The permittee, when operating with lifts open, shall carry a crew as follows:

Area Administration:	General Manager	
	Mountain Manager	
	Lift Foreman	
	Hill Chief	
Avalanche Control	Avalanche Technician and six assistants	
Lift Operations:	Chairlift #1	4 attendants
	Chairlift #2	3 attendants
	Chairlift #3	3 attendants
	Chairlift #4	3 attendants
	Tanaka Lift	3 attendants
	Relief Crew	Lift Foreman, Mechanic
Hill Safety	At least the minimum number of patrolers required for lifts open as listed on page 15.	

In the absence of the General Manager, the Mountain Manager will assume authority. In the absence of the Mountain Manager, the Lift Foreman will assume authority.

DUTIES, GENERAL (See Appendix A for complete job descriptions).

A. General Manager: The General Manager or a designated representative will be available at all times for emergencies, accidents, etc. (See chart of organization, page 3).

B. Mountain Manager: The Mountain Manager will supervise all phases of mountain activity.

C. Hill Chief: The Hill Chief will direct the ski patrol and be responsible for all hill safety programs and first aid. (See Section A-3).

D. Avalanche Technician: The permittee shall provide a qualified Avalanche Technician, acceptable to the U.S. Forest Service. The Avalanche Technician will, with the concurrance of the Forest Service Snow Ranger, direct all weather recording and avalanche control with the exception of the firing of the recoiless rifles. (See Section A-4).

E. Pro-Patrol: Each member of the Professional Patrol will assist in first aid to the injured, avalanche hazard reduction, and other duties as assigned. (See Section A-9)

F. Volunteer Patrol: Each member of the Volunteer Ski Patrol will assist in the first aid to the injured and other prevention programs. (See Section A-10)

G. Lift Foreman: The Lift Foreman will oversee the entire lift operation including maintenance, and will supervise all lift operators and attendants. (See Section A-5)

H. Mecnanic: The Mechanic will assist in the maintenance and repair of all lifts and snow vehicles and machinery.

I. Night Lift Supervisor: Will supervise general skiing and lift operations. He will be a qualified lift mechanic.

J. Lift Operators: Each lift operator will be responsible for the operation and safety progrms of his assigned lift. (See Setion A-7)

K. Lift Attendants: Each Lift Attendant will assist the Lift Operator in the safe and efficient operation of his station. (See Section A-8)

L. Lodge Operator: The Skyride Lodge Operator will operate food service facilities to meet state and local health requirements. (See Section A-11).

PUBLIC INFORMATION AND EDUCATION PROGRAMS

A. General

The permittee will make a space available on a convenient wall in the lodge, to place a Forest Service pegboard for the purpose of providing handout material such as maps, ski tips, trails and snow condition reports, etc. The permittee also provides a pegboard in the business office for such materials.

B. Signing (Also see Alyeska Sign Plan) p.11

Information and regulation signs will be placed at lift stations, major trails and other convenient locations to aid the public and assist in safe use of the area and facilities.

C. Public Relations

All public contact shall be conducted in a courteous and helpful manner by both the permittee and U.S. Forest Service personnel.

RACES, SKI SCHOOLS AND OTHER SNOW ACTIVITIES

A. Races

1. To help prevent possible conflicts between races and other public skiing, certain areas of the mountain have been set aside for training and races. These areas include: the poma hill, lower race trail, silver tip, and the south edge. Race coaches must take a written request to the Hill Chief for use of these areas at least 48 hours in advance of use. Approval for use is subject to the use of some areas may be restricted from race practice. Prior to the ski season, the Mountain Manager, Hill Chief and Snow Ranger will agree on the areas to be used for racing activities.

2. Use of ski safety devices is not required of each racer while actually running a sactioned race. However, as soon as the racer leaves the course, he must have properly functioning ski stops or safety straps.

3. Removal of all poles, smoothing out of ruts, fencing off hazardous race areas and other safety measures will be the responsibility of the user. Failure to do so will result in loss of use privileges.

B. Ski School Activities

A. It will be the permittees responsibility to see that the use of slopes for instruction by ski schools will be regulated to prevent undue interference with public use.

2. Any special lift privileges, such as line cutting, will be granted subject to approval by the lift operator. All instructors using such privileges will do so in a courteous and professional manner.

C. Ski Touring and Climbing

1. Since most of Alyeska is surrounded by high, uncontrolled avalanche hazard areas, climbing outside the avalanche control area will be allowed on guided tours only. Each tour must be approved by the U.S. Forest Service Snow Ranger and Alyeska's Avalanche Technician. In the event the Snow Ranger cannot be reached, the Avalanche Technician has the authority to approve the tour.

D. Helicopter Use on Max's Mountain

On occasion, helicopters will be used at Alyeska and on Max's Mountain. Primarily they will be used for administrative use, avalanche control work, and servicing weather equipment on Max's Mountain. In the case of a special event, such as a guided ski tour down Max's Mountain or kite flying activities, approval from the Snow Ranger and permittees' Avalanche Technician must be received prior to the event.

E. Kite Flying

1. All requests for hang gilider flying within the ski area must be approved by the Alyeska General Manager.

2. Prior to flying, proof of purchase of a $100,000 liability insurance policy covering death and injury must be provided. The flyer must sign a waiver releasing Alyeska Resort and the U.S. Forest Service from any liability resulting from his flying activities.

3. Take offs and landings will be permitted from approved areas only. No flying will be permitted within 200 feet of lift cables.

F. Miscellaneous

No toboggans, snow machines, ski bobs or other such over-the-snow device will be allowed on ski slopes except for the official use of the permittee or the U.S. Forest Service.

ALYESKA SIGN PLAN

A. Lifts, Lift Stations and Ticket Offices

1. Each ticket office will have a sign indicating which lifts are open that day. Each ticket office, when operating, should also have any special warning or regulation signs necessary for special situations.

2. Chair #1
   a. Base
      1. Loading Instructions sign
      2. Avalanche Warning and Explanation sign

   b. Midway
      1. Do Not Unload Here
      2. Keep Ski Tips Up

   c. Top
      1. Keep Ski Tips Up
      2. Safety Gate
      3. Please Wait Here (on down loading steps)
      4. Unload Here

   d. Chair Lift Line
      1. Danger: Do Not Swing, Bounce, or Jump Out of Chairs (Tower #4)
      2. Prepare to Unload (Tower #15)

3. Chair #2

   a. Base
      1. Loading Instructions sign
      2. Avalanche Warning and Explanation sign

   b. Top
      1. Unload Here
      2. Safety Gate
      3. Keep Ski Tips Up

   c. Chair Lift Line
      1. Danger: Do Not Swing, Bounce, or Jump Out of Chairs (Tower #4)
      2. Prepare to Unload (Tower #30)

4. Chair #3

   a. Base
      1. Loading Instructions sign

b. Top
   1. Unload Here
   2. Safety Gate
   3. Keep Ski Tips Up

c. Chair Lift Line

   1. Danger: Do Not Swing, Bounce, or Jump out of Chairs (Tower #4)
   2. Prepare to Unload (Tower #6)

5. Chair #4

a. Base
   1. Loading Instructions sign
   2. Avalanche Warning and Explanation sign

b. Top
   1. Unload Here
   2. Safety Gate
   3. Keep Ski Tips Up

c. Midway #4

   1. Do Not Unload Here
   2. Keep Ski Tips Up

d. Chair Lift Line

   1. Danger: Do Not Swing, Bounce, or Jump Out of Chairs (Tower #4)
   2. Prepare to Unload (Tower #3&4)

B. Slope Regulation and Information Signs

1. The names of major runs should be posted at trail heads to allow the public to have points of reference. Signs should be placed so as not to obstruct normal traffic or create hazard.

2. Slope regulation signs should be placed wherever trails cross or congested area is present. Signs should be placed so as not to obstruct normal traffic or create hazard.

C. Avalanche and Closed Area Warning Signs

Avalanche and closed area warning signs approved by the U.S.F.S. and the permittee should be used to close avalanche and hazard areas. Signs should be placed close enough together to be easily seen from one sign to another. At all times when skiers are on the mountain there will be a closed area sign line from the top of Mitymite down to Lo Lo Leap along North Ridge and a sign line down Center Ridge marking the permanently closed area.

D. Responsibility for Signs

1. All avalanche closure warning signs will be supplied by the Forest Service. These signs will be mounted on posts, and maintained by the permittee. Placement or removal of avalanche warning signs must have the approval of the Forest Service Snow Ranger, except for normal maintenance.

2. All other signs will be supplied and maintained by the permittee.

COMMUNICATIONS

A. Chairlifts and Tows

1. Chairlift #1

Each terminal of chair #1 will have a low voltage, voice activated telephone. The base of Chair #1 will have a FM remote station transmitting thru aid room base station and a telephone extension.

2. Chair #2

The top and base terminals of chair #2 will have a low voltage, voice activated telephone. The base of chair #2 will also have FM remote station transmitting thru sun deck base station. The ski patroler at the top of chair #2 will maintain an open radio.

B. Ski Patrol Communications

1. The sundeck patrol room and ski patrol aid room will each have a 5 wall CB base station when volunteer ski patrolers are on duty. Each ski patroller on duty will carry a battery hand held CB radio. In the event there are more patrollers than radios available some patrollers may not be carrying a radio. The sundeck and aidroom will also have FM base stations and will be connected to the resort's regular telephone system.

2. To reduce radio traffic and promote clarity of communication, each patroller should use clear concise english. The following codes may be used when their use results in speedy and efficient communications.

Code 1 - Poor radio reception
Code 2 - Good radio reception
Code 3 - Radio transmitter check
Code 20 - Location or status
Code 33 - Accident
Code 99 - Major emergency
    Code 99A - Avalanche rescue
    Code 99B - Back injury
    Code 99C - Cardiac Arrest
    Code 99D - Disturbance

3. Telephones, instead of radios, should be used for confidential, personal, and nonessential communication and any such communications should be kept to a minimum.

WEATHER REPORTING AND RECORDING

A. It will be the responsibility of the permittee to take readings and maintain a daily weather log. Charts, log books, etc., will be supplied by the Forest Service.

B. A weather station will be maintained at midway (elevation about 1525 feet) and top of chair #2. In addition to a seven day thermograph, they should have a 24 hour storm and total snow stake, density measuring equipment and a snow thermometer.

C. A weather station will also be maintained at the base. This station should contain thermometers, 24 hour and total snow stakes, and a rain gauge.

D. A recording anemometer is maintained at ther sundeck to measure ridge crest wind speeds (elevation 2350 feet). The recorder for the anemometer is located in the aid room.

E. Weather reports will be filled out on resort, Forest Service, and Weather Bureau forms. Reports will be sent to the Forest Service and Weather Bureau on a scheduled basis.

FIRST AID RESCUE DURING DAY SKIING OPERATIONS

A. Ski Patrols, Professional and Volunteer

1. An organized, trained and adequately equipped ski patrol will be available during days of operation.

   a. A professional patrol, under the direction of the Hill Chief (see chart of organization), will be on duty during weekday operation. At least two pro-patrolers will be on duty weekend days to assist the Hill Chief (see section A-9).

   b. A volunteer ski patrol, meeting National Ski Patrol System requirements, will be on duty during weekends and holidays. Volunteers will be under the direction of a Duty Leader (see section A-10). Should there be an insufficient number of volunteers to cover the hill safely, professional patrolers will be called to work.

2. There will be a minimum of 12 patrollers, with a leader, during periods of full operation on weekends and legal holidays. On Monday and Tuesday, when chairs #1 and/or #4 and #2 are operating, there will be a minimum of 5 patrollers. If chair #3 is operating on Monday or Tuesday, no additional patroller will be required. On Wednesday, Thursday and Friday, when chair #1 and/or #4, #2 and #3 are operating, there will be a minimum of 6 patrollers required. When chair #' and/or #4 is operating, and both the bowl and and racing trail are open, 4 patrollers will be required. If skiing is from top #1 and/or top #4, two or 3 patrolmen are necessary. There will be 2 patrollers during night operations on chair #3. Four patrollers will be necessary if night skiing is in full operation (see night skiing plan).

B. Equipment, Rescue and First Aid

1. Rescue Equipment

a. The permittee will provide sleds specially to transport injured skiers over snow. Sleds should be placed as follows:

1) Sundeck: 4 sleds with splint and blankets
2) Top of Chair #2: 2 sleds with splint and blankets
3) Chair #3: 1 sled with splint and blankets
4) Additional sleds can be placed at the discretion of the Hill Chief.

b. Additional rescue equipment such as ropes, junars, slings, etc., should be on hand in case of emergency. Such items are usually stored at the Sundeck Avalanche Cache.

2. First Aid Equipment

a. Each patroler will carry the basic first aid supplies necessary to provide emergency care as outlined in the Emergency Care Standing Orders (see below).

b. Additional first aid supplies will be stocked in the ski patrol aid room and the Sundeck patrol room.

c. Special equipment such as back and traction splints will be located as follows:

1. Sundeck: The sundeck patrol room will have 2 long back splints, 1 short back splint, 1 traction splint, 1 shoulder support splint, portable oxygen tank, ambu bag and a cervical collar.

2. Top of Chair #2: The top of chair #2 will have a long back board, a traction splint and portable oxygen tank.

3. Aid Room: The ski patrol aid room will have a long back board, a traction splint and portable oxygen tank. A physicians code 99 kit will also be located in the aid room.

C. Emergency Care Procedures

1. Emergency care at Alyeska Resort by the Pro-Patrol will be based on the following:

   a. For those patrollers holding Advanced First Aid Cards only, care will be based on the American National Red Cross Advanced First and Emergency Care manual presently in print.

   b. For those patrollers holding Emergency Medical Technician certification, care will be based on the American Academy of Orthopedic Surgeons Emergency Care textbook currently in print.

2. Specific guidelines for Emergency Care and Transportation are as follows:

   a. Patrollers will contact either the Hill Chief or Aid Room Medical Technician if any questions arises as to first aid procedures to be followed in specific cases.

   b. All cases of actual or suspected spinal injury must be immobilized with a backboard.

   c. All cases of actual or suspected major long bone fractures will be stabilized with a traction splint.

   d. In cases of respiratory and cardiac failure, life support will be carried on in accordance with the American National Red Cross cardiopulmonary resusitation flow sheet to the level of the patroller's certification.

   e. IV fluids will be administered by qualified Emergency Medical Technicians in accordance with the guidelines established by the Medical Advisory Board for the Municipality of Anchorage's Emergency Medical Services, as found in their standing orders for EMT-A II, if a person so qualified is available.

   f. Transportation of the injured will be conducted in accordance with the following guidelines:

      1. Except with the approval of the Hill Chief or Aid Room Medical Technician, all patients will be transported to the Aid Room.

      2. All sleds with victims will be run by two patrollers, except when snow and terrain conditions allow for safe transportation by one patroller.

      3. No patient will be transported until stabilized, as outlined in the appropriate manual of reference.

g. Consultation of physicians in the clinic will be requested only on the approval of the Hill Chief or Aid Room Medical Technician. In such cases, the patient may be transported directly to the clinic, if requested by the physician. Only cases of spinal injury, major long bone fracture, severe head injury, severe internal injury, severe shock, and cardiac and/or respiratory arrest should warrant physician involvement.

h. An ambulance will be called only with the approval of the Hill Chief and Aid Room Medical Technician, with the patient's consent, or implied consent.

i. An ambulance will be called for any of the following emergencies:

1. Blood pressure crisis
2. Onset of sudden severe illness
3. Any spinal injury
4. Any trauma with potential of impending severe shock
5. Any compound fracture
6. Any femur fracture
7. Any severe head injury where brain damage is suspected
8. Anytime life or the quality of life will be endangered by the delay of transportation

i. In the event that such ambulance transportation may be delayed and such delay would increase the danger to life or quality of life, alternative transportation may be used.

j. Volunteer ski patrollers will give first aid and emergency care to the injured in accordance with procedures outlined in the American National Red Cross Advanced First Aid and Emergency Care manual, and within the guidelines established by the National Ski Patrol System, Inc.

k. It will be the responsibility of all patrollers on duty at Alyeska Resort to be completely familiar with the previously mentioned standard manuals and the above standing orders. In cases where doubt exists as to the correct and authorized technique, advice should be sought from the patroller's acting duty leader or the Aid Room Medical Technician. In an emergency situation when the duty leader or Aid Room Medical Technician cannot be contacted, patrollers must exercise the soundest judgement possible for the maximum benefit of the patient.

l. If a conflict exists between above standing orders and the mentioned reference manuals, the procedure as outlined in the reference manual will be followed.

CHAIRLIFT EVACUATION PLAN

A. General

Owing to the sometimes extreme wind and cold temperatures that the area experience, it is important that a fast, efficient method of chair evacuation be provided. Since power outages could necessitate having emergency means for clearing the chair lifts, auxiliary gasoline engines as standby power units are provided. In case of power failure, these units could be put into action within 10 minutes. Should, however, some mechanical failure occur, such as a cable derailment, manual evacuation of a chair lift would be necessary. The Hill Chief will make the final decision when a manual evacuation is necessary, and will be in charge.

B. Equipment

1. Chair #1: Chair #1 will have 4 canvas evacuation bags or T-bars complete with rope, throwing line and bean bag located as follows: 2 at the top terminal, 1 at midway and one at the base. In addition, 2 T-bars or bags (complete) will be located in the sundeck ski patrol room.

2. Chair #2: Chair #2 will have 3 canvas evacuation bags or T-bars (complete) located as follows: 2 at the top terminal and one at the base. In addition, the two units located at the sundeck patrol room could be used starting at the main street area.

3. Chair #3: Chair #3 will have 2 canvas evacuation bags or T-bars (complete) located as follows: 1 at the top terminal and one at the base. Evacuation equipment from the base of chairs #1 or #4 could also be used. During periods of night operation, lanterns and flares should be available in case of electrical lighting failure.

4. Chair #4: Chair #4 will have 6 canvas evacuation bags or T-bars (complete) located as follows: 2 at the top terminal, 2 at the base and 2 at Midway station. Evacuation equipment located on chairs #1 and #3 and equipment at the sundeck patrol room could also be used.

C. Training

The Sourdough Ski Patrol, the permittee, and the U.S. Forest Service will hold training sessions at the beginning of each season so that all those involved in conducting chair lift evacuations and other rescue operations are fully acquainted with the correct, safe procedures. Additional training sessions should be held during the winter. They are:

1. Skadi practice - 1 hr per mo.
2. Avalanche simulated rescue - 3 per season
3. 1 practice crevasse rescue

D. Action Plan

1. The Hill Chief or Volunteer Ski Patrol Leader, in that order, will take immediate charge of the evacuation operation. He will consult directly with the lift foreman and mountain manager to determine reason for stopage and length of time lift will be inoperative.

2. Evacuation leader will evaluate time against weather factors such as wind, temperature, and remaining daylight in order to decide on a course of action. A maximum of 1 hour, if weather conditions are ideal, will be allowed before evacuation is started.

3. Evacuation leader will notify the lift operator, lift foreman, mountain manager and area manager of any decision for manual evacuation. Once evacuation has begun, the chairlift may not be started until cleared by the evacuation leader.

4. All available ski patrollers and other trained persons should be alerted to go to the nearest lift station. One person should ski along the chairlift line to alert occupants that evacuation has started and not to attempt to jump from chairs.

5. Evacuation teams consisting of at least 2 people should procede as follows:

   a. Chair #1: 2 teams from the top working down, 1 team from midway working down, and 1 from the base working up.

   b. Chair #2: 2 teams from the top working down, 2 teams from the Sundeck working down and 1 team from the base working up.

   c. Chair #3: one team from the top and one from the base.

   d. Chair #4: Two teams from the top and one team up from the base and one team working down from tower 18.

6. On completion of the evacuation, the evacuation leader will take a complete report. Contents of the report will include:

   a. Time and reason stopage

   b. Time evacuation started and completed

   c. Number of people evacuated

   d. Accident reports for any injuries that occurred during the evacuation

   e. Recommendations

   Copies of the report should go to the Area General Manager and the Forest Service Snow Ranger.

GENERAL SWEEP PROCEDURES

A. General

1. The "Sweep" is designed to assure that no one remains on the mountain after closing. Each patroller must be certain that his assigned sweep area is clear. Patrollers must coordinate with each other to assure that all areas are covered.

2. A ski patroller should occupy the "last chair" on each lift. No public skiers will be allowed on the lifts after that time.

3. Sweep will be organized at the top of Chair #2 by the patrol leader or Hill Chief. He will notify operator at base of #1 (or #4) when sweep is complete. The Forest Service Snow Ranger may spot check the sweep procedures.

4. Patrolmen will check in at the aid room upon completion of their sweep procedures.

B. Action Plan

1 Bowl Sweep

a. Group 1

Stay high to Chilkoot Ridge then to Center Ridge, then to Gully. Split at the Gully and sweep to the High Traverse when open. Hold at the Knoll. Take the Easy Trail above the Waterfall and across to National. Take the Cat Track around the Poma to the base.

b. Group 2

Take the North Edge into Mighty Mite Ridge to the Sundeck. Hold an open radio at the Sundeck and wait until sweep is clear to Main Street. Then take a sled down Main Street into the Bowl.

c. Group 3

Hold on top until High Traverse is clear. Then go down Trapline to Main Street. Radio to Sundeck for Bowl Sled. Take Alpine and Eagle Rock slot and check the South Face. Check in with the base of #2, then stay next to the trees on the canyon side to the base.

d. Group 4

Take Prospector, then across Fairbanks Knoll to Wicks Knoll. Check the Champagne Gully and stay high. Sweep Silvertip and down through the trees to the Creek Crossing. Stay high on the Waterfall and traverse to the Poma Hill and in.

2. Race Trail Sweep

a. Group 1

Take the North Ridge and the Dogleg through the trees above Midway. Take Denali and the Meadow to Heidi, then down Sourdough. Take the Cat Track to Chair #3 to the base.

b. Group 2

Under the chair line to Mambo, to Midway and clear with the attendant at Midway. Take the North Edge of the Race Trail (hold sled until Steilhung Slot is clear), down Steilhung, and in.

c. Group 3

South Edge and check the South Face. Take the Bowl Crossover and join the bowl sweep.

d. Group 4

Take the South Edge high and Hogback to Midway. Take the south edge of the Race Trail and the Steilhung Slot (notify group 2 when clear). Take the canyon side of the Race Trail to the base.

Night Skiing Operation Plan

The purpose of this night skiing operaton plan is to establish practical and functional guidelines that will help provide reasonable safety for the skiing public during night skiing operations at Alyeska Resort. This plan represents a thoughtful and conscientious attempt on the part of Alyeska Resort and the Forest Service personnel, to identify night operational hazards and to establish methods of avoiding foreseeable injurious situations.

A. Lift operations

Chairs #1 and #4, and #3 will operate for night skiing. All lifts will be manned and operated by trained and competent personnel. This personnel will be thoroughly trained in all night lift operations, including night chair evacuation, night avalanche resuce, and night emergency lighting systems and procedures. The supervision of the night lift operation and personnel will be carried out by the night lift supervisor who will always be on duty during the night skiing operations. In addition either the Mountain Manager, Alyeska Lift Foreman, or a qualified lift mechanic will be on call within the Girdwood Valley during night operations. This person may be needed in the case of a lift mechanical difficulty, power outage, or other emergencies which may arise during night operation.

B. Night Skiing Terrain

Trails lighted and open for skiing during night operations will include the South Edge, Top to Midway, the Racing Trail, and all trails to the base of #3 lift from top #3. These trails will be patrolled and maintained for night skiing. All other trails on the mountain are closed to entry during night operations. This specifically means the Bowl and South Face are closed and will be signed accordingly.

C. Signs

A sign stating, "The South Face and Bowl are absolutely closed and not patrolled during night operation. Violators will lose skiing privileges" will be located at or near the top of lift #1 and #4. In addition a sign line with signs stating, AREA will be maintained CLOSED from the top of #4 lift down the South Edge to the top of the Racing Trail. These signs will be closely spaced and outlined with white reflector tape. Violators of these signs and witnessed skiing in the closed areas may lose their skiing privileges.

D. Ski Patrol and Areas of Responsibility

During night skiing operation one Alyeska pro-patroller will be in charge of ski patrol and related responsibilities on the mountain. He or she will be assisted by at least two qualified ski patrollers plus one other designated Alyeska employee. This person will be an expert skier, trained in tobaggan handling, night lift evacuation, avalanche rescue and have a thorough knowledge of the night skiing operations. He is not required to have first aid training and will not be administering first aid or handling accidents on the mountain. A list of qualified 4th persons will be maintained by the Hill Chief. All patrollers will carry headlamps at all times while on the mountain during night operations. If only chair #3 is operating for night skiing two ski patrollers are required.

The ski patrol will be responsible during night skiing operation but not limited to the following:

1. Administering first aid and the evacuation of the injured from the mountain
2. Lift evacuation
3. Maintaining warning and closure signs
4. Identifying and marking terrain hazards
5. Initiating avalanche resuce within ski area and notifying State Troopers and U.S. Forest Service.
6. Sweeping the mountain at close of night operation.

E. Sweep Procedures

The sweep procedure at the close of night skiing will include 4 patrollers. One patroller will ski with a headlamp through the bowl to the base of the mountain. He will have radio communications with race trail sweep. He will call out "sweep" as he skis to the bottom of the mountain.

The race trail sweep will consist of 3 patrollers skiing Top to Midway, the racing trail, and chair #3 trails as outlined under General Sweep Procedures, 2. Race Trail Sweep, page 22. Alyeska Snow Safety Plan.

F. Night Lift Evacuation

1. The pro-patroller in charge of ski patrol during night skiing will take immediate charge of the evacuation operation. He will consult directly with the night lift supervisor and mountain manager to determine reason for stopage and length of time lift will be inoperative.
2. Evacuation leader will evaluate time against weather factors such as wind, temperature, and the light situation in order to decide on a course of action. A maximum of 1 hour, if weather conditions are ideal, will be allowed before evacuation is started.
3. Evacuation leader will notify the night lift supervisor, lift operator, lift foreman, mountain manager, and area manager of any decision for manual evacuation. Once evacuation has begun, the chairlift may not be started until cleared by the evacuation leader.

4. All available ski patrollers and other trained persons should be alerted to go to the nearest lift station. One person should ski along the chairlift line to alert occupants that evacuation has started and not attempt to jump from chairs. If the night lights are out the bamboo poles with flares attached will be lit and placed under chairlift by this person. All patrollers should have headlamps and evacuation teams should acquire search beacon lamps from the rescue cache before proceeding with evacuation.

5. Evacuation teams consisting of at least 2 people should procede as follows:
   a. Chair #1: 1 team from the top working down, 1 team from midway working down, and 1 team from the base working up.
   b. Chair #3: 1 team from the top and 1 from the base.
   c. Chair #4: 1 team from the top and 1 team up from the base and 1 team working down from midway.
   d. After commencement of the lift evacuation, if the mountain manager or mechanic is able to repair the mechanical that shut down the lift while the majority of passengers are still on the chair, he shall contact the evacuation lieader and request that the patrollers will ski along the lift line and advise all evacuation teams to suspend manual evacuation. After the ski patrollers inform the evacuation leader that all parties have been notified, the evacuation leader will notify the mountain manager to start up the lift, to either continue regular operation or evacuate all passengers in that manner.

6. On completion of the evacuation, the evacuation leader will make a complete report. Contents of the report will include:
   a. Time and reason of stopage
   b. Time evacuation started and completed
   c. Number of people evacuated
   d. Accident reports for any injuries that occurred during the evacuation
   e. Recommendations

   Copies of the report should go to the Area General Manager and the Forest Service Snow Ranger.

G. Equipment

Due to the possibility of a power outage, additional emergency lighting equipment will be added to the rescue cache at the skyride. This will include:

1. 6 headlamps
2. 6 search beacon lamps
3. 12 20 minute flares
4. 100 bamboo poles with 30-45 minute flares attached
5. In addition, 8 search beacon lamps = 1 for each lift station on chairs #1, #3, and #4.
6. In addition, both the top and bottom stations on lifts #1, #4, and #3 will be equipped with an emergency/automatic lighting system.
7. Under normal operations, a snowcat equipped with a high powered search beacon will be stationed both on the upper mountain and lower mountain near the top and base terminals of the lifts during night operation. These snowcats could be used in emergency situations.

H. Rescue

In the event of an avalanche rescue follow the Avalanche Rescue Procedures p.48, and Avalanche Rescue General Alarm p.51, Alyeska Snow Safety Plan.

In the event of a missing person report during or after night skiing operations immediately notify State Troopers and receive instructions. The Alaska State Troopers are responsible for all rescue operations and will be notified immediately in the case of any rescue situation or operation.

Alaska State Trooper Phone No. 333-9548, or 911.

RESTRICTIONS ON CHAIR OPERATIONS AND TRAIL CROSSINGS

A. Excessive wind speeds could endanger chair lift operations. An anemometer has been installed behind the Sky Ride with readings recorded at the Aid Room. An additional anemometer will be installed and maintained at the top of #2 lift. The aid room attendant will watch the instrument and inform operators when winds become severe. In close cooperation with the Snow Ranger, either the Mountain Manager, Lift Foreman or the Hill Chief will decide when to shut down the lifts.

B. Severe weather or poor visibility could require trail restrictions. Severe winds, very low temperatures, poor visibility, insufficient snow cover or severe icing or crust conditions must be considered.

