Stratigraphic Column for North Flank of the Uinta Mountains

AGE		SYMBOL	FORMATIONS	Thickness (meters) (not to scale)	LITHOLOGY	NOTES
Quat.		Q*	Unconsolidated deposits	less than 50		Alpine glaciers in Uinta Mountains. Capture of Green River by Colorado River
Tertiary	Pliocene	Tag	Old gravel deposits	less than 50		
	Miocene	Tbp	Browns Park Formation	0-500		Crustal relaxation; Uinta Mountains down dropped along Uinta fault zone and drainage patterns change in eastern Uintas.
	latest Oligocene(?)					
	Eocene	Tbr	Bridger Formation	600		
		Tg	Green River Formation	625-1173		
		Tw	Wasatch Formation	610-1500		Uinta Mountains continue to uplift and erosion exposed Uinta Mountain Group
	Paleocene	Tfu	Fort Union Formation+	500-900		Unconformity, 6 m.y.; TK boundary and the extinction of dinosaurs
Cretaceous		Ke	Ericson Sandstone	88-275		Uplift of Uinta Mountains begins near end of Cretaceous
		Krs	Rock Springs Formation	0-385		Strata thin to east
		Kbl	Blair Sandstone	0-110		End of great Western Interior Seaway
		Kbx	Baxter Shale	1890-2100		Hilliard Shale of some previous workers
		Kf	Frontier Sandstone	36-58		Gas reservoir at Clay Basin
		Kmr	Mowry Shale	61-75		Unconformity, 5 m.y. Fossil fish bones and scales in Mowry
		Kd	Dakota Sandstone	40-76		Gas reservoir at Clay Basin
			Cedar Mountain Formation	0-60		K-1 unconformity, 2 m.y.
Jurassic		KJcm	Morrison Formation	90-287		K-0 unconformity, 25 m.y. Abundant dinosaur remains
		Js	Stump Formation	40-82		*Belemnites* fossils
		Je	Entrada Sandstone	30-75		J-3 unconformity, 1 m.y.
		Jc	Carmel Formation	34-144		
		J'Rn	Nugget Sandstone	230-256		J-2 unconformity, 14 m.y.
Triassic		Trc	Chinle Formation	40-116		
		Trm	Moenkopi Formation	160-225		Ankareh and Stanaker Fms. of some workers. Gartra Member. TR-3 unconformity, 15 m.y.
		Trd	Dinwoody Formation+	50-160		Woodside Shale of some workers
Permian		Pp	Park City and Phosphoria Formations	60-130		TR-1 unconformity, 6 m.y. Phosphate deposits
		PIPw	Weber Sandstone	186-472		Unconformity, 3 m.y. Forms cliffs and important oil reservoir in the Rocky Mountains
Pennsylvanian		IPm	Morgan Formation	11-62		
		IPrv	Round Valley Limestone	75-125		
Mississippian		IMdh	Doughnut Shale	91		
			Humbug Formation	75-90		
		IMm	Madison Limestone	130-300		Forms cliffs, contains marine fossils
		Zur	Red Pine Shale	0-600		Unconformity, about 350 m.y.
Proterozoic		Zu	Unnamed Formation of the Uinta Mountain Group (includes Outlaw Trail [Zuo] marker bed)	as much as 4500		Forms the core of Uinta Mountains; Flaming Gorge Dam constructed in this unit
		Zuju	Upper member of Jesse Ewing Canyon Formation	150-440		
		Zujl	Lower member of Jesse Ewing Canyon Formation	58-245		Angular unconformity, about 500 m.y.
Archean		YXrs	Red Creek Quartzite	as much as 6100		
		YW	Owiyukuts Complex	Thickness Unknown		Metamorphosed rocks that are some of the oldest in Utah (about 2700 Ma)

*See Correlation of Quaternary Units for symbols
+Unit may be tectonically thickened

