

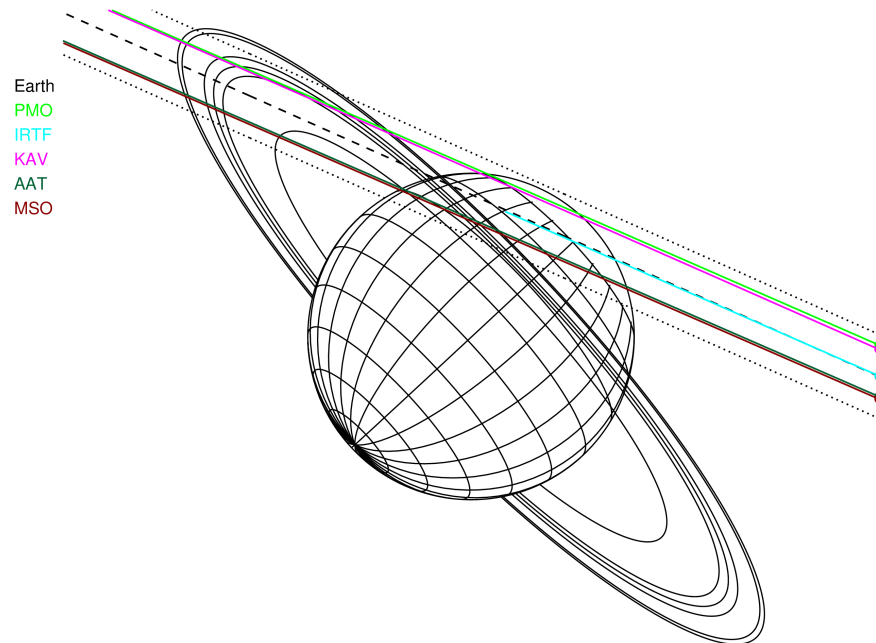
target : Neptune
 target radius (km) : 24764.00
 C/A epoch : 2032-09-05T15:51:18.680
 Event type : PgtRgt
 : Neptune occs: geocentric, topocentric
 : Ring occs: geocentric, topocentric
 Gaia source ID : 2552125131275826816
 2Mass ID (if available) : 01043912+0506360

ICRS Star Coord at Epoch: 01h 04m 39.16219s +05°06'35.93481s
 RUWE (>1.4 is poor) : 1.17
 K magnitude : 8.475
 G magnitude : 10.109
 RP magnitude : 9.558
 BP magnitude : 10.486
 DUPflag : 0
 Distance (au) : 29.002
 f0 (km) : 0.000
 g0 (km) : 0.000
 skyplane vel. (km/s) : -19.36
 Sun-Target sep (deg) : 146.29
 Sun-Moon sep (deg) : 154.45
 B (ring opening deg) : -13.26
 PA of pole (deg) : -47.00



2032-09-05T15:51:18.6800 α: 01 04 39.1622 δ: +05 06 35.935 C/A 0.935° PA 155.97 deg v_sky -19.36 km/s D 29.00 AU
 Credit: Styled after SORA/Lucky Star

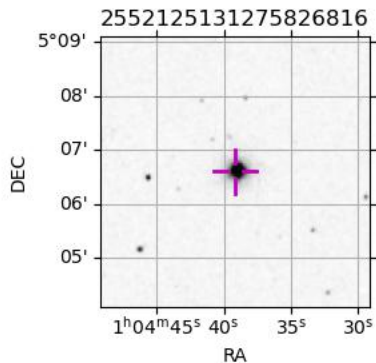
Neptune 2032-09-05T15:51:18 K8.47 G10.11 PgtRgt



