B.C. Coastal Reconnaissance

Summary

Through the week of June 18-23, 1987, Louise Klatzel Mudry and Greg Cave searched the area between Port Hardy and Powell River for sediments packaged within the pervasive Mesozoic volcanic and intrusive igneous complexes characteristic of the Insular Belt. The coal bearing Cretaceous strata are preserved as isolated, fault bounded blocks, juxtaposed against the Triassic Karmutsen Fm. and Jurassic Bonanza Fm. basalts. Within the Cretaceous strata locally economical coal deposits have been exploited since the mid 1800's.

The purpose of the reconnaissance exploration along the coastline was to search for fault bounded blocks similar to those occurrences previously explored. Due to the heavy forest cover many of the areas were inaccessible and therefore limited exploration to shoreline, creeks and logging roads. Access into the outlined areas was achieved by the use of a helicopter and 4X4 truck.

No Cretaceous sediments were located other than those already delineated in the Suquash Basin, Comox Basin and Powell River areas. The past geological mapping of Alert Bay (92-L), Bute Inlet (92-K) and Alberni (92-F) was found to be quite accurate. The low lying regions mapped as Quaternary are dominated by glacially derived cobbles, sands, silts and commercially exploitable gravels. The thickness of Quaternary sediments is underterminable and was reported to be as thick as 500' (152.4 m) by Greg Ockert. The areas covered by Quaternary sediment are of interest due to their close proximity to the Comox Basin and their absence of the pervasive high relief volcanic sequences.

The only means of evaluating the bedrock would be to initiate a drilling program which can be considered as a high risk prospect. Surfical exploration is prohibited by the dense forest cover and inhabitation. Should a new reserve be defined, exploration and development would likely be met with little opposition because of the acceptance of the existing mining activity. This region is a favorable exploration target due to the very low transportation costs associated with a mine near tidewater.

During our preliminary reconnaissance we were unable to discover any new sedimentary strata and found the present geological maps to be detailed and accurate.

It can be deemed unlikely that new Cretaceous outliers will be discovered as the area has been actively explored since the mid 1800's.

Port Hardy - Powell River

Suquash Creek 92-L-11

A brief stop was made here to examine the coal measures of the Upper Cretaceous Suquash Fm. This site marks the first discovery and mining of coal on Vancouver Island. Here several of the nine coal measure outcrop in the intertidal region. From this location the coal measures can be seen striking directly toward Malcolm Island.

Malcolm Island 92-L-10, 11

Only one outcrop of cobble conglomerate is exposed on the island and it is mapped as being Tertiary in age. However, there is a striking similarity between this conglomerate and the one exposed on Hornby Island in the Comox area mapped as Upper Cretaceous. The remainder of the island is blanketed by Quaternary gravels. The question still remains as to whether or not the Suquash Fm. extends to Malcolm Island. The only means of testing this hypothesis is to drill a hole to determine bedrock. Any water wells?

Cormorant Island 92-L-10

No bedrock was seen exposed due to Quaternary gravel cover. Topographically the island is very similar to Malcolm Island.

Pearse Islands - Hanson Island 92-L-10

These islands as previously mapped are composed of the Karmutsen Fm. basalt and hold no potential for continued exploration.

Harbledown Island 92-L-10, 9

The dark lustrous outcrop observed in Parsons Bay was confirmed to be interbedded limestones and greywackes as previously mapped by the G.S.C. The outcrop is discontinuous in nature resulting from the feldspar porphyry (fp) intrusion. The partially recrystallized limestones are very competent. Depositional features include scouring and cross-bedding preserved in the coarse grained greywacke and differential compaction is exhibited in the limestones. Tight isoclinal folding at the hand specimen scale is assumed to be syntectonic. The preserved sediments likely represent a submarine fan or channel system where there is an intimate relationship between upslope debris flows and basinal limestones. No sediments younger than the above mentioned Upper Triassic Parsons Bay Fm. were found.

Turnour Island 92-L-9

Mesozoic tonalites and quartzdiorite comprise all of the exposed outcrop along the shoreline as mapped by the G.S.C. No sediments are expected on the island.

Knight Inlet 92-L-9 - 92-K-12

Through Knight inlet to the head of call inlet the high relief fjord like coastline is dominated seemingly entirely of diorites, granodiorites and quartzdiorites belonging to the Mesozoic hypabyssal suites. Judging from the characteristic topography there appears to be no reprieve suggesting a possible outlier of sediments.

Fulmore Lake - Tom Browne Lake - Jackson Bay 92-K-12

The attraction to this area is the anomalously low relief surrounded by the steep, high relief, ridges of granodiorite and quartzdiorite. The rare outcrop in the low lands, due to thick stands of reforrestation after logging, consists entirely of glacial tills. The area is underlain either by easily erodable sedimentary subcrop or intense glaciation is responsible for the resulting low lands. The later conclusion is deemed favorable because of a small rounded (glaciated) granodiorite hill found near Seabird Lake. The valley also appears "U" shaped suggesting a glacial origin.

Hardwicke Island 92-K-5

Upon flying over the south shore of Hardwicke Island a black well bedded lustrous outcrop was spotted. The outcrop consisted of crystalline limestone mapped as Upper Palaeozoic in age. The strata are intruded by feldspar porphyry dikes, metamorphosed, and very competent. No other sediments were located as the remainder of the island consists of granodiorites and Upper Triassic Karmutsen Fm. basalts.

