Visual Astronomy 101

Mike Hotka

AL Membership Includes:

- Inclusion in Nationwide Organization
- 10% Discount off Vendor Merchandise
  - Called Celestial Savings
  - Astronomics, Thousand Oaks, etc
- 10% Discount on Astronomy Books
  - Free Shipping
- Access to Observing Programs
  - Hands-on activities
  - List of tasks to accomplish

Who am I?

Drawing by David Nicholls

- Been an Amateur Since 1965
  - Comet Ikeya-Seki
- 1st Astronomical League Observation
  - M57 on July 12, 1986
- Since that 1st Observation, I have:
  - Completed 52 AL Observing Programs
  - Received 71 of 76 Certificates
  - Completed 22 Other Observing Programs

My 12.5” f/8 Scope

This Presentation
http://mikehotka.com

WWII Honoree	New Telescope	Astronomy Biography	Astronomical Accomplishments	Walk Down Memory Lane
Equipment	My Astro Buddies	Observing Lists	Observing Logbook	How I Do What I Do
Awards Page	First Astronomical League Certificate	My Useful Astro Links	My Software Patent	Resume
Our Holiday Lights	2011 Okie-Tex Star Party	Other Great Astro Links	Retirement Opportunities	Publications
2016 Okie-Tex Star Party	OzSky 2016	My Sky Diving Adventure	ALCON 2017	

Who am I?

- Been an Amateur Since 1965
  - Comet Ikeya-Seki
- 1st Astronomical League Observation
  - M57 on July 12, 1986
- Since that 1st Observation, I have:
  - Completed 52 AL Observing Programs
  - Received 71 of 76 Certificates
  - Completed 21 Other Observing Programs

When I was 11 years old, I remember looking at this comet, from my home town of Iowa City, IA. I looked at it night after night and was fascinated with what I saw. That Christmas, Santa brought me a telescope and another amateur astronomer was born.

In 1983 I moved to Dallas, TX and joined the Texas Astronomical Society. There I met John Waggoner, who was big in Astronomical League's Observing programs. He encouraged me to start doing these programs and you can see my first observation for a program there.

Since I started these Programs, I have not stopped. I love lists of objects to observe.

Once thing about me is by the end of this talk, you will know how much I like lists.

Get My Business Card

What Drives My Desire to Observe?

- Set a Goal
- Then Set Intention(s) to Achieve Goal

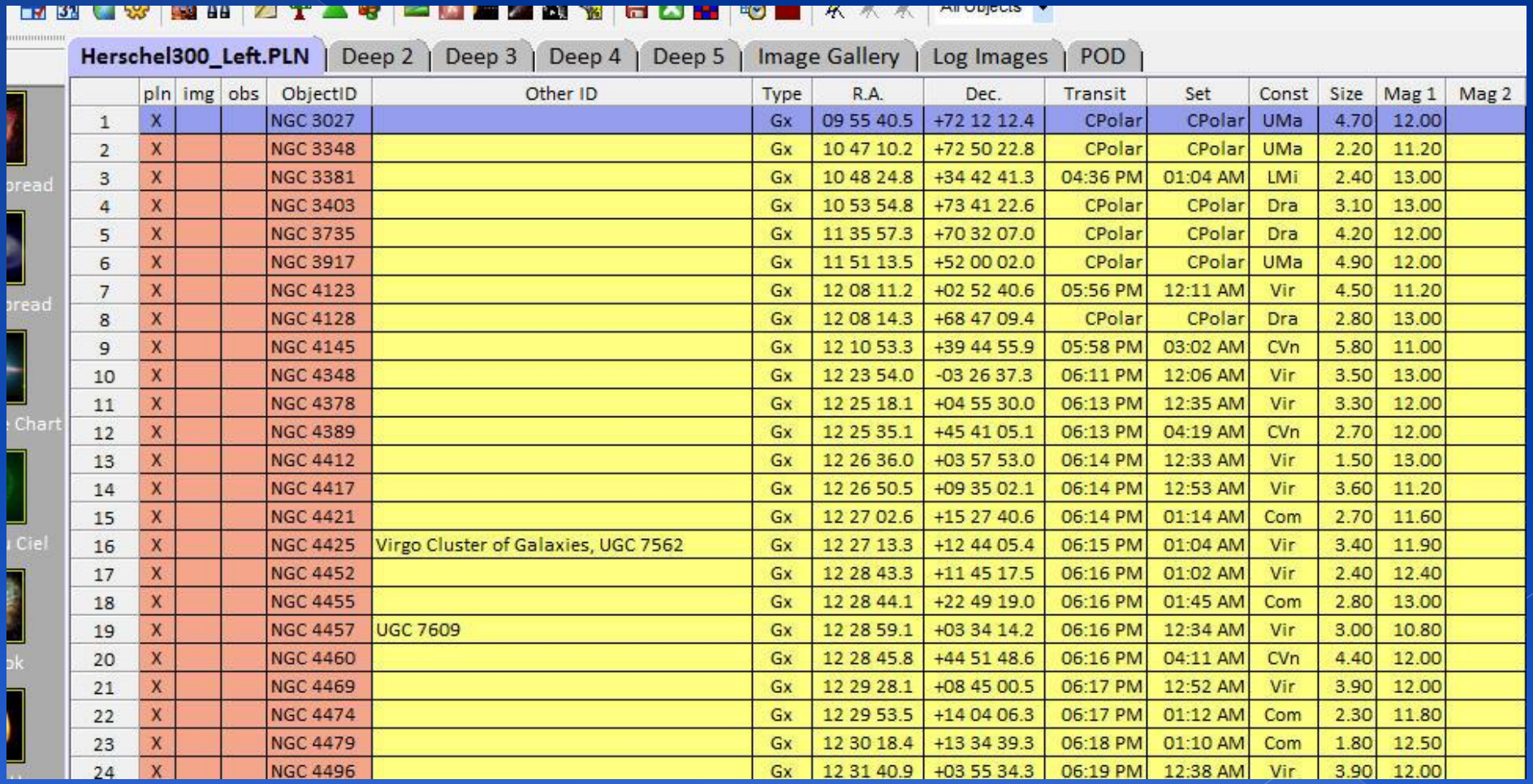
First Astronomical Goal

- Astronomical Goal
  - To Observe 10,000 Unique Celestial Objects
    - 5661 Unique Objects Observed Already
- Intentions
  - Herschel 2500
    - 477 left to observe
  - Complete Dave Mitsky's Double Star List
    - 151 of 822 observed so far

Second Astronomical Goal

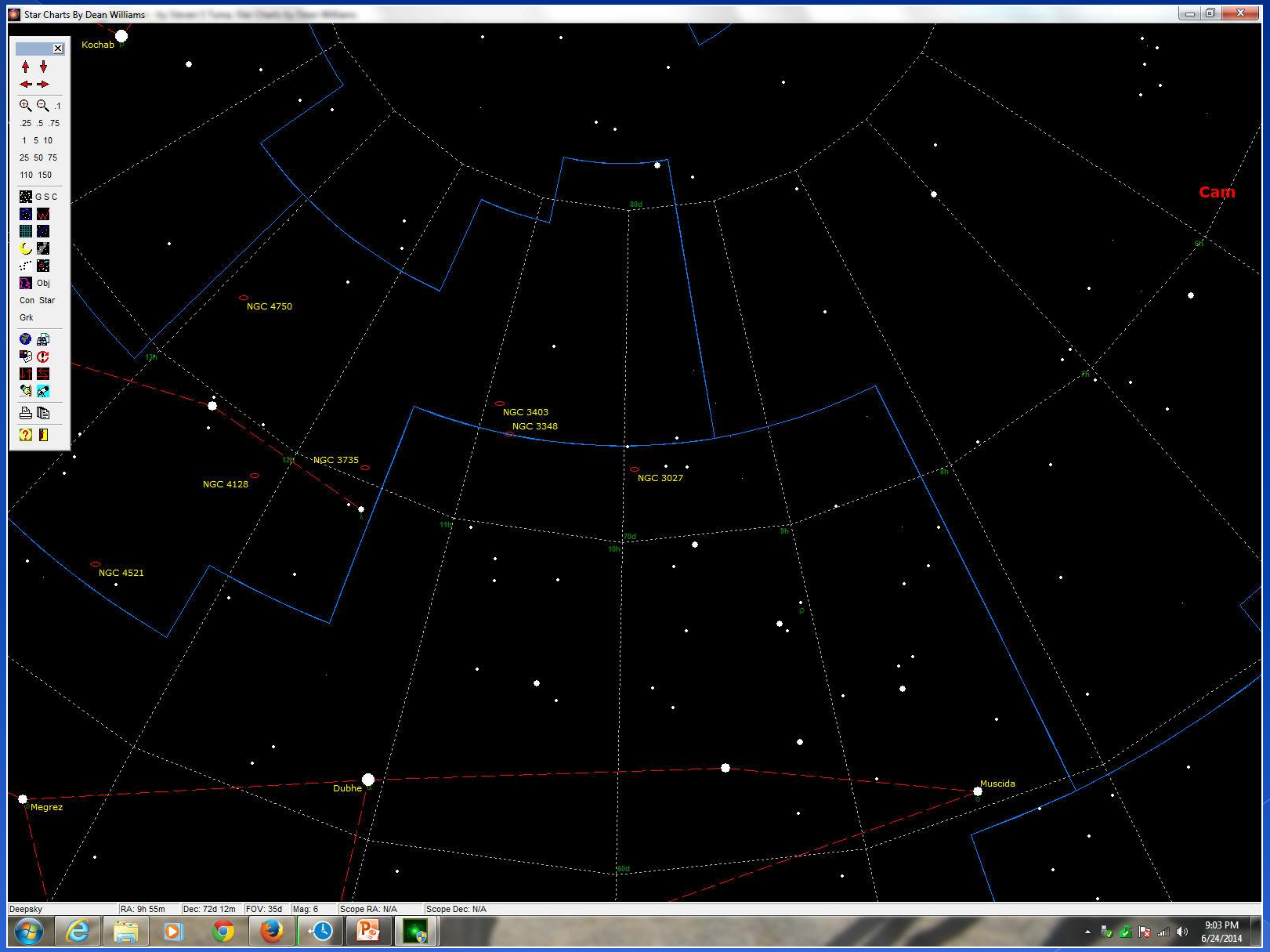
- Astronomical Goal
  - Complete 57 of the 58 Existing AL Observing Programs
    - Cannot do Sky Puppy Program
- My Current Intentions
  - Finish Observing the 5 Remaining AL programs

Deepsky Astronomy Software

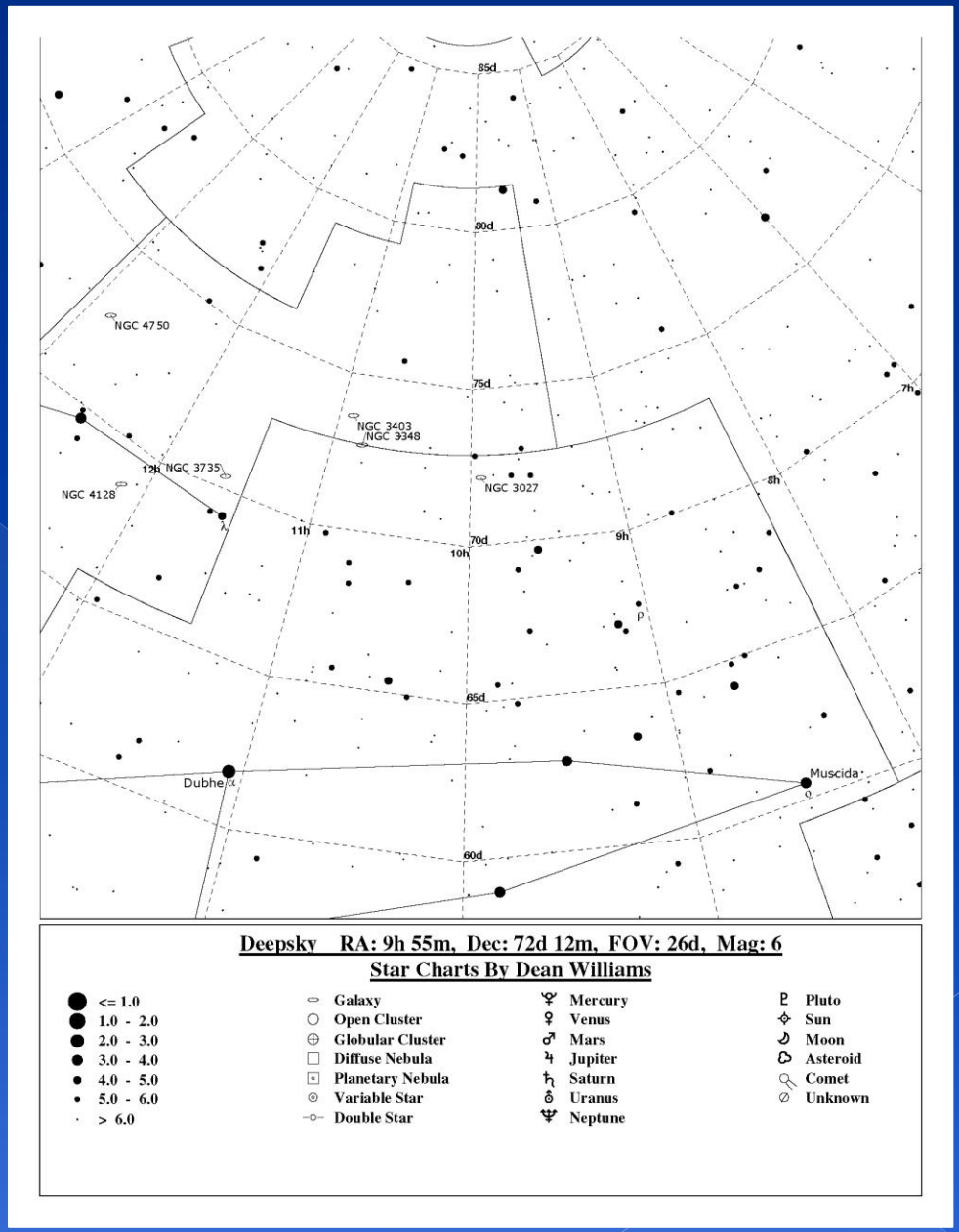


Herschel300_Left.PLN | Deep 2 | Deep 3 | Deep 4 | Deep 5 | Image Gallery | Log Images | POD

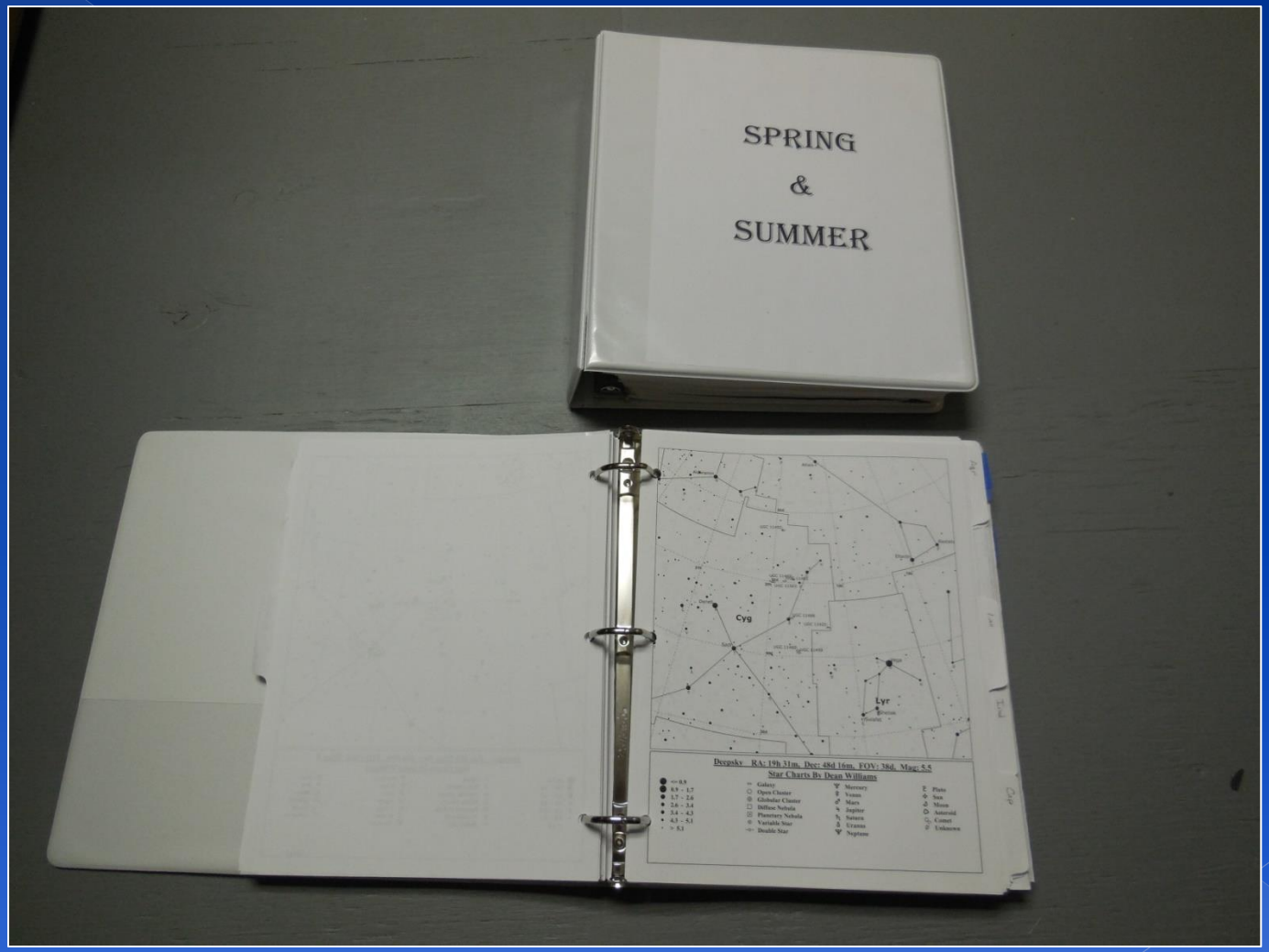
	pln	img	obs	ObjectID	Other ID	Type	R.A.	Dec.	Transit	Set	Const	Size	Mag 1	Mag 2
1	X			NGC 3027		Gx	09 55 40.5	+72 12 12.4	CPolar	CPolar	UMa	4.70	12.00	
2	X			NGC 3348		Gx	10 47 10.2	+72 50 22.8	CPolar	CPolar	UMa	2.20	11.20	
3	X			NGC 3381		Gx	10 48 24.8	+34 42 41.3	04:36 PM	01:04 AM	LMi	2.40	13.00	
4	X			NGC 3403		Gx	10 53 54.8	+73 41 22.6	CPolar	CPolar	Dra	3.10	13.00	
5	X			NGC 3735		Gx	11 35 57.3	+70 32 07.0	CPolar	CPolar	Dra	4.20	12.00	
6	X			NGC 3917		Gx	11 51 13.5	+52 00 02.0	CPolar	CPolar	UMa	4.90	12.00	
7	X			NGC 4123		Gx	12 08 11.2	+02 52 40.6	05:56 PM	12:11 AM	Vir	4.50	11.20	
8	X			NGC 4128		Gx	12 08 14.3	+68 47 09.4	CPolar	CPolar	Dra	2.80	13.00	
9	X			NGC 4145		Gx	12 10 53.3	+39 44 55.9	05:58 PM	03:02 AM	CVn	5.80	11.00	
10	X			NGC 4348		Gx	12 23 54.0	-03 26 37.3	06:11 PM	12:06 AM	Vir	3.50	13.00	
11	X			NGC 4378		Gx	12 25 18.1	+04 55 30.0	06:13 PM	12:35 AM	Vir	3.30	12.00	
12	X			NGC 4389		Gx	12 25 35.1	+45 41 05.1	06:13 PM	04:19 AM	CVn	2.70	12.00	
13	X			NGC 4412		Gx	12 26 36.0	+03 57 53.0	06:14 PM	12:33 AM	Vir	1.50	13.00	
14	X			NGC 4417		Gx	12 26 50.5	+09 35 02.1	06:14 PM	12:53 AM	Vir	3.60	11.20	
15	X			NGC 4421		Gx	12 27 02.6	+15 27 40.6	06:14 PM	01:14 AM	Com	2.70	11.60	
16	X			NGC 4425	Virgo Cluster of Galaxies, UGC 7562	Gx	12 27 13.3	+12 44 05.4	06:15 PM	01:04 AM	Vir	3.40	11.90	
17	X			NGC 4452		Gx	12 28 43.3	+11 45 17.5	06:16 PM	01:02 AM	Vir	2.40	12.40	
18	X			NGC 4455		Gx	12 28 44.1	+22 49 19.0	06:16 PM	01:45 AM	Com	2.80	13.00	
19	X			NGC 4457	UGC 7609	Gx	12 28 59.1	+03 34 14.2	06:16 PM	12:34 AM	Vir	3.00	10.80	
20	X			NGC 4460		Gx	12 28 45.8	+44 51 48.6	06:16 PM	04:11 AM	CVn	4.40	12.00	
21	X			NGC 4469		Gx	12 29 28.1	+08 45 00.5	06:17 PM	12:52 AM	Vir	3.90	12.00	
22	X			NGC 4474		Gx	12 29 53.5	+14 04 06.3	06:17 PM	01:12 AM	Com	2.30	11.80	
23	X			NGC 4479		Gx	12 30 18.4	+13 34 39.3	06:18 PM	01:10 AM	Com	1.80	12.50	
24	X			NGC 4496		Gx	12 31 40.9	+03 55 34.3	06:19 PM	12:38 AM	Vir	3.90	12.00	


