

**CONTROLLED MAINTENANCE PLAN FOR FRAME  
DISTRIBUTING FRAMES  
SUPPLEMENTAL INFORMATION—CENTRAL OFFICES**

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**1. GENERAL**

1.01 This section describes the general plan for maintenance principles as applied to distributing frame operations either in a centralized frame environment or a local wire center. It applies to work performed on all types of frames (ie, MDF,

IDF, LDF, TDF, etc), and provides the general principles, definitions, descriptions, explanations, and examples of the controlled maintenance concept.

1.02 This section is being reissued for the following reasons:

- (a) Inclusion of changes to the Frameworker Performance Plan (FPP), Section 201-200-014
- (b) Trouble ticket changes
- (c) Frame Control Record changes
- (d) Text changes to reflect the Computer System for Main Frame Operations (COSMOS) environments.

1.03 The title for each figure includes a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

1.04 Recommendations for changes, additions, or deletions to this section or to any of the controlled maintenance documents should be made on Form E-3973 as specified in Section 000-010-015.

1.05 The information in this section is intended for use of the first and second level supervisors responsible for the frame operation. Within this section, the first level supervisor shall be referred to as the supervisor and the second level supervisor will be denoted by the term "manager".

1.06 This plan shall be implemented on all frame operations having one or more equivalent frameworkers and can be used on smaller frames where evidence of problems exist. It is used to measure the quality performance of work, regardless of the type of office. It contains instructions and forms for evaluating and recording quality performance data of each individual frameworker. Supervisors and managers are responsible for making the necessary work evaluations and recording the appropriate information. A thorough knowledge of this Controlled Maintenance Plan, the Frame Force Management Plan (Section 201-200-010), and the Frameworker Performance Plan (Section 201-200-014) is required to ensure that work evaluations are complete, accurate and properly recorded, and therefore provide a fair and meaningful job performance evaluation.

**1.07** Refer to the following sections for associated information:

- Network Management Plan—Section 780-125-500
- NMMP—Work Quality Inspection and Evaluation Program—Section 780-125-502
- NMMP—Cost Control and Measurement—Section 780-125-504.

## **2. CONTROLLED MAINTENANCE**

**2.01** Controlled Maintenance is the term applied to the general plan described in this section for managing the quality of installation work and upkeep maintenance on all distributing frames. Controlled Maintenance is a series of actions or activities formulated to maintain service reliability using both preventive and corrective maintenance. The effective implementation and ongoing use of a Controlled Maintenance Plan are major contributing factors to providing excellent service and minimizing operating expenses.

**2.02** In the administration of this Controlled Maintenance Plan and the development of a fully trained frame force, there are two basic items that supervision must consider:

- (1) The quality of the maintenance work being performed by frameworkers
- (2) Determining if any craft personnel require training, retraining, or guidance.

**2.03** The series of forms described in this section have been designed for use in the distributing frame controlled maintenance effort. These forms will be used as the primary tools for documenting the maintenance activities and the quality performance level of the frame operation.

**2.04** The use of these forms alone will not automatically ensure that an effective Controlled Maintenance Plan is in effect or that the frame performance index objectives are achieved. Primary emphasis is placed on the timely and satisfactory completion of all maintenance requirements. The completion of the necessary forms documenting these activities and their careful analysis will define what alterations to distributing frame operating procedures are necessary in order to achieve the desired performance level. The use of these forms

is of particular importance to frame operations reporting performance levels in Bands L and U (Network Switching Performance Measurement Plan or an equivalent measurement plan).

**2.05** The word maintenance, as used in this section, refers to the quality of work performed on frames (placement and removal of jumpers) and the general frame "upkeep". There are two basic types of maintenance that can be applied to the frame operation—preventive and corrective.

**2.06** *Preventive Maintenance*, when applied to distributing frames, is somewhat different from preventive maintenance described for switching systems. There are no periodic operational tests or relay adjustments to assure service reliability to customers. While there are some maintenance routines which must be scheduled (such as frame inspections, cleaning of blocks, maintenance of solder coppers, checking for missing heat coils and special service protection, etc), the bulk of preventive maintenance is doing high quality work on the initial installation, rearrangement, or disconnect of service.

**2.07** Service reliability is governed not only by the placement and removal of jumpers on the appropriate terminal, but by the quality of work that was performed on adjacent terminals (T-ZONE). Therefore, frameworkers are responsible for the "T-ZONE" surrounding the immediate working area (see paragraphs 3.12 and 3.13).

**2.08** *Corrective Maintenance* consists of the activities of logging, locating, repairing and recording details of troubles reported by central office forces, other offices, testboards, and other sources.

**2.09** A trouble occurs on the frame when customer service is not installed properly or existing service is interrupted due to poor quality of work. Unlike switching systems, trouble conditions on the frame are very seldom caused by the failure of frame components; however, troubles may be caused by broken blocks, internal crosses within a frame block, protector unit, or permanent frame wiring, etc. The existence of trouble is noted by observation or when trouble reports are received.

**2.10** Accuracy and quality of work on distributing frames are important because the distributing

frame presents the greatest exposure of customer service to the possibility of central office caused troubles. In most cases, troubles occurring on distributing frames are service affecting.

2.11 Troubles are generally categorized into the following two different types:

- **Solid Troubles:** Troubles that permanently affect the customer's line or circuit involved, causing a continuous failure. Examples of this type of trouble are broken jumpers, missing heat coils, wire clippings, solder splashes, etc.
- **Intermittent Troubles:** Those troubles that continue to appear and disappear until they are cleared. For example, wire clippings or solder splashes may cause intermittent failures and may also cause trouble indications to appear in different areas. Frameworker activity may cause vibration which can disturb wire clippings or solder splashes, resulting in intermittent trouble conditions such as temporary crosses. These trouble conditions may be difficult to locate because they appear to move from one location to another.

2.12 The majority of frame troubles are the result of human error or mechanical failures caused by one or more of the following conditions. Responsible maintenance forces must be familiar with these causes.

**Environment:** Environmental conditions in the form of wire clippings or solder splashes on blocks, and frame bags, ladder bags or scrape wire containers which have been overfilled can cause frame troubles. Good housekeeping practices will eliminate nearly all improper environmental conditions.

- **Defects:** Failure of various frame components due to internal crosses and grounds in blocks, spring assemblies and protectors or open protection units are called defects.
- **Work Errors:** Frame troubles can be caused by human errors due to carelessness, faulty workmanship, poor quality, improper training, improper procedures on the part

of the frame force and other forces working in the central office. Errors caused by employees in other organizations must be investigated and controlled. Deviations from established documented maintenance methods may also result in work errors.

2.13 Central Office Frame Forces must become familiar with the central office (frame) maintenance practices which define procedures that can reduce the number of environmental problems and work errors. The consistent use of these practices can reduce the number of troubles caused as a result of wire clippings, solder splashes, improperly terminated jumpers, etc.

- **Typical Frame Procedures**—Frame force activity may cause troubles or billing errors when proper procedures are not followed in the operation of the frame. These procedures will likely involve such items as proper intercept methods, a go-ahead from the installer on change type orders requiring a field visit, use of proper methods when working transfer orders (so as not to interrupt customer service for an extended period), coordination with Test Center or control office before working on Special Circuits, etc.
- **Housekeeping**—Good housekeeping practices accomplish at least two important objectives in a frame operation: Minimization of the dirt (solder splashes, wire clippings, etc), safety hazards, and other potential problems associated with untidy areas; secondly, the practices assist in the establishment of an organized operating atmosphere which is an important part of distributing frame maintenance. Material should not be stored haphazardly in the frame area. Tools, test equipment, drawings, and supplies should not be allowed to become dirt collectors; rather, they should be stored in an appropriate area and marked properly. All covers and protection on special circuits must be in place, except when work is in progress.
- **Other Forces**—Other forces (such as the Frame Control Center [FCC], Network Administration, Construction, etc), have occasions to access frames. These forces might cause service-affecting problems. The frame supervisor should maintain coordination

with the other forces in their procedures, records, and implementation of changes to ensure trouble-free customer service. In addition, when other forces are required to work in the frame, the frame supervisor is responsible for seeing that work is performed in a manner that does not jeopardize customer service.

- **Bell System Practices Application**—Bell System Practices prescribe the proper procedures for placing, terminating, soldering, wrapping, and removing jumpers from service. Work performed in accordance with these instructions will result in an operation with high service reliability and low cost.

2.14 The control of distributing frame troubles is comprised of the following activities:

- **Handling Trouble Reports**—The proper handling of troubles requires the completion of trouble reports and the coordination and follow-up of troubles referred to or referred from the frame force. This activity also includes keeping current status logs for future analysis. Prompt response and fast restoral of service through the use of trouble reports are key parts of the distributing frame function.
- **Arresting Trouble-Causing Factors**—Proper housekeeping methods, protection of service, prevention of work errors, and performing quality work on the initial installations are the essence of the frame maintenance job. Frameworkers should be thoroughly familiar with the entire frame job, the use of this maintenance program, the use of frame test equipment, and the significance of trouble reports.

### 3. PREVENTIVE MAINTENANCE

3.01 The bulk of preventive maintenance on distributing frames is the performance of high quality work on the initial installation, rearrangement or disconnection of service. As described in paragraph 2.06, preventive maintenance is also the term applied to the activities associated with locating, repairing and recording troubles which result from scheduled maintenance routines (ie, frame inspections, cleaning of blocks, maintenance

of solder coppers, checking for missing heat coils and special service protection, etc).

#### A. Quality Control

3.02 The responsibility of the frame supervisor for obtaining high-quality work is directly related to the responsibility for service and cost. Work errors usually harm customer service. Investigations and corrections resulting from work errors increase costs. The order and nonorder activity on distributing frames presents many opportunities for work errors.

**Note:** Order work pertains primarily to jumper wire activities. Nonorder work is defined as activities that support operations.

3.03 The activities of the supervisor and manager that are directed at reducing work errors to a minimum and then holding them at a low level must be coordinated into a quality control program. This program should provide an overall knowledge of distributing frame work quality and should identify the causes of work errors.

3.04 The supervisor has an obligation to periodically check an adequate sample of each frameworker's work in order to determine the quality of the entire job. Furthermore, supervision must take the indicated action required to correct work which is below standard. This implies that quality standards for the various kinds of work be known by the manager, supervisor and the frameworker. These standards are defined in Bell System Practices as performance requirements or the proper method for performing assigned frame tasks. Therefore, it is mandatory that the manager and supervisor become familiar with these standards in order to evaluate work quality and take the necessary corrective action.

3.05 The existence of a quality control program can be effective because frameworkers know that quality is a requirement of the job. When they are aware that their work will be checked or observed, they will tend to perform a higher quality work operation.

3.06 It is very important that all kinds of work performed by all frameworkers be checked for quality. The number of work items checked for each frameworker and for the total frame force may vary according to need. Mainly, the need is

determined by the quality of the overall job being done as noted in past evaluations and Frameworker Performance Plan (FPP) requirements.

**3.07** Where practicable, supervisors should make quality inspections of work promptly after completion. The reason for this is when an extended period of time has elapsed since the frameworker completed the job, someone else could have worked in the same area and caused deviations.

**3.08** Results of work evaluations must be recorded on Form E-6954 (Frameworker Work Evaluation Sheet). Details for the completion of Form E-6954 are included with each package of forms and are included in this plan as part of Fig. 1.

**3.09** An inspection item is a work activity that makes up part of the processing of a service order, trunk order, or other frame activity. It is **not** the number of orders evaluated. Example: A No. 5 crossbar (5XB) main station in service requires Main Distributing Frame (MDF), Number Group (NG), and translator frame (TRNSL) cross-connects. The work activity required on this order could provide an inspection item count of at least 14 as indicated by the following example.

MDF Jumper Placement	— 1 Item
MDF Jumper Termination	— 2 Items
T-Zone Inspection	— 3 Items (1 item per frame)
NG—Cross Connects	— 3 Items
Translator—Cross Connect	— 1 Item per translator
Tests	— 1 Item
Coils	— 1 Item
Records	— 1 Item per line
Filing	— 1 Item
Total	14 Items

**3.10** The number of inspection items and the number of items found satisfactory must be recorded on Form E-6954. Refer to Fig. 1 for an example of Form E-6954 and the definition of terms for the Frameworker Evaluation Sheet. The results of the individual Forms E-6954 are summarized on Form E-6955-B (Frameworker Performance Plan-Quality). See Fig. 2.

**3.11** All required training as a result of unsatisfactory inspection items is noted on Form E-6954. After the required training is completed, details are entered on the training record of the appropriate frameworker. The supervisor should discuss results of evaluations only with those directly concerned, such as the frameworker or immediate supervisors.

**T-ZONE Inspection**

**3.12** Frameworkers are responsible for a **maximum** T-ZONE area which is composed of three zones on the horizontal MDF as follows: (1) 20 rows of lugs to the left of the work location, (2) 20 rows of lugs to the right of the work location, (3) 20 rows of lugs immediately below the work location. On the vertical side of conventional frames (VMDF), the **maximum** T-ZONE area is composed of two zones as follows: (1) 20 rows of lugs immediately above the work location, (2) 20 rows of lugs immediately below the work location. The T-ZONE area is determined locally for each frame location, taking into consideration the general condition of the frame and the amount of time required to clear all defects within the specified T-ZONE.

**3.13** It is recommended that the frameworker clear defects within the T-ZONE while working in the area. Defects which require extensive repair should not be cleared at this time. Instead they should be logged or ticketed by the frameworker. When scheduled work is assigned, corrective action for these defects can be included.

**Frameworker Work Evaluations**

**3.14** The main purpose for the evaluation of work is to develop a fully trained force, and ensure the overall quality of the distributing frame operation. All employees will need training to fully develop their capabilities and enhance their opportunities. The work of employees who are fully trained on their present assignment should be evaluated for evidence that they continue to meet high standards. The evaluation also serves as an input to the employee performance record.

