

# CONCEPTUAL DESIGN REVIEW

Metropolitan State University

Isaac Hamilton

Jordan Gallegos

Christopher Olson

McMillan Miskin

Daniel Koch

Thomas Mindenhall

Cody Overcash

March 9, 2009

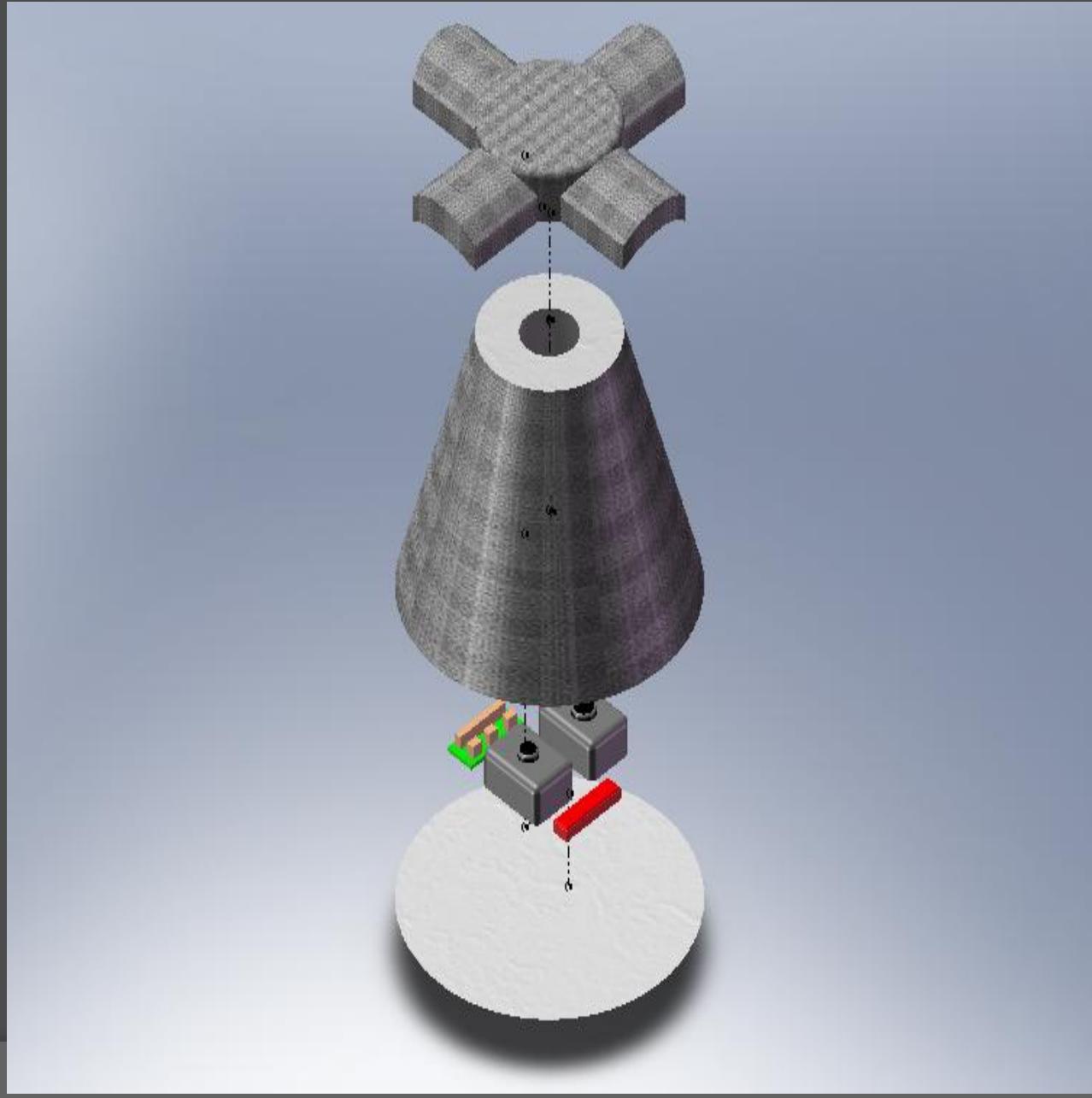
## ○ Mission Overview

- Our objective is to send a weather balloon with a payload into the upper atmosphere that will capture still photographs of the entire launch, record gravitational forces upon impact of the payload and to have an aerodynamic payload shell that will achieve controlled flight and descent from high altitudes.
- Our expectations of this experiment is to launch a successful payload into the harsh conditions of space while obtaining still photographs and flight pattern data, and to also experience teamwork on a first-hand scale
- Amateur high altitude weather balloons are becoming more popular. Many people have used weather balloons to obtain cosmic dust samples and also to take aerial photography from the edge of space.

