

**CENTRAL OFFICE AMA EQUIPMENT WITH BILLING DATA TRANSMITTER (BDT)  
PRECAUTIONARY MEASURES  
COMMON SYSTEMS**

CONTENTS	PAGE
1. GENERAL . . . . .	1
2. APPARATUS . . . . .	2
3. PRECAUTIONARY MEASURES FOR ELECTROMECHANICAL AMA EQUIPMENT . . . . .	2
A. Recorder and Recorder Connector . . . . .	2
B. Master Timing Circuit . . . . .	2
C. Transverter . . . . .	2
D. Transverter Connector . . . . .	3
E. Translator . . . . .	3
F. Call Identity Indexer . . . . .	3
G. Trunk Arranged for AMA . . . . .	3
H. Billing Indexer . . . . .	3
4. PRECAUTIONARY MEASURES FOR BDT EQUIPMENT . . . . .	3
A. ENCODER . . . . .	4
B. Recorder Control Board . . . . .	4
C. Data Sets . . . . .	4

information contained in other Bell System practices and circuit and schematic descriptions covering alarm routines, taking equipment out of service, and working on apparatus.

1.02 This section is reissued for the following reasons:

- (a) To change title
- (b) To separate electromechanical equipment from BDT equipment.

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The recorder transfer feature should be used for routine maintenance or for testing only when little or no traffic is being served by the associated trunks. If it is necessary to transfer to the emergency recorder during the busy hours because of a trouble condition, the trouble should be completely cleared before the regular recorder is restored to service.

**Caution: To prevent possible loss of revenue on calls in progress when transferring to the emergency recorder, the BDT emergency recorder port RUN switch should be set to the same encoder as the recorder being transferred.**

**1. GENERAL**

1.01 This section covers the procedures to be followed when answering alarms and when working on equipment in Automatic Message Accounting (AMA) offices equipped with BDT. This section supplements but does not replace the

1.04 Consideration should be given to the possible effect on the No. 1 Automatic Message Accounting Recording Center (AMARC) equipment before any tests are made on the BDT equipment.

1.05 BDT major alarms will be generated by ENCODER control boards or the power and alarm unit. Replacement of operated fuses or

**NOTICE**  
Not for use or disclosure outside the  
Bell System except under written agreement

defective power converter will silence major alarms generated by the power and alarm unit. Major alarms generated by the ENCODER control board indicate an ENCODER failure to all recorder ports.

1.06 BDT minor alarms can only be generated under program control via the ENCODER control board. They are the result of an ENCODER transfer on one recorder port, failure of a recorder port to both encoders, or a 20-second period during which no polling messages were received from the AMARC.

## 2. APPARATUS

2.01 322A (make-busy) plugs, as required.

2.02 32A test set.

2.03 Master timing circuit SD-25633-01 (recorder test portion).

## 3. PRECAUTIONARY MEASURES FOR ELECTRO-MECHANICAL AMA EQUIPMENT

### A. Recorder and Recorder Connector

3.01 When it is necessary to remove a recorder from service, one of the following methods can be used:

(a) Transfer the regular recorder to the emergency recorder. Under this condition, all completed calls will be charged.

(b) If the emergency recorder is not available, make busy the recorder. Under this condition, all message unit calls using the associated trunks will be free calls and all toll calls using these trunks will be routed to over-flow. For this reason, recorders should be made busy only when there are no other means of removing them from service.

3.02 When the emergency recorder is in use and it is desired to take it out of service, the associated trunks should be transferred back to the regular recorder or made busy whenever possible.

3.03 When it is desirable to transfer one recorder to the emergency recorder for maintenance reasons, the BDT will detect this operation. Lines will be processed from the emergency recorder in

a normal manner except that the data sent to No. 1 AMARC will have a recorder label of the transferred recorder instead of an emergency recorder label. No. 1 AMARC will continue to process data in the normal fashion.

3.04 Before working on individual pieces of apparatus (except the TTIB relay), in the regular or emergency recorder or preference circuits, the transverter trouble indicator, trouble ticketer, or trouble recorder should be made busy to the recorder. This action will avoid recording troubles caused by working on the apparatus. The transverter trouble indicator, trouble ticketer, or trouble recorder will then be available to record service failures on other equipment units.

3.05 Each recorder has an HR, MTR, NP, and XRB lamp appearing on the recorder frame. If, in response to an alarm, one of these lamps is lighted, make busy or transfer the recorder indicated by the alarm. After the trouble has been cleared, proceed as outlined in paragraph 3.07.

3.06 To prevent a false HR alarm, do not restore a recorder to service during the interval from one full minute before the hour to one full minute after the hour. This does not apply to jobs with the "timekeeping functions retired in place" feature (option UF in the recorders and option VR in the master timer).

3.07 Before restoring a regular recorder to service, an operation test should be performed using the master timing circuit (see Section 201-901-501 Test C).

### B. Master Timing Circuit

3.08 When tests of a master timing circuit require that a recorder be attached, use the emergency recorder unless otherwise specified.

3.09 After clearing trouble in the master timing circuit, the circuit should be restored to service, but may be left out of control until needed.

### C. Transverter

3.10 Before working on any individual piece of apparatus of the transverter (except the TIB relay), insert a make-busy plug into the TVTIB or TRMB jack.

