



TRAINING UPDATE

Lab Location: SGAH & WAH
Department: Chemistry

Date Distributed: 4/10/13
Due Date: 5/1/13

DESCRIPTION OF PROCEDURE REVISION

Name of procedure:
Dimension Vista® Sample Processing, Startup and Maintenance SGAH.C133, WAH.C126 v002
Dimension Vista Maintenance Log form AG.F246.000
Description of change(s):
Section 5: Specify labeling for aliquots and dilutions in A.3 & 4; Standardize shift assignments in D.1; Add Maintenance Log to C.1, D.1 & 4
Section 9: Add Maintenance Log
Changes are shown in yellow highlight in the SOP

Document your compliance with this training update by taking the quiz in the MTS system.

Approved draft for training all sites (version 002)

Non-Technical SOP

Title	Dimension Vista® Sample Processing, Startup and Maintenance	
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Laboratory Approval		
Print Name and Title	Signature	Date
<i>Refer to the electronic signature page for approval and approval dates.</i>		
Local Issue Date:		Local Effective Date:

Review:		
Print Name	Signature	Date

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1. PURPOSE

To outline the operational daily start up procedure for the Siemens Dimension Vista and describe all other maintenance that must be performed as scheduled.

2. SCOPE

This procedure applies to all Core Laboratory personnel working with the Siemens Dimension Vista instruments.

3. RESPONSIBILITY

Core Laboratory Personnel are responsible for performing and complying with this procedure.

The Technical Supervisor is responsible for content and review of this procedure.

4. DEFINITIONS

None

5. PROCEDURE

A. General Information

1. If an aliquot or dilution is required, never pour sample back into the primary tube.
2. When preparing an aliquot or dilution, only handle one patient sample at a time.
3. An aliquot made as a straight pour-off into a Small Sample Container (SSC) does not require additional labeling, however, the following conditions must be met:
 - a. Handle one patient at a time.
 - b. Pour off patient sample from the primary tube into an SSC and immediately place the SSC on top of the primary tube.
 - c. If there is specimen left in the primary tube, discard the SSC when testing is complete.

- d. If there is no specimen left in the primary tube, parafilm the top to secure the SCC to the primary tube and save.
4. To make dilutions, handle one patient at a time. Label a Sample Cup with patient name and accession number, and then proceed with the dilution. Never dilute into Small Sample Containers.
5. If there is limited quantity of a specimen, parafilm and save the Sample Cup.
6. All saved specimens must be labeled with patient identification.

B. Operating Dimension Vista

B1. Sample Container and Racks

B2. Sample Preparation

B3. Sample Orders



B4. Process Samples

B5. Test Results

B1. Sample Container and Racks

1. Adapters and acceptable Tubes

All sample containers except the 10 mL tube require an adapter. The adapter for 5 mL tubes is teal and the adapter for 7 mL tubes is beige. These adapters must be used because they have specific codes that identify them to the instrument.

Sample Container	Acceptable Rack	Adaptor Type	Adaptor Color	Adaptor Code	Volume	Size
Red top Tube / Lavender top Tube	Grey / Orange	5 mL	Teal		4 mL	13 x 75 mm
Green top Tube / Red top Tube	Grey / Orange	7 mL	Beige		4.5 mL	13 x 100 mm
SST	Grey / Orange	None	None	None	7.5 mL	16 x 100 mm
Open Glass Tubes (Urines)	Yellow	None	None	None	7.5 mL	16 x 100 mm

2. Dimension Vista® Sample Cups

- a. The maximum fill volume for sample cups is 1.0 mL of fluid.
- b. The operator must ensure there is sufficient sample in the cup. When using a sample cup, be sure the lid is closed securely so it does not interfere with probe movement.
- c. When loading a cup into the required adapter, be sure to seat it securely, with the bottom of the cup lid touching the top of the adapter.
- d. The dead volume in a sample cup on a 5 or 7 mL adapter is 20 µL.
- e. The dead volume in a sample cup on a limited rack is 10 µL.
- f. The dead volume must be added to the required sample volume displayed on the Manual Order Entry screen.