Johnstone Straight - Pye Lake 92-K-5

This region is again dominated by Karmutsen Fm. basalt flows which are discordantly contacted by the plutonic granodiorites and quartzdiorites. Inland toward Pye Lake there is a low lying area mapped as quaternary. Some tills were found but there is no indication of the underlying bedrock.

Discovery Passage 92-K-6, 3

Both the east and west shores of Discovery Passage, Quadra Island and Vancouver Island respectively, are composed of the massive Karmutsen Fm. basalt flows. Only small isolated deposits of till are present near Elk Bay and Deepwater Bay which likely represent intense glaciation. A large area covered by till south of the town of Bloedel exists, although, it is likely underlain at some depth (?) by Cretaceous Comox Basin strata. Due to the regions proximity to the town of Campbell River and Highway 19 numerous cottages exist along the coastline.

Quadra Island - Cortes Island - Marina Island 92-K-3

Plutonic quartzdiorite, granodiorite and Karmutsen Fm. basalts form the prominent ridges on north Quadra and Cortes. However, on the southern regions and on Marina Island the topography becomes very subdued and no bedrock is exposed through the cover of till. An exposure was visited at the extreme south end of Quadra Island where greater than 100' (30 m) of glacially derived sediments are preserved. The sediment is dominated by a fine grained, loess like, matrix with minor (<1%) large cobbles and boulders, and nearly 5% small pebbles. The massive nature of the partially consolidated sediment suggest quiescent depositional conditions. It is possible that this represents a portion of the Comox Basin but, the only means of determining subcrop and/or till thickness is to drill an exploratory drill hole. Much of the three islands is privately owned and inhabited. Outcrop inland is rare to absent.

Hernando and Savary Islands 92-F-15

These two islands were not visited due to their dense population. Due to the flat nature of the islands it is speculated that a similar till covers the entire island. As a consequence to their dense population exploration and/or development would likely be met with a great deal of opposition.

Harwood Island

The island consists mostly of unconsolidated fine grained mica rich (10%) Quaternary sands that reach thicknesses greater than 60' (18 m). At the southern tip of the island granodiorite is exposed. The island is sparsely populated, but it is an Indian Reservation.

Texada Island 92-F-9, 10, 15

Gillies Bay and Cook Bay areas have been previously mapped as Cedar District and Extension-Protection formations. Access into Cook Bay was not attained due to poor road and vehicle condition. However, the Gillies Bay area was covered by logging road access and bisected by Movat Creek. The majority of the island is composed of Karmutsen Fm. basalt and it is possible that the Cretaceous outliers were interpreted from air photos as no sedimentary outcrop was found. Should a mineable coal deposit be delineated Texada Island would be a favorable location as there are presently eight mines; 4 gold, 4 limestone.

Powell River 92-F-16

The field examination of the low relief region between Powell River and Lois Lake was undertaken in response to the coal occurrence sited by D.B. Dowling and the current coal lease holding by Fargo Oil Corp., last renewed October 24th, 1986. The purpose of this reconnaissance level exploration was to determine if the adjacent lands held any potential for follow-up coal exploration.

Access into the lease area was easily attained via Zillinsky road and power line right of way off of Highway 101 southeast of Powell River. Both old and new logging roads provided sufficient access to all the low relief region between Powell River and Lois Lake. The topography is anomalously low in relief in comparison to the steep and higher relief topography of the adjacent Coastal Mountains. Due to the past logging of the area, some 20-30 years ago, the regrowth of trees obscures the majority of the surface.

The Fargo Oil lease area is dissected by Kelly and Lang Creeks of which only Lang Creek was found to have any outcrop. At the power line crossing, south of the leases, the banks of Lang Creek exposed a very coarse grained arkosic sandstone with numerous coalified tree fragments and carbonaceous stringers. The cross-bedded arkosic sandstone likely represents the channel lag of a fluvial stream system. Below the channel scours are thinly laminated very fine grained sandstones and siltstones. The sediments dip nearly due west at less than 10°. No outcrop was found immediately within the lease boundary due to the dense forest cover. However, north of the lease area granodiorite outcrops are well exposed in Lang Creek and to the west Hammil Hill was found to be composed of Triassic basalts and granodiorites.

Should there infact be an economically viable coal deposit in this area it would be of only limited aerial extent corresponding to the leases held by Fargo Oil Corp. There is very little probability for a potential coal deposit in the outlying area due to the volcanic and intrusive rocks. A primary concern prohibiting exploration and development of any kind is the abundance of private land ownership, farms and fish hatcheries.

Denham Island - Hornby Island 92-F-10

Both islands expose all but the lower three formations within the Cretaceous Nanaimo Group. It can be speculated that exploration and/or development on either of these islands would be met with a great deal of protest due to dense populations, oyster farms and established Provincial Parks.

The remainder of the day was spent showing Greg Ockert the previous days findings.