AVALANCHE FORECASTING AND CONTROL

A. General

1. The Avalancne Technician, in close cooperation with the Snow Ranger and Hill Chief, shall be in charge of all avalanche forecasting and control. He will determine when control work is necessary and will choose the methods and approach that will provide positive control to minimize risk to the public or personnel. (see section A-4).

2. Avalanche forecasting and control requires mature and sound judgement. Therefore, it is extremely important that the Snow Ranger and Avalanche Technician work closely together in the avalanche control work.

3. Closing areas and the enforcement of the closed area regulations will be the responsibility of the permittee. After consulting with Hill Chief and stating specific reasons, the Snow Ranger may require the closing of the areas.

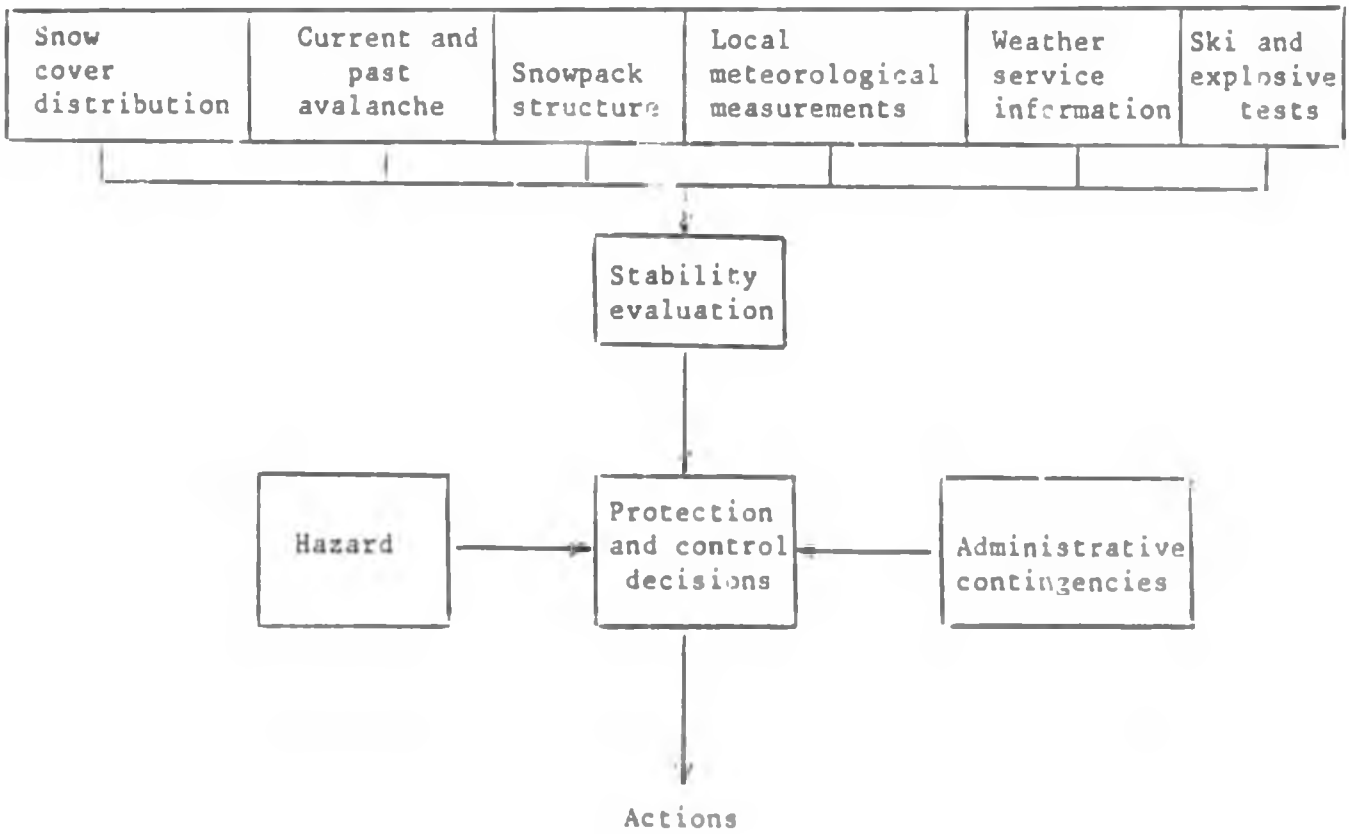
4. Control of avalanches with hand placed charges shall be done by the Avalanche Technician and Pro-Patrol as outlined below. Persons blasting will have received at least 16 hours of training from a qualified instructor within the past 24 months and show one year experience in snow blasting. In addition, a 4 hour explosive handling refresher is required on a yearly basis. Qualified volunteer ski patrollers will be permitted to assist in ski control work They will work directly with the Avalanche Technician, or qualified propatrolman.

5. The procurement of all equipment for the control of avalanches, such as explosives, fuse, igniter, etc., and their storage will be the responsibility of the permittee. The permittee is responsible for providing transportation and storage of the rifles and ammunition within the ski area boundaries. The Forest Service will transport the rifles and ammunition outside the ski area boundaries. All costs incurred by the Forest Service during transportation will be reimbursed by the permittee.

6. The 75mm and 105mm recoiless rifles are under the direct control of the U.S. Forest Service.

B. Avalanche Forecasting

1. Avalanche forecasting is a complex process involving a combination of factors as summarized on the next page:



Accurate records are essential to the control and forecasting programs. Extensive field observations are also required.

2. Weather data is necessary to assist in the forecasting of avalanches. Climate analysis will be given careful study by the Snow Ranger and Avalanche Technician. Weather data from the midway station and wind recordings from the top terminal should be compared with natural and artificial avalanche activity. Snow, weather and avalanche observations are the responsibility of the permittee.

3. Terrain and hazard analysis is used to help determine avalanche paths and safety zones. The following hazard classification photograph and accompanying charts have been prepared with the cooperation of the Forest Service and the permittee.

Area Classification	Hazard Class	Protective Measures
Area 1 (Race Trail)	Class 1	PS, U
Area 2 (Top-to-Mid)	Class 1	PS, U, E
Area 3 (Main Bowl Area)	Class 2	PS, U, E, TC
Area 4 (Silvertip)	Class 3	PS, U, E, TC, A
Area 5 (North Face)	Class 3	E, PC
Area 6 (Glacier)	Class 3	E, TC, A
Area 7 (Bowl Rim)	Class 3	A, PC
Area 8 (Lower Face)	Class 2	PS, U, TC, A

Hazard Classifications

Class 1 Minimum

Class 2 Low Intermittent

Class 3 High Intermittent (controlled)

Class 4 High Intermittent (uncontrolled)

Protective Measures Classification

PC Permanent Closure

TC Temporary Closure

PS Protective Skiing

U Use

A Artillery

E Explosives, Hand Placed

C. Avalanche Control Procedures

1. General

a. Avalanche control work is a highly specialized job. Avalanches are a dangerous and unpredictable force of nature. The releasing of this force involves considerable danger unless there is adherence to a strict safety plan. Special care must be taken at all times to insure the safety of the control team and the skiing public.

b. The methods used to reduce, or eliminate, hazards are determined by the degree of hazard and its location. Hazard classifications #1 and #2 may be managed by protective skiing only, especially for slide paths which can be approached from the top. This is especially true if there is a stable base with only a moderate amount of snow involved. Some of hazard #2, however, may require explosives. Hazard #3 will need both artillery and explosives.

c. All avalanche control programs are the responsibility of the permittee in cooperation with the Snow Ranger.

2. Qualifications of Personnel

a. Forest Service personnel engaged in avalanche control operations must be competent skiers and have basic knowledge of mountaineering. They must have a current U.S. Government avalanche blasters card, schooling in basic avalanche control procedures, and hold a current advanced first aid card. Those personnel firing artillery must be schooled in weapon procedure and firing every two years.

b. Permittee personnel engaged in avalanche control must hold a current first aid card and have special training in avalanche control work. Those personnel who use explosives must have 16 hours of specific explosives training within the past two years plus one year of snow blasting experience.

c. Volunteer Ski Patrollers may be used for assisting in the control program using explosives. This includes providing look-outs and communications for keeping areas clear while blasting operations are in progress. A special blasting school will be held for designated patrollers. The school will cover avalanche blasting techniques and general safety requirements as set forth in this manual and the Forest Service Health and Safety Code.

3. Artillery Control Procedures

a. General

The objective of the 75mm and 105mm recoilless rifles is to insure more positive control of the slopes of Alyeska beyond the limits of hand explosives and protective skiing. The U.S.F.S. Snow Ranger will be available to fire the rifles upon request from the permittee. The Snow Ranger or his assistant will fire, or supervise the firing of the rifles at all times. Although, in the event the Snow Ranger, Assistant Snow Ranger, Anchorage R.M.A., or Wally Watts, Forester, cannot be available to fire the rifles at the permittees request then:

1. The Permittee shall contact the Forest Supervisor, or the Recreation Manager and state the reason they desire to fire the rifles.

2. Upon approval, the permittee's trained and qualified gunner may take responsibility and fire the rifles. A coordinated plan for the safest method for firing will be followed.

b. Equipment location and control:

1. One 105mm rifle is located on the lower gun platform near chair #3.

2. One 105mm rifle is located at the upper gun platform just below the Sundeck.

3. One 75mm rifle is available to be placed where needed.

4. One 105mm rifle is located on jun platform on ridge behind top #2 lift.

5. A large ammunition storage cache is located near the top of chair #3.

6. Maintenance of all firing platforms and amunition caches.

7. The permittee will provide assistance as needed for transporting equipment and explosives.

c. Artillery Firing Procedures

1. Artillery fire will be conducted with Lifts 1, 2 and 4 unoccupied and people out of all anticipated runout zones. On the occasions that hazard to the Alyeska View Townhouse Complex is anticipated due to avalanche control activities, an alarm system, if provided by Alyeska View Townhouses, will be activated. Snow avalanches are a natural and often unpredictable phenomenon. Avalanche forecasting even when practiced with state of the art technology may not anticipate the occurance and extent of every avalanche.

2. Following is the firing manual for rifle firing and must be adhered to by everyone concerned.

For details on safety, firing procedures, malfunction, maintenance and cleaning, the following military references should be reviewed periodically:

1. 105mm recoilless rifle, M27

   a. Training and Maintenance Literature - 105mm Recoilless Refle, M27. Reproduction dated 30 September 1966 by the National Guard Bureau.

   b. T.M. 9-329 (105mm rifle, M27; 105mm rifle carriages; M22 and T47 modified and 105mm rifle mounts M75 and T143.

   c. F.M. 23-82 (106mm Recoilless Rifle, M40A1).

2. 75mm

   a. T.M. 9-3140

   b. F.M. 23-81

This manual is a supplement to the reference listed above and has been written to emphasize certain details which are peculiar to our use of the recoilless rifles in avalanche control or which are of particular importance for safety.

The procedures described below are to be used each time the weapons are fired, and this manual is to be reviewed each day the weapons are to be fired, prior to firing.

The procedures have been established for a trained Forest Service crew of two, "Gunner and Loader", firing a recoilless rifle from a fixed mount. The Gunner's duties are listed on the left and Loader's on the right. Where one duty involves both members of the crew, it is written across the entire page.

I. Firing Procedures

a. Prior to Firing

Gunner	Loader
1. Clean snow from tower and move necessary rounds, cleaning and si ting equipment to firing platform.	
2. Remove breech and muzzle covers.	2. Prepare cleaning equipment.
3. Dry bore of rifle with ramer staff and clean cloth.	
4. Mount sight	4. Observe[1]

Gunner	Loader
5. Check bore sight when possible[2]	7. Assist with bore sighting devices

6. Remove safety railing to provide safe clearance for firing.

7. Mount breechblock on rifle[2].	7. Observe

8. After breechblock is mounted, gunner remains on the left side of the rifle and loader on the right. Neither is to pass to the rear of the weapon, except for occasional ramming of the bore, when necessary. If it is necessary to get to the opposite side of the refle, pass in front of the mount and under the forward portion of the rifle.

9. Check function of breechblock without a round in the chamber:

a. Observe loader	a. Close and lock breech: Left hand, only, for 75mm; right hand, only, for 105mm.
b. Attempt to fire without releasing the safety. Firing pin should not release[2]. If it does, safety is not functioning and weapon must not be fired until corrections are made.	b. Observe gunner
c. Release safety and activate firing mechanism (press trigger on 75mm and turn firing handle on 105mm). Firing pin should release with a click.	c. Observe gunner
d. Open breech on 75mm (See photo #8.	d. Open breech on 105mm (complete breechblock check for 105mm).
e. Observe	e. Close and lock breech of 75mm.
Gunner	Loader
f. Attempt to open breach of 75mm without releasing firing mechanism. It should not open. If it does, corrections must be made before proceeding further[2].	f. Observe gunner
g. Observe loader	g. Release lock of closed breechblock on 75mm using "wire hook". Breech should open. (See photo #1).

1/ Whenever Gunner or Loader are asked to "Observe" in the manual procedure, they are to check each other for errors, unsafe actions or malfunctions.

2/ See T.M. for 75mm or 105mm rifle for detailed instructions.

10. If breech mechanism is operating properly, crew is ready to proceed.

11. From this point on, if the gunner, loader, or anyone observing firing sees any hazard which may endanger the gun crew, or anything to the front or rear of the weapon, he must announce "CEASE FIRE" in a loud, clear voice. Upon hearing "CEASE FIRE", the gun crew will stop what they are doing and clear the weapon, if necessary, until the hazardous conditions have been corrected.

12. Ear muff type ear protectors should be put on at this time in order to get accustomed to hearing with them on during dry fire.

B. Dry Fire - The crew goes through a practice fire mission without a live round using all of the required steps and voce commands listed below under Fire Mission. This is to be done daily prior to firing each weapon to assure that the crew uses the correct procedure.

C. Fire Mission

Gunner	Loader
1. Announces "ACTION and proceeds to lay weapon on first target.	
a. Using direct fire sight[2]	a.
(1) Lays weapon for deflection and checks to see that it agrees with blind fire data. (If free motion is used, gunner is to lock it prior to making final adjustments and announce "TRAVERSE LOCKED".)	Observes from loader's side to assure that weapon is properly laid for deflection.
Gunner	Loader
(2) Lays weapon for elevation (If free motion is used - 75mm only - gunner is to lock it before completing final adjustments and announce "ELEVATION LOCKED".)	(2) Observes from loader's side.

2/ See T.M. for 75mm or 105mm rifle for detailed instructions.

