

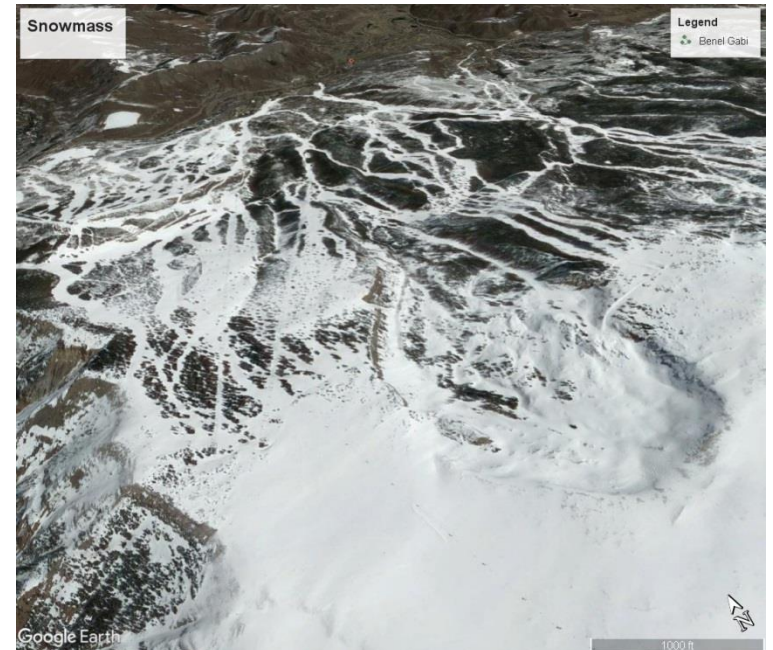
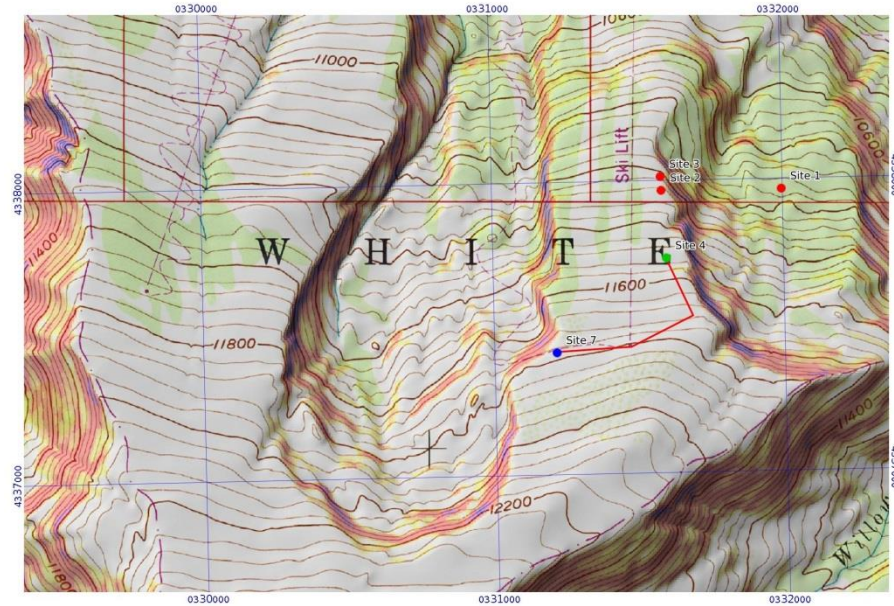
SAO 164 Module 4 Assignment – 2 Full Pits
Location: Snowmass Ski Area, Snowmass CO

Gabi Benel

1/15/2018

Location

- “Big Burn”, Snowmass, CO
- <https://caltopo.com/m/U1M5>
- Details:
- Pit 1:
 - ELEV: 11,810’(NTL)
 - ASPECT: 8 (N)
 - SLOPE: 13 deg
- Pit 2:
 - ELEV: 11,810’(NTL)
 - ASPECT: 8 (N)
 - SLOPE: 13 deg



