FEATURE DOCUMENT

ATTENDANT CAMP-ON AND INDICATION OF

CAMP-ON

NO. 2 ELECTRONIC SWITCHING SYSTEM

FEATURE DEFINITION AND DESCRIPTION

1. DEFINITION

1.01 Attendant camp-on and indication of camp-on are centrex features that are commonly used by the attendant (operator). Attendant camp-on is activated whenever the attendant attempts to extend a call to a busy station. The incoming call remains connected to the attendant until the busy station becomes idle. This station is then automatically rung and upon answer, is connected to the calling party.

1.02 Indication of camp-on is an audible burst of tone to the busy station indicating that the incoming call is camped on. The tone occurs when the attendant leaves the connection. Subsequent bursts of tone are provided to the busy station each time the attendant leaves the waiting connection after verifying the calling party's desire to wait.

1.03 In a No. 2 Electronic Switching System (ESS), attendant camp-on and indication of camp-on features are provided with centrex (PBX) service. In order to provide the indication of camp-on, a tone circuit group must be defined in all No. 2 ESS offices that are equipped with the EF-1 (extended feature) generic program. This circuit group is part of a low-tone group which is also used to provide busy verify tones. The low-tone group always requires two circuits.

1.04 Attendant camp-on and indication of camp-on are always provided together except in cases of data set stations. (Indication of camp-on tone is optionally provided on a per-station basis.) Where data sets are involved, the indication of camp-on can interrupt the transmission of data. Therefore, the operating company may restrict stations involved in data transmission from having this feature.

1.05 These features are available only as part of the EF-1 generic program in a No. 2 ESS office. In addition to the EF-1 generic program, a universal attendant console must also be available for the attendant to implement attendant camp-on feature. Camp-on can be provided to existing centrex customer groups by a recent change message. However, an office data administration (ODA) run is required whenever additional 440-Hz tone (part of low-tone group) circuit group is required for the camp-on tones.

2. DESCRIPTION

A. Customer (User) Perspective

2.01 Attendant camp-on is initiated by the attendant using the 1B or 2B universal console in the following manner (refer to Figure 1):

(1) The attendant answers an incoming call at the universal console.

(2) Attendant dials a station and receives an indication that the station is busy.

(3) When camp-on is allowed, the attendant's DEST lamp flashes at 60 ipm without audible busy tone, indicating that the station is busy and the call has camped on (call is held waiting and will be rung automatically when it becomes idle).

(4) The attendant announces to the calling party that the station is busy and asks if the calling party wishes to wait. If affirmative, the attendant releases from the connection to the called station and the called station user hears a burst of tone (440 Hz ±5 Hz). The DEST lamp continues to flash at 60 ipm. Only one call may camp-on to a busy station at one time. Camp-on is not allowed if busy station has a call on *hold* or if this station is the controlling party of a conference call.

(5) During the period that the calling party is camped on to a busy called station, no signals are returned to the calling party. A timed reminder automatically recalls the attendant periodically to enter the connection to give the calling party a status report. Each time the attendant releases from the connection, a burst of tone is transmitted to the called party for indication of camp-on.

(6) When the called station becomes idle, the station is automatically rung and audible ring is returned to the calling party and the DEST lamp now flashes at 30 ipm. The calling party is connected to the called station upon answering.