Gunner	Loader
	(3) Sets blind fire reading on quadrant and passes to gunner
(4) Reads setting on quadrant back to loader	
(5) Uses quadrant to assure that elevation agrees with blind fire data.	(5) Observes
b. Blind Firing	
(1) Lay for deflection using predetermined setting. (If free mot on is used, gunner is to lock it prior to making final adjustments and announce "TRAVERSE LOCKED").	(1) Check lay for deflection from loader's side.
	(2) Sets blind fire elevation reading on gunner's quadrant and passes to gunner
(3) Reads settin on quadrant back to loader	
(4) Elevates weapon using elevation adjustments on weapon and levels bubble of quadrant. (If free motion is used - 75mm only - gunner is to lock it prior to making final adjustments and announce "ELEVATION LOCKED".)	(4) Observes
2. Check clearance to front of weapon.	2. Check clearance of breech, bore, and area to rear of weapon.

Gunner	Loader
3. Assists loader in preparing round. Position at front of weapon under bore.	3. Prepares round[2]. Remove "U" ring from fuse, check round[3] and announce setting - "SUPER QUICK" or "DELAY".
4. Observe and assure that weapon is not knocked out of lay in loading.	4. Load weapon[2]. a. Close breech -Left hand, only, on 75mm (see photos, #2, 3,4, and 5). -Right hand on 105mm
5. 75mm. Place right hand on firing handle so that hand is extended over trigger to prevent accidental firing by an individual other than gunner. Leave hand in place until weapon is fired. 105mm - Observe	5. Face rear and take one step back parallel to rifle so as to be in gunner's view. (See photo #6 for relative position of gunner and loader). Tap gunner on shoulder and announce "UP". (Wave at gunner if position of gun does not allow you to tap him. See photo #7 for illustration.
6. Check area to front of weapon for clearance, and if clear announce, "CLEAR TO THE FRONT." (If for any reason the normal sequence of firing is broken after step 6, the operation is to be repeated from step 6 on).	6. Check area to rear and if clear announce "CLEAR TO THE REAR."
7. If clear to the front and clear to the rear, announce "ALL CLEAR".	7. Continues observation to rear of weapon.

2/ See T.M. for 75mm or 105mm rifle for detailed instructions

3/ Check round for:

a. Foil damage at point
b. Fuse setting
c. Damaged rotating band
d. Shell secure in casing
e. Sack in cartridge case not punctured and leaking
f. Dry shell - no discoloration or condensation
g. Primer not dented

Gunner	Loader
8. Continue observation to the front of the weapon and when ready, announce "READY TO FIRE".	8. Continues observation to rear of weapon.
9. Announces "FIRE" and fires. (If weapon fails to fire, gunner announcees "MISFIRE" and uses misfire procedures outlined in section E.	9. Continues observation to rear of weapon.
10. Open breech and eject spent cartridge case on 75mm. (See photo #8).	10. Open breech and eject spent cartridge case on 105mm. a. On 75mm look thru tub to check if it is clear of debris.

11. Observe impact of round and snow action.

12. Repeat steps #1 - #11 for each round to be fired during Firing Mission.

13. After completion of firing, set up safety railing.

14. Clean and cover weapon and store equiopment.

15. Record rounds fired, duds, and any malfunctions in gun book.

D. Care and Cleaning

1. Clean bore with brass brush and bore cleaner immediately after firing.

2. Swab out breech with bore cleane . (A toilet bowl brush is good for this operation).

3. Remove breechblock, tear down and clean with bore cleaner.

4. Periodic removal of the vent ring (after a maximum of 50 rounds) will allow easy removal when the vent ring must be replaced. Loosening or removal after each day's firing is advisable.

5. Bore, breach, and breechblock are to be cleaned with bore cleaner the day of firing and three consecutive days thereafter.

6. After last cleaning, lightly oil bore, breech, and breechblock.

2/ See T.M. for 75mm or 105mm rifle for detailed instructions.

7. Clean and oil weekly if not firing for up to 90 days. When the newer oils and water replacement compounds are used, a weekly inspection will determine if a weekly cleaning is necessary.

8. If weapon is not to be fired for over 90 day intervals, clean thoroughly, dry, oil tube, insert V.C.I. paper, or other recommended product, and seal breech and muzzle ends.

9. After the storage period, weapons should be cleaned with solvent, then lightly oiled.

10. The breechblock, vent ring, and rifle are all matched and must be kept together.

11. Each breechblock and vent ring are good for 500 rounds, and the tube is good for 2,000 rounds. Therefore, the breechblock and vent are changed four times for each tube.

12. Bore, breech, and vent parts should be closely checked for foreign particles after each round.

13. All parts should be checked continuously for wear and breakage.

14. Replacement of parts and repairs beyond our capability are to be made by Army Maintenance units.

15. Weapons should receive a maintenance inspection annually by Army Ordinance personnel.

E. Stoppages, Causes, and Immediate Action[2/]

1. 75mm

a. Failure to load - The pre-engraved rotating band fails to engage the rifling of the tube properly. It is most often caused by dirt in the tube from previous rounds or by a burred rotating band. Do not force the round into the tube. Clean the bore with a brass brush and/or file the burr from the rotating band.

b. Failure to cock - The reason for this may be a broken or worn cocking cam, broken or worn sear, or dirt accumulated in cocking mechanism. Inspect cocking mechanism for worn or broken parts or excess carbon. Clean or take to Army Ordinance for repairs, as necessary.

2/ See T.M. for 75mm or 105mm rifle for detailed instructions

c. Failure to fire - This may be caused by a defective primer, weak or broken firing pin spring, broken or worn firing pin, accumulation of carbon in firing mechanism. The procedure for handling a misfire is as follows:

(1) Assume that a misfire is a hang fire[3] and may cook off[4].

(2) Wait a minimum of two minutes before taking corrective action.

(3) Keep rifle trained on target.

(4) Stay clear of front and rear of weapon.

(5) After two-minute delay, loader will unlock the closed breech using tool #7305536 - "The Big Hook" - Caution: round may fire when breech lock is released. (See photo #1).

(6) Loader will recock rifle, being careful not to open the breech. Leave the threads of the vest bushing and breechblock partially engaged.

(7) Loader locks breech block.

(8) Gunner attempts to fire, using correct procedures.

(9) If another misfire occurs, repeat steps 2 through 5.

(10) Remove the round. To remove the round, elevate the muzzle approximately 5 degrees, and have loader hold hand behind round so it will not fall out of breech. If projectile separates from case, remove the powder from the chamber and place rags in breech for padding. Then screw bell rammer on staff, insert it in muzzle end of tube and slide gently up against the projectile. It may be necessary to tap the end of the staff, lightly, in order to break the round loose. Do not bang the bell against the projectile. Since the round has not been fired, it is not armed; but must be handled with care.

3/ Hang fire - A defect in the percussion element or igniter which results in a delay in ignition of the propelling charge.

4/ Cook off - If tube is hot (three rounds per minute for 20 minutes) and round is left in tube, it may cause the propellant, fuse, or projectile to explode in the tube. Normally, we will not be firing this fast. If caught in this situation, cool tube with snow or have crew move a safe distance from weapon until it cools.

11. If the primer is dented, the round is defective and should be destroyed the same as a dud.

12. If the primer is not dented, the problem is with the firing mechanism. Correct, if possible, and attempt to fire the round again.

2. 105mm - For details review T.M.

a. Failure to load - The reason for stoppage is the same as for the 75mm. There is one additional cause, and that is improper action of the indexing pins. Immediate action is same as for 75mm.

b. Failure to cock - Same as for 75mm.

c. Failure to fire - The same causes and immediate actions as for 75mm. One extra precaution is necessary where the misfire may be due to the breechblock not being rotated to the fully locked position. Do not rotate breechblock to closed position. First rotate to open position and cock the firing pin; then fully close the breechblcok and make another attempt to fire.

F. Dud - A round that does not dtonate on impact. If "S.Q." fuse malfunctions, the "Delay" fuse activates and should detonate round. However, in these cases there is a malfunction on both systems. It is unlikely that a dud can be located in the snow pack; however, the area around the dud should be flagged and the location recorded. Duds must be considered armed and dangerous; and a diligent search must be conducted as the snow melts. Once found, a dud must be destroyed immediately. Use one or two pounds of HDP, and, preferably, detonate with an electric cap to provide better control of detonation. Blaster should be a minimum of 400 yards from the blast area unless he can be in dedilade behind a large rock or some other protection. After detonation, return to make certain dud is destroyed.

QUANDRANT M1

Operational Checks and Adjustments

a. Set the left radial arm plunger pointer located in center of plunger plate against the zero graduation on the left 0-800 mile elevation scale.

b. Turn micrometer's knurled knob until the dial zero graduation line is alined with the vertical index line on the holder, and the horizontal index line on the radial arm plunger is alined with the horizontal line (mark zero) on holder.

c. Place the quadrant M1A1 with the horizontal frame shoes resting on the pads of the sighting equipment or breech shoes on the fire control equipment with the index arrow marked LINE OF FIRE pointing in the direction of the line of fire.

Note: Make certain that the surface on the pads of the sighting equipment or breech shoes on the fire control equipment is level and free of all foreign matter.

d. Manually elevate controls of the sighting equipment of the fire control equipment until the bubble in the level vial of level vial tube assembly on quadrant M1A1 is centered.

e. Turn quadrant M1A1 end for end with the index arrow LINE OF FIRE pointing in the opposite direction of line of fire. If the bubble recenters itself, the instrument is in perfect adjustment.

f. If the bubble does not recenter, try to center bubble by rotating the micrometer knob.

g. If the bubble recenters, the correction is plus (positive) and is equal to one half of the micrometer's dial indication.

h. Set the indication as shown in g above on the micrometer's dial. Verify the correction by repeating c through e above when elevating equipment to a given elevation, and add the correction to the given angle.

i. If the bubble does not recenter when the micrometer's know is rotated as indicated in f above, the correction is minus (negative) and the amount of correction is determined as shown in j through l below.

j. Set the pointer of the left radial arm plunger plate on -10 graduation (one graduation below zero) on the left 0-800 mile elevation scale.

k. Turn micrometer's know until the bubble in the level vial is centered. Subtract the micrometer's dial indication from 10 and divide by two. This indicates the amount of adjusted correction error.

l. Set the adjusted correction error indicated in k above on the micrometer's dial. Verify the correction by repeating c through e above.

m. When laying the equipment to a given elevation, subtract the correction from the given angle.

n. In the event the remainder so far obtained is less than zero, lower the left radial arm plunger plate pointer located in the center of the plate to -10 below zero graduation on the left 0-800 mile elevation scale. Subtract the remainder from 10 and index resultant on micrometer dial.

o. If the required correction exceeds plus (positive) or minus (negative) 0.4 mils, the quandrant M1A1 requires maintenance.

3. Additional Weapon Firing and Safety Points are:

(a) The firing area will be kept clear of all persons except those directly connected with the firing.

(b) Weapons must not be fired from any location or position where obstructions to the rear blast cone exists. Such obstructions may reflect the back blast sufficiently to injure the gun crew. The rear danger area, due to back blast and flying particles, is defined as a triangle whose apex is at the breech, with an extension of the line of the axis of the bore 130 feet to the rear, and a base line of 150 fe t. No one must be allowed in this area.

(c) Duds will be recorded and their positions marked.

(d) Everyone operating the rifle should be thoroughly familiar with the procedures to handle a misfire.

(e) On completion of the firing, the breach block will be taken from the gun, cleaned, and then stored in a locked cabinet in the base area.

(f) All weapons will be cleaned immediately after firing or the same day of firing. The gun will then be securely covered and protected from the weather. The gun will then be cleaned the following day to assure a rust-free condition.

(g) The shell and cartridge containers will be cleaned up and disposed of immediately after firing.

4. Handling and Disposal of Duds

(a) The Snow Ranger will keep track of all duds and misfires and report their occurance and location to the permittee. It will be the responsibility of the permittee to locate and mark all dud rounds.

(b) As duds are located, the Forest Service will be notified. They will arrange for the distruction of the dud rounds by the Army E.O.D. Detachment or other qualified personnel.

(c) When the number of duds exceeds 2% of the rounds fired of the same allotment, the information must be reported to the Military Ammunition Center. If the dud rate exceeds 5%, all remaining rounds of that allotment will be withdrawn from use and the military notified.

5. Hand Control and Protective Skiing

(a) Protective skiing will be done by qualified members of the Sourdough Ski Patrol and by the permittees professional ski patrol. All protective skiing will be directed by the safety regulations established in the U.S.D.A. Avalanche Handbook #489. Skiing teams will consist of not less than 2 patrollers who will each have a rescue beacon.

(b) Hand charging

(1) All hand charging will be directed by the permittees' Avalanche Technician. Blasting teams will consist of at least 2 patrollers who have experience in avalanche control and use of explosives.

(2) Each blasting party will be under the primary suprvision of a qualified blaster who has at least one year of snow blasting experience and who has attended and successfully completed a 24 hour blasting refresher course within the last year.

(c) Shots will be placed on avalanche slopes so as to achieve the best possible results. (See shot placement photographs).

(d) Hand charges will be prepared using techniques outlined in the Dupont Blasters Handbook.

6. Cornice Blasting

(a) Blasting the cornice is a potentially dangerous procedure which requires exact control and safe procedures. Past experience has shown that premature release of the cornice can be caused by the drilling of shot holes. Therefore, experience in blasting technique, winter mountaineering, and avalanche behavior are of extreme importance.

(The recommended steps on borehole blasting are as follows:

(1) The driller, belayed securely, steps into position on the safe side of the working line and drills a row of holes up to 1 m in depth, but no deeper than half the thickness of the roof. The boreholes should be as close as possible to the potential tensile fracture line of the cornice.

(2) The diameter of the holes should be such that the charges fit as tightly as possible. The holes should be spaced 2 m apart. Since cornice snow is normally quite hard, boring will require a soil auger of diameter approximate to the charge.

(3) After all holes are bored, the main line of detonating cord is strung out. To prevent loss of explosives in the event of a sudden cornice collapse, a free end of the main line should be secured to an anchor until he system is ready to be detonated.

(4) A charged laced with 2-m branch line is inserted into the first hole. The branch line is connected to the main line, and the hole is refilled with snow and stemmed (tamped) compactly.

(5) After all boreholes are prepared in a similar manner, a free end of the detonating cord is armed with cap and fuse. Firing takes place after the usual check with the posted guard.

Whereas surface blasting of cornices requires 1-kg charges, buried charges can be limited to about 0.5 kg per hole. All of the recommended explosives for slope control (see table 6) can be buried. Moreover, it is not necessary to penalize explosives for low detonation pressure in comparison to TNT, in fact some field evidence favors low-detonation-pressure explosive for buried-charge cornice blasting.

Because detonating cord plays an important role in cornice blasting, one should be acquainted with the basic techniques for working with high explosive. The following points should be kept in mind:

Use reinforced detonating cord. This gives an extra margin of safety by retaining the explosive system should the cornice fail during preparation.

Because of knot-tying problems, do not use detonating cord with an outside plastic sheath.

Kinks and sharp bends are to be avoided.

Special care should be taken in cold weather to avoid breaking or cracking the cord.

Detonating cord lines should be laid out as straight as possible but not stretched taut.

