APPENDIX I

An example of detailed calculations for EQD2 and EQD2-T of the FAST-FORWARD plus boost regimen.

The mathematical formula for EQD2 is as follows:

EQD2 = Total dose x ([α/β + dose per fraction]/[α/β + 2])

For breast cancer, the α/β value is 4 Gy.

EQD2 (FAST FORWARD alone) = 26 x [(4+5.2)]/[4+2]) = 39.87 Gy

EQD2 (boost) = 9 ([4+3)]/[4+2]) = 10.5 Gy

Thus, EQD2 (FAST-FORWARD plus boost) = 39.87+10.5 = 50.37 Gy

The mathematical formula for EQD2-T is as follows:

EQD2-T = EQD2 + (λ x ΔT)

When taking time into account, an λ value of 0.6 Gy/day was used in order to compensate for tumor cell repopulation.

EQD2-T (FAST FORWARD alone) = EQD2 (FAST FORWARD alone) + λ x ΔT^{*} = 39.87+0.6 x (26-5) = 39.87+12.6 = 52.47 Gy

**In order to deliver 39.87 Gy, 20 fractions of 2 Gy are required (26 days total treatment time). FAST-FORWARD alone is delivered in 5 days. Thus, Δ*T*= 26-5=21*

EQD2-T (boost)= EQD2 (boost) + λ x $\Delta T^{\#}$ = 10.5+0.6 x (5-3) = 10.5+1.2 = 11.7 Gy

*#In order to deliver 10.5 Gy, 5 fractions of 2 Gy are required (5 days total treatment time). Boost is delivered in 3 days. Thus, Δ*T*= 5-3=2.*

Thus, EQD2-T (FAST-FORWARD plus boost) = 52.47+11.7 = 64.17 Gy.