Star Charts By Dean Williams
Kochab
Cam
NGC 4750
NGC 3403
NGC 3348
NGC 3735
NGC 4128
NGC 3027
NGC 4521
Dubhe
Megrez
Muscida
Deepsky
RA: 9h 55m
Dec: 72d 12m
FOV: 35d
Mag: 6
Scope RA: N/A
Scope Dec: N/A
9:03 PM
6/24/2014

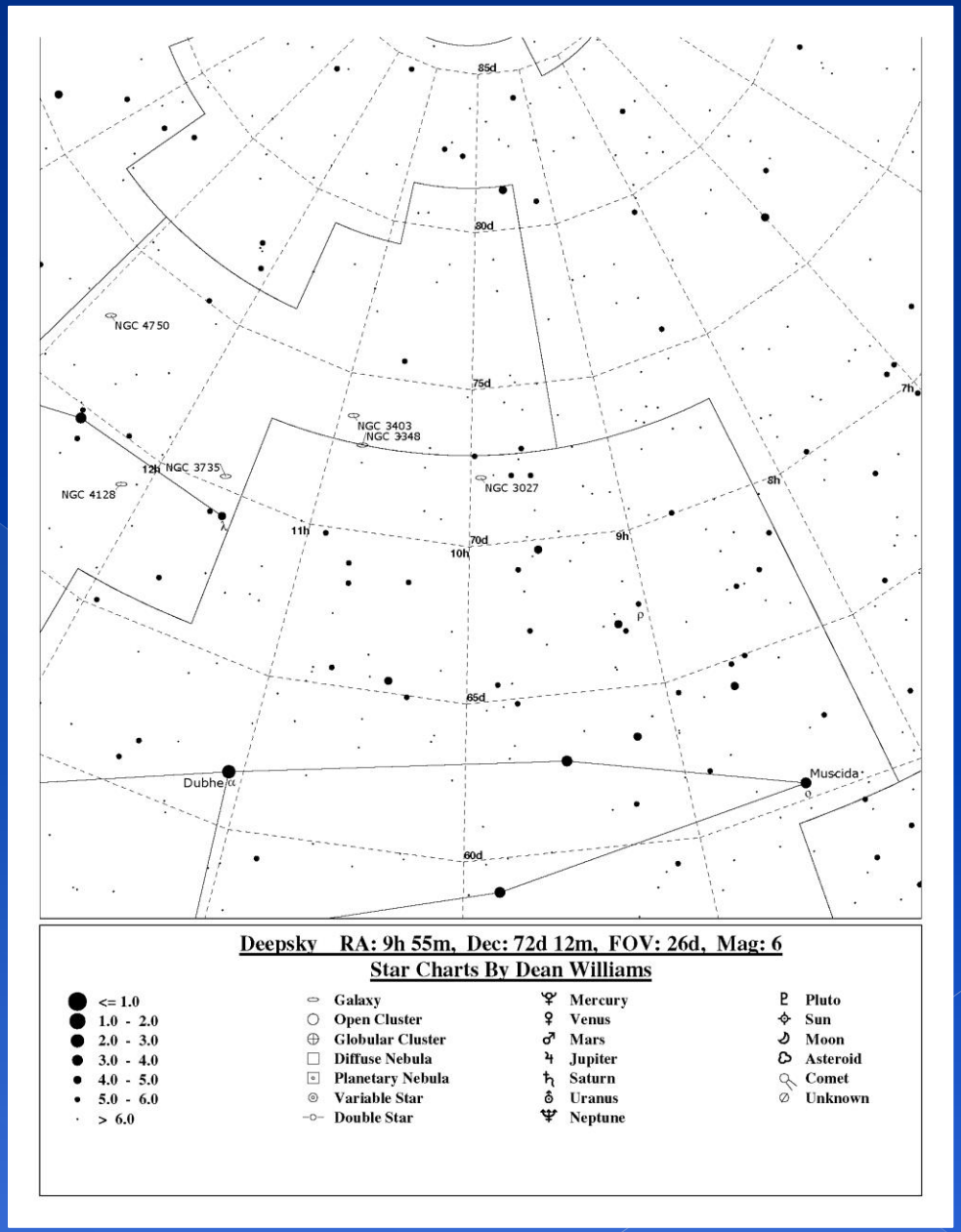
- Print them on Your Printer



Notebooks Constellation Ordered

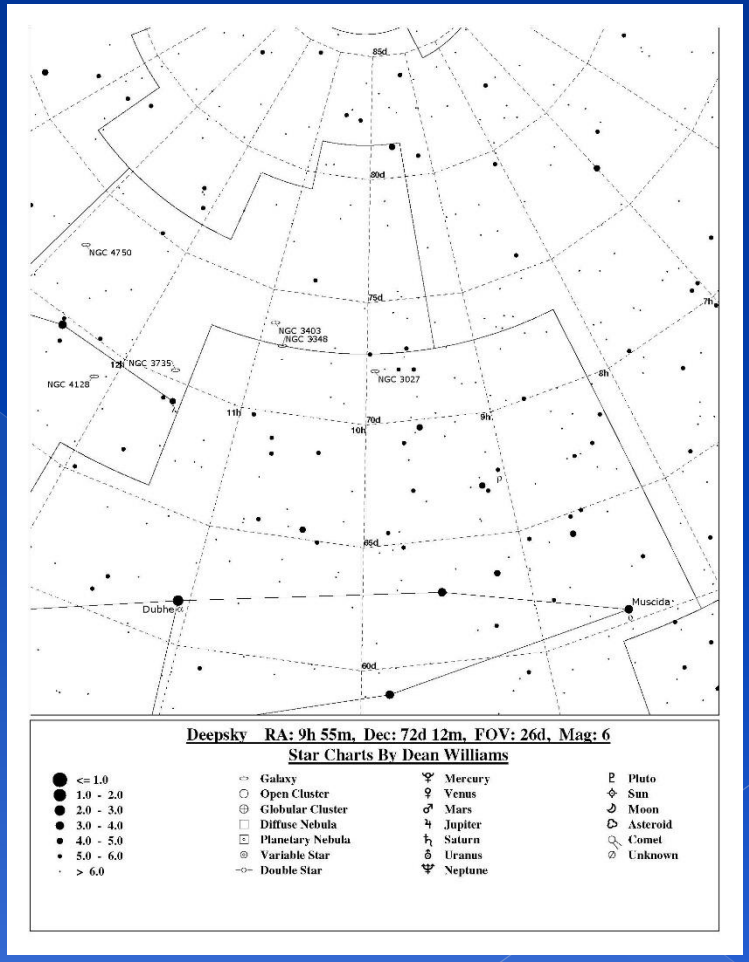


- Print to .pdf file using free Cute PDF Writer

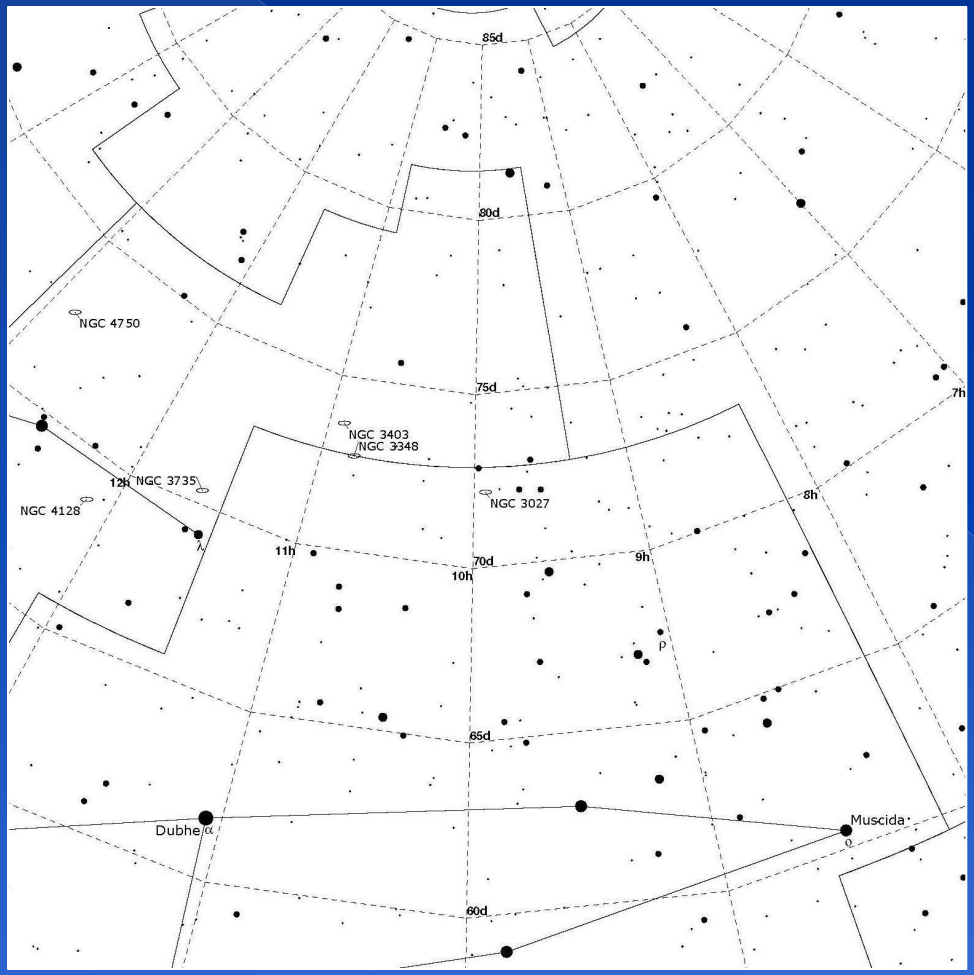


Create JPG Pictures

- Open .pdf in free Acrobat Pro 8.0
  - Choose Export->JPEG
- Open JPEG in MS Picture Manager
  - Crop off bottom and white space on top and sides
  - Save resulting image



