

OBSERVATIONAL ROUND – SOLUTIONS & MARKING SCHEME

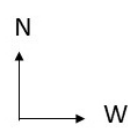
NO - TASK 1: ALIGNMENT OF FINDERSCOPE WITH THE MAIN TELESCOPE **TOTAL: 5 p**


Evaluation of the alignment and marking is done by the telescope assistants. **Max.: 5 points**

NO - TASK 2: SATURN AND TITAN **TOTAL: 15 points**

2019.08.04 22:00 UT

Viewfield:






E
W

T
+

Titan

2019.08.04
22:00 UT

Ring:



$d_{\text{Titan}}: 164''$
 d: 148-180'' **3 points**
 d: 139-189'' **2 points**
 d: 123-205'' **1 point**

$PA_{\text{Titan}}: 109^\circ$
 PA: 99 – 119° **4 points**
 PA: 89 – 129° **2 points**

OBSERVATIONAL ROUND – SOLUTIONS & MARKING SCHEME
TRANSPARENT TEMPLATE FOIL 1 FOR TITAN POSITION 08.04

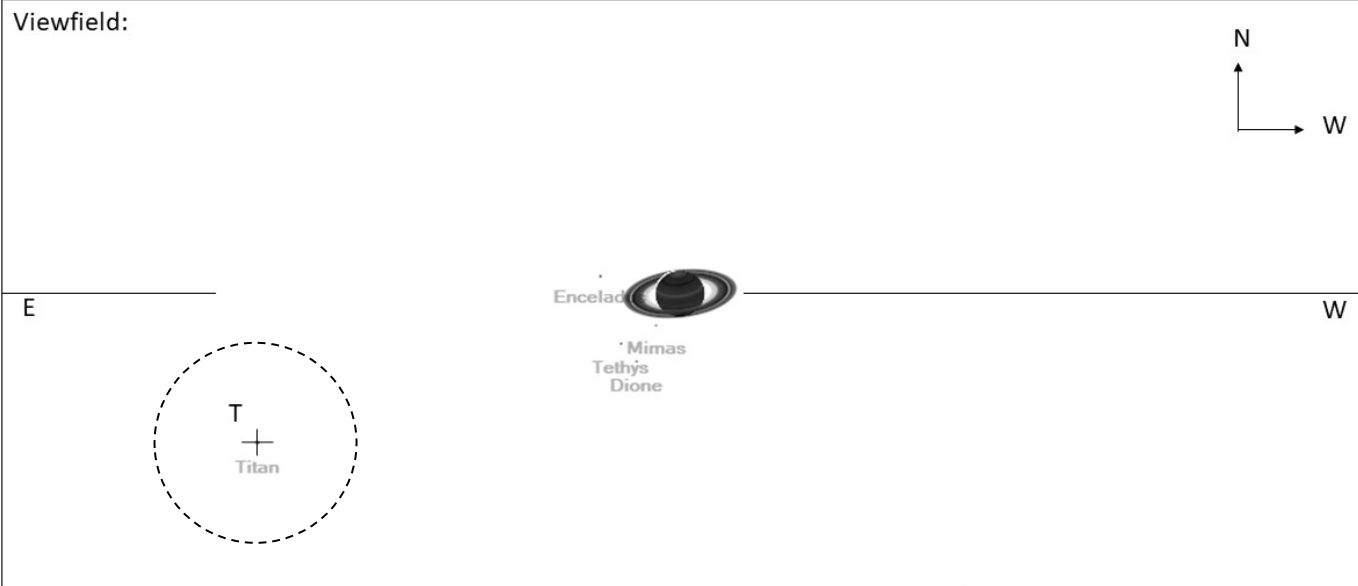

NO - TASK 1: ALIGNMENT OF FINDERSCOPE WITH THE MAIN TELESCOPE **TOTAL: 5 p**

Evaluation of the alignment and marking is done by the telescope assistants. **Max. : 5 points**

