

# KODAK X-OMAT 3000 RA and 5000 RA Processors



HEALTH SCIENCES

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## Section 1 - Getting Started

### Training Purpose and Intended Audience



This training is to introduce you to Kodak's *X-OMAT* 3000 RA and 5000 RA processors. It is intended for those service technicians who have completed Kodak's *Imagewatch* Rapid Access (RA) training program, course 201.

The training that is provided in this video and workbook format will help you become familiar with:

- the new features and functions for the 3000 RA and 5000 RA
- the differences between these two processors
- service procedures and supporting service documentation

Access to either of these processors is desirable but not required to complete this training.

### Training Materials

To complete this training you will need the following:

#### Kodak Publication Materials Needed

Publications	Part No.
<i>X-OMAT</i> 3000 RA and 5000 RA Self Study package Includes: <ul style="list-style-type: none"><li>• <i>X-OMAT</i> 3000 RA and 5000 RA Service Training video tape</li><li>• <i>X-OMAT</i> 3000 RA and 5000 RA Self Study Workbook<ul style="list-style-type: none"><li>– (note: extra Workbooks can be ordered without the video tape.)</li></ul></li></ul>	8B7000 ----- 8B7001
Service Manual for the <i>X-OMAT</i> 3000 RA Processor	5B6732
Service Manual for the <i>X-OMAT</i> 5000 RA Processor	5B6741

To order any of these publications, call Kodak's Health Science Customer Service at 1 (800) 677-9933, or FAX your order to 1 (800) 933-4840. Have your Dealer account number or purchase order number available.

You will also need access to a video tape player and TV monitor.

## Prerequisite and Course Design

The prerequisite for this training is the Kodak's **Imagewatch Rapid Access training program (course 201)**. The skills and information taught on the RA processors in the 201 program will be required for you to successfully complete this training program.

This course is designed to give you the basic information for these two processors. For each training section, you are to view a portion of the video tape, stop the tape when instructed and refer to your Student Workbook to complete the training activities. The Student Workbook will often refer you to the processor's Service Manuals for additional information.

Complete each section of video tape and corresponding Workbook exercises in sequence before proceeding to the next section.

There is no time limit to completing this training. Work at your own pace and review what you need in order to gain the maximum benefit from your training. The anticipated average time to complete this training program is approximately 2-4 hours.

**You are responsible for your own learning!**

The table below represents the training agenda, using both the Student Workbook and the training Video as your learning aids.

Student Workbook	Video
<b>Section 1 - Getting Started</b> General training program information	<i>Getting Started</i> (refers you to Section 1 in the workbook)
	<b>Section 2 - Processor Overviews</b> (viewing time = 12:30 minutes)
<b>Section 2 - Processor Overviews</b> Information and Practice Exercises	
	<b>Section 3 - Processor Components</b> (viewing time = 12:00 minutes)
<b>Section 3 - Processor Components</b> Information and Practice Exercises	
	<b>Section 4 - Diagnostics and Troubleshooting</b> (viewing time = 6:15 minutes)
<b>Section 4 - Diagnostics and Troubleshooting</b> Information and Practice Exercises	

## Administrative Procedures

This training is a part of your ongoing learning process for the Kodak *Imagewatch* certification program. Your successful completion of this training will be credited towards your "qualification" as a skilled and trained service technician for Kodak's Radiographic products.

**To assure that the proper training credits are applied to you and your company, do the following:**

1. Complete this training program and all questions in your Practice Exercise Section.
2. Fill in the information on the cover of the Practice Exercise Section:
  - Your name
  - Dealer name
  - Dealer address
  - Dealer telephone number (and FAX number if used)
3. Remove your Answer Forms (pages -25 -41)
4. Complete and return the Training Evaluation survey on pages -43 and -45.
5. Mail or FAX your completed Answer Forms to the address or FAX number shown below.
6. Your Practice Exercises will be graded and if your score is **80% or greater**, a "certificate" of completion will be issued to you. In addition, both you and your company will be recorded at Kodak as completing the *Imagewatch* training on the X-OMAT 3000RA and 5000 RA processors.
  - The results of your training and/or your certificate will be mailed or FAXed to you in approximately 4-6 weeks.
7. If your score is below 80%, you will need to retake the practice exercises and submit them for review.
  - To receive additional practice exercise questions, order the Student Workbook, Part No. 8B7001

Mail or FAX your completed Answer Forms to:

Carolyn Moses  
Eastman Kodak Company  
CESD, Health Science Division  
901 Elmgrove Road  
Rochester, NY 14653-5742  
FAX: (716) 726-3601



You are now ready to begin your training on the X-OMAT 3000 RA and 5000 RA processors.

Insert the video tape into a VHS tape player and view the section called, "**Processor Overviews.**"

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NOTES

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## Section 2 - Processor Overviews

### Objectives



At the completion of this training section, you will be able to:

- Identify the 3000 RA and 5000 RA processors and the models that they are to replace
- Identify the main features and functions of the 3000 RA and 5000 RA processors
- Identify the major components of the processors

### Evaluation

This section has a practice exercise to complete. You may use the Video, the Service Manuals for the 3000 and 5000 processors and this Workbook to answer the questions.

### Training Activities

You should have just completed viewing “**Processor Overviews**” on the video tape. This overview was primarily on the 5000 RA processor. Much of what you saw on the 5000 also applies to the 3000 model.

Refer to the following in your **3000 RA Service Manual**. Use the topic headings provided below to look up in your Service Manual’s Table Of Contents for the pages you are to review.

