SYSTEM DOCUMENTATION

DESCRIPTION AND ORGANIZATION

1 AND 1A *ESS*™ SWITCHES

1. GENERAL

1.01 This practice provides an explanation of the available documentation for the 2-wire 1 and 1A ESS switches.

1.02 This practice is reissued to make a general update.

1.03 There are four categories of documentation for the 1 and 1A ESS switches which are useful in the central office:

- AT&T Practices

- Program Documents

- Drawings

- Other Documents (PA, TG-1A, PG, etc.)

These categories are explained in detail in this practice.

1.04 System documentation is available through normal channels and central offices normally maintain a current library for reference. All documents described in this practice may not be available in every central office.

2. AT&T PRACTICES

NUMBERING PLAN

2.01 AT&T practices provide descriptive information for the ESS switches as well as procedures for the operation, maintenance, and testing of the ESS switches. Practices are identified by a 9-digit number. The first three digits specify the division; for example, the 231 division covers 1 and 1A ESS switches. The second three digits specify the layer (subdivision); for example, 231-048 covers 2-wire 1 and 1A ESS switches common recent change practices. The last three digits specify a particular practice; for example, 231-048-303 covers the 2-wire 1 and 1A ESS switches trunk recent change formats.

2.02 A numerical index is prepared for each division of AT&T practices; for example, the numerical index for the 231-division is 231-000-000. Always consult the numerical index for a list of practices available as well as the latest issue available. In addition, an alphabetical index is prepared for some AT&T practice divisions. AT&T Practice 231-000-001 is the 231-division Alphabetical Index.

2.03 Many practices are general purpose. Some of these are:

PRACTICE	TITLE
000-000-005	Master Numerical Index — All Divisions
000-010-010	General Plan
000-010-011	Ordering Information

TYPES OF CENTRAL OFFICE DOCUMENTS

2.04 The types of AT&T practices used in a central office are:

- Descriptions

- Operating Procedures

- Test and Measurement Procedures

- Maintenance Procedures

- AT&T TOPs (Task-Oriented Practices)

- Feature Documents

A. Descriptions

2.05 Descriptive information for the 2-wire 1 and 1A ESS switches consists of the following types:

(1) General or overall system descriptions

(2) Support descriptions—These cover such subjects as maintenance considerations for digital carrier trunk frame, acceptance test plan for 1A ESS switch, etc.

(3) Software descriptions

(4) Equipment descriptions and theory of operation.

Software Descriptions

2.06 In some cases, software descriptions are also referred to as SSDs (Software Subsystem Descriptions). SSDs are prepared for the 1A ESS switch. In those cases where the same practice will also cover 1 ESS switch, it is written as a document common to 1/1A ESS switches. SSDs are intended to provide a

description of an entire subsystem of the overall ESS software. For example, SSDs have been issued on the recent change, fault recovery, interrupt handling areas, etc. Software descriptions contain the following types of information:

- System functions and objectives of each function

- Block diagrams of functional arrangements

- Tabulated data and illustrations to support the description.

Equipment Descriptions and Theory of Operation

2.07 Equipment descriptions and theory of operation practices contain all or some of the following information depending upon the design and complexity of the equipment.

- Purpose and application of the equipment

- Description of how the equipment interfaces with other equipment

- Physical characteristics such as size, appearance, mounting, identification and location of components, arrangements, etc.

- Functional characteristics including identification of functional units generally on a block diagram basis

- Functional description of operation generally on a block diagram basis and options available capabilities

- Capabilities and options available

- Equipment maintenance philosophy

- Tabulated data and illustrations that support the descriptions.

B. Operating Procedures

2.08 Operating procedures provide information for the personnel-machine interface. For the 2-wire 1 and 1A ESS switches, these practices are of two types: the procedures for operating control panels, teletypewriters, etc., and recent change procedures.

