S T R A T I G R A P H I C   C O L U M N
O F   P R E - Q U A T E R N A R Y   S E D I M E N T S

Map sheets L-36-XXI, XXII, XXVII

Eratheme	System	Division	Stage	Lower boundary age, Ma	Regio-stage	Horizon	Age index	Thickness, m	Description
		Q	E						
									TSENTRALNA LTZ
Cenozoic	Neogene	Pliocene			Akchagylian		N$_2$ng	8	**Nogayska Suite.** Brown-red, grey-red clays
				3			N$_2$br	9	**Bagrationivska sequence.** Paleo-soil horizons of cherry-red clays with limestone fragments
				5	Kimmerian		N$_2$čt	25	**Chatyrlytska sequence.** Yellow-grey re-crystallized limestones “stone cap”, marls with chocolate clay interbeds, , with *Dreissensia angusta* R o u s s, *Dr. rostriformis* D e s h., *Didacna sp.*
									TSENTRALNA AND SYVASKA LTZ
		Miocene			Pontychniy	Novorosiyskiy	N$_1$od	12	**Odeski layers.** Yellow shell limestones, with *Prosodacna cf. littoralis* (E i c h w)
							N$_1$ev	5	**Evpatoriyski layers.** Greenish-yellow oolitic limestones, with *Congeria novorossica* S i n z.
					Meotychniy	Akmanayskiy	N$_1$ak	13	**Akmanayska Suite.** Yellow-grey limestones with interbeds of clays, in places sandstones, with *Congeria panticapaea* A n d r u s., C. subnovorossica S i n z.
						Bagerivskiy	N$_1$bg	42	**Bagerivska Suite.** Yellow-grey limestones, marls, clays, with *Dosinia maeotica* A n d r u s., *Pirenella sp.*
					Sarmatian	Khersonskiy	N$_1$hr	65	**Khersonska Suite.** Grey organogenic limestones with greenish clay interbeds, with *Mactra caspia* Eichw., *Mactra bulgarica* T o u l a
						Besarabskiy	N$_1$bs	70	**Besarabska Suite.** Light-grey, oolitic-organogenic, pelitomorphic limestones, with *Mactra fabreana* O r b., *M. vitaliana* O r b., *Obsoletiforma fittoni* (O r b.)
				13,6		Volynskiy	N$_1$vl	13	**Volynska Suite.** Light-grey limestones with grey clay interbeds, with *Obsoletiforma praeplicatum* (H i l b.), *Ervilia dissita* Eichw.
					Konkskiy		N$_1$vs	12	**Veselyanski layers**. Grey limestones, greenish-grey clays, with *Obsoletiforma obsoletum* (Eichw.), *Parvinensis konkensis* (S a k.)
							N$_1$ef	19	**Ervilievo-Foladievi layers**. Greenish-grey clays, sands, in places limestones, with *Ervilia trigonula* S o k., *Corbula gibba* Olivi., *Barnea sp*
					Karaganskiy		N$_1$p	39	**Sandstone sequence**. Brown-grey sands, sandstones with limestone and clay interbeds, with *Spaniodontella pulchella* B a i l y, *S. opistodon* Andrus
				16,5	Chokrakskiy		N$_1$br	20	**Brykivski layers**. Grey limestones, clays with sand interbeds, with *Spaniodontella intermedia* A n d r u s., *Sandbergeria praeraxelanica* Zhizh.
					Tarkhanskiy		N$_1$jr	5–6	**Yurakivski layers**. Greenish-grey clays, with *Flarilus bonednus* (O r b.), *Globigerina tarchamensis* S u b b. et Chuts.
							N$_1$mč	15	**Mayachkynska Suite**. Emerald-green, sandy clays and marls, sands, with *Elphidium macellum* (F.et M.), *Strebius beccari* (L.)
									TSENTRALNA LTZ
				23,8	Batysyfonoviy		N$_1$g	200	Maykopska Series (₽$_3$-N$_1$mk): **Sequence of dark-grey clays** with aleurolite interbeds, with *Elphidium sp.*
	Paleogene	Oligocene			Gornostaivskiy		₽$_3$kr / ₽$_3$kr$_2$	300	Kerleutska Suite. **Upper sub-suite.** Dark-grey clays with *Cibicidoides ornatus* (Bogd.), *Saccammina sp.*
					Sirogozkiy Askaniyskiy		kr$_1$	100	**Lower sub-suite.** Dark-grey clays with fish remnants
					Molochanskiy		₽$_3$ml	50	**Molochanska Suite.** Grey calcareous clays with ostracoda *Candona candidula* L n k l., *Pontocypris oligocaenica* (Z a l.)
					Planorbeloviy		₽$_3$pl / pl$_2$	100	Planorbelova Suite. **Upper sub-suite.** Greenish-grey carbonate clays with *Textularia carinata oligocenica* (J. N l k.), *Globigerina trefa* N. B y k.
				37			pl$_1$	50	**Lower sub-suite.** Grey calcareous clays with *Globigerina khadumica* N. B y k.
		Eocene			Alminskiy		₽$_2$al	280	**Alminska Suite**. Greenish-grey marls and clays with limestone interbeds, with *Globigerina corpulenta* S u b b., *Bolivina antegressa* S u b b.
					Kumskiy		₽$_2$ma	260	**Sequence of marls and aleurolites** with fine blobs, grey-brown marls at the bottom, with *Globigerina turkmenica* Chal.
