CONTENTS ENVELOPE 1771 . S.M.L. 616

TENEMENT: S.M.L. 616

TENEMENT HOLDER: Nissho-Iwai (Australia) Pty. Ltd.

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FIRST QUARTERLY REPORT

ON

SPECIAL MINING LEASE NO. 616

IN THE UNO AREA

SOUTH AUSTRALIA

December 10, 1971

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INTRODUCTION

Special Mining Lease No.616 was granted for the limited area of 50 square miles in which the distribution of the Corunna conglomerate was recognized within the area of SML 463.

As a result of the exploration work during the past one year, it has been made clear that strong radioactive anomaly is in well spreading throughout the area, but the radioactivity mainly due to thorium. Drilling was carried out in expectation of a high U/Th ratio under the ground water level, but the result did not show distinct increase in the ratio within the depth of 800 feet. However in some drill cores, uranium was found as much as 0.05 per cent U_3O_8.

From these results, it is expected that uranium content would increase and develop as a deposit in the depths. Our working sheme in the new SML are: (1) detailed investigations of geological conditions, (2) drilling beyond the depth of 800 feet, and (3) mineralogical studies of drill cores.

Summary of Activities

The field works of this quarter were carried out by H. Shibayama, senior geologist of the PNC, and his assistants over a period of 30 days from September to October 1971. The works included geologic survey to make clear the condition of radioactive anomaly in the Uno area, and a preliminary investigation for drilling at the most favorable places. In addition, a geologic investigation on the boundary between the red and the grey sandstone members, and a correlative study between the SML 616 and the Corunna (SML 498) area were carried out. The cores obtained by drilling in the Uno area are now under intensive mineralogical study in the laboratory of the PNC of Japan. The result will be dealt with in the next quarterly report.

LOCATION AND PHYSIOGRAPHY

Special Mining Lease No.616 covers an area of approximately 50 square miles situated mainly in Uno Station. The lease is located about 30 miles northwest of Iron Knob.

This area has good accessibility by a main unsealed road from Iron Knob and is 280 miles by road from Adelaide. The road from Adelaide is sealed to Iron Knob.

The Uno Range runs northwest to southeast for a distance of 14 kilometers. This and other blocks of ridges are composed of the Proterozoic Corunna conglomerate. Some of the more resistant rock forms high ridges up to 170 meters above the local plain level. They generally elongate in the direction parallel to the strike of the sediments.

The average rainfall is approximately 9 inches and only saline water is available from bores and dams for sheep grazing.

TENURE

Application for extension of Special Mining Lease on the area was submitted to the Mines Department of South Australia on August , 1971 and S.M.L. 616 was granted for a period of twelve months commencing September 10, 1971.

The area of the Lease is approximately 50 square miles, as outlined in the Figure 1 and described as follows:-

Commencing at a point being the intersection of latitude $32^{\circ}37'$S and longitude $136^{\circ}40'$E, east to longitude $136^{\circ}48'$E, south to latitude $32^{\circ}43'$S, west to longitude $136^{\circ}43'$E, north to latitude $32^{\circ}41'$S, west to longitude $136^{\circ}40'$E, north to the point of commencement.

GEOLOGICAL STUDY IN THE UNO AREA

The rocks distributed in the Uno area are shown in Table 1 (refer to geological map "U 410" in the report on SML 463). The basement rocks exposed in this area include remarkably folded quartzite (Warrow quartzite), schist and gneiss (Hutchison group) which belong to the Cleve metamophics of the Lower Proterozoic and Burkitt granite belonging to the Early Carpentarian. These rocks are distributed outside the Uno basin forming the Uno Range and the eastern hills. On the northwest of Mt. Helen, Warrow quartzite is distributed as low flat-topped hills. Along the north margin of a small lake lying southwest of the Harris Bluff, highly weathered gneiss is exposed. There are outcrops of gneiss, schist and the like on the margin of Lake Gilles. Burkitt granite is distributed only in a narrow region in the northeast of the lease.

Table 1. Table of Stratigraphic Units

Age	Rock unit	Lithology	Stratigraphic relations
Quarternary	Alluvium	Soil, sand gravel, calcrete	Flat lying in flat plain
Tertiary		Silcrete lateritic gravel	Low flat topped in undulating plain
Late Carpentarian	Gawler Range volcanics	Red-brownish porphiritic rhyolite with tuffaceous layers	A flat lying or sheet of extrusives after deposition of Corunna conglomerate*
	Corunna conglomerate	Conglomerate, shale, quartzose ss, tuff, quartzite	Unconformably over-lies Cleve meta-morphics
Early Carpentarian	Burkitt granite	Hornblende granite	Intrudes Cleve metamorphics
Lower Prote-rozoic	Cleve metamorphics	Schist, gneiss, recrystallized quartzite	

Gawler Range volcanics are widely distributed in the north of the lease. The most common rock type is a reddish brown porphyritic rhyolite. Abundant phenocrysts of quartz and feldspar occur in a microcrystalline groundmass of quartz and K-feldspar in the rock. Silcrete of the Tertiary forms small flat-topped hills in various places of the periphery in the lease.

Corunna conglomerate

The sediment which shows radioactive anomaly and becomes the object of our investigation in the area belongs to the Corunna conglomerate of the Late Carpentarian.

The Corunna conglomerate constitutes the Uno range and its eastern hills. It is subdivided as shown in table 2.

