

Issued: 10 August 1977

MONTHLY REPORT

for

JULY 1977

VISSR Atmospheric Sounder (VAS)
Development and Performance Evaluation

Contract No.: NAS5-21965

Prepared by

Space Science and Engineering Center
University of Wisconsin
Madison, WI

for

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD

I. General

On July 14, 1977, D. Small of NOAA and R. Dedecker, P. Menzel, and H. Revercomb of SSEC attended the VAS Working Group Meeting at Goddard Space Flight Center. The need for better thermal vacuum test data to determine calibration coefficients was stressed. Also the computer to computer interface between the UW and GSFC VAS systems was discussed.

II. VAS Instrument Support

At the Working Group Meeting it was indicated that addition of heaters in the fore optics of the VAS telescope (preferably on the secondary mirror shield and the baffle forward) would allow more unique determination of calibration coefficients and production of thermal gradients closer to those expected in space (hence more representative diagnosis of expected instrument performance). Present calibration uncertainty maxima can be as large as 1.9 erg/etc. and addition of appropriate heaters would reduce this to .5 erg/etc. A VAS calibration of accuracy at least comparable to that of HIRS is essential for a successful VAS Demonstration (absolute error less than 1 erg/etc).

III. Data Processing System Development

At the Working Group Meeting, the plans for UW-GSFC inter-computer communications were also presented. It was agreed that the VAS processing systems at UW and GSFC would communicate via a 9600 baud synchronous full-duplex line using the Digital Equipment Corporation's standard DDCMP protocol. Messages for the exchange of data, source programs, and status information were agreed upon.

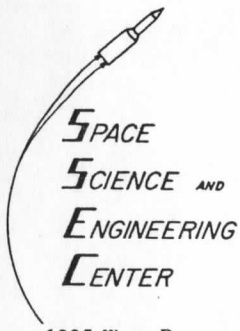
The completion of the mechanical installation of the VAS antenna awaits only the insertion of the hour drive into the system. All safety features are secured. The present RF feed was found to have insufficient gain. A solid state GaAs system has been technically evaluated and found to be good. It is now on order. To insure a good noise ratio in the solid state device, designs for temperature cooling at the focus of the VAS antenna are being investigated.

The frame sync has been tested and reception of IR documentation and pictures was good, however, the visible pictures were noisy. All noise reduction procedures possible are now being implemented.

The video cassette tape archive hardware is being finalized in two sections--(1) the motor drive and power supply and (2) the computer interface. The final stages of debugging are underway, as checkouts with real time data are being performed.

IV. Development of VAS Data Processing Techniques

The software to overlay U.S. state boundaries on HIRS images has been successfully implemented. Software to perform regression of HIRS versus microwave data for selected clear fields of view is being written. Using the resulting "clear" HIRS data set, full resolution regression retrievals of temperature profiles will be performed.



1225 West Dayton Street
Madison, Wisconsin 53706

THE UNIVERSITY OF WISCONSIN

10 August 1977

Mr. J. B. Connor
Contracting Officer, Code 289
NASA--Goddard Space Flight Center
Greenbelt, MD 20771

Dear Mr. Connor:

In accordance with Article III of Contract NAS5-21965, I am submitting the required Progress Report for the month of July, 1977.

If you have any questions or desire further information, please contact me at (608) 262-0118.

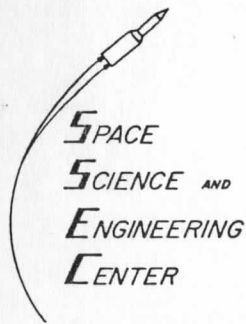
Sincerely,

Paul Menzel
Program Manager

WPM/rmk

Enclosure

cc: H. Montgomery, Code 942 (10 copies)



1225 West Dayton Street
Madison, Wisconsin 53706

THE UNIVERSITY OF WISCONSIN

4 August 1977

Mr. Donald S. Friedman 702.1
Technology Utilization Officer
Goddard Space Flight Center
Greenbelt, Maryland 20771

Subject: Annual New Technology Report Under Contract NAS5-21965

Dear Mr. Friedman:

After reviewing our records, and discussing the advances realized this past year under contract NAS5-21965 with the program investigators, I find that there is no new technology to report. Since we have not awarded any subcontracts under this contract, the subcontract portion of this report is also negative.

Respectfully yours,

Paul Menzel

Paul Menzel
Program Manager

PM/JPR:kmp

cc: V. E. Suomi
T. Haig
J. Roberts
R. Erickson