# Faulting the System – The Ultimate Commissioning Test

## Paper Reference
## 02_AU_CHONG

| Author | Company | Email | Presenter |
|---|---|---|---|
| Yuan Long Chong | TasNetworks | Jimmy.chong@tasnetworks.com.au | ✓ |

# Introduction

- Latest wind farm in Tasmania is 168MW located at Cape Portland, North East Tasmania

- NER 5.8.1 TNSP is required to test and confirm generator fault ride through capability

- Primary configuration & low fault level at Derby made stage fault test possible as part of wind farm commissioning process
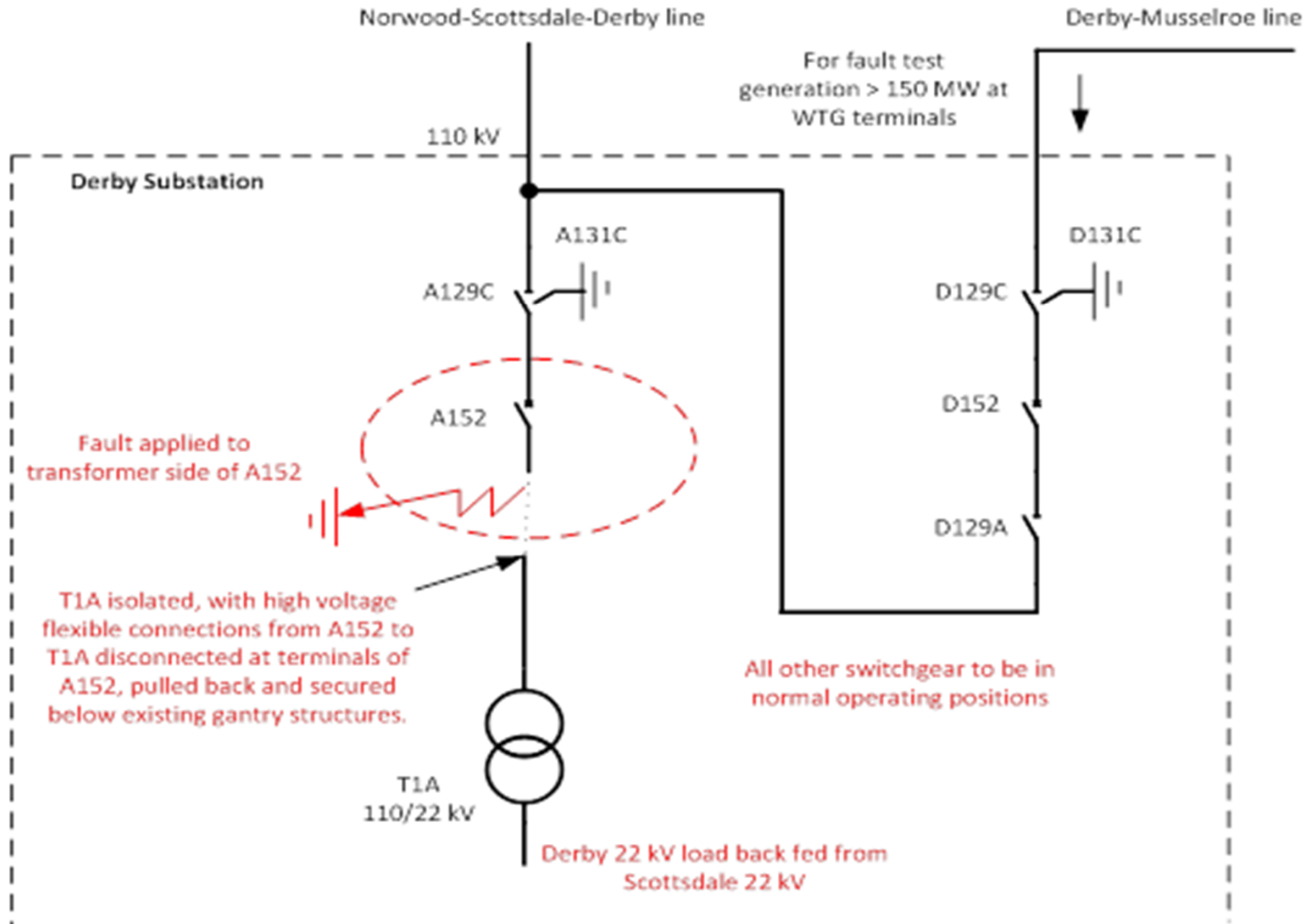
# Basic Test Requirement

