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# CAPELLA RESOURCES LTD.

## GEOLOGICAL ASSESSMENT REPORT

(LINEAMENT ARRAY ANALYSIS)

on the

**S CLAIM GROUP**

Nicola Mining Division

NTS 092108W

GEOLOGICAL SURVEY BRANCH  
ASSESSMENT REPORT

26,525

Vancouver, B.C.  
December 20, 2000

Sookchoff Consultants Inc.  
Laurence Sookchoff, P.Eng

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**Geological  
Assessment Report  
on the  
S Claim Group**

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**Geological**  
**Assessment Report**  
**on the**  
**S Claim Group**

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**Introduction**

A lineament array analysis was completed on four claims of the Capella Resources Ltd. S claim group. The purpose of the structural analysis was to fulfill assessment requirements for one year and to determine the structural control potential for economic mineral zones in this specific area. Based on historical development and/or production of gold/silver minerals from the area, the geology of the area is conducive to the location of economic mineral values hosted by quartz/carbonate veins. These veins, which were emplaced within pre existing structures, may be an indication of precious metal mineralization peripheral to a mineralized porphyritic intrusive.

Information for this report was obtained from sources as cited under Selected References and from the writers' completion of the exploration program as reported on herein.

**Summary**

The S Claim Group, comprised of 72 claim units is located four km southeast of the formerly productive Stump Lake Camp where production from mineralized quartz veins from the Stump Lake Camp reportedly amounted to 77,605 tons averaging a recovered grade of 0.109 oz Au/ton, 3.26 oz Ag/ton, 1.42% Pb and 0.24% Zn. The mineralized quartz veins, which are hosted by shear zones within greenstones of the Nicola volcanics, were explored to a depth of 275 meters and along a strike length of 600 meters and are of irregular width with an alteration zone of up to "15 feet wide".

On the S claim group ground, exploration work in 1985 on the former CIG 100 claim delineated a northeasterly trending zone of anomalous gold values in the northwest sector of the property where pits and trenches expose barren to lightly mineralized quartz veins. In addition, an isolated 420 ppb gold geochem value in the south-central portion of the claim was delineated.

The 1987 exploration program completed by New Hombre Resources Ltd. on the CIG claim confirmed the 300 by 400 meter sub-anomalous gold zone in the northwest sector of the property with no additional significant results. However, detailed exploration in the south-central single station gold value of 1985 resulted in the delineation of a 200 by 40 meter sub-anomalous gold zone (Zone II) with soil geochem values of up to 1089 ppb Au. In one of three pits dug in on Zone II, a soil sample returned 1520 ppb Au at a depth of 50 cm. Samples of mineralized quartz vein float material in the pit areas assayed up to 0.690 oz Au/ton and 18.22 oz Ag/ton.

### Summary (cont'd)

The exploration program also delineated a series of magnetometer lows correlating with a northeast trending electromagnetic anomaly which correlates in part to a geochem anomaly and the mineralized quartz vein float material.

The localized 1996 geochemical survey on the S claim group, which was centered in the area of the Zone II pit containing the 1520 ppb soil geochem gold and the 0.690 oz Au/ton quartz float, delineated anomalous gold values of up to 900 ppb gold to the west of the pit. The anomalous zone is open to the north, south and the west.

In April and May, and in October of 1998, trenching was completed on the Zone II showings.

In 1999, a localized geophysical (VLF-EM) survey was completed on the HK 9-11 claims south of the Zone II showings.

### Property

The property consists of twenty-two located two-post mineral claims and three twenty unit grid claims. Particulars are as follows:

<u>Claim Name</u>	<u>Tenure No.</u>	<u>Expiry Date</u>
S 1 - S 7	334586 - 334592	March 28, 2002
HK 1	360143	October 17, 2001
HK 2 - HK 3	360144 - 360145	October 18, 2001
HK 4 - HK 6	382522 - 382524	November 17, 2001
HK 7	360149	October 18, 2001
HK 8	382525	November 17, 2001
HK 9 - HK 11	360151 - 360153	October 18, 2001
Jackpot 1 - Jackpot 2	360528 - 360529	November 9, 2001
Luna 1 - Luna 2	360967 - 360970	December 8, 2001
HAKA (20 units)	360160	October 17, 2001
AURA (20 units)	360695	December 7, 2001
TERRA (20 units)	360966	December 10, 2001

### Location and Access

The property is located in southwestern British Columbia, forty km northwest of Merritt, northwest of Peter Hope Lake and within five km of Mineral Hill, where production from the Stump Lake Mining Camp occurred.

