

SWITCHING SYSTEMS MANAGEMENT
NO. 4A/4M CROSSBAR
ROUTE AND TRANSLATION VERIFICATION

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1. GENERAL

INTRODUCTION

1.01 This section sets forth administrative and testing procedures to ensure proper code routing and machine access to the toll network by

No. 4XB Switching Systems. This section is being issued jointly as Dial Facilities Management Practice (DFMP) Division H, Section 13d(8), and as BSP Section 212-041-010, because it covers interrelated responsibilities of the maintenance and administration groups.

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

1.03 Comments on this section should be made on DFMP—User's Comment form and forwarded to:

Dial Facilities Management Practices Coordinator
American Telephone and Telegraph Company
295 North Maple Avenue Room 3432B1
Basking Ridge, New Jersey 07920

1.04 This section relates to verification of day-to-day activities involving routing changes, trunk additions, rearrangements and removals, and also to periodic verifications.

1.05 The content of this section covers the job functions of several groups, ie, routing supervisor, dial administrator, maintenance supervisor, and testboard supervisor. This has been done to provide the maintenance supervisor, testboard supervisor, and the dial administrator with background information of the entire routing order process. The intent is to highlight the need for day-to-day coordination between the maintenance and administration groups; their interrelated efforts are necessary to keep routing and translation errors to an absolute minimum.

1.06 Organizational structures, division of responsibilities, and titles may vary considerably among the companies. Therefore, the functional responsibilities as they relate to this routing verification procedure are given below:

(a) **Circuit Provision Engineer:** Plans future traffic routes and determines quantities of trunks required to accommodate forecasted traffic loads. Issues requests for additions, changes, or removal of trunks to meet current load requirements.

(b) **Routing Supervisor:** Interprets the current and future Long Lines Routing Plan (LLRP) or the Operating Telephone Company (OTC) equivalent, the Traffic Routing Guide

(TRG), and designs the routing structure for a given switching system. Issues Translation Card Orders or ETS Recent Change Orders which assign routes. These orders also care for miscellaneous assignments that determine the number of digits to be outpulsed, type of signaling and pulsing, as well as route transfer arrangements, etc.

(c) **Dial Administrator:** Assigns trunk relay equipment in accordance with trunk type and office balance requirements. Assigns traffic registration equipment and/or scan points and accumulates traffic measurement data. Monitors the switching system's performance, investigates irregularities, and initiates corrective measures.

(d) **Maintenance Supervisor:** Maintains the switching system and ensures its proper operation. Implements and coordinates trunk additions, changes, and removals, as well as machine routing changes.

(e) **Testboard Supervisor:** Ensures that in-service trunks function properly. Makes overall operation tests of added, rearranged, or discontinued trunks and periodic verification tests of existing trunks and trunk groups.

1.07 This section does not cover the application of the Trunk Facility Maintenance System (TFMS) or the Peripheral Bus Computer (PBC) in performance of routing verification. Nor does this section address the additional routing verification requirements that will result from the implementation of Common Channel Interoffice Signaling (CCIS) features.

SCOPE OF ROUTING VERIFICATION

1.08 To be meaningful, all work activities must be verified, starting with the interpretation of approved routing plans (LL and OTC) up to and including testing of the No. 4 machine's ability to switch as directed.

1.09 These work activities include:

(a) **Imparting logic to the switcher:** (Translator Card Orders/Recent Change Orders written and worked and tests made.)

(b) **Establishing trunks:** (Trunk orders written, worked and tests made.)

1.10 Through records verification, routing information is checked with the approved routing plans and by means of machine verification, the information is compared with actual machine routing and trunks accessed for all routes. Procedures vary between day-to-day verifications and those of periodic verifications, but the principles are the same. Both frequencies will be treated in detail in later paragraphs.

1.11 It is recognized that machine logic encompasses items other than those required just to route the calls.

Example: Traffic separation peg count, trunk group peg count, and overflow.

1.12 While checking of these items has not been made a requirement of routing verification, local considerations might indicate this to be a logical time for these additional validations.

EFFECTS AND CAUSES OF TRANSLATION ERRORS

1.13 In a 4XB Switching System, the ability to access all trunk groups in a specified alternate routing sequence (routing pattern) is of utmost importance in providing good customer service. Improper routing results in inefficient use of the circuits and equipment provided. Frequently, idle capacity exists in trunk groups not accessed, while overloads are created in other groups receiving the misrouted traffic. Routing irregularities may create unnecessary ineffective machine attempts such as no circuit (NC), reorder, and vacant code—all of which are deterrents to call completion and cause customer dissatisfaction.

1.14 Most translation irregularities are the result of work errors in the various steps involved in code changes and the addition or rearrangements of trunks or trunk groups. The establishment of checks at certain points to verify the accuracy of work performed will minimize work errors. In order to establish specific checkpoints, it is necessary to understand the flow process of routing orders.

ROUTING ORDER FLOW PROCESS

1.15 Routing changes are created whenever trunk groups are added or removed, or when rehomings or office rearrangements are made. Activity in establishing new intertoll trunk groups is initiated by the OTC or LL Area Circuit Provision

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Engineer issuing Routing Change Orders (LL Form T-306 or OTC equivalent). Trunk Orders (LL Form T-5 or OTC equivalent) are subsequently issued by the OTC or LL Area Circuit Provision Engineer. While specific forms and administrative procedures may vary among the companies, basic Bell System routing concepts are adhered to in the planning of the routes. The typical Routing and Trunk Order Flow process, triggered by the Routing Change Order, is shown in the block diagram, Fig. 1.

1.16 Upon receipt of the Routing Change Order and confirmation via the LLRP or the OTC equivalent, the routing group prepares a Translator Card Order (Form E-3920, Fig. 2) for CT offices or an ETS Recent Change Order (Form ETS-8075-T, Fig. 3) for ETS offices. The area codes and the office codes are obtained from the TRG. Then the orders (Form E-3920 or Form ETS-8075-T), with only routing information entered, are forwarded to the dial administrator.

1.17 For card translator offices, the dial administration group completes the assignments on Form E-3920 (per TFP Div K, Sec 3-J); the machine maintenance group codes the items into machine language and transfers the information to a cardboard template, Form E-3869 (per BSP Section 212-120-301) and then prepares the metal translator cards per BSP Section 034-700-812.

1.18 At ETS locations, the dial administration group adds assignment information to the ETS Recent Change Order, when necessary. The machine maintenance group then converts the order into machine language per BSP Section 212-814-301. This information is then inserted into the ETS and PBC memory.

1.19 Dial administrators and maintenance supervisors must establish control procedures to ensure the accuracy of the steps in the trunk addition or rearrangement processes. These control procedures are outlined in Part 2.

2. DAY-TO-DAY CHECKS AND CONTROLS

2.01 The routing supervisor, dial administrator, maintenance supervisor, and testboard supervisor share the responsibility for accurate routing in the switching system. They must ensure that their respective work forces are adequately trained and motivated to produce a high quality job.

2.02 Each of the steps in the Typical Routing and Trunk Order Flow (Fig. 1) are subject to errors that will effect the end product.

2.03 There are several problem areas that appear to be major contributors to routing errors:

- (a) Discrepancies between approved routing plans (LLRP or OTC equivalent) and Routing Change Orders (LL Form T-306 or OTC equivalent).
- (b) Translator Card Order/ETS Recent Change Order not issued.
- (c) Translator Card Order/ETS Recent Change Order not received.
- (d) Translator Card Order/ETS Recent Change Order incorrect.
- (e) Translator Card/ETS input incorrect.
- (f) Sticking or no translator card.

Suggested checks and controls for minimizing these errors in routing are listed in 2.04 through 2.12.

2.04 The person responsible for issuing the approved routing plans (LLRP or OTC equivalent) must ensure that the plans concur with input documents. However, if inconsistencies in routing patterns are questioned by the maintenance or dial administration groups, they should be referred to the Dial Administrator for review with the Routing Supervisor. This surveillance will assist in detecting occasional routing errors and will also broaden the knowledge of the two groups in relation to routing patterns.

2.05 The Routing Supervisor is responsible for the issuance of Translator Card Orders (Form E-3920, Fig. 2) or ETS Recent Change Orders (ETS 8075-T, Fig. 3) in sufficient time to meet required service dates. Controls should be devised to ensure that no scheduled changes are missed. To assist in early identification of all scheduled TRG routing changes requiring Translator Card Orders or ETS Recent Change Orders, LL has developed a computer program known as Advance Routing Guide Information System (ARGIS). ARGIS will give abbreviated listings in several sequences, including one by due dates. The Users Guide for this program was transmitted by G. L. 74-03-177.

2.06 The routing supervisor is responsible for ensuring that all Translator Card Orders or ETS Recent Change Orders issued have been received by the dial administrator. The routing supervisor should establish continuing procedures, verbal or written, requiring a positive reply from the dial administration group as notification that orders have been received. TFP Div. G, Sec 2-C(9) suggests control measures for the dial administrator to employ in ETS offices: sequential numbering of orders for a given machine, logging and indexing of orders received, and a memory jogger list of orders and due dates.

2.07 The dial administrator is responsible for ensuring the accuracy of all items assigned by his group on Card Translator Orders or on ETS Recent Change Orders. All items assigned by the dial administration group should be verified by a person other than the assigner. The need for checking is greater when a large number of codes are assigned to a given route. Repetition of the same assignment invites transposition errors or entries in the wrong locations. Initials of the assigner and the verifier should be entered in the appropriate spaces at the bottom of the orders.

2.08 The dial administrator (or maintenance supervisor where coding of Form E-3920 is a maintenance function) should personally institute a continuing program of checking a sample of the completed Translator Card Orders or ETS Recent Change Orders for errors and omissions. These checks will provide an insight into the overall quality of the assignment work and will highlight areas for additional training.

2.09 The maintenance supervisor is responsible for confirming the accuracy of translator card or ETS translation changes. Group busy relay strapping for trunk groups involved in rearrangements should be thoroughly tested and verified.

2.10 The testboard supervisor is responsible for performing a final overall, operational test of trunk groups involved in routing or trunking rearrangements. Both routing and trunk access features, in addition to circuit and transmission operation, shall be tested.

