675

GEOLOGY OF THE SOUP MINERAL CLAIMS,

NOS. 1 TO 10, INC., & SOUP FR.

OMINECA MINING DIVISION

By: K.C. McTaggart, P.Eng.

August 2nd, 1965

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ILLUSTRATIONS

SUMMARY

On the Soup claims, numbers 1 to 10, inclusive, Omineca Mining Division, are magnetite-rich skarn beds that conform to the stratification of Upper Triassic volcanic rock. The beds range from 10 to 100 feet thick and at least one appears to have a strike length of at least 8000 feet. It is estimated that the mineralized beds on this property contain 27,000 tons per vertical foot.

In addition to iron the deposits evidently contain some copper and gold in unknown amounts. In their present undeveloped and intensely oxidized state the mineralized outcrops are unsuited to significant sampling.

From July 15th to 24th, inclusive, 1965, the writer, assisted by Wm.H. White, P.Eng., made a geological examination and geological map of the Soup mineral claims, numbers 1 to 10, in Omineca Mining Division. Mapping at scale one inch equals 200 feet was done mainly by plane table and stadia, but some pace-and-compass lines and some resections were used locally in outlying or precipitous parts of the property. Because of strong magnetic disturbances near mineral showings all orientations and bearings were made with reference to a distant peak, the bearing of which from the claims was taken as north 80 degrees west(T). The survey revealed open ground between Soup 3,4 and Soup 5,6 claims. This was staked as Soup Fraction by Wm.H. White and its geology is included on the map that accompanies this report.

LOCATION AND ACCESS

The Soup mineral claims, about 15 miles south southeast of Johanson Lake and 12 miles northwest of Aiken Lake, are on the northeast flank of the deep valley of Kliyul Creek and its large easternmost tributary locally known as Miller Creek. Elevations range from 3200 feet in the valley bottom to 7000 feet on the peaks and on the Soup claims from 5000 feet to the crest of a ridge at 6700 feet. The property is above tree-line and its surface, sloping at 30 degrees or more to the southwest, is marked by rocky spurs separated and surrounded by draws and thick aprons of loose, highly mobile talus. Coarse debris of a rock glacier derived from the precipitous headwall of a cirque

mantles much of the surface of Soup 5 and 6 claims.

From rail-head at Vanderhoof, B.C., improved and secondary roads suitable for trucks and also for cars in dry weather extend 197 miles northward to Uslika Lake, and a tractor road continues 30 miles to Aiken Lake. From Aiken Lake to the property is an easy 15-mile route, partly along a pack trail to Croydon Creek and partly along the open, lightly-timbered valley of Kliyul Creek.

GENERAL GEOLOGY

The Soup mineral claims are underlain largely by volcanic rocks of the Upper Triassic Takla Group. These have been intruded by diorite stocks and sills and also by quartz monzonitic batholithic rocks. Narrow dykes of augite porphyry and mica lamprophyre are not common and are too small to show on the accompanying geological map.

Lavas of the Takla Group strike northerly and dip eastward, and are offset by northwesterly and north to northeasterly-striking faults. Magnetite-rich, copper-gold-bearing beds that appear to lie about parallel to the volcanic layering are traceable for thousands of feet.

Takla Group

The stratigraphically lowest exposed rocks of the Takla Group are grey to greenish andesitic lavas. These are partly aphanitic and many show small feldspar phenocrysts and some

scattered small augite crystals. Some lavas show a layering that is due to concentrations of feldspar or mafics. Although such layers superficially resemble bedding in tuffs, a thin-section shows that they are flow layers enriched in phenocrysts. Flow breccia and pyroclastic breccia were noted among these andesites and the presence of massive tuffs is not ruled out.

These andesites grade upward into, and at first interfinger with, bodies of augite porphyry. These, almost certainly flows, but including at least a few dykes and possibly sills, show much variety. Some consist of scattered stubby augite crystals set in an aphanitic to finely-feldspathic groundmass; others contain abundant to closely-packed augite crystals; and some must be almost ultrabasic. Augite porphyry flow breccia is not uncommon.

Feldspar porphyry that occurs in the middle and upper parts of the augite porphyry assemblage contains abundant rounded and zones plagioclase phenocrysts up to $\frac{1}{8}$-inch diameter.

