

EXPLANATION

These diagrams show the appearance of the sky in various latitudes at different times of the day. They are useful in selecting the most suitable stars and planets for navigation on a given flight and for identifying prominent objects at the time of observations.

The *Sky Diagrams* have four advantages over ordinary star charts and star finders:

- (a) They are ready for immediate use without settings or tables of any kind.
- (b) Planets and the Moon are shown as well as the stars.
- (c) True altitudes and bearings are shown on the diagrams without distortion.
- (d) The appearance of the sky for different latitudes and times is shown at one opening so that the appearance for intermediate latitudes and times is easily visualized.

For each month there is a series of diagrams showing the sky for different latitudes at 2<sup>h</sup> intervals during the day. The diagrams on pages A26–A97 are designed for use in latitudes S.50° to N.75°. Those for the morning hours appear on two facing pages, followed by those of the midday hours, and then by those for the evening hours. The diagrams for a given latitude are arranged in a row and show the changes in the sky during the day. The diagrams on pages A98–A121 are for use in the north polar regions; here all diagrams for a given month are on two facing pages. On each page is shown in the middle row of diagrams the appearance of the sky at the north pole, and in the other two rows the appearance at latitude N.75° on opposite sides of the pole (that is, at longitudes differing by 180°) for the same instant of UT and hence for local times that differ by 12 hours. On the upper row of diagrams, these local times are printed with inverted figures. The navigator should select the diagram corresponding to his local time, and place the page with this time right side up at the bottom; north will then be at the top. In a flight, which crosses the vicinity of the pole, the other row of diagrams shows the appearance of the sky to be expected after the other side of the pole has been reached. At the pole itself, the local time is indeterminate.

In each diagram the circular outline represents the horizon and the central cross, the zenith. Altitudes are measured radially with a linear scale; i.e., an object one-third of the way from the edge to the center has an altitude of 30°; the small circles on the diagrams are at altitudes 30° and 60°. Azimuths are measured as on the navigation chart, with north at the top and east at the right. On various parts of the diagrams are small curved arrows indicating the diurnal motion in that area; the length of the arrows shows the motion in one hour.

The objects shown on the diagrams are the 57 selected navigational stars, the Sun, the Moon, the four planets Venus, Mars, Jupiter and Saturn, and the north and south celestial poles. The position of a star or a planet is indicated by its star number or planet initial symbol respectively. Star magnitudes are listed on the even-numbered pages and planet magnitudes are shown on each of the odd-numbered pages. The numbers of the 41 stars used in the *Sight Reduction Tables for Air Navigation* (Pub. No. 249, A.P. 3270) are shown in heavier type. The north and south poles are identified by the initials NP and SP. The position of the Sun is shown by a circle with a dot in the middle. The position of the Moon is shown by a circle with the day of the month on which it occupies that position.

The positions of the stars, Sun and planets in each diagram are indicated for the 15th of the month and will usually serve for the entire month. If it is desired to allow for the motion of the stars during the month, it is necessary only to remember that a given configuration will occur at the beginning of each month one hour later than the time indicated, and at the end of the month one hour earlier. The lengths of the arrows, in the diagrams for 1<sup>h</sup>, 9<sup>h</sup> and 17<sup>h</sup>, indicate the motion of the stars in 15 days. When the Sun is above the horizon, only the Moon and Venus can be seen with the naked eye, but the positions of the stars are given for use with astro-trackers.

Some of the navigational stars may be omitted from the plot if they are close to a solar system object at mid-month. Some of the navigational planets may be omitted if they are close to the Sun at mid-month; in such cases the planet(s) omitted would generally be unobservable for the whole month. The exception might be Venus passing inferior conjunction, which is noted on the right side of the page.

The Moon moves so rapidly with respect to the stars that its position at a given time of the night varies appreciably from night to night, and it is necessary to show on each diagram a succession of positions for various days of the month. Three or more such positions are indicated and those for the intermediate dates may be estimated from those given. Since the Moon moves completely round the sky in slightly less than a month, or a little over  $13^\circ$  in a day, it will appear on a given diagram for about half of each month. The position on the diagram for each successive night is always to the eastward; when it disappears off the eastern edge of the diagram it will reappear on the western edge about two weeks later, except occasionally on the polar diagrams.

*Example.* Select the best available objects to give a fix at 23<sup>h</sup> LMT on 2004 February 10, during a flight on a true course/track of  $210^\circ$  in latitude N.  $25^\circ$ .

The required diagram is reproduced here from *The Air Almanac* 2004, with the course/track of  $210^\circ$  marked on it.

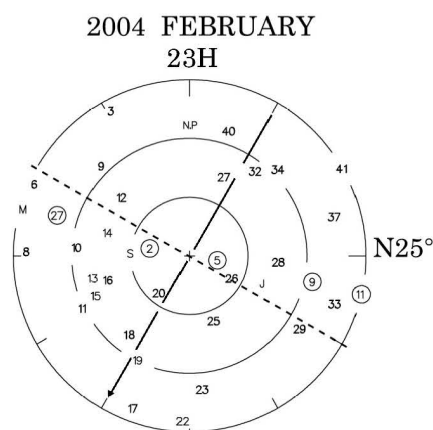
Examination of the diagram shows immediately that the best objects, giving position lines perpendicular to the track and parallel to it, are **18** and **12**, *Sirius* and *Capella*. *Sirius* is approximately at altitude  $40^\circ$ , and true bearing  $210^\circ$ ; *Capella* is approximately at altitude  $45^\circ$  and true bearing  $300^\circ$ . If desired the altitudes and bearings may be found more accurately with dividers and the scale diagrams.

The *Sky Diagrams* used in conjunction with the star chart and the planet location diagrams (pages A122–A124) are extremely effective in star identification, the star chart and the planet location diagram being used for detailed verification of the identification made with the *Sky Diagrams*.

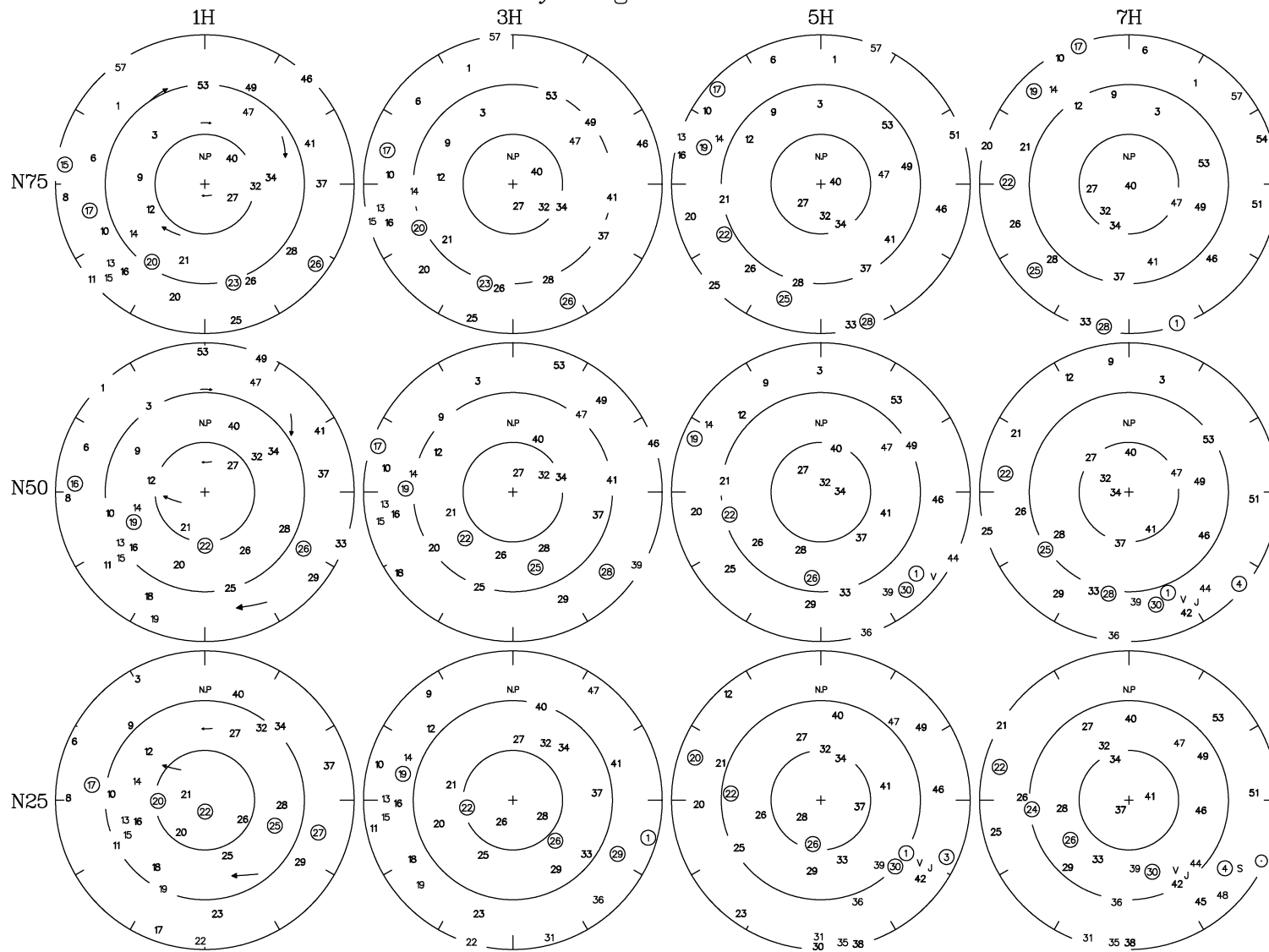
*Example.* On 2004 March 1<sup>d</sup> 22<sup>h</sup> LMT in latitude N.  $25^\circ$ , it is desired to know what objects are visible. The diagrams are for the fifteenth of the month, but the same configurations of stars occur on the first of the month, *one hour later*, or on the first of the following month, *one hour earlier*; therefore the above diagram for February 15<sup>d</sup> 23<sup>h</sup> can be used for March 1<sup>d</sup> 22<sup>h</sup> (for stars only). The azimuths and altitudes of the various objects visible at that time can now be read from the diagram.

It must be remembered that the *Sky Diagrams* are to be used flat on the chart table and that they show bearings as they appear on the navigator's chart, east to the right. The star chart and the planet location diagram, on the other hand, are designed to be held overhead for comparison with the sky, and on them east is to the left.

For some intermediate latitude, such as  $40^\circ$ , or for an intermediate time, such as 22<sup>h</sup>, altitudes and bearings may be taken from two diagrams and a more accurate result obtained by interpolation; but such refinements are not usually necessary.

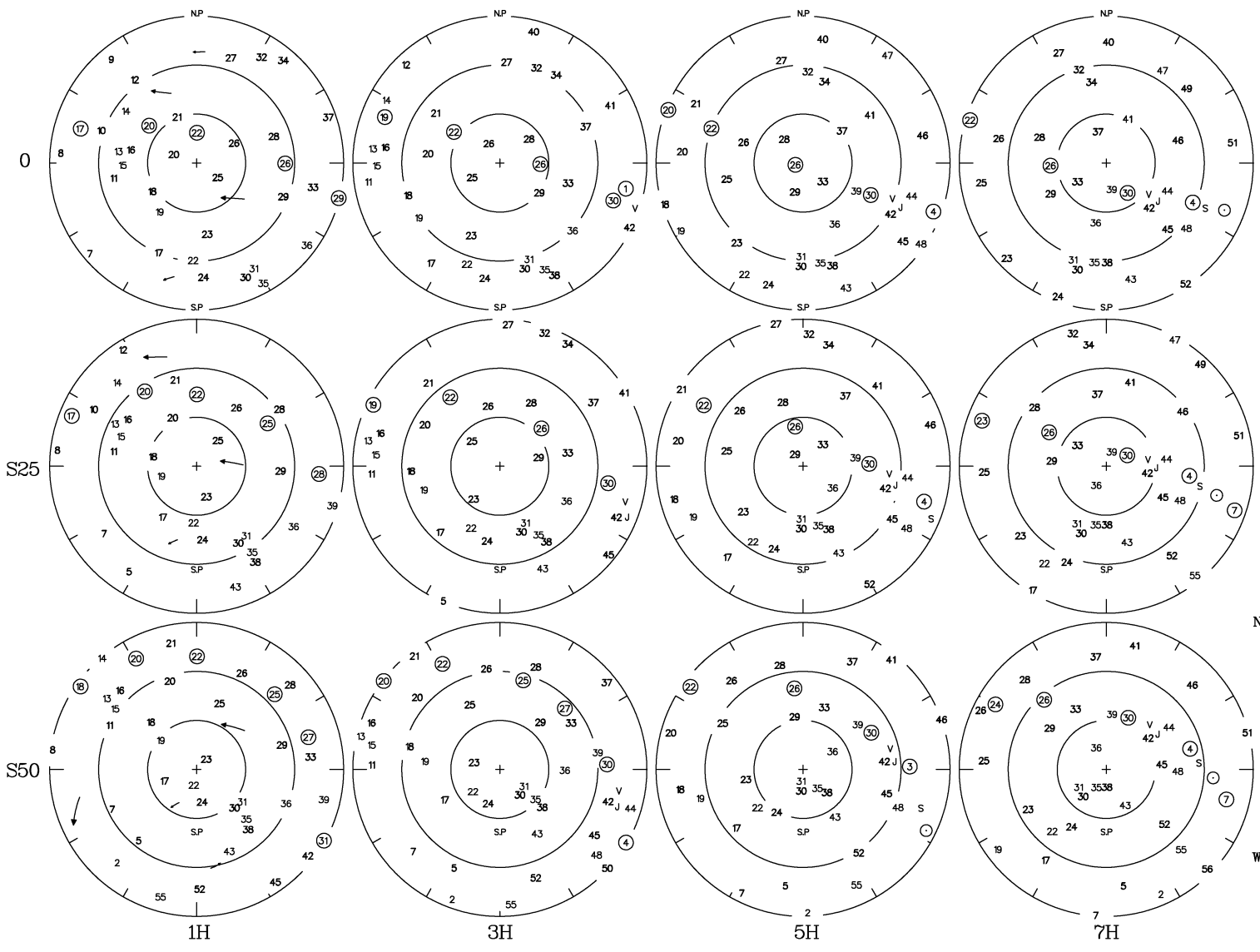


MORNING Sky Diagrams 2019 JANUARY



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

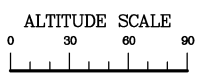
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

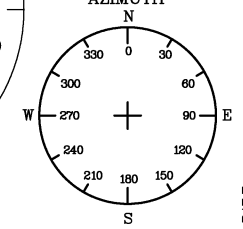
V	Venus	-4.5
M	Mars	0.7
J	Jupiter	-1.8
S	Saturn	0.5

POLES

N•P North S•P South

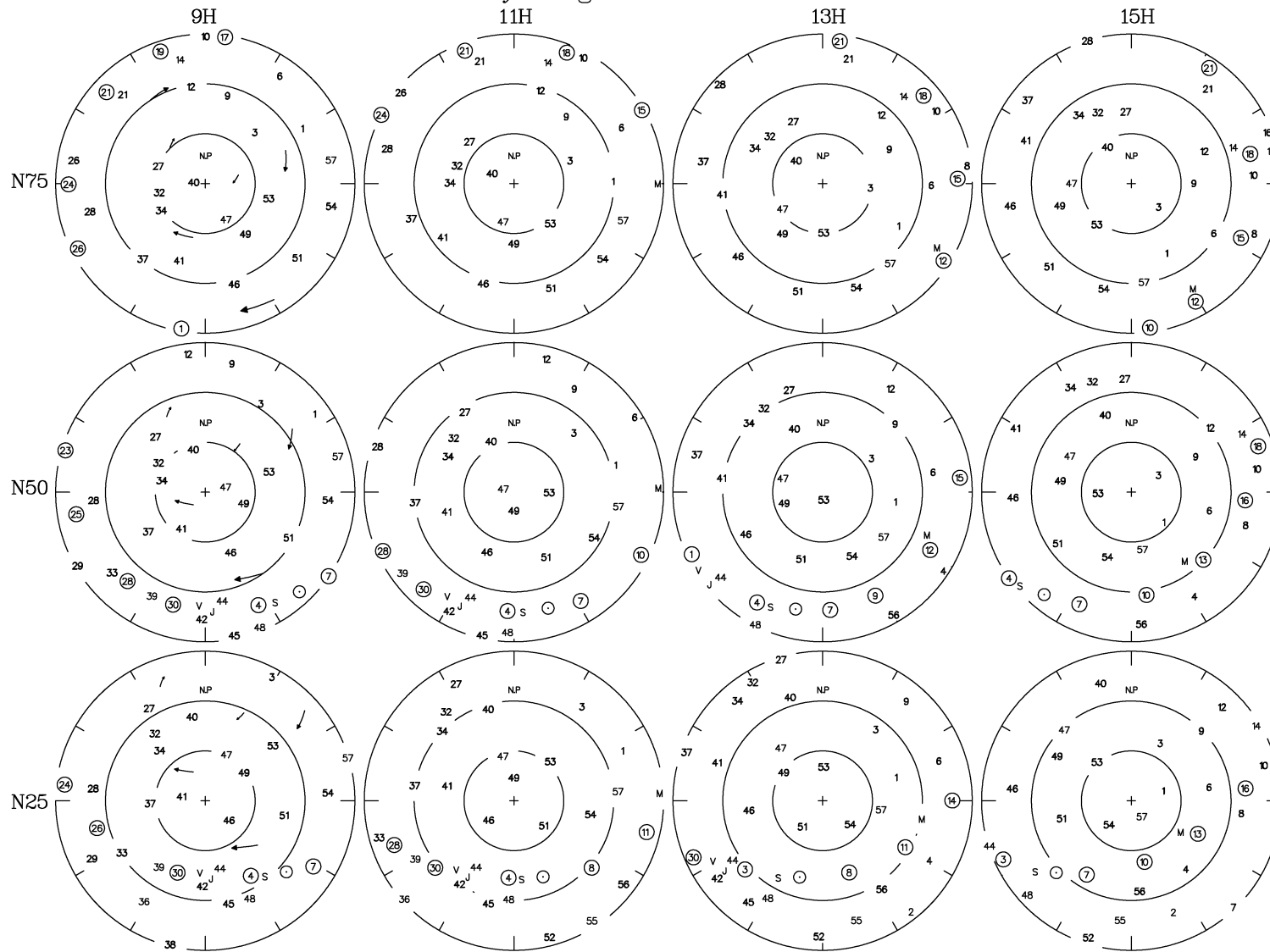


AZIMUTH



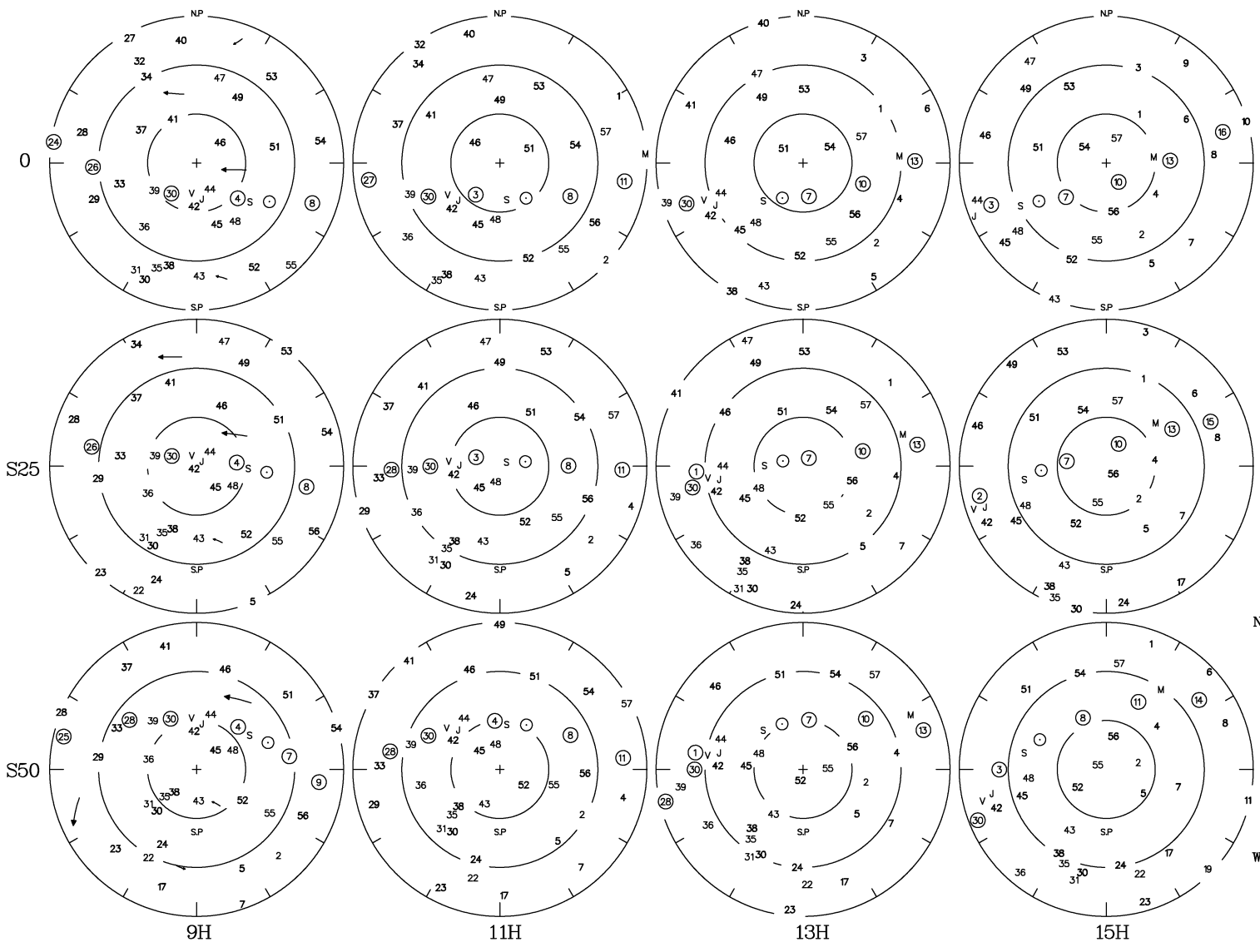
MORNING Sky Diagrams 2019 JANUARY

DAY Sky Diagrams 2019 JANUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
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9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
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25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
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47	2.2	4.6
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49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

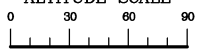
PLANETS Vis. Mag.

V	Venus	-4.5
M	Mars	0.7
J	Jupiter	-1.8
S	Saturn	0.5

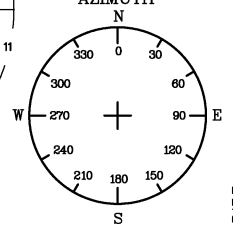
POLES

N•P North S•P South

ALTITUDE SCALE

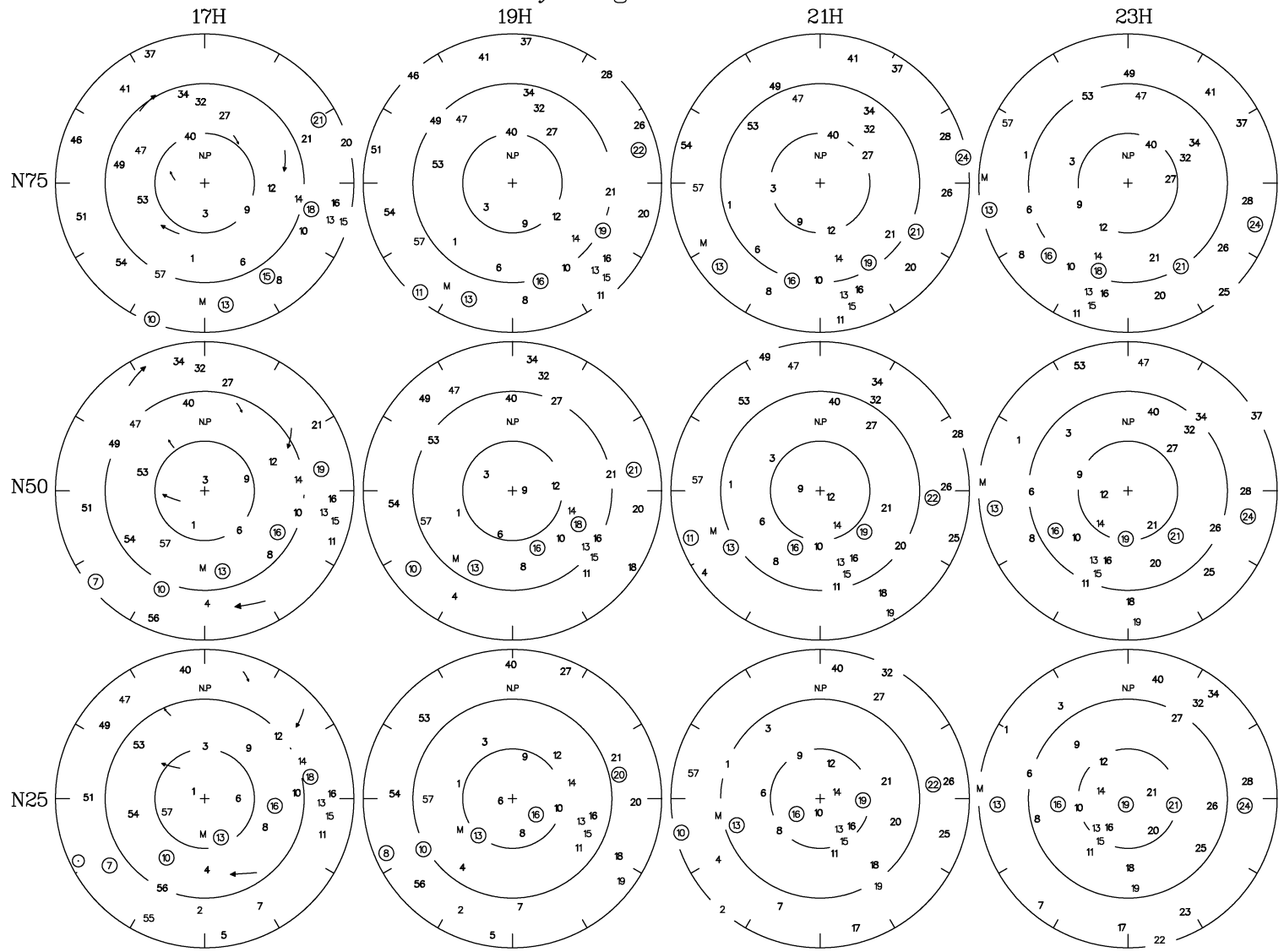


AZIMUTH



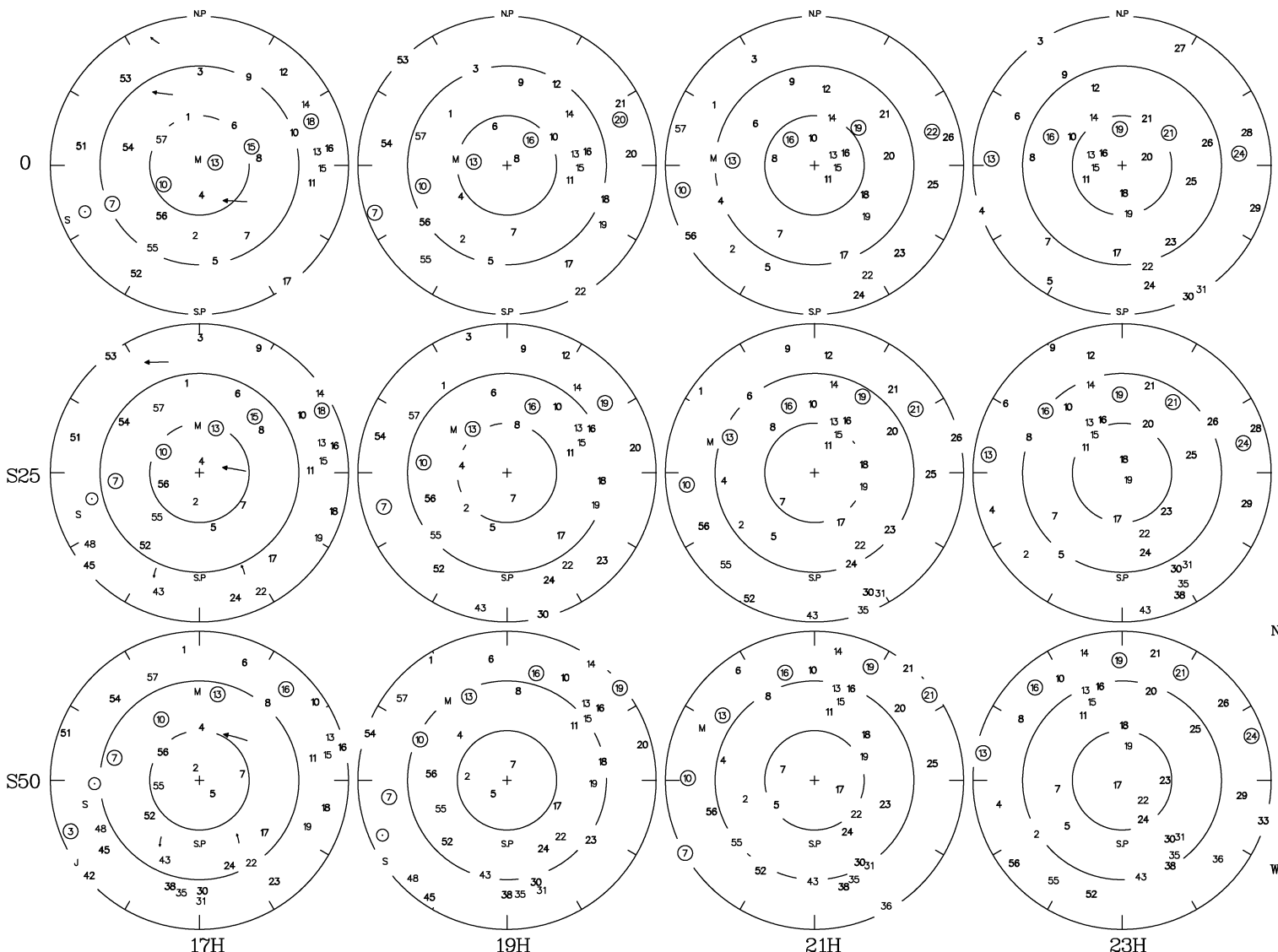
DAY Sky Diagrams 2019 JANUARY

# EVENING Sky Diagrams 2019 JANUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -4.5
- M Mars 0.7
- J Jupiter -1.8
- S Saturn 0.5

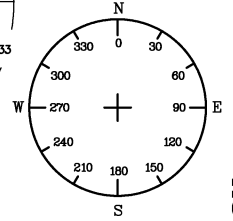
POLES

N•P North S•P South

ALTITUDE SCALE



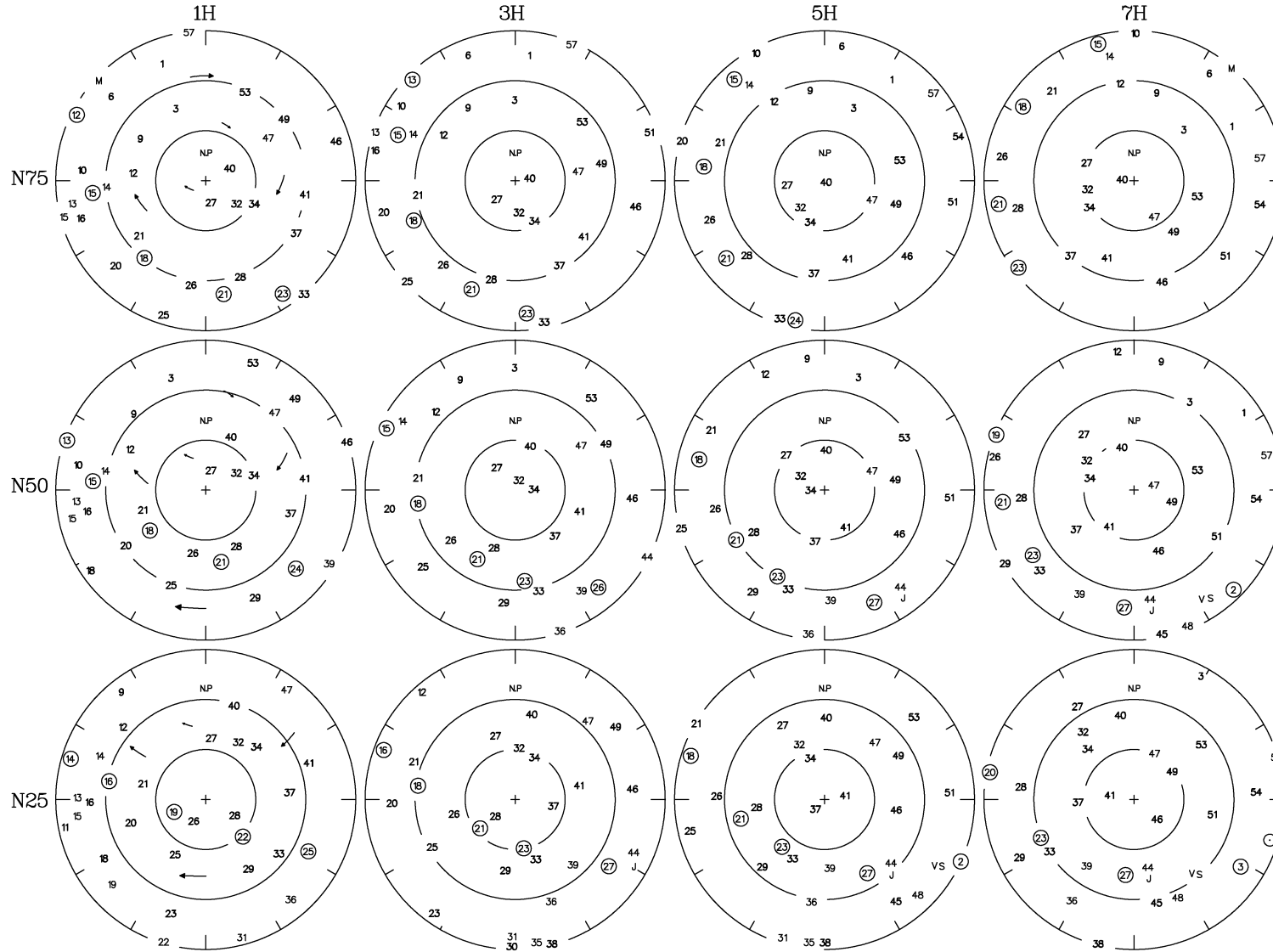
AZIMUTH



EVENING Sky Diagrams 2019 JANUARY

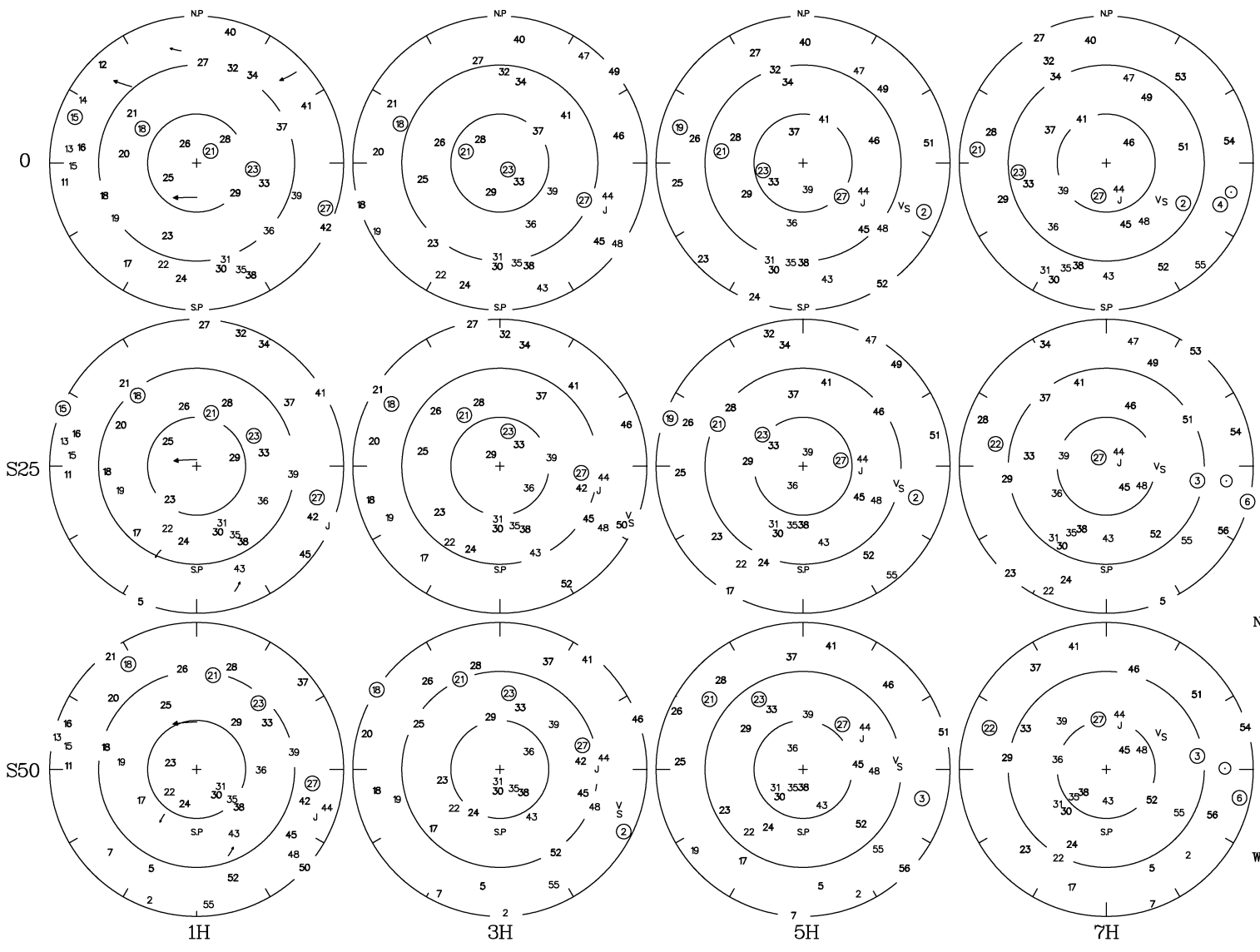


MORNING Sky Diagrams 2019 FEBRUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
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49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
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Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -4.2
- M Mars 1.0
- J Jupiter -2.0
- S Saturn 0.6

