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Mt Ruapehu Eruption: 25 September 2007

Mt Ruapehu erupted on Tuesday evening at 8.26pm and produced two lahars, a moderate eruption column to about 15 000 feet, with ashfall and rock fall across the summit of the volcano. Following are summaries of various aspects of the eruption.

Seismic Summary:

The explosive eruption occurred at 8:26pm and was accompanied by an earthquake that lasted for 8 minutes. A record of the air blast recorded at Whakapapa Village showed that the explosive part of the eruption lasted for no more than 1 minute and occurred at the start of the eruption sequence. As determined by the Ruapehu Eruption Detection System (EDS), the earthquake was magnitude 2.9. The explosion earthquake was preceded by about 10 minutes of minor earthquake activity that was recorded only at the Dome Shelter seismograph and weakly at another seismograph 2 kilometres away. This initial activity was too small and of too short a duration to provide a useful warning of the impending eruption. Following the eruption there was an increase in the level of volcanic tremor by a factor of about 10, but this gradually declined to normal levels within 24 hours. No further volcanic earthquake activity has occurred since the eruption.

Eruption Deposits:

A ballistic (rock fall) apron extends north from the lake, and actually exceeds the ash fallout zone. Typically ash travels further than the heavier ballistics, however in this case the ballistic rocks were ejected with sufficient force to out travel the lighter ash material. Some well-travelled ballistics made it to within a couple hundred metres of the Far West T bar. Many of the ballistic rocks appear to have formed impact craters, while others appear to have later melted their way into the snow/ice. No ballistic rocks were seen over Mangaturuturu Glacier, to the west, an indication of the strong directionality of the blast. The ballistics comprises various rock types, from old andesitic flows (from 1945 and 1995/96 eruptions), a variety of tephra, and vent-fill debris. There is evidence for hydrothermal sealing of the vent prior to the eruption. A number of sulphur-bearing rocks show evidence of the sulphur having been molten on ejection, indicating vent temperatures at the base of the lake in excess of 119 °C.

Crater Lake:

The northern vent is vigorously discharging gas at present, with strong

sulphur slick formation, and white frothy, gas-rich patches at the surface. A much less active discharge was observed over the usually more active southern vent area.

The lake is a uniform grey colour, being well mixed. Prior to the eruption the lake temperature was 13° C, it is now 19° C. Lake level is 1-2 m below the outlet, but appears to be higher than yesterday (consistent with heating and melt water inflows).

Lahars:

Scientists from GNS Science and Massey University have visited the Lahar deposits. The Whakapapa ski field lahar travelled approximately 1 km down the ski field, reaching half-way down the Far West T-bar to an altitude of c. 2100 m. The deposit is about 30 m wide and consists of grey ashy snow, with fragments of rime ice and scattered rocks. Initial estimates suggest the lahar travelled at 20-30 km/hr.

A snow slurry lahar also travelled down the Whangaehu River, leaving a deposit c. 80 m wide and 1-3 m thick near the Round-the-mountain-track bridge 7 km from Crater Lake. The deposits comprise dirty granular snow with a small percentage of Crater Lake water and mud, and scattered ice fragments and pieces of rock. The deposits thin rapidly downstream, with a thickness of c. 40 cm at the bund (10 km), 30 cm at the Wahianoa aqueduct (23 km), and 10-20 cm at the Rail gauge (28 km). Data from flow monitoring equipment suggests a complex flow process, as they show evidence of two and at times three phases of flow - two depositional and one erosional.

Summary:

This eruption is similar to the 1969, 1975 and 1988 eruptions. It's smaller than the 1969 and 1975 events, but larger than 1988. All evidence available to date indicates the eruption was hydrothermal in nature.

We cannot rule out the likelihood of a future eruption and lahars at Mt Ruapehu in the next few days to weeks and as such people should follow Department of Conservation guidelines for access to the mountain. Any future eruption may also be strongly directional towards the summit plateau and hence the risk for that area remains high.

The alert level remains at 2 (Minor eruptive activity) and will continue to be re-assessed.

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