QUALITY ASSURANCE/QUALITY CONTROL DOCUMENTATION SERIES

TITLE	**ROUTINE SITE OPERATOR MAINTENANCE PROCEDURES FOR THE REMOTE HIGH-RESOLUTION DIGITAL CAMERA SYSTEM (RDCS-100)**
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1.0   PURPOSE AND APPLICABILITY

The purpose of routine site operator maintenance is to assure quality data capture and minimize data loss by performing and documenting scheduled operational checks and preventive maintenance. This technical instruction (TI) describes the steps of a routine site visit for the Remote High-Resolution Digital Camera System (RDCS-100), and is referenced in SOP 4120, *Automatic Camera System Maintenance*.

Automatic digital camera systems will collect digital images as scheduled. No daily maintenance is required. Site operators are encouraged to monitor system operations at a minimum of two-week intervals. Site operators inspect the overall system, review the system settings, exchange the memory card, verify system operation, align the camera, and perform troubleshooting and/or emergency maintenance as required. The effective performance and documentation of each of these tasks is the key to quality data collection and minimal data loss.

Site operators should be fully trained and supplied with a *Site Operator's Manual for Remote High-Resolution Digital Camera Systems* that contains detailed routine site operator maintenance procedures for the specific camera monitoring system(s) located at the site. Additional manufacturer instruction booklets and a supply of Visibility Monitoring Status/Assessment Sheets are also provided.

Close personal communications should be maintained between Air Resource Specialists, Inc. (ARS) and site operators throughout the monitoring effort. Operators are encouraged to call or notify ARS by e-mail if they have any questions or problems. Many problems can be fully resolved over the telephone.

2.0   RESPONSIBILITIES

2.1   PROJECT MANAGER

The project manager shall coordinate with the site operator, his/her supervisor, field specialist, and data coordinator concerning the schedule and requirements for routine maintenance procedures.

2.2   FIELD SPECIALIST

The field specialist shall:

- Coordinate with the project manager, the site operator, his/her supervisor, and data coordinator concerning the schedule and requirements for routine maintenance procedures.

- Train the site operator in all phases of camera system maintenance.

- Provide technical support to the site operator via telephone to assure high quality site visits.

- Resolve problems reported by the site operator.

- Document all technical support provided to the site operator.

2.3 DATA COORDINATOR

The data coordinator shall:

- Coordinate with the project manager, the site operator, his/her supervisor, and field specialist concerning the schedule and requirements for routine maintenance procedures.

- Verify that scheduled visits are performed and notify the site operator if he/she fails to make a scheduled visit.

- Provide technical support to the site operator via telephone to identify and resolve system problems. Document all technical support given to the site operator.

- Coordinate the replacement and repair of all system components and support hardware.

- Supply the site operator with all necessary monitoring supplies.

- Review all site documentation completed by the site operator for accuracy and completeness. File all documentation and correspondence.

- Enter the results of all performed procedures into the site-specific Quality Assurance Database.

- Document all capital instrumentation changes and maintain inventory records in the ARS Purchase Order/Inventory Database.

2.4 SITE OPERATOR

The site operator shall:

- Coordinate with his/her supervisor, the project manager, data coordinator, and field specialist concerning the schedule and requirements for routine maintenance procedures.

- Schedule regular site maintenance visits and perform all procedures described in this TI.

- Thoroughly document all procedures on the Visibility Monitoring Status/Assessment Sheet; mail the white copy of the completed sheet to the data coordinator and maintain the yellow copy on site.

- Immediately report any noted inconsistencies to the data coordinator or field specialist.

3.0   REQUIRED EQUIPMENT AND MATERIALS

3.1   SITE VISIT EQUIPMENT

Equipment and materials generally required to support a routine site visit or scheduled maintenance include:

- Medium and small flat-blade screwdriver

- Small Phillips-head screwdriver

- Medium adjustable wrench

- Keys for enclosure and padlocks

- Spare camera batteries (4 AA Ni-MH)

- Spare Personal Digital Assistant (PDA) batteries (2 AAA alkaline)

- Paperclip for resetting the PDA

- Voltmeter

- Lens cleaner and lens paper

- Site Operator's Manual for Remote High-Resolution Digital Camera Systems, containing:

  – SOP 4120, *Automatic Camera System Maintenance*

  – TI 4120-3800, *Routine Site Operator Maintenance Procedures for the Remote High-Resolution Digital Camera System (RDCS-100)*

  – TI 4120-3900, *Troubleshooting and Emergency Maintenance Procedures for the Remote High-Resolution Digital Camera System (RDCS-100)*

  – Manufacturer's instruction booklets

  – Visibility Monitoring Status/Assessment Sheets

- Pen or pencil

- Memory card pouch with adhered label

- Memory card shipping envelopes

3.2   INVENTORY

It is imperative that any capital instrumentation changes made as a result of routine maintenance be thoroughly documented. Specific model and serial numbers of the exchanged enclosure, camera, and/or Personal Digital Assistant (PDA) should be documented for future reference by the data coordinator in the site-specific Quality Assurance Database and ARS Purchase Order/Inventory Database. Any on-site changes made should be documented by the site operator on a Visibility Monitoring Status/Assessment Sheet or Photographic Monitoring Network Quality Assessment Log. Capital equipment exchange procedures are discussed in TI 4120-3900, *Troubleshooting and Emergency Maintenance Procedures for the Remote High-Resolution Digital Camera System (RDCS-100).*

4.0   METHODS

All procedures described in this TI refer to the Remote High-Resolution Digital Camera System (RDCS-100), which consists of five major components:

- A high-resolution digital camera with zoom lens and integrated scripting

- A custom-designed controller

- A PDA (Personal Digital Assistant) palm computer interface

- A battery-backed power system (AC or solar power)

- A lockable environmental enclosure

Many AC-powered remote high-resolution digital camera systems also contain a system heater and window defroster kit. These supplemental components assure ongoing data collection and minimize window condensation for sites located in colder northern climates.