**3.15** Improved performance is usually recognized by higher quality, increased efficiency, greater job knowledge, use of proper methods and safety. In many cases of substandard performance, the need for training becomes evident. Additional training may be required as a result of poor work habits, absence of technical knowledge, or a lack

of knowledge of the supervisor's objectives. Supervisors should not assume that all frameworkers know how to do all work operations correctly or that they know exactly what is expected of them. Work evaluations are a means by which supervisors can determine training requirements.

**3.16** The supervisor should schedule work evaluations so they become a part of the work day along with the other duties. This schedule should reflect a sample of work in progress and work recently completed.

**3.17** In addition to the scheduled work evaluations, the supervisor must be aware of situations requiring an immediate investigation. When a frameworker's error interrupts service, there is an immediate requirement for an investigation to determine the reason for the error. Corrective action must be taken to prevent recurrence.

#### **Work Evaluation Process**

**3.18** The work evaluation process consists of scheduling work evaluations, making each evaluation, taking appropriate action, recording results on Form E-6954, and the necessary follow-up. There are two means of work evaluations: **work inspections** and **work observations**. Each has its own particular application. The supervisor should be careful to select the means which is best for accomplishing the intended results, and should avoid reliance on one type because of habit.

**3.19** **Work Inspections** are used for evaluating a finished job. Jobs such as cross-connections run and terminated, record entries, and service ordering filing are examples of work which can be evaluated accurately when the job is completed. However, the examination of completed cross-connection work that is found faultless does not indicate whether the frameworker worked efficiently and safely, used proper tools or followed proper service protection procedures.

**3.20** In evaluating completed work, it is important that the supervisor be totally familiar with Bell System Practices and local requirements that the frameworker is to apply. Unless the required standards are applied, the supervisor will not know if jobs are done correctly and completely. Quick and partial checks are not satisfactory.

**3.21** **Work Observations** are used to determine if correct procedures, proper tools, and prescribed methods are being used by the frameworker. In addition, particulars, such as compliance with the Accident Prevention Plan (APP), and service protection procedures and job knowledge can also be reviewed while the work is being observed.

**3.22** In performing work evaluations, the frame supervisor evaluates the following:

- Wire placement
- Wire removal
- Terminations (soldering, wire wrap, etc)
- Protection (coils, special protection, etc)
- Testing
- Order completion
- T-ZONE
- Intercept on disconnect activity
- Use of proper methods
- Use of proper tools
- Completion of logs and records
- Filing
- Safety
- Housekeeping.

#### **Attitudes and Objectives**

**3.23** The supervisor and reporting employees must have a "quality attitude" to achieve the desired results of quality control. Development of these attitudes may initially place great demands on supervisory time. However, it will be worth all the effort required to establish this type of office environment.

**3.24** The supervisor's objective in making quality inspections is to correct areas where work is deficient and to give credit for quality work. When an employee's work does not meet the quality

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requirements, the supervisor should work with that employee in whatever way is necessary to overcome the problem. Almost without exception, if employees know that high quality performance is expected and will be recognized, they will work to meet these standards.

### 3.25 The need for doing work evaluations changes.

Generally, it is not practical to specify quotas which would apply to each employee. However, in order to provide a reasonable basis for evaluation, a minimum number of 100 items **must** be inspected each month for each frameworker. (See paragraph 3.09 for definition of an inspection item.) The maximum number of items for each frameworker should be the result of an agreement between first and second level supervision.

3.26 As evaluations disclose improvements resulting from corrective action, the number of items inspected may be reduced as long as the minimum number of evaluations are inspected for each frameworker each month. In all cases, the first and second level supervisors should agree on quantities of work evaluations.

## B. Scheduled Routine Work (ETLs)

3.27 The following paragraphs describe maintenance routines that must be performed on distributing frames. The basis for this type of preventive maintenance activity is the Equipment Test List (ETL). See Fig. 3 for the ETL format. The ETL indicates test requirements and intervals. These tests are scheduled on distributing frames in order to prevent trouble conditions. Figure 4 illustrates the preventive maintenance process as used in this Controlled Maintenance Plan.

**Note:** Where operation support systems provide mechanized schedules and maintenance records of preventive maintenance activity, the equivalent forms and records are accepted in lieu of the forms required by this document.

3.28 The first step in establishing this part of the frame preventive maintenance program is the identification and scheduling of all required routines. ETLs are available to assist in the identification of these routines. The ETLs which are companions to the test and inspection practices are system standards for the application of maintenance instructions contained in Bell System Practices. ETLs are numbered in the same series as the tests

they cover. Distributing frame ETLs are generally found in Sections 201-001-011 and 069-001-011.

3.29 Each ETL lists all tests, inspections, and other instructions prescribed for the frame covered by the ETL. An action classification is assigned to each instruction indicating the manner in which the instruction must be applied. For some action classifications, the ETL assigns minimum frequencies of application. For the most part, the distributing frame tests will have an asterisk (\*) indicated as the frequency. This indicates that the frequency for these tests is to be assigned locally as required.

3.30 The test intervals, when specified, will meet the needs of most frame operations and are consistent with reasonable costs. The tests must be performed at the interval listed in the ETL or as assigned locally, but not less frequently than assigned in the ETL. Frame conditions may dictate that tests must be performed at shorter intervals than listed in the ETL. The purpose of performing recurring work is to prevent service interruptions.

## Classification of Routines

3.31 All tests, inspections or other requirements in the ETLs for distributing frames are given three classifications. The use of these classifications is described below. The word **test** in the following descriptions is used to mean a test, inspection, or other work requirement.

3.32 **Mandatory Work (MW):** MW tests are used to detect actual or potential trouble conditions that could result in a severe service penalty. Indications of such troubles are sometimes obscure.

- MW tests must be performed at a frequency equal to or more frequently than specified in the ETL.

- Some frame components, such as special service devices, are shown as MW because of the critical nature of this service.

3.33 **Mandatory Review (MR):** MR tests are used to detect actual or potential trouble conditions that do not result in a severe service penalty. Indications of such a trouble are sometimes obscure.

- The test frequency assigned to MR routines indicates that a review must be made to determine if there is a need to perform the test.
- At the time of review, if the test has been performed on all units since the time of the previous review, no work is required unless a check of corrective maintenance data indicates otherwise. If the test has not been performed since the previous review, it must be performed on all units. If a decision is made to pass an MR routine, a notation must be recorded on the Test and Inspection Summaries, Forms E-5453 and E-5454.

**3.34 *Trouble Test (TT):*** TTs are not performed at a specified frequency, but should be used (as required) to verify and isolate troubles revealed by other indicators or analysis.

**3.35** Figure 3 is the format used in documenting routine test information. The test information is arranged in the following order from left to right: Section number, issue/addendum, test letter or paragraph number, test title, test class, frequency and the last space is for locally assigned job number. For a list of Distributing Frame and applicable ETLs, refer to Division 201 in the numerical index.

**3.36** In order to provide a complete record of all tests and inspections found in the Bell System Practices, the ETLs contain tests which may not apply to all frame operations; therefore, the pages which do not apply should be retained for later use. Parts of other pages which do not apply are indicated by writing NA in the assigned job number column on the ETL or Form E-5450.

**3.37** Other tests, which are not included in the standard frame ETLs but apply on a local basis, are to be entered on a blank E-5450 form (Fig. 5). Examples are security in the frame area, safety items, and requirements to other frame equipment which do not have an associated ETL. Refer to Section 010-300-011 for an explanation of ETL formats in detail.

#### **Scheduling of Routines (Form E-5451)**

**3.38** After all required routines have been identified, the supervisor must create a schedule for completing the routines consistent with the needs

of the frame operation and the available work force. To assist in this operation, Form E-5451 (Fig. 6) is provided.

**3.39** Form E-5451 provides columns for reading most of the information contained on the ETL, if desired. For detailed instructions in preparing this form, see Fig. 6.

#### **Test and Inspection Work Order and Record (Form E-5452)**

**3.40** Form E-5452 or an equivalent form (Fig. 7) is used as a preventive maintenance work order and a record of the work performed. As routines become due, the supervisor prepares Form E-5452 and assigns the routines to the frame force. As the tests are completed, the results are recorded in the appropriate spaces on the form. Details of test failures and troubles found are entered in the space provided. Complete or partial details of a job are entered in the progress report portion of the form. For detailed instructions in preparing this form, see Fig. 7. All portions of the form must be completed accurately.

**3.41** Some tests and inspections do not ordinarily result in many found troubles and do not require numerous separate work operations. In these cases, it is not necessary to use Form E-5452. Test or Inspection results may be recorded directly on Form E-5453 or E-5454.

#### **Test and Inspection Summary (Form E-5453, E-5454 or E-5455)**

**3.42** Form E-5453 (Fig. 8), Form E-5454 (Fig. 9), and Form E-5455 (Fig. 10) are prepared from the applicable ETL or Form E-5450. These forms provide a summary of the results of previous testing for comparison to the current test results and the analysis of corrective maintenance records. They also provide a record of when the tests were performed and the amount of time required.

**3.43** Forms E-5453, E-5454, and/or Form E-5455 are the source of information for preparing Form E-5452, Test and Inspection Work Order and Record.

**3.44** Form E-5453 (Fig. 8) provides spaces on the front of the form for recording assignment data, BSP number, equipment work description, number of equipment units involved, estimate of

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work time, and the results of the work done. The back of the form provides additional space for results.

**3.45** Form E-5454 (Fig. 9) is a smaller card version of Form E-5453. Form E-5454 is more suitable when a card file arrangement is desired for test and inspection routines.

**3.46** Generally, it is preferred that ETL job assignments be made so that the work may be completed within one work tour. In large operations, certain jobs may have to be portioned into smaller assignments, because the total amount of work is too great to be completed during one work tour. Form E-5455 (Fig. 10) which may be used for large operations provides spaces for summarizing multiple assignment work details.

**3.47** Where multiple job assignments are required, individual work orders (Form E-5452) are prepared as each assignment is due. When the assignment is completed, details are posted in the appropriate spaces on Form E-5455. If desired, progress on extended routines can be noted by using a light colored pencil to color the WORK COMPL spaces as the completion dates are entered.

**3.48** Forms E-5453, E-5454 or E-5455 must be prepared for each MW or MR test specified by the ETL. The proper use of this Controlled Maintenance Plan requires that all information be entered on these forms.

**3.49** Distributing frame operations using a mechanized form of ETL scheduling should refer to Section 201-020-510, Part 4 for a detailed description of an automated ETL administration.

### 4. CORRECTIVE MAINTENANCE

**4.01** In the Controlled Maintenance Plan, corrective maintenance procedures are used for handling trouble reports from all sources other than preventive maintenance routines. These procedures are aimed at:

- Providing an effective means for control and prompt handling of trouble reports.
- Dispatching reports for trouble location and repair.

- Providing for orderly and simplified recordkeeping.

**4.02** The corrective maintenance process (see Fig. 11) is initiated by trouble reports and is completed by restoring service and closing out trouble tickets. Trouble records should be periodically analyzed to determine if modifications to the preventive maintenance program are needed.

#### A. Monitoring and Evaluating Frame Performance

**4.03** The primary means of determining frame performance is through the interpretation of service and administrative measurements.

**4.04** These measurements should be compared to an established set of objectives. Undesirable deviations in service directly relate to a degradation in customer service and are a stimulus for a detailed analysis of trouble reports.

#### Setting Objectives

**4.05** The establishment of objectives for a frame operation should be based on the attainment of high levels of service performance. In the event that performance is far below the objective level, it may be necessary to set interim objectives that can be met in a short period of time with a reasonable amount of effort. Unattainable or unreasonable objectives tend to have a detrimental effect on attempts to improve performance.

#### Frame Control Record (Form E-5497)

**4.06** The Frame Control Record (Fig. 12) is used to summarize the causes of central office frame troubles. It provides a current picture of the frame 5 codes on a daily basis which can be compared to other days and the established frame objective.

**4.07** The report period covered by a control record is the 23rd of one month to the 22nd of the following month. This report period coincides with TREAT (Trouble Report Evaluation and Analysis Tool) used by the Plant Service Center and the appropriate Network Switching Performance Measurement Plan. Figure 12 provides a detailed description on the use of this control record.

**B. Correcting Troubles**

**4.08** The primary sources of trouble reports are the Repair Service Bureau, other offices, and central office forces. A well-controlled Corrective Maintenance Plan must provide for the proper administration of all trouble reports.

**4.09** When a trouble report is received at the Frame Control Center (FCC) or frame location, a Trouble Ticket (Form E-10260) may be prepared where warranted and/or the report is logged on Form E-5457 (Central Office Log). Once the trouble is cleared, the results are forwarded to the responsible organization (ie, RSB, SCC, FCC, etc). If frame locations are administered from a centralized location (FCC, SCC), a Central Office Log is maintained in the center for trouble reports received.

**Trouble Ticket (Form E-10260)**

**4.10** Trouble tickets are corrective maintenance work orders and records for maintenance personnel. They also serve as the source document for details of trouble reports and the resulting found or not-found troubles. It is the responsibility of the supervisor to instruct all craft or clerical personnel in the proper preparation of trouble tickets. Detailed instructions for the preparation of Form E-10260 are found in Fig. 13.

**4.11** Trouble tickets are classified as T (Trouble) or M (Memo) according to the following:

- T-type tickets are issued for reports from the Repair Service Bureau (customer reports), other offices, other departments, and central office forces which require corrective action.
- M-type tickets are issued to cover pending work operations as a result of closed-out T-tickets where repairs are made later. Examples of this type of trouble ticket are a defective frame component, subscriber service moved to new equipment, or repairs to a defective component are made later. The use of "M" tickets will have limited application in most frame operations; however, when these type trouble tickets are written, they are administered in accordance with this practice.

**4.12** A trouble reporting source is assigned an alphabetical designation for identification on the trouble ticket (see Table A). Class A reports are also given a disposition code to identify where the trouble was found (central office, Outside Plant, etc), and if the trouble was found or not found. If the trouble was referred to the distributing frame, it is coded in accordance with the Customer Trouble Analysis Plan (CTRAP), Section 660-100-013 or Trouble Report Evaluation and Analysis Tool (TREAT), Section 660-169-013.

