

Bug'n Out in the Bugaboos

August 8th - 28th

A Ritt Kellogg Memorial Fund Grant Proposal



Submitted by:

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I. Expedition Summary

Expedition Name: Bug'n Out in the Bugaboos

Briefly describe the objective of your expedition below:

The objective of our expedition is to climb moderate routes in a beautiful alpine setting in the best of style. Our expedition to the Bugaboos will be an invaluable learning experience as we test our mettle on the immaculate crags of the most famous alpine climbing area in North America. Besides using modern free tactics to minimize impact to the routes, utmost attention will be paid to the techniques we use off the rock. Reducing the impact of our stay on the local environment will be paramount to our expedition as all of our members share very strong beliefs about how to appropriately use the wilderness.

As such, we have contacted the Friends of Bugaboo Park, a stewardship group, to inquire about how we can give back to the Park during our stay. Our desire is to not only leave no trace while we are there, but to also help clean up the impacts of other climbers and ensure that the pristine wilderness of the Bugaboos is maintained.

Location of expedition:

The Bugaboos, Purcell Mountains, British Columbia, Canada

Firm Expedition Dates: August 8th-28th

of days in the Backcountry: 16 days

Describe the wilderness character of your expedition:

Our expedition will be entering an isolated alpine environment where self-sufficiency is key. Organization and use of backcountry skills are imperative for safety. Accurate knowledge of glacier travel, wilderness first aid, winter camping, route finding, and emergency plans are all necessary for success on this expedition. Additionally, for the duration of our expedition we will be more than an hour away from definitive medical care.

II. Participant Qualifications

Expedition Member	Year of Graduation	WFR Expiration Date
David Fay	2013	January 19, 2013
Chris Dickson	2013	August 7, 2013
Leland Krych	2013	January 19, 2013
John Collis	2013	January 16, 2013

Are all proposed expedition members experienced and/or trained to meet your expedition objectives?

Yes, all members of the expedition are proficient rock climbers, and in the areas where additional experience is necessary, (such as rock rescue and glacial travel) we are seeking creditable training prior to the expedition.

Describe your team's plan to solidify skills prior to the start of the expedition:

Our team is primarily experienced with rock climbing. As a result, we will need to solidify our knowledge of proper glacier travel techniques. To ensure that we travel safely to and from our climbs, we plan on enrolling and participating in classes that will educate us about crevasse rescue and the proper manner in which to travel through glaciated terrain. Specifically, we plan on enrolling in the Crevasse Rescue/Glacier Travel Course offered by the Colorado Mountain School. Through this course we will learn how to read glacial terrain, the basic systems for rigging rope teams, how to place snow and ice anchors, and the fundamentals of the mechanical advantage in hauling systems. The course takes place in the field, and will allow us to practice these skills in multiple mock scenarios. We will be taking the course on April 8th, and it will cost \$170 per person. Additionally, John's knowledge of avalanche prone terrain he acquired from his Avalanche 1 certification and extensive experience riding in the backcountry will help us recognize and assess snow hazards while traveling on steeper terrain.

In addition to amassing indispensable knowledge concerning glacial travel, we also feel it's important to ensure that we have the same confidence concerning safety while climbing on the wall. In order to do so, we plan on enrolling in a comprehensive Rock Rescue Course with the Colorado Mountain School. This 2-day course will teach us how to escape a belay, improvise a rappel, setup raising or lowering systems, ascend a rope, and, ultimately, how to self-evacuate in case of an emergency on the wall. The dates for this course have yet to be determined, but we plan on taking it sometime in the Spring (March or April) and it will cost \$350 per person.

In addition to official courses and creditable training, we will simultaneously be progressing our skills independently on the wall. Since this winter has not endowed much snow upon the mountains, we will not have the normal distractions of the ski slopes to keep us from climbing. In February and March we will have access to the Ritt Kellogg Memorial Gym to begin training for the sunny days on which we can actually get outside. Since each member of our team is proficient leading climbs up to and in some cases exceeding 5.9, we will focus on our confidence and resilience maintaining a cool head in alpine conditions. Leland's numerous 14er ascents around Colorado has established his strong sense of self-reliance and comfort while traveling in remote, and often demanding, wilderness environments. John has scaled cliffs such as the widely acclaimed Castleton tower and, despite being be-knighted on his descent, kept a calm head and executed the right decisions to ensure that he and his party made it safely to the ground. Chris has climbed the Pericle on Pike's Peak and numerous adventurous traditional routes on Old Stage Road. Since these areas are far less publicized when compared to Castleton, their physical remoteness and absence from local guidebooks makes climbing them a formidable

challenge that requires self-reliance and heads-up climbing. David has braved the sandstone towers of Sedona, known infamously for their extremely delicate nature, forcing him to decide carefully and confidently what portions of the rock were trustworthy for hand and gear placements. Each of our previous adventures have endowed us with indispensable knowledge and experience, enabling us to tackle the soaring towers of the Bugaboos

Along with these past experiences in the vertical world, we propose a logical progression of difficulty and committing climbs, encompassing both rock and snow. This winter, our team plans to climb the Y Couloir and the Guides Couloir on Pikes Peak to further develop our skills and to gain more experience traveling on steep snow and ice. Once spring has come to Colorado, there will be numerous rock routes available to us. We plan to climb as many multiple pitch traditional routes as we can this throughout this spring and summer, and have already planned to climb together over Spring Break and 7th Block Break. With this training regimen of simply climbing as much as weather permits, we will be more than adequately prepared for a successful expedition.

A tentative list of routes we will climb this spring/summer:

- Ellingwood Arete, Crestone Needle III 5.7
- Petit Grepon, South ridge III 5.8
- Wind Tower, Wind Ridge II 5.6
- The Bastille, Bastille Crack III 5.7
- Redgarden Wall, Yellow Spur III 5.9
- *Spring Break*
- Kor-Ingalls, Castleton Tower III 5.9
- Epinephrine, Red Rocks IV 5.9
- Solar Slab, Red Rocks III 5.6
- Dream of Wild Turkeys, Red ROCKS III 5.10
- Frogland, Red Rocks III 5.8

III. Expedition Logistics, Gear, and Food

Describe how expedition members will travel from home to the trailhead and back again:

On August 8th, D Fay and J Collis will depart from Boise, Idaho and drive due north through the pan handle of Idaho to reach the Bugaboos. On the same day, C Dickson and L Krych will begin driving from Colorado Springs northwest through Wyoming, Montana and finally into Canada. Everyone will drive back to Colorado Springs on August 28th for the onset of Block 1. We recognize that it is unfortunate that we must take two vehicles, yet it remains necessary since we are beginning our expedition in different parts of the country.

Attach a detailed, day by day itinerary, including maps, elevations, route topos, tide charts, etc., as appropriate: See Appendix A.

Do you have plans to re-ration during the expedition?

No, our plan is to spend our initial two days in the Bugaboos hiking in all of our food for the duration our expedition.

Describe how you will prevent wildlife from getting into your food.

We will be base-camping at Applebee Campground, where the Alpine Club of Canada has installed metal bear boxes that we will be using to secure all of our sustenance for our expedition. Food will be stored and organized into different stuff sacks depending on meal type. These stuff sacks will provide protection against water damage and mismanagement. General campsite organization, bomb-proofing, and tidiness in regards to food will also be utilized to minimize micro-trash and discourage unwanted "guests".

Attach a detailed food list and show how it meets the caloric needs of the expedition.
See Appendix B.

Attach a thorough equipment list, including the detailed description of the contents of the First Aid kit. See Appendix C.

Are all expedition members familiar with Leave No Trace principles?

Yes, all of our members are well versed in the seven LNT principles. Additionally, Chris is a Leave No Trace Master Educator and has taught the LNT curriculum to multiple school/recreational groups.

Describe how you will adapt LNT principles to meet the environment of your expedition.

1) Plan ahead and prepare: One great thing about writing this grant is that it has made us all especially aware of the many organizational aspects required to launch a prepared expedition. That being said, one of the premier principles of our expedition is to bring about as little impact on the Bugaboos as possible. In order to do so, our team is taking special precautions to deal with both food and human waste. We will be packing out all of our trash, so, in order to lighten the load, we will remove all of our food from any excess packaging. Additionally, we will bring trash bags and stuff sacks to ensure that our trash is manageable to pack out, and impenetrable from wildlife. To deal with our human waste, we will be employing a "Wag Bag" technique. Very simply, this process involves defecating into plastic bags, and then packing out those bags along with our other trash. By taking these preparatory precautions, we hope to minimize our impact on the natural environment as much as possible.

2) Travel and camp on durable surfaces: Applebee Campground is situated on glacial granite, which provides an incredibly durable surface for us to eat, sleep and live on during our expedition. We will be traveling to our rock climbs via the Bugaboo Glacier, a perennial glacier that, through freeze/thaw cycles, will erase any trace of our travels.

3) Dispose of waste properly: We will be packing in and packing out all of our waste. Waste will be packaged in WAG Bags, and either packed out or disposed of in the Applebee Campground human waste dumpsters. General trash will be sequestered to a stuff sack and packed out of the park. WAG Bags will be taken on route to ensure that no waste is left on the climb or in the glaciated terrain.

4) Leave what you find: Kleptomania is not our thing, and we firmly believe that any interesting object is far more beautiful left in its natural environment. By leaving the beautiful things we may encounter (cool rocks, pretty flowers) we will allow other backcountry travelers to enjoy them as well.

5) Minimize campfire impacts: Campfires are not permitted within Bugaboo Provincial Park so we will not be creating any. All cooking will be done on light-weight gas stoves.

6) Respect Wildlife: Food and waste will be stored effectively in bear boxes or thick stuff sacks to prevent attracting wildlife. Additionally, we will do a daily sweep of our camp kitchen to ensure that there are no crumbs or small pieces of food that may entice critters. Also, all wildlife we encounter will be observed from a distance.

7) Be considerate of other visitors: Perhaps the most important LNT principle of our expedition, being considerate of other visitors is very important for both our safety and theirs in the Bugaboos. Our attentiveness and awareness of other parties on the rock as well as on the glacier is essential to traveling and climbing safely. The Bugaboo-Snowpatch Couloir is well-known for its high rock-fall potential, so we will take the upmost precautions while approaching and ascending this well traveled zone. If a group is above us on the Couloir, we will wait at the bottom outside of the rockfall zone until we deem it safe to begin ascending. If we find ourselves above another group in the Couloir, we will take the upmost precautions not to dislodge rocks. If we do dislodge rocks, we will loudly yell "Rock!" to alert those below us. Appropriate organization of camp will also be important to ensure that we are considerate of others. Applebee Campground is a major destination for rock climbers from all over the world, so we want to represent the United States well by having a tidy, well-kept campsite. We will also be considerate of the speed and proficiency of other climbers on route. We are going to the Bugaboos for a true wilderness experience, and will make it our duty to ensure that we do not affect any one else's experience negatively by reminding them of our presence.

Are there cultural considerations for the expedition area?

No, we will not be interacting with any local cultures other than the climbing culture, which all of us are well-versed in.

IV. Risk Management Plan

List the anticipated hazards of your expedition and explain how they will be evaluated, avoided and managed:

Glacier Travel

- **Crevasses:** To ensure safe travel, we will rope-up as a four man team whenever crossing glaciated terrain. We will entirely avoid crevasses if possible, however, when necessary, we will evaluate any crevasse we encounter to determine the safest path across. In the event that one of us falls into a crevasse, the other team members will instantly self-arrest and begin crevasse rescue. While one or two team members continue to hold the weight of the fallen climber, the other team member(s) will create a T-slot anchor in solid snow/ice a safe distance away from the edge of the crevasse. Once the anchor is constructed, we will transfer the weight of the fallen climber onto the anchor using Prussiks, and then setup a three-way pulley system to haul the fallen climber out of the crevasse.
- **Steep Snow/Ice:** During the summer months, avalanches are unlikely in the Bugaboo Range. Regardless, we will evaluate all moderate to steep slopes for wet-slide avalanche potential and entirely avoid slopes that exhibit dangerous characteristics. If we must cross a slope that may have avalanche potential, we will use our mountaineering axes to dig a snowpit and make an assessment of the snowpack's stability. Additionally, we will employ proper crampon and ice axe techniques at all times when traveling on the glacier or while navigating steep or icy slopes.
- **Rock/Ice Fall:** We will determine the areas that have a history of, or potential for, rock or ice fall and avoid them. We will be particularly cautious while traveling up and down the Bugaboo-Snowpatch Couloir. This couloir is infamous for rockfall, so we will not attempt to ascend it if there is a group above us that may dislodge rocks or ice. If the hazards presented by the B-S Col. are too risky or dangerous, we will take an alternative southern route around Snowpatch Spire to avoid the couloir entirely. Additionally, we will only travel in areas that we have evaluated, and have determined to be safe from objective hazards, like rock fall.

Climbing

- **Rock Fall:** We will avoid areas with potential for rock fall and routes that have poor rock quality. Some rock fall is inevitable in climbing, but to mitigate the danger of rock fall we will wear helmets at all times for protection and avoid sections of cliff that have potential for rock fall. Additionally, when lead climbing, we will be cognizant of loose or exfoliating rock. If poor rock quality is encountered, we will take extreme caution not to dislodge any rock. In the event that one of us knocks loose some rock, we will shout-out "Rock!" to alert each other as well as any other people potentially climbing in the area.

- **Climber Fall/Injury:** We will only be climbing routes that are well within our abilities. We are trying to gain experience on longer routes, not more difficult routes. Therefore, we will monitor levels of fatigue amongst each other, and assess the team's strength periodically throughout each climb. If it does not appear that the team has the strength or energy to complete a climb, we will retreat via rappels to the ground. Additionally, we will climb with helmets on at all times, and we will place protection often to maintain a safe fall factor. In the event of an injury, we will assess the seriousness of the situation and make an evacuation plan accordingly. If the decision is made to descend, we will do so as quickly and safely as possible. In any emergency situation, we will use our numbers to our advantage and delegate tasks amongst the four of us to increase the speed of a rescue.
- **Anchor/Gear Failure:** Prior to the trip, we will thoroughly inspect all of our gear to determine that is safe and in good condition for use while climbing. On route, we will follow the "Buddy Check" system of double-checking each other's harnesses, knots, and anchors to ensure that everyone is climbing safely. Also, we will always make sure that the leader has the appropriate gear to protect the next pitch. We will only climb once anchors have been checked to be safe and 'ERNESTA'. (Equalized, Redundant, Non-Extending, Solid, Timely, Angle <90*)

Weather

- The weather in any alpine environment can be highly inhospitable, and in the Bugaboos, the weather is known to change rapidly. We have chosen to climb in August, the most favorable climbing season for the area, so that we can have more consistent, good weather. Inevitably, we will most likely encounter some storms. During the summer, storms are likely to generate in the afternoon. To avoid these afternoon storms, we will employ 'alpine starts' and begin trekking to the climbs early in the morning. We will not climb in bad weather, and will only begin climbing if we believe there is a suitable weather window.
- If we encounter bad weather while climbing, we will assess the severity of the situation to determine if it is safe to proceed. If thunderstorms develop, we will immediately descend from cliffs or ridgelines. In the event that a storm is less than 3 miles away (time between flash and bang = 15 seconds) we will attain a sheltered locality and assume the Lightning Position to minimize the risk of being struck.
- On climbs, we will always carry rain shells and insulated jackets to protect us from becoming wet or cold.

Camping

- **Water Contamination:** We will treat all of our water prior to consumption. Our methods for purification will be: bring water to a rolling boil for at least 30 seconds, OR treat water with Iodine, OR pass water through a Katadyn Pump Filter. We will have all of these methods with us in camp to ensure proper hydration. On the wall we will rely on Aquamira and a small hose which will act as a syphon, enabling us to gather water from otherwise unreachable locations.

- **Food Contamination:** We will strategically pack fuel in the bottom of our packs to reduce the potential for white gas contamination. Additionally, we will not bring any perishable foods that has the potential to spoil before consumption. To keep wildlife out of our food and our campsite, we will always store our food in areas inaccessible to bears such as bear hangs or out car. At Applebee campground we will be able to store out food on metal bear hangs provided by the park.

Describe your plans if you need to self-evacuate in the event of an emergency:

In the event of an emergency we will utilize the strength of our team's numbers. Since there are four of us, we will be able to expedite any self-evacuation situation by delegating tasks and sharing the load of the rescue. Our plan for self-evacuation is to immediately hike to the Kain Hut, a lodge owned and operated by the Alpine Club of Canada. This hut is only a half-mile from our campsite and 2-3 miles at the most from any of the climbs we plan to attempt. At this hut there will be additional resources to assist in our emergency situation. If we are unable to reach the hut we will immediately activate our SPOT Device (Satellite Personal Tracking Device) which will alert rescue services as to our location and our need for assistance.

Depending on the severity of the injury and situation, our team's response may be as minimal as descending to camp for a few days rest or as extreme as stabilizing the victim in the field and employing our SPOT device to initiate a Search-and-Rescue operation to bring our teammate to definitive medical care. If an injury prevents any one from being able to continue in the wilderness, but is in no way life-threatening, we will leave Applebee Campground, hike to the trail head, and utilize our vehicle to proceed to the nearest hospital in Golden, BC.

If an emergency occurs while on route, we will assess the situation, and if possible, immediately rappel to the base of the climb and begin a self-evacuation to the Kain Hut. Our campsite and the Kain Hut are only 3 miles from the Park's access road, so an evacuation should take less than 24 hours to deliver an injured individual to the hospital. Otherwise, we can employ a helicopter for rescue, which are on-call in our area.

Describe any measures taken for expedition members with medical histories that warrant special preparedness:

No members of our team have medical histories that warrant special preparedness.

List emergency resources available in the vicinity of your expedition (phone #'s for ranger station, hospital, etc.):

- Closest Town: Brisco, BC (28 miles away)
- Closest Facility to Glacier: The Kain Hut (0.5 mi away)
Alpine Club of Canada, (403) 678-3200
- Closest Hospital: Golden & District General Hospital (75 miles away)
835 9th Street North, Golden, BC V0A 1H2, Canada

(250) 344-5271
--Helicopter Rescue: Golden and District Search and Rescue (75 miles away)
Box 1332, Golden, BC V0A 1H0
(250) 344-5102 or (250) 344-5902

List emergency communication devices you will be carrying. If none, explain why:

We will carry a SPOT (satellite personal tracking device). This device is ideal for contacting emergency responders from remote backcountry locations because it is lightweight and reliable. When activated a SPOT device transmits a 911 signal to the closest rescue providers via GPS.

V. Budget

Attach a detailed expedition budget and write totals in US dollars.

See Appendix D.

Appendix A

Itinerary

We will take two rest days after each class IV climb and one after each class III route. This itinerary has been constructed assuming ideal weather conditions. In actuality extended periods of rest may ensue in response to less than ideal conditions. Since many parties are known to get benighted on the Northeast Ridge (IV 5.7) of Bugaboo Spire, we will climb the Kain Route (III 5.6) first to become familiar with the Northeast Ridge's descent. By beginning with the Kain Route—a groundbreaking ascent in 1916—we will familiarize ourselves with the particular style of the Bugaboo's multi-pitch granitic spires. Once we have become accustomed to the long alpine days and route finding necessary to navigate the Bugaboos, we will attempt our more committing objectives. [Namely the McTech Arete (III 5.10a) on Crescent Spire and Wildflowers (III 5.9) on Snowpatch Spire.]

Day 1: Collect the necessary food, fuel and gear, pack the car and begin our drive to the Bugaboos. Camp along the way.

Day 2: Drive the remainder of the way in, camping just outside of the Bugaboos. Food and fuel will have been bought in larger cities in the US where they are cheaper.

Day 3: Leave in the morning and hike into Applebee campground (3.5 miles). Two trips may be necessary to pack in all 16 days of food. Plenty of time will be provided to establish tents, bear hangs, etc.

Day 4: Scout the area and become accustomed to the surrounding glaciers. Rest up for the Kain route the following day.

Day 5: Alpine Start! Climb the Kain Route (III 5.6) and conquer the famous gendarme.

Day 6: Rest day.

Day 7: Climb the Northeast Ridge (IV 5.7). Arrive at the base of this climb by sunrise to be the first on this popular route.

Day 8: Rest day.

Day 9: Rest day.

Day 10: Climb the West Ridge (IV 5.4). Use the facilities provided at the saddle of this climb so as not to desiccate upon this stunning route.

Day 11: Rest day

Day 12: Rest day

Day 13: Wiessner's Route (IV 5.7) on Snowpatch Spire. We will rappel using the Kraus-McCarthy route.

Day 14: Rest day

Day 15: Rest day

Day 16: McTech Arete (III 5.10a). A short hike up from Applebee Campground.

Day 17: Rest day

Day 18: Wildflowers (III 5.9) on Snowpatch Spire. If time permits, we would love to get on this Bugaboo classic.

Day 19: Pack up camp and hike out. Begin the drive back to Colorado Springs, camping along the way.

Day 20: Drive the remainder of the way to Colorado Springs.

Driving Route

Route 1: Boise, ID to the Bugaboos to Colorado Springs

Total Driving Time: 37 hours 18 minutes

Millage to the Bugaboos: 747 miles

Millage to return to Colorado Springs: 1,314 miles

Millage for the Landrover Discovery: 2,061 miles

Route 2: Colorado Springs to the Bugaboos

Driving time one-way: 22 hours 54 minutes

Total Driving time: 45 hours 48 minutes

Millage one-way: 1,314 miles

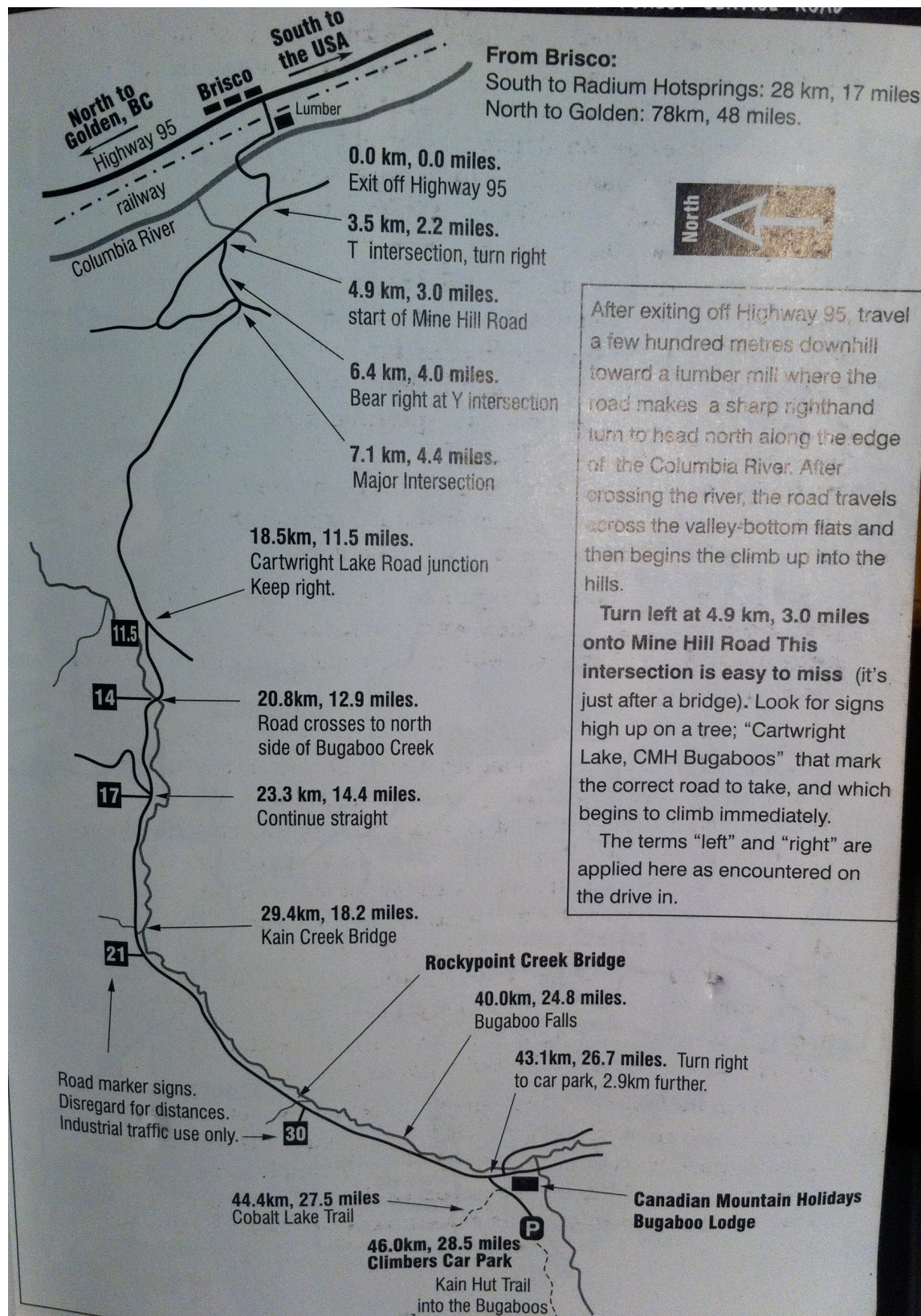
Millage for the Nissan X-Terra: 2,628 miles

Total Millage: 4,689 miles

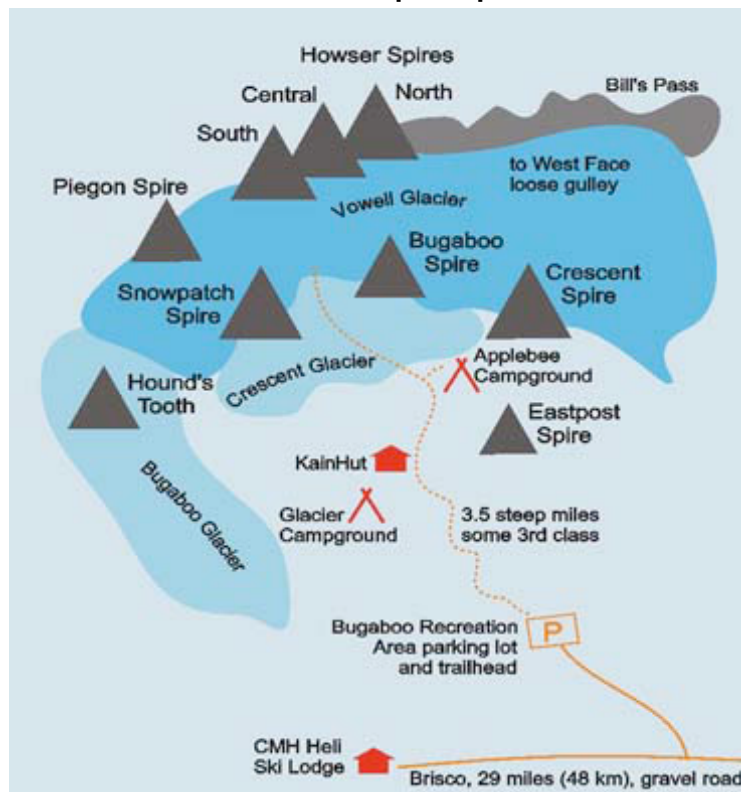
Detailed Driving Directions to Final Destination

For the final stretch of the drive, we will drive north on Hwy 95 for 17 miles from Radium Hot Springs to a small town called Brisco, BC. To navigate from the paved road to the parking area, we shall consult the detailed map below, which gives precise mile markers for each turn. Once on the dirt road leading to the trailhead, we will then head west across the valley (the whole valley floor is a magnificent swamp here so there's only one road to choose from) then north a bit, and into the Purcell Mountains. The road is a logging mainline, signed for Bugaboo Glacier Provincial Park where needed. After 28 miles on this road, we will arrive at the parking lot, in sight of the Bugaboo Glacier, being careful to ignore the spur left to the lodge about 1 mile before the end. Once we arrive at the trailhead (5,000 ft in elevation), we will wrap our car in chicken wire at ground level to prevent porcupines from eating through rubber on our car. This will save us from

damaged tires, and essential hoses connecting fluids within the engine. Chicken wire is nearly always left by previous travelers, but we will bring some with us just in case.



Overview Map of Spires



The hike in is a steep, yet well traveled, trail up to Applebee Campground. We shall be prepared to take two trips to carry in all of our gear and food.

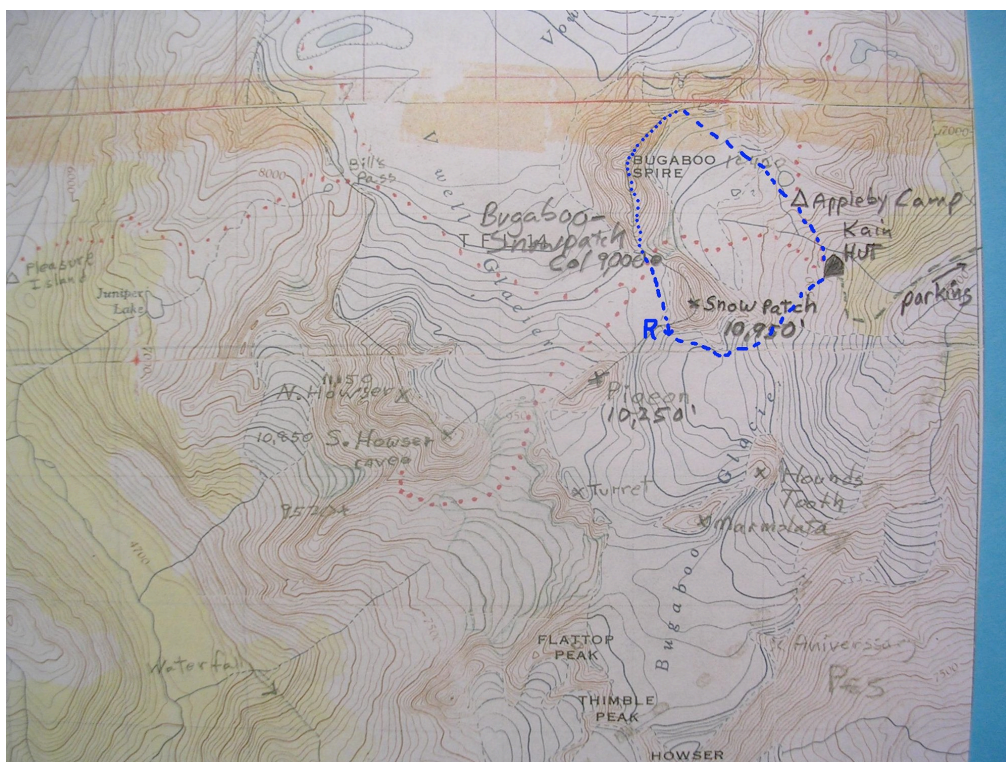


We shall be respectful of the other parties at Applebee Campground.

Descriptions of Approaches, Climbs, and Descents

Kain Route (III 5.6)

Approach from our campground (pictured above) via the Crescent Glacier and the Bugaboo-Snowpatch Col. (red dots to the blue dots to the summit). We will carefully access the Bugaboo-Snowpatch Col before embarking upon this route. If it is unduly hazardous or avalanche prone due to extreme melting later in the season, we shall avoid it entirely and gain the saddle by circumnavigating the south side of Snowpatch Spire (blue dashes in the topographic photo below). If we decide to take the southern route here, we will always circumnavigate Snowpatch Spire instead of taking the Bugaboo-Snowpatch Col. We shall gain the ridge crest and then follow third class terrain past several steps to the right of the ridgeline. Continuing to trend right, we will gain the base of a steeper, shallow chimney (5.4, 50m), which will take us back to the ridge crest proper. Follow the flat section of the ridge to ledges to the right and left which help bypass a step in the ridge. From a small notch where the ridge bars progress, follow a ramp, ledges and short corners on the right side just below the ridge-crest to gain a small pedestal belay on the wall directly below the gendarme proper. Climb the short steep wall past horizontal cracks (fixed pin), to the crest of the ridge. Friction slightly down the other side to the top of a shallow corner and make a long reach out left to gain a crack (fixed pin) leading to a belay behind the gendarme (5.6 25m). Follow the ledge behind the gendarme to a flaky corner system, which leads up to the south summit. Descend by retracing the route, rapelling where necessary.



Discussion of this photo is found in the description for the 'Kain Route'.



The Kain Gendarme on the Northeast Ridge.

Northeast Ridge (IV 5.7)

From Applebee hike north out of camp onto the moraine and follow the same route as if going to Crescent Spire. Once the Bugaboo-Crescent Col has been achieved, follow fourth-class terrain to a terrace where three pitches lead up the left side to gain the ridge-crest proper. The rest of the route follows cracks and chimneys on the north side of the ridge to gain the north summit (see photos below to find the pitches illustrated specifically by grade 5.7 max). Once the North Summit has been gained, begin traversing to the South Summit for the descent. From the shoulder just below the summit rappel down clean dihedral to easier ground. Traverse right (facing down) to the ridge, where more short rappels and exposed moves lead to the Kain Gendarme. Rappel left around the Gendarme, then follow cairns down ridge (keep right). From the saddle with Snowpatch Spire, follow the tracks down snow. Retracing the descent well scouted on the Kain Route.