#### Review in the 3000 RA Service Manuals

Publication	Table of Content Topics
Site Specifications	<ul style="list-style-type: none"> <li>• Site Requirements</li> </ul>
Installation Instructions	<ul style="list-style-type: none"> <li>• Electrostatic Discharge</li> <li>• Connecting the Processor</li> </ul>
Operator Manual	<ul style="list-style-type: none"> <li>• Identifying Covers, Panels and Other Components</li> <li>• Access Code Information</li> </ul>
Theory Guide	<ul style="list-style-type: none"> <li>• Product Description</li> <li>• Operation</li> <li>• Standby Mode</li> <li>• Sleep Mode</li> <li>• Displays</li> </ul>
Diagnostics	<ul style="list-style-type: none"> <li>• Accessing Internal Diagnostics</li> <li>• Diagnostic Menus &amp; Flow charts</li> </ul>



After you have completed your review of the Service Publications, do the **Review Questions** starting on the following page.

\_\_\_\_\_ **NOTES** \_\_\_\_\_



**Review Questions**  
**Processor Overview - Section 2****PRACTICE  
EXERCISE****A. Multiple Choice**

Put your responses to the questions below on the Answer Form, page -27

1. The 5000 RA processor is designed to replace what other RA processor?
  - a. 180 LP Processor
  - b. 270 RA Processor
  - c. M6B Processor
  - d. 480 RA Processor
2. The 3000 RA processor is designed to replace what other RA processor?
  - a. 180 LP Processor
  - b. 270 RA Processor
  - c. 460 RA Processor
  - d. 480 RA Processor
3. The recommended service access clearance around the processors is:
  - a. 91 cm (36 in.)
  - b. 45 cm (18 in.)
  - c. 101 cm (40 in.)
  - d. 30 cm (12 in.)
4. The minimum negative pressure required for proper ventilation with a 3 inch diameter vent duct is:
  - a. 0.3 in. of water
  - b. 0.06 in. of water
  - c. 3.0 cm of water
  - d. 0.03 in. of water

5. What is to be done before handling and servicing printed circuit boards?
  - a. Use protective antistatic packaging for transporting board components.
  - b. Ground yourself with an ESD grounding strap.
  - c. Keep static generating materials (i.e. plastic bags or cups) away from board components.
  - d. All of the above.
6. This circuit board is the only one that is not interchangeable between the 3000 and 5000 processors.
  - a. 5000 board
  - b. 2000 board
  - c. Motor Controller board
  - d. 8000 board
7. The RA processors can operate at these processing cycles
  - a. Kwik, Rapid, Standard and Extended.
  - b. Fast, Medium, Slow.
  - c. Rapid, Regular, Extended and Express.
  - d. Rapid, Standard and Extended only.
8. The processor's microprocessor controls:
  - a. Transport speeds.
  - b. Maintains temperature settings for both the dryer and chemical solutions.
  - c. Replenishment volumes.
  - d. All of the above.
9. To gain access to Diagnostics without using or erasing an access code, you would:
  - a. Toggle switch #4 on the 5000 board.
  - b. Toggle switch #4 on the 8000 board.
  - c. Use your laptop computer connected to the PIC connector to bypass the access code.
  - d. Toggle switch #1 on the 5000 board.

10. During Sleep Mode, the \_\_\_\_ always remains energized.
  - a. Dryer Blower
  - b. Transport Motor
  - c. 5000 Microprocessor Board
  - d. 3000 Display Board
11. In Sleep Mode, the \_\_\_\_ option periodically activates the transport motor and wash water of the processor.
  - a. Cool Down
  - b. Automatic Wash
  - c. Roller Jog
  - d. Standby
12. During Sleep Mode, a fan (blower) can operate for 30 minutes to reduce condensation within the processor. This operating option is called \_\_\_\_.
  - a. Roller Jog
  - b. Standby
  - c. Dehumidifying
  - d. Cool Down
13. Roller Jog requires that the:
  - a. Top cover is taken off.
  - b. AC power and the water supply remain on.
  - c. Solutions temperatures are maintained.
  - d. Both b and c.
14. If you are not able to obtain the proper negative pressure in an Exhaust system, you should:
  - a. Open a window.
  - b. Shorten the Exhaust Duct.
  - c. Attach the Exhaust Duct directly to the building's ventilation system.
  - d. Add the optional Exhaust Fan kit.

15. If the dryer blower motor, transport motor, pumps and all backlighting on the Display Panel's indicators are off, this can indicate that:
- The processor has been deenergized.
  - The processor is in Sleep Mode and still energized.
  - There is a processor malfunction.
  - All of the above.

**B. True or False**

Circle your answers to the questions below on the Answer Form, page -27

- Changing the dryer temperature for non-RA processing cycles can be restricted with an access code.
- The access code can be changed by the user.
- To erase an access code, use toggle switch #4 on the 5000 Microprocessor Board.
- Sleep Mode maintains developer and fixer temperatures.
- To download new operating software into the processor, you need to replace the EEPROM on the 5000 Microprocessor Board.
- Both processors can have the tension of the Drive Chain in the Developer Racks adjusted.
- The processor leaves Sleep Mode when film activates the 6000 Film Accumulator Board.
- When measuring negative pressure in a exhaust duct, the duct is not connected to the processor.
- The water supply's temperature must be a minimum of 5.5°C (10°F) below the developer temperature setpoint.
- For the 5000 processor, the pressure for the water supply is to be between 173-448 kPa (25-65 psi).

**C.** Answer question "C" on page -27.

**D.** Answer question "D" on page -29.



At the completion of the review questions above, proceed to the next section on the video tape.

