4ESS™ Switch
Generic Retrofit and ODA Update
Planning and Scheduling Guide
4E24 to 4E25

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1. General

1.01 This practice contains general planning and scheduling information related to the introduction of a new version of the generic program and/or a new office data assembly (ODA) into a ***4ESS***™ switch. The planning and scheduling requirements are similar whether performing a generic retrofit or an ODA update. Any differences between an ODA update and a generic retrofit are noted. For this practice, the following terms are defined:

(a) Version—The term used to distinguish the programs containing new sets of features; for example, generic programs are identified as 4E<24>, 4E<25>, and so on.

(b) Issue—The word used to identify reassemblies of a given version. Reassemblies of the generic program are identified as 4C.R1, 4C.R2, 4C.R3, and so on.

(c) Retrofit—The introduction of a new version of the office generic program that replaces the existing program and the required introduction of a new ODA.

(d) ODA Update—The introduction of a new ODA with the currently active generic program.

(e) Support Organization—A support group that will be providing assistance before and during a retrofit or an ODA update.

(f) Partial Update (Point load)—The introduction of official corrections or additions to the generic program already operating within the system. Information regarding this process is not contained in this practice. Procedures for the introduction of a partial update are contained in Task Oriented Practice (TOP) 234-351-002.

(g) Update—The overall planning operations and office preparation required to do the retrofit and/or ODA update.

(h) Update Process—The procedure for loading the new generic program and/or ODA into an operational ***4ESS*** switch.

(i) NORMAL File—The part of the 3B21D APS disk where the current data base of the 1B Processor resides.

(j) UPDATE File—The part of the 3B21D APS disk where a new data base of the 1B Processor is assembled.

(k) Service Circuit System (SCS) Update—The introduction of new SCS system files after a 3B21D APS retrofit and prior to 1B retrofit.

(l) Expanded Time Slot Interchange (XTSI) Update—The introduction of new XTSI system files after a 3B21D APS retrofit and prior to 1B retrofit.

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1.07 This practice is developed by the:

Customer Training and Information Products
2000 N. Naperville Road.
Naperville, IL 60566-7033

Introduction

1.08 New features and improvements to the ***4ESS*** switch are made available to operating offices through the generic program. Additional capacity is made available to each office by a new ODA. This software replacement is achieved by the update process. The introduction of a new version of the generic (generic retrofit) requires that a new ODA is introduced concurrently to maintain program/data base compatibility. The ODA can be replaced without changing the resident generic (ODA update). This practice covers both generic retrofit and ODA update.

Objectives

1.09 The objective of a retrofit or ODA update is to introduce a new version of the generic program and/or a new ODA, and ensure the following:

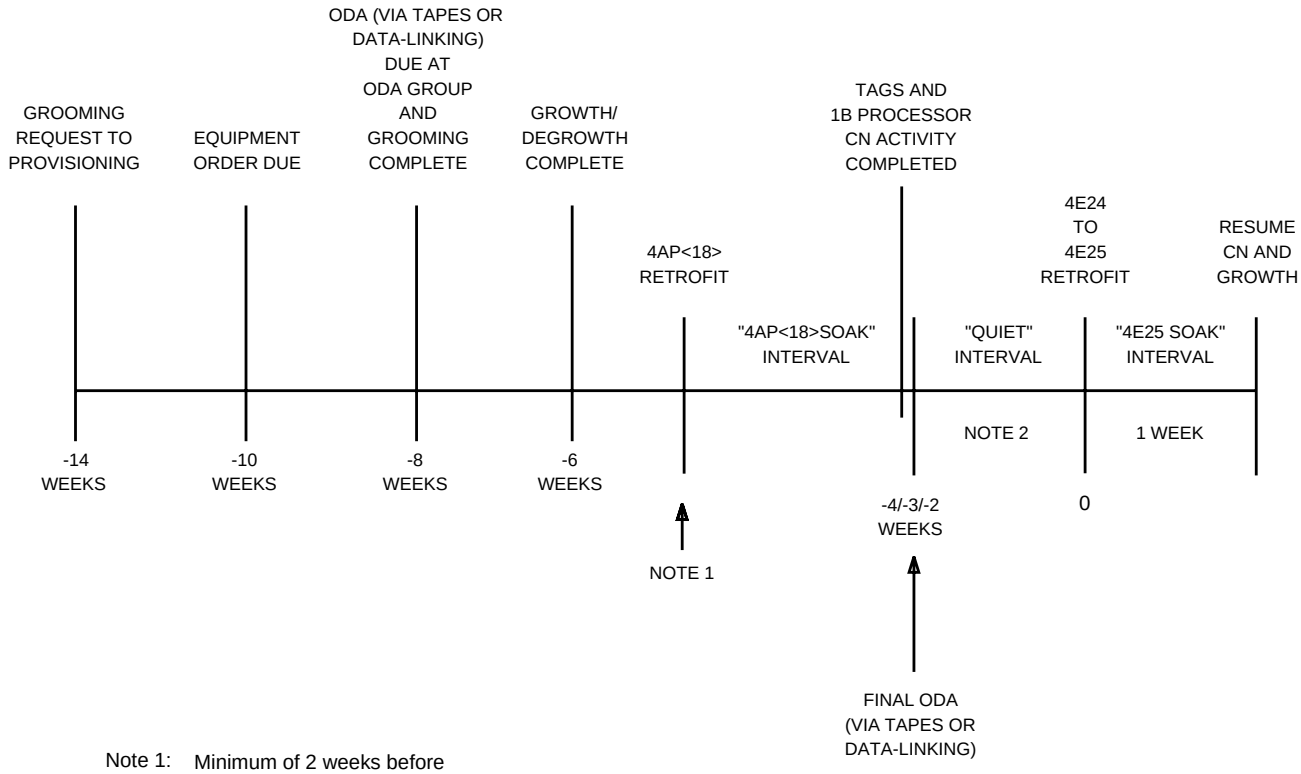
- No interruption of stable calls (no Phase 4s)
- Automatic message accounting (AMA) billing is not overcharged
- Minimal loss of AMA billing data
- Minimal impact on the switching network.

2. Overview of 4E24 to 4E25 Retrofit

2.01 The 4E25 generic does not support a ''Two TMS Office.'' An office with two TMSs must be converted to a four TMS office before retrofitting to the 4E25 generic.

2.02 The 4E25 generic does not support a 3B20D Attached Processor System. The 3B20D Attached Processor System must be converted to a 3B21D Attached Processor System before retrofitting to the 4E25 generic.

2.03 Before an office can retrofit to the 4E25 generic, the 3B21D APS must be operating with the 4AP18 generic. A significant part of preparing an office for the 4E25 generic retrofit will be to coordinate 4AP18 retrofit of the 3B21D APS.



