Accident Report-Utah Avalanche Forecast Center-Logan, 1/14/97
Folly Avalanche Accident
Bear River Range, Wasatch-Cache National Forest
Report Submitted by Mike Jenkins and Kevin Kobe, UAFC-Logan

Avalanche location: the "Folly", Dry Canyon, Logan Peak area, east of Little Big Mountain
3 backcountry skiers/ campers buried and killed
Date: 1/11/97-1/12/97
Time: Unknown, (guess: evening hours 1/11/97)
Type: Hard Slab (HS) Class 4
Crown height: 3.5 ft
Crown width: 40 ft.
Size (width): 300 ft.
Maximum debris depth: 10 ft.
Vertical drop: 680 ft.
Aspect: 235 degrees
Starting zone elevation: 8820 ft.
Starting zone slope angle: 35 degrees
Bed surface: Rain crust (formed 1/1 and 1/2/97)
Weak layer: Upper layer faceted snow above raincrust
Trigger: Natural, resulting from heavy precipitation and strong winds from NW thru E; associated with passage of an artic cold front at 1800 hrs., 1/11/97

Rescue: The skiers were reported missing when they failed to return from a camping/ski trip on schedule. A hasty rescue party of 10 skiers and 1 Rocky Mountain Rescue Dog dispatched by the Cache Co. Sheriff SAR at 2100 hours on Jan. 13, 1997. Snow machines took the skiers to within 2 miles of the slide. Information from witnesses who had seen the party earlier in the day on Jan. 11 helped the rescuers locate the debris by 2230. One of the victims transceiver was still on transmit and a beacon search quickly located the burial site 50 feet above the toe of the slide in thick timber. The victims were located under 4-6 feet of snow using probes. Shoeling was difficult and the bodies were not fully uncovered until 2400. All three victims were in their sleeping bags in their tent which was wrapped around a tree. The cause death appeared to be suffocation.

The avalanche occurred on a SW facing slope known locally as "the folly". It is on the ridgeline that separates Logan Cyn. from Dry Cyn. the drainage leading west from Logan Peak to the city center. The avalanche was a hard slope, class 4 which released naturally. The hard slab was formed by strong winds from the NW through E associated with a cold front taht arrived in our area at about 1800 hours on the evening of the accident. An additional foot of snow fell overnight adding to a foot that fell during the day. Winds preceding the accident were 25-50 mph. The new snow and wind redeposited snow fell on about 6 inches of upper level recrystalized snow which rested on a 5 inch rain crust formed January 1 and 2. The avalanche ran farther and faster than might have been expected due to the presence of the rain crust.

Victims: Max Lyon (38), Keith Maas (36), and Karl Mueggler (29)

Hasty Rescue Team: Kevin Kobe, Al Dymerski, Chris Heck, Ken Murphy, Tom Rivest, Spencer Logan, Mark Lunt, Liz Shulte, Mike Jenkins, Frederick Norsell, and Rocky Mountain Rescue Dog: Sylvi.

Staging area leader at base of Dry Canyon: Chris Gaddis

Witnesses (last seen on afternoon of 1/11/97): Spencer Logan, Al Dymerski, Wally MacFarlane, and Frederick Norrsell

Avalanche Danger from the Utah Avalanche Forecast Center-Logan Advisory, 1/11/97: "Today there will be moderate hazard of human triggered avalanches on NE, E and SE facing slopes steeper than 35 degrees with recent deposits of wind drifted snow. These areas will be most common near exposed ridgelines, but crossloading on subridges and around terrain traps is also likely. A moderate hazard means that human triggered avalanches are possible on steep terrain, but that the hazard is localized. Additional new snow or wind will cause the hazard to increase today. Snow conditions will range from scour to breakable sun crust to wind crust. The sensitive wind slabs may be hard to identify, but will be easy to recognize if you dig down your hand or shovel and observe the layering and shear strength above the prominent rain crust. The best boarding and skiing conditions will be found today on sheltered mid elevation slopes. Individuals without well developed route finding and hazard evaluation techniques should restrict their travel to slopes 30 degrees and less in steepness.

Actual Weather Conditions: The entire Wasatch Front was inundated with a surprise (not forecasted) intense weather system which generated two inch per hour snow fall rates in association with moderate to strong NW, N and then E winds on the afternoon of 1/11/97 and into 1/12/97. Logan Canyon, and both the Cottonwood Canyons in the Central Wasatch were closed because of snow associated problems. The Cottonwoods experienced several road threatening natural avalanches. Many empty autos were buried, a Sheriff's car was struck and buried, and several other people were also buried in Little Cottonwood. Natural avalanches occurred throughout the evening and into the early morning hours of 1/11/97 and 1/12/97 in the entire Wasatch Range. It is these unpredicted snow fall rates and winds which attributed to the fatal avalanche that took the lives of these experienced backcountry travelers.

