FALCONBRIDGE LIMITED

REPORT ON RECONNAISSANCE GEOLOGICAL MAPPING
OF THE
WINDY CRAGGY AREA, B.C.

NTS 114P

Written by: D.R. Prince

Date: September, 1983

Table of Contents

A. Introduction

The following notes and accompanying maps are the results of nearly one month of reconnaissance mapping in the Windy Craggy area of British Columbia. The mapping was done between August 19th and September 15th, 1983 but was plagued by wet, rainy, foggy and windy weather. The poor weather abated on September 7th but by that time the temperature had dropped considerably and the snow cover had descended to below 1300 meters. Most of the mappable areas outcrop between 1200 and 2000 meters. Warm sunny days near the end of the project caused some melting at lower elevations and on the southern faces.

The mapping consisted mostly of helicopter traverses using the drill-dedicated Pacific Helicopters Hughes 500D (DSI). Crew changes and drill supply were top priority for the use of the machine. Nevertheless, at least several hours were available for mapping use on most days. Some ground traversing and spot checking were done but only on a limited scale. Useful simple ground traverses are rare in the Windy Craggy area.

Mapping results are plotted on two 1:10,000 scale topographic plans prepared by Pacific Surveys; some outlying areas are located on an accompanying 1:250,000 scale government topographic map. Contacts on the map are approximate and wherever possible geophysical information was used to extend contacts beneath glaciers and snow cover.

B.General Stratigraphy and Structural Relationships

a) Stratigraphy

Five subdivisions have been identified during mapping in the Windy Craggy area. These consist of the following:

Upper Tats Complex	- undated
Middle Tats Complex	- dated as Triassic by GSC
Lower Tats Complex	- undated
Graphitic Shale Unit	- undated
Limestone Unit	- undated

These subdivisions are based on the predominant lithology in each unit.

The oldest (?) unit is a suite of grey limestones which occur in the western part of the map area. This unit is generally steeply dipping to the east and arcs in a gentle easterly concave curve in the north and south of Windy Craggy.

Everywhere the limestones are overlain with apparent conformable contact by a black graphitic shale-argillite sequence. Small limy beds are included within this unit. This sequence is not a distinctive host for volcanic flows or intrusives.

Whereas both the limestones and the shales are comparatively continuous throughout the map area, the Lower Tats Complex of massive mafic volcanic flows is restricted. In both the north and south the Lower Tats Complex is missing from the stratigraphic pile. This feature is probably attributable to a facies termination. In these localities the rocks of the Middle Tats Complex rest directly on the graphitic shale unit.

The Middle Tats Complex is a relatively uninterrupted alternation of interbedded shales and massive and pillowed flows. It marks the transition between the monolithologic Lower and Upper Tats Complexes and has features common to both. Note that the majority of the known showings occur within or near the Middle Tats Complex horizon.

In the central and northern parts of the area, the Middle Tats Complex is overlain by a sequence of northeast facing pillow lavas of the Upper Tats Complex. These rocks are the youngest in the area aside from a coal bearing sedimentary package of assumed Tertiary age which crops out in the Tats Creek Valley. The Upper Tats Complex also appears to have a conformable relationship with the underlying rocks.

b) Folding

One of the largest structures identified in the area appears to be a syncline with an easterly plunging axis located under the Frobisher Glacier. A reflective symmetry of units about the axis along with opposing facing directions indicate its presence. Strike directions away from the axis are generally northwest and southwest on respective sides of the axis but near the axis, just west of Windy Craggy, the rocks strike north-south and dip steeply to the east. As well, they are strongly folded and contorted in this area suggesting axial planar deformation. Windy Craggy itself is very close to this presumed axis.

Not all of the small scale folds are related to this broad syncline. In fact, many have plunges in direct opposite directions to those expected. It is more than likely that there are at least two other fold deformations present near Windy Craggy.

c) Faulting

Faulting plays a strong role in the distribution of the rock units. The Tats Fault is a very well defined east-west striking structure which has a three kilometer left lateral displacement. From the abrupt termination of the Lower Tats Complex against the fault and its absence in the south block, a significant vertical displacement is also suspected.

A possible block fault may run north-south under the Ice Bridge Glacier. It appears to truncate the Tats Fault and brings the stratigraphically lower graphitic shale unit into close proximity with the Upper Tats Complex. Displacement is thought to be of large magnitude on this fault and it is not unreasonable to believe that the large downthrow movement on the western side may have been responsible for the preservation of a once more widespread volcanic succession.

C. Rock Unit Descriptions

a) Limestone Unit

These rocks were not examined extensively on the ground. From the air they are a thin to thickly bedded, grey to black, resistant set of rocks which, where involved in deformation, have reacted plastically and show its effects vividly. The contact with the overlying graphitic shales appears to be conformable in the west and possibly fault bounded in the northwest. Dips are generally steeply to the east.

b) Graphitic Shales

The graphitic shale sequence is typically very black to dark grey in colour. The strata are thinly bedded and well laminated shales and argillites. Micaceous and calcareous, as well as graphitic, varieties are common in this sequence. Calcite veining is ubiquitous in the calcareous types.

Where involved in deformation these rocks have developed wild fold patterns with strong axial planar formation. The easterly dipping succession has an estimated thickness of one kilometer.

c) Lower Tats Complex

The Lower Tats Complex consists predominantly of massive, thick, green basalt to andesite flows. Sills of massive dioritic intrusives constitute an estimated 15% of this complex; dikes of basalt and diorite are present but occur less commonly than the sills. Columnar jointing and an amygdaloidal nature are seen everywhere in the flows. Pillowed basalts and dacites(?) along with shale interbeds are very poorly represented in the Lower Tats Complex but where found tend to occur near its upper contact. Some mafic to intermediate volcanic breccia has been identified locally and, again, has been noted near the upper contact. Some breccia has been observed in intimate association with the Tats showing.

Individual flow units range up to 50 meters thick and extend along strike for mapped distances of greater than one kilometer; typically the thicker the flow the greater its strike extent. The maximum thickness of this complex is assumed to be in the order of two kilometers. Facing directions are rare but consistently indicate dips to the northeast and tops in the same direction.

Due to ice cover, the Lower Tats Complex is nowhere seen in contact with the underlying graphitic shale sequence.

d) Middle Tats Complex

The Middle Tats is a heterogeneous group of thinly interbedded mafic massive flows, mafic pillow lavas, and graphitic black shales and calcareous argillites. A distinctive geophysical low resistivity signature on the Dighem survey coincides well with the mapped distribution of these rocks. This complex marks the transition from the underlying predominantly massive volcanic flows of the Lower Tats to the mainly pillowed nature of the mafic lavas in the Upper Tats.

In both the north and south the Middle Tats Complex rocks appear to rest conformably on the graphitic shale sequence; as well, in the center they rest with no angular unconformity on the Lower Tats Complex.

The host rocks for the Windy Craggy deposit are also classed as Middle Tats Complex based mainly on their mixed thinly interbedded aspect and their lithologic composition. Their geophysical expression is somewhat more marked due to a higher conductivity than the Middle Tats rocks in the center of the map area. Complication by intense folding near Windy Craggy and the proximity of the conductive underlying graphitic shales also leads to a differing geophysical pattern.

A continuous tracing of the Upper-Middle Tats contact cannot be made across the east-west portion of the Tats

Glacier south of Windy Craggy. It is possible that a fault similar in attitude to the Tats fault lies under the ice and displaces this contact in a right lateral sense. If this is true then it may be reasonable to assume that the Lower Tats Complex is truncated on both the north and south by faults and that the central portion of the map area represents a different facies sequence than the other portions.

e) Upper Tats Complex

A thick sequence of amygdaloidal pillow basalts with minor intercalated massive and columnar jointed flows has been termed the Upper Tats Complex. The pillows are commonly very well developed and show hollow core and lava tube structures in many places. Amygdales are usually scattered throughout the individual pillows although a concentration near the tops can be ascertained: calcite is the most common amygdale filling. Interpillow cherty material and thin selvages are also common. Pillow sizes range from 0.5 meters to larger than 2 meters although the average size is about 1 meter in diameter.

This sequence is approximately three kilometers thick at its thickest point and overlies the Middle Tats Complex (including the Windy Craggy deposit) conformably. Its distinctive nature makes it an excellent marker unit and of great use in determining facing directions. Tops from the pillows almost invariably are to the northeast but north of the Frobisher Glacier tops face south. Just south of the glacier dips are relatively horizontal and pillow tops point upwards.

D. Structural Style

The Windy Craggy region is characterized by numerous fold styles. In general the degree of folding is strongly dependent on the composition of the rocks that have undergone deformation.

The flow sequences appear to exhibit only broad fold closures, mostly on the order of kilometer scale. Small scale structures are not seen in homogeneous flow units. Less competent rocks enclosed within the volcanics show extreme deformation features.

The mixed shale and volcanic units with their varying internal competencies are isoclinally to closely folded; most of the strain has been taken up by the sediments. In many cases the sediments have flowed substantially whereas the volcanics have broken and become rotated and discontinuous. Extreme thickening on fold hinges has been noted in the shaly portions of some sections.

Thick sedimentary sections have also reacted wildly to the deformation. Fold styles vary from tight to isoclinal to ptygmatic. Axial planar cleavage is pronounced in these rocks.

Specific F1 fold styles in the immediate Windy Craggy area, outside the drilling vicinity, may be described as follows:

-tight to close with interlimb angles from 50-70 degrees.

-axial planes are moderately inclined with moderately plunging axes of approximately 50 degrees NW.

-fold styles vary from nearly concentric, in volcanic horizons, to similar with hinge to limb thickening ratios of at least 5:1 in less competent rocks.

-fold symmetry classification is asymmetric with wavelengths of approximately 10 meters and amplitudes of 5 meters.

-a well developed S1 schistosity parallel to the axial planes of the F1 folds is easily recognized in the shales but less so in the volcanics. An exception is one locality east of Windy Craggy where undeformed pillows were traced into a zone where the pillows are extremely flattened perpendicular to bedding and stretched to about 5 times their normal height by strong development of the S1 schistosity in a fold nose.

The relationship of the postulated large easterly plunging syncline centered on the Frobisher Glacier to the small scale structural features around Windy Craggy is unclear. In the immediate Windy Craggy area fold axes have been identified as plunging to the northwest in the case of the F1 folds and to the north in the F2 folds. Neither of these corresponds to the expected parasitic folds of a gently to moderately or even steeply easterly plunging syncline. Medium scale Z folds are evident in the outcrop pattern of the Middle Tats Complex in the central part of the area and these are likely related to this major syncline. Otherwise it would appear that the Windy Craggy structures are unrelated to the Frobisher Glacier syncline and that at least three periods of deformation are manifest.

E. Metamorphism

Aside from contact metamorphism near intrusives, most of the rocks in the map area are of a similar metamorphic grade. Epidote meta-domains are common in volcanic rocks in the Upper Tats Complex, especially in the extreme east. Chloritic zones in the volcanics have also been observed in other widespread localities. Together with the phyllitic nature of the shales and the abundant calcite as amygdale fillings and veins, this mineral assemblage suggests a lower greenschist (chlorite zone) facies.

F. Geophysics

Copies of the preliminary Dighem airborne survey maps were received at Tats Lake on August 24, 1983. These maps, along with the flight tapes, were very useful in interpreting the stratigraphy of the area. Several important points should be noted concerning the survey.

a) Altimeter Readings

Over 7% of the survey shows altimeter readings at an altitude greater than 150 meters. This is well beyond the stated maximum detection limit of 100 meters for the Dighem equipment.

During a discussion with P.A. Smith of Dighem he stated that much of the apparent high readings are due to areas of extreme topography where the aircraft has to assume a nose down attitude in order to climb over the cliffs. When in this attitude the radar altimeter on the helicopter points off vertical and down slope where a false reading is obtained. Smith says that it is impossible to tell now which altimeter anomalies represent those due to this former cause and those caused by true extreme topography and excessive aircraft altitudes. The addition of a recording barometric altimeter on future surveys could provide a useful backup for the radar altimeter.

