GEOLOGICAL REPORT

ON THE

VAL CLAIM GROUP

SIMILKAMEEN MINING DIVISION

92H6
(Latitude 49° 29', Longitude 121° 02')

OWNER AND OPERATOR
B.R. MOWRY
PRINCETON, B.C.

Author: G.D. Bysouth Submitted: November 1990

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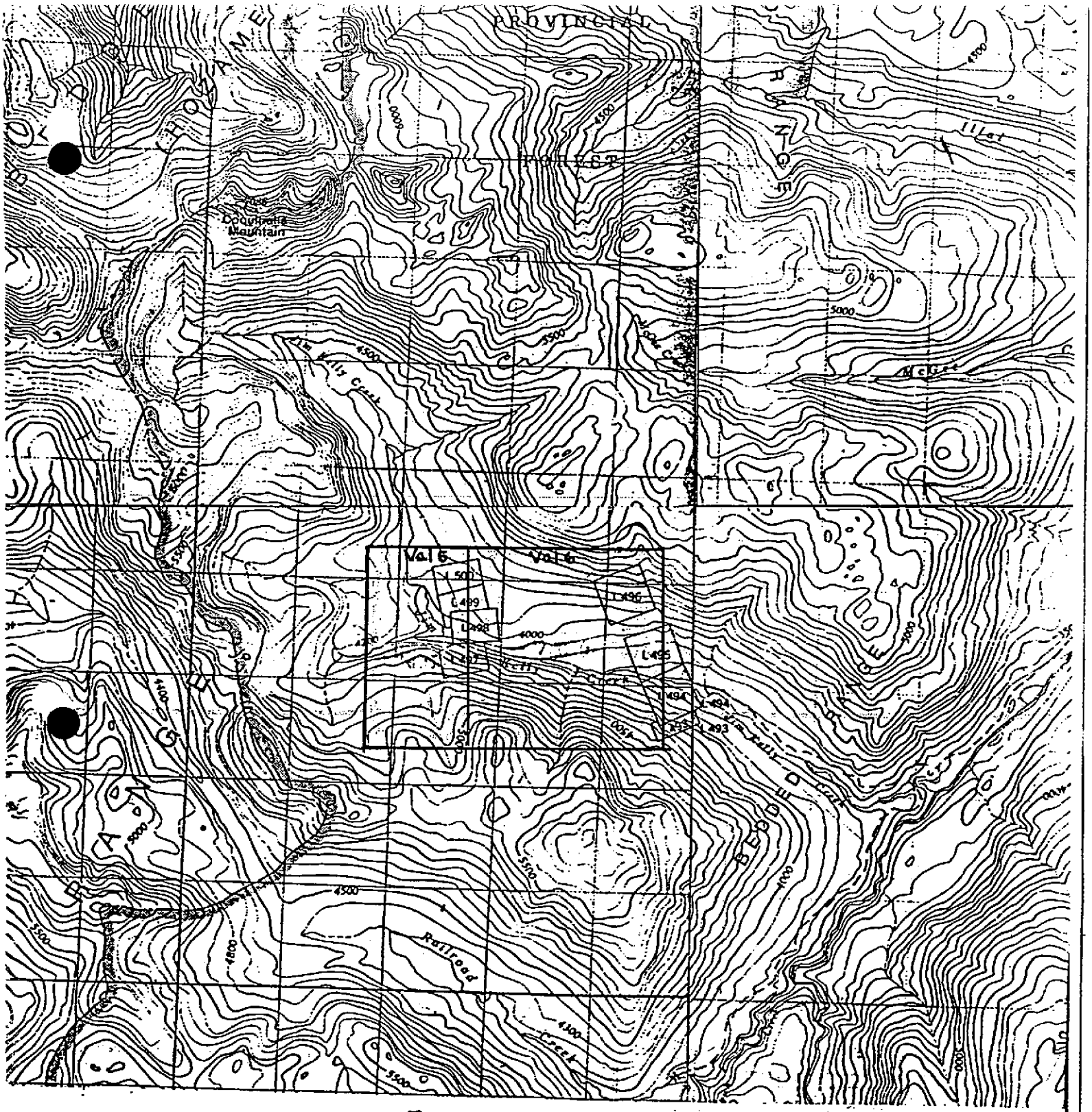


FIGURE 1

LOCATION MAP
VAL GROUP
SIMILKAMEEN M.D.

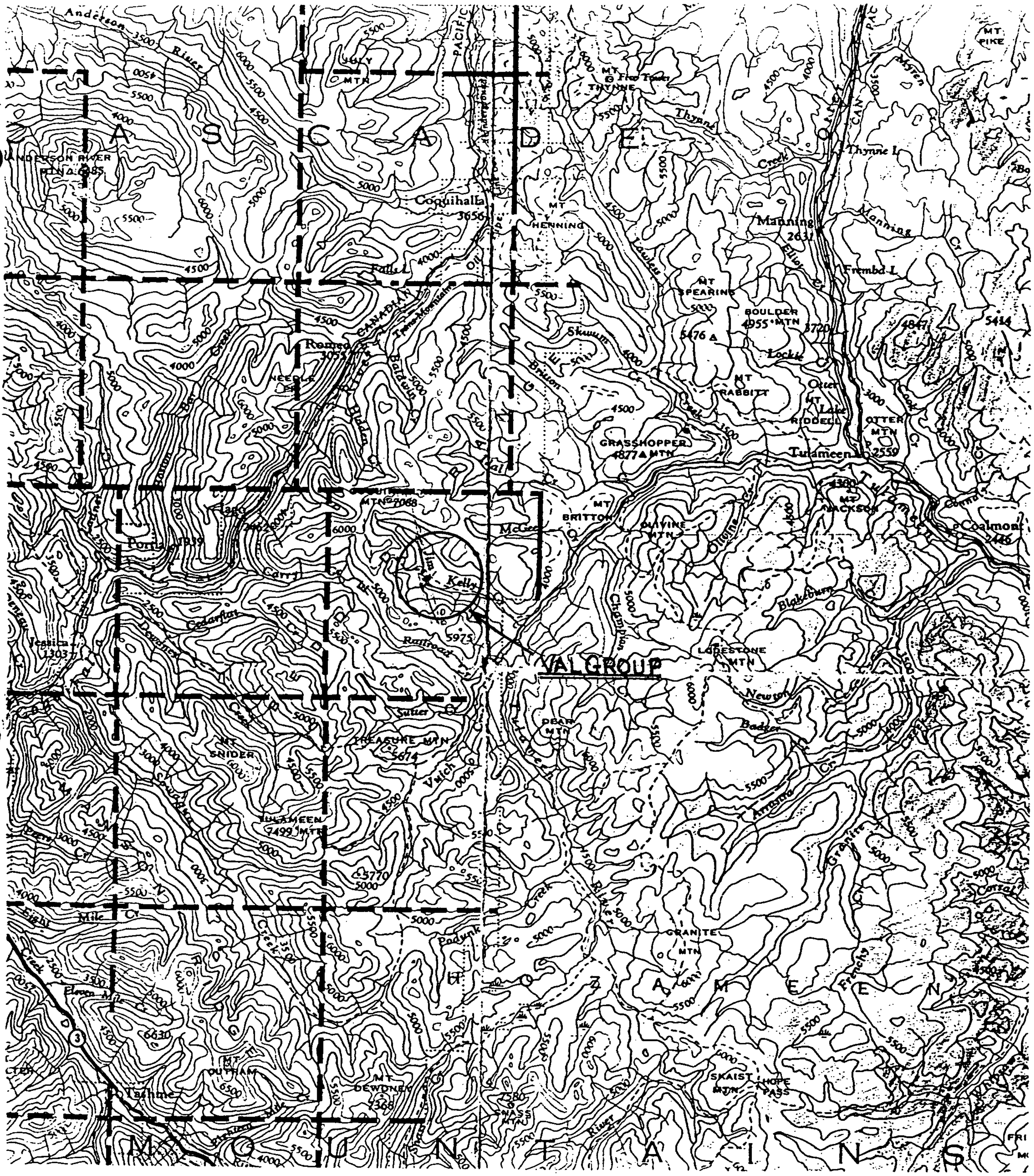
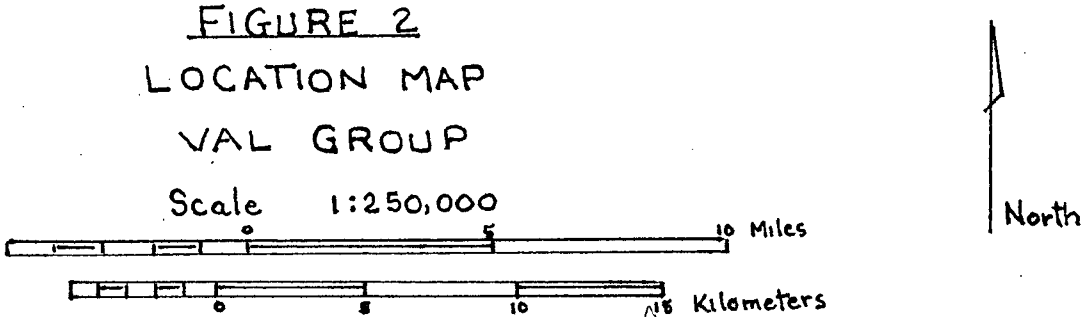


FIGURE 2

LOCATION MAP

VAL GROUP

Scale 1:250,000



1.0 INTRODUCTION

The Val Mineral Claim Group is a gold-silver property located in the valley of Jim Kelly Creek about 4.8 kilometers from the Tulameen River. The nearest settlement is Tulameen, B.C., which lies about 24 kilometers to the northwest. The general area can be reached from either Tulameen Village via the Tulameen River road, or from the Coquihalla highway via interconnecting logging roads. Access to the claims is provided by a bulldozed trail which leaves the Tulameen River road near the Jim Kelly Creek bridge and extends westerly up the creek valley.

The claims cover a number of old gold and silver prospects which were originally worked on near the turn of the century. Most important of these are the John Bull, Gold Mountain and Marks showings, which are also the principle subject of this report. The John Bull and Gold Mountain prospects have been described in the B.C. Minister of Mines Report for 1913. The Marks prospect does not appear in any of the previous literature.

A total area of 260 hectares was geologically mapped on a scale of 1:5000. Field work was done in October of 1989 and August of 1990 on both the Val 5 and Val 6 Mineral Claims.

2.0 MINERAL CLAIMS

Location and configuration of the Val Claims are shown in Figure 1. Claim details are as follows:

Claim Name	Record No.	No. Of Units	Anniversary Date
Val 5	2994	8	August 20
Val 6	2995	16	August 20

The Val Claims are owned by B.R. Mowry of Princeton, B.C. The claims were staked in 1987.

3.0 PREVIOUS WORK

Jim Kelly Creek takes its name from an early prospector, James Kelly, who held claims in the area from 1896 to the time of his death in about 1923. The 1908 Minister of Mines Report also lists the well-known pioneers Robert Stevenson and Dan Ross as co-owners of the Kelly Creek properties.

The first detailed account of the area is given in the 1913 Minister of Mines Report[1] which provides descriptions of John Bull and Gold Mountain showings. The following information was taken from the 1913 report. The John Bull prospect was explored by a 20-foot open cut and an adjoining 25-foot tunnel which was driven along a quartz vein system mineralized with pyrite and chalcopyrite. A sample taken across 8-inches of mineralized quartz vein assayed .70 oz. per ton gold and .50 oz per ton silver, while a picked sample returned 1.40 oz. per ton gold. The Gold Mountain prospect was explored by a 125-foot tunnel driven along a narrow quartz vein system mineralized with pyrite, chalcopyrite, galena, arsenopyrite and minor tetrahedrite. A sample across 10-inches of vein returned .02 oz. per ton gold and a trace of silver. A picked sample yielded .42 oz. per ton gold and 20.0 oz. per ton silver.

No account of the Marks prospect could be found. It had been explored by a tunnel approximately 9-meters long which was developed along a quartz vein system sparsely mineralized with chalcopyrite. A picked sample taken by the writer assayed .20 oz. per ton gold and 1.06 oz. per ton silver.

The next major amount of work done in the Jim Kelly Creek area is described in the 1966 Minister of Mines Report[3]. During this time, the west part of the area, now covered in part by the Val claims, was explored as a porphyry copper prospect by Bethex Explorations Limited. A large amount of bulldozing was

done, followed by an I.P. survey and a 2832-foot diamond drill program.

During 1988 and 1989, the writer carried out a series of EM-16 geophysical surveys within the Val claims. A large significant westerly trending conductor was outlined along the Jim Kelly Creek valley between the Superior and Marks prospects. Details of this work is provided in geophysical assessment reports for 1988 and 1989[4].

4.0 OBJECTIVE

The purpose of this project is to determine the geological environment of the gold-bearing quartz-sulfide vein systems exposed in the John Bull, Gold Mountain and Marks showings, in order to establish the best direction for future exploration.

5.0 TOPOGRAPHY AND SURFICIAL GEOLOGY

As shown in Figure 2, the Val Claim block straddles the valley of Jim Kelly Creek. Maximum elevation is about 1700 m. Minimum elevation is about 1100 m. Within the claim block, the creek trends westerly to the West Fork then abruptly swings to the northwest; both trends very likely reflect bedrock structure. The southside of the valley has been oversteepened, and is now subject to rock failures and avalances. Bedrock exposures are very plentiful here and in the creek canyons below. Along the northside of the valley, above the rock canyons to about the 1300 m. level, the valley slope is very gentle, in places plateau-like, due to thick deposits of glacial material, and rock exposures are virtually nonexistant.

A thin layer of lodgement till covers most of the area and even appears along the steep southern slopes of the valley. Below the 1130 m. elevation, the bed of Jim Kelly Creek rests on the till. Above that elevation it appears entirely entrenched in

bedrock. A thick deposit of glaciolacustrine sand, silt and clay overlies the till to about the 1260 m. elevation. Along the eastern edge of the property, the base of this deposit is a varved clay. In general, the lake deposits have greatly hindered the exploration of the Val property.

6.0 RESULTS OF THE GEOLOGICAL SURVEY

6.1 INTRODUCTION

Geological relations established by this survey are shown in Figure 3. The base map was created from airphotos and geophysical grids. Outcrop locations were determined by hip chain and compass. Field notes and binocular microscope date are appended.

Three distinctive rock units have been recognized. The oldest is the Green Diorite which is a dark green complex assemblage of metamorphosed dioritic rocks. This rock is probably a basic border phase of the Eagle Granodiorite. Next is a sequence of clastic sedimentary rocks which appear to overlie the Green Diorite along an erosional unconformity. This formation is assumed to represent the basal section of the Lower Cretaceous Pasayten Group [2]. The third and possibly the youngest of the three is the Hornblende Diorite. Its relationship with the other two is not known at this time; however, a similar plutonic rock is known to intrude the Pasayten Group northwest of the claim block.

A profusion of fine grained light grey felsite dykes occur throughout the area and appear to cut all rock types. Similar dykes intrude the Miocene Volcanic Complex northwest of the claims, and it is assumed therefore, that the dykes underlying the Val claims are also of Miocene or later age. Associated with the felsite dykes are some green, fine grained to aphanitic dykes assumed to be also of granitic composition. They have been referred to as Green Dacite in the report.

All rocks have been affected by a period of carbonate alteration and quartz carbonate vein formation, accompanied by both disseminated and vein-hosted sulfide mineralization.

6.2 GREEN DIORITE

The Green Diorite is well exposed along the lower canyons and creek beds of Jim Kelly Creek. It is a highly altered complex of dioritic composition which shows rapid variations in texture and alteration even within a single outcrop. Much of it appears as a soft, dark green, fine grained rock resembling a greenstone, and has been referred to as such in the field notes. The medium grained variations however, can be readily identified as diorite, and show a fairly uniform composition of about 45% feldspar, 35% altered mafic minerals and up to 15% quartz. Chlorite is the dominant mafic alteration but a green fibrous mineral is also present which may be actinolite. The feldspar appears to be mainly plagioclase. Assessory minerals include hematite and pyrite. Most of the rock is equigranular although some variations are porphyritic with feldspar phenocrysts in a fine grained chloritic matrix. In most cases the mineral constituents of the fine grained diorite could not be determined, however, it does appear to have a more basic composition. The origin of the fine grained rock is not certain. Some of it occurs as xenoliths in the coarser grained rock, and may therefore, represent partially assimilated magmatic roof material. In other cases, the finer grain size may be due to grinding and alteration along zones of shearing.

Alteration patterns within the Green Diorite have been difficult to interpret. Complete chloritization of the mafic minerals occurs throughout the area mapped, and in places the feldspar shows various degrees of saussuritization. This could be interpreted as an early stage of propylitic alteration upon which the later alteration was superimposed. At any rate, most of the Green Diorite unit shows very obvious

carbonate and quartz-carbon alteration. Weak argillic alteration is also present and may be more widespread than indicated in the hand specimen. The strongest alteration appears to occur in those rocks exposed along Jim Kelly Creek below the West Fork junction. The carbonate is rusty weathering, and probably ankerite. It occurs mainly as open spaced filling along breccia cavities, fractures and micro-shears. It is often accompanied quartz. Commonly, the carbonate occurs as orange weathering envelopes around quartz veinlets.

The Green Diorite appears to have undergone a considerable acount of structural deformation, particularly along the creek below the West Fork. Most of the exposures here exhibit various degrees of crushing or cataclastic deformation without the development of strong shear planes, and the overall trend of deformation is difficult to determine. Northwesterly directed shearing and brecciation has been noted; that is, most of the quartz-carbonate vein systems cutting the Green Diorite occur within weak northwesterly striking shear zones, and a strong zone of northwest trending brecciation was mapped at station 90-53 along the east edge of the mapped area. However, the most prevalent axis of deformation is considered to trend westerly, and is also considered to have determined the course of Jim Kelly Creek. For instance, a zone of gouge and breccia has been traced from the John Bull adit westerly for a distance of 270 meters. The true width of the system is not known but must be in excess of six meters. The strike appears to be about 310-degrees. The fault breccia is healed by rusty weathering carbonate over most of the observed length and strong quartz-carbonate stockworks occurs in the adjacent Green Diorite over a width of a least ten meters. Below the John Bull adit, easterly to the mouth of Gold Mountain Creek the south wall of the Jim Kelly Creek canyon is intensely fractured while the north wall is relatively solid. Some breccia structure healed by carbonate was also noted along this section

of south wall. It is tentatively concluded, therefore, that a system of westerly trending fault and breccia systems extend along the creek valley from the mouth of Gold Mountain Creek to near the West Fork, and these systems, at least in part, pre-date the period of carbonate alteration.

6.3 PASAYTEN GROUP

As shown in Figure 3 the Pasayten Group sedimentary rocks underlie the southwestern corner of the claim block. The basal member of the Group is a red to purplish-brown cobble conglomerate which contains an abundance of granitic clasts. In canyon exposures along the West Fork of Jim Kelly Creek the conglomerate appears to overlie the Green Diorite along an inferred erosional unconformity which dips to the west at about 60-degrees. A lack of thermal metamorphism in the sedimentary rocks generally supports this interpretation. A red sandstone overlies the conglomerate, forming a basal red bed sequence at least 30 meters thick. The red coloration of the sediment appears to be due to finely divided hematite which may indicate a subaerial environment of deposition. A thick sequence of light brown sandstone and dark grey argillite with subordinate red siltstone overlies the redbeds. Near the western boundary of the claims the sediments are cut by a large body of brown weathering carbonate altered felsite. Red sandstone is exposed near the creek bed west of the claims and along the ridge south of the creek. In both cases it is used as a marker to locate the approximate position of the Pasayten contact. The creek exposures indicate the sedimentary sequence strikes at about 340-degrees and dips to the west at about 60-degrees.

6.4 HORNBLENDE DIORITE

The Hornblende Diorite forms prominent outcrops along the south rim of the Jim Kelly Creek valley. It is mineralogically similar to the Green Diorite but differs from it in both texture and alteration. Its most distinguishing feature is an abundance

of black hornblende prisms contained in a seriate matrix of feldstar, hornblende and minor quartz. Part of the feldspar component also occurs as large ovoid grains giving the rock a porphyritic appearance. Typical compositions appear to be about 30% hornblende, 50% feldspar and 15% quartz. Most of the feldspar is plagioclase but a pinkish hue to some grains suggest orthoclase is also present. In some exposures the diorite shows weak to moderate chloritization of hornblende and saussaritization of feldspar. Stronger alteration occurs along a northeasterly trending shear zone exposed in Gold Mountain Creek, and along a westerly shear zone hosting the mineralization exposed at the Gold Mountain adit. In both cases, the diorite has been sheared and the hornblende component completely altered to chlorite, accompanied in places by the introduction of carbonate and quartz.

6.5 FELSITE DYKES

Pale grey fine grained dykes occur throughout the area and are particularly abundant along the Jim Kelly Creek valley below the West Fork junction. These rocks appear composed almost entirely of quartz and feldspar with feldspar abundances exceeding that of quartz. Some quartz porphyry has been noted but in most exposures the rock appears equigranular and can be best described as an alaskite or felsite. Most of the dykes are less than four meters wide but occur as swarms. One large dyke, about 15 meters wide, occurs near the Marks adit and another of similar width occurs at the North Fork junction.

As shown in Figure 3, an east trending swarm of felsite dykes have been exposed along Jim Kelly Creek and show a close relationship to both the John Bull and Marks mineralized zones. These dykes are all soft, all fizz in acid and all weather to a rusty brown coloration. The alteration assemblage is assumed to be ankerite, clay and quartz. Some dykes contain coarse segregations of quartz, carbonate and chalcopyrite. Most carry disseminated pyrite accompanied in places by sparse

chalcopyrite and hematite. Total metallic mineral observed to date, however, does not exceed one-percent. Sampling done by the writer has indicated the dykes contain minor amounts of gold, and the gold content increases with the sulfide content.

A minor group of felsite dykes have been mapped along Gold Mountain Creek associated with a northeast trending shear zone and green dacite dykes of similar orientation. These dykes generally have hard cherty textures and appear relatively unaltered.

6.6 GREEN DACITE DYKES

Green dykes occur throughout the area but in much lesser abundance than the felsite. Most are hard dense cherty rocks. Quartz phenocrysts in some suggest a granitic composition, possibly close to dacite. Most observed to date are less than two-meters wide. The large dyke lying along the Gold Mountain Creek shear zone is in places over 10-meters wide.

6.7 QUARTZ CARBONATE VEIN SYSTEMS

As shown in Figure 3, quartz-carbonate vein systems occur in abundance along the rock exposures created by Jim Kelly and Gold Mountain Creeks. The most important of these are the John Bull, Marks and Gold Mountain systems which have been explored by adit tunnels.

The John Bull system strikes approximately 350-degrees and dips westerly at 40- to 50-degrees. The total system of veins and intervening schistose mineralized rock is approximately 3 meters wide. The veins are subparallel in strike but of variable dips which in section would produce a branching system. The largest and most central vein is about 46 cm. in width and contains massive pyrite. There is some suggestion that the larger veins of the system "pinch and swell" in the schistose host rock, and this may have led to an error in the direction of the adit which does not follow the logical

projection of the larger richer veins. Gangue mineralization accompanying the quartz includes brown weathering carbonate, pea green mica, grey chlorite and a yellowish brown clay mineral. These minerals commonly occur as thin pyrite-bearing layers within the quartz to create a distinctive "ribboned" appearance. Similar vein systems are also exposed along the creek bed east of the John Bull adit and have been identified as the J.B. type in the field notes and in Figure 3.

The Marks vein system strikes at about 340-degrees and dips westerly at 45-degrees. It appears to be about 1.5 meters wide and contains veins ribboned similar to those of the John Bull prospect. However, the veins are only sparsely mineralized with sulfides, mainly chalcopyrite.

