Geology of Athapuscow Aulacogen East Arm of Great Slave Lake, N.W.T.

MIDDLE PROTEROZOIC (1.6-1.0 GA)

NEOAUTOCHTHON

MIDDLE PROTEROZOIC (1.6 - 1.0 GA)

Md MACKENZIE DIABASE: NORTHWEST-TRENDING VERTICAL DYKES

Mf FORTRESS GABBRO: NESTED CONE-SHEETS
932

EARLY PROTEROZOIC (2.5 - 1.6 GA)

ET-THEN GROUP (Em, Ev, Ep)

Ep PREBLE FORMATION: CROSSBEDDED, FELDSPATHIC-LITHIC, PEBBLY SANDSTONE (FLUVIAL)
915

Ev AMYGDALOIDAL BASALT (SUBAERIAL LAVA FLOWS)
942

Em MURKY FORMATION: CONGLOMERATE, SEDIMENTARY BRECCIA, LITHIC-FELDSPATHIC SANDSTONE (ALLUVIAL FANS)
916

----------UNCONFORMITY----------

Cj COMPTON INTRUSIVE SUITE: CALC-ALKALINE LACCOLITHS; 1865± 13 MA (U-Pb ZIRCON): HORNBLENDE-BIOTITE DIORITE (Cid) AND QUARTZ MONZONITE (Ciq)
921

Vb PETITOT BRECCIA: NORTHEAST-TRENDING, INTRUSIVE, BRECCIA DYKES CONTAINING CLASTS OF ARCHEAN BASEMENT, SOSAN GROUP AND STARK FORMATION EXCLUSIVELY; MINOR SUBSIDIARY BOSTONITE DYKES; LIMITED TO SIMPSON ISLANDS TERRANE (AGE RELATIVE TO COMPTON INTRUSIVE SUITE UNKNOWN)

