

THE INFOAGE MARCONIGRAPH

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Airborne Signals Intelligence (SIGINT) Returns to Camp Evans

John Cervini

AOC Garden State Chapter • 732-528-7854 • johncervini@optonline.net

Approximately twenty years ago, an organization then known as the Electronic Warfare Laboratory, successfully demonstrated an experimental, radar intercept, Electronic Intelligence (ELINT) payload on a UAV surrogate platform (Figure 1) at the Army's annual Golden Saber tactical exercise in Fort Hood, Texas. The demonstration was a culmination of a three year research and development program to design, fabricate, and demonstrate a lightweight intercept system that could accurately locate high priority threat emitters in real time; and disseminate the information directly into a Division or Corps Tactical Operations Center.



Figure 1: CM-30 carrying Medfli/MASS equipment

The equipment was known as the Miniaturized Electronic Support Measures (ESM), Direction Finding, Location and Intercept system. It consisted of a unique antenna array and microwave multi-channel receiver (2-18GHz) built by ESL Inc., a millimeter wave front end (18-40 Ghz) built by Georgia Tech, and the Modular

Adaptive Signal Sorter (MASS) built by the RCA Corporation. The MEDFLI acronym was a reference to the Mediterranean fruit fly infestation that was plaguing California farmers at that time. Preliminary testing was conducted at Moffett field in Silicon Valley California, and the support team for those flights can be seen in Figure 2 below. A number of the Army engineers in the photo are still working at Fort Monmouth today, at EWL'S successor organization, Intelligence and Information Warfare Directorate (I2WD).



Figure 2: Original MEDFLI/MASS support Team

Flash forward twenty years to Camden New Jersey, home of L-3 Com East. Fred Barnum, AOC Garden State Chapter Member (GSC), had been storing the remnants of the Medfli/MASS, which was fortunately salvaged by Jeff Kesling (Figure 3) from the I2WD excess equipment pool many years ago. Fred contacted the author, who had been searching for EW equipment to display at the initial Electronic Warfare exhibit

at the InfoAge learning center at Camp Evans in Wall Township New Jersey.



Figure 3: (L to R) Jeff Mumma, John Cervini, Jeff Kesling and Fred Barnum with MEDFLI/MASS equipment.

The AOC GSC has been supporting InfoAge for a number of years by donations and with volunteer labor during the vast cleanup after transfer from the Army. The EW exhibit will initially be housed in Building 9032 C in a wing behind the Marconi Hotel. The EW room needs to be refurbished, and the Garden State Chapter members will again roll up their sleeves and contribute to the effort. The MEDFLI/MASS will be part of an interactive display to educate the public and excite young people about the legacy of Electronic Warfare at Camp Evans and Fort Monmouth. The EW Display will be open to the public in late Fall of this year.

Vintage Computers 'Byte' Into Camp Evans

Evan Koblentz

MARCH (Mid-Atlantic Retro Computing Hobbyists)

646-546-9999

evank@midatlanticro.com

MARCH will host the Vintage Computer Festival East 6.0 on Sept. 12-13 at the InfoAge Science Center.

The VCF East is a celebration of computers from yesteryear. The VCF exhibit hall, open on both afternoons, is traditionally most interesting to the general public. It's much like an antique car show, with one major difference - everything is turned on! Registered exhibits so far include DEC PDP-8 minicomputers, the history of computer chess, history of computer graphics, Coleco ADAM, Apple II,

BASIC Programming Challenge, and logic trainers. About 20 exhibitors are anticipated.

In addition to the afternoon exhibit hall, VCF mornings are dominated by lectures and seminars. This year's keynote lecture is Ted Hurewitz, who will discuss his role on RCA's Bizmac and 501 computers in the 1950s, Saturday at 10:30 a.m. Other registered sessions include a talk on the history of computer development here at Camp Evans, and David Ahl's lecture on famous microcomputer industry blunders.

