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ASTRONOMY CLUB OF TULSA

# OBSERVER

OCTOBER 2015

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PHOTOS: Above: The Great Square of Pegasus; Below: Sagittarius and the Milky Way. Both photos taken at the Okie-Tex Star Party, September 2015. Both photos by Tamara Green.

THE ASTRONOMY CLUB TULSA  
IS A PROUD MEMBER OF



THE ASTRONOMICAL LEAGUE

# OCTOBER 2015

## MOON PHASES AND HOLIDAYS:

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			



LAST QUARTER SUN OCT 4  
 NEW MOON MON OCT 12  
 FIRST QUARTER TUES OCT 20  
 FULL MOON (Hunter's Moon) TUES OCT 27  
 HALLOWEEN SAT OCT 31

## UPCOMING EVENTS:

DAYLIGHT SAVING TIME ENDS SUN, NOV. 1.

GENERAL MEETING	SAT, OCT 3	7:00 PM	JENKS HS PLANETARIUM
MEMBERS' NIGHT**	FRI, OCT 9	7:00 PM	ACT OBSERVATORY
PUBLIC STAR PARTY	SAT OCT 17	7:00 PM	ACT OBSERVATORY
SIDEWALK ASTRONOMY	SAT OCT 24	6:30 PM	BASS PRO
ANNUAL DINNER MEETING**	SAT NOV 7	6:30 PM	JENKS HS PLANETARIUM
MEMBERS' NIGHT**	FRI NOV 13	6:00 PM	ACT OBSERVATORY
PUBLIC STAR PARTY	SAT NOV 21	7:00 PM	ACT OBSERVATORY
SIDEWALK ASTRONOMY	SAT NOV 28	5:00 PM	BASS PRO

\*\*MEMBERS AND FAMILY ONLY PLEASE.

# NOVEMBER 2015

## MOON PHASES & HOLIDAYS:

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		



LAST QUARTER TUES NOV 3  
 NEW MOON WED NOV 11  
 FIRST QUARTER THU NOV 19  
 FULL MOON (Beaver Moon) WED NOV 25  
 THANKSGIVING THU NOV 26

**VERY IMPORTANT ANNOUNCEMENT  
OCTOBER ELECTION OF OFFICERS AND BOARD**

**ELECTIONS TO BE HELD AT OCTOBER GENERAL MEETING.**

The election of officers and board members for 2016 will be held at our OCTOBER General Meeting. The date will be Saturday, October 3 at 7:00 PM at the Jenks Planetarium. The meeting will be on that Saturday night due to a home game at Jenks on that Friday night. Anybody who is interested in an office or board position, or who would like to nominate someone, please contact Secretary Teresa Davis at [astrotulsa.sec@gmail.com](mailto:astrotulsa.sec@gmail.com) so she can get your or your nominee's name on the ballot.

Below is who is running so far:

President: Richard Brady  
Vice President: Tamara Green  
Secretary: Teresa Davis  
Treasurer: Tim Davis  
Board: Skip Whitehurst  
Christopher Proctor  
James Taggart

We will need to have a quorum of members in order to have the elections take place so please make plans to attend.

**THANK YOU FOR YOUR CONSIDERATION AND PARTICIPATION!**

## **An Invitation to attend the ELDORADO STAR PARTY!**

You can save by registering early for the 13th annual Eldorado Star Party (ESP), October 5-10, 2015.

Just for amateur astronomers who want dark skies and a protected environment, the 7,100 acre X-Bar Ranch is 20 miles WNW of Sonora, Texas. Sponsored by the Austin, San Antonio, and Fredricksburg astronomy clubs, and assisted by volunteers throughout Texas, this event brings dark skies closer to the amateur astronomer... ESP's central location is within easy driving distance of many Texas cities... 3 hours west of San Antonio, and 5 1/2 to 6 hours from Dallas and Houston.

