

Copernicus Project Association Balloons with radio capsule

Short wave transmission is an outstanding passion. A few thousand amateur radio users in Poland devote many hours each week to this hobby. Apart from the fantastic feeling related to listening to somebody who is thousands kilometres away from us and the ability to talk to them, there are many other interesting aspects of amateur radio sport: competitions, DX-trips, collecting diplomas, building your own transmitting and receiving equipment, and fox hunting. Launching the balloons, with capsules larded with radio transmitting and receiving, as well as measuring equipment is really a very exciting experience. Resilient Copernicus Project Association with the seat in Toruń deals with such an exploration of the atmosphere. We decided to discuss that issue with the Chief of the above-mentioned association and the launch team, Maciej Jakimiec (SP2SGF).

Editing office: You are an economist by profession, and an information scientist by passion; thus, you should have an access to cheap and effective digital multimedia communications. So, why you deal with amateur radio?

SP2SGF: Nowadays, it is difficult to explain to my colleagues why I'm still playing that sport in spite of the progress of communication techniques, expansion of internet, and mobile phones. It is simply inexplicable: nothing can replace the immediate contact between people, and this is the direction it heads for. Let's calculate how many e-mails we send each day, how often we make use of internet communicators, and we forget, that the ability to simply converse with the other person is the most outstanding feeling.

There is no one way to follow in order to become the radio amateur. Today, I recall with great sentiment the middle of the 80-ties, when my father showed me the construction of the radio named ...Szarotka. The first incompetent operations with the soldering tool and a small electronic piece, the name of which I did not know at that time, rest in my hands.

And then, the next stage. At my papa's instigation, I signed in the amateur radio club SP2PFG. And from that moment there was nothing more sacred to me, but the visit in the club twice a week. All members of my family knew, that I am busy on Tuesday and Friday afternoons. There, I met the first licensed radio amateurs and there, I made my first communication trials under their watchful eye.

I became a ham radio listener. The celebration of granting the licence of a listener, first listening, participating in competitions and QSL cards. Then, the course preparing for the examination on broadcasting was started, as well. When I finished the course, I successfully passed the examination and got the licence.

As there is no one way to ham radio sport, there are also no good and bad ham radio amateurs. Each person chooses for themselves, what they want to do, what is most interesting to them and what attracts them.

After I finished my studies at Nicolas Copernicus University, I stayed with my wife in Toruń, where we have been residing until now. Here, our two daughters, Magdalena and Małgorzata were born, who cheer me on together with my wife while I make my efforts.

Professionally, I am connected with Bydgoszcz, where I am a director of the Polish branch of a Dutch company dealing with high-tech IT services. They are migrations, roll out/roll in processes, it means the widely-understood asset management.

Edit.: So, how it came upon an idea of balloons and establishment of the association?

SP2SGF: The idea to realise the project of sending a few balloons far into the atmosphere was conceived at the beginning of 2005. It was not accidental. Once, while browsing through internet sites I found the one, which discussed a widely understood amateur exploration of the atmosphere. The willingness to touch something beyond one's reach, to be in places where only a few had a chance to be, is the dream of many. And mine, too...

When I look at pictures taken with photo cameras put in capsules suspended under the balloons, I believe, that once, we will also go up and look at our planet with our human eyes.

For a long time, I considered, if it was worth to formalise the activity, or maybe I should act with my friends as an unassociated group of amateurs. Finally, we took up the decision on creating Copernicus Project Association. It was necessary in order to be a partner to other organisations and institutions that decide on the possibility to contravene the air space or grant authorisation to amateur radio stations.

And so it happened. In April, 2005 the association came to being. Right after that, I started completing a team of people, who want to do something actively, without grumbling, that it cannot work. I asked Jarek (SP2SWJ, present SP3SWJ), as well as Darek (SP2BZW) for co-operation. All other colleagues reported voluntarily. A very strong group of Poznań came to being, that was oriented to construction of our capsules. Artur (SP3VSS) was the leader, who surprised us with his creativity and devotion more, than once.

