

BC Recon.

BRITISH COLUMBIA

BITUMINOUS RECONNAISSANCE PROGRAM - 1984

CHILCOTIN PROSPECT

NTS 92-0

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CHILCOTIN PROSPECT

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ABSTRACT

The Chilcotin prospect area is located in the Tyaughton Trough, a large Jurassic - Cretaceous depositional basin in southwest British Columbia.

The sedimentary and tectonic history of the basin resulted in both marine and continental deposition. It had been proposed in 1983 that coal bearing sediments may be located within these sedimentary sequences. As a result of fieldwork in 1983 two sedimentary units, the Jackass Mountain Group Division 'A' and the Kingsvale Group sediments were concluded to be possible coal-bearing strata.

A reconnaissance program completed in 1984 studied these units and determined them to have been deposited under alluvial fan to alluvial floodplain environments. While some coaly material and plant fragments were observed, the proper sedimentary conditions for coal swamp formation were not observed and no coal occurrences of economic value were discovered.

It is concluded that this portion of the Tyaughton Trough contains no economic coal deposits and that it is unlikely that other areas within this basin would. No further investigation is recommended for the immediate area.

INTRODUCTION

During 1984, a reconnaissance mapping program was conducted within the project area (92 0) known as Chilcotin (Figure 1). This program was conducted to follow-up the conclusions and recommendations drawn from a similar program in 1983 and to address the feasibility of a continued search for coal within this tectono-stratigraphic region.

The purpose of the 1984 program was to investigate a particular stratigraphic unit, Division A, of the Jackass Mountain Group which was identified to have good potential for coal-bearing sediments. In addition, the sedimentary sequences of the overlying Kingsvale Group were to be investigated as possible coal bearing units.

The program was allotted a six week time period from May 25 to July 10 with two Esso geologists completing the necessary coverage. Short term assistance was also given by two other geologists on an intermittent basis.

A budgetary figure of \$105,000 was allocated for use on the Chilcotin and Nechako projects. An estimated \$55 k was utilized within the parameters of completion of this portion of the project. A list of expenditures is shown in Appendix 4.

Figure 1

CHILCOTIN RECONNAISSANCE AREA 1984



REGIONAL GEOLOGY

The Chilcotin project area is located in a Jurassic - Cretaceous depositional basin known as the Tyaughton Trough. The Tyaughton Trough is bounded on the west by the Coast Geanticline, on the north and east by the Hinterland Belt including the Pinchi Geanticline and the southern portion of the Nechako Trough (Figure 2). Sedimentary accumulations are estimated to be 10 thousand metres.

During the Middle Jurassic development of the Tyaughton Trough was initiated. Marine sediments of the Relay Mountain Group were deposited during the Upper Jurassic and Lower Cretaceous periods. During the Lower Cretaceous, this basin was uplifted creating a shift of the depositional trough eastward. Marine sediments of the Taylor Creek Group and non-marine sediments of the Jackass Mountain Group were then deposited in this residual low or successor basin. Continued uplift and transcurrent movement allowed for increased basinal development with increased sedimentation. As uplift through the Lower Cretaceous persisted, the Tyaughton Trough became increasingly non-marine in character with withdrawal of the marine sequence probably to the south and west.

The primary sedimentary sequences of the Tyaughton Trough which have been studied include the Jackass Mountain Group and the Kingsvale Group and represent the non-marine depositional sequences.

The study area is complicated by igneous activity and post depositional faulting. At least five period of plutonic activity and six periods of volcanic activity have occurred during and after deposition. A complex faulting series has also occurred in conjunction with these periods of igneous activity or as completely separate events relating to major structural events of the Cordillera. Discussion of these events is covered more thoroughly in the 1983 reconnaissance report (Hopkins).

RECONNAISSANCE APPROACH

The 1984 reconnaissance program consisted of geological mapping of five (5) target areas using ground crew mapping techniques and one (1) area by aerial reconnaissance methods.

The target areas included three (3) areas underlain by sediments of the Jackass Mountain Group Division A and three (3) areas underlain by Kingsvale Group sediments. Target areas 1 through 5 are outlined on Figure 3 while the aerial reconnaissance area six (6) is shown in Figure 4.

To adequately cover the areas and complete the geological mapping two methods of approach were used. The first consisted of establishing a field camp within the target area and running daily traverses from these centers. Two campsites were utilized to cover target areas 1, 4 and 5. The location of these camps are on Dash Creek and Nicodemus Creek and are shown on Figure 3.

The remainder of the areas were covered by daily set out and pickup from Lilloet via helicopter. This method covered areas 1, 2 and 3.

Geological information was recorded in field notebooks and pertinent data was manipulated to provide answers to the theories put forward. The results of the fieldwork is included in the appropriate Appendices 1 and 5 and the subsequent interpretations and conclusions compiled within the main body of the report. The geology is plotted at 1:50,000 scale maps found in Appendix 7.

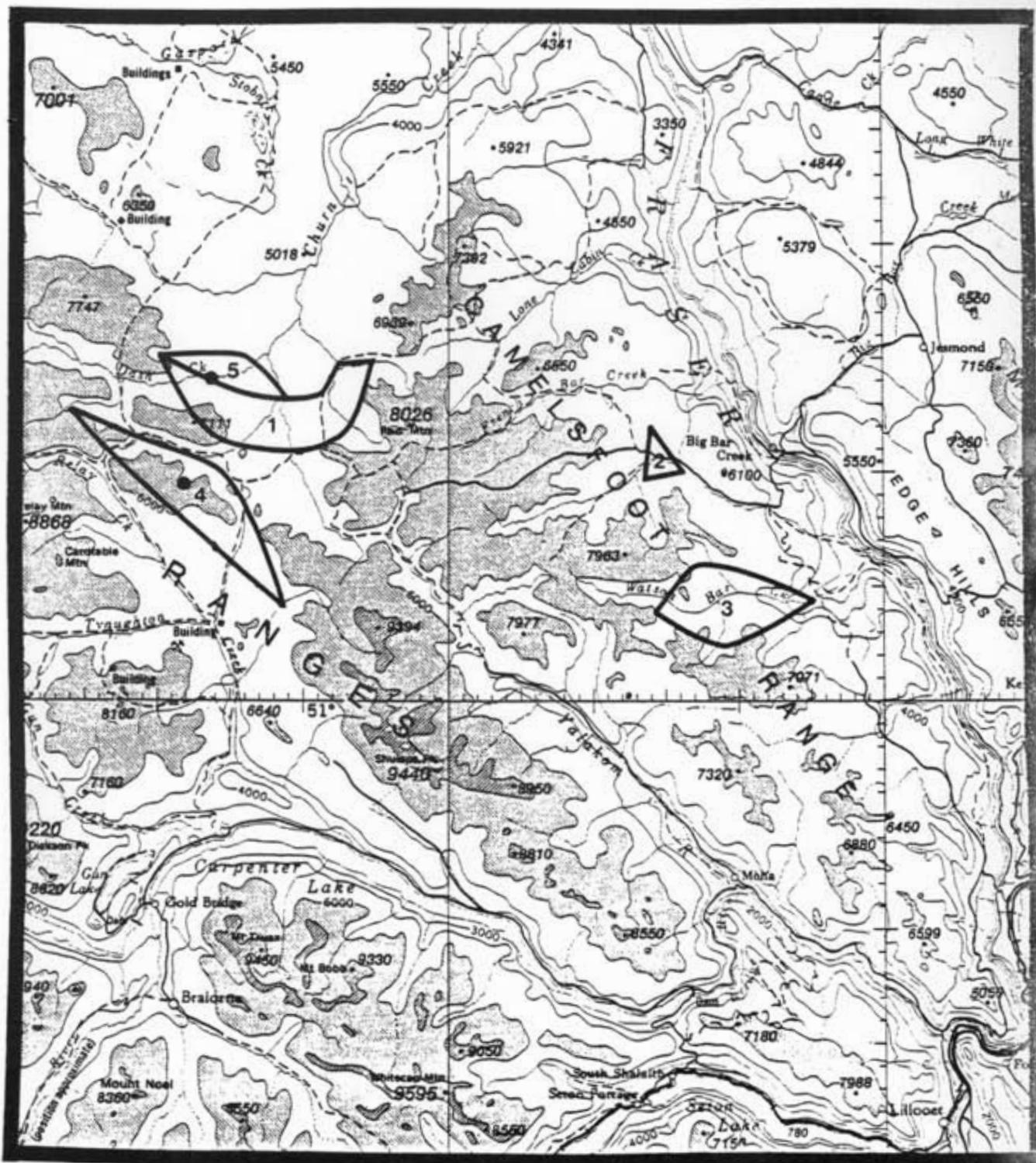


FIGURE 3. TARGET AREAS FOR CHILCOTIN RECONNAISSANCE

1 : 500 000

TARGET AREA 1 DIVISION A OF JACKASS MOUNTAIN GROUP

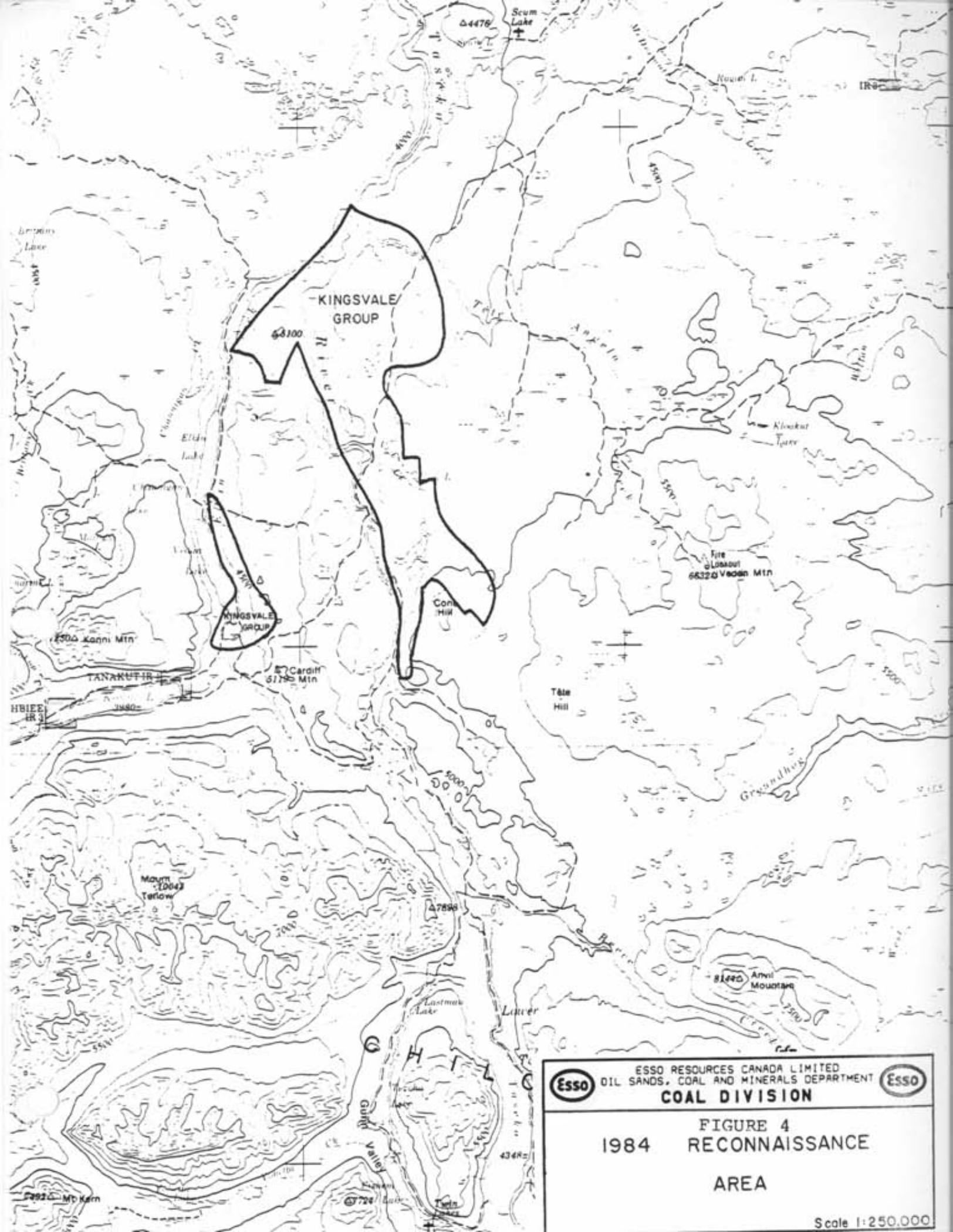
● CAMP

TARGET AREA 2 DIVISION A OF JACKASS MOUNTAIN GROUP

TARGET AREA 3 DIVISION A OF JACKASS MOUNTAIN GROUP

TARGET AREA 4 SEDIMENTARY ROCKS OF KINGVALE GROUP

TARGET AREA 5 SEDIMENTARY ROCKS OF KINGVALE GROUP




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FIGURE 4
1984 **RECONNAISSANCE**
AREA

Scale 1:250,000

STRATIGRAPHY

The regional stratigraphy has been studied previously by the Geological Survey of Canada. A wide variety of rock descriptions have been placed on the various sequences. The two most commonly used are i) Duffell and McTaggart, 1952 and ii) Jeletzky and Tipper, 1967 shown in Figure 5 and 6 respectively.

