



PEARL NEWS

Fall 2001 • Volume 4, Issue 3

A Publication of the Professional Electrical Apparatus Recyclers League

MEMBERSHIP COMMITTEE REPORT

By Greg Womble, Committee Chair

As the year comes to an end I would like to thank all those who have helped increase the PEARL membership. Without your assistance PEARL would not be as strong as it is today.

The Membership Committee would like to acknowledge the newest members: Brian Belyea and Leon Belyea of Belyea Co., Inc. and Tom Thiel of Wolstein Equipment.

Members should start planning now to bring a new recruit to the PEARL Annual Technical Conference in New Orleans in March 2002. This is a great way to show prospective members PEARL and the benefits of being a member. ■

Taking a Closer Look at the DLRO

By Mike Nightingale

In this article, we are going to refresh some previous discussions on low resistance ohmmeters and get into some hands-on examples and practices.

A digital low resistance ohmmeter, DLRO, is a high precision portable test set that typically measures resistance from 1 microhm to 60 ohms. The DLRO is basically the same test machine as the Ducter. The only difference is that the DLRO generally gives a wider range of readings than that of the Ducter. A Ducter usually has a range of 1 microhm to 1 ohm. These two words are commonly used interchangeably throughout our industry, and sometimes are confused as being different tests. Both the DLRO and Ducter are trademarks names that belong to AVO Biddle Instruments. Another device that we will at least mention is the Kelvin Bridge, which is only another type of

resistance meter. This has a wider range of measurement than those mentioned above, normally .01 microohms to 1000 ohms, with an accuracy of +/- .03%. In our industry, we generally do not need this degree of accuracy, but I wanted to mention it because it can be used for the same testing as the Ducter and DLRO. For our examples we will be using the DLRO, which is very common in rebuild shops and maintenance facilities.

Before we get into some common procedures and examples, let's briefly go through the mathematics of the type of readings we are taking. There has been confusion with decimal point location when taking measurements with a DLRO. For example, confusion sometimes takes place when one person will take a reading of 45 microohms from line to load on a circuit breaker, which is

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Board meeting in Lake Tahoe. Seated from left to right: David Rosenfield, Finley Ledbetter, Federico Anselmetti, Arthur Levin, Jim Rooney and Randy McAyeal

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News from the President

by Randy McAyeal

The mission of PEARL:

Create a marketable distinction in quality, safety, and integrity for PEARL members in the eyes of their customers.

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PEARL News is a quarterly publication of the Professional Electrical Apparatus Recyclers League. Submission of industry-related articles is encouraged.

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It still doesn't seem like almost a year has passed that I was elected president of PEARL. It's an honor of which I never dreamed and the Board and I have worked hard to meet the challenges that face the association. We have developed a strong sense of pride and purpose in helping PEARL move forward and succeed in reaching our short and long-term goals.

Then, September 11 and things changed. Thomas Jefferson said, "Peace and friendship with all mankind is our wisest policy, and I wish we may be permitted to pursue it. But the temper and folly of our enemies may not leave this in our choice." And so with the attack on our nation it has come to pass again that we must defend our freedoms from enemies within and outside our borders.

The loss of innocent life weighs heavy upon our very soul encouraging us to do whatever we can to help, therefore PEARL has donated \$4000 to the September 11th fund to show that as Americans "United We Stand." PEARL encourages its members to match our contribution by making a contribution in \$100 units. The checks can be sent to the PEARL headquarters address. They will be sent to the "September 11 Fund" in a batch along with a cover letter recognizing those who contribute.

We should all take pride in what PEARL has accomplished in a very short period of time and it should motivate us to work that much harder in getting the message out to the electrical industry. With the economy in difficulty we can find even further motivation to promote our concept of delivering quality material at very reasonable prices and opening doors that have traditionally been closed to us. Our members have the potential to make a difference and this we shall not forget.

Once again I would like to thank the members of the Board who journeyed to South Lake Tahoe at their own expense to attend the Board of Directors meeting, now on with the other news.

Membership.

The Membership committee's goal of recruiting 5 new members for the year 2001 has been met. But keep the excitement and enthusiasm going for recruiting potential new members and lets exceed our goals in 2002.