3. Dimension Vista® Small Sample Containers

- a. Dimension Vista® Small Sample Containers are intended to be used when the aliquot probe cannot reach the sample in a primary barcoded tube. In these situations, using Dimension Vista® Small Sample Containers allow efficient sample processing by retaining the use of the barcode information on the primary tube.
- b. Fill the Dimension Vista® Small Sample Container with a maximum of 1.0 mL of sample, the dead volume is 100 µL.

4. Sample Racks

- a. Sample racks hold six samples and are barcoded for identification to the system.
- b. Each position on a rack is numbered so that the system can communicate the exact location of a sample.
 - **Surplus Rack (Grey Color):** The sample volume aspirated from a Surplus rack is greater than the amount needed to process the scheduled tests. This option allows for unplanned testing such as add-on tests, dilutions and reflex testing. The minimum sample volume is 200 µL. The total minimum sample in the container is 200 µL plus the dead volume of the container being used.
 - **Limited Rack (Orange Color):** The sample volume aspirated from Limited racks is only the amount needed to run scheduled tests. No add-on tests or re-runs are allowed on samples aliquotted from limited racks. The instrument attempts to retry on process errors; however there must be sufficient volume remaining in the aliquot. HIL tests are not automatically ordered but are processed if requested by the operator (manually ordered). Dead volume for a sample cup in a limited rack is 10 µL. The minimum sample volume is 50 µL. The total minimum volume that must be in a limited SSC is 60 µL.
 - **Urine Rack (Yellow Color):** Open glass tubes only.

5. Adequate Sample Volume:

- a. Before loading a sample tube into a rack, use one of the two Minimum Sample guides as a quick check for adequate sample volume in the primary sample tube or sample aliquot tube.
- b. Hold the appropriate type of sample tube up to the guide for that size tube.
- c. If the sample is within the indicated sufficient sample height area, there is adequate sample volume to run that sample.

5. When ordering a manually prepared diluted sample, enter the dilution factor in the Manual Dilution factor field. The instrument automatically multiplies the result by the factor. When a factor is entered, other than 1.0, the sample is not auto-diluted by the instrument.
6. To print a barcode label for a sample cup, press **Print Barcode** after the data fields on the screen have been filled in. On the dialog box that appears, press “Print Sample Cup Barcode”.
7. Select an option sample to be run from the drop down menu.
8. Press **Submit Order**.

B4. Process Samples

1. Load Racks onto the Instrument

- a. Place the rack in the input lanes. It is moved automatically to the (designated) aliquot area.
- b. When aliquotting is complete, the rack is shuttled to the output lanes where it can be removed.

2. STAT Sample Processing

- a. Use the STAT lane for STAT samples, **whole blood methods**, and priority tests.
- b. Place barcoded sample containers in a rack.
- c. Place the rack in the STAT lane located to the right of the output lane.
- d. After the samples are aliquotted, the rack moves out through the sample output lane.

3. Whole Blood Sampling

- a. Surplus samples presented in a tube or sample cup must be placed in the STAT lane. Sample cup minimum fill is 200 μ L.
- b. Samples presented in tubes or cups via the routine lanes are not supported and yield both the problem sample “Failed to Create One or More Aliquots” and the process error “Routine Tube Whole Blood Processing Not Supported”.
- c. Surplus samples presented in any SSC (small sample containers) can be placed in the routine lanes and STAT lane without any errors. There is no limit to the number of SSC that can be used at a single time because whole blood samples placed in SSC are automatically re-suspended prior to aspiration, to allow for routine lane entry. Minimum fill is 400 μ L. The maximum fill is 1 mL.
- d. Limited samples for whole blood sampling is not supported.

4. View Samples

Use one of these methods to view the progress and status of a sample:

Sidebar Samples Option

The Samples option in the sidebar display shows samples in real time as they are processed on the system. The display is constantly refreshed as testing takes place and the sample status changes.

Press the **Samples** button on the Sidebar menu.

There are three options for viewing samples in the sidebar:

- **Processing.** Displays status and estimated time to completion.
- **Completed.** Displays completed samples.
- **STAT Only.** Displays only STAT samples.

