86-222-14815

Geological Survey

and

Geochemical Sampling

of the

SNOW Claim

of the

Longworth Group

at

Bearpaw Ridge, Sinclair Mills
Cariboo Mining Division
British Columbia

NTS: ~~93 H/13, 93 H/14,~~ 93 I/4E
Latitude: ~~53° 58'~~ N 54° 0.5'
Longitude: 121° ~~30'~~ W 32.5'

Prepared for

Consolidated Silver Standard Mines Limited
1100 - 1199 West Hastings Street
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Prepared by

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SUMMARY

Trenching, blasting and representative chip sampling was undertaken on the SNOW claim of the Longworth Group to obtain samples for chemical analysis and thermal shock testing.

The geochemical analysis indicate that the samples collected from the claim grade 99.5% SiO_2 or better and are suitable for the production of silicon metal. The thermal shock tests confirm the samples have the required physical properties for reduction in a silica furnace. Although the silicon/ferrosilicon market is not all that attractive at present, concerted efforts will be made to develop this resource.

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INTRODUCTION

The Longworth Group consists of 9 discontinuous two-post claims located over resistive ridge exposures of Lower Silurian Nonda Formation orthoquartzite. The claim group was staked in 1974 to protect this source of silica which has grades of 99.6% SiO_2 and better. The proximity of such an abundant source of metallurgical quality silica to infrastructure enhances the potential for development of this resource. The two-week 1985 program consisted of representative chip sampling and blasting perpendicular to strike across the quartzite. The samples were analyzed for percent silica by Chemex Labs of North Vancouver. As the claim group is discontinuous, work has been filed on the claims individually.

LOCATION

The Longworth Group is located along Bearpaw Ridge 80 kms east of Prince George, B.C. The claims were staked to cover a north-west striking quartzite parallelling the Fraser River and CNR line. The claims are 6 kms east of the CNR line and the closest road access terminates at Sinclair Mills 7 km west of the claims. The Claim Group straddles three NTS 1:50,000 sheets: 93 H/13, 93 H/14 and 93 I/4. Access to the property is restricted to helicopter or foot.

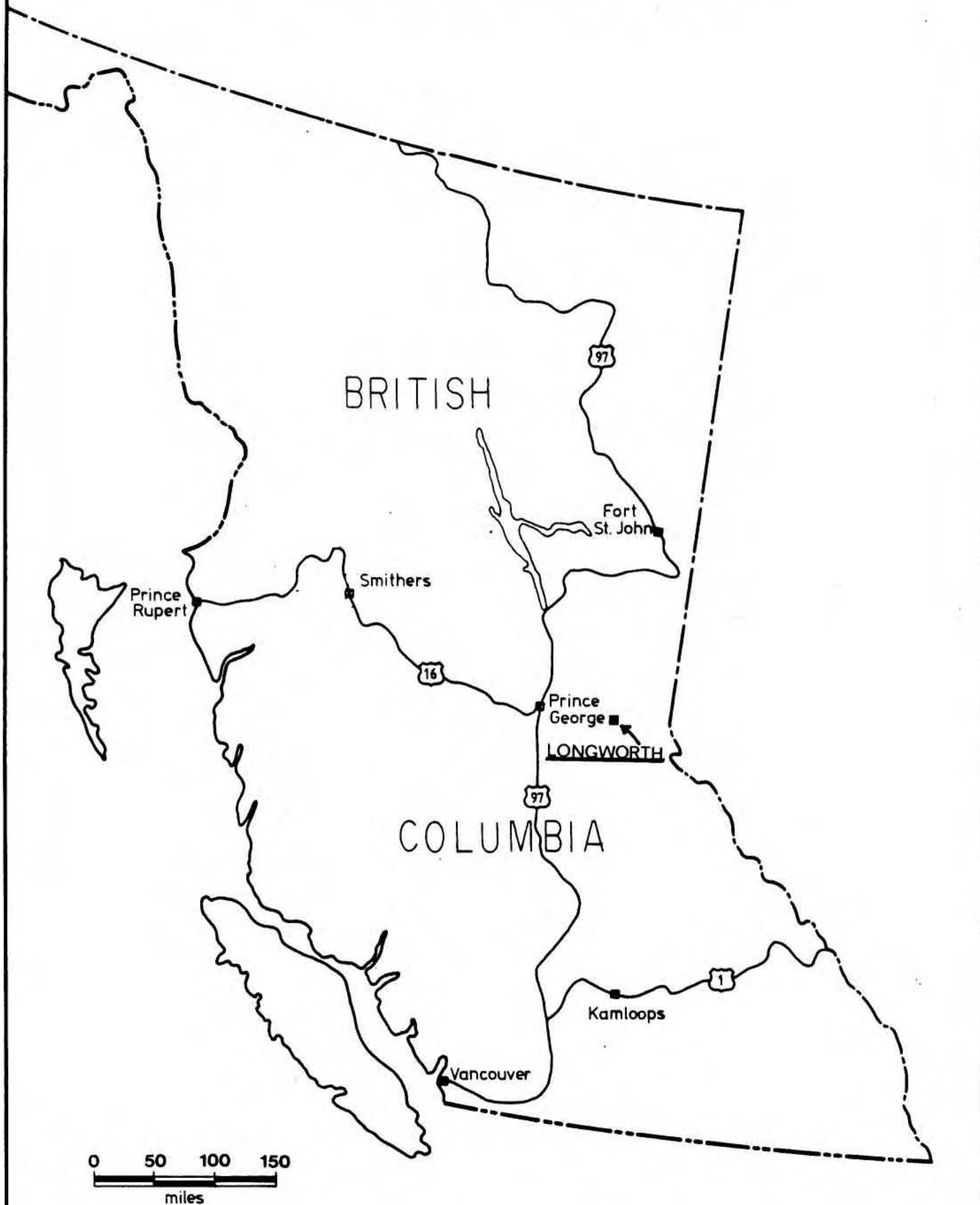
CLAIMS

The Longworth Group consists of 9 claims in 5 groups

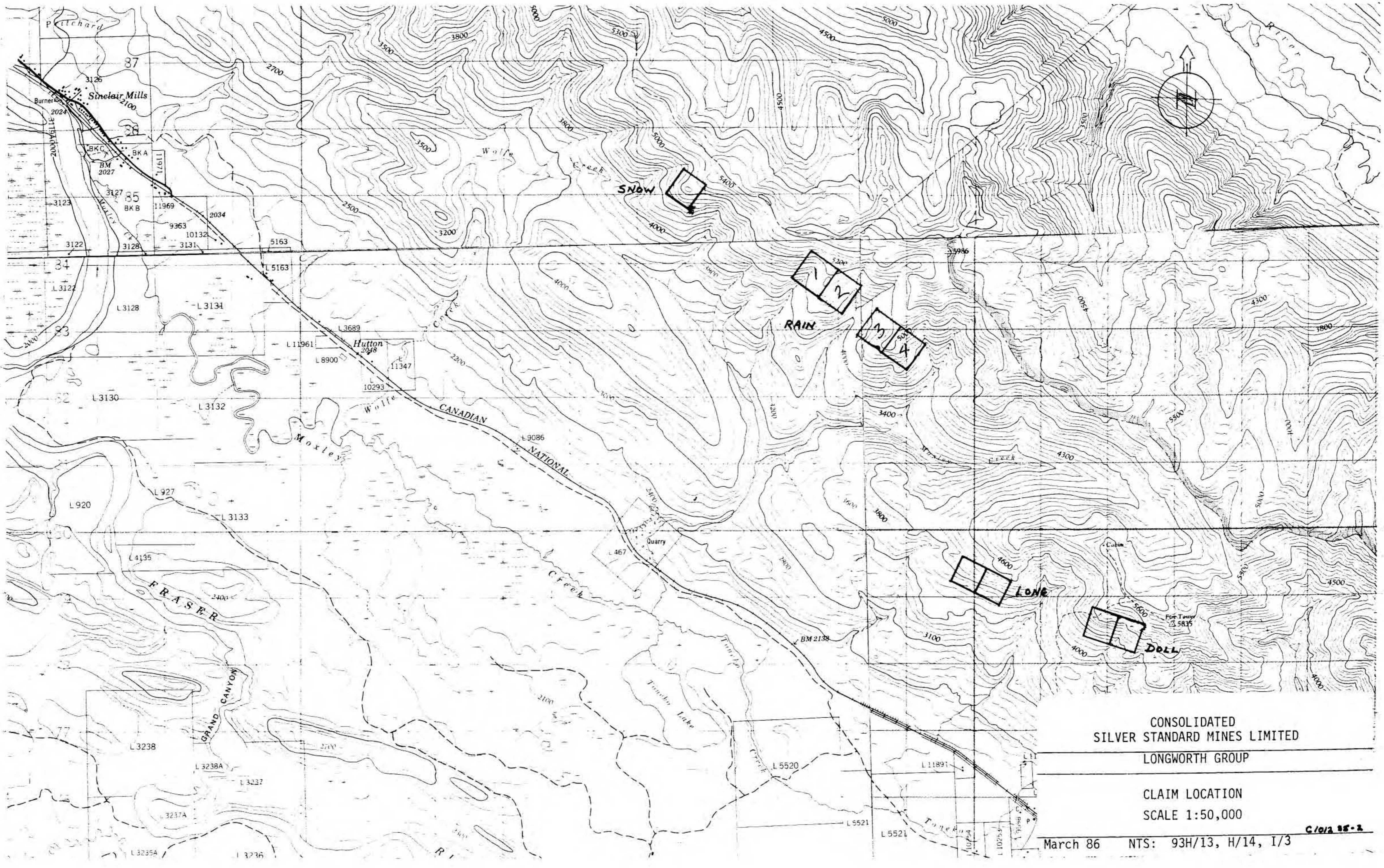
Claim	Record #	Anniversary Date
* SNOW	1105	July 6, 1986
RAIN 1,2	1101, 1102	July 6, 1986
RAIN 3,4	1103, 1104	July 6, 1986
LONG 1,2	71925,71926	April 10, 1986
DOLL 1,2	71927, 71928	April 10, 1986

* Claim(s) subject of this report.

CONSOLIDATED SILVER STANDARD MINES LTD.



DRAWING C1012 85-1


CONSOLIDATED
SILVER STANDARD MINES LIMITED
LONGWORTH GROUP
CLAIM LOCATION
SCALE 1:50,000
March 86 NTS: 93H/13, H/14, I/3
SNOW
RAIN
LONG
DOLL
Sinclair Mills
Hutton
CANADIAN NATIONAL
Wolfe Creek
Moxley Creek
FRASER
GRAND CANYON
Quarry
Cabin
Fire Tower

HISTORY

The silica exposure at Bearpaw Ridge was sampled in 1974 by employees of Silver Standard Mines while carrying out a regional exploration program for stratiform lead-zinc mineralization. Initially poor (incorrect) analytical results indicated the quartzite on the property was of poor quality (98.5% SiO_2). Re-analysis in 1980 indicated an average silica content of 99.0% SiO_2 and better in samples taken from the property and a major sampling program was carried out by Silver Standard employees in 1981 under the supervision of Hanna Mining Corp, optionees of the property. The 1981 program confirmed the presence of potentially economic silica-pure quartzites in substantial quantities. The program included helicopter-supported blasting and sampling of the exposures during a two-week time period. No assessment report was filed detailing this work and the property has received little exploration attention since then.