The general stratigraphy of the Jackass Mountain Group has been described in detail by Hopkins (1983 report) and will not be covered in detail here. It had been concluded that the Jackass Mountain Group Division A was the most likely candidate to hold coal bearing sequences and thus the focal point of exploration.

Jackass Mountain Group - Division A

The lithologies of Division A were described during the 1983 reconnaissance and included "alternating beds of fine to medium grained carbonaceous litharenite, dark carbonaceous siltstone and carbonaceous shale. Large pieces of carbonaceous wood and high concentrations of plant fragments occur in abundance" (Hopkins, 1983).

The overall thickness of the Jackass Mountain Group Division A was estimated at 1200 metres. Less than 5% of the unit was investigated in 1983 due to concentration on the overlying members. Representative sections of the remainder of the stratigraphic column were investigated within three target areas.

Lithologies of the Jackass Mountain Division A within these areas are consistent with 1983 descriptions. They include fine to coarse grained sandstone, dark grey siltstone and dark grey shale. Small coaly stringers and abundant plant fossils were observed throughout while locally pebble conglomerate (chert and volcanic fragments) were found. Details of lithologies found in specific target areas are listed in Appendix 1 and a typical stratigraphic column found in Appendix 2.

FIGURE 5 TABLE OF FORMATIONS I

ERA	PERIOD OR EPOCH	FORMATION	LITHOLOGY
		NOT IN CONTACT	
			ANDESITE, BASALT, AGGLOMERATE, TUFF, BRECCIA
		KINGSVALE GROUP	CONFORMITY
			ARKOSE, GREYWACKE, SHALE, AND CONGLOMERATE
			UNCONFORMITY
		SPENCES BRIDGE GROUP	ANDESITE, DACITE, BASALT, RHYOLITE, TUFF, BRECCIA, AGGLOMERATE, CONGOLMERATE, SANDSTONE, GREYWACKE, AND ARKOSE
		FAULT CONTACT WITH SPENCES BRIDGE GROUP; OVERLAIN UNCONFORMABLY BY EOCENE SEDIMENTARY AND VOLANIC ROCKS	
			DIVISION C : CONGLOMERATE, GREYWACKE, AND ARGILLITE
		JACKASS MOUNTAIN GROUP	DIVISION B : GREYWACKE, ARGILLITE, ARKOSE, AND CONGLOMERATE
			DIVISION A : ARKOSE GREYWACKE, ARGILLITE AND CONGLOMERATE
		FAULT CONTACT	

MESOZOIC

LOWER CRETACEOUS

(DUFFELL AND McTAGGART, 1952)

FIGURE 6

TABLE OF FORMATIONS II

SYSTEM AND SERIES	STAGE	FORMATION	LITHOLOGY	THICKNESS (METERS)		
CRETACEOUS	UPPER CRETACEOUS	KINGSVALE GROUP	DIVISION D	ANDESITIC AND BASALTIC TUFFS AND BRECCIAS	1220 m+	
			DIVISION C	VOLCANIC CONGLOMERATE, GREYWACKE, SHALE AND CONGLOMERATE	61 m- 183 m+	
			DIVISION B	ANDESITIC AND BASALTIC TUFFS AND BRECCIAS, MINOR LAVAS	1830 m+	
			DIVISION A	PEBBLE AND COBBLE CONGLOMERATE, GREYWACKE, SHALE, SILTSTONE	1650 m+	
			?	?		
	LOWER CRETACEOUS	UPPER (?) MIDDLE	TAYLOR CREEK GROUP	CHERT PEBBLE CONGLOMERATE, BLACK BANDED LIMY SHALE, GREEN TUFFS, VOLCANIC BRECCIAS, ANDESITE AND BASALT	3230 m+	
		AND				
		?	?			
		LOWER ALBIAN	JACKASS MOUNTAIN GP.	DIVISION C	GREYWACKE, SHALE, THIN PODS AND LENSES OF CONGLOMERATE, ARKOSE	2440 m+
		APTIAN		FRENCH BAR FORMATION (DIVISION B)	BOULDER CONGLOMERATE, MINOR LENSES OF PEBBLE AND COBBLE CONGLOMERATE, GREYWACKE, ARKOSE	610 m- 915 m+
			GREYWACKE, SHALE, THIN BEDS OF CONGLOMERATE SIMILAR TO DIVISION C	1220 m+		
PROBABLE MAJOR UNCONFORMITY WITH JACKASS MOUNTAIN GROUP; POSSIBLE DISCONFORMABLE RELATION WITH TAYLOR CREEK GROUP						
RELAY MOUNTAIN GROUP						
(JELETZKY AND TIPPER, 1						

Jackass Mountain Group - Division B

Lithologies of the Jackass Mountain Group Division B were recognized within target area 2 at South French Bar Creek. This unit included cobble conglomerate with well rounded granitic cobbles and a coarse grained sandstone matrix. Sandstone lenses were present and are described as coarse grained poorly sorted medium to light grey sandstone. Interbedded with the conglomerate as medium grained sandstone that was poorly sorted with angular clast characteristics. This lithological description is consistent with sections observed in 1983 and with previously documented descriptions by the G.S.C. and referred to as the French Bar Formation (Jeletzky & Tipper, 1967). Photographs of Division A and B sediments are shown in Plates 1 to 7 in Appendix 6.

Kingsvale Group

Rice (1948) described the Kingsvale Group as a series of younger volcanic rocks resting unconformably above the Spences Bridge Group with a sedimentary zone at its base. Fossil plant remains were collected near a railway station known as Kingsvale.

Duffell and McTaggart (1952) described the Kingsvale Group sediments in the Ashcroft area as "buff to green arkose and grit, soft dark mudstone, grey to greenish grey conglomerate containing pebbles of granite and Nicola Group rocks and hard, dark, thin bedded argillite".

Roddick and Hutchison (1973) in the Pemberton area described the sediments as "thin to medium bedded shale and lesser amounts of sandstone, arkose and conglomerate". The conglomerate consists mainly of chert and volcanic fragments.

In the Taseko Lake map area Jeletzky and Tipper (1967) estimated the Kingsvale Group to be greater than 4500 metres thick and subdivided it into 4 mappable units.

Division A - interbedded buff to greenish grey greywacke, coarse to fine chert and volcanic pebble conglomerate, siltstone and soft dark grey shale. Wood fragments and plant remains are abundant.

Division B - andesitic and basaltic tuffs and breccias, minor lavas.

Division C - volcanic pebble and cobble conglomerate, greywacke and shale.

Division D - andesitic and basaltic tuffs and breccias.

During the 1984 program, three areas of the Kingsvale Group were investigated. Target areas 4 and 5 were mapped by ground methods while an area north Taseko Lake (Figure 4) and south of Scum Lake was completed by aerial methods.

Lithologies described in Target Area 4 (Nicodemas Creek) consisted of chert and volcanic pebble conglomerate, very fine to medium grained sandstone, dark green to grey siltstone and dark grey shale. Plant fossils were found in the very fine grained sandstone. Occasional interbeds of andesite were noted. The described lithologies indicate that this would be Kingsvale Group Division A.

Lithologies described in Target Area 5 (Dash Creek) include volcanic cobble conglomerate and very fine grained to coarse grained sandstone. Minor calcite veining was noted. No plant fossils or carbonaceous material was reported. The described lithologies are indicative of the Division C sediments of the Kingsvale Group. A stratigraphic section of this area illustrates the sedimentary relationships (Appendix 2).

Lithologies observed in aerial reconnaissance north of Taseko Lake consisted mainly of interbedded units of brown to buff sandstone and grey siltstone with pods of pebble conglomerate and thin interbeds of shale. This section likely represents Division A of the Kingsvale Group. Some inhouse slides are available to view this area. Photographs of the various target area lithologies are shown in Plates 9 and 10 in Appendix 6.

DEPOSITIONAL ENVIRONMENT
JACKASS MOUNTAIN GROUP

The overall depositional environment interpreted for the Jackass Mountain Group is that of cyclic sequences of alluvial fan to alluvial plain transition. These sequences are the result of erosion of areas of probable repetitive uplift or relative relief change created by syndepositional movement along the fault margin of the Fraser Fault system (Figure 7).

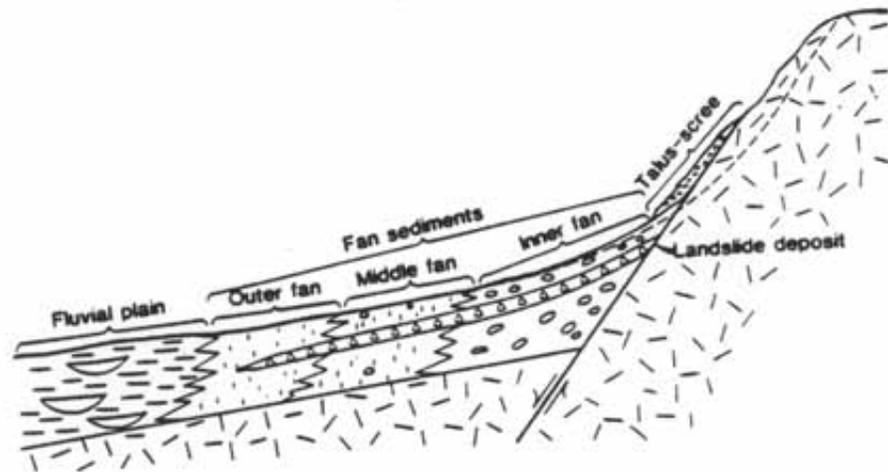
The processes involved for this mode of occurrence have been called Scarp Retreat and Lowering of Relief and Response to Tectonic Uplift (Nilsen 1982). The scenarios are illustrated in Figure 8.

DIVISION A

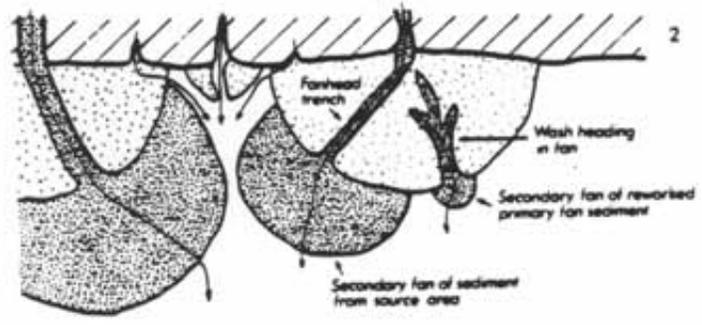
The lithologic features combined with the sedimentary descriptions given for the intervals within Division A generally conform to sediments of a distal alluvial fan sequence. The interbedded nature of siltstone and variable grainsized sandstone coupled with minor conglomerate, carbonaceous shale and plant fossil occurrences suggest alluvial flood plain with sheet like deposits of finer to coarser material deposited at various stages of *flow regime* level or depositional gradient. The sedimentary scenario is likely similar to the Scarp Retreat and Lowering of Relief model shown in Figure 8.

DIVISION B

The lithologies of Division B consist of well rounded granitic cobble conglomerate with a coarse grained sandstone matrix with interbedded medium grained sandstone lenses. There were no recognizable sedimentary structures and the sorting of the material suggests indistinct graded bedding.



2km

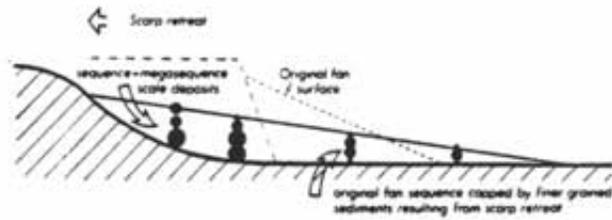



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Plan and cross-sectional views showing relationship of alluvial fan deposits to adjacent facies.

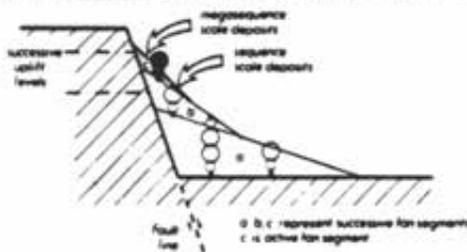
(T.H. Nilsen - 1982) Figure 7

Scarp Retreat and Lowering of Relief

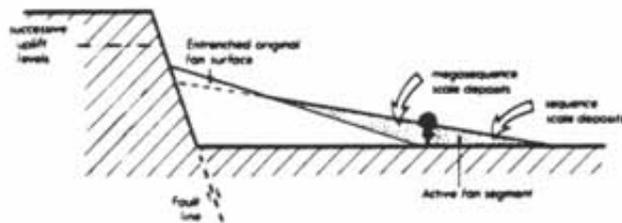


eg. represent progressive increase and decrease in grain size, bed thickness and possibly attendant changes in fan processes (the latter particularly applying to megasequences)

Response to Tectonic Uplift : relative uplift exceeds rate of stream dissection



Response to Tectonic Uplift : prolonged entrenchment (Table 4) as stream dissection exceeds rate of relative uplift



eg. represent progressive increase and decrease in grain size, bed thickness and possibly attendant changes in fan processes (the latter particularly applying to megasequences)

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<p>EXAMPLES OF ALLUVIAL FAN SETTINGS WITH TYPES OF VERTICAL SEQUENCES</p>
(T.H.Nilsen, 1982) Figure 8

The rounding of the cobbles indicate transport of the clasts but due to the expected moderate competency of the granitic material and cobble-size clasts the distance from source area is not likely too great. Therefore, it is concluded that Division B represents an alluvial fan conglomerate with probable occurrence of this area in the lower portion of the inner alluvial fan (Figure 7).