Most of these rocks are strongly altered. Augite has changed to uralitic hornblende and chlorite, and plagioclase to saussurite or sericite. Joints are commonly coated with films of radiating tremolite crystals, and some joints are encrusted with finely-crystalline specularite. Veinlets of calcite, epidote or quartz are numerous, and, adjacent to mineralized zones, the rocks may contain sparsely-disseminated pyrite and limonite.

Intrusions

Diorite occurs in the headwall of the rock glacier basin on Soup 6 and 8 claims and also as a dyke(?) along the spur that forms the northern rim of the basin. Typical diorite consists of plagioclase and hornblende, the latter commonly well-oriented by flow. Some phases are augitic, however, and superficially resemble certain porphyries of the Takla Group. Another phase is monzonitic rather than dioritic. At the margins diorite forms narrow dykes, most only inches thick but a few 6 feet across, that are charged with angular fragments of the lavas of the Takla Group. The diorite is highly altered. Hornblende is bleached; plagioclase saussuritized; and chlorite, carbonate, pyrrhotite and epidote abundant. Wall rocks within a foot or two of the contact are impregnated with pyrite and limonite.

A highly altered microdiorite sill lies near the footwall of the lowermost mineralized bed on Soup 1, 2, 3 and 4 claims. This is a pale grey rock, jointed at infrequent intervals so that broad surfaces and coarse blocks contrast with the relatively small surfaces and finer talus derived from volcanic rocks. In hand specimen, the freshest rock resembles a fine-grained diorite but much of the rock is so altered as to be difficult to classify. A thin-section is not much help; traces of hornblende and augite survive but plagioclase is represented only by vague outlines. The position and nature of this sill

suggest that it is possibly an offshoot of the diorite mass previously described.

Quartz monzonite, apparently belonging to the Omineca Intrusions, invades the Takla volcanic rocks in the southwestern part of the property. This rock, somewhat heterogeneous at the contact, is a homophanous biotite quartz monzonite that weathers strikingly white so that it is visible at great distance. Its contact effects include recrystallization and, locally, slight pyritization of the volcanic rocks.

Structural Geology

The lavas of the Takla Group strike northerly and dip fairly regularly about 30 degrees east. The rocks are, of course, lacking in bedding, and this statement is based on a few measurements of flow layering, the trace of contacts along the mountain-side, and on the general appearance of rock stratification from a distance.

The volcanic rocks, the sill, and associated mineralized beds are considerably faulted. The mineralized body on Soup 7, 8, and 10 is cut by a major fault that strikes north 70 degrees west, dips either vertically or steeply to the southwest, and has a right-lateral offset of 1200 feet. Other faults in this vicinity strike northwesterly and at least one also has a right-lateral offset. In the northern part of the property the principal faults strike north to a little east of north, but their sense of movement is not

consistent. Some appear to be right-handed and others left-handed. The outcrops of many of the faults in the volcanic rocks are composed of either phyllite or closely-cleaved andesite and fractures are mineralized with one or more of fine-grained calcite, prismatic quartz, or epidote.

ECONOMIC GEOLOGY

The principal mineral deposits on the Soup claims are beds of magnetite-rich skarn that appear conformable with the stratification of the Takla volcanic rocks. The deposits lie near the base of the upper volcanic unit that is composed largely of augite porphyry flows and breccias. Probably the deposits are on flow contacts. These deposits are described briefly by Roots (1954), G.S.C. Memoir 274, page 212.

Structure

Being conformable with the stratification of the volcanic rocks, the mineral deposits dip eastward, i.e. into the mountain-side, at about 30 degrees. A few measurements of relict layering in mineralized material confirm this attitude. Two sets of faults cut the mineralized beds. The showing on Soup 7, 8 and 10 claims is offset 1200 feet to the right by a northwesterly-striking fault that appears to be un-mineralized. However, a northerly-striking that displaces a mineralized bed to the right on Soup 4 claim contains a vein-like zone of

copper-stained magnetite and pyritic quartz. Other faults having similar attitudes appear un-mineralized. Evidently some faults are pre-ore and some post-ore.

