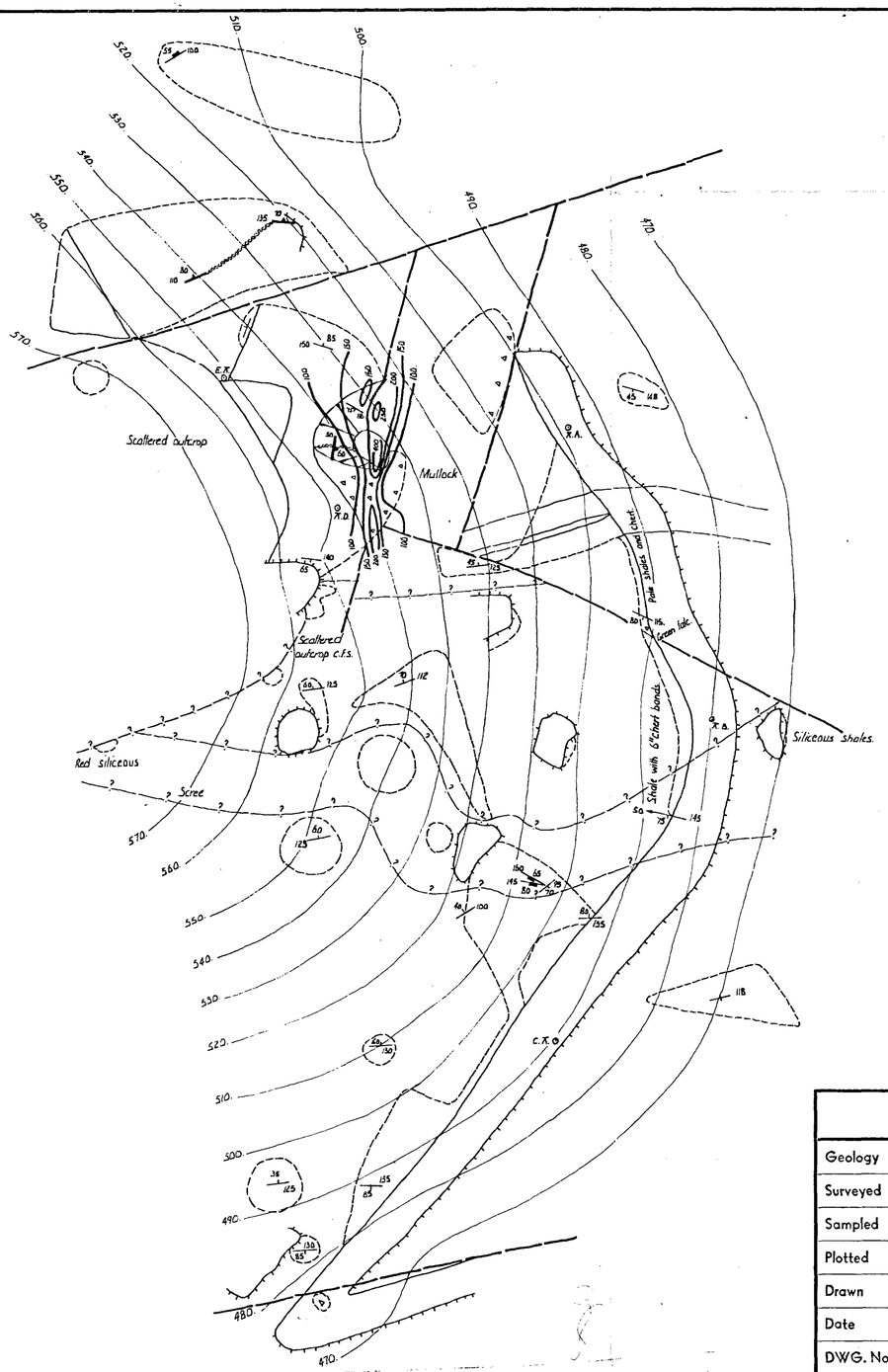
LEGEND

- Coronation sandstone — MIDDLE PROTEROZOIC
- Altered microgranodiorite, microdiorite showing through sandstone — ZAMU COMPLEX
- Cherty ferruginous siltstone showing through sandstone — KOOLPIN FORMATION
- Cherty shales — KOOLPIN FORMATION
- Purple to pale shales — KOOLPIN FORMATION

(ZAMU COMPLEX and KOOLPIN FORMATION — LOWER PROTEROZOIC)

- Fault
- Geological boundary
- " " inferred
- Outcrop "
- Trace of shear
- Dip and strike of bedding
- " " " " shear
- " " " " joint
- Minor fold
- Edge of bench
- T.B. Theodolite station
- Boulder
- Brecciation
- 200 — 200 Radiometric contours
- 500 — 500 Contour lines

Note: Radiometric contours derived from 1956 Radiometric Survey



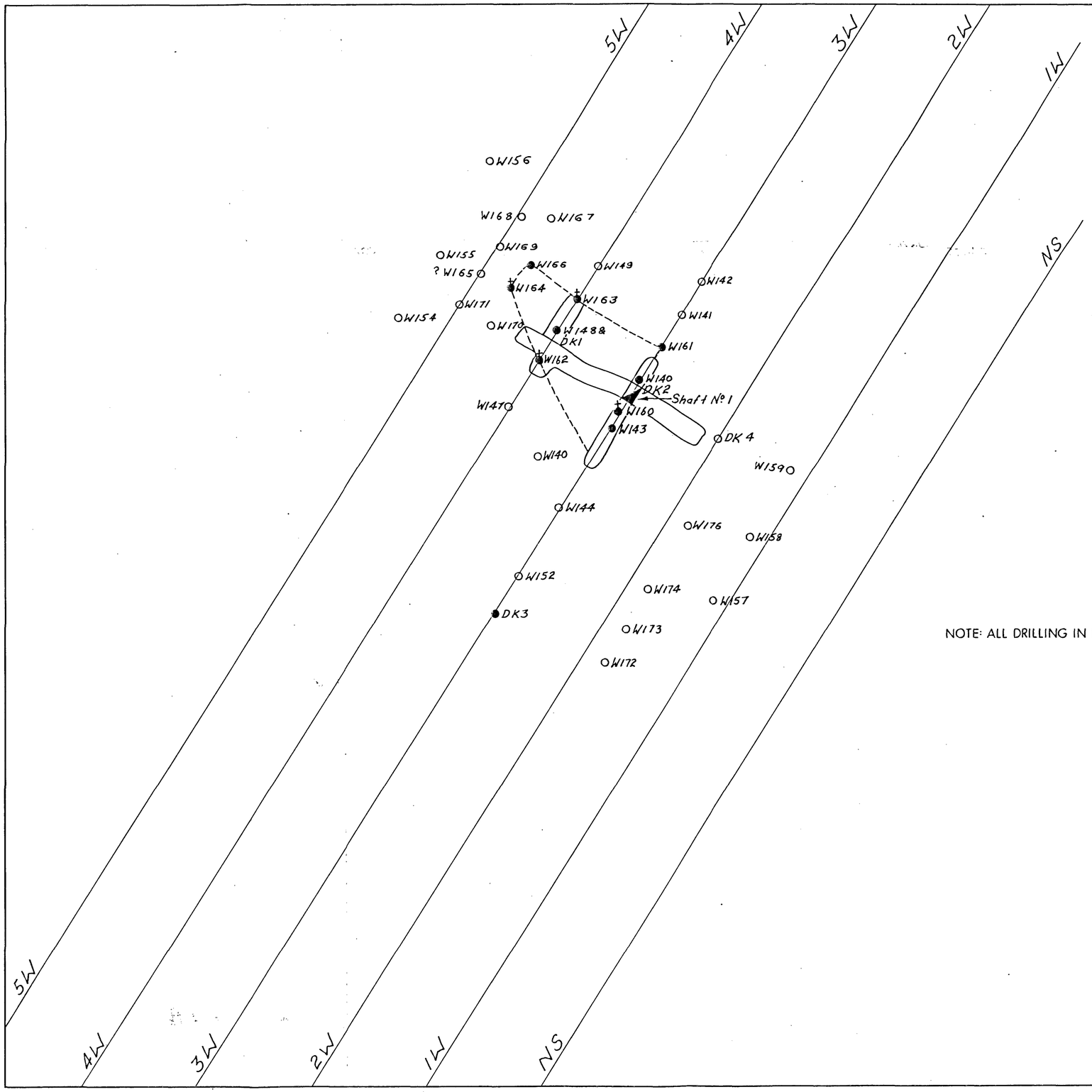
Magnetic North.

CR1986 0320

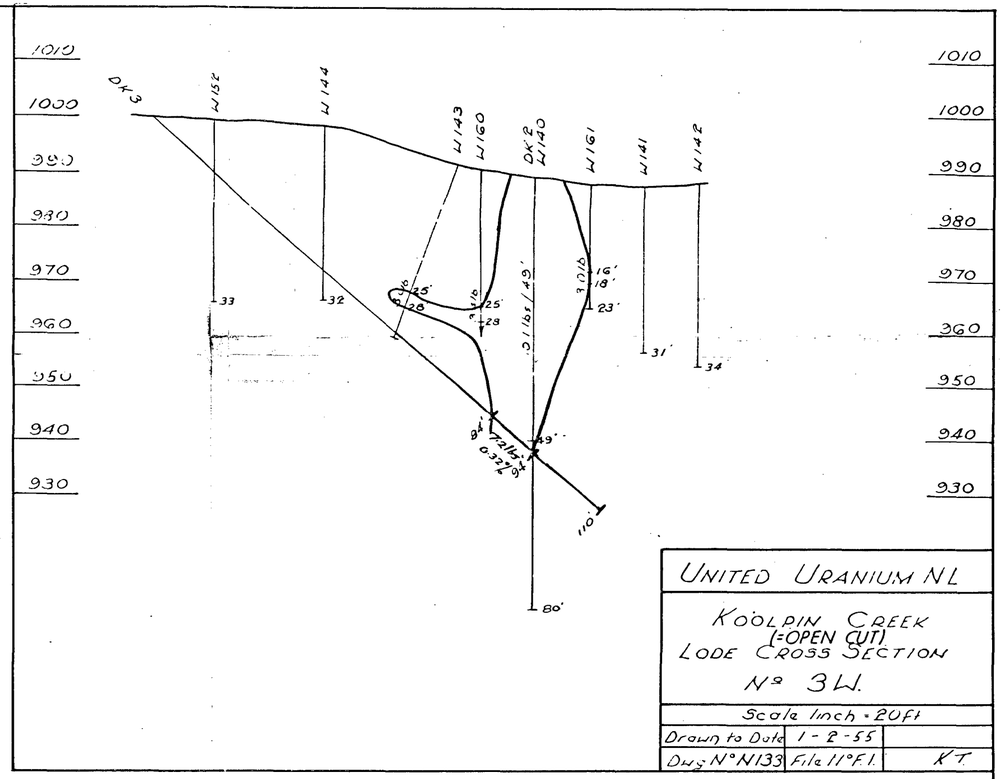
Fig 2.

PLATE 40

UNITED URANIUM N.L.		
Geology	J.F.H.	SOUTH ALLIGATOR A.P.2225
Surveyed	M.M.	MONOLITH.
Sampled		DETAILED GEOLOGICAL MAP
Plotted	J.F.H.	
Drawn	J.J.K.	
Date	June 1970	Scale 40 0 40 80
DWG. No.	595	



NOTE: ALL DRILLING IN KOOLPIN FORMATION



UNITED URANIUM NL

KOOLPIN CREEK
(=OPEN CUT)
LODE CROSS SECTION
No 3W.

Scale 1 inch = 20 Ft		
Drawn to Date	1-2-55	
Dwg No N°N133	File 11°F1.	KT

CR1986 0320

LEGEND

- Concealed Ore Body
- Exposed Ore Body
- Lode Intersected
- o Lode not intersected
- Hole ends in ore
- W Wagon drill hole
- DK Diamond drill hole

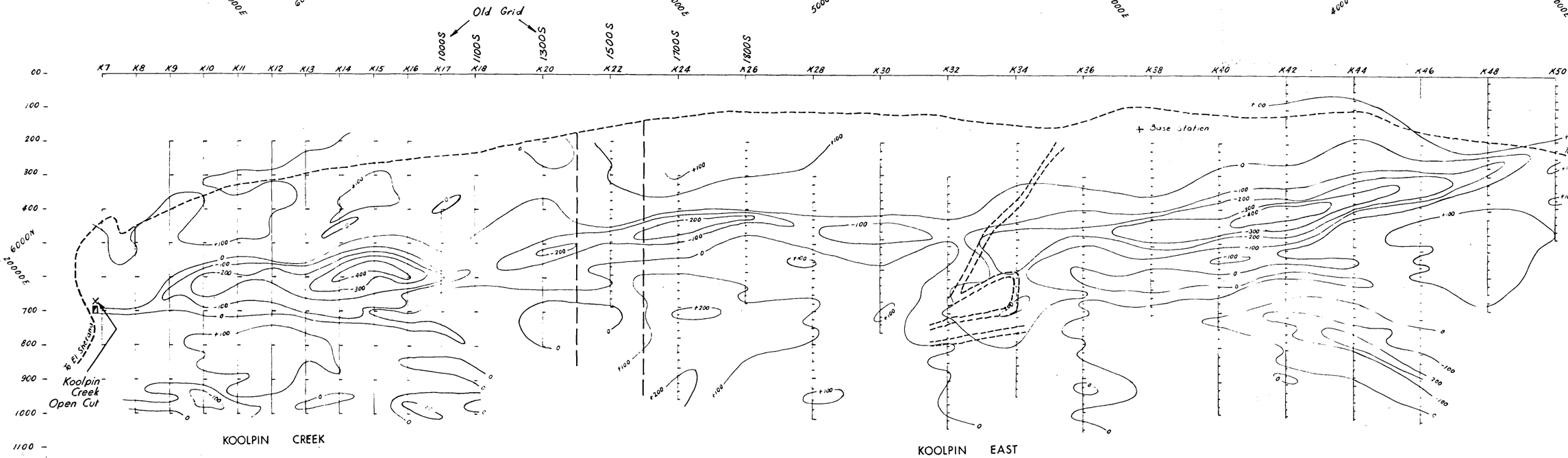
PLATE 41

UNITED URANIUM N. L.

KOOLPIN CREEK
(=OPEN CUT)
PROGRAMME OF DRILLING
&
PLAN OF ORE BODY

Scale: 20ft = 1 inch		
Drawn to Date	31·10·55	
Dwg No. N120	File No. F1	Drawn by N.T.

Re-drawn by L.J.T., July 1987



Reference

- Traverses Pegged at 50-ft intervals (slope distance) Distances reduced to horizontal for plotting
- Traverses K7 to K20 inclusive surveyed in 1960 (Rowston, 1961)
- \+ Base station, value ±66 mV referred to the High Road - Scinto 5 survey
- x Koolpin Creek open-cut
- Approximate position of road
- Approximate position of Wagen Drill Hole lines - Koolpin East