Not to scale

Stratigraphic Column for the South Flank of the Uinta Mountains

AGE		SYMBOL	FORMATIONS	Thickness (meters) (not to scale)	LITHOLOGY	NOTES
Quat.		Q*	Unconsolidated deposits	less than 50		Alpine glaciers in Uinta Mountains. Capture of Green River by Colorado River
Tertiary	Pliocene	Tb	Bishop Conglomerate	0-150		Regional extension tilted and faulted the Bishop Conglomerate
	Eocene	Tds	Starr Flat Member of Duchesne River Formation	40-230		
		Td	Lapoint Member of Duchesne River Formation	65-320		Crustal stability; Gilbert Peak erosion surface forms and Bishop Conglomerate is deposited.
		Tdd	Dry Gulch Creek Member of Duchesne River Formation	150-200		
		Tdb	Brennan Basin Member of Duchesne River Formation	220-600		Duchesne River Formation unconformably deposited on a variety of Mesozoic formations after uplift of Uinta Mountains in Late Cretaceous through early Tertiary
		Tu	Uinta Formation**	0-625		
		Tg	Green River Formation**	400-800+		
		Tw	Wasatch Formation**	600		
	Paleocene	Tfu				
Cretaceous		Kmv	Mesaverde Group**	280-800		
		Kms	Mancos Shale	1400-1700		Mancos Shale represents last formation of great Western Interior Seaway
		Kf	Frontier Sandstone	43-85		Unconformity, 5 m.y.
	Mowry	Kmr	Mowry Shale	10-65		Fossil fish scales and bones in Mowry
	Dakota	Kd	Dakota Sandstone	15-52		K-1 unconformity, 2 m.y.
			Cedar Mountain Formation	0-60		K-0 unconformity, 25 m.y.
Jurassic		KJcm	Morrison Formation	200-270		Abundant dinosaur remains
	Stump	Js	Stump Formation	40-80		*Belemnites* fossils
	Entrada	Je	Entrada Sandstone	30-75		J-3 unconformity, 1 m.y.
	Carmel	Jc	Carmel Formation	30-120		
		J'Rn	Nugget Sandstone	200-315		J-2 unconformity, 14 m.y.
Triassic		Trc	Chinle Formation	70-140		
	Moenkopi	Trm	Moenkopi Formation	160-340		Gartra Member. TR-3 unconformity, 15 m.y. Pinches out westward
	Dinwoody	Trd	Dinwoody Formation	0-60		TR-1 unconformity, 6 m.y.
Permian		Pp	Park City and Phosphoria Formations	20-75		Phosphate deposits
		PIPw	Weber Sandstone	200-400		Unconformity, 3 m.y. Forms cliffs and important oil reservoir in the Rocky Mountains
Pennsylvanian	Morgan	IPm	Morgan Formation	190-290		
	Round Valley	IPrv	Round Valley Limestone	65-120		
Mississippian	Doughnut	IMdh	Doughnut Shale	24-91		
	Humbug		Humbug Formation	30-90		
		IMm	Madison Limestone	150-300		Forms cliffs, contains marine fossils
CAMBRIAN		Cl	Lodore Formation	0-180		Unconformity, 136 m.y. Thins westward
Proterozoic		Zur	Red Pine Shale	0-600		Unconformity, about 220 m.y.
		Zu	Unnamed Formation of the Uinta Mountain Group	as much as 4500		Forms the core of the Uinta Mountains; Flaming Gorge Dam constructed in this unit

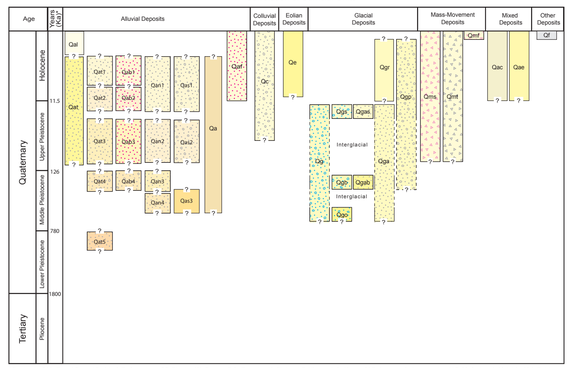
*See Correlation of Quaternary Units for symbols
**not exposed in quadrangle - on cross section only

