Subhash Bhandari, Rachna Raj, D.M. Maurya and **L.S. Chamyal,** Department of Geology, M S. University of Baroda, Vadodara-390002 reply:

We appreciate the interest shown in our paper by Utpal Chakrabarti and Abhinaba Roy. Pointwise replies to their comments are as follows:

1. As mentioned in the caption, the figure is meant for showing the interrelationship between the various geomorphic surfaces. The two faults at high angles to the NSF are well established in the area. Our study also confirms the existence of these faults. Estimation of throw along these faults is not possible since the thickness of the fan sediments is not known, as the base is not exposed. The vertical scale in Fig.1D is for the topographic profile, the thickness of the sediments is exaggerated for the purpose of clarity.
2. The fans have coalesced to form a fan surface. Inferences on the chronology of these fans will be mere speculation in the absence of absolute dates. We did observe the easterly deflection of Shamariya Khadi, but apart from this no other evidence was found to substantiate the strike-slip movement along the NSF. Detailed study on neotectonics is necessary for this.
3. No deformational structures were observed in the fan sediments.
4. Exact thickness of the fan sediments is not known. However the thickness appears to be less since the Late Pleistocene sediments are exposed along the Narmada river (Merh and Chamyal, 1997; Maurya et al. 2000).
5. Since alluvial fans are formed by multichannel distributary river systems, detailed palaeocurrent analysis may not reveal much. Alluvial fans are established based on their geomorphic and tectonic settings and the well-established lateral, vertical and down fan variation of sedimentary facies.
6. The north direction indicated in Fig.2B is correct.

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KIMBERLITE OCCURRENCE IN RAICHUR AREA, KARNATAKA by S. Shivanna, J.K. Srivastava and A.R. Nambiar, Jour. Geol. Soc. India, v.59, No.3, 2002, pp.269-271.

V. Madhavan, Department of Geology, Kakatiya University, Warangal- 506 009, A.P. comments:

The occurrence of kimberlite near Raichur in Karnataka, as reported in the above mentioned paper and preceded by two earlier reports (Nambiar et al. 2001; Shivanna et al. 2002), gains significance in view of its location between the two large and well established kimberlite fields of Mahbubnagar (Narayanpet kimberlite field - NKF) and Anantapur (Wajrakarur kimberlite field - WKF). The wide gap, hitherto existing between the NKF and WKF is now considerably reduced with the Raichur kimberlites providing the desired link. The authors deserve compliments for their efforts in locating this new body.

The step-wise or sequential manner in which kimberlite, lamproite and lamprophyre are found distributed across the Cuddapah basin was first noticed and broadly interpreted as the multifaceted manifestations of mafic potassic magmatism within and adjoining the intracratonic basin (Madhavan, 1990). The scenario was recently described in terms of zonal arrangement of kimberlite, lamproite and lamprophyre wherein the kimberlite and lamprophyre zones

are respectively found towards the western and eastern sides of the Cuddapah basin with the lamproite zone coming in between, within the basin (Madhavan, 2000). The discovery of kimberlite at Raichur is very much in conformity with the observed zonal arrangement of kimberlite west of Cuddapah basin. Each one of these zones runs parallel to one another along the length of the Cuddapah basin. Such a configuration, when viewed in the backdrop of the Dharwar craton, would indicate that kimberlites lie in close proximity to the centre whereas the lamproites and lamprophyres are emplaced towards the peripheral parts of the craton denoting a significant shift from the centre. These three zones do not intersect each other at any point, thereby indicating their mutually exclusive nature. The very association of kimberlite, lamproite and lamprophyre is unique to the Cuddapah intrusive province which is unlikely to be repeated in any other alkaline provinces of India (Madhavan, *in press*). From the geochemical and isotopic evidences (Chalapathi Rao et al. 1997, 1998), contrasting melt sources were identified for these Proterozoic kimberlites and lamproites leading to the recognition of a Proterozoic mantle heterogeneity beneath the south Indian craton. While the kimberlite and lamproite magmas were generated at greater depths (> 150 km) within the mantle (Chalapathi Rao et al. 1998), the lamprophyre and other non-exotic alkaline rocks have also indicated a source within the mantle but very close to the mantle-crust boundary (Subba Rao et al. 1989).

To sum up, the Cuddapah basin and its neighbouring parts in the eastern Dharwar craton offer a number of challenging problems related to various magmatic activities which warrant immediate attention and in this context the recently envisaged Cuddapah Intrusive Province (Madhavan et al. 1999) provides a wide scope for further investigations.

