THE INFOAGE
MARCONIGRAPH

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Power At InfoAge

Henry Kearney
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The InfoAge Science History Learning Center and Museum campus in Wall Township, which has been closed since late December because of electrical problems caused by Hurricane Sandy, reopened for public tours on Saturday, March 16, at 1 p.m.

InfoAge Center Director Fred Carl said the reopening of the museum campus is the result of the Wall Township Committee's recent decision to loan the Center a heavy-duty generator to provide electrical power for the three main buildings in which the interactive museums open to the public are located.

This 400 Kilowatt Generator, owned by Wall Township, is on loan to InfoAge. We suffered a loss of power due to Sandy last October. The generator eases our difficulties during this crisis and allows us to return to a normal operating schedule.

"We're grateful to George Newberry, the Committee's liaison to InfoAge, and to all of the members of the Township Committee as well as the township employees who have pitched in to make this [reopening] happen," Carl said. "The purpose of our museums is to enable the public including students of all ages to learn more about science and history in a historic atmosphere," "We're delighted that our museums have become a major historic and cultural resource for our region and state," he added.

The InfoAge Camp Evans site, where Guglielmo Marconi conducted some of the earliest wireless communications in 1913 and 1914 and where the U.S. Army conducted significant communications-electronics research and development from 1941 to 1997, is listed in both the U.S. and New Jersey Registers of Historic Places.

Secretary of the Interior Ken Salazar designated Camp Evans last October 17 as one of the newest additions to the list of National Historic Landmarks. That designation places Camp Evans on a distinguished roll call of such sites as Pearl Harbor and the Apollo Mission Control Center.

In announcing the reopening of the museums, Carl noted that dozens of volunteers continued to work tirelessly to maintain the InfoAge campus during the past few months. "Our volunteers put forth an enormous effort to clean up and repair damages to our buildings caused by the hurricane," he said. "A few examples of that effort are our Institute for Exploratory Research which continued to teach kids to use soldering irons to build electronic devices and our New Jersey Antique Radio Club volunteers who prepared for our radio auction later this spring which will help raise funds for the Radio Technology Museum and for InfoAge."

More Radar Artifacts for InfoAge

Ray Chase
New Jersey Antique Radio Club • 908-757-9741 • raydio862@verizon.net

TPS-1D Modules now stored in 9010C

For over 50 years an outfit in CT purchased large quantities of military surplus radar equipment and sold it around the world. Their six story warehouse comprised over 300,000 square feet of equipment. Unfortunately their pricing policies were usually out of the range that individual collectors and museums could afford. Now their business is on a steep decline so they are liquidating the inventory mostly for scrap. Through some friends and contacts we have been able to tap into their liquidation process and make some acquisitions of artifacts that will greatly improve our radar displays.

Two items acquired are a PPS-15 Ground Surveillance Radar (GSR) that was developed here at Camp Evans along with another GSR variation the AN/TPS-33. We also picked up a spare PPS-4 that will be added to our collection of GSR's on display that now include the PPS-4, PPS-6, PPS-15 and TPS-33. But the most significant acquisition is a nearly complete AN/TPS-1D Army field air search radar. I say nearly complete because the antenna for it was already gone but other of my contacts possibly have located the missing antenna so as they say, "stay tuned" for further developments. The TPS-1 radar has a storied past that is worth relating.

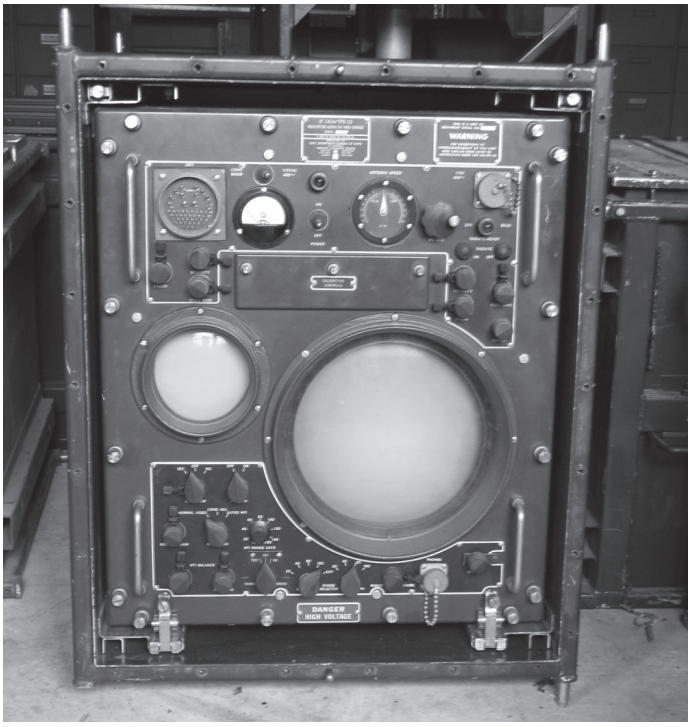
Started in mid WWII, the TPS-1 was listed as Project No. 426B on the Camp Evans SECRET Monthly Projects Report of August 1943. Based on experience gained with existing WWII rapid deployment portable field aircraft warning radars Bell Labs designed the TPS-1A and Western Electric began production. Early results indicated changes were needed so a modified TPS-1B was rapidly substituted. The 1B that was released about 1948 was simple, effective, reliable and modular for rapid transport and erection. It saw service early in Korea and was even considered for possible use in the initial Dew Line radar defense network. But technology as always was rapidly advancing and Raytheon was contracted to come up with an improved version that became the TPS-1D ("tippsy one dog" as it was often called). This set was available in the early 1950's.