Note 1: Minimum of 2 weeks before Final ODA

Note 2: 2 Weeks (for LEC with ODAMANager and Inter-company Data-link)
3 Weeks (for LEC without ODAMANager and Inter-company Data-link)
4 Weeks (for AT&T)

Figure 1. Sequence of Events for 4E25 Generic Retrofit

2.04 There are no requirements to add expanded main memory to the 3B21D APS.

2.05 The 4E25 generic does not require the addition of Program Store (PS) memory.

2.06 The sequence of events required to prepare an office for the 4E25 retrofit is shown in Figure 1. The Installation Interval reflects any growth before the 4AP18 retrofit. Total time between the material being shipped and completion of growth may differ, depending on the size of the growth job.

⚠ CAUTION:
Adherence to standard intervals shown in Figure 1 is critical in planning for and meeting customer commitment dates. Changes in requirements (engineering) and/or late inputs that affect standard intervals shown need to be approved by the appropriate organizations.

2.07 It is recommended that the 4AP18 retrofit be performed a minimum of 2 weeks before the final ODA tape is written. This will allow a 1 week soak of the 4AP18 generic to ensure no problems with the 3B21D APS operating system. This will also help ensure that the 4E24 to 4E25 generic retrofit will take place on schedule.

2.08 The procedure in 234-160-418, 4AP17 to 4AP18 Retrofit, is used to retrofit to the 4AP18 generic.

2.09 If the office contains an SCS, an SCS software update is not required to be performed for this retrofit. The software will remain at issue 16.

2.10 At this time, no XTSI software update is required prior to 4E24 to 4E25 update. If changes occur and an update is necessary, each XTSI must be updated as close to the 1B Processor retrofit as can be scheduled. The procedure to update the XTSI system files is contained in 234-160-210AC (for AT&T offices) or 234-160-210 (for LEC offices). These documents use the new XTSI software update tool. The manual XTSI update procedure is still contained in 234-160-201AC (issue 2 or later for AT&T offices) or 234-160-201 (Issue 3 or later for LEC offices).

2.11 All operational support systems associated with the ***4ESS*** switch must be verified to ensure that their software is compatible with the new generic to be loaded during the generic retrofit. A list of Lucent Technologies operational support systems and their associated software releases are listed in Table A. Activation of some 4E25 features may require a specific software release. If there is a compatibility conflict in any operating system software, the software must be updated before the retrofit.

Table A. Operational Support Systems Software Requirements

Operational Support System	Software Release
Netminder/NTM*	9.0
Netminder/NTP†	2NTP.7
TNM	6.2
ConnectVu-Trunk	8.0
Billdats® System	5.4

* NTM - Network Traffic Management
† NTP - Network Traffic Patterning

2.12 There are three different methods of building the new data base as follows:

(a) If the new generic and/or ODA and network management (NWM) tapes are being loaded in an office, these tapes will only need to be loaded once. The new data base is built during the Test Retrofit/Test ODA process. These tapes are not required to be loaded during the night of the update unless the new data base has been destroyed.

(b) In LEC offices using ODAMANager with an inter-company data-link, the ODA is downloaded to a file at the office being updated in time for the Test Retrofit/Test ODA process. The new generic and/or NWM tapes will be the only tapes that need to be loaded. The new data base is built during the Test Retrofit/Test ODA process. The tapes are not required to be loaded during the night of the update unless the new data base has been destroyed.

(c) If the new data base is to be built via a switched 56-kb/s link from an Off-Line Processor, the downloading of the data base can occur up to a week before the Test Retrofit/Test ODA process. Schedules for downloading the new data base should be obtained from NESAC.

2.13 While the system operates under the control of the 4E24 generic in the NORMAL file on the 3B21D APS disk, the 4E25 data base is built in the UPDATE file on the same disk. Both of these 1B data bases share the same moving head disk (MHD) and are duplicated in the other moving head disk.

2.14 For the generic retrofit, the data base will be verified first. Then, key variable data in the NORMAL file is mapped over to the UPDATE file. When the data base has been completed, the 1B Processor memory is pumped with 4E25 generic data from the UPDATE file; then a Phase 3 is started. On completion of the Phase 3, call processing will resume with the 4E25 generic.

2.15 The 4E24 generic data base is still available in the NORMAL file. If any problem develops with the 4E25 generic such as a loss of system sanity, a manual pump to the 4E24 generic data base in the NORMAL file will be required. Once the 4E25 generic is found to be sufficiently reliable, the functional file (UPDATE) is renamed NORMAL, and the file containing the 4E24 data is now renamed UPDATE. The UPDATE file is closed (normal access denied) to the 1B Processor.

3. Kitted Documents

3.01 This part identifies the documents that are received as part of the retrofit kit. These documents should arrive on-site at the -9-week interval. A later issue (if received) supersedes the issue listed in the appropriate Table. The 3B documents listed in Table B will go to both AT&T and LEC offices. The 1B Processor documents listed in Table C are for AT&T offices and the 1B Processor documents listed in Table D are for LEC offices.

Table B. 3B Kitted Documents

3B Documents		
Document Number	**Issue Number**	**Title**
234-160-210	1	XTSI Software Update Tool *
234-160-210AC	1	XTSI Software Update Tool †
234-160-418	1	4AP<17> to 4AP<18> Retrofit - 3B21D APS Only
234-200-400	3	APS Maintenance Reference Handbook
254-303-100	2	3B21D Computers Common System Growth/Retrofit Tasks
254-303-101	3	3B21D Computers Common System Routine Task
254-303-102	1	3B21D Computers Common System Trouble Clearing
254-303-103	1	3B20D and 3B21D Computers RTR Operating System Processor Recovery Message Guide
254-303-104	1	3B20D and 3B21D Computers RTR Operating System Recent Change and Verify Manual
254-303-105	2	3B20D and 3B21D Computers RTR Operating System Hardware Reference Manual
254-303-106	1	3B20D and 3B21D Computers RTR Operating System System Maintenance Manual Volumes 1, 2, and 3
254-303-107	1	3B20D and 3B21D Computers RTR Operating System Software Troubleshooting Guide
254-303-110	7.2	3B20D and 3B21D Computers RTR Operating System Input Message Manual (PDS)
254-303-111	7.2	3B20D and 3B21D Computers RTR Operating System Output Message Manual (PDS)
254-303-112	6.2	3B20D and 3B21D Computers RTR Operating System Input Message Manual (MML) **
254-303-113	6.2	3B20D and 3B21D Computers RTR Operating System Output Message Manual (MML) **
IM-4A001-01	9.2	***4ESS*** Switch/APS Input Message Manual
OM-4A001-01	9.2	***4ESS*** Switch/APS Output Message Manual

* This document will only be sent to LEC customers.
† This document will only be sent to AT&T customers.
** These documents will only be sent to the NCCs, NESAC, and LEC customers.

