LOG OF MEETING
DIRECTORATE FOR ENGINEERING SCIENCES

SUBJECT: Underwriters Laboratories Standards Technical Panel (STP) on Arc-Fault Circuit-Interrupters (GFCIs)

DATE OF MEETING: July 31- August 1, 2001

PLACE OF MEETING: Underwriters Laboratories (UL), Northbrook, IL

LOG ENTRY SOURCE: Doug Lee, ESEE

DATE OF LOG ENTRY: August 9, 2001

COMMISSION ATTENDEES: Doug Lee, ESEE

NON-COMMISSION ATTENDEES:
Timothy Arendt, City of Chicago
Steve Campolo, Leviton Mfg.
William Fiske, Intertek Testing Services
John Goodsell, Hubbell Incorporated
George Gregory, Square D. Company
Joseph Hertel, State of Wisconsin
James Jones, Electrical and Computer Engineering
Jack Jordan, State Farm Insurance
Clive Kimblin, Cutler-Hammer Inc.
Howard Leopold, Cooper Wiring Devices
Arthur Mastromino, UL
Edward Manasian, UL
Don Snyder, UL
James Beyreis, UL
Paul Notorian, UL
Thomas Packard, Pass and Seymour/Legrand
Philip Piqueira, General Electric Company
Robert Spehalski, Lutron Electronics
John Young, Siemens Energy & Automation, Inc.

SUMMARY OF MEETING: See attached agenda

The meeting started with a review of the STP process by Mr. Snyder of UL. The discussions indicated that the UL STP process is still evolving. Presently, UL staff consolidate proposals and send to members for written balloting. This process is unlike the *National Electrical Code (NEC)* process that allows the members to change the proposal during the meeting and ballot to accept the proposal, reject the proposal or to accept the proposal in principle.

Mr. Dini, from UL's research group, presented the various types of AFCIs so that everyone could

better understand the proposals being presented. UL presented proposed changes for the outlet branch circuit (OBC) AFCI to replace the outlet circuit AFCI. This proposal was based on a product submitted for listing and *NEC* Panel 2's decision to allow this device as satisfying the *NEC* requirement for AFCIs in *NEC* article 210-12. There were many discussions regarding Code Panel 2's intent. Mr. Gregory then presented Square D's proposal for additional testing of OBC AFCIs and the clarification of the protection provided by these devices for upstream branch circuit wiring.

Mr. Campolo explained the Leviton proposals for the reset lockout technology, surge testing, and supervisory testing. The reset lockout technology is basically the same as that proposed for Ground-Fault Circuit-Interrupters (GFCIs). The AFCI shall not reset and deliver power if it fails to pass its built in test. The AFCI shall not provide power when it cannot detect arcs and the GFCI shall not provide power when it cannot provide shock protection. Mr. Lee added that the proposal should also address the potential miswiring issues noted from the STP for GFCIs. Most STP members believed that AFCI testing would be addressed by UL in the same manner as the GFCI testing since the devices would be used in the same environments. Mr. Lee requested information from the STP on GFCIs be sent to the members of the STP for AFCIs since not all members were present.

Mr. Campolo proposed increasing the surge test requirements to the levels of IEEE C62.41 and UL 1449. He believed that the UL proposal for GFCIs was inadequate. Mr. Campolo also proposed that the supervisory test should test the arc detection circuitry or software and not just if the tripping mechanism will actuate.

Mr. Gregory proposed increasing the branch/feeder AFCI requirements to address lower level series arcing. He stated that Square D has overcome the potential nuisance tripping issues. There were many discussions on this issue. It was stated that the present generation of product has several years of testing which indicates that there is no problem with nuisance tripping. It was also stated that this is the ultimate goal for the AFCI. A task group was formed to address potential loads for nuisance tripping of series arc detection for the new generation of AFCIs.

Mr. Kimblin proposed that the capability of the AFCI to address glowing connections should be added to the standard. The AFCI is not intended to detect glowing connections, but AFCIs with equipment ground fault protection (all of the AFCIs) will respond to glowing connections when there are ground currents. A UL Special Services investigation of glowing connections was summarized.

Mr. Kimblin also proposed requirements to address a potential for line-side miswiring and to add upstream testing requirements of outlet circuit AFCIs.

UL reproposed requirements for AFCIs rated 120/240 volts based on previous product submittals. UL also had proposals for revisions to the environmental noise test and clarification of miscellaneous requirements.

UL discussed the schedule for the minutes (30 days) and proposals for balloting. The CPSC staff member is a non-voting member of the STP.

APPENDIX A

AGENDA FOR THE MEETING OF THE

STANDARDS TECHNICAL PANEL FOR ARC-FAULT CIRCUIT-INTERRUPTERS

Please note that agenda items submitted with specific wording have been identified as PROPOSALS.

ORDER OF BUSINESS

1) Call to order.

2) Announcements.

3) Introduction of members, guests, and observers.

4) Additions or corrections to the agenda.

5) Discussion on STP meeting policies (brief overview of the STP Process with a question and answer session).

6) UL's Presentation of the Various Types of AFCIs.

7) Proposals for Addition of Requirements for Outlet Branch Circuit (OBC) AFCIs - Appendix B.

8) Proposal to Prevent an AFCI that has Failed its Internal Test from Delivering Power to Loads - Appendix B.

9) Proposal for Surge Testing - Appendix B.

10) Proposal for Supervisory Test Circuit - Appendix B.

11) Proposal to Upgrade Requirements for the Branch/Feeder AFCI - Appendix B.

12) Proposal for Addition of AFCIs also Listed to UL 1053 - Appendix B.

13) Proposal for Addition of Test to Check for Outlet Circuit AFCI Operation in the Event of Line-Side-Miswiring – Appendix B.

14) Proposal for Addition of Test to Check that Outlet Circuit AFCI Operates with the "Current-Limiting Wire" Placed Upstream of the Outlet - Appendix B.

15) Reproposal of the Supplement for AFCIs Rated 120/240 Volts - Appendix B.

16) Proposal for Inclusion of Requirements for Resistance to Environmental Noise Test - Appendix B.

17) Proposal of Revision of Requirements for the Point Contact Arc Test – Appendix B.

18) Proposal for Clarification of Miscellaneous Requirements - Appendix B.

19) Proposal for Inclusion of Requirements for Cord Sets Provided with Leakage-Current Detection and Interruption (LCDI) - Appendix B.

20) New business (time permitting).

21) Future meeting schedule.

22) Adjournment.