RandomRace Team on
Global Space Balloon Challenge

19 April 2014

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First, we would like to thank Global Space Balloon Challenge organizers for being able to combine in their event efforts of stratosphere flying fans worldwide. One was very interested in studying someone else's experience and meet, yet not outright, our hobby fellows.

Then, a couple words about our RandomRace team. Stratosphere launches are very important but not a primary target for us. Instead, the primary target is organizing and running balloon search public competitions. There are launched some balloons with GPS-trackers transmitting their coordinates to a monitoring server. Some time later the balloons burst and trackers land in random positions and become checkpoints. Competitors look for landed trackers with their GPS navigators and give them back to organizers on finish. On the monitoring server map a team can see, apart from trackers, other teams (and other teams can see them as well) which create an extra intrigue in searching. To become a winner, a team must find most checkpoints. The first competition took place on 26 October 2013 and the next will be on 31 May 2014.

Now some words about our Global Space Balloon Challenge launch. The contest time (18-21 April) was coincidentally the same as summer bicycle season opening in our quite northern Russian city of Saint-Petersburg, with a dedicated bike ride on 19th April.

RandomRace team members are bicycle and, in particular, bike touring fans. We have therefore decided to launch a balloon at a bike ride finish located at the Palace Square – the very heart of our great city. Marvie! – we have managed to get an official permission for the launch. The balloon would have an instrument container, a parachute and a Velopiter bicycle club banner onboard thus welcoming about 6 thousand bikers taking part in the ride organized by the club.

RandomRace Team, August 2013

RandomRace teamleader Dmitry Bulavinov with children

The first RandomRace competition, October 2013

Below is the summary of the equipment we have used.

The container was made of a plastic bottle. The bottle bottom was cut off and inside the bottle there was placed a thermal insulating insert made of soft polyethylene foam. Almost all equipment including a video camera was placed inside the insulation. The camera was recording through the bottle. The cut bottle edge was then squeezed, covered with a sealant, curled some times and fixed with a light yet robust aluminum alloy pressing device. The shell is airproof and adiabatic.

Pepsi-Cola is not our sponsor – these bottles turned out the most transparent. :-)

Container sealing with a pressing device

Container made of plastic bottle

Fabricating the thermal insulation insert

The camera in the container

Self-made descent chutes provide a vertical speed of 4-5 m/s (~1000 ft/min). In this case we have used a self-made 12-section parachute 120 cm (4 ft) in diameter rated for 1 kg (2.5 pounds) load.

Parachute cords are joined with a heat shrink tube

Parachute test with a cuddly toy with a relevant weight

To our regret, for this launch we have not had anything better than a very old fairly dried up and badly stretching meteorological balloon produced in 1987 and weighting 850 grams (2 pounds). It was clear that our probe will not reach 30 km (100 000 ft) altitude (though our earlier launches ended even higher), but the reality did not justify even our modest expectations.


Packaged old balloons

Neck with a production date

GSM coverage in the vicinity of our city is not good everywhere and commercially available GPS-trackers do not always provide a required level of received signal due to low capacity of their GSM antennas. Moreover, tall trees in the woods interfere with GPS signals making things even worse. We have developed and assembled a GPS tracker free from these drawbacks. Onboard balloons we launch there is a 433 MHz transmitter to facilitate a local search at a landing site with a self-made beam antenna receiver.

Thus, we planned to launch:

1) airtight adiabatic container;

2) industrial GPS-tracker;

3) self-made GPS-tracker;

4) self-made 433 MHz transmitter;

5) barometric altimeter circuit board from a GPS navigator;

6) Wing video camera fitted with two 18650 accumulators;

