The Jersey Broadcaster

NEWSLETTER OF THE NEW JERSEY ANTIQUE RADIO CLUB

November 2014 Volume 20 Issue 11

MEETING/ ACTIVITY NOTES

Reported by
Marv Beeferman

MEETING NOTICE

The next NJARC meeting will take place on Friday, November 14th at 7:30 PM at InfoAge. Directions may be found at the club's website (http://njarc.org). This month, our Technical Coordinator Al Klase will talk about the history of shortwave. If time permits, we also might demonstrate some practical examples of Marv Beeferman's capacitor talk from last month. Finally, some auction items will be offered from the estate of Harold Goehner of Madison, NJ.

The ON-LINE Broadcaster

The New Jersey Broadcaster is now on -line. To date, over 120 of your fellow NJARC members have subscribed, saving the club and your editor a significant amount of money and work. Interested? Send your e-mail address to mbeeferman@verizon.net. Be sure to include your full name.

I received some good feedback regarding my capacitor talk at the October meeting. Your Board and Technical Coordinator Al Klase would be very happy to receive any recommendations you might have for future talks; you can send them to me or Al directly or submit a list at our monthly meeting.

Ray Chase reports that last month, along with Harry Klancer and Don Irish, a trip was made to Medford Lakes, NJ to pick up a donation of electronic items from Mary Liddle. Mary was first visited six years ago and the result was a truckload of equipment. A few years later, the NJARC crew was back to clean out the basement. Both donations ended up in an auction that yielded a nice profit for InfoAge.

This trip cleaned out the attic and Mrs. Liddle insisted on bringing some of the contents to InfoAge in order to get a look at our Radio Technology Museum. This was her first visit and she was delighted with what she saw. Five pallets of "electronic stuff" were brought to building 9036D to be sorted and categorized for our next InfoAge auction. The two vehicles used in making this pickup logged over 300 miles!

On Monday, October 27th, Ray Chase and Harry Klancer presented our History of Radio Broadcasting program to an appreciative audience of about 50 at Seabrook Village. Brochures and volunteer forms were left suggesting InfoAge as a good place for volunteer work.

Ray Chase has been contacted by a writer for the Phoenix Patriot, the University of Phoenix's quarterly magazine for the military community. She is working on a three-section article on WWII inventions that have been adopted by the civilian world. The sections are Drones, GPS and Radar. Ray has prepared a written outline for her on radar and then provided more details during a telephone interview. Besides Ray, InfoAge will be referenced as a source for the writer's work.

I just opened an e-mail from Dave Sica with a link to e-bay offerings of some of the radios that were purchased during the William Corkutt sale. Hopefully, they will wind up in the hands of collectors who appreciate Bill's extensive research and collecting activities in the often neglected area of homebrew radios. It would also be a tip of the hat to Bill if some that were purchased by NJARC members wind up in our Radio Technology Museum. An article about the sale and Bill's interests begins on page 4 of this month's *Broadcaster*.

A Bill Corkutt DeForest-type homebrew offered on e-bay.

December 13th is just around the corner so don't forget to send in your reservation for our upcoming Holiday Party. While you're at it, start thinking about a gift for the Mystery Grab Bag. A reservation form can be found on page 7. Also remember our Fall swapmeet at the Parsippany PAL on November 22nd.

In closing, I'm sure you're familiar with some of the versatility of solder in applications other than making electrical connections. A turn or two wrapped around test leads, cheater cords or other light wires will keep them neatly bundled and untangled. It can be used as a temporary lacing cord for turning a rat's nest of temporary test hook-ups into an orderly arrangement. It can be used as a shorting bar, easily inserted under almost any kind of screw connector, fitted into a jack or simply twisted around a lug. It can fill a too large of a hole for a self-tapping screw, allowing the screw to grip securely. For fishermen, it can equip flies, spinners or plugs with more weight. But did you know that solder also had romantic overtones?

The tinkers of central Europe used to melt a spoonful of solder scraps and then pour them into a shallow bowl of cold water. The shape assumed by the hardened solder was then used to determine the fortune of the individual, as is done with tea leaves. The practice has been picked up and perpetuated by electronic technicians in that part of the world!

