D- 42: Reserves estimation of the kaolin deposit at Meetiyagoda

T Thilina Damayanthi[1], K T U S de Silva[1], W L W Fernando[2], M P J Jayawardana[2]
([1]*Geological Survey & Mines Bureau,* [2]*Univ. of Moratuwa*)

Kaolin ($Al_2O_3.2SiO_2.2H_2O$) is the name given to pure white clays composed chiefly of the mineral kaolinite. It is the final product in the weathering of feldspar in rocks like granite, pegmatite and feldspar rich gneisses.

Economic deposits of super kaolin in Sri Lanka are limited and so far found only in the area around Meetiyagoda. This kaolin deposit supplying super grade kaolin to the porcelain table-ware industry is now being rapidly exhausted. If adequate supplies of super grade kaolin are not maintained for the local industry, imports of kaolin would be necessary. Therefore to locate further super grade kaolin deposits to meet the present and future needs a detailed kaolin survey in the South-west of Sri Lanka was undertaken.

More than 5400 m^3 of super grade kaolin (LPL grade) was located within the area of detailed survey. This commenced in August 1994, on a reconnaissance basis. Out of 11 fields 5 fields namely Lewduwa, Athkandura, Kahatapitiya - Nindana road, Ihaladanketiya and Eranawila (A) were selected for detailed auger hole studies. Promising pockets of super grade kaolin were indicated in these fields during the preliminary survey.

After studying the auger hole data and whiteness results of the reconnaissance survey of 2 parts of Eranawila (A) field (P and P_1 area), tentative boundaries of the super grade kaolin pockets were demarcated.

A North-South baseline was laid parallel to the length of the field. In the 'P' area, auger holes were put down at 10 m intervals whereas in the 'P_1' area, distance between the holes was 20 m.

The thickness of the overburden, of this field varied between 1.5 to 2.0 m. Hence all the holes were cased to a depth of 2 m. After installing the casing, all holes were washed and cleaned and sand removed with the help of a sand pump. For augering and sampling a 4" Ivan-type hand auger was used. Samples were collected at 1 m intervals and at points when colour differences were observed. In some holes the lack of cohesiveness of samples due to the absence of sand in the kaolin, made collection of samples difficult.

In this survey, 84 samples were collected from 18 auger holes of 'P' and 'P_1" area at different depths. These samples were analysed in the laboratory of Noritake Lanka Porcelain Ltd. Matale. Only 56 samples maintained the required standard for LPL grade.

In this survey, reserves estimation was based on data from bore hole logs and analytical results. Super grade kaolin thickness decreased towards the west of the deposit. In the eastern boundary of the deposit (P area), the thickness varied from 7 to 8 am.

Due to the variable thickness of the kaolin bed and the presence of small (cm scale) low grade kaolin patches, prediction of exact subsurface extent, shape and continuity of the deposit was difficult. However, by close examination of analytical results,the deposit was identified to contain 3 pockets in the 'P'are a and 4 pockets in P_1 area. Within each of these 7 pockets, the LPL grade kaolin thickness remained uniform but of different thicknesses.

Assuming slab model to all 7 pockets, the volumes of LPL grade kaolin within 'P' and 'P_1' areas were 1484 m^3 and 3934 m^3 respectively.