



Astronomy Club of Tulsa

Observer

December 2014



Photo: The Horsehead and Flame Nebulas, Image by Michael Blaylock. Used With Permission. Thank You Michael!

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The Observer is getting a makeover! Don't miss the cool new redesign for 2015! Your Editor hopes you will like it as much as I do!

—Tamara

DECEMBER 2014

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6 
7	8	9	10	11	12	13
14 	15	16	17	18	19	20
21 	22	23	24	25	26	27
28 	29	30	31			

JANUARY 2015

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4 	5	6	7	8	9	10
11	12	13 	14	15	16	17
18	19	20 	21	22	23	24
25	26 	27	28	29	30	31

UPCOMING EVENTS:

General Meeting	Fri, Dec 5	Jenks HS Planetarium	7:00 PM
Sidewalk Astronomy	Sat, Dec 6	Bass Pro	6:00 PM
Public Star Party	Sat Dec 13	ACT Observatory	7:00 PM
Members' Night	Fri, Dec 19	ACT Observatory	7:00 PM
Back-Up Night	Sat, Dec 20	ACT Observatory	7:00 PM
WINTER SOLSTICE	Sun, Dec 21		6:03 PM CST
Christmas Eve	Wed, Dec 24		
Christmas Day	Thurs, Dec 25		
New Year's Eve	Wed, Dec 31		
New Year's Day	Thurs, Jan 1		

January 2015 Events TBA



President's Message

By Mandy Nothnagel

Hello everyone!

What a year! I can't believe that it's already December! This year has been great for us as a club- aside from our normal monthly events, we hosted the Telescopes 101 event in January, Messier Marathon in March, an Observatory Appreciation Day in April, the ORU Summer Science Academy & International SUNday in June, the Partial Solar Eclipse Event in October and held our Italian-themed Annual Banquet in November. Astronomy also had an exciting year- meteor showers, comets, Mars exploration, comet exploration, new discoveries, the list goes on and on!

We have some great ideas for activities and events planned for 2015- we look forward to your participation and hope that you enjoy them as much as we anticipate! As always, we always welcome your ideas, suggestions, and anyone who would like to volunteer.

As many of you know, I did not run for president next year and Richard Brady will be taking my place for 2015. I want to say thank you so much to everyone for all of your help and support over the last year. I have been working with a fantastic team and I feel like we made a lot of improvements this year. We've seen increased interest and support from our community and our guests seemed to enjoy our events even more than they did in the past. I want to say a special "THANK YOU!" to our Board Members and everyone that volunteered last year. You guys are the reason that this club has been so successful and your passion and concern is noticed and appreciated.

Thank you all for a fantastic 2014! I hope you have a wonderful, safe holiday season and I am looking forward to 2015! Happy New Year!

Mandy Nothnagel
President
Astronomy Club of Tulsa



Treasurer's and Membership Report

By Tim Davis

Astronomy Club of Tulsa: 138 members, including 49 new members in 2014.

Welcome to our new member this month: William Hawkins

Club Accounts as of Dec 1, 2014: Checking: \$ 3,156.26; Savings: \$ 3,771.90; Investment accounts: \$ 19,239.55 (*Value Fluctuates with Market*); PayPal: \$ 0.00



The club now has PayPal available for you to start or renew memberships and subscriptions using your credit or debit cards. Fill out the registration form at <http://astrotulsa.com/page.aspx?pageid=16> **Click Submit** and you will be given the choice of either **mailing in your dues** with a check **or using PayPal** which accepts most major credit cards. A modest processing fee is added to PayPal transactions.

You may also renew your membership or join at one of our club events using your credit card by seeing one of our officers. We can take payments with the Square card reader now. A small fee is also added on to these transactions.

ALSO NOTE: For our current members who are renewing their memberships, you can now go to a new link on the website to start your renewal process. On the home page, hover over the "Member" tab on the ribbon menu near the top of the page. Then select the "Membership Renewal" link and this will take to a page to fill out your information. Fill this out, submit it, then pay your dues by whatever method you choose.