KOOLPIN CREEK AND KOOLPIN CREEK EAST
SELF-POTENTIAL CONTOURS

CONTOUR INTERVAL: 100 mV

Scale

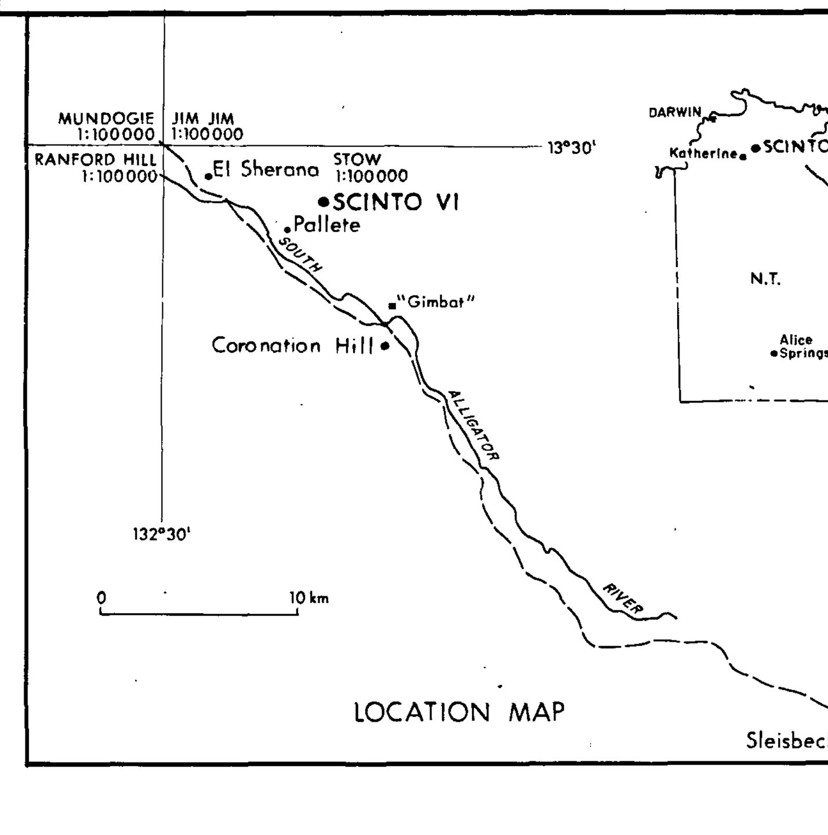
200 0 200 400 600 FT

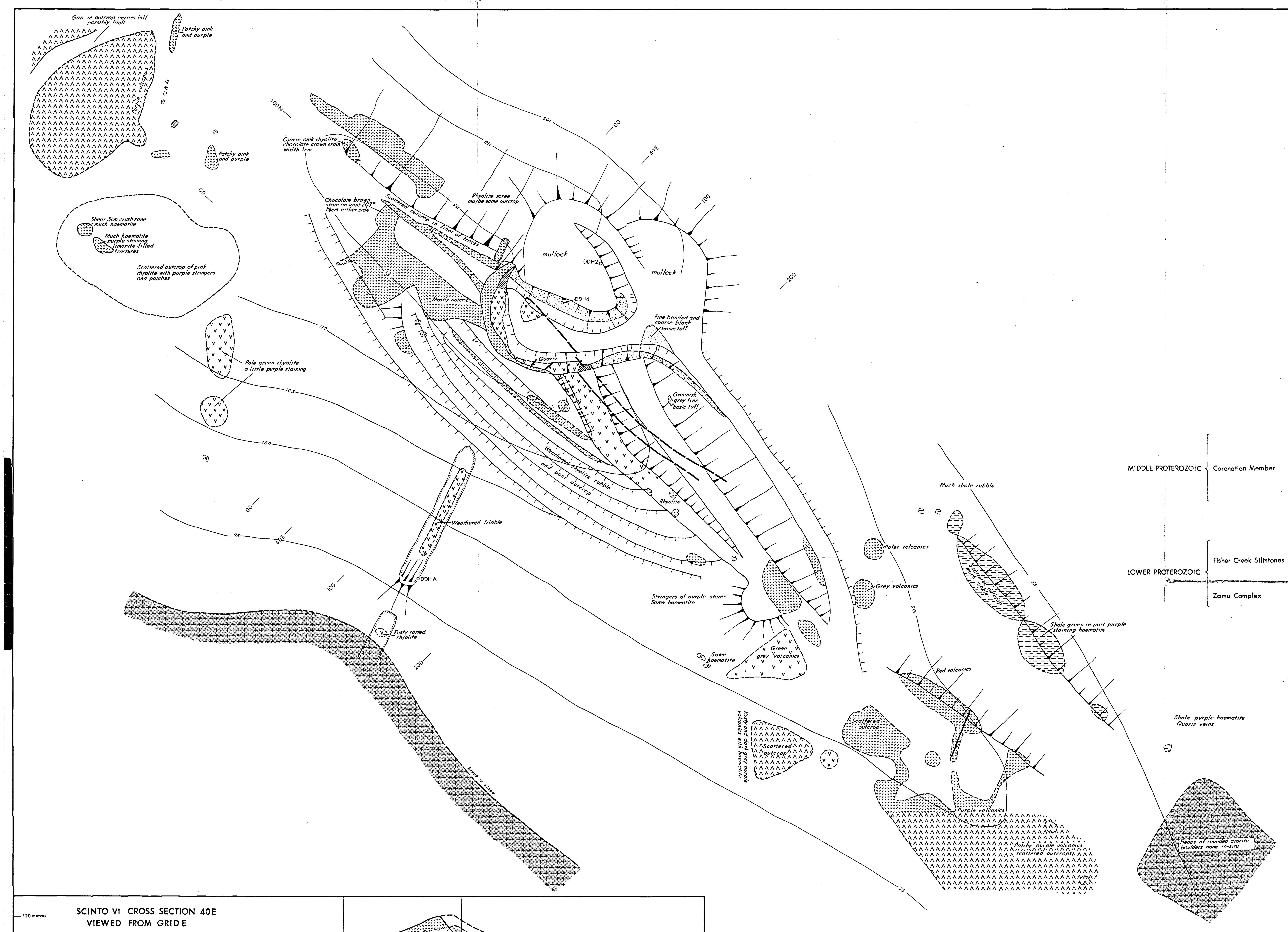
CR1986 0320

PLATE 42

053/87-5

TO ACCOMPANY RECORD No 1987/82 H352 GP




Gap in outcrop across hill possibly fault
Patchy pink and purple
Patchy pink and purple
Shear 5cm crushzone much haematite
Much haematite purple staining limonite-filled fractures
Scattered outcrop of pink rhyolite with purple stringers and patches
Pale green rhyolite a little purple staining
Coarse pink rhyolite chocolate crown stain width 1cm
Chocolate brown stain on joint 203° 15cm either side
Scattered outcrop in floor of tracks
Rhyolite scree maybe some outcrop
mullock
mullock
DDH2
DDH4
Mainly outcrop
Fine banded and coarse black basic tuff
Quartz
Greenish grey fine basic tuff
Weathered rhyolite rubble and poor outcrop
Rhyolite
Weathered friable
DDHA
Rusty rotted rhyolite
Stringers of purple stains Some haematite
Some haematite
Green grey volcanics
Paler volcanics
Grey volcanics
Much shale rubble
Shale green in part purple staining haematite
Red volcanics
Scattered outcrop
Scattered outcrop
Rusty and dark grey purple volcanics with haematite
Purple volcanics
Patchy purple volcanics scattered outcrops
Shale purple haematite Quartz veins
Heaps of rounded diorite boulders none in-situ
break in slope
100N
00
40E
100
200
95
105
110
115

MIDDLE PROTEROZOIC — Coronation Member:
- Purple rhyolite
- Pink rhyolite
- Green-grey rhyolite

(remapped as quartz syenite Harrison, 1971)

- Crushed rock

LOWER PROTEROZOIC — Fisher Creek Siltstones:
- Various coloured shale; red, yellow and purple, but original colours probably grey and green
- Fine compact laminated black basic tuff; metamorphosed

Zamu Complex:
- Diorite or quartz diorite

- Inferred unconformity
- Outcrop boundary
- Fault
- Trace of shear zone in pit walls
- 100 Contour (metres)
- DDH Diamond drill holes

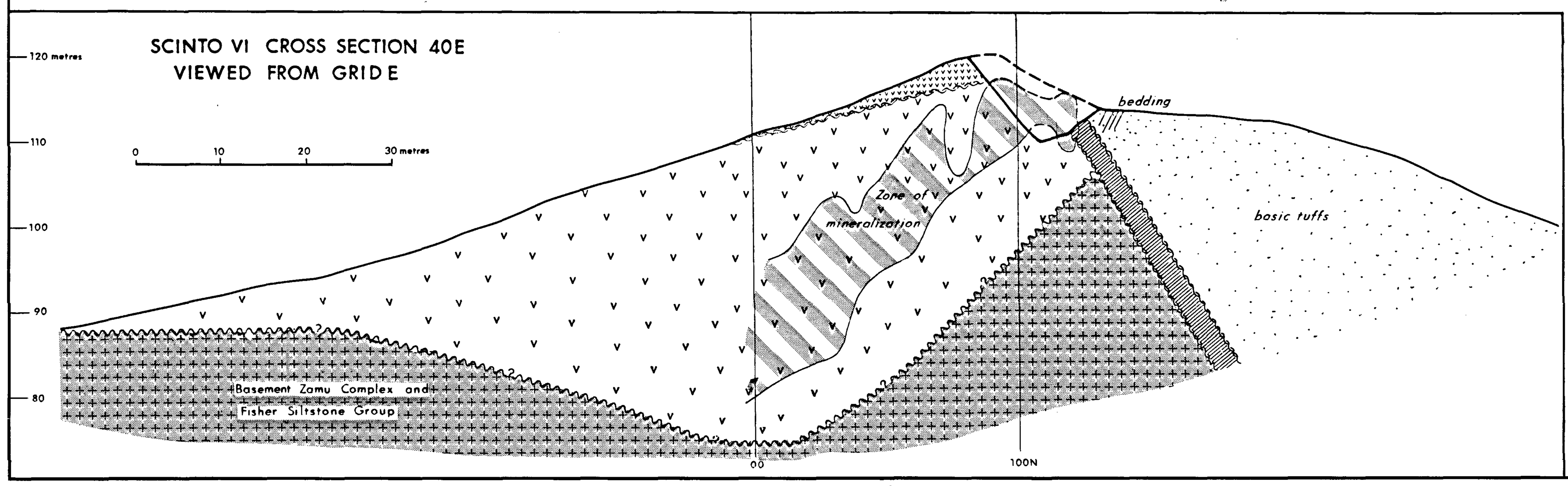
MN GN 46°30'

CR1986 0320

Scale 1:500

0 10 20 30 40 50 metres

Note: Geology by J.F. Harrison, United Uranium N.L. February, 1970 (Plan No.478) Grid in feet.



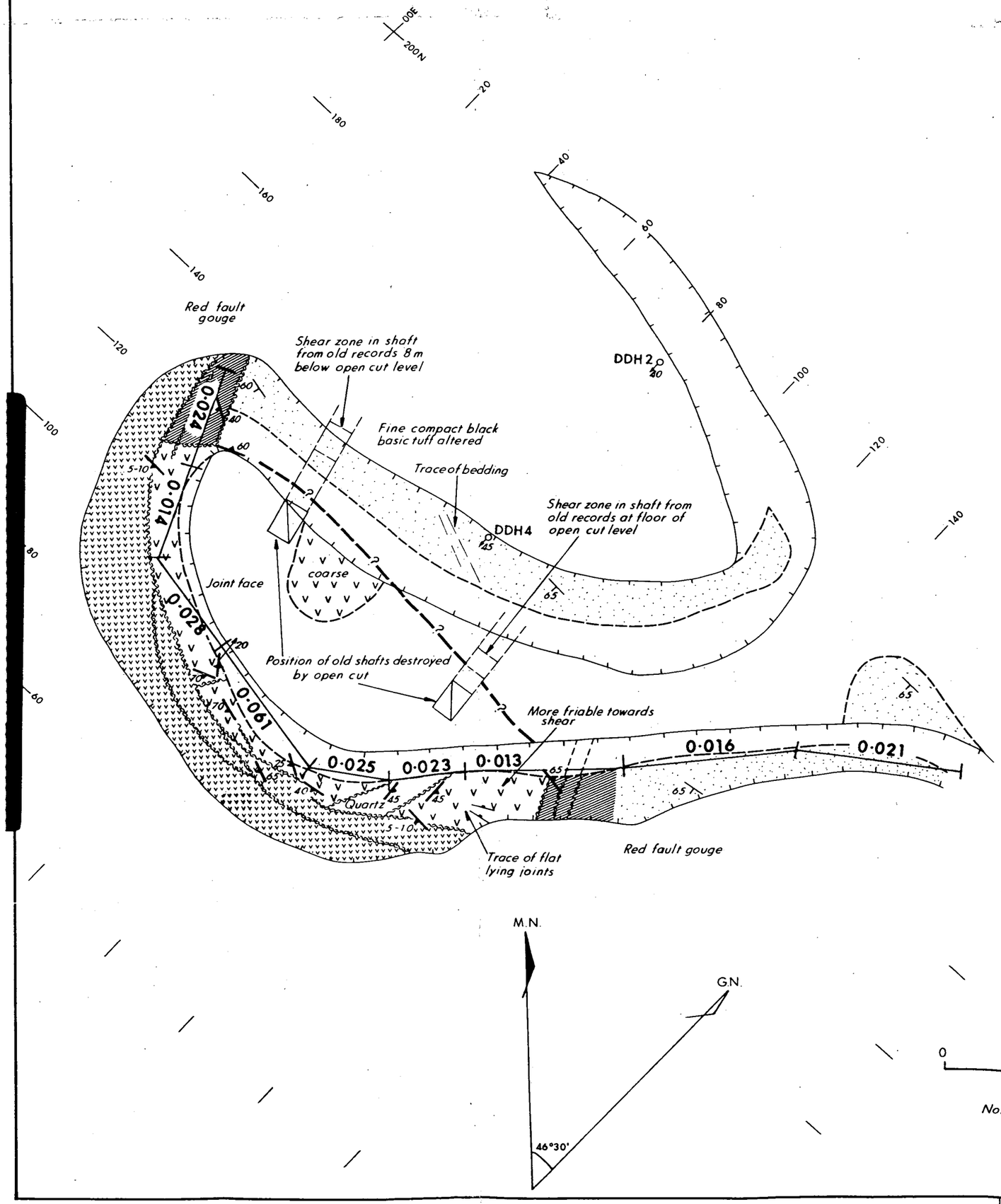
BHP Minerals Exploration

GEOLOGICAL MAP

SCINTO VI AREA, N.T.

Prepared:	Date: April, 1986	PLATE 43
Drawn: D.J.R	Project No.: G 18	
Centre: Brisbane	Drawing No.: A1-539	

Revisions:



MIDDLE PROTEROZOIC — Coronation Member
- Pink rhyolite
- Green-grey rhyolite

remapped as quartz syenite Harrison, 1971

Crushed rock

LOWER PROTEROZOIC — Fisher Creek Siltstones
- Fine compact laminated black basic tuff; metamorphosed

Outcrop boundary

65 Strike and dip of bedding

25 Shear

Shear vertical

20 Shear showing dip and strike and pitch of slickensides

Strike and dip of joint

Fault (inferred)

Trace of shear zone in pit walls

Open cut

DDH2 45 Diamond drill hole with depression

BHP rock chip sample interval (1985)

0·061 Au assay result (ppm)

Scale 1: 250

0 5 10 15 20 metres

Note: Geology by J.F. Harrison, United Uranium N.L. February, 1970 (Plan No. 478) Grid in feet.

CR 1986 0320

BHP Minerals Exploration

GEOLOGICAL MAP AND GEOCHEMISTRY

SCINTO VI OPEN CUT, N.T.

Prepared:	Date: April, 1986	PLATE 44
Drawn: D.J.R.	Project No.: G18	
Centre: Brisbane	Drawing No.: A3-412	

Revisions:

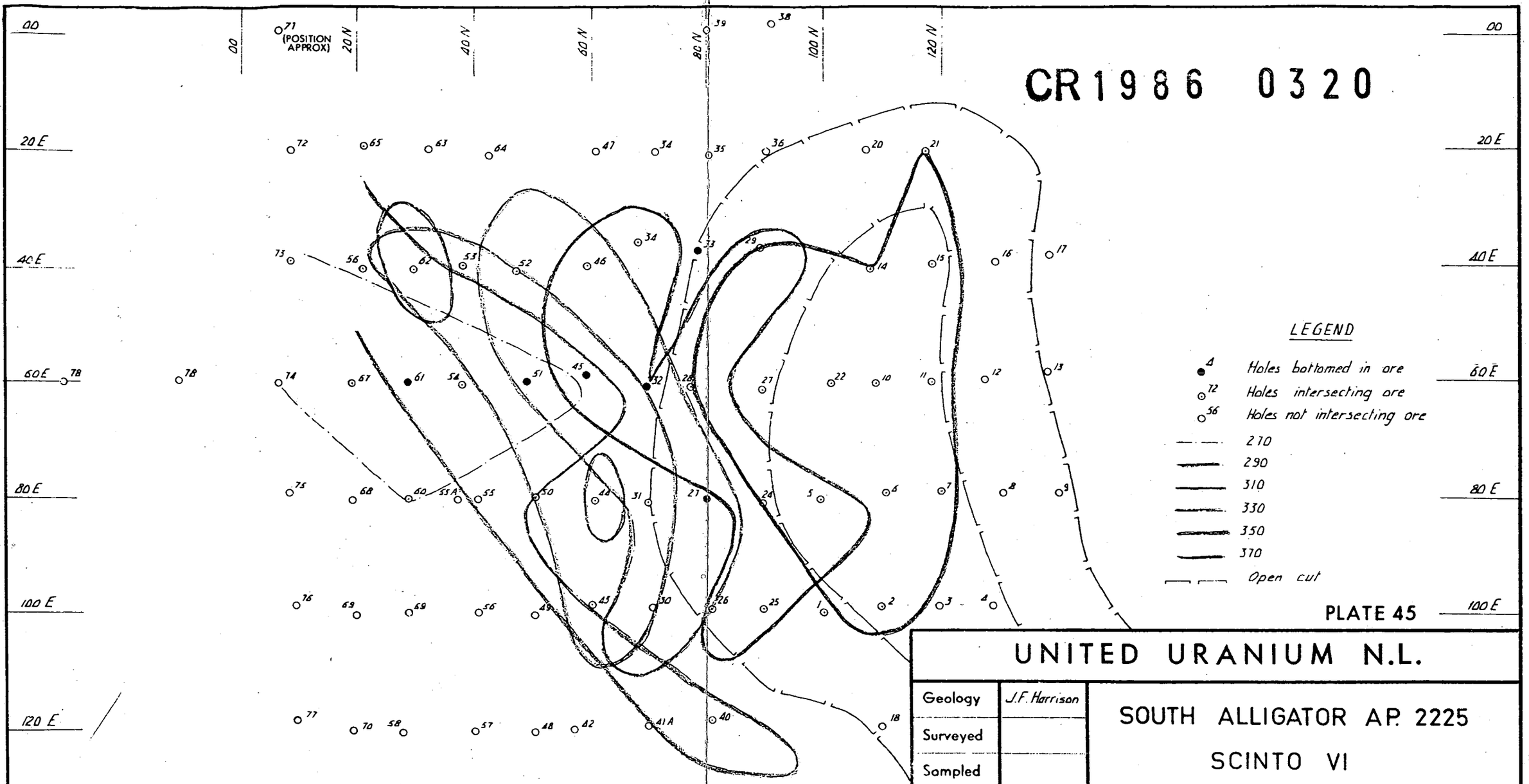


PLATE 45

UNITED URANIUM N.L.