Edit.: Could you briefly present the beginnings of Near Space World Program?

SP2SGF: It shall not be surprising, if I say, that all the good things started on the Old Continent. The first flight being a part of Near Space program took place on the 28th of May, 1967 in Finland. The load consisted of beacon modules for 2metres and 70centimetres. The group realised 18 flights and finally, it ended its activity in 1980.

As late as on the 15th of August, 1987, the program became known in the United States. Bill Brown (WB8ELK), still very engaged in that program, became the precursor of it. On that day, William had his birthday and the launch of the balloon was one of the elements of the birthday's celebration. The first capsule consisted of the beacon module transceiver transmitting frequency of 2m.

The next milestones of Near Space program:

- 23rd of October, 1988 – the first cross-band repeater sent by WB8ELK
- 1988 – the first camera (black and white ATV) sent by WB8ELK
- 1988 – the first film camera sent by WB8ELK
- August, 1991 – Bill WB8ELK writes the first article on Near Space for 73 magazine
- 27th of February, 1994 – the first packet radio transmission speed 9600 from the atmosphere to the Earth.
- 12th of November, 1994 – the first Near Space flight into the atmosphere, documented with GPS
- 10th of October, 1998 – the first SSTV transmission – Kenwood VC-H1 module was applied
- On the 20th of April, 2005 we registered Copernicus Project Association.

Edit.: Do you accept any volunteer in your group, or you make some kind of selection, e.g. with regard to predispositions?

SP2SGF: No, we have absolutely no limitations. It is a rather a niche hobby, so there are not many of us, but we count on real hotheads.

Doing something together, discovering the old subjects anew, for one's own satisfaction, makes an important element.

People that are willing to join us have to fill in the simple application form on the web site page and they do not have to bear any costs.

Edit.: And how does the activity of Copernicus Project Association look like in practice?

SP2SGF: In the first year of our activity, we organised the meeting named perversely 'the Technical School.' Its name was very much connected with the place, as we met during the forest school and indeed, the subject was the technical one. The name remained the same, although usually, the place is different. Last year, the Technical School 2006 took place in Funka near Chojnice. It was connected with the flight of our balloon CP02.

Education makes an important aspect of our activity. During each meeting or outdoor event, we try to spread quite comprehensive information on what we are doing and what the amateur exploration of the atmosphere is, why it is worth to discover things, that have already been described by scientists, etc. I like events and lectures with scouts who often invite me to join their activities, as they are interested in the world and open to new experiences. Thanks to co-operation with Kujawsko-Pomorska Troop in August, 2007, together with Jakub (SQ2EAZ) we led the workshops for scouts during one of scout camps in Bory Tucholskie. It is another experience strongly connected with Near Space program realised by us.

In this place, the event that took place in May in Włocławek, is worth mentioning. Our flight CP03 finished with an enormous success. Nearly 400 confirmations via e-mail from the whole country and neighbouring countries added some faith and it confirmed us in the conviction that the project was worth continuing.

We flew over a few dozen kilometres, transmitting from the height of nearly 28 thousand metres. Our equipment happily returned on the ground and soon it will be ready to launch again for another mission.

The distribution of QSL card for those stations, which confirmed hearing or connection through SR0FLY is just being started.

Edit.: What is the designation of equipment installed in the capsule and where it comes from?

SP2SGF: One of the basic tasks of the equipment is to transmit all data that are helpful in locating the capsule, to the ground. I mean the current co-ordinates. Temperature inside and outside the capsule and atmospheric pressure often make an additional element.

In the capsule, one can find the radio equipment that is to enable the radio amateurs to communicate. So far, it has been that way: work with the use of cross-band repeater allowed many users of the short-wave radio from Poland and the neighbouring countries for feeling emotions connected with communication via the repeater which is situated 28 thousand metres above our heads.

The equipment is owned by the constructors who – similar to Artur SP3VSS – could especially buy the photo camera making digital photos during the flight. Some elements are borrowed from the companies, which support us.

