

## **Solar America Initiative SolarABCs Product Safety Panel Stakeholder Teleconference**

December 17, 2007

Attendance - There were 34 participants pre-registered for the teleconference. Please reference the Excel spreadsheet attached. Evelyn Butler of UL facilitated the conference. Tim Zgonena of UL led the technical discussion.

A. Overview of SAI Solar ABCs subcontract and the product safety panel objectives. Specific deliverables covered below.

B. Overview of current Photovoltaic (PV) and PV Balance Of System (BOS) related standards:

- General – A brief explanation of the standards revision process was given. More information on the ANSI process can be found at <http://www.ansi.org>.

The **Standards Technical Panels (STPs)** are an important part of the process by which UL develops and maintains its Standards for Safety. An STP is a group of individuals, representing a variety of interests, formed to review proposals related to UL Standards for Safety. When an American National Standards Institute (ANSI)/UL Standard for Safety is involved, an STP serves as the consensus body to review and vote on proposals prior to publication.

The **Collaborative Standards Development System (CSDS)** was created to further enhance the development of UL's existing standards and for the creation of new ones. This process is accomplished through the distribution of proposals to revise a standard and the collaborative approval process surrounding it, as well as the collaboration around any number of topics.

- Current US Standard for Safety ANSI/UL 1703- Existing edition of UL1703 (Flat Plate PV modules) will be replaced with UL 61730 when published. UL 61730 will be harmonized with IEC 61730-1 in mid-2008.
- Future UL 61730 - Tim explained the challenges / problems with PV grounding per the 2008 National Electric Code , RTI polymerics ratings and material tracking that will be addressed in the US national differences to IEC 61730. Proposals for these issues will be submitted to the UL 1703 STP for consideration and balloting into the harmonized UL 61730.
- Current US Standard for Safety ANSI/UL1741 for PV inverters, charge controllers, combiner boxes, etc. Work is also being done to harmonize this standard to the international arena. The future standard will be UL/IEC 62109-1 (see below). The harmonization effort will include requirements for non-isolated and ungrounded array inverters.

Upcoming IEC 62109-1 was submitted for CDV ballot. IEC 62109-2 inverter performance standard is also being finished and will be submitted for CD2 March 2008.

- C. **PV Arc Fault Circuit Interrupters (AFCI) Research** - The *Product Safety Panel* will conduct a literature search of national and international PV documents to characterize issues related to PV AFCI needs. The panel will develop a proposed PV system AFCI design to the SOLAR ABCS for consideration.

It is a challenge of identifying the PV arc signature. It was reported that there may be a Swiss prototype that could be reviewed. It was also suggested that we look to Naval, Airplane and Telecom AFCI components or requirements so as to not repeat

processes where possible. Some inverter manufacturers on the panel suggested potential methods to identify the presence of a DC arc and will follow-up separately with Tim.

- D. **PV and Polymerics Materials** - The *Product Safety Panel* will conduct an industry survey to identify the causes and severity of PV module failures resulting from polymer property failure issues to examine if current testing procedures adequately exercise materials under test for the conditions seen in the field. The panel will develop test methods to address these failure modes.

UL discussed the development and publishing of the UL Subject 5703, Outline for Determination of the Maximum Operating Temperature Rating of Photovoltaic (PV) Backsheet Materials.

UL also discussed its R&D project related to a PV materials test protocol to subject all of the PV module materials (assembled into small two cell simulated modules) to accelerated aging chamber cycling. This test is to assess the impact of cyclic, thermal extremes, humidity and concentrated UV exposure on the overall assembly. UL has obtained several test samples and is preparing to perform a trial run of the proposed test sequence. UL is presently attempting to locate suitable environmental chambers for the program that incorporate all of the environmental conditions for the check test.

- E. Other items:
- How can we give access to STP information to Solar ABCs stakeholders?  
UL will explore with the SolarABCs group what information can be shared and a potential process.
  - How will UL treat 62108 when it is published? It will need to be submitted under the ANSI process.

Next Teleconference is tentative scheduled to take place in April 2008.

<b>First Name</b>	<b>Last Name</b>	<b>Company</b>
Gautam	Bahri	The Boeing Company
Howard O	Barikmo	Sunset Technology, Inc.
Thomas	Basso	NREL
Kurtis	Borg	Solar Integrated Technologies
Michelle	Boven	Dow
Thomas	Brown	Intertek Testing Services, Inc.
Thomas	Brungard	Tyco Electronics
Evelyn	Butler	UL
Ryan	Gaston	The Dow Chemical Company
Fred	Kracke	Xantrex Technology
Carl	Lenox	SunPower Corporation
Carl	Osterwald	NREL
SHAKHER	PUNTAMBEKAR	DUNMORE CORPORATION
Stephen	Ressler	GE Energy
Larry	Sherwood	Sherwood Associates
Lee	Smith	Dunmore Corp.
Mike	Taylor	Solar Electric Power Association
Uday	Varde	United Solar Ovonic LLC
Keith	Vinchkoski	Apollo Solar
Brian	Wiley	Wiley Electronics LLC
Robert	Wills	Citizenre Corp
John	Wohlgemuth	BP Solar
Timothy	Zgonena	UL
one more		Dow