Harris Bluff shale

The Harris Bluff shale is exposed on the western scarp of the Uno Range from a little southern point of the Harris Bluff to a place some 1 mile to the north of Water Tank Hill. This shale is softer and more argillaceous than the overlying red sandstone, being less resistance to weathering. It forms steep slopes and is mostly covered with the debris of the red sandstone so as to be partly exposed. The thickness is estimated at 50 m or more.

Table 2. Stratigraphy of the Corunna Conglomerate Formation

Uppermost member	Pink fine sandstone, white coarse sandstone, tuff, tuffaceous shale
Wade sandstone member (30 m)	Red coarse sandstone
Uno shale member (135 m+)	Black shale
Quartzite member (50 m-)	Quartzite, current bedding quartzose sandstone
Grey sandstone member (0-60 m)	Pebble, granule conglomerate, coarse sandstone (current bedding clay gall impression)
~~ Partial unconformity ~~~~~~	
Red sandstone member (20 - 190 m)	Red fine sandstone with white quartz pebble
Harris bluff shale (50 m+)	Pale green shale, silt, fine sandstone

Red sandstone member

This member can be seen on the southwestern slope of the Uno Range and on the eastern hills which form the east limb of the Uno syncline. In the northern part of the Uno Range the red sandstone member is seen in the thickness of some 20 m on the mid-slopes and the quartzite member covers the upper parts, while in the part south of Tank Hill the sandstone member increases in thickness and forms the whole range by itself. The maximum thickness is estimated at 150 m. In the northern part of the Uno Range this member shows steep dip of 40°E to 50°E at a strike of N10°E to N40°W, while in the southern part it shows gentle dip of N15°E to N20°E at a strike of N40°W to N60°W. In the eastern hills the red sandstone member shows steep dip of 90° to 70° and overturn in some parts. It constitutes the hill with wide flat top in combination with the quartzite member.

The red sandstone member is mostly composed of reddish fine-grained sandstone and includes at least three inserted layers of white pebble conglomerate in some parts. The white pebble conglomerate consists of subangular or angular pebbles of white vein quartz, 2 to 5 cm in diameter, and a cementing matter or matrix of red sandstone. The quantity of gravel is higher in the lower conglomerate layers.

In the upper part of this member, ripple marks are often seen, and current bedding is also observed.

Grey sandstone member

In the northern part of the Uno Range, this member is distributed between the underlying red sandstone member and the overlying quartzite member, and forms flat plane along the top of the range. In the part south of Water Tank Hill, where erosion is more developed, grey sandstone is seen in such a form as sticking on the eastern flank of the red sandstone member which makes the ridge. We can see this tendency more remarkably as we go southward, and, for example, on the east of the Harris Bluff grey sandstone is barely seen at the foot of the range.

This is due to the nature of the grey sandstone member which is mainly composed of conglomerate and coarse sandstone, being weaker in resistance to erosion than the quartzite and the red sandstone members. These circumstances can be estimated from the topography around Water Tank Hill. The thickness of this member varies from 40 to 60 m in the Uno Range.

In the eastern hills, the grey sandstone member decreases in thickness, being 20 to 30 m on the south of the road from the Clarke Well to the Webb Dam, 10 m or less in the Webbs Rock, and only 2 to 5 m on Mt. Helen and the hill which lies on the northeast of the big lake. Thus the grey sandstone member is very thin in the eastern limb (especially in the northeastern part).

In the region from the Harris Bluff to Water Tank Hill, there exists basal conglomerate which includes mainly quartz pebbles 2 to 15 cm in diameter and rarely cobbles or boulders of the red sandstone member, while in the region north of Water Tank Hill there is only pebble conglomerate composed of coarse sandstone and pebbles of 2 cm in the maximum diameter. On the basal conglomerate, there is a layer of 20 m or less in thickness, which shows a sedimentary cycle of several tens cm. This layer changes into the overlying quartzite member through a transitional zone which mainly consists of quartzose coarse sandstone with remarkable current bedding and includes a thin seam of pale green silt or clay. Gravels included in the conglomerate are mostly subangular to subrounded quartz pebbles. But cobbles or pebbles from the underlying red sandstone member are rarely observed in it and gravels closely resembling Gawler Range volcanics were obtained by drilling. These volcanics are now under petrographic analysis.

From the investigation on the boundary between the red and the grey sandstone members, it came to light that there were at least some unconformable parts on the boundary. As seen in the region from the Harris Bluff to the Old Tank Hill, grey sandstone covers the surface of the blocks of red sandstone or fills up gaps of the blocks, and grey sandstone with current bedding is sometimes present between red sandstones. In various places it is observed that quartz veins intrude red sandstone but do not enter grey sandstone. In some places of the Uno area, the boundary between the red and the grey sandstone members is remarkably uneven and suggests that there were old gullies in such places. The thickness of the red sandstone member is approximately 140 m in Harris Bluff, while it decreases to some 20 m in the region north of Water Tank Hill. The decrease in thickness of the red sandstone member in the northern part may reasonably be explained by the denudation of the member. The above-mentioned facts show that there is unconformable relation between the red and the grey sandstone members.

Quartzite member

This member is the same in distribution as the underlying grey sandstone member, but it is more resistant to erosion than the latter and forms the tops of hills in the northern part. In the region south of Water Tank Hill, this member is distributed in such a form as sticking on the eastern flank of the Uno Range in the same way as the grey sandstone members. Its exposure is comparatively well in the eastern limb of the Uno syncline.

This member gradually changes into the underlying grey sandstone member through a transitional quartzose sandstone zone which shows especially remarkable current bedding. The quartzite member is mainly composed of massive white quartzite and shows an alternation of white quartzite and quartzose sandstone in some parts.

