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COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS.

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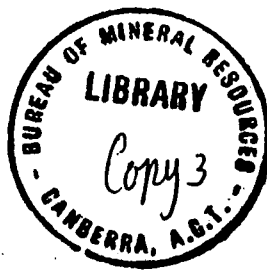
1953, No. 57



REPORT ON EXAMINATION OF SPECIMENS OF MILL
PRODUCTS FROM MINES AT BROKEN HILL

by

J. DALY



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1. INTRODUCTION.

In connection with the search for uranium in Australia, samples of mill products from producing mines have been examined for radioactivity by the Bureau. Amongst these were several samples from mines at Broken Hill. A preliminary examination showed that the uranium content of the samples was certainly much less than 0.01 per cent. To obtain more accurate data, the samples were re-examined by more sensitive methods, and the results of these are tabulated below.

2. RESULTS.

Mine	Nature of sample	Equivalent U_3O_8 content (%)	
		Radiometric assay	Fluorimetric assay
Broken Hill North	Flotation lead concentrate	0.003	0.0005
	Flotation zinc concentrate	Nil.	0.0005
	Granular (jig & table)	0.0015	0.0013
	Final residue	0.001	0.001
Zinc Corporation	Crude ore	Nil.	0.0003
	Lead concentrate	Nil.	0.0001
	Zinc concentrate	Nil.	0.0001
	Final residue	0.0005	0.0006
Broken Hill South	Zinc concentrate	Nil.	0.0005
	Jig concentrate	Nil.	0.0001
	Table concentrate	0.002	0.001
	Press lead concentrate	Nil	0.0003
	Final residue	0.001	0.0004

The radiometric assay values have been rounded off to half a unit in the third decimal place. This is much higher accuracy than can safely be claimed for radiometric assays. However, the general very close agreement between radiometric and fluorimetric assays indicates that a satisfactory degree of precision has been attained in the radiometric work.

For fluorimetric assay, the samples were dissolved in nitric acid and the uranium extracted with ethyl acetate. This procedure determines acid-soluble uranium only.

3. CONCLUSIONS.

- (i) The uranium content of all samples is extremely low.
- (ii) There is no evidence that the concentration methods used have concentrated the uranium to any marked degree.

- (iii) It appears that most, if not all, of the uranium is present in an acid-soluble form.
- (iv) There is an increase in uranium content from south to north along the lode. Samples from Zinc Corporation contain virtually no uranium, those from the South Mine contain rather more, while those from the North Mine show higher values again.