a remote 800 Service data base.

2.03 When a caller dials an 800 number, an originating screening office (OSO) queries the 800 Service data base, using CCIS direct signaling. If the busy/idle status for that 800 number in the data base is idle, the data base returns an unlisted 10-digit direct distance dialing (DDD) telephone number to the OSO, which is used to route the call to the terminating end office (TEO). (See Fig. 1.)

2.04 If the status of the 800 number is busy in the data base, the data base returns a busy indication to the OSO and the call is given busy treatment at the OSO. See references A(1) and A(2) in Part 18 for details.

2.05 The primary benefit of the BISI feature is the reduced network traffic due to 800 Service ineffective attempts being given busy treatment at the OSO rather than at the TEO.

DESCRIPTION

3. USER OPERATION

CUSTOMER

3.01 Not applicable.

TELEPHONE COMPANY

3.02 User operation by telephone company personnel is limited to recent change controls via three input messages. RC-INH-BIS is used to inhibit all BISI activate/deactivate recent change messages. RC-ALLOW-BIS is used to remove this inhibition.

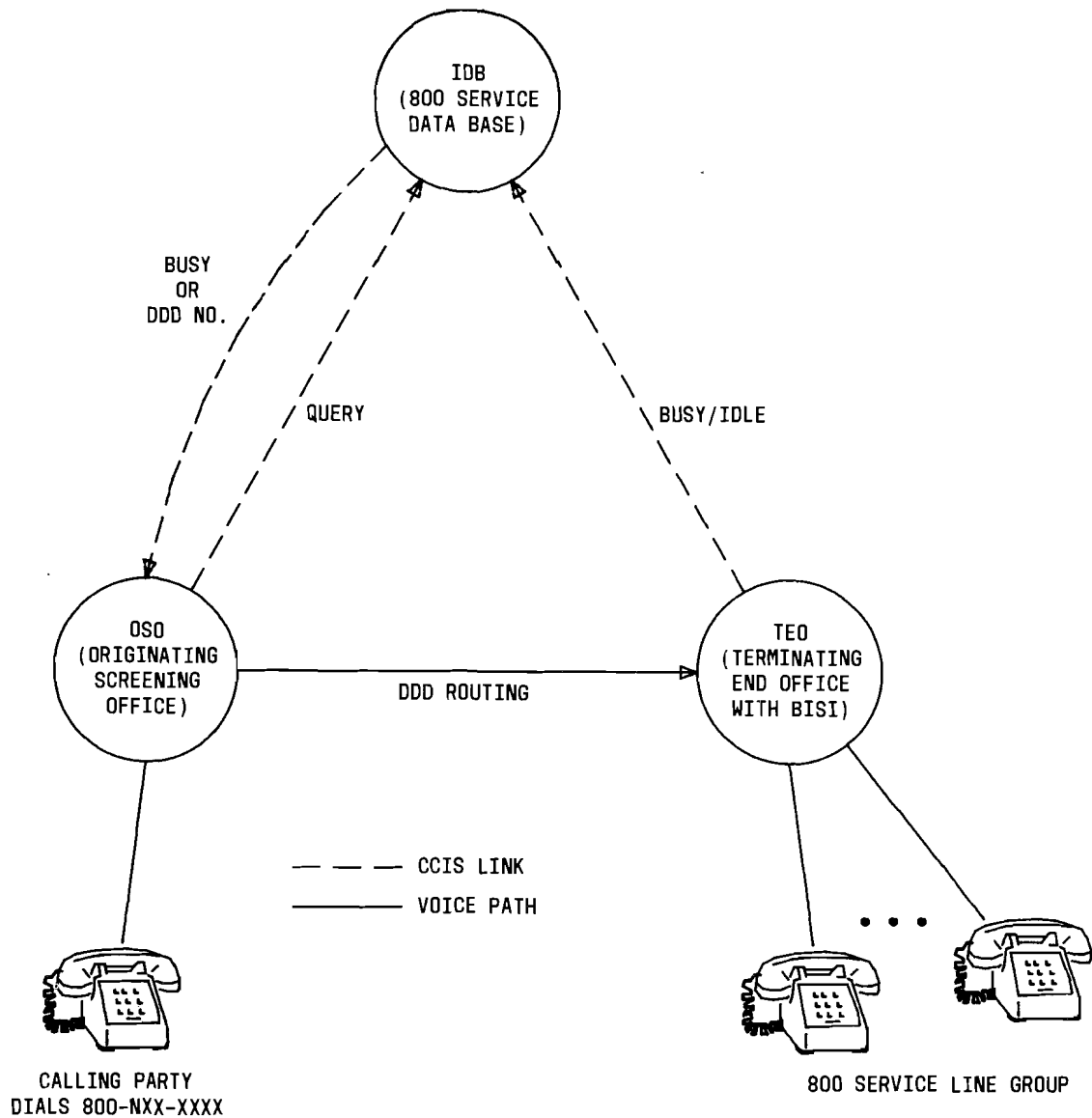


Fig. 1—Typical 800 Service Call With BISI

RC-CENSUS is used to verify if any inhibit controls are active on BISI recent changes.

3.03 The following teletypewriter (TTY) input messages are used to administer BISI traffic studies and messages.

(a) BI-MEOIDC is used to manually request the sending of an end office initiated data check message.

(b) BI-ERRMSGP is used to allow or prevent the printing of BISI error messages for a particular simulated facility group (SFG) or for all SFGs.

(c) BI-COLLCNTS is used to add (up to a maximum of 8 SFGs) and remove SFGs from the BISI traffic studies list.

(d) BI-PRNTCNTS is used to schedule the printing of BISI feature counts (either hourly, daily, or immediate).

(e) BI-SNDBIMSG is used to manually send a busy/idle message to the 800 Service data base.

3.04 TTY output messages utilized by the BISI feature are as follows:

(a) BI MEOIDCR is printed in response to BI-MEOIDC and contains the results of an end office initiated data check message.

(b) BI SFGDA contains the result of deactivation due to a mismatch of data in an end office initiated data check response.

(c) BI01 DSMSG is a BISI error message which is printed when an invalid BISI direct signaling message is received from the 800 Service data base.

(d) BI02 is a BISI error message that contains the results of recent change initiated activation, deactivation, or data verification (printed when the RC:BISI message is entered and the activation/deactivation fails).

(e) BI03 USAGE is a BISI error message which is printed whenever the usage count for an unlimited access SFG or limited access SFG with the terminal number access check item set to 1 is corrected due to a busy/idle status update request message received from the 800 Service data base.

(f) BI16 is printed in response to the BI-COLLCNTS input message and contains the SFG numbers of the SFGs that are on the BISI traffic studies list.

(g) BI17 contains per-office BISI feature counts, ie, number of INWATS attempts, number of unreported busies, non-SFG overflow counts (physical facilities busy but SFG access not at maximum), number of ineffective 800 Service call attempts, number of failed direct signaling messages, total end office busy count, and total data base busy count.

(h) BI17-A contains per-SFG BISI feature counts, ie, number of busy busy/idle messages, number of idle busy/idle messages, number of direct signaling messages, number of direct signaling messages received, data base busy count, and data base overflow count.

(i) BI17-B indicates end of BISI SFG feature counts.

For details of these messages, see references in Part 18B.

3.05 The customer traffic counts function of the BISI feature processes the 15-minute traffic counts (data base busy counts and data base overflow counts) received from the 800 Service data base. These traffic counts can be provided to the 800 Service customer if the 800 Service customer has both the Automatic Call Distribution (ACD) and ACD-ESS Management Information System (AEMIS) features. For details of the AEMIS feature, see reference A(12) in Part 18.

4. SYSTEM OPERATION

HARDWARE

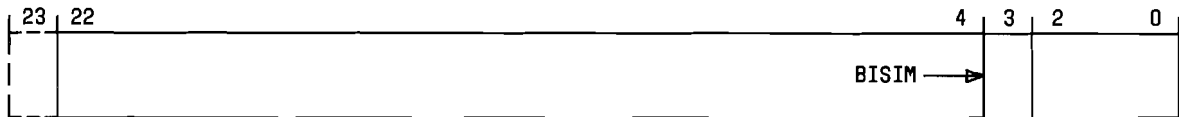
4.01 Not applicable.

OFFICE DATA STRUCTURES

A. Translations

4.02 The LENCL 4 word, in the line equipment number translator, contains the BISIM item (Fig. 2). If this item is set to a value of one, the associated line is monitored for originations and disconnects by BISI. This item is set to one for lines in unlimited access BISI simulated facility groups or in limited access BISI simulated facility groups with the terminal number access check (TNAC) indicator also set to one. A simulated facility group (SFG) is called a BISI SFG if the BISI SFG indicator is set to one in the SFG auxiliary block. The special line indicator in the LENCL 1 word must be set to one if the BISIM item in the LENCL 4 word is set to one.

4.03 The INWATS data base directory number indicator (IDBDN) is required in the directory number (DN) auxiliary block (Fig. 3). If the 800 Service data base routes calls to a specified DN, then that DN must have the IDBDN item set to one. For all DNs associated with a particular SFG, only one of those DNs can have IDBDN equal to one. The IDBDN is equal to zero for all other DNs in that SFG. For series completion, DNs associated with a particular SFG are defined to be those DNs starting with the routing DN and continuing through the series completion group up to but not including the next DN with IDBDN set to one. For multiline hunt group and



NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

LEGEND:

BISIM - BISI LINE MONITORING INDICATOR, SET TO 1 FOR MONITOR

Fig. 2—Line Equipment Number Translator

other applications, the DN to which calls are routed must be the IDBDN.

