

**CENTREX DIRECTED CALL PICKUP  
NO. 2 ELECTRONIC SWITCHING SYSTEM**

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**NOTICE**

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**FEATURE DEFINITION AND DESCRIPTION****1. DEFINITION**

**1.01** *Directed call pickup* is a centrex feature that enables a station user to answer calls to a specified telephone from any other phone in the centrex group by dialing the answer code of the phone to be answered. When a centrex station user is alerted that a designated telephone in the centrex group is ringing, the call may be answered at a nearby telephone by dialing a custom answer code associated with the ringing station. The user may be alerted by various commercially available alerting devices, by a BELLBOY® device, or by merely hearing the ringing station.

**1.02** In a No. 2 Electronic Switching System (ESS) with centrex, the directed call pickup feature is assigned on a per-station basis within a centrex group.

**1.03** No hardware additions are required for directed pickup. It can, however, be used with customer-owned alerting devices. Software changes are minimal and can be done by either office data administration (ODA) or recent change. Directed call pickup can be implemented for centrex customers in any office with the EF-1 generic program.

**2. DESCRIPTION****A. Customer (User) Perspective**

**2.01** Upon being alerted that a phone is ringing, a station user can initiate a directed call pickup request from any nearby station within the centrex group. Directed call pickup can be initiated by either of the following two methods:

- (1) A user selects a nearby idle station, goes off-hook, receives dial tone, and dials the pickup answer code for the station whose call is to be picked up.
- (2) A station user on an existing connection flashes and receives dial tone, then dials the call hold access code (if the station has the capability). The user receives dial tone and dials the directed call pickup answer code of the station whose call is to be picked up. To use this method, the station picking up the call must have the *call hold* feature.

**2.02** If the called station has the directed call pickup feature and the station is ringing, a connection is established between the incoming calling party and the party who dialed directed call pickup. If the called station is busy (e.g., the station was answered before directed pickup was accomplished) or if the called station does not have the directed pickup feature, reorder tone is returned to the user.

**B. System Implementation**

**2.03** When a centrex line goes off-hook and dials a request for directed call pickup, control is passed to the centrex digit interpretation program to interpret the dialed digits. The centrex digit interpretation program prefixes digits and substitutes digits as necessary. After all of the digits have been received and the necessary prefixing designated by the digit interpreter table (DIT) terminal entry has been done, the 4-digit translation program retrieves the terminating translation words for the extension dialed. This translation indicates the line is a centrex line and points to the centrex line 4- and 6-word expansion table for terminating information. Control is then passed to the centrex custom calling program. If an answer code is dialed which points to a noncentrex station, reorder tone is returned to the originator of pickup.

**2.04** The centrex custom calling program searches through the transient call records (TCRs) to find one that is in a ringing state, has the desired TEN, and has the same centrex number as the originator's line. If a qualifying TCR is found, the program attempts to find a path between the originator of the pickup and the calling party. If a path is found, ringing is removed from the called party and the line is idled. The originator of the pickup is disconnected from the digit receiver and the receiver and originating register (OR) are released. The originator of the pickup is then connected to the calling party.

**2.05** If the program finds no qualifying TCR or no path is found, the originator of the pickup is connected to reorder tone and the original ringing connection remains intact.

**Directed Call Pickup Answer Codes**

**2.06** The answer code to be dialed to activate directed call pickup may be three, four, or five digits in length. The exact digits to be dialed

must be custom tailored to fit each customer group, depending on the customer's need. The answer code is a combination of the directed call pickup access code and a portion of the extension number that is being picked up. The directed call pickup access code or "first digit(s) dialed" can be one or two digits in length. This code points to the directed call pickup terminal entry in the centrex DIT. This terminal entry contains the number of digits expected, a normalized office code (NOC) and the prefix digit(s) (if required) to be applied to the extension number. The first digit(s) dialed is used to search the centrex DIT for a terminal entry. Figure 1 shows examples of the different dialing plans available for directed call pickup. In the first example, 248 is dialed to pick up ringing station 48. The "2" is used as an entry into the centrex DIT. The "2" accesses a terminal entry containing an NOC which is an abbreviated form of the office code. The terminal entry also supplies any prefix digits needed to construct the 4-digit station number of the station being picked up. The NOC and 4-digit number are then sent to the 4-digit translator. In the example, the terminal entry provides the prefix "31" to be used with the remaining two digits dialed (48). The 4-digit translator then receives and translates station 3148. The other examples in Figure 1 are accessed in a similar manner.