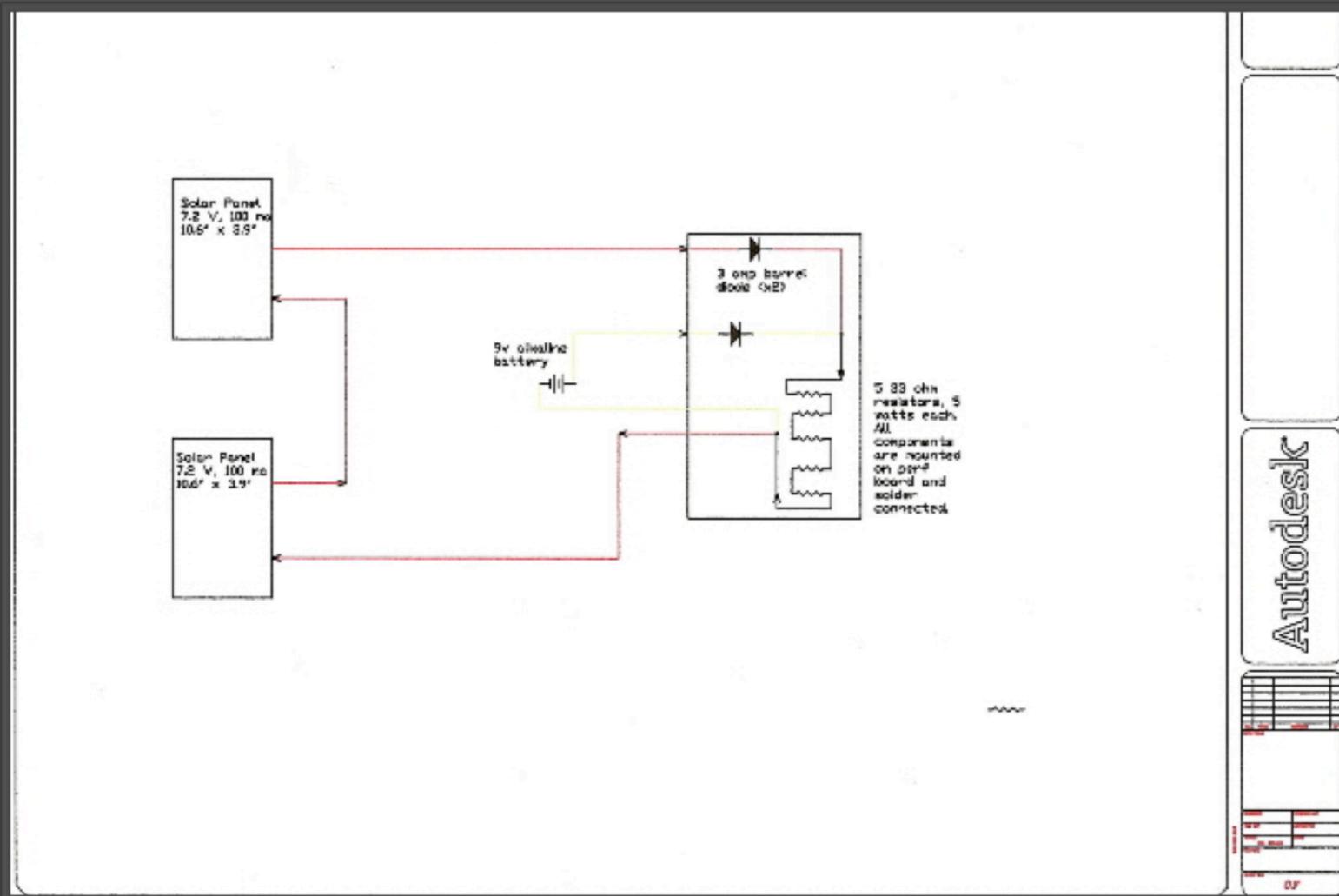
# **Payload User Guide Compliance**

- Mass- 1.5 kg (Total Payload)
- Passive aerodynamic control in-flight and landing
- Determination of G-loads upon landing
- On-board photography during entire flight
- Balloon Interface
  - String connection
  - Light-weight Payload