One of our recent trailer acquisitions that could Be a possible future home for the TPS-1D

Raytheon did a good job and added such features as:

- A slightly larger and better focused antenna
- An integrated IFF (identification, friend or foe) antenna
- A dual thyratron modulator rather than a mechanical rotary spark gap
- Variable speed antenna rotation
- Major changes to the microwave portion of the receiver for improved sensitivity and reduced maintenance.
- Automatic frequency control (AFC) was added to the receiver
- Most significantly, MTI or moving target indication was incorporated; a new technology that blanked out fixed targets or clutter and displayed only moving targets such as aircraft. This greatly increased the ability of radar to detect low flying or close in planes that previously would be obscured by large radar returns from terrain.

The TPS-1D consists of six modules plus antenna. Each module is approximately 2 feet in width and depth with a height of about 30 inches with weights ranged from 208 to 350 pounds. Each has four handles and the tech manual indicates that four GI's can carry each one. The antenna itself breaks down into 5 sections for transport. Overall weight is about 2500 lbs.

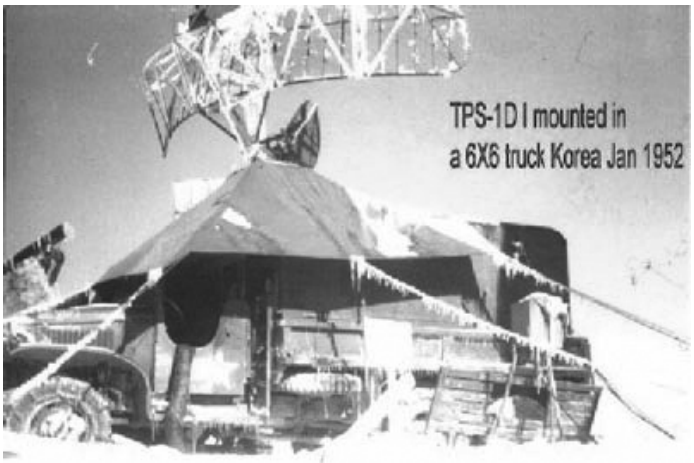


The Control & Indicator Module of the TPS-1D Showing the Two Radar Scopes

The six modules are:

- Radar Modulator
- Control Unit & Azimuth Range Indicator (A Scope & PPI Scope)
- Signal Comparator (provides the MTI function)
- Power Supply & Central Power Distribution & Cable Connection Unit
- Receiver-Transmitter
- Antenna Base

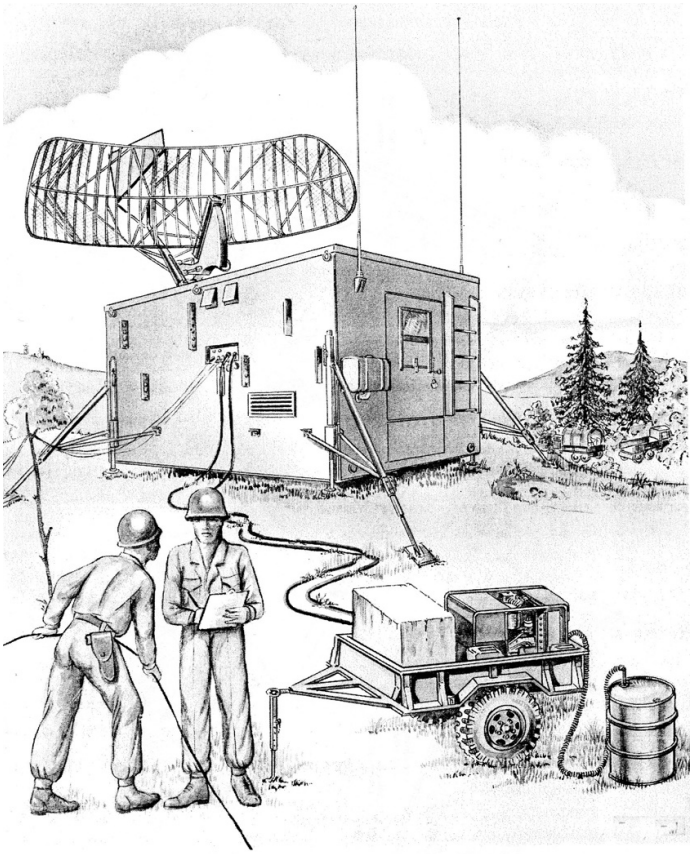
Sixteen multiconductor cables plus four rigid and one flexible high power coaxial cable complete the interconnection of the six units. Two "deuce and a half" trucks can transport it with a towed trailer mounting a 400 cycle engine generator for prime power. The TPS-1D radiates a 500 KW radar pulse in the L frequency band and can track and detect aircraft at a range of 160 nautical miles (181 statute miles). The original concept was for the six modules to be stacked on top of each other giving an antenna height about 22 feet above ground. It was used in this configuration many times but as such was not particularly easy to erect and was difficult to service. Being modular, alternate configurations were often adopted that did not detract from its effectiveness. Tents were initially provided for protection of the equipment and operators but again, configurations using standard truck mounted shelters were found to be more effective for rapid deployment and erection.



