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BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS.

1955, No. 122.

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REPORT ON RADIOMETRIC BORE LOGGING IN THE
MT. ISA CLONCURRY DISTRICT FOR THE GEOLOGICAL
SURVEY OF QUEENSLAND

by

G. F. CLARKE



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REPORT ON RADIOMETRIC BORE LOGGING IN THE
MT. ISA CLONCURRY DISTRICT FOR THE GEOLOGICAL
SURVEY OF QUEENSLAND

by

G. F. CLARKE

GENERAL:

The Bureau of Mineral Resources undertook the supply and operation of radiometric bore logging equipment to log all diamond drill holes in the Mt. Isa-Cloncurry district for the geological survey of Queensland.

The writer visited the area during the second week in September, 1955 to initiate the bore-logging programme and assess the amount of work to be done. Following this, a geophysical assistant was sent to Mt. Isa from the Darwin Office and succeeded in logging only seventeen of a total of forty-five holes as the remainder had collapsed.

The equipment used was the Austronic BRV-1 Ratemeter fitted with a GM5A3 G.M. tube, and a complete set of this gear was left at Mt. Isa in the care of the government geologist. Any additional probing required will be done by an operator sent from the Darwin Office.

DISCUSSION OF RESULTS:

The radiometric logs are shown on Plates 1-7, together with the approximate ϵ U_3O_8 content. With regard to the latter, the figures are based on calibration of the BRV-1 Ratemeter fitted with a GM5 Special tube which was done by P. H. Dodd at Rum Jungle in December 1953.

Up to the present time no satisfactory check has been made to determine the accuracy of this calibration. When it was learnt that the core recovery in drilling the Anderson lode was approximately 95 per cent, and that the core had been radiometrically assayed by the South Australian Mines Department, the opportunity was taken to compare our estimated ϵ U_3O_8 content with the assays results of the core.

A difficulty arose when it was found that the probing units sent from Melbourne, were fitted with GM5A3 G.M. tubes the sensitivity of which is very much lower than the GM5 Special G.M. Tubes.

It is evident from the radiometric logs of the Anderson lode (Plate 1-2) that the radiation is very constant throughout the depth of the ore body. This is to be expected when geological evidence shows that the uranium mineralisation is finely disseminated throughout the host rock. It follows that this type of lode would be ideal for an accurate comparison between the two tubes under actual working conditions.

Three holes were logged on the Anderson lode, first with a GM5 Special G.M. tube and then with a GM5A3 G.M. tube and the results compared.

Altogether 430 readings were plotted with counts per minute of GM5A3 tube as ordinate against counts per minute of GM5 Special tube as abscissae. A mean curve was drawn and the calculations of ϵ U_3O_8 made from the calibration of the GM5 Special G.M. tube as done by P. H. Dodd.

Comparing the results of the core assays and the estimated ϵ U_3O_8 content there is an average difference over the six holes logged, on the Anderson lode, of 0.08%, the estimated ϵ U_3O_8 being higher.

