emphasizes the advantage of comparing ancient and modern systems. This approach is designed to integrate as many lines of evidence and criteria as are available. The variety of fluvial facies, environments, and processes can be integrated in terms of four basic systems, each defined on an association or dominance of particular kinds of facies and operating processes. Features are those resulting from the complete history of a fluvial system as expressed in its facies, thus embracing such temporal effects as changes in load and discharge. In certain systems a stream may be temporally braided or meandering in the same reach owing to seasonal variations in discharge; however, through its history, a system will show a dominance of certain process, and therefore, of certain facies. The basic kinds of fluvial systems here outlined represent end-members in a spectrum.

The four principal fluvial systems recognizable in both modern and ancient systems include:

Fine-grained fluvial systems: high sinuosity meanderbelts characterised by elongate multistoried sand bodies and extensive overbank facies;

Coarse-grained fluvial systems: low sinuosity meanderbelts characterised by broad, multilateral sand bodies and limited overbank facies;

Braided fluvial systems: coarse-grained, multilateral bed-load sands and gravels; may be component of fan systems;

Delta distributary channels: straight, nonentrenched, elongate, multistoried sands; delta-plain component of river dominated deltas.

A fifth type of fluvial system is the *valley-fill* or *entrenched channel* variety. This channel-fill system results from base-level changes that impose superimposition and subsequent aggradation.

(2)

A NOTE ON OXYGEN ISOTOPES OF MAGNESITE AND DOLOSTONE OF MESOPROTEROZOIC GANGOLIHAT DOLOMITE (FORMATION), PITHORAGARH DISTRICT, UTTAR PRADESH by S. Kumar, Jour. Geol. Soc. India, v.51(3), pp.367-370.

M.N. Joshi, Geology Department, DBS College, Dehradun, Comments:

The stable isotope data and their interpretation presented by the author need some clarification:

1. The $\delta^{18}O$ values are mentioned with respect to SMOW standard. The value range from -9.0 to -10.8‰ for dolostone with average of -10.06 and from -11.8 to -16.8‰ for magnesite with average of -14.0. These negative values could have been normal had they been against PDB standard. With SMOW they appear to be quite abnormal because $\delta^{18}O$ values for standard seawater are +28.6‰ (Krauskopf, 1979 p.507) and those for recent marine limestones vary from +28 to +30‰ SMOW (Faure, 1986 p.478). Due to lithification with age these values decrease to +20‰ in Cambrian. The values in the present paper being so highly negative do not allow these stromatolitic dolostones to be interpreted as shallow marine tidal flat deposits which is the common belief.

2. If these $\delta^{18}O$ values are against PDB then only they correspond well with other data presented by earlier workers for the same Gangolihat Formation (Joshi et al. 1993).

Similarly the $\delta^{18}O$ data for magnesite also, if taken against PDB, match well with those of Bauri magnesite of Almora district (Joshi et al. 1993) as well as fall within the field of Veitsch type magnesites shown by Pohl (1990).

3. The interpretation of the isotope data about the origin of magnesite appears to have been reached hurriedly. The average difference of 1‰ for $\delta^{13}C$ and 4‰ for $\delta^{18}O$ between dolostone and magnesite figures is not that striking. The $\delta^{13}C$ range between 0 to 4‰ is typical marine which can become negative due to organic activity (Tucker in Tucker and Wright, 1990, p.384). The $\delta^{13}C$ values of magnesites given in the present paper fall within the marine realm. Moreover, the other

data for these analogous magnesites like chemical (Sengupta, 1990; Joshi et al. 1993) and fluid inclusion (Sharma and Joshi, 1997) negate hydrothermal concept.

Therefore, the interpretation of isotope values should be reviewed in that light.

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S. Kumar, Geology Department, Lucknow University, Lucknow, Uttar Pradesh replies:

1. I am grateful to M.N. Joshi for pointing out a basic mistake in $\delta^{18}O$ values which are given against SMOW standard. The measurements for both $\delta^{18}O$ and $\delta^{18}C$ were made against PDB standard. Traditionally $\delta^{18}O$ values are given against SMOW standards and as such the values for $\delta^{18}O$ (PDB) values were to be converted to SMOW standard. However, this was not done and the $\delta^{18}O$ (PDB) values were given by mistake against SMOW standard. All values of $\delta^{18}O$ are against PDB standard and not against SMOW standard as given in the paper. All other comments relate to this mistake.

2. Since there are two distinct clusters for dolostone and magnesite in the scatter diagram, a separate origin is suggested for them.

(3)

A PROGNOSTIC ASSESSMENT OF THE ENVIRONMENTAL IMPACT DUE TO OPEN CAST MECHANISED MINING OF THE EAST COAST BAUXITE DEPOSITS IN ANDHRA PRADESH, by P.K. Ramam, Jour. Geol. Soc. India, v.52, pp.103-110.

A.V. Subrahmanyam, Atomic Minerals Division, P.O. Assam Rifles, Nongmynsong, Shillong - 11, comments:

1. P.K. Ramam stated that in ECB deposits there are no evidences of post-bauxite movements (neotectonics). The change in drainage pattern from NE-SW to N-S, NW-SE and S development of scarp faces of some land forms in the area may indicate neotectonism. However, these are not studied. In the Panchpatmali bauxite deposit, Subrahmanyam, Rao and Rao (1996) have reported post-bauxite movements (neotectonics). Being part of same setup in space and time, these deposits can not escape post-bauxite movements (neotectonics)?

2. The ECB deposits consists of five subgroups (Fig.1, p.104). Under EIA assessment: a) physical environment, b) Ecosystem, c) aesthetics and d) socio-economic parameters are considered. The Anantagiri subgroup has more aesthetic value; other subgroups have a fine blend of physical, ecological and aesthetics. Poor socio-economic condition is the only common parameter