Annual meeting.

Make your reservations now for the biggest and best conference yet. PEARL's annual conference will be held in conjunction with the international Electrical Testing Association (NETA). The meeting will be held in New Orleans March 24, 2002 and the deadline for the guaranteed rate is February 22, 2002. So call 800-441-1414 for reservations and be sure to ask for the NETA group rates.

Site inspections.

One of our goals for 2001 was to complete and pass site inspections for the greater part of our membership. Although we were a little shy of the goal, for those of you who have requested and passed your inspection I give you my congratulations. Now lets reach our goal of having the majority of our voting members certified by March for the annual conference.

Looking forward to seeing you all in March.

Keep the faith and God Bless America

Randy McAyeal



A Plan For All Seasons

By Jay Romanoff

Several years ago, I was in the midst of a record year in volume and profits. It was one of those times where I could do no wrong. Everything I tried worked, and it seemed as if it would never end. I was quite shocked when my father pulled me aside and asked the dreaded question, "What are you going to do when the good times end?"

At that time, I did not appreciate the "buzz kill." The last thing I wanted to think about was my good fortune coming to an end. The point that he was trying to make was that I should have a plan in case of a downturn. He had experienced many peaks and valleys throughout his career, and he knew that having an emergency plan would help me weather the storm, whenever it came. This was perhaps the most valuable advice that he ever gave me. It also was one of the few times in life that that I listened to him before he could utter the words, "I told you so."

"A detailed emergency plan or even a very basic plan can prove invaluable in times of crisis."

In the past five years, I have had to pull my emergency plan out of my briefcase and implement it. It is a fact that success is fragile and often short-lived. There will always be events that occur that negatively impact your business, and having a plan to deal with a downturn has made my experiences much less painful. Here is a brief outline of how I wrote my plan and what it consists of.

Step One. Review your current income statement. Create a spreadsheet that lists the following:

Current Sales	\$
Cost of Goods Sold	\$
Gross Profit	\$
Expenses	\$
Profit Before Tax	\$

Next, create additional columns that reflect a 5%, 10%, 15%, 20%, and 25% reduction in your sales. By using the same Cost of Goods Sold percentage, you can come up with your new Gross Profit amount. Then plug in your existing expenses. This will give you a look at how close you are operating to your "breakeven" point.

The next step is to make a list of your current expenses. Then make two additional columns, marked Moderate

Reductions and Extreme Reductions. One of the facts that caused me the most concern is the realization that so many of my expenses were fixed. No matter how much business I did, many of the expenses could not be greatly reduced. Those expenses were adjusted minimally across my spreadsheet.

The most painful part of writing this plan was realizing that the most significant way to reduced overhead was to eliminate people. It is much easier to deal with this issue when the plan is hypothetical. Make a list of your entire staff, and divide it between salaried and hourly people. I like to look at these numbers on a monthly basis, so I use the following formulas:

$$\begin{aligned} & (\text{Salary} / 12) = \text{Monthly Salary} \\ & \quad (\text{Hourly Wage} \times 40 \text{ hrs./week}) \\ & + (\text{OT Wages} \times \text{OT hrs./week}) \\ & \times 52 \text{ Weeks} \\ & / 12 \\ & = \text{Monthly Hourly Wages} \end{aligned}$$

I also add columns for monthly benefits, such as health insurance, so that I can see what the true cost of each individual is. I then total up my monthly compensation expenses.

Next, I eliminate people from the list that are expendable should we experience moderate reductions in sales and extreme

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FIRE! FIRE! FIRE!

By Randall Maddox

It was a beautiful sunny day in Summit County, Colorado, and I was ending a wonderful season. This was my last of forty or so days of snowboarding, spread out over the winter. My wife, Christina, teaches snowboarding at Keystone, and she had been there for almost five months. We spent the day riding with friends and reminiscing about all the good times we had, and as I returned to the house in the afternoon, the season seemed complete and I felt ready to return to Texas the next day and call it a year. This was April 17. I will NEVER forget that date.

