

IEEE Product Safety Engineering Society

IEEE PSES TSTC

Meeting Minutes: April 3, 2013

Members present: Don Gies (Alcatel-Lucent), Al Martin (TE Connectivity), Mick Maytum, Paul Ng (GE Energy), Joe Randolph (Randolph Telecom), Dan Roman (Creston Electronics), Jim Wiese (Adtran).

Members absent: Tim Ardley (Adtran), Philip Havens (Littelfuse), Doug Parker (Adtran), Tom Smith (TJS Technical Services Inc), Steve Zugay (Cree), Peter Lim (Alpha Technology), Gary Schrempp (Dell), Peter Tarver (Enphase Energy), Anne Venetta-Richard (Alcatel-Lucent)

1. Attendance/Introductions

Attendees introduced themselves.

2. Previous meeting minutes

The minutes from the last meeting was approved as submitted

3. New business

Joe commenting on a PEG presentation on windmills: The converters in windmills generate harmonics, which can get into communications systems if the windmills are not well grounded.

4. AC Power Cross Considerations for Non-Telecom Signaling Lines (e.g. Ethernet, Alarms) Run in Outside Plant – Jim Wiese

Background:

I would like to see if the committee would be interested in re-engaging in the Ethernet issues from last spring that I kinda dropped.

We have been looking at some new applications and seeing what others are doing. After receiving many of these products and reviewing tons of data sheets and marketing literature, there are major issues with the ways safety agencies and manufacturers are dealing with Ethernet and PoE. Some are quite hysterical as they have sealed metal OSP pole mount box that brings in PoE or Ethernet from a remote building. The remote building has a standard Ethernet or PoE switch (that is listed as intra-building only SELV, as no one seems to know the UL PAG exists, and which of course is flawed anyway), and the OSP box is also Listed (assuming it is Listed at all) as only allowed to be connected to intra-building SELV, and then passes the Ethernet on to another remote device somewhere else that also is SELV intra-building per the Listing but the data sheets show it mounted on a pole???? There is a bunch of exposure to transients and GPR's, and the end device is up on a pole looking like a lightning rod which makes things worse. And of course it has direct exposure to at least 120VAC in many cases as does the midspan device and switch.

The other things we see a lot is slapping gas tubes on Ethernet automatically makes it fine for OSP exposure including GPR's????

I could go on and on, but is just amazing how much snake oil and unlisted/improperly Listed devices there are that are popping up into the market (just do some simple Google searches on Ethernet/PoE protectors, PoE injectors, PoE cameras, etc) and apparently the safety agencies and most manufacturers are clueless about what to do with these things.

Of course I am not even sure what to do about devices on top of poles or antennas that are connected to switches in a remote building connected by Ethernet or PoE???

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Joe to Jim: Have you seen any transformers that don't pass the 1500 V test? Jim: Yes – about 60 – 70% of what we tested was non-compliant.

Jim: For POE the IEEE standard allows a 1500 V impulse test, which has minimal impact versus the DC or AC tests.

Jim: In many cases the power input to equipment is protected, but not the POE port.

Jim: UL PAG: POE is treated as outside plant, but ignores overvoltage test in Annex NAC.

Jim: In GR1089, only do the 125V power fault test for Ethernet.

Joe: GR1089 is silent on the hipot test for Ethernet.

Don: We generally protect Ethernet ports, because we don't know where they are going. What about CPE?

Jim: We had a wireless access point, where equipment could be put on a pole. Looked into commercially available protectors, and found that these in general caused more failures than if the ports had no protection. But these ports should have protectors. In reviewing the protectors, they have no isolation. Safety organizations list these protectors as SELV, and ignore UL 60950 clause 6.

Mick: 802.3 says that requirements only apply when wiring is inside building.

Jim: Standards organizations need to address the issue of Ethernet going outside a building.

Mick: Need to have standards for both components and for equipment. The surges to be applied should be taken from work on cell towers. The inductive spike generated by the lightning flowing through the inductance of the tower is the problem.

Jim: Anything running into the outside plant [including Ethernet] should be TNV1.

Don: Standards never said that if you have wires running to the outside plant, you need to test to UL 60950 clause 6.

Joe: Power fault is an issue for a run of ~ 600 ft.