#	a(km)	ring
1	42000.0	Galle
2	53200.0	LeVerrier
3	55200.0	Lassell
4	57200.0	Arago
5	61953.0	Galatea
6	62933.0	Adams

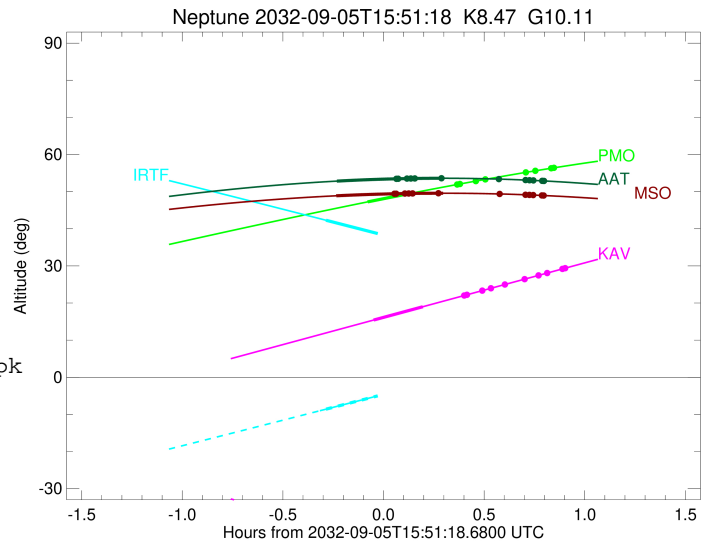
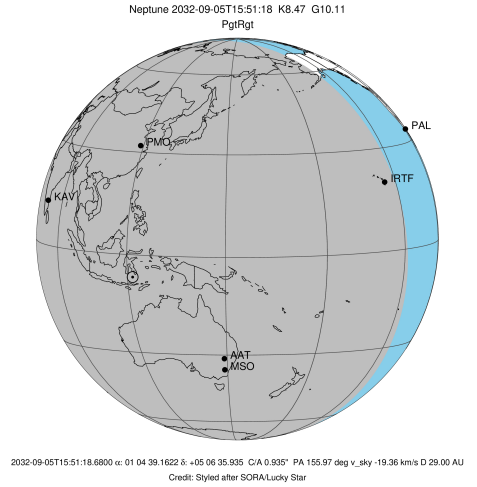
Observable events with sun below -5 deg and altitude above 5 deg unblocked by planet

Obs	Location	lat	Elon	Rings I	Planet	Rings E	Observed Events Interval	OEcode
PIC	Pic du Midi	42.9	0.1					PnnRnn
PAL	Palomar Mt (200")	33.4	243.1					PnnRnn
PMO	Purple Mtn Obs. Nanki	32.1	118.8	+	+	+	SEP 05 15:46 - SEP 05 16:41	PieRie
KPNO	Kitt Peak Natl Obs	32.0	248.4					PnnRnn
MCD	McDonald Obs. 2.7m	30.7	256.0					PnnRnn
TEN	Teide Obs./Tenerife	28.3	343.5					PnnRnn
IRTF	Mauna Kea/IRTF	19.8	204.5		+		SEP 05 15:34 - SEP 05 15:34	PinRnn
KAV	Kavalur Observatory	12.6	78.8	+	+	+	SEP 05 15:48 - SEP 05 16:45	PieRie
RIO	Rio de Janeiro	-22.9	316.8					PnnRnn
ESO	European Southern Obs	-29.3	289.3					PnnRnn
AAT	Siding Spring (AAT)	-31.3	149.1		+	+	SEP 05 15:37 - SEP 05 16:38	PieRne
SAAO	So. Afr. Astro. Obs.	-32.4	20.8					PnnRnn
MSO	Mt. Stromlo Observato	-35.3	149.0		+	+	SEP 05 15:37 - SEP 05 16:38	PieRne



