

Observations:

Room Temp.	15
Atm. Pressure	76 cm of Hg
Angle of inclination, $\theta$	30
length of cylinder, L	30.5cm
height of tunnel, 2b	30.5cm
Total head, h1	19.7
Static head, h2	24.6
Dynamic head, h	4.9

Section 1:

Position (deg)	Static Head, h' (cm)	Reference Head, h0(cm)	P( $\theta$ )	cos( $\theta$ )	P( $\theta$ )*cos( $\theta$ )	P( $\theta$ )*cos( $\theta$ )*L*r
0	21.2	24.6	166.270	1.000	166.270	1.610
10	23.4	24.6	-58.683	0.985	-57.792	-0.560
20	24	24.6	-29.342	0.940	-27.572	-0.267
30	26.1	24.6	73.354	0.866	63.527	0.615
40	28.3	24.6	180.941	0.766	138.608	1.342
50	30	24.6	264.075	0.643	169.744	1.644
60	31.3	24.6	327.649	0.500	163.825	1.586
70	31.6	24.6	342.320	0.342	117.080	1.134
80	31.6	24.6	342.320	0.174	59.443	0.576
90	31	24.6	312.978	0.000	0.000	0.000
100	30.3	24.6	278.746	-0.174	-48.404	-0.469
110	30	24.6	264.075	-0.342	-90.319	-0.875
120	29.6	24.6	244.514	-0.500	-122.257	-1.184
130	29.5	24.6	239.624	-0.643	-154.027	-1.492

140	29.5	24.6	239.624	-0.766	-183.563	-1.778
150	29.4	24.6	234.734	-0.866	-203.285	-1.969
160	29.4	24.6	234.734	-0.940	-220.578	-2.136
170	29.5	24.6	239.624	-0.985	-235.984	-2.285
180	29.1	24.6	220.063	-1.000	-220.063	-2.131

Section 2:

Vertical Position, y(cm)	Total head, h1(cm)	Static head, h2(cm)	u(y)
0	20.3	25.1	19.576
1	20	25.1	20.179
2	19.7	25.2	20.955
3	19.7	25.2	20.955
4	19.7	25.2	20.955
5	19.8	25.2	20.764
6	20	25.2	20.376
7	20.3	25.3	19.980
8	20.6	25.4	19.576
9	21.1	25.5	18.743
10	21.6	25.6	17.871
11	22	25.6	16.954
12	22.6	25.5	15.216
13	22.9	25.5	14.408
14	22.8	25.5	14.682
15	22.5	25.4	15.216
16	22	25.4	16.476
17	21.7	25.3	16.954

18	21.3	25.2	17.646
19	20.7	25.1	18.743
20	20.5	25.1	19.164

Results:

Uniform vel, U	19.77935287
P1	1203.01011
P2	1239.381605
Fd1	2.225734035
Fd2	1.792174836
Cd1	0.479589264
Cd2	0.386168247

Error Analysis:

$\Delta P$	$\Delta \text{integral}$
1.460184039	
0.489334334	0.000
0.241532369	0.001
0.579238972	0.000
1.374896554	0.003
1.953728495	0.004
2.378709111	0.004
2.474835493	0.003
2.474835493	0.002
2.281876494	0.001

2.053069421	0.001
1.953728495	0.002
1.820022021	0.003
1.786365786	0.003
1.786365786	0.004
1.752615829	0.005
1.752615829	0.005
1.786365786	0.006
1.650793968	0.006

$\Delta u^2$	$\Delta \text{Integral}$
3.414722	
3.658231	0.070721
3.971644	0.076289
3.971644	0.079433
3.971644	0.079433
3.888379	0.078599
3.723397	0.076114
3.54443	0.072671
3.369195	0.069129
3.042594	0.064097
2.726066	0.057667
2.429265	0.05154
1.932513	0.043588
1.720565	0.036524
1.79087	0.035114

1.940642	0.037309
2.302655	
2.460641	
2.697525	
3.096722	
3.254791	

$\Delta h_1(\text{cm})$	0.1
$\Delta h_2(\text{cm})$	0.1
$\Delta h(\text{cm})$	0.2
$\Delta U$	0.404
$\Delta P_1$	4.890
$\Delta P_2$	4.890
$\Delta F_{d1}$	0.105
$\Delta F_{d2}$	0.342
$\Delta C_{d1}$	0.042
$\Delta C_{d2}$	0.090

Plots:

