

The Product Safety Newsletter

In this issue		Page
Chairman's Message	Richard Pescatore	1
Technically Speaking	Rich Nute	2
Safety of Power Cords, Extension Cords and Branch Circuit Breakers	Patton & Associates	3
EMC Symposium Report		4
CSA 220 Questionnaire	Pam Kawashima and Roger Volgstadt	5
Traceability of Plastics	Pete Perkins	14
Product Safety News		16
Area Activity Reports		17
For Your Informatopm		19
Letters to the Editor		21

Vol.1, No. 8

September / October 1988

Chairman's Message

WHAT is the purpose of a newsletter? More specifically, what is the purpose of this newsletter?

Merriam-Webster defines newsletter as a "printed sheet, pamphlet, or small newspaper containing news or information of interest chiefly to a special group."

To date, this newsletter has served to:

- Disseminate information of general interest; i.e., publicize events, purpose of the group, etc.
- Allow individuals to express their opinions to a wide audience.
- Provide a forum for individuals to debate issues publicly.

In short, this collection of pages has provided a medium to present and share views and disseminate information.

Is this a good newsletter, one of high quality? Only you, our readers, can answer this. But let me share my thoughts, along with

the thoughts of one of our readers, on the subject.

We have been working hard to attempt to meet your needs and wants in a newsletter. Little has been done to limit the publication of your thoughts. Editing has been kept to a minimum, and as many letters as space permits have been published.

Yes, opposing views have been published. I have viewed this as a healthy exchange of opinion and didn't give it much further thought. That is, until I read a letter from one of our readers, Mr. Jeff Lind. (Jeff's letter appears in the *Letters to the Editor* column.)

Jeff identifies the subject of his thoughtful letter as "infighting" and raises some very interesting points that I had not previously considered. He views some of our articles or reader letters as "combative" and "ego-driven." He goes on to suggest that some

articles "undermine published agency requirements."

As mentioned above, 'I have not viewed our newsletter in this light. I can assure you that everyone involved with the newsletter is, like Jeff, "sincere and serious." We want to be a "positive force" in our profession.

The people who work to get the newsletter published and into your hands work hard to make this happen. In addition to the contributing writers, John McBain and Roger Volgstadt are both extremely dedicated to producing a quality document. The many hours that each of these individuals contribute to this cause are proof enough.

If Jeff's point of view is typical, we cannot consider our publication a good one. To understand the situation, we need your feedback. Please send your comments

Continued

The Product Safety Newsletter

Vol.1, No.8 September/October 1988

The Product Safety Newsletter is published monthly by the Product Safety Technical Committee of the IEEE EMC Society. No part of this newsletter may be reproduced without written permission of the authors. All rights to the articles remain with the authors. Opinions expressed in this newsletter are those of the authors and do not necessarily represent the opinions of the Technical Committee or its members. Comments and questions about the newsletter may be addressed to the Product Safety Newsletter, Attention: Roger Volgstadt, c/o Tandem Computers Incorporated 2550 Walsh Ave. Santa Clara, CA 95051-1392, Fax No: 408-748-2137. Letters and articles should be received by the fourth Friday of the month to be included in the next month's newsletter.

This newsletter is prepared by the Corporate Graphics Group of Tandem Computers Incorporated. The editor wishes to extend a special thanks to Melanie Bell, Jaroslav Bondy Dostal and Jodi Elgin of Tandem Computers Incorporated for their work in preparing this newsletter.

Technically Speaking

Rich Nute

Hello from Vancouver, USA!

Furor and controversy are words which describe the process by which standards committees decide the value of the resistor in the leakage current measuring network.

However, the different specified resistor values create no more than a 6.25% error for the value of the leakage current.

More furor and controversy surround the selection of the resistor tolerance. The resistor tolerance creates almost the same percentage error in the measured value.

Still more furor and controversy occur when we compare the ANSI, UL, CSA and IEC measur-

ing circuits.

The ANSI, UL, CSA and IEC circuits are demonstrably identical; all four give the same measured value.

Resistor Value

Different standards specify different values for the current-sampling resistor in the current-measuring circuit for electric shock current and leakage current. Examples of these different values are:

500 ohms: UL 1270,
Paragraph 19.1

1000 ohms: UL 544,
Paragraph 27.13

Continued

Chairman's Message

Continued

to me in care of:

*Hewlett-Packard
19447 Pruneridge Ave., M/S 42LS
Cupertino, CA 95014*

Please let us have your comments so that we can meet your needs. Let me know what you think of the quality of this newsletter. What you like. What you don't like.

To answer my first question about the purpose of this newslet-

ter: its purpose is to serve you, our members, and provide you with a publication that fills your wants and needs as product safety professionals. Only with your help can we accomplish this purpose.

Thank you, Jeff, for sharing your thoughts. Now let's hear from the rest of you!

Rich Pescatore, Chairman

Technically Speaking

Continued

1500 ohms: UL 478,
Paragraph 28A.6
2000 ohms: UL 1459,
Paragraph 48.6

What difference do these values make?

Let us assume that we are measuring 0.5 milliamperes of leakage current from a 120-volt product. To have leakage current we must have a circuit consisting of a voltage source, a series impedance, the current-sampling resistor (1500 ohms), and a return path (ground). (See Figure 1.) We know E (120 volts) and I (0.5 mA). Using Ohm's law, the total resistance in the circuit, including the 1500-ohm current-sampling resistor is:

$$R = \frac{E}{I} \text{ or } \frac{120}{0.5 \cdot E^{-3}}$$

$$R = 240 \text{ ohms}$$

Subtracting the 1500-ohm current-sampling resistor, we have a source resistance of 238.5 k ohms. Using this value, we can calculate the current when using other values of current-sampling resistor.

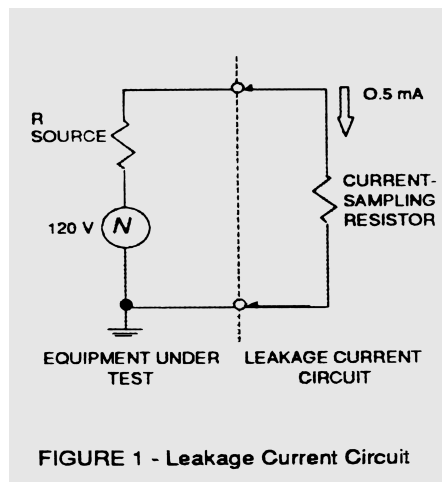
And, we can repeat the calculations for a 240-volt source.

And, we can repeat the calculations for 3.5 milliamperes and 5.0 milliamperes leakage current.

What do these data mean? Essentially, we have a current

source. This means that the current is nearly independent of the load which, in this case, is the current-sampling resistor.

The worst-case error is +6.25%. This means that a manufacturer could test leakage Current with an ordinary ammeter, knowing that the ammeter reading is higher than the reading with a 1500-ohm



resistor. If a manufacturer used the ammeter and the actual limit value, 0.5, 3.5 or 5.0 milliamperes, he would have a small guard-band such that his measurements would always be pessimistic.

So, where only power-line frequency appears in the leakage current, why go to the trouble of using the resistor? If it passes with the ammeter, it will pass with the resistor!

Why all the fuss about the value of the resistor?

Resistor Tolerance

Let us assume that we are again measuring 0.5 milliamperes of leakage current from a 120-volt product. Recall from the discussion of resistor value, the source impedance is 238.5 kilohms when leakage current is 0.5 milliamperes and the current-sampling resistor is exactly 1500 ohms.

In this case, assume the current-sampling resistor is a 1500-ohm, 5% resistor. Let us further assume that the resistor is at the low end of its tolerance, -5%. The resistor value therefore is 1425 ohms. Using Ohm's law, the current in the circuit is:

$$I = \frac{E}{R}$$

$$I = \frac{120}{238.5 \text{ k} + 1.425 \text{ k}}$$

$$I = \frac{120}{239.925 \text{ k}}$$

$$I = 0.5002 \text{ milliamperes}$$

The actual voltage across the 1425-ohm resistor is:

$$E = I \times R$$

$$E = 0.5002 \times 1425$$

$$E = 0.713 \text{ volts}$$

If we now calculate the value of

Continued

Technically Speaking

Continued

leakage current using the nominal value of the resistor rather than the actual value, we get:

$$I = \frac{E}{R}$$

$$I = \frac{0.713}{1500}$$

$I = 0.475$ milliamperes

This is very nearly the same error as the resistor tolerance, 5%.

Measuring Circuits

The UL and IEC measuring circuits are shown in Figure 2A. In a progression of figures, the circuits are simplified to their essential elements-ultimately showing the equality of the UL and IEC circuits.

Figure 2B adds the source to the UL circuit as is already shown in the IEC circuit. Note that the UL circuit has its neutral grounded, while the IEC does not. The IEC circuit has the equipment grounded, while the UL does not.

Figure 2C deletes the ground from both the UL and the IEC circuits. Since there is only one connection to ground in both circuits, there can be no current in the ground, so the grounding is extraneous to the measurement.

Figure 2D simplifies the UL circuit by deleting the plug and socket.

Figures 2E and 2F show the

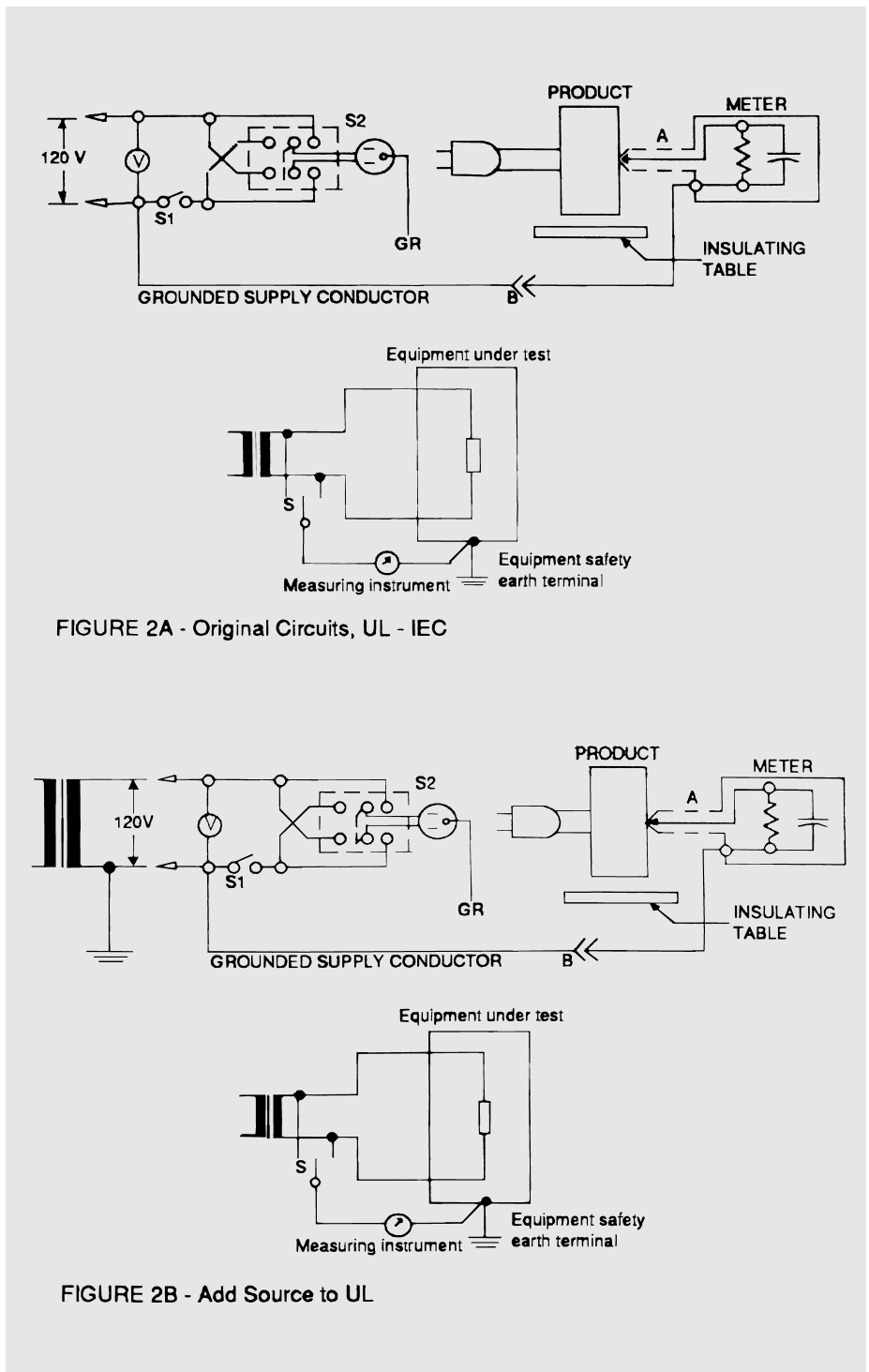


FIGURE 2A - Original Circuits, UL - IEC

FIGURE 2B - Add Source to UL

Continued

Technically Speaking

Continued

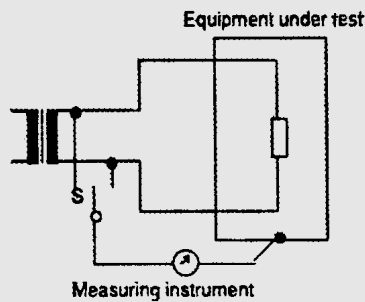
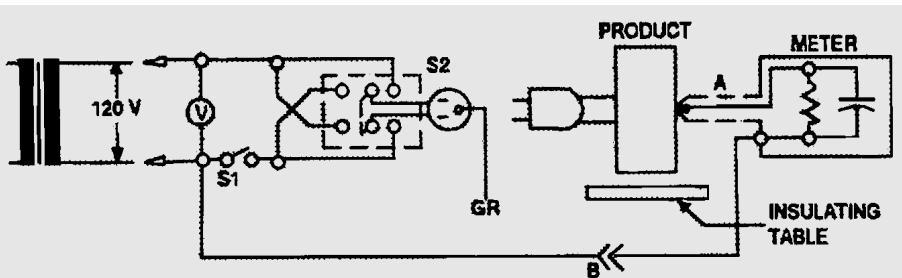


FIGURE 2C - Delete Grounding

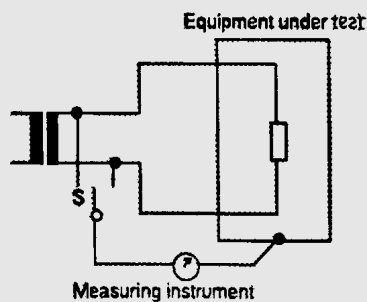
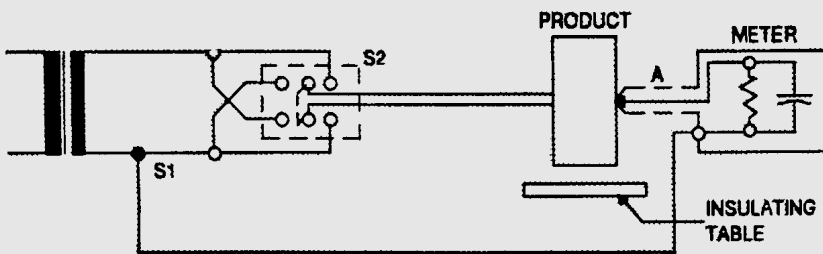


FIGURE 2D - Simply UL

normal and reverse polarity positions, respectively, of the UL and IEC polarity switches.

Capacitor

Next let's examine the effect of the 0.15 microfarad capacitor in parallel with the Current-sampling resistor. Capacitive reactance is given by:

$$X = \frac{1}{2 \times \pi \times f \times C}$$

$$X = \frac{1}{2 \times \pi \times 60 \times 0.15E-6}$$

$$X = 17.7 \text{ k ohms}$$

The parallel network of 17.7 k and 1.5 k resolve to an impedance of 1.38 k ohms. This is less than 10% effect at 60 hertz.

The capacitor is useful only when the leakage current includes high-frequency currents, which the capacitor serves to shunt around the current-sampling resistor. If the capacitor is not used, then the measurement is higher than it would be with the capacitor.

Conclusion

The value of the current-sampling resistor in measuring leakage current at power-line frequencies is of negligible consequence to the measurement. The use of an ordinary ammeter will always

Continued

Technically Speaking

Continued

give a pessimistic and worst-case value for leakage current. If your product has an acceptable leakage current with an ammeter, then it will have an acceptable leakage current with the standard current-sampling measurement circuit. And, there is no difference between the UL and IEC measuring circuits. Perhaps furor and controversy are not necessary after all!