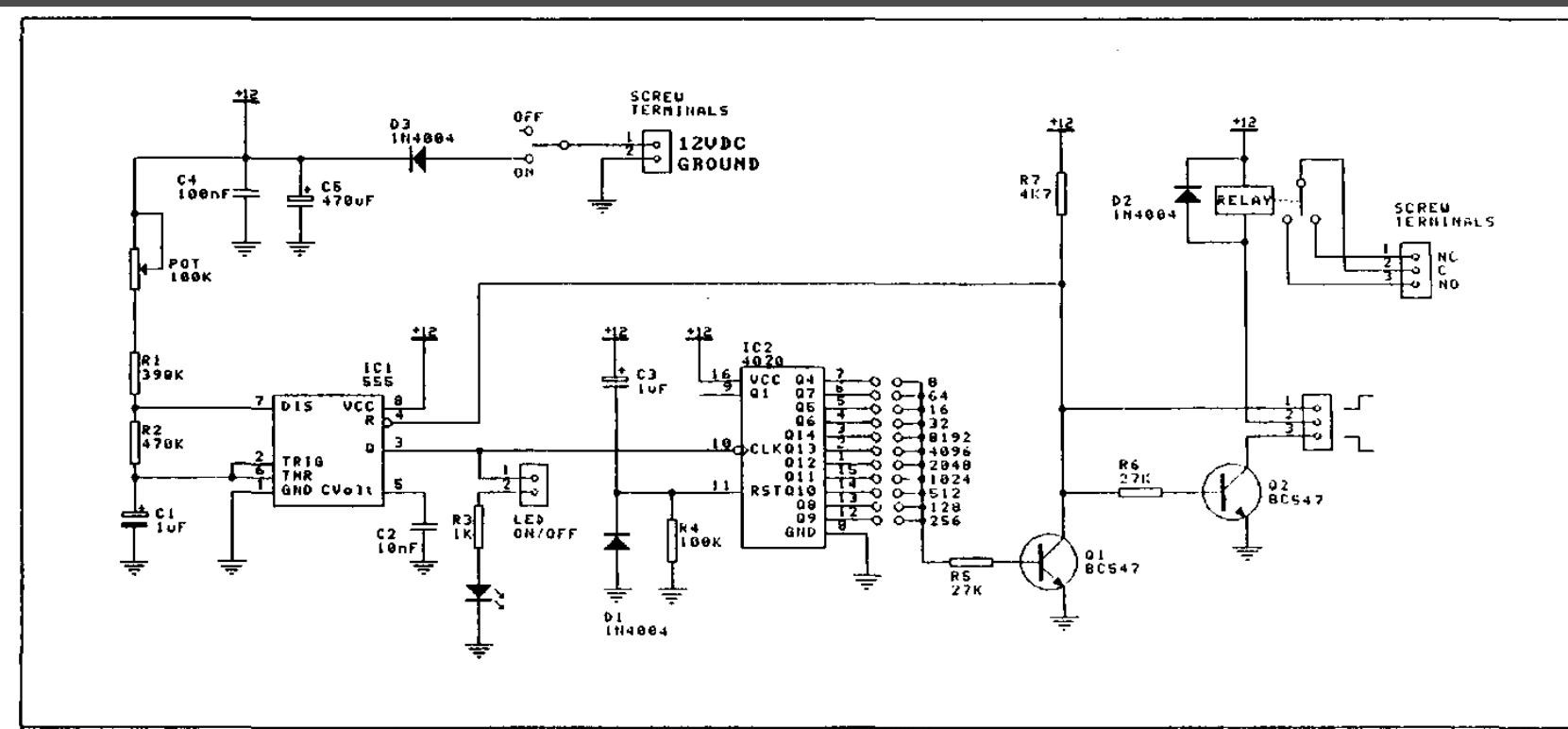
# Exploded View with balloon interface



# Wiring Diaphragm for Resistor Heater



# MK111 Timing Circuit



# Parts List

<u>PART NAME</u>	<u>PRICE</u>
Carbon Fiber	\$145.00 est
CANON A570 Digital Camera	\$74.95 x 2 = \$149.90
HOBO Pendant G Logger Kit	\$157.41
MK111 Timing Circuit	\$14.95
Pink Foam Board	\$12.00
Gorilla Glue	\$3.78 x 3 = \$12.54 tax inc
9-V Battery	\$2.05
9-V Battery Holder	\$0.80
33Ω Resistor	\$.39 x 5 = \$1.95
Barrel Diode	\$1.59
Perf Board	\$4.49
<b>TOTAL</b>	<b>\$502.68</b>

# Team Member Responsibilities

- Daniel Koch-Exterior Structural and Composite Material handling
- Jordan Gallegos-Structural design oversight handling and aerodynamic in flight data control recording process
- McMillan Misken- Photograph design and wiring assembly.
- Christopher Olson- Internal Heating assembly
- Cody Overcash- Aerodynamic Flight control assembly and visual recording assembly
- Isaac Hamilton- Still Photo recording and wiring assembly. Interior shell construction and assembly
- Thomas Mindenhall-Interior structural assembly

# Upcoming Schedule

- March 1-7 Finalize construction of Interior Design and exterior payload assembly
- March 8-14 Testing of interior resistor heaters & digital camera
- March 15-21 Accelerometer
- March 22-28 Finalize and modify any needed issues