It is fortunate that most of the problem areas are in the central and southern parts of the survey and that most of the Windy Craggy portion is within limits. Dighem should be requested to mark on their final maps line portions where information is not known to be reliable due to this problem.

b) Resistivity Contours

Resistivity readings are of great value for geological control but the contour cutoff, at least on the preliminary maps, is set too high at 1000 ohm-meters to provide the required continuity. A cutoff of 5000 ohm-meters would be more appropriate and useful.

c) Missing Conductors

Flight tapes should be checked and compared with the final plans and fiducial points from the survey should be plotted accurately on the 1:2500 scale base plans and on the 1:10,000 scale regional maps. Note that the preliminary maps lack plotting of many individual conductors. Some are even missing on this version from the north and south ends of the Windy Craggy deposit.

d) Windy Craggy and Tats Showings

The geophysical responses from the Windy Craggy and the Tats showings differ markedly. The Tats showing exhibits a strong magnetic anomaly with only an associated reverse polarity expression on the electromagnetic traces. This is undoubtedly attributable to the high magnetite content of the mineralization. The trace of the anomaly coincides well with the known rusty zones to the north. The strongest portion of the anomaly is in the southern part but care should be taken not to infer that the better economic mineralization is necessarily associated with the magnetite.

The Windy Craggy response is relatively complex and beyond the province of this report. The best magnetic response is at the southern end where the conductors are strong and linear. Towards the northern end the magnetic readings are somewhat lower although still strongly anomalous compared to the surrounding rocks. In the north the EM conductors bifurcate and change strike. This is probably indicative of the involvement of the sulphides in the Dihedral-mapped folding on the North Face. Numerous other conductors on and below the North Face deserve attention although a first examination showed the presence of black shales. However, since the sulphides are known to be associated with these sediments, a detailed ground examination of these anomalies should be attempted.

e) Other Anomalies

The anomalous conductive and magnetic zone in the southern part of the survey area near Ice Bridge Creek was examined. The conductive portion to the southwest is caused by a thick section of steeply dipping graphitic shales. Minor amounts of stratiform disseminated pyrite are present.

The adjacent but not coincident magnetic anomaly marks a thick section of vertically dipping mafic volcanics exposed in the mountain face on Ice Bridge Creek. Samples of the volcanic proved to be non-magnetic and thus no particular cause for this anomaly may be assigned. A weak, relatively inaccessible, iron stained outcrop occurs two thirds of the way up the mountainside but no samples of this material were obtained.

A small group of conductors at the west end of Tats fault on the north side is caused by a small outcropping of graphitic shales.

A coherent low resistivity zone trending north-northwest across the central portion of the map area is caused by the Middle Tats Complex and its graphitic shales.

Coal bearing sediments located in Tats Creek have been traced west towards Tats Lake. An exposure of coal occurs east of the boundary of the survey and lies on strike with a conductive zone in the valley north and east of the lake. It is possible that this conductor represents the western extension of these coal bearing units. Consideration should be given to using geophysics to follow the coal. Test work will be required before any large scale surveys to confirm that it does respond to EM methods as indicated.

G. Showings

Numerous small showings outcrop in the map area but many of them are inaccessible for normal investigation.

One of the largest and more prominent group of showings is located north and east of Windy Craggy on the north side of the Frobisher Glacier. The largest of these consists of approximately 10% disseminated pyrrhotite in a white siliceous to sericitic massive volcanic rock. The weathered surface is rusty and crackly in appearance. The mineralized zone is about 50 meters wide and extends downslope for an undetermined distance. No attitudes were observed and the relationship of of this mineralized unit to the pillow basalts is uncertain. This showing deserves a thorough investigation in spite of its apparent lack of economic minerals since much of its appearance is suggestive of syngenetic volcanogenic sulphide deposition processes. A grab sample from the top of this showing was taken for analysis. (#41910 and 41914)

A small section of malachite stained cliff was noted east of the north-south portion of the Tats Glacier. This particular showing is situated at 1100 meters elevation in a steep draw in a near vertical cliff where the surrounding rocks are massive volcanic flows of the Lower Tats Complex. No samples were obtained.

A gossanous appearing zone west of the toe of Ice Bridge Glacier at the 1300-1400 meter level was examined. On the ground this zone turned out to be an outcrop of massive ferroan dolomite or siderite with no trace of sulphide mineralization seen. The unit is conformable with the surrounding sediments and has a width of approximately 30 meters. The western contact with folded grey micaceous shales is sharp. A sample of this unit was taken for analysis. (#41911)

A weakly iron stained outcrop occurs east of the toe of Ice Bridge Glacier near the top of the mountain at the 1600 meter level. Although not visited on the ground, the association of this showing with the Middle Tats Complex warrants its further investigation by climbers. Most of the staining in outcrop occurs on jagged vertical cliff faces. Snow cover prevented sampling of any stained rubble.

Three rusty zones were observed at the head of the East Arm of Tats Glacier. None were visited due to topography but their association with the Middle Tats Complex gives reason for further work by climbers.

As well, the rusty zone north of the toe of Ice Bridge Glacier at the 1100-1200 meter elevation should be investigated in a similar manner. This zone coincides with the southernmost unexplained magnetic anomaly on the Dighem survey.

Two obvious rusty zones unrelated to the volcanic rocks occur south and west of Tats Lake in the intrusive. These showings although separated by about 1.5 kilometers are virtually identical in appearance. The zones consist of rubble of a buff to light brown altered iron stained granite. Veinlets and stockworks of chlorite and hematite altered to limonite give the rock its colour. No sulphides were observed but a sample was taken for analysis. (#41912)

The Tats showing was visited once during the course of the mapping. It obviously continues to deserve further work in the way of mapping and drilling.

H. Conclusions

The Windy Craggy lithologies do not represent those of a typical ophiolite sequence formed at a MOR spreading center. Most ophiolites show a common sequence of partly layered ultramafics which pass upwards into a series of distinctively sheeted dikes which, in turn, feed the pillow basalt flows on the surface. Both the sheeted dikes and the ultramafics are not present at Windy Craggy. The large volumes of interbedded sediments are also atypical of ophiolites.

It is rather more likely that the Windy Craggy rocks represent a simple development of a volcanic pile on the ocean floor which, in this case, consisted of older sediments. The presence of these sediments along with those interbedded with the volcanics mitigates against an abyssal sea floor development site. There is no real reason not to equate these volcanics generally with the other Triassic submarine volcanics in the rest of the northern Cordillera.

The change in volcanic style from the massive sheet flows of the Lower Tats Complex to the pillowed units of the Upper Tats Complex is intriguing. Even more interesting is the high ratio of sediments to volcanics in the Middle Tats Complex. These sediments more than likely represent a significant hiatus in the volcanic activity. Note that, of the 22 located showings and rusty zones, 17 of them occur at or near the Middle Tats Complex horizon. The onset of renewed volcanic activity buried the Middle Tats rocks and their mineralization and may have been responsible for their preservation from later erosion. The Middle Tats Complex rocks could prove to be fertile prospecting ground.

From the general stratigraphic setting it is likely that the Windy Craggy deposit formed off the axis of vulcanism. The absence of the Lower Tats Complex beneath Windy Craggy leads to the thought that the sulphides were deposited in a nearby basin on the flanks. The pillow basalt outpouring was much greater in areal extent than the sheet flows and extended over the basin covering and preserving the sulphides.

I. Recommendations

The Windy Craggy area deserves a vigorous followup exploration effort in several directions. It is strongly recommended that work in the following fields be undertaken:

a) Mapping

1) A detailed mapping program on the whole of the Windy Craggy mountain should be started as early as possible next season. Mountain climbing geologists should be employed to to map all exposed faces with particular attention paid to the structural complexities of the lower portions of the North Face. A set of expanded base maps on 1:2500 scale will be required for this purpose.

As well, particular attention should be paid to structural complexities from the engineering standpoint. Obvious discontinuities observed on the South Face of Windy Craggy give hints of possible ground problems if an exploration (or production) adit is put in as proposed on the Southwest Ridge. Mapping of this area beforehand may help greatly in reducing costs by preventing needless surprises. The Toronto Engineering and Geological departments should provide specific input into the design of this mapping program.

2) A similar scale mapping program should be started on the Tats showing with the view to producing detailed sample lines across the deposit. This should be completed prior to drilling this deposit.

3) All other showings should be ground investigated and sampled by mountain climbing geologists during the 1984 season.

b) Rock Geochemistry

Studies should commence on discerning the relationship of alteration patterns in the host rocks of the Windy Craggy deposit. The core from the drill holes should be analysed for geochemically significant anomalies during the winter season. If encouraging patterns develop then consideration should be given to surface sampling, in both the immediate Windy Craggy vicinity and the whole map area, in order to try to detect the presence of more sulphide bodies and to aid in tracing the known deposits.

c) Geophysics

1) A followup examination should be made using climbers to determine the cause of the southernmost magnetic anomaly on the Dighem survey.

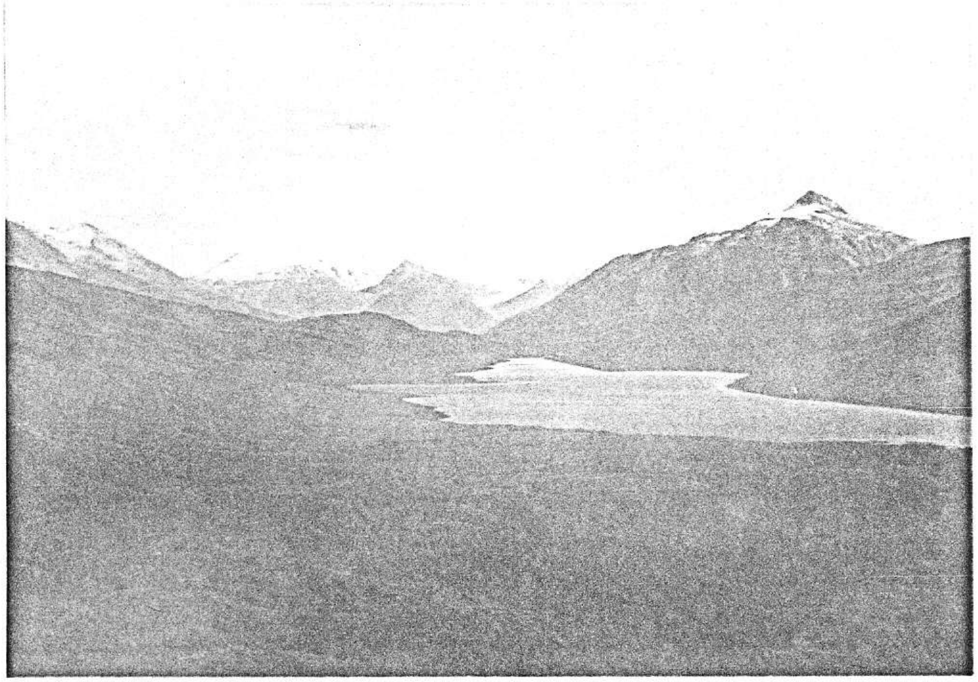
2) Discussions should be held with Dighem to try to prevent any future repetition of the altimeter problem. It may be likely that all future contracts should specify use of a recording barometric altimeter as well as the system now employed. Many of the present apparent high altimeter readings could have been reflown in the opposite direction preventing the nose down attitude problem. Dighem should be requested to produce maps showing line portions of

suspect quality.

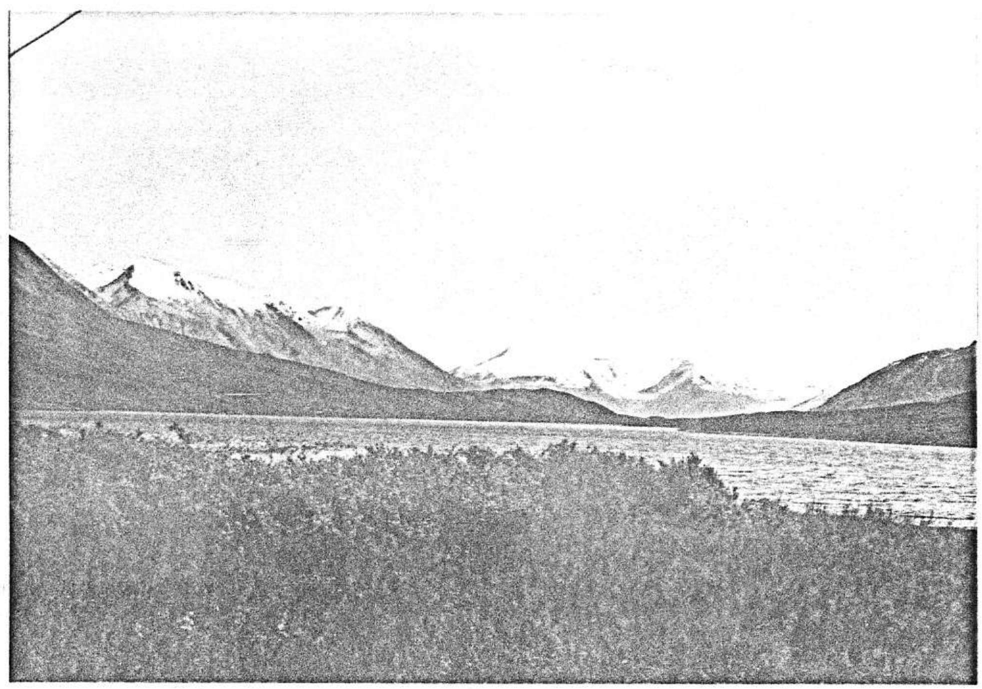
In addition, a resistivity map contoured at 5000 ohm-meters and lower should be produced in order to provide more geological control. The present cutoff level of 1000 ohm-meters is too high for this purpose.

