

# Finder Charts for the Southern High Mass X-Ray Binary Photometry Project

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Finder charts for 7 southern objects taken from Liu *et al.* [1] are given in the following pages. These objects were chosen because they are southern hemisphere high mass X-ray binaries (HMXB) with unknown orbital periods and with  $11 < V < 14$  so they may be observed with the WFI on the 40 inch SSO telescope. The HMXBs are given LPH numbers after the authors of [1]. The catalogue is available electronically at:

<http://vizier.u-strasbg.fr/cgi-bin/qcat?J/A+AS/147/25>

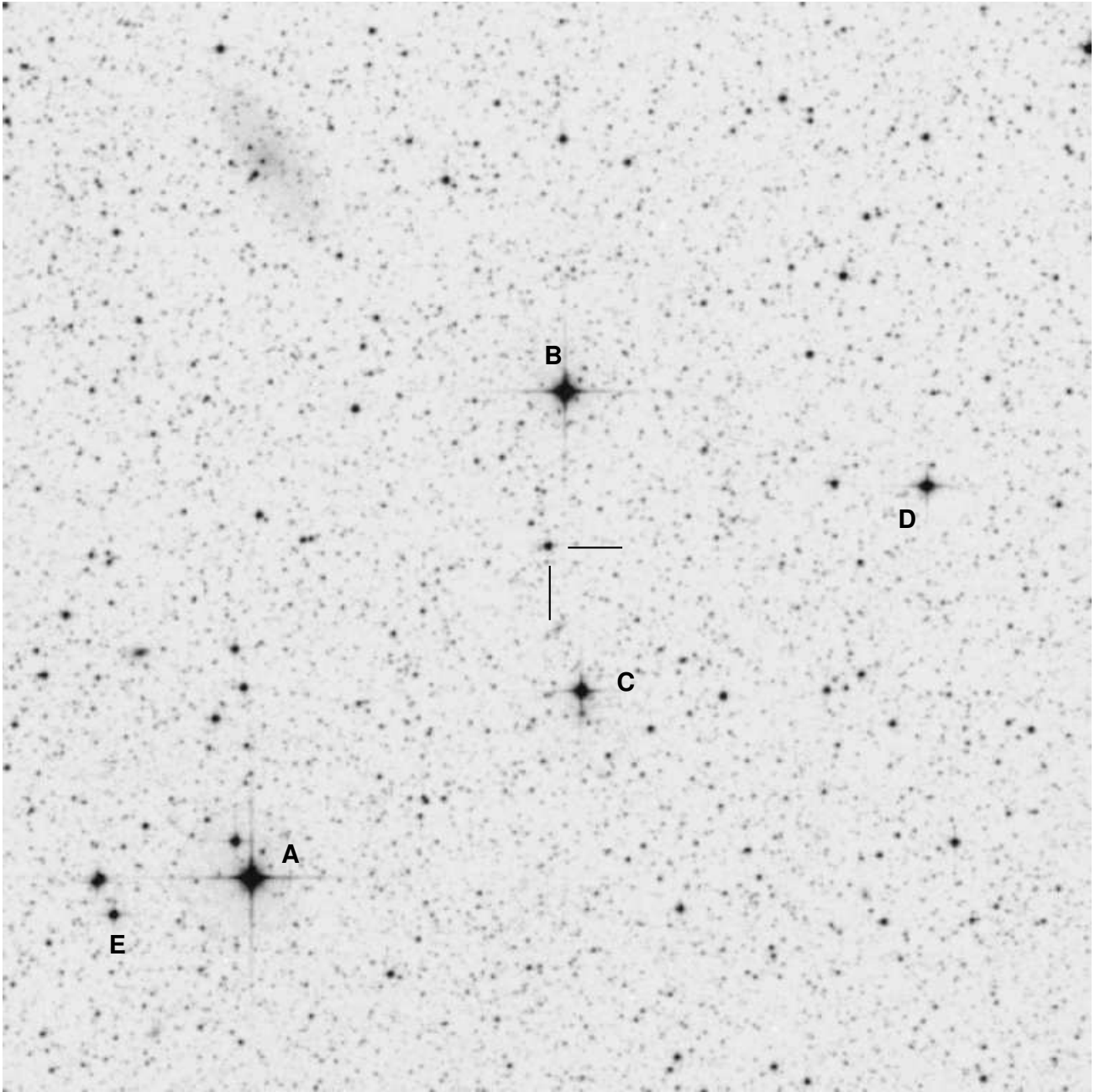
Each chart consists of a DSS image for the identification of the high mass x-ray binary object in a CCD image plus reference star data taken from the SIMBAD database. *Note that the reference stars are not necessarily good comparison stars.* Indeed some are known variables. The reference stars simply represent the available SIMBAD information about the fields given. The identification of each reference star was confirmed by plotting a DSS image centered on the coordinates given by SIMBAD. The determination of a good set of comparison stars is yet to be done.

On the reverse of each finder chart (these charts are meant to be printed double sided) is a visual finder chart produced using the `starchart` software. The visual chart is produced for reference only for broader orientation.

## References

- [1] Liu QZ, van Paradijs, van den Heuvel. *Astron. Astrophys. Suppl. Ser.* 147:25-49 (2000)

# J0532.5-6551 (Sk -65 66) (LPH046)



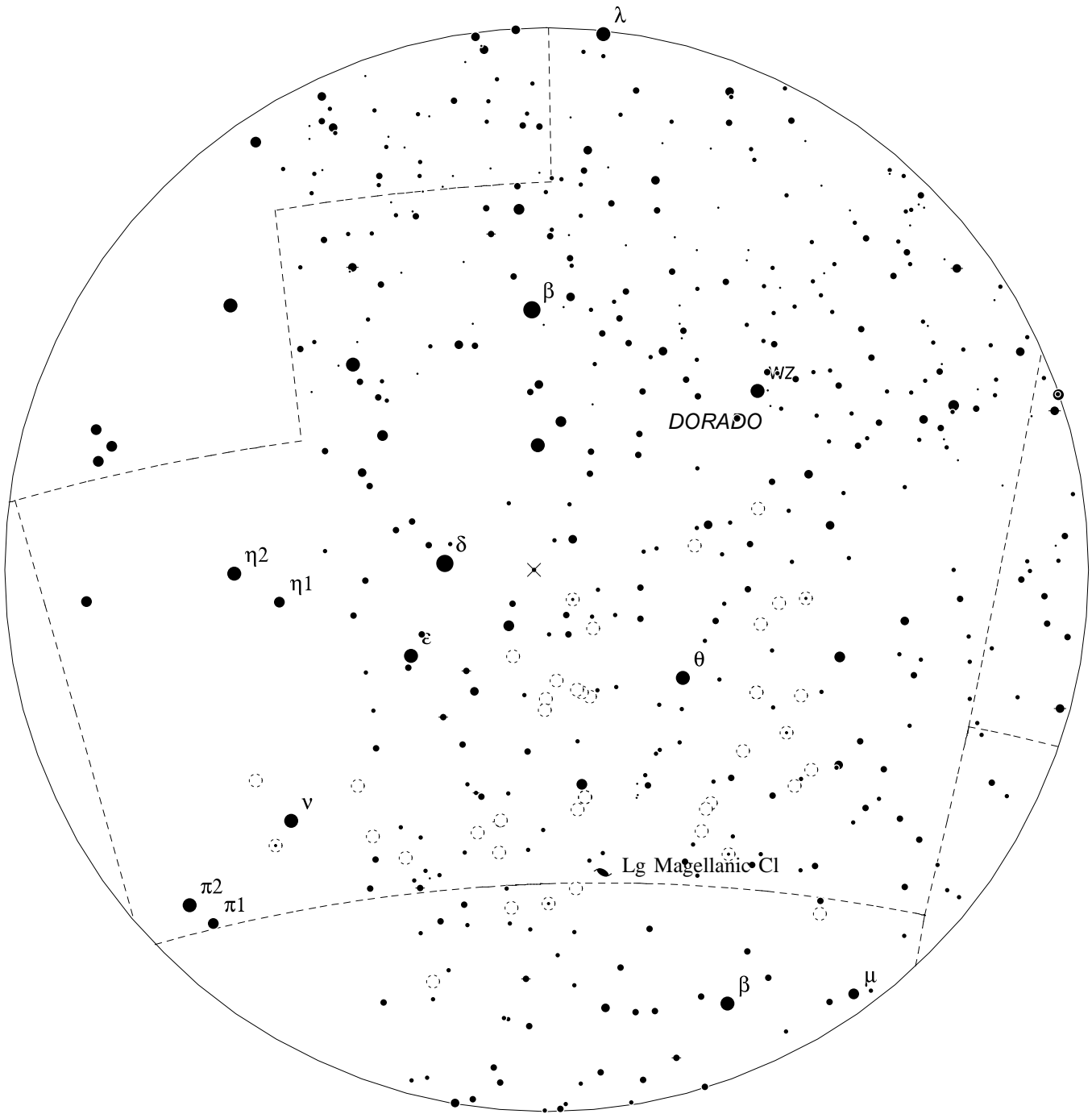
J0532.5-6551:  $05^h32^m32^s.64$   $-65^\circ51'40''.8$  (J2000)  $V=12.3$   
15m ( $1/4^\circ$ ) sq field — North up. In Dorado (LMC), Uranometria 445.