Main lines can be spliced with conventional square knots; the knots should be pulled tight. Leave 10 cm of free end. Splices should be kept to a minimum.

Branch lines should be connected to the main line with a girth hitch or clove hitch to achieve a 90° tie. Tighten up securely and leave a 10 cm free end.

Wet detonating cord loses sensitivity. Keep the cord as dry as possible during storage and handling. While blasting wet-snow cornices, take special precautions to keep the free end, where the cap is attached, as dry as possible.

Any number of branch lines can be connected to the main line; however, connections should not be made at a splice.

It should be clear that blasting massive cornices requires adequate manpower and special equipment. A typical blasting operation should include a minimum of four qualified avalanche workers plus the blaster-in-charge, who distributes and supervises the various jobs. The minimum equipment needed in massive cornice operations is quite impressive. The blaster-in-charge should be certain that the following equipment is taken.

Adequate clothing for ridgetop conditions (Hypothermia is a serious threat and can dull senses just when alertness is needed).

Adequate footwear (generally double mountaineering boots, rather than competition plastic ski boots).

The required explosives, caps, detonating cord, safety fuse, and igniters.

Flagging to identify the working line.

Auger, if charges are to be buried.

Belay rope (and slings and carabiners as required for anchor).

Snow pickets, if required for anchors.

Radios

Collapsible probes and avalanche transceivers (see chapter 8).

Blasting a massive cornice presents many technical problems as well as high costs. Serious thoughts should be given to the alternative, controlling the cornice with preventive structures installed near the ridgecrest.

(c) Access to the cornice will be attempted only in good weather conditions. A helicopter is the safest means of ascent.

(d) The blast will be conducted only when the hill is clear. Members of the public may be allowed to watch the shot from the Sundeck.

(e) The blast will be set and detonated using prime cord techniques described in the Dupont Blasters Handbook and the Avalanche Handbook #489.

(f) Control of the cornice by use of artillery

(1) The 105mm recoilless rifle may be fired to control the cornice. It has been found through experience that the most efficient shot point is approximately two-thirds up from the base of the cornice. Results from the shell are normally large chunks or pieces of cornice releasing in the area of impact. This method of controlling the cornice is sufficient as long as the upper glacier bowl is not open on a regular basis for skiing.

7. Helicopter Blasting

(a) The dropping of hand charges from a helicopter may be an effective means of avalanche control. Two blasters are necessary and the weather must be ideal.

(b) The charges are pre-armed on the ground with at least a three minute cap and fuse assembly. The charges are placed in a wooden box on the back seat of the machine.

(c) One blaster will be in the front seat with the pilot and select the spots for charging. The other blaster will attach the igniters, light the charges and throw them. The blaster throwing the charges must be secured to the machine by a climbing harness and safety rope.

AVALANCHE RESCUE PROCEDURES

A. General

Avalanche rescues will be conducted as outlined in "PLAN OF ACTION" below. This outline should be well known by everyone concerned with hill safety. A rapid, safe and efficient response is the victims best chance for recovery. Copies of this plan must be available at lift stations and ski patrol aid rooms.

B. Training

The U.S. Forest Service, National Ski Patrol and the permittee will conduct annual training sessions on Avalanche Rescue. Classroom and field exercises should be used to develop a well-trained and coordinated team for rescues. Other groups such as the Girdwood Mountain Rescue Group should be encouraged to attend these sessions. Successful rescue of the avalanche victim depends on well-trained personnel and efficient, fast response.

C. Equipment

1. The permittee will maintain 3 major avalanche rescue equipment caches. The Snow Ranger will also have some equipment available in the Snow Ranger's pickup. It will be the permittees responsibility to maintain the three caches in ready order.

2. The Sundeck Avalanche Cache will contain at least the following:

1....Hasty Search Pack, 5 man
- 1.....Instruction envelope for Hasty Search Leader
- 4.....Probes, sectional
- 3.....Shovels, collapsible
- 50....Markers, flag wand
- 2.....Flagging, survey, rolls
- 4.....Headlamsp, with batteries
- 4.....Flares, fifteen (15) minutes

1.....Avalanche Rescue Plan and Instruction Sheet
30....Probes, non-sectional
6.....Shovels, mounted 3 per pack frame
1.....Oxygen, with ambu bag on pack frame
150...Markers, flag wand
...Flagging, survey, rolls
200...Cord, nylon 1/8th inch, feet
15....Flares, fifteen minute
10....Headlamps with spare batteries
1.....Rope, climbing, nylon, 11mm, 120 ft.
4.....Skins, climbing, pair
1.....Blanket, space type, large
25....Vests, high visability orange

3. The ski patrol Aid Room Avalanche Cache will contain at least the following:

1....Hasty Search Pack, 5 man
- 1.....Instruction envelope for Hasty Search Leader
- 4.....Probes, sectional
- 3.....Shovels, collapsible
- 50....Markers, flag wand
- 2.....Flagging, survey, rolls
- 4.....Headlamps, with batteries
- 4.....Flares, fifteen (15) minutes

1.....Avalanche rescue plan and instruction set
40....Probes, non-sectional
12....Shovels, mounted on pack boards
100...Markers, flag wand
4.....Flagging, survey, rolls
32....Flares, fifteen (15) minutes
6.....Headlamps, with spare batteries
100...Bamboo poles with 45 min flares attached

4. The avalanche cache at the top of lift #2 will contain the following:

2....Hasty Search Pack, 5 man
1.....Instruction envelope for Hasty Search Leader
4.....Probes, sectional
3.....Shovels, collapsible
50....Markers, flag wand
2.....Flagging, survey, rolls
4.....Headlamps, with batteries
4.....Flares, fifteen (15) minutes

1....Avalanche rescue plan and instruction set
20....Probes, non-sectional
6.... Shovels, mounted 3 per pack frame
1.....Oxygen, with ambu bag on pack frame
150...Markers, flag wand
3.....Flagging survey, rolls
200...Cord, ny on 1/8th inch, feet
1.....Rope, climbing, nylon, 11mm, 120 ft.
4.....Skins, climbing, pair
1.....Akia, packed on two pack frames, complete with padding sleeping bag, quickie splint, covers and handles.

5. Each Snow Ranger should carry at least the following:

1....Hasty Search Pack, 5 man
1....Instruction envelope for Hasty Search Leader
4.....Probes, sectional
3.....Shovels, collapsible
50....Markers, flag wand
2.....Flagging, survey, rolls
4.....Headlamps, with batteries
4.....Flares, fifteen (15) minutes

1....Rope, climbing, nylon, 11mm, 120 ft.
1....Skins, climbing, pair
1....Scoop shovel
2....Snow shoes, pair
3....Karibiners
25'..Sling
1....Ice ax

D. Plan of Action

1. Avalanche rescue often requires a large number of people working in a well-directed and coordinated team to give the best chance of live recovery. The following action plan is divided into sections of major responsibility, each of which must be coordinated by the rescue leader.

2. General Alarm

a. Any person who receives an avalanche report must do the following:

1. Hold the witness

2. Begin the rescue procedure by calling one of the following people (start at the top and work down until someone is reached):

SNOW RANGER********** TOM MILLER

ASST. SNOW RANGER********** JIM HACKETT

AVALANCHE TECHNICIAN********** DAVE HAMRE

HILL CHIEF********** JOHN SAMUELSON

VOLUNTEER PATROL LEADER ON DUTY

MOUNTAIN MANAGER********** LARRY DANIELS

GENERAL MANAGER********** CHRIS VON IMHOF

ANY PROFESSIONAL SKI PATROLLER

ANY VOLUNTEER SKI PATROLLER

3. The first person on this list to be contacted will assume the position of Rescue Leader until relieved.

3. Rescue Leader

a. The rescue leader will direct the rescue efforts until relieved.

b. The rescue leader will do the following and anything else possible to assure a successful rescue:

1. Notify Alaska State Troopers

2. Notify all lift stations to alert all rescue personnel and follow their Code 99A instructions (see page 55).

3. Get pertinent information from the witness quickly.

4. Appoint a hasty search leader and give him his instruction packet (see page 53). Hasty Search Leaders should be selected from those qualified U.S.F.S., U.S.P.S., or area personnel known to be capable of performing the tasks of Hasty Patrol Leader.

5. Appoint a s ribe and give him his instruction package. (see page 53).

6. Appoint column leaders as necessary and give each one an instruction package (see page 54).

7. Appoint an Accident Site Commander and give him his instruction packet (see page 52). The accident site commander must be chosen only from those known to be well qualified for the task.

8. Assign someone to get the resuscitation equipment and physicians code 99 kit from the hotel. Have this equipment taken to the accident site by one of the rescue teams. If possible a physician should accompany the group.

9. If the rescue appears lengthy, appoint a third stage leader and give him his instruc ion package (see page 54).

10. At all times, direct and coordinate manpower to assure a safe, efficient and rapid rescue operation.

11. Refer news media to Alyeska management or to the U.S. Forest Service.

c. A copy of these instructions will be kept, together with all other instructions, in a conspicuous location in each rescue cache.

4. Instructions for Rescue Leaders Scribe

a. Keep a list of all persons who leave or enter the search area. Get drivers licenses or other ID cards when possible.

b. Keep track of times which may be important, such as when column's leave for the site, when they arrive, etc.

c. Keep a list of equipment sent to or from the site, when it went out and who took it.

d. Assist the Rescue Leader with other tasks as directed.

5. Instructions for Accident Site Commander

a. Upon arrival at the accident site, assume command of the rescue operations until relieved.

b. Obtain a complete briefing from column leaders on their progress.

c. Redistribute personnel if necessary and be sure an avalanche guard is in position and an escape route well known.

d. Estaolish radio contact with rescue leader and report progress every 10 minutes. Use radio codes when necessary.

e. If rescue appears lengthy, have rescue leader arrange for additional third stage support.

f. Arrange to remove witness and tired rescuers from area safely. Report names of those leaving area to rescue leaders scribe.

g. Follow prescribed course probe procedures.

h. At conclusion of rescue operations, make sure all rescuers and equipment are accounted for. Dispatch rescuers in groups and instruct group leaders to give names to rescue leaders scribe.

6. Instructions for Hasty Search Leader

a. Select five rescuers who are physically fit and are good skiers. Have them record their names with the rescue leaders scribe.

b. Assign two members to get equipment from rescue cache. If available, give each member a scadie or pieps.

c. Get as much information from the witness as possible. Assign one member to keep track of the witness.

d. Select a safe route and flag it. Be sure to follow accepted procedures for hazardous area travel.

e. Evaluate avalanche hazard at the site and post an avalanche guard. Make an escape route known to all.

f. Make a quick, thorough search of the slide area and its perimeter. Flag the victims point of entry, last seen point, articles of clothing or equipment and the perimeter of the slide.

g. Determine the most likely burial region and begin coarse probe. Start new probe lines as additional help arrives. Use electronic search if possible.

h. Report progress to rescue leaders every 10 minutes. Brief column leaders as they arrive.

i. Remain in charge until relieved by the accident site commander.

7. Instructions for Column Leaders

a. Select only those rescuers who are physically fit and good skiers. Have them record their names with the Rescue Leaders scribe.

b. Distribute assigned equipment among rescuers. Equipment should include probes, shovels and a rescue pack.

c. Obtain a briefing from the rescue leader.

d. Follow the established route to the accident site. Use accepted procedures for travel to hazardous areas.

e. Upon arrival at the accident site, follow directions of the person in charge.

8. Instructions for Third Stage Leader

a. Get a complete briefing from the rescue leader.

b. Arrange for additional manpower or supplies to meet rescue needs through the Alaska State Troopers. Tel. 333-9548 or 911.

MANPOWER

1.	Girdwood Mountain Rescue Group	783-2211 or 783-2525
2.	Alaska Rescue Group	(AST)333-9548 or 783-2525
3.	Air Force Rescue Center	AST 333-9548
4.	Mountaineering Club of Alaska	AST 333-9548
5.	Nordic Ski Club	333-9548
6.	Sourdough Ski Patrol	333-9548
7.	Denali Ski Patrol	333-9548

EQUIPMENT

1.	Girdwood Mountain Rescue Group	783-2211 or 333-9548
2.	Alaska Rescue Group	(AST)333-9548 or 911
3.	Denali Ski Patrol	333-9548

COMMUNICATIONS

1.	Sourdough Ski Patrol	344-5373
2.	Denali Ski Patrol	333-9548
3.	49er Club	(AST) 333-9548

FOOD

1.	Alyeska Lodge	783-2222
2.	Crow Creek Mercantile	783-2195
3.	Double Muskie Inn	783-2822
4.	Girdwood Griddle	783-2554

OVER-SNOW VEHICLES

1.	Alaska State Troopers	(AST) 333-9548
2.	Alyeska Resort	783-2222
3.	Don Conrad	783-2936

HELICOPTERS

1.	Air Force Rescue Center	333-9548
2.	Alaska State Troopers	333-9548 or 783-2525 or 911
3.	Far North Ski Guides	783-2814
4.	ERA Helicopter Service	272-5422

LIGHTS

1.	Air Force Rescue Center	333-9548
2.	Alaska State Troopers	333-9548 or 783-2525

9. Instructions for Lift Operators and Attendants.

a. Alert all ski patrollers and other rescue personnel at your station.

b. Restrict uphill loading to rescue personnel only.

c. Await further instructions from the rescue leader.

IMPORTANT NUMBERS AND ADDRESSES

TITLE	NAME	HOME	OFFICE
Snow Ranger	Tom Miller	783-2605	279-5541 Ext. 215
Asst. Snow Ranger	Jim Hackett	783-2816	279-5541 Ext. 216
Forest Supervisor	Clay Beal	347-1703	279-5541
Recreation Manager	Lynn Mitchell	349-5778	279-5541
Forester	Victor Baer	349-3720	279-5541
General Manager	Chris von Imhof	783-2715	783-2222
Mtn. Manager	Larry Daniels	783-2740	783-2222
Lift Foreman	Dick Harris	783-2898	783-2222
Hill Chief	John Samuelson	783-2920	783-2222
Avalanche Technician	Dave Hamre		783-2222
Patrol Leader	Marty Sherman	243-4810	
Asst. Patrol Leader	Dick Lathrop	337-3485	
Avalanche Adviser	Wally Watts	344-8461	276-4246
State Troopers	Bill Hugues		783-2525
Air Force Rescue Ctr.	AST	333-9548	344-0420

AVALANCHE CLOSURE VIOLATIONS

The Forest Service is responsible for protecting the welfare and safety of the public. The permittee is responsible for taking action which is their responsibility in the area safety plan. Closing areas and enforcing avalanche closure notices requires close cooperation between the management and the Forest Service. The permittee has been requested to cooperate by repossessing lift tickets or refusing sale to any trespassers.