BRITTLE, DEXTRAL TRANSCURRENT FAULTING

NORTHWEST- DIRECTED THRUSTING

CONTEMPORANEOUS ACTIVITY IN WOPMAY OROGEN

TERMINAL, CONJUGATE, TRANSCURRENT FAULTING

GREAT BEAR (CALC-ALKALINE) MAGMATIC ZONE

TREE RIVER FOLDING

CALDERIAN OROGENY (1.885±5 MA) AND RECLUSE-TAKIYUAK FOREDEEP

EPWORTH PASSIVE MARGIN

AKAITCHO INITIAL RIFTS

HOTTAH TERRANE MAGMATISM

EARLY PROTEROZOIC (2.5 - 1.6 GA) GREAT LAKE SUPERGROUP

GREAT SLAVE SUPERGROUP

SLAVE CRATON (AUTOCHTHON)	PARAUTOCHTHONOUS DUPLEXES	CHRISTIE ALLOCHTHON	KEITH NAPPE	BUNTING NAPPE	WILSON ISLAND TERRANE	SIMPSON ISLANDS TERRANE
EARLY PROTEROZOIC (2.5 - 1.6 GA) **PETHEI GROUP (Pt, Pu, Pw, Ps)** Ps SLOPE FACIES (MCLEAN AND PEKANATUI FORMATIONS): CONOPHYTIC MARLSTONE, LIMESTONE RHYTHMITE, RHYTHMITE-CLAST BRECCIA 926* Pw WILDBREAD PLATFORM (WILDBREAD AND HEARNE FORMATIONS): STROMATOLITIC, OOLITIC, FENESTRATE AND INTRACLASTIC DOLOMITIC LIMESTONE 920 Pu UTSINGI RAMP (UTSINGI FORMATION): CONOPHYTIC DOLOMITIC LIMESTONE 919 Pt TALTHEILEI PLATFORM (TALTHEILEI FORMATION): STROMATOLITIC AND INTRACLASTIC DOLOMITE 905 **KAHOCHELLA GROUP (Kg, Kb, Kj, Km)** Km MCLEOD BAY AND CHARLTON BAY FORMATIONS: RED AND GREEN CONCRETIONARY SHALE 963 Kj JACKSON GABBRO: IRREGULAR SILLS AND DYKES 901 Kb BASALT: VOLCANIC BRECCIA PIPES, HYDROCLASTIC MAAR VOLCANOES, TUFFS; MINOR LAVA FLOWS 907 Kg GIBRALTAR FORMATION: RED SHALE; MINOR DARK GREEN CONCRETIONARY SHALE, GRANULAR HEMATITE IRONSTONE, BASALTIC TUFF 967 **SOSAN GROUP (Sh, Sk, Sb, Sr)** Sr RHYOLITE: APHANITIC PLUGS AND DOMES AROUND SETON ISLAND; WELDED ASH-FLOW TUFF AND LAVA FLOWS IN CAULDRON WEST OF SACHOWIA POINT 918 Sb BASALT: LAVA FLOWS, TUFF; MINOR BRECCIA PIPES AND REMNANT VOLCANIC CONES 911 Sk KLUZIAI AND AKAITCHO RIVER FORMATIONS: MATURE SUBFELDSPATHIC QUARTZITE; RED AND BUFF, MICACEOUS, GLAUCONITIC SANDSTONE AND SILTSTONE; LOCALIZED VOLCANIC SANDSTONE, TUFF; MINOR GRANULAR HEMATITIC IRONSTONE 913 Sh HORNBY CHANNEL AND DUHAMEL FORMATIONS: CROSSBEDDED FELDSPATHIC QUARTZITE; DOLOMITIC QUARTZITE; IMPURE STROMATOLITIC DOLOMITE; MINOR QUARTZ-PEBBLE CONGLOMERATE, BASALTIC TUFF 912 ----------UNCONFORMITY----------	EARLY PROTEROZOIC (2.5 - 1.6 GA) **PETHEI GROUP** Ps SLOPE FACIES: LAMINATED MARLSTONE (DOUGLAS PENINSULA FORMATION), CONOPHYTIC MARLSTONE (MCLEAN FORMATION), LIMESTONE RHYTHMITE AND RHYTHMITE-CLAST BRECCIA (PEKANATUI FORMATION) 904 **KAHOCHELLA GROUP** Km CHARLETON BAY FORMATION: DARK GREEN, SULPHIDIC, CONCRETIONARY SHALE ----décollement----	EARLY PROTEROZOIC (2.5 - 1.6 GA) **CHRISTIE BAY GROUP (Cx, Cp, Ct, Cs)** Cx BUFF, FELDSPATHIC SANDSTONE 922 Cp PEARSON FORMATION: COLUMNAR BASALT (SUBAERIAL LAVA FLOWS); MINOR INTER-FLOW ARGILLITE 925 Ct TOCHATWI AND PORTAGE INLET FORMATIONS: RED, CROSSBEDDED, LITHIC-FELDSPATHIC SANDSTONE; RED, MUDCRACKED, MUDDY SILTSTONE