Upcoming Events

Nov. 22 - Fall swapmeet at Parsippany PAL
Dec. 13 - Holiday Party at the Freehold Elks Lodge - no meeting

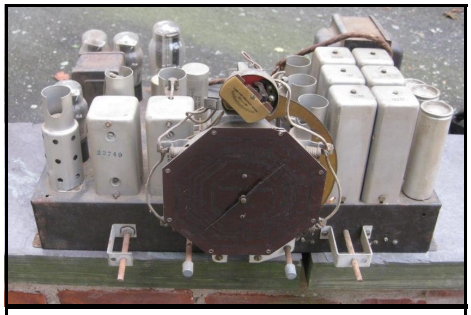
THE JERSEY BROADCASTER is the newsletter of the New Jersey Antique Radio Club (NJARC) which is dedicated to preserving the history and enhancing the knowledge of radio and related disciplines. Dues are $25 per year and meetings are held the second Friday of each month at InfoAge or Princeton University.
The Editor or NJARC is not liable for any other use of the contents of this publication.

AUCTION PLANNED FOR NOVEMBER MEETING

President Richard Lee is always on the lookout for ways to add a little "excitement" to our monthly meetings and he should be commended for all his efforts in tracking down and hauling auction items to Princeton and InfoAge. Last month, he received a call from the niece of Harold Goehner of Madison New Jersey; Mr. Goehner passed away in 1989. Harold was an avid antique radio collector and woodworker and his wife recently also passed away and the family home sold. An internet search could not locate any other information about Mr. Goehner but perhaps a few of our members recall who he was.

Here are a few of the items that will be offered:

Bendix wood table top.



Stromberg Carlson 10-tube chassis.

Atwater Kent Model 42

Philco Model 20 cathedral.

RCA metal turntable.

Motorola wood table top.

Freed Eisemann NR-5

Silvertone battery set.

AN/PPS-5D GSR RADAR DISOVERED AT INFOAGE

By
Ray Chase &
Marv Beeferman

Last month, InfoAge member John Cervini discovered that, included in a prior shipment of the FOPEN radar from Aberdeen, was a PPS-5D Ground Surveillance Radar (GSR). The museum's collection now includes GSR model numbers PPS-4, PPS-5, PPS-6, PPS-15 and major parts of a TPS-33 along with a TPQ -48, a Lightweight Counter-Mortar Radar (LCMR). With this latest addition, an internal museum display of GSR and Counter Mortar radars is being considered.

The PPS-5D is the US Army's Man-Portable Battlefield Surveillance Radar system used to target enemy personnel and vehicles. It played an essential role in the protection of U.S. forces at the beginning of Operation Iraqi Freedom when it was the only system available that could penetrate through a sandstorm and successfully target approaching Iraqi T-72 tanks. (During sandstorms early on in the conflict, the Army was forced to remain stationary, making them vulnerable to enemy attack.) The radar was also used for force protection and perimeter surveillance once the coalition entered Baghdad.

On October 20th, the PPS-5D was set up in the rear of our Radio Technology Museum and "fired up" - it appeared to be completely operational. Unfortunately, the supplied batteries were flat so a line powered source was used. Al Klase was tasked to see if he could recharge the batteries and it was decided to eventually move the unit outside to get some longer range experience.

The PPS-5D is a Ku band (16 GHz) battlefield Ground Surveillance Radar (GSR). The model "D" is a greatly enhanced, lighter model of the original PPS-5 that was introduced at least 40 years ago. The upgrade replaced the existing analog electronics with a digital system while retaining the antenna, feed tripod, azimuth drive and telescope assemblies. Dates on the equipment indicate that it may have been manufactured around 2006. It was developed by the Syracuse Research Corp. (SRC) where it probably laid some of the groundwork for the TPQ-48 LCMR radar displayed at InfoAge.

The radar is a manpack unit weighing 94 pounds, carried by a three-man team and powered by two sets of 24-volt rechargeable batteries. Alternately, it can be powered from a 28-volt vehicle source. It can be set up and disassembled in ten minutes.

The radar operates on the pulse Doppler principle and has Moving Target Indication (MTI). Maximum range is 20,000 meters (about 12.5 miles). Target indication and tracking is visual in real time on a laptop computer control unit and audible by earphones. Antenna search is either by manual control or an automatic two-speed sector scan of up to 180 degrees. The control and display unit can be removed up to 150 feet from the Receiver/Transmitter (RT) unit. The visual display is digital and data transfer is by an RS-232 buss. The equipment is completely solid state with a built-in test program.

The unit that was discovered is 100% complete and housed in a transit case with all technical manuals...it appeared to be new and unused. The ruggedized laptop control unit operates under Windows XP.

