Implications". I requested a total of $119,100 over four years, mostly in support of one or two graduate students to expand the study of faint diffuse emissions described in my last report. I have begun a manuscript on this study, for submission to Geophysical Research Letters as soon as possible.

At the Fall Meeting of the American Geophysical Union, held in San Francisco, CA, in early December, Dr. Israel Oznovich and I presented some preliminary results of a joint study on auroral height-finding from a single station, using simultaneous multi-wavelength observations of auroral arc emissions. We examined a sequence of arcs observed at Eureka, NWT on October 23, 1993, and determined unusually high (≥180 km) emission centroid heights for the [OI] green line emissions, based on their zenith angles and angular distances from the corresponding [OI] red line emissions. By coincidence, the DMSP F10 satellite overflew the arcs while they were in view from Eureka, and the instantaneous coordinates of the electron precipitation exciting the arcs strongly confirmed the heights inferred solely from the optical data. The measured precipitating electron spectra were also consistent with high-altitude emission. The study is continuing, and will be submitted for publication as soon as possible. The technique we are investigating will be useful as an aid to mapping polar arcs to geographic/geomagnetic coordinates for purposes of comparison with observations from other space- and ground-based instruments.

1.3 Magnetospheric topology study

This study has yet to begin, as opportunities for progress in the two areas described above were pursued in preference to this area. The study of Polar Diffuse Aurora described above in §1.2 will require an examination of the magnetic field topology in the neightbourhood of the diffuse emission regions.

1.4 Convection inference study

This study was to have begun October 1, 1995, but was delayed in favour of the faint arc study efforts.

1.5 Storm precursors study

This study was also to have begun October 1, 1995, but was delayed. An opportunity exists to contribute to an extensive study of a major storm period in November 1993, and the study will begin along these lines during the last quarter of the contract year.