A TPS-1D in Korea 1952

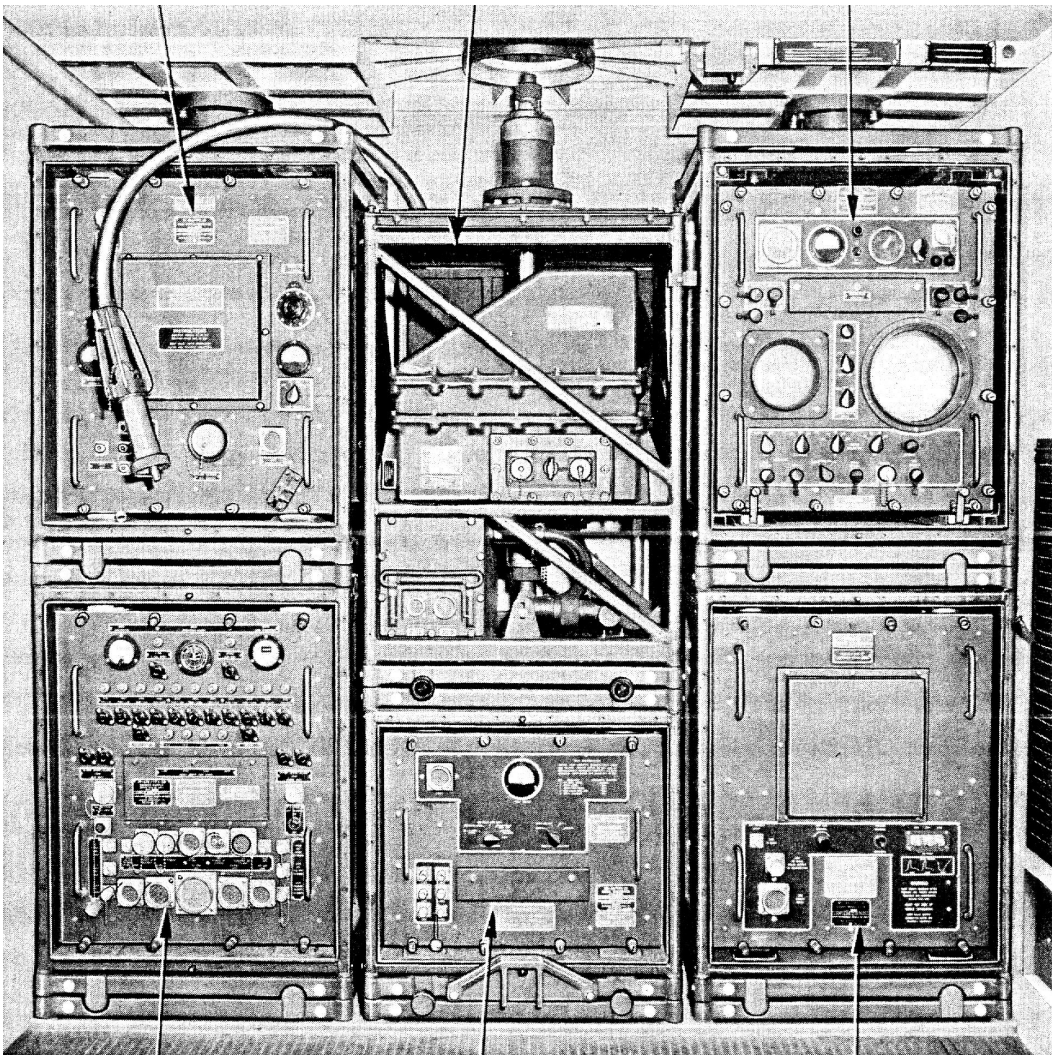
The Control Unit with Indicators can be remotely located from the rest of the set with a 50 foot extension cable (that we have). The exceptional performance of the TPS-1D along with its modular adaptability to suit available situations soon made it the radar of choice for field deployments. This radar saw much service during the Korean conflict as well as most other U.S. military land operations probably through the 1980's and possibly later. Many NATO foreign militaries used this radar and perhaps some are still in service in third world countries. It was used by the U.S. Air Force to complement the radar coverage of the continental United States, by U.S. Army Air Defense Command at the battalion level and the U.S. Marine Corps as forward air defense and fighter controlled air intercept.

