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1953/142

REPORT

ON

WHITE'S DEPOSIT, RUM JUNGLE, N.T.

by H.J. Ward.

RECORDS

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INTRODUCTION.

White's Deposit, which is the original discovery at Rum Jungle, and on which exploration has been mainly concentrated, has so far proved to be the most important deposit in the area. It is situated 2.23 miles on a true bearing of 28 degrees from Rum Jungle Railway Siding and lies on the northern bank of the Finniss River (East Branch) halfway between Brown's Deposit and Dyson's Find.

Following upon the favourable results obtained from diamond drilling and shaft sinking in 1950 work was continued at the deposit during 1951 and 1952. The development work and exploration activities are not yet completed, but available evidence has suggested a control of mineralization, which it is hoped will be substantiated by future field work.

Geological and assay plans and sections of the mine workings have been prepared on a scale of 20 feet to an inch from theodolite and tape surveys and surface geological plans on a scale of 40 feet to an inch have been produced by plane table and telescopic aledade surveys.

A description of the deposit based on results obtained to the end of 1952 is given in the following pages.

GEOLOGY.

GENERAL

Regional geological mapping has shown that the carbonaceous slates in which White's Deposit occurs are part of the slate formation which forms the core of a major dragfold lying on the north western side of Grant's Reef Fault (Matheson 1953).

Three rock formations are present in the vicinity of the deposit namely the Quartzite Breccia Formation a Slate Formation and a Limestone Formation.

Quartzite Breccia Formation

The quartzite breccia is predominantly a reddish rock consisting of irregular angular gragments of milky white to translucent quartz set in a fine grained sandy matrix. The rock, which is considered to be of detrital origin, has since been silicified and hematised. Intersections of the quartzite breccia formation by surface drilling reveal that apart from a reduction in the amount of silicification, the nature of the rock does not alter with depth. It is possible that variations within the quartzite breccia will be revealed by further work.

Slate Formation.

The slate formation in the vicinity of White's Deposit has been broadly subdivided into carbonaceous slates (in part graphitic) and chloritic schists, and it is expected that further subdivisions of these rocks may be possible as work continues.

The carbonaceous slates, which comprise the greater portion of the slate formation, range from light grey felspathic rocks with black shaley inclusions, and to a dense black fissile carbonaceous slate. The slates are either blocky or fissile, the latter often contain blebs, small lenses and winlets of quartz. Graphitic schists are the metamorphic alteration products of carbonaceous slates, and where observed in the few exposures in the area are coated with secondary copper minerals. These schists appear to be the most favourable host rocks for copper and uranium deposits. mineralization.

In the ore zone the slates are generally bleached micaceous and finely brecciated and have a grey silky appearance.

A bed of slates, which has been given the field name of "spotted slates" outcrops on the crest of the low ridge to the north of the workings. These rocks have been exposed in the northwest crosscut on the 100 feet level. On the surface they are weathered to al light grey colour whereas in the underground workings they are blocky black rocks streaked with kaolin.

The slate formation has been brecciated prior to mineralization. Excellent exposures can be seen in drives and crosscuts on the 100 feet level, but only one surface exposure (in costean No. H) has been mapped. In No. 2 Northwest crosscut on the 100 feet level the breciated slabs of mineralised slate commonly attain dimensions of 2 feet by 1 foot by 6 inches. Seams of pyrite have been observed to pass from one slate fragment to another without any displacement.

The chloritic schists are more susceptible to weathering than the carbonaceous slates and do not outcrop strongly at the surface. They are talcose to the south, and vary from a light to dark greenish rock in the primary zone, to a flesh or fawn coloured rock in the oxidised zone where they contain, in places, nodular masses of magnesite. In the underground workings of the 100 feet level the chloritic schists are generally greenish coloured, but when crushed, silicified and hematised assume a local dark purple to black colour. In diamond drill hole intersections below the 100 feet level the chloritic schists are of a silky grey greenish colour and contain patches of hematite and carbonate veinlets.

Limestone Formation.

The limestone formation, which does not outcrop near the workings has been exposed by drives to the south-west from the main southeast crosscut off No. 4 shaft. It consists of masses of recrystallised limestone and impure grey shaley limestone associated with chloritic and carbonaceous schists. Secondry silicification of the calcareous rocks has occurred. Pyrite and chalcopyrite mineralization has been observed within the formation.

In the Rum Jungle area this limestone formation usually occurs between the slate formation and the quartzite breccia formation, but near White's Deposit there appears to be a local lensing or pinching out. In this area the boundary between the quartzite breccia and the slate formation is soil covered but surface mapping indicated that the limestone formation narrowed from more than 1,000 feet near Brown's Deposit to a possible 50 feet in width at White's Deposit.

Subsequent diamond drilling from the surface and the 100 feet level showed that a thin band of chloritic schists occurred at the junction of the quartzite breccia and slate formations and it is thought that this may possibly represent a metamorphosed impure carbonate rock.

STRUCTURAL GEOLOGY.

The geological structure at White's Deposit is complex.

Regional geological mapping has shown that White's Deposit is situated near the nose of a fold in the slate core of a regional northeasterly pitching anticline. In the mine the ore bearing beds are folded into an anticline, which plunges at an angle of about 40 degrees to the east. Reversals in pitch due to movement along shear planes are frequent.

It was previously thought that the axial plane shear of the Giant's Reef Dragfold passed through the mine. However development work on the 50 feet level in the latter part of 1952 suggests that shearing parallel to the axial plane of the Giant's Reef Dragfold has taken place along the limbs of the fold. This shearing along the libs of the minor folds within the mine workings is illustrated in plan (Plate 4) and in section (Plate 6.)

The general trend of the shears is in an easterly direction and their dip is approximately vertical. The shearing pattern formed during movement along Giant's Reef Fault has been complicated by later faulting. The most important fault is one which has a north strike and a dip of 60 degrees east. This fault has truncated the ore body and it is thought the western extension of the orebody is situated in the soil covered area known as White's south deposit on the southern bank of the Finniss River (East branch).

On the information available it is difficult to interpret the geological structure and evaluate the controls of mineralization.

MINERALIZATION.

THE ORE BODIES.

Exploratory work undertaken after the discovery of secondary uranium minerals at the surface has disclosed that copper and uranium ore deposition has taken place at White's deposit within favourable beds of the slate formation. The outline of the copper orebody closely adheres to the folded and faulted slate beds between Nos. 1 and No. 4 shafts (Plate 5). It is not yet known whether the ore deposition occurred during the Giants Reef period of faulting, or at an earlier date and later concentrated by dynamothermal metamorphism at the nose of folds within the slate formation. Faulting both parallel and at right angles to the axial plane of Giants Reef Dragfold has caused displacements of the orebody.