**4.13** When "T" tickets are closed out, details of found or not-found troubles must be recorded for future analysis. A portion of the ticket is arranged for coding trouble data. Table B identifies the situations for coding the FRAME block and scoring the items on the right side of the ticket. Table C provides a list of major distributing frame designations and the appropriate abbreviation. Figures 14 through 17 illustrate completed "T" tickets and are used as a guide in the preparation of frame trouble tickets.

**4.14** Each "T" ticket must have an entry in the "Frame" space. Enter the frame component and number (ie, VMDF 201/902), NTF or REF OUT. All troubles found in the wiring of a particular frame component are coded to that component. Troubles that "came clear while testing" and were isolated to a particular frame are also coded to that frame component.

**4.15** As previously discussed, "Memo" tickets may be issued to cover pending work operations as a result of closed-out "T" tickets. When the report is closed out and the service is restored by removing the defective component from service, the associated "T" ticket is kept in a special file for pending work. Later, when a craft person has been assigned to repair the defective item, a "Memo" ticket is issued for the work operation. When the component is restored to service, the "T" and "Memo" tickets are completed and filed. MEMO tickets may also be issued to clear defects found as a result of T-ZONE inspections.

**4.16** Trouble tickets are serially numbered for identification and for relating them to reports or troubles. Ticket serial numbers are entered on the Central Office Log described in paragraph 4.18. It is recommended that the tickets be numbered serially beginning at the first of each year. If the frame operation is experiencing a large volume

of trouble reports (10 or more per month), then the tickets should be serially numbered beginning at the first of each month (ie, April's tickets would begin with 4-1). The supervisor must determine the ticket numbering scheme that best fits the individual frame operation. In some of the smaller operations, it may be desirable to serialize and record both central office and frame trouble tickets on the same Central Office Log. Here again, this is at the discretion of the individual supervisor.

4.17 Trouble tickets are not issued for recording troubles disclosed by preventive maintenance activities.

**Central Office Log (Form E-5457)**

4.18 The Central Office Log (Fig. 18) is used for recording frame trouble reports and other distributing frame activity which could result in trouble reports. The log is a convenient display of pertinent information associated with trouble reports where the log is used in lieu of frame tickets. Detailed information is entered on the log.

4.19 This log may also be used for noting other distributing frame activity, ie, contractor activity, outside plant forces performing work on distributing frames, etc. These entries are useful for investigating trouble reports which may be associated with this type of activity.

4.20 The Central Office Log may be closed out monthly or periodically, depending on the volume of trouble reports and other entries. In small offices, it may be convenient to utilize the same Central Office Log for recording both switching system and frame trouble reports and other office activity. In either case, any trouble reports which are not closed out on a log must be carried over to the log for the next period with explanatory notes.

**C. Analysis of Trouble Records**

4.21 One important activity that is a part of corrective maintenance is the periodic analysis of completed trouble records. In addition to the trouble tickets, results of preventive maintenance routines should also be analyzed. The purpose of this analysis is to categorize all troubles in terms of frame components, causes of trouble and to

initiate positive action to reduce the possibility of future troubles.

4.22 The analysis of trouble reports may result in any number of actions. Some examples of these actions are:

- Increase or recommend a decrease in the frequency of a particular preventive maintenance routine.
- Initiate on-the-job training to reduce work errors.
- Change housekeeping and cleaning routines to reduce wire clippings, solder splashes, etc, on the distributing frame.

**Ticket File**

4.23 One of the first steps in the analysis of trouble reports can be the creation of a ticket file which provides for the systematic storage of trouble tickets. The trouble tickets are filed in accordance with the equipment code on the trouble ticket. All NTF tickets, which cannot be associated with a particular frame component, should be filed in a bin designated as NTF. Separate bins should be designated for filing MEMO, HOLD FOR REPAIR, and PENDING trouble tickets issued during the current month. The file should be located in the administration center for that particular frame location.

4.24 The ticket file bins are arranged according to the major distributing frame components as listed in Table C. As experience is gained with a frame operation, the supervisor may change the layout of the ticket file to meet the needs of a particular distributing frame. Figure 19 illustrates a suggested ticket filing arrangement. If practical, the distributing frame filing system may be an addition to the one presently set up for the associated switching system.

4.25 Trouble tickets should be retained in a 3-month moving file. At the end of each report period, tickets for the oldest month should be removed. Figure 19 illustrates two suggested methods of retaining trouble tickets in a 3-month file.

## 5. QUALITY ASSURANCE (SECOND LEVEL RESPONSIBILITY)

**5.01** The procedures in this part will describe the manager's (second level supervisor) role in the administration of an effective distributing frame quality control program.

**5.02** An effective quality control program will only come about as the result of an attempt by management to reduce and hold work errors to a minimum. As quality improves, so does the service to customers and the cost to the company. However, an effective quality control program cannot be accomplished without the close supervision of both the manager and the supervisor.

**5.03** It is important that the manager and each of the subordinate supervisors agree upon service and cost objectives (eg, frame code 5s, percent efficiency, percent nonorder time, etc). In addition, there should be an agreement for the number of items inspected if the indicated need is more than the minimum as outlined in paragraph 3.25. To avoid misunderstanding, such objectives should be in writing, with copies in the files of both the manager and the supervisor.

**5.04** In order to ensure quality workmanship on the frame, performance of work evaluations according to specified inspection standards, an effective corrective action program, and the compliance with all distributing frame administrative programs, the manager is responsible for the following areas.

### A. Technical

**5.05 Work Evaluations**—The manager shall perform work inspections and observations of craft work as follows:

- (a) Work Evaluations (Independent of those made by the supervisor)
- (b) Work Evaluations (Accompanying the supervisor).

**5.06** The manager shall perform a minimum of 25 work inspection items per frame per quarter for frames with one or more full-time frame attendants. The time interval is every six months for frames with less than one full-time frame attendant. These work evaluations should be a random number of inspections independent

of those performed by the supervisor, and some inspection items previously evaluated by the supervisor. If the work evaluations performed by the manager and those performed by the supervisor do not agree on the quality of workmanship, then the manager shall accompany the supervisor during work inspections and work observations. This will provide the manager with information regarding the supervisor's technical competence and ability to perform work evaluations according to specified inspection standards.

**5.07** Results of work evaluations, performed by the manager, are recorded on Form E-6954 (Frameworker Work Evaluation Sheet) and summarized on Form E-6955-B (Frameworker Performance Plan-Quality). Refer to Part 3 of this section for detailed information concerning the performance of work evaluations. Further information on frameworker evaluations is located in Section 201-200-014, Frameworker Performance Plan.

**5.08** The manager shall enter on Form E-6954 the data reviewed and any pertinent remarks concerning those work evaluations which were performed by the supervisor and reviewed by the manager. Appropriate spaces have been provided on Form E-6954 for this purpose.

**5.09 Distributing Frame Congestion**—At least once every six months, the manager shall perform checks to determine horizontal shelf and express trough pileup on all distributing frames. The checks shall be made on the various types of distributing frames as follows:

#### (a) Conventional Frame

- (1) The jumper pileup must not block access to the distributing rings at the rear of the horizontal shelf.
- (2) The jumper pileup must not block access to the fanning holes in the base of the horizontal terminal strips.
- (3) There must be a minimum of 3-1/2 inches between the top of the jumper pile and the next higher shelf for the frameworker to easily reach the distributing rings at the rear of the shelf.

These requirements limit the maximum jumper pileup to 3-1/2 inches on the conventional MDF

with 8-inch shelf spacing and 1-inch support arms, and to 5-1/2 inches on the conventional MDF with 10-inch shelf spacing. Figure 20 illustrates a maximum jumper pileup that satisfies the three preceding physical conditions. Frames having either moderate (one to two shelves with congestion) or excessive (three or more shelves with congestion) shall be fully analyzed to determine the cause and to establish an effective corrective action program.

(b) **ESS Modular Frame**

(1) On an ESS Modular Frame the test for congestion is applied to both the upper and lower jumper troughs at the same point in the frame lineup. Select by inspection the four locations in the frame lineup where the jumper pileup in both the upper and lower troughs appears to be greatest. Compress the jumpers in each trough and measure the compressed jumper pileup from the bottom of the trough to the top of the pileup. Add the two measures together. The frame is not considered to be congested if the combined measure is less than 5 inches at any one of the four locations. If the combined measure is 5 inches or greater at any one of the four locations, the frame is congested and shall be fully analyzed to determine the cause and to establish an effective corrective action program. In some later versions of the ESS Modular Frame, the upper trough was subdivided into two troughs. In these cases, the combined compressed pileup in both upper troughs and the lower trough cannot exceed 5 inches.

(c) **COSMIC Frames with COSMOS**

(1) COSMOS maintains many parameters relative to the existing trough congestion as well as detailed counts of jumpers in the upper and lower troughs for every module of the COSMIC frame. The reference levels for trough congestion on the COSMIC frame is defined by design curves. The design curves consist of operating regions for trough congestion that ranges from the most desirable region to the least desirable region.

(2) The most desirable region is identified as the phase zero region while the least desirable operating region is the phase three region. A report from COSMOS to the frame

supervisor stating that the frame is in phase zero indicates that the express trough congestion is within the desirable operating range for the number of jumpers on the frame. Conversely, a report stating that the frame is in phase three indicates that the frame trough congestion is above the acceptable limits for the number of jumpers on the frame. See Fig. 21 for the COSMIC frame design curves.

(3) On COSMIC frames that operate in conjunction with COSMOS, the standard, on-line Frame Trough Jumper Count Report (transaction code FJC) will be used in the test for congestion. Before obtaining this report, ensure that the Tabulation of Module Jumpers program (transaction code TOM) has been run not more than one week prior to the review. This program updates the jumper tables in the data base and will ensure that information obtained is current. Obtain the FJC report for the frame or frames being reviewed. Select the four locations that have the highest jumper count between adjacent modules. For any of these four locations, the maximum trough congestion acceptable is when the jumper count is 5000 jumpers or more. The thrust of all COSMOS and operating company procedures is to keep trough congestion well below the design limit (5000 jumpers) and in the phase zero region.

(4) COSMOS was designed to provide an up-to-date report of the facilities and wiring on a frame and a compilation of reports which reflect the present condition of that frame. Analysis of periodic reports provides a way to spot trends such as an excessive tie pair usage and trough build-up on a COSMIC frame. Figures 22, 23, and 24 provide guidelines for the use of the COSMOS reports. Figure 22 is a chart which lists the frame management reports that should be obtained by the staff support person for the frame. The optimum frequency and retention intervals are included along with the suggested action to be taken. Identifications of the transaction codes are contained in the Users Guide. If more information is desired, refer to the COSMOS Frame Training Manual documents (PA-6P012 for COSMOS without Frame Force Management Module [FWM] or PA-6P015 for COSMOS with FWM). Figure 23 is a recommended chart for tracking the more essential frame related items. The graph in Fig. 24 shows a method of tracking the COSMIC congestion

between the tie pair usage, trough build-up, and the "M" number constraint.

(d) **COSMIC Frames Without COSMOS**

(1) On COSMIC Frames that do not have COSMOS, the test for congestion is applied to both the upper and lower jumper troughs at the same point in the frame lineup. Select by inspection the four locations in the frame lineup where the jumper pileup in both the upper and lower troughs appears to be greatest. Compress the jumpers in each trough and measure the compressed jumper pileup from the bottom of the trough to the top of the pileup. Locate the point on the graph in Fig. 25 that corresponds to the measured height of the compressed pileup in the upper and lower trough. If the point falls below the line for all four locations, there is no congestion. If the point is on or above the line at any one of the four locations, the frame is considered to be congested. Frames (ESS-MODULAR or COSMIC) having congestion should be analyzed to determine the cause and to establish an effective corrective action program. The manager shall be a member of the Congestion and Control Review Committee as outlined in Sections 680-535-009 and 680-830-012.

**B. COSMOS Data Base Accuracy**

**5.10** The purpose of maintaining the integrity of the COSMOS data base is to assure its trouble-free use. To maintain the integrity of the data base with respect to facility associations and individual facility status, periodic sampling of the telephone number (TN), office equipment (OE), and cable pair (CP) files are made to statistically test the agreement of the data base with actual wiring in the central office.

**5.11** The random data base sample is obtained with transaction VER run by the data base manager. A complete frame check of the circuits listed by VER will lead to an estimate of data base accuracy. Data base accuracy estimates are important because they assist in determining trouble conditions in the data base and their potential causes. They assist in determining whether accuracy levels are changing and provide a quantitative value for the changes occurring. They can be used to determine whether wholesale data base purification is required and, if so, in which areas.

**5.12** Observation of operating COSMOS applications indicates that 95 percent VER level of data base accuracy should provide a smooth running operation. It is important to estimate the data base accuracy level before going from a manual operation to COSMOS operations. If a 95 percent or higher accuracy level is not obtained, then the start of operations should be deferred. After going operational, if the level drops below 95 percent, the corrective actions indicated in Table D should be reviewed with responsible interface groups and a corrective program established.

**5.13** Transaction VER provides all related circuit information for 150 randomly selected telephone numbers, line equipment, and cable pairs (50 of each). Optionally, 50 more random circuits are selected if the tie pair option is used. Transaction VER also lists the circuits in the cable pair MDF location order to facilitate the frame verification. In addition, for each circuit, a comment field and verification summary field are provided for convenience in recording the results of the frame verification. See Fig. 26 for a sample VER work sheet and Fig. 27 for an example of verification results.