**D. Transverter Connector**

3.11 When a transverter connector is removed from service by making the associated senders busy during periods of heavy traffic, subscriber reactions may result because of the overflow tone received. A transverter connector should be restored to service immediately upon clearing trouble, especially during periods of heavy traffic.

3.12 Before restoring transverter connectors to service, apply tests which may be indicated by the nature of the trouble found.

**E. Translator (when provided)**

3.13 Removing a translator from service will prevent identification of 1000 calling subscribers. For this reason, **a translator should be made busy only as required to work on equipment and should be restored to service as quickly as possible.**

3.14 If a translator is made busy, all bulk billed calls will be completed without a charge record and toll calls will be routed to overflow. For this reason, **avoid removing a translator from service during busy hour periods.**

3.15 **If a translator is removed from service, No. 1 AMARC, traffic, and repair service personnel should be advised by telephone of the action taken.**

3.16 Spare windings are provided on the E-SW, O-SW, SW0, SW1, SW2, SW4, SW7, VF0 to VF4 relays and on the directory number coils for temporary repair of defective windings or coils. The relay or coil should be replaced as soon as possible.

3.17 Translators removed from service for maintenance reasons should be restored to service as quickly as possible.

**F. Call Identity Indexer**

3.18 When a call identity indexer (CII) is removed from service by making the associated recorder busy in place of the trunks, all message unit calls using trunks associated with the CII are free calls and toll calls are routed to overflow. For this reason, **where possible, the trunks should be removed from service.**

3.19 Before working on individual pieces of apparatus in the CII, notify No. 1 AMARC and make busy the transverter trouble indicator or trouble recorder to the associated recorder.

3.20 Circuit failures in the CII cause the time alarm features of the associated recorders to function. These failures call in the transverter trouble indicator or trouble recorder, and the trouble location must be determined from the display or trouble card produced.

**G. Trunk Arranged for AMA**

3.21 To avoid starting the CII circuit and causing repeated timing entries, insulate the DJ<sub>1</sub> lead of the trunk involved before attempting to clear trouble or adjust apparatus.

3.22 If, as a result of trouble or testing, repeated timing entries are generated and transmitted to the No. 1 AMARC, forward complete information including trunk number, associated recorder number, time of day, and the nature of the trouble to the No. 1 AMARC.

3.23 Before restoring trunks to service, test for the ability of the trunks to generate initial answer and disconnect entries using the master test frame or automatic trunk test frame.

**H. Billing Indexer (when provided)**

3.24 Before working on any individual piece of apparatus of the billing indexer, make busy the transverter trouble indicator or trouble recorder to the billing indexer.

3.25 Billing indexers should be removed from service only when traffic conditions permit.

**4. PRECAUTIONARY MEASURES FOR BDT EQUIPMENT**

4.01 **Before any of the plug-in components of the BDT may be removed from their respective connectors, the power supply to the particular component must be removed.** Some components of BDT (ENCODER control boards, recorder control boards, power converters, and display boards) are equipped with power switches to permit removal of power to the unit before disengaging or engaging the unit. Other components of BDT (scan boards, distribute boards, ENCODER components, programmable controllers,

and data sets) are not equipped with power switches. **When it is necessary to remove a component of a BDT not provided with a power switch, the other ENCODER must be made primary to all recorders ports.** Once the ENCODER associated with the plug-in unit to be replaced has been made secondary to all recorders in the BDT, set POWER switch on the secondary ENCODER control board to OFF. With the ENCODER powered down, associated plug-in components may be removed.

#### A. ENCODER

**4.02** When an ENCODER fails, the recorder ports which are normally associated with it are automatically transferred to the other ENCODER. Light-emitting diodes (LEDs) on the ENCODER display and control panel will be lighted indicating the ENCODER failure condition. Audible alarms will also be sounded. Isolate ENCODER trouble conditions per Section 201-901-301.



***It is important that ENCODER failure conditions are given immediate attention. If the second ENCODER should fail while a failure condition exists in the first ENCODER, billing data will be seriously affected.***

**4.03** An ENCODER to be manually removed from service must be made secondary to all recorder ports within the same BDT. The primary/secondary status must not be manually reset if an XFR LED is lighted on the ENCODER control board.

**4.04** When restoring an ENCODER to service, allow the ENCODER to run as secondary to all recorder ports before resetting the primary/secondary status to normal. The normal setting of the RUN switch on the recorder control

boards should cause each ENCODER to be primary to approximately 50% of the billing traffic of the recorders.

#### B. Recorder Control Board

**4.05** An AMA recorder may have up to 100 trunks associated with it. A recorder control board is provided for each AMA recorder. Perform the following steps before removing a recorder control board:

- (a) Remove associated recorder from service (see paragraph 3.01).
- (b) Set POWER switch on recorder control board to be removed to OFF.

#### C. Data Sets

**4.06** Associated with each ENCODER in the BDT are two data sets. One of these data sets is dedicated (202T) and is used by the ENCODER under normal operating conditions. The other data set (202S) is a dial-up link under control of the No. 1 AMARC and is used only when the dedicated line has failed.

**4.07** Should there be a failure condition associated with either data set, it is important that operation is restored to normal as soon as possible. Refer to the 592 division of Bell System Practices for information pertaining to 202S and 202T data sets.

**4.08** The No. 1 AMARC facilities, associated with the two dial-up data links at each BDT, are shared by up to 15 BDTs. When a dial-up data link is used to replace a defective data link, consideration should be given to removing the associated ENCODER from service (see paragraph 4.03).