GEOCHEMICAL REPORT ON THE

WEST (WEST GROUP) 1-12 MINERAL CLAIMS

WHITEHORSE MINING DISTRICT

Latitude 60° 04' North   Longitude 135° 07' West

N.T.S. Map Sheet 105D/3E

Based on work completed between
July 12th and July 17th, 1979

For

E&B Explorations Ltd.

By

R.R. Culbert, Ph.D., P.Eng.

D.G. Leighton & Associates Ltd.

31 January 1980

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $ 4800

Resident Geologist or
Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

B. R. BAXTER
Supervising Mining Recorder
for Commissioner of Yukon Territory

CONTENTS

ILLUSTRATIONS

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GEOLOGICAL CONSULTANTS

3155 WEST 12TH AVENUE
VANCOUVER, B.C.
V6K 2R6

WEST PROPERTY
BENNETT LAKE, Y.T.

INTRODUCTION

This report describes the results of a geochemical survey for uranium completed on the WEST property during 1979. This program was follow-up to work done during the previous year which consisted of geochemical sampling, prospecting and geological mapping.

The work done in 1979 was completed between July 12th and 17th by helicopter support based in Atlin, B.C. The WEST property work formed part of a larger program involving the investigation of other properties in the B.C.-Yukon border region.

SUMMARY AND CONCLUSIONS

1. The WEST property is comprised of 12 unsurveyed claims, and is located on the West Arm of Bennett Lake, 25 kilometers southwest of Carcross, Yukon Territory.

2. The property is underlain mainly by granodiorite and leucocratic quartz monzonite. A fault may separate these units.

3. A strong uranium anomaly coinciding with an oval shapped swamp identified in 1978 was tested by a grid of auger holes in an attempt to determine the source of uranium ions.

4. It is concluded that the high uranium values in the WEST property marsh are not of local origin (i.e. from beneath the swamp area) but represent accumulation from through-going uraniferous waters from an unknown source or sources up slope.

5. The extremely high molybdenum geochemistry on the WEST property deserves attention.

Respectfully submitted,

PROFESSIONAL
PROVINCE OF
R. CULBERT
BRITISH COLUMBIA
ENGINEER

R.R. Culbert, Ph.D., P.Eng.

GENERAL DESCRIPTIONS

Location and Access

Latitude 60° 04' North; longitude 135° 07' West. Located on the north side of the West Arm of Bennett Lake about three kilometers from its western end. Accessible by float plane, helicopter or boat from Carcross, Yukon Territory.

History

Uranium-molybdenum geochemical anomalies were found in a swampy area of the WEST property in 1978. Fairly detailed augering was carried out in 1979 in an attempt to establish a drill target along the lineament holding that muskeg. No previous uranium exploration work is known from this particular area.

Claims

The WEST property consists of the following claims:

Claims	Grant No.	Record Date	Expiry
WEST 1-12	YA22555-YA22566	25 April 1978	1980

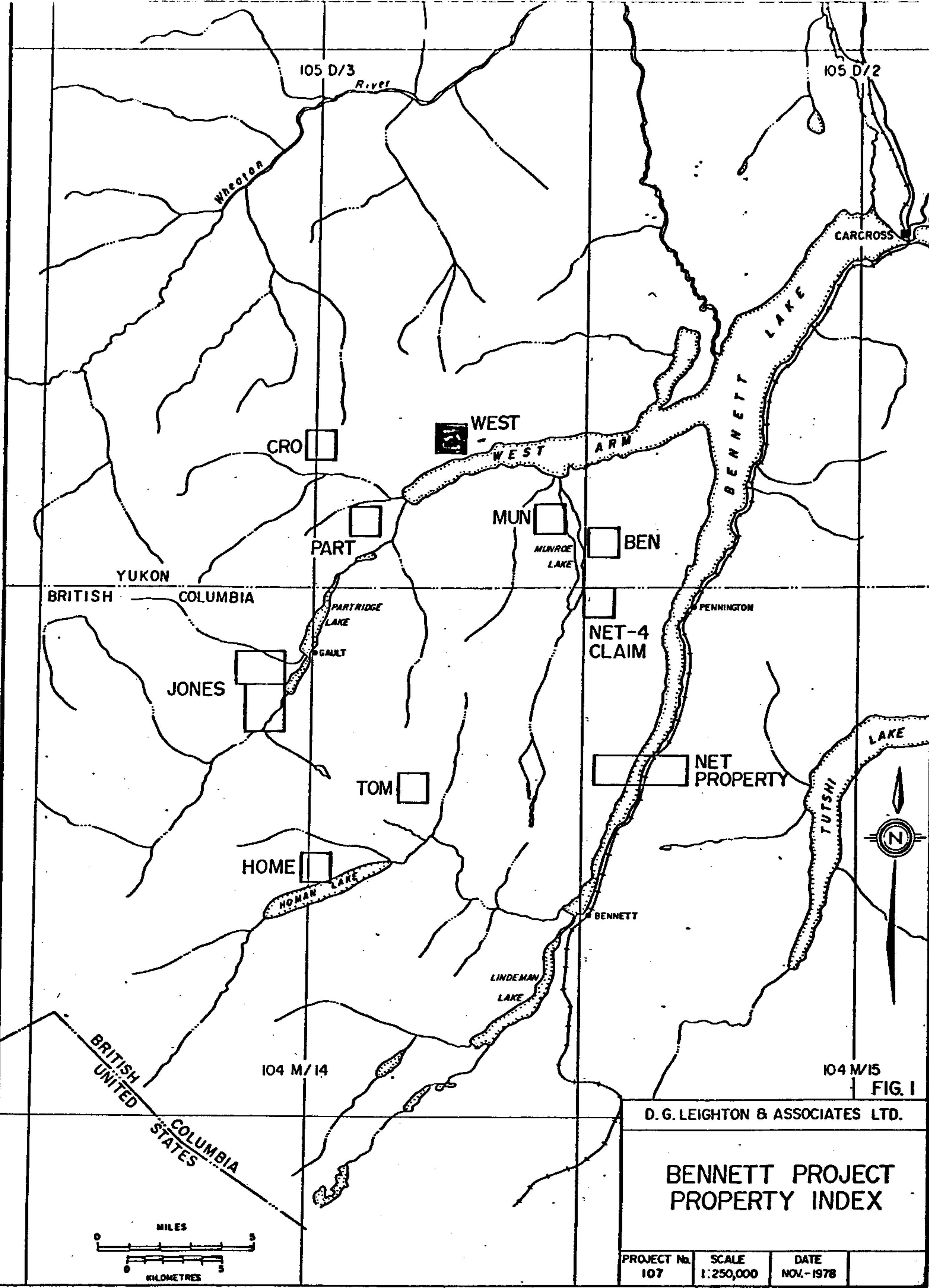
105 D/3
105 D/2
River
Wheaton
CARCROSS
BENNETT LAKE
WEST
CRO
WEST ARM
MUN
PART
BEN
MUNROE LAKE
YUKON
BRITISH COLUMBIA
PARTRIDGE LAKE
PENNINGTON
NET-4 CLAIM
GAULT
JONES
TOM
NET PROPERTY
TUTSHI LAKE
N
HOME
HOMAN LAKE
BENNETT
LINDEMAN LAKE
BRITISH COLUMBIA
UNITED STATES
104 M/14
104 M/15
MILES
0
5
0
5
KILOMETRES
D. G. LEIGHTON & ASSOCIATES LTD.
BENNETT PROJECT
PROPERTY INDEX
PROJECT No. 107
SCALE 1:250,000
DATE NOV.-1978

FIG. 1

GEOLOGY*

Most of the WEST property is covered by glacial drift or coluvium. A glacial lake deposit forms a terrace along the 2,700 foot elevation below which no outcrop occurs. Virtually the only rock cropping out on the property occurs on a knoll extending 1,200 x 400 meters between 2,700 and 3,200 feet asl. Rocks here consist of three varieties of intrusive rock: fine-grained biotite quartz monzonite averaging 80-90 cps (radioactivity), coarse-grained biotite-hornblende granodiorite averaging 90-100 cps, and fine-grained granodiorite averaging 60-70 cps. No clear contacts were observed. All rocks are unaltered and only weakly fractured, and no anomalous radioactivity was encountered on traverses over the knoll. Nearly all rocks on the steep sidehill north of the knoll consists of coarse-grained leucocratic pink to white quartz monzonite containing 25-30% quartz, 30% plagioclase, 40% K-feldspar and 2-5% biotite and hornblende, and varying from 120-180 cps radioactivity.

A suggestion of a fault separating the knoll from the main sidehill to the north is apparent on airphotos.

*From assessment report on the WEST property by R.R. Culbert dated 28 February 1979.

GEOCHEMISTRY

Fifty-two holes were augered to bedrock in the swampy area on the east side of the WEST property. Samples were collected at one-half meter intervals and assayed by low energy gamma spectrometry (see Appendix "A"). Results and sample locations are shown on an accompanying map (in pocket) and listed in Table I following this page.

This work showed that most of the marsh was quite shallow, and while there were a few areas where uranium was concentrating toward the bottom of the profile, there was no general increase in uranium equilibrium there to suggest that the majority of uraniferous waters are ascending along the main fracture. Furthermore, some other strong anomalies were discovered, both in spring systems above the swamp lineament, and above the lineament to the west of the marsh area. The overall picture was hence of uraniferous waters from a higher and unknown origin entering a lineament.

Prospecting on the ridge and hillside above the geochemical anomalies encountered only very weak radioactive zones, although some minor molybdenum showings were also reported. The extremely high molybdenum geochemistry here deserves attention.

TABLE I

WEST PROPERTY GEOCHEMICAL DATA

BENNETT PROJECT - 1979 GEOCHEMICAL DATA

EXPLANATION OF HEADINGS
*********** ** ********

SAMPLE NAME -- THIS GIVES NAME AND NUMBER OF GEOCHEMICAL SAMPLE AS IT APPEARS ON SAMPLE MAPS. PRECEEDING LETTER INDICATES FIELD WORKER IN WHOSE BOOK THE CASE IS DESCRIBED.