Position from: SIMBAD

OB, BHC?, LPH references are to LPH041, not this star.

## Reference star data from SIMBAD

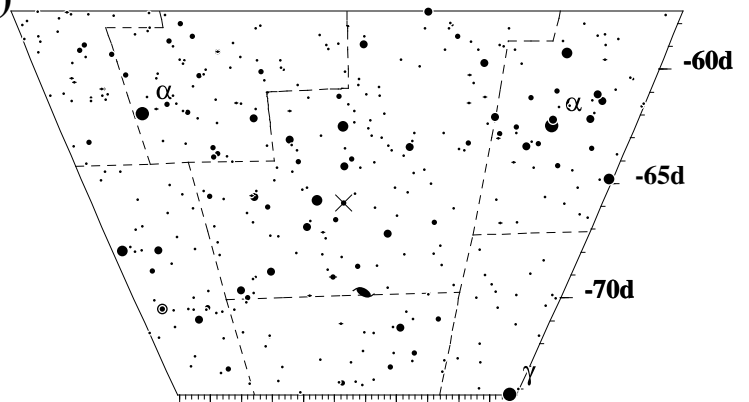
Ref Star	ID	RA	Dec	B	V
A	HD 37379	05 33 09.04	-65 56 32.2	8.86	8.42
B	HD 37298	05 32 31.98	-65 49 32.2	10.97	9.78
C	HD 271341	05 32 26.60	-65 53 37.6	11.6	10.7
D	HD 271333	05 31 42.51	-65 50 26.2	11.4	11.0
E	ARDB 530	05 33 29	-65 57.1	13.22	12.43



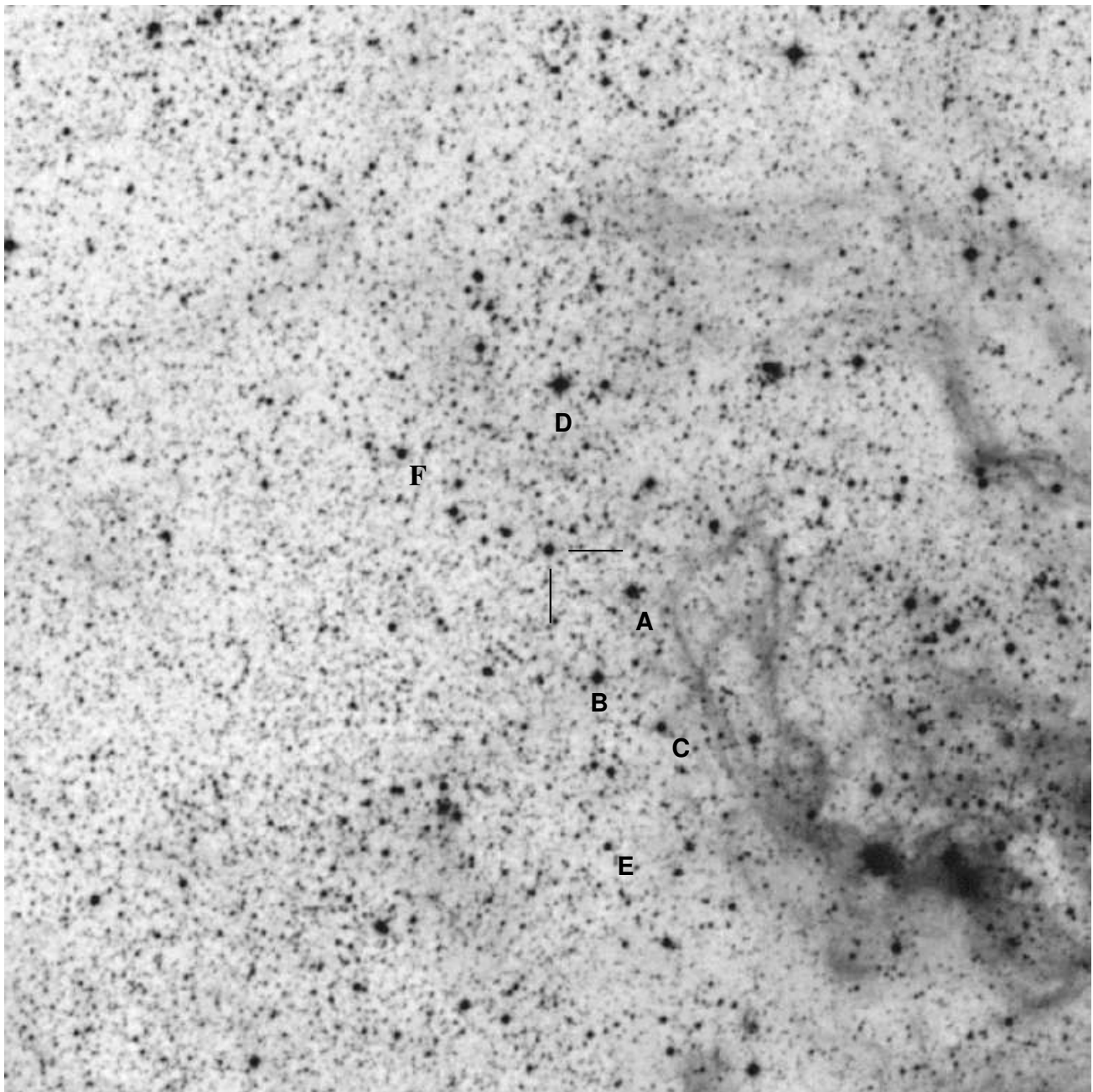
**J0532.5-6551 (Sk -65 66) (LPH046)**

( 5h32m,-65d51m lim: 11.0)

- |     |      |     |
|-----|------|-----|
| ● 3 | ● 4  | ● 5 |
| ● 6 | ● 7  | ● 8 |
| ● 9 | ● 10 |     |
- 
- |           |              |            |
|-----------|--------------|------------|
| ⊕ Planet  | ● double     | ○ variable |
| ⊙ Cluster | × Asteroid   | ☄ Comet    |
| ◇ Nebula  | ⊛ Globular   | ○ Open     |
| ◆ Galaxy  | ♁ Planetary  | ◇ Diffuse  |
| ⊙ Unknown | ● Elliptical | ◇ Spiral   |
|           | ⊗ Other      | ★ Quasar   |



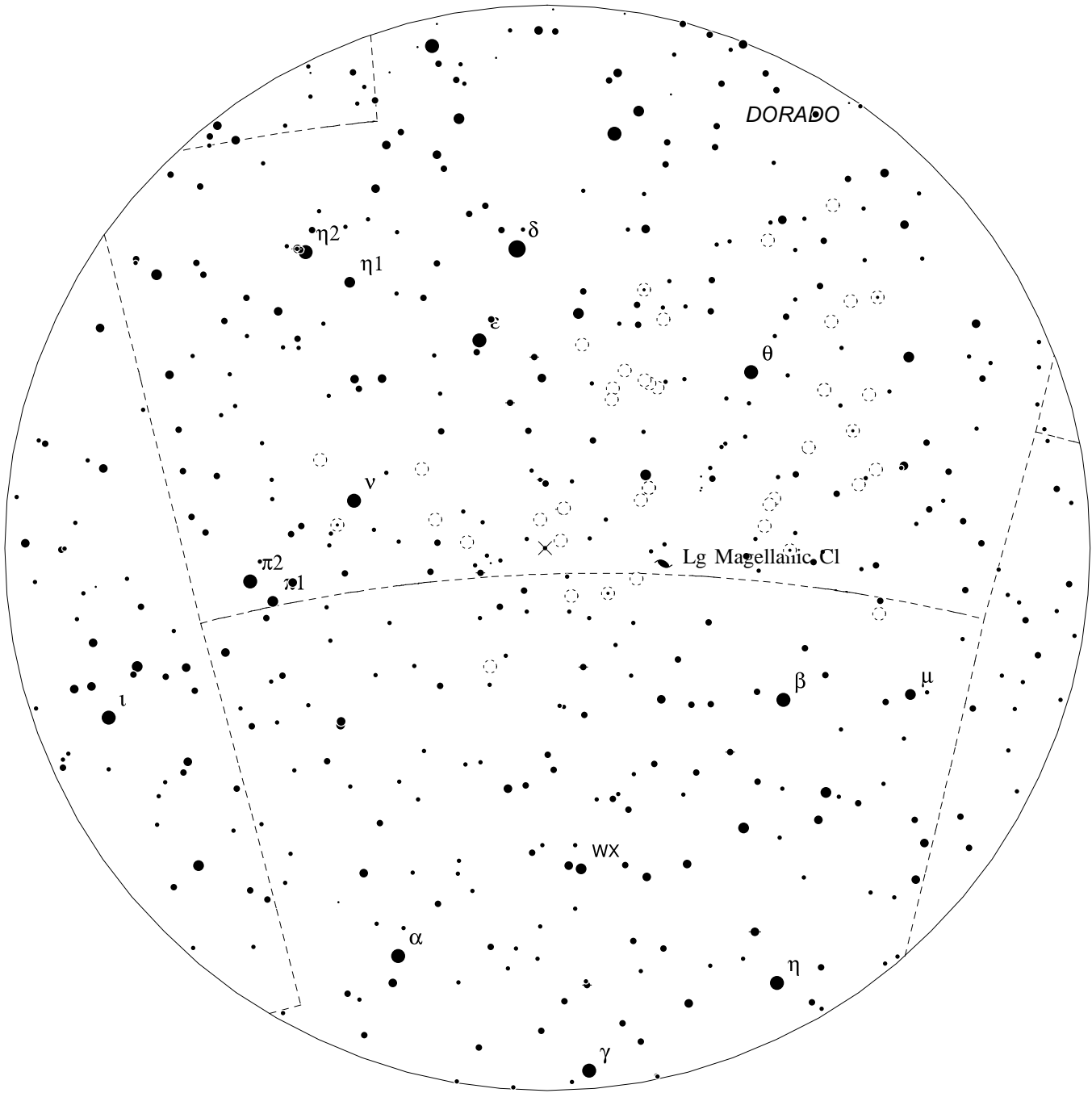
**J0541.4-6936 (Sk -69 271, GSC 09167-00578)  
(LPH053)**



