



DOCUMENTATION EXPRESS

SAMPLE PROJECT PAGES

by

Mike Hayden

Senior Writer / Consultant / Founder

| Pg | Client | Documentation Type | Sample Page |
|-----------|-----------------------|-------------------------------------|--|
| 1. | Applied Materials | ISO 9000 QA Certification | Closed System Run Certification |
| 2. | Applied Materials | ISO 9000 Non-Conformance | Handling GPS Engineering Non-Conformances |
| 3. | Applied Materials | ISO 9000 Training Manual | PVD QA Technician Certification Training Manual |
| 4. | Applied Materials | ISO 9000 Training Manual | PVD QA Technician Certification Training Manual |
| 5. | Applied Materials | ISO 9000 Operations Manual | Standards for Developing Documentation |
| 6. | Applied Materials | ISO 9000 Operations Manual | Writing QMS Documentation |
| 7. | Applied Materials | Business Process Simulation | Non-Conformance Process Modeling |
| 8. | Documentation Express | Operations Manual | Key Frustrations in Documentation Maintenance - Documentation Maintenance Problems |
| 9. | Documentation Express | Operations Manual | Key Frustrations in Documentation Maintenance - Establishing a Maintenance Policy |
| 10. | Diasonics | Operators Manual | Philosophy of Operations |
| 11. | Diasonics | Operators Manual | Audio/ECG Control Panel |
| 12. | Diasonics | Operators Manual | Mode Selection - Scan Modes |
| 13. | Diasonics | Operators Manual | Mode Selection - Pulsed Doppler |
| 14. | Diasonics | Operators Manual | Standard Biopsy Devices - Attaching Biopsy Devices |
| 15. | Diasonics | Operators Manual | Cardiac Measurement - Doppler |
| 16. | Rolm | PhoneMail User Guide | How to Use Decision Tree |
| 17. | Rolm | PhoneMail User Guide | Decision Tree |
| 18. | Atherton Technology | User Manual | VAX Ada Integration User's Guide |
| 19. | UltraTech Stepper | ISO 9000 Manufacturing Instructions | Install the Lens Assembly and Adjust Course Position |



5. VERIFY OPERATIONAL CHECKS

NOTE: All references in this section (5) are to the process recipe for each PVD chamber, which do not appear in the final test work instructions (FTWI).

- 5.1. ___ Create a sequence named **CERT** that is the same as the 1K sequence, using the qualification recipes.
- 5.2. ___ If the system has **Pre-Clean chambers**, set up clean wafers.
- 5.3. ___ Select recipe header and change expected heater temperature to 100 C.
- 5.4. ___ Turn all **heaters** ON at 100 C.

NOTE: Advanced 101 and HTHU heaters need to be set at 200 C.

- 5.5. ___ Verify that the **recipes** are correct.
 - 5.5.1. ___ Find in the Red Book, the specified recipes and temperatures.
 - 5.5.2. ___ Find in the Final Test book, the associated process data sheets.
 - 5.5.3. ___ Look at the qualified process data sheets; correlate and verify that the process data sheets' recipe numbers match the Red Book's recipe numbers.
 - 5.5.4. ___ Go to the program header screen, select programs, and use the arrows at the bottom to find the recipe names.
 - 5.5.5. ___ Match up the associated process qualified recipes numbers with the recipe numbers shown on the screen under the recipe names.
 - 5.5.6. ___ Navigate: (to) Monitor Chamber Screen or Chamber Service Screen.
 - 5.5.7. ___ Run the process recipe from Final Test that qualified the chamber.
- 5.6. ___ Verify that the **Orienter degas lamps** are on.
- 5.7. ___ Place system in **Auto Mode**
- 5.8. ___ Place **load lock** in **unload** position.
- 5.9. ___ Verify that the **Status Lamp** works by pressing RUN and STOP buttons alternately.
- 5.10. ___ Load 5 **wafers** in the bottom and the top of each cassette, keeping the first and last slot vacant, and ensuring that no wafers are cross-slotted.
- 5.11. ___ Press **RUN**.
- 5.12. ___ Verify that **load lock door** operates correctly.
- 5.13. ___ Verify that there are **no mapping errors**.