Routine servicing procedures are summarized in the Remote High-Resolution Digital Camera System User's Manual, provided in the site operator's manual. Detailed photographs and diagrams of the system and associated components are provided in Figures 4-1 through 4-3.

The following manufacturers' instruction booklets provide additional reference and are located in the Site Operator's Manual for Remote High-Resolution Digital Camera Systems:

- Kodak digital camera instruction booklet
- PDA palmtop computer instruction booklet

This section includes two (2) major subsections:

4.1 Routine Servicing
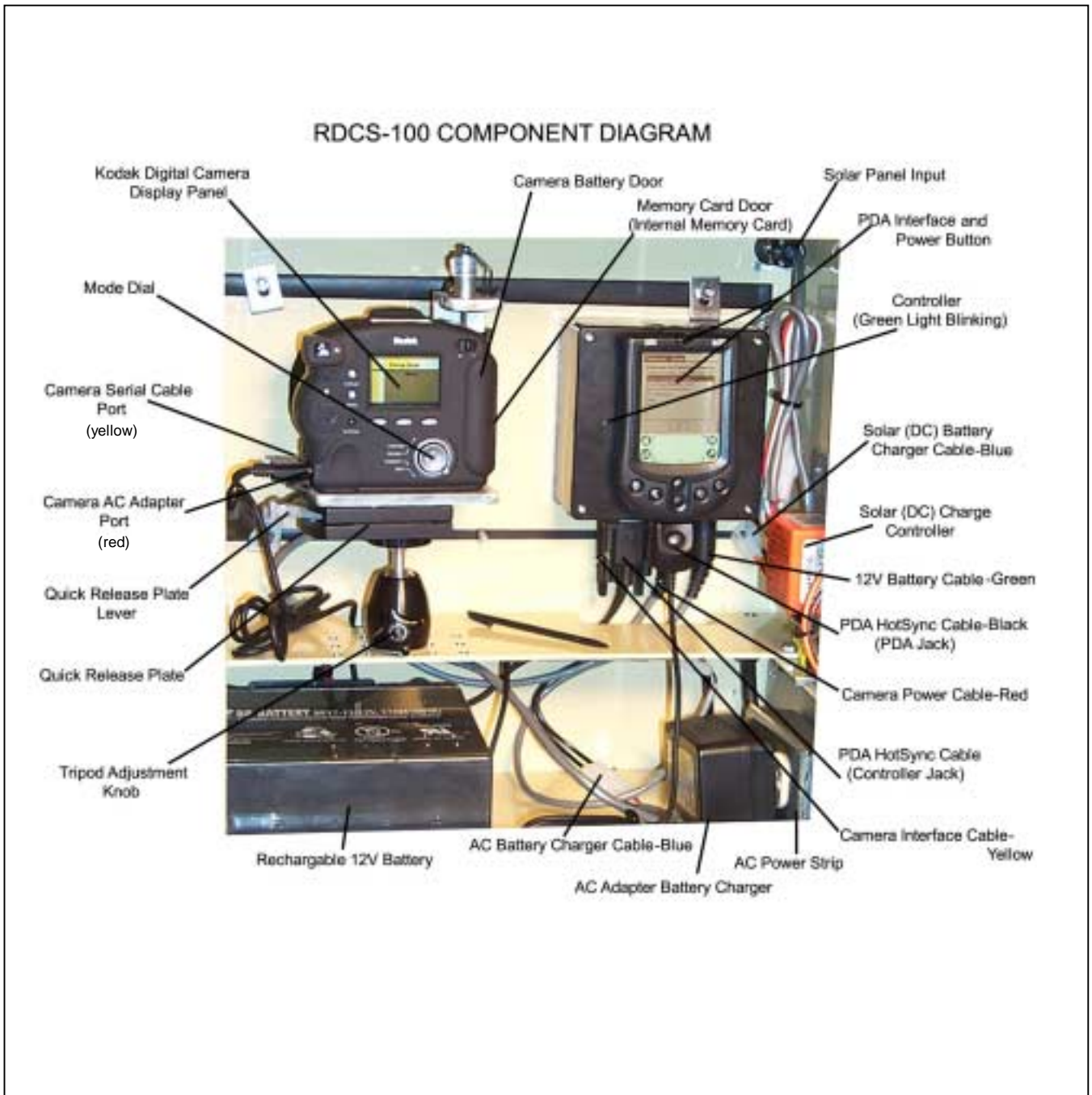4.2 Scheduled Maintenance

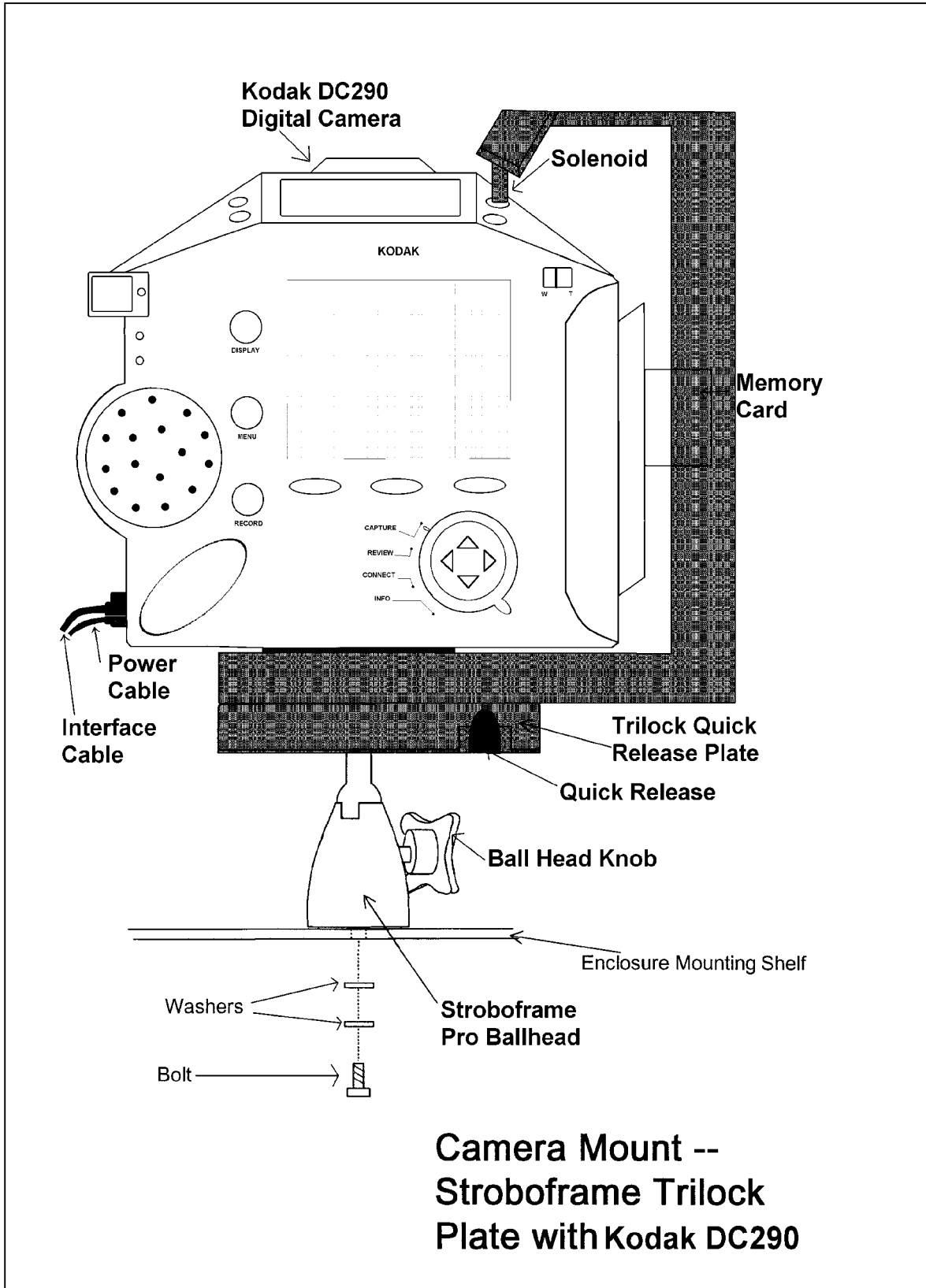Figure 4-1. Remote High-Resolution Digital Camera System (RDCS-100) Components.

Kodak DC290 Digital Camera

Solenoid

KODAK

DISPLAY

MENU

RECORD

CAPTURE
REVIEW
CONNECT
INFO

Memory Card

Power Cable

Interface Cable

Trilock Quick Release Plate

Quick Release

Ball Head Knob

Enclosure Mounting Shelf

Washers

Stroboframe Pro Ballhead

Bolt

Camera Mount -- Stroboframe Trilock Plate with Kodak DC290

Figure 4-2. Remote High-Resolution Digital Camera System (RDCS-100) Mount Diagram.

