ObservationReport

ObservationID **0136** on 2022-09-30 20:48

all measures in mm

Object	**NGC7000**				
Common Name	North America Nebula				
Alternate Name (s)	Caldwell 20				
Visual Magnitude	4				
Distance ▶Object	2590 ly				
Apparent Size	120 × 100'				
Object R.A.	20h 59m 17.1s				
Object DEC	+44° 31' 44"				
WikiLink	https://en.wikipedia.org/wiki/North_America_Nebula				

20220930_NGC7000_ASI294_0136-01WM.jpg

Link ▶Picture	NGC7000_20220930
Descpription	Emission Nebula
Constellation	Cygnus

Picture Data					
Work Status	Published		Quality	***	
Source Format	Photo		Picture Center R.A.	20h 59m 58.506s	
Tot./Act. Frames/Pane	10	10	Picture Center DEC	+44° 31' 39.732"	
H / V Panes	2	2	H/V FoV [°]	3,6536	2,4869
Exp. [s] / Frame	300		Above horizon [°]	79°	
Total Time / Pane [min]	200,00	50,00	View Direction	231° SW	
Camera Data	**ZWO Optical**		**ASI294MC-Pro**	**ZWOASI294**	
Camera Angle [°]	294,4		Pixel Pitch [µm]	4,63	
Gain or ISO	120		Camera Temp. °C	-10	
Observation Site					
Observation Start	2022-09-30T20:48:23	UTC+/- +1h	Observation End	2022-10-01T00:31:14	
Observation Site	DE Göttingen MBR		Site Elevation /Bortle	182	5
Province	NDS		Site Coordinates	51° 34' N, 9° 56' E	
Sky & Moon					
Sky Index | Total Clouds	2,8	%	Moon Rise | Set	12:58:00	20:52:00
Outside Temp. °C	7		Moon Age [d]	4,5	
Moon Phase |% Illum.	1st quarter	27 %	Moon ▶Target Dist.	349°	
Optical Configuration	**TS600AS294**		**TS600ASI294T252**		
Lens or Scope	TSO APO 90/600		Focuser	M90 TS600 Rack + Pinion	
Type Of Build	APO Triplet Refractor		Focuser Position [mm]	0,00	EAF Steps 0
Brand	TS-Optics				
Addtional Optics	M63 WO Rotator		Optical Factor	1	
Filter	Omegon UHC 2"		FoL norm|actual [mm]	599	599
Diameter [mm]	90		DawesLimitLink	1,74 Arcsec	
Aperture / f-stop	6,66		Optical Scale ["/px]	1,595	
Other Hardware & Software					
GuideScope	Omegon 50/200		Mount	iOptron iEQ45 Pro	
GuiderHW	ASiairPro		SessionControl	ASiairPro	
GuiderSW	NONE		PostProcessingSW	PS, LrC, PixInsight	
More ...					
Work Folder	2022\20220930_NGC7000_0136_GOE-MBR				
Comment					

Remarks

1. Session Planning

This was my first attempt to capture a mosaic picture of 4 partially overlapping images using NGC7000 as a target which is too big to fit in one frame in the Cyngnus constellation.

2. Location and sky:

The images were take at the outskirts of Göttingen in a rather bright environment (Bortle scale 4-5)
The sky quality was declining during the capturing process and is easily visible: the lower right section was the first set of pictures, then came the lower left, then the upper right and finally the upper left. In the upper left the haze became clearly visible, if you look at the bright star ξ Cyg at the upper left that is surrounded by a big halo.

3. Session Results

The four pictures have been stacked from 10 pictures, each with an exposure time of 300s.

The stitched final picture has a size of 2.84 x 1.89 deg. The overlapping was planned to be 20% with a camera orientation of 247.9°, but was mistakenly set to 307.6° resulting in a not entirely overlapping pictures leaving black edges that hat to be cut out by rotating and cropping the stitched image. Star integration and post-processing was done with PixInsight using the steps decribed on
https://astroguide.starlust.de/html/ProcessingMosaicImages.html

The final processed pictures indicated 2 problems with the equipment:

- stars are not shown as dots but look like asterixes, although an APO triplet refractor was used and the lense was cleeaned before usage. Either the lense or the new 2" UHC filter are the reason for this effect (another cleaning required?)
- all stars have a smaller twin shadow star on their right this may be an indication of problems with bakslash, guiding or tracking.

4. Post Processing

Image selection, registration, background improvement and color correction were done in PixInsight (Post Processing using PixInsight (starlust.de)).
No further image post processing was required.
No color or hue changes have been applied, the final image is showing natural colors.

5. Plate Solve and Camera Rotation

ASIAIR rotation measurement:

Before Meridian Flip: -103.259
After Meridian Flip: 76.8233
Calculation: 180° - 103.259° = 76,741° (corresponds nearly with measured 76.8233° in Astrometry.net)

Astrometry.net rotation measurement:

Final image: 103,3° (corresponds witth ASIAR rotation)

Plate Solve result (ASIAIR):

RA:5h42m27s DEC:-2°21'40" Angle = -103.268, Star number = 186

6. Main logfile entries

2022/09/30 20:39:30 Plan 20220824 NGC7000 Start

2022/09/30 20:39:30 [Autorun|Begin] NGC7000-1 Start
2022/09/30 20:40:13 Solve succeeded: RA:20h56m50s DEC:+45°3'33" Angle = 52.3771, Star number = 200
2022/09/30 20:40:13 [AutoCenter|End] The target is centered
2022/09/30 20:40:22 Shooting 10 light frames, exposure 300.0s Bin1
2022/09/30 20:40:22 [AutoFocus|Begin] Run AF before Autorun start, exposure 2.0s Bin1, temperature 9.8°C
2022/09/30 20:43:10 Auto focus succeeded, the focused position is 22383
2022/09/30 20:43:10 [AutoFocus|End] Auto focus succeeded
2022/09/30 20:43:12 [Guide] ReSelect Guide star

