Exhibit to Agenda Item #4

Provide an overview of the **Cosumnes Power Plant (CPP)** steam turbine generator stator ground fault failure and approve the proposed amendment to the **2022 SFA Budget Resolution** to augment the Capital Expenditures line item by $18.61 million for **Sacramento Municipal Utility District Financing Authority (SFA)**.

Board Finance & Audit Committee and Special SMUD Board of Directors Meeting

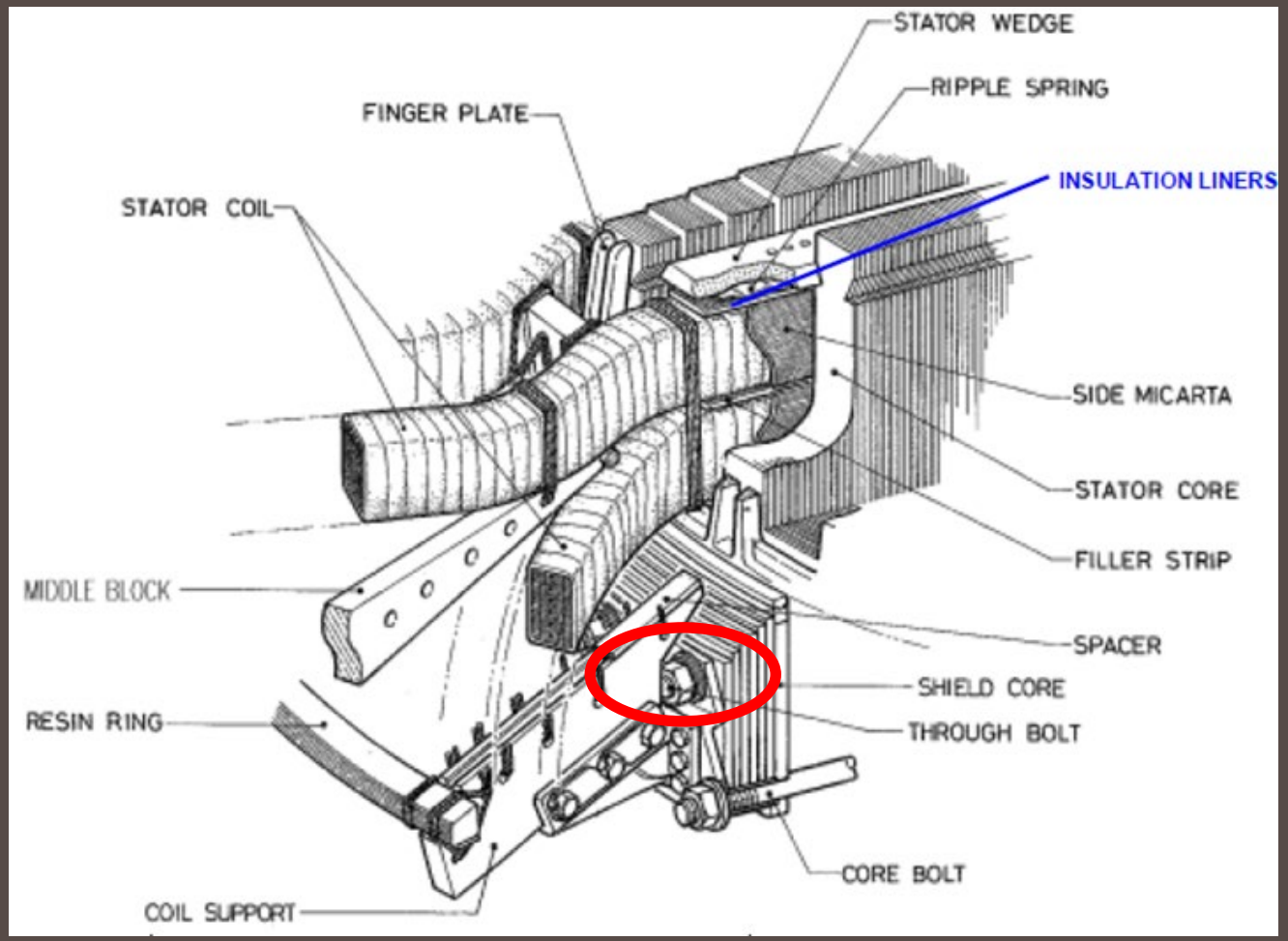
Tuesday, October 18, 2022, scheduled to begin at 5:30 p.m.

