COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

RECORDS.

1961/161

THE TESTING OF ELECTROMAGNETIC ANOMALIES BY DIAMOND DRILLING AT WATERHOUSE No.2 URANIUM PROSPECT, NORTHERN TERRITORY.

by

B.P. Ruxton.

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CONTENTS

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SUMMARY

Between December, 1960 and February, 1961, two diamond drill holes, DDH.2 and DDH.4, each 250 feet in length, were put down on Waterhouse No.2 Uranium Prospect to test two electromagnetic anomalies (A and B).

DDH.2, in the centre of the prospect, tested anomaly A. It passed through shale and siltstone to 168 feet and then entered and remained in hematitic quartz-breccia. Sheared graphitic shale with numerous sulphide veinlets (forming about 2% of the rock), between 103 feet and 150 feet, apparently causes this major electromagnetic anomaly.

DDH.4 tested the northern anomaly B. It passed through shale and siltstone to 112½ feet and then entered and remained in amphibolite. Minor pyrite and chalcopyrite (less than 2%) in the siltstone between 60 and 112 feet are probably the cause of this minor electromagnetic anomaly.

Maximum radioactivity logged was 0.05 mR/Hr (0.08% eU_3O_8) between 102½ feet and 105½ feet in DDH.2.

INTRODUCTION

Location :

Waterhouse No.2 Uranium Prospect is 70 miles south of Darwin, immediately west of the North Australian Railway line, 6 miles south of Batchelor Siding (Plate 1). It is on Crown Land within an Authority to Prospect at present held by the Australian Mining and Smelting Coy Pty Ltd.

Gently undulating stony ground in the centre of the prospect gives way outwards to drift-covered flats. Apart from a ridge of siltstone and a small rocky knoll of quartz-breccia, outcrops are rare.

The rocks on the prospect form part of the Golden Dyke Formation of Lower Proterozoic age (Rum Jungle Special Sheet, 1 inch to 1 mile, 1960).

Previous Work :

A radioactive anomaly was discovered on this prospect by the Waterhouse Geological Party in 1952. Ground traverses with a ratemeter (Wyatt and Alle, 1953) showed that a large area of the prospect had a radioactivity more than twice background (Plate 1), local spots had radioactivity more than four times background.

In 1953, three costeans were excavated by the Bureau of Mineral Resources, and detailed geological and geophysical work was carried out by Wyatt and Alle. Wyatt mapped a sedimentary sequence of (in ascending order) siltstone, hematitic quartzite, hematitic quartzite-breccia, and black shale (Plate 1). The general strike was recorded as 345°, and dips averaged 45° in an easterly direction. Traces of malachite were noted in the black shales, and copper was detected in part of the overlying soil by geochemical methods (Debnam and White in Wyatt and Alle, 1953).

Alle carried out several magnetic traverses from east to west across the prospect. An area of high magnetic intensity (over 3,000 gammas) was recorded in the north-west of the prospect where there is no outcrop (Plate 1).

United Uranium N.L. held a lease on the area in 1954, and sank a shaft to 41 feet. Between 29 feet and 38 feet this passed through graphitic shale dipping east at 45°, and high radioactivity was recorded between 34 feet and 38 feet. One diamond drill hole (about 160 feet east of the shaft) was drilled vertically to a depth of 280 feet. It intersected sulphide-bearing shale between 150 feet and 225 feet, and breccia between 226 feet and 280 feet. The sulphide was mainly pyrite. There were only trace amounts of copper, lead, zinc, and nickel. No significant radioactivity was detected. United Uranium N.L. also excavated another 10 costeans.

In 1957 the Bureau of Mineral Resources carried out a detailed electromagnetic survey using the Turam method to test for indications of the presence of sulphide deposits (Daly and Tate, 1960). A major linear anomaly (A, Plate 1) trends northwards to the site of the shaft, and then turns abruptly north-eastwards and dies out. A minor linear anomaly (B, Plate 1) trending northwards also occurs in the north-west of the prospect area.

Purpose of Drilling:

Five diamond drill holes were recommended by Daly and Tate (1960) to test the electromagnetic indications. Two holes were later approved; of these, DDH.2 was to test anomaly A, and DDH.4 was to test anomaly B.

DRILLING RESULTS

The drilling was carried out between December, 1960 and February, 1961 by the Associated Diamond Drillers Pty Ltd under contract to the Bureau of Mineral Resources.

DDH.2 - General :

DDH.2 was depressed at 55° on a bearing of 270°, and was drilled for a length of 250 feet. The co-ordinates of the collar on the geophysical grid (Daly and Tate, 1960) are 400 S./ 900 E.

The recovery rate for the zones specified in the contract was :

Zone	Depth	Distance	Recovery		Min.Specified
Oxidation	0 - 80 ft	80ft	30 ft	38%	-
Reduction	80 - 110 ft	30ft	$21\frac{1}{2}$ft	72%	80%
Target	110 - 170 ft	60ft	54 ft	90%	85%
Reduction	170 - 250 ft	80ft	$53\frac{1}{2}$ft	67%	80%

A zone of partial oxidation extends to 80 feet. The static water level was at 20 feet, but at 171 feet water was lost rapidly. Only short (6 to 18 inches) runs were obtained in the siltstone and shale, and frequent cave-ins hampered the drilling. At 235 feet, the drill rods suddenly dropped 4 feet. The vein-quartz breccia in the lower part of this hole contains large cavities, and only 8 inches of core were recovered between 235 feet and 250 feet. Cave-ins and cavities caused serious difficulties in the geophysical logging. The hole was cased to 40 feet.

DDH.2 - Geology :

DDH.2 passed through :-

	Superficial drift	0 - 12 ft
i.	Shaly siltstone	12 - 56 ft
ii.	Silty shale	56 - 81 ft
iii.	Banded siltstone and shale	81 - 103 ft
iv.	Graphitic shale	103 - 150 ft
v.	Shale breccia	150 - 168 ft
vi.	Hematitic quartzite breccia	168 - 210 ft
vii.	Hematitic quartzite	210 - 219 ft
viii.	Hematitic vein-quartz breccia	219 - 250 ft

i. The shaly siltstone is pale grey, micaceous, and siliceous. Several thin bands of pale yellow greywacke-siltstone occur within it.

ii. The silty shale is medium-grey and carbonaceous. It contains a few thin bands of pale grey shaly siltstone.

iii. The banded siltstone and shale has a very minor (less than 1%) content of pyrite and chalcopyrite. A few thin bands of greywacke siltstone occur in it.

iv. The graphitic shale is dark grey, and contains a minor amount (about 2%) of pyrite and chalcopyrite in veins less than one-tenth of an inch thick commonly following the bedding. At intervals the shale is strongly sheared, and films of lustrous graphite coat the fracture planes.