WITH PSEUDOMORPHS AFTER HALITE AND GYPSUM 922 Cs STARK FORMATION: MEGABRECCIA (EVAPORITE SOLUTION-COLLAPSE BRECCIA? REMOBILIZED DURING THRUSTING) CONSISTING OF PACKED CLASTS OF VARICOLOURED, STROMATOLITIC, WAVE-RIPPLED, DOLOMITIC LIMESTONE, AND RED, SILTY TO SANDY MUDSTONE; WITH PSEUDOMORPHS AFTER HALITE; MINOR PILLOW BASALT (Csv) 934 ----------ductile décollement in Stark Formation (Cs)----------	EARLY PROTEROZOIC (2.5 - 1.6 GA) **PETHEI GROUP** Pb BASINAL FACIES (BLANCHET FORMATION): FELDSPATHIC WACKE TURBIDITES; CONOPHYTIC MARLSTONE (MCLEAN LITHOSOME), LIMESTONE-ARGILLITE RHYTHMITE (PEKANATUI LITHOSOME) 903 KAHOCHELLA GROUP (Kt, Kp, Kr, Kj) Kj JACKSON GABBRO: IRREGULAR SILLS AND DYKES 901 Kr APHYRIC RHYOLITE: PLUGS, DOMES, LAVA FLOWS 918 Kp BASALT: PILLOW LAVA, PILLOW BRECCIA 909 Kt GIBRALTAR, MCLEOD BAY AND CHARLTON BAY FORMATIONS: SILTY (TURBIDITIC) MUDSTONE; CONCRETIONARY MUDSTONE; MINOR GRANULAR HEMATITE IRONSTONE ----------décollement----------	**EARLY PROTEROZOIC (2.5 - 1.6 GA)** **SOSAN GROUP** Sk KLUZIAI AND AKAITCHO RIVER FORMATIONS: MATURE, SUBFELDSPATHIC QUARTZITE (MARINE); RED AND BUFF, MICACEOUS, GLAUCONITIC, SANDSTONE AND SILTSTONE 913 Sh HORNBY CHANNEL FORMATION: CROSSBEDDED, PEBBLY, HEMATITIC, FELDSPATHIC QUARTZITE (BRAIDED RIVER DEPOSIT) 912 ----------décollement----------		EARLY PROTEROZOIC (2.5 - 1.6 GA) **KAHOCHELLA GROUP** Kg GIBRALTAR FORMATION: RED MUDSTONE; MINOR GRANULAR HEMATITIC IRONSTONE 967 **SOSAN GROUP (Sh, Sk)** Sk KLUZIAI AND AKAITCHO RIVER FORMATIONS: MATURE, SUBFELDSPATHIC QUARTZITE (MARINE); RED AND BUFF, MICACEOUS SANDSTONE AND SILTSTONE 913 Sh HORNBY CHANNEL FORMATION: CROSSBEDDED, PEBBLY, HEMATITIC, FELDSPATHIC QUARTZITE (BRAIDED RIVER DEPOSIT); MINOR QUARTZ-PEBBLE CONGLOMERATE; IMPURE STROMATOLITIC DOLOMITE 912 **UNION ISLAND GROUP (Us, Ub, Ug)** Ug GABBRO SILLS 933 Uv BASALT: PILLOW LAVA, MASSIVE LAVA FLOWS, TUFF 931 Us SEDIMENTS (LACUSTRINE?): NON-STROMATOLITIC, DOLOMITE; LAMINATED, RED AND GREEN ARGILLITE; GRAPHITE-SULFIDIC SHALE; MINOR QUARTZ-PEBBLE CONGLOMERATE, BASAL GRANITE-CLAST BRECCIA 936 ----------UNCONFORMITY----------
Hd HEARNE DIABASE: NORTHEAST-TRENDING VERTICAL DYKES BLACHFORD INTRUSIVE SUITE (Bc, Bw, Bh, Bg, Bt) Bt THOR LAKE SYENITE: PERALKALINE SYENITE 930 Bg GRACE LAKE GRANITE: PERALKALINE RIEBECKITE MESOPERTHITE GRANITES 924 Bh HEARNE CHANNEL AND MAD LAKE GRANITES: SUBALKALINE 2175 ± 5 MA (U-Pb ZIRCON) BIOTITE-HORNBLENDE GRANITE 923 Bw WHITEMAN LAKE QUARTZ SYENITE: ALKALINE FAYALITE-2186 +-_5 MAPYROXENE SYENITE TO SUBALKALINE BIOTITE-(U-Pb ZIRCON) HORNBLENDE GRANITE 925 Bc CARIBOU LAKE GABBRO: ALKALINE OLIVINE GABBRO, NORITIC GABBRO, LEUCO-FERRODIORITE 937					EARLY PROTEROZOIC (2.5 - 1.6 GA) Wg BUTTE ISLAND INTRUSIVE SUITE: BIOTITE-CHLORITE-1895 ± 5 MA (U-Pb ZIRCON) MUSCOVITE