

IEEE Power Engineering Society Entity Annual Report 2005

Entity: West Coast Subcommittee (F0)

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Significant Accomplishments in 2005:

SC F0

Continued to successfully attract new members to the various West Coast Subcommittee working groups.

TF F0A

The Paper on Current North American Assessment and Refurbishment Practices of Substation Grounding was published in the July 2005 PES Transactions.

WG F0B

The final draft (14) of P1527 – Recommended Practice for the Design of Flexible Buswork Located in Seismically Active Areas was successfully balloted. Final editing will be completed in early 2006 and sent for approval to the Standards Board for publishing in 2006. A Tutorial is being developed for the Annual meeting in Scottsdale in April 2006. The PAR has been extended through December 31, 2006.

WG F1

The final draft (9) of IEEE 693 draft has successfully been balloted, and approved by the Standards Board for publishing in mid-2006. A Tutorial is being developed for the Annual meeting in Scottsdale in April 2006.

A PEER (Pacific Earthquake Engineering Research) Center Lifelines project (co-funded by the California Energy Commission and PG&E) is underway in early 2006. This project will help translate the latest research on interconnected substation equipment into practical tools (Application Guides) that can easily be implemented by utility engineers for design and construction.

The West Coast Subcommittee Website is being used as focus point for the storing of new equipment testing records, which can be used by a supplier to indicate they have pre-qualification of their equipment to IEEE 693.

WG F2

The review of the final draft of IEEE 525 control cable standard has now been completed by the WG. The final draft reflects the new standard format and a layout that follows the typical design process to install cable systems in substations. An example for a small

distribution substation has been added as an annex to make the guide more user-friendly.

The final draft will be sent for balloting in early 2006. A Tutorial is being developed for the Annual meeting in Scottsdale in April 2006. The PAR has been extended through December 31, 2007.

WG F3

The revised layout for the Substation Fire Protection Guideline IEEE 979 has been further developed and reviewed. Assignments for updating each clause are continuing, with the membership balanced between consultants, fire protection and substation design engineers from North America and international. The PAR has been approved.

A tour of PG&E's indoor Mission Substation was conducted in June 2005 to address the complexity of issues associated with the retrofitting of fire protection mitigation features in existing substations. World-wide transformer fire event reports are being forwarded among the group as they occur.

Benefits to Industry from the 2005 Work (provide specific examples):

The Transaction Paper on Assessment and Refurbishment Practices of Substation Grounding provides a handy reference of common practices throughout North American utilities. This should lead to more consistent and safer ground grids throughout the life-cycle of a substation; that is, ensuring the parameters of initial design are maintained.

IEEE 525 revision provides a much-improved, user-friendly approach to control cable design for substations. This makes the standard more usable and valuable (especially for newer engineers), and incorporates the latest information and references on communication cable, fiber optic cable, and shielding practices. An example provides the user a ready reference of following the standard through the design process. This should lead to more consistency of cost-effective and reliable designs within the industry.

IEEE 693 provides a clear, single set of requirements for seismically qualifying electric power equipment. A supplier can qualify their equipment before they receive an order and therefore amortize the cost of this qualification over the number of units they expect to sell, instead of charging each utility for individual tests to meet their special seismic requirements. The supplier can now also include seismic requirements in the initial design process and does not have to modify the equipment after it has been manufactured to meet the required seismic requirements. The sharing of the research work load is still being undertaken through the PEER group for the qualification of substation equipment to IEEE 693.

IEEE 979 provides the industry an improved understanding of the risks, methods and impacts from fire damage in substations. It provides a reference for best practices that should provide cost-effective designs while minimizing or eliminating risks to personnel and the public.

IEEE 1527 ensures that bus connections to major substation equipment will not cause collateral damage during seismic events. This new guideline will enhance the understanding and applicability of flexible connections, and acts as a handy reference for dynamic force characteristics of non-strain conductors.

Benefits to Volunteer Participants from the 2005 Work (provide specific examples):

Knowledge transfer and problem-solving was undertaken through work on the IEEE 525, IEEE 693, IEEE 1527 and IEEE 979:

- Shielding practices and voltage levels of control cable
- Transformer fires and design mitigation practices
- Utility implementation of seismic designs
- Conductor attachment dynamic forces from seismic movement

Recognition of Outstanding Performance:

The members of WG F1 and SC F0 wish to acknowledge the contributions of Rulon Fronk for his outstanding leadership in completing the balloting and approval of the revised 693.

Significant Plans for 2006:

SC F0

To link the West Coast Subcommittee Website to the Substations and PES web sites.

To continue to attract new members to the subcommittee's various working groups and task forces.

To arrange Panel Sessions and Tutorials on the subjects covered by the subcommittee.

WG F0B

To publish IEEE 1527, and develop a Tutorial. To support the PEER project in developing an Application Guide to mitigate the interaction of interconnected substation equipment.

WG F1

To publish IEEE 693, and develop a Tutorial. To support the PEER project in developing an Application Guide to mitigate the interaction of interconnected substation equipment.

WG F2

To successfully ballot IEEE 525, so it becomes an official revised IEEE standard, and develop a Tutorial.

WG F3

To successfully update and expand IEEE 979, in preparation of becoming an official revised IEEE standard.

Problems and Concerns:

Limited number of young engineers attending meetings. We need to attract and retain the next generation of engineers in the Power Engineering area. It is believed that tutorials prior to the meetings are a good idea, and there must be more variety.

To continue to attract informed and committed participants to help would on standards in a timely manner.

Obtaining consensus for a single set of seismic standards from other PES Committees and groups outside of IEEE.

Submitted by: John D. Randolph

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