Beta Weekly Summary (11/1/91)

RTX Prototype Evaluation:

Surface temperature studies were conducted for various A.G. configurations. This study was performed at 12.5 and 17.5 watts for 1 second. At 12.5 watts the maximum temperature varied from 400°C to a high of 580°C. The slow rise of temperature in a direct cast sheet was a result of delamination and A.G. ignition. At 17.5 watts the maximum temperatures were slightly less variable, ranging from 450°C to 600°C. Again, evidence of post ignition is evident for both perforated AG and direct cast AG. Direct casting with no adhesive appears to enhance heating rate and sheet surface temperature, probably because there is less propensity to develop an adhesive vapor barrier between the heater and tobacco. Perforated models appear to be more efficient because the perforations provide a path for vapor release.

Subjective assessment of a new paper tube, calendared inside uncalendared outside, versus the standard tube, uncalendared on both sides, resulted in the preference for the standard tube.

Power and resistance studies using the RTX and Blin heater fixture continue to show significant variations within puffs. Contact integrity of the tulip clip, Blin disk, and RTX connector is being studied in detail.

Permanent Heater Concept Evaluation:

Continued studies of tobacco/foil direct casting and adhesion have shown inadequate adhesion under thermal load. A slit foil ladder arrangement is planned.

Modelling analysis of a "spider" permanent heater design indicates C_p (thermal capacity) is an important parameter and the average heater temperature

varies with the material. This modeling data will be used as a guide for thermal spray research.

Heater designs utilizing either silicon or cermet blades are being considered.

Circuit and Sensor Development:

Blank circuit boards half the size of the RTX circuit should arrive next week. Final assembly and check out will follow. A machined enclosure is being designed.

Size projections for a hybrid circuit are being made by FMI. This "puff on demand" (POD) design utilizes a piezoresistive sensor to initiate a puff. The size projection should be complete within two weeks.

A piezoelectric sensor designed inhouse is being assembled. This sensor utilizes no power and would be of great value as long as the size can be reduced.