C37 Analysis of Electrical Power Input That May Affect Critical Instrumentation in a Forensic DNA Profiling Training and Service Laboratory Service Business at the Biotechnology Center, Shadow Lane Campus, University of Nevada, Las Vegas

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After participating in this presentation, attendees will have a greater appreciation of the importance of controlling the quality of electrical power supplied to sensitive and expensive instrumentation and the potential negative effects of power disturbances on forensic DNA results.

Disturbances in the quality of electrical power supplied to sensitive DNA instrumentation used in quantitation, amplification, separation, and analysis of short tandem repeat DNA fragments can have serious conse- quences on the forensic laboratory equipment and reportable results (that may or may not be obvious). This presentation clearly shows the impor- tance of this subject and review critical aspects involved in electrical engi- neering and biological sciences applied to forensic science. This study should influence users to acquire and install such power protection.

In a process that started early in this decade, a new Biotechnology Center has been established at the Shadow Lane Campus of the University of Nevada Las Vegas. Within this Center, a modern Forensic DNA Laboratory is in place that is providing training services in “Forensic DNA Profiling” and laboratory training services in other genomic/proteomic analyses.

Instrumentation installed in this laboratory for DNA quantitation, amplification, and analysis is critically dependent upon the quality of elec- trical power supplied to the specific instrument. This presentation discusses the quality of incoming electric utility power, intra-laboratory power disturbances, dynamic measurements taken of the incoming alternating current (AC) power and economic loss impact case study effects (potential and actual) on sensitive and critical instrumentation typically used in “Forensic DNA Profiling” and other clinical and research applications. The AC power to this sensitive instrumentation is controlled by Franek Technologies Instrument Power Protection. The instrumentation examined includes, as example, the Applied Biosystems Prism 7000 Real Time PCR used in DNA quantitation and the Applied Biosystems 3100 Avant used in separation and analysis of Short Tandem Repeat DNA fragments.

Power Protection for Sensitive Instrumentation, Forensic DNA Profiling, UNLV

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