

X-ray Image Logger Quick Start Guide

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Introduction

The X-Ray Image Logger (XMSL) takes a series of 2-D x-radiographs from either whole-round sections or section-halves. Sections are measured one by one.

WARNING: You are using an imaging system which works with an X-ray generator source. Do not place your hand under the source or bypass any of the security measures. Ensure that you receive the appropriate training before using the instrument; failure to do so can result in physical harm.

Procedures

• Preparing the Instrument

1. Double-click the **IMS** icon (Figure 1). **IMS** initializes the instrument, tests communications, homes the motion control system and verifies the **Dark and Light Calibrations**. For more information refer to the **XMSL User Guide**.



Figure 1. IMS icon.

2. Prior to imaging cores the user must:

Test exposure parameters in the **Imaging Utility (Instruments > Camera: Imaging Utility Section)** section in the *XMSL User Guide*.

Set exposure parameters in the **Measurement Editor (DAQ > Measurement Editor)**.

Adjust the automatic image processing settings (**Image Processing** section in the *XMSL User Guide*)

NOTE: Ask the PP technician to help with these steps.

• Set exposure parameters

1. Select **DAQ > Measurement Editor** from the **IMS** panel menu (Figure 2).
 - a. **Interval:** Number of centimeters the core will move between each image. This value is hardcoded in **IMS** software and cannot be changed in this window. This interval guarantees image overlap and maximizes system efficiency. Default interval is set at 12 cm.
 - b. **Width:** Fixed length of the produced image. This value is dependent on the detector and hardware setup. Default length is 15 cm.
 - c. **Stack:** Number of x-radiographs taken at each position. These images are stacked and averaged to produce the final raw image. 20 images is the standard. Stacking more images does not improve the image quality further. See the *User Guide*, 'Image Stacking' section for more information.
 - d. **Exposure Time:** Duration of each exposure in milliseconds.
 - e. **kV:** X-ray tube voltage. Maximum voltage for the source is 120 kV. Lowering the voltage while maintaining the number of x-rays penetrating the core (longer exposure or higher current) will increase image contrast.
 - f. **mA:** X-ray tube current. Maximum current for the source is 1 mA. Increasing the current will increase contrast if voltage is kept constant.

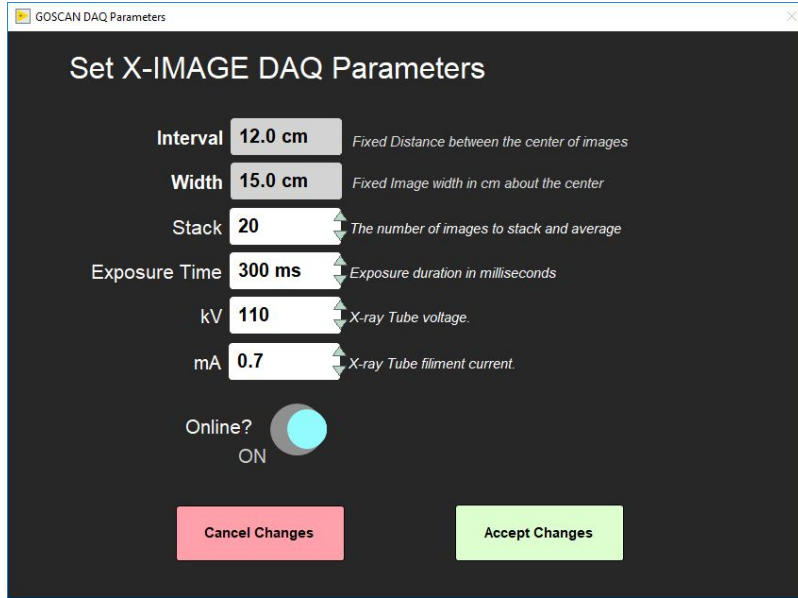


Figure 2. XMSL Measurement Editor Window.

2. Click **Accept Changes**. To revert any changes back to the original settings click **Cancel Changes**.

• Making a Measurement

1. Place section in the core tray. Make sure the section is oriented blue endcap towards the X-Ray source (Figure 3).



Figure 3. Correct core position.

