

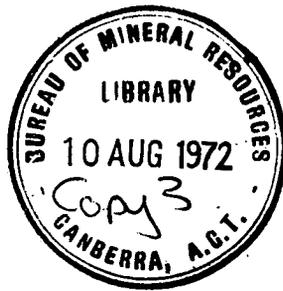
1956/13

COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

RECORDS:

1956/13



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1956/13

REPORT ON AN INSPECTION OF THE ADELAIDE
RIVER URANIUM MINE, NORTHERN TERRITORY.

MINERAL RESOURCES
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Ref....by J. H. Lord.

This mine was inspected at the end of September, 1955, and a report of its operations was included in "Radioactive Investigations in the Northern Territory, Report for Quarter ending 30th September, 1955.", prepared by the writer. Since that date, steady progress has been made with development of the mine and in the search for new lodes. This report includes all operations at the mine, until the end of January, 1956.

During this period a parcel of ore (No. 2), which was in the process of being delivered to Rum Jungle at the time of the last report, was completed and two additional parcels of ore (No. 3 and 4) were delivered. Details of all ore delivered are as follows:-

No. 1 parcel	404	long tons	assayed 0.396% e U ₃ O ₈
No. 2 parcel	517	" "	" 0.6085% "
No. 3 parcel	217	" "	" 1.52% "
No. 4 parcel	214	" " (wet)	not available.

The No. 4 parcel should assay nearly 1% U₃O₈.

DEVELOPMENT

At present, the mine has 19 employees, working one shift per day. There are three underground machine crews. One crew is engaged in leading stoping on the No. 1 level, the second crew in driving on the No. 2 level of the No. 5 shaft, while the remaining crew is deepening No. 1 inclined shaft. (see Plate I for positions).

No. 5 Shaft

No. 1 Level.

Approximately 110 feet of driving along the shear was done on this level, during the early exploration of the Black lode. A rise and a leading stope are now being taken out.

No. 1 Sub-Level.

Approximately 157 feet of driving and cross-cutting have been done on this sub-level, off the southern end of No. 2 stope. A rise has been commenced from this sub-level.

No. 2 Level.

Approximately 200 feet of driving has been completed on this level. Recently, the south drive has been continued and a leading stope was taken out over the southern 50 feet. A winze has been commenced below the leading stope.

No. 1 Inclined Shaft.

This shaft, which is being deepened in search of the White lode, has reached an inclined depth of 270 feet. At the No. 1 level (204 feet inclined depth), 140 feet of driving and cross-cutting were done in search of the White lode.

Drilling.

Since September, diamond drill hole No. 12 has been completed to a depth of 393 feet and diamond drill hole No. 13 was down to a depth of 90 feet, at the end of January.

During the same period, eighteen waggon drill holes were sunk between diamond drill hole No. 11 and the fault to the north, as shown on Plate I.

GEOLOGY.

Black Lode

Recent underground development has lengthened the ore body. Originally, it appeared that the quartz-filled shear, which carries the primary pitchblende mineralisation, passed from the quartz-greywacke or sandstone into the shale, where it became less marked and the mineralisation decreased rapidly. The driving of the No. 1 sub-level (see Plate I) however, shows that the shearing tends to divert along the contact between the sandstone and shale, before striking into the shale. When the shear enters the shale it is weak, but it contains pitchblende, which with the quartz filling has penetrated the fractures in the shales. As a result the mining width has become irregular, but greatly increased to a maximum of 18 feet. The values are erratic but high.

This new feature suggests that development of No. 1 and No. 2 levels to the south may find similar high-grade pitchblende mineralisation. This work has commenced on the No. 2 level and has encountered mineralisation within the shales.

White Lode

Although this lode does not show on the surface plan (Plate I) near the mine, it is thought to occur between the Black and Brown lodes. There was an indication of its existence in diamond drill hole No. 11. Diamond drill hole No. 12, which was completed recently, encountered a mineralised zone with pitchblende. Radiometric probing showed an approximate $e U_{308}$ content of 0.36% between 378 and 382 feet (see Plate II).

Diamond drill hole No. 13 (see Plate I) is now being drilled to intersect this lode at a greater depth and further to the south.

The No. 1 inclined shaft is being deepened to locate this lode. At an inclined depth of 204 feet cross-cutting and driving of a total length of 140 feet failed to locate it. A weak easterly dipping shear, which was found, showed only very weak radioactivity.

