# Launch Day

So, the big day has come. Your tracker has been working for weeks now, and you’ve tested that you can track it on the ground from a mile away. You have permission from the CAA and your flight predictions show a nice landing far away from any hazards. Your base station is set up and you’re ready to put the kit in the car for the chase. You have the balloon, gas, filling rig, ground sheet, parachute, completed payload, cord and plenty of duct tape. You’ve created both payload and flight documents, you’ve seen your balloon on the map, and you’ve alerted the other UK balloonists of your flight. You’re ready to launch!

## Preparation

Get the car unloaded. Put a table up if you have one (much nicer to work on a table than the ground when your putting the final touches to the payload, or getting your laptop tracking set up). Lay out the ground sheet and peg or put weights on the corners to stop it taking off. Put the cylinder and filler on the ground sheet, together with the other items that the person filling the balloon will need.

## Tracker

The tracker is the first thing to get working. Make sure that you can receive and decode the transmissions. Wait till it has a GPS lock. Make sure that you have internet connectivity and that the balloon has appeared on the live map. Make sure you’re using new batteries and not ones you’ve been testing with!

## Payload

Put the tracker inside the payload box, and connect the aerial to the tracker. Check the tracker is still working. Make sure all cameras have fresh / fully charged batteries. Make sure the SD cards are empty of all images! Start up the cameras, and photograph your contact label in case the label is lost during the flight but the camera is recovered. Preferably put one label inside and another on the outside.

Start the cameras recording stills/video. Insert the cameras and close off the payload lid (fix it down with tape). Check that the tracker is still working and still has a GPS lock. Check that the cameras are still recording.

# Payload Train

Measure roughly 10 metres of braided nylon cord out. Tie one end to the top of the payload, and the other end to the **bottom** of the parachute. Measure out another 5 metres of cord, and tie one end to the **top** of the parachute.

All knots should be pulled **hard** to make sure that they do not slip at all. Remember that these are the only things stopping you from dropping a payload from 30km up without a parachute. Put a piece of tape over each knot to stop it coming apart.

Put the free end of the top line (the one above the parachute) on the ground near to the person filling the balloon.

## Balloon

Now it is time to fill the balloon. Remove it from the wrapper and lay it out on the ground sheet. Fit the filler assembly to the helium cylinder and make sure it’s a tight fit. Open the cylinder valve.

Fit the balloon neck over your filler tube, leaving enough of the beck free for sealing later. Then tape down with duct tape over the end. Fit 2 cable ties to stop the balloon from escaping.

Check the weight of your water bottle, making sure that it matches your neck lift calculation taking into account the weight of the filler. Attach the bottle to the filler with cable ties.

Open the gas valve and allow the balloon to fill. Fill until it can hold the water bottle in the air without the bottle coming back down. If it’s windy, wait for a lull in the wind before doing this. If in doubt add more gas.

When you have enough gas, tie 2 cable ties around the neck of the balloon, about 10-20mm apart. Get someone to come over and help at this point. Tie the free end of the top line around the balloon. Cut off the cable tie ends and put tape over the knot and cut ends. Wrap the line around the cylinder or have someone hold it (they **must** wear gloves) to stop the balloon escaping if you slip up. Have someone hold the balloon neck (where that line goes) whilst you remove the cable ties that are holding the balloon neck on the filler tube, and remove the tape. Fold the balloon neck back over itself, put on one more cable tie, cut off the loose end and tape over it.

## Launching

First, check that the tracker still has a GPS lock and you are decoding the transmissions. Check that all cameras are still recording. Check that the payload train is tied together properly and that no idiot put the parachute on upside-down.

If your CAA permission tells you to call Air Traffic Control for clearance, do that now. Follow their instructions (they may well ask you to wait for an aircraft to pass).

Have someone hold the payload.

Check the sky for planes – look and listen.

Start allowing the balloon to rise. Gloves are very, very important for this bit as you could get a bad cut from the nylon line. Lift the line up, keeping a good grip at all times, feeding the parachute through your hands and keep going till you are holding the payload.

Check the sky again.

Now it’s time to let go! So long as it’s not windy, then this is easy. If it is windy, you will find that the balloon isn’t above you, but is about 15 metres away and possibly only a couple of metres above the ground. See if you can wait for the wind to let up, at which point the balloon will start to rise. Start walking towards the balloon, and it should rise. Walk faster, allowing the balloon to rise till the line is almost vertical. You may well need to run at this point. Do not release until you can see that when you let go the payload will go up (or at least horizontally) and not down into the ground!

## Chasing

Once everything is packed up you can set off after the balloon. Generally, the best plan is to make sure you’re not far from the balloon when it bursts. You may well be tempted to drive straight to the expected landing point, but that’s generally a bad idea as you won’t know the landing area until after the burst.

Whatever you do, try and be near the intersection of 2 major roads so that you can head off in any direction once the balloon has burst and the landing prediction starts to be more accurate.

You can then head for the expected landing point shown by the live map. Again, try to find a good road junction to park near. Or, if it’s a hilly area, the best idea is to get to the top of a nearby hill; this is much better than being in a valley where the radio signal is likely to cut off early.

# Recovery

When the payload has landed, the signal will probably stop. If it hasn’t stopped, then either you managed to find a place very close to the landing position (typically within 1 mile) or it’s in a tree!

If you don’t have a final position, then getting one is your absolute top priority. Drive to the latest payload position that you do have, or to the predicted landing spot (shown by the live map). Use the yagi aerial if the signal is too weak to decode, or find a small hill to drive up. So long as you can get to within 1 mile of the payload, without a hill in the way, you should get a decodable signal.

Once you have the final position, write it down and tap it into a sat nav. Drive to the closest you can by road. If you have a 3G signal, switch the live map to satellite view and see where the payload is and how you’re going to get there. Or, use Back Country Navigator Pro on a tablet or phone, to view where you are and where the payload is on an Ordnance Survey map (download the map before the flight!).

Almost always, the flight will be on private land so you should always try and find the landowner and get permission.