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Los Angeles first EHV XLPE cable

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This paper outlines the design procedure which the Los Angeles Department of Water and Power used for the design of their first 230 kV cross-linked polyethelene (XLP) insulated cable. The cable system infrastructure supports the supply of an additional 450MVA to Los Angeles North Hollywood area. An area extremely congested and in immediate need of expanded load support. Following almost a year in construction, the system was energized in May 2002. In this paper the following major design procedures will be discussed:

- Insulation thickness design methodology utilizing the Weibul Statistical model for probability of failure along with the maximum and average stress approaches. A brief discussion of the iterative process used to calculate the insulation thickness.
- Discussion of the significant issues that determine expected life of the joint connections such as cold forces, and specific cable connections. A method of calculating theses forces is also presented
- Discussion of mechanical forces acting on the cable which impact joint strength required to accommodate and withstand any system stress
- Discussion of cable installation in a duct system environment
- Discussion of the commission test process and approval criteria completed at the end of the cable installation.