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# FINAL REPORT

# DATA REDUCTION AND ANALYSIS FOR THE TRW IMP-7 PLASMA WAVE EXPERIMENT

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## DATA REDUCTION AND ANALYSIS FOR THE TRW IMP-7 PLASMA WAVE EXPERIMENT

The last data acquisition from IMP 7 occurred on September 30, 1978, and Figure 1 shows the low frequency magnetic field levels during this last day before retirement. During the past year we have continued to work on data analysis from IMP 7, and in the future thi work will continue under the auspices of our NASA Headquarters SR&T/Data Analysis contract, Some of the tasks now under way include further analysis of magnetospheric boundaries, studies of substorm and fireball phenomena, and ISEE/IMP 7 correlations involving interplanetary transients. Thus this final report is actually only an interim progress report for the full IMP 7 data analysis program.

The actual progress during the years of Project-funded data analysis can best be appreciated by studying the publications attached in the Appendix. The highlights might be enumerated as follows:

(1) The IMP 7 interference problems were analyzed and the lessons learned on IMP were applied in the design of the ISEE 1,2, and 3 wave instruments.

(2) The measurements in the tail revealed great complexities involving substorms and fireballs and provided insight into the overall dynamics of the magnetosphere. The low levels of magnetic turbulence may be of great significance with respect to the development of tearing-mode dissipation for reconnection events.

(3) The IMP wave observations in the distant magnetosphere boundary region showed that the boundaries were quite diffuse and frequently purely-defined.

(4) On some occasions nearly simultaneous IMP 7 and 8 comparisons were used to achieve new understanding of shock structure and propagation. These studies will be continued with IMP and ISEE.

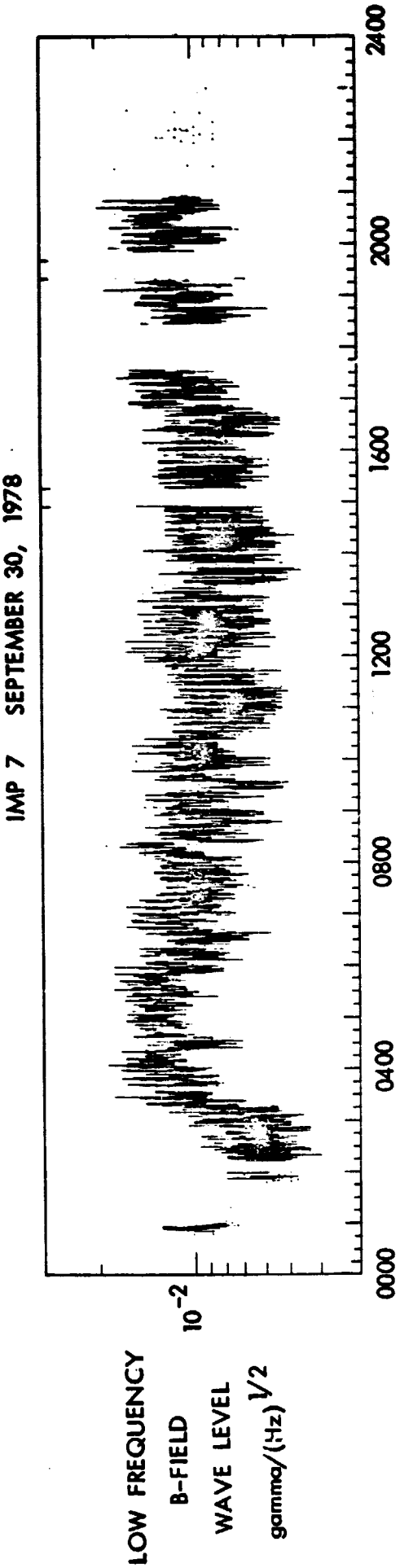


Figure 1

## APPENDIX

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