A. Violations of avalanche closures and closed areas which have been posted as such, will henceforth be dealt with in the following manner:

1. First Offense. The violator will be denied skiing privileges for one week and will receive an explanation of the avalanche closure policy by the Snow Ranger or Avalanche Technician. A written notice will be sent to Alyeska Resort of action taken, signed by the Snow Ranger or Avalanche Technician.

2. Second Offense. Suspension of skiing privileges for the remainder of the season.

3. It is further understood and made a part of this plan that upon willful violation of an avalanche closure, ski instructors, ski patrolmen, and other employees of the permittee may be subject to suspension under Clause 2 above for a first offense. Written notice will be sent to Alyeska Resort of action taken, signed by the Snow Ranger.

4. Snow Ranger on duty may write a federal citation under 36 CFR 261.50 (a) & (b) and 36 CFR 261.53 (e) for violation of avalanche and closed areas.

TICKET REMOVAL POLICY

AVALANCHE CLOSURE

1. 7 days off mountain
   Federal citation

2. Off mountain for season
   Federal citation

TRAIL CLOSURE

1. Warning
2. 7 days off mountain
3. Off moutain for season

RECKLESS SKIING

1. Warning
2. 1 day off mountain
3. 1 month off mountain

COLLISION (witnessed)
with violator clearly
at fault).

1. Warning
2. 1 day off mountain
3. 1 month off mountain

LINE CRASHING

1. Warning
2. 1 day off mountain
3 1 month off mountain

FRADULENT USE OF PASS OR TICKET

1. Confiscation of pass or ticket,
   1 month off mountain

UNLOADING FROM A MOVING LIFT
AT OTHER THAN A TERMINAL

1. 1 week off mountain
2. 1 month off mountain

When warning a ticket holder, tear a corner off the ticket. When warning a pass holder, record the pass number and name. All action taken must be recorded on a violation report. A complete explanation of violation policies should be given to each violator.

In cases of avalanche closure violations, the U.S. Forest Service Snow Ranger should be contacted so that a Federal citation can be issued. In order for a citation to be issued, the patroller must witness the violation and never lose direct visual contact. All tickets and passes removed from violators are to be turned in to the Hill Chief. Season passes will in turn be placed in the business office for safe keeping. It is imperative that all pulled tickets and passes be completely documented.

The permittee, in the interest of safe, enjoyable skiing, reserves the right to revoke the ticket or pass of any person creating a hazard to others, or otherwise detracting from others enjoyment of skiing. Such revocation will be done in as courteous and professional manner as possible, and will be completely documented.

APPENDIX A-3

JOB DESCRIPTION

HILL CHIEF

1. Execute duties as outlined in the Snow Safety Plan.

2. Help develop, review and revise the Snow Safety Plan and other resort operational safety plans.

3. Report directly to the mountain manager.

4. Assume the responsibilities of the mountain manager during his absence.

5. Be "on call" at all times and work when needed by the mountain manager.

6. Direct and supervise members of the Pro-Patrol.

7. See that Pro-Patrol members are well trained in emergency care, avalanche hazard detection and control, the safe and efficient use of explosives, lift safety and evacuation, and other areas of Pro-Patrol responsibility.

8. Have a current advanced first aid card or be a currently registered EMT.

9. See that information sign boards are in good repair and that information is current.

10. Maintain all trail and information signs.

11. Keep rescue and first aid equipment in good condition.

12. See that trails are checked regularly and that hazardous conditions are corrected.

13. Flag off or fence danger areas and see that all towers in skiing areas are padded.

14. Counsel ski patrol members at morning and evening briefing sessions.

15. Enact opening and closing times.

16. Provide daily hill condition and ski reports.

17. Represent the permittee in matters dealing with the volunteer ski patrols.

18. Assist the Forest Service in promoting safe skiing practices.

19. Take charge of all lift evacuations.

20. Direct the "sweep".

21. See that equipment issued to the Hill crew is kept in good order.

22. See that ski patrol rooms are clean and in good repair.

23. Assistant Hill Chief will be acting Hill Chief in the absence of Hill Chief.

APPENDIX A-4

JOB DESCRIPTION

AVALANCHE TECHNICIAN

1. Administer and execute duties as outlined in the Snow Safety Plan.

2. Report directly to the Mountain Manager.

3. Be "on call" at all times and work when needed by the mountain manager.

4. In close cooperation with the Snow Ranger, Mountain Manager and Hill Chief, be in charge of all avalanche forecasting and control, and determine when control work is necessary.

5. In close cooperation with the Snow Ranger, Avalanche Technician will control the opening and closing of avalanche areas and the enforcement of closed areas regulations.

6. Maintain daily weather and avalanche records.

7. Test and evaluate snow conditions regularly.

8. When necessary, assist the Snow Ranger in firing the recoilless rifles.

9. Oversee and direct all hand charging and test skiing.

10. Maintin gun firing platforms and supplies in a clean and ready condition.

11. Inventory and control the storage of hand explosives and supplies.

12. Maintain a sufficient ammunition and supplies inventory in the caches and gun mounts to meet potential needs.

13. Inventory ammunition storage twice weekly.

14. Maintain a sufficient hand explosives and supplies inventory to meet potential needs.

15. Procure all equipment and supplies for the control of avalanches.

16. Maintain all avalanche closures. Keep avalanche signs in good repair.

17. Keep avalanche rescue equipment in good condition and ready for use.

18. Assist in training Pro-Patrol and volunteer ski patrol members in avalanche control and rescue procedures.

19. Assist Snow Ranger in promoting safe skiing practices.

20. Have a current Advanced First id and Emergency Care card, or the equivalent.

21. After notifying Forest Supervisor or Recreation Manager the permittee's employers who are certified gunners will fire recoiless rifles when the Snow Rangers or other U.S.F.S. gunner cannot reach the area.

22. Be available at such times as there is an avalanche hazard.

23. In the absence of the Avalanche Technician, Hill Chief or a qualified designated assistant, acceptable to the Forest Service, will be acting Avalanche Technician.

24. Observe post control results.

25. Participation as a Forecaster in daily avalanche hazard forecast.

APPENDIX A-5

JOB DESCRIPTION

LIFT FOREMAN

The responsibilities of the Lift Foreman are as follows:

Establish and conduct weekly, monthly, and yearly maintenance and inspection schedules for each chairlift.

Maintain a thorough maintenance log for each chairlift and record all work done on the lift in the maintenance log.

Conduct daily lift maintenance as may be required throughout each operation day.

Maintain a good knowledge of the American National Standards Institute's "Safety requirements for aerial passenger tramways" and insure that the Alyeska Resort is operating within these guidelines.

Conduct a morning start-up of each lift that will be operated that day and visually inspect each lift's terminals, line machinery, cable and ramps.

Provide all lift personnel (new and returning) with a thorough orientation regarding the Alyeska Resort, its various departments, and its employee policies and procedures.

Establish and maintain a daily and weekly lift crew schedule, including daily lift station assignments, hours each crew member will work, and the days off each will have per week.

Instruct all lift personnel in the proper loading and unloading procedures for skiers and foot passengers.

Instruct all lift personnel in the proper use of all communications equipment at their disposal.

Instruct all lift personnel in the proper procedures to follow in the event that a manual chairlift evacuation becomes necessary. This will include a brief review of those procedures throughout the operating season.

Insure that all lift personnel are familiar with the Alyeska Ski Resort's Snow Safety Plan and the role they will be expected to play in the event an avalanche occurs during an operating day.

Instruct all lift personnel in the proper procedures for the lift station to which they are assigned. For each lift operator this will include a working knowledge of the following items:

1. Proper morning start-up procedures.
2. Proper use of all stop and toggle switches.
3. Proper use of communication equipme .
4. Proper application of service brak anti-rollback brake, and emergency brake.
5. Proper use of the lift's auxiliary mover
   a. Morning start-up.
   b. Connecting auxiliary motor to lift drive shaft.
   c. Engaging auxiliary motor and operating lift for unloading purposes.
6. Conduct morning inspection of all loading and unloading ramps.
7. Conduct morning inspection of the lift's terminals, all line machinery, cable, and chairs.
8. Conduct proper down-loading of foot passengers if applicable.
9. Supervision of lift attendants.

APPENDIX A-7

JOB DESCRIPTION

LIFT OPERATOR

General Requirements

Good physical condition. Must be 18 years of age and willing to work a changing schedule with varying hours. During peak periods, some overtime will be required. The operator must be well acquainted with the operation of the lift he is working on. The operator must be able to run the lift under normal situations and also know how to operate it under auxiliary power.

Duties

The operator is responsible for the day to day operation of his particular lift. The operator must be able to direct and motivate the two or more persons working with him on the lift. The operator should show by personal example the proper methods and attitudes of a lift crew person.

It is the operator's responsibility to make sure that the ramps are kept propely, thal all signs are in their proper location, and that his lift meets or exceeds all its basic operational requirements. Furthermore, it is the operator's responsibility to see that any abnormalities or problems with the lift, personal, or public be brought to the attention of the lift foreman.

The operator's primary responsibility is lift operation. However, from time to time the operator will be called on to assist other departments with certain tasks. These will be done willingly and without hesitation.

Training

The operator will have gone through the training that is given to each lift attendant. In addition, the operator will be taught the genera' function of his lift. He should know how all brakes function, how to adjust them, and know when they need to be adjusted. In general, the operator should become familiar enough with is lift that he can spot most any abnormality and either correct it and/or report it to the Lift Foreman.

APPENDIX A-8

JOB DESCRIPTION

LIFT ATTENDANT

General Requirements

Good physical condition. Must be 18 years of age and willing to work a changing schedule with varying hours. During peak periods, some overtime will be required

Duties

The lift attendant will assist the operator in the daily operation of the chairlift. He will either work the bottom end with the operator, or after a break-in period, will man the top station. The attendant will be required to be ready for work with all gear and clothes five minutes prior to punch-in time.

The attendant's primary job responsibility is to assist the public in loading and unloading. This includes keeping the ramps and loading platforms in good shape.

There will be other tasks that will be expected of the lift attendant. Although the attendant's primary job is dealing with the lift, the attendant will be expected to perform other jobs for other departments from time to time.

Training

Prior to the beginning of the season a one or two-day training session will be held. If the attendant is hired during mid-season, the new person will be assigned to a station with an experienced operator for on-the-job training.

Periodic crew meetings will be held throughout the season to discuss procedures and safety measures.

The attendant is expected to learn the general operation of the chair and the function of its components.

The attendant will take his directions from the Lift Foreman and/or the Mountain Manager.

APPENDIX A-9

JOB DESCRIPTION

PRO-PATROL

1. Administer and execute duties outlined in the Snow Safety Plan.
2. Report directly to the Hill Chief.
3. Have a current Advanced First Aid and Emergency Care Card, or be a currently registered E.M.T.
4. Have a current Circle A avalanche card or the equivalen .
5. Wear an area approved uniform and aid belt.
6. Administer first aid to the injured following area standing orders.
7. Transport the injured off the mountain to the aid room or clinic.
8. Assist the Snow Ranger, Avalanche Technician and Hill Chief in Avalanche Control.
9. Assist in avalanche rescue.
10. Assist in keeping avalanche rscue equipment in good and ready condition.
11. Assist in chairlift evacuation.
12. Assist in keeping lift evacuation equipment in a good and ready condition.
13. Assist in the search and rescue of lost skiers.
14. Check trail signs daily and straighten and reposition when necessary.
15. Check all fence lines daily and straighten and reposition when necessary.
16. Check all tower pads daily and raise when necessary.
17. Assist in setting out trail signs, fence lines and tower pads.
18. Check ski slopes and trails daily to determine hazards and danger areas.
19. Assist in marking, fencing r removing hazards.

20. Deep Sundeck porch, steps, and when necessary, roof clear of snow and ice.

21. Assist lodge operator in minor skyride maintenance when necessary.

22. Assist in removal of skyride sewage when necessary.

23. Keep skyride patrol room and storage areas in a neat and orderly condition.

24. Keep base aid room and storage areas in a neat and orderly condition.

25. Follow established area "bump" system.

26. Make trail "sweep" at closing.

27. Assist Mountain Manager in trail maintenance and minor lift maintenance when necessary.

28. Assist lift crews with lift ramp snow removal when necessary.

29. Help lift crew control lift lines when necessary.

30. Assist in policing the general public to prevent reckless speeding, out-of-control skiing or other hazardous situations.

31. Assist in lift operation in an emergency.

32. Assist the Snow Ranger, Hill Chief, and Avalanche Technician in Public Safety training and public relations.

33. Maintain good relations and cooperate with volunteer groups.

APPENDIX A-10

JOB DESCRIPTION

VOLUNTEER SKI PATROL

1. Report directly to Volunteer Patrol Duty Leader.

2. Administer and execute duties as outlined in Snow Safety Plan.

3. Have a current Advanced First Aid and Emergency Care Card or the equivalent.

4. Have a current Circle A avalanche card or the equivalent.

5. Wear an NSPS and area approved uniform and an Aid Belt when on duty.

6. Administer first aid to the injured according to Area Standing Orders.

7. Transport injured skiers off mountain to aid room or clinic.

8. Assist in the reduction of avalanche hazards under the immediate supervision of the Snow Ranger, Avalanche Technician or Hill Chief. Only qualified patrollers selected by the U.S. Forest Service and Alyeska Resort will be used.

9. Assist in avalanche rescue.

10. Assist in chairlift evacuation.

11. Assist in search and rescue of lost skiers.

12. Check ski trails and slopes daily to determine hazards.

13. Report hazardous conditions to the volunteer Patrol Duty Leader, Hill Chief, Avalanche Technician or Snow Ranger. In extreme emergency, the volunteer Patrol Duty Leader can close sections of the mountain in the event the Hill Chief, Avalanche Technician, Snow Ranger, or Mountain Manager cannot be contacted.

