



Figure 1. Structural subdivisions.

Abstract

The 1:50 000 scale bedrock geological map of Stimson Creek (NTS 82-J8) is the result of geological fieldwork conducted in 1997 and 1998, combined with reinterpretation of pre-existing maps. The area covered by the map extends from the Alberta syncline westward to the inner part of the southern Rocky Mountain foothills. Bedrock geology in the Alberta syncline is characterized by gently dipping Upper Cretaceous to Paleocene normal clastic strata. Exposed in the northern part of the area, a narrow zone of hinterland-vergent thrust faults and folds developed in Upper Cretaceous clastic strata that form the upper detachment of a triangle zone. Foreland-vergent thrust faults, folds and rare back-thrusts developed in Jurassic and Cretaceous clastic strata characterize the Rocky Mountain Foothills. Resistant, marine Mississippian carbonate outcrops in the structurally highest thrust sheet. Deformation is thin-skinned and probably Late Cretaceous to Early Tertiary. Thick, Lower Cretaceous, igneous-clast-bearing, incised, channel-fill conglomerate occurs in the Corral Creek area.

Résumé

La carte géologique à l'échelle de 1:50 000 de la région du ruisseau Stimson (Stimson Creek, SNRC 82-J8) est le résultat de travaux géologiques menés sur le terrain en 1997 et 1998, combinés à la réinterprétation de cartes préexistantes. La région de la carte s'étend du synclinal de l'Alberta vers l'ouest jusqu'à la partie extérieure des collines Rocheuses. Dans le synclinal de l'Alberta, la géologie du substratum rocheux est caractérisée par des strates clastiques non marines, à faible pendage, du Crétacé supérieur au Paléocène. La partie nord de la région présente une zone étroite de failles de chevauchement et de pli, à vergence vers l'arrière-pays, qui se sont développées dans les strates clastiques du Crétacé supérieur correspondant au décollement supérieur d'une zone triangulaire. Des failles de chevauchement, des plis et de rares retirochassages à vergence vers l'avant-pays, qui se sont développés dans des strates clastiques du Jurassique et du Crétacé, caractérisent les contreforts des Rocheuses. Des roches carbonatées marines résistantes du Mississippien affleurent dans la nappe de charriage structuralement la plus élevée. La déformation est superficielle et date probablement du Crétacé tardif au Tertiaire précoce. D'épais conglomérats de remplissage de chenaux, incisés, comportant des classes de roche grêle et datant du Crétacé inférieur, sont présents dans la région du ruisseau Corral.

82-010	82-J8	82-012
827A	OF3875	
82-07	82-08	82-09
CGM 8	CGM 24	
82-02	82-01	82-04
1828A	1831A	1837A
881A	OF3888	

National Topographic System reference and index to adjoining published Geological Survey of Canada maps

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CANADIAN GEOSCIENCE MAP 24

GEOLOGY

STIMSON CREEK

Alberta

1:50 000



Canadian
Geoscience Maps

Author: M.E. McMechan

Geological interpretation by M.E. McMechan based on ground observations by M.E. McMechan, 1997–1998, 2007; published geological maps by Hume and Hage, (1946), Hume, (1947), and studies of vertical airphotographs and high-resolution orthorectified images.

Geomatics and cartography by B. Fimiston, F.A. Harpjo, and P.R.J. Wozniak

Scientific editing by E. Inglis

Map projection Universal Transverse Mercator, zone 11, North American Datum 1983

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications. Elevations in feet above mean sea level

CANADIAN GEOSCIENCE MAP 24

GEOLOGY
STIMSON CREEK
Alberta
1:50 000

1 0 2 3 4 km

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Mean magnetic declination 2013, 14°45'E, decreasing 12.2 annually

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QUATERNARY

Qa Alluvium, colluvium, and fill: deposits of gravel, sand, and silt. This unit is shown only where these deposits cover the bedrock extensively.

Qls Landslide: blocks of nearby bedrock.

TERTIARY

TPH Porcupine Hills Formation: shale: carbonaceous, olive-brown or grey, massive, rubby; sandstone: calcareous, fine- to coarse-grained, grey, light tan-weathering, medium- to very thick-bedded, massive to crossbedded, multistored; mudstone: grey-green, tan, and red; minor conglomerate: granule to pebble; limestone: fine-grained, pedogenic. Thick sandstone forms characteristic resistant bands.

TPH-as Porcupine Hills Formation, sandstone bodies: sandstone: fine- to medium-grained, thick- to very thick-bedded, crossbedded; minor shale: muddy, interbeds within sandstone. Resistant, cliff-forming unit.

