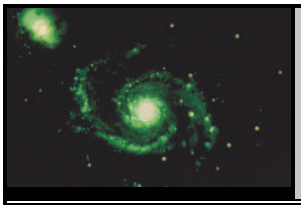


The Prairie Astronomer

The Official Newsletter Of The Prairie Astronomy Club, Inc.

July 2004 **Volume 45 Issue #7**

Internet Addresses

PAC Web Page:	www.prairieastronomyclub.org
PAC E-Mail:	info@prairieastronomyclub.org
NSP Web Page:	www.nebraskastarparty.org
NSP E-Mail:	nsp@4w.com
OAS Web Page:	www.OmahaAstro.com
Hyde Observatory	www.hydeobservatory.info
NEB-STAR	www.neb-star.org

CLUB EVENTS

PAC Meeting 7:30pm
Tuesday, July 27, 2004

Club Star Party
Friday, August 13, 2004

Mahoney Star Party
Friday, August 13, 2004

PAC Meeting 7:30pm
Tuesday, August 31, 2004

Club Star Party
Friday, September 10, 2004

PROGRAM

July program: To be announced

PAC-LIST: You may subscribe to the PAC listserv by sending an e-mail message to: **imailsrv@prairieastronomyclub.org**. In the body of the message, write "Subscribe PAC-List your-email-address@your-domain.com"

For example:
Subscribe pac-list stargazer@myISP.com

To post messages to the list, send to the address **pac-list@prairieastronomyclub.org**

READ THIS NEWSLETTER ONLINE

Those who wish to help with publishing and postage costs by receiving only the on-line version of the newsletter should contact Liz Bergstrom at 464-2038. Mark Dahmke or Liz can give you the logon account and password for access. You may receive both the mailed version and the on-line version if you wish. A printable PDF version of this newsletter is also available through the website.

CONTENTS:

The Prairie Astronomer is published monthly by the Prairie Astronomy Club, Inc. Membership expiration date is listed on the mailing label. Membership dues are: **Regular $20/yr, Family $22/yr**. Address all new memberships and renewals to: **The Prairie Astronomy Club, Inc., PO Box 5585, Lincoln, NE 68505-0585**. For other club information, please contact one of the club officers listed on the last page of this newsletter. Newsletter comments and articles should be submitted to: **Mark Dahmke, PO Box 80266, Lincoln, NE 68501 or mdahmke@4w.com,** no less than ten days prior to the club meeting. The Prairie Astronomy Club meets the last Tuesday of each month at Hyde Memorial Observatory in Lincoln, NE.

Secretary's Report

Minutes for the Meeting of June 29, 2004

President Dave Knisely called the meeting to order, welcome Rob and Marjorie Bailey new visitors.

The last PAC Star Party was clouded out.

Dave Churilla and Bob Kacvinsky attended the last Mahoney Star Party, it was a good night with comet NEAT and between 100 and 150 public. The next Mahoney Star Party will be July 9

Martin Gaskell reported on an occultation passing directly overhead from Lincoln, invited members to help him time the event this evening.

The next PAC star party will be July 16 at Olive Creek.

The 11th annual Nebraska Star Party will be July 17 -23 at Merritt Reservoir, registration is now $25.00

Outreach events: Outreach coordinator Jeff Campbell reported on two recent events and two cancelled events. The next events are as follows:

July 6,7, and 8
July 12, 13, 14 and 15
July 26, 27, 28, and 29
Norris School has also asked for events in July and August

The Washiska Audubon Society has also asked for our participation on two events this year on August 14 and September 11.

If you'd like to help out at any of these events, contact Jeff Campbell.

The Astronomical League issues awards for observing accomplishments, such as the famous Messier Certificates. If you would like to participate in one of these programs, contact observing chair Jeff King to get started. Speaking of AL awards...

Congratulations Dave Brokofsky on two awards:

The AL Lunar Pin and the Honorary Messier Award for observing all 110 Messier objects!

Program Chair, Jack Dunn has the next couple of programs planned, but is always looking for new material. If you'd like to speak about something you've done in astronomy lately, contact Jack.

