

27 3 437 3884 52 0

MAPYR UTMZ UTME UTMN ROKTYP WEATHLKCOND VEG RELIEFLAKTYPWATCOL SUSP SEDCOL
SEDCOMWATDEP AREA CONTAMSAMTYP SAMSCE DUPSAMSAMLOCTYP SAMSAMPRE CARD SI AL
FE MG CA K SR BA TI MN OD ZN CU PB HG
AG AS CO NI CR V U LI MO BE LA Y ZR

(8X,A4,T1,A6,F2.0,4X,F2.0,F6.0,F7.0,A4,F2.0,F3.0,F4.0,F3.0,F4.0,F3.0,F2.0,F5.0,
F4.0,F2.0,F3.0,2X,F4.0,F2.0,F3.0,F1.0,F2.0/12X,A4,F3.0,F1.0,6F5.0,5F5.0,5X/20X,
3F5.0,F5.1,F5.0,F5.1,4F5.0,10X/20X,F5.1,F5.0,2F5.1,3F5.0,25X)

PROJECT 720063***BEAR-SLAVE OPERATION***ALLAN, CAMERON AND DURHAM***1972

THE PROJECT TITLE IS***RECONNAISSANCE GEOCHEMISTRY USING LAKE SEDIMENTS AND
WATERS OF A 36,000-SQUARE MILE AREA OF THE CAN. SHIELD***

THE PRINCIPAL INVESTIGATORS WERE***R.J.ALLAN, E.M. CAMERON, AND C.C. DURHAM*****

PILOT STUDY FIELD WORK WAS DONE IN 1971. THE MAIN FIELD OPERATION WAS DONE IN
1972. TWENTY-FOUR RAW DATA MAPS AND A SUMMARY REPORT ARE PUBLISHED (ALLAN ET AL
1973). FOLLOW-UP WORK IS IN PROGRESS (1974).

THE OBJECTIVES WERE TO TEST THE FEASIBILITY OF LOW SAMPLE DENSITY LAKE
SEDIMENTS-LAKE WATERS SURVEYS AS A METHOD FOR SYSTEMATIC EVALUATION OF THE
MINERAL POTENTIAL OF THE NORTHERN CANADIAN SHIELD AND TO PROVIDE REFERENCE
GEOCHEMICAL DATA ON THE VARIOUS GEOLOGIC AND TECTONIC DOMAINS OF THE SHIELD.
PARTS OF BEAR-SLAVE STRUCTURAL PROVINCES WERE CHOSEN BECAUSE OF VARIED GEOLOGIC
AND TECTONIC TERRAINS, UNDEVELOPED MINERAL POTENTIAL, RELATIVE ACCESSIBILITY
FOR MINERAL DEVELOPMENT, AND THE AVAILABILITY OF BACKGROUND ELEMENT
CONCENTRATION DATA IN AN UNCONTAMINATED ENVIRONMENT.

THE PROJECT AREA COVERS ABOUT 36,000 SQ. MI. (94,000KM2) BOUNDED BY N 64-30
TO N 66 DEGREES AND W 106 TO 118 DEGREES. THE AREA IS DIVIDED INTO THREE
SECTORS, AS FOLLOWS***

SHEET NO.	NTS SHEETS	N. LAT.	W. LONG.
1	86F, 86G, 86B(N1/2), 86C(N1/2)	64-30 TO 66-00	118-00 TO 114-00
2	76E, 86H, 76D(N1/2), 86A(N1/2)	64-30 TO 66-00	114-00 TO 110-00

***NOTE THAT IN ADDITION TO THE REGIONAL SAMPLING A SMALL AREA (750 SQ.MI.-2000 KM2) BETWEEN REGAN AND MUSKOK LAKES (N 65-00, W 108-00) WAS SAMPLED IN MORE DETAIL (ONE SAMPLE SITE PER 2.5 SQ.MI.).

