INTRODUCTION
The Traction Power Substations Standards Subcommittee (TPSSS) is in its fifteenth year of operation since it was formed in 2002. The TPSSS is working on developing new standards, recommended practices, and guides; coordinating with other organizations such as APTA and AREMA and within IEEE; providing up-to-date information on professional activities of interest to the electrified rail and transit industry; and soliciting recommendations, ideas and suggestions that would improve industry practices. The TPSSS is a subcommittee of the Rail Transportation Standards Committee (RTSC) within the IEEE Vehicular Technology Society (VTS). The TPSSS meets bi-annually at various transit properties in the United States and Canada. The TPSSS consist of electrified transit and railway industry leaders in the public and private sectors dedicated to writing national consensus standards, recommended practices, and guides which will govern manufacturing, supply, installation, testing, commissioning, and operation of traction power substation equipment.

PURPOSE
The purpose of this meeting was to update the TPSSS membership on status of TPSSS activities including Working Groups (WG) and Task Forces (TF), to share the progress of their work, to conduct working sessions, and to outline future plans for continuing their work on standards, recommended practices and guides.

Wednesday, May 10, 2017
Joint meeting session with OCS in the Pavilion Room
Meeting called to order         Gary Touryan/Paul White
• Welcome Greetings by SORTA Director of Rail Services    Paul Grether
• VTS Vice President, Land Transportation       Bin-Yuan Ku
    Dr. Bi-Yuan Ku Gave a summary of VTS activities. He encouraged everyone to join VTS. He encouraged those eligible to apply for Senior Member status in the IEEE. He encouraged everyone to participate in the Joint Rail Conference.

Start of TPSSC only meeting session
• Introductions         All
• Next meeting location and date       Gary Touryan
    Mr. Touryan informed that the next meeting will be at PATH Journal Square, Jersey City on October 16 and 17 for OCS and October 18 and 19 for TPSSC.
• Dinner Logistics     Paul Forquer
• TPS Website and iMeet Central=Central Desktop     Gary Touryan
• Balloting               Paul Forquer
    Mr. Paul Forquer stressed the importance of participating in balloting.
• Minutes of the previous meeting       Paul Forquer
    Meeting Notes of the previous meeting were approved.
• PatCom info               Paul Forquer
    Prior to starting the WG/TF session Mr. Paul Forquer went over PatCom information.

P1653.1 – 2016 – IEEE Standard for Traction Power Transformers for Substation Application up to 1500 Volts dc Nominal Output         Ethan Kim
    There was a discussion on the appendix containing the “Ping Test”. It was agreed the appendix needs more work including some directions on how to interpret the results.

P1653.2 – 2009 – IEEE Standard for Uncontrolled Traction Power Rectifiers for Substation Application up to 1500 Volts dc Nominal Output         Ben Stell
    Mr. Stell reported the following:
    • The current 1653.2 standard has been posted to IEEE TPSSC iMeet Central site in the 1653.2 “workspace”. The former ANSI C34.2 and NEMA RI-9 standards have been posted there as well for reference. We have transitioned to iMeet for future work on this standard, so those who want to work on this standard need to provide Benjamin with current contact for invitations to the iMeet Central 1653.2 workspace. Email them to him at Benjamin.Stell@STVInc.com.
• This standard will expire in 2019 unless it is revised. The revision procedure makes the entire standard open to comments by anyone (not just the proposed changes), which could extend the time required for successful balloting.

• A Project Authorization Request (PAR) must be obtained for revision of the standard. Mr. Stell will request a revision PAR and circulate an initial revision draft for comments prior to the October 2017 meeting.

• Mr. Stell suggesting adopting a three-hour service rating as represented in the figure below. After discussion, it was decided to reduce the duration of the three 300% load periods from five minutes to 1 minute.

![Extended Extra Heavy Traction Service Rating](image)

Mr. Andrew Jones reported on extensive work that their WG is planning to enhance the guide.

P1653.4 - 2011 – IEEE Standard for dc Traction Power System Field Testing and Acceptance Criteria for System Applications up to 1500 Volts dc Nominal  Tom Young
Mr. Tom Young outlined the contemplated changes to the standard. There was a vigorous discussion on how to revise it as a recommended practice instead of standard.