(7) If the camped-on party has the call hold feature, the camped-on party can answer the camped-on call by flashing and dialing the call hold access code which places the talking
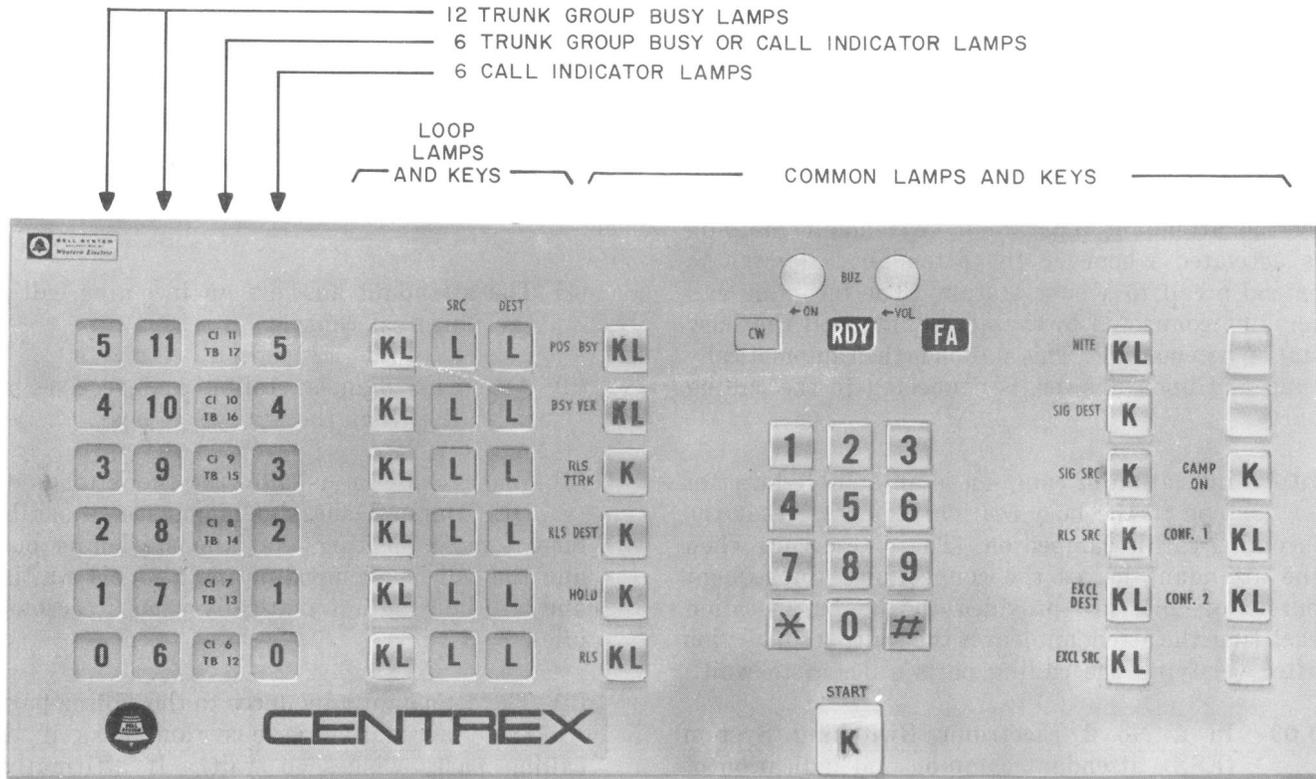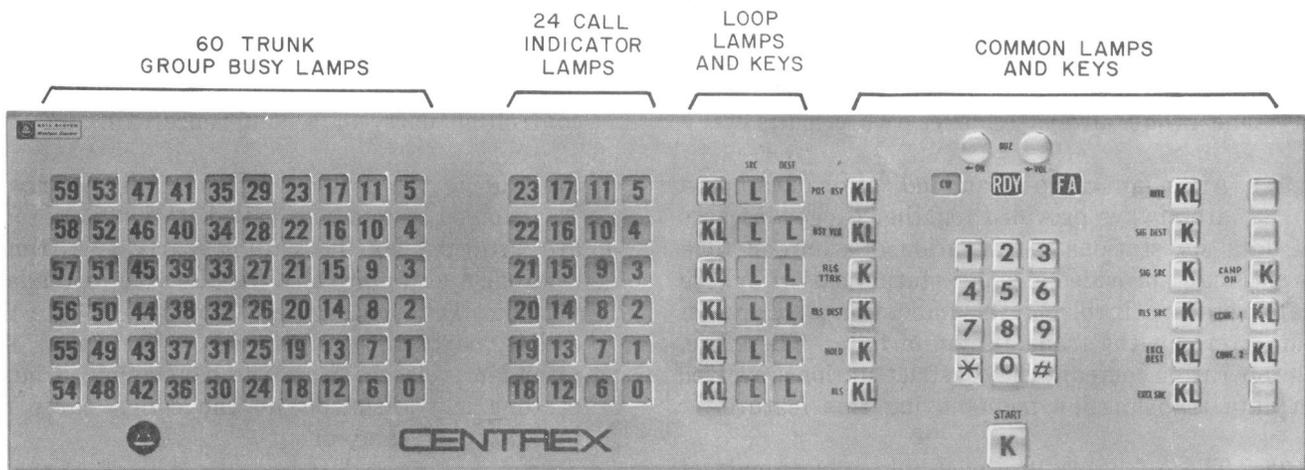
Fig. 1—Attendant Telephone Console Lamp and Key Arrangements

party on hold. The camped-on party is then connected to either the calling party or the attendant if the attendant is still on the loop. The camped-on party may return to the original connection at any time by flashing the switchhook and dialing the call hold access code.