2022/09/30 20:43:21 Exposure 300.0s image 1# … image 5#
2022/09/30 21:08:32 [Guide] Dither
2022/09/30 21:08:48 Exposure 300.0s image 6# … image 10#
2022/09/30 21:34:00 [Guide] Stop Guiding and tracking

2022/09/30 21:34:01 [Autorun|Begin] NGC7000-2 Start
2022/09/30 21:34:01 [AutoCenter|Begin] Auto-Center 1#
2022/09/30 21:34:01 Mount slews to target position: RA:20h59m59s DEC:+43°43'18"
2022/09/30 21:34:17 Solve succeeded: RA:20h59m52s DEC:+43°44'26" Angle = 51.7495, Star number = 122
2022/09/30 21:34:32 Solve succeeded: RA:21h0m0s DEC:+43°43'19" Angle = 51.6858, Star number = 151
2022/09/30 21:34:32 [AutoCenter|End] The target is centered
2022/09/30 21:34:32 Start Tracking
2022/09/30 21:34:41 [Guide] Stop Guiding
2022/09/30 21:34:41 Stop Tracking
2022/09/30 21:34:42 [Meridian Flip|Begin] Wait 9min26s to Meridian Flip
2022/09/30 21:44:08 Meridian Flip 1# Start
2022/09/30 21:44:08 Mount slews to target position: RA:20h59m59s DEC:+43°43'18"
2022/09/30 21:45:07 Solve succeeded: RA:21h0m0s DEC:+43°43'12" Angle = -128.369, Star number = 155
2022/09/30 21:45:07 The Mount has flipped
2022/09/30 21:45:07 [AutoCenter|End] The target is centered
2022/09/30 21:45:08 [Guide] Calibration data Flipped
2022/09/30 21:45:08 [Meridian Flip|End] Meridian Flip succeeded
2022/09/30 21:45:13 [AutoFocus|Begin] Run AF after Auto Meridian filpped, exposure 2.0s Bin1, temperature 9.7°C
2022/09/30 21:47:57 Auto focus succeeded, the focused position is 22360
2022/09/30 21:47:57 [AutoFocus|End] Auto focus succeeded
2022/09/30 21:47:59 [Guide] ReSelect Guide star
2022/09/30 21:48:01 [Guide] Start Calibrating
2022/09/30 21:52:05 [Guide] Calibrate Success
2022/09/30 21:52:05 [Guide] Guide Settle
2022/09/30 21:52:21 [Guide] Settle Done
2022/09/30 21:52:21 Exposure 300.0s image 1# ... image 5#
2022/09/30 22:17:32 [Guide] Dither
2022/09/30 22:17:41 Exposure 300.0s image 6# … image 10#
2022/09/30 22:42:53 [Guide] Stop Guiding and Tracking

2022/09/30 22:42:54 [Autorun|Begin] NgC7000-3 Start
2022/09/30 22:43:12 Mount slews to target position: RA:21h2m2s DEC:+45°26'41"
2022/09/30 22:43:25 Solve succeeded: RA:21h2m2s DEC:+45°26'42" Angle = -127.707, Star number = 254
2022/09/30 22:43:34 [AutoFocus|Begin] Run AF before Autorun start, exposure 2.0s Bin1, temperature 8.9°C
2022/09/30 22:46:38 Auto focus succeeded, the focused position is 22352
2022/09/30 22:46:38 [AutoFocus|End] Auto focus succeeded
2022/09/30 22:46:47 Exposure 300.0s image 1# ... image 5#
2022/09/30 23:11:59 [Guide] Dither
2022/09/30 23:12:14 Exposure 300.0s image 6# … image 10#
2022/09/30 23:37:25 [Guide] Stop Guiding
2022/09/30 23:37:25 Stop Tracking

2022/09/30 23:37:26 [Autorun|Begin] NGC7000-4 Start
2022/09/30 23:37:43 Mount slews to target position: RA:21h5m5s DEC:+44°5'34"
2022/09/30 23:37:56 Solve succeeded: RA:21h5m5s DEC:+44°5'35" Angle = -127.445, Star number = 101

2022/09/30 23:37:56 [AutoCenter|End] The target is centered
2022/09/30 23:38:06 [AutoFocus|Begin] Run AF before Autorun start, exposure 2.0s Bin1, temperature 9.2°C
2022/09/30 23:40:34 [AutoFocus|End] Auto focus succeeded
2022/09/30 23:40:43 Exposure 300.0s image 1# … image 5#
2022/10/01 00:05:55 [Guide] Dither
2022/10/01 00:06:03 Exposure 300.0s image 6# … 10#
2022/10/01 00:31:15 [Guide] Stop Guiding
2022/10/01 00:31:15 Stop Tracking

2022/10/01 00:31:15 [Autorun|End] Finish Autorun
2022/10/01 00:31:15 Plan 20220824 NGC7000 Finish
2022/10/01 00:31:15 Turn Off Cooling
2022/10/01 00:31:15 Stop Tracking
2022/10/01 00:31:28 Mount GoTo Home POS
2022/10/01 00:32:26 EAF back to zero position failed
2022/10/01 00:32:26 Shutdown ASIAIR
Log disabled at 2022/10/01 00:32:26