After some initial tests inside the museum, on October 29th, it was decided to move the unit outdoors to get some longer range experience with it (all in the interest of research, of course). Al Klase found that the supplied batteries had suffered from excessive long-term storage and could not be recharged so a line-powered supply was substituted. (Battery cost is $300 each so connections at Tobyhanna or Aberdeen are being investigated to obtain a reasonable, working set.)

After addressing some minor initial bugs (like placing the power switch in the "on" position), it was found that the radar functioned well, detecting passing vehicles on the road opposite the museum and the movement of personnel 100 yards away. However, Ray noted that further study of the radar's manual is needed to get a better idea of how the software works and what is the best performance that can be expected.

Ray Chase begins assembly and makes some initial adjustments.

Ray at the controls.

The boys and their toy.

Al Klase helps with alignment.

BILL CORKUTT AND THE JOY OF HOME BREW

By
Marv Beeferman

(Is it "homebrew" or "home brew?" It probably doesn't matter, but I prefer homebrew as the noun and home brew as the verb...Ed)

Three years after the passing of Bill Corkutt (1930-2011), WZ2I, and the sale of his home, a unique collection of early radios was offered for purchase. If you were lucky enough to participate in the sale, you would have found that each radio included a card noting that Bill specialized "in 1920s battery-powered antique radios with emphasis on varied early circuit design." Although not everyone's cup of tea, most of the radios were homebrews where Bill had meticulously traced the circuitry, made repairs as necessary, and brought back to life many of the variations of early radio design. What was even more impressive was that Bill captured his research and discoveries in a series of articles in *Antique Radio Classified* (A.R.C.).

Born after the depression, Bill Corkutt grew up in the coal-mining region of eastern Pennsylvania. Following high school, he enlisted in the Army - "a handy means of escaping home for poor boys without the means or encouragement of college." After four years in Germany, he returned to work within the automobile factories of Detroit. He later attended a small mining college in Northern Michigan where he earned a B.S. in electrical engineering. This technical training led him to Alaska, England and Europe, working on Cold War projects. Upon returning to the United States, Corkutt earned his Master's degree in mathematics and education from Columbia University and proceeded to work as a field engineer in Iran and Saudia Arabia.

Corcutt's interests included world travel and mountain climbing and his writings included fiction (*The Mountains of Allah*, etc.) and papers in math and science. His has written articles for *Antique Radio Classified* with the following titles: "Early Home Brews with Grid-Leak Detectors," "Reinartz Home Brews," "The Joy of the Home Brew" "The Mighty Superhet," and "Air-Frame Variometer Home Brew." You can find many of the radios offered in Bill's collection described in these articles.

One can get a feel for Bill's admiration for homebrews in his A.R.C. article "The Joy of the Home Brew:"

"In 1920, there were few radio manufacturers. Radio amateurs and experimenters - boys or young men imbued with the challenge of a new technology - built their own. They "homebrewed," a term borrowed from prohibition. When broadcasting boomed in 1922, it was logical to build broadcast-band receivers for themselves or for friends. Some bootlegged (another prohibition term) manufactured radios for illicit sales that violated patent rights."

"Probably a million home brews were built every year up until 1925 when the manufacturers finally caught up. After all, you could save 75 or 80 percent by building your own. Radio magazines were abundant and contained plans for all the latest circuits: regeneratives, TRFs, neutrodynes, reflexes, even superhets. The plans (sometimes in the form of blueprints) were an extension of the mechanical world and provided exact dimensions and detailed instructions, though it's doubtful that many of the builders understood the electronics involved."

"What is it that makes a home brew so fascinating to a modern antique collector? To begin with, a home brew is often unique, one-of-a-kind, like a work of art conceived by an inspired creator. In the early days, radio was often referred to as an "art" rather than a science. In addition, an old home brew presents a technical challenge since the original may never have worked, may have been abandoned before completion, or suffered considerable modification over the years. Extra panel and baseboard holes, mixed wiring, and sloppy soldering attest to the difficulties involved."

"On the plus side, home brews are inexpensive to buy and easy to work on (big parts and open breadboard layouts). In addition, you don't have to worry about altering an expensive manufactured radio."

"Over the years I've acquired a few dozen home brews. Some I junked and stripped for parts; most I restored to operation. Some I consider as true works of art. The simple 1-tube home brew shows a high degree of conformity, but the large sets are often unique."