APPLIED MATERIALS
PVD DIVISION

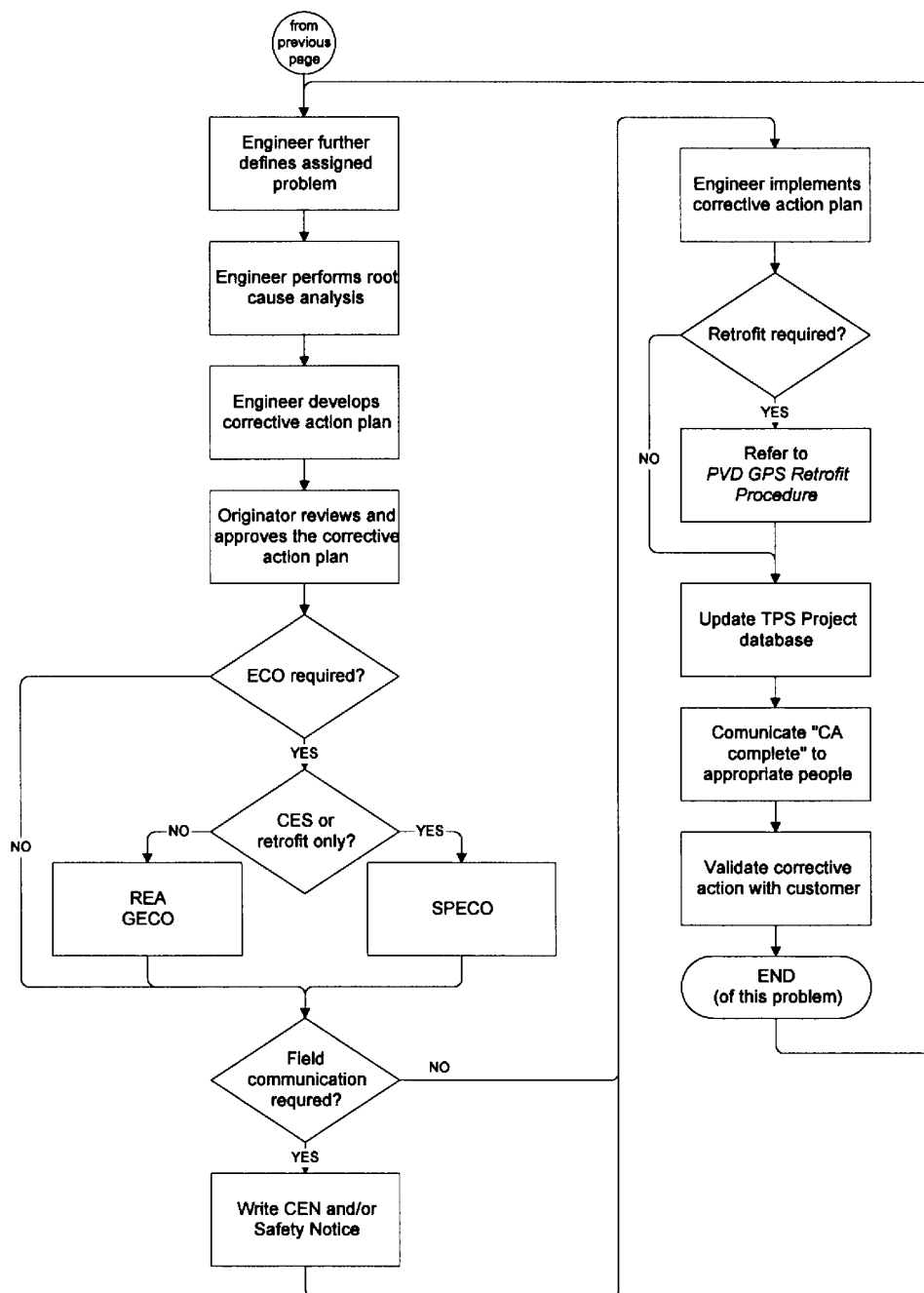
Doc. No.
Revision
Date

xxxxx
Draft 1
9/27/96

Global Product Support Engineering
Work Instruction

Handling GPS Engineering
Non-Conformances

Page 5 of 8



/gpsengwi.doc/Printed 9/27/96
Mike Hayden



APPLIED MATERIALS
PVD DIVISION

Doc. No.
Revision
Date

PTPQW003
Draft 5
26 Jan 96

Centura / Endura
Work Instruction

**PVD QA Technician
Certification Training Manual**

Page 30 of 50

6.2.6.6. System Shipment Inspection

Purpose: To train trainees to verify the presence of the system on the shipping checklist via the configuration workbook and sales order, and to write detailed Problem Logs.

Prerequisites: Completion of **Shipkit Consumables Inspection**.

Training Sequence: Training will be under the supervision of an assigned Final Test Technician using QA Technician.

Reading Assignments: *QA Policies and Procedures*.

Proficiency Demonstration: Upon completion of this module, the trainee will demonstrate ability to recognize non-conformances between shipping checklists, system configuration workbook, customer SO, and the shipping documents, and write detailed Problem Logs.

Next Training Module: After demonstrated proficiency, **Non Conformance Feedback Meeting**.

6.2.6.7. Non Conformance Feedback Meeting

Purpose: To train trainees to review certification non-conformances, develop a detailed presentation of most important issues, and to conduct a non-conformance review meeting with the work center.

Prerequisites: Completion of **System Shipment Inspection**.

Training Sequence: Training will be under the supervision of an assigned Final Test Technician using.

Reading Assignments: *QA Policies and Procedures*.

Proficiency Demonstration: Upon completion of this module, the trainee will demonstrate ability to review certification non-conformances, develop a detailed presentation based on Pareto Charts highlighting the top three non-conformances, give the presentation to the assemblers and engineers for that zone, and discuss solutions.

Next Training Module: After demonstrated proficiency, **QA Closed System Run Training**.



APPLIED MATERIALS
PVD DIVISION

Doc. No.
Revision
Date

PTPQW003
Draft 5
26 Jan 96

Centura / Endura
Work Instruction

**PVD QA Technician
Certification Training Manual**

Page 37 of 50

6.2.7.6. Verify CESs

Purpose: To train trainees to verify Customer Engineering Specials, and to write detailed Problem Logs.