Beta photo of the Northeast Ridge of Bugaboo Spire.

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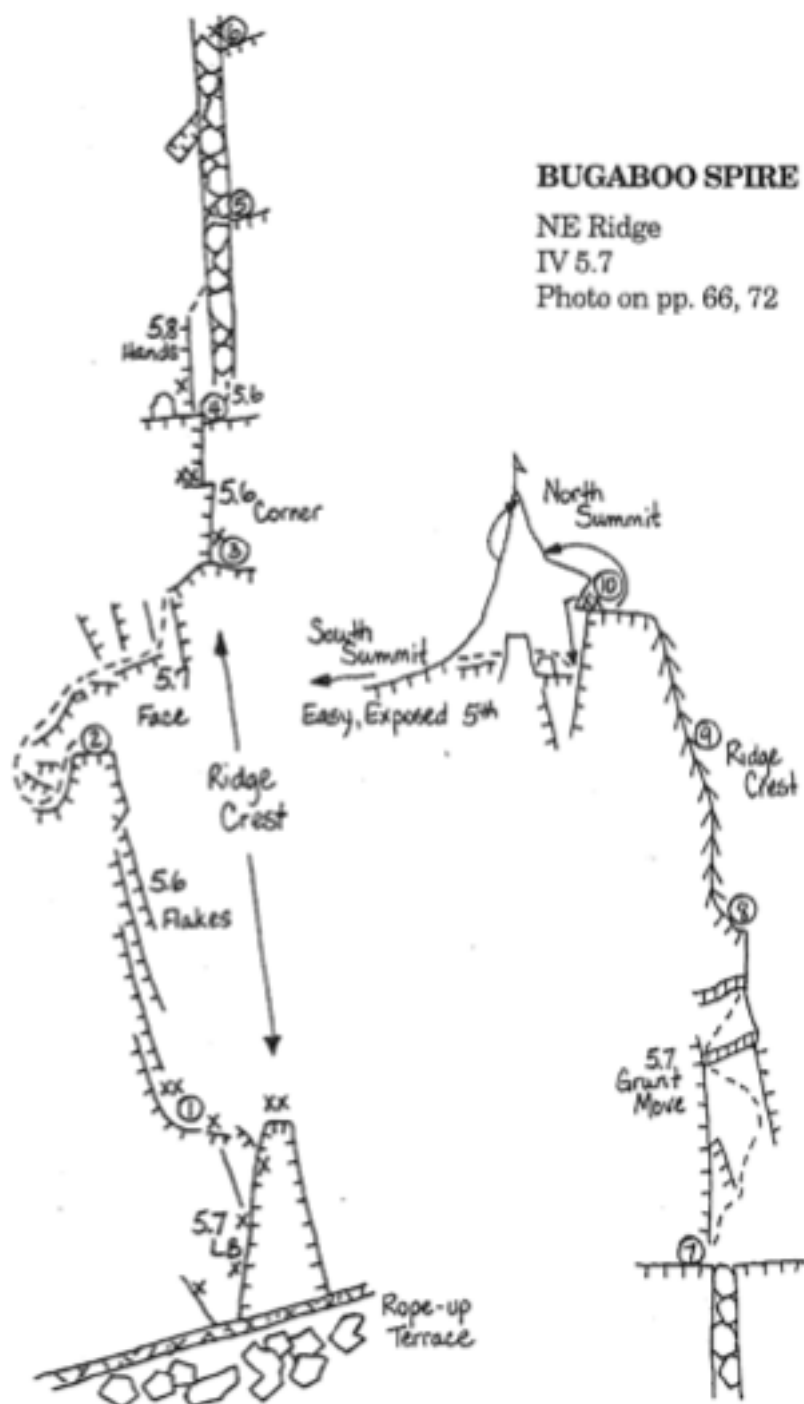
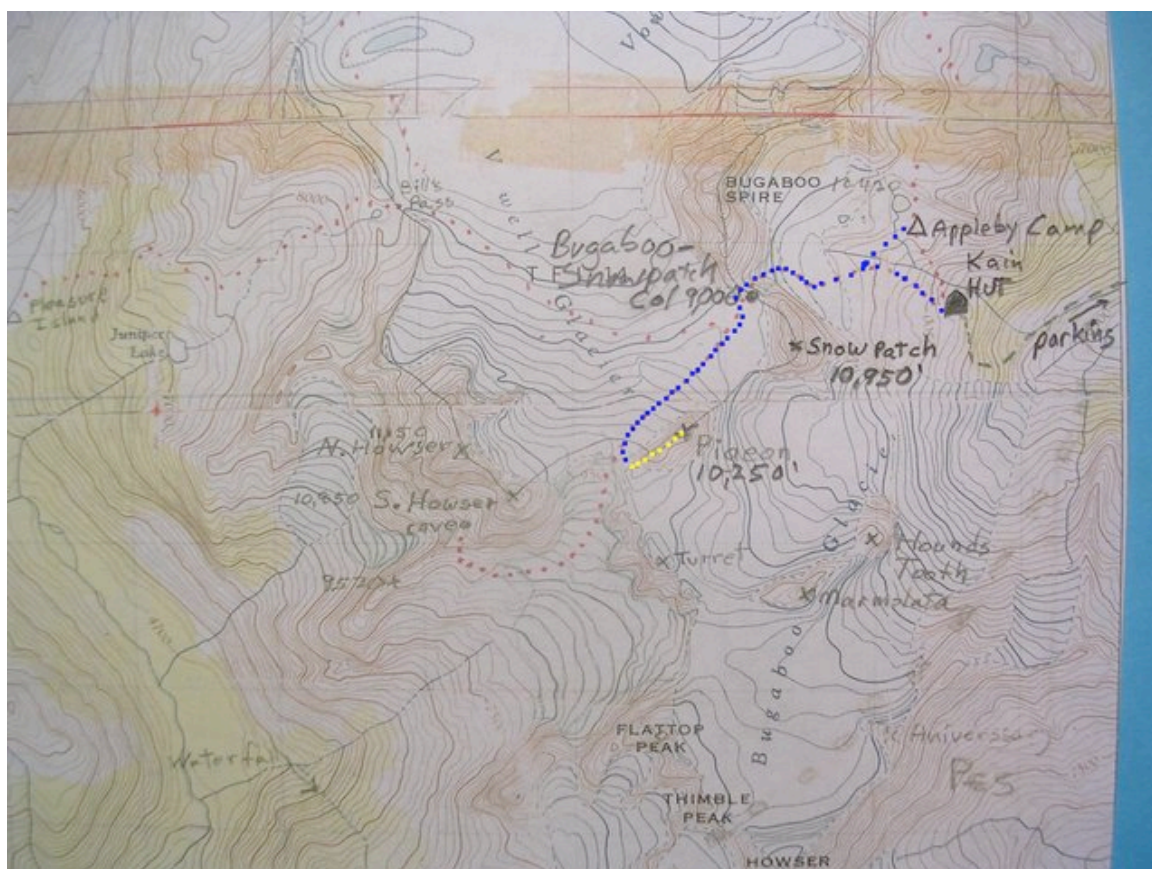


Fig. 11. Bugaboo Spire, NE Ridge

Detailed topo of the Northeast Ridge

West Ridge (IV 5.4)

Hike up the Bugaboo-Snowpatch Col and follow the Upper Vowell Glacier west towards Pigeon Spire. Walk past the Pigeon Spire to the north to the highest point and scramble south to the crest of the West Ridge. There is actually an outhouse near the ridge with signs leading to it, so if we see those signs then we're in the right place. (Approach represented by blue dots in the topographic map below.) The route consists mostly of fourth class climbing. From the low point on the ridge scramble east to the first summit staying near the ridge-crest, sometimes to the south, sometimes to the north but never more than a few yards away. At the top of the first summit follow slabs down to a saddle and then continue up the ridge toward the second summit. Again stay near the crest until we get to a steep section that is avoided by following a ledge to a corner on the north side of the ridge. The corner will lead you up to the second summit from which some easy fifth-class down climbing to the north will end at a col between the second and main summits. From the col, move left beneath the summit following icy ramps till you get to the bottom of a slab angling up to the right. Climb up the slab continuing up a chimney to a loose gully on the left. Climb up the gully until you get to a 10" wide left-angling crack. Step right to a large flake and chimney and then back left to a 5.4 handrail. Follow the handrail for about 12 feet and make a reachy move up and right to easier ground that leads to the summit. (The route is outline topographically on the map below in yellow.) Follow the same route back to the base.