Table C. AT&T 1B Processor Kitted Documents

1B Processor Documents		
Document Number	**Issue Number**	**Title**
234-010-315	17	***4ESS*** Switch/1B Processor Domestic Call-Irregularity Handbook *
234-010-316	12	***4ESS*** Switch/1B Processor International Call-Irregularity Handbook *
234-090-251AC	1	4E25-R1 Product Release Document
234-090-252AC	1	4E25-R2 Product Release Document
234-090-253AC	1	4E25-R3 Product Release Document
234-160-025	1	4E24 to 4E25 Generic Retrofit and ODA Update
234-185-025	1	Generic Retrofit and ODA Update Planning and Scheduling Guide - 4E25 Generic
234-310-251AC	1	***4ESS*** Switch/1B Processor 4E25 Generic Maintenance Reference Handbook
IM-4B000-01	1.6	***4ESS*** Switch/1B Processor Input Message Manual
OM-4B000-01	1.6	***4ESS*** Switch/1B Processor Output Message Manual
4B000-01AC	1.6	***4ESS*** Switch/1B Processor Proprietary Input/Output Message Manual
* These documents will only be sent to the NCCs and NESAC.		

Table D. LEC 1B Processor Kitted Documents

1B Processor Documents		
Document Number	**Issue Number**	**Title**
234-010-315	17	***4ESS*** Switch/1B Processor Domestic Call-Irregularity Handbook
234-010-316	12	***4ESS*** Switch/1B Processor International Call-Irregularity Handbook
234-160-025	1	4E24 to 4E25 Generic Retrofit and ODA Update
234-185-025	1	Generic Retrofit and ODA Update Planning and Scheduling Guide - 4E25 Generic
234-310-251	1	***4ESS*** Switch/1B Processor 4E25 Generic Maintenance Reference Handbook
IM-4B000-01	1.6	***4ESS*** Switch/1B Processor Input Message Manual
OM-4B000-01	1.6	***4ESS*** Switch/1B Processor Output Message Manual

4. Magnetic Tape Requirements for Update Process

4.01 This part identifies the new tapes that will be required to accomplish the update process and is broken down into tapes needed for 3B21D APS office. Order the tapes that are needed early enough to ensure on-time delivery.

4AP17 to 4AP18 Retrofit With a 3B21D Attached Processor System

4.02 ***4AP18 Tape-Only Program Tape (J4A018R-1, List 3M4) (TP-4A465):*** This tape contains the tape-only program needed for system reinitialization and is not required for the 4AP17 to 4AP18 retrofit.

4.03 ***4AP18 Generic Tape (J4A018R-1, List 3M5) (TP-4A465-01):*** The generic tape list number is made up of one 3B21D APS generic tape designated rt0 1. The tape contains the new 4AP18 generic program to be loaded into the system during the 4AP17 to 4AP18 retrofit.

4.04 ***4AP18 Data Base Tape (J4A018R-1, List 3M6) (TP-4A465-02):*** The data base tape is similar to the ODA tape in the 4E25 update. This tape has the 3B21D APS unit information to be loaded after loading the 4AP18 generic tapes.

4E25 Update Process With a 3B21D Attached Processor System

4.05 All ordered tapes will be shipped as a single package via overnight delivery on the Tuesday before Test Retrofit/Test ODA Update. This will ensure that the most recent issue of the tapes will be used to perform the update.

4.06 If the new data base is to be built via the Off-Line Processor method, trouble-location procedure (TLP) tape is the only tape that needs to be ordered. See within this section, the TLP tape order identification. At the end of the update, tapes that are needed for local use will be written.

4.07 In offices that use ODAMANager with an inter-company data-link, the new generic and trouble-location procedure (TLP) tapes are the only tapes that need to be ordered. See within this section, the generic and TLP tape order identifications. At the end of the update, tapes that are needed for local use will be written.

4.08 ***4E25 Generic Tape (J4A048G-1, List 3M1) (TP-4A025):*** This tape should contain the most current issue of the generic program. If the data base is to be loaded via the Off-Line Processor or if an ODA only update is being performed, the generic tape is not required.

4.09 ***4E25 Office Data Tape (J4A048G-1, List 3M2):*** A generic retrofit requires a new office data base because of assignment changes in datapool. The ODA may also include new data to accommodate growth or reengineered memory space. The ODA generated by the office data assembler is the most critical element of the update, because it is unique to each office. The ODA tape is not required if the data base is to be loaded via the Off-Line Processor, although the same ODA generation process, as stated below, must be followed. The office data tape is generated in the following way:

(1) For offices that don't use data-linking for their ODA, the current office data base is copied onto a 4-mm tape, preferably using a clean, blank tape. This tape and a copy of the tape header printout (obtained from VER:UPDATE input message from the 3B APS) are sent to Lucent Technologies at the following address:

Lucent Technologies
4ESS Data Platform Development (ODA Group)
Room 4E-317
2000 N. Naperville Road
Naperville, IL 60566-7033

(2) For offices that use data-linking, see paragraph 7.12.

(3) The ODA tape is spooled to the Lucent server machine containing TAGS and memory sizing information.

(4) New input data for the next engineered interval (growth, for example) is added to the ODA data.

(5) A new office data base, compatible with the new or resident generic program issue, is generated by the 4ESS Data Platform Development (ODA Group) using the new ODA data.

(6) The first tape is spooled at 8 weeks before the update and produces the office data used for TAGS processing. The second ODA spooling begins at the start of the office quiet interval and produces the office data that will be used in the update. The office enters the quiet interval at their pre-determined time (-4 weeks for AT&T, -3 weeks for LECs using ODA tapes, or -2 weeks for LECs using ODA data-linking) prior to the update.

4.10 ***4E25 Network Management Display System Tape (J4A048G-1, List 3M3) (TP-4A025-01):*** The NWM tape contains control data for displays associated with both the Network Management Display System and the On-Site Operations Report System. A new NWM tape is required to ensure compatibility with the new generic program. The new NWM tape is no longer unique to each office. The unique control data is contained in the long-term storage (LTS) area associated with Network Management Display System. The NWM tape is not required if the data base is to be loaded via the Off-Line Processor.

4.11 The NWM tape is loaded into the UPDATE file during Test Retrofit/Test ODA update process.

4.12 The network management data is required to test the network management function and is also one of the tools used for evaluating post update system performance. It is necessary to reintroduce office thresholds, controls (if any), and/or study classes after a generic retrofit or ODA update. The study classes entered by Page TG20 and thresholds used on Page MA01 are saved during an update; but other thresholds, controls, and study classes are lost. It is not normally necessary to order the NWM tape for an ODA update unless a later issue is available.

4.13 ***4E25 Trouble-Location Procedure Data Tape (J4A048G-1, List 3M4) (TP-4A025-02):*** A generic retrofit requires a new TLP data tape to attain compatibility with the new generic version. This tape is required for either method of data base loading when performing a generic retrofit. It is not normally necessary to order this tape for an ODA update unless a later issue is available.

Table E. 4E25 Library Packages - Issue 1

Packages	Components (Pidents)	Title
LG25FLDS	TGAP	Trunk Group Assignment Program
	LIB1	Field Support Library Program 1
LG25NETX	NETX	Network Exercise Library Program
LG25PGRO	XAPP	1B Processor Translation Alteration and Print Program
LG25PKG1	ERLI	Error Analysis Library Program
LG25TMSG	TMSG	Time-Multiplexed Switching Growth Program

4.14 ***4E25 Library Tape (J4A048G-1, List 3M5) (TP-4A125):*** This tape contains the library packages listed in Table E. Further releases of this tape may contain additional packages. The library tape is not required if the data base is to be loaded via the Off-Line Processor. It is not normally necessary to order this tape for an ODA update unless a later issue is available.