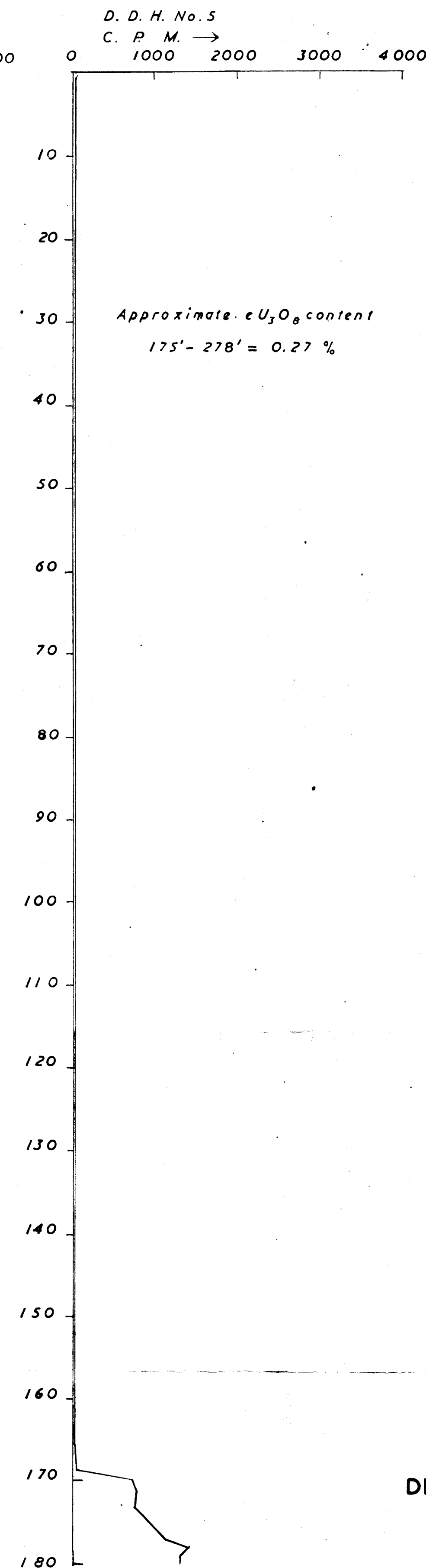
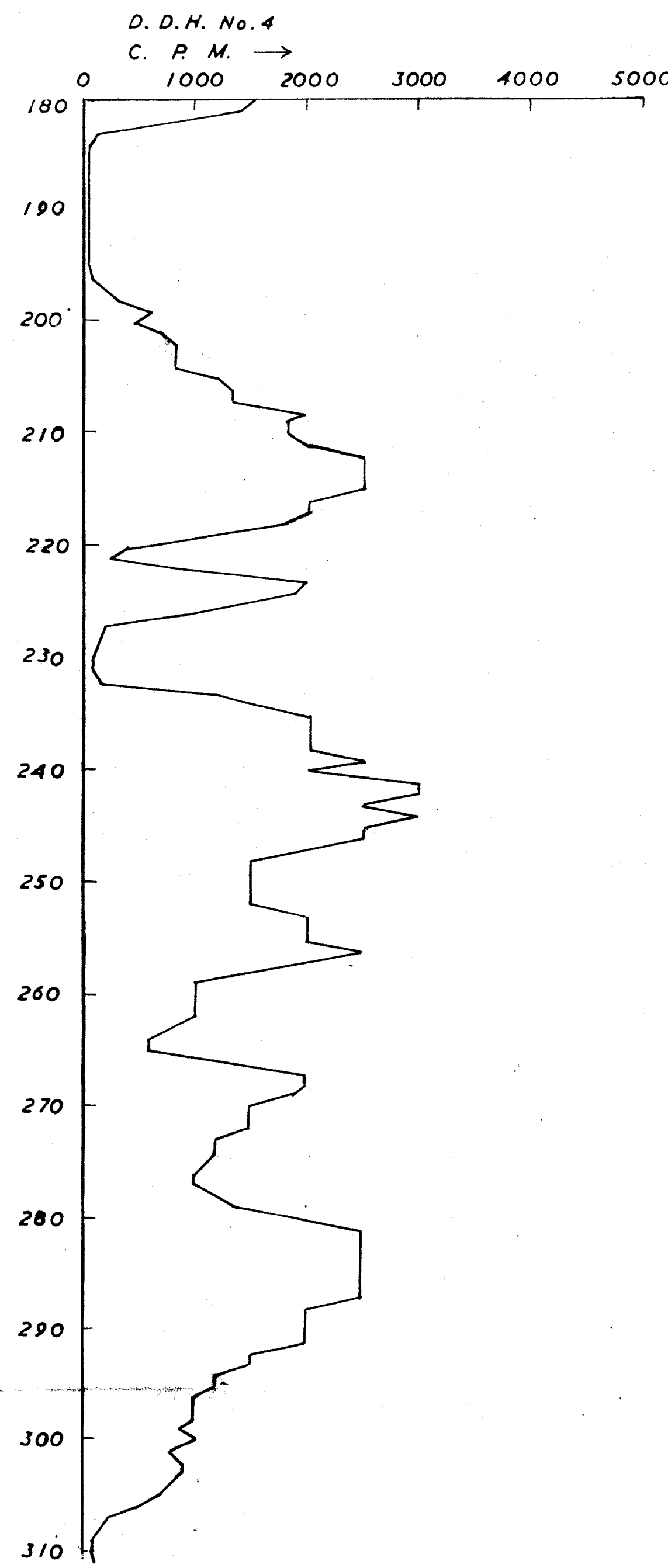
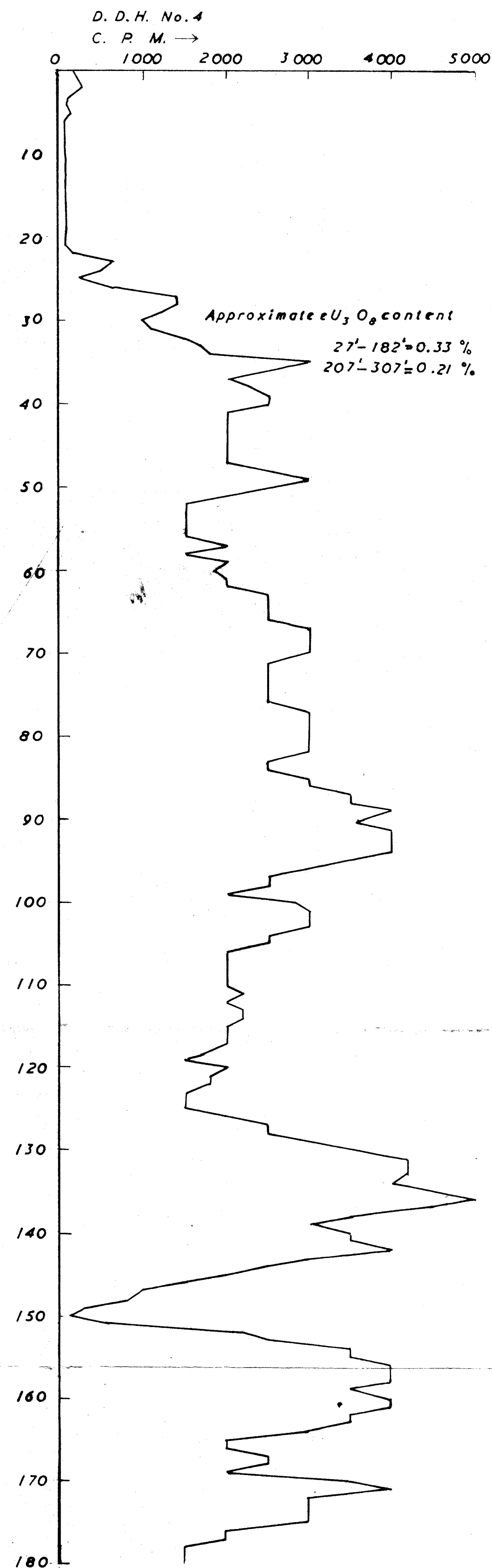
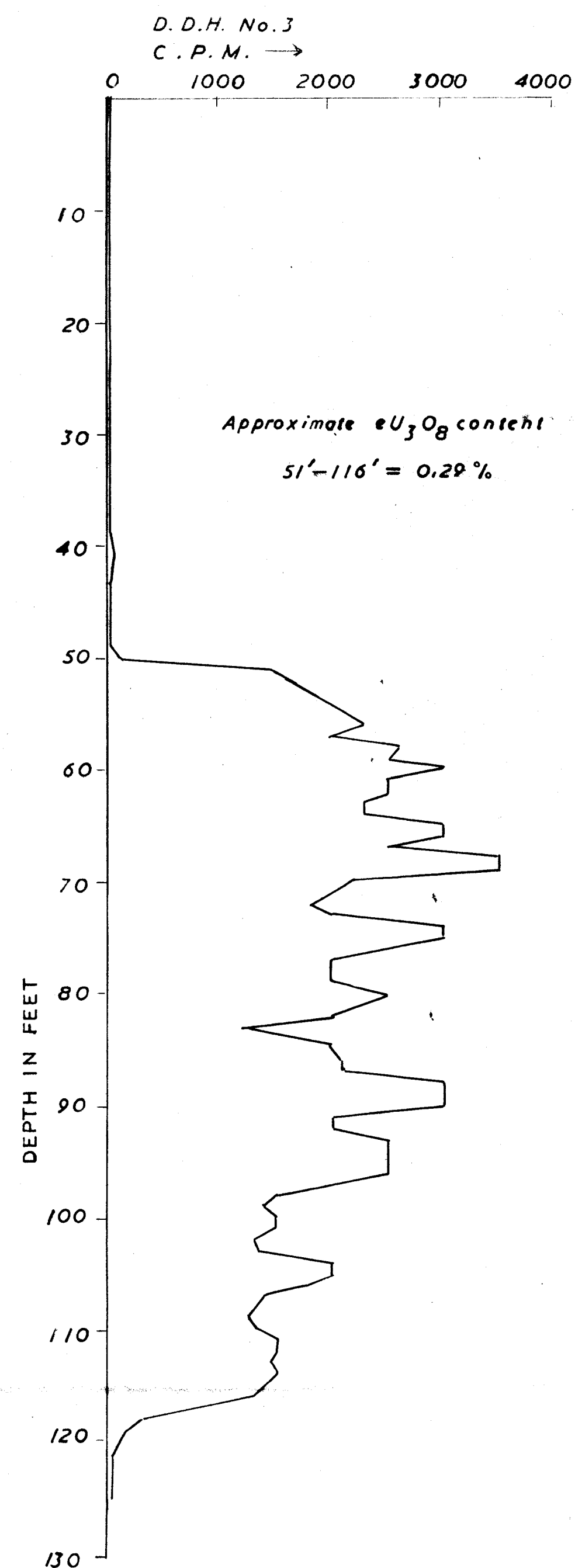
It is not proposed to alter the calibration curve of the GM5 Special G.M. tube to agree with the results of the core assays. More reliable chemical assays might have made a change necessary.