B. System Implementation

2.02 When the attendant dials a busy station, the station's translation information is examined to determine if the station has the Station Hunting feature. If so, the next station in this hunting "chain" is tested for busy or idle. If idle, the call completes to this station. If busy, the process continues until either an idle station is found (and the call completes) or until the hunting chain is exhausted. If the chain is exhausted, camp-on to the *original* called party is attempted. For this case, and for the case where the original called party does not have Station Hunting, control is transferred to the CMPENT routine of the Attendant Services Program (ATSER, PD-2H311).

2.03 The CMPENT routine in the ATSER program determines whether or not camp-on is allowed. When camp-on is allowed, the camp-on progress mark (CAMPON) is placed in the transient call record (TCR) to monitor the busy/idle status of the busy station. The camp-on code is written into the camped-on station's centrex scatter table entry (CSTE) to prohibit any other call from also camping on the busy station. When camp-on is not allowed, control is returned to the CTXDGT program to return busy tone.

2.04 The CAMPON progress mark establishes a TCR to connect a 440-Hz tone circuit for 200 milliseconds to the station whenever the attendant operates the release or hold key (Figure 2).

2.05 A timed reminder recalls the attendant to the loop after 30 seconds have elapsed. Whenever the attendant enters the loop and subsequently releases, the tone circuit is connected to the busy station for 200 ms. This continues until "A" picks up the camped-on call or until "C" decides to abandon. Operation of the hold key also applies the camp-on tone.
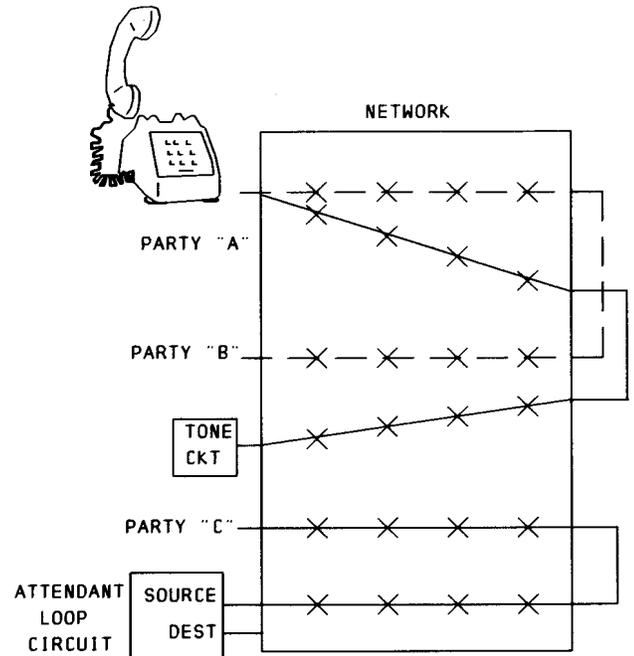
NOTE:
THE TCR ASSOCIATED WITH THE ATTENDANT'S DEST PORT SETS THE STABLE CALL BETWEEN PARTIES "A" AND "B" TRANSIENT IN A DIFFERENT TCR. THIS NEW TCR IS THEN LOADED WITH A PROGRESS MARK TO CONNECT "A" TO THE TONE CIRCUIT FOR 200 MS AND RECONNECT THE A TO B CALL

Fig. 2—Illustration of Camp-on Tone Connection

3. FEATURE FLOW DIAGRAM

3.01 A feature flow diagram giving the functional operation of the attendant camp-on and indication of camp-on features is shown in Figure 3.

4. INTERACTIONS

4.01 The attendant camp-on feature interacts with other No. 2 ESS centrex features as described below.

- Camp-on is not allowed on a centrex station that already has a camped-on call.

- Camp-on is not allowed on a centrex station that has a held call.

