Visualization System

SECTION 9: Operating the Visualization System (Video Display)

The SQA-V Visualization System with video display (upper screen) is used to view and count sperm cells. The visualization system is a critical "link" to V-Sperm GOLD where enhanced, real time video can be displayed on a PC monitor. The visualization system:

- Accommodates both an SQA-V testing capillary to "scan" through a depth of 300 microns or a standard slide to view samples (20 micron depth).
- Operates via control knobs to set focus, brightness, contrast and color, and via the keypad zoom, illumination, and monitor on/off functions.
- Magnification range: x300 to x500.

Operating Instructions

Standard Slide Preparation:

- Use 10 µl of semen.
- Standard slide, 22 mm x 22 mm cover-slip (to insure 20 micron depth).
- Load the prepared, standard slide into the SQA-V slide adaptor.

Testing Capillary Preparation:

- Fill the SQA-V testing capillary for either a normal or low volume specimen (see Appendix).

Visualization Process:

- The video display will automatically illuminate when the SQA-V is turned on.
- Use monitor **ON/OFF** key on the keypad to independently operate the video display.
- Wait for the self-test to complete (system is disabled at this time).
- To ensure that the visualization system is working properly prior to use:
  - Press the **HIGH ILLUMINATION** key multiple times to ensure a maximum level setting.
  - **To view cells:** Press **ZOOM IN** to maximum magnification (x500).
  - **To count cells:** Press **ZOOM OUT** to minimum magnification (x300).
- Insert semen sample (either capillary or slide) into the visualization chamber.
- Adjust **CONTRAST, COLOR, BRIGHTNESS, FOCUS** and object **ILLUMINATION** controls for optimal image quality.
- Use **ZOOM OUT** (x300) / **ZOOM IN** (x500) to regulate magnification.

Counting Cells Using the Visualization Screen:

1. Follow the WHO Manual instructions for semen sample collection and preparation. Thoroughly mix the sample before step #2.
2. Pipette 10uL of the semen sample onto a standard slide and cover with a 22x22 mm coverslip. Prepare a new slide if air bubbles or liquid spillage occurs.
3. Load the slide into the slide adaptor and then insert the slide adaptor into the SQA-V visualization chamber. (Refer to the SQA-V User Guide APPENDIX 3: Using Standard Slides in the Visualization System for details).

Please note:
The visualization screen grid of the SQA-V is calibrated to a CONC STANDARD default of "1" or Makler/non-dilutional chambers.

Please see the Appendix Section **"Concentration Standard – Counting Chamber"** for details.

4. Press the ZOOM-OUT button on the SQA-V keypad all the way to set the magnification to x300.
5. Set the: BRIGHTNESS, CONTRAST & COLOR knobs of the video display:
    a. COLOR knob: Turn clockwise to the end (maximum color),
    b. CONTRAST: Turn counterclockwise to the end (maximum contrast),
    c. BRIGHTNESS knob: Turn clockwise from the darkest setting until the background is light (not maximum!).
6. Adjust the focus knob to maximize the image: Turn clockwise all the way. Then turn counterclockwise until a clear image appears on the screen.
7. Go to V-Sperm and click on the **Real Time Video** button. FREEZE the image.
8. The screen of both the SQA-V and the V-Sperm is divided into a grid containing 20-distinct squares (see below).

9. Each spermatozoon seen on the ENTIRE 20-square grid is 1 Million/ml of sperm concentration. FOR EXAMPLE: In the grid above, there are 7 spermatozoa in each cell of the grid. 7 (spermatozoa) X 20 (cells) = 140 M/ml sperm concentration for this sample.
10. To count a minimum of 200 cells (per WHO), turn the silver knob of the slide adaptor and a new field of view will be displayed in the grid.
11. When viewing multiple fields, divide the final count by the number of screens (fields of view) counted. For example, if two of the screens above are counted there would be a total number of 280 sperm cells so the sperm concentration will be: 280 ÷ 2 = 140 M/ml.
12. Refer to table 2.2 of the WHO Manual 5th Edition to determine if the duplicate counts are acceptable.