

APPENDIX B.
RAF PROJECT SAFETY COMMITTEE
HAZARDOUS MATERIALS AND DEVICES
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DO NOT WRITE IN THIS BLOCK

Project:	___NOMADSS___	Installation Period:	8 Apr – 22 May 2013
Aircraft:	___C-130___	Beginning Date:	___1 Jun 2013___
Instrument Number:	_____	Ending Date:	___15 Jul 2013___

1. Instrument: ___SO2 pulsed fluorescence_____
2. Function: ___measure SO2_____
3. Principal Investigator: ___Lee Mauldin, Chris Cantrell_____
- Address: ___311 UCB, University of Colorado, Boulder, CO 80309___
- Telephone: ___303-947-7466_____
4. Instrument Operator(s): Lee, Chris, and a yet to be named student
5. Is this instrument commercially produced? ___Yes_____
6. If so, please list name and address of manufacturer:
 Thermo Scientific
7. Please list serial number of the instrument:
 We don't have the instrument yet_____

Please attach a copy of the manufacturer's instruction manual for the device. If this is not possible, attach a copy of those pages of the instruction manual which describe the principles of operation, hazard warnings, safety features, and safety rules.

8. If the instrument is not commercially produced, please provide information requested below:

Designed by:	NA
Organization:	NA_____
Address:	NA_____
Telephone:	NA_____
Built by:	NA_____
Organization:	NA_____
Address:	NA_____

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9. Describe principles of operation, hazard warnings, safety features:
 Ambient air is sampled into a fluorescence cell where light of a specific wavelength for SO₂ is pulsed. The resulting fluorescence emission is detected by a photomultiplier and converted to counts. Zero and calibration are accomplished by addition of zero air or an SO₂ standard diluted into zero air.
10. If the instrument is commercially produced, has it been modified? Yes
11. If modified, describe the modification.
 The flow is increased by the addition of an external pump. A “kicker” designed to reduce interference from hydrocarbons is removed, because of the substantial flow restriction.

All investigators please answer the following:

12. Does the instrument contain, use, or produce:
- | | | | |
|--------------------------|-------|------------------------|---------|
| Radioactive materials | _____ | Compressed gases | ___X___ |
| Other ionizing radiation | _____ | Non-ionizing radiation | _____ |
| Flammable liquids | _____ | Laser | _____ |
| Radar | _____ | Flammable gases | _____ |
| Explosive materials | _____ | Toxic materials | _____ |
13. If any of the categories were checked, specify the material below (for example, amount, energy levels, physical form, etc.).
 Compressed air, compressed 5 ppmv SO₂ in N₂ calibration mix
14. Please list all other chemicals you will use on board this aircraft in your experiment.
 None
15. If your experiment consumes or discharges materials, will you need to carry additional materials on board? No

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16. What and how much extra materials will you need to carry?
NA
17. What kind of container will you need to carry these materials?
_NA_____
18. If the device utilizes a laser, please classify the laser according to ANSI Z 136.1-1973 (circle one). NA
Class: I II III IV
19. If your laser will be operating at a wavelength that is not eye safe, what procedures will be established to minimize the danger to yourself and other project participants?
_NA_____ please attached a separate document covering this question_____
20. If you are using compressed gas cylinders, what is the maximum pressure expected for each cylinder type?
_air: 2000 psi; 5 ppm SO2/N2: 2000 psi_____
21. Will you be re-filling any compressed gas cylinders yourself, either at JeffCO or during the field deployment?
_No_____
22. Are there any other hazards associated with the instrument itself, the required ground support equipment or the experiment which have not so far been covered in this questionnaire?
No
23. How would you describe the probability of an accident resulting from the presence and use of your instrument on board the NCAR aircraft?
Very small

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24. How would you describe the severity of such an accident?
Very minor

25. What precautions will you take to decrease the probability and the severity of an accident? If any documented safety procedures from your home facility or university are available, please attach a copy of said materials to this form.
Secure gas cylinders. Check gas lines for leaks after installation.

13 March 2013

Date



Signature of principal investigator or operator

Christopher Cantrell

Printed name of principal investigator or operator

Reviewed by

Date