

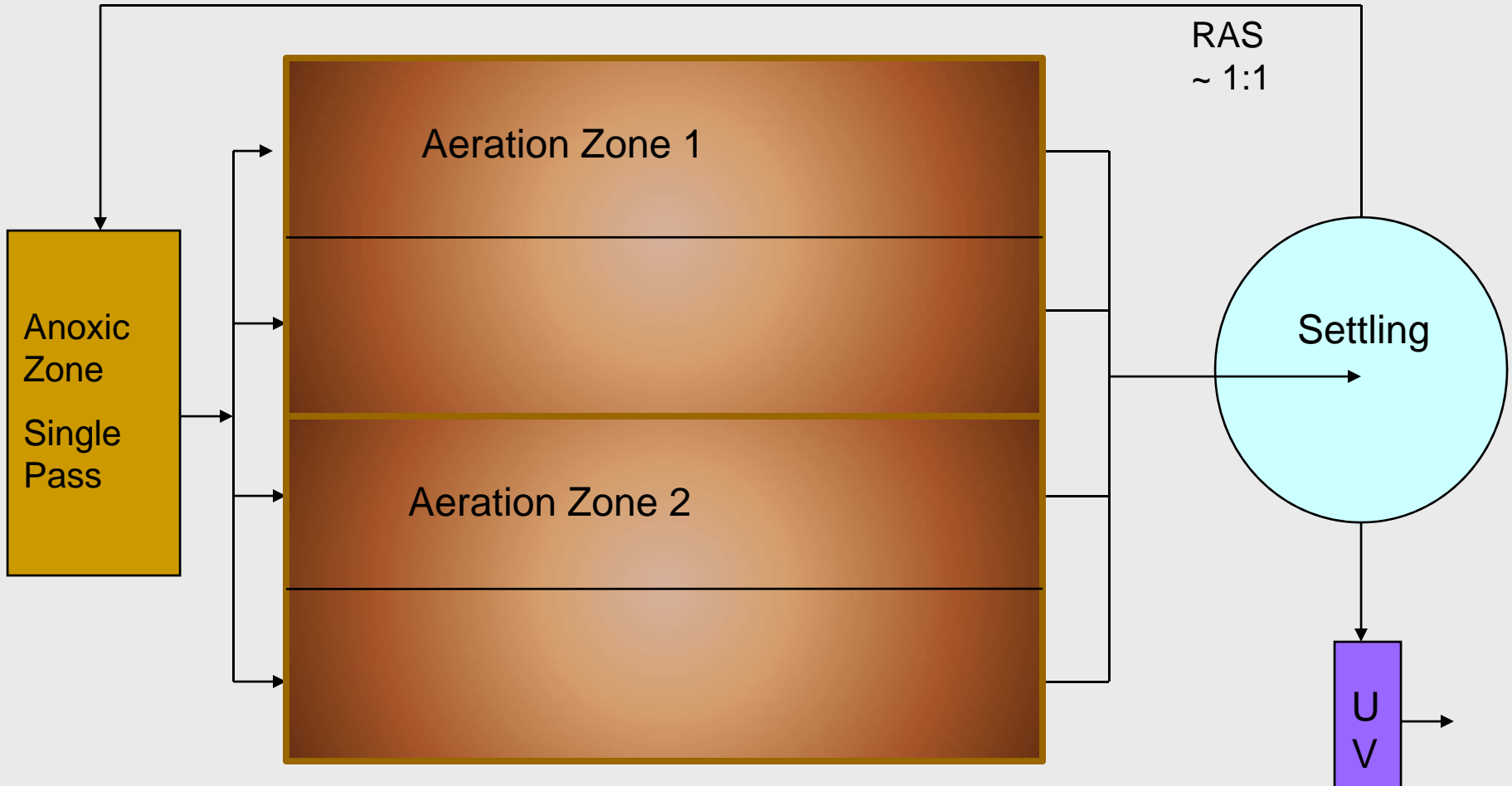


ON LINE NITROGEN ANALYSIS A CASE STUDY

Abington Township WWTF
Abington, Pa.