Just a small sampling of the numerous radios offered for sale. (Photos courtesy of John Dilks.)

Bill notes that by the end of the 1920s, the advent of low-cost AC-powered radios probably killed the lust for home-brewed broadcast receivers, although the hams continued to brew their own communications equipment.

The sale itself was by invitation, i.e. an appointment was necessary. Those collectors that arrived early had an overwhelming choice of some very collectable and interesting sets, some completely tubed with brass-based and tipped 01A's and UX/UV 199's. Also included were books, tubes and parts; prices were very reasonable.

Unfortunately, I was a latecomer. Based on my discussion with NJARC member Dave Sica and what was left over for me to purchase, there were many interesting sets that were probably overlooked. I could only guess that both lack of transport space and an inability to recognize some very unique radios prevented the sale of a fair number of sets. Even arriving after most of the sets were picked over, Dave was able to purchase some

with full complements of early tubes. I had filled the bed of my F150 XLT truck with a layer of some 15 radios and would have had to start a second layer to fit in much more. Based on the location, a second trip was out of the question.

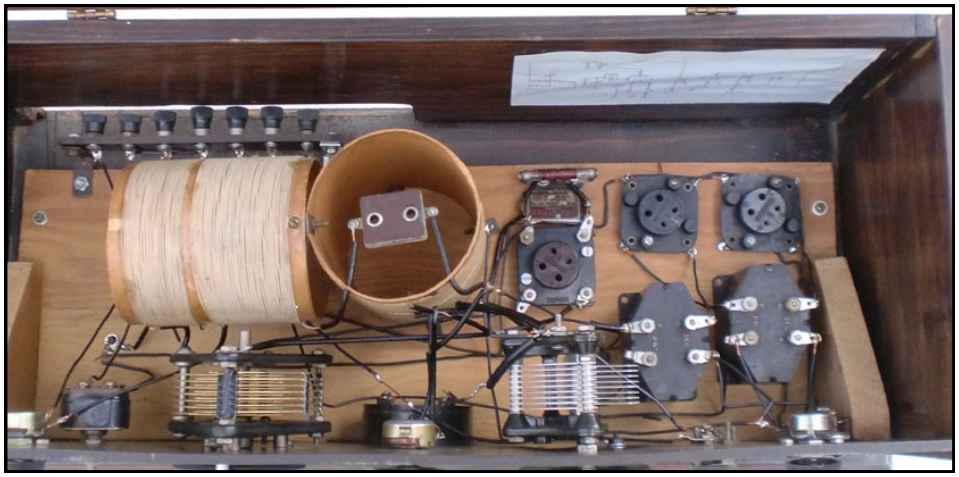
To get an idea of Bill Corkutt's approach to a radio that many collectors might consider a "junker" and doesn't deserve much attention, let's turn to an example that was purchased by Dave Sica. It's a three-tube BC/SW home brew that appeared in Bill's "*The Joy of the Home Brew"* article in *Antique Radio Classified (A.R.C.).*

"I bought the radio as a junker via an A.R.C. ad. It was a true junker, and my first reaction was to strip it for parts. The baseboard was rotting, the panel was severely warped, the audio transformers and much of the wiring was missing and their was no cabinet. However, the detector components were intact, including a 2-section coil with one coil mounted at a right angle to the other."

"I traced the circuit which seemed unique - a mixture of inductive (dual tickler coils) and capacitive (series capacitors) regeneration. Out of curiosity, I decided to test the detector; it worked so well (the single tube operated a loud speaker on all local stations) that I decided to restore the entire radio. This entailed building a new baseboard, straightening out the panel (using heat and weights), a good cleaning (the tan coil forms and white wire of the coils cleaned up nicely with soap and water), adding audio transformers, and a complete rewiring. The panel was of standard size, and I had a spare cabinet on hand."

"The tuning knobs and variable capacitors are by General Radio. Mechanical Vernier tuning is via spur gears. The 2-position tap-switch on the right of the panel selects broadcast or shortwave operation. When in the shortwave position, the switch shorts out half the tuning coil secondary to allow operation up to 2 megacycles. Regeneration is controlled by a series capacitor or by a variable resistor shunting one of the tickler coils. The meter is a milliammeter and uses a series resistor arranged to monitor the filament supply voltage."