J0541.4-6936:  $05^h41^m20^s.15 -69^\circ36'23''.3$  (J2000)  $V=12.3$   
 15m ( $1/4^\circ$ ) sq field — North up. Dorado (LMC) near Tarantula Neb, Uranometria 445.  
 Position from: SIMBAD, B2 supergiant

Reference star data from SIMBAD

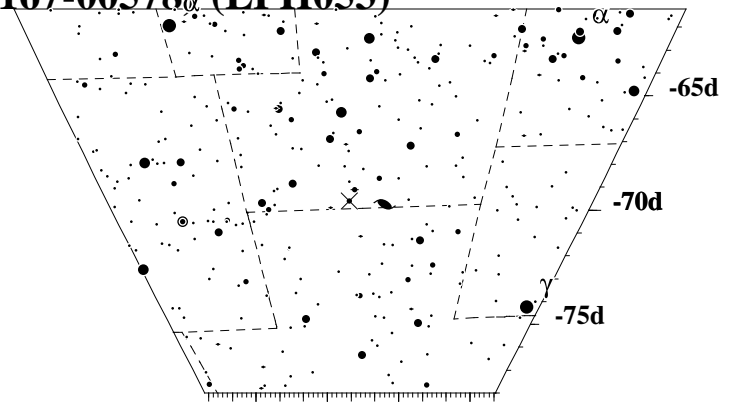
Ref Star	ID	RA	Dec	B	V
A	HD 269978	05 41 06	-69 36.9	11.98	11.536
B	2MASS J05411066-6938040	05 41 10.63	-69 38 03.8	14.3	12.5
C	GEN# +8.58690268	05 41.0	-69 39	12.59	12.60
D	HD 269991	05 41 20.72	-69 34 06.0	10.86	10.5
E	GEN# +8.58690269	05 41.1	-69 41	13.51	13.58
F	[BE74] 619	05 41.7	-69 35	12.802	12.768



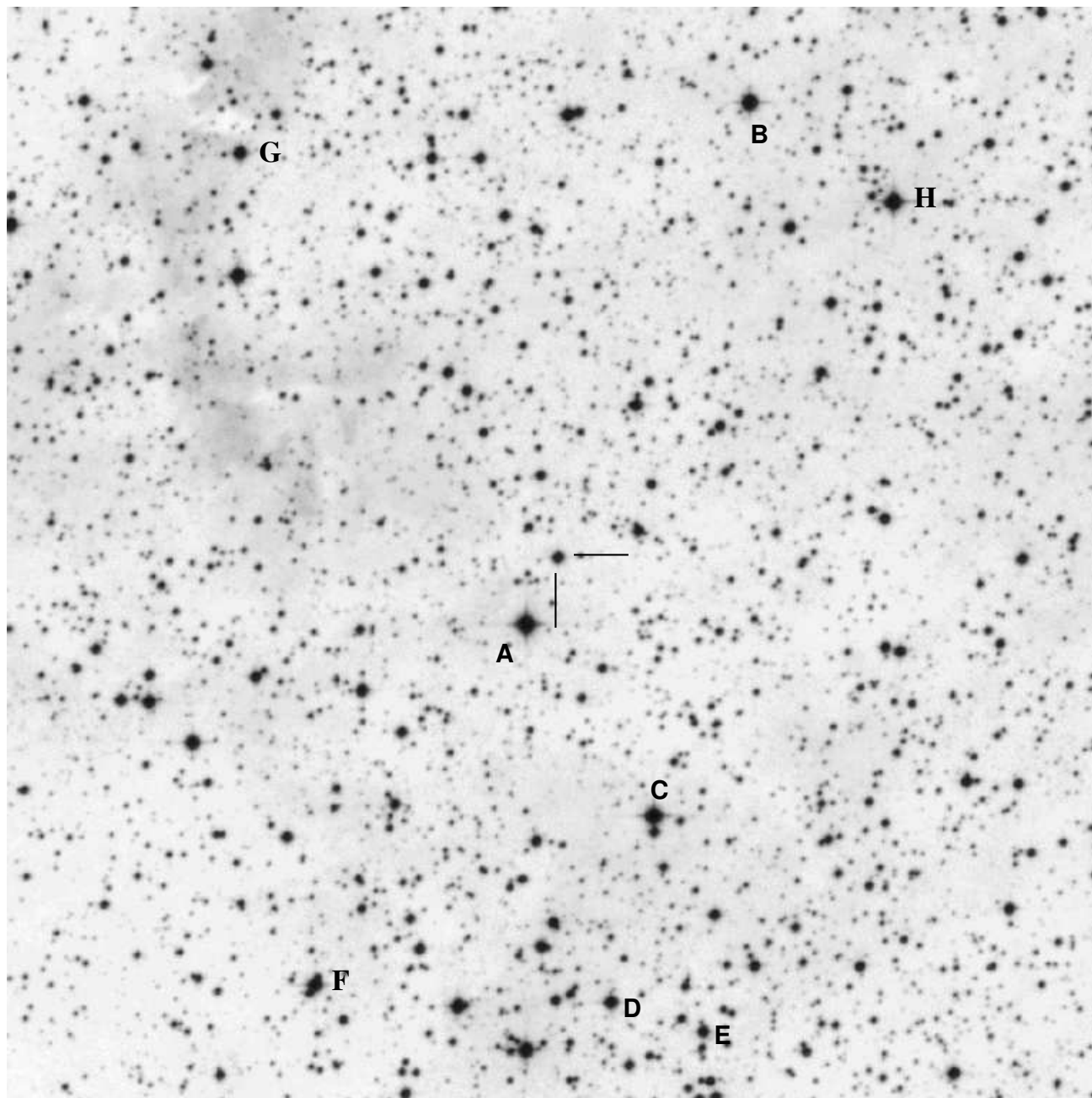
**J0541.4-6936 (Sk -69 271, GSC 09167-00578) (LPH053)**

( 5h41m,-69d35m lim: 11.0)

- |     |      |     |
|-----|------|-----|
| ● 3 | ● 4  | ● 5 |
| ● 6 | ● 7  | ● 8 |
| ● 9 | ● 10 |     |
- 
- |           |              |            |
|-----------|--------------|------------|
| ⊕ Planet  | ● double     | ○ variable |
| ⊙ Cluster | × Asteroid   | ☄ Comet    |
| ◇ Nebula  | ⊛ Globular   | ○ Open     |
| ● Galaxy  | ⊕ Planetary  | ◇ Diffuse  |
| ?         | ● Elliptical | ◇ Spiral   |
|           | ⊗ Other      | ★ Quasar   |