- The fault impedance should fixed and consistence

- The fault duration should be known and controlled

- The fault phases can be selected and controlled

- The fault can be executed and terminated as required
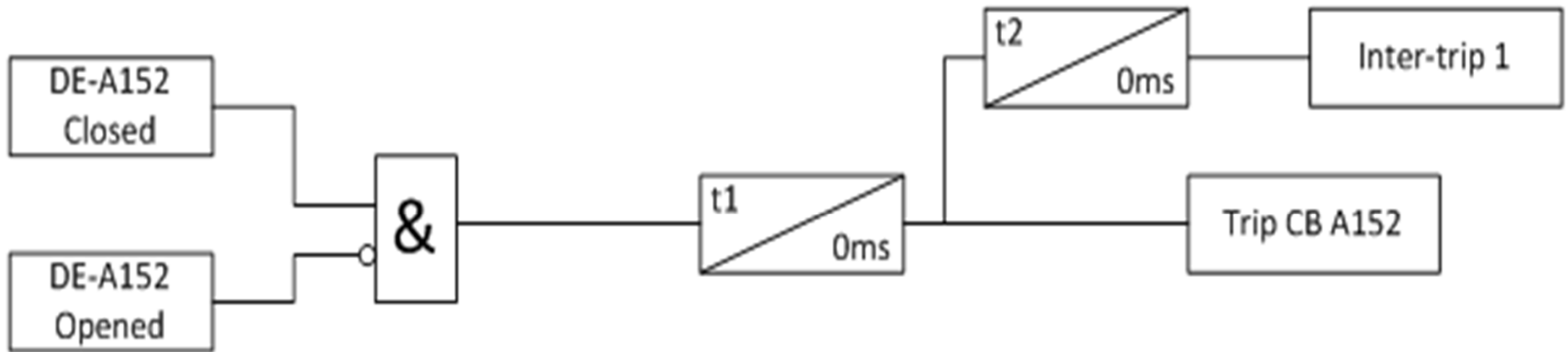
# Fault Delivery Mechanism

# Secondary System Control Setup

- Fault will be applied between the overlapping zone of transmission line and transformer protection zone