CRETACEOUS-TERTIARY

KTWC Willow Creek Formation: shale and mudstone: locally carbonaceous, green, red, purple, and grey; sandstone: lithic wacke, fine- to coarse-grained, grey, light tan-weathering, medium- to very thick-bedded, massive to crossbedded, friable; minor limestone: occurs as nodules or concretions in shale (caliche); conglomerate: granule to pebble. Sandstone becomes coarser and more indurated upward, locally contains fresh water molluscs.

KTWC-as Willow Creek Formation, sandstone bodies: sandstone: fine- to medium-grained, thick- to very thick-bedded, crossbedded.

CRETACEOUS

KSMR St. Mary River Formation: sandstone: fine-grained, hard to soft, grey to greenish-grey, nodules common; silt shale and shale: grey to greenish-grey; shale: carbonaceous, minor limestone (ironstone), coal.

KBp Bearpaw Formation: mudstone and shale: locally silty, dark grey-brown, rubby, concretions common; sandstone: arkosic or lithic wacke, very fine- to medium-grained, brownish-grey, thin- to medium-bedded, coarsens and cleans upward, variable concretion content, minor bentonite. Unit contains bioturbates.

KBR Belly River Group: mudstone: silty, grey and green; sandstone: grey and green, very fine- to medium-grained, crossbedded; limestone: pedogenic, occurs as concretions or caliche nodules, rare coal, bentonite.

KDP Deadhorse Coulee and Pakowki formations: undivided.

KPk Pakowki Formation: mudstone and shale: dark grey to greenish-grey, contains distinctive bed of floating chert pebbles at base; minor sandstone: silty, very fine- to fine-grained, grey to olive-grey, thin- to medium-bedded, parallel to current-rippled or hummocky cross-stratified, trace fossils common, interbedded with shale, coarsens and thickens upward. Unit is recessive, typically 25 m to less than 10 m thick. Unconformably overlies Deadhorse Coulee Formation.

Milk River Group (KTC–KCs)

KCh Deadhorse Coulee Formation: sandstone: fine- to medium-grained, light greenish-grey, thin- to thick-bedded, massive, trough crossbedded, or current-rippled, may contain mica, chert, and plant detritus; shale: silty, greenish-grey, rubby; mudstone and shale: carbonaceous, grey or greenish-grey, locally rusty-weathering, sideritic concretions; minor coal: impure. Overlain unconformably by Pakowki Formation.

KV Virgile Formation: sandstone: quartz arenite, locally calcareous or iron-bearing, fine- to medium-grained, light grey to white or light brown, very thick-bedded, massive to crossbedded, contains small concretion; sandstone: magnetite quartz arenite; prominent cliff and ridge former.

KTC Telegraph Creek Formation: shale: silty or sandy, dark grey; sandstone: very fine- to medium-grained, light grey to white or light brown, very thick-bedded, massive to crossbedded, contains small concretion; sandstone: magnetite quartz arenite; prominent cliff and ridge former.

Alberta Group (KCs–KWp)

KWp Wapiti Formation: shale: locally calcareous, locally silty, dark grey to black, contains sideritic concretions; siltstone: thin-bedded, sandstone: calcareous, fine-grained, grey, thin-bedded; limestone: contains ammonites.

KC Cardium Formation: sandstone: quartz arenite, fine-grained, grey to dark grey, thin- to medium-bedded, locally crossbedded, crosslaminated, or bioturbated; shale: silty or sandy, conglomerate: granule, at base of unit, limestone: occurs as concretions, contains ammonites and trace fossils.

KBs Blackstone Formation: shale and mudstone: silty, locally calcareous, dark grey to black, sideritic concretions; sandstone: locally lufaceous, very fine- to fine-grained, grey, thin-bedded; limestone: argillaceous, conglomerate: chert-pebble at base of unit, bentonite: contains ammonites and bivalves.

Blairmore Group (KCo–KSMv)

KSMv Beaver Mines and Mill Creek formations: undivided.

KMC Mill Creek Formation: mudstone and siltstone: dark grey to black, locally variegated in upper part; sandstone: quartz arenite, chert grains more abundant upward, fine- to coarse-grained, grey to white, crosslaminated, bioturbated; minor conglomerate: quartzite, chert, and igneous pebbles, arkosic matrix, locally developed in upper part of unit; bentonite: increases in abundance upward. There are upward-coarsening cycles in lower part.

KSM Beaver Mines Formation: sandstone: feldspathic, some volcanic grains, fine- to coarse-grained, green to grey, locally crossbedded; siltstone: olive-green, laminated, calcite nodules; mudstone: variegated green and red, blocky, contains root traces and pedogenic horizons; minor conglomerate: pebble to cobble, thick-bedded to massive, igneous-clast-bearing, channel-fill.

KSM-cg Beaver Mines Formation, conglomerate facies: conglomerate: pebble to cobble, thick-bedded to massive, igneous-clast-bearing, incised, channel-fill.