# 1024.0-5732 (Wack 2134, GSC 08608-00157) (LPH067)



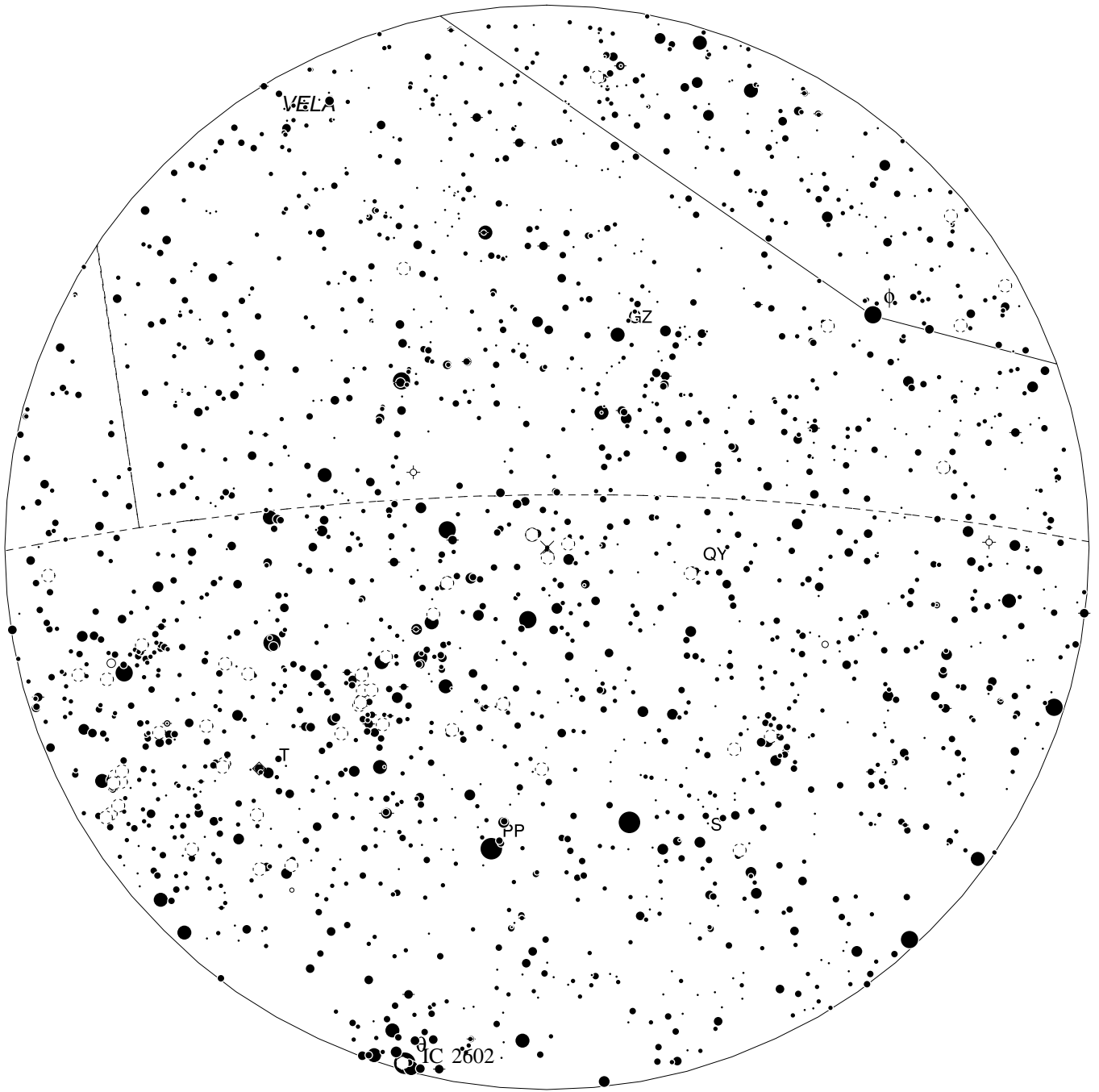
1024.0-5732:  $10^h25^m56^s.49$   $-57^\circ48'44''.4$  (J2000)  $V=12.7$

15m ( $1/4^\circ$ ) sq field — North up. In Carina, Uranometria 426.

Position from Wackerling's Catalog: <http://vizier.cfa.harvard.edu/viz-bin/VizieR?-source=III/17B/>  
and SIMBAD under NAME WACK 2134; Wolf-Rayet + O star? 61 ms X-Ray pulsar

## Reference star data from SIMBAD

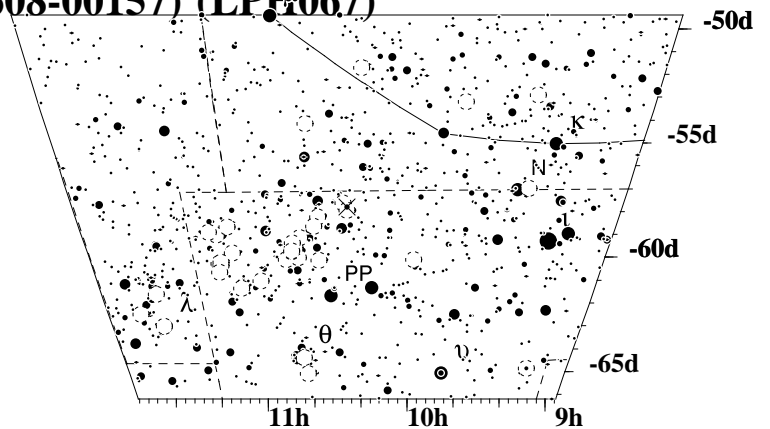
Ref Star	ID	RA	Dec	B	V
A	HD 90578	10 26 00.19	-57 49 37.0	9.40	9.38
B	HD 90521	10 25 34.00	-57 42 40.3	10.06	9.95
C	HD 90552	10 25 48.27	-57 52 20.3	10.11	9.81
D	HD 302760	10 25 53.82	-57 54 51.4	11.3	
E	GSC 08608-00153	10 25 44.45	-57 55 19.4	11.6	11.0
F	CPD-57 3216	10 26 23.9	-57 54 24	11.4	
G	HD 302843	10 26 26.53	-57 42 56.1	11.6	
H	HD 302751	10 25 19.83	-57 44 09.0	11.1	10.1



### 1024.0-5732 (Wack 2134, GSC 08608-00157) (LP#1067)

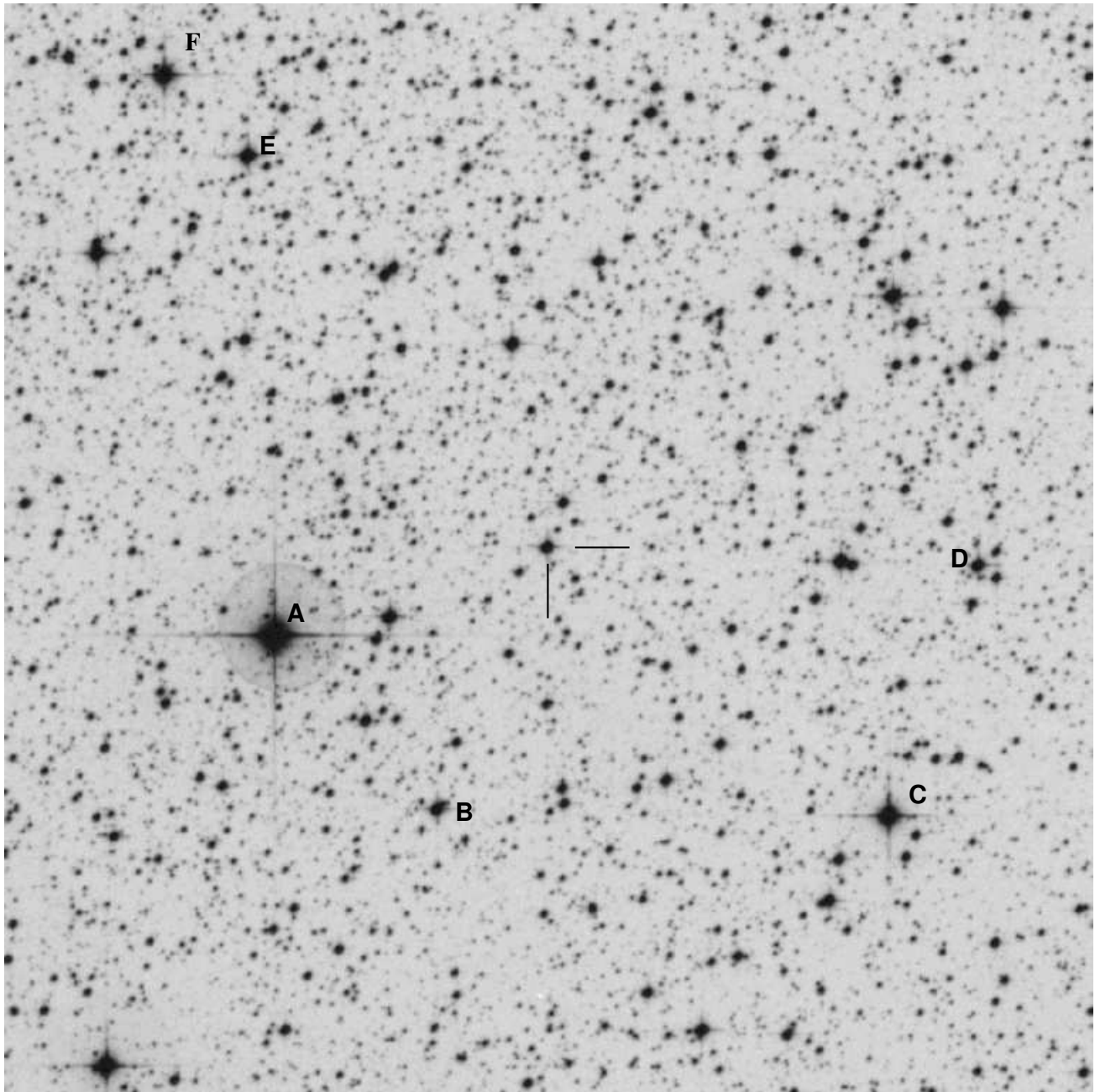
(10h26m,-57d47m lim: 11.0)

- |     |     |      |
|-----|-----|------|
| ● 2 | ● 3 | ● 4  |
| ● 5 | ● 6 | ● 7  |
| ● 8 | ● 9 | ● 10 |
- 
- |           |              |            |
|-----------|--------------|------------|
| ⊕ Planet  | ● double     | ○ variable |
| ⊖ Cluster | × Asteroid   | ☾ Comet    |
| ◇ Nebula  | ⊙ Globular   | ○ Open     |
| ◆ Galaxy  | ⊕ Planetary  | ◇ Diffuse  |
| ?         | ● Elliptical | ◆ Spiral   |
|           | ⊗ Other      | ★ Quasar   |





