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Digital Dev. Memo #343

To: Thomas Hemker
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 Subj: Affect of Transients of +28 AGC Power Bus

22.3 The Block II AGC contains voltage fail circuitry which will stop the computer (thus causing a restart) if the 28 volt power to the computer drops below 23.3 ± 0.3 volts. Because the 28 volt power busses are filtered, and because of the additional delay within the VFAIL circuitry, a very brief loss of power may not hinder AGC operation.

Tests performed on AGC-200 at MIT (a "C-1" configuration computer) resulted in the data of Table I. Since the filter networks have blocking diodes, no current flows into, or out of, the AGC unless the bus voltage is approximately 0.6 volts higher than + 28 common (after the $L \frac{di}{dt}$ transient has died out). This is why dropping below 22 volts has no additional affect since + 28 common requires approximately 850 μ s to drop to 22 volts. + 28 common is filtered by approximately 400 μ f of capacitance and decreases approximately 6.25 volts/msec when no current is flowing into the AGC.

The inductance between + 28 common and either of the 28 volt buses will limit the input current for any high voltage - short duration transients (a 100 volt positive transient of 1 μ sec duration will increase + 28 common by approximately 0.1 volts). AGC-200 performed with pulses of this nature in excess of 100 volts in both polarities on the 28 volt buses.

TABLE I
 AGC-200
 Nominal Volage = 28.00 volts,
 Apply Negative Pulse to 28V Bus to Determine
 Point of VFAIL.

Power Applied TO	Can Drop To -- Volts	For -- μ sec Without VFAIL
A & B Bus	22.57	∞
"	0.0	900
"	22.0	900
A Bus	22.66	∞
"	0.0	850
"	22.3	850
B Bus	22.76	∞
"	0.0	850
"	22.0	850

NOTE: 1. All measurements with Respect to AGC case (OVDC).
 2. Turn-on and turn-off times less than 25 μ sec.