

TABLE I

DETAILED STRATIGRAPHY MASTER¹

May, 1982

GATAGA AREA (KECHIKA TROUGH)²

<u>SYMBOL</u>	<u>COLOUR</u>	<u>UNIT</u>	<u>LITHOLOGY</u>
<u>RECENT</u>			
OB			- Undivided overburden
OB _{SC}			- Soil - C - horizon or scree
OB _{RG}			- River gravel
OB _{TL}			- Till
<u>LATE TERTIARY - Normal Faulting</u>			
--- U	935		- Tectonic breccia of lithology designated in first four spaces.
--- F	935		- Graphitic shear and gouge zone of lithology designated in first four spaces.
--- Q	938		- Quartz - carbonate veins.
<u>CRETACEOUS TO EARLY TERTIARY - Laramide Orogeny</u>			
F ₂	(feature)		- Second phase kink folds
F ₁	(feature)		- First phase Laramide folds
S ₂	(feature)		- Second phase crenulation cleavage
1	(feature)		- First phase axial planar cleavage
<u>TRIASSIC (TR)</u>			
TR _{ML}	945 (striped)		- Marl: shaly limestone, limestone to dolostone, buff to light grey weathering thinly irregularly bedded with abundant <u>Monotis</u> .
TR _{RC}	945 (striped)		- Chert: irregularly ribbon bedded with large composite nodules, graphitic partings.
TR _{SH}	945 (striped)		- Shale: brown-grey to black, silty.
<u>WARNEFORD FORMATION (DM_w)</u>			
DM _{WC}	965		- Conglomerate: chert granule to pebble, also breccia, varicoloured, black to light silvery-grey weathering.
DM _{WQ}	944		- Quartzarenite: black, light grey weathering, siliceous, graphitic, laminated, could be = DC _{SH} .
DM _{WT}	931		- Porcellanite: ribbon bedded black chert, bounded on both sides by Warneford on Fluke.
DM _{WB}	911		- Shale: dark grey to black, gunsteel to rusty weathering, hard, graphitic, competent coring but phyllitic lenticular cleavage when weathered; common intraformational breccia (DM _{WBI}) and/or chert and quartz sand to pebble conglomerate lenses (DM _{WBX}) = DA _{GH} , DA _{ph} , DM _{WC} .
DM _{WM}	928		- Barite: unmineralized, massive, laminated, grey, grades to pbbly barite in silty shale interbedded with conglomerates = DG _{BH} .