**5.14** Samples are provided in multiples of 150 facilities (200 if tie pair circuits selected), eg, if 300 facilities (100 cable pairs, 100 line equipment, 100 telephone numbers) are desired, VER should be run twice. It is possible that multiple runs of VER will list the same facility more than once; however, the probability of this occurring is remote. It should be noted that in any given run of VER, more than 50 cable pairs, for example, will be listed. This is because most of the 50 randomly selected line equipment will have associated cable pairs, and similarly, associated cable pairs will be listed for the 50 randomly selected telephone numbers. Hence, a given run of VER will provide 150 "circuits," where a "circuit" can consist of a spare facility. Generally, more than 100 different cable pairs, line equipment, and telephone numbers will be associated with these circuits.

**5.15** Since the data base is dynamic, care should be taken to limit the VER runs and subsequent frame verification effort to the amount which can be accomplished during one day. In other words, only execute as many VER runs as can be physically checked by the frame in one day. This will keep the VER output as current as possible and avoid "old" data.

5.16 Statistical sampling of data base accuracy is meaningful only if the sampling is done **regularly** and **consistently**. A schedule must be established for executing VER runs and the results must be recorded over extended periods of time.

5.17 The recommended frequency for sampling data base accuracy, and the number of VER runs comprising each sample is shown in Table E. When circuit accuracy decreases, the number of VER runs should be increased to monitor the results of a corrective program.

5.18 If more information is required on the VER transaction, refer to Sample Selection and Central Office-Frame Review in Section 190-520-005.

**C. Administrative**

5.19 **Corrective Action Program**—Each supervisor shall have an established corrective action program for correcting deficiencies found through the use of FFMP, CMP, and FPP. This program should include the required training or retraining as a result of unsatisfactory work items or a low percentage of efficiency on individual frameworkers or the overall frame force. The manager should also ensure that necessary follow-up and documentation of this training is being made. Other areas of corrective action could include frame rehabilitation, investigation and control of discrepancies, roadblocks, service affecting troubles, etc.

5.20 **Controlled Maintenance Plan (CMP)**—Each frame operation with one or more full time frameworkers should use this Controlled Maintenance Plan. It is the responsibility of the manager to see that the Controlled Maintenance Plan is being properly used, and that all the associated forms and control records are filled out correctly.

5.21 **Frame Force Management Plan (FFMP)**—Each frame operation with one or more full time frameworkers should use the Frame Force Management Plan in Section 201-200-010. Initially, the manager must determine that the time study was properly performed, that it was properly recorded, and that realistic objectives have been set. At regular intervals, the manager should also check the other required frame force management

control forms for completeness, accuracy, and utilization. These will include:

- Daily Forecast (E-6619 or E-6619-1)
- Loading Sheet (E-6620)
- Load and Work Time Record (E-6843)
- Daily Central Office Frame Activity Log (E-6622)
- Other Work Log (E-6623)
- Central Office Monthly Control Log (E-6624)
- Speaker Activity Log (E-6625)
- Frame Control Record (E-5497)
- Work Assignment List (E-5848).

5.22 **Frameworker Performance Plan (FPP)**—The manager must be assured that the information used by FPP for the appraisal of each craft person is accurate and reliable data. Forms E-6620 (Loading Sheet), E-6843 (Load and Work Time Record), and E-6954 (Frameworker Work Evaluation Sheet) of each individual frameworker shall be checked periodically for accuracy. The appropriate information shall be summarized on Form E-6955-A (Frameworker Performance Plan-Productivity) and Form E-6955-B (Frameworker Performance Plan-Quality). A check should also be made to verify that the supervisor is exercising job rotation among the frame force. If job rotation is not feasible, justification for lack of rotation must be documented and carefully considered for its effect upon the employee.

**Note:** An audit trail of the activities is an excellent indicator as to whether or not the plans are being used to improve the quality of workmanship, the technical competence of individual frameworkers, and an increase of overall frame efficiency.

5.23 The manager should schedule office visits periodically to perform the necessary work evaluations and review the administrative procedures as outlined in paragraphs 5.19 through 5.22. These results should be critiqued with the supervisor,

documented, and when required the necessary follow-up action taken.

**5.24** During these office visits, all other areas of the frame operation should be reviewed and critiqued (such as the Accident Prevention Plan, Cable Transfer Administration [Section 620-050-020], etc).

**5.25** Having performed the functions as outlined in paragraphs 5.23 and 5.24 will enable the manager to make judgment as to the effectiveness of the frame supervisor in the areas of quality and productivity of the service order and other work activities. It will also enable the manager to more readily respond to higher level management inquiries as to the technical and administrative health of the frame operation.

**6. DOCUMENTATION**

**6.01** The proper maintenance of a distributing frame depends upon the availability of the required documentation. Reference shall be made to Section 201-200-001 for documentation that pertains to distributing frame operations. A copy of all applicable documents should be available to the distributing frame force.

**7. RECORDS**

**A. Retention of Records**

**7.01** When a frame is located in a Frame Control Center (FCC) environment, all forms are maintained in the FCC. Copies of the forms and records may also be maintained in the local office depending on local management requirements.

**7.02** The forms described in this section have been designed for containing useful information

in an orderly fashion. The minimum length of time each record should be kept is found in the company record retention schedule. In general, unless otherwise specified, no records should be maintained for more than one month. If it appears advisable to retain certain records for a longer period of time than is indicated in this retention schedule, action should be taken to have the retention requirements changed. The normal procedure should be to retain a record no longer than its possible usefulness.

**7.03** A simple method for retaining these records is to establish large folders or mailing envelopes, each marked with the month and year. As each report month ends, records may be removed from binders and filed in the appropriately marked envelopes or folders. At the same time, records in an envelope with a date exceeding company retention requirements should be discarded.

**B. Ordering Information**

**7.04** Forms should be ordered in multiples of the quantities contained within each package. All forms associated with this plan may be ordered through the local Western Electric distributing center. Prepare requisition as follows:

(Quantity)	Form (Number)
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**7.05** Table F provides a description of all forms associated with this plan.

**C. Requirements**

**7.06** Table G provides a list of all forms and their requirements for the Frame CMP, FFMP, the FPP and the Frame Performance Measurement Plan (FPMP).

DEFINITION OF TERMS

**BSP Requirements Are The Standard For Inspection Items**

**DISTRIBUTING FRAMES:** MDF, LDF, IDF, etc.

**EQUIPMENT FRAMES**

**WIRING BAYS:** N. G., BLK. RLY., TRANSL., NUMBER NETWORK, etc.

**JUMPER PLACEMENT:** The entire jumper has proper Slack, Dress and is using **Routing** rings and **Fanning** strips correctly. Count 1 item inspected per jumper. Count 1 item satisfactory only when the entire jumper meets requirements. If one end is incorrect the entire item is unsatisfactory.

**PROPER TERMINATION:** All leads in the jumper must be terminated per BSP. If both ends are examined, count 2 items inspected. Count 1 item satisfactory for each end of the jumper in which all leads are properly terminated, ie, **Max** satisfactory is 2 per jumper.

**JUMPER REMOVAL:** Jumper completely removed and related lugs at both ends of jumper cleaned. Count 1 item satisfactory only when **both** locations of previous termination are acceptable.

**T-ZONE:** **CAUTION** This inspection must be made as soon as possible following order completion to justify responsibility for any defects upon the frameworker under inspection. The maximum horizontal MDF T-Zone area shall be composed of three (3) zones as follows: (1) 20 rows of lugs to the left of the work location, (2) 20 rows of lugs to the right of the work location, (3) 20 rows of lugs immediately below the work location. On the vertical side of conventional frames (VMDF) the T-Zone area shall be composed of two (2) zones as follows: (1) 20 rows of lugs immediately above the work location, (2) 20 rows of lugs immediately below the work location. The T-Zone area shall be determined locally (See Section 201-200-013, paragraphs 3.13 and 3.14). Count 1 item per line inspected for each frame examined, ie, count 1 item per line satisfactory for each frame, irregardless of the number of jumpers or terminations found free of defects.

**TESTS:** Count 1 item inspected for each line requiring a test. Count 1 item satisfactory for each line having all required order completion tests performed.

**INTERCEPT:** Count 1 item inspected for each line examined. Count 1 item satisfactory for each line correctly intercepted.

**COILS AND SPECIAL PROTECTION:** Count 1 item inspected for each line examined. Count 1 item satisfactory if proper coils are in place and special protection, if required, is in use.

**RECORDS:** Count 1 item inspected per line examined. Count 1 item satisfactory only, when the service order, equipment transfer, etc, has been correctly signed off and logged by the frameperson.

**FILING:** Count 1 item for each order examined. Count 1 item satisfactory only when the service order, transfer, etc, has been filed in accordance with Section 201-200-010.

**FOLLOW UP REQUIRED:** A CHECK should be made in either the "yes" or "no" box on each work evaluation sheet. If follow up action is required, the "ADDITIONAL REMARKS" should be used for recording the appropriate information.

**DATE REVIEWED BY 2ND LEVEL:** This space is to be used by the manager for recording the date on which he/she evaluated those work items previously inspected by the supervisor.



**Frameworker Work Evaluation Sheet**

E-6954 (5-80)

EMPLOYEE		OFFICE		DATE	
DATE REVIEWED WITH EMPLOYEE		SUPERVISOR		<input type="checkbox"/> INSPECTION <input type="checkbox"/> OBSERVATION	

DISTRIBUTING FRAMES	ITEM COUNT	NO. ITEMS INSPECTED	NO. ITEMS SATIS.	SOURCE S.O. NO., ETC.	REMARKS
JUMPER PLACEMENT	1 PER JUMPER				
PROPER TERMINATION	2 PER JUMPER				
JUMPER REMOVAL	1 PER JUMPER				
T-ZONE	1 PER FRAME				

EQUIPMENT FRAMES & WIRE BAYS	ITEM COUNT	NO. ITEMS INSPECTED	NO. ITEMS SATIS.	SOURCE S.O. NO., ETC.	REMARKS
JUMPER PLACEMENT	1 PER JUMPER				
JUMPER REMOVAL	1 PER JUMPER				

OTHER	ITEM COUNT	NO. ITEMS INSPECTED	NO. ITEMS SATIS.	SOURCE S.O. NO., ETC.	REMARKS
TESTS	1 PER LINE				
INTERCEPT	1 PER LINE				
COILS AND SPECIAL PROTECTION	1 PER LINE				
RECORDS	1 PER LINE				
FILING	1 PER ORDER				
TOTAL					

FOLLOW UP REQUIRED	<input type="checkbox"/> YES <input type="checkbox"/> NO	DATE REVIEWED BY 2ND LEVEL
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ADDITIONAL REMARKS

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Fig. 1—Frameworker Work Evaluation Sheet and Definition of Terms—Form E-6954 (3.08, 3.10)

**FRAMEWORKER  
PERFORMANCE PLAN  
QUALITY**

E6955-B (9/79)

Employee: \_\_\_\_\_  
Months In Title: \_\_\_\_\_  
Shift: \_\_\_\_\_

Month \_\_\_\_\_ Year \_\_\_\_\_

Office: \_\_\_\_\_  
Supervisor: \_\_\_\_\_

Day	Col. A	Col. B	Col. C	Remarks
	Number Items Inspected	Number Found Satisfactory	Percent Found Satisfactory $\frac{\text{Col. B}}{\text{Col. A}} \times 100$	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
T				

Monthly % Satisfactory:  $\frac{\text{Total Col. B}}{\text{Total Col. A}} \times 100 = \underline{\hspace{2cm}}$

Fig. 2—Frameworker Performance Plan—Quality (3.10)

**SECTION 201-200-013**

**4.0 DISTG FRAMES**

**4.1 DISTG FRAMES; CONVENTIONAL**

FOR ALL UNITS

201-220-501	(1/0)	A	CROSS CONNECTION WIRES	MR *	----
		B	CONNECTIONS TO TERMINALS	MR *	----
		C	DISTRIBUTING RINGS & FANNING STRIPS	MR *	----
		D	TERM STRIP & LUGS	MR *	----
		E	CABLING	MR *	----
		F	JACK BOXES	MR *	----
		G	PROT SPGS, JK SPGS & PROT, JK, OR CONN LUGS	MR *	----
		H	PROTECTOR BLOCKS	MR *	----
		I	HEAT COILS	MR *	----
		J	BAT. & GRD BINDING POSTS	MR *	----
		K	GROUND CONNECTIONS	MR *	----
		L	MARKING & DESIGNATION CARDS	MR *	----
		M	S. O. CORD HOOKS	MR *	----
		N	S. O. & TEST CORDS	MR *	----
		O	MISSING & DEFECTIVE PARTS	MR *	----
		P	STORAGE CABINETS & END GUARD STG SPACES	MR *	----
		Q	SPECIAL SERVICE DEVICES	MW 6M	----
		R	REVERSE DEVICES	MR 2M	----
		S	TALK CIRCUITS	MR *	----
		T	ELECTRIC OUTLETS	MR *	----
		U	TESTING DEVICES	MR *	----

TROUBLE TESTS

201-206-501	(2/0)	A	RESISTANCE TEST	TT	----
		B	SHORT-CIRCUIT TEST	TT	----

**4.2 DISTG FRAMES; ESS TYPE MODULAR**

FOR ALL UNITS

201-221-501	(1/0)	A	CROSS CONNECTION WIRES	MR *	----
		B	CONNECTIONS TO TERMINALS	MR *	----
		C	FANNING STRIPS & WIRE RETAINERS	MR *	----
		D	CONNECTING BLOCKS & TERMINALS	MR *	----
		E	UPPER EXPRESS WIRE TROUGH	MR *	----
		F	LOWER EXPRESS WIRE TROUGH	MR *	----
		G	CABLING	MR *	----
		H	JACK PANELS	MR *	----
		I	JACKS	MR *	----
		J	CONNECTIONS & PROTECTORS	MR *	----
		K	BATTERY & GROUND TERMINALS	MR *	----