Not to scale

Wells Used in Cross Section (tops picked by D.A. Sprinkel)

ID	Cross Section	Well Information	Formation	Top (m)	Thick (m)	Top (ft)	Thick (ft)
1	A - A'	Preston Oil Company	Bridger Formation	0	191	0	627
		Antelope Hollow Unit 44-17	Green River Formation	191	626	627	2053
		SE14SE14 section 17, T. 3 N., R. 19 E.	Wasatch Formation	817	616	2680	2021
		Daggett County, Utah	Total Depth	1433		4701	
		API: 4300930064					
2	A - A'	Noble Energy Company	Bridger Formation	0	30	0	100
		Antelope Hollow State 32-20	Green River Formation	30	1173	100	3850
		SW14NE114 section 20, T. 3 N., R. 19 E.	Wasatch Formation	1204	1469	3950	4820
		Daggett County, Utah	Fort Union Formation	2673	755	8770	2477
		API: 4300930065	Mesaverde Group	3428	696	11247	2285
			Ericson Sandstone	3428	252	11247	826
			Rock Springs Formation	3680	381	12073	1250
			Blair Sandstone	4061	64	13323	209
			Baxter Shale	4125	196	13532	643
			Total Depth	4321		14175	
3	A - A'	Carter Oil Company	Duchesne River Formation	0	305	0	1000
		Whiterocks Unit 2	Uinta Formation	305	213	1000	700
		SW14NE114 section 6, T. 1 N., R. 1 E.	Green River Formation	518	811	1700	2660
		Uintah County, Utah	Wasatch Formation	1329	494	4360	1620
		API: 4304710586	Mesaverde Group	1823	284	5980	932
			Mancos Shale	2107	103	6912	338
			Total Depth	2210		7250	
4	B - B'	E.L.K. Oil Company	Baxter Shale	0	488	0	1600
		SW14NE114 section 20, T. 3 N., R. 20 E.	Frontier Sandstone	488	58	1600	190
		Daggett County, Utah	Mowry Shale	546	49	1790	160
		API: 4300910339	Total Depth	594		1950	
5	C - C'	McMoran-Freeport Oil Company	Uinta Mountain Group	0	797	0	8721
		State 43-2A	upper Jesse Ewing Canyon Formation	117	438	385	1438
		NE14SE114 section 2, T. 2 N., R. 25 E.	lower Jesse Ewing Canyon Formation	556	241	1823	791
		Daggett County, Utah	Red Creek Quartzite	797	386	2614	1268
		API: 4300930058	Owiyukuts Complex(?)	1183	1475	3882	4839
			Uinta fault	2658	0	8721	0
			Baxter Shale	2658	764	8721	2506
			Frontier Sandstone	3422	42	11227	138
			Mowry Shale	3464	73	11365	239
			Dakota Sandstone	3537	61	11604	200
			Cedar Mountain Formation	3598	27	11804	87
			Morrison Formation	3624	91	11891	297
			Stump Formation	3715	82	12188	270
			Entrada Sandstone	3797	49	12458	162
			Carmel Formation	3847	34	12620	112
			Nugget Sandstone	3881	236	12732	774
			Chinle Formation	4117	41	13506	134
			Moenkopi Formation	4157	207	13640	680
			Dinwoody Formation	4365	49	14320	160
			Park City Formation	4414	64	14480	210
			Weber Sandstone	4478	186	14690	610
			Morgan Formation	4663	62	15300	205
			Round Valley Limestone	4726	75	15505	245
			Doughnut-Humbug Formation	4801	173	15750	568
			Madison Limestone	4974	121	16318	397
			Total Depth	5095		16715	
6	C - C'	Dreilling & Sons Inc	Frontier Sandstone	0	162	0	530
		Hiko Bell Federal 1	Mowry Shale	162	24	530	80
		NW14NW114 section 21, T. 3 S., R. 24 E.	Dakota Sandstone	186	52	610	170
		Uintah County, Utah	Cedar Mountain Formation	238	30	780	100
		API: 4304730036	Morrison Formation	268	195	880	640
			Stump Formation	463	52	1520	170
			Entrada Sandstone	515	48	1690	159
			Carmel Formation	564	37	1849	121
			Nugget Sandstone	600	238	1970	780
			Chinle Formation	838	87	2750	286
			Moenkopi Formation	925	166	3036	544
			Dinwoody Formation	1091	59	3580	193
			Park City Formation	1150	36	3773	117
			Weber Sandstone	1186	78	3890	257
			Total Depth	1264		4147	
7	C - C'	Hiko Bell Mining & Oil Company	Mancos Shale	0	658	0	2160
		Jensen Ridge Federal 1	FrontierSandstone	658	72	2160	235
		SW14NW114 section 28, T. 3 S., R. 23 E.	Mowry Shale	730	24	2395	80
		Uintah County, Utah	Dakota Sandstone	754	50	2475	165
		API: 4304730042	Cedar Mountain Formation	805	30	2640	100
			Morrison Formation	835	207	2740	680
			Stump Formation	1042	40	3420	130
			Entrada Sandstone	1082	76	3550	250
			Carmel Formation	1158	43	3800	140
			Nugget Sandstone	1201	238	3940	782
			Chinle Formation	1439	89	4722	293
			Moenkopi Formation	1529	163	5015	535
			Dinwoody Formation	1692	59	5550	192
			Park City Formation	1750	48	5742	156
			Weber Sandstone	1798	94	5898	310
			Total Depth	1892		6208	