TYP -- TYPE OF SAMPLE TAKEN, AS FOLLOWS:
- STRM- SILT FROM STREAM OR WATERCOURSE.
- LAKE- LAKE OR SWAMP SEDIMENT.
- SPRG- SEDIMENT FROM SPRING OR SEEPAGE.
- LINS- LINEAMENT OR GULLY SOIL SAMPLE.
- GRID- SOIL SAMPLE TAKEN BY GRID OR LINE SPACING.
- AUGR- AUGER SAMPLE OF SOIL OR BOG, DEPTH IN METERS.
- ROCK- ROCK SAMPLE.

PROP -- INDICATES PROPERTY ON OR NEAR WHICH SAMPLE WAS TAKEN.

URANIUM PPM -- PARTS PER MILLION URANIUM IN DRIED SAMPLE, WITH STANDARD ERROR FOR THE DETERMINATION IN BRACKETS.

PB-214 -- LEAD-214 IS A URANIUM DAUGHTER PRODUCT WHICH FOLLOWS THE RADON ESCAPE POINT IN THE DECAY SERIES. IT IS GIVEN IN EQUIVALENT PPM URANIUM.

RADM 226 -- WHERE STATISTICALLY VIABLE, THE RADIUM 226 CONTENT IS GIVEN IN PPM URANIUM EQUIVALENT.

TH PPM -- THIS IS THE THORIUM CONTENT IN PARTS PER MILLION.

EQU LIB -- PERCENTAGE EQUILIBRIUM (WHERE COUNTING STATISTICS ALLOW) BETWEEN URANIUM AND ITS DAUGHTER RADIUM. VALUES OVER 100 INDICATE RADIUM EXCESS AND ARE TYPICAL OF CERTAIN TYPES OF LEACHING IN ROCKS AND OF SOME SEDIMENTS NEAR SPRINGS. THE MORE USUAL LOW VALUES ARE TYPICAL OF WATER-TRANSPORTED URANIUM AS FOUND IN SEDIMENTS AND SOILS.

FIELD COMMENTS -- AS NOTED BY SAMPLERS TO HELP IDENTIFY THE SAMPLE CASE.

WEST PROPERTY -- LOCATED ABOVE THE WEST ARM OF BENNETT LK., ON NORTH SIDE

SAMPLE NAME	TYP	PRCP	URANIUM PPM	PB-214 PPM EQV	RADM 226	TH PPM	ECU LIB	SPEC GRAV	FIELD COMMENTS
A WE 1L	LINS	WEST	4 (10)	2 (2)		39		0.52	-ORGANIC WET
A WE 2L	LINS	WEST	(6)	7 (1)		30		0.78	BROWN MUCK
A WE 3B	GRID	WEST	13 (6)	2 (1)		16		0.81	BROWN SANDY
A WE 4	GRID	WEST	147 (13)	63 (3)	14		45	0.54	ORGANIC WET
A WE 5L	LINS	WEST	146 (11)	2 (2)		4		0.52	
A WE 6B	GRID	WEST	131 (36)	1 (9)		18			
A WE 7B	GRID	WEST	19 (6)	4 (1)		18		0.83	BROWN SANDY
A WE 8B	GRID	WEST	10 (5)	6 (1)		16		0.97	
A WE 9B	GRID	WEST	(5)	5 (1)		21		0.94	
A WE 10B	GRID	WEST	677 (18)	55 (3)				0.52	
A WE 11B	GRID	WEST	(6)	10 (1)		15		0.84	ORGANIC
A WE 12B	GRID	WEST	259 (10)	11 (2)		20		0.68	ORGANIC
A WE 13B	GRID	WEST	8 (6)	3 (1)		14		0.76	ORGANIC WET
A WE 14L	LINS	WEST	698 (23)	14 (4)	32	20	2	0.34	ORGANIC WET
A WE 15B	GRID	WEST	115 (15)	11 (3)	35	16	9	0.35	ORGANIC
A WE 16B	GRID	WEST	119 (12)	5 (3)		12		0.44	ORGANIC DRY
A WE 17B	GRID	WEST	2 (12)	(3)		30		0.39	SANDY
A WE 17S	STRM	WEST	20 (9)	7 (2)		30		0.59	SANDY
A WE 18B	GRID	WEST	12 (8)	5 (2)		28		0.61	ORGANIC DRY
A WE 19B	GRID	WEST	59 (11)	7 (2)		29		0.50	SANDY
A WE 20B	GRID	WEST	14 (7)	8 (1)		34		0.74	SANDY
A WE 21B	GRID	WEST	16 (5)	2 (1)		13		0.88	
A WE 22B	GRID	WEST	19 (6)	7 (1)		7		0.86	
A WE 23B	GRID	WEST	10 (6)	5 (1)		8		0.85	
A WE 24B	GRID	WEST	15 (6)	3 (1)		9		0.77	
A WE 25B	GRID	WEST	6 (5)	3 (1)		16		0.92	
A WE 26B	GRID	WEST	(5)	4 (1)		12		0.89	SANDY
A WE 27B	GRID	WEST	2 (5)	3 (1)		14		0.91	
A WE 28B	GRID	WEST	17 (5)	1 (1)		16		0.91	
A WE 29S	GRID	WEST	128 (13)	2 (3)		19		0.42	SANDY GRAVEL
A WE 29B	GRID	WEST	2 (6)	2 (1)		11		0.80	SANDY
A WE 30B	GRID	WEST	(6)	7 (1)		8		0.83	
A WE 31L	LINS	WEST	51 (14)	(3)		27		0.34	ORGANIC DRY
A WE 32B	GRID	WEST	(6)	2 (1)		24		0.77	SANDY
A WE 33B	GRID	WEST	12 (6)	3 (1)		11		0.80	
A WE 34B	GRID	WEST	73 (8)	5 (2)		30		0.70	
A WE 34L	LINS	WEST	42 (9)	6 (2)		38		0.60	TALUSFINES
A WE 35B	GRID	WEST	19 (7)	9 (2)		17		0.71	
A WE 36S	STRM	WEST	129 (11)	2 (2)		37		0.52	SANDY GRAVEL
A WE 36B	GRID	WEST	1 (9)	7 (2)		33		0.54	ORGANIC DRY
A WE 37B	GRID	WEST	29 (10)	7 (2)		11		0.47	ORG GRAVEL
A WE 37L	LINS	WEST	51 (18)	3 (4)		41		0.29	SANDY ORG
A WE 38B	GRID	WEST	5 (8)	3 (2)		31		0.60	TALUS FINE
A WE 39B	GRID	WEST	15 (5)	5 (1)		14		0.94	SANDY
A WE 40B	GRID	WEST	2 (7)	8 (2)		18		0.69	TALUS FINE
A WE 41B	GRID	WEST	4 (6)	7 (1)		20		0.84	BROWN ORGANIC
A WE 42B	GRID	WEST	8 (6)	3 (1)		15		0.80	
A WE 43B	GRID	WEST	1 (5)	4 (1)		20		0.97	
A WE 44L	GRID	WEST	10 (6)	5 (1)		12		0.82	
A WE 45S	GRID	WEST	84 (13)	7 (3)		13		0.40	SAND GRAVEL
B WE 1	SPRG	WEST	20 (8)	1 (2)		20		0.57	NOTCH WEST END
B WE 2S	SPRG	WEST	64 (5)	5 (1)		17		1.07	JUST ABOV NTCH
B WE 3L	LINS	WEST	31 (6)	9 (1)		11		0.81	350OFT