Geology	J.F. Harrison
Surveyed	
Sampled	
Plotted	
Drawn	B. Gay
Date	Feb. 1970
DWG. No.	477

SOUTH ALLIGATOR A.P. 2225
SCINTO VI
CONTOURS OF THE MINERALIZED ZONE

Scale

20 0 20 40

BHP Minerals Exploration

GEOLOGICAL PLAN OF SCINTO V PROSPECT - SHEET 1

Prepared:	Date:	PLATE 46
Drawn:	Project No.:	
Centre:	Drawing No.:	

Revisions

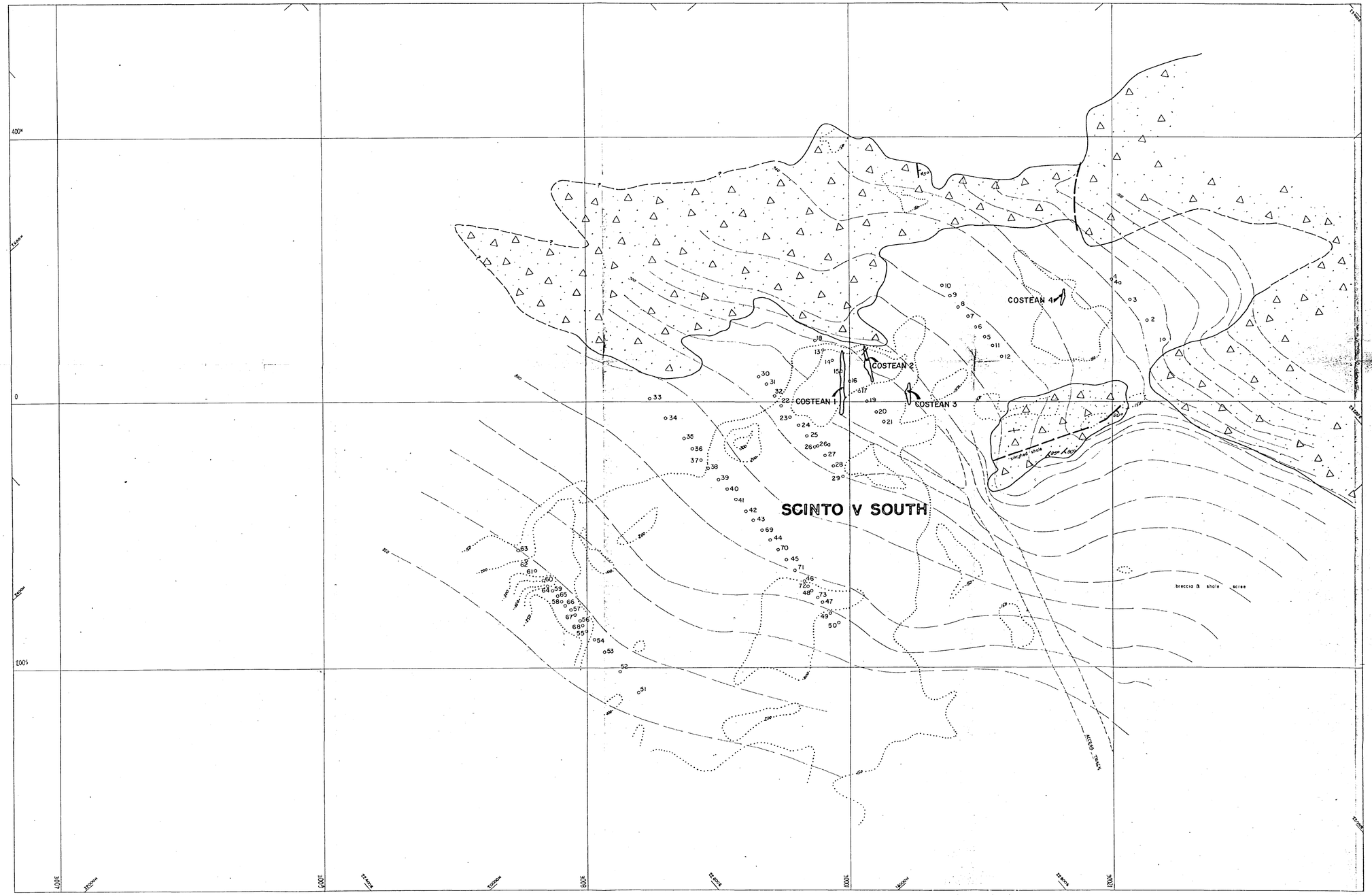
CR1986 0320

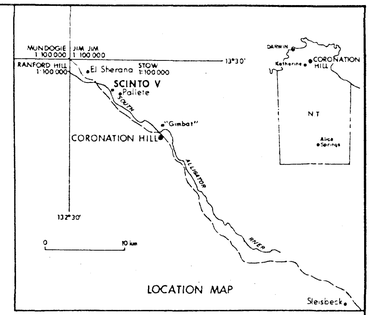
Scale 1"=40'
0 20 40 60 80 100 ft

FOR REFERENCE SEE PLATE

KEY TO SHEETS

SHEET 1	SHEET 2





MIDDLE PROTEROZOIC — Scinto Breccia

LOWER PROTEROZOIC — Koolpin Formation; cherty ferruginous siltstone

- Fault
- Geological boundary
- Where the fault or boundary is approximate, line is broken; where inferred, queried.
- Isorads in C.P.M
- Trend lines
- Strike and dip of strata
- Vertical strata
- DDH3 — Diamond drillhole
- Percussion drillhole
- 12 — Percussion drillhole, inclined
- 97 — Percussion drillhole (1962)
- 76 — Percussion drillhole, inclined (1962)
- Quartz vein
- Shaft
- B.M.R grid
- 400E — N.A.U.C. & U.U.N.L. grid
- Track
- Contour

KEY TO SHEETS

SHEET 1	SHEET 2

MN

CR1986 0320

0 20 40 60 80 100 ft

1":40'

Detail taken from U.U.N.L. Figures IA, IB, IC

BHP Minerals Exploration

GEOLOGICAL PLAN OF SCINTO V PROSPECT – SHEET 2

Revisions:	Prepared:	Date: Aug 1987
	Drawn:	Project No.: G 18
	Centre: Brisbane	Drawing No.:

PLATE 47

— LEGEND —

SILICEOUS BRECCIA
Red coloured siliceous breccia with quartz and rock fragments
SB_1 – unsilicified acid volcanic rubble. SLB – siliceous breccia capping on limestone ? outcrop

SANDSTONE
White quartzite

Massive grey pebbly sandstone, with large cross sets and white sandstone
Pm 4c – quartz pebble bed and dykes. Pm 4f – ferruginous conglomerate

Sandstone
Red polymict conglomerate with LOWER and MIDDLE PROTEROZOIC fragments

Thin bedded, brown to grey, sandstone (Low angle cross beds and ripple marks)
Pm 4a – sedimentary dyke.

Hematite rich boulder conglomerate – consisting of rounded volcanic and sandstone boulders from local outcrops of "Lower Cover" rocks.
Pm 4h – sandstone.

PUL PUL RHYOLITE

Acid volcanics – rhyolite, tuff and agglomerate

SANDSTONE
CORONATION MEMBER
Basic to intermediate volcanics, Amygdaloidal varieties common, and red mudstone.
Pm 1b – sandstone

PALETTE SANDSTONE
Massive coarse grained grey feldspathic sandstone

BRECCIA
SR – siliceous replacement and silicified breccia

SHALE/SILTSTONE
Pale shale, tuffaceous sandstone and possibly fine grained tuffaceous material.

Interbedded shale and chert with tuff, reworked tuff and shale.
Pl 5b – shale

Dolomite

Shale, phyllite and mudstone

Sandstone, feldspathic sandstone, pebbly arkosic sandstone and quartzite.

SHALE
Shale, mudstone and green fine grained tuff / mudstone

Basic and intermediate volcanic

MIDDLE PROTEROZOIC — UPPER COVER ROCKS — KOMBOLGIE FM.
LOWER COVER ROCKS — EDITH RIVER VOLCANICS
LOWER PROTEROZOIC — KOOLPIN FM. — CORYDON SUBGROUP — MASSON FM.

SOUTH & EAST OF SADDLE RIDGE

SANDSTONE
Grey sandstone.
Pm 1c – white to pink siliceous breccia ? sandstone, sand and pebble rich zones.

Basic to intermediate volcanics

Geological boundary – position accurate, appx.	Road
Geological boundary inferred	Mullock
Fault with dip – position accurate, appx.	Open cut mine
Synclinal axis – position accurate, appx.	Depression – "Sink hole" ?
Bedding strike and dip	Bulldozed embankment and pile
Overturned bedding strike and dip	Scree slip fracture
Fault / joint strike and dip	Adit
Geological contact strike and dip	Shaft
Quartz vein strike and dip	Adit levels projected to surface
Tension cracks strike and dip	Costean
Cleavage (possibly coincident with bedding) strike and dip	Bulldozed area
Cleavage strike and dip	Fence
Strike and dip of planar fabric of phyllite / shear	Stream
Generalized strike and dip	Lease corner peg with lease number
Plunge of minor folds	Closed survey inflexion point
Plunge of columnar joint "cylinder"	Spring location
Facing direction	Quartz pebble beds with sandstone cobbles
Bedding trend lines	Sandstone boulder conglomerate
Radiometric spot high in counts per second (cps)	Hematite zone
Pitchblende	Agglomerate
Secondary uranium minerals	Quartzite

CR1986 0320

PLATE 48

NORANDA AUSTRALIA LTD.

SCINTO PLATEAU LEASES
South Alligator River
Northern Territory
GEOLOGY INTERPRETATION

SCALE 1:5000
100 50 0 100 200 300 400 500 metres
500 250 0 1000 2000 3000 feet

DATE: Jan. 1978	GEOLOGY: J.H. Wright	DRAWN: A.H.
APPROVED: C.P. Pedersen	DRAWING No. 414-C-841	

MC7A

Scinto 6

KOOLPIN CK.

72,000ft E

108,000 ft N

GML 46A

GML 45A

Palette

Skull

GML 43A

GML 44A

Cliff Face

Koolpin East

MC6A

MC2A

Scinto 5

Scinto 5 South

Scinto 1

MC4A

MC5A

Palm

Scinto Camp

MC3A

ML 1415A

ML 1414A

ML 1413A

Skull II

ML 1399A

ML1400A

ML1401A

ML 1402A

Saddle Ridge North East

Saddle Ridge East extended

ML 1398A

ML1397A

ML 1396A

ML 1395A

ML 1410A

ML 1411A

ML 1412A

Saddle Ridge East

ML 119A

ML 125A

Saddle Ridge

ML 1387A

ML 1388A

Saddle Ridge South

Clear Springs

FISHER CK.

SOUTH ALLIGATOR RIVER

108,000 ft N

72,000 ft E

— LEGEND —

Geological and radiometric traversing – 1976
1:5650 (photo scale)

Geological mapping - 1:1200 approx.

Geological mapping - 1:4200 approx.

Detailed geological mapping.
(various scales - eg. 1:240 & 1:480)

NOTE :- Information from extant records and base map from Sheet 2 United Uranium contoured plan 1:10000

PLATE 49

NORANDA AUSTRALIA LTD.

SCINTO PLATEAU AREA
Northern Territory

GEOLOGICAL MAPPING PRIOR TO 1977

SCALE - 1:10 000

400 200 100 0 200 400 metres
1000 500 0 1000 feet

DATE: Dec. 1977	COMPILED: J.H. Wright	DRAWN: A.H.
APPROVED C.P. Pedersen	DRAWING No: 414-C-838	

72,000ft E

KOOLPIN CK.

MC7A

Scinto 6

108,000ft N

GML 46A

GML 45A

Palette

Koolpin East

Cliff Face

Skull

GML 43A

GML 44A

ML 1415A

ML 1414A

Skull II

ML 1413A

ML 1399A

ML1400A

ML 1401A

ML 1402A

MC6A

Scinto 5

MC2A

Saddle Ridge North East

ML 1398A

Saddle Ridge East extended

Scinto 5 South

Scinto 1

ML 1410A

ML 1411A

ML 1412A

ML1397A

ML 1396A

ML 1395A

MC4A

MC5A

Palm

Scinto Camp

MC3A

Saddle Ridge East

ML 119A

ML 125A

Saddle Ridge

ML 1387A

ML 1388A

Saddle Ridge South

Clear Springs

FISHER CK.

SOUTH ALLIGATOR RIVER

CR1986 0320

— LEGEND —

Radiometric and S.P. Surveys and Traverses

S.P. Surveys

Radiometric Surveys

NOTE:- *Information from extant records and base map from Sheet 2 United Uranium contoured plan 1:10000*

108,000ftN

72,000ftE

PLATE 50

NORANDA AUSTRALIA LTD.

SCINTO PLATEAU AREA

Northern Territory

RADIOMETRIC and S.P. SURVEYS

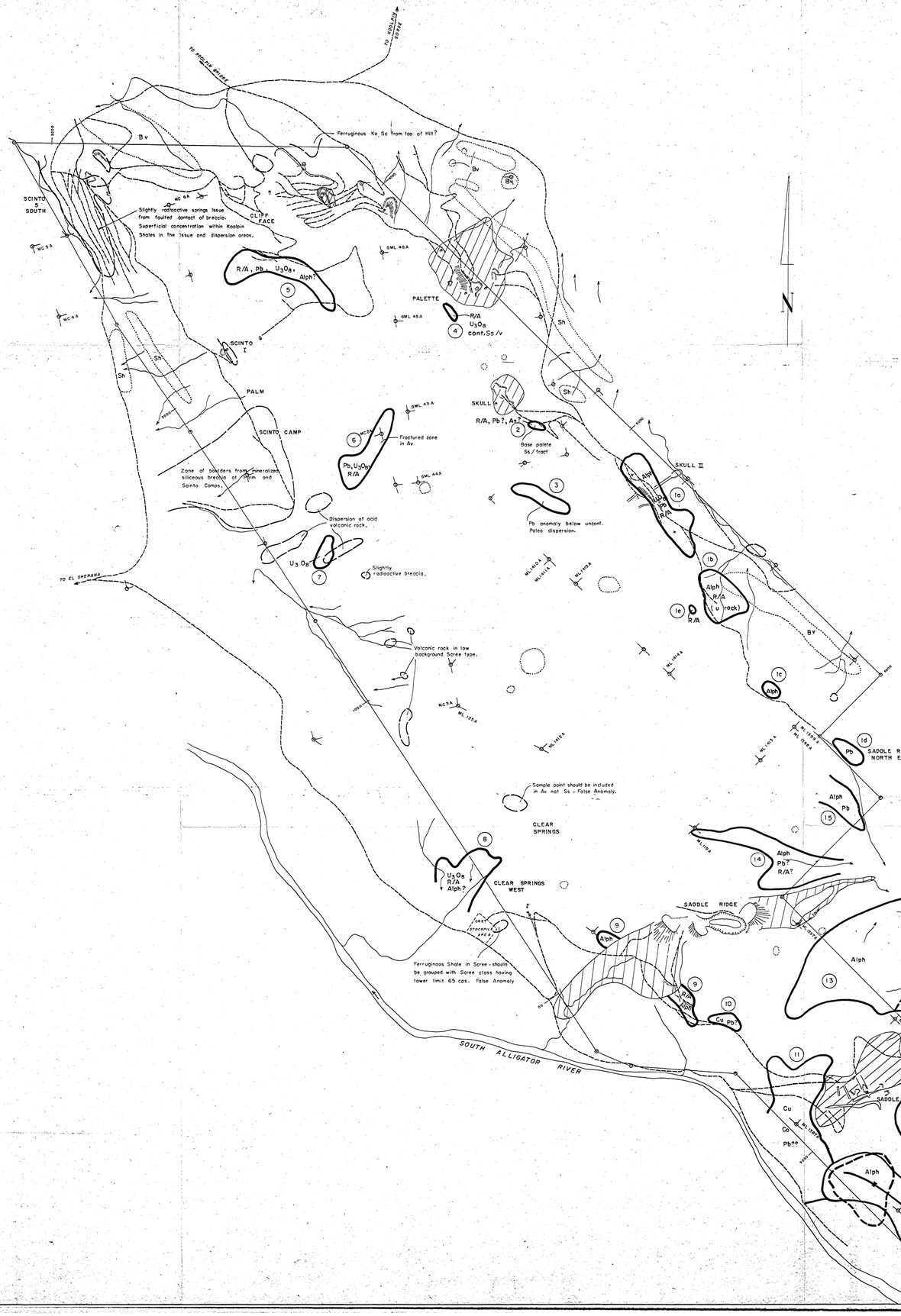
PRIOR TO 1977

SCALE - 1:10 000

400 200 100 0 200 400 metres

1000 500 0 1000 feet

DATE: Dec. 1977	COMPILED: J.H. Wright	DRAWN: A.H.
APPROVED: C.P. Pedersen	DRAWING N°: 414-D-839	



— LEGEND —

SOIL and ROCK TYPES

A	Acid
B	Basic
Ko	Kaolpin
Sc	Scree
Sh	Shale
Ss	Sandstone
v	Volcanic

MINERALS

Alph	Alphalogger
As	Arsenic
Co	Cobalt
Cu	Copper
Pb	Lead
u	Pitchblende
U_3O_8	Uranium Oxide

R/A Gamma radioactivity
cont. Contorted
fract. Fracture
unconf. Unconformity

Road
Mullock
Open cut mine
Bulldozed embankment and pile
Adit
Shaft
Costean
Bulldozed area
Stream
ML1399A Lease corner peg with lease number
Closed survey inflexion point

Possibly significant anomaly in terms of the presence of mineralisation
Anomalies due to either known non - interest mineralisation or unsignificant statistical variations caused by unmapped differences in rock types effecting unit backgrounds
Anomalies due to high rock unit background values
Anomalies due to disturbance by earthworks
12 Anomaly number
\+ Anomaly peak values

CR1986 0320

PLATE 51

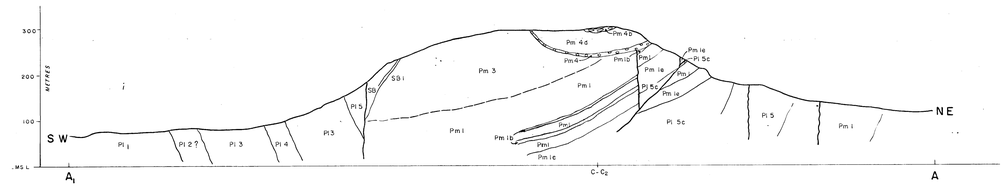
NORANDA AUSTRALIA LTD.