References

Bancroft, Austen J.; 1913
Geology of the Coast and Islands between the Straight of Georgia and Queen Charlotte Sound B.C.
G.S.C. Memoir 23

Borovic, I.; 1979
The Suquash Coal Field
Ramm Venture Corp.
by IGNA Engineering and Consulting

Crickmay, C.H. and Pocock, S.A.J.; 1963
Cretaceous of Vancouver, B.C.
A.A.P.G. Bull., Vol. 47, no. 11, pp 1928-1942

Dawson, G.M.; 1876-77
Explorations in British Columbia
G.S.C. Report of Progress

Muller, J.E. and Jeletzky, J.A.; 1970
Geology of the Upper Cretaceous Nanaimo Group, Vancouver Island and Gulf Islands, B.C.
G.S.C., Paper 69-25., pp 1-75

Muller, J.E.; Northcote, K.E.; and Carlisle, D.; 1974
Geology and mineral deposits of Alert Bay - Cape Scott map - area Vancouver Island, B.C.
G.S.C. Paper 74-8

Roddick, J.A.
Note on the stratified rocks of Bute Inlet map area.
G.S.C. Open file no. 480

CODM QUALITY DATA

Sample #1

CARD COLUMN:

LAB	LAB NUM	C	T	DATE M	DATE YR	UNIT NAME	WT % OF TTL	WT % OF SCREENED SINK	WT % OF SCREENED FLT		ID
	30042			07	87		100				B2
20	22	27	28	29	31	33	40	44	48	52	71

PROS	HOLE	TOP (F/M)	BASE (F/M)	F/M	SCREEN SIZE (MM) MAX	SCREEN SIZE (MM) MIN	S. G. RANGE MIN	S. G. RANGE MAX		ID
										B1
01	04	12	19	26	27	32	37	41	45	71

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

BASIS A,R,D	PROXIMATE ANALYSIS MSTR	ASH	VOL MATTER	CALORIFIC CONTENT	UNITS	UNITS=1=BTU/LB 2=CAL/GM 3=KJ/KG	ID
A	5.00	2.65	39.64	11960	1		B5
R	16.46						B5
D							B5
20	21	26	31	36	41	42	71

BASIS A,R,D	ULTIMATE ANALYSIS S %	C %	H %	N %	CL %	O %	ID
A	.19						B6
R							B6
D							B6
20	21	26	31	36	41	46	51	71

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

HARDGROVE GRINDABILITY	MSTR	EQUILIB MSTR	SURFACE MSTR	SPEC GRAV	ID
		19.4		1.28	B8
20	25	30	35	40	45	71

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

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

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

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

MINERAL ANALYSIS OF ASH KO	PO	SO	UNDTR	ID
				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.

CODM QUALITY DATA

Sample #2

CARD COLUMN:

LAB	LAB NUM	C	T	DATE M	DATE YR	UNIT NAME	WT % OF TTL	WT % OF SCREENED SINK	WT % OF SCREENED FLT	ID
	30042			07	87		100			B2

20 22 27 28 29 31 33 40 44 48 52 71

PROS	HOLE	TOP (F/M)	BASE (F/M)	F/M	SCREEN SIZE (MM) MAX	SCREEN SIZE (MM) MIN	S.G. RANGE MIN	S.G. RANGE MAX	ID
									B1

01 04 12 19 26 27 32 37 41 45 71

SAMPLE NUMBERS	ID
	B3
	B4

20 24 28 32 36 40 44 48 52 56 71

BASIS A,R,D	PROXIMATE ANALYSIS MSTR	ASH	VOL MATTER	CALORIFIC CONTENT	UNITS	UNITS=1=BTU/LB 2=CAL/GM 3=KJ/KG	ID
A	4.12	12.85	34.45	10793	1		B5
R	9.33						B5
D							B5

20 21 26 31 36 41 42 71

BASIS A,R,D	ULTIMATE ANALYSIS S %	C %	H %	N %	CL %	O %	ID
A	.90						B6
R							B6
D							B6

20 21 26 31 36 41 46 51 71

FREE SWELLING INDEX	GIESLER PLASTICITY SOFT (F)	FLUID (F)	SOLID (F)	MAX DDPM	ID
					B7

20 23 28 33 38 41 71

HARDGROVE GRINDABILITY	EQUILIB MSTR MSTR	EQUILIB MSTR	SURFACE MSTR	SPEC GRAV	ID
		10.1		1.40	B8

20 25 30 35 40 45 71

BASIS A,R,D	SULFUR TYPES PYRITIC	SULFUR TYPES SULFATE	SOLUBLE COAL ALKALIES ACID NA	ACID K	WATER NA	WATER K	ID
A							B9
R							B9
D							B9

20 21 26 31 36 41 46 51 71

FUSION TEMPERATURE (F) REDUCING ATMOSPHERE INIT	H=W	H=W/2	FLUID	OXIDIZING ATMOSPHERE INIT	H=W	H=W/2	FLUID	ID
								C1

20 24 28 32 36 40 44 48 52 71

ASH ALKALIDES WATER SOLUBLE NA	K	CO	T250	ASH CRITICAL VISCOCITY (F)	POISES	ID
						C2

20 26 32 37 41 45 49 71

MINERAL ANALYSIS OF ASH SIO	ALO	TIO	FEO	CAO	MGO	NAO	ID
							C3

20 25 30 35 40 45 50 55 71

MINERAL ANALYSIS OF ASH KO	PO	SO	UNDTR	ID
				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.