Virtual Meeting (online)

Background

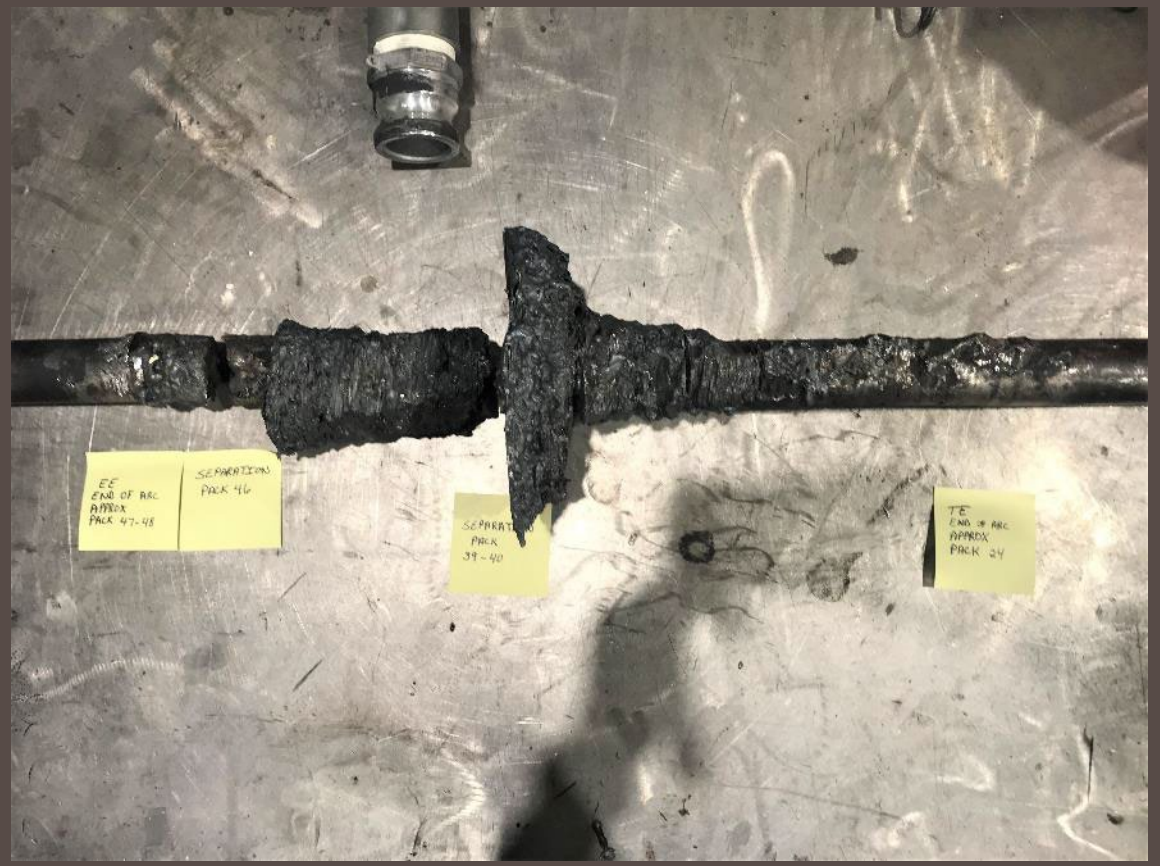
- Cosumnes Power Plant (CPP) had an extensive Cold Iron Outage to complete several Capital improvements including CT3 Major and Steam Turbine (STG1) Overhaul in Spring of 2022.
- The STG tripped while performing “return to service” testing on June 5, 2022. The plant was forced out of service and immediately began investigation believing to have experienced a Stator ground fault based on the relay activation data following the trip.
- Extensive damage was subsequently identified resulting in a complete generator and core restack with the field still being evaluated with the high probability of requiring a rewind as well. STG1 is expected to remain out of service until approximately January-February 2023, as repairs are made.
- The plant was able to place the Combustion Turbines into a 1x0 & 2x0 availability state June 17, 2022, by running the plant by bypassing to the condenser.

What caused the Ground Fault Failure



- ***Through-bolt came into contact with the core*** which caused the stator ground fault.
- The Root Cause Analysis (RCA) indicates ***insulation surrounding the through-bolt had failed*** which resulted in contact with stator core.
- The most plausible cause for the failure of the through-bolt insulation is ***abrasion or wear of the insulation caused by relative motion*** between the through bolts and core iron laminations while they were in contact.