Uno shale member

This member is seen in the wells around the Uno homestead, in the Clarke Well, on the west margin of the big lake, and at the point 200 m east to the Wade Dam in the north of the Wade Hill.

It is composed of black shale and laminated in general. In diamond drill hole Au-U-5, some massive black shale was observed.

Our drilling in this member has reached 130 m deep, but the thickness is estimated at some 300 m. A considerable amount of fine-grained pyrite was found not only in drill cores but also in the black shale obtained from the wall of each well.

Wade red sandstone member

This member forms steep slopes on the Wade Hill, one of the eastern hills, and on a small hill which lies west of the Webb Rocks. It sometimes appears from under the silcrete of the Tertiary.

On the Wade Hill, the member shows gentle dip of 10° to 15° to NE in general, while on the eastern limb it shows dip of 45° to 60°NW at a strike of S50°W.

The rock is composed of white coarse-grained sandstone and reddish sandstone.

Uppermost member

This member is exposed on the hill which runs in the direction of NW-SE on the east of the Wade hill and on the small hill which lies on the west of the Webb rocks.

This member constitutes the uppermost part of the Corunna conglomerate, and its erosion is so remarkable that the upper part of the member remains only in some places. In the western limb of the Uno syncline, the member is comparatively good in the continuation of exposure, but in the western limb it is covered with the silcrete of the Tertiary, being rarely exposed. The rock is composed of tuff, tuffaceous shale, white coarse-grained sandstone and red to pink fine-grained sandstone.

RADIOACTIVE ANOMALY IN THE CORUNNA CONGLOMERATE

Radioactive anomaly is detected in the grey sandstone member of the Corunna conglomerate as previously reported (Refer to the 1st-4th Quarterly Reports on SML No.463).

In detail, this anomaly exists as more than four bedded anomaleous zones in a layer about 20 m in thickness. The lowest zone lies at 2 or 3 m above the boundary between the grey and the red sandstone members. The surface observation is supported by the result of drilling. These radioactive anomalous zones are mostly composed of pebble conglomerate, and coarser-grained conglomerate and finer-grained sandstone are not remarkable in radioactive anomaly. Among the four anomalous zones, the upper two are higher in radioactivity than the others. They always show more intense radioactivity than 0.1 to 0.2 mr/hr in the outcrops.

FURTHER EXPLORATION PROGRAMME

Our further exploration programmes in this area are: (1) extensive mineralogical studies of the core samples collected by drilling less than 800 feet in depth, and (2) further drilling deeper than 800 feet with the intention of carrying out chemical analysis and mineralogical investigation of the drill cores.

SECOND QUARTERLY REPORT

O N

SPECIAL MINING LEASE NO. 616

IN THE UNO AREA

SOUTH AUSTRALIA

MARCH 10, 1972

<u>C O N T E N T</u>

I. Introduction

In the second quarter of S.M.L. 616, no field work was executed. Instead, mineralogical and petrographic studies were made on the core samples obtained from drilling work, 5 holes, approx. 2700 ft. in total, which was conducted in May, 1971.

II. Mineralogical Research on Drilled Core Samples

Given hereunder are a brief report on the results of microscopic examination made on the samples collected by a geologist of the Geological Survey of Japan when he visited the field of work in August, 1971.

The results of mineralogical research on the drill cores obtained in the work in May, 1971 which we had asked the laboratory, P.N.C., Japan to perform, are also mentioned briefly.

A. Summary of the comment of the geologist of Geological Survey of Japan

(1) Harris Bluff shale member (Lowermost member of Corunna conglomerate in Uno area)

Fine sandstone, not well sorted, which is composed mainly of sericite needles with feldspar and opaque minerals in a little quantity.

(2) Red sandstone member

Composed mostly of quartz grain, but includes a very little quantity of sericite, plagioclase and opaque minerals.

Part of quartz is regarded authigenic. Hematite film is filled between grains.

(3) Grey sandstone member   UL. 22

(3)-1 Pebble conglomerate of No.1 outcrop

Left unsorted. Quantity of protoclastic quartz is predominated than that of vein quartz. Matrix is angular quartz with sericitized feldspar.

(3)-2 Granule sandstone of outcrop No.1

Quartz grain predominates in quantity. Perthitic orthoclase is included to some extent.

The ratio of composition is as follows:

Quartz 78.9%, K. feld. 10.0%, lithic fragments (schist) 1.5%, matrix (sericite) 9.6%.

According to the classification of rocks (Okada, 1971), this corresponds to arenite.

(3)-3 Drill core sample Au-U-3-42 (395.3 ft)

Yellowish green colored fine sandstone. With rounded quartz and feldspar, it is composed of as follows:

Quartz 48.3%, potash feldspar 20.1%, lithic fragments 0.3% and matrix (sericite). This corresponds to feldspathic wacke according to Okada (1971).

The yellowish green color of this core sample is likely due to well crystallized sericite in matrix.

(3)-4 Drill core sample Au-U-3-89-90 (424.0 ft)

Pebble conglomerate.

The sample contains 0.05% of U_3O_8 after the analysis by AMDL and PNC.

Mainly composed of rounded quartz with a little quantity of rock fragments (quartzite, latite, and chert) and potash feldspar.

They constitute of quartz 82%, lithic fragments 5.9%, K. feld. 2.2% and matrix (mostly sericite, partly biotite) 9.9%. Pyrite is found in a sizable quantity. This corresponds to quartzose arenite according to Okada (1971).

(4) Burkitt granite

Sample location: Map grid reference 505964 on map sheet of Port Augusta (1 : 250,000)

Granitic texture with constituents of potash feldspar, plagioclase, quartz, hornblende.

