CHANGE IN PROGRAM STORE WORD DESCRIPTION NO. 2B ELECTRONIC SWITCHING SYSTEM

CONTENTS PAGE

1. GENERAL

1.01 This section describes the overwrite procedures used for inserting program or translation patches to correct errors affecting service in a No. 2B Electronic Switching System (ESS). This section also gives information and suggested procedures for administering No. 2B Emergency Broadcast Warning Messages (BWMs).

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 Each program problem which is identified by BTL is assigned a modification request (MR) number and an overwrite (OW) number. The formal correction of these program problems is by software change notices (CNs). This type of change is also called a generic program update or restart. Each software CN has an associated engineering change notice (ECN) which lists the MRs and identifies the troubles corrected in the CN. AT&TCo also issues a program notice which is essentially the same as the ECN.

1.04 Program corrections for certain troubles which are service-affecting and require immediate correction are distributed as No. 2B ESS Emergency BWMs from the Western Electric Product Engineering Control Center (PECC). Each warning is numbered serially. The warnings usually contain generic program overwrites which will normally be included in the next scheduled update or restart. In addition, for broadcast warnings containing overwrites, a "point" CN number is assigned to facilitate insertion of the change by the Western Electric installer in an office prior to turnover.

1.05 When BTL closes a program issue to new MRs, there will be an interval of several months before the CN is installed in individual offices. During this time there could be some recently distributed overwrites which are not included in the new program. These overwrites may apply to either the currently installed issue, the new issue, or both issues of the program. The broadcast warning will indicate the issue to which the change applies.

1.06 All overwrites which apply to an issue of generic program currently installed in the office

should be inserted. Therefore, the insertion of overwrites in offices which have been turned over is the responsibility of the telephone company. Applicable overwrites should be installed in sequence and it is recommended that the overwrites be installed as they are received.

1.07 In addition to broadcast warnings, there are special overwrites with associated MR and OW numbers that do not get general distribution. This could be due to a coordinated change in hardware and software, special circumstances for a particular office, or the office being the soak office for an overwrite prior to its distribution. These special overwrites are generated by BTL or WE-PECC and distributed by WE-PECC to those individual offices. In the case of a coordinated hardware-software change, the overwrite will be included with the installation information for the hardware change. Such changes will be distributed by the hardware CN.

1.08 The method of administering the overwrites and recording their insertion is given in Part 2. The method for actually checking the overwrites, by inserting the change messages and verifying the inserted message, is given in TOP Section 232-090-022.

1.09 Refer to the Input Message Manual (IM-2H200) and the Output Message Manual (OM-2H200) for detailed information pertaining to any input or output message referred to in this section.

1.10 Refer to TOP Section 232-090-022, for detailed procedures on updating program store translation information in the No. 2B ESS.

2. ADMINISTRATION OF OVERWRITES

2.01 The administration of overwrites due to broadcast warnings or special purpose BTL overwrites requires an understanding of the overwrite. Also, the overwrite status and location must be clearly documented so that all changes to the generic program are immediately evident. In addition, when software CNs are inserted into the system, all previously installed overwrites must be reverified as to their inclusion in the previous CN. If not included these overwrites must be inserted. Refer to paragraph 2.05(3).

2.02 The overwrite number for translation patches (overwrites) must be taken from a list (block) of numbers reserved for translations. For the No. 2B-EF-1 generic, the reserved numbers (block) range from 7500 through 7999. For the No. 2B-EF-2 and later generics, the reserved numbers (block) range from 1 through 999. The use and administration of these numbers must be controlled by the local TELCo.

A. Procedures for Administering New Overwrites

2.03 All broadcast warnings should be inserted if they affect the issue of program currently installed in the office. Each BWM is to be entered on the broadcast log (Fig. 1). All associated information, MR and OW numbers, and trouble nature are to be entered also. If the BWM is reissued to supersede all or part of a previous broadcast, the total overwrite will either be withdrawn or corrected by the reissued warning. When the overwrite is implemented, the teletypewriter hard copy of input message IN:OW, IN:OWDATA, OP:OW, VFY:OW:OLD and output message VFY OW COMPL are to be labeled with the BWM and/or point CN number and kept with the log. The date inserted and the corrected program issues are also entered on the log.

2.04 The telephone company should maintain a copy of the broadcast log at the Electronic Switching Assistance Center (ESAC) or Switching Control Center (SCC). If a ESAC has ***not*** been established, a central staff or group should maintain the current log for each office. The ESAC should require a positive feedback of the status of each overwrite in all offices involved. A suggested method would be to reproduce the broadcast log sheets to inform the ESAC whenever changes are made on the log. This will enable the ESAC to have a complete and accurate status file of all overwrites in each office.

