

TEGA

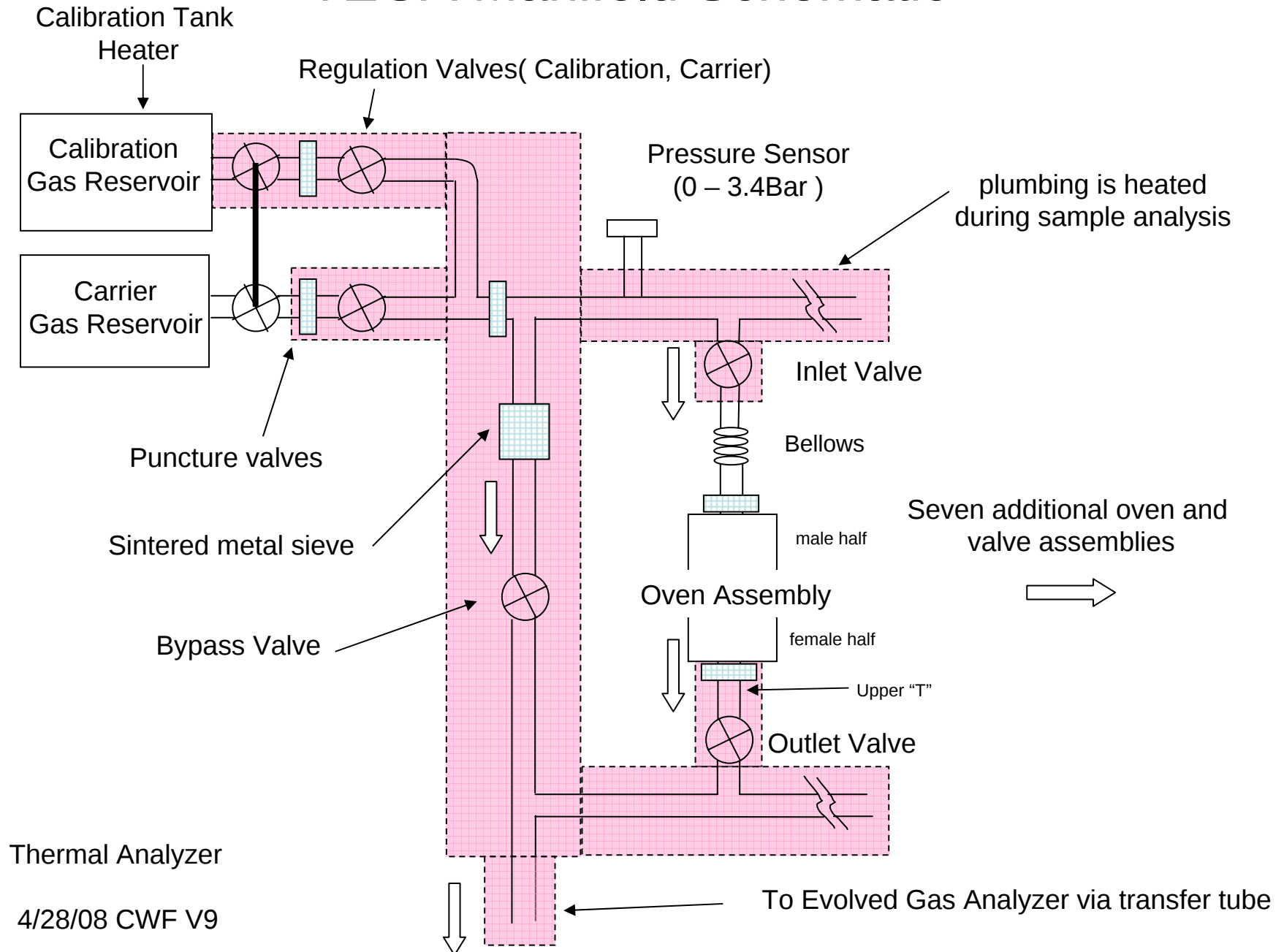
Thermal and Evolved Gas Analyzer

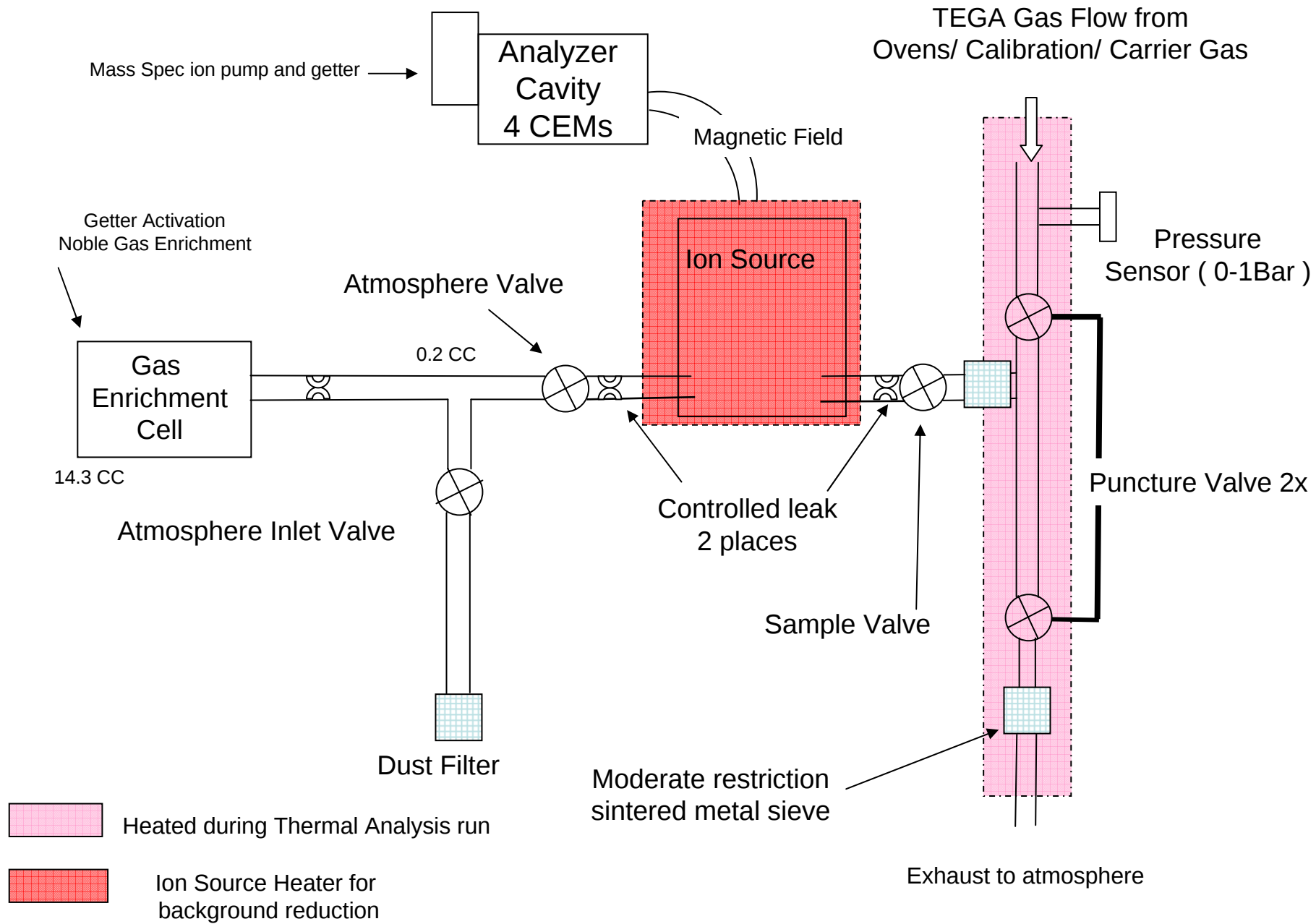
Block Diagrams

Manifolds, Valves, and Gas flow

Updated 4/28/08

TEGA Manifold Schematic

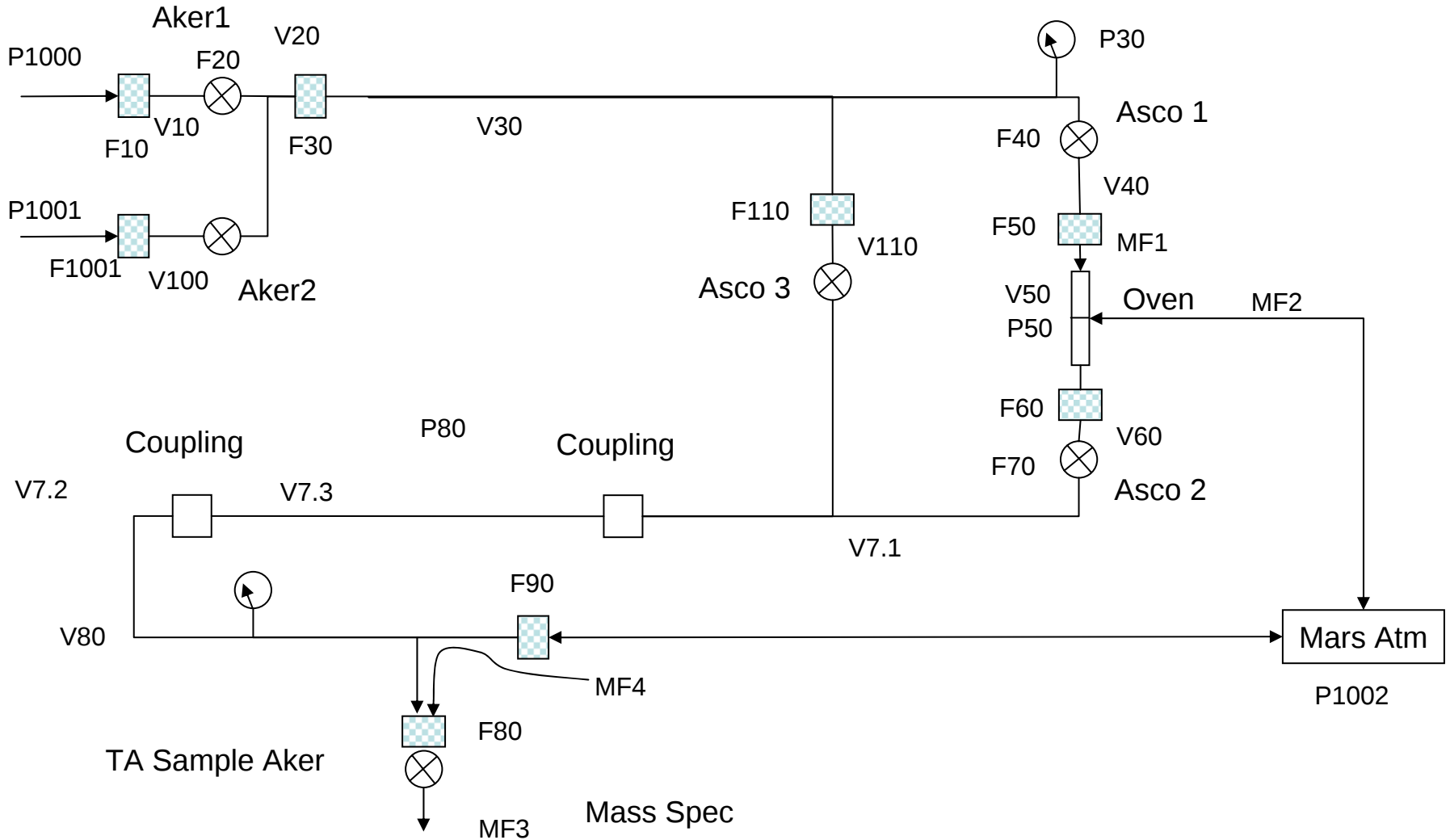




4/28/08 CWF V9

Evolved Gas Analyzer

Flow Path for regulation modeling



ID	Pressure of Interest	Limits
P1000	Carrier Gas Pressure	1 -4.48 Bar
P30	Manifold pressure	Appr 38 mB
P50	Oven Pressure	Mars amb < 40 mB
P80	Pressure at Mass Spec Sample Inlet	6 to 30 mB
P1002	Mars Atmosphere	6 – 12 mB*
P1001	Cal Gas Pressure	1 -4.48 Bar

ID	Volume Description	Value (cm^3)
V10	Pre-regulating valve carrier	0.0075