DESCRIPTIONS OF THE MAP SHEETS FOLLOW***

SHEET 1*** THIS LIES WITHIN WOPMAY SUBPROVINCE OF BEAR PROVINCE. APHEBIAN MIOGEOSYNCLINAL SEDIMENTS (QUARTZITE, SHALE, CONGLOMERATE, SILTSTONE, DOLOMITE, MINOR ANDESITIC FLOWS) OF THE SNARE AND EPWORTH GROUPS UNDERLIE THE EASTERN PART AND ALSO FORM A NORTH-SOUTH BELT ALONG WOPMAY RIVER. THE CENTRAL AND WESTERN PARTS CONTAIN GRANITIZED SNARE-EPWORTH EUGEOSYNCLINAL ROCKS (1700-1900 M.Y.), GRANODIORITE, MIGMATITE AND GNEISS. WEST OF WOPMAY FAULT (RIVER) HIGH-LEVEL GRANITES AND VOLCANIC ROCKS, ARKOSE, SHALE AND CONGLOMERATE OF THE CAMERON BAY AND ECHO BAY GROUPS ARE PRESENT.

MOST KNOWN MINERALIZATION IS WEST OF WOPMAY FAULT. INCLUDED ARE U DEPOSITS AT PORT RADIUM, SOME QUARTZ STOCKWORKS CONTAINING U, AG AT PORT RADIUM (ELDORADO) AND SIMILAR AG OCCURRENCES AT ECHO BAY, CAMSELL RIVER (TERRA MINE), AND CONTACT LAKE (EL BONANZA, NOREX AND SILVER BAY). CU IS MINED WITH AG AT ECHO BAY. CHALCOPYRITE FLOAT HAS BEEN FOUND EAST OF THE WOPMAY FAULT.

SHEET 1 IS 90 PER CENT UNDERLAIN BY DISCONTINUOUS PERMAFROST AND 10 PER CENT BY CONTINUOUS P.F. DRAINAGE IN THE WEST AND NORTHWEST IS MAINLY INTO GREAT BEAR LAKE. IN THE SOUTH DRAINAGE IS INTO GREAT SLAVE LAKE. DIRECTION OF GLACIAL ADVANCE (WISCONSIN-LAURENTIDE SHEET) WAS MAINLY EAST TO WEST.

ROCKS OF THE WOPMAY SUBPROVINCE ARE RELATIVELY ENRICHED IN U. IN HARDISTY LAKE MAP SHEET IN THE S.W. PART OF THE PROJECT AREA U AVERAGES 8.1 PPM IN ROCKS (EADE AND FAHRIG, 1971) WHEREAS IN THE FORT ENTERPRISE SHEET IN SLAVE PROVINCE TO THE EAST THE AVERAGE IS 1.7 PPM .

SHEETS 2 AND 3*** THESE ARE WITHIN SLAVE PROVINCE. THEY ARE UNDERLAIN BY ARCHEAN GRANITIC AND GNEISSIC ROCKS CONTAINING BELTS OF METAMORPHOSED (GREENSCHIST AND AMPHIBOLITE FACIES) VOLCANICS AND SEDIMENTS OF THE YELLOWKNIFE

SUPERGROUP. THE LATTER INCLUDES BASAL MAFIC LAVAS, ACIDIC TO INTERMEDIATE FLOWS AND PYROCLASTICS, AND CONFORMABLY-OVERLYING FLYSCH SEDIMENTS (GREYWACKE, SHALE) WITH SUBORDINATE QUARTZITE, LIMESTONE AND IRON FORMATION. IN N.E. SHEET 3 ARCHEAN ROCKS ARE UNCONFORMABLY OVERLAIN BY LITTLE-DEFORMED APHEBIAN ARGILLITE, QUARTZITE, SILTSTONE AND CONGLOMERATE OF GOULBURN GP.

GRANITIC ROCKS OF SLAVE PROVINCE MAINLY POSTDATE YELLOWKNIFE GROUP BUT SOME BODIES MAY BE OLDER.

