

Construction and Operation of Cyclotrons for Medical Isotopes, N.R. STEVENSON, TRIUMF -

Modern high intensity commercial cyclotron systems are continuously being improved to achieve high beam power, reliability and ease of operation. Other factors playing a part in the ongoing development of commercial cyclotrons include the need for lower radiation dose to personnel, flexibility of operation (multiple beams, variable energy), and the desire to minimize the routine maintenance requirements. In the case of TRIUMF TR30 we examine the evolution of the cyclotron and targetry systems that have occurred over the past six years which have now brought the system to the stage of having the highest available beam current of any commercial cyclotron in operation. A contrast is made with the older CP42 cyclotron system installed 15 years ago. In this case, while developments have resulted in a significantly better operating environment, the inherent limitations of the older "base technology" inhibit the progress towards the goals of higher beam currents, greater flexibility and lower maintenance requirements. In both cases, the potential for further improvements is discussed and compared with an ideal commercial cyclotron isotope production facility.