SAMPLE NAME	TYP	PRCP	URANIUM PPM	PB-214 PPM ECV	RADM 226	TH PPM	EQU LIB	SPEC GRAV	FIELD COMMENTS
B WE 4S	STRM	WEST	143 (8)	7 (1)		27		0.75	3570 FT GRAV
B WE 5L	LINS	WEST	8 (6)	7 (1)		12		0.76	3520FT BRN ROOT
B WE 6L	LINS	WEST	1 (8)	5 (2)		31		0.64	3540FT ROCTY
B WE 7S	STRM	WEST	79 (10)	8 (2)		14		0.56	3045FT GOODSILT
B WE 8S	STRM	WEST	411 (15)	8 (2)		21		0.49	3030FT POORSILT
B WE 9S	SPRG	WEST	348 (13)	10 (2)		62		0.58	2815FT ORG SAND
B WE 10S	STRM	WEST	107 (9)	3 (2)		35		0.64	2815FT GOODSILT
B WE 11S	STRM	WEST	25 (5)	3 (1)		19		1.12	LOW SWAMP
B WE 12S	STRM	WEST	39 (5)	7 (1)		9		1.05	LOWER SWAMP
B WE 13S	STRM	WEST	95 (7)	9 (1)		13		0.91	LOWER SWAMP
B WE 14S	STRM	WEST	130 (8)	3 (1)		28		0.82	LOWER SWAMP
B WE 15S	STRM	WEST	73 (5)	5 (1)		10		1.12	LOWER SWAMP
B WE 16S	STRM	WEST	6 (5)	7 (1)		25		1.14	HDVALLY HINDCLM
B WE 17S	STRM	WEST	22 (8)	17 (2)	30	47		0.72	BACK VALLY TRAV
B WE 20R	STRM	WEST	(6)	18 (1)	42	43		1.00	
B WE 22S	STRM	WEST	28 (6)	8 (1)		22		0.83	
B WE 23S	STRM	WEST	57 (10)	9 (2)		40		0.57	
B WE 24S	STRM	WEST	32 (6)	5 (1)		21		0.81	
B WE 25S	STRM	WEST	55 (6)	12 (1)	18	28	26	1.05	
B WE 26S	STRM	WEST	110 (9)	7 (2)		52		0.69	
B WE 27S	STRM	WEST	81 (7)	5 (1)		27		0.84	
B WE 28S	STRM	WEST	97 (8)	7 (2)		27		0.71	
B WE 29S	STRM	WEST	43 (8)	4 (2)		40		0.69	
B WE 33S	STRM	WEST	33 (9)	7 (2)		36		0.61	
B WE 36R	GRID	WEST	19 (6)	11 (1)	3	20	78	0.85	
B WE 39R	STRM	WEST	8 (6)	12 (1)	18	42		0.93	
B WE 41L	STRM	WEST	10 (7)	7 (1)		30		0.72	NE CLAIM AREA
B WE 42S	STRM	WEST	39 (8)	10 (2)		24		0.73	GRAV.HIGH UPMTN
B WE 43S	STRM	WEST	41 (10)	8 (2)		55		0.60	GRAV.HIGH UP
B WE 44S	STRM	WEST	266 (13)	11 (2)	5	94	4	0.57	GRAV MID MTN.
B WE 45S	SPRG	WEST	4129 (48)	85 (6)	69	51	2	0.32	NW LOW SWAMP
K WE 1S	STRM	WEST	17 (8)	4 (2)		27		0.66	1.3M FAST FLO
K WE 2B	LINS	WEST	9 (5)	6 (1)		19		1.08	GRAINY IN WASH
K WE 3B	LINS	WEST	(5)	7 (1)		23		1.03	3M WASH TO CR
K WE 4B	LINS	WEST	19 (5)	7 (1)		12		1.00	SANDY
K WE 5B	LINS	WEST	17 (5)	5 (1)		26		1.10	
K WE 6B	LINS	WEST	9 (5)	4 (1)		25		1.04	
K WE 7L	LINS	WEST	7 (5)	4 (1)		29		0.95	
K WE 8L	LINS	WEST	13 (6)	6 (1)		32		0.86	
K WE 9L	LINS	WEST	2 (6)	9 (1)		51		0.94	1M CR BANK SND
K WE 10L	LINS	WEST	12 (5)	5 (1)		29		1.09	
K WE 11B	LINS	WEST	(6)	5 (1)		20		0.78	
K WE 12B	LINS	WEST	(8)	5 (2)		39		0.67	
K WE 13L	LINS	WEST	26 (7)	9 (1)		19		0.79	
K WE 14S	LINS	WEST	92 (11)	6 (2)		46			2M FF GRAV.
K WE 15S	LINS	WEST	156 (10)	10 (2)		26		0.64	.5M
K WE 16L	LINS	WEST	5 (11)	8 (2)		28		0.47	GRIT ORG RTS
K WE 17L	LINS	WEST	15 (6)	9 (1)		37		0.92	.5M BANK
K WE 18S	LINS	WEST	36 (9)	10 (2)		41		0.64	
K WE 19L	LINS	WEST	32 (9)	4 (2)		23		0.57	LOAM
K WE 20L	LINS	WEST	4 (8)	10 (2)		35		0.63	LOAM
K WE 21L	LINS	WEST	11 (6)	3 (1)		41		0.84	
K WE 22L	LINS	WEST	19 (9)	2 (2)		11		0.51	

WEST PROPERTY -- LOCATED ABOVE THE WEST ARM OF BENNETT LK., ON NORTH SIDE

SAMPLE NAME	TYP	PROP	URANIUM PPM	PB-214 PPM EQV	RADM 226	TH PPM	EQU LIB	SPEC GRAV	FIELD COMMENT
K WE 23S	LINS	WEST	155 (10)	10 (2)		35		0.62	DRY.5M CR SAN
K WE 24S	LINS	WEST	15 (6)	6 (1)		30		0.98	15M.ARM OF SAN
K WE 25L	LINS	WEST	58 (6)	6 (1)		17		0.90	25M BANK TCHSN
K WE 26L	LINS	WEST	23 (4)	8 (1)		8		1.15	15M LIN SNDY
K WE 27L	LINS	WEST	(6)	3 (1)		20		0.86	GULLY
K WE 28S	STRM	WEST	36 (6)	7 (1)		10		0.81	1M CR FF
K WE 29B	LINS	WEST	2 (4)	5 (1)		20		1.16	SANDY
K WE 30B	LINS	WEST	10 (4)	3 (1)		11		1.19	
K WE 31B	LINS	WEST	3 (6)	3 (1)		18		0.82	
K WE 32B	LINS	WEST	14 (5)	3 (1)		11		0.98	
K WE 33L	LINS	WEST	5 (5)	6 (1)		13		1.06	
K WE 34S	STRM	WEST	23 (5)	5 (1)		15		1.05	2M CR FF
K WE 35L	LINS	WEST	8 (6)	6 (1)		17		0.90	
K WE 36L	LINS	WEST	6 (6)	5 (1)		14		0.87	
K WE 37L	LINS	WEST	28 (9)	3 (2)		23		0.57	.3M TRIC
K WE 38B	LINS	WEST	11 (4)	4 (1)		12		1.12	
K WE 39L	LINS	WEST	4 (6)	5 (1)		14		0.79	
K WE 40L	LINS	WEST	29 (6)	(1)		20		0.82	
K WE 41L	LINS	WEST	8 (5)	3 (1)		11		0.96	SNDY&RT.HRS.
K WE 42L	LINS	WEST	6 (5)	5 (1)		21		1.09	
K WE 43L	LINS	WEST	19 (5)	5 (1)		14		0.98	
K WE 44L	LINS	WEST	14 (5)	1 (1)		20		0.92	
K WE 45L	LINS	WEST	11 (5)	4 (1)		12		0.95	
K WE 46L	LINS	WEST	18 (6)	5 (1)		4		0.83	FINE PWDR
K WE 47L	LINS	WEST	10 (5)	3 (1)		19		0.90	GRAIN RED BRN
K WE 48L	LINS	WEST	10 (7)	5 (1)		20		0.74	
K WE 49L	LINS	WEST	5 (4)	5 (1)		13		1.09	
K WE 50L	LINS	WEST	19 (5)	4 (1)		10		0.89	5CM LIN SNDY
K WE 51S	STRM	WEST	58 (7)	9 (1)		5		0.77	1M F SILT
K WE 52S	STRM	WEST	35 (8)	5 (2)		12		0.65	.7M DK SILT
K 1WE .5	AUGR	WEST	426 (17)	17 (3)	22	34	4	0.42	SPONGE ORGS
K 2WE .5	AUGR	WEST	277 (19)	10 (4)		9		0.31	
K 3WE .5	AUGR	WEST	49 (5)	4 (1)		5		0.96	ORG SILT + GRVL
K 4WE .5	AUGR	WEST	141 (18)	4 (4)		29		0.29	BRN PEAT -BP
K 4WE 1	AUGR	WEST	329 (14)	5 (3)		13		0.46	B P
K 4WE1.5	AUGR	WEST	135 (9)	11 (2)	20	11	8	0.70	BP& SILT-SND
K 5WE .5	AUGR	WEST	225 (14)	4 (3)		23		0.41	WEST AUGER
K 5WE .5	AUGR	WEST	200 (11)	8 (2)		14		0.57	
K 5WE1.5	AUGR	WEST	118 (12)	6 (2)		21		0.48	ORG MUCKSMELL
K 5WE 2	AUGR	WEST	104 (13)	(3)		21		0.38	BP
K 5WE2.5	AUGR	WEST	142 (10)	10 (2)		12		0.58	BP SILTY SAND
K 5WE 3	AUGR	WEST	343 (13)	35 (2)	22	16	10	0.61	BP SILTY SAND
K 5WE3.2	AUGR	WEST	707 (17)	51 (3)	22	40	7	0.61	SAND ROCK
K 6WE .5	AUGR	WEST	211 (14)	13 (3)	10	17	6	0.43	BRN ORG
K 6WE 1	AUGR	WEST	224 (21)	10 (5)		6		0.26	BP
K 6WE1.5	AUGR	WEST	60 (18)	17 (5)	30		28	0.27	BP
K 6WE 2	AUGR	WEST	159 (18)	3 (4)				0.28	BP
K 6WE2.5	AUGR	WEST	189 (18)	14 (4)	20	15	7	0.32	BP
K 6WE 3	AUGR	WEST	435 (17)	17 (3)	22	23	4	0.44	BP
K 6WE3.5	AUGR	WEST	226 (18)	5 (4)		22		0.31	BP
K 6WE3.7	AUGR	WEST	173 (14)	9 (3)		1		0.39	BP SAND
K 7WE .5	AUGR	WEST	30 (17)	13 (4)	30			0.28	BLK ORG
K 7WE 1	AUGR	WEST	75 (22)	(5)		11		0.22	BP