NEWS NOTE: Both Sky & Telescope and Astronomy have free Digital subscriptions available with print subscriptions, or Digital subscriptions may be purchased separately. Contact their websites for details.

Membership rates for 2014 are as follows:

Adults: \$ 45.00 per year, includes Astronomical League Membership.

Sr. Adult: \$ 35.00 per year for those 65 or older, includes Astro League Membership.

Students: \$ 30.00 with League membership; Students: \$ 25.00 without League membership.

Additional Family membership: \$ 20.00 with voting rights and League membership; \$ 15.00 with voting rights but without League Membership.

The regular membership allows all members in the family to participate in club events, but only ONE Voting Membership and one Astronomical League membership.

Join Online – Add or renew magazine subscriptions. <http://www.astrotulsa.com/page.aspx?pageid=16>

Magazine Subscriptions: If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Forms are available on the club website.

Astronomy is \$ 34.00 for 1 year, or \$ 60.00 for 2 years. www.astronomy.com To get the club discount you must go through the club group rate.

Sky & Telescope is \$ 33.00 per year www.skyandtelescope.com Sky & Telescope also offers a 10% discount on their products.

Note: You may renew your Sky & Telescope subscription directly by calling the number on the renewal form, be sure to ask for the club rate.

NEW SUBSCRIPTIONS must still be sent to the club.

2015 Wall Calendar

The 2015 Astronomy Magazine Wall Calendars are here and are now available. If you would like to reserve one, send me an email at AstroTulsa.Tres@gmail.com, or call me at 918-665-8134 and let me know how many you would like. Otherwise, they will be available on a first come, first served basis at our upcoming events. We have 50 available this year for \$10.00 each, cash, check or credit cards accepted. That is a 23% savings off the regular retail price.



Get yours while they last!

Tim Davis

ACT Treasurer



The Secretary's Stuff

By Tamara Green

Hi Boys and Girls!

Beginning next year, Ms. Teresa Davis will be our new Secretary, so this will be the last "Secretary's Stuff". I will be Vice President as of January 2015! Below are the minutes from our November Dinner Meeting and Elections. However, thank you al so very much for putting up with me as Secretary for the past 5 years!

ASTRONOMY CLUB OF TULSA

ANNUAL DINNER MEETING

NOVEMBER 7, 2014

PRESENT:

MANDY NOTHNAGEL, PRESIDENT

RICHARD BRADY, VICE PRESIDENT

TAMARA GREEN, SECRETARY

TIM DAVIS, TREASURER

STAN DAVIS, BOARD

SKIP WHITEHURST, BOARD

CHRISTOPHER PROCTOR, BOARD

JAMES TAGGART, BOARD

JOHN LAND, BOARD

MICHAEL BLAYLOCK, BOARD

NOT PRESENT:

LEE BICKLE, BOARD

Location: Tulsa Air and Space Museum Planetarium.

Program: Dinner, catered by Mangiamo's, with a Silent Auction of various items donated by Club members, Recognition and Appreciation of Volunteers, Election of Officers and Board for 2015, Planetarium Show and Group Photo.

Mandy called the meeting to order at 6:50 PM and told all present to go get tood. While everyone was enjoying the nice Italian meal, Mandy announced that there was a silent auction of various items donated by members of the Club. There were vintage star atlases, books, an adapter for an iPhone to hook it up to an eyepiece, beaded jewelry, observing aprons and a picture of Neil DeGrasse Tyson along with his book.

Also, Vice President Richard announced that Secretary Tamara Green had previously advised the Board that she intends to run for Vice President, stating that noone else put their name in the hat and that she "could use the break", and that prior to the start of the meeting, Teresa Davis expressed an interest in running for Secretary, so Richard advised everyone to write Teresa's name in the blank for Secretary.