The first type includes the following type of information:

- Identification of controls and built-in indicators and a description of the intended role of each

- Instructions covering the proper method of operating the product to achieve specific objectives

- Instructions for removing the product from service and for returning it to service

- Instructions covering calibrations and associated adjustments

- Tabulated data and illustrations that reinforce the instructions and descriptive information.

The recent change procedures are used to make changes to translations within the 2-wire 1 and 1A ESS switch memory. Translation information is that data within the ESS switch memory that provides to the generic program information about individual lines, trunks, service circuits, and other items which may require frequent change. Translation information varies from office to office and may change from day to day, so it must be readily changeable. Recent change procedures are provided in the form of recent change message formats to make these changes.

C. Test and Measurement Procedures

2.09 Test and measurement procedures provide instructions for verifying that the product is operating as intended and for identifying when adjustments and repairs are required. They contain the following types of information:

- Statements identifying: (1) the purpose of the test or measurement, (2) what the test or measurement is expected to prove, and (3) how the results can be used

- Customer-affecting circumstances which control application of the test or measurement

- Identification of tools and apparatus required

- Instructions for connecting apparatus to the product for test or measurement

- Instructions for performing the test or measurement, for adjusting controls as required, and

for analyzing measured values to determine the condition of the product

- Tabulated data and illustrations that reinforce the instructions.

D. Maintenance Procedures

2.10 Maintenance procedures provide the instructions for keeping the system in proper operating condition. They contain the following types of information:

- Nonprocedural (narrative) information pertinent to maintenance

- Identification of tools and apparatus required

- Instructions covering calibration, lubrication, inspection, checks, and adjustments associated with the product

- Actions to be taken in responding to and clearing an alarmed condition

- Instructions covering how to analyze and evaluate trouble reports and diagnostic messages

- Decision-action logic which may be used in isolating and clearing a fault and in restoring the product to an operable condition

- Instructions covering the proper method of removing and replacing components

- Identification of those items that should be returned for repair and instructions covering the repair of those that can be repaired in the field

- Tabulated data and illustrations that reinforce the instructions.

E. AT&T Task-Oriented Practices

2.11 AT&T TOPs (Task Oriented Practices) are maintenance procedure documents designed to support the operating telephone companies in:

(1) Preparing the product for service

(2) Operating the product, including the personnel-machine interface product

(3) Verifying that the product is operating as intended

(4) Identifying when corrective action is required

(5) Maintaining the system in an operable condition.

Each TOP provides instructions for performing the following work functions:

- Routine Maintenance—work done on a scheduled basis.

- Acceptance Testing—work done to verify that a newly installed system is operational.

- Company Order—work done to activate, change, or discontinue service.

- Trouble Clearing—work done to locate and correct system malfunctions.

A TOP is formatted to provide a document in which the user, in response to a stimulus (e.g., alarm, trouble report, service order), can readily access pertinent data necessary to successfully complete the task initiated by that stimulus. The data contained in TOP is of sufficient depth to support minimum-skill level users (step-by-step detailed information) but is also structured to enable experienced users to bypass detailed instructions for tasks that can be performed from memory. TOP data is limited to only that procedural information necessary to perform the task initiated by the stimulus.

F.   Feature Documents

2.12   Feature documents provide a set of ESS switch documentation which is oriented to features as they relate to customers, administration, and maintenance areas. Primary emphasis is given to those features that are customer oriented. Each feature document uses a carefully organized format so that it provides similar coverage of each feature. The feature document system has the following general characteristics:

- It recognizes the fact that the feature, as such, is a major characteristic of a switching system

and is the basis for organization of a documentation system.

- It provides a single source for reference to all information concerning a feature. This document contains or references all system-wide information required by all user organizations.

- All features of an ESS switch are covered in a consistent manner.

- Information in the feature document will be updated when changes in the feature or its interactions occur.

- The feature document is listed in the 231-division index and is available to all legitimate users via standard practice distribution procedures.