(1) June 18

- Arrive in Port Hardy via BC. Air at 5:00 P.M.

- weather is great, clean and warm.

- Chartered Vancouver Island Helicopter to begin recon.

- The first stop is Suquash Ck. where the Cretaceous Suquash Fm. is exposed. this is the location of past (?) mining activity. The coal seam can easily be seen outcropping on the beach. The coal is quit consistent. The measures strike nearly due east-west dipping shallowly to the north.

[signature]

(2)

①

Suquash Ck.

240°/2° N — 1 Sample
255/5° N
230/3° N.

Thick sequences of muds lie above and below the partially mined seam.

flying east along the coast and upsection 2 other small (10-30cm) coal seams with carbonaceous shales outcrop.

② A second stop in a cove on the main Island South and West of Pulteney Pt. hosted one of these thin seams again floor and roofed by sandstone

306/2 N
286/3 N
292/2 N

No outcrop is observed on the spit harbouring Port McNeil.

Malcolm Island was then flown as the coal measures strike directly toward the island. The Island was examined last summer by myself. No new clearing or exposure has been found. The island is covered by glacial till and the small outcrop of (Ts) conglomerate.

The shoreline from Beaver Cove to Port McNeil was then flown confirming the extensive Karmutsen Basalt exposures.

Pearse Islands also Karmutsen

LEVEL

June 19

(1)

Port Hardy

- Fog and arrival of Bute Inlet geology map delay departure to Beaver Cove to 9:30 am.

- checked gravel pits within mapped Cretaceous southwest of Port McNeill. The Cretaceous is present out onto the point north of Port McNeill

- Hanson Isl.
  Kamutsen Bas. ?
  unable to land.

- Cormorant Isl.
  facing for prelim. bldg.
  in the town [illegible] here

(2)

- Parsons Bay South Side
on Hartledown Sol
355/27° (320/33°) 355/32°
→ at contact ?

Parsons Bay Limestone
small discontinuous outcrops
of l.s.t. (fp) (feldspar porphyry) with plag phenocr.
Intersected by vesicular basalt
and recrystallized basalts? with
minor pyrite 2-3%
greywacke light-med grey, grainy
l.s.t. : dk grey-black.
thinly bedded : 0.5-10 cm, well bedded
some karst weathering - to argillaceous
very dirty l.s.t. pitted w greywacke.
recrystallized upon intrusion events
distinct crystals within the l.s.t.
very finely x-talline

Picture # 17 roll # 1 LKM.

l.s.t. easily mistaken for volc.

- These sediments when flying over are very apparent due to their well bedded nature in contrast to the massive intrusive

315/34°

- small scale (hand sample) isoclinal folding
depositional or post depositional ?

- greywacke has well developed x-beds

- turbidite, submarine canyon deposition,
several cm of greywacke bedded with the fine grained limestone with apparent differential compaction

picture #18 roll #1 LKM

10cm × 10cm

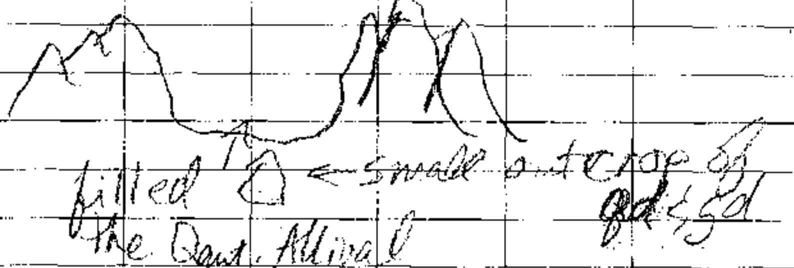
Harbledown Island
Tonalite

Gough Borough
granodiorite

[illegible] to [illegible]
to [illegible]. Flagged over [illegible]
to Fillmore [illegible] to check [illegible]
flat area mapped as Quaternary.
Checked Qd in area & then flew
down Reid Creek to [illegible] Bay then
had lunch.
Then crossed over to Jackson Bay.
All of Fillmore - Tom Brown Lake
Jackson Bay has been logged
all forest roads, creeks - but
heavy alder & second growth
is in the cut areas.
a quarry in Jackson Bay of
qd or qtz -

flew over a quarry near Seabird
Lake - lots of till
must have used it for roads in
the logged off area to the west -

all forest quarry with gd
in forest blocks
& as we looked
back up from [illegible]
Scarborough Inlet - the Quarry
area looked as if it might
have been just more
heavily glaciated -
as the gd-blocks in the
valley were rounded outcrops
the valley was flat



LEVEL

Hardwick Island

= back in to Karmutsen Volcanics

- excellent outcrop all along coast of island

- further down island
Bright, sheen, black, well bedded
thin to med bedding
2-15 cm thick

282/48° dip 290/51

likely Hornsatite stain
very resistive

appears to metamorphosed greywacke - much like Parsons Bay; Not a limest.
V.i crystalline though B

has been intruded by FP - feldspar phorphyry

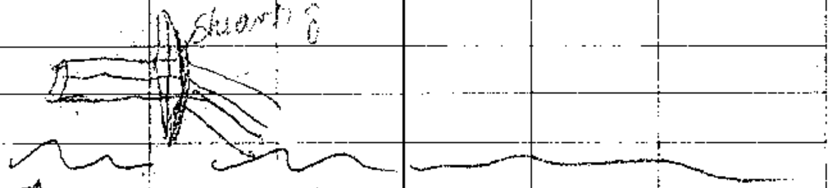
appears to have
been v. argillaceous - fractured w/ concoidal break

Greg. Picture ① #3

well developed cleavage.

lots of Fe Stain, contorted bedding around corners

lots of faulting & shear zones on outcrop.