The candidates for Officers and Board for 2015 were:

President – Richard Brady

Vice President – Tamara Green

Secretary – Teresa Davis, Tamara Green (Green said she would take it again if noone else wanted it, but preferred the VP position)

Treasurer – Tim Davis

John Land—Board

Mandy Nothnagel – Board

Christopher Proctor – Board

James Taggart – Board

Ed Underhill – Board

Skip Whitehurst – Board.

Also on the ballot was an issue for the membership to vote on, that being instead of Officers and Board members' terms beginning immediately after the election meeting, having them begin in January to not only allow for them to transition into their new positions but also to allow them to serve during an actual calendar year.

The vote went on during dinner. 28 people voted. Tamara announced the results of the election:

President – Richard Brady

Vice President – Tamara Green

Secretary – Teresa Davis

Treasurer – Tim Davis

Board-Members-At-Large:

John Land

Mandy Nothnagel

Christopher Proctor

James Taggart

Ed Underhill

Skip Whitehurst

The motion to have terms of office and board begin in January carried, with 22 out of 28 votes. All terms of office and board will now begin in January instead of immediately after the election meetings.

There was also a vote on which planetarium show everyone wanted to see. The membership voted for "Stars".

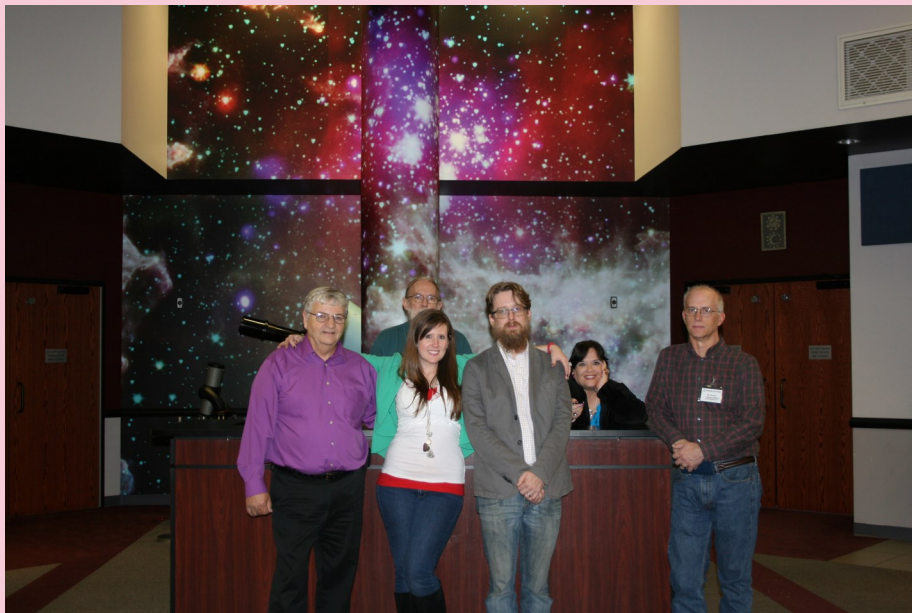
Following the elections, there was a recognition and appreciation ceremony for all volunteers who helped out with various events during the year, as well as a door prize drawing. Then, the membership enjoyed "Stars" while volunteers cleaned up the Planetarium lobby.

After the show, everyone gathered for a group photo. VP-Elect Tamara took a photo of the entire group of members, then a photo of officers and board who stayed after the planetarium show. Teresa had already left, so she did not appear in the photo. After that, the meeting ended.

IN PICTURES: The November Dinner Meeting and Election of Officers and Board for 2015!



Club members get together for a group picture!



Officers and Board for 2015

Left to right, front: Ed Underhill, Board; Mandy Nothnagel, Board; James Taggart, Board; Tim Davis, Treasurer

Left to right, back: Richard Brady, President, Tamara Green, Vice President.

Not Pictured: Teresa Davis, Secretary; John Land, Board; Christopher Proctor, Board; Skip Whitehurst, Board



Thanks to all who came to our Dinner Meeting. You all made it fun and exciting!

