

PARS Launch Controller Check List



VERSION 1.1

This document describes the PARS responsibilities of a launch control master (LCM).

The responsibilities of a LCM are important, especially for High Power rockets, but also for safety in Mid Power and Low Power activities.

All PARS members who want to become an LCM have the opportunity to do so, even if they do not own a rocket.

1. Every PARS launch will have an LCM separate to the range safety officer (RSO).
2. The LCM will be responsible for the rocket, and its flight, at all times, and must be a UKRA member with BFMA insurance. Ideally they will also be Level 1 certified.
3. The LCM will take on all of the appropriate pre-flight launch preparation, but can give out tasks to other members if they can be supervised.
4. The LCM must check the work of other members in preparing for any launch.
5. The LCM will oversee the launch, pre-pad, on-pad and during recovery.

To become an LCM, the PARS member must oversee one or more launches to the satisfaction of the RSO.

A check list of activities for the LCM is on the next page.

Launch Site

- Working with the RSO to check safe launch conditions (wind, cloud cover, air traffic etc.)
- Ensuring the site is suitable for the planned launch
- Ensuring the site is suitable for the predicted altitude of flight
- Ensuring the site is suitable for the expected drift of the rocket

Launch Team

- Assigning responsibilities for preparation, launch, recovery, sighting and tracking

Rocket Preparation

- Determining the appropriate motor for the launch
- Determining the appropriate ejection delay timing
- Determining the appropriate parachute size(s)
- Packing and preparing the rocket for launch, including:
 - Folding and packing the parachute(s)
 - Linking the rocket sections and parachute(s) with harnesses
 - Testing the flight electronics
 - Setting the altimeter dual recovery height if appropriate
 - Testing the radio tracking system, if any
 - Testing the empty ejection canisters
 - Loading and preparing the ejection charges
 - Ensuring the electronics safe mode and shorting terminals before:
 - Connecting the ejection charges to the flight electronics
 - Unpacking the motor and adjusting the delay time of the motor
 - Loading the motor into the rocket

Pre-Flight

- Filling out the flight card and speaking with the RSO to ensure he is satisfied that the flight is safe
- Ensuring only the team required for pad preparation comes to the pad
- Moving the rocket onto the pad
- Returning the pad to vertical
- Ensuring the pad is set at appropriate angle, taking into account wind direction, trajectory required etc.
- Tightening the pad bolts to ensure the pad is stable
- Optional: checking the electronics system for a second time
- Installing the igniter before connecting it to any power connections

- Checking launch controller safe mode and zero current before connecting electric firing circuit to igniter
- Switching on the rocket electronics on (ejection, tracking etc.)
- Confirming the altimeter beep sequence complies with expected deployment height
- Confirming the altimeter reports battery charge OK
- Confirming the altimeter reports continuity across igniter OK
- Moving the pad team back to safe distance

Launch sequence

- Final checks for air traffic, audience and team safety
- Initiating launch sequence (off safety, armed, countdown, ignition)
- Deciding the correct course of action if there is a failure to ignite or an on-pad failure event/CATO
- Monitoring the flight, noting any unexpected conditions – e.g. dual recovery failure, live igniter still in rocket on ground

Recovery

- Overseeing recovery, including radio tracking and sighting
- Performing the recovery, including:
 - Use of 2-mile radios for team communications
 - Switching rocket to safe mode
 - Returning rocket to launch site for debrief meeting