"With the bandswitch in the broadcast position, all local broadcast stations were received with good volume and fidelity. With the switch in the shortwave position, Amateur CW (Morse code) stations on the 160-meter Amateur band were received. By careful tuning and regeneration adjustment, I found that strong single-sideband (SSB) voice signals could be demodulated."



A 3-tube BC/SW home brew restored by Bill Corkutt and purchased by Dave Sica. Note the hand-drawn schematic in the upper right.

Among my own purchases, two were of note. In one radio, I found a note dated 8/24/2000 from Rodney Schrock of Somerset, Pennsylvania complimenting Bill on his A.R.C. article "The Mighty Superhet." Also included was a copy of Schrock's article "E.M. Sargent's Infradyne" that was published in the AWA's "Old Timers Bulletin" in 1981. After examining the radio, I confirmed that the radio was indeed an Infradyne.

The Infradyne goes against the common logic of why the superheterodyne was invented in the first place. The circuit was a radical departure from the normal superheterodyne circuit of the time. Its Remler "Infradyne Amplifier" amplifies the **sum** frequency of the incoming signal and the local oscillator. The amplifier operates at about 3490 KHz and it makes a very quiet superhet compared to the lower IF frequency superhets. Furthermore, there is only one spot on the oscillator dial that will bring in the incoming signal. Since the Infradyne Amplifier operates on a fixed frequency of about 3490 KHz, the local oscillator frequency has to be decreased as the desired signal frequency is increased. This is just the opposite of what happens in a normal superhet!

There were numerous improvements to the Infradyne circuit. The radio I purchased uses Camfield "Duoformer" coils in the front end and were first recommended in the September, 1926 issue of *Citizens Radio Call Book*. The photo I am using, selected for clarity, is not the same radio I now own but is typical and very closely duplicates its construction.

A second superheterodyne purchase was a Phenix Model L-2 Ultradyne. The circuit was designed by French inventor R.E. LaCault and first offered in November, 1924. Instead of injecting the oscillator signal into the grid circuit of the first detector (as was standard at the time), the Ultradyne principle used the oscillator to modulate the plate of the first detector. In addition, regeneration was also provided in the first detector with a corresponding increase in amplification of the incoming signal. Another feature of this radio is that it uses "amperite" current regulating resistors in the filament circuits of all the tubes, eliminating the need for rheostats.

The Ultradyne was noted to be a very good performer, so why didn't it become more popular? Corkutt speculates that the

answer probably lies in the fear of patent litigation since there is no doubt that an IF frequency is generated by the modulator and amplified as in the Armstrong superhet. Of course, with the advent in the late 1920s of multigrid tubes where heterodying occurred inside the tube itself, the question became moot.

Bill Corkutt was surely a collector who loved the hobby. I look forward to examining the circuitry of all the other radios I purchased from him and "firing them up" to see how they perform. I hope others who were given the opportunity to preserve Bill's collection feel the same and keep his legacy intact.

The Infradyne - note the Remler amplifier and "Duoformer" coils.

The Phenix Model L-2 Ultradyne

BEGINNER'S CORNER

AVOIDING THE "SMOKE TEST"

The following information is based on information from the August 1997 issue of "Popular Electronics" in Charles Rake's "Circuit Circus" section...Ed

Some novice club members may have noticed at our repair clinics that more experienced troubleshooters first power up an old radio by connecting it to a standard incandescent light bulb. The resistance in the bulb limits the power that can reach the radio. This is simply a non-destructive way to avoid a "smoke test," that is, a fire or the catastrophic failure of vital and expensive parts such as transformers resulting from excessive current drawn by shorted or failed components.

The least expensive "dim-bulb" tester is shown in Figure 1. Three 110-volt AC incandescent lamps with different wattages are used to pre-set current limiting. Switch S1 limits the maximum short circuit current to about 360 mA, S2 to about 900 mA and S3 to about 3.6 amperes.

The only drawback of this circuit is the high initial turn-on current of a lamp. The internal resistance of an incandescent lamp is much lower when its filament is cold and increases greatly when hot. This is where switch S4 comes into play. Al ways close S4 before closing any of the power-on switches of the radio to be tested so that the lamp's high inrush current will flow through S4. After the lamp lights, open switch S4 and let power reach the radio.

To use the tester, start with the 40-watt bulb. If it lights brightly, **stop!** There is probably a short circuit in the power supply. If the 40-watt bulb doesn't light, move on to the larger wattages. In general, if the larger wattages don't glow, it is safe to power up the radio.