On the 100 feet level of the mine, development work has revealed (Plate 4) the presence of two areas of copper mineralization within an area of copper mineralization. The Western area of uranium mineralization is situated to the west of the northwest crosscut. The eastern area of uranium mineralization which was first intersected in the No. 1 shaft south crosscut, extends about 40 feet to the west of this crosscut.

The western section has an average length of 150 feet and width of 30 feet. Diamond drilling (Plate 7) has shown that this ore body persists to a depth of 350 feet, and that it has approximately the same length and width at the 100 feet and 200 feet levels. Variations in thickness are probably due to folding within the slate formation. The ore-body has been terminated to the west by a fault, which has a north strike and a 60 degrees east dip. Movement along the fault plane has been to the north on the eastern side thus the western continuation is expected to be found at White's south. The nature of the eastern termination of this orebody and its relationship with the eastern orebody is not known.

Within the mine, the chloritic schist-carbonaceous slate contact exposed in the eastern end of the 100 feet level is thought to be the faulted continuation of the chloritic schist-carbonaceous slate contact in No. 1 shaft south crosscut about 7 feet from the shaft. Exposures on the 50 feet level conform to this correlation. The eastern orebody appears to have been deposited in a different slate horizon from the western orebody (Plates 4,6). This is supported by the absence of a chloritic schist band near the hanging wall of the eastern orebody. This band of chloritic schist is adjacent to the hanging wall of the western orebody and has been proved from the surface to the 300 feet level (Plate 7).

The downward extension of the eastern orebody has not been found by surface drill holes WDQ and W4, nor can it be correlated with the ore on the 50 feet level.

The anticlinal structure in which the ore horizons are folded is well illustrated by results obtained from development on the 50 feet level (Plate 3). On this level ore occurs in both the northern and southern limbs of an east pitching anticline. Shearing along the limbs of the folds has displaced the beds favourable for uranium mineralization. Later faulting has caused reversals in pitch which may account for the presence of ore in UDDH No. 16. Anticlinal folding in the beds favourable for uranium mineralization is visible on the 100 feet level in No. 4 shaft south crosscut.

MINERAL ASSOCIATIONS.

Mineragraphic examinations of the ore have been carried out, and the primary and secondary uranium minerals described (Stillwell, 1951 & 1952)

The following table indicates the types and principal location of minerals occurring at White's deposit.

TABLE I.

Metals	Primary	Secondary.
Uranium	Uraninite found on 50 ft. and 100 ft. level workings and in diamond drillholes W.D.P.,W.1. W.3.	Torbernite Metatorbernite Common in No. 1 Shaft within 15 ft. of collar and on 50 ft. level. Phosphouranylite abundant near surface at No.2 shaft occurring in costean 'A' and No.3 shaft. Post Mine Minerals. Yet to be identified.

Table I cont.

Metals.	Primary.	Secondary.
Copper	Chalcopyrite: As disseminations and replacements in bedding also in fissure veins (massive veins up to 2 ft. wide on 100 ft. level with quartz and bornite) throughout the workings. *Bournonite Bornite as replacement of bedding on 100 ft. level and in fissure veins with quartz and chalcopyrite. Covellite in quartz vein at 97 ft. in south crosscut from No. 4 shaft.	Malachite Azurite Pseudomalachite Dyhidrite Cornetite. Native Copper in 50 feet level also in No 2 shaft at 28 feet. Chalcocite.
Iron	Pyrite	Hematite Limonite
Lead		Cerussite at surface in small costean coords (290E, 11SN.)
Cobalt		Erythrite No.1 Shaft south crosscut 50 ft. level
Nickel	Bravaite	

* Bouronite. Bournonite has been recognised (Stillwell, 1951) associated with chalcopyrite, what appears to be bournonite also occurs in the massive form at 50 feet level of No. 1 Shaft. Some doubt has been expressed however as to whether or not this massive mineral is really chalcocite, and mineral determinations are in progress.

No. 1 shaft was sunk on showings of torbernite and phosphuranylites exposed in No. 2 Costean. These minerals were associated with malachite and were confined to a bed of carbonaceous slate which was synclinally dragged on a fault with an east strike. With the structural termination of the slates secondary uranium mineralization ceased. A crosscut to the south at the 50 feet level in No. 1 shaft revealed a localised zone of high radio-activity within 15 feet of the shaft. This indicates that a blanket of non-radio-active rock one foot thick can effectively conceal high radio-activity. Torbernite and uraninite were associated with massive bournonite (?) malachite and quartz in this zone of high radio-activity. The mineralized zone, which attained a maximum width of 2 ft. 6 inches and was confined to the back of the crosscut, in crushed talcose chloritic slates.

During 1951 assays of uranium samples taken from the workings on the 50 feet level had a low U_3O_8 content and the mineralization appeared to be patchy. Further development on the 50 feet level during 1952 revealed the presence of high grade primary uranium are associated with copper sulphides, and secondary minerals of copper and uranium.

In No. 2 shaft, secondary, fluorescent, uranium minerals associated with malachite were found under a soil cover of six inches. Phosphuranylite occur as coatings and seams 8 feet below ground level. The radio-activity attained a maximum of 60 times the background count. Radio-activity is weak between 8 feet and 25 feet below ground level. The presence of finely disseminated uranium minerals was detected by the mineralight. In ordinary light the mineral appeared as a black spot within a dark grey zone of alteration - each particle occupying not more than 0.2 inches in diameter. At 29 feet below the collar (that is 25 feet below ground level) of No. 2 shaft, native copper, sooty chalcocite, chalcopyrite and covellite were encountered. Samples from below this depth assayed greater than 2% U_3O_8. Radiometric assays of 7% U_3O_8 were obtained from samples of bleached gruge from a fault 12 inches wide striking N60 degrees W and dipping 60 degrees N.E. at the bottom of No. 2 shaft.

Secondary uranium minerals occurred in the carbonaceous slates of No. 3 shaft. The slates are here displaced by a fault which strikes N 40 degrees E and dips 50 degrees south. Uranium mineralization was in the slates, along the fault and a few inches in the chloritic schists below the fault Torbernite was the predominant uranium mineral and when mined was a deep green in colour, but on exposure to sunlight it changed to a yellow colour.

No uranium mineralization was encountered in No. 4 shaft in 1951. However in 1952 development work on the 100 feet level outlined the uranium orebody and showed that sooty black uraninite was the only visible primary uranium mineral. Complete crystals have not been observed but relict crystals are known to exist. The sooty nature of the uraninite may be due to later hydrothermal activity.

