



MINUTES

Orange Empire Division
International Association of Electrical Inspectors

Date: 01Feb2011.

Location: Santa Ana Elks Lodge, 212 S. Elk Lane, Santa Ana, California.

Called to order by Randy Buck at 11:46 a.m.

Installation of Officers

Henry Huang with The City of Tustin, moved that the current officers be reinstated. The motion was seconded and approved without dissent. The officers were sworn in by Russ Helmick.

Randy Buck (President) acknowledged the ongoing education work performed for this Division by Scott Davis.

Membership Comm. Rep.

The Membership Committee Report was given by Jill Fisher. She stated that we have two new members: Jim Niswonger with the O. C. Sanitation District and David Whitney of the Port of Long Beach.

New attendees performed self introductions.

Treasurers Report

The Treasurer's Report was given by Randy Buck.

Old Business

None conducted.

New Business

Tom Griffith announced that free admission could be obtained for the upcoming Electric West convention (22-24 Feb) at our website, courtesy of UL. Tom added that Mike Holt is to give a

two-hour training during the Electric West convention, probably at Long Beach City College, regarding grounding vs bonding; a free copy of the 2008 Mike Holt Grounding and Bonding book will be handed out.

Scott Davis announced that the 2008 Analysis was on sale here.

Randy Buck spoke about an on-line article in Solar Pro Magazine by Bill Brooks re Target, Bakersfield PV fire. Randy mentioned the highlights of the article: Large arrays can have over 1 Amp of current flowing through the equipment ground at full radiation under normal operating conditions; because of this, there is a GFP blind spot. A fault to ground in a grounded, current-carrying, source-circuit conductor went undetected by the inverter's GFP device. GFP method presumes that it will detect the first fault in the system, and if any fault exists prior to opening the GF fuse, the GFP system is ineffective and can actually make the situation worse. If a fault occurs on string-level, grounded current-carrying conductor on a larger system, the ground-fault current generated cannot exceed a few Amps due to the fact that there is little Voltage pushing the current; as a result, this type of fault lives on forever until the fateful day when an ungrounded conductor fails. The first fault exists at installation, proper commissioning tests were not done. The only way to get GFP below 1 Amp is to go to an ungrounded system as is found in Europe; contemporary European inverters can detect changes in ground current as low as 300 mA. To make existing arrays much safer retrofit with a circuit at the inverter that would test the grounded conductor each morning for ground faults prior to starting the inverter, which is what European inverters are required to do. [?] Proper commissioning and routine maintenance would have prevented the fire. Bill Brownell commented that 100 Amps is the minimum GFP setting on a service; i.e., 1 Amp of fault current is not hazardous. Scott Humphries commented that the conduit straps had not been installed to allow for movement due to expansion, and that the expansion fittings had not been braced when the wire was originally pulled.

Code Questions

None presented.

Consultant Time

None taken.

Testing Lab Time

None taken.

Contractor Time

None taken.

Manufacturer Time

None taken.

Utility Time

None taken.

Inspector Time

None taken.

Education Program: Analysis of Changes, 2008 NEC, Part 2.

The Education Program was given by Scott Davis.

Scott touched on the following.

The "Analysis of Changes" includes the Proposal number and the ROP.

110.26(C)(2) Large Equipment, six – foot parameter is back. In Santa Ana, include the u. g. pull section in the measurement.

110.26(C)(3) Personnel Doors.within 25 ft. Think about doors beyond the first door.

110.26(G) Locked Electrical Rooms.

110.33 Entrance to Enclosures and Access to Working Space

110.33(A) Entrance.

110.33(A)(3) Personnel Doors.

210.4 Multiwire Branch Circuits.

210.4(B) Disconnecting means.... handle ties or multipole breaker.

210.4(D) Grouping of neutrals with ungrounded conductors.

210.5(C) Ungrounded Conductors... must be identified by line and system.

210.8(A)(2) and (A)(5) Exceptions for GFCI protection. Deleted exceptions, i. e., **all** receptacles in a garage must have GFCI protection.

210.8(B)(4) GFCI Protection for Personnel.

210.8(B)(5) Sinks.

210.12(B) Dwelling Units. AFCIs required for all rooms other than kitchens or bathrooms.

GE has a 1-pole AFCI brkr for use on multiwire ckt with a handle tie.

210.12(B) Exception No. 1. No longer a length limitation.

210.12(B) Exception No. 2.

210.52(E)(3) Outdoor Outlets.