4.04 The simulated facilities group number (SFGN) is stored in the multiline hunt group terminal auxiliary block (Fig. 4). The SFGN is required on all terminals associated with unlimited access BISI SFGs or limited access BISI SFGs with the TNAC item set to one. The simulated facilities indicator (SFI) item must also be set to a value of one.

4.05 The BISI item in word 2 of the SFG auxiliary block identifies the SFG as a BISI SFG (Fig. 5). If the activated/deactivated BISI (ADB) status indicator in word 5 is set to a value of one, then busy/idle messages are sent to the associated 800 Service data base. If the ADB indicator is set to a value of zero, then busy/idle messages are *not* sent to the associated 800 Service data base. The BISI maximum lines (BML) item indicates the number of physical facilities associated with the SFG for unlimited access SFGs and limited access SFGs with the TNAC item set to one. If the data base busy count frequency (DBBCF) item is set to a value of one, the attempt and overflow counts in the SFG head cell are updated every 15 minutes to include the busy and overflow counts from the remote 800 Service data base. If the

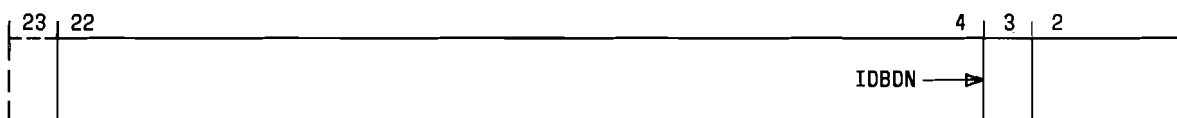
DBBCF item is set to 00, only daily busy and overflow counts are taken. Daily busy counts are taken on all BISI SFGs, regardless of the value of the DBBCF item. The office code (OFC) item in word 5 is the 10-digit binary equivalent of digits 4, 5, and 6 of the 800 number. The busy/idle bit number (BIBN) item in word 6 is used by the 800 Service data base as an index. This index is used to identify the SFG to the 800 Service data base.

4.06 Word 3 of the office options table contains the blind period timing interval (BPTI) item. This item is used to sequence the sending of busy/idle messages to the 800 Service data base. (Refer to Fig. 6.)

4.07 The limits translator contains a recent change register limit (RCLIM) for BISI. This item indicates the amount of primary recent change (RC) registers the BISI feature can seize, thus reducing the possibility of BISI monopolizing the RC area. (Refer to Fig. 7.)

B. Parameters/Call Store

4.08 Parameter word A8SFDB and Compool word A8SFDC contain the address of the BISI sim-



NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

LEGEND:

IDBDN - INWATS DATA BASE DIRECTORY NUMBER INDICATOR

Fig. 3—Directory Number Auxiliary Block

SECTION 231-090-276

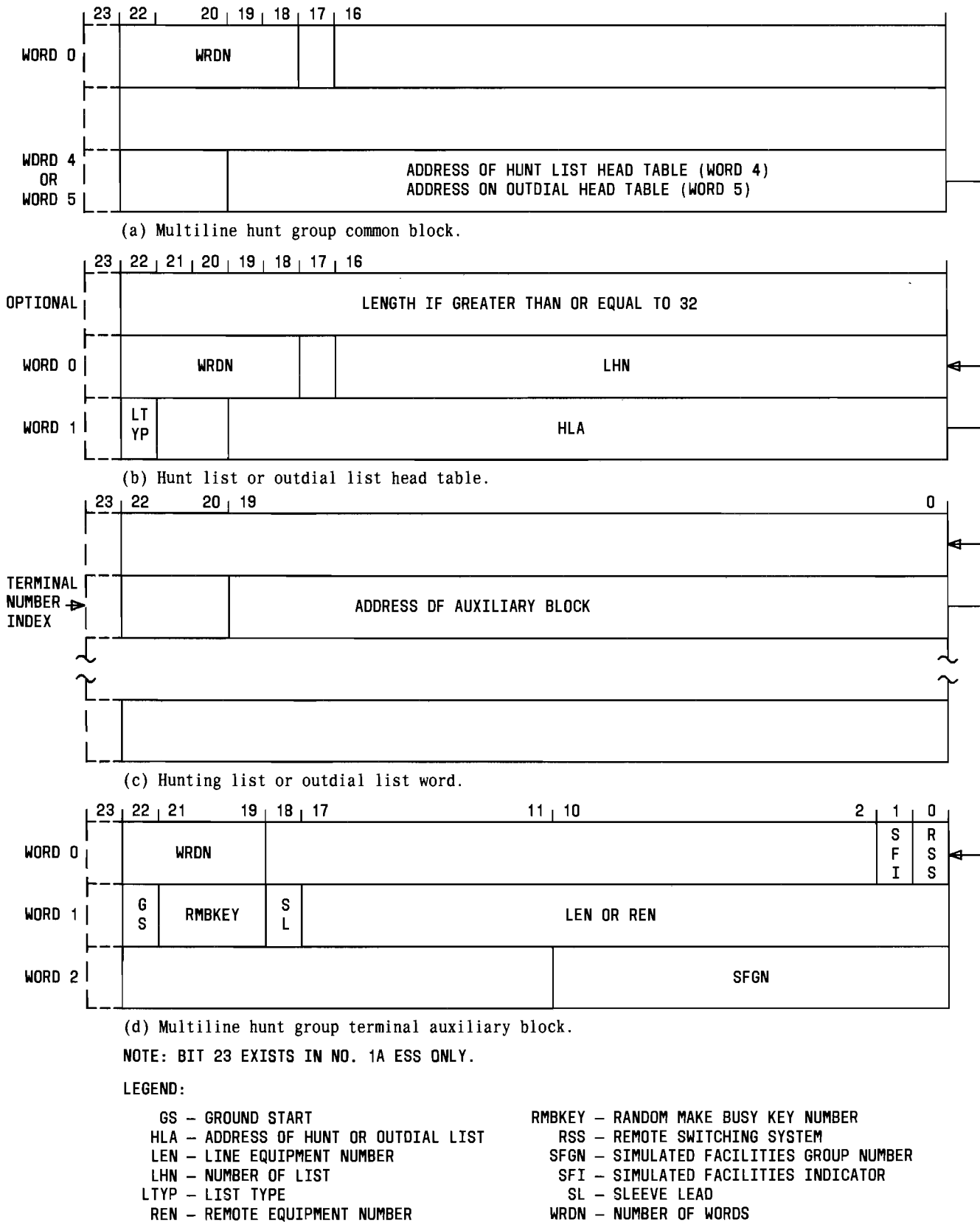
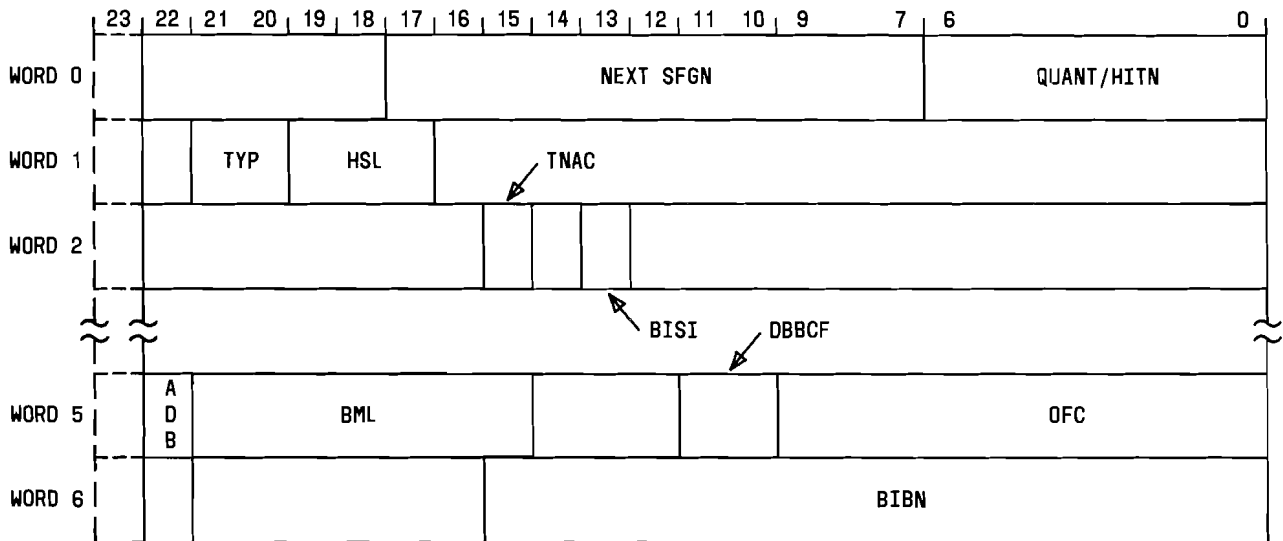


Fig. 4—Multiline Hunt Group Terminal Auxiliary Block

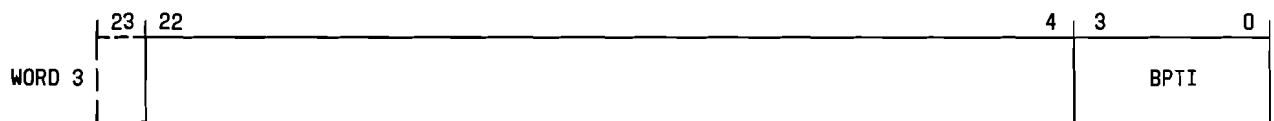


NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

LEGEND:

- ADB - ACTIVATED/DEACTIVATED BISI STATUS INDICATOR
- BIBN - BUSY/IDLE BIT NUMBER
- BISI - BISI SIMULATED FACILITIES GROUP INDICATOR
- BML - BISI MAXIMUM LINES
- DBBCF - DATA BASE BUSY COUNT FREQUENCY
- HITN - HIGHEST TERMINAL NUMBER
- HSL - HUNT SEQUENCE LENGTH
- OFC - OFFICE CODE
- TNAC - TERMINAL NUMBER ACCESS CHECK
- QUANT - QUANTITY OF LINES

Fig. 5—Simulated Facilities Group Auxiliary Block

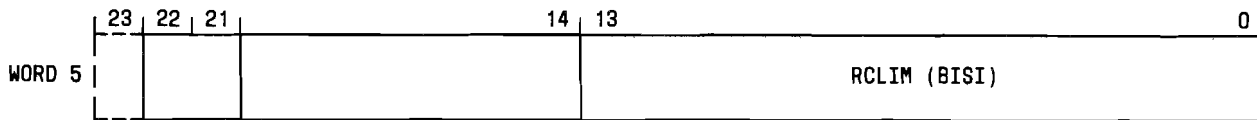


NOTE: BIT 23 EXISTS IN NO. 1A ONLY.