WEST PROPERTY -- LOCATED ABOVE THE WEST ARM OF BENNETT LK., ON NORTH SIDE

SAMPLE NAME	TYP	PROP	URANIUM PPM	PB-214 PPM EQV	RADM 226	TH PPM	EQU LIB	SPEC GRAV	FIELD COMMENT
K 7WE1.5	AUGR	WEST	51 (17)	4 (4)		23		0.29	BP
K 7WE 2	AUGR	WEST	236 (13)	5 (3)		6		0.46	BP
K 7WE2.5	AUGR	WEST	144 (7)	8 (1)		22		0.90	ORGSILT&TCHCLY
K 8WE .5	AUGR	WEST	69 (18)	(4)		17		0.27	BLK ORGMUCK
K 8WE 1	AUGR	WEST	82 (19)	7 (5)				0.25	
K 8WE1.5	AUGR	WEST	430 (15)	13 (3)	6	28	3	0.49	
K 9WE .5	AUGR	WEST	242 (14)	8 (3)		15		0.44	
K 9WE 1	AUGR	WEST	786 (18)	20 (3)	23	28	2	0.50	
K 9WE1 A	AUGR	WEST	202 (7)	8 (1)		23		0.98	CLAYISH
K10WE .5	AUGR	WEST	132 (17)	2 (4)		27		0.32	BLK ORG MUCK
K10WE 1	AUGR	WEST	163 (9)	16 (2)	14	23	10	0.79	SILTY GOOD
K11WE .5	AUGR	WEST	92 (15)	8 (4)		3		0.33	BLK ORG MUCK
K11WE 1	AUGR	WEST	86 (10)	3 (2)		3		0.50	
K12WE .5	AUGR	WEST	114 (12)	(3)		2		0.42	
K12WE 1	AUGR	WEST	223 (11)	6 (2)		27		0.60	
K13WE .5	AUGR	WEST	409 (15)	2 (2)		6		0.46	
K13WE 1	AUGR	WEST	236 (7)	5 (1)		11		0.98	BP & GRIT
K14WE .5	AUGR	WEST	108 (10)	3 (2)		8		0.53	BP-(BRN PEA'
K14WE 1	AUGR	WEST	146 (11)	14 (2)	26	7	10	0.56	BP
K14WE1.5	AUGR	WEST	113 (8)	(1)		21		0.73	BP
K14WE 2	AUGR	WEST	167 (9)	7 (1)		21		0.75	BP
K15WE .5	AUGR	WEST	22 (26)	(7)		30		0.18	BP
K15WE 1	AUGR	WEST	75 (20)	7 (5)		6		0.24	BP
K15WE1.5	AUGR	WEST	51 (20)	1 (5)		8		0.23	BP
K15WE 2	AUGR	WEST	57 (20)	4 (5)		8		0.24	BP
K15WE2.5	AUGR	WEST	71 (17)	11 (4)	23		15	0.30	BP
K15WE 3	AUGR	WEST	293 (16)	1 (3)		10		0.36	BP
K15WE3.5	AUGR	WEST	257 (14)	10 (3)		23		0.45	BP
K15WE3.7	AUGR	WEST	171 (12)	11 (2)		4		0.50	BP SAND
K16WE .5	AUGR	WEST	74 (17)	6 (4)		25		0.29	BP
K16WE 1	AUGR	WEST	99 (18)	10 (4)				0.27	BRN PEAT (BP)
K16WE1.5	AUGR	WEST	82 (7)	4 (1)		10		0.81	BP GRIT
K16WE 2	AUGR	WEST	25 (4)	4 (1)		9		1.15	SAND
K17WE .5	AUGR	WEST	187 (12)	8 (2)		4		0.47	BP
K17WE 1	AUGR	WEST	644 (15)	19 (2)	30	30	3	0.59	BP
K17WE1.5	AUGR	WEST	117 (12)	6 (3)		4		0.43	BP
K17WE 2	AUGR	WEST	61 (12)	(3)		18		0.40	BP
K17WE2.5	AUGR	WEST	120 (7)	5 (1)		20		0.85	BP SILTY
K18WE .5	AUGR	WEST	51 (16)	2 (4)		10		0.30	BP
K18WE 1	AUGR	WEST	59 (5)	7 (1)		8		1.00	BP SANDY
K18WE1.5	AUGR	WEST	159 (10)	1 (2)		33		0.62	BP SILTY
K19WE .5	AUGR	WEST	271 (17)	4 (3)		30		0.37	BRN ORG MUCK
K19WE 1	AUGR	WEST	197 (11)	8 (2)		25		0.56	BP
K19WE1.5	AUGR	WEST	357 (17)	17 (3)	1		4	0.39	BP
K19WE 2	AUGR	WEST	254 (10)	13 (2)	6	24	5	0.75	SANDY
K19WE2.2	AUGR	WEST	118 (7)	4 (1)		30		0.85	CLAY
K20WE .5	AUGR	WEST	171 (23)	1 (5)		40		0.23	BRN ORG MUCK
K20WE 1	AUGR	WEST	94 (7)	1 (1)		15		0.87	SANDY
K22WE .5	AUGR	WEST	17 (15)	5 (4)				0.31	BRN ORG MUCK
K22WE 1	AUGR	WEST	42 (19)	1 (5)				0.24	BP
K22WE1.5	AUGR	WEST	220 (19)	(4)		34		0.29	BP
K23WE .5	AUGR	WEST	72 (12)	11 (3)	16	13	15	0.44	BP
K23WE 1	AUGR	WEST	180 (14)	3 (3)		15		0.39	BP

WEST PROPERTY -- LOCATED ABOVE THE WEST ARM OF BENNETT LK., ON NORTH SIDE

SAMPLE NAME	TYP	PROP	URANIUM PPM	PB-214 PPM EQV	RADM 226	TH PPM	EQU LIB	SPEC GRAV	FIELD COMMENTS
K23WE1.5	AUGR	WEST	80 (13)	(3)		14		0.39	BP
K23WE 2	AUGR	WEST	57 (6)	4 (1)		17		0.94	SAND
K23WE2.5	AUGR	WEST	36 (4)	3 (1)		8		1.29	SAND
K24WE .5	AUGR	WEST	215 (14)	1 (3)		22		0.43	
K29WE .5	AUGR	WEST	231 (12)	(2)		20		0.51	
K25WE .5	AUGR	WEST	314 (11)	8 (2)		9		0.65	
K26WE .5	AUGR	WEST	185 (9)	6 (2)		17		0.71	
K27WE .5	AUGR	WEST	351 (15)	4 (3)		34		0.45	
K28WE .5	AUGR	WEST	80 (25)	6 (6)		17		0.20	
K28WE.75	AUGR	WEST	81 (11)	(2)		20		0.46	
K30WE .5	AUGR	WEST	528 (17)	14 (3)	17	12	2	0.45	
K31WE .5	AUGR	WEST	43 (5)	5 (1)		13		1.10	
K31WE.75	AUGR	WEST	21 (4)	5 (1)		13		1.24	
K32WE .5	AUGR	WEST	395 (15)	14 (3)		16		0.47	
K32WE.75	AUGR	WEST	197 (8)	5 (1)		24		0.92	
K33WE .5	AUGR	WEST	92 (16)	(4)		24		0.30	
K34WE .5	AUGR	WEST	295 (14)	14 (3)	20	10	4	0.48	
K35WE .5	AUGR	WEST	291 (10)	5 (2)		15		0.70	
K35WE 1	AUGR	WEST	169 (7)	8 (1)		25		1.01	
K35WE1.2	AUGR	WEST	57 (6)	9 (1)		22		1.05	
K36WE .5	AUGR	WEST	357 (24)	4 (5)		38		0.25	
K36WE 1	AUGR	WEST	911 (26)	32 (4)	2	1	3	0.32	
K37WE .5	AUGR	WEST	288 (18)	6 (4)		10		0.32	WEST AUGER
K37WE 1	AUGR	WEST	582 (22)	21 (4)	47		3	0.33	
K37WE1.5	AUGR	WEST	437 (12)	18 (2)	32	12	4	0.67	
K37WE 2	AUGR	WEST	851 (29)	21 (5)	72	18	2	0.26	
K38WE .5	AUGR	WEST	167 (14)	5 (3)				0.37	
K38WE 1	AUGR	WEST	425 (20)	12 (4)	28	6	2	0.33	
K38WE1.5	AUGR	WEST	780 (20)	13 (3)	23	33	1	0.42	
K38WE 2	AUGR	WEST	311 (9)	17 (1)		12		0.88	
K39WE .5	AUGR	WEST	250 (13)	13 (2)	14	9	5	0.51	
K39WE 1	AUGR	WEST	416 (17)	8 (3)		19		0.41	
K39WE1.5	AUGR	WEST	365 (13)	18 (2)	34	20	5	0.61	
K39WE 2	AUGR	WEST	737 (16)	37 (2)	44	21	5	0.65	
K40WE .5	AUGR	WEST	1008 (34)	38 (6)	115	17	3	0.23	WEST AUGER
K WE 53L	LINS	WEST	11 (6)	3 (1)		17		0.76	2CM LIN WET SND
K WE 54L	LINS	WEST	33 (8)	6 (2)		9		0.61	2CM L W SND
K WE 55S	STRM	WEST	18 (7)	7 (2)		29		0.71	1M CR SILT SND
K WE 56S	STRM	WEST	135 (13)	6 (3)		34		0.45	1.3M CR SLT-SND
K WE 57S	STRM	WEST	259 (15)	16 (3)	22	30	6	0.42	1M CRGS& CK SND
K WE 58L	LINS	WEST	11 (5)	3 (1)		18		1.02	20M LIN SND
K WE 59S	STRM	WEST	286 (22)	14 (5)	13	9	4	0.27	.3M TRIC ORGRIT
K WE 60S	STRM	WEST	33 (6)	5 (1)		10		0.87	1M DRY SND
K WE 61L	LINS	WEST	4 (6)	2 (1)		15		0.76	6M LIN GRAINSND
K WE 62L	LINS	WEST	4 (6)	6 (1)		23		0.82	10M LIN SND
K WE 63L	LINS	WEST	14 (12)	10 (3)		26		0.41	10M LIN SND
K WE 64L	LINS	WEST	14 (7)	1 (1)		33		0.69	FAN OFF 15M CR
K WE 65S	STRM	WEST	6 (5)	5 (1)		24		1.11	3 FORKS CR
P WE 6B	LINS	WEST	(6)	9 (1)		33		0.97	PEAK 6350
P WE 9B	LINS	WEST	121 (9)	82 (2)	82	35	89	1.02	R/A 500CPS
P WE 25B	LINS	WEST	11 (5)	8 (1)		42		1.09	SILT-HILLSIDE
P WE 29B	LINS	WEST	(9)	6 (2)		40		0.60	SILT-HILLSIDE
P WE 31B	LINS	WEST	2 (5)	8 (1)		18		0.98	SILT-HILLSIDE

