**Plan QA Tool using the Eclipse Scripting API – What it actually checks**

**V2.1.1**

* Checks that the name of primary ref point matches the plan name.
* Checks that the name of the CT matches the name of the structure set.
* Checks that the prescribed isodose line is 100.
* Checks that all beam isocenters are the same.
* Checks that the machine is the same for all fields.
* Jaw settings
  + Checks for a minimum jaw setting of 3x3 at each control point.
  + Checks that all RapidArc fields have a max x-jaw of 20 cm.
  + CBCT has a 10x10 and Setups have a 15x15 cm setting.
* Arcs
  + RapidArc beams should have similar number of arcs in each direction (not all clockwise for example).
  + Collimator is not zero degrees.
  + Checks that the plan normalization value is within 10 percent of 100. Plans outside this range should be reoptimized as delivery accuracy MIGHT begin to suffer.
* Normalization
  + Makes sure that “no normalization” is not selected.
  + For arcs, checks that “100% covers 95% of the volume” is selected.
* Field Naming
  + Treatment fields begin with correct numbers (1.x, 2.x, M1-1.x etc.) based on plan name.
  + Treatment fields have correct name (RAO/LAO etc.) based on gantry angle and patient orientation.
  + SU fields have correct name based on gantry angle and patient orientation.
  + If the couch angle is not zero, then for photons fields the angle should be contained in the field name in the form “Txyz” where xyz is the angle.
* RT Chart
  + Couch and imager values are 10, 110, 0 and 50 cm respectively.
  + Plan setup notes begin with the course name, a space and then the plan name.
  + The tolerance table is correct for the selected treatment unit.
  + The daily, session and total dose limits for the primary reference point and any point that has “RAD” in the name. NOTE: this assumes only one fraction per day.
  + Any found radcalc points are evaluated to make sure they are in a high dose region (>90% of the Rx dose)
* Algorithms
  + Checks grid is 1 mm for lung SBRT (if all are met: dose per fx > 9 and FS < 10 cm with "lung" in plan name), and for any plan that has a non-empty structure with “optic” in the name excluding plans with “ENT” in the name.
  + Heterogeneity correction is on.
  + Checks AAA and eMC versions.
  + Electron plans using 6 MeV have the grid size set to 0.1 cm. Otherwise 0.15 cm.
* Checks consistency between the “Use Gated” checkbox in the plan properties and the use of “BH” (representing breath hold) in all of: plan name, CT name and structure set name.
* All setup fields use either the “bone” or “ANT kV” DRR setting
* Checks that the couch structure is present and correct (not position though) for the treatment unit. Checks the inner and outer HU values of the couch as well.
* Field MU are ≥ 5.
* Treatment fields have the max dose rate selected.
* All electron beams have a tray ID defined in properties.
* Warns user if the primary target for arc treatments is smaller than 2 cm in diameter.
* For SC+AX fields, the “extended” field property option is verified depending on the laterality and the actual gantry angle for post fields.