SYMBOL	COLOUR	UNIT	LITHOLOGY
<u>CONUNDRUM SILTSTONE (DC)</u>			
DC _{SH}	945	Conundrum siltstone ⁴	- Siltstone to breccia: light grey, speckled-weathering, soft, variably calcareous, pyritic, diffusely laminated, local individual burrows, exposed on Elf to Fluke; DA _{SH} may be fine-grained equivalent.
<u>AKIE SHALE (DA)</u>			
DA _{RS}	947	Rusty shale	- Upper Devonian to Mississippian soft shales and siltstones above mineralized barite
DA _{PS}	951	Pinstriped shale	- Shale: dark brown, rusty brown weathering, indistinctly bedded, with lithic sandstone and orange dolomitic siltstone interbeds, grades into DC _{SH} / DM _{WQ} , interbedded with DA _{PS} and DA _{PH} on Fluke.
DA _{PS}	951	Pinstriped shale	- Shale: dark brown-grey, light grey to rusty brown weathering, silty, distinctly laminated, = DC _{SH}
DA _{TB}	943		- Siltstone: light to medium grey, dolomitic, fine grained, homogeneous texture, commonly tectonic breccia.
DA _{GH}	911	Graphitic shale ⁴	- Shale: dark grey to black, rusty grey weathering, graphitic, competent, moderately hard, laminated, with discontinuous pyrite laminae, irregular planar cleavage; = DA _{PH} / = DM _{WB} .
DA _{SH}	946	Phyllitic siltstone ⁴	- Siltstone: light to dark grey, speckled, variably calcareous, planar to irregularly laminated ± burrow mottled; phyllitic-graphitic lenticular cleavage; = DA _{SF} , possibly finer facies of DC _{SH} .
DA _{PH}	920	Phyllitic shale ⁴	- Shale: light to medium grey, rusty brown weathering, faintly laminated, soft, phyllitic, lenticular to slaty cleaved, = DA _{PF} , = DM _{WB} , = DA _{GH} .
<u>GUNSTEEL FORMATION (DG, DB)</u>			
DG _{SS}	910	Undivided Gunsteel	- Upper Devonian to Mississippian siliceous shales and siltstones enclosing mineralization.
DG _{SH}	910	Undivided Gunsteel	- Shale: dark grey to black, silvery-grey (gunsteel) weathering, laminated.
DG _{CH}	934	Hanging wall ribbon chert ⁴	- Porcellanite: dark grey to black, silvery grey weathering, ribbon bedded (<5cm), with graphitic shale partings and interbeds = DG _{CP} .
DB _{BH}	928	Hanging wall barren barite ⁴	- Barite: unmineralized, laminated, white to grey; grading to blebby, calcareous, in black porcellanite; within DG _{CH} . Contains large limestone concretions; may be distinguished from DG _{BF} by distinct striped-weathering laminae.
DG _{TH}	913	Hanging wall poker chip shale ⁴	- Shale to porcellanite: dark grey, silvery-grey weathering, distinct graphitic partings <3cm apart, commonly <1cm; laminated, commonly with siltstone laminae (DG _{THT}); = DG _{PR} , DB; = DG _{PC} .
DG _{CM}	931	Chert marker beds	- Porcellanite: dark grey to black, massive to ribbon bedded, commonly with quartz veining, in one to several beds up to several meters thick, within DG _{PR} .
DG _{PR}	908	Pregnant shale	- Shale to porcellanite: dark grey to black, silvery-grey to rusty weathering, silty; bedding thicker than 3 cm, massive to laminated; good slaty cleavage in outcrop; ± nodules and laminae of barite, pyrite and calcite = DG _{TH} , = DB _{BS} , = DG _{BP} . Includes DG _{TH} on Fluke.
DG _{LB}	942	Laminar banded pyrite	- Pyrite: > 10%, very fine-grained, very finely laminated, interlaminated with siliceous ± calcareous shale and siltstone in beds 1 to 20 cm. thick; can have visible galena and sphalerite (DG _{LBE}); within DG _{PR} ; = DB.
DG _{SK}	944	Siltstone breccia	- Siltstone: light to medium grey, laminated to burrow mottled, dolomitic, siliceous, common intraformational breccia (DG _{SVT}) and conglomerate, confined to mineralized horizon; similar to S _{SS} ; breccia has massive sulphide matrix in places.
DG _{DL}	940	Distinctly laminated unit	- Rhythmically interlaminated on a scale of about 1 cm: siliceous siltstone, fine-grained laminated pyrite, black siliceous shale ± blebby barite.
DB _{PY}	916	Pyrite	- Pyrite: > 80%, laminated, fine-grained, framboidal.
DB _{VN}	929	Veins and sweats	- Barite: medium to coarsely crystalline, common galena in strain shadows and irregular patches, in veins and sweats. Barite talus slopes at Cirque and Elf showings are dominated by this unit.