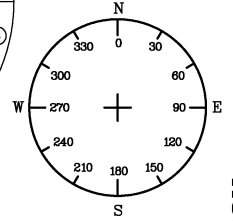
POLES

N•P North S•P South

ALTITUDE SCALE

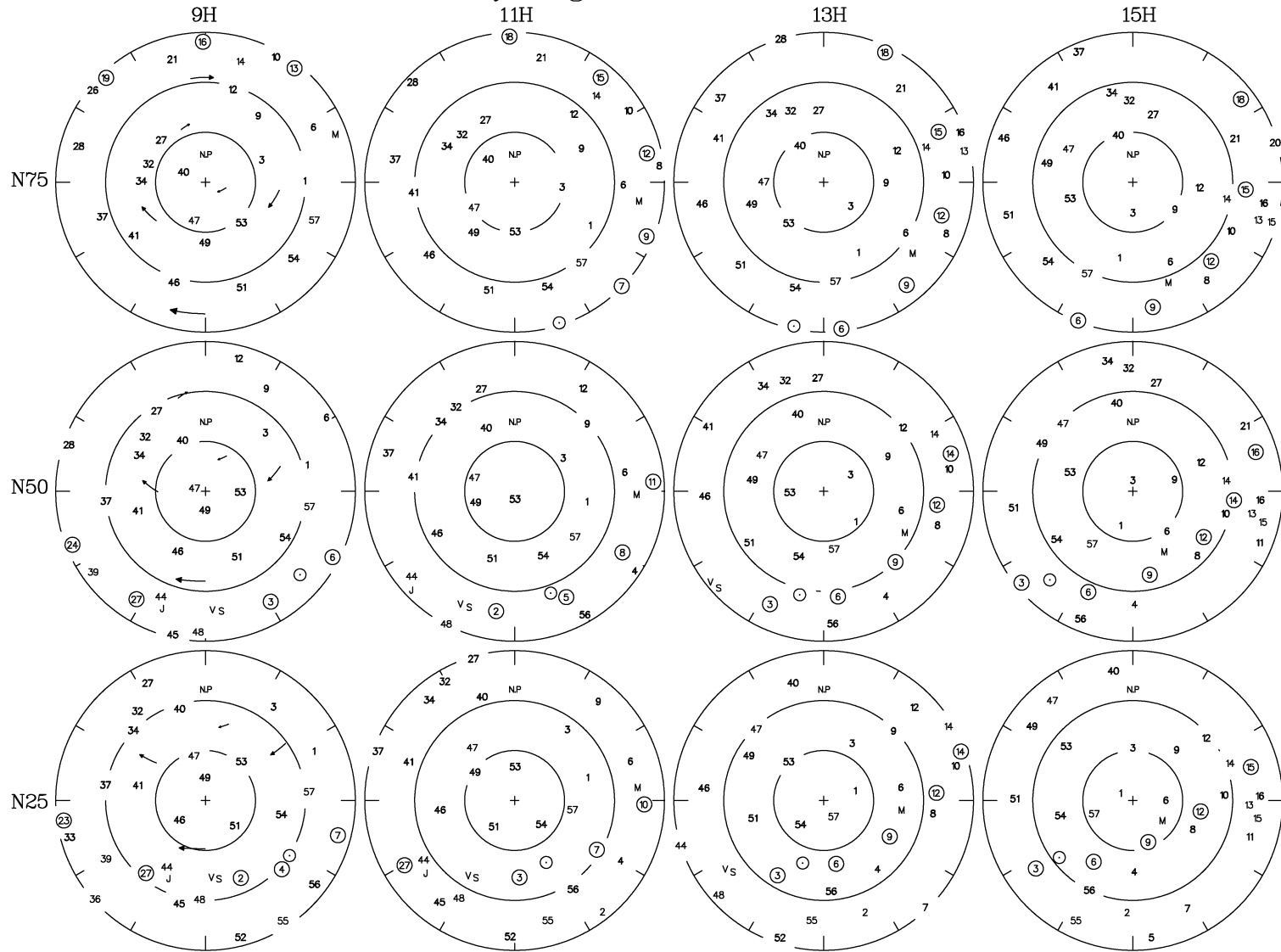


AZIMUTH



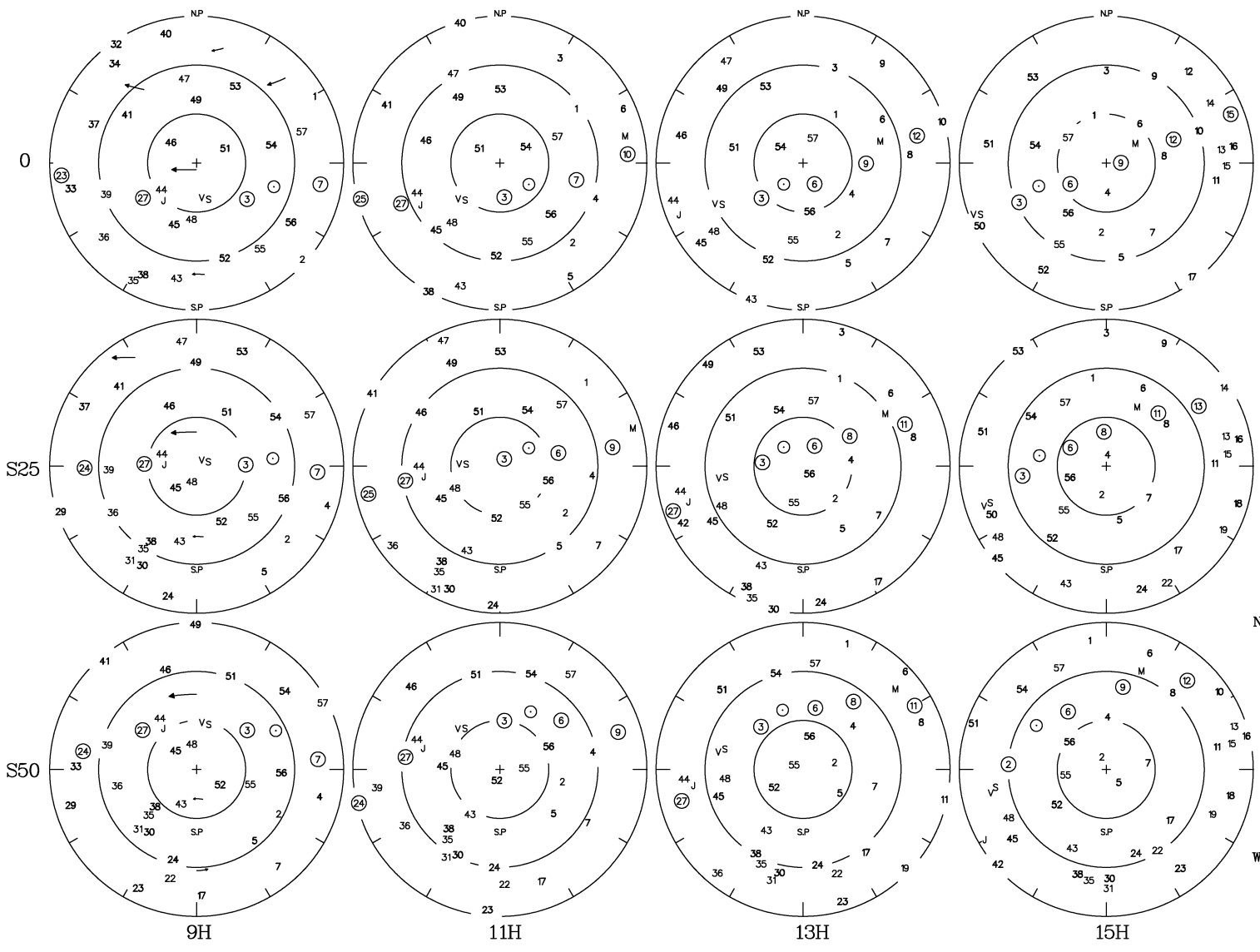
MORNING Sky Diagrams 2019 FEBRUARY

DAY Sky Diagrams 2019 FEBRUARY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
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14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
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49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
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56	1.2	1.3
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Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

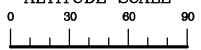
PLANETS Vis. Mag.

- V Venus -4.2
- M Mars 1.0
- J Jupiter -2.0
- S Saturn 0.6

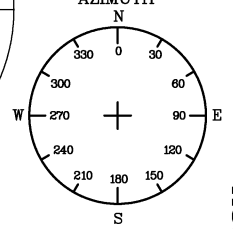
POLES

N•P North S•P South

ALTITUDE SCALE

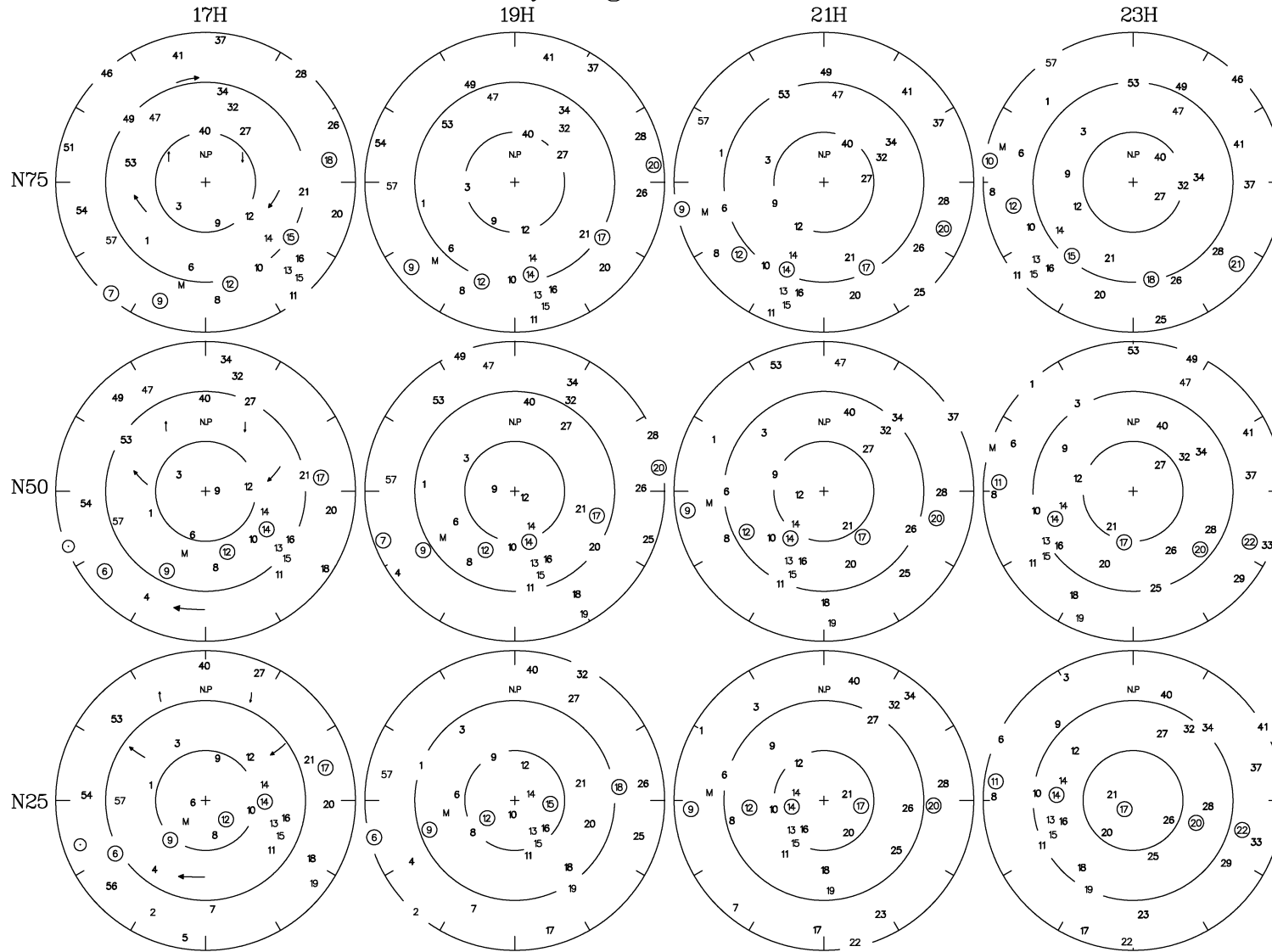


AZIMUTH



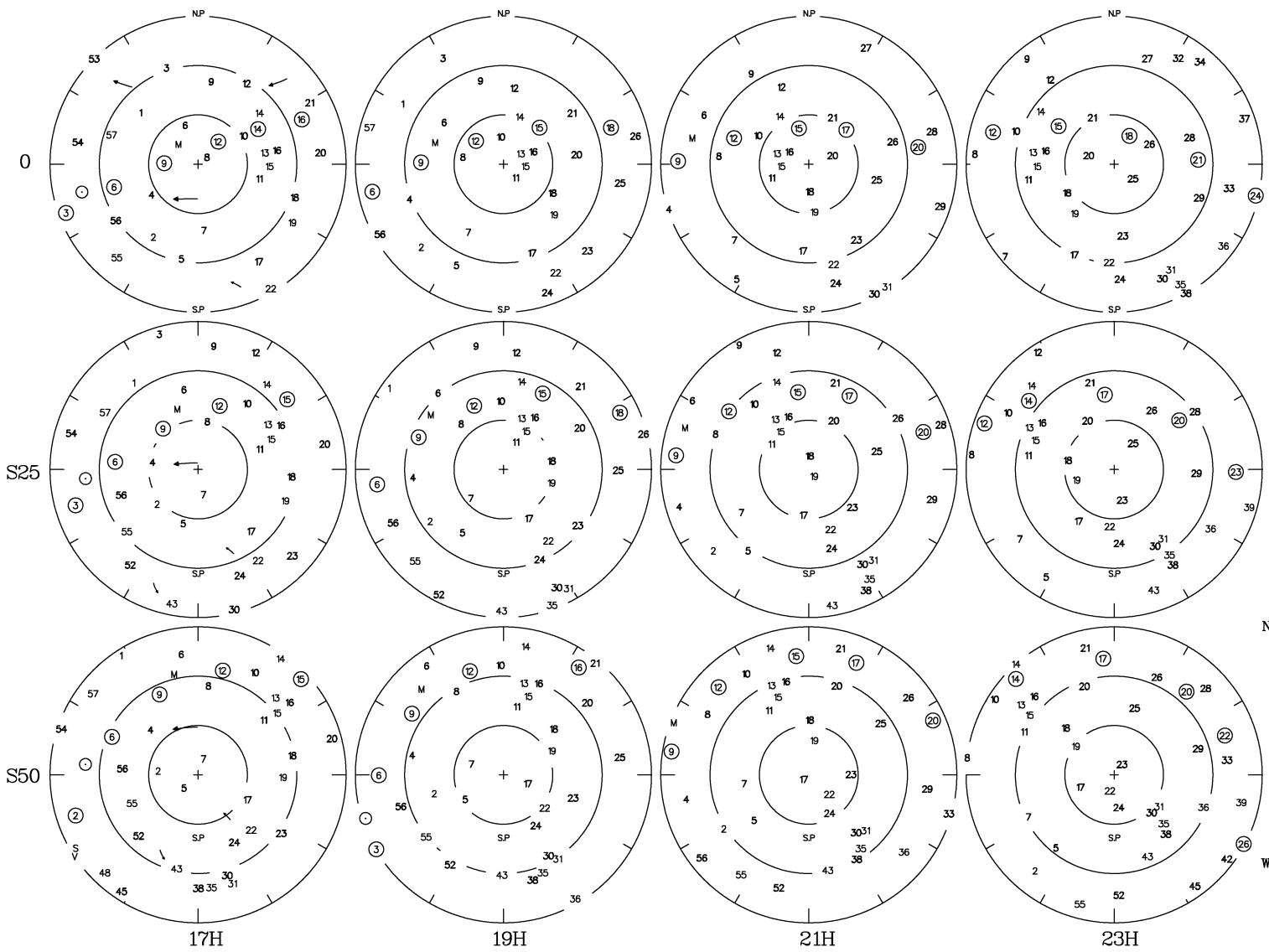
DAY Sky Diagrams 2019 FEBRUARY

# EVENING Sky Diagrams 2019 FEBRUARY



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40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var.  $\pm 0.5$  mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -4.2
- M Mars 1.0
- J Jupiter -2.0
- S Saturn 0.6

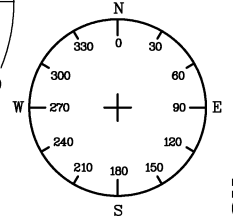
POLES

N•P North S•P South

ALTITUDE SCALE

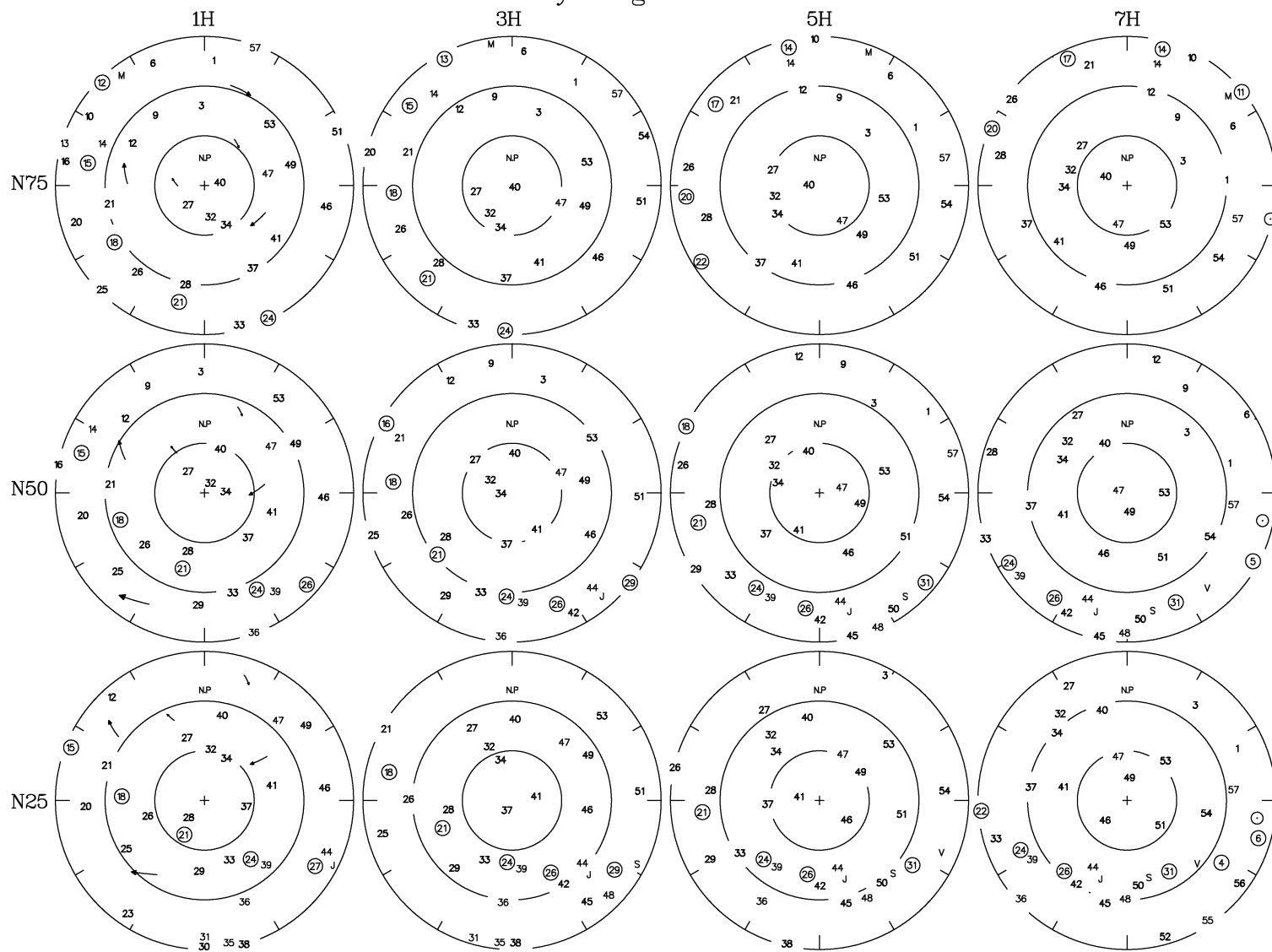


AZIMUTH



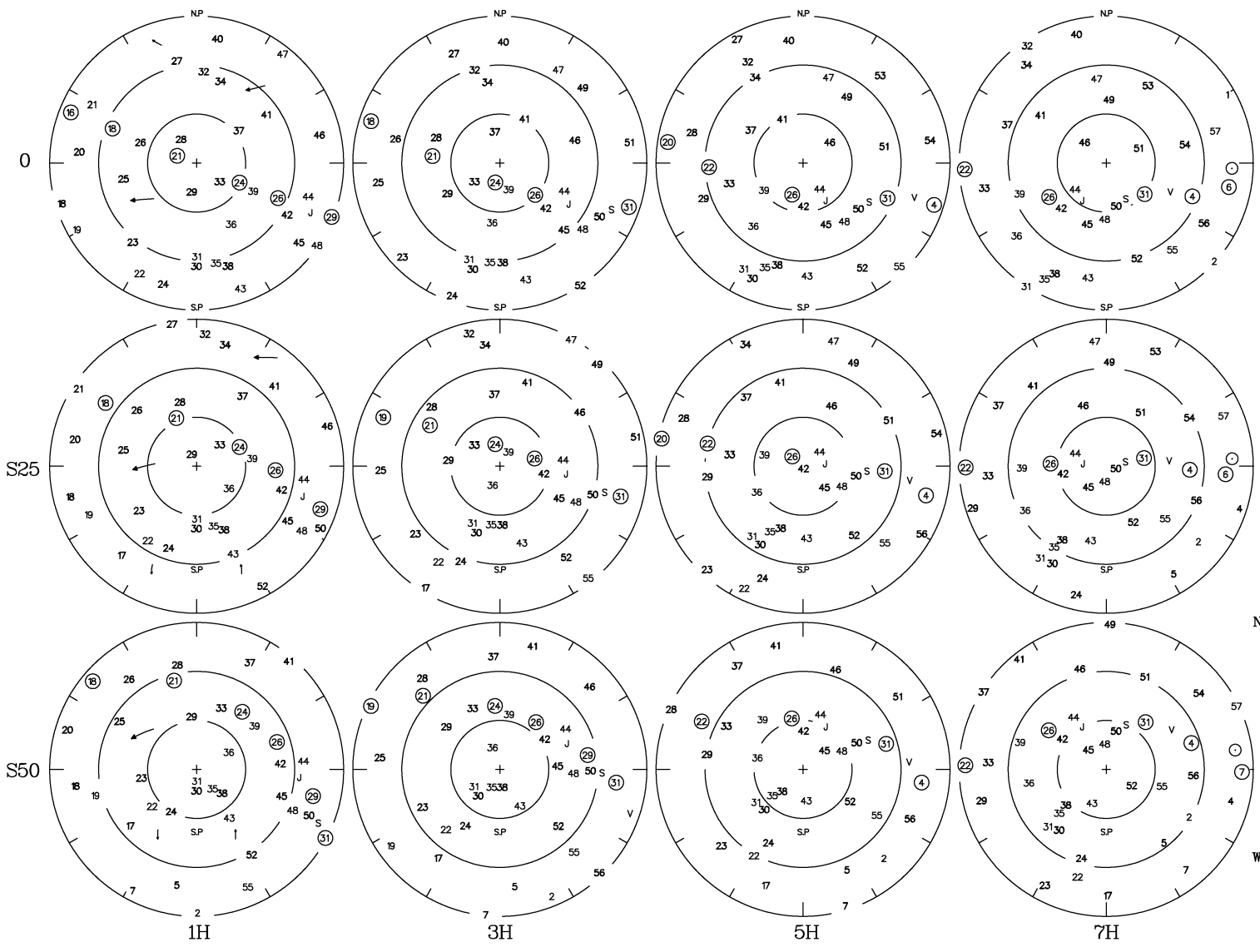
EVENING Sky Diagrams 2019 FEBRUARY

# MORNING Sky Diagrams 2019 MARCH



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var.  $\pm 0.5$  mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

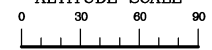
PLANETS Vis. Mag.

- V Venus -4.0
- M Mars 1.3
- J Jupiter -2.1
- S Saturn 0.6

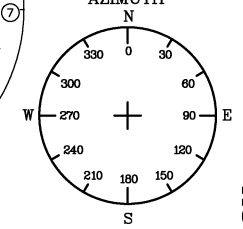
POLES

N•P North S•P South

ALTITUDE SCALE



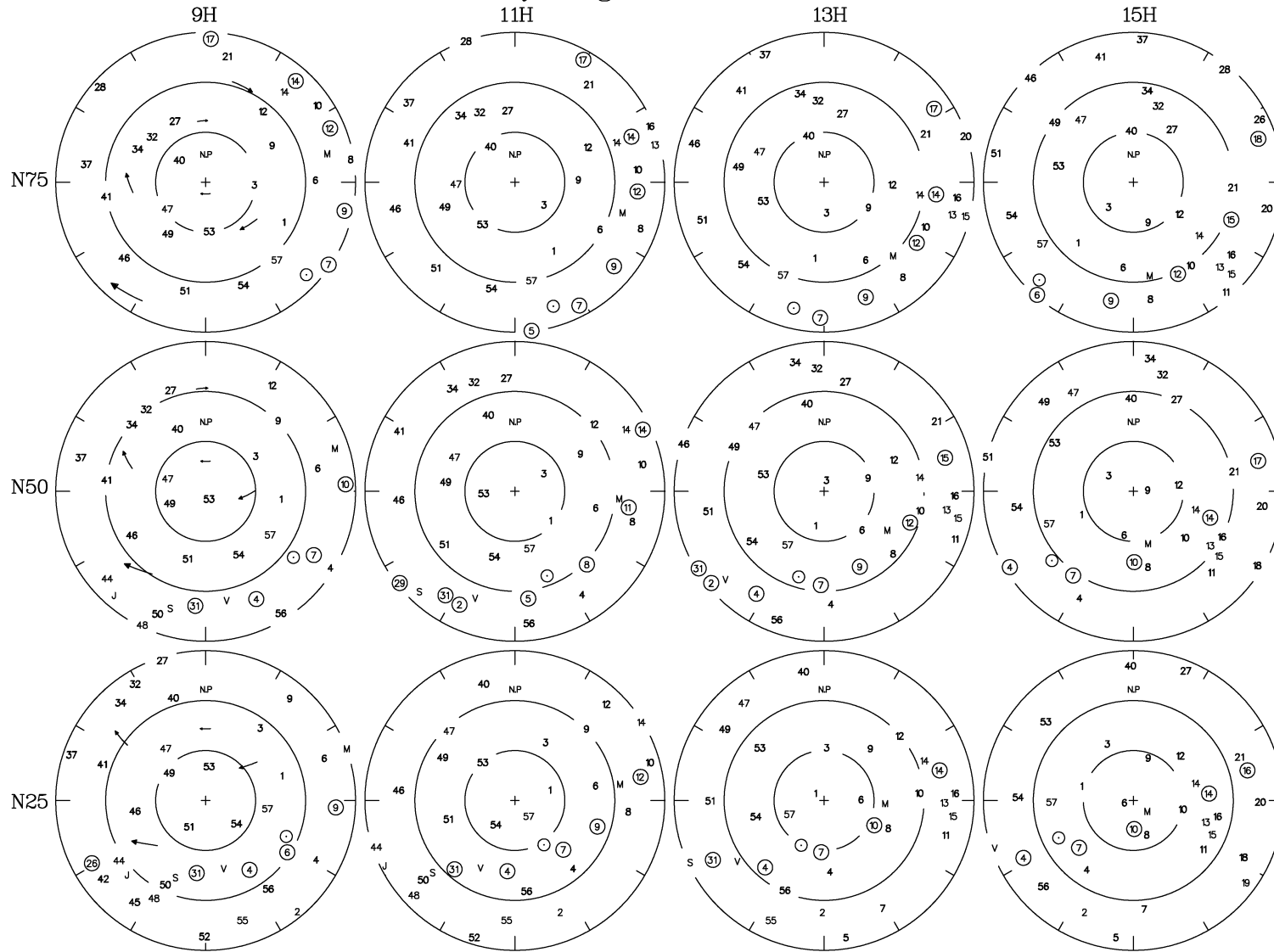
AZIMUTH



MORNING Sky Diagrams 2019 MARCH

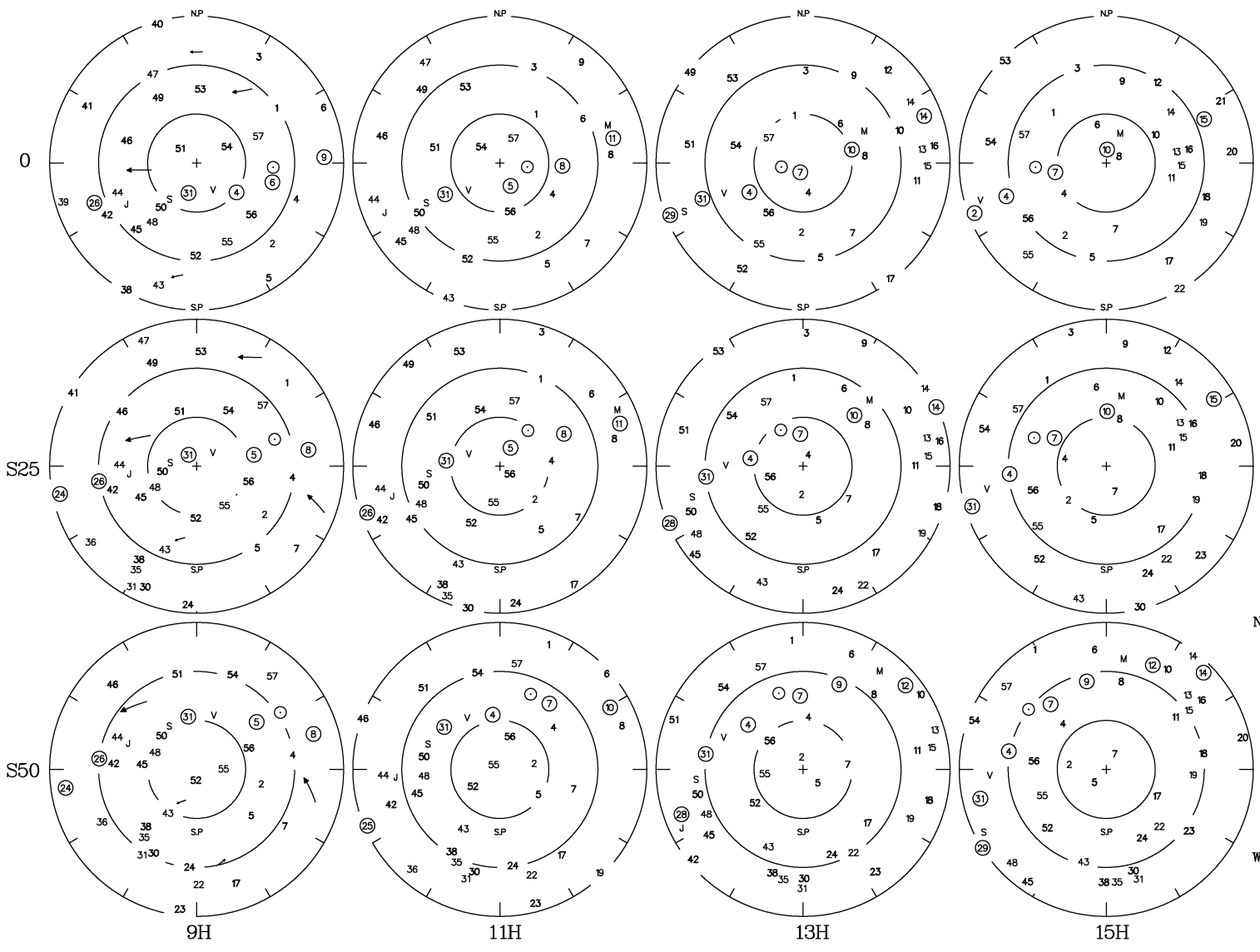


# DAY Sky Diagrams 2019 MARCH



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var.  $\pm 0.5$  mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

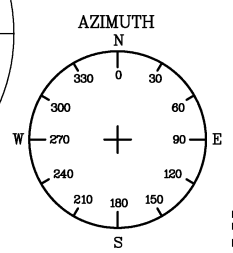
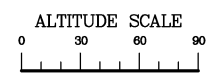
☾ MOON

① Position, 1st of month  
 ② Position, 2nd of month etc.

PLANETS Vis. Mag.