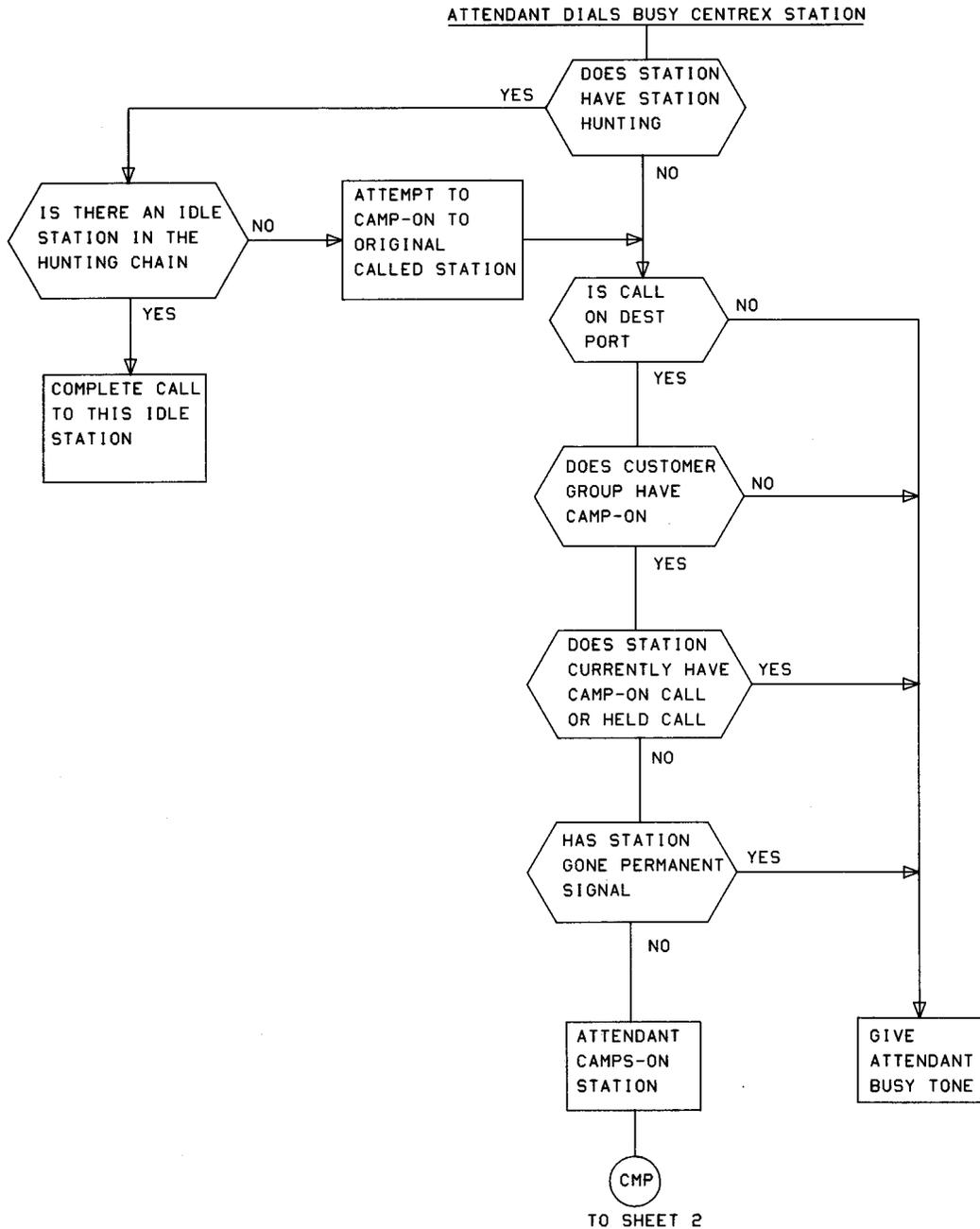- A station with a camped-on call is not allowed to exercise call pickup.