Access is from the Merritt-Kamloops Highway No. 5 to within three km of the property. A secondary road, the Peter Hope Lake road, junctions off to the east within three km south of Stump Lake and provides access to the property.

### Physiography

The property is situated at the western edge of the Douglas Plateau, which is within the physiographic area designated as the Interior Plateau of British Columbia. Gentle to moderate slopes prevail with relief in the order of some 200 meters from Peter Hope Creek Valley.

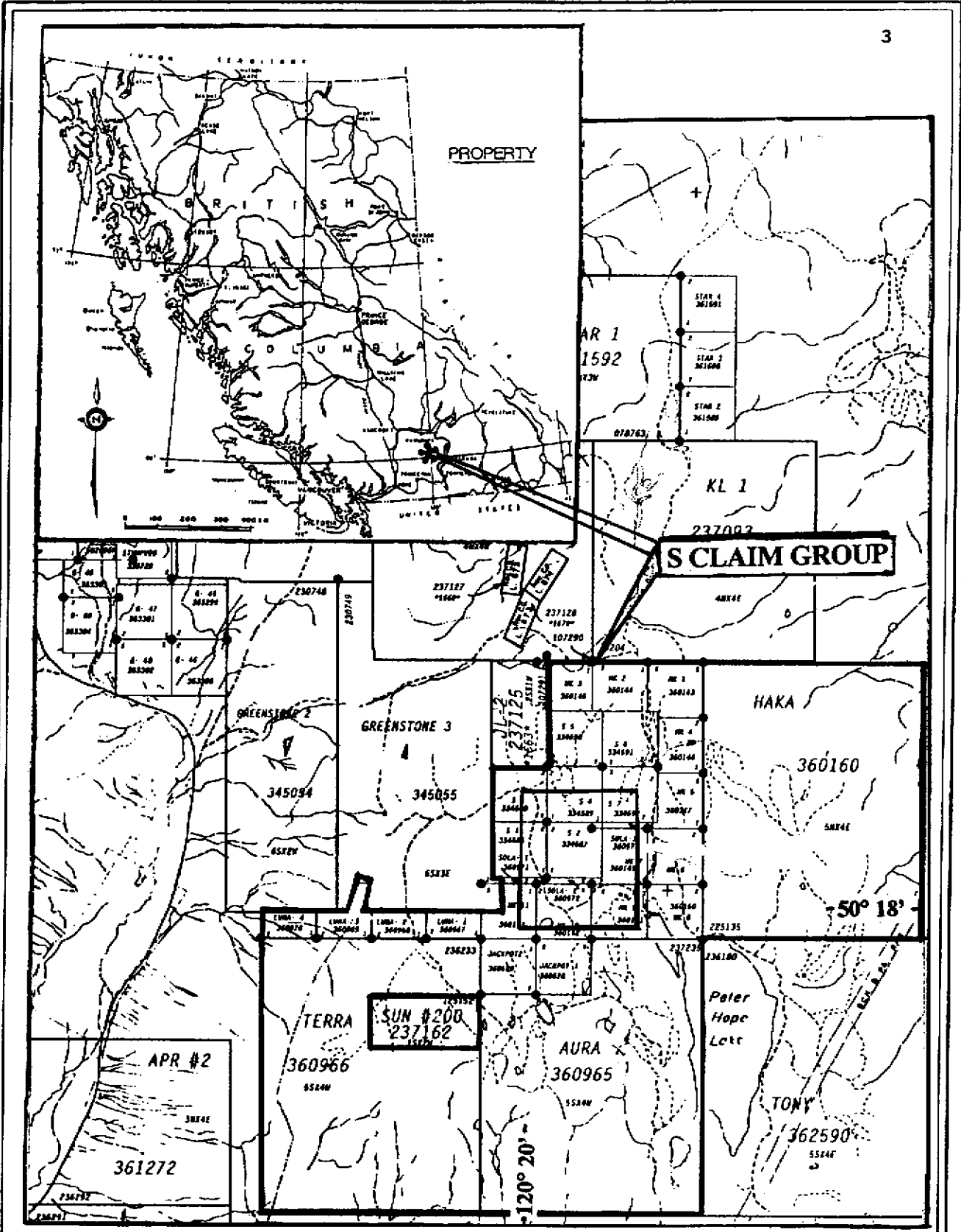


Figure 1. Location & Claim Map. (Claim Map is Ministry of Energy, Mines & Petroleum Resources Map 092I/08W)

### **Water and Power**

Sufficient water for all phases of the exploration program could be available from Peter Hope Lake northeast to Peter Hope Lake in the southwest. In addition to tributaries of Peter Hope Creek, other watercourses are indicated draining the property.