3) In the immediate Windy Craggy area all fiducial points should be checked with the flight tapes and the flight lines and anomalous zones carefully hand picked and plotted on the 1:2500 scale geological plans.

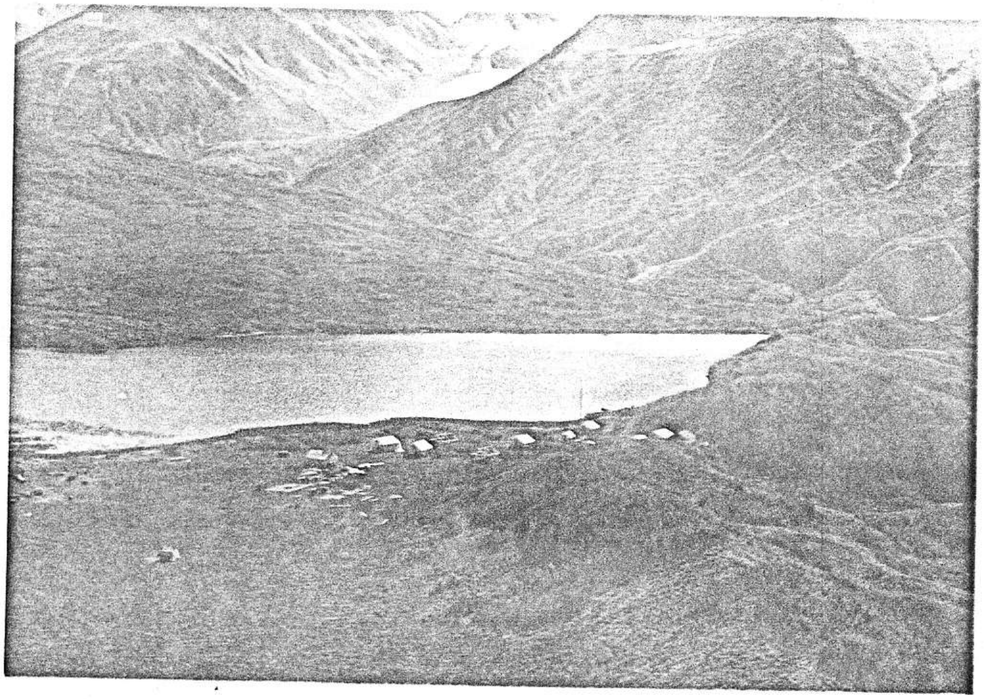
4) Test work should determine if the coal measures respond to geophysical techniques. If further flying is planned in the area then several lines should be flown over the known exposures in order to test their conductivity. Otherwise ground geophysical tests should be tried during the summer of 1984.



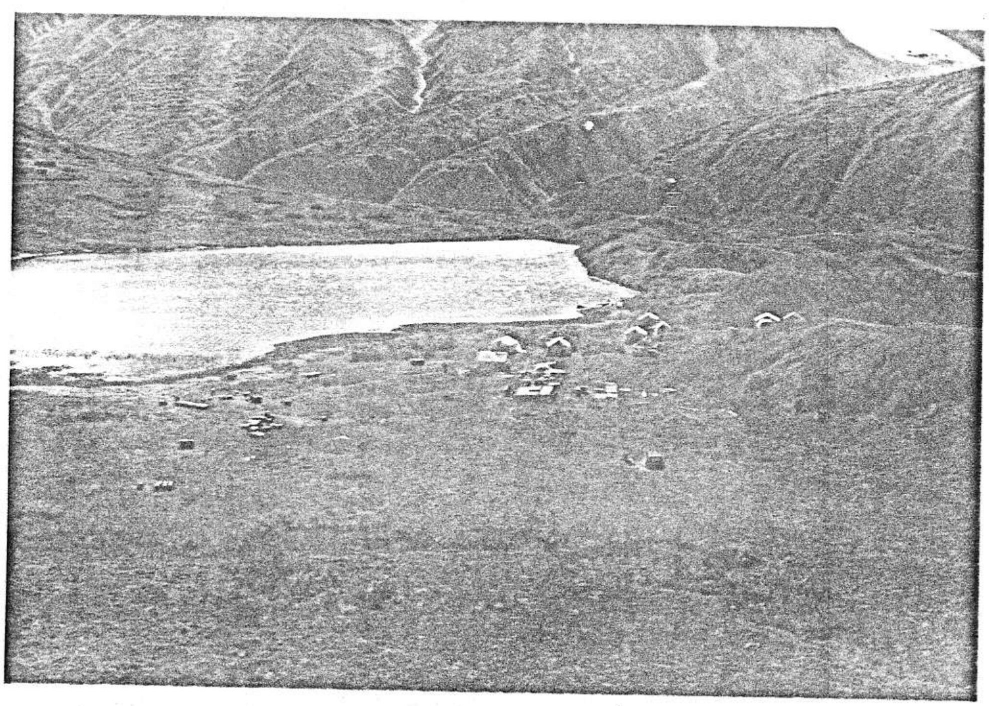
Tats Lake. Proposed airstrip to right of lake on first horizon.

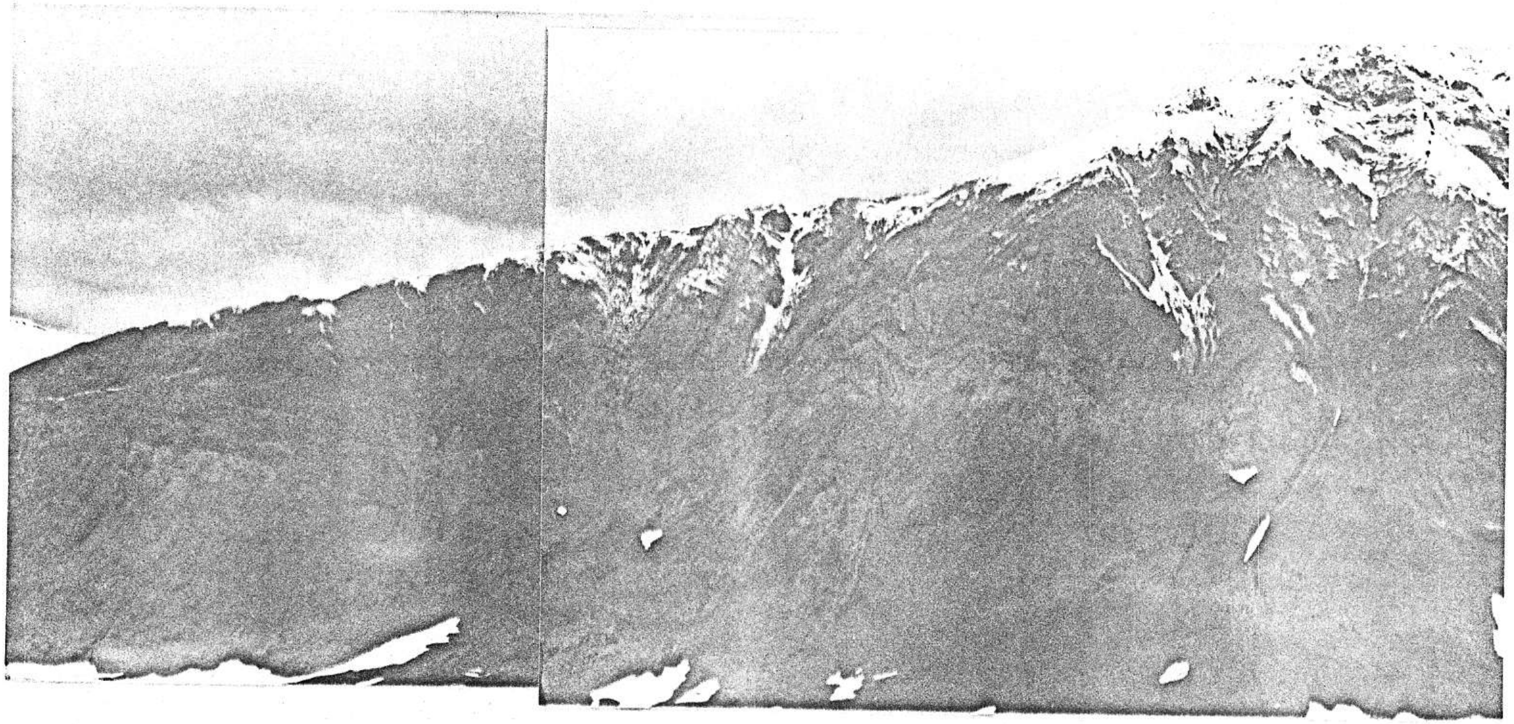


View down Tats Creek Valley.

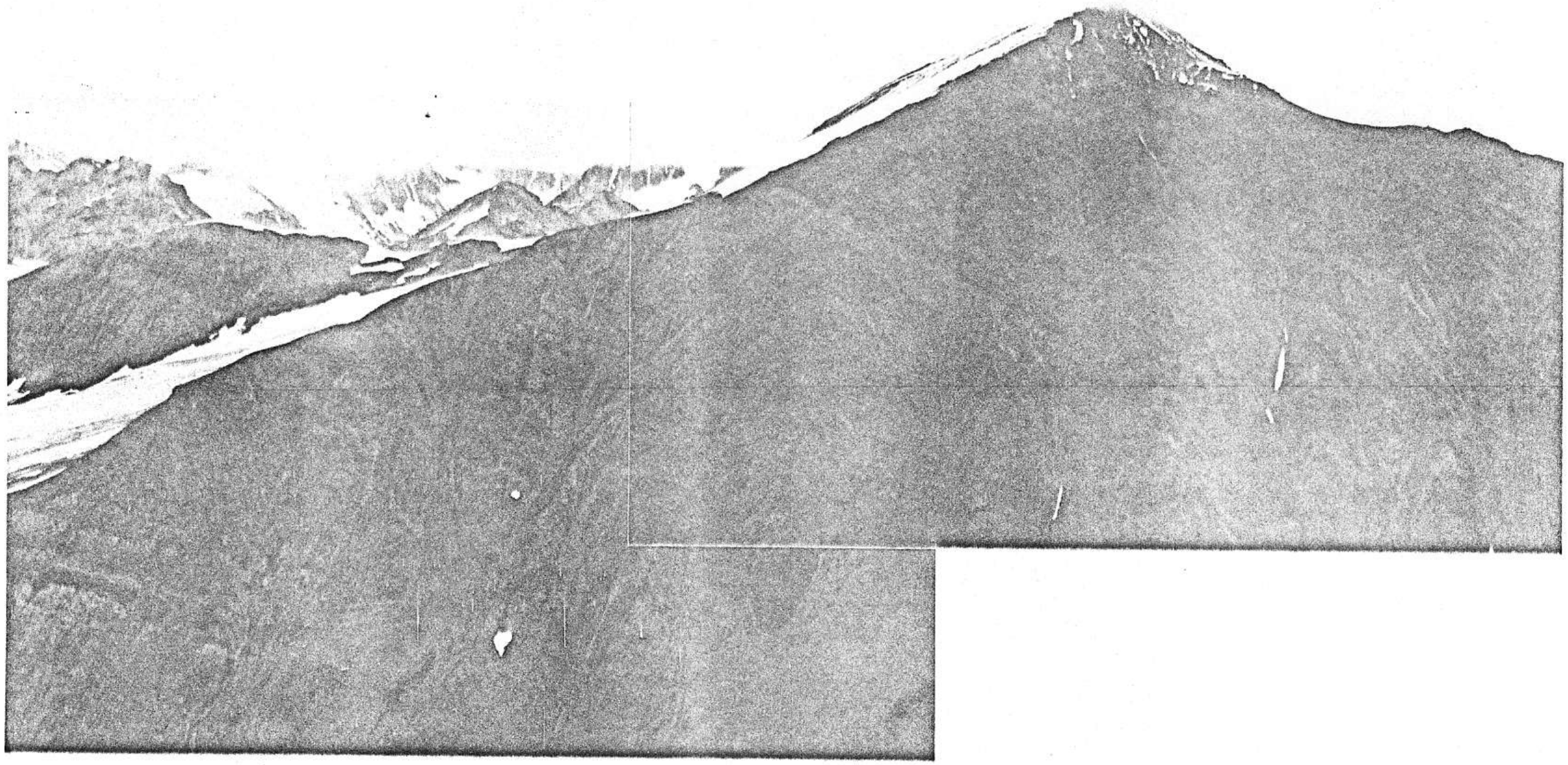


Tats Lake Camp.

