

Lambert Substation Outage Response



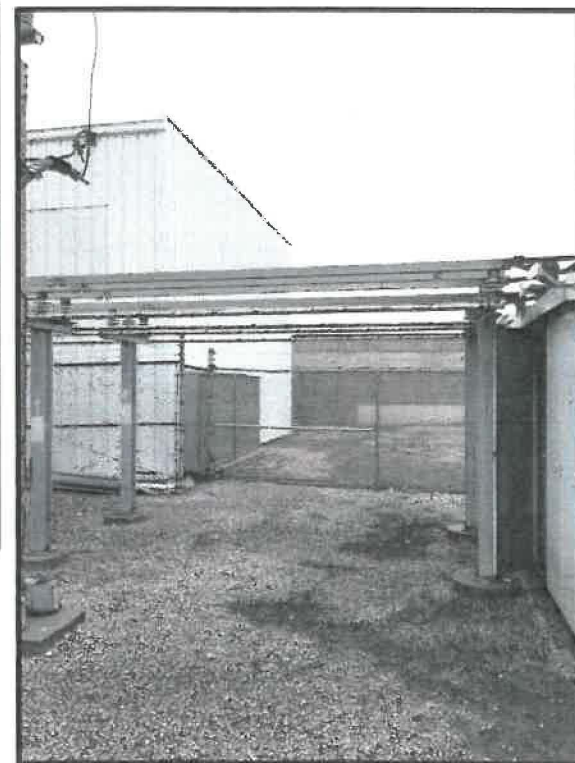
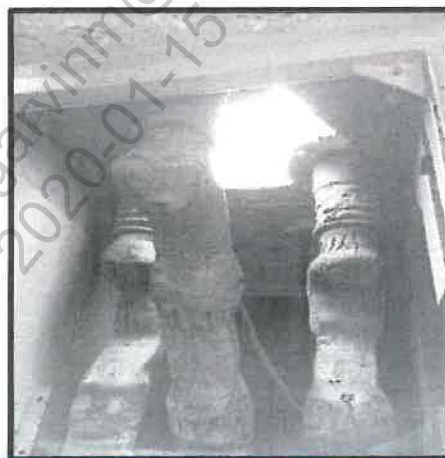
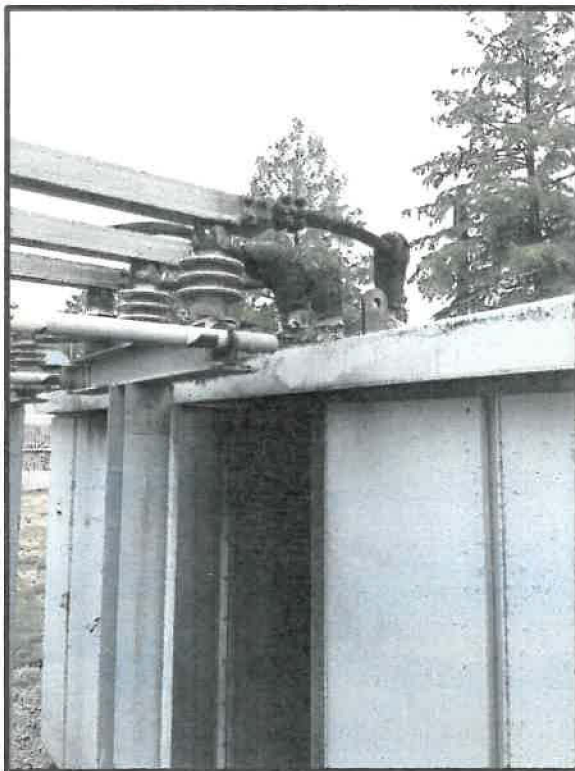
Ameren Missouri
08.03.2016



The Event – July 3, 2016

- Circa 1970s substation construction includes open air buswork from transformer to rooftop-bushing switchgear.
- Rooftop bushings flashed over. Likely due to rain seepage at bushings. Extensive switchgear damage occurred when one bushing flashed over and quickly engulfed both sets of bushings.
- Fault currents likely burned open a phase of the 34,000 volt supply conductor near the substation.