The mode of occurrence of this unit is illustrated in Figure 8 using the Response to Tectonic Uplift model. Repeated conglomeratic sequences in the section above the Division B unit may represent minor pulses in uplift or changes in fluvial environments on the alluvial plain.

Typical stratigraphic sections displaying the sedimentary relationship from the base of Division A to the top of Division C illustrates the overall sedimentary history (Figure 9). This tectono-depositional model is applicable in much of the successor basins formed during genesis of the Tyaughton Trough. A comparison between models of alluvial fan sequences in the Chilcotin prospect area and those from La Magdalena Basin - coal field succession of northern Spain are shown in Figure 9.

KINGSVALE GROUP

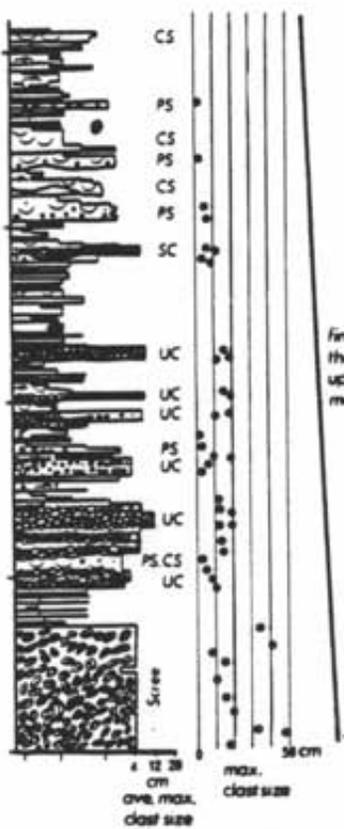
The depositional environment of the sediments of the Kingsvale Group are somewhat similar to the underlying Jackass Mountain Group. Because tectonic activity along the eastern flank of the Tyaughton Trough fault zones persisted into the Cretaceous a somewhat complex geological scenario was developed. Volcanism was prevalent and although probably contemporaneous with fault movement may have had periods without faulting. Nonetheless, the overall Kingsvale Group is an interbedded sedimentary and volcanic sequence which was deposited during this period. The Kingsvale Group has been divided into four units of which Division A and C, both sedimentary, have been previously described. A depositional environment interpretation has been made for each sedimentary Division A and C.

VERTICAL SEQUENCE OF COARSE GRAINED SEDIMENT TYPES

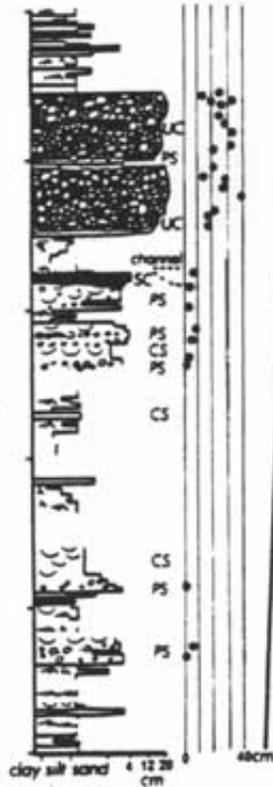
La MAGDALENA BASIN

↑ increasing distally
 CS Cross-bedded sandstone
 PS Pebbly sandstone
 SC Stratified conglomerate
 UC Unstratified conglomerate

↑ increasing proximally
 UC Unstratified conglomerate
 SC Stratified conglomerate
 PS Pebbly sandstone
 CS Cross-bedded sandstone

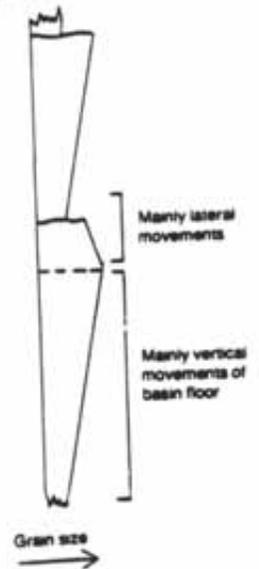


fining and thinning upward megasequence



coarsening and thickening upward megasequence

MAJOR BASIN-FILL INCREMENTS, COARSENING-UPWARDS & OFFSET STACKED



(T.H. NILSEN / 82)

JACKASS MOUNTAIN GROUP / KINGSVALE GROUP VERTICAL SEQUENCE

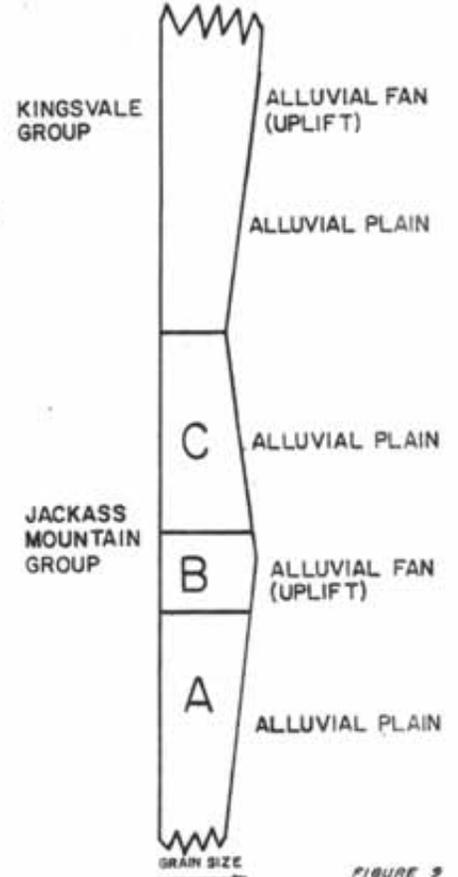
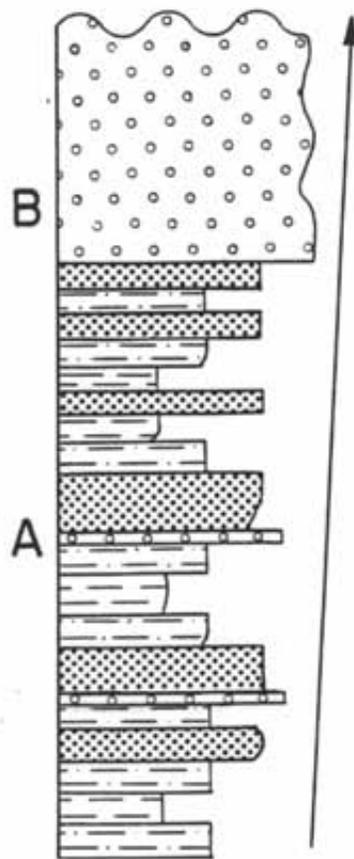
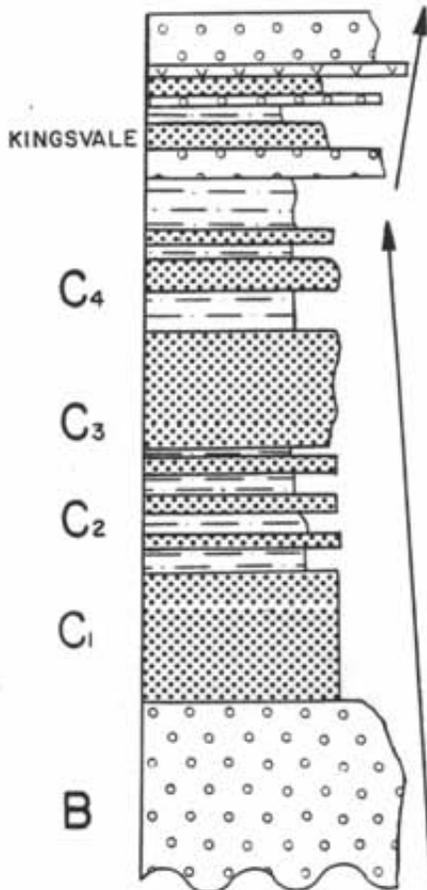


FIGURE 9

DIVISION A

The lithologies previously described in Target area 4 (Nicodemas Creek) have been assigned to Division A of the Kingsvale Group. The sediments described indicate a probable fluvial floodplain depositional environment based on the variety of sediments and presence of plant material. Pebble conglomerates and fine to medium grained sandstone probably represent channel and crevasse splay deposits while dark green to grey siltstone and dark grey shale indicate overbank and back swamp deposits. Minor intercalation of andesite indicate periodic volcanism which likely were the precursors of Division B, a volcanic unit.

DIVISION C

Lithologies previously described in Target area 5 (Dash Creek) have been assigned to Division C of the Kingsvale Group. The lithologies consist of predominately volcanic cobble conglomerate with very fine to coarse grained sandstone. These sediments likely represent alluvial fan deposits along the flanks of the topographic highs created by the volcanic emergence. The grain size of the clasts and apparent lack of sorting would indicate these occurrences would likely be in the inner to middle fan sequence (Figure 7).

TASEKO LAKE SECTION

The target area north of Taseko Lake consisted mainly of similar lithologies to Division A and were judged to be dominately fluvial with channels and floodplain sediments fairly wide spread. Photographs of the units are illustrated in Plates 9 and 10 in Appendix 6.

SUMMATION

Because the type section has described sediments of both A and C to be separate units it is probable that A is a distal unit and would have an alluvial fan with similar characteristic to C in its proximal stage. Therefore, it is logical to conclude that Division C, a proximal alluvial fan sequence, had a distal equivalent similar to Division A. Should this be the case, at least 2 periods of uplift and deposition could be recognized within the Kingsvale Group.

COAL GEOLOGY

COAL DEPOSITION

Based upon the presence of plant fossils and thin coaly intervals, it would appear that while some flora assemblages existed at that time, the proper conditions for coal swamp accumulation in these identified portions of the prospect and did not exist. The determining factors could be:

- 1) unsuitable climate.
- 2) unstable depositional basin with likely high variable conditions.
- 3) lack of established widespread depositional areas i.e. back swamp or blanket/paralic bogs due to tectonic instability.

Coal could occur within either section of the Jackass Mountain and Kingsvale Groups if the above conditions were met but evidence from the representative areas and reports on the sediments in other areas by various authors don't support this possibility.

COAL QUALITY

Coal samples taken from the Chilcotin prospect were analyzed at Loring Laboratories. The coal is classified as a sub-bituminous 'C' coal* with the following quality analysis. Additional copy of this analysis is shown in Appendix 3.

AIR DRIED BASIS

H ₂ O Percent	2.67
Ash Percent	58.99
Volatile Matter Percent	20.01
Fixed Carbon Percent	18.2
Sulphur Percent	0.13
Calorific Value (BTU/lb)	3522
Equilibrium H ₂ O Percent	7.6
Specific Gravity	1.91

*A.S.T.M. mmmf Heating Value 8615 BTU/lb.

CONCLUSION

The sediments of the Jackass Mountain Group and the Kingsvale Group were interpreted to be alluvial fan to floodplain sediments which were deposited along a scarp created by tectonic activity in the Tyaughton Trough during Jurassic and Cretaceous time. The sediments represented an area where the overall energy of the flow regime and the unstable nature of the basin prevented proper conditions for coal swamp accumulation. Small coal and coaly sediment occurrences were located within these sediments but show no continuity or value as an economic resource. It is therefore concluded that coal is unlikely to be found in this area and based on our work to date further work is not recommended.

