

Image of the Location



Images of Equipment



Images of Equipment Key

A – Tent and Poles Large Enough for Five People

B – Ice Core Drill

C – Heavily Insulated Coat with Hood and Matching Insulated Pants

D – Sleeping Bag

E – Large Sheet of Orange Plastic

F - Helmet

G - Crampons

H – Stove with Can of Fuel

I – Ice Ax

J - Shovel

K – Map of the Area

L – Metal Can with Sealable Lid

M – Bottle of Sunscreen

N – Packet of Iodine Tablets

O – Energy Bar

P – LED Flashlight

Q – Compass with Attached Mirror

R – Pair of Sunglasses

S – 100 Feet of Rope

T – Box of Rock Samples

Materials List

I	G	C	E		[I - E]	[G - E]	[C - E]
				100 Feet of Rope			
				8 Energy Bars			
				4 Helmets			
				4 Pairs of Sunglasses			
				4 Ice Axes			
				4 Pairs of Crampons			
				4 Heavily Insulated Coats with Hoods and Matching Insulated Pants			
				4 Sleeping Bags			
				4 Two-Liter Metal Cans with Sealable Lids			
				1 Box of Rock Samples			
				1 Stove with Can of Fuel			
				1 LED Flashlight			
				1 Compass with Attached Mirror			
				1 Map of the Area			
				1 Bottle of Sunscreen			
				1 Shovel			
				1 Packet of Iodine Tablets			
				1 Tent and Poles Large Enough for Five People			
				1 Large Sheet of Orange Plastic			
				1 Ice Core Drill			
				TOTALS			

Analysis by the Expert

Dr. Lonnie G. Thompson, researcher at the Byrd Polar Research Center and leader of 58 expeditions, provided the following analysis.

What you choose will depend on where you are. In the continental United States, we are accustomed to elaborate search and rescue operations, but it is important to consider that in the United States, there are generally aircraft available, highly trained searchers, and very few places that are truly isolated. Even in remote parts of the Western United States, it is difficult to find a place that is more than 10 miles from a road.

Even being close to a road does not guarantee being rescued unless you make yourself highly visible. Searchers in aircraft and on the ground are looking for a needle in a haystack during an aircraft accident. While we think about helicopters as being large, relative to the size of the mountain they are tiny. Once smoke has dissipated, the aircraft's location will only be obvious to someone who is nearby. An example of this is the crash site of Steve Fossett, a businessman and adventurer, who died in an accident in the Sierra Nevada Mountains in 2007. Despite a month of thorough searching, the crash site was only discovered accidentally a year later by hikers. The best way to locate a downed aircraft is often sunlight reflecting off its glass, but since it is snowing, the glass will soon be covered.

If you were on Nevado Sajama, as described, the nearest town is La Paz about 150 miles to the Northeast, and no one will come to your rescue. You will need to lead your party to safety. The good news you are not on Zanger Kangri, in Western Tibet. In that case, the nearest town is Lhasa about 1000 miles to the Southeast and, again, no one will come to your rescue.

In order of most important to least important:

1. 4 Heavily insulated coats with hoods and matching insulated pants as protection against cold and the wind is job number one.
2. 1 Tent and poles large enough for five people for the same reason as above.
3. 4 Sleeping bags for the same reason as above.
4. 1 Stove with can of fuel necessary for melting snow and ice for water to drink.
5. 8 Energy bars for short-term food.
6. 1 Shovel necessary for digging snow and ice for drinking water and securing the tent.
7. 1 LED flashlight for nighttime operations and possibly signaling.

8. 1 Compass with attached mirror for finding way and possibly signaling.
9. 1 Map of the area to plan and execute a self-rescue.
10. 4 Ice axes for getting off the mountain glacier without sliding. Since glaciers are made of ice, the surface can be like an ice rink.
11. 4 Crampons for the same reason as above.
12. 100 Feet of rope to belay (lower) each other off the mountain glacier in steeper areas.
13. 4 Two-liter metal cans with sealable lids to protect sleeping bags and other gear from getting wet during the hike to the nearest town.
14. 1 Bottle of sunscreen to protect skin from the large amount of ultraviolet light at high elevation near the Equator. Once the snowstorm stops and the sun comes out, the snow reflects all the light and skin can burn quickly.
15. 4 Pairs of sunglasses to protect eyes from ultraviolet light just like your skin.
16. 1 Packet of iodine tablets for water treatment once off the glacier.
17. 1 Large sheet of orange plastic to cover gear from rain at lower elevation and possibly signaling.
18. 4 Helmets for safety in case of sliding and avalanches.
19. 1 Ice core drill has no usefulness for the rescue.
20. 1 Box of rock samples has no usefulness for the rescue.

One item that was not on the list but that would be useful is a well-stocked first aid kit.