Flew by Pl. Lake - & came down

Discovery Passage & looked at Quadra Island

Saw Basalt at ~~other~~ north end of Quadra - Out. in cliffs in middle

Quadra has lots of lovely homes on it.

Refueled at Campbell River

LEVEL

②

As we came over to
Campbell R. - it's very
noticeably flat.

Cliffs on end of Quadra - Quat-
Gres #21 photo.

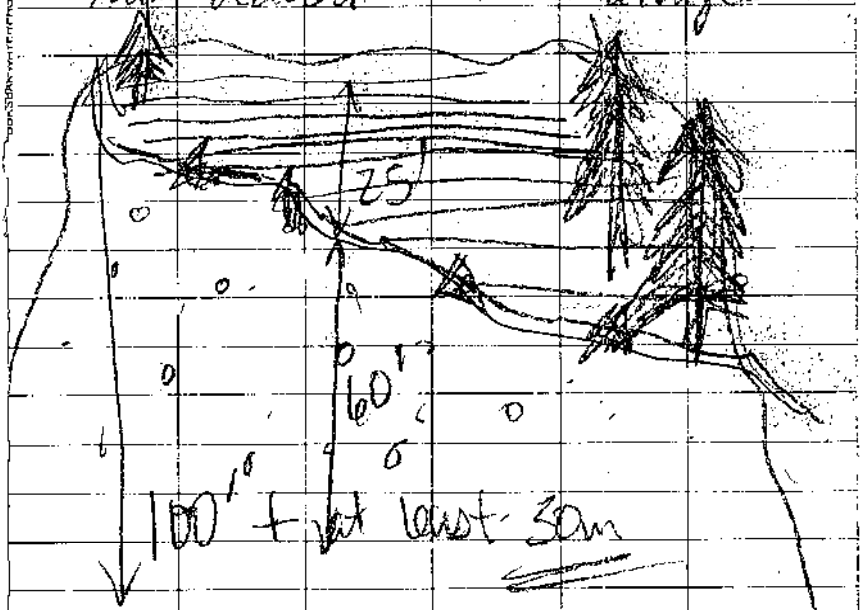
Sandy matrix w/ cobbles - (cobbles greenish
matrix stained to orange)
3-5% cobbles
blue grey to buff - form resistant
cliffs

pebbles ±3% - subangular
to subrounded. basalt
to well rounded

Sandy matrix w/ cobble size clasts with clay layers pebble size clasts
massive no distinct bedding

above cobbled layer
down cutting
channel - well horizontal laminated
- pinch & swell
variable coloured beds
thin bedded - better with feel.

strange depositional environ.



LEVEL

(2)

further along the shore to the east the massive cattle unit does become bedded & dips to the West. poorly bedded.

flew up Guadina to basalt (Kormutsin) then crossed over to contacts and worked south between the two islands there is lots of silicification

Started on Adionite on Conting

(1)

Stopped at
Qtz Monz - Qtz diorite
outcrop off
Harwood Is.

Amazingly short distance
between intrusive &
Quaternary alluvium
on Hayward Island

Greg's Photos 7,8,9,10

beautiful small scale ripple marks
with hummocky X-strat.
& within larger scale X-beds.

beautiful forsets, laminated X-bdg
in lovely sand loaded w/ mica
flecks.
& even carby lams - nothing
great though
just enough to define lams

X-beds 2m thick.

LEVEL

7

(2)

60 feet of black sand,
and granitic intrusion
to ft 300-[illegible] in boring.

(1)

Sunday - June 21/87

Lang Creek on Hydro line
just off [illegible]allinsky Road.

Arkosic Sandstone (sample)
with large [illegible] 1-2 up to
10 cm coal clasts & stringers

Sandstone has ≈ 50% qtz
≈ 25% feld
≈ 10% mica
≈ 15% other chips
very coarse etc.
up to 5mm grains
avg 1-2mm

thin silt/sand layers form
more resistant beds. 10cm

appears to be flat lying - but
is poorly lithified & weathers
readily into soft sand on
track. 180/7 dips S.
poor strike/dip attempted.