The site is eight miles north of Interstate-10, and has a convenient all-weather road and nearby light-shielded parking area at the observing fields. The main observing area includes power for telescopes and equipment, and is organized so that you may drive on-off from the nearby parking area at night without impacting the observers on the fields. The same darkout rules that you see at TSP will be in effect here! Here's some of what you will find at this year's ESP:

- \* Star party activities including special observing programs, afternoon speakers, and doorprizes. And don't miss the nearby Caverns of Sonora!
  - \* Camping (and hot water showers), special rates at nearby motels, catered meals.
  - \* New! Safari Bed Tent! You can sleep in a comfortable bed on site and avoid the drive to a motel at a nearby town. Or if you already enjoy camping at ESP, now you can avoid the transport/setup/take down of your own tent, and get a real bed!
  - \* Internet available at Lodge and observing field.
  - \* Convenient ONLINE registration and payment via check or credit card!
- Want to learn more? There's lots of information on the ESP web site!

Register online NOW at:

<http://www.eldoradostarparty.org>

Pre-register soon, to save money before our rates go up!

# PRESIDENT'S MESSAGE

BY RICHARD BRADY



Hi everyone!

September was a very busy month astronomically speaking. Things were happening both on the ground (Okie-Tex) and in the sky (the Total Lunar Eclipse).

I know several of our members went to Okie-Tex again this year. If you have any pictures you would like to share, please send them to me and I will show them at the next General Meeting.

Don't forget, we moved the October General Meeting from Friday to Saturday, October 3, so we could find parking spaces. (Jenks varsity has a home football game on Friday.) Still at 7:00 PM and still at Jenks Planetarium.

I hope everyone was able to view the Total Lunar Eclipse last Sunday, September 27. I saw the beginning and end of the total eclipse (at least I think I saw them, the edges of the moon were quite bright and it was hard to tell exactly when). The edges of the moon seemed quite bright throughout the eclipse, considering how deeply into Earth's shadow the moon went. If you have pictures of the eclipse you want to share, send them to me too.

The photos of Pluto and its moons have started coming on again. Be sure to check them out at <http://app.plutosafari.com/gallery.html> and <http://pluto.jhuapl.edu>.

And Rosetta and Philae continue to explore comet 67P/Churyumov-Gerasimenko (<http://www.nasa.gov/rosetta>) and Dawn continues to circle dwarf planet Ceres ([http://www.nasa.gov/mission\\_pages/dawn/main/index.html](http://www.nasa.gov/mission_pages/dawn/main/index.html)). And I got the impression Curiosity must have been feeling a little bit neglected after I saw the Astronomy Picture of the Day for August 22 (<http://apod.nasa.gov/apod/ap150822.html>). It seemed to be saying "Hey! Remember me?"

Back to Earth now. We will be having elections for the officers and board at the October General Meeting. If you are interested in being an officer or on the board, please let our secretary, Teresa Davis, know and she will add you to the ballot. Her email is [astrotulsa.sec@gmail.com](mailto:astrotulsa.sec@gmail.com). To be an officer or on the board you must be a member in good standing for at least a year.

In November, we will be having our annual dinner. This year it will be at the Jenks Planetarium on Saturday, November 7th at 6:30-8:30 PM. There is a very nice room with full kitchen facilities on the same floor as the planetarium, just at the other end of the hall. We will have Italian again from Mangiamo's. I should have the price in time to announce it at the October General Meeting.

Finally, if you enjoyed the Total Lunar Eclipse, be sure to make plans for the Total Solar Eclipse on Monday, August 21, 2017. Check out the Great American Eclipse website at <http://www.greatamericaneclipse.com>. It has lots of information including maps of the ground track. The closest point to us is just north of Kansas City, Missouri. I'm going, are you?

Clear Skies!  
Richard Brady

## TREASURER'S AND MEMBERSHIP REPORT

BY TIM DAVIS



**Astronomy Club of Tulsa: 153 members, including 54 new members in 2015.**

**Welcome to our new members this month:** Eric Johnson, Glen Lightfoot, Christie and Joe Rooney, Byron Labadie, Timothy Smythe and Rick Walker.



**Club Accounts as of September 26, 2015 :**

**Checking: \$4,705.38; Savings: \$3,774.55; Investment accounts: \$17,640.15 (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. 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 2015 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 for 1 year, or \$60 for 2 years. [www.astronomy.com](http://www.astronomy.com)

To get the club discount you must go through the club group rate.