### 3. FEATURE FLOW DIAGRAM

3.01 Figure 2 is a flow diagram of the operation of directed call pickup as defined in DESCRIPTION.

### 4. INTERACTIONS

4.01 The directed call pickup feature interacts either directly or indirectly with the following features.

- **Add-On**—The user cannot add-on a station by dialing a directed pickup answer code. **Call Hold** may be used with directed pickup however.
- **Intercentrex Calling Group**—Directed pickup is not allowed on intercentrex calls.
- **Fully Restricted Terminating**—A fully restricted terminating centrex station may pick up a call on a directed basis, even

though the call may be a direct inward dialed (DID) call.

- **All Versions of Centrex Pickup And Trunk Answer Any Station**—If the ringing station is answered or is picked up by another station before a directed pickup attempt is completed, the originator of directed pickup will receive reorder tone.
- **Speed Calling**—Speed calling may be used to pick up calls on a directed basis; however, the station cannot dial change the pickup answer code in the speed calling list. Answer codes must be entered and changed by recent change.

## ATTRIBUTES

### 5. STATION/SYSTEM

5.01 The directed call pickup feature is provided on a per-station basis to stations in the same centrex group.

### 6. LIMITATIONS

6.01 Directed pickup is limited to stations within the customer group. Calls cannot be picked up in intercentrex calling groups or from any trunk facility. Directed pickup is valid only from centrex stations.

### 7. RESTRICTION CAPABILITY

7.01 The directed call pickup feature must be specified for a station if calls to that station are to be picked up. The centrex line expansion must indicate that directed call pickup (DP bit = 1) is allowed.

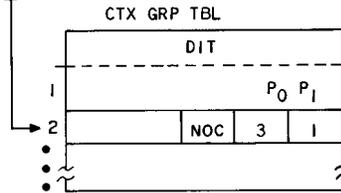
### 8. COST DATA

8.01 The costs in terms of program store space requirements for the directed call pickup are as follows:

- One centrex DIT terminal entry (one word each) per centrex group (Figure 3)
- One bit (DP bit) per station allowed to be picked up on a directed basis in the centrex 4- or 6-word expansion table.

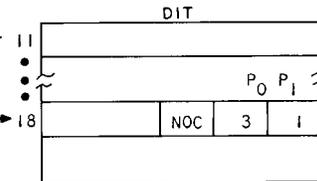
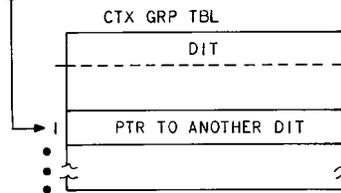
**2-DIGIT DIALING PLAN (EXTENSIONS PREFIXED BY "31")**

A) DIAL 248, WANT TO PICK UP 48



PROGRAM REPLACES 2 WITH 31 AND SENDS 3148 AND THE NOC TO THE 4-DIGIT TRANSLATOR.

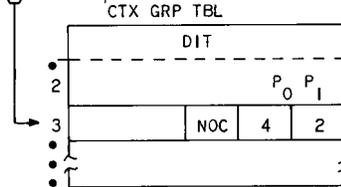
B) DIAL 1848, WANT TO PICK UP 48



PROGRAM REPLACES 18 WITH 31 AND SENDS 3148 AND THE NOC TO THE 4-DIGIT TRANSLATOR.

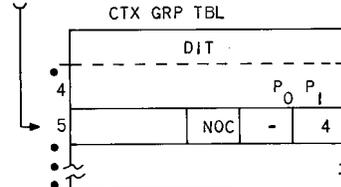
**3-DIGIT DIALING PLAN (EXTENSIONS HAVE A "4" PREFIX)**

A) DIAL 353, WANT TO PICK UP 253



PROGRAM REPLACES 3 WITH 42 AND SENDS 4253 AND THE NOC TO THE 4-DIGIT TRANSLATOR.

B) DIAL 5253, WANT TO PICK UP 253



PROGRAM REPLACES 5 WITH 4 AND SENDS 4253 AND THE NOC TO THE 4-DIGIT TRANSLATOR.

LEGEND:  
 PTR - POINTER  
 DIT - DIGIT INTERPRETER TABLE  
 NOC - NORMALIZED OFFICE CODE  
 P<sub>0</sub> P<sub>1</sub> - PREFIX DIGITS

**Fig. 1—Examples of Directed Call Pickup Answer Codes (Sheet 1 of 3)**

**INCORPORATION INTO SYSTEM**

**9. PLANNING**

**9.01** No special planning considerations are necessary for this feature other than arriving at answer codes that fit the customer's needs. If an ODA run is to be made, normal ODA schedules should be observed.

