The voltage change at A appears as a step on the oscilloscope proportional to I_1, i.e.,

$$V_1 - V_o = 100\, I_1.$$

When input 1 is shorted to ground the positive pulse from the output of G1 also provides an input to G5 -- a four input nor gate. This gate produces a negative-going pulse which is used to trigger the monitoring oscilloscope.

Channels 2, 3 and 4 all operate in the same manner as described above for channel 1. The complete circuit diagram for the velocity and tilt circuits is shown in Figure 19.

The velocity circuit has one feature absent in the tilt circuit. Attached to each of channels 3 and 4 of the velocity circuit is a signal output circuit as shown in Fig. 19. When pin 3 or pin 4 is shorted, a negative pulse will appear at the respective auxiliary outputs. These outputs may be used to trigger external circuitry, i.e. manganin gauge current supplies, time interval counters, measurement oscilloscopes, etc.

B. Quartz Gauge Calibration Circuit

The quartz gauge technique is used to measure pressure profiles during shock compression. Based upon the piezoelectric properties of quartz, this gauge produces a current that is proportional to the pressure difference across the thickness of the quartz[9]. For pressures below 30 kilobars the current-pressure relation is accurately known and for a given current observed from the gauge the pressure may be computed. Consequently, it is desirable to calibrate the measurement oscilloscopes directly to establish an accurate relation between the scope deflection and the current output from the quartz gauge. A calibration circuit has therefore been developed to feed a pulse of known current amplitude through the instrumentation cable and to the oscilloscopes that are to monitor the output from the gauge.