Ready to put on my Surface 2

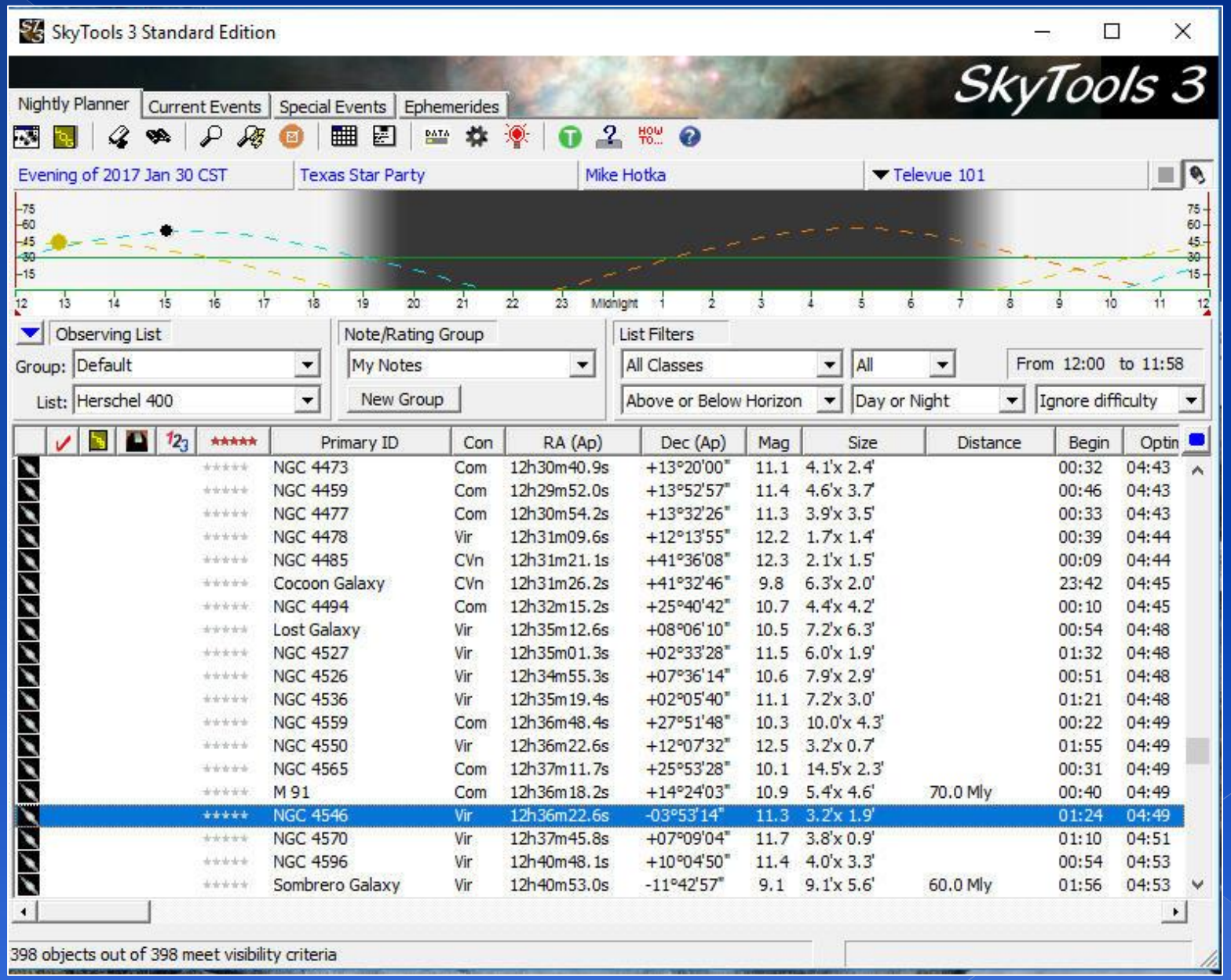


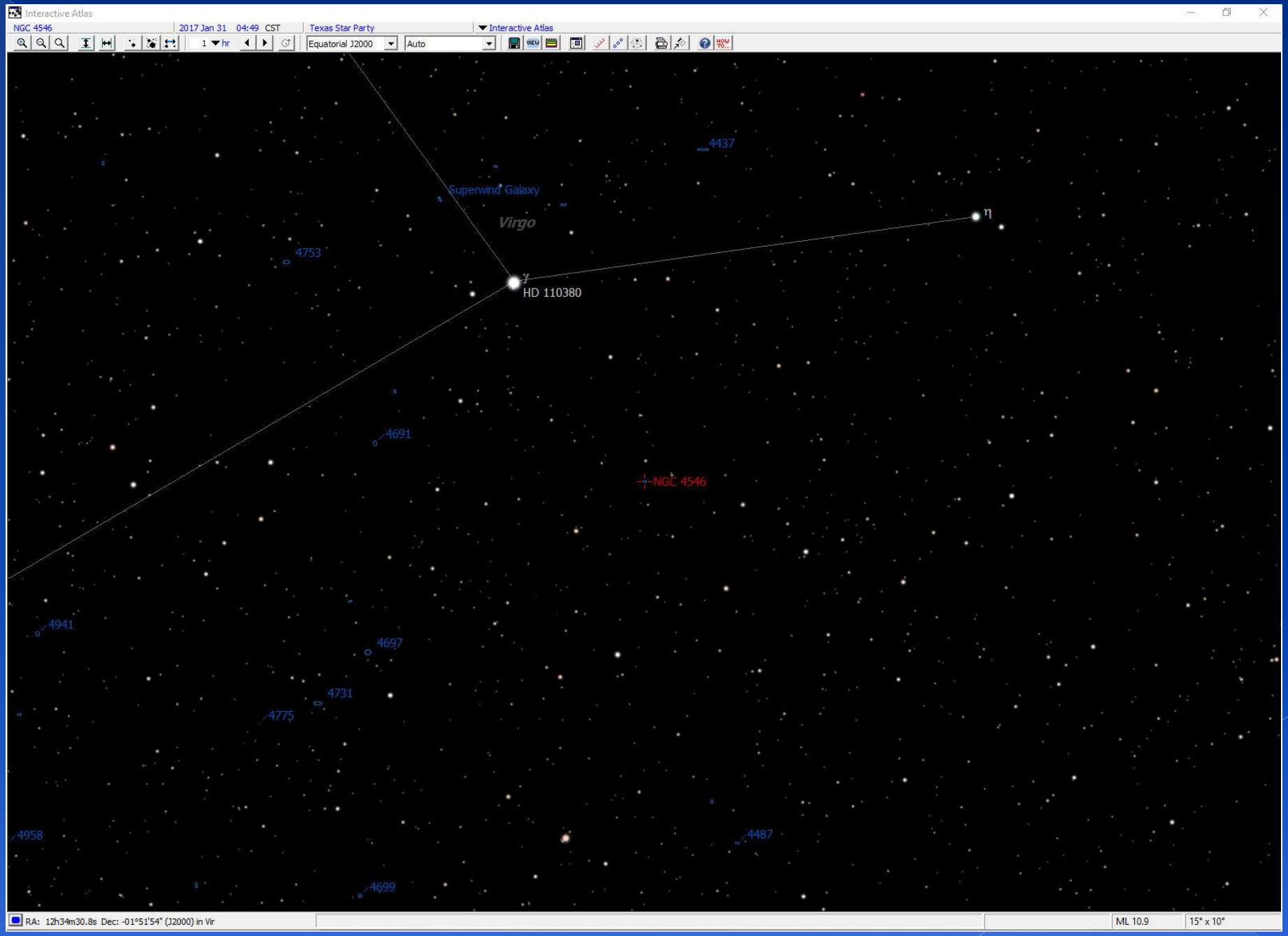
Amazon.com

- Export your DAS Observing List to Excel
- Save Object IDs into a .txt file

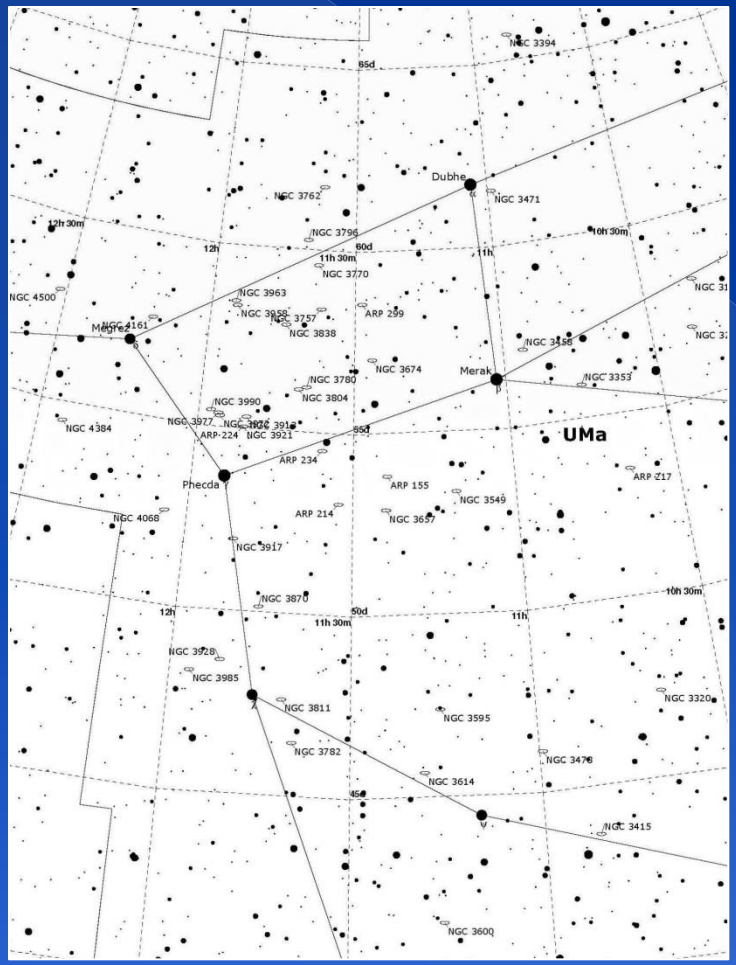
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	X			NGC 4425	Virgo Cluster of Galaxies, UGC 7562	Gx	12 27 13.3	+12 44 05.4	2000						Vir	3.40	11.90	
2	X			NGC 4452		Gx	12 28 43.3	+11 45 17.5	2000						Vir	2.40	12.40	
3	X			NGC 4455		Gx	12 28 44.1	+22 49 19.0	2000						Com	2.80	13.00	
4	X			NGC 4457	UGC 7609	Gx	12 28 59.1	+03 34 14.2	2000						Vir	3.00	10.80	
5	X			NGC 4460		Gx	12 28 45.8	+44 51 48.6	2000						CVn	4.40	12.00	
6	X			NGC 4469		Gx	12 29 28.1	+08 45 00.5	2000						Vir	3.90	12.00	
7	X			NGC 4474		Gx	12 29 53.5	+14 04 06.3	2000						Com	2.30	11.80	
8	X			NGC 4479		Gx	12 30 18.4	+13 34 39.3	2000						Com	1.80	12.50	
9	X			NGC 4496		Gx	12 31 40.9	+03 55 34.3	2000						Vir	3.90	12.00	
10	X			NGC 4503		Gx	12 32 06.2	+11 10 35.4	2000						Vir	3.50	11.10	
11	X			NGC 4808		Gx	12 55 49.1	+04 18 13.6	2000						Vir	2.70	12.00	
12	X			NGC 4532		Gx	12 34 19.4	+06 28 08.6	2000						Vir	2.90	11.90	
13	X			NGC 4561		Gx	12 36 09.3	+19 19 11.0	2000						Com	1.50	13.00	
14	X			NGC 4564		Gx	12 36 27.0	+11 26 21.2	2000						Vir	3.10	11.10	
15	X			NGC 4567	Siamese Twins	Gx	12 36 32.7	+11 15 28.4	2000						Vir	3.00	11.30	
16	X			NGC 4568	Siamese Twins	Gx	12 36 34.3	+11 14 17.7	2000						Vir	4.60	10.80	
17	X			NGC 4580		Gx	12 37 48.4	+05 22 06.0	2000						Vir	2.40	13.00	
18	X			NGC 4421		Gx	12 27 02.6	+15 27 40.6	2000						Com	2.70	11.60	
19	X			NGC 4793		Gx	12 54 40.7	+28 56 16.5	2000						Com	2.90	11.70	
20	X			NGC 4597		Gx	12 40 12.9	-05 47 58.0	2000						Vir	3.60	12.00	
21	X			NGC 4790		Gx	12 54 52.0	-10 14 53.0	2000						Vir	1.80	13.00	
22	X			NGC 4623		Gx	12 42 10.7	+07 40 36.3	2000						Vir	2.60	13.00	
23	X			NGC 4632		Gx	12 42 32.3	-00 05 05.9	2000						Vir	3.20	12.00	
24	X			NGC 4634		Gx	12 42 40.8	+14 17 45.9	2000						Com	2.40	12.40	
25	X			NGC 4653		Gx	12 43 51.0	-00 34 18.8	2000						Vir	2.60	12.30	
26	X			NGC 4658		Gx	12 44 37.7	-10 05 04.0	2000						Vir	2.20	13.00	
27	X			NGC 4783		Gx	12 54 36.4	-12 33 29.5	2000						Crv	1.70	11.80	
28	X			NGC 4694		Gx	12 48 15.0	+10 59 02.0	2000						Vir	3.60	12.00	
29	X			NGC 4700		Gx	12 49 07.7	-11 24 43.0	2000						Vir	3.00	12.00	
30	X			NGC 4731	Virgo Cluster of Galaxies, MCG-01-33-026	Gx	12 51 13.3	-06 33 32.0	2000						Vir	6.50	11.00	
31	X			NGC 4747	UGC 8005, Arp 159	Gx	12 51 45.5	+25 46 28.5	2000						Com	3.60	12.40	
32	X			NGC 4771		Gx	12 53 21.2	+01 16 08.3	2000						Vir	4.00	13.00	
33	X			NGC 4772		Gx	12 53 29.1	+02 10 06.1	2000						Vir	3.30	13.00	
34	X			NGC 4775		Gx	12 53 45.9	-06 37 19.0	2000						Vir	2.20	12.00	

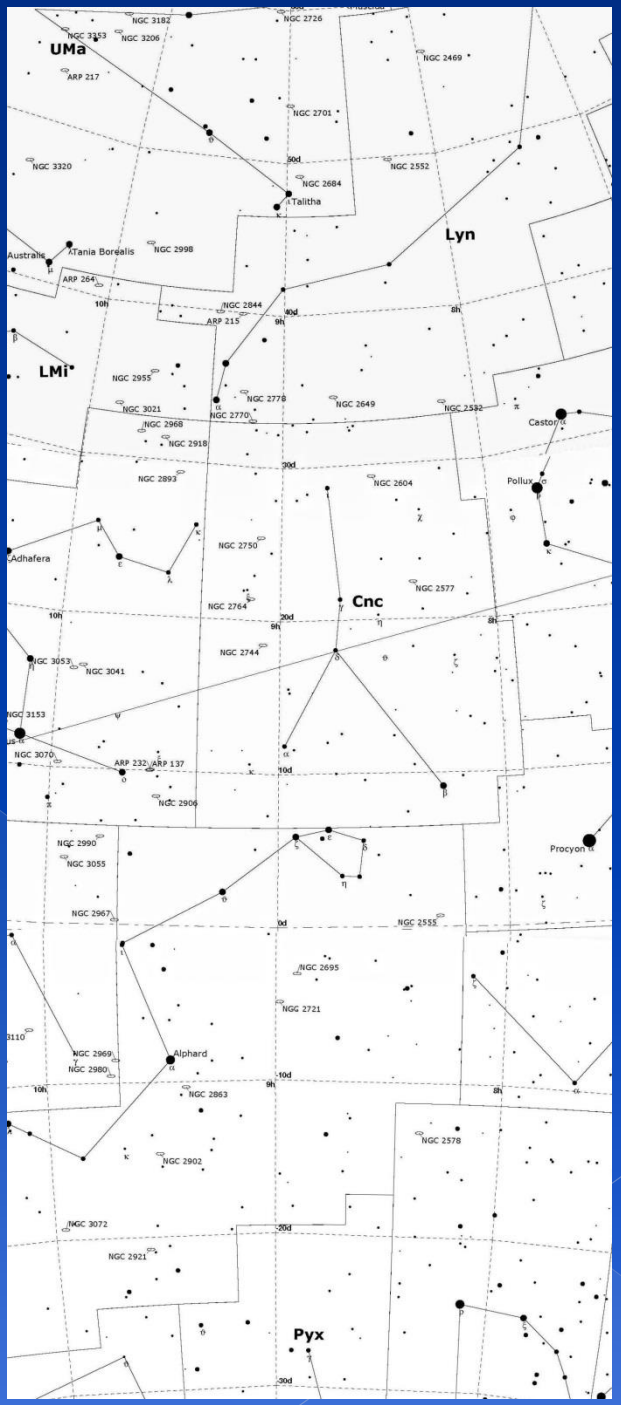
⊙ Import .txt file into SkyTools 3




Interactive Atlas
NGC 4546
2017 Jan 31 04:49 CST
Texas Star Party
Interactive Atlas
1 hr
Equatorial J2000
Auto
4437
Superwind Galaxy
Virgo
η
4753
γ
HD 110380
4691
NGC 4546
4941
4697
4731
4775
4958
4487
4699
RA: 12h34m30.8s Dec: -01°51'54" (J2000) in Vir
ML 10.9
15° x 10°

Make Panoramas with free Microsoft ICE





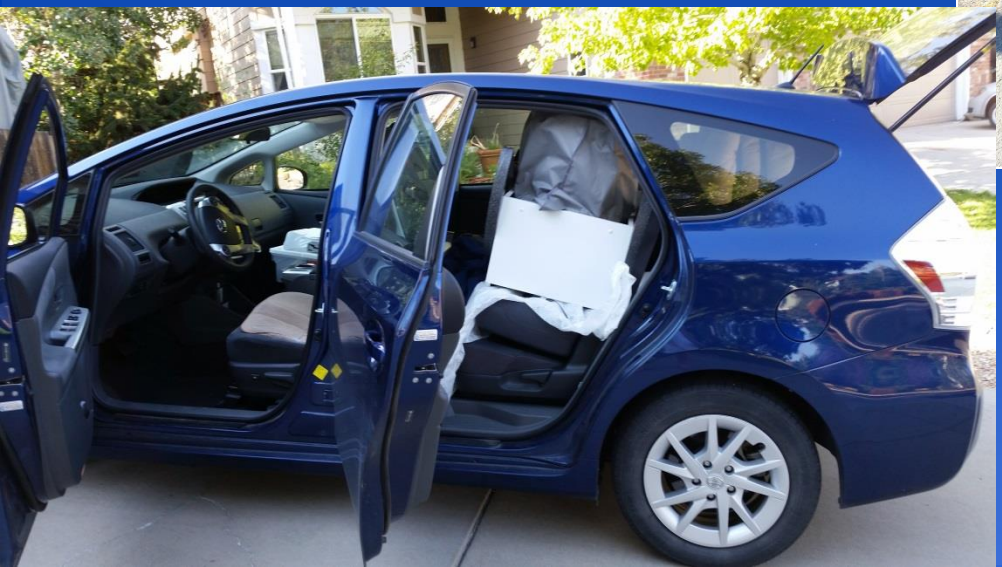
Overnight List of Items to Pack

	12.5" Base/Poles/Upper Cage/ Finder Platform		Alieve		Winter Boots		Chart Box(es)
	Little Giant ladder		Tums		Wool Socks		Night Sky Guides
	Black 12.5" Equipment Case		Bug Spray		Ski Pants		Double Star Charts
	8" Scope/Base		Hand Sanitizer		Long Johns		2 Seasonal Notebooks
	Telrad for 8" Scope		Sun Screen		Thermal Wools		Pgm Notebook(s)
	Sky Commander/Pedestal/Alt Arm		Water		Sweat Shirt		Spiral Notes Book
	Weights (2 small clamps)		Snacks		Gloves		Double Star List
	Rock Weights		Dinner		Ski Hat		Pencils
	Table		Sleeping Bags/Foam		Ear Muff Hat		Blue Tape
	Chair		My Pillow		Neck Gator		Duct Tape
	8x50 Binoculars		Camera/Tripod		Jacket		Needle Nose Pliers
	3 Eyepiece Cases		4 - AA Batteries		Winter Coat		Leveling Blocks
	20x80 Binoculars/Mount/Weights		1 - 9V Battery		Coveralls		Toilet Set/Enclosure
	Multi-Band Radio				Eye Shade		Table Top Dew Guard
	Scope Cover		Hat		Ear Plugs		Back Brace
	Ground Tarp		Shovel		Noise Maker		
	12V Deep Cycle Battery		Toilet Paper				
	Extension Cord/3 way connector		Paper Towels				
	DC/AC Power Converter		Fly Swatter				
	Window Net/Magnets		Electric Fan				
	Phone Red Screen		Electric Heater				
	Phone Charger		Window Net/Magnets				
	PC/Red Screen/Box						

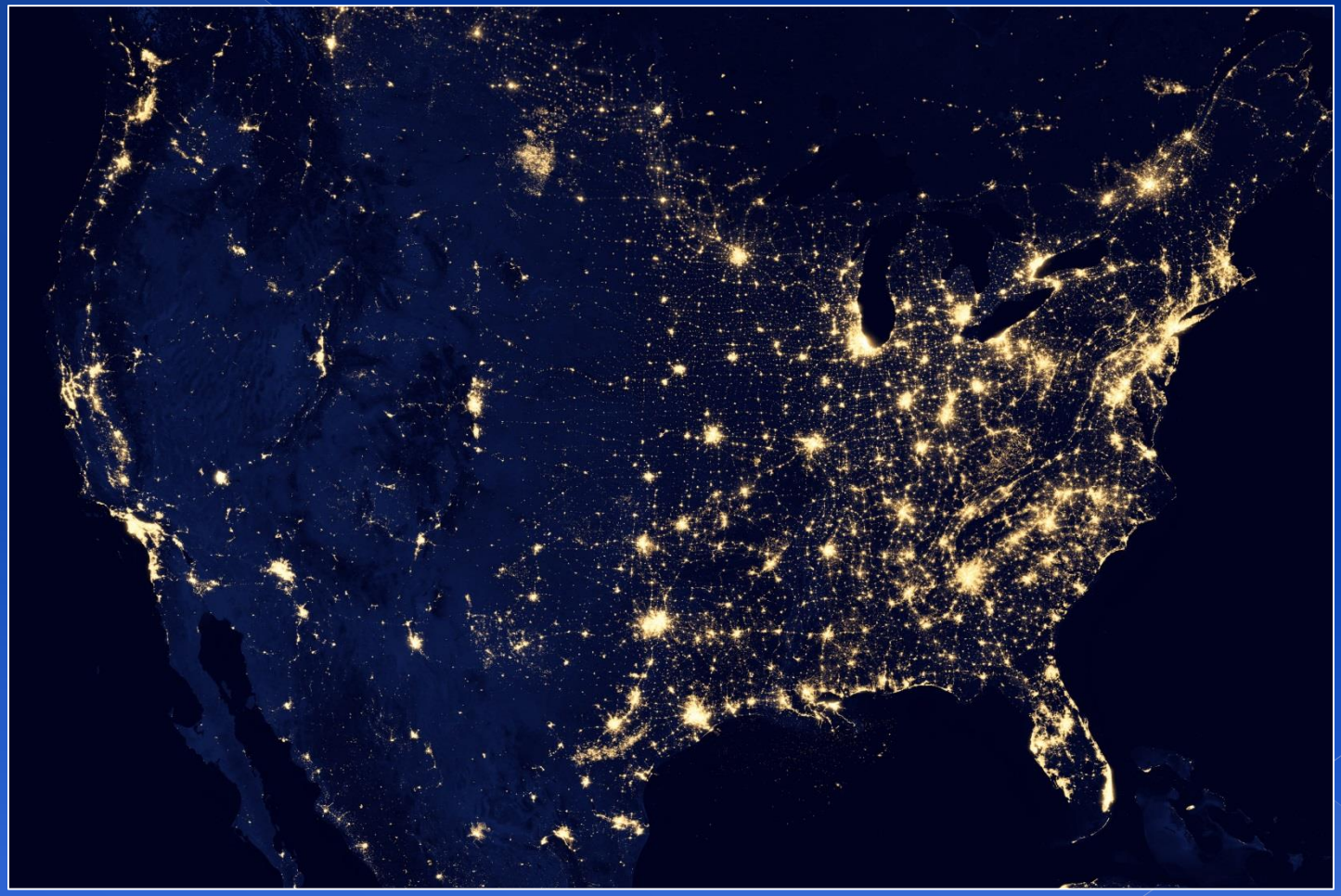
Week/Weekend List of Items to Pack

	12.5" Base/Poles/Upper Cage/ Finder Platform		Alieve		Winter Boots		Chart Box(es)
	Little Giant ladder		Tums		Wool Socks		Night Sky Guides
	Black 12.5" Equipment Case		Bug Spray		Ski Pants		Double Star Charts
	8" Scope/Base		Hand Sanitizer		Long Johns		2 Seasonal Notebooks
	Telrad for 8" Scope		Sun Screen		Thermal Wools		Pgm Notebook(s)
	Sky Commander/Pedestal/Alt Arm		Water		Sweat Shirt		Spiral Notes Book
	Weights (2 small clamps)		Snacks		Fingerless Gloves		Double Star List
	Rock Weights		Dinner		Black Gloves		Pencils
	Table		Sleeping Bags/Foam		Ski Hat		Noise Maker
	Chair		My Pillow		Ear Muff Hat		Electric Fan
	8x50 Binoculars		Camera/Tripod		Neck Gator		Electric Heater
	3 Eyepiece Cases		4 - AA Batteries		Jacket		DC Fan
	20x80 Binoculars/Mount/Weights		1 - 9V Battery		Winter Coat		Blue Tape
	Multi-Band Radio				Coveralls		Duct Tape
	Scope Cover		Hat		Eye Shade		Needle Nose Pliers
	Ground Tarp		Shovel		Ear Plugs		Leveling Blocks
	12V Deep Cycle Battery		Toilet Paper		Cups/Bowls/Plates		Toilet Set/Enclosure
	Solar Charger		Paper Towels		Spoon/Fork/Knife		Table Top Dew Guard
	Phone Red Screen		Fly Swatter		Tooth brush/paste		Back Brace
	PC/Red Screen/Box		Cot		Towel/Wash Cloth		Aluminum Tarp Poles
	Power Cord/3 way connector		Camp Stove		Soap/Shampoo		Hammer, stakes, rope
	Rheastat Cord		Propane		Shaver		Wire ties/Nippers
	Phone Charger		Matches		Food		Spring Clamps
	Red Lamp Pedestal Arm		Dish Soap		Coffee/Cup		
	DC/AC Converter		Window Net/Magnets		Flavored Drinks		

Grab and Go



Where To Observe



Unknown Internet Source

- Head out alone or with friends
- State Parks, National Parks
  - Ranger Security, bathrooms, showers
  - Security lights
- Local Club's Dark Sky Site

Improves Contrast 1/2 Mag

Don’t Forget About This

Enhance Chances To See It

- Use of filters
  - OIII, Deep Sky, UHC, H-Beta

Lumicon.com

Increase Magnification

- The fainter the galaxy, more power
- Magnification = Focal Length of Telescope (mm)
  Focal Length of Eyepiece (mm)

Orion Telescopes

Orion Telescopes

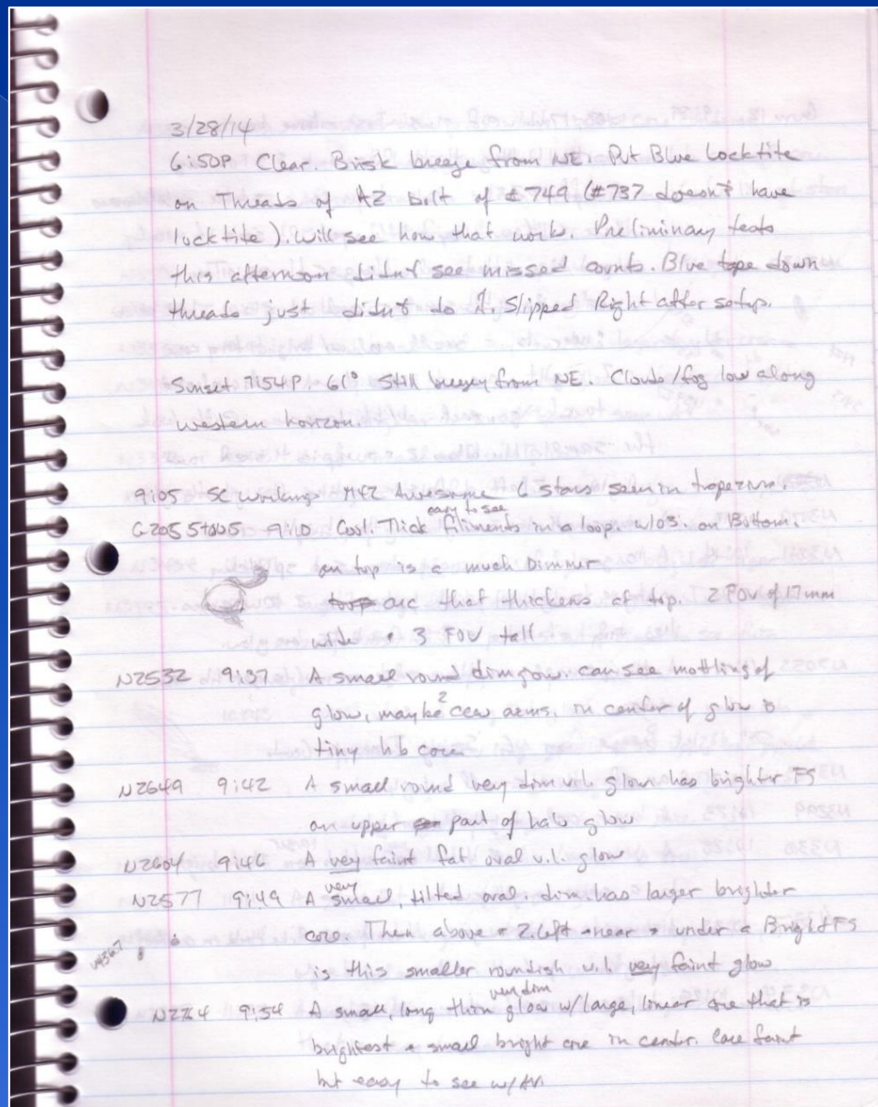
Increase Aperture

Orion Telescopes

While Observing

- How to take notes
- What to record
- Sketching what you see

Taking Notes



3/28/14

6:50P Clear. Brisk breeze from NE. Put Blue Locktite on Threads of AZ bolt of #749 (#737 doesn't have locktite). Will see how that works. Preliminary tests this afternoon didn't see missed counts. Blue tape down threads just didn't do it. Slipped Right after setup.

Sunset 7:54P. 61° Still breezy from NE. Clouds/fog low along western horizon.

9:05 SC working. M42 Awesome 6 stars seen in trapezium.

G205 Stars 9:10 Cool. Thick (easy to see) filaments in a loop. w/03. on Bottom. on top is a much Dimmer ~~top~~ arc that thickens at top. 2 FOV of 17mm wide 3 FOV tall

N2532 9:37 A small round dim glow. can see mottling of glow, maybe 2 cew arms. in center of glow is tiny hb core

N2649 9:42 A small round very dim v.l. glow has brighter FS on upper part of halo glow

N2604 9:46 A very faint fat oval v.l. glow

N2577 9:49 A very small, tilted oval. dim. has larger brighter core. Then above & 2 left near & under a Bright FS is this smaller roundish v.l. very faint glow

N2764 9:54 A small, long thin very dim glow w/ large, linear core that is brightest & small bright core in center. Core faint but easy to see w/AV

What To Record

19mm – Nice tilted oval. Bright. Fills ½ FOV. Goes from 11 – 5 o'clock. Pretty flat. Can see mottling near center for dust lanes.

Galaxies

15mm – A small, extremely faint thin tapered tilted galaxy. Maybe hint of a hare brighter core.

Globular Clusters

19mm. Nice, bright, round Globular. Tiny bright core that has a bit dimmer halo of stars around it. Tons of member stars seen.

Bright Nebulae

Nice. Few stars on glow. Large and whispy. Seen with and without UHC and 15mm shows it nicely. Trapezium in center. Direct Vision.

Open Clusters

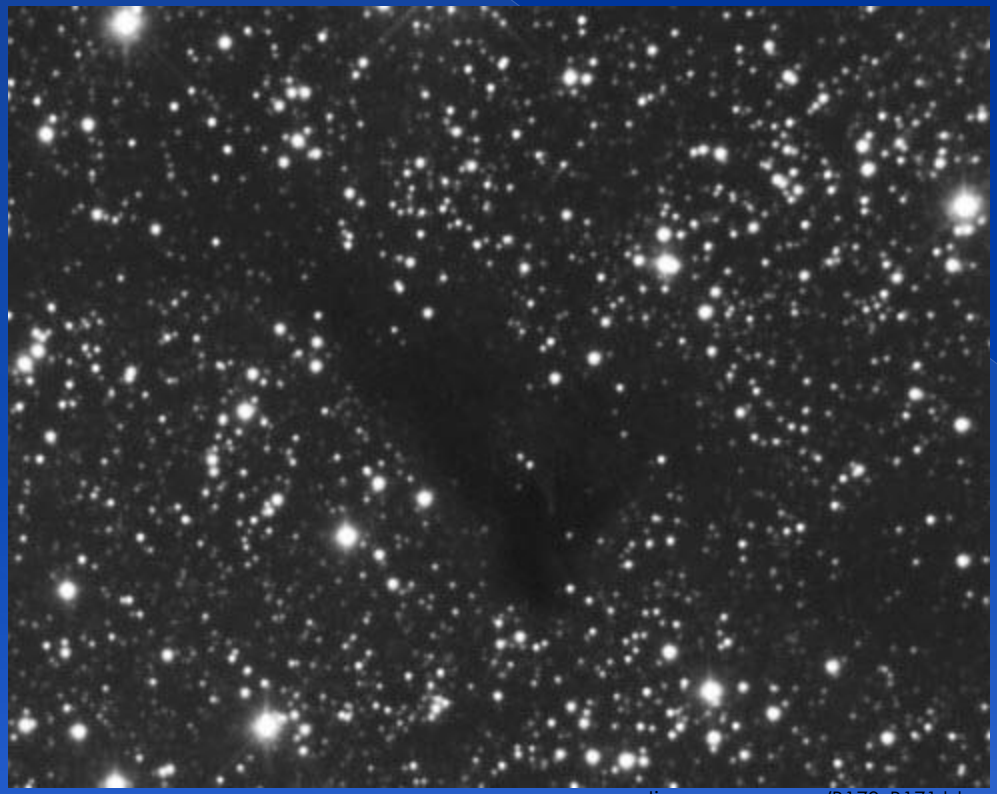
19mm – 15 stars form a line of stars that gets fatter in middle and tapers around each end. Approx 3 magnitudes. Brightest dim. Then in middle see a glow. With DSF, see it extends from center to right. Open cluster goes from 2-8 o'clock. Nebula goes from 3-9 o'clock. Dim yet easy to see.

Planetary Nebulae

19mm – Shows it as an eye shaped with center much darker and has a bowtie, hourglass shape, look. The edges off left and right dim out to edge. OIII shows it better and UHC shows it like w/o OIII filter. Nice view. No central star seen.

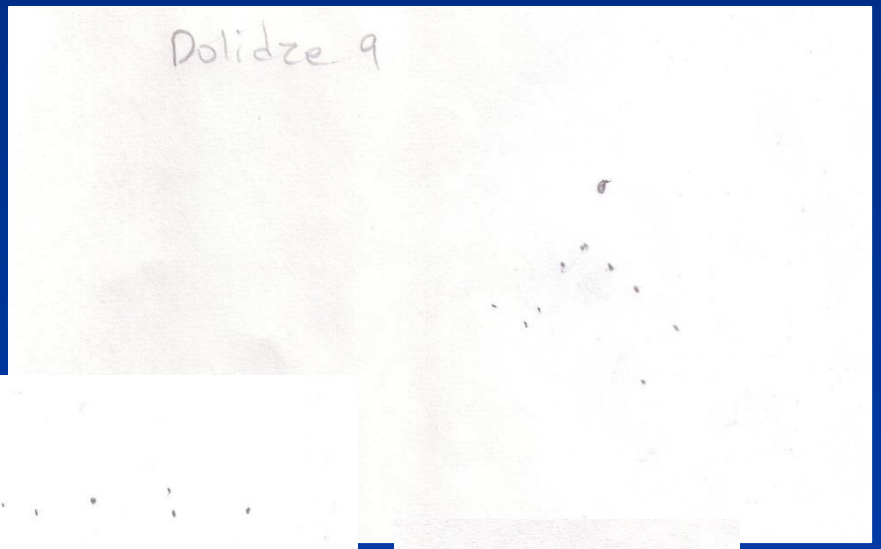
Dark Nebulae

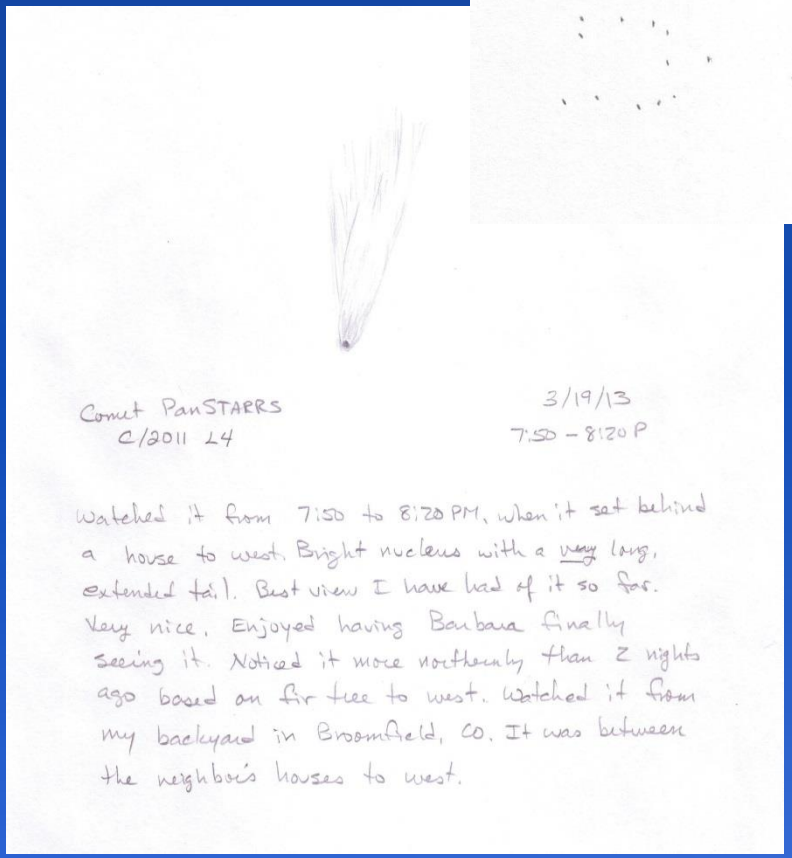
B171

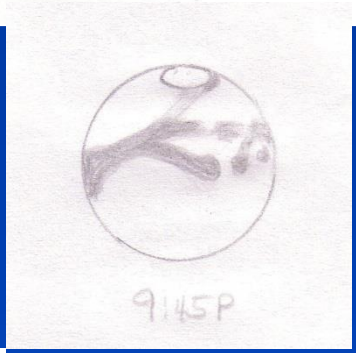


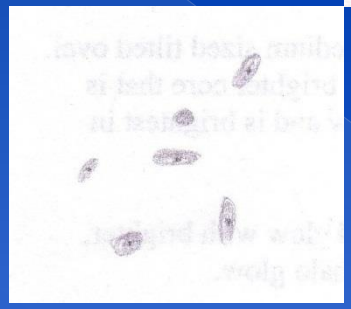
martingermano.com/B170_B171.htm

15mm – A long, wide boot shaped area void of stars in a star rich area. Top of boot 2 FOVs long and toe of boot 1 FOV. Bounded by bright stars and just a few sprinkled on void.