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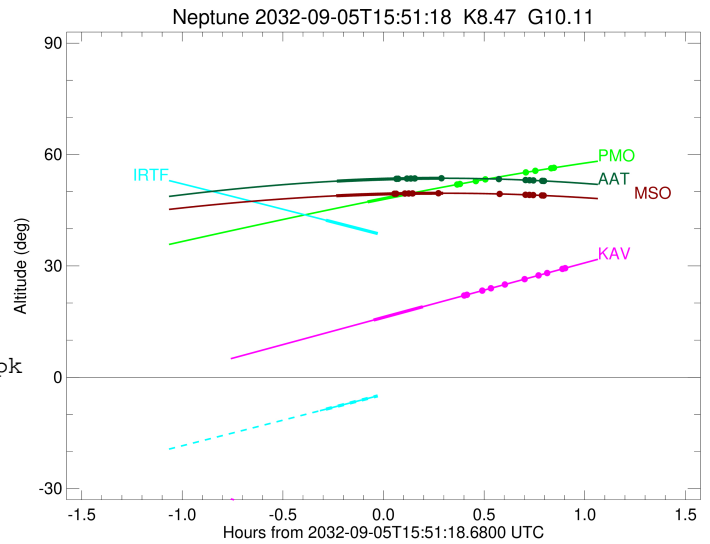
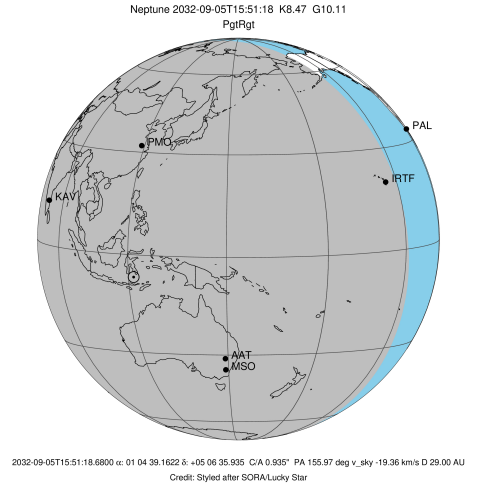
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2032-09-05T15:52:50.030
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : PMO
Location              : Purple Mtn Obs. Nanking
Latitude (deg)       : 32.06667
E. Longitude (deg)   : 118.82089
Altitude (km)        : 0.364
Gaia source ID       : 2552125131275826816
2Mass ID (if available) : 01043912+0506360
ICRS Star Coord at Epoch: 01h 04m 39.16219s +05:06:35.93481s
RUWE (>1.4 is poor) : 1.17
K magnitude           : 8.475
G magnitude           : 10.109
RP magnitude          : 9.558
BP magnitude          : 10.486
DUPflag               : 0
Distance (au)         : 29.002
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.36
Sun-Target sep (deg) : 146.29
Sun-Moon sep (deg)   : 154.43
B (ring opening deg) : -13.26
PA of pole (deg)     : -47.00
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 1.122
C/A sky separation (km) : 23605.6
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
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Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2032-09-05T16:12:04.108		51.73	-51.62	62933.04	-21.33		
Galatea	I	2032-09-05T16:12:50.915		51.86	-51.61	61953.06	-20.54		
Arago	I	2032-09-05T16:17:14.347		52.59	-51.54	57200.71	-15.34		
Lassell	I	2032-09-05T16:19:40.676		52.98	-51.48	55205.00	-11.94		
Neptune	I	2032-09-05T15:46:32.687		47.24	-51.47	24742.20		75.48	75.94
Neptune	E	2032-09-05T15:59:08.798		49.50	-51.67	24751.42		47.35	48.32
Lassell	E	2032-09-05T16:34:21.633		55.28	-50.97	55200.03	11.93		
Arago	E	2032-09-05T16:36:47.987		55.65	-50.86	57200.00	15.34		
Galatea	E	2032-09-05T16:41:11.510		56.29	-50.63	61953.00	20.53		
Adams	E	2032-09-05T16:41:58.340		56.40	-50.59	62933.00	21.32		