Wx Conditions Overview

- SKY: CLR
- PRECIP: NO
- WIND SPD: Calm
- BLOWING SNOW: Previous
- PEN: FOOT 60 cm; Ski 5 cm
- HS: 68 cm
- Tair: -4 C

Notebook – Tour Plan

Date: 20180114 Time: 1025 Field Location: SNOWMASS

Weather Forecast			Snowpack and Avalanche Observations	
T	T _{DAY}	T _N	T _{MAX}	20180114 SNR2020 CTL, E, NWBLE
W	25-30	10-15	25-30	
	10-30	5-15	5-15	
	0	0-1	0-1	

Snowpack Summary

12-18 in. of snow since Jan 6. 1-1.5" water.
 Many weak layers. Rumbling collapses & shooting cracks (on E)
 stiffer slabs above well developed DH. Ski pen ~25, boot
 pen to the ground

Avalanche Danger	Problems	Type	Likelihood	Size	Distribution
ATL	MOD	PSa	Poss.	5m-10	W-SE
NTL	MOD	PSa	Poss.	5m-10	W-SE
BTL	MOD	PSa	Poss.	5m-10	NW-E

Notes:

- Take high alpine or burn life to sites.

Terrain to Avoid:

closed terrain by snowmass ski patrol
 - Anywhere observing stiffer slabs developing
 - unconnected terrain

Open Runs/Areas:

All open high alpine & burn terrain

Closed Runs/Areas:

Hanging Valley

Fieldwork Needs:

- Look at what new snow is doing
 - See if snowmass is behaving like rest of zone
 - SFD 104 assignment 4 (2 pits ~500m apart)
 - shadow Peter Carvelli & learn from him

Emergency Response:

Snowmass ski patrol: 970 923-0531
 - in reach.

Field Weather Obs

Time	1130		
Location	TOP OF BURN		
Elev.	11,810		
Aspect	N		
Sky	CLR		
Precip (type/rate)	NONE		
HS	68cm		
T _{AIR}	-4°C		
T _{SURF}	-10°C		
T ₋₂₀	-9°C		
Surf. Form / Size	V 1mm		
Pen Boot	60cm		
Pen Ski	5 cm		
Wind (Speed/Dir)	5-10 mph W		
Blowsnow	No		

- NOTE A LOT OF SHREDS TO MIDPACK HEIGHT IN PIT.
- VERY LARGE DH AND VERY FACETED SNOW THROUGHOUT ENTIRE PACK
- ICE CRUST @ GROUND BUT NOT MID-PACK.

Pit 1 Site



Pit 1:

ELEV: 11,810'(NTL)

ASPECT: 8 (N)

SLOPE: 13 deg

Pit 1 Photos



Pit 1 Photos



Layering of snowpack visible on pit wall.

Pit 1 Photos



Grain photos from pit 1 – large DH from lower layers of snowpack (32cm – 0 cm)

Pit 1 Photos



Grain photos from pit 1 – more faceting, mid snowpack level

Pit 1 photos



Top layer from pit 1 showing consolidated 4cm thick slab, 4F hardness.

Pit 1 Results - notebook

Location: TOP OF BIG BUAN
 Date: 20180114 Time: 11:30 Obsvr: G BENEZ
 Elev: 11,510' Aspect: 8° Slope Δ : 13° Pit Type: FULL