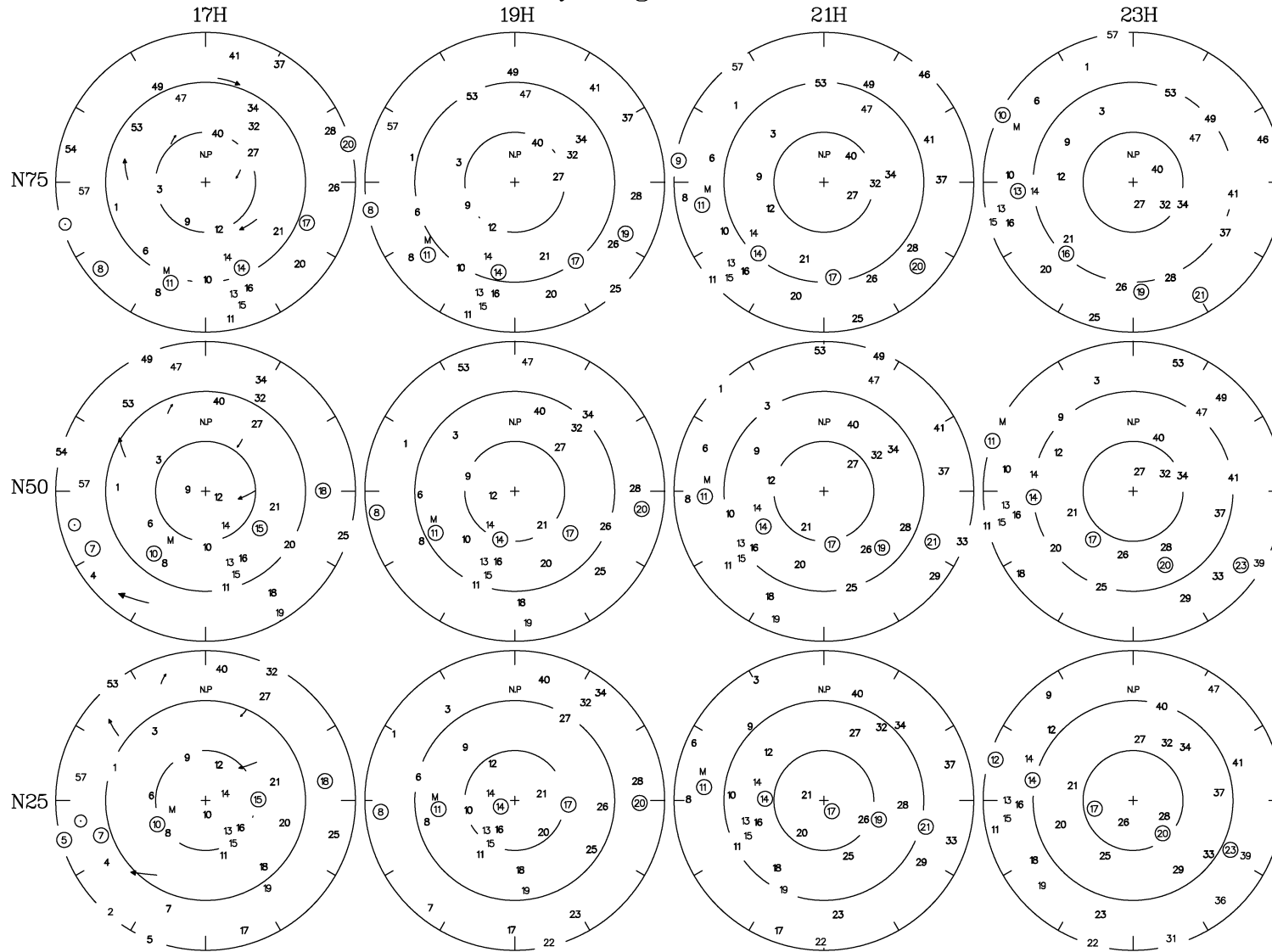
- V Venus -4.0
- M Mars 1.3
- J Jupiter -2.1
- S Saturn 0.6

POLES  
 N•P North S•P South



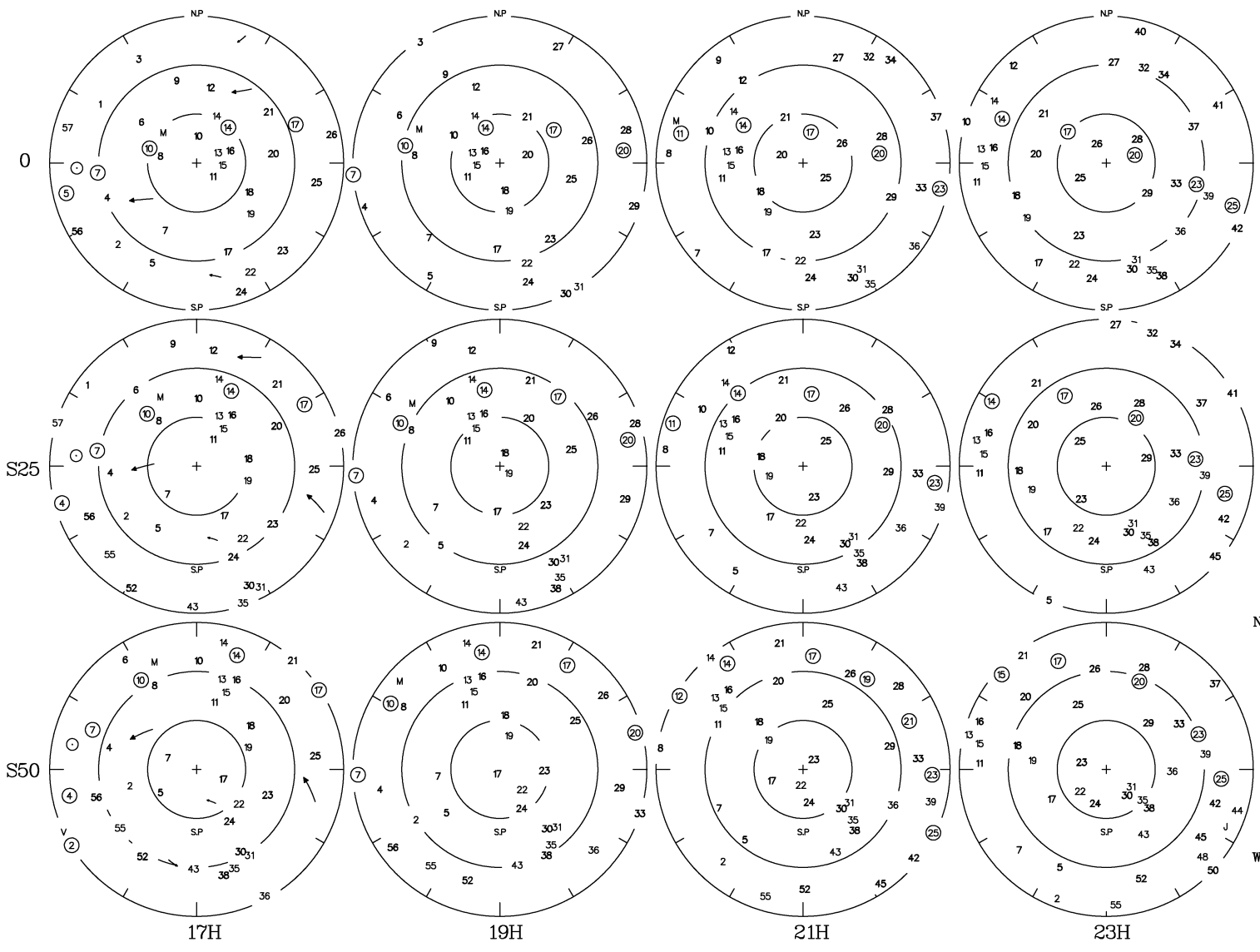
DAY Sky Diagrams 2019 MARCH

# EVENING Sky Diagrams 2019 MARCH



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -4.0
- M Mars 1.3
- J Jupiter -2.1
- S Saturn 0.6

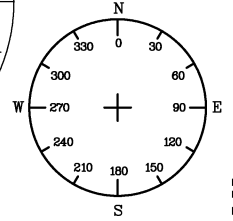
POLES

N•P North S•P South

ALTITUDE SCALE

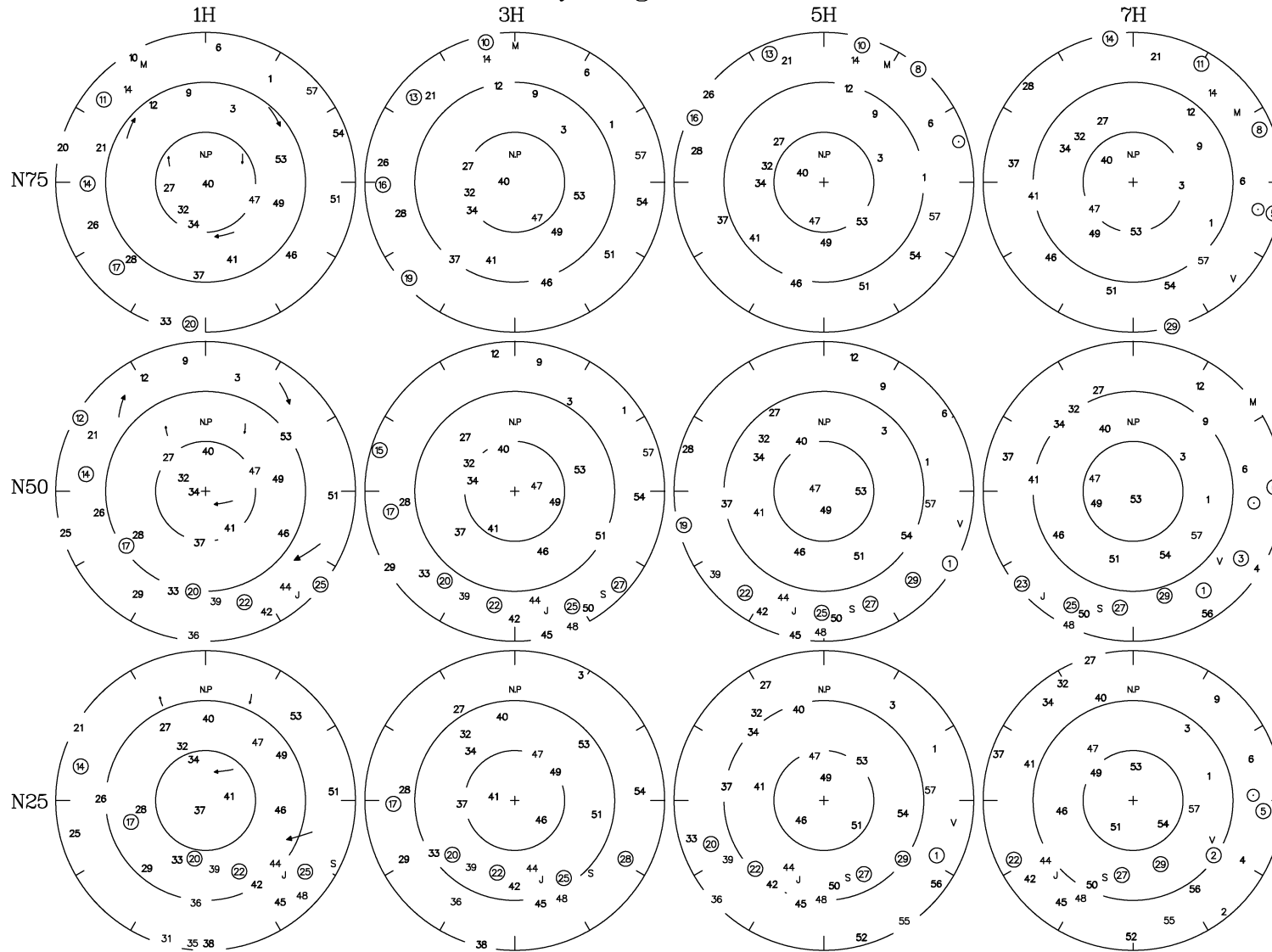


AZIMUTH



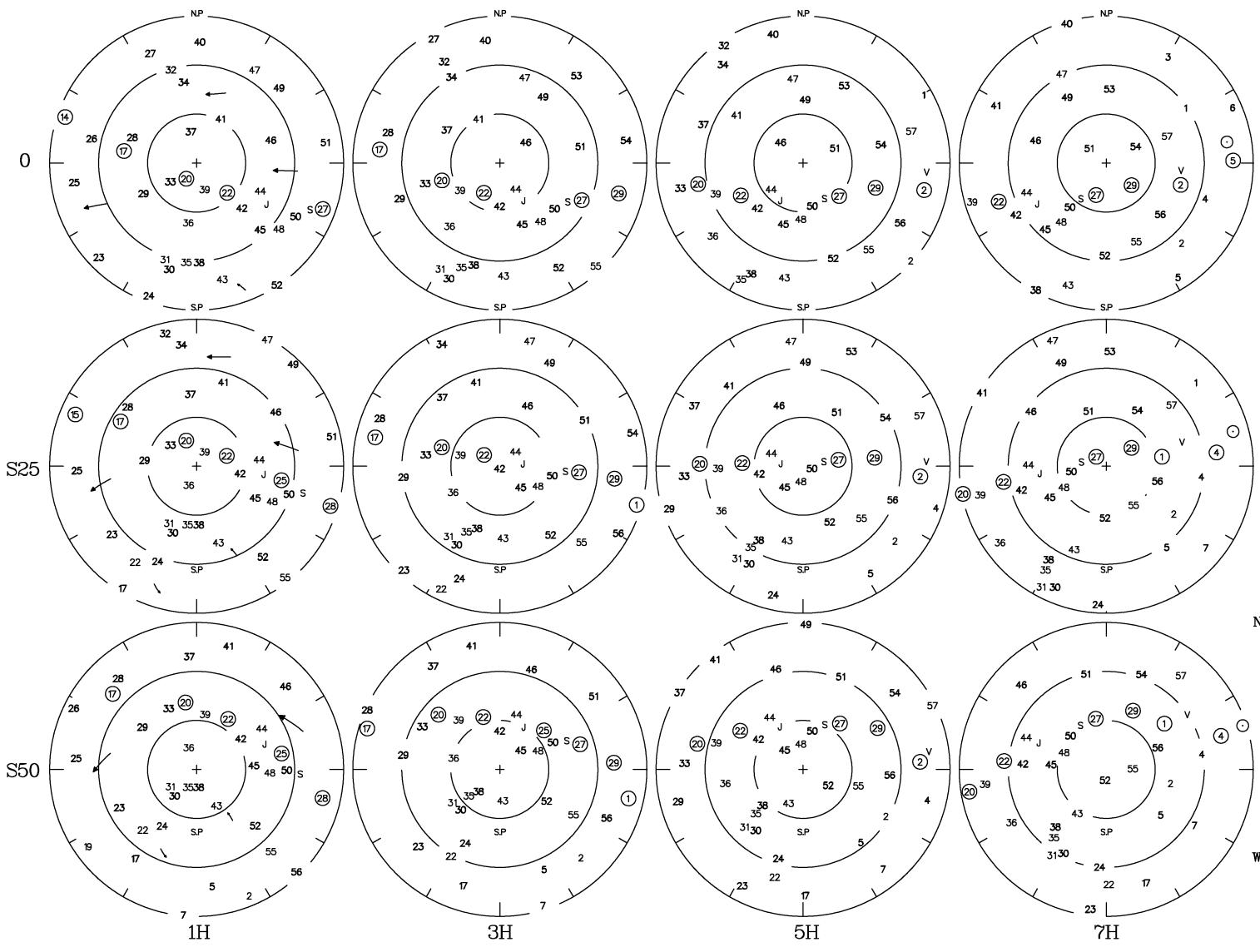
EVENING Sky Diagrams 2019 MARCH

MORNING Sky Diagrams 2019 APRIL



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.5
- J Jupiter -2.3
- S Saturn 0.5

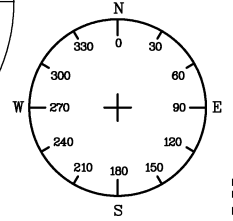
POLES

N•P North S•P South

ALTITUDE SCALE

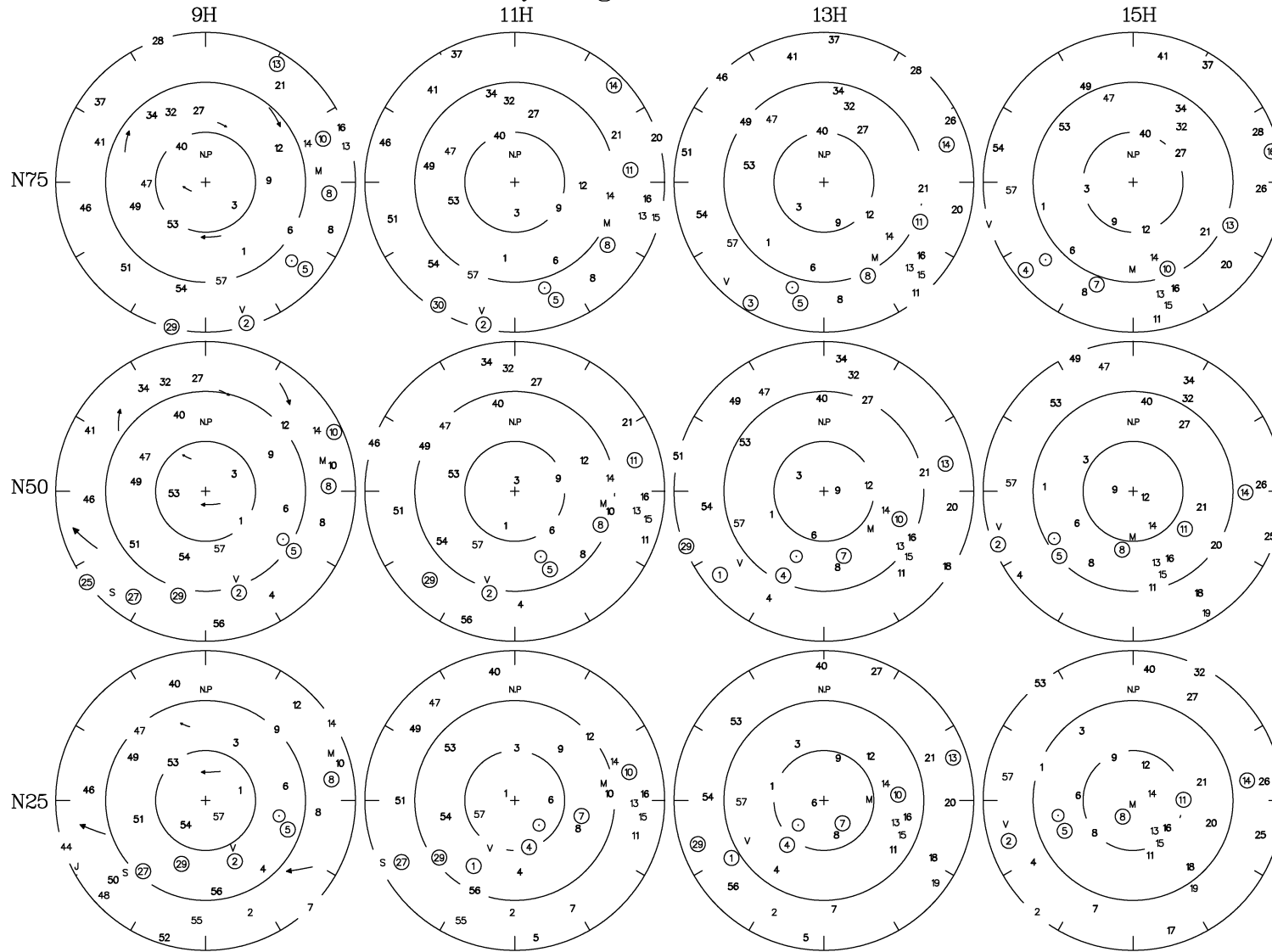


AZIMUTH



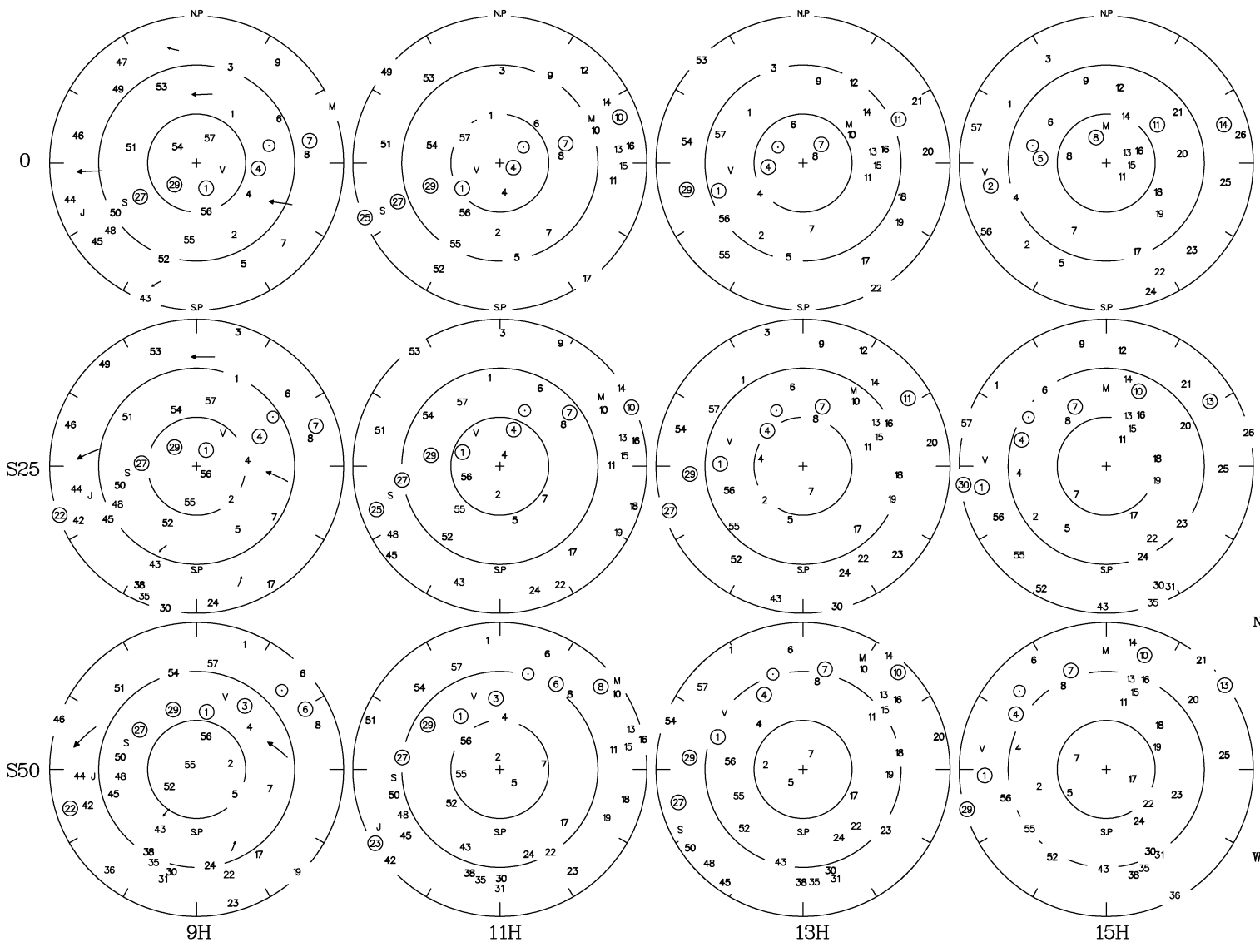
MORNING Sky Diagrams 2019 APRIL

DAY Sky Diagrams 2019 APRIL



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

① Position, 1st of month  
② Position, 2nd of month etc.

PLANETS Vis. Mag.

V Venus -3.9  
M Mars 1.5  
J Jupiter -2.3  
S Saturn 0.5

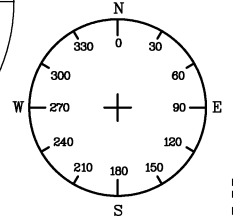
POLES

N•P North S•P South

ALTITUDE SCALE



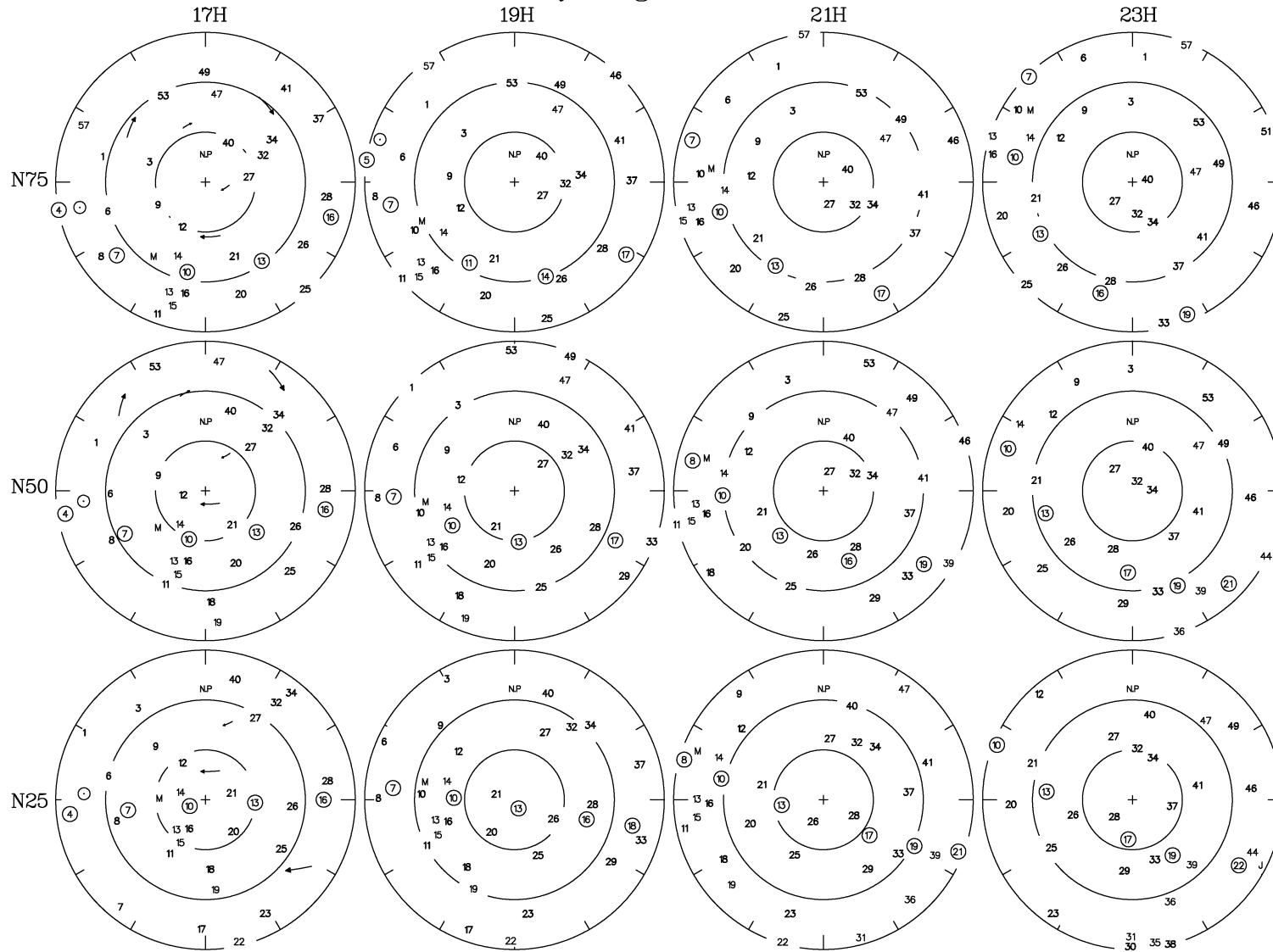
AZIMUTH



DAY Sky Diagrams 2019 APRIL

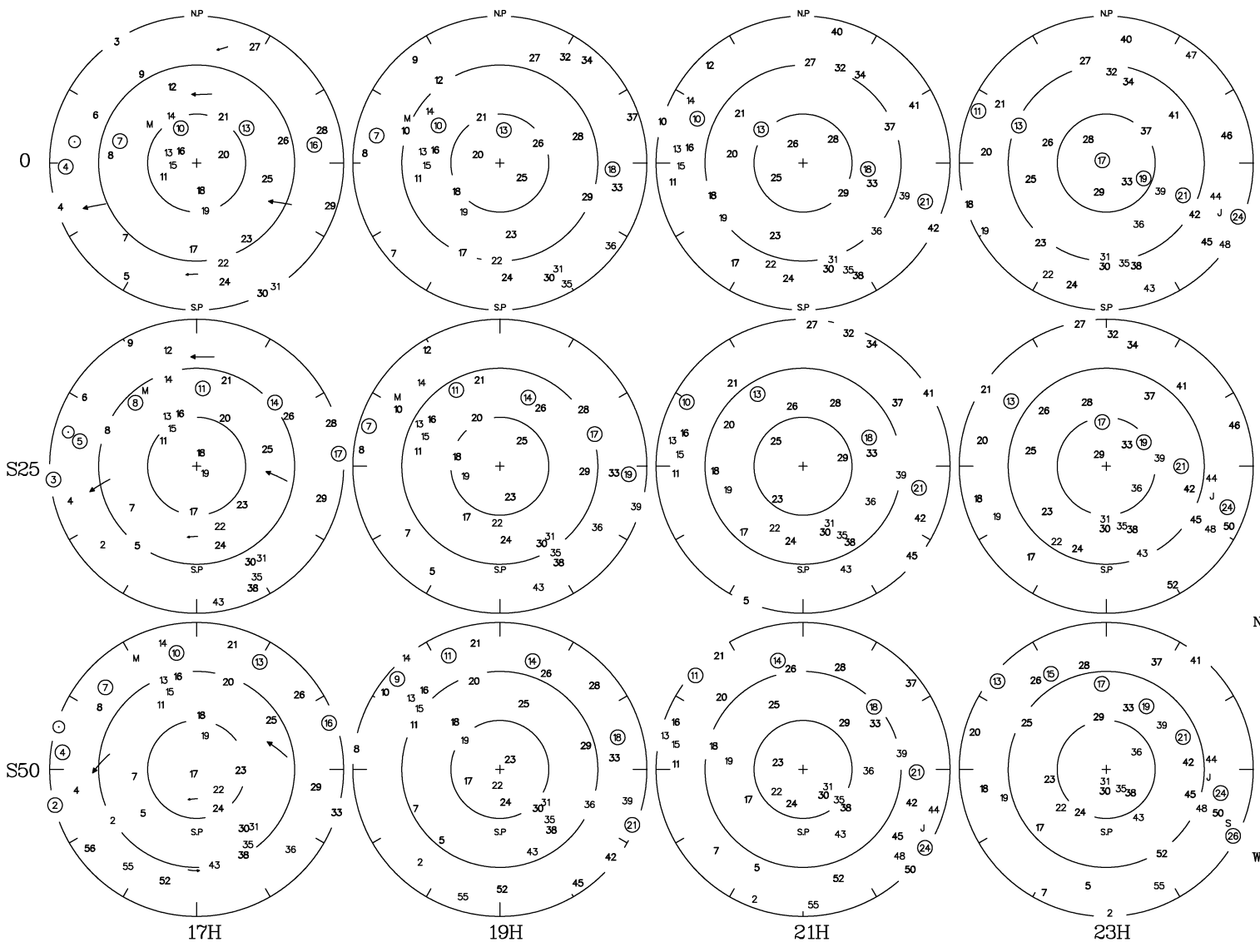


# EVENING Sky Diagrams 2019 APRIL



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.5
- J Jupiter -2.3
- S Saturn 0.5

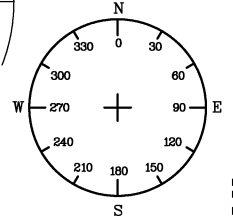
POLES

N•P North S•P South

ALTITUDE SCALE

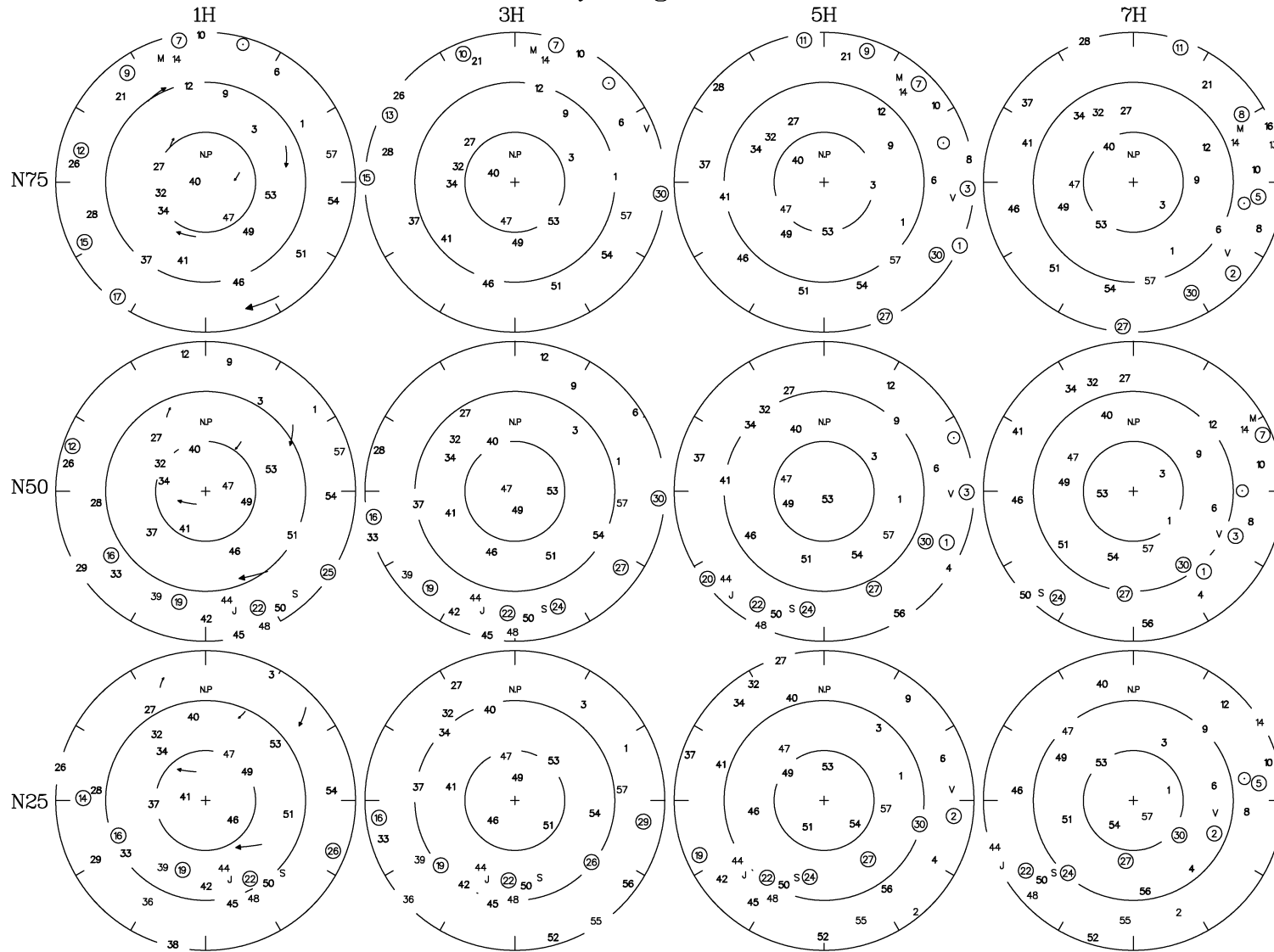


AZIMUTH



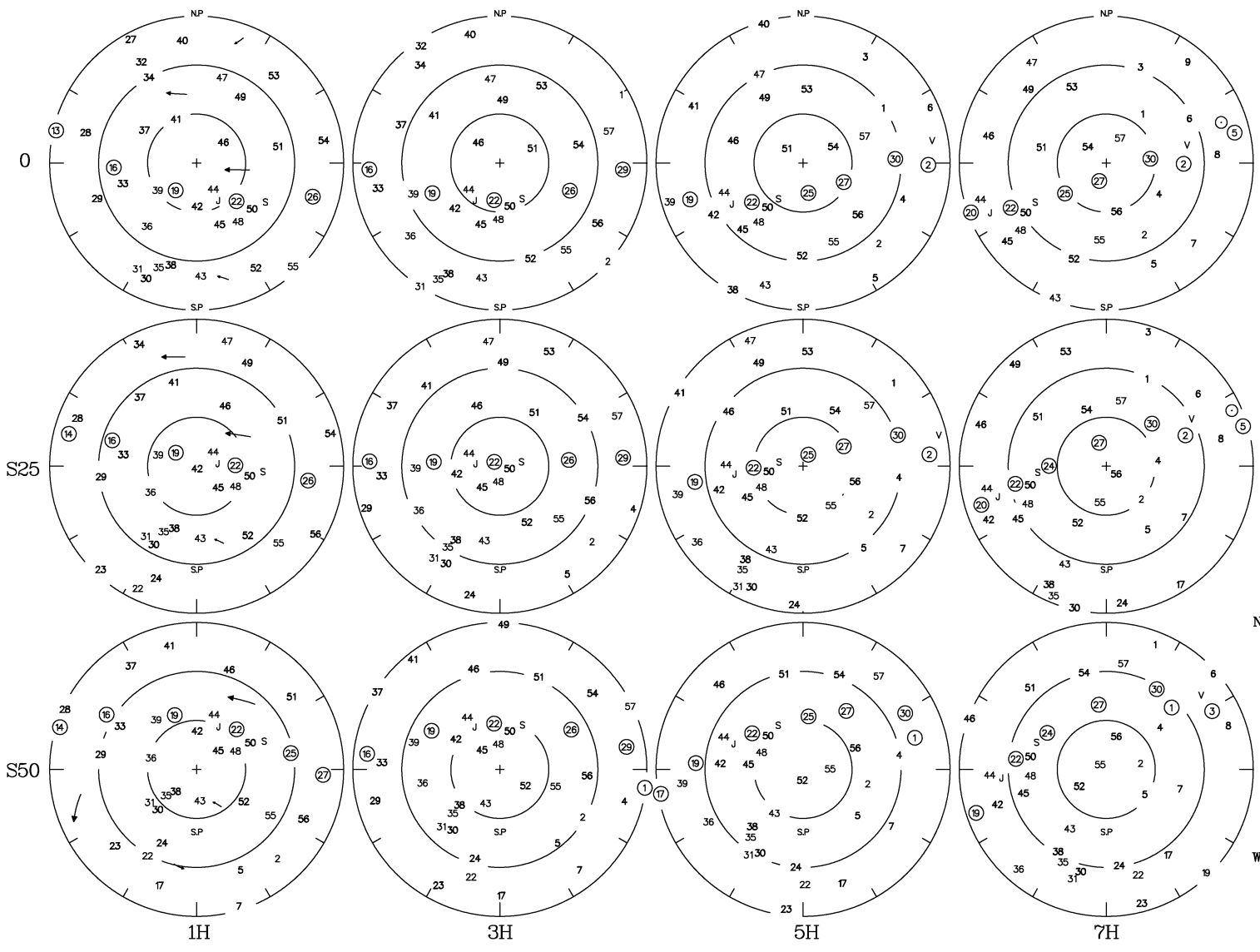
EVENING Sky Diagrams 2019 APRIL

# MORNING Sky Diagrams 2019 MAY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

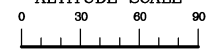
PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.7
- J Jupiter -2.5
- S Saturn 0.4