SCINTO PLATEAU LEASES
South Alligator River
Northern Territory
MAP SHOWING ANOMALOUS GROUPINGS

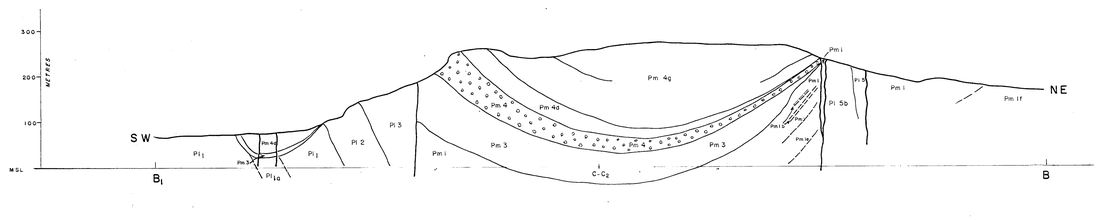
SCALE = 1:5000
100 50 0 100 200 300 400 500 metres
500 250 0 500 1000 1500 feet

DATE: Febr. 1978	COMPILED: J.H. Wright	DRAWN: N.S. & A.H.
APPROVED: C. Pedersen	DRAWING No. 414-E-843	

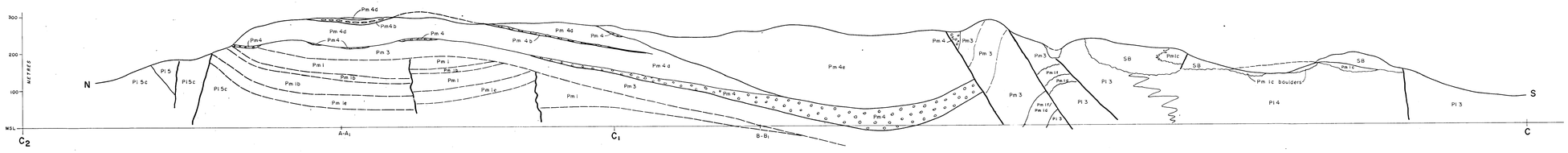
SECTION A_1-A



SECTION B_1-B



SECTION C-C_2



— LEGEND —

SB — Red coloured siliceous breccia with quartz and rock fragments
SB_1 - unsilicified acid volcanic rubble. SLB - siliceous breccia capping on limestone? outcrop

UPPER COVER ROCKS

KOMEILGIE FM.

Pm 4g — White quartzite

Pm 4e, Pm 4f1, Pm 4c — Massive grey pebbly sandstone, with large cross sets, and white sandstone
Pm 4c- quartz pebble bed and dykes. Pm 4f- Ferruginous conglomerate

Pm 4d, Pm 4b1 — Sandstone
Red polymict conglomerate with LOWER and MIDDLE PROTEROZOIC fragments

Pm 4a, Pm 4h — Thin bedded, brown to grey, sandstone (Low angle cross beds and ripple marks)
Pm 4a - sedimentary dyke.
Hematite rich boulder conglomerate - consisting of rounded volcanic and sandstone boulders from local outcrops of "Lower Cover" rocks
Pm 4h - sandstone.

MIDDLE PROTEROZOIC

LOWER COVER ROCKS

EDITH RIVER VOLCANICS

Pm 3 — PUL PUL RHYOLITE
Acid volcanics - rhyolite, tuff and agglomerate

Pm 1, Pm 1b, Pm 1e — CORONATION MEMBER
Basic to intermediate volcanics, Amygdaloidal varieties common, and red mudstone.
Pm 1b - sandstone
PALETTE SANDSTONE
Massive coarse grained grey felspathic sandstone

SOUTH & EAST OF SADDLE RIDGE
Pm 1c, Pm 1f, Pm 1a

Grey sandstone.
Pm 1c - white to pink siliceous breccia ± sandstone, sand and pebble rich zones.
Basic to intermediate volcanics

SR — SR - siliceous replacement and silicified breccia

LOWER PROTEROZOIC

MASSOUL FM.

Pi 5, Pi 5c, Pi 5b — Pale shale, tuffaceous sandstone and possibly fine grained tuffaceous material.
Interbedded shale and chert with tuff, reworked tuff and shale.
Pi 5b - shale

CORNWOOD MEMBER

KOOLPIN FMTN.

Pi 4 — Dolomite

Pi 3 — Shale, phyllite and mudstone

Pi 2 — Sandstone, felspathic sandstone, pebbly arkosic sandstone and quartzite.

Pi 1, ? Pi 1a — Shale, mudstone and green fine grained tuff/mudstone
Basic and intermediate volcanic

——— Geological boundary - position accurate, appx.
— — — Fault

CR1986 0320

PLATE 52

NORANDA AUSTRALIA LTD.

SCINTO PLATEAU LEASES
South Alligator River
Northern Territory

INTERPRETED GEOLOGY - SECTIONS A_1-A, B_1-B and C_2-C

SCALE - 1:5000
100 50 0 100 200 300 400 500 metres
500 250 0 500 1000 1500 feet

DATE: Jan. 1978	GEOLOGY: J. H. Wright	DRAWN: N.S. & A.H.
APPROVED: C. P. Pedersen	DRAWING No. 414-C - 842	

24600E 24700E 24800E 24900E

2100N 2000N 1900N 1800N

Access track

Black shale

NAUO Shaft

Pitchblende in back of drive

Pitchblende in back of drive

Sheared black shale

Small ore shoot

Contorted phyllitic shale

Brecciated quartz beds

Saddle

Scree slope

Massive grey

Main zone of brecciated quartzite

Access track

CR1986 0320

Brecciated quartzite

Sheared black shale

Silicified shale

SCALE 1" = 20 ft

0 20 40 feet

GRID CO-ORDINATES ARE IN FEET

BHP Minerals Exploration

GEOLOGICAL PLAN
CLIFF FACE PROSPECT

Revisions:			
	Prepared:	Date:	PLATE 53
	Drawn:	Project No.:	
	Centre:	Drawing No.:	

No. 5 Adit
No. 4 Adit
No. 6 Adit
No. 1 Adit
No. 7 Adit
No. 2 Adit
No. 3 Adit
South Drive Adit
PADDH3
PADDH4
PLACEFIX
DARWIN
PALETTE
Katherine
Tennant Creek
ALICE SPRINGS
LEGEND
MIDDLE PROTEROZOIC
KOMBALGIE FM.
Pm4d Pinkish grey quartz sandstone with cross beds and ripple marks.
Pm4i Coarse polymict conglomerate beds with angular clasts of volcanics and sandstone.
Unconformity
EDITH RIVER VOLCANICS
Basic to intermediate volcanics, amygdaloidal varieties common, with lenses of sandstone and shale.
Pm1e PALETTE SANDSTONE Massive grey sandstone.
Unconformity
LOWER PROTEROZOIC
KOOLPIN FM.
Pl5c Pale shale and sandstone, often tuffaceous with minor interbedd chert.
Pl5 Interbedded shale and chert with tuff, reworked tuff and shale.
Underground workings
EXPLANATION
Strike and dip - bedding
Strike and dip - normal fault plane
Strike and dip - reverse fault plane
Strike and dip - joint
Geological contact - accurate
Geological contact - approximate
Geological contact - inferred
Fault contact - accurate
Fault contact - approximate
Fault contact - inferred
Breccia
® 450 Total count - Radiometric anomaly (Scintrex GIS-4)
⊕ B245 Petrological sample site and number
Mineral lease post
Foot of rise
Head of rise
Rise
Shaft
Portal
Underground workings projected to surface
Track
Open cut
1240 Topographic contour (contour interval - feet)
D D' Cross section line
* B112 Petrological sample site
SCALE 1:480
(1" = 40')
Palette
Gold Prospect
CR1986 0320
GEOLOGICAL PLAN
PALETTE AREA
EXPLORATION
BRISBANE
SOUTH ALLIGATOR JOINT VENTURE
NORTHERN TERRITORY
COMPILED: A.A. BRICKELL AFTER U.U.N.L.
DRAWN: W.J. STEEN
DATE: DECEMBER, 1979
SCALE: 1 : 480 (1" = 40')
PLATE 54

LD

D'

Pm4d

Pm4i

Pm1b

?

D

Pm1e

Pm1

?

?

P15c

D

F

Pm1e

F

?

?

P15c

Pm1e

?

P15c

LEGEND

MIDDLE PROTEROZOIC

KOMBALGIE FM.

Pm4d — Pinkish grey quartz sandstone with cross beds and ripple marks.

Pm4i — Coarse polymict conglomerate beds with angular clasts of volcanics and sandstone.

EDITH RIVER VOLCANICS

Pm1 (Pm1b) — Basic to intermediate volcanics, amygdaloidal varieties common, with lenses of sandstone and shale.

Pm1e — PALETTE SANDSTONE
Massive grey sandstone.

LOWER PROTEROZOIC

KOOLPIN FM.

P15c — Pale shale and sandstone, often tuffaceous with minor interbedd chert.

——— Geological contact - accurate

— — Geological contact - approximate

—?— Geological contact - inferred

——— Fault contact - accurate

— — Fault contact - approximate

—?— Fault contact - inferred

Δ Δ Δ Breccia

Adits

CR 1986 0320

SCALE 1:480
(1" = 40')

feet 40 0 40 80 120 160 200 feet

metres 10 0 10 20 30 40 50 metres

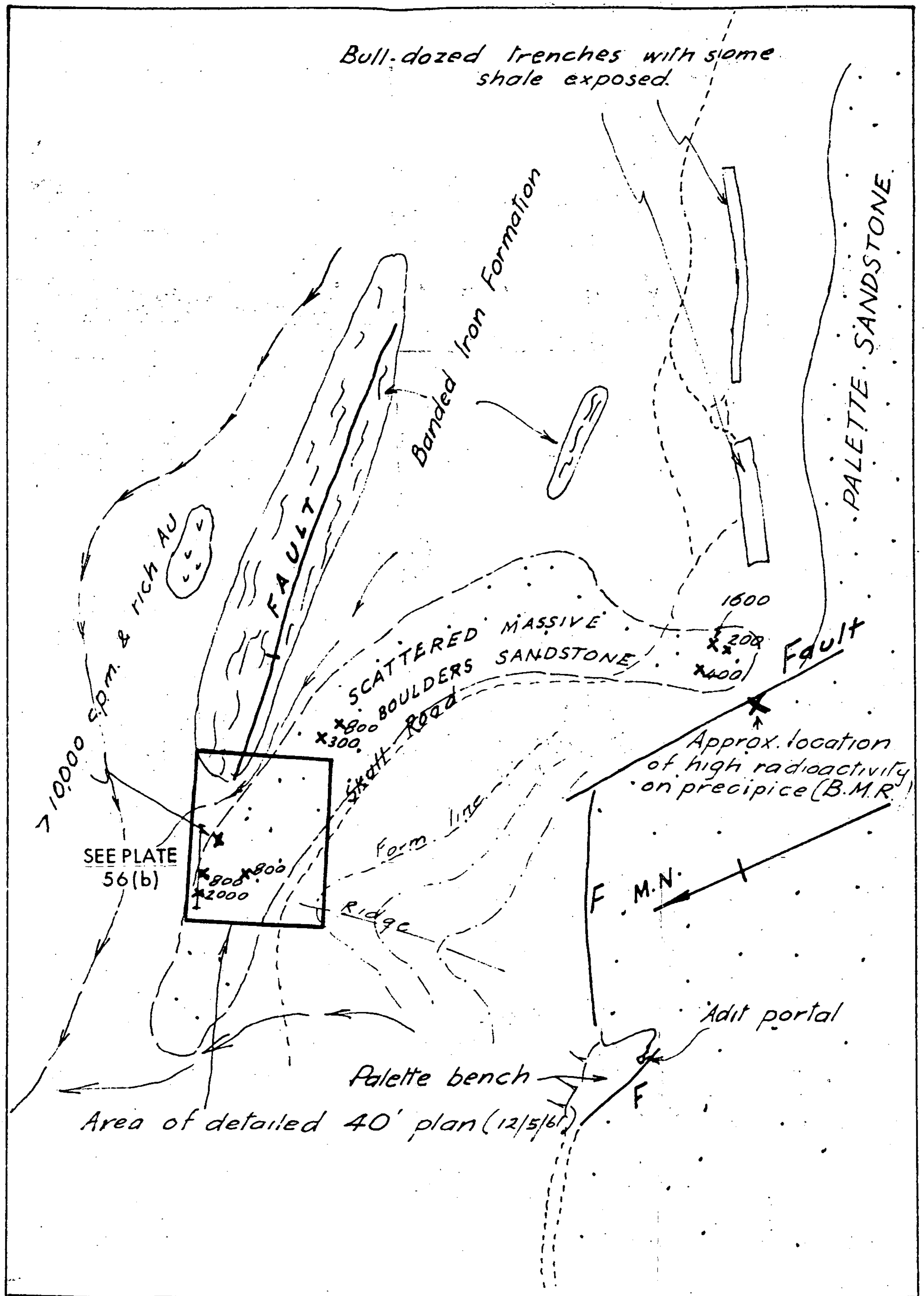
SCHEMATIC CROSS SECTION D – D'
PALETTE

EXPLORATION
BRISBANE

SOUTH ALLIGATOR JOINT VENTURE

NORTHERN TERRITORY

COMPILED:	DRAWN: G. A. CHEE	SCALE:	PLATE 55
A. A. BRICKELL	DATE: FEBRUARY, 1980	1:480 (1" = 40')	



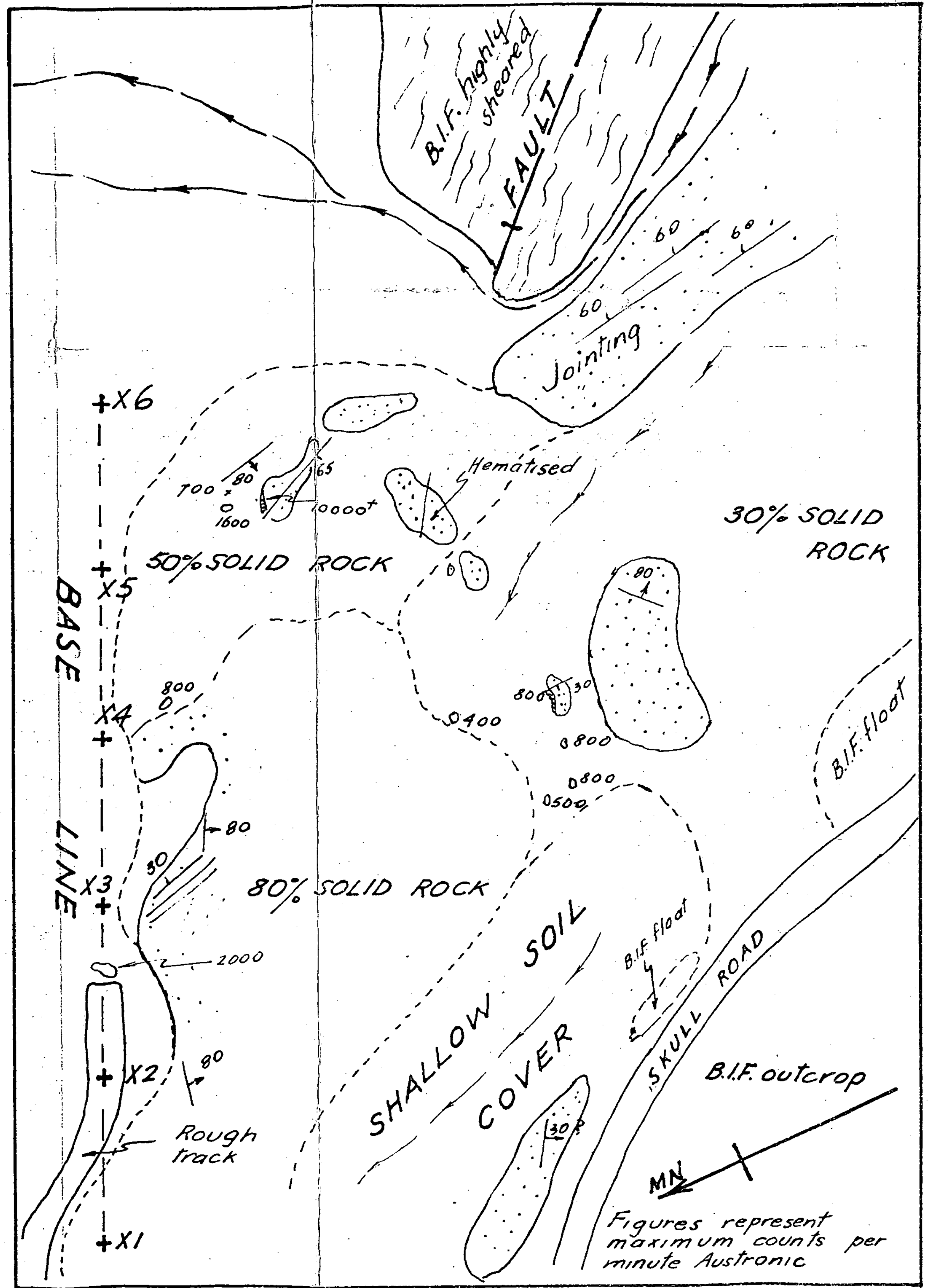
GEOLOGICAL PLAN

SKULL AREA

showing locations of mineralised boulders
PHOTO SCALE 1" = 350' approx.