Camera Enclosure; Exterior & Interior View
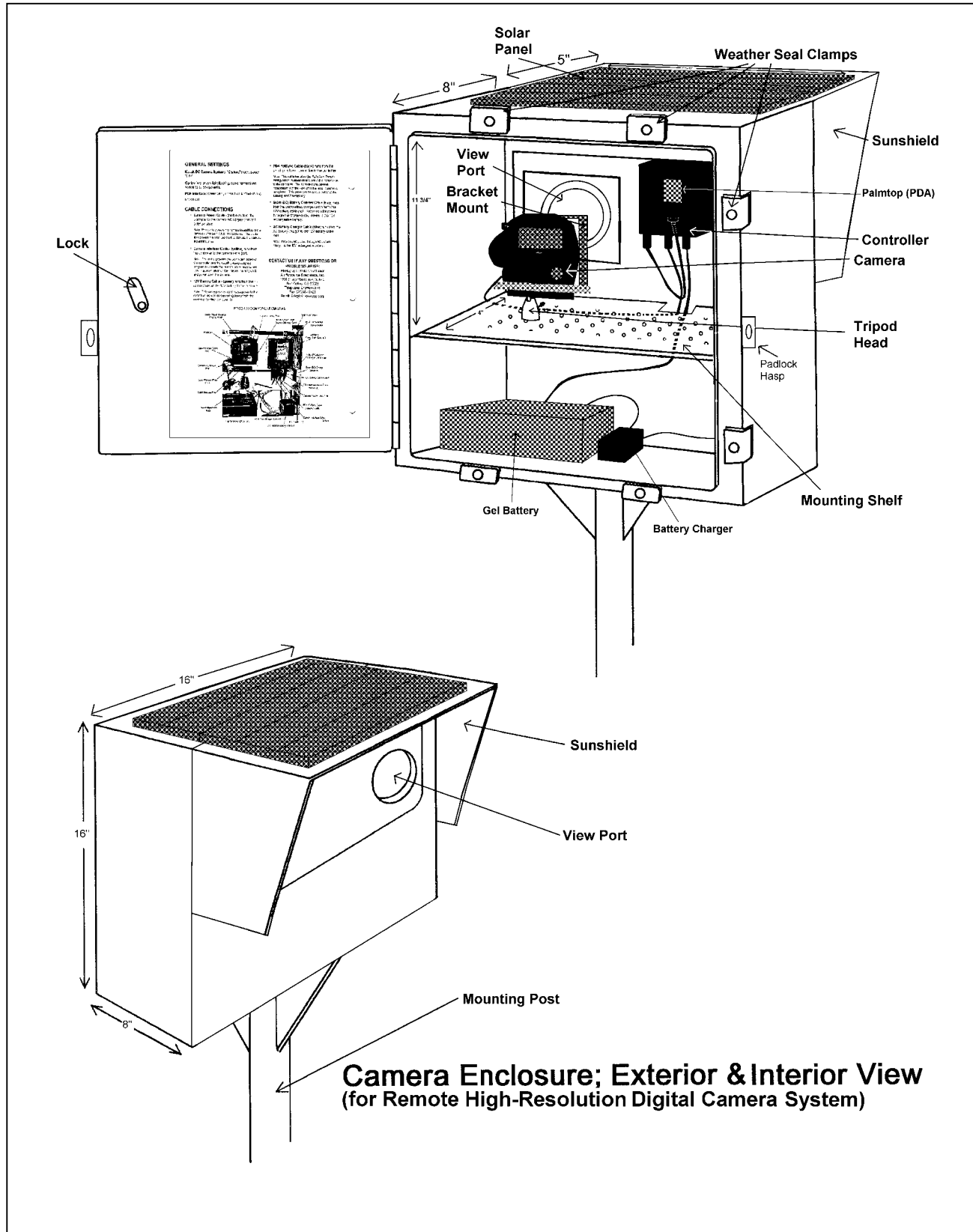(for Remote High-Resolution Digital Camera System)

Figure 4-3. Remote High-Resolution Digital Camera System (RDCS-100) Enclosure.

4.1   ROUTINE SERVICING

The RDCS-100 system will collect digital images as scheduled. No daily maintenance is required. Site operators are encouraged to monitor system operations at a minimum of two-week intervals. Regular maintenance during operator visits are summarized in Table 4-1.

Table 4-1

Digital Camera System
Field Maintenance Procedures

Regular Maintenance performed at each site visit:

- Inspect overall system and clean shelter window.

- Review controller interface (via PDA) and camera display menus for correct settings.

- Exchange memory card.

- Verify system operation.

- Align camera and digital light meter.

- Complete Visibility Monitoring Status/Assessment Sheet:

    - Document any equipment or monitoring discrepancies found.

    - Document all servicing or maintenance actions performed.

    - Describe current weather conditions and conditions observed during the monitoring period.

    - Describe current visibility conditions and conditions observed during the monitoring period.

- Close and lock camera enclosure.

- Ship memory card and the white copy of the completed Visibility Monitoring Status/Assessment Sheet to ARS.

During each routine site visit, the operator will thoroughly document all pertinent data collection information, any maintenance performed, and note any equipment or monitoring discrepancies found on the Visibility Monitoring Status/Assessment Sheet (Figure 4-4). The site operator must complete all applicable portions of this sheet and ship the white original to the data coordinator with each memory card. A completed example status/assessment sheet is provided in Figure 4-5. The following subsections detail how to complete the status/assessment sheet.

Site ID: _____   Data Sequence # : _____
Initials: _____   Memory Card ID # : _____
Shipment Tracking # : _____

REMOTE DIGITAL CAMERA SYSTEM
VISIBILITY MONITORING STATUS/ASSESSMENT SHEET

MEMORY CARD LOADED   **MEMORY CARD REMOVED**

Today's Date: _____ Time: _____   Today's Date: _____ Time: _____

Yes   No   **Yes   No**

☐   ☐   PalmCam Remote program properly activated   ☐   ☐   System found in proper condition
☐   ☐   Viewed Controller status: ☐   ☐   PalmCam Remote program properly activated
☐   ☐   PDA date/time matches controller date/time ☐   ☐   Viewed Controller status:
☐   ☐   Site status verified   ☐   ☐   PDA date/time matches controller date/time
           Enclosure temp (°F): _____   ☐   ☐   Site status verified
           System battery voltage: _____   Enclosure temp (°F): _____
☐   ☐   Loaded memory card   System Battery Voltage: _____
☐   ☐   Camera & solenoid bracket secured on tripod plate ☐   ☐   Images collected as expected,
☐   ☐   Power cable jacks secure   controller exposure count = _____
☐   ☐   Controller cable jacks secure   ☐   ☐   Power, controller, camera jacks secure
☐   ☐   Camera cable jacks secure   ☐   ☐   Camera & solenoid bracket removed from tripod plate
☐   ☐   TEST picture taken as expected   ☐   ☐   Exchanged memory card
           camera image count = _____   ☐   ☐   Memory card pouch properly labeled
☐   ☐   Camera alignment verified   ☐   ☐   Memory card and assessment sheet shipped
☐   ☐   PDA power turned off   (denote shipment tracking # above)
☐   ☐   Enclosure door locked and
           door seal clamps tightened

