Appendix I
Symbols and Abbreviations

Symbol	Term	Units
BB	Boardblock test	categorical
CT	Compression test	categorical
D#	Avalanche size – destructive force	categorical
DT	Deep Tap Test	categorical
E	Grain size	mm
ECT	Extended column test	categorical
F	Grain form	categorical
f	Fall height of the hammer, ram penetrometer	cm
H	Vertical coordinate (line of plumb)	cm, m
H	Mass of hammer, ram penetrometer	kg
H2D/H2DW	Twice per day snow accumulation/water equivalent	cm/mm
HIN/HINW	Interval snow height/water equivalent	cm/mm
HN24/HN24W	Height of 24-hour snow accumulation/water equivalent	cm/mm
HN/HNW	Height of new snow layer/water equivalent	cm/mm
HS/HSW	Height of snowpack/total water equivalent	cm/mm
HST/HSTW	Storm snow height/water equivalent	cm/mm
HW	Water equivalent of a layer	mm
L	Layer thickness (measured vertically)	mm,cm,m
n	Number of blows of the hammer, ram penetrometer	dimensionless
N/O	Not observed	categorical
P	Penetrability	cm
p	Increment of penetration for n blows, ram penetrometer	cm
PF	Depth of foot penetration	cm
PR	Depth of penetration by standard ramsonde	cm
PS	Depth of ski penetration	cm
PST	Propagation saw test	categorical
Q	Shear quality	categorical
R	Hand hardness index	categorical

Symbol	Term	Units
R#	Avalanche size – relative to path	categorical
RB	Rutschblock test	categorical
RH	Relative humidity	%
RN	Ram number	kg
RR	Ram resistance	N
SB	Stuffblock test	categorical
SR	Stability ratio	dimensionless
ST	Shovel shear test	categorical
T	Temperature of snow	°C
T	Mass of tubes, ram penetrometer	kg
Ta	Air temperature	°C
Tg	Ground temperature	°C
Ts	Temperature of snow surface	°C
T20	Temperature of snow 20 cm below the surface	°C
α	Alpha angle	degree
α_i	Alpha angle of an individual avalanche	degree
α_e	Alpha angle of an extreme event. Smallest angle observed in a specific avalanche path	degree
Δ (Delta)	Change in penetration	cm
ε (epsilon)	Strain	dimensionless (m/m)
θ (theta)	Liquid water content	% (by volume)
ρ (rho)	Density	kg/m^3
σ (sigma)	Normal stress	Pa
Σ (Sigma)	Normal strength	Pa
τ (tau)	Shear stress	Pa
T(Tau)	Shear strength	Pa
T_∞	Frame independent shear strength	Pa
T_{100}	Shear strength measured with 100 cm^2 shear frame	Pa
T_{250}	Shear strength measured with 250 cm^2 shear frame	Pa
ψ (psi)	Slope angle	degree

Snow Profile

Reference: _____

Date: _____ Time: _____ Observers: _____

Location: _____

Elev: _____ Aspect: _____ Slope Angle: _____ Precip: _____ Sky: _____ Wind Dir: _____ Speed: G

Wind Loading? Y N PREV Ski Pen: _____ cm in Boot Pen: _____ cm in Profile Type:

Snow Layer Temperature (°C)

-18° -16° -14° -12° -10° -8° -6° -4° -2°C

Depth H (cm)	Moist θ	Form F	Size E (mm)	Density ρ (kg/m^3)	Test Results and Comments
200					
190					
180					
170					
160					
150					
140					
130					
120					
110					
100					
90					
80					
70					
60					
50					
40					
30					
20					
10					
0					

I K P 1F 4F F

Snow Profile

Reference: _____

Date: _____ Time: _____ Observers: _____

Location: _____

Elev: _____ Aspect: _____ Slope Angle: _____ Precip: _____ Sky: _____ Wind Dir: _____ Speed: G

Wind Loading? Y N PREV Ski Pen: _____ cm in Boot Pen: _____ cm in Profile Type:

Snow Layer Temperature (°C)	Depth H	Moist θ	Form F	Size E	Density ρ	Test Results and Comments
	(cm)			(mm)	(kg/m^3)	

I K P 1F 4F F

Temperature Conversion Chart

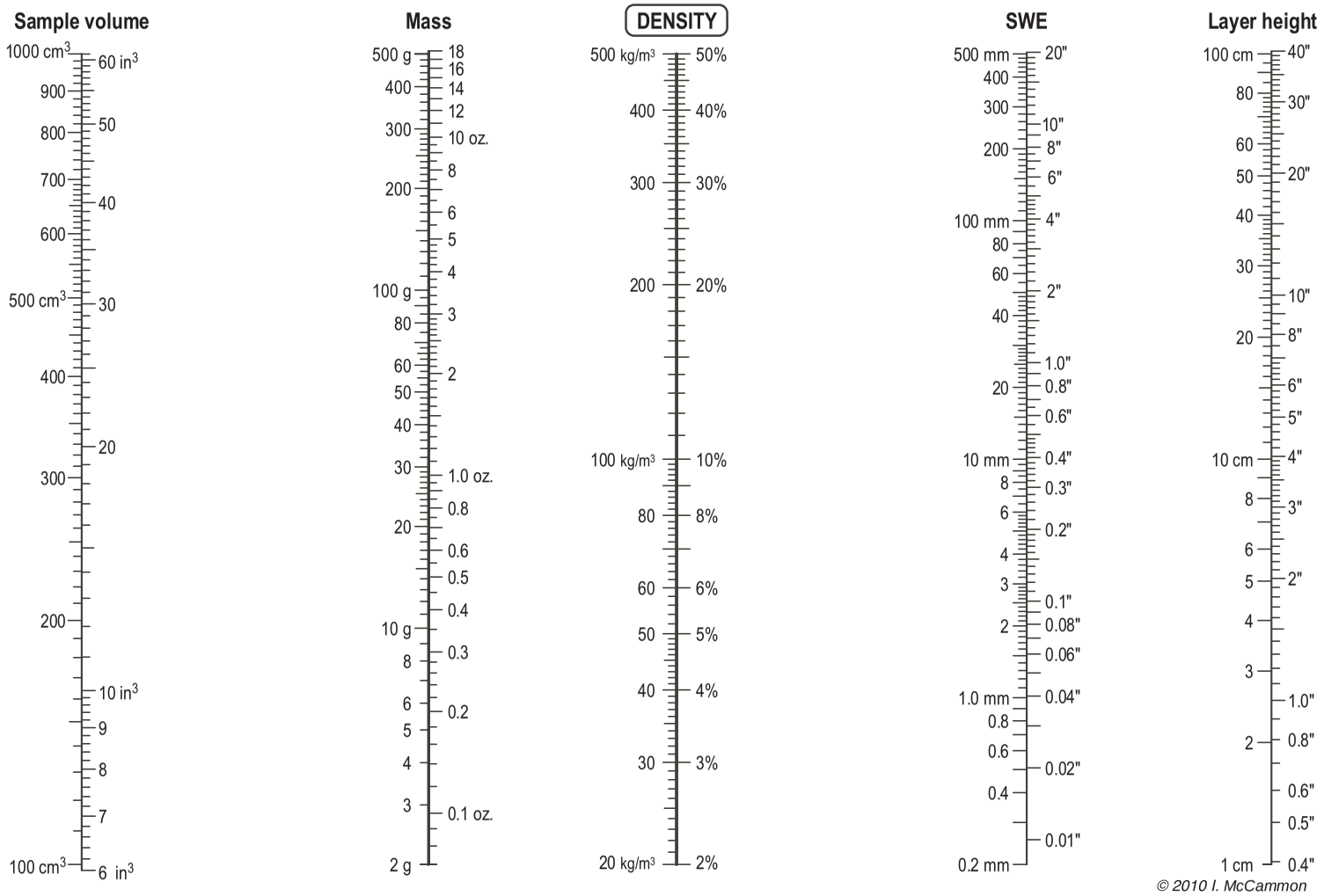
°C	°F
-40	-40
-39	-38.2
-38	-36.4
-37	-34.6
-36	-32.8
-35	-31
-34	-29.2
-33	-27.4
-32	-25.6
-31	-23.8
-30	-22
-29	-20.2
-28	-18.4
-27	-16.6
-26	-14.8
-25	-13
-24	-11.2
-23	-9.4
-22	-7.6
-21	-5.8
-20	-4
-19	-2.2
-18	-0.4
-17	1.4
-16	3.2
-15	5
-14	6.8
-13	8.6
-12	10.4
-11	12.2
-10	14
-9	15.8
-8	17.6
-7	19.4
-6	21.2
-5	23
-4	24.8
-3	26.6
-2	28.4
-1	30.2
0	32