7) Cobra video camera with three 18650 accumulators (they were in the container and the camera was fixed on an outside bar to record a container in flight);
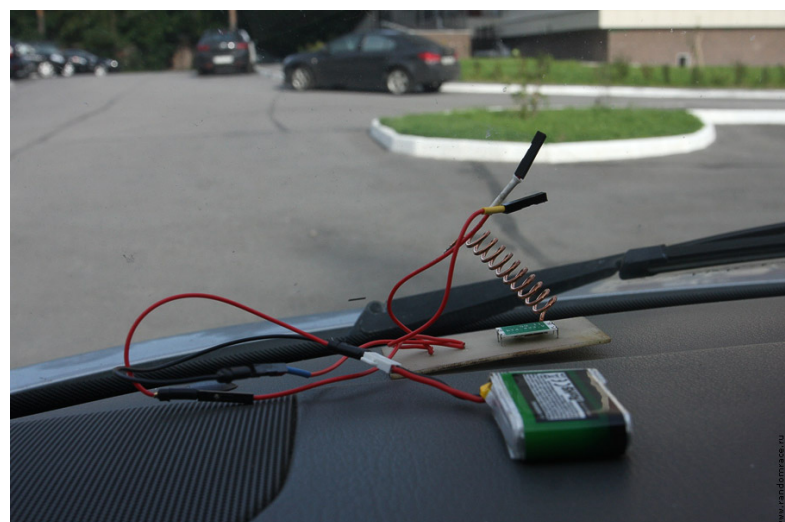
8) bicycle club banner;

9) parachute.

The total weight of the descent load was 1200 g (3 pounds) without a balloon weight.
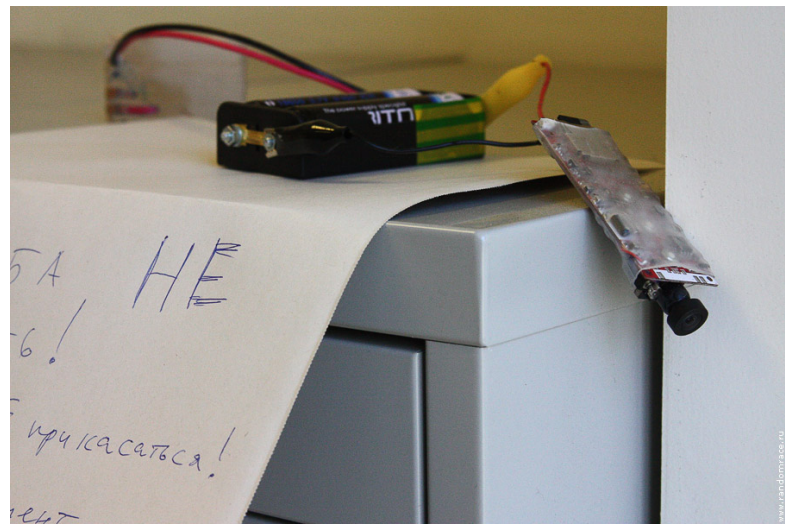
Wing video camera

Cobra video camera (with our balloon flight forecast for the specified date, time and site)

Self-made 433 MHz transmitter

On the launch day the RandomRace team occupied one of the well-known backyards mentioned in literary works of the great Russian writer Dostoevsky. :-)

Unfortunately, the first balloon burst, came off its neck and flew away bleeding off helium and heading for world-famous Hermitage museum. But we had spare balloons and helium. Actually, remaining helium was enough just for the second balloon with the minimum lift margin. On the container we have attached a special sticker dedicated to our participation in the Global Space Balloon Challenge contest.

Inflating balloon

The camera is now recording!

Test weighing

Heading for the launch site

Heading for the launch site

On the appointed time we have come to the square (the probe attracted a great interest of local people and city guests). When the bike ride was finished, the cyclist club chairman gave a welcoming speech and then the balloon started its ascent accompanied by the screaming of the crowd of thousands bikers.