Patient Samples Menu

Use these Patient Sample menu options to view samples:

- All Samples > Sample List
- All Samples > Search Samples
- STAT Samples
- Add On Tests
- Sample History

5. Search Samples

- a. The search samples screen finds a specific sample on the list, based on search criteria entered.
- b. The operator can search for a character or number string. Type the data in the Search field and press the **Go** button. All samples meeting the criteria are listed on the screen. Select the patient to view the results.
- c. The handheld barcode scanner can also be used to scan the barcode label on the tube.

6. Add-On Tests

- a. Go to **Patient Samples > All Samples**. Select sample.
- b. Press **Add-on Tests** button to order additional tests for a sample that has already been placed on the instrument.
- c. Order tests using the Methods sidebar or the Query LIS button.
- d. Specify if sample is to be obtained from an existing aliquot plate or from the rack with the reloaded sample.

7. Cancel Tests

A test can be cancelled on a patient sample that is processing. **Manually Cancelled Test** appears on the test result report in the flag field.

- a. Select **Patient Samples > All Samples > Sample List**.
- b. Select the patient sample from the sample list on the Results screen.
- c. Highlight the test to be cancelled.
- d. Press **Cancel Selected Tests**. Dialog box appears to confirm selected test.

B5. Test Results

1. Display Test Results

Use the **Patient Samples > All Samples > Results** screen to view test results for a patient.

2. Print Test Results

If a printout of the results is needed, press the **Print** button at the bottom of the screen.

3. Retransmit to LIS

To retransmit results to the LIS, press the **Retransmit** button. Results for the displayed sample are transmitted.

If not all tests are finished processing, the completed results are sent as a partial report.

4. HIL Index

The HIL reporting feature, which alerts the operator to potential interference from hemolysis, icterus and lipemia in a sample, provides a numerical index for each interference attribute.

- H = hemoglobin resulting from lysis of red blood cells
- I = icterus resulting from endogenous bilirubin
- L = lipemia or turbidity caused by insoluble lipids

5. Automatic Dilution (Autodilution)

When the system dilutes a sample automatically, the message **Diluted** appears on the test results report.

If the diluted sample still produces a result outside the assay range for the method, the flags **Below Assay Range** or **Above Assay Range**, and the comment **Diluted** appears on the test report with the method. If this occurs, dilute the sample manually and use the Manual Order Entry screen to rerun the test, enter the dilution factor to determine the correct test result.

C. Daily Startup

1. Perform these tasks every 24 hours

Navigate to **System > Daily Log > Daily Setup Log**.

Perform the following tasks:

- a. Probe Test (The probe test is scheduled automatically as part of off-peak activities)

Interpreting Probe Test Result:

Result	Explanation
SKIP	The test was not done because a prerequisite test failed. For example, if alignment verification for a probe fails, its tubing integrity test is not run.
GRAY	If the area is grayed out, the test is not applicable for the probe.
ERROR	A mechanical error occurred during the test. Creates a red alert.
FAIL	The test was completed but the result was outside the acceptable range. Creates a red alert.
PASS	No errors occurred during the test and the result was within the acceptable range.

- b. Review temperatures and humidity
- c. Clean the sample lane area and inspect the sample racks Wipe the areas around the sample rack handling area and STAT lanes with a damp cloth. Inspect the sample racks and clean with soapy water as needed.
- d. Empty waste as indicated by alerts

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- e. Replenish supplies as indicated by alerts:
 - Load Aliquot Plates
 - Load Cuvettes
 - Empty Waste
 - Load LOCI® Reaction Vessels
 - IMT consumables
 - System Fluids
 - Reagent Needs
- f. View Hydration Status
- g. When the tasks are completed record the tasks on the Daily Setup Log by selecting the “Yellow X” in the complete column. A green “Check Mark” appears along with the date. These tasks are documented both electronically and manually on the Dimension Vista Maintenance Log.

2. Off-Peak Activities

Off-peak activities are scheduled to start within a 4 hour user-defined window. The system automatically starts off-peak activities during this time frame.

The system performs the following activities:

- a. Runs Probe Test
- b. Routine IMT Clean
- c. Discard expired aliquot plates
- d. Backup Database
- e. Hydrates Reagents (that are needed in the next 24 hours)
- f. Orders Calibrations that are near expiration (that are configured for auto-trigger and expiration)
- g. Zip Milipore Data Files
- h. If probe test is configured, the instrument pauses and enter Diagnostics mode. The remaining activities do not interfere with normal processing.

