The proposed research provides an excellent opportunity for graduate study and training, accordingly the major portion of the funding requested is (as shown in section 1) for the support of a graduate student (at a rate of $15K per annum) for each of the four years for which funding has been requested. It is anticipated that the first two years of work will be carried out within the scope of an M.Sc. project, while the last two years will form part of a Ph.D. project for a qualified student. Further funding for completion of the project will be sought from NSERC and/or other sources (*e.g.,* University graduate scholarships).

A major requirement of the study is the ongoing acquisition of ground-based image data to complement measurements from new ground- and space-based experiments as detailed in Part II. The costs for operation of the Polar Camera at Eureka, archiving/processing the data, and transporting the Polar Camera to and from Saskatoon for repair and refurbishment in alternate years, are budgeted in section 2. These costs are estimated as $0.5K per annum for installation and shutdown, $1K per annum for onsite operations support, $1K per annum for equipment maintenance (*e.g.,* optical filter replacement, hardware repair, software support), and $7K per annum for the very high costs of return shipment between Eureka and Saskatoon. Also, the research program described in this application will be significantly supported by services provided by the Institute for Space and Atmospheric Studies (ISAS), University of Saskatchewan: these include Administration, Stores, Laboratories (electronic, optical), and related highly skilled personnel. The University of Saskatchewan supports ISAS substantially ($60K per annum), on the understanding that ISAS Professors seek and secure approximately matching funds from NSERC or CSA. The cost of ISAS services fees, beyond that provided by the U of S, are $20 per hour. It is estimated that a total of 200 - 300 hours per annum (equivalent to 1.5 - 2 months) are required by this program, for a total of $4-6K per annum. Estimates of required time and associated costs are higher in alternate years owing to the labour required to repair and refurbish the Polar Camera during the summer.

In section 3 a total of $1.25K per annum has been requested, including $0.75K for data archive media (4 mm DAT), and $0.5K for other supplies.

As the proposed research requires active collaboration with scientists within and outside Canada, funds have been requested in section 4 for one trip for collaborative purposes per annum ($1.25K) by the student, and in alternate years attendance by both the student and D. P. Steele at a major conference to present research results ($2.5K). Costs for Steele's attendance will be borne by his CNSR transition contract with the CSA, during the first phase of the project; should this contract be extended for a further two years, additional support for Steele's participation would be drawn therefrom.

In section 5, publication costs for the second year of each phase have been budgeted ($1K), with half the expense being borne by Steele's CSA contract in the first phase (and the second phase, if possible).