A.R. Nambiar, S. Shivanna and **J.K. Srivastava**, Geological Survey of India, Bangalore - 560 078 reply:

The authors are grateful to Dr. Madhavan for his complimentary remarks and reiterating once again his long-standing views on alkaline magmatism in 'Cuddapah Intrusive Province' (CIP) that kimberlites, lamproites and lamprophyres are distributed in three distinct zones, running parallel to the Cuddapah Basin (Madhavan, 1990, 2000). Our present work was confined to Raichur area, though one of the authors (SS) had the experience of working in parts of Narayanpet kimberlite field falling in the state of Karnataka in Gulbarga district. Hence, our understanding on the kimberlite/lamproite/lamprophyre magmatism in CIP is mainly from published works and by regional traverses taken in Wajrakarur kimberlite field (WKF), along with our colleagues from Hyderabad, working in the area.. However, we would like to state the following in response to the comments of Dr. Madhavan:

(1) Though the Chelima and Zangamarajupalle lamproites occur within the Cuddapah Basin (CB), the Ramannapeta and the recently discovered lamproites around Jaggayyapeta (Reddy et al. 2000) lie though close to, but outside the CB, within the Peninsular gneiss. (2) Cuddapah Intrusive Province appears to be a misnomer, as all the kimberlites, lamprophyres and most lamproites (except Chelima and Zangamarajupalle) occur outside the intracratonic Cuddapah basin. The name gives a wrong impression that the intrusive activity is confined to CB, as the term 'Cuddapah' is well entrenched in Proterozoic Geology of India. Apart from the alkaline rocks (kimberlites, lamproites and lamprophyres and genetically related syenitic rocks), Proterozoic dyke activity at different time intervals is well documented, particularly in Eastern Dharwar Craton (EDC), west of CB. Whether the CIP also includes these mafic dyke rocks is not clear. It will be more appropriate to consider the distribution of only the kimberlites, lamproites, lamprophyres and other alkaline rocks and to redesignate CIP as an alkaline province with suitably selected name. (3) Dr. Madhavan's contention that these three zones do not intersect each other does not seem to be entirely true. The Jaggayyapeta lamproites, including Ramannapeta occurrences lie between the lamprophyres of Prakasam district, which occur as a cluster NW of Ongole (Madhavan et al. 1998) in the south, and the occurrence of lamprophyre dykes at Polayapalle, near Khammam (Subrahmanyam et al. 1987) in the north. Further, lamprophyres are reported to occur at Udiripikonda (14°49'36": 7°00'45"), Korakkodu (14°46'13":7°20'00"), Nagireddipalli (14°47'26": 77°26'32"), Kalagalla (14°48'47": 77°25'08") and Sivarampeta (14°50'08":77°20'08") areas within WKF (Nayak, *pers. commn.*). The authors had the occasion to visit these occurrences and detailed petrological studies on these rare rocks to characterize them are underway by the officers of Op: A.P, GSI.

We agree with Dr. Madhavan that the CB and its neighbouring areas in EDC offers wide scope for further studies on the emplacement of various mantle derived rocks.

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GENERIC PROVENANCE, TECTONICS AND PETROFACIES EVOLUTION OF SANDSTONES, JAISALMER FORMATION (MIDDLE JURASSIC) RAJASTHAN

by M. Masroor Alam. Jour. Geol. Soc. India, v.59, Jan.2002, pp.47-57.

Saif ud din, Natural Resources and Environmental Research Institute, NRERI/PEC, King Abdul Aziz City for Science and Technology, P.O. Box No. 6086, Riyadh - 11442, Saudi Arabia comments:

In the above paper Alam has tried to analyze petrofacies of the Jaisalmer sandstones in the light of local model of Aravalli-Delhi Fold Belt.

The lithostratigraphic and petrofacies variation in the Barmer and Jaisalmer Basins of Rajasthan, India forced the authors to conceive them as separate basins. Siddiqui (1963) conceived a barrier between Barmer and Jaisalmer basins. The source of the Barmer basin sediments is from the Aravallis in southeast. But the assignment of provenance of Jaisalmer sandstone of Jaisalmer Formation to the Aravalli-Delhi Supergroup by Alam (2002} following Siddiqui (1963) needs review.

The author has correctly identified that Jaisalmer sandstones plot in the "mature craton interior field" rather than the recycled orogen and/or basement uplift provenance as may be expected from clastics from Aravalli-Delhi Fold belt.

The Malani succession was very much exposed in the northeast of Jaisalmer basin, wherefrom it provided sediments to the Marwar Supergroup of the Nagaur basin in Rajasthan. Malani Succession was never entirely covered by the Marwar Supergroup. The geological map by Das Gupta and Chandra (1978) published by the authors clearly demonstrates the limit of Marwar Supergroup. It never touched the Aravalli and Delhi Supergroups. The Malani Rocks have remained exposed beyond the limits of Marwar Supergroup.

Thus, lack of first cycle detritus of volcanic origin and plots of clastic population of Jaisalmer sandstone in 'mature