Joe: The UL PAG is 1.2.13.8.2. It assumes TNV1 unless proven otherwise. But no power fault. Power fault should be added to this PAG. TNV1 requirements assume a protector at the building entrance. Can we simply say Ethernet is TNV1? The assumption is that a 1500 V surge can be developed.

Mick: Look at what ITU-T has done: Test using 1500 V on ports, check 4 – 6 kV on port-port. The high voltage limit is due to cable breakdown.

Jim: We should aim at helping UL rewrite their PAG [which is controlled by Tom Burke]. Then try to influence safety standards to address new short-haul interface requirements. Rewriting the PAG has to be done within UL – work with Randy Ivans.

Joe: Someone wrote a long justification for the PAG [Jim said it's in the PAG].

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Jim: In UL1459, all ports had to be marked internal or external. That went away in UL60950. In new equipment there is no place to mark the ports.

Don: We should say that the intent of the PAG is to be technology neutral.

Don: Do you have any damage data that could be shared? It would help make the case for changing the PAG.

Joe: Got hung up before on how big the lightning hit could be. If have GPR, then could have large surges. GPR may be the big concern.

Don: The good news is that many of the outside runs are wireless or optical fiber. But UL needs to be concerned with all wires that could go outside a building.

Jim: May be difficult to address GPR. Should first get the PAG changed

Don: Task for Jim and Joe – create a draft of a new PAG. Look at severity of issues: Do the simple stuff first, then tackle the harder problems.

Jim: The NEC doesn't require a primary protector on outside lines if you think that the voltage can't go over 300 V. NEC doesn't address lightning.

Don to Jim: Can we have a copy of your PEG presentation?

Jim: Yes

Jim: A lot of companies think that if a protector is put on a line, it's OK to run the line to the outside plant [even SELV circuits]. That's not OK if the circuit doesn't have isolation.

Joe: In Nissar's PEG presentation on grounding Ethernet, the GDT used didn't generate a differential surge.

Don to Mick: Can we have a copy of your PEG presentations?

Mick: Will forward some.

Mick: Need a description of the environment of the equipment.

Joe: No one knows how the equipment will be used. Maybe we need to consider worst case.

Action:

Jim will take a stab at rewriting the PAG, and will work with Joe on this.

5. Additional agenda items

None

6. ATIS/Telcordia Activity

None

7. Old Business

a. *IEC 62368 – MOV requirements – Mick Maytum*

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No discussion

b. Smart Grid Issues

No discussion

c. 380 V DC power systems.

No discussion

d. Solar panel integration

No discussion

e. ATIS/Telcordia Activity

No discussion

f. IEC 62368-1 – Impact on Telecom Industry.

There has been much discussion from the industry as to whether IEC 62368-1, “Audio, Information and Communication Technology Equipment – Part 1: Safety Requirements,” should be globally adopted as national safety standards, replacing IEC 60950-1 and IEC 60065.

We have heard pros and cons for adoption. The pros tendency is that there are more options available for service-access equipment, whereas the cons tendency is that there are additional tests that will add expense to testing and certification.

With respect to the telecom industry, what are the pros and cons for adopting IEC 62368-1?

Next meeting

Next meeting – Proposed Wednesday, 24 April 2013.

Respectfully submitted,

Al Martin

Secretary

Participant	Employer	Telephone	E-mail	IEEE Member?	PSES Member?	LinkedIn Subgroup	Other Committee
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Guest: Jack Burns, Dell, IEEE PSES, VP Technical Activities

Chair: Peter Tarver

Vice Chair: Don Gies

Secretary: Al Martin

- 1) UL Standards Technical Panel for Subjects 60950-1, -21, -22, -23
- 2) TIA TR 41.7, TR41.7.1
- 3) IEEE Surge Protective Devices Committee
- 4) ATIS Protection Engineers Group
- 5) ITU-T, SG5, WP1
- 6) Canadian National Subcommittee for IEC TC108
- 7) TIA TR 41.7.10 (Smart Grid)
- 8) US TAG to IEC TC 108

Other LinkedIn members:

hifi cha, China (Independent Consumer Electronics Professional)

IEEE Product Safety Engineering Society
Jeff Whitmire (Manager, Regulatory Compliance at Adtran)

Telecommunications Technical Activities Committee Roster