

REPORT
ON
SILVER CREEK SHOWINGS
of
Hudson Bay Mountain
Silver Mines Ltd. (N.P.L.)

OMINECA

MINING DIVISION

by

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November 30, 1966

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SILVER CREEK SHOWINGS

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SILVER CREEK SHOWINGS

REPORT

To: Hudson Bay Mountain Silver Mines Ltd. (N.P.L.)

Nov. 30/66

SUMMARY AND CONCLUSIONS:

The southeast showing, designated 'F' by Campbell, contains a potential of approximately 40 tons per vertical foot grading 0.05 oz. Au, 17 oz. Ag, 6.5% Pb and 7% Zn per ton. Work to date indicates 250 ft. vertical extent. At surface the mineralization lies very near both a limestone pinch-out and a fault. It could be explored further along this contact on three underground levels, either by short drill holes, or by tunneling, or both. It could also be explored further on surface by bulldozer stripping. The potential of this deposit, even when coupled with the low grade zinc deposits in the neighboring limestone lens, appears small however, and this should be recognized when more work is considered.

INTRODUCTION:

This report follows reports by D.D. Campbell dated August 19, 1965, and November 10, 1965, and letters dated June 6, 1966, and September 7, 1966. It deals with only the eastern portion of the lower property, and covers surface exposures and tunneling and drilling completed there at the end of the 1966 season.

H.B. Gilleland assisted in mapping surface and underground on October 1 and 2, 1966. Discussion with R. Kirkham of the B.C. Department of Mines prior to this field work provided some valuable information which is incorporated herein. Maps of both surface and underground, made so they can be superimposed readily, accompany the report. One section, showing the plunge of the intersection of the fault with the limestone lens, is also included.

ROCK TYPES:

Three rock types are shown on the accompanying maps. The oldest, according to Kirkham, is a sequence of volcanic flows. The flows are andesites, amygdaloidal and also porphyritic in places, predominantly green but with some purple (from hematite) patches. No evidence of bedding was found in the flows.

Lying above the flows, and actually in part intercalated with them, are two lenses of limestone. The limestone is partly marmorized (converted to marble) particularly near mineralized sections. The fresher sections are composed almost completely of fossil shells, and this, coupled with the fact that the lenses are unusually lenticular, leaves no doubt that they are reefs, deposited on or very near an old shore line.

Rock Types - cont'd:-

Above the limestone is a sequence of water-lain tuffs, locally well-bedded. The tuffs are transitional into the limestone in the underground exposures. The contact at surface appears to be with a massive flow, or thick tuff bed, followed by the thin-bedded water-lain tuffs.

STRUCTURE:

Kirkham has mapped and photographed a major recumbant fold in the area. According to his interpretation the beds on the property are overturned where exposed at surface, should steepen to vertical in the order of 500 feet or so below surface, and dip southerly, with right side up, below that. He suggests this fold could be related to a major flat fault which is exposed at about 7000 feet elevation, and south of the Silver Lake workings. This major fault projects well above the Silver Creek showings, and is of course, now eroded and of no direct consequence to them.

The limestone, and particularly the southeast lens, terminates very abruptly along strike to the west in spite of its appreciable thickness. Although one might expect the sudden termination is through faulting, no evidence exists of a fault of the required strength. Careful search revealed that the limestone in the outcrop about a hundred feet east of the high grade surface cut is butting into the andesites along an irregular contact which is obviously not a fault. It could be a scour contact, where a younger volcanic flow has scoured off the limestone beds.

Since the limestone beds are organic reef, they likely formed along or near an old shore line. The beds would be thin nearest shore, and thicken seaward, but probably terminate rapidly where water was too deep for the organisms to tolerate. The longest dimension of the reef would parallel the old shore line. Recent volcanic terrain is most irregular to begin with, thus very irregular marine basins, and consequently discontinuous erratic limestone beds are to be expected. Rapid lateral gradation of limestone into bedded water-lain tuffs, on the seaward side, would be a fairly common occurrence under the conditions pertaining. The available information fits this explanation better than the possible scour above described, particularly since some water-lain tuffs are found intercalated with the limestone underground and in the drill core. A few hours work with a bulldozer would explore the high grade surface lens, and perhaps solve the structural problem at the same time.

Both the north and south limestone lenses gradually thin to nothing at their eastern terminations. These terminations are in contact with volcanic flows, and must represent the old shore lines.