Detailed information concerning feature documents is contained in AT&T Practice 231-090-011.

CENTRAL OFFICE PRACTICES (231-Division)

2.13   The 231-division AT&T practices contain the primary descriptive information and procedures for operation, maintenance, and testing of the 1 and 1A ESS switches. The information is covered as follows:

231-000-	Indexes and sections applicable to all types of 1 and 1A ESS offices
231-001-101 through 231-026-101	2-wire and 4-wire 1 ESS switch processor practices
231-030- through 231-038-	2-wire 1 and 1A ESS switch common equipment descriptions
231-045-	2-wire 1 and 1A ESS switch common software subsystem descriptions
231-048-	2-wire 1 and 1A ESS switch common translation descriptions. Starting with 1E6 and 1AE6 generic programs, recent change formats are covered in this subdivision through 1E8B and 1AE8A.04

231-049-	2-wire 1 and 1A ESS switch common maintenance procedures and information
231-050- through 231-059-	2-wire 1 and 1A ESS switch common TOP is being covered in these subdivisions
231-090-	2-wire 1 and 1A ESS switch common feature documents
231-100- through 231-160-	2-wire 1 ESS switch descriptive, operation, maintenance, and test practices
231-161- through 231-189-	2-wire 1 ESS switch TOP is covered in these subdivisions
231-190-	2-wire 1 ESS switch feature documents
231-300-	1A ESS switch program support descriptions
231-301-	1A ESS switch equipment descriptions
231-310-	1A ESS switch software subsystem descriptions
231-318-	1A ESS switch recent change formats for 1AE8A.05 and later generic programs
231-319-	1A ESS switch growth descriptions will be covered in this subdivision
231-360- through 231-389-	1A ESS switch TOP is covered in these subdivisions
231-390-	1A ESS switch feature documents.

CENTRAL OFFICE PRACTICES (Other Than 231-Division)

2.14 The AT&T practice divisions which contain information pertaining to the 1 and 1A ESS switches are listed below. In most cases, this information will also apply to other systems. In the following listing, the division will always be listed and the subdivision will generally be listed. If only one document is referenced, the complete practice number will be given.

010-700-	Engineering complaint procedures
032-173-301	Testing, replacing, handling, storing, and shipping circuit packs and semiconductor devices
034-360-	Recorder—KS-19125L3 (AMA 1 ESS Switch)
034-351-	Recorder — reproducer — KS-12068L6 (recorded announcements 1 ESS switch)
040-	Relays
074-	Tools—catalogue information
075-	Tools and materials (common usage)—maintenance, selection, and use
076-	Tools and materials—switching systems and power—maintenance, selection, and use
100-136-	Magnetic latching relay—timing test set J4735A
103-335-	Check of transmission test lines
167-	Power plants, power units, and power supply
167-217-	111A DC power plant
167-624-	326A, B DC power plant
167-670-	504B ASC power plant
167-684-	610B DC power plant
167-686-	660C DC power plant
167-724-	806H ringing and tone power plant
167-726-	808A ringing and tone power plant
167-727-	812A ringing and tone power plant
201-221-	ESS—type modular distributing frames
201-222-	COSMIC (Common Systems Main Interconnecting Frame)

201-519-	13A Announcement System
201-520-	CSRAF (Common Systems Recorded Announcement Frame)
201-653-	E2A telemetry
254-2	1A processor (Used with 1A ESS switch)
254-200-	1A processor—general descriptive information
254-201-	1A processor equipment descriptions
254-251- through 254-253-	1A processor TOPs
254-280-	1A processor software descriptions
254-281-	1A processor growth descriptions
254-3	3A processor (Used with EPSCS and E911 on 2-wire 1 ESS switch)
254-300-	3A processor equipment descriptions
254-302-	3B20D computer (Used with 1A ESS as an attached processor)
254-340-	3A processor software descriptions
254-341-	3B20D computer software
660-470-	1 and 1A ESS offices with HILO 4-wire switching—terminal and through balance procedures
660-476-	1 and 1A ESS offices—terminal and through balance procedures (non-HILO 4-wire)
966-1	1 and 1A ESS switches general descriptive information