ATTENDANT DIALS BUSY CENTREX STATION

```
                              ┌─────────────┐
                         YES / DOES STATION \
              ┌─────────────<  HAVE STATION  >
              │              \ HUNTING       /
              │               └──────┬──────┘
              │                      │ NO
              ▼                      │
    ┌─────────────┐  ┌─────────────┐ │
   / IS THERE AN  \ │ ATTEMPT TO  │ │
  /  IDLE STATION  \ NO │ CAMP-ON TO │ │
  \  IN THE HUNTING > ─> │ ORIGINAL   │ │
   \ CHAIN         /    │ CALLED     │ │
    └──────┬──────┘     │ STATION    │ │
           │ YES        └──────┬─────┘ │
           ▼                   │       ▼
    ┌─────────────┐            │  ┌─────────┐
    │ COMPLETE    │            └─>│ IS CALL  \ NO
    │ CALL TO     │               \ ON DEST   >─────────┐
    │ THIS IDLE   │               / PORT      /         │
    │ STATION     │               └────┬─────┘          │
    └─────────────┘                    │ YES            │
                                       ▼                │
                               ┌─────────────┐          │
                              / DOES CUSTOMER \ NO      │
                              \ GROUP HAVE      >───────>│
                              / CAMP-ON        /         │
                               └──────┬──────┘           │
                                      │ YES              │
                                      ▼                  │
                               ┌─────────────┐           │
                              / DOES STATION  \ YES      │
                              \ CURRENTLY HAVE  >───────>│
                              / CAMP-ON CALL   /          │
                              \ OR HELD CALL  /           │
                               └──────┬──────┘            │
                                      │ NO                │
                                      ▼                   │
                               ┌─────────────┐            │
                              / HAS STATION   \ YES       │
                              \ GONE PERMANENT  >────────>│
                              / SIGNAL         /           │
                               └──────┬──────┘            │
                                      │ NO                │
                                      ▼                   ▼
                              ┌─────────────┐   ┌─────────────┐
                              │ ATTENDANT   │   │ GIVE        │
                              │ CAMPS-ON    │   │ ATTENDANT   │
                              │ STATION     │   │ BUSY TONE   │
                              └──────┬──────┘   └─────────────┘
                                     │
                                   ( CMP )
                                 TO SHEET 2
```

Fig. 3—Feature Flow Diagram (Sheet 1 of 3)

- The call pickup feature cannot be used to pick up a call which is camped on to another station.

- When a camp-on station hangs up to retrieve the camped-on call, the camp-on feature causes the station to ring. Another centrex station (in the same pickup group as the ringing station) *can* pick up this call by using the call pickup feature.

- When an attendant attempts to camp-on to a busy station that has the Station Hunting feature, this feature takes precedence over camp-on. The call hunts to the next station in the hunting chain and may complete

FROM SHEET 1

(CMP)

ATTENDANT
IS ON THE
LOOP

RLS
DEST

HOLD

RLS

RELEASE THE
CAMPED-ON
CALL

IS CALLING
PARTY STILL
ON SOURCE

NO

CANCEL
CAMP-ON

CAMPED-ON
STATION
ON-HOOK

(ONH)

CAMPED-ON
STATION
DIALS
CALL HOLD

(CHD)

YES

DOES STATION
HAVE THE
CAMP-ON TONE
OPTION

NO

YES

IS THIS STATION
THE CONTROLLING
PARTY ON A
CONFERENCE

YES

NO

IS STATION
IN A TALKING
CONNECTION

NO

YES

GIVE 0.2-SECOND
CAMP-ON TONE TO
CALLED STATION

SETUP 30-SECOND
TIMED REMINDER
FOR ATTENDANT

(CMP1)

TO SHEET 3

Fig. 3—Feature Flow Diagram (Sheet 2 of 3)

FROM SHEET 2

(CMP1)

```
ATTENDANT
IS OFF THE
LOOP
```
- -

```
ATTENDANT          30-SECOND                CAMPED-ON                   CAMPED-ON                    CALLING
ENTERS             TIMEOUT        ( ONH )    STATION        ( CHD )      STATION DIALS                PARTY
LOOP                                         ON-HOOK                     CALL HOLD                    ON-HOOK
```

| TURN OFF TIMED REMINDER IF ONE IS IN PROGRESS | RECALL ATTENDANT VIA A TIMED REMINDER | RING CAMPED-ON STATION | | TURN OFF TIMED REMINDER IF ONE IS IN PROGRESS |

(CMP)   (CMP1)

```
STATION
ANSWERS
```

```
CANCEL
CAMP-ON
```

```
PLACE
EXISTING
CALL ON
HOLD
```

```
TURN OFF
TIMED REMINDER
IF ONE IS IN
PROGRESS
```

```
HAS ATTENDANT         YES        CONNECT CALLING
PLACED THIS ──────────────────▷  PARTY TO CAMPED-
CALL ON HOLD                     ON PARTY VIA
                                 ATTENDANT LOOP
```