Uraninite associated with pyrite and chalcopyrite in its richest concentrations occurs in highly micaceous slate bands or finely brecciated schists. The host rocks in the ore zone generally bleached and the uraninite shows alteration rims and red coloured aureoles.

Pyrite chalcopyrite and bornite occur associated with quartz in veins and as disseminations in the carbonaceous slates and graphitic schists. Some of the quartz-chalcopyrite veins have been fractured, the chalcopyrite filling the fractures in the quartz. Pyrite and chalcopyrite bearing quartz veins are generally absent from the uraniferous portion of the copper uranium orebody. Disseminated bornite and bornite-quartz veins appear to be confined principally to the hanging wall of the copper-uranium orebody.

The accompanying plan (Plate)

illustrates the zoning of the copper uranium minerals on the 100 feet level. It has been possible to subdivide the uranium orebody into

(a) a zone 10 feet - 20 feet in width in which the ore grade is $>0.5\%$ U_3O_8.

(b) A zone surrounding (a) in which the ore grade is approximately 0.2% U_3O_8.

It was thought when development work first commenced at White's deposit that there was a copper-uranium ratio within the uranium orebody. However subsequent work has shown that such a ratio cannot be established as can be seen from the following table.

TABLE II

Sample No.	Location.	Assay results.	
		% Cu(Chemical)	% U_3O_8 (Radiometric).
B608	Northwest crosscut Westwall 38' - 43'8"	0.4	0.025
B609	" " " 43'8" - 49'9"	0.5	0.252
B610	" " " 49'9" - 55'	2.0	1.108
B611	" " East wall 52'7" - 54'2"	1.5	0.279
B612	" " " " 54'11" - 61'	2.4	0.494
B613	" " West wall 56'7" - 60'9".	6.0	0.722
B1 520	No. 4 shaft Sth.W. H/W Drive at 47 ft. 30" south of centre of face	5.3	0.061
B521	" " " " " " " " " " 30" north " " " "	4.3	0.393
B523	" " " " " " " " 56 ft. 30" south " " " "	2.9	0.94
B524	" " " " " " " " " " 30" north " " " "	1.8	0.65
B527	" " " " " " " " 66 ft. 30" south " " " "	5.8	0.195
B528	" " " " " " " " " " 30" north " " " "	6.3	2.9 approx.

WORKINGS.

When the deposit was examined in 1949 (Ward 1950) there were two shallow costeans, a collapsed shaft and several potholes.

During 1950 the two shallow costeans were cleared out and an additional ten costeans were dug by manual labour, Landrover and scoop. Two costeans, A and B, were bulldozed.

No. 1 shaft was sunk in No. 2 costean on showings of secondary uranium minerals which gave high radiometric results. No. 1 shaft was sunk to a depth of 55 feet during 1950 and two crosscuts were put out from the shaft, one to the north at the 30 feet level for a distance of 15 feet and one to the south at the 50 feet level for a distance of 18 feet.

No. 2 shaft was opened up in No. 1 Costean where exceptionally rich showings of uranium ochres had been exposed. This shaft, sunk on an inclination of 80 degrees is 43 feet below the collar. By the end of November 1950 a drive 13 feet long had been opened up to the east at the 50 feet level of No. 2 shaft.

No. 3 shaft which is about 100 feet west of No. 1 shaft was sunk to a depth of 12 feet in 1950 on rather rich surface indications of radio-active minerals which, due to faulting did no persist at depth.

In 1951 the crosscut on the 50 feet level of No. 1 shaft was extended to 30 feet from the shaft and driving for 20 feet to the west and 15 feet to the east was undertaken from the end of the crosscut. At the eastern end of the drive a crosscut was extended 6 feet to the south. In the south wall of the 50 feet level drive 8 jackhammer holes were drilled to test the wall rock for radio-activity. When driving had been terminated on the 50 feet level sinking in No. 1 shaft was continued to the 100 feet level. By the end of 1951 a south east crosscut at the 100 feet level revealed the presence of the orebody at a distance of 10 feet from the shaft.

In 1951, No. 4 shaft was sunk to a vertical depth of 100 feet below the top of the shaft collar and a crosscut 97 feet in length was extended to the south at the 100 feet level in order to intersect the orebody located by No. 2 shaft and diamond drilling.

The purpose of mining work in 1952 was to determine the shape of the orebody on the 50 feet and 100 feet levels. To this end driving and crosscutting was continued and by January 1st, 1953, 1030 feet of underground development on the 100 feet level and 277.5 feet of development on the 50 feet level had been completed. A winze was sited to intersect the western orebody between the 150 feet and 200 feet levels and to provide an early opening for ventilation purposes when connected at the 200 feet level with the new main shaft. The winze had been sunk to a depth of 40 feet by the end of 1952.

DIAMOND DRILLING

Diamond drilling operations at White's Deposit commenced in late September, 1950 under the direction of the Bureau of Mineral Resources. Up to the 31st December, 1952 a total of 8148 feet had been drilled to test the orebody at White's Deposit. The details of holes drilled at White's Deposit are listed in tables IV and V.

In carrying out the drilling operations the following drills were available for

(a) Surface Drilling: Screwfeed drills:- Mindrill E100, Goldfields No. 7 and Mindrill A3000

Hydraulic feed drills:- Sullivan H.D.22.

(b) Underground drilling: Airfeed drills:- Sullivan D.6 and Mindrill XR350

The distribution of footage is shown in the following table.

TABLE III

	SURFACE DRILLING				UNDERGROUND DRILLING	
Year	Mindrill E100	Goldfields No. 7.	Mindrill A3000	Sullivan H.D.22	Sullivan D.6.	Mindrill XR350
1950	(Sept-Dec) 485 ft.					
1951	(May-Nov) 605 ft.	290 ft.				
1952	(Jly-Sept) 516.5 ft.	May 172 ft.	(Jly-Nov) 991 ft.	(June-Dec) 2241 ft.	(Feb-Sept) 2152.5 ft.	(Sept-Dec) 695 ft.
TOTALS	1606.5 ft.	462 ft.	991 ft.	2241 ft.	2152.5 ft.	695 ft.

TOTAL FOOTAGE 8148 feet.

TABLE IV Surface Drilling.

