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Over the years USSR and Russian hams have built and operated 20 separately numbered amateur satellites called Radio Sputnik, or RS for short. Also three smaller USSR hamsats were called Iskra, which is Russian for "spark". Many New Zealand hams will remember operating through RS10/11 and RS12/13. They had more transmit power than the newer cube sats and excellent receiver sensitivity which made them easy to use. For Mode A operations, just a few watts of transmitter power and a small 2-Meter antenna were all that was required for the up link. A dipole antenna and a receiver capable of tuning the 10-Meter Amateur band was all that was needed for the down link.

The first two Russian ham satellites were launched together on October 26, 1978. RS-1 and RS-2 both contained sensitive mode A (145 MHz up link and 29 MHz down link) linear transponders a telemetry beacon and Codestore unit similar to AMSAT-OSCAR 6. The transponders aboard RS-1 and RS-2 could be kept operating for only a few months before battery problems disabled both spacecraft. Since the Russians were limited to only a few watts of transmitter power on the 2-Meter band, the Mode A transponders carried on their RS satellites had to have very sensitive up link receivers.

Six new Russian satellites were launched together on a common launch vehicle on December 17, 1981. RS-3 and RS-4 were experimental satellites and did not contain transponders for general use. The remaining satellites all contained Mode A linear transponders. In addition, RS-5 and RS-7 both contained "auto transponders" called ROBOTS. These ROBOTS made it possible to carry on a CW telegraphy contact with the spacecraft. A typical communication with the ROBOT would be initiated by the radio amateur on the ROBOT up link frequency and the satellite would respond with a short message and issue a QSO number.

The RS-10/11 satellites were really two packages attached to a primary spacecraft, the COSMOS 1861 navigation satellite. They were launched 23rd June 1987 and lasted until November 2000. Each of the ham satellites had two radio amateur transponders onboard. Only one was switched on at a time. Both satellites had a 40 kHz wide linear transponder allowing for CW and SSB contacts and a CW ROBOT similar to RS-5 and 7.

RS-14/AO-21 was launched on January 29, 1991, the results of a joint venture between AMSAT-U and AMSAT-DL. The amateur equipment rode piggyback on the INFORMATOR-1, an experimental geological satellite. As of September 16, 1994 the spacecraft was switched off, including the amateur equipment onboard. The reasons cited were those of cost in maintaining the craft in space when the usefulness of the primary payload was exhausted. The amateur community lost a valuable asset. RS-14/AO-21 was a very popular satellite with radio amateurs. The equipment to communicate through RS-14/AO-21 was simple and easy to operate. RS-14/AO-21 functioned as a "repeater in the sky" and routinely transmitted digitally recorded voice messages commemorating events like the 25th anniversary of the first landing on the moon by broadcasting Neil Armstrong's first words as he stepped on the moon.

RS 12/13 was launched February 5, 1991 on board a Russian Cosmos C launcher. RS-12/13 was also two amateur radio packages attached to and drawing power from a primary spacecraft, the COSMOS 2123 Russian Navigation Satellite. Each satellite had two radio amateur transponders onboard. Only one was switched on at a time. Both satellites had 40 kHz wide linear transponders allowing for CW and SSB contacts and a CW ROBOT similar to RS-5 and 7. RS12/13 had down link transmitters on 2m and 10m and up link receivers on 2m and 15m, these could be combined in any combination including 21 MHz up link into 29 and 145 MHz down links and 21 MHz and 145 MHz up links into a common 29 MHz down link. No other Amateur communications satellite had used 15-Meters for an up link before. It is thought that superpower proton flashes from the Sun caused damaged to the COSMOS2123 and RS-12/13 transponders about July/August 2002 (thanks Jerry, K5OE/3).

RS-15 was launched December 26, 1994 from the Baykonur space center. The satellite is a spherical like unit about 1 meter diameter and its weight is approximately 70 kg. On board was a mode A [2m – 10m] transponder, two radio beacons, CW - broadcast bulletin board (2kb), remote control system and telemetry system. The satellite had no orientation or stabilization systems. The 10m beacon is still active when the satellite is in sunlight.

RS-17 (also known as Sputnik 40) was a 1/3rd scale model of Sputnik 1 the 1st man made satellite. It was built by high school students to commemorate the 40th anniversary of the launching of Sputnik I (1957). It was launched by hand on November 4, 1997 by Russian cosmonauts from the MIR space station. RS-17 broadcast its bip-bip signal for 55 days. The rate of the beeps was dependant on the satellite temperature the same as the signal from Sputnik 1.

Sputnik-41 / Radio Sputnik 18, was the same as RS-17. It was launched by hand on November 10, 1998 from the MIR space station.

RS-22 is a training satellite built by the Mozhaisky military academy in St. Petersburg, Russia. It was launched into a low 693 x 675km orbit. RS-22 carries a CW beacon on 70cm that sends telemetry in the form of 16 groups of 5 to 7 characters framed by "rs22". Code is sent at about 5wpm with a pause of approximately 10 seconds between each group. The satellite is still fully operational with a beacon on 435.3520 MHz CW.

RS30 "Yubileiny" (Russian for jubilee) was launched 23 May, 2008 into a fairly high near circular orbit at a maximum altitude of 1500 km, to mark the 50th anniversary of the launch of the first Russian (URSS) artificial earth satellite. Among other missions the satellite will solve a wide range of educational, research and technological tasks. It is transmitting cw telemetry on 435.315 MHz and possibly 435.215 MHz. There have been some reports of image transmissions. According to the launch team the satellite will broadcast audio and video about the history of the Soviet and Russian space programs, as well as signals imitating those broadcast by Sputnik in 1957. The transmission lasts for 4 minutes; the down link signal consists of a call signal and TM-data (10 seconds), a voice message (1 minute), a 50 second pause, the first artificial satellite imitated signals (10 seconds), an image (1 minute), then another 50 second pause.

Sources: web sites including:

<http://www.cira.colostate.edu/ramm/hillger/amateur.htm>

<http://www.n2yo.com>

Spacetoday.com

AMSAT NA

www.amsat.org/amsat/sats/n7hpr/rs.html

http://www.dk3wn.info/sat/afu/sat_rs30.shtml