°C	°F
0	32
1	33.8
2	35.6
3	37.4
4	39.2
5	41
6	42.8
7	44.6
8	46.4
9	48.2
10	50
11	51.8
12	53.6
13	55.4
14	57.2
15	59
16	60.8
17	62.6
18	64.4
19	66.2
20	68
21	69.8
22	71.6
23	73.4
24	75.2
25	77
26	78.8
27	80.6
28	82.4
29	84.2
30	86
31	87.8
32	89.6
33	91.4
34	93.2
35	95
36	96.8
37	98.6
38	100.4
39	102.2
40	104

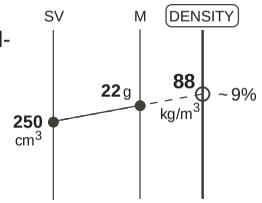
Wind Speed Conversion Chart

mi/hr	m/s	kt	km/hr
1	0.4	0.9	1.6
2	0.9	1.7	3.2
3	1.3	2.6	4.8
4	1.8	3.5	6.4
5	2.2	4.3	8.0
10	4.5	8.7	16.1
15	6.7	13.0	24.1
20	8.9	17.4	32.2
25	11.2	21.7	40.2
30	13.4	26.1	48.3
35	15.6	30.4	56.3
40	17.9	34.8	64.4
45	20.1	39.1	72.4
50	22.4	43.4	80.5
55	24.6	47.8	88.5
60	26.8	52.1	96.6
65	29.1	56.5	104.6
70	31.3	60.8	112.7
75	33.5	65.2	120.7
80	35.8	69.5	128.7
85	38.0	73.9	136.8
90	40.2	78.2	144.8
95	42.5	82.6	152.9
100	44.7	86.9	160.9
105	46.9	91.2	169.0
110	49.2	95.6	177.0
115	51.4	99.9	185.1
120	53.6	104.3	193.1
125	55.9	108.6	201.2
130	58.1	113.0	209.2
135	60.4	117.3	217.3
140	62.6	121.7	225.3
145	64.8	126.0	233.4
150	67.1	130.3	241.4

Nomogram for determining snow density and snow water equivalent (SWE)



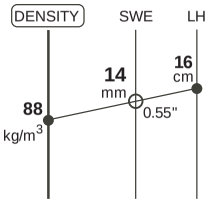
Use the LEFT half of this chart to determine the density of a snow sample. Connect the Sample volume and Mass measurements with a straight line. Where this line intersects the DENSITY axis is the sample density in kg/m^3 and % water.



Example: A snow sample from a **250** cm^3 cutter weighs **22** g. The nomogram gives a density of **88** kg/m^3, or about 9% water by volume.

● input ○ output

Use the RIGHT half of this chart to determine the snow water equivalent (SWE) of a snow sample. Connect the sample DENSITY and the Layer height with a straight line. Where this line intersects the SWE axis is the SWE in mm and inches.



Example: The previous sample came from a layer **16** cm thick. The nomogram gives a water equivalent of the layer as **14** mm or about 0.55" of water.