NO - TASK 2: SATURN AND TITAN **TOTAL: 15 points**

2019.08.04 22:00 UT

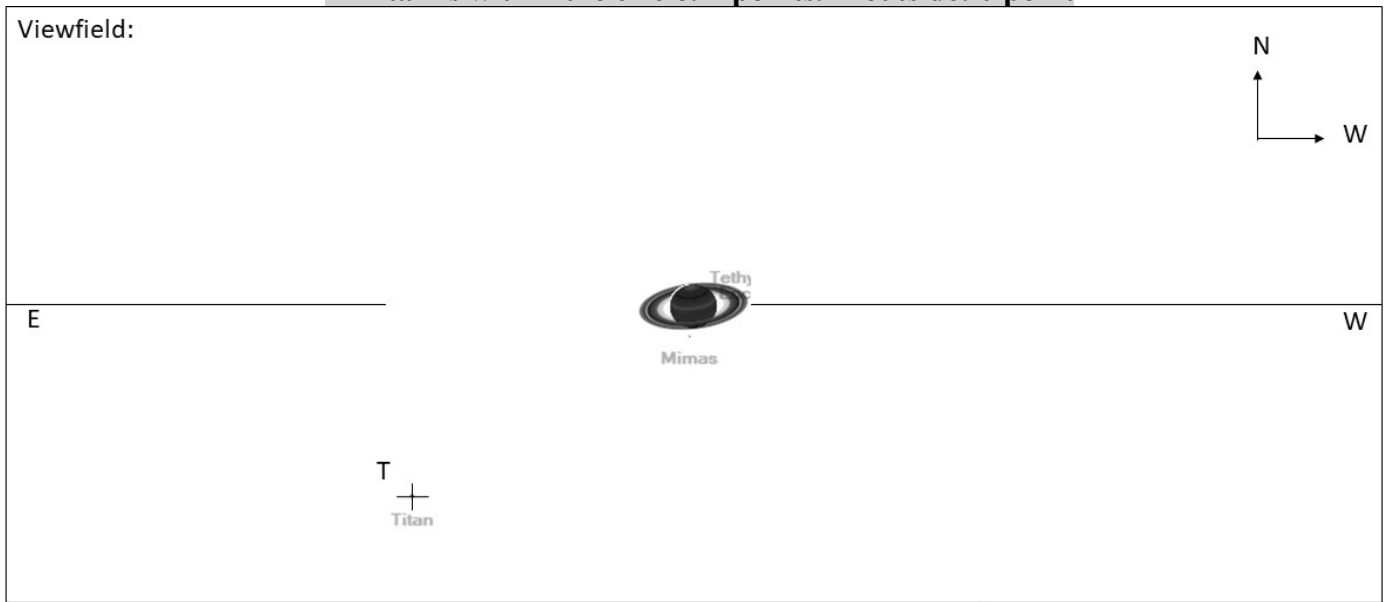
If Titan is within the circle: 2 points. If outside: 0 point

<p>Viewfield:</p> 	<p>Ring:</p> 
<p>2019.08.04 22:00 UT</p>	

- $d_{\text{Titan}}: 164''$
- d: 148-180" **3 points**
- d: 139-189" **2 points**
- d: 123-205" **1 point**

- $PA_{\text{Titan}}: 109^\circ$
- PA: 99 – 119° **4 points**
- PA: 89 – 129° **2 points**

If Titan is within the circle: 2 points. If outside: 0 point



2019.08.05
22:00 UT

Ring:



- d_{Titan}: 129"
- d: 116-131" **3 points**
- d: 110-148" **2 points**
- d: 97-161" **1 point**

- PA_{Titan}: 124°
- PA: 114-134° **4 points**
- PA: 104-144° **2 points**

Scoring:

Titan position + name:		2 points
Titan is outside the circle:		0 point
Ring continuity in front of the disk is proper		2 points
Ring tilt towards Earth is proper		2 points
ring does not exceed northern pole, ring is not too thin		
Ring tilt towards sky E-W direction is proper		2 points
PA measurement of Titan:	±10°	4 points
	±20°	2 points
Distance calculation of Titan	±10%	3 points
	±15%	2 points
	±25%	1 point

TRANSPARENT TEMPLATE FOIL 2 FOR TITAN POSITION 08.05

If Titan is within the circle: 2 points. If outside: 0 point

Viewfield:

E W

Ring:

2019.08.05
22:00 UT

- d_{Titan} : 129"
- d: 116-131" **3 points**
- d: 110-148" **2 points**
- d: 97-161" **1 point**







- PA_{Titan} : 124°
- PA: 114-134° **4 points**
- PA: 104-144° **2 points**

Scoring:








- Titan position + name: **2 points**
- Titan is outside the circle: **0 point**
- Ring continuity in front of the disk is proper **2 points**
- Ring tilt towards Earth is proper **2 points**
ring does not exceed northern pole, ring is not too thin
- Ring tilt towards sky E-W directions is proper **2 points**
- PA measurement of Titan: $\pm 10^\circ$ **4 points**
 $\pm 20^\circ$ **2 points**
- Distance calculation of Titan $\pm 10\%$ **3 points**
 $\pm 15\%$ **2 points**

Saturn drawing evaluation scheme

Ring and continuity in front of the disk – max 2 p








<p>Ring:</p>  <p>proper – 2p</p>	<p>Ring:</p>  <p>inverse – 0p</p>	<p>Ring:</p>  <p>improper – 0p</p>
<p>Ring:</p>  <p>improper – 0p</p>	<p>Ring:</p>  <p>too wide ring – 0p</p>	<p>Ring:</p>  <p>too narrow ring – 0p</p>

Ring tilt towards Earth – max 2p sub-Earth Phi=24,8°

<p>Ring:</p>  <p>24,8° – 2p</p>	<p>Ring:</p>  <p>22,8° – 2p</p>	<p>Ring:</p>  <p>20,8° – 1p, S pole visible</p>
<p>Ring:</p>  <p>16,8° – 0p, too thin</p>		
<p>Ring:</p>  <p>26,8° – 2p</p>	<p>Ring:</p>  <p>28,8° – 1p, very thick</p>	<p>Ring:</p>  <p>30,8° – 0p, too thick</p>

Saturn drawing evaluation scheme

Ring tilt towards sky E-W direction – max 2p PA equatorial: 6,4°

<p>Ring:</p>  <p>6,4° – 2p</p>	<p>Ring:</p>  <p>9,4° – 2p</p>	<p>Ring:</p>  <p>12,4° – 1p</p>
<p>Ring:</p>  <p>15,4° – 0p</p>		
<p>Ring:</p>  <p>6,4° – 2p</p>	<p>Ring:</p>  <p>3,4° – 1p</p>	<p>Ring:</p>  <p>0° – 0p</p>