CURRENT WORK

The Longworth Group was sampled between September 1 and 18 to compliment the results of the 1981 program. Two campsites were used for this work: one equidistant between the SNOW and RAIN claims, the other northeast of the DOLL claims. The current program included hand trenching, blasting using a Copco plugger, and chip sampling of weathered and blasted silica outcrops on each claim. Traverses, largely dictated by exposure, were made across strike, though in one instance (Long 1) an oblique traverse was made. Samples suitable for thermal shock testing were selected from the blasted material. Sampling was done along strike from the previous work to avoid duplication.

TOPOGRAPHY AND VEGETATION

The Longworth Group is on the west flank of Bearpaw Ridge at an elevation of 1500m ASL with the apex of the ridge at 1700m ASL. The top of the ridge is covered with open meadows separated by clusters of 5m high dense spruce. Outcrop is minimal. The flanks of the ridge are covered with spruce, dense alders and

1-meter high lush green leafy vegetation which hampers horizontal mobility and accelerates downward vertical movement. Outcrop is largely restricted to the resistive quartzite unit with the regional phyllites exposed in a few places. Bearpaw Ridge marks a weather pattern boundary and is frequently covered by cloud while the sky is clear to the west. Access to the property is possible by flying up the many drainages when the cloud coveris not too thick. A blizzard in early September dumped 20 centimeters of snow on the Ridge.

REGIONAL GEOLOGY

Bearpaw Ridge forms part of the Rocky Mountain Belt, adjoining the Rocky Mountain Trench on the east. It is dominated by Lower Silurian clastic sediments and volcanics equivalent to the Nonda Formation. The sediments are comprised of limy shale, shale, dolostone and minor quartzite. The volcanics (greenstones) include fragmentals and flows occurring as a 2km wide member just east of the Longworth Claim Group within the larger Silurian carbonite-rich sediment package. It appears that the volcanism was contemporaneous with marine carbonate deposition. Late Llandovery age brachipods and corals typify the fauna occurring in the Nonda Formation on Bearpaw Ridge (Campbell et al, 1973, p.25.). On the west, Bearpaw Ridge is in fault contact with Lower Cambrian McNaughton Formation clastic sediments. To the east, the Nonda Formation sediments conformably (?) overly Cambrian to Ordovician shales and carbonates.

LOCAL GEOLOGY

Locally, the Longworth Group is underlain by quartzite with lesser shale and limestone. The quartzite is massive and equigranular with rounded quartz grains averaging 0.5mm in diameter. Bedding is apparent in only a few outcrops and it dips steeply (70°-80°) east. The quartzite is up to 400m thick and its eastern contact with the shales appears to be fairly sharp although it was not observed. There has been minor faulting and folding of the quartzite.

The quartzite is pinkish white to buff on the fresh surface and weathers greyish white. It is cut by numerous fine white quartz veins which probably reflect remobilization of quartz along fractures. These veins are frequently en echelon. There is a weak fracture cleavage developed normal to the strike.

Impurities in the quartz include muscovite-bearing cavities, limonite-stained microfractures, minor calcite and minor quantities of hydro carbons (?).

PURPOSE

In the production of silicon and ferrosilicon metals, the silica (SiO_2) bond is reduced giving silicon Si and oxygen O_2. The catalyst for the reduction is a high temperature electric carbon electrode which strips the SiO_2 from the quartz and breaks the bond.

In the silicon furnace there is an extreme temperature variation from the top of the furnace, quartzite and carbon products, and the bottom of the furnace, molten silicon. For this reason the quartzite must have certain physical and chemical properties. It must be pure so that the silicon product is not contaminated and it must be resistant so that it reduces and does not melt. If the pore spaces between the quartzite fragments get blocked by the quartzite fracturing too small or congealing, the oxygen cannot combine with carbon products to escape as carbon dioxide and the quartzite will melt. Thus at high temperatures the rock must not decrepetate. Silica meeting both physical and chemical specifications is not that common.

SAMPLING PROCEDURE

Unbiased representative sampling of the quartzite is most crucial in proper evaluation of the property. For this reason blasting was undertaken on certain claims of the Longworth Group in order to expose fresh material similar to that which would be mined in a production operation. Four of five one-half metre deep holes, 1 to 2 metres apart were drilled in a line and blasted using aluminum based dynamite and B-line. After the blast an appropriate sample at least 10cm x 10cm x 10cm was selected for thermal shock testing. Across the blast, fresh chip samples were collected consisting of 10 to 15 pieces measuring 2cm or more a side such that the chip sample weighed 7 to 10 kgs. Chips greater than 2cm a side were hammered down in size. Care was taken to avoid samples with drill hole marking to reduce the potential for aluminum contamination. Pieces with lichen or surficial oxide stain were also avoided as these would not be present in an open cut and could not be considered representative.

In areas where it was not practical nor time effective to blast, chip sampling was carried out across outcrop. Much of the outcrop has been rounded by weathering making it necessary to use a sledge and chisel to obtain clean samples. Once a chip was obtained, lichen and surficial oxidation were removed by hammering the sample. As the hammer is made of steel softer than the quartzite, splashes of iron were frequently left on the sample, a potential source of iron contamination.

A comprehensive description of the analytical method is included in Appendix 1. A brief summary follows. In the case of producing silicon metal, it is necessary that the silica contain less than 0.1% Fe_2O_3. It is necessary that as little iron as possible is introduced into the sample. Many samples have splashes of hammer steel already and acquire more iron when crushed in an iron crusher. To reduce the effects of this iron, the sample is passed through a magnetic separator before pulvarization. The sample is ground to - 200 mesh in a zirconium ring pulverizer and passed by a magnet before being analyzed. By using the zirconium pulvarizer it is possible to analytically determine the amount of material introduced into the sample from the zirconium rings. Although the method is not iron exclusive, the contamination, is minimal.

For the thermal shock characteristics, samples were tested at the University of British Columbia Metallurgical Engineering Department under the supervision of Dr. Chaklader. The procedureis described in detail in Appendix 1.

GEOCHEMICAL RESULTS

Samples from the Longworth Group were analyzed on two occasions: the first for SiO_2; the second for SiO_2, Al_2O_3, Fe_2O_3, CaO, L.O.I., and Zr. The results are shown in Table 1 with assay certificates included in Appendix 3. To be acceptable for the production of silicon metal, the silica must have the following chemical specifications: SiO_2 99.5% min., Al_2O_3 0.25% max., Fe_2O_3 0.10% max., CaO-nil, L.O.I., 0.2% max. It is apparent from Table 1 that a number of samples meet these specifications.

To arrive at the final sample SiO_2% value, a few assumptions were made. The first is that by averaging the results of Test A and Test B the silica value is realistic. The rock analyses in Table 1 indicate that the property contains silica which can be used in the production of both silicon and ferrosilicon alloys. Most of the samples from the SNOW claim satisfy the chemical requirements of: SiO_2 99.5%, Al_2O_3 0.25%, Fe_2O_3 0.10%, CaO nil, L.O.I. 0/20%.

Reproducability of the test was quite variable with a difference of 0.02% to 0.68% SiO_2 with a mean variation of 0.13% SiO_2. It is essential to have material with a silica purity of 99.5% SiO_2 or better. Thus the mean variation implies any values averaging 99.5% to 99.65% SiO_2 could be suspect. Chemex who performed the analysis have offered an explanation for this variation and it is included in Appendix 1.

Zirconium rings were used to pulverize the samples and as a result the zirconium reporting in the analysis, is contamination resulting from wear of the rings. In determining the true average silica content of each sample, the zircon content was

TABLE I

Sample description	TEST A: SiO2 % fusion	Fe2O3 %	CaO %	Al2O3 %	L.O.I. %	Zr (XRF) ppm	TOTAL	TEST B: SiO2 % fusion	AVERAGE: SiO2 % Average A + B	SiO2 Variation A + B	Claim	SiO2 Zr Corrected
19651	99.16	0.09	0.16	0.25	0.23	845	99.97	99.35	99.25	0.19	S	99.33
19652	99.04	0.07	0.04	0.31	0.20	862	99.75	99.25	99.14	0.21	S	99.23
19654	99.52	0.06	0.03	0.25	0.18	892	100.13	99.45	99.48	0.07	S	99.57*
19655	99.56	0.07	0.03	0.18	0.16	758	100.07	99.60	99.58	0.04	S	99.65*
19658	99.60	0.04	0.03	0.14	0.15	717	100.03	99.46	99.53	0.16	S	99.60*
19661	99.72	0.05	0.02	0.16	0.14	739	100.16	99.46	99.59	0.26	R 2	99.66*
19664	99.80	0.04	0.02	0.11	0.08	927	100.14	99.56	99.68	0.24	R 2	99.77*
19665	99.56	0.06	0.02	0.20	0.06	1171	100.02	99.37	99.46	0.19	R 2	99.57*
19667	99.24	0.05	0.02	0.50	0.17	1154	100.09	99.01	99.12	0.23	R 1	99.23
19668	99.32	0.04	0.03	0.29	0.17	1125	99.96	99.16	99.24	0.16	R 2	99.35
19669	99.64	0.05	0.03	0.32	0.14	1187	100.30	99.40	99.52	0.24	R 2	99.63
19670	99.60	0.03	0.02	0.13	0.12	1050	100.00	99.51	99.55	0.09	R 2	99.65*
19671	99.52	0.04	0.02	0.26	0.15	985	100.08	99.35	99.43	0.17	R 1	99.52
19672	99.60	0.06	0.02	0.21	0.07	1190	100.07	99.45	99.52	0.15	R 2	99.63*
19675	99.56	0.09	0.02	0.17	0.06	936	99.99	99.51	99.53	0.05	S	99.62*
19676	99.60	0.04	0.03	0.22	0.08	747	100.40	99.45	99.52	0.15	S	99.59*
19678	99.20	0.04	0.02	0.28	0.09	661	99.69	99.26	99.23	0.06	D 1	99.29
19679	99.36	0.03	0.02	0.30	0.11	810	99.90	99.20	99.28	0.16	D 1	99.36
19680	99.72	0.04	0.02	0.10	0.10	797	100.06	99.56	99.64	0.16	D 1	99.72*
19681	99.68	0.03	0.02	0.09	0.10	906	100.01	99.66	99.67	0.02	D 1	99.76*
19682	99.68	0.04	0.02	0.12	0.12	786	100.05	99.56	99.62	0.12	D 1	99.69*
19683	99.76	0.03	0.02	0.08	0.10	772	100.06	99.65	99.70	0.11	D 1	99.77*
19684	99.72	0.03	0.02	0.07	0.10	778	100.01	99.70	99.71	0.02	D 1	99.78*
19685	99.48	0.04	0.02	0.16	0.11	640	99.87	99.55	99.51	0.07	D 1	99.57*
19688	99.20	0.04	0.03	0.35	0.08	773	99.77	99.25	99.22	0.05	L 1	99.29
19689	99.40	0.04	0.02	0.18	0.06	848	99.78	99.50	99.45	0.10	L 1	99.53*
19690	99.52	0.04	0.02	0.20	0.09	678	99.93	99.56	99.54	0.04	L 1	99.61*
19691	98.84	0.05	0.02	0.54	0.10	917	99.64	99.16	99.00	0.68	L 1	99.09
19692	99.56	0.03	0.02	0.15	0.07	946	99.92	99.55	99.55	0.01	L 1	99.64*
19693	99.60	0.03	0.02	0.13	0.06	861	99.92	99.56	99.58	0.04	L 1	99.66*
19694	99.56	0.03	0.02	0.15	0.15	731	99.83	99.75	99.65	0.19	L 1	99.72*
19801	99.60	0.02	0.02	0.13	0.10	803	99.95	99.60	99.60	0.00	R 4	99.68*
19802	99.56	0.03	0.02	0.15	0.08	713	99.91	99.65	99.60	0.09	R 4	99.67*
19803	99.60	0.03	0.02	0.13	0.06	695	99.91	99.56	99.58	0.04	R 4	99.65*
19804	99.44	0.04	0.03	0.22	0.08	768	99.88	99.40	99.42	0.04	R 4	99.49
19805	99.52	0.04	0.02	0.15	0.09	782	99.90	99.60	99.56	0.08	R 4	99.63*
19806	99.56	0.04	0.02	0.16	0.10	804	99.81	99.50	99.53	0.06	R 4	99.61*
19807	99.24	0.06	0.02	0.31	0.08	486	99.75	99.60	99.42	0.36	R 4	99.46
19808	99.45	0.04	0.02	0.28	0.10	624	99.95	99.46	99.45	0.01	R 4	99.51
19809	99.40	0.04	0.02	0.27	0.08	830	99.87	99.80	99.60	0.40	S	99.68
19811	99.57	0.04	0.02	0.15	0.09	777	99.94	99.40	99.48	0.17	S	99.55*
19812	99.52	0.08	0.02	0.16	0.11	640	99.95	99.55	99.53	0.03	S	99.59*

