TO: SPEAR Dist.

FROM: J. G. Judkins, Microwave Engineering Group

SUBJECT: SPEAR 3 RF Water Specifications, One 1300 kW Klystron Station.

There are 3 water systems required for SPEAR 3 RF. Supply and return valves on all lines. Flow meters and switches on return lines.

Two LCW systems: Stainless Steel, no brass when possible.

1.) Klystrons
   1 Station: 275 GPM/Station 275 GPM Total
   Heat Load: 1500 kW/Station max. 1500 kW max.
              1000 kW/Station nominal 1000 kW nominal
   Temperature: 32 °C, +/- 1 °C
   Pressure: 150 PSI max.

2.) RF Cavities
   4 Cavities: 60 GPM each 240 GPM Total
   Heat Load: 85 kW each 340 kW (constant)
   Temperature: 32 °C, +/- 1 °C
   Pressure: 150 PSI max. 40 PSI drop each

HCW
   Steel pipe with Vitaulic joints. 1700 microsiemens at 20 degrees C.

Waveguide Loads
   2 Areas: 150 GPM/Area 300 GPM Total
   Heat Load: 200 kW nominal
              1300 kW (test/commission)
   Temperature: input: 15° C minimum
                 30° C maximum
   Pressure: 80 PSI max. 15 PSI drop each.