Approach Route to Pigeon Spire

Wiessner's Route [aka SE Corner] (IV 5.7)

Hike the trail from the hut up to the Pigeon Fork of the Bugaboo Glacier. Once past the steep rock of the southeast spur of Snowpatch, snow leads up to the col in the southeast spur where the roped climbing starts. (Blue dots pictured below) The climb can be separated into three sections; the initial five pitches up to the Wiessner Overhang Traverse, the six pitches up the left side of the snowpatch that is the mountain's namesake, and the final three crux pitches up the summit headwall.

From the notch, a couple of easy pitches lead to a large corner, the first 5.4 bit. The corner faces left, away from the hut and the low angle left wall is climbed. Next, a 5.4 spur is followed to a stance below the Wiessner Overhang, which is not climbed directly. Move right to the 5.5 hand traverse used by Wiessner to dodge the roof and gain the easy slabs next to the snowpatch. Several easy pitches parallel the left side of the snowpatch, then move climbers right (north) a couple hundred feet, eventually passing a large detached flake. The 5.9 Direct heads left from this flake. The first pitch up the headwall is a 5.4 chimney followed by a hand traverse left to a belay below the Vein Pitch. For the Vein Pitch there is a choice: either a 5.6 offwidth or the fine climbing on the vein, rated up to 5.8. There is consensus that the route is not done unless you do the Vein. After the crux, hopefully still protected with good fixed pins (in once-virgin granite), move left to rejoin with the offwidth line and stretch the pitch to a belay on flakes. The third and final summit headwall pitch starts by climbing up to a leftwards traverse. The traverse leads to a zig-zag crack, 5.6. The pitch ends with a 5.4 ramp crawl right to the belay spot. One final easy lead to the top. We will descend the Kraus-McCarthy route, there are bolts every 30 meters. But we will take advantage of our four man team and employ four double rope rappels to reach the snowfield. (Yellow dots pictured below) Then we will walk north to Bugaboo-Snowpatch Col and descend via more rappels. We will stay to climbers left to avoid rock fall hazards reported on the other side of the Col. and continue back to the Applebee Campground (Red dots pictured below).



Map of approach and climb of Snowpatch Spire.

McTech Arete (III 5.10a)

From the Applebee campground walk toward the east side of camp and look for a trail that climbs north onto the moraine. Follow the trail around the west side of the first lake you come to and around the east side of the second lake. Then straight north up the Crescent Glacier.

P1: Climb up flakes to a small corner roof, step left to another crack and continue up a short chimney to a belay on top of a pillar. (5.9) (Or just jam straight up the roof with perfect hands at 5.10)

P2: This pitch is classic. Follow a finger and hand crack out left from above the belay to an alcove. Climb up through the alcove jamming the outstanding crack up a steep face to a ledge and belay at a chain anchor. (5.10-)

P3: Climb some corners and easy ground up and to the right to another anchor. (5.4)

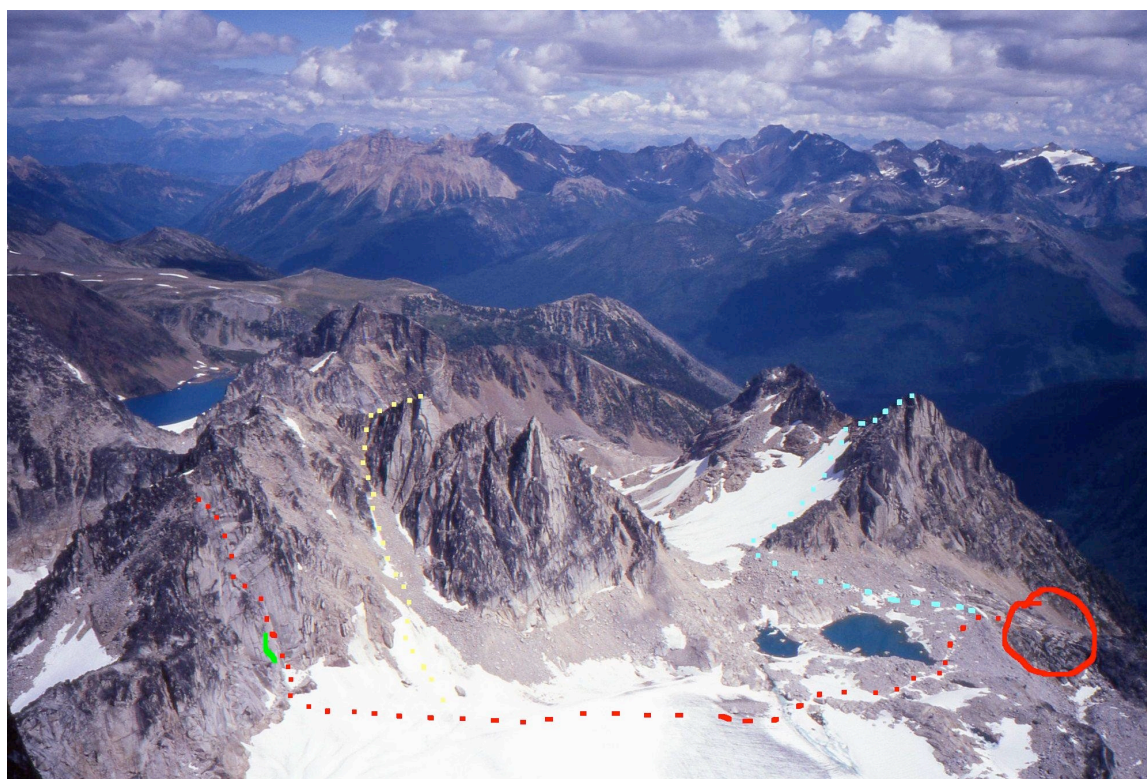
P4: Step right from the anchor behind a flake and climb up a nice corner to a roof. Traverse out right under the roof to another corner and pull a second roof to a belay ledge on the left with chains. (5.9)

P5: Climb some cracks on the face to the right and gain a corner which leads to another ledge with chains. (5.8)

P6: Climb up a steep corner and then scramble left around the arete. Continue up a face to the ridge crest and belay. (5.7)

Descent: The first rappel anchors are out on the face of the left dihedral. Rap back down to the top of the 5th pitch. Three 60-meter rappels will get us back down. The next chains are also hard to find. Rap down as gravity decides and look to the right of some mini chimneys. The last rap takes you to several meters above the ground in a corner, but it is easy down climbing from there. Move back right past your start and return the same. There is also a walk off descent in a gully between Crescent Spire and Crescent Towers.

Red dots below represent the approach to and climb of the McTech Arete.



Wildflowers (IV 5.9)**Wildflowers (III, 5.9)**

Begin hiking up the Bugaboo-Snowpatch Col. The start of the route lies almost directly below the south summit of the Snowpatch Spire and follows a large left facing dihedral. Begin on a ledge about 200 feet below the dihedral.