Silicon Metal - Quartz Specifications: SiO_2 99.50%, Al_2O_3 0.25%, Fe_2O_3 0.10%, CaO Nil, L.O.I. 0.20%

* Acceptable

S - SNOW
R - RAIN
L - LONG
D - DOLL

added onto the average silica content. As an example, sample 19670 has a zirconium content of 0.105% Zr. This could then be divided up against the other constituents pro-rata but the distribution other than for SiO_2 would be so miniscule the Zr% has been added directly to the silica amount giving a corrected, realistic SiO_2 percentage.

Of the 42 samples tested, 28 have the required chemical specifications for silicon metal production, of which 10 might be unacceptable as they are within one standard deviation of the average of the variations in SiO_2 analyses with respect to the critical value of 99.5% SiO_2.

The results of the chemical analyses for the SNOW Claim as presented on C1012-85-5 indicate the claim is dominated by metallurgical grade silica. The sampling in 1981 and 1985 was concentrated along the western limit of the outcrop knoll as this material is the most readily acceptable.

The SNOW silica has little hematite or hydrocarbon stain. The samples which are unacceptable are rich in alumina (Al_2O_3). The alumina is correlative with muscovite veins and concentrations in the quartzite. Although the muscovite occurs in cross cutting structures it is believed to be primary clay contamination, remobilized into the open voids.

THERMAL SHOCK RESULTS

Sixteen samples were tested at the Metallurgical Engineering ceramic lab at the University of British Columbia. Of these, 12 are designated acceptable while 4 are not (Table 2). A description of the method is given in Appendix 1 with the results given in Appendix 4. Most of the samples exhibited little cracking after being raised to 1300°C indicating the quartzite on the Longworth property would withstand the thermal shock of a silicon furnace.

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TABLE 2

LONGWORTH THERMAL SHOCK SAMPLES

Sample #	Claim	Size (inches)	Comments	# Fractures 1000°C	# pieces 1300°C	Acceptable/ Unacceptable
19653	SNOW	3 x 3 x 4		1 crack	1 crack intact	acceptable
19656	SNOW	4 x 5 x 5		1 crack	6 pieces	unacceptable
19657	SNOW	4 x 4 x 4 C		2 pieces	2 pieces	unacceptable
19659	SNOW	4 x 5 x 5		3 pieces	10 pieces	unacceptable
19660	SNOW	3 x 4 x 5		2 pieces	3 pieces	unacceptable
19662	RAIN 2	4 x 4 x 5	limonite fracture	cracking	cracking	acceptable
19663	RAIN 2	4 x 4 x 4 C		cracking	cracking	acceptable
19666	RAIN 2	3 x 4 x 6		cracking	2 pieces	acceptable
19673	SNOW	3 x 4 x 5		cracking	2 pieces	acceptable
19674	SNOW	4 x 4 x 4 C		cracking	intact	acceptable
19677	SNOW	4 x 4 x 4 C		cracking	3 pieces	acceptable
19686	DOLL 1	3 x 5 x 5	hydrocarbons	-	intact	acceptable
19687	DOLL 1	2.5 x 5 x 5		-	intact	acceptable
19692	LONG 1	4 x 4 x 4 C		cracking	intact	acceptable
19673	SNOW	4 x 4 x 4 C		cracking	intact	acceptable
19810	SNOW	4 x 4 x 5		cracking	intact	acceptable

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The SNOW silica does not exhibit as good physical properties as it does chemical. Of ten samples tested from the property, four were deemed unacceptable due to cracking. Two of these samples cracked at 1000°. At 1300° there was no further breakdown of the samples which indicates they could be acceptable. Some of the samples had pre-existing cracks as a result of the blast to expose them, and these lines of weakness would be expected to break down first. If this is the case, one can conclude that most of the silica exposed on the claim is within acceptable limits.

CONCLUSIONS AND RECOMMENDATIONS

The SNOW claim received the most attention in the current program as it is the area most readily accessable and appears to have the better grade material. Both the thermal shock and chemical analysis of the samples collected on the Longworth property from September 1-18, 1985, meet the required chemical and physical specifications for the production of either silicon or ferrosilicon metals. No further work is recommended until the silicon market improves. At such a time additional exploration is recommended.

1) Stripping of the SNOW exposure. Five meter wide strips every 100 meters, stripped to bedrock. Blasting and detailed sampling across these stripped areas.
2) Diamond drilling (NQ) every 50m along strike across the section for a total of 5000m of drilling. This should provide sufficient detail for pit design.
3) No further work is recommended on the Long claims
4. Additional sampling away from the sediment contact is recommended on the Doll claim
5. No further work is recommended on the Rain 3 and Rain 4 claims.
6. Additional sampling on the Rain 1 and 2 claims should accompany renewed activity on the Snow claim

REFERENCES

Lay, D. (1941)
Fraser River Tertiary Drainage-History, BCDM Bulletin No.11, 75p. (refer p.20)

Campbell, R.B. (1967)
McBride (93H) Map-Area, British Columbia in Report of Activities, Part A. May to Oct 1967, GSC Paper 68-1A, pp.14-23.

Campbell, R.B., E.W. Mountjoy and F.G. Yarg, (1973)

Geology of the McBride Map-Area, British Columbia, GSC paper 72-35, 104p. (incl: GSC Map 1356A).

LONGWORTH PROJECT COSTS (INCLUSIVE)

Wages:	FIELD (Aug.30-Sept.20)		$6290.00
	1 Geologist 5 days @ $220.00/day	$1100.00	
	1 Geotechnician 22 days @ $125.00/day	$2750.00	
	1 Assistant 10 days @ $ 90.00/day	$ 900.00	
	OFFICE-PREPATORY/METALLURGY		
	1 Geologist 7 days @ $220.00/day	$1540.00	
Food & Accommodation:			$1655.00
30 mandays in camp @ $40.00/day		$1200.00	
7 mandays commercial @ $65.00/day		$ 455.00	
Transportation			$7113.31
Helicopter (Sept.01,03,14,17)			
9.7 hours @ $510.00/hour including fuel		$5335.00	
4x4 Rental 22 days @ $40.00/day		$ 880.00	
4x4 Mileage 2500 kms @ $0.30/km		$ 750.00	
Airfares (Prince George - Vancouver)		$ 148.31	
Instruments			$2076.10
2 pluggers 22 days each @ $25.00/day		$1100.00	
Dynamite: Browns - Smithers		$ 505.26	
4 drill steel, parts & labour		$ 470.84	
Surveys			
2 sheets 1:10,000 contoured basemaps			$3000.00
Analysis			$3867.60
42 rock samples for SiO_2 @ $17.50 ea.		$ 735.00	
42 rock samples for SiO_2, CaO, Fe_2O_3, MgO, Al_2O_3, L.O.I. @ $42.50		$1785.00	
16 rock samples for Thermal Shock testing @ $75.00 ea.		$1200.00	
cutting of 6 rocks for met testing @ $24.60 ea.		$ 147.60	

Field Gear		$ 450.00
1 SB-X-11 radio rental 20 days @ $12.50/day	$ 250.00	
1 stove & cooking gear 20 days @ $ 5.00/day	$ 100.00	
Miscellaneous - sample bags, hammers, topofil, etc.	$ 100.00	
Report Preparation		$1800.00
1 Geologist review of chemical data, report writing & preparation, 5 days @ $220./day	$1100.00	
1 Draftsman, 5 days @ $120./day	$ 600.00	
Paper and supplies	$ 100.00	

Total Cost		$26,252.01
Administration charge 10%		$ 2,625.20

TOTAL PROGRAM EXPENDITURES		$28,877.21
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The Longworth Property consists of 5 claim groups. The total cost of the program was $28,000 and this has been apportioned accordingly. Most of the work was carried out on the SNOW claim and all costs, such as transportation to the site have been split on a pro-rata basis based on time. Helicopter time for camp moves has been charged to the appropriate claim.