v. The shale breccia is mostly brecciated, dark grey, graphitic shale in a silty matrix; a few thin zones of siltstone fragments in a shaly matrix were noted. It contains a minor amount (less than 2%) of pyrite and chalcopyrite segregated in small patches (up to ¼ square inch) between the breccia fragments. Some chlorite occurs in the matrix.

vi, vii, viii. The hematitic rocks are mostly greyish red, with pyrite in a few of the fractures. Three rock types, in places separate and in other places intimately intermixed, were recognised in core from the quartzite breccia. These are : bedded silicified siltstone and shale, silicified siltstone fragments in a shaly siltstone matrix, and vein-quartz fragments in a microbrecciated matrix. Thin sections reveal veinlets of chlorite, commonly containing apatite, in the siltstone fragments. The vein-quartz breccia also contains minor chlorite and apatite, and some of the quartz shows pronounced undulose extinction.

Surface geology indicates a consistent northerly strike and easterly dip near the hole. On this evidence the geometry of the beds intersected is given in column 3 of the following table :

Depth	Angle of bedding to core axis	Dip east
12- 85 ft	90°	35°
85-105 ft	90° decreasing to 75°	35° increasing to 50°
105-219 ft	between 40° and 65°	between 60° and 85°
219-250 ft	no bedding determined	- - -

Strong shearing in the graphitic shale is particularly noticeable between 104 and 120 feet, and a fault is thought to occur at about 106 feet.

DDH.2 - Geophysics :

DDH.2 was logged by A. Douglas and M. Rhodes. The radiometric log, taken between 0 and 242 feet, shows one anomaly between 102½ and 105½ feet (Plate 4), where radioactivity of 0.05 mR/Hr (0.08% eU_3O_8) was recorded. None of the core recovered showed anomalous radioactivity when tested with a ratemeter (Harwell type 1368A). Core recovery and lithology between 102 and 110 feet are tabulated below :

Length Drilled	Recovery	Lithology
to 102'2"	-	Dark grey carbonaceous shale
102'2" - 102'10"	8"	Pale yellow greywacke-siltstone
102'10"- 103'	2"	Dark grey carbonaceous shale
103' - 104'	4"	Sheared graphitic shale, dip 50° E.
104' - 105'	4"	
105' - 106'	4"	Brecciated graphitic shale
106' - 110'	26"	Sheared graphitic shale, dip 65° E.

The brecciated shale between 105 feet and 106 feet seems to mark a fault. Thus the high radioactivity between 102½ feet and 105½ feet is probably due to a band (not recovered) about one foot thick in the sheared graphitic shale just below the greywacke-siltstone and just above a fault.

The remainder of the log ranges from 0.006 mR/Hr in the upper cased portion of the hole to 0.017 mR/Hr at 137 feet, 149 feet, and 236 feet (see Plate 4).

It was not possible to maintain standing water in the hole for electrical logging. As a result several sets of measurements were taken of the resistivity and self-potential between 42 feet and 105 feet. The most reliable graphs are reproduced on Plate 4. These show low resistance values in the carbonaceous shale, and moderate values in the shaly siltstone. The banded siltstone and shale show the

the greatest range of resistivity, and the peaks of high resistance at 89 feet and 103 feet correspond to narrow bands of greywacke-siltstone. The lowest resistance at 105 feet is correlated with the sheared graphitic shale. The self-potential results are difficult to interpret; the greatest negative value occurs at 105 feet.

DDH.4 - General

DDH.4 was depressed at 55° on a bearing of 270° and was drilled for a length of 250 feet. The co-ordinates of the collar on the geophysical grid (Daly and Tate, 1960) are 200N/600E.

The recovery rate for the zones specified in the contract was:

Zone	Depth	Distance	Recovery	Min.Specified
Oxidation	0 - 57ft	57ft	5ft 9%	-
Reduction	57 - 87ft	30ft	23ft 77%	80%
Target	87 -250ft	163ft	138ft 85%	85%

The base of the oxidised zone is at about 57 feet. Groundwater was struck at 79 feet, but at 181 feet water was rapidly lost. The hole was cased to 68 feet.

DDH.4 - Geology

DDH.4 passed through :-

	Superficial drift	0 - 28 feet
i.	Silty shale	28 - 57 feet
ii.	Shaly siltstone	57 -112½feet
iii.	Amphibolite	112½-250 feet

i. The silty shale is medium grey, carbonaceous, and micaceous. Between 48 and 50 feet there is a weathered band of sheared amphibolite above a quartz vein 6 inches thick. Below the vein, veinlets of talc are abundant in the shale for several feet.

ii. The shaly siltstone is pale grey, micaceous, and siliceous. Sedimentary structures, including contortions, brecciation, and 'slumping', are well displayed. Minor pyrite and chalcopyrite (less than 2%) are present below 61 feet, and are concentrated in the less shaly parts. Most of the veins and segregations of sulphide are less than one-tenth of an inch thick, and only two veins, at 62 feet and 103 feet, attain one fifth of an inch in thickness. Between 109 and 112½ feet, immediately above the amphibolite, the rock is an indurated silicified mudstone.

iii. The amphibolite is a fine-to-medium-grained, massive, dark grey rock that has been almost wholly reconstituted by low-grade regional metamorphism (see Appendix). The upper zone (112' - 134') contains albite and amphibole in about equal amounts, whereas in the lower zone (144'-250') feldspar is absent. At the top of the section, from 112½' to 117', an albite-hornblende rock carries about 18 % apatite occurs.

Bands of shale one inch and four inches thick occur at 115 feet and 118 feet respectively. Several thin quartz veins are recorded within the amphibolite, and are accompanied by thin carbonate veins below 142 feet. Between 139 feet and 142 feet, only loose quartz fragments were recovered, and this interval probably represents a fault zone.

The bedding of the siltstone is consistently inclined at 65° - 70° to the core axis. Assuming that the strike is northerly, i.e., parallel to the electromagnetic anomaly, the dip is either 10-15° E. or 55-60° E. The lower dip is considered more likely because when the sulphide-bearing shaly siltstone between 61 and 109 feet is projected to the lower limit of oxidation it corresponds closely with the Turam anomaly (Plate 3). The amphibolite has been assumed to be concordant with the sediments (Plate 3) but it may be a discordant igneous intrusion.

<u>DDH.4 - Geophysics</u> :

DDH.4 was logged by A. Douglas and N. Hamilton. The radiometric log taken between 0 and 120 feet is uniform throughout at a value representing local background (Plate 5). The core between 120 and 250 feet was tested with a ratemeter (Harwell type 1368A), but no anomalous radioactivity was detected.

