Assessing the Suitability of a Medical Cyclotron as an Injector for an Energy Upgrade, D.M. DYKES, M.W. POOLE, V.P. SULLER, DARESBURY; A. KACPEREK, CLATTERBRIDGE* - The 60 MeV cyclotron at Clatterbridge operates as the UK centre for proton therapy, concentrating on treatment of eye tumours; the accelerator is a Scanditronix model MC60PF fixed energy isochronous cyclotron with a high current ion source. Although possible energy upgrades have been previously considered interest has now been reawakened by the activities of the Italian TERA Foundation, which has proposed a compact high frequency booster linac as a potential solution to achieve the 200 MeV needed for a broader therapy programme. The paper reports progress on studies to assess if the Douglas cyclotron is suitable for a test of such a prototype booster linac. The results demonstrate that a cyclotron beam pulse of about 25 microseconds can be achieved by application of amplitude and phase modulation to its RF system. The output emittance and energy spread of the accelerator in this unusual pulsed mode have been measured and compared with the normal CW values and indicate compatibility with the acceptance of the proposed linac.

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