Hole No.	Year.	Type of drill.	Co-ordinates.		Reduced Level of site in feet.	Bearing Magnetic	Inclination.	Bore depth in feet.	% Core Recovery.	% Core Recovery in ore zone.	Bit Size.
WDA	1950	Mindrill E100	176N	142E	313	155°	70°	94.5	19.5	18.3	EX
WDB		" "	166.5N	89E	312	155°	60°	92	16.3	8.1	EX
WDC		" "	173.5N	113E	313	155°	60°	89.5	3.4		EX
WDE		" "	211N	160.5E	314	162°	60°	109.5	29.0		EX
WDF		" "	211.5N	302.5E	321	171°	60°	99.5	27.6	26.6	EX
WDG	1951	" "	141N	45E	311	155°	60°	100	5.6		EX
WDH		Goldfields No.7.	122.5N	9E	311	155°	60°	100	6.0		EX
WDI		Mindrill E100	153N	67.5E	312	155°	60°	70	11.7		EX
WDJ		" "	186.5N	228E	316.	145°	60°	100	9.4	9.4	EX
WDK		" "	251.5N	296E	316.6	129°	60°	132	40.9		EX
WDL		" "	231.5N	387E	323	157°	45°	103	29.6		EX
WDM		" "	243N	414.5E	322.9	157°	45°	100	24.0		EX
WDN		Goldfields No.7.	221N	193E	316	162°	60°	190	5.0		EX
WDO	1952	" "	9.5N	225.5E	311.6	298°30'	45°	172	16.6		EX
WDP		Sullivan HD22	2.5S	409E	313.1	298°30'	45°	412	25.1	27.2	AX
WDQ		" "	2.5S	413E	313.1	336°30'	50°	544	50.0		AX
WDR		Mindrill E100	100N	172E	311.6	337°30'	60°	103	9.7	15.8	EX
WDS		Mindrill A3000	47.5N	496E	313.1	298°30'	46°30'	108	10.4		AX
WDT		" E100	444N	125E	329.7	155°30'	60°	176	17.9		EX
WDU		" "	372N	510E	335.8	157°	60°	137.5	41.6		EX

Cont.

Table IV cont. *Surface Drilling.*

Hole No.	Year.	Type of Drill.	Co-ordinates.	Reduced Level of site	Bearing Magnetic	Inclination.	Bore depth feet.	% Core Recovery.	% Core Recovery in ore zone.	Bit size.
W1	1952	Mindrill A3000	25N 360.5E	313.8	298°30'	70°	365	34.1	24.9	AX
W2		" E100	259N 546E	327.1	157°	60°	100	25.5		EX
W3		" A3000	36.2N 441.2E	314.1	298°30'	45°	518	34.7	19.6	AX
W4		Sullivan HD22	5N 502.5E	315	336°30'	50°	551	54		AX
W5		" "	50.5S 388E	312.73	298°30'	45°	85	10		AX
W6		" "	32S 300E	312.8	298°30'	60°	252	14		AX
W7		" "	82S 550E	313.8	298°30'	60°	397	39.2		AX

PLATE V *Underground Drilling.*

Hole No.	Year.	Type of Drill.	Co-ordinates.	Reduced Level of site in feet.	Bearing Magnetic.	Inclinations.	Bore Depth in feet.	% Core Recovery.	% Core Recovery in ore zone.	Bit size.
DDH1	1952	Sullivan D6	82N 188E	218.9	142°	10°	150	11		AX
2		" "	161N 340.9E	212.9	147°	"	235	59.6		AX
3		" "	183N 330E	212	322°	"	150	5		AX
4		" "	150N 220.5E	220.9	322°	"	215	5.1		AX
5		" "	160.5N 279E	219.7	322°	"	185	8.6		AX
6		" "	140N 264E	217.6	142°	"	155	18.9		AX
7		" "	194N 410E	213.6	142°	"	192	36.7	31.3	AX
8		" "	207N 401.5E	213.2	325°	"	206	29.8		AX
9		" "	203N 406.5E	213.6	88°45'	"	201	76.4		AX
10		" "	202N 407E	213.6	112°30'	"	200	47.7		AX
11		" "	331N 114E	222		"	158	29.1		AX
12		" "	205N 406.5E	213.8	60°15'	"	198.5	62.0	40	AX
13		" "	330N 107E	222	321°15'	"	122	50.8		AX
14		MindrIll XR350	25N 114.5E	217.3	233°15'	"	215	20.8		EXT
15		" "	24N 116.5E	217.2	168°45'	"	195	6.3		EXT
16		" "	181.5N 297E	275.3	354°	"	187	8.1		EXT

ORE RESERVES

The ore reserves and grade at White's Deposit are discussed in the general report on the activities in the Rum Jungle area (Matheson, 1953).

GEOPHYSICAL RESULTS.

RADIOMETRIC RESULTS

A surface plan showing the radiometric contours of thedeposit was prepared in October 1949 by D.F. Dyson of the Geophysical Section. Surface contamination resulting from costeaning, shafting and diamond drilling has not permitted further radiometric contouring.

Radiometric profiles of costeans and diamond drillholes and radiometric contour plans and sections of the underground workings are available from the Geophysical Section.

The limits of the orebody are based on radiometric assays of all mine samples and diamond drill sludge samples. These assay results are subject to revision as variations due to inequilibrium of the standard samples sometimes occurred. Arrangements are being made for check chemical assays.

At present the correlation of radiometric results with mine geology is difficult. However it is expected that continued work at Rum Jungle will eventually establish a basis of correlation.

SELF POTENTIAL RESULTS.

Results of a self potential survey conducted in 1950 (Allen, 1950) indicated that four anomalies were present in the vicinity of White's Deposit. However some doubt was expressed as to whether the anomalies were created by graphitic schists present in the area. The presence of strong sulphide mineralization on the 100 feet level of the mine supports the belief that the self potential anomalies are indicative of sulphide minerals.

Diamond drilling of self potential anomalies has not proved that copper sulphides are the sole cause of these anomalies. When the extent of pyrite mineralization is determined it will be possible to assess the value of the self potential work.

MAGNETOMETER SURVEYS.

Results of magnetometer surveys in the vicinity of White's Deposit are not yet available but it is hoped that they will be of use in the interpretation of the geological structure.

CONCLUSIONS.

Primary uranium minerals have been found associated with copper minerals in favourable beds within a slate formation which forms the core of a regional anticline which pitches about 35 degrees to the north east shearing parallel to and transverse to the axial planes of the folds has caused displacement of the uraniferous beds. The main ore-body which is approximately 150 feet long and 30 feet wide on

the 100 feet level has been proved from the surface to the 350 feet level. Further diamond drilling to test the downward extent of the orebody on the 450 feet level and development work on the 200 feet level to outline the orebody is recommended.