SCCS (SWITCHING CONTROL CENTER SYSTEM) PRACTICES

2.15 The 2-wire 1 and 1A ESS switch practices for central office use, which are also usable at the SCCS, are not changed. The areas where central office practices require changing for SCCS use are covered in the 190 division. Practices unique to the SCCS are organized as follows:

190-110-	SCCS common application
190-111-	4 ESS switch
190-112-	1A ESS switch
190-113-	2-wire 1 ESS switch
190-115-	2 ESS switch
190-116-	2B ESS switch
190-117-	3 ESS switch
190-120-	PDSP (Peripheral data storage processor)—2-wire 1 ESS switch
190-122-	5ESS switch
190-130-	SCCS administration
201-653-	E2A telemetry

ENGINEERING TYPE BSPs

2.16 The AT&T practice divisions which contain engineering type information for the 1 and 1A ESS switches are:

790-	Engineering administrative practices
800-	Cross-reference lists, administrative information, general equipment requirements for installation and manufacturing, and general performance requirements
800-020-021	Checking list—floor plan data sheets
801-	Equipment design and general equipment requirements and engineering information—Common Systems

802-	Equipment design and general equipment requirements and engineering information—Power Systems	533-	Customer Premises Systems for ESS provided customer service including centrex
820-	Equipment design and general equipment requirements and engineering information (1 and 1A ESS switches)—see J-Specification in Part 4	622-515-	1 and 1A ESS switches operation and test procedures—ALIT (automatic line insulation test) teletypewriter channel
824-	Equipment design and general equipment requirements and engineering information—Operations Support Systems	662-518-	10A RSS operational and test procedures—ALIT TTY channel (1 and 1A ESS switches)
824-100-110 through 824-100-114	SCCS	999-	Customer Premises Systems—how-to-operate manuals

824-100-110
through
824-100-114   SCCS

851-   Special Services Systems engineering design information

851-103-   EPSCS (Enhanced private switched communication service)

INTERFACE FACILITIES AND SYSTEMS PRACTICES

2.17 The AT&T practice divisions which contain information concerning facilities (such as TTY channels) and systems that interface with the 1 and 1A ESS switches are:

190-102-   CAROT 2 (centralized automatic reporting on trunks)

190-103-   CAROT 1

190-510-   EADAS (Engineering and Administrative Data Acquisition System)

190-540-   EADAS/NM (network management)

252-2   Service Observing and Service Evaluation System 1A

255-   10A RSS (Remote Switching System)

309-300   EPSCS (enhanced private switched communication service)—switched service network

533-   Customer Premises Systems for ESS provided customer service including centrex

622-515-   1 and 1A ESS switches operation and test procedures—ALIT (automatic line insulation test) teletypewriter channel

662-518-   10A RSS operational and test procedures—ALIT TTY channel (1 and 1A ESS switches)

999-   Customer Premises Systems—how-to-operate manuals

3. PROGRAM DOCUMENTS

3.01 Program documents pertain to the design and interpretation of the generic program software. 1 ESS switch program documents use a 1A prefix and 1A ESS switch uses a 6A prefix. Program documents related to the 1A processor use a 5A prefix. Program documents for PDSP (peripheral data storage processor for the 1 ESS switch) use a 1A7 prefix and program documents for SCCS use a 1P prefix. The available program documents are:

- *PG-Generic Program Document:* The PG provides a listing of the generic program documents associated with each generic program. A listing and description of new features and FRs (failure reports) for that generic are also included. PG-1A019 covers the 2-wire 1 ESS switch (central control with centrex) and PG-1A020 covers the 2-wire 1 ESS switch (signal processor with centrex). PG-6A002 cover the 1A ESS switch.