P1/2: Climb up some lichen covered blocks following cracks and flakes to a right facing dihedral, belay here or continue up to the bottom of the large left facing dihedral above and belay. (5.7/8)

P3: Follow the large dihedral with some wider jamming to a belay stance. (5.9)

P4: Continue up the dihedral to another belay. (5.9)

P5: Step right and continue up the main dihedral with more stemming and jamming. (5.9)

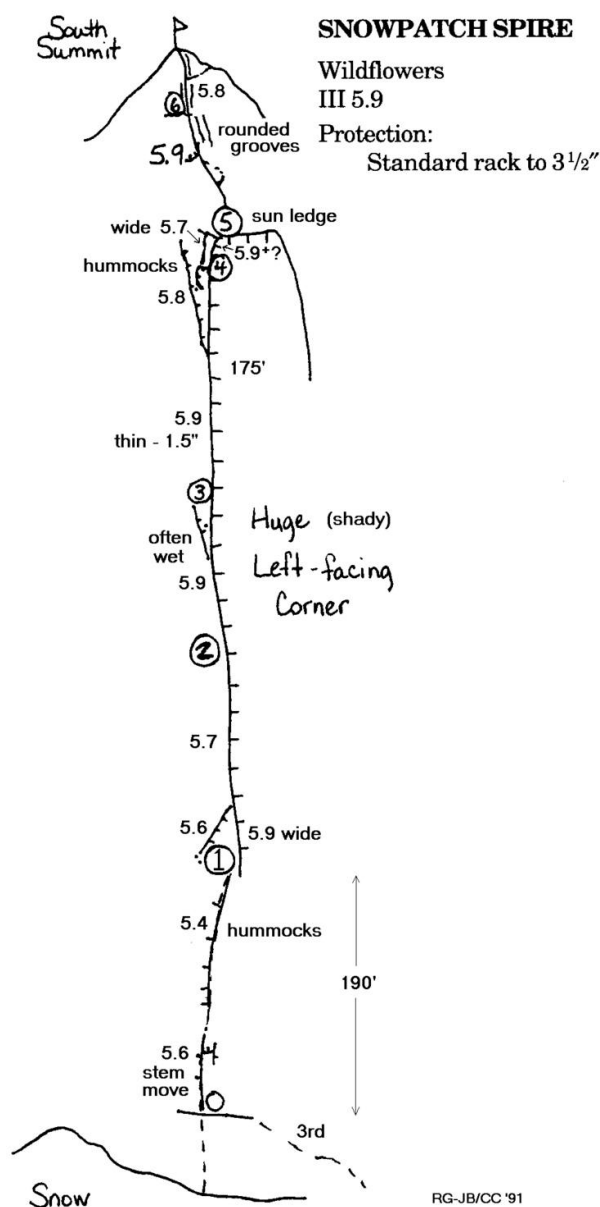
P6: Follow thinner cracks and flakes to a large ledge on the arete and belay. (5.9)

P7: Climb a shorter pitch up a crack to the right of the arete. (5.7)

P8: Follow awkward flaring cracks and grooves to the summit ridge and belay. (5.9)

To descend scramble south from the summit and look for a bolt anchor on the west face. These rappels only require one 60m rope with bolt anchors all the way down.

[Detailed topo at right.]



APPENDIX B

Food and Fuel

Food: We are employing a bulk food rationing system similar that of NOLS. Instead of designing a meal by meal menu, we will essentially carry in a small 'kitchen' of sorts so that we may cook creatively on lay over days, while still having access to quick calories for long days on the wall. This system has worked well for us on personal trips and extended expeditions through NOLS. With a good balance of proteins, carbohydrates, and fats we will be prepared for alpine challenges ahead of us. We will purchase as much food as we can in bulk, to minimize expenses and packaging.

Fuel and stoves: MSR Whisperlite stoves have been tried and tested over the past 30 years without any change to their design. Because of their reliability, we will carry two MSR Whisperlite International stoves and one service kit complete with tools and parts. We are rationing .5 liters of fuel per day fuel, for a total of 10L of fuel.

White Gas Calculation:

150g fuel= 25.6 min burn time

1 day= 60 min (20 min breakfast + 40 min dinner)

20 days x 60 min / (25.6/150g) = 7031g fuel

Density of white gas= 0.66 g/mL

7031g / 0.66 g/mL= 10.7 L

10.7 L = 11.3 quarts

Take 12 quarts to have a small reserve.

Food Budget	Total Cost:	\$960.00			Total Weight (lb):		101 lbs
Breakfast	Unit price	Amount	Qty	Weight (lb)	Cost	Servings	Cal/Serv
Oatmeal	\$4.00	33 oz	1	2.1	\$4.00	24	150
granola	\$5.00	28 oz	1	2	\$5.00	24	74
pancake mix	\$3.00	12 oz	1	0.75	\$3.00	8	230
dehydrated hash browns	\$3.00	500 g	1	1.1	\$3.00	10	175
summer	\$4.00	8 oz	2	1	\$8.00	10	150

sausage							
cheddar cheese	\$4.50	10 oz	2	0.6	\$9.00	10	100
green tea	\$3.50	16 packets	2	0.1	\$7.00		0
brown sugar	\$1.00	8 oz	1	0.5	\$1.00	10	102
honey	\$3.00	1.2 cups	1	1	\$3.00	10	128
ground almonds	\$6.00	8 oz	1	0.5	\$6.00	24	58
			Total:	9.65lbs			
Lunch	Unit price	Amount	Qty	Weight (lb)	Cost	Servings	Cal/Serv
peanut butter	\$3.50	16 oz jar	4	4	\$14.00	46	210
nutella	\$4.30	16 oz jar	1	1	\$4.30	12	160
jam	\$4.00	8 oz jar	1	0.5	\$4.00	12	50
tortillas	\$3.50	10	2	1.3	\$7.00	10	120
pitats	\$3.50	10	2	1.3	\$7.00	8	100
summer sausage	\$4.00	8 oz	4	2.3	\$16.00	24	150
gorp		12 cups				24	276
raisins	\$3.00	16 oz	1	1	\$3.00		61
almonds	\$6.00	8 oz	1	0.5	\$6.00		68
chocolate chips	\$2.00	16 oz	1	0.5	\$2.00		100
dried cranberries	\$3.00	8 oz	1	1	\$3.00		47

banana chips		16 oz	1	1		16	147
cliff bars	\$12.00	12	1	2	\$12.00	15	260
beef jerky	\$10.00	8 oz	3	3	\$30.00	24	230
cheese	\$4.00	1 lb	1	3	\$4.00	24	200
			Total:	22.4lbs			
Dinner	Unit price	Amount	Qty	Weight (lb)	Cost	Servings	Cal/Serv
brown rice	\$2.00	1 lb	1.6	1.6	\$3.20	8	340
dehydrated beans	\$4.00	1 lb	1.6	1.6	\$6.40	8	330
couscous	\$3.00	1 lb	1.4	1.4	\$4.20	8	240
quinoa	\$3.50	1 lb	3	3.1	\$10.50	16	340
barley	\$3.50	1 lb	0.9	0.9	\$3.15	6	325
dehydrated yams	\$1.00	800 g	1	1.75	\$1.00	8	120
dehydrated corn	\$1.00	800 g	1	1.6	\$1.00	8	90
dehydrated peas	\$1.00	800 g	1	1.6	\$1.00	8	70
dehydrated onions	\$1.00	800 g	1	1.6	\$1.00	6	60
beef jerky		24 oz		1.5		24	115
olive oil	\$12.00	12 oz	1	1.2	\$12.00	40	125
dried tortellini	\$3.00	480 g	1	1	\$3.00	8	230
alfredo sauce packets	\$0.70	1 packet	4	0.05	\$2.80		

cheddar cheese	\$4.00	16 oz	2	2.1	\$8.00	34	228
grated parmesan	\$4.00	2 cups	1	0.25	\$4.00	8	107
bran muffin mix	\$3.00	8 oz	1	0.5	\$3.00	8	120
chocolate bar	\$2.00	3 oz	5	1.2	\$10.00	10	230
Snickers bar	\$2.00	4 oz	4	1	\$8.00	8	275
			Total:	23.95lbs			

Example Menu's					
Example Menu's	Calorie per serving	Total Calories	Dinner 2	Total	845
			quinoa	340	
			yam	120	
Breakfast 1		384	onion	60	
oatmeal	150		jerky	200	
honey/brwn sugar	102		olive oil	125	
granola	74				
ground almonds	58		Dinner 3	Total	839
			couscous	240	
Breakfast 2	Total	358	corn	90	
pancake	230		peas	70	
honey	128		jerky	200	
			olive oil	125	

Breakfast 3	Total	439	cheese	114	
hash browns	175		Dinner 4	Total	810
sausage	150		barley	325	
cheese	114		corn	90	
			peas	70	
Lunch 1	Total	867	jerky	200	
pb	210		olive oil	125	
nutella	160		Dinner 5	Total	810
tort	120		tortellini	230	
jerky	230		parm cheese	107	
banana chp	147		cheddar cheese	228	
Dinner 1	Total	898	olive oil	125	
beans	330		muffin	120	
rice	340				
cheese	228				

Average Day = 2147 Calories (per person)

Add Cliff Bar = 260 Cal, Add 1.5 oz Chocolate Bar = 230 Cal

Max Day = 2637 Calories (per person)

We will also be carrying 12, King Sized Twix bars at 476 Cal each, as extra food for big climbing days.