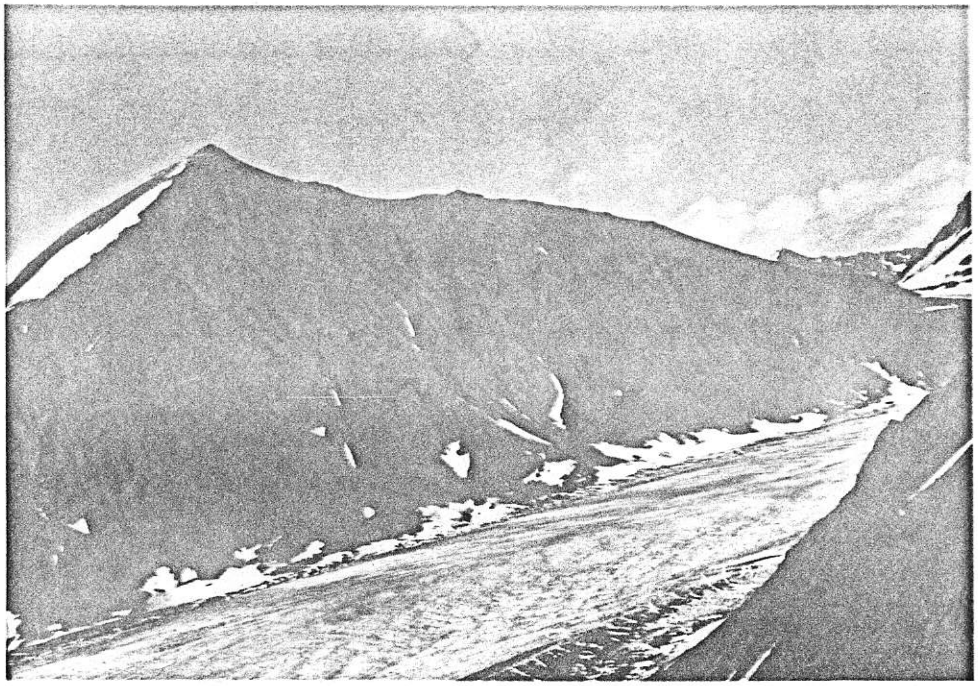




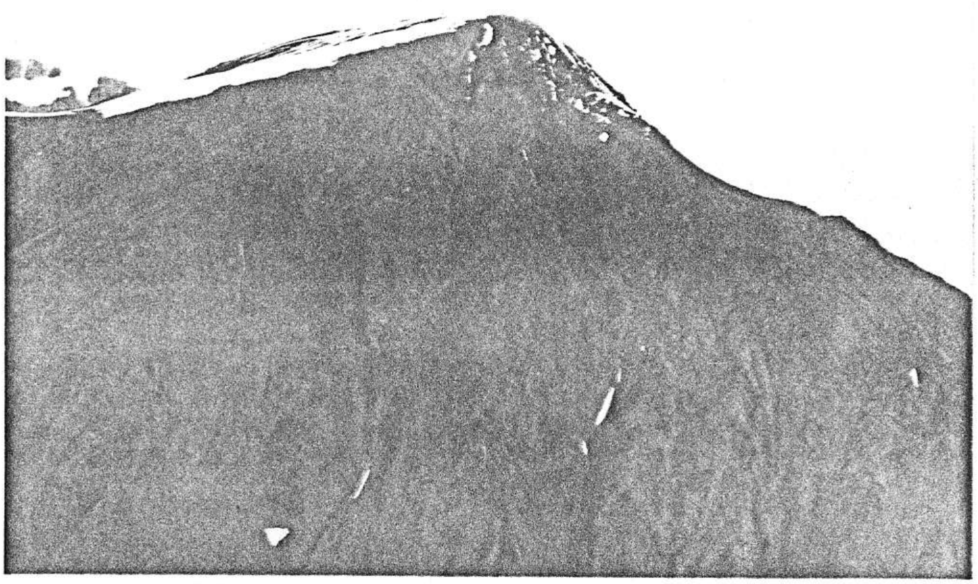
Windy Craggy. South Face. Southwest Ridge.



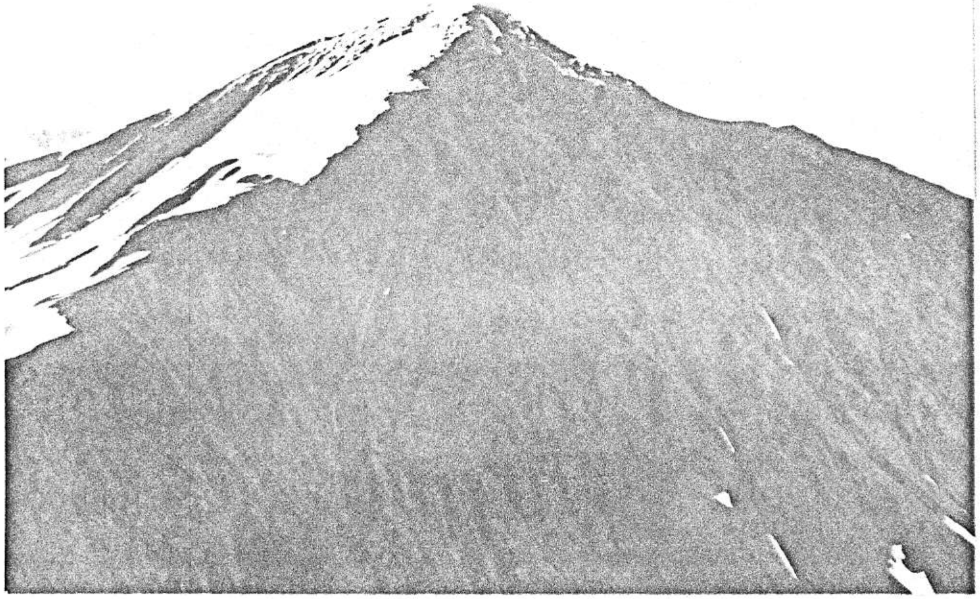
Windy Craggy. South Face.



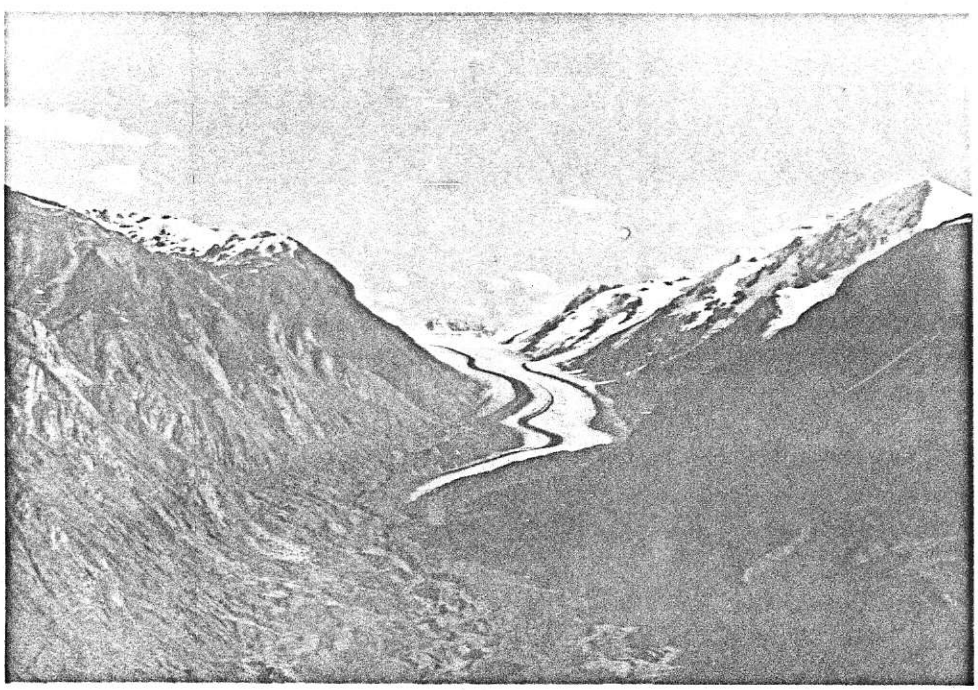
Windy Craggy. South Face.



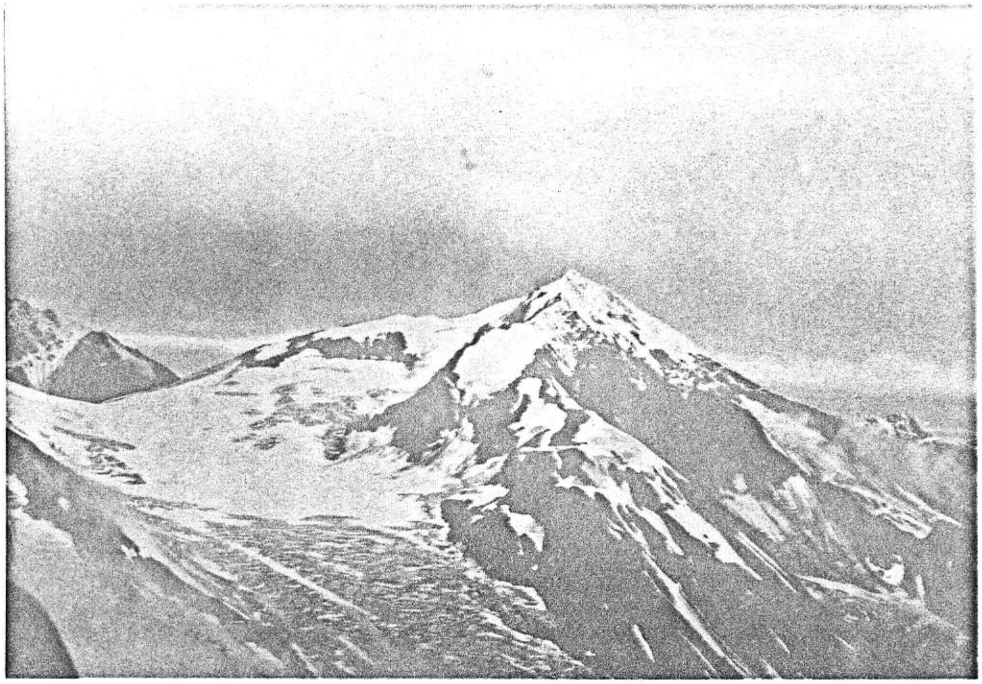
Windy Craggy. South Face.



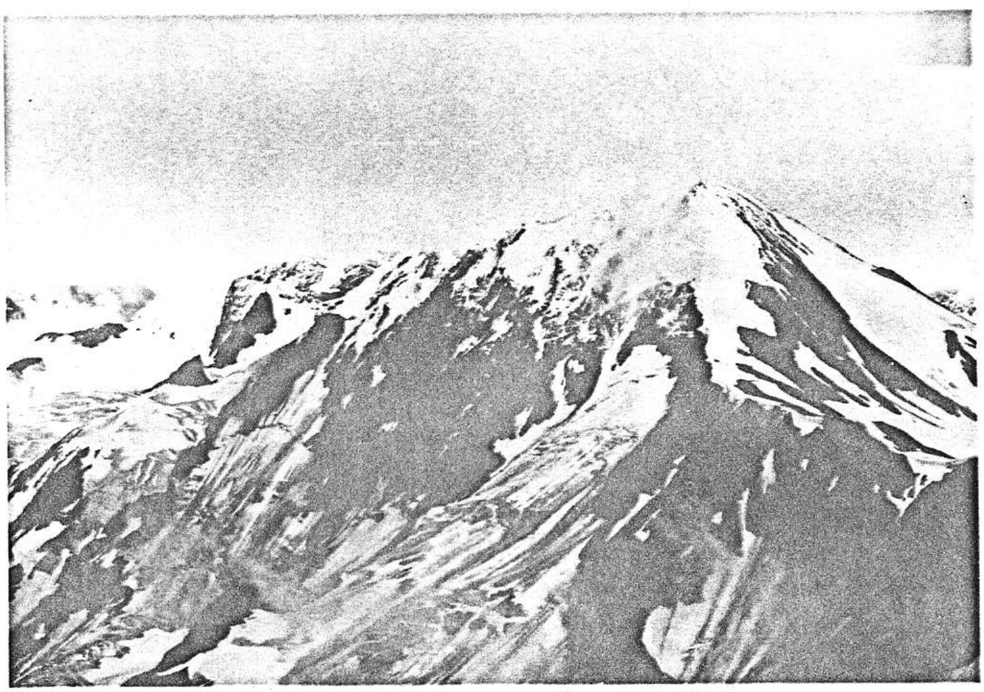
Windy Craggy. South Face.



