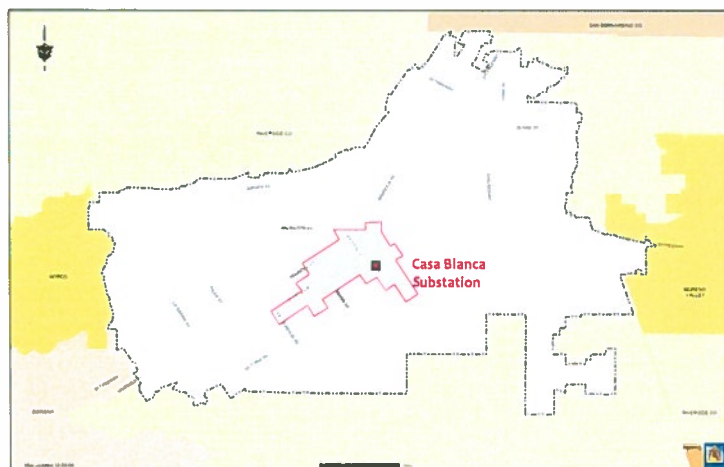


CASA BLANCA SUBSTATION TRANSFORMER No. 1

TRANSFORMER OUT-OF-SERVICE UPDATE AND PLANS FOR RESTORATION

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SERVICE AREA



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BACKGROUND

- Built by ABB
- In-service
October 2012
- Sole transformer
at Casa Blanca
Substation

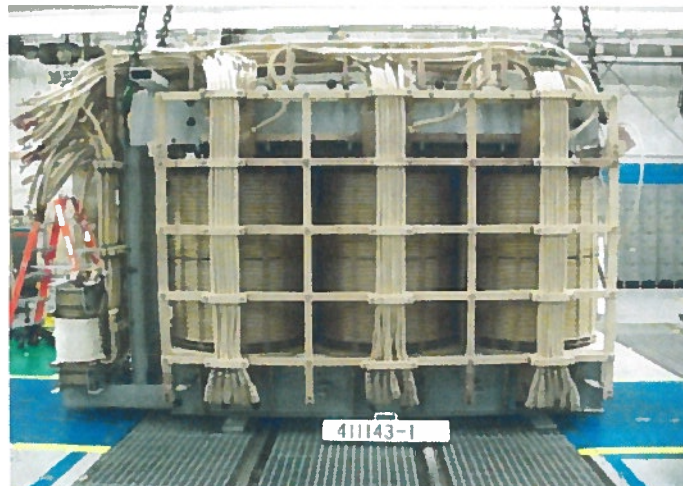


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FABRICATION



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DGA TESTING

Dissolved Gas Analysis is a technique for early problem detection



Extract Oil
sample from
transformer



Examine oil
sample at
laboratory



Perform
Engineering
Analysis

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PREVIOUS INCIDENT

- October 2013 - Lab results indicated abnormal gas levels
- ABB performed on-site investigation and adjustments
- Normal DGA results after oil processing
- Returned to service



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RECENT EVENT

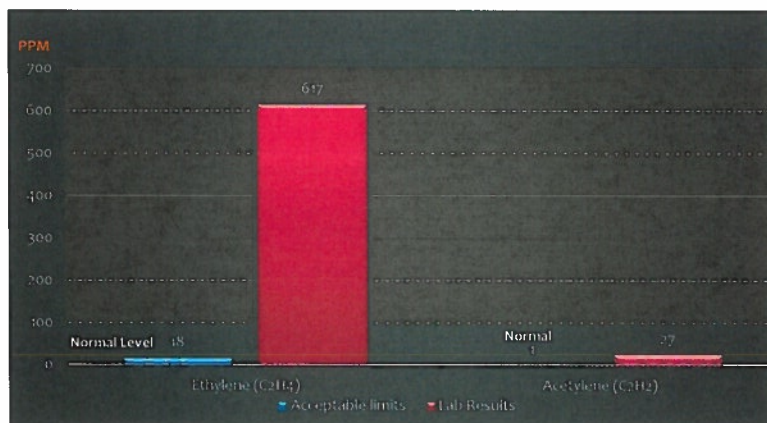
- December 2015 – DGA indicated very high level of gassing
- A second sample validated initial results
- Transformer removed from service



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ABNORMAL DGA RESULTS



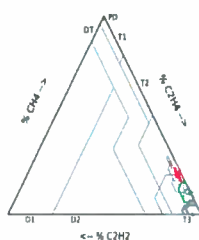
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DIAGNOSIS

Gas ratios indicate internal arcing over
700°C / 1,300° F

Duval Triangle



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STEPS TAKEN

- No customer impact
- Transferred Casa Blanca loads to neighboring substations
- Shipping transformer to ABB factory for full inspection and testing
- Under warranty until 2017



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FUTURE PLANS

- Return Casa T1 to service before summer

Options:

- Temporarily utilize the Mobile Substation Trailer
- Relocate new Plaza T5 to Casa
- Add T2 at Casa



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Recommendation

- That the Board of Public Utilities receive this report.



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