METEORITE COLLECTIONS IN CANADA: COLLABORATING TO SUPPORT SPACE EXPLORATION. R. K. Herd[1], C. D. K. Herd[2], I. Nicklin[3], and K. Tait[3], [1]Curator, National Meteorite Collection of Canada, Natural Resources Canada, Geological Survey of Canada, 601 Booth Street, Ottawa K1A 0E8 (herd@nrcan.gc.ca), [2] Department of Earth and Atmospheric Sciences, 1-26 Earth Sciences Building, University of Alberta, Edmonton, Alberta T6G 2E3 (herd@ualberta.ca), [3] Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario M5S 2C6 (iann@rom.on.ca;ktait@rom.on.ca).

Introduction & Summary: Major meteorite collections in Canada have begun collaborating, to improve the acquisition and description of new Canadian meteorites and other important samples, to promote awareness of and access to their holdings, and to help create a national infrastructure of researchers and institutions experienced in space-exploration-critical skills for receiving, curating, handling, and analyzing astromaterials. This initiative is supported by funding from the Canadian Space Agency (CSA) for an Astromaterials Discipline Working Group. "Astromaterials" currently include meteorites, cometary samples like those from the Stardust mission, atmospheric particles, lunar and other returned specimens from missions, tektites, space-exposed hardware and analogue materials.

Background: Meteorite collections began in Canada in 1855 when Sir William Logan acquired the Madoc meteorite and started the National Meteorite Collection of Canada at the Geological Survey of Canada (GSC). With the major fall of the Bruderheim meteorite in 1960, collaboration amongst Canadian researchers began in earnest, to ensure retention and representation of Canadian falls and finds in our national institutional collections. The Associate Committee on Meteorites (ACOM) of the National Research Council of Canada (NRCC) became the co-ordinating body for research on meteors and meteorites until responsibility passed to the Meteorites and Impacts Advisory Committee (MIAC) of the CSA in the late 1980's. In early 2006 the pristine samples of the Tagish Lake meteorite were acquired by a consortium of Canadian institutions that included the University of Alberta (U of A), the Royal Ontario Museum (ROM), the CSA, Natural Resources Canada (NRCan) and the Department of Canadian Heritage [1, 2]. In fall 2006 interested Canadian researchers from government, university and industry proposed to the CSA that a Canadian Astromaterials Facilities Network be established in support of Canada's collaboration with other nations in a global space-exploration strategy. In response to funding opportunities from CSA, an Astromaterials Discipline Working Group (ADWG) was established in 2007, lead by representatives of the institutions holding major meteorite collections: GSC/NRCan, the ROM, and the U of A-- the same institutions which collaborated in the acquisition of the Tagish Lake pristine samples. There are currently eight ADWG members, with plans to add many associate members and a listserver for communications with an expanding community of interest.

Towards Collaboration: In the past institutional meteorite collections in Canada operated mainly independently and competitively as resources and opportunities to acquire materials were available to them. They engaged in some joint field work and trades. While more mature astromaterials communities may utilize competition to advance knowledge and skills, we believe the fledgling Canadian community will now benefit from collaborative initiatives. The consortium approach which led to the acquisition of the Tagish Lake pristine samples showed the potential for productive collaboration among the collections in ways not previously envisioned. Canada's plans to collaborate with other space-faring nations to explore the Moon, Mars and beyond has highlighted the need to rapidly develop national skills to receive, curate, handle and analyze extraterrestrial materials that will be returned from space missions. The institutions in Canada which possess collections and which are uniting in the ADWG are committed to astromaterials research, are in a strong position not only to carry out some of that research but to promote it and to co-ordinate it nationally, and to share and extend their worldwide contacts.

Brief Descriptions of Major Collections: The National Meteorite Collection of Canada consists of approximately 2700 samples of 1100 different falls and finds [3]. It includes important 19th century and earlier meteorites acquired with the Foote collection in 1914. It has doubled in size and representation since 1994 through acquisition of private collections by trade and donations. The meteorite collection of the Royal Ontario Museum (ROM) has undergone dramatic growth in the past decade and now contains over 200 distinct meteorites with approximately 2000 fragments in total. The collection has a strong component of planetary meteorites, including main masses of Lunar and Martian samples for example, and asteroidal achondrites, including HED's, rare or unusual chondrites such as Tagish Lake, CK, CH, CR, R-type chondrites and unequilibrated ordinary chondrites. The meteorite collection of the University of Alberta (U of A) contains approximately 1100 samples from about 130 different world localities, with important

representation from western Canada, and improving Martian representation in support of analogue laboratory syntheses, along with most of the Tagish Lake pristine samples. In addition to these three major collections there are significant holdings at the University of Western Ontario (UWO), the Planétarium de Montréal (PMont), the University of Saskatchewan (USask), the University of Calgary (UCal) and elsewhere. There are a few private collections in Canada that also can be considered of potential national importance. A current estimate of 1500 different meteorites in Canadian collections will likely be revised upwards when a comprehensive survey of holdings` is complete. There are over 70 known Canadian meteorite falls and finds with several awaiting description and classification. Most main masses of these reside in Canadian institutions; some are with finders.

Results Expected: The strength of Canada's meteorite collections, considered together, places it in a strong position to undertake leading Solar System research, with particular strengths in origins and in planetary studies. A long term goal of the ADWG is to harness the latent resources of expertise, equipment and collections in Canada to further our fundamental understanding of the origins of our Solar System, and to contribute substantially towards a road map for future sample return missions in which Canada participates. In the short term this means demonstrating the potential of the already available samples to researchers and students, including astronauts, who might not otherwise consider studying them, but whose interest and training will attract others and build national networks and expertise. These are appropriate initiatives to have arisen from the fall of Tagish Lake in 2000, and should have implications for Canada for decades to come.

References: [1] Herd R. K. and Herd C. D. K. (2007) *LPS XXXVIII*, Abstract #2347. [2] Herd C. D. K. and Herd, R. K. (2007) *Comparative Planetology Workshop, 2007.* Sudbury, Ontario, June 13-17, 2007. [3] Herd R. K. (2002) *Meteoritics & Planet. Sci., 37, Supplement* Abstract #5231.