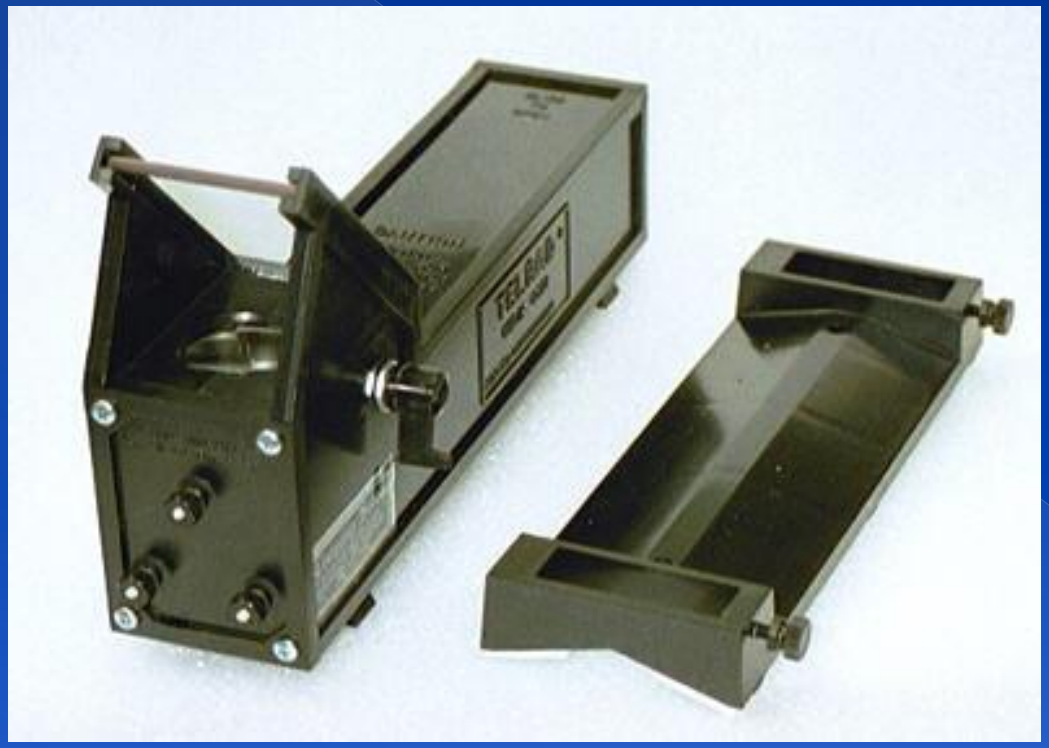
Sketch What Impresses You

Star Hop or Digital Setting Circles?

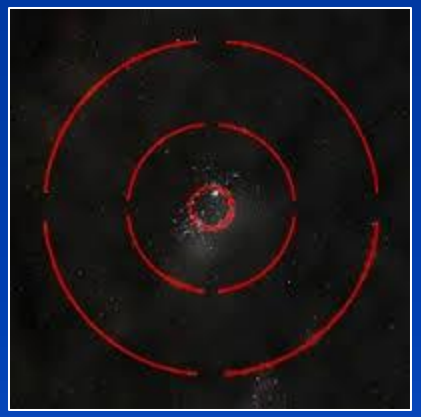
- Both
  - If DSC alignment fails twice
    - I continue observing by star hopping

Wildcard-Innovations

How a Telrad Works

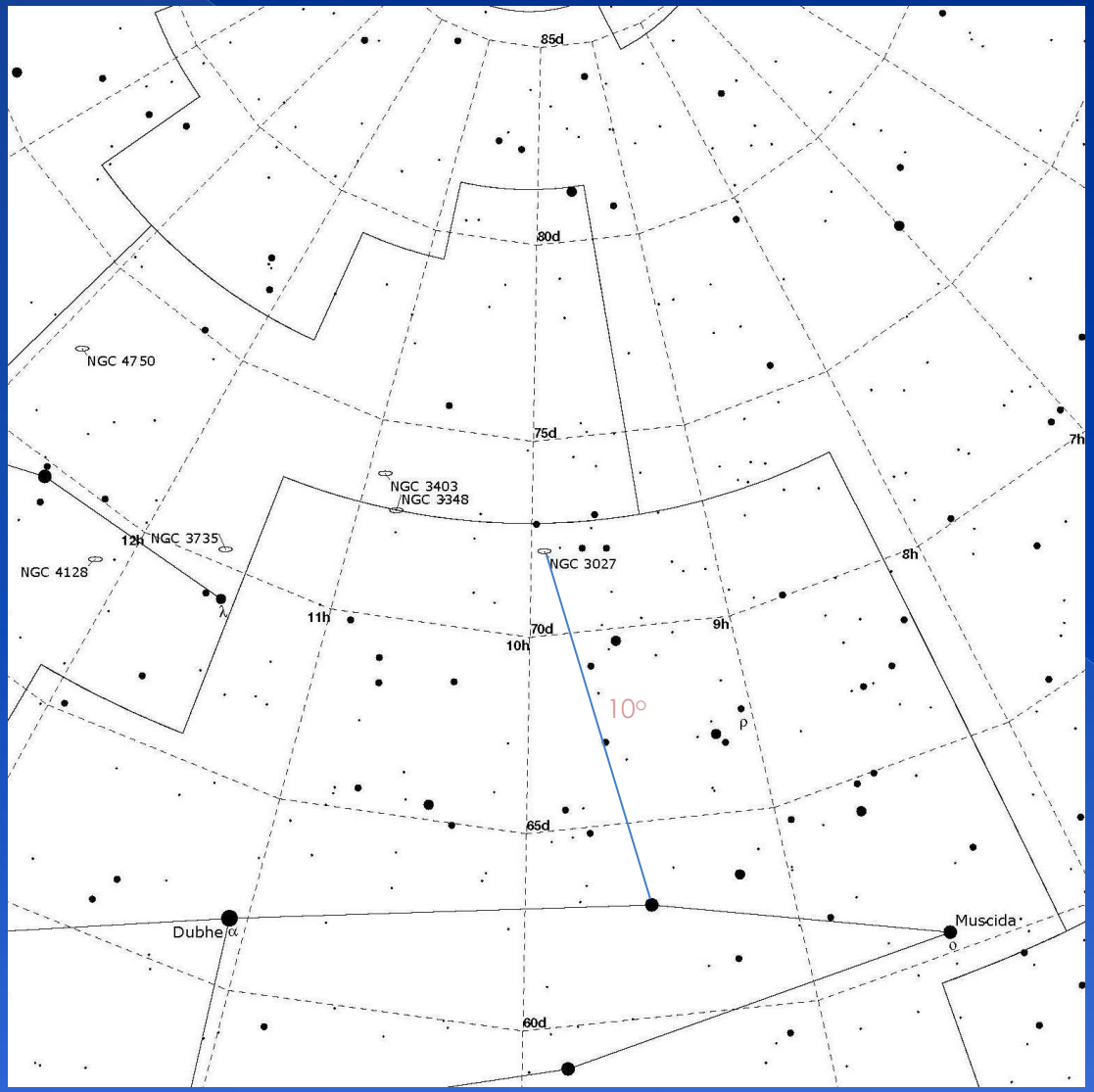


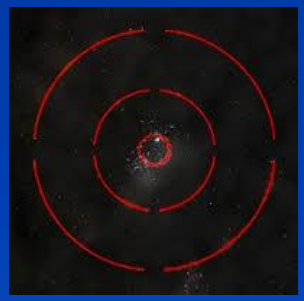
Internet Image



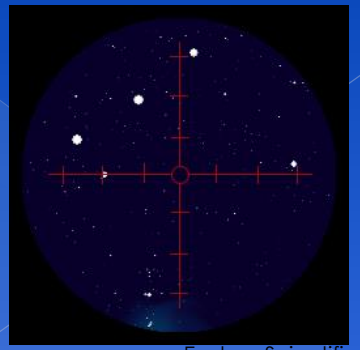
firstlightopticss.com

How to Star Hop





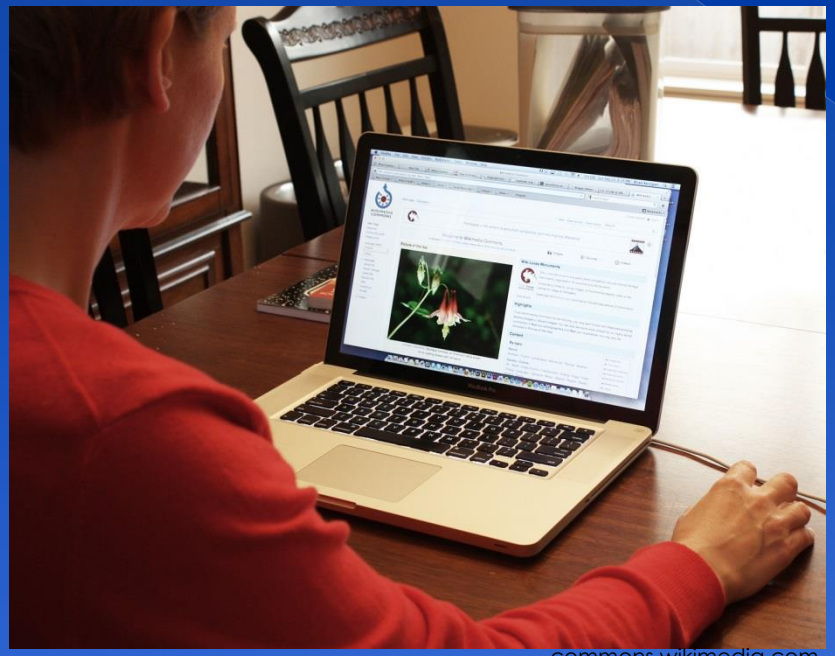
firstlightopticss.com



Explore Scientific

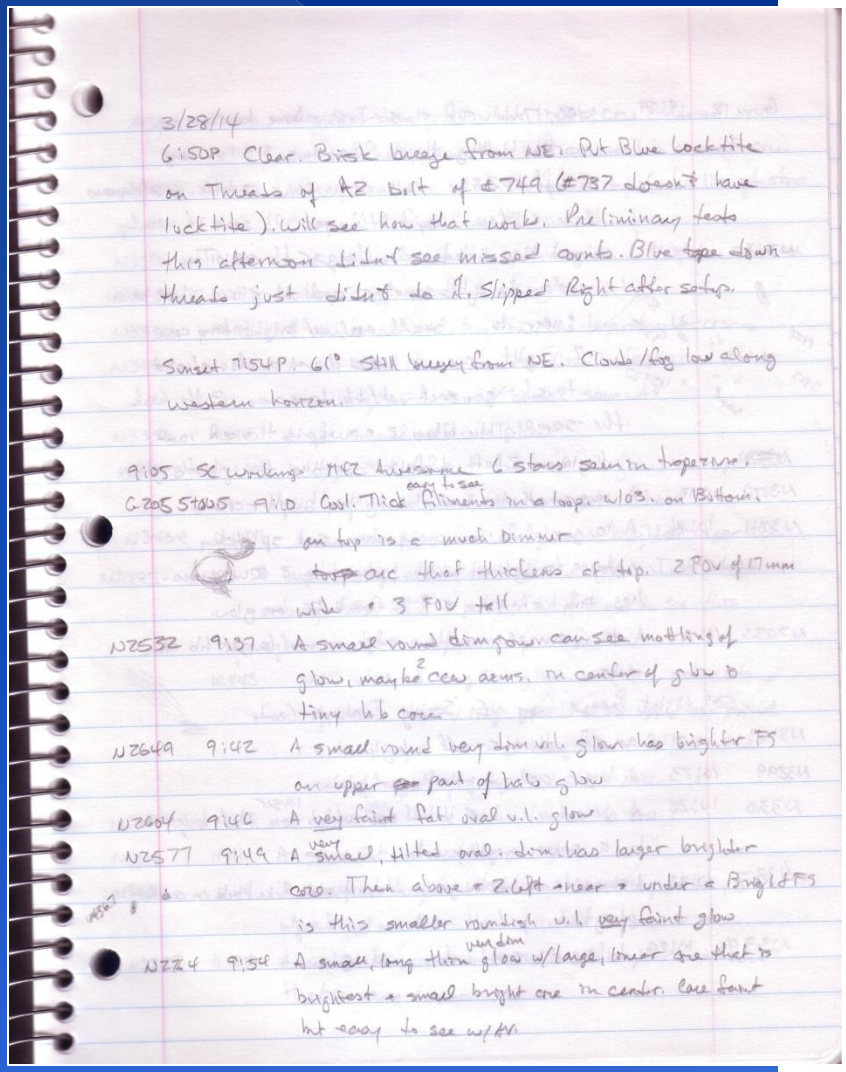
Post Observing Activities

- Hard Copy
- Log observations in your Astronomy DB



commons.wikimedia.com

Transposing Notes



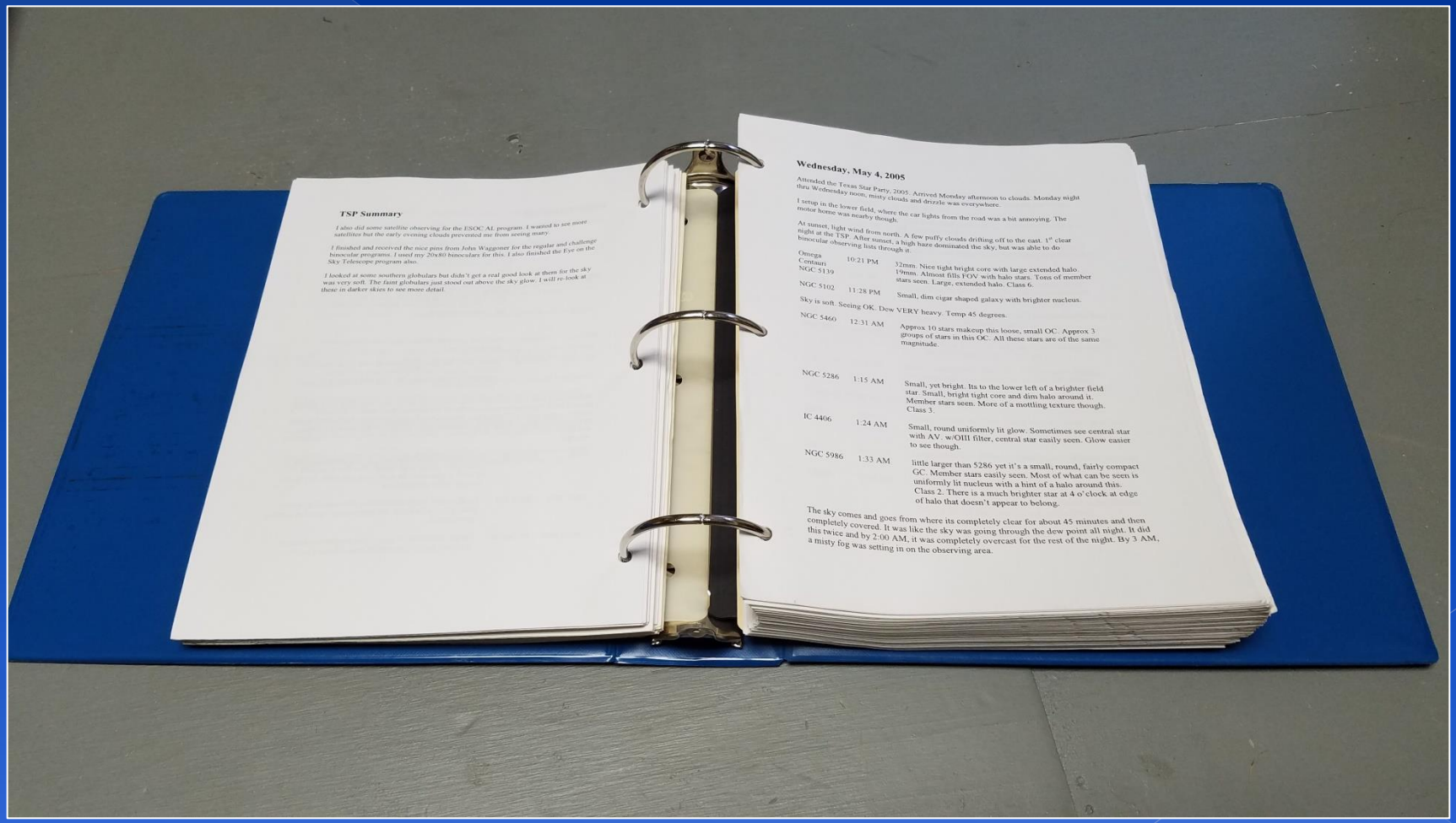
Friday, March 28, 2014

Cady Alverado brought Blue Locktite to *lock* the AZ bold to the ground board of scope #749 (#737 doesn't have Locktite for the threads grabbed by themselves and there is no AZ slippage). Preliminary tests showed this solved the slippage issue (didn't see missed counts) and I used the Sky Commander the rest of the night. The blue masking tape down the threads from the night before just didn't do it. It slipped right after the setup steps.

6:50 PM. Clear, Brisk breeze from NE. Sunset at 7:54 PM. 61 degrees. Smoke low along western horizon.

9:05 PM. Sky Commander works. M42 awesome. 6 stars seen in trapezium. Slewed between M41 and M42 twice and object in FOV both times.

G205.5+00.5	9:10 PM	17mm – Cool. This. Easy to see with O3. Thick filaments in a loop on bottom and arc that thickens at top. 2 FOV wide and 3 FOV tall.
NGC 2532	9:37 PM	17mm – A small, round, dim glow. Can see mottling of glow, maybe 2 CCW arms. In center of glow is a tiny, hare brighter core.
NGC 2649	9:42 PM	17mm – A small, round, very dim, uniformly lit glow. Has brighter field star on upper part of halo glow.
NGC 2604	9:46 PM	17mm – A very faint, fat oval, uniformly lit glow.
NGC 2577 UGC 4367	9:49 PM	17mm – A very small, tilted oval. Dim. Has larger, brighter core. Then above and to right and near and under a bright field star is this smaller, roundish, uniformly lit, very faint glow of U4367.
NGC 2764	9:54 PM	17mm – A small, long thin, very dim glow with larger, linear core that is brighter with small, bright core in center. Core faint but easy to see w/AV.



TSP Summary

I also did some satellite observing for the ESOC AL program. I wanted to see more satellites but the early evening clouds prevented me from seeing many.

I finished and received the nice pins from John Waggoner for the regular and challenge binocular programs. I used my 20x80 binoculars for this. I also finished the Eye on the Sky Telescope program also.

I looked at some southern globulars but didn't get a real good look at them for the sky was very soft. The faint globulars just stood out above the sky glow. I will re-look at these in darker skies to see more detail.

Wednesday, May 4, 2005

Attended the Texas Star Party, 2005. Arrived Monday afternoon to clouds. Monday night thru Wednesday noon, misty clouds and drizzle was everywhere.

I setup in the lower field, where the car lights from the road was a bit annoying. The motor home was nearby though.

At sunset, light wind from north. A few puffy clouds drifting off to the east. 1st clear night at the TSP. After sunset, a high haze dominated the sky, but was able to do binocular observing lists through it.