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APPENDIX 4

LIST OF EXPENDITURES

The 1984 budgetary figures included a sum of \$105,000 for reconnaissance in the Chilcotin - Nechako project areas. An allocation of funds to the Chilcotin project consisted of \$55,000. The cost to complete the proposed program was tabulated to be \$55,106.56. A cost breakdown is provided below:

	\$
Helicopter	20,698.00
Helicopter Fuel	3,166.46
Accommodation	1,262.04
Subsistence	1,507.96
Truck Rental	1,880.00
Fuel	403.81
Field Purchases	538.29
Salaries and Administration	<u>25,650.00</u>
	55,106.56

RECONNAISSANCE RESULTS

Dash Creek (west of camp)

Target Area #1

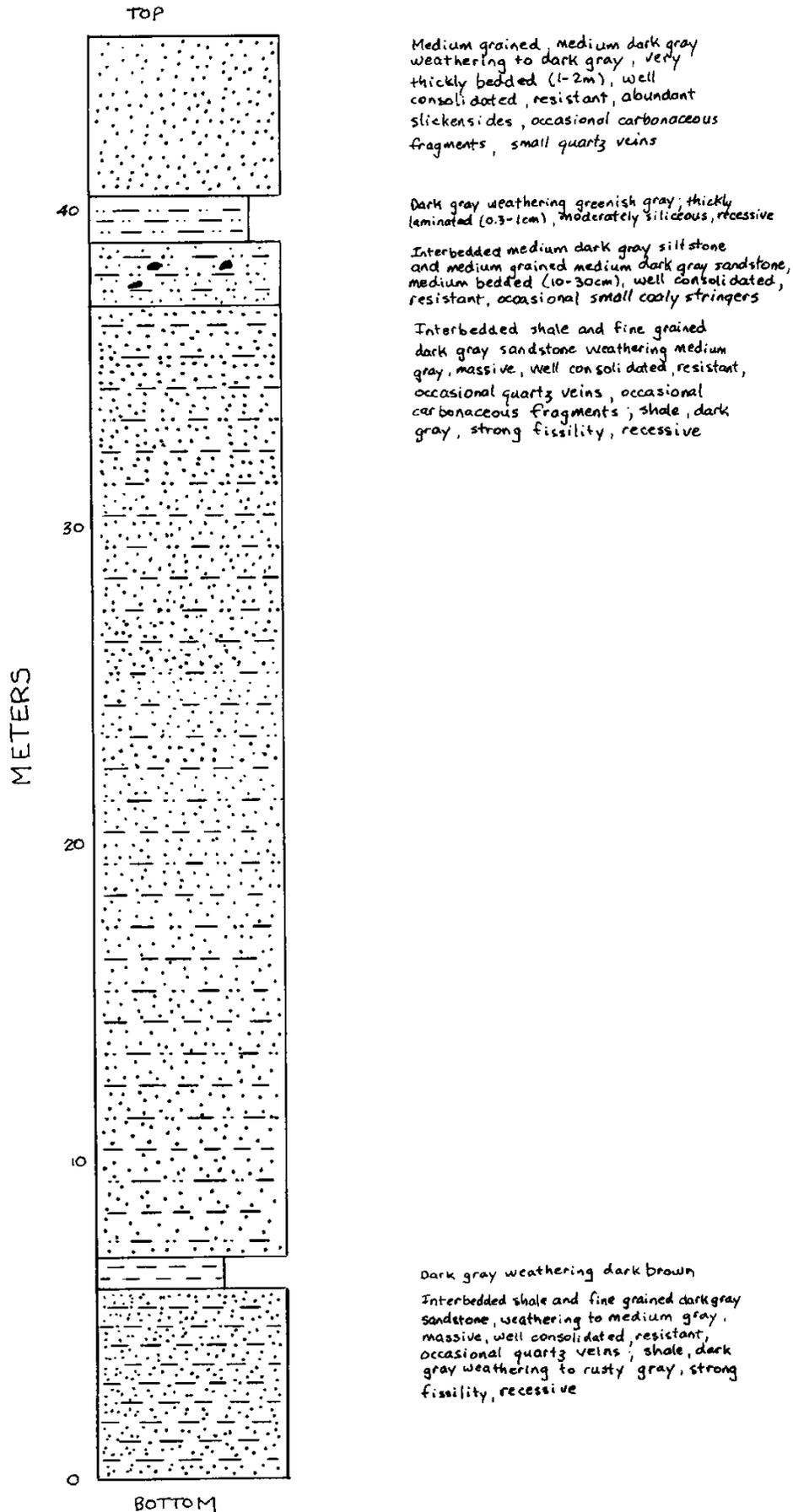
- abundant plant fossils
- small coaly stringers
- seven ^{different} ~~main~~ lithologies
 - 1 medium grained sandstone, medium green weathering green gray, well consolidated, resistant, very ~~thickly~~ ^{thinly} bedded (1-2m), occasional carbonaceous fragments, rare quartz veining, occasional slickensides
 - 2 siltstone, dark gray weathering light gray, very thinly bedded (1-3cm), recessive, extreme fracturing, moderately siliceous
 - 3 fine grained sandstone, light greenish gray weathering brownish gray, no visible bedding plane, well consolidated, extreme fracturing, slightly resistant
 - 4 coarse grained sandstone, medium green weathering green gray, well consolidated, resistant, very thickly bedded (1-2m)
 - 5 medium grained sandstone, light gray salt and pepper weathering light green salt and pepper, no visible bedding plane, well consolidated, badly fractured, resistant, siliceous, rare coaly stringers
 - 6 medium grained sandstone, light gray green weathering light green, medium bedded (10-30 cm), well consolidated, resistant, occasional small coaly stringers

- a small coal seam was found (paleosample taken)
BB 84008, analysis to follow.
- fly camp was located on one of the arm of the Hungry Valley Fault (it is a thrust fault)
- the main stratigraphic column was created from the data collected from this area
- the main lithology in this area was found to be a very thickly bedded to massive medium grained sandstone (#1) with six other different lithologies

Conclusion

Dash Creek was considered to be the most promising area for coal deposition but only a small seam was found.

STRATIGRAPHIC COLUMN
OUTCROP BB 84008



Churn Creek

Target Area 1

- abundant plant fossils
- eight main lithologies
 - 1 medium grained sandstone , pale brown weathering to buff colour, angular , poorly sorted , resistant , massive
 - 2 fine grained sandstone , greenish gray weathering yellow gray, angular , poorly sorted , recessive , thinly bedded (3-10cm)
 - 3 fine grained sandstone , blue gray weathering medium gray angular , poorly sorted , resistant , thickly bedded (40 to 60cm) abundant plant fossils
 - 4 medium grained sandstone , medium dark gray weathering olive gray , angular , poorly sorted , resistant , medium bedded (30-100cm.) abundant plant fossils
 - 5 coarse grained sandstone , tan weathering light brown, subrounded , poorly sorted , resistant , siliceous
 - 6 siltstone , dark gray weathering medium dark gray , recessive, thinly laminated (20-30cm).
 - 7 very fine grained sandstone , greenish gray weathering medium gray , angular , poorly sorted , recessive , thinly laminated (0.2cm) , abundant quartz veining
 - 8 pebble conglomerate , clast range (20-10cm) , well rounded , volcanic and chert pebbles , fine grained sandstone matrix ,

green grey weathering to dark grey, massive, resistant, clast supported

- well preserved plant fossils (sample taken)

Conclusion

- The topography in this area is very flat so a creek which runs through the middle of the target area was chosen. Churn Creek showed early signs of favourable conditions (plant fossils) but no coal seams were found. However, it did show a wide variety of different lithologies which are indicative of Division A

Creek west of Red Mountain

Target Area 1

- strike consistent ~ 30° dip 90°
- plant fossils
- Six main lithologies
 - 1 medium grained sandstone, olive gray weathering to medium light gray, angular, poorly sorted, well consolidated, thickly bedded. (30-40cm)
 - 2 pebble conglomerate, clast range (2 to 6cm), well rounded, volcanic and chert pebbles, coarse grain sandstone matrix, medium gray weathering medium dark gray, massive bedding, very resistant, matrix supported
 - 3 medium grained sandstone, medium dark gray weathering medium light gray, angular, poorly sorted, resistant, very thickly bedded (1-2m)
 - 4 medium grained sandstone, greenish gray weathering light brown, angular, poorly sorted, resistant, very thickly bedded (1-2m)
 - 5 Coarse grained sandstone, greenish gray weathering medium light gray, subrounded, poorly sorted, resistant, very thickly bedded (1-2m)
 - 6 Very fine grained sandstone, blue gray weathering medium light gray, poorly sorted, recessive, badly sheared, very thinly bedded (1-3cm.)

? shale, dark gray weathering dark brown, thinly bedded (1-4cm), recessive, strong fissility, small blocky talus fragments

Conclusion

- the swing in strike within target area from (E-W to NE-SW) indicate this creek to have similar qualities to Churn Creek. Wide range of lithologies and plant fossils were found but no coal seams.

South French Bar Creek

Target Area 2

- strike consistent $\sim 190^\circ$ dip $12-34^\circ$
- Two main lithologies
 - 1. cobble conglomerate, clast range (10 to 15cm) well rounded, granitic cobbles, coarse grained sandstone matrix, green gray weathering medium gray, massive, siliceous, very resistant, matrix supported (sandstone lense; medium light gray weathering light gray, coarse grained, subangular, poorly sorted, medium bedded (10 to 30cm), recessive, very crumbly irregular fragments)
 - 2. medium grained sandstone, greenish gray weathering to medium gray, angular, poorly sorted, moderately resistant, medium bedded (20-30cm.)

Conclusion

- the existence of granitic cobble conglomerate indicate this area to be more Division B than Division A
- the dips were more shallower than originally though which indicate Division A to be more east of this target area.

Watson Bar (south side) Target Area 3 Creek

- strike consistent ~ 225° dip 12°
- the creek generally followed the strike
- Four ^{different} main lithologies
 - 1 medium grained sandstone , greenish gray weathering to buff colour , angular , poorly sorted , resistant , massive no bedding planes , badly fractured
 - 2 siltstone , dark gray weathering medium dark gray , recessive , rusty weathering , very thinly bedded (1-3cm)
In this sequence it is interbedded with lithology no. 1
 - 3 very fine grained sandstone , olive gray weathering greenish gray , angular , poorly sorted , resistant , badly fractured , massive , no bedding planes
 - 4 very fine grained sandstone , light gray weathering to tan colour , resistant , massive , angular , poorly sorted , no bedding planes
- no evidence of coal or plant fossils
- walked down Red Creek which runs into Watson Bar Creek

Conclusions

- massive medium grained sandstone (#1) were generally found on each sides of the creek
- no signs to indicate coal deposition

Watson Bar (north side) Target Area 3
Creek

- strike consistent $\sim 235^\circ$ dip 35°
- Three main lithologies
 - 1 medium grained sandstone, greenish gray weathering olive gray angular, poorly sorted, resistant, thickly bedded (40-60cm) siliceous, abundant calcite veining along bedding planes
 - 2 fine grained sandstone, brown weathering medium dark gray, angular, poorly sorted, resistant, thickly laminated (0.5-1cm)
 - 3 fine grained sandstone, greenish gray weathering olive gray, angular, poorly sorted, resistant, thinly bedded (5-8cm)

Conclusion

- Walked a ridge north of Watson Bar Creek
- More variety of lithologies were found than Red Creek.
- Rocks were more finer grained than those rocks found on Red Creek (Watson Bar Creek - south side)

KINGSVALE GROUP SEDIMENTS

- H. M. A. Rice (1948) in his study of Princeton map-area founded a series of younger volcanic rocks resting unconformably above the Spences Bridge Group with a sedimentary zone at its base
- fossil plant remains were collected
- To this group of rocks Rice assigned the name Kingsvale "after the railway station of Kingsvale near which the only good fossil locality found in the Princeton map-area occurs (p.25)."

The following is a summary of the description of the Kingsvale Group sediments

Arcroft map-area by S. Duffell and K.C. McTaggart

- Kingsvale Group sediments are described as "buff to green arkose and grit, soft dark mudstone, grey to greenish grey conglomerate containing pebbles of granite and Nicola group rocks, and hard, dark, thin-bedded argillite (p.51)."
- the sedimentary beds may be as much as 243 to 305 meters thick or may be missing
- they contain well preserved plant fossils including stem fragments and leaves

Pemberton map-area by J.A. Roddick and H.H. W.W. Hutchinson

- the sediments consist mainly of "thin to medium bedded shale and lesser amounts of sandstone, arkose and conglomerate (p.9)."
- the conglomerate consist mainly of chert and volcanic fragments

Taseko Lake map-area by J.A. Jeletzky and H.W. Tipper

- In this map-area, Kingsvale Group is found to be over 4500 meters thick and therefore it became necessary to subdivide it into four mappable units
- Division A is a sedimentary zone at the base of the group
- the sediments consist mainly of "interbedded buff to greenish grey greywacke, coarse to fine pebble conglomerate, siltstone and soft dark grey shale (p.60)."
- the conglomerate contain chert and volcanic pebbles
- Wood fragments, carbon and plant remains are abundant with excellent preservation.

Division B and D are mainly volcanic

Division C

- it consist mainly of conglomerate, greywacke and shale
- in this division "the conglomerate varies in colour from purple to brown, green and grey and is almost entirely volcanic pebbles and cobbles up to 20 cm. diameter and in places boulders up to 0.6 meters (p.62)."
- The divisions are thought to be late Albian to Late Cretaceous age

RECONNAISSANCE RESULTS

Nicodemas Creek

Target Area 4

- Kingsvale sediments
- Six main lithologies
Eight
 - 1 fine grained sandstone, medium red brown weathering brownish gray, poorly sorted, angular, moderately consolidated, recessive, medium bedded (10-30cm.)
 - 2 Pebble conglomerate (clast range 0.25-4cm), chert pebbles, poorly sorted, subangular, fine grained sandstone matrix, medium green gray weathering medium rusty brown, well consolidated, very siliceous, clast supported
 - 3 medium grained sandstone, medium green weathering rusty brown, poorly sorted, angular, well consolidated, siliceous, brittle, badly sheared
 - 4 very fine grained sandstone, medium green brown weathering medium green, poorly sorted, angular, well consolidated, siliceous, medium bedded (10-20cm)
 - 5 Pebble conglomerate, clast range (2-4cm), chert and volcanic pebbles, poorly sorted, angular, medium grained sandstone matrix, medium dark gray weathering medium gray, well consolidated, resistant, matrix supported, moderate graded bedding
 - 6 medium grained sandstone, light gray weathering olive gray, poorly sorted, angular, poorly consolidated, recessive, thin planar beds

2 shale gray weathering dark gray, poorly consolidated, strong fissility, small thread like talus fragments (1cm)

8 siltstone, dark green weathering greyish green, poorly sorted, poorly consolidated, recessive

- occasional plant fossils were found in a very fine grained sandstone
- volcanic layers of andesite are occasionally interspersed with sedimentary rocks

Conclusion

- Chert pebble conglomerate, occasional plant fossils, siltstone and other lithologies indicate this area to be Division A of the Kingsvale Group

Dash Creek (East of Camp)

Target Area #5

- Kingsvale sediments

- Five main lithologies:

1 medium grained sandstone, blue gray weathering to brownish gray, well consolidated, resistant, very thickly bedded (1-2m)

2 Cobble conglomerate, clast range (5-15cm), well rounded, volcanic cobbles, medium grained sandstone matrix, medium green weathering dark green, massive bedding, well consolidated, resistant, matrix supported

3 coarse grained sandstone sandstone, brownish gray weathering olive gray, well consolidated, resistant, very thickly bedded (1-3m)

4 medium grained sandstone, medium dark gray weathering to medium light gray, well consolidated, resistant, occasional calcite veining, very thickly bedded (1-3m), small irregular shaped talus fragments (2-3cm)

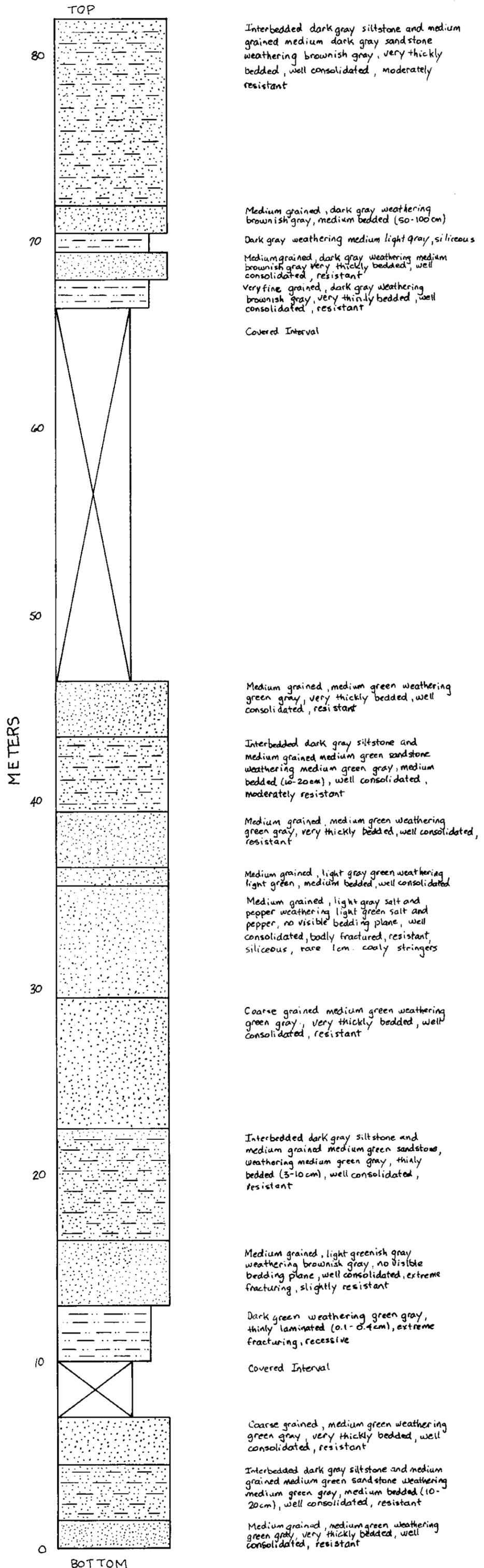
5 very fine grained sandstone, olive gray weathering to tan-buff, well consolidated, siliceous, resistant, rare calcite veining, rare convolute bedding

- no plant fossils or carbonaceous fragments

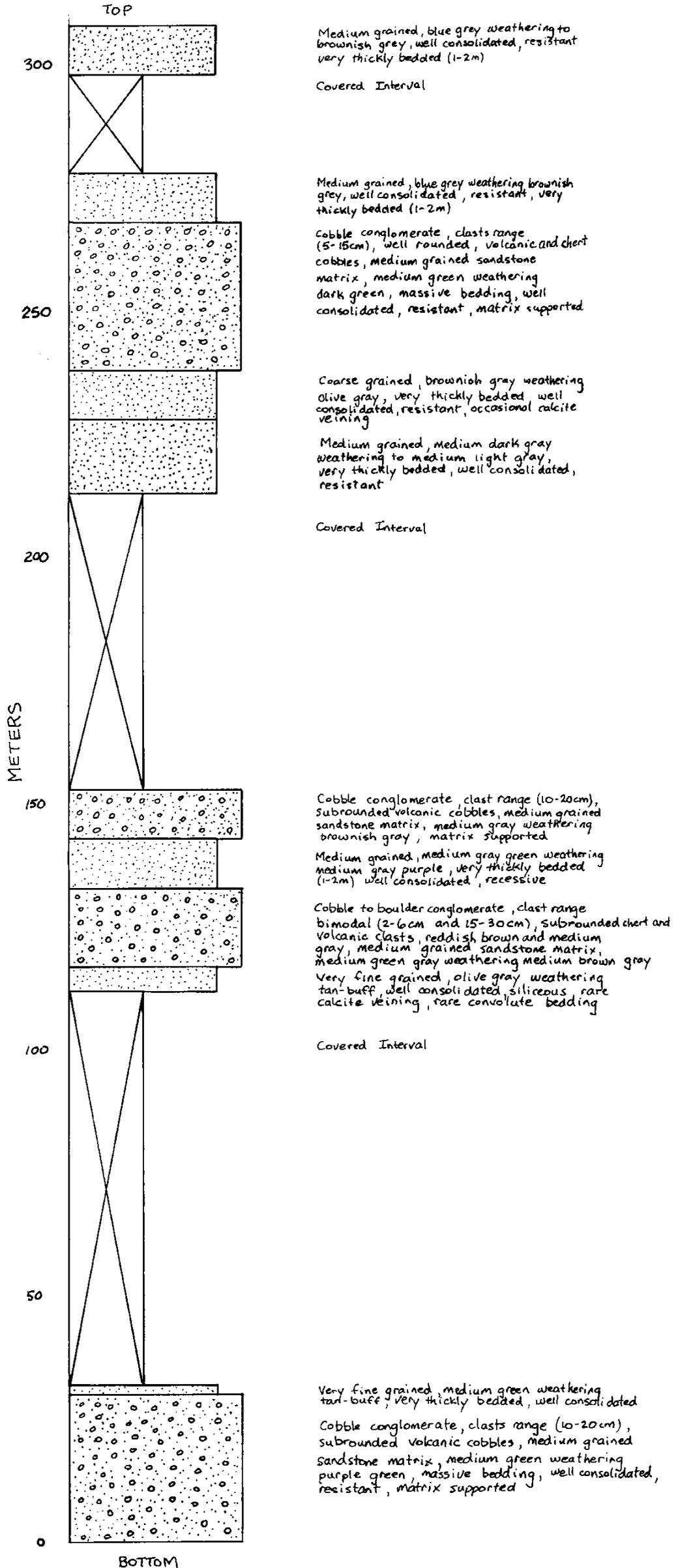
Conclusion

- volcanic cobble conglomerate of this area is very similar in description to the conglomerate of Division B of the Kingsvale Group.

GENERALIZED STRATIGRAPHIC COLUMN
JACKASS MOUNTAIN GROUP (DIVISION A)



GENERALIZED STRATIGRAPHIC COLUMN KINGSVALE GROUP



COMM QUALITY DATA

CHILCOTIN BB-84-008

CARD COLUMN:

LAB	LAB NUM	C	T	DATE		UNIT NAME	WT % OF TTL	WT % OF SCREENED		ID	
				M	YR			SINK	FLT		
	26888			09	84		100			B2	
20	22	27	28	29	31	33	40	44	48	52	71

BASIS A,R,D	PROXIMATE ANALYSIS					UNITS	UNITS=1=BTU/LB 2=CAL/GM 3=KJ/KG	ID
	MSTR	ASH	VOL MATTER	CALORIFIC CONTENT				
A	2.67	58.99	20.01	3522		1		B5
R	3.20							B5
D								B5
20	21	26	31	36	41	42		71

FREE SWELLING INDEX	GIESLER PLASTICITY				ID	
	SOFT (F)	FLUID (F)	SOLID (F)	MAX DDPH		
					B7	
20	23	28	33	38	41	71

BASIS A,R,D	SULFUR TYPES		SOLUBLE COAL ALKALIES				ID	
	PYRITIC	SULFATE	ACID		WATER			
			NA	K	NA	K		
A							B9	
R							B9	
D							B9	
20	21	26	31	36	41	46	51	71

FUSION TEMPERATURE (F)								ID	
REDUCING ATMOSPHERE				OXIDIZING ATMOSPHERE					
INIT	H=W	H=W/2	FLUID	INIT	H=W	H=W/2	FLUID		
								C1	
20	24	28	32	36	40	44	48	52	71

MINERAL ANALYSIS OF ASH							ID	
SIO	ALO	TIO	FEO	CAO	MGO	NAO		
								C3
20	25	30	35	40	45	50	55	71

PROS	HOLE	TOP (F/M)	BASE (F/M)	F/M	SCREEN SIZE (MM)		S. G. RANGE		ID	
					MAX	MIN	MIN	MAX		
01	04	12	19	26	27	32	37	41	4571	
20	24	28	32	36	40	44	48	52	56	71

SAMPLE NUMBERS									ID	
										B3
										B4
20	24	28	32	36	40	44	48	52	56	71

BASIS A,R,D	ULTIMATE ANALYSIS						ID	
	S %	C %	H %	N %	CL %	O %		
A	.13						B6	
R							B6	
D							B6	
20	21	26	31	36	41	46	51	71

HARDGROVE GRINDABILITY	EQUILIB MSTR	SURFACE MSTR	SPEC GRAV	ID		
					MSTR	
	7.6		1.91	B8		
20	25	30	35	40	45	71

ASH ALKALIDES WATER SOLUBLE	CO	T250	ASH CRITICAL VISCOCITY		ID		
			(F)	POISES			
NA	K				C2		
20	26	32	37	41	45	49	71

MINERAL ANALYSIS OF ASH				ID	
KO	PO	SO	UNOTR		
					C4
20	25	30	35	40	71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

APPENDIX 4

LIST OF EXPENDITURES

The 1984 budgetary figures included a sum of \$105,000 for reconnaissance in the Chilcotin - Nechako project areas. An allocation of funds to the Chilcotin project consisted of \$55,000. The cost to complete the proposed program was tabulated to be \$55,106.56. A cost breakdown is provided below:

	\$
Helicopter	20,698.00
Helicopter Fuel	3,166.46
Accommodation	1,262.04
Subsistence	1,507.96
Truck Rental	1,880.00
Fuel	403.81
Field Purchases	538.29
Salaries and Administration	<u>25,650.00</u>
	55,106.56

1971

1/1/1971

NOTES

STRATIGRAPHIC SECTION o/c BB84002 AND BB84003

LITHOLOGICAL UNIT :

MAP SHEET :

ELEVATION

U.T.M. COORDINATES : GRID ZONE

LOCATION :

BB84002 & BB84003

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
1	Litharenite (greywacke), medium grain, medium green weathering green grey; very thickly bedded, well consolidated, resistant, sharp contact with unit 2, abundant slickenslides, sharp irregular slab shaped fragments (3 to 5cm)	1.5 m	1.5m
2	Interbedded dark grey siltstone, very fine grained medium green litharenite (greywacke) and medium grained medium green litharenite (greywacke); weathering medium green grey, medium bedded (10 to 20 cm), well consolidated, resistant sharp contact with unit 3, occasional slickenslides	3 m	4.5

BB84002 & BB84003

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
3	Litharenite (grey wacke), medium grain, medium green weathering green grey; very thickly bedded, well consolidated, resistant, occasional slickensides, sharp irregular slab fragments (3 to 5cm)	2.5m	7.0
4	covered interval	3m	10m
5	siltstone, dark green, weathering dark green, thinly laminated (0.1 to 0.4cm), extreme fracturing, recessive, small (1 to 2cm) sharp cubey fragments	3m	13m
6	Litharenite (grey wacke), fine grained, light greenish grey weathering brownish grey; no visible bedding plane, well consolidated, extreme fracturing, slightly resistant, sharp contact with unit 5 sharp irregular spherical shaped fragments (2 to 3cm)	3.5m	16.5m
7	Interbedded dark grey siltstone and medium grained medium green litharenite (grey wacke), weathering medium green grey, thinly bedded (3 to 10cm), well consolidated, resistant, sharp slab and small cubey fragments (3 to 5cm)	6m	22.5m

BB84002 $\frac{1}{2}$ BB84003

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
8	Litharenite (greywacke), coarse grain, medium green weathering green grey; very thickly bedded, well consolidated, resistant, sharp irregular shaped slab fragments (3 to 5cm), cut by rare thinly bedded (2 to 5cm) siltstone beds	7m	27.5m
9.	Litharenite (greywacke), medium grain, light grey salt and pepper weathering light green salt and pepper, no visible bedding plane, well consolidated, badly fractured, resistant, siliceous, sharp contact with unit 8, rare 1cm coaly stringers	6m.	35.5m
10.	Litharenite (greywacke), medium grain, light grey green weathering light green medium bedded (10 to 30cm), well consolidated, resistant, 3 small (1 to 2cm) coal seams and 2 stringers, occasional calcite veins, badly fractured, coal stringers displaced by small strike slip faults, dextral movements, displacement 40cm.	1m.	36.5m
11.	Litharenite (greywacke), medium grain, medium green weathering green grey; very thickly bedded, well consolidated, resistant, sharp contact with unit 10, abundant slickensides sharp irregular slab shaped fragments (3 to 5cm).	3m.	39.5m