**SKY & TELESCOPE** is \$33 per year [www.skyandtelescope.com](http://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.

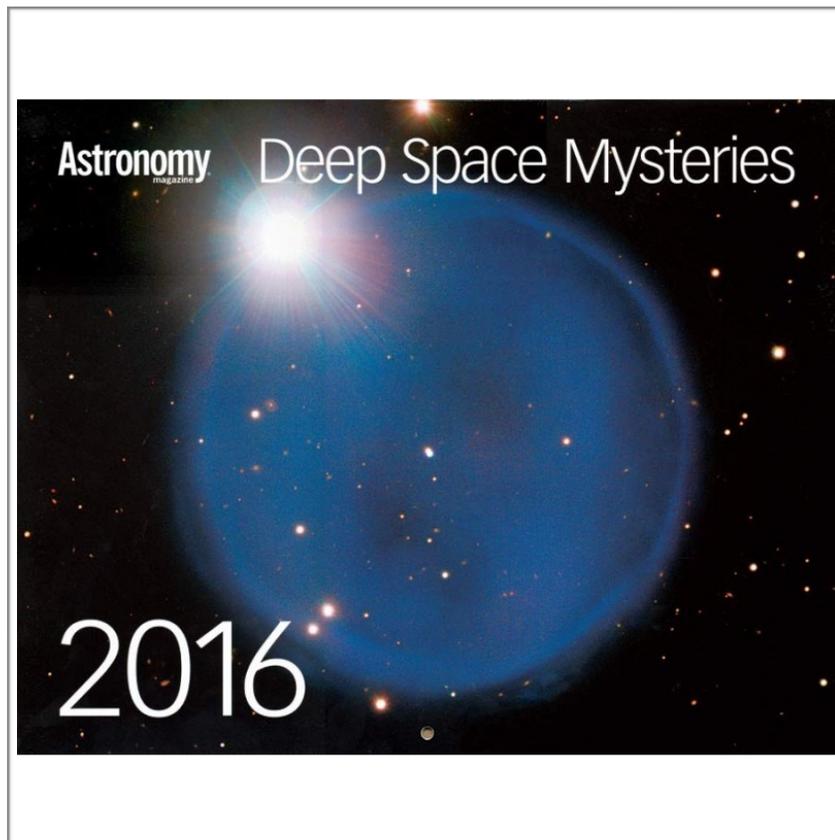
NEW SUBSCRIPTIONS must still be sent to the club

## 2016 Wall Calendar

The 2016 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](mailto: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.

Calendars must be picked up in person at a club event, we can not ship these to you. If you reserve one, just let me know at which event you will pick it up.

Get yours while they last!



Tim Davis

Act Treasurer

# SECRETARY'S CORNER

BY TERESA DAVIS



This month's public meeting will be next Saturday, October 3, 2015. We all need to be there for the annual business including the elections of our board members and officers. You will find the roster below as of Sunday, September 27, 2015 evening. The same night as the special total eclipse.

Incidentally, as I am writing this article for the newsletter this evening, I am also watching the Super – Blood Red- Moon having a total eclipse. The last time we had an eclipse, it was also a total eclipse. This is the fourth and last of the 4 part series referred to as the tetrad. We will actually have 9 Tetrads in this century so in the whole grand scheme of things, that's pretty often. Why is this one so special? What caused me to get excited about this one? I was asked these questions in an interview earlier today with David Norris from Channel 8. My answer at the time was explaining the color of the moon when the moon is under the umbra stage of the eclipse and the fact that the moon is at perigee or closest point of its elliptical orbit around the earth. At the same time we are lined up to view our shadow as it glides across the moon tonight. As I came away from the interview, I had to admit to my husband, Tim, and my son, Jason, that isn't really the reason this eclipse is so important to me. The last total lunar eclipse was covered by the media as they interviewed someone they found that would talk about it. I can't remember the channel I was watching but I just couldn't forget that the individual had no known scientific ideas to declare as he gave a story about some apocalypse. The reason this eclipse was so important to me has to do with having another chance to give a scientific explanation to the Tulsan's that watch the news. At the time I got the call, I had about 2 hours to grab dinner with family, finish a few errands, and get across the river to meet the interviewer. I know we had a few other news stations contact us through emails and Owen was also ready to step up and give an interview to one of them. Thanks Owen for your dedication.



