Genovevakreuz Member: Brownish to grey flaser limestones and nodular limestones; about 10 m in thickness.
Lend Member: Red to violet sometimes brecciated dolomites and dolomitic phyllites and platy limestones; known only from temporarily exposed subsurface outcrops.
Thalwinkel Member: Red to violet cephalopod limestones; up to 30 m in thickness.

Underlying unit(s): Kehr Formation.

Overlying unit(s): Parmasegg Formation.

Lateral unit(s): -

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheet 163 Voitsberg, 164 Graz.

Remarks: -

Complementary references: HUBMANN & MESSNER (2005, 2007), HUBMANN & SUTTNER (2007), HISTON et al. (2010), EBNER & HUBMANN (2012).

Bameder-Formation / Bameder Formation

BERNHARD HUBMANN

Validity: Valid; first description by EBNER (1989: "Bameder-Formation"); formalized by EBNER (1998: p. 129–130).

Type area: ÖK50-UTM, map sheet 4228 Voitsberg (ÖK50-BMN, map sheet 163 Voitsberg).

Type section: Not defined, but EBNER (1998) proposed a type region at Bamederkogel (1,160 m) (N 47°11'45" / E 15°12'20") west of village Groß-Stübing (ÖK50-BMN, map sheet 163 Voitsberg).

Reference section(s): -

Derivation of name: After the hill Bameder 30 km north of Graz.

Synonyms: Partly: Bythotrephis-Schiefer (STACHE, 1874); Neritenschiefer (PENECKE, 1894); Nereitenschiefer (HERITSCH, 1906); Scalarituba-Sandsteine (WEBER, 1990).

Lithology: Grey sand/siltstones and clay shales with intercalations of black platy nodular and flaser limestones.

Fossils: Rare solitary rugose corals.

Origin, facies: Intertidal to shallow subtidal environment.

Chronostratigraphic age: Lochkovian–Pragian.

Biostratigraphy: -

Thickness: 300–500 m.

Lithostratigraphically higher rank unit: Rannach Group.

Lithostratigraphic subdivision: EBNER (1998) distinguished 2 members, both outcropping on Bameder hill west of Groß-Stübing.
Krahfuß Member: Predominantly grey sandstones with *Scalarituba* and intercalations of dark coloured platy (crinoidal) limestones; about 150–200 m in thickness.
Spandl Member: Succession overlying the Krahfuß Member; alternating silty and clayey shales and sand/siltstones with darkgrey platy limestones; about 200–300 m in thickness.

Underlying unit(s): Unknown.

Overlying unit(s): Unknown.

Lateral unit(s): -

Geographic distribution: Styria, western parts of highland in the surroundings of Graz; ÖK50-UTM, map sheet 4228 Voitsberg (ÖK50-BMN, map sheet 163 Voitsberg).

Remarks: -

Complementary references: EBNER (2001), FLÜGEL (2000).

Heigger-Formation / Heigger Formation

BERNHARD HUBMANN

Validity: Valid; first abridged description by FLÜGEL (1984) (herein: "Haiggerfolge"); formalized by FLÜGEL (2000: p. 23; Heigger-Formation).

Type area: ÖK50-UTM, map sheet 4228 Voitsberg (ÖK50-BMN, map sheet 163 Voitsberg).

Type section: No type section defined; FLÜGEL (1984, 2000) proposed an area between the western slopes of Pleschkogel (1,061 m) and Mühlbacherkogel (1,050 m) as type region (Heiggerkogel: N 47°09'34" / E 15°14'20").

Reference section(s): -

Derivation of name: After the hill Heiggerkogel (1,098 m) northwest of Rein.

Synonyms: Partly: Kalkschieferstufe i.w.S. (HERITSCH, 1917b, c).

Lithology: Light grey to brownish thin bedded limestones locally intercalated by marly clay/siltstones.

Fossils: Spicules, styliolids, conodonts (BUCHROITHNER, 1978).

Origin, facies: Shallow subtidal deposits.

