



**CENTREX STATION REARRANGEMENT
FEATURE DESCRIPTION
NETWORK ADMINISTRATION
1A ESS™**

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1.03 The title for each figure includes a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

2. FEATURE DESCRIPTION

2.01 The Centrex Station Rearrangements (CSR) feature allows Centrex/ESSX-1 customers to directly access the 1A translations data base to enter certain recent changes and verify their own station assignments without requiring a service order. With the CSR feature, station rearrangements can be made more quickly and at the customer's convenience.

2.02 An existing customer desiring the CSR feature must initiate a service request to the operating company to add the CSR feature. The CSR feature is provided on a per-line basis. Changes to customer lines not having CSR and changes of features not covered by CSR continue to require a service request to the company and operating company initiated recent changes.

2.03 The CSR feature can be provided for a Centrex/ESSX-1 customer having one or more Centrex groups. The customer can specify lines that are not to have the CSR feature. Those lines not having CSR are protected from any customer-initiated recent changes. A telephone company service order is required to change the status of a line from inaccessible to accessible or vice versa for CSR.

2.04 The following types of lines cannot be provided the CSR feature:

- Multiline Hunt group lines
- Attendant lines
- Centrex lines equipped with data sets
- Any line which has a special hardware configuration (eg, ground start lines and lines having associated scan points or signal distributor points).

2.05 Other restrictions are as follows:

- Lines marked for TOUCH-TONE service cannot be moved to or swapped with lines marked for dial pulse service and vice versa.

- A CSR customer can have only one command active at a time.

3. CUSTOMER USE OF CSR FEATURE

A. Customer Interface

3.01 A customer with CSR service is connected to the 1A ESS switch via a terminal and a peripheral controller (PUC) data link (Fig. 1). One PUC data link is required for each CSR customer.

3.02 Each PUC data link (Fig. 1) consists of a line interface unit and associated data set at the central office. The PUC data link has a line appearance (referred to as the dialup port) on the line link network (LLN) for customer access and control. The PUC is connected to the 1A ESS switch via the peripheral unit bus.

B. Session Origination

3.03 To originate a terminal session, a customer dials the directory number (DN) associated with a PUC dialup port. If the PUC data link is busy when a customer dials, busy tone is returned.

3.04 After successfully dialing the PUC dialup port DN, the customer dials a 4-digit password (security code) to gain access to the system. When the correct 4-digit password is received, the 1A ESS switch sends a greeting to the customer, followed by a system prompt indicating a readiness to receive a command.

C. Customer Commands

3.05 The CSR commands (for activation/deactivation, change, display, and verification requests) are entered via the customer terminal.

3.06 *Activate/Deactivate Commands* allow certain features to be active or inactive on a per-station basis. Refer to Fig. 2 for a listing of these features.

3.07 *Change Commands* are used to rearrange (swap/move) TNs and to change particular service options on a per-station (line) basis. Service options which can be changed are listed in Fig. 2.

3.08 *Display Commands* allow CSR customers to verify their call pickup group numbers,

Centrex group numbers, and station (line) data that they control in the data base. The data that can be displayed is listed in Fig. 2.

3.09 Verify Commands initiate a search for those stations in the customer's centrex group(s) with the CSR feature that have (or do not have) the specified feature/service option/characteristic. Series completion sequences and extensions that series complete to a specified extension can also be verified. The features/service options/characteristics that can be verified are listed in Fig. 2. Only one feature/service option/characteristic can be verified at a time.

3.10 All Commands are checked for errors.

Change commands are also checked to insure that they affect only TNs within the customer's assigned number range. The customer receives a message that the change command has been accepted. If a command is denied for any reason, the customer receives a message that the command was not accepted and a brief explanation of the denial. See Fig. 3 for CSR customer output messages. During the time interval between the end of the customer command and the beginning of each line of output, an acknowledgement ("nod") indicator is provided every minute to assure the customer that the request is being processed. The options available as a "nod" indicator are as follows:

- Terminal printout ("Processing")
- Terminal space - backspace
- A bell ring.

D. Automatic Message Accounting

3.11 The Automatic Message Accounting (AMA) record is made for each successful activation/deactivation, display, change and verification command. Charges may be applied for all customer commands which are serviced by the 1A ESS switch. No charges are made for commands which are not serviced. Successful customer commands are recorded on AMA tape at the central office. The AMA tape entries are summarized by the telephone company to obtain the total number of each type of successful customer commands for billing purposes.