As we rolled into the house and began to pull off our gear, I noticed almost simultaneously that there were messages on the house phone and one on my cell. I am a very hands-off guy, and I rarely talk to the office when I am out. I check e-mail and have always told the guys at work to only call me "if the place burns down." I can't really remember which message I checked first, but there were three—all from Dawson

Clark, our HR Manager. He wanted me to call him immediately. Not good. My mind raced. Something had happened. Someone was hurt, or worse yet!

I nervously called his cell number. No one was hurt but, as you probably already know, we had suffered a major fire. The assessment was sketchy, but every fireman in Temple, Texas, was there to fight it, including those who were off duty. The fire had raged for about two hours. I knew I could not get out that night, so I quickly decided to return the next day on my scheduled flight. Kyle McQueen, our CEO and my partner, was there. He had made a fast turn around from LAX.

The night was long. I tossed and turned, but did get some sleep. It was grueling the next day when I got to Killeen Airport,

about thirty miles from Sunbelt at 8:30 p.m. As I rode toward Temple, my cell rang. It was Kyle, and he wanted to meet me. I was deeply glad I did not have to face it alone. Nothing could have made me ready to see the devastation. I had poured half of my life into something, which now looked like a nuclear-waste site. Unbelievable. Tears streamed down my face. I did not sleep a wink that night.

We had lost about 18,000 square feet, and that included our entire power-assembly bay. We could move some stuff elsewhere, but we were down in power transformers, and that is fully 45% of our business.

We began the arduous task of calling customers. Some of the items lost were units almost complete and only days from shipping. One, for a big power plant in California, was crucial. Fortunately, we had a loaner, as it would be months before they would see their unit. Miraculously, we had only one small order cancelled. The rest of the customers would wait. For the next month, we dealt with environmental and insurance people, and finally the work started some five weeks after the fire. Although we had no toxic chemicals involved, the soot had paraffin and carbon and required being contained and cleaned up. ■

"I had poured half of my life into something, which now looked like a nuclear-waste site."

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NEC 2002 and Flash Hazard Marking

By John Cadick

The 2002 NEC has a couple of very significant requirements for switchboards, panelboards, industrial control panels, and motor control centers. These are significant for both the users and suppliers of such equipment. I will begin by quoting the two articles.

"110.16 Flash Protection. Switchboards, panelboards, industrial control panels, and motor control centers that are in other than dwelling occupancies and are likely to require examination, adjustment, servicing, or maintenance while energized shall be field-marked to warn qualified persons of potential electric arc flash hazards. The marking shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing or maintenance of the equipment."

"80.9(B) Existing Installations.

Existing electrical installations that do not comply with the provisions of this Code shall be permitted to be continued in use unless the authority having jurisdiction determines that the lack of conformity with this Code presents an imminent danger to occupants. Where changes are required for correction of hazards, a reasonable amount of time shall be given for compliance, depending on the degree of the hazard."

Although the burden of Article 110.16 seems to fall on the end user (note the phrase "field-marked"), it will not be long before your

customers start to ask you to mark their equipment for them. This requirement will be simple, as long as it can be simply fulfilled by posting a warning, such as "DANGER!!! ELECTRICAL FLASH HAZARD."

Note, however, that only qualified persons are allowed to approach such hazards and, by definition, a qualified person must be familiar with the hazard, including the degree of the hazard. Some in the electrical industry put all of these elements together and draw the conclusion that the arc energy level, in cal/cm², must be included in the marking.

Only time will tell whether the energy level needs to be included. However, if it is required, the manufacturer (you?) cannot, in general, label it for the simple reason that the manufacturer does not

know what the actual arc level will be. The determination of the actual arc level must be accomplished by the performance of a flash-hazard analysis. A proper flash-hazard analysis requires the performance of a short-circuit analysis and a coordination study.

Note that Article 80.9(B) provides, for the first time, a breakaway from the "grandfather" clause. If the Authority Having Jurisdiction (AHJ) so decides, even existing installations will have to be marked.

In summary:

- The 2002 NEC requires that areas with flash hazards be so marked.
- As the manufacturer, you may be asked to provide that marking.
- The requirement will probably extend to the inclusion of energy levels at the marked locations.
- Existing installations may have to be marked, depending on the ruling of the AHJ. ■




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More options

The Professional Electrical Apparatus Recyclers League, PEARL, and the InterNational Electrical Testing Association, NETA, are holding their annual conferences concurrently in 2002. This gives you more options for topics. Your single registration fee gets you into either or both of these great conferences.