					Novopavlivskiy; Simferopolskiy		₽$_2$rd	360	**Rodnikovska sequence**. Light-grey, greenish-grey marls with limestone and clay interbeds, with *Globigerapsis subconglobatus* C h a l., *Acarinina bullbrooki* (B o l l i.)
				54	Bakhchysarayskiy		₽$_2$ok	120	**Okunivska Suite**. Grey calcareous clays and greenish-grey marls, with *Globorotalia subbotinae* M o r.
		Paleocene			Kachynskiy		₽$_1$lz	260	**Lazurnenska Suite**. Greenish-grey marls with limestone and black clay interbeds, with *Spiroplectammina kurtishensis* Balakhm., *Karreria fallax* Rzehak.
					Bilokamyanskiy		₽$_1$gm / ₽gm$_2$	240	Gromivska Suite. **Upper sub-suite.** Grey organogenic-detritus and foraminifera limestones with marl interbeds, with *Globorotalia angulata* W h i t e., *Stereostomella gigantica* Subb.
				65			₽gm$_1$	200	**Lower sub-suite.** Grey organogenic-detritus limestones and grey marls, with *Stensioina caucasica* (S u b b.), *Globoconusa daubjergensis* (B r o n n.)
									PRYKARKINITSKA LTZ
Mesozoic	Cretaceous	Upper	Maastrichtian	72			K$_2$st	700	**Stroganivska sequence**. Light-grey limestones at the top, dark-grey clayey limestones with marl interbeds at the bottom, with *Bolivina kalinini* Vass., at the top *Neoflabellina reticulata* R o s s.
			Campanian	83			K$_2$nm	300	**Novomayachkynska sequence**. Light-grey limestones with minor greenish clays, with *Globotruncana fornicata* (P l u m m.), *Gavelinella stelligera* (M a r i e), *Pseudovalvulineria clementiana pseudoexcolata* (R a l i n.)
			Santonian	87					
			Coniacian	88 ?			K$_2$kr	800	**Karkinitska sequence**. Light-grey, white limestones, sandstones at the bottom, with *Brotzenella berthelini* (Kell.), *Cibicidoides praleriksdalensis* (Vass.), *Pseudovalvulineria infrasantonica* (Balakhm)
			Turonian	91					
			Cenomanian	96			K$_2$gn	180	**Genicheska sequence**. Grey quartz-glauconite sandstones. Sands, aleurolites, clays, grey marls and limestones with flint at the top, with *Gavelinella cenomanica* B r o t z.
		Lower	Albian			Kovylnenskiy; Tarkhankutskiy	K$_1$av	280	**Averyanivska sequence**. Dark-grey siliceous argillites with aleurolite and sandstone interbeds, with *Gavelinella slavutichi* (K a p t.), *Lingulogavelinella zoratensis* (D j a f f. e t A g a l.)
				108		Ryleevskiy	K$_1$hr	160	**Khersonska sequence**. Sandstones, aleurolites, argillites, grey clays with *Haplophragmoides aff. nonioninoides* R e s.
			Aptian	114		Tayganskiy	K$_1$no	200	**Novooleksiivska Suite**. Sandstones and sands, aleurolites, clays with limestone interbeds, gravelites at the bollom, with *Hedbergella aptica* A q a l.
			Barremian						
			Hauterivian						
									PIVNICHNOKRYMSKA LTZ
	Jurassic	Middle	Bathonian	167		Kopselskiy	J$_2$iš	400	**Ishunska Suite**. Dark-grey clays, aleurolites with polymictic sandstone interbeds, with *Nucula ventricosa* P č e l., *Lucina bellona* (O r b.)
						Karadazkiy	J$_2$čč	250	**Chaychynska sequence**. Sandstones, gravelites, schistose clays with andesite-basalt lavas and their tuffs
			Bajocian	176					
			Aalenian	180		Bitatskiy	J$_{1-2}$at	500	**Ateyska Suite**. Alternating dark-grey argillites and aleurolites with sandstone and limestone lenses, with *Pseudogrammoceras fallociosum* (Bayle.), *Lamarckella media* Kapt.
		Lower	Toarcian	187					
	Triassic	Upper	Norian			Krymskiy	T$_3$p	276	**Sequence of sandstones** with argillite, gravelite and conglomerate interbeds
			Carnian	230			T$_3$a	200	**Sequence of argillites** with sandstone and aleurolite interbeds, with *Halobia cf. sittneri* M o i s s., *H. septentrianalis* S m i t h
									NOVOSELIVSKA LTZ
Paleozoic	Carboniferous	Middle					C$_2$ns	750	**Novoselivska Suite**. Greenish-grey quartz-chlorite, epidote-sericite-chlorite, actinolite-epidote-chlorite schists; rhythmic intercalation of limestones and quartz-mica, carbonate and coaliferous schists
		Lower		360			C$_1$zj	1100	**Zuyska Suite**. Black, phyllite-like, graphite-mica, chlorite, mica-quartz, quartz-carbonate-mica schists, with *Trilobozonotriletes sulcatus* (Waltz)
									BAKALSKA LTZ
Upper Proterozoic	Ryphean	Upper		1000 ±50			R$_3$bk	5000	**Bakalska Series.** Quartz-muscovite, garnet-mica schists with amphobolite bodies

