**B.7.2.**

## Electrical aging and breakdown of crosslinked polyethylene cables

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A model of dry ac electrical aging of extruded cables is briefly described. The model is based on two basic parameters, the activation energy $\Delta G$ and volume $\Delta V$ and there is no adjustable constant. It is shown that it agrees very well with experimental data for XLPE cables aged under constant temperature. The main objective of this paper is to show that the impulse and the ac breakdown fields of actual XLPE cables for at least two different set of aging and breakdown results can be directly related to the basic parameters deduced from electrical aging tests performed on the same samples. From a practical point of view, this means that the breakdown strength of a XLPE cable can be deduced from long time aging data. Conversely, the aging characteristics at constant temperature could be predicted from at least three breakdown measurements lasting some seconds and performed under three different voltage raise rates. The practical implications of this observation are discussed in some detail.