- *IM-Input Message Manual:* The input message manual lists TTY messages that can be typed on the maintenance TTYs to request a system action or function. A description of the format and the use of each message, as well as cautions and expected results, are given for each message. The messages are arranged in alphanumerical order, and a topical index guides the reader to the specific message to be used. Some of the types of actions and functions that these messages request are:

(a) To diagnose a system unit

(b) To initiate traffic counts

(c) To trace a call

(d) To read from or write into memory locations.

Recent change messages are covered in 231-division practices rather than the IMs. IM-1A001 cover the 1 ESS switch; IM-6A001 covers the 1A ESS switch; IM-1A700 covers PDSP; and IM-1P1xx covers SCCS.

- *OM-Output Message Manual:* The output message manual lists in alphanumeric order all the system output messages printed by the TTY. This document contains a description of each message, the reason each message was issued, the actions to be taken, if any, as a result of the message having been issued, and alarm indications that should accompany the message. OM-1A001 covers the 1 ESS switch; OM-6A001 covers the 1A ESS switch; OM-1A700 covers PDSP; and OM-1P1xx covers SCCS.

- *PR-Program Listing:* The PR consists of a computer generated sequential list of program instructions and related information for one or more program units identified by PIDENTs. A PIDENT is that segment of a program that is compiled as a unit by a compiler program (on a general purpose computer). Most PRs consist of a single PIDENT; only a few contain more than one. The listing produced as a result of this compilation becomes the PR or a part of it if PIDENTs are combined to perform a system function. No PIDENT is split between PRs. The PR contains an index sheet which lists the PIDENTs it contains and their issues, followed by the listings for each PIDENT.

- *PC-Program Change:* The PC is an interim document which is issued for each "point" issue of a generic program and supplements the existing program listing (PR). The document identifies and includes only the instructions of the (PIDENTs) affected by the generic program changes.

- *TLM-Trouble Locating Manual:* The TLM is a maintenance document which supplements the output message manual to help in locating troubles within system units. A TLM usually covers one functional unit of the system (for example, program store, call store, etc.). The TLM lists trouble numbers that are matched with numbers generated by the system from the diagnostic results. The suspected faulty package(s) (location and type) and any special procedure are specified adjacent to each trouble number. Except for TLM-1A001 on trunks and TLM-1A121 on TTYs, a TLM carries the same number as the SD (schematic drawing) of the functional unit with which it is associated. A few system units do not have an associated TLM.

- *PK-Raw Data Document:* The PK program document specifies the type of diagnostic test performed and its expected unprocessed (raw data) as they are initially stored in memory. This document is associated with one of several maintenance programs which diagnose specific equipment units.

The PK supports the TLM for those cases where the trouble number cannot be found in the TLM or where the replacement of the equipment listed in the TLM does not correct the trouble. This may occasionally happen, particularly when the fault is marginal in nature.

In the event that the trouble number does not lead to the trouble, the maintenance personnel can request, via the maintenance TTY, that the diagnostic program be reexecuted and that the test results be printed in an unprocessed form. For trunks, raw data is requested via a diagnostic from the trunk and line test panel. The raw data document helps the attendant to interpret this test data by describing the various tests and their expected results.

A document with the letter abbreviation PK is followed by the same number used with the PR for the diagnostic program involved.

- *PK-Program Map:* The program map contains an alphabetical listing of all PIDENTs in a specific generic. Adjacent to the PIDENT are its issue and absolute octal starting and ending addresses. Normally, the program for each PIDENT consists of a single block of memory; however, when a program has been modified by patching, it may consist of more than one distinct block. To obtain the absolute address of an instruction in a program whose PR listing

is relocatable (as most are), it is necessary to add this relocatable or relative address to the absolute address of the beginning of that PIDENT.

Note: The program may definitely defines the contents of a program. It should be used as an authoritative source.