The structure which appears to be a fault, leading easterly from the northwest lens of limestone towards the portal of

Structure - cont'd:-

No. 4 tunnel, is thus actually a disconformity. It should be no surprise that this structure is difficult to find in the No. 5 (5150 elev.) tunnel. It should be, and is there only a tight contact between two flows.

The two limestone lenses are thus two separate bodies, formed at separate times in shallow marine basins. Their eastern terminations are the shorelines of the then existing basins. The western termination of at least the south lens is a reef edge with probably a sharp gradation, seaward, to water-lain tuffs.

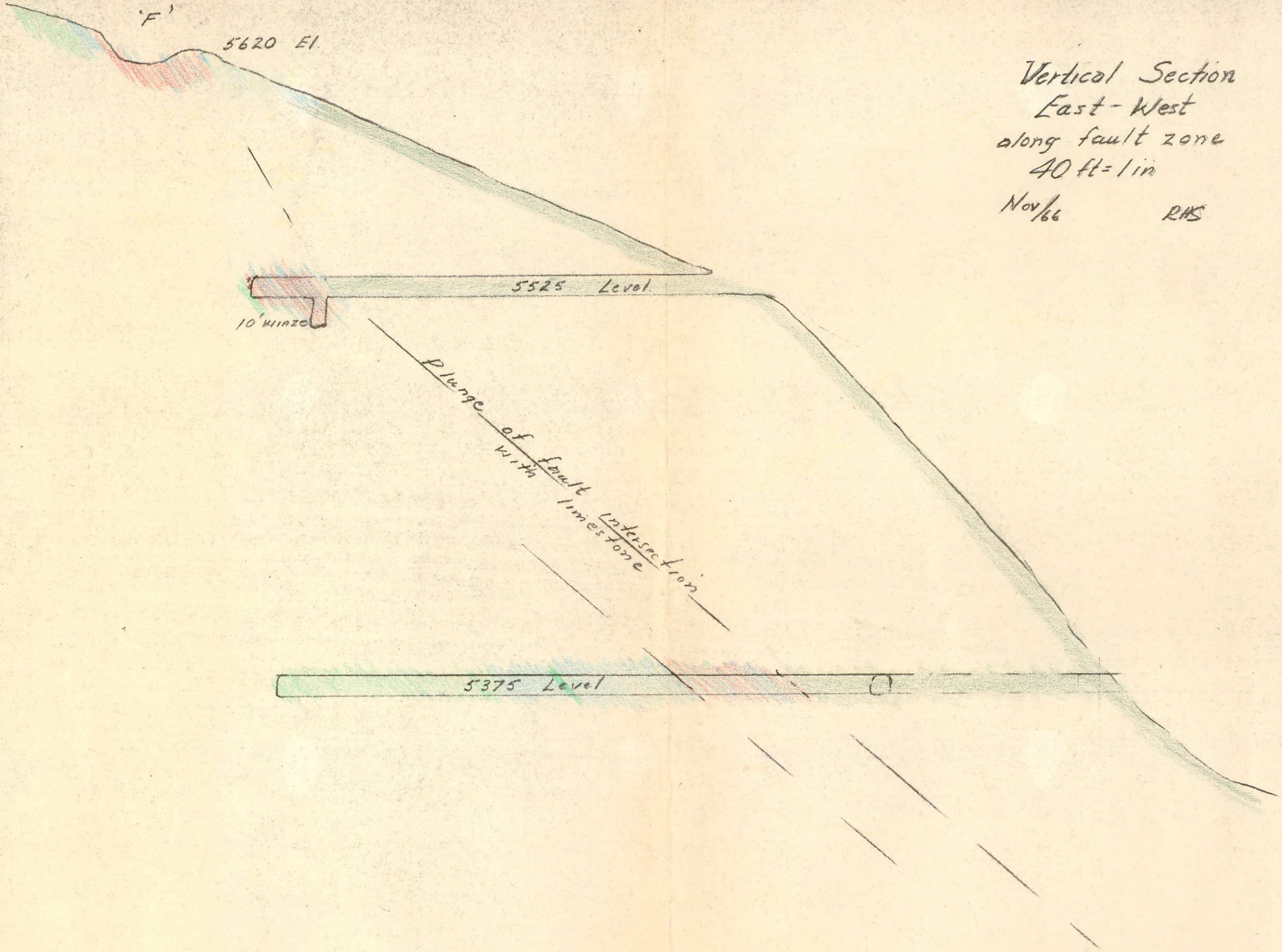
Two faults of importance are in the area mapped. The northern fault cuts through No. 5 tunnel, and continues westerly to the north limestone bed near the old surface shaft. It has not been drifted by any underground workings, and is not discussed further.