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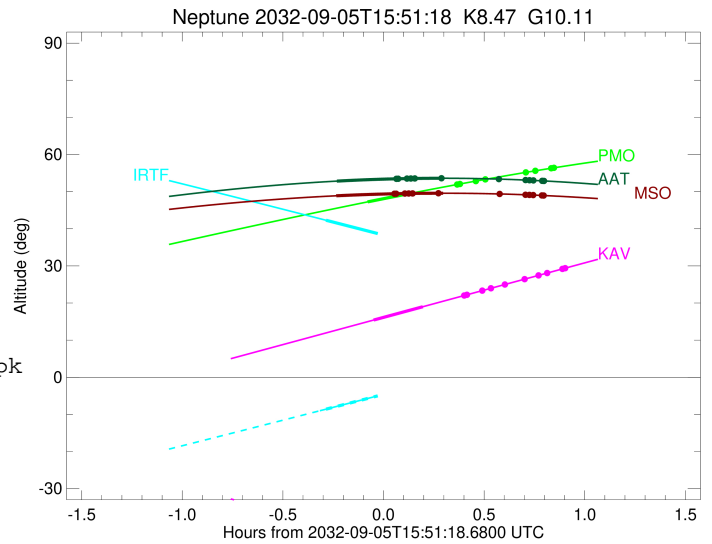
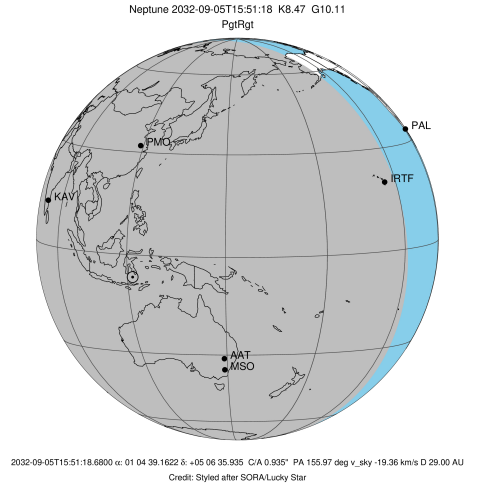
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2032-09-05T15:47:08.320
Event type           : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : IRTF
Location              : Mauna Kea/IRTF
Latitude (deg)       : 19.82622
E. Longitude (deg)   : 204.52800
Altitude (km)        : 4.168
Gaia source ID       : 2552125131275826816
2Mass ID (if available) : 01043912+0506360
ICRS Star Coord at Epoch: 01h 04m 39.16219s +05:06:35.93481s
RUWE (>1.4 is poor) : 1.17
K magnitude           : 8.475
G magnitude           : 10.109
RP magnitude          : 9.558
BP magnitude          : 10.486
DUPflag              : 0
Distance (au)        : 29.002
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.36
Sun-Target sep (deg) : 146.29
Sun-Moon sep (deg)   : 155.32
B (ring opening deg) : -13.26
PA of pole (deg)     : -47.00
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.924
C/A sky separation (km) : 19443.0
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
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Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2032-09-05T15:55:47.223	b	37.27	-3.57x	62933.00	-27.78		
Galatea	I	2032-09-05T15:56:22.766	b	37.13	-3.43x	61953.00	-27.36		
Arago	I	2032-09-05T15:59:24.266	b	36.43	-2.73x	57200.00	-24.91		
Lassell	I	2032-09-05T16:00:46.683		36.10	-2.41x	55200.01	-23.60		
LeVerrier	I	2032-09-05T16:02:14.277		35.76	-2.07x	53200.02	-22.04		
Neptune	I	2032-09-05T15:34:09.210		42.30	-8.60	24743.40		70.11	70.72
Neptune	E	2032-09-05T16:00:09.276		36.25	-2.55x	24758.97		27.71	28.53
LeVerrier	E	2032-09-05T16:28:52.187		29.52	4.16x	53200.00	21.88		
Lassell	E	2032-09-05T16:30:20.464		29.17	4.51x	55200.00	23.40		
Arago	E	2032-09-05T16:31:43.595		28.85	4.83x	57200.00	24.69		
Galatea	E	2032-09-05T16:34:46.893		28.13	5.55x	61953.00	27.08		
Adams	E	2032-09-05T16:35:22.819		27.99	5.69x	62933.00	27.48		