- *Parameter Listing:* Beginning with the 1E3/1AE4 generic programs, individual features were loadable in an office on an optional basis. Due to this, the parameter listing produced by the PDA (parameter data assembler) now contains absolute addresses for the optional feature groups added in a particular office. This section of the PDA listing must be used in conjunction with the Program Map to obtain actual program addresses.

- *PK-COMPOOL:* The COMPOOL record is a COMmon POOL of program information that is used jointly by all programs in a system. The use of the COMPOOL shortens and simplifies the individual system programs by using a common program where possible. Symbols that are used in many programs to refer to the same memory location, item, or constant are assigned in numerical values that are used universally. These values are stored in the COMPOOL. The COMPOOL record is a computer generated document listing these values. It also contains related information such as a tabulation of all PIDENTs that make a reference to each COMPOOL symbol.

- *PK—CIN (Change in Network):* PK-1A121-01 is a users manual for NTWK (network) and CIN macros. A CIN diagram describes the function of a CIN program by listing the transitions of the network paths between the lines and trunks involved in the particular CIN.

- *TLP—Trouble Locating Procedures (1A ESS switch only):* The TLP is provided by the diagnostic results post-processing program. This program provides an on-line facility for a common personnel—machine interface. There are several methods of automatic raw data analysis provided. The main output of this process is an ordered list (pack list) of suspected faulty equipment locations. This pack list is the first line maintenance aid

available to maintenance personnel to aid in the repair of faulty frames. Refer to AT&T Practice 254-280-230 for details.

4. DRAWINGS

4.01 Drawings provide information on the system hardware. The principle types of drawings are:

- *SD-Schematic Drawing:* The AD provides all the internal and external wiring connections of a circuit, along with a detailed list of all the circuit components used for that circuit. The SD is divided into well-defined sections. They are:

  (a) *A Sheets*—The A sheets provide an index to the rest of the drawing; contains the apparatus index, lead index, and option index. The apparatus index provides a drawing location for a specific piece of circuit hardware such as resistors, relays, capacitors, keys, etc. The lead index provides a drawing location for any leads that interconnect to another circuit. Likewise, the option index gives drawing locations where the apparatus or wiring options may be found.

  (b) *B Sheets*—The B sheets contain the FS (functional schematic) figures. These figures provide the point-to-point wiring information within the circuit. In some SDs, this point-to-point wiring is shown as individual leads; in newer SDs, the FS figures give symbol blocks with single line for multiple-wire connections. A table of lead designations and pin connections must be used with the symbol blocks.

  (c) *C Sheets*—The C sheets provide apparatus figures which pertain to circuit hardware. Such information as hardware codes, frame location, drawing locations, and designations can be found in the C sheets. In the case of relays, keys, and jacks, the apparatus figures will indicate which terminals are connected and which ones are unassigned.

  (d) *D Sheets*—The D sheets contain the drawing notes and the feature or option table. The D sheets also act as a catchall for any information which does not belong on any of the other sheets. The feature or option table gives a verbal description of all wiring

and apparatus options which may be applied to the circuit.

(e) *F Sheets*—The F sheets provide any circuit requirements that pertain to that particular SD. Such information may be in the form of any mechanical or electrical check that must be made on the circuit.

(f) *G Sheets*—The G sheets provide the CAD figures. These figures show the interconnection of the leads with external terminations and their origination points within the circuit. In general, any lead terminating external to the circuit will go via a terminal strip or plug. These terminal strips, plugs, and distributing frame connections are shown in the CADs.

● *CD-Circuit Description:* The CD describes the operation of the circuit shown on associated SD, as well as the maintenance and testing information for the circuit in some cases. The CD and the associated SD have the same number.

● *J-Specification:* The J-Spec (J-specification) is the drawing that contains ordering information and many other hardware specifications for the frame. The ordering information is in the form of lists that may be provided for a particular frame. The lists of a frame give it flexibility to be used in a number of different environments.

