

Occultation prediction for Nederland midden

E. Longitude 5 0 0.0, Latitude 52 0 0.0, Alt. 0m;

day	Time	P	Star	Sp	Mag	Mag	%	Elon	Sun	Moon	CA	PA	VA	AA	Libration	A	B	RV	Cct	durn	R.A. (J2000)	Dec	Mdist	SV									
y	m	d	h	m	s	No	D	v	r	V	ill	Alt	Alt	Az	o	o	o	o	L	B	m/o	m/o	"/s	o	sec	h	m	s	o	m	s	Mm	m/s
23	Mar	1	17	56	56	M	78501	K0	7.8	7.3	73+	117	-7	59	133	9S	177	208	173	+3.9	-5.5	+9.9+9.9	.000	-90.0		6	33	58.0	27	2	41	398.4	710.6
23	Mar	1	18	50	9.5	D	1013c	G0	7.0		73+	117		64	154	82S	103	121	99	+3.7	-5.5	+1.7-0.1	.346	-13.8		6	36	26.3	27	16	42	398.2	688.6
1013 is double: AB 7.14 8.97 0.72" 274.1, dT = -2sec																																	
1013 is a close double. Observations are highly desired																																	
23	Mar	1	22	10	20.4	D	78641	M0	8.3	7.5v	74+	118		53	242	47N	53	15	48	+3.1	-5.5	+1.8+0.5	.270	45.4		6	41	39.2	27	23	42	399.0	745.2
78641 = ASAS J064139+2723.7, 8.26, range 0.16, V, Type MISC, Period 28.97 days, Phase 26%																																	
23	Mar	1	22	13	32.9	D	1028	G8	7.5	7.1	74+	118		53	243	56S	130	92	125	+3.1	-5.5	+0.8-2.6	.329	-31.5		6	41	42.7	27	4	54	399.1	747.8
23	Mar	1	22	17	58.5	d	78648	K2	8.9	8.3	74+	118		52	244	77S	109	71	104	+3.1	-5.5	+1.0-1.8	.382	-10.5		6	42	2.2	27	9	21	399.1	751.2
23	Mar	1	22	22	53.6	d	78644	A0	8.8	8.8	74+	118		52	246	29N	35	356	30	+3.1	-5.5	+2.3+2.2	.172	63.8		6	41	45.6	27	26	15	399.2	755.6
23	Mar	1	23	19	47.5	d	78670k	G0	9.0	8.7	74+	119		43	259	29S	158	115	153	+2.9	-5.5	-0.3-4.1	.223	-57.8		6	43	14.8	26	56	24	399.9	809.0
23	Mar	2	1	3	52.5	d	78740	K0	8.3	7.8	75+	119		28	279	61N	68	25	63	+2.8	-5.4	+0.5-1.1	.401	32.6		6	47	16.2	27	7	28	401.4	925.8
23	Mar	2	2	18	2	m	1042c	A2	6.7	6.6	75+	120		17	292	3N	10	330	4	+2.7	-5.4	+9.9+9.9	.000	90.0		6	49	10.2	27	11	25	402.6	1015.4
1042 is double: 6.7 9.8 0.10"																																	
1042 is a close double. Observations are highly desired																																	
Distance of 1042 to Terminator = 3.5"; to 3km sunlit peak = 0.0"																																	
23	Mar	2	18	3	38.9	D	1131	A2	7.3	7.3	81+	128	-7	53	119	26S	166	203	157	+2.7	-6.0	+2.3-5.7	.116	-72.0		7	28	0.9	26	13	39	400.3	729.3
23	Mar	2	18	15	26	Gr	1131	A2	7.3	7.3	81+	128	-9	55	**	GRAZE: CA	8.0S;	Dist. 97km	in az. 169deg.	[Lat = 51.11+0.12(E.Long-5.00)]													
23	Mar	2	20	48	36.7	d	79490	G5	8.7	8.2	81+	129		64	188	38N	51	46	42	+2.2	-6.0	+2.1+2.2	.224	50.8		7	32	57.9	26	29	46	399.8	686.6
23	Mar	2	20	57	53.9	d	79497	K7	8.8	8.0	81+	129		64	193	45N	58	49	49	+2.2	-6.0	+2.0+1.5	.255	44.2		7	33	17.1	26	27	36	399.8	688.7