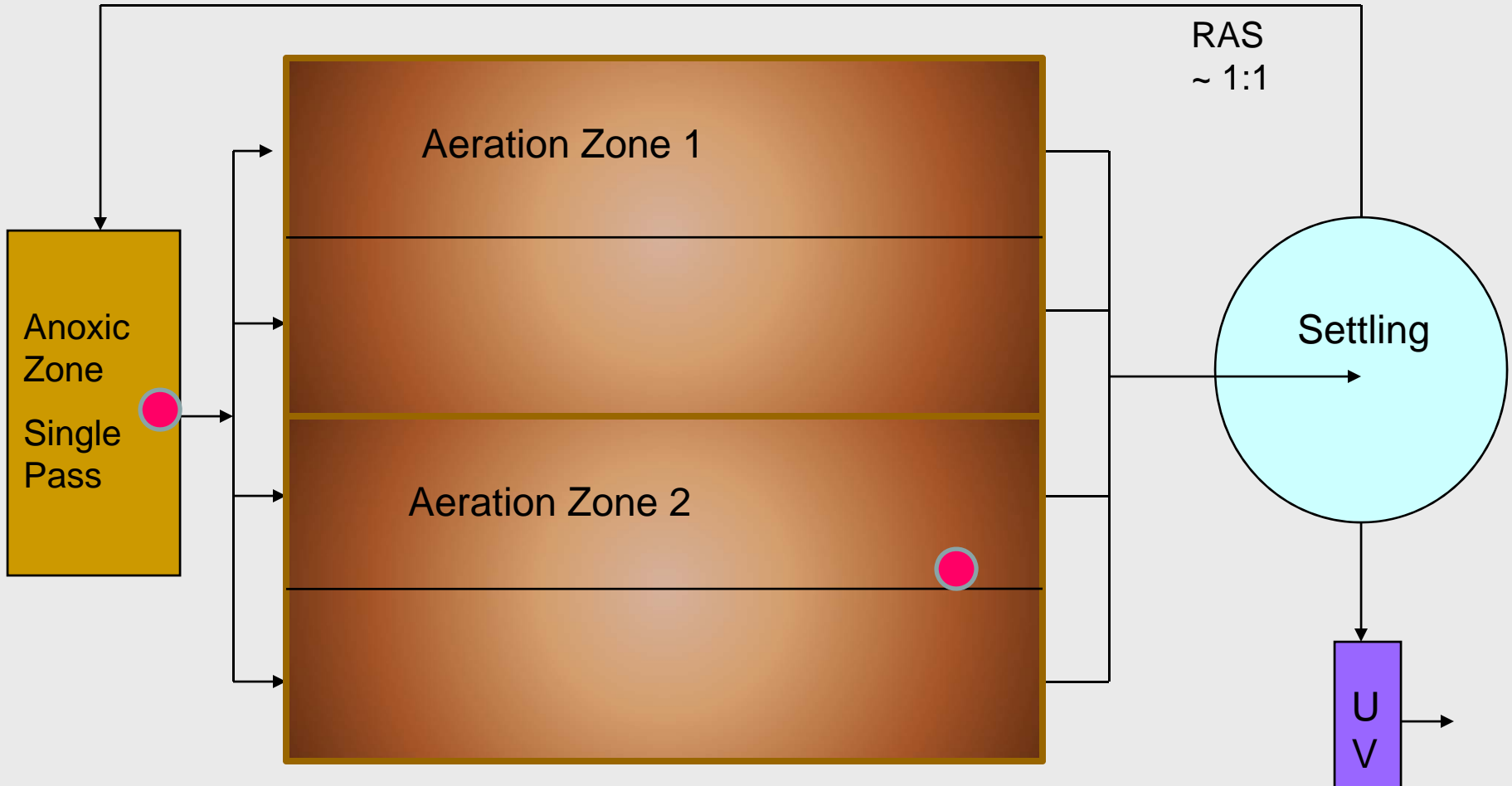


System Layout



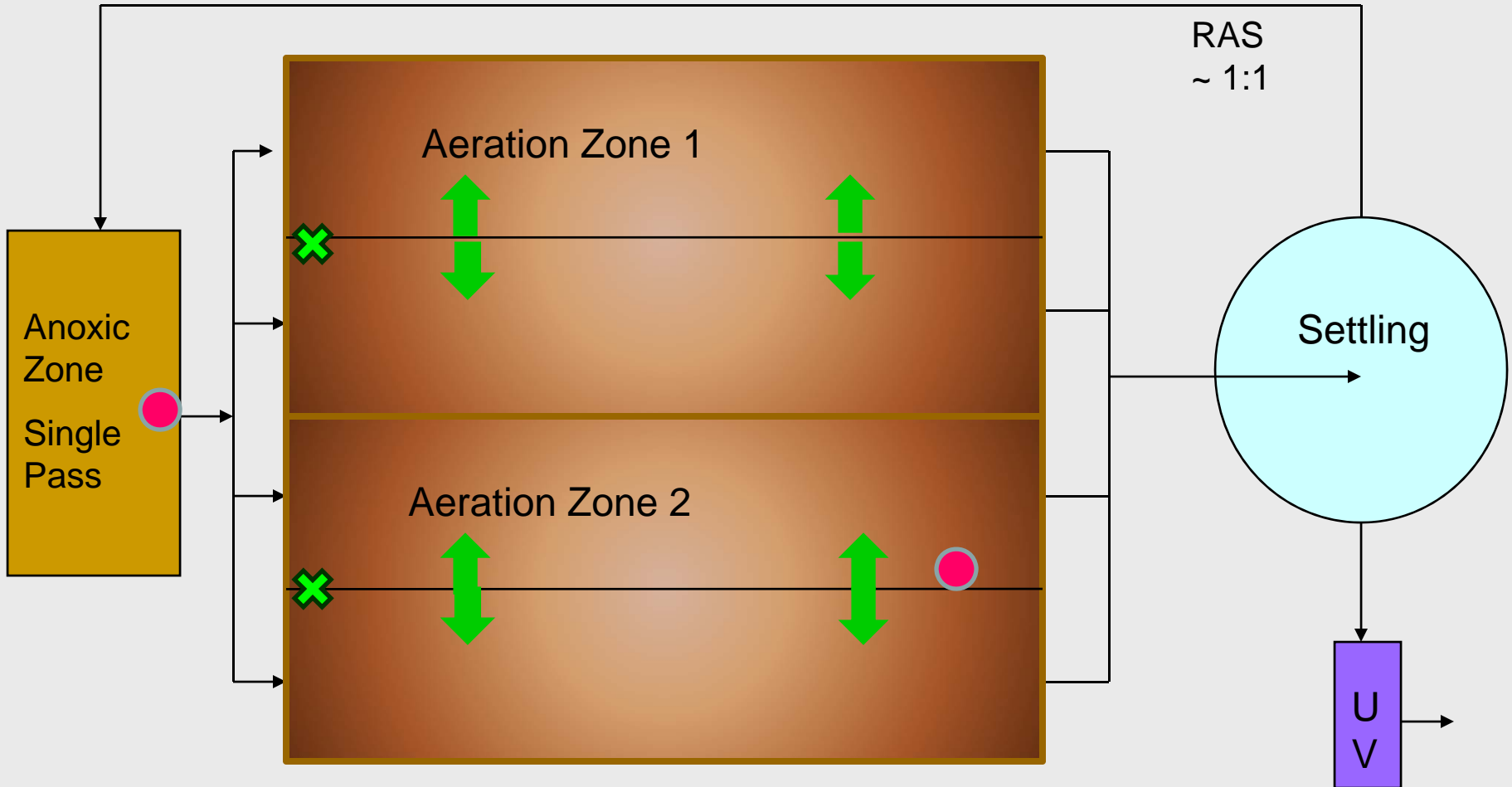


Analyzer Locations





D.O. Control





Nitrogen Analyzer



Control Box

- Reagent Bags
- HMI
- CPU
- RS 485 Output
- 4-20 mA Output
- Reagent pumps



IPS (In-Process Sampler)



IPS Components

- Reference Probe
- NH_4/NO_3 Probe
- Reagent Lines
- Stirrer
- Cover Plate

Operating Cycle

- Collect sample
- Calibrate unit
- Measure mV
- Calculate Conc.



BIOS (Bioprocess Intelligent Operating System)

- MS-Windows based PLC program.
- Maintains computer model of biological process.
- Collects data from field instruments
 - Temperature
 - Flow rates
 - D.O. values
 - Nitrogen values