# J1037.5-5647 (LS 1698, AAVSO 1033-56) (LPH069)



J1037.5-5647:  $10^h37^m35^s.2$   $-56^\circ47'59''$  (J2000) V=12.3

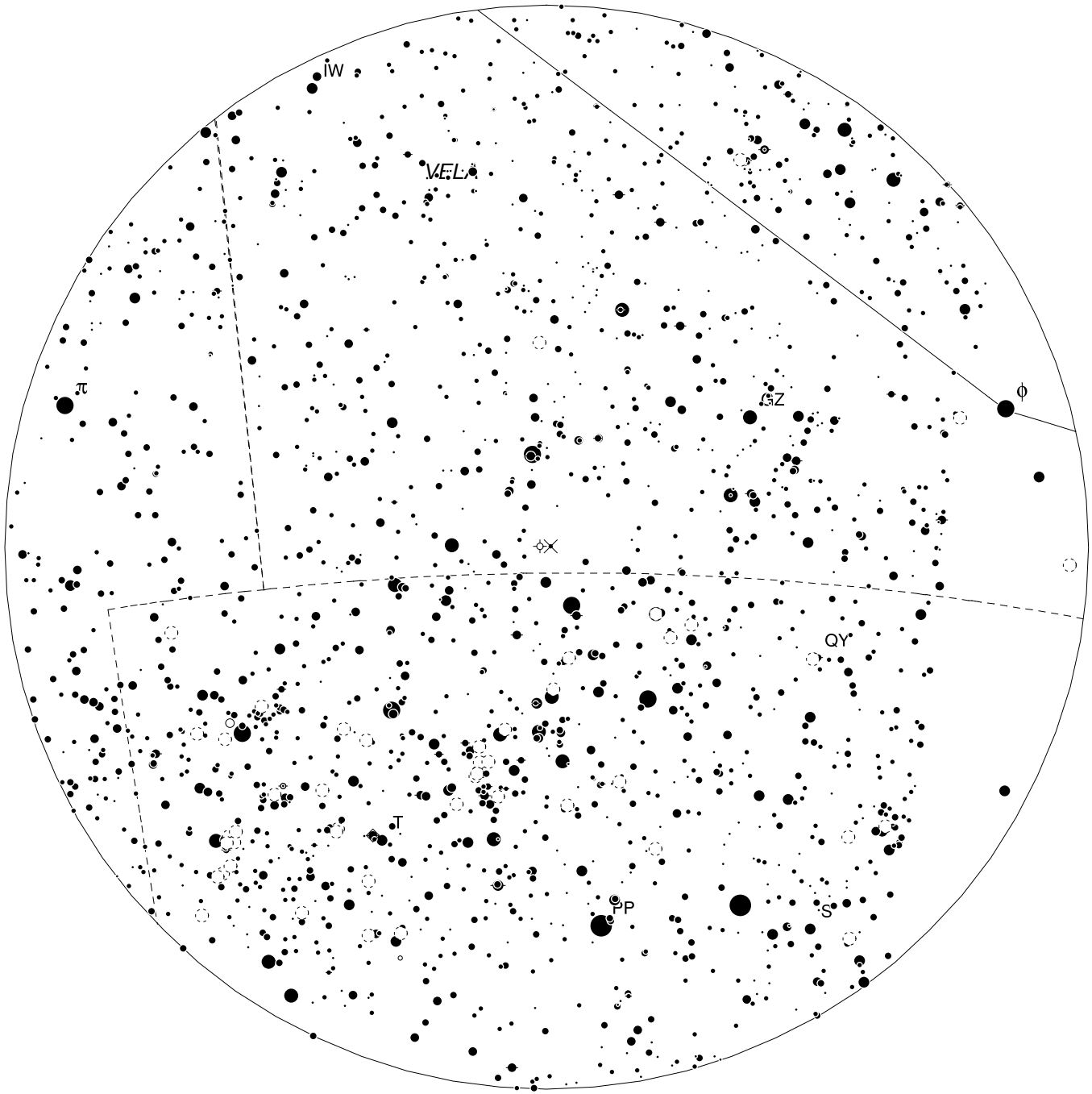
15m ( $1/4^\circ$ ) sq field — North up. In Vela, Uranometria 427.

Position from: Motch et al., *Astron. Astrophys.* 323, 853-875, 1997.

B0V-IIIe, Probably same as LPH068 = 4U1036-56

## Reference star data from SIMBAD

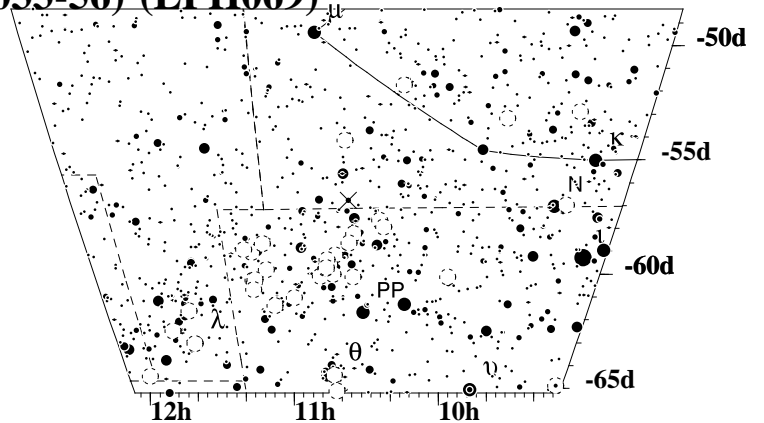
Ref Star	ID	RA	Dec	B	V
A	HD 300933	10 38 02.98	-56 49 02.0	10.09	8.33
B	GSC 08609-01982	10 37 47.17	-56 51 29.2	11.5	11.0
C	HD 300864	10 37 01.72	-56 51 45.4	10.63	9.31
D	HD 300863	10 36 52.05	-56 48 20.9	11.4	11.0
E	HD 303137	10 38 04.16	-56 42 26.0	11.4	10.6
F	HD 300915	10 38 12.28	-56 41 17.4	10.67	9.59



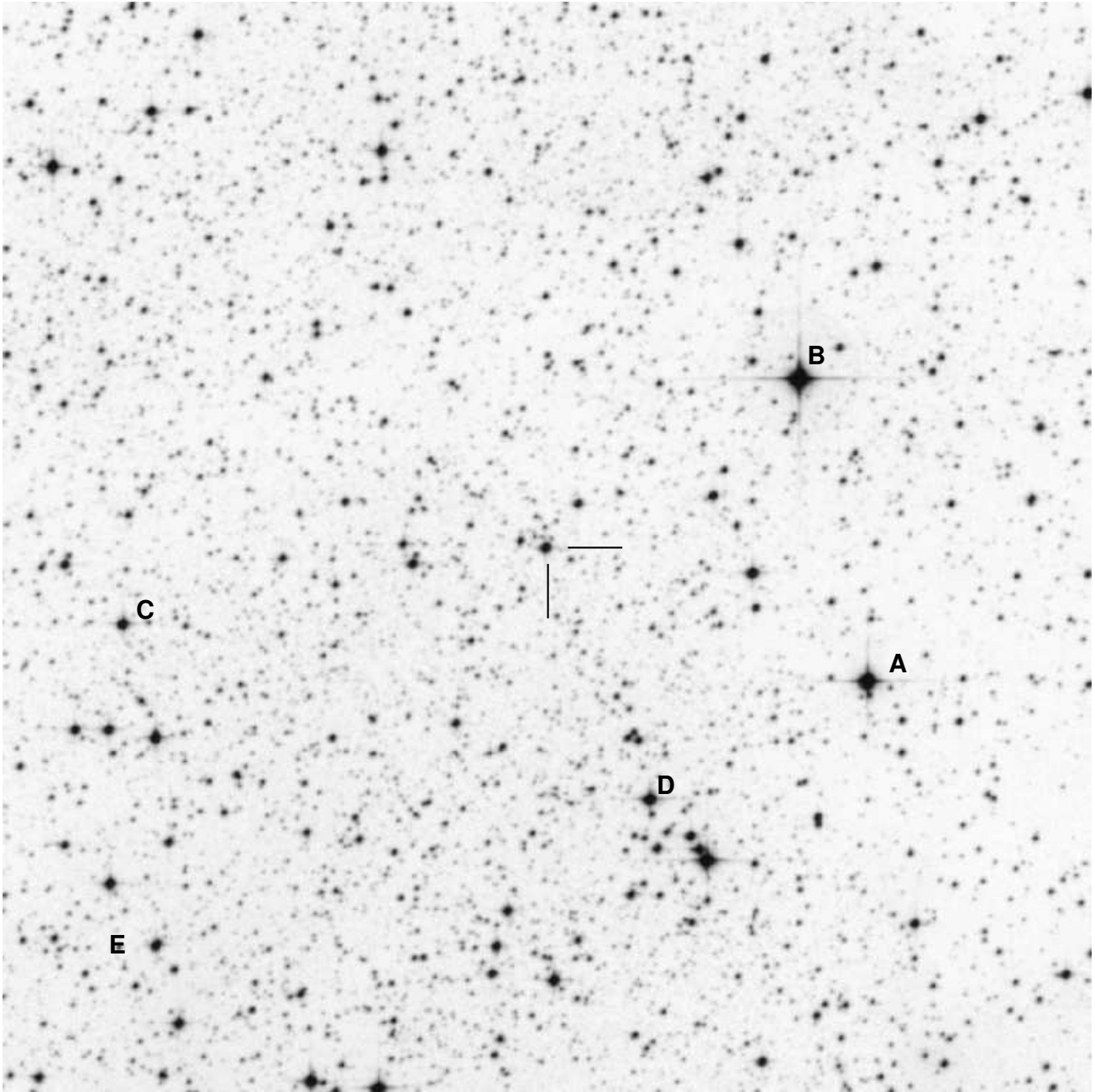
### J1037.5-5647 (LS 1698, AAVSO 1033-56) (LPH069)