E. Disconnection

3.12 When the CSR customer disconnects (ie, hangs up the telephone or data set) standard release treatment occurs. When the customer disconnects, any command in progress is aborted if possible.

4. TELEPHONE COMPANY: CSR INTERACTION

A. Data Base Protection

4.01 Since the CSR feature allows CSR customers to access and change certain customer data in the data base, the data base integrity is protected by the following provisions:

- Customer access to the data base is password protected.
- Telephone company personnel can inhibit the CSR feature (for all customers) and/or can selectively inhibit one or more CSR customers from using the CSR feature.
- A CSR customer is restricted to that particular customer's own Centrex group(s).
- Lines in a CSR customer's Centrex group are selectively allowed the CSR capability based on customer requirements and telephone company restrictions for certain lines.
- Lines marked for dial pulse service cannot be mixed in a move with lines marked for TOUCH-TONE service.
- Call pickup assignments are checked to insure the call pickup group is valid for that customer.

B. Customer Originated Recent Change Log

4.02 The customer originated recent change log (CLOG) provides a record of all CSR's as they are entered into the system. The recent change message that causes the same action as the customer command is printed on a teletypewriter (TTY) in the central office (Refer to Fig. 4). Thus, the CLOG record may be used for the following purposes:

- Backup recent change data for CSR customer changes in the event recent change translations are lost or contain errors.

- To update line and number records.
- To update other records such as cable pair, business office, etc.

4.03 The CLOG output can be directed to one of several TTY channels. The local maintenance and recent change monitor channels are the default channels for CLOG output messages.

4.04 One CORC message is provided for the CSR feature. The CORC message has two formats as follows:

- CORC06 - LINE (for station changes other than moves)
- CORC06 - MOVE (for station moves)

4.05 The CORC output message formats include the CORC header, a time indicator, and the recent change message that causes the same action as the CSR customer command. The format for the CORC06 RC:LINE output message is shown in Fig. 5. The format for the CORC06 RC:MOVE output message is shown in Fig. 6.

C. Feature Control

4.06 Input messages are available to control and verify the CSR feature and CSR customer status and to verify various CSR customer translation data.

4.07 The telephone company can inhibit the CSR activation/deactivation and change capabilities via an input message. This message inhibits CSR changes for all CSR customers; however, CSR display and verification capabilities are not inhibited.

4.08 The telephone company can selectively inhibit one or more CSR customers from using the CSR feature via an input message. When a customer is inhibited, no CSR commands are accepted from that customer.

4.09 During an office overload condition, automatic overload controls slow down processing of all recent change (including CSR customer requests) to give priority to call processing.

5. TRANSLATION FORMS

5.01 The following translation forms provide data for the CSR feature:

- **ESS 1107A** - Supplementary Information Record: This form indicates that CSR is allowed for specified lines.
- **ESS 1107B** - Centrex Group Supplementary Information Record: This form indicates the call pickup group number(s) assigned to each customer Centrex group.
- **ESS 1126** - Supplementary Customer Services Identification Record: This form contains the CSR customer security code, CSR feature indicator, and the "nod" indicator. This form is also used to define the PUC/DL usage and to assign a customer to a data link.
- **ESS 1506** - Miscellaneous Assignment Information Record: This form is used to assign a customer to a data link and define the PUC/DL usage.

6. TRAFFIC MEASUREMENTS

6.01 Traffic measurements are provided for the CSR feature on the hourly H and C, selected quarter hour DA15, S1, S2, and S3 schedules. They are assigned like any other CTX type data.

6.02 These measurements provide the ability to report or give customer measurements. Ex: Busy Study Request. COER would only need the office measurements. EADAS/TDAS could be set up for customer busy study information or marketing information.

6.03 The traffic measurements related to the CSR feature are as follows:

- **TMC 131** - Successful PUC data link accesses peg count of successful logons by a PUC/DL customer on a per PUC/DL basis.
- **TMC 132** - PUC data link usage count, taken at 100-second intervals, counts the customer usage of a particular PUC/DL.
- **TMC 133** - Data link maintenance busy usage count, taken at 100-second intervals, counts the maintenance busy condition of each PUC/DL.

