TECHNICAL BULLETIN

42i Series Troubleshooting High/Lo Background Error

Symptom: Cannot Zero the Instrument: *BKG "above or below limit"*

Gas setup to instrument: Flow zero air to the instrument.

Initial instrument setup:

Turn Service mode on in the instrument controls menu.
Go to the calibration factors menu: Reset the user calibration defaults.
This will set backgrounds to zero and coefficients to 1.00
Go to Instrument Controls and turn the ozonator off.
Go to Instrument Controls and turn the PMT supply off.
Press the run button, readings on front panel should read zero. (Wait a few cycles)
The concentrations should not be negative, if the readings are not zero, calibrate the input board.

Input Board Calibration:

Go to the service menu, and scroll down to Input Board Calibration.
Select the Auto-Calibration and run test.
It will take about five minutes for the test to complete.
When test is complete, hit the run button and the concentrations should read zero.
Record the Values: NO=_____NO2=_____ NOx=_____ (PMT & O3 OFF)

Test to Eliminate the PMT as the Problem:

In the Main Menu go to Instrument Controls.
Turn on PMT supply only and leave the ozonator OFF Any increase in readings is the PMT dark current.
Record the values: NO=_____NO2=_____NOx=_____(PMT ONLY ON)
In the standard level instrument, the dark current is typically a couple ppb, maximum is 15ppb.

Note: When the PMT's fail, this dark current number will usually be very high. In the High Level instruments, dark current is higher, typically .100-.200ppm, should be less than 1ppm. If your recorded concentrations look good, then your PMT is good.

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Checking for contamination in the instrument or the external zero air source:

Turn on the Ozonator

You should see slight increase in reading on front panel (couple of ppb)

If the concentration is high, the problem is either the unit is contaminated or the problem is with your zero air source. To eliminate the Zero air, disconnect the sample line on the back of the instrument. If the concentration goes low, then it's the zero air, if it stays elevated then the unit is contaminated and should have the reaction chamber cleaned and inspect all Teflon tubing and replace as necessary.

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