Components of potash feldspar are perthite, orthoclase and microcline as given in the order of quantity. Plagioclase is a relatively small crystal and of replacement type. Rock name is biotite bearing hornblende quartz syenite.

(5) Gawler range volcanics

Sample location: Map grid reference 472967 on Port Augusta

Plagioclase is found more in phenocryst than potash feldspar, and matrix is of granophyric texture.

This corresponds to the altered quartz latite.

The opinion and future prospecting measure of the geologist of G.S. Japan are that foliated granite matters and mica schist can be considered as the source of Corunna conglomerate, that rocks having an origin of radioactive anomaly are accompanied with a sizable quantity of potash feldspar, that potash feldspar is not found in less radioactive red ss. member and Harris Bluff shale, that pretty large amount of pyrite is found at places where uranium content is high, and therefore the future guiding principle of prospecting should be directed to the discovery of places where pyrite or potash feldspar is accumulated.

B. The results of mineralogical research for which we had requested laboratory, P.N.C., Japan, are nearly coincide to what was mentioned in the second quarterly report, S.M.L. 463.

Radioluxograph and autoradiograph of 24 samples of comparatively high-radioactive drilled cores revealed that radioactivity is observed at the interstitial part of grains. Then samples were clushed for X-ray diffraction and heavy minerals were separated by means of heavy liquid.

Investigation by X-ray diffraction revealed that they are composed of minerals as shown in the following table.

TABLE I

Sample No.	M i n e r a l s							
AU-U-1-135	Qz.	Sid.	Py.	Zr.	Ana.			
" -"-1-191	Qz.	Zr.	Ana.	Py.				
" -"-1-205	Qz.	Sid.	Py.	Ana.				
" -"-2-166	Qz.	Py.	Ana.	Chl.				
" -"-2-177	Qz.	Chl.	Ana.	Sid.	Zr.			
" -"-2-184	Qz.	Chl.	Ana.	Ut.	Sid.			
" -"-2-199	Qz.	Ana.	Chl.	Ut.	Py.	Seri.		
" -"-3- 25	Qz.	Seri.	Zr.	Ana.				
" -"-3- 46	Qz.	Zr.	Seri.	Ana.	Ru.			
" -"-3- 67	Qz.	Zr.	Py.	Ru.				
" -"-3-131	Qz.	Py.						
" -"-4- 58	Qz.	Sid.	Zr.					
" -"-4- 68	Qz.	Py.	Zr.	Ana.				
" -"-4- 98	Qz.	Sid.	Ana.					
" -"-4-123	Qz.	Seri.	Sid.	Ana.	Zr.			
" -"-5- 41	Qz.	Chl.	Seri.	Zr.	Ana.	Py.		
" -"-5- 51	Qz.	Seri.	Chl.	Zr.	Ana.			
" -"-5- 54	Qz.	Chl.	Ru.	Ut.	Ana.	Zr.	Hem.	Seri.
" -"-5- 56	Qz.	Chl.	Ut.					
" -"-5- 64	Qz.	Chl.	Seri.	Ana.	Py.	Zr.	Ut.	
" -"-5- 95	Qz.	Chl.	Ana.	Hem.	Ut.			
" -"-5- 97	Qz.	Chl.	Ana.	Ut.				
" -"-5-138	Qz.	Seri.	Chl.	Ana.	Zr.			
3-89-90	Qz.	Seri.	Zr.	Ana.	Mona.	Py.		

Qz; quartz, Chl; chlorite, Seri; sericite, Sid; siderite
Py; pyrite, Hem; hematite, Ana; anatase, Ru; rutile
Zr; zircon, Mona; monazite, Ut; uranothorite,

III. Exploration Programme of Next Quarter

In the third quarter, test drilling will be executed to check the possibility of uranium mineralization at lower parts which are considered most favourable from the results of the test drilling done as well as mineralogical investigation.

Reference

H. Okada (1971) Classification of sandstones: Analysis and proposal. Jour. Geol., 79. (4)

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THIRD QUARTERLY REPORT

O N

SPECIAL MINING LEASE NO. 616

IN THE UNO AREA,

SOUTH AUSTRALIA

Nissho-Iwai Co. (Australia) Pty. Ltd.,
499 Bourke Street,
MELBOURNE. VIC. 3000.

JUNE 10, 1972

<u>C O N T E N T S</u>

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1. SUMMARY OF EXPLORATION

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The mineralogical research on drilled core samples obtained from the five drills totalling about 2,700 feet was executed on the second quarter for this lease, the result of which was utilized for mineralogical and lithological analyses of uranium mineralization in this field.

Based on the previous exploration data, including the above result, it is planned to continue drilling works in the third and fourth quarter to confirm the feature of uranium mineralization occurring some 800 feet or more in depth within the lease. A preliminary field examination to select the drilling sites started on May 10 by Mr. H. Shibayama, senior geologist of P.N.C., and his assistant, and the site was set as shown in the attached figure. The drilling footage is expected as much as 1,200 feet.

The drilling work being conducted by the Longyear (Aust.), Pty. Ltd. began on June 5, and expected to complete by the end of June. At the end of the work, the drill hole will be logged radiometrically and the core samples will be submitted for lithological, mineralogical and radiometric examination, of which radioactive (anomalous) parts will be chemically analyzed. These results are considered as the data for evaluating the ore deposit in this lease.

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FINAL REPORT

ON

SPECIAL MINING LEASE NO. 616

IN THE UNO AREA

SOUTH AUSTRALIA

NISSHO-IWAI CO. (AUSTRALIA) PTY. LTD.

