1.0 PURPOSE:

High-resolution images of specimens can be obtained by running CT scans and reconstructions, using various, specialized parameters to the investigator's liking. These tasks can be completed using the GE eXplore CT Vision 120 uCT (also known as the Vision 120). Specifically, each scan is labeled according to the project, exam, the type of specimen and protocol used. The protocol chosen defines how to collect a series of images.

2.0 SCOPE:

This SOP describes how to scan specimens using the Vision 120 in a safe and efficient manner. It does not explain the use of MicroView software.

3.0 RESPONSIBILITIES:

The individual using the piece of equipment is fully responsible for performing & reporting the work in a safe and efficient manner. This individual must have the following safety certificates and training:

- X-Ray (with a TLD badge)
- Radiation
- Biohazard
- WHMIS
- General lab safety

Please see the following link for safety training information, under "Health and Safety Training Sessions":

http://www.uwo.ca/humanresources/facultystaff/h_and_s/training/training_idx.htm#10

4.0 DEFINITIONS:

Table 1: Communication Icon Color Descriptions

Color	Description
Dark Grey	In-active or Not Connected
Bright Grey	Connected
Red Icon	Error
Yellow Warning Sign	Warning
Green Rotating Cog	System is Busy

Table 2: Communication Icon Descriptions

Icon	Description
System Coordinator	General status of all systems
SPECT System	n/a
CT Subsystem	System communication with CT subsystem
Recon Engine	System communication with Reconnection server
Chiller	n/a

Gantry	Status of CT Gantry
Cradle/Table	Status of table and cradle with collimator
Collimator	n/a
Interlock	Status of Specimen table cover for CT scan
BioInSite	Connection of BioInSite
XRay	Firing of XRays
ABORT	Stops all system activity

5.0 REFERENCES:

5.1. Technical Publication, Revision 2. GE Healthcare eXplore CT120 User Guide.

Table 3: Page References

Chapter	Page # (Hardcopy)	Page # (.pdf)**
Chapter 4: Pre-Scan Preparation	29-39	25-35
Chapter 5 – Scan Module	41-58	36-53
Chapter 6 – The Explorer Module	59-61	54-56
Chapter 7 – The Reconstruction Module	63-67	57-62

***Attachment A: CT_Vision120Manual.pdf*

6.0 PROCEDURES:

- BEFORE PROCEEDING, refer to a manuscript (methods) document that is specific to your task (prewritten or write one up yourself).

6.1 Login

6.1.1. To turn on, turn the system key clockwise, then press the green **START** button.
   a) If the key doesn't turn, turn the red reset button below the CT 120 monitor a bit, then try 6.1.1. again.

6.1.2. Turn on the Host Console (HP xw8600 Workstation).

6.1.3. Type in the Username (vct) & Password (vct@pci)

6.1.4. Click **GE icon** in **Console Application** (on desktop) to launch Host Console Interface.

6.1.5. Click on **Explorer** icon on the left.

6.1.6. Highlight the desired scanner in **Available Scanners** window. Communication Icons will be seen at the bottom of the screen.

6.1.7. See table 1 & 2 under section 4.0 for Communication Icon Colors & Descriptions for reference.

6.2 Tableside Controller – Registering Table

6.2.1. Register the table by pressing **Register Table** button.

6.2.2. "Ready" will appear under Table Status and Cradle Location and Height displays the position of the specimen cradle.

6.3 Tableside Controller – Positioning Specimen for Scanning

6.3.1. Place the specimen on the specimen cradle and leave the specimen table cover open.
6.3.2. Press **Toggle Lasers** button to turn on the alignment lasers.
6.3.3. Ensure the **Table** tab is selected in the top right of screen.
6.3.4. Use the arrows to move the table until specimen is at a desired position.
6.3.5. CT Gantry buttons (**AP** is anterior/posterior view – moves gantry to home position, **Up** arrow rotates CT Gantry counter clockwise. **Down** arrow rotates CT Gantry clockwise. **LR** is left/right to obtain a side view).
6.3.6. Click **Set** under Laser Mark Plane.
6.3.7. Press **Toggle Lasers** again to turn the lasers off. Use **Move to Home** button to move table to its outermost position. Move to appropriate scan plane via **Move** buttons.
6.3.8. Close the specimen table, move the cradle to its forward position.