NO

```
CONNECT CALLING
PARTY TO
CAMPED-ON
PARTY
```

```
SET ATTENDANT
LOOP IDLE
```
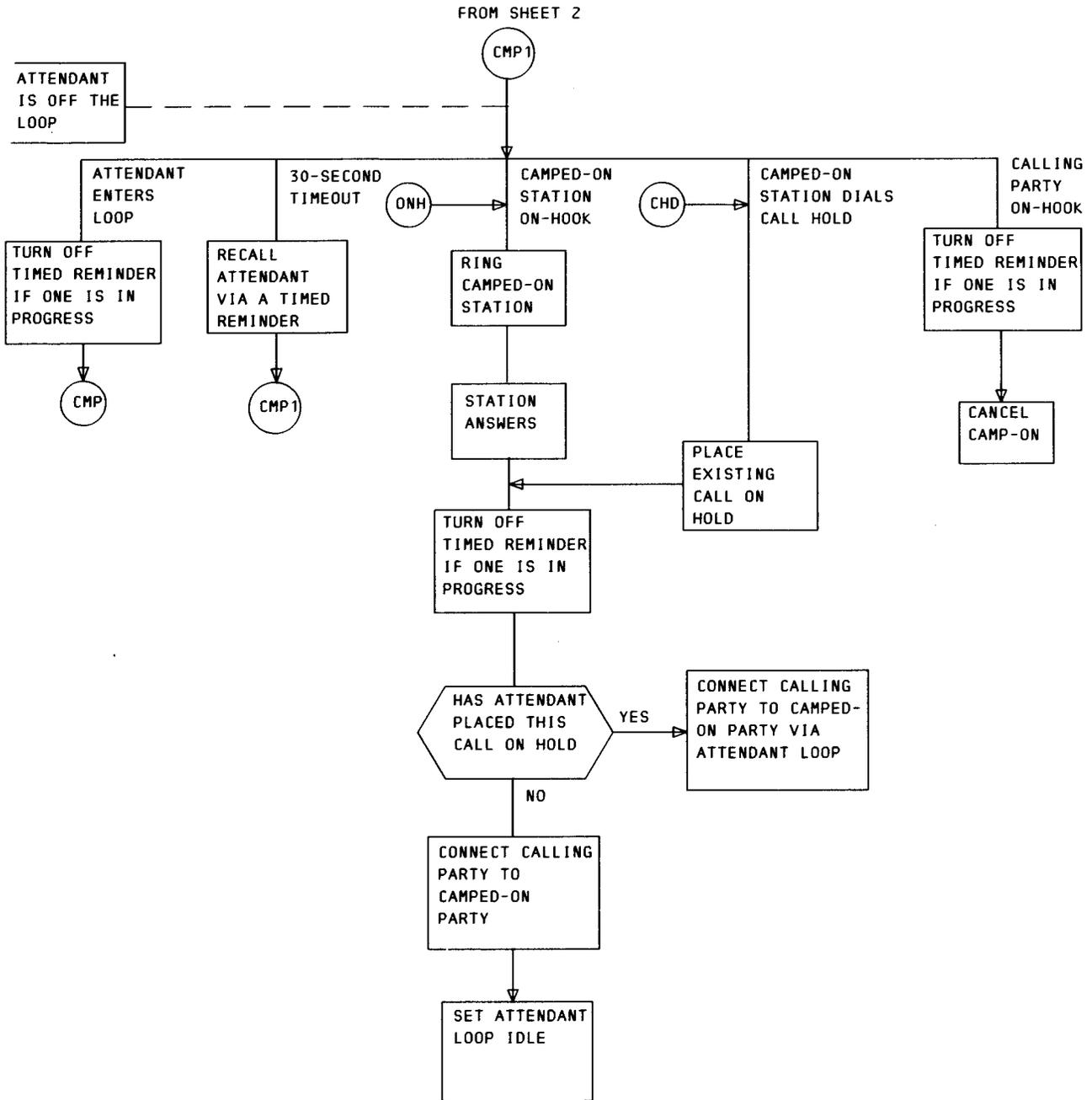
Fig. 3—Feature Flow Diagram (Sheet 3 of 3)

without camp-on. If this next station is busy and has Station Hunting, the call hunts to the next station in the hunting chain. If the end of the chain is reached in this manner, the call camps on the *original* called party.

● Attendant camp-on tone is not provided on calls to the controlling party of a 3-way conference, to a centrex station connected to a code call or paging circuit, nor to any party not in a stable talking connection.

● The attendant can camp-on to a party controlling a 3-way conference call. The controlling party, however, is not given camp-on tone.

● Centrex stations that have fully restricted terminating features are not allowed to be camped on.

● A centrex station connected to a recorded telephone dictation circuit can be camped on.

● A centrex station connected to a recording completing operator cannot be camped-on.