### **History**

The history of the immediate area stems from the mineral deposits at Mineral Hill some six km west of the northwestern portion of the S Claim Group. Mineralization at Mineral Hill was discovered in 1882 with exploration and shaft development on the Joshua, Tribal Cain, King William Enterprise and Planet claims prior to 1890.

Exploration and development on Mineral Hill was sporadic to 1929 when a mill was built and operated to 1931. From 1939 to 1942, when operations were suspended, some mine development occurred in addition to the rebuilding of the mill. Since 1942 limited exploration was carried out on the various properties of the area.

Production from the Stump Lake camp during the period from 1916 to 1944 and from the Enterprise, King William, Tribal Cain and Joshua Veins is reported as 77,605 tons of ore mined yielding 8,494 ounces of gold, 252,939 ounces of silver, 40,822 pounds of copper, 2,206,555 pounds of lead and 367,869 pounds of zinc or a recovered grade of 0.109 oz Au/ton, 3.26 oz Ag/ton, 0.026% Cu, 1.42% Pb and 0.24% Zn. Other properties in closer proximity to the S Claim Group on which exploration was completed include the Mary Reynolds and the Azela within one km east and north.

The Mary Reynolds or the Jean Group was one of the early claims staked in the Stump Lake area and produced a small amount of gold-silver ore. The workings include a "96 foot" deep shaft with a "240 foot" long adit level in addition to numerous other workings exploring a vein system with general characteristics similar to the other Stump Lake deposits.

The Azela is within the Johannesburg camp situated "about 16,000 feet" southeast of the Enterprise Mine and within 100 meters west of the S Claim Group. The main showing is a shaft reportedly "78 feet" deep with open cuts and other workings within the claim. Previous exploration work on the ground included that of Aarn Exploration and Development Co. Ltd. when "250 feet" of trenches and two "miles" of road were completed.

On the S claim group ground, Times Square Energy and Resources Ltd. (name subsequently changed to New Hombre Resources Ltd.) completed localized geological, geophysical and geochemical surveys on the CIG 100 Claim, which is presently, in part, the S claim group. In 1987, New Hombre Resources Ltd. completed a soil geochemical survey, a VLF-EM survey, a magnetometer survey, a geological survey, and the digging of three test pits (S-1, S-2 & S-3) to examine the soil profile of the southeast gold anomaly.

In 1990, a fracture density study was completed on the CIG 100 claim. The Cig 100 claim was allowed to expire in 1992. From 1992 to 1995 the CIG 100 ground was originally covered in part by the Spud claim group and subsequently by the WJA claim group that was owned by Module Resources Incorporated. The only work completed for Module prior to the expiration of the WJA claims in 1995. was some trenching.

### **History (cont'd)**

The S claim group was staked in 1995 followed by the completion of a localized geochemical survey over the pit area. From 1996 to 1999 localized geochemical, geophysical and geological surveys including trenching, were completed over Zone II located within the S claims. During this period additional contiguous claims to the original seven S claims were staked.

In 1999 and 2000 most of the claims were subjected to a GPS survey to establish accurate location.

### **Geology**

The regional geology of the area as mapped by W.E. Cockfield and published as map 886 A in G.S.C. Memoir 249 (1947) indicates that the Stump Lake area is underlain by an assemblage of Upper Triassic volcanic flows, pyroclastics and sedimentary units termed the Nicola Group.

In a northerly trending contact with the Nicola the Carboniferous and Permian Cache Creek Group is indicated as occurring at Plateau Lake five km east of the S Claim Group. The Cache Creek rocks are shown to rarely outcrop as windows within the Nicola.

In a later geological map published by the GSC from the geological mapping completed by Monger (1980-82) and McMillan (1969-75 and 77-80) of the B.C. Ministry of Energy, Mines and Resources with supplemental information, the location of the Cache Creek rocks is shown as the Nicola Group. The Nicola Group consists of argillite, siltstone, volcanic sandstone and local intercalated tuff. The formation to the west of the contact and underlying the S Claim Group is the results of which are the subject of this report indicated as consisting of predominantly volcanics with interbedded argillite. The volcanics consist of augite porphyry and augite-plagioclase porphyry, volcanoclastic breccia and tuff.