P1653.5 Recommended Practice for Controlled Rectifiers for Traction Power Substation Applications  Vitaly Gelman
Mr. Vitaly Gelman presented a status review of the Recommended Practice and discussed specific topics including:

• The paragraph addressing general requirements was modified into a Section 5 with additional subsections 5.1 “Operation in 6 and 12-pulse mode”; 5.2 “Filter capacitors”; small subsection 5.3 “interphase transformer” and 5.4 “Fault withstanding capability”.

• Added subsection 8.1.4 “Switching losses”

• Expanded subsection 8.2.1 voltage regulation specification and 8.2.3 determination of inherent and total voltage regulation and 8.2.4 Effect of harmonics in line voltage

• Modified section 8.3 into “Power factor vs Reactive Power”

• Expanded 8.4.4 “Parallel operation of rectifier units” and 8.4.5 “Device current unbalance”

• Added preliminary versions of Sections: 10-15 Testing program Plan and related Procedures and Reports; Design Tests; Controlled Rectifier Factory Tests; TRU Installation Tests; TRU Field Performance Tests, and Standard Documentation

• Moved Section “Rectifier Dielectric tests” into Annex A

• Expanded Annex B Bibliography

For the next IEEE TPSSS meeting in October 2017 new Sections 10-15 will be edited and expanded, to be close to a final version.

P1653.6 - 2013 – IEEE Trial-Use Recommended Practice for Grounding of dc Equipment Enclosures in
Traction Power Distribution Facilities

Ethan Kim gave an update.

Shop grounding practices

- Not good to just say "just install like mainline and yard." Need to document all practices and why.
- Group will revisit the Shop practices again.

Low resistance grounding - Insulation practices

- Need to add text that insulation is installed to prevent inadvertent grounding of enclosures and TPSS enclosure.

Low resistance grounding - Floor insulation

- Need to extend limits of floor insulation to include the dc breaker drawout area so that the breaker truck doesn’t bridge switchgear to ground.

A separate recommended practice to be developed for Railway Systems Grounding.

Recommended use of an explanatory note in 1653.6 to clearly define the intended use of the document.


Brian Gerzeny discussed on how working with PES we were able to provide comments and have some input in the revised standard. He re-emphasized the importance for at least 5 volunteers to accompany him to PES meeting to work on future revisions.

Mr. Gerzeny reported the following:

- iMeet site was populated with members from past WG.
- Reviewed proposal for redefining and adding current rating terms to the standard. Further discussions on this topic will occur in future WG meetings.
- Conference call/On line WG meetings will begin in June.

Adjourn the first day meeting

Tour of Cincinnati Bell Connector Streetcar and Facilities

Thursday, May 11 2017

Meeting called to order & general information

P1884 Guide for Stray Current/Corrosion Mitigation for dc Rail Transit Systems

WG will make a presentation at the next meeting.

P1887 Wayside Energy Storage System Guide for dc Traction Applications

Suresh Shrimavle opened a new topic for discussion whether it is feasible for the use of generators to feed for traction power substation and its pros and cons. Apparently a few clients are asking this option in their proposals. A brief discussion/brain storming session took place within the subcommittee and further discussion needed on this topic in the upcoming meetings as a follow up.

P2720 Rail Potential Management Guide for Direct Current Traction Electrification Systems

Mr. Stell noted the following about the current draft.

- Scope: This guide provides a description of the concepts, applicable standards, and methods used for the calculation and management of rail potential on dc-electrified rail transit systems.
- Purpose: This guide describes existing methods, terminology, and additional references for the management of rail potential on dc-electrified rail transit systems.
- Draft D5 has some areas that need work in particular (volunteers are requested):
  o 8.3.1 Impact of passenger platform de-icing materials on touch & step voltages (it was noted during discussions that airport de-icing materials may be helpful for this application)
  o 8.3.2 Impact of platform edge doors on touch voltages (recommended design guidelines)
9.8 Passenger platform electrical isolation guidelines
9.9 Voltage Limiting Devices: update section per recent European VLD application guide EN 50526-3 (Benjamin to do)
9.10 Analysis of impact of negative grounding devices on local and remote rail potentials via

TF on Smart Substations
Mark Curry – Chair
The Smart Substation Task Force presented a paper entitle IEEE Guide – Substation Automation Task Force - DRAFT. The paper discussed architecture, protocols and cybersecurity. The task force is seeking members.

Adjourn the second day meeting                  Gary Touryan

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