**10. HARDWARE ENGINEERING**

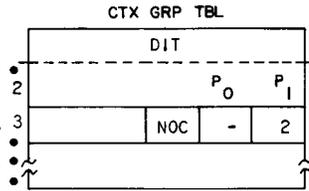
**10.01** No additional hardware is required for implementing directed call pickup except for customer-owned and maintained alerting devices when applicable.

**11. SOFTWARE ENGINEERING**

**11.01** For calculations of call processing time requirements and percent of real time used

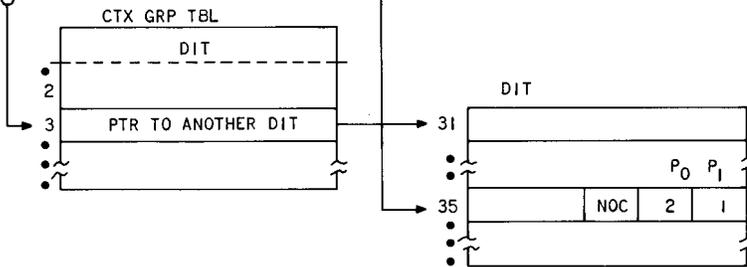
4-DIGIT DIALING PLAN

A) DIAL 3100, WANT TO PICK UP 2100



PROGRAM REPLACES 3 WITH 2 AND SENDS 2100 AND THE NOC TO THE 4-DIGIT TRANSLATOR.

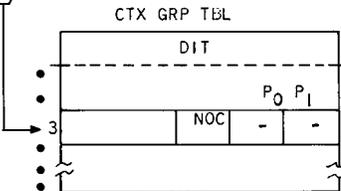
B) DIAL 3500, WANT TO PICK UP 2100



PROGRAM REPLACES 35 WITH 21 AND SENDS 2100 AND THE NOC TO THE 4-DIGIT TRANSLATOR.

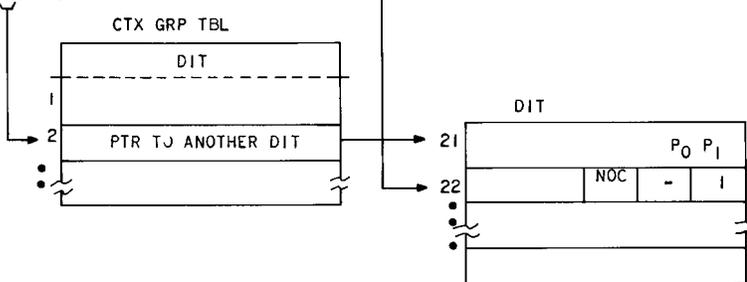
5-DIGIT DIALING PLAN

A) DIAL 31048, WANT TO PICK UP 21048



PROGRAM SENDS 1048 AND THE NOC TO THE 4-DIGIT TRANSLATOR, WHERE THE NOC CORRESPONDS TO AN OFFICE CODE THAT ENDS WITH 2.

B) DIAL 22048, WANT TO PICK UP 21048



PROGRAM REPLACES 2 WITH 1 AND SENDS 1048 AND THE NOC TO THE 4-DIGIT TRANSLATOR, WHERE THE NOC CORRESPONDS TO AN OFFICE CODE THAT ENDS WITH 2.

Fig. 1—Examples of Directed Call Pickup Answer Codes (Sheet 2 of 3)

by the directed pickup feature, see Traffic Facilities Practice Division D, Section 12-n.

12. COMPATIBILITY

12.01 Directed call pickup may be used with radio alerting equipment that is customer-owned and maintained.

13. OFFICE DATA

13.01 The directed call pickup feature requires additional translations in the No. 2 ESS office data. A terminal entry is required in the centrex DIT. A layout of the directed pickup terminal entry is shown in Figure 3. This is the same terminal entry described in Part 2 under **Directed Call Pickup Answer Codes** and in Figure 1. If the feature is assigned to a line, the centrex line expansion table (Figure 4) requires

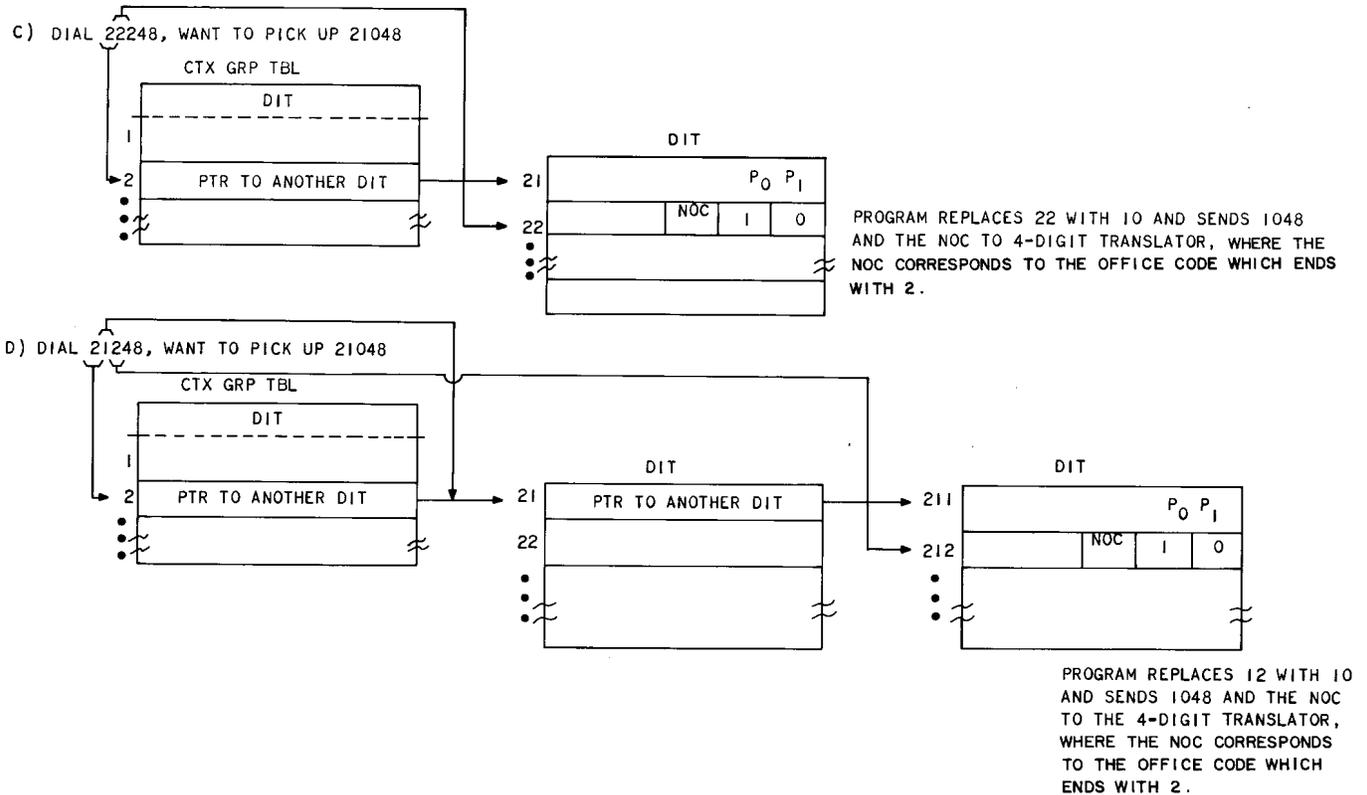


Fig. 1—Examples of Directed Call Pickup Answer Codes (Sheet 3 of 3)

the DP bit be set to allow calls to this line to be picked up on a directed basis.

**13.02** The directed call pickup feature may be added or deleted for a centrex customer by recent change or by an ODA run.

**Recent Change Messages**

**13.03** To assign directed call pickup to a centrex customer group, use the A RC:DIT message and specify the following keywords: CTX, DTP, NDT, DGT, PFX, DGE. This message is used to change the centrex DIT terminal entry. For adding directed pickup to a customer group, an unassigned terminal entry must be available that can be assigned for directed call pickup.

**13.04** The directed call pickup feature can be assigned or unassigned for a specific line by recent change. This is the normal mechanism for administering the feature on a per-line basis and can be used regardless of the method used to assign the feature to the centrex group. To add or delete the feature in a line's translations, use the A RC:L message and specify the following

keywords: ORD, TYP, TEN, TN, NNX, DPU, CTX.

**Office Data Administration**

**13.05** The directed call pickup feature may be assigned or unassigned by an ODA run. To assign or unassign the feature by ODA, the following ESS forms must be completed and submitted to the Western Electric Company Regional Data Center for processing.

- ESS 2101 **Centrex Directory Number Table**—The directed call pickup feature must be indicated in the features portion of the line class information for each line to be assigned the directed call pickup feature.
- ESS 2109-2 **Centrex Group Table**—The first digits to be dialed by the station user must be entered (range = 1 to 3 digits) along with the prefix digit(s) to be used. The data type to be specified should be 04 for directed call pickup. The route index column should contain the office code (NNX) of the station(s) that can be picked up.

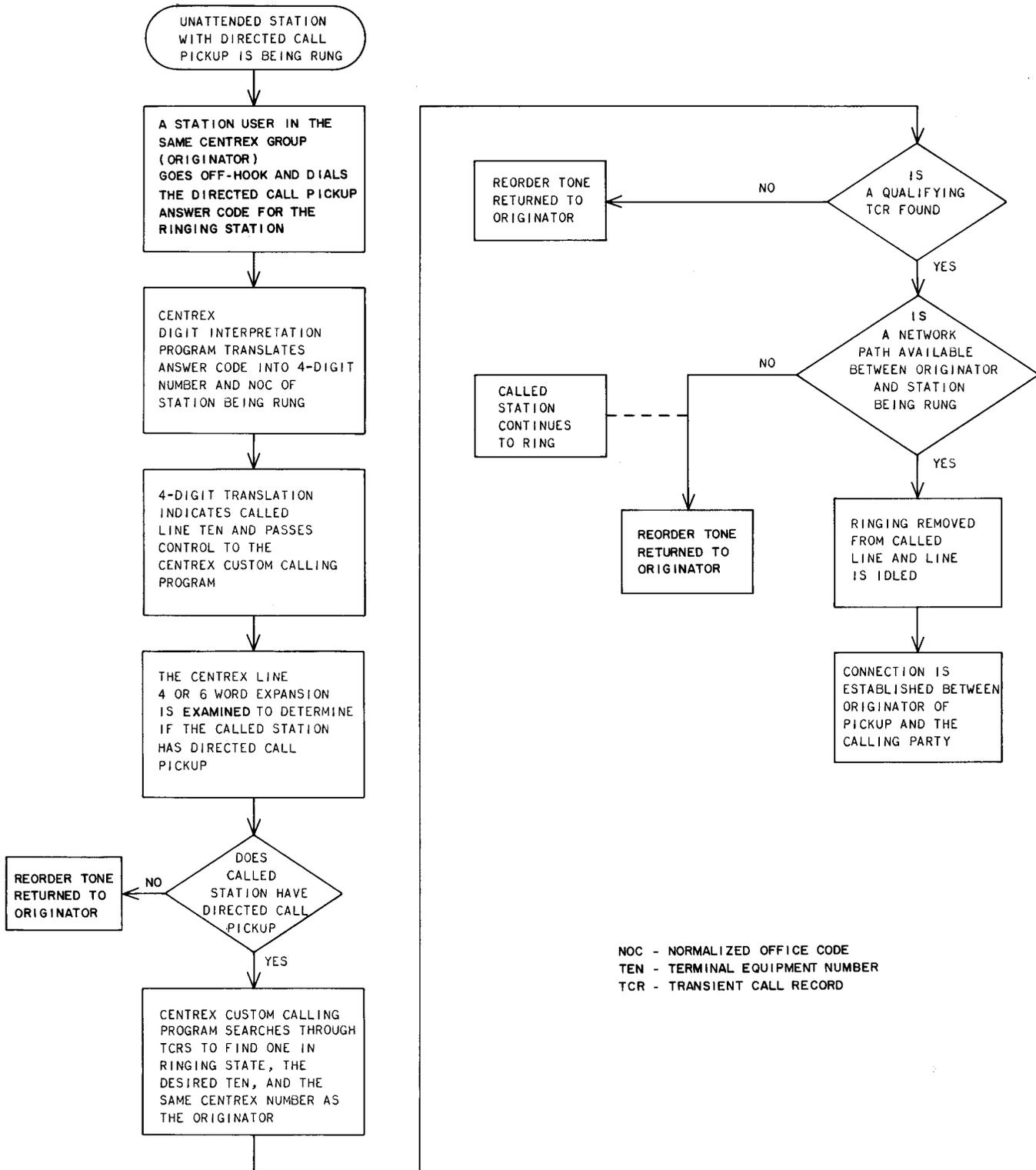


Fig. 2—Feature Flow Diagram—Directed Call Pickup

P	0	1	0	0	BP	LS	DGE		NOC		PRFX 0		PRFX 1	
21	20			17	16	15	14	12	11	8	7	4	3	0

LEGEND

- PRFX - PREFIX DIGITS
- NOC - NORMALIZED OFFICE CODE
- DGE - NUMBER OF DIGITS EXPECTED
- LS - LOOK FOR # (USED WITH TIMEOUT PLAN SPEED CALLING)
- BP - BARGE-IN PERMITTED (FUTURE USE)
- P - PARITY