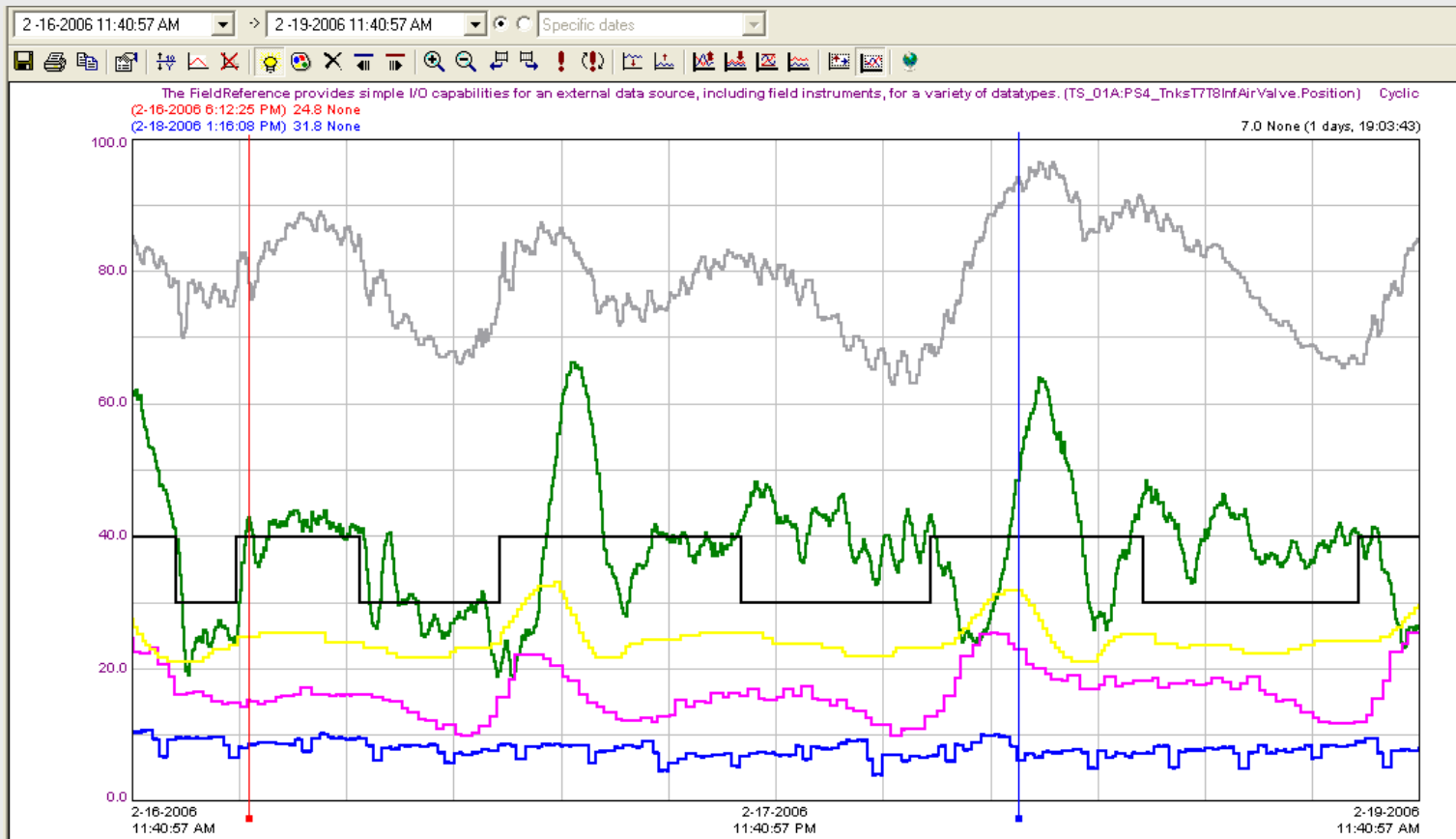


BIOS (Continued)

- Operators input data from laboratory
 - MLSS, MLVSS, SVI
 - RSSS, RSVSS
 - Raw, Primary & Effluent BOD₅, COD, NH₄, NO₃, TSS
- Uses model to determine optimum D.O. setpoint under current operating conditions
- Outputs D.O. setpoint
- Uses new data to refine the model



