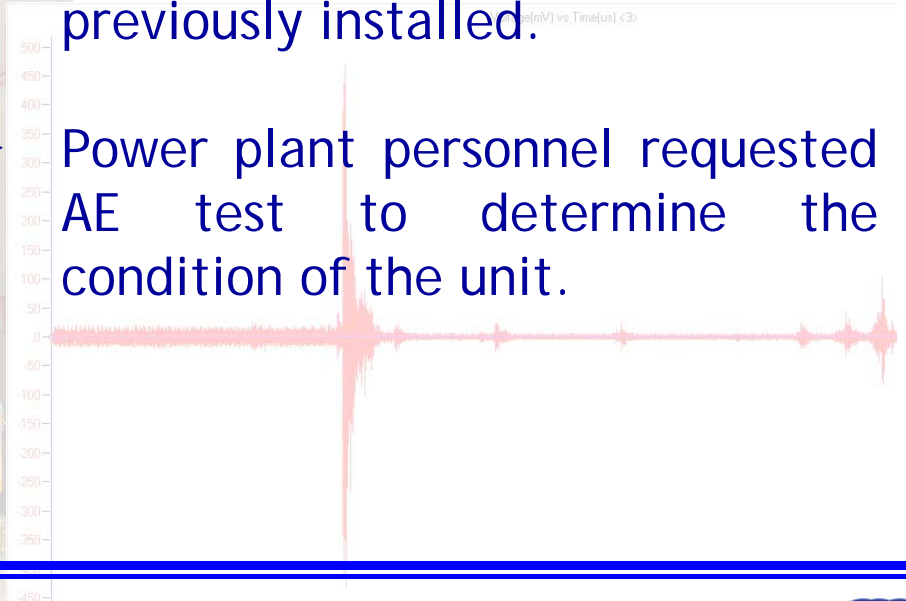
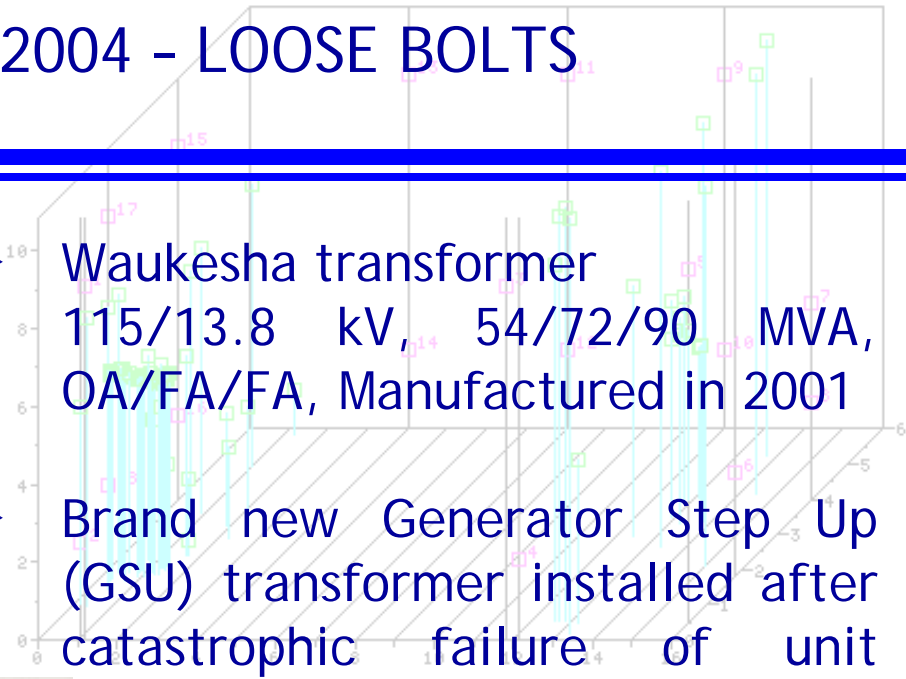


CASE STUDY 8032004 - LOOSE BOLTS

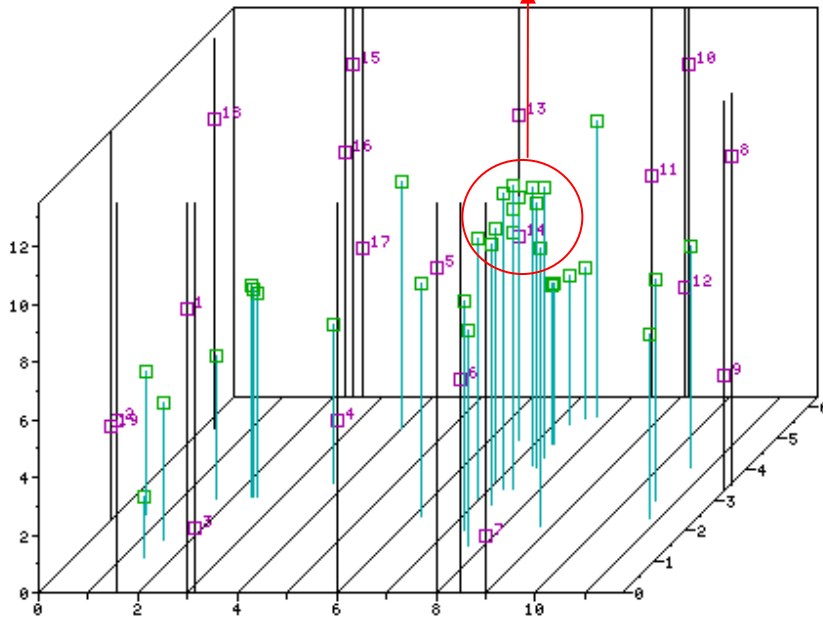


- Waukesha transformer
115/13.8 kV, 54/72/90 MVA,
OA/FA/FA, Manufactured in 2001
- Brand new Generator Step Up
(GSU) transformer installed after
catastrophic failure of unit
previously installed.
- Power plant personnel requested
AE test to determine the
condition of the unit.



CASE STUDY 8032004 - LOOSE BOLTS

CLUSTER 1



- Dissolved Gas Analysis sample before the AE test indicated a positive trend in CH₄ & C₂H₆ gases.
- An infrared scan did not find any hot spots/overheating.
- 1 Cluster of events obtained in lower part of LV bushings X1 or X2
- Internal inspection revealed a few loose bolts on one of the low voltage bushings.
- Bolts were tightened.
- Unit is in service. No increase on Gas Concentrations has been observed.