- Fault shall be control using logic
  - Doesn't rely on fault current
  - No modification to protection setting
  - Timing can be fine tuned
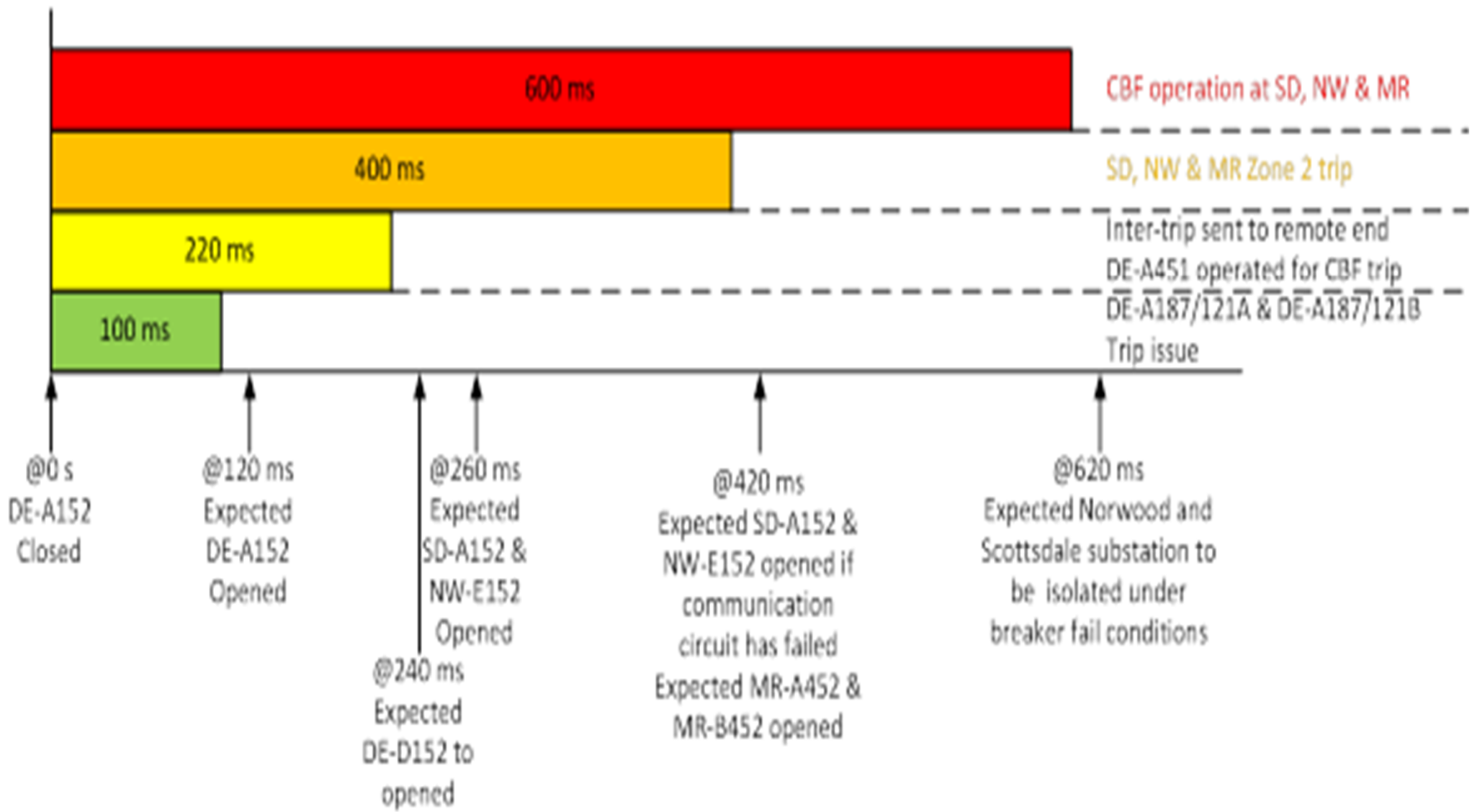  - No chance of residue test setup leftover