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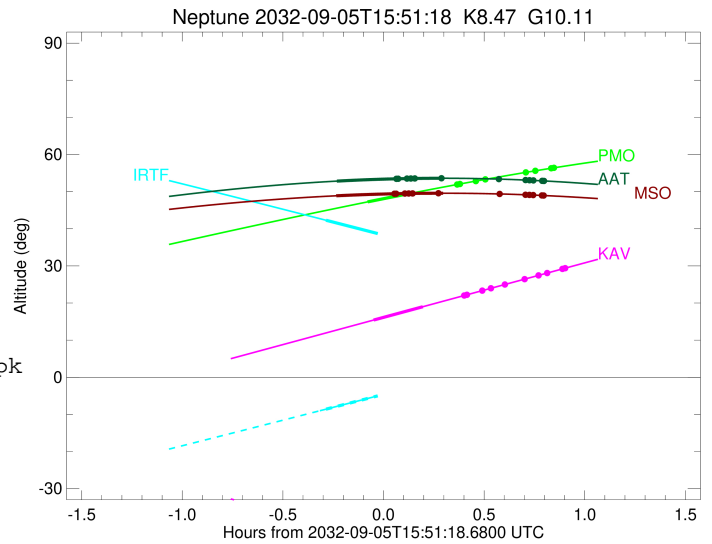
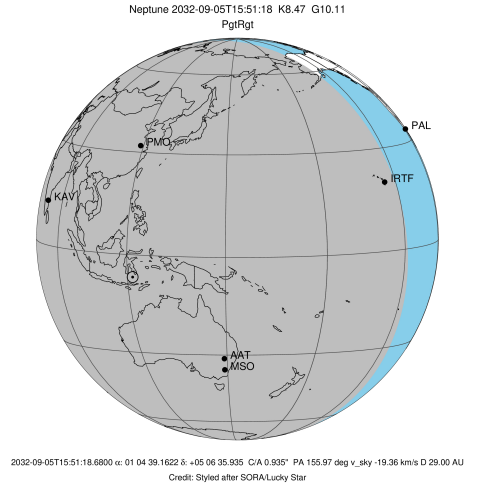
target                : Neptune
target radius (km)   : 24764.00
C/A epoch            : 2032-09-05T15:55:40.540
Event type          : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code       : KAV
Location            : Kavalur Observatory
Latitude (deg)      : 12.57556
E. Longitude (deg)  : 78.83167
Altitude (km)       : 0.722
Gaia source ID      : 2552125131275826816
2Mass ID (if available) : 01043912+0506360
ICRS Star Coord at Epoch: 01h 04m 39.16219s +05:06:35.93481s
RUWE (>1.4 is poor) : 1.17
K magnitude          : 8.475
G magnitude          : 10.109
RP magnitude         : 9.558
BP magnitude         : 10.486
DUPflag             : 0
Distance (au)       : 29.002
f0 (km)              : 0.000
g0 (km)              : 0.000
skyplane vel. (km/s) : -19.36
Sun-Target sep (deg) : 146.29
Sun-Moon sep (deg)  : 153.84
B (ring opening deg) : -13.26
PA of pole (deg)    : -47.00
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 1.104
C/A sky separation (km) : 23214.0
NAIF SPICE kernels  : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
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Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2032-09-05T16:14:12.057		21.73	-48.45	62933.03	-21.61		
Galatea	I	2032-09-05T16:14:58.189		21.92	-48.62	61953.04	-20.87		
Arago	I	2032-09-05T16:19:14.142		22.97	-49.56	57200.43	-16.08		
Lassell	I	2032-09-05T16:21:31.223		23.52	-50.06	55202.22	-13.05		
LeVerrier	I	2032-09-05T16:24:36.229		24.28	-50.73	53313.93	-8.80		
Neptune	I	2032-09-05T15:48:20.401		15.41	-42.63	24742.01		76.42	76.85
Neptune	E	2032-09-05T16:03:01.884		19.00	-45.95	24752.41		44.87	45.84
LeVerrier	E	2032-09-05T16:34:53.889		26.80	-52.95	53204.06	8.48		
Lassell	E	2032-09-05T16:37:58.952		27.55	-53.61	55200.01	13.06		
Arago	E	2032-09-05T16:40:15.836		28.11	-54.09	57200.00	16.11		
Galatea	E	2032-09-05T16:44:31.321		29.15	-54.99	61953.00	20.91		
Adams	E	2032-09-05T16:45:17.357		29.34	-55.15	62933.00	21.66		