LEGEND:

- BPTI - BLIND PERIOD TIMING INTERVAL

Fig. 6—Office Option Table



NOTE: BIT 23 EXISTS IN NO. 1A ONLY.

LEGEND:

RCLIM - RECENT CHANGE REGISTER LIMIT

Fig. 7—Limits Translator

ulated facilities group table (Fig. 8). Set card SFG specifies the quantity of simulated facilities groups in the office for the engineering period (plus 1). Each word in the table contains the per-SFG cumulative 24-hour data base busy count and the BISI per-SFG status data.

4.09 Parameter word R6RCBISQ contains the address of the RC BISI queue (Fig. 9). The RC BISI queue contains data sent from the recent change routine to the BISI program. The size of the BISI queue is 32 words.

4.10 Parameter word B1WRKB and Compool B1WRKP contain the address of a call store block (350 words) which contains control, traffic, and temporary data used in and during the operation of the BISI feature (Fig. 10).

4.11 Parameter word B1BPTP contains the address of a call store block (62 words), which contains control and SFG data used during the operation of the BISI feature. This information is used to provide the blind period timing function, which controls the transmission of busy/idle messages to the 800 Service data base. (Refer to Fig. 11.)

4.12 Parameter word R2RCBQ contains the address of a call store queue (20 words) required for the BISI feature. This area is used to queue internally generated RC messages to activate or deactivate busy/idle reporting on particular simulated facilities groups. Set card NRCBQ specifies the quantity of entries allowed on the queue. (Refer to Fig. 12.)

4.13 Parameter word R2RCBQX contains the address of a call store queue auxiliary area (144 words). This area contains the body of a general RC queue entry while waiting for RC processing on the RC batch queue. (Refer to Fig. 13.)

4.14 Parameter word F2CRCKBF contains the call store address of the customer originated recent change keyword message data block buffer (CRCKBF). This 80-word call store buffer is used to hold the print buffer for keyword message data block CLOG messages. (Refer to Fig. 14.)

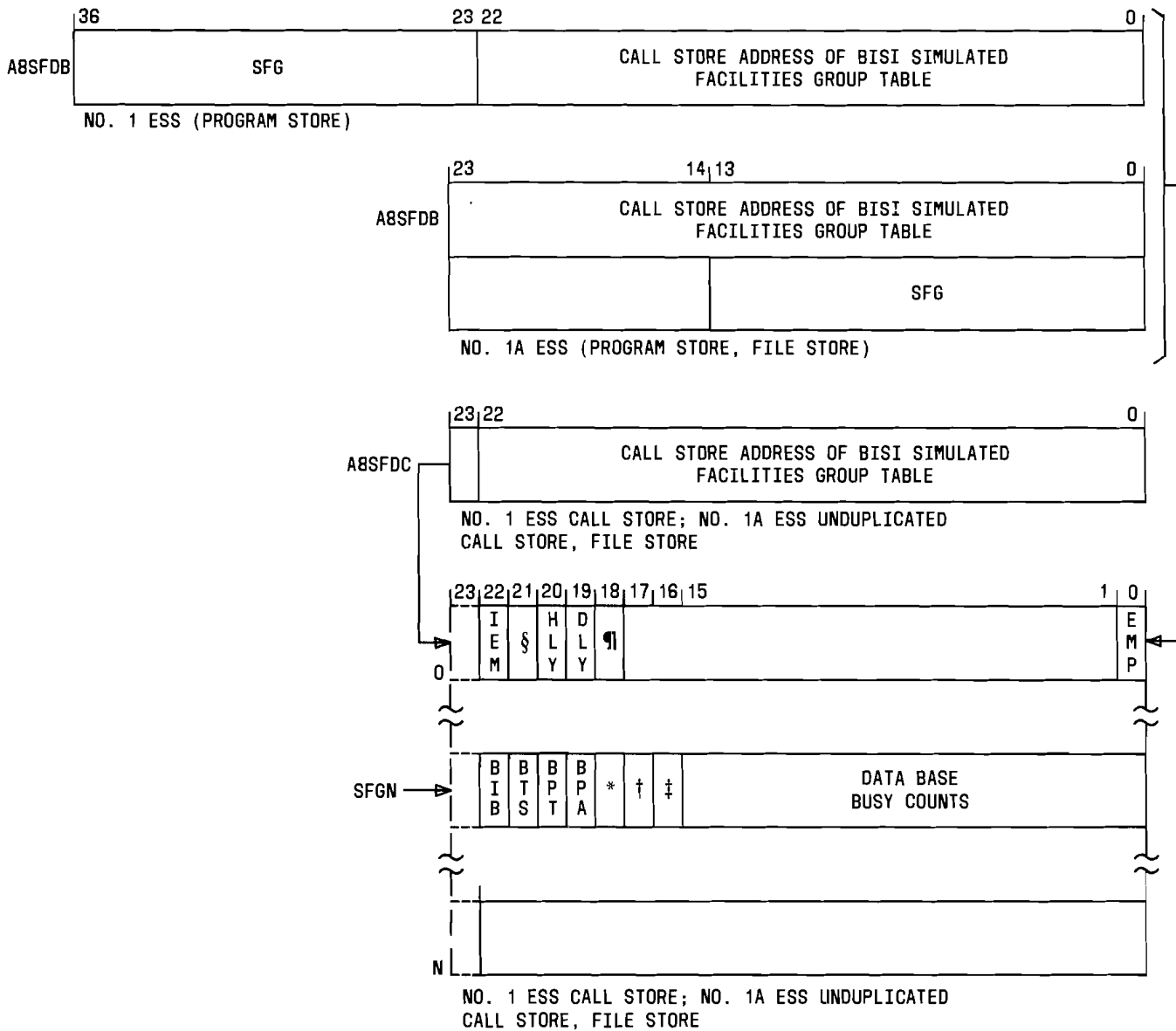
FEATURE OPERATION

A. Busy/Idle Monitoring and Reporting

4.15 The line group monitoring function of the BISI feature monitors the busy/idle status of 800 Service line groups (SFGs) in an 800 Service TEO. The line group monitoring function detects when an 800 Service line group changes state or when a call overflows from an 800 Service line group, and reports the state change to the busy/idle reporting function. Busy/idle reporting function then initiates the process of sending a busy or idle message to the 800 Service data base.

Unlimited Access Group Monitoring

4.16 When a call terminates in a TEO to a 800 Service customer's line in an unlimited access SFG, a DN translation is performed which yields the SFGN. The usage count (USAGE) in the SFG head cell is incremented by one. This count is compared to the BML item in the SFG auxiliary block. If USAGE = BML, the SFG status is changed to busy. An 800 Service SFG is busy when the number of calls associated with the SFG is equal to the number of calls allowed in the SFG. When disconnect occurs, a LEN translation is performed which yields the SFGN. For disconnects in an 800 Service multiline hunt group, the SFGN is obtained from the multiline hunt group terminal auxiliary block; otherwise, it is obtained from the DN auxiliary block for that LEN. The usage



NOTE: BIT 23 IN CALL MEMORY EXISTS IN NO. 1A ESS ONLY.
 * IMNS † IMNST ‡ IEMS § AIMNS ¶ INPROG

LEGEND:

- | | |
|---|--|
| AIMNS - ANY IDLE MESSAGE NOT SENT | IMNS - IDLE MESSAGE NOT SENT |
| BIB - BUSY/IDLE BIT | IMNST - IDLE MESSAGE NOT SENT TIMING |
| BPA - BLIND PERIOD TIMING AUDIT BIT | INPROG - CLEARING OF ERROR MESSAGE |
| BPT - BLIND PERIOD TIMING | INHIBITING IN PROGRESS |
| BTS - BUSY TRAFFIC STUDIES | N - EQUAL TO VALUE OF SET CARD SFG |
| DLY - DAILY PRINT OF BISI FEATURE COUNTS | SFG - SIMULATED FACILITIES GROUP |
| EMP - ELEVEN P.M. AMA FLAG | SFGN - SIMULATED FACILITIES GROUP NUMBER |
| HLY - HOURLY PRINT OF BISI FEATURE COUNTS | |
| IEM - INHIBIT ERROR MESSAGE | |
| IEMS - INHIBIT ERROR MESSAGES | |