SNOW	40%
RAIN 1,2	25%
RAIN 3,4	10%
DOLL 1,2	15%
LONG 1,2	10%

LONGWORTH PROJECT COSTS

SNOW CLAIM

Wages:	FIELD (Aug.30-Sept.22)		$2670.00
	1 Geologist 1 day @ $220.00/day	$ 220.00	
	1 Geotechnician 10 days @ $125.00/day	$1250.00	
	1 Assistant 6 days @ $ 90.00/day	$ 540.00	
	OFFICE-PREPATORY/METALLURGY		
	1 Geologist 3 days @ $220.00/day	$ 660.00	
Food & Accommodation:			$ 610.00
12 mandays in camp @ $40.00/day		$ 480.00	
2 mandays commercial @ $65.00/day		$ 130.00	
Transportation			$1959.60
Helicopter 2.4 hrs. @ $510./hr.		$1240.60	
4x4 Rental 9 days @ $40/day		$ 360.00	
4x4 Mileage 1000 kms @ $0.30/km		$ 300.00	
Airfares (Prince George - Vancouver)		$ 60.00	
Instruments			$1276.10
2 pluggers 14 days each @ $25./day ea.		$ 700.00	
Dynamite: Browns - Smithers (pro-rata)		$ 305.26	
4 drill steel, parts & labour (pro-rata)		$ 270.84	
Surveys			
2 sheets 1:10,000 contoured basemaps			$ 333.36
Analysis			$1448.40
10 rock samples for SiO_2 @ $17.50 ea.		$ 175.00	
10 rock samples for SiO_2, CaO, Fe_2O_3, MgO, Al_2O_3, L.O.I. @ $42.50 ea.		$ 425.00	
10 rock samples for Thermal Shock testing @ $75.00 ea.		$ 750.00	
cutting of 4 rocks for met testing @ $24.60 ea.		$ 98.40	

Field Gear		$ 180.00
1 SB-X-11 radio rental ($250.00)	$ 100.00	
1 stove & cooking gear ($100.00)	$ 40.00	
Miscellaneous - sample bags, hammers, topofil, etc.	$ 40.00	
Report Preparation		$ 360.00
1 Geologist review of chemical data, report writing & preparation, 1 day @ $220./day	$ 220.00	
1 Draftsman, 1 day @ $120./day	$ 120.00	
Paper and supplies	$ 20.00	

Total Cost		$ 8,837.46
Administration charge 10%		$ 883.75

TOTAL PROGRAM EXPENDITURES		$ 9,721.21
		==========

STATEMENT OF AUTHOR'S QUALIFICATIONS

I, Robert Allan Quartermain, of 2303 - 1600-D Beach Avenue, Vancouver, British Columbia, do hereby certify that:

I am a graduate of the University of New Brunswick (BSc, 1977).

I am a graduate of Queen's University (MSc, 1981).

I am a member of the Geological Association of Canada.

I have been practising my profession as a field geologist since 1977, employed by Canadian and American mining companies involved in the exploration for and development of mineral deposits.

R.A. Quartermain

APPENDIX 1

Chemex Labs Ltd.

Analytical Chemists *Geochemists* *Registered Assayers*

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1
Phone: (604) 984-0221
Telex: 043-52597

APPENDIX 1-a

The silica samples were initially prepared in iron ring pulverizers. It was decided to purchase zirconia rings to pulverize the second cut to avoid possible iron contamination. The second split was then assayed for SiO_2, Fe_2O_3, CaO, Al_2O_3, LOI and Zr.

For silica assay, an 0.25 gram sub-sample was weighed into a platinum crucible. Hydrofluoric-sulphuric acid mixture was added to volatilize the silicon as the tetrafluoride. This was repeated to constant weight and reported as % SiO_2. The precision as determined from repeat assays was +/- 0.15% SiO_2. This appears to be the limit of accuracy for the method.

The detection limit for CaO and Fe_2O_3 is 0.01%. The value for calcium at 0.02% represents 8 scale divisions on the atomic absorption and should be accurate in that range. We are doing additional tests to confirm this.

MAY - 7 1986

APPENDIX 1-b

THERMAL BREAKDOWN TEST

Standard Method: A quartz sample (approximately 4" x 4" x 4") is placed in a suitable furnace which has been preheated to 600°C. The temperature is then raised to 1000°C over a period of 2 hours. At the end of this 2-hour period, the sample is observed in the furnace, and if the sample has cracked apart the test is terminated and the quartz is not accepted. Should the sample still be in one piece, the test is continued by raising the temperature to 1300°C over another 2-hour period. At the end of this 2-hour period (elapsed time 4 hours), the sample is removed from the furnace and cooled to room temperature.

The sample is then examined again, and the following observations determine if it is accepted or not. If the sample has cracked into six or less pieces, it is acceptable, but if it has cracked or decrepitated into 10 or more pieces, it is not accepted.

Revised Method: At U.B.C., the furnace is approximately 2 cubic feet in size which enables it to take only 4 samples at a time, 2 on top of 2. Due to this arrangement it was not possible to remove a cracked sample at the 1000°C threshhold. At the end of the 2-hour 1000°C period a visual examination was made of the silica samples. If one had cracked it was noted but not removed. During the initial 2-hour period only 1 layer of bricks was placed in front of the furnace opening. For the second 2-hour period a double layer of bricks was blocked in front of the opening.

At the end of the 1300°C raise the blocks were pulled from the oven into a sand box for cooling.

U.B.C.

The work at U.B.C. was carried out under the supervision of Dr. Chaklader Professor of Metallurgical Engineering specializing in ceramics.

APPENDIX 2

APPENDIX 2

SAMPLE #	CLAIM	DESCRIPTION	
19651	SNOW	11m	chip of sugary material with Fe & Mn stain
19652	SNOW	7m	chip of clean material
19654	SNOW	14m	chip of clean material with minor limonite
19655	SNOW	7m	chip of fair looking material with some sericite & minor staining
19658	SNOW	5m	chip of clean material
19661	RAIN 2	16m	chip of fresh blasted material, clean
19664	RAIN 2	10cm	grab of blasted material, characteristic
19665	RAIN 2	10cm	grab of talus
19667	RAIN 1	18m	chip of bluff coloured material, slightly calcareous.
19668	RAIN 2	18m	chip of bluff coloured material, slightly calcareous.
19669	RAIN 2	18m	chip of good looking material
19670	RAIN 2	10m	chip of fair material with minor liminite
19671	RAIN 1	30m	chip of good looking material

SAMPLE #	CLAIM	DESCRIPTION	
19672	RAIN 2	30m	chip of clean material
19675	SNOW	5m	chip of clean material, minor iron stain
19676	SNOW	5m	chip of clean fresh blasted material
19678	DOLL 1	33m	chip of blasted material with minor iron stain
19679	DOLL 1	1m	chip of blasted cherty material with white veining and hydrocarbon
19680	DOLL 1	1m	chip of dull chert with veining, iron stain and faint odour
19681	DOLL 1	1m	chip of dull chert with minor iron stain
19682	DOLL 1	1m	chip of dull chert with minor limonite and pyrobitumin
19683	DOLL 1	3.5m	chip of dull chert with minor limonite and pyrobitumin
19684	DOLL 1	1m	chip of dull chert with iron and pyrobitumin
19685	DOLL 1	4m	chip of moderately clean material
19688	LONG 1	15m	chip of veined material with minor mica and limonite

SAMPLE #	CLAIM	DESCRIPTION	
19689	LONG 1	30m	chip of clean sugary quartzite
19690	LONG 1	30m	chip of dirty bituminous quartzite
19691	LONG 1	8m	chip of clean material with oily feel
19692	LONG 1	30m	chip of moderately clean material
19693	LONG 1	15m	chip of clean material with minor inclusions
19694	LONG 1	15m	chip of material with minor limonite
19801	RAIN 4	4.3m	chip of buff sugary quartzite with minor limonite
19802	RAIN 4	4.8m	chip of buff sugary material with some impurities
19803	RAIN 4	15m	chip of buff veined sugary material
19804	RAIN 4	8.8m	chip of buff veined material
19805	RAIN 4	5.5m	chip of buff veined material
19806	RAIN 4	7.2m	chip of buff veined material
19807	RAIN 4	12.5m	chip of sugary material
19808	RAIN 4	17.5m	chip of sugary material

SAMPLE #	CLAIM	DESCRIPTION	
19809	SNOW	1m	chip of clean material with minor limonite microfractures
19811	SNOW	1m	chip of old trench, pure quartzite
19812	SNOW	1m	chip of old trench, clean material with minor limonite

APPENDIX 3

Chemex Labs Ltd.

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North Vancouver, B.C.
Canada V7J 2C1
Phone: (604) 984-0221
Telex: 043-52597

CERTIFICATE OF ASSAY

TO : CONSOLIDATED SILVER STANDARD MINES LIMITED

11th Floor, 1199 W. HASTINGS ST.
VANCOUVER, B.C.
V6E 3T5

CERT. # : A8516632-001-A
INVOICE # : I8516632
DATE : 15-NOV-85
P.O. # : NONE

ATTN: A.R.C. POTTER

Sample description	Prep code	SiO2 % fusion					
19651	208	99.35	--	--	--	--	--
19652	208	99.25	--	--	--	--	--
19654	208	99.45	--	--	--	--	--
19655	208	99.60	--	--	--	--	--
19658	208	99.46	--	--	--	--	--
19661	208	99.46	--	--	--	--	--
19664	208	99.56	--	--	--	--	--
19665	208	99.37	--	--	--	--	--
19667	208	99.01	--	--	--	--	--
19668	208	99.16	--	--	--	--	--
19669	208	99.40	--	--	--	--	--
19670	208	99.51	--	--	--	--	--
19671	208	99.35	--	--	--	--	--
19672	208	99.45	--	--	--	--	--
19675	208	99.51	--	--	--	--	--
19676	208	99.45	--	--	--	--	--
19678	208	99.26	--	--	--	--	--
19679	208	99.20	--	--	--	--	--
19680	208	99.56	--	--	--	--	--
19681	208	99.66	--	--	--	--	--
19682	208	99.56	--	--	--	--	--
19683	208	99.65	--	--	--	--	--
19684	208	99.70	--	--	--	--	--
19685	208	99.55	--	--	--	--	--
19688	208	99.25	--	--	--	--	--
19689	208	99.50	--	--	--	--	--
19690	208	99.56	--	--	--	--	--
19691	208	99.16	--	--	--	--	--
19692	208	99.55	--	--	--	--	--
19693	208	99.56	--	--	--	--	--
19694	208	99.75	--	--	--	--	--
19801	208	99.60	--	--	--	--	--
19802	208	99.65	--	--	--	--	--
19803	208	99.56	--	--	--	--	--
19804	208	99.40	--	--	--	--	--
19805	208	99.60	--	--	--	--	--
19806	208	99.50	--	--	--	--	--
19807	208	99.60	--	--	--	--	--
19808	208	99.46	--	--	--	--	--
19809	208	99.80	--	--	--	--	--

VOI rev. 4/85

W. Nentmann

Registered Assayer, Province of British Columbia

NOV 1 8 1985

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Canada V7J 2C1
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Telex 043-52597