<u>SYMBOL</u>	<u>COLOUR</u>	<u>UNIT</u>	<u>LITHOLOGY</u>
<u>GUNSTEEL FORMATION</u> (Continued)			
DB _{ES}	923	Elf Showing	- Galena + sphalerite + calcite + barite + pyrite; massive, interlaminated, > 8% Pb + Zn over 10 cm. intervals; interbedded with Pregnant Shale on a scale of 1 to 10 cm; grades into DG _{LBE} . Intersections on South Cirque (81C37) are temporarily assigned to this unit.
DB _{MS}	925	Massive sulphides	- Pyrite, sphalerite ± galena: massive, medium to coarsely crystalline, ± minor barite.
DB _{SB}	922	Sulphides-barite	- High grade sphalerite, galena and pyrite with 20% < barite < 60%; crudely laminated, crystalline.
DB _{BX}	921	Barite breccia	- Intraformational breccia of barite, often with siltstone fragments, locally coarse crystalline, with < 40% irregular laminae and matrix of pyrite + barite.
DB _{BS}	918	Barite-sulphides	- Barite with < 40% pyrite and < 10% Pb + Zn: finely crystalline, irregularly to discontinuously interlaminated; minor barite nodules > 1 cm. diameter.
DG _{BP}	907	Barren pregnant shale	- Shale to porcellanite: black, moderately to very siliceous, silty, graphitic S _O partings 3-10 cm; diffuse pyrite laminae, poorly to well cleaved, barren of Pb-Zn mineralization, grades into DG _{TF} and DG _{CF} . Footwall to eastern DB; laterally equivalent to DG _{PR} and DB in "R" Creek and east of Gossan Fault.
DG _{TF}	912	Footwall poker chip shale ⁴	- Shale to porcellanite: dark grey to black, silvery weathering, distinct graphitic partings < 3 cm apart, commonly 1 cm, internally finely laminated, common siltstone laminae = D _{PC} , DG _{TH} .
DB _{BF}	939	Footwall barren barite ⁴	- Barite: unmineralized, laminated, light grey, rusty weathering, grading to blebby (BFB), calcareous, in black porcellanite, within DG _{CF} . Contains large limestone concretions (BFA), cephalopods = DB _{BH} .
DG _{CF}	956	Footwall ribbon chert ⁴	- Porcellanite: dark grey to black, silvery-grey weathering, ribbon bedded (< 5 cm), with graphitic shale interlaminae and partings = DG _{CH} .
<u>DEVONIAN SHALE</u> (DA)			
DA _{PF}	920	Phyllitic shale ⁴	- Shale: grey weathering, soft, phyllitic, lenticular to platy cleaved = DA _{PH} , = DA _{CF} .
DA _{GF}	911	Graphitic shale ⁴	- Shale: dark grey to black, rusty grey weathering, graphitic, competent, moderately hard, laminated, with discontinuous pyrite laminae, irregular planar cleavage. = DA _{PF} .
DA _{SF}	943	Phyllitic siltstone ⁴	- Siltstone: light to dark grey, speckled, variably calcareous, planar to irregularly laminated ± burrow mottled, with phyllitic-graphitic lenticular cleavage partings; = DA _{SH} .
DA _{SL}	941	Silty shale	- Silty shale: dark brown-grey, rusty brown weathering, medium hard to soft, massive to indistinctly laminated, interbedded with Conundrum Siltstone and extending northeast just above D _{KR} on Fluke and Pie claims.
<u>GUNSTEEL FORMATION</u> (DG)			
DG _{FT}	964	Footwall poker chip	- Shale: black, graphitic, poker chip partings, with common light grey siltstone beds = DG _{TF} .
DG _{FP}	933	Footwall pregnant shale	- Shale to porcellanite: black, massive coring, with common speckled siltstone, creamy and discontinuous pyrite laminae; on Elf includes large blebby calcite + quartz in sausage-like chains; interbedded with D _{PL} ; = DG _{PR} .
<u>CONUNDRUM SILTSTONE</u> (DC)			
DC _{SF}		Conundrum Siltstone ⁴	- Silty shale to granule breccia; speckled light and dark grey, soft, variably calcareous, pyritic, diffusely laminated. Intersected just above Kwadacha Reef in 1981 Fluke drill holes. = DC _{SH} .
<u>KWADACHA and PESIKA REEFS</u>			
D _{KR}	919		- Lower to Middle Devonian Limestone. - Limestone: grey, thick massive bedded, fossiliferous - stromatoporoid, coral, crinoid debris with some fossils in growth position.