Operating Experience

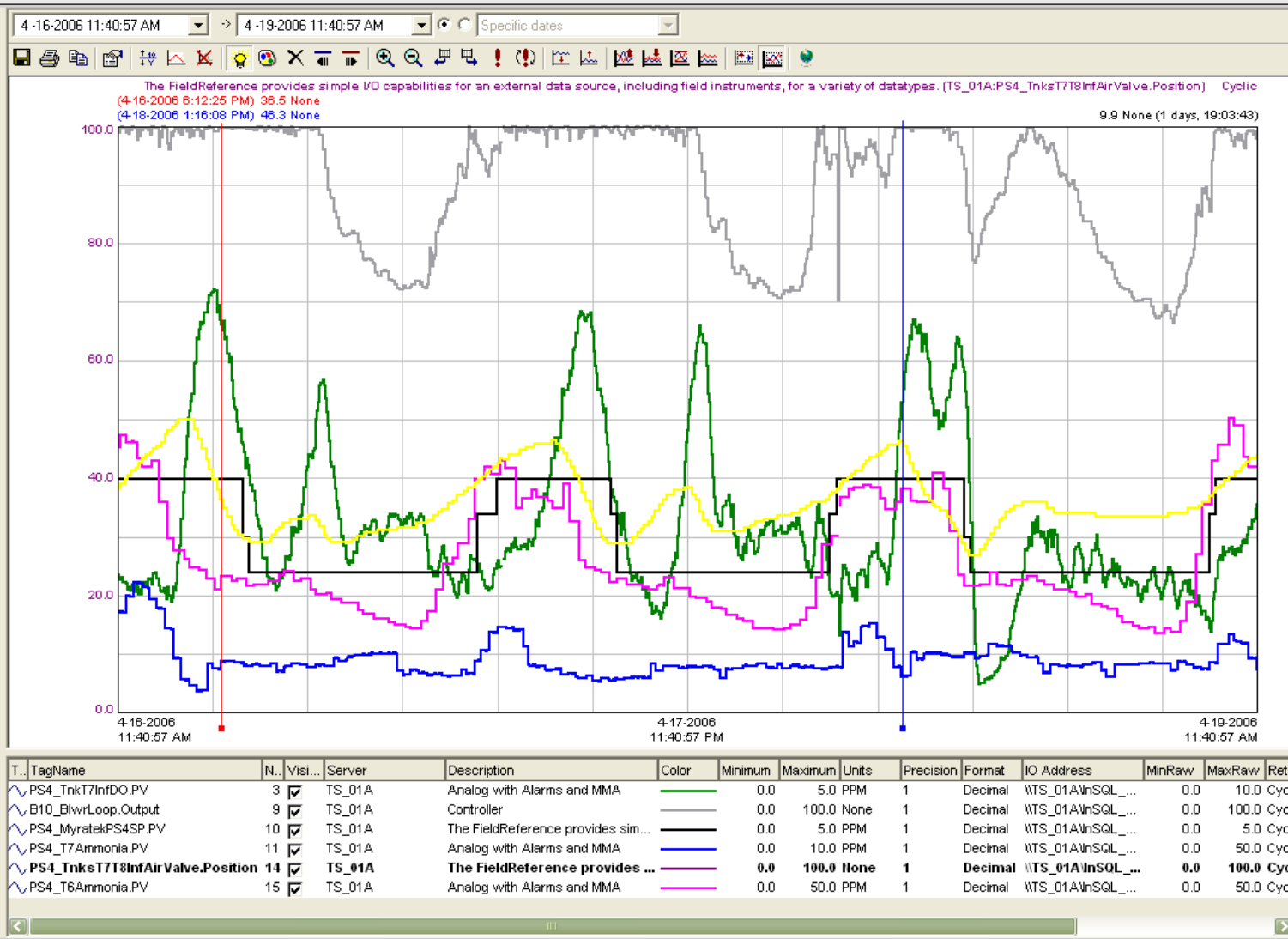


SRT
13 Days

T.. TagName	N..	Visi...	Server	Description	Color	Minimum	Maximum	Units	Precision	Format	IO Address	MinRaw	MaxRaw	Retr
PS4_TnkT7InfDO.PV	3	<input checked="" type="checkbox"/>	TS_01A	Analog with Alarms and MMA	—	0.0	5.0	PPM	1	Decimal	WTS_01A\InSQL_...	0.0	10.0	Cycl
B10_BkwrLoop.Output	9	<input checked="" type="checkbox"/>	TS_01A	Controller	—	0.0	100.0	None	1	Decimal	WTS_01A\InSQL_...	0.0	100.0	Cycl
PS4_MyratekPS4SP.PV	10	<input checked="" type="checkbox"/>	TS_01A	The FieldReference provides sim...	—	0.0	5.0	PPM	1	Decimal	WTS_01A\InSQL_...	0.0	5.0	Cycl
PS4_T7Ammonia.PV	11	<input checked="" type="checkbox"/>	TS_01A	Analog with Alarms and MMA	—	0.0	10.0	PPM	1	Decimal	WTS_01A\InSQL_...	0.0	50.0	Cycl
PS4_TnksT7T8InfAirValve.Position 14	14	<input checked="" type="checkbox"/>	TS_01A	The FieldReference provides ...	—	0.0	100.0	None	1	Decimal	WTS_01A\InSQL_...	0.0	100.0	Cycl
PS4_T6Ammonia.PV	15	<input checked="" type="checkbox"/>	TS_01A	Analog with Alarms and MMA	—	0.0	50.0	PPM	1	Decimal	WTS_01A\InSQL_...	0.0	50.0	Cycl



