1. INTRODUCTION

This report describes the work performed in the period May 1970 to December 1972. A solar radio patrol over a wide frequency range, from cm to dekameter wavelengths, was maintained at Manila Observatory (14°38'N 121°05'E) to complement the coverage of Sagamore Hill Radio Observatory (42°38'N, 70°49'W). The purpose of the patrol was precise measurement and real-time reporting of radio bursts and associated geophysical effects. It was also necessary to analyze the radio bursts and seek relationships with other solar parameters and with geophysical events such as PCAs, SIDs and geomagnetic storms. Patrol work was performed by Manila Observatory and Air Weather Service personnel. This project supports AFCRL research and AWS real-time needs.

2. OPERATIONAL WORK

The period covered by this patrol was more eventful than expected since the peak of the solar cycle had the nature of a broad plateau. One may single out as outstanding in activity two periods: the second half of January 1971 and the whole of August 1972. A comprehensive coverage of these and other events was maintained. Solar radio burst data in the cm and decimeter range are published in the monthly NOAA Solar-Geophysical Data while daily flux, operating hours, graphs of selected bursts and dekemeter radio bursts also are published in the quarterly AFCRL Geophysics and Space Data Bulletin. Copies of chart records of important radio bursts are sent to AFCRL. A list of published studies of radio bursts and of geophysical events are provided in the Appendix. Immediately following are discussion of two other topics.

3. MAJOR GEOMAGNETIC STORMS AND ASSOCIATED SOLAR EVENTS

Some ninety seven (97) geomagnetic storms with sudden commencements (SSC) were recorded at Manila Observatory during the period July 1968 to March 1972. The instrument used was a Heliflux model HSM-1 on real time recording of the geomagnetic X-component, i.e., the horizontal N-S component of the field. Since Manila Observatory is at most only four degrees north of the geomagnetic equator, this component is almost 95% of the total field. A sudden commencement is identified by an impulsive increase, ΔX, of the X-component.

A SSC was tentatively considered a major event if $\Delta X \geq 20$ gammas. Of the 97 recorded events forty four met this criterion. Yet not all of these could be classified as major events. An additional criterion was set, namely $\Delta X/\Delta t \geq 20$ gammas/minute, where Δt was the rise time. This norm considers geomagnetic storms that exhibit a fast compression rate of the magnetosphere. The pressure at impact of the solar wind shock front on the magnetosphere can be related to the parameter $\Delta X/\Delta t$. Of the forty four events only eleven met this additional criterion. Table 1 lists them in chronological order.

A little more than half of them occurred in a single year, in 1970, towards the end of the plateau of peak solar activity in the present sunspot solar cycle, while the rest were equally distributed at about one each for the remaining years. Except for SSC ## 1 and 10, the above mentioned criterion was more than amply met. Furthermore, when the ratio $\Delta X/\Delta t$ was determined, the resulting values clustered about 25, with the one exception of SSC #4