2.11 The addition of trunks and trunk groups and the associated work in establishing new routes or rearranging existing routes involve a considerable number of work steps (records,

cross-connections, and testing). Many offices have developed local checklists, on which all necessary work may be identified and checked off as completed. A typical checklist format is shown in Fig. 4.

2.12 It is desirable to have one person responsible for coordinating the completion of all these work items as scheduled. This designated coordinator may be in the maintenance group or in the dial administration group, depending on local organization structure. The appropriate supervisor will make periodic sample checks to assess the thoroughness and accuracy of this control.

3. DAY-TO-DAY ROUTING VERIFICATION TESTING

GENERAL

3.01 Day-to-day activities such as additions, removals, or rearrangements to existing trunk groups, addition of new trunk groups, addition of INWATS, number series, rehomings, and other routing changes require that routing verification tests be made. These tests are in addition to the trunk order tests (mentioned in BSP Section 660-450-301) which deal primarily with signaling, transmission, and operation testing.

3.02 The purpose of the routing verification tests are to ensure that the codes involved will route to all intended trunk groups and trunk subgroups and that the switching machine can access all trunks in these groups.

3.03 The dial administrator will initiate testing requests to the maintenance center and to the toll testboards and will receive notification of test results.

3.04 The code routing portion of the routing verification can be done by translator verification tests in all decoders in CT offices and by decoder-marker tests in ETS offices.

3.05 Trunk access testing shall include verification of group busy relay operation.

3.06 Trunk access testing can be done by using tandem access lines at the toll testboard. In cases where toll completing trunks do not appear in the testboard, the test will be coordinated with the maintenance center, which must identify and make the trunks busy after being accessed.

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3.07 The functions to be performed by each of the groups mentioned are covered in more detail in 3.08 through 3.32.

DIAL ADMINISTRATION FUNCTIONS FOR CODE ROUTING AND TRUNK ACCESS TESTING

3.08 The dial administrator is responsible for initiating requests for code routing tests and trunk access testing in accordance with Table A (Fig. 5).

3.09 Forms E-6233 and E-6234, as appropriate, will be prepared by the dial administrator to furnish code and routing information for the required testing. These forms will be issued to the maintenance supervisor and to the testboard supervisor in adequate time, prior to the scheduled completion date and time on the trunk or routing orders (Card Translator Orders or ETS Recent Change Orders), so that testing may be coordinated with cross-connection work and translator card changes or with ETS changes.

3.10 When trunk access tests are to be made on final toll groups, arrangements should be made to patch the NCA announcement to the first four trunks of the NCA group. This will enable the testboard to distinguish between an NC and a reorder (RO) condition.

3.11 Use of Form E-6233: This form (Fig. 6) shall be issued to the testboard supervisor or to the maintenance center supervisor for trunks with no test and make-busy appearances in the testboard area, for trunk access testing when additions, removals, or changes are made in machine or trunk assignments. The form will show what tests are to be made (per Table A) and provides space for comments relating to results. The purposes of the various tests are described as follows:

TEST A—This test is to verify that all trunks added to an existing group, or trunks involved in a trunk block connector change (ETS), may be accessed and that selection in the next alternate route group is made when all trunks are busy.

TEST B—This test is to verify that disconnected trunks can no longer be accessed and that selection in the next alternate route group is made when all trunks are busy.

TEST C—This test will verify that all trunks in a new group, or trunks involved in a trunk block connector change (CT), may be accessed and that selection in the next alternate route group is made when all trunks are busy.

TEST D—This test verifies that trunks involved in OTLF or trunk relay assignment changes may be accessed and that selection in the next alternate route group is made when all trunks are busy.

3.12 Instructions for the preparation of Form E-6233 are listed in Fig. 6.

3.13 Use of Form E-6234: This form (Fig. 7) shall be issued to the maintenance center supervisor for code routing verification when changes are made in the routing of codes. The form will indicate the type of test to be made, the codes involved, the intended routing, and in CT offices, the FAT boxes affected. The purpose of the various tests are described as follows:

TEST E—This test will verify that 3- or 6-digit codes involved in changes will access the desired trunk groups.

TEST F—This test verifies that the Inward WATS Terminating Screening Office does the proper band screening for 1NB-XXX Inward WATS codes and also that it will access the desired trunk groups with the correct code conversions. WATS administrative procedures for installation and maintenance are described in BSP Section 311-100-100. Inward WATS service considerations are discussed in DFMP Division F, Section 5.

TEST G—This test verifies that the originating toll office doing 6-digit translation of 800-NPA codes incorporates the proper Inward WATS band relationship between the calling and the called NPAs on all routes. (See BSP Section 311-100-100 and DFMP Division F, Section 5.)

3.14 Instructions for the preparation of Forms E-6234 are listed in Fig. 7.

MAINTENANCE CENTER FUNCTIONS FOR CODE VERIFICATION

3.15 The machine maintenance center will perform code verification tests appropriate to the routing changes specified in Tests E, F, and G. Form E-6234 will be furnished by the dial administrator requesting these tests.

3.16 In CT offices, the decoder-marker test frame will be utilized to verify translations as detailed in BSP Section 212-120-502. After the code changes have been activated, translation verify (TV) all decoders to ascertain that all trouble recorder cards show identical punches. One trouble recorder card should be verified against all items on the original translation order.

3.17 In ETS offices, the decoder-marker test frame is used to verify translation data in memory as detailed in BSP Section 212-816-501.

3.18 In addition, Test G should include call-through tests (see BSP Section 311-100-100) to verify the integrity of routing where intermediate switchers are involved. Band screening at the distant toll office will not be verified by these call-through tests. These test calls will be placed to the band 5 test line (0055). As a band 5 call is always "inband" a call which reaches the Terminating Screening Office will always terminate in the special Inward WATS announcement.

3.19 Failure to complete any tests satisfactorily is to be reported to the dial administrator for verification of the accuracy of the information supplied.

3.20 Following the completion of all tests, Forms E-6234 will be returned to the dial administrator.

MAINTENANCE CENTER FUNCTIONS FOR TRUNK ACCESS TESTING

3.21 When toll completing trunks do not appear in the testboard area it will be necessary for the maintenance center to identify trunks accessed and make them busy as requested by the testboard personnel.

3.22 Due to the necessity of turning down trunks, the tests shall be performed during light traffic periods.

3.23 Place a test call via an access line, identify the trunk seized and make it busy. Repeat the test until all required trunks have been tested. In cases where trunks are being discontinued or added, the preceding trunks should be made busy prior to initiating the tests.

3.24 When testing has been completed, turn up all trunks not in trouble.

3.25 Test Forms E-6233 will be returned to the dial administrator following the completion of all tests.

3.26 The maintenance center also may be requested to make busy toll completing trunks preceding intertoll trunks that are being access tested from the testboard.

TESTBOARD FUNCTIONS FOR TRUNK ACCESS TESTING

3.27 The testboard shall complete trunk access tests requested on Form E-6233 issued by the dial administrator. The procedures for the specific tests A through D, are detailed in Table B (Fig. 8).

3.28 Due to the necessity of turning down trunks, the tests shall be performed during light traffic periods.

3.29 Proper operation of lockout lamps in groups under test should be confirmed to reduce unidentified trunk selections.

3.30 At least one 7- or 10-digit call-through test shall be made over each trunk group to verify the integrity of the digits outpulsed.

3.31 Failure to satisfactorily complete any tests is to be reported to the dial administrator for verification of the accuracy of the information supplied and then to the maintenance supervisor, as required.

3.32 Test forms, with appropriate comments, are to be returned to dial administrator for analysis and filing.

3.33 Questions regarding trunk selection order or alternate route patterns may be referred to the dial administrator.

4. PERIODIC ROUTING VERIFICATION—CARD TRANSLATOR OFFICES

GENERAL

4.01 Routing verification is required at regular intervals in order to evaluate the switching system's continued overall ability to route traffic according to routing plans and access all trunks in the designated groups. Careful analysis of the results should bring to light any deficiencies in current day-to-day administrative procedures. A major objective should be the continuing improvement of the entire routing process.

4.02 Routing should be verified annually. The magnitude of verifying all 3- and 6-digit translated codes justifies performing this on a sampling basis, although consideration should be given to performing an initial 100% verification if this has never been done.

4.03 Trunk access verification should be performed semiannually, just prior to Mother's Day and Christmas (May and December). This testing should be done on a 100% basis. Because trunk access verification is an integral part of a complete routing verification, it is suggested that these procedures be performed concurrently on an annual basis.

ROUTING VERIFICATION PROCEDURES

4.04 Periodic CT routing verification procedures are subdivided into five categories of activities. These are:

(a) **Record Verification:** Verifies that the office records (Form E-3920) route traffic as intended by the TRG, LLRP, and/or OTC routing plan. The verification may be done on a sample basis or on a 100% basis. Record verification is independent of verification activities (b), (c), (d), and (e), listed below and may be done before, during, or after those activities.

(b) **Decoder Alternate Route Verification:** Verifies that all assigned route relays advance in accordance with the routing plan and that the associated AR cards direct the markers to the proper trunk groups. Decoder Alternate Route Verification may be performed on a sample basis or a 100% basis.

(c) **Home Translator Code Verification:** Verifies that the Home Area Translator (HAT) cards properly translate the specified code and direct traffic to the proper trunk groups. Home translator Code Verification may be performed on a sample basis or on a 100% basis.

(d) **Foreign Area Code Verification:** Verifies that the Foreign Area Translator (FAT) cards properly translate the specified codes and direct traffic to the proper trunk group. Foreign Area Code Verification may be performed on a sample basis or on a 100% basis.

(e) **Trunk Access Verification:** Verifies all working IT and TC trunks can be accessed. Trunk Access Verification is performed on a 100% basis.

4.05 Local conditions such as personnel scheduling, development of tools to assist in performing these verifications, etc, may vary. This section describes procedures that are generally applicable in today's environment.

ROUTING VERIFICATION—COORDINATION

4.06 A procedural outline should be formalized to ensure complete understanding of the annual routing verification program by all those participating in the project. A typical procedural outline, including functions and assigned responsibilities, is shown in Fig. 9.

4.07 As indicated in the outline, an appropriate staff coordinator should set up an overall schedule for routing verifications of all 4XB switching machines within the staff's area of responsibility, upon consultation with the dial administrators, maintenance supervisors, testboard supervisors, and routing supervisors. Consideration should be given to planned activities in the switching systems to be verified and also to the work loads imposed on the various groups involved (routing, dial administration, maintenance center, and testboards).