<u>SYMBOL</u>	<u>COLOUR</u>	<u>UNIT</u>	<u>LITHOLOGY</u>
<u>PAUL RIVER FORMATION</u>			
D _{PC}	944		- Lower (LD _p) to Middle (D _p) Devonian Shale containing coarse clastic rocks and/or graptolites; lateral equivalent of D _{KR} and LD _{PQ} .
D _{PP}	930		- Conglomerate: chert and siliceous siltstone fragments in siliceous black shale, could = LD _{PX} .
D _{PL}	906		- Porcellanite: ribbon bedded, with fossiliferous limestone breccia beds; overlies D _{KR} east of Cirque.
LD _{PX}	906		- Shale: black, with thin fossiliferous limestone turbidites, commonly with one and two-holed crinoids = DG _{PP} .
			- Siltstone to breccia: thin to thick graded beds, clasts of chert, quartz sand, pyritic siltstone and shale chips, interbedded with black ribbon porcellanite (D _{PP} ??) and black graphitic shale. Elf and Fluke, could = DA _{CG} .
<u>DOLOMITIC QUARTZITE FORMATION</u>			
LD _{PQ}	919		- Quartzite: grey, dolomitic, graded beds, fossil debris, rhythmically interbedded with black graptolitic shale, mapped on east side of Gataga Trough only.
			-- LOCAL UNCONFORMITY --
<u>SILURIAN SILTSTONE (S_c)</u>			
SS _{SX}	943		- Middle to Late Silurian, top of Road River Group.
SS _{SC}	934		- Siltstone: medium grey, dolomitic, laminated, includes intraformational breccia - commonly at gradational to sharp contact between Devonian shale and S _g - paleo soil?
S _{SH}	941		- Chert lenticles 1 to > 30 mm. long in black siliceous silty shale, commonly = SS _{SX} .
	939		- Siltstone: shaly, recessive, laminated, variably calcareous.
S _{SS}	940		- Barite: unmineralized, light grey, laminated, slightly calcareous.
S _{SQ}	940		- Siltstone: light orange-weathering, dolomitic, with common burrows, feeding fans and burrow mottling (S _{SSW}).
S _{SL}	904		- Sandstone: quartzose, with coral and sponge fragments; rhythmic, massive graded beds; interbedded with black siltstone and shale.
			- Limestone: grey weathering, laminated or burrow mottled, silty - calcareous versions of S _{SSL} + S _{SSW} .
			-- LOCAL UNCONFORMITY --
<u>SILURIAN CHERT (S_{RC})</u>			
S _{RC}	932	Silurian Chert	- Early to Middle Silurian, Road River Group
			- Porcellanite (S _{RCS}): streaky white-striped, ribbon bedded, with black calcareous graptolitic shale partings, some dolomitic siltstone (S _{ROD}) and large limestone concretions (S _{RCA}). Details in Facies Relationships diagram.
<u>SILURIAN LIMESTONE (S_{RL})</u>			
S _{RL}	903	Silurian Limestone	- Early Silurian (Ilandoverly), Road River Group
			- Limestone: grey, rhythmic, flaggy to blocky bedded, calcisiltite and fine calcarenite turbidites with graptolitic shale interbeds.
			-- LOCAL UNCONFORMITY --