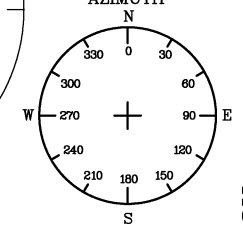
POLES

N•P North S•P South

ALTITUDE SCALE

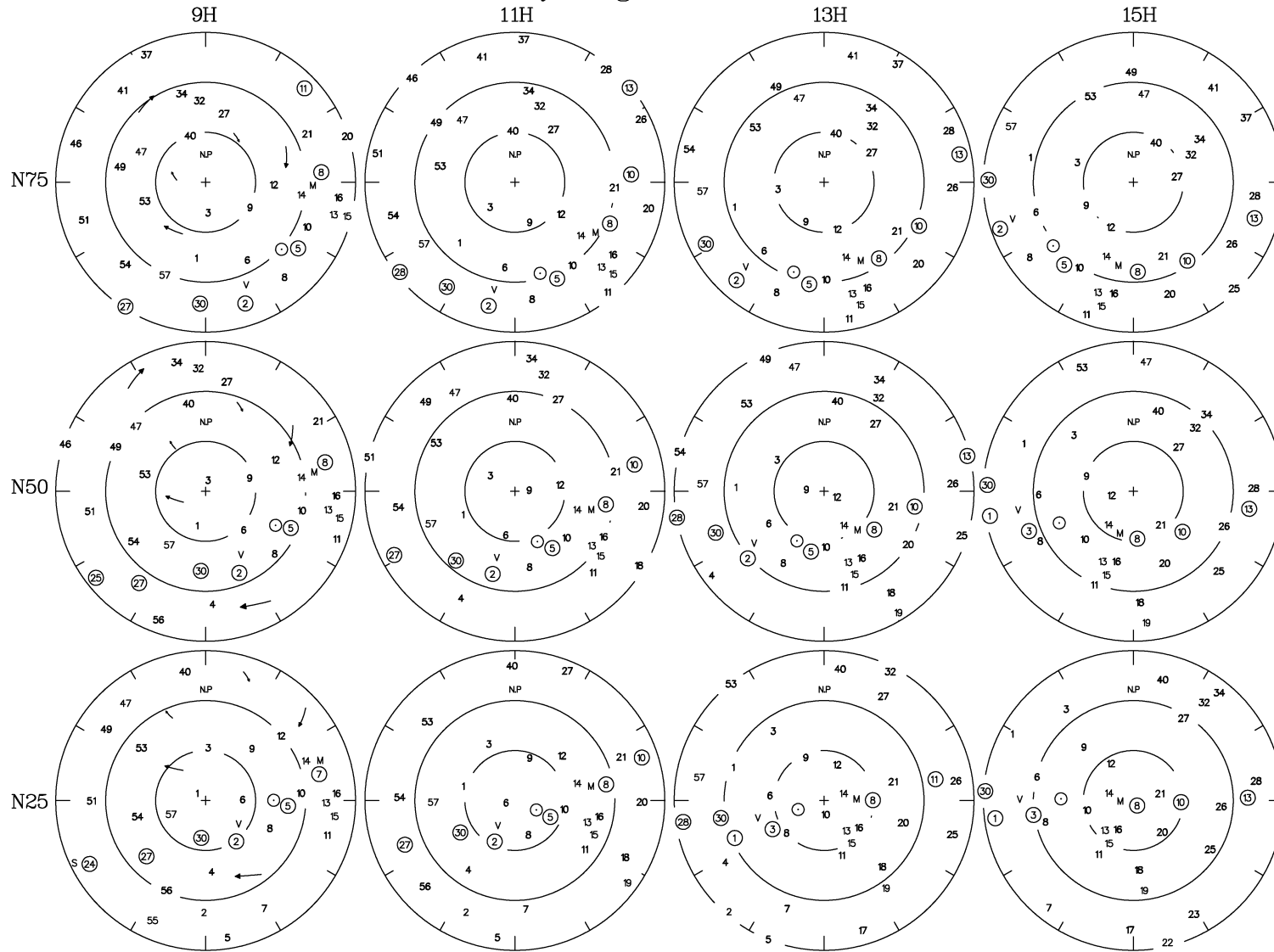


AZIMUTH



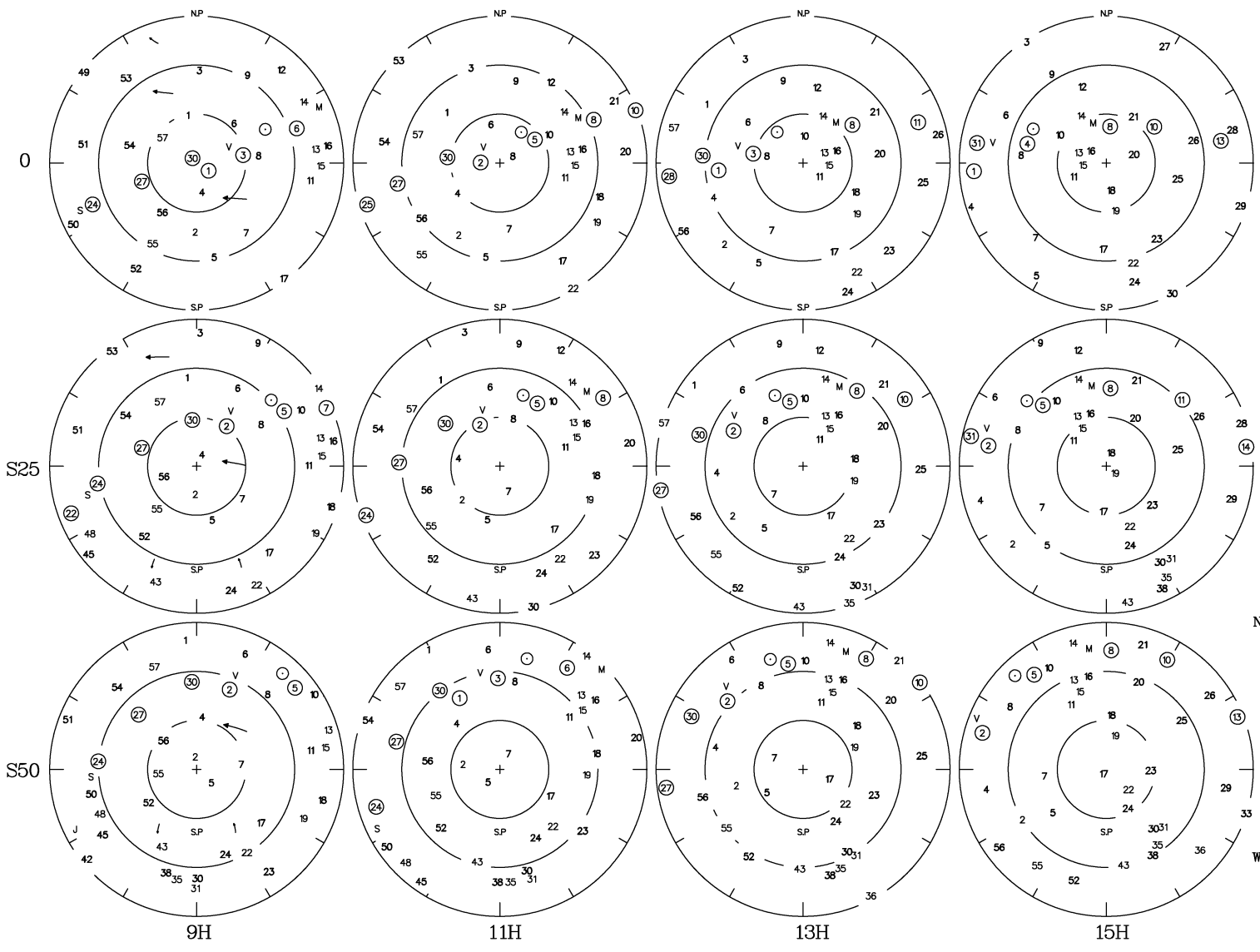
MORNING Sky Diagrams 2019 MAY

DAY Sky Diagrams 2019 MAY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

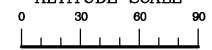
PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.7
- J Jupiter -2.5
- S Saturn 0.4

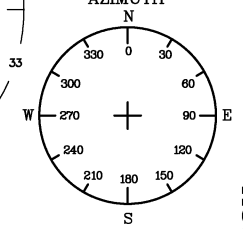
POLES

N•P North S•P South

ALTITUDE SCALE

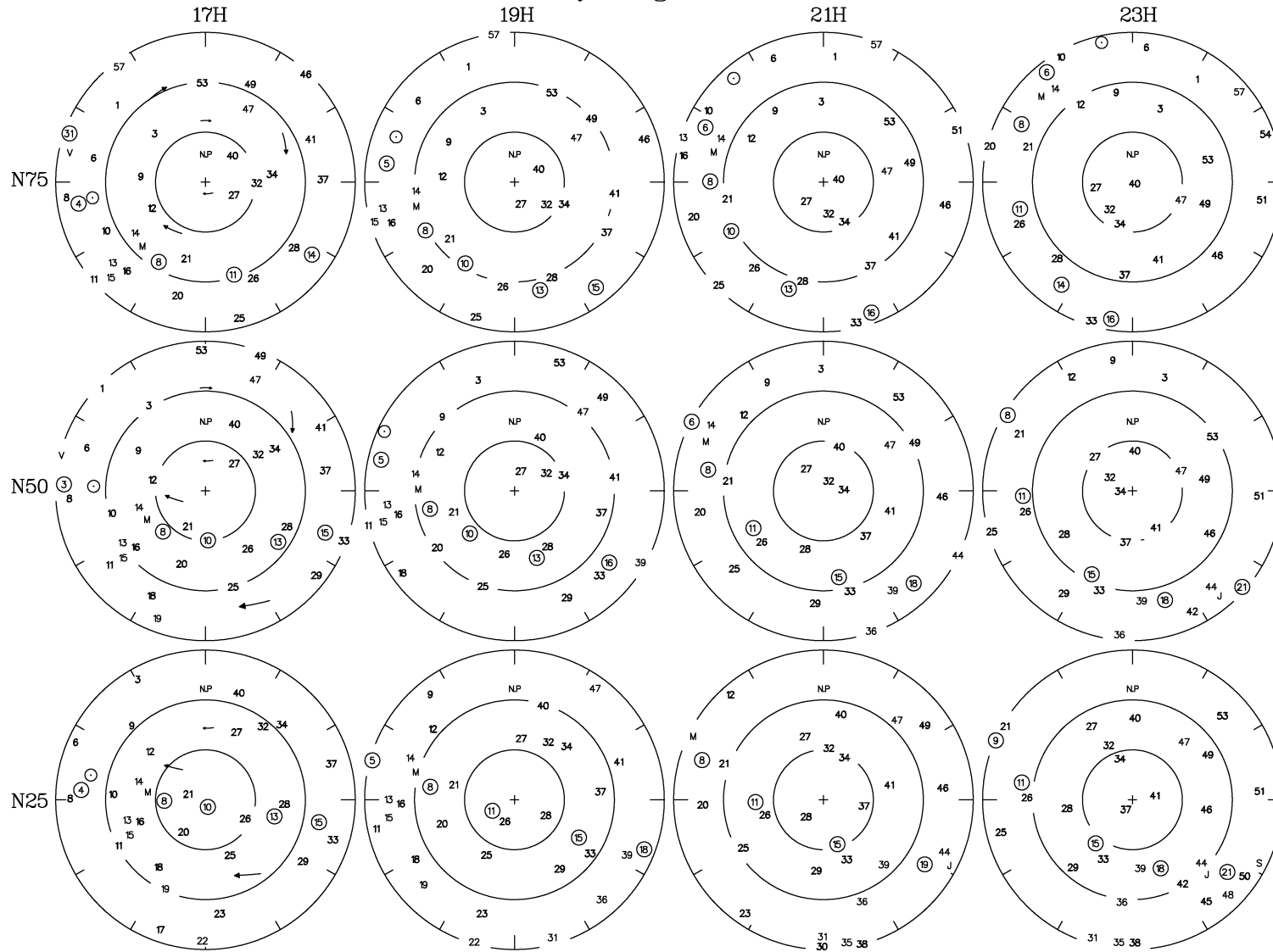


AZIMUTH



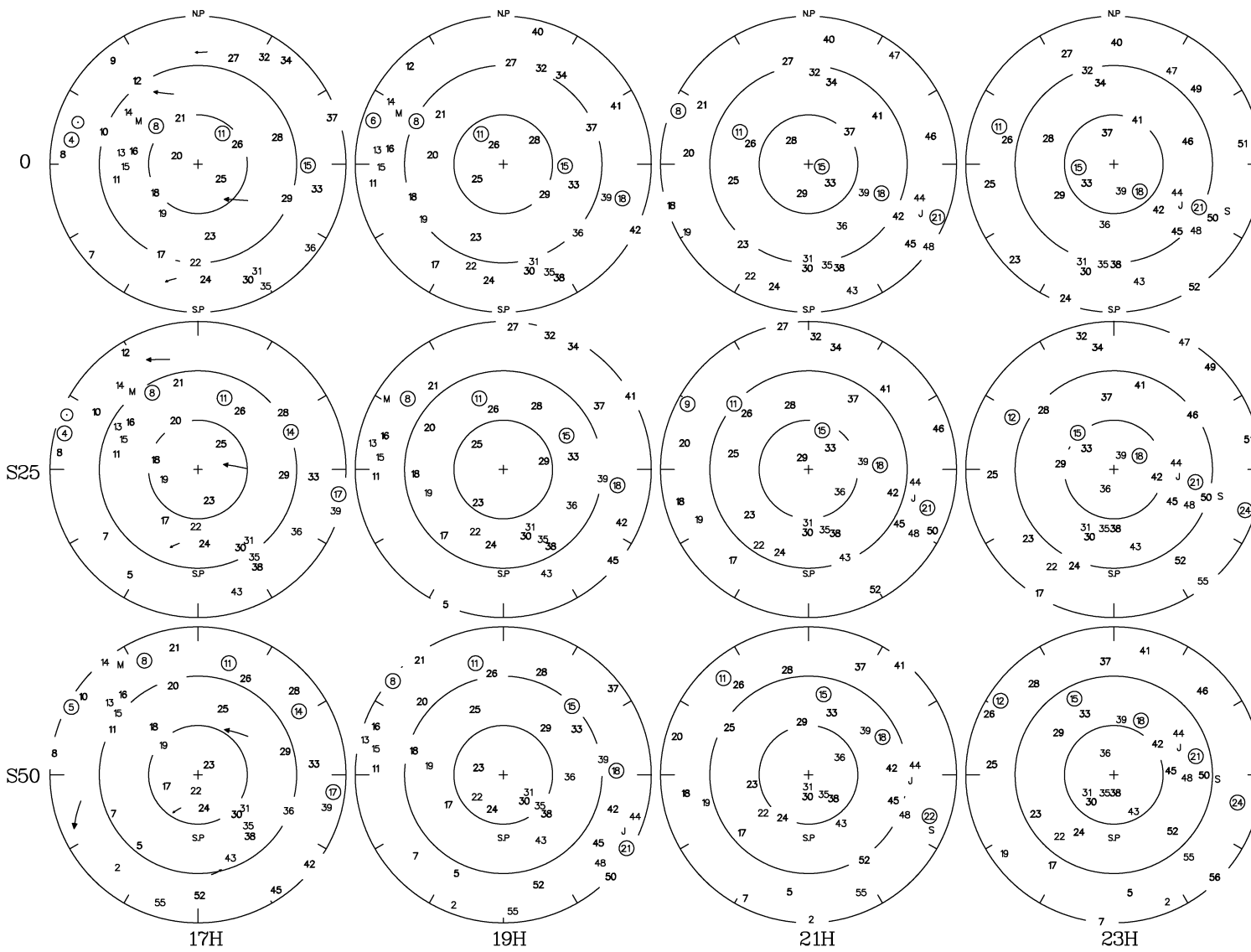
DAY Sky Diagrams 2019 MAY

# EVENING Sky Diagrams 2019 MAY



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

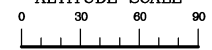
PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.7
- J Jupiter -2.5
- S Saturn 0.4

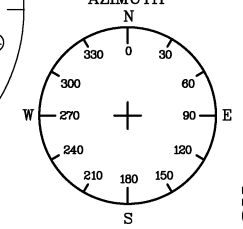
POLES

N•P North S•P South

ALTITUDE SCALE



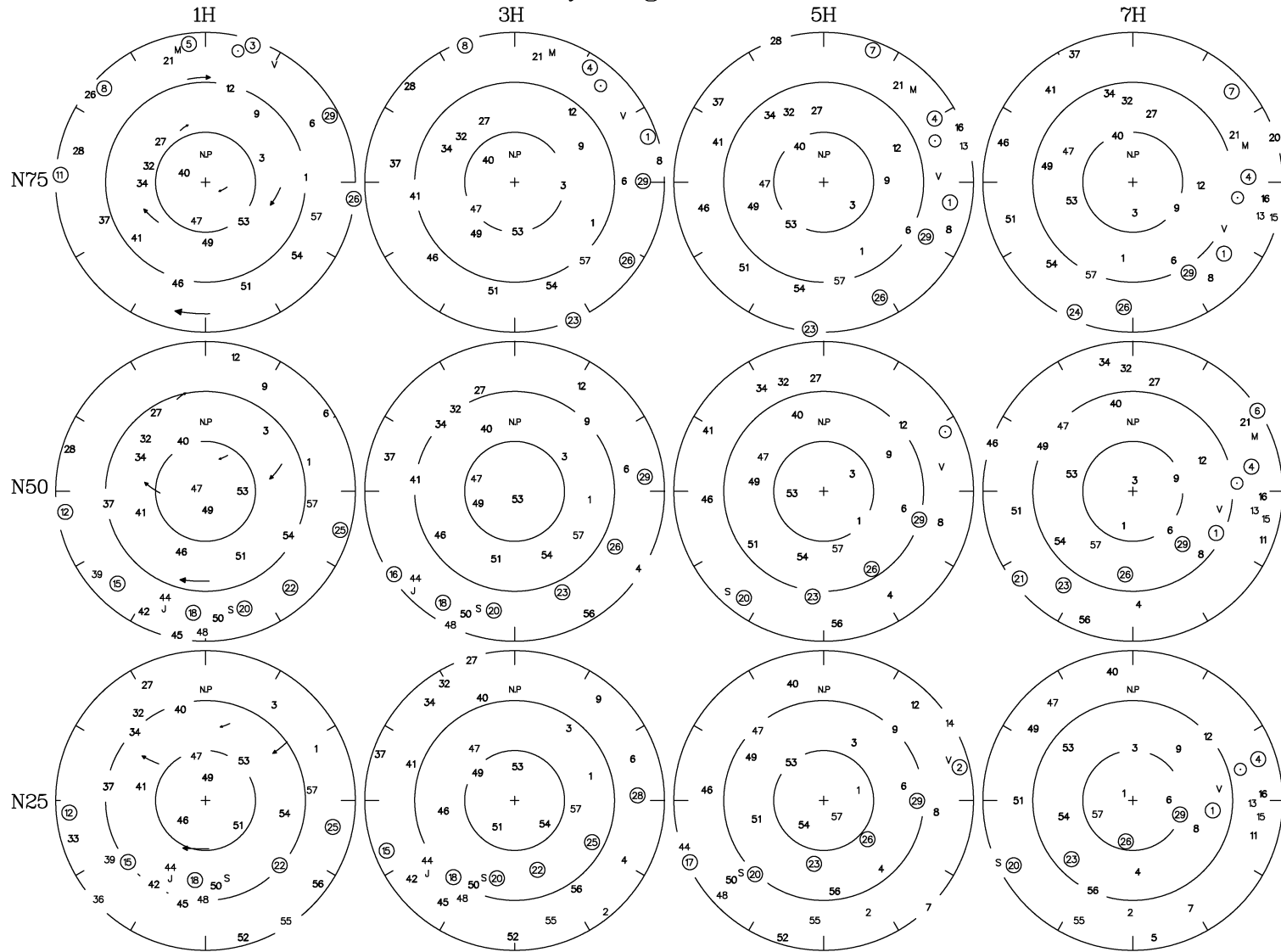
AZIMUTH



EVENING Sky Diagrams 2019 MAY

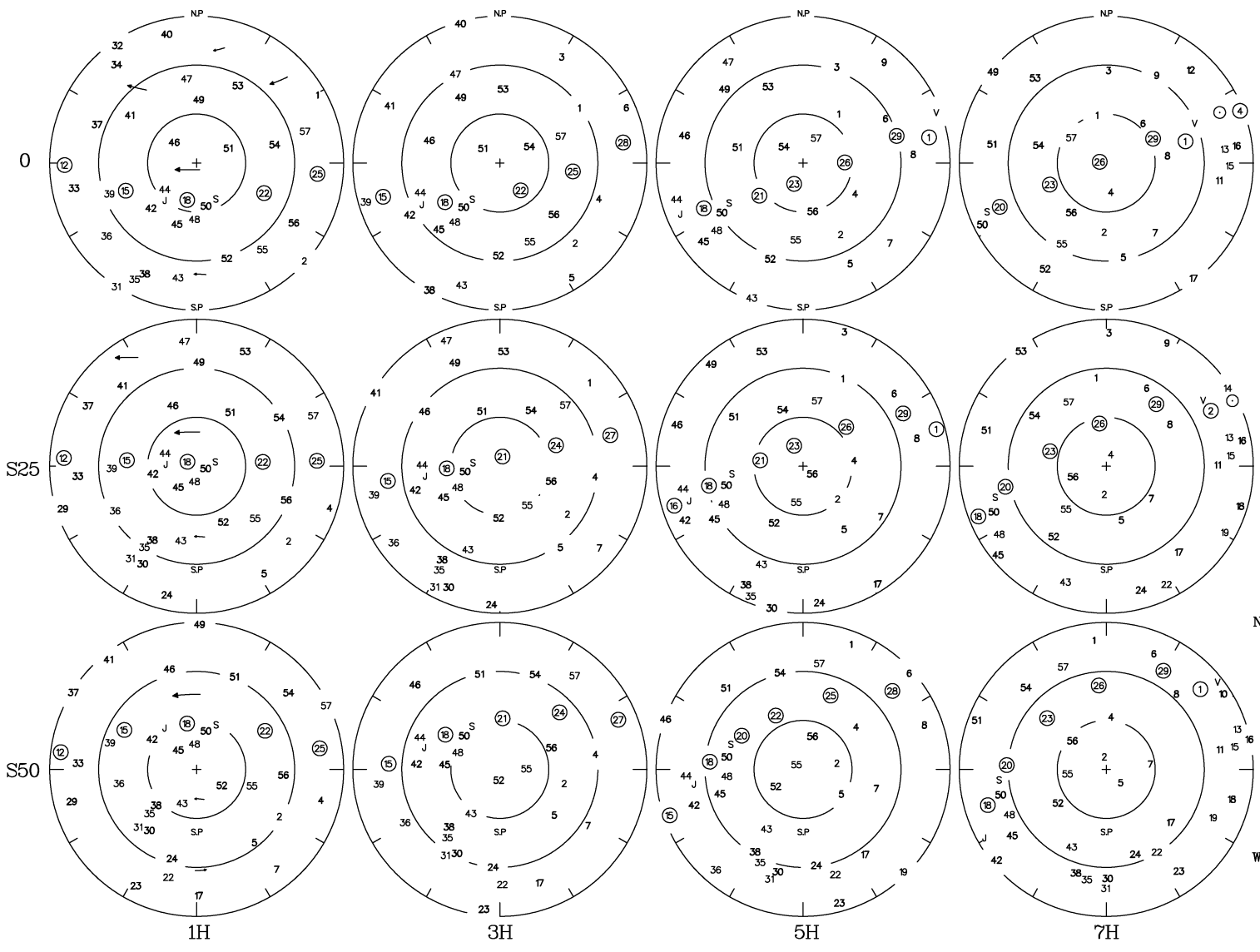


MORNING Sky Diagrams 2019 JUNE



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

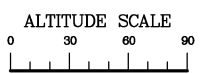
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

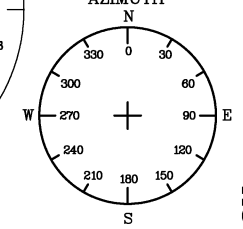
- V Venus -3.8
- M Mars 1.8
- J Jupiter -2.6
- S Saturn 0.2

POLES

N•P North S•P South

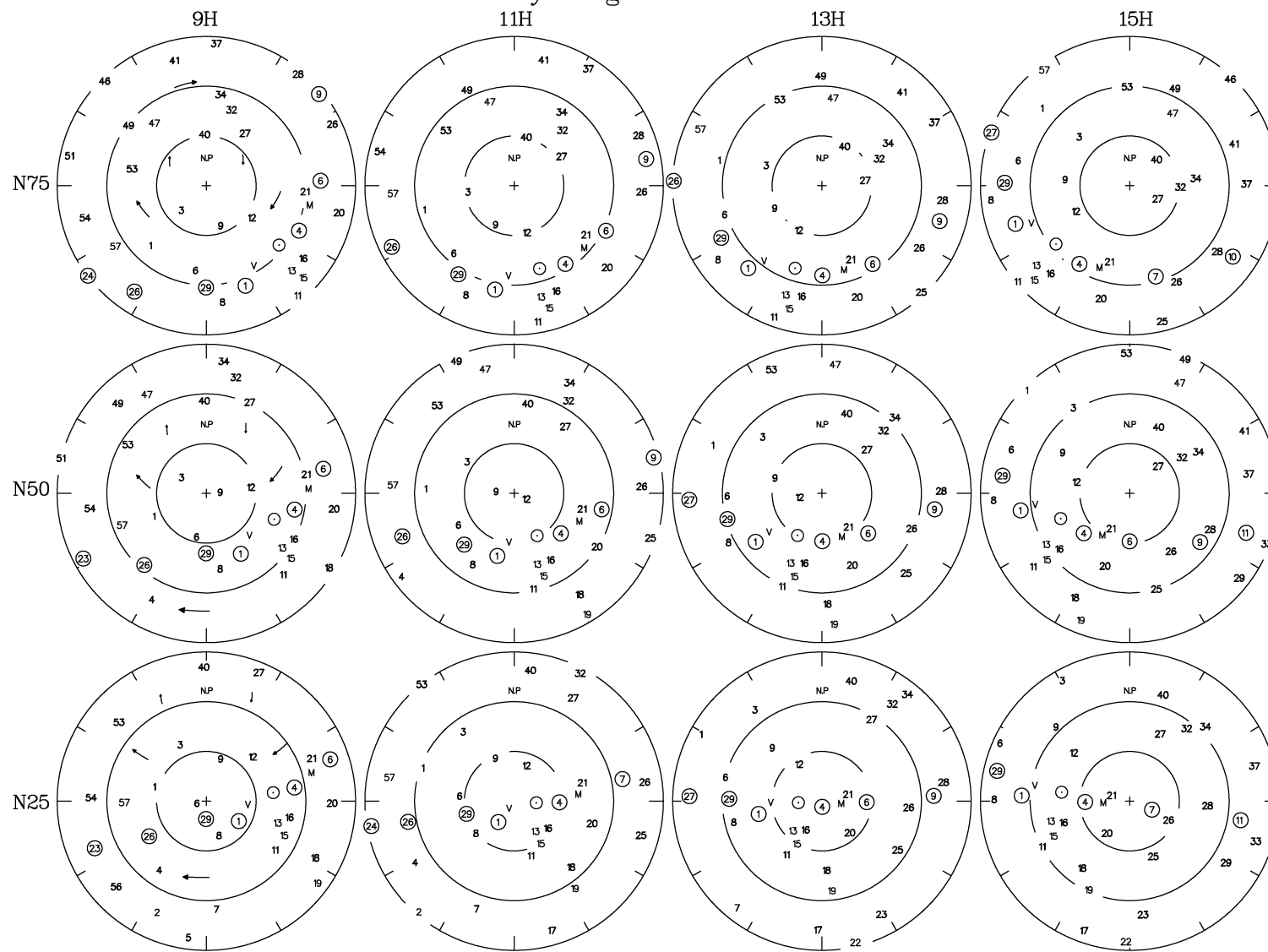


AZIMUTH



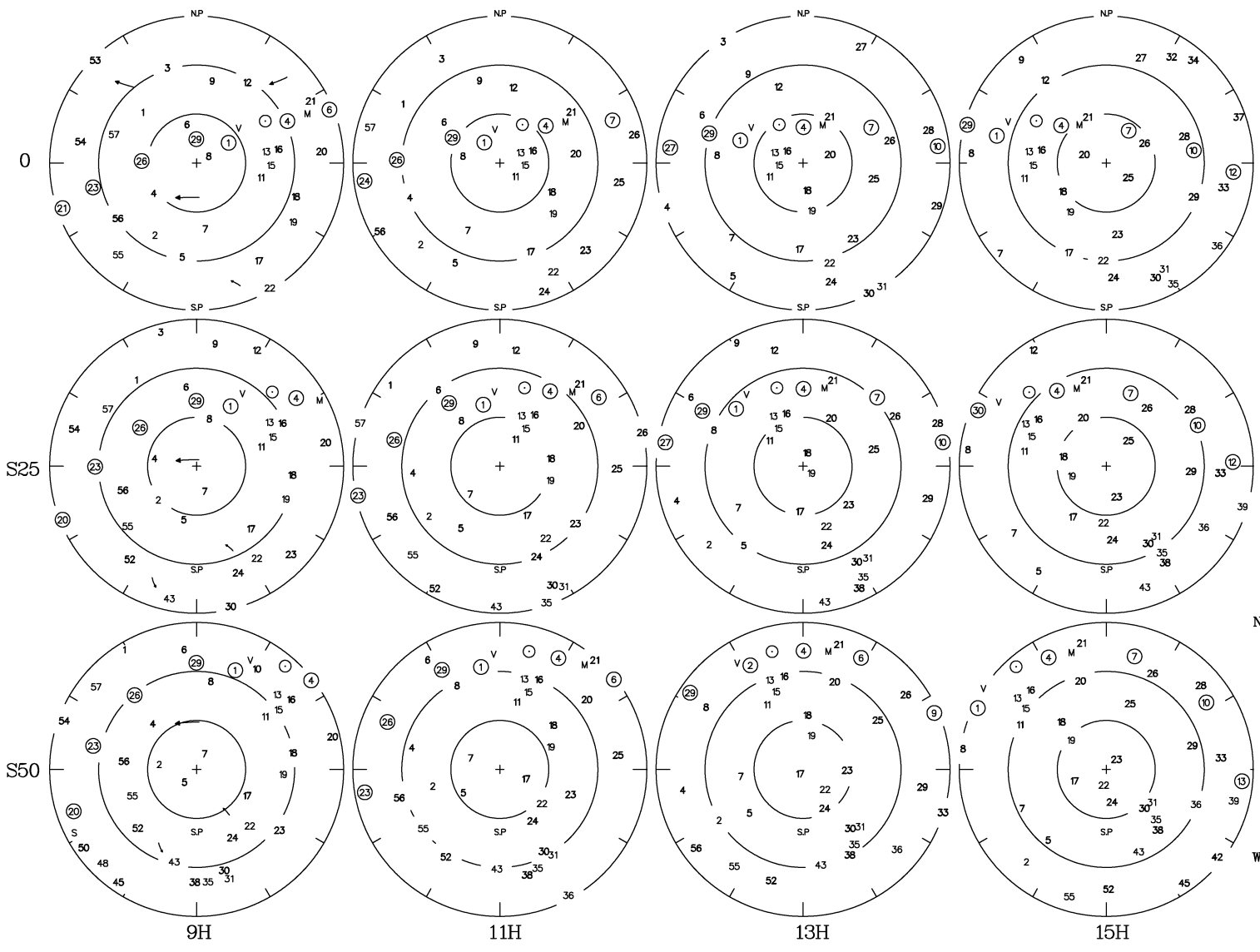
MORNING Sky Diagrams 2019 JUNE

# DAY Sky Diagrams 2019 JUNE



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var.  $\pm 0.5$  mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.8
- J Jupiter -2.6
- S Saturn 0.2

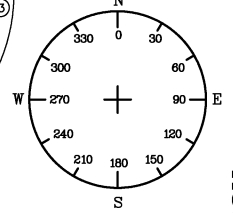
POLES

N•P North S•P South

ALTITUDE SCALE

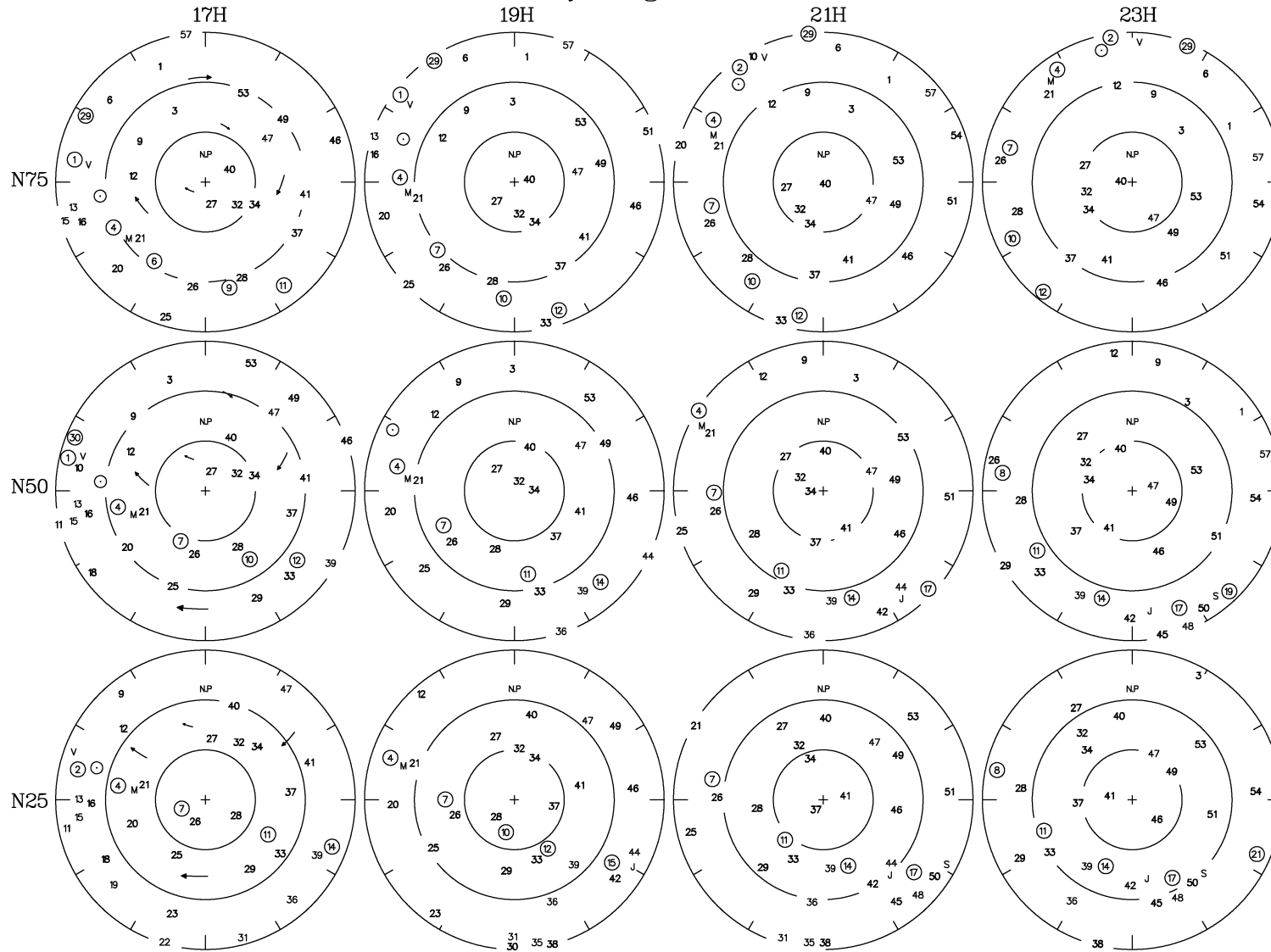


AZIMUTH



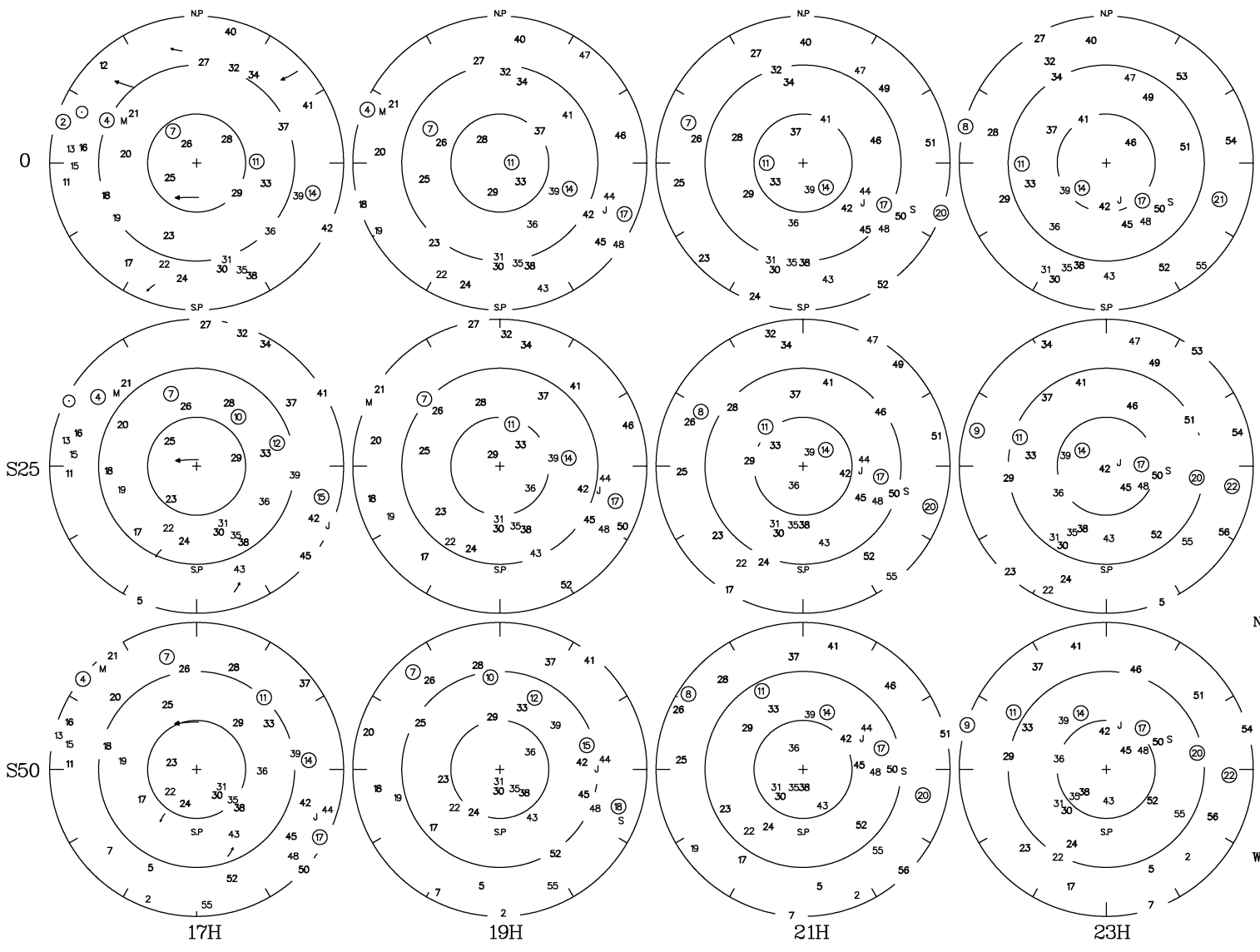
DAY Sky Diagrams 2019 JUNE

# EVENING Sky Diagrams 2019 JUNE



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var.  $\pm 0.5$  mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.8
- J Jupiter -2.6
- S Saturn 0.2