WEST PRCFERTY -- LCCATED ABOVE THE WEST ARM CF BENNETT LK., ON NCRTH SIDE

SAMPLE NAME	TYP	PRCP	URANIUM PPM		PB-214 PPM ECV		RADM 226	TH PPM	EQU LIB	SPEC GRAV	FIELD CCMMENT
Y WE 1L	LINS	WEST	15	(8)	6	(2)		18		0.62	8S25CE BRN CRG
Y WE 1S	STRM	WEST	427	(37)	12	(8)		39			13S200E
Y WE 1B	GRID	WEST	18	(8)	3	(2)		2C		0.64	
Y WE 2B	GRID	WEST		(8)		(2)		53		0.60	OC LK SILT
Y WE 3B	GRIC	WEST	7	(11)		(3)		16		0.42	25E BRN ORG
Y WE 4B	GRIC	WEST		(13)	4	(3)		7		C.33	5CE BRN ORG
Y WE 5B	GRID	WEST		(8)	8	(2)		36		0.63	BRN ORG
Y WE 6B	GRID	WEST		(7)	7	(1)		23		0.70	
Y WE 7B	GRID	WEST	3	(9)	5	(2)		18		0.56	
Y WE 8B	GRID	WEST	5	(12)	5	(3)		23		0.41	BRN CRG
Y WE 9B	GRIC	WEST	49	(9)	4	(2)		20		C.57	
Y WE 1CB	GRID	WEST	11	(7)	5	(1)		21		0.75	MED SLOPE
Y WE 11B	GRIC	WEST	3	(9)		(2)		37		C.52	
Y WE 12B	GRIC	WEST	21	(6)	3	(1)		21		C.80	
Y WE 13B	GRID	WEST	18	(6)	6	(1)		19		0.85	
Y WE 14B	GRIC	WEST	15	(5)	6	(1)		19		0.97	
Y WE 15B	GRID	WEST	5	(6)	7	(1)		24		0.82	350E
Y WE 16B	GRID	WEST	12	(7)	8	(1)		14		0.72	400E
Y WE 17B	GRIC	WEST		(7)	5	(1)		4C		C.75	
Y WE 18B	GRID	WEST	6	(15)		(4)		4		0.29	BLK ORG
Y WE 19B	GRIC	WEST		(8)	10	(2)		4C		C.71	STEEP
Y WE 20B	GRIC	WEST	32	(7)	2	(1)		28		C.77	5CCE SANDY
Y WE 21B	GRID	WEST	19	(6)	3	(1)		19		0.90	525E STEEP
Y WE 22B	GRID	WEST	6	(5)	3	(1)		18		0.94	
Y WE 23B	GRID	WEST	17	(5)	4	(1)		17		1.12	
Y WE 24B	GRID	WEST	8	(4)	4	(1)		14		1.C9	600E

BREAKDOWN OF COSTS (For Assessment Purposes)

Wages and salaries	$1,050.00	
Benefits @ 12%	126.00	$1,176.00
Meals and accommodation 14 man days @ $35.00/man/day		490.00
Transport - mainly helicopter		858.00
Assay costs 291 samples @ $6.00		1,746.00
Miscellaneous; includes, report preparation, equipment rental, etc.		630.00
WEST PROPERTY TOTAL		$4,900.00

The following were directly involved with field work on the WEST property in 1979:

R.J. Bilquist, Prospector	c/o Box 81, Gabriola Island, B.C.
D.T. Kenning, Field Technician	304 West 11th Ave., Vancouver, B.C.
Jay Page, Field Technician	670 Vancouver Ave., Penticton, B.C.
R.R. Culbert, Geologist	c/o 3155 West 12th Ave., Vancouver, B.C.

CERTIFICATION

I, R.R. Culbert, do hereby certify that:

1. I am a practicing Professional Geological Engineer with offices at 3155 West 12th Avenue, Vancouver, B.C.

2. I am a graduate of the University of British Columbia, BASc. (1964), PhD. (1971).

3. I have practiced mining exploration for fifteen years, most of which were based in British Columbia.

4. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia.

5. I have personally visited the WEST property and supervised exploration work carried out there.

Respectfully submitted,

R.R. Culbert, PhD., P.Eng.

31 January 1980

APPENDIX "A"

ANALYTICAL PROCEDURE

LEGS - LOW ENERGY GAMMA SPECTROMETRY

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3155 WEST 12TH AVENUE
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LEGS - LOW ENERGY GAMMA SPECTROMETRY

INTRODUCTION

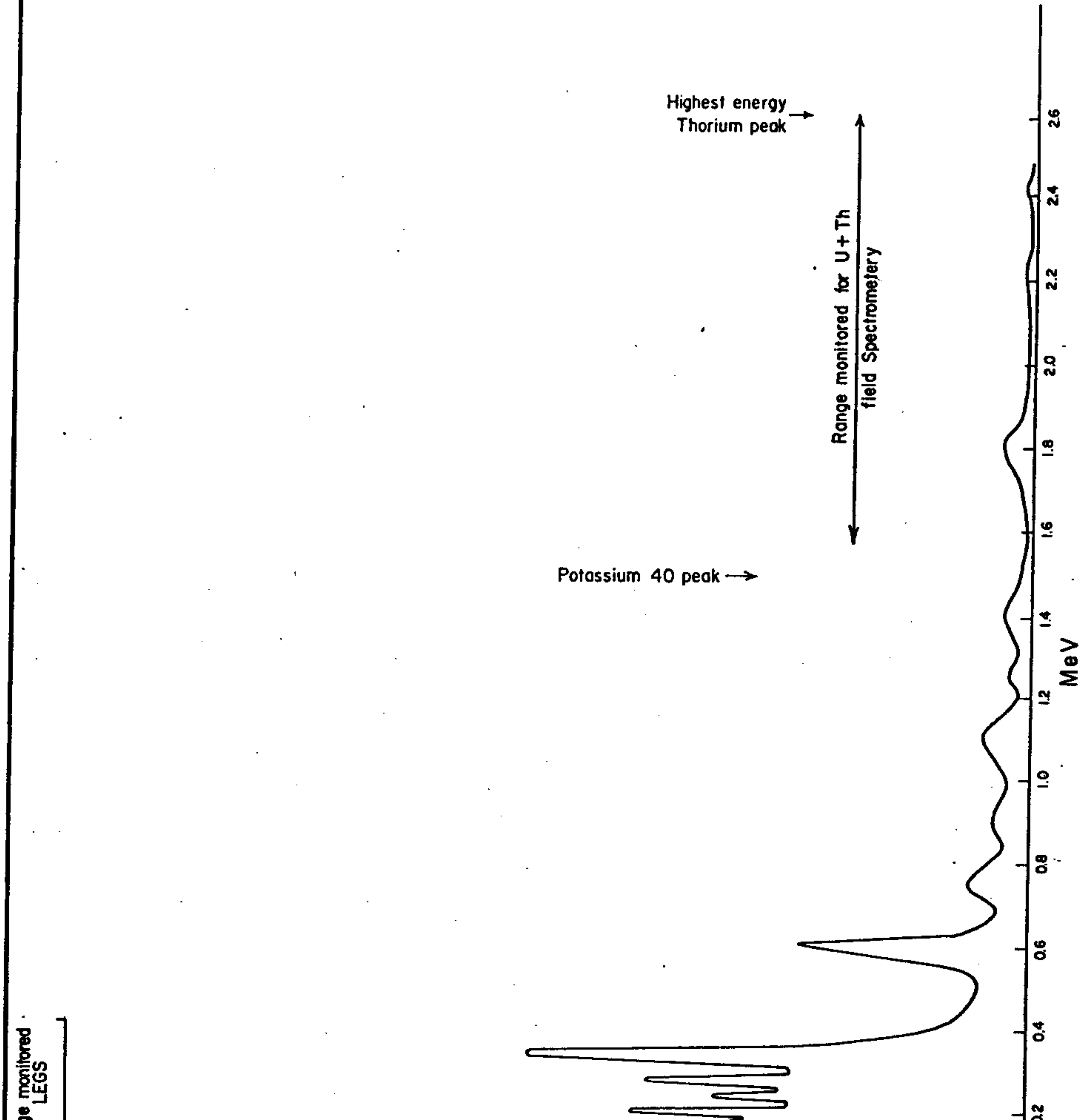
Low energy gamma spectrometry (LEGS) provides a method of determining uranium, thorium and U^{238} daughter products Pb^{214} and radium in geological samples, and has unique advantages when compared with other techniques. The system described here was developed by D.G. Leighton & Associates Ltd. with two objectives in mind. One was to provide an accurate assay facility which could be used in the field, giving field personnel rapid feedback which is particularly valuable on regional type programs. The second objective was to tackle the problem of radioactive disequilibrium. It was felt that routinely monitoring equilibrium would be useful in interpreting mobilizing mechanisms involved in uranium transport and tracking anomalies back to their source. The technique has proven to be reliable and highly cost effective in a variety of exploration programs.

METHOD

General

Conventional gamma spectrometry in geological exploration is severely limited for two reasons. First, because very high background gamma flux occurs at low energy levels (below 1 MeV), conventional systems are constrained to measure only the highest portion of the natural gamma energy range (above 1 MeV) and so cannot measure uranium directly (requiring measurements below 0.1 MeV) determining instead potassium, thorium and Bi^{214}. Unfortunately, if the geological system is in disequilibrium, considerable error will result in the value for uranium (from reliance on these measures as an indicator of uranium). In natural systems, especially in sediments and weathered rock, disequilibrium is the rule rather than the exception, due to the varying half lives and chemistries of uranium daughter products. The second limit in conventional systems is that, because only measurements at high energy levels are made, large statistical errors are introduced since at these energy levels, very low count rates occur (see Figure 1).

The LEGS system avoids both of these limitations. Measurement of the gamma spectrum at low energy levels (between 0.05 and 0.4 MeV) is achieved by ringing a 7 cm radius lead shield around both the sample and a "center-well" scintillating crystal to screen out background radiation. Since high count rates are measured at these low energy levels, a much lower statistical error exists. Moreover, uranium can be measured directly, together with two of its daughter products, so that the degree of disequilibrium in the system can be determined.



AN ORDINARY ROCK GAMMA SPECTRUM

FIGURE 1.

The LEGS system, then, is a laboratory or field base method, involving a lead shielded scintillating crystal and a pulse height analyzer capable of integrating counts across preset segments of the gamma spectrum. A weighted 8.7 cc sample of the material to be analyzed is placed in a plastic vial and inserted into the scintillating crystal. Pulse counts are monitored by the pulse height analyzer and the .05 - .4 MeV gamma spectrum is broken into four segments and measured. Resultant numbers are entered into a programable desk calculator to obtain uranium and thorium content in ppm and, Ra^{226} and Pb^{214} content in percent equilibrium or ppm uranium equivalents. Background radiation corrections are involved for samples of low radioactivity and self absorption corrections for those rich in uranium or thorium.

