



Technical Support Bulletin 2003-01

Sediment Trap Battery

May 16, 2003

Alert Level: **ADVISORY**

Software Version: ALL Sediment Trap versions

Instrument: Sediment Traps with drop-in battery holders

Subject: Battery Endurance Calculation

Summary: For proper Sediment Trap operation, the battery endurance of the drop-in battery cells must be properly calculated. If the battery endurance is not properly calculated, the Sediment Trap may stop rotating before the end of the planned deployment.

Potential Negative Effects: Sample bottles near the end of the scheduled deployment may be empty. The last sample cup will contain sediment from the time of the last sample rotation until recovery.

Technical Details: Adapt the sample battery endurance calculation below to your planned deployment in order to estimate the correct battery endurance. If your Sediment Trap does not have a Compass/Tilt sensor, then do not include that battery drain in your calculation. Deployment event data will remain in non-volatile memory until trap recovery if the battery expires.

Drop-in battery capacity: 5000 mAh
Current drain while sleeping: 0.3 mA
Current drain moving the rotator: 300 mA

Duration of rotator move: 45 seconds (0.0125 hr)
Single rotation: 3.75 mAh

Current drain reading the Compass/Tilt module: 60 mA
Duration of Compass/Tilt read: 3 seconds (0.00083 hr)
Single Compass/Tilt read: 0.05 mAh

Battery endurance calculation for a 12-month deployment with a Compass/Tilt read every 4 hours with a 21 cup trap:

Fill Bottles: 22 rotations @ 3.75 mAh each = 82.5 mAh

Low-power Sleep: 8760 hours x 0.3 mA = 2628 mAh
Take Samples: 22 rotations @ 3.75 mAh each = 82.5 mAh
Compass/Tilt: 2200 reads @ 0.05 mAh each = 110 mAh

Total: 2903 mAh

Note: the most significant battery drain is the 12-months of low-power sleep.