Fig. 8—Parameter Word A8SFDB

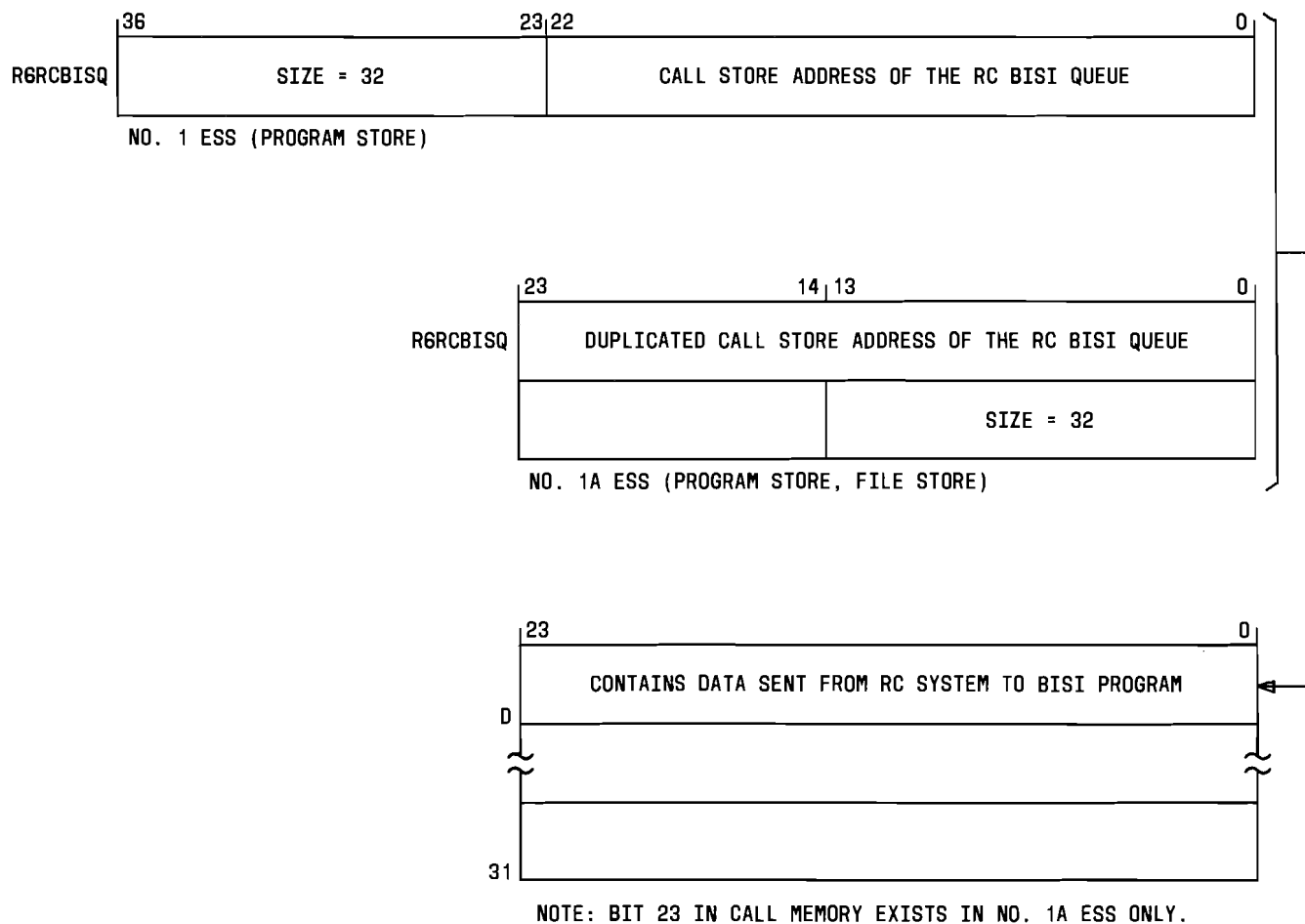


Fig. 9—Parameter Word R6RCBISQ

count in the SFG head cell is decremented by one. This count is compared to the BML item in the SFG auxiliary block. If $USAGE = BML - 1$, the SFG status is changed to idle. An overflow report is made when a call overflows from a BISI SFG and all physical facilities are busy.

Limited Access Group (TNAC = 1) Monitoring

4.17 In a limited access SFG with $TNAC = 1$, the HITN item is used to limit access to the SFG. The BML item indicates the number of physical facilities associated with the SFG. Therefore, when $BML = USAGE$, the SFG is reported to be busy to the busy/idle reporting function. The SFG is reported to be idle when $USAGE = BML - 1$. The SFGN is obtained for terminations and disconnects as described in paragraph 4.16. An overflow report is made when

a call overflows from a BISI SFG and all physical facilities are busy.

Limited Access Group (TNAC = 0) Monitoring

4.18 When a call terminates to an 800 Service customer's line in a limited access SFG with $TNAC = 0$, a DN translation is performed which yields the associated SFGN. A simulated facilities register (SFR) is seized and the usage count in the SFG headcell is incremented by one. If $USAGE = QUANT$ where QUANT is set equal to the number of SFRs for the SFG, then the SFG is reported busy to the busy/idle reporting function. When a SFR is released (disconnect occurs) from a busy SFG ($USAGE = QUANT - 1$), an idle report is made to the busy/idle reporting function.

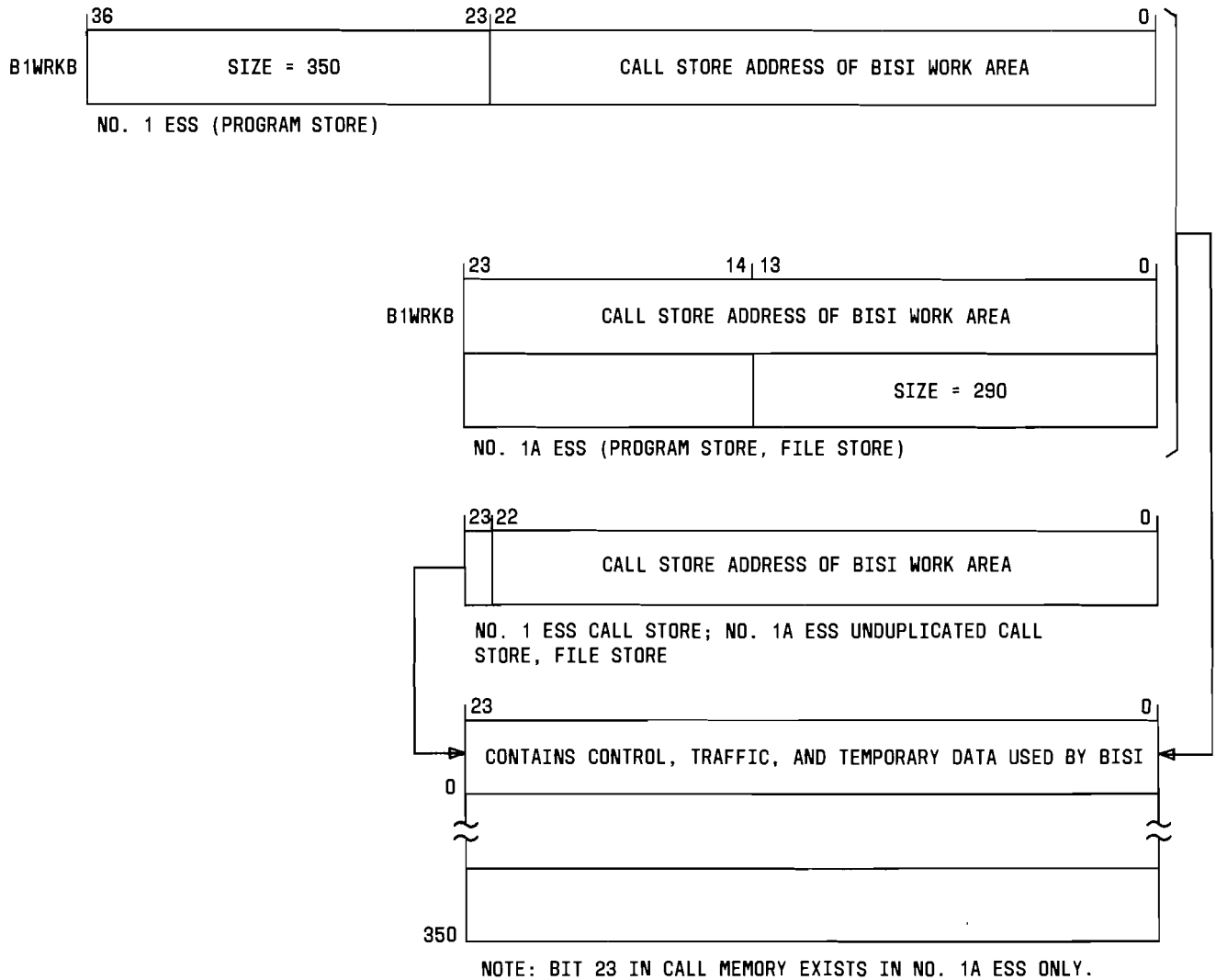


Fig. 10—Parameter Word B1WRKB

4.19 In a limited access group with TNAC = 0, there is no unique LEN to SFG association. When a line in one of these SFGs goes off-hook, it is impossible to determine the SFG involved so no SFR is seized. Therefore, it is possible that all the physical facilities associated with the SFG are busy, but the number of 800 calls in progress, as indicated by the usage count, is not at maximum (USAGE < QUANT). If all physical facilities are busy and 800 access is available (USAGE < QUANT), then no busy or overflow report is made to the busy/idle reporting function.

Busy/Idle Reporting

4.20 Busy/idle reporting occurs under one of the following conditions:

- Line monitoring reports an SFG as busy
- Line monitoring reports an SFG as idle
- Line monitoring reports an overflow from a busy SFG.