Discovery

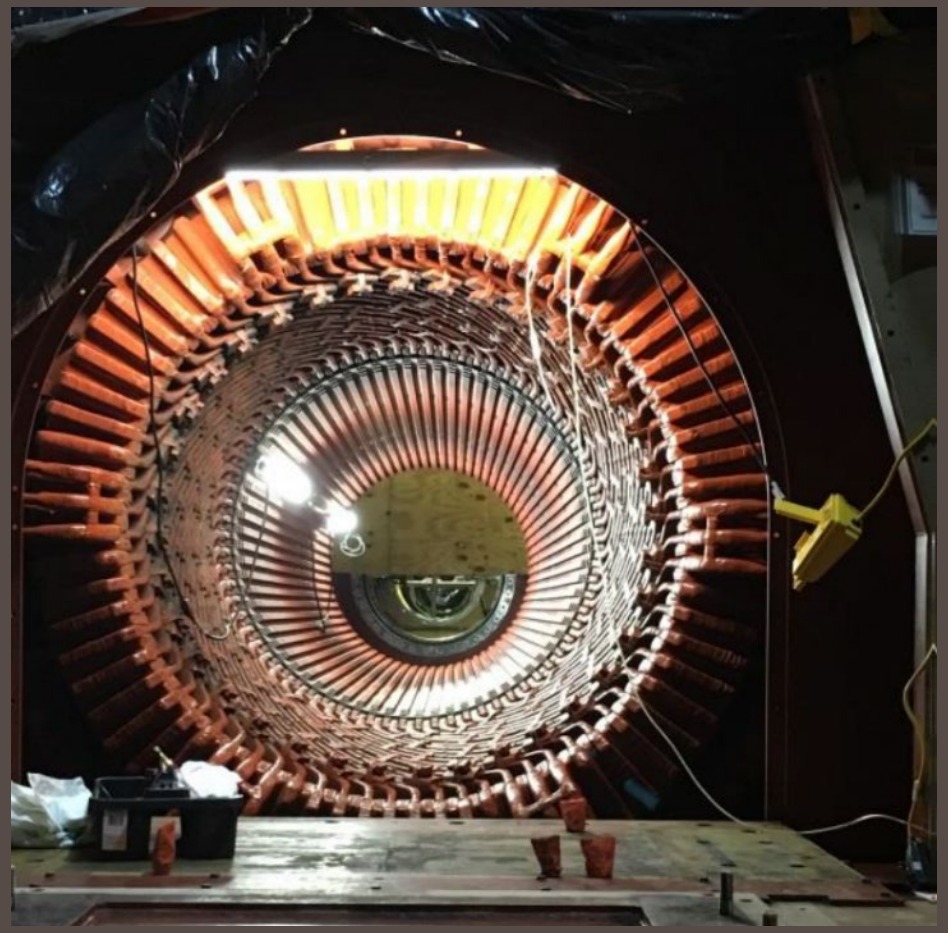


Through Bolt following removal

Through bolt through lamination

Deterioration of Insulation

Why Air-Cooled Generators Fail



- Thermal – heat generated by the working generator (thermal cycling)
- Mechanical – cause by machine vibration
- Electrical – caused by voltage stress
- Chemical stresses – caused by the breakdown of materials, insulation (epoxy resin) and other components over time
- Environmental factors
- *Rarely does one factor work alone to cause a problem*

Repair Scope

- 100% Stator Core Lamination Replacement & Restack
  - Ethos and TG Advisors (3rd party consultants) recommend 100% core restack
- Replace all through bolts
  - Ethos and TG Advisors recommend replacing all through bolts
  - Bolts purchased from Mitsubishi
- Replace core vents
  - Full replacement due to extent of damage
- Generator rotor inspection and rewind
  - Currently in St. Louis with Mechanical Dynamics and Analysis (MDA) for inspection
  - Incoming inspection has identified metal deposits within coil slots & will require full rewind