SYVASKA LTZ

Age index	Thickness, m	Description
N$_2$-E$_1$ td	8	**Tyup-Dzhankoyski layers**. Olive-brown, wax-like clays, with *Coretus corneus* (L.), *Planorbis sp.*
N$_2$kl	17	**Kuyalnytski layers**. Grey, greenish-grey clays, aleurolites, sands, with *Limnocardium ex gr. limanicum* Krest., *limanicum* Krest., *Dreissena theodori kubanica* Krest.
N$_2$pn	16	**Pantykapeyska Suite**. Grey, non-carbonate clays, in places aleurolites, sandstones, sands, with *Didacnomya vulgaris suchumica* Sinz., *D. ex gr. tanaica* Ebers.
N$_2$kb	12	**Kamyshburunska Suite**. Greyish-green clays with sandstone and aleurolite interbeds, with *Dreissensa theodori* A n d r u s., *Dr. polymorpha* (P a l l.)

TSENTRALNA LTZ

Age index	Thickness, m	Description
N$_1$kz	28	**Kazankivska sequence**. Pebble-stones with gravel, sand, clay and limestone interbeds, with *Prosodacna sp., and others*

SYVASKA LTZ

Age index	Thickness, m	Description
N$_1$kp	130	**Krasnoperekopska Suite**. Dark-grey to black, fine-bedded clays with *Obsoletiforma fittoni* (O r b.), *Mactra vitaliana* O r b.