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PLATE I

WHITE'S DEPOSIT
RUM JUNGLE N.T.
SURFACE
GEOLOGICAL INTERPRETATION PLAN

by H.J. WARD.

SCALE 40 FEET (20 0 40 80)

LEGEND

- Chloritic schist
- Graphitic schist and carb. slate
- Geological boundaries
- Dip and strike of bedding
- Fault (possible)
- Radiometric contours (4X) (3X) (2X)

Quartzite Breccia

SECTION LINE

New Main Shaft

No 1 Shaft

No 2 Shaft

No 1 Shaft

WDA WDB WDC WDD WDE WDF WDG WDH WDI WDJ WDK WDL WDM WDN WDO WDP WDQ WDR WDS WDU

W1 W2 W3 W4 W6

A C E 4 7 9 10

45°(?)

ALONG PLANE NW CROSS-CUT

FINNISS RIVER (East Branch)

TRUE MAGNETIC

400N 300N 200N 100N 00 100S

00 100E 200E 300E 400E 500E 600E

PLATE 2

WHITE'S · DEPOSIT
RUM JUNGLE N.T.
50FT LEVEL (Reduced level 271')
GEOLOGICAL PLAN

Scale 20 0 40 80 FEET

LEGEND

Chloritic schist
Graphitic schist and carbonaceous slate

Faults 80°
Geological boundaries
Dip and strike of bedding 60°
Faults (possible) ? ?
Fold axes synclinal
anticlinal
Plunge of fold 40°

by H.J. WARD.

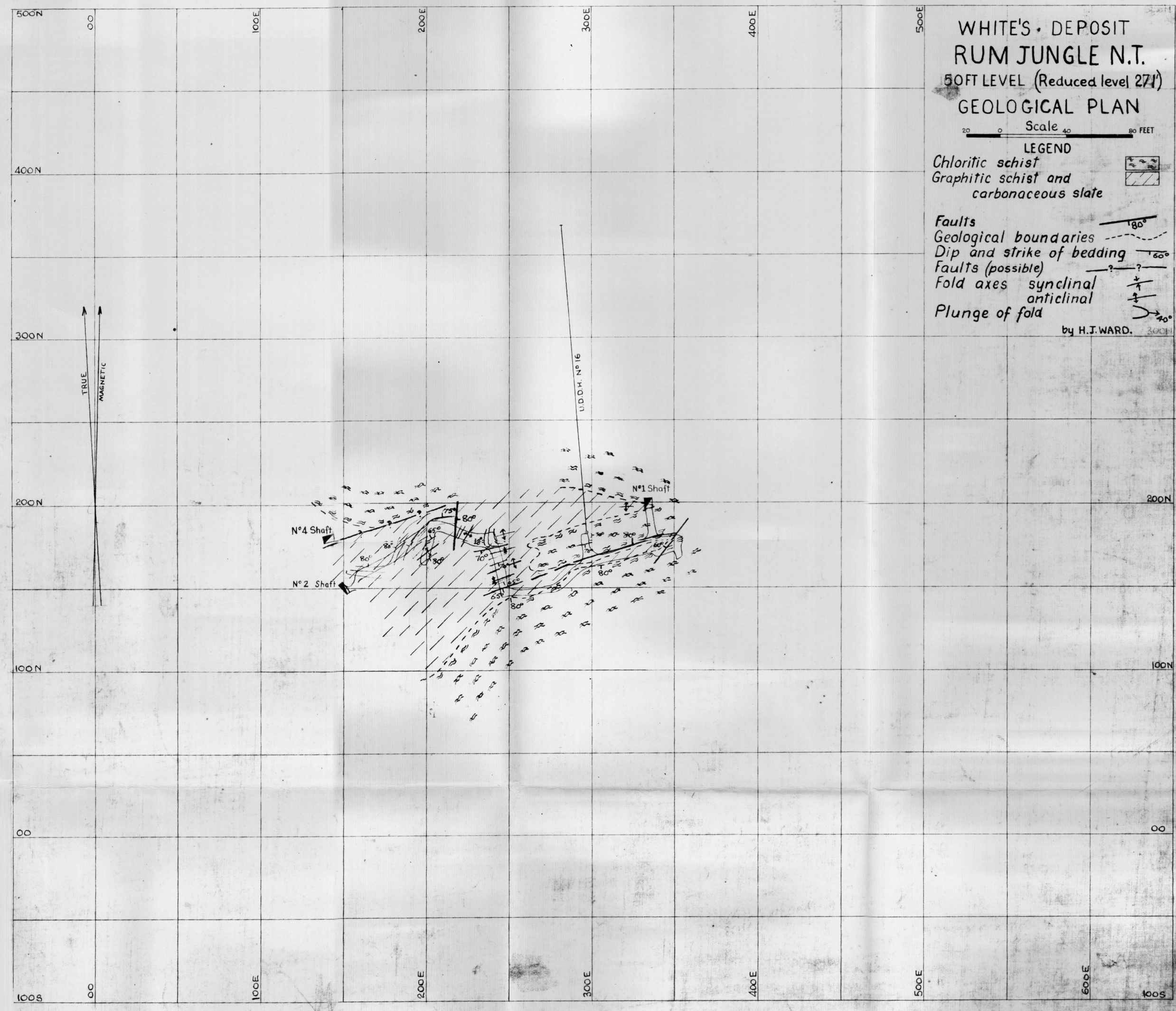


PLATE 3

WHITE'S DEPOSIT
RUM JUNGLE N.T.
50FT LEVEL (Reduced level 271')
GEOLOGICAL INTERPRETATION PLAN

Scale 20 0 40 80 FEET

LEGEND

- Chloritic schist
- Graphitic schist
- Geological boundaries
- Dip and strike of beds — 60°
- Faults — 80°
- Fold axes — synclinal / anticlinal
- Plunge of folds — 45°
- Ore boundaries
- Uranium ore

by H.J. WARD.