Format

We have shortened the time and added sessions. The conference is Monday and Tuesday. Seminars are Wednesday. And these days are packed with information and good times.

By offering presentations concurrently, you choose the topics you need the most. We are continuing with NETA's dual-track schedule from last year - Technical track and Electrical Management track. We are now adding a third PEARL track, with programs dealing with electrical equipment recycling.

We are also helping your pocketbook. You can get the lower-priced, stay-Saturday-night plane fares by flying in on Saturday, taking part in the pre-conference Swamp Tour or Golf Tournament on Sunday, both great networking opportunities, soaking up the technical presentations and exhibits on Monday and Tuesday, and then participating in the hands-on seminars on Wednesday.

Panels

You have told us that you like those smaller group panel discussions, where you can get personal attention to your

questions. We have expanded our panels to give you not only more choices, but even smaller groups. Topics for 2002 include Electrical Failures, Electrical Safety, Education and Training for Electrical Testing Technicians, and Low and Medium Voltage Circuit Breakers. PEARL offers Panels on the Internet - Friend or Foe, and PEARL General Industry Topics.

Seminars

Again, we listened. You like the seminars, so they are still part of the program. The topics for this year's four-hour sessions are Electrical Safety Procedures and Principles and Substation Maintenance. They are on Wednesday, following the conference.

Bring your significant other

Plan your vacation around this technical extravaganza. New Orleans is a great location. Not only do you learn and network in very pleasant surroundings, your "significant other" can enjoy the activities, too. Take your choice on Sunday. Both the pre-conference Swamp Tour and Golf Tournament are geared toward everyone. So is the New Orleans style Diamond Anniversary Celebration on Monday evening. We have planned a plantation tour for your guest while you are in Monday's technical sessions. And, we are betting your spouse or friend can find something to do in The French Quarter on Tuesday morning, before joining you that afternoon for exhibits and refreshments. Start planning now!

Why have joint conferences?

Having the PEARL conference in conjunction with NETA's makes good sense. The two organizations parallel each other within the electrical industry. Offering parallel conferences seems a natural progression, making maximum use of both organizations' talents and resources. Our conference attendees are the ones who reap the benefits.

The Professional Electrical Apparatus Recyclers League (PEARL) is an organization in its infancy, less than six years old. In those few years, PEARL members have accomplished much, setting high standards for quality reconditioning and safety to protect the end user. PEARL develops information and provides networking and other services related to recycling and reuse of electrical power equipment.

NETA boasts 30 years of quality and expertise in electrical testing and maintenance. Our members and their clients know that when they hire a NETA Full Member company, they are getting an assured level of competence and reliability.

The goal of each organization is excellence in its respective field. For the 2002 Technical Conference, NETA and PEARL are working together to offer joint conferences for the benefit of all.

To register and for more information refer to the enclosed conference brochure. ■

"SEPTEMBER 11 FUND"

PEARL took action at its recent board meeting to provide assistance to families and individuals affected by the tragedy of September 11, 2001. In a strong show of support a donation of \$4,000 was approved to be sent to the "September 11 Fund". This is a fund established by the United Way of New York City, the New York Community Trust and the Council of Foundations. The money will go to victims of the attacks in New York City, Washington, DC and Johnstown, PA.

You, too, can help by sending a tax-deductible contribution in \$100 increments to help match the PEARL donation. The check should be made payable to "September 11 Fund" and sent to PEARL at 6257 Lakepoint Place, Parker, CO 80134. The check will be sent to the "September 11 Fund" in a batch along with a cover letter recognizing those who contribute.

Thank you for your kind consideration during this special time of the year.

PEARL On The Web

The PEARL Web site, <http://www.pearl1.org>, has a new look and feel. More streamlined and faster, all of the member information is at your fingertips without having to work through multiple pages per classification. A new feature is the pearl1.org e-mail address for each member company, as well as e-mail addresses for board members and committee chairpersons. Click on the email link and a message window opens. Click Send, and the e-mail will automatically be forwarded to an e-mail address specified by that member company.