5. Office Performance Evaluation Prior to Update Process

NOTE:
The provisions of Part 5 shall be met by each office before a generic retrofit or ODA update is permitted.

5.01 To bring about a retrofit/ODA update and to minimize service risks, the ***4ESS*** switching equipment must meet and maintain minimum system performance criteria. The performance criteria are determined by a daily monitoring and count of several machine maintenance actions, and by the observation of frame status for the 3 weeks before the update. The office performance level components required for the update are shown in Figure 2.

A. Discounting

5.02 The performance level components may, at times, exceed the limits shown in Figure 2. The significant portion of these daily counts should only apply to effects of problems for which no immediate solution is evident or those that are not reproducible. A method for discounting the effects of abnormal system behavior, for which the cause is known or that is not expected to recur, will be applied for the following cases:

- Interrupts, interjects, and phases because of identified and resolved hardware problems
- Interrupts, interjects, and phases because of identified software problems (generic, ODA, network management, and so on)
- Results of office or Lucent Technologies error.

B. Performance Requirements for 8 Hours Before the Update Process

5.03 The office should be performing within the standard office performance level for the 8-hour period before the update process. In addition, the 1B master test and control (MTC) and secondary record (SREC) input/output (I/O) channels should experience zero interrupts.

C. Daily Reporting

5.04 Figure 3, Preretrofit Office Evaluation Tally Sheet, is provided for use in summarizing data required for daily reporting.

D. On-Line Reports

5.05 The appropriate support organization will evaluate the office condition during the final weeks before the update process. This will be done by using the daily and weekly reports, and by analyzing error analysis program (ERAP) reports via a data terminal. The following ERAP information is required:

- Processor interjects
- Input/output base level maintenance (BLM) reports
- All interrupts on a per-frame basis.

• INTERRUPTS	
1B PROCESSOR	≤ 1 PER MEMBER NUMBER PER DAY ≤ 3 PER DAY TOTAL
TMS, NC, PUB, IO, CCIS	≤ 2 PER MEMBER NUMBER PER DAY ≤ 4 PER DAY TOTAL
PERIPHERY, PER OPERATIONAL SP CORE (SP, DT, TSI, XTSI) OR DIF (DIF, TSI COMPLEX) (THE ALLOWABLE DAILY INTERRUPT COUNT SHALL NOT EXCEED 25, REGARDLESS OF OFFICE SIZE)	≤ 3 PER DAY
PBFRs	≤ 1 PER DAY
• INTERJECTS	≤ 2 PER MEMBER NUMBER PER DAY ≤ 5 PER DAY TOTAL
• BASE LEVEL ANALYZED, CORRECTED AND/OR UNDERSTOOD	
• PHASES/DUPLEX FAILURES	
DIRECTED PHASE 1	≤ 1 IN 2 WEEKS
SYSTEM PHASE 1	≤ 1 IN 1 WEEK
PHASE 2 OR 3	≤ 1 IN 4 WEEKS
DT, VIF, OR EST	≤ 1 IN 4 WEEKS
TGR/TER LINK PAIR	≤ 1 IN 2 WEEKS
• OUT-OF-SERVICE UNITS	
NUMBER OUT-OF-SERVICE	≤ 5 AT ANYTIME
CRITICAL UNITS: CC DIF PS TMSP CS LN PUB TSI/XTSI CU NCLK SP	
• 3B COMPUTER	
INTERRUPTS	≤ 3 PER DAY
PHASE 1	≤ 1 IN 4 WEEKS
PHASE 2 OR 3	≤ 1 IN 4 WEEKS
CNI RING INIT	≤ 1 IN 2 WEEKS
CNI RING TRANSPORT ERRORS	≤ 2 PER DAY
DLNE ERRORS	≤ 1 PER DAY