The shaft is being deepened further in an endeavour to locate the drill intersection.

Other Lodes.

In the search for other lodes, a programme of waggon drilling was carried out between diamond drill hole No. 11 and the eastern end of the fault to the north (see Plate I), with the object of testing the various small radiometric highs in the area. However, eighteen holes, some to a depth of 120 feet, failed to locate any radioactivity worthy of further investigation.

ORE RESERVES.

The ore, which has been treated since the last report on the ore reserves at this mine, (see "Radioactive Investigations for the Northern Territory, Report for the Quarter ending 30th September, 1955.", Appendix I) has been considerably richer in grade than was estimated. It was observed in that report, that there was a lack of systematic channel sampling in the earlier working, and since the grade was erratic, the results would depend on the diligence of the management in mining, but it was emphasised that "a minimum overall grade of 0.3% e U₃O₈" was "undoubtedly conservative".

The present management is sampling systematically, as development work progresses, although some of the earlier workings have not yet been re-sampled. As a result of this and with the encountering of high values in recent development work, it is possible to raise the grade of the ore reserves.

The grade can still be regarded as conservative, because of the erratic nature of the values and the dependence on the competence of the management to control the extraction of the ore on this difficult lode.

Unbroken Ore Reserves

Proven	2,100 tons	@	0.5%	e U ₃ O ₈
Probable	600 tons	@	0.5%	"
Possible	2,000 tons	@	0.3%	"

Broken Ore Reserves

No. 2 Stope	300 tons			
No. 1 & No. 2 leading stopes	100 "			
	<hr/>			
Total	400 "	@	0.7%	e U ₃ O ₈ .

CONCLUSIONS

The most significant development at the Adelaide River mine, during recent months, is the location of the continuation of uranium mineralisation into the shales overlying the quartz greywacke or sandstone. This has assisted in the improvement in grade and quantity of proven ore reserves.

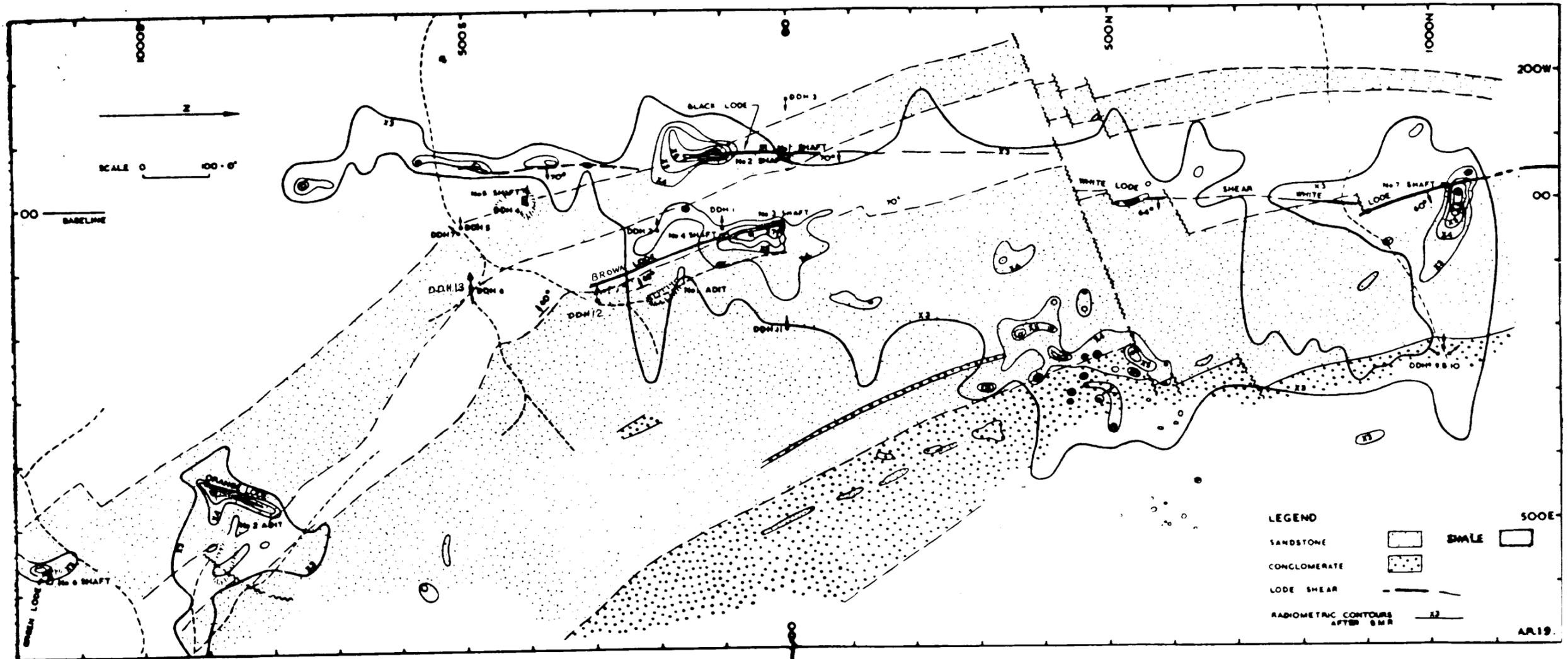
Systematic channel sampling and the results of parcels of ore treated at Rum Jungle show that the grade of the uranium ore is higher than was estimated previously. With careful and selective mining, the grade could be maintained above 0.5% U₃O₈.