All photos were taken by Tamara Green, except for the one of her receiving her appreciation certificate, which was taken by Tony White, with Tamara's camera. Thank you Tony!

NITELOG - Norway INTErurban Local Observing Group by Tom Hoffeder

As noted last Dec, because there are so few objects in the fall and winter skies, compared to the spring with all the galaxies, we continue to run ever further ahead of the sky. What I mean by that is previous to listing all the Messiers in one year, objects listed were within two hours RA of the meridian at the end of twilight. This month's objects don't begin to approach the meridian until around 10, and that is at the end of December. The thing to do is save the sheets from previous months and work on them the best you can, or observe later at night. However, the stars listed are more in line with "what's up" earlier in the evening.

OBSERVING: For the Norway/South Paris area, the Twitchell Observatory, weather permitting of course, **Monday Dec 1st at 7:30.** (If you are on Facebook, check it out! <https://www.facebook.com/groups/1576662229235265/>)

METEORS: One of only two showers worth checking: the Geminids! Per amsmeteors.org, "... the strongest dependable and observable display. Geminid rates usually pass 60-70/hour at maximum." The peak occurs the night of the 13th/14th with the moon conveniently not rising until around 11:15, which means there are five and a half hours of dark sky for watching meteors, since the radiant rises a little before 5:45 (the end of astro twilight - times apply to New England). With the radiant low, you will see considerably less than 60 per hour, but the bright ones will be much longer and more spectacular than later when the radiant is higher.

MOON: It's Lunar X time and, just like last Dec, this one is good across the whole US of A! It goes complete around 7:20 PM EST on Dec 28th. Attached is a brief summary of viewing conditions at some sample locations; you can get a good idea of your conditions based on the data. The X is visible for a couple hours after the time noted. (S = setting, R = rising.)

COMETS: None again, two months in a row, bummer. I thought there would be a couple bright ones this month but turns out they are very low on the southern horizon, especially for New England. The good news is that one of them, one of the many PanSTARRS (2012K1), has been around since May so you've probably seen it, and the other one (another Lovejoy, 2014Q2) will be higher and brighter (6th mag!) next month.

Location	Local Sunset	Local X Time	Moon Altitude
Norway, ME	16:10	19:20	45° (S)
Tolland, CT	16:26	19:20	47 (S)
Lakeland, FL	17:41	19:20	64 (S)
Ft. Wayne, IN	17:19	19:20	52 (S)
Tulsa, OK	17:17	18:20	58 (R)
Las Vegas, NV	16:33	16:20	52 (R)

PLANETS: Jupiter in eastern Leo rises high enough in the east for observation starting around 11 on the 1st and around 9 by the end of Dec. Red spot (which seems to become a little more elusive each year) and shadow transits attached. This month and most of next year, the orbits of the "big four" moons are edge-on from our point of view, which means they can eclipse and occult each other. There is one event (see 4E1A attached) on the 20th that could be interesting: Callisto eclipses Io from 10:13 to 10:33 PM EST, causing Io to dim by 74%. If you check the attached Jupe file, you will find that the Red Spot also transits that evening at 9:30, which means it might still be visible at the beginning of

the eclipse. Add to that the fact there is Facebook buzz about having a December (not winter, since summer begins "south of the border") solstice star party at Heron Cove (in CT) on that date, which is known to attract overcast, so Joe No-Cloud, we needja!

STARS: Three carbons, four doubles and three triples are included; since they are more in line with the meridian at the end of twilight, you can start working on them while waiting for the M's and H's to get higher. The last double, 40b Eridani, may sound familiar because I have been bombarding you with it year after year, sometimes month after month! Why? Because I want everyone to see not only a white dwarf (something not easily done in most scopes - this is in fact the only "easy" one), but a white dwarf in the company of a red dwarf. Stellar integration at its best!