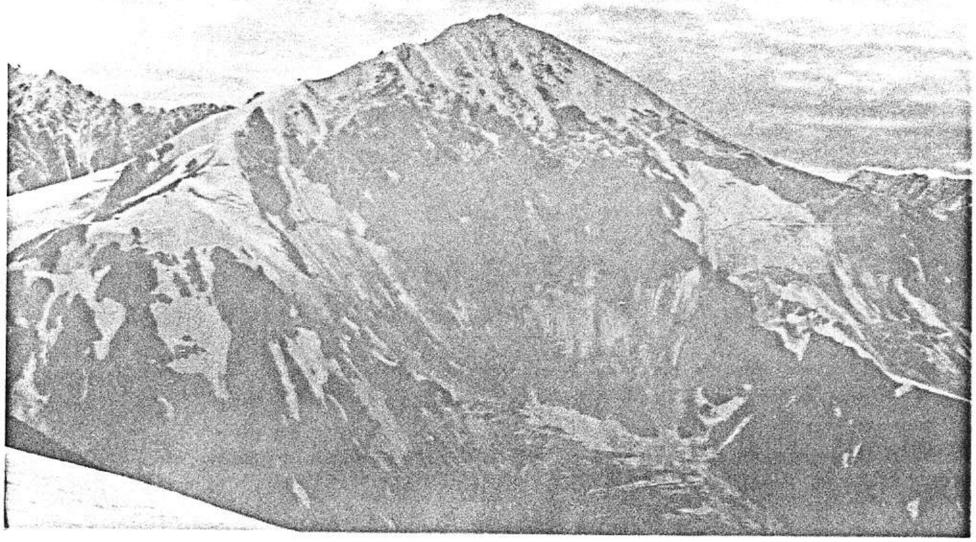
Windy Craggy (highest peak on right). Looking east along Frobisher Glacier.



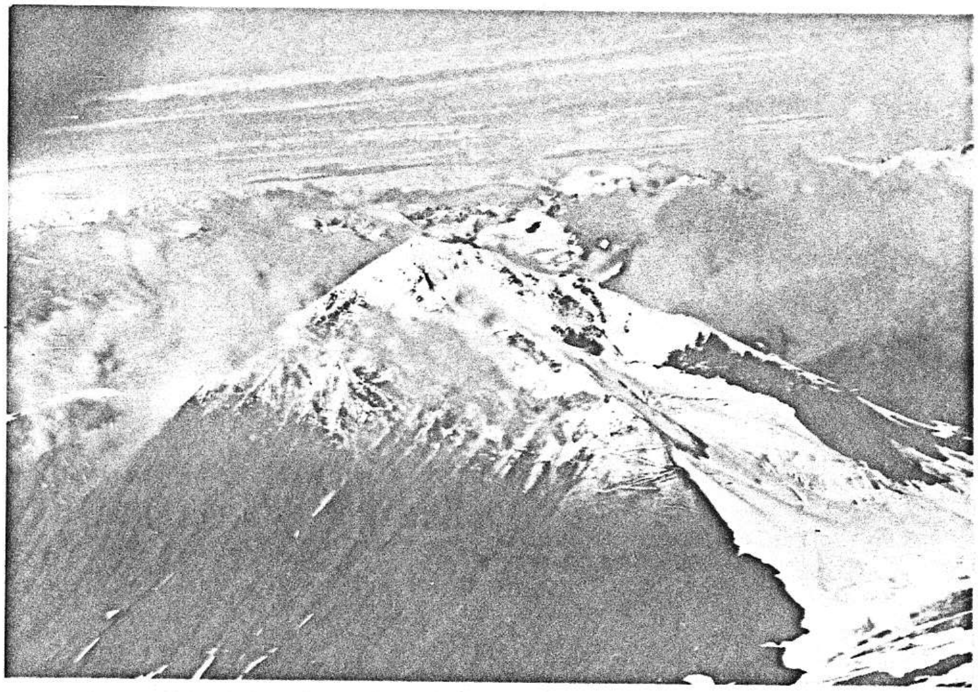
Windy Craggy. View of Northeast Ridge.



Windy Craggy North Face. Note brown sulphide spall on ice below North Face sulphide exposures.

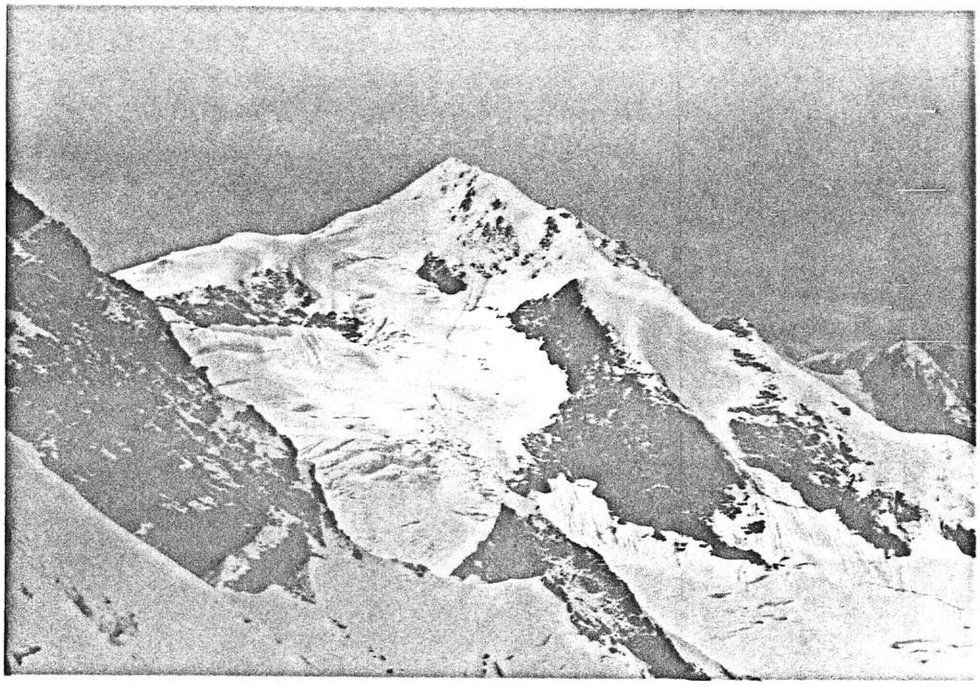


Windy Craggy North Face. Note drills for scale on horizon in left center of photo.

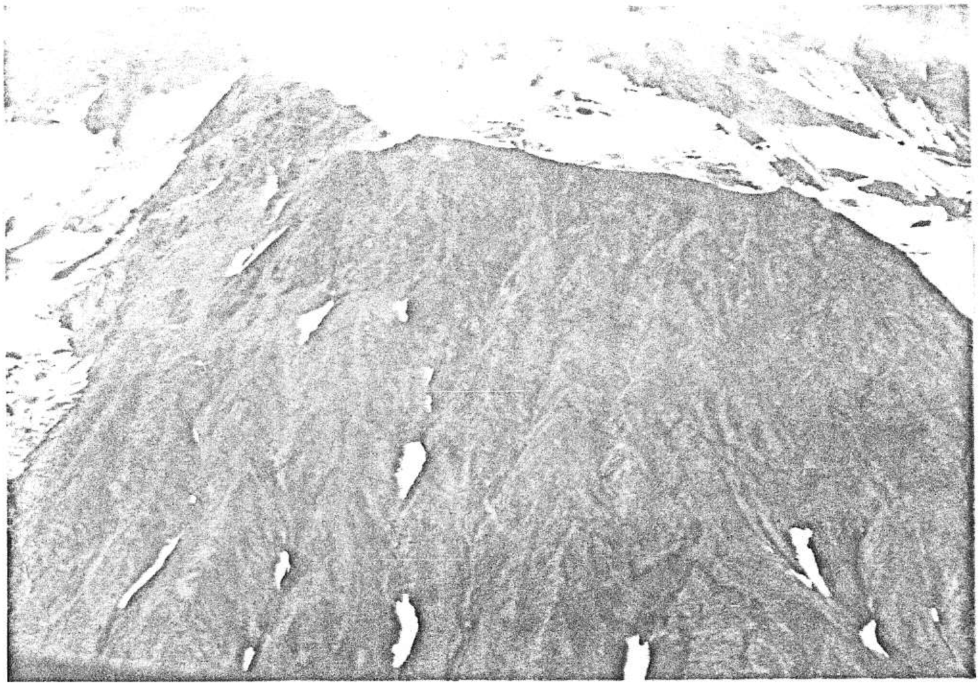


Windy Craggy Southeast Ridge. Note cut switchbacks and drills in right center of photo.

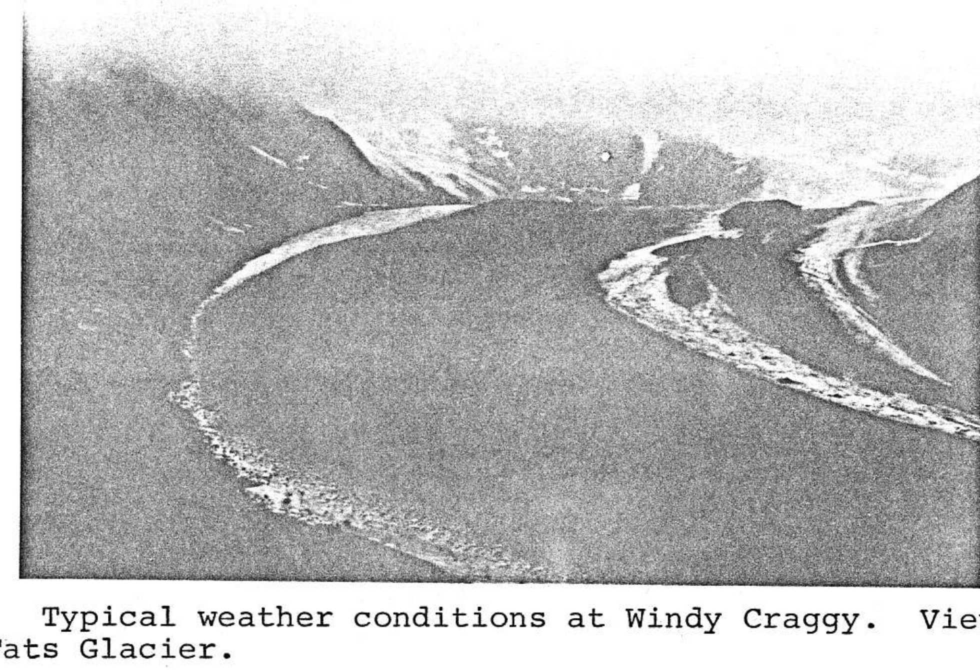
Windy Craggy Northeast Ridge in foreground. Tweedsmuir Glacier in background.



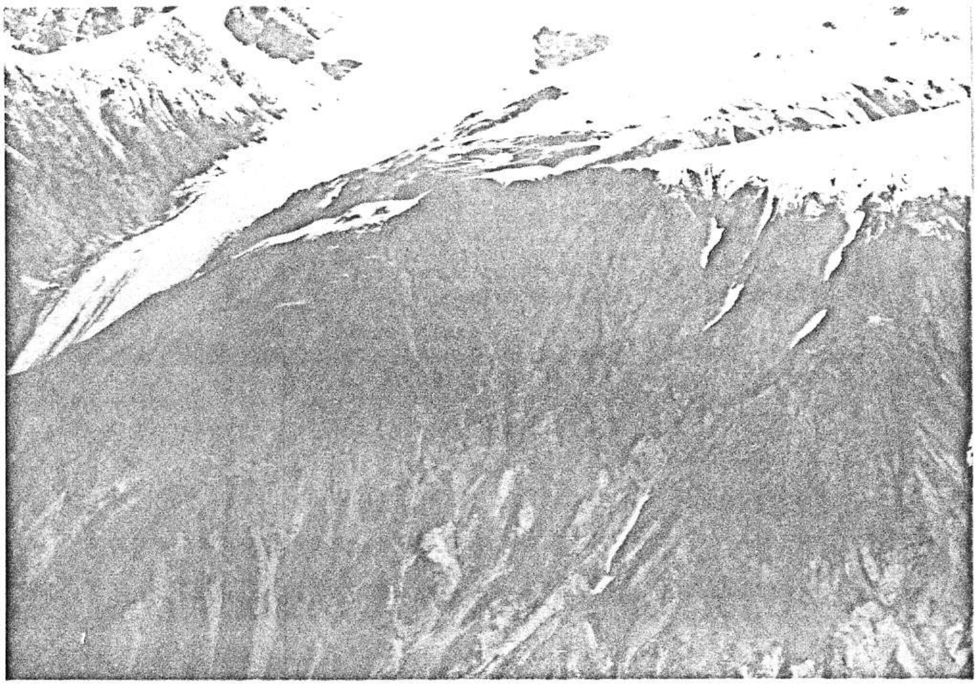
Windy Craggy east Face. Note drill setups.



