

HII regions in NGC 2403 and NGC 2366

Telescope: **AS110** (Zeiss AS110/1650 mm)

Eyepieces:

ATC40 - ATC Kellner, $f=40\text{mm}$, ($41\times$, $61'$)

O-25 - CZJ Ortho, $f=25\text{mm}$, ($66\times$, $38'$)

A-16 - Zeiss Abbe Ortho, $f=16\text{mm}$, ($103\times$, $28'$)

A-10 - Zeiss Abbe Ortho, $f=10\text{mm}$, ($165\times$, $17'$)

Accessories: Baader 1.25" prism

Time: 2015/11/03 20:50-22:40UT

Location: Ondřejov

Weather: Clear and transparent sky, above the mist. Sometimes slight haze.

When I was leaving home, it was not clear how the sky would look like when I arrive to my observatory in Ondřejov. The danger was the mist. It could ruin all the effort of 20 minutes drive. The observatory is about 150 m higher than our backyard and there was a good chance that it would stay clear.

I was not turned down. I was welcomed by bright stars shining on black-velvet sky. A sign I don't experience too often unfortunately. The mist was most of the time in the valley below me. There were only short periods of very light haze during the two hours session. Simply beautiful night.

I had in mind three targets for the evening. As the sky was so nice, I decided to give another try to the planetary Jones 1. Then I wanted to explore in more detail bright galaxy NGC 2403 and try to spot nearby irregular galaxy NGC 2366 which I failed to see in the past.

On the way to Jones 1, I have noticed in the Interstellarum Deep Sky Atlas galaxy **NGC 7753** ($V=12.2$, $3.3' \times 2.1'$, $PA50^\circ$). It was marked as a good object for 8" telescopes. It was bearing also the Arp designation, Arp 86. A sign that this might be an interesting target worth of stopping by.

The galaxy was quite difficult target for 110mm refractor. It was not visible at $41\times$. Larger magnifications, $103\times$ and $165\times$, revealed very faint elliptical spot, elongated at $PA \sim 70^\circ$. No other details were noticed.

I was also trying to spot shortly the nearby galaxy **NGC 7752** ($V=14.0$, $0.8' \times 0.5'$, $PA113^\circ$). There was no sign of it at powers



of $103\times$ and $165\times$. As I even did not know if I had a chance of detecting this galaxy, I didn't make serious attempt to find it. Looking at the catalogue numbers, I think there is quite a good chance to see it in 110mm telescope based on my previous experience with similarly bright and large members of distant galaxy clusters.

Then I jumped to the planetary nebula **Jones 1** ($V=12.1$, $5.5'$). I spent about half hour on this target, playing with different magnifications ($41\times$, $66\times$, and $103\times$) and OIII filter. I had no luck, except a very short moment when I indeed saw strongly elongated nebula. Comparing the view with the DSS image, it was in the location of southern patch in the planetary. I could not see it again despite all of my effort and therefore I don't consider the object seen by me.

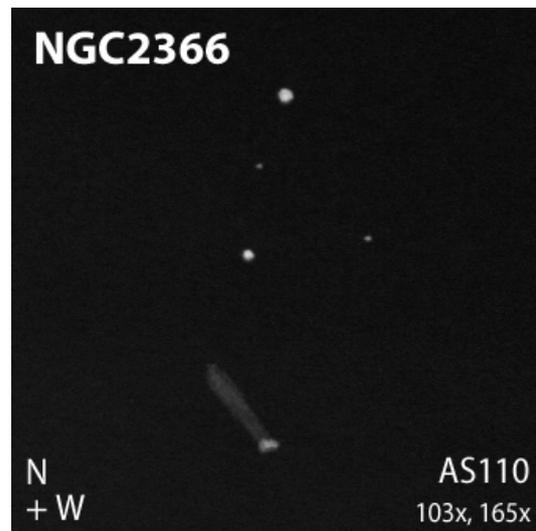
Next target was galaxy **NGC 2403** ($V=8.6$, $18' \times 11'$, $PA127^\circ$). I have read about encouraging observations of HII regions in this nearby galaxy through small telescopes. I had to see it by myself.

At 41 \times , it was beautiful and bright silvery spot hiding between two quite bright stars. It was not easy to determine the shape of the galaxy because of the two stars. I guessed that there was a brighter center, elongated at PA \sim 160 – 180 $^\circ$. Much fainter body was elongated in slightly different angle, at PA \sim 140 – 160 $^\circ$. I saw a faint tip extending from the north-west end.

Higher magnifications of 103 \times and 165 \times revealed clearly that the tip contained quite a distinct arm. With averted vision, a thick and long line was popping in and out for short moments, pointing roughly in the north direction. There was another fainter misty spot slightly more north. Looking at the galaxy images, this was another HII region in the same arm. I have noticed one more HII region. It was just a small brighter rounded spot north of the nucleus, at the border of central brighter oval.

I'm sure that with more time and with proper DSS image at the eyepiece, I would be able to locate more HII regions. There are few more on the images that look even brighter than those two I have noticed.

The last target of the night was nearby irregular galaxy **NGC 2366** (V=11.0, 8.1' \times 3.3', PA25 $^\circ$). As NGC 2403, it belongs to the M81 group.

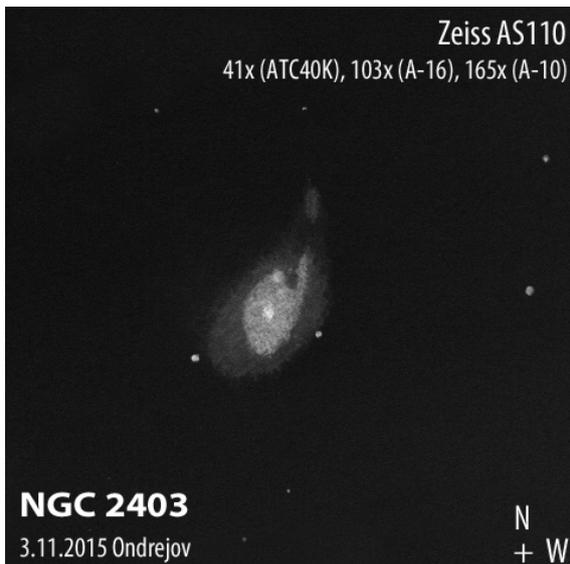


Equipped with the DSS image, I located precisely the position of the two bright HII regions at the southern end of the galaxy. Indeed, they were there at 103 \times and 165 \times . Small hazy spot was popping in and out with averted vision. It was elongated in east-west direction, and I had a feeling occasionally that the spot has even a double structure. I was not able to convince myself about visibility of this feature, it was too rare and I could be biased as I saw the DSS image during observing.

To see the main galaxy body was a different story. In the beginning, I missed it completely. With some effort and concentration, it started to show out as a very faint line.

I was also trying to spot without success nearby small galaxy **NGC 2363** (V=14.9, 1.7' \times 1.1', PA20 $^\circ$). As the catalogue numbers suggest, there was practically no chance.

Unfortunately, two hours run quite quickly and I had to go back to get some sleep. I quickly checked the view of M31 and Pleiades and closed the observatory roof. When I arrived at home, the whole garden was covered with medium thick mist. I could see only the brightest stars through it. The drive to my darker site was definitely worth.



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