The self-potential log taken between 69 and 232 feet shows higher positive readings in the amphibolite than in the shaly siltstone. A large negative value between 106 and 109 feet corresponds with a badly fractured portion of the shaly siltstone.

Resistivity readings were not made owing to failure of the equipment.

GEOLOGICAL INVESTIGATIONS

<u>Surface Mapping</u> :

All the costeans were re-examined, and additional structural data have been added to Wyatt's map (see Plate 1). Surface evidence suggests a narrow north-trending sheared zone of vertically dipping shale bounded by two steep reverse faults within an unsheared sequence of moderately dipping siltstone and shale. Structurally this is an imbricate zone.

Wyatt mapped a zig-zag boundary to the hematitic quartzite breccia as though it were part of the succession (see Plate 1), apparently on evidence not now visible. However, the vein-quartz breccia exposed fits better into a pattern of NNE-trending lenticles arranged en echelon and discordant to the general strike of the siltstone and shale. The vein-quartz breccia probably occupies tension gashes related to the tear fault.

GEOPHYSICAL INTERPRETATION

<u>Electromagnetic Anomaly A</u> :

Steeply dipping sheared graphitic shale in an imbricate zone intersected between 103 and 150 feet in DDH.2 is apparently the cause of the major electromagnetic anomaly. The bounding reverse faults dip at about 45° in an easterly direction.

Sulphide veins, usually following bedding, are more common in this zone than elsewhere. The intersection of this imbricate zone with the lower limit of oxidation corresponds closely with the position of the Turam anomaly (see Plate 2).

Anomaly A is apparently continued to the NNE at C (Plate 1) and both the gap between, and the terminal bending of the anomalies is probably due to a tear fault which rotated the beds in a clockwise sense (Plate 1).

The small sharp bend in anomaly A near costean 4 is caused by a west-trending fault. North of this fault the intensity of the anomaly increases, and the centre line of the anomaly comes closer to the surface outcrop of the shear zone. Turam ratio contours exceed 3.6 only immediately north of this west-trending fault and near the shaft (Plate 1) ; neither of these maxima has been tested.

The base of the zone of oxidation is nearer to the surface north of the fault. This is shown by the occurrence of pyrite and chalcopyrite in the graphitic shale taken from between 29 and 38 feet depth in the shaft. In DDH.2 south of the fault sulphides appear in the core only below a vertical depth of 63 feet. Weathering in the zone of oxidation is less intense north of the fault, and graphite is present in costeans only north of the fault. Both these factors may explain the increase in intensity of Anomaly A north of the west-trending fault.

Anomaly A is most intense in the drag zone of the tear fault, where the most intense shearing is to be expected. Increase in intensity of shearing of the graphitic shale probably causes increase in conductivity, as the graphite particles are progressively rearranged parallel to the shear fractures

Electromagnetic Anomaly B :

The sulphide-bearing siltstone intersected between 61 and 112½feet in DDH.4 is probably the cause of the minor Turam anomaly in the north-west of the prospect.

REFERENCES

BUREAU OF MINERAL RESOURCES, 1960 - Rum Jungle Region, N.T., Special Sheet (1 inch to 1 mile)

DALY, J. and TATE, K.H., 1960 - Waterhouse Nos. 2,3, and 4, Uranium Prospects, Geophysical Surveys, N.T., 1957. Bur.Min.Resour. Aust.Rec. 1960/109 (unpubl.)

WYATT, J.D. and ALLE, A.F., 1953 - Preliminary Report on Waterhouse Uranium Prospect No.2, Bur.Min.Resour.Aust.Rec. 1953/105 (unpubl.)

APPENDIX A.

PHOSPHATE ANALYSES OF SELECTED SAMPLES FROM THE DRILL CORE AT WATERHOUSE No.2 PROSPECT, RUM JUNGLE AREA, NORTHERN TERRITORY.

Selected samples of drill core from Waterhouse No.2 Prospect were analysed for phosphate by S. Baker with the following results :-

D.D.H.	Lithology	Depth in feet.	P_2O_5 %
4	amphibolite	113	8.62
2	quartzite breccia	171	14.2
2	quartzite breccia	204	17.2
2	quartzite	216	11.4

APPENDIX B.

NOTES ON THE AMPHIBOLITE FROM D.D.H. NO.4, WATERHOUSE NO.2 PROSPECT, RUM JUNGLE AREA, N.T.

by

R. Bryan.

The 130 feet of core logged by Ruxton is amphibolite of igneous origin, which has undergone low-grade regional metamorphism.

Thin section examination of the core shows gradational variation both in texture and composition of the amphibolite from the upper intersection to the bottom of the drill hole. These changes can best be explained in terms of original differences in the rock, and an approximate log of the amphibolite can then be drawn up in the following way:

112'8" - 117'*

In the hand specimen the rock is dark grey, and consists of euhedral to subhedral hornblende crystals set in a white or pale grey material. In thin section, the hornblende crystals are found to average 0.5 mm. across and 1.mm. in length (T.S. 6870); pleochroism is strong, from deep blue-green to pale green to straw brown, and the extinction angle is 24°. This hornblende makes up 30% of the rock. In one slide (T.S. 6878) it has been partly replaced by chlorite.

Albite forms 60% of the rock, and occupies most of the space between the hornblende crystals. It occurs as even-grained anhedra averaging 0.02 mm. across. Very little twinning is present, suggesting that the feldspar has been completely reconstituted.

Apatite is unusually common, forming prisms up to 0.5 mm. long, as well as very fine needles scattered evenly through the feldspar. Probably the apatite makes up over 10% of the rock. Iron oxide and lesser amounts of pyrite and pyrrhotite together make up 5% of the rock.

The texture of the rock is quite anomalous, not being typical of either a calc-silicate rock or an altered igneous rock. However, the presence of long apatite crystals suggests an igneous origin.

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* All the limits are conservative as they are based on samples of core sent to me, and not on the complete log.

124' - 134'6"

In the hand specimen the rock is grey, massive, and fine-to medium-grained. In thin section it consists of fine-to medium-grained aggregates of actinolite and chlorite, together with an equal amount of fine-grained albite. Leucoxene, sphene, iron-oxide, biotite, and apatite amount to 5% of the whole (T.S. 6872). In one slide (T.S. 6873) chlorite has replaced all the original femic material, and feldspar is absent.

The texture of these rocks is typical of basic igneous rocks that have been reconstituted by low grade regional metamorphism.