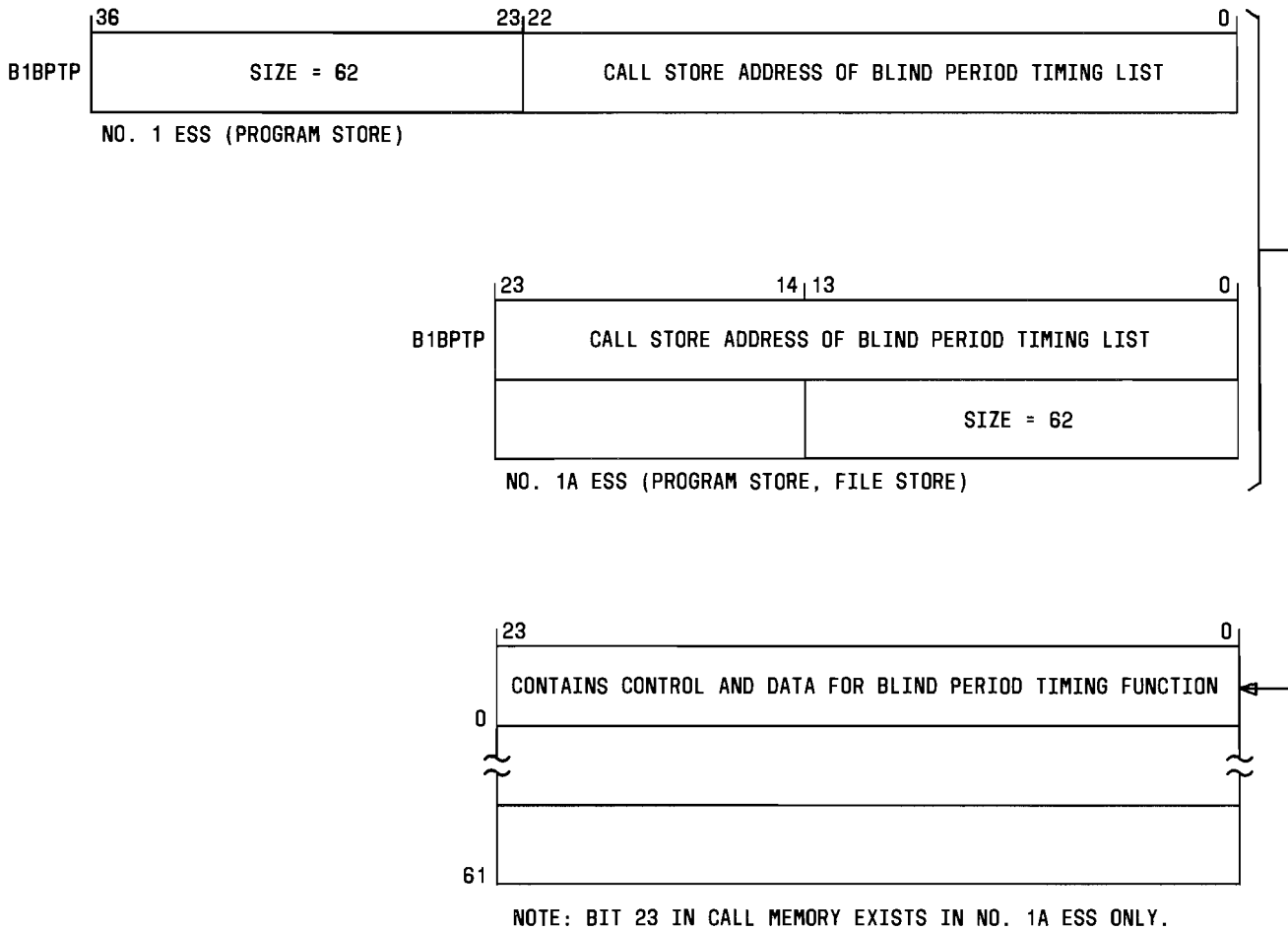


Fig. 11—Parameter Word B1BPTP

The busy/idle message that is sent to the 800 Service data base via CCIS direct signaling contains the following information:

- (a) The customer's 800-NXX in binary
- (b) The message type (00010 0001)
- (c) The terminating end office return address (15-bit binary function number)
- (d) The busy/idle status (0 for idle and 1 for busy)
- (e) The audit response bit
- (f) The 16-bit busy/idle bit number.

4.21 The 800 Service data base determines whether a busy or idle message is received and updates the status of the indicated customer destination. If

the SFG is reported to be busy, then the SFG is placed on the blind period timing list for 3 to 9 seconds. Busy/idle reporting is not performed while the SFG is marked on this list.

B. Busy/Idle Activate/Deactivate Messages

4.22 The transmission of busy/idle messages can be activated and deactivated from both the 800 Service data base and the terminating end office. When activation or deactivation is initiated at the 800 Service data base, the data base sends the terminating end office a busy/idle activate/deactivate message containing the following:

- (a) The terminating end office DDD number
- (b) The message type
- (c) The activate/deactivate indicator
- (d) 800 Service data base return address.

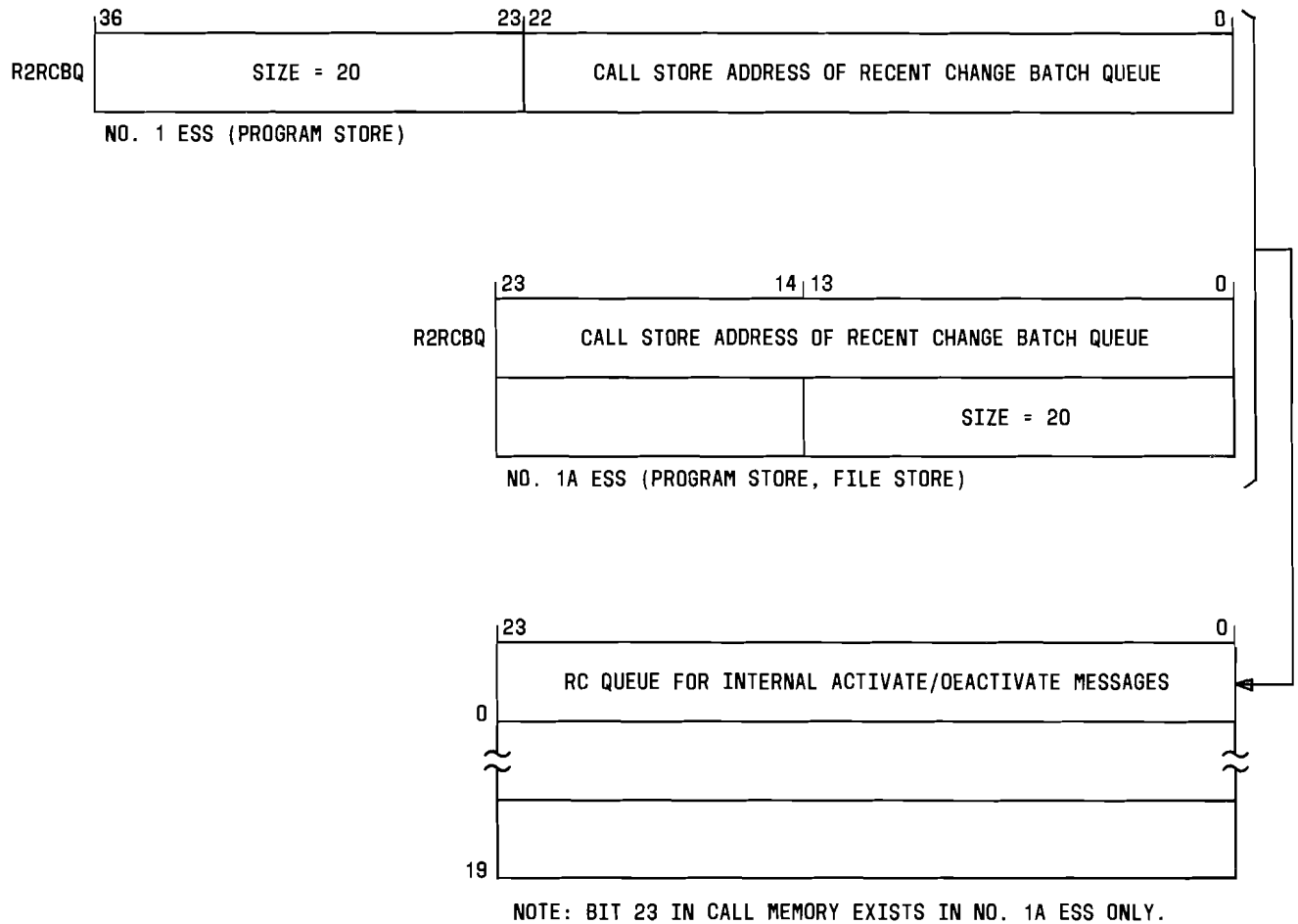


Fig. 12—Parameter Word R2RCBQ

4.23 Upon receipt of a valid busy/idle activate/deactivate message from the 800 Service data base for a BISI SFG, the terminating end office sets the ADB indicator in the SFG auxiliary block accordingly. If the message is an activate request, the ADB item is set to a value of one. If the message is a deactivate request, the ADB item in the SFG auxiliary block is set to 0. The procedure described is referred to as automatic activation (deactivation) of 800 Service busy/idle reporting.

C. Terminating End Office Busy/Idle Activate/Deactivate Response

4.24 The terminating end office sends a busy/idle activate/deactivate response message to the

800 Service data base due to one of the three following situations:

- (a) In response to an activate/deactivate message sent by the 800 Service data base via a request from the network administration center (NAC)
- (b) In response to a data comparison at the terminating end office
- (c) In response to a craft person initiated change in the busy/idle reporting status of an 800 customer SFG.