Correlation of Surficial Units



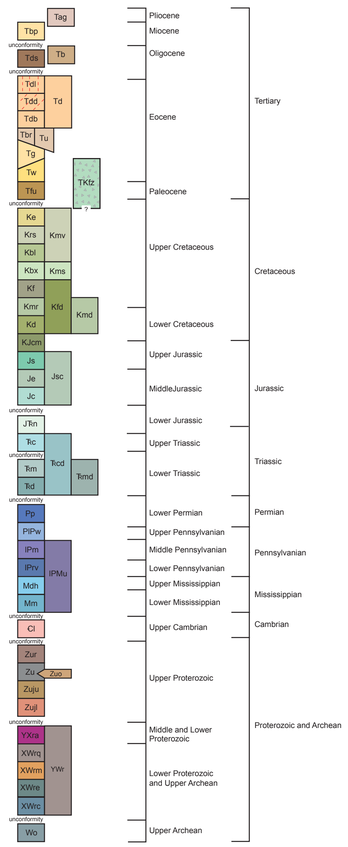
*Gradstein, F.M., Ogg, J.G., and Smith, A.G., Agterberg, F.P., Bleeker, W., Cooper, R.A., Davydov, V., Gibbard, P., Hinnov, L.A., House, M.R., Lourens, L., Luterbacher, H.P., McArthur, J., Melchin, M.J., Robb, L.J., Shergold, J., Villeneuve, M., Wardlaw, B.R., Ali, J., Brinkhuis, H., Hilgen, F.J., Hooker, J., Howarth, R.J., Knoll, A.H., Laskar, J., Monechi, S., Plumb, K.A., Powell, J., Raffi, I., Röhl, U., Sadler, P., Sanfilippo, A., Schmitz, B., Shackleton, N.J., Shields, G.A., Strauss, H., Van Dam, J., van Kolfschoten, T., Veizer, J., and Wilson, D., 2004, A Geologic Time Scale 2004: Cambridge University Press, 589 p.