D. Maintenance

1. General information and schedule

- a. The Daily Log and weekly / monthly maintenance will be performed as specified below:

Shady Grove and Washington Adventist Hospitals:

Instrument	Shift	Maintenance
Vista 1	Day	Off-Peak, Daily, Weekly and Monthly*
Vista 2	Evening	Off-Peak, Daily, Weekly and Monthly*
Vista 3 (SGAH only)	Night	Off-Peak, Daily, Weekly and Monthly*

* The Weekly and Monthly maintenance may be subject to a schedule change, however as long as they are performed successfully and on time, they will be acceptable.

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- b. The daily monitoring of the instrument supplies and waste will be performed on all three shifts.
- c. The Core Laboratory Group Leads are responsible for the weekly review of **Dimension Vista Maintenance Logs**.
- d. The Core Laboratory Supervisor, Operational Director or designee is responsible for the monthly review of maintenance.
- e. The required maintenance must be completed as scheduled.
- f. After any maintenance is completed, Quality Control must be run successfully before releasing patient results.

2. Basic Steps and Tools needed for Maintenance

Always pause the instrument first. To open the Lids:

- a. Insert a long slender tool in the hole next to the STAT lane. Press firmly against the latch and lift the lid.
- b. Insert the tool into the hole at the center of the center lid. Press firmly against the latch and lift the lid.
- c. Close the lids and press the **Operation** icon to display the drop-down menu. Press **Reset** to return system status to **Ready**.

3. Accessory Spare Parts Kit

Parts and tools needed for maintenance and replacement procedures can be found in the accessory spare parts kit that comes with the instrument.

4. Weekly Maintenance:

Navigate to **System > Daily Log > Weekly Maintenance Log**.
Perform the following:

Clean Reagent Residue on Baseplate:

- a. Press the **Operation** icon, then the **Pause** button to pause the instrument.
- b. Release the center cover interlock and raise the center lid of the instrument and locate the baseplate.
- c. Clean the areas around Reagent Arms 1 and 2 as needed using a damp cloth.
- d. Close the instrument lids and press the **Operation** icon, then **Reset**.

Inspect IMT Module Sample Port for Salt Crystals

- a. Press the **Operation** icon, then the **Pause** button to pause the instrument.
- b. Release the center cover interlock and raise the left and center instrument lids and locate the IMT module area.
- c. Gently pull on the rectangular latch on each side of the aliquot plate holder to release the aliquot plate cover. Set the cover aside.
- d. Locate the IMT Sample Port. If salt crystals are present, clean as needed using a damp cloth.
- e. Close the instrument lids and press the **Operation** icon, then **Reset**.
- f. When completed, record the tasks on the Weekly Maintenance Log. Click on the "Yellow X" in the complete column and a green "Check mark" appears along with the date. These tasks are documented both electronically **and manually on the Dimension Vista Maintenance Log**.

5. Monthly Maintenance

- a. Perform these tasks monthly, using the following supplies:
 - Flex® Inserts
 - Air Filters
 - Drain Brush
 - Gauze
 - Long Slender Tool
 - Alcohol Prep Pad
- b. Navigate to **System > Daily Log > Monthly Maintenance Log**.
- c. Perform the procedures in the following order:
 - 1) Inspect IMT Peristaltic Pump Tubing for flattened areas.
 - 2) Clean Reagent Flex® Inserts:
Dimension Vista® 1500: clean the Reagent Arm 1, 2, and 3 Flex® Inserts.
 - 3) Clean the aliquot, IMT, sample, reagent and reagent prep drains.
 - 4) Clean Aliquot Probe Tip using alcohol prep
 - 5) Replace Air filters
 - 6) Clean Aliquot Waste Chute
- d. When completed, record the tasks on the Monthly Maintenance Log. Click on the “Yellow X” in the complete column and a green “Check Mark” appears along with the date. These tasks are documented both electronically **and manually on the Dimension Vista Maintenance Log**.