The underground development is not proceeding on such a scale as to anticipate any sudden increase in the production from this mine. Recently, the average rate of delivery to the treatment plant has been 40 tons per week approximately, from the Black lode. This rate could possibly be doubled, but a new haulage system would be required, before a further increase from this lode could be guaranteed.

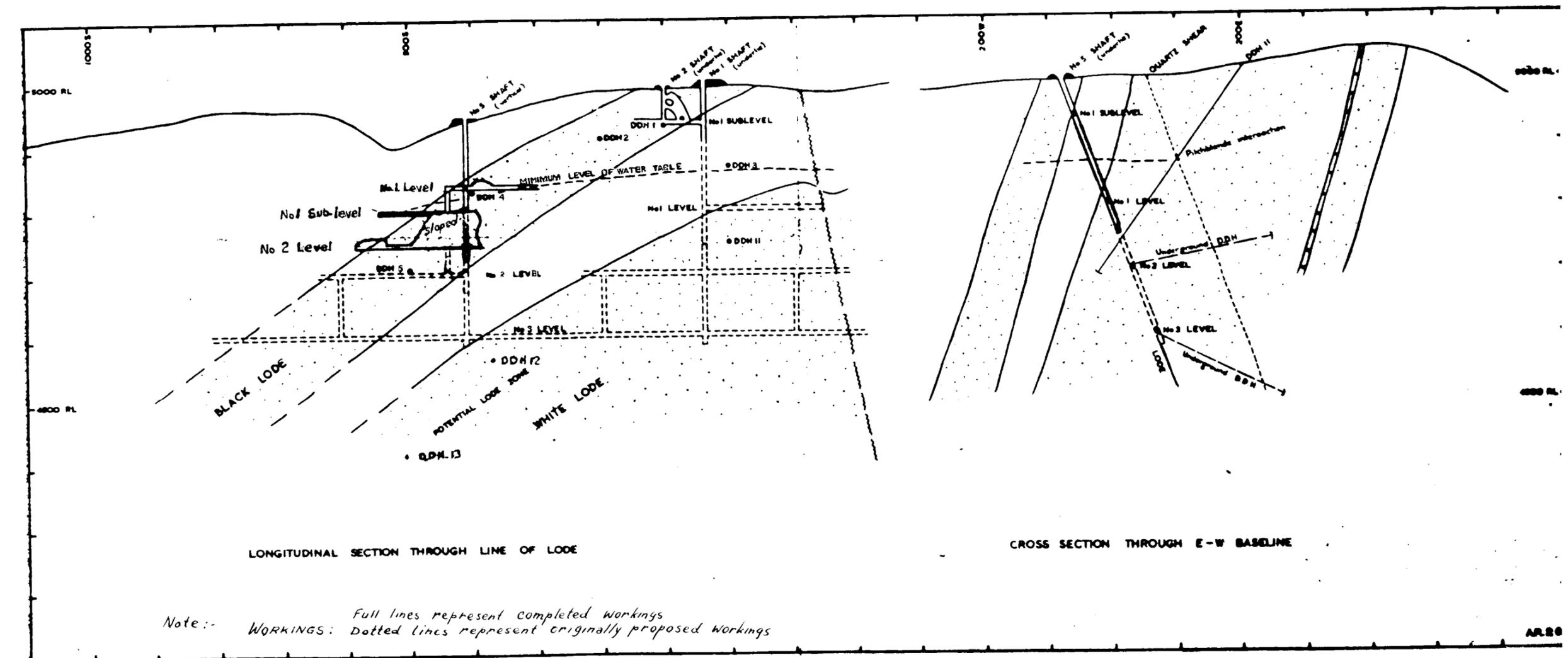
No early production from the other lodes can be anticipated.