(10h38m, -56d47m lim: 11.0)

- |     |     |      |
|-----|-----|------|
| ● 2 | ● 3 | ● 4  |
| ● 5 | ● 6 | ● 7  |
| ● 8 | ● 9 | ● 10 |
- 
- |           |              |            |
|-----------|--------------|------------|
| ⊕ Planet  | ● double     | ○ variable |
| ⊖ Cluster | × Asteroid   | ☾ Comet    |
| ◇ Nebula  | ⊙ Globular   | ○ Open     |
| ◆ Galaxy  | ♁ Planetary  | ◇ Diffuse  |
| ⊙ Unknown | ● Elliptical | ◆ Spiral   |
|           | ⊗ Other      | ★ Quasar   |



# 1118-615 (He3-640) (LPH071)



1118-615:  $11^h20^m57^s.21$   $-61^\circ55'00''.3$  (J2000)  $V=12.1$

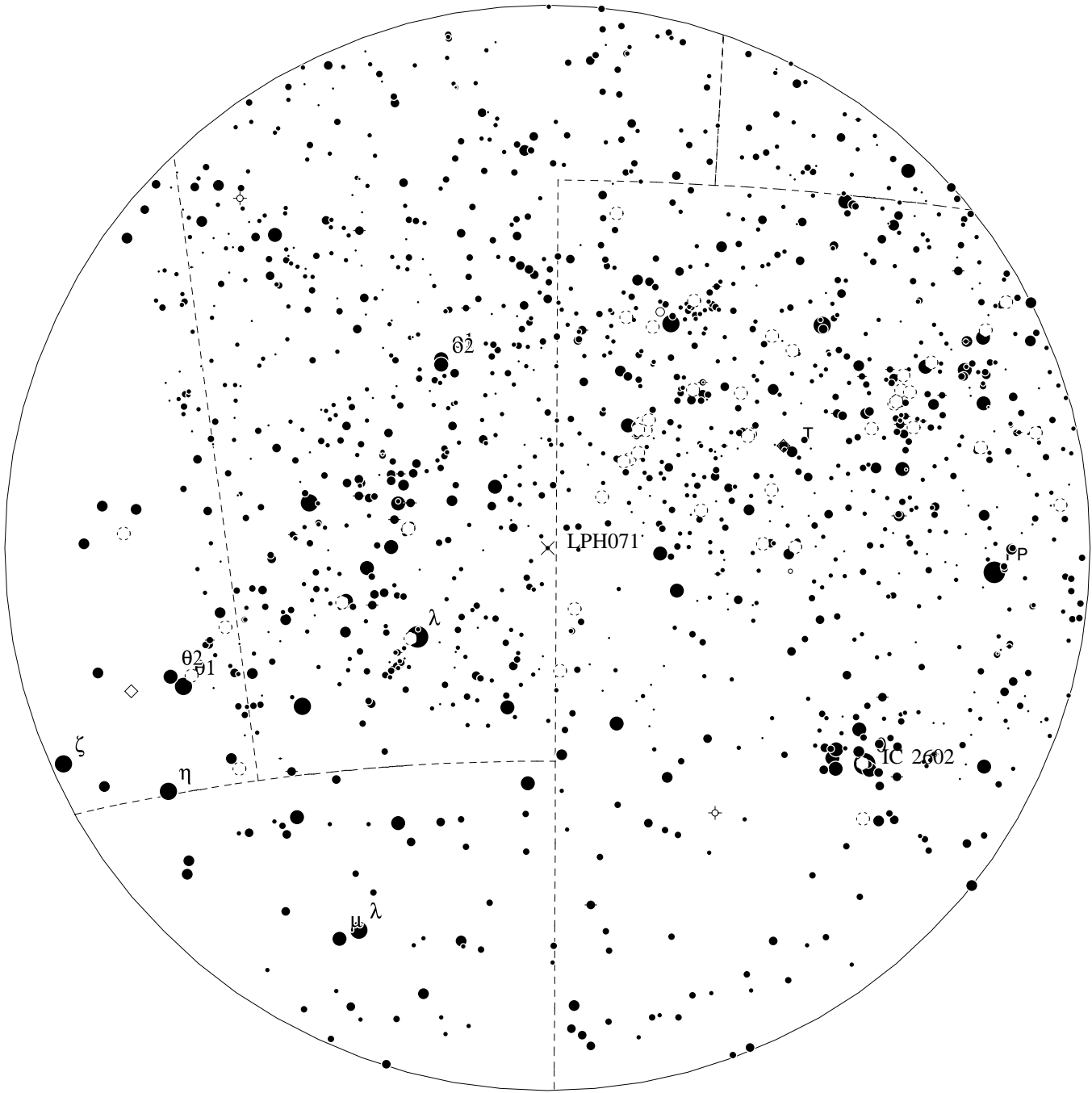
15m ( $1/4^\circ$ ) sq field — North up.

On Centaurus-Carina border, Uranometria 449 (marked as He3-640).

Position from: SIMBAD (WRAY 15-793, Hen 3-640); O9.5 III-Ve (fast rotating Be star)

## Reference star data from SIMBAD

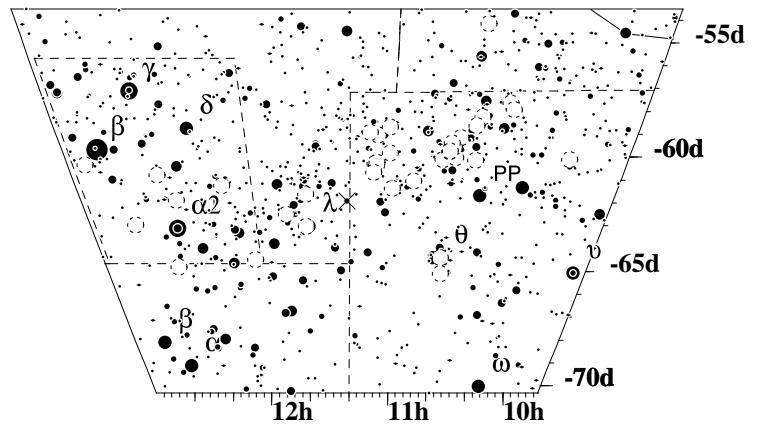
Ref Star	ID	RA	Dec	B	V
A	HD 98670	11 20 19.19	-61 56 44.9	10.64	9.41
B	HD 98678 (RS Cen - Mira variable)	11 20 27.89	-61 52 36.8	10.9	9.24
C	HD 308430	11 21 46.41	-61 56 08.8	11.0	
D	HD 308431	11 20 44.37	-61 58 25.0	9.6	



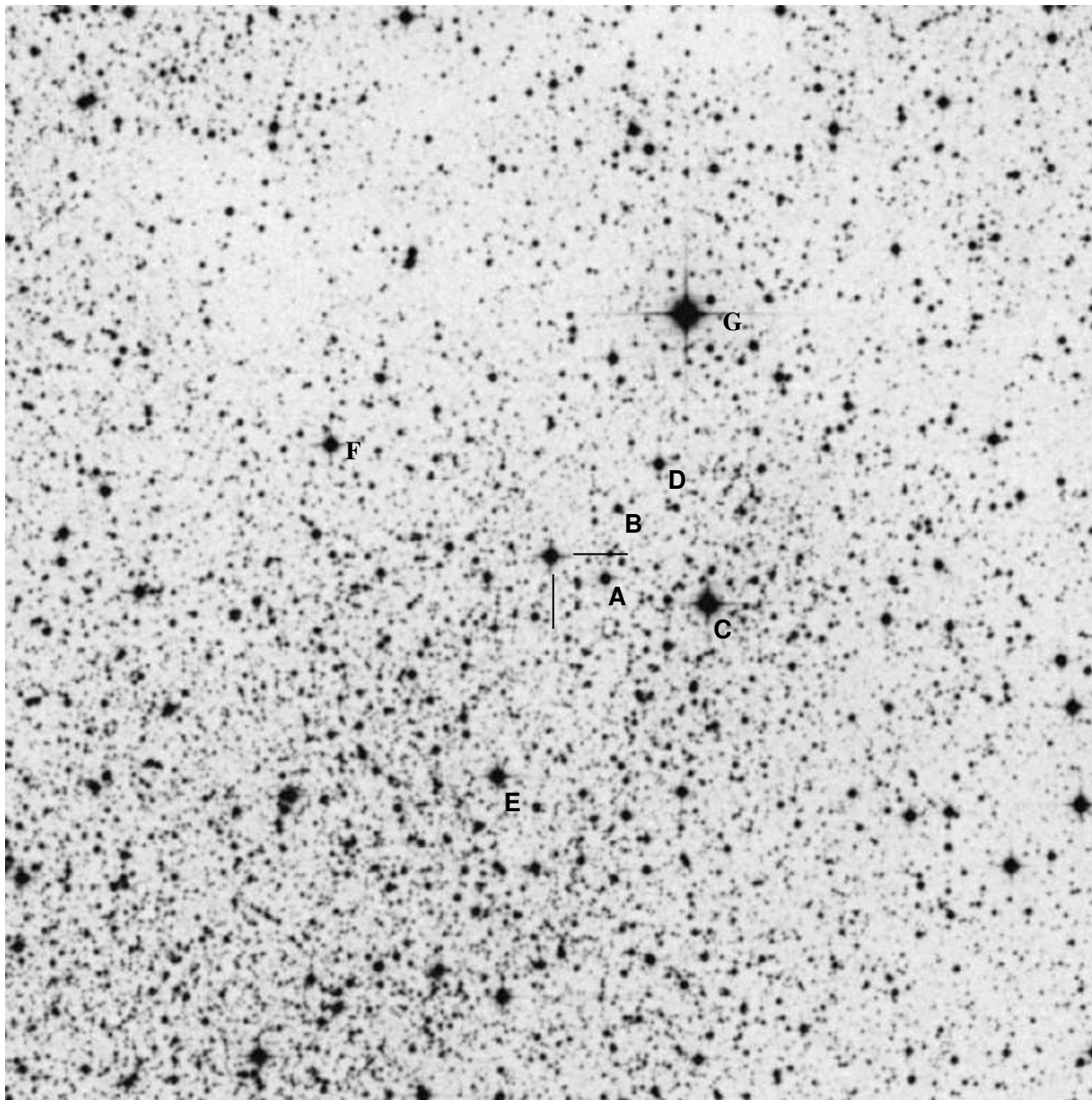
### 118-615 (He3-640) (LPH071)

