



Vol.74 No.1* Jan-Feb, 2017

SVAS

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OBSERVER

Sacramento Valley Astronomical Society
Founded in 1945

HGO



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Stuart Schulz visited HGO after a week away, having left a winter wonderland up there that was accessible only by boots or snowshoes, only to find Sunday (12/11) a transformed landscape of pine needles, bare tarmac, and one seriously misplaced snow drift. Since it had remained cold, the rain melted the snow all away, and suddenly there was full access for the upcoming dark nights (unless a cold storm were to roll in) as well as a snow-less roof that easily rolls off. He found the structure water-tight, in spite of heavy rains, and a dome with a shutter that did not leak a drop.

Special thanks to Charles Jones for the great roof repairs!

SVAS Event Calendar



Jan 20, Fri, SVAS General Meeting, 8:00pm.

Sacramento City College, Mohr Hall Room 3,
3835 Freeport Boulevard, Sacramento, CA.



Jan 27, Fri

New Moon.



Jan 28, Sat

Blue Canyon, weather permitting.



Feb 17, Fri, SVAS General Meeting, 8:00pm.

Sacramento City College, Mohr Hall Room 3,
3835 Freeport Boulevard, Sacramento, CA.



Feb 25, Sat

New Moon.



Feb 25, Sat.

Blue Canyon, weather permitting.

Star Party Schedule for 2017

Jan 28	
Feb 25	
Mar 25	
Apr 22 & 29	
May 27	
Jun 24	
July 21-23 Star B Q	
Aug 19	
Sept 16 & 23	
Oct 21	
Nov 18	
Dec 16	



Community Star Parties

Contact Wayne Lord

SVAS Guest Speakers

Speaker Seeker
Fera Zamani



Our Speakers for Friday, Jan 20, 2017:

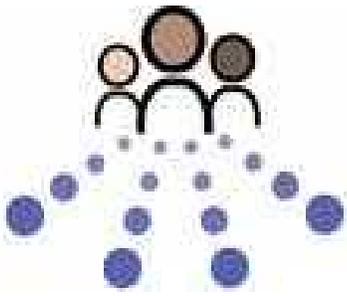
Jeff Baldwin, VP of the Stockton Astronomical Society (SAS), and Dr. Larry Grimes.

They flew on SOFIA (Stratospheric Observatory for Infrared Astronomy) last fall, and have agreed to share their fantastic experience with the SVAS at this January's general meeting. This is a must attend opportunity to share this once in a lifetime flight by two of our own fellow astronomers.

<http://www.seti.org/seti-educators/nasa-selects-educators-fly-with-astronomers-sofia-airborne-observatory>

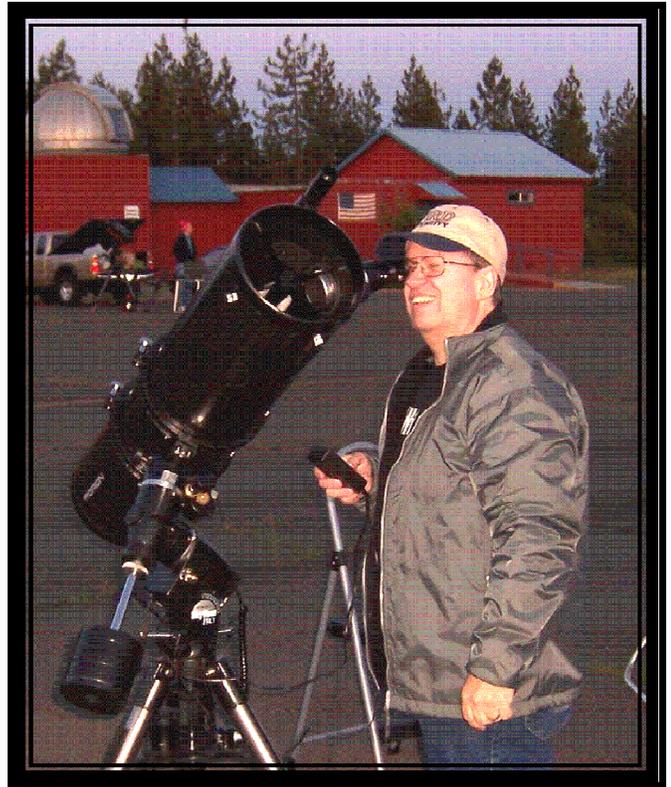
SOFIA is an 80/20 partnership of NASA and the German Aerospace Center (DLR), consisting of an extensively modified Boeing 747SP aircraft carrying a reflecting telescope with an effective diameter of 2.5 meters (100 inches). The aircraft is based at NASA's Armstrong Flight Research Center in Palmdale, Calif. The SOFIA Program Office is at NASA Ames Research Center in Moffett Field, Calif., which manages SOFIA's science and mission operations in cooperation with the Universities Space Research Association (USRA; Columbia, Md.) and the German SOFIA Institute (DSI; University of Stuttgart).