**Fig. 3—Equipment Test List Format (3.27, 3.35)**

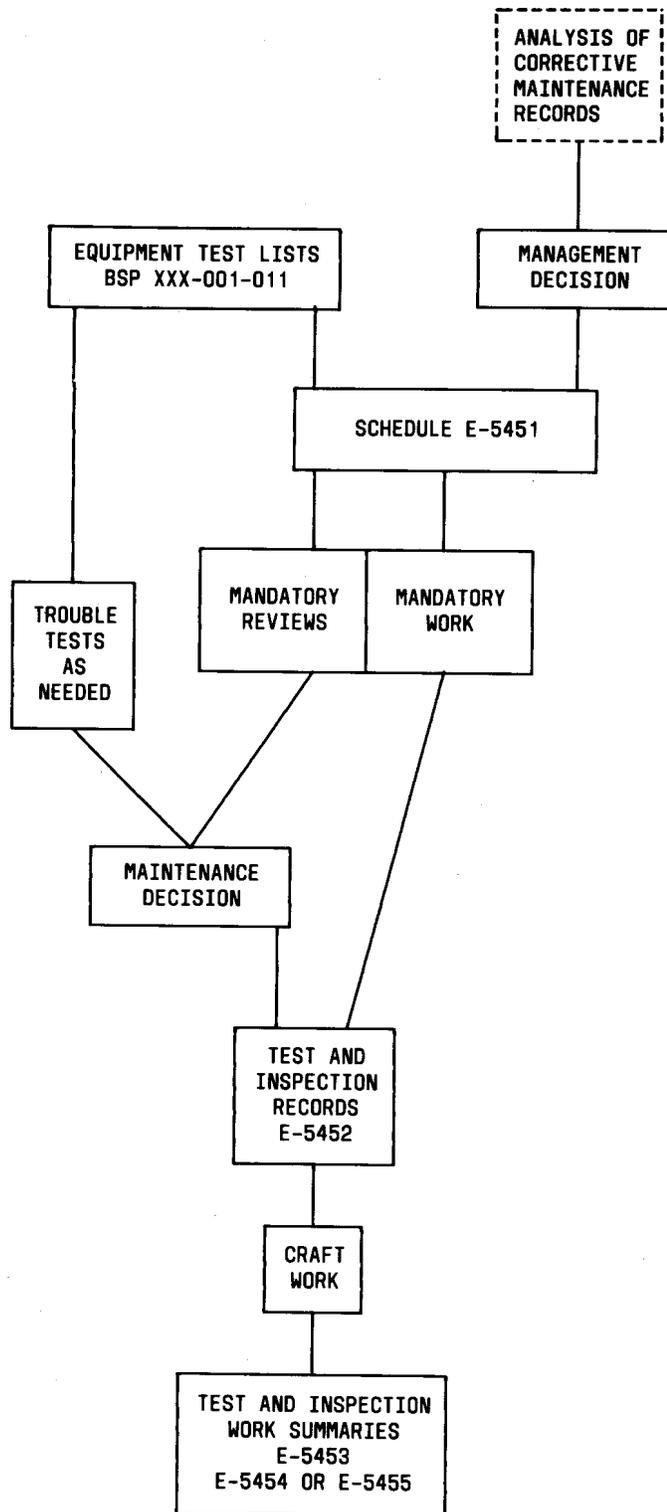


Fig. 4—Preventive Maintenance Diagram (3.27)







TEST AND INSPECTION SUMMARY

E-5453 (6-67)

OFFICE 267 ASSIGNMENT OR JOB NO. 3

BSP NO. <u>BSP-201-204-501</u> AND TEST LETTER OR PAR. <u>Test "I"</u>		WORK DESCRIPTION <u>Check for missing heat coils</u>			
EQUIPMENT <u>VM DF</u>					
FROM <u>VER 00</u>	TO <u>VER 39</u>	TOTAL UNITS <u>40</u>	TEST	ESTIMATED TIME	
			CLS	FREQ	PER UNIT
					<u>60</u> PER ASGN.
DATE <u>1-4-78</u>	WORK COMPL. <u>1-5-78</u>	BY <u>JRG</u>	TROUBLE <u>1</u>	TIME SPENT TEST <u>60</u> REPAIR <u>5</u>	
SUMMARY OF TESTS, INSPECTIONS, SAMPLES, REVIEWS					
<u>Replaced heat coils in CA/PR 201/1066</u>					
NOTE					
EXPLANATION					
A Designation of Central Office					
B Locally Assigned - Cross-reference to Equipment Test List					
C Test Reference Information					
D Description of Equipment					
E Show First and Last Unit of Equipment on this Assignment					
F Total Circuits Covered by this Assignment					
G Description of Test or Inspection					
H Test or Inspection Class and Frequency - From Equipment Test List					
I Estimated Test Time Per Unit and Assignment					
J Date E-5452 Issued and Date this Assignment Completed					
K Workman's Initials					
L Total Trouble Appearances - Taken From E-5452					
M Total Test and Repair Time - Taken From E-5452					
N Space for Summarizing Trouble Detail - Shown on E-5452 When Used					

Fig. 8—Test and Inspection Summary—Form E-5453 (3.42, 3.44)





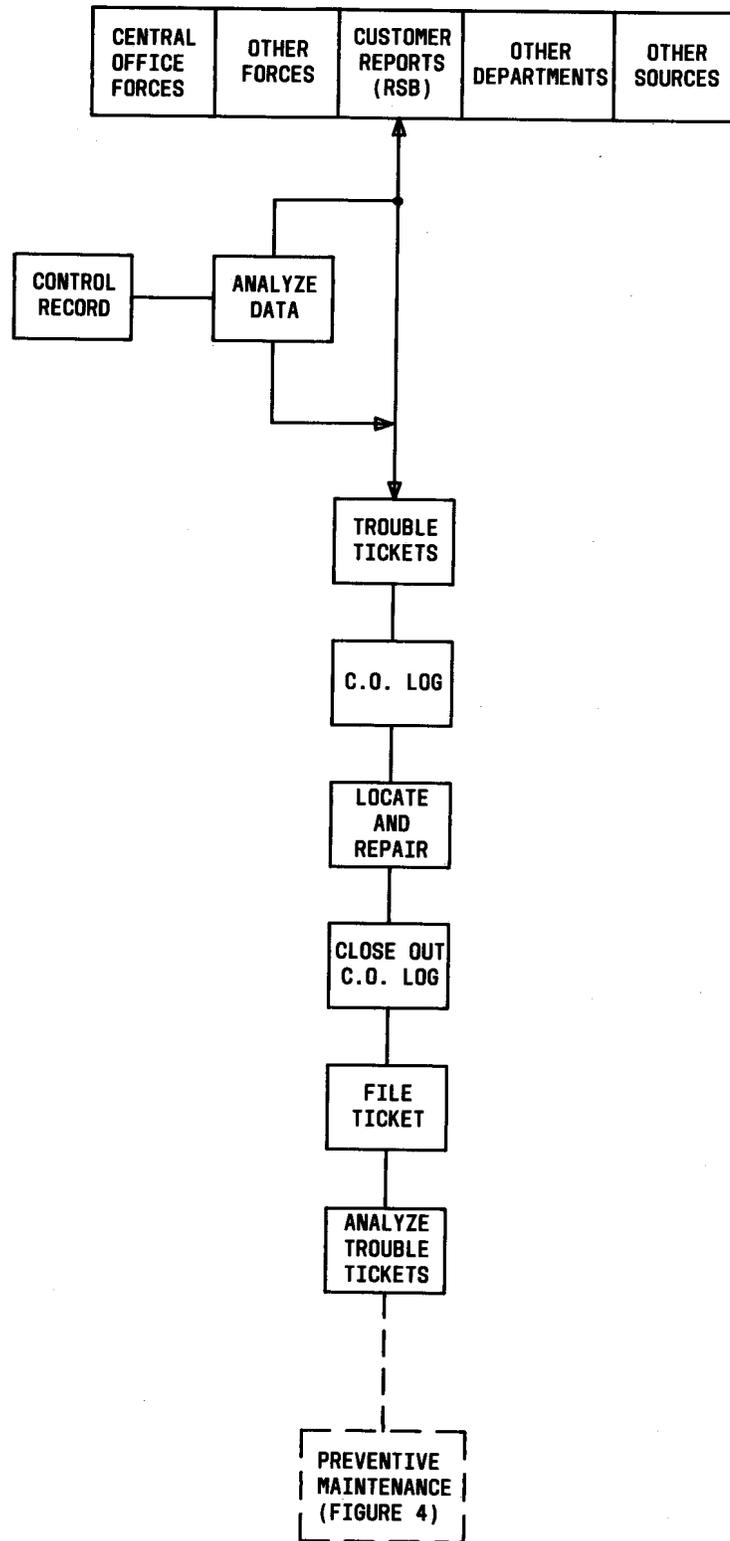


Fig. 11—Corrective Maintenance Diagram (4.02)



- 1 - DATE REPORT RECEIVED AT FRAME LOCATION
- 2 - CENTRAL OFFICE NAME OR FRAME DESIGNATION
- 3 - SERIAL NUMBER OF TICKET
- 4 - INITIALS OF PERSON REPORTING THE TROUBLE
- 5 - ORIGIN OF REPORT OR LOCATION OF PERSON MAKING REPORT
- 6 - CHECK "T" OR "MEMO"
- 7 - INITIALS OF PERSON RECEIVING REPORT
- 8 - TIME REPORT RECEIVED AT FRAME LOCATION. USE 24-HOUR CLOCK
- 9 - REPORT CLASS
- 10 - COMMITMENT TIME - TIME THAT THE REPAIR SERVICE BUREAU HAS COMMITTED AND GIVEN TO THE SUBSCRIBER TO HAVE SERVICE RESTORED.
- 11 - DETAILS OF TROUBLE REPORT (INCLUDE IF LINE IS OUT OF SERVICE)
- 12 - DETAILS OF ACTION TAKEN, INCLUDING REFERRALS
- 13 - INITIALS OF PERSON REFERRED TO PLUS DATE, TIME, AND THE TICKET NUMBER, IF TROUBLE IS REFERRED TO ANOTHER WORK FORCE
- 14 - INITIALS OF PERSON CLEARING TROUBLE AND PERSON REPORT CLEARED TO PLUS THE TIME
- 15 - DATE REPORT CLOSED OUT
- 16 - CENTRAL OFFICE CAUSE CODE  
NOTE: REFER TO THE CUSTOMER TROUBLE REPORT ANALYSIS PLAN (CTRAP), SECTION 660-100-013, OR THE TROUBLE REPORT EVALUATION AND ANALYSIS TOOL (TREAT), SECTION 660-169-013
- 17 - TIME SPENT ON THIS TROUBLE
- 18 - FOREMAN'S INITIALS UPON REVIEW OF TICKET
- 19 - CENTRAL OFFICE DISPOSITION CODE (SEE ITEM 16 - NOTE)
- 20 - FRAME DESIGNATION (ABBREVIATION) AND EXACT LOCATION.
- 21 - CROSS-CONNECTS - APPLIES TO THE FOLLOWING ITEMS WHEN TROUBLE IS ATTRIBUTED TO A CROSS-CONNECTION ON ANY C.O. DISTRIBUTING FRAME.
  - WRONG - CROSS-CONNECTION PLACED WRONG ON DISTRIBUTING FRAME
  - CUT - JUMPER CUT OFF IN ERROR
  - BROKEN - ADJACENT FRAME ACTIVITY, JUMPER FOUND TO BE BROKEN
  - LOOSE - TERMINATION IMPROPERLY MADE WHICH ALLOWS CONNECTOR TO BE OPEN
  - DISCONNECT - WHEN CROSS-CONNECTION HAS ACTUALLY BEEN DISCONNECTED OR IS MISSING
- 22 - TERMINAL - WHEN TROUBLE IS LOCATED ON FRAME TERMINAL AND IS ATTRIBUTED TO ONE OF THE FOLLOWING ITEMS:
  - SOLDER CROSS - WHEN SOLDER IS FOUND TO CAUSE A SHORT CIRCUIT BETWEEN ADJACENT TERMINALS
  - WIRE CROSS - WHEN WIRE IS FOUND TO CAUSE A SHORT CIRCUIT BETWEEN ADJACENT TERMINALS
  - OTHER - ALL OTHER CASES OF TROUBLES
- 23 - INTERCEPT - ANY TIME TROUBLE IS CORRECTED BY REPAIRING INTERCEPT WIRING OR REPLACING INTERCEPT STRAP OR TOOL
- 24 - PROTECTION - WHEN TROUBLE IS FOUND TO BE ATTRIBUTED TO ONE OF THE FOLLOWING ITEMS OF PROTECTION:
  - COILS OUT - WHEN COILS ARE FOUND TO BE UNPLUGGED OR PULLED OUT
  - COILS OTHER - WHEN COILS ARE FOUND TO BE DAMAGED, IMPROPERLY PLACED, ETC
  - CARBONS - WHEN CARBONS ARE BURNT, BROKEN, IMPROPERLY PLACED, ETC
- 25 - ORDER ERROR - WHEN THE FRAME WORK DOCUMENT CONTAINS INFORMATION WHICH MISGUIDES OR MISDIRECTS THE WIRING AND RESULTS IN A SUBSCRIBER CIRCUIT BEING REMOVED FROM SERVICE IN ERROR. THE FRAME WORK DOCUMENT MAY BE SERVICE ORDERS, CABLE TRANSFERS AND OTHER WORK ORDERS

TEL NO.	LINE EQUIP.	E-10260 (8/80)			FRAME
		DISTRIBUTING FRAME TROUBLE TICKET			(20)
CA. & PR./ASSOC. EQUIP.	OTHER EQUIP.	DATE ①	FRAME LOC. ②	TKT NO. ③	
DETAILS OF REPORTED TROUBLE ⑪	REPT BY ④	LOC ⑤	T M ⑥	CROSS-CONNECTS	WRONG
	RCVD BY ⑦	TIME ⑧	CLASS ⑨		COMMITMENT TIME ⑩
ACTION TAKEN AND RESULTS OBTAINED ⑫	REFERRED			TERM	BROKEN
	TO ⑬	TIME	DATE		TKT NO.
	CLEARED			PROT.	DISCONNECT
	BY ⑭	TO	TIME		DATE
WK TIME ⑰	FMN CK ⑱	DISPOSITION CODE ⑲		SOLDER CROSS	
				WIRE CROSS	
				OTHER	
				INTERCEPT	
				COILS-OUT	
				COILS-OTHER	
				CARBONS	
				ORDER ERROR	