2. Click **START**. The **Section Information** screen is displayed (Figure 4).

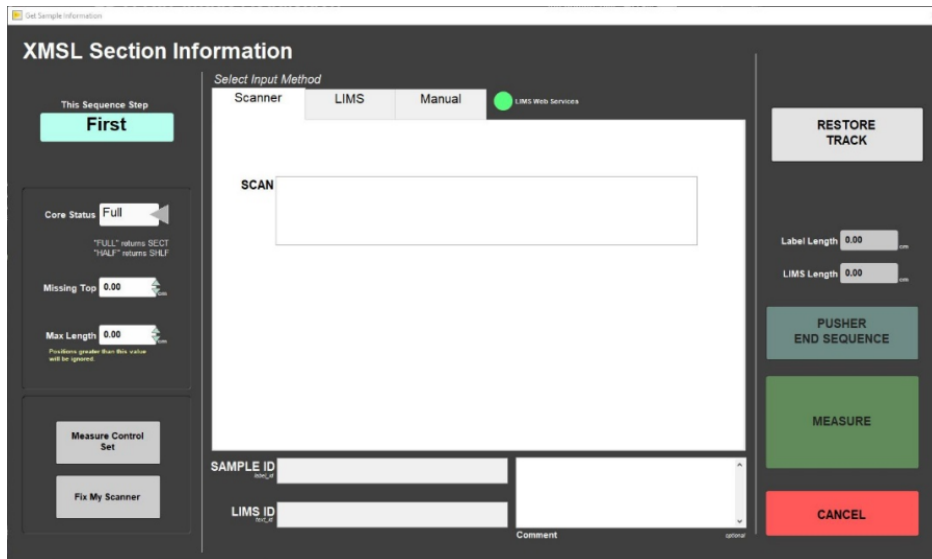


Figure 4. XMSL Section Information Screen.

3. Select the **Core Status** (left side of window) that matches the type of core being imaged.

- Full**= Whole round.
- Half**= Section half.

4. Place the cursor in the **SCAN** field and scan the section label. **SAMPLE ID** and **LIMS ID** automatically fills. This ID tag contains information on expedition, site, hole, core, section number and length.

Additional entry field options are the **LIMS** and **MANUAL** tabs.

Manual: Type in the sample label ID (i.e., 362-U1480A-1H-1-A), LIMS Text ID (i.e., SHLF7851761) and length of section. Use the whole round ID when imaging whole rounds. Click **USE ME** to update the IDs and enable the **MEASURE** button. Any entry will be accepted, but that does not guarantee the data will upload. The Text ID must match an actual section for the data to upload.

5. Ensure that the section is inside the track system (using the first loading door) and that all doors are properly closed. Green and yellow lights on top of the lead box should be on. If doors aren't properly closed the green light will not appear, and a error message will be displayed on the screen (Figure 5).



Figure 5. Warning message indicating that the source is not ready to ramp up.

NOTE: If both doors are closed properly and this message is displayed, please contact the PP technician.

6. Click **MEASURE**

7. The motion control pusher will move the section above the detector.

8. When the section is over the detector, the x-ray source will ramp up and a status window will be displayed on the screen (Figure 6). Once mA and kV are stable, the window will close and image acquisition will begin. User may abort at any time by clicking the **ABORT** button.

START X-RAYS

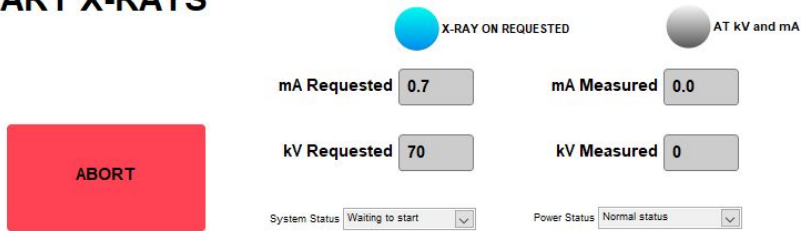


Figure 6. X-Ray status. As the source ramps up, the measured values will update.

WARNING: During X-Ray measurements a flashing red light will be on. DO NOT open the doors during this period. Failure to comply, can result in physical harm.

9. The instrument will move each section down the track system, automatically taking images along section (Figure 7). This continues, until the actuator reaches its limit switch and returns to it's home position.