Community Star Parties

Contact Wayne Lord
star_geezer@yahoo.com 916-396-7404



Volunteers Needed!

Do you own a telescope and know how to use it?

Can you locate some of the brighter objects such as the moon and planets under light-polluted skies?

Do you enjoy sharing the views through your telescope with others?

If you answered YES to the above, you are a good candidate to volunteer for SVAS' Outreach to local schools and other organizations. We have a few faithful volunteers who have been supporting this effort for a number of years

now, but could use an infusion of "new blood" to the group, and as we say, "You can never have too many 'scopes at a Star*Party." And there is nothing that compares to the delight in a young child's face when he or she sees Saturn or the craters of the Moon for the first time!

If this interests you, get your name added to the volunteer's list by emailing Outreach@SVAS.org or star_geezer@yahoo.com (Wayne Lord, Outreach Coordinator)

Wayne Lord/Star_Geezer
Citrus Heights, CA





Antelope Meadows Elementary School

School Star Party Report



Continued from previous page

We were almost skunked with clouds, but a little persistence waiting them out paid off! The photos at right is the Moon trying very hard to make an entrance. Slowly the clouds gave way to some great views of the Moon, Mars, and later some overhead constellations.

Dew was a problem, and we need to be prepared to give it a battle. The heat is extracted from the objective lens or mirror when exposed to outer space. This causes water vapor to condense on the colder surface. I have an electric heat band that goes around the objective of my Cassegrain, and does a great job keeping the dew away. However, I discovered it's a bit too warm when wrapped right at the objective, distorting it and causing some image degradation. Locating the heat band just behind the objective improved things a lot. Others used dew shields with some success, but it depends on where you are observing. By observing nearer the horizon, it helps the dew shield to more effectively cover the glass surfaces. Newtonian designs have less of a problem, because the objective is covered by the telescope tube, but the secondary mirror located near the top can dew up quickly.



School Star Party Report



We had some great kids, they were very well organized into small groups, and sent to our telescopes in shifts. Parents were there too, and everyone enjoyed the views!
Observer Editor



Messier Marathon

East West

by Lonnie Robinson



We are hanging in there with the Messier Marathon group for 2017! I believe it is a great opportunity for beginning and experienced observers to come together, improve their observing skills, make new friends, and have FUN! We are eager to help with telescope issues, getting things aligned, moving smoothly, and getting you up and running. Messier objects are some of the easiest objects to find, and they definitely help us learn the constellations and prominent stars.

A couple years ago, I spoke with Don Machholz, the author of the "Messier Marathon" book, about using go-to telescopes for this effort. His answer was refreshing; he believes it's OK to use whatever means necessary to get everyone involved. I find using a computer, and planetarium software, really helps me learn the night sky. The more I use it, the less I depend on it. Ultimately, there could be a separate trophy for those who manage using a total manual star hopping method.

As soon as the weather permits this spring, we will get started. We will meet at each available scheduled star party at HGO, and it will be a learning experience for the rest of 2017. If we have some qualified candidates, we will run a Messier Marathon near a moonless night during March of 2018. At that time we will attempt to observe as many M-objects as possible in one evening, hopefully all 110.

Give one of us a call, let us know if you are interested. Your support is greatly appreciated, we are doing it for you the membership as well as ourselves! The great photo below is an early 2015 Messier group, several of the same members voiced their interest to do it again in 2017! We will have free copies of Messier finder charts and check off lists, and plenty of refreshments. Bring warm clothes, red flashlight, mosquito repellent, a telescope with a red dot finder, and a comfortable chair. You can find us near some flashing red marker lights on the tarmac, at scheduled SVAS HGO star parties.