Figure 2. Retrofit/ODA Update Office Performance Level Components

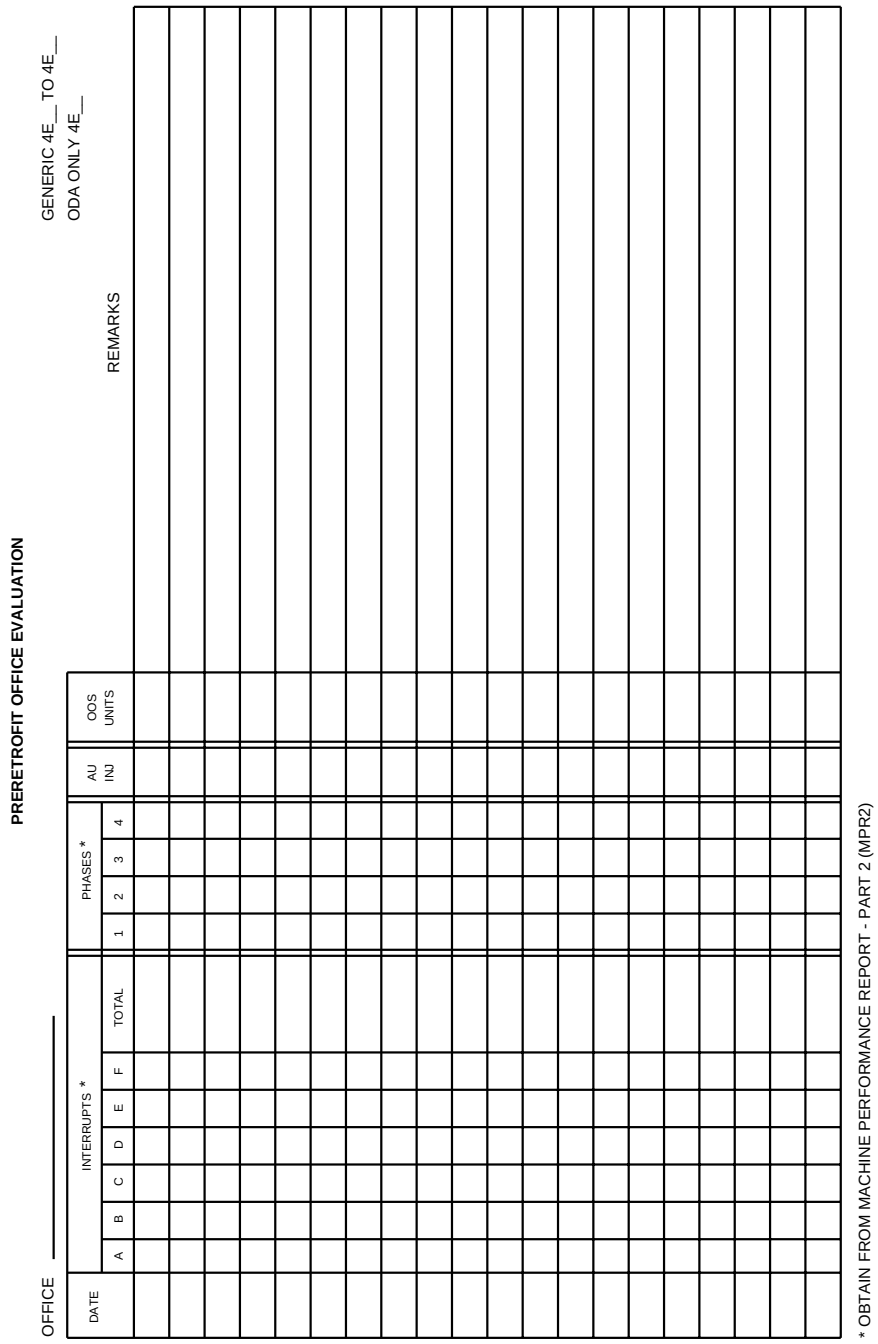


Figure 3. Preretrofit Office Evaluation Tally Sheet

6. Overall Scheduling Process and Coordination

6.01 As part of the overall review of the generic retrofit, ODA update, and growth processes, close coordination is required among the many organizations responsible for the planning and scheduling of a new update office implementation schedule. To provide the required coordination, the New Technology Integration (NTI) group was started to ensure the consistent and fair application of the generic introduction and update rules; to provide a forum to resolve differences between service requirements and system support capabilities; and to identify long-term trends so that rules and procedures can be updated appropriately.

6.02 The overall retrofit/ODA update process is depicted in the Growth/Update Schedule (Figure 4).

6.03 At the -4/-3/-2 week event, Trunk Assignment Generation System (TAGS) processing must be completed by Lucent Technologies Regional Engineering. Any hardware reconfigurations during the Quiet Interval before the update can jeopardize the update schedule and will incur additional software processing charges.

6.04 Information in Figure 4 has been extracted from AT&T System Letters, IL81-01-351 and RL80-01-239. These system letters cover recommendations for engineering, planning, and scheduling ***4ESS*** switching equipment additions and generic retrofits. Certain items in Figure 4 have been restated to provide a time reference of the events listed in Part 7.

6.05 The schedule provided in Figure 4 should be used as a guide in the planning and implementation of generic retrofits/ODA updates and any associated equipment growth additions. The schedule is a combination of the Lucent Technologies ODA Group schedule for the production of ODAs, and the requirements for office preparation and hardware installation. Verification intervals, test requirements, and tracking tools are contained within the schedule or appropriately referenced.

6.06 The criticalness of meeting the dates listed on the schedule cannot be overstated. The ODA process is a long and involved combination of several interrelated support subsystems. Since the Lucent Technologies ODA Group is working on several offices simultaneously, the input data must be accurate, complete, and on time to ensure that the update schedule for this and other offices remains on schedule.

	ITEM	RESPONSIBILITY	DATES TARGET	DATES ACTUAL
1.	Equipment Order Due to LT	Office Engrg.	10W-P22	
2.	Floor Plan Due to LT	Office Engrg.	C-1	
3.	CARTS Worksheets and CMS Tape Due to Office	LT Engrg.	?W-P22	
4.	ODA TWRP Tapes or Files Due to ODA Group from Office (TAGS & ODA Verification)	Office Oprns.	8W-P22	
5.	ODA Preliminary Error Checking Begins	ODA Group	8W-P22	
6.	Carry Out -8 Week Events†	Office Oprns.	8W-P22	
7.	Main Equipment Shipped	LT Svc.		
8.	Main Installation Start	LT Instl.		
9.	Processor Equipment Shipped	LT Svc.		
10.	Processor Installation Start	LT Instl.		
11.	Processor Growth Completed	LT Instl. Office Oprns.	2D-P12A/B	
12A.	Carry Out -2/-3 Week Quiet Interval Events† (for LEC)	Office Oprns. LT Instl. ODA Group	2W-P22/ 3W-P22	
12B.	Carry Out -4 Week Quiet Interval Events† (for AT&T)	Office Oprns. LT Instl. ODA Group	4W-P22	
13.	Office Distributing Frame Information Due to LT Region (CARTS)	Office Engrg. Office Oprns.	C-12A/B	
14.	Office Distributing Frame Information Due to NSC (CARTS)	LT Engrg.	C-12A/B	

Figure 4. 4E25 Growth/Update Schedule (Sheet 1 of 2)

	ITEM	RESPONSIBILITY	DATES TARGET	DATES ACTUAL
15.	ODA Memory Sizing (406C and 406Z) Forms Due to LT-BL from Office	Office Engrg. Office Oprns.	C-12A/B	
16.	LT TAGS Due to LT-BL from NS Region	LT Engrg.	C-12A/B	
17.	Carry Out -3 Week Events†	Office Oprns.	3W-P22	
18.	Carry Out -2 Week Events†	Office Oprns.	2W-P22	
19.	Carry Out -1 Week Events (if required)†	Office Oprns.	1W-P22	
20.	Carry Out -3 Day Events†	Office Oprns.	3D-P22	
21.	Carry Out -2 Day Events†	Office Oprns.	2D-P22	
22.	Generic Retrofit/ODA Update	Office Oprns. Support Organization	*	
23.	Installation Turnover Date	LT & Office		
24.	Service Date	Office Oprns.		

LEGEND:

W – One Calendar Week (7 Days)
D – One Calendar Day
P – Prior to (Latest Date Event Can Occur)
A – After (Earliest Date Event Can Occur)
C – Concurrent With
? – Nonfixed Interval Conditioned on Office Size
* – Key Date – Externally Imposed
† – Details Provided in Part 7
3W-P22 Listed Event is to Occur 3 Weeks Prior to Event 22 (3 Weeks Before Retrofit or ODA Update)
CARTS – Circuit Assignment Record Transfer System
CMS – Circuit Maintenance System
LT – Lucent Technologies
ODA – Office Data Assembly
TAGS – Trunk Assignment Generation System
TWRP – Tape Write-Read Program

Figure 4. 4E25 Growth/Update Schedule (Sheet 2 of 2)

6.07 Schedule dates are established as follows for items listed on the 4E25 Growth/Update Schedule (Figure 4) as follows:

(1) Items 1 through 5 and 11 through 14 should be derived by the Lucent Technologies Region and the office from standard interval information shown on the schedule.

(2) Items 7 through 9 are to be scheduled by the office and Lucent Technologies (Region and Installation) organizations to ensure that Item 16 is completed on schedule. Item 16 must be completed before the scheduled Quiet Interval is to begin. This will ensure that the final ODA tapes accurately reflect the final processor hardware configuration.

(3) Items 6 and 14 through 21 are derived by the Lucent Technologies Region from standard interval information shown on the schedule. Additional details of the activities involved are included in Part 7 of this practice. The information due at the Lucent Technologies ODA Group is required as part of the standard interval for generating new ODA tapes.

(4) Items 23 and 24 apply to the peripheral growth activity (if any) that will follow the retrofit or ODA update. Office performance during this period should be closely monitored to ensure that the criteria specified in 234-381-001 are being met.

