



**ENERGY
NORTHWEST**

Main Generator Rotor Replacement

Stephen Dallas, Principal Engineer
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Project Scope

- ✦ Ship New Rotor from Charlotte, NC to Columbia
- ✦ Move Rotor to Turbine Deck
- ✦ Dismantle Generator and Remove Existing Rotor
- ✦ Perform 8 Year Inspection of Generator
- ✦ Install New Rotor
- ✦ Move Existing Rotor to Storage Container and Store Onsite

Industry Perspective

- ✦ Many other Westinghouse Generator Owners have already Replaced their Generator Rotor (STP, Cooper, Farley....)
- ✦ Others have Ordered New Rotors for Future Replacement (Sequoia, Turkey Point, St Lucie, Byron, Braidwood....)
- ✦ Rotor Shorted Turns are a Common Occurrence on Generators, some can be Rewound in the Field while others Require Rotor Replacement

Rotor Shorted Turns

- ✦ Rotors Consist of a Single Winding of 200 Turns
- ✦ Each Turn is Insulated from other Turns and from the Rotor Body
- ✦ When the Insulation between Turns Degrades Shorting can Occur Effectively Eliminating 1 Turn
- ✦ This Condition Requires Additional Field Current to Maintain Magnetic Flux Density
- ✦ This Additional Field Current Results in Increased Heating which Stresses Remaining Insulation
- ✦ Shorted Turns also Result in Imbalance which can cause Excessive Vibrations Damaging other Components

Budget

- ✦ Budget is in Place for FY 2011, \$6 Million for New Rotor
- ✦ Rotor Out Inspection is Scheduled for FY 2011, Budget of \$3.5 Million in place to Disassemble and Reassemble Generator

Status/Issues

- ✦ The New Rotor is ready to be Shipped when needed
- ✦ Work Scheduled and Budgeted for R-20
- ✦ Torsional Testing Scheduled for Startup

Miscellaneous Pictures



Pictures

