

AGING OF ELECTRICAL CABLES: ENVIRONMENTAL STRESSORS AND CONDITION ASSESSMENT STUDIES

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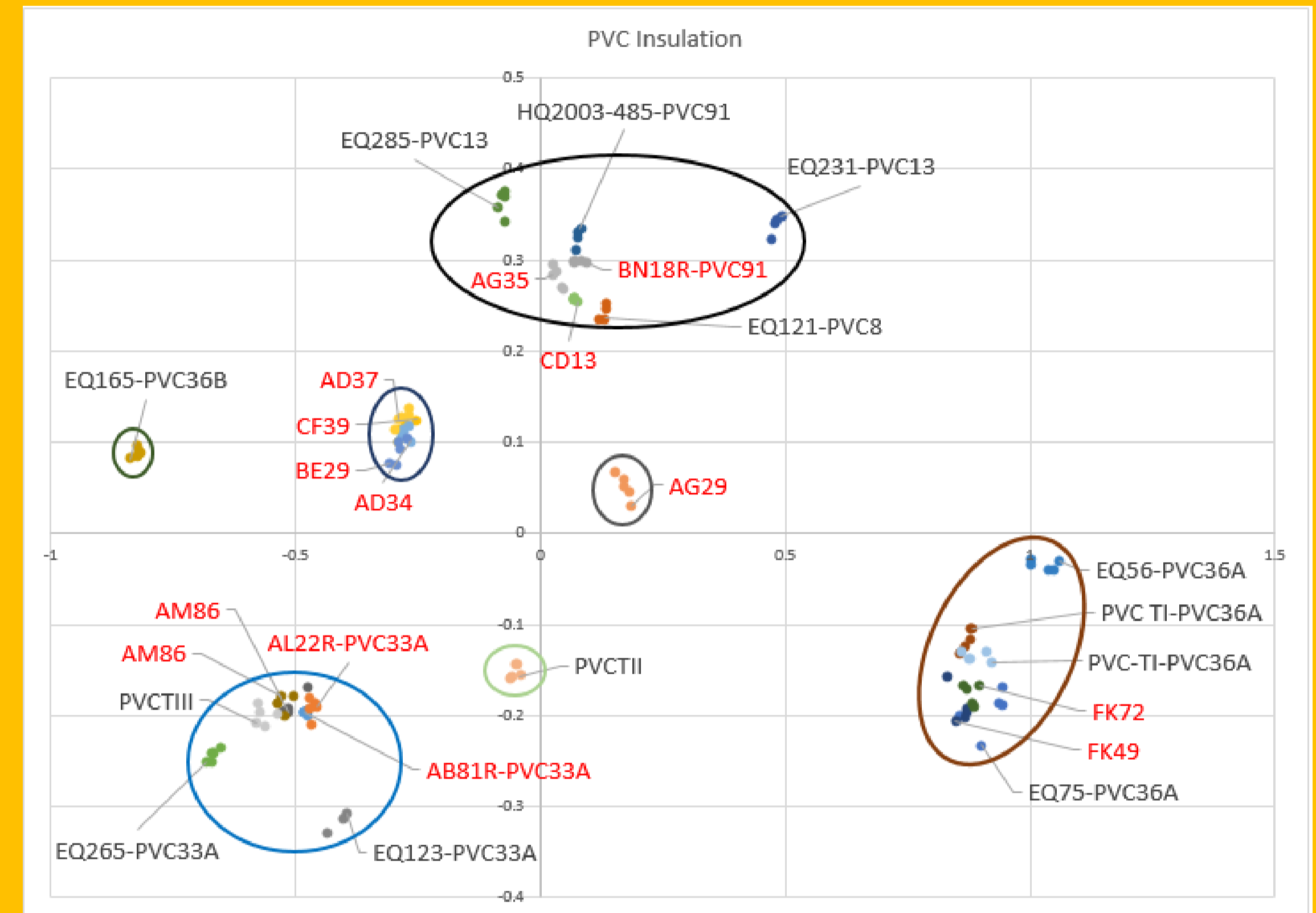
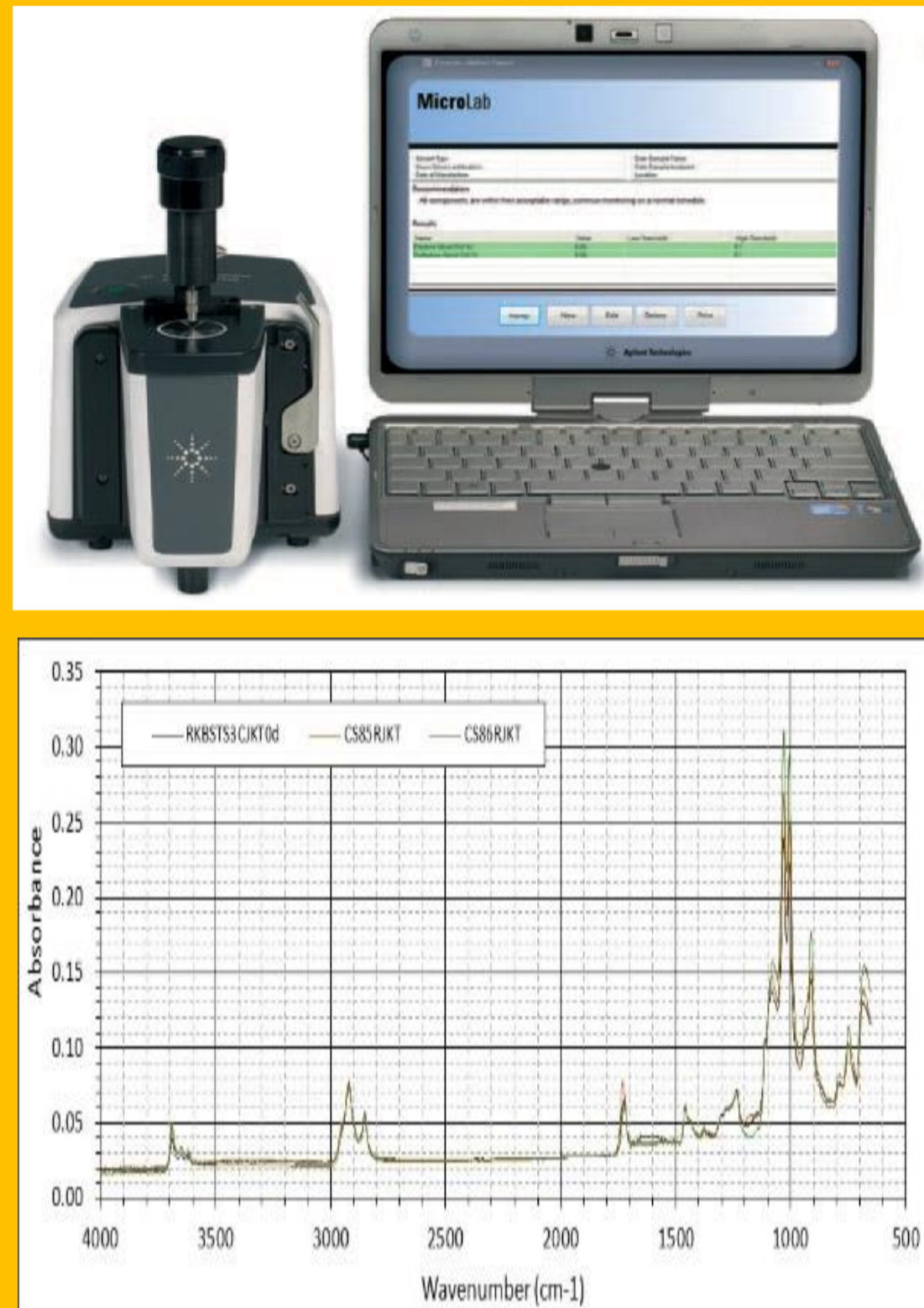
Project Objectives:

- Assess condition of cables removed from the field
- Refine protocols for more reliable accelerated aging
- Assess methodologies for prediction of cable remaining life

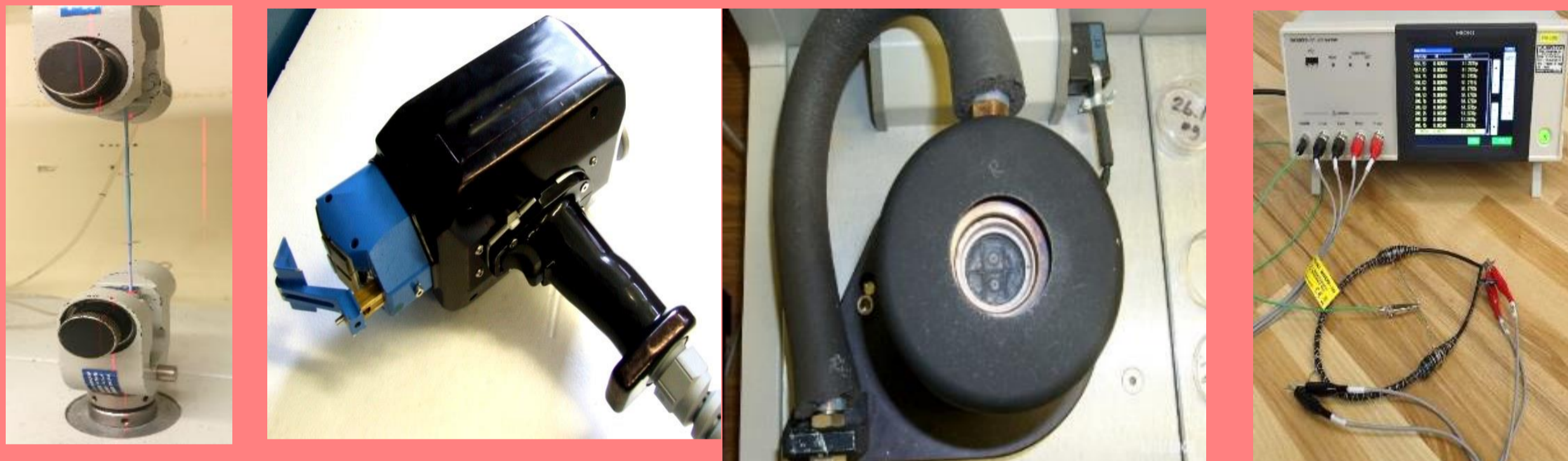
Retrieval of Electrical Cables from Hydro-Quebec Gently-2 (2018-2020)



Use of FTIR and PCA to Identify Insulation/Jacket Materials and Material Formulations (2018-2020)