FEW ECONOMIC DEPOSITS ARE KNOWN IN THE SLAVE PART OF THE PROJECT AREA BUT A POTENTIAL MAY EXIST FOR QUARTZ-GOLD DEPOSITS OF THE YELLOWKNIFE TYPE AND FOR MASSIVE SULPHIDE (ZN,PB,CU,AG) DEPOSITS IN YELLOWKNIFE SUPERGROUP ACIDIC VOLCANICS. NEAR-ECONOMIC EXAMPLES OF THE LATTER OCCUR AT HACKETT RIVER WITHIN THE PROJECT AREA, AT HIGH LAKE NORTH OF THE AREA, AND AT CLINTON-COLDEN, A PROSPECT SOUTH OF THE AREA.

SHEET 2 IS UNDERLAIN 90 PER CENT BY CONTINUOUS PERMAFROST AND 10 PER CENT BY DISCONTINUOUS P.F. SHEET 3 IS UNDERLAIN ENTIRELY BY CONTINUOUS P.F.

IN SOUTHERN SHEET 2 DRAINAGE IS INTO GREAT SLAVE LAKE, WHEREAS THE NORTHERN PART DRAINS PREDOMINANTLY INTO THE ARCTIC OCEAN. IN SHEET 3 DRAINAGE IS WEST AND NORTH INTO THE ARCTIC OCEAN. ICE DIRECTION MOVEMENT WAS AS SHEET 1.

IN 1971 EIGHT PILOT AREAS AVERAGING 200 SQ. MI. (520 KM²) EACH WERE SAMPLED. THESE WERE*** MCGREGOR LAKE, HIGH LAKE, TERRA MINE, HACKETT RIVER, MUSKOX LAKE, BODE LAKE, INDIN LAKE AND HARDING LAKE. SEVEN OF THE AREAS CONTAIN MINERALIZATION. ANALYSIS OF LAKE SEDIMENTS, WATERS, AND ROCK SAMPLES SHOWED THAT....(1) LAKE SEDIMENT GEOCHEMISTRY CORRELATES WITH BEDROCK GEOCHEMISTRY.... (2) AREAS CONTAINING SIGNIFICANT MINERALIZATION ARE DETECTABLE BY LAKE SEDIMENT GEOCHEMISTRY (ALLAN ET AL, 1972).

THE MAIN BEAR-SLAVE SAMPLING PROGRAM WAS CARRIED OUT JUNE 25 TO AUGUST 2, 1972 USING 3 HELICOPTERS AND AN OTTER F/W SUPPORT A/C. A TOTAL OF 4,102 SITES WAS SAMPLED, GIVING AN AVERAGE DENSITY OF ABOUT 1 SITE PER 10 SQ. MI. (26 KM²). A LAKE SEDIMENT SAMPLE AND A WATER SAMPLE WERE TAKEN AT EACH SITE. AVERAGE TIME PER SAMPLE SITE WAS 9.9 MINS. ALL-INCLUSIVE COSTS (INCL. ANALYTICAL WORK)

WERE ABOUT \$7.50 PER SQUARE MILE.

INORGANIC LAKE SEDIMENT SAMPLES WERE COLLECTED FROM NEARSHORE SHALLOW-WATER SITES USING A SIX-FOOT EXTENSION SOIL AUGER. WATER DEPTHS AT SAMPLE SITES WERE RESTRICTED TO THE RANGE 3-8 FEET. WATER SAMPLES COLLECTED JUST BELOW THE LAKE SURFACE CONSISTED OF A 175 ML. SAMPLE FOR HG ANALYSIS AND A 500 ML. SAMPLE FOR GENERAL ANALYSIS.

HG WATER SAMPLES WERE TREATED WITH 1 ML. OF 1 PER CENT KMN04 AND 5 ML. OF CONC. H2S04. THE 500 ML. SAMPLE WAS ACIDIFIED WITH 1 ML. CONC. HN03.

EH AND PH MEASUREMENTS WERE MADE BY METER. FOR SHEET 1 EH AND PH WERE RECORDED FOR ALL SAMPLES. FOR SHEETS 2 AND 3 ONLY 1 SAMPLE IN 10 WAS MEASURED. PH VALUES WERE ALL IN THE RANGE 6.5-7.5. EH VALUES WERE ALL POSITIVE.