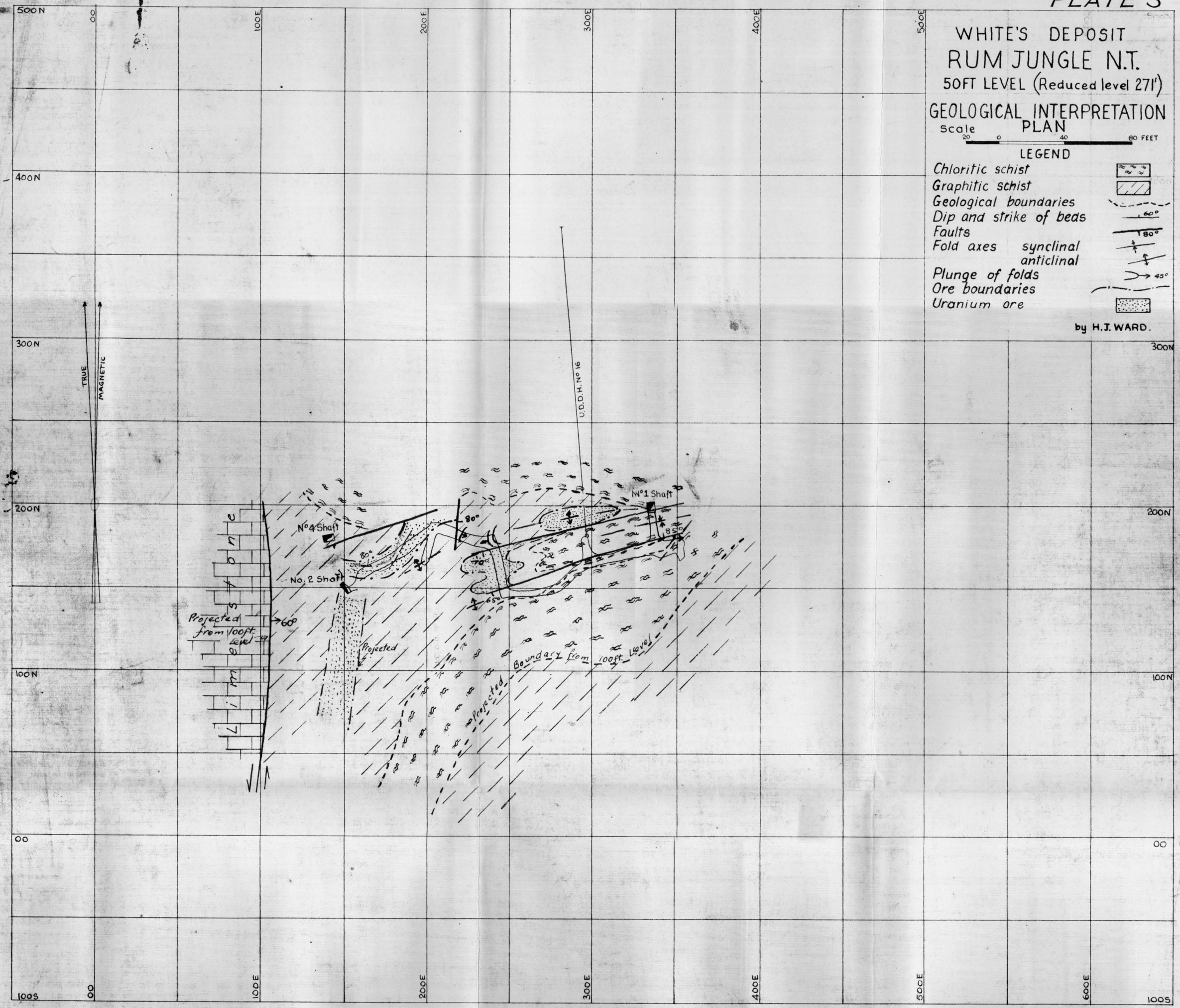


PLATE 4

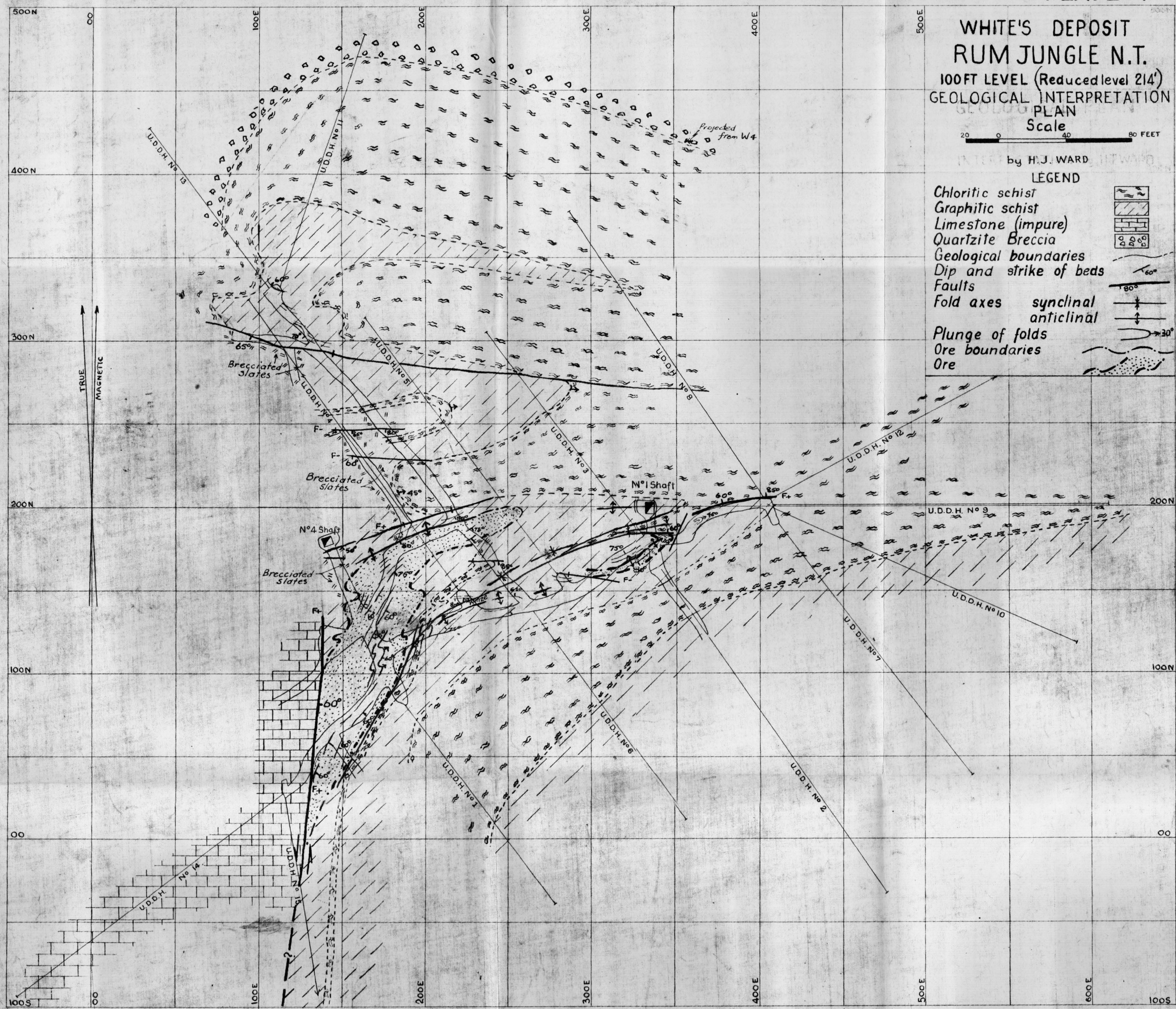

WHITE'S DEPOSIT
RUM JUNGLE N.T.
100 FT LEVEL (Reduced level 214')
GEOLOGICAL INTERPRETATION
PLAN
Scale
20 0 40 80 FEET
by H.J. WARD
LEGEND
Chloritic schist
Graphitic schist
Limestone (impure)
Quartzite Breccia
Geological boundaries
Dip and strike of beds
Faults
Fold axes synclinal
anticlinal
Plunge of folds
Ore boundaries
Ore
TRUE
MAGNETIC
Projected from W4
Brecciated Slates
Brecciated Slates
Brecciated Slates
No 1 Shaft
No 4 Shaft
U.D.D.H. No 13
U.D.D.H. No 11
U.D.D.H. No 5
U.D.D.H. No 4
U.D.D.H. No 3
U.D.D.H. No 8
U.D.D.H. No 12
U.D.D.H. No 9
U.D.D.H. No 10
U.D.D.H. No 7
U.D.D.H. No 6
U.D.D.H. No 1
U.D.D.H. No 2
U.D.D.H. No 14
U.D.D.H. No 15
500N
400N
300N
200N
100N
00
100S
00
100E
200E
300E
400E
500E
600E

PLATE 5

WHITE'S DEPOSIT
RUM JUNGLE N.T.
100FT LEVEL (Reduced level 214')
PLAN OF ORE BODIES

Scale 20 0 40 80 FEET

LEGEND

Boundary of copper ore body

Extent of uranium ore body

Uranium ore assaying $>0.5\%\ U_3O_8$

Northern limit of visible bornite

Faults 60°

by H.J. WARD.