Yellow Flag Criteria
 Count of 5 or 6 Flags
 Indication of
 Instability

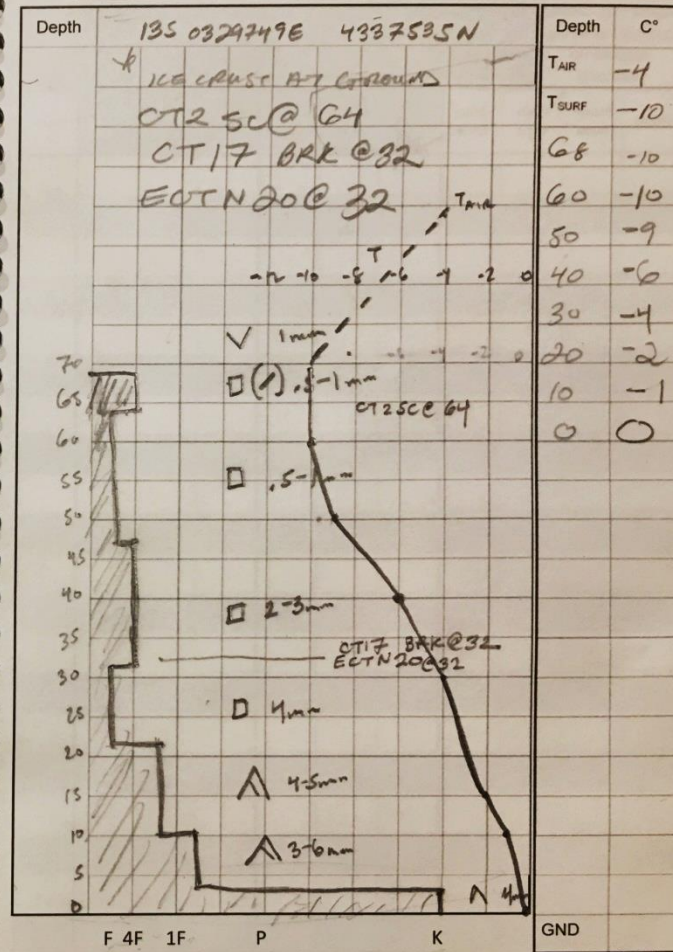
Layer Properties:
 Avg Grain Size > 1mm
 Hardness < 1F
 Persistent Grain Type (SH, FC, DH)

Interface Properties:
 Diff in Grain Size > .5mm
 Diff in Hardness > 1
 Interface Depth 20-85cm

Depth	Hardness	Grain Type	Grain Size	Avg. Grain Size	Hardness	Grain Type	Grain Size diff	Hardness diff	Interface Depth	Sum
68	4F	□	0.5-1							
64	4F	□	0.5-1							2
48	4F	□	2-3mm							4
32	FF	□	4mm							6
22	1F	△	4-5mm							5
10	1F	△	3-6mm							5
3	K	△	4mm							3
0										

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Sky: CLR Precip: NONE Wind Dir: W Wind Spd: 5-10
 Blowing Snow: Ext ___ Dir ___ Loc ___ Pen (Foot/Ski): 0.5 HS: 66cm T_{air}: -4
 Notes: BRUSHY GRASS COVER