Your comments on this article are welcome. Please address your comments to the *Editor, Product Safety Newsletter, c/o Tandem Computers, 2550 Walsh Ave., Santa Clara, CA 95051.*

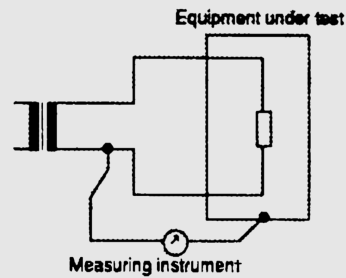
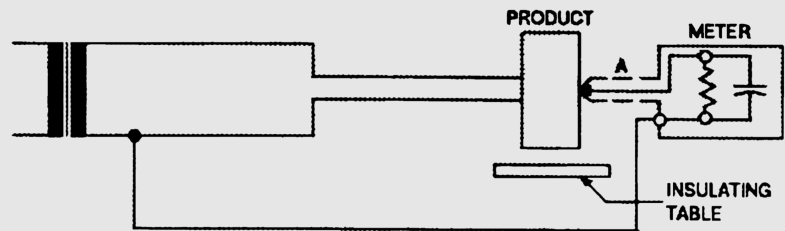


FIGURE 2E - Normal Polarity

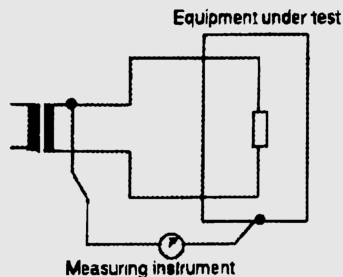
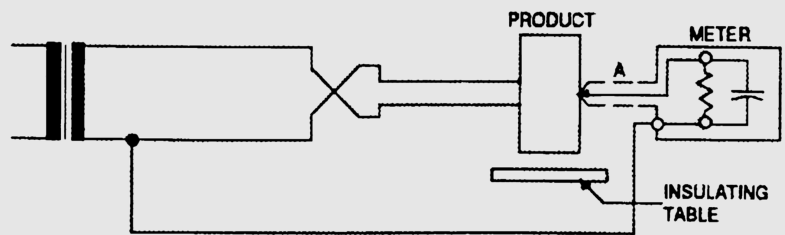


FIGURE 2F - Reverse Polarity

Safety of Power Cords, Extension Cords and Branch Circuit Breakers

D. Bruce Langmuir, Bose Corporation

The following is a Summary of a presentation given on July 27, 1988, at a meeting of the Product Safety Society, Northeastern Chapter.

Some feel the solution to many power extension cord fires is to require them to be made with 16 AWG wire, theoretically making the branch circuit breaker more likely to open and the power cord not get so hot when it is shorted. Thus for about the last couple of years, the National Electric Code (NFPA-70) requirements are now for 16 A WG wire extension cords in the U.S. However, extensive testing done at Philips Consumer Electronics Co. and P.A.C.E. Inc., has shown that the North American branch circuit breakers do not prevent electrical fault shorted conditions which can easily cause fires.

Contrary to popular belief, a shorted power cord, or extension cord, or nonmetallic sheathed (NM) cable is usually not a permanent or long duration absolute dead short. When power extension cords or NM cables are shorted, short duration high current pulses, three to six cycles long, usually occur. Fire conditions can be created with these short duration high current pulses with a breaker which essentially never opens, whereas a fuse will usually open and prevent the fire

condition. The current of these short duration pulses is frequently lower than the magnetic trip current of North American branch circuit breakers. The short duration current pulse occurs when the power extension cord's conductors or NM cable's conductors become shorted, then arc, and the arc gets to the the temperature where the copper fuses open, with more than enough power at the arc to start a fire. It can be years after a power extension or NM cable is pinched and damaged before it shorts and causes a fire.

Panel 4 of the 1987 National Electric Code, NFP A- 70, Paragraph 240-4, Exception No.3, should thus be challenged. Circuit breakers do not seem to be adequately defined. North American branch circuit breakers probably need better specifications so they will trip on these high current short duration pulses caused from shorted power cords, extension cords and NM cables. The European IEC circuit breaker specifications better address the problem of tripping open from these high current short duration pulses.

Dave Carpenter, from Philips Consumer Electronics Co., others active in the EIA, R-1 Product Safety Committee, and Frederick ("Rick") Franklin, owner of Professional Analytical & Consulting Engineers, Inc., (or

P.A.C.E., Inc.) have been trying for many years to get some corrective action on branch circuit breakers, but as yet to no avail. They have approached UL, CPSC, NFP A, NEMA and the insurance company persons. UL feels research on this matter must be done and sponsors identified before any corrective action can be made. A number of years ago, Dave Carpenter's staff made a 20-minute VHS videotape of shorting and burning 16 A WG line cords that do not open circuit breakers; this film was shown during the meeting. This video shows a steel channel, such as (may) be used with metal furniture feet, cutting an extension cord a number of times, with the circuit breaker tripping. It also shows a 16-AWG extension cord shorting over fifty times as it sits on burning card board, never tripping a 20-amp branch circuit breaker. Rick Franklin is in the process of having a professionally produced video film made on the same subject.

At the conclusion of this article is a short article titled "*Circuit Breakers: Safety or Myth,*" written in August 1988 by Rick Franklin. It summarizes the circuit breaker problem and the characteristics of a shorted extension line cord.

Continued

Safety of Power Cords, Extension Cords and Branch Circuit Breakers

Continued

Both Dave Carpenter and Rick Franklin have done extensive work in this area. Together they have written several articles on this subject. They may be contacted for additional information at the following addresses:

David L. Carpenter
Manager Product Safety & Compliance
Philips Consumer Electronics Co.
1-40 and Straw Plains Pike
P.O. Box 14810
Knoxville, TN 37914-1810
Phone: 615-521-4635
Fax: 615-521-4891

Frederick F. ("Rick") Franklin President P.A.C.E., Inc.
4325 Indeco Court
Cincinnati, OH 45241
Phone: 513-793-2771; (No Fax)

Some feel the corrective action which should be taken includes a tighter requirement on the branch circuit breakers. The peak current of the breakers should be limited to tripping open with 150-amp peak current pulses. The European IEC circuit breaker specifications and design with their faster trip time of around 4 milliseconds should be considered. If the assumption in the NEC is valid that the power cord is of concern, and if the breaker current can be limited to 150-amp peak with a magnetic trip time of 4 milliseconds, then the NEC exception is correct, and a specification change on the circuit breaker is required. This is more than just

a power cord problem.

The reaction of the 45 attendees at the July 27, 1988, Product Safety Society, Northeast Chapter meeting, to the presentation summarized above and in the short attached article by Rick Franklin, was very positive in the need for taking corrective action. All attendees remarked that their "eyes were opened" to the inadequacy of branch circuit breakers, and "how could anyone not realize the severity of this problem after seeing the video film." All felt a presentation with the film and steel channel sample should be given to the other three chapters of the Product Safety Society around the U.S., and again to key persons at the NFPA and UL.

Attendees felt that if UL and NFPA does not start to take corrective action soon, a petition should be drawn up with corrective action to improve North American circuit breaker specifications, signed by members of the four chapters of the Product Safety Society, and used in lobbying with NFPA and UL to correct the problem. They also felt the problem was not extension cords or line cords, but it is the branch circuit breakers, thus indicating corrective action should be taken for branch circuit breaker specifications. I feel the

EIA, R-1 Product Safety Committee should be part of this effort and petition, and perhaps the coordinator, with guidance from Dave Carpenter and Rick Franklin.

This is a potentially serious safety issue that can affect all of us in the electronics industry and needs to be addressed. Perhaps if we all understand the short circuit problem and get together, needed corrective action might be taken. Comments concerning the above article can be addressed to:

D. Bruce Langmuir
Manager, Product Safety
Bose Corporation
The Mountain
Framingham, MA 01701;
Phone: 508-879-7330;
Fax: 508-872-6541.

"Circuit Breakers: Safety or Myth?"

Frederick F. Franklin, P. E.