The Gold Mountain vein system occurs within a narrow shear zone, about 4 meters wide, which cuts fresh Hornblende Diorite. The vein system consists of several small branching quartz veins, but one main vein seems to contain most of the mineralization. It is about 30 cm. thick and well mineralized with pyrite, chalcopyrite and minor bornite. It strikes approximately 280-degrees and dips vertically, which is also the approximate altitude of the host shear zone. A similar west trending shear-zone containing quartz-chalcopyrite mineralization is exposed directly east of the adit in the Gold Mountain Creek canyon, and appears to be a logical extension of the adit mineralization.

The other quartz vein systems shown in Figure 3 are similar to those described above but differ in one important aspect - none contain significant sulfide mineralization.

7.0 STATEMENT OF EXPENDITURES

GEOLOGICAL SURVEY - VAL GROUP 1990

1. Field Work

G.D. Bysouth	October 11, 1989 . .	8 hours		
	October 12, 1989 . .	8 hours		
	May 19, 1990	10 hours		
	August 5, 1990 . . .	10 hours		
	August 6, 1990 . . .	10 hours		
		46 hrs	@ $25/hr	$1150.00

2. Binocular Microscope Examination

G.D. Bysouth	August 11, 1990. . .	6 hours		
	August 12, 1990. . .	7 hours		
	August 14, 1990. . .	6 hours		
		19 hrs	@ $25/hr	475.00

3. Report Preparation

G.D. Bysouth	24 hours @ $25/hr	600.00

4. Vehicle Costs

4 x 4 1989 GMC	5 days @ $20/day	100.00

5. Camp Costs

5 days @ $35.00/day	175.00
Total Cost	$2500.00

8.0 CONCLUSIONS

The information presented in this report indicates that a major westerly trending system of deformation, dyke intrusion, alteration and mineralization lies along the bottom of the Jim Kelly Creek Valley, and hosts the John Bull and Marks gold prospects. The Gold Mountain gold prospect is not structurally linked to the other two, but rather lies within a very minor system of similar mineralogy and strike. It is concluded therefore, that a comprehensive program of exploration must be carried out along the valley bottom which would include rock geochemical sampling of available exposures and I.P. geophysical surveys over the buried parts of the valley.

Submitted by:

Garry D. Bysouth
Geologist

APPENDIX A

STATEMENT OF QUALIFICATIONS

I, Garry D. Bysouth, of Williams Lake, B ritish Columbia, do certify that:

1. I am a geologist.
2. I am a graduate of the University of British Columbia, with a B.Sc. degree in Geology in 1966.
3. From 1966 to the present I have been engaged in mining and exploration geology in British Columbia.
4. I personally did all the field work contained in this report and interpreted the results.

Garry D. Bysouth

Garry D. Bysouth

APPENDIX D
REFERENCES

(1) B.C. Minister of Mines, Annual Report, 1913, pp 232-233.

(2) Cairnes, C.E., 1924, Coquihalla Area B.C., Geol. Survey of Can. Mem. 139.

(3) B.C. Minister of Mines, Annual Report, 1966, pp 174.

(4) Bysouth, G.D., 1988, E.M. 16 Survey on the Val Group (Assessment Report).

(5) Bysouth, G.D., 1989, E.M. 16 Survey on the Val Group (Assessment Report).

ROCK : BINOCULAR MICROSCOPE EXAMINATION

Sample No.	HCl Reaction	Texture	Minerals	Identification and Remarks
90-1	Strong	sheared, crushed ? fine grn ? cataclastic tex?	chl., carb., plag ? ?	dark green nondescript chl. rx "laced" with carb. veinlets - GREENSTONE or - sheared chl-carb-alt'd diorite.
90-1	weak	equigranular fine grn - 1-2mm	qtz - white spar carb + clay along fractures	ALASKITE
90-2	strong	hypidomorphic granular - sheared and crushed - grn size ~1-3mm	chl., plag, qtz, carb veinlets, qtz-carb. veinlets - almost stockwk - alt'd diorite with ~1.0 % py	CHL-CARB. ALTERED DIORITE
90-2	mod	foliated - grn. size ~3-4mm	20 % chl. as wisps and shreds, 60% pale grey clay alt'd plag. ~10 % interstitial qtz. minor carb.	a bleached light greenish grey rx - indistinct fol'd texture. BLEACHED CLAY ALTERED DIORITE
90-2	strong	fine grn ~1mm poss, crushed or sheared	chl - clay - carb - qtz ~.5 % diss. py	a fine grn dk green rx "laced by orange weathering qtz-car veinlets CLAY - CARB ALTERED GREENSTONE
90-3	strong	fine grn < 1mm	chl - carb rx. sparse dissem py - cp - bo	a fine grn dk green rx. laced by orange weathering qtz-car veinlets CARB. ALTERED GREENSTONE
90-4	weak	hypidomorphic granular. sl. crushed - med grn. 2-3 mm.	30 % chl, 15 % qtz, 50 % plag.	a weakly chl - clay - carb. alt'd DIORITE
90-4	weak	fine grn - equigran	qtz + white spar ~.5 % dissem cp + py	typical fine grn granular, no mc ALASKITE
90-5	weak* - but 50% of spec. is rhomb. min poss. siderite	J.B. type vein	qtz, chl, pea green mica - poss talc, sparse euhedral py - pale orange brown weathering surface - siderite*	a vein ribboned with chl + talc, qtz and siderite layers - J.B. TYPE QTZ VEIN
90-5	none	fine grn - equigran.	qtz + white spar ~1 % dissem py	ALASKITE

ROCK : BINOCULAR MICROSCOPE EXAMINATION

Sample No.	HCl Reaction	Texture	Minerals	Identification and Remarks
90-7	mod	fine grn equigran ~1mm	chl, saus. plag, orange weathering carb veinlets	a dark green FINE GRAINED SAUSSARITIZED DIORITE
90-7	strong	fine grn	chl, clay, orange weathering carb. n.s dissem. py	a dark green CLAY-CARB. ALTERED GREENSTONE
90-7	none	fine grn-equigran <1mm	qtz-white spar minor clay + hem	reddish weathering ALASKITE
90-9	mod.	fine grn ~1-2mm poss. crushed	30% chl, 50% plag, 15% qtz, carb	fine grn CARB. ALTERED DIORITE
90-10	mod	med-coarse grn hypidiomorphic gran. 3-5mm.	30% chl as ragged relicts of hb, 45% clay altd plag; 10% interstitual qtz.	dark green soft CARB-CLAY ALTERED DIORITE
90-12	mod	med grn (~3mm) hypidiomorphic gran	30% chl, 40% clay alt'd plag, 10% qtz as above + ~5% ep + minor hem	dark green soft. CARB-CLAY ALTERED DIORITE
90-15	weak	sheared and crushed	50% coarse chl in granulated green soft matrix	CLAY ALTERED DIORITE
90-15	weak	foliated	qtz-chl (carb) + ~10% fine py.	-sheared, min. diorite QTZ-CHL-PYRITE ZONE

ROCK : BINOCULAR MICROSCOPE EXAMINATION

Sample No.	HCl Reaction	Texture	Minerals	Identification and Remarks
90-16	Strong	sheared, crushed,	chl, green clay alt'n, brown weathering carb, chloritized mafics, clay alt'd plag.	nonmagnetic, mod. soft H 3-4½, - an altered and sheared diorite - SHEARED, CLAY ALTERED DIORITE
90-16	Mod	hypidiomorphic-gran. avg. grn size ~4mm	chl ~35-40% pale grey plag 40%, carb. qtz ? ± clay	H. 3-6 CHLORITE ALTERED DIORITE
90-16	Weak	~aphanitic - sl. sugary.	mainly SiO_2, minor Fe carb., clay, chl., py	H. ~7 QUARTZ CARBONATE ALTERATION
90-17	Weak	brecciated and healed by qtz-carb.	SiO_2, Fe carb, clay	a green aphanitic rx., H 4-5, which has been brecciated and "healed" by qtz-carb. micro veinlets QUARTZ CARBONATE ALTERATION
90-19	weak	aphanitic	Pale grey granular → qtz and spar?, minor Fe carb. ~.5% dissem py + hem	ALASKITE DYKE
90-22	none	porphyritic	~20% qtz phenos in pale grey aphanitic matrix - H~7 Minor pale brown clay - sparse dissem cp + hem	QUARTZ PORPHYRY
90-22	strong	breccia	clay, carb, chl., qtz	CLAY-CARBONATE ALTERED DIORITIC BRECCIA
90-25	none	porphyritic	same as 90-22 except no cp - only dissem hem.	QUARTZ PORPHYRY
90-25	weak	hypidiomorphic granular - avg. grn size 3-6mm.	~40% pale grey plag. ~40% chloritized mafic 15% qtz.	" FRESH DIORITE
90-26	none	hypidiomorphic granular - 3 to 6mm	45% greenish plag 35% chl. mafics 15% qtz	SAUSSARITIZED DIORITE
90-26	mod.	sheared and crushed.	as above but no saus. and tex. obsur. by shearing and clay alt'n - micro carb. veins.	WEAKLY CARBONATE - CLAY ALTERED DIORITE
90-27	none	aphanitic	pale grey, hard H-7	ALASKITE DYKE
90-31	strong	crushed?	chl., clay alt'd plag?, Fe carb. qtz	CARBONATE ALTERED DIORITE