(2)

The coal was sampled
for palynology

This outcrop continues around
192/11 the corner
Good reading

7-3m of outcrop

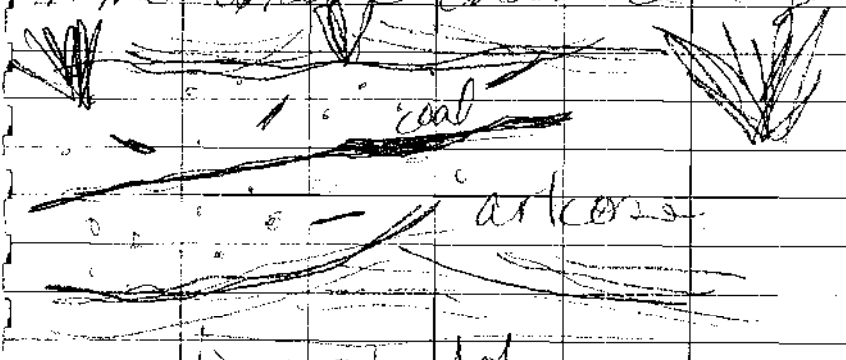
lamos x-beds
fine sandst. w/ coarse arkosic
layers
sandstone 80cm - resistive
coarse upto 100cm thick
coal clasts

forms bank of creek
but all the land seems
privately owned.

The arkose gassglot ~~has a lot of~~ maybe the channel lag.

as the sandstone seems to fine upward.
In the arkose are coal clasts & in one spot we found a 2m long 2cm up to 10cm thick coal
the coal is harder than the rock
we sample this for palyn.

Other coal stringers also appear in the arkose channel lag.



Lang Creek - Strike section

(2)

120/15 100/

the S/d is variable due to all the cross beds

Flow Unit (Hornby Sol)
Conglomerate
- Lower Contact

clast supported
sc + sem. Mag. Porn
main conformation
very well rounded
poorly sorted
volcanic clast
~ 98% clasts
rare lenses of silt & sst.
[illegible] on [illegible] bedded
med. gr. sst matrix
light brown
well sorted
feldspar rich (Arkosic)

in distant beds
visual strike & dip
230/15°

massive
very resistant
conformable to [illegible]?

June 22nd

LEVEL

Light Pt. (Denham Sd.)

308/11 310/7

Cardan District

well bedded with ... beds of siltstone, f.g. s.st., and gritty (...) sands

Argillaceous → olive grey
Sandstone → light brownish grey

... of section

flaggy weathering

shale ... clasts

cut by dykes
brown ... 5-20cm thick

LEVEL

CANADA
1:50,000
EDITION 2
92 F/9
TEXADA ISLAND
NELSON
ISLAND
SECHELT
PENINSULA
HARDY ISLAND
MALASPINA
STRAIT
STRAIT OF GEORGIA
GEORGIA
SABINE CHANNEL
LASQUETI ISLAND
Gillies Bay
Mount Pocahontas
Jervis Island
Jedediah Island
Lasqueti Island
Paul Island
Boho Island
Tucker Bay
Wells Point
Larson Islet
Potter Pt
North Thormanby Island
Cedar District
Extension Protection
LKM - GIC
June 1987
774
TEXADA ISLAND
BRITISH COLUMBIA
Scale 1:50,000 Échelle
Miles
Metres
Yards
Milles
Mètres
Verges
CONTOUR INTERVAL 100 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection
ONE THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 10
QUADRILLAGE DE MILLE MÈTRES
TRANSVERSE UNIVERSEL DE MERCATOR
INDEX TO ADJOINING MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM
TEXADA ISLAND
92 F/9
EDITION 2
774 (M01)

LKM - GJC
June 1987

ALERT BAY   92 L

BRITISH COLUMBIA

Scale 1:250,000 Échelle

Miles 5 0 5 10 15 20 Milles

Kilometres 5 0 5 10 15 20 25 30 Kilomètres

Transverse Mercator Projection
North American Datum 1927
Contour Interval 500 feet
Elevations in feet above Mean Sea Level

Projection transverse de Mercator
Réseau géodésique nord-américain unifié 1927
Équidistance des courbes 500 pieds
Élévations en pieds au-dessus du niveau moyen de la mer

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys, Ottawa

Ces cartes sont en vente au Bureau de distribution des cartes, ministère des Mines et des Relevés techniques, Ottawa

Publiée par le **SERVICE TOPOGRAPHIQUE DE L'ARMÉE**, (G.R.C.) Renseignements à jour en 1963. Imprimée en 1965.

La déclinaison magnétique (1964) varie de 25°10' vers l'est au centre de la bordure ouest de la feuille à 25°00' vers l'est au centre de la bordure est. Variation annuelle décroissante 3.0'

Town	Ville	Stream intermittent or dry	Cours d'eau intermittent ou à sec	
Village or Settlement	Village ou hameau	Intermittent lake	Lac intermittent	
Post Office	Bureau de poste	Rapids; falls	Rapides; chute	
Church	Église	Marsh or Swamp	Marais ou marécage	
School	École	Lighthouse	Phare	
Boundary monument	Borne-frontière	Horizontal control point	Point géodésique	
Airport	Aéroport	Landing ground	Piste d'atterrissage	
Seaplane base	Base d'hydravions	Seaplane anchorage	Amarrage d'hydravions	

Index to adjoining maps of the National Topographic System
Tableau d'assemblage du Système National de Référence Cartographique

