

TID-1 DETECTION USING VARIAN TSD ELECTRONICS

- 1.) DET TID-1 detection normally uses a stand-alone DET Current Supply to provide heating power and polarization to the TID-1 Ion Source. In contrast to an NPD where the optimum polarization is a low value (i.e., -4 or -5 V), best TID-1 sensitivity is obtained with a higher polarization of -45 V which is available from the DET supply.

- 2.) The polarization or bias voltage on Varian's TSD electronics is normally set at -4 V for NPD detection. However, that bias voltage can be increased to a value of -12 V by adjusting the bias voltage potentiometer to its maximum (full clockwise) position. This will suffice for providing some of the unique TID-1 selectivity. If better detectivity is required, then the DET supply is always an option.

- 3.) Unlike an NPD which requires a detector gas mixture of Hydrogen and Air, TID-1 detection requires only an inert Nitrogen gas environment, or an oxidizing environment of Air or Oxygen. These can be achieved using the TSD pneumatics controls, by simply connecting the appropriate gas composition to the gas inlets normally supplying "Hydrogen", "Air", and Makeup to the detector. Best selectivity versus Hydrocarbons is generally obtained using Nitrogen as the detector gas. Air or Oxygen environments suppress responses from some compounds while enhancing responses to others.

- 4.) TID-1 detection does not require as high a heating current for the ion source as is used in an NPD. Varian TSD electronics provide a minimum of 2.400 Amps heating current, and that will be sufficient for many TID-1 applications.