**Insert the video tape now and review "Processor Components," Section 3.**

## Section 3 - Processor Components

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### Objectives



At the completion of this training section, you will be able to:

- Identify the locations and describe the functions of the Printed Circuit Boards
- Describe and Interpret the DC and AC power distribution system
- Interpret System Block diagrams
- Identify the locations of the main film transport components

### Evaluation

This section has a practice exercise to complete. You may use the Video, this Workbook and the Service Manuals for the 3000 and 5000 processors to answer the questions.

### Training Activities

You should have just completed viewing the video tape: **Processor Components, Section 3.**

The video:

- Identified locations for the Printed Circuit boards on the 5000 RA and 3000 RA processors
- Described various design improvements for both processors
- Identified components and features of the 3000 RA processor

You are to continue learning about the processors by reviewing specific information in your Service Manuals. Use the **3000 RA** and **5000 RA Service Manuals** to review the topics listed in the following tables.


☐

### Review in the 5000 RA Service Manual

Publication	Table of Content Topics
Theory Guide	<ul style="list-style-type: none"> <li>• Film Detection</li> <li>• Drive System</li> <li>• Developer Heating and Cooling</li> <li>• Control of Developer Temperature</li> <li>• Thermistors</li> <li>• Power Distribution</li> </ul>
Service Manual	<ul style="list-style-type: none"> <li>• Component Locator</li> <li>• Diagrams</li> </ul>
Diagrams	<ul style="list-style-type: none"> <li>• AC Power Distribution</li> <li>• DC Power Distribution</li> <li>• System Block Diagrams</li> </ul>

### Review in the 3000 RA Service Manual

Publication	Table of Content Topics
Service Manual	<ul style="list-style-type: none"> <li>• Component Locator</li> <li>• Diagrams</li> </ul>
Diagrams	<ul style="list-style-type: none"> <li>• AC Power Distribution</li> <li>• DC Power Distribution</li> <li>• System Block Diagrams</li> </ul>


☐

After you have completed your review of the Service Publications, do the **Review Questions** starting on the following page.

## Review Questions

### Processor Components - Section 3

PRACTICE  
EXERCISE



#### A. Multiple Choice

Put your responses to the questions below on the Answer Form, page -31

1. Given a functioning 5000 Processor that is not in standby with the dryer temperature below set point by 10°F, which measurement indicates an SSR problem?
  - a. The voltage across the Dryer SSR (U1) Terminal 1 and 2 is 230 V ac.
  - b. The voltage across the Dryer SSR (U1) Terminals 3 and 4 is 5 V dc.
  - c. The voltage across the Developer Heater (HR1) terminals is 230 V ac.
  - d. None of the above.
2. Given a functioning 5000 RA Processor in Standby Mode with the developer temperature at 80° F (and a setpoint of 96° F), which measurement would indicate a processor problem?
  - a. The voltage across the Developer SSR Terminals 1 and 2 is 0 volts ac.
  - b. The voltage across the Developer SSR Terminals 3 and 4 is 5 volts dc.
  - c. The voltage across the Developer Heater Terminals is 230 volts ac.
  - d. The voltage across the Developer Heater Terminals is 0 volts ac.
3. What two components need to be satisfied before the Recirculation Pump and the Developer Heater are energized?
  - a. Fixer Level Probe and Developer Level Probe.
  - b. Developer Level Probe and Developer Heater.
  - c. Replenishment Pump and Developer Level Probe.
  - d. None of the above.
4. What does the Circuit Breaker #3 (CB 3) protect on the 5000 RA processor?
  - a. Fixer Solution Heater Circuitry.
  - b. Dryer Heater Circuitry.
  - c. Dryer Blower Circuitry.
  - d. DC Drive Motor Circuitry.

5. Given 4 wire (L1, L2, N and ground), 120/208, what diagram would you use to strap the 5000 RA Transformer?
- a. Diagram A
  - b. Diagram N
  - c. Diagram K
  - d. Diagram L
6. Given 4 wire (L1, L2, N and ground), 120/240, what diagram would you use to strap the 5000 RA Transformer?
- a. Diagram J
  - b. Diagram H
  - c. Diagram L
  - d. Diagram B

**B. Fill in the Blanks.** Refer to the Circuit Diagrams for the 5000 RA Processor to complete the table on page -31.

**C. Fill in the Blanks.** Refer to the Circuit Diagrams for the 5000 RA Processor to complete the table on page -33.

Use the listed items below to complete the following Fill in the Blank questions and for completing Figures 1 and 2 on pages -37 and -39. Enter the letter from the list below that matches your answer. (Answers may be used more than one time.)

A 600 Filter Board  
B 2000 Interface Board  
C 3000 Display Board  
D 5000 Microprocessor Board  
E 6000 Film Accumulator Board  
F 7000 Drive Interlock Board  
G 8000 Current Sense Board  
H Drive Motor Controller Board  
I Solenoid(s)  
J Film Detector Switch(s)  
L Cover Interlock Switch(s)  
M Level Sensor

N 5 Volt Power Supply  
O 24 Volt Power Supply  
P Quad Power Supply  
Q EMI Filter  
R Solid State Relays (SSR)  
S Exhaust Fan  
T Air Tube(s)  
U Heat Exchanger  
V Thermal Cut Off  
W Dryer Overtemperature Thermostat  
X Component Plate  
Y Yoke



**D. Fill in the Blanks**

Put your responses to the questions below on the Answer Form, page –35

1. The \_ acts as a filter for the Quad Power Supply and is on the 3000 RA Processor only.
2. The \_ monitors the AC current going to the Developer and Fixer solution heaters.
3. Acting as a safety interlock is the \_.
4. Using 22 infrared sensors, the \_ detects film presence and measures the film area for replenishment rate and total film usage.
5. Using the \_ you can change between the 3 non-RA processing cycles, enter and exit Sleep Mode and download new software into the processor.
6. The \_ controls the LCD and Keypad.
7. The 3000 RA processor has a \_ built into the Dryer Heater as a replaceable overheat safety feature.
8. The Drive Motor Controller Board on the 5000 processor receives +24 volts DC power from the \_.
9. The \_ is located in the Dryer Plenum on the 5000 processor and has a manual reset button.
10. The 5000 RA processor comes equipped with a(n) \_, which also operates during the Cool Down option in Sleep Mode.