14. Assist in flagging, fencing, or closing hazardous areas.

15. Help place or remove avalanche closure signs, trail marking signs, and traffic control signs.

16. Report skiing violations to the volunteer Ski Patrol Duty Leader, Hill Chief, Avalanche Technician, or Snow Ranger.

17. Follow established "bump" system.

18. Assist in minor trail maintenance when necessary.

19. Assist in the control of lift lines when necessary.

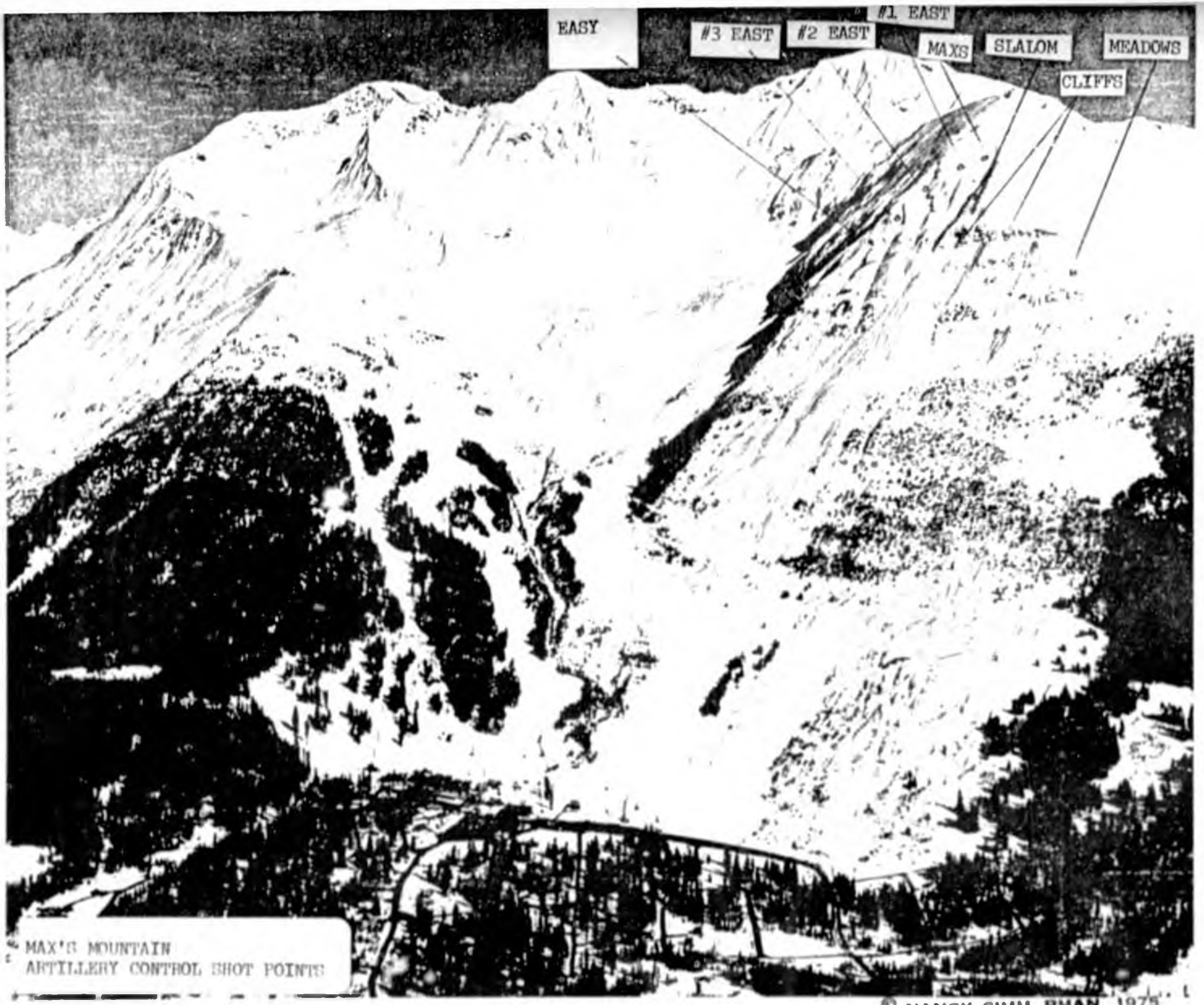
20. Keep skyride aid room in an orderly and neat condition.

21. Keep all patrol rescue equipment in a good and ready condition.

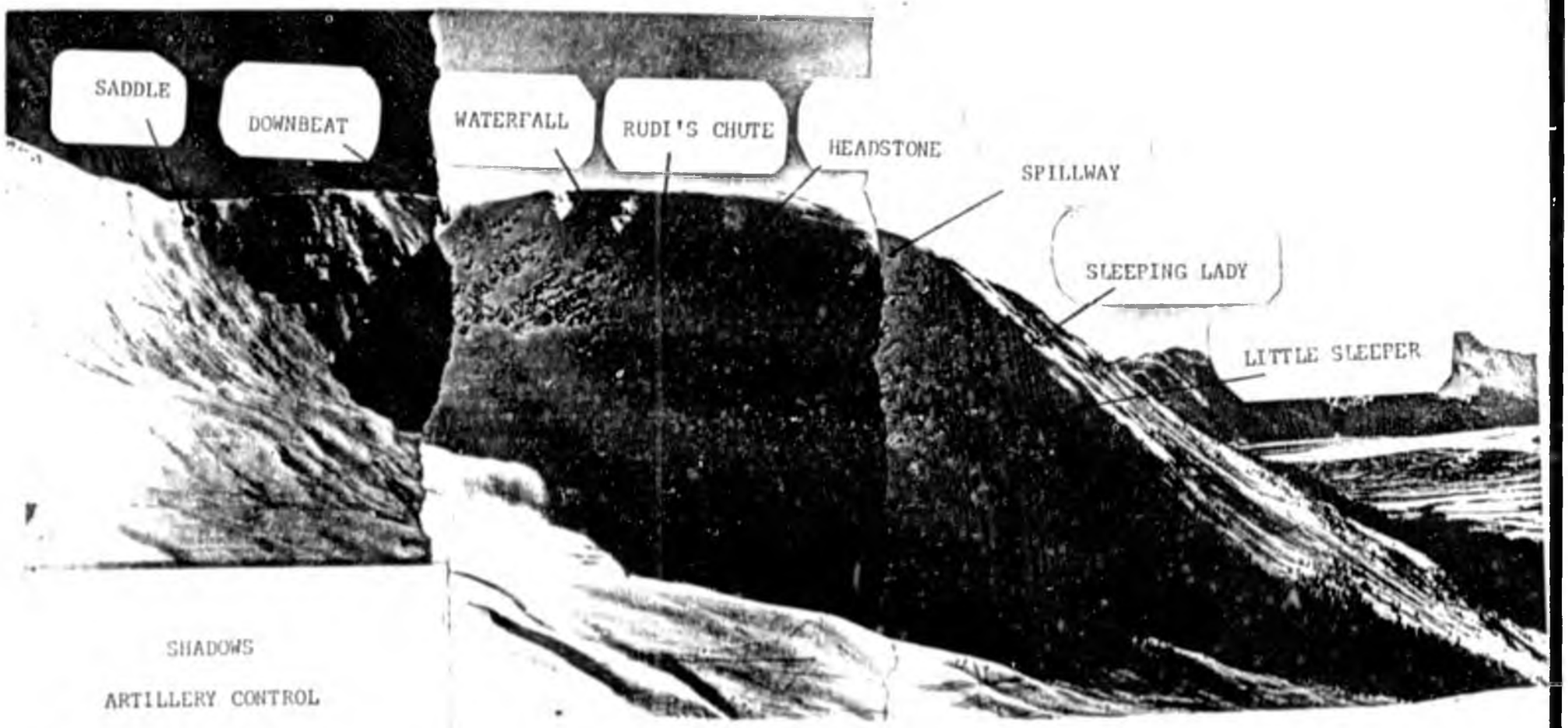
22. Check all patrol communications daily to assure good working condition.