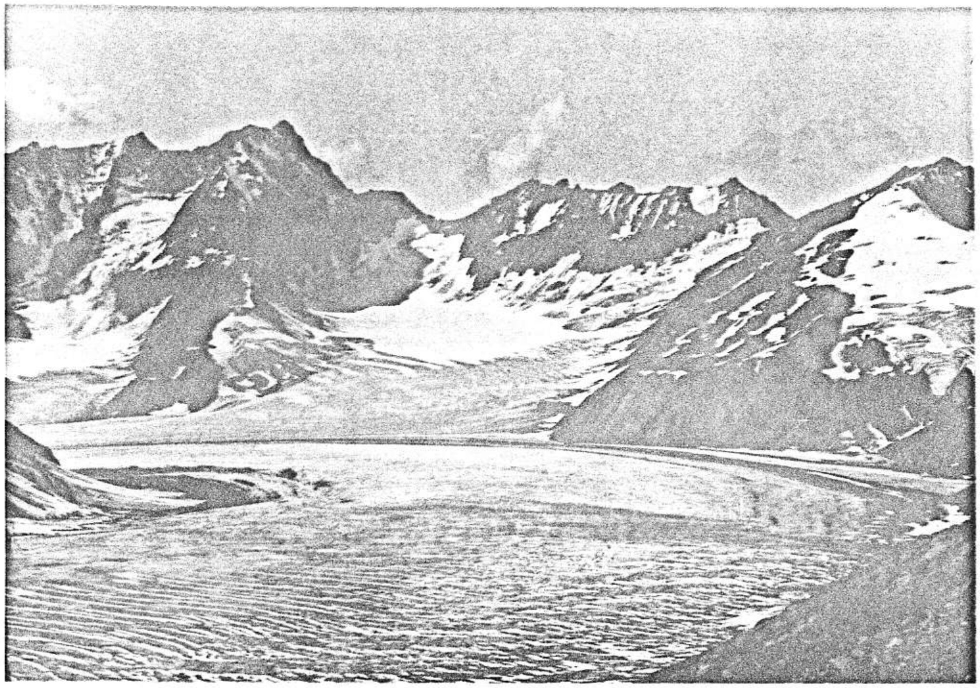
Windy Craggy. Outcrop of black shales at foot of North Face.



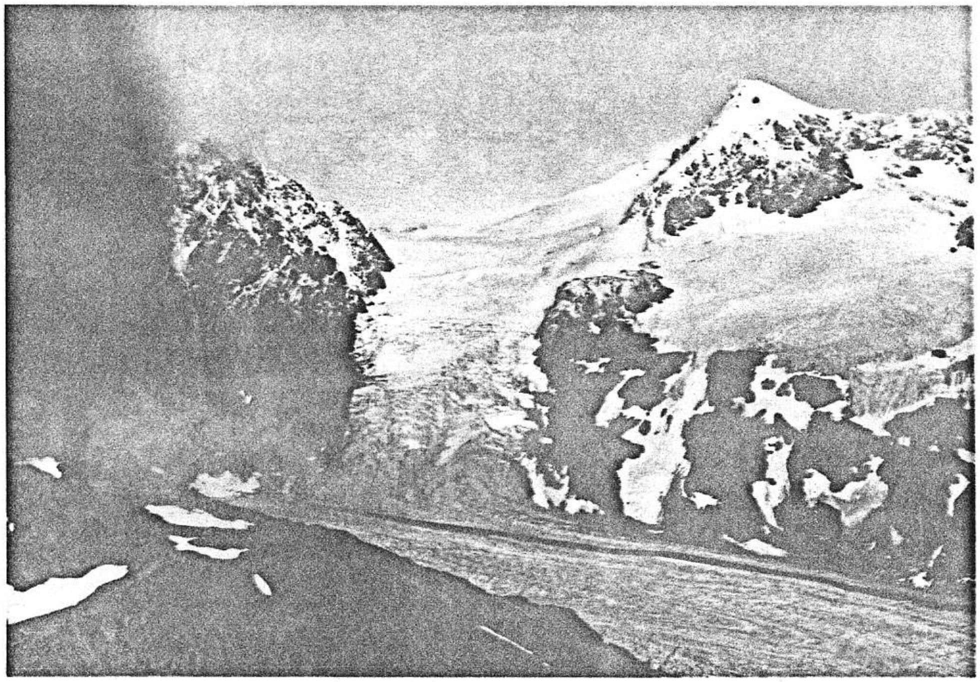
Typical weather conditions at Windy Craggy. View up Tats Glacier.



Mountain face across Frobisher Glacier from Windy Craggy. Looking north.

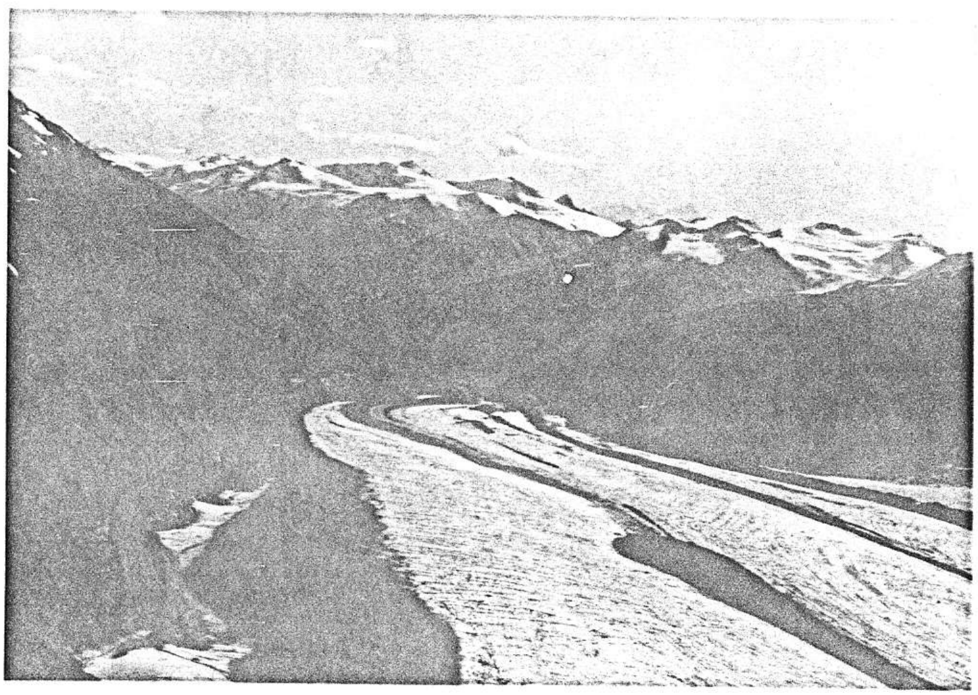


View across Tats Glacier (in foreground) looking west from pumphouse site.



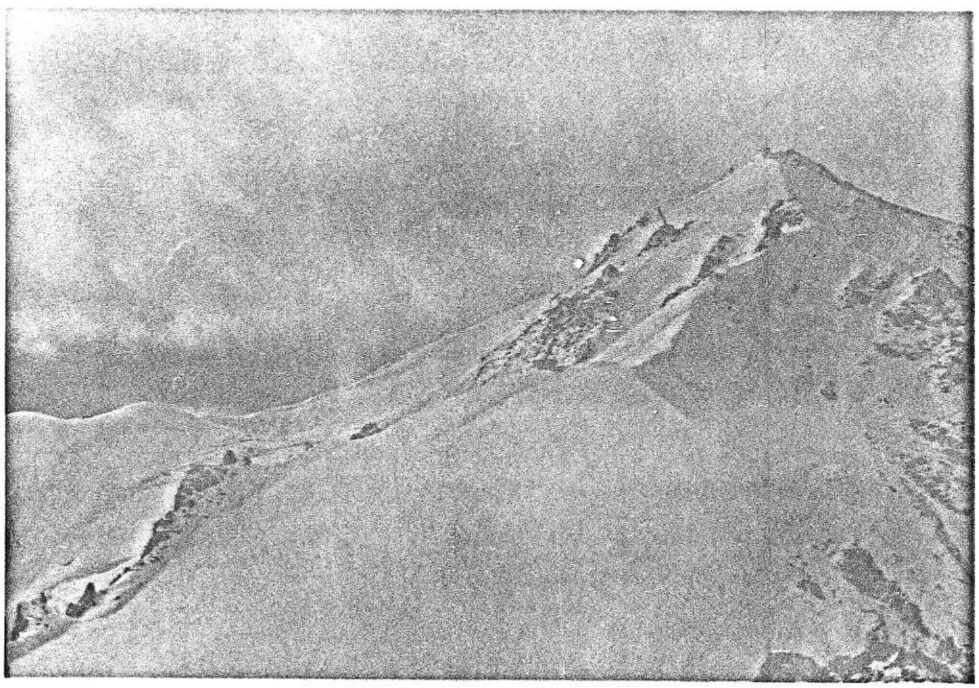
View of Pillow Glacier. Felsic pillow outcrop to right of cascading glacier. Tats Glacier in foreground. Looking east.

Toe of Tats Glacier. Tats Creek in distance. Looking south.

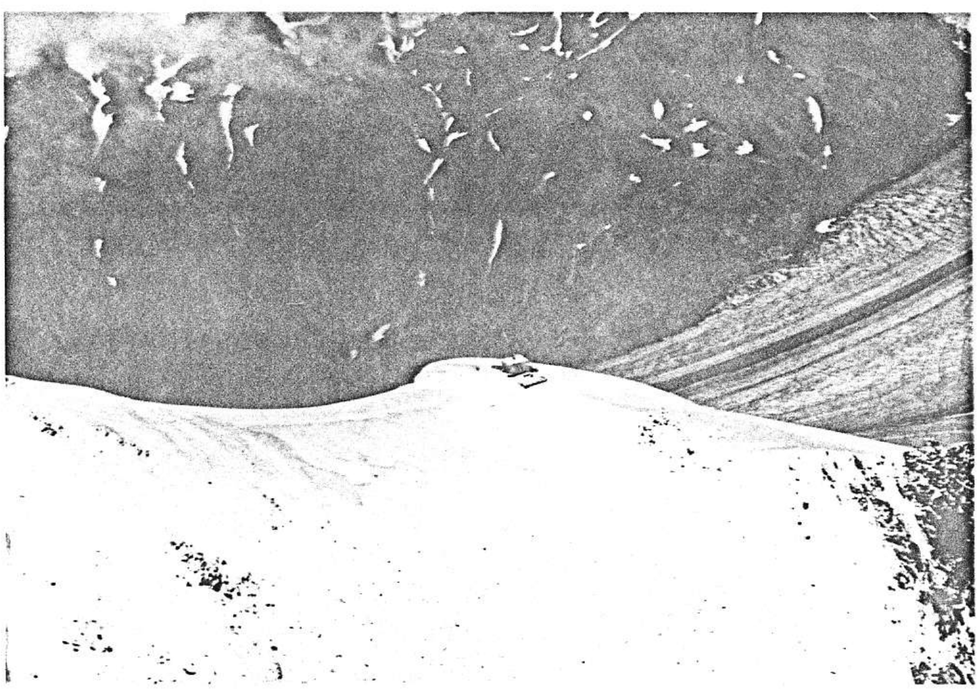


Toe of Tats Glacier. Looking south.

Windy Craggy. Drill setups. Northeast Ridge.