DESCRIBE WEATHER AND VISIBILITY CONDITIONS for the duration of the monitoring period:

_____
_____
_____

Current % Cloud Cover   _____   Ambient Temperature °F _____ _____ _____
                                                                   Now   Max   Min

COMMENTS/ACTION TAKEN

_____
_____
_____

SUPPLIES NEEDED   _____
_____

Ship white copy and memory card to:

Air Resource
Specialists, Inc.
1901 Sharp Point Drive, Suite E
Fort Collins, CO 80525
Phone: 970-484-7941
Fax: 970-484-3423

Figure 4-4. Example Remote Digital Camera System Visibility Monitoring
Status/Assessment Sheet for the High-Resolution Digital Camera
System (RDCS-100).

Site ID: _FTCO2_   Data Sequence # : ___003___
Initials: _KKF_   Memory Card ID # : _FS-128-009_
Shipment Tracking # : _8279 4190 3143_

REMOTE DIGITAL CAMERA SYSTEM
VISIBILITY MONITORING STATUS/ASSESSMENT SHEET

MEMORY CARD LOADED

Today's Date: _7/3/01_   Time: _17:10_

Yes	No	
X	☐	PalmCam Remote program properly activated
X	☐	Viewed Controller status:
X	☐	PDA date/time matches controller date/time
X	☐	Site status verified
		Enclosure temp (°F): _86.5_
		System battery voltage: _13.8_
X	☐	Loaded memory card
X	☐	Camera & solenoid bracket secured on tripod plate
X	☐	Power cable jacks secure
X	☐	Controller cable jacks secure
X	☐	Camera cable jacks secure
X	☐	TEST picture taken as expected
		camera image count = _1_
X	☐	Camera alignment verified
X	☐	PDA power turned off
X	☐	Enclosure door locked and
		door seal clamps tightened

MEMORY CARD REMOVED

Today's Date: _7/17/01_   Time: _16:08_

Yes	No	
X	☐	System found in proper condition
X	☐	PalmCam Remote program properly activated
X	☐	Viewed Controller status:
X	☐	PDA date/time matches controller date/time
X	☐	Site status verified
		Enclosure temp (°F): _88_
		System Battery Voltage: _14.1_
X	☐	Images collected as expected,
		controller exposure count = _40_
X	☐	Power, controller, camera jacks secure
X	☐	Camera & solenoid bracket removed from tripod plate
X	☐	Exchanged memory card
X	☐	Memory card pouch properly labeled
X	☐	Memory card and assessment sheet shipped
		(denote shipment tracking # above)

13 days X 3 =39
1 test shot

DESCRIBE WEATHER AND VISIBILITY CONDITIONS for the duration of the monitoring period:
Daily afternoon thunderstorms. Hot

Current % Cloud Cover _10%_   Ambient Temperature °F _86_ _94_ _50_
                                                      Now Max Min

COMMENTS/ACTION TAKEN
Exchanged PDA batteries on 7/17/01
Checked all other batteries - they are fine.
Took test photo on 7/3/01 @ 17:15.

SUPPLIES NEEDED
None at this time.

Ship white copy and memory card to:

Air Resource
Specialists, Inc.
1901 Sharp Point Drive, Suite E
Fort Collins, CO 80525
Phone: 970-484-7941
Fax: 970-484-3423

Figure 4-5. Completed Example Remote Digital Camera System Visibility Monitoring
Status/Assessment Sheet for the High-Resolution Digital Camera System
(RDCS-100).

4.1.1 Status/Assessment Sheet General Information

The following general information appears on the Visibility Monitoring Status/Assessment Sheet.

SITE ID   Enter the five-character site abbreviation (e.g., MOZI2).

DATA SEQUENCE #   Enter the numeral sequence of memory cards used, beginning with 001.

INITIALS   Enter the site operator's initials.

MEMORY CARD ID#   Enter the memory card identification number, located on the back of the memory card.

SHIPMENT TRACKING # Enter the FedEx Tracking Number, located at the top of the FedEx shipping label adhered to the mailing envelope.

Figure 4-6. FedEx Shipping Label With Tracking Number.
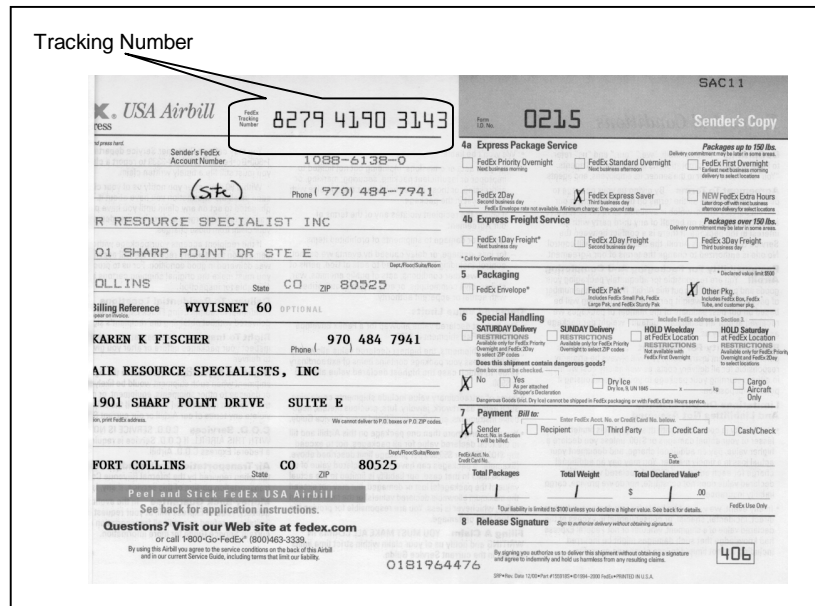
WEATHER AND
VISIBILITY CONDITIONS At the time of memory card exchange, describe recent and current weather and visibility conditions that may be helpful in interpreting the photographic image data.