**E. Component and Board Locator** For Figures 1 and 2 on pages –37 and –39 , enter the letter from the previous component listing (items A-Y) that identify the component's location.



At the completion of the review questions above, proceed to the next section on the video tape.

**Insert the video tape now and review “Troubleshooting and Diagnostics,” Section 4.**

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## Section 4 - Troubleshooting and Diagnostics

### Objectives



At the completion of this training section, you will be able to:

- Identify and use the various diagnostic aids available to you
- State how to access the internal diagnostics
- Interpret various diagnostic error codes
- Identify troubleshooting procedures for given processor operational problems
- Identify solutions to resolve processor malfunctions

### Evaluation

This section has a practice exercise to complete. You may use the Video, this Workbook and the Service Manuals for the 3000 and 5000 processors to answer the questions.

### Training Activities

You should have just completed viewing the video tape: **Troubleshooting and Diagnostics, Section 4.**

The video walked you through a service procedure on the 3000 RA processor.

You are to continue learning about the processors by review specific information in your Service Manuals. Use the **5000 RA Service Manual** to review the topics listed below.



#### Review in the 5000 RA Service Manual

Publication	Table of Content Topics
Operator Manual	<ul style="list-style-type: none"> <li>• Usage Information</li> <li>• Preventive Maintenance</li> <li>• Problem Solving</li> </ul>
Diagnostics	<ul style="list-style-type: none"> <li>• Error Codes</li> <li>• Diagnostic Menus</li> <li>• Reports</li> </ul>



After you have completed your review of the Service Publications, do the **Review Questions** starting on the following page.

## Review Questions

### Troubleshooting and Diagnostics - Section 4



#### A. Multiple Choice

Put your responses to the questions below on the Answer Form, page -41.

1. Upon replacing a 5000 Microprocessor board in either the 5000 RA or 3000 RA processors, you need to do the following:
  - a. Transfer the Clock/Memory Module from the old 5000 Board to the new 5000 Board.
  - b. Download the operating software to the new 5000 Board with the use of a laptop computer.
  - c. Transfer the EEPROM from the old 5000 Board to the new 5000 Board.
  - d. All of the above.
  - e. Both 'a' and 'b'.
2. A processor shows error code **E012**. The input to the Solid State Relay is not present. What would you replace?
  - a. The Heater.
  - b. The Solid State Relay.
  - c. The 5000 Board.
  - d. 8000 Board.
3. A qualified service person is required to fix these types of errors:
  - a. Caution and Fatal errors.
  - b. Warnings and Deadly errors.
  - c. Warnings and Cautions.
  - d. Fatal and Non-Fatal errors.

4. The processor's error information can be retrieved as follows:
  - a. In Diagnostics, the Error Codes can be displayed historically or by frequency of occurrence.
  - b. In Diagnostics, the last 100 Error Codes are retained for review.
  - c. On the user/operator error reporting screens, the error descriptions are shown in order of highest service priority.
  - d. All of the above.
5. The recommended monthly Preventive Maintenance procedures for the 5000 RA processor includes:
  - a. Removing, cleaning and inspecting the: 3 Crossovers, the Developer, Fixer and Wash Racks, and the Dryer Air Tubes.
  - b. Replacing the Developer and Water Supply Filters, and cleaning the Replenishment Strainers and Filters.
  - c. Cleaning the Developer Rack with *Kodak* "Developer System Cleaner and Neutralizer."
  - d. All of the above.
  - e. answers 'a' and 'b' above.
6. What happens and what type of service will be required if you exceed 6.2 volts while adjusting the Power Supply (PS2)? (Refer to "Adjustments and Replacements")
  - a. The Power Supply will malfunction, showing 0 voltage. You will need to replace the Power Supply.
  - b. The Power Supply protection circuit will trip to "off" (0 volts output). You will need to turn down the Power Supply to below +5 volts.
  - c. The Power Supply is tripped to off. The processor will need to be deenergized for approximately 60 seconds to reset the Power Supply. Then readjust the Power Supply to +5 volts.
  - d. Do 'b' and then 'c' above.

Review the service call scenario below and answer the questions. You may use any of the service publications for the 5000 RA processor. If you have access to the processor, use it as needed to enhance your learning process.

### B. Service Call - Multiple Choice

Put your responses to the questions below on the Answer Form, page -41.

You respond to a customer's service need on the 5000 RA processor. The customer explains that the film did not exit on the last couple of sheets fed in. The processor indicates a service code of **E041**.

