

y	day	Time	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	May	24 21 9	9.8 D	80165	F2	7.5	7.3	25+	60	-10	26 276	81N	92	50	78	+0.4 -6.0	+0.3-1.6	.459	19.5		8 24 55.2	23 56 43	400.9	947.4		
23	May	24 22 11	55.0 D	80192kG5		8.5	8.0	25+	60		16 287	88N	100	60	86	+0.4 -6.0	-0.1-1.6	.514	10.4		8 27 4.2	23 43 39	401.9	91018.9		
23	May	25 20 13	30.5 d	80693	G0	8.4	8.1	33+	70	-5	39 253	62S	133	94	116	-0.7 -6.0	+0.3-2.2	.415	-16.1		9 12 42.5	20 40 24	400.5	839.0		
23	May	25 22 33	57 m	80735	K0	8.7	8.1	34+	71		18 281	8N	24 344	7	-0.9 -5.8	+9.9+9.9	.000	90.0		9 16 39.7	20 37 24	402.6	991.2			
23	May	26 22 3	9.6 d	98916	G	9.0	8.7	43+	82		25 264	38S	161 122	142	-2.0 -5.4	-0.2-2.4	.345	-42.2		10 2 30.9	16 3 9	401.3	906.9			
23	May	26 23 35	24.5 D	1479	F2	6.4	6.2	44+	83		11 281	64S	136 97	116	-2.1 -5.3	-0.3-1.9	.487	-19.1		10 5 40.9	15 45 27	402.7	1005.9			
23	May	29 22 55	22 m	1766kK0		7.9	7.3	72+	116		23 238	10N	34 2	12	-5.3 -2.5	+9.9+9.9	.000	90.0		12 16 58.4	0 21 8	392.8	837.2			
23	May	30 1 4	20.8 D	1772cA2		3.9	3.9s	72+	117		4 264	32S	172 134	150	-5.5 -2.3	+0.1-2.3	.297	-53.6		12 19 54.3	- 0 40 1	394.5	959.4			
R1772 = Zaniah = eta Virginis																										
1772 is double: AB 3.9 5.9 0.14" 2.6, dT = -0.47sec																										
1772 is a close double. Observations are highly desired																										
1772 = NSV 5555, 3.86 to 3.93, V																										
23	May	31 20 41	42.3 d	158151SF8		7.7	7.4	87+	139	-7	27 178	83N	103 105	84	-5.8 +0.2	+1.6-0.2	.385	22.4		13 45 52.3	-11 13 16	382.8	773.0			
158151 is triple: **AB 8.5 8.5 0.10" : AC 7.3 17.2 243" 213.0, dT = -215sec																										
158151 has been reported as non-instantaneous (OCc 458). Observations are highly desired																										
23	Jun	2 21 49	23.3 d	2216pB9		7.2	7.2	98+	164		16 170	86N	90 97	78	-5.4 +3.5	+1.6+0.3	.395	25.9		15 32 10.3	-21 58 1	373.3	796.2			
2216 is double: AB 7.1 10.9 0.70" 41.0, dT = +1.2sec																										
2216 is a close double. Observations are highly desired																										
23	Jun	12 1 40	51.3 r	61cG6		7.8	7.3	36-	74	-10	8 100	77S	232 270	254	+5.3 +3.8	+0.2+1.9	.537	-172.0		0 29 51.0	- 0 19 15	375.1	986.6			
61 is double: ** 8.5 8.5 0.050"																										
61 has been reported as non-instantaneous (OCc1141). Observations are highly desired																										
23	Jun	13 2 23	34.1 r	109810	M4	7.8	7.0v	25-	61	-7	12 95	67S	224 262	244	+5.6 +2.2	+0.1+1.9	.522	-164.1		1 19 44.7	6 9 43	378.2	996.6			
109810 = CV Psc, 7.76 to 7.9, Hp, Type SRB, Period 22.525075 days, Phase 79%																										
23	Jun	13 8 2	50.7 r	214WK1		6.2	5.6s	24-	58	40	46 187	44N	294 289	314	+5.1 +1.6	+2.6-1.6	.219	120.6		1 28 22.9	7 57 41	375.7	784.9			
214 is double: AB 6.3 8.0 69" 100.1, dT = +306sec																										
214 = NSV 519, 6.19 to 6.23, V																										
23	Jun	15 7 34	53.5 r	457	M0	6.2	5.4s	8-	34	36	52 139	41N	305 330	319	+5.4 -1.4	+2.7-1.0	.187	115.8	.01	3 8 21.1	18 47 42	382.3	798.2			
R457 = 54 Arietis																										
457 = NSV 15637, 6.25 to 6.28, V, Type SRB:																										