J. Shepherd
Consulting Geologist 19/5/61

(a)



GEOLOGICAL PLAN

SKULL AREA

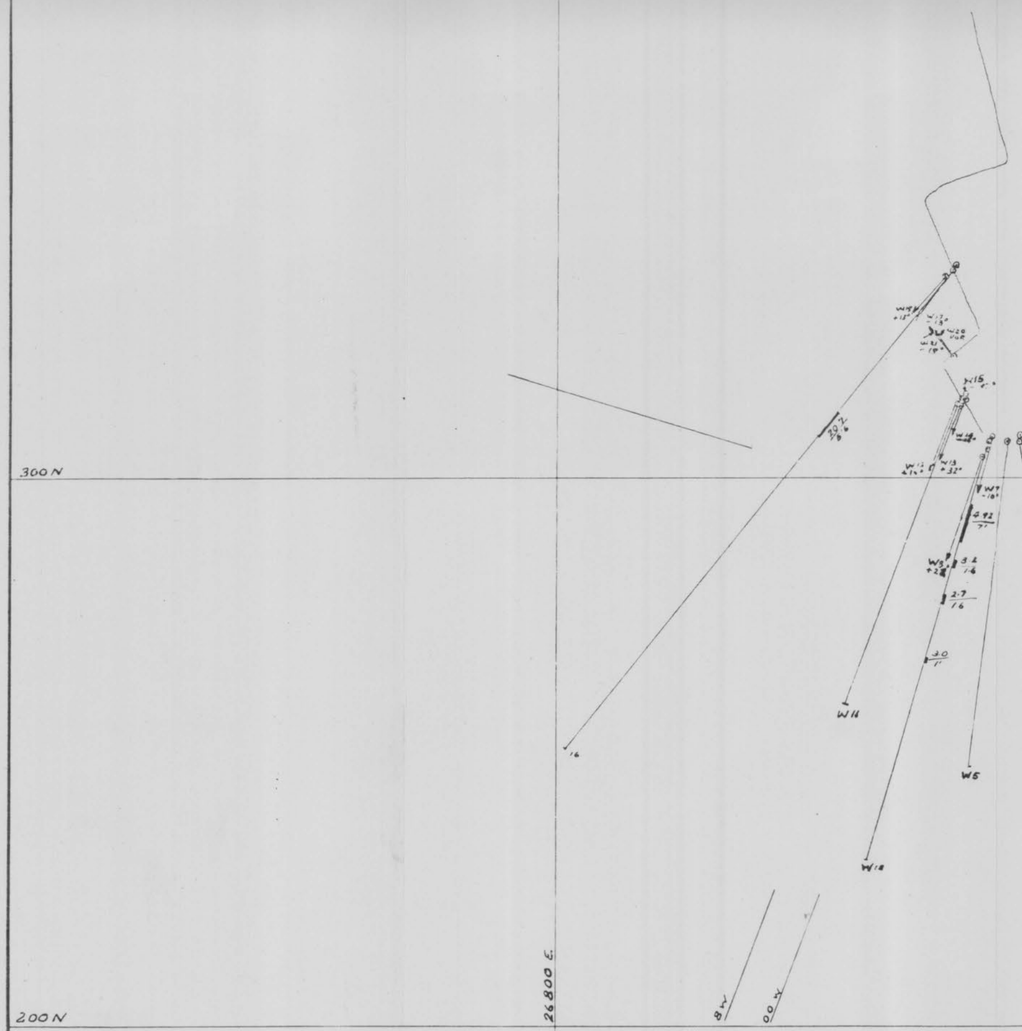
showing locations of mineralised boulders
1" = 40'

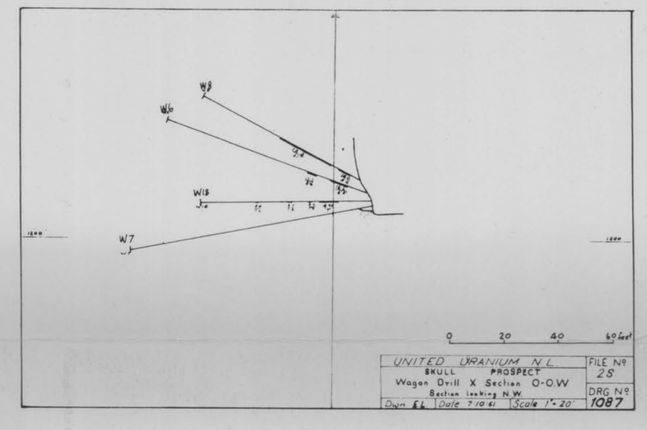
30 Bedding 70 Jointing

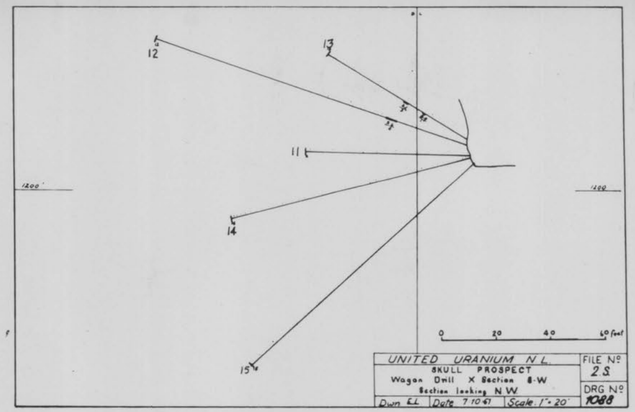
J. Shepherd
Consulting Geologist 12/5/61

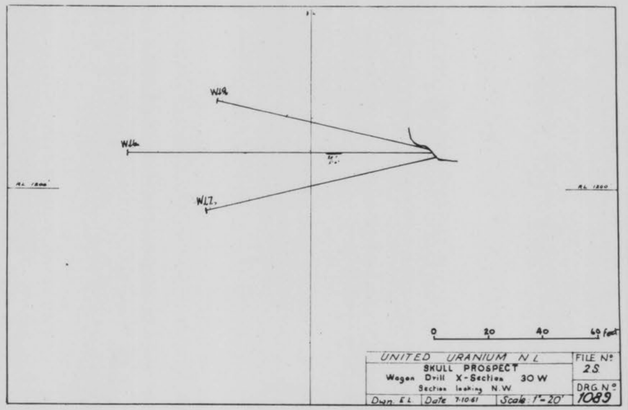
(b)

PLATE 56





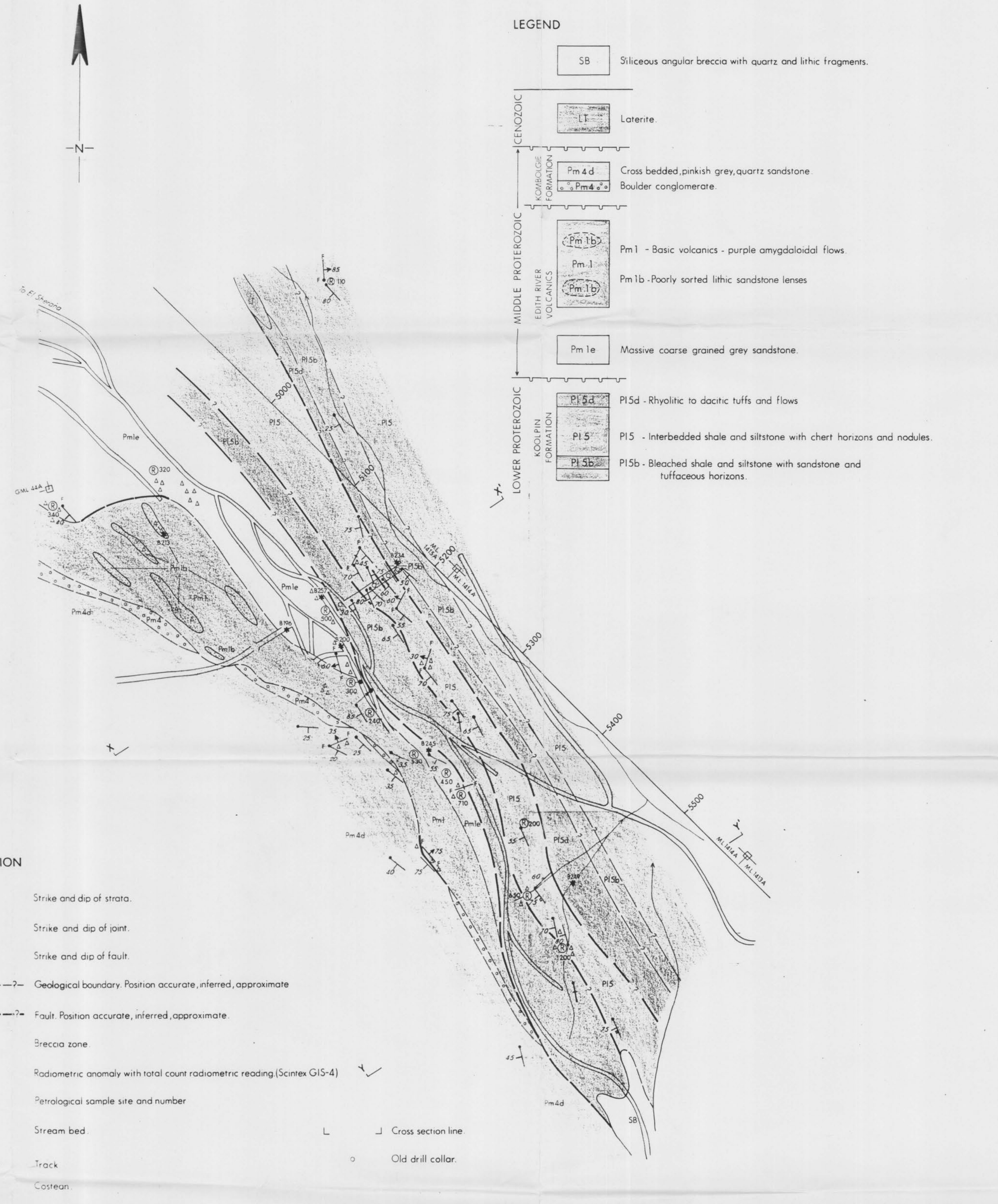




CR1986 0320

PLATE 57

REVISIONS	UNITED URANIUM N.L.	FILE No. 211.
	SKULL PROSPECT PLAN & SECTIONS OF WAGON DRILL PATTERN	DRG. No. 1086.
	Scale 1 inch = 20 feet	
	DRAWN E.L. | DATE 7-10-61 | APP'D	



LEGEND

SB — Siliceous angular breccia with quartz and lithic fragments.

CENOZOIC

LT — Laterite.

KOMBOLGIE FORMATION

Pm 4 d — Cross bedded, pinkish grey, quartz sandstone.

Pm4 — Boulder conglomerate.

MIDDLE PROTEROZOIC

EDITH RIVER VOLCANICS

Pm 1b / Pm 1 / Pm 1b

Pm 1 - Basic volcanics - purple amygdaloidal flows.

Pm 1b - Poorly sorted lithic sandstone lenses

Pm 1e — Massive coarse grained grey sandstone.

LOWER PROTEROZOIC

KOOLPIN FORMATION

Pl 5d — Pl5d - Rhyolitic to dacitic tuffs and flows

Pl 5 — Pl5 - Interbedded shale and siltstone with chert horizons and nodules.

Pl 5b — Pl5b - Bleached shale and siltstone with sandstone and tuffaceous horizons.

EXPLANATION

- Strike and dip of strata.
- Strike and dip of joint.
- Strike and dip of fault.
- Geological boundary. Position accurate, inferred, approximate
- Fault. Position accurate, inferred, approximate.
- Breccia zone.
- Radiometric anomaly with total count radiometric reading.(Scintex GIS-4)
- Petrological sample site and number
- Stream bed.
- Track
- Costean.
- Surveyed base line with station peg.
- Lease corner peg with lease number.
- Cross section line.
- Old drill collar.

SCALE 1:2500

FEET 200 0 200 400 600 FEET

METRES 50 0 50 100 150 200 250 METRES

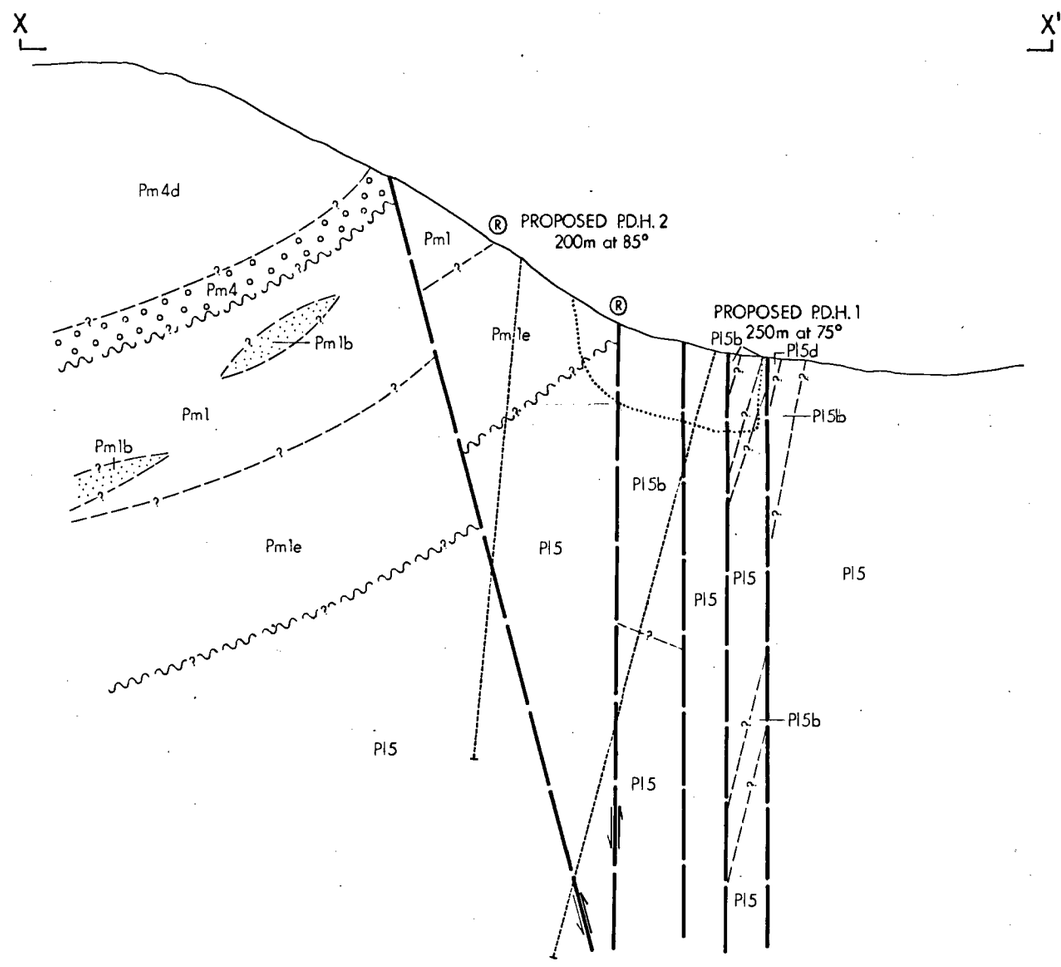
CR1986 0320

GEOLOGICAL PLAN
SKULL II AREA

EXPLORATION
BRISBANE

SOUTH ALLIGATOR JOINT VENTURE
NORTHERN TERRITORY

COMPILED: A A BRICKELL	DRAWN: PR LEONARD DATE: DECEMBER, 1979	SCALE: AS SHOWN	PLATE 58



EXPLANATION

- Geological boundary. Position accurate, inferred, approximate
- Fault. Position accurate, inferred, approximate.
- Unconformity. Position accurate, inferred, approximate.
- ® Radiometric anomaly.
- Limit of U.U.N.L. 1961 percussion drilling.

LEGEND

MIDDLE PROTEROZOIC

KOMBOLGIE FORMATION
- Pm 4 d — Cross bedded, pinkish grey, quartz sandstone.
- Pm 4 — Boulder conglomerate.

EDITH RIVER VOLCANICS
- Pm 1b / Pm 1 / Pm 1b — Pm 1 - Basic volcanics - purple amygdaloidal flows.
- Pm 1b - Poorly sorted lithic sandstone lenses.
- Pm 1e — Massive coarse grained grey sandstone.

LOWER PROTEROZOIC

KOOLPIN FORMATION
- Pl 5d — Pl5d - Rhyolitic to dacitic tuffs and flows.
- Pl 5 — Pl5 - Interbedded shale and siltstone with chert horizons and nodules.
- Pl 5b — Pl5b - Bleached shale and siltstone with sandstone and tuffaceous horizons.

SCALE 1:2 500

FEET 200 0 200 400 600 FEET

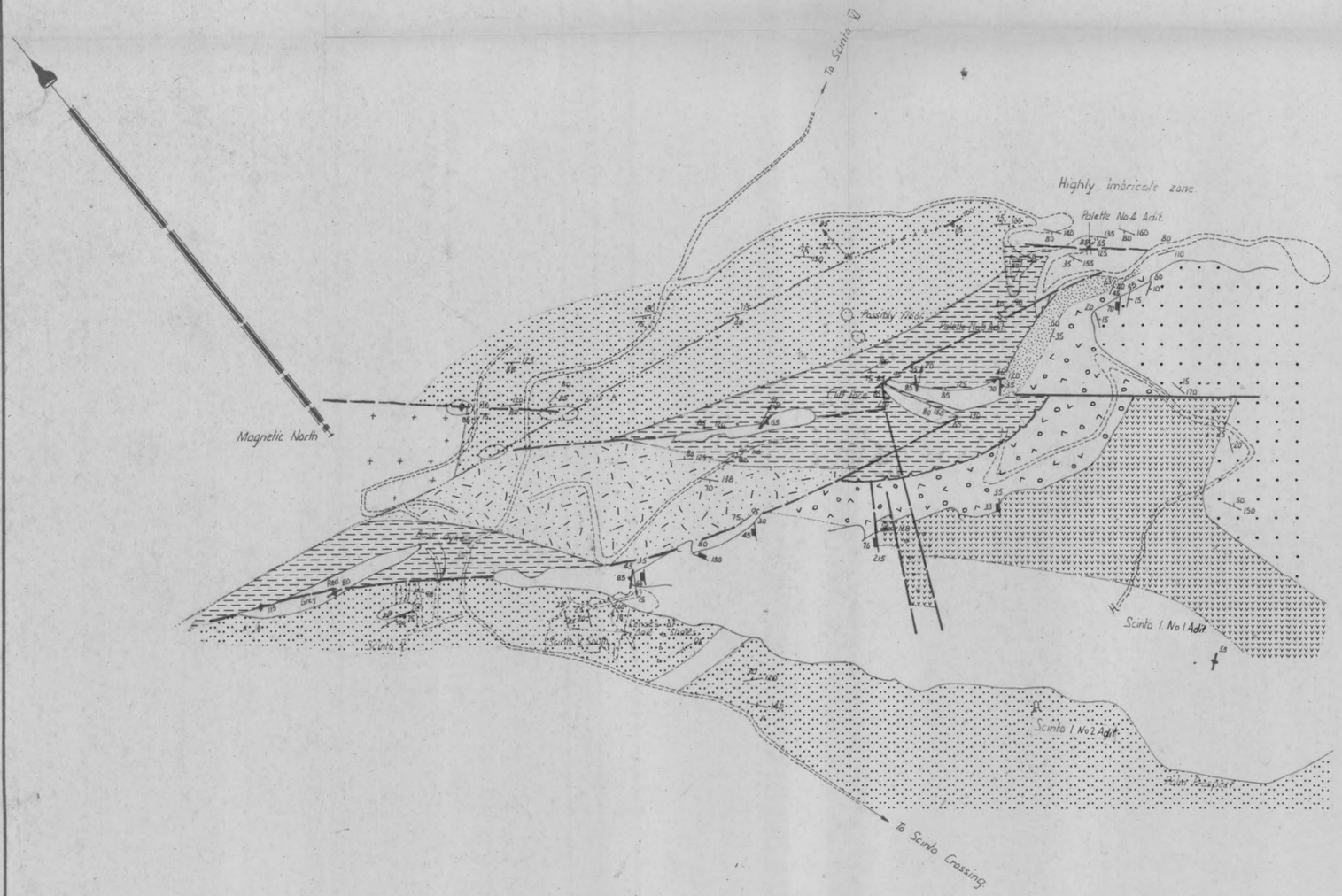
METRES 50 0 50 100 150 200 250 METRES

SCHEMATIC CROSS SECTIONS
SKULL II

EXPLORATION BRISBANE

SOUTH ALLIGATOR JOINT VENTURE
NORTHERN TERRITORY

COMPILED: A.A. BRICKELL	DRAWN: W.J. STEEN DATE: JANUARY 1980	SCALE: 1:2 500	PLATE 59



LEGEND.