Prerequisites: Completion of **Verify Operational Checks**.

Training Sequence: See PVD Closed System Run Certification Work Instruction (PTPQW004). Training will be under the supervision of an assigned Qualified QA Technician.

Reading Assignments: *PVD Closed System Run Certification Work Instruction, Appendix A, section 6.*

Proficiency Demonstration: Upon completion of this module, the trainee will demonstrate ability to verify that all CESs on the SO are present, complete, conform to specified assembly procedures, to test the CES, and to write detailed Problem Logs.

Next Training Module: After demonstrated proficiency, **Verify Atmospheric Checks**.

6.2.7.7. Verify Atmospheric Checks

Purpose: To train trainees to run atmospheric (ATM) tests and to write detailed Problem Logs.

Prerequisites: Completion of **Verify CESs**.

Training Sequence: See PVD Closed System Run Certification Work Instruction (PTPQW004). Training will be under the supervision of an assigned Qualified QA Technician.

Reading Assignments: *PVD Closed System Run Certification Work Instruction, Appendix A, section 7. Atmospheric Transfer Work Instruction (PTPQW010).*

Proficiency Demonstration: Upon completion of this module, the trainee will demonstrate ability to verify cassette sensors, set up ATM transfers, load wafer cassettes, verify loadlock doors, and verify robot's wafer handling. Trainee will also demonstrate ability to write detailed Problem Logs.

Next Training Module: After demonstrated proficiency, **Verify Mechanical/Electrical**.



6.6.8. Tables, figures, and illustrations

- Check that all figures and tables mentioned in the text are present.
- Check that tables and figures are referenced before they appear in the manual.
- Check figures, tables, technical examples, and error messages against the source data.
- Check that the position of a table or figure does not interrupt a list items or contiguous text.
- Draw lines in tables as required for clarification.

6.6.9. Style

- Avoid using "input" and "output" as verbs.
- Avoid using "he" or "she". Instead use "you," "your," or "the user" as appropriate.
- Do not use "you" when giving the reader instructions; instead, use the imperative.
- Use "preceding" and "following" (or similar wording), instead of "above" and "below," to direct the reader to information in the manual.
- Spell out "Figure". Use "Figures" for more than one figure. (Example: See Figure 5.4 and see Figures 5.4, 5.7, and 5.9).
- Include "App." when referencing appendix items, but "App." does not appear in the item itself. (For example, appendix figures are referenced "See App. Fig. n.n."; label the figure simply "Fig. n.n.") Spell out "Appendix" when it begins a sentence.
- Make sure heading levels correctly designate sections or subsections, for example, see Section 2.1 and see Subsection 2.1.1.
- Spell out each acronym the first time used in each chapter.
- Make sure the acronym in parenthesis follows the definition of an acronym.
- Use "see" to direct the reader to information in the manual (For example, See Subsection 3.4.2). Use "refer to" to direct the reader to information not in the manual (For example, Refer to Handbook).

6.6.10. Flow Charts

- (See the '100' document)



APPLIED MATERIALS
PVD DIVISION

Doc. No.
Revision
Date

PTQMW100
Draft 2
27 Sep, 96

PVD Quality & Reliability
Work Instruction

Writing QMS Documentation

Page 2 of 10

1. OBJECTIVE

The objective of this Work Instruction is to define the detailed steps taken in the creation of documents for the Quality Management System (QMS). A universal template is available for both "Procedures" (Level 2) and "Work Instructions" (Level 3).

2. SCOPE

This Work Instruction applies to all Departments within Applied Materials PVD Division that write Procedures and Work Instructions impacting the QMS.

3. RESPONSIBILITY

The PVD Director of Quality is responsible to ensure that all documents for inclusion within the Quality Management System conform to requirements. Draft Procedures and Work Instructions must be assessed by the TQM group to assign and record a number, ensure suitability, format and accessibility.

The identified "Author / Procedure Owner" is responsible to ensure that documented Procedures and Work Instructions reflect the actual working practice and do not conflict with any other existing Procedures or Work Instructions.

Each manager and supervisor is responsible for ensuring that Procedures and Work Instructions produced within their areas of responsibility follow the prescribed standard (this document).

The upkeep and distribution of this Work Instruction is the responsibility of the TQM group.

4. REQUIREMENTS

4.1. **Personnel** : All employees designated as an "Author or Procedure Owner".