6. As Needed Maintenance:

a. Replace Water Purification Module (WPM) Components

The WPM alerts the user when a component needs to be replaced or cleaned. The user can manually perform maintenance on the following components:

- 1) Q-Gard Replacement
- 2) Progard Replacement
- 3) Sanitization
- 4) pH Cleaning (A)
- 5) pH Cleaning (B)

To replace a component of the WPM:

- 1) Press the alert or press **Setup >Supplies > Maintain Water Supply**.
- 2) The WPM Main page opens.
- 3) Select the **Alarms-Events** button to view the component requiring attention.
- 4) Select the **Maintenance** button from the WPM menu.
- 5) Select the maintenance to be performed.

b. Replace Progard® Pretreatment Pack

- 1) Open the left-hand door. The WPM sits on a movable tray.

- 2) Pull up on the metal ring/black knob in the right front corner to release the tray. Pull the tray forward.
- 3) Locate the Progard® Pretreatment Pack.
- 4) Press the **Maintenance** button on the WPM screen. Press **Progard Replacement** button, then press **Continue**.
- 5) Follow the instructions (listed below) on the screen to replace the pack:
 - a) Lift the pack adapter cover to the top position. Remove the metal locking clip and pull out the Progard.
 - b) Remove the protective caps from the new Progard and wet the pack o-rings using a few drops of water.
 - c) Slide the pack onto the metal guide pin. Lift up the Progard slightly in order to push the bottom of the pack into the slot at the bottom of the system.
 - d) Push the Progard completely onto the pack adapter. The metal guide pin should be visible now. Lock the Progard in place with the metal locking clip on the end of the metal guide pin. Lower the adapter cover over the newly installed Progard.
- 6) When completed press **Finish**. The Maintenance Complete screen is displayed. Press **Finish** again.
- 7) Record this replacement in the Instrument Log.

c. Replace Q-Gard® Polishing Pack

- 1) Open the left-hand door. The WPM sits on a movable tray.
- 2) Pull up on the metal ring/black knob in the right front corner to release the tray. Pull the tray forward.
- 3) Press the Alert or **Setup > Supplies** to display the Supplies screen. Press **Maintain Water Supply**.
- 4) Press the **Maintenance** button on the WPM screen. Press **QGard Replacement** button, and press **Continue**. The system depressurizes.
- 5) Follow the instructions (listed below) on the screen to replace the pack:
 - a) Lift the pack adapter cover to the top position. Remove the metal locking clip. Pull out the Q-Gard.
 - b) Remove the protective caps from the new Q-Gard and wet the pack o-rings using a few drops of water.
 - c) Slide the pack onto the metal guide pin. Lift up the pack slightly in order to push the bottom of the pack into the slot at the bottom of the system.
 - d) Push the pack completely onto the pack adapter. The metal guide pin should be visible now. Lock the pack in place with the metal locking clip on the end of the metal guide pin. Lower the adapter cover over the newly installed Q-Gard.
- 6) When finished, press **Next**. The Maintenance Complete screen is displayed. Press **Finish**.
- 7) Record this replacement in the Instrument Log.

d. Sanitize the RO Membrane

Use this procedure to sanitize the RO Membrane when prompted by an Alert (approximately every 60 days).

- 1) Open the left-hand door. The WPM sits on a movable tray.

- 2) Pull up on the metal ring/black knob in the right front corner to release the tray. While pulling on the ring, pull the tray forward.
- 3) Press the Alert or **Setup > Supplies** to display the Supplies screen. Press **Maintain Water Supply** to display the dialog box.
- 4) Press **Maintenance** and follow the instructions to begin the sanitization cycle. Follow the instructions; the system will ask for a chlorine tablet soon.
- 5) Record the procedure in the Instrument Log.

e. pH Clean

Use this procedure to perform a pH clean of the RO Membrane when prompted by an Alert.