Another new feature to be activated soon will be the addition of a PEARL logo "button" to the database listing of each member who has passed the site inspection. Clicking on the logo will take you to a screen in which the classifications of product marketed within PEARL standards by that company will be listed. This will afford the potential customers

or suppliers the ability to easily determine from the PEARL site if a specific member company normally deals in the products that they wish to purchase or sell.

The Newsletter section will be gradually expanded to include all past PEARL newsletters in PDF format and will allow interested visitors to monitor the evolution of PEARL. A Classified Ads section may be added. The News section will contain articles of an historical nature that cover various topics, including those dealing with wholesaler and manufacturer perceptions of the electrical recycling/surplus industry over the years in printed media and the responses they elicited from members of the industry as well as announcements of important events.

Lots of things will be happening with the PEARL Web site over the next few months. Visit our Internet home frequently. ■

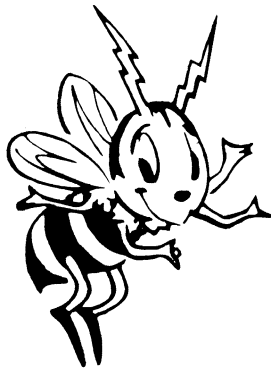
FRIEND OF PEARL

A new designation of membership was established early this year as part of the Affiliate Member category called "Friend of PEARL". The honor is given to those special leaders in the industry and others such as elected officials who believe in the promotion of equipment that has been remanufactured. Friends of PEARL appreciate the core values that PEARL was founded on—safety, quality and integrity.

PEARL is please to announce that WESCO, one of the largest and most prestigious electrical wholesale distributors, has been named a "Friend of PEARL". Accepting the honorary membership of behalf of WESCO is Mr. Cesare Brogneri, Supplier Relations Manager.

We welcome WESCO! Other Friends of PEARL are Mr. John Cadick, Cadick Corp., Ms. Lucille Roybal-Allard, U.S. Congresswoman, 33rd District, Los Angeles, CA, and Mr. Dean Gillies, Coast to Coast.

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DLRO FROM PAGE 1

actually a reading I took when I did a DLRO test on a Westinghouse 150VCPW-500 breaker. Someone else will then say that they got .045 milliohms on the same breaker at a different location, and will want to know why I had such horrible readings. It is obvious that what occurred is that the other person did not know that they got the .045 reading using a different scale setting. When converting to ohms, this value would be .000045 ohms, which, when you think about it, points out the accuracy of these meters. Mathematically, all of these are the same readings. The quick moral of this story is that one should be very careful with decimal point placement. If someone were not careful, he could either interpret a test reading to be either unusually exceptional or bad enough that the breaker or device should be thrown away.

One way to make sure your technicians are doing this properly is to have them measure a resistor with a known value, or by having them carefully read the instruction manual. Another idea is to record historical "trends" for different makes and amperages of breakers. If you have a Westinghouse DB-25, with historical data that tells you that the last twenty times you performed a DLRO test on this breaker you had an average of 97 microohms, and a technician writes down a reading of .097 microohms, you know there is something wrong.

Now we will get to some practical uses of the DLRO to try and detect high-resistance connections. For the first example, we will measure the contact resistance for a General Electric TKJ636400 molded case circuit breaker. Before you start, make certain that the condition of the contact surfaces are cleaned and are free of debris, oil, dirt, etc. This should be done whether or not you are testing the breaker, or have just finished reconditioning it. Failure to do so will possibly alter the accuracy of the measurement.

After either cleaning or reconditioning the breaker, take the two probes from the DLRO and firmly press them to the line and load connections of each phase and record the results. Make sure that you apply enough pressure with the probes. If

properly done, you will actually impress the points of the DLRO test leads into the copper or aluminum. Failure to do so would not give true results of the circuit resistance. Another point to keep in mind, especially with molded case breakers, is that the placement of the test probes needs to be on the lug landing pads, and not through the lug itself. In some instances, you may actually have to remove a breaker lug to properly test. This is the same for air breakers, in that you do not test through the primary disconnect, or finger cluster. With these larger breakers, there is usually enough room to get proper connection points.