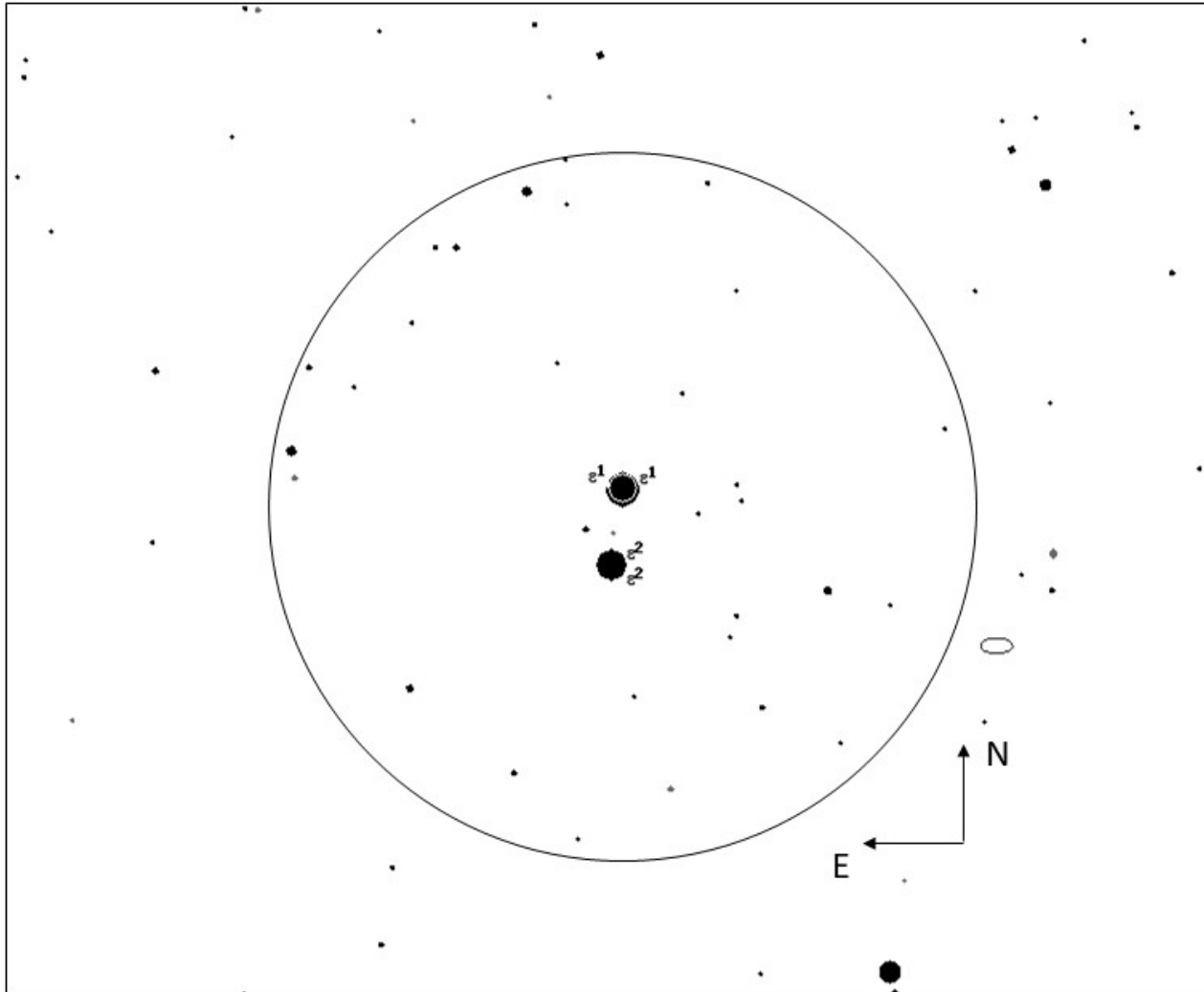
NO - TASK 2 / alternative:

OBSERVING EPSILON LYR

TOTAL: 15 points

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. **(0-3 points)**

FOV with 10 mm eyepiece: The components of the close pairs are not resolved.



FOV drawing: star field and directions:

Correct direction & labelling of North and East relative to the star field: **2 points**

Correct drawing of at least 3 stars in the FOV: **1 point**

Correct drawing of at least 6 stars in the FOV: **2 points**

Wide pair distance: $208'' = 3,47'$ **2 points**

Wide pair PA: 172° **3 points**

Correct estimation of the relative angle of close pairs: **3 points**

Distance estimation of wide pair: $d_{\varepsilon_1-\varepsilon_2} = 3.2 - 3.8'$ **2 points**
 $d_{\varepsilon_1-\varepsilon_2} = 2.8 - 4.2'$ **1 point**

Position angle of the wide pair: $PA_{\varepsilon_2} = 170-175^\circ$ **3 points**
 $PA_{\varepsilon_2} = 167-177^\circ$ **2 point**
 $PA_{\varepsilon_2} = 162-182^\circ$ **1 point**

Relative angle between the direction of lines fitted onto the two close pairs: 92° (also the 88° complementary angle is acceptable – referring to this, the evaluation bands are centered to 90°)