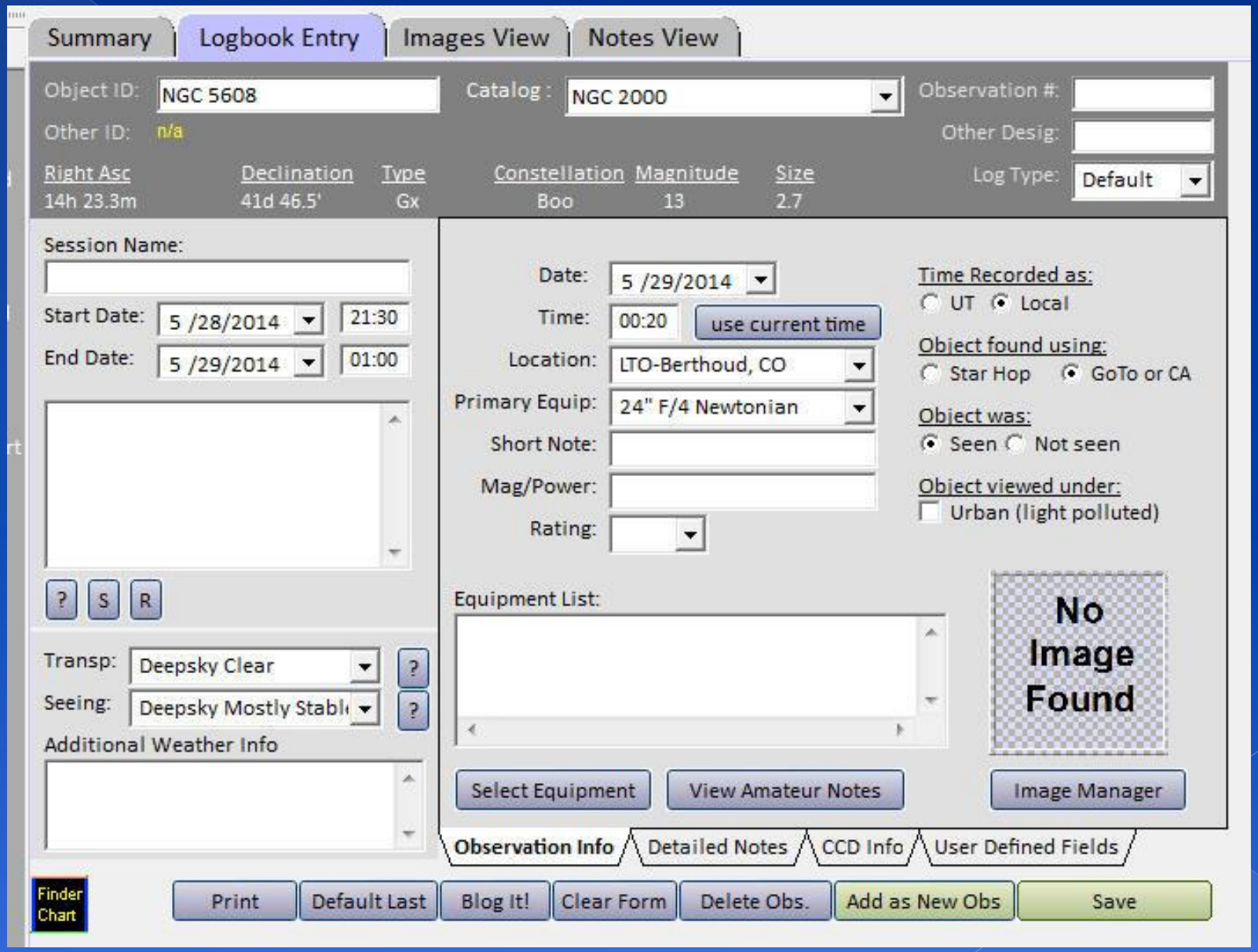
Omega Centauri NGC 5139	10:21 PM	32mm. Nice tight bright core with large extended halo. 19mm. Almost fills FOV with halo stars. Tons of member stars seen. Large, extended halo. Class 6.
NGC 5102	11:28 PM	Small, dim cigar shaped galaxy with brighter nucleus.

Sky is soft. Seeing OK. Dew VERY heavy. Temp 45 degrees.

NGC 5460	12:31 AM	Approx 10 stars makeup this loose, small OC. Approx 3 groups of stars in this OC. All these stars are of the same magnitude.
NGC 5286	1:15 AM	Small, yet bright. Its to the lower left of a brighter field star. Small, bright tight core and dim halo around it. Member stars seen. More of a mottling texture though. Class 3.
IC 4406	1:24 AM	Small, round uniformly lit glow. Sometimes see central star with AV. w/OIII filter, central star easily seen. Glow easier to see though.
NGC 5986	1:33 AM	little larger than 5286 yet it's a small, round, fairly compact GC. Member stars easily seen. Most of what can be seen is uniformly lit nucleus with a hint of a halo around this. Class 2. There is a much brighter star at 4 o'clock at edge of halo that doesn't appear to belong.

The sky comes and goes from where its completely clear for about 45 minutes and then completely covered. It was like the sky was going through the dew point all night. It did this twice and by 2:00 AM, it was completely overcast for the rest of the night. By 3 AM, a misty fog was setting in on the observing area.

Update Your Database



GGCOC_Additional.PLN | Deep 2 | Deep 3 | Deep 4 | Deep 5 | Image Gallery | Log Images

	pln	img	obs	ObjectID	Other ID	Type	R.A.
1	X	X	X	NGC 2988		Gx	09 46 47.8
2	X	X		IC 5370		Gx	00 00 09.1
3	X	X		NGC 3	UGC 58	Gx	00 07 18.0
4	X	X		NGC 68	UGC 170	Gx	00 18 18.0
5	X	X		NGC 80		Gx	00 21 11.0
6	X	X		NGC 329		Gx	00 58 01.4
7	X	X		NGC 383	Pisces Cloud, UGC 689, VV 193	Gx	01 07 24.0
8	X	X		NGC 439	ESO 412-18	Gx	01 13 48.0
9	X	X		NGC 507		Gx	01 23 39.9
10	X	X	X	NGC 1129	UGC 2373	Gx	02 54 30.0
11	X	X	X	NGC 1380	ESO 358-28	Gx	03 36 30.0
12	X	X	X	NGC 2289		Gx	06 50 53.5
13	X	X	X	NGC 2340	UGC 3720	Gx	07 11 12.0
14	X	X	X	NGC 2804	UGC 4901	Gx	09 16 48.0
15	X	X	X	NGC 2943	UGC 5136	Gx	09 38 30.0
16	X	X	X	NGC 3158	UGC 5511	Gx	10 13 48.0
17	X	X	X	NGC 3607	UGC 6297	Gx	11 16 54.0
18	X	X	X	NGC 3627	M66 - in the Leo Triplett	Gx	11 20 15.0
19	X	X	X	IC 696		Gx	11 28 39.9
20	X	X	X	NGC 3730	MCG-01-30-003	Gx	11 34 18.0
21	X	X	X	NGC 3801	UGC 6635	Gx	11 40 18.0
22	X	X	X	NGC 4005		Gx	11 58 10.2
23	X	X	X	NGC 4065		Gx	12 04 06.3
24	X	X	X	NGC 4303	M61	Gx	12 21 54.0

Measure Your Goals

WWII Honoree	New Telescope	Astronomy Biography	Astronomical Accomplishments	Walk Down Memory Lane
Equipment	My Astro Buddies	Observing Lists	Observing Logbook	How I Do What I Do
Awards Page	First Astronomical League Certificate	My Useful Astro Links	My Software Patent	Resume
Our Holiday Lights	2011 Okie-Tex Star Party	Other Great Astro Links	Retirement Opportunities	Publications
2016 Okie-Tex Star Party	OzSky 2016	My Sky Diving Adventure	ALCON 2017	

Caldwell Gold Certificate	Certificate #28	Log of Observations
Southern Skies Telescopic	Certificate #51	Log of Observations
Southern Skies Binocular	Certificate #94	Log of Observations
Southern Planetary Nebula Advanced	Certificate #1	Log of Observations
Southern Constellation Hunter	Certificate #9	Log of Observations
Active Galactic Nuclei	Certificate #10-V	Log of Observations
Asteroid Regular Certificate	Certificate #48	Log of Observations
Asteroid Gold Certificate	Certificate #58	Log of Observations
NEO Intermediate Award	Certificate #11	Log of Observations
NEO Advanced Award	Certificate #12	Log of Observations
Beyond Polaris	Certificate #2	Log of Observations
Analemma	77% Complete	Log of Observations
Variable Star	76/100 Complete	Log of Observations
Occultation	0/7 Asteroid 0/15 Total Lunar 0/3 Grazing Lunar	Log of Observations
Total Solar Eclipse 2017	0% Complete	Log of Observations
Galileo's TOES	0/32 Complete	Log of Observations

Other Lists of Objects Status		
Project Name	**Number Seen**	**Observations**
Comet Observations	45 Recorded	Log of Observations
Kepple and Sanner 400	Certificate #2	Log of Observations
View 1000 Galaxies	Complete May, 2010	
View 5000 Unique Celestial Objects	Goal Reached 4/7/2016	Count of Objects
Unique Celestial Objects Observed	5664	Count of Objects

AL Observing Programs

- Currently 59 Programs to choose from
  - https://www.astroleague.org/observing.html
  - Gives structure to your Observing Sessions
    - List after list of **what** to observe
  - See cool objects off the beaten path

- Each program will teach you something new
  - Build a set of skills to aid you in observing
- Classification/Sketching Requirements
  - Forces you to study object to see finer details
  - Trains your eye to see fainter and fainter objects

"Seeing is in some respect an art, which must be learnt."

William Herschel

Where to Start

- Messier Observing Program
- 110 Objects
  - 1 Super Novae Remnant
  - 4 Planetary Nebulaes
  - 7 Nebulaes
  - 26 Open Clusters
  - 29 Globular Clusters
  - 40 Galaxies
  - 3 Others

https://www.astroleague.org/al/obsclubs/messier/mess.html

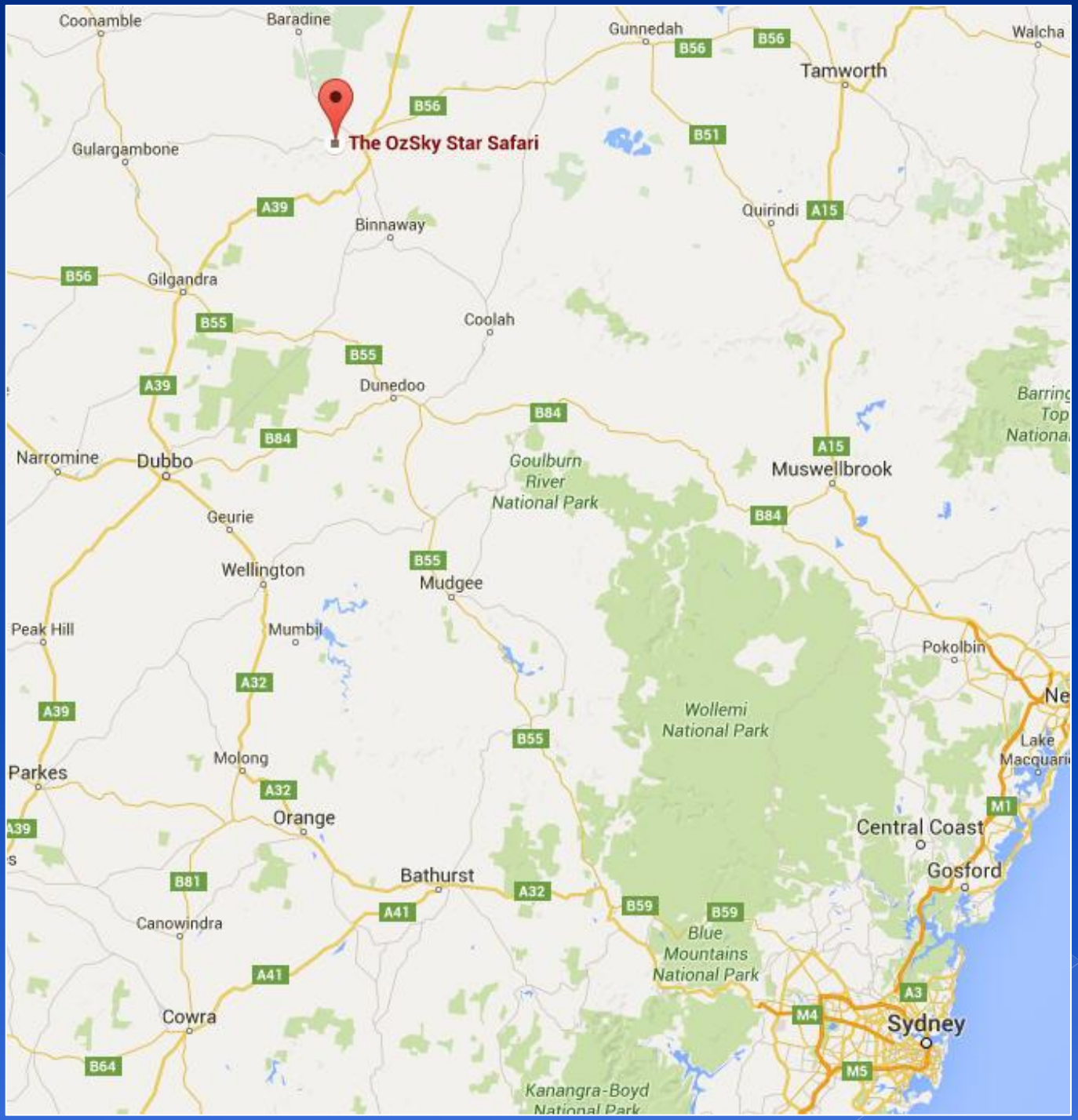
Other Beginner Programs

- Beyond Polaris
- Sky Puppy
- Asterisms
- Carbon Star
- Constellation Hunter
- Double Star
- Galileo
- Globular Cluster
- Solar, Hydrogen-Alpha Solar

Googleimages.com

- Meteor
- Lunar, Lunar II
- Messier Binocular
- Deep Sky Binocular
- Southern Skies Telescopic
- Southern Skies Binocular
- Caldwell Gold
- Caldwell Silver
- Galileo's TOES


THE
OzSky
STAR SAFARI
3RF
AUSTRALIA
COONABARABRAN
-AUSTRALIA-
2016
APRIL 2-9, 2016
www.OzSky.org


Coonamble
Baradine
Gunnedah
Walcha
Tamworth
The OzSky Star Safari
Gulargambone
Binnaway
Quirindi
Gilgandra
Coolah
Dunedoo
Barring
Top
Nationa
Narromine
Dubbo
Goulburn
River
National Park
Muswellbrook
Geurie
Wellington
Mudgee
Peak Hill
Mumbil
Pokolbin
Wollemi
National Park
Lake
Macquari
Parkes
Molong
Orange
Central Coast
Gosford
Bathurst
Canowindra
Blue
Mountains
National Park
Sydney
Cowra
Kanangra-Boyd
National Park
B56
B51
A39
A15
B55
B84
A32
B81
A41
B59
A3
M1
M4
M5
B64


Welcome
to
COONABARABRAN
ASTRONOMY CAPITAL
OF AUSTRALIA


18" f/4.5

Photo by Roger Dillon

Australia List of Items to Pack

	Old Wallet, Driver's License, AMEX and VISA, Med Cards		Passport		Electronic Australian VISA
	8x50 Binoculars		Alieve		Long Johns
	Phone Charger Cord		Tums		Thermal Wools
	SS Notebook		Camera/Charge Cord		Sweat Shirt
	Constellation Notebook		4 - AAA Batteries		Fingerless Gloves
	New Spiral Notebook		1 - 9V Battery		Ski Hat
	2 Pencils - 1 Pen - Eraser		3RF Ball Cap		Jacket
	Glasses Lanyard (straps)		Red Flashlights		Eye Shade
	Tooth Picks/Floss		Red Gooseneck Light		Ear Plugs
	Carry On Bag		Gold Locket		Back Brace
	Magnifying Glass		13mm Eyepiece		Clothes
	Phone Battery w/ Charger		17mm Eyepiece		Toiletries
	AC Power Strip		DSF and O3 Filters		2 weeks of Pills/Supplements
	AUS to US Power converter		Clipboard		Snacks for Plane Ride
	Laundry Soap Power in baggie		Alarm Clock		Neck Pillow
	Green Water Bottle		Umbrella/Rain coat		Sweat Clothes for sleeping
	Imodium		Sun Screen		Selfie Stick
	Sea Sick bands		Collapsible Lunch Bag		Memory Stick
	2 - AA Batteries		Personal Business Cards		Rubber Bands
	Observing Vest		Regular glasses w/case		Observing Hood
	Equipment Photo Book		Sun glasses		Fanny Pack
	Bar of Soap and Container		Shampoo		Cortisone 10
	3 plastic bags for dirty clothes		Gas X		Ear Buds
	Print train tickets				
	Print Boarding Pass				

