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NASA TECH BRIEF

Airborne Spectrometer Senses Several Gases

A newly modified airborne spectrometer can be switched easily in flight to measure the atmospheric concentration of SO_2, NO_2, or I_2.

A variable shutter provides for changes in the field of view that permit observation of a wider range of plume widths. Concentrations of gases in the atmosphere frequently occur as bands, lenses, or plumes —as from a factory's chimney. Previously, switching between gases has required modification in the laboratory, with extensive calibration.

The adjustable grating, counter, and access window enable the operator to reset the grating's position during flight by resetting of the counter to a predetermined number. The quartz correlation mask and the spectral-aperture instrument-function filter are mounted in a precision frame that can be replaced easily for change from one gas to another.

The structure of the spectrometer is so modified that, for change of gas, the two calibration cells (mounted in a removable subframe) can be slipped in or out easily. For accurate observation of plumes the instrument's beam must be narrower than the plume; the instrument's field of view can now be changed under the control of a calibrated counter. Further development would enable the instrument to switch from one gas to another under remote control.

Note:

The following documentation may be obtained from:

Clearinghouse for Federal Scientific
and Technical Information
Springfield, Virginia 22151
Single document price $3.00
(or microfiche $0.65)

Reference:
NASA-CR-99609 (N69-23489), Absorption Spectrometer Modifications and Flight Testing

Patent status:

No patent action is contemplated by NASA.

Source: J. McDowall and A. J. Moffat of
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