4.08 Once the overall schedules have been determined, the dial administrator shall coordinate the scheduling of each step of the program and ensure that continuity is maintained throughout the entire routing verification project (provision of sample codes and routings, testing, analyzation and resolution of discrepancies, evaluation for additional testing requirements, and final report).

ROUTING VERIFICATION—SAMPLING

4.09 The complete verification of the treatment of all codes, in all records and in all translators on a manual basis presents a formidable work load. This section describes sampling procedures which are designed to substantially reduce the number of verifications required (both in record verification and code verification). These sampling techniques, if carefully applied, can predict error rates in the untested portions of the records and the switching system, with a greater than 90% confidence level. Given the predicted error rate and an analysis of the troubles found, management can logically decide what further action may be required.

4.10 Sampling techniques are described in BSP Section 212-001-010. Strict adherence must be paid to rules of random number selection and the results must be understood if the sampling tests are to be meaningful. Routing verification sampling procedures for CT offices seek to identify instances where troubles exceed a 1.5% rate. The Sample Size Table in BSP Section 212-001-010 was developed for use where approximately 10% defects are anticipated—it should *not* be used for routing verification. Instead, refer to the Sample Size Table (Fig. 10). From this table it can be seen that sampling is less efficient for smaller universes than it is for larger ones.

4.11 Sampling procedures, as they apply to the five categories of periodic routing verification activities are given below:

- (a) **Record Verification:** For purposes of record verification, a random sample of codes shall be verified. The universe from which the sample codes shall be drawn consists of all 3- and 6-digit translated codes. For example, consider an office which translates the HNPA and 15 FNPAs. The HNPA and each FNPA contain 1000 codes (both working and nonworking) for a total universe of 16,000 codes. Referring to the Sample Size Table, Fig. 10, 1.5% error column, note that the sample size required is 941 codes, selected randomly from the HNPA and FNPAs.

The Inward WATS 800 Special Area Code (SAC) shall be treated as an FNPA; however, it may be desirable to verify Inward WATS codes on a 100% basis if this appears to be a service requiring

special attention. In this case the Inward WATS would then be excluded from the sample.

The development of the lists of sample codes can be done on a manual basis, if necessary, but computer programs can save time in generating lists of random numbers for this purpose. Some companies have already developed such programs, and these should become known through listings in the Catalog of Time Shared Programs.

(b) **Decoder Alternate Route Verification:**

A sample decoder shall be selected and the operation of each assigned route relay shall be verified against the office records. The AR cards associated with each route relay shall also be verified in the sample decoder home translator.

(c) **Home Translator Code Verification:**

A sample decoder shall be selected and the treatment of each of the 1000 working and vacant 3-digit codes (ABC digits 000 to 999) shall be verified. The treatment of all 4-, 5-, or 6-digit codes that are translated in the home translators shall also be verified in the sample translator.

(d) **Foreign Area Translator Code Verification:**

A random sample of 4-, 5-, or 6-digit codes that are translated in the FATs shall be developed from the office records. The sample size shall be 1000 codes, distributed equally among the FATs. For example, for an office which has 10 FATs in service, randomly select 100 translated codes (codes for which cards exist in the translator) in each FAT. In cases where translators are paired, a separate sample shall be taken in each translator of the pair.

- (e) **Trunk Access Verification:** Because the purpose of this verification is to assure that all trunks can be accessed, sampling procedures are not applicable and should not be used.

4.12 Form E-6235 Summary Report—Annual 4XB

Routing Verification (Fig. 11) provides the necessary formulas for determining the predicted error rates for untested portions of the record, decoders, and translators.

RECORD VERIFICATION PROCEDURES

- 4.13** The sample code list described in 4.11 (a) shall be developed by the dial administration group and forwarded to the routing group.

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4.14 It is essential to the overall project that basic documents (LLRP, TRG, and OTC routing plan) be used in developing the intended routings for the sample codes. This task should be assigned to someone other than the person who normally prepares Routing Assignment Orders for this specific switching system.

4.15 Using the basic documents mentioned above, the routing group shall enter the intended first route and first alternate routes for each code on the sample code list. The list should then be returned to the dial administration group.

4.16 The dial administration group should compare the sample code list routings with Dial Administration and Maintenance Center Forms E-3920 for concurrence. Where discrepancies are noted for codes on the sample list, the correctness of the routing should be confirmed. Where necessary, correcting orders should be issued. The magnitude of these orders will determine the need to review them with the routing supervisor and the maintenance supervisor prior to their issuance.

4.17 In those cases where Forms E-3920 are found to be in error (including planned deviations not documented in writing), the discrepancies shall be listed as record verification errors on Form E-6235 Summary Report—Annual 4XB Routing Verification (see Fig. 11). At the conclusion of the record verification, the predicted error rate for untested portions of the record should be calculated using the formula provided on the Summary Report. If the error rate exceeds the 1.5% level, a 100% record verification should be made.

DECODER ROUTE RELAY VERIFICATION—TESTING PROCEDURES

4.18 The maintenance supervisor shall select a sample decoder to perform this verification. All assigned route relays shall be tested, per BSP Section 212-115-501, to verify that their operation is in accordance with the office records. In cases where route relays are associated with Route Transfer (RT) relays, the tests shall be performed with the RTs in both the nonoperated and operated condition.

4.19 All AR cards associated with each route relay tested shall be verified per BSP Section

212-115-502. The trouble record cards ejected shall correspond to the office record.

4.20 Where discrepancies are noted, all decoders shall be tested for that same discrepancy. If the discrepancy occurred only in the sample decoder, that discrepancy shall be classified as a “random error.” If the discrepancy occurred in one or more additional decoders, that discrepancy shall be classified as a “group error.”

4.21 It is necessary to classify discrepancies as random errors or group errors for the results of the sampling procedure to accurately predict error rates in untested decoders. The sample decoder random error rate can be expected to occur in other decoders as well. However, the group error rate must be weighted by the number of group errors found and cleared in order to accurately establish an overall predicted error rate for untested decoders.

4.22 For the purpose of routing verification, card drop failures are not considered discrepancies. A record of all card drop failures should be maintained during the verification and remedial action taken as required.

4.23 Form E-6235, Summary Report—Annual 4XB Routing Verification (Fig. 11) provides a formula for determining the predicted untested decoder route relay error rate. If the error rate exceeds the 1.5% level, a 100% decoder route relay verification should be made.

HOME TRANSLATOR CODE VERIFICATION—TESTING PROCEDURES

4.24 The home translator associated with the sample decoder selected in 4.18 shall be used to perform this verification. All working and vacant codes (ABC digits 000 to 999) shall be tested per BSP Section 212-120-502 to verify that their treatment is in accordance with Forms E-3920. The treatment of all 4-, 5-, or 6-digit codes that are translated in the home translator shall also be verified. Where a specific code lies within both the Area Code (AC) and Non-Area Code (NAC) domains, both domains shall be tested. Any discrepancies noted shall be reviewed with the dial administrator to confirm the correctness of the office record.

4.25 Where translator card discrepancies are noted, all home translators shall be tested for that same discrepancy. If the discrepancy occurred only in the sample home translator, that discrepancy shall be classified as a "random error." If the discrepancy occurred in one or more additional home translators, that discrepancy shall be classified as a "group error."

4.26 It is necessary to classify discrepancies as random errors or group errors for the results of the sampling procedure to accurately predict error rates in untested home translators. The sample home translator random error rate can be expected to occur in other home translators as well. However, the group error rate must be weighted by the number of group errors found and cleared in order to accurately establish an overall predicted error rate for untested home translators.

4.27 For the purpose of routing verification, card drop failures are not considered discrepancies. A record of all card drop failures should be maintained during the verification and remedial action taken as required.

4.28 Form E-6235, Summary Report—Annual 4XB Routing Verification (Fig. 11) provides a formula for determining the predicted untested home translator's error rate. If the error rate exceeds the 1.5% level, a 100% home translator code verification should be made.

**FOREIGN AREA TRANSLATOR CODE VERIFICATION—
TESTING PROCEDURES**

4.29 The sample code list described in 4.11 (c) shall be developed by the dial administration group and forwarded to the maintenance supervisor's group.

4.30 The maintenance supervisor's group shall test each code per BSP Section 212-120-502 to verify that its treatment is in accordance with Form E-3920. Any discrepancies noted shall be reviewed with the dial administrator to confirm the correctness of the office record.

4.31 For the purpose of routing verification, card drop failures are not considered discrepancies. A record of all card drop failures should be maintained during the verification and remedial action taken as required.

4.32 Form E-6235, Summary Report—Annual 4XB Routing Verification (Fig. 11) provides a formula for determining the predicted error rate for untested foreign area translated codes. If the error rate exceeds the 1.5% level, a 100% foreign area translator code verification should be made.

TRUNK ACCESS VERIFICATION—TESTING PROCEDURES

4.33 Trunk Access is verified by observing that all IT and TC trunks can be seized via tandem access test lines at the toll testboard.

4.34 The dial administrator will coordinate the scheduling of this testing with the testboard supervisor and the maintenance supervisor. A complete set of Forms E-6233, Test C (Fig. 6) with current routings, will be issued. These routings will include special routings of holiday augments when they are available.

4.35 Due to the necessity of turning down trunks, the tests shall be performed during light traffic periods.

4.36 The toll completing trunks that have no testboard appearances will require seizure identification and make busy at the TMB jack field.

4.37 Other toll completing trunks plus the intertoll trunks will be tested from the testboard in accordance with Test C as outlined in Table B (Fig. 8).

4.38 At least one 7- or 10-digit call-through test shall be made over each trunk group to verify the integrity of the digits outpulsed.

4.39 Troubles encountered shall be recorded on Forms E-6233 and referred to the dial administrator or maintenance supervisor. Questions on trunk selection order or alternate route patterns should be referred to the dial administrator. On completion of testing, the Forms E-6233 should be returned to the dial administrator.

4.40 Upon completion of the Trunk Access Verification, the dial administrator shall enter the number of troubles found on Form E-6235, Summary Report—Annual 4XB Routing Verification (Fig. 11).