144' - 154'

In hand specimen this rock is grey, massive, medium- to fine-grained, and cut by some calcite veins. In thin section it consists of green actinolite, brown hornblende, carbonate, black iron oxide, and accessory amounts of leucoxene, sphene, biotite, muscovite, and pyrite. Very little feldspar is present. Actinolite makes up 80% of the rock, and forms medium-grained, moderately pleochroic anhedra; commonly the actinolite encloses very irregular anhedra of strongly pleochroic brown hornblende, which are undoubtedly original constituents of the rock. The hornblende makes up about 5% of the rock (T.S. 6875). Carbonate, probably all calcite, forms 10% of the rock, and the remainder consists principally of black iron oxide.

The rock is probably an ultrabasic differentiate -- pyroxenite - that has suffered low-grade regional metamorphism.

174' - 250'

This rock is pale grey to greenish-grey, fine-grained, and massive, and is cut by calcite veins. In thin section it consists of tremolite-actinolite, black iron oxide, brown hornblende, and accessory apatite. Tremolite-actinolite makes up 85% of the rock, and is pale green and only weakly pleochroic. It forms masses of fine-grained, randomly-oriented fibres (T.S. 6878). Strongly pleochroic brown hornblende forms 5% of the rock, and is enclosed in anhedra of tremolite-actinolite, rather than in fibrous aggregates. Black iron oxide forms 5-10% of the rock.

The texture of the actinolitic amphibole is very similar to that in the rocks over the interval 124' - 134'6", but on the basis of composition the rock is much closer to that from the 144' -154' interval. The only difference in composition, appears to be that the tremolite-actinolite in the rock found at 174' - 250' contains more magnesium and less iron than that altered pyroxenite immediately above it.

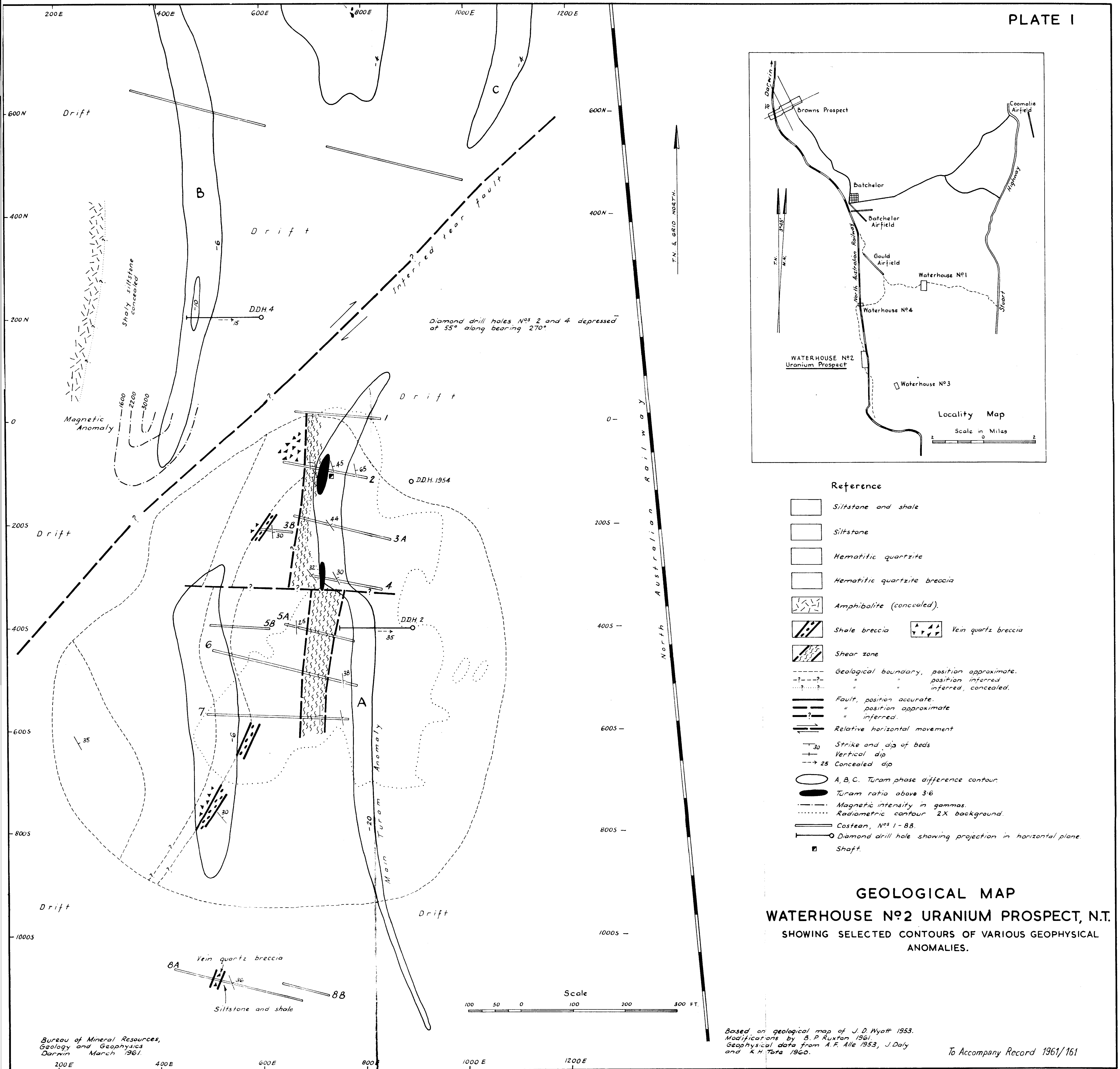
The rock is an altered pyroxenite.

Conclusions

In the zone of amphibolite from 144' to 250' the presence of elongate apatite crystals, together with the overall texture of the rock, leave no doubt as to its igneous origin. The rock contains virtually no plagioclase, and was probably an ultrabasic differentiate of a basic magma. The rock was probably a pyroxenite containing little brown hornblende. It showed some increase in iron content in its upper part, and such a condition could arise from gravitational settling of early -formed, magnesium-rich pyroxene.

The material from 112'8" to 134'6" is quite distinct from the underlying material, in that it contains over 50% albite, and that within the interval from 112'8" to 117' the amphibole is medium-grained, well-formed green hornblende. The most probable explanation of these differences is that the zone from 124' to 134'6" represents normal basic rock now albitized and uralitized, and that the thin zone from 112'8" to 117' is a later injection of a more felsic differentiate in which green hornblende was an original constituent. In view of the large thickness of altered pyroxenite encountered (over 100'), one would expect to find far more altered basic rock than the 10'6" recorded (124' to 134'6"), if the two types were genetically related. However, according to Ruxton (see above), there is a probable fault at about 140' - and this depth also marks the break between the pyroxenite and the altered basic rock. It seems possible that much of the altered basic rock has been missed in the core, due to faulting.