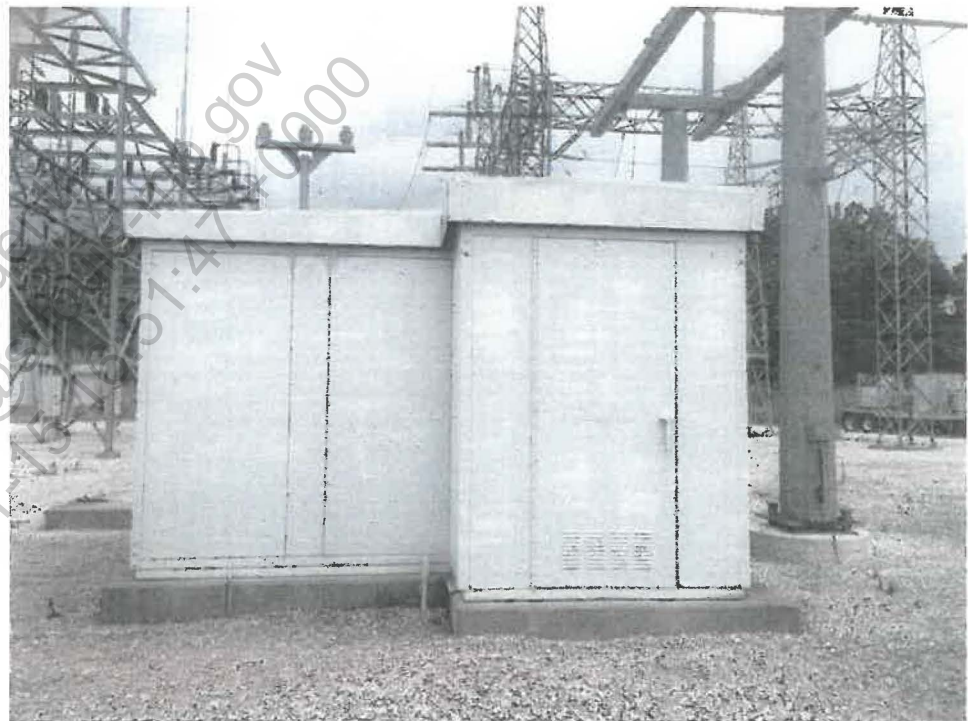
Timeline

- **10:59AM** on July, 3rd 2016, the Lambert substation lost power following a switchgear fault
- **11:40AM** Ameren Missouri first responder arrived on scene and called for substation personnel
- **1:00PM** Substation supervisor on scene – response elevated and Operating Leadership on scene by 2:00PM. Determination made that switchgear is badly damaged but can be isolated, allowing restoration of airport loads.
- **3:30PM** Overhead exposed bus sections were removed to isolate damaged switchgear.
- **4:30PM** Lambert Substation transformers energized allowing restoration of airport loads.



Switchgear Replacement

- The switchgear at Lambert is badly damaged
- Replacing with a spare switchgear.
- Spare switchgear does not have rooftop bushings