499 BOURKE STREET,

MELBOURNE.

SEPTEMBER 10, 1972

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CONCLUSIONS

The Nissho-Iwai Co. Aust. Pty. Ltd. has carried out an exploration for uranium under the supervision of geologists of the Nuclear Fuel Development Corporation, Japan, since September, 1969 in the Uno area, South Australia. From synthetic investigations of the data obtained during the two years, it has been confirmed that grey sandstone in the Corunna Conglomerate Formation of the Proterozoic age is radioactive throughout the whole area of the Uno syncline. But the grey sandstone member is homogenous in petrological and mineralogical features, and it is hardly supposed that there exist channels or paleostreams occurring uranium ore deposits. Accordingly, it is concluded that there is little chance for finding workable uranium ore deposits in the Uno area even in the central part of the syncline. Of this judgement, the area is not regarded as worthy of investment in exploration. We decided to close the exploration work in the area.

SUMMARY OF ACTIVITIES IN THE FOURTH QUARTERLY PERIOD

The main works carried out in the fourth quarterly period were diamond drilling and drill core analysis of them as described in the third quarterly report.

In the middle of June, radiometric surveys along roads in the lease were done using a McPhar AV-4 model carborne spectrometer made by McPhar Geophysics Co.

DIAMOND DRILLING

No workable uranium ore deposit could be found in shallow parts of the Uno syncline by diamond drilling carried out in SML 463 in May, 1971.

In this year, drilling was done, as AU-U-No.6, at 0.4 km southwest (along the fence) of the Wades Dam, which is located 4.5 km southeast of Uno Homestead, expected to find some enrichment of uranium at depth of the Uno syncline. The drilling site was selected close to the central part of the syncline as far as possible and also close to water supply for drilling, but outside the prohibited area for mining in the Mining Act recently enforced. The drilling was operated by the Longyear Australian Pty. Ltd. The radioactive horizone was located in a deeper place ever expected (1,200 feet), that is in a depth of 1,467 feet (447·14 m). The drilling was done up to a depth of 1,470 feet (448 m).

The details of stratigraphy in AU-U-No.6 are shown in Appendix I.

As compared with the northern area of the Uno syncline, where drilling had done last year, in the Uno shale member the ratio of black shale is small and light gray to dark green fine-grained sandstone facies are dominating. The underlying members below the black shale (Uno shale member) are almost the same as those observed by drilling last year. But quartzite member is composed of finer grains as compared with that observed in the northern part of the lease. Patches, seams and films of pyrite were found in various places through the black shale member and quartzite member but not in the grey sandstone member.

The conglomerate of the grey sandstone member consists of cyclothem of 20 - 30 cm in thickness as hitherto known, and radioactivity is remarkable in the coarse-grained part, that is, pebble conglomerate of the cycle.

Pebbles of the pebble conglomerate mostly consists of vein quartz, though they are rarely found in a form similar to Gawler Range volcanics.

LOGGING AND ANALYSIS

Logging

Only a part of the radiometric logging could be carried out because of a trouble in the hole. The cores obtained were tested with a portable scintillometer, but any radioactive anomaly could not be detected in them except the pebble conglomerate member.

Sampling & Analysis of Core Samples

Radioactive anomaly was detected with a scintillometer in the cores obtained from a depth of 217 to 1,470 feet. Average core samples were collected from a depth of 1,348 to 1,470 feet by taking 1 sample per 1 foot. Among them, the upper 30 samples from a depth of 1,348 to 1,377 feet were analyzed by paper chromatographic method at the site, while the deeper 90 samples were analyzed in the Australian Mineral Development Laboratories (AMDEL).

The assay results are shown in Appendix II. From these data, it is clear that in AU-U-No.6 most of the radioactive anomaly also due to thorium and uranium is not detected. The maximum contents of thorium showing 820 ppm in concentration was detected in a depth of 1384 - 1391 feet, while uranium was detected in only two samples in a depth of 1390 - 1391 and 1424 - 1425 feet, showing 30 ppm. And both thorium and uranium were much lower in quality here as compared with the northern part of the syncline and the outcrops.

FURTHER EXPLORATION PROGRAMME

The Nissho-Iwai Co. (Aust.) Pty. Ltd. has carried out uranium exploration for two years under the supervision of geologists of P.N.C. in the Uno area. From synthetic investigations of the data obtained, it has been concluded that there is little chance for finding uranium deposits of economical value in the Special Mining Lease. Accordingly, the area was not regarded as worthy of investment in exploration. It has been, therefore, decided to finish the exploration work in the area.

NISSHO IWAI CO. (AUSTRALIA) PTY LTD

Appendix I. Geology of Column in Hole Au-U-6

Depth (feet)	Rock
0 - 219	Grey sandstone (noncoring)
219 - 256	Black shale thin medium sandstone bearing
256 - 293	Alternation of black shale & medium-fine sand-stone pyrite recognized in cracks
293 - 296	Granule sandstone
296 - 390.6	Black shale thin medium sandstone bearing gypsum 352.2 pyrite films 370-380
390.6 - 450.6	Alternation of shale & quartz sandstone shale : silicified in parts
450.6 - 460.6	Black shale clacite & pyrite
460.6 - 501.6	Mainly quartz sandstone pale-dark green sand-stone massive
501.6 - 556.6	Alternation of shale & sandstone laminated
556.6 - 644	Laminated fine sandstone green-pale green mainly quartz sandstone
644 - 698	Alternation of shale & sandstone shale rich grey-black shale & mainly quartz sandstone : felsic sandstone in part
698 - 732	Quartz sandstone 711,745.6' pyrite films in black shale
732 - 798	Massive grey sandstone (fine)
798 - 1002.6	Black shale lamination nearly flat, pale green soft siltstone-claystone bearing in lower parts pyrite recognized in many place
1002.6 - 1048	Alternation of shale & quartz sandstone 1032 pyrite film 1 m/m 1037 pyrite patch 10 m/m
1048 - 1161	Black shale 1068 pyrite film 3 m/m 1059 20 m/m