Tracking the Horsehead Nebula

The Power of Accumulated Light

The picture below, left, shows the basic shape of Orion on a dark night as seen by the unaided eye. Most obvious is the line of three bright stars, known as Orion's Belt in the center. The left star in the belt (circled) is Alnitak which appears to be a single star in the dark sky. However, unlike the eye which cannot store up light, CCD sensors (or film) in a camera can accumulate light over time if the shutter is left open. If we use a camera on a telescope that tracks a star as it moves across the sky, we can capture complex and beautiful nebulae, which are amorphous gas and dust clouds where new stars are often born. Thus, in the photo below, right, the telescope has magnified the area shown within the red circle on the map, and the sensor in the camera accumulated the light by tracking the star perfectly for half an hour with shutter open. Within this chaos of gas, stars and dust, we can see the Horsehead Nebula in the lower center--a tiny silhouette of darkness poking its head out horizontally in front of a brilliant orange nebula of hot gases.



The constellation of Orion showing the three-star "belt" in the center and the prominent nebula M42 in lower center. The brightest star in the sky, Sirius, is just out of the frame in the lower left. North is up.



A 30-minute photograph of the Alnitak region (see red circle in chart on the left) taken through a 3.5 inch Stellarvue refractor and Canon 60Da camera. Post-processing done in Photoshop 6. The bright star in the center is Alnitak, the Horsehead directly below. S Schulz, Dec. 2016.



Magnified Images of the Horsehead, rotated to vertical position

A black&white close-up of the Horsehead on the left shown upright with North facing left. This clearly reveals the horsehead shape of the dark nebula against the bright nebula behind. The small photo to the right is a very close infrared shot taken by the Hubble Telescope in space without the interference of the earth's atmosphere. In addition, infrared photos can pierce the dark dust of the nebula and illuminates the underlying shape and structure, as well as the density of the gasses of the star-forming regions within.





The National
Geographic Channel

MARS

I hope you all have enjoyed the Mars series on the National Geographic Channel as much as I have! Last week they portrayed finding microbial life on Mars, it was an exciting moment for me even though it was fictional.

I was reminded of John Richards, our December 16th speaker from SETI. We all had a great time enjoying his talk in the Powerhouse Science Center's planetarium. He spoke of how finding life on other worlds will make major changes in how we think of our own existence. He said we are continually watching and listening for intelligent signals from outer space, but so far there is nothing. The vast distances of the universe complicate communication. The Big Bang theory puts everything being created at the same time, therefore extraterrestrial intelligent life probably advanced on a similar timetable. Our species has been here only a short time, relating to cosmic time, and radio signals from the distant universe may not have had time to reach us yet? Are we the only intelligent life in the universe, it's possible but not probable! Are we the only life in the universe, absolutely not (my opinion)! Life could be found in many forms, and we probably need to visit other worlds to find out for sure.

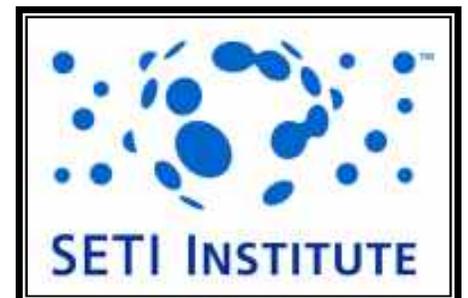
It will be a highlight of my lifetime, if we put humans on Mars before my earthly departure. I'm an old guy, and my first visualization of Mars was one of vast civilizations who built canals to transport the decreasing water supply to their cities. Now I will be satisfied just finding any life forms there.

Observer Editor

John Richards



A senior software engineer at SETI





I am doing my best to keep the SVAS ATM (Amateur Telescope Makers) effort alive and well! Mirror making and Dobsonian telescope building is my thing, and I truly enjoy helping others build or upgrade their telescopes. There is a great sense of accomplishment looking through a mirror and scope you handcrafted yourself!