B. Procedures for Administering Existing Overwrites When a Software CN Is Applied

2.05 Three sets of documents are required in order to properly insert the overwrites when applying a software CN.

(1) The ***broadcast log*** of all overwrites in the machine.

(2) The ***ECN*** associated with the new program. The ECN will list the MRs included in the new program, and can be obtained from the Western Electric Company.

(3) The ***broadcast warnings*** associated with a new program issue. BTL and WE-PECC will

OFFICE				GENERIC				ISSUE	
BROADCAST WARNING NUMBER	CN NUMBER	PR NUMBER	PR NAME	NATURE OF TROUBLE	DATE INSERTED	MR NUMBER	TC NUMBER	TO BE CORRECTED IN ISSUE	DATE WITH-DRAWN

Fig. 1—Broadcast Log

provide new address and data, via the Broadcast Warning routine, for all overwrites which are not included in the new program issue.

2.06 Check each MR listed in the broadcast log, for which the overwrite was implemented, against the list of MRs in the ECN. Any MR not found in the ECN has not been included in the new program. For these MRs, contact WE-PECC for resolution of the problems before proceeding.

> ***Note:*** The procedure described in paragraph 2.06 should be completed before the scheduled installation of the new program issue.

2.07 Install the new program issue. If all previously overwritten tapes have ***not*** been replaced by the new program issue, contact WE-PECC for resolution of any problems.

2.08 Update the broadcast log and send the report form to appropriate telephone company personnel, ESAC, or Staff.

C. Preturnover and Program Retrofit Offices

2.09 The preturnover period and program retrofit period pose special problems to the telephone companies. The Western Electric Company installer is responsible for turning over a working system with a standard generic program installed. However, there may be some overwrites which should be installed by the Western Electric Company installer. To accomplish this, the WE-PECC, as discussed in paragraph 1.04, will assign a "point" CN number to each broadcast overwrite using the CN number assigned to the previous issue of the affected generic program. The "point" CN will be applicable to office installation, retrofits, and generic restarts only. Overwrites installed by the WECo installer should be entered in the broadcast log in the normal manner.

D. Special Situations

2.10 In some rare cases, the WECo installer may have obtained an overwrite for which MR and OW numbers have been assigned, but which is not distributed via the Broadcast Warning routine. In the event the overwrite is needed for one particular office, but was not considered to have application elsewhere, the overwrite may become part of a future generic program or a coordinated hardware and software change. In this case, the WECo installer should notify the telephone company of the existence of the overwrite. The telephone company should record all overwrites on the broadcast log prior to turnover.

E. Summary

2.11 The use of the broadcast log should result in an orderly administration of all broadcast warnings and software overwrites. Extreme care must be taken by the central office personnel and ESAC to administer, insert, and verify all overwrites in the system.

2.12 Strict adherence to this procedure should eliminate system troubles resulting from overwrite insertion. An important fact to recognize is that mistakes in the overwrite procedure may lead to total system failure.

2.13 All insertions of overwrites into program store should be done in the low traffic period of the day. This time of the day is recommended because the action requires duplicated equipment to be removed from service.

3. CAPABILITIES AND RESTRICTIONS

3.01 The overwrite procedure may be used to change the contents of any MAS location in the No. 2B ESS program without restriction. Normally, however, changes made by the overwrite procedure apply to the generic program.

> ***Note:*** The overwrite procedure should only be used to change MAS translation information in an emergency situation. Refer to TOP Section 232-090-022, for updating program store translation procedures.

3.02 An unlimited number of locations can be changed using the overwrite procedure by a repeated sequence of TTY input requests. Any changes performed by the complete overwrite procedure immediately becomes active. An overwrite word for translations will not be allowed if a recent change currently exists for that location. Therefore, a recent change update must be performed first if the overwrite procedures are used to overwrite data in an area of program store that is recent changeable (translation area).

3.03 ***The overwrite procedure is intended for use only by experienced mainte-***

nance personnel as a method of last resort to change permanent memory. The maintenance personnel should carefully follow any special instructions given on the emergency broadcast warnings or special purpose BTL overwrites while executing this procedure.

Note: The overwrite procedure should not be attempted by office personnel except in response to emergency BWMs, special purpose BTL overwrites, or through direct consultation with the No. 2 ESS Diagnostic Center.