# Control Logic



Note: t1 & t2 timer shall be adjusted based on test result

# Backup Protection

# Data Record

- PMU & oscillography setup within Derby Substation

- Remote end substation with oscillography

- Wind farm installed with high speed power quality recorder

- Disturbance recorder installed throughout power system
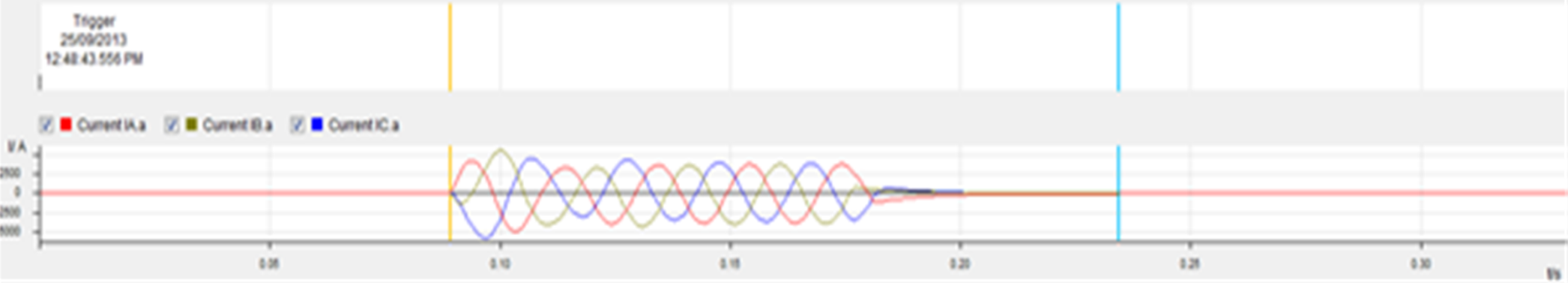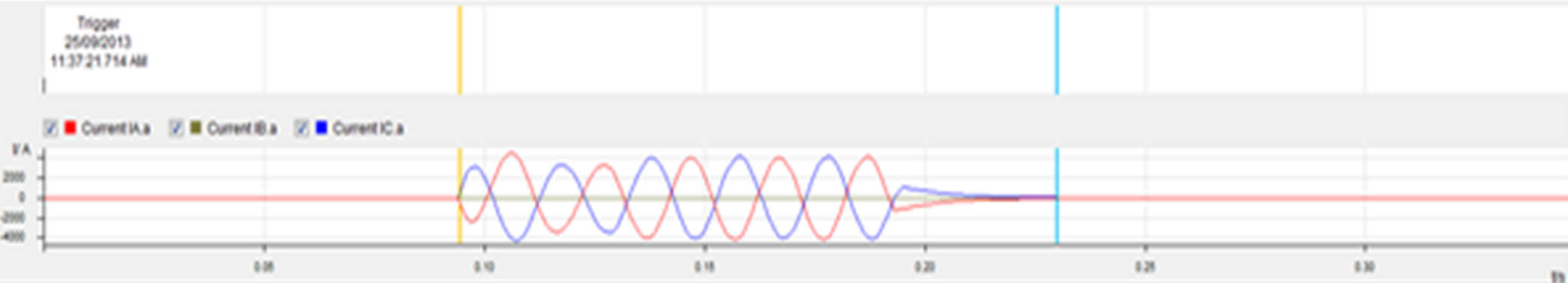
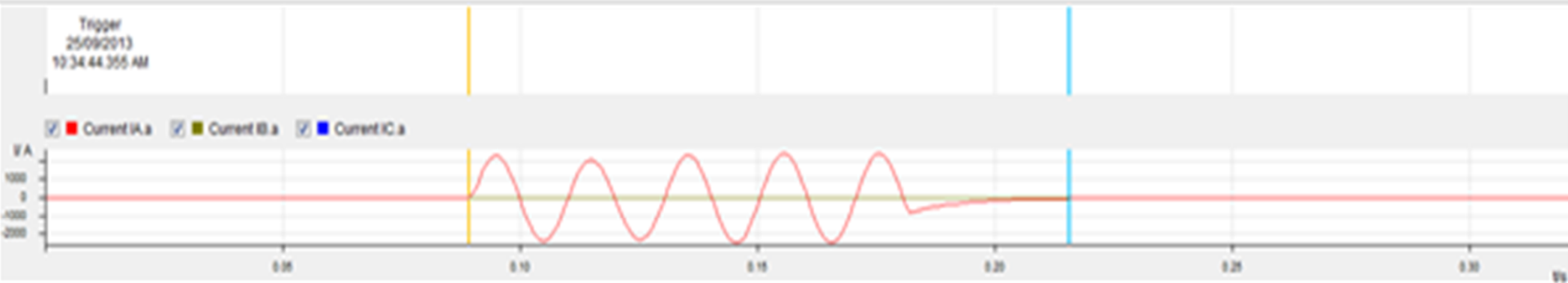- Temporary IP camera installed at Derby Switchyard

# The Big Day!

# The Result

# Conclusion

- Test was consider successful, however not all wind turbines ride through the fault

- Simulated fault current is only 11% difference from actual fault current

- The test requires tedious preparation work but well worth the effort

- Provide the highest confidence in any commissioned system if no issue found

# What happened

# Thank You



Hold that thought for question time at the end of this session ….