ATTRIBUTES

5. STATION/SYSTEM

5.01 Attendant camp-on is provided on a per-centrex group basis. Indication of camp-on is provided on a per-station basis.

5.02 An attendant can establish a maximum of six simultaneous camp-on connections from the attendant's position.

5.03 A tone circuit group must be defined in the translations to provide the 440-Hz camp-on tone in all offices requiring camp-on.

6. LIMITATIONS

6.01 Use of attendant camp-on requires that the centrex customer use the universal attendant console.

6.02 The attendant cannot camp-on to a station that is already camped on.

6.03 The attendant cannot camp-on to a busy station that has a call on hold.

7. RESTRICTION CAPABILITY

7.01 Attendant camp-on can always be recent changed in or out as long as the 440-Hz tone circuit is equipped. Refer to OFFICE DATA for the proper RC messages.

8. COST DATA

8.01 The costs attributable to attendant camp-on and indication of camp-on are in terms of program store words (PS) and tone circuits. One bit per centrex station is required to indicate whether camp-on tone should be applied. Approximately 200 PS words in the generic program provide the camp-on and the indication of camp-on features. One bit of program store in the centrex block translation defines whether the centrex customer has camp-on.

8.02 One tone circuit and associated translations are required to provide a 440-Hz tone for the indication of camp-on.

INCORPORATION INTO SYSTEM

9. PLANNING

9.01 In the planning for the attendant camp-on and indication of camp-on features, the following considerations must be made:

● At least one attendant console is required

● A 440-Hz tone circuit group must be defined by the ODA when this group has not been previously defined.

Refer to HARDWARE ENGINEERING for ordering details of the tone circuit.

10. HARDWARE ENGINEERING

10.01 At least one 440-Hz tone circuit (low tone) is required to provide the indication of camp-on feature. This tone circuit (SD-2H118-01) has a trunk order code (TOC) of 61400 (J-2H018).

10.02 Care should be taken by the WECo engineer to insure the proper association of SD-2H118 circuit with the trunk group for which it is intended.

10.03 When the tone circuit (SD-2H118-01) is being provided for the first time, one 2-inch mounting plate is required per circuit.

11. SOFTWARE ENGINEERING

11.01 Refer to the Traffic Facilities Practices Division D, Section 12-n for details on engineering the number of circuits and translations.

12. COMPATIBILITY

12.01 When certain key telephone sets, PBXs, and certain other customer premise equipment are used, if indication of camp-on tone is applied, this could cause the call to be disconnected. This is due to the open interval generated in connecting and disconnecting the line to the busy party. Refer to EL 2646, dated July 12, 1973, for information on treating lines associated with key telephone equipment.

12.02 Additional compatibility problems may exist when camp-on is involved with computer ports. When data is being transmitted via computer ports, the indication of camp-on tone should not be provided because the data being transmitted may be lost. The resulting open switching interval can also cause the call to be disconnected. Stations that expect a long usage with computer ports should have the camp-on tone inhibited.

13. OFFICE DATA

A. Translations

13.01 The translators affected by the implementation of attendant camp-on and indication of camp-on include:

- the centrex group expansion

- centrex station expansion

- trunk group translator

- the scan point number translator.

13.02 Figure 4 is a typical translation layout of attendant camp-on and indication of camp-on.

B. Recent Change (RC) Messages

13.03 The attendant camp-on feature can be added or deleted in a centrex customer group with the following RC messages:

(1) Camp-on for centrex group

- A RC:CTX with keyword CMP ADD/—provide camp-on features to the group

- A RC:CTX with keyword CMP DLT/—remove camp-on feature from the group

(2) Indication of camp-on tone for centrex station

- A RC:L/ with keywords CTX and NCT ADD forbids camp-on tone to be given to a camped-on station for a station that was previously allowed camp-on tone (e.g., if a station is a computer port, NCT = No Camp-on Tone)

- A RC:L/ with keywords CTX and NCT DLT—allows camp-on tone to be given to a station that was previously denied camp-on tone.

13.04 The TTY input message A VY:CTX is used to verify that camp-on has been properly defined in the translations.

13.05 Refer to Input Message Manual IM-2H200 for complete definition of the variable fields required.

C. ODA Information

13.06 In order to incorporate attendant camp-on in a No. 2 ESS office, an ODA run can be utilized. That is, an ODA run is required whenever additional low-tone circuit groups (group 033) are required. When an ODA run is needed, the following ESS input forms must be completed by the operating companies and submitted to WECo Regional Center for processing. Normal scheduling procedures should be observed in preparing these input forms.