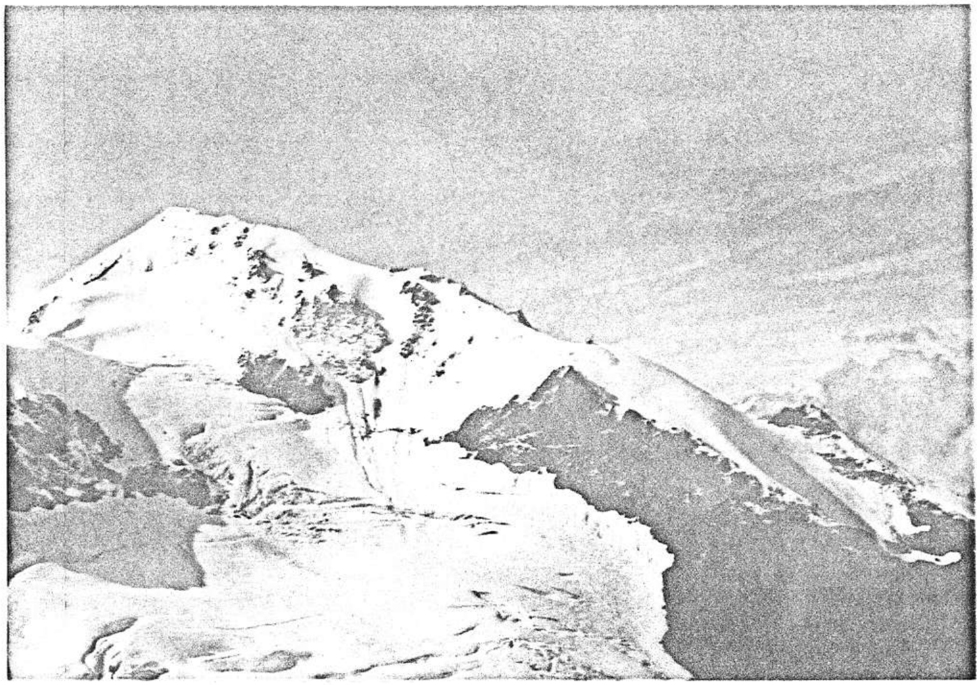


Longyear 38 drill setup site.

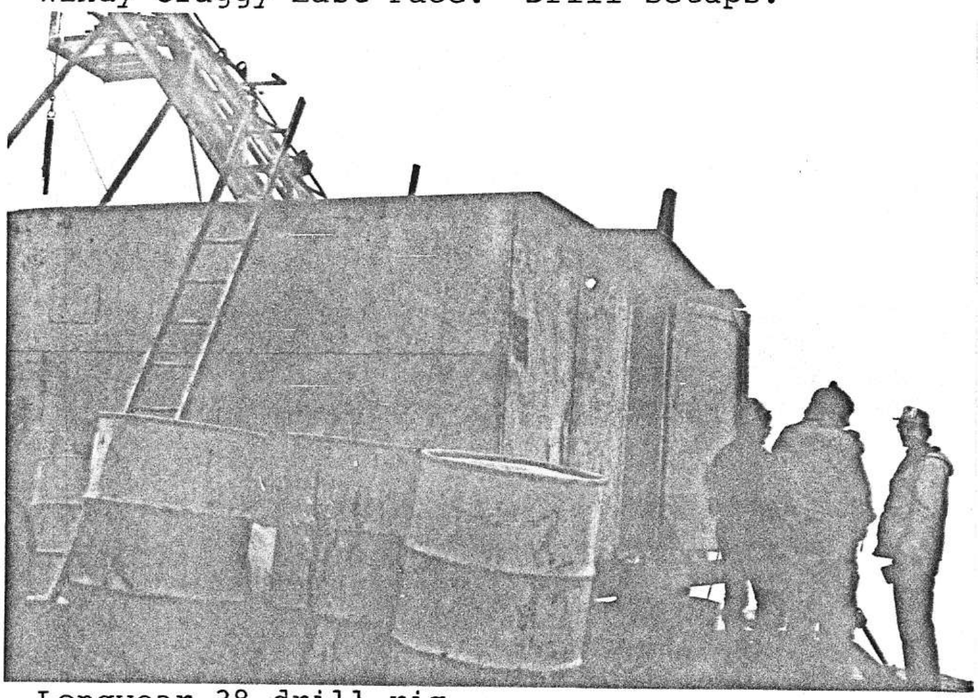


Pacific Helicopters Hughes 500D (CG-DSI) at 38 drill site. Note weather conditions.

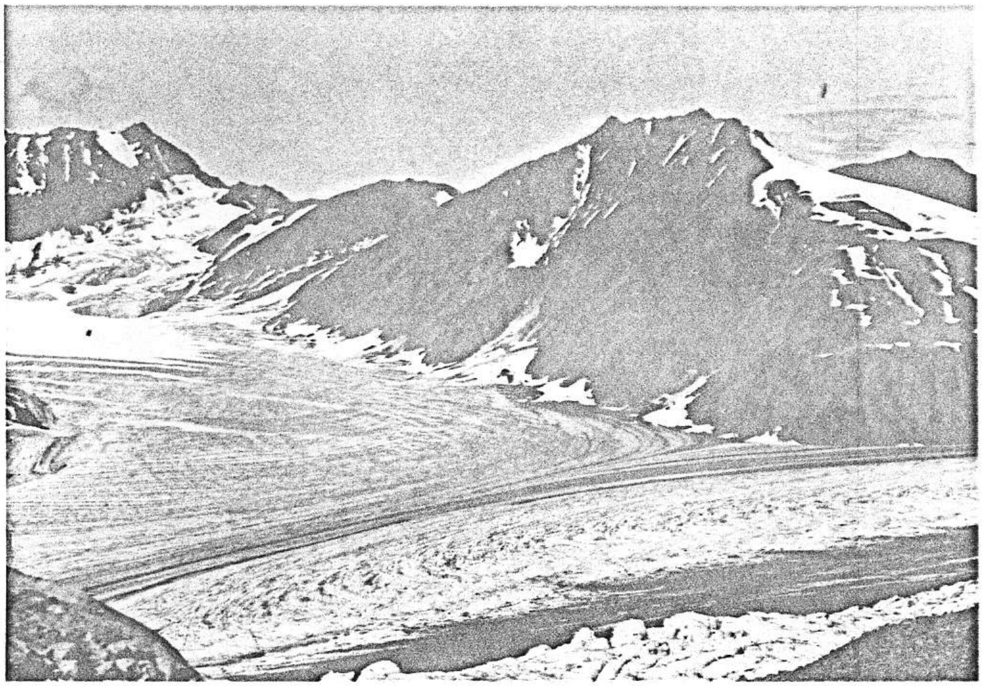
View looking east from Southeast Ridge of Windy Craggy. Note water line.



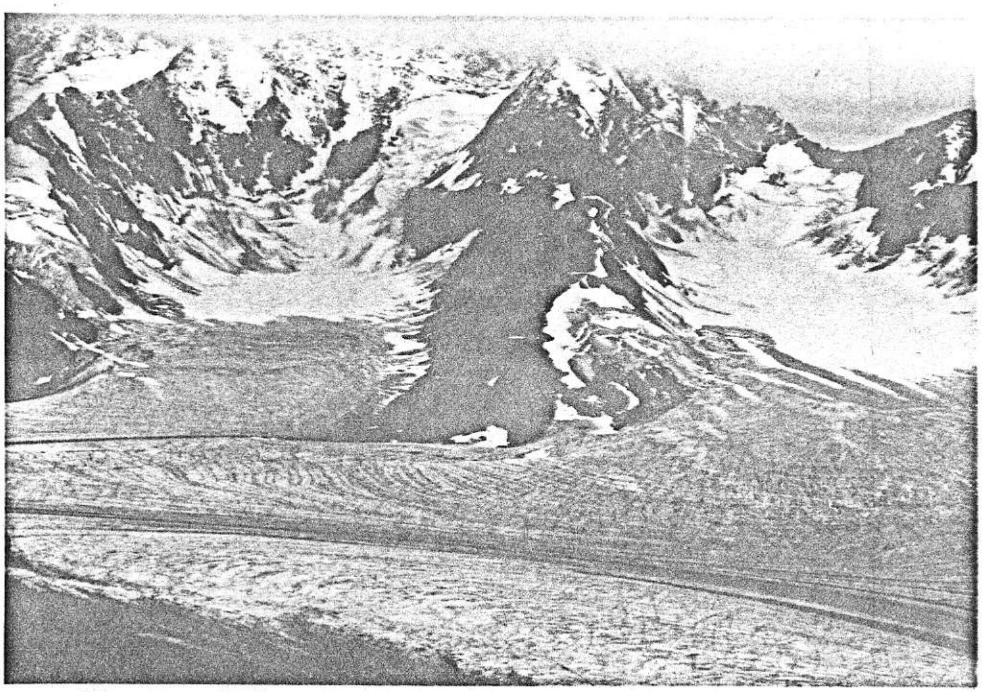
Windy Craggy East Face. Drill setups.



Longyear 38 drill rig.

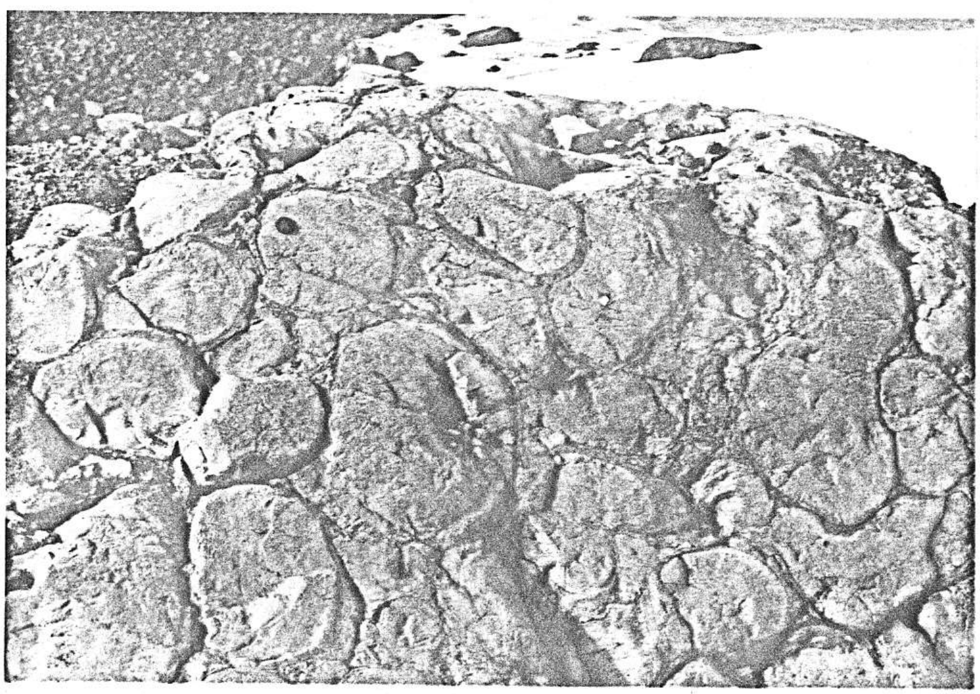


View of mountain west of Windy Craggy. Note black shale outcrop on central face. Limestones occur on right and volcanics on left of shales. Tats Glacier in foreground. Looking northwest.

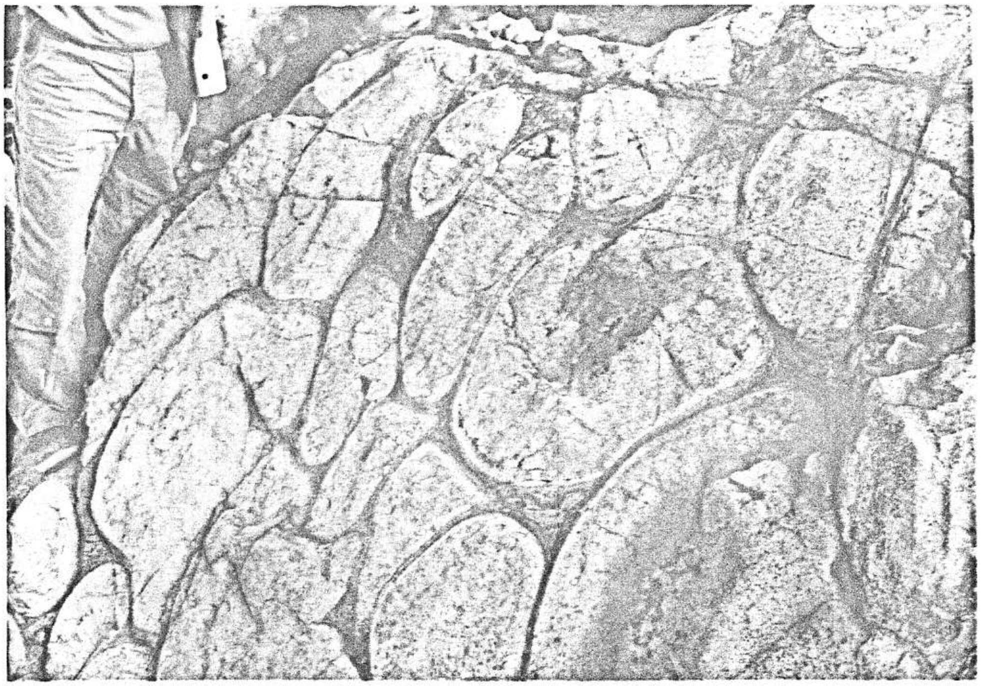


View of side glaciers off Tats Glacier (foreground). Looking west.