The ballot for this Saturday's election will have some of our current board members and only a few others so far. If you have been a member for at least one year, there is still time to shoot an email my way and get on the ballot. I will add any names sent my way up until Friday evening. Ballots will be printed out for all those voting members at our Saturday evening meeting at the Jenks planetarium. If you have not come out to our meetings at Jenks, you are missing a unique experience. After any announcements and sharing of events from NASA with images brought to us by our President Richard, we get an awesome show each month.

The following is a list of the club members that have contacted me to be on the ballot.

President – Richard Brady

Vice President – Tamara Green

Secretary – Teresa Davis

Treasurer – Tim Davis

Board Members – Skip Whitehurst, James Taggard, Chris Proctor

# A REPORT ON OKIE-TEX 2015

BY TAMARA GREEN

ALL PHOTOS BY TAMARA GREEN



Hello All!

The Okie-Tex Star Party was early this year, starting on Saturday, Sep. 12 and ending Sunday, Sep. 20.

Weather-wise, during the day we had brutal weather with broiling heat (Michael's portable weather station showed temps of literally 102° F IN THE SHADE!) and vicious winds, but at night it was very pleasant; I never needed to use anything warmer than a hoodie all week. Towards the end of the week, the daytime temps dropped too. Skies cleared up nicely each night as well, making for some really great viewing! I am happy to say that I am now a little more than halfway through my Herschel 400 list!



View of Sagittarius, Scorpius, and the Milky Way

Surprisingly, and much to my disappointment, there were not very many vendors this year. There was a gentlemen who sold collimating tools, another who sold beautiful hand-made and hand-carved wooden eye-piece boxes, a vendor who had copies of Starry Night Pro 7, the guys who have copies of their Night Sky Observer's Guide each year, Astronomics, Televue, Explore Scientific, Daystar (a solar observing equipment concern), Infinitees, and a couple who had astronomy-themed card games and planespheres for sale. Three of the vendors who were regular fixtures for a number of years were not there this year: Astro Gizmos (the owner passed away earlier this year, and his family has decided to run the business as an online-only shop), S&S Optika (Owners Tim and Cathie Havens have decided to close up shop and retire), and Starry Nights (Judy Cunningham has also retired).

The food, as usual, was wonderful. Jody's Catering did a FANTASTIC job this year with the good meals and the Cosmic Café. Jody and her crew really busted their behinds this year to feed the more than 500 people who attended the star party! I forget the exact number, but if I remember right, it was around 560 or so. We had record attendance.

We did have some good speakers, but the highlights of the week were Tim Hunter, a friend of David Levy, on Friday Night; he gave a really great talk on his many years as an amateur astronomer; and then David Levy on Saturday Night, whose presentation was one to be remembered for ages to come!

And of course there were the two swap meets and the two giveaways. There were some really great bargains to be found at the swap meets and nice prizes at the giveaways. Sadly, I did not win anything. John Land won a set of filters, Michael Blaylock won a mount, Judy Leiser won a set of books, and Ann Bruun won a book.



Black Mesa



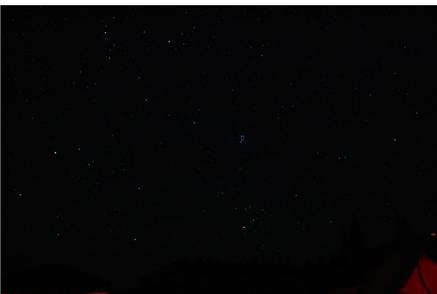
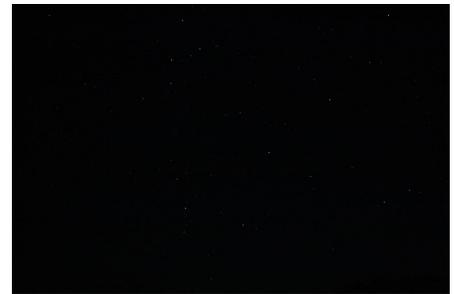
At The Swap Meet

Next year, the star party will be closer to its traditional time, from Sep. 24 to Oct 2. Owen and I plan to be there, and we hope to see you there too! Until then, Clear Skies! For more of my pics, see next page.