7. Preupdate Process (Beginning 14 Weeks Prior to Update)

7.01 This part describes update schedule dates and those office operations required to be started or completed on the specified date. Each date is stated as an interval with respect to the day of the update process. The interval is stated in weeks unless otherwise specified; that is, -8 equates to 8 calendar weeks before the date of the update process. The events described also appear as intervals on the 4E25 Growth/Update Schedule (Figure 4) in sequential order.

-14 Week Events

7.02 If trunk assignments are being moved during the update (this is called ''grooming''), the office engineer submits a trunk-grooming request to provisioning.

-9 Week Events

7.03 All documents in Table B and Table C or Table D should be on-site.

-8 Week Events

7.04 NESAC will data-link the ODA for AT&T offices.

For LEC offices using ODAMANager with an inter-company data-link, the ODA will be transferred by the data-link.

For all other offices, two tape copies of the ODA at 4-mm are made on separate Digital Audio Tape (DAT) units, labeled accordingly; and sent to the Lucent Technologies 4ESS Data Platform Development ODA Group so that the new TAGS information can be checked against the present office data. This will ensure that the current office hardware assignments will match both the present and future assignments in the new ODA. The ODA tape-write procedure is contained in 234-351-002.

7.05 Provisioning completes trunk grooming, if required.

-5 Week Events

7.06 Verify input/output terminal options for the recent change monitor channel (RCMOC) so that the recent change information can be collected.

7.07 Verify recent change storage capability. The ability to save recent changes is a critical part of the 4E24 to 4E25 retrofit and ODA update.

If the office is covered by a Machine Administration Group (MAG) or Operation Support System, this task is their responsibility. If the office is not covered, it is the responsibility of the Maintenance Operation Center (MOC).

7.08 Review experiences from previous updates. If any problems were encountered, ensure that appropriate action is taken to prevent the recurrence of similar problems.

7.09 The new ODA, to be loaded with the 4E25 generic, must reflect the current processor configuration existing at the time of the retrofit. For this reason, any changes or growth in the 1B Processor or 3B21D APS units are to be completed before the final ODA tape is written.

-4/-3/-2 Week Quiet Interval Events

7.10 The ''Quiet Interval'' for the Local Exchange Carrier (LEC) is either 2 weeks if the office uses ODAMANager with an inter-company data-link or 3 weeks if the office writes their ODA to tape. The AT&T ''Quiet Interval'' remains at 4 weeks.

CAUTION:
If the office does not adhere to the -2/-3 (for LEC)/-4 (for AT&T) week criteria, the update may be postponed by the New Technology Integration (NTI) group.

7.11 The memory-sizing forms (406C and 406Z), if any, are due at the beginning of the Quiet Interval. The forms should be sent to the following:

Lucent Technologies
4ESS Data Platform Development (ODA Group)
Room 4E-317
2000 N. Naperville Road
Naperville, IL 60566-7033

or email to the following:
blange@lucent.com or
mhavemann@lucent.com

7.12 The following preparations are made for the generation of ODA tapes:

- Two days before the final ODA is captured, all 1B Processor network change notice (CN) activity is completed except for those Class A CNs necessary for the update.
- NESAC will perform the ODA copy for AT&T offices at the -4-week interval.

  For LEC offices using ODAMANager with an inter-company data-link, at -2 weeks, the ODA will be transferred via the data-link.

  For all other offices, at -3 weeks, two tape copies of the ODA at 4-mm are written and sent to Lucent Technologies ODA Group. The ODA tape-write procedure is contained in 234-351-002. All current recent changes must be activated before the ODA tapes are written.

7.13 Following the generation of the ODA tapes or ODA data-link transfer, preupdate interval (Quiet Interval) is started. During this time, it is important that unit-type translation changes be kept to a minimum. Network Control Center (NCC) or PECC must be contacted if unit-type translation changes are required. If any absolute or functional changes are necessary, copies of each should be retained by the office for inclusion with the recent change update process after the retrofit. Such changes might include recent change forms 800 and 801, or translations alteration and print program (XAPP) messages.

7.14 If the office is covered by an Operation Support System, an Operation Support System command must be entered after the ODA tape is written, but before any recent changes are activated. This command starts the ''Quiet Interval'' by expanding the data base to more than a 2-week storage.

7.15 All recent change activity involving CLLI* code, CLLI Code Assignment for Special Purpose Routing (CASPER), Call Completion Analysis System (CCAS), Subscriber Recording Systems (SRS), and other similar-type trunks should be stopped.

-3 Week Events

7.16 This period is not reduced for LEC offices.

7.17 The office update coordinator shall provide the office evaluation data to the appropriate support organization. This data will be used by the support organization to determine if the office has met the performance criteria required for the update process. The standard office performance level components are listed in Figure 2. A more detailed description of system performance criteria and the required daily reporting can be found in Part 4.

7.18 The office update coordinator should ensure that a method of procedure (MOP) is prepared. Information in the method of procedure should cover the following:

(a) Scheduling of all tests and verifications required before the update process.

(b) References to the appropriate TOP procedures required to complete each operation. The method of procedure should not contain detailed procedural data that would duplicate the TOP procedures. This applies particularly to the procedures for the transition to the new data base. Much supporting information, verification data, and emergency recovery steps are included in the TOP. Retrofits and ODA updates are critical processes that can affect the integrity of the office.

(c) References to start time and/or date when each operation will be performed. These schedules should be coordinated with the appropriate support organization (NESAC or PECC).

(d) The individual or work group responsible for execution of each operation.

(e) Tests of particular interest or operations that are unique to each office, including any operations necessary to provide additional checks uncovered in paragraph 7.08.

(f) A work center staffing chart showing the personnel needed during the update process.

(g) Appointing of an overall update coordinator. This would allow a single point of contact for all parties, offices, work centers, and so on, involved in the update.

-2 Week Events

7.19 Events scheduled for this date consist of the following:

(1) Confirming the shipping schedule for the required tapes.
(2) Forwarding a copy of completed method of procedure to the applicable support organization.

-1 Week Event

7.20 If the office is covered by an Operation Support System, starting 1 week before the update process, recent changes must be verified to be error-free on a daily basis until the update.

7.21 If the office contains an XTSI, no XTSI software update is required at this time. If changes occur and an update is necessary, each XTSI must be updated as close to the 1B Processor retrofit as can be scheduled.

* COMMON LANGUAGE is a registered trademark and CLEI, CLLI, CLCI, and CLFI are trademarks of Bell Communications Research, Inc.

The procedure to update the XTSI system files is contained in 234-160-210AC (for AT&T offices) or 234-160-210 (for LEC offices). These documents use the new XTSI software update tool. The manual XTSI update procedure is still contained in 234-160-201AC (issue 2 or later for AT&T offices) or 234-160-201 (Issue 3 or later for LEC offices).