4.41 It is recognized that automatic or semiautomatic devices on the market, such as Group Access

SECTION 13d(8)

Test Set, (GATS), simulated Load Operation Test Set (SLOTS), Northeast Electronics TTS-41, etc, will greatly speed up the trunk access testing and are currently being used successfully at some locations. Specific recommendations for these or for comparable machines by other manufacturers are not made herein, however, because they have not been adopted as Bell System standard.

ROUTING VERIFICATION—EVALUATION

4.42 The dial administrator will analyze all discrepancies found during the testing procedures and determine if additional tests should be made.

4.43 Generally, a 100% verification should be considered necessary if results of the sample testing show that troubles found exceed the 1.5% level.

4.44 When excessive trouble rates are encountered, evaluation of probable causes by sample group may indicate that 100% testing is not required in all the sample categories.

4.45 When the verification is completed, a final Summary Report—Annual 4XB Routing Verification (Form E-6235, Fig. 11) should be prepared by the dial administrator. Copies of the completed form should go to the testboard supervisor, the maintenance center supervisor, the routing supervisor, and to others as directed locally.

4.46 The dial administrator should retain a copy of the final summary report and of all data used in the verification procedure for a period of two years.

5. PERIODIC ROUTING VERIFICATION—ETS OFFICE

GENERAL

5.01 Routing verification is required at regular intervals in order to evaluate the switching system's continued overall ability to route traffic according to routing plans and access all trunks in the designated groups. Careful analysis of the results should bring to light any deficiencies in current day-to-day administrative procedures. A major objective should be the continuing improvement of the entire routing process.

5.02 Routing should be verified annually. The magnitude of verifying all translated codes justifies performing this on a sampling basis, although consideration should be given to performing an initial 100% verification if this has never been done.

5.03 Trunk access and route advance verification should be performed semiannually, just prior to Mother's Day and Christmas (May and December). This testing should be done on a 100% basis. Because trunk access and route advance verification is an integral part of a complete routing verification, it is suggested that these procedures be performed concurrently on an annual basis.

ROUTING VERIFICATION PROCEDURES

5.04 Periodic ETS routing verification procedures are subdivided into two categories of activities. These are:

(a) **Code Verification:** Verifies that the ETS properly translates the specified code and directs traffic to the proper trunk group, as intended by TRG, LLRP, and/or OTC routing plan. The office records (Form ETS-8075) are also verified in the code verification process.

(b) **Trunk Access and Route Advance Verification:** Verifies all working IT and TC trunks can be accessed and that the ETS properly alternate routes traffic. Each routing pattern is verified by accessing the designated trunk groups. Trunk Access and Route Advance Verification is performed on a 100% basis.

5.05 Local conditions such as personnel scheduling, development of tools to assist in performing these verifications, etc, may vary. This part describes procedures that are generally applicable in today's environment.

ROUTING VERIFICATION—COORDINATION

5.06 A procedural outline should be formalized to ensure complete understanding of the annual routing verification program by all those participating in the project. A typical procedural outline, including functions and assigned responsibilities is shown in Fig. 12.

5.07 As indicated in the outline, an appropriate Staff Coordinator should set up an overall schedule for routing verifications of all switching

systems within the staff's area of responsibility, upon consultation with the dial administrators, maintenance supervisors, testboard supervisors, and routing supervisors. Consideration should be given to planned activities in the switching systems to be verified and also to the work loads imposed on the various groups involved (routing, dial administration, maintenance center, and testboards).

5.08 Once the overall schedules have been determined, the dial administrator shall coordinate the scheduling of each step of the program and ensure that continuity is maintained throughout the entire verification project (provision of sample codes, testing, analyzation and resolution of discrepancies, evaluation for additional testing requirements, and final report).

ROUTING VERIFICATION—SAMPLING

5.09 The complete verification of the treatment of all codes, in all records and in the ETS on a manual basis presents a formidable work load. This section describes sampling procedures which are designed to substantially reduce the number of code verifications required. These sampling techniques, if carefully applied, can predict error rates for untested codes with a greater than 90% confidence level. Given the predicted error rate and an analysis of the troubles found, management can logically decide what further action may be required.

5.10 Sampling techniques are described in BSP Section 212-001-010. Strict adherence must be paid to rules of random number selection and the results must be understood if the sampling tests are to be meaningful. Routing verification sampling procedures for ETS offices seek to identify instances where troubles exceed a 0.5% rate. The Sample Size Table in BSP Section 212-001-010 was developed for use where approximately 10% defects are anticipated—it should *not* be used for routing verification. Instead, refer to the Sample Size Table (Fig. 10). From this table it can be seen that sampling is less efficient for smaller universes than it is for larger ones.

5.11 Sampling procedures, as they apply to the two categories of periodic routing verification activities are given below:

(a) **Code Verification:** For purposes of code verification, a random sample of codes shall

be verified. The universe from which the sample codes shall be drawn consists of all 3- and 6-digit translated codes. For example, consider an office which translates the HNPA and 15 FNPAs. The HNPA and each FNPA contain 1000 codes (both working and nonworking) for a total universe of 16,000 codes. Referring to the Sample Size Table, Fig. 10, 0.5% error column, we see that the sample size required is 2,544 codes, selected randomly from the HNPA and FNPAs.

The Inward WATS 800 Special Area Code (SAC) shall be treated as an FNPA; however, it may be desirable to verify Inward WATS codes on a 100% basis if this appears to be a service requiring special attention. In this case the Inward WATS would then be excluded from the sample.

It is permissible to draw an equal number of random codes from each of the NPAs that are translated. This deviation from pure random selection will simplify the development of the lists of random codes and should not significantly distort the results of the sampling procedure.

(b) **Trunk Access and Route Advance Verification:** Because the purpose of this verification is to assure that all trunks can be accessed, sampling procedures are not applicable and should not be used.

5.12 The development of code lists can be done on a manual basis, if necessary, but computer programs can save much time in generating lists of random numbers for this purpose. Some companies have already developed such programs and these should become known through listings in the Catalog of Time Shared Programs.

5.13 After the sample code lists have been developed, the routing group will enter the intended first and alternate routes opposite each code. It is essential to the overall project that the LLRP, TRG, and AC Routing Plan be used to develop the intended routings. This task should be assigned to someone other than the person who normally prepares routing orders for the office being verified. This information will then be forwarded to the dial administrator for use in comparing intended routes with those contained in the office records and encountered during testing.

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5.14 Form E-6235 Summary Report—Annual 4XB Routing Verification (Fig. 11) provides the necessary formulas for determining the predicted error rates for unverified codes.

CODE VERIFICATION PROCEDURES

5.15 The sample code lists described in 5.11 (a) and 5.13 shall be used during code verification.

5.16 ETS generics 7.3A and higher enable the dial administrator to access the data table verification program via the Channel 2 TTY and make data verification (DV) checks. Random access computer programs can be developed to prepare a tape for input to the ETS TTY. This tape precedes each sample code with "DV" instructions to query the ETS for the RPI of the first route. The tape of sample codes, together with "DV" instructions, prepared either manually or by computer, can be used for input to the ETS.

5.17 The resulting first route RPIs printed out from the ETS data tables should be cross-referenced to the office records and checked against the intended first-routes supplied by the routing group, so that both the ETS memory and office records will be verified. Alternate route treatment need not be verified during code verification, as these features will be covered during trunk access and route advance testing.

5.18 In cases where a specific code lies within more than one domain, all domains in which that code is active shall be verified.

5.19 The dial administrator shall resolve all discrepancies in collaboration with the routing supervisor or maintenance supervisor. Where discrepancies are noted in the office record (including planned deviations not documented in writing), they shall be classified as "record errors." Where discrepancies are noted in the ETS memory (and the office record is correct), they shall be classified as "translation errors." All errors shall be entered on Form E-6235, Summary Report—Annual 4XB Routing Verification (Fig. 11). Form E-6235 provides a formula for determining the predicted record and translation error rate for untested codes. If the error rate exceeds the 0.5% level, a 100% code verification should be made.

TRUNK ACCESS AND ROUTE ADVANCE VERIFICATION—TESTING PROCEDURES

5.20 Trunk Access and ETS alternate route features are tested by accessing all working IT and TC trunks, via tandem access lines at the toll testboard and verifying (by observing the trunks seized) that the correct routing pattern is followed.

5.21 The dial administrator shall coordinate the scheduling of this testing with the testboard supervisor and the maintenance supervisor.

5.22 The dial administrator shall prepare a complete set of Forms E-6233 (covering each assigned RPI) and forward them to the testboard supervisor.

5.23 The toll completing trunks that have no testboard appearances shall be accessed via the testboard tandem access test lines. The maintenance center will be required to identify the trunk seized and make it busy at the TMB jack field.

5.24 Other toll completing trunks and the intertoll trunks shall be tested from the testboard in accordance with Test C, as outlined in Table B (Fig. 8).

5.25 At least one 7- or 10-digit call-through test shall be made over each trunk group to verify the integrity of the digits outpulsed.

5.26 Troubles encountered shall be recorded on Forms E-6233 and referred to the dial administrator or maintenance supervisor. Questions on trunk selection order or alternate route patterns should be referred to the dial administrator. On completion of testing, the Forms E-6233 should be returned to the dial administrator.

5.27 Upon completion of the Trunk Access and Route Advance Verification, the dial administrator shall record the number of trunk access and route advance troubles on Form E-6235, Summary Report—Annual 4XB Routing Verification (Fig. 11).

5.28 It is recognized that automatic or semiautomatic devices on the market, such as Group Access Test Set, (GATS) Simulated Load Operation Test Set (SLOTS), Northeast Electronics TTS-41, etc, will greatly speed up the trunk access testing and are currently being used successfully at some

locations. Specific recommendations for these or for other comparable machines by other manufactures are not made herein, however, because they have not been adopted as Bell System standard.

ROUTING VERIFICATION—EVALUATION

5.29 The dial administrator shall analyze all discrepancies found during the verification procedures and determine if additional codes should be verified.

5.30 Generally, a 100% verification should be considered necessary if results of the sample verifications show that troubles were found in more than 0.5% of the codes verified.

5.31 When excessive trouble rates are encountered, evaluation of the probable causes by sample group may indicate that 100% testing is not required in all categories.