4.2. **Safety** : N/A

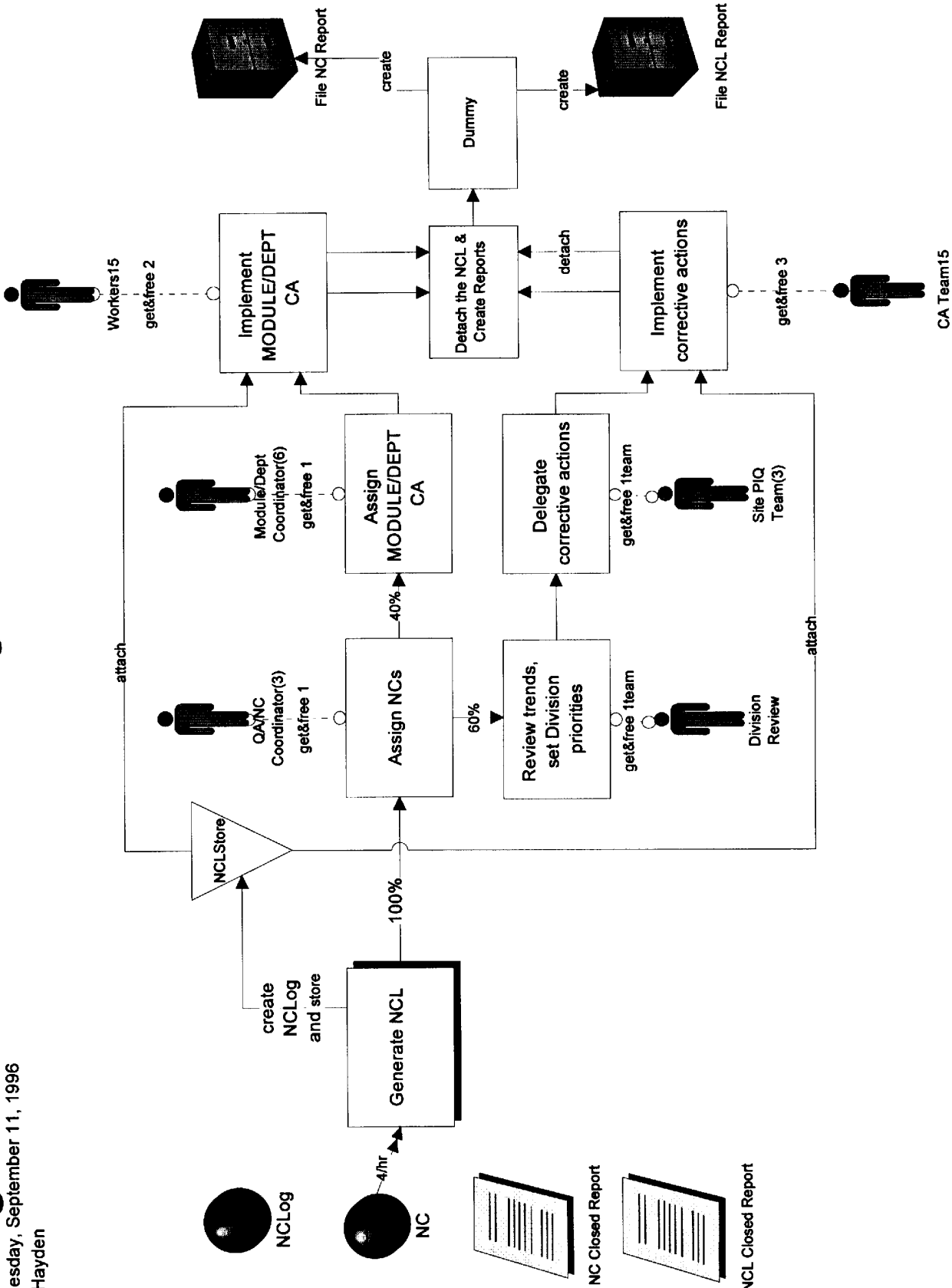
5. REFERENCES

QMS Document and Change Control - PTQMPXXX

5.1. Acronyms / Definitions

"Procedure" - A procedure describes, in broad terms, the principles and strategy involved. Typically procedures cut across organizational boundaries. Procedures ensure the following:

- Adherence to proven and effective methods,
- Consistency of results.
- Definition of the what, when, where, and who (but not how).

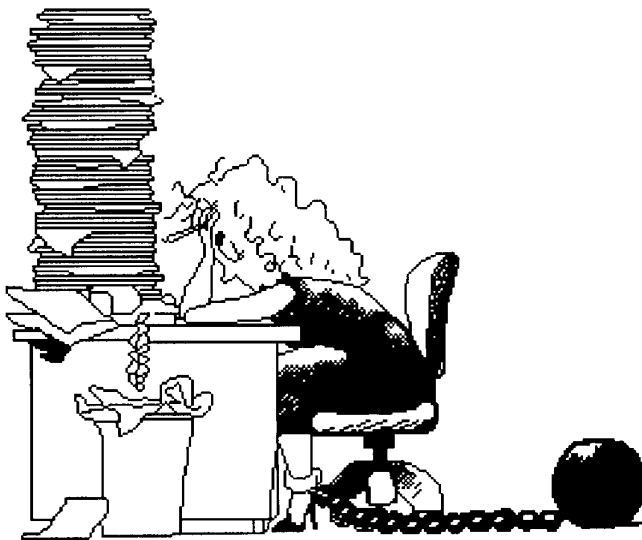


Poor Writing

A great deal of documentation is poorly written because the writing effort was undisciplined and unstructured. Poor writing practices and lack of discipline cause:

- Confusing jargon and procedures
- Lack of project notes (documentation of the project)
- Poor formatting
- Lack of cross-indexing
- Large, poorly structured modules

The task of understanding poorly written documentation is arduous for the Maintainer when the documentation has been modified by different people with multiple writing styles. Often, such writing simply does not produce the desired result. Even if it produces expected results, it is sometimes harder to use than necessary, perhaps not suited for the skill level available, or is plain unfriendly. **Trying to change such writing is often an expensive disaster!**



Lack of Common Data Definitions

Problems invariably arise when two or more writers independently create sections that conflict and are not logically related. Manuals, whether large or small, must have common definitions to establish

Establishing a Maintenance Policy

A maintenance policy should employ standards that describe in broad terms the responsibilities, authorities, functions, and operations of the maintenance organization. It should be comprehensive enough to address any type of change to the documentation and its operating environment.

