rocks; and (3) the ca. 2700 Ma Cross Bay plutonic complex comprised of polydeformed and metamorphosed Archean tonalite gneiss, diorite and gabbro that structurally overlies the MacQuoid Homocline. The volcanic rocks are predominantly tholeiitic basalts to basaltic andesites. U-Pb isotopic studies from the supracrustal and granitoid rocks suggest that the Cross Bay complex was deformed at ca. 2695 Ma before the onset of ca. 2680 Ma volcanism in the MacQuoid homocline, and highlight a complex Archean and Paleoproterozoic tectono-magmatic evolution. The Big lake shear zone (Blsz), which coincides with the southern margin of the Cross Bay plutonic complex, is a north-dipping zone of straight gneisses/mylonites predominantly derived from granitoid protoliths. Metamorphosed and deformed ca. 2190 Ma mafic dykes, and variably deformed ca. 1830 Ma granite and co-magmatic lamprophyre dyke-swarms represent Paleoproterozoic magmatic events. The region experienced tectonometamorphic events at ca. 2.55-2.5, 1.9, 1.83, and 1.75 Ga.

The region covered in poster 2 (parts of central Hearne) is underlain by the central and eastern segments of the Rankin-Ennadai granite-greenstone belt and by Paleoproterozoic continental clastic sequences (e.g., Hurwitz Group) and ca. 1830 Ma granitoid plutons. Geochronological data indicate formation of the Archean crust between 2711-2667 Ma. The oldest volcanic rocks (2711-2691 Ma) consist of mixed tholeiitic and calc-alkaline mafic and felsic, submarine to subaerial volcanic rocks and associated plutons. Younger volcanic rocks and associated calc-alkaline intrusions yield ages between 2686-2679 Ma. A regional, penetrative deformation and metamorphism occurred during the latter stages of a plutonic event at ca. 2680 Ma. Detrital zircon geochronology indicate that the Archean metasedimentary rocks and associated iron formation were deposited after 2681 Ma followed by ca. 2666 Ma post-tectonic granite, ca. 2659 Ma carbonatite, and deposition of post-2660 Ma, possible "Timiskiming-type" conglomerates. Development of the Rankin-Ennadai belt in an extensional, oceanic supra-subduction environment is suggested.

VOLCANIC STRATIGRAPHIC CONTROL OF GOLD MINERALIZATION OCCURRING AT THE MADRID BEND IN THE HOPE BAY DEFORMATION ZONE, NUNAVUT

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In the central Madrid segment of the Hope Bay Greenstone Belt, north-south trending volcanic stratigraphy consists of variably flattened and altered volcanic units subdivided on the basis of physical characteristics and lithogeochemical signatures. Dark green high Fe-Ti basalt flows typically exhibit stronger D_2 strain and more chlorite-calcite alteration than adjacent lighter green "normal" tholeiites. In the Suluk area these two packages are separated by a 100m wide north-trending, steep westerly-dipping linear of strong deformation and quartz-ankerite-sericite alteration (the Hope Bay Deformation Zone; HBDZ). Three lithologies have been identified within the HBDZ by means of visual examination and geochemistry. These include enclaves of basalt, lenses of argillite and quartz-feldspar porphyry bodies dated at 2698.7 +6.7/-3.7 Ma. At the north end of Patch Lake the HBDZ swings westward cutting through stratigraphy toward the

Naartok deposit and is lost in an overlying felsic volcanic package exposed on the eastern shore of Windy Lake. These felsic volcanic rocks are of the same age as the quartz-feldspar porphyry intruding the deformation zone. Along this east-west trending segment the hangingwall stratigraphy departs from north-south, becoming progressively northeast in orientation as volcanic units are dragged into the shallow north-dipping zone of deformation.

Although the HBDZ is not itself mineralized, it is spatially related to several promising gold prospects in the Madrid area, indicating that it acted as the major conduit for gold-bearing fluids from depth. Gold mineralization is primarily hosted within high Fe-Ti basalts located in the footwall of the deformation zone at Suluk, and in the hangingwall in the Naartok area. Mineralization is concentrated in quartz + ankerite veins and stockworks, however, bordering Fe-Ti-Cr-Ni enriched wall-rock also hosts significant gold. Auriferous zones are invariably accompanied by sulphidization in the form of pyrite ± chalcopyrite, pyrrhotite and arsenopyrite. Associated wall rock alteration is characterized by an assemblage of quartz + ankerite + sericite ± paragonite and fuschite. Several generations of veining have been identified, two of which may contain gold. Early deformed grey quartz + ankerite ± albite veins and stockworks are the primary host to gold. Occurrence of gold in weakly deformed quartz + coarse ankerite ± hematite veins and vein breccias that crosscut the earlier set is evidence for late remobilization. Mineralized zones typically occur along lithological contacts and proximal to interflow argillite lenses. Dilation between lithologies of contrasting rheology created fluid pathways and trapped gold-bearing fluids. The strong gold association with Fe-Ti basalts indicates gold precipitation was dominantly controlled by the stratigraphic position of the high Fe-Ti volcanic units that proved most amenable to sulphidization.

GRAVITY AND MAGNETIC SIGNATURES OF THE MUSKOX LAYERED INTRUSION, NORTHWESTERN CANADIAN SHIELD

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The 65 km long, north-trending 1270 Ma Muskox layered mafic-ultramafic intrusion in the northwest Canadian Shield has a maximum width and thickness of about 10 km and 2200 m, respectively, near its northern extremity. It narrows to roughly 200 metres at its south end, and then continues further south as a narrow dyke. Northward continuation of the intrusion beneath basaltic volcanics of the Coppermine River Group is suggested by the presence of prominent linear gravity and magnetic highs.

The intrusion comprises marginal peridotites lying above the inward-dipping contacts, and an overlying, flat-lying igneous stratigraphy dominated by dunites and peridotites (lower and mid levels) and gabbros (higher levels). Geological evidence indicates that the intrusion is funnel-shaped in cross-section along its length. Gravity and magnetic anomalies associated with the intrusion provide an independent means of examining the third dimension of the intrusion. A conspicuous linear magnetic high runs along the intrusion, locally branching into two or three separate features, and extends approximately 20 km northward across overlying, gently dipping