# A REPORT ON OKIE-TEX 2015

BY TAMARA GREEN, CT'D.

ALL PHOTOS BY TAMARA GREEN





# the Space Place

September-October 2015 / Vol. 8, Issue 3

## NEWS AND NOTES FOR FORMAL AND INFORMAL EDUCATORS

Space Place is a NASA website for elementary school-aged kids, their teachers, and their parents.

It's colorful!  
It's dynamic!  
It's fun!  
It's rich with science, technology, engineering, and math content!  
It's informal.  
It's meaty.  
It's easy to read and understand.  
It's also in Spanish.  
And it's free!

It has over 150 separate modules for kids, including hands-on projects, interactive games, animated cartoons, and amazing facts about space and Earth science and technology.

It's back to school time, and here at NASA Space Place, we have lots of new articles and activities to share with your students.

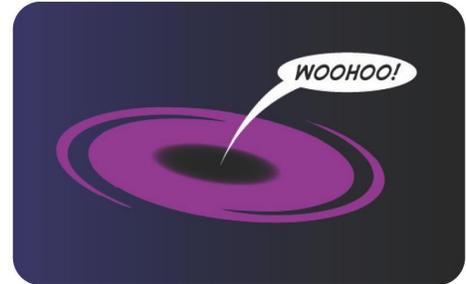
### New! Planet Profiles

Find out more about our solar system's eight amazing planets with the new planet profiles. Find out how long a year lasts on Uranus and why the sun doesn't rise every "day" on Mercury.



Every profile features planet merit badges that showcase each planet's unique characteristics, as well as beautiful photos.

<http://spaceplace.nasa.gov/planets>



### New! What is the Big Bang?

This article discusses one of the biggest questions in science: how did our universe begin?

<http://spaceplace.nasa.gov/big-bang>

### New! Space Place Glossary

There are a lot of new vocabulary words to learn when you read about space and Earth science. Our new glossary has over 65 terms with easy to understand definitions.

<http://spaceplace.nasa.gov/glossary>



Explore Earth and space at [spaceplace.nasa.gov](http://spaceplace.nasa.gov)

**Printable Content**

You can decorate your classroom with the official **Space Place calendar** for the **2015-2016** school year. It has beautiful images, NASA facts and trivia, and links to relevant content. Download individual months or the entire set today.  
<http://spaceplace.nasa.gov/calendar>



**Crafts, Crafts, Crafts!**

Learn more about space, the sun, Earth, and comets with these fun activities.



**Pinwheel Galaxy Pinwheel**

A galaxy in the palm of your hand!  
<http://spaceplace.nasa.gov/pinwheel-galaxy>

**Sun Paper**

Marbled paper that looks just like our sun.  
<http://spaceplace.nasa.gov/sun-paper>

**Earth Fan**

A fan with all of Earth's interesting layers.  
<http://spaceplace.nasa.gov/earth-fan>

**Comet on a Stick**

Your very own comet to fly around the room!  
<http://spaceplace.nasa.gov/comet-stick>

**Special Days**

*Noteworthy days in NASA and space history you can observe in your classroom.*

**September 1 — The first time a solar flare was observed and recorded, 1859.**

What is a solar flare, anyway?  
<http://spaceplace.nasa.gov/solar-cycles>

**September 18 — Voyager I took the first photo of Earth and the moon together, 1977.**

Do you know how far apart the moon and Earth are? It's farther than you might think!  
<http://spaceplace.nasa.gov/moon-distance>

**September 23 — Johann Galle discovered Neptune in 1846.**

Find out more about our solar system's coldest planet, where one year takes 164 Earth years.  
<http://spaceplace.nasa.gov/all-about-neptune>

**October 3 — The National Oceanic and Atmospheric Administration founded in 1970.**

Go on a wild weather adventure to celebrate!  
<http://spaceplace.nasa.gov/wild-weather-adventure>