Schedule

Timeline Overview

• Preliminary Electrical Testing & Winding removal to include 50% lamination removal (June-July)	~ *60 Days*
• Lamination Design & Fabrication* (July-November)	~ *100 Days*
• 50% Core Vent Design & Fabrication* (July-November)	~ *80 Days*
• Procuring/Manufacturing – Through Bolts* (Sept-December)	~ *120 Days*
• Perform Core Lamination Restack and Stator Rewind (Sept-January)	~ *165 Days*
• Field Rewind (will be completed in parallel with Core restack & rewind) (Aug-October)	~ *96 Days*
• Post Repair Electrical & Performance Testing (January/February)	~ *5 Days*

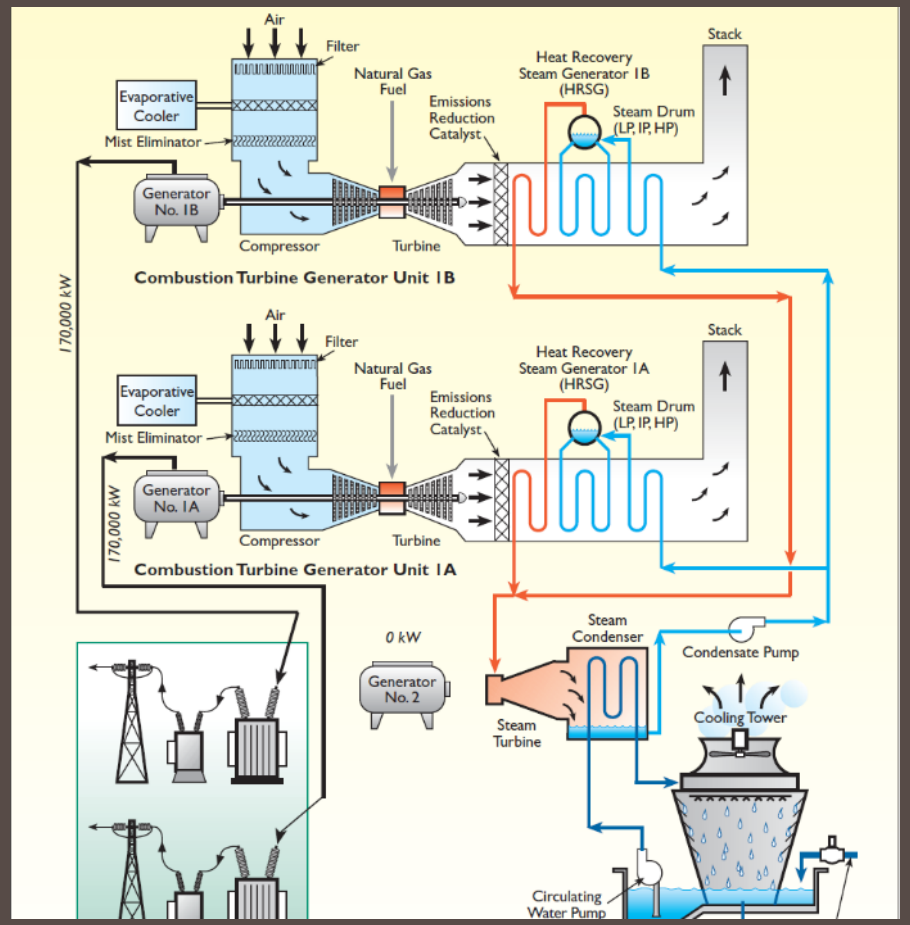
**Material fabrication & design are scheduled to be completed in parallel within the detailed schedule*

Temporary CPP Operations

1X0 & 2X0 Operations

- Confirmed safety and plant capability from 3rd party (IEC) and Ethos Engineering.
- Obtained Sacramento Metropolitan Air Quality Management District (SMAQMD) Regular Variance to operate in this configuration for up to a year on 08/17/22.
- Received Staff Approval of Petition to Amend from the California Energy Commission (CEC) to operate in this configuration on 08/03/22.

1X0 & 2X0 Operations



- Bypass Steam Turbine
  - 1X0 83 MW – 200 MW (Gross)
  - 2X0 83 MW – 280 MW (Gross)
  - Run in manual control with no Automatic Generation Control (AGC) for unit stability

SFA Steam Turbine Generator Repair Supplementary Budget

Total repair costs:	**$24.9M**
2022 O&M costs to be covered by existing budget:	**$0.9M**
2022 Capital costs: *(current augmentation request)*	**$18.6M**
2023 Capital costs: *(included in 2023 Budget to be approved in December)*	**$5.4M**