The area is dominated by Tertiary faults with the major north-northeast trending Quilchena-Stump Lake fault system defining in part the eastern limit of the Nicola batholith with the Nicola Group. The fault trends through the northeastern portion of Stump Lake, centrally through the Stump Lake camp and two km west of the S Claim Group. The major northwest trending Cherry Creek Fault 20 km north of Stump Lake truncates the Quilchena fault system. Secondary or associated structures in the area trend northerly to northwesterly.

In the Stump Lake area and specifically within the area of Mineral Hill where the major development and production was carried out the rocks consist of greenstone of the Nicola Group. The greenstone is an andesitic rock usually fine grained; locally it is coarser-grained and is dioritic to diabasic in texture. Occasional bands of tuff and breccia are included in the formation. The tuff is extremely fine-grained, banded and the breccia contains andesitic fragments up to 10 cm in diameter similar in composition to the matrix.

The greenstones strike 40° to 60° east and dip nearly vertical in the vicinity of the workings. Porphyritic to fine-grained hornblende-andesitic dykes, up to two and one-half meters wide occur in the area. Quartz filled fractures and shear zones strike northerly and dip easterly.

On the Enterprise quartz vein system, stoping was primarily carried out below the 150-foot level with a shaft to the "900 foot" level. The vein is commonly under two feet wide and strikes from 350° and 015° and dips easterly from 40° to 80° with considerable pinching and swelling.

### Geology (cont'd)

The King William vein does not differ greatly from the Enterprise vein off which it forms a branch however it does reach a width of "nine feet". It joins the Enterprise vein at lower levels and has been drifted out south from its intersection with the Enterprise vein on each of the levels except the 800-foot.

A shaft "to a depth of 755 feet on the dip with the 320 foot drift level continued for 2,160 feet" from the portal to intersect the Joshua vein develops the Joshua mine. The vein follows a fracture and shear zone striking nearly north and dipping 60° east. Below the 400 foot level the dip is stated to be towards the west.

The Planet shaft is about "2,800 feet" southwest of the Enterprise workings. The vein strikes 10° east and dips steeply easterly and is composed of a band of quartz "eight to 18 inches" wide.

At the Azela the occurrence consists of a shear zone six to eight feet wide striking north 015° east and dipping 55° south. Two pits show a vein zone striking north 40° west with a steep northeast dip. In one pit the zone is "three feet" wide with "14 inches" of heavily oxidized country rock carrying bunches of quartz. The cuts show only scanty sulphides.

The Mary Reynolds vein zones strike northeast and dip steeply southwest to northwest. The veins have been traced over "900 feet" by cuts and drill holes. The zones range up to "six feet" wide and carry veins and stringers of quartz mineralized with pyrite, chalcopyrite, galena, zinc blende and tetrahedrite. A fracture zone up to "five feet" wide with stringers of quartz and calcite strikes north 40° E and dips 85° SE.

On the S claim group ground, Vollo (1983) states that from air photo interpretation and field examination the flows of the Nicola volcanic rocks strike about N 20° E and dip steeply. In addition, minor zones of acid rocks, quartz veining and quartz carbonate alteration were noted.

Kuran (1985) states that the S claim group ground is underlain by volcanic rocks which "vary from dark green biotite-hornblende porphyritic flows to pale green, pitted weathering, porphyritic flows with biotite and hornblende phenocrysts altered to chlorite. Two main directions of jointing in the volcanics strike north-northeast to north-northwest and dip vertically."

J. Paxton (1987) reports that the chloritized hornblende-biotite porphyry appears to be an epidotized facies of dark green biotite-hornblende. In addition several zones of pyroclastic breccia were noted. At several locations quartz vein float was also noted.

In the current exploration program, the trenches that were completed in the 1998 exploration program were examined. The trenches revealed typical greenstone with a minor degree of quartz-carbonate stringers and flooding. Sampling of the bedrock exposed by the trenches was warranted.