The amphibolite falls within the "albite-epidote amphibolite facies" (Williams Turner and Gilbert, 1954, "Petrography", Freeman), and was formed by low-grade regional metamorphism, possibly assisted by earlier deuteric alteration. It has reached a stage of alteration roughly equivalent to that found in amphibolite from Mt. Burton, Rum Jungle Creek South, and Brocks Creek.



GEOLOGICAL MAP
WATERHOUSE No2 URANIUM PROSPECT, N.T.
SHOWING SELECTED CONTOURS OF VARIOUS GEOPHYSICAL ANOMALIES.

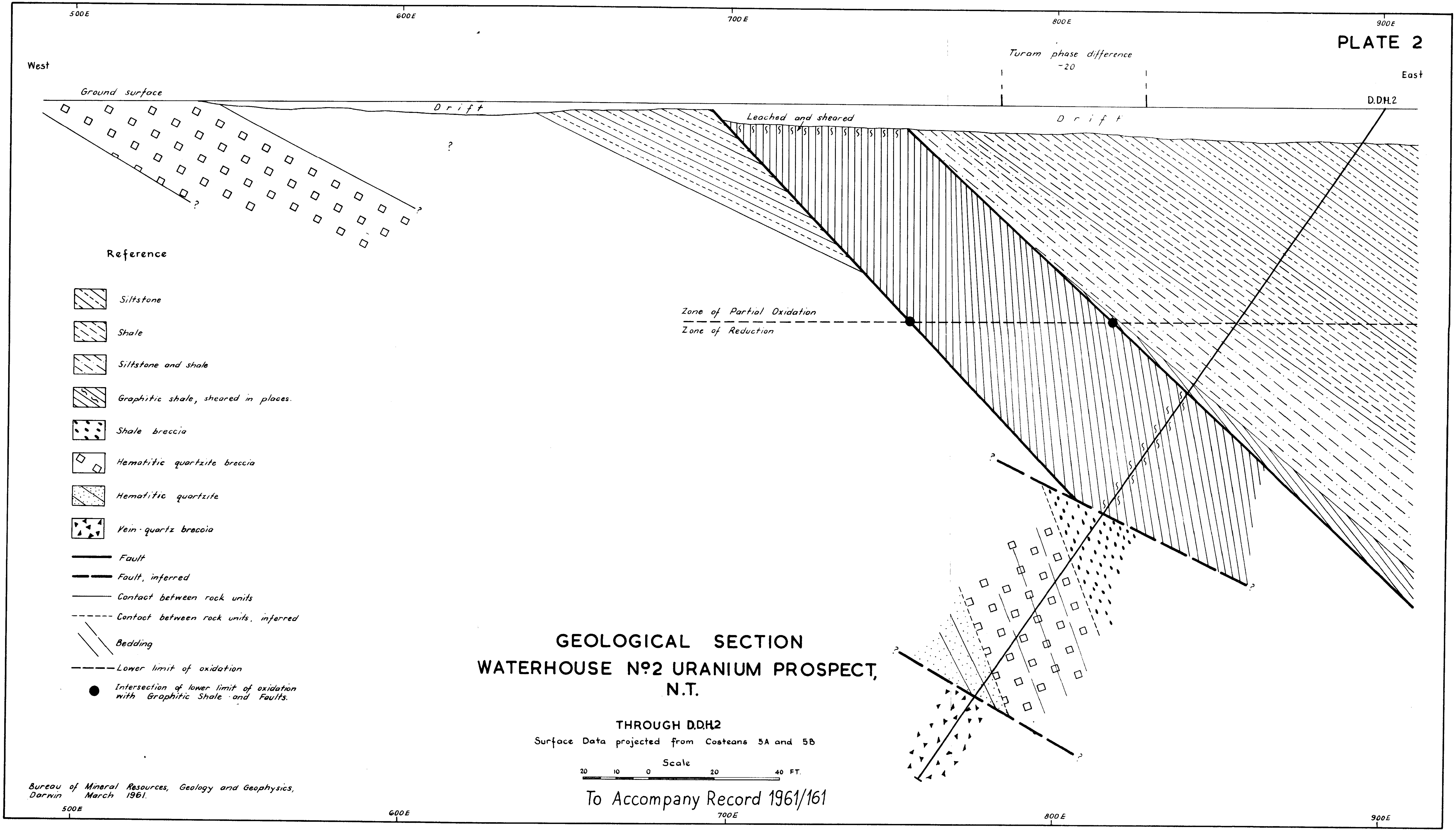


PLATE 2
500E
600E
700E
800E
900E
West
East
Turam phase difference
-20
Ground surface
Drift
Drift
Leached and sheared
D.D.H.2
Zone of Partial Oxidation
Zone of Reduction
Reference
Siltstone
Shale
Siltstone and shale
Graphitic shale, sheared in places.
Shale breccia
Hematitic quartzite breccia
Hematitic quartzite
Vein-quartz breccia
Fault
Fault, inferred
Contact between rock units
Contact between rock units, inferred
Bedding
Lower limit of oxidation
Intersection of lower limit of oxidation with Graphitic Shale and Faults.
GEOLOGICAL SECTION
WATERHOUSE No.2 URANIUM PROSPECT, N.T.
THROUGH D.D.H.2
Surface Data projected from Costeans 5A and 5B
Scale
20 10 0 20 40 FT.
To Accompany Record 1961/161
Bureau of Mineral Resources, Geology and Geophysics, Darwin March 1961.
551