Southern Sky: Telescopic - Caldwell - Binocular - Planetary Nebulae

		ID	Other Desifnation	Type	RA	Dec	Con	Size	Mag	CS
B	C	**NGC 104**	47 Tucanae	Gb	00 24 05.4	-72 04 51.9	Tuc	30.90	4.00	
	C	NGC 121	ESO 50-SC12	Gb	00 26 48.0	-71 32 00.0	Tuc	1.50	10.60	99.90
		126	Bet1Tuc	*	00 31 32.7	-62 57 29.0	Tuc		4.37	
		127	Bet2Tuc	*	00 31 33.6	-62 57 57.0	Tuc		4.54	
		NGC 292	SMC, Small Magellanic Cloud, Nubecula Minor	Gx	00 52 36.0	-72 48 00.0	Tuc	319.10	2.30	14.00
		NGC 330		OC	00 56 18.7	-72 27 45.0	Tuc	2.00	9.60	
		NGC 346		C+N	00 59 05.0	-72 10 36.0	Tuc	14.00	10.30	
B	C	**NGC 362**		Gb	01 03 13.9	-70 50 53.9	Tuc	12.90	6.60	
		NGC 371	ESO 51-SC14	OC	01 03 30.0	-72 03 00.0	Tuc	7.50	13.80	99.90
		NGC 419		Gb	01 08 17.3	-72 53 00.0	Tuc	2.60	10.00	
B	C	**NGC 1261**		Gb	03 12 15.7	-55 12 57.1	Hor	6.90	8.40	
		NGC 1313	Topsy-Turvy Galaxy, Starburst Galaxy, ESO 82-11	Gx	03 20 05.4	-66 42 08.0	Ret	8.50	9.00	
		NGC 1549		Gx	04 15 45.0	-55 35 31.2	Dor	3.70	9.90	
		NGC 1553		Gx	04 16 10.5	-55 46 48.9	Dor	4.10	9.50	
		NGC 1566		Gx	04 20 00.5	-54 56 16.8	Dor	7.60	9.40	
		NGC 1763	IC 2115	OC	04 56 48.0	-66 25 00.0	Dor	25.00	99.90	99.90
		NGC 1850		OC	05 08 44.9	-68 45 41.7	Dor	3.00	9.30	
		NGC 1955		C+N	05 26 10.0	-67 29 54.0	Dor		9.00	
		NGC 1962		C+N	05 26 19.0	-68 50 12.0	Dor		8.00	
B	C	**NGC 2070**	Tarantula Nebula, Looped Nebula, 30 Doradus, True Lovers' Kn	C+N	05 38 42.5	-69 06 03.3	Dor	40.00	8.20	
		NGC 2074	ESO 57-EN8	OC	05 39 06.0	-69 30 00.0	Dor		8.50	99.90
B	C	**NGC 2516**		OC	07 58 04.0	-60 45 12.0	Car	30.00	3.80	
		NGC 2547		OC	08 10 09.0	-49 12 54.0	Vel	20.00	4.70	
B	C	**IC 2391**	Cr 191	OC	08 39 36.0	-52 55 00.0	Vel	60.00	2.50	99.90
		IC 2395		OC	08 42 29.0	-48 07 54.0	Vel	8.00	4.60	
		NGC 2669		OC	08 46 22.0	-52 56 54.0	Vel	12.00	6.10	
PN		IC 2448		Pl	09 07 06.3	-69 56 31	Car	8.0"	11.5	
B		**NGC 2808**		Gb	09 12 02.6	-64 51 49.9	Car	13.80	6.30	
PN	C	NGC 2867	PK 278-5.1	Pl	09 21 24.0	-58 19 00.0	Car	0.20	9.70	14.90
PN		NGC 2899		Pl	09 27 03.1	-56 06 21	Vel	2'	12.2	
PN		IC 2501		Pl	09 38 47.2	-60 05 31	Car	2.0"	11.3	
B		**NGC 3114**		OC	10 02 36.0	-60 07 12.0	Car	35.00	4.20	
PN		IC 2553		Pl	10 09 20.9	-62 36 48	Car	12"	13	
PN	C	NGC 3195	Gamma Leonis Group, PK 296-20.1	Pl	10 09 24.0	-80 52 00.0	Cha	0.67	11.50	10.80
PN		NGC 3211		Pl	10 17 50.6	-62 40 15	Car	12"	11.8	
		NGC 3247		C+N	10 24 18.0	-57 45 24.0	Car	7.00	7.60	
B		**NGC 3293**	Gem Cluster, OCL 816	C+N	10 35 51.0	-58 13 48.0	Car	40.00	4.70	
B	C	**IC 2602**	Southern Pleiades, Cr 229, Theta Carinae	OC	10 42 57.0	-64 23 42.0	Car	50.00	1.90	
		NGC 3324	Keyhole-Dk neb near brightest part of NGC 3372	DKNb	10 44 24.0	-59 39 00.0	Car			
B	C	**NGC 3372**	Eta Carinae Nebula, Keyhole Nebula	Nb	10 45 06.0	-59 52 00.0	Car	120.00	3.00	99.90
PN		IC 2621		Pl	11 00 20.1	-65 14 58	Car	5.0"	10.5	
B	C	**NGC 3532**	Firefly Party Cluster, OCL 839	OC	11 05 39.0	-58 45 12.0	Car	55.00	3.00	

LMC Objects

NGC 1515		Gx	04 03 50.5	-54 06 52.0	Dor	5.40	11.00
NGC 1533		Gx	04 09 51.6	-56 07 09.0	Dor	2.90	10.90
NGC 1546		Gx	04 14 36.7	-56 03 38.6	Dor	3.20	11.60
NGC 1596	Carafe Group (with NGC 1595, 97, 98), ESO 157-31	Gx	04 27 37.8	-55 01 36.0	Dor	3.90	11.00
NGC 1617		Gx	04 31 39.5	-54 36 06.1	Dor	4.70	10.40
NGC 1644		Gb	04 37 39.0	-66 11 54.0	Dor		13.00
NGC 1688		Gx	04 48 23.4	-59 48 01.0	Dor	2.40	12.00
NGC 1698	ESO 56-SC6	Nb	04 49 06.0	-69 07 00.0	Dor	1.50	12.20
NGC 1712	ESO 56-SC11	OC	04 51 00.0	-69 24 00.0	Dor	2.60	99.90
NGC 1715	ESO 85-EN9	Nb	04 52 12.0	-66 55 00.0	Dor		99.90
NGC 1703	ESO 119-19	Gx	04 52 54.0	-59 45 00.0	Dor	2.90	11.30
NGC 1736	ESO 56-EN16	Nb	04 53 00.0	-68 03 00.0	Dor		99.90
NGC 1743	Dunlop 114	OC	04 54 06.0	-69 12 00.0	Dor	2.00	99.90
NGC 1755		OC	04 55 14.0	-68 12 18.0	Dor	2.00	9.90
NGC 1774		OC	04 58 07.0	-67 14 36.0	Dor		10.00
NGC 1786		Gb	04 59 07.0	-67 44 48.0	Dor	1.20	10.10
NGC 1783		Gb	04 59 08.8	-65 59 10.3	Dor		11.00
NGC 1805		OC	05 02 21.0	-66 06 54.0	Dor		10.00
NGC 1816		C+N	05 03 51.0	-67 15 42.0	Dor		9.00
NGC 1820		OC	05 04 07.0	-67 16 4			
NGC 1818		OC	05 04 14.0	-66 26 0			
NGC 1835		Gb	05 05 06.0	-69 24 1			
NGC 1831		OC	05 06 17.0	-64 55 0			
NGC 1846		Gb	05 07 34.4	-67 27 3			
NGC 1796		Gx	05 07 55.8	-61 11 3			
NGC 1855	NGC 1854	Gb	05 09 18.0	-68 51 0			
NGC 1854		OC	05 09 20.0	-68 50 5			
NGC 1856		OC	05 09 29.0	-69 07 4			
NGC 1874	ESO 56-EN84	OC	05 13 12.0	-69 23 0			
NGC 1876		OC	05 13 18.0	-69 22 0			
NGC 1866		OC	05 13 39.0	-65 27 5			
NGC 1868	ESO 85-SC56	Gb	05 14 36.0	-63 57 0			
NGC 1898		Gb	05 16 42.0	-69 39 3			
NGC 1895	ESO 85-EN62	Nb	05 16 54.0	-67 20 0			
NGC 1899	ESO 56-EN94	Nb	05 17 48.0	-67 54 0			
NGC 1910	ESO 56-SC99	OC	05 18 42.0	-69 14 0			
NGC 1917	ESO 56-SC100	Gb	05 19 00.0	-69 00 0			
NGC 1921	ESO 56-SC102	Nb	05 19 24.0	-69 47 0			
NGC 1920	ESO 85-EN74	Nb	05 20 36.0	-66 47 0			
NGC 1935	IC 2126	OC	05 22 00.0	-67 57 0			
NGC 1936	IC 2127	OC	05 22 12.0	-67 59 0			
NGC 1941	ESO 85-EN79	Nb	05 23 06.0	-66 23 0			
Lg Magellanic Cl	ESO 056-G115	Gx	05 23 36.0	-69 45 0			
NGC 1945	ESO 85-EN83	Nb	05 24 54.0	-66 27 0			
NGC 1949	ESO 56-EN117	Nb	05 25 06.0	-68 28 0			
NGC 1958	ESO 56-SC119	OC	05 25 30.0	-69 50 0			

SMC Objects

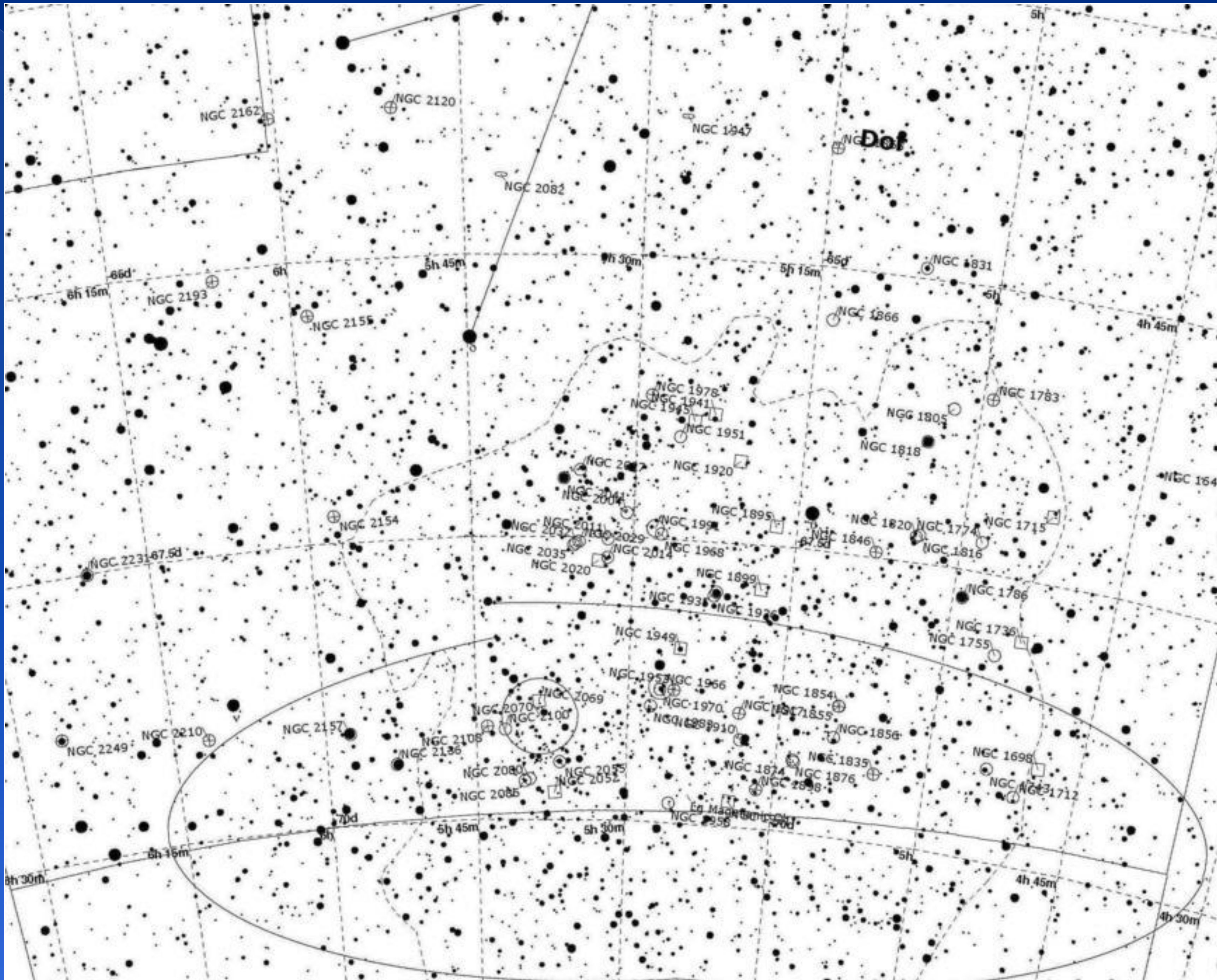
NGC 121		Gb	00 26 47.6	-71 32 10.5	Tuc	1.50	10.60
NGC 152		Gb	00 32 56.8	-73 06 57.0	Tuc		12.00
NGC 220		OC	00 40 30.5	-73 24 12.0	Tuc		11.00
NGC 248	ESO 29-EN8	Nb	00 45 24.0	-73 23 00.0	Tuc	1.00	99.90
NGC 249	ESO 29-EN9	Nb	00 45 30.0	-73 05 00.0	Tuc	2.00	13.80
NGC 261	ESO 29-EN12	Nb	00 46 30.0	-73 06 00.0	Tuc	1.90	13.00
NGC 265		Gb	00 47 10.9	-73 28 39.0	Tuc		12.00
NGC 269		Gb	00 48 20.9	-73 31 51.0	Tuc		12.00
NGC 294	ESO 29-SC22	Nb	00 53 06.0	-73 23 00.0	Tuc		99.90
NGC 299		C+N	00 53 24.7	-72 11 48.0	Tuc		11.00
NGC 339		Gb	00 57 45.4	-74 28 10.9	Tuc	2.20	11.90
NGC 361		Gb	01 02 11.2	-71 36 24.0	Tuc	1.50	11.80
NGC 376	ESO 29-SC29	Gb	01 03 54.0	-72 49 00.0	Tuc	7.90	11.80
NGC 406		Gx	01 07 24.2	-69 52 35.0	Tuc	3.80	12.00
NGC 411	ESO 51-SC19	Gb	01 07 54.0	-71 46 00.0	Tuc		11.00
NGC 416		Gb	01 07 58.5	-72 21 22.0	Tuc	1.10	11.00
NGC 434		Gx	01 12 29.8	-58 12 29.0	Tuc	1.90	13.00
NGC 456	ESO 29-SC38	OC	01 13 42.0	-73 18 00.0	Tuc	15.00	99.90
NGC 458	ESO 51-SC26	Gb	01 14 54.0	-71 33 00.0	Tuc		10.50
NGC 7329		Gx	22 40 24.1	-66 28 44.5	Tuc	4.20	12.00
NGC 7408	ESO 109-26	Gx	22 55 54.0	-63 42 00.0	Tuc	1.60	12.60