ROCK : BINOCULAR MICROSCOPE EXAMINATION

Sample No.	HCl Reaction	Texture	Minerals	Identification and Remarks
90-31	none	porphyritic	~50% qtz phenos in pale grey soft (H~1) matrix - laced by qtz. -hem-py veins	ALTERED QTZ PORPHYRY
90-32	weak	crushed? or sl. seriate? - avg. grn size ~2mm	30% hem-stained qtz. 40% white spar 15% hem-chl. alt'd bio.	-a reddish fine-med grn. "plutonic-looking" rx formed at the contact between the Pasayten Group and the diorite HYBRID QUARTZ DIORITE
90-34	strong	clastic	a congl. with pebbles of granitic rx, qtz. and a frag. of Spences Bridge Lava? in a hem. stained sandy matrix	RED PEBBLE CONGLOMERATE
90-38	weak	?	a pale grey nondescript rx with ~10% Fe carb grns - H ~4-5.	altered alaskite?
L	strong	porphyritic	plag., chl. hb, Fe carb. qtz	phenocrysts of orange rimmed soft plag. up to 4 mm dia (anhedral) and hb (chl.) pheno's up to 3 mm long in a seriate matrix of qtz, spar, chl and carb. CARBONATE ALTERED HORNBLENDE PLAGIOCLASE PORPHYRY

ROCK : BINOCULAR MICROSCOPE EXAMINATION

Sample No.	HCl Reaction	Texture	Minerals	Identification and Remarks
90-37	mod	sheared poss cataclastic grn size ~ 1-2 mm	plag, chl, carb	fine grn, sheared dark green CARB. ALTERED DIORITE
90-40	mod	sl foliated med grn ~3mm	45% plag, 30% chl 10% qtz	CARB ALTERED DIORITE
90-41	strong	sl foliated med grn ~3mm	45% plag, 25% chl 15% qtz	CARB. ALTERED DIORITE
90-41	weak	shear, fine grn equigran.	qtz - spar spar hem ~1% dissem py	ALASKITE
90-44	none	?	anhedral white spar? 80% 15% qtz. ~1% dissem magnetite. ~5% bio	pale to med grey zone of alt'n? alt'd diorite? ALASKITE ?
90-45	mod	sheared, poss cataclastic 1-3 mm dia	chl - plag, minor qtz minor sericite	CARB. ALTERED DIORITE
90-46	mod	sheared, fine grn < 1 mm. sl. porphyritic	a green nondescript looking rx with scattered chl phenocrysts up to 1mm long and random qtz grns up to 2mm dia in a greenish poss granulated matrix - poss some sand.	green sheared DACITE DYKE ?
90-46	none	aphanitic	dense hard (7) rx either a dyke or zone of silicification - ~.5% dissem py	ALASKITE DYKE ?
90-47	mod.	sheared	qtz, ser? or chl, carb sparse py-cp, minor clay.	QUARTZ-CARB. ALTERED SHEAR ZONE
90-48	none	sheared	qtz-ser- minor carb ~.5% py	QUARTZ-SERICITE SHEAR
90-48	none	sheared - aphanitic	qtz-feldspar? ~1% py	ALASKITE ?
90-49	none	seriate, med grn	hb 1-7mm long subhedral blk prisms 30%; plag anhedral grns .5mm-3mm dia 50%; qtz 10% tiny	fresh grey FRESH HORNBLENDE DIORITE

ROCK : BINOCULAR MICROSCOPE EXAMINATION

Sample No.	HCl Reaction	Texture	Minerals	Identification and Remarks
90-49	weak	sheared, granulated to ~ 1-2mm grns	? sheared granulated diorite with introduced minor clay - carb.	SHEARED DIORITE
90-50	none	seriate med. grn	fresh hb 1m - 4mm as blk subhedral prisms 30% ; plag. 45% as rounded grns up to 3mm ; 15% interstitial qtz	fresh grey HORNBLENDE DIORITE
90-51	none	same as 90-50	same as 90-50	fresh grey HORNBLENDE DIORITE
90-52	none	seriate-fine grn ≠ 1mm	hb phenocrysts in a seriate matrix of hb+plag. - poss. some saus. not strongly alt'd. to chl	fine grn dark green mod. fresh DIORITE
90-53	strong	crushed-granulated fine grn ~1mm	chl-rich rx crushed and "healed" by orange weathering carb. carb ~ 20%	dark green sheared CARB. ALTERED GREENSTONE
90-53	strong.	sheared, crushed, granulated.	chl-rich rx crushed and healed by orange weathering carb veinlets. carb ~ 25% - also qtz segreg's with dissem mlo..?	dark green sheared CARB. ALTERED DIORITE