BB84002 & BB84003

36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
	12	Interbedded dark grey siltstone and medium grained medium green litharenite (greywacke) weathering medium green grey, medium bedded (10 to 20 cm), well consolidated, moderately resistant, sharp contact with unit 11, large irregular blocky fragments	4m	43.5m
	13	Litharenite (greywacke), medium grain, medium green weathering green grey, very thickly bedded, well consolidated, resistant, sharp contact with unit 11 sharp irregular slab shaped fragments (3 to 5cm)	3m	46.5m
	14	covered interval	20m	66.5m
	15	Siltstone, dark grey weathering medium light grey, very thinly bedded (1 to 3cm) moderately siliceous, moderately recessive, knife blade fragments	1.5m	68.0m
	16	Litharenite (greywacke), medium grain, dark grey weathering to brownish grey, very thickly bedded, well consolidated, resistant, sharp contact with unit 15, large irregular shaped slab fragments (3 to 5cm).	1.5m	69.5m

SUBJECT

BB84002 & BB84003

37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
UNIT	LITHOLOGY	THICKNESS	UNIT	METERS	TOTAL FROM	BASE																														
17	Siltstone, dark grey weathering medium light grey, very thinly bedded (1 to 3cm.), moderately siliceous, recessive, knife blade fragments.	1m		70.5m																																
18	Litharenite (greywacke), medium grain, dark grey weathering to brownish grey, medium bedded (50 to 100cm), well consolidated, resistant, large irregular shaped slab fragments (3 to 5cm.)	1.5m		72.0m																																
19	Interbedded dark grey siltstone and medium grained medium dark grey litharenite (greywacke) weathering brownish grey, very thickly bedded, well consolidated moderately resistant, sharp contact with unit 18, large irregular blocky fragments	10m		82.0m																																



5014
G.S.C.

STRATIGRAPHIC SECTION o/c H84005

LITHOLOGICAL UNIT :

MAP SHEET :

ELEVATION :

U.T.M. COORDINATES : GRID ZONE

LOCATION :

BB 84007

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
1	Litharenite (greywacke), medium grain, medium green weathering light brown grey, very thickly bedded, well consolidated		

STRATIGRAPHIC SECTION o/c BB84008

LITHOLOGICAL UNIT

MAP SHEET

ELEVATION

U.T.M. COORDINATES

LOCATION

BB84008

UNIT	LITHOLOGY	THICKNESS UNIT	METERS
			TOTAL FROM BASE
1	Litharenite (greywacke), medium grained, medium dark grey weathering to dark grey very thickly bedded, well consolidated, resistant, abundant slickensides, occasional carbonaceous fragments, Small quartz veining cutting across bedding plane, small irregular shaped fragments (2 to 3cm)	5m	45.5m
2	siltstone, dark grey weathering to greenish grey; thickly laminated (0.3 to 1cm), moderately siliceous, moderately recessive gradational upper contact, occasional coal stringers, small 1cm angular fragments	1.5m	40.5m

BB 84008

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
3	Interbedded dark grey to rusty grey shale, medium dark grey siltstone and medium grained medium dark grey litharenite (grey wacke), medium bedded (10 to 30 cm), well consolidated resistant, small irregular shaped fragments; siltstone is poorly consolidated recessive, small irregular shaped fragments (1 to 2 cm); shale shows strong fissility, irregular sharp fragments, occasional small coaly stringers.	2 m	39m
4.	Interbedded shale and fine grained dark grey litharenite (grey wacke) weathering to medium grey, massive, well consolidated resistant, occasional quartz veins, gradational lower contact with unit 5, sharp irregular shaped fragments (4 to 10 cm), occasional carbonaceous fragments; shale, dark grey, strong fissility, recessive	30m	37m
5	Shale, dark grey, weathering dark brown, thinly bedded (1 to 4 cm), recessive, strong fissility, small blocky fragments	1m	7m

BB84008

UNIT	LITHOLOGY	METERS	
		THICKNESS UNIT	TOTAL FROM BASE
6	Interbedded shale and fine grained dark grey litharenite weathering to medium grey, massive, well consolidated, resistant, occasional quartz veins, sharp irregular shaped fragments (4 to 10cm); shale, dark grey weathering to rusty grey, strong fissility, recessive	6m	6m



STRATIGRAPHIC SECTION O/C BB84004 AND H84004

LITHOLOGICAL UNIT:

MAP SHEET :

ELEVATION

U.T.M. COORDINATES : GRID ZONE

LOCATION :

BB84004 AND H84004

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
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<p>Interbedded black siltstone, fine grained very light brown litharenite (greywacke) weathering dark grey and rusty brown, finely laminated, well consolidated, moderately resistant, rare convolutes, extreme fracturing, occasional minute calcite veinlets</p>	<p>1m</p>
--	-----------

BB84004 $\frac{1}{2}$ H84004

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
	Litharenite (greywacke), coarse grain, medium green weathering light brown grey, very thickly bedded, well consolidated, resistant occasional scour surfaces, rare siltstone xenoliths (hard and soft), moderate fracturing, sharp contacts with unit above and below, irregular fragments (10cm)	2.5m	
	Interbedded black siltstone, fine grained very light brown litharenite (greywacke) weathering dark grey and rusty brown, finely laminated, well consolidated, moderately resistant, rare convolutes, extreme fracturing, occasional minute calcite veinlets	1m	
	Litharenite (greywacke), medium grain, medium green weathering light brown grey, very thickly bedded, well consolidated, resistant sharp contacts, irregular shaped fragments (5cm)	1.5 m	
	Interbedded medium dark grey siltstone, fine grained brown litharenite (greywacke) weathering rusty brown, very thinly bedded (1 to 3cm), well consolidated, moderately resistant, sharp contacts, sharp flat irregular shaped fragments (1 to 2cm)	1m	

STRATIGRAPHIC SECTION o/c BB84004 AND H84004

UNIT	LITHOLOGY	METERS	
		THICKNESS UNIT	TOTAL FROM BASE
	Litharenite (greywacke), medium grain, medium green weathering light brown grey, very thickly bedded, well consolidated, resistant, sharp contacts, irregular shaped fragments (5cm)	1.5m	

STRATIGRAPHIC SECTION BB84001, H84001
AND H84002

LITHOLOGICAL UNIT

MAP SHEET

ELEVATION

U.T. M. COORDINATES : GRID ZONE

LOCATION

BB84001, H84001 AND H84002

UNIT	LITHOLOGY	THICKNESS UNIT	METERS TOTAL FROM BASE
1.	Litharenite (grey wacke), medium grained blue grey weathering to brownish grey, well consolidated, resistant, very thickly bedded, sharp angular fragments	10 m	308 m
2.	covered interval	20 m	298 m
3.	Litharenite (grey wacke), medium grained, blue grey weathering to brownish grey, well consolidated, resistant, very thickly bedded, sharp angular fragments	10 m	278 m

UNIT	LITHOLOGY	METERS	
		THICKNESS UNIT	TOTAL FROM BASE
4	Cobble conglomerate, clasts range 5cm to 15 cm, well rounded, volcanic cobbles, medium grained litharenite matrix, medium green weathering dark green, massive bedding, well consolidated, resistant, matrix supported	30m	268m
5.	Litharenite, coarse grained, brownish grey weathering to olive grey, very thickly bedded, well consolidated, resistant, small cubey fragments (1 to 3cm.)	10m	238m
6.	Litharenite, medium grained, medium dark grey weathering to medium light grey, very thickly bedded, well consolidated, resistant, occasional calcite veining, small irregular shaped fragments (2 to 3cm.)	15m	228m
7	covered interval	60m	213m
8	Cobble conglomerate, clasts range 10cm to 20cm, subrounded volcanic cobbles, medium grained litharenite matrix, medium grey weathering brownish grey, massive bedding, well consolidated, resistant, matrix supported	10m	153m

UNIT

LITHOLOGY

THICKNESS
UNITMETERS
TOTAL FROM
BASE

9

Litharenite (greywacke), medium grained, medium grey green, weathering to medium grey and medium purple, very thickly bedded, well consolidated, recessive due to shearing, small cubey fragments (1cm.)

10m

143m

10

Cobble to Boulder conglomerate, clasts range bimodal; 2 to 6cm and 15 to 30cm., subrounded volcanic clasts, reddish brown and medium grey, medium grained litharenite matrix, medium green grey weathering to medium brown grey, well consolidated, resistant, sharp irregular fragments (1 to 2cm.)

15m

133m

11.

crystal tuff

1m

118m

12.

Sub-litharenite, very fine grained, olive grey weathering to tan-buff, well consolidated, siliceous, rare calcite veining, rare convolute bedding, sharp irregular shaped fragments

5m

117m

UNIT

LITHOLOGY

THICKNESS
UNITMETERS
TOTAL FROM
BASE

13.

covered interval

80m

112m

14.

Litharenite, very fine grained, medium green weathering to tan-buff, very thickly bedded, well consolidated, resistant, sharp contact with unit 15

2m

32m

15.

Cobble conglomerate, clasts range 10cm to 20cm, subrounded volcanic cobbles, medium grained litharenite matrix, medium green weathering purple green, massive bedding, well consolidated, resistant, matrix supported

30m

30m

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7485 04-05

DATE <i>July 9/84</i>	GEOLOGIST <i>G.F. & B.T.</i>	OUTCROP <i>BB84043</i>	SLIDE/PHOTO
MAP <i>920/2</i>	AERIAL PHOTO	SAMPLE(S)	<i>①</i>
EASTING		NORTHING	ELEVATION

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
<i>SST</i>	<i>N6</i>	<i>5Y4/1</i>	<i>-</i>	<i>-</i>	<i>med.</i>	<i>A</i>	<i>poor</i>
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
	<i>-</i>	<i>-</i>	<i>-</i>		<i>-</i>		

COMMENTS:
- no orientation
- thickly bedded, indistinct lower ➡

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING No. TAKEN		FAULTS	
	RANGE	MEAN	TYPE	ORIENT. DISP.
TYPE	FOLDS TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:
798

and upper contact

Composition

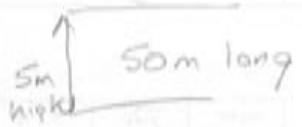
(2)

70% R.F.

20% Qtz

10% spar

well consolidated



- seems flat lying
on top of the ridge

- below st
similar to matrix of congl

89F

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7485 8405

DATE July 9/84	GEOLOGIST B.T. ? GF.	OUTCROP B334044	SLIDE/PHOTO 
MAP 920/2	AERIAL PHOTO	SAMPLE(S)	

EASTING	NORTHING	ELEVATION
---------	----------	-----------

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

→

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	

TYPE	FOLDS TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:

OUTCROP SKETCH (OVER)

congl - below the medium
grain sst. (2)

pebble size clast
(2-6cm)

- no orientation

clast - mainly of vol
& chert

- well consolidated
- matrix supported
- upper contact indistinct

- matrix - coarse grain
poorly sorted sst

- angular

- N5 (⊕) N4 (⊙)

70% RF

20% Qtz

10% spar

- no orientation

- 2m high

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7685 8405

DATE July 9/84	GEOLOGIST B.T. & G.F.	OUTCROP BB84045	SLIDE/PHOTO
MAP P20/2	AERIAL PHOTO	SAMPLE(S)	

EASTING	NORTHING	ELEVATION
---------	----------	-----------

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES	OUTCROP TYPE/SIZE			

COMMENTS:
same as BB84043

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES	OUTCROP TYPE/SIZE			

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		TYPE	FAULTS ORIENT. DISP.
	RANGE	MEAN		

TYPE	FOLDS TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE	RELATION

COMMENTS:

OUTCROP SKETCH (OVER)

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7485 84-08

DATE July 9/84	GEOLOGIST G.F. & B.T.	OUTCROP B389046	SLIDE/PHOTO
MAP 920/2	AERIAL PHOTO	SAMPLES:	

EASTING	NORTHING	ELEVATION
---------	----------	-----------

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/BED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:
- same conglomerate and sst possible contact

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/BED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	
	325/45° E		

FOLDS TYPE TREND PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:
ORIENTATION QUESTIONABLE

OUTCROP SKETCH (OVER)

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7885 84-05

DATE July 9/84	GEOLOGIST G.F. # B.T.	OUTCROP EB84047	SLIDE/PHOTO ①
MAP	AERIAL PHOTO	SAMPLE(S)	

EASTING	NORTHING	ELEVATION
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GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	N6	N4	-	-	medium	A	poor
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
-	well	-					

COMMENTS:

very thickly bedded 1-2m
- alternating beds of sst & recessive →

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING No. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	
	021 / 23° E		

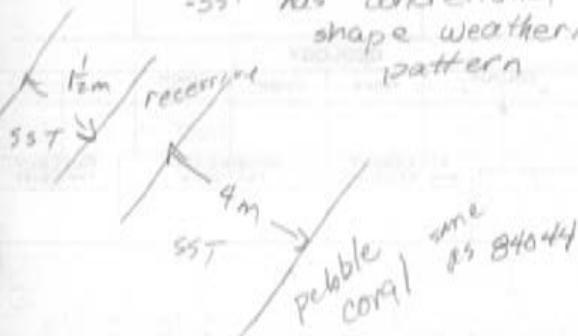
TYPE	FOLOS TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:

(2)

area and sst

-sst has concretionary /
shape weathering
pattern



qtz veins cutting across
bedding plane

recessive layer is

fine grain sst

5YR 3/4 (+)

N6 (w)

poor Angular
sorted

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7885 84-05

DATE July 9/84	GEOLOGIST G.F. & B.T.	OUTCROP 3384048	SLIDE/PHOTO 
MAP 920/z	AERIAL PHOTO	SAMPLE(S)	
EASTING		NORTHING	ELEVATION

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	S1R6/4	666/1	-	-	med	A	poor
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
-	well						

COMMENTS:

very thickly bedded 1-2m

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING No. TAKEN		FAULTS	
	RANGE	MEAN	TYPE	ORIENT. DISP.
	033/45 E			
FOLDS TYPE TREND	PLUNGE	JOINTS-CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION	

COMMENTS:

FROM 84047 we walked

(2)

Alternating bed of massive ss+
pebble conglomerate, v.f. ss+
and then we get 84048

composition

70% Rf

20% Qtz

10% spar

upper & lower contact
indistinct

- well consolidated

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7885 8405

DATE July 9/84	GEOLOGIST G.F. F.B.T.	OUTCROP BB89049	SLIDE/PHOTO ①
MAP 920/2	AERIAL PHOTO	SAMPLE(S)	

EASTING	NORTHING	ELEVATION
---------	----------	-----------

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	N6	566/1	-	-	medium	A	poor
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
-	-	-	-		-		

COMMENTS:
very thickly bedded

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	

FOLDS TYPE	TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:

composition

- 70% RF

20% qtz

10% spars

- well consolidated

- resistant

- indistinct upper & lower contact

- small 2-5cm irregular shaped talus fragments

- fractured

- 2m thick



(2)

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7885 84-05

DATE July 9/84	GEOLOGIST G.F. & R.T.	OUTCROP BB84050	SLIDE/PHOTO 
MAP Q20/2	AERIAL PHOTO	SAMPLES:	

EASTING	NORTHING	ELEVATION
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GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	N6	N7			med	A	poor
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
plant	well	-					

COMMENTS:
thickly bedded 30-80cm.
composition 80% RF, 10% gts, 10% spar

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
sst	sydi	N5	-		f	A	poor
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
plant	well	-					

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	
	831 / 41 E		
FOLDS TYPE TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:

OUTCROP SKETCH (OVER)

RECOMMENDATION
OUTCROP IDENTIFICATION FORM

(2)

well consolidated
indistinct lower and
upper contact

below

minor fine grain sand
abundant plant fossils

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7485 04-08

DATE July 9/84	GEOLOGIST G.F. & B.T.	OUTCROP BBB4051	SLIDE/PHOTO
MAP 920/2	AERIAL PHOTO	SAMPLE(S)	

EASTING	NORTHING	ELEVATION
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GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
ST					med.		
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:
Same lithology as medium grain A sst
in BBB4050

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		FAULTS	
	RANGE	MEAN	TYPE	ORIENT. DISP.

TYPE	FOLDS TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE	RELATION

COMMENTS:

OUTCROP SKETCH (OVER)

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7885 8408

DATE July 9/84	GEOLOGIST B.T. & G.F.	OUTCROP BB84052	SLIDE/PHOTO (1)
MAP 920/2	AERIAL PHOTO	SAMPLE(S)	

EASTING	NORTHING	ELEVATION
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GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	N6	506/1			med	A	poor
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
-	well	-	-				

COMMENTS:
thickly bedded →

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	
	017°/46° E		

FOLDS TYPE TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:

OUTCROP SKETCH (OVER)

Composition

(2)

- 60% RF
- 20% Qtz
- 20% SpAR

- well consolidated
- resistant
- indistinct contact
- small 2-3cm irregular shaped fragments

**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7885 84/08

DATE July 9/84	GEOLOGIST B.T. & G.F.	OUTCROP BB84053	SLIDE/PHOTO ①
MAP 920/2	AERIAL PHOTO	SAMPLE(S)	

EASTING	NORTHING	ELEVATION
---------	----------	-----------

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	SB5/1	SG6/1			medium	A	poor
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
-	well	-	-				

COMMENTS:
thickly bedded
well consolidated, resistant ⇒

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING NO. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	

TYPE	FOLDS TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE RELATION

COMMENTS:

OUTCROP SKETCH (OVER)

no contacts shown
small 1-2cm talus fragments

(2)



**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

①

7885 04-05	GEOLOGIST July 9/84 G.F. S.B.T		OUTCROP BB84054	SLIDE/PHOTO
MAP 920/2	AERIAL PHOTO		SAMPLE(S)	

EASTING	NORTHING	ELEVATION
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GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	N6	586/1			coarse	S	poor
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/BED. FEATURES		OUTCROP TYPE/SIZE		

COMMENTS:
very thickly bedded 1-2m
very well consolidated, resistant →

MINOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	N6	586/1	10cm	-	very fine	-	poor
FOSSILS	INDURATION	ACCESSORY MIN. STAINING	BEDDING/BED. FEATURES		OUTCROP TYPE/SIZE		
-	-	-	-		-		

COMMENTS:
very thinly bedded 1-3cm
recessive, badly sheared

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING No. TAKEN		FAULTS	
	RANGE	MEAN	TYPE	ORIENT. DISP.
	050/42E			

TYPE	FOLDS TREND	PLUNGE	JOINTS/CLEAVAGE	INTRUSIVE/VOLCANICS TYPE	RELATION

COMMENTS:

OUTCROP SKETCH (OVER)

2

⇒ Composition

70% RF

20% Qtz

10% spa

small 5-6cm irregular
shaped talus fragments

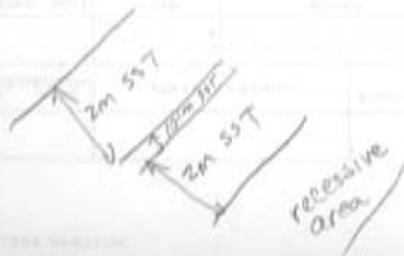
composition

70% RF

20% Qtz

10% spa

small 1cm irregular
shaped talus fragments



**RECONNAISSANCE
OUTCROP DESCRIPTION FORM**

7885 8405

DATE 17/06/04	GEOLOGIST A.P. BT.	OUTCROP BB 84010	SLIDE/PHOTO
MAP 92 0/2	AERIAL PHOTO	SAMPLE(S)	
EASTING		NORTHING	ELEVATION 2160m

GEOLOGY

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
CONG	N6/0	N5/0	1m-1.5m	lithic grn + valcon	gra - pabs	a	P
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
—	well	—	graded bedding ↑		small ridge (3x2m)		

COMMENTS:

MATRIX SUPPORTED - medium - coarse grained
lithic ss.
(2 BEDS of CGL - 1 cct) INTERBEDDED

MAJOR LITH.	COLOUR		THICK	COMP.	GRAIN SIZE	R	S
	W	F					
SST	5Y6/1	N6/0	15cm	lithic	med- coarse	a	med- poor
FOSSILS	INDURATION	ACCESSORY MIN./STAINING	BEDDING/SED. FEATURES		OUTCROP TYPE/SIZE		
—	med	—	minor graded fining upwards		—		

COMMENTS:

COARSE NEAR BASE / lenticular
wacke (40%) matrix - vfg ss-siltst.

COAL LITH.	COLOUR		THICKNESS		COAL DESCRIPTION	ROOF	FLOOR
	W	F	COAL	INTERVAL			

COMMENTS:

STRUCTURAL GEOLOGY	BEDDING No. TAKEN		FAULTS TYPE ORIENT. DISP.
	RANGE	MEAN	
295/61°N		—	
FOLDS TYPE	TREND	PLUNGE	JOINTS/CLEAVAGE
—	—	—	212/60°W
INTRUSIVE/VOLCANIC TYPE		RELATION	
—		—	

COMMENTS:

RUBBLE ALONG ASCENT CONSISTED
PREDOMINATELY OF SIMILAR CGL. MINOR SS FLOAT

OUTCROP SKETCH (0.5V)



PLATE 1. JACKASS MOUNTAIN GROUP - DIVISION 'A' siltstone



PLATE 2. JACKASS MOUNTAIN GROUP - DIVISION 'A' sandstone



PLATE 3. JACKASS MOUNTAIN GROUP - DIVISION 'B' conglomerate
SOUTH FRENCH BAR CREEK



PLATE 4. JACKASS MOUNTAIN GROUP - DIVISION 'B' conglomerate
SOUTH FRENCH BAR CREEK



PLATE 5. JACKASS MOUNTAIN GROUP - DIVISION 'A' chert pebble conglomerate
CHURN CREEK



PLATE 6. JACKASS MOUNTAIN GROUP - DIVISION 'A' interbedded sandstone
& siltstone outcrop BB84027, CHURN CREEK



PLATE 7. JACKASS MOUNTAIN GROUP - DIVISION 'A' interbedded siltstone & sandstone, CHURN CREEK



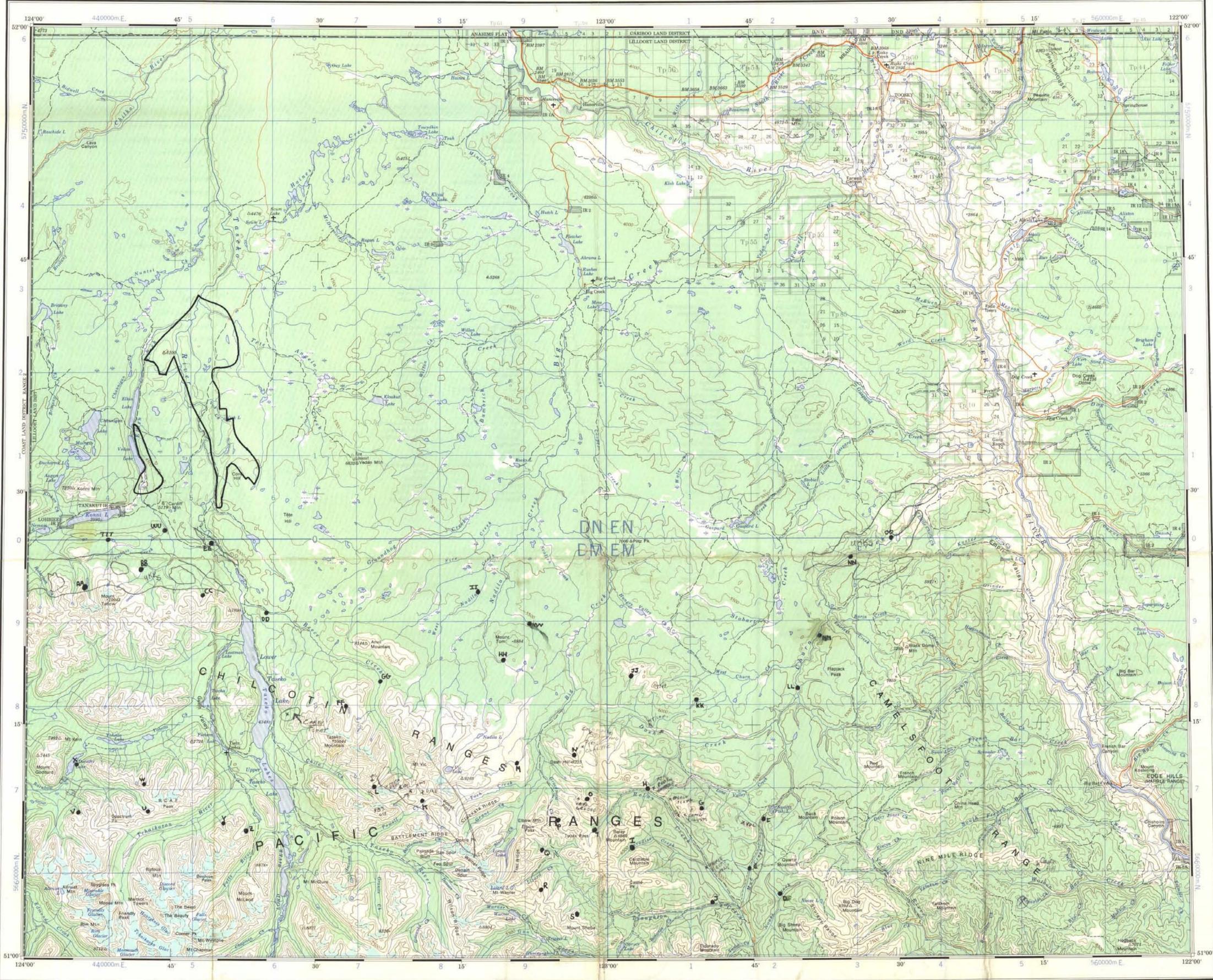
PLATE 8. FLY CAMP ON NICODEMAS CREEK



PLATE 9. KINGSVALE GROUP SEDIMENTS; NORTH OF TASEKO LAKE



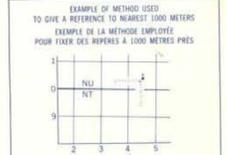
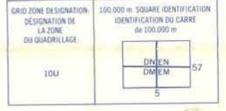
PLATE 10. KINGSVALE GROUP SEDIMENTS; NORTH OF TASEKO LAKE



Military users refer to this map as: **SERIES A 502 SÉRIE**
 Référence de cette carte pour usage militaire: **MAP 92-O CARTE**
EDITION 2 MCE ÉDITION

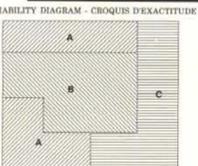


TEN THOUSAND METRE
 UNIVERSAL TRANSVERSE MERCATOR GRID
 ZONE 10
 QUADRILLAGE DE DIX MILLE MÈTRES
 TRANSVERSE UNIVERSEL DE MERCATOR



REFERENCE POINT: CHURCH-ÉGLISE (see above)
 SQUARE: Read letters of 100,000 square metre. Lire les lettres du carré de 100,000 m².
 EASTING: Read number on grid line immediately to left of point. LONGITUDE EST: Note le chiffre de la ligne du quadrillage immédiatement à gauche du repère.
 NORTHING: Read number on grid line immediately below point. LATITUDE NORD: Notez le chiffre de la ligne du quadrillage immédiatement en dessous du repère.