-3 Day Events

7.22 The following events are scheduled for 3 days before the update process:

(a) For LEC offices, the 4E25 generic (TP-4A025), 4E25 ODA (TP-ODD-xxxx-Hx-xx), 4E25 library (TP-4A125), 4E25 NWM (TP-4A025-01), and 4E25 TLP (TP-4A025-02) tapes are due on site, as required. For AT&T offices, the 4E25 TLP (TP-4A025-02) tape is due on-site. If any tapes or documentation are not on-site, the appropriate support organization should be contacted for assistance.

(b) Generic documentation per PG-4A025 is due on-site.

(c) Library program documentation per PG-4A125 is due on-site (if required).

(d) Check each new tape to ensure that the tape header can be read and header information is correct. This header information can be checked by entering VER:UPDATE:TAPE,MT a! input message from the 3B APS.

(e) For LEC offices using ODAMANager with an inter-company data-link, verify that proper ODA is available by entering VER:UPDATE:TAPE,MT "/etc/bwm/omgroda" input message from the 3B APS.

(f) It is not necessary to prepare traffic and plant measurement input messages (SCHED:MEASREPT...!) on a teletypewriter cartridge tape or floppy disk for reentry after the office is operating on the new system. The traffic and plant measurement schedule data is mapped over during the update.

(g) Arrange for AMA data collection on the evening of the update. This procedure is covered in 234-160-025.

(h) If overwrites are not on the support organization computer system, interrogate Software Change Administration and Notification System (SCANS) network for the required 4E25 generic overwrites (234-160-025); and prepare non-critical overwrites on a cartridge tape or floppy disk for post-retrofit insertion.

-2 Day Events

7.23 The following events are scheduled for 2 days before the update process:

(1) Use 234-160-025, to ensure the following verifications and tests are completed:

(a) If the current generic has not been written to tape (4-mm), a backup generic tape should be written.

(b) If the new data base is to be downloaded via the Off-Line Processor, an OP:APPLOAD UPD! input message is entered to ensure the new data base is available in the UPDATE file.

(c) If the tapes are going to be loaded by the office, the new generic and/or office data and NWM tapes are loaded on 3B21D APS Disk System using the 3B21D APS DAT units.

(d) If the office receives their ODA via ODAMANager inter-company data-linking, the new generic and/or NWM tapes are loaded on 3B21D APS Disk System using the 3B21D APS DAT units. The ODA is loaded from the /etc/bwm/omgroda directory to the 3B21D APS Disk System.

(e) Rebuild any large scale nailup connections in the UPDATE file.

(f) Verify the 1B file hashed areas for zero errors.

(g) If required, insert critical overwrites into the new generic and/or ODA in the UPDATE file.

NOTE:
The critical generic overwrites to be applied before the retrofit are supplied to NESAC and PECC by Lucent Technologies. The Lucent Technologies ODA Group supplies the appropriate support organization with critical overwrites to be applied to the new ODA before the update. These overwrites may be supplied via a 3B21D APS broadcast warning message (BWM).

(h) Run the cross translations compare program to compare certain critical data in the new ODA with data in the active system.

(i) If the results of cross translations compare program show unexplained mismatches, these errors must be resolved with the applicable support organization before proceeding.

(2) If the office is covered by an Operation Support System, the Operation Support System data base should be verified to ensure there are no routing form (300 series forms) problems.

(3) Complete all in-progress common network interface (CNI) ring growth before the update. If growth is not completed, the growth must be backed out or the update delayed.

8. The Update Process

8.01 This section outlines the tasks involved in performing a generic retrofit/ODA update; details are contained in 234-160-025.

8.02 The generic retrofit procedure must be reviewed and thoroughly understood before being performed. It is very important that if something is not understood, to contact your next higher technical support group for clarification.

8.03 When reviewing the generic retrofit procedure, become familiar with the backout procedure that may be required.

8.04 System operation must be closely monitored during the generic retrofit procedure.

A. Prepare Office for Update

8.05 The following office activities are performed on the evening of the update process:

(1) Collect office performance data for post update comparison.

(2) Ensure that the system hardware diagnostic status is at a level that will support the update process without endangering the office integrity. The minimum frame requirements to begin the update are shown in Table F.

(3) Inhibit recent change activities.

Table F. Minimum Frame Requirements and Status for Generic Retrofit or ODA Update (Note 1)

UNIT	MINIMUM FRAME REQUIREMENTS (NOTE 2)	UNIT	MINIMUM FRAME REQUIREMENTS (NOTE 2)
3B20D	Fully duplexed	PS	All in-service
API	APIs duplexed and in-service	SCS	All controllers and service circuit units available for service
AUI	Fully duplexed	SP	Base SPs operating duplex plus All Nonbase SPs in-service. No more than 1 controller out-of-service
BUSES	All buses in-service (operating duplex)	S&SD	Fully duplexed
CC	Operating full duplex	TGR	All in-service and operating duplex
CS	All in-service	TMS	All in-service (operating duplex)
EST	All in-service and operating duplex	TSI/XTSI	Dedicated TSI/XTSI operating duplex plus all other TSIs/XTSIs in service. No more than 1 controller out-of-service
IFB	Fully duplexed	VIF/DT/DIF	All in-service. No more than 1 VIF/DT/DIF controller out-of-service (excluding TSI caused). No more than 1 VIU/DTU/DIU out-of-service in any 1 VIF/DT/DIF
IOUS	All IOUSs plus all required I/O channels in-service		
MUP	Fully duplexed		
NCLK	All 4 chains in-service		
NM	Must be operational and in-service (duplex)		

Note 1: The abbreviations used in this table are:

API - Attached Processor Interface
AUI - Auxiliary Unit Interface
CC - Central Control
CS - Call Store
DIF - Digital Interface
DIU - Digital Interface Unit
DT - Digroup Terminal
DTU - Digroup Terminal Unit
EST - Echo Suppressor Terminal
IFB - Interface Buffer
IO - Input/Output
IOUS - Input/Output Unit Selector
MUP - MCC Utility Processor
NCLK - Network Clock
NM - Network Management
PS - Program Store
SCS - Service Circuit System
S&SD - Scanner and Signal Distributor
SP - Signal Processor
TGR - Terminal Group
TMS - Time-Multiplexed Switch
TSI - Time Slot Interchange
VIF - Voiceband Interface
VIU - Voiceband Interface Unit
XTSI - Expanded Time Slot Interchange

Note 2: Any operational unit which fails diagnostics must be powered down.

(4) Copy the following data on tape:

CAUTION:
The COPY:APPFILE NORM! message must not be entered after the ODA tape is written.

- Resident ODA
- Long-term storage (LTS) data
- Traffic and plant measurement (TPM)
- Trunk-out-of-service list (TOSL).

(5) Obtain the following printouts:

- On-site operations report and network management controls
- Detailed trunk status for all trunk subgroups
- Trunk appearance number to trunk appearance number (TANTOTAN) and large scale nailup circuit assignments so they can be verified after the office is running on the new data base
- Listing of all out-of-service units.

(6) Run Processor Configuration test (Phase 95) on each Central Control.