SYVASKA LTZ

Age index	Thickness, m	Description
N$_1$g	200	**Sequence of clays**. Dark-grey clays with aleurolite and marl interbeds, with *Elphidium sp., Rotalia sp.*
₽$_3$gr	400	**Gornostaivska Suite**. Dark-grey clays and aleurolites with *Textularia caucasica* D., *Chlamys cornea* S o w.
₽$_3$as	600	**Askaniyska Suite**. Grey aleuritic clays with *Textularia carinata follis* K r a j e v a, *Chlamys hofmanni* (M u n s t.)
₽$_3$sr	200	**Sirogozka Suite**. Grey aleurolites and clays with fish skeleton remnants and *Corbula sokolovi* (K a r l.)
₽$_3$ml	100	**Molochanska Suite.** Grey calcareous aleuritic clays with *Candona candidula* L n k l.,
₽$_3$pl / ₽$_3$pl$_2$	250	Planorbelova Suite. **Upper sub-suite.** Greenish-grey slightly calcareous clays with *Textularia carinata oligocenica* (J. N l k.)
₽$_3$pl$_1$	150	**Lower sub-suite.** Grey calcareous clays with *Globigerina khadumica* N. B y k.
₽$_2$al	280	**Alminska Suite**. Grey clays, in places marls, with *Bolivina antegressa* S u b b.
₽$_2$mg	150	**Layers of marls** with *Globigerina turkmenica* Chal.
₽$_2$np	150	**Novopavlivska Suite**. Grey marls with *Operculina alpina* H. D o u v.
₽$_2$sm	140	**Simferopolska Suite**. Marls, limestones, with *Acarinina bullbrooki* (B o l l i.)
₽$_1$g	110	**Sequence of clays** with marl interbeds, with *Acarinina camerata* C h a l.
₽$_1$mv	125	**Sequence of grey marls and limestones** with sandstone and aleurite interbeds
₽$_1$bg	120	**Bogachivska Suite**. Grey organogenic-detritus, sandy, siliceous limestones

T S E N T R A L N O K R Y M S K A   L T Z

Age index	Thickness, m	Description
K$_2$kc	120	**Koltsovska sequence**. Marls and grey clayey limestones, with *Pseudovalvulineria infrasantonica* (Balakhm)
K$_2$nt	200	**Natashynska Suite**. Light-grey clayey limestones with suture and stilolite marks, marl and clay interbeds, with *Gavelinella ammonoides* (R e s.), *Stensioeina emscherica* B a r y s h n.
K$_1$kp$_1$	50	**Krasnopolyanska Suite**. Lower sub-suite. Grey clayey marls with *Rotalipora ticinensis* (G a n d.)
K$_1$ ev	280	**Evpatoriyska sequence**. Grey sandstones, argillites with flint, with *Ticinella (?) aff.breggiensis* (G a n d.)
K$_1$ el	500	**Elyzavetynska sequence**. Grey argillites with aleurolite and flint interbeds, with *Hoplites dentatus* S o w.
K$_1$ rl	170	**Ryleivska Suite**. Dark-grey aleurolites and argillites, with *Haplophragmoides rosaceus* S u b b.
K$_1$ tt	130	**Tetyanivska Suite**. Dark-grey carbonate argillites with *Haplophragmoides rosaceus* S u b b.
K$_1$ ks	150	**Kashtanivska Suite**. Dark-grey argillites with aleurolite interbeds, with *Hypacanthoplites nolaniformis* (N a t z k.)
K$_1$ dn	100	**Donuzlavska Suite**. Grey sandstones, aleurolites with clay interbeds, with *Anoceras nisum* O r b.
K$_1$ kl	20-120	**Kalininska Suite**. Grey, parti-colored sandstones, aleurolites with clay interbeds, with *Schizaecea, Gleicheniaceae, Classopolis,*

