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SITOR-A, the Maritime Mode

The Simplex Telex Over Radio (SITOR) code (*a.k.a.* SPECTOR and AMTOR) is a 7-bit synchronous error correction code based on the CCIR 476 standard. It is used extensively for maritime and embassy communications. SITOR signals are always sent at 100 baud, generally using 170 Hz shift.

SITOR Mode A is used for individual communications between two stations. A duplex circuit is normally involved, with the transmitting station on one frequency and the receiving station on the other. As the transmission progresses, the receiving station acknowledges error-free reception or requests retransmission of the last part of the message. It is this procedure that normally makes this mode error-free between two stations.

SITOR-A is used for ship-to-shore communications, and it's an excellent place to start if you're new to the digital modes.

SITOR Mode B is a broadcast-only mode from one station to several other stations. Error correcting is done at the transmitting station and there is no feedback from the receiving stations. In this month's column we will focus on SITOR Mode A (*a.k.a.* ARQ and TOR). It is used almost exclusively for ship-to-shore communications, although a number of embassies use it as well.

Unlike other modes, SITOR-A is a relatively easy catch. The reasons for this are several. It is an easy mode to recognize — the characteristic "chirp-chirp-chirp" of a transmitting signal is unmistakable. It is an easy mode to tune on your decoder since the baud rate and shift remain constant. For maritime usage, the signals are concentrated in specific frequency ranges in specially allocated marine bands.

Maritime traffic is almost never encrypted, so that message content is always in-the-clear. In addition, even though your monitoring post is not in a position to request repetition of a garbled signal, it is a mode that seems the least prone to produce garbled text on your screen. And finally, although much maritime traffic has gone to satellite, there still are thousands of vessels out there that continue to use this mode — and will for a long time to come.

How it Works

The station originating the transmission is known as the Information Sending Station (ISS). The receiving station is known as the Information Receiving Station (IRS). During an ISS transmission characters are sent in blocks of threes. Watch your screen the next time to observe this characteristic.

After the transmission of each block the IRS sends a control character to acknowledge reception or request retransmission. If you sometimes see characters being repeated on your monitor, there is nothing wrong with your decoder; the IRS has requested retransmission, and whatever is sent and how many times it is retried is what you'll see.

It is possible to identify the IRS sending control characters by its unique one "chirp" sounds, but, as there is no printable message content, there's not much point monitoring these signals. On some frequencies you might hear what sounds like two SITOR-A broadcasts. In actual fact, what you are monitoring is the ISS and IRS on the same frequency. Using sophisticated timing protocol, both stations can share a simplex frequency. During idle periods, you will hear the high and low tones and your mark and space indicators will alternately flash.

During a transmission either station may send control codes which change the ISS/IRS arrangement — making the receiving station the sending station, and vice-versa.

Decoding SITOR-A

Almost all decoders include the SITOR-A mode, from the most rudimentary to the most sophisticated. It remains one of the easiest modes to decode because of its standard baud/shift rate. Be aware, however, that stations may be idle (with no traffic being sent) for long periods of time. Many decoders support an idle indicator to alert you to this condition.

SITOR-A Frequencies

The maritime bands are divided into frequency bands for fixed coastal stations and mobile bands for ships. A good place to easily locate SITOR-A transmissions are in the coastal station bands. Tune between the following frequencies: 6314.0 kHz to 6330.0 kHz, 8415.0 kHz to 8437.0 kHz and 12579.0 to 12658.0 kHz. There may be several stations from different countries on the same frequency, so you may see several languages. Frequency spacing is generally .5 kHz apart.

The Egyptian Embassy in Washington puts out a strong SITOR-A signal in North America. Look for them in the local evening EST between 14,500 and 14,950 kHz. They often send 5-letter code groups, but usually identify at the completion of each group.

Good luck and good hunting until next month, when we will look at the SITOR-B mode.