ROCK : BINOCULAR MICROSCOPE EXAMINATION

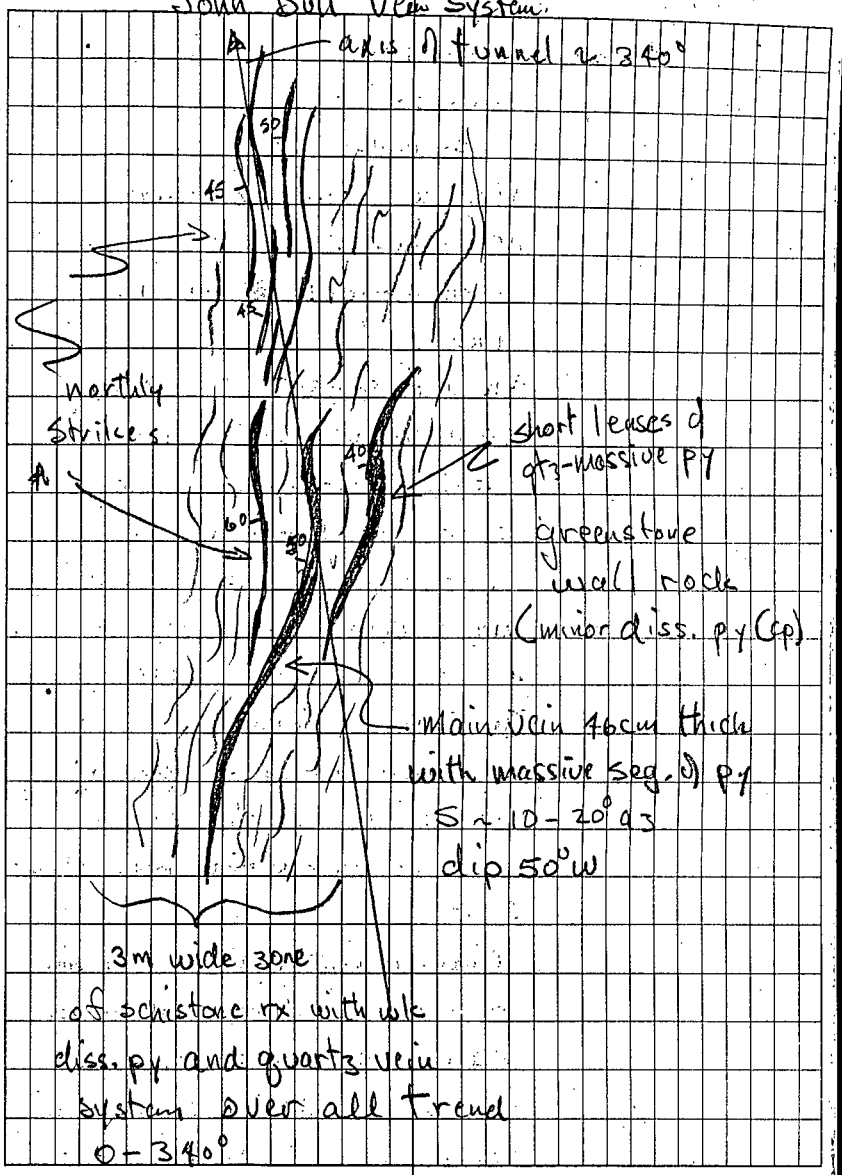
Sample No.	HCl Reaction	Texture	Minerals	Identification and Remarks
850W 300S	weak	fine grn ~1mm-2mm poss. seriate	~30% blk hb as anhed. prisms in a weakly saus. background of plag and minor qtz ~.5% dissem py	dark green fine grained HORNBLENDE DIORITE
S. of J.B	none	seriate - med. grn up to 2.5mm - poss. ol. foliated and cataclastic	ovoid feldspar grns up to 2.5mm and anhedral blk hb prisms up to 2mm long in a swirled saussuritised seriate ground mass of qtz and plag. fine diss py ≤.5%	med grn mod. fresh DIORITE
1150W 100S	weak	fine grn. ≤1mm equigran ?	dense grey-grey rx cut by numerous orange weathering carb. veinlets very fine dissem py poss some bo	grey green CARBONATE ALTERED GREENSTONE
J.B. wall rx	weak	seriate and fine grn. - largest grns ~1.5mm	dense dark green diorite with ovoid feldspar grns and blk hb prisms in a finer grn poss. saus. matrix.	fine grn dark green DIORITE
700W 650S	none	med grn, 3-5mm, hypidomorphic granular	60% anhedral 'spar poss K'spar and plag. 30% chl. mafics - mainly hb, ~10% qtz - minor saus. alt'n	DIORITE
300E 625N	mod	fine-med grn 1-2mm seriate	60 white 'spar + 30% interstitial grey qtz + ~5% bio	ALASKITE
300E 125S	none	"crowded" porphyry to seriate	ovoid grns of 'spar from 1-7 mm dia 60% in a seriate interstitial matrix of quartz + chl.	med grey dacite or FELDSPAR PORPHYRY

Oct 11/90 Geological Traverse - Val Group

Traverse starts @ John Bull adit and proceeds Southerly up the steep side of the valley.

0 m.s 89-1 John Bull adit. a system of branching veins ranging in width from 5 to 46 cm. mineralized with coarse massive seg. py. contained within a schistose zone ~3 m. wide Gangue Min. are talc?, grey chl., ankerite and a yellows mica or clay. Veins are ribboned by these minerals Weak dissem py occur along the ribbons. The strongest and best mineralized veins appear lensoid and strike N-10°E while the adit strikes more N.W.ly 0-340°

15 m.s. 89-2 Coarse green breccia - avg 5cm ang. frags in dark green frag. matrix - a large exposure but width and attitude cannot be det. - cement is clay and carb.



FIELD

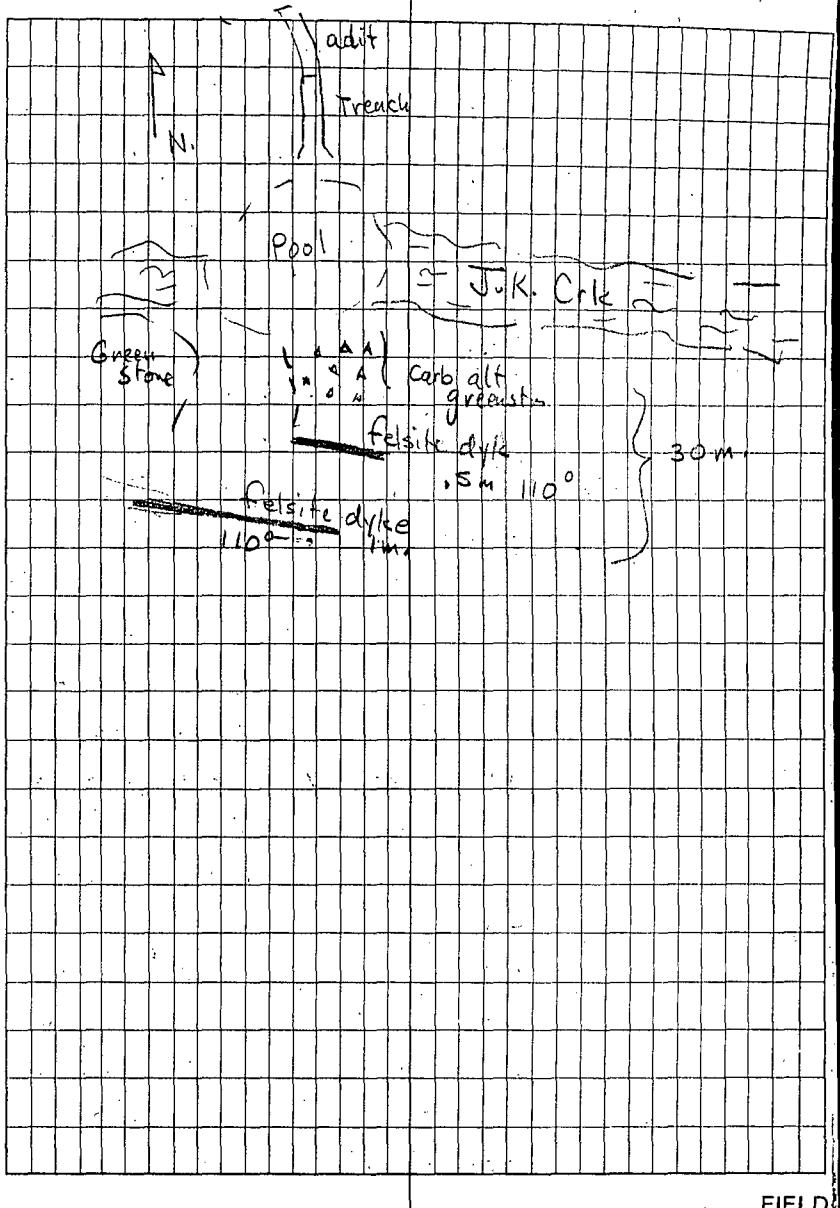
Oct 11/90

89-2 ~ 8 m S of the bx lies a brownish felsite dyke - aphanitic - ~ .5m wide. strikes 110°/3. large exposures of sheared broken carb. chl- alt'd green stone lie ~ E and W. of the bx.

~10m further S another felsite dyke ~1 m. thick strike 110° with ~ .5% diss. py - mainly aphanitic tex. - fairly hard & fresh.

205 m S 89-3 mainly carb. alt'd rusty colluvium and talus to 89-3 - At 89-3 There is a line of outcrops ~// to crk valley - all greenstone with wk carb. alt'n.; the greenstone appears as a dk green nondescript sheared or crushed rx with obvious carb. either along veins or micro shears or with cavities in bx rx - commonly the carb. occurs as orange brown envelopes around qtz veinlets.