An avalanche warning was issued by UAFC in SLC for the entire Wasatch Range at 1500 on the day of the incident.

Backcountry Avalanche and Mountain Weather Advisory

for the Northern Wasatch Mountains

| Home Page | About the Forecast Center | Advisory |

Be sure to read all segments of this forecast before venturing into the backcountry.

Introduction

Good morning this is Mike Jenkins with you backcountry avalanche and mountain weather advisory for the Northern Wasatch Mountains for Saturday January 11, 1997 and it is 0730. The Utah Avalanche Forecast Center in Logan is brought to you by the College of Natural Resources at USU in cooperation with the Wasatch-Cache National Forest.

Education

Rain on January 1 and 2. A foot of new on January 3 followed by cold air. Eight to ten inches of new snow in dribs and drabs between January 7 and 10 and then big winds from the W and NW. This is the scenario that has setup the avalanche hazard we will be dealing with for the next several days. The cold air caused a condition we call recrystallization which generally weakens the snow surface. It makes for good travel conditions when on the surface but when buried by additional snow becomes a significant weak layer.

Snow Pack Stability

Bed surface, weak layer, slab. Sound familiar?? They are all in place and yesterday as I toured around I found very sensitive wind slabs on NE, E and SE facing slopes. These slabs easily failed with cornice bombs and ski cuts. The new wind slabs slid on the recrystallized snow or within individual wind deposited layers. We received an additional 3" overnight with WNW winds continuing with hourly averages above 25 mph and gusts to over 40. For 8 hours yesterday morning winds averaged 36 to 42 mph with gusts over 50. My observations were validated by a report

yesterday from the Hell's Kitchen area where a party of skiers triggered a slide sympathetically above them on a SE facing slope. The slide was 3-6 inches deep and was 300' wide and ran for about 300'. No one was caught, but it points out the sensitive nature of the snowpack.

Avalanche Danger: Conditions by Elevation and Aspect

Today there will be moderate hazard of human triggered avalanches on NE, E and SE facing slopes steeper than 35 degrees with recent deposits of wind drifted snow. These areas will be most common near exposed ridgelines, but crossloading on subridges and around terrain traps is also likely. A moderate hazard means that human triggered avalanches are possible on steep terrain, but that the hazard is localized. Additional new snow or wind will cause the hazard to increase today. Snow conditions will range from scour to breakable sun crust to wind crust. The sensitive wind slabs may be hard to identify, but will be easy to recognize if you dig down with your hand or shovel and observe the layering and shear strength above the prominent rain crust. The best boarding and skiing conditions will be found today on sheltered mid elevation slopes. Individuals without well developed route finding and hazard evaluation techniques should restrict their travel to slopes 30 degrees and less in steepness.

Any Special Hazards

Snowmobilers I talked with yesterday said that the supportable rain crust made for go anywhere conditions. Be especially careful today high marking steep open E facing bowls below cornices. Only allow one machine on the slope at a time and watch your partners from a safe location.

Mountain Weather

A closed low that moved into our area yesterday has move west toward Nevada and will bring additional light snow today before winds become E and snow shuts off. Then on Sunday a SW flow may develop with reinforcement from arctic air and a moist atmosphere to create the potential for another shot of snow Sunday p.m. into Monday. Today winds will be NW at 25 with 10000' temperatures in the teens and at 8000' in the low 20s turning much colder tonight and tomorrow.

Call to Report Avalanches 797-4145

If you see anything interesting in the backcountry, especially in the way of avalanches, please call our Logan office 797-4145.

Kevin Kobe will update this advisory by 0800 Sunday morning and thanks for calling.

This Forecast is Updated Daily

Email: fajenkin@cc.usu.edu

ZCZC SLCSABSLC ALL
TTAA00 KSLC DDHHMM
UTZALL-231200-

UTAH AVALANCHE FORECAST CENTER
FOREST SERVICE - NATIONAL WEATHER SERVICE, SALT LAKE CITY, UTAH

1500 HRS, SATURDAY, JANUARY 11, 1997

*** AVALANCHE WARNING ***

AN AVALANCHE WARNING IS IN EFFECT FOR THE MOUNTAINS OF NORTHERN UTAH. HEAVY SNOWFALL LANDING ON A WEAK PREEXISTING SNOW PACK HAS CAUSED A HIGH DANGER OF HUMAN TRIGGERED AVALANCHES. SPONTANEOUS SLIDES ARE POSSIBLE. PEOPLE SHOULD AVOID STEEP TERRAIN AND AVALANCHE RUN-OUT AREAS.