- Upper Kombolgie sandstone.
- Breccia.
- Pink tuffaceous rhyolite.
- Amygdaloidal volcanics.
- Coronation sandstone.
- Acid intrusive.
- Basic dyke.
- Cherty ferruginous siltstone.
- Pale shales.
- Greywacke argillite.
- Fault.
- " inferred.
- Geological boundary.
- " " inferred.
- Unconformity.
- " inferred.
- Marked feature (foot of cliff).
- Track bench.
- Adit portal.
- Cliff face shaft.
- Brecciation.
- Airphoto lineament.
- Boundary of unknown nature.

- Strike & dip of bedding.
- " " " " vertical.
- " " " shear.
- " " " " vertical.
- " " " joint.
- " " " Shear " (showing pitch of slickensides.)
- Minor folding.

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PLATE 60

UNITED URANIUM N.L.		
Geology	J.F.H.	SOUTH ALLIGATOR A.P.2225.
Surveyed		N.W. END OF SCINTO PLATEAU.
Sampled		(AIRPHOTO RUN 6. 1029.80')
Plotted	J.F.H.	
Drawn	J.J.K.	
Date	Oct. 1970.	Scale (Approx.) 400' 0 400' 800'
DWG. No.	795	

24200E

24400E

24600E

800N

600N

SCINTO 1, Nº 2 ADIT

SCINTO 1, Nº 1 ADIT

mineralisation on surface

L.H. Nº 2

L.H. Nº 1

A

B

sharp brecciated ridge

high knob

mylonite

crushed Shale

bleached Shale

laterite

20' drop

30' drop

fault or joint

Fault

soil covered

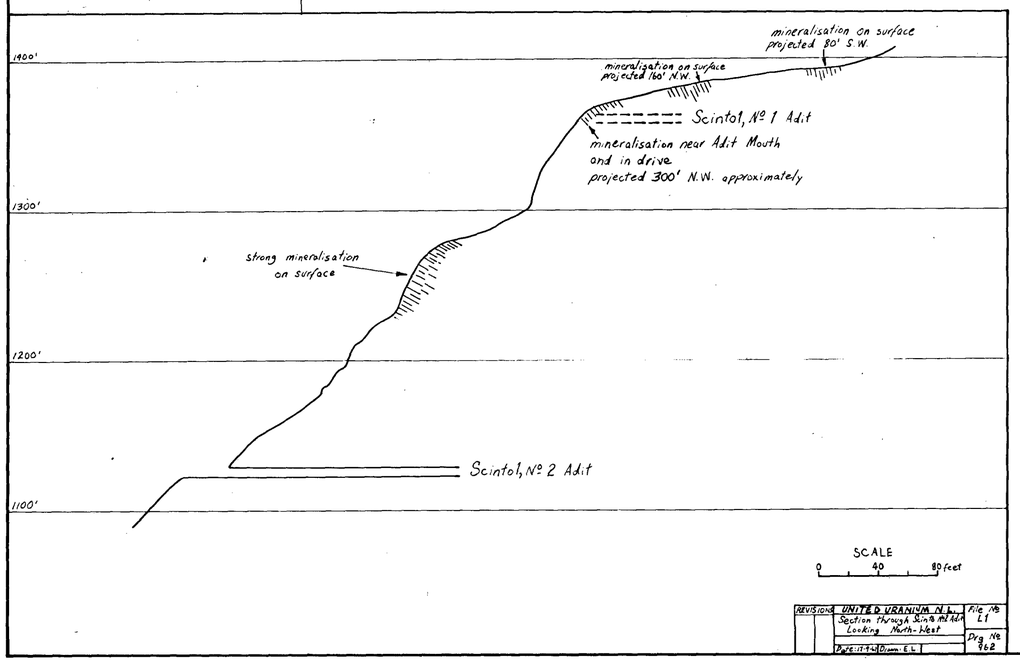
soil covered slope

bottom of cliff

cavity

cavity

scree slope



LEGEND

LH Nº2 Long Hole Number 2

Koolpin Formation

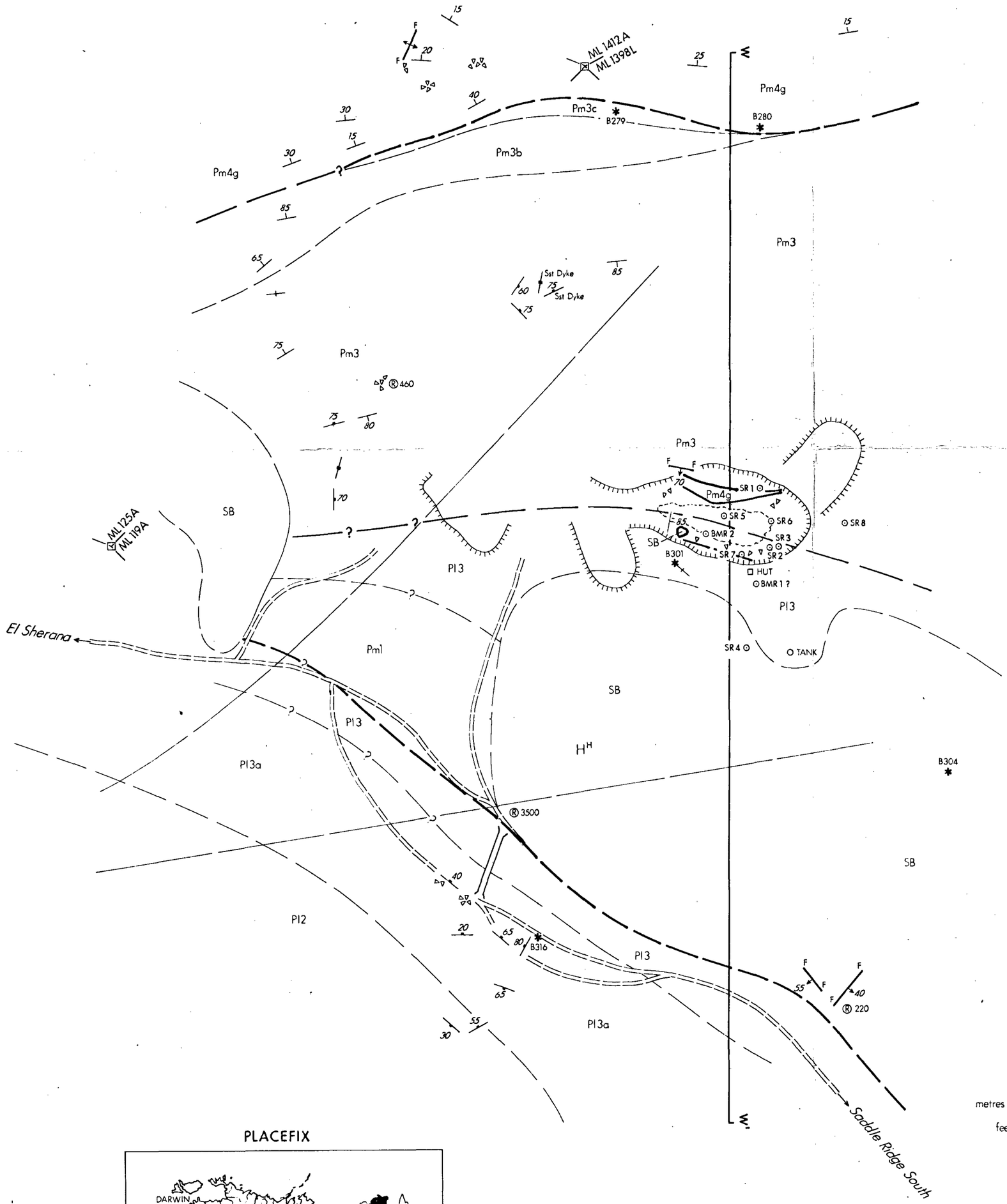
Scinto Breccia

CR1986 0320

Note: This map is a re-draw of 951, 959 and 962 by L.J.T., 4·8·87.

PLATE 61

REVISIONS	UNITED URANIUM N.L.	FILE Nº 1L
	SCINTO 1 GEOLOGICAL PLAN OF Nº 1 AND Nº 2 ADITS	
	Scale: 1 inch equals 20 feet	DRG Nº 959
	Date: 4.9.60 Drawn: E.L.	



LEGEND

MIDDLE PROTEROZOIC

- SCINTO BRECCIA — SB — Breccia with angular quartz and chert fragments and variably hematitic siliceous matrix.
- KOMBOLGIE FM. — Pm4g — Cross-bedded and ripple marked pinkish grey quartz sandstone.
- EDITH RIVER VOLCANICS — Pm3c — Pm3c - Purple hematitic basalt
- Pm3b — Pm3b - Polymict conglomerate with rounded volcanic cobbles.
- Pm3 — Pm3 - Rhyolitic ignimbrite and tuff
- Pm1 — Basic volcanics - flows and tuffaceous(?) sediments.

LOWER PROTEROZOIC

- KOOLPIN FORMATION — PI3 — Pale shales - often pyritic.
- PI3a — Pale sandstones and siltstones - often pyritic
- MUNDOGIE SANDST. ? — PI2 — Thinly bedded quartz sandstone.

EXPLANATION

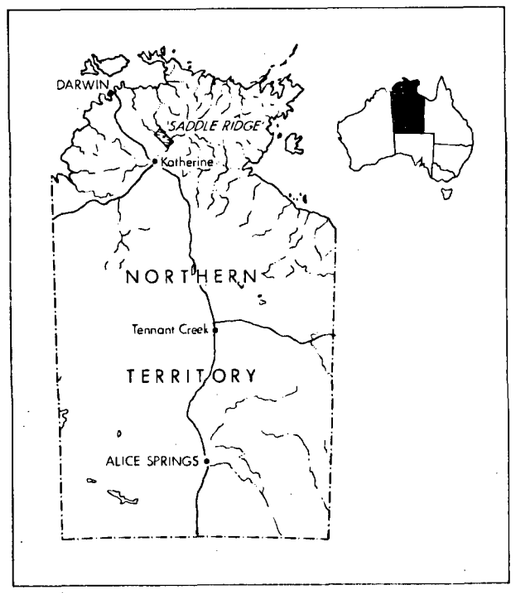
- Strike and dip - bedding
- Strike and dip - normal fault plane
- Strike and dip - reverse fault plane
- Strike and dip - joint
- Geological contact - accurate, approximate, inferred
- Fault contact accurate, approximate, inferred
- Breccia
- ® 3500 — Total count. Radiometric anomaly (Scintrex-GIS-4)
- Track
- B231 — Petrological sample site and number
- Mineral lease post
- Open cut showing approximate water line.
- H^H — Hematite concentration
- SR6 — Old Diamond Drill collar
- Mullock dump
- Air photo lineament

SCALE 1:2 500

metres 50 0 50 100 150 200 metres

feet 100 0 100 200 300 400 500 600 700 feet

PLACEFIX



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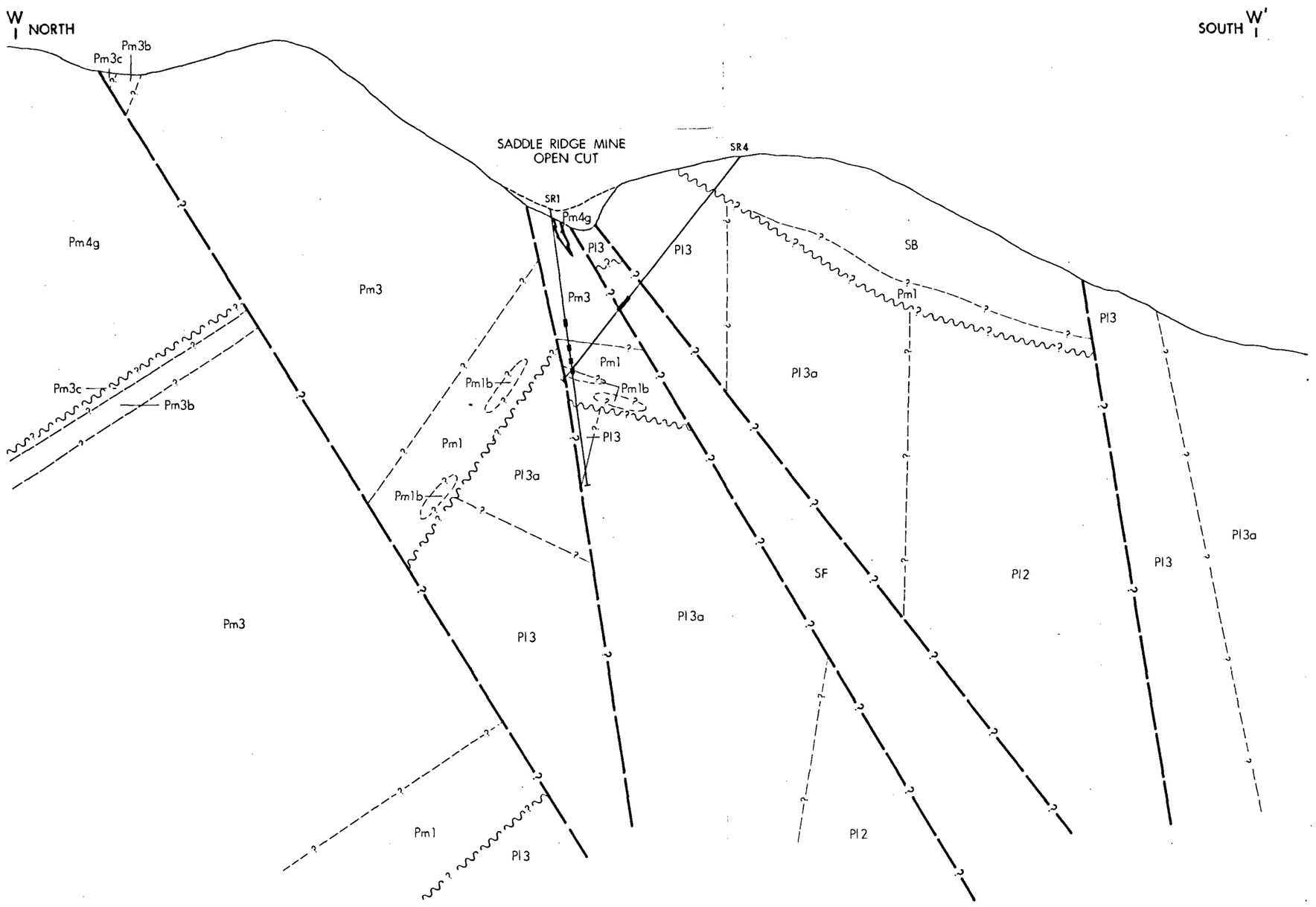
GEOLOGICAL PLAN
SADDLE RIDGE AREA

EXPLORATION BRISBANE

SOUTH ALLIGATOR JOINT VENTURE
NORTHERN TERRITORY

COMPILED: A.A. BRICKELL	DRAWN: W.J. STEEN DATE: NOVEMBER, 1979	SCALE: 1:2 500	PLATE 62



LEGEND

- SF — Siliceous fault breccia (From U.U.N.L. drill hole data)
- SB — Breccia with angular quartz and chert fragments and variably hematitic siliceous matrix. (SCINTO BRECCIA)
- Pm4g — Cross-bedded and ripple marked pinkish grey quartz sandstone. (KOMBOLGIE FM)
- Pm3c — Pm3c - Purple hematitic basalt.
- Pm3b — Pm3b - Polymict conglomerate with rounded volcanic cobbles.
- Pm3 — Pm3 - Rhyolitic ignimbrite and tuff.
- Pm1 (Pm1b) — Basic volcanics - flows and tuffaceous(?) sediments. Pm1b - Lithic sandstone lenses.

(MIDDLE PROTEROZOIC — EDITH RIVER VOLCANICS)

- Pl3 — Pale shales - often pyritic.
- Pl3a — Pale sandstones and siltstones - often pyritic

(KOOLPIN FORMATION)

- Pl2 — Thinly bedded quartz sandstone. (MUNDOGIE SANDST.)