Depending on your radio's (or TV's) power rating, you may want to vary the wattage of the lamps you are using. Most typical five or six-tube sets use around 35 watts of power so a 100 watt bulb is appropriate. Note that if the bulb's wattage is too low, it will light brightly even if your radio has no problems, and it won't play at all. A variation of the circuit shown would be to use a three-way socket. Then you could install something like a 30-70-100 watt bulb and simply turn the light's switch to increase the wattage.

Figure 2 uses a 3 to 5-amp Variac connected through a current limiting lamp (L1) or through a switch (S2) to an outlet test socket. Select a fuse size that matches the transformer's maximum output current and a lamp of about 100 watts (for low wattage radios).

To use the test unit, set T1 for a minimum output voltage and set switch S2 to position "B." Plug in the radio and close switch S1. Slowly increase the voltage while watching L1. If there is a short in the power supply, L1 will glow brightly. If L1 barely glows, everything is probably okay and S2 can be switched to "A" and T1 adjusted to 110 volts.

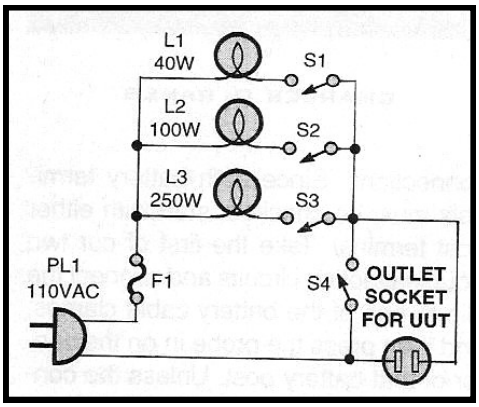


FIGURE 1

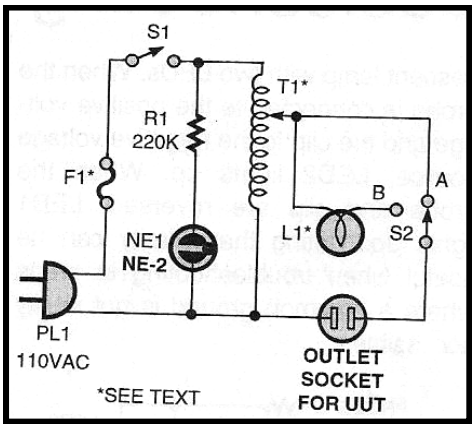


FIGURE 2

NJARC Holiday Party

Date: **Saturday, December 13th, 2014**
Time: **5:00 PM – Cocktail Hour**
6:15 PM – Dinner
Place: **Freehold Elks Lodge**
73 E Main St
Freehold Township, NJ 07728

Members: **$25 each**
Non-Member Adults and Children over 12: **$25 each**
Children under 12: **$5 each**

Cocktail Hour, Dinner Buffet, Mystery Grab Bag, Surprises
A wonderful evening of fun, good food and fellowship with a radio theme.

*******RESERVATIONS REQUIRED *******
If you plan to attend, please fill out the attached coupon, detach it and mail it with a check to:
Marvin Beeferman
2265 Emerald Park Drive
Forked River, NJ 08731

by December 5th. **Everyone who plans to attend must send back a response form with the name(s) of attendees.** Reservations must be made via the form below; **please refrain from telephone or email reservations unless absolutely necessary!** Payment must accompany the form.

----------Cut here ----------

Name(s): _____ _____
_____ _____

Telephone or email: _____

Number of **Members**: _____ X $25 = $_____
Number of **Children** under 12: _____ X $5 = $_____
Number of **Non-Members:** _____ X $25 = $_____

TOTAL: $_____

Make checks out to **NJARC**, enclose with this form and **mail before 12/05/14.**

New Jersey Antique Radio Club's

Fall Swap Meet

Parsippany PAL Building
Smith Field
Route 46 @ 33 Baldwin Road
Parsippany, NJ 07054

Saturday November 22nd, 2014

Refreshments Available

(70) 8 Foot Tables
$25.00 for members
$30.00 for non-members
Reserve Additional Tables $20.00
At the Door $25.00

Open to the Public
8am to 12 noon
Vendor setup at 7:15 AM
$5.00 Entrance Fee
Club Donation

For Directions
Visit our website: www.njarc.org
or Mapquest
33 Baldwin Road
Parsippany NJ 07054

Vendors, Make your Reservations Now !
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