The calibration of the GM5 Special G.M. tube was done using pitchblende in equilibrium as the source of radiation, and as the probe unit is a gamma counter only, it follows that errors could occur if a calibration curve was drawn on assays results of material which was out of equilibrium.

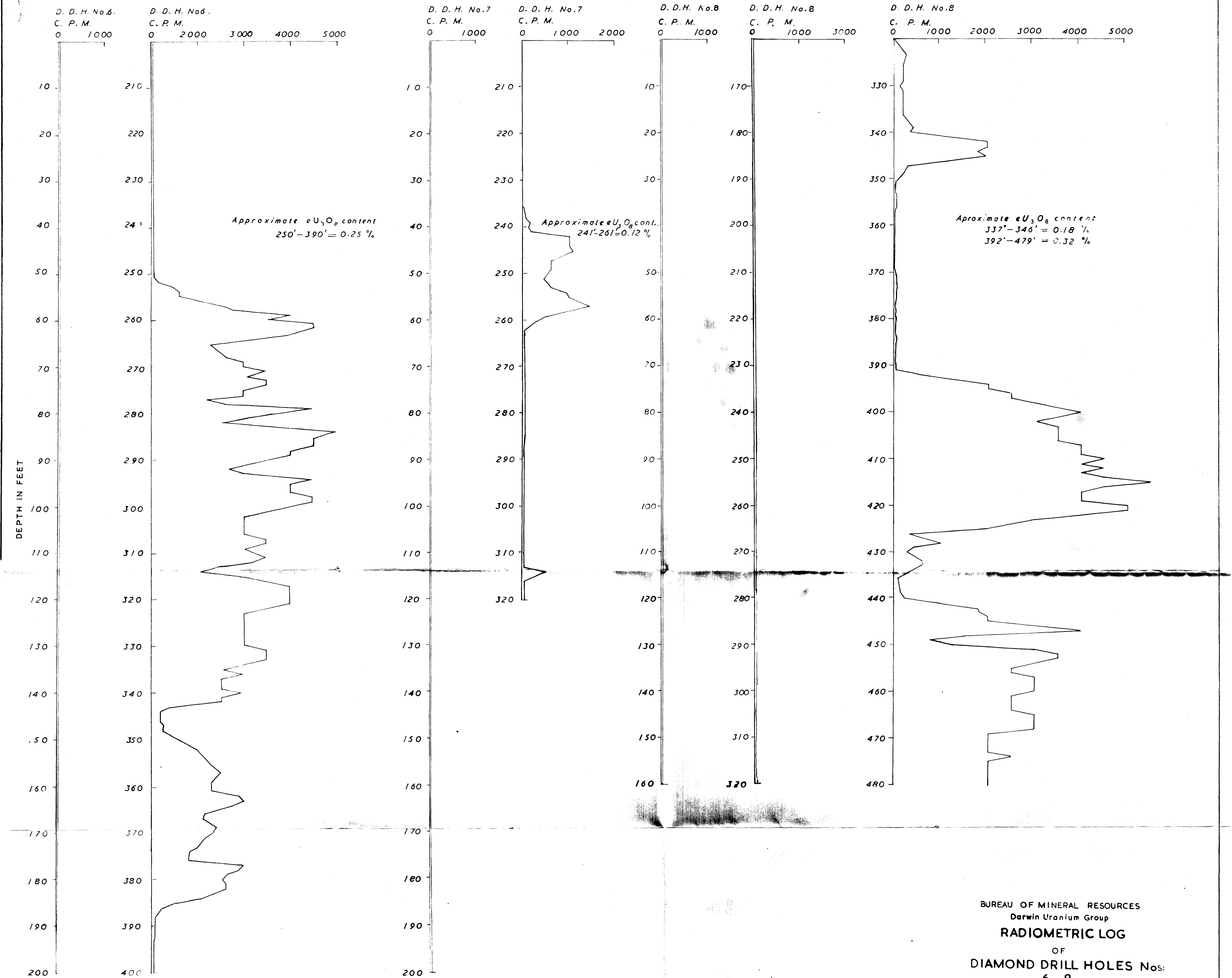
Although it is highly probable that the uranium mineralisation at the Anderson lode is in equilibrium, there is no evidence available from core assays to verify this. Furthermore an average difference of 0.03% is not unduly large, when the calculated U_3O_8 content is always given as an approximate figure only.