5.32 The dial administrator should conduct a review of the verification results with all groups concerned to determine what corrective administrative procedures might be implied.

5.33 The dial administrator shall retain a copy of the Summary Report and of all data used in the routing verification process for a period of two years.

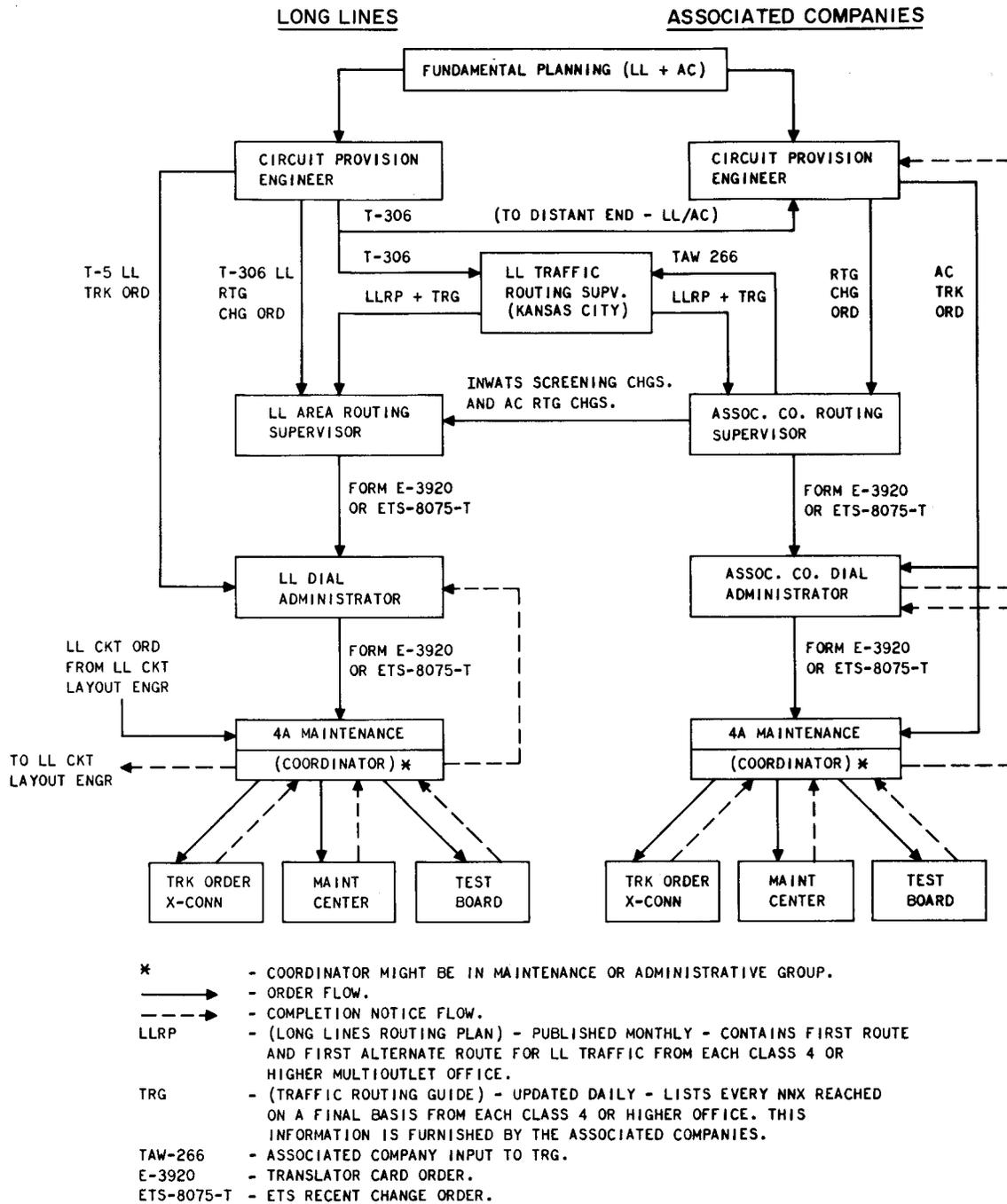


Fig. 1—Typical Routing and Trunk Order Flow

Wallace Business Forms, Inc.

REF: TFP DIV G SECT 2C(7)
BSP 212-1200-301
DFMP DIV H, SECT 13C(11)

E-3920 (6-75)

TRANSLATOR CARD ORDER FOR

OFFICE

| TYPE OF CARDS | | | | ORDER NO. | | | |
|--|---|----------|---------------------------|------------------------------|----------|----------|------|
| DESTINATION | | | | CODE | | | |
| TOLL CENTER | | | | BOX NO. | | | |
| FIRST ROUTE | | | | GRP. ASSIGN. | | | |
| FIRST ALTERNATE ROUTE | | | | EFFECTIVE | | | |
| REPLACES ORDER NO. | | | | REPLACED BY | | | |
| 1 | PRETRANS. OR CODE DIGIT PARITY | XXX | CODE | CONTINUITY AND DIGIT CONTROL | CANC. | MADE | CODE |
| | NCA OR 3D NCA | | | 0 DIGITS | 0, 2 | 1, 2 | |
| | CA4 OR 4D CA4 | | | 4 DIGITS | 0, 4 | 1, 4 | CDC |
| | CA5 OR 5D CA5 | | | 5 DIGITS | 2, 4 | 0, 7 | |
| 2 | OUT TRUNK APPEARANCE | XXX | | INWATS SCREENING | CANC. | MADE | |
| | IT TRAIN IT | | | BAND 1 | 0 - 4, 7 | 0 - 0, 1 | |
| | TC TRAIN TC | | | BAND 1 & 2 | 0 - 0, 2 | 0 - 1, 2 | |
| | TRAFFIC SEPARATION - PEG COUNT | XXX | | BAND 1 - 3 | 0 - 0, 4 | 0 - 1, 4 | |
| 3 | OUT TRUNK CLASS A | 0 | | BAND 1 - 4 | 0 - 2, 4 | 0 - 0, 7 | |
| | B | 1 | | BAND 1 - 5 | 0 - 1, 7 | 0 - 2, 7 | |
| | C | 2 | | BAND 1 - 6 | 1 - 4, 7 | 1 - 0, 1 | WST |
| | D | 0, 1 | | BAND 1 - 7 | 1 - 0, 2 | 1 - 1, 2 | CDC |
| | E | 0, 2 | TS | ORIGINATING SCREENING | CANC. | MADE | |
| | F | 1, 2 | | AUTHORIZED CODE CAMA | 1 - 2, 4 | 1 - 0, 7 | |
| | G | 0, 1, 2 | | AO & NON-CAMA | | | |
| | CAMA A1 | | | | 1 - 0, 4 | 1 - 2, 4 | |
| 4 | THROUGH PEG COUNT | TCP | | CAMA AO, A1 & NON-CAMA | 1 - 1, 7 | 1 - 2, 7 | |
| | TRK. GRP. PEG COUNT & OVERFLOW | XXX | | CODE CONVERSION OR | XXX | | CCHN |
| | PEG COUNT & OVERFLOW GRP. 0 | 0 | | AREA CODE (AR CARDS) | XXX | | CCH |
| | 1 | 1 | | HUNDREDS | | | CCTN |
| 5 | 2 | 2 | | TENS | | | CCT |
| | 3 | 0, 1 | | UNITS | | | CCUN |
| | 4 | 0, 2 | TP | | XXX | | CCU |
| | PEG COUNT ONLY GROUP 0 | 1, 2 | | VARIABLE SPILL CONTROL | XXX | | |
| 6A | OVERFLOW ONLY GROUP 0 | 0, 1, 2 | | SKIP - NONE | NSK | | |
| | NONE | | | - 3 | SK3 | | |
| | TRANSLATOR BOX NUMBER | | HB | - 6 | SK6 | | |
| | | | BT | | XXX | | |
| 6B | INWATS AREA 1 BAND DIGIT | | BU | 14 TRUNK BLOCK CONNECTOR | | | TCT |
| | | | | | | | TCU |
| | | | | 15 TRUNK BLOCK | | | TB |
| | | | | 16 GROUP START | | | GST |
| 6C | TASI TRANSIT SWITCHING | YES HB | HB | 17 GROUP END | | | GET |
| | - 3 DIGIT TRANSLATION | BT0, BU4 | BT0 | | | | GSU |
| | OPERATOR AND CUSTOMER | NO BU7 | BU4 | CODE BAR INFORMATION | XXX | | |
| | "C" DIGIT CODE CONFLICT | | BU7 | DIGIT - A | | | A |
| 7 | CLASS | XXX | | - B | | | B |
| | MANUAL OUTGOING | 0 - 4, 7 | | - C | | | C |
| | OUTPULSING - DC | 0 - 0, 1 | | - D | | | D |
| | DIALING - SIMPLEX | 0 - 1, 4 | | - E | | | E |
| | - EXPECT DELAY DIAL | 0 - 2, 4 | | - F | | | F |
| | - EXPECT STOP - GO | 0 - 0, 7 | | ALTERNATE ROUTE | 0, 2 | | |
| | EXPECT DELAY DIAL & STOP GO | 1 - 0, 4 | | ROUTE ADVANCE - 1 | 0, 1 | | |
| | - LOOP | 0 - 2, 7 | CLT | - 2 | 1, 2 | | |
| | - RING 20 CYCLES | 1 - 0, 1 | | - 3 | 0, 4 | | CG |
| | - RING SIMPLEX | 0 - 1, 7 | | 3 DIGIT NAC | 1, 4 | | |
| | - EXPECT DELAY DIAL | 1 - 0, 2 | CLU | 3 DIGIT AC | 4, 7 | | |
| | - EXPECT STOP - GO | 1 - 4, 7 | COLC | 6 DIGIT | 2, 4 | | |
| | EXPECT DELAY DIAL & STOP GO | 1 - 1, 2 | | PNC | 0, 7 | | |
| | MF + KP1 - | 0 - 0, 2 | | PNC ROUTE ADVANCE - 1 | 1, 7 | | |
| | MF + KP1 - SEND CODE "14" OR SIGNAL CHANGES FORWARD | 0 - 1, 2 | | TASI, TAS2 OR TASS | 2, 7 | | |
| | MF + KP1 - SEND OVS TRANS & SIGNAL CHANGES FORWARD | 1 - 1, 4 | | COMMON ONLY | VO | VO | |
| MF + KP2 - SIGNAL CHANGES FORWARD | 1 - 2, 4 | | TERMINAL OR COMMON | NVO | NVO | | |
| MF + KP2 - SEND OVS TRANS & SIGNAL CHANGES FORWARD | 1 - 0, 7 | | CAMA ROUTING | XXX | | | |
| CAMP ON TRUNK | 0 - 0, 4 | | AUTHORIZED CAMA ROUTING | ACR | ACR | | |
| CANCEL DELAY LOOP CLOSURE | CDLC | | UNAUTHORIZED CAMA ROUTING | UCR | UCR | | |
| 8 | AREA CODE CONTROL | XXX | | BY | | DATE | |
| | AREA CODE | AC | | ROUTING | | | |
| | NOT AN AREA CODE | NAC | | ASSIGNMENT | | | |
| | ALTERNATE ROUTE - HOME AREA | AHA | | CODED | | | |
| 9 | ALTERNATE ROUTE - FOR. AREA | AFA | | TEMPLATE | | | |
| | ALTERNATE ROUTE PATTERN NO. | | ART | WORK DONE | | | |
| | ROUTING INSTRUCTION | XXX | ARU | | | | |
| | NO PRINCIPAL CITY ROUTE | 0, 7 | | | | | |
| | INWATS NONPRINCIPAL CITY ROUTE | 1, 7 | | | | | |
| | CARD TO CARD | 4, 7 | | | | | |
| | CARD TO RELAY | 0, 1 | | | | | |
| | RELAY ROUTE | 0, 2 | RI | | | | |
| | FOLLOW WITH OVERFLOW (CBA) | 1, 2 | | | | | |
| | FOLLOWING WITH REORDER (FRA) | 0, 4 | | | | | |
| FOLLOW WITH MASTER BUSY (NCA) | 1, 4 | | | | | | |
| FOLLOW WITH SECOND TRIAL | 2, 4 | | | | | | |

