TITLE: The Piparo Mud Volcano: Geophysical Monitoring.

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For many years mud volcanoes have been active in parts of central and south Trinidad, the most well known being The Devil's Woodyard and more recently, Piparo. Essentially, the effluent of the volcanoes is predominantly viscous, fluidized kaolinitic clay (and to a lesser extent "exotics" in the form of rock fragments). After violent eruptions clay is exposed at the surface. With a high solar influx from the sun, the surface clay becomes sun-baked to form a rigid, hard crust. Beneath this is a progressively stiff plastic mud, then a slurry pool, which is fed by low activity within the deep-earth major vent. As pressure builds up beneath the crust, minor small vents continually develop along weak points of cracks in the crust. Such low-level, non-explosive, activities coupled with the topographical changes due to rainfall and erosion render the volcanoes dynamic.

As an environmental issue, the Department of Physics over the past years has been monitoring the dynamics of the mud volcanoes at both the Devil's Woodyard and Piparo. This project forms part of the on-going monitoring programme. Consequently, the overall objective was to gather, analyze and interpret geophysical data at Piparo, alongside data previously gathered in the past years. The study focused mostly on seismic refraction characterization of the sub-surface depth profile of the "tassik".

Unlike the Devil's Woodyard where reliable records of major eruptions dates back to the mid-nineteenth century, reports of activity at Piparo prior to the major eruption in 1997 are sketchy. However, compared with the Devil's Woodyard there are certain similarities; for example, crust formation, sub-surface stratification and low-level activity at small vents. Further, although the proliferation of these minor vents at

Piparo is less than at the Devil's Woodyard and the sub-surface is perhaps less complex in terms of fragmentation. However, this relatively 'young' volcano is expected to 'age' with time and tassik exposure. This aging process is continuous with time and can be observed when compared to previous data. From comparison it can be seen that the thickness of the surface crust at the Piparo mud volcano decreases with time, with a contrasting increase of the underlying surface.