- **TMC 134** - CSR messages rejected due to input error peg count counts the number of invalid CSR input messages by each CSR customer.
- **TMC 135** - CSR customer messages peg count counts the number of CSR input messages by each CSR customer.
- **TMC 136** - CSR inhibited condition usage count, taken at 100-second intervals, counts the CSR unavailability for each CSR customer due to manual interventions.
- **TMC 137** - CSR messages rejected due to system error peg count counts the number of CSR input messages which are aborted due to a system error for each CSR customer.
- **TMC 005, EGO 591** - Failure to bill due to nonhardware failure peg count counts the number of CSR messages not billed because AMA resources (excluding tape drive failures) are unavailable.

7. SET CARDS

7.01 The values of set cards that may be of interest to the network administrator are as follows:

- **NCCSR** - This set card represents the maximum number of CSR customers planned for the current engineering interval. The maximum number that may be assigned is 63.
- **NAMSS** - This set card represents the number of 18-word AMA registers. The AMA record for CSR customers is stored in 18-word AMA registers until the data is written into the AMA output buffer. The value of set card NAMSS should include one 18-word AMA register for each CSR customer.

8. REAL TIME IMPACT

- 8.01** Since RC message processing is done in low priority job classes, the CSR feature has negligible impact on call capacity of the office.
- 8.02** The CSR feature that no fixed overhead and has negligible variable overhead.

8.03 The capability to make a station inactive is available for CSR customers. An inactive station is treated as an unassigned Centrex station during call processing, but it retains its translation data in the data base. Inactive stations are treated as busy stations during series completion. A call to an active station that requires series completion hunting, when there are one or more inactive stations in the sequence, takes approximately the same number of cycles as a call hunting over the same number of busy stations.

9. GLOSSARY

9.01 Terms frequently used in this section are defined in the following paragraphs.

9.02 Access Code Restriction Group (ACRG) - An ACRG is defined by the telephone company to allow stations (assigned to that ACRG) access to predefined facilities. Station access to facilities is restricted by the station ACRG assignment to the predefined facilities. Up to eight ACRGs can be established by the telephone company for each Centrex group. The ACRG is also known as the Centrex Access Treatment (CAT) code.

9.03 Automatic Callback Calling (ACBC) - The ACBC feature enables a calling party, who calls a busy station within the Centrex group, to be automatically called back when the called station becomes idle. The ACBC feature eliminates the waiting associated with camp-on, and allows both the calling and called parties to originate and receive other calls while the feature is active.

9.04 Call Forwarding Busy Line (CFBL) - The CFBL feature allows a call to a station that is busy to be automatically forwarded to a predesignated TN. The call forwarding TN can be changed using the CSR feature.

9.05 Call Forwarding Don't Answer (CFDA) - The CFDA feature allows a call to a station that is not answered after a predetermined number of rings to be automatically forwarded to a predesignated TN. The number of ringing cycles and the call forwarding TN can be changed using the CSR feature.

9.06 Call Forwarding Unrestricted Source (CFUS) - The CFUS is a service option available for the CFBL feature. Without the CFUS option, the CFBL feature forwards only incoming and attendant completed calls. The CFUS option allows intragroup calls to be forwarded using the CFBL feature.

9.07 Call Forwarding Variable (CFV) - The CFV feature allows all calls to a called station to be automatically forwarded to another TN without regard to the busy/idle status of the called station. The call forwarding TN is variable and can be changed by the station user.

9.08 Call Hold (CHD) - The CHD feature allows a station user to hold any established call by flashing the switchhook and dialing a special access code. Call hold allows a station user to temporarily hold a call in order to either originate another call or return to a previously held call.

9.09 Call Pickup (CPU) - The CPU feature allows a station user to answer a call that is directed to another station in the same call pickup group. Call pickup is accomplished by dialing a call pickup answer code while the called station is ringing.

9.10 Call Waiting Originating (CWO) - The CWO feature allows the calling party to wait for a call to a busy station within the same customer group to be automatically completed. With CWO, the called (busy) station is automatically rung when it becomes idle.

9.11 Call Waiting Terminating (CWT) - The CWT feature allows an incoming call to a busy station to receive call waiting treatment until the call is answered. The called party is alerted that an incoming call is waiting to be answered.

