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NEW OCCURRENCE OF MANGANOCOLUMBITE FROM LATE PROTEROZOIC PEGMATITES OF BHURPIDUNGRI, JHARSUGUDA DISTRICT, ORISSA by P. Jagadeesan, K.S. Mishra, and P.V. Ramesh Babu. Jour.Geol. Soc. India, v.66, 2005, pp.141-144.

S. Viswanathan, Flat B-203, Block-B, United Avenue Apartments, South End, 7-1-29, Ameerpet, Hyderabad-500016, comments:

The authors claim that they are reporting for the first time, the occurrence of manganocolumbite in the pegmatites of India at Bhurpidungri in the Jharsuguda district of Orissa. This claim cannot be accepted for the following reasons: Two criteria have to be fulfilled for naming a member of the columbite-tantalite isomorphous series as 'mangano-columbite': (1) an Mno/FeO ratio of more than 3 and (2) a Ta_2O_5 content of less than 20 percent by weight (Vlasov, 1966, p.453; Kuz'menko, 1959, in Vlasov, *op.cit*). Kuz'menko and Vlasov also feel that the term 'mangano-columbite' should be reserved only for the manganese end-member of the columbite-tantalite series, $MnNb_2O_6$.

In Table 2 on p.143, the authors have given analytical data for eight samples of columbite-tantalite, numbered BP/1 to BP/8, from Bhurpidungri. As they have not given the MnO/FeO ratio of the samples, and also overlooked the significance of these ratios, I have calculated the MnO/FeO ratios. Seven of the samples (BP/1, 2, 4 to 8) have MnO/FeO ratios of less than 3, with BP/5 having a very low value of 0.86. Although one sample (BP/3) has an MnO/FeO ratio of 3, its Ta_2O_5 content is high (24.45%). The average of the eight samples (BP_x) has an MnO/FeO ratio of only 2, though its Ta_2O_5 content is 14.33%. Therefore, the Bhurpidungri columbite-tantalites are not 'manganocolumbites'.

On p.144, the authors state that, "The manganocolumbite under study contains up to 18.46% MnO, and is comparable with that from the San Diego Mine, Mesa Grande, California (MnO - 19.21%) and Pakeagama pegmatite, Ontario, Canada (MnO - 12.50%) (Breaks et al. 1998) (Table 3)." This comparison is misleading because, when comparing 'manganocolumbites' from different areas, it is not enough to compare only their MnO values. It is absolutely essential to compare their MnO/FeO ratios and Ta_2O_5 contents. For instance, with its very high MnO/FeO ratio of 55.06 and Ta_2O_5 of 12.56%, the San Diego Mine sample is a fine example of a manganocolumbite. In sharp contrast, with its low MnO/FeO ratio of 2.17 and high Ta_2O_5 of 30.99%, the Pakeagama sample is not a manganocolumbite. As already pointed out, the 'average' Bhurpidungri sample is also not a manganocolumbite because of its low MnO/FeO ratio of 2.

If the MnO content of a columbite-tantalite is the only criterion for naming it as 'manganocolumbite', as the authors appear to believe, they should note the following:

Columbite-tantalites with high MnO contents, within the range of 8 91 to 18 46% given by them for the so-called 'manganocolumbites' of Bhurpidungri in Table 2 (p 143), occur at Fagum, Gadar, Tharipahari, Saknakola, Kararua, Ambadah, Kalapahari, Tarazoppa, Goriadih, Nirupahari, and Domchanch in the Bihar mica-pegmatite belt (B N Tikoo, 1990 The geochemistry of columbite-tantalite from the rare-metal pegmatite belts of India Unsubmitted Ph D Thesis He died before he could submit his Thesis to the Osmania University I was his Ph D Guide) The columbite-tantalite from Tarazoppa (Hazaribagh district, 72 H/10, 24°31'20" 85°44'40") (MnO = 12 93%, FeO = 4 03%, Nb_2O_5 = 49 40%, Ta_2O_5= 31 09%) is strikingly similar to the one from the Pakeagama pegmatite, Ontario, Canada (MnO = 12 59%, FeO = 5 62%, Nb_20_5 = 48 82%, Ta_2O_5 = 30 99%), which the authors consider as being a 'manganocolumbite', citing Breaks et al 1998, but is not, because of its low MnO/FeO ratio of only 2 17 and high Ta_2O_5 (30 99%) Despite its much higher MnO/FeO ratio of 3 21, the Tarazoppa columbite-tantalite is also not a 'mangano-columbite' because of its high Ta_2O_5 (31 09%)

On p 143, the authors have stated that "two samples were investigated by the X-ray diffraction method that confirmed it as manganocolumbite (PDF data Card No 33-899 of JCPDS) " They refer to the two samples as "Sample-I" and "Sample-II" Are these two from the batch of eight, numbered BP/1 to BP/8, and if so, which two? If not, they should have given analytical data for these two samples also, with the MnO/FeO ratio, Ta_2O_5 content, and locality of the manganocolumbite listed in PDP Data Card No 33-899 of JCPDS

