PREPAREDNESS FOR A VOLCANIC EVENT

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Chorus

60 million cubic meters of acidic ash wrecked havoc on districts up to 300kms from the mountain

MT RUAPEHU – OCTOBER 1995

Volcanic Event impacts on Telecommunications

Volcanic Ash – Hard, Highly Abrasive, Mildly Corrosive and Conductive when wet!

The Telecommunications network has limited resilience to a major volcanic event. This is particularly true of Local or Near Field volcanic activity.

The impacts of Ash Fall are as follows…

People	Severe limitations on our Field Force's ability to move within the ash fall zone. H&S has become the dominant consideration when deploying human resources.
Transportation	The Telecommunications network is comprised of a large number of geographically distributed sites. Exchanges, Antennas, Cabinets, Terminals and so on. Interventions, especially if "plant" was needed, would require transportation.
Air Conditioning	Most Telecommunications infrastructure requires active cooling. This ranges from forced fresh air, heat exchangers and split systems for the larger exchange sites.
Mains Power	Its likely that in a major ash fall that either feeders or distribution circuits will fail causing a reliance on standby plant, either engine alternators or batteries.

Chorus

Preparedness for a Volcanic event

Operating as national companies, specific preparations in place for Volcanic Events rely on strategies developed under our Tactical and Event Response Governance structure (This would be in consultation with our consultant engineers such as OPUS and BECA)

Remember also that if the scenario is serious enough, the Telecommunications sector would convene the TEF (Telecommunications Emergency Forum) to aggregate our capabilities to the best advantage of the community.

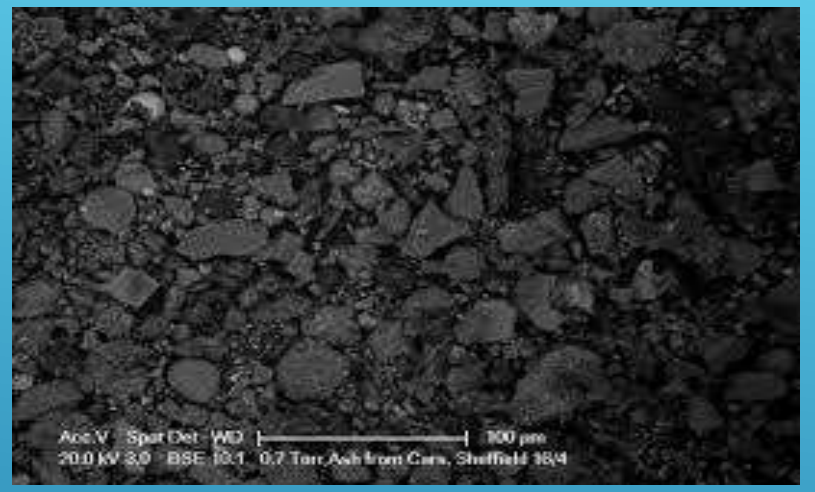
The diversity of equipment in our network is such that it is not a practical proposition to hold a spares and material resource specifically to cater for a regional volcanic scenario. Instead Chorus would draw upon an existing distributed material base to arrive at the best possible solutions that would be permitted by the scale and intensity of the event.

Distinguishing a near or far field event (Local or Distal) is simply an expression of severity. Both events will require a calculated response proportional to the severity.

Chorus

Fine

Coarse


Acc.V Spot Det WD 100 µm
20.0 kV 3.0 BSE 10.1 0.7 Torr Ash from Cars, Sheffield 16/4

Best and Worst Case scenarios

Best Case

Widespread Ash fall is obviously the most serious impactor and we may have a good chance to mitigate that if the fall is moderate. Our main concern is for the preservation of the equipment and to do that we need to make sure that the air-conditioning is working effectively. Periodic cleansing of the heat exchangers / fresh air systems would ensure that we could sustain service. If there was widespread power failure, Chorus would prioritise the application of alternative power generation in addition to air-conditioning maintenance as needed.

Worst Case

The ash fall is so intense that it is impossible to mitigate the clogging of air-flow systems either by method or being inaccessible to service personnel for H&S reasons. Even if power has failed, and built in engine alternators run until their intakes are clogged, the equipment in the building will run on the battery supply until it "cooks" and will be unrecoverable. In addition, Lava bombs at near field sites do not have a mitigation and will in the worst case destroy either a site or sufficiently penetrate the building, site structure (masts, cabinets, equipment rooms…) to cause a fire.

Chorus

CONSIDERATIONS (SHORT TERM)

People.

- Inability to travel to or from work.
- Inability for field staff to access roads, remote access sites until clearances established.
- BCP's in place to ensure sealing of windows and doors to protect indoor areas. Water conservation plans or distribution of face masks.
- Alternative work locations (Disaster Recovery Centres) and/or work from home options.

Dust Control (Post event)

- reducing the amount of dust that could be walked into a building during a minor fall - ash foot bath and disposable overalls?
- Clear ash build up in gutters to prevent internal flooding or perhaps structural collapse from the weight if wet.
- Air Conditioning systems will be very exposed and vulnerable. Controls around dust being dragged into condensers.

DUST CONTROL (POST EVENT) CONT

- Reliance on the resilience and coordination of other Lifelines Utilities to provide the necessary supply of Electricity, Fuel, Road clearances/transport etc.

Diversity

- Switch traffic from main data centres to the Disaster Recovery Centres.

Long Term, identification of assets – structural and operational may take some considerable time (months) depending on the impacted areas and severity of damage.

Specific Answers

The best "restoration" strategy may to be to actually switch the equipment OFF to prevent damage. This would apply to the regional exchanges serving areas from which the local population would have been evacuated. This would ensure that once the event is over, Telecommunication nodes can be re-started with the best chance of recovery.

A restoration method that begins at with the reactivated node and works out to the peripheral cabinets and customer base is then undertaken. Some copper cable connectivity issues may appear as not all passive cabinets are ash proof and levels of humidity will cause service impairment… (high pressure water then air flushing of the terminal strips may be adequate to restore service but would not be a long term service prospect)

Ironically, the passive optical networks are less susceptible if they remain untouched as the fibre connectors intrinsically keep dust out.. However, any restoration actions that disrupt this seal in the presence of ash will need to be more carefully managed than during BAU.

Chorus

THANK YOU.