# UNC-Sandia Infrasound Experiment (USIE)

SAND2016-7198PE

## Objective:

Record acoustic signals from three large explosions at the EMRTC facility in Socorro.

## Payload Specs:

-One Polar Tech Insulated Carton, 26 x 20 x 11 inches
-Approximately 15 lb.
-Internal power
-No comm

Very similar (slightly larger) than UNC ULDB piggyback

Payload components have been tested on two HASP flights and one sounding balloon flight

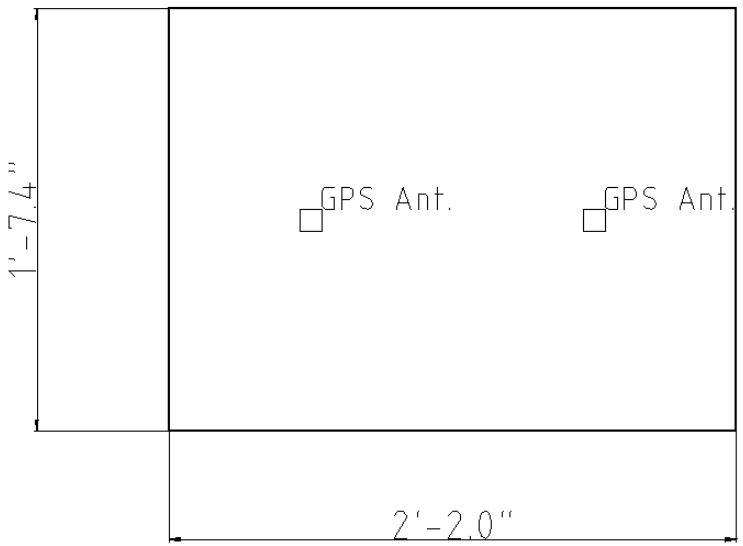
## Team:

Daniel Bowman (Sandia): Payload design, construction, integration, and flight ops

Jonathan Lees (UNC): Equipment support, ground array deployment.

Stephen Arrowsmith (Sandia): Acoustic propagation modeling

Top View




USIE PAYLOAD SCHEMATIC

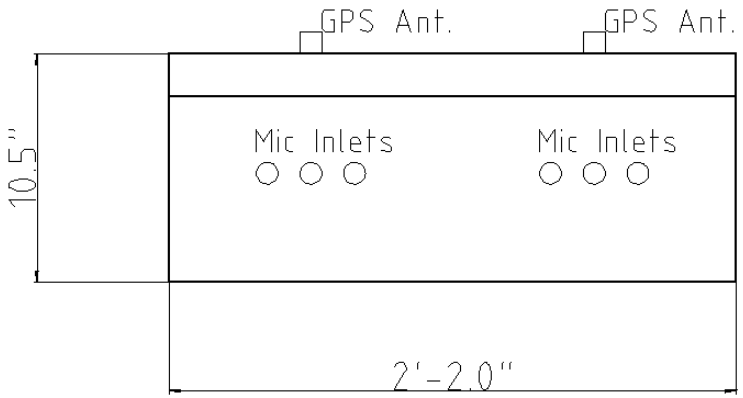
GPS ANTENNAE LOCATED ON TOP OF UNIT, BUT CAN BE PLACED APPROX. 6 FT AWAY IF NEEDED

MIC PORTS MUST BE OPEN TO ATMOSPHERE

PAYLOAD ACTIVATION BY ATTACHING EXTERNAL CONNECTORS TOGETHER

NO POWER/COMM PROVIDED BY CSBF

Side View




Similar design flown on sounding balloon flight, November 2015. USIE is slightly larger (this version is 17” across) and will not be hanging.

# Requirements

## Experiment:

-One ground explosion just after reaching float
-One as balloon crosses Rio Grande valley
-One 15 minutes before termination

## Integration in Ft. Sumner:

-One table with AC power access
-Two chairs
-Internet (wireless) access
-Phone land line, if possible

## Flight Requirements:

-Minimize activity on the flight system for 0-15 minutes after blast (i. e. no swiveling) to ensure signal capture
-Please fly as far west as possible before termination

## Other:

-Permission to deploy a ground infrasound array on airport premises

-Permission to hand launch two solar hot air balloons <10 minutes after main balloon release, if weather permits

# Timeline

July 5:  Payload assembly complete

August 5-8:  Hang test at Sandia Facility for Acceptance Calibration and Testing (FACT) site

August 14-20:  Deployment of ground infrasound stations

August 22:  Integration of USIE payload in Ft. Sumner

August 29-?  Flight operations

September 4-9: Recover ground infrasound and solar balloon stations, retrieve USIE unit from CSBF in Ft. Sumner