

Ar-Ar geochronology of basaltic rocks from Bombay Offshore: implications on India-Seychelles breakup

PATTABHIRAM V S S SAI KONDEPUDI, KANCHAN PANDE AND RADHAKRISHNA MUNUKUTLA

Indian Institute of Technology Bombay

Presenting Author: kvsspram.007@gmail.com

The Deccan Volcanic Province covers an outcrop area of ~500,000 km², while a significant area remains concealed below the sediments in the western offshore. Of the several wells drilled in the Mumbai offshore region, many have terminated in basalt section, whereas a few wells have encountered Precambrian basement rocks directly below the Tertiary sediments [1]. To understand the spatio-temporal relationship of these basalts with the onshore volcanism, we have selected twelve drilled-well samples from the Bombay offshore basin for Ar-Ar geochronology. The ages were determined using the primary standard MMHB (523.1±2.3 Ma) [2]. The plateau ages of these samples range from 69 to 61 Ma and correlate well with the published onshore ages ranging from 67-60 Ma [3-5]. Out of these, one basalt sample yielded a plateau age of 79 Ma, recording an older volcanic episode in this region. This 80-70 Ma older magmatism reported along the Western Continental margin of India(WCMI) provides evidence for continued rifting subsequent to the India-Madagascar breakup at 88 Ma [6, 7]. The combined analysis of onshore and offshore geochronology data (67-60 Ma) strongly indicates the occurrence of pre-, syn- and post-rift phase magmatic episodes of the India-Seychelles breakup [3]. The Reunion hotspot track hypothesis needs to be revisited in light of recent reporting of older ages along the WCMI [6-11].

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