

Meeting Minutes of WG D5
April 8, 2008
San Francisco, CA

Bob Nowell, Chairman, opened the meeting with introductions. There were 26 members and 19 guests present at this meeting. See attendance list at end of minutes.

1. **Obligatory Statement** - Bob Nowell presented the latest revision of five page long obligatory document from IEEE, regarding patents in standards and inappropriate topics for working group meetings.
2. **Member presence** – There are a total of 36 members on the WG roster. More than 50%, 26 members were present at this meeting. This fact allows the WG to officially conduct business.
3. **Minutes/Agenda** – A motion/vote was carried (White, D’Alessandro) that the questions regarding Nashville 2007 minutes sent in by Dr. Abdul Mousa should be addressed and approved by all WG members via e-mail. The Nashville 2007 minutes were not discussed any further.
A motion/vote was carried and the San Francisco 2008 working group agenda was approved.
4. **Survey /Dr. Boris Shvartsberg** – Boris discussed Rolling Sphere, Mousa’s Improved Method and Wagner’s method. Based on the requirements from many US utilities, Dr. Sakis Meliopoulos recommended including acceptable risk evaluation related to the lightning protection method into the standard.
5. **“Bucket Bridge Report”/Gary Engmann** – Gary presented initial results of his Task Force investigation. Main topics discussed:
 - Collection Volume method
 - Upward Leader Inception
 - Probability Formula

Refer to the attached document

The Task Force will make the final recommendations to the chairman Bob Nowell at the Nashville 2008 meeting.

6. **Early Streamer Emission/Dr. William Rison** – Presented on Early Streamer Emission lightning protection systems. The presentation included video of a lightning event recorded with high-speed camera. (Refer to the attached document).
7. **Proposed Lightning, Shielding Methods/Dr. Franco D’Alessandro** – Presented on Current and Proposed Lightning Shielding Models. The presentation compares Fixed Angle, Empirical, Simple EGM (RSM), Revised EGM (Mousa), and Improved EGM (Eriksson) design methods applied to the 69 kV substation published in the Annex B of IEEE Standard 998. (Refer to the attached document)
8. **Design Cases using WinIGS/Lane Garrett** – Presented results concerning 69kV and 500/230 kV

**Meeting Minutes of WG D5
April 8, 2008
San Francisco, CA**

substation designs using WinIGS and applying different LP protection methods offered by the software. (The substation layouts were modeled based on the examples published in the Annex B of the IEEE Standard 998. (Refer to the attached document)

9. **Independent LP Cases/Dr. Sakis Meliopoulos** – Presented three designs for Generation, Distribution, and Transmission substation using WinIGS software. Rich Keil, Chuck Haahr, and Martin Havelka volunteered to evaluate the cases in the software and compare results.

10. **Assignments** –

| Section (Clause) Number | Lead Person |
|--------------------------------|-----------------------|
| 2 | Brian Stephens |
| 3-4 | Chuck Haahr |
| 5 | Lane Garrett |
| 6 | Gary Engmann |
| Annex D | Keith Wallace |
| Annex C | Hanna Abdallah |
| Annex X | Gary Engmann |

The date and time of the Nashville fall meeting will be specified. Please submit **all assignments two weeks prior to the Nashville meeting to the secretary at mhavelka@ieee.org.**

Respectfully submitted by
Martin Havelka
Secretary, WG D5

**Meeting Minutes of WG D5
April 8, 2008
San Francisco, CA**

Attendance List (with affiliation):