```

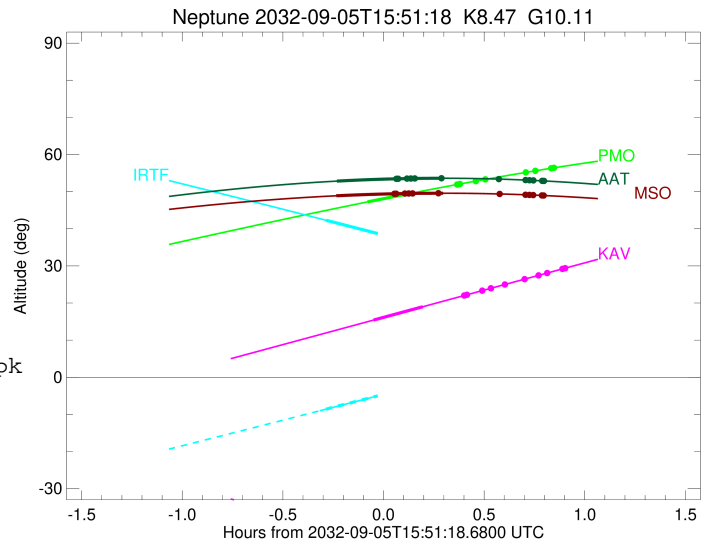
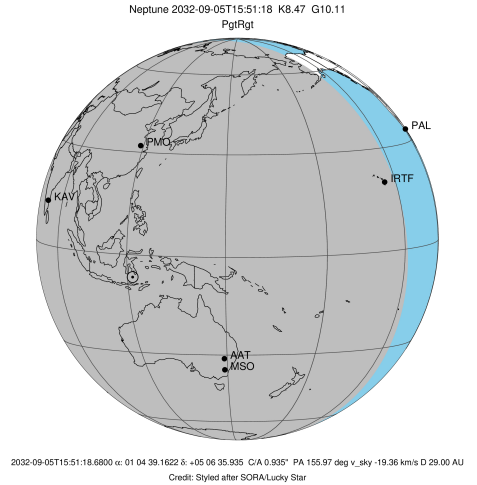
target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2032-09-05T15:53:02.750
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code        : AAT
Location              : Siding Spring (AAT)
Latitude (deg)       : -31.27703
E. Longitude (deg)   : 149.06608
Altitude (km)        : 1.164
Gaia source ID       : 2552125131275826816
2Mass ID (if available) : 01043912+0506360
ICRS Star Coord at Epoch: 01h 04m 39.16219s +05:06:35.93481s
RUWE (>1.4 is poor) : 1.17
K magnitude           : 8.475
G magnitude           : 10.109
RP magnitude          : 9.558
BP magnitude          : 10.486
DUPflag              : 0
Distance (au)         : 29.002
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.36
Sun-Target sep (deg) : 146.29
Sun-Moon sep (deg)   : 154.61
B (ring opening deg) : -13.26
PA of pole (deg)     : -47.00
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.779
C/A sky separation (km) : 16379.9
NAIF SPICE kernels   : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall11.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2032-09-05T15:54:43.727	b	53.45	-53.91	62933.00	-31.74		
Galatea	I	2032-09-05T15:55:14.715	b	53.46	-53.83	61953.00	-31.51		
Arago	I	2032-09-05T15:57:48.855	b	53.51	-53.38	57200.00	-30.09		
Lassell	I	2032-09-05T15:58:56.142	b	53.53	-53.19	55200.00	-29.34		
LeVerrier	I	2032-09-05T16:00:05.333	b	53.55	-52.99	53200.00	-28.46		
Galle	I	2032-09-05T16:07:43.697	b	53.61	-51.64	42000.06	-19.36		
Neptune	I	2032-09-05T15:37:22.195		52.84	-56.76	24745.91		61.81	62.62
Neptune	E	2032-09-05T16:08:44.102		53.61	-51.46	24761.90		17.47	18.04
Galle	E	2032-09-05T16:25:39.920		53.38	-48.35	42000.00	19.27		
LeVerrier	E	2032-09-05T16:33:21.298		53.14	-46.90	53200.00	28.22		
Lassell	E	2032-09-05T16:34:31.066		53.09	-46.67	55200.00	29.09		
Arago	E	2032-09-05T16:35:38.906		53.04	-46.46	57200.00	29.86		
Galatea	E	2032-09-05T16:38:14.150		52.93	-45.96	61953.00	31.32		
Adams	E	2032-09-05T16:38:45.312		52.91	-45.86	62933.00	31.57		