1. What does the error code **E041** indicate?
  - a. Inoperative transport
  - b. Top cover not closed
  - c. Crossovers are not seated correctly
  - d. Loss of transport speed control
2. According to the Service Manual, which Power Supply provides 24 volts to the DC Motor Controller Board?
  - a. Quad Power Supply (PS2)
  - b. Power Supply 3 (PS3)
  - c. Power Supply 1 (PS1)
  - d. Motor Drive Power Supply
3. Which test points on the 5000 Board do you measure the control voltage from?
  - a. TP MOTDRV
  - b. Terminals 1 and 3
  - c. TP MOTFB
  - d. Terminals 2 and 4
4. For a 5000 RA processor in the U.S. set at Standard speed, what should the approximate control voltage reading be on the 5000 Board for the test points determined above?
  - a. 0.0 v DC
  - b. 1.5 v DC
  - c. 1.9 v DC
  - d. 1.5 v AC

5. A meter measurement of 5 V DC is obtained at Terminals 4 and 6 on the Drive Motor Controller (A4). This can indicate:
  - a. Normal processor operation.
  - b. Mechanical malfunctions.
  - c. A defective 5000 Board.
  - d. A faulty connector in the transport speed control.
6. The supply and control voltages to the Drive Motor Controller (A4) are normal, but the Drive Motor is not operating. What would you replace?
  - a. Drive Motor Controller (A4) or DC Drive Motor (B6)
  - b. 5000 Board
  - c. Solid State Relay (U2)
  - d. +24 volt Power Supply (PS3)

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**Answer Forms**

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*Please print neatly!*

Student Name	
Dealer Name	
Dealer Address	
Phone No.	(    )
FAX No.	(    )

Your Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Do the following:**

1. Answer the all the questions in the three Practice Exercise Sections.
2. Detach this Practice Exercise section from the rest of the Student Workbook.
  - Be sure to include pages 25-41. (These are actually 9 single-sided printed pages)
  - Complete the Training Evaluation survey and return
3. Mail or FAX your Practice Exercises responses for review to:
  - MAIL

**Eastman Kodak Company**  
**CESD, Health Science Division**  
**901 Elmgrove Road**  
**Rochester, NY 14653-5742**

- FAX  
**(716) 726-3601**

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## Answer Forms

### Processor Overview - Section 2



#### A. Multiple Choice

Circle the letter below that represents your response to the questions on pages –9 to –12.

- |                        |                         |
|------------------------|-------------------------|
| 1. a    b    c    d    | 9.    a    b    c    d  |
| 2.    a    b    c    d | 10.    a    b    c    d |
| 3.    a    b    c    d | 11.    a    b    c    d |
| 4.    a    b    c    d | 12.    a    b    c    d |
| 5.    a    b    c    d | 13.    a    b    c    d |
| 6.    a    b    c    d | 14.    a    b    c    d |
| 7.    a    b    c    d | 15.    a    b    c    d |
| 8.    a    b    c    d |                         |

#### B. True or False

Circle "TRUE" or "FALSE" below that represents your responses to the questions on page –12.

- |                  |                   |
|------------------|-------------------|
| 1. TRUE    FALSE | 6. TRUE    FALSE  |
| 2. TRUE    FALSE | 7. TRUE    FALSE  |
| 3. TRUE    FALSE | 8. TRUE    FALSE  |
| 4. TRUE    FALSE | 9. TRUE    FALSE  |
| 5. TRUE    FALSE | 10. TRUE    FALSE |

**C. Place a check (✓) next to the correct answers for the *following question*.** Refer to the software flowcharts in the Operator Manual.

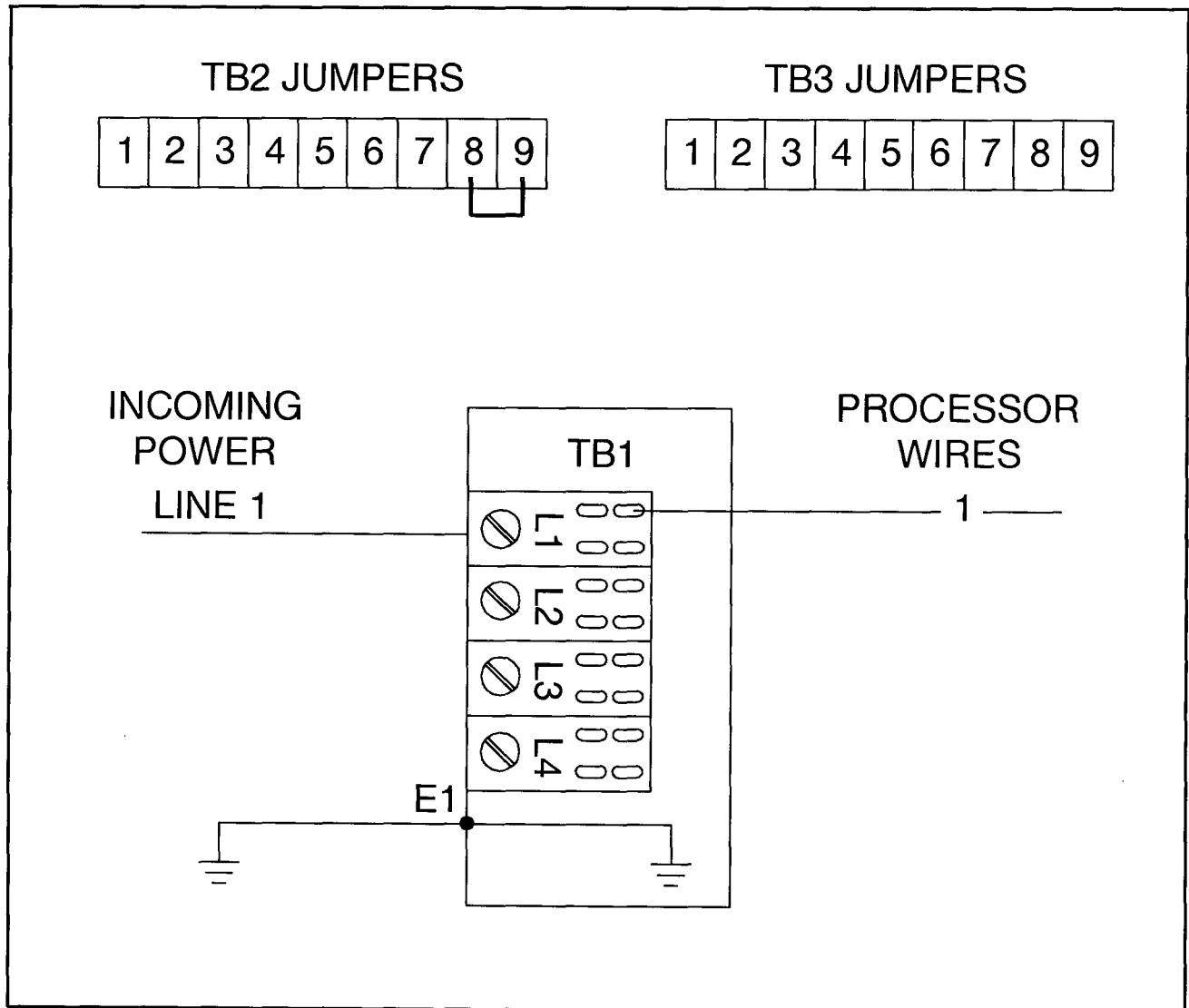
Using the processor's internal Diagnostics software, you can test or activate the following functions from the Display Panel:

a ____ Film Accumulator LEDs	l ____ Replenishment Volumes
b ____ Cover Sensor	m ____ Film Detector Switches
c ____ Room Light Sensor	n ____ Receptacle Outlet
d ____ Interface Jack	o ____ Dryer Blower Motor
e ____ Developer & Fixer Heaters	p ____ Developer Cooling Solenoid
f ____ Solution Level Sensors	q ____ Dryer Heater
g ____ Wash water Solenoid	r ____ Replenishment Pump Motors
h ____ Display Panel LEDs	s ____ Dryer AC Overtemp Thermostat
i ____ Drive Transport Motor	t ____ Wash Water Heater
j ____ Transport Motor Speed	u ____ Developer & Fixer Temperature
k ____ Recirculation Pump Motor	v ____ Temperature of the Wash Water

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**D.** Complete the diagram below by drawing in the lines that address the following example:

Your customer's electrical service is 3 wires (line 1, line 2 and ground) with 208 volts from line to line. In the diagram below, draw lines to indicate how you would wire the remaining jumpers and wires for a 3000 RA processor. (Three lines have been drawn for you.)



H150\_0001DC\_



At the completion of the review questions above, proceed to the next section on the video tape.

**Insert the video tape now and review "Processor Components," Section 3.**

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## Answer Forms

### Processor Components - Section 3



#### A. Multiple Choice

Circle the letter below that represents your response to the questions on pages–15 –16.

1. a b c d

4. a b c d

2. a b c d

5. a b c d

3. a b c d

6. a b c d

**B. Fill in the Blanks.** Refer to the Circuit Diagrams for the 5000 RA Processor to complete the table below. Identify either the:

- Solid State Relay's Descriptor number
- What the Solid State Relay controls

**Solid State Relays on the 5000 RA Processor**

	SSR #	Controls this component
-	U 1	Dryer Heater
1.		Fixer Heater
2.		Developer Replenishment Pump
3.	U 4	
4.		Developer Heater

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**C. Fill in the Blanks.** Refer to the Circuit Diagrams for the 5000 RA Processor to complete the table below. Identify either the:

- Diode Number
- What the Diode indicates on the 5000 Microprocessor Board

**Diode indicators on the 5000 Microprocessor Board**

	Diode #	Is an indicator for this component:
-	DS14	Developer Cooling Solenoid
1.	DS1	
2.	DS3	
3.	DS__	"Heart Beat" LED
4.	DS5	
5.	DS__	Water Solenoid

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Enter the letter from the listed items below that represents your responses to the questions on page -17. Use this list to complete the following Fill in the Blank questions and for Figures 1 and 2. (Answers may be used more than one time.)

- |                                |                                    |
|--------------------------------|------------------------------------|
| A 600 Filter Board             | N 5 Volt Power Supply              |
| B 2000 Interface Board         | O 24 Volt Power Supply             |
| C 3000 Display Board           | P Quad Power Supply                |
| D 5000 Microprocessor Board    | Q EMI Filter                       |
| E 6000 Film Accumulator Board  | R Solid State Relays (SSR)         |
| F 7000 Drive Interlock Board   | S Exhaust Fan                      |
| G 8000 Current Sense Board     | T Air Tube(s)                      |
| H Drive Motor Controller Board | U Heat Exchanger                   |
| I Solenoids                    | V Thermal Cut Off                  |
| J Film Detector Switch(s)      | W Dryer Overtemperature Thermostat |
| L Cover Interlock Switch(s)    | X Component Plate                  |
| M Level Sensor                 | Y Yoke                             |

