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SOLAR RADIATION VI EXPERIMENT

The experiments scheduled for the NRL Solar Radiation VI Satellite are mainly a continuation of solar monitoring studies first carried out successfully in the 1960 ETA-2 Satellite. These studies have as their goal the determination of the time history of the sun's x-ray and ultra-violet emissions. It has already been found that solar x-ray emission is the most sensitive index of solar activity known. It is to be expected that more detailed analysis of the various phenomena comprising solar activity by means of this x-ray tool will help in our understanding of solar events and will aid in the prediction of safe travel in space.

The set of experiments scheduled for SR-VI include a main experiment and three secondary experiments. The main experiment is a study of the hardness spectrum of the solar x-ray emission and of its time variation. This study will be carried out with ion chamber x-ray detectors covering the following nominal spectral bands:

0.1 - 1.6 A
0.5 - 3.0 A
2.0 - 6.0 A
2.0 - 8.0 A
8.0 - 16.0 A
44.0 - 60.0 A

The outputs of the above chambers will be telemetered to earth in real time. A comparison of the outputs of these chambers should provide a measure of the effective emission temperature. This will provide a measure of cooling rates, which in turn may permit determination of whether collisional or adiabatic cooling processes are dominant.

The following secondary experiments are also planned for SR-VI. To test the effectiveness of magnetic shielding for the x-ray ion chambers a 2-8 A x-ray ion chamber will be flown behind a dummy magnet. To provide data on variations in the longwave solar x-ray emission a magnetically protected 44-60 A x-ray detector will be flown.

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