The basic TPS-1D was an important element of the North American Dew Line when it was set up in 1954. Several WWII era radars were considered for incorporation in the initial Dew Line but the performance and reliability of the TPS-1D was proven and so was fitted with a larger antenna reflector, a few other modifications and was re-identified as the FPS-36. For the Nike Hercules system the basic TPS-1D was again chosen, this time outfitted with another special antenna and designated as the FPS-56. It was then modified as the FPS-61 with electronic counter-counter measure (ECCM) features added. The U.S. Army used the TPS-1D mounted in a shelter as field deployed antiaircraft defense along with IFF and communications equipment. In this configuration it was designated as Radar Surveillance Central AN/GSS-1. My research found at least eight variations of the basic TPS-1D with upgraded nomenclature designations; mostly with larger antenna configurations and/or (ECCM) packages. I was not able to determine how many of these equipments have been produced, a problem complicated by the many designated variations of the same basic set. It may have been produced in NATO countries as well. So the basic TPS-1D radar possibly has the longest life span and lineage of any land based air defense radar since the word radar was invented.



The TPS-1D Installed in a GSS-1 Shelter For Field Deployment

So, what are we going to do with our TPS-1D? Well there are several options. Assuming that we can obtain the missing antenna, and I am quite optimistic on this, we could put it together in one of the trailer vans that we recently acquired or obtain a shelter like used for the GSS-1



Six Radar Modules Shown Installed Inside the GSS-1 Shelter

configuration or even put it together in one of our buildings. Either way, it is my intent, with perseverance and a little luck to cable-up this unit, power it up and put it "on the air" as a working demonstration of radar. There are some hurdles to accomplishing this but it is not pie in the sky. At least one submarine museum ship has restored their search radar and regularly operates it for visitors. Fortunately several years ago I obtained a complete technical manual for this set so we have all or most of the documentation that we should need. Actually, we have nearly two TPS-1D radars as we took the liberty of grabbing several extra modules while we could so we have some spares. Although some of these modules came from different nomenclatured versions of the TPS-1D, the basic design was extremely well thought out so minor variations should not present a problem for us. The power requirement for the set is 115 volts, single phase, 400 cycles 5000 watts. This will require a 60 cycle motor generator or an engine generator set. We may have access to an engine generator on site or the makings of an inverter so a power source should not be a significant hurdle. The extra modules we have and some extra interconnecting cables that came along might be trading collateral for other needs in the future.

For the future there is the possibility of obtaining more related artifacts from this organization in CT and I hope to be able to give more details at a later date. As it stand now, InfoAge has the makings of becoming a premier museum for interpreting and presenting the history and development of military radar in the 20th century with an outstanding displays of artifacts; one of the finest in this country. Camp Evans rich history of the development of radar inspires us to do no less.

I would like to acknowledge the able assistance of InfoAge volunteers who helped deliver these items to Camp Evans; John Tyminski, Joe Giliberti, Nels Warren and primarily Steve Goulart who drove the truck.

InfoAge at the OTES PTA Science Fair

Ray Chase
New Jersey Antique Radio Club • 908-757-9741 • raydio862@verizon.net

Harry Klancer displays the Hand Battery to a visitor at the science fair.

