

## Remembering Dr. Don Miller, W9NTP Born May 25, 1923--Silent Key March 22, 2015

How Did the MIR SSTV System come into Existence? -Farrell Winder, W8ZCF

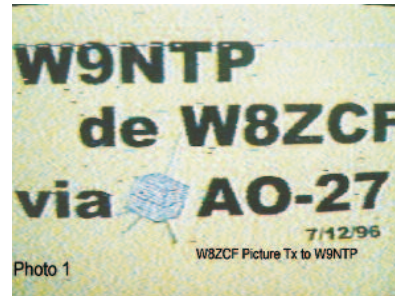


In my activity in Amateur Radio beginning in 1941 there have been many very interesting experiences. One especially stands out as exciting with a strong feeling of accomplishment. This was the association with Don Miller, W9NTP in planning and successfully implementing a small packaged SSTV System for the Mir Space Station. I know Don also had a similar feeling of mutual reward for our efforts in concluding a History making event.

How did the MIR SSTV system come about? For those who knew Don, he had a way of presenting a friendly challenge that one just had to pursue. For example, I was trying to make voice contact with Dr. Shannon Lucid who was aboard the MIR Space Station. Don had already accomplished this and I was trying with hit or miss methods. Don pointed out this was not good practice and to do it suggested the only real way was to get a tracking program using Keplerian elements. I pursued Don's suggestion and became very successful in tracking space vehicles and I am still using the program today. Now with precise tracking Don and I then went on to several satellite experiments with voice contacts via the satellites.

One was using AO-27. This satellite had been a strictly FM voice contact media for contacts between wide spread ground stations, 145.850 MHz up to the satellite and 436.805MHz down.

Since Don and I had good success in SSTV terrestrial exchanges, we thought about a more advanced idea of exchanging an SSTV picture via this satellite. After a few tries in getting lined up properly with a good position for our antennas we had the first known exchange of pictures via AO-27. See Photos (1 & 2). With this exciting



event we thought about an even more advanced idea. *Would it be possible to get a small SSTV station aboard the International Space Station or the MIR Space Station that could send pictures from space to Amateur Radio operators and other viewers on Earth?*

Having heard that 2 amateur operators, Dr. David Larsen, N6CO and Miles Mann, WF1F had been successful in putting an amateur radio transceiver aboard MIR, we decided to contact N6CO and WF1F to pursue our SSTV concept. N6CO and WF1F had formed an association among themselves, called "MAREX" (MIR International Amateur Radio Experiment to promote Amateur Radio Satellite Systems). They had been working with Sergej Samburov, RV3DR, Chief of the Cosmonaut Amateur Radio Department in Russia.

Don and I arranged a long telephone conference call one evening on May 23, 1997 with N6CO and WF1F. I believe it was Don, W9NTP's very vivid descriptive performance of what SSTV could do that was convincing enough to quickly result in approval among all 4 of us to proceed pending further approval.

Miles contacted Sergej Samburov, explained our idea and in short time received approval from the Russian authorities to develop our concept. A plan was immediately implemented among us to come up with an SSTV package with specifications that could be approved in Russia.

As there was no funding available, it was necessary to depend on our own efforts plus generous sponsors for the building blocks. Don, W9NTP was already familiar with the Tasco Scanner for sending and receiving SSTV, having contacts with Tasco Electronics, Ltd in Japan. The Tasco is a stand alone package for the processing of SSTV, providing for an NTSC video input and formatted SSTV output for feeding an input to an RF transmitter. A remote control provides selection of stored pictures.

Don was also familiar with a Tasco Docking Station. This unit has a 5 inch screen for displaying a captured camera input. Don arranged for these items from Tasco Ltd., Japan. I arranged for small cameras from Apple Computer, the type used in conferencing meetings.

Miles arranged for the Kenwood Corp to supply their TM-V7A, a dual band transceiver. A key item to complete the package was an automatic controller for unattended operation. This was engineered and developed by Hank Cantrell, W4HTB who became interested in our concept and joined us for much needed assistance. Hank's controller also supplied a CW ID, "R0MIR" an FCC requirement. Robot 36 was selected for the operating mode providing a picture in 36 seconds with the capability of repeating or a new picture every 2 minutes. Hank also did the final mechanical assembly of all the above items. (See photo 3). MIR SSTV video was transmitted



on 145.985 MHz and voice exchange on 437.975MHz. Communications in the USA took place with the Russian Cosmonauts but was restricted due to the language barrier.

However, when Jean-Pierre Haignere, French Cosmonaut came aboard we had excellent exchanges in English or French along with many new pictures. Hank and Chris Scott, W4NEQ did an admiral job by test flying the completed MIR System on 2 different flights to simulate operation aboard MIR.

Many perfect pictures were received by all those within range on the ground. Russia

required 4 systems to be built, one as a spare and all 4 systems were required to be tested and approved in Russia. We actually built 5 systems. Miles arranged for transportation of the units to Russia and while there, stayed to train the cosmonauts that would go aboard MIR a few months later. We

eventually learned that one of the units would be sent via the Russian Soyuz cargo ship to MIR for installation within the Space Station sometime in late 1998. Miles got a message from Sergej Samburov on December 12, 1998 that pictures would start and immediately called me. I called

Don and he set up to receive. He copied the 1st picture, (See Photo 4). This picture shows the MIR SSTV system in the background which was captured and sent by Commander Gennady Padalka.



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I copied many pictures. (See photo 5).



Thousands of other pictures followed including pictures within the station as well as pictures taken through one of the port holes of Earth and Space. Mir continued sending pictures worldwide for periods between December 1998 through April 23, 2000. Mir was deorbited into the Pacific Ocean March 23, 2001. The time line for the Mir SSTV development was 13 months. At 19 months and about 3000 e-mails which I processed, Don, W9NTP received the first great and exciting perfect picture from MIR!! Some 50 magazine and newspaper articles were compiled during MIR's active SSTV transmission periods.

<http://www.atvquarterly.com>

Many of the articles were very interesting such as the one by Michael Beebe of the Buffalo, NY News.



MIR SSTV was a favorite discussion among Amateurs during MIR's picture activity.

As many Dayton Hamvention attendees may remember, Don exhibited his Wyman Research Products every year. Don and his wife Sue, W9YL in 1999. Note that he was showing one of the MIR SSTV units and had it rigged to automatically sequence many of the received pictures from MIR.



Enough words cannot be expressed about Don's Engineering, Research and Innovative abilities to enhance and promote Amateur Radio including SSTV and fast scan ATV.

He did this not only in the USA, but often continued mobile with voice and SSTV activity in some of the 200 countries that he visited.

We will greatly miss this talented Amateur Radio Operator.

73,  
Farrell W8ZCF