CERTIFICATE OF ASSAY

TO : CONSOLIDATED SILVER STANDARD MINES LIMITED

11th Floor, 1199 W. HASTINGS ST.
VANCOUVER, B.C.
V6E 3T5

CERT. # : A8518723-001-A
INVOICE # : I8518723
DATE : 31-JAN-86
P.O. # : NONE

ATTN: R.A. QUARTERMAIN

Sample description	Prep code	SiO2 % fusion	Fe2O3 %	CaO %	Al2O3 %	L.O.I. %	
19651	208	99.16	0.09	0.16	0.25	0.23	--
19652	208	99.04	0.07	0.04	0.31	0.20	--
19654	208	99.52	0.06	0.03	0.25	0.18	--
19655	208	99.56	0.07	0.03	0.18	0.16	--
19658	208	99.60	0.04	0.03	0.14	0.15	--
19661	208	99.72	0.05	0.02	0.16	0.14	--
19664	208	99.80	0.04	0.02	0.11	0.08	--
19665	208	99.56	0.06	0.02	0.20	0.06	--
19667	208	99.24	0.05	0.02	0.50	0.17	--
19668	208	99.32	0.04	0.03	0.29	0.17	--
19669	208	99.64	0.05	0.03	0.32	0.14	--
19670	208	99.60	0.03	0.02	0.13	0.12	--
19671	208	99.52	0.04	0.02	0.26	0.15	--
19672	208	99.60	0.06	0.02	0.21	0.07	--
19675	208	99.56	0.09	0.02	0.17	0.06	--
19676	208	99.60	0.04	0.03	0.22	0.08	--
19678	208	99.20	0.04	0.02	0.28	0.09	--
19679	208	99.36	0.03	0.02	0.30	0.11	--
19680	208	99.72	0.04	0.02	0.10	0.10	--
19681	208	99.68	0.03	0.02	0.09	0.10	--
19682	208	99.68	0.04	0.02	0.12	0.12	--
19683	208	99.76	0.03	0.02	0.08	0.10	--
19684	208	99.72	0.03	0.02	0.07	0.10	--
19685	208	99.48	0.04	0.02	0.16	0.11	--
19688	208	99.20	0.04	0.03	0.35	0.08	--
19689	208	99.40	0.04	0.02	0.18	0.06	--
19690	208	99.52	0.04	0.02	0.20	0.09	--
19691	208	98.84	0.05	0.02	0.54	0.10	--
19692	208	99.56	0.03	0.02	0.15	0.07	--
19693	208	99.60	0.03	0.02	0.13	0.06	--
19694	208	99.56	0.03	0.02	0.15	0.15	--
19801	208	99.60	0.02	0.02	0.13	0.10	--
19802	208	99.56	0.03	0.02	0.15	0.08	--
19803	208	99.60	0.03	0.02	0.13	0.06	--
19804	208	99.44	0.04	0.03	0.22	0.08	--
19805	208	99.52	0.04	0.02	0.15	0.09	--
19806	208	99.56	0.04	0.02	0.16	0.10	--
19807	208	99.24	0.06	0.02	0.31	0.08	--
19808	208	99.45	0.04	0.02	0.28	0.10	--
19809	208	99.40	0.04	0.02	0.27	0.08	--

W. Sbr Amdnini
....
Registered Assayer, Province of British Columbia

CTA

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1
Telephone: (604) 984-0221
Telex: 043-52597

CERTIFICATE OF ASSAY

TO : CONSOLIDATED SILVER STANDARD MINES LIMITED

11th Floor, 1199 W. HASTINGS ST.
VANCOUVER, B.C.
V6E 3T5

ATTN: R.A. QUARTERMAIN

CERT. # : A8518723-002-A
INVOICE # : I8518723
DATE : 31-JAN-86
P.O. # : NONE

Sample description	Prep code	SiO2 % fusion	Fe2O3 %	CaO %	Al2O3 %	L.O.I. %	
19811	208	99.57	0.04	0.02	0.15	0.09	--
19812	208	99.52	0.08	0.02	0.16	0.11	--

W. Stenkmaann

Registered Assayer, Province of British Columbia

CTA

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North Vancouver, B.C.
Canada V7J 2C1
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Telex: 043-52597

CERTIFICATE OF ANALYSIS

TO : CONSOLIDATED SILVER STANDARD MINES LIMITED

11th Floor, 1199 W. HASTINGS ST.
VANCOUVER, B.C.
V6E 3T5

ATTN: R.A. QUARTERMAIN

CERT. # : A8518723-001-A
INVOICE # : I8518723
DATE : 31-JAN-86
P.O. # : NONE

Sample description	Prep code	Zr (XRF) ppm					
19651	208	845	--	--	--	--	--
19652	208	862	--	--	--	--	--
19654	208	892	--	--	--	--	--
19655	208	758	--	--	--	--	--
19658	208	717	--	--	--	--	--
19661	208	739	--	--	--	--	--
19664	208	927	--	--	--	--	--
19665	208	1171	--	--	--	--	--
19667	208	1154	--	--	--	--	--
19668	208	1125	--	--	--	--	--
19669	208	1187	--	--	--	--	--
19670	208	1050	--	--	--	--	--
19671	208	985	--	--	--	--	--
19672	208	1190	--	--	--	--	--
19675	208	936	--	--	--	--	--
19676	208	747	--	--	--	--	--
19678	208	661	--	--	--	--	--
19679	208	810	--	--	--	--	--
19680	208	797	--	--	--	--	--
19681	208	906	--	--	--	--	--
19682	208	786	--	--	--	--	--
19683	208	772	--	--	--	--	--
19684	208	778	--	--	--	--	--
19685	208	640	--	--	--	--	--
19688	208	773	--	--	--	--	--
19689	208	848	--	--	--	--	--
19690	208	678	--	--	--	--	--
19691	208	917	--	--	--	--	--
19692	208	946	--	--	--	--	--
19693	208	861	--	--	--	--	--
19694	208	731	--	--	--	--	--
19801	208	803	--	--	--	--	--
19802	208	713	--	--	--	--	--
19803	208	695	--	--	--	--	--
19804	208	768	--	--	--	--	--
19805	208	782	--	--	--	--	--
19806	208	804	--	--	--	--	--
19807	208	486	--	--	--	--	--
19808	208	624	--	--	--	--	--
19809	208	830	--	--	--	--	--

CTA

Certified by W. Ranaweera ....

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VANCOUVER, B.C.
V6E 3T5

ATTN: R.A. QUARTERMAIN

CERT. # : A8518723-002-A
INVOICE # : I8518723
DATE : 31-JAN-86
P.O. # : NONE

Sample description	Prep code	Zr (XRF) ppm					
19811	208	777	--	--	--	--	--
19812	208	640	--	--	--	--	--

Certified by ....

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11th Floor, 1199 W. HASTINGS ST.
VANCOUVER, B.C.
V6E 3T5

ATTN: A.R.C. POTTER

CERT. # : A8516632-002-A
INVOICE # : I8516632
DATE : 15-NOV-85
P.O. # : NONE

Sample description	Prep code	SiO2 % fusion					
19811	208	99.40	--	--	--	--	--
19812	208	99.55	--	--	--	--	--

NOTE: PULVERIZED IN ZIRCONIA RINGS
NOT CORRECTED FOR 0.1% ZrO_2 INDUCED IN PREPARATION STAGE
CORRECTION FOR ZrO_2 WOULD INCREASE SiO_2 CONTENT BY 0.1%

VOI rev. 4/85

Registered Assayer, Province of British Columbia

APPENDIX 4

THE UNIVERSITY OF BRITISH COLUMBIA
309 - 6350 Stores Road
VANCOUVER, B.C., CANADA
V6T 1W5

DEPARTMENT OF METALLURGICAL ENGINEERING
Telephone: (604) 228-2676

April 15, 1986

Mr. R. A. Quartermain
President
Consolidated Silver Standard Mines Ltd.
1199 West Hastings Street
Vancouver, BC
V6E 3V4

Dear Mr. Quartermain:

Re: Testing of Silica Samples

This is to let you know that we have completed the testing of the 16 silica rock samples you sent for "Thermal Breakdown Tests". The samples were approximately 64 cubic inches. These were heated according to the schedule you supplied. The specimens were observed at 1000°C while still in the furnace, then heated to 1300°C over a two hour period. The specimens were taken out of the furnace and then we observed their cracking behaviour. The results of the tests are given in the enclosed table. It appears that only three samples were cracked significantly enough to be rejected, although two of these were cracked into 2 or 3 pieces each. Only one of them, #19659, cracked into multiple pieces. We have saved all the specimens. If you want them back, you can pick them up at your convenience.

Yours sincerely,

A.C.D. Chaklader
Professor

ACDC/gs
Enclosures

APR 17 1986

TABLE 1: Test Data of Silica Samples

SAMPLE	CONDITION at 1000°C	CONDITION at 1300°C
19653 (OK)	only 1 medium sized crack	Still only 1 crack. Entirely intact
19656 (OK)	only 1 crack intact	Fractured at temperature into 4 pieces, then into 6 pieces during COLD handling.
19657 REJECTED	fractured into 2 equal pieces	No further change - still 2 equal pieces
19659 REJECTED	fractured into 3 pieces	Fractured into ~ 10 pieces.
19660 REJECTED	fractured into 2 pieces	Fractured into 3 pieces.
19662 (OK)	slight cracking only	Major cracking but no separation
19663 (OK)	minor cracking	Medium cracking but still one piece.
19666 (OK)	very light cracking	Intact in furnace but fractured into 2 pieces on HOT removal.
19673 (OK)	very minor cracking	Fractured into 2 pieces.
19674 (OK)	minimal cracking	Intact - still only minimal cracking.
19677 (OK)	medium cracking	Intact - ~4 cracks. However, with COLD handling it fractured into 3 pieces.
19686 (OK)	No cracks	Intact - only medium cracking. 1 small piece broke off with tongs handling on HOT removal.
19687 (OK)	No cracks	Intact - light cracking only.