Chronostratigraphic age: Lochkovian–Emsian.

Biostratigraphy: -

Thickness: Local strong variation in thickness; more than 100 m.

Lithostratigraphically higher rank unit: Rannach Group.

Lithostratigraphic subdivision: -

Underlying unit(s): Parmasegg Formation.

Overlying unit(s): Flösserkogel Formation.

Lateral unit(s): Flösserkogel Formation.

Geographic distribution: Styria, highland in the surroundings of Graz.

Remarks: Transitions from dolomitic and sandy/silty deposits of the Flösserkogel Formation into successions dominated by thin bedded limestones northwest of Pleschkogel-Heiggerkogel-Mühlbacherkogel were interpreted as transitional zone between tidal flat environments and basinal settings (FENNINGER & HOLZER, 1978) of the "Rannachfacies" (H. FLÜGEL, 1975).

Complementary references: EBNER (1998, 2001).

Parmasegg-Formation / Parmasegg Formation

BERNHARD HUBMANN

Validity: Valid; first description by FLÜGEL (1960: "Crinoiden-Schichten"); formalized by FRITZ (1991: p. 230–233; Parmasegg Formation).

Type area: ÖK50-UTM, map sheet 4222 Leoben (ÖK50-BMN, map sheet 163 Voitsberg).

Type section: FRITZ (1991) proposed a type section at Parmaseggkogel (N 47°13'29" / E 15°28'50").

Reference section(s): Greitnerkogel (N 47°12'55" / E 15°17'25") (FRITZ, 1991).

Derivation of name: After the hill Parmasegg (785 m) 28 km north of Graz (FRITZ, 1991).

Synonyms: Crinoiden-Schichten (H. FLÜGEL, 1960, 1961, 1975); partly: Kalkschiefer-Folge (CLAR, 1874); unterer Crinoidenkalk (HOERNES, 1880); Kalkschieferstufe (HERITSCH, 1906); Kalkschieferstufe i.A. (WAAGEN, 1937); Plattenkalke und Schiefer des e-gamma (SEELMEIER, 1944); ef-Flaser-Plattenkalke (SCHOUPPÉ, 1953); plattige Kalkschiefer (WEBER, 1990).

Lithology: Major parts of the succession consist of platy crinoidal limestones intercalated with sandy marls and sand/siltstones.

Fossils: Fossils are rare (conodonts, badly preserved rugose corals, indeterminable crinoids).

Origin, facies: Intertidal to shallow subtidal environment.

Chronostratigraphic age: Pragian (may locally also contain uppermost Silurian (*eosteinhornensis* conodont zone); FRITZ, 1991: p. 232)–lower Emsian (?).

Biostratigraphy: See above.

Thickness: 150–200 m.

Lithostratigraphically higher rank unit: Rannach Group.

Lithostratigraphic subdivision: FRITZ (1991) distinguished four members (Dolomit-Siltschiefer Member, Karbonat-Mergel Member, Plattenkalk Member and Siltstein Member) in the type region. FLÜGEL (2000) divided the formation into three members:
Greitnerkogel Member: Blue-grey platy limestones and crinoidal limestones; less than 100 m in thickness.
Oberbichl Member: Succession of brown platy silty limestones, flaser- and crinoid-limestones, and sand/siltstones; some tens of meters in thickness.
Stiwoll Member: Yellowish marly sand/siltstones; about 80 m in thickness.

Underlying unit(s): Kötschberg Formation.

Overlying unit(s): Flösserkogel Formation.

Lateral unit(s): Bameder Formation, Heigger Formation.

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 134 Passail, 163 Voitsberg, 164 Graz.

Remarks: -

Complementary references: HUBMANN & MESSNER (2007).

Kogler-Formation / Kogler Formation

BERNHARD HUBMANN

Validity: Valid; first nomination by GOLLNER & ZIER (1985: "Koglerformation"), formalized by FLÜGEL (2000: p. 43; Kogler-Formation).