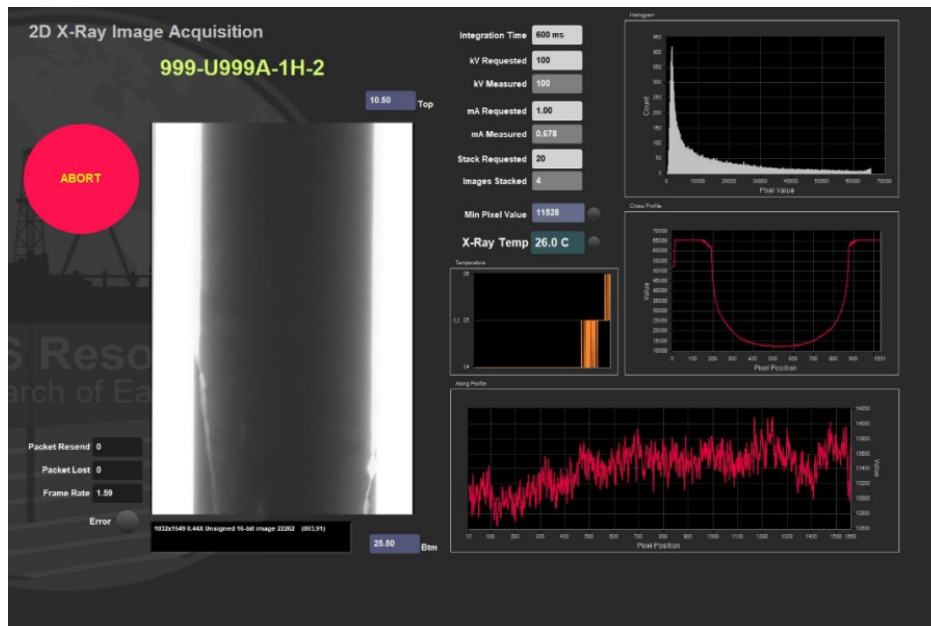


Figure 7. IMS display during imaging.

10. The source ramps down, and a window with the message 'X-RAY OFF' is displayed on the screen (Figure 8). The red light on top of the lead box turns off.

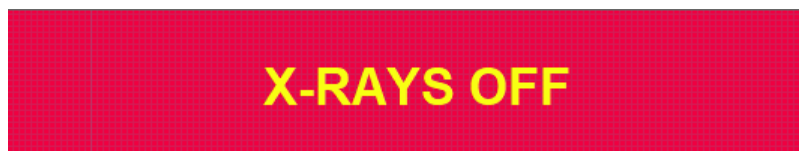


Figure 8. X-Ray OFF status window.

11. **XMSL Section Information** window is displayed on the screen (Figure 9).

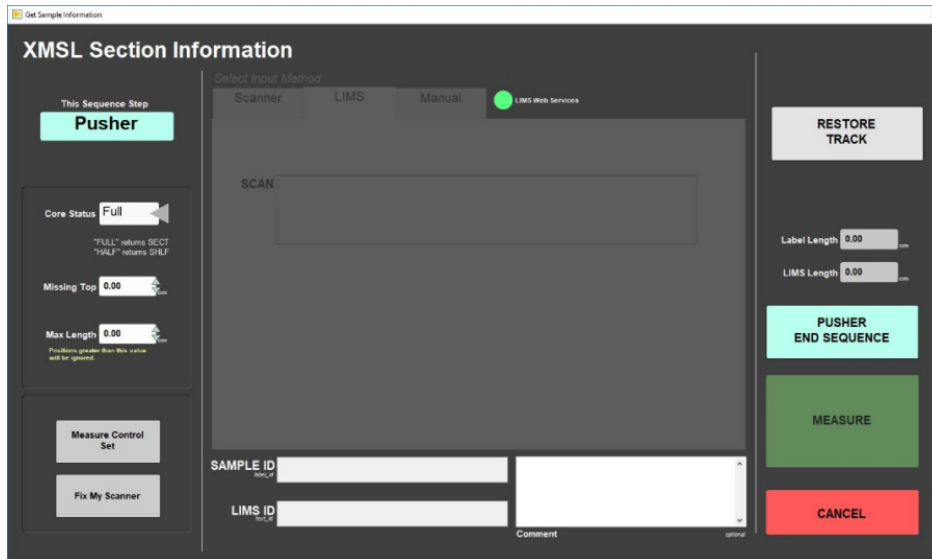


Figure 9. Sample Information Window- Pusher End Sequence View.

11. Open the load door and place the Pusher section (either XMSL whole-round or section-half) onto the track. Close the load door.

12. Click **PUSHER END SEQUENCE**. The source will ramp up and the motion control system will continue to push the section through the x-ray system.

NOTE: If the detector grid pattern becomes visible in the images, contact the PP technician, as the detector will have to be recalibrated.

13. When the imaging is complete, **IMS** will automatically process the raw images and output them to the **C:\AUX_DATA** folder. The raw images output to the **C:\DATA\IN** folder. For more information on **IMS** image processing, see the 'Automatic Image Processing' section in the User Guide.

14. Every thirty minutes both raw and processed images are automatically copied to **data1 (CLEVELAND)(S:)data1\7.3 Petrophysics_XRAY\mirror**. Be extremely careful when deleting an image on the X-Ray computer, as any change will be automatically replicated on **data1**.

- **ABORT** button

1. At any time during imaging a user can click the **ABORT** button to end the imaging process and ramp down the source.
2. A dialog window with different options will appear (Figure 10).



Figure 10. Abort by User dialog box.

NOTE: There are also two **Emergency Stops** on the XMSL track, one for stopping the movement of the track and the other for shut down the X-Ray source.

Credits

Credits for changes to this document are given in the page history.

All improvements to the Quick Start Guides and User Guides are a communal effort, with honorable mention to the group of LOs, ALOs, and technicians who have helped.

Archive Versions

[LMUG-X-rayImageLoggerQuickStartGuide](#): An exported PDF version of this wiki page as of 2020-11-07.
[X-ray Image Logger QSG - 25022020](#)