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Source: Kristjan Benediktsson, TF3KB, IRA, Icelandic Radio Amateurs.

Subject: Establish the Costas Loop Prize, in honour of John P. Costas, past W2CRR/K2EN.

Committee(s): C4 and C5

Summary:

Small steps inspiring youngsters may turn out as giant leaps. We think this is a good time to remind spectrum allocators and us how this happens time and again through amateur radio.

Without the Costas Loop, the modern digital communications world would not be the same. Its invention has been described as having had "a profound effect on modern digital communications."

Its development did not occur in a vacuum. Like we have often seen, the first small steps of a youngster absorbed in amateur radio, may later turn out to be giant leaps in terms of career and personal development.

John P. Costas was an active amateur radio operator, past W2CRR/K2EN and built his own kilowatt transmitter typical at the time. It was well built in a nice six foot rack and he had a rotating beam to go with it.

He was able professionally to pursue some of his own interests, one of which was developing a synchronous receiver for demodulating effectively a double sideband signal without carrier. To that end he went to the foundations to invent an outstanding system - the Costas Loop.

Long time ago I read with disbelief an article in January 1957 issue of CQ Magazine by someone who claimed that SSB, being hailed as the new superior voice mode vowing to take over from AM, might not, if properly handled, be better than AM at all. The article was met with similar disbelief at QST, which refused its publication.

Later, during my engineering studies in Norway, while not hanging out with friends like Ole, at the LA1K, Academic Radio Club, I frequented the library for private studies. There I came across the Dec. 1956 issue of Proceedings of the IRE (now IEEE), often called the SSB issue.

This issue was devoted to the "fanfare" of SSB. Only one man differed (some say only one dissenting article was allowed). I read the article, and now with improved foundation, I got convinced he was right. Same guy wrote that paper, John P. Costas, then W2CRR, and the paper: "Introduction to 'Synchronous Communications.'"

Many years later, often at IARU Region-1 conferences, I met the then IARU President, the late Richard L. Baldwin, W1RU. By coincidence at one of those conferences, I don't remember how, but one day he turned to a point and a story he

wanted to share with me. He didn't know I knew. He told me about Costas' paper. But he also told me something I didn't know. In the American military, where Dick was employed, Costas' paper was read with attention when it came out in 1956. What was their reaction?

They concluded too he was right, and then, which I didn't know, ordered a total silence about it. This was something they wanted to study, and they did, and that was a beginning of the understanding that broadband modes are not necessarily worse at conserving spectrum, than narrow band ones, as the IRE Dec. 1956 SSB issue had imagined. And they have many advantages too.

Costas' paper was reissued by IEEE in 2002 as a "Classic Paper."

So we think it is about time to return the favour:

- a. For taking the first small step, turning out to be a giant leap, the step from SSB to DSB as nearly equivalent signals, in terms of signal to noise and spectrum conservation, contrary to the conventional orthodoxy then and now.
- b. For developing the Costas Loop, which has been described as having had "a profound effect on modern digital communications," though developed in the analogue world of the 1950s.
- c. For being one of the finest examples of a recurring case and a worthy cause, the first small steps of a youngster absorbed in amateur radio, later turning into giant leaps as career and personal development with advancing of the state of the art as well.

We propose:

To suggest to the IARU Region 1 EC that they propose to the IARU

1. The establishment of the IARU Costas Loop Prize, in honour of John P. Costas, past W2CRR/K2EN.
2. To award innovative achievements of radio amateurs in developing efficient modulation and spectrum usage techniques.
3. The first awarding it is suggested being presented at an IARU ceremony at the WRC-19.

Financial Implications:

Not known at this time