

Eruption of Molten Rock Material from Vikarabad Area, A.P. – D.V. Reddy, R. Rangarajan, Simanchal Padhy, G.B.K Shankar, G. Rajender Reddy, NGRI, Hyderabad; Email: ngi.dvr@gmail.com

Media reported on August 15, 2009, eruption of lava like material at two sites in Kalkoda and Siripuram villages near Vikarabad town (Fig.1) in Rangareddy district of Andhra Pradesh. As per the instruction of Dr. V.P. Dimri, Director, NGRI, we have visited the two sites and investigated the possible reasons for the eruption of molten rock like material. One of the sites where the major eruption occurred is in the barren elevated land of Kalkoda village, about 40 km from Vikarabad town. The eruption is found at two spots within a distance of 70-80 m. One

spot (here after called as P1) has heavy eruption (Fig. 2), created a huge cavity up to a depth of 1 – 1.5 m below ground level (Fig.2 top inset). Visual observations indicates that the erupted low density, shining and porous granular material spread over few square meters in the form of thick black/grey black coloured slag and glass. At another spot (P2), the molten rock material appears to have gushed out with a great pressure from a 2-3 cm diameter hole. Incidentally, these two eruptions have occurred at the steel electrical poles (11 KVA line). At P1, the electrical pole is supported by the stay wires in all four directions. The cavity formed at this site spread in between the electrical pole and the stay wire in the eastern side.

Another eruption site is at Siripuram village, about 15 km ENE of the Kalkoda site. The erupted material has spread over <1 m² area and the eruption was from a hole adjacent to the electrical pole (11 KVA, Fig.2 bottom left inset). Here also the molten rock material appears to have gushed out with a great force and spread around. Though the incident was reported on 15th August, this might have happened earlier than 15th and nobody might have noticed it.

A small trench (~50 cm deep) was made across the hole

from where the molten material ejected at Siripuram site. In this trench a tube like structure with a diameter of 8 to 25 cm and about 70 cm long is found. However, the second end of the tube was closed. Highly polished inner wall of the tube looks like polished metallic surface (Fig.2, bottom right inset). The tube wall thickness varies from 3-4 cm where the burning intensity reduced from inside to out side till the original soil contact. The tube like structure indicates the core from where the molten material gushed out with a great pressure and due to that the polished surface is formed. Slag and glassy material formed due to burning of soil, gasses escaped from the soil pores and also soil moisture breaks in to vapors due to severe heat generated by electric current.

Such glassy material called fulgurite is reported earlier by Jayakumaran (*Curr. Sci.* v.75(8), 1998, pp.763-764) to have formed due to lightning at Udiyur in Periyar district of Tamil Nadu. The texture and shape of fulgurite is typical of superheating, instantaneous melting, and rapid cooling. In the present case, the material observed in the area is similar to fulgurite but it is not formed due to lightening. As there was no major rainfall event in the month of July and August. In the present case, the phenomenon is due to the intensive heat developed due to current leakage from the electrical pole. At P1, a part of the steel pole had the corrosion spots, indicating the evidence of heating below the ground level. Hence we ascribe this event to short-circuiting of high voltage (11 KVA) power line. The discussion we had with electricity board people shows that the faulty insulator at the top of the metallic pole is the reason for the leakage of current. The methodology used in in-situ vitrification of soil (US Patent 4376598; <http://www.patentstorm.us/patents/4376598/description.html>) also confirms the hypothesis proposed by us. It shows that fulgurite can be formed due to electrical short circuit.

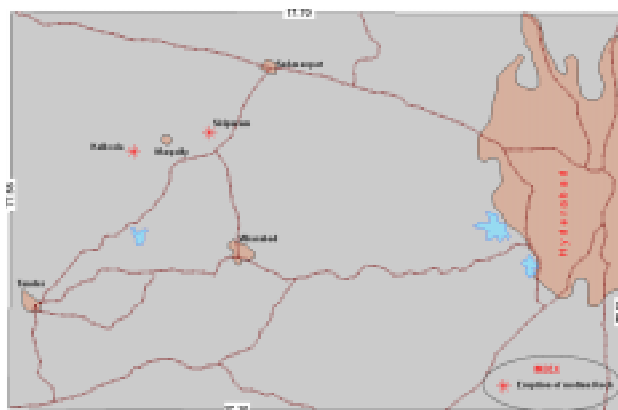


Fig.1. Location of molten material erupted sites Kalkoda and Siripuram.



Fig 2. Erupted molten rock material at Kalkoda village and its close-up view. Two insets at bottom is Siripuram site and the excavated portion.