Most North American circuit breakers do not prevent short circuit fires (and most fire investigators know it). This fact was the lead sentence in an article published in the NFP A Fire Journal in 1984 by P.A.C.E., Inc. P.A.C.E. has since quantified household short circuit currents by burning through over 100 energized cables. It found that virtually all household short circuit currents

Continued

EMC Symposium Report

An estimated 100 Symposium attendees stopped at the Product Safety booth. Most took the literature, were interested in the Society, and many voiced the opinion, in one way or another, that a Product Safety Society will be a great benefit to the profession. One man stated it clearly and simply when he said “a Product Safety Society in IEEE is long overdue.” In addition, the response of the EMC Society

members seemed quite positive with respect to having the Product Safety Society join as a Technical Committee of the EMC Society.

We can expect a few new members as a result of our efforts at the booth. Two people left membership applications and a number indicated that their applications or a colleague’s application would be forthcoming.

Many thanks to the IEEE EMC Society for allowing us the booth

space, and to the Product Safety members who manned the booth. Manning the booth were, from the Pacific Northwest chapter, Walt Hart, Al VanHoudt, Bill Picatti, Bijan Nafea and Joe Patterson; and from the Santa Clara Valley area, Gary Victorine and Pat Coles.

Walt Hart
Membership Committee
(Seattle)

Safety of Power Cords, Extension Cords and Branch Circuit Breakers

Continued

fall in the 150-400 ampere range with most of them congregating around 200-250 amperes.

P.A.C.E. discovered that the short circuit arc has its own significant resistance usually in the range of 0.1 ohm to 0.5 ohm. This and the wiring resistance (up to 1.0 ohm) keep the arcing currents to these low levels. Unfortunately, these current ranges are below the quick trip threshold of most North American circuit breakers.

P.A.C.E. has measured those magnetic quick trip threshold levels to be as follows for 15-ampere circuit breakers:

Brand A -120 to 180 amperes

Brand B -120 to 230 amperes

Brand C -150 to 350 amperes

Brand D -325 amperes

Brand E -360 amperes

Brand F -800 + amperes

Brand G -800 + amperes

The magnetic quick trip levels of 20-ampere circuit breakers are correspondingly even higher.

Below the quick magnetic trip level, a short circuit arc takes 1 to 3 seconds to trip the circuit breakers, by heating its slow bi-metallic strip device. During this time 10,000 joules (watt-seconds) can be delivered to the arc.

For decades European circuit breakers have been manufactured which nip magnetically or quickly

at 100 amperes or less (5x). The photograph [not included here-Ed.] below shows the nine-turn coil used to accomplish this, by increasing the magnetic field inside the circuit breaker. The coil also helps the circuit breaker to trip in 0.004 seconds, beginning at 100 amperes and extending throughout the entire higher current range. In the 150 to 400 ampere household short circuit range, the energy at the arc is thus reduced to less than a few hundred joules. (Don’t forget that the circuit resistance of the wiring absorbs much of the let-through

Continued

Questionnaire for CSA 220 File Review

Pam Kawashima and Roger Volgstadt

Pam Kawashima and Roger Volgstadt

10A, 11, 12, 13, and 14.

The CSA Standard for Information Processing and Business Equipment becomes effective September 30, 1988. As an aid to reviewing your company's products, the following questionnaire has been developed. A positive response is meant to reflect the requirements of the standard. A "No" answer should alert you to a possible area of noncompliance with the requirements. Therefore, you can use this questionnaire to review your products and quickly determine those areas needing change to comply with the new requirements. This questionnaire only covers requirements that are more stringent than CSA 154. Relaxed requirements are not considered part of the file review. Unless otherwise noted, a positive response to each question reflects the requirement of the CSA Standard 220-M1986, and TIL's 9, 10,

This questionnaire reflects the understanding of CSA's requirements by the authors. The authors do not assume any responsibility for errors in the questionnaire or our misinterpretation of CSA's requirements. Any questions should be directed to CSA.

Product: _____

Date: _____

Reviewer: _____

Comments: _____

CSA 220 paragraphs are referenced in [brackets].

- | | | | |
|---|---|----|--|
| Y | N | NA | <p>Operator Access: If there are areas of the product which are user accessible by instructions only provided by the manufacturer (i.e., user accessible areas now include areas that the manufacturer tells he user to enter, not just areas accessed without the use of a tool), then [2.1]:
Have these areas been evaluated for compliance with Protection from Electric Shock & Energy Hazards [4.2.7]?</p> |
| Y | N | NA | <p>Ozone: If the product generates ozone (e.g., laser printer), do the installation instructions caution the user about proper ventilation [3.4]?</p> |
| Y | N | NA | <p>Enclosure Strength: If hand held, has the product or any hand-held portion thereof been subjected to the drop test of Clause 6.8.4 [4.2.4.3]?</p> |
| Y | N | NA | <p>Protection from Shock/Energy Hazards (Side Vents): Are all uninsulated shock or energy hazardous parts outside 5 degrees of side vents [4.2.7.5 (d)]?</p> |
| Y | N | NA | <p>If no, is the side vent(s) one of the following:
a) Less than or equal to 5 mm in any dimension OR</p> |

Continued

Questionnaire for CSA 220 File Review

Continued

			b) Less than or equal to 1 mm in width OR
			c) Formed to deflect a falling object outward? (Shock or energy hazardous parts must not be within 5 degrees of vent opening or vent must be a, b or c.)
			d) Be so located that an object entering the enclosure is unlikely to fall on uninsulated live pans, resulting in shock or energy hazard [4.2. 7 .5c] ?
Y	N	NA	Panels within 5 Degrees: Are all fire hazardous components [4.2.2] and 94 V2 or HB materials outside 5 degrees of any panels [4.2. 7.6]?
Y	N	NA	If not, then: a) Are the vents baffled as shown in Figure 5 [4.2.8.2a] OR b) Does the side enclosure material that is within 5 degrees pass the enclosure flame, hot wire ignition and high current arc tests AND c) Are vents covered with acceptable screen (i.e., 14 x 14, 0.46 mm diameter or accept-able perforated plate [Table 1]?
Y	N	NA	Flammable Liquids: If the product uses flammable liquids, has the fire hazard been reduced to a safe level and been tested to clause 6.8.5 [4.3.4]?
Y	N	NA	Operator Access to Secondary Circuits: Is the operator prevented access to internal secondary circuitry? If not, then (all must be y for compliance)
Y	N	NA	a) Are instructions provided on how to remove and replace the enclosure [4.4.3.1]?
Y	N	NA	b) Do the accessible circuits comply with the temperature limits of Clause 6.4, Table 9, Item 10?
Y	N	NA	c) Have operator-accessible connectors and/or card slots been overloaded as specified in Clause 6.7.2.2 (e)?
Y	N	NA	d) Is operator-accessible secondary circuitry limited to <140 V A [4.4.3.2]?
Y	N	NA	e) Is the voltage in the operator-accessible area <42.4 V peak [4.4.3.2]? f)
Y	N	NA	f) Is the voltage source of operator-accessible secondary circuits wing: i) A class 2 transformer (i.e., complies with CSA Standard C22.2 No. 66) [4.4.3.2a]?
			ii) A double insulated isolating transformer with a construction complying with the construction and test requirements of Clause 7.4.3 [4.4.3.2b(i)]?
			iii) An isolation transformer with a grounded shield between the primary and other shock hazard secondary and the user-accessible secondary .[4.4.3.2b(ii)]?
			iv) An isolation transformer with grounded secondary circuits where the