23	Jun	15 10 36	49.3 r	467	K5	6.5	5.7	8-	33	59	54 211	14S	180 160	194	+5.0 -1.8	+0.4+4.8	.173	-115.3	.01	3 13 54.9	18 58 24	382.6	753.2			
23	Jun	20 7 38	12.9 d	1169	K5	5.3	4.5s	5+	25	36	21 74	70S	110 151	100	+2.6 -6.0	+0.2+1.1	.470	-17.9		7 44 6.9	25 47 3	400.3	958.8			
R1169 = 76 Geminorum																										
1169 = NSV 3703, 5.28 to 5.32, V																										
23	Jun	20 17 45	20.5 d	1211SA1		6.3	6.3	6+	29	18	38 263	85N	89 46	77	+1.1 -6.0	+0.7-1.5	.415	21.4		8 1 43.8	25 5 22	399.5	863.1			
R1211 = 4 Cancri																										
1211 is triple: AB 6.3 11.0 45" 27.3, dT = +52sec : AC 6.3 11.6 106" 295.0, dT = -229sec																										
23	Jun	21 20 14	25.7 d	1334kG5		7.0	6.6	12+	41	-2	21 279	45N	56 15	40	-0.2 -5.8	+0.6-1.1	.272	57.1		8 57 5.1	21 51 38	402.7	978.1			
23	Jun	21 21 56	11.2 d	80574cG5		8.8	8.3	13+	41	-11	6 297	63N	75 39	59	-0.2 -5.7	-0.3-1.2	.449	35.9		9 0 47.4	21 27 13	404.3	1088.3			
80574 is double: ** 9.5 9.5 0.10" 140.0, dT = +0.09sec																										
80574 has been reported as non-instantaneous (OCc 706). Observations are highly desired																										

y	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								
	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	Jun	22	21	2	40	m	98751	G5	8.3	7.7	19+	52	-7	17	277	10N	27	347	8	-1.5	-5.4	+9.9+9.9	.000	90.0		9	46	1.1	17	53	21	403.5	978.5
23	Jun	23	21	15	41.4	D	1545	F2	8.0	7.8	27+	63	-8	18	268	84N	104	65	84	-2.8	-4.7	+0.2-1.8	.464	15.1		10	32	16.9	12	55	9	402.7	939.6
23	Jun	23	21	34	41.0	d	99175k	F5	8.8	8.6	27+	63	-10	15	272	65S	135	96	114	-2.8	-4.7	-0.1-2.0	.471	-16.3		10	32	33.7	12	43	50	403.1	959.7
23	Jun	23	22	46	45.5	d	99185p	A3	7.9	7.7	28+	64		4	285	23S	177	140	157	-2.8	-4.6	-0.5-2.2	.257	-60.9		10	34	7.3	12	22	28	404.2	1037.0
							99185 is double: AB 7.7 0.20" 180.0, dT = +0.8sec																										
							99185 is a close double. Observations are highly desired																										
23	Jun	24	19	55	44.6	D	1625SK	3	5.8	5.2	36+	73	0	31	239	87N	109	77	87	-3.8	-4.0	+0.9-1.8	.407	15.4		11	14	1.8	8	3	39	399.7	819.0
							1625 is triple: **Aa,Ab 6.7 6.7 0.10" 90.0, dT = +0.23sec : AB 5.8 11.8 23.8" 259.9, dT = -51sec																										
							1625 has been reported as non-instantaneous (OCc 137). Observations are highly desired																										
23	Jun	24	21	1	56.4	r	1625SK	3	5.8	5.2	36+	74	-7	22	254	-65N	318	281	296	-4.0	-3.9	+0.3-2.1	.437	164.6		11	14	1.8	8	3	39	400.5	879.9
							1625 is triple: **Aa,Ab 6.7 6.7 0.10" 90.0, dT = +0.15sec : AB 5.8 11.8 23.8" 259.9, dT = -29sec																										
							1625 has been reported as non-instantaneous (OCc 137). Observations are highly desired																										
23	Jun	25	22	8	59.6	D	1732cK	0	6.8	6.1v	46+	85		13	256	17S	187	150	165	-5.2	-2.7	-0.2-2.7	.192	-65.6		11	59	23.9	1	49	36	398.2	899.4
							1732 is double: ** 7.6 7.6 0.10" 129.0, dT = +0.28sec																										
							1732 has been reported as non-instantaneous (OCc 708). Observations are highly desired																										
							1732 = HIP 58466, 6.82, range 0.00, 6V, Type VAR, Period 0.08566 days																										