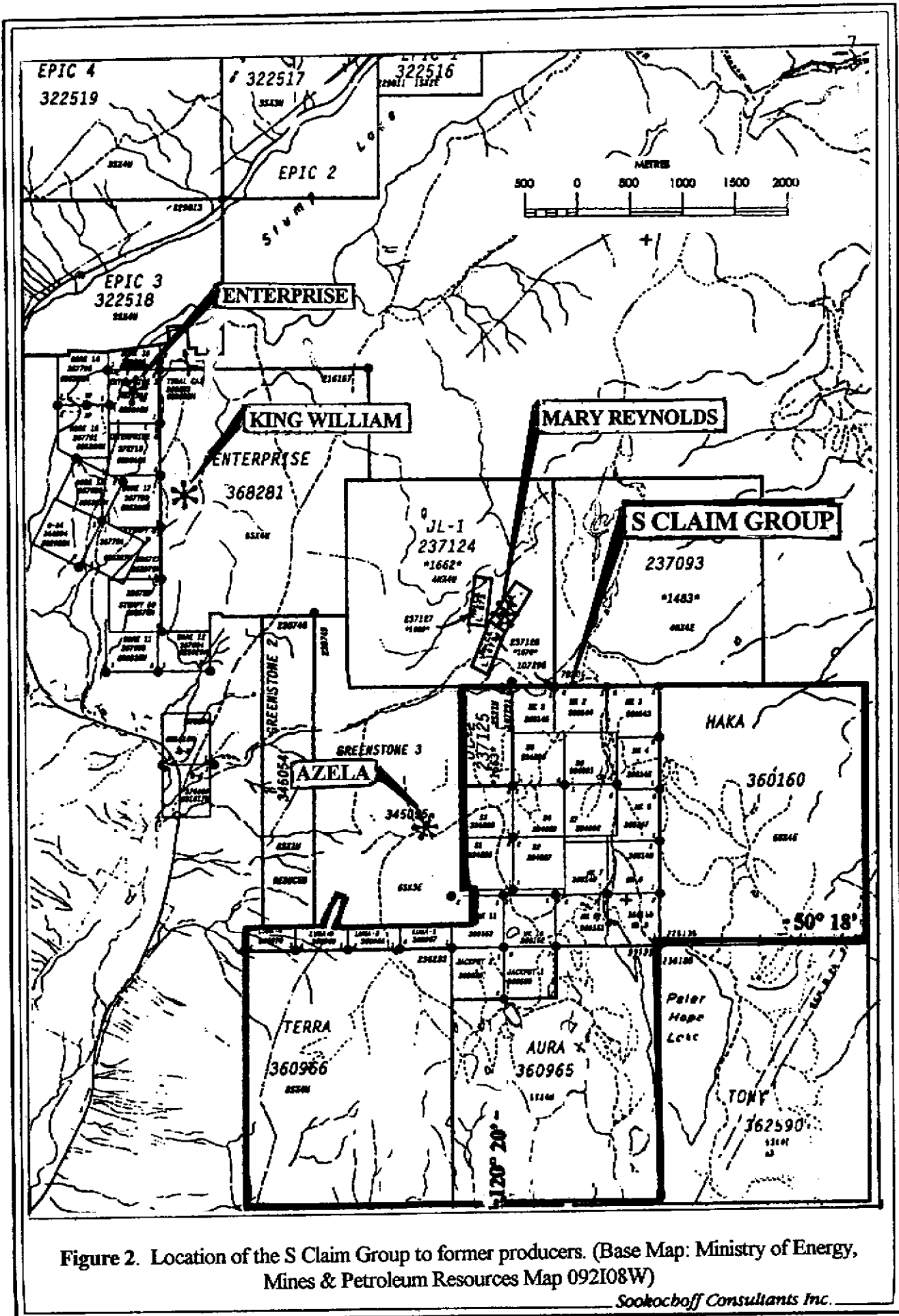


Figure 2. Location of the S Claim Group to former producers. (Base Map: Ministry of Energy, Mines & Petroleum Resources Map 092I08W)

**Mineralization**

Mineralization on Mineral Hill of the Stump Lake camp is essentially associated with quartz veins, which occur as quartz fillings in shear and fracture zones. The principal quartz veins strike from north 45° west to north 25° east and dip between 45° easterly and vertical.

The quartz is white and vitreous and is mineralized irregularly with sulphides, which include pyrite, galena, sphalerite, tetrahedrite, chalcopyrite and bornite. The sulphides occur in segregations, thin seams and disseminations, which make up usually a low proportion of the veins. Gold and silver values are rudely proportional to the amount of sulphides in any one vein.

Mineralization is reported to consist of variable sulphides within quartz veins. Samples of wall rock with low to moderate carbonate and/or ankerite and/or silica alteration ranged from background to 39 ppb Au. The quartz vein samples ranged from background values in gold to 1650 ppb Au in Trench II of Zone I to 0.690 oz Au/ton and 14.64 oz Ag/ton at Zone II. The higher-grade gold values were contained in quartz float with light to moderate degrees of pyrite, chalcopyrite and argentite occurring as blebs, pockets and clusters.