4.25 The busy/idle activate/deactivate response message contains the following data:

- (a) The customer 800-NXX in binary
- (b) The message type

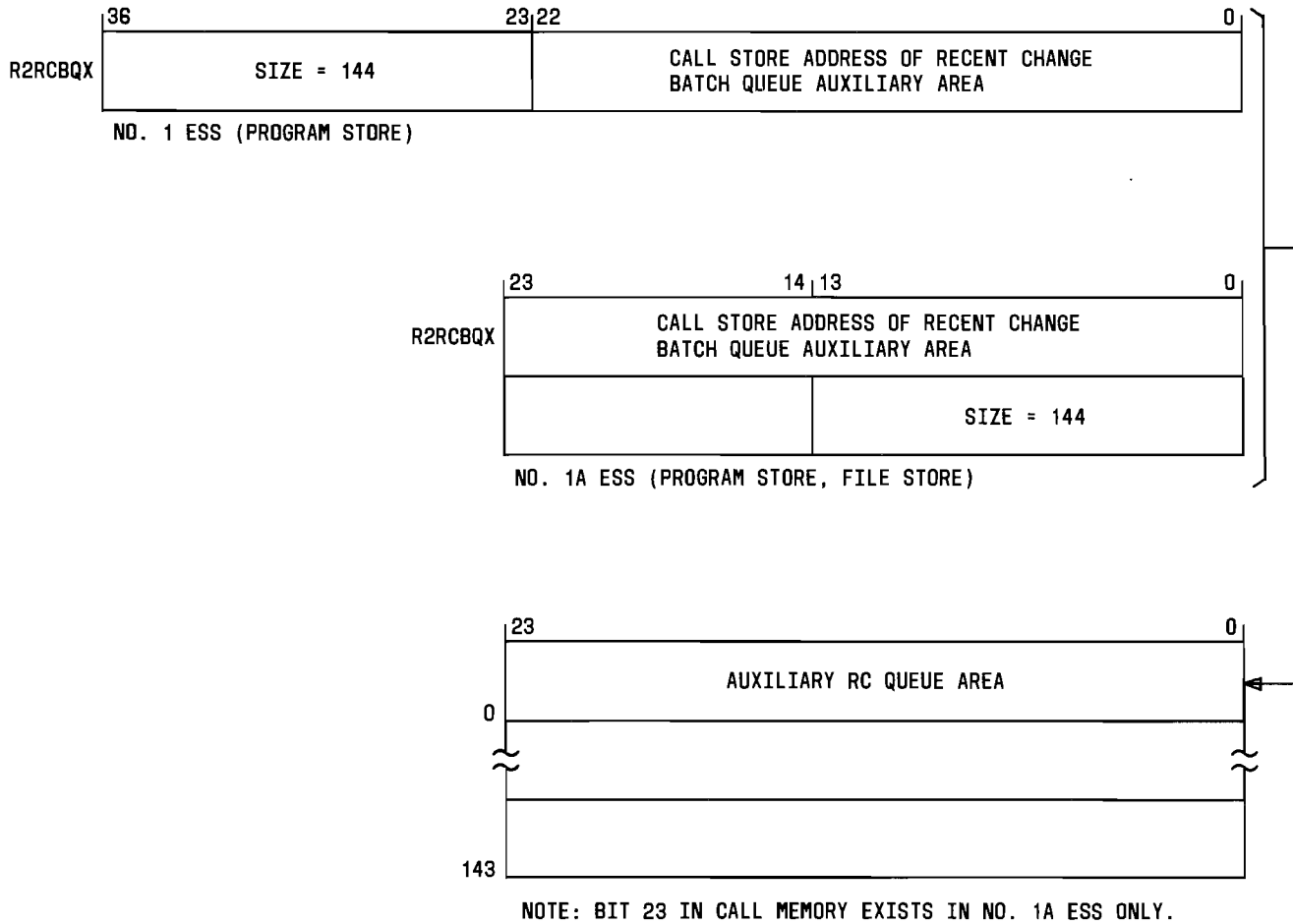


Fig. 13—Parameter Word R2RCBQX

- (c) The terminating end office return address
- (d) The customer's busy/idle bit number at the terminating end office
- (e) The reason sent field
- (f) The activate/deactivate response indicator (one if activate response, zero if deactivate response).

D. Busy/Idle Status Update Request Message and Terminating End Office Response

4.26 An 800 Service data base sends the terminating end office an update request message when the data base detects that a SFG has been in the busy state for "n" or more minutes (where n is a data base parameter of 1-7). The data base idles that

customer's busy/idle indicator. The data base then sends the busy/idle status update message to the terminating end office. The message is of the following format:

- (a) The destination DDD number (NPA in binary, NXX in binary, and XXXX in binary-coded-decimal)
- (b) The message type (00010 0010)
- (c) The 800 Service data base return address (15-bit function number).

The terminating end office, upon receiving the status update message, determines the current busy/idle state for the indicated SFG and responds with a busy/idle message. The format of this message is identical to the busy/idle message as described in

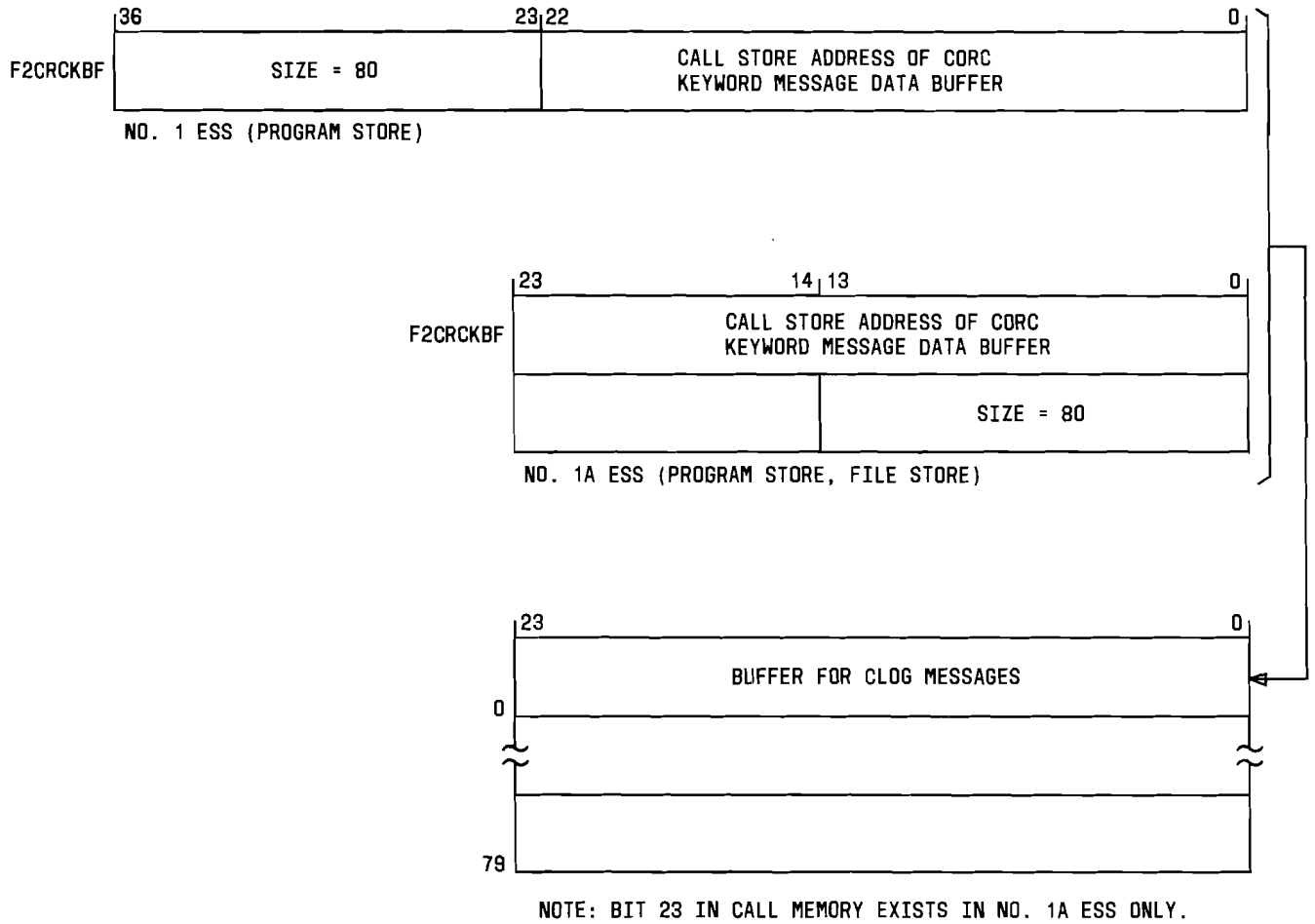


Fig. 14—Parameter Word F2CRCKBF

paragraph 4.20 except that the audit response bit is set to a value of 1.

E. Initiated Data Check and Terminating End Office Response

4.27 Since some identical customer data is stored at the 800 Service data base and at the terminating end office for routing both 800 calls and direct signaling messages, a check is performed to verify that the information is in agreement.

4.28 The 800 Service data base sends the terminating end office a data base initiated data check message of the following format:

- (a) The destination DDD number
- (b) The message type

- (c) The 800 Service data base return address
- (d) The data check identification number
- (e) The data check type indicator.

4.29 The terminating end office response to this message is a data base initiated data check response message containing the following information:

- (a) The 800 Service data base function number as the destination address
- (b) The message type
- (c) The terminating end office return address
- (d) The terminating end office NXX

- (e) The terminating end office 16-bit busy/idle number
- (f) Busy/idle messages activated indicator
- (g) The data check identification number
- (h) The data check type indicator
- (i) Not found indicator.