23	Mar	2	21	6	33.3	D	79495d	A2	8.3	8.3	81+	129		63	197	48S	145	133	135	+2.2	-6.0	+1.2-2.9	.265	-42.0		7	33	12.7	26	6	50	399.8	691.1
79495 is double: AB 8.4 14.0 4.5" 70.4, dT = +5sec																																	
79495 is a close double. Observations are highly desired																																	
23	Mar	3	1	33	7.4	d	1162	K2	8.2	7.6	82+	130		30	274	61N	75	32	65	+1.5	-5.8	+0.6-1.3	.396	32.1		7	41	17.4	25	53	19	402.5	913.2
23	Mar	3	3	0	19.2	D	1169	K5	5.3	4.5s	83+	131		17	290	36N	49	9	39	+1.4	-5.8	+0.5-0.8	.286	56.5	.01	7	44	6.9	25	47	3	403.8	1015.5
R1169 = 76 Geminorum																																	
1169 = NSV 3703, 5.28 to 5.32, V																																	
23	Mar	3	17	30	40.1	D	80089	G5	7.2	6.7	88+	139	-2	39	101	33S	165	207	152	+1.6	-6.2	+1.7-3.3	.161	-66.7		8	19	9.2	24	10	29	401.8	792.9
23	Mar	3	17	43	47	Gr	80089	G5	7.2	6.7	88+	139	-4	42	**	GRAZE: CA	9.7S;	Dist. 163km	in az. 165deg.	[Lat = 50.48+0.17(E.Long-5.00)]													
Distance of 80089 to Terminator = 16.8"; to 3km sunlit peak = 4.5"																																	

y	m	d	h	m	s	P	Star No	Sp D	Mag v	Mag r V	% ill	Elon Alt	Sun Alt	Moon Alt	Az	CA	PA	VA	AA	Libration L	B	A m/o	B m/o	RV "/s	Cct o	durn sec	R.A. (J2000) h m s	Dec o m s	Mdist Mm	SV m/s				
23	Mar	3	20	52	11.1	D	80165	F2	7.5	7.3	88+	140		62	166	58S	141	150	127	+1.1	-6.2	+1.3	-2.0	.298	-32.9	8	24	55.2	23	56	43	400.3	690.3	
23	Mar	3	22	26	37.8	d	80192k	G5	8.5	8.0	88+	140		59	210	47S	152	133	138	+0.8	-6.2	+0.7	-3.0	.279	-40.8	8	27	4.2	23	43	39	400.4	714.8	
23	Mar	4	21	54	45.1	d	80735	K0	8.7	8.1	94+	151		59	174	83N	109	113	92	-0.3	-6.1	+1.6	-0.6	.361	6.6	9	16	39.7	20	37	24	399.8	703.9	
23	Mar	5	3	8	56.8	D	1393	G7	6.5	6.0	95+	153		26	270	48N	74	33	57	-1.0	-5.8	+0.6	-1.5	.356	41.8	9	24	45.3	19	47	12	402.3	932.9	
23	Mar	6	2	16	8.2	d	98973	G0	8.5	8.2	98+	163		36	246	42S	172	136	152	-2.0	-5.4	-0.2	-2.8	.276	-50.4	10	9	35.2	15	20	47	399.8	839.3	
Distance of 98973 to Terminator = 18.2"; to 3km sunlit peak = 7.3"																																		
23	Mar	8	21	43	57.9	r	1766k	K0	7.9	7.3	98-	164		25	126	60S	256	286	234	-3.9	-3.0	+1.4	+2.4	.289	-131.8	12	16	58.4	0	21	8	393.9	827.5	
23	Mar	9	0	12	35.2	r	119340	pF5	8.3	8.1	98-	163		37	166	83S	280	289	258	-4.3	-2.8	+1.6	+0.1	.353	-152.4	12	20	15.2	-0	8	41	392.5	758.3	
119340 is double: ** 9.3 9.3 0.10" 90.0, dT = +0.28sec																																		