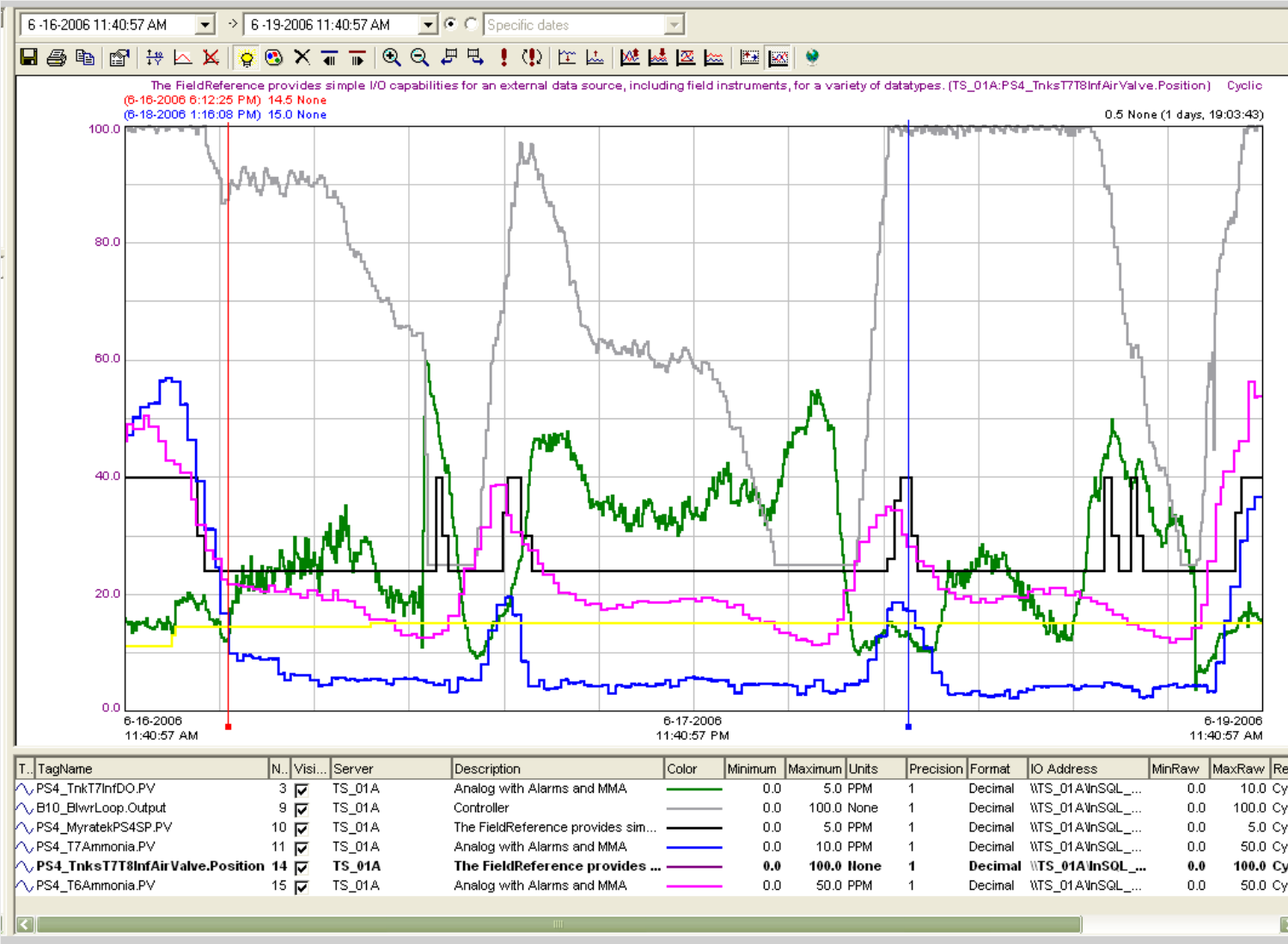
Operating Experience



SRT
8 Days



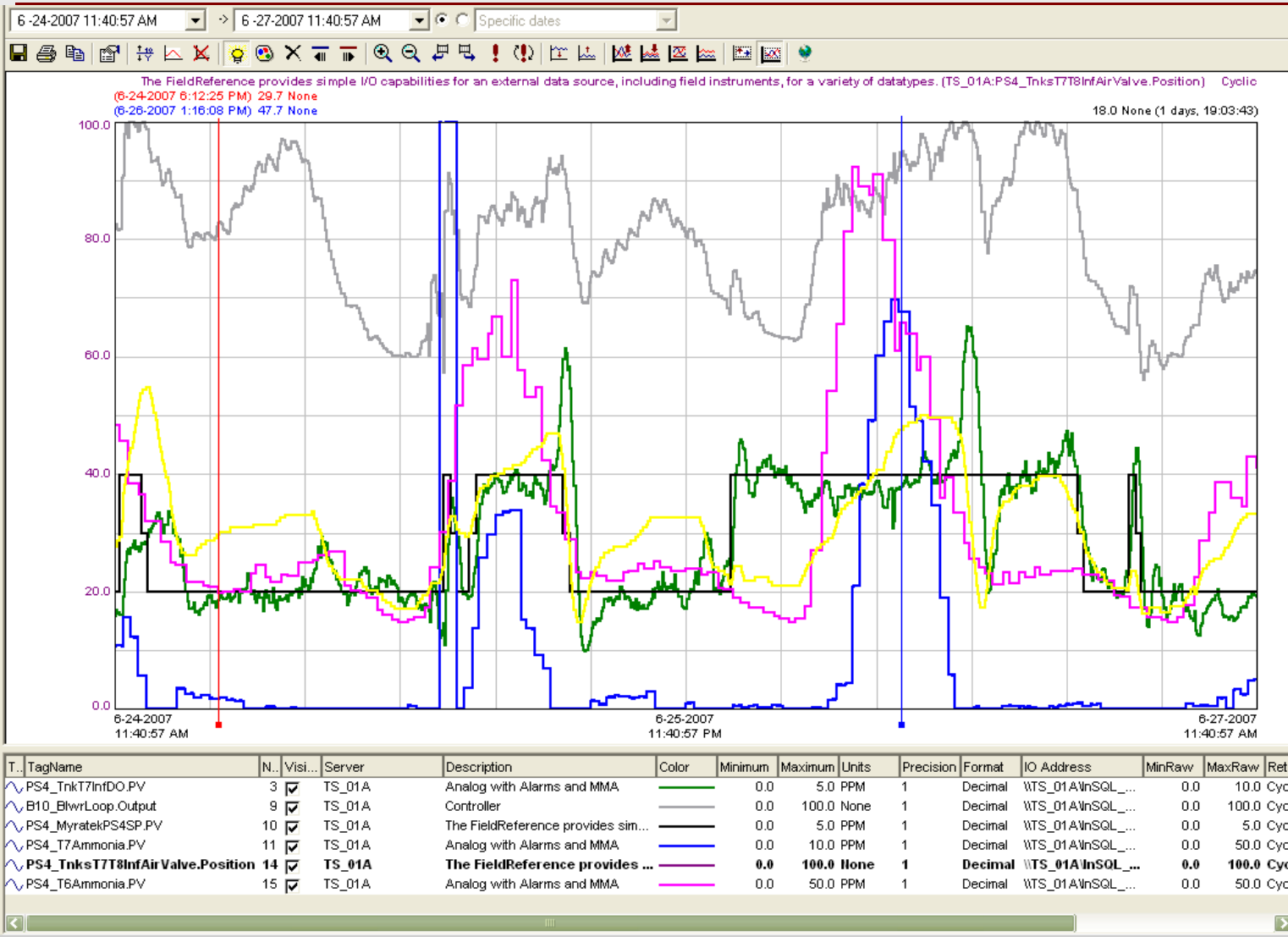