4.30 If the terminating end office receives a data base initiated data check message for an 800 number which it does not serve, a response message is still sent by the terminating end office to the 800 Service data base. In this case, the not found indicator is set to one and all zeros are used for the NXX portion of the end office 800-NXX-XXXX and busy/idle bit number. If the 800-NXX and busy/idle bit data matches at the 800 Service data base, a busy/idle activate message is sent to the TEO. If a mismatch of the data occurs, a busy/idle deactivate message is sent to the TEO.

F. Terminating End Office Initiated Data Check

4.31 A terminating end office initiated data check is sent to the 800 Service data base as a result of one of the following actions: (1) a recent change request for activation, and (2) upon request from a craft person at the terminating end office.

4.32 The terminating end office initiated data check message contains the following:

- (a) The customer 800-NXX
- (b) The message type
- (c) The terminating end office return address
- (d) The terminating end office busy/idle bit and number
- (e) The terminating end office data check identification.

4.33 Upon receiving a terminating end office initiated data check message, the 800 Service data base sends a response message containing the following:

- (a) The terminating end office function number as the destination address

- (b) The message type
- (c) The 800 Service data base DDD number
- (d) The not found indicator
- (e) The terminating end office data check identification
- (f) The 800 Service data base busy/idle bit status
- (g) The 800 Service data base busy/idle count frequency
- (h) The 800 Service data base return address.

The not found indicator is set to one if the 800 Service data base cannot derive a DDD number with the terminating end office provided 800-NXX and the busy/idle bit number. The DDD number is set to zero in this case.

CHARACTERISTICS

5. FEATURE ASSIGNMENT

5.01 The BISI feature is provided on a per 800 Service customer simulated facility group basis.

6. LIMITATIONS

OPERATIONAL

6.01 Not applicable.

ASSIGNMENT

6.02 All lines in an 800 Service group (unlimited SFG or limited SFG with TNAC = 1) must be assigned an originating major class of denied origination.

6.03 To provide the BISI feature in a No. 1 or 1A ESS office, each 800 Service SFG in the office must be assigned a DDD telephone number.

6.04 Only eight SFGs can be assigned in the terminating end office to the BISI traffic studies list.

7. INTERACTIONS

STATIC

7.01 A small number of 800 Service customers have 800 Service automatic message accounting

(AMA) billing implemented using 800 Service hardware (clocks and registers). The BISI feature does not report busy/idle conditions for any 800 Service lines that use this hardware method in the terminating end office.

7.02 Multiline hunt stop hunt and multiline hunt make-busy keys must not be assigned to 800 Service lines/groups (unlimited SFG or limited with TNAC = 1).

DYNAMIC

7.03 Not applicable.

8. RESTRICTION CAPABILITY

8.01 Not applicable.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 The procedure for adding the BISI feature to a No. 1 or No. 1A ESS office is illustrated in Fig. 15. See reference A(8) in Part 18 for details of the procedure for adding CCIS direct signaling capability in a No. 1 or No. 1A ESS office. Refer to Part 13 to verify the proper installation, addition, or deletion of the BISI feature.

9.02 The RC:BISI message must be used to deactivate busy/idle reporting of an 800 Service customer line group before changing customer data using RC:LINE or RC:SIMFAC messages.

9.03 The following set cards are required or are affected by the BISI feature:

SECTION	TITLE
9SBISI	BISI feature group
9SVM11	Verify message improvements phase 1 feature group
9FBISI	BISI feature package
9FCLOG	CLOG feature package
9FRCAD	RCAD feature package
NRCBQ	Number of RC batch queue entries.

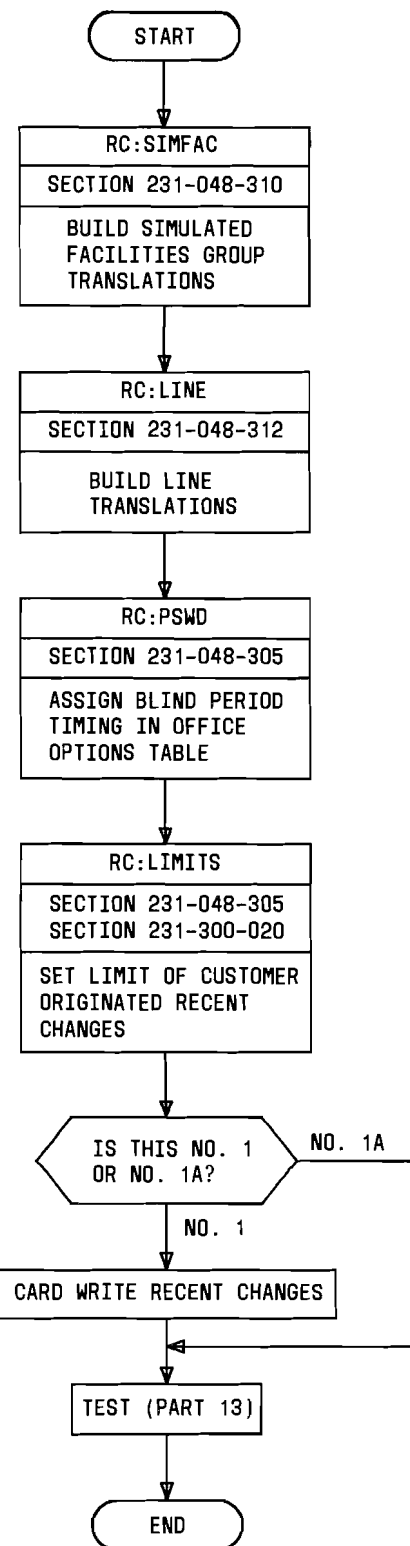


Fig. 15—Procedure for Adding BISI Feature in an ESS Office

10. HARDWARE REQUIREMENTS

10.01 Not applicable.

11. SOFTWARE REQUIREMENTS

Note: This part contains cost factors and determination of quantities. Central Office Equipment Engineering System (COEES) Planning and Mechanized Ordering Modules are the recommended procedures for developing these requirements. However, for planning purposes or if COEES is not available, the following guidelines may be used.

MEMORY

A. No. 1 ESS

Fixed

11.01 The following memory is required whether or not the BISI feature is used:

- (a) **Base generic program (program store):** Approximately 830 words are required.
- (b) **Fixed parameters (program store):** Seven words are required.
- (c) **Compool defined words (call store):** Three words are required.

Conditional

11.02 The following memory is required when the BISI feature group is activated:

- (a) **Optionally loadable feature packages (program store):** Package sizes are 7300 words, including 4600 words for the BISI feature package, 1200 words for the RCAD feature package, and 1500 words for the CLOG feature package.
- (b) **Call store:** Requirements are as follows:
 - BISI simulated facilities group table—1 word per SFG
 - Recent change BISI queue—32 words
 - BISI work area—350 words
 - Blind period timing list—62 words

- Recent change batch queue—20 words
- Recent change batch queue auxiliary area—144 words
- Customer originated recent change keyword message data block buffer—80 words.

Variable

11.03 The following **translations (program store)** are required when the BISI feature is applied:

- Line equipment number auxiliary block—1 word (shared cost with other features)
- Directory number auxiliary block—1 word (shared cost with other features)
- Multiline hunt group terminal auxiliary block—1 word
- Simulated facilities group auxiliary block—2 words
- Office option table—1 word
- Limits translator—1 word.

B. No. 1A ESS

Fixed

11.04 The following memory is required whether or not the BISI feature is used:

- **Base generic program (program store, file store):** Approximately 1,035 words are required.
- **Fixed parameters (unduplicated call store, file store):** Fourteen words are required.
- **Compool defined words (duplicated call store):** Three words are required.

Conditional

11.05 The following memory is required when the BISI feature group is activated:

- **Optionally loadable feature packages (program store, file store):** Package sizes

are 9490 words including 5980 words for the BISI feature package, 1560 words for the RCAD feature package, and 1950 words for the CLOG feature package.

- **Duplicated call store:** Requirements are the same as No. 1 ESS. Refer to paragraph 11.02.

Variable

11.06 The memory required for translations (**unduplicated call store, file store**) when the BISI feature is applied is the same as translations for No. 1 ESS. Refer to paragraph 11.03.

REAL TIME IMPACT

11.07 In a No. 1 ESS office, a fixed overhead of 50 cycles (100 cycles for No. 1A ESS) per terminating 800 Service call is assumed attributable to the BISI feature. This is due to the line group monitoring process to determine the status of SFGs and to the incrementing of traffic counts.

11.08 An overhead of 300 cycles (600 cycles for No. 1A ESS) is required to form and send a busy/idle message.

11.09 Depending upon the size of the 800 Service terminating end office, a real time savings of 1.5 percent of the No. 1 and No. 1A ESS processor capacity is estimated for the BISI feature due to the elimination of busy 800 Service calls.

11.10 Cycle times for No. 1 ESS are as follows: 5.5 microseconds (0 percent speedup), 5.24 microseconds (5 percent speedup), or 5.0 microseconds (10 percent speedup). Clock speedup is available with 1E7 and base restarts of the 1E6 generic programs.

11.11 The cycle time for No. 1A ESS is 0.7 microsecond.

12. DATA ASSIGNMENTS AND RECORDS

TRANSLATION FORMS

12.01 The following ESS translation forms, detailed in reference C(1) in Part 18, are applicable to the BISI feature:

- (a) ESS 1107A—Supplementary Information Record—Used to assign BISI monitoring and

the INWATS data base directory number items on a per-line basis.

- (b) ESS 1115—Multiline Group Record—Used to assign the simulated facilities group number associated with the terminal in a multiline hunt group.

- (c) ESS 1225—Simulated Facilities Group Record—Used to assign BISI data in the simulated facilities group auxiliary block.