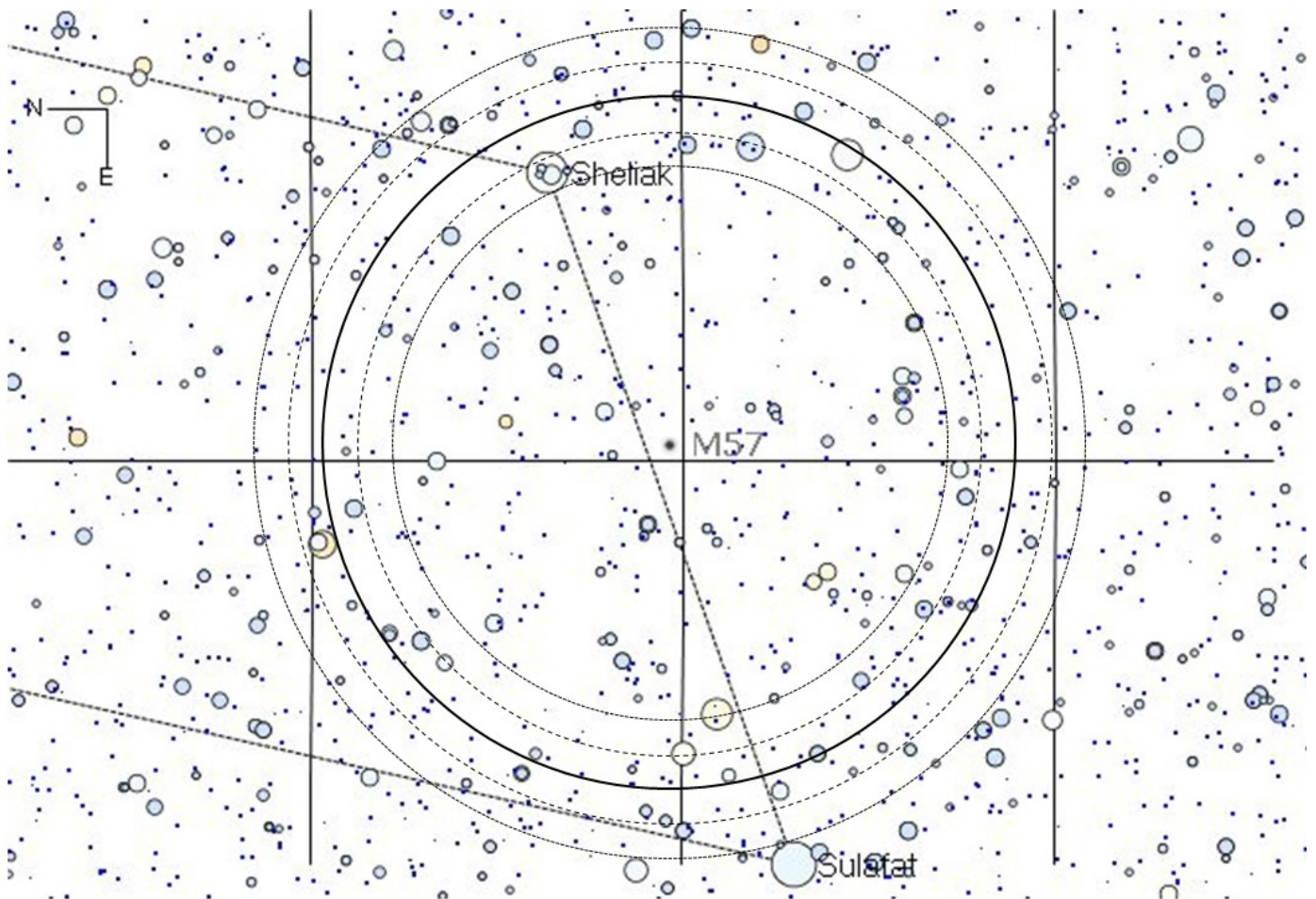
$85-95^\circ$ **3 points**
 $80-100^\circ$ **2 points**
 $75-105^\circ$ **1 point**

NO - TASK 3: SURROUNDING OF M57 (RING NEBULA)

TOTAL: 10 points

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. **(0 - 4 points)**

Field of view (in 25 mm eyepiece):