Mineralogy

In the few places where un-oxidized material can be examined, it consists largely of granular magnetite with scattered aggregates of coarsely crystalline pyrite and disseminated small grains of chalcopyrite. Gangue minerals present in small amount include actinolite (or tremolite), fine-grained massive garnet, epidote, and locally a little calcite.

In most places the wallrocks lack metallic minerals and are not conspicuously altered, but in a few places, particularly near faults, the wall rocks may be silicified and sparsely pyritized.

Weathering of Outcrops

An unusual feature of these mineralized outcrops, and one that prevents significant systematic sampling, is their state of oxidation. Material least affected, visible in very few places, is massive magnetite containing virtually no sulphide or gangue minerals. It appears that with increasing sulphide content the intensity of oxidation also increases. Much of the material composing outcrops is a porous aggregate of residual

magnetite cemented by limonite. Such material commonly exhibits either layered or brecciated texture. Where oxidation is complete outcrops are composed entirely of compact limonite with a good deal of botryoidal goethite that forms an indigenous gossan. Of an undistinguished dull reddish-brown colour, the hydrated iron oxide has not migrated from its place of origin. Rock a foot or two away from such gossan may be entirely free of iron stain. Although traces of copper carbonates can be found in nearly all outcrops, it is likely that most of the copper has been leached from these gossans.

Siliceous pyritic rock is also oxidized, but in a different manner. Its surfaces are filmed with transported limonite having a bright yellowish-red colour quite distinct from the darker hues of indigenous gossan.

Size and Continuity

The map that accompanies this report shows the mineralized outcrops and suggests their continuity. Mapped widths are only approximate because almost nowhere is mineralized material exposed continuously from foot to hangingwall. On the other hand, because of the opposed relation of dip and surface slope, mapped (i.e. horizontal) widths are almost everywhere less than true thickness.

The mineral deposit on Soup 8 and 10 claims is 1500 feet long and ranges in thickness from 10 to a maximum of 100 feet near station 12. Its displaced segment on Soup 7 claim is very poorly exposed but may be about 400 feet long and 30 feet thick. North of the rock glacier are two mineralized beds about 100 feet apart stratigraphically. These beds are only intermittently exposed, usually in small saddles of rock spurs, and are thoroughly oxidized. The lowermost bed has a mapped length of 2600 feet and appears to be about 20 feet thick. The upper bed has a mapped length of 1100 feet and may be somewhat thinner than its neighbor. Northward, beyond the limit of mapping, no rock is exposed but blocks of magnetite-bearing gossan are common in talus.

A very small, isolated, magnetite-bearing gossan outcrops 400 feet west of station 15. This is approximately where the mineralized bed on Soup 7 claim would be expected to re-appear on the north side of the rock glacier. It is possible, therefore, that these showings represent a single mineralized horizon, interrupted only by a few faults, that is continuous for a horizontal distance of 8000 feet.

Taking into consideration only mapped segments of mineralized material, using a dip of 30 degrees east and a volume factor of 8 cubic feet per ton, it is estimated that the quantity represented on the map amounts to 27,000 tons per vertical foot of depth.

Grade

The oxidized nature of the outcrops in their present undeveloped state prevents sampling and assays that have much significance. Although copper stain is widespread it is not abundant. A few samples taken in 1964 by a Company geologist from the showing on Soup 8 and 10 claims assayed from 0.4% to 1.4% copper and averaged about o.10 ounces gold per ton. The presence of gold in economically significant amounts is unusual in a magnetite skarn, but seems to be peculiarly characteristic of such deposits in this area (Roots, p.212; White(1947), Ann. Rep. B.C. Min. of Mines,p.103-4).

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Respectfully submitted:

August 2nd, 1965

K C M Taggart

K.C. McTaggart

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
TO WIT:

In the Matter of

SUB - MINING RECORDER
RECEIVED
AUG 2 1965
M.R. #8123 $
VANCOUVER, B.C.

I, W H White

of 4778 - W 2nd Ave Vanc. 8, B C

in the Province of British Columbia, do solemnly declare that

Expenditures for Geological Survey of Soup Group amount to :-

20 Engineer days @ $100 per day	2000
Transportation, Car, air, helicopter	1000
Food	100
	$ 3100

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the
of VANCOUVER, B.C., in the
Province of British Columbia, this
day of AUG 2 1965, A.D.

