D. The Status of LAMPF, D. C. Hagerman, LASL

The Los Alamos Meson Physics Facility (LAMPF) is described in the literature[1] and at this time is in many ways a mature facility serving as a major experimental tool in a variety of scientific investigations. Typically, during production operation of the facility, nine to twelve different experimental groups are using one of the meson, neutron, or proton beams for their research; this simultaneous use by many different groups is one of the most important features of the facility.

During a typical year, at least 4000 h of operation for research is scheduled; both H^+ and H^- beams are available and the H^- beam can be polarized, if desired. During production operation, beam availability is typically in excess of 80%. Beam quality in the machine is very good in that beam spill is quite low even at average currents exceeding 500 μA. It appears that it is quite feasible to provide H^+ beams of 1-mA average current whenever they are needed. High-intensity H^- beams will also be possible assuming development of a suitable ion source.

The thermal and induced-radioactivity problems in the experimental areas associated with the intense beams are difficult to solve. The total power in the beam at a production current of 500 μA is 400 kW; this power is dissipated in and near the targets and the beam stop. At each of these locations the induced activity levels can easily be in the several thousands R/h range. Clearly, repair and modification work in such an environment must be done remotely which requires at least 10 times longer than "hands-on" work. Solution of beam-related problems in the experimental area will determine the pace of further increases in production current.

Future development work on the facility will emphasize increased flexibility of operation as well as increased current. Time sharing with the WNR has been a successful mode of operation; a time-sharing scheme to provide variable energy H^- beam for nucleon-nucleon studies will be implemented within the next year. A high-intensity H^- beam will be added for the WNR proton-storage ring within a few years time. The machine duty factor will be increased so that all users may receive an adequate amount of beam time.

References

1. IEEE Trans. on Nucl. Sci., NS-24, No. 3, pp. 1605-1610, June 1977.