To be effective, the policy should be consistently applied and supported by upper management so that it establishes and organizational commitment to maintenance.

When supported by management, the standards and guidelines help to direct attention to the need for greater discipline in design, development, and maintenance.

The maintenance policy must address:

- The need and justification for changes
- The change controls and procedures
- The use of modern practices, techniques, and tools

It should describe management's role and duties regarding maintenance and define the procedures for controlling changes to documentation after the base line is established. (Baseline refers to a well-defined base or configuration to which all modifications are applies.)

Implementation of the policy enforces adherence to rules regarding the documentation, from initiation through completion of requested changes. Once this is accomplished, it is possible to establish the milestones necessary to measure maintenance progress. *Plans, however, are of little use if they are not followed.* Reviews and audits are required to make sure plans are carried out.

The purpose of change control is to assure smooth functioning and orderly evolution of the documentation. The key to controlling changes is centralization of change approval.

Surveys show that successful organizations have a formal **Trouble Report / Change Request** process with a single person or review board approving all changes prior to scheduling of work. When

DATA ENTRY CONVENTIONS

The screen prompts used in the Spectra System help you understand what the program expects you to enter.

There are several ways that you, the operator, interact with the system via keys, buttons, knobs, paddles, and menu options. Following is a table showing each item and its **predicate** as used in this manual:

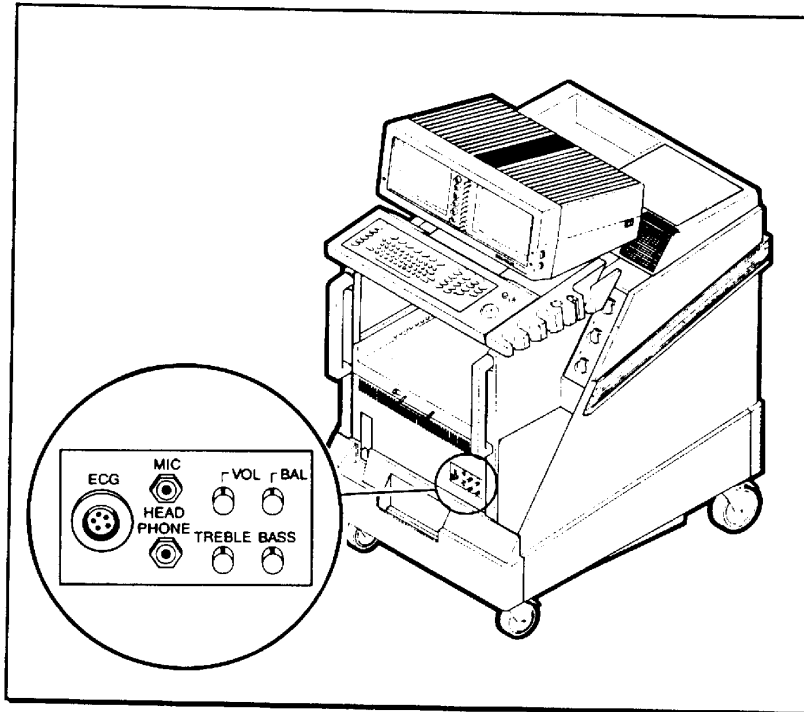
| Interactive Item | Predicate | Action |
|------------------|-----------|--|
| Keyboard Keys | "Type" | Type on alphanumeric keys |
| Buttons | "Press" | Press and release, or, press arrow |
| Knobs | "Rotate" | Rotate to desired setting |
| Paddles | "Adjust" | Adjust paddle to left or right |
| Menu Option | "Select" | Select by Trackball or type numeric key |

The use of the above predicates is consistent throughout the manual. In other words, buttons are always "*pressed*," keyboard keys are always "*typed*," knobs are always "*rotated*," etc.

Examples:

- When an instruction tells you to "**type**" information, type in the information via keyboard.

AUDIO/ECG CONTROL PANEL



AUDIO/ECG CONTROL PANEL

- | | |
|----------------------|--|
| ECG Connector | Allows connection of ECG cable. Not currently supported. |
| MIC | The microphone jack allows connection of a microphone for external recording with the VCR. |
| Headphone | The headphone jack allows connection of headphones for all audio output. |
| Volume | The volume knob adjusts the volume of the stereo speakers. |

MODE SELECTION



INTRODUCTION

The Image Mode Row includes the following Mode Selection buttons:

- **B-SCAN**
- **MIXED MODE**
- **TIME AXIS**
- **M-MODE**
- **PULSED DOPPLER**
- **CW DOPPLER¹**
- **COLOR FLOW²**

There are 3 basic **imaging and Doppler modes**:

- B-Scan
- M-Mode
- Doppler (Pulsed/CW/Color)

In all imaging modes, vector density and frame rate are optimized for best image quality.