FOR MORE DETAILED INFORMATION, CALL: 364-1581

UTAH AVALANCHE FORECAST CENTER (USDA FOREST SERVICE/NATIONAL WEATHER SERVICE)
LEES
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ZCZC SLCSABSLC ALL
TTAA00 KSLC DDHHMM
UTZALL-231200-

UTAH AVALANCHE FORECAST CENTER
FOREST SERVICE - NATIONAL WEATHER SERVICE, SALT LAKE CITY, UTAH

0500 HRS, SUNDAY, JANUARY 12, 1997

*** AVALANCHE WARNING ***

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FOR MORE DETAILED INFORMATION, CALL:
SALT LAKE CITY 364-1581
LOGAN 797-4146
OGDEN 626-8600
PROVO 374-9770
PARK CITY 649-2250

UTAH AVALANCHE FORECAST CENTER (USDA FOREST SERVICE/NATIONAL WEATHER SERVICE)
CILIBERTI
NNNN

1-15-1997 Mt Ogden (9,572')

Date	Hour	Wind Dir	Wind Speed	Gust	Air temp
1 9	2400	304	41	52	19
1 10	100	306	44	56	19
1 10	200	307	42	54	19
1 10	300	269	39	59	20
1 10	400	311	42	50	19
1 10	500	312	39	52	19
1 10	600	312	38	47	19
1 10	700	312	38	46	18
1 10	800	308	36	47	17
1 10	900	303	36	46	16
1 10	1000	300	42	52	18
1 10	1100	306	37	55	18
1 10	1200	316	31	43	20
1 10	1300	319	28	42	19
1 10	1400	319	27	39	20
1 10	1500	314	27	33	19
1 10	1600	315	24	31	19
1 10	1700	320	27	39	18
1 10	1800	320	23	35	17
1 10	1900	320	17	25	18
1 10	2000	322	13	18	18
1 10	2100	323	16	28	18
1 10	2200	322	16	29	18
1 10	2300	320	21	34	18
1 10	2400	319	22	32	18
1 11	100	319	26	36	18
1 11	200	319	27	33	18
1 11	300	314	26	34	18
1 11	400	313	27	41	18
1 11	500	313	31	38	17
1 11	600	313	30	36	17
1 11	700	316	26	32	17
1 11	800	317	24	34	17
1 11	900	315	24	32	17
1 11	1000	315	24	29	18
1 11	1100	315	30	47	20
1 11	1200	317	35	51	20
1 11	1300	314	40	51	20
1 11	1400	313	42	51	19
1 11	1500	313	42	53	18
1 11	1600	315	47	64	18
1 11	1700	317	48	71	17
1 11	1800	314	37	51	16
1 11	1900	317	28	42	16
1 11	2000	317	27	40	13
1 11	2100	312	17	35	8
1 11	2200	313	18	30	6
1 11	2300	172	6	19	1
1 11	2400	206	6	18	-3
1 12	100	221	6	20	2
1 12	200	155	9	29	-1
1 12	300	137	18	36	-8

1	12	400	133	22	37	-10
1	12	500	127	25	41	-13
1	12	600	125	26	42	-15
1	12	700	122	24	44	-16
1	12	800	122	26	42	-17
1	12	900	128	28	46	-15
1	12	1000	138	23	38	-11
1	12	1100	144	15	36	-9
1	12	1200	155	12	29	-6
1	12	1300	145	14	38	-3
1	12	1400	133	25	46	-4
1	12	1500	131	32	49	-8
1	12	1600	127	32	47	-9
1	12	1700	128	32	53	-10
1	12	1800	131	32	47	-9
1	12	1900	132	33	48	-6
1	12	2000	135	30	47	-4
1	12	2100	138	27	45	0
1	12	2200	135	41	59	0
1	12	2300	130	46	61	-3
1	12	2400	125	39	56	-6

Hourly Beaver Mountain Summary (8,800')