This year's edition of the VCF East also has three special events. First is the VCF Book Sale, which covers a variety of science and technology topics. Pricing is very simple -- take your books to the front desk, put them on a scale, and we'll charge by the pound. Our second special

event is the VCF 8-Bit Concert! Enjoy 90 minutes of live computer-generated musical entertainment, including visual effects. Third is a build-your-own pocket terminal workshop sponsored by Briel Computing; see <http://www.brielcomputers.com/workshop.html> for workshop details.

Tour MARCH's recently renovated computer museum. The museum includes four major exhibits: Computing @ Camp Evans; Minicomputers; Homebrew/Single-Board Computers; and Microcomputers.

Tickets are sold at the show. The cost is \$10 for one day, \$15 for both days, and free for 17 and younger. Parking is free.

Visit <http://www.vintage.org/2009/east/> for more info.

InfoAge Exhibits At IMS Boston

Ray Chase

New Jersey Antique Radio Club
908-757-9741 • enrprn@erols.com

IMS is the International Microwave Symposium, organized annually by the Microwave Theory and Techniques Section of the Institute of Electrical & Electronics Engineers (IEEE). This year it was held at the Boston Convention and Exposition Center from June 9th to the 12th. What might you ask does an International Microwave Symposium have to do with InfoAge? The development and mass production of radar just prior to and during World War II was the beginning of today's huge and far-flung microwave industry. Camp Evans played a pivotal roll in the creation of that industry. This annual convention and trade show always has a historical exhibit area, and through the auspices of Dru Reynolds from the local IEEE Chapter, InfoAge was invited to be a participant.

Paul Martynuik, a local Boston IEEE volunteer, coordinated the planning for this effort and sent me preliminary sketches of the area and display stands that we could use. He arranged VIP credentials for me as I coordinated the effort, brought our displays to Boston and set them up.

All this at no cost to InfoAge at a trade show where booth space goes for up to a hundred dollars a square foot. The historic exhibit area was 50 feet square on the main floor and InfoAge ended up with a full corner taking up about one fifth of the total space. I brought artifacts, displays and posters that would best show our Marconi heritage as well as the Army's history of radar development at Camp Evans.



The Zahl Tube display at IMS Boston.

Other displays in the historical area came from NEM (National Electronics Museum in Linthicum, MD), the Museum of Wireless and Steam in East Greenwich, RI who had a small display of Fessenden artifacts and the Raytheon Co. who provided some very early magnetrons and displayed several of the

first Radar Ranges. All through the three-day exposition there was continuous traffic through the historical area with most visitors taking time to examine the displays and read the posters and signs. Various InfoAge brochures and handouts were provided. Who would have thought that these following generations would be that interested in the history of microwave?

The show was an eye opener in other respects. There were over 500 manufacturers, technical institutions and agencies displaying on the main floor. The progress in current microwave technology is amazing. Everything now is super tiny and in the Ghz. Range. Only the test equipment has gotten larger and much more expensive. For example Automotive Collision Avoidance radars are being produced at 75 Ghz. and some measuring equipment was shown up to 385 Ghz. It is not microwaves anymore it is now nanowaves.

Camp Evans/InfoAge received a great deal of good publicity and it was a rewarding experience for me as well. An interesting side note; as a participant, I received an invitation to the Chairman's dinner Monday evening at the Harvard Club. Needless to say a first class affair at a very historic venue.



The Great High Altitude Scope Rescue Caper

Ray Chase

New Jersey Antique Radio Club
908-757-9741 • enrpnr@erols.com

Northern New Jersey is often an area that still yields early electronic artifacts from attics and cellars and so it was that NJARC member Dave Sica recently received word from a collector who wished to donate some items that he had for some time and that were not doing him any good. If a good home could not be found for them, they were headed for the dumpster. The collector indicated to Dave that his father told him that one item was a radar indicator from WWII, maybe Camp Evans. Before Dave went to pick up the items he talked to me while we were at InfoAge and I showed him the SCR-268 Scope that we have on display in the WWII Radar room and told him to look for its distinctive rounded top. I also cautioned him that it was very heavy and if it was fortunate enough to have its full case cover then it was extremely heavy. None the less, if it was radar, we wanted it so Dave went of on another vintage electronics rescue mission.

