**I. General information:**

1. Mission name: **SONGNEX 2015**

2. Instrument name: **UHSAS (Sta 2 rack)**

3. What is measured: **Aerosol size resolved number concentrations**

4. Short description of measurement technique:

**UHSAS: Fine particle size distribution by laser light scattering.**

5. Contact information for all personnel going to the field with this instrument:

 (*for multiple investigators,* *please list the PI or primary contact person first*)

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Email** | **Office phone**  | **Cell phone** |
| 1. Charles Brock | charles.a.brock@noaa.gov | 303-497-3795 | 303-887-2523 |

**II. Specific information:**

1. Total installed weight:

|  |  |  |
| --- | --- | --- |
| **Rack weight and balance info** | **Allowed** | **Actual** |
| Weight, lbs.: |  |  50 lbs UHSAS only |
| Overturning moment, in-lbs.: |  |  |

**Pod weight and CG:**

**NOTE**: Please also provide weight-and-balance information for all installed equipment. Templates for standard electronics racks are available for download [here](http://www.esrl.noaa.gov/csd/tropchem/2008ARCPAC/P3/index.html). PIs with non-standard installations will need to provide relevant information in a similar format.

2. Individual subassembly info(weights should sum to total listed above)

|  |  |  |
| --- | --- | --- |
| **Component name** | **Location name and flight station** | **Weight, lbs** |
| 1. Sta. 2 rack + instruments | Station 2  |  |
| 2.  |   |  |

1. Component power consumption in Amps

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Component name** | **Location name** | **400 Hz****3Ø** | **400 Hz****1Ø** | **60 Hz** | **28VDC** | **28VDC****WOW** |
| 1. UHSAS | Station 2  |  |  | 2A |  |  |
| 2.  |  |  |  |  |  |  |
| 3.  |  |  |  |  |  |  |
| 4.  |  |  |  |  |  |  |
| 5. |  |  |  |  |  |  |
|  | **Totals:** |  |   | 2A |  |  |
|  |  | **400 Hz****3Ø** | **400 Hz****1Ø** | **60 Hz** | **28VDC** | **28VDC****WOW** |

4. Inlet and exhaust information

|  |  |  |
| --- | --- | --- |
| **Inlet/exhaust name** | **Location name and flight station** | **Hole size through hull, inches** |
| 1. Low Turbulence Inlet | FD window, FS 320 | 2.5 inches |
| 2. Sta 2 exhaust | Port side, FS 451, top port | 1/2”, BF Venturi plate dump |
| 3. |  |  |

5. Source of flow(name and location of pump or venturi)

|  |  |
| --- | --- |
| **Pump name** | **Location name and flight station** |
| 1. UHSAS brushless DC diaphragm pump | Internal to UHSAS, Station 2 |
| 2.  |  |

6. Installed hazardous materials or equipment:

(only for items *installed* *in the aircraft for use during flight*)

A. Lasers

**1) UHSAS**

 **a) Type: solid-state diode laser, directly mounted**

 **Class: I (in closed unit with safety switches)**

 **Wavelength: 800 nm**

 **Output power: 1000 mW continuous**

 **Eye-safe? no**

 **Beam fully contained within instrument during normal operation? yes**

 **b) Type: solid-state Nd3+:YLF**

 **Class: I (in closed unit with safety switches)**

 **Wavelength: 1054 nm**

 **Output power: 30 mW continuous**

 **Eye-safe? no**

 **Beam fully contained within instrument during normal operation? yes**

B. RF transmitters: **NONE**

C. Radioactive materials: **NONE**

D. Compressed gases: (1 ft3 = 28.32 liters; cabin volume = 4260 ft3 = 1.21 x 105 liters): NONE

E. Chemicals (solids and liquids): **NONE**

F. Cryogens: **NONE**

G. UPS and battery installation: **NONE**

H. Motors

 **1) UHSAS**

 **a) Description: sealed diaphragm air pump, KNF Neuberger**

 **Motor information: Brushless DC, 24 V, 0.4A**

 **Thermal interlock enabled? no**

 **2) Various small brushless DC fans, 12 V**

I. Operator seat requests

Test flights: **1**

Transit flights: **0**

Science flights: **0**

7. Data and plumbing drops

 Network (Cat. 5/6 ethernet) drops requested: **1**

 Serial drops requested: **NONE**

 IRIG-B drops (BNC coax connector) requested: **NONE**

 Vacuum/exhaust/ emergency dump lines: **1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Flow rate, slpm** | **Line pressure, Torr** | **Pump type** | **Trace gas concentration(s)** |
| 1. Sta 2. Exhaust | <1 | Atmospheric + 20 Torr | Diaphragm | water, noncondensing, RH<35% at 20 oC |
| 2.  |  |  |  |  |
| 3. |  |  |  |  |

 Ground gas service lines (number, location, type of service): **NONE**

 Other gas lines (number, location, type of service): **NONE**

Will you be sending data to the AOC data station? If so, please provide the following information: NONE

8. Aircraft access

 a. flight days:

 Pre-flight time requested at aircraft (hours): **1 Hour**

 Routine pre-flight ground support required? **NONE**

 Routine post-flight time requested at aircraft (hours): 0.5 **Hours**

Routine post-flight ground support required? **NONE**

b. non-flight days:

 Routine external access to inlets or zenith mounts required? **NONE**

*Please note there is zero access and zero power to the aircraft (including pods) on hard-down days. These occur at least once every seven calendar days while in the field.*

**9. Aircraft maneuvers**

 Briefly describe in-flight calibration frequency, duration, altitudes desired:

 Briefly describe instrument sensitivity to flight conditions:

(issues during roll/pitch, ascent/descent, sampling in cloud, icing etc.)

**Valid data may not be acquired during in-cloud sampling due to droplet or ice crystal shattering on LTI.**

10. Miscellaneous

 *1. Hazmat for preflight/postflight calibrations*: Please describe fully any additional hazardous materials - compressed gases, solvents, radioactive ion sources – that you anticipate *temporarily* bringing onto the aircraft for periodic instrument calibration purposes (e.g., *n*-butanol in a CN counter, 210Po in a DMA, a UPS for power, compressed gas cylinders for calibrations, etc.)

 **a) UHSAS**

 **1) Methanol for optics cleaning (<40 ml)**

 **2) Compressed zero air cylinder (<150 ft3) during cals**

 **3) n-butyl alcohol (<1 liter) for CN counter during cals**

 **4) <20 mCi 210Po in DMA during cals**

 **5) Dilute di (2-ethylhexyl) sebacate in isopropyl alcohol (<1 liter) during cals**

 *2. Fabrication and sheet metal support:* **NONE**

1. *Ferry flight/check flight procedures.* **NONE. Instrument may be flown cold.**

**III. Ground laboratory space**

1. Tampa space requests:

 Power requirements: **Included in NMASS worksheet**

 Special requests:

2. Field space requests:

 Work space, ft2: **Included in NMASS worksheet**

 Number of tables/chairs:

 Power requirements:

 Storage space, ft2:

 Other requests: