CALL PICKUP

(CENTREX)

NO. 2 ELECTRONIC SWITCHING SYSTEM

FEATURE DEFINITION AND DESCRIPTION

1. DEFINITION

1.01 Call pickup is a feature which allows a telephone user to answer other nearby ringing telephones from the user's telephone in the following manner:

Assume a person hears a nearby telephone ring. Normally, he would walk over to the ringing phone to answer it. With the call pickup feature, this person can pick up his own phone (or another nearby phone if he chooses) and dial a special access code. This will automatically cause the call to the other ringing phone to be transferred to his phone. Any phone within a specified pickup group is able to exercise this feature.

1.02 In a No. 2 Electronic Switching System (ESS), call pickup is associated with centrex service. If more than one station line in a pickup group is ringing and the call pickup access code is dialed, the No. 2 ESS generic program will select the station to be answered. There may be any number of telephones in a pickup group and up to 254 pickup groups per centrex customer. Different pickup groups may have the same or may have different pickup access codes.

1.03 Call pickup is a software feature and is made available as part of the extended feature (EF-1) generic program in a No. 2 ESS office. Since this is a software feature, no additional hardware is required. Call pickup is implemented into the No. 2 ESS system via an office data administration (ODA) run or by a recent change (RC).

2. DESCRIPTION

A. Customer (User) Perspective

2.01 The centrex station user may initiate call pickup by using the following procedures:

(1) Station user hears a station ringing in the preset pickup group.

(2) The user dials the pickup access code from any idle station in that pickup group.

(3) The call to be answered is then routed to the station line on which the pickup access code was dialed, the station user is connected to the incoming call, and ringing stops at the original called station.

(4) If call hold is provided and the station user has a call in progress, the station user flashes for dial tone, dials the "call hold" code, receives second dial tone, then dials the pickup access code to pickup the incoming call.

(5) After the call is picked up via the pickup access code, the original station to which the call was directed is idled to subsequent terminating calls and can be used to originate other calls. Station users who dial the pickup access code when a station is not ringing, receive a reorder tone.

(6) If the call is answered by the *called* party, the station user dialing the pickup access code receives reorder tone.

B. System Implementation

2.02 When ringing begins at the called centrex line, the centrex number and the pickup group number of that line are obtained and stored in the transient call record (TCR) associated with that line.

2.03 When a centrex line goes off-hook and the call pickup access code is dialed, control is passed to the centrex digit interpretation (CTXDGT) program to interpret the dialed digits. If call pickup has been dialed, the centrex number translator determines that some special service access code was dialed. The originating line is screened to determine if special service access is permitted. If special service access is permitted, the code for call pickup (e.g., code = 3) is read out of the translator and control is transferred to the centrex custom calling (CTXCC) program. (Each pickup group number is eight bits in length. Possible pickup group numbers range from 001 to 254. A pickup group number zero indicates that the line does not have call pickup feature. Pickup group number 255 is reserved for the "trunk answer any station" feature.)

2.04 The centrex custom calling program receives control from the number translator. Only an extension in a centrex group may dial call

pickup. The station user may originate call pickup from either an idle or busy state. If a station is in a busy state, call hold service (if available) must be used before call pickup is activated. The program verifies that the originator is a line that has a pickup group number in the translations. If the pickup group number equals 0, the line is routed to reorder tone. If the line has a pickup group other than 0, a hunt is made through the TCRs to find a transient call with the same centrex number and pickup group number and a ringing progress mark.

2.05 When the proper TCR is found, the program finds a path between the call pickup originator and the calling party. If a path is found, the ringing at the unattended station is stopped and that line is idled. The originator of the call pickup is disconnected from the customer digit receiver (CDR). The CDR and the originating register (OR) are released and the call pickup originator is connected to the calling party.

2.06 If more than one line in the pickup group being matched is rung, the program uses the first qualifying TCR it finds.

2.07 If no qualifying TCR is found, the call pickup originator is given a reorder tone. If no path is found between the call pickup originator and the calling party, the call pickup originator is given reorder tone and the original ringing connection remains intact.

2.08 The call pickup access code to be dialed to activate call pickup can be one, two, or three digits in length and is assigned by the operating company.

3. FEATURE FLOW DIAGRAM

3.01 A feature flow diagram giving the functional operation of the call pickup feature is shown in Figure 1.

4. INTERACTIONS

4.01 The call pickup feature may be used in conjunction with the *call hold* feature (if available). For an example, consider that party A rings party B and party B is in the same call pickup group as party C, and party C is talking to party D. Party C wishes to pickup party B's call. Party C must flash the switchhook, receive

dial tone, and dial the *call hold* access code to place party D on hold. Party C will receive second dial tone, and may now dial the *call pickup* access code. This will pick up party B's call and party A will be connected to party C.

4.02 The *speed calling* list cannot store the call pickup access code.

4.03 The call pickup feature cannot be *call forwarded.*

4.04 Lines with the *directed call pickup* feature (Section 232-190-318) may also have call pickup capability.

4.05 The call pickup feature can be used with key telephone systems; however, it is possible to get a false indication of ringing due to a delay in disconnecting the common ringer after a line is disconnected. The No. 2 ESS will return reorder if the line is disconnected, whether the ringer is still ringing or not. This may cause confusion to customers and must be clearly explained to them.

4.06 A fully restricted terminating centrex station may pick up direct inward dialed (DID) calls, even though DID calls cannot normally reach that station.

4.07 Add-on or Threeway Calling *cannot* be used to add a picked-up call to an existing call.

ATTRIBUTES

5. STATION/SYSTEM

5.01 The call pickup feature is provided on a per-station basis to centrex stations. Stations may be in the same call pickup group provided that these stations are in the same centrex group.

5.02 The maximum number of pickup groups is 254 for each centrex group in a No. 2 ESS office.

5.03 Since call pickup is a software feature and only requires space in the translations, there is no hardware associated with this feature.
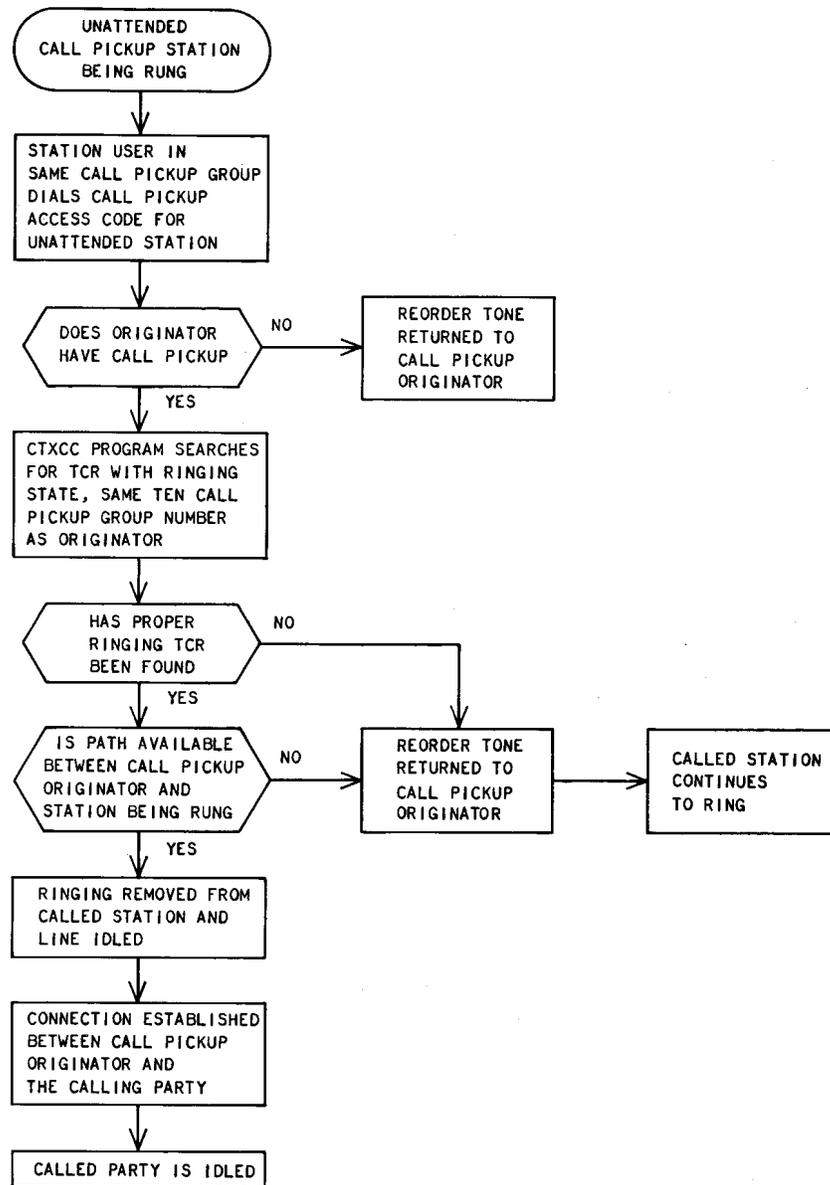
```
        ┌──────────────────┐
        │   UNATTENDED     │
        │ CALL PICKUP STATION │
        │   BEING RUNG     │
        └──────────────────┘
                 │
                 ▼
        ┌──────────────────┐
        │ STATION USER IN  │
        │ SAME CALL PICKUP GROUP │
        │ DIALS CALL PICKUP │
        │ ACCESS CODE FOR  │
        │ UNATTENDED STATION │
        └──────────────────┘
                 │
                 ▼
         ╱ DOES ORIGINATOR ╲  NO   ┌──────────────┐
        ⟨ HAVE CALL PICKUP  ⟩─────▶│ REORDER TONE │
         ╲                 ╱        │ RETURNED TO  │
              │ YES                 │ CALL PICKUP  │
              ▼                     │ ORIGINATOR   │
        ┌──────────────────┐        └──────────────┘
        │ CTXCC PROGRAM SEARCHES │
        │ FOR TCR WITH RINGING │
        │ STATE, SAME TEN CALL │
        │ PICKUP GROUP NUMBER │
        │ AS ORIGINATOR    │
        └──────────────────┘
                 │
                 ▼
         ╱ HAS PROPER ╲  NO
        ⟨ RINGING TCR ⟩──────────────┐
         ╲ BEEN FOUND╱               │
              │ YES                  ▼
              ▼                ┌──────────────┐    ┌──────────────┐
         ╱IS PATH AVAILABLE╲ NO│ REORDER TONE │    │ CALLED STATION │
        ⟨BETWEEN CALL PICKUP⟩─▶│ RETURNED TO  │───▶│ CONTINUES    │
         ╲ORIGINATOR AND    ╱  │ CALL PICKUP  │    │ TO RING      │
          ╲STATION BEING RUNG╱  │ ORIGINATOR   │    └──────────────┘
              │ YES             └──────────────┘
              ▼
        ┌──────────────────┐
        │ RINGING REMOVED FROM │
        │ CALLED STATION AND │
        │ LINE IDLED       │
        └──────────────────┘
                 │
                 ▼
        ┌──────────────────┐
        │ CONNECTION ESTABLISHED │
        │ BETWEEN CALL PICKUP │
        │ ORIGINATOR AND   │
        │ THE CALLING PARTY │
        └──────────────────┘
                 │
                 ▼
        ┌──────────────────┐
        │ CALLED PARTY IS IDLED │
        └──────────────────┘
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Fig. 1—Call Pickup Functional Flow Diagram

6. LIMITATIONS

6.01 A limit of 254 pickup groups within a centrex group is imposed on the call pickup feature.

6.02 There is no limit on the number of lines that may have the call pickup feature or on the number of stations in any given pickup group.

6.03 Main stations outside of the centrex customer groups cannot be included in a call pickup group. All calls to a centrex station with call pickup may be picked up by another centrex station only if that station is in the same pickup group as the called station.

7. RESTRICTION CAPABILITY

7.01 The call pickup feature must be specified for a station if calls to that station are to be picked up. The centrex line expansion must specify the pickup group number. When this group number equals 0, call pickup is not allowed.

7.02   The centrex access treatment (CAT) code must allow the call pickup access code to be dialed by the appropriate stations.

8.   COST DATA

8.01   The costs attributable to call pickup feature are in terms of program store (PS) and call store (CS) words. Approximately 350 PS words are required. Eight bits of PS space (in translations) are required to define the call pickup group in the 4- or 6-word expansion for each centrex station. In addition, a 2-word expansion, pointed to by the dialing tree, is required.

8.02   Real time required to process call pickup has not been determined at this time. Real time is part of the basic cost involved in implementing the call pickup feature.

INCORPORATION INTO SYSTEM

9.   PLANNING

9.01   No special planning considerations are required for this feature. Normal schedules for ODA changes must be observed.

10.   HARDWARE ENGINEERING

10.01   Since call pickup feature is a software feature, there are no hardware engineering requirements.

11.   SOFTWARE ENGINEERING

11.01   For software engineering calculations, refer to Traffic Facilities Practices, Division D, Section 12.

12.   COMPATIBILITY

12.01   No compatibility or equipment interface problems are applicable to the call pickup feature.

13.   OFFICE DATA

A.   Translations

13.01   The translators affected by the addition of the call pickup feature include the centrex digit interpreter, the centrex originating/terminating 4- or 6-word expansion table and the centrex number translator.

13.02   Word 2 (bit position 20-13) of the 4- or 6-word expansion table contains the pickup group number. Figure 2 is a translation layout of the call pickup feature.

B.   Recent Change (RC) Messages

13.03   The A RC:L/ message is used to add call pickup to an existing station in a centrex group.

13.04   The A RC:DIT/ message is used to change the digit interpreter table to define the call pickup access code.

13.05   The A VY:L/ message is used to verify that the call pickup feature is specified for a station in the translations.

13.06   The A VY:DIT/ message is used to verify a terminal entry of the digit interpreter table defined for a centrex station.

C.   ODA Information

13.07   To incorporate the call pickup feature in a No. 2 ESS office, an ODA run will be required for initial installations. The following ESS input forms must be completed by the operating companies and submitted to the WECo Regional Center for processing. Normal scheduling procedures should be observed.

- ESS 2101—*Centrex Directory Number Table*—The call pickup feature must be indicated in the features portion of the line class information column for each line to be assigned call pickup. A CAT code must also be specified for the line.

- ESS 2109 (9B)—*Centrex Group Table*—The access code used for call pickup is assigned on this form for station numbers in a centrex group. The CAT code specified on the ESS 2101 form must also be checked on this form.