REFERENCE:

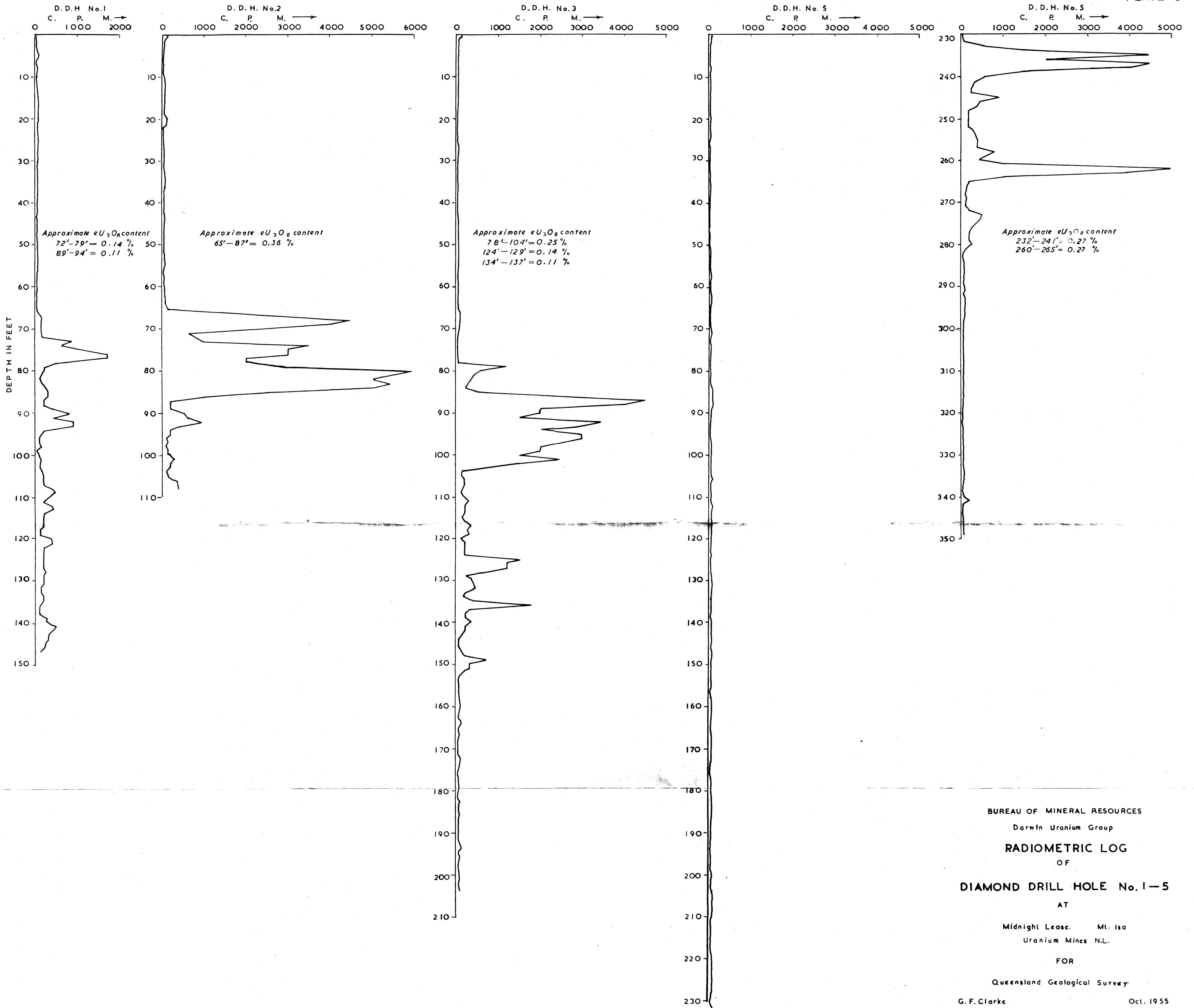
P.H. Dodd, " Report on Investigation of Bore Log
Ratemeter Type BRV-1" unpublished report.