The southern fault was drifted in several places, on the old No. 1, No. 2, and 5525 levels, as well as in the work recently completed. This recent drifting showed that the fault produces a right-hand offset of only 20 feet in the south limestone lens. The fault has a surprising change of strike and dip on the 5525 level, and also appears to weaken and 'horsetail' out as it nears the lime beds on that level. This horsetailing produces a zone of minor faults and fractures, which zone is twenty to forty feet wide. The zone's intersection with the north contact of the limestone lens is the locus of the mineralization. Rather than spreading out and striking along the fault zone, however, the mineralization has spread out and strikes along the limestone contact. The width of the zone of faults and fractures might limit the strike length of the mineralization. The main fault strand does not appear to produce greater width of mineralization than is found elsewhere along the limestone contact.

MINERALIZATION:

The mineralization is not well exposed either on surface or in the tunnels. On surface, a bulldozer could be used to advantage to strip most of the zone, and obtain a good deal more information on its size and its relation to the limestone pinch-out and fault. It appears here that the pinch-out and the fault are within a few feet of being coincident, assuming that the fault swings southerly in strike on surface as it does on the 5525 level just below. Some sheared and oxidized rock on the dumps of the two slumped old cuts east and west of the mineralized cut do attest to fault strands passing through these cuts. The lack of good grade material on their dumps, or of any evidence of mineralization following the limestone-greenstone contact, leave the suspicion that the better grade is fairly local. Campbell's 'guesstimate' of 40 tons per vertical foot appears sufficiently optimistic. Samples average 0.08 oz. Au, 19 oz. Ag, 7.5% Pb, and 8% Zn per ton.

The mineralization exposed in the 5525 level follows the north contact of the limestone, southeasterly from the main fault strand. Unfortunately, the water-filled winze at the face of the drift



Vertical Section
East-West
along fault zone
40 ft = 1 in
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Mineralization - cont'd:-

along the contact precludes examination of the face. The contact could be followed further southeast by drifting, or explored by diamond drilling. The contact could also be followed to the northwest, with right-hand offsets anticipated on the expected fault strands. The narrow band of limestone cut by the northwesterly heading shows no mineralization. This faulted segment is beyond the west-most fault strand, and indicates that only one or two tens of feet of northwest extension of the mineralized contact (up to the main fault strand which should be ten or twenty feet in the northwest wall) is potential. The exposed length, twenty-five feet, has been sampled across five foot average widths, to provide about fifteen tons per vertical foot, averaging 0.03 oz. Au, 16 oz. Ag, 6% Pb, and 6% Zn per ton.

The mineralization recently exposed on the 5375 level is, as on the level above, also following the limestone-greenstone flow contact. It is here explored both along the fault, and again southeast of the fault. The fault offsets the contact, and also the mineralization about twenty feet. The mineralization could be followed by drifting along, or drilling toward, the limestone's north contact north of the fault. It is strong in the south section and drill hole U-4, and thus could likely also be followed southeasterly at least as far as the fault near U-5. The exposed length of about 40 feet, and width of about 5 feet, provide approximately twenty tons per vertical foot. The average of four samples is 0.06 oz. Au, 18 oz. Ag, 8% Pb, and 8% Zn.

The mineralization on the 5375 level is in the same structural environment as that on the 5525 level, and can very likely be followed up the plunge to it.