This mine has established itself as a small producer of high-grade uranium ore, but to become a large producer it would require a considerably increased rate of underground development on the Black lode and the development of other lodes.

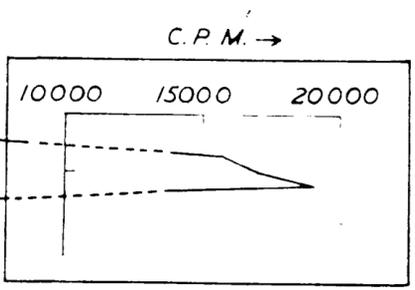
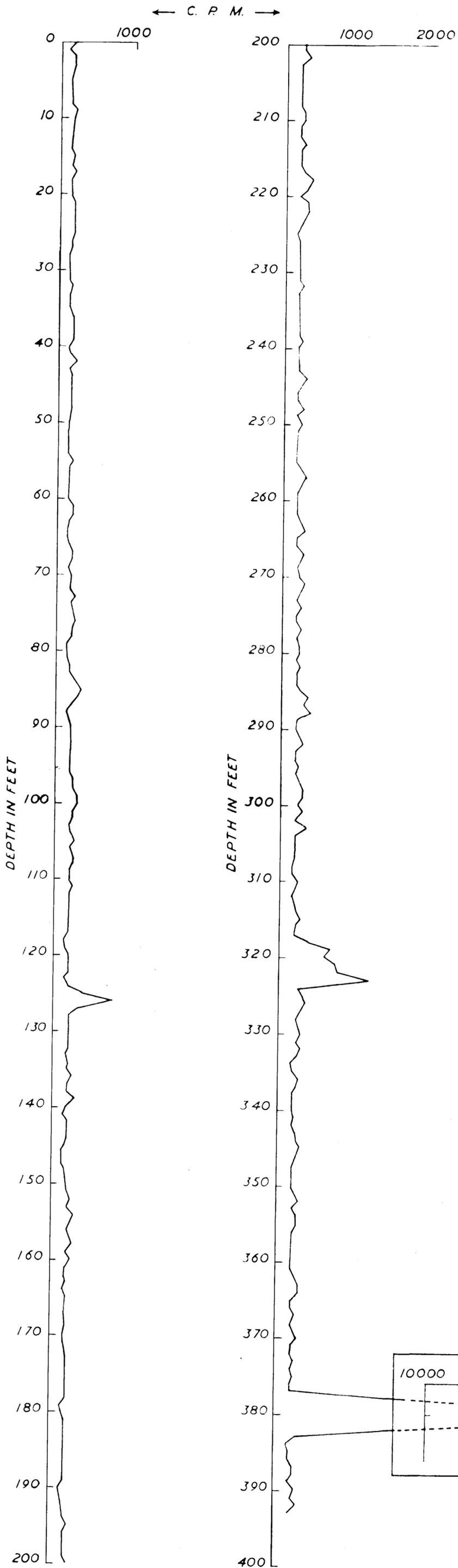
3rd February, 1956.



PLAN No. A.R. 19.
By GEO-SURVEYS OF AUSTRALIA LTD. (with additions by J.H. Lewis 31-1-1956)



PLAN No. A.R. 20.
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Approximate eU_3O_8 content:
 378' - 382' = 0.36%
 379' - 381' = 0.52%

BUREAU OF MINERAL RESOURCES
 Darwin Uranium Group
RADIOMETRIC LOG
 OF
DIAMOND DRILL HOLE No. 12.
 at
 Adelaide River Mine N. T.
 for
 Australian Uranium Corporation
 P. M. Stott. 1956.