In addition to providing ordering information, the J-Spec also contains other information about a frame. The following is a breakdown of different sections of the J-Spec and what can be found in each.

(a) *Stocklist*—The stocklist is a table that provides a breakdown of all the hardware that is provided on a per-list basis.

(b) *Equipment Views*—The J-Spec will provide a dimensioned front, rear, and side view of the equipment as well as sectionalized views of the equipment.

(c) *Cross Reference to Wiring Figures*—Associated with each list is a wiring figure which will directly determine the external connections of the associated hardware.

(d) *Methods of Surface Wiring and Formed Cable Assemblies*—The J-Spec of a frame will contain a table which will cross-reference to other drawings which show such information as local cable drawings, surface wiring drawings, and cable connecting drawings.

(e) *Frame Subunits*—A frame being provided per a J-Spec will often contain other J-Spec units mounted within the frame. These units will carry the same J-Spec number but will be followed by a 2-letter suffix rather than the single letter suffix that the frame has.

(f) *Generations of J-Specs*—As modifications and improvements are incorporated into a piece of equipment, the changes are reflected by new lists being added and others being rated A&M or MD.

(g) *Frame PRACTICES*—In the engineering notes of the J-Spec there will be reference to the practice number of the frame in question. For 1 and 1A ESS switches, the frame practices are included in the 820 division.

● *The T-Drawing:* The T-drawing is usually associated with a similar group of J-Spec equipment. The T-drawing will provide all the external and internal wire connections of the circuit in question. Each T-drawing will have a table showing the J-Spec(s) with which it is associated. The information on the T-drawing is illustrated by sectionalizing the drawing and showing what is contained in each part. In each of the following items, the table in parentheses refers to a table in the T-drawing.

(a) *Feature Table (Table E)*—This table lists the T-drawing figures which can be applied to the equipment in question. This table also contains a verbal description of each figure and option and when they are required.

(b) *SD-T Cross Reference Table (Table C)*—This table provides a method of finding which T-drawing figures and options agree with which SD figures and options.

(c) *Cabling (Table G)*—This table provides in tabular form all the cable connections from a particular frame or unit to all other circuits required for proper operation. The cabling

table provides cable size, point of origination, point of termination, and T-drawing figure that provides for the cable.

(d) *Fuse Requirements (Table F)*—Should any of the T-drawing figures require fusing, it will be listed in this table along with fuse potential, amp rating, fuse type, and designation.

(e) *Figures*—A T-drawing figure usually shows a terminal strip, plug, fuse panel, or any other location where a cable or wire is to leave the confines of the associated unit. These figures are useful when trying to find a terminal strip location or any other information about an external lead or group of leads.

(f) *Circuit Point-to-Point Wiring*—The B and C sheets provide in tabular form a listing of all the internal wire connections of the T-drawing figures.

Note: Should either the T, J, or SD drawing be known, the other two can be found by a series of cross-reference information on the drawings.

(1) The SD may be used to find the T-drawing because the T-drawing carries the same number as the SD. One SD can be the source for a family of T-drawings.

Example:

> SD-1A119-01 Comm Bus Ckt
> T-1A119-27 Comm Bus Ckt LSF
> T-1A119-38 Comm Bus Ckt MT e/w SSD
> T-1A119-57 Comm Bus Ckt UTF & JF
> T-1A119-60 Comm Bus Ckt CPD
> Etc.

(2) The T-drawing can be cross-referenced to a SD or J drawing. To find the SD, refer to the T-drawing/SD drawing cross-reference chart. To find the J-Spec(s), refer to the T-drawing notes which will give equipment arrangements for the T-drawing.

(3) The J-Spec can point to a T-drawing via the list table. Each list provides for an associated T-drawing and figure.