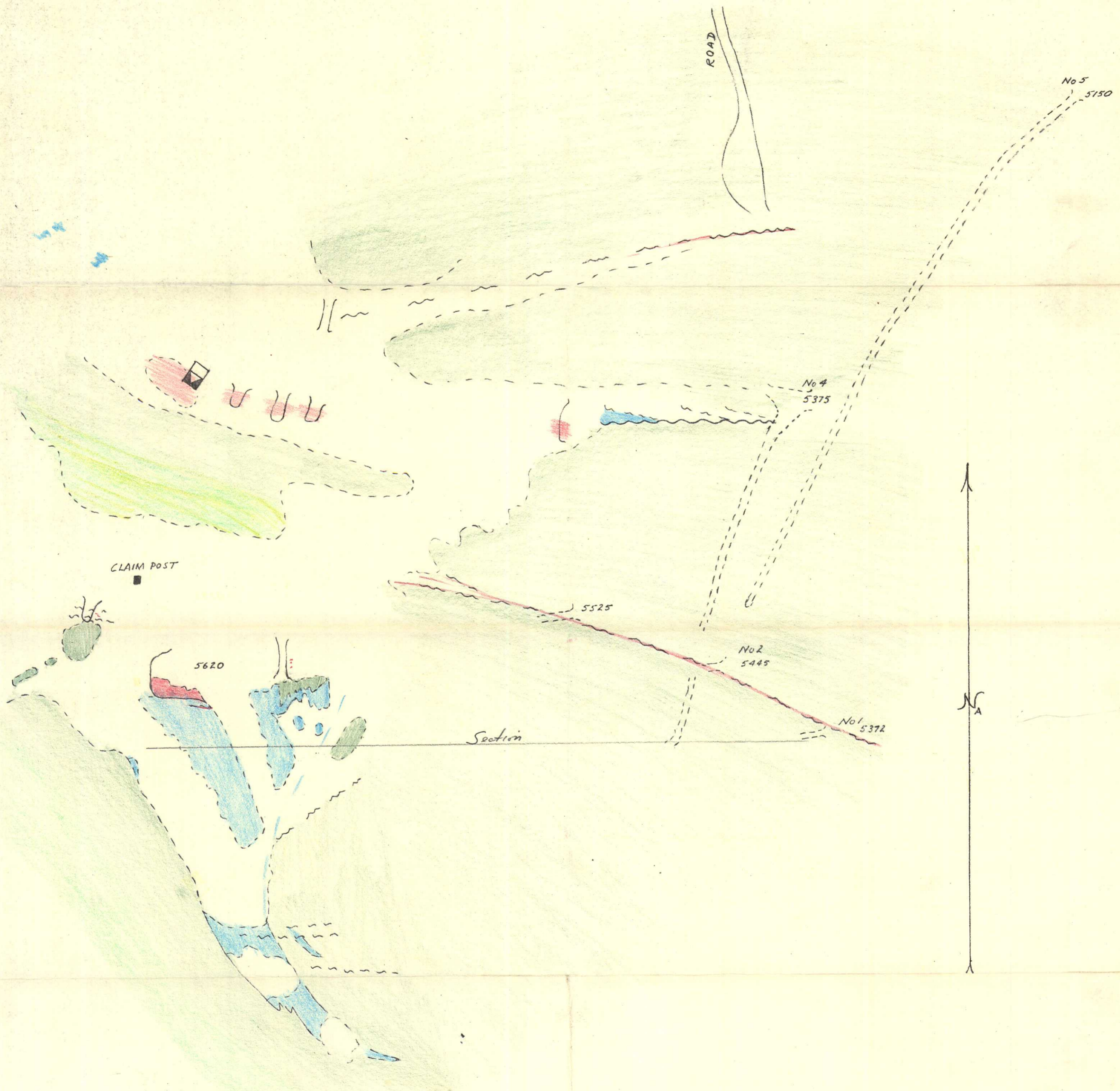
This plunge, controlled by the intersection of the main fault and associated fracturing with the limestone contact is at approximately 40 degrees as shown on the section (facing page). If the limestone reef continues along strike southeasterly from its location in drill holes U-6 and U-7 (on the 5150 level), its intersection with the fault and the associated mineralization would be 250 feet southeast of the 5150 face. Note that the limestone reef would have to have longer strike length here than at surface if it is to meet the fault, thus continuation of the mineralization down to the 5150 level is not reliable.

The connection of mineralization from the 5525 level to surface, however, also requires a change in structural setting in that it has to migrate from the north contact of the limestone to the west contact, or pinch-out.

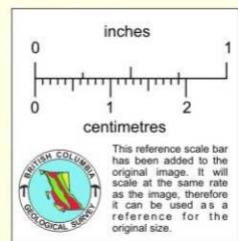
It is most unfortunate that no other high silver shoots are known in the immediate area. Exploring this shoot through the several levels would be a most interesting venture geologically; it is a pity the venture does not appear more attractive economically.

Respectfully submitted,


Dr. R.H. Seraphim, P. Eng.