Edit.: You are the chief of the start team. What kind of tasks are they responsible for?

SP2SGF: The role of the start team is to prepare the flight in a complex way. Our work starts many weeks before the actual launch with checking, if we have any meteorological balloon. If

not, we have to gain it. Most often, we import two or three balloons immediately from the producer from the USA. The time necessary to import them to Poland is about 4 weeks. The next stage is to select the launch place and get in contact with the owners of the area. Further to those preparations, we can start working on the flight itself:

- working out the flight's strategy,
- weather forecast,
- flight course forecast,
- contact with the institution managing the national air space,
- preparing the balloon (helium, capsules, antennas),
- general flight co-ordination

During the flight this team closely co-operates with the group which traces and looks for the descending capsule.

Edit.: Which ones of the tested GPS receivers are the best for balloon flights?

SP2SGF: From our experience we know, that the simplest solutions are the best ones, therefore the so-called 'yellowy', i.e. Garmin eTrex, as well as Motorola products prove to be the good ones.

It is important to ascertain, that a given model informs on the altitude during the whole flight. A part of manufactured GPS receivers do not meet these criteria and they do not work correctly above 18 thousand metres. It is worth stressing, that while fighting for each gram of the capsule's weight, all equipment including GPS is dismantled to the bare electronics. The capsule is constructed in such a way, that it perfectly protects the components against mechanical damage and influence of temperature. From the beginning of our flights, we have also been using the moisture absorbent.

History of mission CP02 showed, that the capsule which lied in the forest for 3 months and which was found as late as on the Christmas Eve, escaped destruction only thanks to such absorbents.

Edit.: Do you keep in touch with the European associations that realise similar missions?

SP2SGF: Yes. Mainly, we exchange experiences by e-mail at the time being, but we think of organising the first European conference, connected with the mutual launch of a few balloons. There is a big chance that the group of students of the Grammar School in Ulm (Germany) accepts our invitation and we will organise some project together. Maybe it will be the first flight beyond the boundaries of the countries?

It seems to me, that we are the active party, full of ideas and willingness to realise them, in any contacts with other European groups, and not only European ones.

Edit.: What are your plans for the nearest months?

SP2SGF: Not a long time ago, we completed the series of meetings and lectures for the friendly scouts of Kujawsko-Pomorska Troop. Together with Jakub (SQ2EAZ) we leaded Near Space workshops during the camp upon Koronowski reservoir. Thanks to such a co-operation, in September we are planning to organise the third in turn 'Technical School' in Funka near Chojnice. In that, very well-equipped scouts' campsite, we have an excellent base for realisation of the next mission CP04. This event will take place on Friday, 28th of

September, with preparations for the Saturday flight. On Sunday, as usual, we will take some rest while sailing on the boat on the lake and discussing the next projects.

Now, I can heartily invite all the interested to visit us and to participate actively in that event.

We are also open to invitations of other organisations and clubs. We were the guests at TAMA 2006, during which we could present the balloon and the capsule, and answer all questions asked by the participants of that meeting.

Edit.: What is the aftermath of the holiday competition named ‘The Flying Capsule’?

SP2SGF: So far, two interesting projects from young, still studying hotheads of construction have been submitted to us. I am very glad, that they are the projects of persons, who are not associated with the ham radio, as it only confirms the universal character of our association.

I think, that with some minor suggestions on our part, it will be possible to adapt those concepts for our needs. From the initial arrangements I know, that one of those constructions will make an element of the diploma’s thesis at the Electric Technical School in Włocławek.

We have also another idea to encourage a group of students to co-operate with us. We will assist them at building similar constructions, with some aid from our sponsors. Then, together with our association, they will be able to test those constructions during the next missions.

Edit.: Thank you for the interview and I wish further development to the association. As Świat Radio is open to all ham radio users, with pleasure will we publish the results of the above-mentioned competition, even with more detailed description and technical schemes of the equipment.

The chief of Copernicus Project Association, Maciej Jakimiec (SP2SGF) was interviewed by Andrzej Janeczek (SP5AHT).