23. Assist in safety training and accident prevention programs.

24. Make "sweep" at closing.



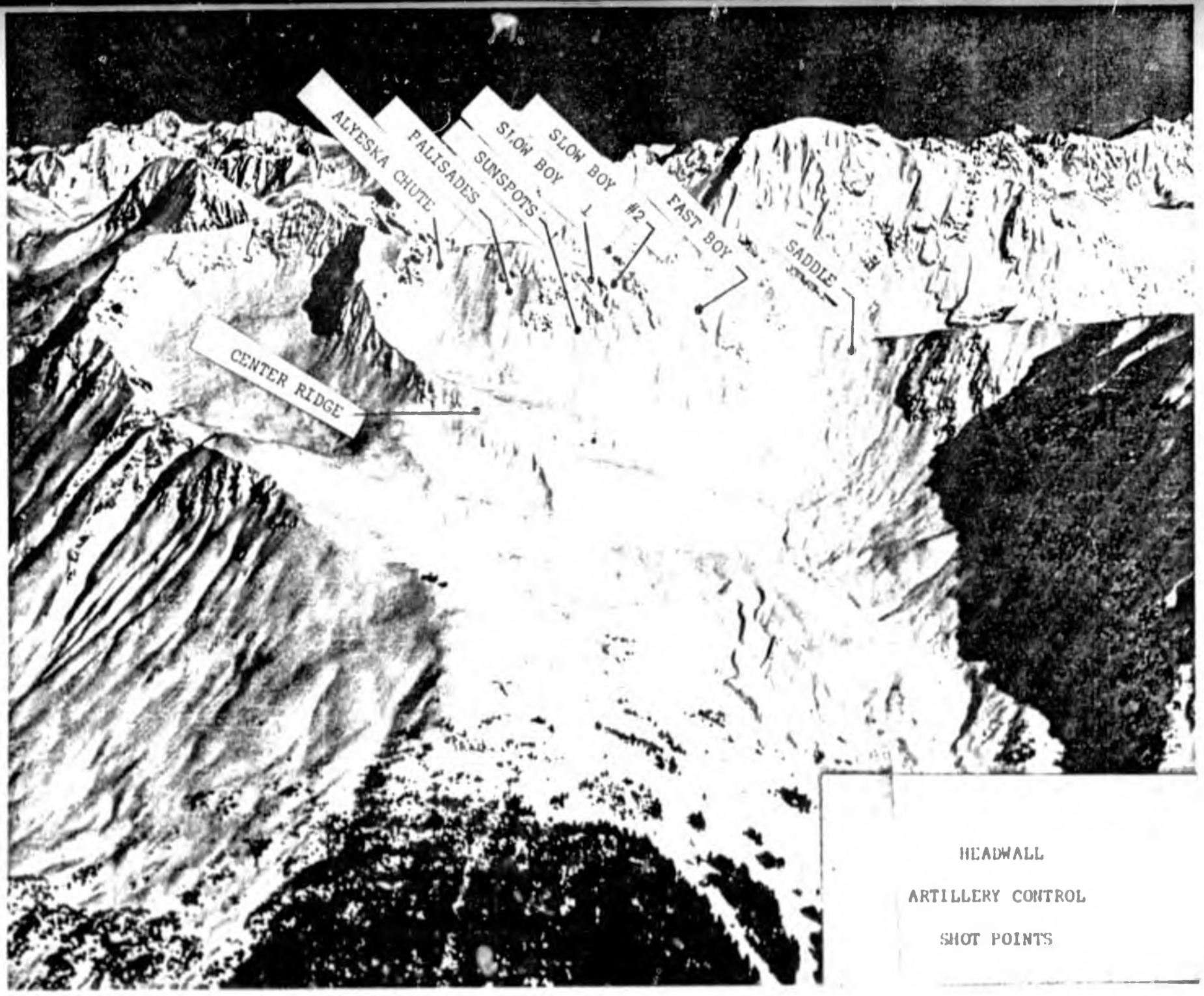
MAX'S MOUNTAIN
ARTILLERY CONTROL SHOT POINTS

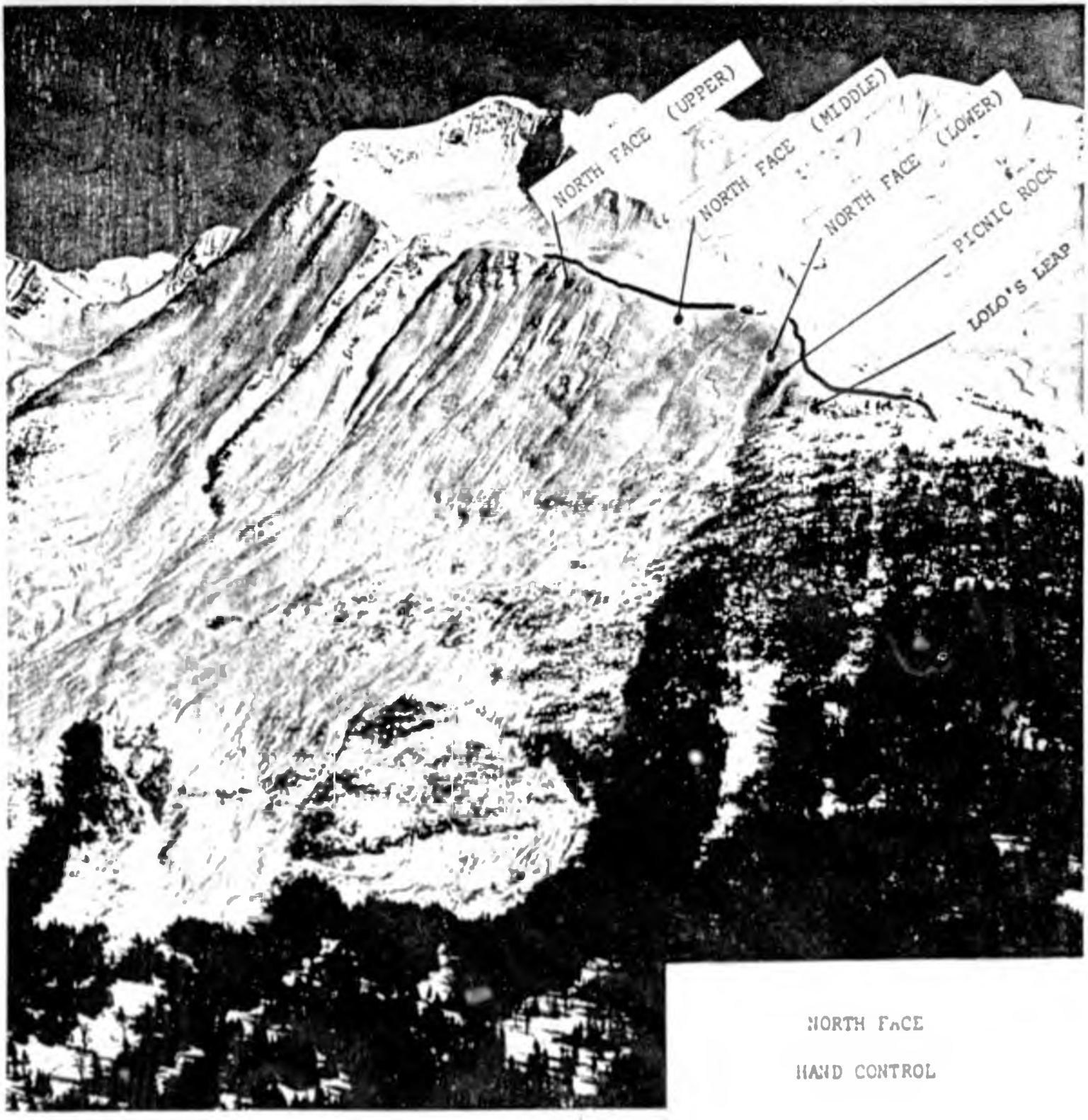


SHADOWS

ARTILLERY CONTROL

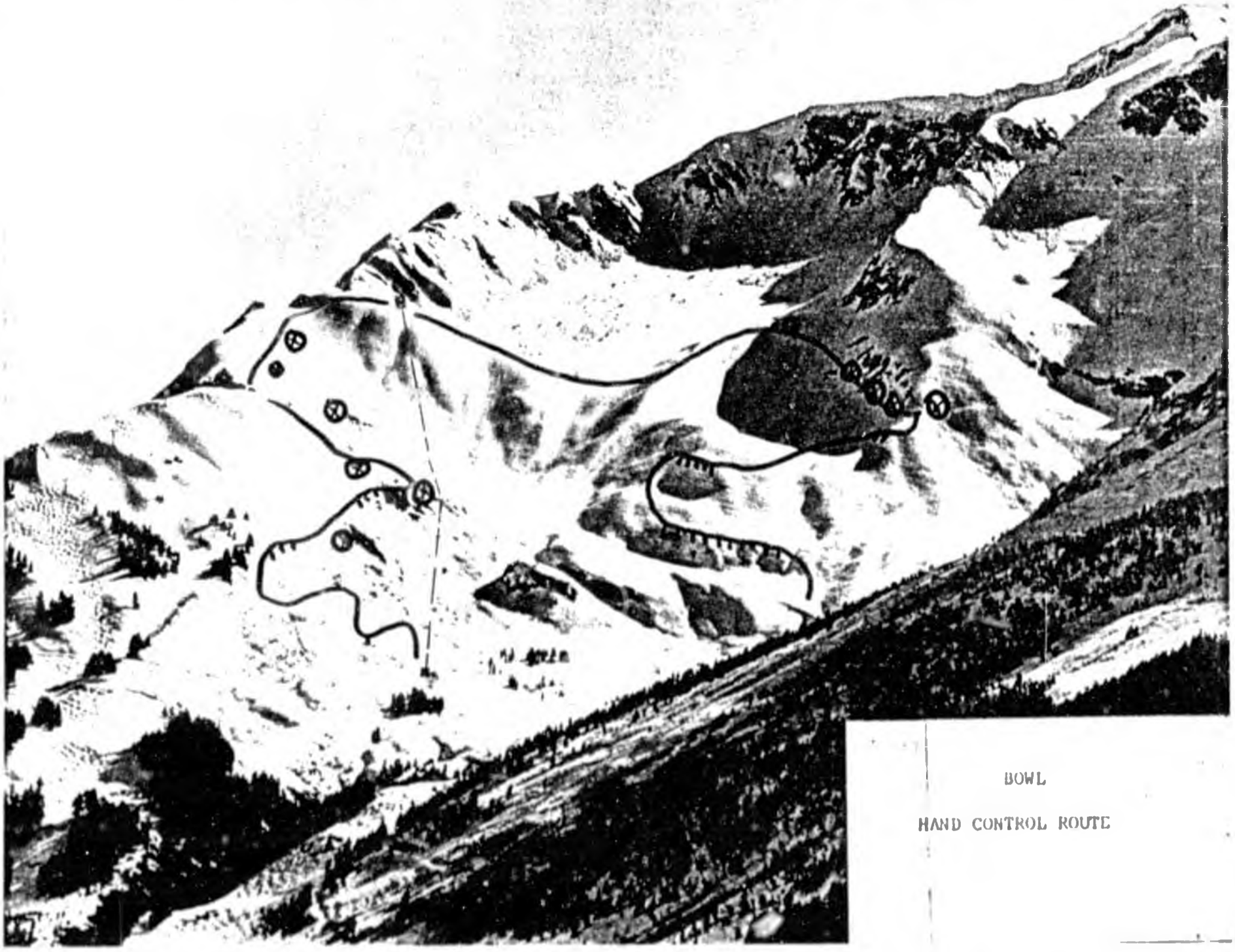
SHOT POINTS


ALYESKA CHUTE
PALISADES
SUNSPOTS
SLOW BOY
SLOW BOY
#1
#2
FAST BOY
SADDLE
CENTER RIDGE
HEADWALL
ARTILLERY CONTROL
SHOT POINTS



NORTH FACE

HAND CONTROL



BOWL

HAND CONTROL ROUTE

SCR

9

(7)

COMMITTEE REPORT

HOUSE

FURTHER:

March 17, 1979 Date: 4-12-79

Mr. Speaker:

The Committee on STATE AFFAIRS has had SCR 9

Requesting the Department of Transportation and Public Facilities to examine and report on the feasibility of construction of a road between Wales and Tin City.

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [X] New Fiscal Note

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

John Bruce

Terry Martin

MEMBERS HAVING
OTHER RECOMMENDATIONS:

_____
CHAIRMAN

H 60 (Rev. 12/78)

THE LEGISLATURE OF THE STATE OF ALASKA
ELEVENTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. SCR 9
Title Road from Wales to Tin City
Requested by Ferguson Date 2/13/79

II. FISCAL DETAIL
Agency Affected DOT/PF
Program Category Affected Design & Construction
Budget Request Unit(s) Affected Highway Design & Construction

EXPENDITURES (Thousands of Dollars)

	FY 79	FY 80	FY 81	FY 82	FY 83	FY 84
100 PERSONAL SERVICES		25				
200 TRAVEL		5				
300 CONTRACTUAL		10				
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL						

FUNDING (Thousands of Dollars)

GENERAL FUND		40				
FEDERAL FUNDS						
OTHER (Specify)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

The above should be sufficient to establish the feasibility and probable cost of the project.

IV. DATE 4/10/79 PREPARED BY Harry Keller
AGENCY DOT/PF
PHONE 364-2122

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

33-001 (Rev. 10/78)

Mr. Chairman:

Tin City is the only active mine in District 22 other than gold mining operation in Nome that provides any jobs for the people in my area.

Mr. Richard Lee the owner has built and maintanined a haul road from Tin City to Goodwin Gulch, a distance of 3 miles.

This bill would provide monies for study of an extension of this road to the village of Wales, which is 7 miles.

I feel there is justification for this study for the following reasons:

1. Over half of our crew of 12 men are from Wales, who, along with the erst of the two communities would use the road constantly. At present the means of contact between Tin City and Wales is by (1) foot, over the mountain, a tough, arduous and many times, dangerous route, (2) by boat during summer months, the only route being via Bering Sea around Cape Mountain, seldom usable because of the frequent south storms prevailing through the summer and (3) by Nome based airplane, which stringently limits the number of people who can travel or the payload they can utilize.

2. The BIA supply ship, Northstar III, which carries winter supplies and material to the various villages along the Arctic coast, almost every year, as it prepares discharge of supplies for Wales finds weather conditions adverse to unloading and is additionally thwarted by several sand bars between the ship's anchorage and the beach. There have been recent instances when the Northstar, due to severe weather and dangerous sand bars had to leave the area with all freight for Wales still aboard, discharge the freight at Nome, then airlift the freight to Wales.

3. The discharge area at Tin City is remarkably well suited for ship-to-shore discharge, has a good protected anchorage, deep water and an ideal beach and a landing area to which a good road is already built and in annual use by the military and civilians and freight lines serving the Tin City area. A road to Wales would enormously simplify the unloading efforts for this all-important requirement.

4. As mentioned before our own primary need for the road is make accessible our property at Boulder Creed and Granite Creed in the very near future. WE have an anticipated life of operation on Boulder Creed of from 12 to 15 years by dredging and on Goodwin Creed of approximately 7 years by dredging. In this enterprise a large local payroll would be generated creating a major economic up-lift to this area.

5. In conjunction with our placer operation we have concrete plans for development of our tin lode claims, the source of all the placer tin. This projection, we feel, has much merit and has the potential of many years of activity and the development of very substantial wealth in this area.

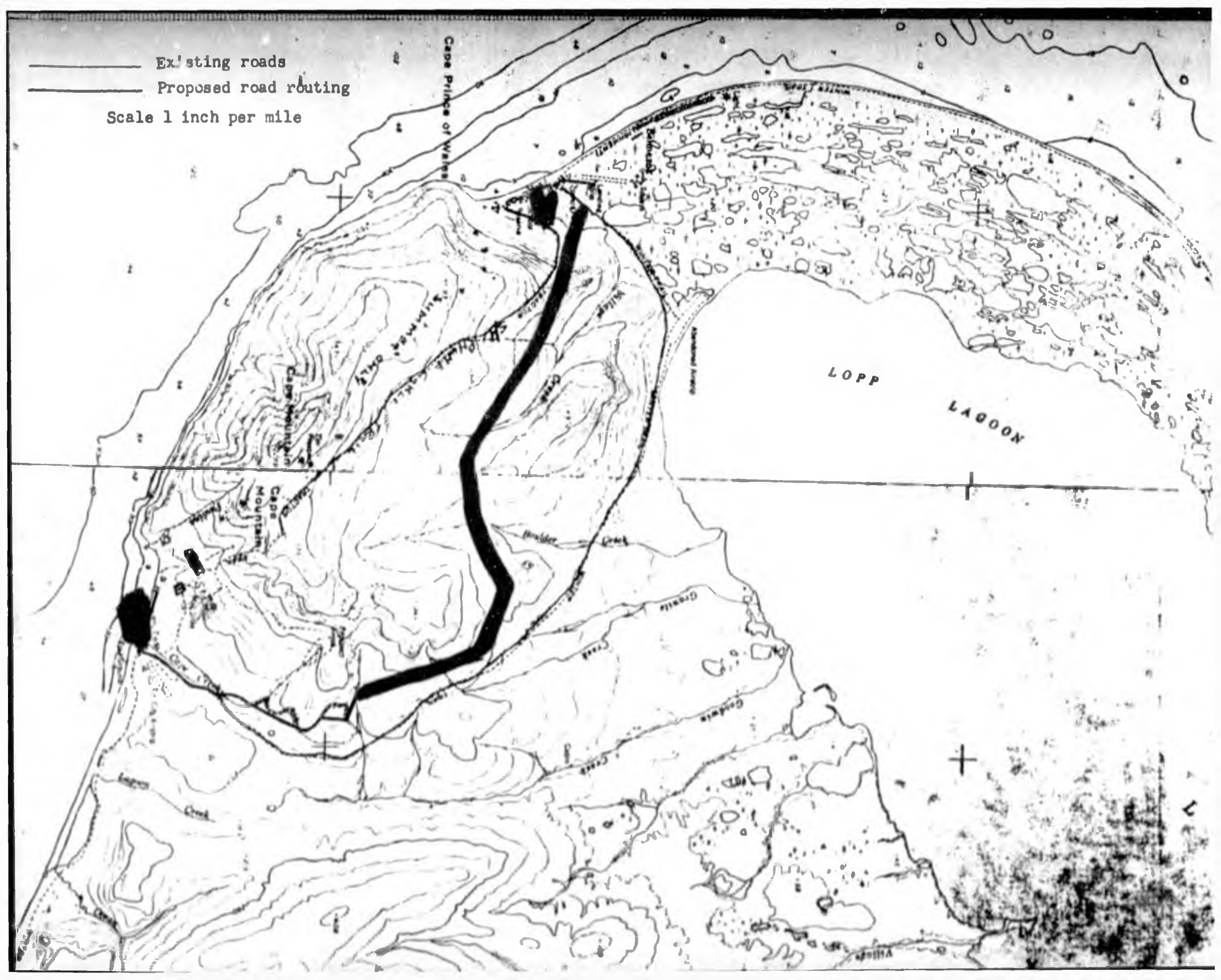
6. We also wish to point out that the Tin City Air Force Base, with a complement of approximately sixty people has a very direct association with Wales in several ways, socially and economically. Wales people are employed at the base, both seasonally and year round. The air base provides an outlet for a substantially large turn-over of Eskimo

carving and crafts. The connections by road between the Air Force Base at Tin City and the Navy Base at Wales is also of considerable value, militarily and economically.

7. The large general store at Tin City stocks and provides a major source of supplies, groceries, meat, clothing, hardware, gas and oil that the people of Wales are largely dependent on. The store also accepts ivory carvings and Eskimo crafts as a medium of exchange which other smaller stores in the area do not. The people of Wales unanimously urge and enthusiastically support a road tieing the communities together as being economically imperative. These people have been praying for a road for many years and many promises have been made by politicians and highway officials that they would be provided a road. Yet nothing has been done. Alaska is a growing State. This area should no longer be neglected and overlooked.

8. We cannot help but note that other areas of Alaska and Seward Peninsula with little or no population and no developed economy have been appropriated millions of dollars for construction of roads and bridges that have relatively little impact on the material development of the country and its people and whose overall usefulness in no way compares to the real need that is to be found with the people of Wales and Tin City.

9. Lastly, the road between Wales and Tin City is the beginning of the link-up of the highway to Nome and eventually with Fairbanks and the Outside, the length of the continent. It is truly a worthwhile and justifiable project that we urge for immediate consideration and implementation.


Existing roads
Proposed road routing
Scale 1 inch per mile
Cape Prince of Wales
LOPP
LAGOON
Cape Mountain
Creek

SCR

20

(7)

COMMITTEE REPORT

HOUSE

FURTHER:

April 3, 1979 Date: 4-12-79

Mr. Speaker:

The Committee on STATE AFFAIRS has had CSSCR 20

Relating to the construction of a road from Goose Bay to Point MacKenzie.

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

[X] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[ ] replace with CS for _____ [ ] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [X] New Fiscal Note

[ ] reports it back without recommendation

[X] referred to the Finance Committee

MEMBERS SIGNING
DO PASS

MEMBERS HAVING
OTHER RECOMMENDATIONS:

CHAIRMAN

H 60 (Rev. 12/78)

INTRODUCTION

As a site for Alaskan industrial development, Point MacKenzie offers some substantial advantages. The Matanuska-Susitna Borough is growing rapidly, and its administrators and residents show an exceptional willingness to support large-scale industrial development.

The Borough is prepared to supply significant financial incentives to industrial developers. Low tax base land is available and low-interest financial assistance can be provided on short notice through the Borough's Power of Ports and other means. Planning and design efforts are now underway for extension of a road to the Point MacKenzie area, and long-term electrical power will be available on site due to hydroelectric projects planned for the Susitna River. Further, the Borough is in the process of preparing a comprehensive land-use planning document to assure compatibility of industrial development at the site with existing and future uses. The Point MacKenzie site is located about 50 road miles and less than 15 air miles from the major metropolitan city of Anchorage. This close proximity to the population center of the state provides additional economic advantages. Transportation costs are minimized, and all services and suppliers are readily accessible.

The location, together with the current trend toward development of attractive residential subdivisions in the area, enhances the overall desirability of the Matanuska-Susitna Borough as a location in which to settle. Residential settings offer full utilities and community services, as well as excellent access to recreational and cultural opportunities.

Physical features of the Point MacKenzie location, including climatic, geologic, and marine characteristics provide a site suitable for port development and large-scale industry. The following text describes in greater detail the character of the Point MacKenzie area and its natural and economic features.

For additional information regarding industrial development in the Matanuska-Susitna Borough, please contact the Borough offices in Palmer, Alaska. A list of contacts has been provided on page 26 for your convenience