**October 16 — The first geostationary operational environmental satellite (GOES) launched in 1975.**

How do you build a weather satellite?  
<http://spaceplace.nasa.gov/story-weather-satellite>

**October 26 — People see first glimpse of the far side of the Moon in 1959.**

Why does the moon have so many craters?  
<http://spaceplace.nasa.gov/craters>



## **WHERE WE MEET**

JENKS HIGH SCHOOL PLANETARIUM

105 E. B ST. JENKS, OK

### **DIRECTIONS TO THE JENKS HIGH SCHOOL CAMPUS:**

#### **FROM THE WEST: (MARKED IN RED ON MAPS)**

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)**

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))**

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

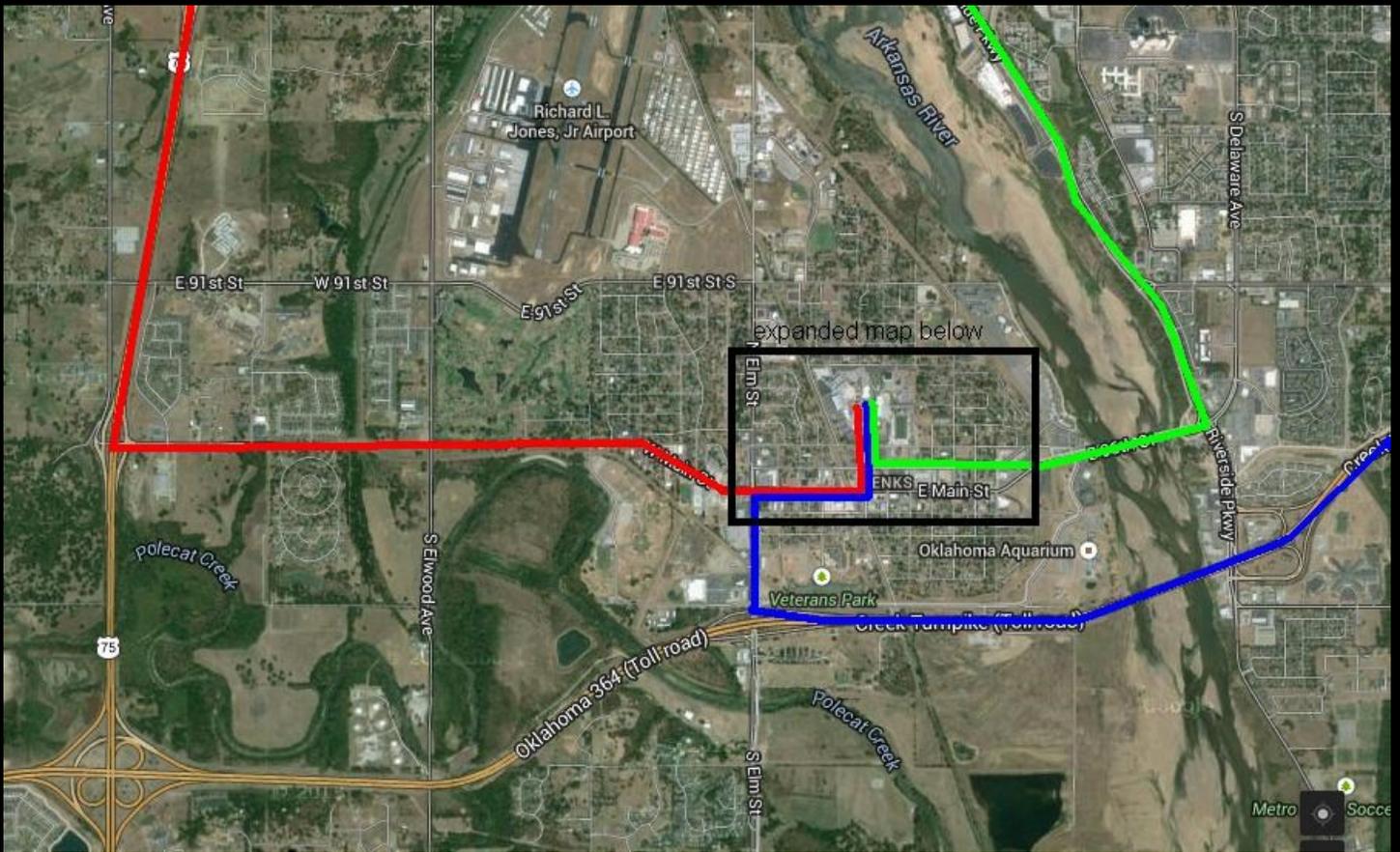
GO UP THE STAIRS TO THE 3RD FLOOR (THERE IS AN ELEVATOR FOR THOSE WHO NEED IT)