ALERT BAY
92 L
EDITION 1

774 M02

GRID ZONE DESIGNATION 9U

100,000 M. SQUARE IDENTIFICATION: WG XG YG / WF XF YF

LIGHTHOUSE

SQUARE: XG

EASTING: 4 / 1 / 41

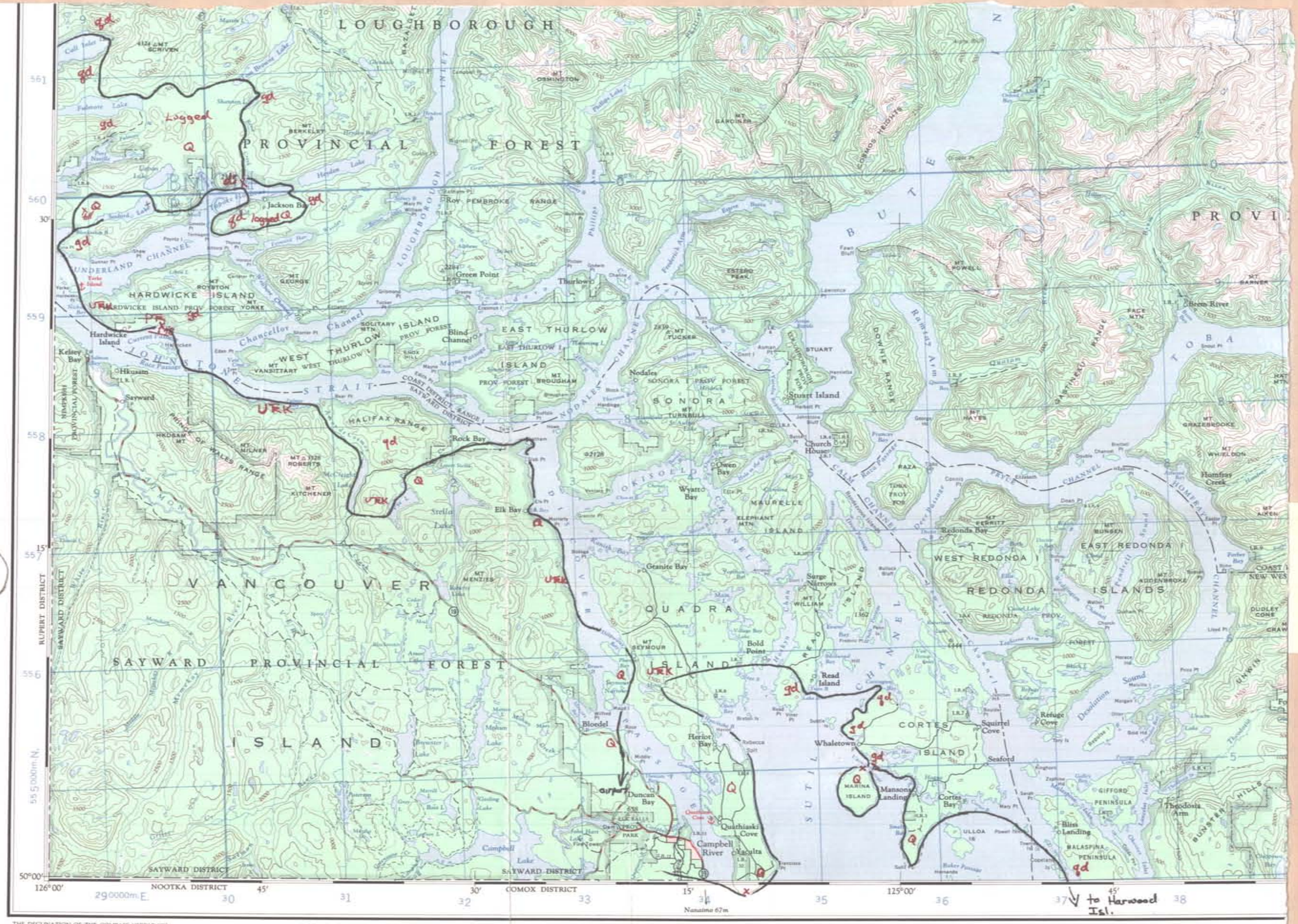
NORTHING: 0 / 8 / 08

MILITARY GRID REFERENCE: XG4108

9UXG4108

TEN THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 9

774 M03



THE DECLINATION OF THE COMPASS NEEDLE 1951

The declination of the compass needle at any place along a red line is the declination given on that red line. At other places the declination is between those given on the neighbouring red lines; thus at the place marked A, the declination is between 24°30'E. and 24°45'E. The declination of the compass needle is decreasing 2½ minutes annually.

Produced and printed by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, 1957, from air photographs taken in 1951.

Universal Transverse Mercator Projection

Contour interval 500 Feet
Elevations in Feet above Mean Sea Level
North American Datum 1927.

REFERENCE

Roads:
- Hard surface, all weather — more than 2 lanes; 2 lanes; less than 2 lanes
- Loose surface, all weather — 2 lanes or more; less than 2 lanes
- Loose surface, dry weather — Wagon road or trail
- Railway: normal gauge — multiple track; single track; abandoned

Boundaries:
- international
- provincial
- county or district
- Indian reserve, park, etc.

Contours:
- elevation
- depression
- approximate
- Spot elevation (in feet)
- Power transmission line
- Telephone line

LKM - GTC
June 1987.