Fig. 3—Directed Call Pickup Terminal Entry in Centrex Digit Interpreter Table

CENTREX LINE 4 OR 6 WORD EXPANSION																					
21																				0	
P																					
P																					
P																					
P			DP																		0
	20		18	17	16	15	14	TEN													
P																					
P																					

DP=1 - CALLS TO THIS CENTREX LINE ARE ALLOWED TO BE PICKED UP ON A DIRECTED BASIS.

Fig. 4—Centrex Line Expansion with Directed Call Pickup Requirements

14. GROWTH/RETROFIT PROCEDURES

14.01 To incorporate the directed call pickup into an office having the EF-1 generic program, the software changes described in OFFICE DATA must be made. If an ODA run was used to incorporate the changes and the update is ready to be incorporated, insert the new information in accordance with Section 232-124-301 *Office Update Procedures Using Regional ODA Program*. If the administrative data link is to be used for the update, refer to Section 232-008-301 *Administrative Data Link Procedures*.

15. TESTING

15.01 No testing is specified for the directed call pickup feature other than exercising the feature via test calls.

ADMINISTRATION

16. MEASUREMENTS

16.01 Traffic peg counts for directed call pickup activation are kept per customer group, in a counter which is shared with call pickup, code call pickup, and trunk answer pickup.

17. RECORD KEEPING

17.01 If an ODA run was made to incorporate the feature, the resulting output forms should be retained as part of the office records. If the recent change message is used to add or delete directed call pickup, the 2101-R and 2109-R forms should be updated to record the change.

18. CHARGING

18.01 No charging is done by the system when directed call pickup is activated.

AVAILABILITY

19. NEW INSTALLATIONS

19.01 The directed call pickup feature is available to centrex customers in any new installation with the EF-1 generic program.

20. GROWTH/RETROFIT

20.01 The directed call pickup feature can only be retrofitted into offices with the EF-1 generic program.

SUPPLEMENTARY INFORMATION

21. GLOSSARY

21.01 The following list identifies terms used in this section that may be unfamiliar to the reader:

- **Centrex Group**—All directory numbers and lines assigned to the same centrex customer that are treated as a group.
- **DIT (Digit Interpreter Table)**—A part of the centrex number translator that provides initial digit(s) interpretation for calls dialed from a centrex station or an attendant.
- **DP bit**—Directed call pickup bit in the centrex line 4- or 6-word expansion. This bit must be set to allow a station's calls to be picked up on a directed basis.

- **EF-1 (Extended Features Generic Program)**—The generic program required for centrex features offered by a No. 2 ESS.

- **NNX**—An abbreviation commonly used to represent a 3-digit office code.

- **NOC (Normalized Office Code)**—A 3-(LO-1) or 4- (EF-1) bit number which represents a 3-digit office code. The NOC is required to access the 4-digit translator.

- **ODA (Office Data Administration) Run**—Mechanism by which translation information may be assembled or changed for a No. 2 ESS. Information from the ESS input forms are inputted into the regional ODA computer, assembled, then sent to the No. 2 ESS.

- **OR (Originating Register)**—Software registers in the No. 2 ESS call store which are used for receiving and sending digits.

- **RC (Recent Change)**—Mechanism for making changes to information stored in the program store. These changes are accomplished via TTY input messages and are stored in the recent change area of call store until some later time when the program store can be updated.

- **TCR (Transient Call Record)**—A call store register designated for storage of information concerning a call in progress.

- **TEN (Terminal Equipment Number)**—A 6-digit number representing the physical location of a line, trunk or service circuit in the switching network. This number includes the network number, concentrator, grid, switch, and level assigned to the terminal.

22. REASONS FOR REISSUE

22.01 This is the initial issue of this section.

**23. REFERENCES**

**23.01** The following documents may be referred to for supplementary information concerning the directed call pickup feature.

- Translation Guide, TG-2H
- PD-2H303—Centrex Custom Calling Program
- Traffic Facilities Practices, Division D, Section 12n—Centrex