

Suit Sat Sensor Prototype Test Bed

West Coast Sensor Group
Proposal

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SUIT SAT PROPOSAL

- AS A GROUP WE HAVE BEEN TASKED WITH PROVIDING EARTH AND SUN SENSORS FOR EAGLE..
 - ◆ EAGLE 1 (OUR TERM FOR FIRST SET OF SENSORS) WILL USE \$4K EARTH SENSOR UNITS FROM SERVO
 - ◆ PRELIMINARY TESTING SHOWS THAT IT MAY BE POSSIBLE TO DO EARTH SENSING MUCH CHEAPER BY THE USE OF IR MOTION DETECTOR SENSORS.

SUIT SAT PROPOSAL

- ◆ USE OF MOTION SENSORS WILL MAKE EAGLE 2 AND EAGLE 2+ CHEAPER AS THE SERVO SENSORS COULD BECOME EITHER FULLY PRICED OR UNOBTAINIUM.
- ◆ OK ON EAGLE 1 BUT NEED TO QUALIFY POSSIBLE EARTH SENSOR FOR FUTURE USE.

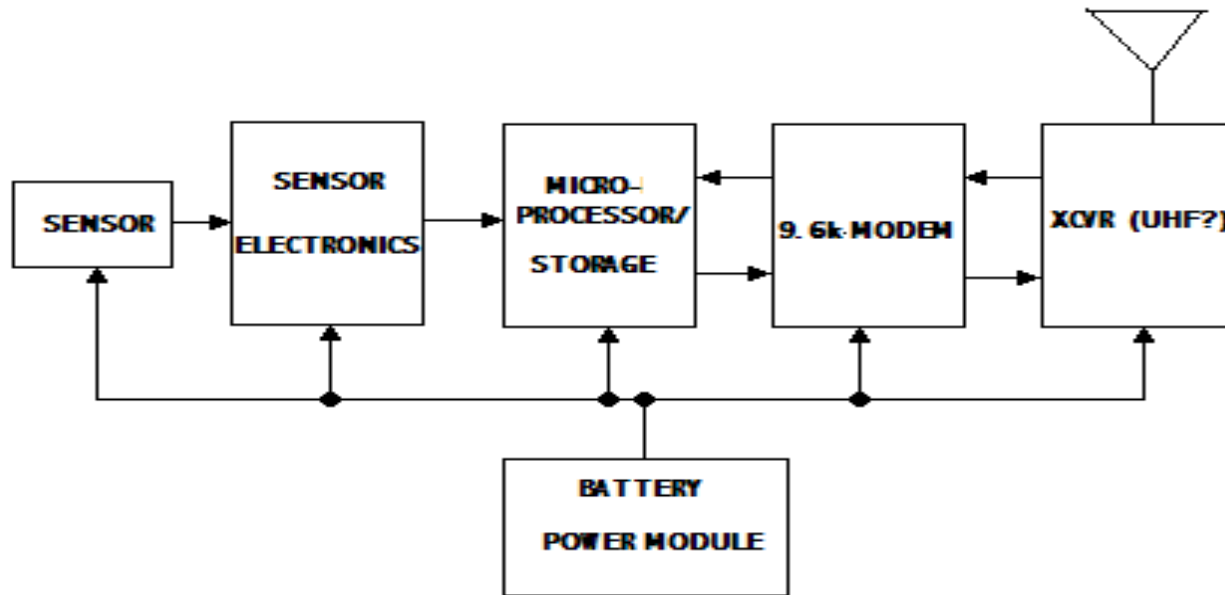
OUR MISSION REQUIREMENTS

- ◆ LONGEST POSSIBLE LIFE IN SPACE
- ◆ SENSOR NEEDS TO POINT UP FROM HEAD END OR DOWN FROM FOOT END OF THE SUIT TO SIMULATE EAGLE'S ROTATION **(THIS ASSUMES THE SUIT IS TUMBLING END TO END)**
- ◆ NEED ONE ANTENNA MOUNTED ON THE SUIT OR USE OF AN EXISTING ANTENNA FOR TELEMETRY

PROPOSAL

1. CONSTRUCT A SYSTEM USING MOTION DETECTOR IR SENSORS TO DO THE TASK
 1. SYSTEM TO BE TOTALLY INDEPENDENT OF ANY OTHER SYSTEM IN THE SUIT (NOT TOTALLY NECESSARY BUT NICE)
 2. SYSTEM WOULD ALLOW SENSOR DATA TO BE DOWNLOADED ON COMMAND FROM EARTH.
 3. WILL HAVE OWN PRIMARY BATTERY OR CAN SHARE POWER IF NECESSARY (SELF POWERED PREFERRED)
 4. TEST BED WOULD FULLY DRAIN ALL AVAILABLE ENERGY FROM BATTERY DURING OPERATION.

SYSTEM BLOCK



1. **WOULD LIKE TO BE ABLE TO DOWNLOAD ALL DATA WHEN PASSING OVER SANTA ROSA OR OTHER POINT BUT ARE WILLING TO TRANSMIT DATA CONTINUOUSLY FROM SENSOR OR WHATEVER AMSAT ETC FEELS APPROPRIATE AS LONG AS WE GET THE DATA WE NEED FOR EVALUATION PURPOSES.**
2. **DOWN LOAD ON DEMAND GIVES LONGEST BATTERY LIFE.**
3. **TRANSMITTER NEEDS TO OUTPUT 250 – 1000 Mw (tbd depends on actual frequency band used)**

PROPOSAL

◆ WOULD CONSTRUCT FROM OFF THE SHELF AS MUCH AS POSSIBLE

- **HAMTRONICS RCVR & XMIT BOARDS**
- **KANTRONICS TNC**
- **PIC OR SIMILAR PROCESSOR**
- **WOULD HAVE TO DEVELOP:**
 - ◆ **POWER MANAGEMENT SYSTEM**
 - ◆ **SENSOR ELECTRONICS**

◆ **BATTERY.**

- **NEW TECHNOLOGY HI CAP LI ION BATTERY OR OTHER TYPE IF REQUIRED**

WHAT WE NEED IF ACCEPTED

1. VARIOUS SYSTEM REQUIREMENTS TO TAKE PROJECT TO ISS FOR LAUNCH.

1. I.E.

1. RFI
2. MATERIAL LIMITATIONS
3. THERMAL CONSIDERATIONS
4. ELECTRICAL LIMITATIONS
5. DOCUMENTATION
 1. TYPE
 2. QUANTITY
 3. FORMAT

2. DATES AND TIMELINE AND DEADLINES

3. ORGANIZATIONAL STRUCTURE TO KNOW WHO TO TALK TO.

4. WHERE WILL STUFF BE PUT ON SUIT SAT? INSIDE WHERE? OUTSIDE ON ARM OR LEG? DO WE KNOW?

5. DETAILS OF THE SUIT

THANKS FOR YOUR TIME AND CONSIDERATION

- ◆ WE FEEL WE CAN MEET THE TIME LINE AS WE KNOW IT
- ◆ IT WILL GIVE US AN OPPORTUNITY TO PRE-TEST CONCEPTS IN AN APPROPRIATE ENVIRONMENT TO IMPROVE AMATEUR SATELLITES FOR THE FUTURE
- ◆ WITHIN REASON WE FEEL WE CAN FINANCIALLY SUPPORT OUR END OF THE PROJECT