119340 has been reported as non-instantaneous (OCc 15). Observations are highly desired																																		
23	Mar	9	0	57	8.6	r	1775	K2	8.1	7.5	98-	163		38	180	50N	327	327	305	-4.4	-2.7	+0.9	-1.3	.375	161.0	12	21	37.8	-0	9	29	392.3	754.3	
23	Mar	10	0	24	46.7	r	139143	K0	8.2	7.6	94-	151		30	159	44S	245	258	224	-4.9	-1.4	+2.8	+2.3	.191	-117.7	13	5	26.1	-6	13	25	389.9	776.5	
23	Mar	10	1	16	4.5	r	139166	A5	8.1	8.0	94-	151		32	173	37N	343	348	323	-5.0	-1.3	+0.5	-1.5	.326	143.9	13	7	11.3	-6	4	55	389.6	762.3	
23	Mar	10	23	21	57.4	r	1984k	M*	7.7	6.9s	88-	140		16	135	43N	337	4	318	-5.2	+0.0	+0.2	-0.6	.378	146.8	13	50	49.1	-11	21	32	388.0	850.4	
1984 = NSV 19971, 7.73, range 0.01, 8V, Type VAR, Period 0.08613 days																																		
23	Mar	11	2	49	58.9	r	158236	pG5	8.0	7.4	87-	139		26	187	55N	326	321	307	-5.7	+0.4	+0.9	-1.1	.376	158.4	13	55	31.5	-12	13	23	386.6	758.8	
158236 is double: AB 7.9 13.0 4.2" 271.9, dT = -7sec																																		
158236 is a close double. Observations are highly desired																																		
23	Mar	11	2	55	33.6	r	1995p	K5	8.1	7.3	87-	139		25	189	71S	272	266	253	-5.7	+0.4	+1.8	-0.4	.342	-147.7	13	55	11.3	-12	26	56	386.6	758.8	
1995 is double: ** 9.1 9.1 0.10" 90.0, dT = +0.29sec																																		
1995 has been reported as non-instantaneous (OCc 110). Observations are highly desired																																		
23	Mar	12	3	24	53.6	r	158774	G1	8.2	7.9	80-	126		20	184	45S	243	240	227	-6.0	+2.0	+2.4	+0.5	.221	-122.9	14	45	18.7	-18	0	10	383.4	758.2	
23	Mar	12	3	33	20.0	R	2104	K4	7.3	6.5	80-	126		20	186	52N	326	322	311	-6.1	+2.0	+1.0	-0.9	.365	153.7	14	45	53.0	-17	41	54	383.3	757.3	
23	Mar	13	2	38	49.3	r	2226k	A1	7.0	6.8V	71-	114		14	161	41N	334	346	322	-5.9	+3.4	+0.6	-0.4	.342	142.9	15	37	31.3	-22	7	1	380.3	789.5	
2226 = HD 139202, 6.97, , Type ACV, Period 1.4938 days, Phase 60%																																		
23	Mar	13	3	53	44.0	r	2234	K5	7.6	6.7	70-	114		16	179	80N	294	295	282	-6.1	+3.5	+1.4	-0.2	.412	-179.3	15	39	1.4	-22	28	25	379.9	759.9	
23	Mar	15	4	4	41.8	r	185573	K5	6.8	5.8s	49-	89		7	157	34N	328	344	327	-5.2	+6.1	+0.6	+0.0	.302	133.1	.01	17	38	12.0	-28	2	48	372.8	800.8
185573 = NSV 23046, 6.83, range 0.01, 8V, Type VAR, Period 1.18268 days																																		
23	Mar	15	4	45	34.4	r	2536k	FF5	7.7	7.4	49-	88	-11	9	166	70S	252	262	251	-5.3	+6.1	+1.6	+0.7	.380	-151.8	17	39	0.7	-28	24	45	372.6	779.1	
23	Mar	23	20	5	36.4	D	92669	DF0	7.4		5+	27		3	284	47N	28	351	47	+5.0	+1.0	+0.1	+0.3	.453	39.6	1	52	2.6	10	48	39	374.9	1069.2	