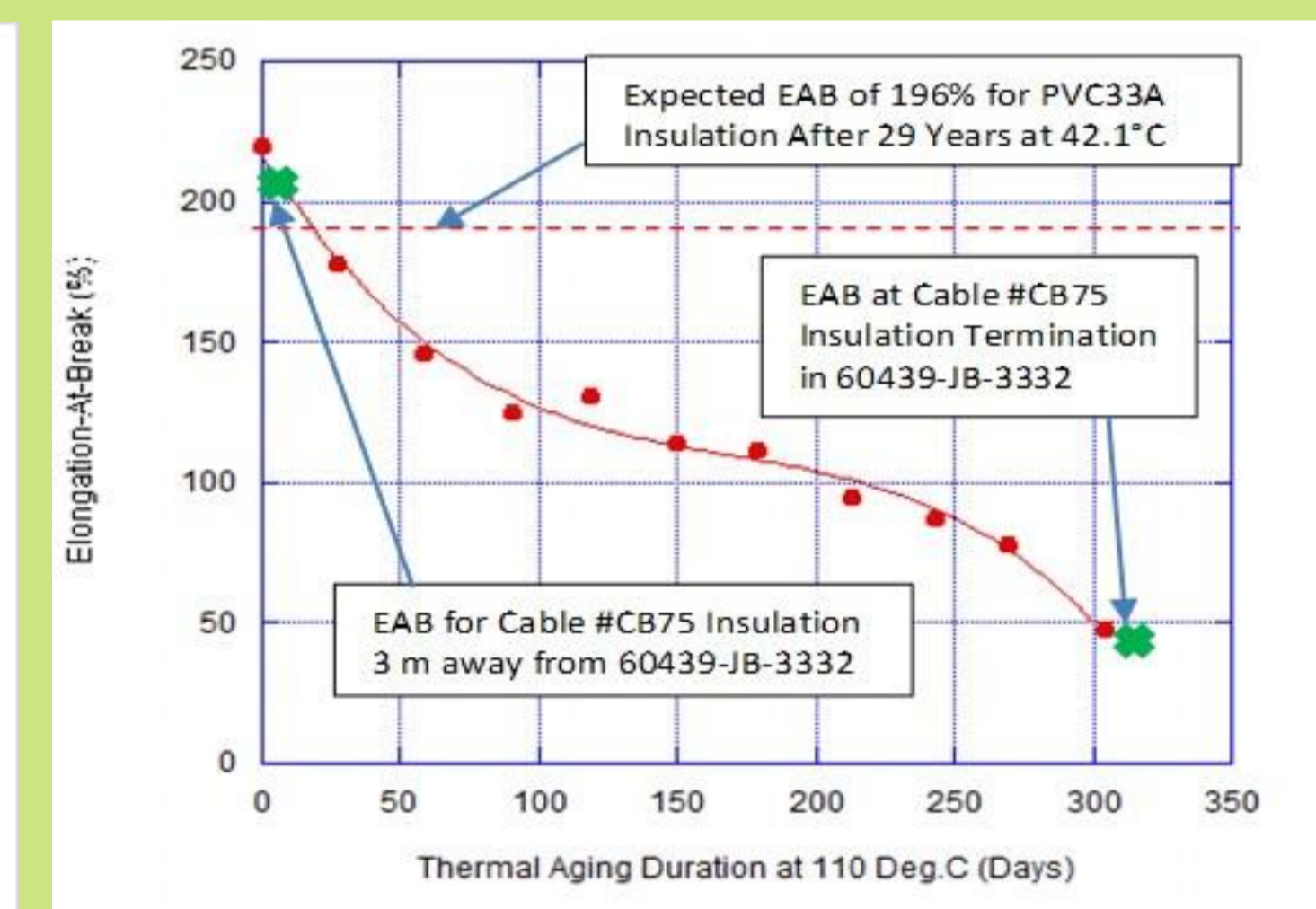
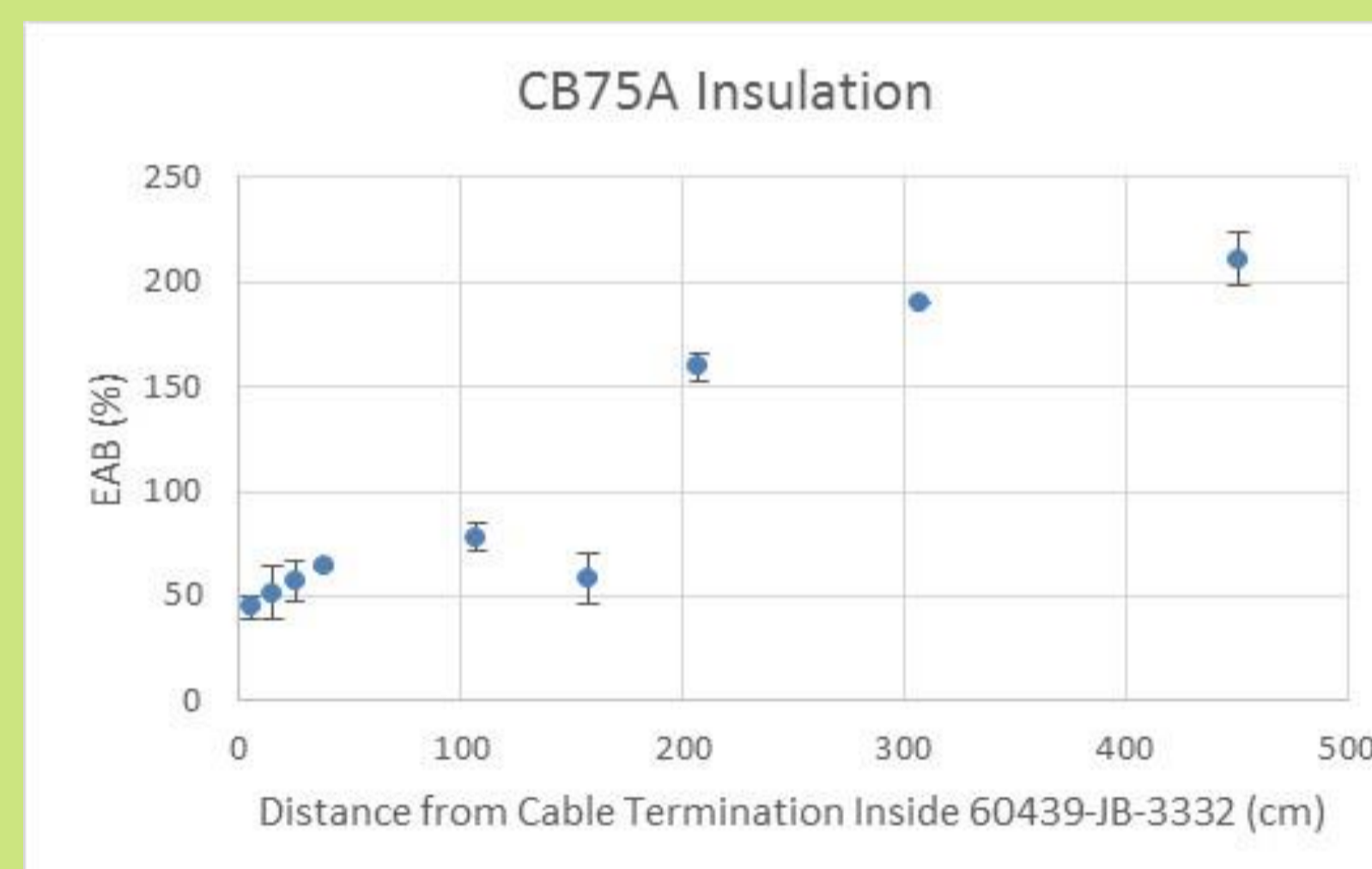