500N 00 100E 200E 300E 400E 500E

400N

300N

200N

100N

00

100S 00 100E 200E 300E 400E 500E 600E

TRUE MAGNETIC

U.D.D.H. No 13

U.D.D.H. No 11

U.D.D.H. No 4

U.D.D.H. No 5

U.D.D.H. No 8

U.D.D.H. No 3

U.D.D.H. No 12

U.D.D.H. No 9

U.D.D.H. No 10

U.D.D.H. No 7

U.D.D.H. No 6

U.D.D.H. No 2

U.D.D.H. No 1

U.D.D.H. No 14

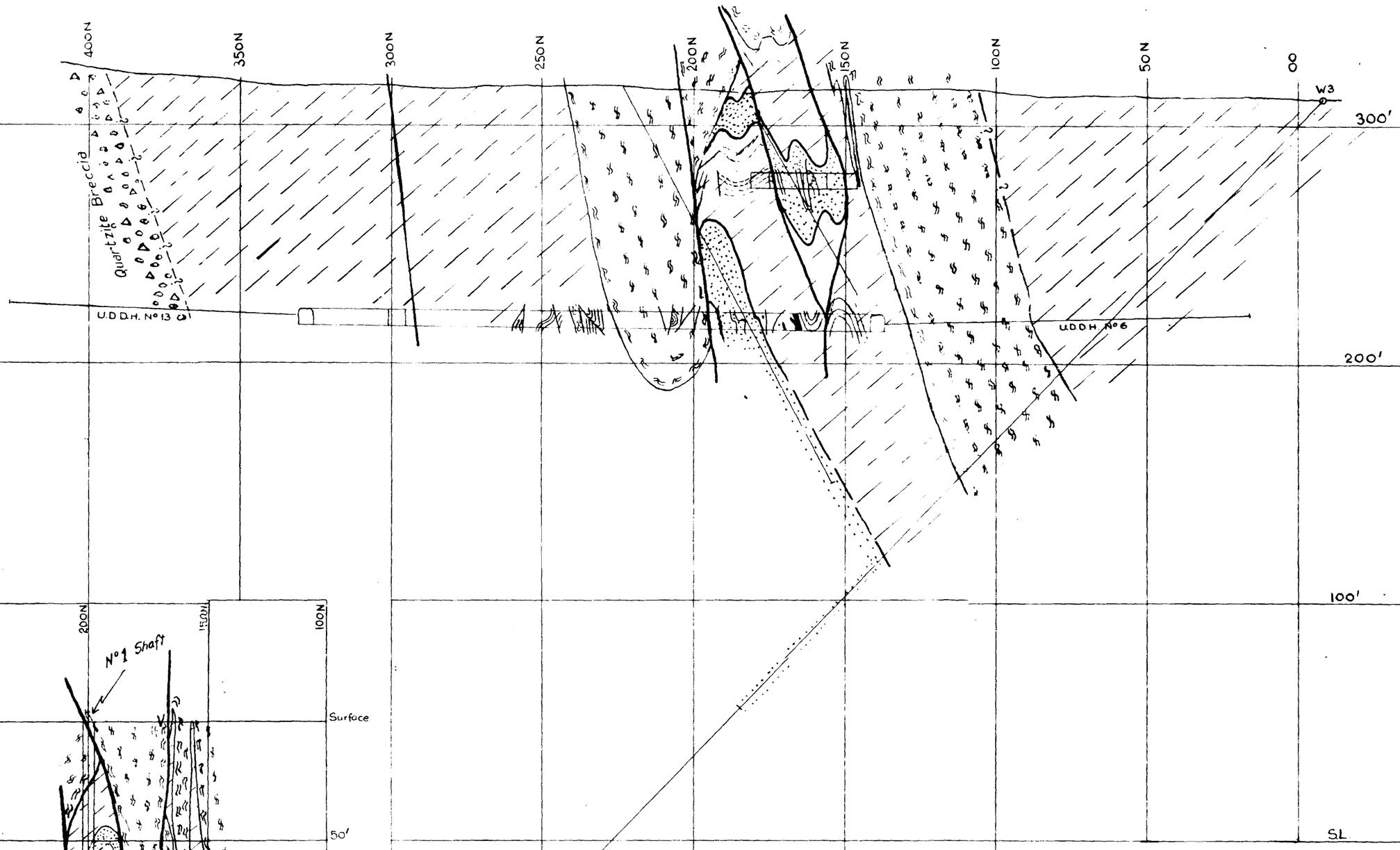
U.D.D.H. No 15

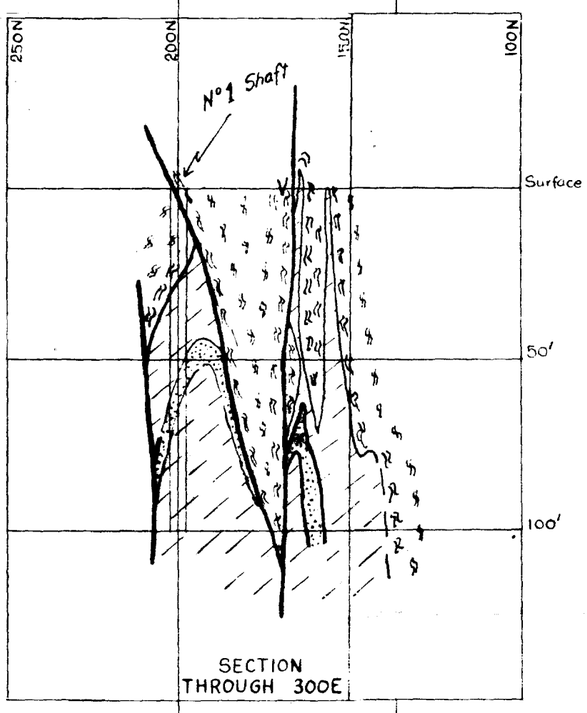
N°1 Shaft

N°4 Shaft

Winze

PLATE 6





SECTION THROUGH 300E

WHITE'S DEPOSIT
RUM JUNGLE N.T.
GEOLOGICAL SECTION ALONG PLANE OF NORTHWEST CROSSCUT

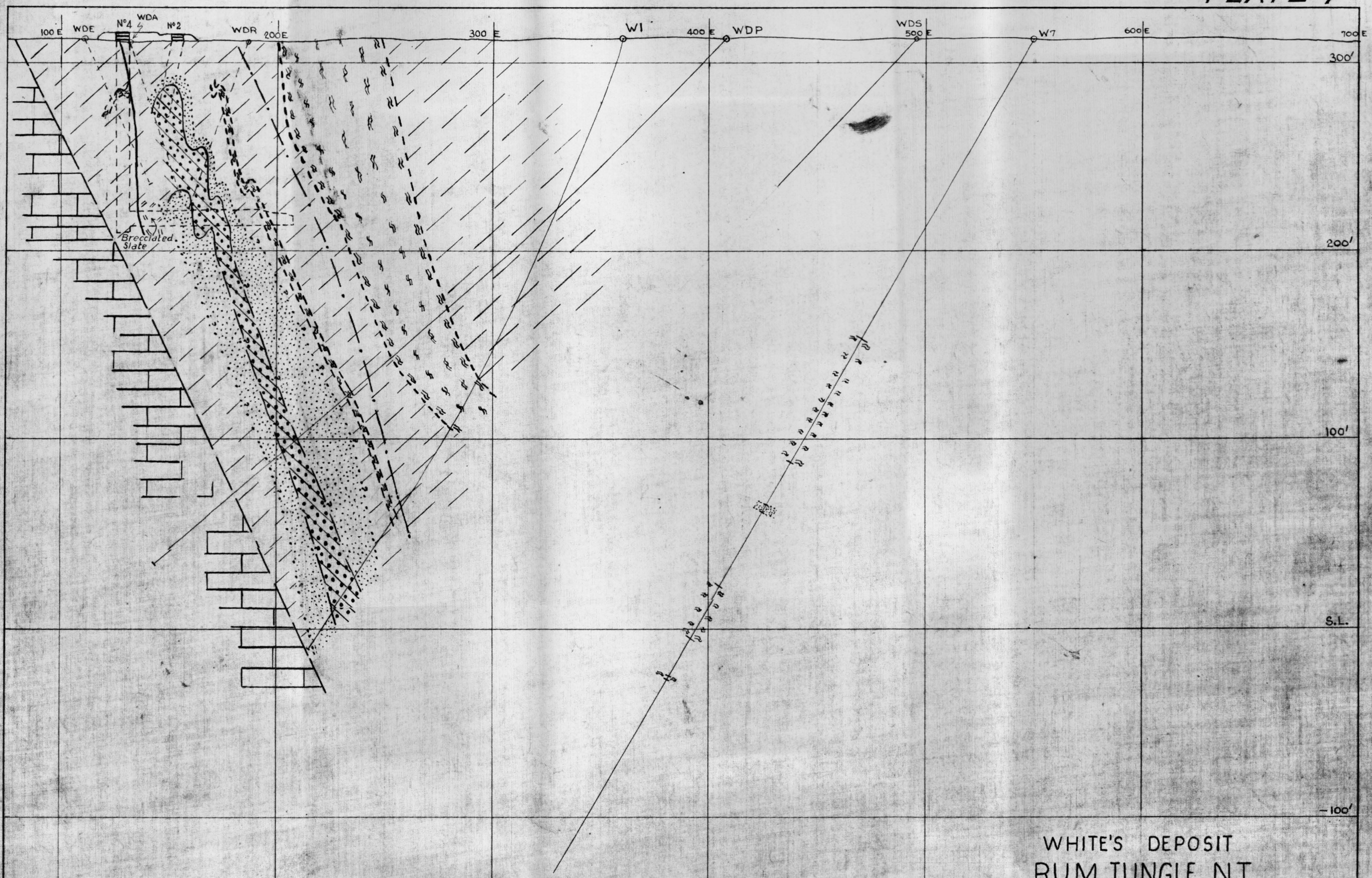
SCALE
20 0 40 80 FEET

by H.J. WARD.

LEGEND

- Chloritic schist
- Graphitic schist and carb. slate
- Geological boundaries
- Faults
- Uranium ore
- Bedding trends
- Faults (possible)

PLATE 7



WHITE'S DEPOSIT
RUM JUNGLE N.T.
GEOLOGICAL SECTION ALONG PLANE OF DRILLHOLES:- WDP., WDS., W1., W7.,

SCALE
20 0 40 80 FEET

by H.J.WARD

LEGEND

- Chloritic schist
- Graphitic schist and carb. slate
- Limestone (impure)
- Geological boundaries
- Boundaries of :- uranium ore
- :- uranium ore assaying > 0·5% U_3O_8
- Approximate hanging wall boundary of copper ore body
- Faults
- Inferred boundaries

053/48
NT 47 C-30