Questionnaire for CSA 220 File Review

Continued

			ground conductor has an ampacity equal to the ampacity of the transformer supply conductors [4.4.3.2b(iii)]?
Y	N	NA	Acoustic Pressure: If the product has a telephone receiver or handset, does the receiver or handset comply with Clause 4.4 of CSA Standard C22.2 No.0. 7 [4.4.4]?
Y	N	NA	Telecommunication Equipment: If the main function of the product is to be telecommunication equipment as described by the manufacturer's marketing and advertising, has the product been evaluated to CSA Standard C22.2 No.0. 7?
Y	N	NA	Disconnect Device: If the input to the system exceeds 12 A, is it provided with an appropriately rated circuit breaker or properly configured disconnect device [4.5.6.3]?
Y	N	NA	Single Pole Devices in Ground Circuit: Are all ground circuits uninterrupted by any switch, control or overcurrent device [4.5.6.4]?
Y	N	NA	Communication Cables: If the product is supplied with communication cables [4.6.8], are the cables:
Y	N	NA	a) Using conductors at least 26 AWG copper AND
Y	N	NA	b) Tested to Clause 6.17 (mech) and 6.6.5 (Hi-Pot) OR
Y	N	NA	c) Suitable for the application (CSA certified)? (Communication cables are used to connect EDP equipment to a telecommunications network.)
Y	N	NA	Telecommunication Plugs and Jacks: If the product is designed to be connected to a telecommunication network, then [4.6.9]:
Y	N	NA	Are the ancillary devices used to connect the product such as adapters, etc., provided with the product?
Y	N	NA	If not, does the manufacturer specify what can safely be used to connect the product to the phone lines [4.6.10]?
			Primary Overcurrent Protection: Do all single pole protective devices connected in the neutral comply with the following (4.11.1.3): The overcurrent device:
Y	N	NA	a) Is connected to a single pole plug AND
Y	N	NA	b) Is supplied from a 15 amp, 125 V or less circuit?
Y	N	NA	c) If a fuseholder, does not expose live parts? The equipment using the single pole device:

Continued

Questionnaire for CSA 220 File Review

Continued

Y	N	NA	d) Is marked according to Clause 5.1.12?
Y	N	NA	Separation of Primary and Telecommunication Circuits: If the product is connected to telecommunication circuits (4.14), has the isolation means provided between the supply circuits and the telecommunication circuits been subjected to the dielectric strength test of Clause 6.6?
Y	N	NA	Operator-Accessible Devices: If provided, are all operator-accessible receptacles or option board slots provided with all of the following [5.1.6]:
Y	N	NA	a) Are the receptacles and/or slots marked with the maximum allowable load current(s)?
Y	N	NA	b) Has the product been tested with the maximum load current specified (i.e., temperature and abnormal tests)?
Y	N	NA	c) Are instructions provided to the operator explaining how to install the option boards?
Y	N	NA	Interconnecting Cables: Do the interconnecting cables in shock or energy hazard circuits comply with the following:
Y	N	NA	a) A tool necessary to disconnect the cable [4.6.3]?
Y	N	NA	b) A marking is provided which cautions the user to disconnect the power before opening the cable connector [5.8]?
Y	N	NA	User Accessibility: If the product is provided with user-accessible connectors, ports or card slots for accessories, was the product temperature tested in a fully loaded configuration [6.2.4.2,6.4.4]?
Y	N	NA	Dielectric Strength, Primary Circuit: Was the product primary circuit dielectric strength tested to 1250 V AC (for 250 V or less systems) or 950 V + 1.2 x rated volts (for systems over 250 V) [6.6.2.2]?
Y	N	NA	Dielectric Strength, Telecommunication Circuits: If the product has telecommunication circuits, have the circuits been subjected to the 1000 VAC dielectric strength test [6.6.4]?

Traceability of Plastics

Peter Perkins, P. E., Manager,
Corporate Product Safety and Regulatory Affairs

Lin Johnson's recent (May and June 1988) article on traceability of plastic materials to meet UL requirements was very interesting. He did a good job of focusing on several UL traceability issues.

There are a couple of other aspects of traceability that were not discussed. One has to do with the classification of plastic materials and the other with the options for traceability during UL FUS inspections. We have bumped into these in working with UL in either our component or product certification activities. I would like to explore these here.

We will explore these in the context of proof of compliance options for polymeric materials.

First, there is one particular class of materials that gets special treatment by UL. This includes materials with a long history of use where problems have not arisen over time. These are called generic materials. They include: slate, porcelain, phenolic, cold-molded composition, unfilled polycarbonate, unfilled nylon, nylon filled with inorganic compounds, melamine, melamine-phenolic, or urea-formaldehyde or other similar materials.

We have organized this discussion so as to address both generic and named classes of materials, as is usually done by UL. We believe generic materials should

always be separated from named specific materials when dealing with UL.

Generic materials have a long history of acceptance by UL. The UL rationale for generic materials traceability was openly described in a UL 478 IAG. In the January 15, 1985, meeting, the IAG acknowledged the universal acceptance of these generic materials by inspection without any specific traceability required. Although generic materials were described at an EDP IAG meeting, the UL philosophy of acceptance is in a more universal sense and not tied to any specific product category according to the description given by the UL personnel. Our experience is that not very many UL personnel understand generic materials; some object to consider allowing using this method of separation. Reference to the aforementioned discussion within the IAG is your best anchor point.

On the other hand, any other polymeric materials require a traceability back to the UL Recognized Component Index (yellow book) or equivalent. These are referred to as named plastic materials.

Because of this separation of materials, we believe the following separation should be made part of the Section General for any files which require traceability

of plastic materials.

Generic Materials: Proof of Compliance for Generic Polymeric Parts or Materials.

Plastics described in a generic way are accepted by physical inspection. (This is a key concept; UL/ FUS inspectors should not pursue traceability.)

The following materials are usually described generically: slate, porcelain, phenolic, cold-molded composition, unfilled polycarbonate, unfilled nylon, nylon filled with inorganic compounds, melamine, melamine-phenolic, or urea-formaldehyde.

Other materials may be described in this generic way and are intended to be accepted in the same manner. Any additional materials that are agreed to be generic will have to be listed to qualify.

Named Materials: Proof of Compliance for Named Polymeric Parts or Materials.

Plastics described in this named way are Recognized Component Plastics (QMFZ2). Acceptance of any named material is by traceability to the basic material as called out in the Recognized Component Directory, Component Recognition Reports or yellow cards which ensures that the material is appropriate as required by the UL/FUS report.

Continued

This is the usual UL method of traceability.

Careful segregation of materials in this way will simplify proof of compliance for the manufacturer. You will need to work with both UL Engineering and UL/FUS to successfully introduce generic materials into your plastics compliance program.

Moving on, the second general point for discussion here includes traceability options. We believe that there are more traceability options than are usually presented either by UL or manufacturers. Options for traceability give the manufacturer some flexibility in demonstrating compliance during FUS inspections. We have identified the following list of traceability options.

- UL molder's program data available accompanying each shipment of parts from the molder.
- Physical trace back through molding process to the material. Works best when the molding process is located physically close to the use area.
- Parts uniquely marked as described in the UL/FUS report. Probably would include as much of the molder's data as could be marked on the parts including the user's part number identification. Qualified supplier to this manufacturer. This may include a split

inspection at the supplier's site. Certificate of conformance from the supplier, as described in Lin Johnson's article.

- Part supplier's catalog specifies material for identified manufacturer's part number. Especially important for commodity items, e.g., cardguides, bumpers, feet and decorative items.
- Manufacturer's lab analysis showing material identification. Assuming correlation could be shown between the manufacturer's lab data and UL's lab data. Lab analysis being, of course, one of the more expensive options.
- Sample to UL for lab identification of material. If none of the above records are available, a sample would be forwarded to the UL lab for analysis.

We've included as many traceability options on the list as we believe should be available to a manufacturer. We would be interested in others we may have missed. We've given consideration to some special cases, e.g., identification marks on small parts where they could not contain all the desired information, supplier identification of materials for commonly available items, etc. What other considerations should be made?

It's not as obvious as to how these options should be allowed. Manufacturers should insist on

them appearing in the Section General of their FUS file rather than in UL's instructions to their inspectors, which are not generally available.

In Summary, separating generic materials from named materials plus allowing for as many traceability options as possible should allow the manufacturer of either a component or product as much latitude as possible in meeting UL's requirements.

Safety of Power Cords, Extension Cords and Branch Circuit Breakers

Continued from page 9

energy.) This would prevent almost all North American short circuit fires, which account for roughly 20% or \$1 billion of fire loss every year, in the experience of P.A.C.E. This loss is great enough to justify the replacement of all North American circuit breakers, in our opinion. The coil reportedly adds only \$0.30 to the cost of manufacture.

Product Safety News and Notes

VDT Standard

After three attempts, Suffolk County, N. Y., passed legislation regarding the ergonomics and work practices of video display terminals (VDTs). The county resolution applies to equipment leased, rented, or purchased after January 1, 1990. It will be applicable to companies with more than 20 employees operating terminals more than 26 hours a week.