InfoAge was invited to participate in the Ocean Township Elementary School Parent Teachers Association Science Fair on January 29th this year. An elementary school, K to 4th grade is a little young for our preferred clientele but New Jersey Antique Radio Club offered to handle it with exhibits from our "Hands-On" room in the Radio Technology Museum. The Science Fair was just a Tuesday evening event from 6:30 to 7:30 PM and would be a display in the school gym along with about 40 or more science projects created by the school children themselves. There were a few other local participants. Harry Klancer, Al Klase and Ray Chase planned on bringing some of our museum "hands-on" items. The PTA assigned us two eight foot tables but we had less than an hour to set up. From the museum we brought the Theremin, static electricity items, magnet displays, simple electric demonstrators, the "hand battery" and a camera and TV remote to demonstrate infra red optics. Several posters were made up to explain some of the experiments along with an InfoAge poster. The set up was hectic and parents and children were coming in while we were finishing. The next hour and a half was pure mayhem as we were flocked with interested children and parents. Fortunately there were three of us as we were all constantly busy demonstrating and helping the kids play with and understand the experiments. We did hand out many InfoAge and radio club brochures along with business card size RTM ad cards that Al made up. Unfortunately we did not have time to really look at the kid's science displays set up in the gym. Many of them looked very interesting and well made but they had to be taken down at the end of the short evening. An enjoyable evening was had by all and a continuing endeavors to spread the word about Infoage and the Radio Technology Museum. The school is only 4 or 5 miles from InfoAge but we still meet many people who do not know of our existence and what we have to show. Unfortunately we had to indicate that we are temporarily closed but many parents said they would watch our web site for announcement as to when we would be open again.

A Museum In Recovery

Bob Perricelli
Association Old Crows • 732-295-0663 • perricelli@comcast.net

Artifact "triage" hall, note Civil War submarine *Whale* in rear of photo.

On the 29th of October 2012 the "Perfect Storm" Sandy hit the New Jersey coast. Directly in its path at the National Guard Training Center in Sea Girt sat the National Guard Militia Museum (NGMM) of NJ. A surge of water five foot in height swept through the entire museum resulting in significant damage to the interior of the building as well as its contents. Almost immediately recovery operations began by the staff, volunteers and Guard soldiers. Over the next five months the museum's collection was recovered, dried out, stabilized, and damaged items repaired. This included weapons, uniforms, military equipment, flags, documents, artwork, photos, and the largest collection in the country of New Jersey Civil War historical records. As the result of this effort the curator Captain Vincent Solomeno was very happy to report that the museum's collection "incurred no major losses". With the help of the NJ Guard soldiers and volunteers the building was cleaned, the sheetrock replaced and repairs made.

Support was also provided by the US Army Center of Military History, the Curator of the New Orleans Jackson Barracks Military Museum, Sarah Stevens NY State Office of Parks and the invaluable assistance of LTC Mark Whitlock from the Illinois National Guard. After the storm the Military Technology Museum of NJ located at InfoAge recovered the many vehicles that they had on display at the NGMM and brought them down to InfoAge for repair, cleaning and storage. Upon the removal of the vehicles from the large hall, LTC Whitlock transformed it into an artifact "triage" center. We were then able to process and lay all the artifacts out on tables and shelves for drying, identification, cleaning, repair, boxing and inventory.

After the hurricane Katrina in 2005 Whitlock led a team of artifact and forensics experts to the Jackson Barracks Military Museum in New Orleans where they successfully recovered and stabilized their artifacts. Whitlock's system of artifact drying, recovery, stabilization and restoration allowed NJNGMM staff, volunteers and Guard soldiers to significantly reduce the time needed to preserve the museums extensive collection. Due to their efforts Captain Solomeno was able to reopen a portion of the museum on April 6th. At this time the main gallery and the adjacent large classroom was opened to the public.

Flags and uniforms drying.

While this effort continued to move forward Carol Fowler, Director of the museum's Veteran Oral History Project (she also conducts the interviews) performed miracles saving discs and files from previous interviews. To date 465 oral histories have been collected including 43 in 2012.

Before the storm the museum was made up of a number of rooms where guests could follow in chronological order the history of New Jersey's National Guard. In addition, to the vehicles and weapons that were shown in the large hall is the Intelligent Whale a Civil War submarine built in 1864 for the Union Navy. The submarine has a very interesting history and is displayed on top of a large steel frame, allowing visitors to enter the submarine via a small set of stairs below the vessel.

A new museum is being planned and will be built by the camp's entrance where it will be safe from any further storm activity. It will also have its own separate entrance, not co-located with the one for the training center.

To help aid in the museum's recovery the NGMM of NJ Foundation is accepting monetary donations. Checks should be made payable to and sent to the National Guard Militia Museum of NJ, Inc., 151 Eggert Crossing Road, Lawrenceville NJ, 08648. Donations are tax deductable.

Cleaned main gallery being readied for grand opening on the 6th of April.


earth day
gathering 2013
a scientific
response to
hurricane
sandy
rutgers professor of meteorology
dr alan robock
3-5pm • infoage
science and history museum
sunday, april 21
The Climate Reality Project
+350 .org
SIERRA CLUB
FOUNDED 1892
SURFRIDER FOUNDATION

ANNUAL INFOAGE RADIO ELECTRONICS AUCTION

Saturday April 27, 2013

Huge Radio/Electronics Auction Conducted By The New Jersey Antique Radio Club and The Radio Technology Museum at the

InfoAge Science History Learning Center and Museum
2201 Marconi Road, Wall, New Jersey 07719

All day sale of vintage radios, electronic test equipment, ham gear, audio equipment, marine radios, military electronics and 1000's of vacuum tubes along with related parts & documentation. Large variety of tubes in box lots, groups or singles; many interesting types. Better tubes are pre tested. 300 + lots, including many large box lots. Something here for every radio/ electronics collector. Stock up for the Kutztown Radio Meet.