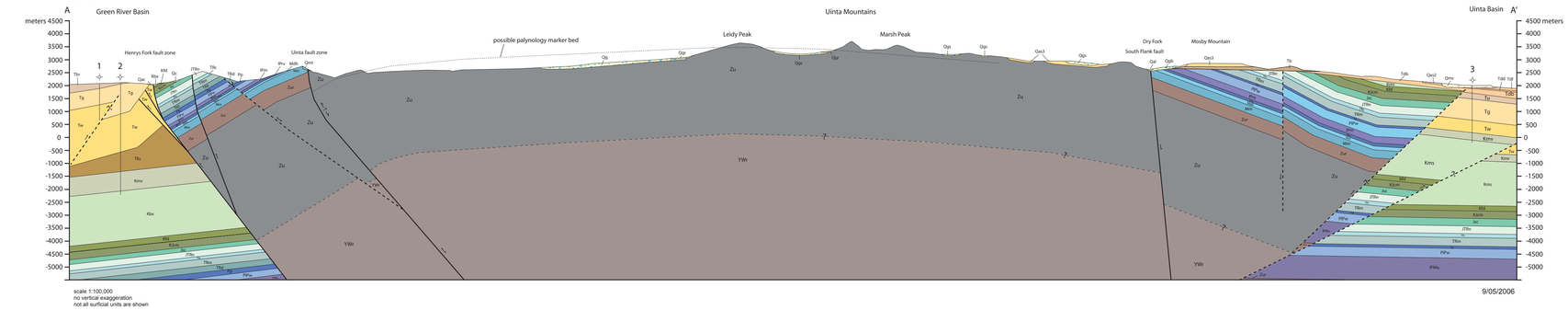
Uinta Mountain Group Palynology

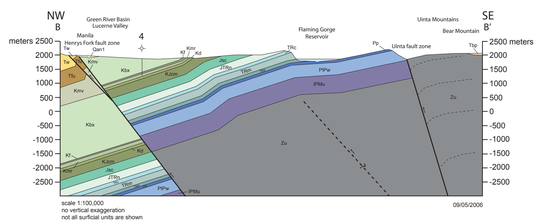
Sample Number	Formation	Microfossils*	North Latitude	West Longitude	Thermal Alteration Index (T.A.I.)
WR-100101-5	Red Pine Shale	*Leiosphaeridia* spp., *?Eohyella, Myxococcoides* sp., ?algal filament fragments	40.62853	109.94825	2.5-2.8
WR-100101-3	Red Pine Shale	*Leiosphaeridia* spp., *?Eohyella*., *Myxococcoides* sp., ?algal filament fragments	40.62322	109.94439	2.5-2.8
WR-100101-2	Red Pine Shale	*Leiosphaeridia* spp., ?algal filament fragments	40.62322	109.94439	2.5-2.8
BC-050404-5	Red Pine Shale	*Trachysphaeridium laminaritum, Leiosphaeridia* spp., ?algal filament fragments	40.91733	109.99855	2.5-2.8
OB-050404-6	Red Pine Shale	*Trachysphaeridium laminaritum, Leiosphaeridia* spp., ?algal filament fragments	40.91009	109.99823	2.5-2.8
BP-050404-4	Red Pine Shale	*Eosaccharomyces* sp., *Leiosphaeridia* spp., algal filament fragments	40.89376	109.92329	2.5-2.8
LO-050404-3	Uinta Mountain Group, undivided	*Leiosphaeridia* spp.	40.90246	109.87994	2.5-2.8
PA-050504-3	Uinta Mountain Group, undivided	*Trachysphaeridium laminaritum, Leiosphaeridia* spp., ?algal filament fragments	40.89531	109.78368	2.5-2.8
LP-100301-6	Uinta Mountain Group, undivided	*Leiosphaeridia* spp., ?algal filament fragments	40.76539	109.82111	2.5-2.8
LP-100301-4	Uinta Mountain Group, undivided	*Eosaccharomyces* sp., *Leiosphaeridia* spp., ?algal filament fragments	40.75989	109.87170	2.5-2.8
LP-100301-2	Uinta Mountain Group, undivided	*Eosaccharomyces* sp., *Satka* sp., *Trachysphaeridium laminaritum, Leiosphaeridia* spp., ?algal filament fragments	40.76408	109.86678	2.5-2.8
LP-100301-1	Uinta Mountain Group, undivided	*Leiosphaeridia* spp., algal filament fragments	40.76414	109.86611	2.5-2.8
USFS WW1	Uinta Mountain Group, undivided	*Trachysphaeridium laminaritum,Leiosphaeridia* spp., ?algal filament fragments	40.80900	109.46800	2.5-2.8
USFS Red Springs	Uinta Mountain Group, undivided	*Trachysphaeridium laminaritum, Leiosphaeridia* spp. ?algal filament fragments	40.80910	109.46805	2.5-2.8
DJ-050504-1	Uinta Mountain Group, undivided	*Eosaccharomyces* sp., *Trachysphaeridium laminaritum, Leiosphaeridia* spp., ?algal filament fragments	40.94209	109.41665	2.5-2.8
JE-073101-1	Jesse Ewing Canyon Formation	*Leiosphaeridia* spp., carbonaceous filaments	40.92556	109.13803	2.8

