



LORAN-C Going Off The Air - Gone but Not Forgotten

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Created by US engineers during World War-II, LORAN shuts down for good on the 8th of Feb 2010. At one time it had strategic importance, but by now the military has moved on to bigger and better things, satellite navigation and GPS. This column is about that.

What is LORAN?

The acronym LORAN stands for Long Range Aid to Navigation. By definition, it's a hyperbolic form of radio-navigation; a hyperbola being, as the reader may know, "a curve generated by a line so moving that the difference between the distance between two fixed points remains a constant." When I was mere swabbie, I was taught coastal navigation (see SSP, "My GPS Broke - Oh Jeez...", 9/23/09) and, sometime in the late 70's, we got LORAN aboard Captain M. Boorstein's S/V Isis and the 20th century arrived. It was an eye-opener to see how much better the "computer" was than my hand-held compass sightings and Lines of Position. This ultimately is the undoing of any technology - the user eventually throws in the towel in doing it "like grandpa taught me" and now it is a technology race.

How Does LORAN Work?

In practice, LORAN uses that difference/distance theorem, and a "chain" consisting of one master and at least two secondary stations, each transmitting a high powered 100Khz T squared pulse,

to set up a radio grid that allows mariners at sea (and aviators) to "fix" their exact position. Each secondary, with its master, forms a "baseline" (or the two fixed points in the hyperbolic theorem).

Time's the essence of LORAN, time measured in picoseconds. What is a picosecond? A picosecond is one trillionth, or one millionth of one millionth of a second, or 0.000,000,000,001 seconds. That is an almost unimaginably small amount of time. If you remember why GPS can't get you much closer than 20-30 feet of where you are on the planet, (see SSP, "How Does GPS Work?", 1/2/08), it is because it is hard to get a series of satellites to be "in sync" within a few billionths of a second. Well, LORAN uses trillionths of a second as its yard stick. That is a 1,000 times smaller (better, LORAN aficionados would say) than GPS.

Distances between a master and secondary are measured in time, and each secondary must transmit its signal in an exact instant after it receives the master signal. By electronic triangulation, measuring the difference in the arrival time of signals from two baselines, a navigator within the coverage area can fix his position to within a few yards. And timing, extremely accurate, pin-point timing is the key to that accuracy. LORAN's watchwords, "On air and in tolerance," were just another way of saying "on time."

The Sands of Time

My father was fond of reminding his young son, "There are no free lunches, Vincent. Everything costs money." So, as sure as night follows day, as time went on and budget pressures mounted, the US Coast Guard started phasing out most of its overseas LORAN operations, which were originally maintained as part of the US strategic deterrence, by turning the stations over to foreign governments. Technology saved LORAN itself for years as new state-of-the-art equipment would ease the cost of operating and maintaining the LORAN ground stations. At one time LORAN had strategic importance, but by the 70s, the military started its inexorable move on to bigger and better things - specifically satellite navigation (GPS was still a decade in the future before it started moving out SatNav).

Thus, it was mostly commercial fishermen and private boaters who used LORAN up into the present era. For them, it had a couple of advantages. First, LORAN receivers were dirt cheap. And second, LORAN provided a constant reference, independent of inertia (as opposed to SatNav, which relied on electronic dead reckoning between periodic passes of a satellite), that would allow a navigator to consistently return to the most productive fishing grounds.

Why'd We Keep It So Long Then?

Well, aside from the cost of the

receiver being so low, there were legitimate security concerns about being 100% reliant of 16 GPS satellites (see SSP, "The GPS Hole in the Sky", 4/29/09.) Well, satellite navigation is here to stay. There are now 31 GPS satellites up there and the US Air Force keeps adding them for obvious reasons. And, the US Government has not only turned off Selective Availability(SA) (see that How-Does-GPS-Work column) but any satellite launched by the GPS system from 2010 onward will no longer even have the ability to implement SA if the government wanted to. Secondly, there were concerns that Al Qaeda might try to disrupt the GPS satellites using missiles from hostile governments or the black market. But couldn't they also attack the Loran stations with car bombs or their exploding underwear? The locations of the Loran Stations are no longer the great secret that it was, as my kids would say, "back in the day."

So, LORAN, it is time. But we won't forget your service nor the services of the US Coast Guardians that have kept you going over these many decades.

BTW, if you are interested in being part of USCG Forces, email me at JoinUSCGAux2010@aol.com or go direct to John Blevins, who is in charge of new members matters, at FSO-PS@emcg.us and we will help you "get in this thing..."

FLY CASTING CLINICS AND SCHOOL

The New York State Office of Parks, Recreation and Historic Preservation is pleased to announce that Fly Casting Clinics and instructional courses will be offered at two Long Island State Parks.

The Long Island Chapter of Trout Unlimited will be conducting two clinics on "Basic Fly Casting" on Saturday, March 6th at Caleb Smith State Park in Smithtown, and Saturday, March 13th at Connetquot River State Park Preserve in Oakdale. Clinics are rain or shine from 9:00AM - 12:00 Noon. The clinics are open to everyone 15 years and older. If you own fly fishing equipment, bring it with you, but it is not required to attend. Clinic topics will include: basic casting instructions, equipment needs and selection, fly-tying, and conservation and safety techniques.

The registration fee is \$4 per person, per clinic, at Caleb Smith State Park Preserve, and a vehicle use fee of \$6.00 per vehicle will be in effect. There is no registration fee at Connetquot River State Park Preserve; however, a vehicle use fee of \$6.00 per vehicle will be in effect. Reservations are accepted two weeks prior to each clinic.

The Long Island State Park Region also operates Nissequogue River Fly Fishing School at Caleb Smith State Park Preserve. The school offers a series of ongoing instructional classes for groups and individuals in basic to advance freshwater and saltwater fly fishing and casting techniques, stream entomology, and still water (pond) techniques. Please call for current program and fee schedules.

To register for the clinics, or for further information on the school, please call Caleb Smith State Park Preserve at (631) 265-1054 or Connetquot River State Park Preserve at (631) 581-1005, Wednesday through Sunday from 8:30AM - 4:00PM.

For more information about New York State Parks, please visit our website at www.nysparks.com.



NYS INDEPENDENCE PARTY CHAIRMAN URGES IMMEDIATE SEATING OF SENATOR SCOTT BROWN

Independence Party of New York State Chairman and Independence Party of America Chairman Frank MacKay, while congratulating Scott Brown on his victory, urges his immediate seating in the U.S. Senate.

"As leader of the largest third party in the United States, I want to congratulate Scott Brown on his victory in yesterday's special election for the U.S. Senate. According to news reports and several polls, the independent 'unaligned voters' were the difference in this election, turning out in overwhelmingly numbers for Sen. Brown. We applaud this outpouring of support by these Massachusetts Independents," stated Chairman MacKay.

MacKay continued, "Reports of delaying Scott's swearing-in are unacceptable and we in the Independence movement urge his immediate seating. Any delay is a travesty to the democratic process and will not be tolerated by the voters of Massachusetts and voters across the nation. We understand that certain politicians are hanging their hopes on an arcane Massachusetts law that could delay the swearing-in by as much as 15 days. This is unacceptable and we are prepared to take legal action to move this process forward."

"It would be a mistake for anyone to engage in political gamesmanship in the smooth and speedy transition of Sen. Scott Brown to the U.S. Senate," concluded Chairman MacKay.

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