92669 is double: AB 8.22 8.20 3.00" 206.5, dT = -7sec																																		
92669 is a close double. Observations are highly desired																																		
23	Mar	23	20	5	39.8	D X	60134	D	8.2		5+	27		3	284	47N	28	351	47	+5.0	+1.0	+0.1	+0.3	.453	39.7	1	52	2.6	10	48	41	374.9	1069.3	
X 60134 is double: BA 8.2 8.2 3.0" 26.5, dT = +7sec																																		
X 60134 is a close double. Observations are highly desired																																		

y	m	d	h	m	s	P	Star No	Sp D	Mag v	Mag r V	% ill	Elon	Sun Alt	Moon Alt	Az	CA	PA	VA	AA	Libration L	B	A m/o	B m/o	RV "/s	Cct o	durn sec	R.A. (J2000) h m s	Dec o m s	Mdist Mm	SV m/s					
23	Mar	24	18	51		D	93054wF5		8.8	8.6	11+	39	-9	25	264	81S	81	41	97	+5.5	-0.6	+0.5	-1.3	.486	-11.8		2	41	19.9	16	2	24	377.7	910.3	
93054 is double: AB 8.9 13.3 19.0" 54.5, dT = +35sec																																			
23	Mar	24	20	7		D	93076CG5		8.7		12+	40		14	278	45S	117	77	133	+5.4	-0.6	-0.1	-2.6	.379	-45.4		2	43	49.1	16	6	14	379.2	993.1	
93076 is double: BA 10.9 8.8 0.9" 159.0, dT = +1.8sec																																			
93076 is a close double. Observations are highly desired																																			
23	Mar	24	20	7		D X	63209C		8.6	8.3	12+	40		14	278	45S	117	77	133	+5.4	-0.6	-0.1	-2.6	.379	-45.4		2	43	49.1	16	6	14	379.2	993.1	
X 63209 is double: AB 8.76 10.95 0.90" 339.0, dT = -1.8sec																																			
X 63209 is a close double. Observations are highly desired																																			
23	Mar	25	19	33		D	76007 K0		8.6	7.9	19+	52		30	266	61N	46	5	58	+5.5	-2.1	+0.8	-0.1	.415	29.0		3	34	57.4	21	1	3	383.2	881.4	
23	Mar	25	21	24		D	525 A*		6.5	6.4	20+	53		14	286	43S	123	83	135	+5.4	-2.2	-0.4	-2.5	.382	-44.9		3	39	0.1	20	54	57	385.31007.1		
R525 = 14 H1. Tauri																																			
23	Mar	25	22	16		D	76070dA5		7.2	7.0	20+	53		7	296	28N	13	337	25	+5.4	-2.2	+0.7	+1.3	.238	65.3		3	40	21.6	21	24	21	386.31068.8		
76070 is double: AB 7.2 14.7 3.7" 294.3, dT = +3sec																																			
76070 is a close double. Observations are highly desired																																			
23	Mar	25	22	53		d	76092kF8		7.9	7.6	20+	53		2	303	88S	77	44	89	+5.4	-2.2	-0.4	-1.0	.591	1.4		3	42	41.2	21	16	54	386.91109.5		
23	Mar	26	16	42		d	652SB3		6.4	6.3	27+	63	11	61	205	61N	51	34	59	+5.6	-3.4	+1.4	+1.2	.357	22.7		4	23	59.8	24	18	4	385.7	723.6	
R652 = 62 Tauri																																			
