

PG&E Jefferson – Martin 230kV Transmission Project



WETS '07 Workshop

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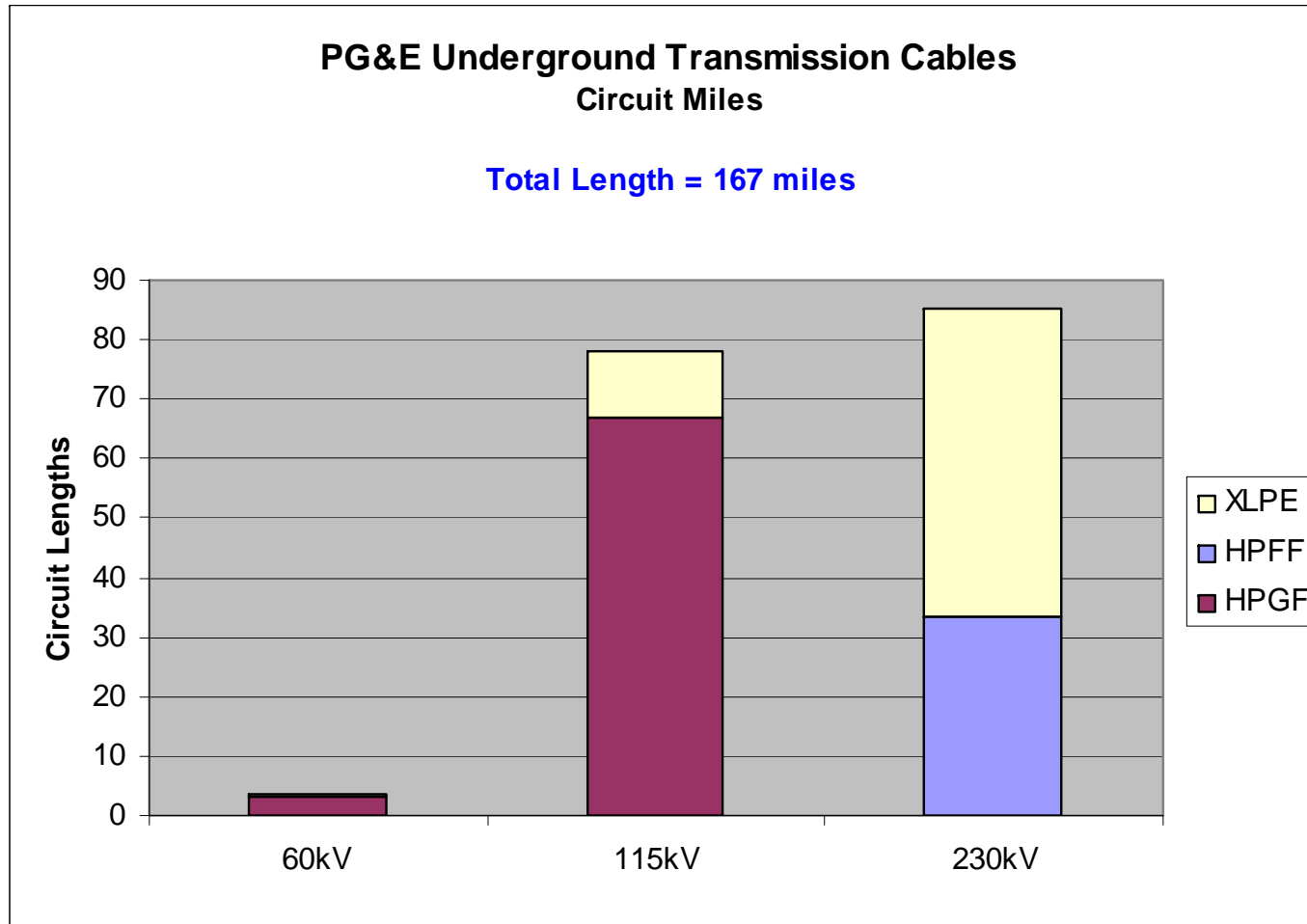
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PG&E Background



- 70,000 square miles
- 23,000 MW Peak electric load
- 4.1M gas customers
- 5.2M electric customers
- 45,800 miles of gas pipeline
- 139,000 miles of electric lines
- 71 generation facilities
 - 68 hydro
 - 2 fossil fuel
 - 1 nuclear
- 20,000 employees

PG&E Transmission Cables



230kV Jefferson-Martin Line Characteristics

- Supply for San Francisco and San Mateo Counties
- Single circuit 230kV XLPE cable system
- Circuit length - 44km total (39km cable + 5km O/L)
- Reactive compensation
- Project cost \$221M
- Energized in April 2006



230kV Jefferson-Martin Line Characteristics

- 1267mm² Copper segmental
- 23.4 mm XLPE
- 4 optic fibers (single mode)
in two stainless steel tubes
- Lead sheath
- MDPE jacket with s/c layer
- 117 mm OD
- 80 Vaults with 234 joints
- 18 Terminations



230kV Jefferson-Martin Line Compensation

- Traditional technology
- One 75 MVAR shunt reactor and 3 step series reactor on one side
- Two 75 MVAR shunt reactor on the other side



230kV Jefferson-Martin Line Operating Conditions

- 478 MVA rating
- Cross-bonding and single point bonding
- DTS monitoring with one movable unit – need to cover line from both sides
- Open trench installation with PVC conduit and fluidized thermal back fill



230kV Jefferson-Martin Line Environmental Aspects

- Two years of environmental review
- Most comprehensive environmental impact report for transmission project in California
- 38 proposed routes
- 135 separate mitigation measures
 - working hour restrictions, noise control, storm water, environmental, traffic, hazardous materials, corrosion, induction, conduction
 - Mitigation measures for special animal species
 - Wildlife exclusion fencing
 - Reduction of visual impact of O/L structures
- O/L due to water shed