Depth (feet)	Rock
1161 - 1193	Alternation of quartz sandstone & shale sandstone rich pyrite grain in upper parts
1193 - 1298	Iron stained in parts white quartzite pale green clay interbeded
1298 - 1328	Iron stained quartz sandstone
1328 - 1368	White quartzite pale green siltstone interbeded
1368 - 1462.8	Iron stained pebble-granule conglomerate cycle of sedimentation from conglomerate to medium-fine sandstone (pale green sandstone) units of sedimentation 1-2' upper parts 2-3 feets in middle 1447.6' - 1462.1 basal conglomerate 3 cm dia. in max.
1462.8 - 1470.0	Red sandstone fine cross laminated
	Hole ended 1470.0 feet

Appendix II. Assay Results of Core from Hole Au-U-6

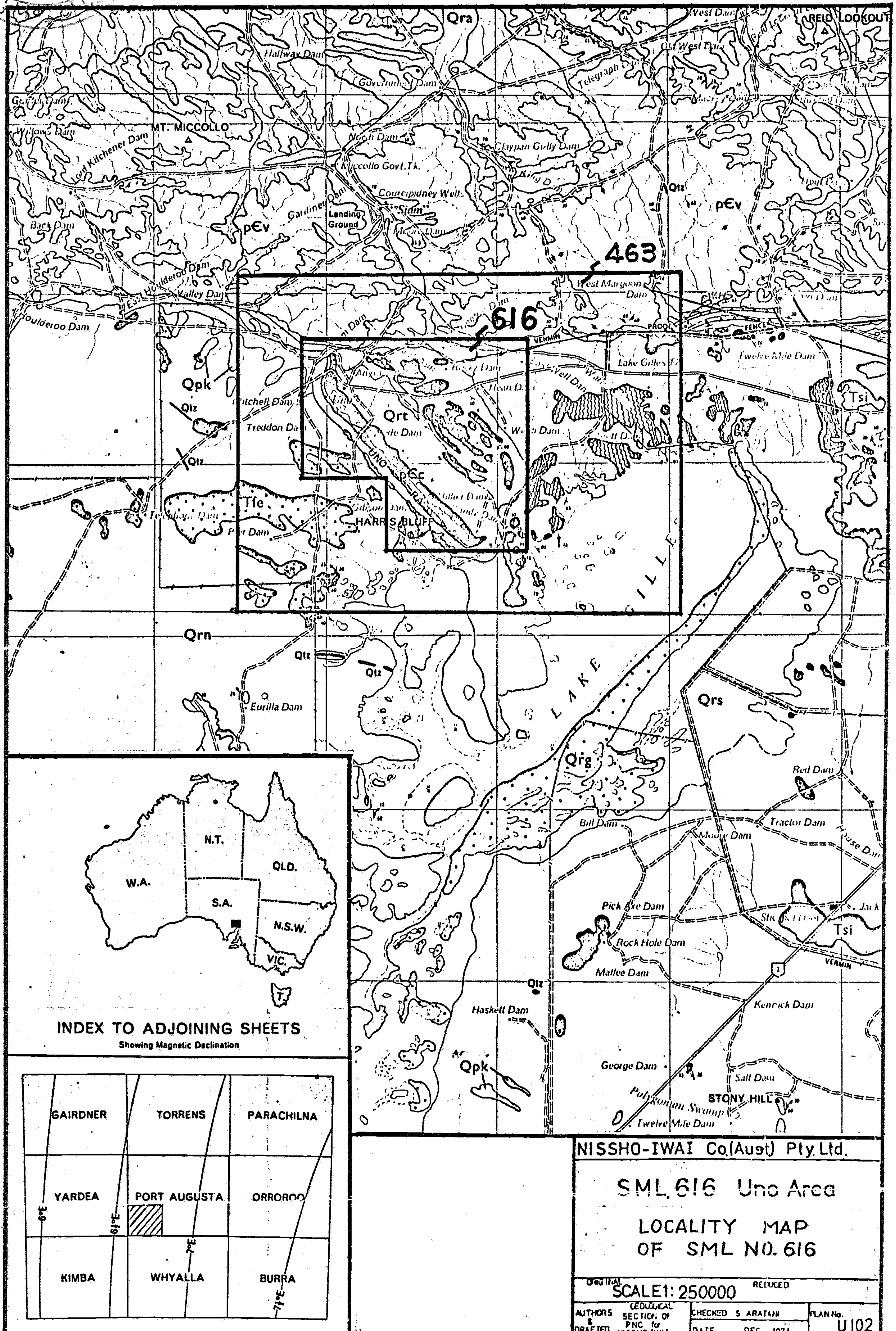
Sample No.	Depth (feet)	Rock	Radioactivity ($\mu r/h$)	Analytical Result U_3O_8	ThO_2
U-6- 1	1348'-1349'	sandstone	6.5		
2	1349'-1350'	"	7.0		
3	1350'-1351'	"	7.5		
4	1351'-1352'	"	7.0		
5	1352'-1353'	"	6.5		
6	1353'-1354'	"	7.5		
7	1354'-1355'	"	6.5		
8	1355'-1356'	"	6.0		
9	1356'-1357'	"	6.0		
10	1357'-1358'	"	6.5		
11	1358'-1359'	"	6.5		
12	1359'-1360'	"	7.0		
13	1360'-1361'	"	7.0		
14	1361'-1362'	"	6.0		
15	1362'-1363'	"	6.5		
16	1363'-1364'	"	6.5		
17	1364'-1365'	"	7.0		
18	1365'-1366'	"	6.5		
19	1366'-1367'	"	7.0		
20	1367'-1368'	"	7.0		
21	1368'-1369'	"	7.0		
22	1369'-1370'	"	7.5		
23	1370'-1371'	"	7.5		
24	1371'-1372'	"	8.0		
25	1372'-1373	"	7.0		

