



RECOVERY TEAM PRESENTATION (B2)

WEEK 2



WEEK OBJECTIVES

- Design metal piston cylinder and rod
- Test the new piston system



DESIGN OF THE NEW PISTON SYSTEM



PROBLEMS TO OVERCOME

- Weakness of the PVC material
- Weakness introduced by the screw fastener



DESIGNS PROPOSED

- Aluminium (Folded and Riveted)
- Steel (Machined from a solid block)



ALUMINUM

- Not structurally sound
- Powder will get between joints and explode
- Rivets on the inside will impede the motion of the piston

MACHINED STEEL

PROS:

- Great structural integrity
- Relatively easier to make than the aluminium design

CONS:

- Time consuming
- Can only be made one at a time



AGREED UPON SOLUTION



- A 32 mm diameter steel pipe (premanufactured) was agreed upon after consultation with batch 1 members.

PROS:

- Prefabricated material
- The piston chambers can be made in bulk



END CAPS AND FASTENERS

We decided to stick to PVC end caps due to the lack of visible fire damage seen in previous tests.

The use of self drilling screw fasteners in previous tests was gauged to have caused structural weaknesses and cracks in the previous test which gave during the detonation.

To mitigate this, we decided to switch to and test the effectiveness of commercially available epoxies.

If the use of screws is found necessary, we decided to use pre drilled holes.



TEST OF THE NEW PISTON SYSTEM

Unfortunately, we were unable to conduct the test in the time frame proposed in the previous meeting.

The tests have been pushed forward.

STRUCTURE OF TESTS



We decided to switch to wired data transfer from the load cell until the issue with the wireless transfer protocol can be resolved.

ORDER OF TESTS

- Old PVC chamber setup.
- Old PVC chamber setup with epoxy fastener.
- Steel chamber, PVC end caps, epoxy fastener.
- Steel chamber, PVC end caps, both screw and epoxy fastener.

All tests will be done with incrementing amounts of crimson powder.



NEXT WEEK TASKS

- Conduct the piston tests.