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Pit 1 Results – Snowpilot

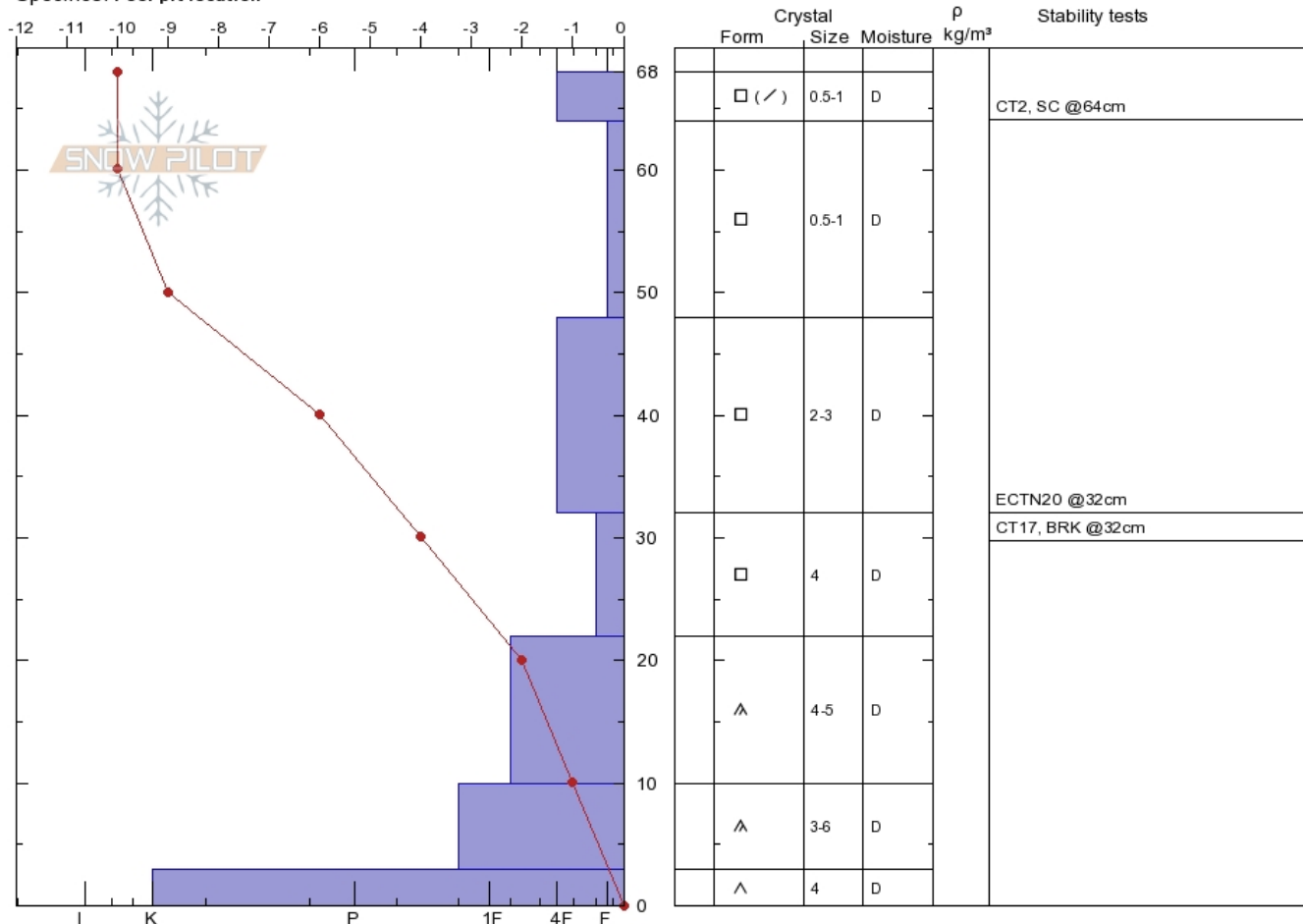
Top of Big Burn
Aspen Snowmass
CO
Elevation: 11810 ft
Aspect: 8°
Specifics: Poor pit location

Gabi Benel
Sun Jan 14 11:30 2018
Co-ord: 13S 329717W 4337403N
Slope Angle: 13°
Wind Loading: previous

Stability:
Air Temperature: -4°C
Sky Cover: CLR
Precipitation: NO
Wind: W Calm

HS68 PF60
Stability Test Notes
32: Shrub in ECT column

Layer Notes



Notes: Brushy ground cover going up to midsnowpack height from ground. 1mm surface hoar at surface.

Pit 2 Site



Pit 2:

ELEV: 11,280'(NTL)

ASPECT: 60(ENE)

SLOPE: 6 deg

Pit 2 Photos



Pit 2 Photos



Layering of snowpack visible on pit observation wall.

Pit 2 Photos



Photos of PST on pit 2. Note fracture going across top of slab. PST 29/100 (SF) @ 24cm

Pit 2 Results - notebook

Location: Richmond Ridge
 Date: 20171213 Time: 1420 Obsvr: G Benel
 Elev: 11280 Aspect: 60 Slope: 6 Pit Type: full