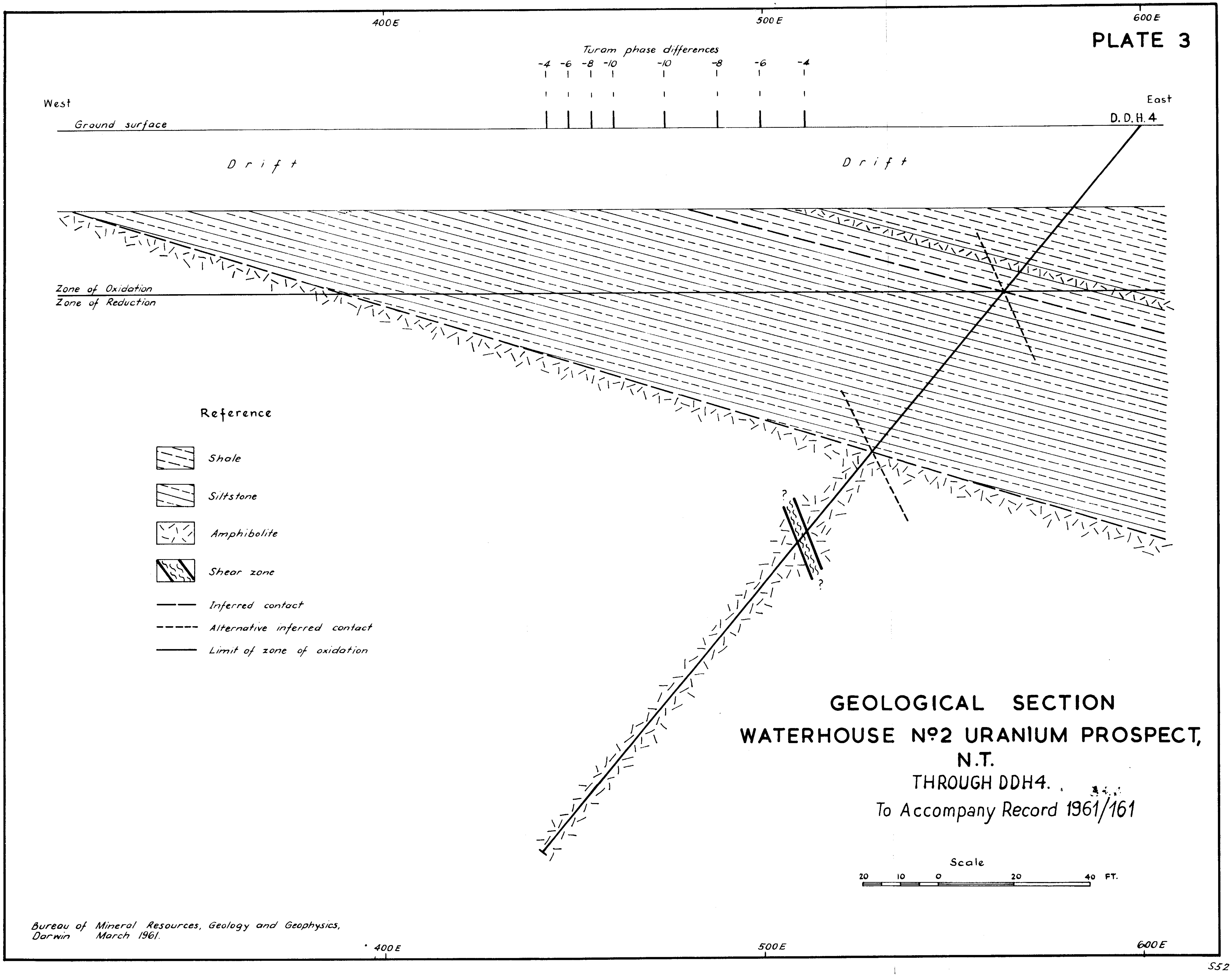
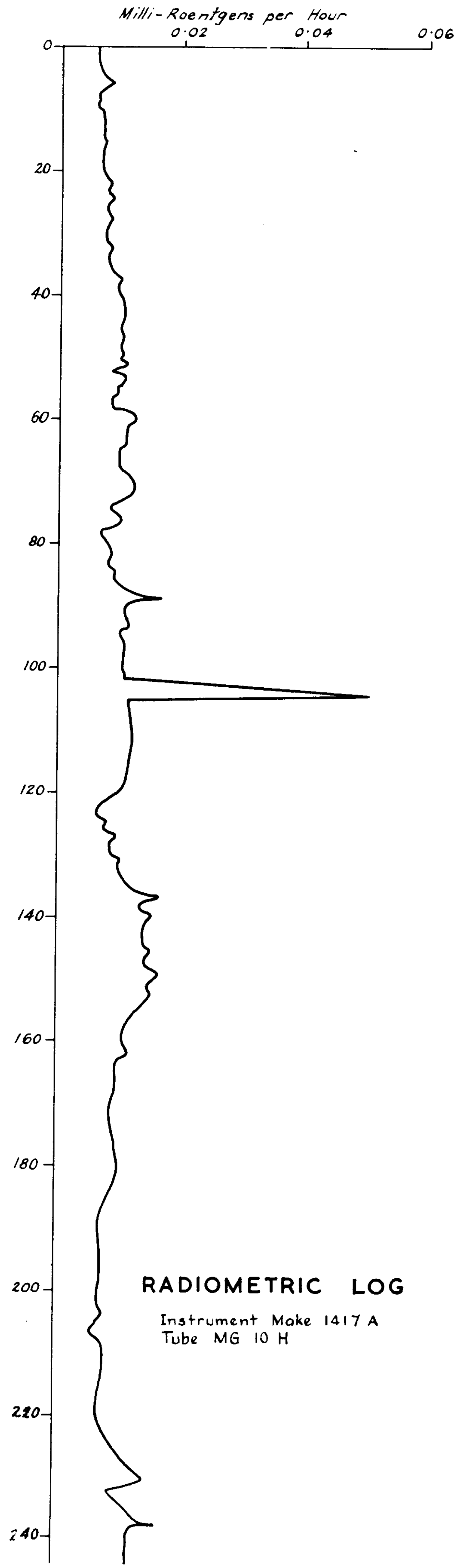


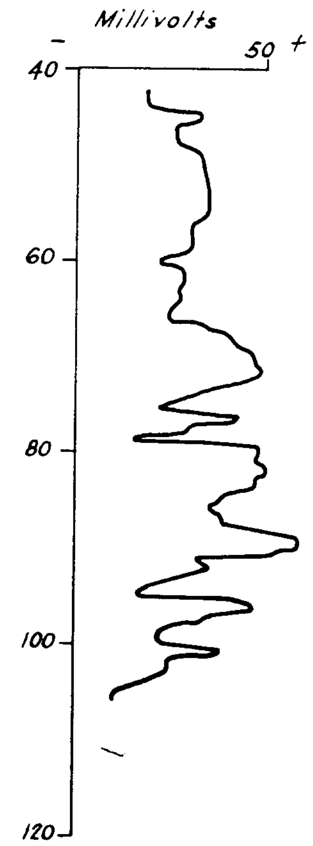
PLATE 3
400E
500E
600E
Turam phase differences
-4 -6 -8 -10 -10 -8 -6 -4
West
East
Ground surface
D.D.H. 4
Drift
Drift
Zone of Oxidation
Zone of Reduction
Reference
Shale
Siltstone
Amphibolite
Shear zone
Inferred contact
Alternative inferred contact
Limit of zone of oxidation
?
?
GEOLOGICAL SECTION
WATERHOUSE No 2 URANIUM PROSPECT,
N.T.
THROUGH DDH4.
To Accompany Record 1961/161
Scale
20 10 0 20 40 FT.
Bureau of Mineral Resources, Geology and Geophysics,
Darwin March 1961.
400E
500E
600E
S52