Hyde news: Hyde volunteer coordinator Dave Churilla is always looking for new volunteers, if you'd like to help out at Hyde, contact Dave and he'll get you started.

Current plans for Hyde include the lunar eclipse for Oct. 27.

Treasurer's report: We had a few AL proposals to vote upon and most importantly, Liz reported on a rather significant increase in the per member dues the club pays. Those dues rise by $1.50 per member to $5.00.

Currently the executive committee is investigating options to deal with this. In the report of this change, Liz noted that at last count, we had about 55 members with current dues.

Larry Hancock reports that the annual PAC/OAS banquet will be held at Mahoney State Park on Oct. 9, 2004.

Jeff Campbell motioned to adjourn, and Dave Brokofsky seconded.

Adjourn to Jack's program.

Respectfully submitted by,

Lee Taylor

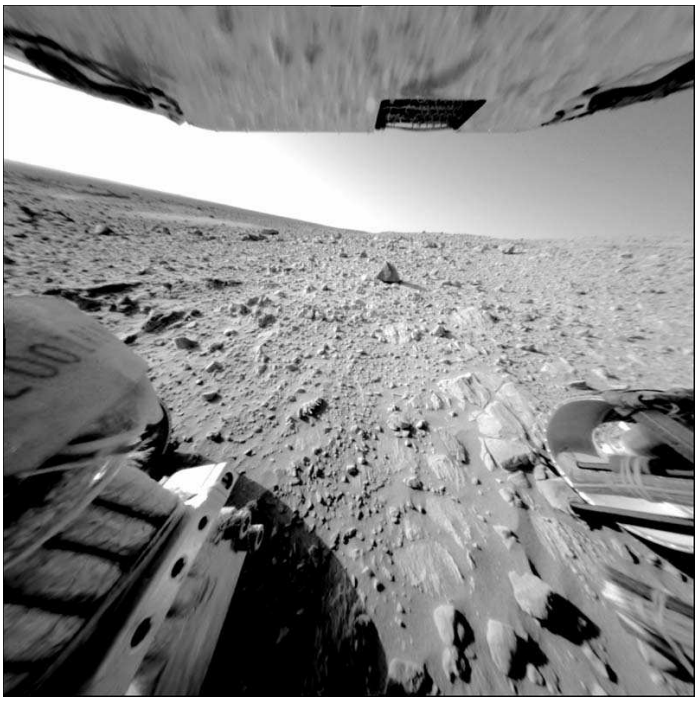
Hyde Observatory Volunteer Schedule

Date	Team Leader	Operators		Supervisor	Events
July					
7/17/04	Bill Wells	Erica Block	Josh Machecek	Martin Gaskell	
7/24/04	Dave Churilla	Joey Churilla	Steve Lloyd	Martin Gaskell	
7/31/04	Jeff King	Dave Brokofsky	Bob Kacvinsky	Dave Churilla	
August					
8/7/04	Bill Wells	Erica Block	Josh Machecek	Dave Hamilton	
8/14/04	Dan Delzell	Jared Delzell	Bob Kacvinsky	Martin Gaskell	
8/21/04	Bob Leavitt	Dave Brokofsky	Joey Churilla	Dave Churilla	
8/28/04	Jeff King	AJ Benker	Steve Lloyd		
September					
9/4/04	Bill Wells	Erica Block	Jeff Campbell		
9/11/04	Dan Delzell	Jared Delzell	Steve Lloyd	Dave Churilla	
9/18/04	Bob Leavitt	Dave Brokofsky	Cece Hedrick		
9/25/04	Jeff King	Josh Machacek	Bob Kacvinsky		
Summer Hours: April through September (Sundown to 11:00 PM)					
Winter Hours: October through March (7:00 PM to 10:00 PM)					

What on earth was Martin Gaskell doing here?! In fact, WHERE on the earth is this? Find out at the August PAC meeting! Martin will be giving a talk on his recent visit to half a dozen observatories in Uzbekistan and Kazakhstan. This will be a wide-ranging report on astronomy in a little-known region of the world that has some of our planet's best observing conditions. Topics will range from a visit to the 15th century observatory of the great astronomer Ulug Beg to a modern top-secret military observatory, and from hot deserts, to coming off the road in a snowstorm in high mountains. Plus, as an added bonus, photos of the historic transit of Venus as seen from Moscow. Tuesday August 31.

