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The Conversion Experience

From Loran coordinates to latitude and longitude

by Burnet Landreth

In its 1992 Radio Navigation Plan, the federal government claims that a decision on whether Loran in the U.S. will be discontinued or not will be made in the year 2000. If it decides to shut it down, the phase-out will take place over a period of 10 to 15 years. However, rumors abound regarding a decision much earlier than that and the entire system disappearing within the next few years.

To say that many boaters (and foreign countries) are upset would be a gross understatement. Foreign countries don't trust the United States not to shut down the GPS system (which only our Defense Department controls) if the mood suits us — leaving the rest of the world's shipping (and other) concerns hanging out in the cold, unlocated wasteland. Consequently, new Loran chains keep popping up around the world to lend a sense of independence.

Though not as concerned about national security, American fishermen may be the most irate of all. After all, they have years worth of hot fishing spots in their logbooks comprised of Loran TDs (time delays, the coordinate numbers used by Loran C). Whatever will they do if the government shuts down Loran? In fact, their entire language will be forced to change. "I found a good tuna bite on the 46 line, just to the east of 72 inches" will never be heard again. Many anglers think in terms of Loran lines and are lost when it comes to Lat/Lon (latitude and longitude).

Converting Loran to Lat/Lon

These unfortunate technosaurus have several choices, only one of which is ideal. Before I delve into the various ways conversions can be made, let me say that the only truly accurate way to convert Loran positions to Lat/Lon is to mount a Loran and GPS side-by-side. Use the Loran to run to a chosen waypoint, then punch that position in as a waypoint on the GPS. Yes, it's time consuming, but the only way to assure absolute accuracy.

Now for the other methods. A few Loran and GPS units available today have the ability to mathematically convert TDs to Lat/Lon and vice versa by means of a very complex algorithm. "Unfortunately, this method has been shown to accomplish only between 300-500 meter accuracy due to the relative lack of mathematical sophistication of the algorithms used in the computation," says Lt. J.G. John Thompson of the USCG Domestic Loran Branch (G-NRN) in Washington, D.C. "Plus, each company treats the ASF (Additional Secondary Factors, the inaccuracies caused in Loran position readouts by the different speeds at which a Loran signal travels over water as opposed to over land) differently. And the ASF correction varies for every geographical point meaning the solutions become virtually infinite. Given identical TDs, no two companies' Lat/Lon conversions are likely to agree. When added to the inherent inaccuracy of up to 100 meters of non-differential GPS, you can see that that wreck you're looking for could be a long way off even after your unit arrived alarm sounds." Admittedly, in a few of the very newest Loran and GPS units, the conversions from TDs to Lat/Lon can be more accurate. However, the conversions back from Lat/Lon to TDs are much less so.

Perhaps the easiest and most time-efficient way is to buy a book that lists myriad Loran and GPS locations of wrecks, buoys, reefs, etc. around the entire U.S. seaboard, Great Lakes, Gulf of Mexico, Florida Keys, Dry Tortugas, and the Caribbean as far south as the Virgin Islands and their converted Latitude and Longitude. Captain Rod Stebbins has spent the last 15 years putting these volumes together and they are converted and then geo-corrected by a personal visit to compare readings. It's not for nothing this monumental work is called the Diving and Fishing Destination Bible. But this, too, has drawbacks. No two manufacturer's Loran units will agree exactly.

Lately there have been several rocket scientists (literally) who've introduced improved algorithms for conversions. One such company that seems to be more accurate than others is Andren Software Co. in Indialantic, Florida. Andren has a program cleverly called The LoranGPS Program that sells for \$60 and works on any recent PC or Mac Plus. A \$10 upgrade buys you the Windows 95 version. Though considerable one-time user effort is required to input all your TDs and descriptions, the result is well worth it. The Coast Guard's Thompson says it's the best he's seen. Capt. Stebbins says it's a "piece of cake." Having used it myself, I can vouch for its easiness. Once you get the conversions done, the program can plot positions on a graph or a chart it creates. Any computer literate navigator will breeze through installation and running of this program.

This may not be as valuable for a casual fisherman or cruiser, but those for whom changing to GPS is a substantial emotional, logistical and financial investment, Andren's program works the best of all we've tested. One caveat though; it remains to be seen if the North American Defense Mapping System generated ASF corrections provide the one-tenth of one microsecond accuracy claimed. It hasn't for me. But it has gotten me close enough to find whatever bottom structure I wanted with my depth sounder.

Yet another company with a somewhat different — more cruising-oriented program is Digital Graphics, Inc. According to Stebbins, this program, called Cruise Planner, contains thousands of navigation marker coordinates as listed by the NADMS, their locations in both TDs and Lat/Lon, thousands of marinas along with specific information on each. Cruise Planner can also compute bearing, distance, fuel consumption, travel time, and ETA.

So you can be dragged kicking and screaming into the next century bemoaning your old Loran unit's ultimate demise or you can beat them to the punch and augment your Loran navigation with GPS today. It beats playing catch-up.

For More Information

Coastal Loran & GPS Coordinates 9132 Blairmoor Rd. Tampa, FL 33635-1322 (813) 884-1810

The Loran Program Andren Software Co. PO Box 33117 Indialantic, FL 32903-3117 (407) 725-4115

Digital Graphics, Inc. 11810 Parklawn Dr. Rockville, MD, 20852 (301) 881-8770

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