Condition Assessment Techniques and Condition Indicators Used

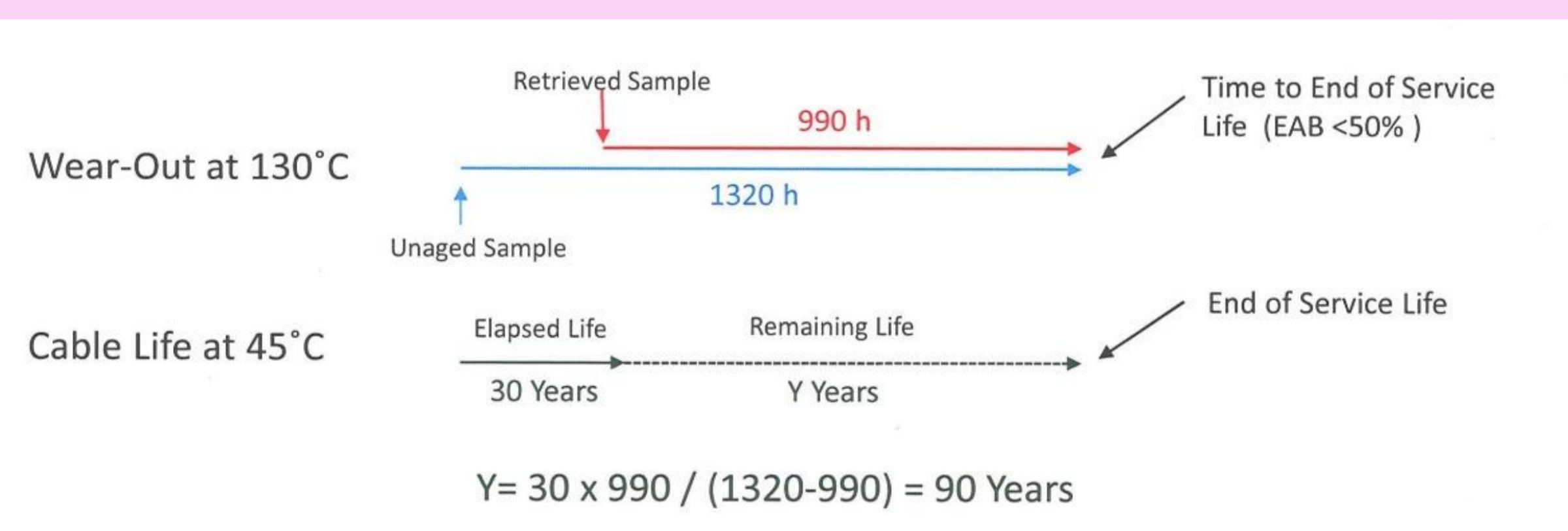


EAB Indenter Modulus Recovery Time Oxidation Induction Time Tan Delta

Condition Assessment of Retrieved Gently-2 Cables (Phase 2: 2019-2020)



Wear-Out of Retrieved Cable Samples for Assessment of Remaining Life of XLPE Insulation (2019-2020)



Low-Acceleration Aging Tests (2020-2022)



X-Ray Irradiation / Thermal Aging Facility

- Low-acceleration wear-out of retrieved cable samples via simultaneous low-dose rate Irradiation and low-temperature thermal aging
- Study of dose-rate effects on cable insulation materials
- Study of inverse temperature effects in XLPE insulation

Expected Outcomes:

- Repository of retrieved cable samples
- Validation of environmental qualification work
- Set of reference data for naturally-aged cables
- Improved cable aging protocols