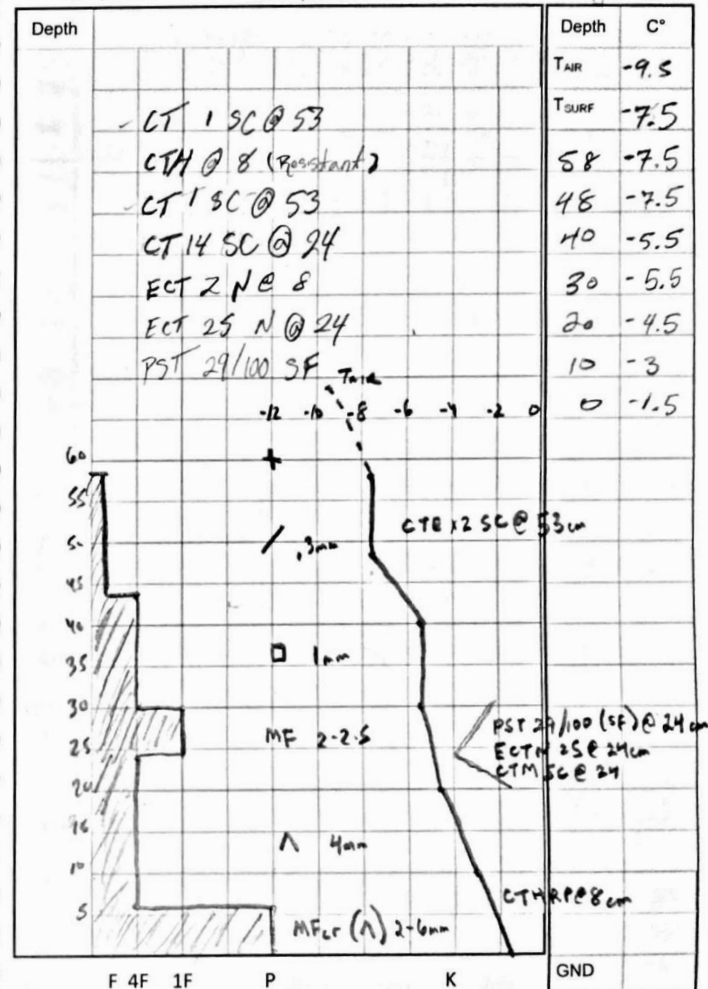
Yellow Flag Criteria
 Count of 5 or 6 Flags
 Indication of
 Instability

Layer Properties:
 Avg Grain Size > 1mm
 Hardness < 1F
 Persistent Grain Type (SH, FC, DH)

Interface Properties:
 Diff in Grain Size > 5mm
 Diff in Hardness > 1
 Interface Depth 20-85cm

Depth	Hardness	Grain Type	Grain Size	Avg Grain Size	Hardness	Grain Type	Grain Size diff	Hardness diff	Interface Depth	Sum
58	F	*								
	F	/	.3							
44	4F	□	1							3
30	IF	MF	2-2.5							4
24	4F	DH	4							5
6	P	(M) MPer	2-6							5
0										

Sky: BKN Precip: NO Wind Dir: SW Wind Spd: 5-10
 Blowing Snow: Ext ___ Dir ___ Loc ___ Pen (Fog/Ski): 291 HS: 58 T_w: -9.5
 Notes: shaded area open to wind below ridge