**Results of Previous Exploration on the S Claim Group Ground**

Exploration work in 1985 on portions of the S Claim Group ground delineated a northeasterly trending zone of anomalous gold values in the northwest sector of the property where pits and trenches expose barren to lightly mineralized quartz veins. In addition an isolated 420 ppb gold geochem value in the south-central portion of the claim was determined.

The 1987 exploration program completed by New Hombre Resources Ltd. confirmed the 300 by 400 meter sub-anomalous gold zone (Zone I) in the northwest sector of the property with no additional significant results. However, detailed exploration in the south-central single station gold value of 1985 resulted in the delineation of a 200 by 40 meter sub-anomalous gold zone (Zone II) with soil geochem values of up to 1089 ppb Au. Three test pits that were dug to a maximum depth of 75 cm in order to examine the soil profile of the southeast gold anomaly (4+00S, 7+25W). Pit S-2 is located along the perimeter of a gold soil geochemical anomaly between values of 144 ppb Au and 781 ppb Au. Pit S-1 is located to the west within an area of 17 ppb Au and one ppb Au. Pit S-3 is located near a soil value of 310 ppb Au. Samples from pit S-2 at 3+85S, 7+35W returned anomalous gold values of up to 1520 ppb Au with increasing values to a depth of 50 cm. The lowest value of 230 ppb Au was from the bottom of the pit. Samples from pits S-1 and S-3 are shallower and returned values of up to 39 ppb Au occurring at the bottom of pit S-3. Samples of mineralized quartz vein float material in the pit areas assayed up to 0.690 Au/ton and 18.22 oz Au/ton.

The exploration program also delineated a series of magnetometer lows (LO's) correlating with a northeast trending electromagnetic (EM) anomaly which correlates in part to a geochem anomaly and the mineralized quartz vein float material. The Ronka VLF EM-16 survey completed over the soil gold anomalies of Zone II defined a 350 metre anomaly which bifurcates to the northeast and correlates in part with soil geochem anomalous/sub-anomalous values in gold, a VLF-EM anomaly, and two local magnetometer lows.

### Results of Previous Exploration on the S Claim Group Ground (cont'd)

The 1996 soil geochemical survey was localized and centered on one of the three pits that were excavated in the 1987 exploration program. A five by 40 metre grid was established with samples picked up at five metre intervals along two east-west grid lines spaced five metres apart and centered on Pit S-3, one of the three 1988 pits. Eight of the 18 samples, all clustered west of line 5W and the pit where the high-grade quartz float (1.158 oz Au/t) was obtained, returned over 400 ppb gold. The central four soil samples ranged from 57 ppb gold to 238 ppb gold and the eastern portion ranging from seven ppb gold to 34 ppb gold. The arsenic values are in a correlative value ratio to the Au values with the copper, lead and zinc values indicating a similar ratio.

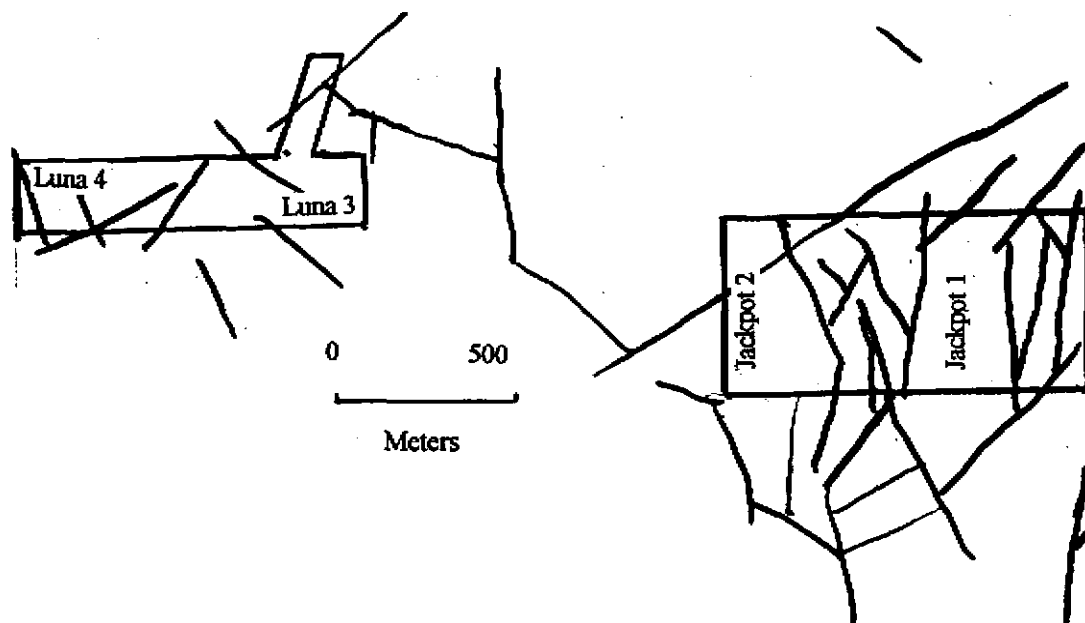
The April-May, 1998 trenching program was not successful in reaching bedrock to determine the source of the high-grade gold-silver float material that was obtained from the shallow pits on Zone II.