Examples of Materials List After Rankings and Comparison

Materials List

I	G	C	E	[I-E]	[G-E]	[C-E]
1						
8	9		12	4	3	
1	1		5	4	4	
9	14		18	9	4	
20	15		15	5	0	
18	10		10	8	0	
10	16		11	1	5	
2	3		1	1	2	
6	6		3	3	3	
13	18		13	0	5	
21	20		20	0	0	
14	13		4	10	9	
19	8		7	11	1	
4	7		8	4	1	
3	4		9	6	5	
17	12		14	3	2	
11	11		6	5	5	
12	2		16	4	14	
5	5		2	3	3	
16	17		17	1	0	
15	19		19	4	0	
TOTALS				86	66	

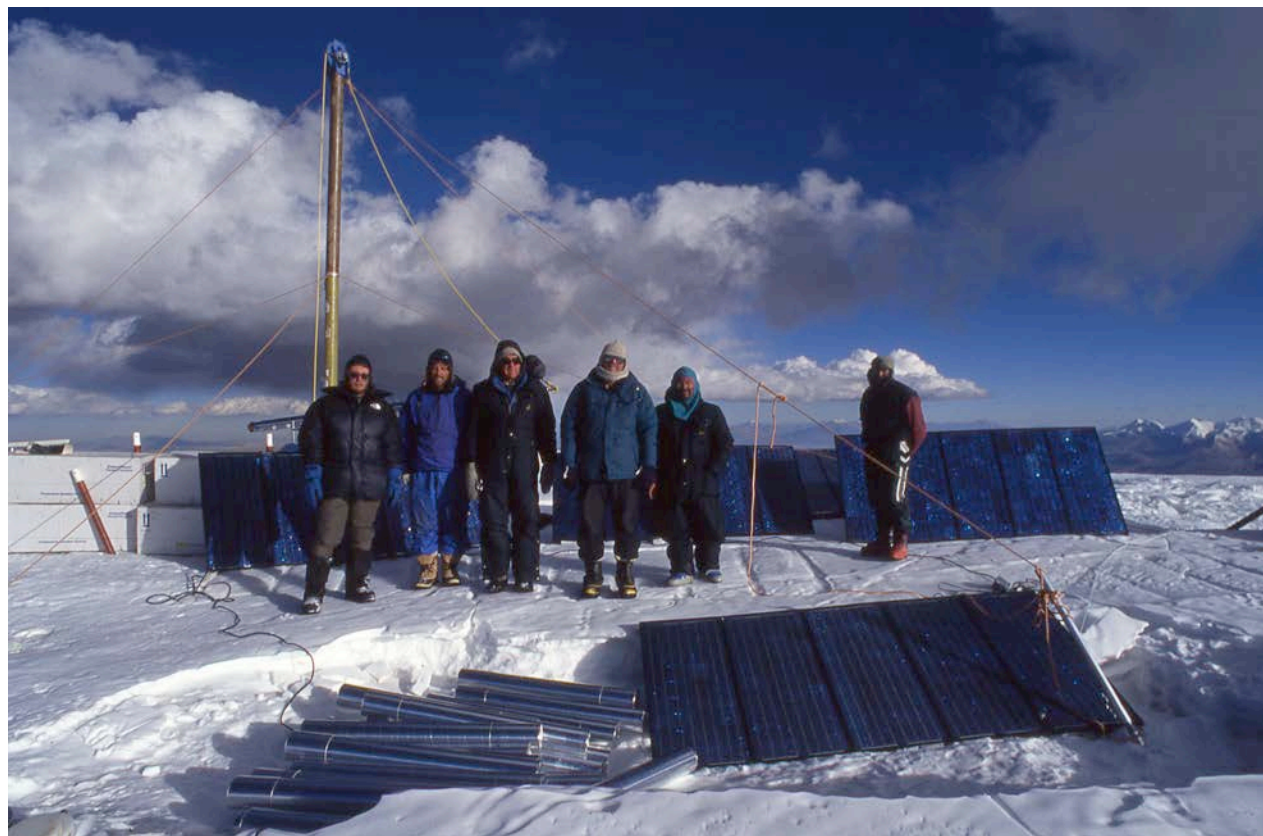
Materials List

I	G	C	E	[I-E]	[G-E]	[C-E]
1						
7	7		12	5	5	
1	2		5	4	3	
15	15		16	3	3	
20	18		15	5	3	
2	3		10	8	7	
3	4		11	8	7	
4	1		1	3	0	
6	5		3	3	2	
14	8		13	1	5	
18	20		20	2	0	
13	10		4	9	6	
16	16		7	9	9	
12	11		8	4	3	
11	12		9	2	3	
17	17		14	3	3	
10	14		6	4	8	
9	9		16	7	7	
5	6		2	3	4	
8	13		17	9	4	
14	14		14	0	0	
TOTALS				92	82	

Examples provided by students at Indianola Informal K-8 School in Columbus, Ohio.



Images from Ice Core Drilling Projects on Nevado Sajama by Researchers from Byrd Polar Research Center



Photos provided by Dr. Lonnie Thompson at The Ohio State University.