UNITED KINGDOM ROCKETRY ASSOCIATION

SAFETY & TECHNICAL COMMITTEE

Informal investigation into a "near miss" event at the April 2015 EARS launch event.

This investigation and subsequent report was carried out and complied solely by the Safety and Technical committee consisting of the chair, Charles Simpson and vice chair, Jonathan Rhodes.

Introduction

The report below consists of two parts.

Part one of the report consists of the findings of the investigation into the launch event at the EARS site as portrayed in a video taken by a fellow rocketeer and also references eyewitness accounts of RSOs, flyers and spectators on the day.

Part two are the recommendations to all rocket flyers to ensure safe flying and ground activities moving forward. It is intended that these will feed into the up and coming review of the safety code, which may include a tightened certification procedure and new advice for RSOs.

Part One

Findings of the investigation into the events at the April 2015 EARS launch.

After reviewing the evidence presented to us, the Safety and Technical committee have the following findings.

1. The events surrounding the launch of the "Golden Boy / Christmas Cracker" rocket are classified as a near miss. Whilst the rocket launch successfully, deployed and recovered safely, there were sufficient issues surrounding the launch to merit the investigation.
2. The aforementioned rocket should not have launched.
   There were a number of reasons that led to this conclusion. These were primarily:-
   - too many joints in the airframe allowing the potential for massive flex along the length of the vehicle especially under aerodynamic load.
   - The launch rail was dramatically undersized for the size of the vehicle and did not have a sufficiently wide spread of supports perpendicular to the launch rail to ensure stability.
   - The vehicle was underpowered having a very marginal power to weight ratio.
3. It was clear from reportage and video evidence that there was a breakdown in communication between the various parties involved in the launch including the RSO on duty, the flyer and the various parties assisting the flyer and RSO in a number of capacities.
4. With regard to conducting an ejection test in the car park, the Safety and Technical committee find that there is insufficient information on the video and conflicting reports from the day. This being the case, no findings can be drawn from this part of the event. Whilst general recommendations have been provided below, it should be noted that these do not support the opinions of any of the parties at the launch event.

Part Two

Recommendations drawn from the findings above, relating to general launch and event safety.

Conducting an ejection test.

- The test should be carried out as if it were a launch with a clear and audible count down.
- It may be carried out in any of the following ways suggested below –
  - on the flight line, for the edification of the public, within a sequence of other launches and always under RSO / LCO control or

    - far removed from other persons, vehicles etc with a minimum of personnel.
- The mass of black powder used should be appropriate to the size of the tube and mass of the load to be ejected.
- The body tube should be adequately fastened, weighted or strapped down to prevent unexpected kickback in the event of anomalous results or test failure.

Conduct of rocket flyers in relation to safety matters.

- The Safety and Technical committee feel that it is incumbent of all higher level rocket flyers to act in a manner that is beyond reproach when it comes to issues of safety. The more progress a flyer makes through the certification grades, the more that safe practices should be at the forefront of activities in all instances. This holds especially true for any Level 3s and members of UKRA council.
- We all, as fellow rocket flyers, have a responsibility for safety and any member spotting any unsafe practice or having concerns in relation to the safety of a flight, should bring them to the attention of the RSO immediately, irrespective of the flyer's position or status.

Range Safety Officers

- It should be clear, in all instances and at every launch, who the RSO on duty is.
- The RSO should be aware that they have the duty to ensure safe flying for all.
- If at any point an RSO feels unhappy about a launch on the grounds of safety, they have the right (and in fact obligation) to disallow the launch until their concerns are resolved irrespective of flight-line pressures.
- If an RSO feels they are unable to allow a flight due to its complexity or the nature of the vehicle is outside their current range of knowledge required for a determination of safe flight and recovery to be made, they should work with the flyer and event organisers to try and source another RSO of greater experience.
- An RSOs judgement on safety is absolute and no-one should feel that they cannot question a flyer of more experience or higher certification level.
- An RSO can receive advice and information from many parties on a launch day but the final decision on a flights safety is theirs.
- The Safety and Technical committee would like to re-iterate that it has every confidence in UKRA certified RSOs and will fully support any actions taken by RSOs on the grounds of safety.

Charles Simpson (Chair S&T) & Jonathan Rhodes (Vice Chair S&T)

Date: 01.05.15