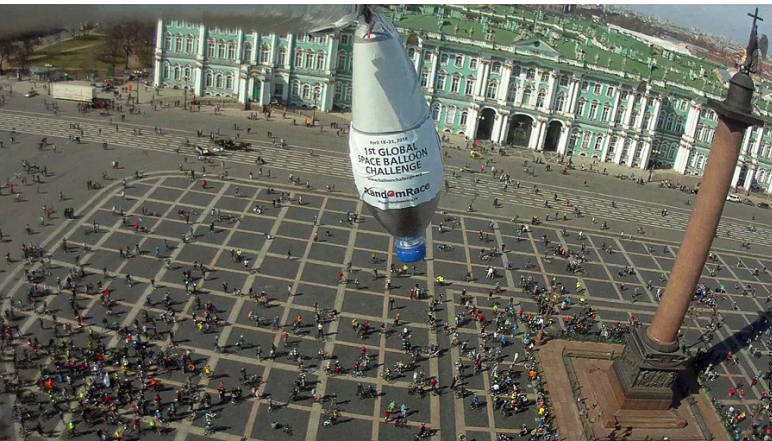RandomRace Team at the Palace Square

Bike ride finish

Get ready, get set, …

Go!

Go!

Unfortunately, the shabby balloon burst hardly reaching 1800 m (6000 ft) altitude and fell down just near the city 12 km (7 miles) away.
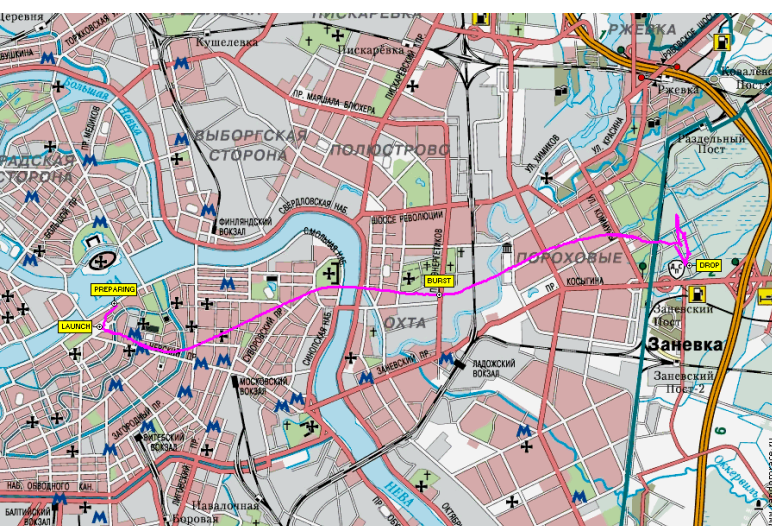

Our balloon over the Palace Square

The Palace Square and bikers
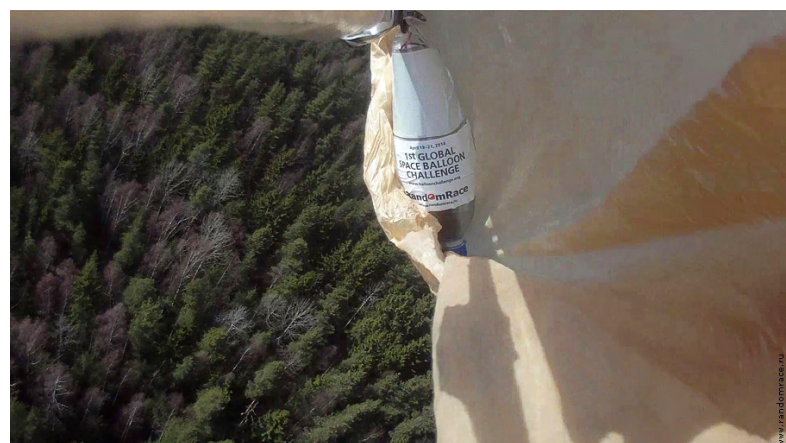

Vasilievsky island

Neva river

Drop point

City map and flight track

However, we succeeded in most of what was had been planned: welcomed bike riders and, ultimately, let our old dream come true – to launch a balloon just from the centre of our beloved city of Saint-Petersburg. The equipment did not fail – we have got recording from both video cameras. The short-term plan is a night launch within a famous white nights season in Saint-Petersburg.

Descent module with burst balloon on a tall tree

RandomRace arborist Alexander Kutischev

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our balloon :-)

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May 2014

Thank you for your attention.

Internet version of this report (with video etc):
http://www.randomrace.ru/2014/gsbc/eng/

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Container is OK