MONZOGRANITE AND GRANODIORITE (INTRUDES UNIT W2) 926 WILSON ISLAND GROUP (W1 - W5) W5 PLAGIOCLASE-PHYRIC BASALT: SUBAQUEOUS LAVA FLOWS, SILLS 947 W4 QUARTZITE (TURBIDITIC) SEMI-PELITE, PELITE, MINOR HEMATITE IRONSTONE W3 QUARTZITE, FERRUGINOUS QUARTZITE, SEMI-PELITE 943 W2 CROSSBEDDED QUARTZITE, FELDSPATHIC QUARTZITE, QUARTZ-PEBBLE CONGLOMERATE, IMPURE DOLOMITE 944 W1 BIMODAL, INTIMATELY INTERCALATED, BASALT AND 1925 ± 11 MA (W1) (U-Pb Zircon) RHYOLITE LAVA FLOWS; POLYMICTIC CONGLOMERATE; LITHIC-FELDSPATHIC QUARTZITE; MINOR INTRUSIVE APHANITIC FELSITE (Wf) ----------décollement----------	Zg GREENSCHIST-FACIES MYLONITE: CHLORITE-MUSCOVITE SCHIST, GNEISS, DEXTRAL TRANSCURRENT SHEARING (AGE RELATIVE TO BUTTE GRANITE UNKNOWN) 966 Hd HEARNE(?) DIABASE: NORTHEAST-TRENDING DYKES (AGE RELATIVE TO MAP UNITS Xg and Za UNCERTAIN) Xg HORNBLENDE-BIOTITE MONZOGRANITE: SYNTECTONIC WITH AMPHIBOLITE-FACIES MYLONITE (Za) 926 Za AMPHIBOLITE-FACIES MYLONITE, PROTOMYLONITE: BANDED, LINEATED, SHEARED GNEISS, AUGEN GNEISS; DEXTRAL TRANSCURRENT SHEARING (AGE RELATIVE TO SIMPSON ISLANDS DYKE UNKNOWN) 939 Sg SIMPSON ISLANDS DYKE: SOUTHEAST-DIPPING, WEAKLY 2170 ±? MA (K-Ar BIOTITE) DIFFERENTIATED, POTASSIC GABBRO; MINOR BASAL PERIDOTITE 956
ARCHEAN (3.8 - 2.5 GA) Ag GRANITE, GRANODIORITE, ETC.: SYN- TO POST- METAMORPHIC YELLOWKNIFE SUPERGROUP (Yv, Ys, Yks) Yks METASEDIMENTS (AMPHIBOLITE FACIES): CORDIERITE + STAUROLITE-ANDALUSITE SEMI-PELITIC SCHIST, METAGREYWACKE, PARAGNEISS 910 Ys METASEDIMENTS (GREENSCHIST FACIES): BIOTITE-MUSCOVITE SEMI-PELITIC SCHIST, METAGREYWACKE, PHYLLITE, SLATE 910 Yv METAVOLCANICS: PILLOW BASALT, BRECCIA, TUFF, AMPHIBOLITE 908						ARCHEAN (3.8 - 2.5 GA) Ag HORNBLENDE-BIOTITE MONZOGRANITE, BIOTITE-MUSCOVITE 2595 ±? MA LEUCOGRANITE; MINOR GRANODIORITE, (K-Ar BIOTITE, QUARTZ DIORITE UNION ISLAND) 929 Ag GARNETIFEROUS ORTHOGNEISS, INTERLAYRED PARAGNEISS, 2555 ±? MA MIGMATITIC GNEISS (K-Ar BIOTITE) 927 As PARAGNEISS: UPPER AMPHIBOLITE FACIES ON SIMPSON ISLANDS, GRANULITE GRADE AROUND THUBUN LAKES (AGE RELATIVE TO YELLOWKNIFE SUPERGROUP UNKNOWN); MINOR AMPHIBOLITE 910 Av AMPHOLITE: HORNBLENDE-BEARING GNEISS; MINOR MARBLE (Ac) 908

Geological boundary (defined, inferred)

Bedding, tops known (inclined, overturned)

Bedding, tops unknown (inclined, overturned)

Primary flow structure in igneous rock (inclined)

Schistosity, gneissosity, cleavage, foliation (inclined, vertical, dip unknown)

Lineation (inclined)

Fault (ticks on hanging wall)

Right-slip fault (variable but subordinate dip-slip component)

Fault of variable or uncertain slip vector (defined, approximate, inferred)

Thrust fault (teeth on hanging wall)

* number designates authors recommended colour of Prismacolor felt markers

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