Auction Begins at 10:00 AM on Saturday
Viewing is from 8:00 AM to 10:00 AM Day of Sale

Sale of artifacts and donations excess to the centers needs. Proceeds to benefit InfoAge, Radio Technology Museum and National Broadcasters Hall of Fame. Auction is indoors with ample seating. Noted radio auctioneer Richard Estes is wielding the auction gavel. Complete auction catalog available two weeks prior to sale. Terms are cash or good check, sorry, we cannot take credit cards. 5% buyers premium is charged.

www.infoage.org for directions
Auction Information: auction@ar88.net or 908-757-9741

The New Jersey Historical Divers Association, Inc. presents our tenth

New Jersey Shipwreck Symposium

Shipwrecks and Sunken Treasure

Saturday, May 4, 2013 – 2 PM to 6 PM

at the InfoAge Science History Learning Center and Museum
2201 Marconi Road , Wall, New Jersey

Admission is $20 per person ($15 for NJHDA Subscriber Members).

Reservations are required – seating is limited. Refreshments provided.
(advanced payment guarantees seating).

The symposium will be hosted by
Dan Lieb – NJHDA President

Presentations

New Jersey Marine Life
A presentation by Herb Segars

The Civil War Blockade Runner Ella Warley
A presentation by Gary Gentile

Admiralty Law for Divers: Can I Arrest It or Can I Be Arrested?
Maritime Attorney David G. Concannon

Treasure Survey Vs. Treasure Prospecting
Ken Hayes, President – Aqua Survey, Inc.

Morning Workshops

The Mechanics of Shipwreck Photography – $25pp
Gary Gentile

Mapping Shipwrecks – $25pp
Dan Lieb

For reservations, directions and more information, please call 732-776-6261 or e-mail info@njhda.org
Send checks payable to NJHDA, 107 Wilson Road, Neptune, NJ, 07753

Alterations and substitutions to the schedule may occur without notice.
NJHDA, Inc. is a nonprofit charitable historical research organization. All donations are tax deductible.

O.M.A.R.C. Tailgate/Indoor

Hamfest

http://www.n2mo.org

SATURDAY

May 18, 2013

(Rain or Shine)

Location: InfoAge Project Diana Site

2300 Marconi Road, Wall Township

GPS Coordinates: 40-11.70N 074-03.39W

Contact: Jeff N2LXM, Phone: 732-996-0637, n2lxm@juno.com

Three Grand DOOR PRIZES:

Wouxun 2m-70cm Limited Edition Kits

Gates open to Sellers at 06:00 Hours

Cost: $10.00per Space (outside) includes admission

$15.00 per space (inside) Includes admission

Gates Open to Buyers at 07:30 Hours

Cost: $5.00 Per Person

Talk-In 146.775, -600 (PL 103.5) N2CTD/R

VE Session Starting at 10:30am

Contact Rich Kennard N2RPQ@arrl.net to pre-register

Kids under 10 and Non-Ham XYL's Free

Refreshments will be available, Ample Parking, Bathroom Facilities

IXR: THE INSTITUTE FOR EXPLORATORY RESEARCH

Intro to Robotics I – Bootcamp

A full day intensive workshop

Sunday, May 19th, 10am – 6pm

Featuring the Velleman "ESCAPE" Robot kit

So you'd like to learn about robotics? Get started with IXR's introductory robotics workshop! With the guidance of our class instructors, participants will build their very own "Escape" robot kit. This robot uses infrared sensors to "see" obstacles, which it will navigate around and avoid. Build an obstacle course out of shoeboxes and furniture and the Escape robot will use sensors to figure its way through.

You will learn:

- Improved soldering skills (intermediate-level)
- Recognize and identify a wide variety of electronic components, and their use
- Desoldering and repair, using a vacuum desoldering station
- Gearboxes and basic mechanical assembly skills

Class Cost: $100 – includes materials cost (one robot kit with both wheels and legs). Complimentary pizza lunch will be provided.

Kids bring a parent free!

Parent-child teams who are building a kit together pay only 1 registration.

Age Recommendation: 13 to adult

No previous robotics experience required.