- andesite flows
- andesite tuffs
- limestone
- sulfides

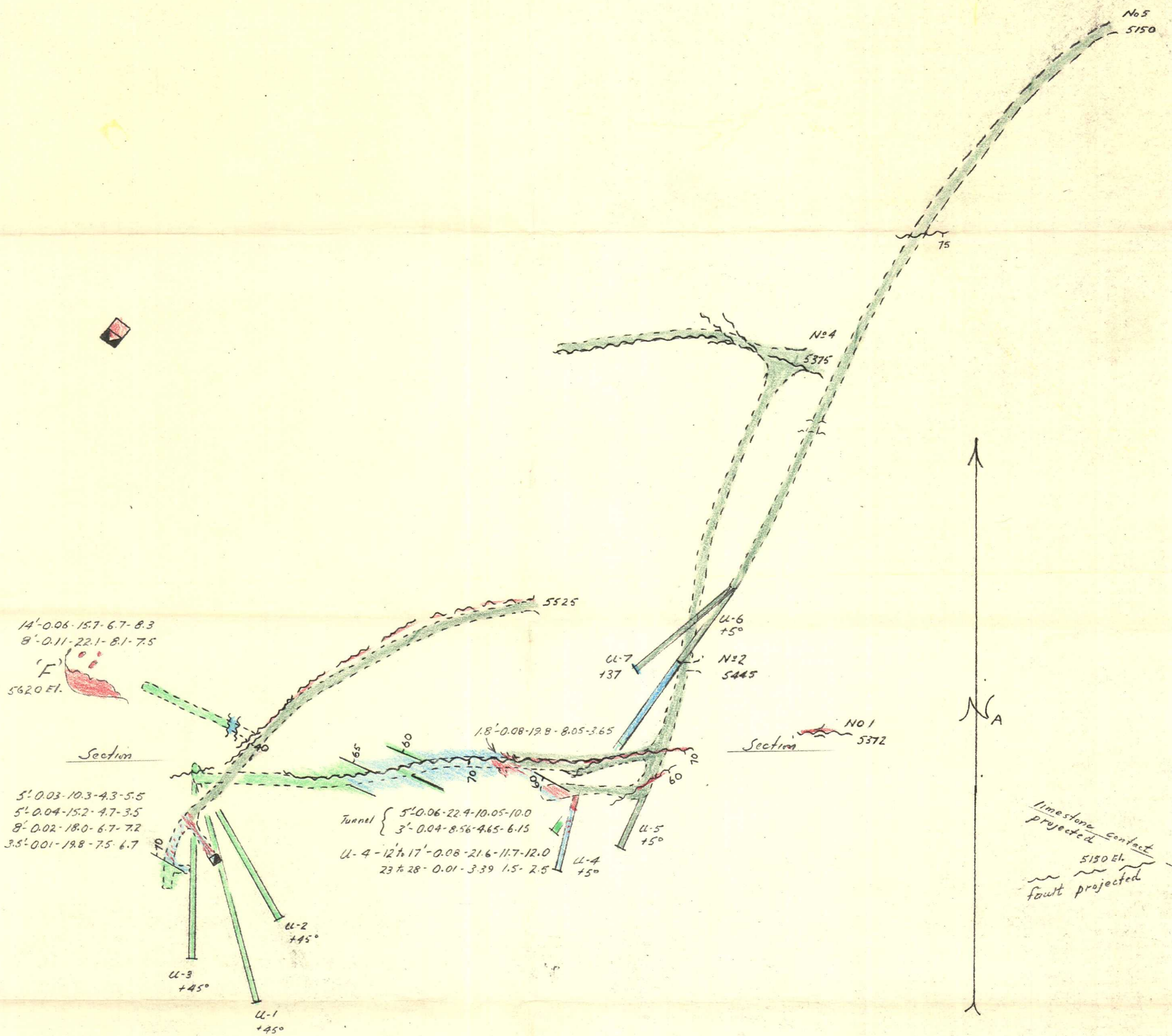


EAST WORKINGS
SILVER CREEK
HUDSON BAY MT.
Surface geology

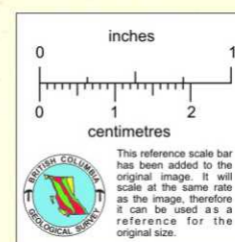
$\frac{40}{100}$ ft. = 1 in.

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- andesite flows
- andesite tuffs
- limestone
- sulfides



EAST WORKINGS
 SILVER CREEK
 HUDSON BAY MT.
 Underground Geology

40 ft. = 1 in.

Oct/66

RHS.