652 is triple: Ba,Bb 8.7 8.7 110.0, dT = 0.00sec : AB 6.4 7.9 29.4" 291.0, dT = -41sec																																			
23	Mar	26	19	33		Gr	76621 K7		8.5	7.5	28+	64		39	** GRAZE: CA -0.7S; Dist.186km in az. 16deg. [Lat = 53.74-0.18(E.Long-5.00)]																				
23	Mar	27	23	20		D	77229 K2		7.8	7.0	39+	77		17	292	82N	79	39	81	+4.3	-4.5	+0.0	-1.2	.516	12.5		5	31	56.4	26	41	6	395.51012.9		
23	Mar	27	23	43		d	77242 B1		8.2	8.2	39+	77		13	296	66N	63	24	64	+4.3	-4.5	+0.0	-0.9	.476	28.5		5	32	46.6	26	44	51	395.91041.0		
23	Mar	28	20	0		d	78234 A0		8.2	8.2	47+	87		54	242	68S	113	76	111	+3.7	-5.5	+1.0	-2.0	.369	-18.2		6	20	4.5	27	23	6	395.5	745.7	
23	Mar	28	20	11		d	78239 A0		9.0	9.0	47+	87		52	245	53N	55	16	52	+3.6	-5.4	+1.6	+0.3	.297	40.8		6	20	16.9	27	37	25	395.6	754.3	
23	Mar	28	20	17		D	78242 K0		8.8	8.4	47+	87		52	247	51N	53	13	50	+3.6	-5.4	+1.6	+0.3	.290	42.9		6	20	26.0	27	37	36	395.6	759.1	
23	Mar	28	20	22		d	78241 A0		8.8	8.8	47+	87		51	247	43S	139	99	136	+3.6	-5.4	+0.5	-3.2	.291	-43.0		6	20	24.7	27	16	56	395.7	763.0	
23	Mar	28	21	34		d	78295 A3		8.8	8.6	48+	87		40	264	81N	83	40	80	+3.5	-5.4	+0.8	-1.3	.419	14.2		6	23	0.3	27	26	37	396.7	831.8	
23	Mar	28	21	53		D	78300 B9		8.3	8.3	48+	87		37	268	37S	145	101	142	+3.4	-5.4	-0.2	-3.2	.299	-47.6		6	23	9.6	27	11	22	397.0	853.3	
23	Mar	28	22	20		D	78309dA0		7.4	7.4	48+	88		33	273	6S	176	132	173	+3.4	-5.4	-2.6	-7.4	.093	-78.2		6	23	30.2	27	7	5	397.4	884.6	
78309 is double: AB 7.4 1.3" 304.0, dT = -9sec																																			
78309 is a close double. Observations are highly desired																																			
23	Mar	28	23	31		d	78377 G5		8.8	8.2	48+	88		23	285	87N	90	48	86	+3.3	-5.3	+0.1	-1.5	.496	8.2		6	27	5.2	27	17	27	398.6	968.2	
23	Mar	29	0	41		D	994cF5		6.6	6.3	49+	89		13	297	17S	166	128	162	+3.3	-5.3	-1.5	-3.1	.196	-68.8		6	28	56.4	26	58	3	399.81051.6		
994 is double: ** 6.8 7.7 0.003" 269.0, dT = 0.00sec																																			
23	Mar	29	18	17		D	1088 A4		5.8	5.7S	56+	97	-2	65	176	41S	146	149	139	+3.0	-6.1	+1.4	-3.0	.233	-48.9		7	11	23.1	26	51	24	397.3	683.5	
R1088 = 47 Geminorum																																			
1088 = NSV 17371, 5.77, , Type DSCT:																																			

day	Time	P	Star	Sp	Mag	Mag	%	Elon	Sun	Moon	CA	PA	VA	AA	Libration	A	B	RV	Cct	durn	R.A. (J2000)	Dec	Mdist	SV													
y	m	d	h	m	s	No	D	v	r	V	ill	Alt	Alt	Az	o	o	o	o	L	B	m/o	m/o	"/s	o	sec	h	m	s	o	m	s	Mm	m/s				
23	Mar	29	19	11	52.3	D	1093SF8	6.6	s	57+	98	-10	64	203	26N	34	18	26	+2.8	-6.1	+2.5+4.4	.146	66.1		7	12	49.0	27	13	30	397.5	693.5					
