

12/6/2022

City of Houston  
Federal Rd Drinking Water Plant  
Houston, TX 77015

Attention: Document Control

Reference: 2211TG161- Power Outage Call Out

Dear Document Control,

The enclosed documentation supports Saber's findings for the cause of equipment failure on November 27, 2022.

All information enclosed is derived from the work performed.

**Services Performed:**

Saber Power performed troubleshooting and repairs on Plant 3 to Plant 1 electrical system

- Cause of fault determined
- Fault found and repaired
- Prevention and Recommendations

Please see the test report below for data collected or comments.

Feel free to contact the below team members for further clarification and scheduling assistance.

**Lead Technician:**

- Name: [REDACTED]
- Phone: [REDACTED]
- Email: [REDACTED]

**Account Manager:**

- Name: [REDACTED]
- Phone: [REDACTED]
- Email: [REDACTED]

Sincerely,

Saber Power Operations

[www.saberpowerfieldservices.com](http://www.saberpowerfieldservices.com)

12/6/2022

**CAUSE OF EVENT:**

On November 27, 2022 around 10:10 am there was 480v cable fault secondary of 4160:480v transformer TR-17 fed from the South bus Unit 19 in Plant 1. This fault caused an increase in current upstream on Plant 1 main 4160v feeder #2 on C phase which caused another cable fault simultaneously. Both faults were cleared by their protective relays opening the associated breakers.

**PREVENTION AND RECOMMENDATION:**

Due to the design of these switchgear configurations, this system prevents switching load from one bus to the other without taking a power outage. This is not economical for performing electrical maintenance in order to prevent incidents like this one from happening. A properly designed system will allow any electrical circuit to be removed from service that has a parallel source without ever losing power to the load and will also restore service automatically from another source if power lost. This system already has most components to make this upgrade without major reconstruction. Also, there are line differential relays installed on both Plant 1 feeders that were never completed and put into service. These are highly recommended to be completed and added for protection. Plant 3 main transformers are protected by electromechanical relays. These relays perform well but do not have the capability to alarm and record event data (which is severely crucial when troubleshooting faults). There are 2 panels for the 138kv protection that are highly recommended to upgrade solid state relays to solve this issue.

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