Fig. 13—Distributing Frame Trouble Ticket (4.10)

TEL NO. <b>565-3449</b>	LINE EQUIP. <b>17-82</b>	E-10260 (8/80)			FRAME
DISTRIBUTING FRAME TROUBLE TICKET					
CA. & PR./ASSOC. EQUIP. <b>14/394</b>	OTHER EQUIP.	DATE <b>6/6/80</b>	FRAME LOC. <b>DOWNTOWN</b>	TKT NO. <b>1</b>	<b>HMDF</b> <b>17-82</b>
DETAILS OF REPORTED TROUBLE <b>NDT O/S</b> <b>TEST RING SIDE</b> <b>OPEN IN</b>		REPT BY <b>CFV</b>	LOC <b>LTD</b>	T <input checked="" type="checkbox"/>	CROSS-CONNECTS
		M <input type="checkbox"/>			
ACTION TAKEN AND RESULTS OBTAINED <b>RING JUMPER</b> <b>NOT SOLDERED AT</b> <b>HMDF -</b> <b>SOLDERED -</b> <b>RETEST OK</b>		RCVD BY <b>WJB</b>	TIME <b>1010</b>	CLASS <b>A</b>	COMMITMENT TIME <b>12:00</b>
		REFERRED			
		TO	TIME	DATE	TKT NO.
		CLEARED			CAUSE CODE
		BY <b>WJB</b>	TO <b>KLH</b>	TIME <b>10:25</b>	DATE <b>6/6/80</b>
		DISPOSITION CODE <b>0534</b>			
		WK TIME <b>15 min.</b>	FMN CK <b>DLS</b>		
		PROT.			
		TERM			
		CROSS-CONNECTS			
		WRONG			
		CUT			
		BROKEN			
		LOOSE			
		DISCONNECT			
		SOLDER CROSS			
		WIRE CROSS			
		OTHER			
		INTERCEPT			
		COILS-OUT			
		COILS-OTHER			
		CARBONS			
		ORDER ERROR			

A customer reports "no dial tone." The test center tests one side open in the central office and refers the trouble to the frame for correction. Investigation of the frame connections discloses that the ring side had not been soldered on the HMDF. The connection is repaired and the ticket closed out to the test center.

Fig. 14—"T" Ticket—Wiring CO Force (4.13)

TEL NO. <b>263-1006</b>	LINE EQUIP. <b>06-07-09</b>	E-10260 (8/80)			FRAME
DISTRIBUTING FRAME TROUBLE TICKET					
CA. & PR./ASSOC. EQUIP. <b>3/418</b>	OTHER EQUIP.	DATE <b>6/7/80</b>	FRAME LOC. <b>UPTOWN</b>	TKT NO. <b>2</b>	
DETAILS OF REPORTED TROUBLE <b>NDT O/S</b> <b>TEST OPEN</b> <b>"OUT"</b>		REPT BY <b>ABC</b>	LOC	T <input checked="" type="checkbox"/>	CROSS-CONNECTS
		M <input type="checkbox"/>			
ACTION TAKEN AND RESULTS OBTAINED <b>MISSING HEAT COILS</b> <b>ON VMDF. COILS WERE</b> <b>REMOVED PER AC</b> <b>ON LTD @ 1210</b> <b>SEE E-6625 DATED</b> <b>6-7-80</b>		RCVD BY <b>EAP</b>	TIME <b>1330</b>	CLASS <b>A</b>	COMMITMENT TIME <b>1530</b>
		REFERRED			
		TO	TIME	DATE	TKT NO.
		CLEARED			CAUSE CODE
		BY <b>EAP</b>	TO <b>ABC</b>	TIME <b>1340</b>	DATE <b>6-7-80</b>
		DISPOSITION CODE <b>0531</b>			
		WK TIME <b>10 min.</b>	FMN CK <b>BT</b>		
		PROT.			
		TERM			
		CROSS-CONNECTS			
		WRONG			
		CUT			
		BROKEN			
		LOOSE			
		DISCONNECT			
		SOLDER CROSS			
		WIRE CROSS			
		OTHER			
		INTERCEPT			
		COILS-OUT			
		COILS-OTHER			
		CARBONS			
		ORDER ERROR			

Customer reports "no dial tone." Testman tests line open out and asks for a cord on cable pair at VMDF. Investigation by frame worker discloses that the heat coils are missing from pair. After checking the daily "speaker activity log," he discovers that the coils were removed per "AC" on LTD.

Fig. 15—"T" Ticket—Protection Other Force (4.13)

TEL NO. 563-1456	LINE EQUIP. 842-05	E-10260 (8/80)			FRAME	
DISTRIBUTING FRAME TROUBLE TICKET					HMDF 842-05	
CA. & PR./ASSOC. EQUIP.	OTHER EQUIP.	DATE 6/7/80	FRAME LOC. 2nd Ave.	TKT NO. 3		
DETAILS OF REPORTED TROUBLE NDT O/S S/C IN		REPT BY GW	LOC LTD	T <input checked="" type="checkbox"/>	CROSS-CONNECTS	
		M <input type="checkbox"/>				
ACTION TAKEN AND RESULTS OBTAINED SOLDER CROSS HMDF		RCVD BY TM	TIME 0930	CLASS A	COMMITMENT TIME 1135	
		REFERRED				
		TO	TIME	DATE	TKT NO.	TERM
		CLEARED				
		BY TM	TO GW	TIME 10:00	DATE 6/7/80	CAUSE CODE 150
		WK TIME 30 min.	FMN CK WM	DISPOSITION CODE 0535		
					PROT.	
					WRONG	
					CUT	
					BROKEN	
					LOOSE	
					DISCONNECT	
					SOLDER CROSS <input checked="" type="checkbox"/>	
					WIRE CROSS	
					OTHER	
					INTERCEPT	
					COILS-OUT	
					COILS-OTHER	
					CARBONS	
					ORDER ERROR	

Customer report of "no dial tone" is referred to frame. The trouble is a solder cross on the HMDF.

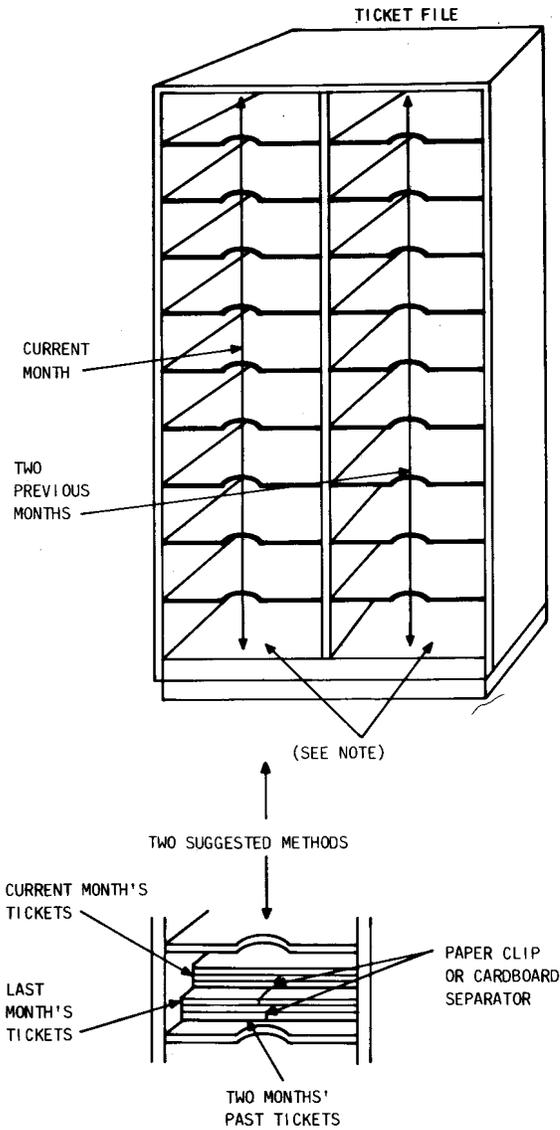
Fig. 16—"T" Ticket—Wiring Environment (4.13)

TEL NO. 565-3449	LINE EQUIP. 117-08	E-10260 (8/80)			FRAME	
DISTRIBUTING FRAME TROUBLE TICKET					NTF	
CA. & PR./ASSOC. EQUIP.	OTHER EQUIP.	DATE 6/8/80	FRAME LOC. MADISON	TKT NO. 4		
DETAILS OF REPORTED TROUBLE UNABLE TO MAKE "DDD" CALLS AT TIMES. OPERATOR ASKS FOR CALLING NUMBER TEST OK		REPT BY KC	LOC LTD	T <input checked="" type="checkbox"/>	CROSS-CONNECTS	
		M <input type="checkbox"/>				
ACTION TAKEN AND RESULTS OBTAINED VERIFIED ALL WIRING ON LDF AND ON THE ANI NUMBER NETWORK WITH NTF		RCVD BY DC	TIME 1010	CLASS A	COMMITMENT TIME 1130	
		REFERRED				
		TO	TIME	DATE	TKT NO.	TERM
		CLEARED				
		BY DC	TO KG	TIME 1025	DATE 6/8/80	CAUSE CODE 150
		WK TIME 15 min.	FMN CK EF	DISPOSITION CODE 0810		
					PROT.	
					WRONG	
					CUT	
					BROKEN	
					LOOSE	
					DISCONNECT	
					SOLDER CROSS	
					WIRE CROSS	
					OTHER	
					INTERCEPT	
					COILS-OUT	
					COILS-OTHER	
					CARBONS	
					ORDER ERROR	

Customer reports "unable to make DDD calls at times, operator intercepts and asks for calling number." Testman is able to make DDD calls on this number ok. However, he requests that all the associated wiring be checked. The frame worker's investigation discloses that both the "IDF" and "ANI NN" frame connections are proper.

Fig. 17—"T" Ticket—No Trouble Found (4.13)





TICKET FILE ORDERING INFORMATION:  
 (QUANTITY) - TICKET ANALYSIS FILE - DRAWING 38-Y-3868  
 (QUANTITY) - SNAP ON 8G DESIGNATION STRIP,  
 TICKET ANALYSIS FILE - DRAWING 38-Y-3868  
 (QUANTITY) - DIVIDER, TICKET ANALYSIS FILE, DRAWING 38-Y-3868

NOTE:  
 EACH BIN SHOULD CONTAIN A  
 MAJOR ITEM OF EQUIPMENT (I.E.  
 VMDF, HMDF, NGF, TRNSL, ETC.)

Fig. 19—Trouble Ticket File (4.24, 4.25)

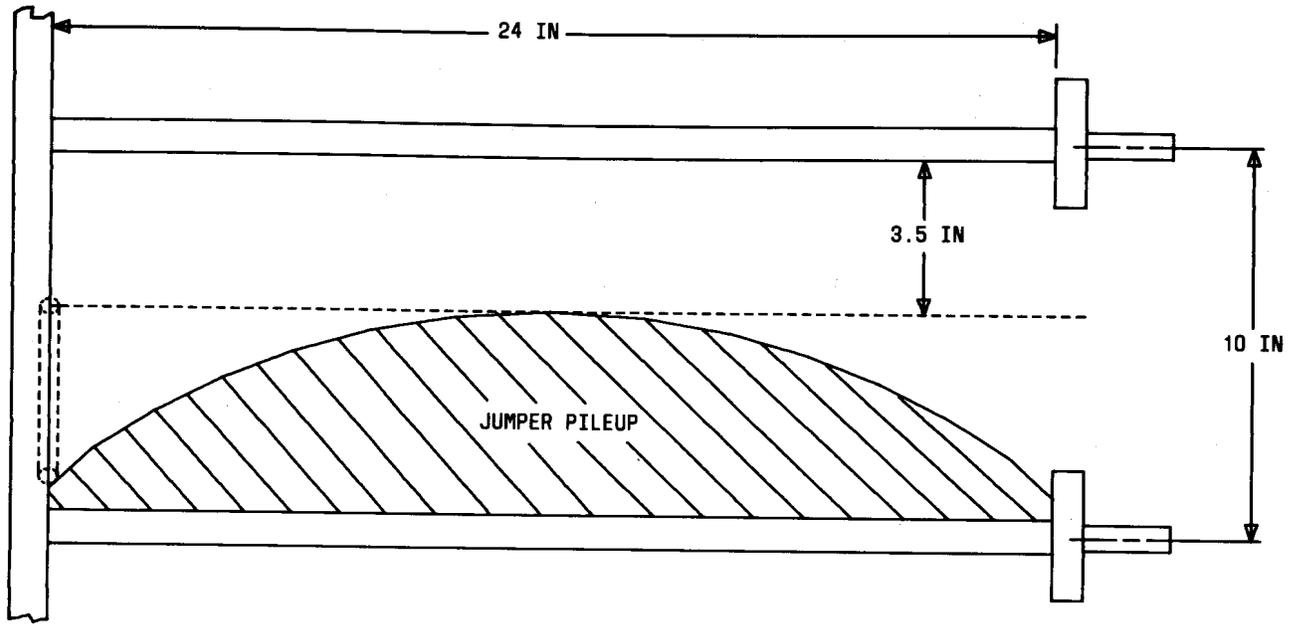


Fig. 20—Maximum Jumper Pileup on Horizontal Shelves of a Conventional MDF (5.09)