● *ED-Equipment Drawing:* The ED drawing is similar in structure to the J-Spec. The ED can

be used to provide hardware. Some uses of EDs would be to provide connectorized cables, frame and aisle lighting equipment, cable rack assemblies, and frame iron work. Another use of the ED drawing is that of an information only drawing. These drawings provide no ordering information, but instead will provide such things as a typical layout of a grounding system, office spare circuit pack requirements, recommended cable rack layout, overall bus system layouts, etc.

● *CPS-Circuit Pack Schematic:* The CPS contains a schematic of the circuit pack, a component list, and circuit description. SD-1A102-01 covers the 1 ESS switch processor CPS and 1 and 1A ESS switches peripheral equipment CPS. SD-1A329-01 covers remreed CPS for the remreed network. SD-5A006 covers CPS information for the 1A processor. However, since approximately mid-1977, new CPSs have been issued as individual CPS drawings.

● *Apparatus Card Catalog:* This is a topical and descriptive card listing of all AT&T manufactured coded apparatus available for use. Apparatus cards give physical dimensions and electrical characteristics, as appropriate, for coded apparatus. Related specifications, SDs, etc., are also given.

5. OTHER DOCUMENTS

5.01 PA (program application) documents provide information necessary to engineer the software portion of an ESS switch. They also contain information for preparing input data, analyzing output data, and using the program.

● *PA-591001 Office Parameter Specification (2-Wire 1 ESS Switch):* This PA describes the input forms and data required for producing office parameter memory card modules.

● *PA-6A001 Office Parameter Specification (1A ESS Switch):* This PA describes the input forms and data required for producing office parameter memory.

● *PA-591003 Translations Output Configuration (2-Wire 1 ESS Switch):* This PA relates information between the ESS translation input

forms and the ESS translation memory (translators). This PA can be used to determine data location in ESS translation memory.

- *PA-6A002 Translation Output Configuration (1A ESS Switch):* This PA relates information between the ESS translation input forms and the ESS translation memory (translators). This PA can be used to determine data location in ESS translation memory.

- *PA-591099 GRC (Growth Recent Change) Form Manual (2-Wire 1 and 1A ESS Switches):* This PA explains GRC forms and contains all the GRC form masters which may be reproduced as required.

- *PA-1A500 Auxiliary Programs (1 and 1A ESS Switches):* This PA provides condensed information on all aspects of the auxiliary programs in an easy to use and concise form.

5.02 Other documents pertaining to 2-wire 1 and 1A ESS switches are:

- *TG-1A Translation Guide (2-Wire 1 and 1A ESS Switches):* The TG-1A provides complete documentation of the software (translations) interface between the telephone company assignment requirements for lines, trunks, routing, charging, measurements, etc. Further, the document details the relationship of these input requirements to the actual feature, option, or machine action desired.

- *PG-1 Parameter Guide (2-Wire 1 ESS Switch):* The PG-1 is used in the preparation of input data for the PDA. Its functional scope for parameter data is analogous to that of the TG-1A (Translation Guide) for translation data. The scope of the PG-1 includes almost all information covered in the current PA-591001, Volume 1. The actual layout of parameter data in program store (Mod 04) is not within the scope of the PG-1; this is left to the PA-591001, Volume 2. The PG-1 is not designed for manual engineering of call store.

- *PG-1A Parameter Guide (1A ESS Switch):* The PG-1A is used in the preparation of input data for the PDA. Its functional scope for parameter data is analogous to that of the TG-1A for translation data. The scope of the PG-1A includes almost all information covered in the current PA-6A001, Volume 1. The actual layout of parameter data in unduplicated call store is not within the scope of the PG-1A; this is left to the PA-6A002. The PG-1A is not designed for manual engineering of call store.

- *J1A063A-1 Trunk and Service Circuit Engineering Specification (2-Wire 1 ESS and 1A ESS Switches):* This specification provides circuit drawing and specification drawing information for standard applications of trunk and service circuits for various central office arrangements. Included is a numerical listing of SDs with associated trunk order codes.