| First Name | Last Name | Role | Email | Company |
|-------------------|------------------|-------------|------------------------------------|--------------------------------------|
| Hanna | Abdallah | Member | HannaEssa.Abdallah@aps.com | Arizona Public Service Co. |
| Ken | Aldridge | Guest | kaldridge@rwbeck.com | R.W. Beck |
| Radoslav | Barac | Member | radoslav.barac@ge.com | General Electric Company |
| Joseph | Bell | Guest | joe.bell@pacificorp.com | Pacificorp |
| Romulus | Berzescu | Member | romulus.berzescu@sargentlundy.com | Sargent & Lundy LLC |
| Bryan | Beske | Member | bbeske@atcllc.com | American Transmission Company |
| Dale | Boling | Guest | dboling@erico.com | ERICO, Inc. |
| James | Cain | Guest | cainbrian@stanleygroup.com | Stanley Consultants, Inc. |
| Chris | Chadbourne | Guest | chris.chadbourne@fciconnect.com | FCI USA, Inc. |
| K. S. | Chan | Guest | kschan@bechtel.com | Bechtel |
| Koushik | Chanda | Member | kchanda@bechtel.com | Bechtel Power Corp. |
| Randy | Clelland | Guest | randy.clelland@bchydro.com | BC Hydro |
| Dr. Franco | D'Alessandro | Member | info@physelec.com | PhysElec Solutions Pty Ltd |
| Dennis | DeCosta | Member | dfdecosta@cai-engr.com | Commonwealth Associates, Inc. |
| W. Bruce | Dietzman | Guest | w.b.dietzman@oncor.com | Oncor Electric Delivery Company |
| Gary | Engmann | Member | g.engmann@ieee.org | Burns & McDonnell |
| Shane | Freepons | Guest | freeponss@bv.com | Black & Veatch |
| D. Lane | Garrett | Member | dlgarret@southernco.com | Alabama Power Company |
| Joseph | Gravelle | Member | joseph.t.gravelle@xcelenergy.com | Xcel Energy |
| Steve | Greenfield | Guest | sgreenfield@erico.com | Erico, Inc. |
| Matt | Guarneri | Guest | matthew.guarneri@constellation.com | Baltimore Gas and Electric |
| Charles | Haahr | Member | chaahr@segainc.com | Sega Inc. |
| Martin | Havelka | Secretary | mhavelka@erico.com | Erico, Inc. |
| Richard P. | Keil | Member | rpkeil@cai-engr.com | Commonwealth Associates |
| Dave | Kelley | Member | dave.kelley@srpnet.com | Salt River Project |
| Allen | Love | Member | aclove@southernco.com | Georgia Power Company |
| Jason | Meidinger | Guest | jason.meidinger@dom.com | Dominion |
| Sakis | Meliopoulos | Vice-Chair | sakis.m@gatech.edu | Georgia Institute of Technology |
| Mark | Morgan | Guest | mark@ecl.biz | East Coast Lightning Equipment, Inc. |
| Mike | Noori | Guest | mike@cengs.com | Custom Engineering Solutions |
| Robert | Nowell | Chair | rsnowell@southernco.com | Georgia Power Company |
| James T. | Orrell | Member | torrell@utilitytec.com | Utility Tech Engr-Consultants (UTEC) |
| Fred | Randolph | Member | frandolph@firstenergycorp.com | First Energy |
| William | Rison | Cor. Member | rison@ee.nmt.edu | New Mexico Tech |
| Donald | Rogers | Member | drrogers@bechtel.com | Bechtel |
| Boris | Shvartsberg | Member | boris.shvartsberg@pseg.com | Public Service Electric and Gas Comp |
| Ryan | Stargel | Guest | rwstarge@tva.gov | Tennessee Valley Authority |
| Brian | Stephens | Member | bstephens@ameren.com | Ameren |
| Curtis | Stidham | Member | cstidham@harger.com | Harger Lightning & Grounding |
| Brian | Story | Member | bstory@entergy.com | Entergy |

**Meeting Minutes of WG D5
April 8, 2008
San Francisco, CA**

| First Name | Last Name | Role | Email | Company |
|-------------------|------------------|-------------|-------------------------|----------------------------------|
| William | Thompson | Guest | bithompson@powereng.com | Power Engineers, Inc. |
| Giang | Tran | Guest | gtran@entergy.com | Entergy Services |
| Keith | Wallace | Member | kawallac@southernco.com | Alabama Power Company |
| Ronald | Wamer | Guest | rhwamer@southernco.com | Georgia Power Company |
| Don | Wengerter | Guest | don.wengerter@eciwi.com | Electrical Consultants, Inc. |
| Ken | White | Member | ken.white@ieee.org | Georgia Transmission Corporation |
| Alexander | Wong | Guest | alex.wong@hydroone.com | Hydro One |
| Roland | Youngberg | Cor. Member | reyoungberg@yahoo.com | MidAmerican Energy Company |