GRID REFERENCE: N44504
 Il reporting beyond 18° in any direction, prefix Grid Zone designation as 14VNU4504. Si vous faites connaître votre position à quelque fin qui se trouve à plus de 18° au nord, indiquez également la zone du quadrillage tel que 14VNU4504.



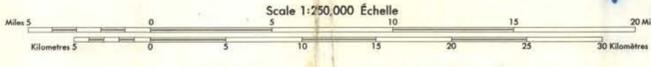
A - Derived from large scale 1:50,000 maps. Information depicted current as of 1965.
 B - Derived from large scale 1:50,000 maps. Information depicted current as of 1967.
 C - Derived from large scale 1:50,000 maps. Information depicted current as of 1971.

Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES. Printed 1976.
 Magnetic declination 1974 varies from 24°21' westerly at centre of west edge to 24°00' westerly at centre of east edge. Mean annual change 2.5' westerly.

Roads: loose or stabilized surface, all weather; 2 lanes or more; less than 2 lanes; loose surface, dry weather; cart track; trail or portage.

FOR COMPLETE REFERENCE SEE REVERSE SIDE

TASEKO LAKES
 BRITISH COLUMBIA

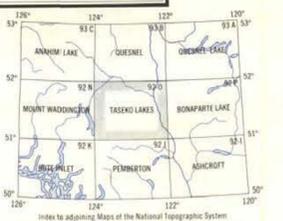


CONTOUR INTERVAL: 500 FEET
 ÉLEVATIONS IN FEET ABOVE MEAN SEA LEVEL
 North America Datum 1927
 Transverse Mercator Projection
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Échelle par la DIRECTION DES LÈVES ET DE LA CARTOGRAPHIE, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES. Imprimé en 1976.
 La déclinaison magnétique pour 1974 varie de 24°21' Est au centre de la limite Ouest à 24°00' Est au centre de la limite Est. Variation moyenne annuelle 2,5' Ouest.

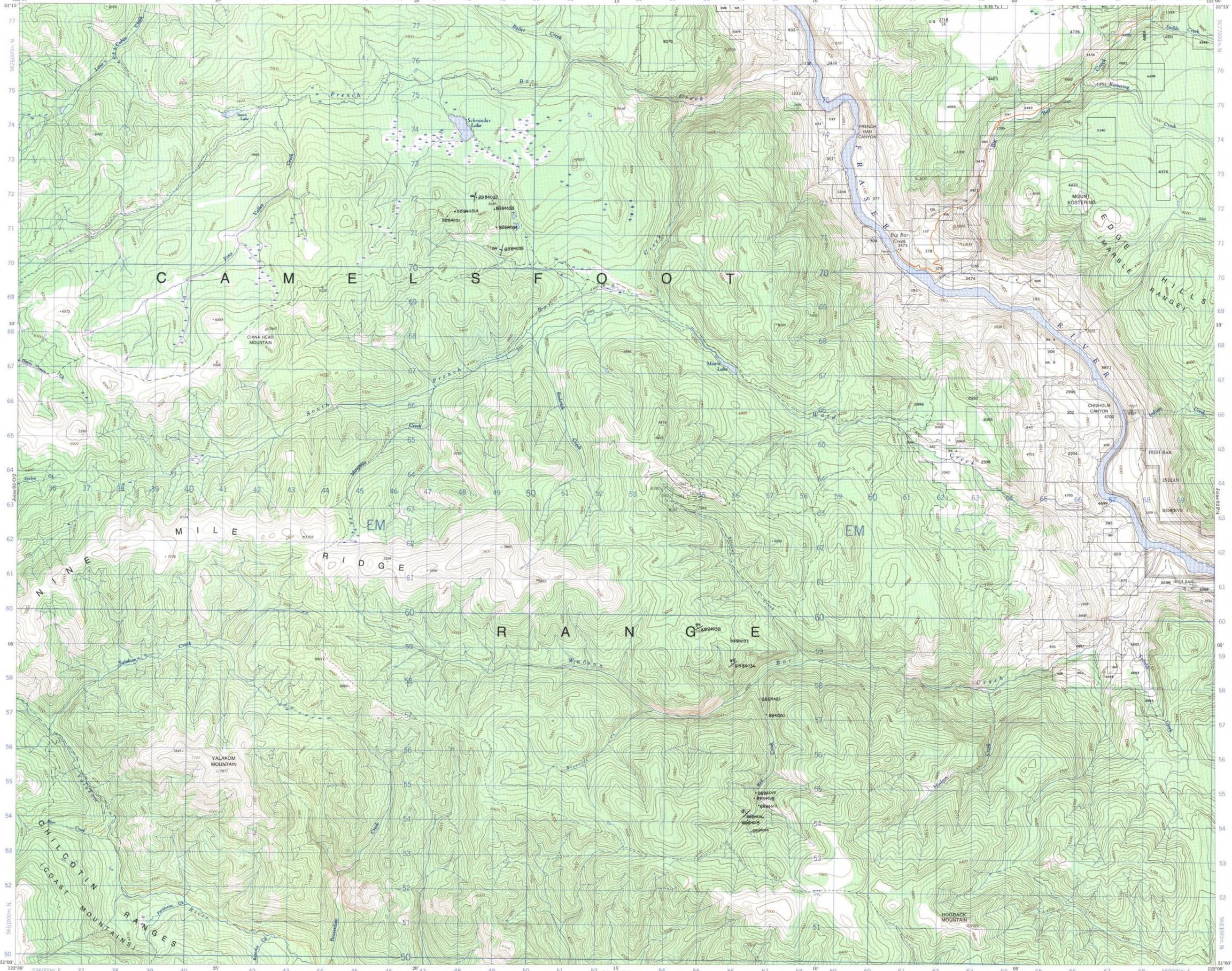
Routes: gravier aggloméré, toute saison; 2 voies ou plus; moins de 2 voies; de gravier, période sèche; sentier ou portage.

POUR UNE LISTE COMPLÈTE DES SIGNES, VOIR AU VERSO

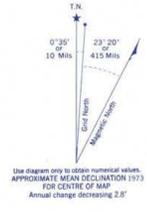


798

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ONE THOUSAND METRE UNIVERSAL TRANSVERSE MERCATOR GRID ZONE 10

GRID ZONE DESIGNATION	10 U
100,000 M. SQUARE IDENTIFICATION	E M

EXAMPLE OF METHOD USED TO GIVE A REFERENCE TO NEAREST 100 METRES

THE FOLLOWING GRID REFERENCE IS A SIMPLE ONE. IT DOES NOT REFER TO A POINT ON THE MAP

EASTING: Read number on grid line immediately to left of point. Estimate number of metres from this line eastward to point.	97
NORTHING: Read number on grid line immediately below point. Estimate number of metres from this line northward to point.	98
EXAMPLE: MILITARY GRID REFERENCE: 979804	

Nearest linear grid reference 100,000 metres (about 62 miles)

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Roads: paved or stabilized surface, all weather; loose surface, dry weather; and un surfaced streets; cart tracks; trail or portage.

Routes: gravel/agglomerate/loose canon; de granite; semis lac et ruis; bois clairse; de terre; sentier ou portage.

798 **YALAKOM RIVER**
LILLOOET LAND DISTRICT
BRITISH COLUMBIA

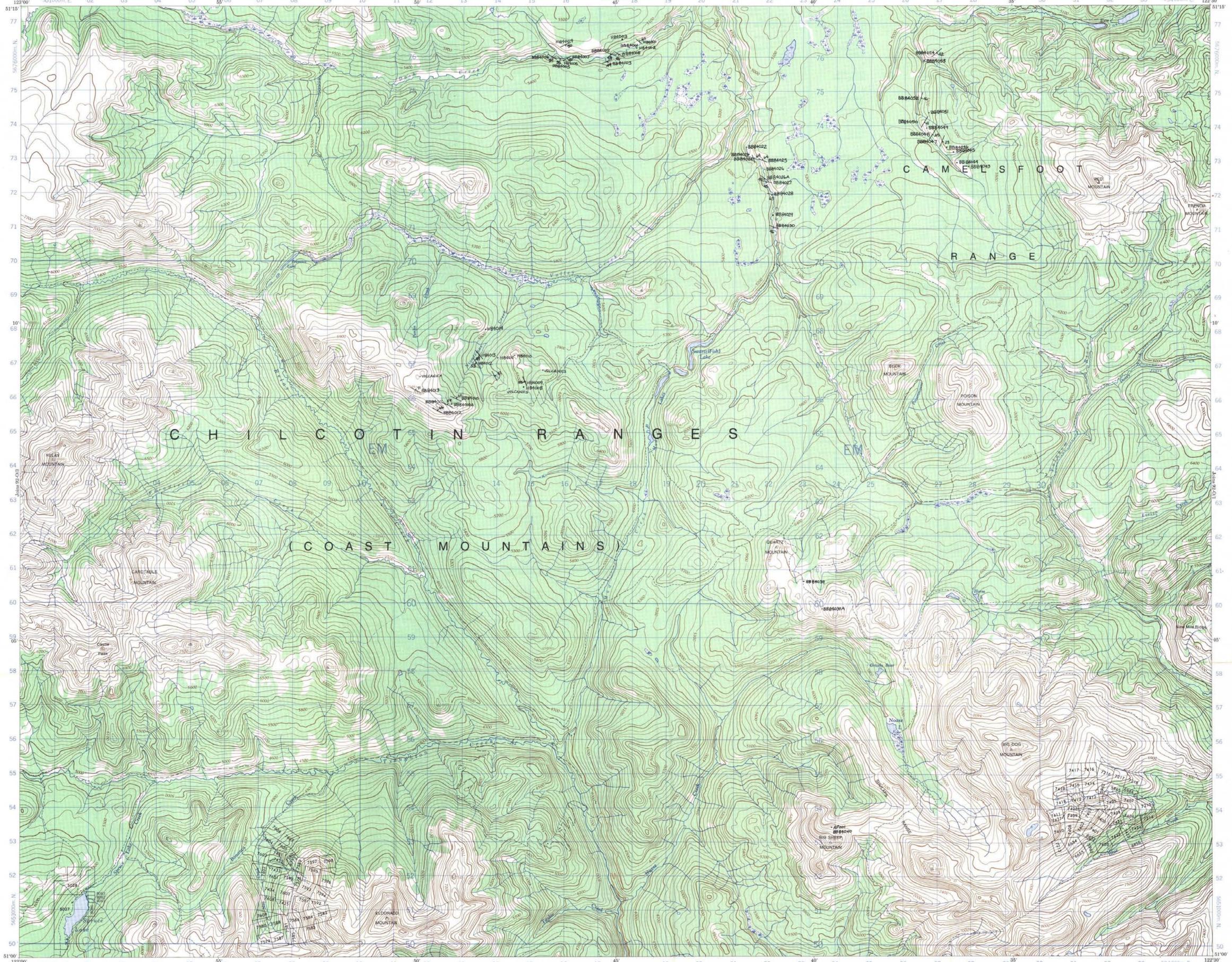
Scale 1:50,000 Échelle

CONTOUR INTERVAL 100 FEET
Elevations in Feet Above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

This Provisional Map is equivalent to a standard map in accuracy of content. Some names on this map are not yet official. Corrections or additions are invited by the Survey and Mapping Branch.

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Use diagram only to obtain numerical values.
APPROXIMATE MEAN DECLINATION (1973)
FOR CENTRE OF MAP
Annual change decreasing 2.8"

ONE THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 10



EXAMPLE OF METHOD USED TO GIVE A REFERENCE TO INABOUT 100 METRES
THE FOLLOWING ARE REFERENCES TO A CORNER OF A POINT AND DOES NOT REFER TO A POINT ON THIS MAP

REFERENCE POINT CHURCH (See above)

EASTING: Read number on grid line immediately to left of point	97
Estimate tenths of a square from this line westward to point	97.5
NORTHING: Read number on grid line immediately below point	98
Estimate tenths of a square from this line northward to point	98.2

EXAMPLE: MILITARY GRID REFERENCE 979804
Nearest grid line and reference (10000) names (labelled) only

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1982
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Roads:
loose or stabilized surface, all weather...
loose surface, dry weather and...
cart track...
trail or portage...

Routes:
gravel aggloméré, toute saison...
de gravier, temps sec et...
de terre...
sentier ou portage...

798

TYAUGHTON CREEK
LILLOOET LAND DISTRICT
BRITISH COLUMBIA
Scale 1:50,000 Echelle

Miles 0 1 2 3
Metres 0 1000 2000 3000 4000
Yards 0 1000 2000 3000 4000

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