There is a great mirror maker named Carl Zambuto. Why is he great; well there are many reasons. He has been a huge supporter of the ATM community, and shares almost all his secrets with us. This is highly unusual, most professional mirror makers closely guard their secret testing and manufacturing processes. He is also famous for great mirrors, although expensive, which excel in ultra smooth surfaces that produce excellent contrast and resolution. These traits are not represented in the usual mirror quality numbers we see like wave numbers, Strehl Ratios and RMS. Mirrors can have great numbers but horrible surface quality, and it is up to the optician to spend the necessary time to slowly polish and figure the surface. Zambuto has developed a process using a sequence of decreasing lap sizes, that smoothly brings down the figure to a parabola. Using the proper CEO mixture, turntable speeds, and lap hardness, completes the process. Representing the "A" in ATM, (amateur), I strive for this high surface quality as well. It is entirely possible for amateurs to make a much better mirror than professionals, by simply spending the extra time professionals can't afford to. I have seen some really bad mirrors that were made by northern California, Oregon, and Washington companies!

The ATM Connection ties the SVAS, NcA (Nevada County Astronomers), SAS (Stockton Astronomical Society) together, to share our ATM knowledge and experience. Bill Thomas from NcA, has developed a fantastic highly accurate mirror test, and has successfully finished several large mirrors and telescopes. Jeff Baldwin from SAS has countless mirrors and telescopes in his portfolio, and is very knowledgeable in telescope optics. I am the student, trying to learn as much as possible from these great mentors, so I can best represent the SVAS. Each mirror or telescope project presents it's own unique set of issues, and it really helps to have a network of experts to call on for ideas and suggestions. We strongly feel sharing our expertise benefits everyone.

2016 has been a great year for the SVAS ATM. I just helped finish up a 12.5" Dobsonian project, making the mirror and telescope from scratch. We are now refiguring two older Meade 16" mirrors, one was refigured by a Northern Calif. mirror maker. They both had sufficient figuring and surface errors we intend to correct. Next I plan on refiguring my own 16", and perhaps changing the f/ from 5 to 4.5. That will lower my eyepiece height enough that I won't need a stool at the zenith.

Mirror testing is our priority, after all we can only make mirrors as good as our test! We are currently using the Slit Image Test by Bill Thomas (NcA), and soon to come interferometry. That way we will be able to figure the entire 360 degree surface to a very high standard.

We haven't scheduled regular SVAS ATM meetings, let me know if you would like us to. SVAS members are welcome to call me anytime, and set up a personal meeting? Come join in the fun, my door is always open. Please give me a shout if I can help with your projects!

Lonnie Robinson



Dimming Stars Erupting Plasma & Beautiful Nebulae

by Marcus Woo



Boasting intricate patterns and translucent colors, planetary nebulae are among the most beautiful sights in the universe. How they got their shapes is complicated, but astronomers think they've solved part of the mystery—with giant blobs of plasma shooting through space at half a million miles per hour.

Planetary nebulae are shells of gas and dust blown off from a dying, giant star. Most nebulae aren't spherical, but can have multiple lobes extending from opposite sides—possibly generated by powerful jets erupting from the star.

Using the Hubble Space Telescope, astronomers discovered blobs of plasma that could form some of these lobes. "We're quite excited about this," says Raghvendra Sahai, an astronomer at NASA's Jet Propulsion Laboratory. "Nobody has really been able to come up with a good argument for why we have multipolar nebulae."

Sahai and his team discovered blobs launching from a red giant star 1,200 light years away, called V Hydrae. The plasma is 17,000 degrees Fahrenheit and spans 40 astronomical units—roughly the distance between the sun and Pluto. The blobs don't erupt continuously, but once every 8.5 years.

