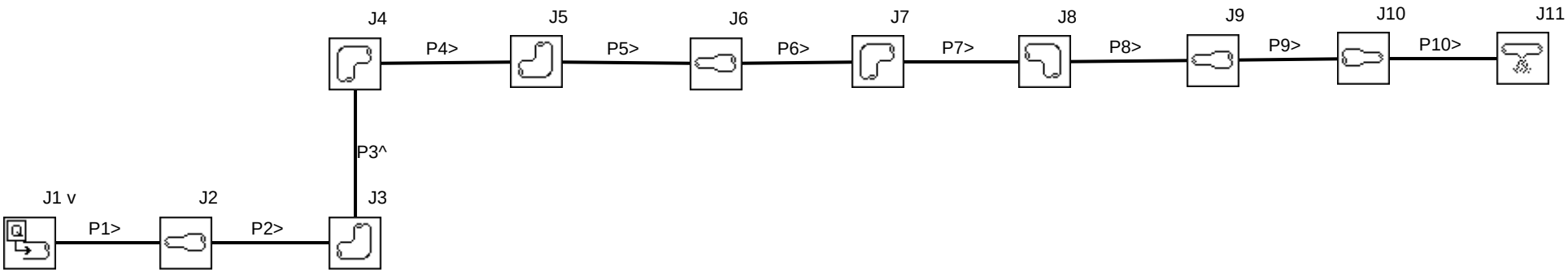
J1 v
J2
J3
J4
J5
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J7
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J10
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P1>
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P10>

Title: CERN SYRINGE FLOW ANALYSIS
Analysis run on: 2/4/2005 5:18:21 PM
Application version: AFT Fathom Version 5.0 (2004.05.13)
Input File: C:\Documents and Settings\vbg.ORNL\My Documents\My Files\High Energy Neutrino\Fathom\HgJet Syringe Single Flow.fth

Heat Transfer with Energy Balance
Fluid Database: AFT Standard
Fluid: Mercury
Max Fluid Temperature Data= 500 deg. F
Min Fluid Temperature Data= 0 deg. F
Default Temperature= 80 deg. F
Default Density= 846.7027 lbm/ft3
Default Viscosity= 3.69638 lbm/hr-ft
Default Vapor Pressure= 1.0636E-04 atm
Viscosity Model= Newtonian

Atmospheric Pressure= 1 atm
Gravitational Acceleration= 1 g
Turbulent Flow Above Reynolds Number= 4000
Laminar Flow Below Reynolds Number= 2300
Overall Delta Head = -126 feet
Overall Delta Pressure = -743 psid
Overall Frictional Pressure Loss = 732 psid
Total Inflow= 47.0 lbm/sec
Total Outflow= 47.0 lbm/sec
Total Energy Inflow= 53.5 Btu/s
Total Energy Outflow= 53.5 Btu/s
Maximum Pressure is 51.6 atm at Junction 1 Inlet
Minimum Pressure is -26.8 atm at Junction 11 Outlet
Maximum Static Temperature is 23.9 deg. C at Junction 11 Inlet
Minimum Static Temperature is 20.0 deg. C at Junction 1 Inlet

CERN SYRINGE FLOW ANALYSIS

Pipe Output Table

Pipe	Name	Pipe Nominal Size	Vol. Flow (gal/min)	Length (inches)	Flow Area (inches2)	Velocity (meters/sec)	Reynolds No.	fL/ D + K	P Stag. In (psig)	P Stag. Out (psig)	dP Stag. Total (psid)	P Static In (psig)	P Static Out (psig)	dP Static Total (psid)
1	Hg Cylinder	8 inch	24.9	39.00	50.027	0.0487	8.62E+04	0.0925	743	743	0.000216	743.3	743.3	0.000216
2	Hg Supply	1 inch	24.9	3.00	0.945	2.5753	6.27E+05	0.0486	740	740	0.317278	733.6	733.2	0.317278
3	Hg Supply	1 inch	24.9	16.00	0.945	2.5753	6.27E+05	0.2591	736	727	9.241468	729.7	720.5	9.241468
4	Flex Metal Hose	1 inch	24.9	6.50	0.945	2.5753	6.27E+05	0.1053	723	723	0.687438	716.7	716.0	0.687438
5	Flex Metal Hose	1 inch	24.9	6.50	0.945	2.5753	6.27E+05	0.1053	722	721	0.687438	715.3	714.6	0.687438
6	Supply Tubing	1 inch	24.9	5.00	0.679	3.5832	7.40E+05	0.0717	719	718	0.906474	706.1	705.2	0.906474
7	Supply Tubing	1 inch	24.9	11.20	0.679	3.5832	7.40E+05	0.1606	715	713	2.030501	702.2	700.2	2.030501
8	Supply Tubing	1 inch	24.9	45.00	0.679	3.5832	7.40E+05	0.6453	710	702	8.158263	697.2	689.1	8.158263
9	Plenum	5 inch	24.9	3.00	22.020	0.1105	1.30E+05	0.0100	690	690	0.000121	689.8	689.8	0.000121
10	Nozzle	None	24.9	4.00	0.119	20.3765	1.77E+06	0.2254	486	394	92.138748	77.5	-14.7	92.138748

CERN SYRINGE FLOW ANALYSIS

All Junction Table

Jct	Name	Junction Type	Elevation Inlet (inches)	Loss Factor (K)	dH (inches)	P Stag. In (psig)	P Stag. Out (psig)	dP Stag. Total (psid)	P Static In (psig)	P Static Out (psig)	dP Static Total (psid)	T Inlet (deg. F)
1	Assigned Flow	Assigned Flow	0.0	0.000	0.00	743	743	0.000	743.3	743.3	0.000	68.0
2	Area Change	Area Change	0.0	1,380.918	6.56	743	740	3.219	743.3	733.6	9.747	68.4
3	Bend	Bend	0.0	0.271	3.61	740	736	3.543	733.2	729.7	3.543	68.4
4	Bend	Bend	19.0	0.271	3.61	727	723	3.734	720.5	716.7	3.734	68.5
5	Flex Bend	Bend	23.0	0.110	1.46	723	722	0.716	716.0	715.3	0.716	68.5
6	Area Change	Area Change	23.0	0.374	4.98	721	719	2.442	714.6	706.1	8.554	68.5
7	Bend	Bend	23.0	0.234	6.04	718	715	2.960	705.2	702.2	2.960	68.5
8	Bend	Bend	23.0	0.234	6.04	713	710	2.960	700.2	697.2	2.960	68.5
9	Area Change	Area Change	23.0	0.939	24.21	702	690	11.875	689.1	689.8	-0.756	68.5
10	Area Change	Area Change	23.0	16,920.160	415.00	690	486	203.568	689.8	77.5	612.370	68.6
11	Spray	Spray Discharge	23.0	0.964	803.03	394	0	393.897	-14.9	-408.8	393.897	75.0