9.12 Dial Call Waiting (DCW) - The DCW feature allows the calling party to invoke call waiting party to invoke call waiting service from the originating station for a call to a busy station for a call to a busy station within the same customer group. The invoke DCW, the calling party dials the DCW access code and the extension number of the station to be call waited. When DCW is invoked, the call (busy) station is

automatically rung when it becomes idle.

9.13 Direct Connect Service - Direct connect service is an originating service option for manual lines which automatically places a call to a preassigned TN when the station user goes off-hook. A station with direct connect service cannot be use to originate a call to any TN other than the preassigned direct connect number (DCN). Terminating service is not affected.

9.14 Directed Call Pickup Nonbarge-In (DCPN) - The DCPN feature allows a station user to answer a call directed to a station in any call pickup group that is in the same customer or complex as the pickup station. A call is picked up (answered) by dialing an access code and the extension number of the station to be answered. If the call has already been answered, the station user who is attempting to pick up the call receives busy tone.

9.15 Directed Call Pickup With Barge-In (DCPU) - The DCPU feature allows a station user to answer a call directed to any other station in the same customer group or complex as the pickup station. A call is picked up (answered) by dialing an access code and the extension number of the station to be answered. If the call has already been answered, a burst of tone alerts the answering party that a third party (the party attempting to pickup the call) is going to be connected on the call. After the burst of tone, the third party is bridged onto the existing 2-party connection.

9.16 Facility Restriction Level (FRL) - An FRL is defined by the telephone company to allow ETS customer stations (assigned to that FRL) access to predesigned facilities. Station access to facilities is restricted by the station FRL assignment to the predefined facilities. Up to eight FRLs can be established by the telephone company for each ETS customer group.

9.17 Inhibit ETS Queuing (INEQ) - The INEQ feature allows the ETS Deluxe Queuing (ETSQ) feature to be inhibited on a per-station basis for an ETS customer station. The ETSQ feature increases the utilization of out-going facilities by allowing calls to wait until a facility becomes available for a particular call on queue, the

call is automatically made without redialing.

• Parameter Guide PG-1A

9.18 Series Completion Hunting - Series completion circular hunting is used when a customer has the CSR feature. With circular hunting the hunt starts with the call line, and if busy, proceeds in a prearranged order to hunt through all lines in the hunt group until an idle line is found.

9.19 Speed Calling - The Speed Calling feature allows station users to have abbreviated codes assigned to frequently called numbers. Speed calling permits dialing of selected numbers using only one or two digits, rather than dialing all digits in the desired TN. Speed calling can be provided on a customer group basis for customer stations to share a common speed calling list.

10. REFERENCES

10.01 Refer to Section 780-100-022 for a complete list of recommended documents.

10.02 The following documents provide information related to this section.

SECTION	TITLE
191-170-400	Centrex Customer Change Feature - Operating Procedures
231-190-064	Centrex Station Rearrangements Feature - Feature Document - 1 ESS Switch
231-390-064	Centrex Station Rearrangements Feature - Feature Document - 1A ESS Switch

Other Documents

- Input Message Manual IM-6A001
- Output Message Manual OM-6A001
- Translation Guide TG-1A
- Office Parameter Specification PA-6A001
- Translation Output Configuration PA-6A002

