

Part III

**CONCLUSION
AND
RECOMMENDATION**

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Chapter 1 Conclusion

Geology of the investigated area is characterized by the formation of the magmatic arc and accretionary prism, and the collision between the Siberian and North China cratons which took place from the Vendian of the Proterozoic time on. From this tectonic development history, the potential of following types of mineralization is expected in the area: ① orphyry copper/molybdenum, ② epithermal gold/silver, ③ pluton-related gold, ④ skarn, ⑤ volcanogenic massive sulfides and ⑥ chromite or platinum group in ophiolite.

According to the information provided by MRAM, 398 mineral occurrences have been located within the investigated area and they are classified into following types; porphyry, skarn, hydrothermal and metasomatic.

The results of the ground truth for 103 mineral occurrences/investigation points, which were selected by the analyses of the existing data and satellite imageries, have confirmed the presence of mineralization of following types; porphyry copper/molybdenum, epithermal gold/silver, pluton-related gold, skarn type copper/lead/zinc and skarn type gold, and have revealed they are promising. Among them, following 10 occurrences have been selected as the candidates for further follow-up.

Erdenet West district

Tsagann chuluut mineral occurrence

Mogoin gol 2 mineral occurrence

Zuukhiin gol mineral occurrence

Danbatseren mineral occurrence

Undrakh mineral occurrence

Tsookher mert mineral occurrence

Bulgan SW district

Oyuut khonkhor mineral occurrence

Tavt district

Ereen mineral occurrence

Teshig mineral occurrence

Tosontsengel district

Naranbulag occurrence

Chapter 2 Recommendation for the Future Investigation

Based on the results of the survey for two years, following are recommended.

Further detailed study is recommended in the Erdenet West district, especially in its eastern part where promising mineral occurrences are concentrated. However, the effectiveness of surface investigation such as geological mapping and geochemical sampling (either soil or stream sediments) is limited here. The reason is as follows; in most of the district, the topography is very gentle and the surface is covered with vegetation (steppe and taiga = boreal forest), exposure of the bed rock is poor, alluvium beds widely occur and overburden is very thick, and development of drainage system is poor and running water is scarce except some large rivers.

Therefore, it is recommended to carry on a high resolution airborne magnetic survey prior to the geologic mapping. The survey should be carried on taking the Erdenet deposit as a standard, in order to find the structural factors that localize the deposit and lithocap, factors that control the formation of deposit such as distribution of intrusive rocks and demagnetized zones that suggest the alteration zones. Based on findings from these, it is recommended to select the new targets for the further detailed exploration.

As to the individual promising occurrences which have already been selected in the district, it is recommended to obtain further detailed information on alteration and mineralization, by carrying on geological survey simultaneously with the high resolution airborne magnetic survey.

Promising targets selected in other districts are as follows.

- ① The areas where "secondary quartzite" distribute (Tsagaan chulut, Mogoin gol 2, and Danbatseren mineral occurrences), since high sulfidation type epithermal gold and porphyry type copper/molybdenum mineralization are expected.
- ② The areas where oxide copper distribute (Undrakh and Zuukhinn gol mineral occurrences), since porphyry type copper/molybdenum mineralization is expected at depths.
- ③ The area where epithermal gold mineralization is expected (Tsookher mert mineral occurrence).

Recommendations for the target areas listed above are as follows.

For group ①, following works are recommended as there is no prominent mineralization on the surface: Detailed geological survey (rock geochemistry and study of alteration zones), in order to find the characteristics of the hydrothermal system (scale, characteristics and locating the activity center), though outcrops are limited here. IP geophysics in order to check the presence of the sulfides at depths.

For group ②, following works are recommended, as denudation is advanced here and the ore level is considered to crop out : Detailed geological survey (soil and rock geochemistry and study of alteration zones) in order to estimate the extent of oxide copper mineralization and possibly to guess presence of leached cap. IP geophysics in order to check the presence of the sulfides at depths including the secondary enrichment zone.

For ③, following work is recommended: Detailed geological survey(soil geochemistry and study of alteration zones), in order to find the extent of gold mineralization and nature of alteration (scale and denudation level) and further to infer the bonanza zone. Diamond drilling after the targets have been located by the study mentioned above.

For Naranbulag in the Tosontsengel district, it is recommended to carry on the same works as described for ②.

For Oyuut khonkhor in the Bulgan West district (epithermal gold.), and Ereen (pluton-related gold) and Teshig (skarn type gold) in the Tavit district, we would watch what are going on hoping that good results will be obtained, since the exploration works are currently being carried on by Mongolian private companies.

It is suggested to carry on following works, although these are not applied to the present scheme of "Cooperative Exploration for Mineral Development" by JICA /MMAJ.

In order to promote the foreign investment in Mongolia, it is suggested to bring existing data and documents including geologic maps in better state based on standardized format. Particularly it would be desirable to make 1:200,000 geologic maps ready for GIS use, which have already been prepared in almost whole the area of Mongolia as shown in Appendix. For this purpose, it would be important to use bilingual notation written in both Mongolian and English. Also it would be necessary to prepare the data base of the inventory of ore deposits/mineral occurrences and to prepare geochemical maps based on the results of the geochemical survey (sample location, assay results etc.). Besides these, it is considered that clarification of the metallogenic and tectonic provinces based on the analysis of the terrane would contribute for the future exploration.

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