Incorporated in M-Mode and Doppler is Mixed Mode which provides a combination of B-Scan with either Doppler or M-Mode.

Several **mixed modes** are available; providing combinations of the basic modes listed above.

- Mixed B-Scan with M-Mode
- Mixed B-Scan with Pulsed Doppler (FFT/Audio)
- Mixed B-Scan with Pulsed Doppler (Audio)
- Mixed B-Scan with CW Doppler (FFT/Audio)
- Mixed B-Scan with CW Doppler (Audio)

¹NOTE: *CW DOPPLER* not currently supported

²NOTE: *COLOR FLOW* not currently supported

ATTACHING THE BIOPSY DEVICES

To Attach the Biopsy Bracket to the probe:

- Determine imaging (head/foot) orientation of the probe.

The Biopsy Bracket is not a sterile device, therefore a sterile technique is not required while attaching.

- For Type-I End-Slide, slide the Biopsy Bracket over the transducer from the head end until it locks into place as shown in **Figure 2** below.

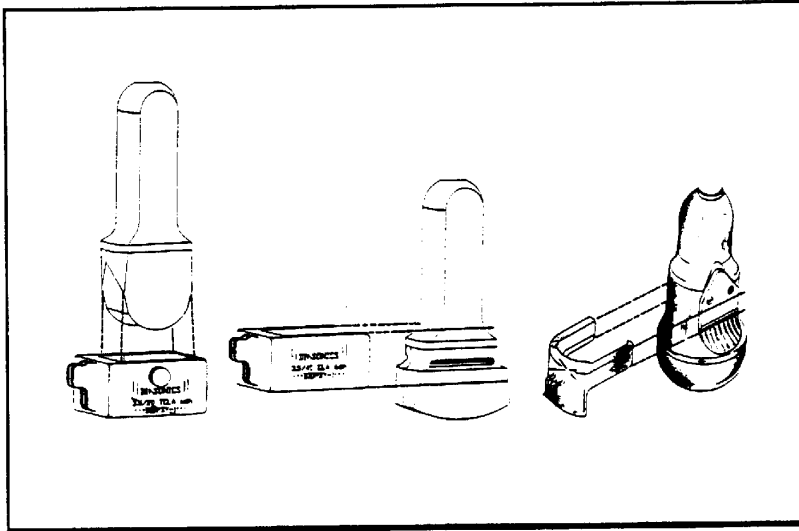


Figure 2. Attaching the Biopsy Brackets to various Probes

- For Type-II Side-Slide, slide the Biopsy Bracket over the transducer from the side until it locks into place as shown in **Figure 2** above.
- Place some ultrasound gel on the tip of the transducer to insure good acoustic contact between the transducer and the probe cover.
- Using sterile techniques, remove a sterile probe cover from its pouch and drape it over the probe and the Biopsy Bracket.

AV

To make doppler aortic valve (AV) measurements:

- ___ Obtain aortic valve Doppler waveform; must be in velocity mode.
- ___ Select **MEASURE** to obtain Doppler Measurement Package.
- ___ Select **AV**.
- ___ Notice the **AV Measurement Table** on the left-hand screen.

The first 4 measurements are grouped together. With a single cursor placement at AV vmax, the next 3 parameters are calculated.

The next 3 measurements (AV VTI, etc.) are completed by an envelope trace of the aortic valve waveform.

The next 3 measurements (AF tFlow, etc.) are completed by following the prompts for cursor placement.

LVOT VTI is an envelope trace of the LVOT waveform.

LVOT vmax is a single-valued measurement.

The last measurement (AV CSA) uses 3 parameters to calculate the area using the continuity equations; they are:

- AV vmax
- LVOT vmax
- LVOT area, easily derived from the B-scan long axis view (just measure the systolic LVOT diameter and the area is automatically calculated).

| | |
|-----------|-------------------|
| AV vmax | m/sec |
| AV Pmax | mm Hg |
| AV vmean | m/sec |
| AV Pmean | mm Hg |
| AV VTI | m |
| AV vta | m/sec |
| AV Pta | mm Hg |
| AV tFlow | msec |
| AV tPk | msec |
| AV acc | msec ² |
| LVOT VTI | m |
| LVOT vta | m/sec |
| LVOT vmax | m/sec |
| AV CSA | mm |

AV
Measurement
Table

How to Use a Decision Tree

Figure 1-3 is an example PhoneMail decision tree (a segment of the Answering Options branch). The **page numbers in bold** tell you where to look for details on that option. To save time use a decision tree, while listening to the PhoneMail prompts, and press the appropriate telephone buttons to accomplish your desired results.

Not all possible telephone buttons are shown on the decision tree due to space limitations.