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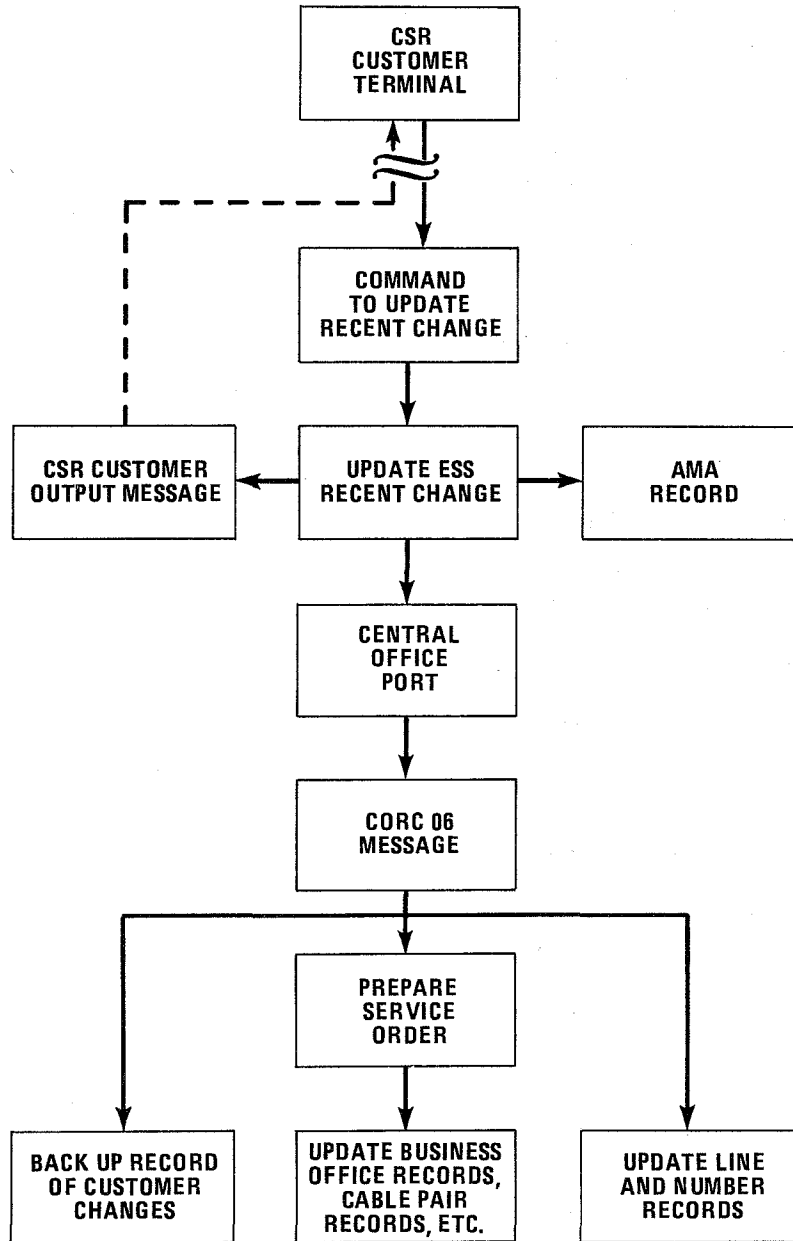


Figure 1 - CSR Customer Interface with ESS Switch (3.01, 3.02)

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<u>FEATURE/SERVICE OPTION/CHARACTERISTIC</u>	<u>ACT/DEACT</u>	<u>CHANGE</u>	<u>DISPLAY</u>	<u>VERIFY</u>
Access Code Restriction Group (ACRG).....	N/A	Yes	Yes	Yes
Active/Inactive Station Status.....	N/A	Yes	Yes	Yes
Active Centrex Number.....	N/A	Yes	Yes	N/A
Automatic Callback Calling (ACBC).....	Yes	N/A	Yes	Yes
Call Forwarding Busy Line (CFBL).....	Yes	N/A	Yes	Yes
Call Forwarding Don't Answer (CFDA).....	Yes	N/A	Yes	Yes
Call Forwarding Number (CFN).....	N/A	Yes	Yes	Yes
Centrex Group Number.....	N/A	N/A	Yes	N/A
CFDA Ringing Cycles (CFDA RCYC).....	N/A	Yes	Yes	Yes
Call Forwarding Unrestricted Source (CFUS).....	Yes	N/A	Yes	Yes
Call Forwarding Variable (CFV).....	Yes	N/A	Yes	Yes
Call Hold (CHD).....	Yes	N/A	Yes	Yes
Call Pickup (CPU).....	Yes	Yes	Yes	Yes
Call Waiting Originating (CWO).....	Yes	N/A	Yes	Yes

NOTE: N/A = Not Applicable

Figure 2 - Overview of CSR Capabilities (Sheet 1 of 2) (3.06, 3.07, 3.08, 3.09)