DETAILS OF SAMPLES FOLLOW***

SAMPLE SITE NUMBER SEQUENCES WERE*** 1-1393, 2001-3375, 4001-5335 AND 6000-6013. THIS GIVES A TOTAL OF 4117. HOWEVER, WITHIN THESE SEQUENCES TWO NUMBERS WERE NOT USED, FOR UNKNOWN REASONS, LEAVING 4115 SAMPLE SITES. THIRTEEN SITES WERE NOT SAMPLED. THESE WERE*** 261, 2078, 4053, 4336, 4388, 4389, 4448, 4561, 4562, 4563, 4564, 4914 AND 5235. THIS GIVES A TOTAL OF 4102 SITES. SAMPLE LOCATIONS ARE LISTED ON GEOL. SURV. CAN. MAP 16-1972 (SHEETS 1, 2, 3).

THREE SEDIMENT SAMPLES WERE LOST IN TRANSIT (5046, 5047, 5049) LEAVING 4099 FOR ANALYSIS. THE

SAMPLES WERE DRIED AND HALVED. ONE-HALF THE SAMPLE WAS SIEVED TO MINUS 250 MESH AND THE MINUS 250 FRACTION USED FOR ANALYSIS. TWENTY-SEVEN SAMPLES DID NOT YIELD ENOUGH MINUS 250 MATERIAL FOR ANALYSIS. THESE WERE*** 227, 253, 268, 314, 465, 2039, 2404, 2410, 2508, 2614, 4152, 4223, 4291, 4347, 4363, 4377, 4432, 4447, 4497, 4548, 4623, 4626, 4753, 4799, 5071, 5080, AND 5081. THESE SAMPLES WERE SIEVED TO MINUS 100 MESH AND THE MINUS 100 FRACTION WAS BALL-MILLED BEFORE ANALYSIS.***NOTE THAT OF THE 27 SAMPLES ABOVE, TWO SAMPLES (253 AND 2410) HAVE DUPLICATE -250 MESH SAMPLES FROM THE SAME SITES (252, 2409).

A TOTAL OF 4102 WATER SAMPLES WAS COLLECTED. SIX SAMPLES (255, 757, 4353,

4372, 4419, 4655) WERE LOST IN TRANSIT. TO DATE (MARCH, 1974) WATER ANALYSES HAVE BEEN DONE ONLY FOR SAMPLES OF SHEET 1.

ANALYTICAL METHODS FOLLOW***

ALL ANALYTICAL WORK WAS DONE IN THE GEOCHEMICAL LABORATORIES OF THE GEOLOGICAL SURVEY.

SEDIMENTS***

ATOMIC ABSORPTION SPECTROPHOTOMETRY***	ZN, AG, MN, LI, HG
FLUORIMENTRY***	U (SEE SMITH AND LYNCH, 1969).
COLORIMETRY***	AS, SB
EMISSION SPECTROPHOTOMETRY***	PB, SN, V, MO, CR, CU, CO, NI, BE, LA Y, ZR, BA, TI CA, MG, FE, K(SEE TIMPERLEY ET L 1973)

***NOTE THAT SB WAS ANALYZED FOR SAMPLES OF SHEET 1 ONLY

NOTE THAT A MEASURE OF THE ORGANIC MATTER CONTENT OF SEDIMENT SAMPLES HAS BEEN PUBLISHED (GEOL. SURV. CAN. MAP 12-1972) USING A COLORIMETRIC METHOD DEVELOPED BY J.J. LYNCH, I.R. JONASSON AND R.G. GARRETT AT THE GEOLOGICAL SURVEY.

WATERS***

ATOMIC ABSORPTION SPECTROPHOTOMETRY*** HG, ZN, NA, K, CA, MG, SI, CL

***NOTE THAT WATER ANALYSES WERE DONE ONLY FOR MAP SHEET 1. THE HG METHOD USED ON WATER AND SEDIMENT SAMPLES WAS DEVELOPED BY I.R. JONASSON. MANY WATER SAMPLES BECAME HG-CONTAMINATED DUE TO ATMOSPHERIC LEAKAGE FROM HG SOURCES IN THE GEOLOGICAL SURVEY BUILDING. ACCORDINGLY, ALTHOUGH HG ANALYSES ARE LISTED IN THIS FILE, THEIR RELIABILITY IS UNCERTAIN.