- ESS 2101—Centrex Directory Number Table—This form is required whenever a camp-on tone should be provided to centrex stations. The no camp-on tone (NCT) column is checked if the tone should be forbidden.

*2101
CENTREX LINE 4 OR 6
21 WORD EXPANSION 0

```
                    0
                    1
                    2
    P    NC         3
         (17)
                    4
                    5
```

*2109
CENTREX GROUP
21   EXPANSION   0

```
P         CMP              0
          (11)
```

INDICATES THAT CUSTOMER 31
GROUP HAS CAMP-ON

THIS BIT INDICATES WHETHER OR NOT
CAMP-ON TONE SHOULD BE PROVIDED
TO A CENTREX STATION WHEN THE
STATION IS CAMPED ON

SCAN POINT NUMBER
21   TRANSLATOR   0
                         0

*2201, 2202
TRUNK AND SERVICE
GROUP DATA
21   TERMINAL LIST   0

P	SC 1 10 BIT NO.	SC 0 10 BIT NO.
P	SC 3 10 BIT NO.	SC 2 10 BIT NO.
P		

GENERIC PROGRAM
CONVERTS 10 BIT
NUMBER TO A PSEUDO
SCAN POINT NUMBER
(PSPN)

PSPN

PSPN
Y (14-8)   Z (7-1)   L/0

TONE CKTS   63

| P | STC = 4 (20-18) | PS ADDRESS (17-0) |

66

2*Z

*2201
21 TONE SUBTRANSLATOR   0
                              0

| P | | TEN (14-0) |
| P | | MEMBER (16-9) | GROUP (8-0) |

255

* THIS NUMBER INDICATES THE
APPROPRIATE ESS INPUT FORM

Fig. 4—Typical Translation Layout of Camp-on and Indication of Camp-on

- ESS 2109-1(9A)—Centrex Group Table—The camp-on feature is assigned to a given centrex customer group.

- ESS 2201—Form Code 21—Trunk Assignment Table—This form will generally be prepared by the Western Electric line engineer for initial installation of the camp-on tone circuit (trunk group 033). In growth situations where additional tone circuits are being installed, partial information should be provided by the dial administrator.

- ESS 2202-1 Form Code 22—Trunk Group Table—This form defines the trunk group and member number, trunk order code and circuit usage option as outlined in the Translation Guide, TG-2H.

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

14. GROWTH/RETROFIT PROCEDURES

14.01 If it becomes necessary to add or delete the attendant camp-on feature, RC messages defined in OFFICE DATA can be used. Refer to IM-2H200 and OM-2H200 for more details on these messages.

15. TESTING

15.01 Testing of the camp-on feature may be done by making test calls to verify that the feature is operating. A verify input message as outlined in OFFICE DATA may be used to verify the translations for camp-on.

ADMINISTRATION

16. MEASUREMENTS

16.01 Traffic measurements for the attendant camp-on feature include the peg count of the number of times an attendant attempts to camp-on to a busy station. Register CTX18 is used to provide this measurement.

17. RECORD KEEPING

17.01 No special record keeping is required other than maintaining the office data records

(ESS-R forms) of an ODA run reflecting the translation data.

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

18. CHARGING

18.01 No special charging is required for the attendant camp-on and indication of camp-on features. Local tariff regulations should be observed.

AVAILABILITY

19. NEW INSTALLATIONS

19.01 The attendant camp-on feature is available in any No. 2 ESS installation equipped with the EF-1 generic program.

20. GROWTH/RETROFIT

20.01 The attendant camp-on feature is only available as part of the EF-1 generic program. If an office having the LO-1 generic program is retrofitted with the EF-1 program, this feature can be made available.

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 may be assembled or changed for a No. 2 ESS. Information from the ESS input forms is inputted into the regional ODA computer, assembled, then sent to the No. 2 ESS.

- *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-2H311-01—Attendant Services Program

- PF-2H311-01—Attendant Services Program

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

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

- PA-2H200—Office Data Tables Layout Specification, No. 2 ESS

- Traffic Facilities Practices Division D, Section 12

- Section 232-120-301—Traffic and Plant Measurements, No. 2 Electronic Switching Systems

- Section 999-200-128—How to Operate the 1- and 2-Type Consoles, No. 2 Electronic Switching System Centrex.