**D. Fill in the Blank**

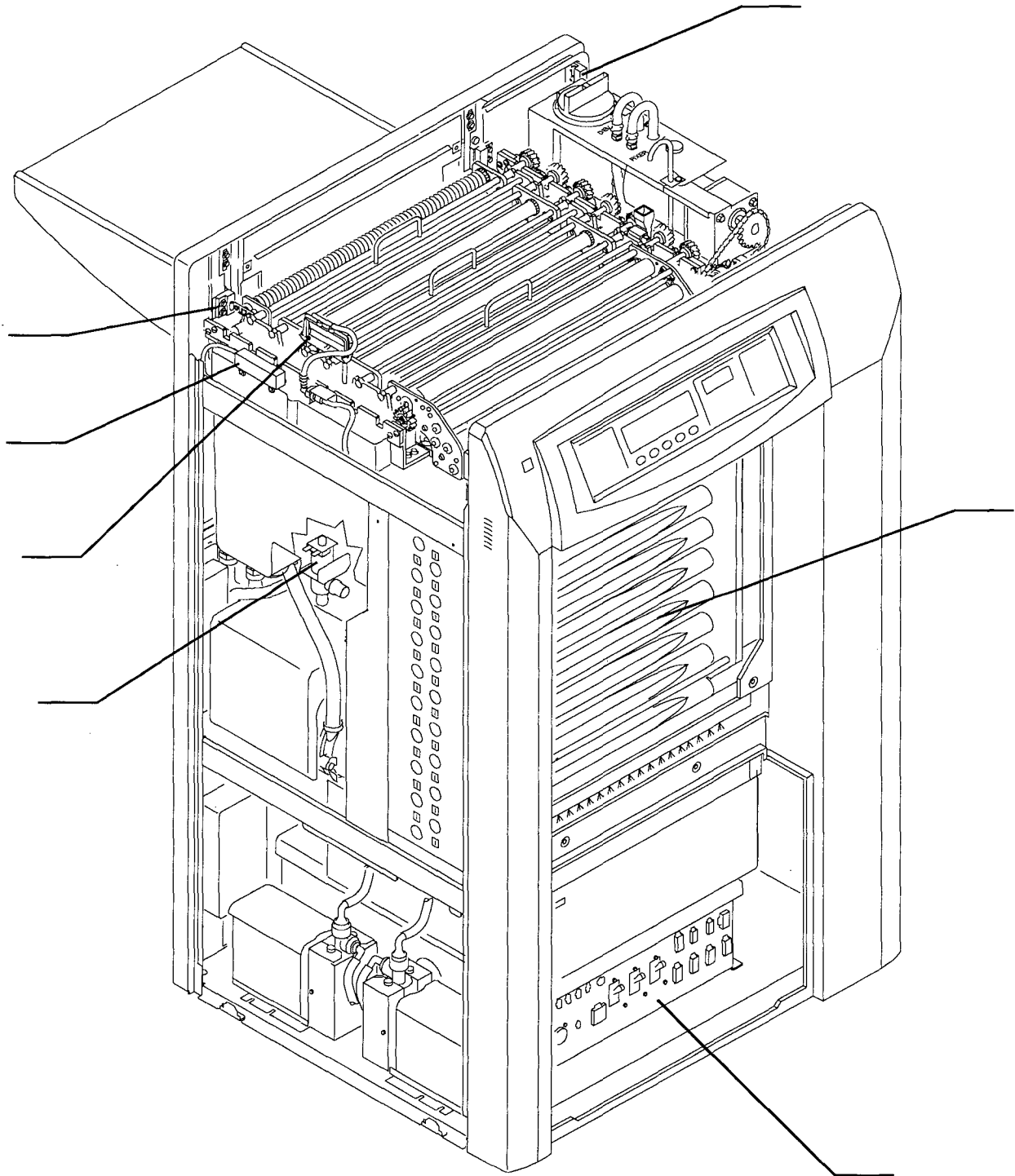
Place the letter below that represents your response to the questions on page -17.

- |          |           |
|----------|-----------|
| 1. _____ | 6. _____  |
| 2. _____ | 7. _____  |
| 3. _____ | 8. _____  |
| 4. _____ | 9. _____  |
| 5. _____ | 10. _____ |

**E. Component and Board Locator** For Figures 1 and 2 on following pages, enter the letter from the listing above (items A-Y) that identify the components.

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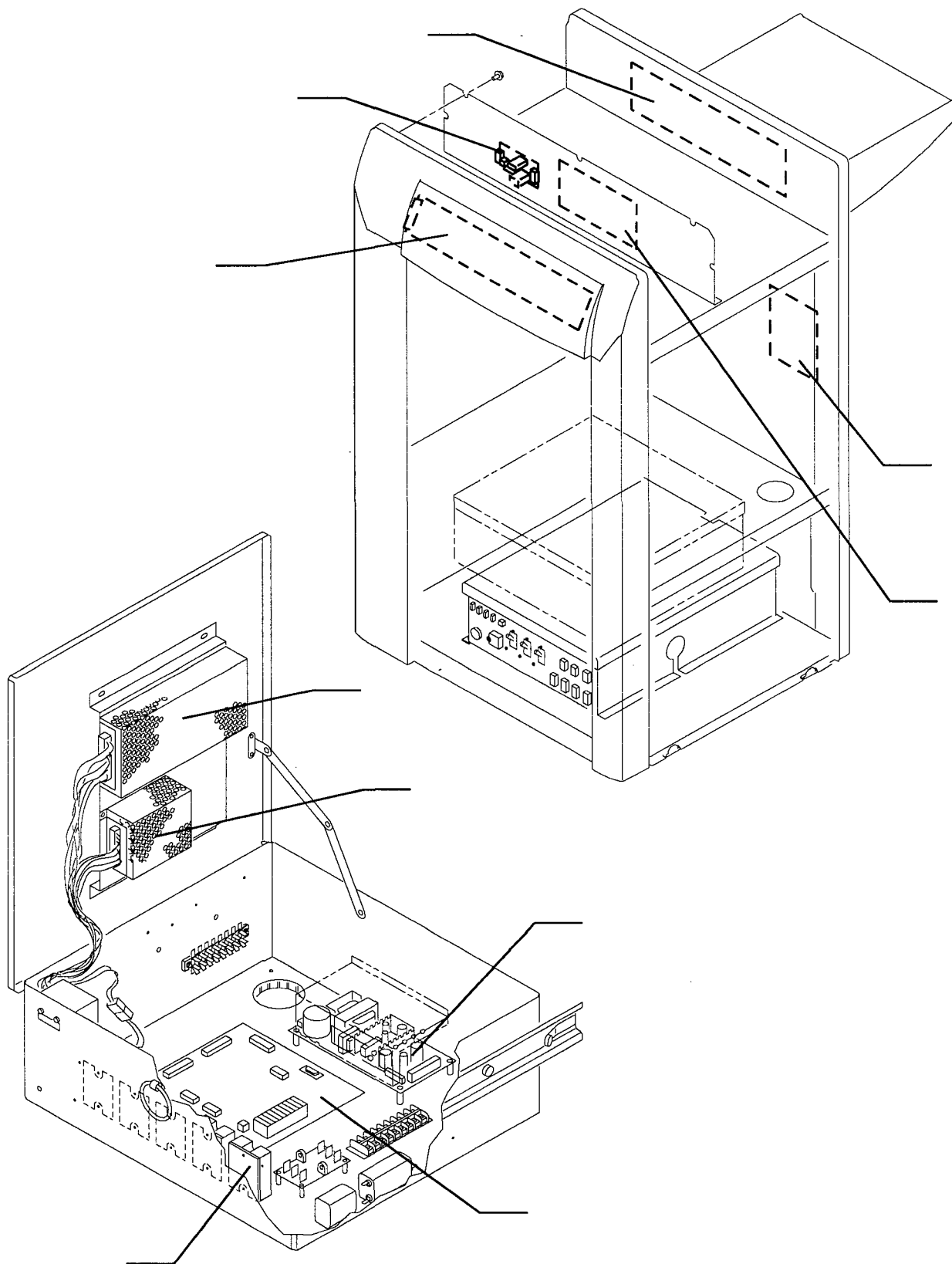
Figure 1. Component Locator