Must See Additional Objects

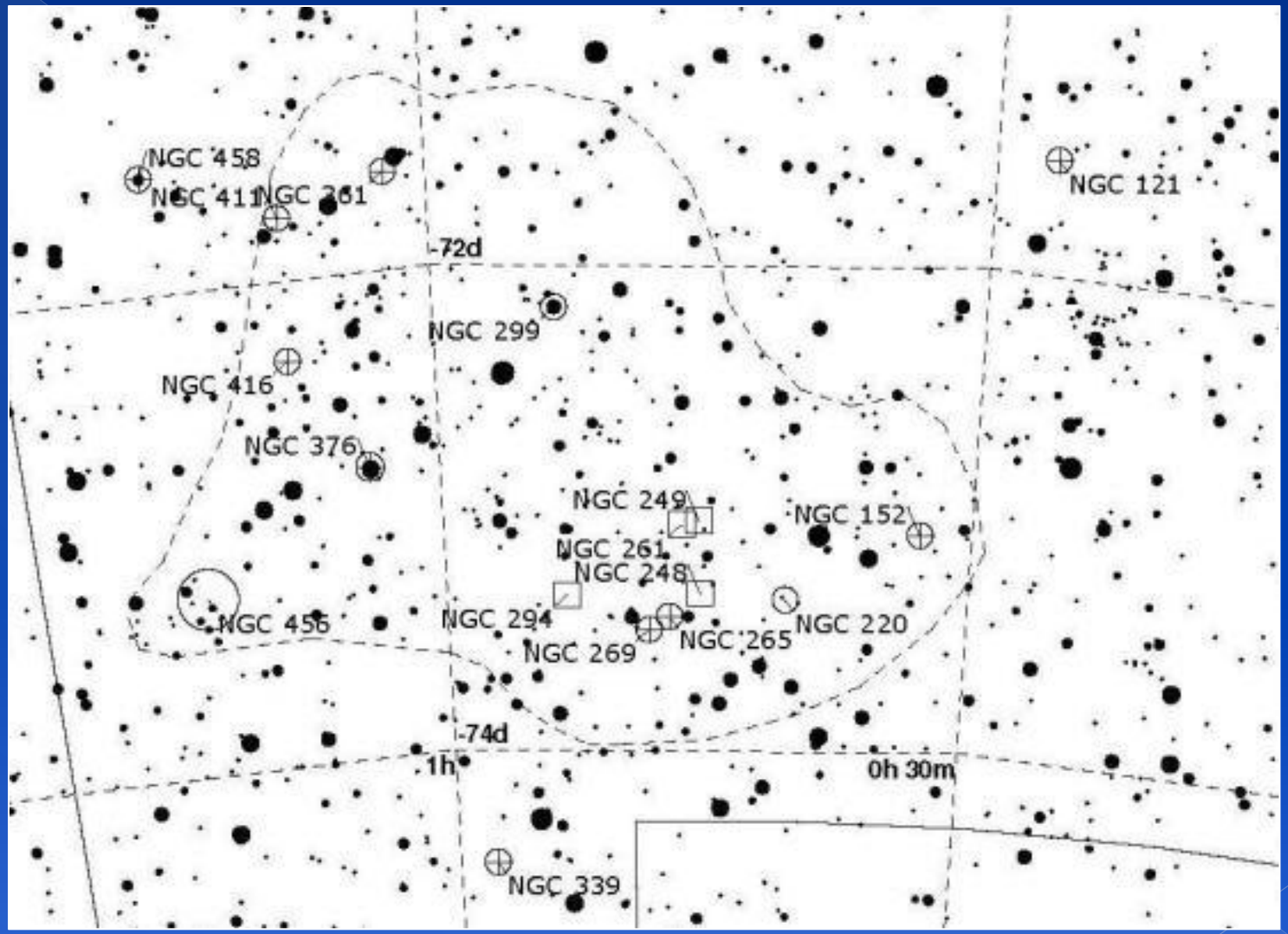
	MS	NGC 6352		Gb	17 25 29.1	-48 25 21.2	Ara	7.10	8.20
	MS	NGC 5139	Omega Centauri	Gb	13 26 47.0	-47 28 53.3	Cen	36.30	3.70
	MS	NGC 5286	Dunlop 388	Gb	13 46 24.0	-51 22 00.0	Cen	9.10	7.40
	MS	NGC 1851	Dunlop 508	Gb	05 14 06.0	-40 03 00.0	Col	11.00	7.10
	MS	NGC 6541	Dunlop 473	Gb	18 08 00.0	-43 42 00.0	Cra	13.10	6.30
	MS	NGC 6541		Gb	18 08 02.0	-43 42 57.0	CrA	13.10	6.60
	MS	NGC 5927	GCL 35	Gb	15 28 00.0	-50 40 00.0	Lup	12.00	8.00
	MS	NGC 5946	IC 4550	Gb	15 35 30.0	-50 40 00.0	Nor	7.10	8.40
	MS	NGC 6388		Gb	17 36 17.3	-44 44 07.7	Sco	8.70	6.90
	MS	NGC 6388	GCL 70	Gb	17 36 18.0	-44 44 00.0	Sco	8.70	6.80
	MS	NGC 6496		Gb	17 59 03.6	-44 16 00.3	Sco	6.90	9.20
	MS	NGC 6723		Gb	18 59 33.1	-36 37 54.4	Sgr	11.00	7.30
B	**MS**	**NGC 6584**		Gb	18 18 37.7	-52 12 57.0	Tel	7.90	9.20
	MS	NGC 3201		Gb	10 17 37.0	-46 24 45.3	Vel	18.20	6.80
	MS	NGC 5128	Centaurus A, Hamburger Galaxy, Arp 153	Gx	13 25 27.7	-43 01 08.2	Cen	18.20	7.00
	MS	NGC 4039	Antennae, Ring Tail Galaxy, ESO 572-48	Gx	12 01 54.0	-18 53 00.0	Crv	3.30	10.60
	MS	NGC 4038	Antennae, Ring Tail Galaxy, ESO 572-47	Gx	12 01 54.0	-18 52 00.0	Crv	3.40	10.30
	MS	NGC 1672		Gx	04 45 42.5	-59 14 52.7	Dor	4.80	11.00
	MS	NGC 1365		Gx	03 33 36.2	-36 08 24.7	For	9.80	9.50
	MS	NGC 5236	M83, Southern Pinwheel, Thousand Ruby Galaxy	Gx	13 37 00.3	-29 51 51.3	Hya	11.20	7.60
	MS	IC 5152		Gx	22 02 41.6	-51 17 46.4	Ind	4.50	12.00
	MS	NGC 7205		Gx	22 07 32.0	-57 27 50.0	Ind	4.30	11.00
	MS	NGC 4594	M104, Sombrero Galaxy	Gx	12 40 00.0	-11 37 00.0	Vir	8.60	8.00
	MS	NGC 2442		Gx	07 36 19.0	-69 32 30.0	Vol	6.00	11.00
	MS	NGC 6876		GxCl	20 11 17.5	-71 00 44.0	Pav	2.40	13.00
	MS	NGC 6868		GxCl	20 09 58.7	-48 21 26.6	Tel	2.70	12.00
	MS	NGC 6729	ESO 396-N*15, R CrA Nebula	Nb	19 01 54.0	-36 57 00.0	Cra	25.00	99.90
B	**MS**	**NGC 6208**		OC	16 49 28.0	-53 43 42.0	Ara	16.00	7.20
	MS	NGC 6250	OCL 991	OC	16 57 54.0	-45 56 00.0	Ara	10.00	5.90
B	**MS**	**Mel 101**	Cr 101	OC	10 42 06.0	-65 06 00.0	Car	14.00	8.00
B	**MS**	**IC 2714**	Cr 245	OC	11 17 18.0	-62 43 00.0	Car	12.00	8.20
B	**MS**	**Mel 105**	Cr 246	OC	11 19 36.0	-63 30 00.0	Car	4.00	8.50
B	**MS**	**NGC 4852**	Dunlop 311	OC	13 00 06.0	-59 37 00.0	Cen	11.00	8.90
B	**MS**	**NGC 5316**	OCL 913	OC	13 54 00.0	-61 52 00.0	Cen	14.00	6.00
B	**MS**	**NGC 5617**		OC	14 29 44.0	-60 42 42.0	Cen	10.00	6.30
B	**MS**	**NGC 5662**		OC	14 35 37.0	-56 37 06.0	Cen	12.00	5.50
B	**MS**	**NGC 4052**	OCL 870	OC	12 02 06.0	-63 13 00.0	Cru	10.00	8.80
B	**MS**	**NGC 4103**	OCL 871	OC	12 06 42.0	-61 15 00.0	Cru	7.00	7.40
B	**MS**	**NGC 4337**		OC	12 24 04.0	-58 07 24.0	Cru	4.00	8.90
B	**MS**	**NGC 4349**		OC	12 24 08.0	-61 52 18.0	Cru	16.00	7.40
B	**MS**	**NGC 5822**		OC	15 04 21.0	-54 23 48.0	Lup	40.00	7.00
B	**MS**	**NGC 4463**		OC	12 29 56.0	-64 47 24.0	Mus	5.00	7.20
B	**MS**	**NGC 4815**		OC	12 57 59.0	-64 57 36.0	Mus	3.00	8.60
B	**MS**	**NGC 5925**		OC	15 27 26.0	-54 31 42.0	Nor	20.00	
B	**MS**	**IC 2488**		OC	09 27 31.0	-56 58 54.0	Vel	15.00	7.00
B	**MS**	**NGC 2910**		OC	09 30 30.0	-52 55 06.0	Vel	5.00	7.20
B	**MS**	**NGC 2925**		OC	09 33 11.0	-53 23 54.0	Vel	12.00	8.00
B	**MS**	**NGC 3228**		OC	10 21 22.0	-51 43 42.0	Vel	18.00	6.00
	MS	PK 342-14.1	Shapley 3	Pl	18 07 24.0	-51 03 00.0	Ara	0.60	11.90

Oz Sky SA

	Name	Other ID	RA	Dec	Con	Mag	Size	Uran
SA	ESO 079- G003	PGC 1952	00h32m02.2s	-64d15m12s	Tuc	12.6	2.7 x 0.4	204
SA	NGC 238		00h43m25.7s	-50d10m58s	Phoenix	13.1	1.9 x 1.6	177
SA	ESO 013- G012	PGC 3948	01h07m02.2s	-80d18m28s	Hydrus	13.6	2.8 x 0.9	214
SA	IC 1625	PGC 4001	01h07m42.6s	-46d54m27s	Phoenix	12.9	1.7 x 1.2	191
SA	NGC 434		01h12m14.1s	-58d14m53s	Hydrus	12.8	2.1 x 1.2	203
SA	ESO 113- G027	PGC 4435	01h14m01.4s	-57d56m07s	Tuc	14.2	1.5 x 0.2	203
SA	NGC 685		01h47m42.8s	-52d45m43s	Eri	11.5	3.7 x 3.3	203
SA	NGC 782		01h57m40.4s	-57d47m25s	Eri	12.5	2.3 x 2	203
SA	ESO 003- G007	PGC 7583	02h00m16.6s	-83d59m16s	Octans	13.4	1.6 x 1.5	219
SA	ESO 115- G021	PGC 9962	02h37m48.1s	-61d20m18s	Hor	13.2	7.2 x 0.8	203
SA	ESO 116- G012	PGC 11984	03h13m04.7s	-57d21m26s	Hor	13.0	3.5 x 1.1	202
SA	NGC 1313		03h18m16.0s	-66d29m54s	Reticulum	9.2	9.1 x 6.9	213
SA	NGC 1433		03h42m01.5s	-47d13m19s	Hor	10.7	6.5 x 5.9	190
SA	ESO 054- G021	PGC 13931	03h49m49.4s	-71d38m07s	Hydrus	13.0	4.6 x 2.4	212
SA	IC 2051		03h52m00.8s	-83d49m50s	Mensa	12.3	2.6 x 1.6	219
SA	NGC 1493		03h57m27.4s	-46d12m39s	Hor	11.8	3.5 x 3.2	190
SA	ESO 015- G005	PGC 14200	03h58m31.5s	-81d03m47s	Mensa	13.4	1.8 x 1.5	219
SA	NGC 1511		03h59m39.8s	-67d38m20s	Hydrus	11.9	3.5 x 1.2	212
SA	NGC 1515		04h04m02.7s	-54d06m00s	Dor	12.1	5.2 x 1.1	202
SA	ESO 015- G008	PGC 14489	04h07m13.7s	-82d17m04s	Mensa	10.8	0.9 x 0.4	219
SA	IC 2035	PGC 14558	04h09m01.9s	-45d31m03s	Hor	12.5	1.2 x 0.9	189
SA	NGC 1533		04h09m51.8s	-56d07m06s	Dor	11.7	2.8 x 2.3	202
SA	NGC 1536		04h10m59.8s	-56d28m50s	Reticulum	13.2	2 x 1.4	202
SA	NGC 1543		04h12m43.2s	-57d44m17s	Reticulum	11.5	4.9 x 2.8	202
SA	NGC 1546		04h14m36.5s	-56d03m39s	Dor	11.8	3 x 1.7	202
SA	NGC 1549		04h15m45.1s	-55d35m32s	Dor	10.7	4.9 x 4.1	202
SA	NGC 1553		04h16m10.5s	-55d46m49s	Dor	10.3	4.5 x 2.8	202
SA	NGC 1559		04h17m35.8s	-62d47m01s	Reticulum	11.0	3.5 x 2	212
SA	NGC 1556		04h17m44.8s	-50d09m52s	Dor	13.5	1.7 x 0.5	189
SA	IC 2058	PGC 14824	04h17m54.3s	-55d55m58s	Dor	13.9	2.4 x 0.2	202
SA	NGC 1558	PGC 14906	04h20m16.2s	-45d01m53s	Cae	13.3	2.5 x 1	189
SA	NGC 1574		04h21m58.8s	-56d58m29s	Reticulum	11.4	3.4 x 3.1	202
SA	NGC 1596		04h27m38.1s	-55d01m40s	Dor	12.1	3.7 x 1	202
SA	NGC 1617		04h31m39.5s	-54d36m08s	Dor	11.4	4.3 x 2.1	202
SA	NGC 1688		04h48m23.8s	-59d48m01s	Dor	12.6	2.4 x 1.9	202
SA	NGC 1703		04h52m52.1s	-59d44m32s	Dor	11.9	3 x 2.6	202
SA	NGC 1705		04h54m13.5s	-53d21m40s	Pictor	12.8	1.9 x 1.4	202
SA	NGC 1824		05h06m56.2s	-59d43m26s	Dor	13.0	3.2 x 0.9	201
SA	NGC 1853		05h12m16.5s	-57d23m57s	Pictor	13.6	2 x 0.7	201
SA	NGC 1947		05h26m47.6s	-63d45m36s	Dor	11.7	3 x 2.6	212
SA	NGC 2104		05h47m04.7s	-51d33m11s	Pictor	13.2	2 x 0.9	201
SA	IC 2160	PGC 18092	05h55m28.5s	-76d55m13s	Mensa	13.9	2 x 0.8	219
SA	NGC 2221		06h20m15.7s	-57d34m42s	Pictor	13.3	1.9 x 0.4	201
SA	ESO 121- G026	PGC 18880	06h21m38.7s	-59d44m24s	Pictor	12.6	3.2 x 2	201
SA	ESO 122-IG 001	PGC 19413	06h40m43.2s	-58d31m28s	Pictor	13.1	2.7 x 1.3	201
SA	ESO 034-G011	PGC 19481	06h43m06.0s	-74d14m10s	Volans	13.8	1.5 x 0.9	218
SA	ESO 034- G012	PGC 19498	06h43m30.8s	-72d35m41s	Volans	13.9	1.8 x 0.9	211



Dor
NGC 2162
NGC 2120
NGC 1947
NGC 2082
NGC 2193
NGC 2155
NGC 1831
NGC 1866
NGC 1978
NGC 1941
NGC 1951
NGC 1920
NGC 1783
NGC 1805
NGC 1818
NGC 1644
NGC 2154
NGC 1895
NGC 1820
NGC 1774
NGC 1715
NGC 1846
NGC 1816
NGC 2035
NGC 2020
NGC 2029
NGC 2014
NGC 1968
NGC 1899
NGC 1786
NGC 1736
NGC 1755
NGC 1949
NGC 1966
NGC 1854
NGC 2069
NGC 2070
NGC 2100
NGC 1970
NGC 1855
NGC 1910
NGC 1856
NGC 2157
NGC 2108
NGC 2136
NGC 2210
NGC 2249
NGC 1835
NGC 1876
NGC 1698
NGC 1712
NGC 2080
NGC 2055
NGC 2052
NGC 2085
6h 15m
6h
5h 45m
5h 30m
5h 15m
5h
4h 45m
4h 30m
65d
67.5d
70d


NGC 458
NGC 411
NGC 361
NGC 121
-72d
NGC 299
NGC 416
NGC 376
NGC 249
NGC 152
NGC 261
NGC 248
NGC 456
NGC 294
NGC 220
NGC 269
NGC 265
-74d
1h
0h 30m
NGC 339

54 Hours of Observing
Took 66 Pages of Notes

NGC 5189 12:14 AM

13mm – With O3, a large, dim, circular glow with brighter arc from 1 o'clock thru center (bit brighter) then to 4 o'clock. Then at 9 o'clock is another hare brighter glow. Without O3, dimmer, but can see all the detail I did with O3 and a bright and dim field stars on glow but not in center.

Seeing and Transparency Good.

NGC 5286 12:20 AM

13mm – A medium sized, dim globular to lower left of a bright field star. Can see hint of member stars. A large, bright core that seems to favor left hand side of globular and flat cutoff on right hand side. 60 degrees high.

NGC 5281 12:23 AM

13mm – 20-25 stars surround a bright field star in center. Above the field star and to left of a field star, the stars form an X in 2 lines. Below and to right they form an arc. Fills center of FOV and somewhat compact. 45 degrees high.

NGC 5316 12:27 AM

26mm – 40+ dimmer, blue white stars of 3-4 magnitudes make an arrow head shape pointing at 3:30 o'clock. Small and compact.
7x35 Binos – Small, faint glow with hints of pinpoints on glow.

Saw 384 New Objects

Tried to find Djvorski 1. Didn't find it because no contrast in the sky around the stinger of Scorpio.

NGC 3136	1:33 AM	13mm – A small tilted oval. 3:1. Has larger, brighter core area and brighter yet small central core.
NGC 3136B	1:33 AM	13mm – A very small, very faint round glow with tiny, very faint stellar core.
NGC 3250 NGC 3244 PGC 30713	1:42 AM	13mm – A very small, very dim tilted oval. 2:1. Has larger, brighter core that slowly brightens to center. To left is P30713, a tiny, roundish smudge of light. Below and a bit away (approx. 1 FOV) is N3244, a very small, thin, 2:1 oval. Uniformly lit. Very faint.
NGC 3256 NGC 3256C NGC 3263 NGC 3261	1:53 AM	13mm – A small tilted oval. Very faint halo and large, brighter core. Most of core is offset to lower part of halo from center, which maybe is N3256C. Below and to right and 1 FOV away is N3263, a very small, very faint, thin edge on with tiny, brighter core. To right of this is N3261, a tiny, roundish, uniformly lit smudge of light.
bh 176	2:03 AM	In 30" with 17mm (224x) eyepiece – A globular in Norma. A very faint glow. Very small. Under a couple of brighter field stars. Very subtle. Circular.
NGC 3258 NGC ~~3264~~ 3268 NGC 3281A	2:20 AM	13mm – A very small, very faint, roundish glow. To left is N~~3264~~ 3268, a very small, roundish smudge of light. Below and to left and to left of a faint field star is a tiny, round smudge of light of N3281A.

Summary of My Trip

WWII Honoree	New Telescope	Astronomy Biography	Astronomical Accomplishments	Walk Down Memory Lane
Equipment	My Astro Buddies	Observing Lists	Observing Logbook	How I Do What I Do
Awards Page	First Astronomical League Certificate	My Useful Astro Links	My Software Patent	Resume
Our Holiday Lights	2011 Okie-Tex Star Party	Other Great Astro Links	Retirement Opportunities	Publications
2016 Okie-Tex Star Party	OzSky 2016	My Sky Diving Adventure	ALCON 2017	

Michael Hotka's

OzSky 2016 Star Safari Adventure
Near Coonabarabran, NSW Australia

Thoughts about my trip to Australia, March 28 thru April 10, 2016 to view the southern sky thru telescopes.

More details of my adventure can be found here.

Details of all the objects I observed can be found here in my typed Observing Log of the observations I made during the OzSky week.

My primary goal for the week was to make observations for all the southernmost Astreonomical League Observing Program objects. In addition to sketching all the constellations I cannot see from Colorado, I had not looked at 91 objects from the Caldwell Gold, Southern Sky Binocular, Southern Sky Telescopic and Southern Sky Planetary Nebulae Programs. I made a list of these objects to aid me in observing all these objects and this was the top priority of observing at OzSky.

Next, I wanted to see many of the objects in the Large and Small Magallenic Clouds as I could. I made a list of 83 objects for the LMC and a list of 21 objects for the SMC.

Then I put together a list of 57 addiional obects such as globular clusters, other planetary nebulae and other objects I wanted to see.

Finally, I made a list of all the Southern Arp galaxies I had not seen. There were 178 galaxies on this list, of which I saw most of them.

As if I didn't have enough lists, I made a final list of all the items I weanted to take with me so I wouldn't forget anything at home.

With all my lists, I was well prepared for my Australian Observing Adventure.

Deepsky Astronomy Software

FREE to Download and Use

WWII Honoree	New Telescope	Astronomy Biography	Astronomical Accomplishments	Walk Down Memory Lane
Equipment	My Astro Buddies	Observing Lists	Observing Logbook	How I Do What I Do
Awards Page	First Astronomical League Certificate	My Useful Astro Links	My Software Patent	Resume
Our Holiday Lights	2011 Okie-Tex Star Party	Other Great Astro Links	Retirement Opportunities	Publications
2016 Okie-Tex Star Party	OzSky 2016	My Sky Diving Adventure	ALCON 2017	

Free Download Free

Steve Tuma's Deepsky Astronomy Software

Sky Tools 3

- Three Versions to Purchase
  - I use the Standard Edition
- http://www.skyhound.com/skytools.html

Don't Forget My Card

- Pickup my business card
  - Has my web site URL
  - Has my email address
  - Identify you met me at the AL Convention

Thank You Soooo Much!!!

- Visual Observing is fun and rewarding
  - AL Observing Programs are like a box of Cracker Jacks

Award Search

Program award search | Search results

Results of program award search

Name	Program	Level	Award Number	Award Date	Society Name
Michael A. Hotka	Carbon Star Program		8	2011-07-23	Longmont Astronomical Society

My Hope Is

- That you can take something from my presentation and apply it to your own observing

Questions/Comments