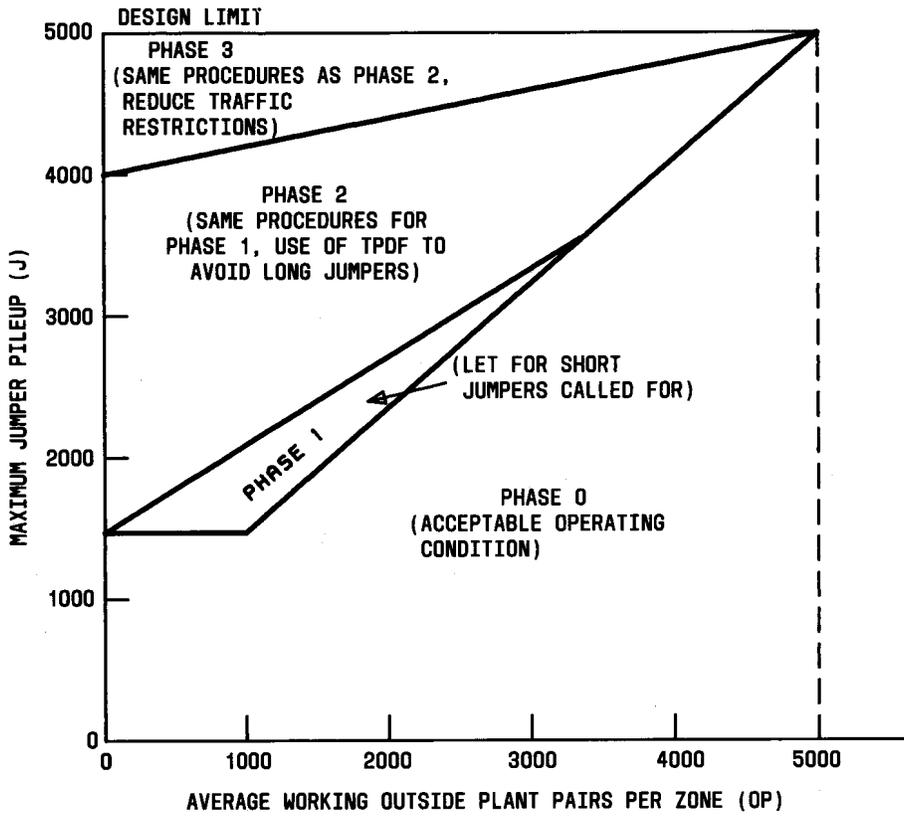


Fig. 21—COSMIC Frame System Design Curves and Phase Regions (5.09)

COSMIC AND MODULAR					
TRANSACTION	FREQUENCY	ACTION TAKEN	RETENTION	NOTES	REMARKS
JPR	MONTHLY	<u>TRACK</u> - SHORT JUMPER SUCCESS RATE BY LINE UP <u>ANALYZE</u> - FOR SIGNIFICANT TRENDS	1 YEAR	1	
FJC	QUARTERLY	<u>ANALYZE</u> - FOR SIGNIFICANT TRENDS	LIFE OF FRAME	1	
NJV	QUARTERLY	<u>ANALYZE</u> - FOR SIGNIFICANT TRENDS	LIFE OF FRAME	1	
CPR	MONTHLY	<u>TRACK</u> - PHASE NUMBER <u>GRAPH</u> - JUMPER BUILDUP IN RELATION TO TIE PAIR USAGE AND "M" NUMBER	1 YEAR	1	
TPU	MONTHLY	<u>GRAPH</u> - WORKING IN RELATION TO CPR DATA (ABOVE) AND "M" NUMBER <u>TRACK</u> - % SPARE FOR ALL FRAME COMBINATIONS	UNTIL NEXT TIE PAIR ADDITION		
TSR	QUARTERLY	<u>ANALYZE</u> - FOR SIGNIFICANT TRENDS	LIFE OF FRAME		
ESR	MONTHLY	<u>TRACK</u> - "M" NUMBER	NONE		
DBG	MONTHLY	<u>RESOLVE</u> - ERRORS	NONE	2	
VER	MONTHLY TO QUARTERLY	<u>VERIFY</u> - CIRCUITS (DONE BY FRAME)	NONE	2	
LPO	MONTHLY	<u>TRACK</u> - NUMBER OF ORDERS 3 DAYS OVERDUE, WITHOUT FRAME COMPLETION	NONE		
LXC	AS NEEDED	<u>PRINT</u> - LONG JUMPERS USE WHEN CPR PHASE NO. 1. USE FJC AND JPR TO PINPOINT PROBLEM AREAS	NONE		
TOM	MONTHLY	NO ACTION NECESSARY	NONE	2	
CONVENTIONAL FRAMES (ZONED)					
MJR	MONTHLY	<u>TRACK</u> - SHORT JUMPER SUCCESS RATE BY ZONE <u>ANALYZE</u> - SIGNIFICANT TRENDS	1 YEAR	2	

NOTES: 1. RUN AFTER TOM IS RUN.  
2. HAVE RUN BY DATA BASE MANAGER.

Fig. 22—COSMOS Frame Management Reports (5.09)

REFERENCE: BSP 201-200-013

FRAME TRACKING

(REPRODUCE LOCALLY)

WIRE CENTER \_\_\_\_\_ FRAME \_\_\_\_\_ # MODS \_\_\_\_\_ # LINEUPS \_\_\_\_\_

JUMPER MANAGEMENT	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
	CPR PHASE NUMBER												
JPR % SHORT JUMPER													
LPO # ORDERS													
OVERDUE OVER 3													
DAYS W/O FRAME													
COMP.													
TPU % SPARE													
C1 - C2													
C1 - M1													
C1 - M2													
ESR "M" NUMBER													
DIP OPTION													
% MS FILL													
(ACTUAL)													
DIP MANAGEMENT													
UDP     CLF													
RLF													
ECS													
JL													

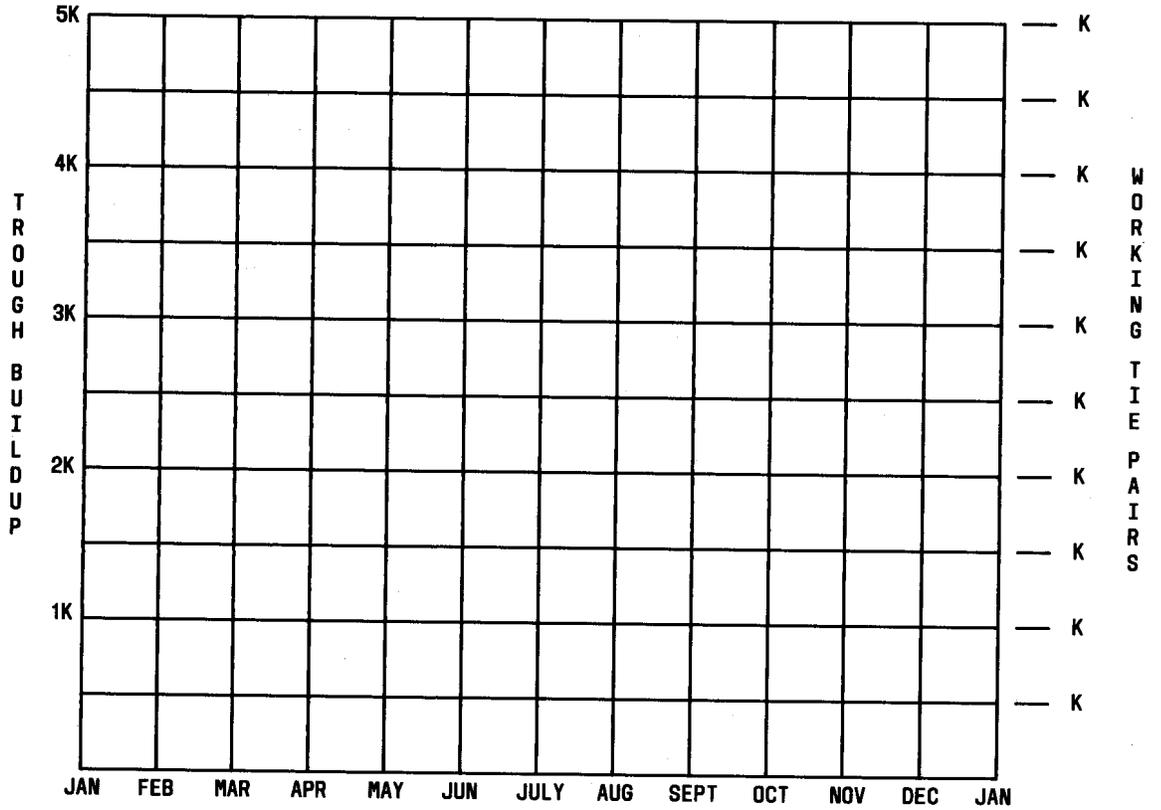
Fig. 23—Form Used for Tracking Frame Items (5.09)

REFERENCE: BSP 201-200-013

(REPRODUCE LOCALLY)

WIRE CENTER \_\_\_\_\_ FRAME \_\_\_\_\_ TPDF TIE PAIRS \_\_\_\_\_ [MAX]

YEAR \_\_\_\_\_ #MODS \_\_\_\_\_ # LINE UPS \_\_\_\_\_



"M" NUMBER \_\_\_\_\_

- JUMPER BUILDUP
- ✂ TIE PAIRS

Fig. 24—COSMIC Congestion (5.09)

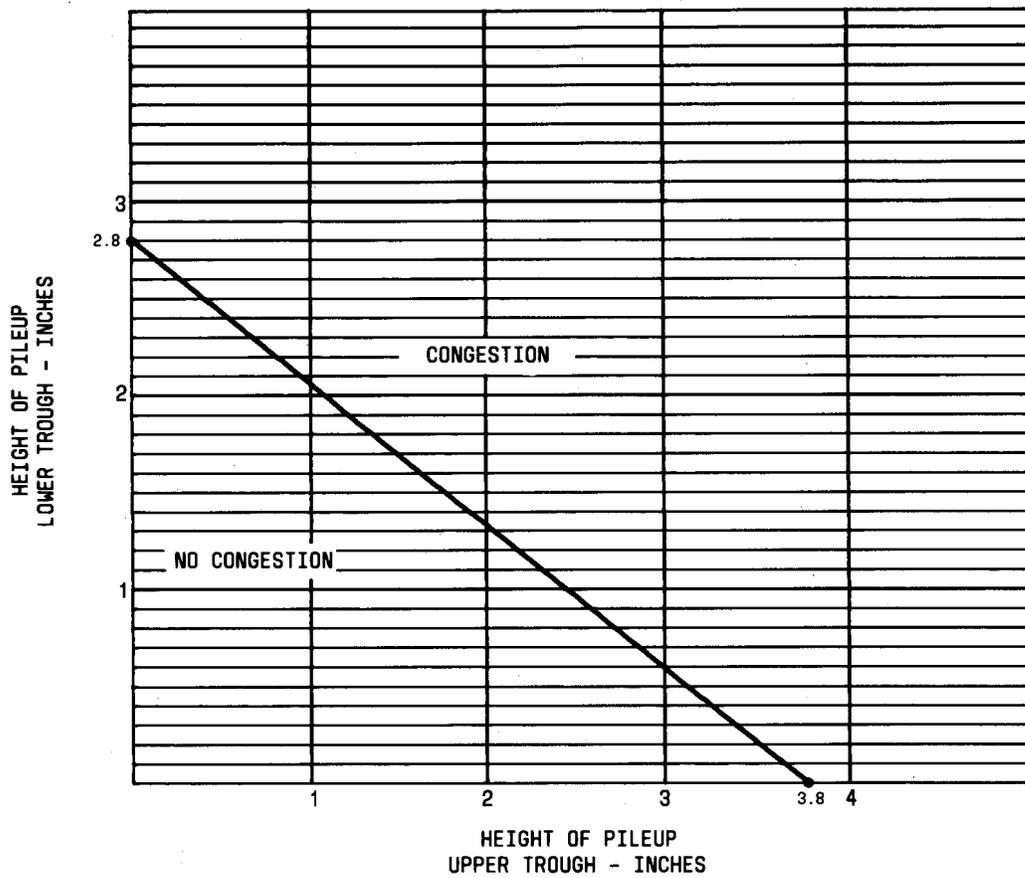


Fig. 25—Graph for Determining COSMIC Frame (Without COSMOS) Congestion (5.09)

## SAMPLE VER WORKSHEET

CIRCUIT NO.           ①  
                          1

          ②           ③           ④           ⑤           ⑥           ⑦           ⑧  
          CKT      TN-OE   CP-TN      CP-OE      CP       OE       TN

  W S      W S      W S

          ⑨  
COMMENT:

⑩  
CIRCUIT FOR CP 4909-1839

TN    985-0089  
      ST WK  
      TYPE X

OE    013-02-54  
      ST WK  
      FR LOC WM1001  
      CS 1FR  
      US 1FR  
      FEA TNNL

CP    4909-1839  
      ST WK  
      DATE 03/12/79  
      FR LOC WM1001

## NOTES FOR SAMPLE VER WORKSHEET

- ① Number of the sample circuit chosen by VER (1-150).
- ② Total circuit accuracy. All physical relationships on the MDF must match COSMOS. Place a ✓ if correct, X if discrepancy.
- ③ TN-OE accuracy. ANA result from the horizontal MDF.
- ④ CP-TN accuracy. ANA result from the vertical MDF.
- ⑤ CP-OE accuracy. If either the TN-OE or CP-TN relationship prove discrepant, this relationship must also be a discrepancy.
- ⑥ CP W/S status matches with COSMOS. Circle the status if correct, X if discrepancy. The facility can be shown correct as working even if it is working on a TN other than shown in COSMOS.
- ⑦ OE W/S status matches with COSMOS.
- ⑧ TN W/S status matches with COSMOS.
- ⑨ Comment space to explain discrepancies and perform LAC and RSB record checks.
- ⑩ Entire circuit relationship for the selected facility.

Fig. 26—Sample VER Work Sheet (5.13)

## EXAMPLE OF VERIFICATION RESULTS

CIRCUIT NO. 1						
CKT	TN-OE	CP-TN	CP-OE	CP	OE	TN
✓	✓	✓	✓	W S	W S	W S

COMMENT: All facility associations and related data are correct.