23	Jun	26	22	59	54.2	d	1830WA	3	7.3	7.1	56+	97		7	254	72N	95	58	74	-6.3	-1.3	+0.4-1.8	.432	24.0		12	45	17.4	-3	53	17	394.5	906.2
							1830 is double: AB 7.3 8.1 16.0" 348.0, dT = -11sec																										
23	Jun	30	21	46	36.6	D	2299kK	2	6.2	5.5	91+	145	-11	13	188	16S	169	164	160	-6.4	+4.5	+0.7-1.2	.217	-59.8		16	3	54.7	-24	43	35	371.4	778.0
							Distance of 2299 to Terminator = 17.7"; to 3km sunlit peak = 5.7"																										
23	Jul	3	0	0	58.9	d	2645	A5	6.2	6.1	99+	171		9	190	88N	48	41	50	-4.0	+6.8	+1.3+0.0	.346	40.8		18	17	24.1	-28	39	7	362.3	802.8
							Distance of 2645 to Terminator = 10.9"; to 3km sunlit peak = 2.6"																										
23	Jul	4	0	43	52.5	r	2831k	B2	6.0	6.1s	99-	171		10	186	74S	284	280	293	-2.3	+7.4	+1.5-0.3	.422	155.2		19	24	30.2	-27	51	57	359.7	811.7
							2831 = NSV 24772, 5.98 to 6.03, V, Type SXARI, Period 0.5214404 days																										
							Distance of 2831 to Terminator = 11.8"; to 3km sunlit peak = 3.1"																										
23	Jul	5	1	36	21.6	r	189406	K4	7.3	6.5v	96-	157	-11	13	183	79N	280	278	295	-0.3	+7.5	+1.6-0.2	.405	149.2		20	32	18.9	-24	52	14	358.7	821.1
							189406 = HIP 101336, 7.33, range 0.00, 9V, Type VAR, Period 3.93345 days																										
23	Jul	5	1	52	51.9	R	2998	A0	6.4	6.4	96-	157	-10	13	187	76S	256	251	270	-0.3	+7.5	+1.3-0.1	.472	173.5		20	32	52.4	-24	56	38	358.7	825.9
23	Jul	6	1	29	24	M	3158	F5	5.7	5.5	90-	144	-12	17	167	15N	334	342	352	+1.7	+7.2	+9.9+9.9	.000	90.0		21	34	51.1	-20	5	3	359.3	822.0
							R3158 = 37 Capricorni																										
							Distance of 3158 to Terminator = 16.0"; to 3km sunlit peak = 4.5"																										
23	Jul	6	1	50	55.3	R	3160	F7	6.7	6.5	90-	143	-10	18	173	70N	278	283	297	+1.6	+7.1	+1.7+0.2	.386	145.0		21	34	55.0	-20	15	10	359.3	821.6
							R3160 = 38 Capricorni																										
23	Jul	8	0	22	53.7	r	3446p	K0	7.2	6.5	72-	117		14	124	58N	281	312	303	+5.0	+5.3	+0.9+1.4	.389	139.6		23	23	45.3	-8	27	36	365.6	905.6
							3446 is triple: **Aa 7.9 7.9 0.050" 34.0, dT = +0.05sec : AB 7.2 7.7 6.9" 143.8, dT = +13sec																										
							3446 has been reported as non-instantaneous (OCc1091). Observations are highly desired																										

y	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										
	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	Jul	8	0	23	7.2	r	X185486p		7.6	7.2	72-	117		14	124	59N	280	311	302	+5.0	+5.3	+0.9+1.4	.392	140.1		23	23	45.5	-	8	27	42	365.6	905.4	
									X185486 is double: BA 7.7 7.2 6.9" 323.8, dT = -13sec																										
									X185486 is a close double. Observations are highly desired																										
23	Jul	9	0	3	23.9	r	128654cK0		7.2	6.5	62-	104		10	106	60S	218	254	240	+6.1	+4.0	+0.3+1.9	.499	-157.8		0	14	24.5	-	2	11	53	370.3	968.9	
									128654 is double: ** 8.2 8.2 0.050" 143.0, dT = -0.03sec																										
									128654 has been reported as non-instantaneous (OCc 593). Observations are highly desired																										
23	Jul	9	1	29	13.6	R		36	G5	7.1	6.6	61-	103		22	124	11S	169	200	191	+6.0	+3.9	-0.3+2.6	.185	-111.8		0	17	48.4	-	1	51	46	369.3	892.9