If the nomenclature of different members of the columbite-tantalite isomorphous series has undergone any revision in recent years, I wish to get enlightened by the authors

P. Jagadeesan[1], **K.S. Misra**[1] and **P.V. Ramesh Babu**[2], Atomic Minerals Directorate for Exploration and Research, [1]Civil Lines, Nagpur – 440 001, [2]Begumpet, Hyderabad – 500 016, reply

The authors are sincerely thankful to Dr S Viswanathan for his valuable comments We would like to make the following observations

1 The first claim of manganocolumbite is genuine and so far none has reported manganocolumbite from Indian pegmatites The examples quoted by Dr S Viswanathan that some of the pegmatites viz , Fagum, Gadar, Tharipahari etc , in Bihar Mica Belt having high content of MnO have not been published so far
2 The Ta_2O_5 content has nothing to do with the nomenclature of manganocolumbite, instead, if it is high >50%, it will be known as manganotantalite Vlasov (1966) has also advocated that the ratio of Fe/Mn can be used for prefixing "iron" or "manganese" in front of the mineral or by using Mn-tantalite, Mn-columbite etc , (Vlasov, 1966, p 453) Presently naming of the mineral has been preferred by taking elemental ratio of Mn/Mn+Fe (atomic ratio) (after Cerny et al 2003) instead of taking MnO/FeO ratios
3 His comment on percentage of Ta_20_5 that it should be <20% is not correct The manganocolumbite mineral data clearly shows that it can be >20% and can go up to 33 58% (Cerny et al 2003, Breaks et al 1999)
4 Regarding his comment on the comparison of manganocolumbite of Bhurpidungri with Pakeagama sample, it is clarified that it is well-published data by Breaks et al (1999) in which they have clearly mentioned that it is a manganocolumbite and comparison is not only done for its percentage of MnO_2 but considering all the major oxides and its geological set up
5 The sample Nos I and II are from the same batch and they are sample Nos BP/2 and BP/3
6 We agree with Dr S Viswanathan that average may not be a representation of manganocolumbite because there are few samples which may not be true manganocolumbite (Sample Nos BP/5 & BP/8) but in a pegmatite there will not be a single mineralogical representation but they occur in a isomorphous solid solution series This is the reason for variation in their chemical composition

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GEOSTATISTICAL STUDIES OF A GOLD PROSPECT IN SIDHI DISTRICT, MADHYA PRADESH by K. Saikia and B C Sarkar. Jour. Geol Soc. India, v 66, pp.229-241

Shakeel Ahmed, National Geophysical Research Institute, Hyderabad, **Email:** *shakeelahmed@ngri res in*, comments

The authors of the article deserve appreciation for applying geostatistics, to the estimation of a gold deposit and publishing the same

The approach in this article is similar to the one published by Sarkar and Roy (2005) Also following two points are required to be explained

1. When they fitted log normal model to gold distribution, why did they not carry log-normal kriging This point needs clarification and elaboration
2. My comments in respect of grade tonnage curves, given in my comments on Sarkar and Roy (2005, please refer p 542 of this issue) also hold good in respect of this paper This points need clarification

K. Saikia and **B.C. Sarkar**, Indian School of Mines, Dhanbad, ***Email:*** *bhabesh_sarkar@yahoo co in*, reply

Our point wise replies to the comments are as follows

1 Reasons for applying ordinary kriging for estimation of block values instead of lognormal kriging are mentioned in the paper on p 237 under the section 'Block Kriging', lines 8 to 11 References of Champigny and Armstrong (1988) and David (1968) clearly state the reasons For the sake of clarification, these are explicitly given below

David (1988) in his book 'Handbook of Applied Advanced Geostatistical Ore Reserve Estimation', p 49 states *'Circumstances of non-stationarity may render the estimation of the parameters of a log normal mode extremely difficult Hence, one may use the semi-variogram model that appears to be the best for deriving the parameters of a model'*

Champigny and Armstrong (1988) in their paper on 'Estimation of Fault-controlled Deposit' and discussed on modeling of a gold deposit of epithermal type (3rd International Geostatistics Congress, Avignon, Sept 5-9, 1988, pp 311-322) They state *'Lognormal kriging was not considered in the modeling although values conformed to a lognormal distribution because it requires second order stationarity of $log_e(Xj)$ values and not just local stationarity'*

2 The comments point to the single issue, i e deriving grade-tonnage curves Different authors have applied different methods that can be grouped as

- (i) Grade-tonnage curves derived from a histogram of sample grades
- (ii) Grade-tonnage curves derived from a continuous distribution representing sample grades;
- (iii) Grade tonnage curves derived from local block estimates,
- (iv) Grade tonnage curves by multiple indicator kriging,
- (v) Grade tonnage curves based on conditional block simulation

Virtually all these methods of deriving grade-tonnage curves contain some error In the present modeling study, the grade-tonnage curves have been derived from local block estimates

The authors express deep sense of gratitude to Dr Shakeel Ahmed for going through the two of our above mentioned papers very minutely and objectively and offering his comments In fact, such an exercise aids in bringing improvements in the methodology