(11h21m, -61d54m lim: 11.0)

- |     |     |      |
|-----|-----|------|
| ● 2 | ● 3 | ● 4  |
| ● 5 | ● 6 | ● 7  |
| ● 8 | ● 9 | ● 10 |
- 
- |           |              |            |
|-----------|--------------|------------|
| ⊕ Planet  | ● double     | ○ variable |
| ⊙ Cluster | × Asteroid   | ☾ Comet    |
| ◇ Nebula  | ⊛ Globular   | ○ Open     |
| ◆ Galaxy  | ⊕ Planetary  | ◇ Diffuse  |
| ⊙ Unknown | ● Elliptical | ◆ Spiral   |
|           | ⊗ Other      | ★ Quasar   |



# J1826.2-1450 (LS 5039) (LPH100)

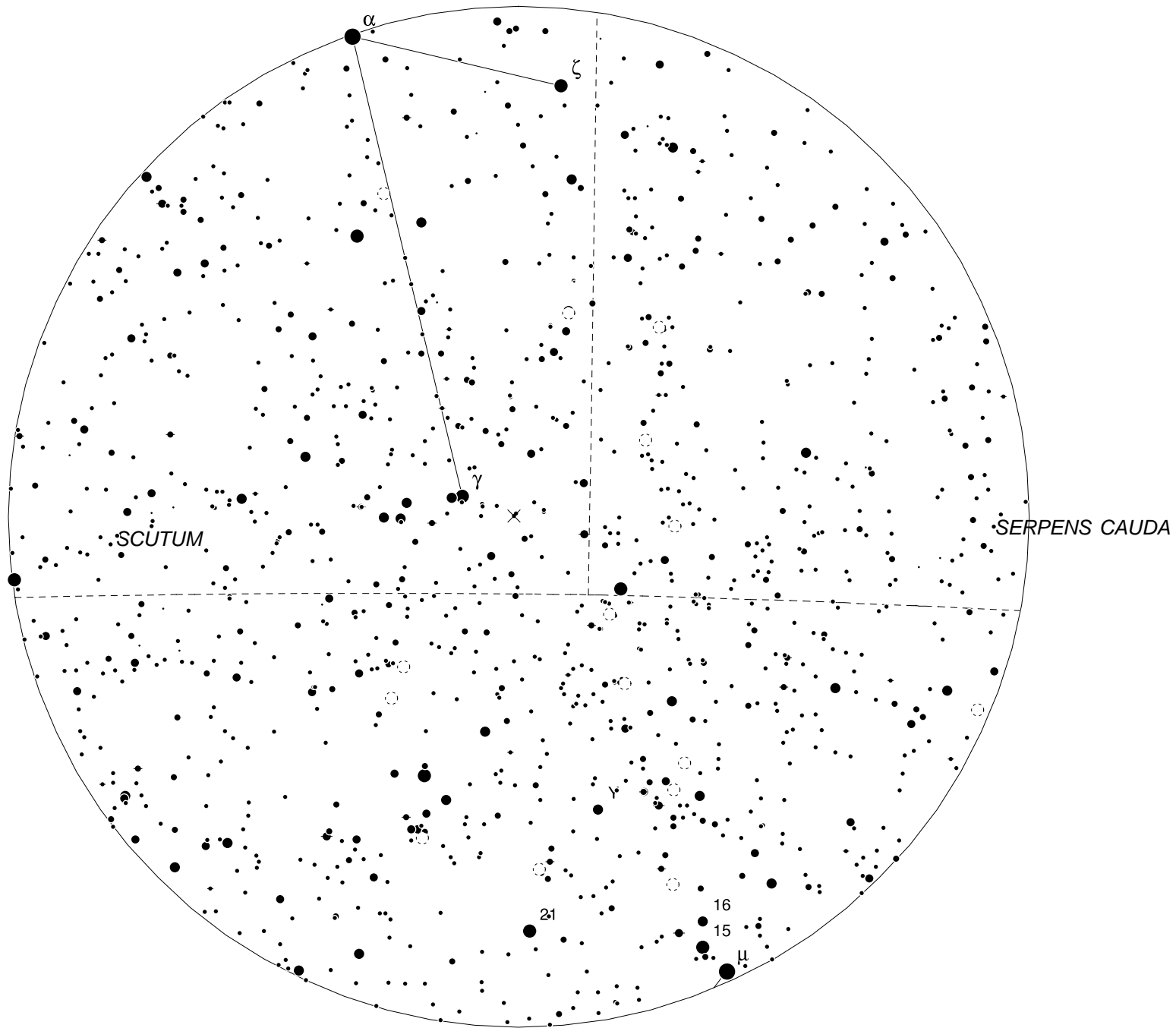


J1826.2-1450:  $18^h26^m15^s.03$   $-14^\circ50'53''.6$  (J2000)  $V=11.23$   
 15m ( $1/4^\circ$ ) sq field — North up. In Scutum near Sagittarius-Serpens Cauda border,  
 Uranometria 294.

Position from: SIMBAD;  $\gamma$ -ray-emitting persistent microquasar, O7V((f))

## Reference star data from SIMBAD

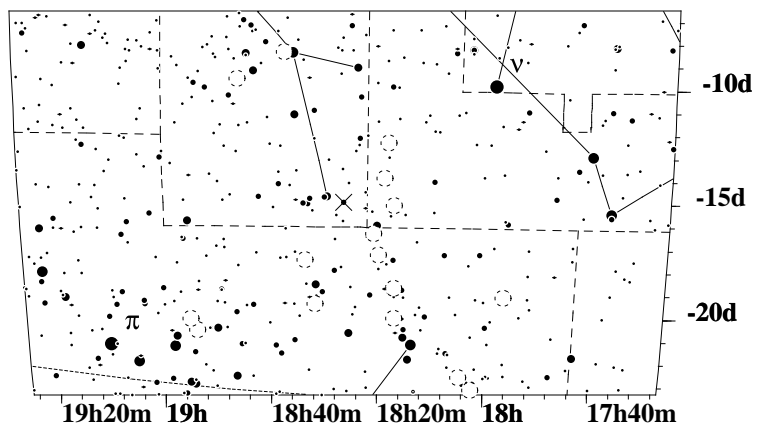
Ref Star	ID	RA	Dec	B	V
A	USNO-A2.0 0750-13157934	18 26 11.97	-14 51 12.1	14.6	13.7
B	USNO-A2.0 0750-13157416	18 26 11.23	-14 50 15.0	17.1	15.5
C	USNO-A2.0 0750-13153701	18 26 06.11	-14 51 33.6	12.2	11.6
D	USNO-A2.0 0750-13155723	18 26 08.92	-14 49 38.3	13.4	12.7
E	USNO-A2.0 0750-13162766	18 26 18.12	-14 53 54.2	12.6	11.9
F	USNO-A2.0 0750-13170022	18 26 27.50	-14 49 21.3	13.5	12.4
G	HD 169633	18 26 07.36	-14 47 36.4	8.68	8.21