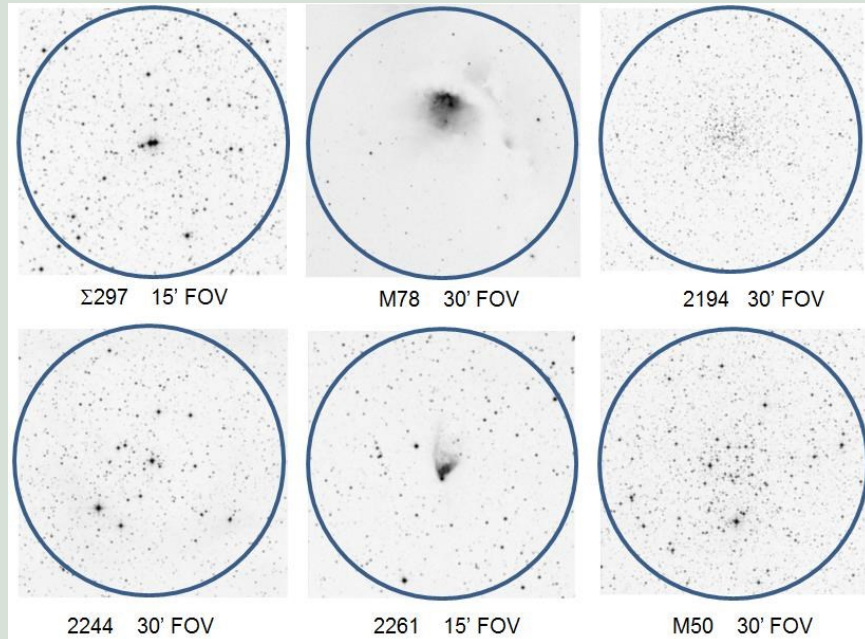
THE GOOD STUFF: Five Messier (4 OC's and 1 DN) and 15 Herschel 400 (13 OC's, 1 PN and 1 DN) objects. Also the Rosette Nebula and a diffuse nebula that looks like a comet! How convenient is that for a month with no real comets?

QUESTIONS: As always, questions and comments are welcome!

tom hoffelder

rocksnstars@gmail.com

"Were I to write out one prescription designed to alleviate at least some of the self-made miseries of mankind, it would read like this: "One gentle dose of starlight to be taken each clear night just before retiring." ~ Leslie Peltier



JUPITER IN DEC 2014 (EST)

DATE	GRST*	I SHAD	E SHAD	G SHAD	C SHAD
1	01:01	21:27-23:43			
2					
3	02:39 & 22:30				
4					
5	04:17				
6	00:09			20:29-	
7	05:56	04:51-07:08		00:04	
8	01:47	23:20-	20:33-23:25		
9		01:36			
10	03:25 & 23:15				
11					
12	05:03				
13	00:54				
14				00:25-04:02	
15	02:32 & 22:24		23:09-		
16		01:12-03:29	02:02		
17	04:10				
18	00:02				
19	05:48				
20	01:40 & 21:31				
21				04:23-07:59	
22	03:18 & 23:09				
23		03:05-05:22	01:44-04:38		
24	04:56	21:34-23:50			
25	00:47				
26					
27	02:25 & 22:16				
28					
29	04:03 & 23:54				
30		04:59-07:15	04:20-07:14		
31	05:41	23:27-			