The following example, using a one-personal-greeting system, tells how to use a decision tree to record a greeting:

Suppose you want to record a new greeting for your callers. The decision path you would follow is shaded in **Figure 1-3**. From your telephone, you would do the following:

1. Dial your access number to access your mailbox home state.
2. Press **8** for Answering Options.
3. Press **1** for Personal Greetings.
4. Press **1** for Record New Greeting.
5. At the tone, speak your new greeting.
6. To terminate recording of the greeting, press *******#** (not shown, but indicated by voice prompts).

The PhoneMail system would now answer your telephone and play your new greeting.

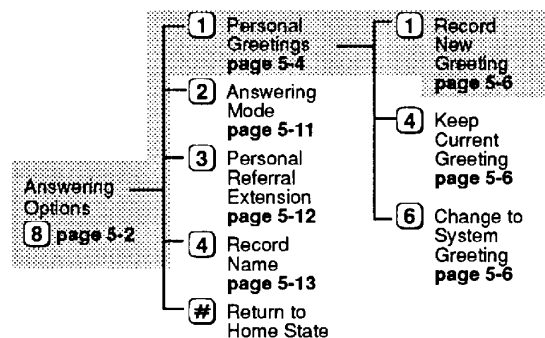
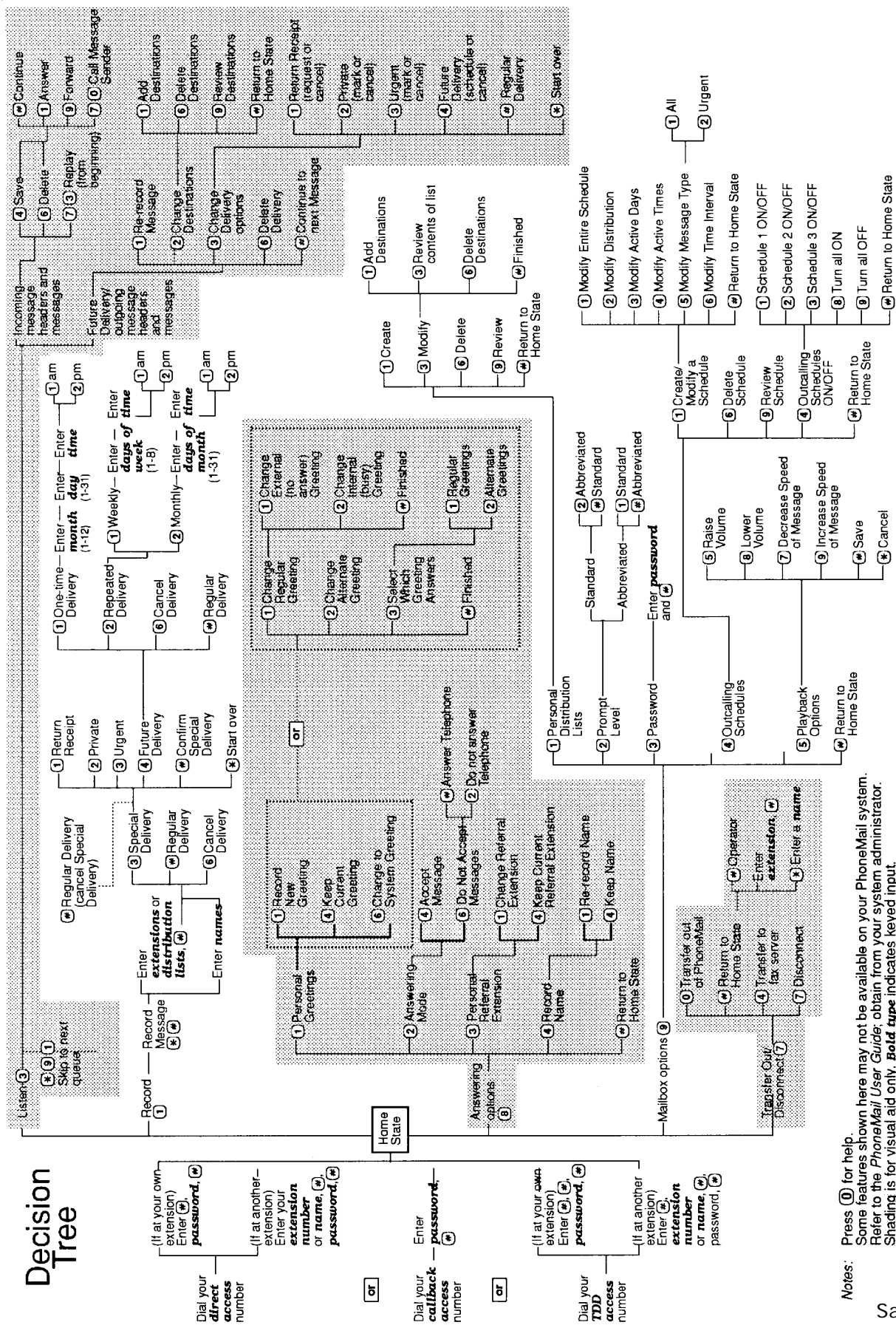


Figure 1-3. Answering Options Decision Tree with Page References (Example)

Decision Tree



Using the VAX Ada Integration

This chapter explains how to set up projects and use the VAX Ada integration using Software BackPlane functions.