W H White

Sub-Mining Recorder

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

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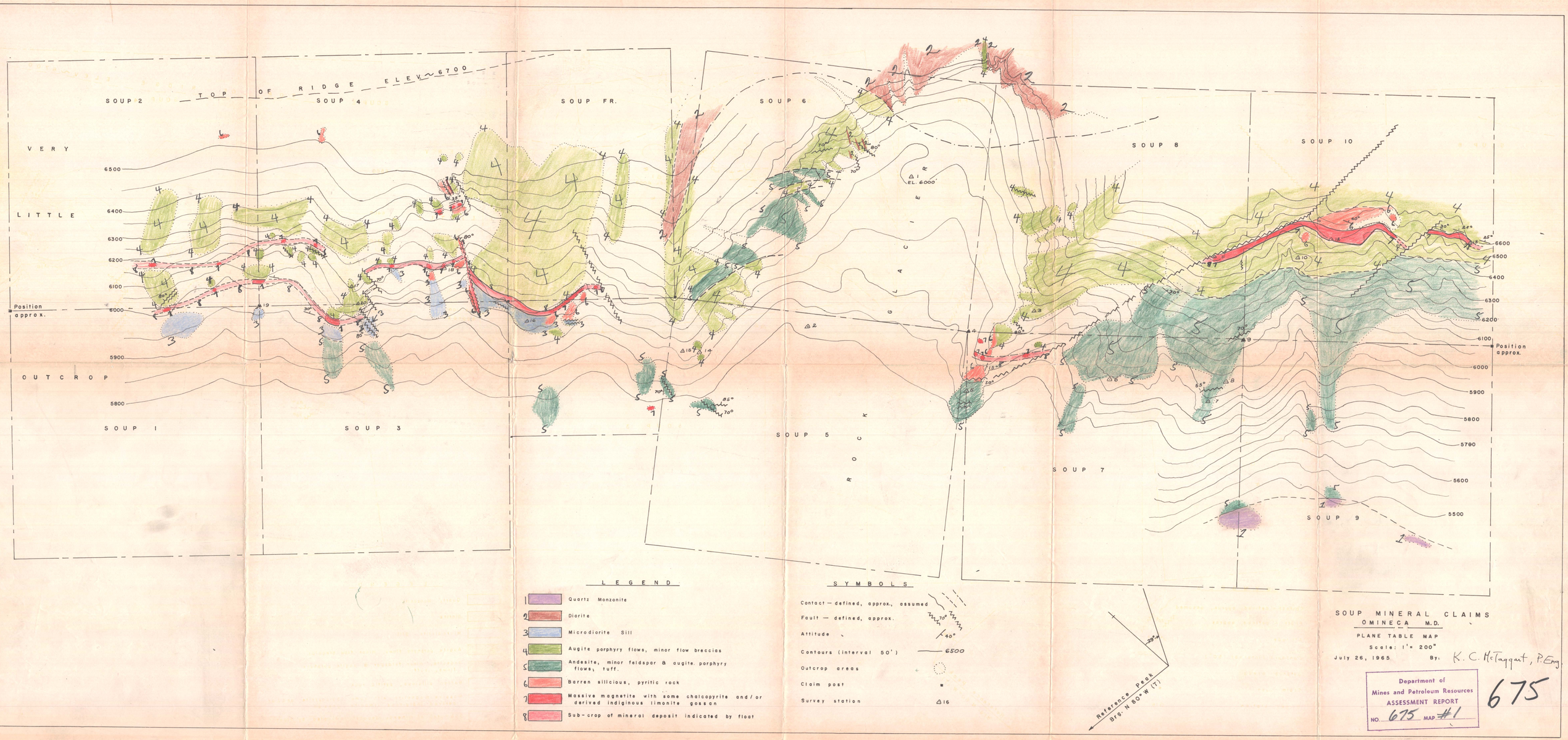

LEGEND

1. Quartz Monzonite
2. Diorite
3. Microdiorite Sill
4. Augite porphyry flows, minor flow breccias
5. Andesite, minor feldspar & augite porphyry flows, tuff.
6. Barren silicious, pyritic rock
7. Massive magnetite with some chalcopyrite and/or derived indiginous limonite gossan
8. Sub-crop of mineral deposit indicated by float

SYMBOLS

- Contact — defined, approx., assumed
- Fault — defined, approx.
- Attitude
- Contours (interval 50') — 6500
- Outcrop areas
- Claim post
- Survey station Δ16

Reference Peak
Brg. N 80° W (T)

SOUP MINERAL CLAIMS

OMINECA M.D.