*** NOTE THAT WATER DATA FOR NA, K, CA, MG, SI, CL ARE NOT INCLUDED IN THIS FILE

DETECTION LIMITS FOLLOW***

SEDIMENTS***

ELEMENT	METHOD	D.L. IN PPM
ZN	ATOMIC ABSORPTION	2

AG		0.5
MN		1 10
LI		I
U	FLUORIMETRY	0.2
HG	FLAMELESS A.A.	5 (PPB)
AS	COLORIMETRY	0.5 TO 1.0
SB	COLORIMETRY	0.1 TO 0.5
PB	DIRECT READING EMISSION SPEC.	2
SN		2
V		3
MO		2
CR		1
CU		1
CO		2
NI		2
BE		1
LA		12
Y		5
ZR		25
SR		2
BA		3
TI		7
CA		N/A
MG		N/A
FE		N/A
K		N/A

WATERS***

ELEMENT	METHOD	D.L. IN PPB
HG	ATOMIC ABSORPTION	.004
ZN		.2

PRECISION INFORMATION FOLLOWS***

SEDIMENTS***

ELEMENT	METHOD	MEAN (PPM)	STD. DEV.	COEFF. VAR.
---------	--------	------------	-----------	-------------

ZN	ATOMIC ABSORPTION	116	7.9	6.8
AG		.59	.08	13.6
MN		249	12	4.8
LI		26	1.4	5.4
U	FLUORIMETRY	1.5	.13	8.7
AS	COLORIMETRY			
SB	COLORIMETRY			
PB	DIRECT READING EMISSION	37.6	4.7	13
SN	SPEC.	1.96	1.4	71
V		63.9	8.5	13
MO		1.48	.4	27
CR		52.9	7.5	14
CU		53.5	7.4	14
CO		14.8	3.3	22
NI		36.8	4.4	12
BE		1.88	0.8	43
LA		50.2	10.5	21
Y		23.0	5.3	23
ZR		281	62	22
SR		261	29	11
BA		540	55	10
TI		3271	356	11

MEAN (PER CENT)

CA	1.1	0.1	9
MG	1.2	0.2	17
FE	3.1	0.2	6
K	1.9	0.2	11

***NOTE THAT PRECISION DATA ABOVE WERE OBTAINED FROM A COMPOSITE LAKE
SEDIMENT SAMPLE FROM THE 1971 BEAR-SLAVE PILOT STUDY. THE FIGURES APPLY
TO 254 ANALYSES OF THE SAME COMPOSITE RUN OVER A PERIOD OF ONE MONTH.

LABORATORY PERSONNEL FOLLOW***

OVERALL SUPERVISOR

J.J. LYNCH

EMISSION SPECTROMETRY	R. HORTON, W. NELSON, W ALEXANDER
ATOMIC ABSORPTION- WATERS	G. GAUTHIER
SEDIMENTS	A MCLAURIN, A. LEMIEUX, R CROOK
MERCURY	L. TRIPP
FLUORIMETRY URANIUM	J. PELCHAT
SAMPLE PREPARATION	P. LAVERGNE, A. MARTINEAU

RESULTS FOLLOW***

THREE MAPS SHOWING SAMPLE LOCATIONS HAVE BEEN PUBLISHED - GEOL. SURV. CAN.
MAP 16-1972, SHEETS 1,2 AND 3.