92 K

BUTE INLET
BRITISH COLUMBIA

"TO FILE"

Scale 1:250,000
1 Inch to 4 Miles Approximately

Miles 5 0 5 10 15 20 Miles
Kilometres 5 0 5 10 15 20 25 30 Kilometres

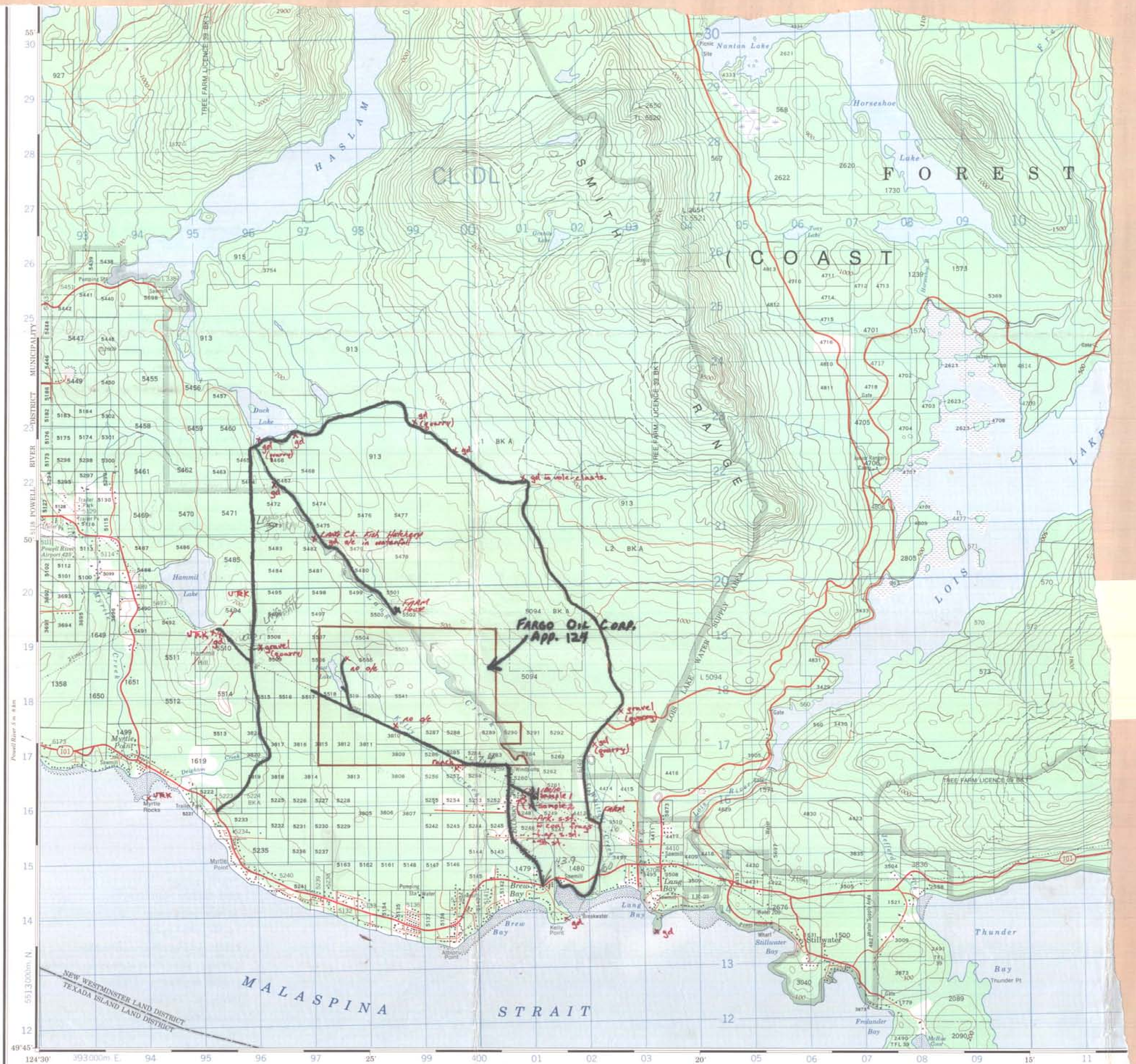
774 M04

ADA

EDITION 3

92 F

Refer to this map as:	92 F EDITION 3 ASE SERIES A 502



Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES. Updated from aerial photographs taken in 1972. Culture check 1974. Printed 1976.

Copies may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa or your nearest map dealer.

June 1987
LKM / GJC

Roads:	Routes:		
hard surface, all weather	pavée, toute saison	dual highway / 2 chaussées séparées	more than 2 lanes / plus de 2 voies
hard surface, all weather	pavée, toute saison	2 lanes / 2 voies	less than 2 lanes / moins de 2 voies
loose or stabilized surface, all weather	gravier aggloméré, toute saison	2 lanes or more / 2 voies ou plus	less than 2 lanes / moins de 2 voies
loose surface, dry weather and unclassified streets	de gravier, temps sec et rues hors classe		
cart track	de terre		
trail, cut line or portage	sentier, percée ou portage		

FOR COMPLETE REFERENCE SEE REVERSE SIDE — POUR UNE LISTE COMPLÈTE DES SIGNES, VOIR AU VERSO

774 (M05)

HASLAM LAKE
BRITISH COLUMBIA

Scale 1:50,000 Échelle

Miles 1 0 1
Metres 1000 0 1000 2000 3000
Yards 1000 0 1000 2000 3000