PIVNICHNOKRYMSKA AND TSENTRALNOKRYMSKA LTZ

Age index	Thickness, m	Description
K$_2$dz / K$_2$dz$_2$	900	Dzhankoyska Suite. **Upper sub-suite.** Grey marls with limestone and flint interbeds, with *Bolivina incrassata* (R e s.), *Pseudotextullaria varians* (Rzeh.)
K$_2$dz$_1$	450	**Lower sub-suite.** Grey clayey limestones with marl interbeds, with *Globotruncana coactava* (B o l l i), *G. morozovae* Vass.
K$_2$ pl	300	**Pavlivska sequence**. Light-grey limestones with marl interbeds, with *Cavelinella stelligera* (M a r i e)
K$_{1-2}$kp / K$_{1-2}$kp$_3$	300	Krasnopolyanska Suite. **Upper sub-suite.** Light-grey limestones with *Rotalipora cushmani* M o r n.
K$_{1-2}$kp$_2$	300	**Middle sub-suite.** Grey clayey marls with *Rotalipora appeninnica* (R e n z.)
K$_{1-2}$kp$_1$	600	**Lower sub-suite.** Grey clayey marls with *Rotalipora ticinensis* (G a n d.)
K$_1$ kv$_2$	300	**Kovylnenska Suite**. Upper sub-suite. Dark-grey argillites, marls with sandstone and volcanomictic rock interbeds, with *Praeglobotruncana delrioensis* (P l u m m.)

PIVNICHNOKRYMSKA LTZ

Age index	Thickness, m	Description
K$_2$vr	200	**Voronkivska sequence**. Light-grey limestones with suture and stilolite marks, with *Pseudovalvulineria infrasantonica* (Balakhm)
K$_2$ zn	1200	**Znamyanska Suite**. Light-grey clayey, organogenic and pitonelic, with suture and stilolite marks, flint, with *Gavelinella ammonoides* (R e s.), *Stensioeina emscherica* B a r y s h n.
		Tarkhankutska sub-zone
K$_{1-2}$ kp$_1$	600	**Krasnopolyanska Suite**. Lower sub-suite. Grey clayey marls with *Rotalipora ticinensis* (G a n d.)
K$_1$ kv$_1$	1600	**Kovylnenska Suite**. Lower sub-suite. Dark-grey argillites, volcanomictic and polymictic sandstones, gravelites, in places siliceous and volcanogenic rocks, with *Pervinquieria subinflata* (P i c t.), *Hamites cf. attenuatus* S o w.
K$_1$ tr	560	**Tarkhankutska Suite**. Dark-grey argillites with aleurolite and volcanomictic rock interbeds, with *Hamites dentatus* S o w., *Kossmatella agassiziana* Pict., in places dacite-andesite lava and lava-breccia abd hornblende-plagioclase porphyries
K$_1$ rl	170	**Ryleivska Suite**. Aleurolites, argillites, extrusives, with *Haplophragmoides rosaceus* S u b b.
K$_1$ ks	200	**Kashtanivska Suite**. Dark-grey argillites with aleurolite, sandstone with siderite interbeds, with *Hypacanthoplites nolaniformis* (N a t z k.)
K$_1$ dn	200	**Donuzlavska Suite**. Grey sandstones, aleurolites with argillite and clay interbeds, with *Choffatella decipiens* S c h u m b.
K$_1$ kl	250	**Kalininska Suite**. Grey, in places parti-colored sandstones, aleurolites with clay, gravelite interbeds, with coalified remnants of *Gleicheniaceae, Classopolis, Schizaecea*

S e r e b r y a n s k o - D z h a n k o y s k a   s u b - z o n e

Age index	Thickness, m	Description
K$_{1-2}$pv / K$_{1-2}$pv$_2$	300	Pryvolnenska Suite. **Upper sub-suite.** Dacite-andesite lava and lava-breccia, sandstones, aleurolites and marls, with *Inoceramus crippsi* M a n t.; *Rotalipora appeninnica* (R e n z.)
pv$_1$	60	**Lower sub-suite.** Grey clayey marls, sandstones, with *Rotalipora ticinensis* (G a n d.)
K$_1$ tt	150	**Tetyanivska Suite**. Dark-grey carbonate argillites with aleurolite interbeds, with *Hamites attenuatus* S o w., *Grammotodon carinatus* Sow.

Notes: scale for sediment expression in the column:
Neogene 1:100 000
Paleogene 1:200 000
Mesozoic, Paleozoic and Upper Ryphean 1:200 000