A ~ 210 m. - qtz-chl vein system ~10cm wide qtz veins ribbons of chl - weak p.v. 350° strike



FIELD

Oct 11/90		Vol. Group Geol.
455 ms	89-4	steep slope of colluvium to 89-4 – diff. to det. true step. vs. large boulders. – @ 455 m med grn. diorite – fresh hb. prisms up to 3mm long. in a seriate chl. alt'd matrix – no obvious carb. alt'n
610 ms	89-5	steep bluffs – mainly med grn diorite hb ~ 20 o/o as fresh prisms in a fine to med. grn seriate matrix of plag. qtz and hb. – plag. often occurs as rounded grns up to 3mm dia – rx appears variously porphyritic. prob. comp. 50o/o plag, 35 o/o hb., 10-15 o/o qtz + K-spar + assess.
820 ms	89-6	Same as above but more alt'd. – mafics more chloritic – plag. wkly saus. – poss. of a NE. trending fault or shear zone shown by foliation and cataclastic tex. in some rx.
350 m E	89-7	traverse swings east from 89-6 – Same diorites as 89-5 and 89-6 – samples taken

FIELD

Oct 11/90

198MN 89-8	Traverse N. of 89-7 – down steep talus – strip 89-8 lies at the change of slope from mainly rx exposure to tree covered colluvium – mainly a med grn diorite with ~ 45% grey p'lag, 35% chl. alt'd mafics, – similar to the other diorites but more alt'd. Note: non of the diorite along this traverse shows the degree of alt'n as those of J.K. Crk – ie no carb., very minor chl. and seric.

FIELD

Oct 12/89 | Val. Group Geol.

Traverse S. from the junction of the West fork.

0m – will map later.

~~195m~~S 89-9 poor octp – fine to med. grn diorite – prominent gray plag. grns in a chloritic matrix – some rusty weathering carb. – rx has crushed appear. – min's diff. to identify.

455m S 89-10 steep rocky slopes – fresh look diorites – typical rx is a med grn diorite or quartz diorite with fresh, hb. and plag – tex. appears seriate ~ 20% hb, 50% plag, and ~ 20% interstitial qtz.

Traverse ~205° from 89-10 to height of land.

700m SW 89-11 red to maroon Pasayten sandstone – appears massive – no bedding angles

Traverse ~270° from 89-11

110m W 89-12 poor otcp – appears mainly red sandst.

200m W 89-13 no otcp.

Traverse N'ly from 89-13.

FIELD

Oct 12/89

985m N. 89-14 – no otcp from 89-13 to 89-14; @ 89-14 in stream cut good exposure of grey soft, brown weathering rx fine grn – poss. an altered felsite dyke – attitude not def. – minerals visible are ankerite grns, flakes of musc. and clay (kaolin ⇒ earthy odour) – poss. westerly trending / – very fine diss. py (<.5%)

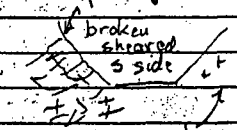
485m N 89-15 Sample L. traverse along Bethex baseline – poor otcp along third I.P. line mainly a feldspar-hb. diorite – prisms of hb and rounded grns of plag. up to 3mm. dia in a seriate matrix of qtz, hb and plag. rx has been chl-carb alt'd – even plag. appears partly alt'd to brown carb. – note a sequence of Pasayten sandstone & siltstone lies ~150m to the west in Crk cut.

cut by minor east trending felsite and dacite dykes.

89-16 typical carb-chl. alt'd diorite – same as other crk exposures. not similar to 89-15 – ie. appears equigranular and more chl-carb. alt'd.

FIELD

May 19/90

Stn 90-5 350-420 W	large felsite dyke poss 10-20 m wide trends along creek bottom = apparent strike ≈ 280° – some dissem py + qtz segs ≤ up to 2" wide with py (cp)
Stn 90-6 480m	felsite ≈ 300° along crk bed – dyke swarm?
Stn 9-7 500-600	same rxs – diorite – greenstone – felsite and pale grey alt'n. – an observation  Solid N side direction of valley floor ≈ 290° – dip of broken zone appears SW
Stn 9-8 560	S side of crk – Adit along shear zone trending ≈ 340° – several ribboned qtz veins – largest? .5m with diss cp (pyr) – dip ≈ 45° W
Stn 9-9 590	same geol – S wall appears more alt'd – N wall is diorite with patches of greenstone – strong carb alt'n along E wall in places.
Stn 90-10 600	dioritic otcp with xenoliths and blocks of greenstone – bedding str. of stn. in an large greenstone blocks is ≈ 130° – sample of coarser grn diorite taken.
Stn 90-11 780	E trending shear zone @ 780 ≈ same as that S of S.B.

May 19/90 Val Claims Geology.

Traverse W. along Jk. Creek bottom

Stn #90-1 850W-125S start @ 0 – otcp is from 0 to 65m W	a large otcp on Jk. creek, from from 850W, 125S; mainly greenstone cut by numerous pale grey orange-brn weathering zones of alt'n – the largest is ≈ 3m wide and strikes 15° az – dipping Wly @ ≈ 30°; the greenstone is in most places "laced" by brown weathering carb veinlets. On weathered surfaces, the greenstone resembles a diorite or green plag. porp. The greenstone is also cut by a N-ly trending siliceous pale grey fine grn dyke – felsite – which contain minor dissem brown pyr.
Stn 90-2 175W	– several small otcps from 6.5m to 175m W all greenstone with N to NE trending orange brown weathering alt'n zone. – but at ≈ 150–175 a med to fine grn diorite occurs which is intrusive to the greenstone. Also @ 175W a zone of pale green alt'n occurs with contacts ult dissem py
Stn 90-3 230W	zone of pale grey and greenish alt'n with p dissem py (wlks)
Stn. 90-4 270W	large canyon-like otcp – felsite dykes brown weathering, S. ≈ 300°, 2-3m wide minor dissem pp – cutting fine grn diorite and greenstone) –
Stn 90-5 320	same rxs; J.K. type shear zone 340°/60W; 1m wide – wlk. cp

Aug 5/90 Val Group Geol. Traverse

Stn 90-16	from J.B. showing west to 1100 m.
1030-1100m W.	Same rx types except for fine grn dark green dacite? dykes up to .5m wide -320° 340° str. - sharp contacts. Host rock is laced with qtz-carb veins which str. ~320-340 plus veinlets which form stkwks. In gen. the diorite appears sheared and chl-alt'd - see sample. Shearing trends are diff. to det. - poss. N.W. On the S. side of crk - gg fault zone ~ 1m wide 310° - dip 60 w with felsite on hanging wall. shear heavily carb rx on foot wall
Stn 90-17 1110	- Cont. rx exposure - same rx - numerous small felsite dykes - some py(ml) Bx. zone - rusty weathering at 1110 m - striking 310° - along bed of crk - ~ 6-9 m. wide.
Stn 90-18 1150	Same - cont. exp. - strong qtz-carb stkwks in a felsite dyke and carb alt'd wall rx Dyke is ~.5m wide strikes 300° and contains disem py.
Stn 90-19 1190	same dyke - gen. 300° st. continues
Stn 90-20	dyke ends in crk exposure ⇒ crk swings to west - main rx is a mod alt'd diorite - cut by small dykes of green dacite and felsite ~45° az ; strong qtz-carb zone (ie net work of veinlets over 6m) str 310° az
Stn 90-21 1260	cont. exp. as above but felsite and qtz-carb zones <3m. str. 300°

May 19/90

Stn 9-12 820 m -	from ~600 to 820 m the alt'n appears to have decreased and the diorite rocks have become sl. coarser grn'd
Stn 90-13 890 m	shear zone - rusty but not strong alt'd 320° - 30 m wide
Stn 90-14 990 m	shear zone 325° >20 m wide - resembles the S.B. type shear zone
Stn 90-15 1030 mW	J.B. adit. strike 350° dip 50-55° W. width ~ 3m - qtz vein system in shear zone
Gen. Notes:	Three main rx types - fine to med grn diorite which is chl. alt. + saus alt'd and later carb. alt'd - the diorite appears to be the contact zone due to the presence of numerous inclusions of greenstone - contacts are reactive The greenstone is a dark to med green fine grn rx - often it is diff. to dist between the two rx types - the diorite always has inclusions of greenstone in the sec. of creek. Cutting both rxs are a sequence of pale grey felsite dykes - non porp. and fine grn - consisting of qtz + fsp Alteration - chl + saus followed by brown weathering carb - silica ± alt'n which affects all rxs. (including the dykes) Shear zones of the J.B. type contain qtz veins ribboned with green chl - pea green talc and a yellowish clay mineral

Aug 5/9 Val Claims

90-31 1760 mW — alt'd nondescrip. greenish rx – sample taken – shearing poss – E-W

90-32 1790 mW — almost continuous exp. from 1765 by a series of small steps. @ 1790m on S wall of crk & a small trib flows over a large outcrop of light grey carb. alt'd rx – prob felsite minor sulfides. 320° strike exposed in main creek 20' W – strong shearing ~ 350° – zone is again exposed in crk bed @ ~1835 which suggests a 300° str.