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Darwin Uranium Group
RADIOMETRIC LOG
OF
DIAMOND DRILL HOLES Nos 3-5
AT
Anderson Lode Mt. Isa
Australian Oil Exploration Ltd.
FOR
Queensland Geological Survey
G.F. Clarke Oct. 1955



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RADIOMETRIC LOG
OF
DIAMOND DRILL HOLES Nos:
6-8
AT
Anderson Lode Mt. Isa
Australian Oil Exploration Ltd.
FCR
Queensland Geological Survey
G.F. Clarke Oct 1955



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Darwin Uranium Group
RADIOMETRIC LOG
OF
DIAMOND DRILL HOLE No. 1-5
AT
Midnight Lease. Mt. Isa
Uranium Mines N.L.
FOR
Queensland Geological Survey
G. F. Clarke Oct. 1955

PLATE 4

D. D. H. No. 1

C.P.M. →

0 1000

DEPTH IN FEET

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

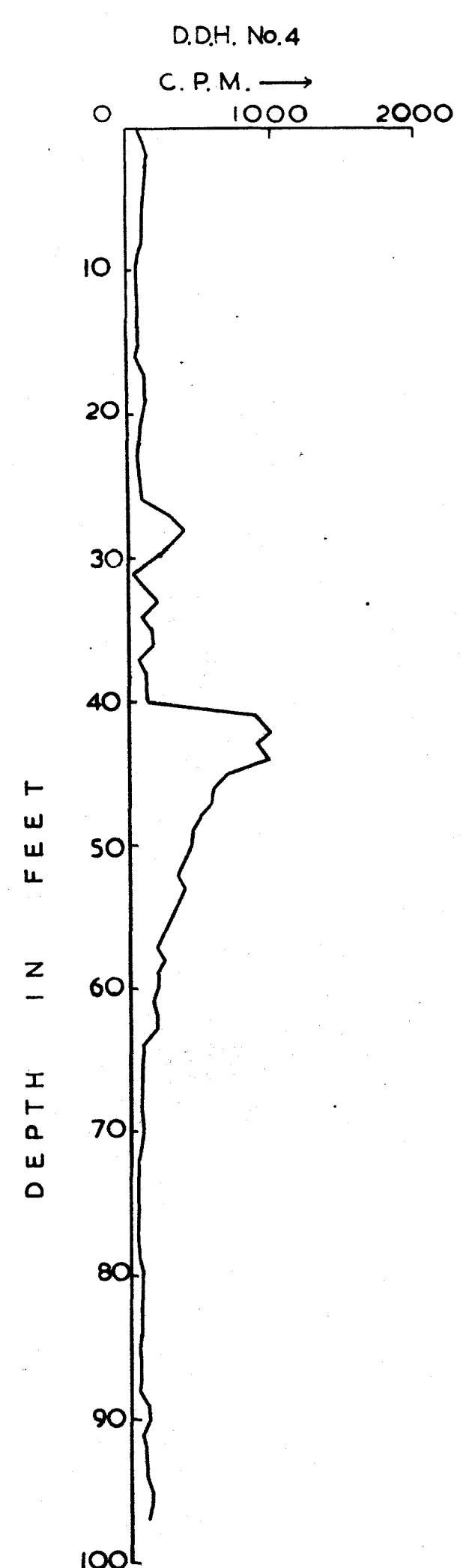
Approximate eU_3O_8
content
152'-155' = 0.05 %