APPENDIX C

Equipment List

<p>Personal Clothing:</p> <ul style="list-style-type: none"> -Waterproof Mountaineering Boots -Gore-Tex gaiters -Wool socks (4 pair) -Camp Shoes -Long underwear bottoms -Long underwear top -Fleece pants -Fleece jacket -Soft shell jacket -Puffy -Waterproof shell rain jacket -Waterproof shell pants -Gloves -Warm hat -Thin socks for wearing in climbing shoes (1) -Synthetic t-shirt (2) -Synthetic underwear (3) <p>Personal Equipment:</p> <ul style="list-style-type: none"> -LED headlamp with 2 sets extra batteries -Waterproof watch with alarm -Sunglasses -Sleeping bag, 0-20 degrees -Full-length sleeping pad -Compression stuff sacks for sleeping bag/clothing -60L backpack -Eating utensils -Nalgene 1 liter (2) -Personal bowl and spork -Tube of lip balm -12 oz tube of sunscreen -Digital camera w/ extra batteries -Personal toiletries <p>Personal Equipment (cont'd)</p>	<p>Group Climbing Gear (Accounting for two climbing parties):</p> <ul style="list-style-type: none"> -70m x 10.2 mm dynamic single rope -60m x 9.8 mm dynamic single rope (2) -Double set of BD Camalots #0.3 - 4, single #5 -Double set of TCU's (or equivalent small cam) #00-2 -Double set of stoppers, set of RP's, including offsets -Alpine draws (30 Shoulder length runners, 8 Double length runners) -20ft Cordelletes (5) -Wire gate biners for draws and gear -Locking biners (18) -Petzl Ascenders (2) -Rap rings (9) and 5mm accessory cord for making rappels -Small ice screw (3) -Emergency Bivy Tarp -A small rubber hose (for use as a siphon on the wall) <p>Personal Climbing Gear:</p> <ul style="list-style-type: none"> -Helmet -Climbing shoes and approach shoes -Harness -Daisy chain -Belay device and locking HMS carabiner -Prussik cord -Lightweight mountaineering axe -Strap-on crampons -Chalkbag and tape -Nut tool (for the leader as well as the followers) -10L to 40L climbing pack -small knife
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<ul style="list-style-type: none"> -Notebook and pencil -Reading book -Emergency contact card -Knife <p>Camp Equipment:</p> <ul style="list-style-type: none"> -2 2-person 4 season tents -Gear/cooking Mega-mid shelter -MSR Whisperlite International stoves (2) -MSR fuel bottles (3) -12 quarts of white gas -Pot w/lid, pan, and a big spoon -Leatherman multi-tool -Trash bags (4) - Wag Bags (12) -Stuff sacks for storing food -Duct tape, small sewing kit, seam-grip -10L MSR Dromedary bag -Katadyn Pump Filter - Aqua-Mira (2 sets) -230 g Counter Assault bear spray (3) -20 meters of chicken wire <p>Route Finding:</p> <ul style="list-style-type: none"> - Small Compass - Detailed topographical maps printed from online resources <p>Communication:</p> <ul style="list-style-type: none"> -SPOT satellite messaging device 	<p>Wilderness First Aid Kit:</p> <ul style="list-style-type: none"> -Surgical shears -Tweezers -SAM splint -Safety pins -Irrigating syringe -Analog thermometer -Rubber gloves (1) -Rectangular band-aids (4), - Finger band-aids (4) -Rolls athletic tape (4) -2x2 gauze pads (4) -4x4 gauze pads (4) -Rolls stretch gauze (2) -Sanitary napkins (4) -1 oz tube anti-bacterial ointment -Alcohol pads (4) -Tube tincture of Benzoin -Steri Strips -CPR mask -Emergency Space blanket (2) -Ibuprofen: 60 tablets -Immodium: 10 tablets
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APPENDIX D

Budget

Driving Fuel Cost:

- Colorado Spring to the Bugaboos =1,314 miles
- Roundtrip millage =2,628 miles
- C Dickson and L Krych will be driving a Nissan X-Terra, which gets 16 mpg

$$\frac{2,628 \text{ miles}}{16 \text{ mpg}} = 164.25 \text{ gallons}$$

- Boise, Idaho to the Bugaboos = 747 miles
- Millage including the return to Colorado Springs =2,061 miles
- J Collis and D Fay will be driving a Landrover Discovery which gets 15 mpg

$$\frac{2,061 \text{ miles}}{15 \text{ mpg}} = 137.4 \text{ gallons}$$

Total gallons = 301.65 gallons
 We are budgeting fuel costs at \$3.80/gal to account for increased summer prices.
Total Roundtrip gas costs: \$1,146.27

Food Costs:

Our past experience in the backcountry shows that a robust, high-calorie diet of lightweight food cost \$12 a person/day x 4 people x 20 days = \$960
 Therefore the Total Food costs for four people: \$1,115.40

White Gas:

The white gas calculations in Section III indicate that the adequate amount of white gas for 4 people over the course of 20 days is 12 quarts. The REI list price for white gas is \$12.95 per quart x 12 quarts = \$155.40

Wilderness Communication:

SPOT devices notify local search and rescue authorities and initiate essential helicopter aid in the event of a serious injury. A SPOT 2 device is also far more cost effective when compared to satellite phones. Total costs of a one month rental of a SPOT 2 device: \$85

Information:

The Bugaboos: One of the World's Great Alpine Rockclimbing Centres
 By: Chris Atkinson and Marc Piche. List price: \$39.95
 We will save money by printing off the extremely detailed Bugaboos-Summit Series map from this website:
http://www.esri.com/mapmuseum/mapbook_gallery/volume22/tourism4.html

Camping Fees

Applebee Campground is Bugaboo's cheapest, most popular and only outdoor campsite in Bugaboo Provincial Park. The price is \$5 per night per person x 4 people x 16 nights = \$320 in Campsite Fees

Bear Spray:

We feel that it is important to always have bear spray on hand in the ill-fated case that we encounter a bear. Counter-Assault 230g \$44.95 (REI list price) x 3 = \$134.85

Aquamira:

With 2 bottles, we will be prepared to purify all of our liquid water with Aquamira, as only 15 drops are needed per liter. \$14.99 per bottle x 2 bottles = \$29.98

Wag Bag Waste Bags:

Many areas of the Bugaboos have outdoor facilities and established toilets including Applebee Campground and the saddle just before heading up the West Ridge of Pigeon Spire. Yet there will be times on the wall and in transit when we are not able to access such facilities in time. Since the Bugaboos is a popular climbing destination and suffers significant impact from visitors, we shall carry Wag Bag Waste Bags to pack out all of our waste. This sanitary solution is sold at REI in packs of 12. \$34.00

Abbreviated Budget:

Driving Fuel Costs: \$1,146.27

Food Costs: \$1,115.40

White Gas: \$155.40

SPOT 2 Rental: \$85.00

Guidebook: \$39.95

Camping Fees: \$320.00

Bear Spray: \$134.85

Aquamira: \$29.98

Wag Bag Waste Bags: \$34.00

Total: \$3,060.85

We are requesting \$3,060.85 from the Ritt Kellogg Memorial Fund to make our expedition possible.

Money Saving Techniques:

- We will buy as much food in bulk as possible. We have access to Costco, a bulk food-buying club, and will be purchasing as much food as possible from there.
- For the finer items that we wish to buy in bulk (grains, granolas, rices) we will support local health foods store, Mountain Mama's, where CC students we get a 10% discount.
- We will print our maps off of the internet for free to avoid paying for commercial copies. We plan on creating detailed topo maps of the approaches and routes using the GIS Lab at Colorado College.
- For cooking we will rely on white-gas stoves, which rely on fuel that is available almost worldwide and cost less money than the fuel required for canister stoves. Additionally, MSR Whisperlites can run on many different types of combustible liquid fuels, which could be handy if we run out of fuel or encounter difficulty in finding white gas.
- We will camp in free campsites enroute to the Bugaboos, and prepare food for the journey to prevent having to buy food along the way, which could be more expensive.
- We will buy gas in the US because it is less expensive than Canada.
- We recognize that our cars are not the most fuel efficient vehicles, yet when we looked into the price of flying to the Bugaboos, it was still far cheaper to drive. Therefore, in order to save money, we are willing to put some considerable wear and tear on our vehicles.