Prerequisites: IXR's "Learn to Solder" workshop, or basic electronics soldering experience. Come in to IXR on any Sunday, 1-5pm, for Soldering Sundays! Learn basic soldering with us. (Kits start at $7)

Go to www.meetup.com/IXR-NJ to enroll!

InfoAge Car Show

Saturday June 22nd,2013

Raindate: Saturday June 29th

2201 Marconi Road, Wall, NJ 17719

(CAMP EVANS AREA)

10:00AM to 4:00PM

DOOR PRIZES & FOOD

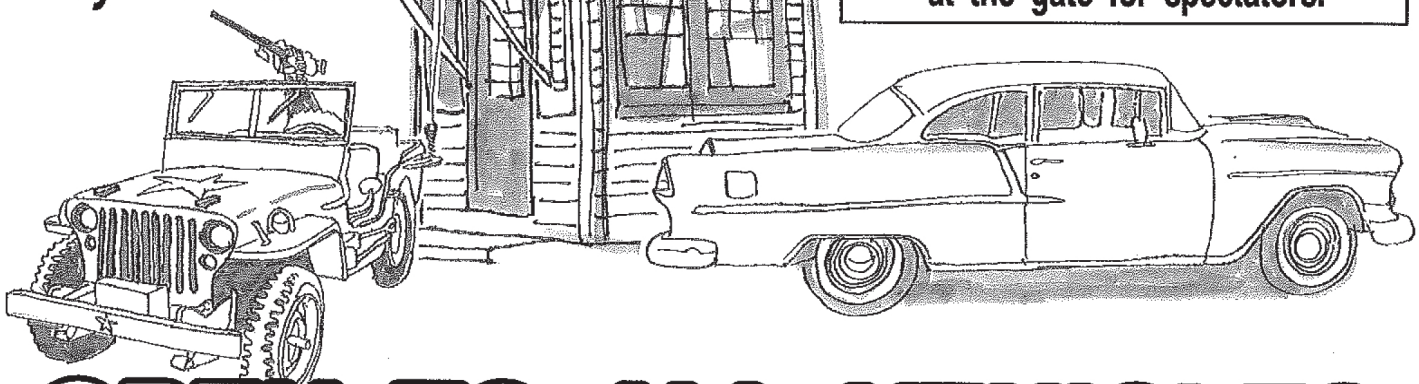
Cruisin' sounds from the 50&60's by DJ Fill

Dash Plaques to first 100 vehicles!

REGISTRATION BEGINS AT 9:00AM

$15.00 per vehicle

We are asking for a $5.00 Donation at the gate for spectators.



OPEN TO ALL VEHICLES

(Trophies for 1988 & older vehicles ONLY!)

Museum & Exhibits are OPEN!

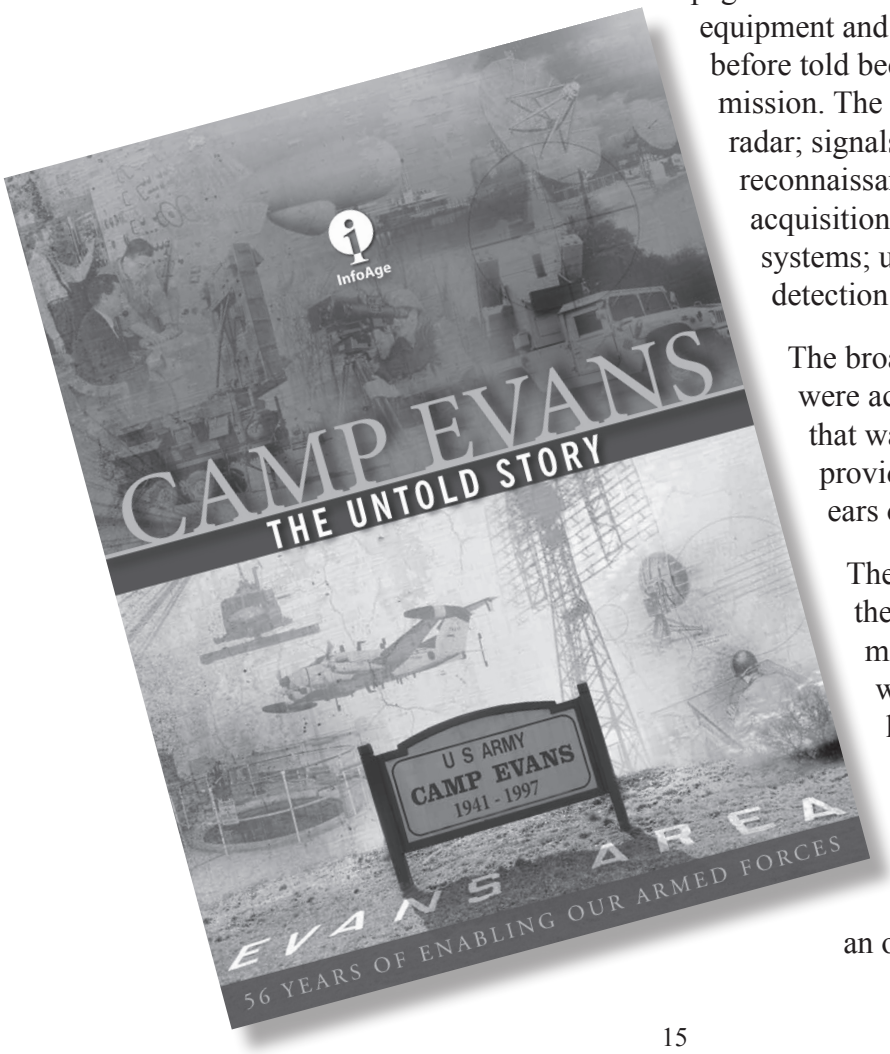
Presented By:
Military Technology Museum of NJ

