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| Technical Support Bulletin 2004-4 | Aux/Stepper TVS Diode | Nov 23, 2004 |
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Alert Level: **ADVISORY**

Software Version: N/A

Instrument: All McLane samplers except MMP

Subject: Aux/Stepper TVS Diode

**Summary:** The electrical input voltage circuitry of the Aux/Stepper board can be improved by replacing D13 Zener diode with a TVS (Transient Voltage Suppress) diode.

**Technical Details:** A new TVS diode is available to suppress the transient voltage spike each time the battery is connected to the electronics. Testing at McLane revealed that the current Zener diode does not react as fast as this new TVS to squelch the transient voltage spike. This TVS diode has a sub-nanosecond response time and adequately squelches fast electrical transients seen in the circuitry when the battery is connected.

**Potential Negative Effects:** The TVS diode dissipates a small amount of power during the transient voltage suppression. However, this additional power drain has an insignificant effect on the endurance of the sampler because the TVS diode power drain occurs immediately after the battery is connected.

**Action:** McLane Research Laboratories, Inc. will begin to use the TVS diode on all new Aux/Stepper boards. Existing samplers with Aux/Stepper boards can be upgraded in conjunction with other upgrades or repairs.