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Standard Operating Procedure **NHX/SOP-171-006**

Title: Maintenance of Perkin Elmer (PE) Model ZL5100 PC Atomic Absorption Spectrometer: Graphite Furnace

Source: Research Triangle Institute

U.S. Environmental Protection Agency
Office of Research and Development
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TITLE: STANDARD OPERATING PROCEDURE FOR MAINTENANCE OF PERKIN ELMER (PE) MODEL ZL5100 PC ATOMIC ABSORPTION SPECTROMETER: GRAPHITE FURNACE

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MAINTENANCE OF PERKIN ELMER (PE) MODEL ZL5100 PC
ATOMIC ABSORPTION SPECTROMETER: GRAPHITE FURNACE

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1.0 INTRODUCTION

Maintenance practices for the PE Model ZL5100 PC Atomic Absorption Spectrometer graphite furnace operation are described below. They should be performed daily by the instrument operator during periods of analysis and recorded in the instrument log book. The PE User's Manual is kept near the instrument for reference.

2.0 ROUTINE MAINTENANCE ITEMS

2.1 Atomizer Cell

- Inspect graphite components for charring, pitting or other signs of degradation. Replace if necessary.
- Inspect quartz windows and o-rings; clean with methanol, ethanol, isopropanol, or other suitable solvent if film or particles present.

2.2 Controlled Temperature Furnace

- Check for adequate water level in recirculating chiller, and check for adequate flow.
- Check argon pressure and flow. Replace gas cylinder as needed.

2.3 A/S 70 Autosampler

- Check for adequate clean water (or appropriate rinsing solution, e.g., Triton-x, 0.5% HNO_3) in rinsing reservoir.
- Empty waste bottle if necessary.
- Check integrity of injection tip (it should be clean, unclogged, unbent) and re-align sampler arm if necessary for accurate sample injection.

3.0 NON-ROUTINE MAINTENANCE ITEMS

3.1 Atomizer Cell

- The lab manager should remove and examine graphite contact rings annually. They should be cleaned with appropriate solvent and replaced if they are excessively charred or corroded.

- The lab manager should inspect the fume extraction system, including the graphite tip, tubing and motor, annually or in the event of system failure.

4.0 DOCUMENTATION

The Instrument Logbook contains the daily record of use and conditions. Completion of routine maintenance is noted in this log book daily. Non-routine maintenance and repairs are recorded in a separate maintenance log section, with entries describing symptoms and repairs performed, and date of service.

5.0 CORRECTIVE ACTION

If routine cleaning or replacement of consumable supplies described in Section 2.0 does not render the instrument operational, the lab manager should be consulted for further corrective actions. A Perkin Elmer service representative or RTI mechanical or electronics staff will be consulted as necessary.

6.0 SOURCES/REFERENCES

1. Cantle, John Edward, ed. Atomic Absorption Spectrometry, New York, Elsevier, 1982.

2. Perkin Elmer Corp., Model ZL5100 PC Atomic Absorption Spectrometer Users Manual, Norwalk, CT, 1987.

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