<u>SYMBOL</u>	<u>COLOUR</u>	<u>UNIT</u>	<u>LITHOLOGY</u>
<u>SHALE FACIES OF ROAD RIVER GROUP (O_{RR})</u>			- Early to Late Ordovician
O _{RC}	933	Ordovician Chert	- Porcellanite: black(+ white?), ribbon bedded, with limestone concretions, mainly NW of Driftpile Creek.
O _{RG}	967	Ordovician Graptolitic Gunsteel	- Shale: black, silvery-grey (gunsteel) to black weathering, variably calcareous, graptolitic, minor chert, local barite horizons (O _{RCB}).
O _{RQ}	963	Ordovician Quartzite	- Quartzose sandstone turbidites with minor dolomite, carbonate fossil fragments and graptolitic shale interbeds; mainly east of Akie Trough.
O _{RP}	936	Rusty Shale	- Shale: black, rusty and buff to light grey weathering, graptolitic, commonly calcareous.
O _{RD}	941	Dolostone	- Dolostone: orange weathering, silty, = S _{SS} ; restricted to Gataga Trough.
O _{RS}	904	Silty Shale	- Silty Shale to Siltstone: dark grey, tan to pink weathering, laminated, graptolitic, variably calcareous, stratigraphically below to slightly above the Ospika Volcanics (Q _v), includes breccia = O _{SK} .
O _{RL}	905	Ordovician Limestone	- Limestone: rhythmically flaggy bedded with graptolitic shale interbeds; yellow weathering.
O _{RN}	904	Nodular Shale	- Shale: black, buff to light grey weathering, limestone nodules, interdigitates with Upper Kechika.
<u>OSPIKA VOLCANICS (Q_v)</u>			- Ordovician, in Road River shales O _{RN} to O _{RP} , from top of Kechika to just above O _{RL} .
Q _{VF}	937		- Mafic to andesitic flows, locally amygdaloidal and phyllitic, massive flows to variolitic pillows.
Q _{VX}	937		- Mixed volcanic and shale intraclast breccia and conglomerate.
Q _{VT}	937		- Tuff and breccia: orange-weathering, flattened, siliceous (Q _{VTS}) to highly calcareous (Q _{VTK}).
Q _{VG}	937		- Gabbroic-textured mafic sills within Kechika Group and Road River Shales.
<u>SKOKI FORMATION (O_{SK})</u>			- Dolostone: grey-buff laminated flaggy beds and intraformational breccia (O _{SKL} , O _{SKI}) or interbedded graptolitic shale and dolostone breccia with abundant corals and crinoids (O _{SKX}) or massive bedded fossiliferous dolostone -- Skoki Formation (O _{SKM}).
<u>KECHIKA GROUP (EO_K, O_K)</u>			
O _{KU}	902		- Limestone: yellowish-tan weathering, grey-brown, nodular, argillaceous, cliff-forming.
EO _{KL}	902		- Limestone: distinctly bedded, grey, phyllitic, nodular, argillaceous.
<u>CAMBRIAN (LE, ME, E)</u>			- Early to Late Cambrian basinal facies.
e _{SS}	928		- Shale: siliceous, silty, laminated, pinkish-buff weathering, resembles O _{RS} , encloses ME _{LR} .
ME _{LR}	902 (striped)	Spectre Peak Reefs	- Limestone: light grey, aphanitic with tiny trilobites - Middle Cambrian Reefs.
LE _{AQ}	928		- Rhythmically interbedded orange-weathering dolostone with Archeocyathids and quartzarenite with Skolithos.

MODIFIERS

=	Homotaxial to
=	Lithology similar to, but stratigraphic position different from
A	Calcite nodules, includes Septarian nodules
B	Barite nodules
C	Chert nodules
D	Dolomitic
E	Visible sphalerite ± galena laminae
F	Highly sheared - when alone denotes FAULT clay to sandy gouge
G	Carbonaceous or graphitic
H	Interbedded with shale
I	Intraformational breccia/conglomerate
J	Volcaniclastic or tuffaceous
K	Calcareous
L	Laminated i.e. bedding < 1 cm. (thin bedded = < 3 cm.)
M	Massive bedded
N	Nodular pyrite
Ø	Silty if shale; shaly if siltstone; i.e. silty shale!
P	Laminar banded pyrite
Q	Quartz veining
R	Disseminated pyrite
S	Siliceous
§	Non-siliceous
T	Siltstone laminae and thin beds (calcareous and non-calcareous) - usually turbidites
U	Tectonic (U-) Breccia - when alone denotes FAULT breccia
V	Veins of pyrite ± sphalerite ± galena ± quartz ± calcite ± barite
W	Bioturbated ("WORMY")
X	With conglomerate interbeds
Y	Pyrite laminae (individual)
Z	Disseminated sphalerite

1. In stratigraphic order wherever possible - see Facies Relationships and General Stratigraphy diagrams. After Cecile and Norford (1979), Fritz (1979), Gabrielse (1975, 1981), Gabrielse et al (1977) and Taylor et al (1979).
2. This is for the entire Gataga Area; not all units are present in each property.
3. Conversion chart correlating this with 1978, 1979, 1980 and 1981 legends - follows.
4. The hangwall and footwall versions of these members can be lithologically indistinguishable, in which case they are referred to as DG_C, DE_B, DG_T, DA_P, DA_C, DA_S, DC.