

## **A NOTE ON MUD-VOLCANO ERUPTION IN BARATANG, MIDDLE ANDAMANS ON 18-02-2003**

The Deputy Commissioner of Andamans informed GSI, Eastern Region, Kolkata, over telephone on 22-02-2003 about the incident of eruption of a mud volcano at Baratang Island, Middle Andamans, which started from 18-02-2003. The GSI team comprising S/Sri S. Raghav, P. Jana, B. Shankar and C.A. Limbu, who were carrying out fieldwork in the island, were immediately advised to visit the site and report.

Baratang Island of Middle Andamans is well known for mud volcanoes. The site of the present volcano was having a smaller fissure before 1983. This type of fissure is numerous in Baratang from which mud and gas have been constantly seeping out either from an isolated fissure or from a cluster of fissures. The last major eruption in recent past took place in March, 1983.

A Brief account of the preliminary observations made by the team at the site is given below:

- (i) A mud volcano with loud explosion and mild tremors and intermittent fire flares (as per the versions of forest people working there) started erupting on 18<sup>th</sup> February, 2003 at 20.00 hrs. at a place about 1 km SSE of Jarwar Creek, under Nilambur Panchayat in baratang Island.
- (ii) The present eruption covering an area of 1,000 sq m to 1,200 sq m has resulted in the formation of a sub-circular mound of about 30 m in diameter and height of about 2 m at the center.
- (iii) The main crater is submerged under the grey coloured, solidified mud. At present emission of a colourless gas with sulphurous smell at times were noted along with grey, dark grey to bluish grey coloured viscous mud. The present activity is confined to 8 small craters, the biggest one having an inner diameter of about 20 cm and 28 cm in height.
- (iv) The ejected mud also contains angular to sub-rounded rock fragments consisting of sandstone, red and green coloured shales, quartz-calcite veins and crystals of cubic pyrite (?) possibly from the underlying strata.
- (v) The eruption has opened up 2 parallel cracks / fissures about 2 m apart from the south central periphery of the mound extending in N20°E – S20° W direction. The larger one was traced continuously for 15 m with a maximum width of about 30 cm. According to the eyewitnesses the width of the cracks have increased since the day of the eruption. Overall tectonic trend of A & N islands is N-S.
- (vi) At the southern end of the larger fissure there is a small ejection center discharging bluish grey semi-viscous mud showing presence of a dark brown pool of liquid from where gas bubbles are frequently emanated.
- (vii) About 500 m south, another ejection center, with similar feature (minus the immiscible liquid), were noted. As per the versions of the locals, the area is covered by water and the activity increases during spring tide.
- (viii) The country rocks are found to be predominantly medium grained to gritty sandstone, polymictic conglomerates (with pebbles upto 3cm x 3cm dimensions) and olistoliths belonging to Mithakhari Group of rocks.
- (ix) According to the local people working in the Forest Department, a more extensive eruption of higher magnitude had occurred at the some place during March, 1983, the remnants of which are seen strewn around beyond the western periphery of the present eruption. The areal extent of the previous eruption is about 50 m in diameter. As per the versions of the local people, the heat generated then were sufficient to burn the vegetation present. In comparison the present eruption contains much less rock ejecta and the temperature was around 30°C.

- (x) The only visible effect of the present eruption on the surrounding vegetation is the partial submergence of some trees of 23 m height observed in the northern half of the circular mound.
- (xi) On 16<sup>th</sup> February, 2003, people of Diglipur area, N. Andamans felt tremors in the morning. This can be the aftershocks of smaller intensity still continuing after the September, 2003 earthquakes in middle and North Andamans.

In course of preliminary survey the following samples were collected:

- (a) Gas samples: 2
  - (b) Mud sludge samples: 4
  - (c) Solidified mud samples: 2
  - (d) Rock fragments from the eruption (18-02-2003): 4
  - (e) Rock fragments from the 1983 eruption: 4
- (xii) The water collected from about 2 km N of the present site was tested with Horiba multi-element Probe. It shows the following properties:

No.	Property	Value	Remarks
1	pH	8.34	Basic
2	Specific conductivity	1.52 s/m	Highly conductive
3	Turbidity	140.0 NTU	Highly turbid due to mud suspension
4	Dissolved Oxygen	5.51 g/l	Much more than normal well water in the area
5	TDS	9.4 g/l	
6	Eh	305 mv	
7	Temperature	26.9 °C	

**Recommendations:**

1. Detailed delineation of all the cones / fissures in the Middle and North Andamans.
2. Detailed geophysical study to trace the gas chamber.