PLATE 4

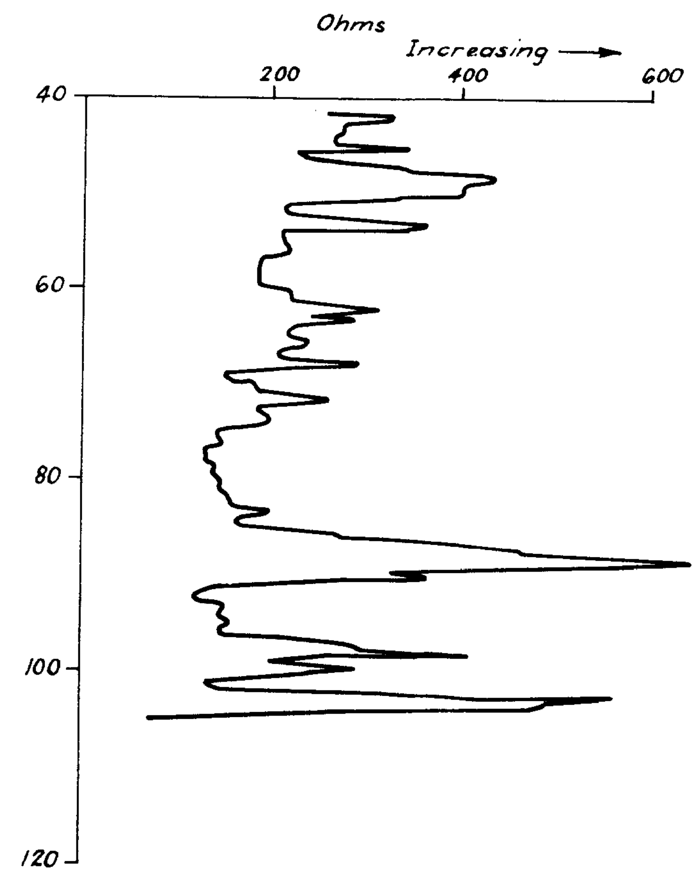


RADIOMETRIC LOG

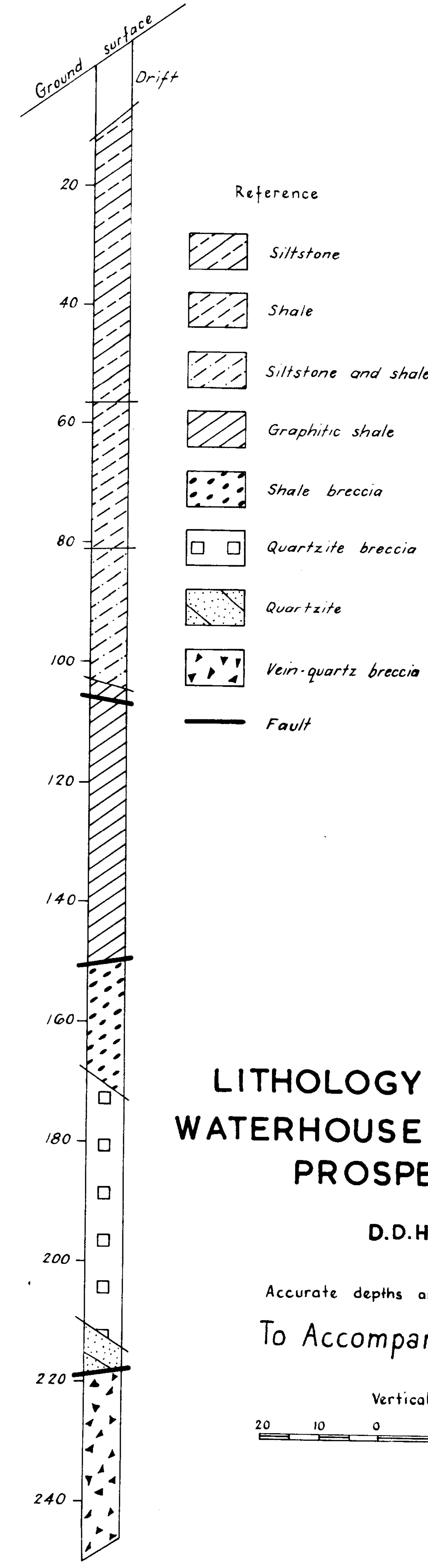
Instrument Make 1417 A
Tube MG 10 H



SELF POTENTIAL PROFILE



RESISTIVITY



LITHOLOGY AND LOGS WATERHOUSE Nº2 URANIUM PROSPECT, N.T.

D.D.H. 2

Accurate depths are shown on left side.

To Accompany Record 1961/161

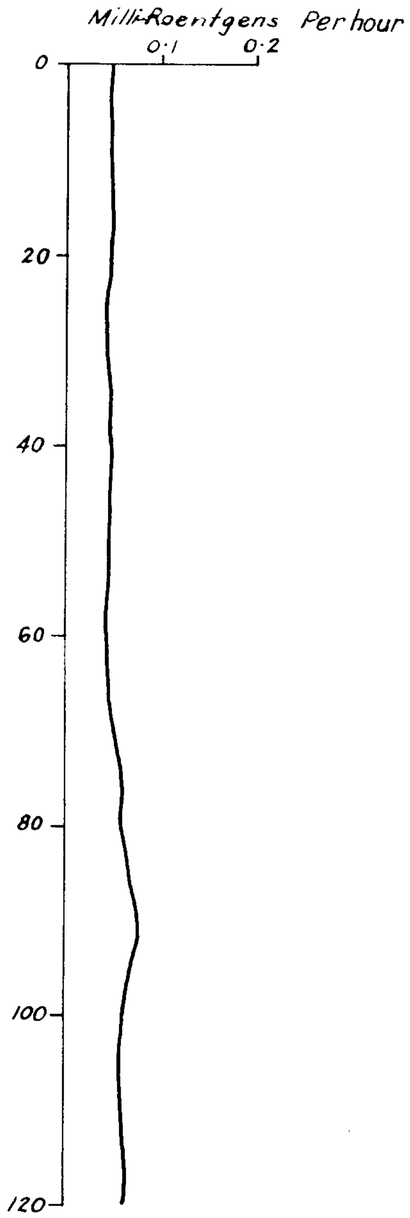
Vertical Scale

20 10 0 20 40 FT.