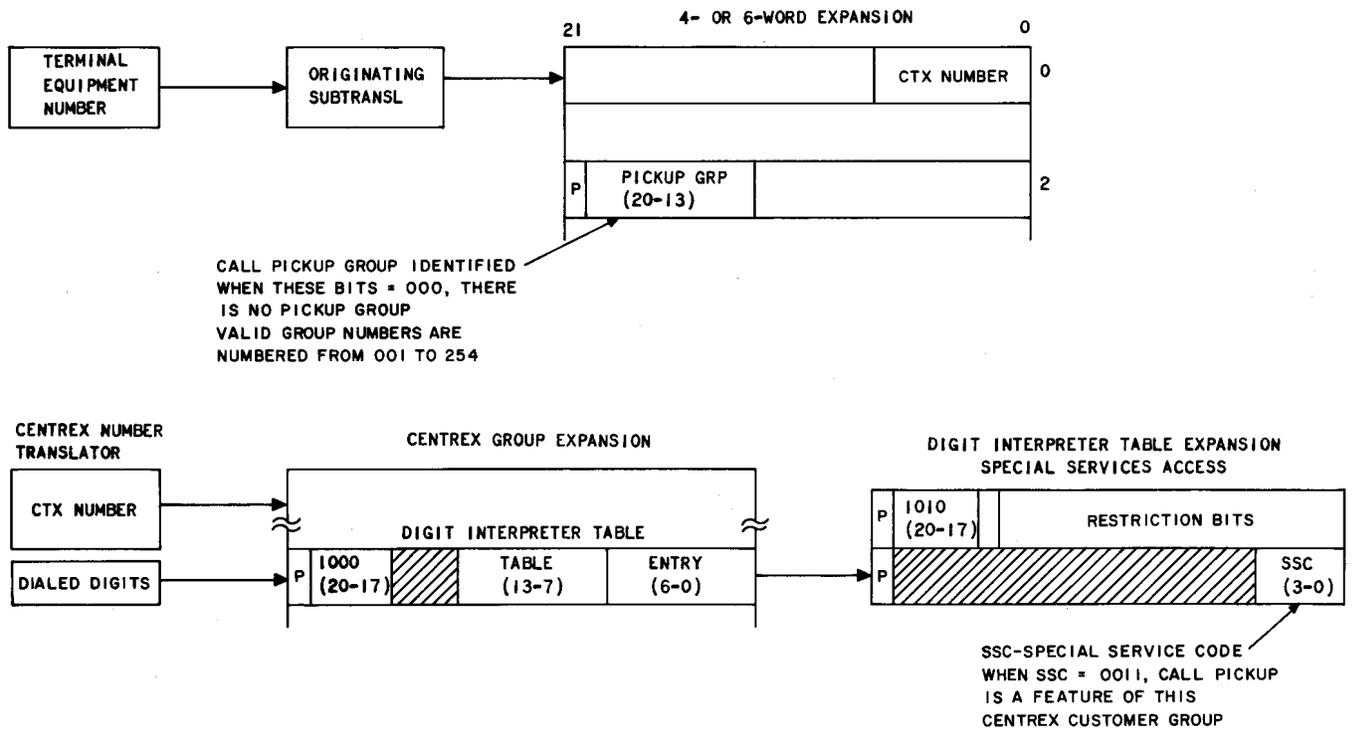**13.08**   Copies of these reproducible input forms are in Division 11, Section 1 of the Translation Guide, TG-2H.

Fig. 2—Typical Translation Layout of Call Pickup Feature

14. GROWTH/RETROFIT PROCEDURES

14.01 To incorporate the call pickup feature into a No. 2 ESS office equipped with EF-1 (extended feature) program an ODA run may be used. After the input forms have been submitted 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.*

14.02 If it becomes necessary to add or delete the call pickup feature, recent change messages may be used. For details on the RC messages used to add and remove the call pickup feature, refer to the input and output message manuals, IM- and OM-2H200.

15. TESTING

15.01 No special testing is required other than placing a test call to a station that has the call pickup feature.

ADMINISTRATION

16. MEASUREMENTS

16.01 Traffic measurements for the call pickup feature include the traffic peg counts per centrex customer group. Register CTX9 is used to provide this measurement.

17. RECORD KEEPING

17.01 No record keeping is required for call pickup other than keeping the office records (ESS-R forms) up-to-date when changes are made via ODA runs.

17.02 A record of all recent change messages must be maintained in addition to the R-forms.

18. CHARGING

18.01 No special automatic message accounting (AMA) recording is made as a result of call pickup being utilized.

AVAILABILITY

19. NEW INSTALLATIONS

19.01 The call pickup feature is available in any installation equipped with Issue 2 or 3 of the EF-1 generic program.

20. GROWTH/RETROFIT

20.01 The call pickup feature is a centrex feature and is only available as part of the EF-1 generic program; therefore, the LO-1 (local office) generic program cannot offer this feature. However, if an office having LO-1 generic program is retrofitted with the EF-1 generic, call pickup can be made available for centrex customers.

SUPPLEMENTARY INFORMATION

21. GLOSSARY

21.01 The following list identifies acronyms and abbreviations used in this document:

- *Centrex Group*—All directory numbers and lines assigned to the same centrex customer that are treated as a group.

- *ODA*—Office Data Administration System—Mechanism by which translation information is entered into a No. 2 ESS office. Information from the ESS input forms are inputted into the regional ODA computer, assembled, then sent to the No. 2 ESS office.

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

22. REASONS FOR REISSUE

22.01 This is the initial issue of this section.

23. REFERENCES

23.01 The following documents are major references used in the preparation of this document.

- Translation Guide, TG-2H

- PD-2H303—Centrex Custom Calling Program

- PF-2H303—Centrex Custom Calling Program

- IM-2H200—Input Message Manual No. 2 ESS

- OM-2H200—Output Message Manual No. 2 ESS

- PA-2H200—Office Data Tables Layout Specification

- Traffic Facilities Practices, Division D, Section 12

- Section 232-120-301—Traffic and Plant Measurements 2-Wire No. 2 Electronic Switching System