TURN RIGHT AND GO DOWN THE HALLWAY TO EITHER SIDE OF THE PLANETARIUM

### **MAPS ON NEXT PAGE**

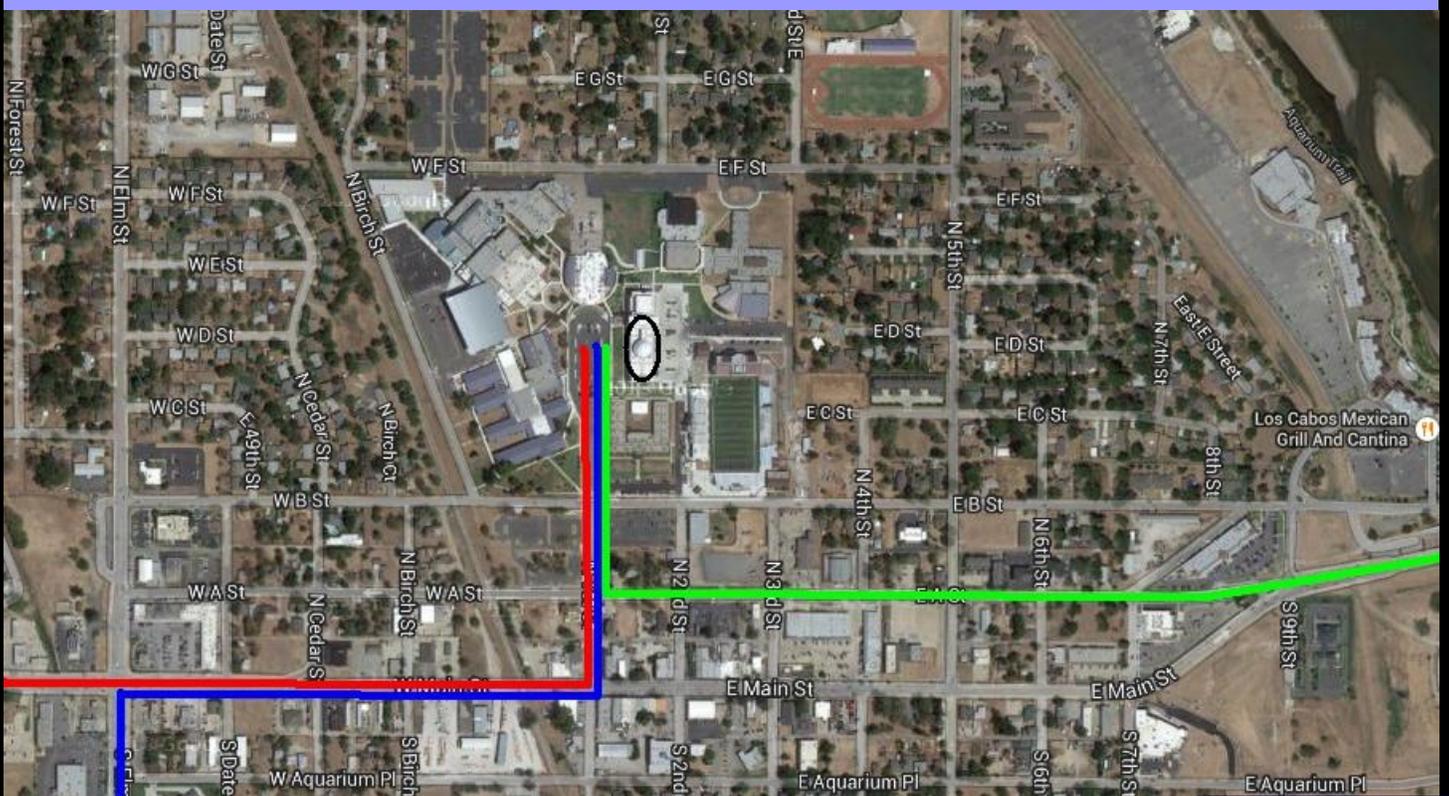
**THE GENERAL MEETINGS ARE FREE AND OPEN TO THE PUBLIC.**

**WE HOPE TO SEE YOU THERE!**



**ABOVE:** DIRECTIONS TO JENKS HIGH SCHOOL FROM CENTRAL TULSA, WEST OF TULSA AND EAST OF TULSA

**BELOW:** MAP SHOWING ROUTE INTO PARKING LOT



## MEMBERSHIP INFORMATION

### ASTRONOMY CLUB OF TULSA OFFICERS:

**PRESIDENT** RICHARD BRADY  
astrotulsa.pres@gmail.com

**VICE PRESIDENT** TAMARA GREEN  
astrotulsa.vp@gmail.com

**SECRETARY** TERESA DAVIS  
astrotulsa.sec@gmail.com

**TREASURER** TIM DAVIS  
astrotulsa.tres@gmail.com

### BOARD MEMBERS-AT-LARGE:

JOHN LAND  
CHRISTOPHER PROCTOR  
JAMES TAGGART  
SKIP WHITEHURST  
ED UNDERHILL

### STAFF:

**NEWSLETTER EDITOR** TAMARA GREEN  
astrotulsa.vp@gmail.com

**WEBMASTER** JENNIFER JONES  
jjones@seedtechnologies.com

**MEMBERSHIP CHAIRMAN** JOHN LAND  
astroclubbiz@windstream.net

**OBSERVING CHAIRS** OWEN AND TAMARA GREEN  
darthnewo@yahoo.com, astrotulsa.vp@gmail.com

**SIDEWALK ASTRONOMY** OWEN GREEN  
darthnewo@yahoo.com

**PR AND OUTREACH** OWEN GREEN  
darthnewo@yahoo.com

**GROUP DIRECTOR** TERESA DAVIS  
actgroupscheduling@gmail.com, astrotulsa.sec@gmail.com

**NIGHT SKY NETWORK** RICHARD BRADY  
astrotulsa.pres@gmail.com

**FACILITIES MANAGER** JAMES TAGGART  
astrotulsa.obs@gmail.com