The October 1998 trenching program consisted of two trenches peripheral and to the south of the Zone II showings. The trenches, up to 1.25 metres in depth, exposed greenstone containing occasional stringers and fracture fillings of barren quartz-carbonate.

The 1999 geophysical (VLF-EM) survey to the south of Zone II indicated a weak anomaly - possibly indicating a structure paralleling the Zone II gold bearing structure to the west.

### 2000 Lineament Array Analysis

A lineament array analysis of four claims (Luna 3 & 4, Jackpot 1 & 2) of the S claim group was completed in November 2000. The purpose of the structural analysis was to determine the stress and strain history of the region and thus the regional tectonic analysis. The structural pattern could also provide information on the stress source thus indicating the location of potentially mineralized sub surface intrusives.

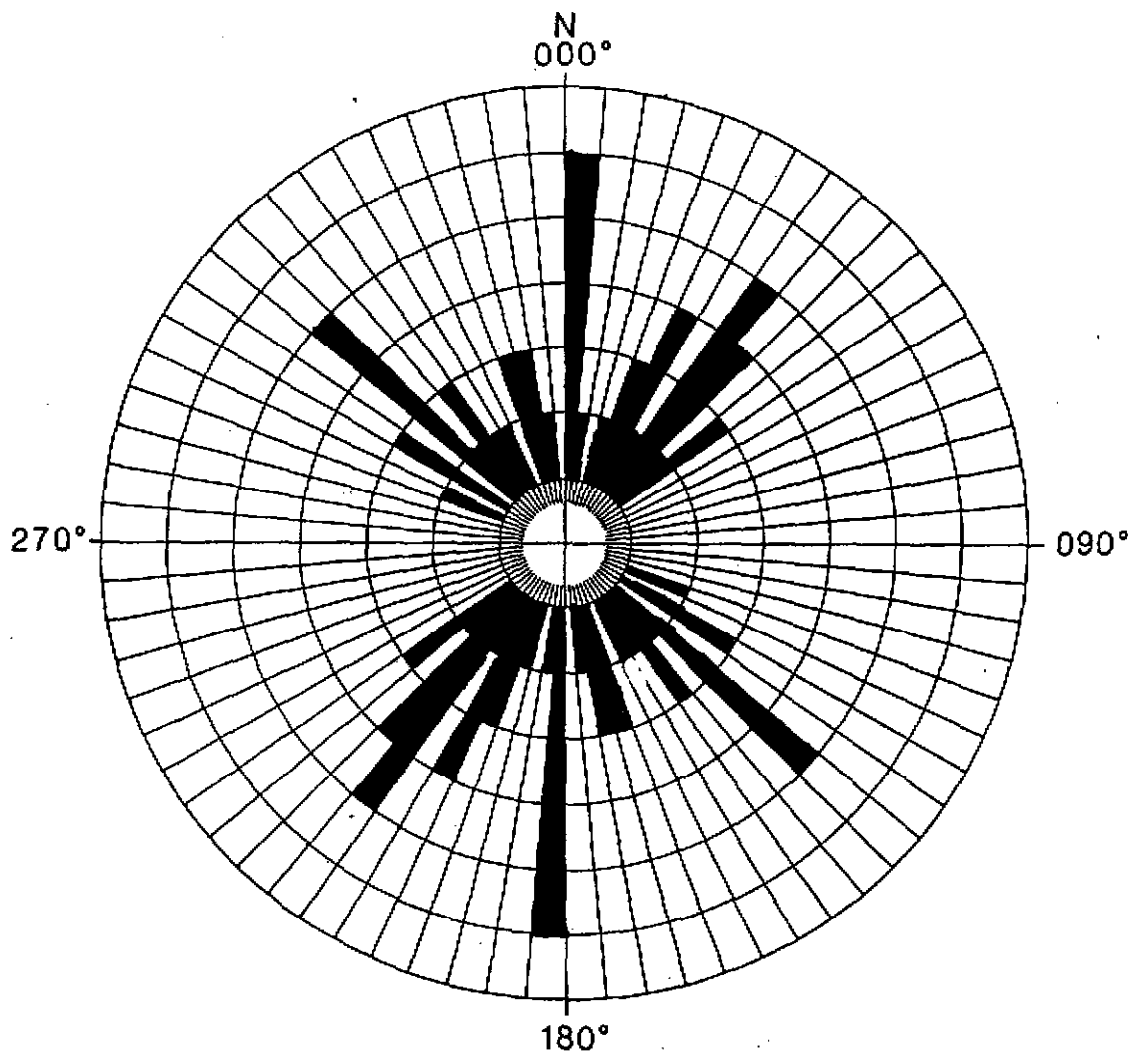


**Figure 3.** Lineaments on and peripheral to the Luna 3 & 4, Jackpot 1 & 2 mineral claims of the S claim group as determined from air photographs.

**2000 Lineament Array Analysis (cont'd)**

Air photographs 30BC86044 No's 028-030 at a mean scale of approximately 1:15,000 were utilized for the lineament array analysis. The analysis was accomplished using a stereographic projection viewing of the air photographs and marking the lineaments on an overlay. A total of 23 lineaments were marked, compiled into a 5° class interval and plotted on a rose diagram as indicated on Figure 4.

Two fault sets trending at 025° to 050° and 305° to 325° as a conjugate fault system were indicated. A northerly trending fault set was also indicated which is related to the dominant 025° to 050° fault set as ladder structures.



**Figure 4.** Rose diagram showing the 23 lineament plots as determined on the Luna 3 & 4, Jackpot 1 & 2 mineral claims of the S claim group

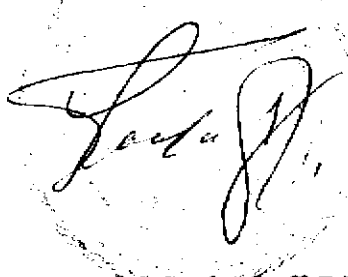