The technique is calibrated using Geological Survey of Canada Radioactive Rock Standards, and chemical standards from Min-En Laboratories and the B.C. Department of Mines. Figure 2 shows the standardization results for uranium. These samples were counted for at least 4,000 seconds each, however, and in the usual 400 - 1,000 second geochemical analysis runs it is the counting statistic uncertainty which almost entirely controls the accuracy.

Components Measured

Although the decay sequence of uranium is very complex it may spectrographically be broken into three components (Table 1), within which the half-lives of the daughters are sufficiently short that there is unlikely to be noticeable separation of the members by natural chemical processes. The first component includes the uranium isotopes and their short lived daughter Th^{234}.

CALIBRATION STANDARDS FOR URANIUM BY L.E.G.S.

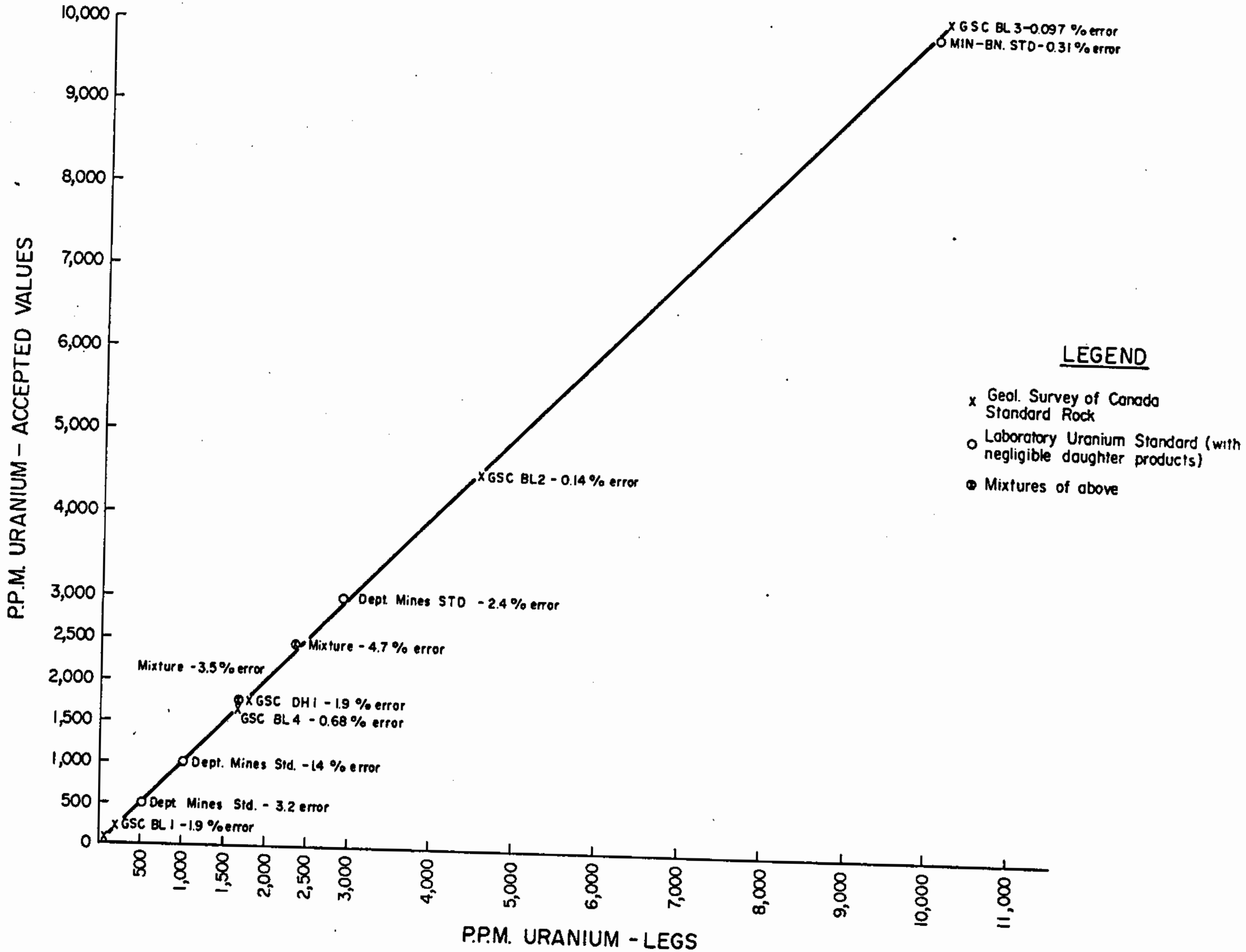


TABLE 1

DISEQUILIBRIUM COMPONENTS IN U^{238} DECAY SEQUENCE (SIMPLIFIED)

	Isotope	Half Life	Importance In LEGS	Channel (Fig. 3)	Remarks
1st Component	U^{238}	4.51 x 109 yr.			
	Th^{234}	24.1 days	Major	A	Peaks at 93 and 64 KEV
	P_q^{234}	6.75 hr.			
	U^{234}	2.47 x 105 yr.	U-Minor	A	
2nd Component	Th^{230}	8.0 x 104 yr.	U-Minor	A	Major disequilibrium point
	Ra^{226}	1602 yr.	Major	B	Peak at 186 KEV
3rd Component	Rn^{222}	3.82 days			Disequilibrium due to mobility of radon gas
	Po^{218}	3.05 min.			
	Pb^{214}	26.8 min.	Major	C & D	Peaks at 242, 295 and 352 KEV
				A	Conversion x-rays at 80 KEV
	B_i^{214}	19.7 min.			Higher energy gamma emission
	Po^{214}	1.6 x 10.4 sec.			
	Pb^{210}	22.0 yr.			
	B_i^{210}	5.0 days			
	Po^{210}	138.4 days			
	Pb^{206}	Stable			

Most radiation from the U^{235} decay series may be included in this component. The 80,000 year half-life of Th^{230} provides the first break in the uranium decay series and in view of the differing chemistry of U and Th, this is a major point of disequilibrium. Th^{230} itself produces negligible gamma radiation, and so may be grouped with its daughter product, radium. Ra^{226} has a 1,602 year half-life and a chemistry similar to the alkaline earths. Its immediate daughter Radon forms the second disequilibrium break in the decay chain, for although it has a short half-life, its gaseous state gives it mobility (especially during grinding or preparation of geochemical samples). Radon itself is not a gamma emmitter, but its daughter Pb^{214} has three important low energy wave lengths, and the subsequent Bi^{214} has a variety of high energy emmissions.

Two other radioactive components must be considered. The first of these is thorium, which is generally considered to have a fixed radiation signature in view of the short half-lives of its daughters and the especially close grouping of its major gamma emmitters. The second additional component is due to the one step decay of potassium, which does not significantly effect the technique.

Figure 3 shows the spectra of the three components of uranium radiation and thorium as viewed on the pulse height analyser. It also demonstrates how the spectrum is broken into four channels across which the counts are automatically integrated.

Precision

Both uranium and thorium are difficult elements in quantitative analysis, and the level of precision in geochemical determinations tends to be low. Figure 4 shows the results from splits