210.62 Show Windows. Receptacles within 18 inches above.

215.6 Feeder Equipment Grounding Conductor. Ground wire required between buildings.

215.10, Exception No. 2. Ground Fault protection on the load side of a transformer.

220.82(B)(3) General Loads Clothes dryers on the required laundry branch circuit.

220.82(C)(2) Heating and Air-Conditioning Load.

225.18 Clearance for Overhead Conductors and Cables, railroad tracks.

225.22 Exception is gone; no Flex in wet location, even with W wire.

225.39 Ratings of Disconnects.

230.24(B). The word "Ground" was removed.

230.44 Exception. Service-Entrance Conductors in Cable Tray.

230.50 Protection Against Physical Damage. Combines 230.49 and 230.50. EMT is not shown in Edison's ESR, but "Other Approved Means" is there.

230.53 Raceways Arranged to Drain.

230.54 Overhead Service Locations.

230.71(A) General. Extra disconnects allowed for surge protectors and power monitors, etc.

230.82 and 230.94. Surge protection ahead of the main.

230.79 Rating of Service Disconnect. Not less than the calculated load.

230.205(A) Service Switch Location. Some locations do not have to be readily accessible.

240.4(D) Small Conductors. 7 Amps for #18, 10 Amps for #16. Generally for industrial installations and motor homes.

240.15 Ungrounded Conductors.

240.21(C) Transformer Secondary Conductors. No longer called "taps". 240.4(B) may not be applied, i.e., next **smaller** overcurrent device must be used.

240.21(B)(1) FPN and 240.21(C)(2) FPNs are gone.

240.21 Location in Circuit. You can't tap a tap.

240.21(C)(2)(4) Transformer Secondary conductors size ratio.

240.21(C)(3) Industrial Installation Secondary Conductors Not over 25 feet Long.

240.21(H) Battery Conductors. Battery rooms need adequate ventilation. (480.9 intent is not to mandate mechanical ventilation; hydrogen disperses rapidly.) Sealed batteries do require

ventilation because they emit very small amounts of gas and lots if overcharged through a little valve.

480.9 Battery Locations. Ventilation is required. Ventilation proofing for lights to work.

240.24(B) Occupancy. (1) Overcurrent Devices. Exception for occupancies that don't have cooking equipment.

240.24(F) Not Located Over Steps (Overcurrent devices).

240.86(A) Selected Under Engineering Supervision for interrupting ratings; signage at each location for existing installations only; electrical engineers only.

240.92(B) Feeder Taps. Existing installations only, engineers only.

250.8 Grounding and Bonding Connections. Many connectors are now required to be listed.

250.20(D). Separately derived systems, generators; and FPN No. 1.

250.28(D) Size. system bonding conductor at separately derived system.

250.28(D)(2) Main Bonding Jumper Size.

250.28(D)(3) System Bonding Jumper Size.

250.30(A)(4) Multiple Separately Derived Systems.

250.32(B). Grounding separate structures; include an equipment-grounding conductor for new buildings; and Exception for existing installations only.

Isolated ground bus; green with yellow stripe which can be applied in the field.

250.35 Permanently Installed Generators. Specific instruction for sizing the system bonding jumper.

250.32(D) Remote Disconnects. Now includes 700, 701 and 702 references. Main not needed at the building if the generator disconnect is within site.

250.52(A)(3) Concrete Encased Electrode. Vertical Ufer is okay.

250.52(A)(60) Other Listed Electrodes. Mostly at cell sites.

250.64(D) Service With Multiple Disconnecting Means Enclosures.

250.68 Exception No. 2. Connection no longer required to be accessible.

250.94 Bonding for Other Systems. 20 feet is max to g. e. from any system entering the building; if not, another electrode must be installed.

250.112(I) Remote-Control, Signaling and Fire Alarm Circuits. Must now be grounded.

250.118 Types of Equipment Grounding Conductors.

250.119 Exception. Green conductors for controls okay for other than equipment-grounding conductors.

250.120(A) FPN. fire-rated circuits. COPS system. See installation manual. Steel fittings rather than cast required.

250.122(F) Conductors in Parallel. Cable equipment-grounding conductors must be fully sized; exception is gone.

250.146 Connection Grounding Terminal to Box.

250.146(A) Surface-Mounted Box.

250.146(D) Isolated Receptacles.

Meeting adjourned at 2:35 p.m.

Respectfully submitted by Dan Vaughan