Operating Experience



SRT
11 Days



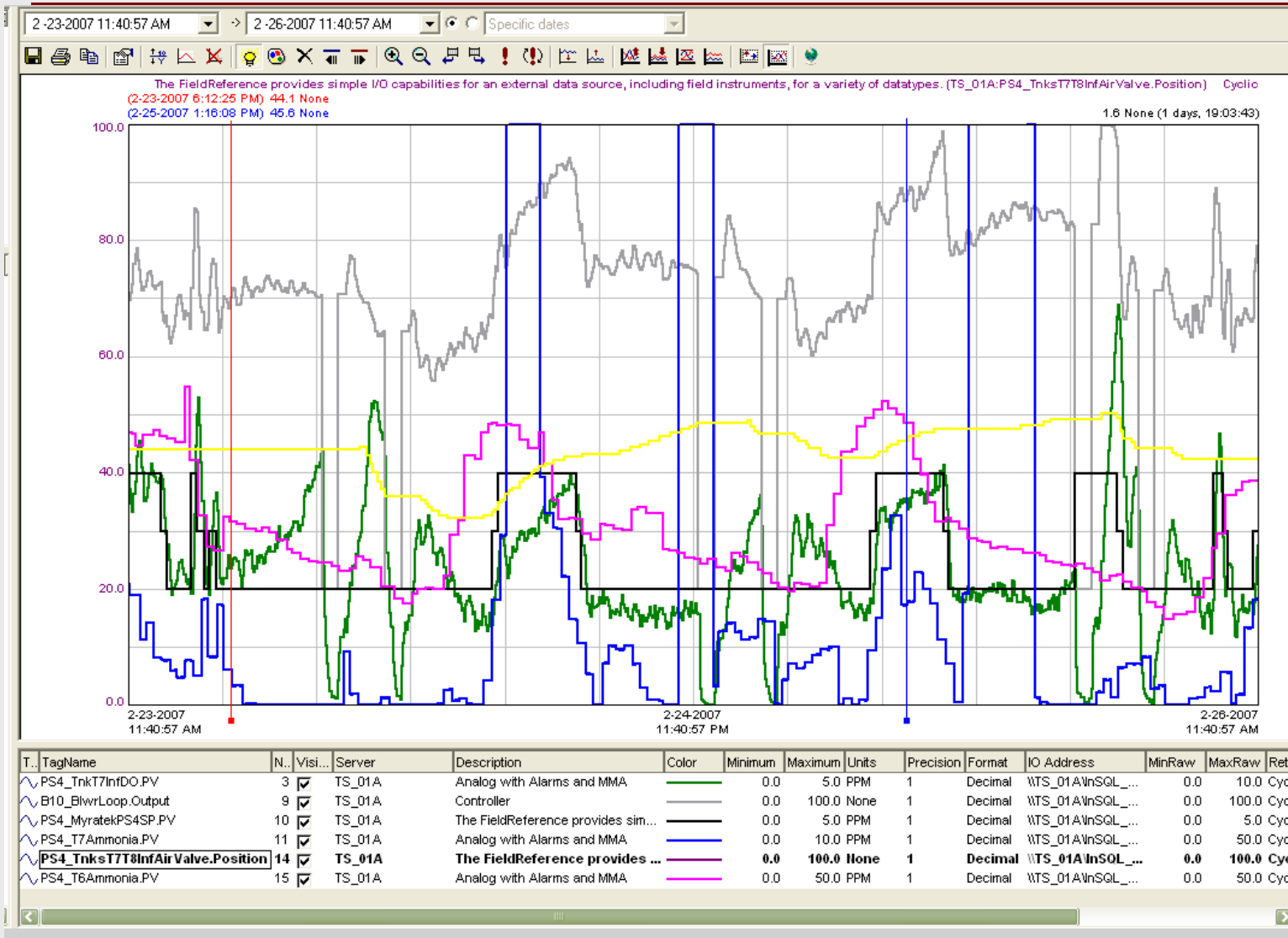
Operating Experience



SRT
7 Days