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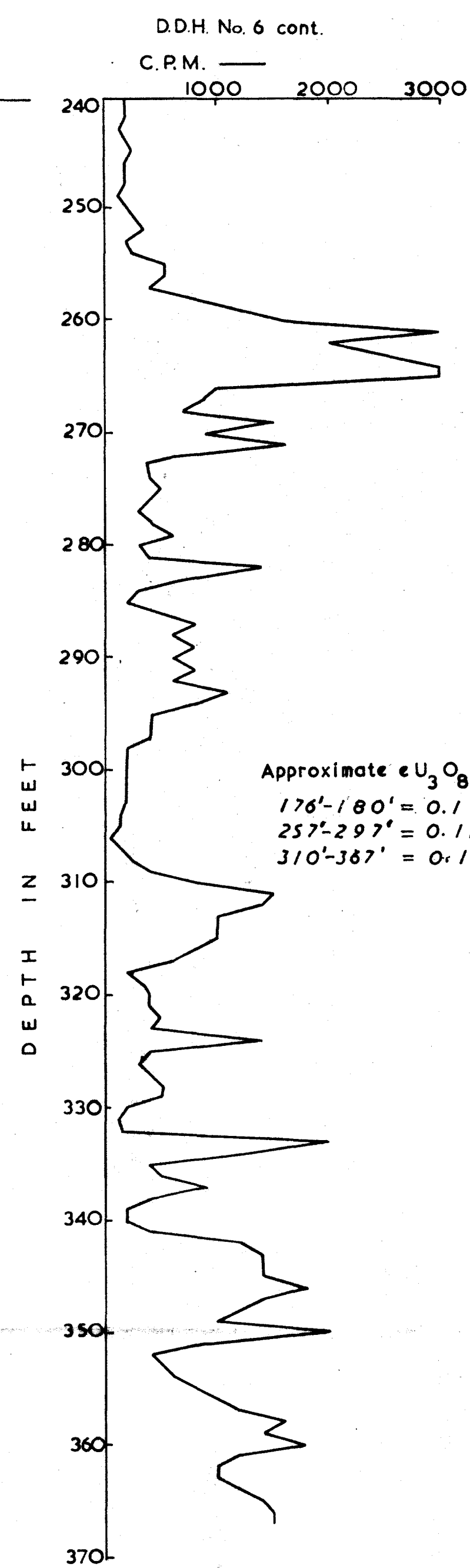
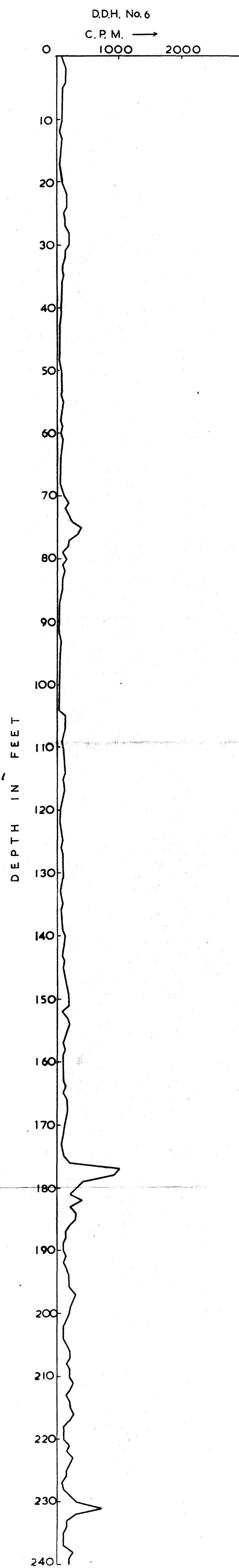
RADIOMETRIC LOG
OF
DIAMOND DRILL HOLE No. 1
AT
Embla Ridge Lease Mt. Isa
United Uranium N.L.
FOR
Queensland Geological Survey