### MEMBERSHIP RATES FOR 2015 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.*

### MAGAZINE SUBSCRIPTIONS:

ASTRONOMY IS \$34 FOR ONE YEAR OR \$60 FOR 2 YEARS.

WEBSITE: [www.astronomy.com](http://www.astronomy.com)

SKY & TELESCOPE IS \$33 PER YEAR.

WEBSITE: [www.skyandtelescope.com](http://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>

OR, IF AT A STAR PARTY OR MEETING, SIMPLY FIND A CLUB OFFICER TO ASK ABOUT JOINING OR RENEWING WITH YOUR DEBIT OR CREDIT CARD THROUGH OUR CONVENIENT SQUARE OPTION!



THE ASTRONOMY CLUB OF  
TULSA INVITES YOU TO MAKE  
PLANS THIS FALL TO JOIN US AT  
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BRING THE JOY AND KNOWLEDGE OF  
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TULSA, OK AND THE SURROUNDING  
AREA. TODAY OUR MISSION REMAINS  
EXACTLY THE SAME. WE TRAVEL TO  
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MANY OTHER VENUES WITH SCOPES  
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WE ALSO ARE A PROUD PARTICIPANT IN  
NASA'S NIGHT SKY NETWORK.

THE EDITOR WISHES TO THANK THE FOLLOWING FOR  
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TAMARA GREEN



ABOVE PHOTO: Cassiopeia and Andromeda with the Andromeda Galaxy

BELOW PHOTO: One Last Sky-Scape

Both photos taken at Okie-Tex Star Party on Sep 27, 2014 by Tamara Green.

