Elekta Physics Webinar (7-9-2020)

# Presenter

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# Questions

1. How can we export images from iView (in service mode)? We don’t see a USB port.

You cannot export DICOM locally, but you can export it to SNC after you create a node for an SNC DICOM listener. You will need to do this on the iView backend. You’ll need the IP address and port. After the node is added, you’ll be able to just select it from a dropdown.

1. How can we type in exact numbers to set MLC and jaws when creating stored beams in Service Mode?

The way we’re doing it (creating fields in Service Mode) is not recommended. If we insist on doing it this way, we can use the keyboard left and right arrows. If the arrows don’t work or stop working, maybe the leaf isn’t selected and/or the mouse isn’t over the leaf.

The best way to do it is with Quick Beam > Square/Rec at the bottom of the screen. Ignore the dropdown at the top of the screen.

1. How are the radiation isocenter and the mechanical isocenter determined on Elekta machines? Why aren’t they the same point?

The radiation isocenter is determined by a flexmap, and the lasers are aligned to the BBs. The mechanical isocenter is the middle of the MLC positions, and the crosshairs are

The radiation and mechanical isocenters are closer to each other on Varian than they are on Elekta. It is okay for them to differ by <= 1 mm. If they differ by >1 mm, call an FSE.

The difference could be due to gantry sag, which is greatest at gantry 0° and 180°, and least at gantry 90° and 270°. The central axis will be different for different gantry angles. The radiation isocenter does not change, though.

1. Can we move the crosshairs to the radiation isocenters (set by the flexmap)?

No, because that would mean the crosshairs aren’t in line with the mechanical isocenter, and you’ll get crosswire blockout.

Even if all we use thee crosshairs for is patient positioning, we shouldn’t align them to the radiation isocenter? No: what about QA?

1. For QA purposes, are the crosshairs more accurate than the lasers for aligning the field?

Yes. If there’s no blockout, this is the way to determine the central axis at gantry 0°.

1. For flexmap for physics purposes, do you run through full CBCT or just the lasers to the radiation isocenter?

Just align the radiation isocenter. Typically, when we say *flexmap*, we are referring to setting up the kV isocenter by using the BBs to find the radiation isocenter.

1. Where can I find Elekta tolerances for gantry sag, radiation-to-mechanical isocenter alignment, etc.?

The customer acceptance test has many of these tolerances, including tolerances relating to radiation-to-mechanical isocenter alignment. Leaf speed is not specified, but refer to TG-132, which, Steven thinks, says that leaf speed should be no greater than 5 cm/s.

1. If I set the dose rate to zero, the delivery dose rate is around 600, but if I enter a dose rate of 600, the delivery dose rate is more like 300. Why is this?

For a static field or a step-and-shoot IMRT field, the machine has a discrete number of dose rates. For example, if the maximum dose rate is 650, the available dose rates are 650, 325, 163, etc. The dose rate you specify is the dose rate that you do not want to exceed. So if the max is 650 and we enter 600, the machine will round down to 325 so as not to exceed the max of 600.

It is recommended to set the dose rate to zero so that way machine can deliver the most appropriate dose rate. Setting the dose rate to zero also allows for machine dose rate variation for arc fields (VMAT).

1. Can you give us an overview of AQUA’s capabilities?

AQUA centralizes everything QA. AQUA automatically pulls results from many sources, including daily QA and electrometers, but you can enter results from pretty much anything (e.g., CBCT). You can refer to baselines and generate reports, which are useful for auditing. AQUA includes reminders for when QA is due. However, AQUA cannot analyze log files.

AQUA is intended for TG-142; it has all TG-142 tests built in. Steven will look into the automated tests being added in order to determine whether AQUA could eventually replace SNC Routine.

We’ve been discussing AQUA with Matt, and Corey McCormick is working with Mike Federico from CRMC IT to set it up.

1. Where are log files stored, and how can I access them?

PRF files are generated and stored on the NSS (the firewall). In Service Mode, use the Service Compression Backup Exports tool to access log files. The PRF format is not easy to analyze, so send it to Elekta to get an Excel version. What we can do with log files of course depends on the software we’re using.

1. What are guard leaves? When should we use them?

Leaves don’t ever fully close: there is always at least a 5 mm gap. Guard leaves prevent the leaves from closing. If the leaves did close, you’d see a “hump” at the center of the field.

Guard leaves are open by default, and it is not recommended that you close them.

1. Is RayStation set up to have guard leaves open for small fields?
2. What does “Interlock: HTB” mean when delivering beam? Couldn’t find it in the manual.

Steven doesn’t know, but this interlock is always temporary, so we don’t need to worry about it.

1. Is it possible to limit MLC leaf speed?

Yes. In RayStation, leaf speed can be edited in the machine characterization. The recommended maximum MLC speed is 3.2 cm/s.

1. What is the total range of the leaves in RayStation?

The range of the Dynamic Leaf Guide (DLG) is 15 cm.

The range of the leaves is 20 cm. This means that no two positions can differ by more than 20 cm. In other words, the distance from the most extended to the most retracted is 20 cm.

1. What info does Steven need in order to remote into the machine?

Just the machine S/N. We can use Intellimax or Webex.