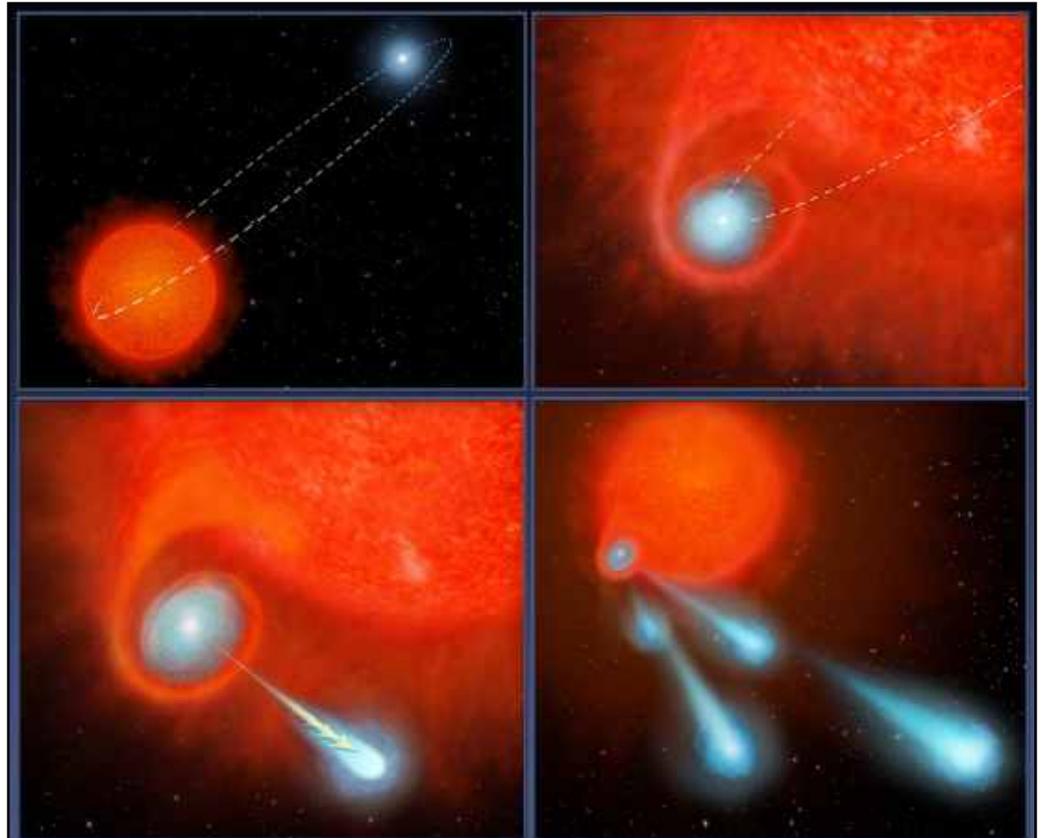
The launching pad of these blobs, the researchers propose, is a smaller, unseen star orbiting V Hydrae. The highly elliptical orbit brings the companion star through the outer layers of the red giant at closest approach. The companion's gravity pulls plasma from the red giant. The material settles into a disk as it spirals into the companion star, whose magnetic field channels the plasma out from its poles, hurling it into space. This happens once per orbit—every 8.5 years—at closest approach.

When the red giant exhausts its fuel, it will shrink and get very hot, producing ultraviolet radiation that will excite the shell of gas blown off from it in the past. This shell, with cavities carved in it by the cannon-balls that continue to be launched every 8.5 years, will thus become visible as a beautiful bipolar or multipolar planetary nebula.

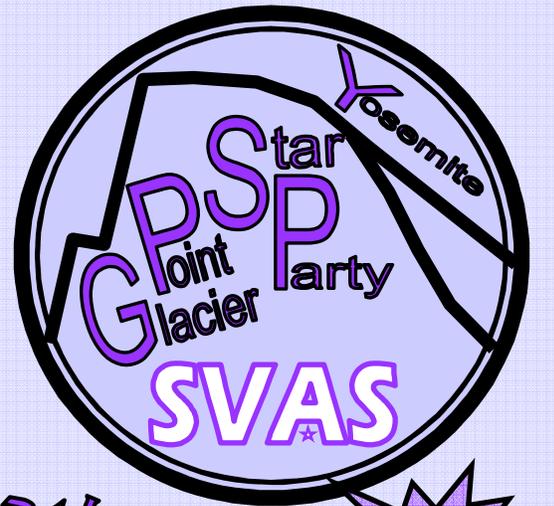
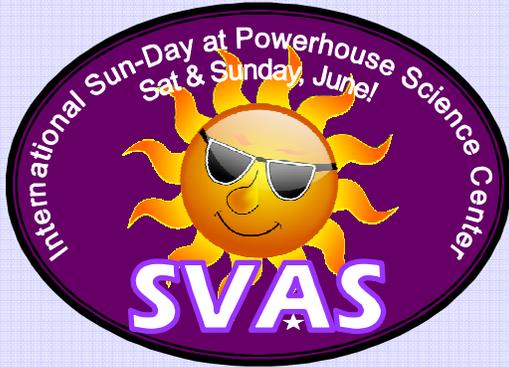
The astronomers also discovered that the companion's disk appears to wobble, flinging the cannonballs in one direction during one orbit, and a slightly different one in the next. As a result, every other orbit, the flying blobs block starlight from the red giant, which explains why V Hydrae dims every 17 years. For decades, amateur astronomers have been monitoring this variability, making V Hydrae one of the most well-studied stars.