V20	Post regulating valve	0.2090
V30	Manifold	0.8920
V40	Entrance Volume	1.9570
V50	Oven Volume	0.0530
V60	Exit Volume	0.2940
V71	TA exit conduit	0.6530
V72	EGA entrance conduit	0.1850
V73	Transfer Tube	0.1600
V80	EGA Sample manifold	1.5200
V100	Pre-regulating valve cal	0.0075
V110	Bypass Valve Dead Volume	0.0039

ID	Frit Description	Pore Size Microns	Conductance (SCCM/mb)
F10	Carrier Tank Frit	0.2	0.0054
F30	Regulating frit 1	2 x 2.0	0.019
F1001	Cal Tank Frit	0.2	0.0054
F50	Oven Entrance frit	0.2	0.0054
F60	Oven Exit Frit	2	0.0397
F80	EGA filter	0.2	0.0054
F90	EGA exit filter	2x 1.0, 2x 0.5	0.003
F110	Bypass Frit	0.2	0.003
F20	Aker Flow Coeff	n/a	0.280
F40	ASCO Flow Coeff	n/a	0.100

ID	Mass Flow	Value
MF1	Into Oven	Approx 0.04 SCCM
MF2	Oven Leak	< ±10% of oven mass flow
MF3	Sample into Mass Spec	1e-6 SCCM
MF4	Mars leak back into sample manifold	< 1% of sample

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- CF1** **Must tweak this to get correct pressure in EGA when all assembled**
Chuck Fellows, 1/19/2005
- CF3** **Measured EQM 4/28/08**
Chuck Fellows, 5/16/2008
- CF4** **measured EQM unused #4 female and unmated cell #2**
Chuck Fellows, 5/16/2008
- CF5** **measured 1 unmated male and two mated halves that give solid estimate**
Chuck Fellows, 5/16/2008