## Conclusions

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The lineament array analysis indicates a conjugate fault system with directions of 025° to 050° and 305° to 325°. The northerly trending lineaments, although numerous, are weak and are attributed as related to the conjugate 025° to 050° fault set. The principal stress direction, as interpreted from the rose diagram, would be at 355°. The local fault stresses are reflected by the regional Stump Lake Fault system six kilometers to the west.

Although the scant local structural pattern does not clearly indicate a sub-surface intrusive, a topographically expressed circular feature bordering and south of the Jackpot claims, may reflect an intrusive.

Respectfully submitted  
Sookochoff Consultants Inc.

A handwritten signature in cursive script, appearing to read 'Laurence Sookochoff', is enclosed within a faint circular stamp or seal.

Laurence Sookochoff, P.Eng.

Vancouver, BC  
December 20, 2000

**S Claim Group  
Statement of Costs**

Lineament Array Analysis including report

\$ 1,500.00

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- Cockfield, W.E.** - Geology and Mineral Deposits of Nicola Map Area, Memoir 249, G.S.C. 1961.
- B.C. Minister of Mines Report** -1936 p D14-D23
- Geological Survey of Canada** -Bedrock Geology of Ashcroft (92I) map area, Open File 980
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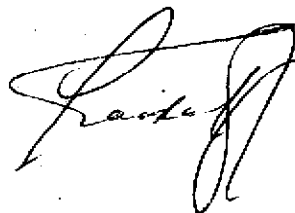
### Certificate

I, Laurence Sookochoff, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geologist and principal of Sookochoff Consultants Inc. with offices at 4463 West First Avenue Vancouver, BC V6R 4H9.

I, Laurence Sookochoff, further certify that:

- 1) I am a graduate of the University of British Columbia (1966) and hold a B.Sc. degree in Geology.
- 2) I have been practicing my profession for the past thirty-three years.
- 3) I am registered and in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.
- 4) The information for this report is based on information as itemized in the Selected Reference section of this report and from work the writer has completed on the S claim group ground from 1980 to 2000.



Laurence Sookochoff, P. Eng.

Vancouver, BC  
December 20, 2000