CIRCUIT NO. 2						
CKT	TN-OE	CP-TN	CP-OE	CP	OE	TN
X	✓	✓	✓	W S	W S	W S

COMMENT: All facility associations correct. Related data are incorrect. The comment section should be used to note the incorrect data, (eg, wrong intercept, improper protection, etc).

CIRCUIT NO. 3						
CKT	TN-OE	CP-TN	CP-OE	CP	OE	TN
✓				W S	W S	W S

COMMENT: Spare cable pair (as listed by COSMOS) was spare on the frame and status was correct. Note that this is considered a correct "circuit".

CIRCUIT NO. 4						
CKT	TN-OE	CP-TN	CP-OE	CP	OE	TN
X				W S	W S	W S*

COMMENT: Spare telephone number listed by COSMOS was not spare. Note that this is considered an incorrect "circuit".

CIRCUIT NO. 5						
CKT	TN-OE	CP-TN	CP-OE	CP	OE	TN
X	✓	X	X	W S	W S	W S

COMMENT: Cable pair listed by COSMOS was not part of this circuit but it was a working pair.

CIRCUIT NO. 6						
CKT	TN-OE	CP-TN	CP-OE	CP	OE	TN
X	✓	X	X	**W S	W S	W S

COMMENT: Same as Circuit 5 except cable pair listed by COSMOS as part of working circuit was actually spare on the frame.

- \* X is struck over S.
- \*\* X is struck over W.

Fig. 27—Example of Verification Results (5.13)

**TABLE A**  
**REPORT CLASSIFICATIONS**

The major sources of trouble reports are assigned the following alphabetical designations for ease in identifying report sources on trouble tickets.		
TYPE OF TICKET	REPORT CLASS	REPORT SOURCE
T	A	Repair Service Bureau
T	B	Network Administration/Operators Services
T	C	Sender or Originating Register
T	D	Alarm
T	E	Trouble Recorder, Trouble Indicator, Tbl. Ticketer
T	J	Other Office or Other Sources of Report
Memo	No Class	All "Memo" Tickets

TABLE B

## CODING "T" TICKETS

TROUBLE CODING SPACES		SITUATIONS
Frame		Enter frame type and location (see Table C for abbreviations) for cases of found trouble and for cases where trouble disappears. If frame is not determined or no trouble is found, enter NTF. Enter Ref. Out (Referred Out) when trouble is referred to another office, PSC, or testboard.
Score one of the following for each case of found trouble.		
Cross-connects	Wrong	Score one when a cross-connection has been determined to be in fault. It may have been placed wrong, cut off due to error, accidentally broken, improperly made connection, or totally disconnected.
	Cut	
	Broken	
	Disconnect	
Terminal	Solder Cross	Score one when the trouble has been determined to be located on the frame terminal (such as solder shorting two terminals, etc).
	Wire Cross	
	Other	
Intercept		Any time trouble is corrected by repairing intercept wiring or replacing intercept strap or tool.
Protection	Coils Out	Score one for troubles caused by open, grounded, missing, short circuited protection units (heat coils, carbons, etc).
	Coils Other	
	Carbons	
Order Error		Score when the frame work document (such as service orders, cable transfers, or other work orders) has misguided or misdirected the wiring and it results in a subscriber circuit being removed from service due to error.

**TABLE C**  
**DISTRIBUTING FRAME COMPONENT DESIGNATIONS**

COMPONENT (FRAME TYPE)	ABBR.
Main Distributing Frame	MDF
Vertical Side of Main Distributing Frame	VMDF
Horizontal Side of Main Distributing Frame	HMDF
Toll Distributing Frame	TDF
Trunk Distributing Frame	TRDF
Circuit Distributing Frame	CDF
Line Distributing Frame	LDF
Intermediate Distributing Frame	IDF
Block Relay Frame	BRF
Number Group Frame	NGF
Translator Frame	TRNSL
Message Register Distributing Frame	MRDF
ANI Number Network Frame	ANI
Assignment Distributing Frame	ADF
Traffic Register Frame	TRF
Protector Frame	PF

TABLE D

THRESHOLDS FOR APPLICATION OF CORRECTIVE ACTION AND PREVENTIVE MEASURES

**CORRECTIVE ACTION DEFINITIONS**

- \*\* A Compare OE spare list with ESS dump, 5XB number group frame, 1XB block relay frame, or SXS IDF.
- B Compare CP spare list with cable book (ECCR).
- \*\* C Compare CP spare list with MDF appearances.
- D Compare nonworking TN list with intercept records.
- \*\* E Compare nonworking TN list with ESS dump or electro-mechanical frame appearances.
- \*\* F Compare TP spare list with MDF appearances.
- \*\* G Compare spare list for miscellaneous facilities with MDF.
- \*\* H Compare TN-OE list with ESS dump or translator frame wiring.
- \*\* I Compare CP-OE list with MDF wiring.
- \*\* J Compare CP-TN list with TSPS or ANI.
- \*\* K Compare CP-TN-OE list with UNCORK or complete MDF verification.
- L Compare TN-FEA-US list with accounting.

**PREVENTIVE MEASURES DEFINITIONS**

- S Dial telephone numbers before applying spare status.
- \*\* T Prewired test of assigned facilities.
- U Post completion validation of maintenance changes, cable transfers, and line equipment transfers.
- V Post completion validation of service orders.

\*\* Items which affect frame.

APPLICATION THRESHOLD	OVERALL CKT	CIRCUIT			WORKING-SPARE			
		TN/OE	CP/TN	CP/OE	CP	OE	TN	
100	I							
99								
98								
97								
96								
95	V	UV	UV	T	T	S V D E		
94				II	V		V	V
93							H	J
92	III	A-L*	K	K	K			
91								
90								
89								
88								
87	IV	K						
86								
85								
84								
83								
82								
81								
80								

- I Good Operations Environment
- II Preventive Measures Required
- III Selective Corrective Action Warranted
- IV Severe Corrective Action Required

\* One or more of A-L depending on which category is the chief contributor to the error rate.

- TN Telephone Number
- OE Office Equipment
- CP Cable Pair

TABLE E

## FREQUENCY AND SIZE OF VER RUNS

MOST RECENT OVERALL CIRCUIT ACCURACY	SAMPLING FREQUENCY	NUMBER OF VER RUNS PER SAMPLE
98-100	Every 3 months	1
95-97	Every 2 months	1
91-94	Every 2 months	2
86-90	Every month	2
81-85	Every month	3
80 or less	Every month	4

**TABLE F**  
**FORM DESCRIPTIONS**

FORM	TITLE	SIZE (INCHES)	PAPER STOCK	MARGIN/PUNCH	FORMS PER PACKAGE
E-5450	Equipment Test List	8-3/8 × 10-7/8	Bond	Right/7 Hole	50
E-5451	Preventive Maintenance Schedule	11 × 7	Bond	Standard/7 Hole	50
E-5452	Test and Inspection Work Order & Record	8-3/8 × 10-7/8	Bond	Standard/7 Hole	50
E-5453	Test and Inspection Summary	8-3/8 × 10-7/8	Bond	Standard/7 Hole	25
E-5454	Test and Inspection Summary	5 × 8	Card	None	25
E-5455	Test and Inspection Summary Multiple Assignments	11 × 17	Bond	Standard/7 Hole	25
E-5457	Central Office Log	8-3/8 × 10-7/8	White	None	50
E-5497	Frame Control Record	8-3/8 × 10-7/8	Bond	None	50
E-6951	Frameworker Work Evaluation Sheet	8-3/8 × 10-7/8	Bond	Standard/7 Hole	50
E-6955-A E-6955-B	Frameworker Performance	8-3/8 × 10-7/8	Bond	Standard/7 Hole	25
E-10260	Distributing Frame Trouble Ticket	3-1/2 × 6-1/2	White	None	50

**TABLE G**  
**FORM REQUIREMENTS**

PLAN	FORM	FORM NAME	FORCE SIZE		
			0 - 1	2 - 3	4+
Frame Force Management (201-200-010)	E-5497	Frame Control Record	CC	X	X
	E-5848	Work Assignment List	X	X	X
	E-6619	Daily Forecast	N	O	X
	E-6619-1	Daily Forecast	N	O	O
	E-6620	Loading Sheet	N	N	O*
	E-6843	Load and Work Time Record	X	X	X
	E-6622	Frame Activity Log	X	X	X
	E-6623	Other Work Log	O	O	O
	E-6624	Control Form Daily Log	O	X	X
	E-6625	Speaker Activity Log	O†	O†	O†
	Reproduce Locally	Time Study	O	O	O
	Reproduce Locally	Time Study Summary	O	O	O
	Reproduce Locally	Pricing Chart	O	O	O
	Reproduce Locally	Forecasted Nonorder Pricing	O	O	O
Controlled Maintenance Plan (201-200-013)	E-5450	Equipment Test List	N	X	X
	E-5451	Preventive Maintenance Schedule	X	X	X
	E-5452	T&I Work Order	X	X	X
	E-5453	T&I Summary (Sheet)	X	X	X
	E-5454	T&I Summary (Card)	O	O	O
	E-5455	T&I Multiple Assignments	O	O	O
	E-5457	Central Office Log	X	X	X
	E-6954	Work Evaluation Sheet	X	X	X
	E-10260	Trouble Ticket	O	X	X
Frameworker Performance Plan (201-200-014)	E-6955-A	Performance-Productivity	X	X	X
	E-6955-B	Performance-Quality	X	X	X
Frame Performance Measurement Plan (201-200-005)	E-10341	Frame Unit Report	O	O	X
	E-10342	Performance Summary	O	O	X

**LEGEND:**

N: Not Required

X: Required

CC: Maintained in Control Center

O: Optional and recommended

\*: A Form E-6620 or a Form E-6843 should be maintained

†: Form E-6622 is used if E-6625 is not used.

*Note:* Some forms shown as optional may have a similar form used for central office technicians which may include frame attendants.

SECTION 201-200-013

REFERENCE: BSP 201-200-013

(REPRODUCE LOCALLY)

FRAME TRACKING

WIRE CENTER \_\_\_\_\_ FRAME \_\_\_\_\_ # MODS \_\_\_\_\_ # LINEUPS \_\_\_\_\_

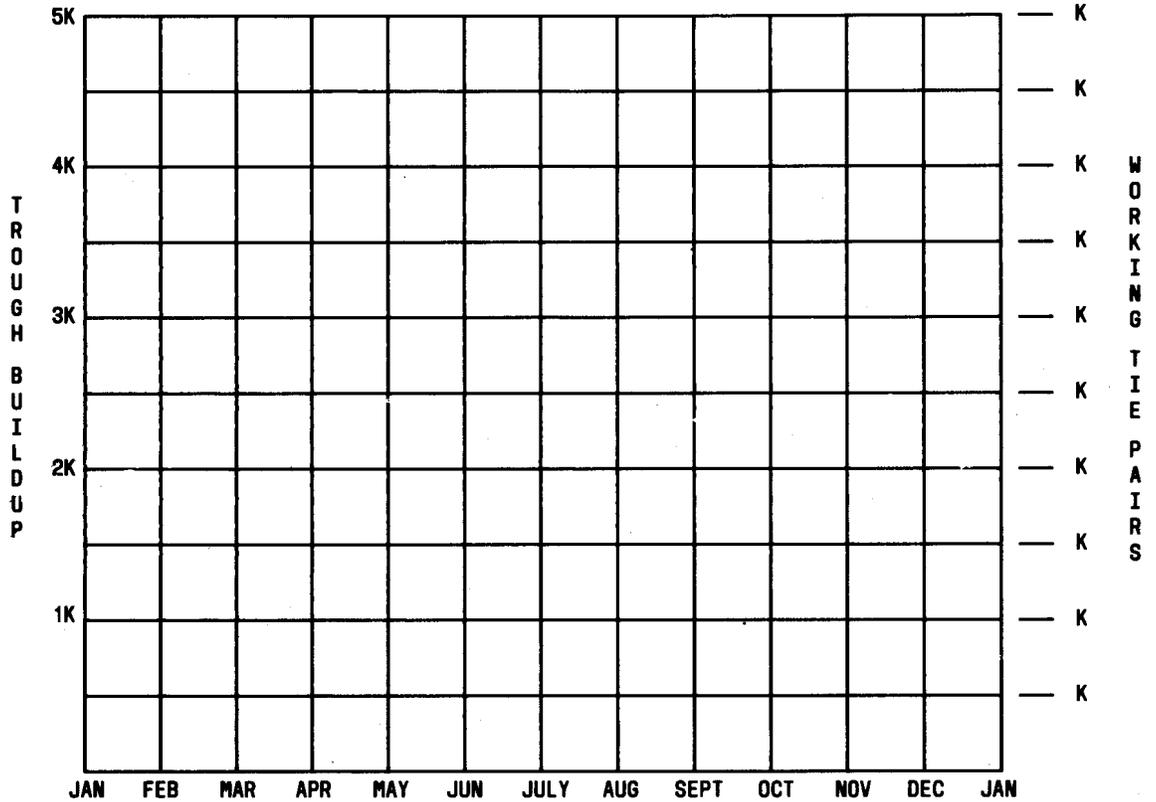
JUMPER MANAGEMENT													
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
CPR PHASE NUMBER													
JPR % SHORT JUMPER													
LPO # ORDERS													
OVERDUE OVER 3													
DAYS W/O FRAME													
COMP.													
TPU % SPARE													
C1 - C2													
C1 - M1													
C1 - M2													
ESR "M" NUMBER													
DIP OPTION													
X MS FILL													
(ACTUAL)													
DIP MANAGEMENT													
UDP    CLF													
RLF													
ECS													
JL													

REFERENCE: BSP 201-200-013

(REPRODUCE LOCALLY)

WIRE CENTER \_\_\_\_\_ FRAME \_\_\_\_\_ TPDF TIE PAIRS \_\_\_\_\_ [MAX]

YEAR \_\_\_\_\_ #MODS \_\_\_\_\_ # LINE UPS \_\_\_\_\_



"M" NUMBER \_\_\_\_\_

⊖ JUMPER BUILDUP

✂ TIE PAIRS