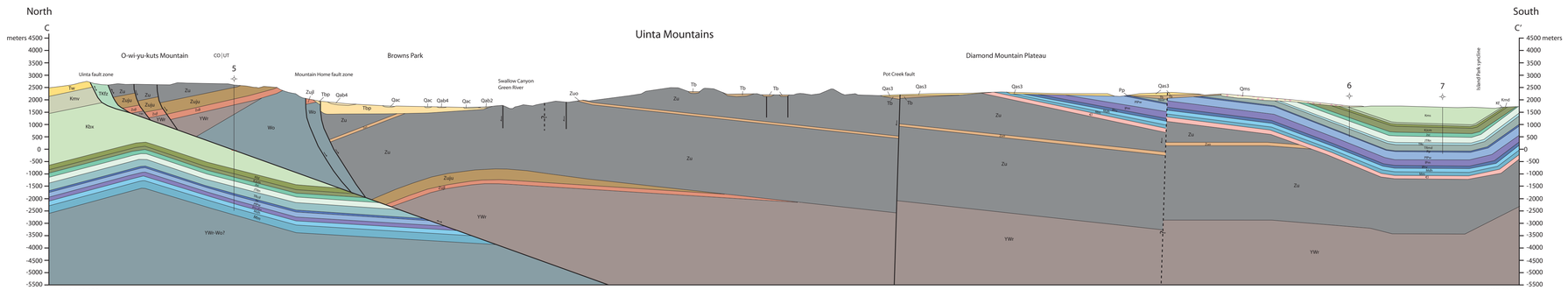
*Sprinkel, D.A., and Waanders, Gerald, 2005, Stratigraphy, organic microfossils, thermal maturation of the Neoproterozoic Uinta Mountain Group in the eastern Uinta Mountains northeastern Utah, *in* Dehler, C.M., Sprinkel, D.A., Pederson, J.L., and Kowallis, B.J., editors, Uinta Mountain geology: Utah Geological Assocation Publication 33, p. 63-73.

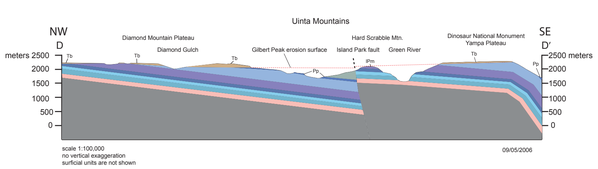
Correlation of Bedrock Units











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Interim Geologic Map of the Dutch John 30' x 60' Quadrangle, Daggett and Uintah Counties Utah, Moffat County, Colorado, and Sweetwater County, Wyoming

Douglas A. Sprinkel

2006

10/05/2006