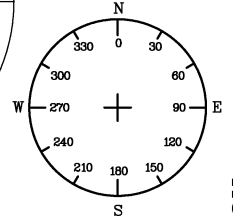
POLES

N•P North S•P South

ALTITUDE SCALE

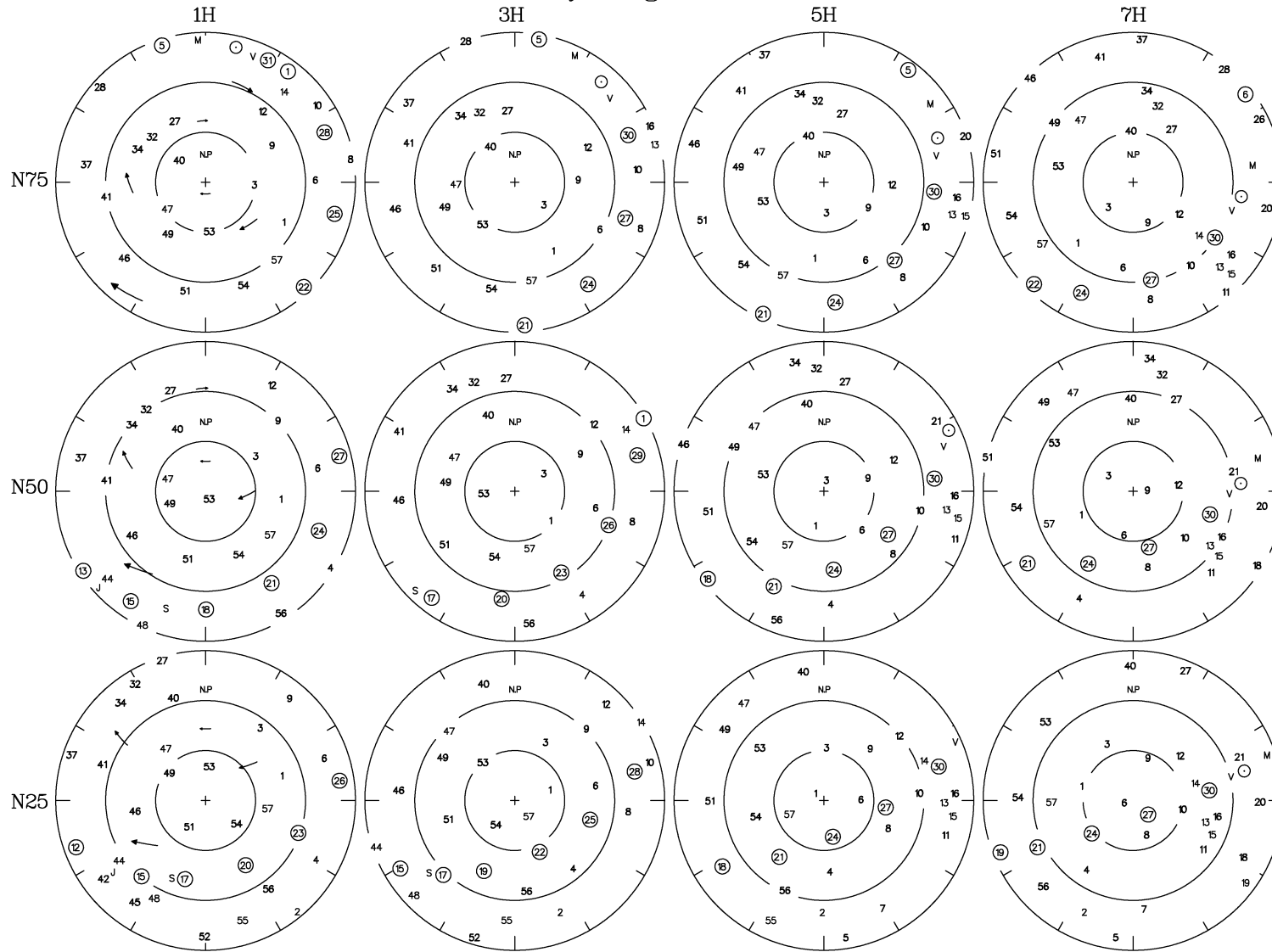


AZIMUTH



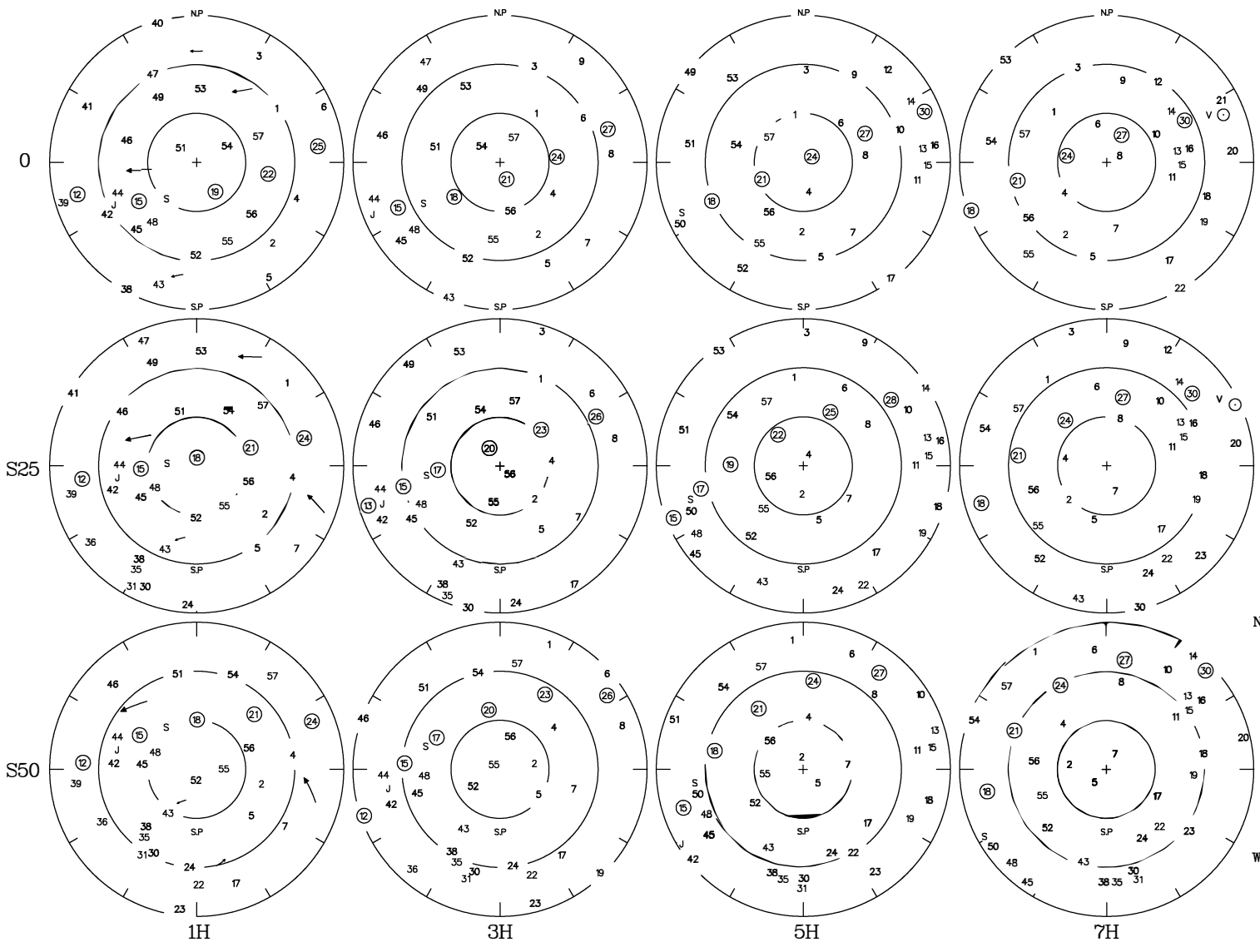
EVENING Sky Diagrams 2019 JUNE

MORNING Sky Diagrams 2019 JULY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

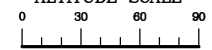
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.8
- J Jupiter -2.5
- S Saturn 0.1

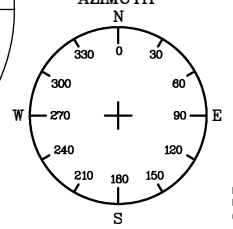
POLES

N•P North S•P South

ALTITUDE SCALE



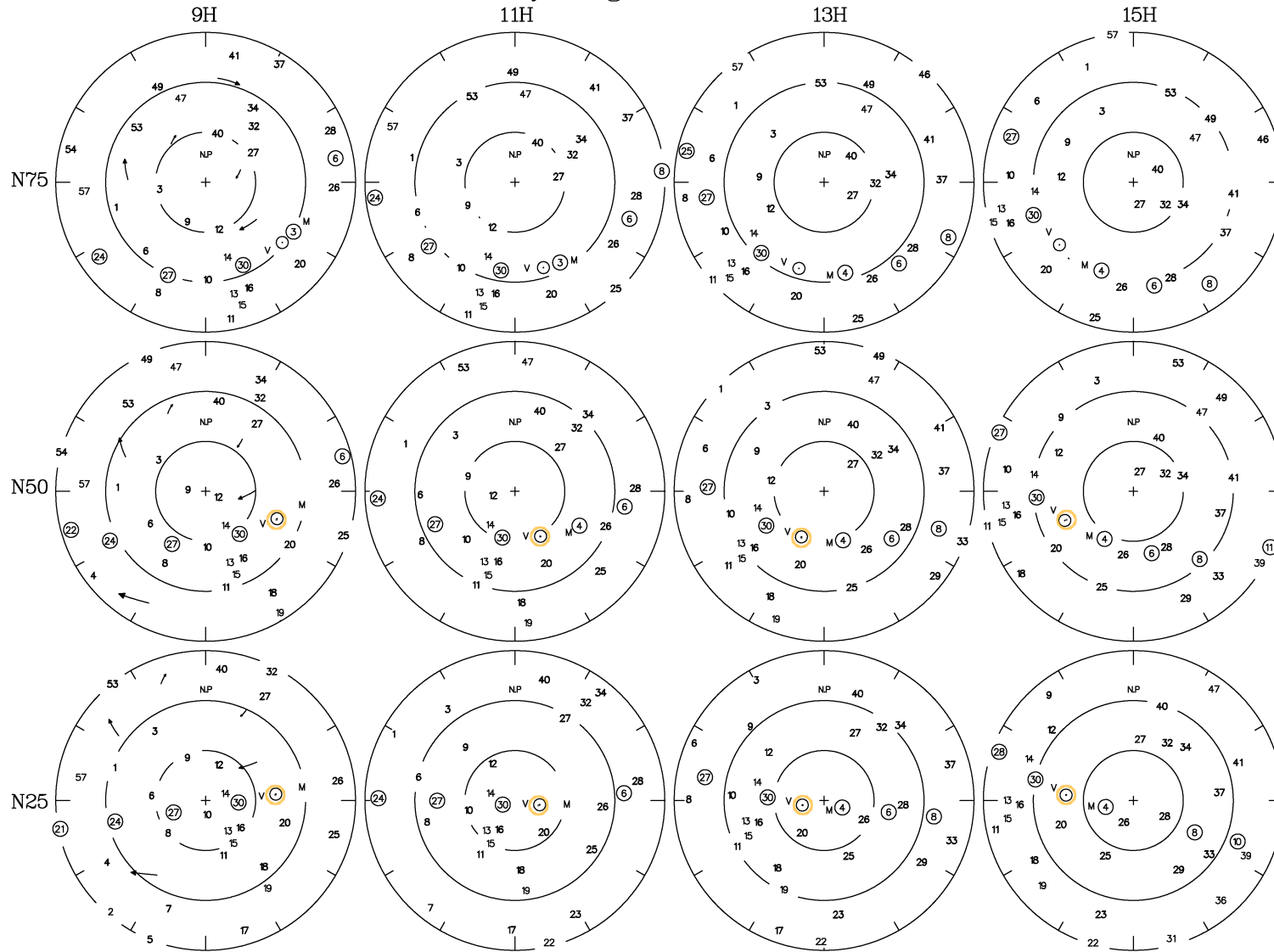
AZIMUTH



MORNING Sky Diagrams 2019 JULY

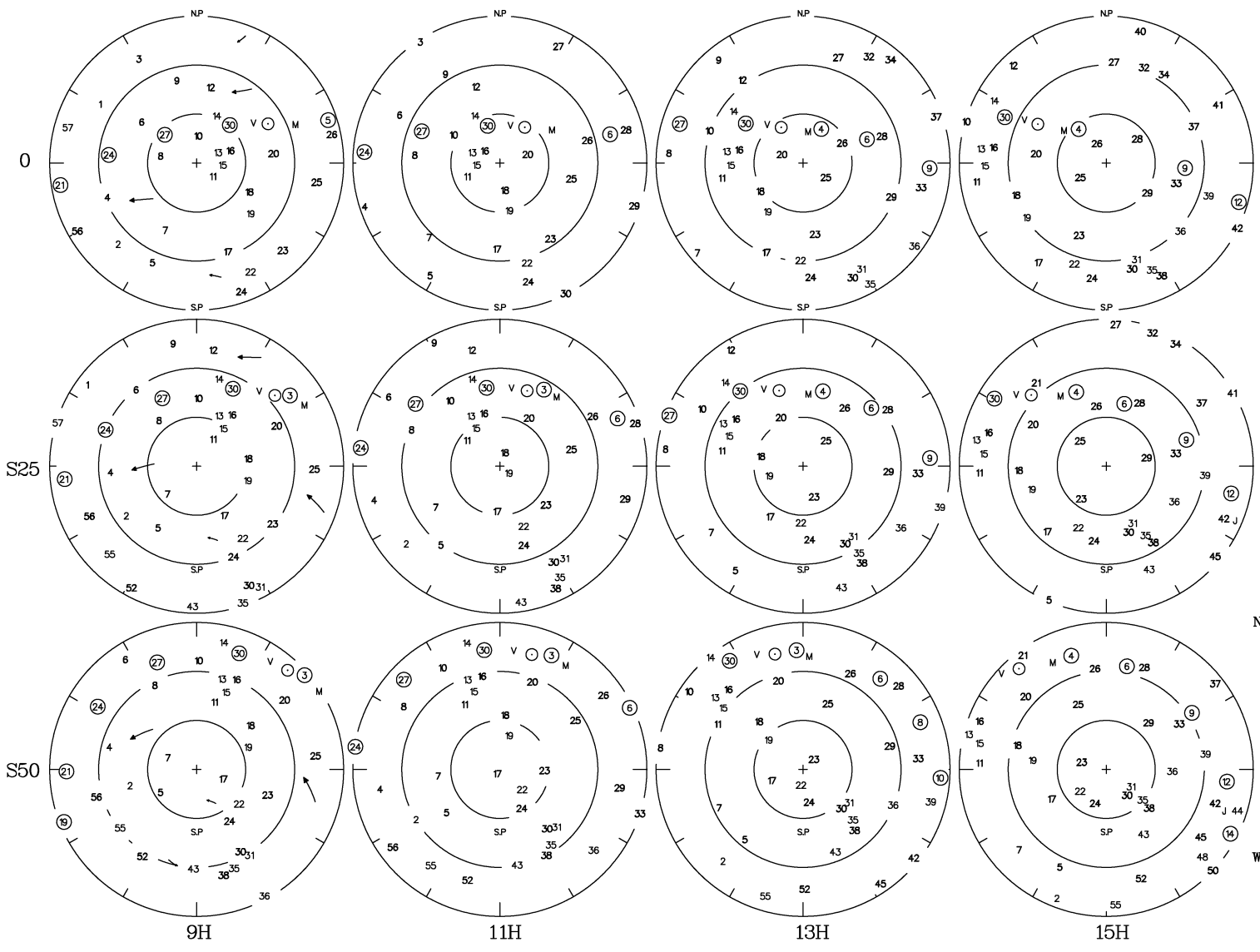


# DAY Sky Diagrams 2019 JULY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

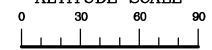
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.8
- J Jupiter -2.5
- S Saturn 0.1

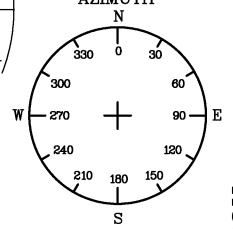
POLES

N•P North S•P South

ALTITUDE SCALE

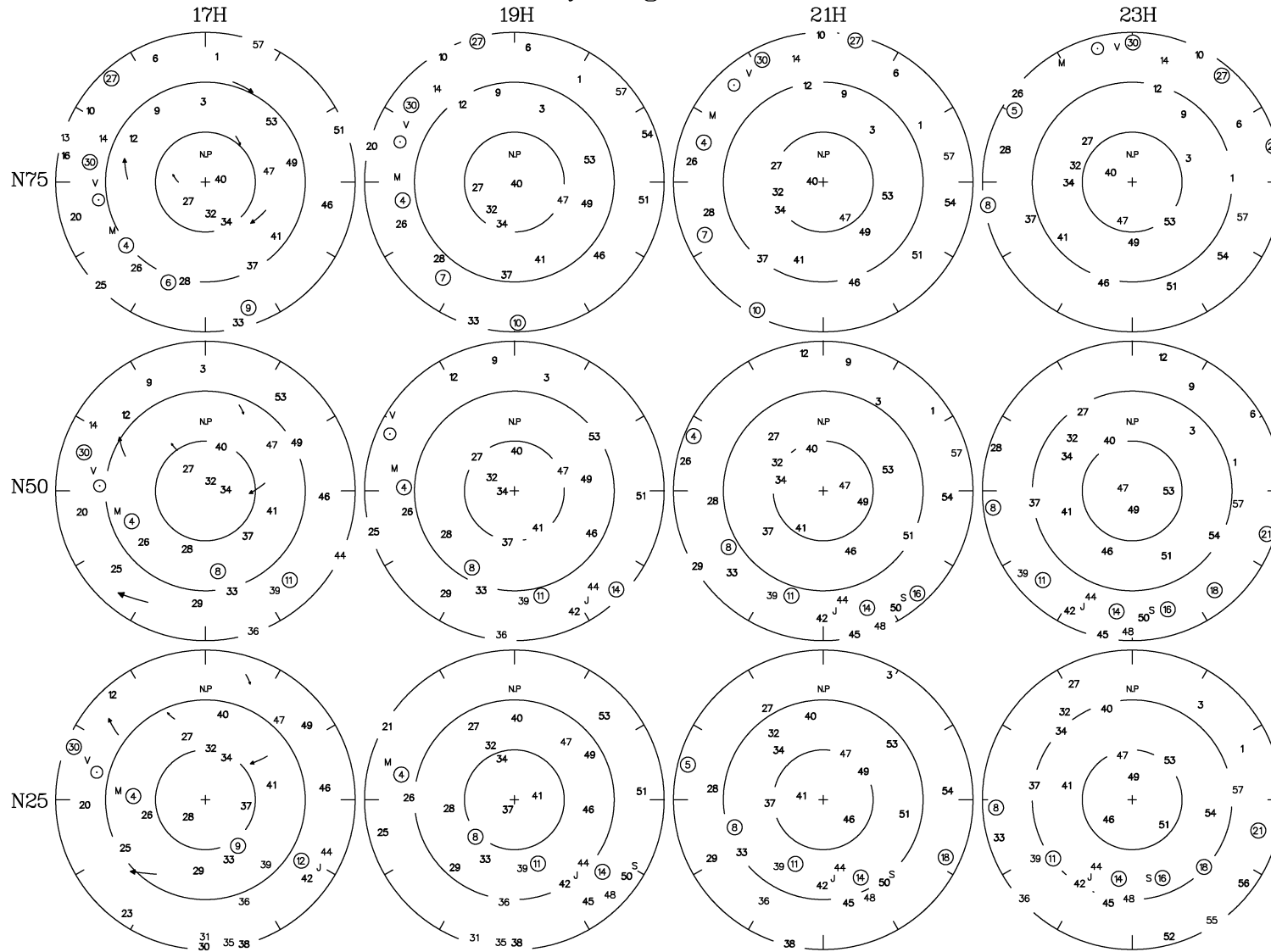


AZIMUTH



DAY Sky Diagrams 2019 JULY

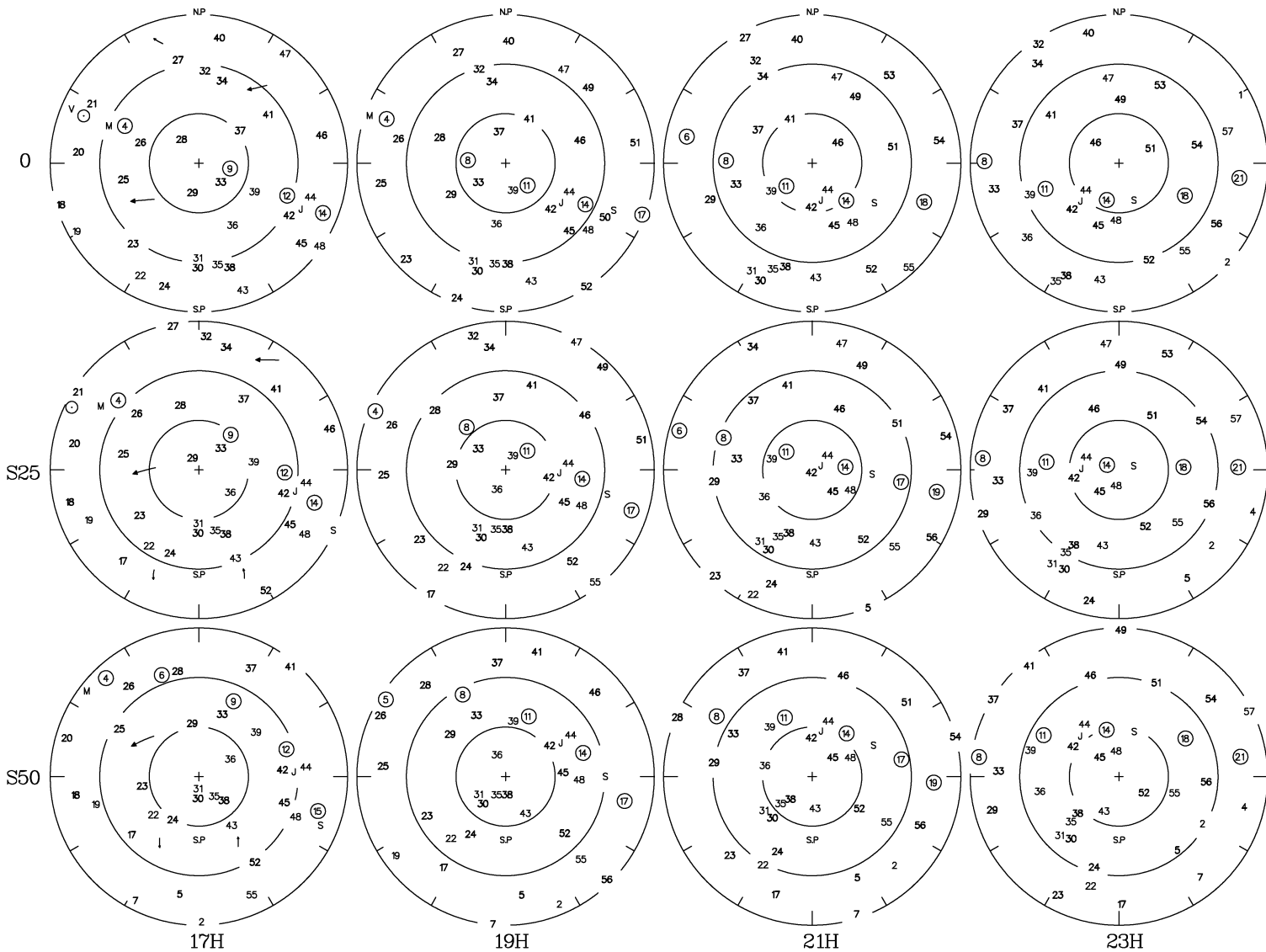
# EVENING Sky Diagrams 2019 JULY



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	5.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.

  = Magnitude 1 stars



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

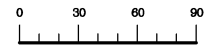
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.8
- J Jupiter -2.5
- S Saturn 0.1

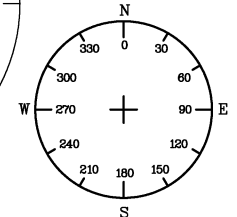
POLES

N•P North S•P South

ALTITUDE SCALE

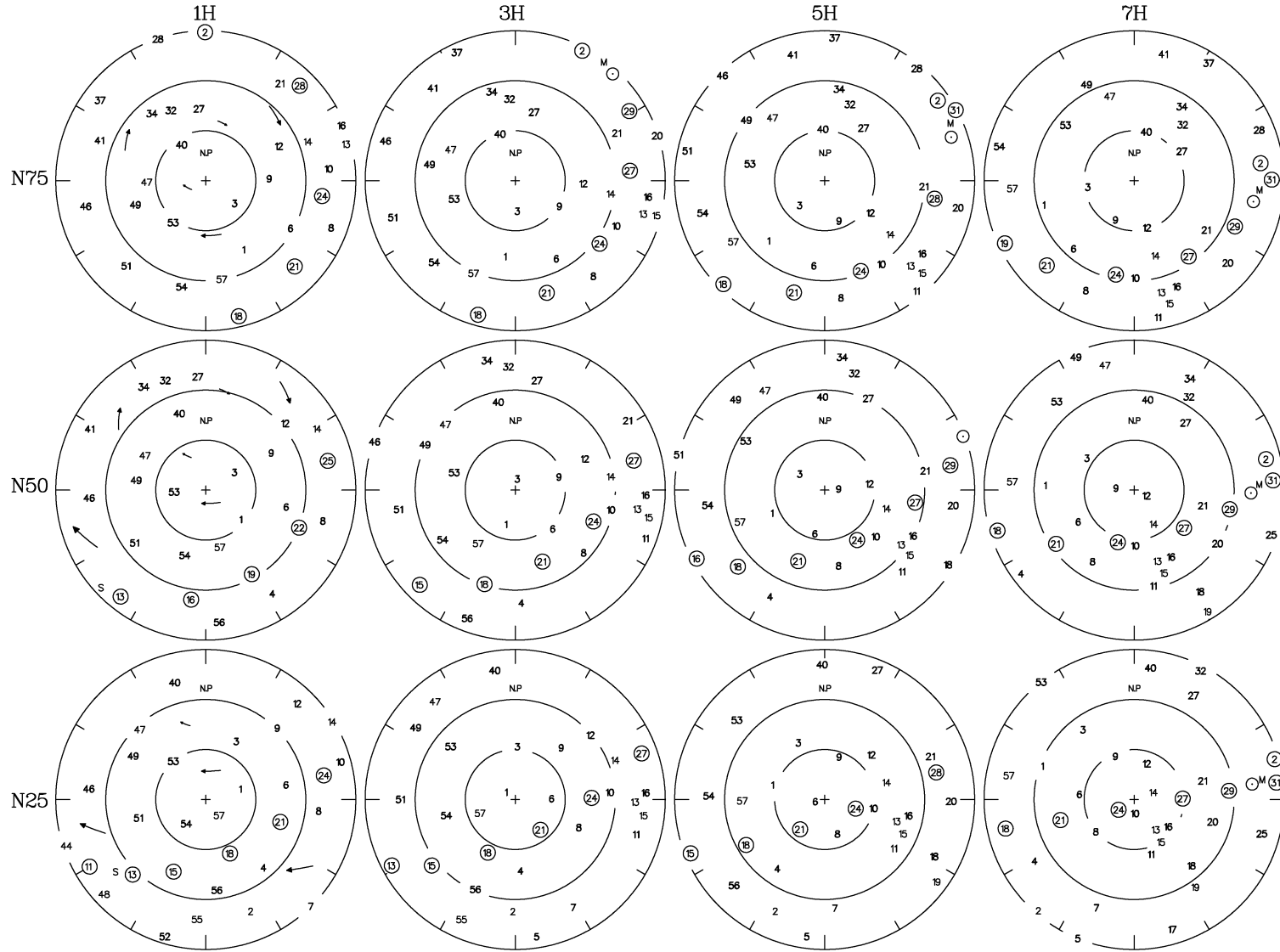


AZIMUTH



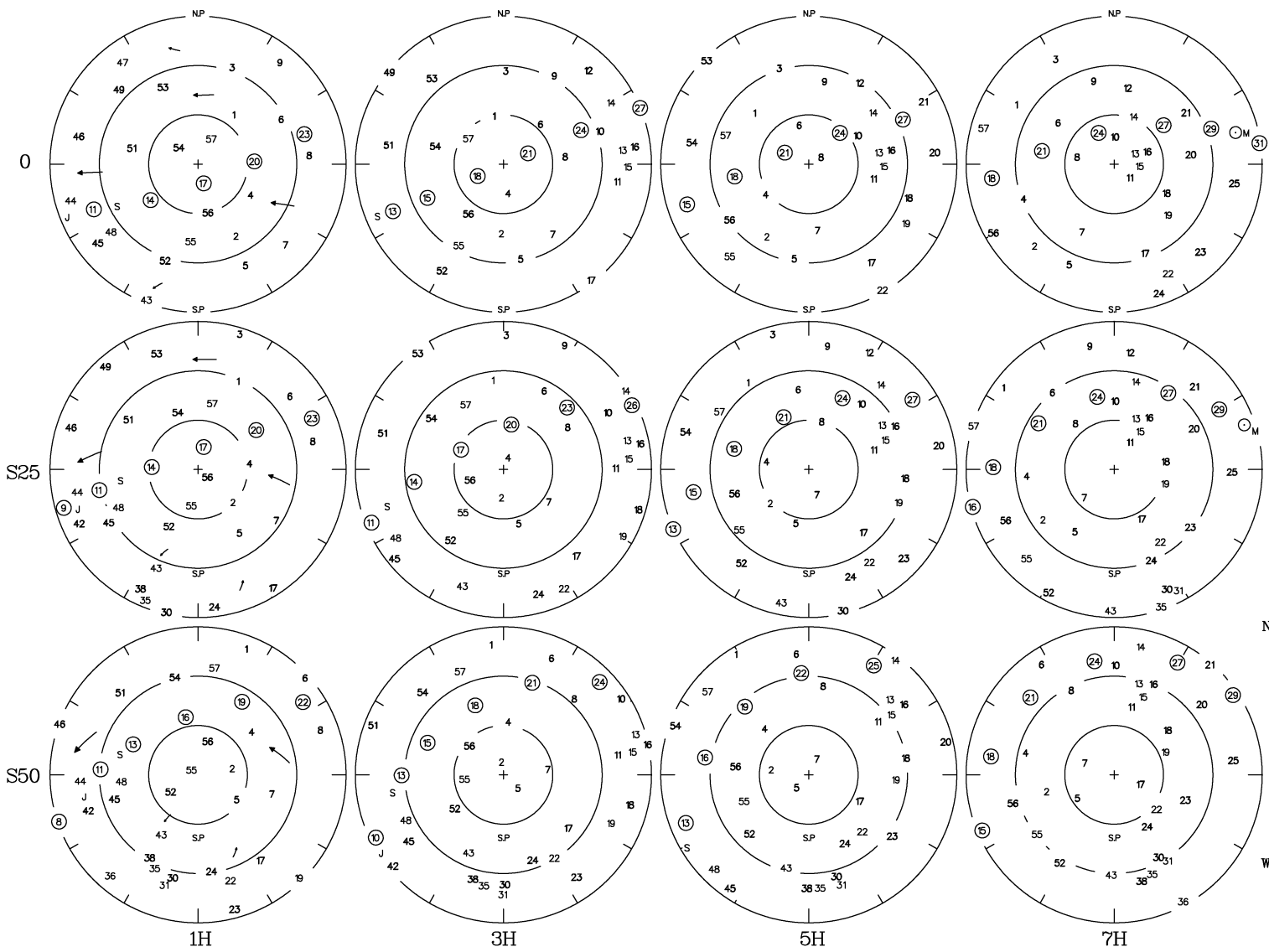
EVENING Sky Diagrams 2019 JULY

MORNING Sky Diagrams 2019 AUGUST



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

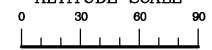
PLANETS Vis. Mag.