Sample No.	Depth (feet)	Rock	Radioactivity (μr/h)	Analytical Result U_3O_8	ThO_2
U-6-26	1373'-1374'	sandstone	7.5		
27	1374'-1375'	granule sandstone	9.0		
28	1375'-1376'	sandstone	8.0		
29	1376'-1377'	"	8.5		
30	1377'-1378'	granule sandstone	1.3		
31	1378'-1379'	sandstone	8.5	10	130
32	1379'-1380'	"	7.0	5	30
33	1380'-1381'	"	8.0	5	30
34	1381'-1382'	"	8.0	5	40
35	1382'-1383'	pebble	10.0	10	170
36	1383'-1384'	granule	1.0	10	240
37	1384'-1385'	"	1.5	25	820
38	1385'-1386'	pebble	1.0	15	250
39	1386'-1387'	sandstone	7.5	5	20
40	1387'-1388'	granule	8.0	10	95
41	1388'-1389'	conglomerate, sandstone	7.5	10	80
42	1389'-1390'	sandstone	1.0	15	180
43	1390'-1391'	granule	20.0	30	680
44	1391'-1392'	sandstone	8.0	5	20
45	1392'-1393'	"	7.5	10	35
46	1393'-1394'	"	8.0	5	60
47	1394'-1395'	"	8.0	5	80
48	1395'-1396'	"	8.0	5	110
49	1396'-1397'	"	7.5	5	120
U-6-50	1397'-1398'	"	8.5	10	90

Sample No.	Depth (feet)	Rock	Radioactivity (μr/h)	Analytical Result U_3O_8	ThO_2
U-6-51	1398'-1399'	granule sandstone	8.0	5	130
52	1399'-1400'	sandstone	9.0	5	140
53	1400'-1401'	granule sandstone	11.0	15	210
54	1401'-1402'	sandstone	13.0	15	370
55	1402'-1403'	granule sandstone	10.0	10	150
56	1403'-1404'	sandstone	8.0	5	100
57	1404'-1405'	granule sandstone	13.0	20	370
58	1405'-1406'	sandstone	14.0	20	350
59	1406'-1407'	"	13.0	15	300
U-6-60	1407'-1408'	granule	12.0	15	400
61	1408'-1409'	granule sandstone	7.0	5	60
62	1409'-1410'	"	9.5	5	180
63	1410'-1411'	"	9.0	5	110
64	1411'-1412'	"	6.0	5	25
65	1412'-1413'	"	6.5	5	25
66	1413'-1414'	"	10.5	5	180
67	1414'-1415'	sandstone	8.0	5	60
68	1415'-1416'	granule sandstone	10.0	5	180
69	1416'-1417'	"	9.0	5	130
U-6-70	1417'-1418'	sandstone	8.0	5	90
71	1418'-1419'	"	8.5	5	120
72	1419'-1420'	"	7.5	5	45
73	1420'-1421'	"	13.0	10	400
74	1421'-1422'	granule sandstone	10.5	5	220

Sample No.	Depth (feet)	Rock	Radioactivity (μr/h)	Analytical Result U_3O_8	ThO_2
U-6-75	1422'-1423'	sandstone	18.5	20	510
76	1423'-1424'	"	21.5	30	640
77	1424'-1425'	"	11.0	10	200
78	1425'-1426'	"	8.5	10	130
79	1426'-1427'	granule sandstone	13.0	10	270
U-6-80	1427'-1428'	"	8.5	5	120
81	1428'-1429'	sandstone	7.0	5	35
82	1429'-1430'	granule sandstone	8.0	5	60
83	1430'-1431'	"	10.5	5	100
84	1431'-1432'	sandstone	10.0	5	120
85	1432'-1433'	"	8.0	5	40
86	1433'-1434'	"	7.5	5	25
87	1434'-1435'	granule sandstone	9.0	5	55
88	1435'-1436'	"	12.0	5	210
89	1436'-1437'	"	8.5	5	140
U-6-90	1437'-1438'	"	7.0	5	60
91	1438'-1439'	"	7.0	5	90
92	1439'-1440'	sandstone	7.5	5	20
93	1440'-1441'	"	7.0	5	25
94	1441'-1442'	"	8.0	5	100
95	1442'-1443'	"	6.5	5	30
96	1443'-1444'	"	6.5	5	15
97	1444'-1445'	"	8.0	5	50
98	1445'-1446'	"	7.0	5	40
99	1446'-1447'	"	8.0	5	75
U-6-100	1447'-1448'	granule	8.5	5	70