Kg Gladstone Formation: sandstone: quartz, medium grey, brown-weathering, fine-grained, hard, interbedded with mudstone: grey, green-grey, mudstone: red and green with a few quartz sandstone interbeds in basal part.

KCo Cadomin Formation: conglomerate: chert and quartzite clast, pebble- to cobble-sized, matrix of quartz sand, fine- to coarse-grained, mottled brown-weathering, resistant; sandstone: quartz arenite, locally carbonaceous, light grey.

JURASSIC-CRETACEOUS

Kootenay Group

JKME Mist Mountain and Elk formations: shale and mudstone: carbonaceous, dark grey to black; siltstone: light to dark grey, greyish-brown-weathering; sandstone: lithic or quartz arenite, locally carbonaceous, fine- to coarse-grained, light to dark grey, coal: low- to high-volatile, bituminous to semibituminous, some economic seams; conglomerate: chert- and quartzite-pebble, rare, but conspicuous beds (Mist Mountain Formation); sandstone: lithic, fine- to coarse-grained, grey; siltstone: carbonaceous, mudstone: silty, carbonaceous (Elk Formation).

JURASSIC

JF Fernie Formation: basal sandstone: phosphatic, dolomitic, field, black, fossiliferous, minor pebbles, 0.1 m thick; lower shale and mudstone: dark grey to black, brownish-grey-weathering, soft, commonly laminated and fissile, may contain concretions and blemishes (Poker Chip Shale); middle sandstone: quartzite, finely laminated, light grey, buff-weathering, with thin grey limestone beds (Rock Creek Member); overlain by shale and limestone: phosphatic, nodular, black, fossiliferous, strongly pitted grading upward to shale: soft, fissile, grey, with local concretions (Highwood Member); upper shale: fissile, black with siltstone and sandstone: very fine- to fine-grained, thin-bedded, brown-weathering, increasing in content grain size and bed thickness upward with local sandstone: massive or crossbedded, fine-grained, brown-weathering in upper part (Passage Beds).

MISSISSIPPIAN

Rundle Group (MLv–MLHwS)

Mount Head Formation

MLHwS Wieman, Bari, and Saller members: dolostone: silty or sandy, yellow-grey-weathering, thin-bedded to laminated, ripple crosslaminated, local fenestral fabrics; siltstone to sandstone: light grey to brown-grey weathering, thin-bedded to laminated, ripple crosslaminated, commonly dolomitic, recessive (Wieman Member); lime granestone: skeletal, light to medium grey, commonly crossbedded, resistant (Bari Member); silty dolostone to dolomitic siltstone: tan to light grey-weathering, very thin- to thick-bedded, laminated, crosslaminated, recessive (Saller Member).

MLv Livingstone Formation: limestone: skeletal granestone, locally dolomitic or cherty, freely to coarsely crystalline, grey, pale grey-weathering, locally waxy, massive, resistant; dolostone: grey, fossil content includes crinoid ossicles and bryozoans.

Contact

Defined

Approximate

Inferred

Concealed

Mapping precision change

Map unit grouping at dotted line

Fault, thrust, symbol on hanging wall

Defined

Approximate

Inferred

Concealed

Fault, back thrust, symbol on hanging wall

Approximate

Inferred

Concealed

Fault, transverse

Approximate

Inferred

Fault zone

Zone of faults, deformation

Anticline, upright

Defined

Approximate

Inferred

Concealed

Anticline, overturned

Defined

Approximate

Inferred

Concealed

Syncline, upright

Defined

Approximate

Inferred

Concealed

Syncline, overturned

Approximate

Inferred

Concealed

Station

Outcrop visited, attitude not determined

Burrow

Bedding, top known

Inclined

Vertical, ball on younger side

Overturned

Bedding, top known (historical)

Inclined

Inclined, dip not recorded

Vertical, ball on younger side

Overturned

Bedding, top unknown

Inclined

Bedding, top unknown (historical)

Inclined

Vertical

Groundwater

Spring

Wells

Drilled and cased

Dry, abandoned

Oil well

Oil well, abandoned

Note 1. Structural thickening probably occurs in this area, but cannot be mapped due to poor exposure.

REFERENCES

Hume, G.S. 1947. Stimson Creek, west of the 8th meridian, Alberta; Geological Survey of Canada, Map 934A, scale 1:63 360.

Hume, G.S. and Hage, C.O. 1942. Pekisko Creek, Alberta; Geological Survey of Canada, Map 698A, scale 1:63 360.

Recommended citation

McMechan, M.E. 2013. Geology, Stimson Creek, Alberta; Geological Survey of Canada, Canadian Geoscience Map 24, scale 1:50 000, doi:10.4095/293115

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Canadian Geoscience Maps

STIMSON CREEK

Alberta

1:50 000

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