V	Venus	50.0
M	Mars	1.8
J	Jupiter	-2.3
S	Saturn	0.2

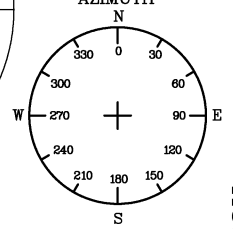
POLES

N•P North S•P South

ALTITUDE SCALE

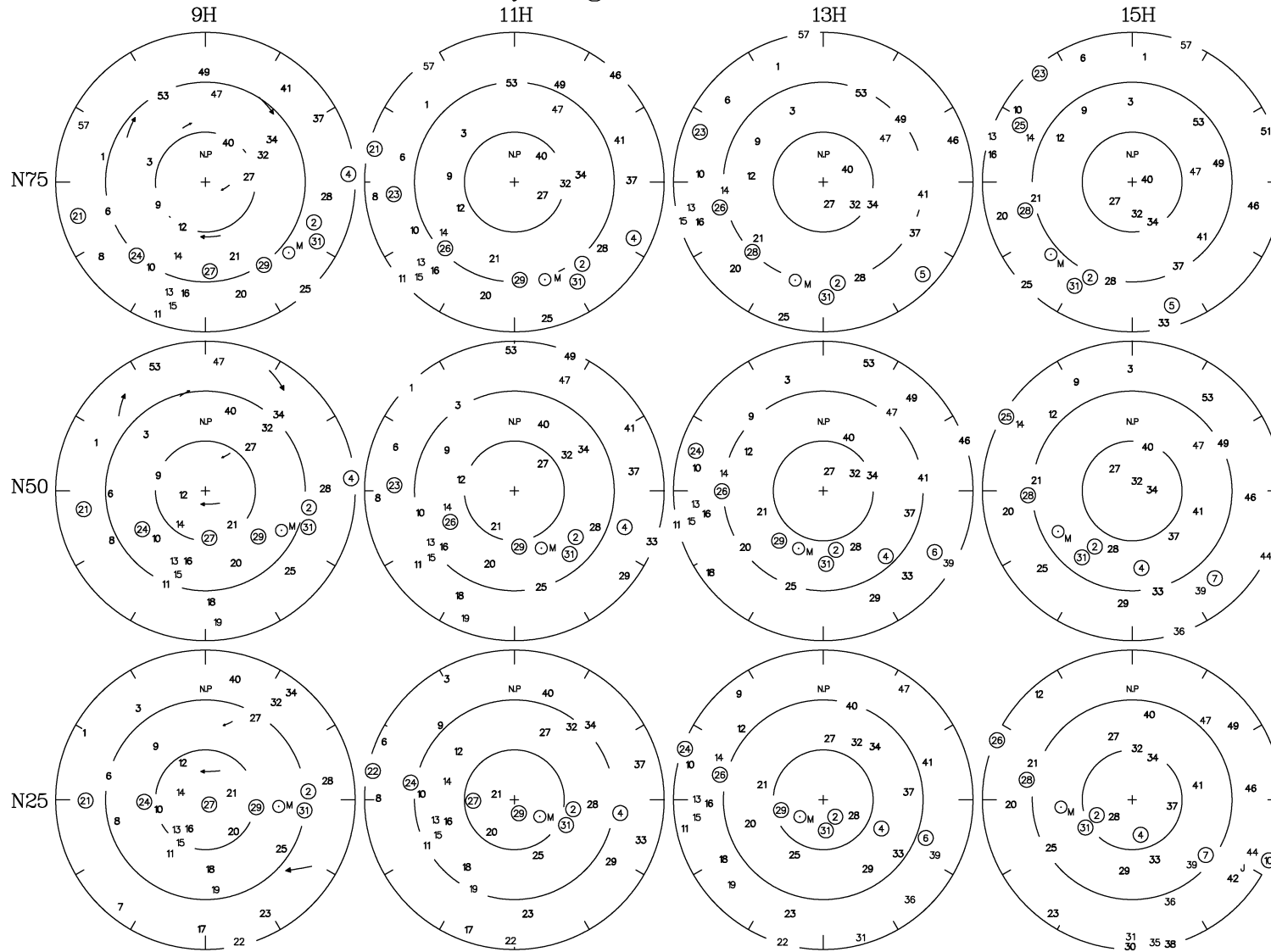


AZIMUTH



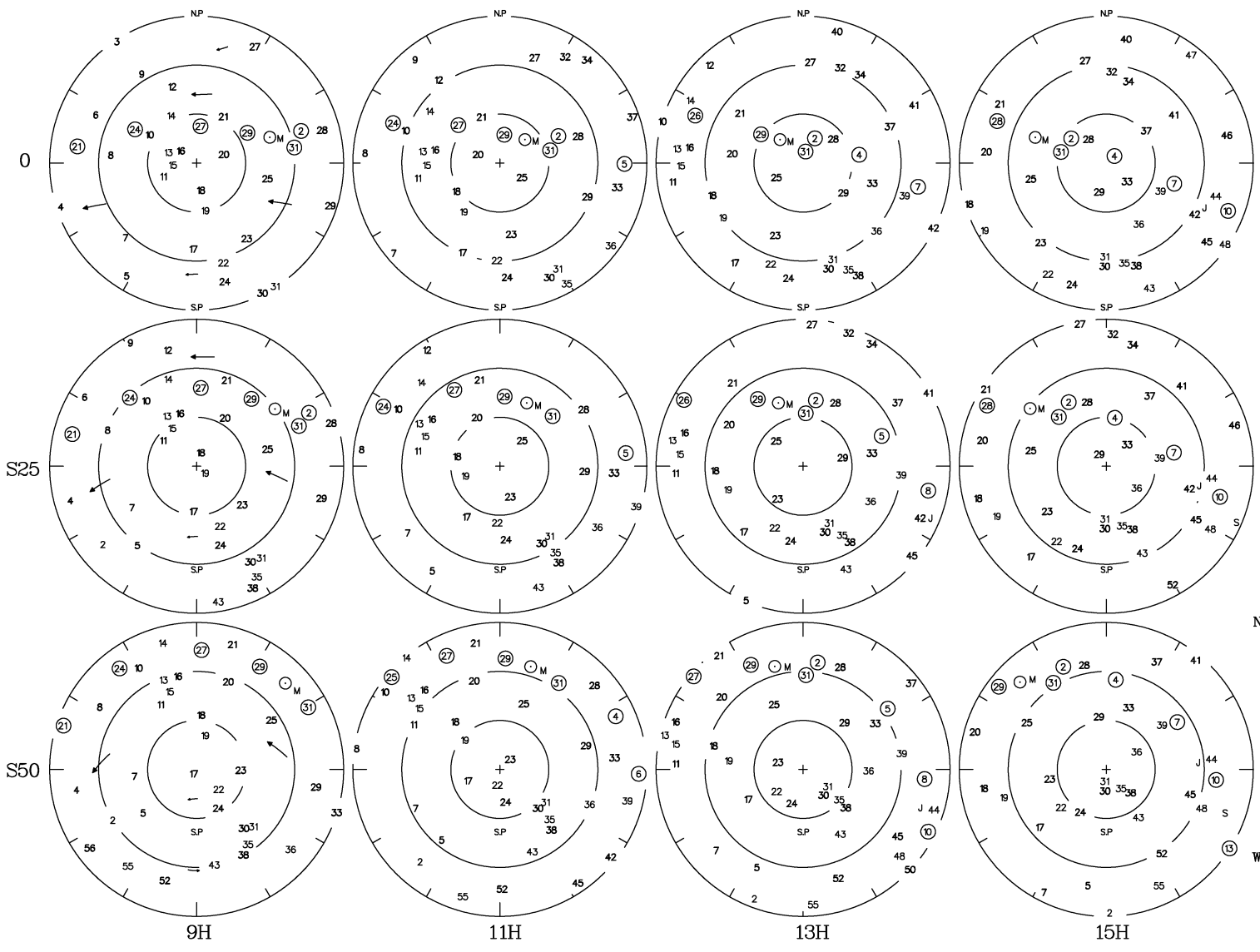
MORNING Sky Diagrams 2019 AUGUST

DAY Sky Diagrams 2019 AUGUST



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
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9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

V	Venus	50.0
M	Mars	1.8
J	Jupiter	-2.3
S	Saturn	0.2

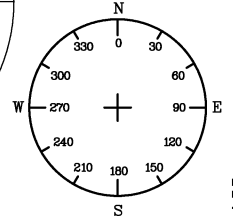
POLES

N•P North S•P South

ALTITUDE SCALE



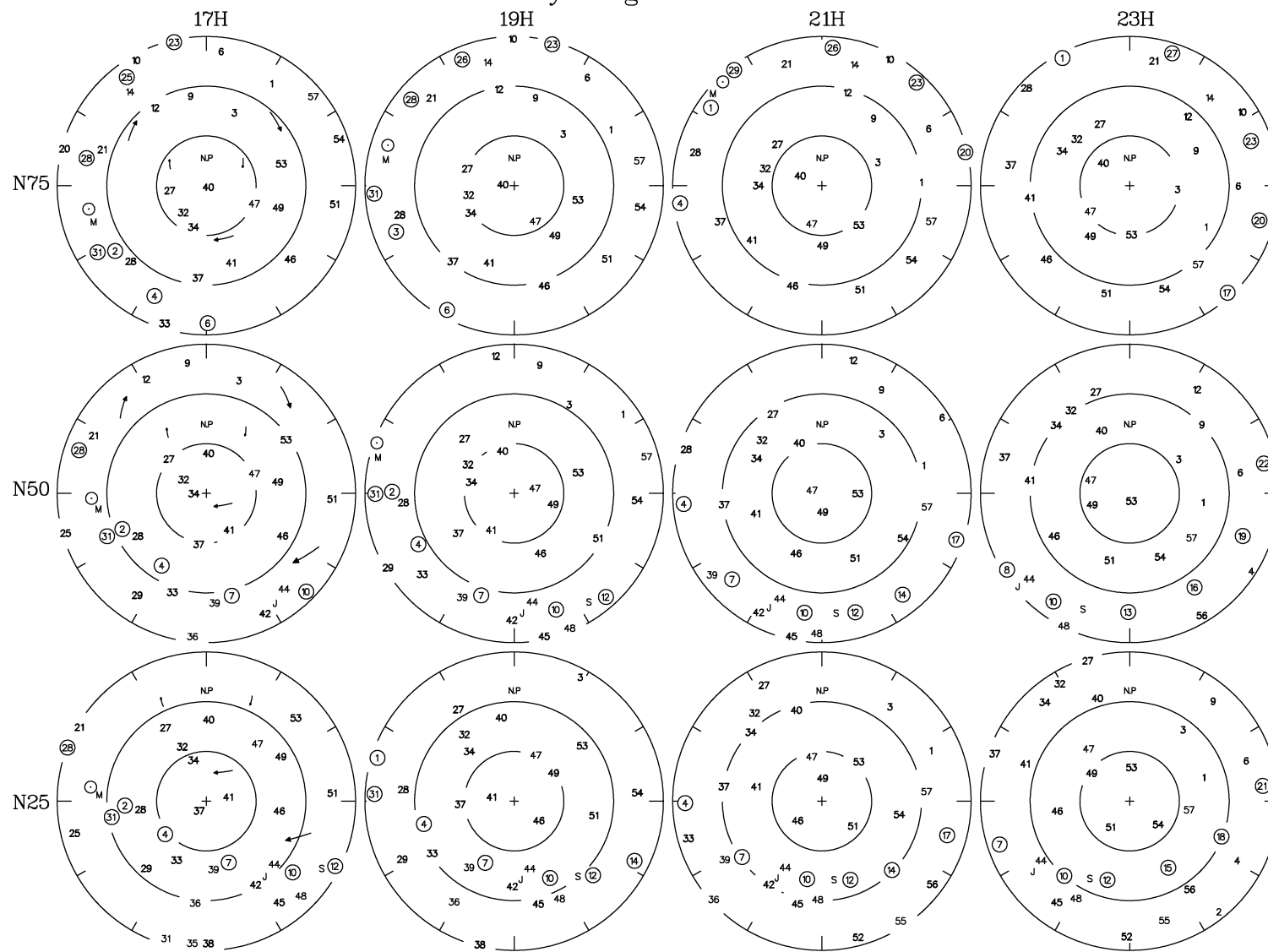
AZIMUTH



DAY Sky Diagrams 2019 AUGUST

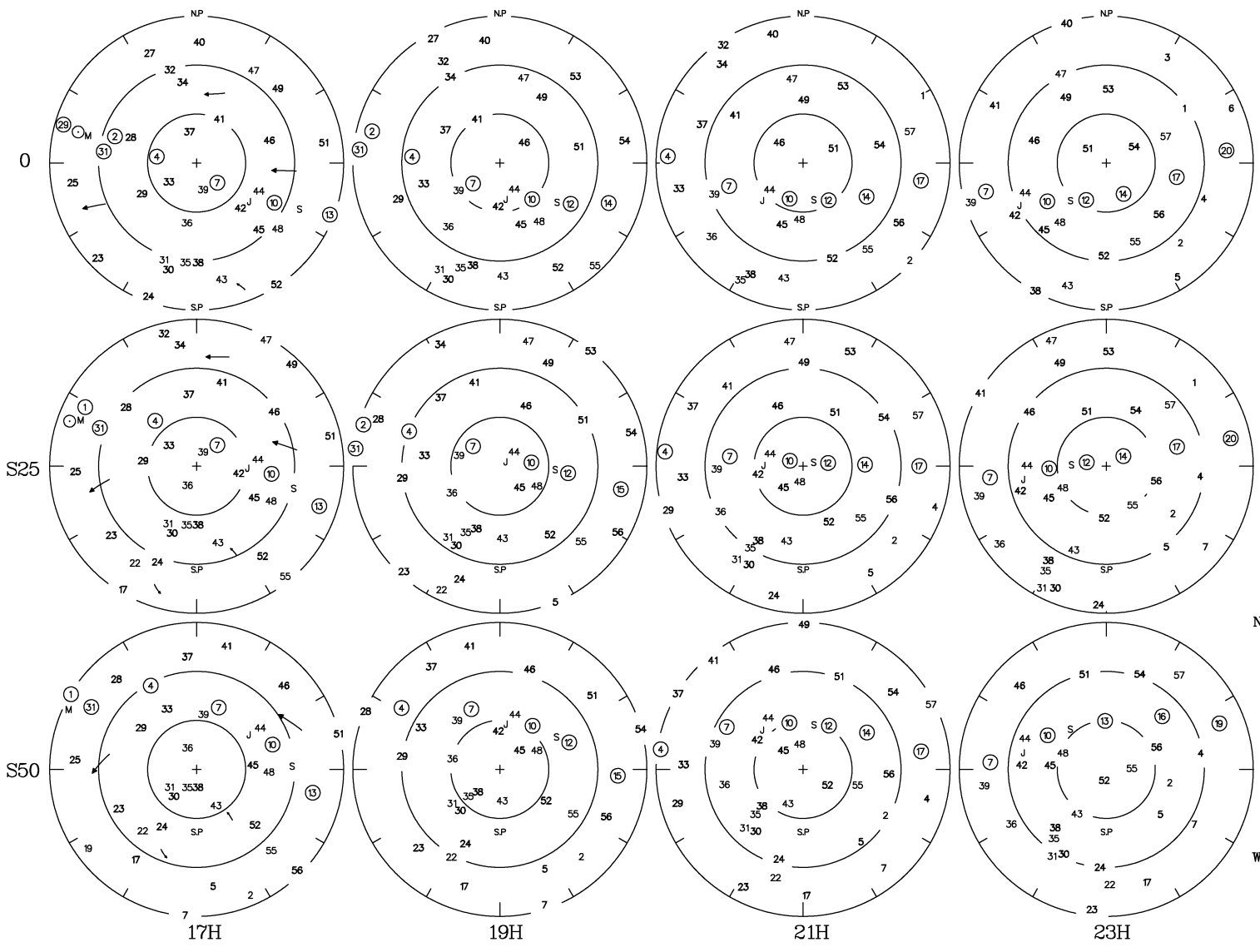


# EVENING Sky Diagrams 2019 AUGUST



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

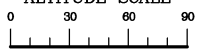
PLANETS Vis. Mag.

V	Venus	50.0
M	Mars	1.8
J	Jupiter	-2.3
S	Saturn	0.2

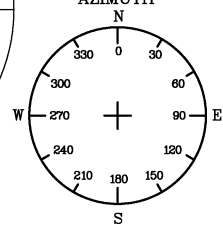
POLES

N•P North S•P South

ALTITUDE SCALE

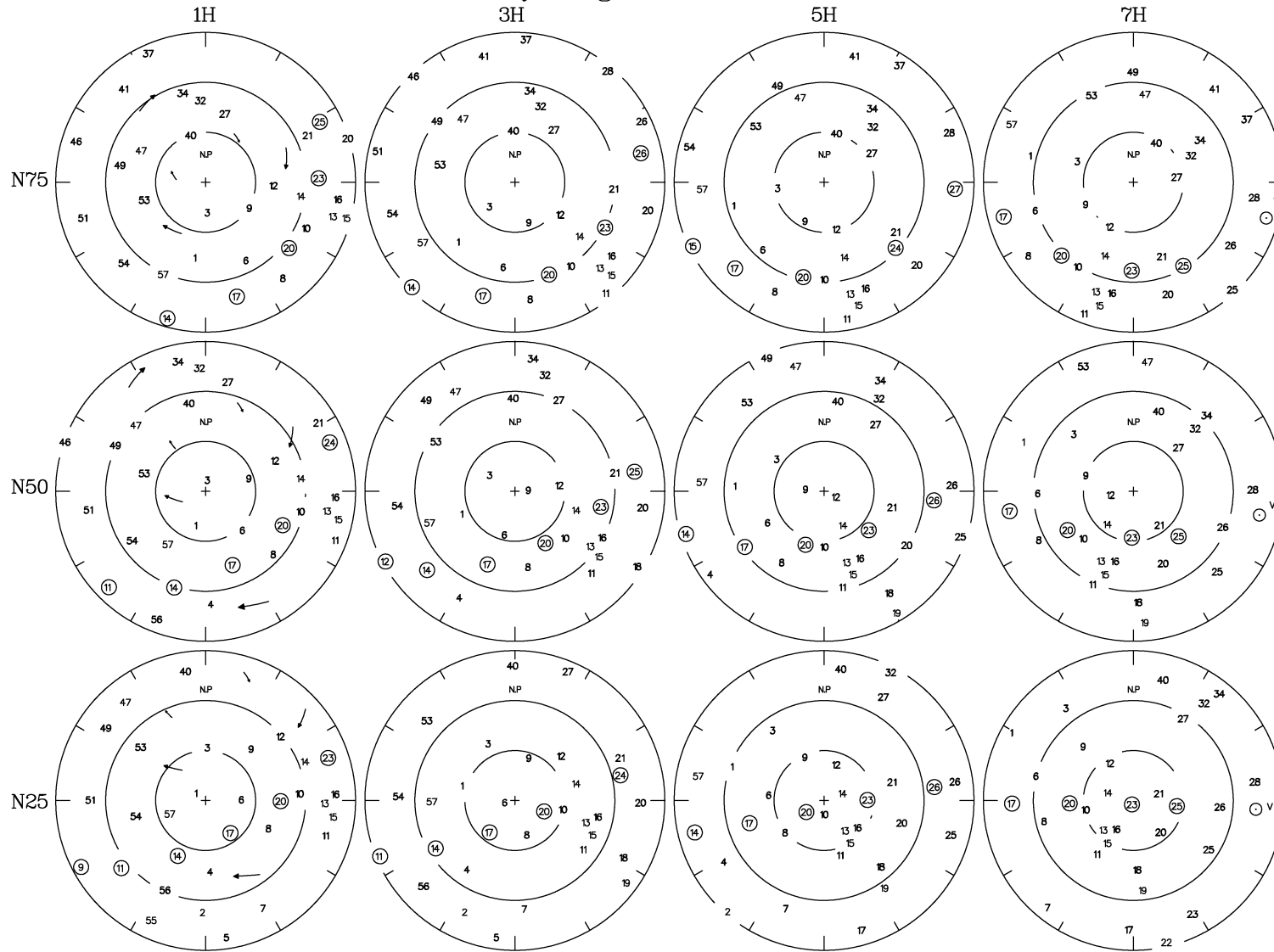


AZIMUTH



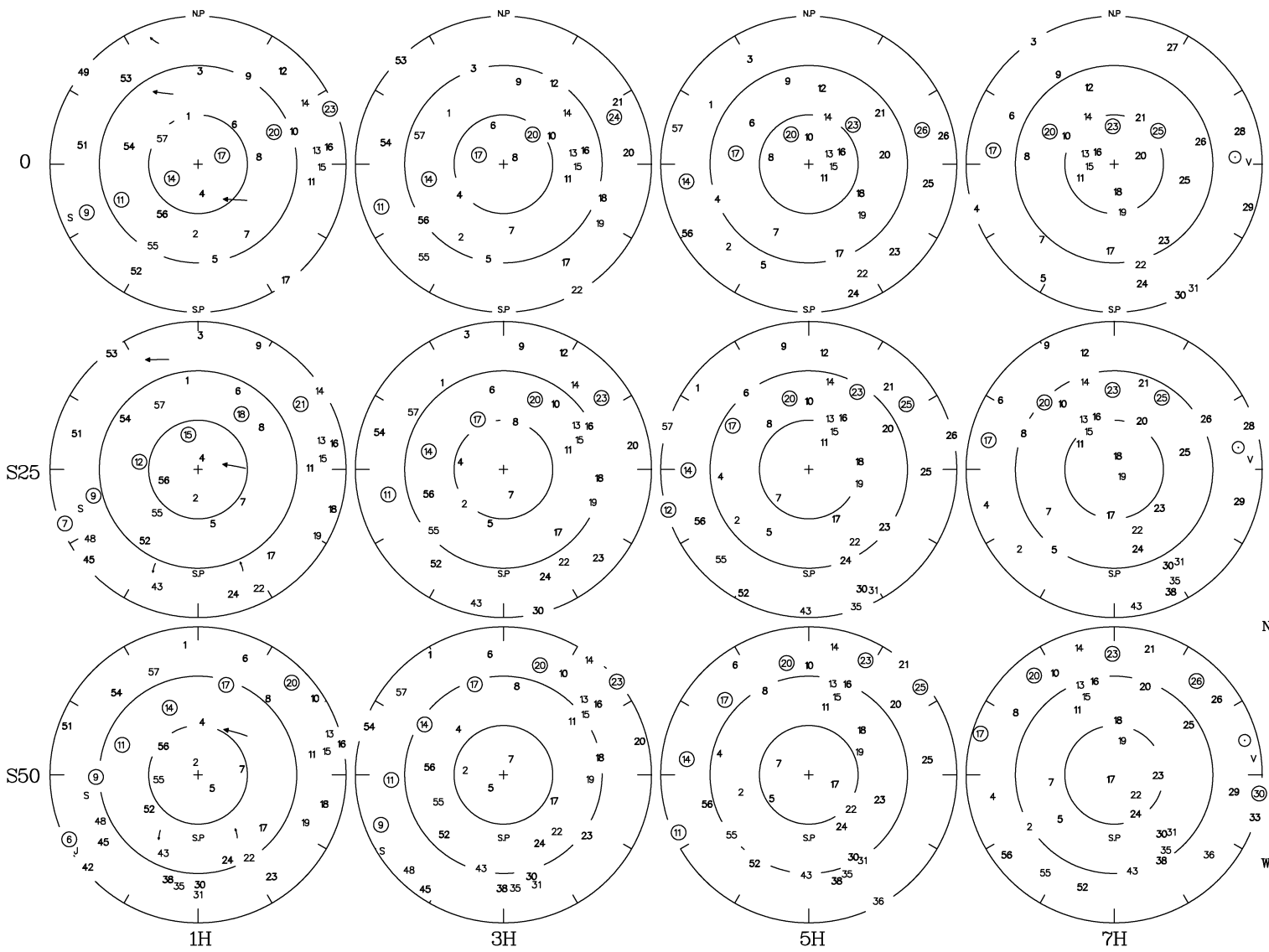
EVENING Sky Diagrams 2019 AUGUST

MORNING Sky Diagrams 2019 SEPTEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

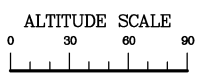
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

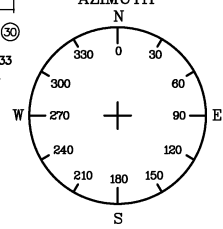
- V Venus -3.9
- M Mars 1.8
- J Jupiter -2.1
- S Saturn 0.4

POLES

N•P North S•P South

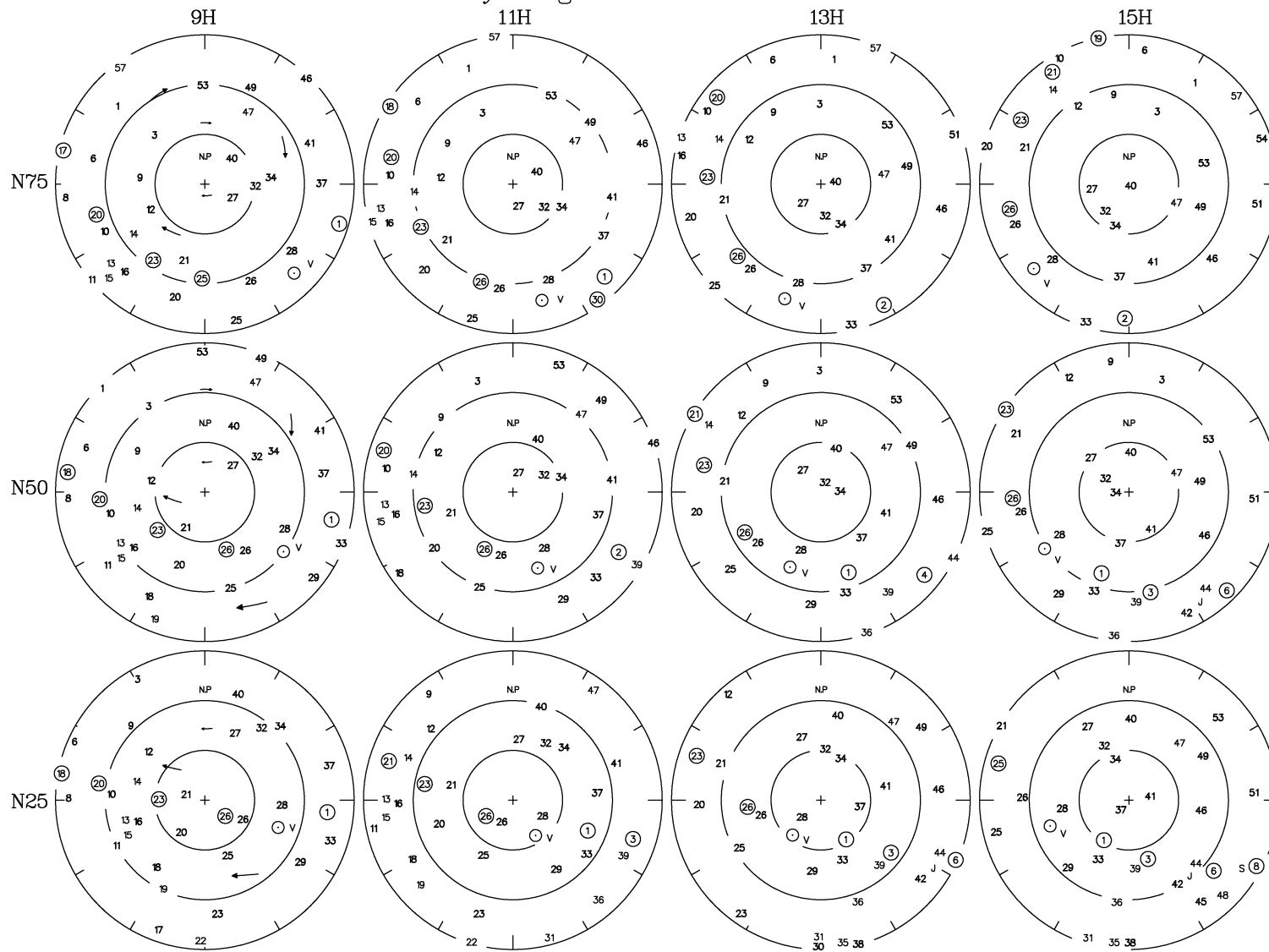


AZIMUTH



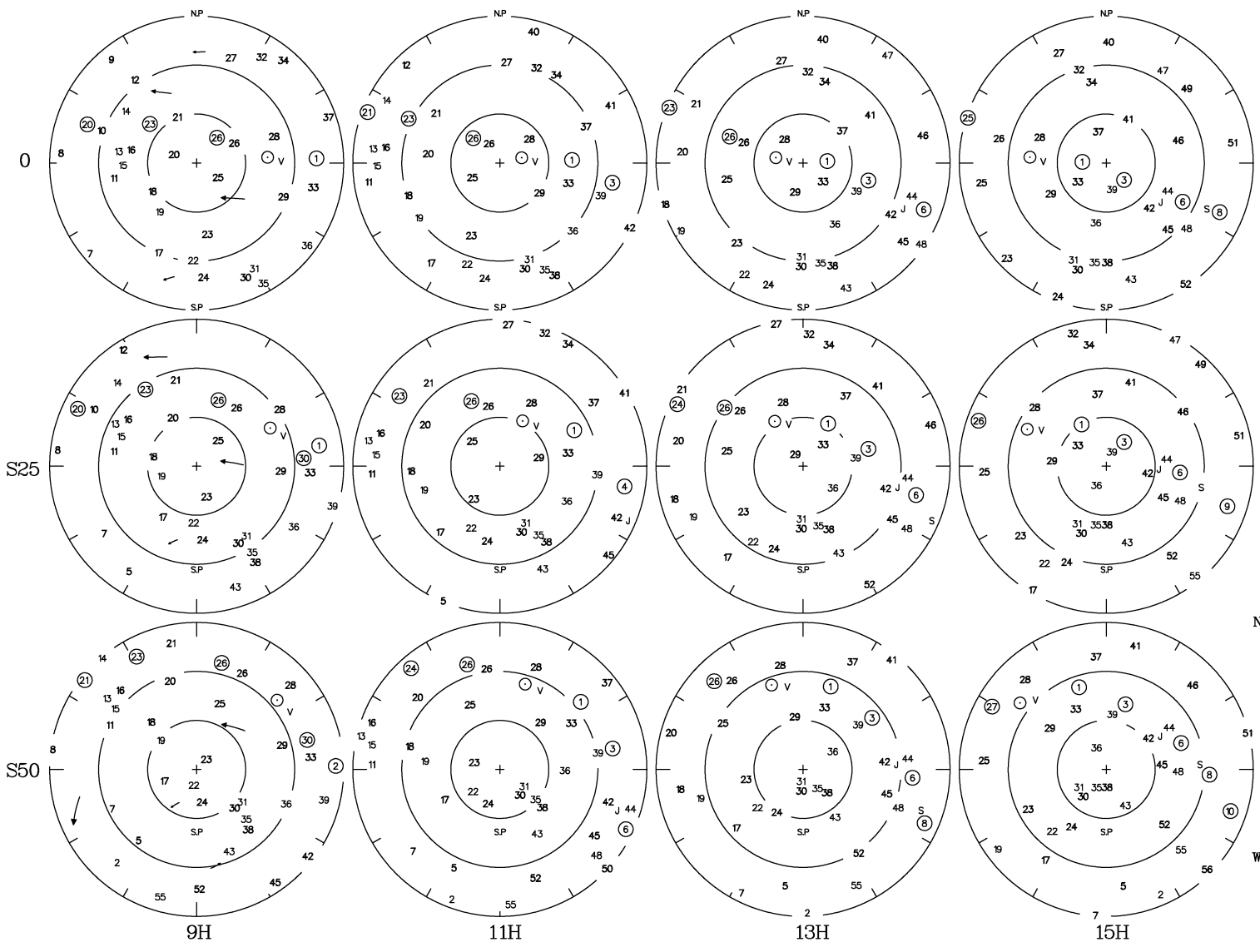
MORNING Sky Diagrams 2019 SEPTEMBER

DAY Sky Diagrams 2019 SEPTEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
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8	2.5	5.3
9	1.8	2.4
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11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
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42	1.0	3.7
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46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
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MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.8
- J Jupiter -2.1
- S Saturn 0.4

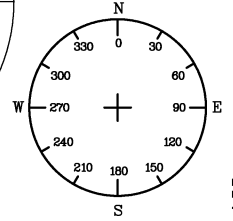
POLES

N•P North S•P South

ALTITUDE SCALE



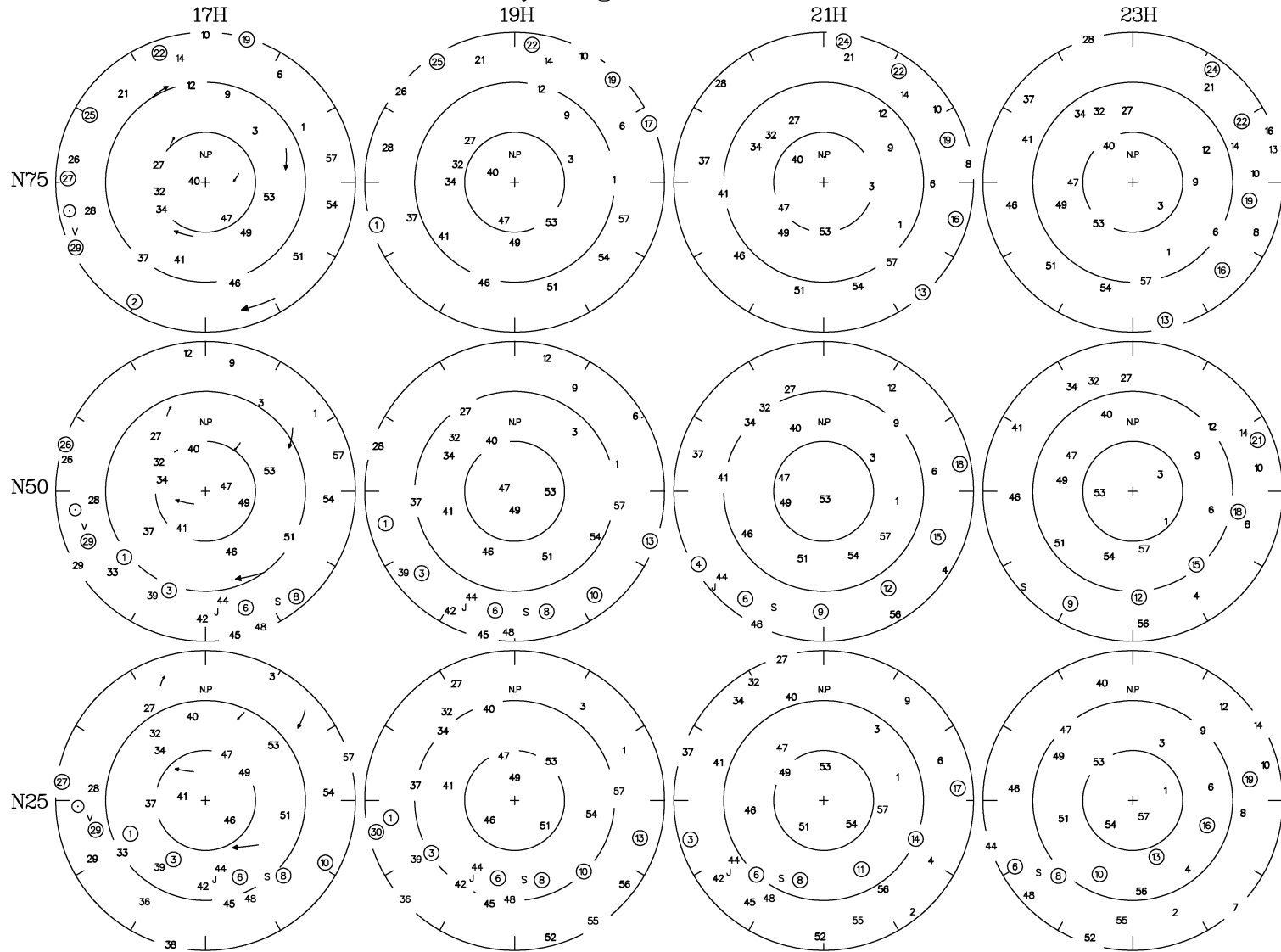
AZIMUTH



DAY Sky Diagrams 2019 SEPTEMBER

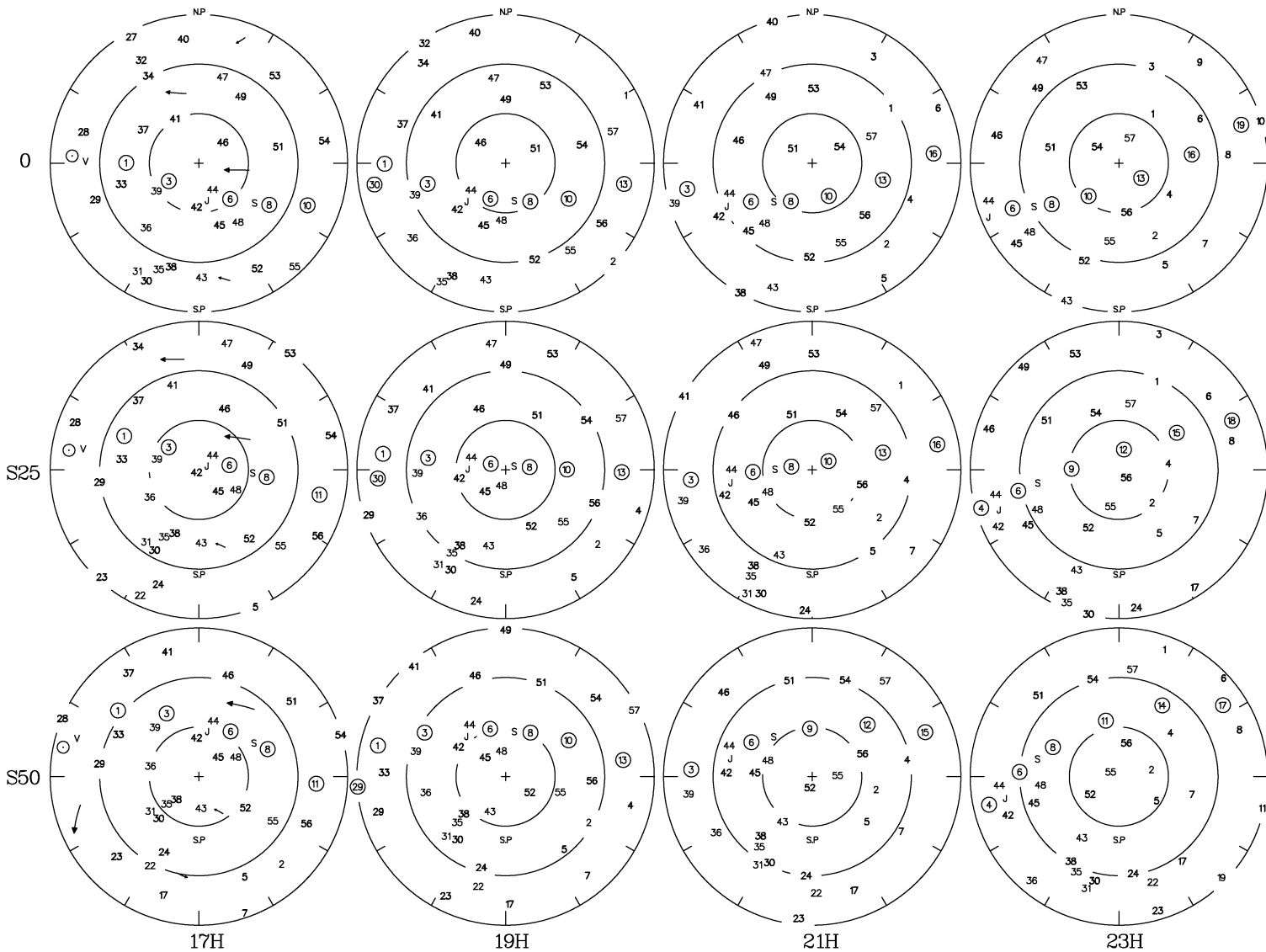
A77

# EVENING Sky Diagrams 2019 SEPTEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
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35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
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40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
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45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



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☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

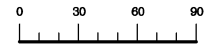
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.8
- J Jupiter -2.1
- S Saturn 0.4