H148\_0083ECB  
H148\_0083EA

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Figure 2. Printed Circuit Board Locator



H148\_0153ECA  
H148\_0153EA



At the completion of the review questions in Section 3, proceed to the next section on the video tape.

**Insert the video tape now and review "Troubleshooting and Diagnostics," Section 4.**



**Answer Form**  
**Troubleshooting and Diagnostics - Section 4****A. Multiple Choice.**

Circle the letter below that represents your response for the questions on pages –20 and –21.

- |              |              |
|--------------|--------------|
| 1. a b c d e | 4. a b c d   |
| 2. a b c d   | 5. a b c d e |
| 3. a b c d   | 6. a b c d   |

**B. Service Call - Multiple Choice.**

Circle the letter below that represents your response for the questions on pages –22 and –23.

- |            |            |
|------------|------------|
| 1. a b c d | 4. a b c d |
| 2. a b c d | 5. a b c d |
| 3. a b c d | 6. a b c d |

**Congratulations!**

You have just completed the Service Training on the KODAK X-OMAT 3000 RA and 5000 RA Processors. This Self-Teach training program was designed to help you become familiar with these two products and their related Service Manuals.

If you are associated with KODAK as an *Imagewatch* service provider, you will need to send a copy of your responses to the Practice Exercises.

Detach your **Answer Forms** (pages –25 through –41) and follow the directions on page –25 for mailing or FAXing.

Please take the time to give us feedback on this training program. Fill out the **Training Evaluation** on the following pages and send it along with your test. If you wish to remain anonymous, send it separately to the same address. Your feedback is important in helping us develop quality training and product support programs in the future.

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**Training Evaluation**

Please complete this survey and return to:

Carolyn Moses  
 Eastman Kodak Company  
 CESD, Health Science Division  
 901 Elmgrove Road  
 Rochester, NY 14653-5742  
 or FAX: (716) 726-3601

Your name: \_\_\_\_\_  
 (optional)

**Course Content**

How did you feel about: (place a ✓ in a box that applies)	excellent		very good		satisfactory		poor		not acceptable		N/A
	10	9	8	7	6	5	4	3	2	1	0
1. The training objectives were clearly stated											
2. Training met the course objectives											
3. The training assignments were clear											
4. The practice exercises were relevant											
5. The practice exercise questions were clear											
6. The <u>amount</u> of information presented was:	too much		appropriate				too little				
7. The <u>amount</u> of reading was:	too much		appropriate				too little				
8. The <u>amount</u> of video viewing was:	too much		appropriate				too little				

**Course Materials**

How did you feel about: (place a ✓ in a box that applies)	excellent		very good		satisfactory		poor		not acceptable		N/A
	10	9	8	7	6	5	4	3	2	1	0
9. The self-teach workbook was an effective guide to my training											
10. The video program was clear and informative											
11. The Service Manuals helped me answer the review questions											

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## Overall Impressions

How did you feel about: (place a ✓ in a box that applies)	excellent		very good		satisfactory		poor		not acceptable		N/A
	10	9	8	7	6	5	4	3	2	1	0
12. I am confident that I have learned enough and that I can find the information needed to service these products											
13. Considering your training time, the information learned, the delivery format, and the review exercises, your time was well spent on this training program											
14. You would like to receive more self-teach training programs to stay current	agree		to supplement other training				disagree				

15. What was the strongest part of this training program?

16. What was the weakest part?

17. Your management/supervisor was supportive of your training efforts. Yes \_\_\_\_ No \_\_\_\_  
Comments:

19. How much time did it take to complete this training program? \_\_\_\_\_ Hours

20. You completed your training on: (check one)

- ☐ Company time, during my regular hours  
☐ Company time, using extra work hours  
☐ Your own personal time  
☐ A mix of company and personal time

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Health Sciences  
EASTMAN KODAK COMPANY  
Rochester, New York 14650

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