*Transit, visible +/- 50 min

12/13					12/20				
SS	CTE	NTE	ATE	MR	SS	CTE	NTE	ATE	MR
16:03	16:37	17:13	17:49	23:15	16:06	16:39	17:16	17:51	NA

Object (Type)	RA	Dec	Star	N/S	E/W	Mag*/ (# of Stars)	Size (')/ Sep (")	Spect/ M# or H#	Dist (ly)	Urano l Page	Comment/[B-V] {current mag}/ (opt x)
R For (CS)	02 29.3	-26 06	τ 3 Eri	2.5 S	7.5 W	7.5-13		Ne		310	[5.4]
Y Per (CS)	03 27.7	+44 11	κ Per	0.7 S	3.2 E	8.1- 10.9		Revar		63	[2.9] {9.2}
U Cam (CS)	03 41.8	+62 39	γ Cam	8.8 S	0.9W	7.7-9.5		Ne		18 (ns)	[4.1] {8.0}
ι Cas (MS)	02 29.1	+67 24	---	---	---	4, 7, 8	2.2, 7.3	A5,F5, G4		17	(220)
η Per (MS)	02 50.7	+55 54	---	---	---	4,8,5,1 0	28, 66			38	(18)
η_c Per (MS)	---	---	---	---	---	10, 10.5	5.2			38	(90)
Σ 297* (MS)	02 45.4	+56 34	prev	0.7 N	0.7 W	8,8,5,1 0.5	16, 28			38 (ni)	(30)
Pi 97 (MS)	03 42.7	+59 58	η Per	4.0 N	6.6 E	6, 8.5	55	gK5, B8		39 (ni)	(10)
40 Eri (σ^2) (MS)	04 15.3	-07 39	γ Eri	5.8 N	4.2 E	4.5, 9.5	83	K1	16	268	(6)
40b Eri (MS)	---	---	---	---	---	9.5, 11	7.6	dA,dM4	16	268	(65)
NGC 2068* (DN)	05 46.8	+00 05	ζ Ori	2.0 N	1.5 E	8.0	8x6	M78		226	
NGC 2099 (OC)	05 52.3	+32 33	θ Aur	4.7 S	1.6 W	(150)	15	M37		98	
NGC 2168 (OC)	06 09.0	+24 21	η Gem	1.8 N	1.3 W	(120)	25	M35	2600	137	
NGC 2158 (OC)	06 07.4	+24 06	prev	0.3 S	0.3 W	(40)	5.0	*H17-4	16K	137	
NGC 2169 (OC)	06 08.4	+13 58	γ Gem	2.4 S	7.0 W	(18)	6.0	*H24-8		182	

NGC 2194* (OC)	06 13.8	+12 48	prev	1.2 S	1.3 E	(100)	9.0	*H5-6		182	
NGC 2185 (DN)	06 11.0	-06 14	γ Mon	-	0.8 W		1.0	*H20-4		272	
NGC 2186 (OC)	06 12.1	+05 26	α Ori	2.0 S	4.2 E	(30)	5.0	*H25-7		182	
NGC 2237 (DN)	06 30.9	+05 03	ϵ (8) Mon	0.4 N	2.0 E		80x50	-		227	Rosette
NGC 2244* (OC)	06 31.9	+04 57	prev	0.1 S	-	(16)	24	*H2-7		227	inside Rosette
NGC 2251 (OC)	06 34.6	+08 22	prev	3.5 N	0.6 E	(35)	10	*H3-8		182	
NGC 2261* (DN)	06 39.2	+08 45	prev	0.4 N	1.1 E		3.0x1. 0	H2-4		182	Hubble's Varia- ble Neb
NGC 2281 (OC)	06 48.3	+41 05	θ Gem	7.1 N	0.7 W	(30)	25	*H71-8		68	
NGC 2286 (OC)	06 47.7	-03 09	δ Mon	2.7 S	6.1 W	(50)	15	*H31-8		228	
NGC 2287 (OC)	06 46.0	-20 45	α CMa	4.0 S	0.4 E	(50)	39	M41		318	
NGC 2301 (OC)	06 51.8	+00 28	δ Mon	0.9 N	5.0 W	(60)	15	*H27-6		228	
NGC 2304 (OC)	06 55.2	+17 59	γ Gem	1.6 N	4.0 E	(30)	3.0	*H2-6		138	
NGC 2311 (OC)	06 57.8	-04 37	δ Mon	4.1 S	3.6 W	(25)	7.0	*H60-8		228	
NGC 2323* (OC)	07 02.7	-08 23	θ CMa	3.7 N	2.1 E	(100)	15	M50		273	
NGC 2324 (OC)	07 04.1	+01 03	δ Mon	1.5 N	1.9 W	(30)	8.0	*H38-7		228	
NGC 2392 (PN)	07 29.2	+20 55	δ Gem	1.1 S	2.1 E	9.1	0.9	*H45-4		139	
NGC 2395 (OC)	07 27.2	+13 36	β CMi	5.3 N	0.1 W	(30)	15	*H11-8		184	