PLANE TABLE MAP

Scale: 1" = 200'

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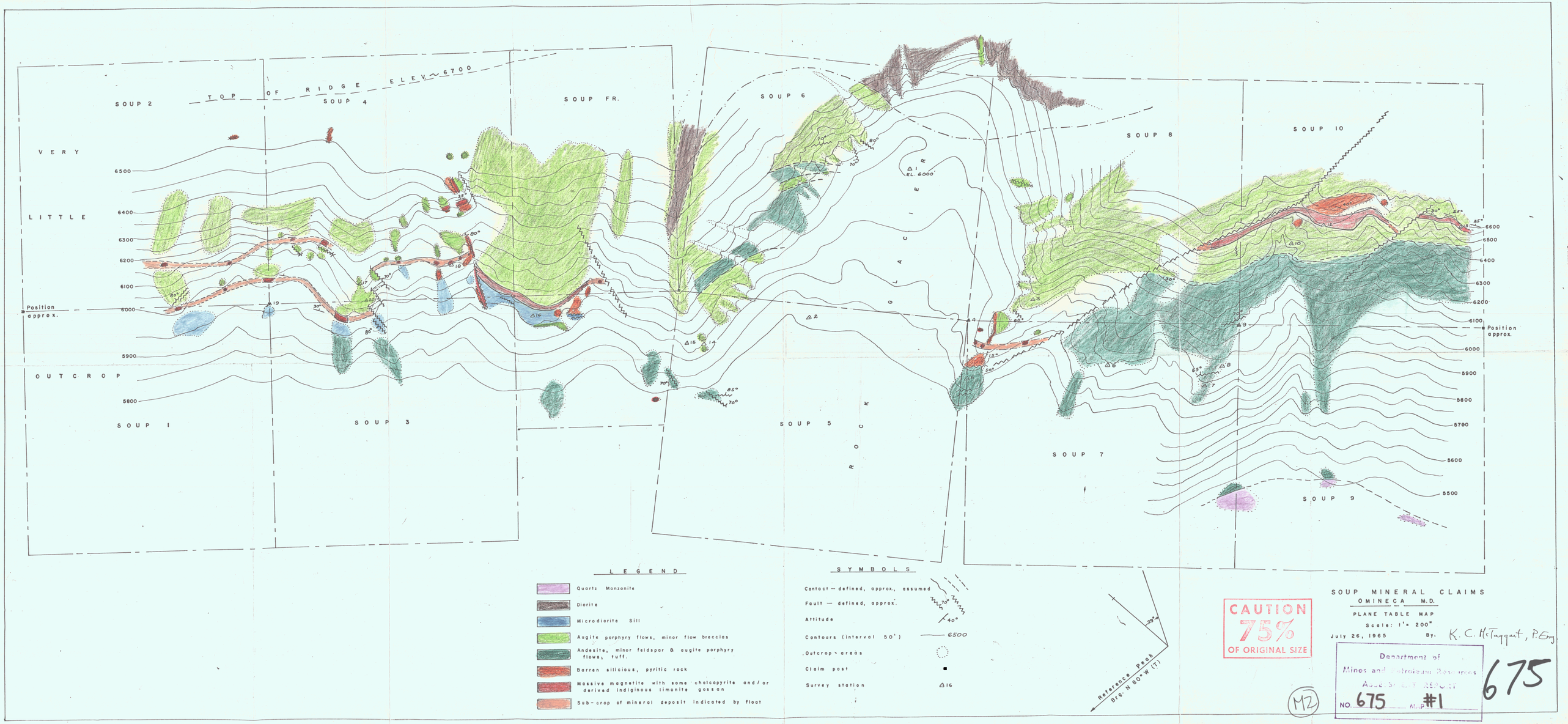

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CAUTION
75%
OF ORIGINAL SIZE

SOUP MINERAL CLAIMS

OMINECA M.D.

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