- 1) Open the left-hand door. The WPM sits on a movable tray.
- 2) Pull up on the metal ring/black knob in the right front corner to release the tray. While pulling on the ring, pull the tray forward.
- 3) Press the Alert or **Setup > Supplies** to display the Supplies screen. Press **Maintain Water Supply** to display the dialog box.
- 4) Press **Maintenance** and follow the instructions to begin the pH clean cycle.
- 5) Record the procedure in the Instrument Log.

f. Water Sampling for Culture (to be done once a month on every Dimension Vista)

- 1) Log on as an Administrator.
- 2) Press **Operation > Pause**.
- 3) Press **Advanced > Diagnostics**.
- 4) Select **System Diagnostics** from the Diagnostics menu.
- 5) Select **Vista Diagnostics** from the Diagnostic Tasks menu.
- 6) Select the **Prime** tab.
- 7) To set up the flush for Reagent Arm 2 (R2 arm), enter 11 into the Reagent Arm 2 field. Select Prime Pumps for Reagent Arm 2.
- 8) Release the interlock and raise the center lid.
- 9) Get the sterile cup or sampler assembly ready.
- 10) Write the date, type, and sampling site on the outside of the collection case.
- 11) Remove the cover from the R2 arm by pressing in and up on the latch and lifting the cover off the arm assembly.
- 12) Remove the fitting from Reagent Probe 2.
- 13) Place the collection case under the R2 Arm tubing and fitting.
- 14) While holding the collection case under the tubing and fitting, select the Reagent Arm 2 **Prime Pumps** button and collect the appropriate volume to fill the collection case.
- 15) Reconnect the R2 probe tubing to its fitting and reinstall the R2 arm cover if removed in Step 12.
- 16) Prime the Reagent Arm 2 pump 5 times by selecting **5** next to the Reagent Arm 2 field.
- 17) After the probe has completed priming, select the **Instrument** tab. Select the **Exit Diagnostics** button. Select **Yes** to exit.
- 18) Close the instrument lid.
- 19) Select the **Home** icon at the top of the screen.
- 20) Navigated to **System > Daily Log**, then select **Run Probe Test** button. This ensures that the probe has been fitted correctly after sampling. If the probe

test fails, adjust the probe to its fitting until it is secure, then prime the Reagent Arm 2 pump again and perform the probe test until it passes for Reagent Arm 2.

- 21) Document collection on Millipore Water Sampling for Culture log.
- 22) To order culture:
 - a) Complete a microbiology downtime form with
 - name of the Lab section ordering
 - date and time water is collected
 - name of test ordered
 - b) Use one of the labels attached to the form to label the specimen
 - c) Deliver specimen to Specimen Processing
 - d) Specimen Processing staff will:
 - Order XH20 in LIS
 - Label the specimen and downtime form with the LIS order
 - Deliver sample to Microbiology
 - e) Microbiology staff will:
 - Inoculate a Standard Methods Agar (SMA) plate with 1 mL of water utilizing a 1 mL pipette.
 - Let plate sit in hood specimen side up until water absorbs into medium.
 - Send to Chantilly for incubation and reading.
- 23) Culture result will be processed as follows. Group Lead will:
 - a) Retrieve results from printer
 - b) Record results as CFU/mL on the Millipore Water Sampling for Culture Log
 - c) Acceptable values are ≤ 10 CFU/mL.
 - d) Document corrective action if value is unacceptable.

g. Probe Replacement

- 1) **Replace a Reagent Probe** (When the Reagent Probes count reaches 1,170,000 cycles, a yellow system alert is generated. When the count reaches 1,200,000 cycles a red system alert is generated).
- 2) **Replace the Reagent Preparation Probe** (When the Reagent Preparation Probe count reaches 28 hours a yellow system alert is generated. When the count reaches 30 hours a red system alert is generated).
- 3) **Replace other probes as needed.**

6. RELATED DOCUMENTS

Quality Control Program, QA procedure
QC Responsibilities and Review, QA procedure

7. REFERENCES

Dimension Vista® System Operator's Guide, Siemens Diagnostics, revised 03/2011.

8. REVISION HISTORY

Version	Date	Reason for Revision	Revised By	Approved By
000	12/20/12	Section 5: Correct shift assignments by site in D.1	A Chini	R SanLuis
001	3/27/13	Section 5: Specify labeling in A.3 & 4; Standardize shift assignments in D.1; Add Maintenance Log to C.1, D.1 & 4 Section 9: Add Maintenance Log	A Chini	R SanLuis

9. ADDENDA AND APPENDICES

Refer to Attachment tab of Infocard:

- A. Dimension Vista Limits Chart
- B. Millipore Water Sampling for Culture on Dimension Vista Systems
- C. Dimension Vista Maintenance Log**