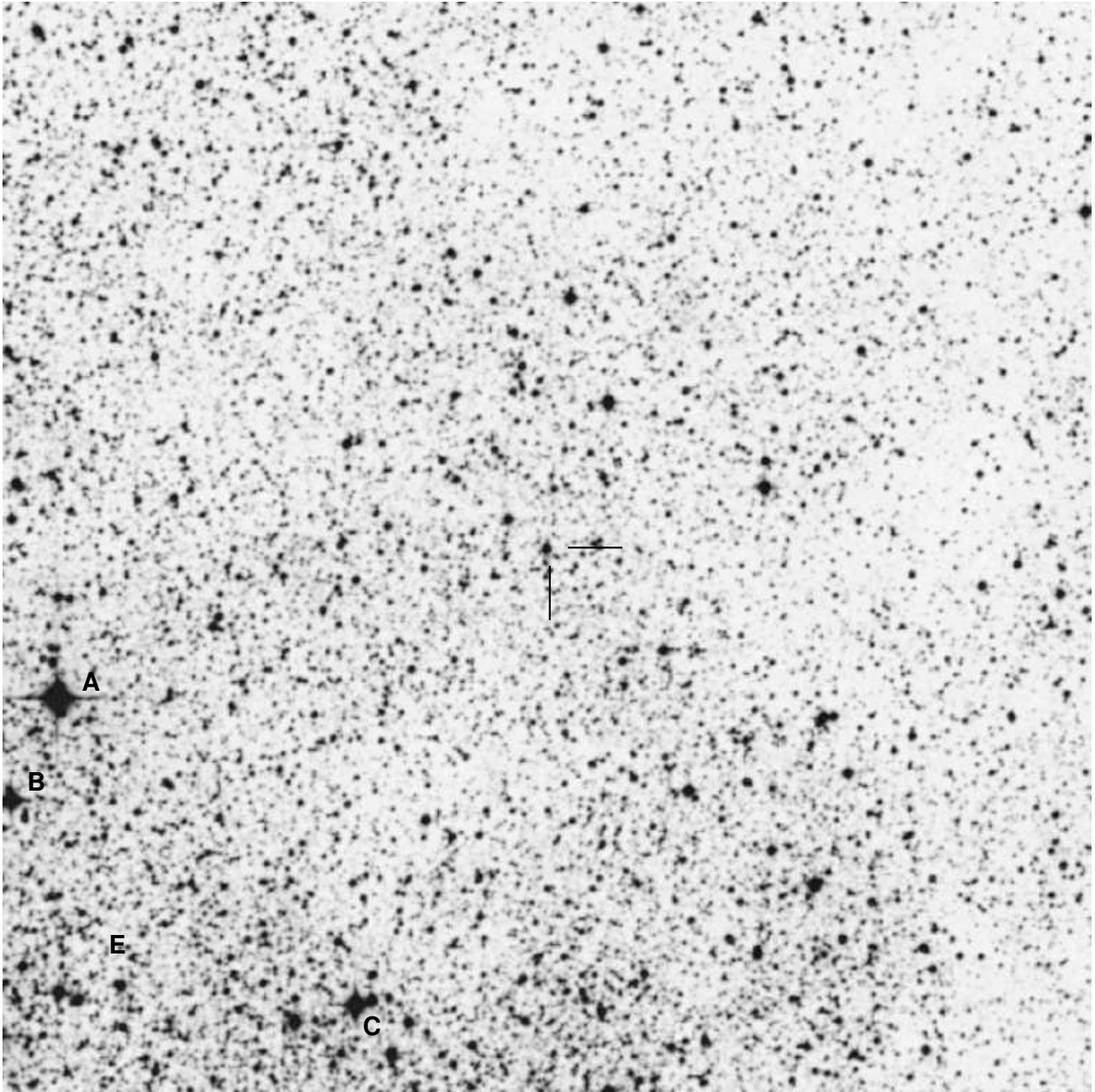
### J1826.2-1450 (LS 5039) (LPH100)

(18h26m, -14d50m lim: 11.0)

- |     |      |     |
|-----|------|-----|
| ● 3 | ● 4  | ● 5 |
| ● 6 | ● 7  | ● 8 |
| ● 9 | ● 10 |     |
- 
- |           |              |            |
|-----------|--------------|------------|
| ⊕ Planet  | ● double     | ○ variable |
| ⊖ Cluster | × Asteroid   | ☾ Comet    |
| ◇ Nebula  | ⊕ Globular   | ○ Open     |
| ◆ Galaxy  | ⊕ Planetary  | ◇ Diffuse  |
| ⊕ Unknown | ● Elliptical | ◆ Spiral   |
|           | ⊗ Other      | ★ Quasar   |



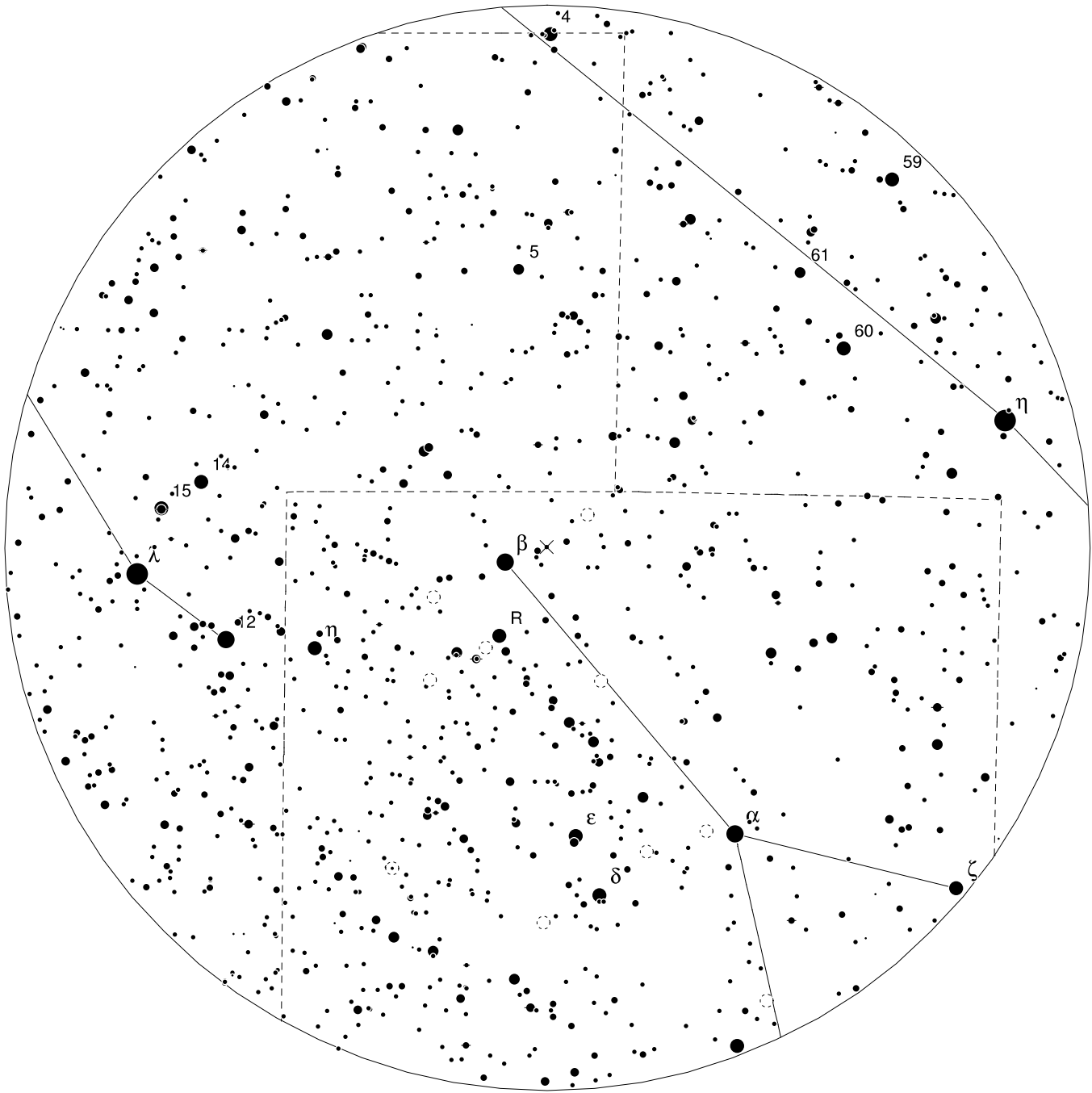
# 1845.0-0433 (AX 1845.0-0433) (LPH107)



1845.0-0433:  $18^h45^m01^s.5 -04^\circ33'55''.5$  (J2000)  $V=13.96$   
 15m ( $1/4^\circ$ ) sq field — North up. In northern Scutum, Uranometria 250.  
 Position from: Coe MJ et al. MNRAS 281, 333-338, 1996.  
 O9.5I

## Reference star data from SIMBAD

Ref Star	ID	RA	Dec	B	V
A	HD 173438	18 45 28.62	-04 35 58.7	8.91	8.26
B	BD-04 4576 (GSC 05122-00604)	18 45 31.16	-04 37 23.4	10.8	10.2
C	HD 173385 (GSC 05122-00150)	18 45 12.16	-04 40 12.5	10.55	9.92



### 1845.0-0433 (AX 1845.0-0433) (LPH107)

(18h45m, -04d33m lim: 11.0)

- |     |     |      |
|-----|-----|------|
| ● 2 | ● 3 | ● 4  |
| ● 5 | ● 6 | ● 7  |
| ● 8 | ● 9 | ● 10 |
- 
- |           |              |            |
|-----------|--------------|------------|
| ⊕ Planet  | ● double     | ○ variable |
| ⊙ Cluster | × Asteroid   | ☾ Comet    |
| ◇ Nebula  | ⊙ Globular   | ○ Open     |
| ◆ Galaxy  | ⊕ Planetary  | ◇ Diffuse  |
| ⊙ Unknown | ● Elliptical | ◆ Spiral   |
|           | ⊗ Other      | ★ Quasar   |

