Dated 2nd February, 2025

From:

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To:

The General Manager (Exploration),
Mineral Exploration & Consultancy Limited,
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Nagpur-440 006

Sub: Peer Review of 'Geological Report on Preliminary Exploration (G-3) for Rock Phosphate in Nimbli Block (2.7 sq km) District: Jaisalmer, Rajasthan'

Ref: 1. Your letter no. MECL/EXPL/File/NMET/PR/2024-25/994, Dated 20.01.2025

2. NMET letter no. F. No. 44/1/2017-NMET/523 dated 19-11-2024.

Sir,

With reference to the above, please find enclosed the abovementioned report on phosphorite exploration in Jaisalmer district Rajasthan which is peer reviewed by the undersigned. It is requested to go through the observations and modifications suggested in the report and attend to the comments and queries mentioned in the text part as well as at the margins of Tables and Plates. In addition, the following comments that emerge from review of the said report are given below:

1. CHAPTER-VII: GEOLOGY

Section 7.2.2, P. 13: Randha-Birmania sequence is considered as the westernmost Precambrian sequence in India, while it is shown as Cambrian in the Table 7.1 at page 13. Please clarify it.

Text Figure 7.3 of MECL at P. 20: In this figure phosphorite bands is shown to transect gray cherty limestone and dolomitic limestone which is incorrect depiction of the PLATE NO.-III. Perhaps the axial trace is shown as phosphatic band. Pl. correct it as per PLATE NO. -III of this report.

Section 7.3.5 (P.16): Please clarify what is meant by 'complex folding'? Is it geometrically complex or superimposed folding?

Section 7.4, Block Geology: Thickness of Birmania basin is cited as 900m (Section 7.2.3) while it is mentioned as 536m (P.14, P. 18) and as 600m in the Table 7.1 (P. 13). It is ought to be same in the report.

Section 7.5.2 (P.21): Cherty limestone is stated to be the oldest, but in the legend of Text Fig. 7.3 (P. 20) ferruginous sandstone is shown to be oldest. The legend should be as per stratigraphic considerations in the report.

Section 7.5.2 Structure within the Block (P.21): The stereogram (Fig. 7.17) indicates almost non-plunging folding, whereas the plunge is mentioned between 25° to 30° (see Section 7.6.6 at P. 32). Please check it and make requisite corrections.

Section 7.7.0 (P. 34): Phosphate Mineralization: Sections 7.7.2 and 7.7.3 are unrelated to the Birmania phosphate mineralization. Hence, they should be deleted from the report.

Section 7.7.5 (P. 35): The diagram given at P. 35 should be referred after the original author.

Repetition of Figures: Fig. 7.9b (P. 25) and 7.23 (P. 36) and Fig. Pmg-1 in the Annexure X-B/1 are the same but given at three different places. Also, the Fig. 7.12 (P.27) and Fig. 12.1 (P.49) are the same but given at different places. Please avoid repetition.

Section 7.8.5, and ANNEXURE X-A/1 Mineragraphic Studies:
All the five samples show mainly iron oxide phases along with rutile/anatase. **No sample shows phosphate, quartz, calcite, clay minerals etc. even in trace amount?** It is baffling to see no phosphate minerals in mineragraphic studies of the phosphorite investigation.

2. CHAPTER IX (P. 41) Aerial or Ground Geophysical or Geochemical Survey: Whether it was part of the sanctioned component or not. If not then why to make the blank chapter.

3. CHAPTER XII (P. 49) SAMPLING TECHNIQUE
Analytic work on core sampling, composite samples for 34 element analyses, external check samples, and results of X-Ray diffraction studies are shown to be awaited as on 07/01.2025. The report submitted is thus incomplete in this respect.

4. CHAPTER XV: QUALITY OF ASSAY DATA AND LABORATORY TESTS (P. 57)
The Certified Referenced Material (CRM) used for phosphate analyses must be mentioned.

5. CHAPTER XVIII: BENEFICIATION STUDIES (P. 61)
Earlier studies on beneficiation carried out by GSI through IBM indicate that Birmania phosphorite is not amenable to enrichment. In the light of technological advancements, it would have been appropriate to carry out beneficiation studies, otherwise it shall remain a constraint in auctioning and exploitation of the Birmania phosphorite deposit.

6. CHAPTER XIX (P. 79) RESOURCES ESTIMATION TECHNIQUES

Against 367 number of envisaged sample analyses, results of only 56 samples are used for making a histogram (Fig. 19.1 at P. 64).
Results of 23 composite samples are stated to be awaited (see Section 19.5.1 at P. 64).
In the Section of Methodology Adopted (Section 19.7.1, Point 3 at P. 67) dip angle of bedding surface is to be used in place of foliation, as the former is a primary geological surface that controls phosphate mineralization.

7. CHAPTER XX (P. 79) REPORTING OF RESOURCES

The difference between the resources estimated by Geological Cross Section method and Level Plan method is 14% which is much higher than the permissible limit. To increase level of confidence, it is suggested to estimate reserves by Longitudinal Vertical method.

While going through the CHAPTER-VIII (P. 39 and 40), CHAPTER -X (P. 42) and CHAPTER-XX (P.70), it is not clear, in what way the present exploration work involving 32 boreholes has helped in establishing additional resources in terms of grade and tonnage, over and above the previous two exploration projects carried out in Birmania area, Jaisalmer; initially by the GSI (1968-1970, 68 no. of boreholes), and later by MECL (G-2 level, 69 boreholes) for the Union Ministry of Chemical and

Fertilizers in 2022. It may also be mentioned that there is great overlap in the two exploration projects by MECL, including the present one, in terms of area and depth of drilling, subsequent to GSI's estimation of resources in late sixties. In the present era of data sharing, it is difficult to comprehend why the present report has not taken cognizance of G-2 level exploration involving 69 boreholes for comprehensive assessment of Birmania phosphorite. It will be appropriate to include a table indicating coordinates of all the three project areas, strike length, number and depth of boreholes drilled and the nature of reported resources, as it will help in auctioning of the Birmania phosphorite block.

8. ANNEXURE VA/1 **Surface Geological Samples**

There is no correspondence between the remarks indicating rock type identified in the field and chemical analyses. The 17 number of samples (Sample nos. 3, 7, 14, 15, 18, 19, 20, 22, 27, 29, 31, 32, 34, 35, 37, 39 and 40) identified as quartzitic sandstone analyse an average of 11.51% SiO_2, the highest being 14.36%, and an average LOI of 24.44%. The quartzitic sandstone must analyse above 90% SiO_2. The high LOI content indicates that the rocks were probably siliceous impure limestone.

ANNEXURE IX/8, Sl. No. 14: The table shows columns of major and accessory minerals as blank.

9. Comments on Plates made on the body of figures may be attended.

10. Section of REFERENCES (P. 89) Work of 11more authors has been referred in the text of the present report but not cited in the list of References. Please add the authors in the list as indicated at P. 89.

Comments on the margins have been made in the report which also include Chapters II to VI. These comments may be attended while revising the report.

Enclosed: The Report (as above) along with Plates.

Yours Sincerely

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Copy for information to:

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