Fig. 2—Form E-3920: Translator Card Order

ETS RECENT CHANGE ORDER FOR _____ OFFICE

| | |
|--------------------------------|----------------------------------|
| ORDER TYPE _____ | ORDER NO. _____ |
| TYPE FORM CODES ATTACHED _____ | REPLACES ORDER NO. _____ |
| DUE DATE _____ | COORDINATE WITH ORDER NOS. _____ |
| REPLACED BY ORDER NO. _____ | PAGE _____ OF _____ |

DESCRIPTION OF CHANGE:

TELETYPE CODE MESSAGE:

| ETS BASIC RECORDS | | BY | DATE |
|------------------------|------------|----|------|
| QUESTIONNAIRE FORM | ROUTING | | |
| CODE COMPLETED | ASSIGNMENT | | |
| COMPILER LIST UP DATED | | | |
| QUEST. FORM CODE FILED | | | |

| RECENT CHANGE ORDER | BY | DATE |
|---------------------|----|------|
| TELETYPE CODING | | |
| INPUT TAPE CUT | | |
| LOADED AND TESTED | | |
| ACTIVATED | | |

Fig. 3—Form ETS-8075-T: ETS Recent Change Order

TABLE A
TEST AND FORM REQUIREMENTS

| ACTIVITY | NOTES | TEST | | | | | | | FORM | |
|--|-------|------|---|---|---|---|---|---|------------------|-------------------------|
| | | A | B | C | D | E | F | G | ACCESS E-6233 | CODE RTNG. E-6234 |
| 1. Trunk additions | | X | | | | | | | X | |
| 2. Trunk block connector changes in ETS offices | 1 | X | | | | | | | X | |
| 3. Trunk removals | | | X | | | | | | X | |
| 4. New trunk groups | 1 | | | X | | | | | X | |
| 5. Trunk block connector changes in CT offices | 1 | | | X | | | | | X | |
| 6. GB relay rearrangements | | | | X | | | | | X | |
| 7. Semiannual access tests | | | | X | | | | | X | |
| 8. Trunk relay changes | 1 | | | | X | | | | X | |
| 9. OTLF assignment changes | 1 | | | | X | | | | X | |
| 10. Changes in HAT/FAT | 1 | | | | | X | | | | X |
| 11. ETS routing changes | 1 | | | | | X | | | | X |
| 12. Interstate INWATS terminating screening changes. | 1,2 | | | | | | X | | | X |
| 13. Interstate INWATS — new NPAs — band verification | 1,3 | | | | | | | X | | X |
| 14. Annual sample code routing verification | 4 | | | | | | | | | X |

Notes:

1. Prior to performing tests specified for these activities, the maintenance center will have completed the appropriate "TV" tests as specified in Section 212-120-502 for CT machines and in Section 212-816-501 for ETS machines.
2. This test is done only at INWATS Principal City Machines.
3. This test is done at originating machines that do 6-digit translation of 800 + NPA codes.
4. Prepare Forms E-6234 for CT offices only. Testing procedures for CT offices are covered in Part 4; ETS, Part 5.

Fig. 5—Table A: Test and Form Requirements

INSTRUCTIONS FOR FILLING OUT FORM E-6233
(FOR 4XB)

- OFFICE — Switching System name.
- ORDER NO. — Circuit Order, Traffic Order, or ETS Recent Change Order number, or semiannual access test.
- ISSUE DATE — Date Form E-6233 is issued by Dial Administrator.
- DUE DATE — Date Test is to be made.
- ISSUED BY — Initials of person preparing Form E-6233.

Verification to be Performed by

(TSTBD)

(MTCE CTR) — Indicate whether the verification is to be performed by testboard or maintenance center personnel by striking out term not applicable.

ORDER NO. — Circuit Order, Traffic Order, or ETS Recent Change Order number, or semiannual access test.

ISSUE DATE — Date Form E-6233 is issued by Dial Administrator.

DUE DATE — Date test is to be made.

COLUMN: A — Type of test to be made per Table A.

B — Trunk group routing pattern or patterns to be tested, starting with the lowest trunk group in the routing pattern.

C — Route code NNPA, TTC, and test code numbers as required.

D — Trunk number(s) to be tested (eg, 1-75).

E — Tester to check appropriate column as determined by access test results.

F — Tester to check appropriate column as determined by route advance test results.

G — Expected overflow treatment on calls overflowing final routes (120 IPM tone or NC Announcement).

H — Tester to check appropriate column as determined by group busy test results (required for day-to-day verifications only).

I — Comments, if necessary.

J — Data tested and initials of testman completing tests.

PAGE__ OF__ — Enter the page number and total number of pages for this verification.

Fig. 6—Instructions for Filling Out Form E-6233 (Page 2 of 3)

TRUNK ACCESS AND ROUTE ADVANCE VERIFICATION

FORM E-6233

OFFICE ALPHA ISSUED BY _____
 ORDER NO. SEMI-ANN TRK ACCESS VER.
 ISSUE DATE 11-15-74
 DUE DATE 12-15-74

VERIFICATION TO BE PERFORMED BY (TSTBD CTR)

| A | B | | | | | C | D | E | | F | | G | H | | I | J | | | | | |
|--|-------------|---|---|---|---|-----------|-------------------------------|--------------|---------------|-------------|----|---|---------------|----|---|---------------------------------|---------------|---------------|----|---------------------------------------|-------------------|
| | TRUNK GROUP | | | | | | | DIALING CODE | TRUNK NUMBERS | ACCESSED OK | | | ROUTE ADVANCE | | | | A N N | GROUP BUSY OK | | DIAL ADMINISTRATOR OR TESTER COMMENTS | DATE AND INITIALS |
| | 1 | 2 | 3 | 4 | 5 | | | | | YES | NO | | YES | NO | | | | YES | NO | | |
| | | | | | | WASH 3 | 202+102 | 1-80 | ✓ | | ✓ | | | | | | SJ 12-2-74 | | | | |
| | | | | | | ARLINGTON | 703+053+102 | 1-30 | ✓ | | ✓ | | | | | | | | | | |
| | | | | | | WASH 1 | 301+056+102 | 1-90 | | | ✓ | ✓ | | | | UNABLE TO ACCESS TRUNKS 48-50 | | | | | |
| | | | | | | RICHMOND | 703+102 | 1-48 | ✓ | | ✓ | | | | | | | | | | |
| | | | | | | BALTIMORE | 301+102 304+063+102 | 1-48 | ✓ | | | ✓ | | | | DOES NOT ROUTE ADVANCE TO WAYNE | SJ 12-3-74 | | | | |
| | | | | | | WAYNE | 215+102 609+102 717+102 | 1-85 | ✓ | | ✓ | | | | | | | | | | |
| | | | | | | NORWAY | 815+102 | 1-210 | ✓ | | ✓ | | NKA | | | | | | | | |
| Illustration of the use of Form E-6233 for purpose of semi-annual trunk access and route advance verification. | | | | | | | | | | | | | | | | | | | | | |

Fig. 6—Form E-6233: Trunk Access and Route Advance Verification (Page 3 of 3)

CODE ROUTING VERIFICATION

FORM E-6234

OFFICE OMEGA
 ORDER NO. 7440
 ISSUE DATE 2-5-74
 DATE/TIME DUE 4-10-74 1:00 PM

PERFORM TEST F G H

ISSUED BY R.G.

