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TITLE: Ongoing Monitoring of the Piparo Mud Volcano 2009

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This research project deals with the monitoring of the Piparo mud volcano. This is the latest addition of the continuous monitoring program that has been performed by the Department of Physics since its major eruption in February 1997. This project compares the results obtained this year of 2009 to the previous years. Two types of geophysical surveys were conducted to investigate the nature of the subsurface of the mud volcano. They were the Seismic Refraction survey and the Electrical Resistivity survey. The X-Ray diffraction method was also conducted to determine the mineralogical characteristics of the extruded mud sample. In addition, the surface indicators were also mapped and compared.

The results of the Seismic Refraction method inferred the presence of two layers. This result differed from the previous two years where three layers were found. The range of the seismic velocity was found to concur with the velocity range of clay. The thickness of the layer was calculated to be approximately 1.2 m. The results from the Electrical Resistivity survey indicated clay with variation of saturation levels. Additionally, the X-ray diffraction showed that mineralogically the mud is comprised mostly of kaolinite, quartz, mica and montmorillonite. From mapping and comparing the surface indicators to the previous years it was observed that there was a new major vent present and a decrease in the number of minor vents. Furthermore, the depth of the entire mound is decreasing with time due to erosion, compaction and weathering. The vegetation over the years continues to encroach from the base of the mound upwards, particularly on the northern side.