```

target                : Neptune
target radius (km)   : 24764.00
C/A epoch             : 2032-09-05T15:53:08.990
Event type            : PgtRgt
: Neptune occs: geocentric, topocentric
: Ring occs: geocentric, topocentric
Observer code         : MSO
Location               : Mt. Stromlo Observatory
Latitude (deg)        : -35.32000
E. Longitude (deg)    : 149.00833
Altitude (km)         : 0.770
Gaia source ID        : 2552125131275826816
2Mass ID (if available) : 01043912+0506360
ICRS Star Coord at Epoch: 01h 04m 39.16219s +05:06:35.93481s
RUWE (>1.4 is poor) : 1.17
K magnitude           : 8.475
G magnitude           : 10.109
RP magnitude          : 9.558
BP magnitude          : 10.486
DUPflag               : 0
Distance (au)         : 29.002
f0 (km)               : 0.000
g0 (km)               : 0.000
skyplane vel. (km/s) : -19.36
Sun-Target sep (deg)  : 146.29
Sun-Moon sep (deg)    : 154.58
B (ring opening deg) : -13.26
PA of pole (deg)      : -47.00
Pole direction: RA (deg): 299.33374
Dec (deg): 42.95036
C/A sky separation (") : 0.763
C/A sky separation (km) : 16054.1
NAIF SPICE kernels    : RAJobs_U111+rgf16.spk
URKALLv1.spk
nep097.bsp
nep101.bsp
sat4401.bsp
de440.bsp
earth_720101_070426.bpc
earthstns_itr93_040916.bsp
earth_200101_990628_predict.bpc
pck00010.tpc
pck.urall1.tpc.Neptune
naif0012.tls
IAU_NEPTUNE_for_RINGFIT.tpc.BECAREFUL
earth_flat_IAU.spk
    
```



Ring	I/E	UTC	b?	alt	alt-sun	radius	r-dot	lat-geo	lat-geodetic
Adams	I	2032-09-05T15:54:09.493	b	49.42	-51.48	62933.00	-31.98		
Galatea	I	2032-09-05T15:54:40.245	b	49.44	-51.40	61953.00	-31.76		
Arago	I	2032-09-05T15:57:12.923	b	49.48	-51.01	57200.00	-30.44		
Lassell	I	2032-09-05T15:58:19.389	b	49.50	-50.84	55200.00	-29.73		
LeVerrier	I	2032-09-05T15:59:27.596	b	49.51	-50.66	53200.00	-28.90		
Galle	I	2032-09-05T16:06:52.740	b	49.57	-49.48	42000.04	-20.43		
Neptune	I	2032-09-05T15:37:13.285		48.89	-53.96	24746.20		60.92	61.74
Neptune	E	2032-09-05T16:09:05.472		49.58	-49.12	24762.12		16.52	17.07
Galle	E	2032-09-05T16:25:51.139		49.38	-46.30	42000.00	20.33		
LeVerrier	E	2032-09-05T16:33:19.471		49.17	-45.00	53200.00	28.65		
Lassell	E	2032-09-05T16:34:28.265		49.13	-44.80	55200.00	29.48		
Arago	E	2032-09-05T16:35:35.281		49.09	-44.60	57200.00	30.20		
Galatea	E	2032-09-05T16:38:08.998		49.00	-44.14	61953.00	31.59		
Adams	E	2032-09-05T16:38:39.903		48.98	-44.05	62933.00	31.83		