(7) If the office is set up for AMA recording, save primary IC and/or OC data. This must be scheduled to complete within 2 hours before the update.

(8) If the office is covered by an Operation Support System:

(a) Convert the Operation Support System recent change monitor channel recent change data base.

(b) Convert the Operation Support System recent change data base.

(c) If problems are encountered with 300 series routing forms during the conversion, the forms in error will have to be deleted.

(9) Set all trunks that were added during ''Quiet Interval'' or since Off-Line Processor recent change update to CAD.DSA state before performing update.

(10) Verify that CNI ring is in a stable condition.

(11) Observe the 1B MTC terminal and 3B maintenance terminal (MCRT) printouts for any audits that are inhibited. If audits are inhibited, take corrective action, as determined by the appropriate support organization, before the update.

B. Update Stores with New Generic Program and/or ODA Issue

8.06 After the primary IC and/or OC AMA data has been saved, the update can continue. An outline of the update process follows:

(1) Verify the UPDATE file to ensure that the correct data base is still loaded.

(2) If required, insert critical overwrites into the new generic and/or ODA using the 3B21D APS out-of-service overwrite (OSOW) program.

(3) Map key variable data in the NORMAL file over to the UPDATE file.

(4) Verify the 1A file hashed areas for zero errors.

(5) Update TOSL during the update.

(6) Set up 1B Processor Master Control Complex (MCC) controls for a manual pump to the 4E25 generic (in the UPDATE file) on the 3B21D APS disk

(7) Invoke a Hard A at the 1B Processor MCC by entering **01**.

(8) Observe the 1B Processor MCC **86 - CODE** field on the EAI page for progress since all input/output communication with the system will be suspended.

NOTE:
In **EAI FAIL DATA DISPLAY** section, octal digits "aaa" and "bbbbb" (Figure 5) must begin incrementing within 10 seconds after invoking a Hard A (**01** command). "bbbbb" indicates that 1B Processor is attempting to pump and "aaa" indicates the memory range that is being pumped.

"aaa" and "bbbbb" will continue to increment until **PC PROGRESSION - CMPL** goes black on green, approximately 2 minutes after invoking the Hard A (**01** command).

86 - CODE: O'000aaabbbbb
87 - DATA:
88 - ADDR:

Figure 5. 86 - Code Field Layouts

(9) Observe 1B Processor MCC for phase 3 indication.

NOTE:
On 1B Processor MCC terminal, fourth left-most digit (bit 23) in **EAI FAIL DATA DISPLAY - 86 - CODE** field will go between **0** and **4**. **53 - PHASE 3** will color black on purple; and **PHASE IN PROG**, in lower right-hand corner, goes white on red. The phase could take up to 4 minutes to complete.

(10) Wait for the phase to complete with I/O communication.

(11) After the phase 3 completes, a return to call processing occurs but under control of the new software data base.

(12) If 1B Processor recovered on new data base without I/O, set up the 1B MCC terminal to restore I/O; and perform a Soft A to restart the I/O.

(13) Monitor system performance.

C. Update Successful

8.07 When the system begins to process calls on the new data base, do the following:

(1) Release the manual force on the processor configuration.

(2) Rename the 3B21D APS UPDATE file to the NORMAL file via an input message.

NOTE:
The only recourse to the old data base is via a manual pump configuration.

(3) Verify service circuits and activate, if required.

(4) Verify all TANTOTAN connections and compare with preupdate assignments.

(5) Verify large scale nailup capability (LSNC) connections and compare with preupdate assignments.

(6) Run the system audit of writable stores (SAWS) audits (AUD 43, 44, 45, 66, and 72).

8.08 Check system operation as follows:

(1) Verify AMA operation is running properly.

(2) Clear the recorded message area on disk.

(3) Start trunk testing.

(4) Start network management testing.

(5) Make sure post-retrofit testing and evaluation activity is monitored by all work centers.

8.09 Any recent changes that were applied to the old data base after the recent change cutoff date are now reentered. It is not necessary to reenter the traffic and plant measurement schedules anymore. This data is mapped over

during the update. The final step is to install any 4E25 generic overwrites previously received via SCANS. If any overwrites were installed or a generic retrofit was performed, 1B Processor generic tapes should be written.

8.10 The system is now fully loaded with the new software system. Machine performance continues to be evaluated for a week following the update to verify that all office performance requirements are being met.

D. Update Failure

8.11 The following lists the failure points that may occur during the update of the 1B Processor. If one of the failures occurs, a backout to the old data base is required. This list is not all inclusive since an unforeseen failure may be received:

- **86 - CODE** field did not start counting after second attempt [second attempt is defined as the Central Controls (CCs) have been switched to try another attempt and another failure occurs].
- In **86 - CODE** field "aaa" [Figure 5] does not begin to increment and "bbbbb" does begin to increment after second attempt.
- If "aaa" stops incrementing and "bbbbb" continues to increment after second attempt.
- If any value appears in **87 - DATA** field after second attempt.
- **PC PROGRESSION - CMPL** did not change to black on green after second attempt.
- **53 - PHASE 3** did not color black on purple after second attempt.
- Phase 3 did not complete after second attempt.
- System did not recover on new data base with I/O communication after second attempt.
- System did not recover on new data base after second attempt.

9. Post Update

9.01 Following the completion of the update process, a review of the entire update period should be made. Problem areas for which corrections were required should be recorded for future update consideration (paragraph 7.08).

9.02 On +3 days following a generic retrofit/ODA update, a meeting is called by Software Quality Control to discuss the update events of the previous weekend and to conduct a post-process evaluation. Attendees may include representatives of Lucent Technologies ODA Group, NESAC, PECC, and other update support groups. Local problems encountered that require further investigation should be forwarded to this group for consideration and resolution.

Abbreviations and Acronyms

A

AMA
Automatic Message Accounting

C

CARTS
Circuit Assignment Record Transfer System

CN
Change Notice

CNI
Common Network Interface

D

DAT
Digital Audio Tape

E

ERAP
Error Analysis Program

L

LTS
Long-Term Storage

M

MCC
Master Control Complex

MHD
Moving Head Disk

N

NESAC
National Electronic Systems Assistance Center

NTI
New Technology Integration

NWM
Network Management

O

ODA
Office Data Assembler/Office Data Assembly

ODAMANager
Office Data Assembly Manager

OSOW
Out-of-Service Overwrite

P

PECC
Product Engineering Control Center

PS
Program Store

S

SCANS
Software Change Administration and Notification System

SCS
Service Circuit System

T

TAGS
Trunk Assignment Generation System

TANTOTAN
Trunk Appearance Number to Trunk Appearance Number

TLP
Trouble Location Procedure

TOP
Task Oriented Practices

TOSL
Trunk Out-of-Service List

X

XTSI
Expanded Time Slot Interchange

How Are We Doing?

Document Title: ***4ESS***™ Switch—Generic Retrofit and ODA Update—Planning and Scheduling Guide—4E24 to 4E25

Document No.: LT 234-185-025 Issue 1 Date: October 1999

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