The program starts at approximately 8:00 after the usual PAC business meeting. Bring your friends. This will be a program highly suitable for children.

NASA's Mars Rovers Roll Into Martian Winter



As winter approaches on Mars, NASA's Opportunity rover continues to inch deeper into the stadium-sized crater dubbed "Endurance." On the other side of the planet, the Spirit rover found an intriguing patch of rock outcrop while preparing to climb up the "Columbia Hills" backward. This unusual approach to driving is part of a creative plan to accommodate Spirit's aging front wheel.

Spirit, with an odometer reading of over 3.5 kilometers (2.2 miles), has already traveled six times its designed capacity. Its right front wheel has been experiencing increased internal resistance, and recent efforts to mitigate the problem by redistributing the wheel's lubricant through rest and heating have been only partially successful.

To cope with the condition, rover planners have devised a roundabout strategy. They will drive the rover backward on five wheels, rotating the sixth wheel only sparingly to ensure its availability for demanding terrain. "Driving may take us a little bit longer because it is like dragging an anchor," said Joe Melko, a rover engineer at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "However, this approach will allow us to continue doing science much longer than we ever thought possible."

On Thursday, July 15, Spirit successfully drove 8 meters (26 feet) north along the base of the Columbia Hills backward, dragging its faulty wheel. The wheel was activated about 10 percent of the time to surmount obstacles and to pull the rover out of trenches dug by the immobile wheel.

Along the way, Spirit drove over what scientists had been hoping to find in the hills -- a slab of rock outcrop that may represent some of the oldest rocks observed in the mission so far. Spirit will continue to drive north, where it likely will encounter more outcrop. Ultimately, the rover will drive east and hike up the hills backward using all six wheels.

"A few months ago, we weren't sure if we'd make it to the hills, and now here we are preparing to drive up into them," said Dr. Matt Golombek, a rover science-team member from JPL. "It's very exciting."

For the past month, the Spirit rover has been parked near several hematite-containing rocks, including "Pot of Gold," conducting science studies and undergoing a long-distance "tuneup" for its right front wheel.

Driving with the wheel disabled means that corrections might have to be made to the rover's steering if it veers off its planned path. This limits Spirit's accuracy, but rover planners working at JPL's rover test facility have come up with some creative commands that allow the rover to auto-correct itself to a limited degree.

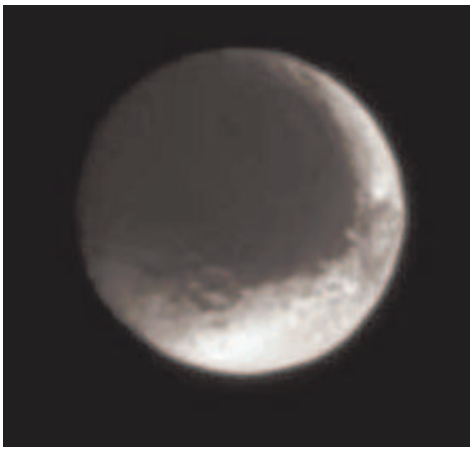
As Spirit prepares to climb upward, Opportunity is rolling downward. Probing increasingly deep layers of bedrock lining the walls of Endurance Crater at Meridiani Planum, the rover has observed a puzzling increase in the amount of chlorine. Data from Opportunity's alpha particle X-ray spectrometer show that chlorine is the only element that dramatically rises with deepening layers, leaving scientists to wonder how it got there. "We do not know yet which element is bound to the chlorine," said Dr. Jutta Zipfel, a rover science-team member from the Max Planck Institute for Chemistry, Mainz, Germany.