www.infoage.org

Camp Evans: The Untold Story

InfoAge is proud to sponsor the book, "Camp Evans: The Untold Story," in recognition of the significant contributions made by men and women, both military, civilian, and contractors who served at Camp Evans, Wall Township, New Jersey and who left a legacy of innovation that had enabled and continues to enable our Armed Forces.

The InfoAge Science History Learning Center and Museum at Camp Evans is a focal point for the preservation and interpretation of New Jersey's rich communications, computer, and electronics history, providing a specialized learning center for all visitors. The area is especially significant in history, serving as the site of the Marconi Wireless Telegraph Company of America. During World War I the Navy operated the station under the authority of the Radio Act of 1912. The message announcing that World War I had ended and the Armistice had been signed was received at the Marconi Station and retransmitted to Washington.



Camp Evans' U.S. Army Signal Corps provided America's first World War II radar systems. In 1946, Camp Evans under Project Diana opened the "space age" by reflecting radar signals off the moon. During the 1950s, innovative and far reaching technologies were developed at Camp Evans.

It is appropriate that InfoAge, as a science and technology learning center, has its start at such an historic location. The intent of InfoAge is to provide visitors a dynamic and evolving interactive atmosphere, rich in specialized history, technologies, and basic science, and similarly, to invoke an appreciation for the vital contributions of the many engineers and scientists who developed the technology.

We ask that you consider purchasing this important book which captures the tremendous heritage of technological innovation at this historic site.

"Camp Evans: The Untold Story" has over 200 pages and 100s of photographs showing the actual equipment and technology developed in a story never before told because of the classified nature of the mission. The breadth of the work described covers radar; signals intelligence; electronic warfare; reconnaissance and surveillance sensors; target acquisition systems; Identification Friend or Foe systems; unattended sensor systems; radiation detection systems; and meteorology systems.

The broad spectrum of accomplishments were achieved with an assembled workforce that was considered the best in the country, providing products that were the eyes and ears on the battlefield.

The legacy of Camp Evans will live on in the hearts and minds of those who helped make that history. Their contributions will hopefully be better appreciated by having been recounted in this book.

To order your copy of "Camp Evans: The Untold Story," contact InfoAge at 732-280-3000, or contact us via e-mail at rfginc@optonline.net and an order form will be forwarded.

InfoAge
Science/History Center
at Camp Evans, Wall, NJ

InfoAge Science History Learning Center and Museum
2201 Marconi Road • Wall • NJ • 07719

732-280-3000 • www.infoage.org

The Newsletter of InfoAge

Inside this issue...

2013 Calendar of Events

Earth Day Gathering
A Scientific Response to Hurricane Sandy
Saturday, April 21, 3-5pm

Annual InfoAge Radio Electronics Auction
Saturday, April 27
Auction begins at 10am
(call 908-757-9741 for more info)

New Jersey Shipwreck Symposium
Saturday, May 4, 2-6pm
Admission will be charged. RSVP required.
(call 732-776-6261 for more info and RSVP)

MARCH Vintage Computer Repair Workshop and Consignment Sale
Saturday & Sunday, May 18-19, 10am-5pm
Admission will be charged. RSVP required.
(call 656-546-9999 for more info)

OMARC Indoor/Tailgate Hamfest
Saturday, May 18 - rain or shine
7am-1pm
Admission will be charged.
2300 Marconi Rd, Wall Township
(call 732-996-0637 for more information)

Intro to Robotics I - Bootcamp
A full day intensive workshop
Sunday, May 19, 10am-6pm
Class costs apply.

InfoAge Car Show
Saturday, June 22 (June 29th raindate)
10am-4pm
A $5 donation is requested from spectators.

*For more information about these events, such as admission costs and times, **call 732-280-3000** or visit us online at **www.infoage.org**.*