1093 is triple: AB 7.24 7.27 0.75" 299.5, dT = -0.4sec : AC 7.2 12.8 13.7" 74.7, dT = +71sec																																					
1093 is a close double. Observations are highly desired																																					
1093 = NSV 3453, 6.43 to 6.46, V																																					
23	Mar	29	19	11	52.3	D	X 99111S	7.2	7.0s	57+	98	-10	64	203	26N	34	18	26	+2.8	-6.1	+2.5+4.4	.146	66.1		7	12	49.0	27	13	30	397.5	693.5					
X 99111 is triple: BA 7.3 7.2 0.8" 119.5, dT = +0.4sec : BC 7.3 12.7 14.0" 68.3, dT = +80sec																																					
X 99111 is a close double. Observations are highly desired																																					
X 99111 = NSV 3453, 6.43 to 6.46, V																																					
23	Mar	29	19	14	16.4	r	1088 A4	5.8	5.7S	57+	98	-11	63	205	-43S	231	214	223	+2.8	-6.1	+2.1+1.7	.237	-131.2		7	11	23.1	26	51	24	397.5	694.7					
R1088 = 47 Geminorum																																					
1088 = NSV 17371, 5.77, , Type DSCT:																																					
23	Mar	29	19	26	48	GrX	99111S	7.2	7.0s	57+	98	-12	61	** GRAZE:	CA	2.6N;	Dist.163km	in az.	19deg.	[Lat = 53.55-0.22(E.Long-5.00)]																	
23	Mar	29	19	26	48	Gr	1093SF8	6.6	s	57+	98	-12	61	** GRAZE:	CA	2.6N;	Dist.163km	in az.	19deg.	[Lat = 53.55-0.22(E.Long-5.00)]																	
23	Mar	29	20	45	40	d	79200 G0	8.8	8.6	57+	98		54	239	10S	179	142	171	+2.5	-6.0	-1.4-8.3	.098	-75.3		7	14	46.3	26	38	54	398.2	746.7					
23	Mar	29	21	33	8.4	D	1105cG7	6.5		57+	98		48	252	66S	123	82	115	+2.4	-6.0	+0.6-2.2	.387	-18.3		7	17	3.4	26	41	22	398.7	787.3					
1105 is double: AB 7.00 7.70 0.20" 236.2, dT = -0.21sec																																					
1105 is a close double. Observations are highly desired																																					
23	Mar	29	22	16	43.3	d	79262 G5	9.0	8.5	57+	99		41	261	61S	127	84	119	+2.3	-5.9	+0.3-2.3	.397	-22.4		7	18	19.5	26	35	47	399.3	831.2					
23	Mar	29	22	53	35.1	D	1108cG8	7.0	6.5	58+	99		36	269	46N	55	11	46	+2.2	-5.9	+1.2-0.6	.287	50.3		7	19	30.8	26	49	23	399.8	871.9					
1108 is double: ** 7.7 7.7 0.10" 90.0, dT = +0.28sec																																					
1108 has been reported as non-instantaneous (OCc1353). Observations are highly desired																																					
23	Mar	29	23	29	30.5	D	79304 K2	8.1	7.3	58+	99		30	275	78N	86	43	78	+2.2	-5.9	+0.4-1.5	.446	18.3		7	20	54.5	26	37	27	400.3	912.9					