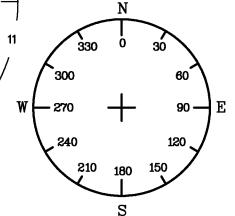
POLES

N•P North S•P South

ALTITUDE SCALE



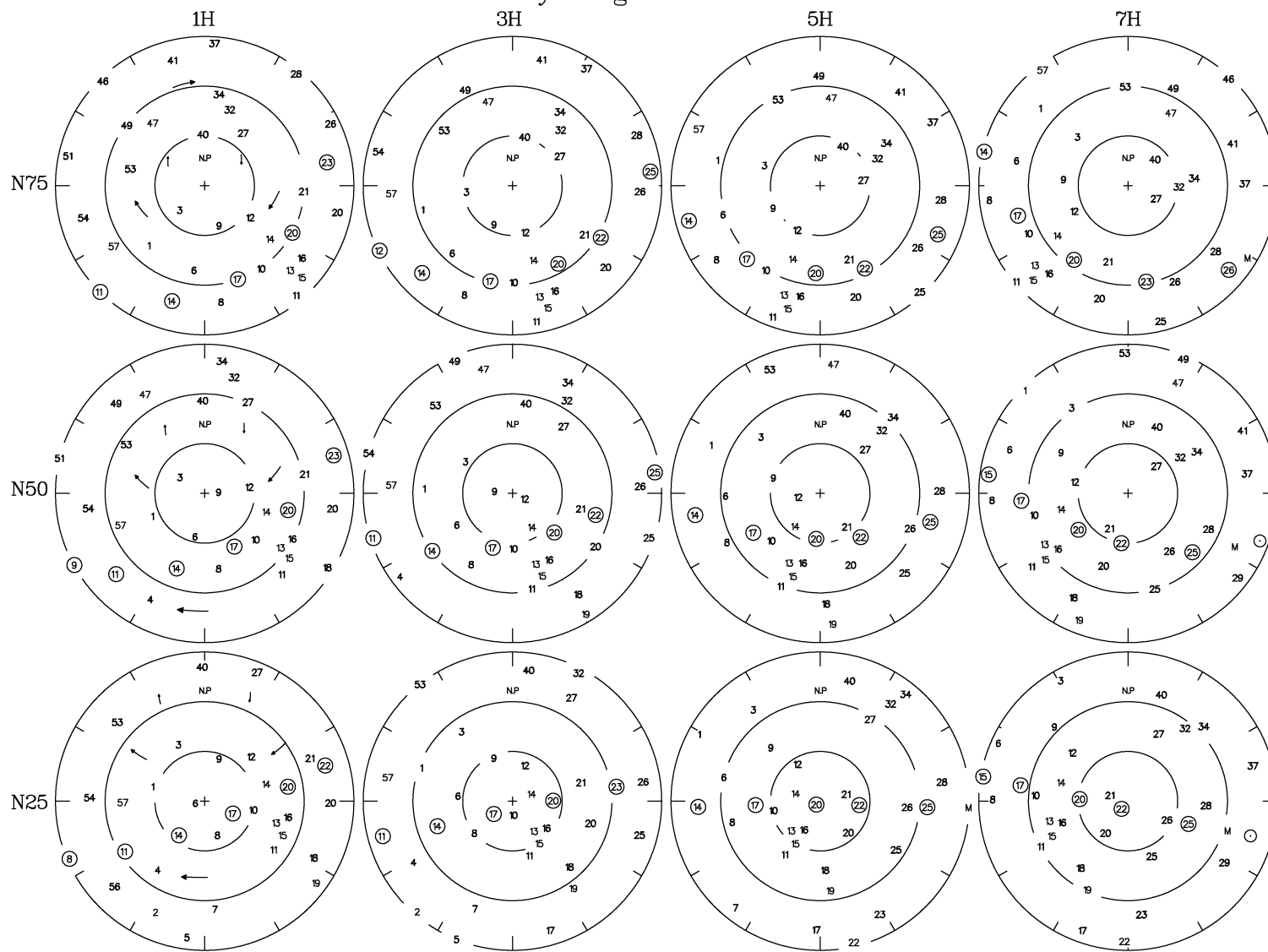
AZIMUTH



EVENING Sky Diagrams 2019 SEPTEMBER

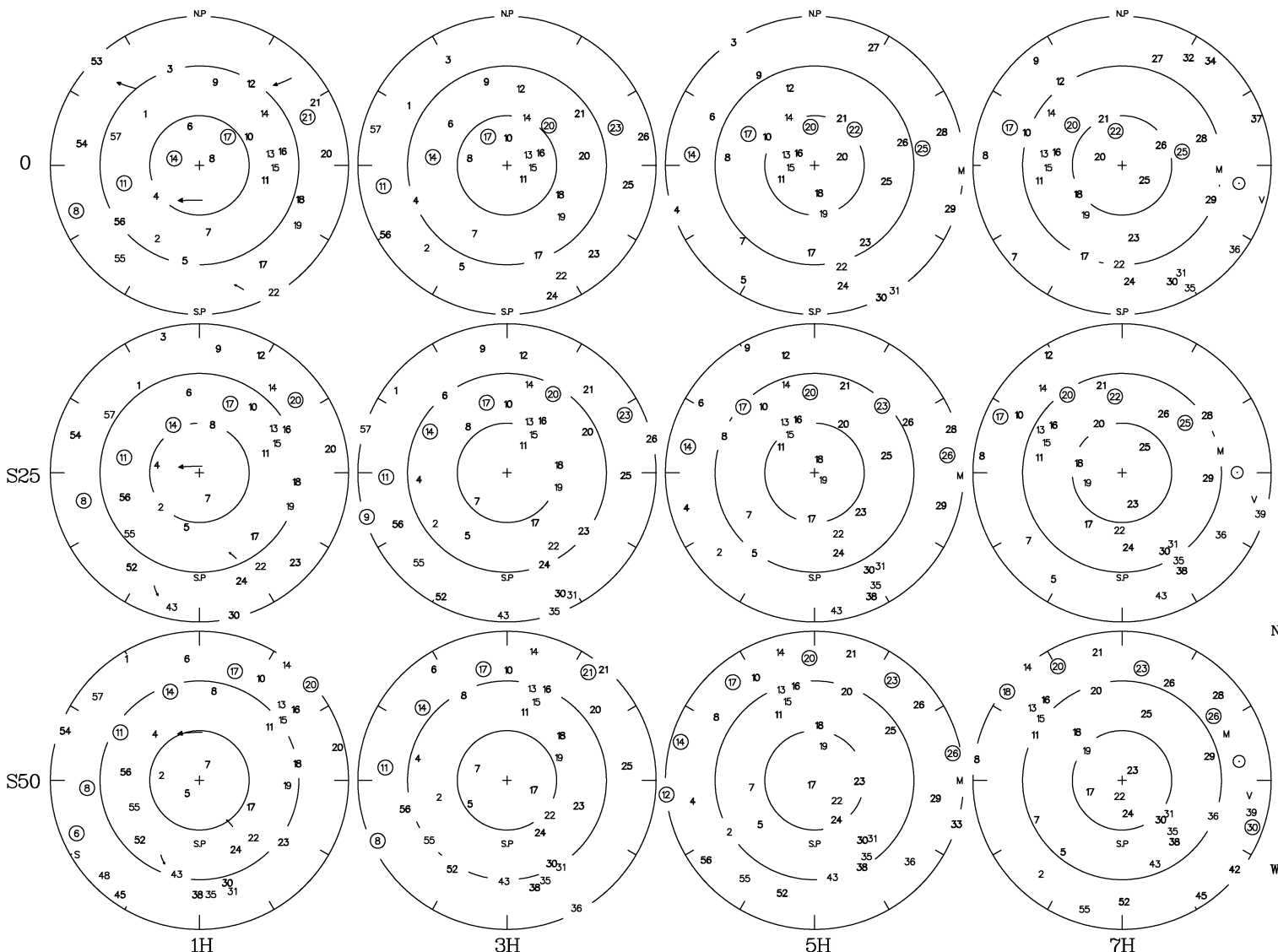


MORNING Sky Diagrams 2019 OCTOBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var.  $\pm 0.5$  mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.8
- J Jupiter -2.0
- S Saturn 0.5

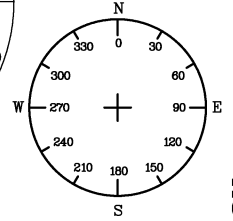
POLES

N•P North S•P South

ALTITUDE SCALE

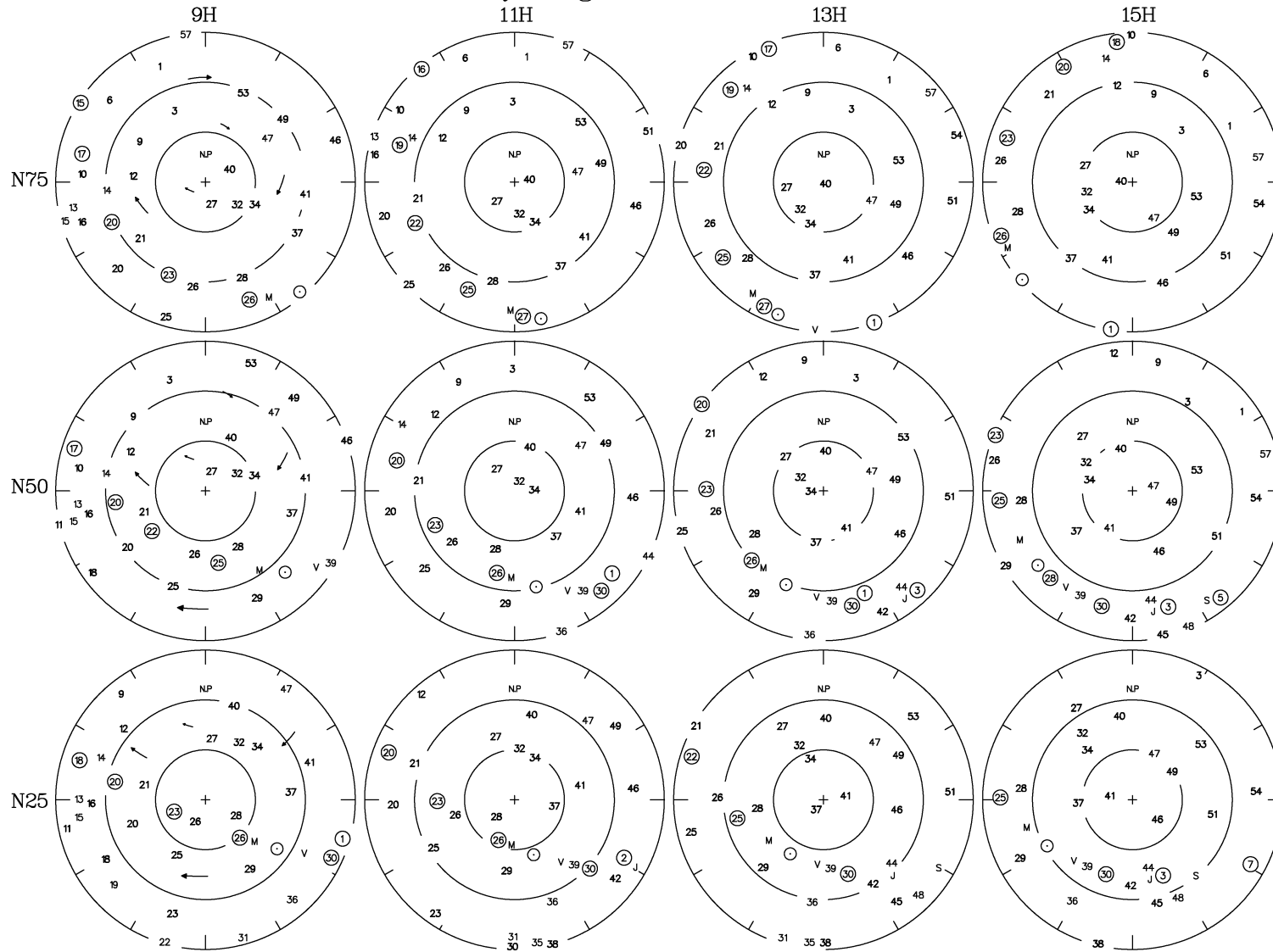


AZIMUTH



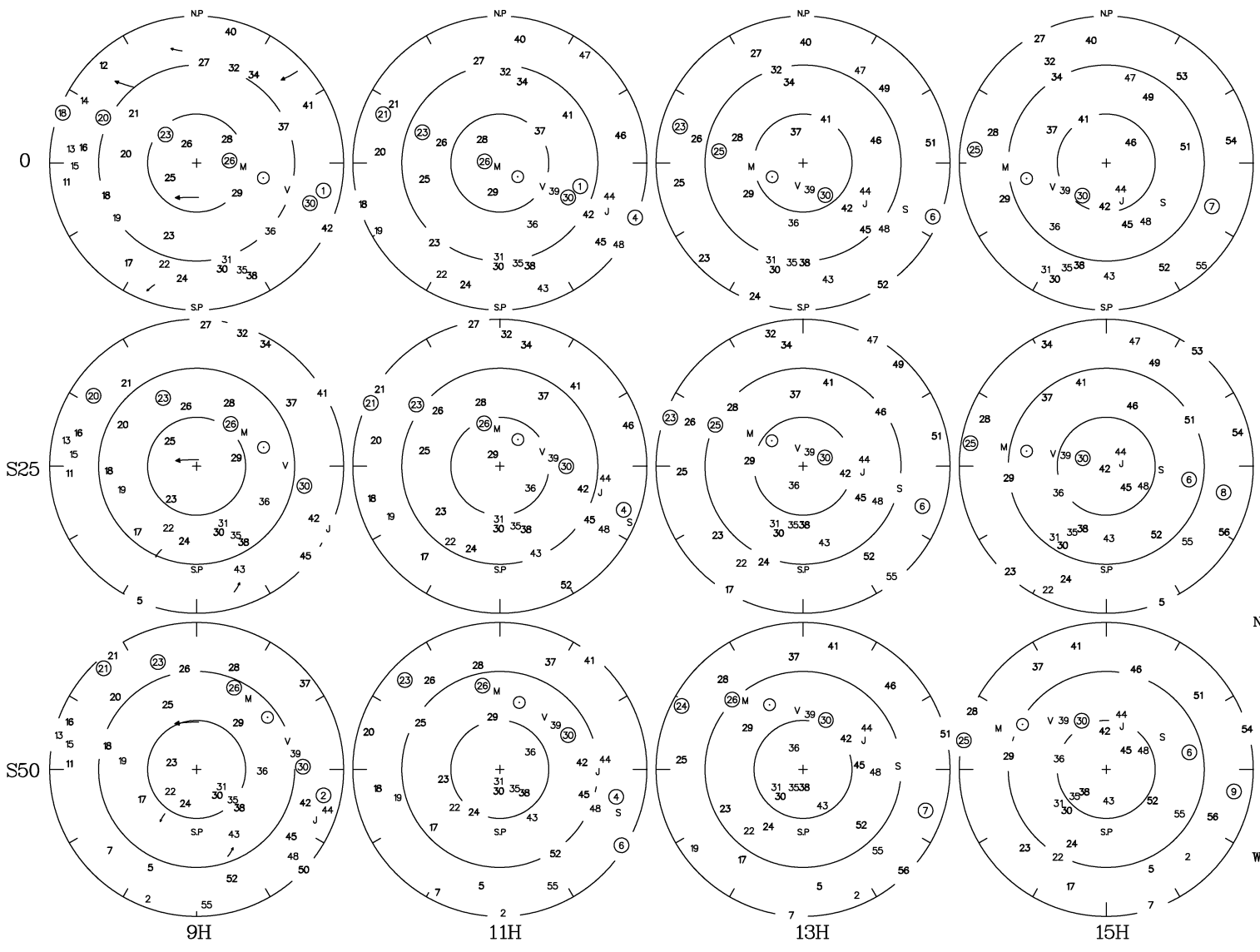
MORNING Sky Diagrams 2019 OCTOBER

DAY Sky Diagrams 2019 OCTOBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

☾ MOON

① Position, 1st of month  
② Position, 2nd of month etc.

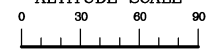
PLANETS Vis. Mag.

V Venus -3.8  
M Mars 1.8  
J Jupiter -2.0  
S Saturn 0.5

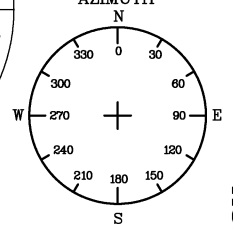
POLES

N•P North S•P South

ALTITUDE SCALE

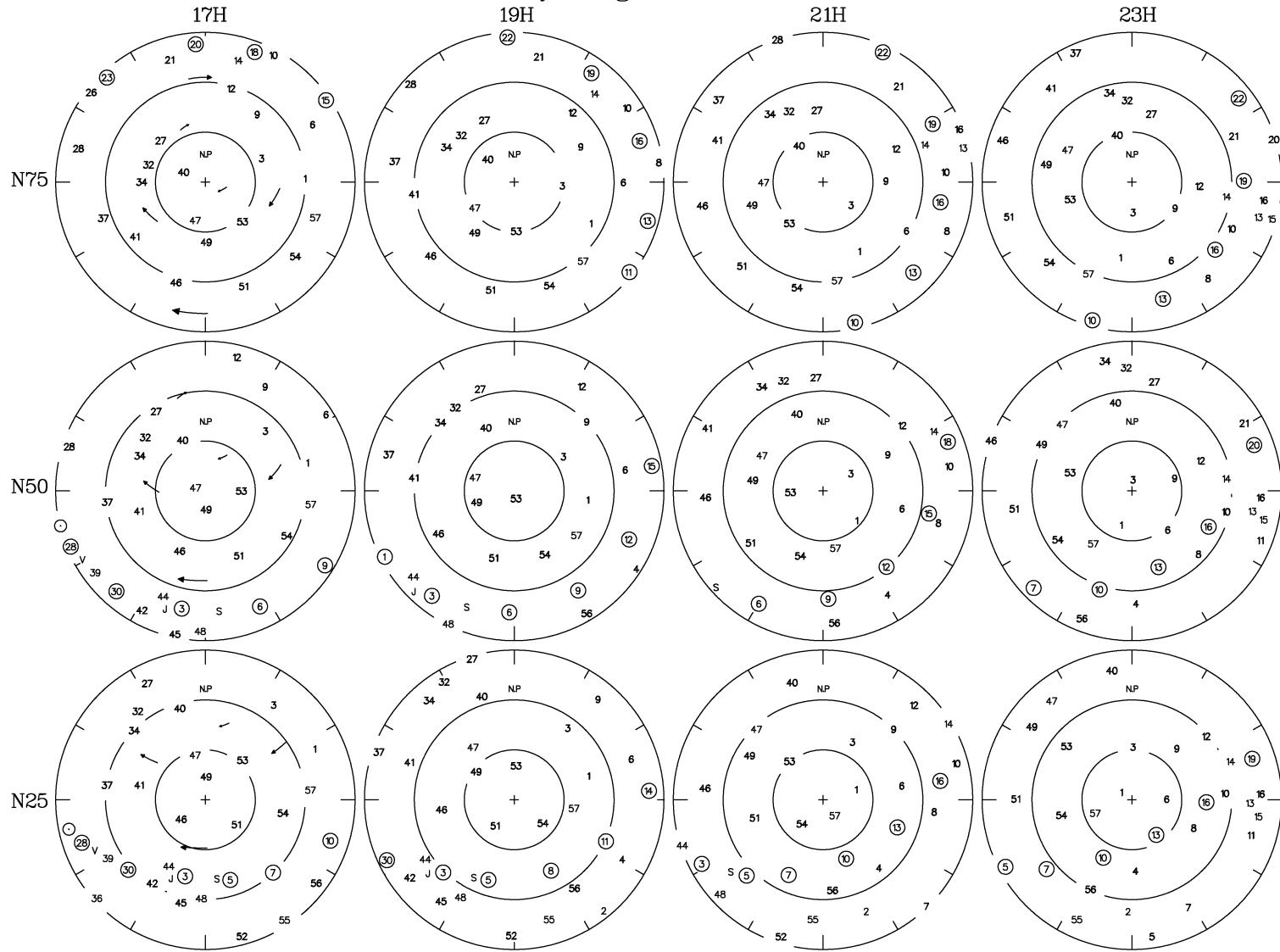


AZIMUTH



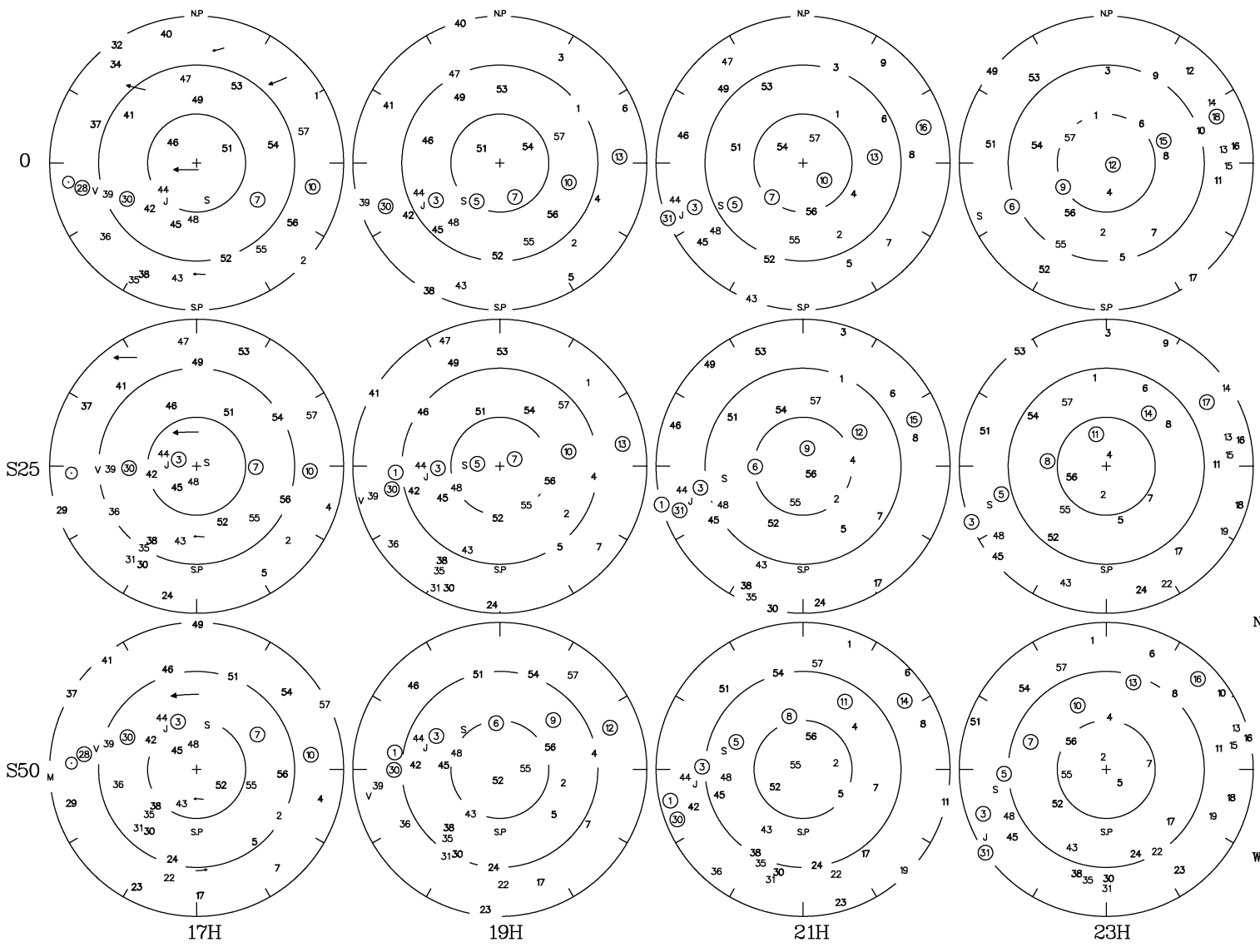
DAY Sky Diagrams 2019 OCTOBER

EVENING Sky Diagrams 2019 OCTOBER



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
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11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
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45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var.  $\pm 0.5$  mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

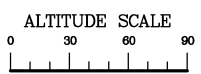
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

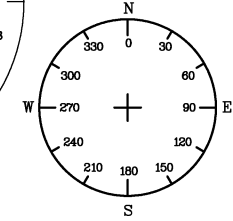
- V Venus -3.8
- M Mars 1.8
- J Jupiter -2.0
- S Saturn 0.5

POLES

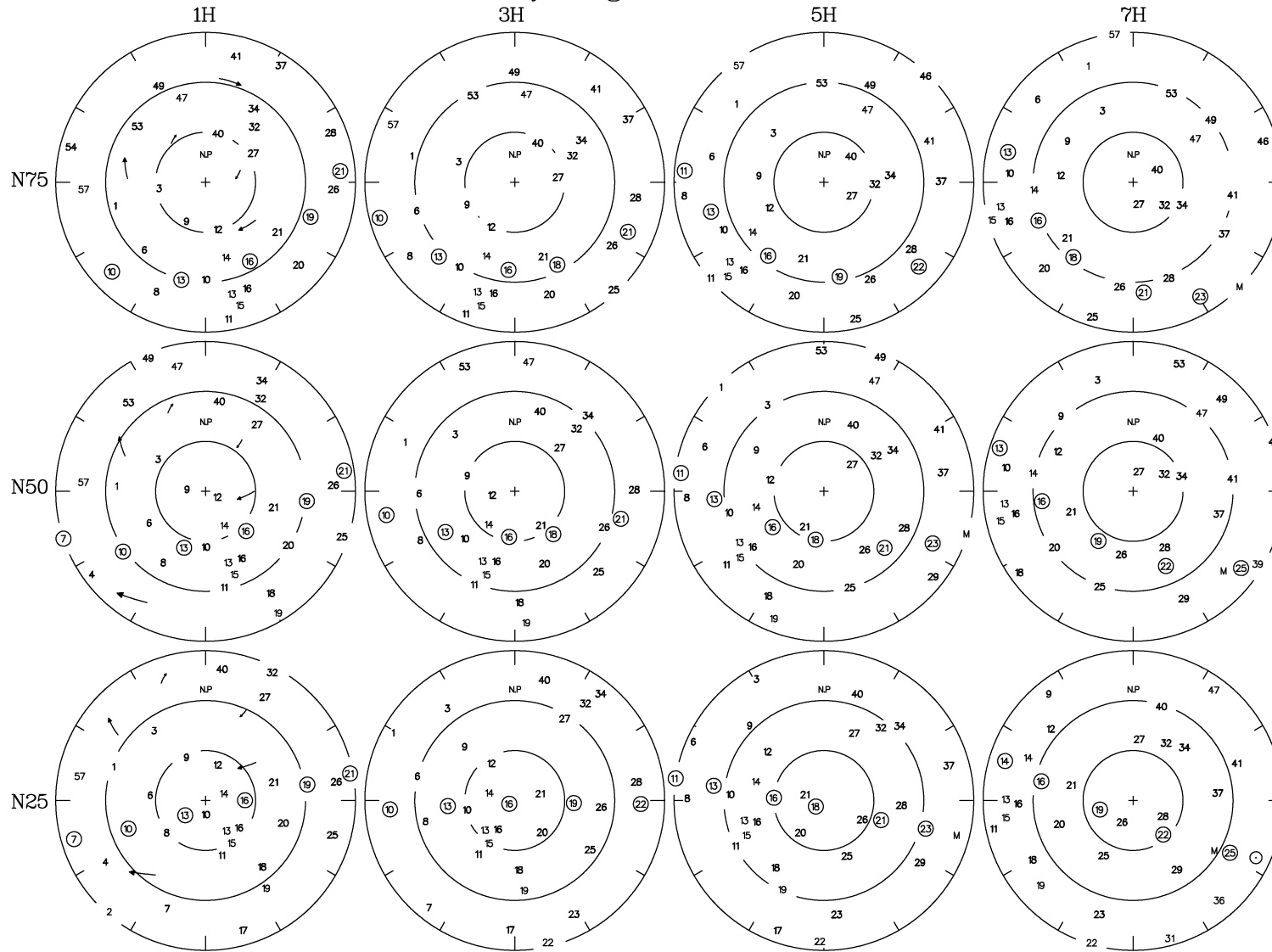
N•P North S•P South



AZIMUTH

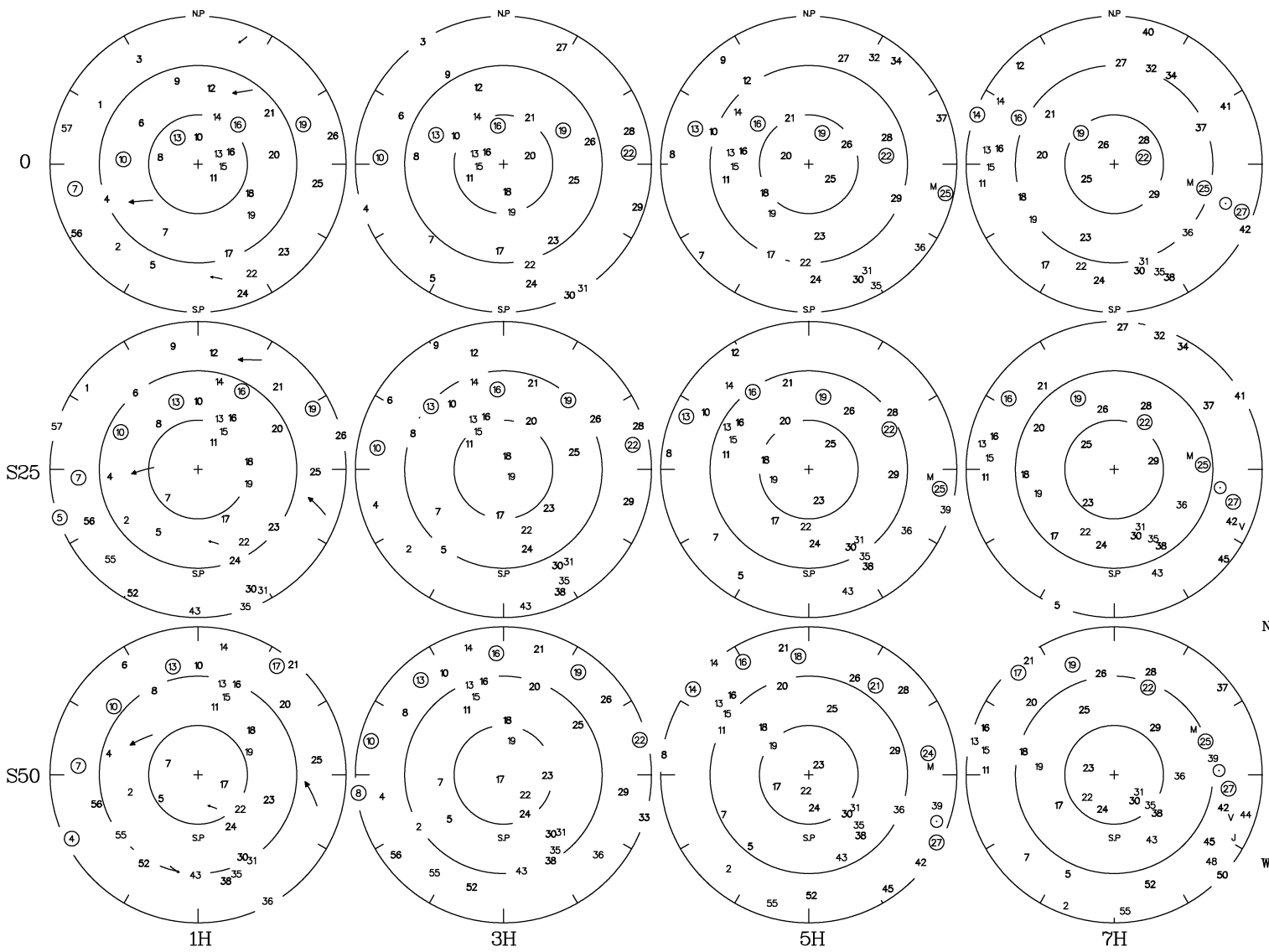


MORNING Sky Diagrams 2019 NOVEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
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12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
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23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
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41	2.2	2.1
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44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

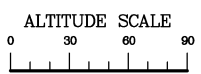
- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

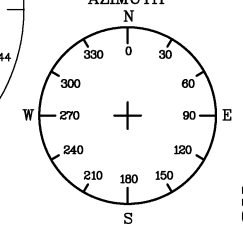
- V Venus -3.8
- M Mars 1.8
- J Jupiter -1.9
- S Saturn 0.6

POLES

N•P North S•P South



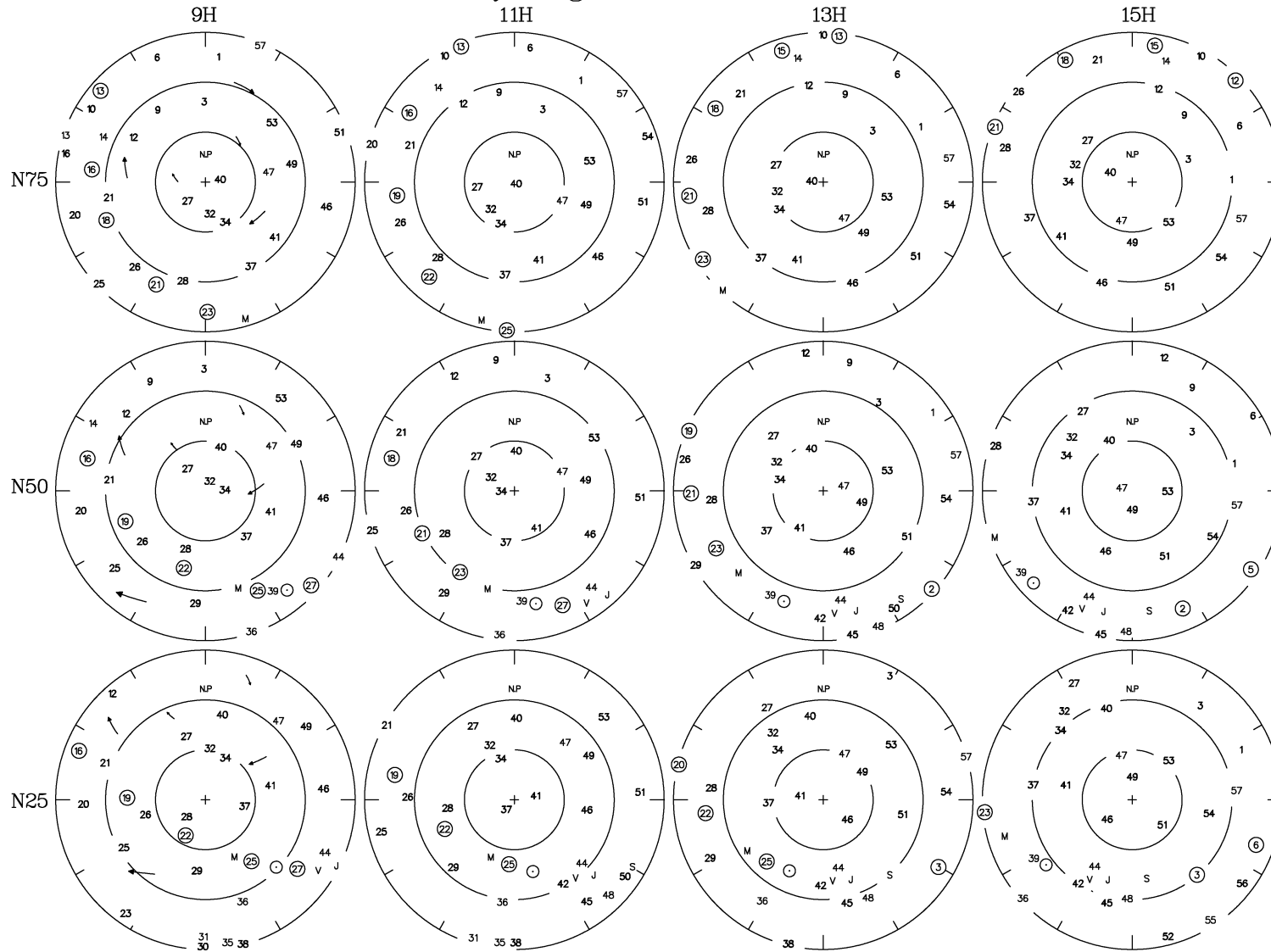
AZIMUTH



MORNING Sky Diagrams 2019 NOVEMBER

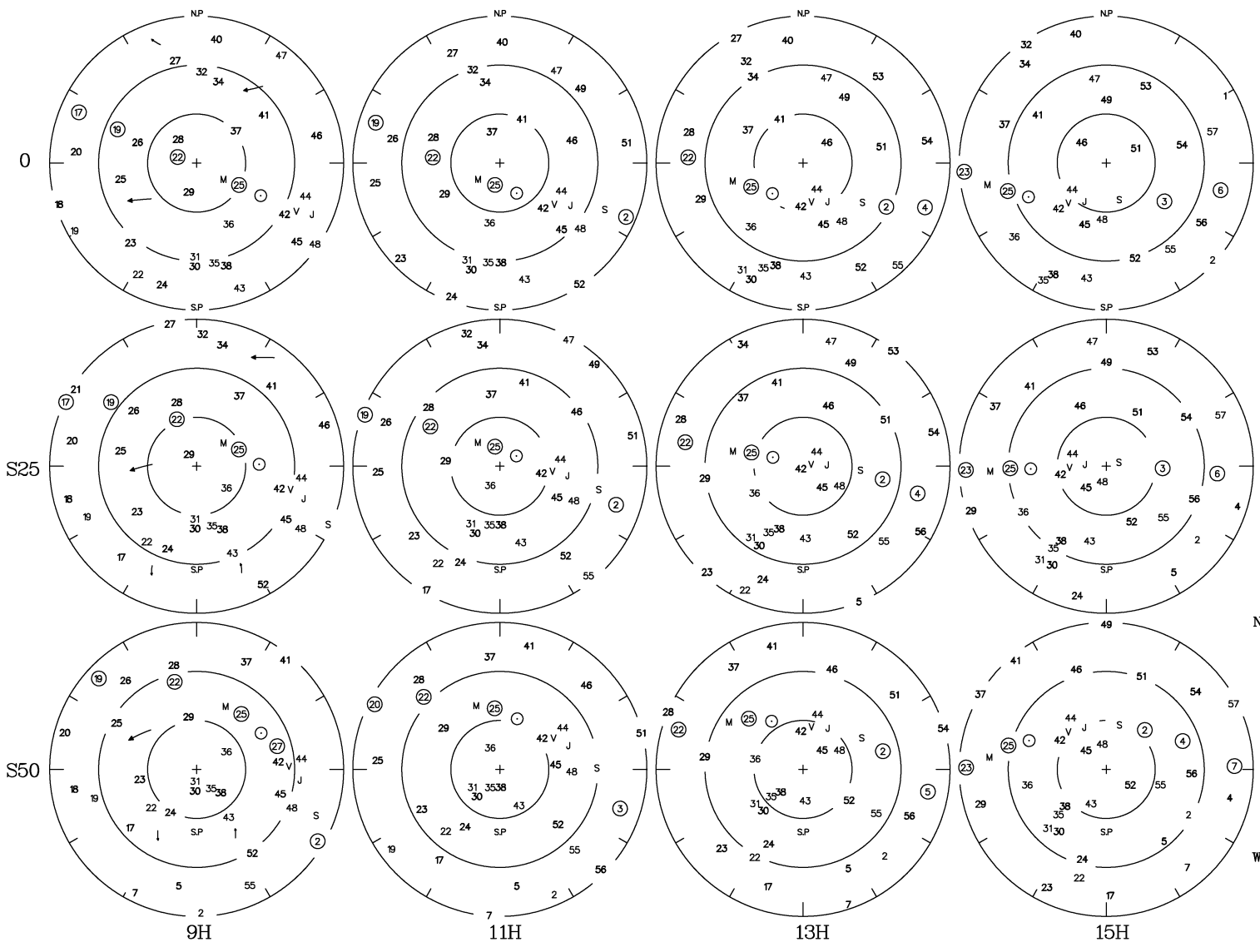


DAY Sky Diagrams 2019 NOVEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



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☉ Sun

☾ MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

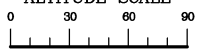
PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.8
- J Jupiter -1.9
- S Saturn 0.6