90-32 1900 — Payaster Contact – zone is ~ 30m wide. Diorite is fine grn @ contact coarser grn 10 m from contact. P. rxs @ contact is a congl. with rounded to subangular pebbles, cobbles and boulders of granitic rx in a & clastic maroon col. matrix ∠ of contact appears to be ~340° dipping 60° W. Bedding appears ~20°/50° W

90-33 1930 — reddish P. sandstone – grades to 340°/50 W siltstone

90-34 1955 — blk-dk grey shale – grades to argillite – no thermal effects noted

90-35 2000 — massive mine. bedded reddish sandstone (sl) grey argillite – 340°/60 W interbedded Thickness not det.

90-36 2020 — dk grey shale >60m thick – repeats @ 2080-2090 } alternating sequence of shale siltstone & sandstone

Aug 5/90

Stn 90-22 1300 m. — carb. alt'd felsite 4m wide 320° – carb. bx zone @ 1330 – see sample – str. 160°

Stn 90-23 1360 m W — cont' exp – still qtz-carb vein and stkwks many stg. E-W.

Stn 90-24 1310 — as above but intense stkwks – qtz-carb samples taken

Stn 90-25 1440' — cont. exp. junction of creek – grn same geol. as above – large felsite dyke. poss. (10 m. wide ?) striking 300° @ junction of crks. – sample of freshest – coarsest grn diorite taken. Note that the felsite dykes can be readily recognised by orange brown weathering – could these be entirely qtz-carb. alt'n of diorite ??

Stn 90-26 — cont' exp. : rx is less alt'd – coarser and more plutonic-looking but still contains numerous blocks of greenstone and is cut by green dacite and leucocratic felsite dykes – the latter are not noticeably alt'd and strike ~ N/S

Stn 90-27 1580 m — end of cont. exp. – med grey to light grey aphanitic rx. sl. carb alt'n – large outcrop – both sides of crk 50 x 20 m.

90-28 1640 — small exp – chl carb alt'd diorite

90-29 1670 — good outcrop of coarser grn diorite

90-30 1715 — carb alt'd diorite – poss E-W carb alt'd felsite dyke

Val Group - Geol. Aug. 6 1990

Traverse starts @ junctions of Gold Mtn Crk. and J.K. Crk and proceeds southerly up Gold Mtn crk.

90-37 0 - 23m. : mainly sheared diorite 340/40° NE - carb. alt'n and veining decreases - strongest @ J.K. Crk.

90-38 60 m : continuous otcp - mainly diorite and a fine grn dk green rx which is often laminated with alternating dk green and epidote green laminae. A qtz-carb. shear zone lies @ 51m striking 60° - dip steeply N ± parallel with Crk.

90-39 76m : qtz-carb shear zone 23.5 m wide; strike ~40°

90-40 108m : on crk - EM line intersection - same rx from here to J.K. crk - mainly a green diorite consisting of pale grey plag. pheno's, anhed. and up to 4 mm length in a chl-green ground mass - rx appears weakly sheared - poss. cataclastic texture. The entire appears to lie along a large qtz-carb. shear zone in this area - strong qtz veining along the foot wall - total system is ~ 10m wide. Inclusions of fine grn green laminated rx occur in the diorite. No pervasive carb. alt'n such as that of J.K. Crk II occurs

Aug. 6/90

90-41 138 m : weakly alt'd diorite

90-42 204m : qtz-carb shear zone 340°/30° SE, ~6m wide with chl. shear zone along footwall

90-43 237m ; 4m wide alaskite dyke 340°/30 SE minor hem-py along fracts.

305m ; Gold Mtn trail

90-44 305 - 332m ; carb alt'n zone about 5 m wide with a 3m wide alaskite dyke - both lying along crk - attitude uncertain - prob. N.E. strike.

90-45 332 - 450 : normal diorite rx; @ 455 m ; qtz-carb alt'n zone minor dissem py - strike 80°/30N

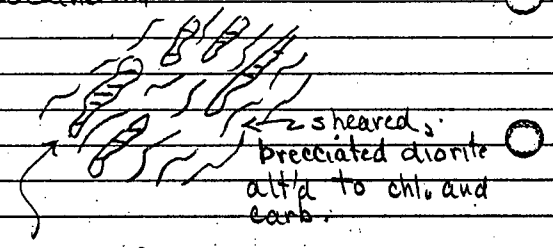
90-46 490 m : med. to fine grn finely laminated rx striking ~170°, dip. 30° E lying along crk bed - same as that observed in 90-38 and 90-40 - a 1-5m wide alaskite dyke appears to lie between the laminated rx and diorite.

90-47 490 - 632m - same as 90-46 - geol. forms a series of water falls - but @ 632m qtz-carb shear zone ~ 4 m wide and striking 80° - qtz seas.

Aug 6/90

Traverse E'ly along S.K. crk from Gold Mtn crk. (0 point of previous trav.)

90-53 150m ; strong carb. alt'd sheared chloritic zone - zone is exposed to 210 m - shearing is predom. N.W'ly ~ 340° - qtz-carb is orange weathering -



lenses of qtz-ank - in places with blebs of ~~Mos~~ Chalcocite

90-54 240 m : large exposure of light brown cherty Q.F.P. - mainly aphanitic

90-55 460m : chl. diorite - no pervasive carb alt'n or shearing - typical of the Crk exposures - a chl. alt'd equigranular rx consisting of ~50% plags in a swirled matrix of chlorite and qtz? - The plag often appears as phenocrysts but the may be due mainly to cataclastic def rather than primary crystallization.

Aug 6/90

90-47 cont'd ; the laminated green rx appears to cut off the qtz-carb zone - this zone may be an extension of that exposed in the Gold Mtn adit.

90-48 650m ; same geol. as 90-45 - the crk appears to lie along the contact between the green lam. rx and diorite from ~ 490m to 650m. Alaskite dyke within the lamin. rx with dissem-py. (Semple)

Traversed northerly from 90-48 to the Gold Mtn adit.

90-49 Gold Mtn adit : qtz-carb veins in a sheared, chloritic alt'd and sl. bleached host - total system ~ 3.5m wide and striking ~100° - dipping vertical. One main vein lies along the S. side of the system ~20 cm wide and min with cp-py-bo. Wall rx on either side of the system is a very fresh diorite rx with blk hb phenos in med. chl. alt'd fine-med grn plag-hb-bio ground mass.

90-50 200 m N. of adit ; fresh hb diorite as above

90-51 103 m E of 90-50 ; same as above

90-52 105 m E of 90-51 ; green laminated rx -

GEOLOGICAL BRANCH
ASSESSMENT REPORT

20,470

NORTH

Chisholm

Val 5 LCP | Val 6 LCP

North Fork

Bethex Grid

NORTH FORK

WEST FORK

Limits of Mapping

Access Road

Ob

GLACIAL LAKE DEPOSITS

John Bull

Trail

Baseline

1350 W.

1500 W.

Dc

Pa

Dh

Marks

GREEN DIORITE

HORNBLENDE DIORITE

Talus

Bunk

Cabin

Superior

JIM KELLY CREEK

PASAYTEN GROUP

Gold Zone

Limits of mapping

INDEX MAP

Tulameen

Coquihalla Mtn.

Val Group

Jim Kelly Cr.

Miles 5 0

Km. 5 0

LEGEND

- Ob — Glacial Sand, Silt and Clay
- J.B Type Quartz Vein System
- Quartz Carbonate Vein System
- Green Dacite Dykes
- Feldsite Dykes
- Dh — Hornblende Diorite
- Pa — Pasayten Group
- Dc — Green Diorite
- Inferred Geological Contact
- Zone of Faulting, Brecciation
- Adit
- Outcrop Area
- Geol. Station

Scale 1:5000
metres 0 100 200

Control
Air Photo, Chain and Compass

VAL GROUP
SIMILKAMEEN MINING DIVISION
GEOLOGY

FIGURE 3