23	Mar	29	23	41	53.5	d	79311 A0	8.3	8.2	58+	99		28	278	77S	111	68	103	+2.2	-5.9	+0.1-1.9	.474	-6.5		7	21	15.6	26	29	40	400.5	927.4					
23	Mar	30	15	53	28.5	d	1206 G8	5.9	5.3	65+	107	20	44	106	84S	109	150	97	+2.3	-6.3	+1.1+0.8	.386	-12.3		8	0	55.9	25	23	34	400.1	767.2					
R1206 = omega Cancri																																					
23	Mar	30	21	24	37.9	D	79980 G8	7.3	6.8	67+	109		54	234	66S	128	95	116	+1.3	-6.3	+0.9-2.2	.368	-17.8		8	9	24.9	24	49	34	399.6	748.4					
23	Mar	30	23	5	7	m	80004 G5	8.9	8.4	67+	110		40	260	7N	21	339	9	+1.1	-6.2	+9.9+9.9	.000	90.0		8	11	49.8	25	0	21	400.7	841.4					
23	Mar	31	2	24	7.6	d	80089 G5	7.2	6.7	68+	111		11	296	79N	93	56	80	+0.9	-6.0	-0.3-1.4	.526	14.7		8	19	9.2	24	10	29	403.71064.3						
23	Mar	31	3	0	55.7	d	1251 B9	5.9	5.9	68+	112		6	302	90S	105	70	92	+0.9	-5.9	-0.5-1.4	.562	1.9		8	20	32.1	24	1	20	404.21102.7						
R1251 = lambda Cancri																																					
23	Mar	31	18	4	27.7	d	1330pG5	7.8	7.5	74+	119	0	53	132	20S	178	208	162	+0.8	-6.4	+1.0-6.2	.126	-70.0		8	54	18.7	22	12	41	399.8	712.0					
1330 is double: ** 8.6 8.6 0.10" 115.0, dT = +0.36sec																																					
1330 has been reported as non-instantaneous (OCc1075). Observations are highly desired																																					
23	Mar	31	18	18	44	Gr	1330pG5	7.8	7.5	74+	119	-2	56	** GRAZE:	CA	-0.3S;	Dist.118km	in az.	190deg.	[Lat = 50.92-0.11(E.Long-5.00)]																	
Distance of 1330 to Terminator = 3.2"; to 3km sunlit peak = 0.0"																																					

y	m	d	h	m	s	P	Star No	Sp D	Mag v	Mag r V	% ill	Elon Alt	Sun Alt	Moon Alt	Az	CA	PA	VA	AA	Libration L	B	A m/o	B m/o	RV "/s	Cct o	durn sec	R.A. (J2000) h m s	Dec o m s	Mdist Mm	SV m/s			
23	Mar	31	23	14	15.6	D	1348	G5	8.1	7.6	76+	121	43	248	72S	127	89	111	-0.1	-6.1	+0.6	-2.1	.412	-10.6	9	2	45.2	21	31	9	400.4	813.2	
23	Apr	1	20	15	45.4	d	98761	G0	8.6	8.2	83+	131	56	166	81S	123	132	104	-0.7	-6.0	+1.4	-0.9	.366	-4.2	9	46	47.1	18	6	57	398.6	708.5	
23	Apr	1	21	56	0.8	D	1444	K0	7.8	7.1	83+	131	54	207	39N	62	45	43	-1.0	-5.9	+2.7	+0.9	.196	59.0	9	49	5.5	18	3	28	398.6	735.6	
23	Apr	1	22	59	53.5	d	98802	F6	8.8	8.6	83+	132	47	229	65N	88	59	69	-1.2	-5.8	+1.5	-1.1	.336	33.0	9	50	42.3	17	44	0	399.0	774.5	
23	Apr	1	23	42	17.1	d	98813SF8		8.4	8.1	84+	132	42	240	89S	114	80	95	-1.3	-5.7	+0.8	-1.8	.414	6.9	9	51	39.1	17	28	33	399.4	807.9	
98813 is quadruple: AB 8.4 12.9 55" 302.7, dT = -132sec : AC 8.4 14.2 93" 297.0, dT = -224sec : AD 8.4 13.5 104" 300.1, dT = -249sec																																	