23	Jul	9	1	30	8.1	r	128673	F8	8.5	8.4	61-	103		22	124	52N	285	316	307	+6.0	+3.9	+1.2+1.3	.332	131.8		0	16	35.1	-	1	31	24	369.2	891.8	
23	Jul	9	1	45	19.2	r	128677cG5		8.4	8.0	61-	103	-11	24	127	84S	242	271	264	+6.0	+3.9	+0.8+1.7	.490	174.8		0	17	5.6	-	1	39	11	369.1	880.2	
									128677 is double: ** 9.1 9.1 0.10" 84.0, dT = +0.19sec																										
									128677 has been reported as non-instantaneous (OCc 594). Observations are highly desired																										
23	Jul	10	1	27	15.1	R	155PF4		6.4	6.2	50-	90		21	109	63N	274	310	295	+6.7	+2.4	+0.7+1.6	.412	143.2		1	5	49.2		4	54	30	374.1	934.4	
									R155 = 77 Piscium																										
									155 is multiple: AB 6.4 7.3 33" 84.0, dT = +79sec : AD 6.4 14.6 43" 323.8, dT = -68sec : AE 6.4 14.4 91" 352.0, dT = -48sec : AC 6.4 13.1 158																										
23	Jul	10	1	28	33.3	R	109667MF6		7.3	7.0	50-	90		21	110	64N	273	309	294	+6.7	+2.4	+0.7+1.6	.417	144.2		1	5	51.4		4	54	34	374.1	933.1	
									109667 is quadruple: Ba,Bb 7.3 12.0 0.30" 41.0, dT = +0.44sec : 7.3 9.0 1.1" 247.6, dT = -2.4sec : BA 7.3 6.4 33" 264.0, dT = -78sec																										
									109667 is a close double. Observations are highly desired																										
23	Jul	10	2	14	42.1	r	109685	K2	8.7	8.1	50-	90	-9	27	120	89N	248	281	269	+6.7	+2.3	+0.7+1.7	.482	167.9		1	7	14.0		5	0	20	373.6	892.3	
23	Jul	10	2	14	48.4	r	109689kF5		8.7	8.5	50-	90	-9	27	120	72S	229	262	250	+6.7	+2.3	+0.6+1.9	.489	-173.2		1	7	25.1		4	55	54	373.6	892.2	
23	Jul	10	2	26	43.0	r	109690kF5		8.8	8.5	50-	90	-8	29	122	61N	277	309	298	+6.7	+2.3	+1.2+1.4	.367	138.9		1	7	29.4		5	11	29	373.5	882.8	
23	Jul	11	0	49	58.2	R	92688	F5	6.8	6.5	39-	78		13	89	70S	229	268	248	+7.0	+0.9	+0.0+1.9	.541	-168.1		1	53	57.7		10	36	50	379.6	1018.5	
23	Jul	12	0	58	36.0	r	X 63209C		8.6	8.3	29-	65		11	78	81S	244	283	260	+7.0	-0.7	-0.2+1.7	.567	179.7		2	43	49.1		16	6	14	384.4	1057.5	
									X 63209 is double: AB 8.76 10.95 0.90" 339.0, dT = +0.14sec																										
									X 63209 is a close double. Observations are highly desired																										
23	Jul	12	0	58	36.0	r	93076CG5		8.7		29-	65		11	78	81S	244	283	260	+7.0	-0.7	-0.2+1.7	.567	179.7		2	43	49.1		16	6	14	384.4	1057.5	
									93076 is double: BA 10.9 8.8 0.9" 159.0, dT = -0.14sec																										
									93076 is a close double. Observations are highly desired																										
23	Jul	12	8	29	31.9	r	433cF6		5.6	5.3S	27-	62	42	53	209	51N	293	274	308	+6.3	-1.5	+2.0-2.1	.261	129.9		2	56	26.2		18	1	24	381.9	752.3	
									R433 = rho Arietis																										
									433 is double: ** 4.5 8.1 0.24" 238.0, dT = -0.5sec																										
									433 has been reported as non-instantaneous (OCc 901). Observations are highly desired																										
									433 = NSV 15612, S.63, , Type BY:																										
23	Jul	13	0	29	59.7	r	76000kK5		8.1	7.2	20-	54		4	61	36S	204	239	216	+6.7	-2.0	-0.6+1.7	.421	-134.6		3	34	25.3		20	22	27	389.4	1133.6	
23	Jul	13	2	43	3.2	R	525	A*	6.5	6.4	20-	53	-7	23	85	59S	227	268	238	+6.7	-2.2	-0.1+2.0	.496	-160.8		3	39	0.1		20	54	57	387.7	988.4	
									R525 = 14 Hl. Tauri																										