<u>FEATURE/SERVICE OPTION/CHARACTERISTIC</u>	<u>ACT/DEACT</u>	<u>CHANGE</u>	<u>DISPLAY</u>	<u>VERIFY</u>
Call Waiting Terminating (CWT).....	Yes	N/A	Yes	Yes
Centrex Station Rearrangements (CSR).....	N/A	N/A	N/A	Yes
Dial Call Waiting (DCW).....	Yes	N/A	Yes	Yes
Direct Connect Number (DCN).....	N/A	Yes	Yes	Yes
Directed Call Pickup With Barge-In (DCPU).....	Yes	N/A	Yes	Yes
Directed Call Pickup Nonbarge-In (DCPN).....	Yes	N/A	Yes	Yes
Facility Restriction Level (FRL).....	Yes	Yes	Yes	Yes
Inhibit ETS Queueing (INEQ).....	Yes	N/A	Yes	Yes
Line Equipment Number (LEN).....	N/A	N/A	Yes	N/A
One-Digit Speed Calling (SC).....	Yes	N/A	Yes	Yes
Series Completion Hunting.....	Yes	Yes	Yes	Yes
Station Telephone Number(s) (TNs).....	N/A	Yes	Yes	N/A
Two-Digit Speed Calling (SC2).....	Yes	N/A	Yes	Yes

NOTE: N/A = Not Applicable

Figure 2 - Overview of CSR Capabilities (Sheet 2 of 2) (3.06, 3.07, 3.08, 3.09)

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<u>OUTPUT MESSAGE</u>	<u>CONDITION</u>
ACCEPTED.....	Change accepted
ERROR__INPUT (input).....	Input error
ERROR__VALER.....	Validity error
ERROR__SYSTEM.....	Recent change system error
ERROR__INTERN.....	Translation error
ERROR__REINPUT MESSAGE.....	Parity check
ERROR__INPUT(&).....	Break
ABORTED.....	Abort response
MESSAGE NOT FOUND.....	Unsuccessful abort
CHANGES INHIBITED.....	CSR changes inhibited
TRY AGAIN.....	Message failed to load on queue or lost message
CTX GROUP CHANGED.....	Successful centrex group change
INVALID CTX GROUP.....	Unseccessful centrex group change
UNEXPECTED ERROR.....	Index out of range or index not valid for customer input
ERR__UNEXPECTED ERROR.....	Index for unexpected error
ERR error code.....	Verify reject
SYNTAX ERROR.....	Invalid input command

Figure 3 - CSR Customer Output Messages (3.10)

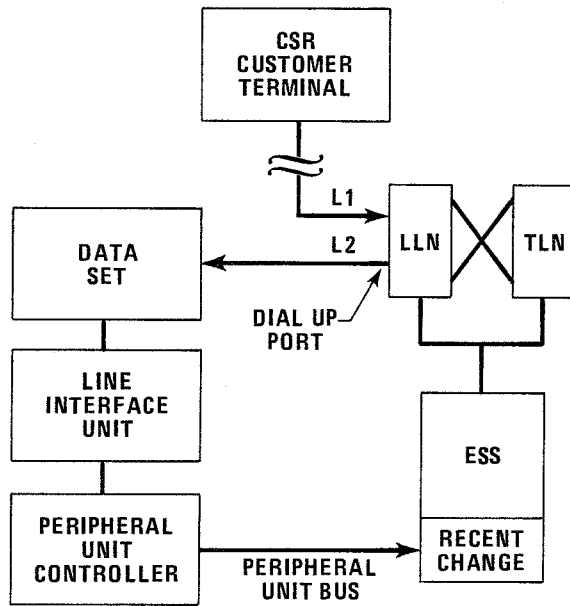


Figure 4 - CSR Output Message Flowchart (4.02)

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```
REPT:CORC06  
TIME      nnnnnn  
CUSTID    nnn  
CSN       nnn  
GSN       nnnn  
RC:LINE:CHG:  
ORD  
CTX       nnnn  
EXT       nnnnn  
ACT  
INACT  
INACT  
HUNT      nnnnn  
CFN       nnnnnnn  
CAT       n  
FRL       n  
CPG       nnn
```

NOTE: THOSE KEYWORDS THAT ARE NOT APPLICABLE ARE NOT PRINTED.

Figure 5 - CORC 06 RC:LINE Output Message Format Example (4.05)

```
REPT:CORC06  
TIME      nnnnnn  
CUSTID    nnn  
CSN       nnn  
GSN       nnnn  
RC:MOVE:  
ORD 1  
CTX       nnnn  
EXT       nnnnn nnnnn...
```

NOTE: THE "EXT" WILL BE A LIST OF FROM 2 TO 11 EXTENSION NUMBERS."

Figure 6 - CORC 06 RC:MOVE Output Message Format Example (4.05)