Such conditions may include, but are not limited to:

- Temperature extremes

- Percent cloud cover currently observed

- Severe weather (lightning, hail, high winds, etc.)

- Passing storm fronts

- Precipitation

- Stagnant air masses

- Fog

- Extremely clean visibility conditions

- Regional or layered haze

- Plumes

- Severity of haze

- Emission source activity (e.g., nearby forest fires, controlled burns, construction, dusty roads, residential wood burning, etc.)

- Any perceptible odors (e.g., wood smoke)

COMMENTS   Describe any equipment or monitoring discrepancies found, troubleshooting or scheduled maintenance performed, and/or corrective actions taken.

SUPPLIES NEEDED   List any servicing supplies or documentation materials required for ongoing monitoring.

4.1.2   Status/Assessment Sheet Memory Card Removed Section

DATE AND TIME   Enter the date and time the memory card was removed and servicing was performed.

SYSTEM FOUND IN
PROPER CONDITION   Inspect the enclosure's interior and exterior for damage or other problems (water leakage, dust, cable connections, window condensation, etc.).

Review the controller interface (on the PDA) and digital camera displays to verify that the system date, site code, zoom setting, image frequency, number of exposures taken, power, battery status, and other diagnostic information are properly recorded.

PALMCAM REMOTE
PROGRAM PROPERLY
ACTIVATED

Verify that the PDA HotSync cable is properly inserted in the PDA jack. Activate the PDA interface by pressing the **Power** button (located at the top, center of the PDA). Access the PalmCam Remote program directly or through the Home menu (denoted by the symbol).

Note that the PDA will return to a sleep mode after 2 minutes with no use. To return to the current PalmCam Remote menu, press the PDA **Power** button again.
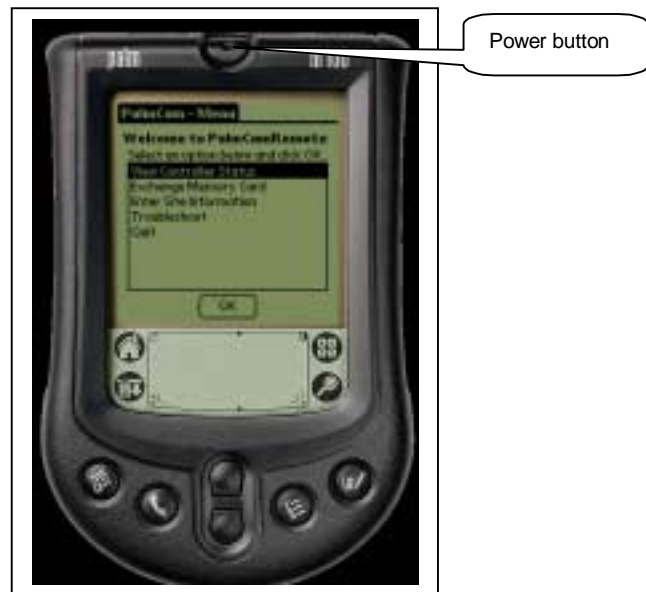

Figure 4-7. PalmCam Menu.

VIEWED CONTROLLER
STATUS

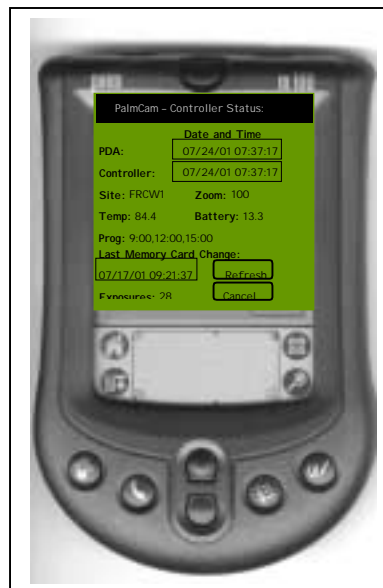Access the View Controller Status menu. (Allow 1 minute for all controller parameters to display).

Figure 4-8. View Controller Status Menu.

- Verify and document the current *Date and Time* for both the PDA and controller. Differences below 1 minute are acceptable.

- Verify the proper *site* code, *zoom* settings, and *program* frequency (e.g., 3x/day).

- Document the displayed enclosure *temperature* and system *battery* supply voltage.

- Verify the date of *last memory card exchange*.

- Verify that the memory card pouch and Visibility Monitoring Status/Assessment Sheet are labeled with the proper exchange dates and times.

- Document the number of *exposures* recorded by the controller.

- Press the **Cancel** button to return to the PalmCam menu.

POWER, CONTROLLER, CAMERA JACKS SECURE	Visually inspect the 12 V battery, controller, and camera jacks to ensure they are secure. Check the integrity of the cables and component connectors. Document any problems, including broken connectors, loose or bare wires, etc. Report any problems promptly to ARS.
CAMERA & SOLENOID BRACKET REMOVED FROM TRIPOD PLATE	Remove the camera and solenoid bracket from the tripod plate to access the internal camera memory card. Memory card exchanges can be made at anytime, but two-week intervals are recommended for overall quality assurance. For a three-image per day schedule, the maximum number of days between service intervals would be approximately 90 days for a 128MB card at 1792 x 1200 image resolution.