G.F. Clarke

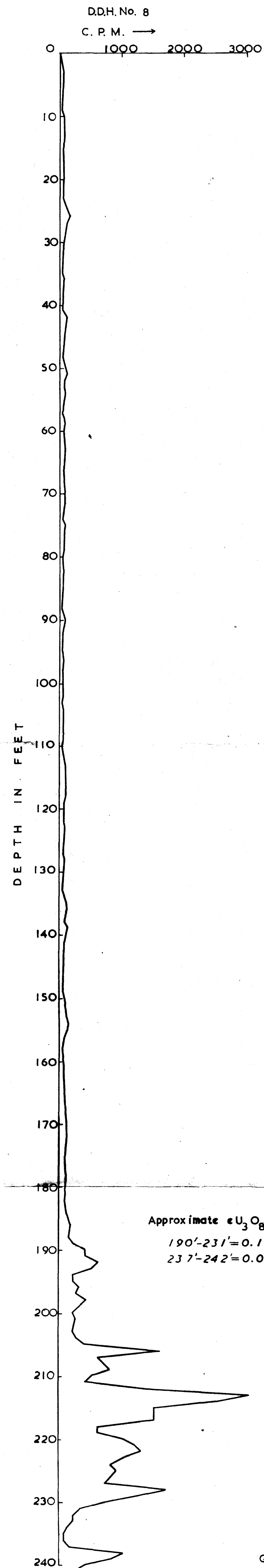
Oct, 1955



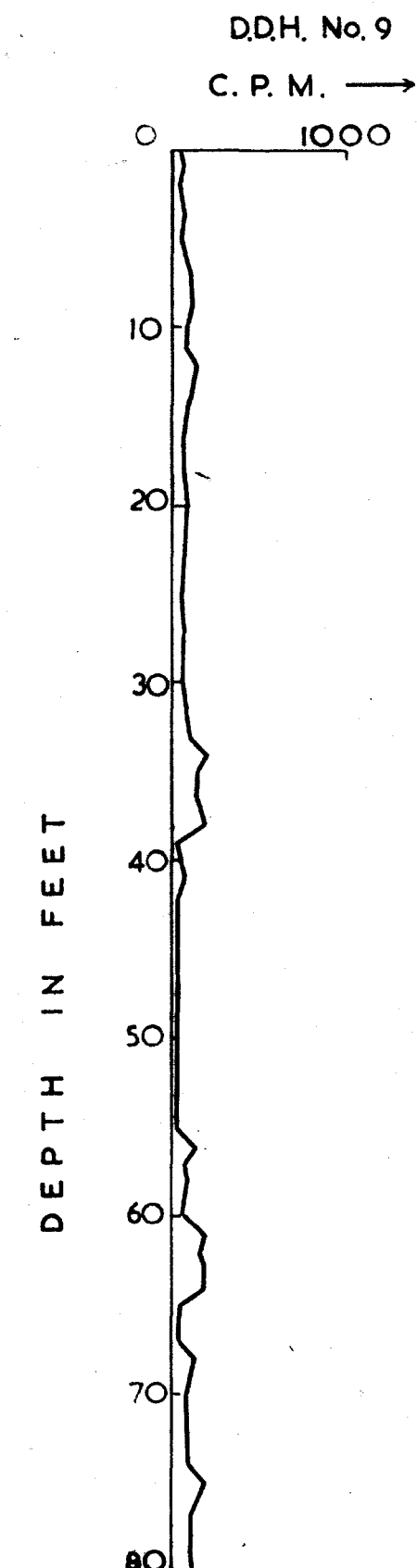
Approximate eU_3O_8 content
40'-55' = 0.1 %



Approximate eU_3O_8 content
176'-180' = 0.1 %
257'-297' = 0.15 %
310'-367' = 0.15 %



Approximate eU_3O_8 content
190'-231' = 0.1 %
237'-242' = 0.08 %



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RADIOMETRIC LOG
OF
DIAMOND DRILL HOLE NOS 4, 6, 8, 9
ON
SKAL LEASE MT ISA
MT ISA MINES LTD
FOR
QUEENSLAND GEOLOGICAL SURVEY
G.F. Clarke Oct. 1955

D.D.H. No. 8

C. P. M.

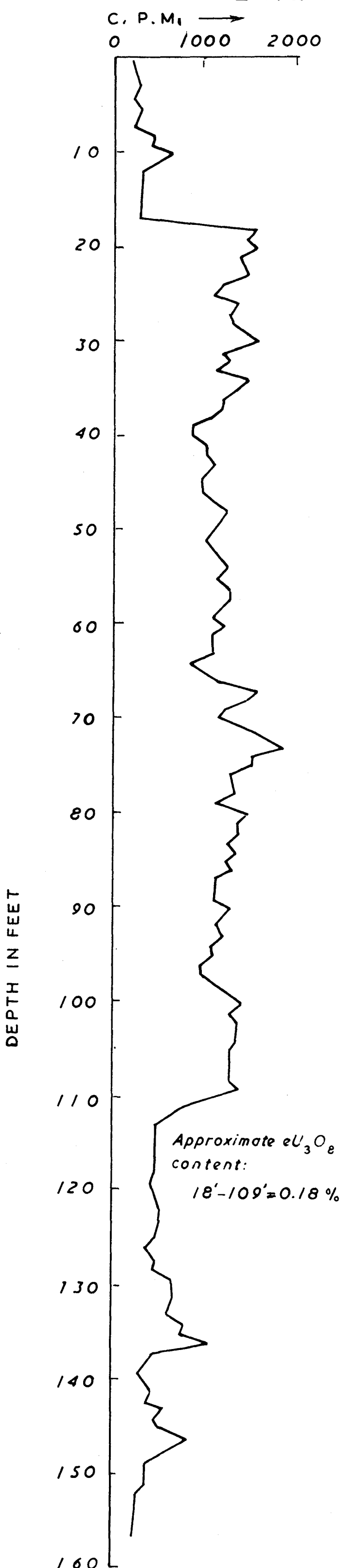
0 1000

DEPTH IN FEET

10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230

Approximate eU_3O_8 content
 101'-105' = 0.06 %
 221'-231' = 0.08 %

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RADIOMETRIC LOG
 OF
DIAMOND DRILL HOLE No.8
 AT
 Elaine Dorothy Lease Mt. Isa
 Mineral Ventures N.L.
 FOR
 Queensland Geological Survey
 G.F. Clarke Oct. 1955



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 Darwin Uranium Group
RADIOMETRIC LOG
 OF
DIAMOND DRILL HOLE No. 5
 AT
 Elaine Dorothy Lease Mt/Isa
 Mineral Ventures N.L.
 FOR
 Queensland Geological Survey
 G.F.Clarke Oct. 1955