Opportunity will roll down even farther into the crater in the next few days to see if this trend continues. It also will investigate a row of sharp, teeth-like features dubbed "Razorback," which may have formed when fluid flowed through cracks, depositing hard minerals. Scientists hope the new data will help put together the pieces of Meridiani's mysterious and watery past. "Razorback may tell us more about the history of water at Endurance Crater," said Dr. Jack Farmer, a rover science-team member from Arizona State University, Tempe.

Rover planners are also preparing for the coming Martian winter, which peaks in mid-September. Dwindling daily sunshine means the rovers will have less solar power and take longer to recharge. Periods of rest and "deep sleep" will allow the rovers to keep working through the winter at lower activity levels. Orienting the rovers' solar panels toward the north will also elevate power supplies. "The rovers might work a little bit more every day, or a little bit more every other day. We will see how things go and remain flexible," said Jim Erickson, project manager for the Mars Exploration Rover mission at JPL.

Cassini Exposes Saturn's Two-Face Moon

The moon with the split personality, Iapetus, presents a perplexing appearance in the latest images snapped by the Cassini spacecraft.



One hemisphere of the moon is very dark, while the other is very bright. Scientists do not yet know the origin of the dark material or whether or not it is representative of the interior of Iapetus.

Iapetus (pronounced eye-APP-eh-tuss) is one of Saturn's 31 known moons. Its diameter is about one third that of our own moon at 1,436 kilometers (892 miles). This image was taken in visible light with the Cassini spacecraft narrow angle camera on July 3, 2004, from a distance of 3 million kilometers (1.8 million miles) from Iapetus. The brightness variations in this image are not due to shadowing, they are real.

During Cassini's four-year tour, the spacecraft will continue to image Iapetus and conduct two close encounters. One of those encounters, several years from now, will be at a mere 1,000 kilometers (622 miles).

Iapetus was discovered by the Italian-French astronomer Jean Dominique Cassini in 1672. He correctly deduced that the trailing hemisphere is composed of highly reflective material, while the leading hemisphere is strikingly darker.