VAX Ada Component Type

A new object type, called VAX_ADA, is available from the Software BackPlane predefined type hierarchy. This new type has the same functionality as the TEXT type that comes with Software BackPlane. Objects of this type can be created and manipulated in the same way as other TEXT and TEXT-based objects in the database.

The VAX_ADA component type represents an Ada Source file. This type must reside in your database before it can be used. Refer to the *User's Guide* for more information.

To Create a Context and Collection for a VAX Ada Project

The Graphic and Character Interface procedures necessary to create a context and collection for a VAX Ada project reside in the following subsections. Before a context and collection can be created, you must first have access to a Software BackPlane database. Once this is done, start Software BackPlane, create dbentry for the database, and open the database

Graphics Interface

To create a context and collection using the Graphics Interface pop-up menu, follow these steps:

___ Create a context:

DATABASE:OBJECT:CREATE

___ Open the new context:

DATABASE:OBJECT:OPEN

___ Create a collection for the top of the context:

CONTEXT:OBJECT:SET TOP

___ Specify the collection type COLLECTION.

(You can also set the top of the context to any existing collection that was derived from the COLLECTION type.)

___ Check out the collection:

CONTEXT:CONTROL:CHECKOUT:COLLECTION

1. Bring lens assembly to stepper on its cart.
2. To prevent damage to the mounting studs, loosen and remove the four bolts on the rear lens support stud mounting plate. (See *Figure 1.*)

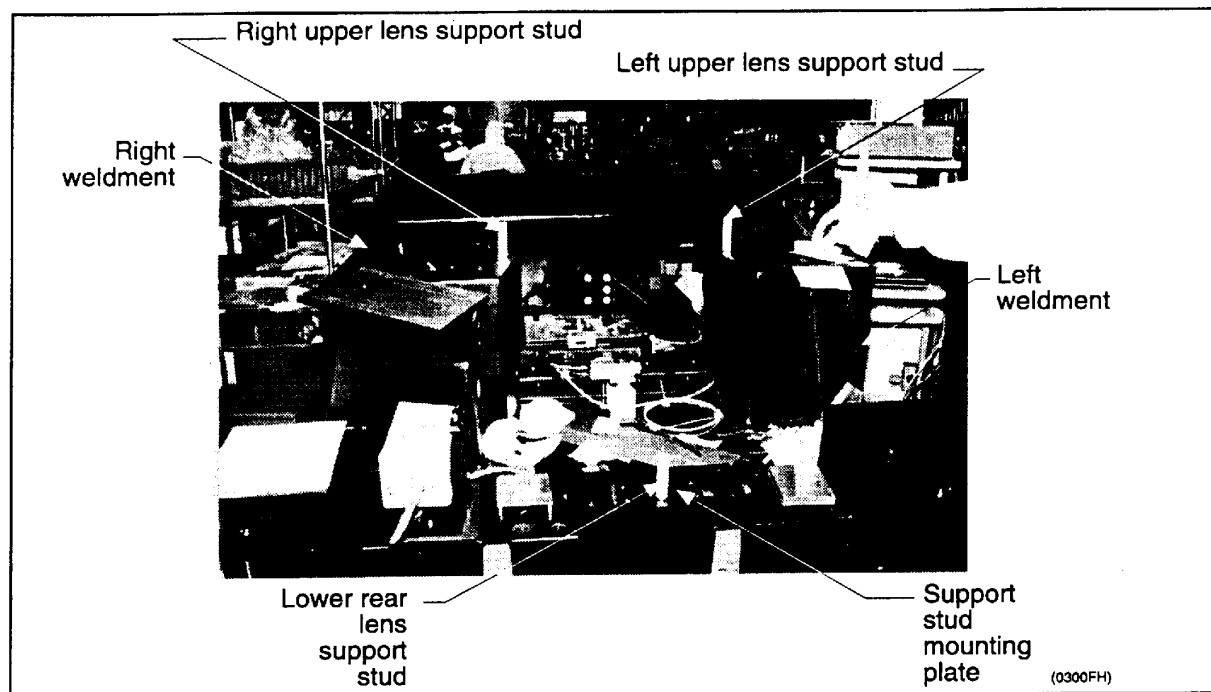


Figure 1. Lens assembly support mounting locations

3. Lubricate the mounting studs and nuts with Braycoate 604 extreme pressure grease and wipe off the excess.
4. Install the lower lens mounting nuts onto the stud lens support, and coarsely adjust the height, to facilitate leveling.
 - 4.1 Install and adjust the lower left and right nuts to a height of about 1/2-inch from the weldments.
 - 4.2 Install and adjust the rear nut to a height of about 1/2-inch from the lens mount.

| | | |
|---|-----------------------|--------|
| TITLE: Install the Lens Assembly and Adjust Coarse Position | DOCUMENT N°: MF15036D | |
| | PAGE N°: 4 of 10 | REV: D |

This document, when printed, is not a valid controlled document. Only electronic versions of this document are valid.
 Users of printed copies are responsible for having the latest version and discarding down rev versions.
 COPYRIGHT© 1995 ULTRATECH STEPPER — For internal use only