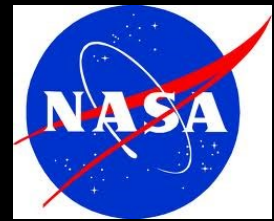
*DSS image

*[Surf
Brtnss
for
GX's] -
mag
per
square
arcmin

*H400

ni=shown but

not
identi-
fied



And For The Young Stargazers:

Check out these fun websites from NASA!

<http://climate.nasa.gov/kids>

<http://scijinks.gov>

<http://spaceplace.nasa.gov>



JENKS HIGH SCHOOL PLANETARIUM

105 E. B St., Jenks, OK

From the West: (marked in red on maps below)

Take US 75 to the Main St. - Jenks exit

Follow Main St. approximately 2 miles and cross the railroad tracks

Turn left on 1st St.

From central part of Tulsa: (marked in green on the maps below)

Take Riverside Drive to the 96th Street bridge

Turn right and go over the river

Follow A St. approximately 7 blocks

Turn right on 1st St.

From the East: (marked in blue on the maps below)

Take the Creek Turnpike to S. Elm St. in Jenks

Follow Elm St. north to Main St.

Turn right on Main St. and cross the railroad tracks

Turn left on 1st St.

For Each:

Park in the lot at the end of 1st St.

Use the doors at the north side of the building

Go up the stairs to the 3rd floor (there is an elevator for those who need it)