COMPARISON OF GAMMA ENERGY DISTRIBUTIONS IN THE 50-400 KEV RANGE

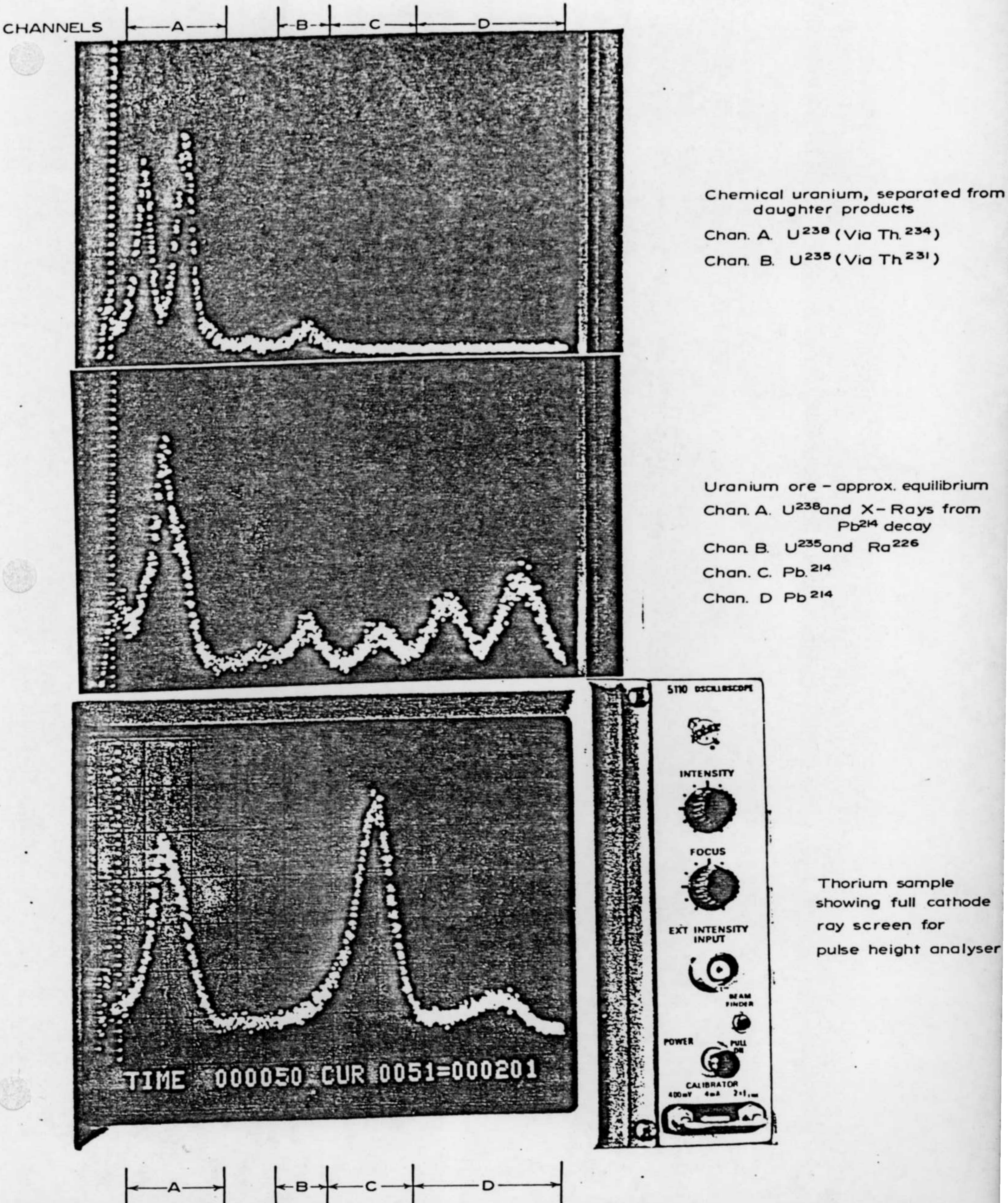


FIG. 3

Comparison of duplicate analyses for uranium

between two Laboratories

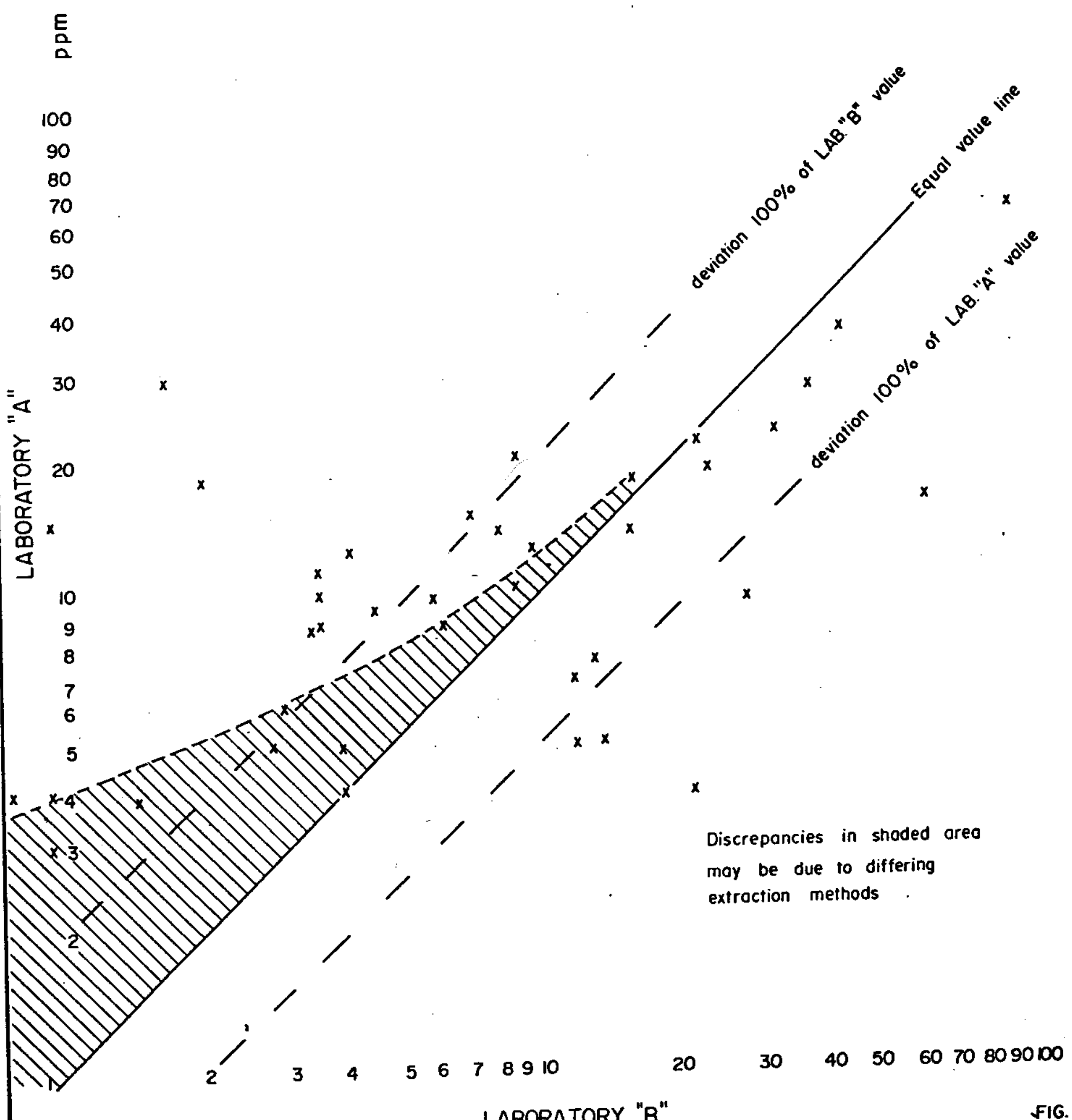


FIG. 4

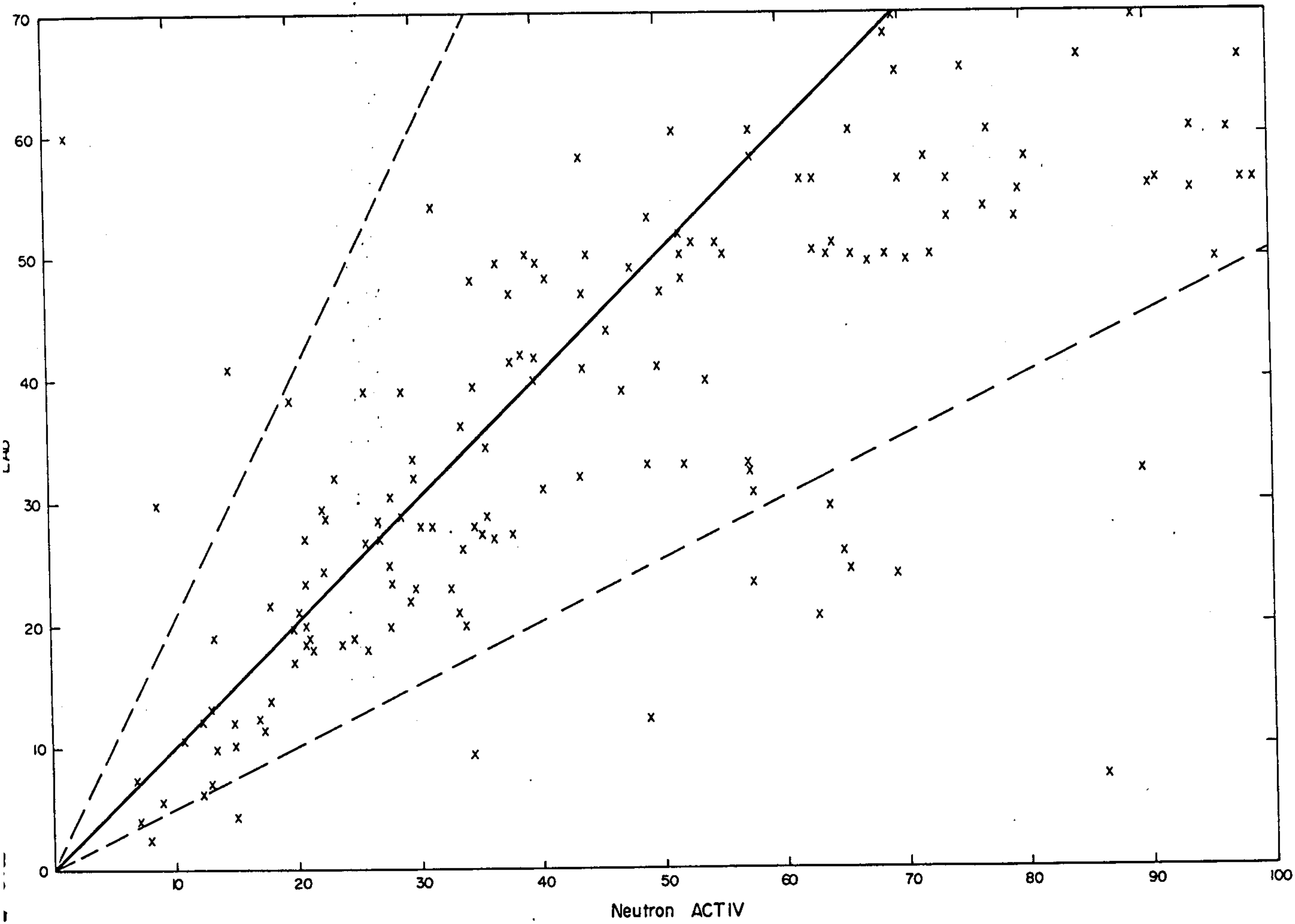
of a group of -80 mesh silt samples sent to two different laboratories, and Figure 5 gives a similar example of a laboratory fluorimetric analysis (with unusually strong acid extraction) compared to neutron activation. The results show clearly that ordinary uranium geochemical determinations are really only semi-quantitative. "Assay-mode" delayed activation neutron analysis is as good as is rountinely available, in our opinion.