| A | B | C | D | E | F | G | H | I | J | K | L | M | |
|----------------|---|---------------|---------------|---------------|----------------|-----------------|---------|---------|---------|-----------|----------------------|---|--|
| 30-60 CODE | SUB GRP | TRK GRP | TRK GRP | TRK GRP | TRK GRP | TRK GRP | TRK GRP | TRK GRP | TRK GRP | ANN. | TEST DECODER # | TESTER INITIAL DATE & TIME | |
| | | <u>WASH-3</u> | <u>WASH-1</u> | <u>VVAYNE</u> | <u>NRWY</u> | <u>NRWY</u> | | | | | | | |
| | 0 | <u>1-40</u> | <u>1-40</u> | <u>1-40</u> | <u>201-210</u> | <u>41-50</u> | | | | | | | |
| | 1 | <u>41-75</u> | <u>41-80</u> | <u>41-80</u> | <u>161-200</u> | <u>1-40</u> | | | | | | | |
| | 2 | <u>—</u> | <u>81-90</u> | <u>81-85</u> | <u>121-160</u> | <u>—</u> | | | | | | | |
| 3 | <u>—</u> | <u>—</u> | <u>—</u> | <u>81-120</u> | <u>—</u> | | | | | <u>NC</u> | <u>ALL</u> | <u>EJ</u> <u>4-10-74</u> <u>187</u> | |
| <u>202-321</u> | N | | | | | O | | | | | | | |
| <u>323</u> | DIAL ADMINISTRATOR COMMENTS | | | | | TESTER COMMENTS | | | | | | | |
| <u>459</u> | <p><u>NNX's LISTED ARE BEING RECENTERED FROM WASH-1 TO WASH-3.</u></p> <p style="text-align: center;"><u>LM</u></p> | | | | | | | | | | | | |
| <u>556</u> | | | | | | | | | | | | | |
| <u>557</u> | | | | | | | | | | | | | |
| <u>558</u> | | | | | | | | | | | | | |
| <u>634</u> | | | | | | | | | | | | | |
| <u>744</u> | | | | | | | | | | | | | |

Fig. 7—Form E-6234: Code Routing Verification (Page 1 of 2)

INSTRUCTIONS FOR FILLING OUT FORM E-6234

- OFFICE — Switching machine being verified.
- ORDER NO. — Circuit Order, Traffic Order, or ETS Recent Change Order number.
- ISSUE DATE — Date Form E-6234 is issued by Dial Administrator.
- DATE/TIME
DUE — Date (and time if critical) that tests are to be made.
- ISSUED BY — Initials of person preparing Form E-6234.
- PERFORM TEST
E F G H — Encircle the test to be performed per Table A.
- COLUMN: A — Use 3- or 6-digit codes. For INWATS terminating screening, list all acceptable band and all reject band "C" digits.
- C — First route trunk group name and circuit numbers by subgroup.
- D-J — First alternate through final trunk group names and circuit numbers by subgroup.
- K — Expected overflow treatment on calls overflowing final routes (120 IPM tone or NC Announcement).
- L — Dial Administrator to enter the decoder numbers that are to be tested.
- M — Date tests completed and initials of tester.
- N — Dial Administrator comments to self or to tester (also indicate codes requiring special routing).
- O — Tester's comments to self or to Dial Administrator.

Fig. 7—Instructions for Filling Out Form E-6234 (Page 2 of 2)

TABLE B

| ACCESS TESTING PROCEDURES | TESTS | | | |
|--|-------|---|---|---|
| | A | B | C | D |
| 1. CAUTION — Due to the necessity to turn down trunks, perform only during light traffic periods. | X | X | X | X |
| 2. Lock out all existing trunks in the group under test, except the last trunk in normal selection. | X | X | | |
| 3. Lock out all existing trunks in the group under test, except the trunk or trunks to be tested, as indicated on Form E-6233. | | | | X |
| 4. Release lockout on new trunks to be tested. | X | | | |
| 5. Using Tandem Access Line, dial code as indicated on Form E-6233 for group or trunks under test. | X | X | X | X |
| 6. Operate lockout key and observe for trunk seizure. Lamp should indicate trunk selection in the order of machine assignment. Release Tandem Access Line, then the lockout. Then relock out through the test board to eliminate seizure forward. | X | X | X | X |
| 7. Release Tandem Access Line and proceed with trunk access and lockouts until all trunks in the group have been selected in the order of machine assignments. | X | | X | X |
| 8. With all trunks locked out, make one additional access call and operate lockout key. This should light a lamp in the first alternate trunk group or return an announcement if group under test is the final group. | X | X | X | X |
| 9. Release all lockouts and enter results on Form E-6233. | X | X | X | X |
| 10. Make all trunks in the group under test busy and request the maintenance center to observe that the associated GB relay is released in CT offices or that the ferrod status (as displayed on the control display panel) indicates a group busy condition in ETS offices. Sequentially release one trunk at a time and observe that the GB Relay/Ferrod status corresponds to the trunk group status. Enter results on Form E-6233. | X | X | X | X |
| Steps 11 Through 14 are Additional Tests for Semiannual Access Tests. | | | | |
| 11. Select the next trunk group in the alternate route pattern and repeat tests 5 through 9. | | | X | |
| 12. Proceed with testing of trunks in each trunk group of the alternate route pattern until all trunks and groups have been checked. | | | X | |
| 13. Final trunk groups of the various alternate route patterns are to be the last trunk groups tested. Verify that "No Circuit Announcement" is received on an overflow call from the final groups. | | | X | |
| 14. Release all lockouts and enter results on Form E-6233. | | | X | |

Note 1. Prior to performing Test C (5 through 9) or D, the maintenance center will have completed the appropriate translation verification tests as specified in Section 212-120-502 for CT offices and in Section 212-816-501 for ETS offices.

Note 2. At least one 7- or 10-digit call-through test shall be made for each trunk group to verify the integrity of the digits outpulsed.

Fig. 8—Table B: Access Testing Procedures

**TYPICAL PROCEDURAL OUTLINE
ANNUAL ROUTING VERIFICATION OF 4XB-CT ON A SAMPLING BASIS**

| STEP | FUNCTION | RESPONSIBILITY |
|----------------------------|---|--|
| 1. | Establish schedule of Routing Verifications of all machines in the area served by a given routing group. | Appropriate Staff Coordinator |
| 2. | Develop sample lists of codes for Record Verification and Foreign Area Translator Code Verification. Decide whether 100% verification is required for special groups of codes (Example: INWATS). | Dial Administrator and Routing Supervisor |
| Record Verification | | |
| 3. | Develop the <u>intended</u> routes for the Record Verification Sample code lists, using the LLRP, TRG, and OTC Routing Plans as source documents. Prepare Forms E-6234 showing subgroup arrangements. | Routing Supervisor and Dial Administrator |
| 4. | Prepare Forms E-6233 for all routes, indicating routing patterns and Trunk Group sizes. | Dial Administrator |
| 5. | Verify accuracy of Forms E-3920 for all Record Verification sample codes. Analyze discrepancies, refer questionable routings to the routing group. | Dial Administrator |
| Office Verification | | |
| 6. | Establish Testing Schedule. | Dial Administrator, Maintenance Supervisor, and Testboard Supervisor |
| 7. | Verify all assigned route relays in a sample decoder. Compare route relay operation against the office records. | Maintenance Supervisor |
| 8. | Verify <u>all</u> codes translated in sample Home Translator. Perform Translator Verification tests and compare treatment of codes with Forms E-3920. | Maintenance Supervisor |
| 9. | Verify the Foreign Area Translator sample codes in each FAT. Perform Translator Verification tests and compare treatment of codes with Forms E-3920. | Maintenance Supervisor |
| 10. | Analyze discrepancies, refer questionable routings to the dial administration group. | Maintenance Supervisor and Dial Administrator |
| 11. | Perform Trunk Access verification tests using Form E-6233. Refer troubles to the Maintenance Supervisor, questionable routings to the Dial Supervisor. | Testboard Supervisor and Maintenance Supervisor |
| Analysis of Results | | |
| 12. | Evaluate test results to determine need for additional verification. | Dial Administrator |
| 13. | Prepare Summary Report of Routing Verification (Form E-6235). | Dial Administrator |
| 14. | Review the results of Routing Verification with all groups concerned. Determine whether corrective administrative procedures are required. | Dial Administrator |
| 15. | Retain all data used in verification procedure for a period of two years. | Dial Administrator |

Fig. 9—Typical Procedural Outline—Annual Routing Verification of 4XB CT on Sampling Basis

SAMPLE SIZE TABLE

Sample size is dependent upon several factors, such as size of universe, expected number of codes with trouble found, and accuracy (assurance level and range) desired. This table represents sample sizes required to detect errors of approximately 0.5 percent (ETS) or approximately 1.5 percent (CT) with a 90 percent assurance.

| SIZE OF UNIVERSE | SAMPLE SIZE FOR DETECTING 0.5 PERCENT ERROR | SAMPLE SIZE FOR DETECTING 1.5 PERCENT ERROR |
|---------------------|---|---|
| 100 | 97 | 91 |
| 200 | 188 | 167 |
| 300 | 273 | 231 |
| 400 | 353 | 286 |
| 500 | 429 | 334 |
| 600 | 501 | 375 |
| 700 | 568 | 412 |
| 800 | 633 | 445 |
| 900 | 694 | 474 |
| 1000 | 752 | 500 |
| 1500 | 1000 | 600 |
| 2000 | 1204 | 667 |
| 2500 | 1367 | 715 |
| 3000 | 1506 | 750 |
| 4000 | 1722 | 800 |
| 5000 | 1885 | 833 |
| 6000 | 2011 | 858 |
| 7000 | 2112 | 875 |
| 8000 | 2195 | 890 |
| 9000 | 2264 | 900 |
| 10000 | 2322 | 909 |
| 11000 | 2373 | 916 |
| 12000 | 2416 | 922 |
| 13000 | 2454 | 928 |
| 14000 | 2488 | 932 |
| 15000 | 2517 | 936 |
| 16000 | 2544 | 941 |
| 17000 | 2568 | 944 |
| 18000 | 2590 | 947 |
| 19000 | 2610 | 950 |
| 20000 | 2628 | 953 |
| 30000 | 2748 | 968 |
| 40000 | 2812 | 976 |
| 50000 | 2852 | 981 |
| 60000 | 2880 | 984 |
| 70000 | 2900 | 986 |
| 80000 | 2915 | 988 |
| 90000 | 2927 | 989 |
| 100000 | 2936 | 990 |

When the universe size is different from any of the sizes shown, use a sample size for the nearest universe size in the table.