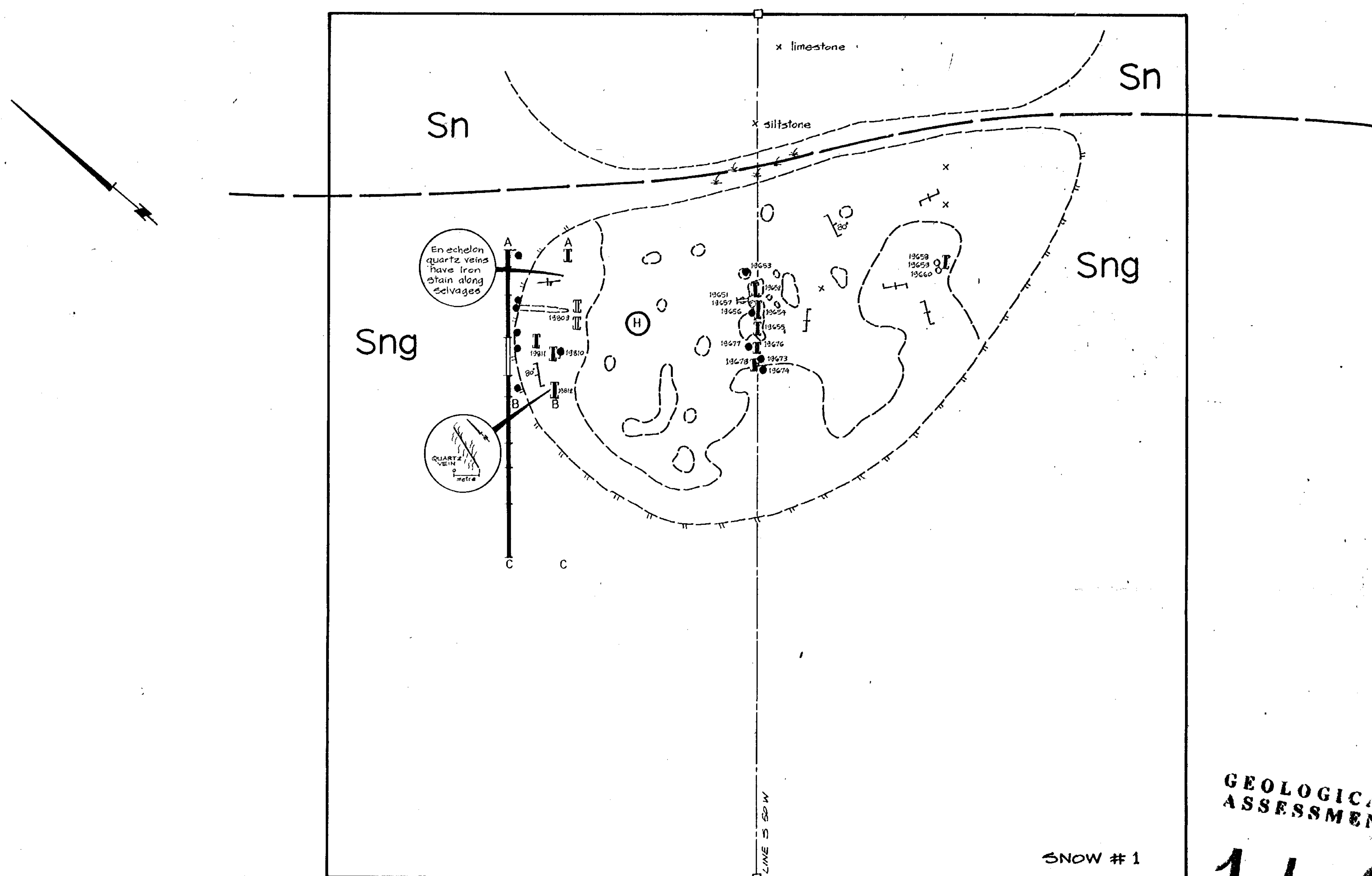
Cont'd ... 2

TABLE 1: Test Data of Silica Samples (Continued)

	SAMPLE	CONDITION at 1000°C	CONDITION at 1300°C
19692 **	19842 * (OK)	very minor cracking	Intact - only 1 light, transverse crack.
19673 **	19849 * (OK)	minor cracking	Intact - very minor cracking only.
19810 **	19850 * (OK)	minor cracking	Intact in furnace - HOT handling caused 5 fractures (3 large and 2 small).

* Sample numbers misread.

** Numbers they should be.



GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,815

GEOLOGY

QUARTERNARY
PLEISTOCENE AND RECENT

Q

SILURIAN
LOWER SILURIAN (ALL OR IN PART)

Sn (Sng, Snv, Sns): All or partly equivalent to Nonda formation: Sn, limy shale, shale, limestone, dolostone; Sng, white quartzite; Snv, volcanic (greenstone) fragmentals and flows, dolostone; Sns, greenstone sills and dykes: contact with €Osh uncertain

CAMBRIAN AND ORDOVICIAN

€Osh: Western shale facies: shale, limy shale, limestone, dolostone, contact with Sn uncertain

CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)
LOWER CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)

€mc: McNAUGHTON FORMATION: quartzite (quartz sandstone) feldspathic quartz-pebble conglomerate, siltstone, shale, phyllite: equivalent to €yp and €mi

CLAIM BOUNDARY
CLAIM POST
OUTCROP
CLIFF
GEOLOGICAL CONTACT
BEDDING
JOINT
MARSH
HELICOPTER PAD

SYMBOLS

CHIP SAMPLE ACCEPTABLE
CHIP SAMPLE UNACCEPTABLE
TRENCH SAMPLE ACCEPTABLE
TRENCH SAMPLE UNACCEPTABLE
THERMAL SHOCK ACCEPTABLE
THERMAL SHOCK UNACCEPTABLE
SAMPLE NUMBER ... 19658

0 50 100 150 200 m
1:2000

DRAWING C 1012-85-5

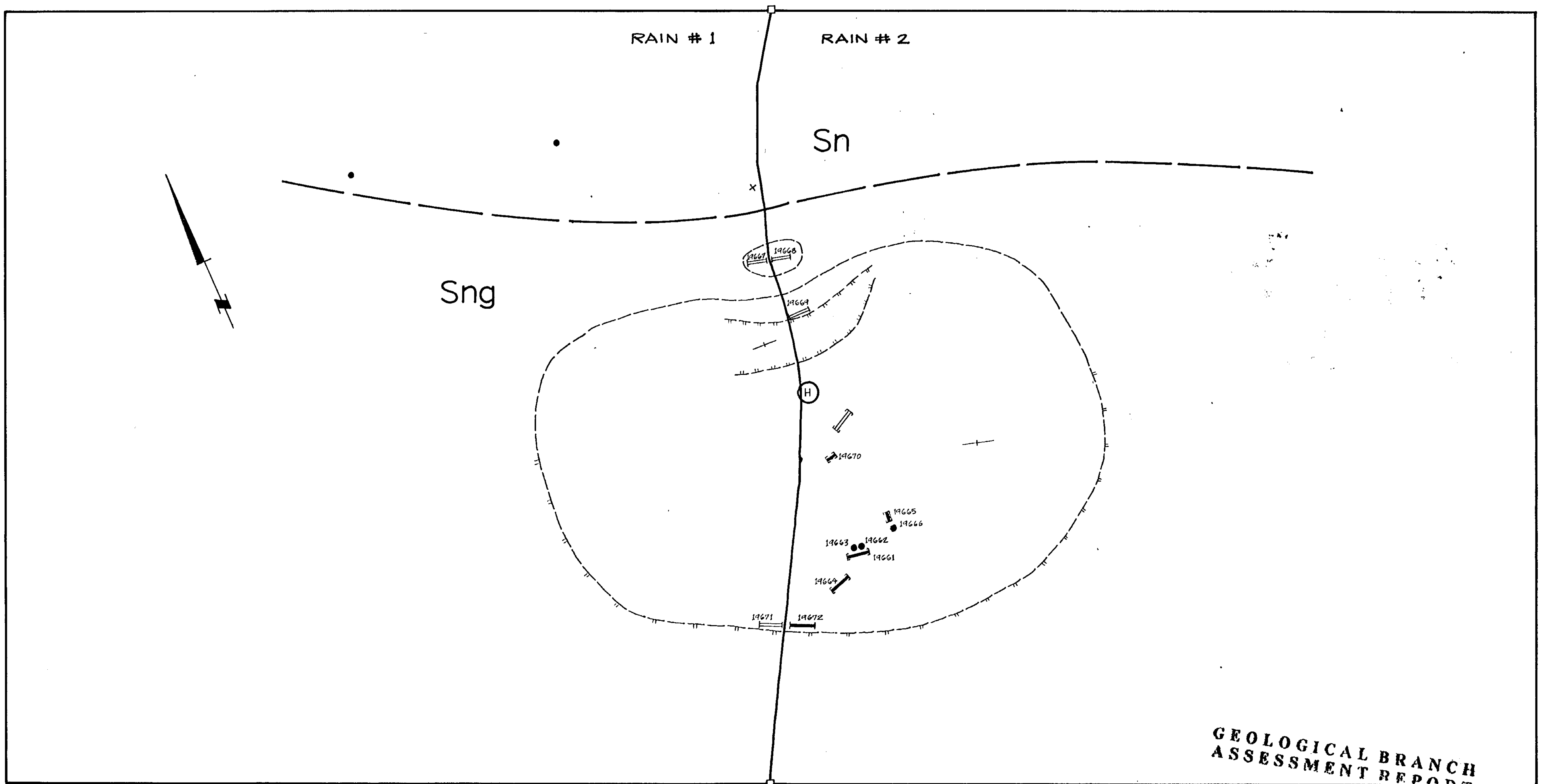
CONSOLIDATED SILVER STANDARD MINES LIMITED

LONGWORTH GROUP

SNOW CLAIM

CARIBOO MINING DIVISION

DATE: APR. 16, '86	N.T.S.:	DRAWN: S.A.	SCALE: 1:2000



GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,815

GEOLOGY

QUARTERNARY
PLEISTOCENE AND RECENT

| Q |

SILURIAN
LOWER SILURIAN (ALL OR IN PART)

| Sn | Sng / Snv / Sns | All or partly equivalent to Nonda formation: Sn, limy shale, shale, limestone, dolostone; Sng, white quartzite; Snv, volcanic (greenstone) fragmentals and flows, dolostone; Sns, greenstone sills and dykes: contact with €Osh uncertain |

CAMBRIAN AND ORDOVICIAN

| €Osh | Western shale facies: shale, limy shale, limestone, dolostone, contact with Sn uncertain |

CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)
LOWER CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)

| €mc | McNAUGHTON FORMATION: quartzite (quartz sandstone) feldspathic quartz-pebble conglomerate, siltstone, shale, phyllite: equivalent to €yp and €mi |

SYMBOLS

CLAIM BOUNDARY
CLAIM POST
OUTCROP
CLIFF
GEOLOGICAL CONTACT
BEDDING (60°)
JOINT (80)
MARSH
HELICOPTER PAD

CHIP SAMPLE ACCEPTABLE
CHIP SAMPLE UNACCEPTABLE
TRENCH SAMPLE ACCEPTABLE
TRENCH SAMPLE UNACCEPTABLE
THERMAL SHOCK ACCEPTABLE
THERMAL SHOCK UNACCEPTABLE
SAMPLE NUMBER 19658