The law entitles workers to an annual eye examination, with the company paying 80 percent of the examination fee and the cost of eyeglasses the operator may require for work on the terminal. The law also makes provisions for adjustable workstations, chairs, detachable keyboards, copy holders, nonglare lighting, and covers to reduce noise of impact printers.

The law has provisions tied to pregnancy, and work breaks if operating the terminal more than three hours.

National Electrical Code Decision

The Standard Council held a hearing and denied the complaint of CBEMA with regard to the effective date for 725-38 (b)(I) and 770-6 (a) of the 1987 edition of the NFP A 70. The decision of the council noted that the two years

was allotted for the issuance of the requirement to the effective date of July 1, 1988, for the requirement of limited power cables to be fire resistant as specified in the aforementioned sections. In addition, the council noted that 90-4 of the NEC makes provisions for custom cables for which alternative products are not yet available.

International Product Safety News

A newsletter devoted to product safety compliance entitled "International Product Safety News" is published by Product Safety International on a subscription basis. For further information, contact the editor, *Mr. A. Michael*, P.O.Box 1561, Middletown, CT 06457-1561.

[The newsletter is not related to nor endorsed by the Product Safety Technical Committee of the IEEE.--Ed.]

Nonlinear Loads Seminar

Pete Perkins, manager of Corporate Product Safety and Regulatory Affairs at Tektronix has brought to our attention the following seminar:

The seminar, entitled "Effects of Nonlinear Loads on the Power-Distribution System and Attached Equipment," deals with the

external effects of using large (or many small) switching power supplies in industrial installations. There are some serious implications from misunderstanding the installation requirements in which the loads are used. In some cases there has been substantial overheating of installed wiring and equipment. The two-day seminar, September 28 and 29, 1988, will be held at the University of Wisconsin and will include the following topics:

- Switchmode Power Conversion in Data Processing Equipment,
- Effect on Nonlinear Loads on the Power Distribution System,
- Utility Power Requirements for Data Processing Equipment,
- True RMS Circuit Breakers
- Neutral and Grounding in the Computer Room,
- NEC True RMS vs. Average Response Type Instrumentation.

Area Activity Reports

Santa Clara Valley Area Report

The August meeting of the Santa Clara Valley Chapter began with a review of the Product Safety Society quest for IEEE affiliation. Rich Pescatore announced that beginning August 1, 1988, the Product Safety Society is now an officially sanctioned Technical Committee under the auspices of the IEEE EMC Society. As a result, the Product Safety Society will now be known as the "Product Safety Technical Committee" and no longer called the Product Safety Society, until we have reached Society status within the IEEE.

Rich outlined the processes involved in becoming a Technical Council of the IEEE, and eventually becoming a Product Safety Society of the IEEE.

Jim Duckett, the chairman of the Santa Clara Valley Chapter of the EMC Society, welcomed the group into the IEEE, and offered his help in the formation of the Technical Committee.

Rich then announced that Scott Barrows, chairman of the Membership Committee, was going back to school, and that as a result he had to resign his position of committee chairman. The PSS would like to thank Scott for all his efforts in making the PSS a success. Kevin Ravo has volun-

teered to replace Scott as Membership Committee chairman.

The night's topic was "System Safety," presented by Brian Claes (SCV program chairman of Tandem Computers. Brian illustrated the benefits of using the "system safety" approach to product safety. Forty attendees enjoyed and learned from his presentation, especially the disk drive cart case study.

The next meeting will be September 27, 1988, at 7:00 p.m. at Apple Computer in Cupertino, 20525 Mariani Ave., on the corner of De Anza Blvd. (Gust south of Hwy. 280). The topic for the next meeting will be "Euro-pean Product Liability." The special guest speaker will be Dr. Ruth Redden of Fluke.

Rick Buck
Publicity Chairman

Colorado Area Report

The next National EMC Symposium will be held in the Denver, Colo., area in May 1989, and the possibility of having a Product Safety session during the symposium is being investigated. Those interested in assisting in the development of the session or attending one should contact Steve Tarket. Steve is also the local contact for individuals in the

Denver area interested in starting their own Product Safety meetings.

Steve Tarket (M/S 65)
c/o Hewlett-Packard
3404 E. Harmony Rd.
Ft Collins, CO 80525
Phone: 303-229-2481;
Fax: 303-229-2692

Upstate New York Area Report

Those interested in a Product Safety Chapter in the upstate area of New York are encouraged to contact the following individual:

Dave Edmunds (M/S 843)
c/o Xerox Corp.
800 Phillips Rd.
Webster, NY 14580
Phone: 716-422-2380
Fax: 716-422-7841

Florida Area Report

Michael Hatch is the latest person to join our list of local contacts. Please pass the word to colleagues in the Tampa area to call Mike if they are interested in meeting locally. Contact:

Michael Hatch
c/o Innovative Industries, Inc.
5909-C Hampton Oaks Pkwy.

Continued

Area Activity Reports

Continued

Tampa, FL 33610
Phone: 813-621-7855
Fax: 813-623-2229

Southern California Area Report

No meeting has been held since the last issue of the newsletter. Charlie Bayhi reports that the next meeting will be held on Monday, October 3, 1988, at MAI Basic Four, Inc. The meeting will start at 1:00 p.m. and feature Dr. James A. Roseboro, an investigator with the FDA. Dr. Roseboro will speak on laser safety. Questions about the meeting or the chapter in general can be directed to: Charlie Bayhi,
Phone: 714-730-2556
Fax: 714-730-2380.

Charlie Bayhi, Chairman
Southern California Area

Northwest Area Report

As we all know by now, we are the Technical Committee on Product Safety, affiliated with the IEEE EMC Society. The next meeting of the Northwest Chapter will be held on Thursday, October 20, not October 18 as reported earlier.

The meeting topic will be International Power Line Configurations and Components. Product safety engineers from Japan, Holland and the U.K. will be there

to discuss both three-phase industrial and single-phase commercial applications. In addition to these speakers, the Chapter officers have obtained a commitment from Bob Wallace of Tektronix to speak on the measurement of leakage currents. Bob is on the IEC committee, IEC TC74/WG5, which has a pilot responsibility in this area. Also, we are expecting NEMKO to provide us a speaker all the way from Oslo, Norway! The following is the agenda:

1:00 *Welcome & Introduction of Speakers*

Gary McInturff

1:10 *Chairman's Remarks*

Richard Nute

1:20 *U K .Ring Circuits and Fused Plugs*

Philip Tradgett

1:40 *Netherlands Mains Circuits*
Ab Kars

2: 10 *Japanese Mains Circuits and Plugs*

Yoshio Yamada

2:30 *Norwegian Mains Circuits*
B. Myrvollen/L. Nybro

3: 30 *Abnormal AC Supply Voltages*

Steve Miller

4:15 *IEC Method of Measuring Leakage Current*

Bob Wallace

6:00 *No-Host Dinner*

(location to be determined at meeting)

This meeting will be hosted by

Mr. Peter Perkins of Tektronix in Beaverton, Oreg. The meeting will be held in the Tektronix auditorium at the Wilsonville facility south of Portland--right off 1-5. To get to the auditorium (building 60), take the Stafford exit off of 1-5 coming from the north, cross over the freeway, and go south on Parkway until you get to the Tektronix campus. Follow the signs from there to building 60. Pete Perkins can be reached at 503-627-1815 for any further information. Please send an RSVP to Susan Turner of Tektronix at 503-627-2389 for both the meeting and the dinner so proper arrangements can be made.

Al Van Houdt
Product Safety Engineer

Northeastern Area Report

No Product Safety meeting was held in August in the Northeast area. However, plans are now being made for the next meeting on September 28, 1988. Dash, Straus and Goodhue, Inc., will host this meeting, starting at 7:00 p.m. The topic and speaker are still being determined. Members of the Northeastern area will be notified by a separate mailing of further details.

Jim Norgaard, Chairman
Northeast Area

For Your Information

Certification Agencies, Part III

The following is the third in a series of articles meant to aid you in your work with the various agencies. This month, we offer a roster of the CSA Pacific Region Office Staff. As before, we look forward to receiving input from you, especially what improvements you would like to see, and what agencies you want included in future articles.