Fig. 10—Sample Size Table

SUMMARY REPORT - ANNUAL 4XB ROUTING VERIFICATION

FORM E-6235
OFFICE GAMMA

DATE 4-15-75

PREPARED BY EFG

| CARD TRANSLATOR OFFICES | | | | | |
|-----------------------------------|-----|-------------------------|-----|--|--|
| RECORD VERIF. - NO. CODES SAMPLED | (A) | NO. OF HAT CODES TESTED | (B) | | |
| NO. OF DECODERS IN SERVICE | (C) | NO. OF FAT'S IN SERVICE | (D) | | |
| NO. OF ASSIGNED AR SUBGROUPS | (E) | TEST DECODER # | (F) | | |

| ETS OFFICES | |
|--------------------|-----------------|
| NO. CODES VERIFIED | (G) <u>2544</u> |

| CODE/ TRK. GRP. | NUMBER OF ERRORS FOUND | | | | | | | | | | | SERVICE AFFECTING | | NOTES |
|--------------------|------------------------|-----------------------------------|-------------------------------------|------------------|--------------------------------------|-----|-----|----------------------------|------------------|--------------------------|-----|-------------------|-------------------|---|
| | RECORD VERIF. | CARD TRANSLATOR OFFICES | | | | | | ETS OFFICES CODE VERIF. | | TRUNK ACCESS TESTS | Y | N | | |
| | | DECODER RTE. RLY. VERIFICATION | | | HOME TRANSLATOR CODE VERIFICATION | | | FAT CODE VERIF. | RECORD ERRORS | | | | TRANSL. ERRORS | |
| | | TEST DECODER | OTHER DECODER GROUP ERRORS | TEST HAT | OTHER HAT GROUP ERRORS | | | | | | | | | |
| RANDOM ERRORS | GROUP ERRORS | RANDOM ERRORS | GROUP ERRORS | RECORD ERRORS | TRANSL. ERRORS | (S) | (T) | (U) | (V) | (W) | (X) | | | |
| MILW-1 | | | | | | | | | | | 1 | X | | SG-1 TRKS 52-75 NO ACCESS |
| 312-537 | | | | | | | | | 1 | | | X | | RTES TO CHG 06 INSTEAD OF NARR |
| 217-486 | | | | | | | | | 1 | | | X | | RTES TO SPD INSTEAD OF CHAMP |
| 414-652 | | | | | | | | | 1 | | | X | | RTES TO MILW INSTEAD OF VC |
| 219-665 | | | | | | | | | 1 | | | X | | RTES TO S BEND 1 INSTEAD OF S BEND 2 |
| 815-464 | | | | | | | | | | 1 | | X | | RTES TO VC - SHOULD BE KCK |
| 5 563 | | | | | | | | | | 1 | | X | | RTES TO VC - SHOULD BE KCK |
| 219-482 | | | | | | | | | | 1 | | X | | RTES TO S BEND 2, SHOULD BE VC |
| 5 737 | | | | | | | | | | 1 | | X | | RTES TO S BEND 2, SHOULD BE VC |
| 309-485 | | | | | | | | | | 1 | | X | | RTES TO NRWY SHOULD BE PERIOD |
| 618-432 | | | | | | | | | | 1 | | X | | RTES TO CENT SHOULD BE VC |
| 5 746 | | | | | | | | | | 1 | | X | | RTES TO CENT SHOULD BE VC |
| TOTAL | | | | | | | | | 4 | 7 | 1 | | | |

| PREDICTED ERROR RATES FOR UNTESTED PORTIONS: | | |
|--|--|--------|
| CARD TRANSL. OFFICES | RECORD ERRORS (RECORD VERIFICATION = $\frac{J}{A} \times 100 =$ | x |
| | DECODER ROUTE ERRORS = $\frac{K + L - \frac{L+M}{C}}{E} \times 100 =$ | x |
| | HOME TRANSLATOR CODE VERIF. = $\frac{N + P - \frac{P+Q}{C}}{B} \times 100 =$ | x |
| | FAT CODE VERIFICATION = $\frac{R}{1000} \times 100 =$ | x |
| ETS OFFICES | ETS RECORD ERRORS = $\frac{S}{G} \times 100 =$ | 0.15 x |
| | ETS TRANSLATION ERRORS = $\frac{T}{G} \times 100 =$ | 0.27 x |

| PERSON HOURS EXPENDED | |
|-----------------------|------|
| ROUTING ENG. | 28.5 |
| DIAL ADMINISTRATION | 42.0 |
| MAINTENANCE CENTER | 37.0 |
| TESTBOARD | 32.5 |

PAGE 1 OF 1

Fig. 11—Form E-6235: Summary Report—Annual 4XB Routing Verification (Page 1 of 4)

**INSTRUCTIONS FOR THE PREPARATION OF THE
SUMMARY REPORT — ANNUAL 4XB ROUTING VERIFICATION**

| SPACE OR COLUMN | DATA TO BE ENTERED |
|---|---|
| (A) — Record Verification — No. codes sampled | Enter the number of codes sampled for record verification [see 4.11 (a)]. |
| (B) — No. of HAT codes tested | Enter the number of home translator codes tested in the “test” translator [see 4.11 (c)]. |
| (C) — No. of decoders in service | Enter the number of decoders equipped in the office being verified. |
| (D) — No. of FAT’s in service | Enter the number of foreign area translators in service in the office being verified. |
| (E) — No. of assigned AR Subgroups | Enter the number of trunk subgroups associated with route relay AR cards. |
| (F) — Test decoder # | Enter the number of the “test” decoder selected for decoder alternate route verification and for home translator code verification. |
| (G) — No. codes verified | Enter the number of codes sampled for ETS code verification [see 5.11 (a)]. |
| (H) — Code/trunk group | Enter the code or name of the trunk group affected by record of translation errors. |
| (J) — Record verification | Enter the digit 1 for each record error discovered during record verification. Only one error per code or trunk group shall be scored. |
| Decoder Route Relay — Verification | |
| (K) — Test decoder random errors | Enter the number of trunk subgroups affected by each test decoder <u>random</u> route relay wiring error or AR card translation error. By definition, random errors are those that occur <u>only</u> in the test decoder. |
| (L) — Test decoder group errors | Enter the number of trunk subgroups affected by each test decoder <u>group</u> route relay wiring error or AR card translation error. By definition, group errors are those that occur in other decoders as well as in the test decoder. |
| (M) — Other decoder group errors | Enter the number of trunk subgroups, per decoder, affected by a given group error (excluding the test decoder). For example, if a given group error occurs in three other decoders, and affects two trunk subgroups, enter the digit 6. |
| Home Translator Code Verification | |
| (N) — Test HAT random errors | Enter the digit 1 for each test translator “random” translation error discovered during home translator code verification. By definition, random translation errors are those that occur in <u>only</u> the test translator. Only one error shall be scored per code. |
| (P) — Test HAT group errors | Enter the digit 1 for each test translator “group” error discovered during home translator code verification. By definition, group errors are those that occur in other translators as well as in the test translator. Only one error shall be scored per code. |

Fig. 11—Instructions for the Preparation of the Summary Report—Annual 4XB Routing Verification (Page 2 of 4)

| SPACE OR COLUMN | DATA TO BE ENTERED |
|------------------------------|--|
| (Q) — Other HAT group errors | Enter the number of home translators (excluding the test translator) containing the group error for a given code. For example, if the test translator and three other translators misroute a given code, enter the digit 3. |
| (R) FAT code verification | Enter the digit 1 for each error discovered during foreign area translator code verification. Only one error shall be scored per code. |
| (S) Record errors | Enter the digit 1 for each record error discovered during ETS office code verification. Only one error shall be scored per code. |
| (T) — Translation errors | Enter the digit 1 for each translation error discovered during ETS office code verification. Do not score translation errors that result from record errors. Only one error shall be scored per code. |
| (U) — Trunk access tests | Enter the digit 1 for each error discovered during trunk access tests. Only one error shall be scored per trunk group. |
| (V) — Service affecting Y | Enter a check mark if the error recorded on a given line is service affecting. For purposes of this summary, an error is service affecting if it: <ol style="list-style-type: none"> (1) affects customer service; (2) directs the call to the wrong trunk group (even though the call may be completed); (3) results in failure to access all trunks in a group or subgroup; (4) results in failure to alternate route. |
| (W) — Service affecting N | Enter a check mark if the error does not cause any of the four failures described in (S) above. |
| (X) — Notes | Enter any pertinent notes concerning special arrangements or trouble encountered. If additional space is required, enter a note identifier number in this column and enter the note on an attached supplemental page. |

Fig. 11—Instructions for the Preparation of the Summary Report—Annual 4XB Routing Verification (Page 3 of 4)

**TYPICAL PROCEDURAL OUTLINE
ANNUAL ROUTING VERIFICATION OF 4A-ETS ON A SAMPLING BASIS**

| STEP | FUNCTION | RESPONSIBILITY |
|--|---|---|
| 1. | Establish schedule of Routing Verifications of all machines in the area served by a given routing group. | Appropriate Staff Coordinator |
| 2. | Develop sample list of codes for Record Verification and the related "DV" tapes for input to the ETS via ETS TTY channel 2. Decide whether 100% verification is required for special groups of codes (Example: INWATS). | Dial Administrator |
| 3. | Enter the <u>intended</u> routes on the page copy of sample lists using the LLRP, TRG, and OTC Routing Documents as source documents. | Routing Supervisor |
| 4. | Prepare Form E-6233 for all routes indicating routing patterns and trunk group sizes. | Dial Administrator |
| Code Verification | | |
| 5. | Run "DV" tapes via ETS TTY channel 2 and from an office record look-up, enter trunk group names opposite the RPI's printed out from the "DV" queries. | Dial Administrator |
| 6. | Compare intended routings with ETS routings (Steps 3 and 5). | Dial Administrator |
| 7. | Maintain records of testing progress and discrepancies, referring troubles to the Maintenance Supervisor and questionable routings to the Routing Supervisor. | Dial Administrator |
| Trunk Access and Route Advance Verification | | |
| 8. | Perform Trunk Access and Route Advance verification tests using Forms E-6233. Refer troubles to the Maintenance Supervisor and questionable routings to the Dial Administrator. | Testboard Supervisor and Maintenance Supervisor |
| Evaluation of Results | | |
| 9. | Evaluate test results to determine need for additional verifications. | Dial Administrator |
| 10. | Prepare Summary Report of Routing Verification (Form E-6235). | Dial Administrator |
| 11. | Review the results of Routing Verification with all groups concerned. Determine whether corrective administrative procedures are required. | Dial Administrator |
| 12. | Retain all data used in verification procedure for a period of two years. | Dial Administrator |

Fig. 12—Typical Procedural Outline—Annual Routing Verification of 4XB ETS on a Sampling Basis