



FIRST ALERT

12 January 2021

33kV Porcelain Cable Termination Failure

On the 15th of December 2020 a 33kV porcelain cable termination failed explosively at Gracefield substation causing one of the supply transformers to trip.

Porcelain fragments and sealing compound spread up to 25 meters away from the source. No personnel were at the substation at the time. The photo below shows the failed termination and similar remaining terminations.



Immediate action taken

- An exclusion zone was created around similar terminations which were still in service.
- The terminations on the faulted circuit were replaced with modern polymer cable terminations.

Further action required

The root cause of this failure is unknown at this stage, but a forensic investigation will be conducted in the coming months. The only known instances of this model of termination are at Gracefield substation.

There may be similar terminations on Transpower's network, however this data is not comprehensively captured in MAXIMO. If you are aware of other locations where this model of termination is installed, please inform Operational Engineering. The model of the termination was a New Zealand Insulators 33kV 9 Shed Sealing End. A technical drawing is on the following page.

Everyone working near these terminations should exercise caution and ensure that safety plans and work plans consider the elevated risk. We recommend the following precautionary steps be taken:

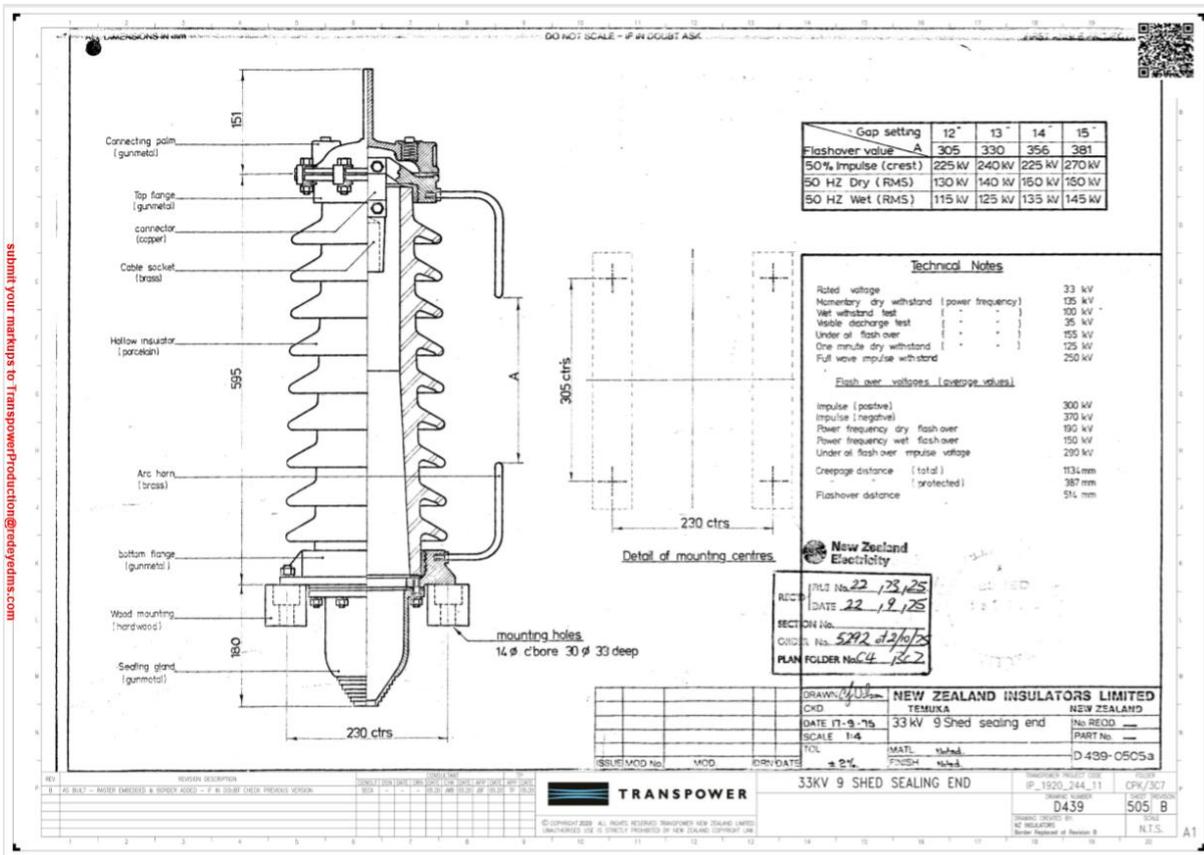
- Where terminations are located closer than 25m to project works where personnel are working, then personnel should minimize the time spent within this zone.
- If personnel have no reason to be closer than 25m from these terminations, they should keep clear. This exclusion zone information should be entered on the site temporary hazard board.
- Where the terminations are located within 25m of the boundary and where the public/personnel can access the adjacent area, then the fence should have shade cloth, or industrial plastic, or some other suitable materials put in place along the fence line to stop any debris should a termination fail.





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- In the case that connected parties have this type of cable terminations within 25 meters of Transpower owned equipment or thoroughfares, this should be noted on the site temporary hazard board and time spent close to the terminations should be minimized. If frequent or extended proximity to a connected party's termination is unavoidable, further protective action such as protective barriers may be required. This First Alert will be shared with all connected third party asset owners.
- These precautionary steps only need to be in place until the termination risk of failure is known and updated advice is issued.



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