Sample No.	Depth (feet)	Rock	Radioactivity ($\mu r/h$)	Analytical Result U_3O_8	ThO_2
U-6-101	1448'-1449'	granule	8.0	5	30
102	1449'-1450'	pebble	9.0	5	40
103	1450'-1451'	gravel	9.0	10	140
104	1451'-1452'	"	8.0	5	85
105	1452'-1453'	"	8.0	5	30
106	1453'-1454'	"	7.0	5	25
107	1454'-1455'	"	7.0	5	25
108	1455'-1456'	"	6.5	5	20
109	1456'-1457'	"	8.0	5	45
U-6-110	1457'-1458'	"	7.0	10	25
111	1458'-1459'	"	7.0	5	55
112	1459'-1460'	"	8.0	5	35
113	1460'-1461'	"	7.0	5	65
114	1461'-1462'	"	7.0	5	20
115	1462'-1462.10	"	8.0	5	15
116	1462.10-1463'	red sandstone	6.5	5	14
117	1463'-1464'	"	7.5	5	10
118	1464'-1465'	"	7.5	5	10
119	1465'-1466'	"	6.5	5	10
U-6-120	1466'-1467'	"	6.5	5	15



NISSHO-IWAI Co.(Aust) Pty. Ltd.

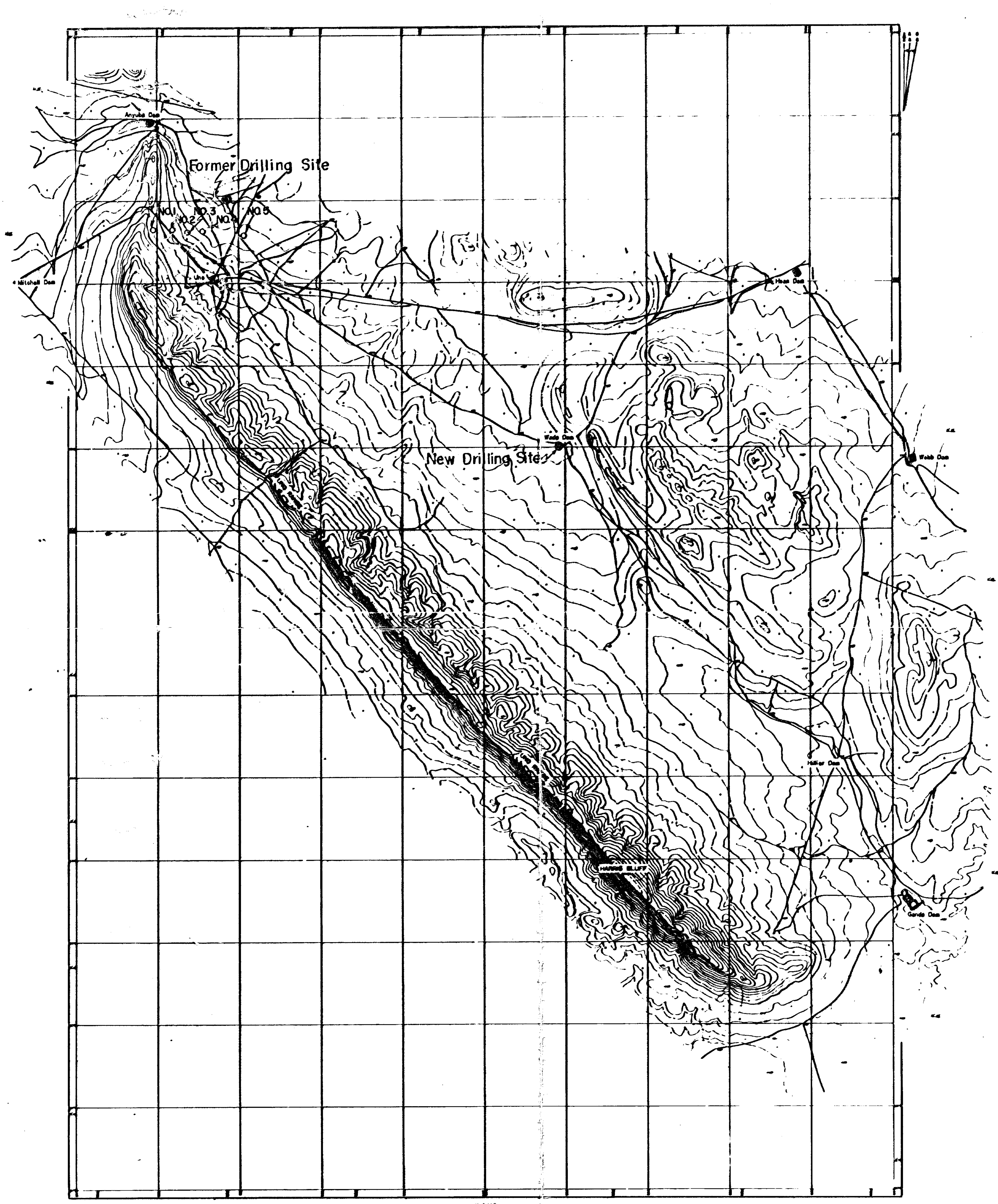
SML 616 Uno Area

LOCALITY MAP OF SML NO. 616

ORIGINAL SCALE 1: 250000	REDUCED		
AUTHORS & DRAFTED: GEOLOGICAL SECTION OF PNC for NISSHO-IWAI	CHECKED S. ARATANI	DATE DEC 1971	PLAN No. U102

FIG. 1

Map Showing Drilling Site in Uno Area



NISSHO-IWAI Co.(Aust.)Pty. Ltd.			
SML. 616 Uno Area			
MAP SHOWING DRILLING SITE			
AUTHORS DRAFT	GEOLOGICAL SECTION of PNC for NISSHO-IWAI	CHECKED S.ARATANI DATE May 1972	PLAN No. U 607