(LOWER PROTEROZOIC)

EXPLANATION

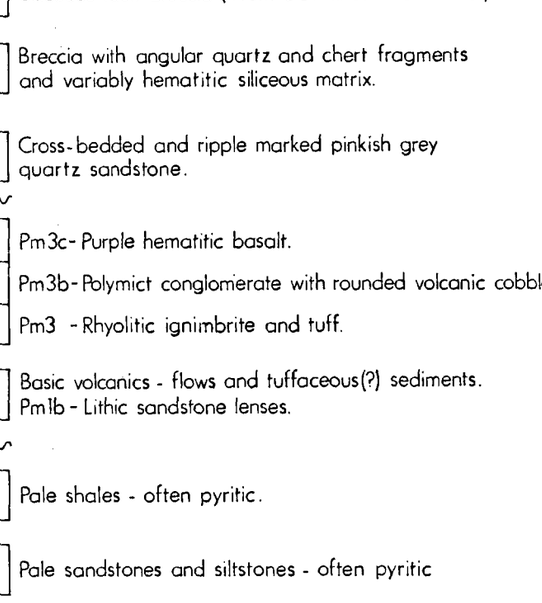
- Geological contact - accurate
- Geological contact - inferred
- Geological contact - approximate
- Fault contact - accurate
- Fault contact - inferred
- Fault contact - approximate
- Unconformity
- SR1 Old diamond drill hole with ore intersections (>2lb/ton)

SCALE 1:2 500

metres 50 0 50 100 150 200 metres

feet 100 0 100 200 300 400 500 600 700 feet

PLACEFIX



CR1986 0320

SCHEMATIC CROSS SECTION W - W'
SADDLE RIDGE

EXPLORATION
BRISBANE

SOUTH ALLIGATOR JOINT VENTURE
NORTHERN TERRITORY

COMPILED: A.A BRICKELL	DRAWN: W.J.STEEN DATE: DECEMBER, 1979	SCALE: 1 : 2 500	PLATE 63

Surface material, soil and highly weathered volcanics

Fine-grained, sheared, veined, purple volcanic tuff (?)

Red-green limonite stained, very coarse-grained agglomerate; fragments up to 15cm in diameter, rounded by movement in shears

Purple, medium-grained, tuffaceous (?) volcanics

Purple-buff, coarse-grained, tuffaceous (?) volcanics

Green-purple, coarse-grained agglomerate; fragments up to 15cm in diameter, some rounded, but generally planar faces

Green, coarse-grained, tuffaceous volcanics

Green, highly kaolinized arkosic (?) sediment; granular with rounded quartz and quartz pebbles

Purple, coarse-grained agglomerate - fragments up to 15cm

Pale, silicified, shale and siltstone

Dark purple, haematitic silicified shale; highly contorted

Highly cleaved, purple siltstones and cherty shales

Massive, purple siltstone

Red, ferruginous shales and siltstones, highly cleaved, some silicification in places

Siliceous, limonitic, breccia

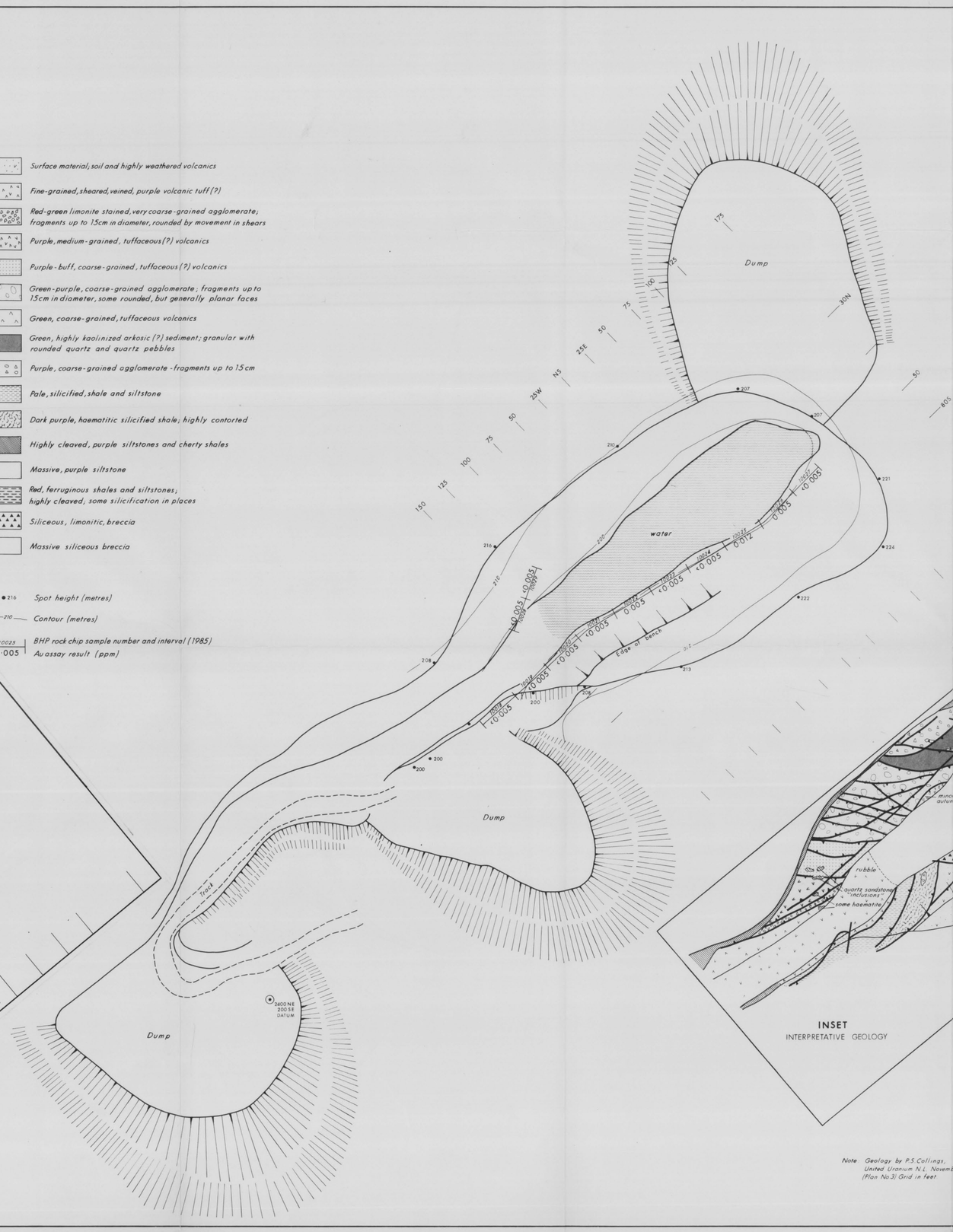
Massive siliceous breccia

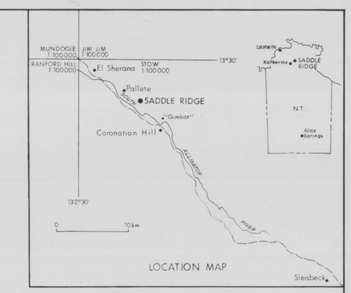
● 216 Spot height (metres)

—210— Contour (metres)

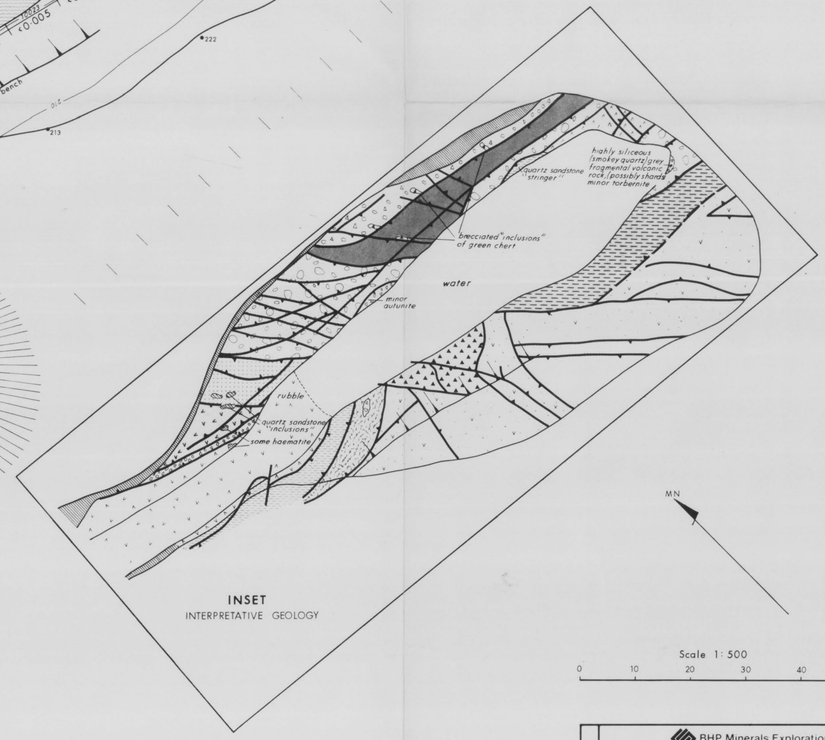
10025 | 0·005 BHP rock chip sample number and interval (1985) / Au assay result (ppm)

DRILL HOLE LOCATIONS





LOCATION MAP



INSET
INTERPRETATIVE GEOLOGY

MN

Scale 1: 500

0 10 20 30 40 50 metre

Note: Geology by P.S. Collings, United Uranium N.L. November, 1969 (Plan No.3) Grid in feet

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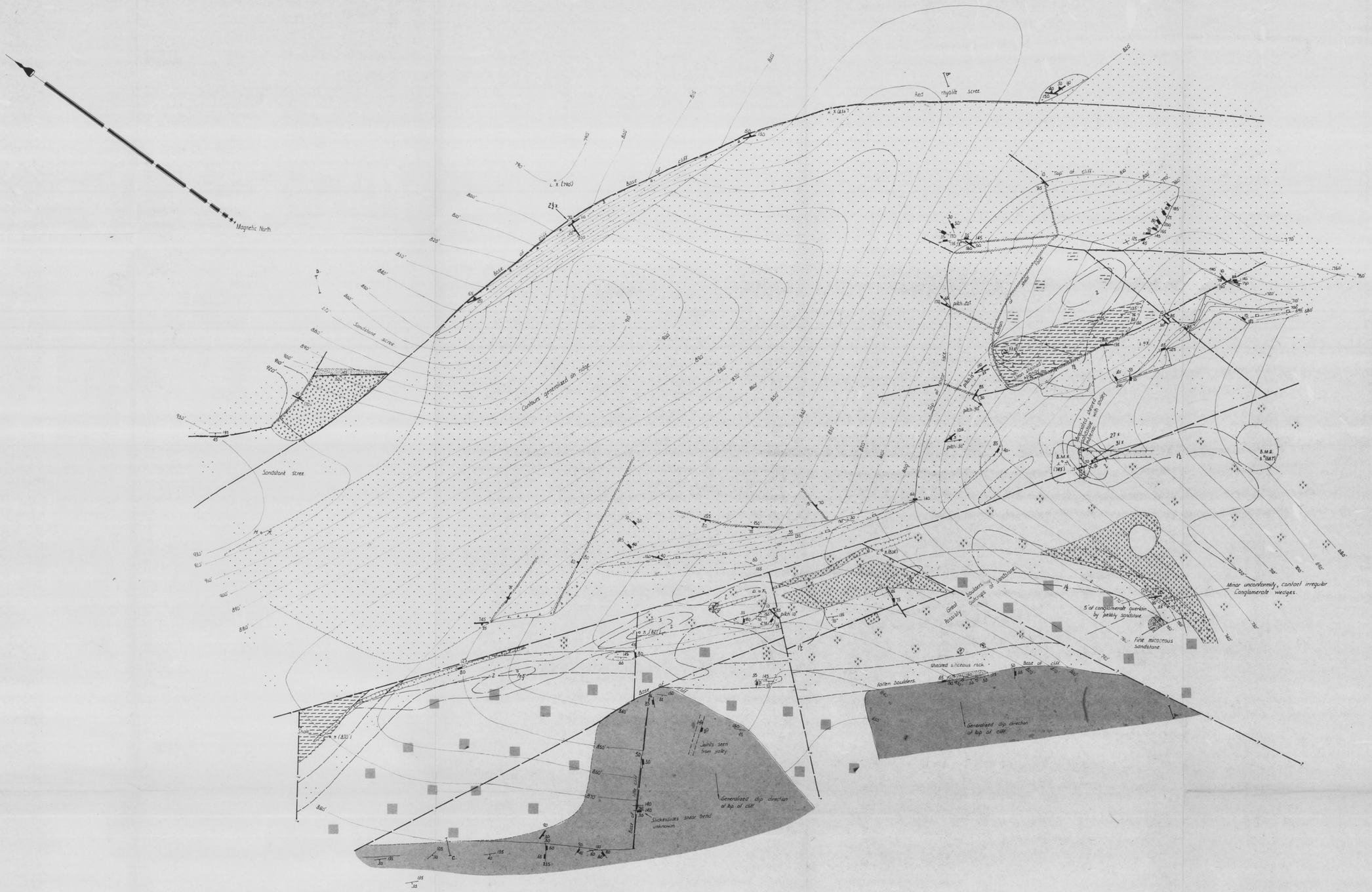
BHP Minerals Exploration

INTERPRETATIVE GEOLOGY, ROCK CHIP GEOCHEMISTRY, AND DRILL HOLE LOCATIONS

SADDLE RIDGE AREA, OPEN CUT

Prepared	Date March, 1986	PLATE 64
Drawn D.J.R.	Project No. G 18	
Centre Brisbane	Drawing No. A1-538	

Revisions



LEGEND.

- Medium grained current bedded sandstone. Beddg dir & typ.
- Red micaceous fine flaggy sandstone & siltstone.
- Coarse pebbly Rhyolitic Sandstone. Conglomerate.

Kombolgie Formation.

- Red rhyolite, only present as float.
- Tuffaceous. Acid amygdaloidal volcanics.
- Altered acid volcanics without amygdales.
- Sheared or brecciated volcanics, undifferentiated.

Pul Pul Rhyolite Member.

MIDDLE PROTEROZOIC

LOWER PROTEROZOIC

- Cherty ferruginous siltstone, sheared & brecciated.

Koolpin Formation.

- Fault, inferred.
- Fault
- Geological boundary
- " " " inferred.
- Outcrop "
- 860 860 Topographic Contour
- Radiametric " & Background
- Trace of joint
- Shear zone
- Brecciation
- Boulder
- Theodolite station
- Theodolite station (870') with R.L.
- Gulley
- Direction of movement of faults (on sections.)

- 30/105 Dip & Strike of bedding
- Horizontal
- 80/45 " " joint
- 170 " " Vertical
- 50/160 " " Shear
- 75 " " Vertical
- 30/105 " " showing pitch of slickensides

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PLATE 65

UNITED URANIUM N.L.

Geology	J.F.H.
Surveyed	M.M.
Plotted	J.F.H.
Sampled	
Drawn	J.J.K.
Date	Aug. 1970
DWG No.	734

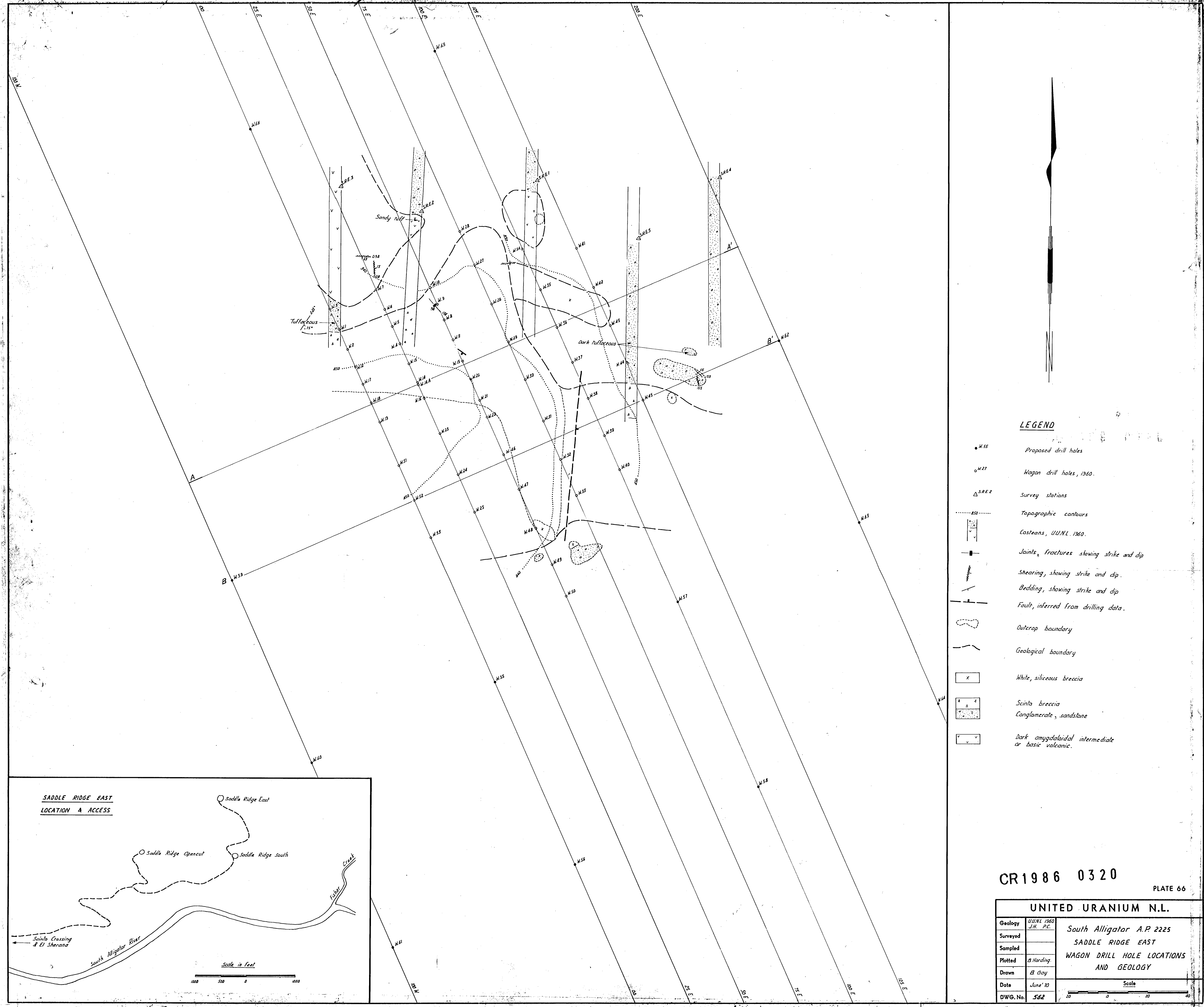
SOUTH ALLIGATOR A.P. 2225

DETAILED GEOLOGICAL MAP

SADDLE RIDGE N.E.