0 50 100 150 200 m
1:2000

DRAWING C 1012-85-6

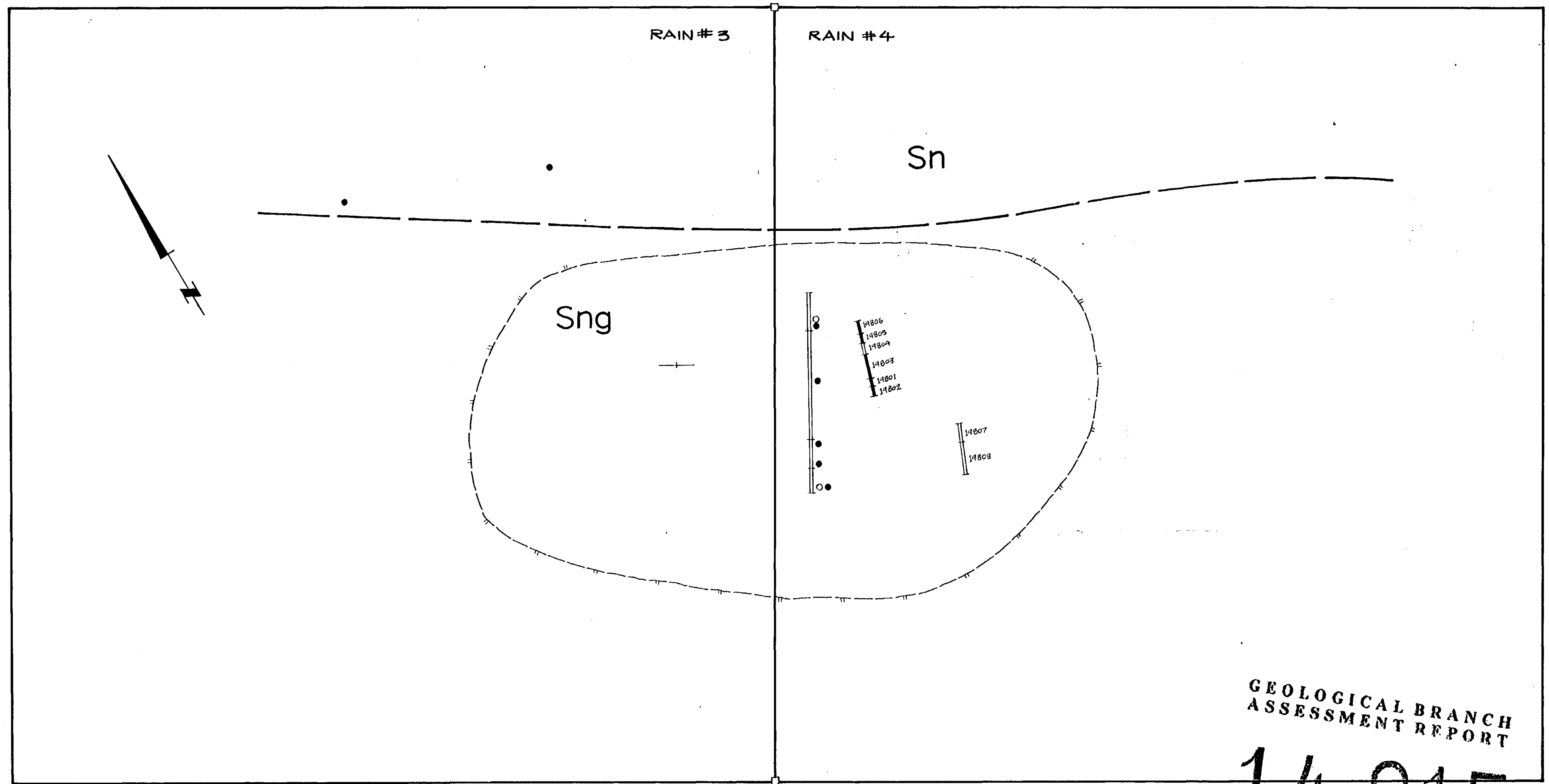
CONSOLIDATED SILVER STANDARD MINES LIMITED

LONGWORTH GROUP

RAIN 1 & 2 CLAIMS

CARIBOO MINING DIVISION

DATE: APR. 16, '86	N.T.S.:	DRAWN: S.A	SCALE: 1:2000



GEOLOGY

QUARTERNARY
PLEISTOCENE AND RECENT

Q

SILURIAN
LOWER SILURIAN (ALL OR IN PART)

Sn (Sng, Snv, Sns) — All or partly equivalent to Nonda formation: Sn, limy shale, shale, limestone, dolostone; Sng, white quartzite; Snv, volcanic (greenstone) fragmentals and flows, dolostone; Sns, greenstone sills and dykes: contact with €Osh uncertain

CAMBRIAN AND ORDOVICIAN

€Osh — Western shale facies: shale, limy shale, limestone, dolostone, contact with Sn uncertain

CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)
LOWER CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)

€mc — McNAUGHTON FORMATION: quartzite (quartz sandstone) feldspathic quartz-pebble conglomerate, siltstone, shale, phyllite: equivalent to €yp and €mi

SYMBOLS

CLAIM BOUNDARY
CLAIM POST
OUTCROP
CLIFF
GEOLOGICAL CONTACT
BEDDING 60°
JOINT 80
MARSH
HELICOPTER PAD

CHIP SAMPLE ACCEPTABLE
CHIP SAMPLE UNACCEPTABLE
TRENCH SAMPLE ACCEPTABLE
TRENCH SAMPLE UNACCEPTABLE
THERMAL SHOCK ACCEPTABLE
THERMAL SHOCK UNACCEPTABLE
SAMPLE NUMBER ... 19658

0 50 100 150 200 m
1:2000

DRAWING C 1012-85-7

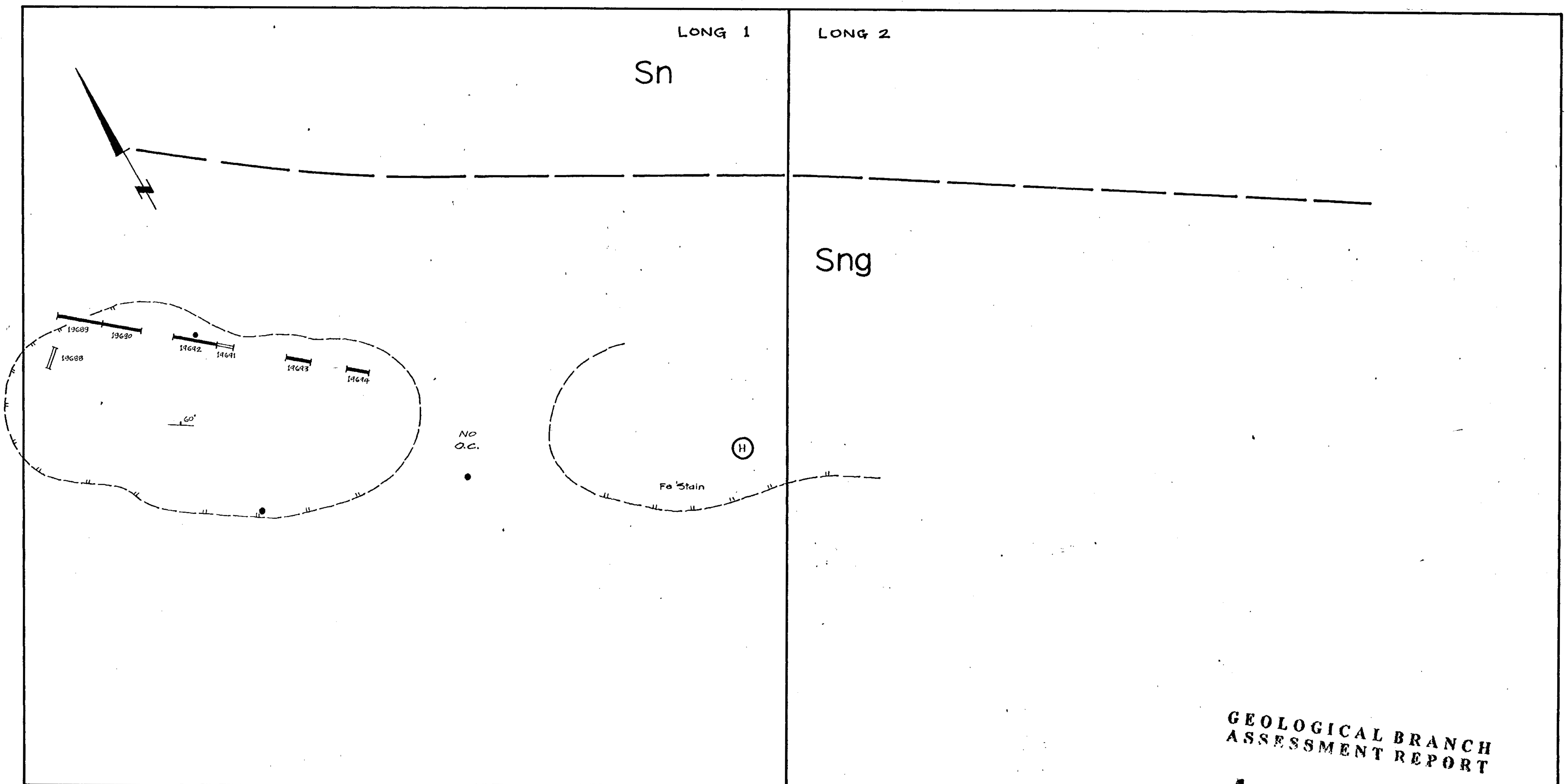
CONSOLIDATED SILVER STANDARD MINES LIMITED

LONGWORTH GROUP

RAIN 3&4 CLAIMS

CARIBOO MINING DIVISION

DATE: APR. 16, '86	N.T.S.:	DRAWN: S.A.	SCALE: 1:2000



GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,815

GEOLOGY

QUARTERNARY
PLEISTOCENE AND RECENT

Q

SILURIAN
LOWER SILURIAN (ALL OR IN PART)

Sn / Sng / Snv / Sns — All or partly equivalent to Nonda formation: Sn, limy shale, shale, limestone, dolostone; Sng, white quartzite; Snv, volcanic (greenstone) fragmentals and flows, dolostone; Sns, greenstone sills and dykes: contact with €Osh uncertain

CAMBRIAN AND ORDOVICIAN

€Osh — Western shale facies: shale, limy shale, limestone, dolostone, contact with Sn uncertain

CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)
LOWER CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)

Єmc — McNAUGHTON FORMATION: quartzite (quartz sandstone) feldspathic quartz-pebble conglomerate, siltstone, shale, phyllite: equivalent to Єyp and Єmi

SYMBOLS

CLAIM BOUNDARY
CLAIM POST
OUTCROP
CLIFF
GEOLOGICAL CONTACT
BEDDING 60°
JOINT 80
MARSH
HELICOPTER PAD

CHIP SAMPLE ACCEPTABLE
CHIP SAMPLE UNACCEPTABLE
TRENCH SAMPLE ACCEPTABLE
TRENCH SAMPLE UNACCEPTABLE
THERMAL SHOCK ACCEPTABLE
THERMAL SHOCK UNACCEPTABLE
SAMPLE NUMBER 19658