Press on the quick release plate lever (refer to Figure 4-2) and pull toward you. Remove the camera and solenoid bracket from the tripod release plate.

EXCHANGED MEMORY
CARD

Access the PDA Exchange Memory Card menu.

- Open the camera memory card door. Flip the memory card **release lever** so it protrudes out from the side of the camera.
WARNING: Do not press the release lever if the red LED under the lever is on or blinking. Ejecting the card while this LED is on can result in the loss of all data on the card.

- Press the **release lever** to eject the memory card from the camera slot. Pull the memory card out of the camera and place in the provided plastic pouch.

- Insert the new memory card. Press firmly until the release lever protrudes out from the side of the camera. Return the **release lever** to the up position. Close the memory card door.

- Remount the camera and solenoid bracket back on the tripod release plate. (Verify that none of the controller or power cables are sandwiched between the plates, or are in front of the camera lens). The quick release plate lever should automatically slide back and lock in place.

Press the **OK** button on the Exchange Memory Card menu when the exchange has been completed. Note this PalmCam Remote command will reset the controller's Memory Card Last Exchanged record to the current date and time.

Refer to Section 4.1.3 for procedures related to loading a new memory card.

MEMORY CARD POUCH
PROPERLY LABELED

Complete the current monitoring period memory card pouch label (Figure 4-9) and seal the used memory card inside the plastic pouch.

| Site Code: PASA1 Data Seq. # : 003 |
| Date/Time ON: 11/06/2000 |
| Date/Time OFF: 11/20/2000 |
| Memory Card ID # : FS-128-004 |

Figure 4-9. Memory Card Pouch Label.

Document the consecutive data sequence number and all observed settings (following the memory card exchange) on the Memory Card Loaded section of the new status/assessment sheet and on the new memory card pouch label. Place both the plastic pouch and new status/assessment sheet inside the enclosure door pocket.

MEMORY CARD AND ASSESSMENT SHEET SHIPPED

Insert the memory card pouch and the white copy of the Visibility Monitoring Status/Assessment Sheet inside the provided traceable shipping envelope. Complete the shipping label and document the tracking number on the site's yellow copy of the status/assessment sheet (see Figure 4-6).

Ship the data memory card to:

Air Resource Specialists, Inc.
1901 Sharp Point Drive, Suite E
Fort Collins, CO 80525
Attention: Photographic Data Coordinator

Note that the operator can download the memory card to a local computer and immediately look at the images taken during the monitoring period. The image and associated data files could be electronically transferred to the operational collection center (via FTP) rather than shipping the memory card.

4.1.3 Status/Assessment Sheet Memory Card Loaded Section

DATE AND TIME

Enter the date and time the memory card was loaded and servicing was performed.

Review the controller interface (on the PDA) and digital camera displays to verify that the system date, site code, zoom setting, image frequency, number of exposures taken, power, battery status, and other diagnostic information are properly recorded.

PALMCAM REMOTE PROGRAM PROPERLY ACTIVATED

Activate the PDA interface by pressing the **Power** button. Access the PalmCam Remote program (refer to Figure 4-7) directly or through the Home menu (denoted by the symbol).

Note that the PDA will return to a sleep mode after 2 minutes with no use. To return to the current PalmCam Remote menu, press the PDA **Power** button again.

VIEWED CONTROLLER STATUS

Access the View Controller Status menu (refer to Figure 4-8). (Allow 1 minute for all controller parameters to display).

- Verify and document the current *Date and Time* for both the PDA and controller. Differences below 1 minute are acceptable.

- Verify the proper *site* code, *zoom* settings, and *program* frequency (e.g., 3x/day).

- Document the displayed enclosure *temperature* and system *battery* supply voltage.

- Verify the date of *last memory card exchange*.

- Verify that the memory card pouch and Visibility Monitoring Status/Assessment Sheet are labeled with the proper exchange dates and times.

- Press the **Cancel** button to return to the PalmCam menu.

LOADED MEMORY CARD   Load a newly formatted memory card into the camera. Refer to Section 4.1.2 for procedures.

CAMERA & SOLENOID BRACKET SECURED ON TRIPOD PLATE   Replace the camera and solenoid bracket on the tripod release plate. Ensure the quick release plate lever is secure (refer to Figure 4-2).

POWER CABLE JACKS SECURE   Visually inspect the power cable jacks and ensure they are secure. Check integrity of the cables and component connectors. Document any problems, including broken connectors, loose or bare wires, etc. Report any problems promptly to ARS.

CONTROLLER CABLE JACKS SECURE   Visually inspect the controller cable jacks and ensure they are secure. Check integrity of the cables and component connectors. Document any problems, including broken connectors, loose or bare wires, etc. Report any problems promptly to ARS.

CAMERA CABLE JACKS SECURE   Visually inspect the camera jacks and ensure they are secure. Check integrity of the cables and component connectors. Document any problems, including broken connectors, loose or bare wires, etc. Report any problems promptly to ARS.