Scale

40' 0 40' 80'

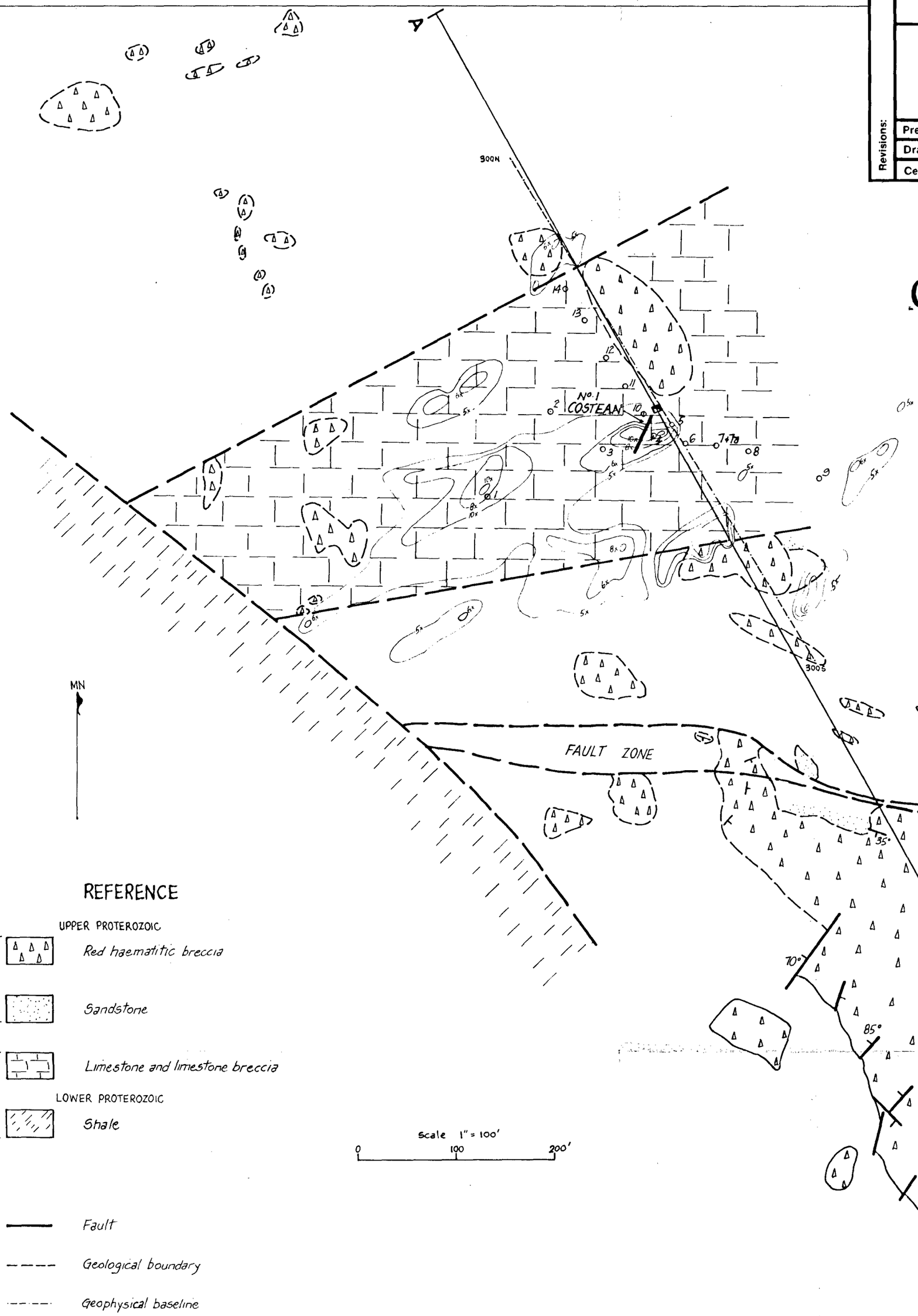

LEGEND
Proposed drill holes
Wagon drill holes, 1960.
Survey stations
Topographic contours
Costeans, U.U.N.L. 1960.
Joints, fractures showing strike and dip
Shearing, showing strike and dip.
Bedding, showing strike and dip
Fault, inferred from drilling data.
Outcrop boundary
Geological boundary
White, siliceous breccia
Scinto breccia
Conglomerate, sandstone
Dark amygdaloidal intermediate or basic volcanic.
Sandy tuff
Tuffaceous
Dark tuffaceous
SADDLE RIDGE EAST
LOCATION & ACCESS
Saddle Ridge East
Saddle Ridge Opencut
Saddle Ridge South
Scinto Crossing & El Sherana
South Alligator River
Fisher Creek
Scale in feet
CR1986 0320
PLATE 66
UNITED URANIUM N.L.
Geology U.U.N.L. 1960 J.H. P.C.
Surveyed
Sampled
Plotted B. Harding.
Drawn B. Gay
Date June '70
DWG. No. 562
South Alligator A.P. 2225
SADDLE RIDGE EAST
WAGON DRILL HOLE LOCATIONS AND GEOLOGY
Scale

BHP Minerals Exploration

GEOLOGICAL PLAN OF SADDLE RIDGE SOUTH PROSPECT

Revisions:			
	Prepared:	Date:	PLATE 67
	Drawn:	Project No.:	
	Centre:	Drawing No.:	

Geology taken from UUNL plan No. 1025, Dec 1960
Geophysics taken from BMR plan, Oct 1955



REFERENCE

UPPER PROTEROZOIC

Scinto Breccia
- Red haematitic breccia
- Sandstone

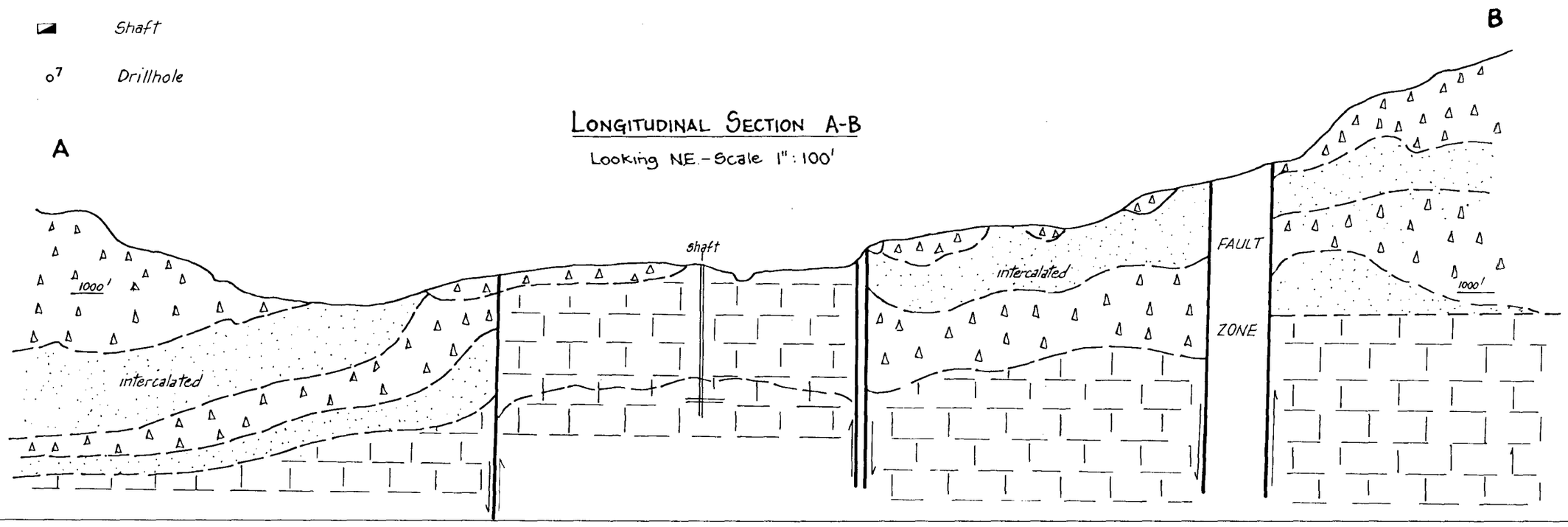
Koolpin Formation
- Limestone and limestone breccia

LOWER PROTEROZOIC
- Shale

- Fault
- Geological boundary
- Geophysical baseline
- 10x Radiometric contour
- 35° Strike and dip of strata
- Shaft
- o7 Drillhole

LONGITUDINAL SECTION A-B

Looking NE. - Scale 1" : 100'



Magnetic North.

·LEGEND·

- Shear plane - dip / strike
- (H) Anomalous area - painted white (>90 μR/hr)
- Outcrop boundary
- Shearing in outcrop
- Approximate topographic contours relative to base elevation.
- Shear (fault?)
- Pul Pul Rhydite Member
  - Purple, porphyritic, rhyolite with massive, glassy, groundmass: bi-pyramidal quartz phenocrysts; minor quartz veining.
  - Purple, porphyritic, rhyolite with powdery groundmass.
- scree

rhyolite and agglomerate scree

rhyolite and agglomerate scree

agglomeratic

brecciated

grey rhyolite

630'

640'

650'

660'

670'

680'

690'

700'

70/170

85/118

70/270

80/165

30/150

80/175

90/120

65/320

90/160

10/160

10/150

90/290

8/175

90/140

10/140

90/180

65/255

80/290

10/165

20/160

60/150

90/190

20/190

90/270

H

Base point (rock cairn) Arbitrary elevation 700 feet.

Scale: 1 inch = 20 feet.

10 feet 0 20 30 feet

OD 1986 0320

PLATE 68

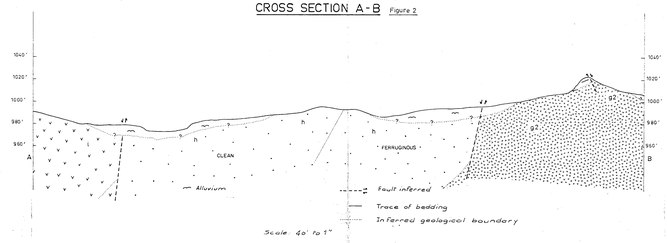
UNITED URANIUM N.L.

Pul Pul Hill Radiometric Anomaly - Detailed Geology. (1 inch = 20 feet)

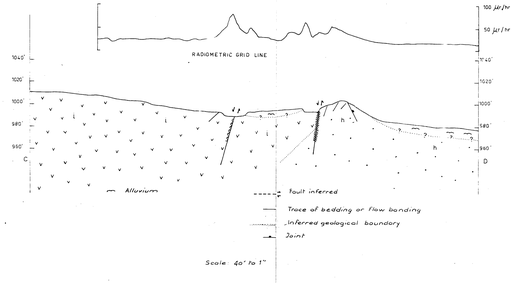
Geology: P.S. Collings	File No:
Plotted: P.S. Collings 3.12.68	Plan No: 5

Prepared by Sampey Exploration Services

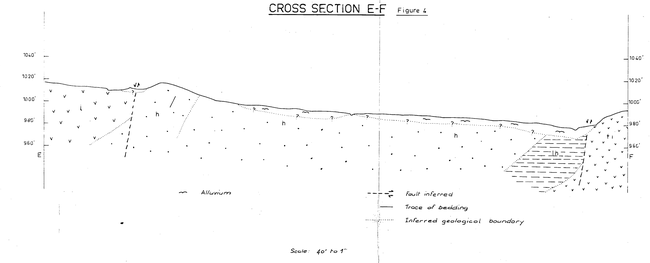
CROSS SECTION A-B Figure 2



CROSS SECTION C-D Figure 3



CROSS SECTION E-F Figure 4



LEGEND

- Outcrop Boundary position accurate
- Outcrop Boundary position inferred
- Geological Boundary position accurate
- Costean
- Limit of creek bed
- Track
- Stream
- 990' Contour interval 10 feet (Heights relative A, arbitrarily 1000')
- S-4 Sample number

	LITHOLOGY	EQUIVALENT N.T. STRATIGRAPHY
v	Intermediate volcanic	Huntree creek volcanic member
h	Clean sandstone	Kurrundie member
h	ferruginous sandstone	
	Micaceous shale	
	Acid volcanic	Pul Pul Rhyolite member
f2	Sandstone	Coronation member
f1	Undifferentiated volcanics	

MIDDLE PROTEROZOIC

BEDDING
- Strike, dip measured
- Strike, dip, not determinable

JOINTS
- Strike dip measured
- 300/80 Shear zone with strike and dip
- Platy flow structure in igneous rocal
- Ferruginous brecciated sandstone gossan
- Fault
- Fault inferred
- Mullock

- 20 ISORAD
- 40 ISORAD
- 60 ISORAD

CR1986 0320 PLATE 69

UNITED URANIUM N.L.		
Geology	J.G.P Wilding J.G. Anderson	SOUTH ALLIGATOR A.P. 7225
Surveyed	J. Double	CHRISTMAS CREEK AREA
Plotted	J.G. Anderson	
Drawn	m. Alberton	GEOLOGICAL PLAN
Date	Aug 89	Scale: 40' 0 40' 80'
DWG. No.	393	

— LEGEND —

QUARTERNARY	Qa	Alluvium and gravels
	Pm e a	Acid volcanics extrusive – chocolate brown colour
	Pm e b	Basaltic member
MIDDLE PROTEROZOIC	Pm e p	Quartz feldspar porphyries, rhyolitic intrusive (?) members
	Pm e con	Acid volcanic conglomerates, fragments of basalt, Zamu, siltstones, shale, quartzite
	Pm e b con	Basal conglomerates, arkoses, feldspathic sandstones, quartz pebble conglomerates
		Unconformity
LOWER PROTEROZOIC	Pl c	Banded cherty ferruginous siltstone (Koolpin Formation or regolith of Fisher Creek siltstone)
	Pl f	Fisher Creek siltstone – siltstones, mudstones, fine grained quartzites and greywackes, some chloritic phyllites Hornfelsed on granite contact
INTRUSIVES		
LOWER PROTEROZOIC	Pg m	Malone Creek granite – Fine grained but phorphyritic on margins
	Pd i	Zamu Complex – dolerites and associated lithologies
		Sheared lineated quartz (or possibly interbedded chert) in fault zone
		Geological boundary position approx. (Including inferred strike trends in Fisher Creek siltstone)
		Observable outcrop content
		Outcrop boundary
		Strike of Strata – dip steep and / or direction - not reliable
	70	Strike and dip of Strata
		Strike and dip of vertical Strata
	ESR 943	Sample location and number
		Tracks
		Rivers and creeks

CR1986 0320

PLATE 70

NORANDA AUSTRALIA LTD.

EXPLORATION LICENCE No. 119
Northern Territory

NORTH WEST MARGIN – MALONE CREEK GRANITE
GEOLOGICAL MAP

PHOTO SCALE
1 : 16,800 approx.

DATE Feb. 14, 1977	GEOLOGY: K. CHAPPLE	DRAWN A.H. & N.S.
APPROVED C.P. PEDERSEN	DRAWING Nº 414-C-816	

2000 E 2100 E 2200 E 2300 E 2400 E 2500 E 2600 E 2700 E 2800 E

2000 N 1900 N 1800 N 1700 N 1600 N 1500 N 1400 N 1300 N 1200 N

Magnetic North

ML593A ML590A ML592A ML591A

Costean 1 Costean 2 Costean 3 Costean 4 Costean 5 Costean 6 Costean 7 Costean 8

DDH 1 DDH 2 DDH 3 DDH 4 DDH 5 DDH 6 DDH 7 DDH 8 DDH 9

Drill Section Reference line

ESR1670 ESR1657 ESR1664 ESR1656 ESR1662 ESR1644 ESR1655 ESR1654 ESR1661 ESR1647 ESR1653 ESR1645 ESR1660 ESR1668/TS ESR1646 ESR1652 ESR1673 ESR1659 ESR1666/TS ESR1651 ESR1658 ESR1650 ESR1649 ESR1648 ESR1665/TS ESR1672/TS ESR1669/TS ESR1671/TS

— LEGEND —

- all — Alluvuim
- el — Eluvium
- s — Soil; bl.s = Black soil
- slt — Sjlt
- rb — Rubble; qtz.rb : Quartz
- pt — Pebble terroce
- phy — Porphyry; qtz.phy : Quartz porphyry
- do — Dolerite
- br — Breccia; qtz.lim.br : Quartz limonite breccia
- sst — Sandstone; fg.sst : Fine grained sandstone; sil.lit.sst : Siliceous lithic sandstone
- slst — Siltstone; m.slst : Meta-siltstone; silf.slst : Silicified tourmalinized siltstone; slst.sc : Siltstone scree
- Geological boundary
- Fault
- Dip and strike of bedding
- costean 2 — Costean location and number
- ML591A — Mineral lease corner peg and Leape number
- XESR1648 — Sample location and number (thin sections marked : /TS)
- River, stream
- DDH 1 — Diamond drill hole collar and number

CR1976 0320

PLATE 71

NORANDA AUSTRALIA LTD.

MINERAL LEASES 590A to 593A
Northern Territory
ANOMALY 3/171

GEOLOGICAL MAP-DIAMOND DRILL HOLE LOCATIONS

SCALE 1:2000
100 80 60 40 20 0 50 00 150 metres

DATE: Dec., 1976	GEOLOGY: R.K. Duncan	DRAWN E.A.B.
APPROVED: C.P. Pedersen	DRAWING No. 414-C-822	

CR1986 0320

BHP Minerals Exploration

PRIORITY AREAS

KAKADU STAGE III CONSERVATION ZONE

Prepared: C.A. Porter	Date: August, 1987	PLATE 72
Drawn: D.J.R.	Project No.: G18	
Centre: Brisbane	Drawing No.:	

Revisions