Canadian Standards Association Engineering Staff

Name	Product Types
<i>Michael Tam, Senior Engineer</i>	
<i>Brij Aggarwal</i>	Process Control Equipment, Signal Appliances Transformers, Electronic Equipment, Industrial Control Equipment
<i>Orest Ewanchyna</i> <i>Ted Sylka</i>	Laboratory Equipment, Test Equipment, Medical Equipment, X-Ray Equipment
<i>Sebasrian George</i> <i>Paul Chan</i> <i>Walter Zatylny</i>	Cleaning Machines, Commercial Cooking Equipment, Electric Fittings, Electric Heaters, Electronic Equipment, Fans & Ventilators, Food Preparing Machines, Industrial Control Equipment, Light Fixtures, Motor-Operated Equipment, Process Control Equipment, Sewing Machines, Signs & Displays, Wiring Devices, Cosmetic & Hygiene Products, Pumps, Motors & Generators
<i>Gordon Brand</i> <i>George Ward</i> <i>Doug Hann</i> <i>Brad Sullivan</i> <i>Shawn Fawcett</i>	Special Acceptance, Special Inspection Services
<i>Jim de Vries, Senior Engineer</i>	
<i>Mark Havlasek</i> <i>Rick LeBlanc</i> <i>Bill Lowe</i>	Electronic Data Processing Equipment, Office Power Supplies, Custom Rectifier, Scales, PPPE (Photo, Printer, Paper Equipment)

Continued

For Your Information

Continued

Egon Varju

David Finley

Fabio Furlan

Jim Nunes

Jeff Pasternak

Keith Poulin

Grant ScJunidbauer

Customer Services Staff

Name

Title

Larry Ruck

Supervisor

Ross Hayhoe

Coordinator-Project Status, Technical Support

Ann Lumb

Application Appraiser

Jim Louie

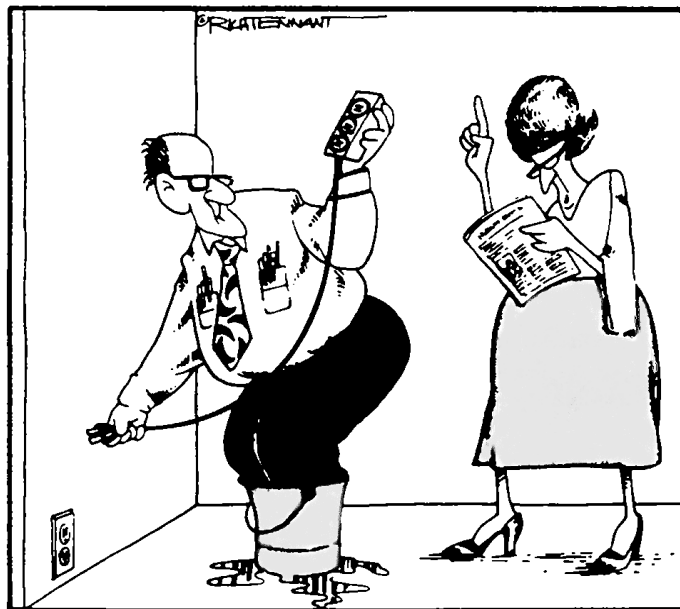
Application Appraiser

Karen Calabrese

Administrative Assistant

Susan Eissler

Standard Sales



"WHOA, HOLD THE PHONE! IT SAYS, 'THE ELECTRICITY COMING OUT OF A SURGE PROTECTOR IS GENERALLY CLEANER AND SAFER THAN THAT GOING INTO ONE, UNLESS-UN-LESS- YOU ARE STANDING IN A BUCKET OF WATER.'"

Letters to the editor

The following letters were received since our last edition of the Product Safety Newsletter. The editor reserves the right to edit letters to fit the available space. Opinions expressed are those of the authors and do not necessarily represent those of the newsletter staff or the Product Safety Technical Committee of the IEEE EMC Society.

Infighting

Congratulations to all involved on your work in getting the Product Safety Society to the point where it is now IEEE affiliated.

The Product Safety Society (or whatever name it ends up with) could be a valuable forum for dissemination of new requirements to veteran safety engineers and a perfect place to instruct those new to the field in the pitfalls and the nuances in the various Standards we use to do our work.

Please note that I said “could be.” I believe the only way to effectively train and disseminate information is to present it in a noncombative, friendly style, where everyone is allowed to ask questions and all questions will be given thoughtful answers. It should be understood that instruction to new comers is essential in order that the PSS can grow. In addition, the newsletter would be an ideal place to note new or changing requirements in Standards of interest to the readership.

The Dr. Z-type articles, whose chief purpose is to convince readers that the author knows it all, are of little benefit. Neither

are the overly technical articles which do not really tell the readership why the agencies have made a requirement, but whose main concern is again some what author ego-driven. (Reference to the excellent HP Journal will show that technical topics can be addressed in a nontechnical manner.)

It is of no value whatsoever to the product safety engineer in the field to know how stupid or unnecessary published requirements are; he needs to know why the agency requires the product to be built that way. And there is always a reason. The main task product safety engineers have is to train other company members in the ways to build product in accordance with agency regulations. The ONLY way to do this is to convince these other people that there is a reason, and a method, to the requirements.

Articles that undermine published agency requirements have no place in the PSS newsletter. The forum for this type of article is IAC meetings or the like where the agencies themselves are

involved.

In closing, please note that I am an interested bystander and only throwing in my two cents worth. However, I am completely sincere and serious about the points above. You have a great start. You need new readership and you absolutely need the support of the agencies to become a voice. The only way to obtain these goals is to change the tone of the newsletter and make it a positive force in the Safety field.

Jeffrey Lind
Safety Specialist
Product Verification Specialists

Oops Department

There was one error in the August issue which I would like to clarify. The wording on page 10 regarding TUV Rheinland- Westfalischer (note correct spelling--- TUV Rheinisch-Westfalischer) is misleading as it seems to suggest that if a customer is using the services of TUV Essen they would automatically receive a

Continued

Letters to the Editor

Continued

TUV Rheinland approval. This is certainly not correct.

There is a major difference between which TUV agency you choose in the U.S. The most commonly used, and most well known and represented in the U.S., and accepted by all TUVs worldwide, is TUV Rheinland. This is not the case with TUV America or TUV Essen. For instance, neither TUV Essen nor TUV America are listed in the Equipment Safety Law (GSG dated July 24, 1968, or the updated version August 13, 1980) as recognized test agencies under those names. A partial list of the first five of the 40 agencies is as follows:

- # 1 VDE
- # 2 TUV RHEINLAND
- # 3 TUV Hannover
- # 4 TUV Berlin
- # 5 TUV Bayern

We would appreciate your making the corrections. If you have any questions, please contact me.

Laszlo P. Hasenau
General Manager
TUV Rheinland of N.A., Inc.

As indicated on the attached copies, typographical errors were made in the July edition (page 11) of the Product Safety Newsletter. Here are the corrections:

Main Office: Danbury, CT
Dr. Klaus Spiegel
Judith Ann Colombo
Laszlo P. Hasenau
David Lohbeck
Dr. Steven Kraemer

Thank you for your attention to this matter.

Laszlo P. Hasenau
General Manager
TUV Rheinland of N.A., Inc.

[The editor apologizes for the errors in spelling the above individuals' names. We encourage our readers to correct their copy of the newsletter so that our errors are not perpetuated.---Ed.]

The Ideal Standards Committee—Conclusion

[The following is the second half of a two-pan Letter to the Editor. Due to lack of space, we had to delay the completion of the letter until this issue.---Ed.]

To assist managers in making committee attendance productive for their organizations, here are some guidelines for committee membership:

I. Funding and support from the supporting company

This should not be taken lightly.

Committee representation will require at least three trips per year PLUS preparatory and debriefing time.

The supporting company should fully understand both the travel and time commitment to which it becomes committed when it provides a committee representative.

The supporting company must recognize that the individual's job changes when he takes on committee membership. The job description should be rewritten so that the committee activity becomes a part of the job itself, rather than an activity outside the individual's regular duties. Likewise, committee activity should be provided with a budget.

Anything less than this results in meeting-by-meeting decisions as to individual attendance. As such, committee membership becomes one of being an information gatherer and reporter rather than a contributor. Many, many companies operate in this manner; members attend, but cannot make any contributions because it is not in their job descriptions, and they cannot guarantee they will attend the next meeting.

The committee itself cannot be effective where members cannot be full members because of variable company support. Too many industry committees are already

Continued

Letters to the Editor

Continued

characterized by such membership. Let's not continue this problem.