At the donors location it was determined that the items were in a crawl space above a garage and the only access was by ladder to a small door under the peak of the garage. The radar item did indeed turn out to be a BC-412-B radar scope, one of the three used on the SCR-268 so called "Searchlight Radar". In use, three operators sitting in tractor seats operated these scopes while ridding on the radar mount as it rotated in azimuth. The three scopes were used to track azimuth, elevation and range individually when targets were acquired. The initial design of this, the

first Army radar, provided no shelter to the operators from weather: rugged chaps these men had to be.



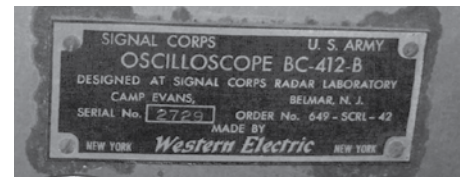
Dave and the donor's son lower the heavy scope from the attic.

Anyway, the scope in the attic was missing its case but still weighted in at well over 50 pounds. Dave assisted by the donor's son managed to lower the scope down with ropes, sliding it along the access ladder that was angled out. The scope is in reasonably good condition and its name tag indicates that it was manufactured by Western Electric and was designed at Signal Corps Radar Laboratory, Camp Evans, Belmar, NJ. Contract date probably 1942.

Post WWII, many of these electronic items showed up on the surplus market and interestingly, the August 1947 issue of Radio News magazine contained an article titled "Build Your Own Television Receiver" based on converting a surplus BC-412. It is beyond me why anyone would attempt such an effort with this extremely heavy 5 inch scope especially since the green tinted CRT tube would have to be replaced with one suitable for black & white TV.



This WWII radar relic sees the light of day after its long dark sleep. The name tag gives testimony to its Camp Evans heritage.



Dave managed to also retrieve some early TV cameras from this location which he will add to his collection of early video artifacts. Meanwhile InfoAge is happy to add another BC-412 scope to our collection of SCR-268 units, (our first one was also donated by a collector in Northern NJ). A third one has been promised to us by a collector in the Chicago area but we have not been able to work out the transportation details. Since the SCR-268 radar set had three scopes, we are "two down, one to go", thanks Dave.



Three SCR-268 scopes in use during a demonstration for the press at Camp Evans on Wednesday, August 15, 1945.



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Information Age Science and History Center, Inc.
2201 Marconi Road • Wall • NJ • 07719

732-280-3000 • www.infoage.org

The Newsletter of InfoAge Inside this issue...

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New Jersey Antique Radio Club Coming Events at InfoAge

September 11 Friday – Regular monthly meeting of NJARC at 7:00 PM, program to be announced, see njarc.org.

October 17 Saturday – Radio Repair Clinic in section A, Bldg. 9032 @ 10:00 AM. The Antique Radio Club conducts several radio repair clinics during the year where technically qualified experts help novice members repair and restore their vintage radios. This all day session will be open to the public who are invited to bring in old radios for assistance in getting them working. Vacuum tube radios only please no solid state models. Test equipment is available and replacement tubes as well as other parts will be sold at nominal cost; there is no charge for labor.

If you are looking for information on your radio or its current value that service is also provided. If you are interested in repair services, it is helpful to call ahead of time for an appointment and if possible, supply the make and model number so that we may have its technical

documentation available. Contact: Richard Lee at 516-765-2438, radiorich@prodigy.net or Ray Chase at 908-757-9741, enrpnr@erols.com. We may be able to help with vintage hi-fi, electric phonographs and short wave equipment as well.

November 14 Friday – Regular monthly meeting of NJARC at 7:00 PM. This is our annual Old Equipment Contest where we invite members to display samples from their collections and compete for prizes in ten categories. Faithfulness of restoration and working condition along with historical documentation is considered in grading entries.

Anyone interested in antique or vintage radios and related subjects are welcome to attend one of our regular meetings as a guest. Meetings are usually held on the second Friday evening of the month at 7:00 PM. Meetings are held either at InfoAge, Wall Township or Bowen Hall, Princeton University, Princeton. Check njarc.org for schedule and directions.