0 50 100 150 200 m
1:2000

DRAWING C 1012-85-8

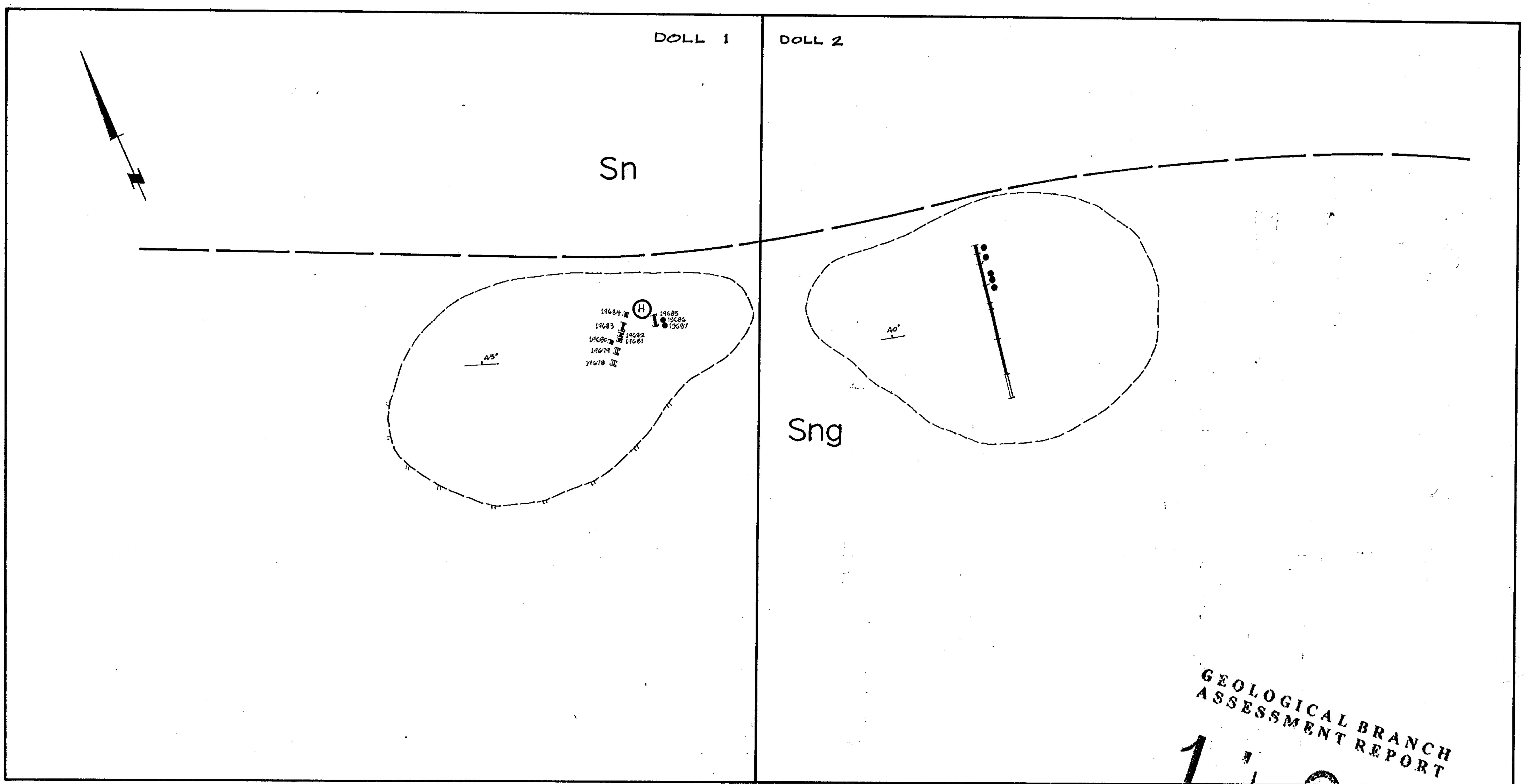
CONSOLIDATED SILVER STANDARD MINES LIMITED

LONGWORTH GROUP

LONG 1&2 CLAIMS

CARIBOO MINING DIVISION

DATE: APR. 16, '86	N.T.S.:	DRAWN: S.A.	SCALE: 1:2000



GEOLOGY

QUARTERNARY
PLEISTOCENE AND RECENT

Q

SILURIAN
LOWER SILURIAN (ALL OR IN PART)

Sn / Sng / Snv / Sns — All or partly equivalent to Nonda formation: Sn, limy shale, shale/limestone, dolostone; Sng, white quartzite; Snv, volcanic (greenstone) fragmentals and flows, dolostone; Sns, greenstone sills and dykes: contact with €Osh uncertain

CAMBRIAN AND ORDOVICIAN

€Osh — Western shale facies: shale, limy shale, limestone, dolostone, contact with Sn uncertain

CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)
LOWER CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)

€mc — McNAUGHTON FORMATION: quartzite (quartz sandstone) feldspathic quartz-pebble conglomerate, siltstone, shale, phyllite: equivalent to €yp and €mi

SYMBOLS

CLAIM BOUNDARY
CLAIM POST
OUTCROP
CLIFF
GEOLOGICAL CONTACT
BEDDING
JOINT
MARSH
HELICOPTER PAD

CHIP SAMPLE ACCEPTABLE
CHIP SAMPLE UNACCEPTABLE
TRENCH SAMPLE ACCEPTABLE
TRENCH SAMPLE UNACCEPTABLE
THERMAL SHOCK ACCEPTABLE
THERMAL SHOCK UNACCEPTABLE
SAMPLE NUMBER 19658

0 50 100 150 200 m
1:2000

DRAWING C 1012-85-9

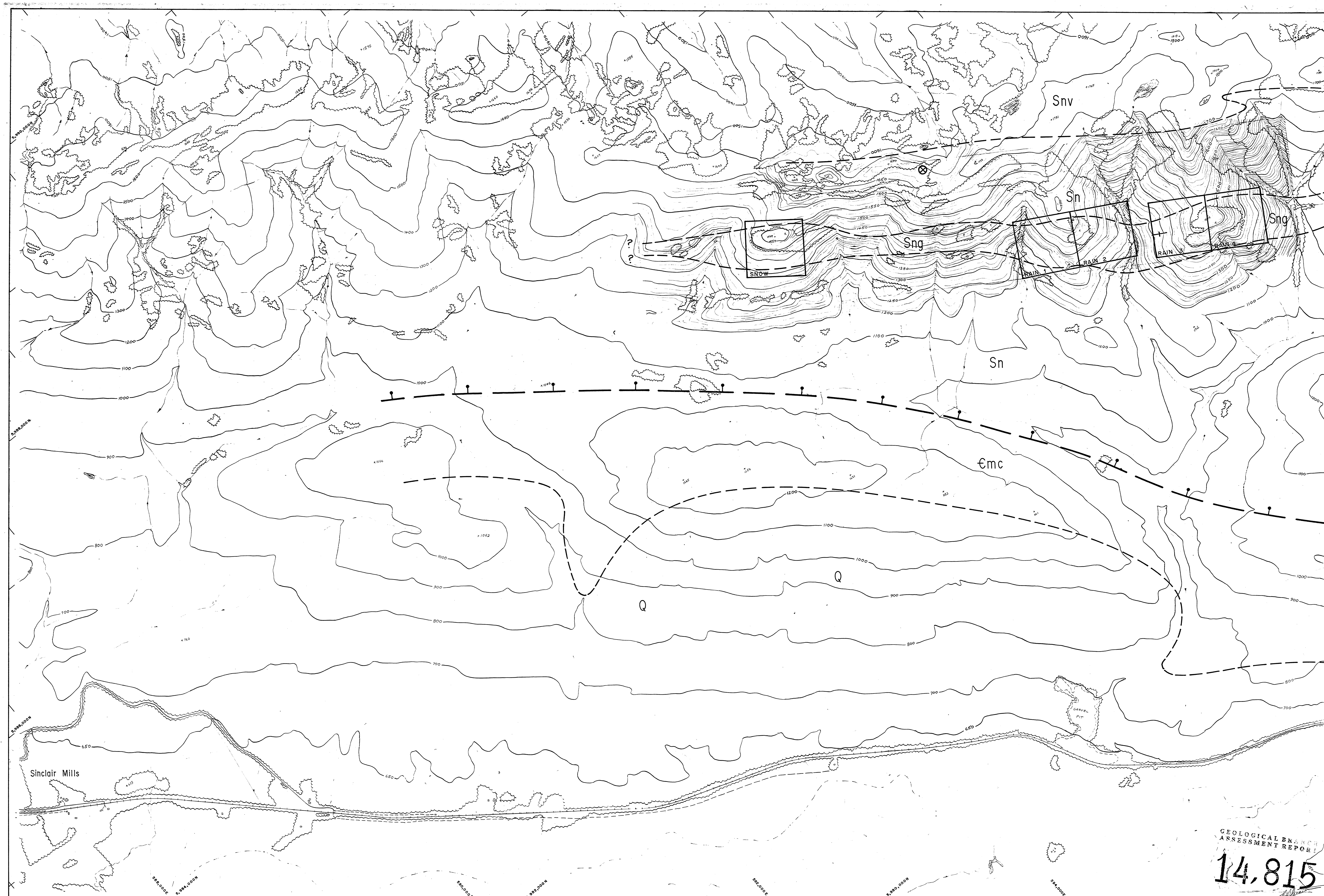
CONSOLIDATED SILVER STANDARD MINES LIMITED

LONGWORTH GROUP

DOLL 1&2 CLAIMS

CARIBOO MINING DIVISION

DATE: APR. 16, 86	N.T.S.:	DRAWN: S.A.	SCALE: 1:2000



GEOLOGY

QUATERNARY.

Q	PLEISTOCENE AND RECENT

SILURIAN

Sn (Sng, Snv, Sns)	LOWER SILURIAN (ALL OR IN PART) All or partly equivalent to Nonda Formation: Sn, limy shale, shale, limestone, dolostone; Sng, white quartzite; Snv, volcanic (greenstone) fragmentals and flows, dolostone; Sns, greenstone sills and dykes: contact with €osh uncertain.

CAMBRIAN AND ORDOVICIAN

€osh	Western shale facies: shale limy shale, limestone, dolostone, contact Sn uncertain

CAMBRIAN AND/OR HADRYNIAN (WINDERMERE)

€mc	LOWER CAMBRIAN AND/OR HADRYNIAN (WINDERMERE) McNAUGHTON FORMATION: quartzite (quartz sandstone) feldspathic quartz-pebble conglomerate, siltstone, shale, phyllite: equivalent to €yp and €mi

SYMBOLS

GEOLOGICAL CONTACT
FAULT
FAULT (dot on downthrow side)
FOLD (syncline)
BEDDING
FOSSIL LOCATION
CLAIM BOUNDARY
CAMP

CLEARING
STREAM
BUILDING
C.N.R TRACKS
ROAD

GEOLOGY FROM MAP 1356 A GSC PAPER 72-35

CONSOLIDATED SILVER STANDARD MINES LTD.

THE LONGWORTH GROUP

CARIBOO MINING DIVISION - B.C.

GEOLOGY & CLAIM LOCATIONS

m200 0 200 400m

SCALE - 1:10000 CONTOURS = 10 METRES & 100 METRES

NTS: 93I 3&4
93H 13&14

MAP BY: EAGLE MAPPING SERVICES LTD. (85-52) DECEMBER 1985

COMPILED FROM 1984 AIR PHOTOS

SHEET 1 OF 2