DISCUSSION

LATE QUATERNARY DEFORMATION AND PALAEOSEISMICITY: INSIGHT INTO GEOMORPHOTECTONIC EVOLUTION OF KACHCHH, WESTERN INDIAN SUBCONTINENT by A.B. Roy, Alokesh Chatterjee and N.K. Chauhan. Jour. Geol. Soc. India, v.81, January 2013. pp.31-40.

A.K. Saxena, F 52, Sunder Marg, C-Scheme, Jaipur – 302 001, comments:

The above paper is an interesting one and provides important information. However, their contention –“no true seismite has so far been reported from the Kachchh region” (p.32, last line and p.33, first line) is not true. Seismites viz., deformational features in Quaternary deposits indicating episodes of neotectonism and palaeoseismicity have been reported and described by Saxena et al. (2002), Saxena and Fulzele (2003) from the Kachchh Mainland Fault area. Sand dyke and sand blow, associated with feeder pipe and related to an earlier earthquake were observed in a trench section buried under Recent deposits (Figs. 1, 2, 3 of Saxena et al. 2002). These are typical liquefaction features, as evidenced by their characteristic mode of occurrence and configuration. This feature is a palaeoseismite formed as a result of liquefaction of water saturated cohesionless sediments due to shear stresses developed during an earthquake in historical period. It was subsequently buried under the Holocene sediments. It is interesting to note that the fissure was reactivated by the 26th January, 2001 earthquake and venting of water mixed with sand due to liquefaction of sub-surface sediment took place. The location falls within KMF and trend of fracture is sub-parallel to KMF.

Again small-scale faults, sympathetic to the KMF, were observed in sand bed, pebble bed of the Quaternary period in a stream section within the KMF zone (Figs. 1, 4, 5 of Saxena et al. 2002) evidencing neotectonism. These faults were identified in 2 m thick Quaternary section with throw of the faults varying from 5 cm to 20 cm.

Another feature indicating palaeoseismicity is soil

containing lime nodules which has been affected by liquefaction and occurs in juxtaposition with Bhuj sandstone in a trench section (Figs. 1, 6, 7 of Saxena et al. 2002). Here mobilization of soil along the fracture suggests liquefaction due to shear stresses caused by an earlier earthquake. This feature is also located in KMF zone and was mildly reactivated during the 2001 earthquake with the development of surface fissure. The field observations as described therein (Saxena et al. op cit, Saxena and Fulzele, 2003) indicate that the palaeoseismic structures (seismites) were formed by more than one large magnitude earthquake in the Recent past.

A.B. Roy, Alokesh Chatterjee and N.K. Chauhan reply:

A.K. Saxena deserves our thanks for drawing the attention to an important aspect of seismicity in Kachchh by providing information on the occurrence of seismite along the Kachchh Mainland Fault. The publications referred by him unfortunately missed our attention. We regret very much the omission and thank him once again for pointing out this interesting observation.

References

- SAXENA, A.K., NEGI, R.S. and Fulzele, D.N. (2002). Some observations on palaeoseismicity along Kachchh Mainland Fault, Kachchh, Gujarat. In: D. K. Paul, Ashok Kumar and M.L. Sharma (Eds.), Proc. 12th Symp. on Earthquake Engineering, Indian Inst. Tech. Roorkee, pp.38-46.
- Saxena, A.K. and Fulzele, D.N. (2003) Strip geological mapping of the Kachchh Mainland Fault. Records Geol. Surv. Ind. Vol. 136, Part 7. pp 72-73.