IEEE 'Lightning Performance of Overhead Lines' WG

Tuesday, July 19, 2016
8:00 AM

Minutes of 2016 WG Meeting at the PES General Meeting in Denver, Co

Chair: Emanuel Petrache
Vice-Chair: Jens Schoene

Emanuel opened the meeting at 8:05am with an overview of the Agenda

1. Bill Chisholm reported on CIGRE WG activities and other news
    a. Presentation posted at http://ewh.ieee.org/soc/pes/lpdl/
    b. B2.54 Guidelines for the Management of Risk Associated with Severe Climatic Events and Climate Change on Overhead Lines (Henry Hawes)
    c. B2.56 Ground Potential Rise at Overhead AC Transmission Line Structures during Faults (George Watt)
    Bill presented details on step potential verification method.
    Recommendation: Coordinate with C4.33 to confirm the validity of the impulse test method, considering frequency dependence of the soil
    d. B2.AG06.TF007 Coordination of transmission line surge arrester (TLSA) and vibration damper installations (David Havard, leading to CIGRE Science & Engineering Article)
    "Don't put your arresters near our dampers"
    Objective is to produce a paper for CIGRE Journal of Science and Engineering guidelines
    Scheduled completion 2016
    e. Petrache paper on CEATI studies (CDEGS HiFreq vs NEC-4)
    f. Lots of interest in German Hybrid AC/DC with positive pole exposed to lightning
    Double circuit lines with single OHG. Converting one side to DC. Banks of 10 arrester at terminal proposed.
    g. C4.23 GUIDE TO PROCEDURES FOR ESTIMATING THE LIGHTNING PERFORMANCE OF TRANSMISSION LINES (Christiaan Engelbrecht)
    "Don't wait for its readiness. Better move forward with revising 1243 on an aggressive schedule."
    h. C4.26 UHV Line Shielding (Jinliang He)
    i. C4.33 Impact of Soil-Parameter Frequency Dependence on the Response of Grounding Electrodes and on the Lightning Performance of Electrical Systems (Sliverio Visacro)
    Bill presented details on frequency dependence of soil. :Using low-frequency value for flashover calculations may result in a 600% error of flashover rate."
    j. C4.36 Winter Lightning – Parameters and Engineering Consequences for Wind Turbines (Masaru Ishii)
    Severity of problem (lightning blowing blades of) is unique to Japan. Starting to see similar problem in Ontario.
    k. C4.39 Effectiveness of line surge arresters for lightning protection of overhead transmission lines (Kenji Tsuge)
    Some aspect of existing electro-geometric model apparently erroneous.
    l. PES Annual Meeting, July 2016
        i. HVDC Line Design Guide Task Force (July 18)
        ii. HVDC Line Design Subcommittee (July 20, 8 AM)

2. Tom McDermott will present the results of a recently-funded CEATI project aimed at improving IEEE Flash (tower models, counterpoise models, and updated applications of the CFO-added method).
    a. OpenEtran developed for distribution to estimate flashover rate.
        i. Runs EMTP under the hood.
        ii. Includes line segments, insulators, grounds, surge arresters, lightning.
        iii. Frequency-dependent arrester models.
        iv. Soil model not frequency dependent.
        v. Does not handle pre-discharge currents.
    b. IEEE Flash calls OpenEtran with a GSL root-finding method to find critical stroke current causing flashover.
    c. Development needs
        i. Improve model of induced voltages from nearby strokes. Proposed new model is from Hoidalen
        ii. Implement the CFO-added method and transmission counterpoise.
    d. CEATI project Scope and Schedule
        i. Transmission: tower and counterpoise model
        ii. Distribution: CFO added method
        iii. Overall: documentations and examples
        iv. Chisholm: Time-dependent insulation parameters
        v. Interface: Python?
        vi. Schedule
            1. Models in C code: October 2016
            2. User Interface and Case Study: February 2017
            3. Documentation and Deployment: June 2017
        vii. Tom asking for recommendations for counterpoised models and data to support this project - performance information, counterpoise, conductor type, etc. Bryan Beske can provide some data.

3. Revision of IEEE Std. 1243
    a. 2 year extension request approved last year
    b. Deadlines:
        i. All IEEE standards have a 10 year maintenance life cycle, and 1243 will expire in 2018
        ii. Complete draft and submit to RevCom (Review Committee) for approval by October 2018 (completed balloted).
        iii. Balloting takes 6-12 months (according to John).
        iv. Switched to inactive -> can bring it back by completing work.
        v. If standard is in balloting, then an extension can be requested.
    c. Next steps.
        i. Create editable format in current template. Can be done by IEEE Standard Association
    d. Bill suggested three changes that can be made immediately
        i. Thunder storm hour wrong by a factor of 10
        ii. Sag calculation wrong by a factor of 10
        iii. L/R time constant tall of wave is wrong. Says determines time on wave, but it doesn't.
    e. Webex meeting 2-3 months from now (September/October, 2016), after editable version received

f. Task assignment.
    i. Assigned during first Webex
    ii. Bill volunteered to transfer 1410 content on flash density to 1243
g. Update on IEEE Std. 1410TM
h. Next Meeting:
    2016 IEEE PES Joint Technical Committee Meeting in New Orleans, January 8 - 12, 2017 (tentatively)

4. Action items
    a. Request editable format that conforms to current IEEE template from IEEE-SA Standards Board (completed). Erin Spiewak will take care of this
    b. Emanuel: Schedule WebEx for end of September, 2016.
    c. Emanuel: Schedule WebEx for late April, 2017.

5. Meeting sojourned at 11AM