A. Verification of Broadcast Warnings

3.04 The No. 2B ESS broadcast warning overwrite must be proofread to verify error free transmission from WE-PECC to the telephone company. The integrity of transmission is made by using the "8-check" procedure. This check procedure is accomplished by creating a check word which when added vertically to the address and data words provides a sum of 8 in each column. In addition the ***decimal sum*** of all octal numbers in the ***address***, and ***data*** fields is accumulated and shown with the check data. An example follows:

MNEMONIC	ADDRESS		OLD DATA		NEW DATA
IN:OWDATA:0, 0,	106010	+	00000000	+	16303027
CHECK	782878		88888888		72585861 =30
	888888		**88888888**		**88888888**

Note: Numbers and symbols shown in bold type do not appear on the broadcast warning, but are provided to illustrate manual arithmetic verification.

All recipients of No. 2B ESS broadcast warnings should perform this check procedure before insertion to assure no errors have been introduced into the overwrite during transmittal to the telephone company.

3.05 ***Caution: The maintenance personnel should exercise more than the normal amount of caution in verifying the input results of any program patch by the overwrite procedures.***

3.06 Any change affecting the MAS memory is vulnerable to error, and any error in either address or data can affect service. The address of the data being changed can readily be verified since the address and the old data must be inputted while entering the new data.

3.07 Any mismatches between the old data corresponding to an address in the broadcast warning and the data at that address in the processor will be detected by the verify overwrite routine. A mismatch generates a VFY OW ERR error message. The mismatch causing the error should be resolved before continuing with the procedure.

3.08 In order to cross-reference overwrites with the program listing, all addresses in the program listings that have data changed due to the overwrite should be marked and cross-referenced to the broadcast log. The important step is to mark the program listing where an overwrite has modified that program. This action will warn the user of the program listing that an overwrite has been inserted.

3.09 A different procedure should be used by offices using microfiche. It is suggested that a 3 inch by 5 inch white card be marked with the changed information and attached to the back of the appropriate fiche card with a paper clip. The 3 inch by 5 inch card should be cross-referenced to the broadcast warning affecting the program listing.

3.10 Verification of the input message via the TTY printout after updating may be made from either the local central office or the centralized maintenance center, such as a ESAC or SCC. If a ESAC is used, it must verify the accuracy of the overwrite in each office it serves. This will require the ESAC to monitor the local office during the overwrite message insertion, during all verifications of the message insertion, and after updating. Reference should be

made to IM-2H200 and OM-2H200 for all input and output message explanations.

3.11 In order to initiate the overwrite procedure, the system must be able to run in a ***normal update mode,*** and the following equipment must be in service: both TDCs (TDC0 and TDC1) CU 0, CU 1, and the maintenance teletypewriter. All input and output messages are handled via the maintenance teletypewriter, exclusively. The maintenance personnel should refer to TOP Section 232-090-022, for the update procedures prior to performing the overwrite procedures.

B. Flowchart of Procedure

3.12 A flowchart of the inspection of overwrites is given in Fig. 2.

3.13 Prior to the incorporation of any major data change to the primary tapes, refer to TOP Section 232-090-004 and Section 232-309-105, for processor tape handling procedures, precautions and conventions.

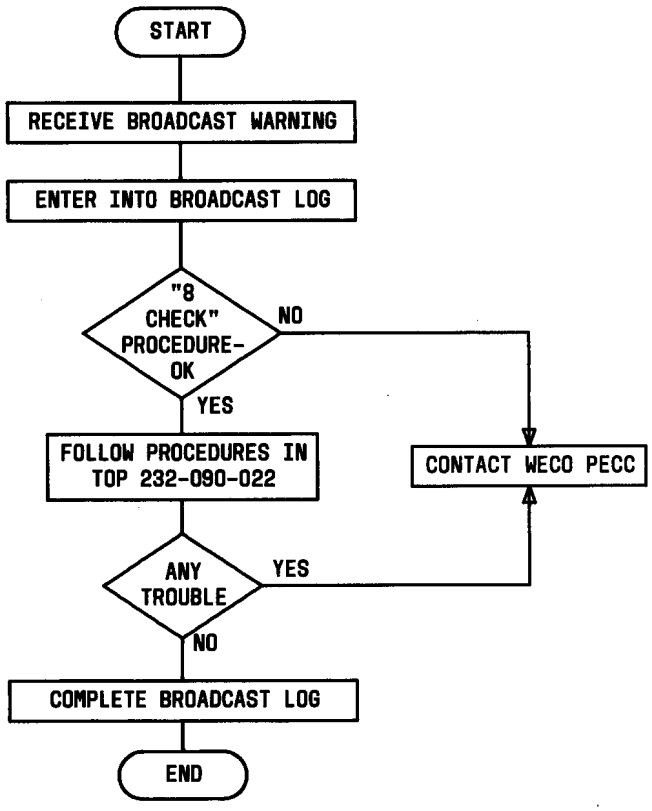

Fig. 2—Flowchart of Procedure for Inserting No. 2B ESS Broadcast Warnings