Pit 2 Results – Snowpilot

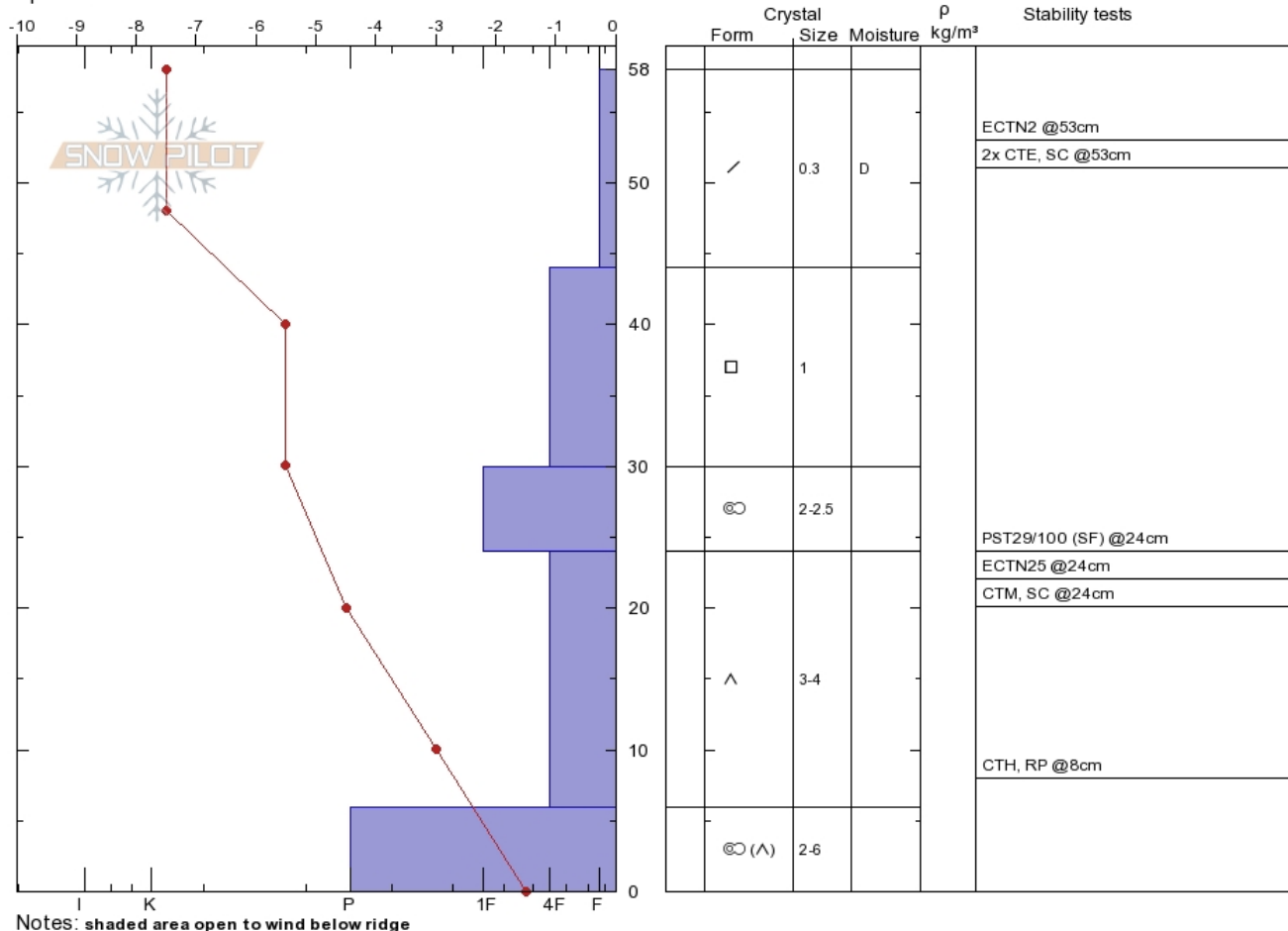
Richmond Ridge ENE
 Elk Mountains
 CO
 Elevation: 11280 ft
 Aspect: 60°
 Specifics:

Gabi Benel
 Thu Dec 14 14:20 2017
 Co-ord: 13S 343026W 4334010N
 Slope Angle: 6°
 Wind Loading: previous

Stability:
 Air Temperature: -9.5°C
 Sky Cover: BKN
 Precipitation: NO
 Wind: SW Light Breeze

HS58 PF29
 Stability Test Notes

Layer Notes



Comparison Between Pits

- Similarities:
 1. No hard windslab found in either location
 2. Melt freeze crust found in both locations at similar depths below surface
 3. Significant DH layer near ground in both locations
- Differences and discussion:
 1. New snow layer twice as deep in Pit 2 (14cm vs. 7cm). This was due to it being more open to wind deposited snow. The first pit was blocked a bit from the wind by trees. Additionally, the aspect of the second pit was more easterly than the first, resulting in more loading from westerly winds.
 2. Pit 2 had a hard (pencil) ice crust at the ground. This was not present in pit 1. This could be due to Pit 2 having held early season snow longer than Pit 1, where the early snow completely melted out - Pit 2 was more shaded from the sun than Pit 1. This early season snow that stuck around on the ground at Pit 2 got baked during warm temps in November and subsequently froze hard.
 3. Pit 2 showed positive results from snowpit tests (CTE on the new snow, ECTN25@ 24cm, PST 29/100 (SF) @ 24cm) while Pit 1 was much less reactive. I think this is due to facets under the melt freeze crust interface that were not as prevalent in Pit 1.