Bureau of Mineral Resources, Geology and Geophysics
Darwin March 1961

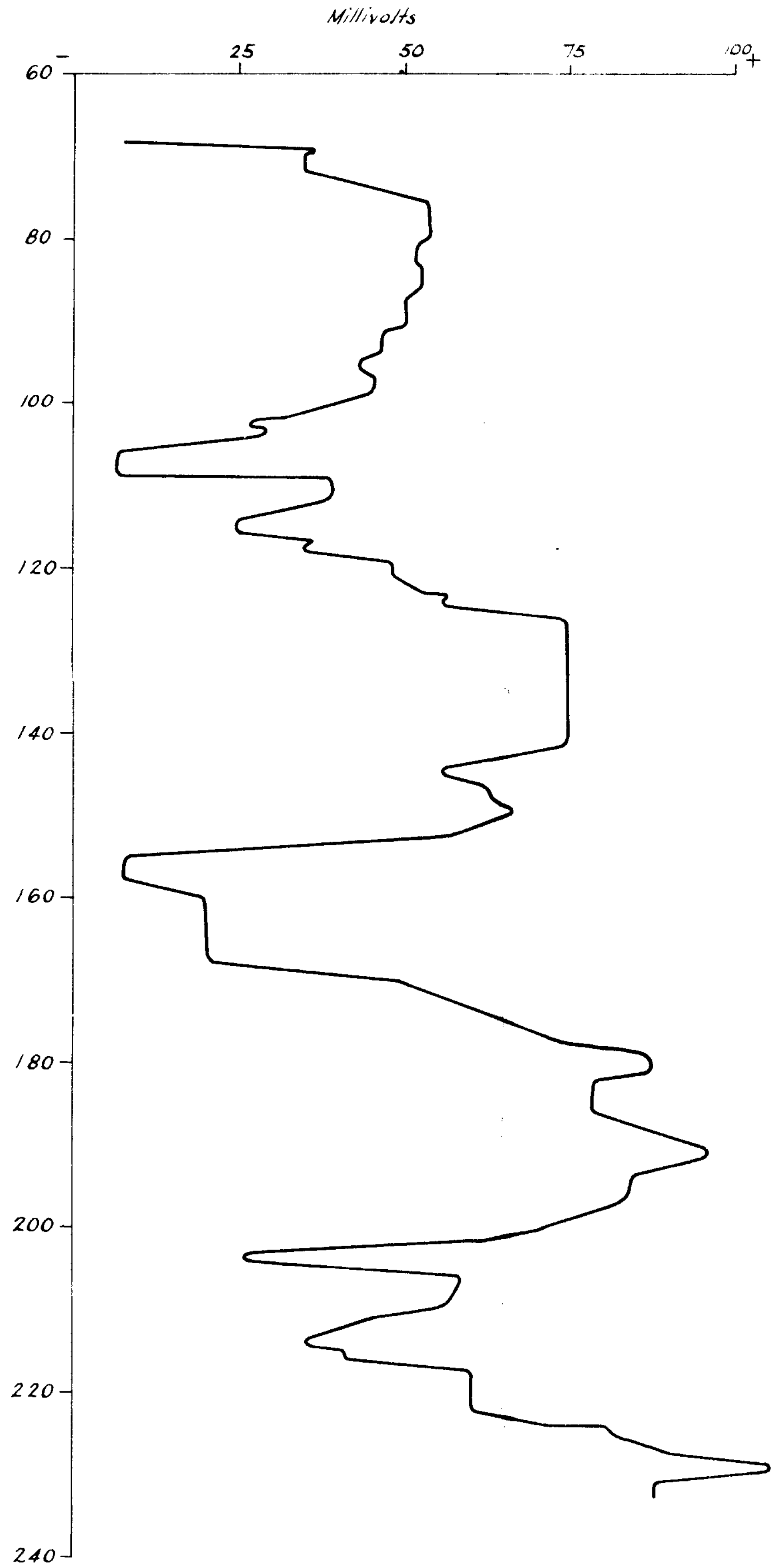
553

PLATE 5

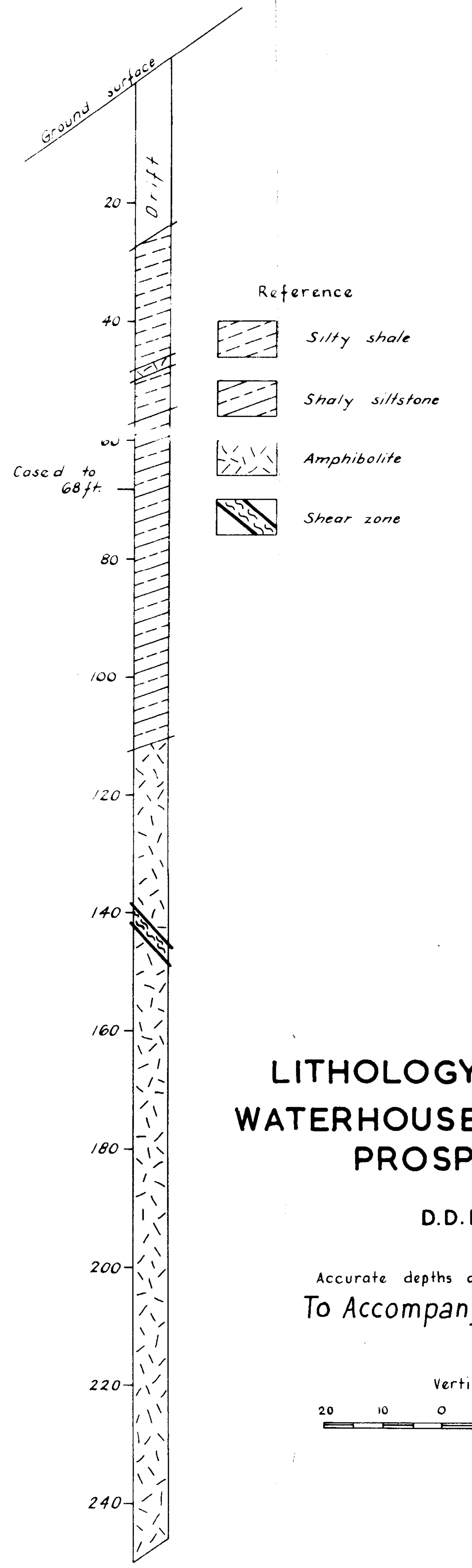


RADIOMETRIC LOG

By "Deedlebug" Probe



SELF POTENTIAL PROFILE



LITHOLOGY AND LOGS WATERHOUSE No. 2 URANIUM PROSPECT, N.T.

D.D.H. 4

Accurate depths are shown on left side.

To Accompany Record 1961/161

Vertical Scale

20 10 0 20 40 FT.

Bureau of Mineral Resources, Geology and Geophysics, Darwin March 1961.