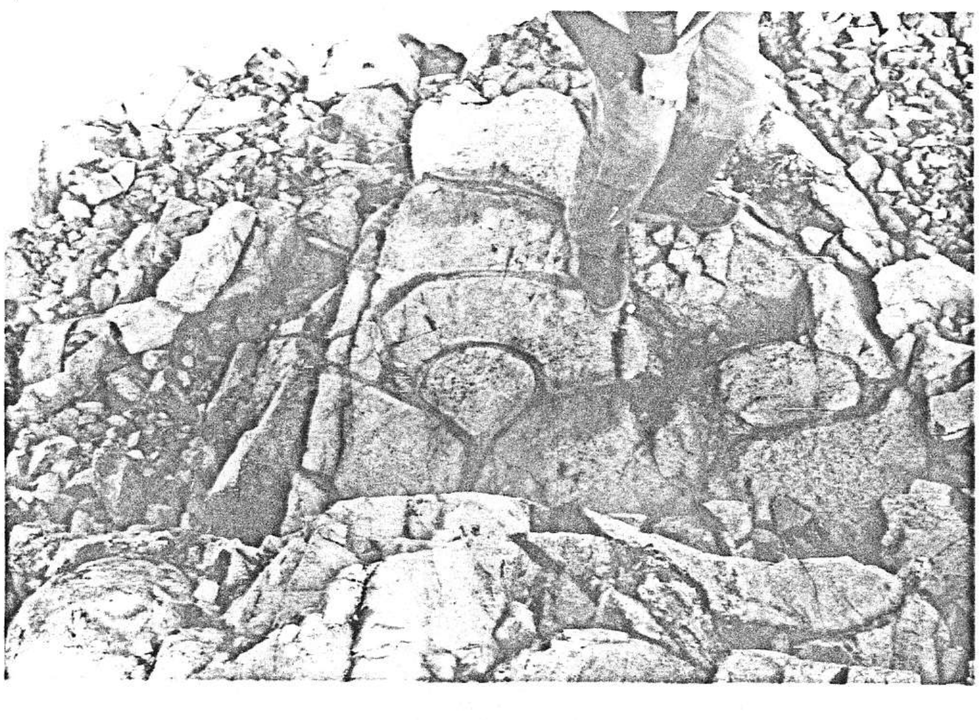
Felsic pillow lavas. Tops to northeast. Looking southwest.



Felsic pillow lavas. Well developed selvedges and hollow cores.

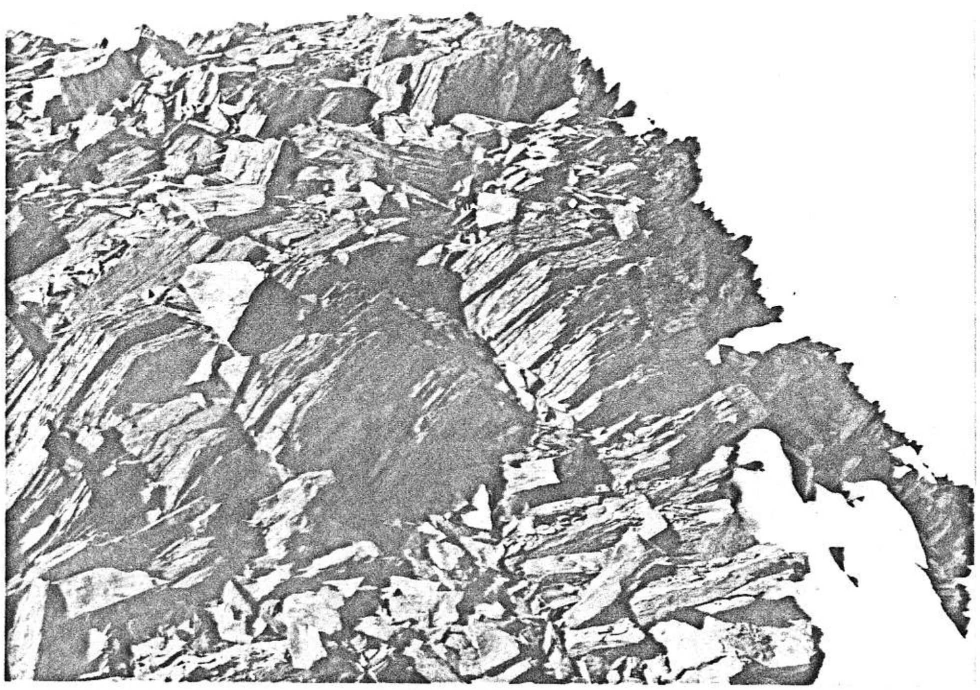


Felsic pillow lavas. Note hollow cores in some pillows.

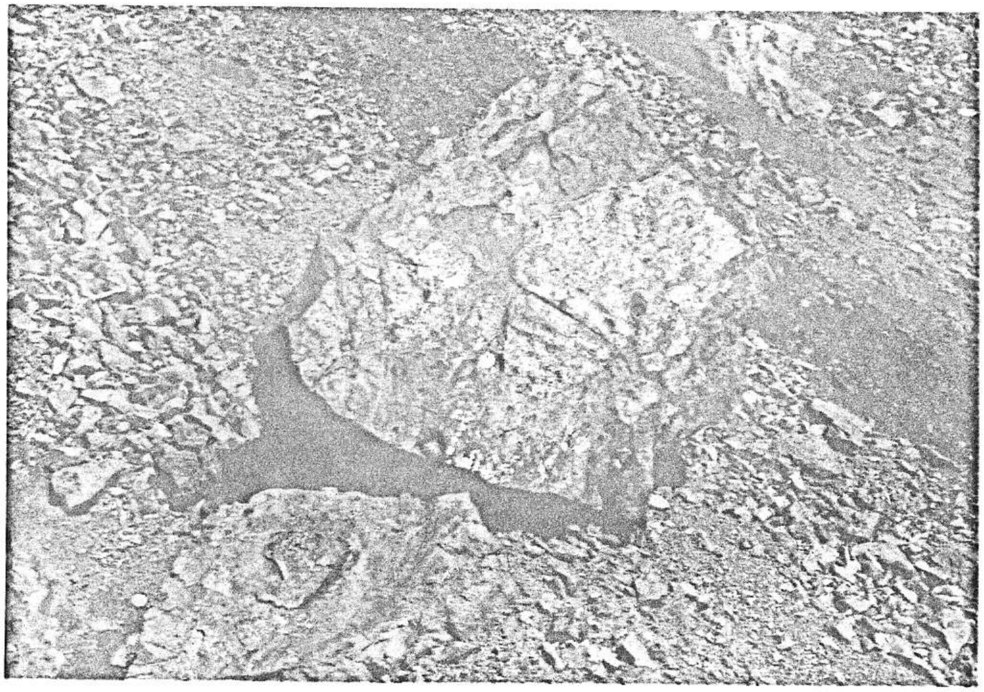


Felsic pillow lavas. Tops to northeast. Looking northeast.

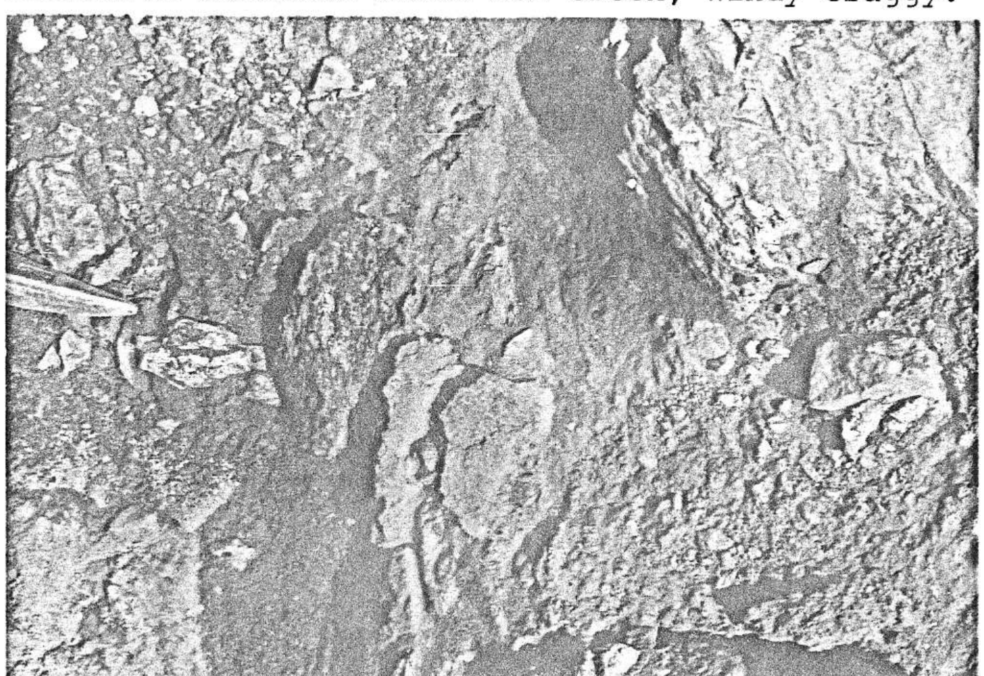
Typical amydaloidal mafic massive flow volcanics.



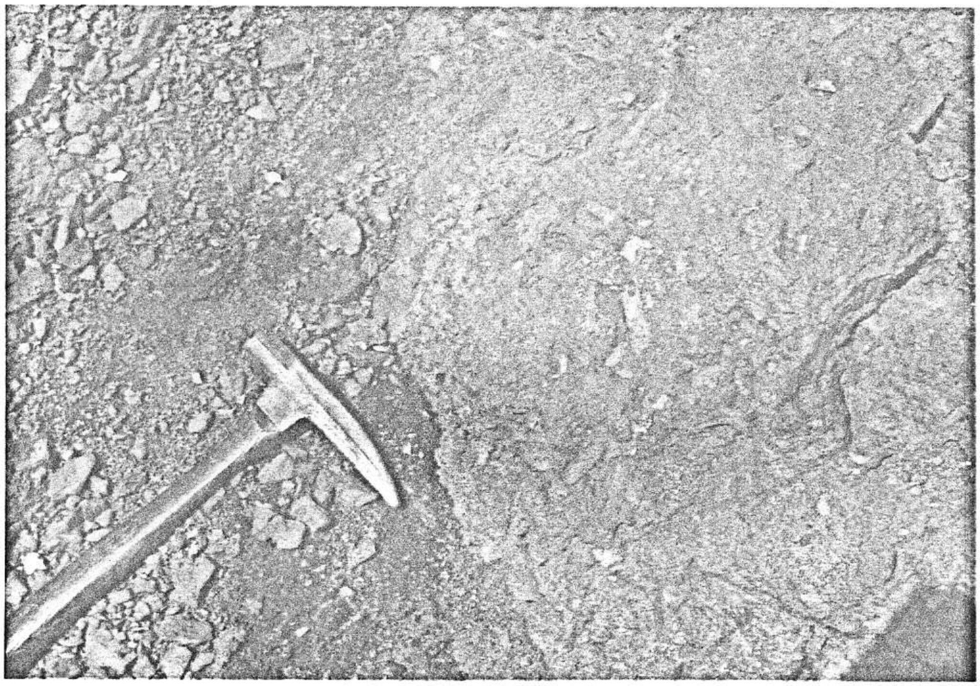
Rubbly micaceous argillites.



Gossanous material above Red Creek, Windy Craggy.



Typical gossan material Southeast Ridge, Windy Craggy.



Recemented volcanic fragments in gossan (ferricrete).
Southeast Ridge, Windy Craggy.