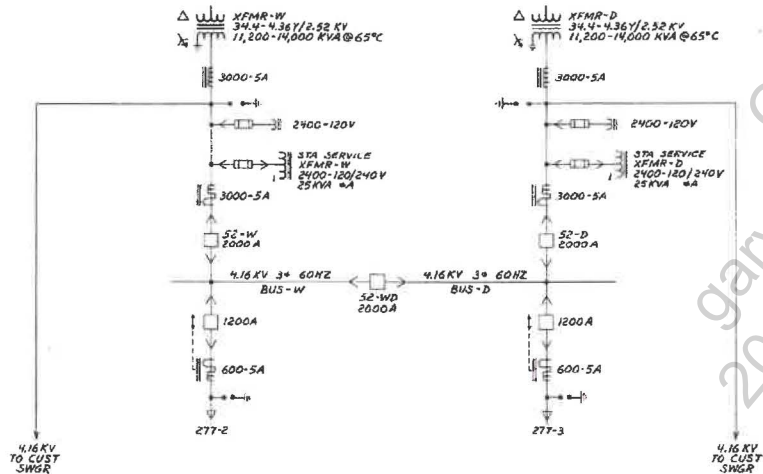




Response - We improved Connection Scheme

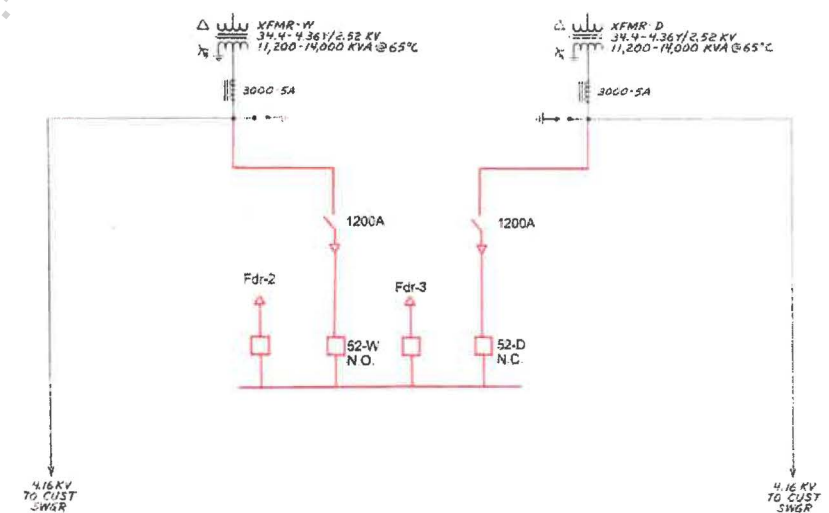
Before

No means for quick isolation from customer



After

Disconnect switches provide means of quick isolation

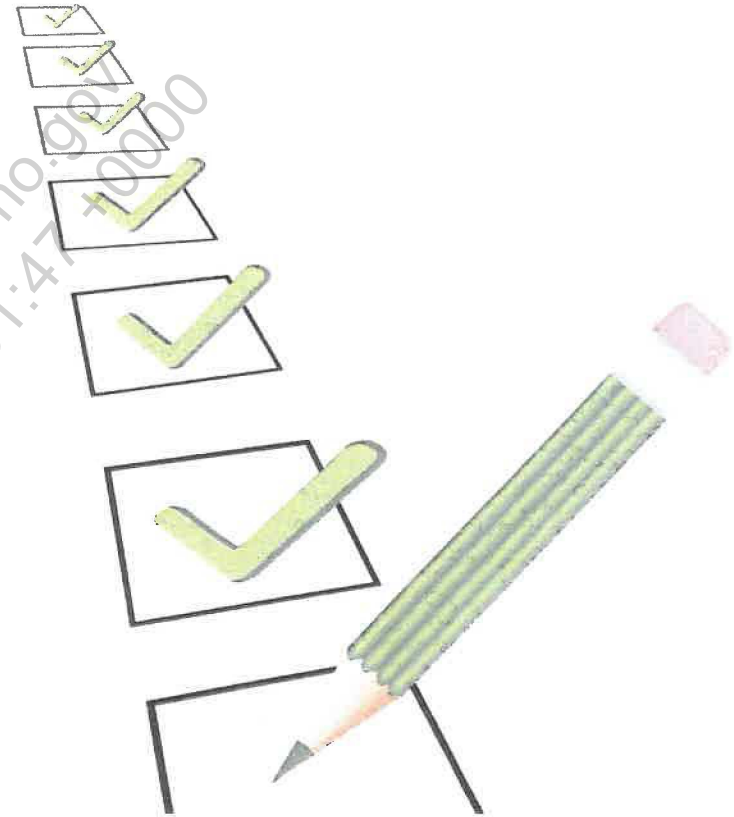


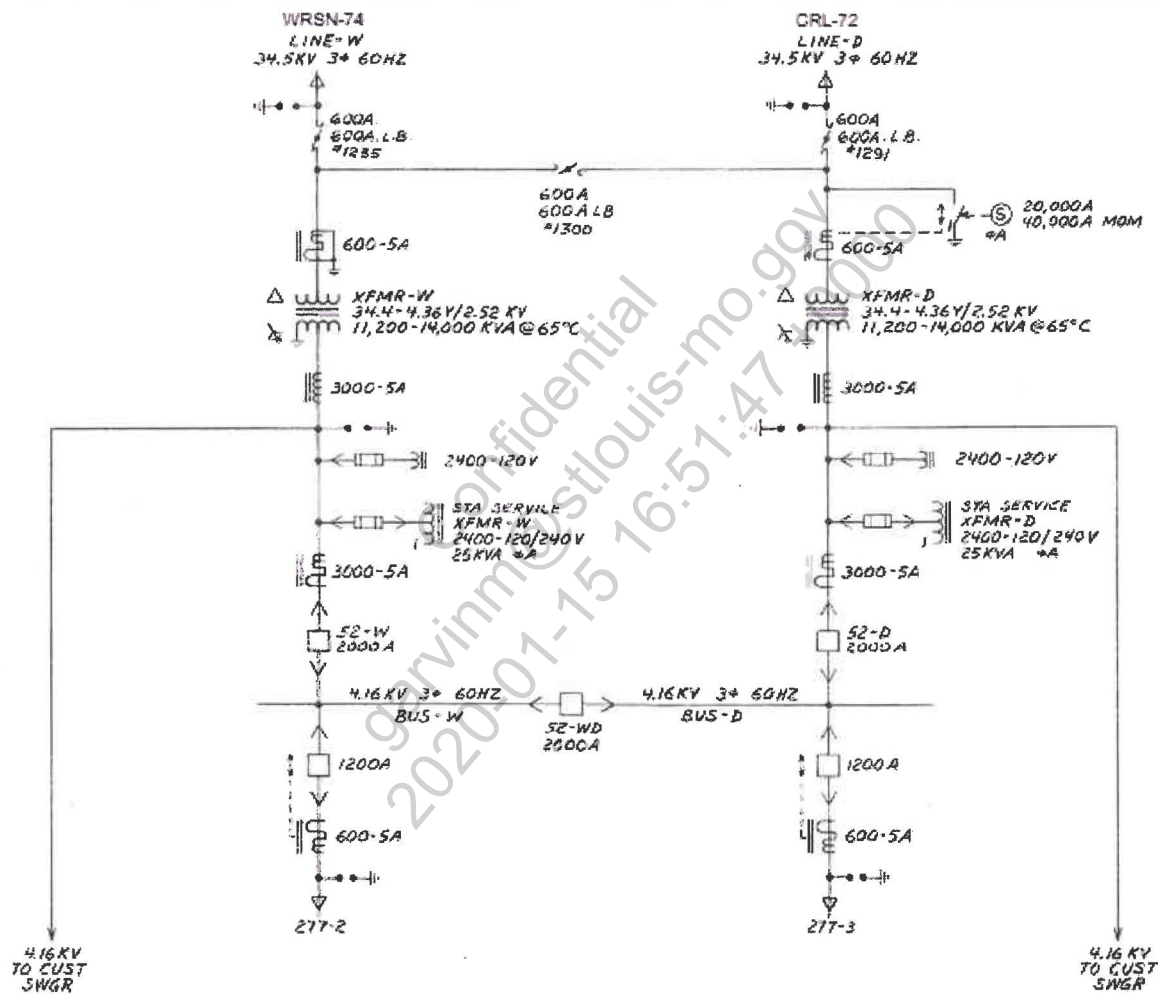