- (d) ESS 1500D—Office Option Record—Used to assign the blind period timing interval value for BISI.

- (e) ESS 1500E—Recent Change Limits Record—Used to assign limit of customer originated recent change registers used by the BISI feature.

RECENT CHANGES

12.02 The recent change messages affected by the BISI feature are as follows:

MESSAGE	FUNCTION
RC:LINE	Indicates BISI line monitoring using keyword BISIM. Keyword IDBDN indicates the 800 Service data base routes calls to this DN. See reference A(5) in Part 18 for detailed information.
RC:SIMFAC	Used to indicate the busy/idle bit number of an SFG using keyword BIBN. Keyword DBBCF indicates the frequency that the terminating end office receives traffic counts from the 800 Service data base. Keyword OFC is used to specify the office code of the dialed 800 Service number. Refer to A(6) in Part 18 for detailed information.
RC:LIMITS	Used to assign and change the recent change register limit using keyword BIS. See reference A(3) or A(4) in Part 18 for detailed information.
RC:BISI	Used to activate or deactivate busy/idle reporting of an 800

MESSAGE

FUNCTION

Service customer line group.
See reference A(6) in Part 18
for detailed information.

13. TESTING

13.01 BISI translation data can be verified using the TTY messages that follow. See references in Part 18B for details.

(a) Use VFY-DN to verify directory number translations. System response should be TR01.

(b) Use VFY-LEN to verify line equipment number translations. System response should be TR03.

(c) Use VFY-CSTG-36 to verify multiline hunt group translations. System response should be TR16.

(d) Use V-SFGN to verify simulated facilities auxiliary block translations. System response should be TR35.

(e) Use V-LIMITS to verify the recent change register limit assigned to the BISI feature. System response should be RC25.

(f) Use VF:DNSVY to survey a specified range of directory numbers to identify and/or count those directory numbers having certain specified assignments of features. System response should be PF followed by a printout of the data.

(g) Use VF:LENSVY to survey a specified range of line equipment numbers (LENs) to identify and/or count those LENs having certain specified assignments. System response should be PF followed by a printout of the data.

(h) Use VF:SURVEY to survey the entire ESS data base or a specified subset of the ESS data base to identify and/or count the occurrence of items specified by the words input. System response should be PF followed by a printout of the data.

14. OTHER PLANNING TOPICS

14.01 Not applicable.

ADMINISTRATION

15. MEASUREMENTS

15.01 Type measurement code (TMC) 005 provides traffic counts for the BISI feature. These counts are available on the hourly H- and C- and the selected quarter-hour traffic schedules. The equipment group or office count numbers (EGOs) and descriptions are as follows:

EGO	DESCRIPTION
567	Blind Period Timing Peg Count —Counts the number of times a simulated facilities group number is placed on the blind period timing list.
568	Blind Period Timing Overflow Count —Counts the number of attempts to place a simulated facilities group number on the blind period timing list when it is full.
570	Direct Signaling Messages Sent Peg Count —Counts the number of messages placed in the terminal transmit buffer which are being sent by the BISI feature to the 800 Service data base. These messages consist mainly of busy/idle messages.
571	Direct Signaling Messages Received Peg Count —Counts the number of messages received by the BISI feature from the 800 Service data base.
592	Direct Signaling Messages Misrouted Peg Count —Counts the number of direct signaling messages received in error.

15.02 The following existing TMCs are affected by the BISI feature.

TMC	DESCRIPTION
027	Simulated Facilities Group Usage —Measures usage on unlimited access 800 Service simulated facilities groups.
030	Two-Way Simulated Facilities Group Incoming Peg Count —Only simulated facilities groups with the DBBCF item set (01) in the SFG auxiliary block have both end office and data base counts.
031	Simulated Facilities Group Overflow —Only the simulated facilities groups with the DBBCF item set to a value of 01 in the SFG auxiliary block have both end office and data base counts.

16. CHARGING

AUTOMATIC MESSAGE ACCOUNTING

16.01 An indication of the effectiveness of a customer's 800 Service is provided via an automatic message accounting (AMA) record of overflow counts associated with 800 Service SFGs.

16.02 Because busy and overflow conditions occur at both the 800 Service data base and the TEO, counts of busies and overflows at the data base are reported to the TEO to provide the customer with an accurate profile of the service.

16.03 The 800 Service data base accumulates overflow and busy counts for overflowing (at the ESS) and nonoverflowing (at the ESS) SFGs. These counts are sent once every 24 hours to the No. 1 or No. 1A ESS terminating end office. The AMA routines disregard the overflow counts as these counts are not required to be output on the AMA record.

16.04 The 800 Service data base sends the 800 Service customer's daily busy count to the 800

Service terminating end office via a CCIS data base busy count message. This message includes:

- (a) The NPA-NXX-XXXX of the destination with the NPA-NXX in binary and the XXXX in BCD
- (b) The message type (00 0001 1000)
- (c) The busy count in binary (16 bits)
- (d) The overflow count in binary (16 bits)
- (e) Data base busy count frequency.

16.05 When the terminating end office receives the data base busy count, the terminating end office busy count is found for the same customer and both are written on an AMA record. The AMA record contains the following:

- (a) An AMA record type identifier (VZ18)
- (b) Billing DN
- (c) The 800 Service data base busy count
- (d) The terminating end office busy count
- (e) The data (month and day)
- (f) The time of day.

16.06 An AMA record is generated for all BISI SFGs in the office. If the data base count is not received for a particular BISI SFG, then the AMA record is zero.

UNIFORM SERVICE ORDER CODES

16.07 Not applicable.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

Nonoverflowing SFG: Alternate routing to another SFG not possible.

Overflowing SFG: Alternate routing to another SFG is possible.

18. REFERENCES

A. Bell System Practices

- (1) Section 231-090-275—800 Service—Terminating Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (2) Section 231-090-274—800 Service—Originating Screening Office Feature—2-Wire No. 1 and 1A Electronic Switching Systems
- (3) Section 231-104-305—Monitoring Recent Change Area Customer Originated Recent Change (CORC)—2-Wire No. 1 Electronic Switching System
- (4) Section 231-300-020—Customer Originated Recent Changes (CORC)—2-Wire No. 1A Electronic Switching System
- (5) Section 231-048-312—ACT, CFV, LINE, MLHG, MOVE, MPTY, OBS, SCLIST, SIMFAC, TWOPTY, and VSS—Line Recent Change Formats (1E6/1AE6 and 1E7/1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (6) Section 231-048-310—ANIDL, BISI, CAMA, CFG, CLAM, CPD, JUNCT, LRE, MSN, MNTGC, PLM, PUC, PUCMB, RCHAN, ROTL, RSP, RSSCB, SCGA, SIMFAC, and TMBCGA Recent Change Formats (1E6/1AE6 and 1E7/1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (7) Section 231-050-020—Local and Toll Common Channel Interoffice Signaling—Task Oriented Practice
- (8) Section 231-090-416—Feature Document—Common Channel Interoffice Signaling Feature—Local and Toll—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (9) Section 212-100-003—Improved INWATS Service in 4A Toll Switching System Having Common Channel Interoffice Signaling—Description and Method of Operation
- (10) Section 212-826-304—Common Channel Interoffice Signaling—Network Routing Description and Tests
- (11) Section 231-090-207—Feature Document—Traffic Measurements Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

- (12) Section 231-090-413—Feature Document—Interface with ACD-ESS Management Information Systems (AEMIS)—2-Wire No. 1 and No. 1A Electronic Switching Systems
 - (13) Section 231-060-210—Service Circuits—Network Switching Engineering—No. 1 and No. 1A Electronic Switching Systems
 - (14) Section 231-061-450—Program Stores—Network Switching Engineering—No. 1 Electronic Switching System
 - (15) Section 231-061-460—Call Stores—Network Switching Engineering—No. 1 Electronic Switching System
 - (16) Section 231-062-465—Processor Community Engineering—Duplicated Call Store—Network Switching Engineering—No. 1A Electronic Switching System
 - (17) Section 231-062-470—Processor Community Engineering—Unduplicated Call Store—Network Switching Engineering—No. 1A Electronic Switching System
 - (18) Section 231-062-460—Processor Community Engineering—Program Stores—Network Switching Engineering—No. 1A Electronic Switching System
 - (19) Section 231-062-475—Processor Community Engineering—File Stores—Network Switching Engineering—No. 1A Electronic Switching System
 - (20) Section 759-100-000—Subject Index—Central Office Equipment Engineering (COEES)—Business Information System Programs
 - (21) Section 759-100-100—General Description—Central Office Equipment Engineering (COEES)—Business Information System Programs.
- B. TTY Input and Output Manuals**
- (1) Input Message Manual IM-1A001, No. 1 Electronic Switching System
 - (2) Output Message Manual OM-1A001, No. 1 Electronic Switching System
 - (3) Input Message Manual IM-6A001, No. 1A Electronic Switching System

- (4) Output Message Manual OM-6A001, No. 1A Electronic Switching System.

C. Other Documentation

- (1) Translation Guide TG-1A, 2-Wire No. 1 and No. 1A Electronic Switching Systems
- (2) Office Parameter Specification PA-591001, 2-Wire No. 1 Electronic Switching System
- (3) Parameter Guide PG-1, 2-Wire No. 1 Electronic Switching System

- (4) Office Parameter Specification PA-6A001, 2-Wire No. 1A Electronic Switching System

- (5) Parameter Guide PG-1A, 2-Wire No. 1A Electronic Switching System

- (6) Translation Output Configuration PA-591003, 2-Wire No. 1 Electronic Switching System

- (7) Translation Output Configuration PA-6A002, 2-Wire No. 1A Electronic Switching System.