Type area: ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

Type section: No type section defined, but FLÜGEL (2000) selected a type region in the vicinity of the farmstead "Kogler", south of St. Erhard, ÖK50-BMN, map sheet 134 Passail (N 47°22'43" / E 15°27'13").

Reference section(s): -

Derivation of name: After the farmstead "Kogler", south of St. Erhard (Breitenau valley), approx. 55 km north of Graz.

Synonyms: Partly: Kalkschiefer-Folge (CLAR, 1874); Kalkschieferstufe i. A. (WAAGEN, 1937).

Lithology: Darkblue to darkgrey, platy and banded limestones, locally with sandstone alternations.

Fossils: Conodonts; rare tabulate and rugose corals.

Origin, facies: Shallow marine deposits.

Chronostratigraphic age: Due to the lack of stratigraphically meaningful fossils no exact age determinable; presumably Lower to Middle Devonian (?Upper Devonian).

Biostratigraphy: -

Thickness: Up to 800 m.

Lithostratigraphically higher rank unit: Peggau Group (FLÜGEL, 2000).

Lithostratigraphic subdivision: FLÜGEL (2000) distinguished three members:
Geschwend Member: Alternating limestones, silt- to sandstones and subordinate argillaceous shales and dolomites, locally volcanites; up to 800 m (?) in thickness.
Sattelbauer Member: Lightgrey, locally fossiliferous limestones (corals, brachiopods) with chert nodules; thickness about 150 m.
Spatl Member: Reddish to violet micritic (flaser) limestones, sandstone and argillaceous shales with intercalations of thin-bedded alkaline volcaniclastics; about 100 m in thickness.

Underlying unit(s): In the area east of the Hochlantsch and the basin of Passail the Kogler Formation is underlain by the Rauchenberg Member of the Schönberg Formation.

Overlying unit(s): North of the Tyrnaueralm successions of the Laufnitzdorf Nappe overly the Kogler Formation, whereas south of the Tyrnaueralm the formation is overlain by successions of the Schöckel Nappe.

Lateral unit(s): -

Geographic distribution: Styria, highland in the surroundings of Graz; ÖK50-BMN, map sheets 133 Leoben, 134 Passail, 163 Voitsberg.

Remarks: Lithological content of the formation is very similar to the Hochschlag Formation and the Hubenhalt Formation respectively (FLÜGEL, 2000).

Complementary references: EBNER (1998).

Hubenhalt-Formation / Hubenhalt Formation

BERNHARD HUBMANN

Validity: Valid; first description by PENECKE (1890: "Kalke und Kalkschiefer der Hubenhalt", formalized by FLÜGEL (2000: p. 44–45; Hubenhalt-Formation).

Type area: Hubenhalt northwest of Fladnitz (Teichalpe area), ÖK50-UTM, map sheet 4223 Weiz (ÖK50-BMN, map sheet 134 Passail).

Type section: No type section defined. FLÜGEL (2000) selected a type region at Hubenhalt, northwest of Fladnitz ÖK50-BMN, map sheet 134 Passail (N 47°19'15" / E 15°26'40"), approx. 40 km north of Graz.

Reference section(s): -

Austrian Stratigraphic Chart 2004 - Paleozoic

(sedimentary successions)

Austrian Stratigraphic Commission

ASC

Legend

- pelagic, offshore, siliciclastic
- pelagic, nearshore, calcareous
- shallow marin, neritic
- terrestrial-continental, coarse clastic
- terrestrial-continental, fine clastic
- evaporite (chloride, sulphate)
- rhyolite, dacite
- (basaltic) andesite, trachyandesite
- basalt
- phyllite
- mixed-facies (in corresponding colors)

- ● coal (may include several seams)
- ? position/age doubtful/controversial
- = equal units
- \ older unit left \ younger unit right
- hiatus
- ~~~ unconformity
- ● GSSP

Fm. Formation

Ls. Limestone

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Cutout and English adaptation of the "Die Stratigraphische Tabelle von Österreich 2004": Geological Survey of Austria

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