Turn right and go down the hallway to either side of the planetarium

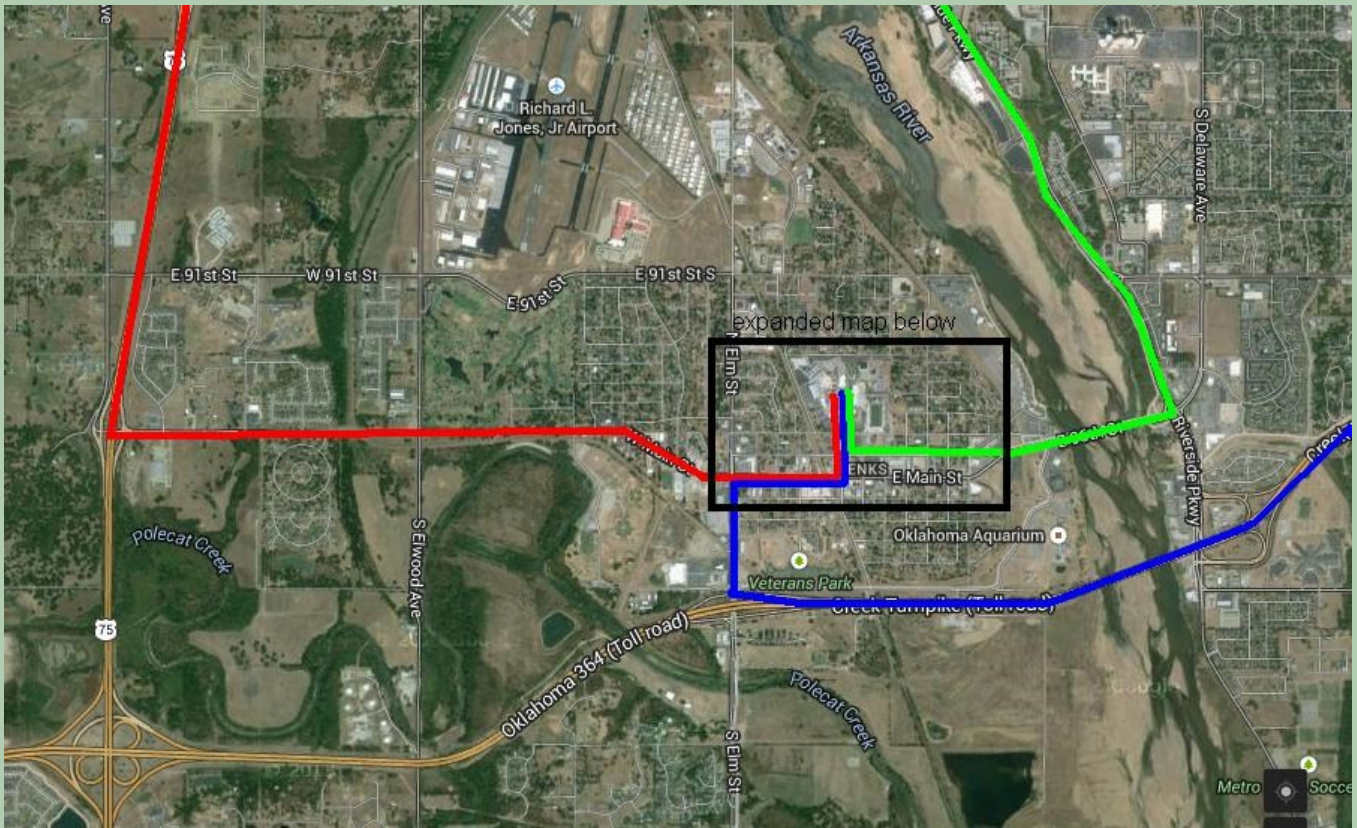
MAPS ON NEXT PAGE

The General Meetings are free and open to the public.

We hope to see you there!

Maps to Jenks High School Planetarium:

To get there via any of the three routes shown on previous page:



To get into planetarium parking lot:



Wishing You and Yours a Safe and Merry Holiday Season!

See you in 2015!



CLUB OFFICERS

President	Mandy Nothnagel	act_pres@astrotulsa.com
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MEMBERSHIP INFORMATION

MEMBERSHIP RATES FOR 2014 WILL BE AS FOLLOWS:

Adults - \$45 per year. Includes Astronomical League membership.

Senior Adults - \$35 per year. *For those aged 65 and older.* Includes Astronomical League membership.

Students - \$30 per year. Includes Astronomical League Membership.

Students - \$25 per year. *Does not include Astronomical League membership.*

The regular membership allows all members of the family to participate in Club events, but only ONE voting membership and ONE Astronomical League membership per family.

Additional Family Membership - \$15 with Astronomy Club of Tulsa voting rights, \$20 with Club voting rights *and* Astronomical League membership.

THOSE WISHING TO EARN ASTRONOMICAL LEAGUE OBSERVING CERTIFICATES NEED TO HAVE A LEAGUE MEMBERSHIP.

MAGAZINES:

Astronomy is \$34 for one year or \$60 for 2 years.

www.astronomy.com

Sky & Telescope is \$33 per year.

www.skyandtelescope.com

Sky & Telescope offers a 10% discount on their products.

If you are an existing S&T subscriber, you can renew directly with S&T at the same Club rate. Both S&T and Astronomy now have digital issues for computers, iPads and smart phones.

ONLINE REGISTRATION

We now have an automated online registration form on the website for new memberships, membership renewals and magazine subscriptions. Just simply type in your information and hit "send" to submit the information. You can then print a copy of the form and mail it in with your check, or use our convenient PayPal option. .

Link: <http://www.astrotulsa.com/Club/join.asp>



Astronomy Club of Tulsa

Photo: Autumn Stars Rising Over the Eastern Ridge of Camp Billy Joe, Okie-Tex Star Party 2013, by Tamara Green.

THE ASTRONOMY CLUB OF TULSA INVITES YOU TO MAKE PLANS THIS WINTER TO JOIN US AT A STAR PARTY!

OPEN TO THE PUBLIC

For more information please visit www.astrotulsa.com.

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