Date	Hour	H2O Inches	Storm Board	Total Snow	Temp
1 9	2400	3.518	3	91	21
1 10	100	3.52	3	91	21
1 10	200	3.521	3	91	21
1 10	300	3.536	3	91	21
1 10	400	3.543	3	91	21
1 10	500	3.548	3	91	20
1 10	600	3.55	3	91	19
1 10	700	3.55	3	91	18
1 10	800	3.55	3	91	17
1 10	900	3.562	3	91	18
1 10	1000	3.562	3	91	18
1 10	1100	3.566	0	91	19
1 10	1200	3.568	0	91	19
1 10	1300	3.567	0	91	19
1 10	1400	3.568	0	91	20
1 10	1500	3.573	0	91	20
1 10	1600	3.577	0	91	21
1 10	1700	3.58	0	91	20
1 10	1800	3.584	0	91	19
1 10	1900	3.585	0	91	19
1 10	2000	3.585	0	91	19
1 10	2100	3.594	0	91	19
1 10	2200	3.601	0	91	19
1 10	2300	3.614	0	91	19
1 10	2400	3.627	0	91	19
1 11	100	3.656	1	92	19
1 11	200	3.705	1	92	19
1 11	300	3.742	2	92	20
1 11	400	3.777	-336	92	20
1 11	500	3.804	3	93	19
1 11	600	3.823	3	93	19
1 11	700	3.831	3	93	19
1 11	800	3.847	3	93	19
1 11	900	3.856	3	93	19
1 11	1000	3.862	3	93	19
1 11	1100	3.879	4	93	20
1 11	1200	3.9	4	94	21
1 11	1300	3.921	4	94	21
1 11	1400	3.951	4	95	21
1 11	1500	4.003	5	95	21
1 11	1600	4.01	5	95	19
1 11	1700	4.028	0	96	13
1 11	1800	4.054	0	98	0
1 11	1900	4.065	1	99	-6
1 11	2000	4.075	2	99	-8
1 11	2100	4.082	2	99	-10
1 11	2200	4.086	2	99	-11
1 11	2300	4.093	2	99	-12
1 11	2400	4.098	-289	99	-14
1 12	100	4.104	8	99	-16
1 12	200	4.116	10	100	-17
1 12	300	4.12	12	100	-17

1 12	400	4.122	13	100	-17
1 12	500	4.125	13	100	-18
1 12	600	4.136	13	101	-18
1 12	700	4.157	14	101	-19
1 12	800	4.171	14	101	-19
1 12	900	4.171	14	101	-19
1 12	1000	4.172	14	101	-19
1 12	1100	4.178	14	102	-18
1 12	1200	4.18	14	102	-17
1 12	1300	4.18	14	102	-17
1 12	1400	4.181	14	102	-16
1 12	1500	4.185	13	102	-16
1 12	1600	4.186	13	101	-15
1 12	1700	4.187	13	101	-16
1 12	1800	4.189	12	102	-17
1 12	1900	4.189	13	101	-17
1 12	2000	4.189	13	101	-16
1 12	2100	4.189	13	101	-16
1 12	2200	4.191	13	101	-16
1 12	2300	4.192	-321	101	-16
1 12	2400	4.192	-322	100	-15
1 13	100	4.194	-322	100	-14
1 13	200	4.194	-322	100	-13
1 13	300	4.197	-322	100	-13
1 13	400	4.201	-323	100	-12
1 13	500	4.202	-324	100	-11
1 13	600	4.202	-324	100	-10
1 13	700	4.204	-324	100	-10
1 13	800	4.207	16	99	-9
1 13	900	4.208	16	99	-7
1 13	1000	4.21	16	99	-6
1 13	1100	4.213	16	99	-1
1 13	1200	4.216	16	99	1
1 13	1300	4.221	16	99	3
1 13	1400	4.23	17	99	4
1 13	1500	4.265	0	99	6
1 13	1600	4.255	0	99	6
1 13	1700	4.255	0	99	5
1 13	1800	4.255	0	99	4
1 13	1900	4.256	0	99	5
1 13	2000	4.256	0	99	6
1 13	2100	4.255	0	99	6
1 13	2200	4.255	0	99	7
1 13	2300	4.255	0	99	7
1 13	2400	4.255	0	99	6
1 14	100	4.255	0	99	7
1 14	200	4.255	0	99	8
1 14	300	4.255	0	98	9
1 14	400	4.255	0	99	10
1 14	500	4.255	0	99	10
1 14	600	4.255	0	98	10
1 14	700	4.255	0	98	10
1 14	800	4.254	0	98	10
1 14	900	4.254	0	98	10
1 14	1000	4.254	0	98	11
1 14	1100	4.255	0	98	15
1 14	1200	4.256	0	98	17
1 14	1300	4.255	0	98	19

Fracture line Profile "The Folly"
1/11/97
data collected 1/13/97 - Carol Ciliberti
graph: Mike Jenkins
9000'
aspect 235°