TWENTY-ONE MAPS SHOWING THE ELEMENT CONTENT OF LAKE SEDIMENTS HAVE BEEN
PUBLISHED. THESE ARE***

ELEMENT	MAP
URANIUM	GEOL. SURV. CAN. MAP 9-1972 SHEETS 1, 2, 3
ZINC	MAP 10-1972 SHEETS 1,2, 3
LEAD	MAP 11-1972 SHEETS 1,2, 3
MANGANESE, IRON AND ORGANIC CONTENT	MAP 12-1972 SHEETS 1, 2, 3
COPPER	MAP 13-1972 SHEETS 1,2, 3
NICKEL	MAP 14-1972 SHEETS 1,2, 3
POTASSIUM	MAP 15-1972 SHEETS 1,2, 3

THE MAPS ARE COMPUTER CONTOURED USING THE GENERAL PURPOSE CONTOURING
PROGRAM (GPCP) OF CALIFORNIA PRODUCTS INC.

PRINCIPAL REFERENCES ARE***

***ALLAN, R.J., CAMERON E.M., AND C.C. DURHAM 1973 RECONNAISSANCE

GEOCHEMISTRY USING LAKE SEDIMENTS OF A 36000 SQUARE-MILE-AREA OF THE
NORTHWESTERN CANADIAN SHIELD. GEOL. SURV. CAN. PAPER 72-50

***ALLAN, R.J., CAMERON E.M., AND CC DURHAM 1973 BEAR-SLAVE OPERATION.

GEOL. SURV. CAN. PAPER 73-1, PT. A, PP 50-52.

***ALLAN, R.J., CAMERON, E.M. AND C.C. DURHAM 1972 LAKE GEOCHEMISTRY,

A LOW SAMPLE DENSITY TECHNIQUE FOR RECONNAISSANCE GEOCHEMICAL EXPLORATION
AND MAPPING IN THE CANADIAN SHIELD. IN EXPLORATION GEOCHEMISTRY, 1972.

PROC. 4TH INTERNAT. GEOCHEM. EXPLOR. SYMP. LONDON (INST. MINING AND MET.,
LONDON, 1972).

32-33 WEATHER CONDITIONS. COL. 32(1) MEANS CLEAR.
COL. 33(1) MEANS RAIN

34-36 LAKE SURFACE CONDITIONS. COL. 34(1) MEANS GLASSY
COL. 35(1) MEANS RIPPLY
COL. 36(1) MEANS CHOPPY

37-40 VEGETATION AROUND LAKE. NOTE THAT THE GRASS AND MOSS
CATEGORIES ARE PRIMARILY FOR TUNDRA-TYPE VEGETATION AND
NOT FOR BOG AND SWAMP WHICH ARE ENTERED UNDER LAKE TYPE
COL. 37(1) MEANS CONIFEROUS
COL. 38(1) MEANS DESCIDUOUS
COL. 39(1) MEANS GRASSY
COL. 40(1) MEANS MOSS

41-43 RELIEF. HIGH***SHEER, STEEP ELEVATIONS
MEDIUM***GENTLY ROLLING HILLS
LOW***FLAT-LYING TUNDRA PLAIN
COL. 41(1) MEANS HIGH
COL. 42(1) MEANS MEDIUM
COL. 43(1) MEANS LOW

44-47 LAKE TYPE. GENERAL SAMPLING AREA OF LAKE BOTTOM
COL. 44(1) MEANS ROCKY
COL. 45(1) MEANS SANDY
COL. 46(1) MEANS CLAYEY
COL. 47(1) MEANS ORGANIC

48-50 WATER COLOR. COL. 48(1) MEANS CLEAR
COL. 49(1) MEANS YELLOW
COL. 50(1) MEANS BROWN

51-52 AMOUNT OF SUSPENDED MATERIAL IN WATER
COL. 51(1) MEANS LIGHT
COL. 52(1) MEANS HEAVY

53-57 SEDIMENT COLOR (WET SAMPLE). COL. 53(1) MEANS WHITE
COL. 54(1) MEANS YELLOW
COL. 55(1) MEANS GREY
COL. 56(1) MEANS BROWN
COL. 57(1) MEANS BLACK

58-61 COMPOSITION OF SEDIMENT. EACH COLUMN HAS A SCALE FROM
0 TO 10 AND THE TOTAL OF THE COLUMNS EQUALS 10.