6.4 Changing Cradle Height

6.4.1. Open the specimen table cover.
6.4.2. Slowly turn the fluted, silver knob underneath cradle, to lower or raise the cradle.
6.4.3. **Table Status** field will tell you if the cradle is too high or low ("motion disabled").
6.4.4. Continue to slowly turn the knob until Table Status fields shows "Ready".

6.5 Identify and Assign Basic Parameters

6.5.1. Click **Scan** on the left side of the screen (HP xw8600 Workstation) to select the Scan menu.
6.5.2. Fill in the **Project, Exam** and **Specimen** fields.
6.5.3. In the **Recon** menu, click on **Recon Server** to choose a reconstruction server.
6.5.4. In the **Scan** menu, click on **Save Data To** to save data at a desired location.
6.5.5. Click on **Select Protocol** button to select the desired protocol.
6.5.6. To edit a protocol, click **Edit Protocol**.

6.6 Adjusting CT Sequence & Reconstruction Task Parameters

6.6.1. Click on a desired CT sequence or CT Reconstruction to examine and/or edit them.

6.7 Warming up the CT Scanner

6.7.1. Click **CT Warmup** to warm up the CT detector and x-ray tube.
6.7.2. If **X-Ray Enable** is on, press X-Ray Enable beside the keyboard before running any scan.

6.8 Defining ROI

6.8.1. Press the **Run Scout** button
6.8.2. Click on the **Region of Interest** button, and choose a ROI you want to adjust.
6.8.3. Drag handles on the box's borders to adjust the size of the ROI.

6.9 Using Fluoroscopy (Fluoro Mode) for Fine Tuning of ROI

6.9.1. Highlight a sequence of interest
6.9.2. Click on the **Fluoro Mode** button (changes to **Start X-Rays**).
6.9.3. Press the **Start X-Rays** button to start Fluoro. To turn off, press it again.

6.10 Scanning

6.10.1. Click **Run Sequence** or **Run Protocol** to start scanning.
a) **Run Sequence** runs a single sequence and its tasks.
b) **Run Protocol** runs all sequences and tasks within a Protocol. Click **Confirm Next Sequence** after each is run.

6.11 Tracking and Modifying Progress

6.11.1. Click on the Reconstruction's name in progress (must be completed)
6.11.2. Click on **View** (leads to MicroView software).
6.11.3. To select a new ROI (add another reconstruction), select and save a new ROI.
6.11.4. Hit **Reconstruct** button.
6.11.5. Give the reconstruction a new name in the **Recon Name** field.
6.11.6. Press **Load ROI** to download a new ROI from MicroView.
6.11.7. Press **Sub Recon** button to queue the new reconstruction.
6.11.8. To dismiss the new reconstruction, press **X** at the top right of parameters window.

6.12 View and Managing Data via the Explorer Module

6.12.1. To view your data, choose a **Data Source**, **Projects**, **Exams** and **Series**.
6.12.2. To set up a series for reconstruction, select the series in interest and click **Send to Recon** button.

6.13 Reconstruction: View Parameters of Queued or Running Jobs

6.13.1. Highlight a job under **Queued Jobs** or under **Running Jobs**
6.13.2. Reconstruction parameters are displayed to the right of the screen.

6.14 Working with Unassigned Reconstructions

6.14.1. Click on CT reconstruction in the *Unassigned Recons* window.
6.14.2. If needed, adjust the parameters.
6.14.3. Click on the **Submit Recon** button with the reconstruction highlighted in the Unassigned Recons window.

6.15 Clean-Up

6.15.1. Sanitize the work area accordingly; using bleach diluted 10:1. Wear gloves, safety glasses and protective clothing.
6.15.2. Dispose of any solid waste appropriately (biohazard, sharps, etc.). The common use area and machine should be completely clean for the next user.

7.0 REVIEWS AND REVISIONS:

This procedure shall be reviewed for compliance and effectiveness and revised as necessary (or at a specified interval).

8.0 ATTACHMENTS and REFERENCE FORMS:

ATTACHMENT A. CT_Vision120Manual.pdf