23	Apr	2	23	4	28.7	D	1553	A0	7.8	7.8	90+	143	47	213	81N	108	88	87	-2.2	-5.2	+1.3	-1.3	.379	16.5	10	37	1.6	12	51	58	397.0	760.9	
R1553 = 78 H1. Leonis																																	
23	Apr	3	0	24	51.4	d	99227	K0	8.2	7.6	90+	143	38	237	33N	60	28	39	-2.4	-5.0	+2.3	-0.5	.188	63.7	10	38	47.7	12	45	41	397.5	815.1	
23	Apr	3	1	51	6.9	d	1559wK2		8.2	7.6	90+	144	26	256	58S	149	111	128	-2.6	-4.9	+0.1	-2.2	.409	-27.6	10	40	37.3	12	4	43	398.6	892.6	
1559 is double: AB 8.3 13.1 57" 330.9, dT = -138sec																																	
23	Apr	3	23	32	20.2	D	1646	K0	7.6	7.0	95+	154	42	207	29S	181	165	159	-3.2	-4.2	-0.1	-2.9	.235	-54.0	11	21	39.6	7	13	23	394.4	764.0	
23	Apr	4	21	56	49.2	D	119212	K0	7.5	6.9	98+	165	39	161	39N	71	82	49	-3.6	-3.2	+2.5	+1.7	.222	56.4	12	5	10.8	2	11	0	391.7	761.5	
Distance of 119212 to Terminator = 12.0"; to 3km sunlit peak = 3.1"																																	
23	Apr	8	0	31	39.6	r	158575	K0	7.8	7.2	96-	158	22	171	54N	328	333	311	-4.9	+1.5	+0.8	-0.7	.382	155.3	14	27	25.4	-15	48	48	382.3	780.0	
23	Apr	8	3	16	53.6	r	2079	K4	7.6	6.7	96-	157	16	212	31N	351	331	335	-5.3	+1.7	+0.7	-1.8	.251	126.3	14	31	57.4	-16	21	45	382.5	787.8	
23	Apr	10	2	43	6.6	D	2349SB1		2.9	v	83-	132	13	178	-49S	144	145	135	-4.8	+4.7	+1.1	-0.5	.345	-34.4	16	21	11.3	-25	35	34	376.7	765.3	
R2349 = Al Niyat = sigma Scorpii																																	
2349 is quadruple: Aa1,2 3.3 4.1 0.002" 155.9, dT = +0.01sec : Aa,Ab 3.06 5.24 0.42" 209.0, dT = +0.5sec : AB 2.9 8.4 20.3" 273.1, dT = -37sec																																	
2349 is a close double. Observations are highly desired																																	
2349 = sig Sco, 2.86 to 2.94, V, Type B CEP, Period 0.246839 days, Phase 93%																																	
23	Apr	10	3	44	49.7	R	2349SB1		2.9	v	83-	132	-11	12	193	60S	252	244	244	-4.9	+4.8	+1.6	-0.3	.345	-145.7	16	21	11.3	-25	35	34	376.7	762.6
R2349 = Al Niyat = sigma Scorpii																																	
2349 is quadruple: Aa1,2 3.3 4.1 0.002" 155.9, dT = 0.00sec : Aa,Ab 3.06 5.24 0.42" 209.0, dT = -0.9sec : AB 2.9 8.4 20.3" 273.1, dT = -55sec																																	
2349 is a close double. Observations are highly desired																																	
2349 = sig Sco, 2.86 to 2.94, V, Type B CEP, Period 0.246839 days, Phase 93%																																	
23	Apr	11	4	39	27.1	r	2505	K4	5.3	4.5	74-	118	-3	9	191	76S	261	254	259	-4.5	+6.0	+1.5	-0.4	.405	-164.2	17	23	21.6	-28	8	34	374.2	763.8
R2505 = 43 Ophiuchi																																	