Committee membership should be a MANAGED activity just as any other part of the job. It should be subject to ALL of the implications that go along with that assertion.

2. Objectives of committee membership and meeting attendance

Just as with any other part of our job, we should set forth the several objectives of committee membership or meeting attendance.

In some cases, simply being a reporter will be acceptable. In some cases, being a criticizer or devil's advocate will be acceptable. But, neither of these can be acceptable committee performance for the long run. They both rely on somebody else providing the material which is reported, criticized, or devil's advocated.

I would assume that the objective of any committee membership is to contribute proposals which accomplish the committee's objectives. Or, if membership includes chairmanship, then the objective is to provide leadership to accomplish the committee's objectives---especially by drawing forth spe-

cific proposals from membership.

3. Qualifications

Given the preceding, then the individual selected by both the committee and the company to participate on any committee must have the technical expertise AND the ability to put forth his technical expertise in the form of written proposals.

This implies researching to form the proposals, testing the proposals, adjusting the proposals to account for technical and editorial criticism, and presenting the proposals in a manner appropriate for the particular committee. It also implies advocacy of certain positions and defending those against criticism. In some cases, this implies maintaining a minority opinion in the face of majority opinion.

Another very significant activity is the criticism of others' proposals. Almost always, this implies a counter-proposal and the research accompanying such counter-proposal.

Working within a committee involves strategy to get proposals accepted and strategy to successfully accomplish criticism.

Thus, qualifications not only include technical, writing, and meeting presence", qualifica-

tions IMPLY imagination, a drive to get things "right, " assertiveness, a drive to contribute to the work of the committee, a strongly held belief in the work of the committee, and some degree of leadership.

Representing a company means that interested parties within the company are kept informed of committee activities, and that interested company parties have ample time to make their views known on the various issues of that committee and on company proposals to that committee.

4. The committee's membership criteria

Committees should establish criteria for membership, both for company support and for individual qualification. A committee should not just accept any warm body. Before a committee accepts a member, it should study the prospective member's resume, interview the member, and determine whether the member's organization will provide the necessary support such as preparatory time, research time, tools, secretarial support, etc.

Continued

Letters to the Editor

Continued

5. *Committee objectives*

Committees should set forth their goals and objectives. These should be stated for each meeting as well as for the long range.

Sponsoring organizations and individual member organizations should get annual reports as to accomplishments and new and future objectives.

Committees should be prepared to disband or requalify members as objectives are accomplished and new objectives are decided.

6. *Meeting plans*

Committees must also set forth their meeting plans so that members' companies can budget and plan their support. Each meeting should have an agenda, and should have specific objectives. Members should be able to decide to attend or not based on the meeting plan and whether or not individual members will contribute to the meeting. Committees should have a tangible output; in the case of safety standards work, the output is almost always a document of some sort.

With best regards from the Pacific Northwest,
Richard Nute

IEEE Product Safety Society

It was a pleasure to meet you (Rich Pescatore) yesterday at the EMC conference and to learn more about the newly proposed Product Safety Society. Walt Hart introduced your society to the Seattle EXCOM early this year. At that time, we agreed to support you in any way we could.

I am circulating copies of John McBain's July 8 letter to Don Clark and your July message to several people. My intent is to let people know what is going on.

I vaguely recall a product safety group being part of Industry Application Society at one time. Perhaps IAS should support Product Safety in their efforts to form a technical council. I'll defer to Pete Morley on this.

Please let us know if there is anything the Seattle Section of EXCOM can do to help you in your efforts.

Erling Hesla
Chairman
Seattle Section, IEEE

Safety of Power Cords, Extension Cords, and Branch Circuit Breakers

Jim Norgaard, Chairman of the Product Safety Society, Northeast Chapter, from Dash, Straus and Goodhue, has informed me of your interest in the safety of power cords, extension cords and branch circuit breakers. Since Jim formed the Northeast Chapter, I have been very active with that group and greatly appreciate how we have been mutually assisting each other. I appreciate receiving the newsletter from your Santa Clara Valley Chapter, and am gratified how networking in our Society has gone national.

D. Bruce Langmuir
Manager, Product Safety and Compliance
BOSE Corporation

[please refer to me article by D. Bruce Langmuir in this issue for more information about the above subject-Ed.)

Product Safety Technical Committee Officers and Committees:

Rich Pescatore-National Chairman
Hewlett-Packard (MS 42LS)
19447 Pruneridge Ave.
Cupertino, CA 95014
408-447-6607

Roger Volgstadt-Communications
(Product Safety Newsletter)
Tandem Computers Incorporated
2550 Walsh Ave.
Santa Clara, CA 95051
408-748-2102
(Fax 408-748-2137)

Santa Clara Valley Area Officers and Committees:

Rich Pescatore-Chairman
Hewlett-Packard (MS 42LS)
19447 Pruneridge Ave.
Cupertino, CA 95014
408-447-6607

Brian Claes-Vice-Chairman/Pro-
grams
Tandem Computers Incorporated
19333 Vallco Pkwy.
Cupertino, CA 95014
408-725-5173

John McBain-Sec/Treasurer
Hewlett-Packard (MS 42LS)
19447 Pruneridge Ave.
Cupertino, CA 95014
408-447-0738

Kevin Ravo-Membership
Underwriters Laboratories Inc.
1655 Scott Blvd.Santa Clara, CA
95050-4169
408-985-2400 ext. 2311

Mike Harris-Constitution
Teccom Co.
699 Baffin Street
Foster City , CA 94404
415-345-9403

Rick Buck-Publicity
Elliot Associates
897 Independence Ave.
Mt. View I CA 94043
415-967-7315

Pacific Northwest Area Officers and Committees:

Rich Nute-Chairman
Hewlett-Packard
P.O. Box G-006
Vancouver, WA 98668
206-254-8110 ext. 2691

Gary McInturff-Vice-Chairman/
Programs
ISG Systems Corp.
E. 22425 Appleyway
Liberty Lake, WA 99019
509-927-5105

AI Van Houdt-Sec./Treasurer
SpaceLabs
4200 150th Ave. N.E.
P.O. Box 97013
Redmond, WA 98073

Walt Hart-Membership(Seattle area)
John Fluke Mfg. Co. Ltd.
P.O. Box C9090
Everett, WA 98206
98206 206-356-5177

Art Henderson-Membership
(Portland area)
Western Transformers
6701 S.E. Alberta St.
Portland, OR 97206
503-777-5636

Northeast Area Officers and Committees:

Jim Norgaard-Chairman
Dash Straus & Goodhue
593 Massachusetts Ave.
Boxborough, MA 01719
617-263-2662
(other officers to be elected)

Los Angeles Area Officers and Committees:

Charles Bayhi-chairman
MAI Basic Four Inc. (#303)
14101 Myford Road
Tustin, CA 92680
714-730-2556

Rolf Burckhardt-Vice-Chairman
9420 Reseda Blvd.
Suite 800
Northridge, CA 91324
818-368-2786

Ercell Bryant-Programs
FileNet
3565 Harbor Blvd.
Costa Mesa, CA 92626
714-966-3459

c/o Tandem Computers Incorporated
2550 Walsh Avenue
Santa Clara, CA 95051
Attn: Roger Volstadt



CALENDAR

The Product Safety Society

Monday, October 3

Southern California Chapter

Subject: Laser Safety
Speaker: Dr. Roseboro, FDA
Time: 1:00 p.m.
Location: MAI Basic Four
Contact: Charlie Bayhi, 714-730-2556

Thursday, October 20

Pacific Northwest Chapter

Subject: International Power Info
Speaker: Various
Time: 1:00 -5:00 p.m.
Location: Tektronix, Beaverton, OR
Contact: Susan Turner, 503-627-2389
(RSVP requested)

Tuesday, October 25

Santa Clara Valley Chapter

Subject: TBD Speaker: TBD
Time: 7:00 p.m.
Location: Apple Computer
20525 Mariani Ave.
Cupertino, CA
Contact: Rick Buck, 415-967-4166

Wednesday, October 26

Northeastern Chapter

Subject: TBD
Speaker: TUV Rheinland
Time: 7:00 p.m.
Location: Sheraton Boxborough
Intersection 495/111
Boxborough, Mass.
Contact: Jim Norgaard, 508-263-2662