

- John Hamilton } Cominco  
 - Ken Pride }

# ALEY

880042  
 94B027  
 94B15E

Apr. 14/87  
 TOS

ZONE	'85 Th (ppm)	'86 Th (ppm)	n	Status
SADDLE	771 550	304 156	16	Potential
SADDLE WEST	none	none	17	Potential
BEAR EXT.	426	none	3	Not Mineable
EAST	690	none	2	"
CENTRAL	<500	none	35	'ORE'
			<u>73</u>	

Average ppm Th = 228 (→ 209)  
(except Bear + East)

- all >500 Th assays were re-assayed (new aliquot)  
 + results <10% (all lower)

{ Most Th hole = 00H 85-3 - Saddle Zone } ~ 75m apart  
 { Next nearest hole = 86-17 }

- No correlation between either high grade/low grade + Th

- Down hole gamma radiation surveys tried in all holes  
 in 1985 (10) - only part way in 7; found 'best' Nb min.  
 in Central zone assoc. with no U or Th. Did not  
 do gamma surveys in '86. Note: Assays in section of Nb  
 min. show highest gamma (Th) values outside min. - no assays, but gamma ray properties lower

- Location of U/Th highs - i) isolated in Bear + East  
 Zones (not mineable) ii) none in Central iii) Saddle  
 iv) Mäder's 840 ppm Th from rare-earth dyke (NW)  
 - hand specimen (4 kg.)

- No anomalous (i.e. >500 ppm) values from surface trenching;  
 - only from composites in drill core - max. 14m length.

- Water geochem. - 3 yrs. ('84 - '86 incl.) baseline studies  
 $Th < 0.005$  ppm in waters i.e. less than detection  
 $\rightarrow pH = 8$  - insoluble
- Narrow min. in East & Bear zones - not economic
- studies & research by Bill Fyfe (UW6) on Elliot Lk.  $U_3O_8$  ores indicate that apatite would be important as 'neutralizer'  
 $\rightarrow$  luckily at Aley apatite occurs up to 5% (ii very 'beneficial') [source: Jerry Blackwell]
- Comment: size of anomalies:

Different thresholds!

1) $U_3O_8$ - .05%	daughter (radon) ~ 3.8 days
2) $Th$ - should be higher? (doesn't dissolve)	daughter (radon) (3.64h $\rightarrow$ 54secs)

Eg. Shear zone 20 m square or  $20 \times 20 = 400m$

$\rightarrow$  drill holes cave quickly ii very expensive to come back & seal

[ 4% radioactivity in concentrate is hazardous ]

- from Mäder's paper - 4 potential Th minerals / 0-uranium

① Rock I.V. with Urs Mäder (UBC grad. student)

ALEY

Dec. 5/86

<u>Sa. No. (Aley-)</u>	<u>ROCK TYPE</u>
1	Close to contact with syenitic phase - circled pyrochlore or <sup>replaced</sup> fersmite - "Biotite-rich <sup>calcite</sup> Carbonatite"
2	Calcite carbonatite - sodic amph. + mica (barren) - marginal phase
3	Transition between syenitic phase + carbonate (metasomatic carbonatite) - ab. amphibole
4	Similar to #1 - probably from East zone (not too persistent bands)
5	Dolomite carbonatite
6	Magnetite-rich phase + green amphibole (assoc. with calcite carbonatite)
7	Transitional fersmite? <sup>dolomite</sup> carbonatite (± niobium?)
8	East zone? (à la #1 + #4)
9	Magnetite rich band in calcite carbonatite
10	Chloritic pseudomorphs in calcite carbonatite with fairly high radioactivity (Th-oxides/silicates)
11	Crse. gr. <u>dolomite carbonatite</u> (recrystallized) - stable isotopes (upper mantle)
12	<u>Dolomite carbonatite</u> - could be very fn. pyrochlore (thin section - high relief - dk. reddish brown)
13	<del>Dolomite carbonatite</del> - black = rutile? or fersmite à la #1, #4
14	<u>Dolomite carbonatite</u> - black = rutile? or fersmite

(2)

ALEY (cont'd)

Dec 5/86

Sa. No. (Aley-)

ROCK TYPE

15

Dolomitic carbonatite with pyrite

16

Chlorite aggregates

17

N/A

18

Calcite carbonatite with amphibole + biotite  
~~+ small pyrochlores~~ - ridge zone

19

Dolomite carbonatite with pyrite

20

Dolomite carbonatite with 'no-name' aggregates  
(incl. fersmite)

- Better mineralization in areas of calcite carbonatite (eg. Central Zone) (cf. dolomite) - zones tend to be 'smaller'.
- also pyrochlore in calcite carbonatite 'sweats'

# INDIAN RIVER

UBC - BGS, <sup>posting</sup>

Oct. 23/86

~~John Ross - see handout~~

~~- Doug Reddy~~

## ALEY CARBONATITE

- mainly mineralogical

URS reader  
2nd Floor

- Hugh Greenwood
- student - no work in field '86
- '86 HG - helicopter cost into Aley in '86
- remapped deposit / mineralogy / structure
- mechanics of emplacement of body
- no thermal effects i.e. arrived cold!
- ductile shear replaced aureole
- ~50 mineral species incl. microprobe
- rare earth carb. dykes around <sup>carbonate</sup> body - origin?
- eq. late stage differentiates intr. into aureole?
- 'syenite' or Qtz-syenite = amphibolite in field  
(aegirine, albite, arfs...)
- C + O isotopes = post magmatic, deuteric

MSc thesis available - UBC Library

- carb - Dev. age 340-350

"Tens of millions  
of tons @ .7% Nb"  
(TF no. rpt. - Dec '87)