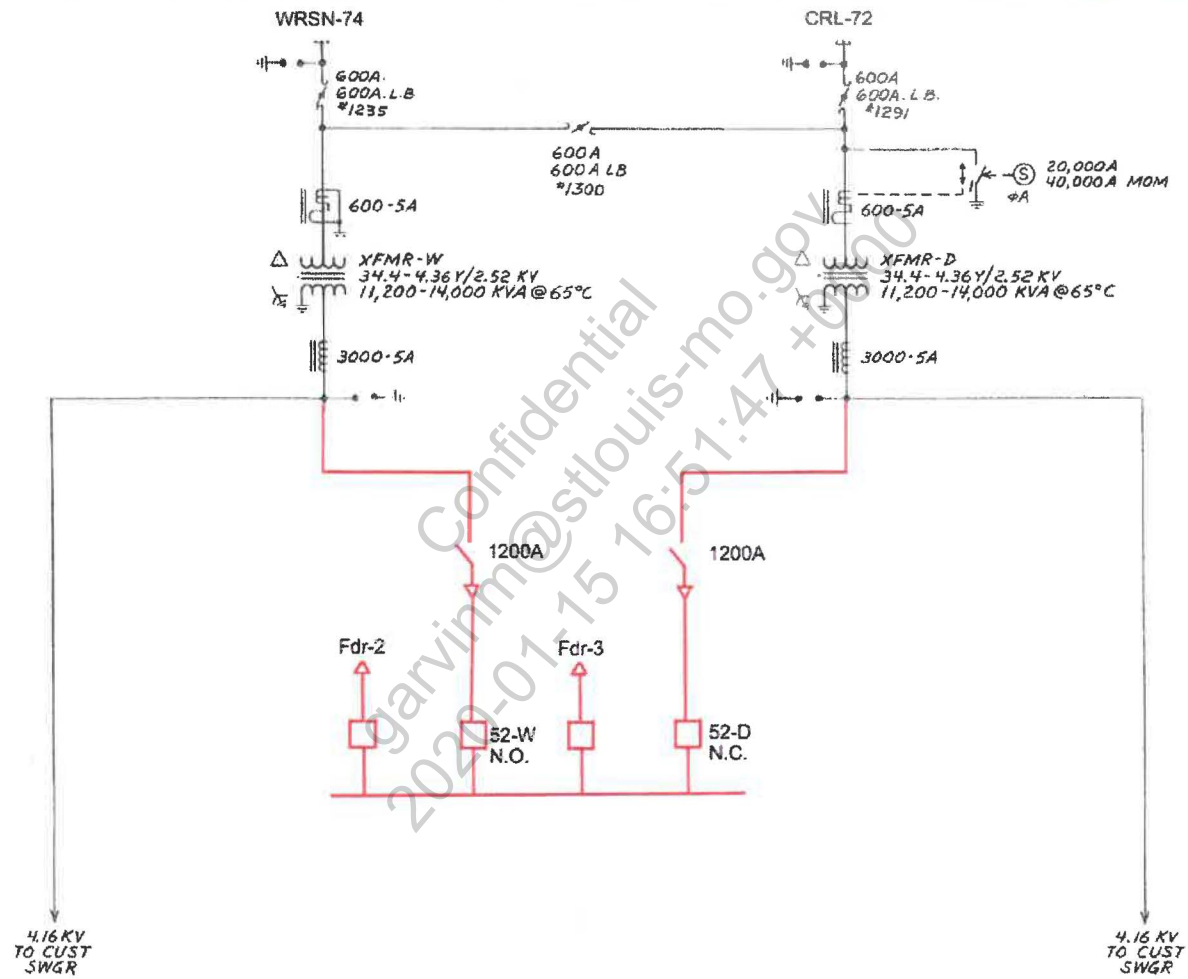
Response

Establish Operational Communication Framework

- Recurring "Operational Readiness" meetings – frequency TBD
- Leverage Ameren Missouri Key Account Relationship
- Confirm facility access protocols and desired communication channels
- Report on station/facilities readiness







July 17 Outage

- St Louis International Substation supplies terminal 2 and portions of Concourse C.
- Outage to Bus W due to a failed lightning arrestor on Ameren owned Transformer W.
- Ameren Missouri loads transferred successfully.
- **Repair Action:** All lightning arrestors on Transformer W were replaced





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