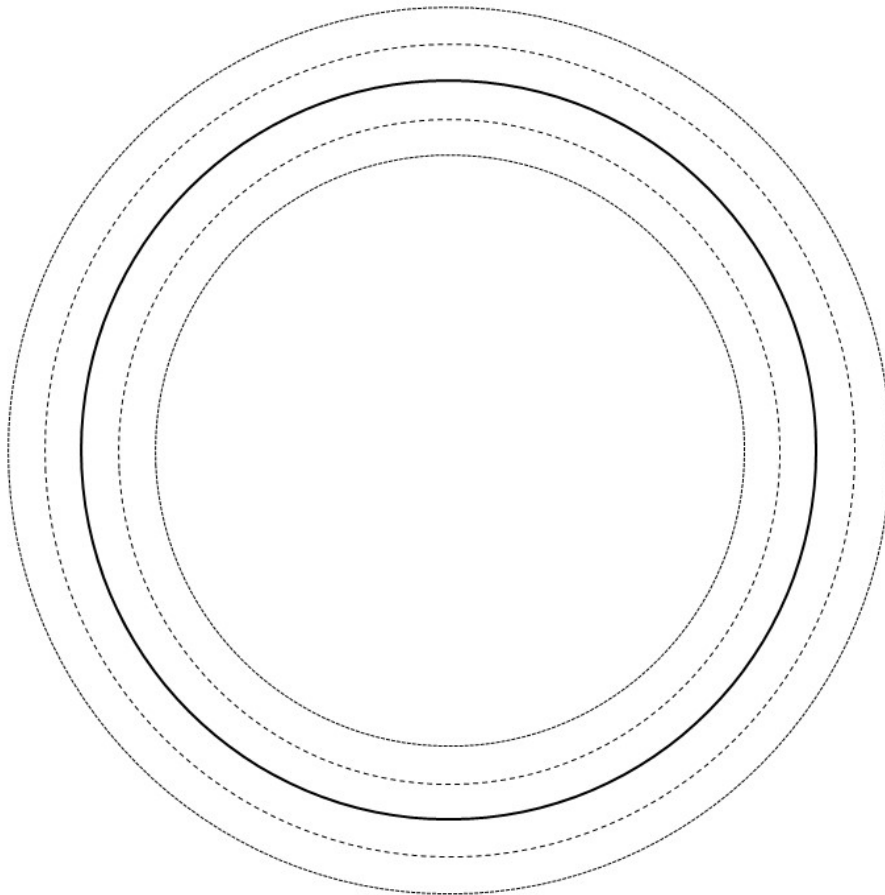
Accuracy within $\pm 10\%$: **6 points**

Accuracy within $\pm 20\%$: **3 points**

NO - TASK 3: **TRANSPARENT TEMPLATE FOIL FOR TASK 3**

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. **(0 - 4 points)**

Field of view (in 25 mm eyepiece):



Accuracy within $\pm 10\%$: **6 points**

Accuracy within $\pm 20\%$: **3 points**

NO - TASK 4: VISUAL MAGNITUDE ESTIMATION OF AF CYGNI **TOTAL: 15 p**

Checking the object in the FOV, and pointing is evaluated by the telescope assistant. **(0 - 8 points)**

Brightness estimation:

mag	Date, time:	UTC
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- Magnitude ± 0.2 mag: **6 points**
- Magnitude ± 0.3 mag: **4 points**
- Magnitude ± 0.4 mag: **2 points**

Time in UTC (if corrected for Summer Time and Time Zone differences): **1 point**

Reference estimation: according to 3 independent visual amateur observations during the night.

NO - TASK 5: NAKED EYE MAGNITUDE ESTIMATION OF 2 STARS **TOTAL: 5 p**

Brightness estimation of STAR 2: 4.3 mag (zeta UMi)

Brightness estimation of STAR 1: 3.0 mag (gamma UMi)

- Values within ± 0.2 mag: **2-2 points**
- Values within ± 0.3 mag: **1-1 point**

Angular distance estimation between γ UMi and Polaris: 19°

Values within $\pm 3^\circ$: **1 point**