COL. 58(1) SAND
COL. 59(1) SILT
COL. 60(1) CLAY
COL. 61(1) ORGANIC CONTENT

62-63 WATER DEPTH AT SAMPLE SITE IN FEET
64-66 AREA OF LAKE OR ESTIMATED SAMPLE DOMAIN (E.G. A BAY)
IN KM2.
67-68 TEMPERATURE IN DEGREES CENTIGRADE
69-72 CONTAMINATION SOURCE IN IMMEDIATE SAMPLE AREA.
COL. 69(1) MEANS WORKINGS, TRENCHES ETC. NEARBY
COL. 70 (1) MEANS CAMP NEARBY
COL. 71 (1) MEANS FUEL CACHE NEARBY
COL. 72 (1) MEANS GOSSAN NEARBY
73-74 SAMPLE TYPE. COL. 73(1) MEANS WATER
COL. 74 (1) MEANS SEDIMENT
75-77 SAMPLE SOURCE. COL. 75 (1) MEANS STREAM
COL. 76 (1) MEANS LAKE
COL. 77 (1) MEANS SPRING
78 DUPLICATE SAMPLE TAKEN AS CLOSE TO THE ORIGINAL SAMPLE
AS FEASIBLE.
79-80 SAMPLE LOCATOR KEY. INDICATES IF SAMPLE CAME FROM BEAR OR
SLAVE PROVINCE. COL. 79 (1) MEANS BEAR
COL. 80 (1) MEANS SLAVE

*** NOTE THAT THIS FILE DOES NOT CONTAIN TEMPERATURE
MEASUREMENTS (COL. 67-68)

ROCK TYPE MNEMONIC CODE FOLLOWS***

AVCC	ACIDIC VOLCANIC
AVCS	ANDALUSITE, CORDIERITE SCHIST
ARGL	ARGILLITE
BSLT	BASALT
CDSM	CORDIERITE SCHIST
CLGM	CONGLOMERATE
DLMT	DOLOMITE

FPPP	FELDSPAR PORPHYRY
GBBR	GABBRO
GRCK	GREYWACKE
GRDR	GRANODIORITE
GRGS	GRANITE GNEISS
GRNT	GRANITE
LMSN	LIMESTONE
MGMT	MIGMATITE
MSDM	METASEDIMENT
PLLT	PHYLLITE
QRTZ	QUARTZITE
SHLE	SHALE
SNDS	SANDSTONE
TUFF	TUFF

CARD 1 ANALYTICAL, CODED AS FOLLOWS

COLS.	ITEM
1-12	CODED AS FIELD CARD
13-16	SAMPLE TYPE IDENT. ***LKSD*** ON ALL CARDS
17-19	SAMPLE PREPERATION CODE ***808*** ON ALL CARDS
	=230 MESH FRACTION
20	CARD NUMBER
21-50	SIX FIELDS OF F5.1 CONTAINING RESULTS FOR SI, AL, FE, MG, CA AND K
51-75	FIVE FIELDS OF F5.0 CONTAINING RESULTS FOR SR, BA, TI, MN AND OPTICAL DENSITY

CARD 2 ANALYTICAL, CODED AS FOLLOWS

COLS.	ITEM
1-20	CODED AS CARD 1
21-35	THREE FIELDS OF F5.0 CONTAINING RESULTS FOR ZN, CU AND PB
36-40	ONE FIELD OF F5.1 CONTAINING RESULT FOR AG
41-45	ONE FIELD OF F5.0 CONTAINING RESULT FOR HG
46-50	ONE FIELD OF F5.1 CONTAINING RESULT FOR AS
51-70	FOUR FIELDS OF F5.0 CONTAINING RESULTS FOR CO, NI,

CR AND V

CARD 3 ANALYTICAL, CODED AS FOLLOWS

COLS.	ITEM
1-20	CODED AS CARD 2
21-25	ONE FIELD OF F5.1 CONTAINING RESULT FOR U
26-30	ONE FIELD OF F5.0 CONTAINING RESULT FOR LI
31-40	TWO FIELDS OF F5.1 CONTAINING RESULTS FOR MO AND BE
41-55	THREE FIELDS OF F5.0 CONTAINING RESULTS FOR LA, Y AND ZR