Because the star fires plasma in the same few directions repeatedly, the blobs would create multiple lobes in the nebula—and a pretty sight for future astronomers.

This four-panel graphic illustrates how the binary-star system V Hydrae is launching balls of plasma into space. Image credit: NASA/ESA/STScI



SVAS Main Events



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Large Aperture Aluminum Telescopes with SlipStream GoTo Drive System

These all metal telescopes offer extreme durability, precision of movement, ease of use and a pleasing low profile aerospace look. They feature:

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~ Even Year Term ~

~ Odd Year Term ~

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****Please visit SVAS.Org for contact Information****

Committees

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Help for Beginners	Perry Preston Porter
HGO Maintenance Director	Stuart Schulz
Amateur Telescope Making	Lonnie Robinson / Bill Thomas
Scholarships	Chuck Real / Kevin Normington

Where We Meet

General Meetings the third Friday of each month beginning at 8:00pm.
Board Meetings begin at 6:30 on the same day. All members are welcome.
Star Parties on weekends nearest the new Moon.

Sacramento City College
Mohr Hall Room 3
3835 Freeport Boulevard
Sacramento, CA. 95822
(12th St. Exit West off I-99)
WWW.SVAS.ORG

SVAS Observer - Newsletter

To Subscribe— First send in your membership application form below, with your dues, and upon approval by the Board of Directors the Observer newsletter (published bi-monthly beginning January) will be sent to your supplied email address in .pdf format. Second, request to join the SVAS Yahoo Group at <http://groups.yahoo.com/group/svas-members>. This group will keep you informed with the day to day current events and discussions.

Articles— Manuscripts and letters are welcome in MS Word, MS Publisher, or plain text format, and emailed to the SVAS Editor. Submission deadline is the 15th of the newsletter release month.

Advertising— Commercial, non-personal advertising, business card, and full page are available. Classified advertising is free to SVAS members.

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SVAS Membership Application

Date ___/___/___ Membership (check one) New: ___ or Renew: ___

Annual Renewal Month is June (Expires July 1st)

(Four months minimum membership is requested, please include the following year if necessary)

General Member (Family-Individual)	Prorate @ \$3 per month	\$36 per yr _____
Observatory Member (Please read Observatory Membership)	Prorate @ \$7 per month	\$84 per yr _____ (General Membership included)
Student Member (ID required)	Prorate @ \$2 per month	\$24 per yr _____

Additional Tax Deductible Contribution \$ _____

Total Enclosed Amount \$ _____

Print Name _____

Address _____

City _____ Zip _____

Phone _____ (E-mail required for newsletter mailing)

E-mail _____

Signature _____

Observatory Membership

Observatory Membership offers the benefits of a regular membership plus the private use of the Henry Grieb Observatory (HGO) at Blue Canyon. **To apply, you must have been a general member for six months or longer, be certified and approved by the Observatory Director, and then approved by the SVAS Board of Directors.**



Please allow 30 Days Or More for Application Approval

By signing this application, I acknowledge I have accessed the SVAS website SVAS.org, read and understand the SVAS bylaws and the rules governing the USFS Special Use Permit. In doing so, I agree to abide by the respective "terms and conditions" of each as they relate to using the SVAS property and facilities. I further understand and acknowledge that failure to abide by these "terms and conditions" can result in revocation of use privileges and/or SVAS membership.

Detach, SIGN , & mail with payment.	To: SVAS Membership Application PO Box 15274 Sacramento, California. 95851-0274
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