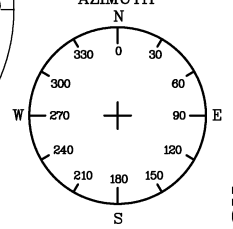
POLES

N•P North S•P South

ALTITUDE SCALE

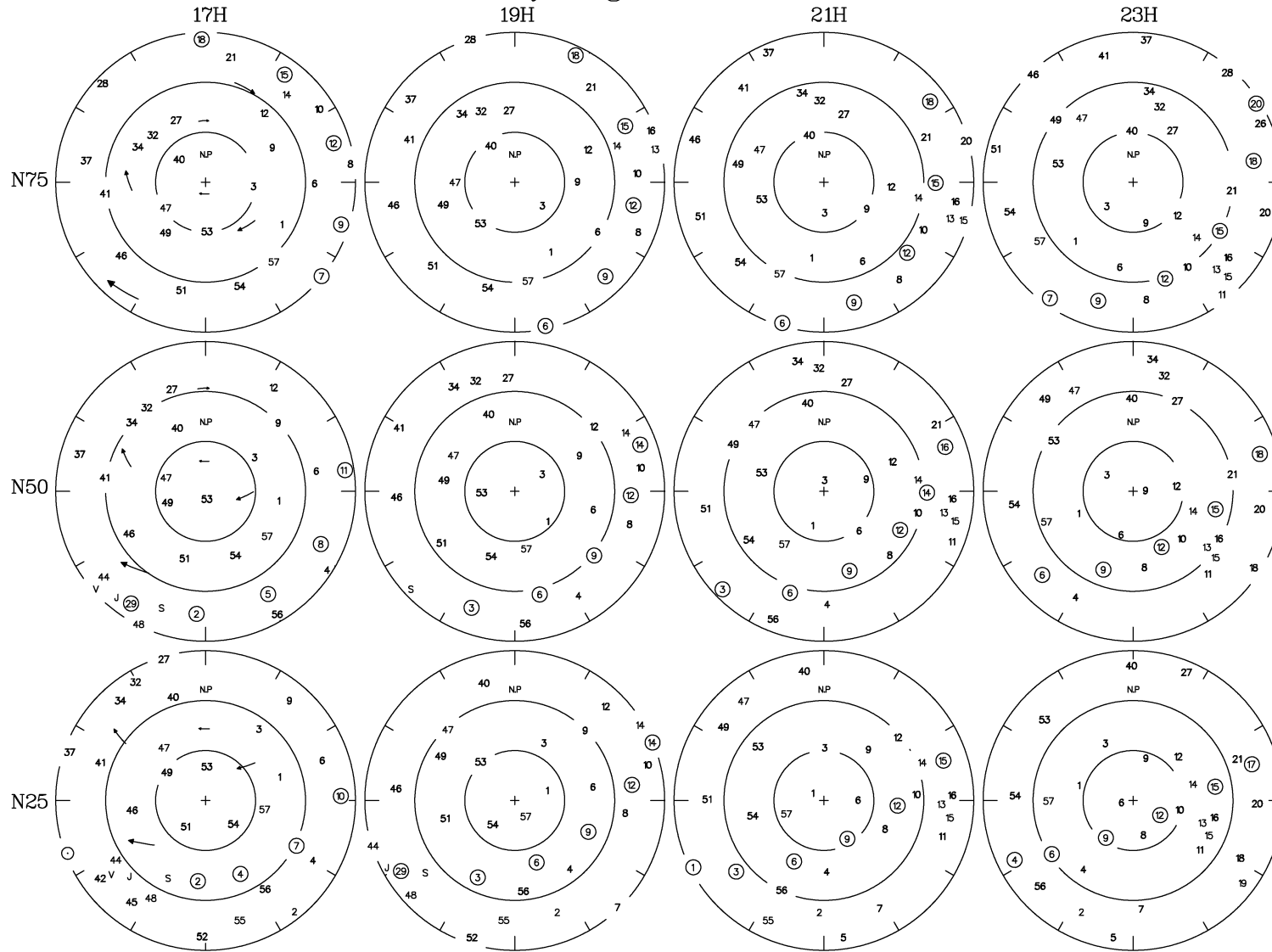


AZIMUTH



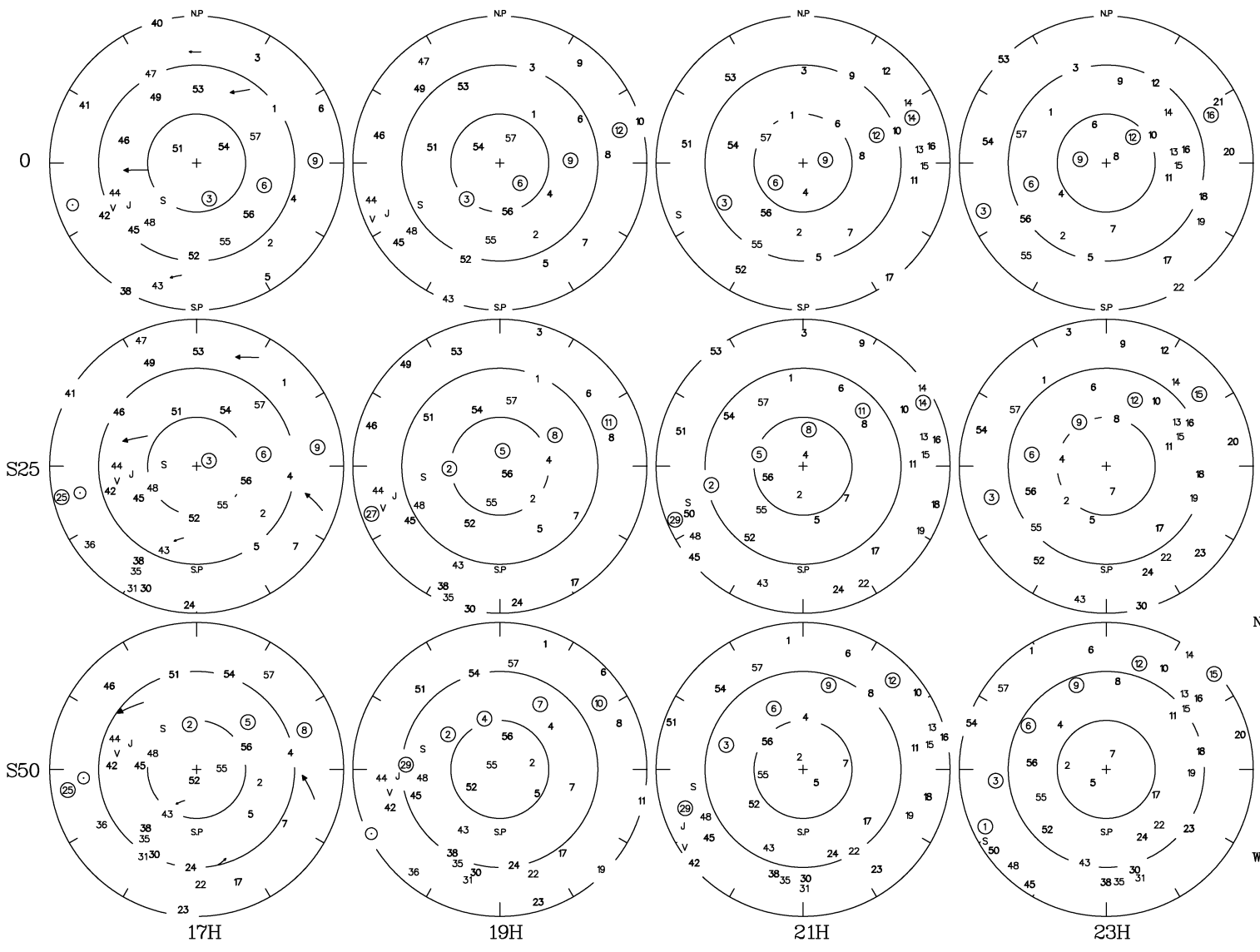
DAY Sky Diagrams 2019 NOVEMBER

# EVENING Sky Diagrams 2019 NOVEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



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MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

PLANETS Vis. Mag.

- V Venus -3.8
- M Mars 1.8
- J Jupiter -1.9
- S Saturn 0.6

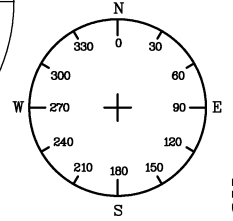
POLES

N•P North S•P South

ALTITUDE SCALE

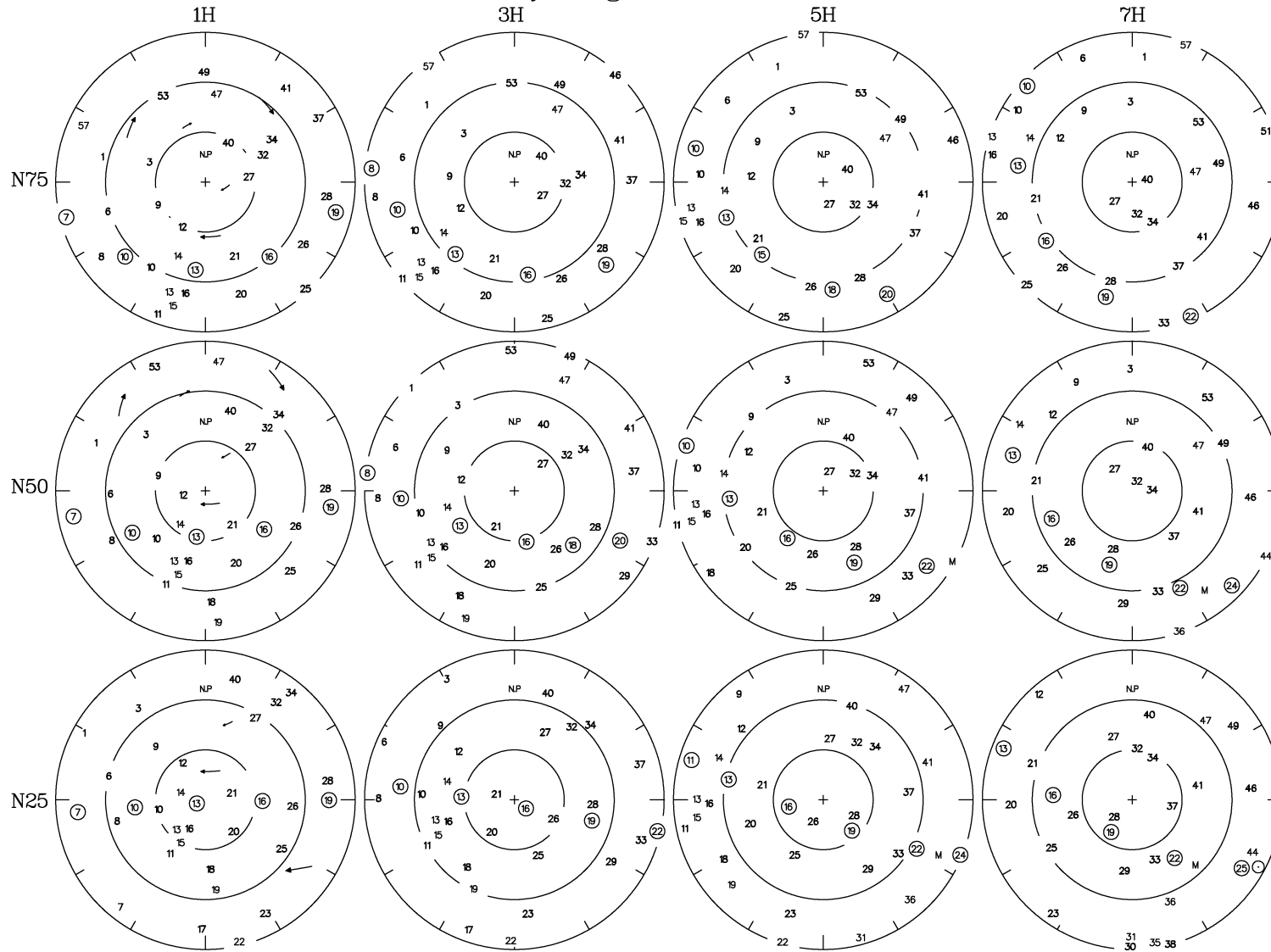


AZIMUTH



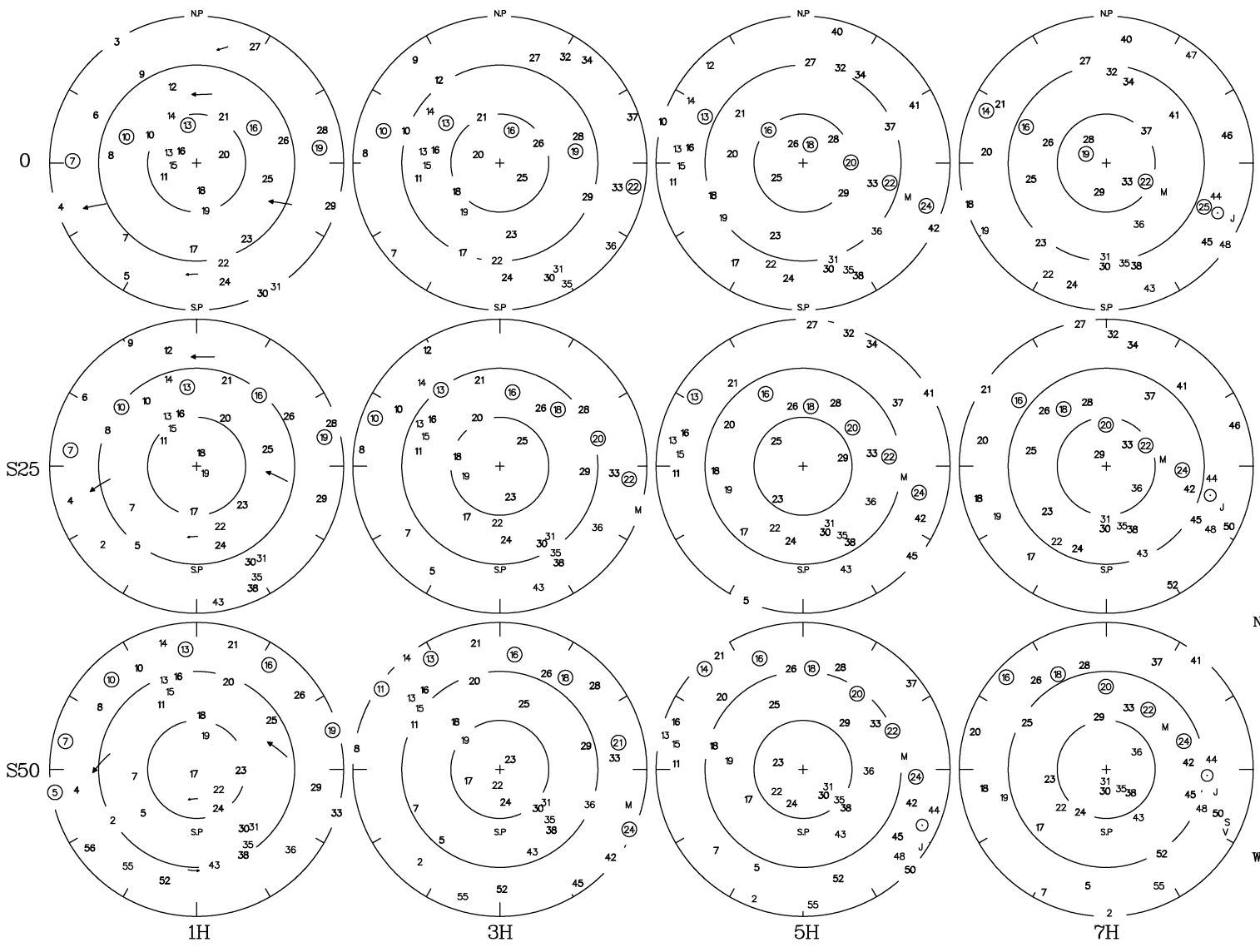
EVENING Sky Diagrams 2019 NOVEMBER

MORNING Sky Diagrams 2019 DECEMBER



STARS		
No.	Magnitude	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
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☉ Sun

MOON

- ① Position, 1st of month
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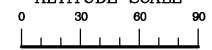
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.7
- J Jupiter -1.8
- S Saturn 0.6

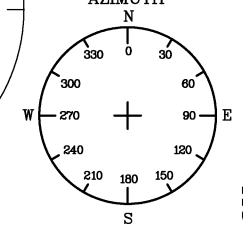
POLES

N•P North S•P South

ALTITUDE SCALE

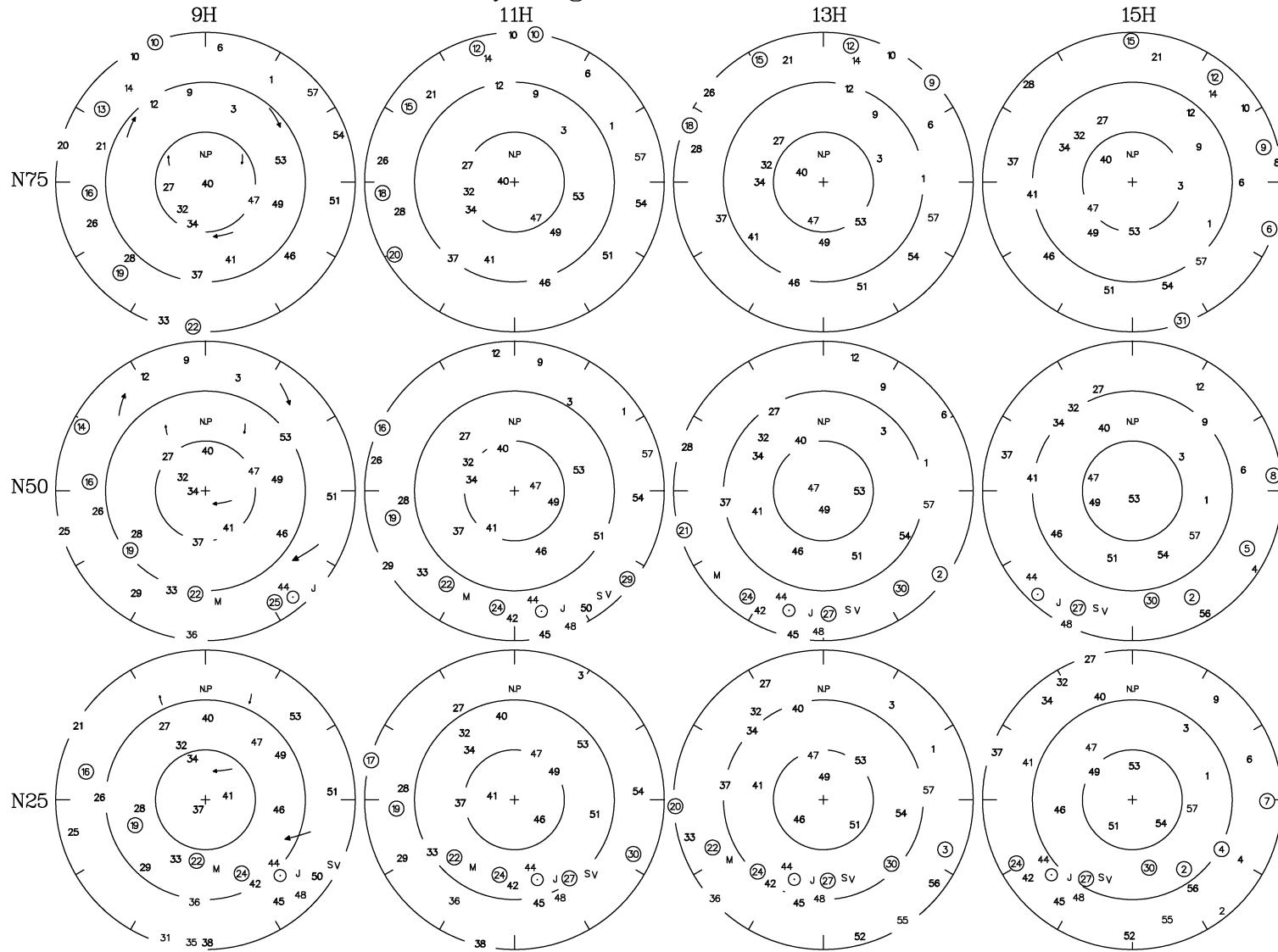


AZIMUTH



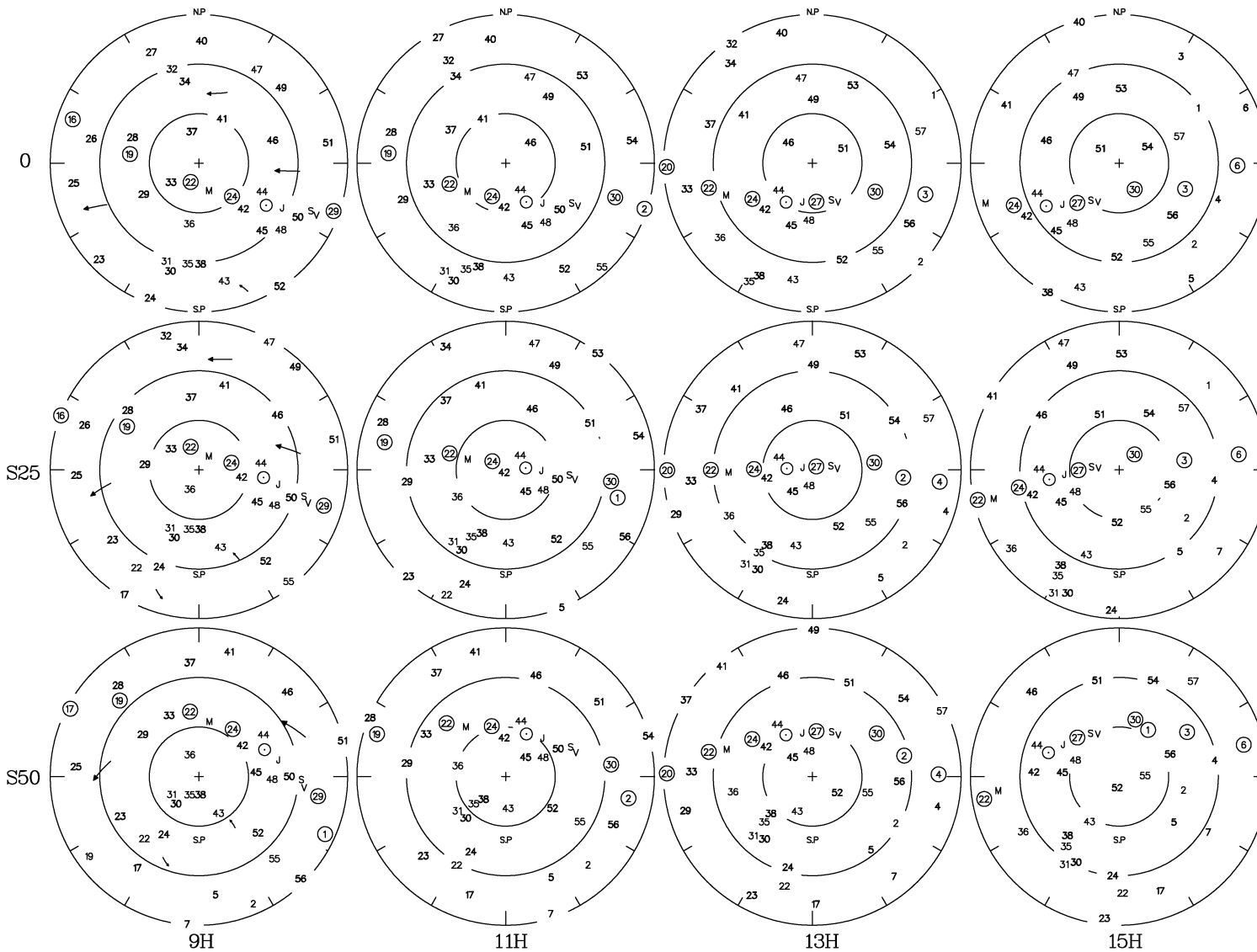
MORNING Sky Diagrams 2019 DECEMBER

DAY Sky Diagrams 2019 DECEMBER



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ± 0.5 mag.



The positions of the stars, planets, and Sun are shown for the fifteenth of the month.

☉ Sun

MOON

- ① Position, 1st of month
- ② Position, 2nd of month etc.

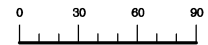
PLANETS Vis. Mag.

- V Venus -3.9
- M Mars 1.7
- J Jupiter -1.8
- S Saturn 0.6

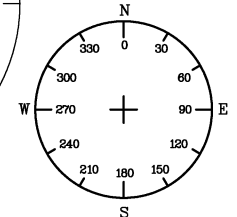
POLES

N•P North S•P South

ALTITUDE SCALE



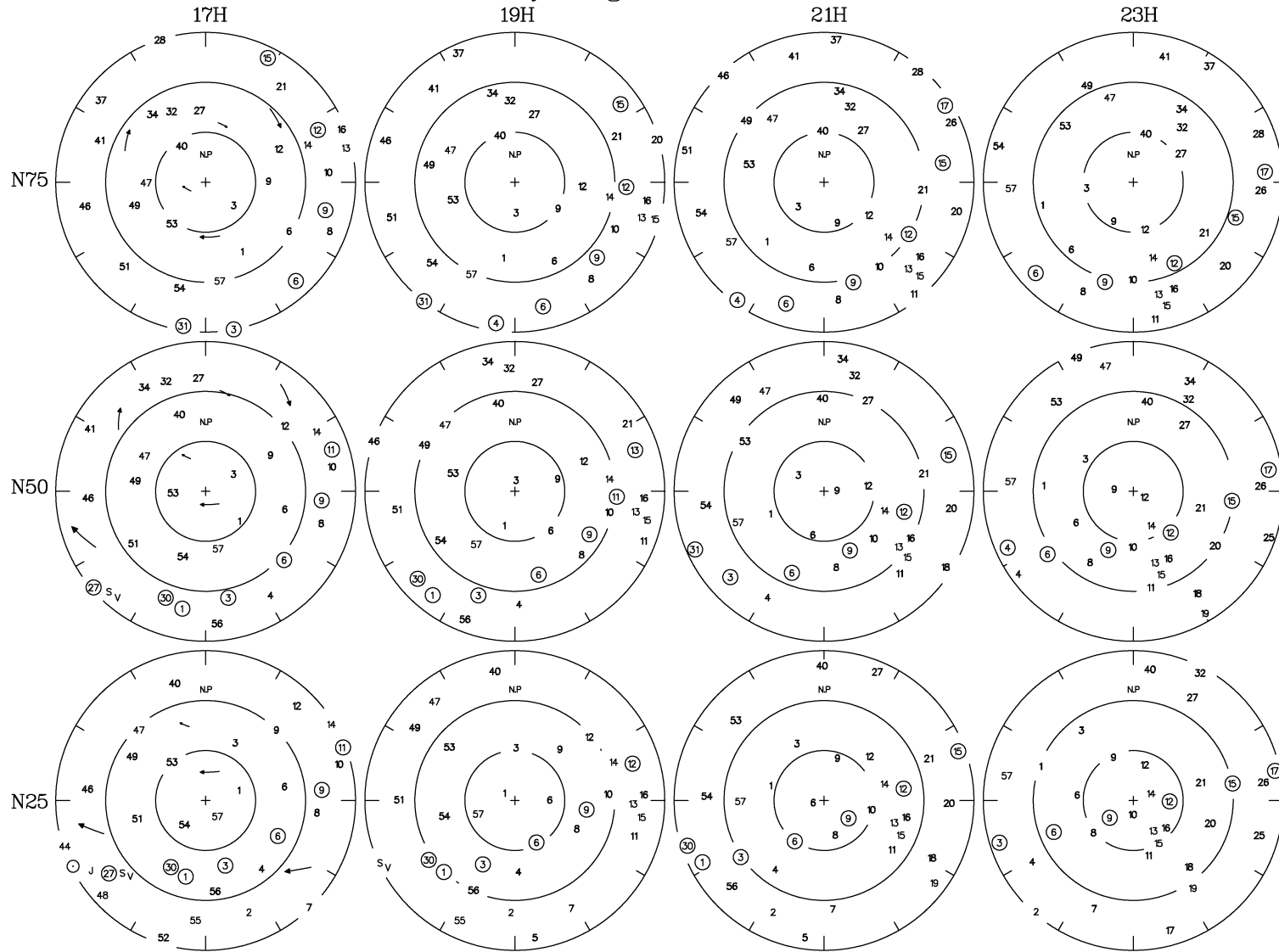
AZIMUTH



DAY Sky Diagrams 2019 DECEMBER

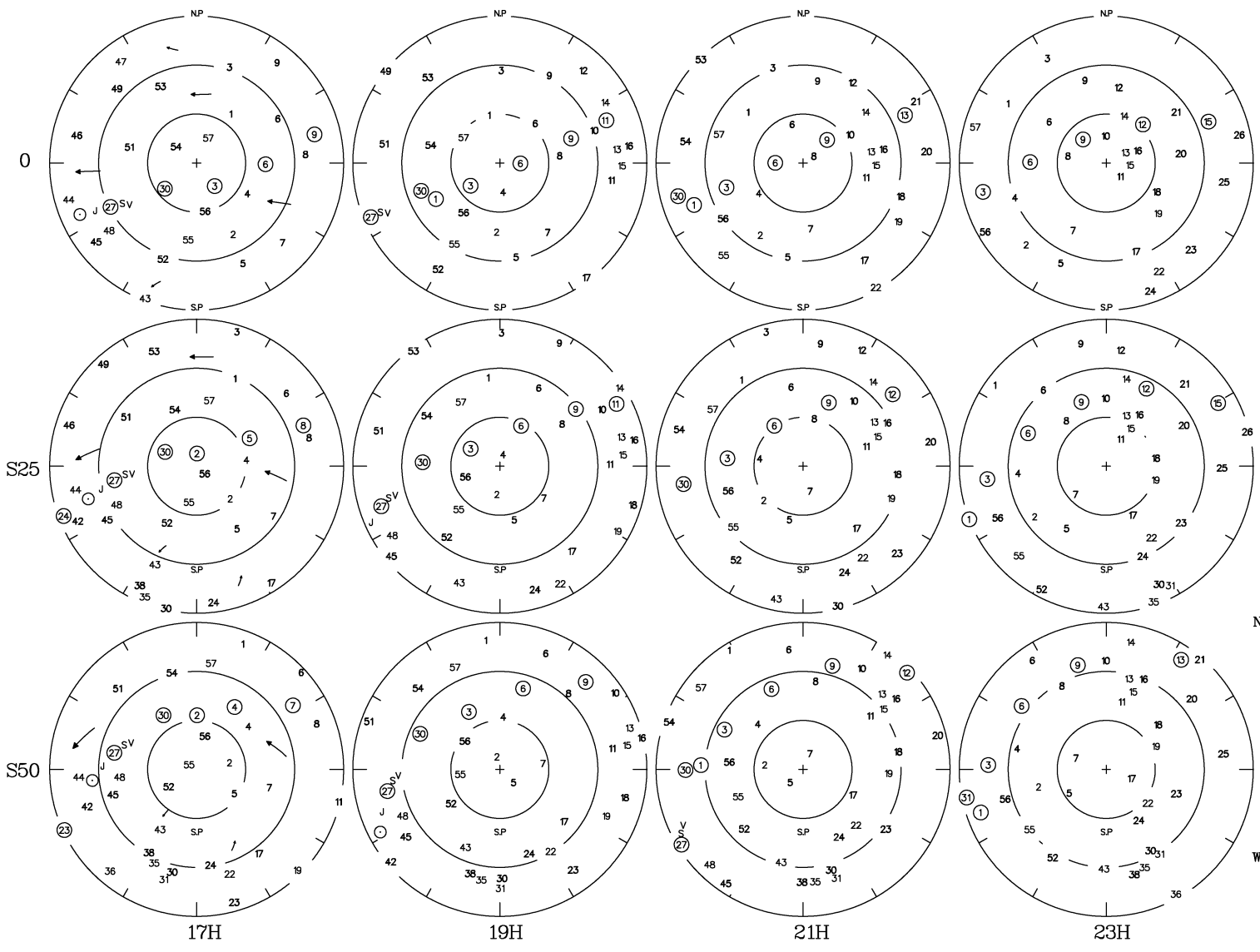


EVENING Sky Diagrams 2019 DECEMBER



STARS		
No.	Magnitude	
	Vis.	S-4
1	2.1	1.8
2	2.4	3.9
3	2.2	4.1
4	2.0	3.6
5	0.5	0.1
6	2.0	3.8
7	3.2	3.2
8	2.5	5.3
9	1.8	2.4
10	0.9	3.1
11	0.1	0.0
12	0.1	1.3
13	1.6	1.2
14	1.7	1.4
15	1.7	1.3
16	0.6*	3.1*
17	-0.7	-0.8
18	-1.5	-1.5
19	1.5	1.2
20	0.4	0.8
21	1.1	2.5
22	1.9	3.3
23	2.2	4.6
24	1.7	1.8
25	2.0	4.4
26	1.4	1.0
27	1.8	3.4
28	2.1	2.2
29	2.6	2.5
30	1.3	0.5
31	1.6	4.1
32	1.8	1.5
33	1.0	0.7
34	1.9	1.5
35	0.6	0.3
36	2.1	3.5
37	0.0	1.9
38	-0.3	0.9
39	2.8	3.2
40	2.1	4.3
41	2.2	2.1
42	1.0	3.7
43	1.9	4.1
44	2.4	2.5
45	1.6	1.3
46	2.1	2.2
47	2.2	4.6
48	1.9	2.0
49	0.0	0.0
50	2.0	1.9
51	0.8	1.0
52	1.9	1.7
53	1.3	1.4
54	2.4	4.8
55	1.7	1.8
56	1.2	1.3
57	2.5	2.3
Polaris	2.0	3.2

\*var. ±0.5 mag.



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MOON

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PLANETS Vis. Mag.

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- J Jupiter -1.8
- S Saturn 0.6

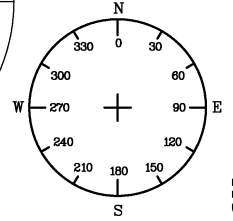
POLES

N•P North S•P South

ALTITUDE SCALE



AZIMUTH



EVENING Sky Diagrams 2019 DECEMBER



PLANET LOCATION DIAGRAM, July – December A123

