Geophysical Research Abstracts, Vol. 9, 02478, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-02478

Detrital garnet chemistry of the subsurface Neogene reservoir sandstones from the Surma Group in the Bengal Basin, Bangladesh: Implications for provenance

(1**) M. Julleh Jalalur Rahman** and Shigeyuki Suzuki (2)

(1) Department of Geological Sciences, Jahangirnagar University, Savar,

Dhaka-1342, Bangladesh, (2) Department of Earth sciences, Okayama University, Japan (jjrahman65@yahoo.com / Fax: 880-2-7708469)

The Bengal Basin lies on the north-eastern part of the Indian subcontinent, and had its origin during the collision of India with Eurasia and Burma, building the extensive Himalayan and Indo-Burman Ranges. The Cretaceous to Holocene Bengal Basin forms a “remnant ocean basin” at the juncture of the Indian plate and the Burma platelet and it is filled mainly by orogenic sediments that record uplift and exhumation of Himalayan and Indo-Burman Ranges. The bulk of the deltaic deposits are Miocene and younger. Miocene sediments of the Surma Group comprises thick accumulations ($\geq$4km) sub-equal proportion of shales/mudrocks and sandstones. The Surma Group sandstones in the Bengal Basin have quartzofeldspathic to quartzolithic composition and a more quartzose one with abundant low-grade metamorphic, sedimentary lithics and low volcanic detritus, indicating that the sands were derived from a quartzose recycled orogen province.

Garnet is a widespread detrital mineral in Neogene sandstones of the Surma Group in the Begal Basin constituting about 57% of the total dense minerals. Electron microprobe analysis of 98 detrital garnets shows that detrital garnets are rich in almandine ($\sim$70; 32-86%). Pyrope and grossular components range from 1 percent to 46% ($\sim$12%) and 38% ($\sim$14%) respectively. Spessartine content is low around 5% although some samples show high values up to 38%.Garnets analyzed in this study can be grouped into three types. (1)Fe-garnet is asolid solution with pyrope $>$10%; (2) Fe-garnet is a solid solution with grossular $>$10%; 3) Fe-garnet with pyrope and grossular both $>$10%. Few Fe-garnets are solid solution between spessertine.Garnet

chemistry reveals the mixed source areas of varying metamorphic grade facies.
Key words: Neogene sandstones, Surma Group, Bengal Basin, Garnet chemistry