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OCCURRENCE OF HIGH URANIUM-BEARING GRANITIC GNEISSES
NEAR NARSIPATNAM, VISHAKHAPATNAM DISTRICT, A.P.

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During the course of investigation of the mineralogy and geochemistry of the granitic gneisses and associated rocks of Narsipatnam area (N lat. 17°33' and E long. 82°27') the authors have come across two samples of granitic gneisses with high uranium in relation to thorium content. (Table I).

TABLE I
U and Th contents in granitic gneisses

Sample No.	Uranium (in ppm)	Thorium (in ppm)	Th/U
S 10	17	9.7	0.57
B 11	4.7	3.4	0.72

S 10: Pink granitic gneiss from 1 km NW of Sanyasi Raju Agraharam.

B 11: Grey granitic gneiss from Buchammapeta.

The uranium and thorium contents in the rocks were determined by Neutron activation analysis applying radiochemical separation techniques. Usually, the distribution of U and Th in various rocks types shows an abundance of Th compared to U; but the granitic gneisses under report, however, show reverse relation in that the uranium is more than thorium.

The granitic gneisses essentially consist of quartz, potassium feldspar, plagioclase, biotite, garnet, and accessory magnetite, zircon, apatite, and sometimes epidote. The modal composition of the two granitic gneisses is given in Table II.

The granitic gneisses are medium to coarse grained and occasionally pegmatitic and aplitic. Porphyroblasts of feldspar and rarely quartz are common. The gneisses are crushed, and show alteration of feldspar to kaolinitic and sericitic material. Biotite is in the form of bands and contains inclusions of zircon. Magnetite is secondary, and formed due to the alteration of biotite.

The high content of Uranium in the two granitic gneisses under report may be either due to the presence of zircon and biotite (Adams *et al*, 1959) or the U content may simply be entrapped between major mineral crystal grains as absorbed ions.

TABLE II
MODAL COMPOSITION OF GRANITIC GNEISSES

	S 10	B 11
Quartz	6.48	11.77
K-feldspar	51.52	32.38
Plagioclase	15.22	20.80
Biotite	23.87	22.52
Garnet	0.42	4.93
Magnetite	2.34	5.74
Zircon, sphene, apatite, and others	0.15	1.86

There are suggestions that generally metamorphic rocks may contain lower Th/U ratio than their corresponding igneous and sedimentary rocks (Adams *et al*, 1959). Husmann, (1956) working on the metamorphic rocks of central Black Forest region reported an average Th/U ratio of 1.5 in orthogneisses and 0.9 in paragneisses. This shows that metamorphic rocks with an igneous parentage generally contain more Th/U, while those with sedimentary parentage contain low Th/U value. The low values of Th/U ratio (0.57 and 0.72) in the present investigation suggest that the rocks under study were originally sedimentary. Further work on the genetic relationship between these granitic gneisses and their associated rocks is in progress.

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