The testing of Phase A can be shown in Figure 1. Please note that "mW" is the scientific abbreviation for microohms. An important rule to follow is that when

utilizing the test leads, it is important to keep the P1 and P2 leads on the inside, closest to each other in the circuit, and the C1 and C2 leads on the outside. This is due to the way the DLRO calculates the resistance of the circuit.

Another example that we will use is taking measurements on a Westinghouse DB-50 air breaker. In this case, we do the same basic test as with the TJK. The nice aspect with the DB breaker is that, since it is larger, it is easier to troubleshoot problems. For example, if we are taking measurements and get the following values shown in Figure 1, we know that there is a problem with the C phase, since Phase C is at least three times larger than the other readings. With a DLRO, you need to have some type of uniformity within readings. I have heard of different stan-



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DLRO FROM PAGE 8

dards to try and meet or exceed. One would be that the readings between poles be within 20% of each other.

Phase A	Phase B	Phase C
($\mu\Omega$)	($\mu\Omega$)	($\mu\Omega$)
65	67	223

Figure 1

We now need to find out where the problem is located. Generally, it can be two different types of areas, either the contacts or the bolted and/or soldered connections. To try and locate the problem, the contacts are isolated and measured from the movable contacts to the stationary contacts, and the results are recorded. If the reading seems normal, which will be a very low value if the contacts are fine, we then need to determine if the problem exists between the movable contacts and the bottom breaker stabs or between the stationary contacts and the top breaker stabs. One of the readings will probably be higher than the others. If so, you have now isolated the area in which a problem exists. If it were in the contact area, you would need to replace or check the tightness of the connections.

A DLRO, as demonstrated in the above circumstances and many others commonly encountered in the electrical industry, proves to be an invaluable tool. This piece of test equipment will tell you if the circuit resistance of a device falls within acceptable levels. Where it is worth its weight in gold is in those cases in which it can help tell the technician where to look for problems. This fact alone has saved me hours of troubleshooting time. ■

ALL SEASONS FROM PAGE 3

reductions in sales. As difficult as this is, the numbers speak for themselves.

This type of planning can be very basic or extremely detailed. Once I got started, I elected to do a lot of research so that my plan was very thorough. I have to stress that even the most basic plan could prove to be invaluable. The first time I used my plan, I had to make moderate cuts. The second time, I had to go to the extreme levels. Although using the emergency plan was far from fun, it made the process far less emotional. During times of crisis, it can be very difficult to take

the time to make a plan, and more distressing to implement it. When the plan is already written, you can deal with the reality of your situation and immediately take appropriate action.

I am happy to say that my plan has helped me deal with sudden changes swiftly and decisively. I have been able to keep my company profitable even in times of crisis. Even though the good times we experience are a lot more enjoyable, my emergency plan has helped me make crisis management equally rewarding. ■

HUMBLE BEGINNINGS, GREAT EXPECTATIONS

By David Rosenfield

PEARL beginnings were modest to say the least. A zero budget meeting in Laughlin, NV was called for the purpose of discussing industry wide concerns about a listing service that many surplus electrical dealers subscribed to. It was perceived that, as an industry, we were being damaged by how we did business. In that meeting we quickly discovered that we had far greater concerns to our continued survival than just a listing service. We were compelled to team up to go to work on our collective futures.

PEARL has membership from coast to coast. Today our organization boasts forty-three voting members, fourteen affiliate members, and four associate members. It is estimated that our voting and associate members run businesses with aggregate revenues of nearly a quarter of a billion dollars (\$250,000,000). There is great power in this kind of volume. It is up to us to harness and take advantage of this power. We are working to realize the benefits of it.

Our members specialize in the variety of product we had intended to represent from the beginning. We are recognized by major standards setting bodies, manufacturers and electrical sales organizations across the nation. We have done this on a relatively small budget and a great deal of sweat. We intended to have a positive effect on the performance of our industry through the creation of standards, training our members and sharing of knowledge among members. While we have far to go, we can certainly say we have been true to our mission since the beginning. Much has been accomplished.

We have an excellent start. Where we go from here is largely dependent on the amount and kind of participation we get from our member volunteers. To this end, I request you drop headquarters a note saying you wish to help. Your participation is needed for our continued success.

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