Overview

- Project Review
- Camera
- Video Transmitter
- Antenna Research
- Video Receiver
- Balloon Cut Down
- Summary
Project Review

- Sending live video from balloon to the ground station
- Build a payload antenna has better radiation efficiency than was used in the past
- Record video on DVR
- Track balloon via GPS
- Set up hardware for ground station
- Nichrome wire cut down system
CG35A-Color Camera

- 380 Horizontal TV Lines Resolution
- 12 VDC Power Supply
- Weighs 55 Grams
- 1 Lux
600TVL-Color Camera

- 600 Horizontal Lines of Resolution
- Weighs 45 Grams (0.10lbs)
- 12 VDC Power Supply
- 0.01 Lux
Video Transmitter

- Videolynx VM-70x
- Large heat sink with fan must be used to dissipate heat radiated from transmitter
- Low weight (11 oz including heat sink) and compact design (2.35” W x 2.8” L x 0.75” H)
- Lithium Ion batteries
- Transmits within range
- Frequency selector switch
Transmitter Specs

- RF output : 0 ~ 5 watts
- DC Power in : 12 ~ 13.5 V
- Current draw max : 2.2 Amps
- RF termination impedance : 50 ohms
- Operating Temperature : -20 ~ 65 degrees Celsius
Transmitter
Payload Antenna

- Last year they have two major problems:
  - The lack of a sensitive ground station system
  - The failure of the ground plane antenna used on the payload package to perform as desired.
Payload Antenna

Things to Consider before Implementation

- Must have better radiation efficiency
- 70cm band
- Mounting on the payload
Payload Antenna

426.25 ATV Ground Plane
Downconverter

- Downconverter receivers the signal and converts the frequencies (421.25, 426.25, 427.25, 434, and 439.25 Mhz) down to channel 3.
Receiver

- Receives the downconverted signal and allows the user to view the signal in one or more computers or devices. In this case, Wifi broadcast.
To test the transmitter and receive video we are going to use PCTV USB stick.
The cut down device will be used to release the balloon from the payload train.

Nichrome is a metal that is used in a toaster.

When heated, easily cuts through nylon string.
Balloon Cut Down

**Weather balloon**
6.7 ft. in diameter, expands to 31 ft. before bursting at over 100,000 ft.
Payload: 4 pounds

**Parachute**
Deploys when balloon bursts

**First payload**
- Camera takes pictures every 15 seconds
- Two tracking and data gathering equipment

**Second payload**
HAM radio repeater

**Source:** Ron Meadows, PAI - MERCURY NEWS
Timeline

- 02/21- Test Transmitter
- 02/28- Anticipate Part Arrival
- 03/07- Have Antenna Built
- 03/14- Have All Parts Tested and Package Assembled
- Next Quarter- Prepare to Launch by April 18th, Implement a Timing Switching Circuit with Multiple Cameras
Summary

- Transmitter Testing
- Ground Plane Antenna Research
- Connect/Test Down converter and Receiver
- Possible Balloon Cut down Design
Conclusion

Questions ?