TEST PICTURE TAKEN AS EXPECTED   Press the **TEST** button on the Exchange Memory Card menu to verify the camera alignment, that all wiring is correct, and the battery power is sufficient to run the camera system.
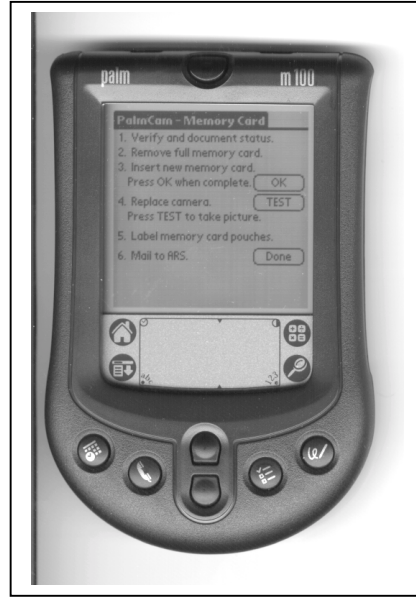
Figure 4-10. Exchange Memory Card Menu.

 Following up to a 60-second pause, the controller should power up the camera, load all pertinent site parameters, take and process a picture, and power down. Closely observe the following on the Kodak camera display screen during this process:

- The loaded controller parameters properly represent those of your site (e.g., site abbreviation, time).

- The vista alignment flashed on the display screen accurately depicts the alignment and zoom setting identified by the Air Program Manager. If not, or if insufficient time was given to verify the alignment, follow the camera alignment procedures in the troubleshoot section of the Remote High-Resolution Digital Camera System User's Manual or TI 4120-3900.

- The camera snaps a picture and the image is processed by the Kodak system. If no image is stored, the battery voltage may be insufficient or the Kodak script is misinterpreting commands from the controller.

- The image counter correctly identifies the number of images collected on the internal memory card. (This should be 1 if the memory card was just exchanged).

- Document the image count number displayed on the Memory Card Loaded section of the Visibility Monitoring Status/Assessment Sheet.

Press the **Done** button to return to the PalmCam menu.

|	
CAMERA ALIGNMENT VERIFIED	The camera alignment must remain constant from one memory card to the next. Observe the camera lens and light meter from the front exterior of the enclosure. The port alignment must be such that the camera lens and light meter are as close to center (unobstructed as possible). Refer to Figure 4-11. Both components must be clearly visible to properly meter and photograph the observed vista. Refer to TI 4120-3900 for proper camera alignment procedures.
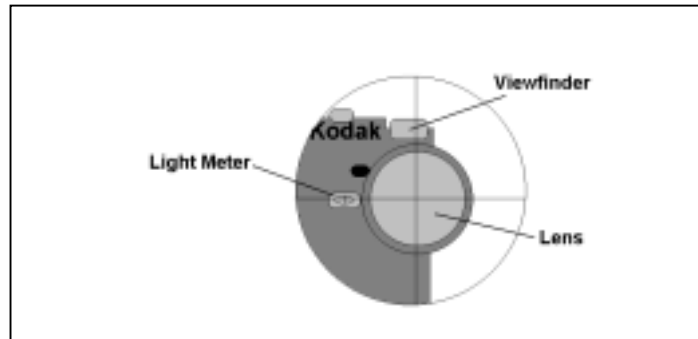
Figure 4-11. Diagram of Proper Port Alignment.

PDA POWER TURNED OFF	To minimize power drainage, turn off the PDA before leaving the site and unplug the PDA HotSync cable at the PDA jack.
ENCLOSURE DOOR LOCKED AND DOOR SEAL CLAMPS TIGHTENED LOCK ENCLOSURE	Place the User's Manual, memory card pouch, and new status/assessment sheet inside the enclosure door pocket for future reference. Close and lock the camera enclosure door. Tighten all door seal clamps and padlock the enclosure door hasp.

4.2   SCHEDULED MAINTENANCE

Long-term and scheduled maintenance requirements of digital camera systems are unknown at this time and will become clear as operational experience builds. All system components are modular and can be readily replaced by the site operator.

PDA batteries should be changed once every month. To install fresh batteries in the PDA:

- Press the latch on the PDA battery door and lift the battery door away from the PDA.

- Install two AAA alkaline batteries into the battery compartment.

- Insert the battery door back into place so that it is flush with the back of the PDA and "clicks" into position. NOTE: When changing batteries, replace them quickly. The built-in backup power maintains memory of your data for a period of up to one minute.

All scheduled maintenance requested by the data coordinator or performed by the site operator must be thoroughly documented on the Visibility Monitoring Status/Assessment Sheet and in the site-specific Quality Assurance Database.

If necessary, a Photographic Monitoring Network Quality Assessment Log (Figure 4-12) is mailed to the site to further document corrective actions taken. The site operator documents the date of correction and what was done, and returns a carbon copy or immediately faxes the log to ARS.

Problems and equipment malfunctions requiring extensive troubleshooting and/or maintenance are fully described in TI 4120-3900, *Troubleshooting and Emergency Maintenance Procedures for the Remote High-Resolution Digital Camera System (RDCS-100)*.

**PHOTOGRAPHIC MONITORING NETWORK
QUALITY ASSESSMENT LOG**

Site: _____ Date: _____

_____

Operator: _____

From: _____

PROBLEM DESCRIPTION:

_____
_____
_____
_____
_____

ACTION REQUEST:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

CORRECTIVE ACTION TAKEN (to be completed by site operator):

_____
_____
_____
_____
_____
_____

Date: _____ Operator: _____

Return Yellow Copy To: Air Resource
                              Specialists, Inc.
                              1901 Sharp Point Drive, Suite E
                              Fort Collins, CO 80525   White - Original, site copy
                              Phone: 970-484-7941   Yellow - return to ARS
                              Fax: 970-484-3423   Pink - ARS retain

Figure 4-12. Photographic Monitoring Network Quality Assessment Log.