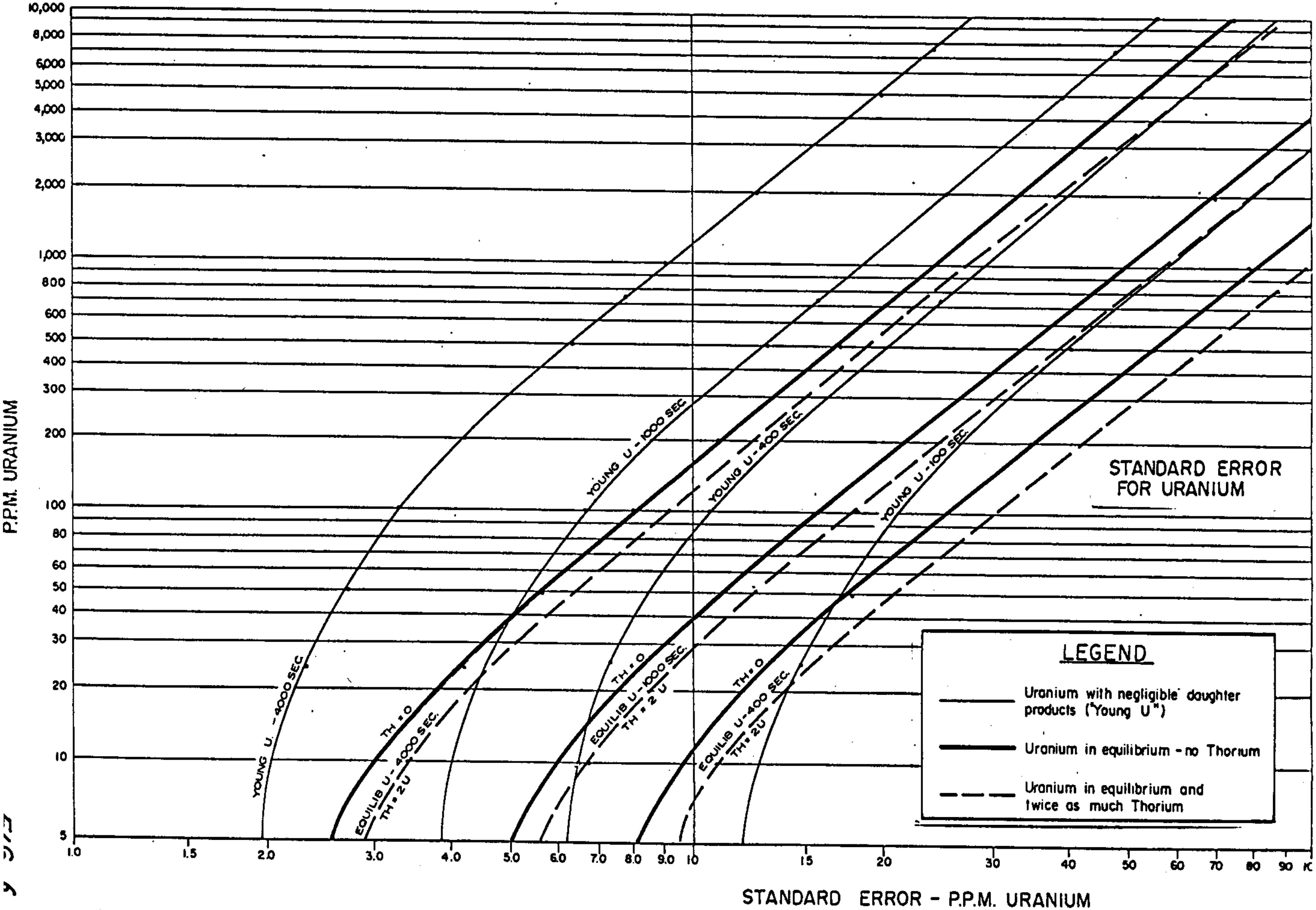
In statistical theory, the standard error (expected standard deviation) of a number produced by counting events is very close to the square root of that number. In practice, this is the controlling factor in precision for routine analysis by the LEGS technique, with other factors such as sample reloading differences and long term drift having little additional influence. This has the practical result of allowing quite accurate calculation of a standard error for each analysis, given the count on each of the spectrum channels monitored. Standard error curves for uranium and Pb^{214} in a variety of circumstances are shown in Figures 6 and 7 assuming a typical background radiation level and a sample density of 1 gm/cc.

Limitations

1. The main limitation of the LEGS technique in exploration geochemistry (at least with the present small crystal size) depends on the definition of "anomaly". If a few ppm is considered significant and Pb^{214} cannot substitute for uranium, then the lengthy counting times involved make another approach more applicable. Figure 6 shows the relationship of counting time to precision.

N. A. Vs. LAB. URANIUM P.P.M.




STANDARD ERROR FOR URANIUM
P.P.M. URANIUM
STANDARD ERROR - P.P.M. URANIUM
10,000
8,000
6,000
5,000
4,000
3,000
2,000
1,000
800
600
500
400
300
200
100
80
60
50
40
30
20
10
5
1.0
1.5
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
15
20
30
40
50
60
70
80
90
YOUNG U. - 4000 SEC.
TH = 0
EQUILIB U - 4000 SEC.
TH = 2U
YOUNG U - 1000 SEC.
TH = 0
EQUILIB U - 1000 SEC.
TH = 2 U
YOUNG U - 400 SEC.
TH = 0
EQUILIB U - 400 SEC.
TH = 2U
YOUNG U - 100 SEC.
LEGEND
Uranium with negligible daughter products ("Young U")
Uranium in equilibrium - no Thorium
Uranium in equilibrium and twice as much Thorium

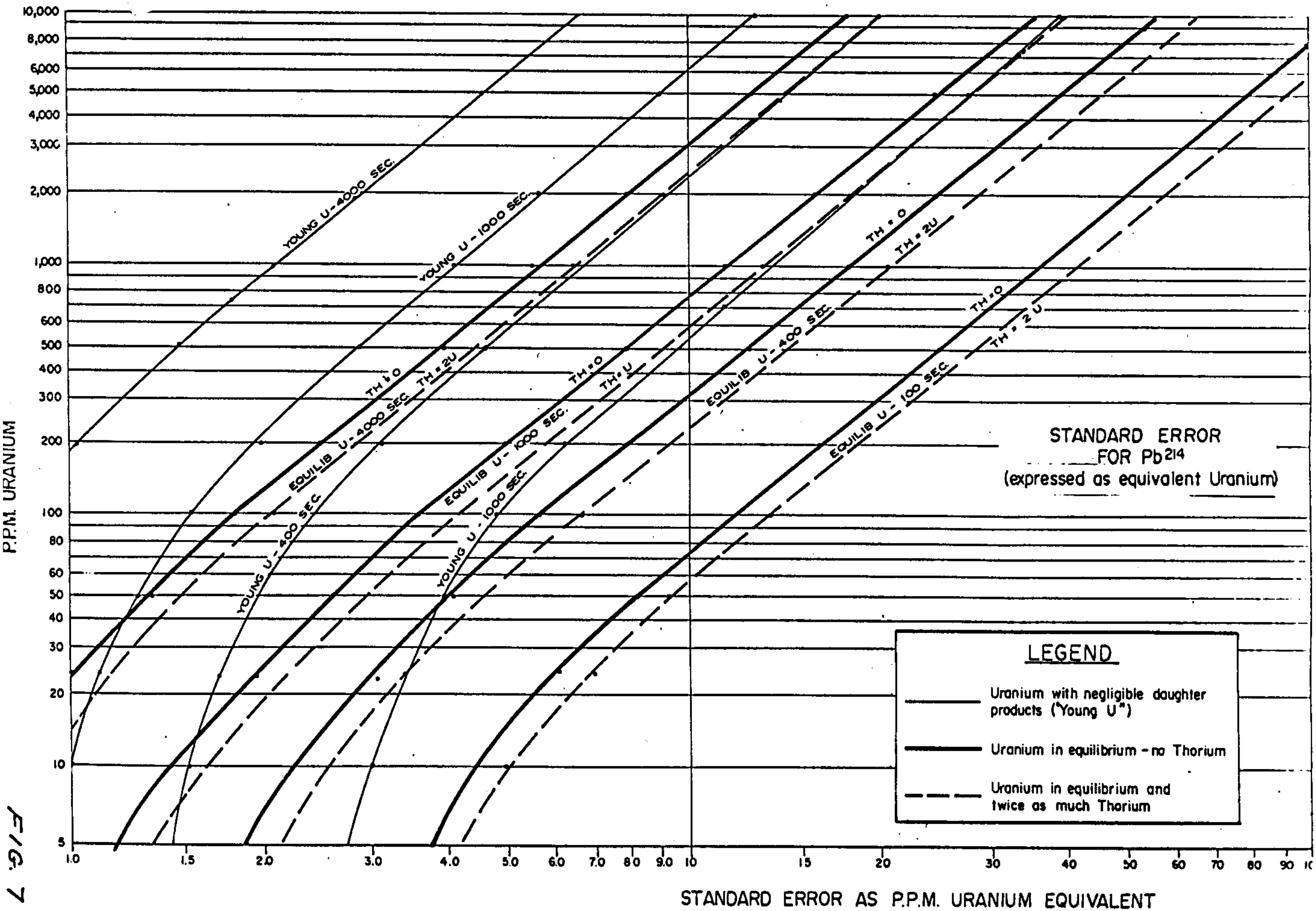

STANDARD ERROR
FOR Pb^{214}
(expressed as equivalent Uranium)
P.P.M. URANIUM
STANDARD ERROR AS P.P.M. URANIUM EQUIVALENT
YOUNG U - 4000 SEC.
YOUNG U - 1000 SEC.
YOUNG U - 400 SEC.
YOUNG U - 1000 SEC.
EQUILIB U - 4000 SEC.
EQUILIB U - 1000 SEC.
EQUILIB U - 400 SEC.
EQUILIB U - 100 SEC.
TH = 0
TH = 2U
TH = U
TH = 2 U
LEGEND
Uranium with negligible daughter products ("Young U")
Uranium in equilibrium - no Thorium
Uranium in equilibrium and twice as much Thorium
10,000
8,000
6,000
5,000
4,000
3,000
2,000
1,000
800
600
500
400
300
200
100
80
60
50
40
30
20
10
5
1.0
1.5
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
15
20
30
40
50
60
70
80
90
10

FIG. 7

2. The very heavy elements tend to absorb radiation in the lowest energy channel. Where high uranium or thorium contents are involved, an interval correction for this effect is easily made. The only element likely to be a problem, therefore, is lead, with which 1,000 ppm gives roughly a 0.5% reduction in counts for that channel. This is likely to be a limitation only in working with certain ores.

3. Although thorium should, in theory, remain fairly close to equilibrium throughout its short decay sequence, cases of apparent thorium disequilibrium have been observed. This may cause problems in weathered, thorium-rich rocks, and is under investigation.

FIG.

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WEST PROPERTY

AUGER SAMPLING RESULTS

(URANIUM GEOCHEMISTRY)

PROJECT	PROJECT No.	SCALE	DATE
BENNET	107	1:1,000	DEC 1979