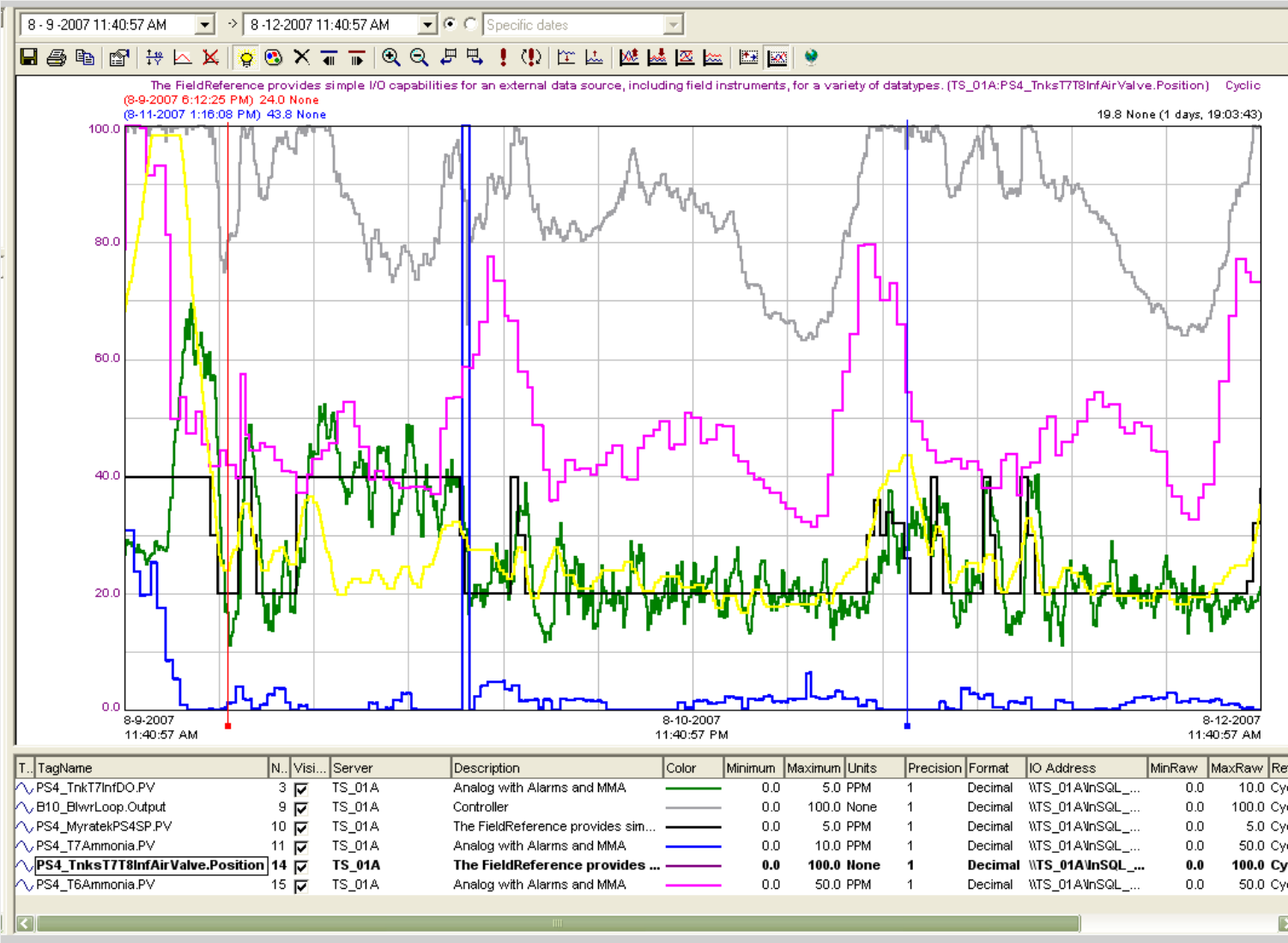
Operating Experience



SRT
10 Days



Operating Experience



SRT
11 Days