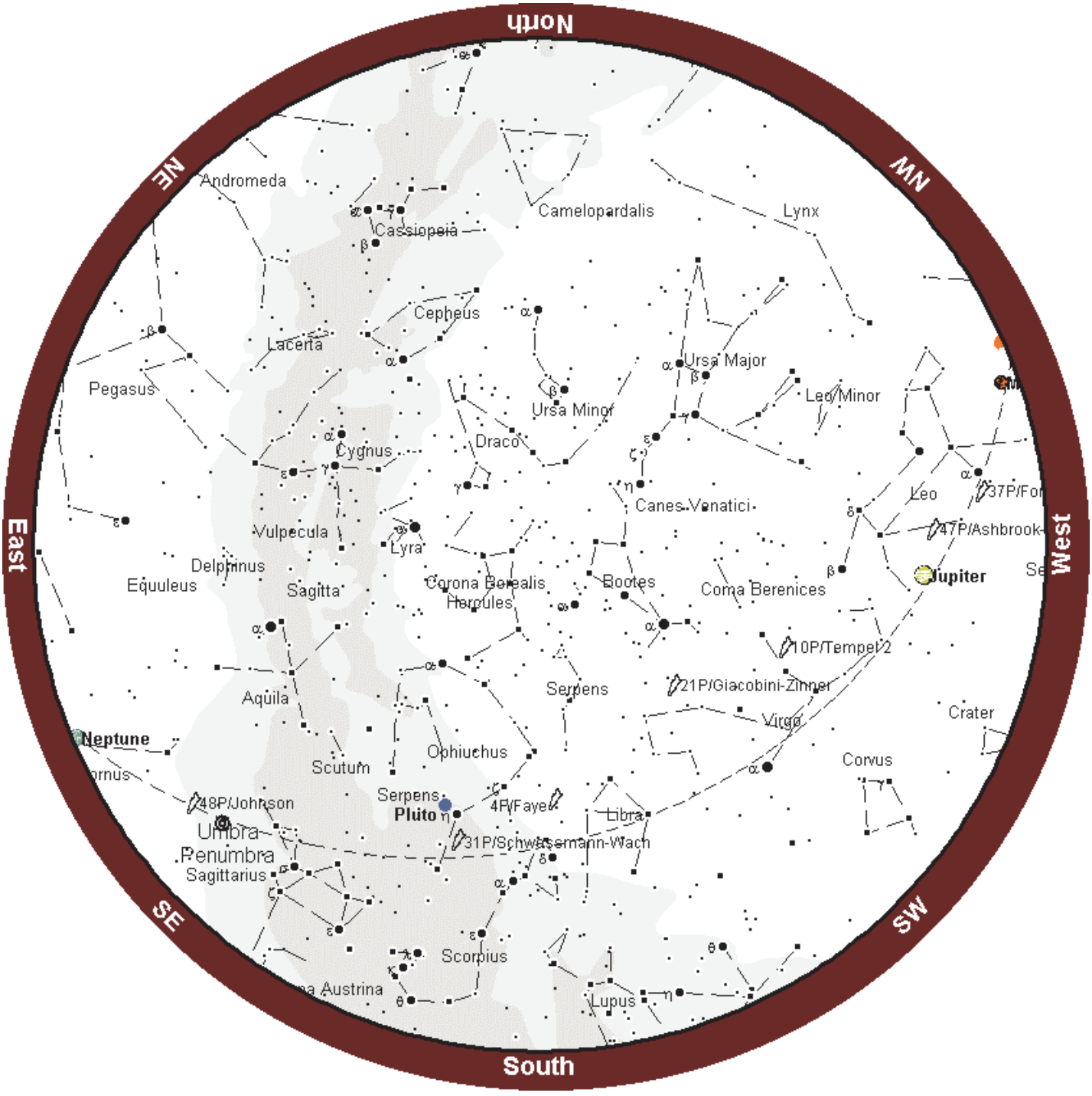
This sets Iapetus apart from Saturn's other moons and Jupiter's moons, which tend to be brighter on their leading hemispheres. Voyager images show that the bright side of Iapetus, which reflects nearly 50 percent of the light it receives, is fairly typical of a heavily cratered icy satellite. The leading side consists of much darker, redder material that has a reflectivity of only about 3 to 4 percent.

One scenario for the outside deposit of material has dark particles being ejected from Saturn's little moon Phoebe and drifting inward to coat Iapetus. One observation lending credence to an internal origin is the concentration of material on crater floors, which is suggestive of something filling in the craters.

Iapetus is odd in other respects. It is in a moderately inclined orbit, one that takes it far above and below the plane in which the rings and most of the moons orbit. It is less dense than many of the other satellites, which suggests a higher fraction of ice or possibly methane or ammonia in its interior.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the Cassini-Huygens mission for NASA's Office of Space Science, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging team is based at the Space Science Institute, Boulder, Colo.

July Star Chart



Events Calendar

August 2004

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
Sun: 18:23 - 08:42	Sun: 18:24 - 08:41	Sun: 18:25 - 08:39	Sun: 18:26 - 08:38	Sun: 18:27 - 08:37 Neptune at opposition	Sun: 18:28 - 08:36	Sun: 18:29 - 08:35 Hyde Observatory open to the public
8	9	10	11	12	13	14
Sun: 18:30 - 08:33	Sun: 18:31 - 08:32	Sun: 18:32 - 08:31	Sun: 18:33 - 08:30	Sun: 18:34 - 08:28	Sun: 18:35 - 08:27 Mahoney Star Party; Club Star Party	Sun: 18:36 - 08:26 Hyde Observatory open to the public
15	16	17	18	19	20	21
Sun: 18:37 - 08:24	Sun: 18:38 - 08:23	Sun: 18:39 - 08:21 Venus greatest elongation	Sun: 18:40 - 08:20	Sun: 18:41 - 08:18	Sun: 18:42 - 08:17	Sun: 18:43 - 08:15 Hyde Observatory open to the public
22	23	24	25	26	27	28
Sun: 18:44 - 08:14	Sun: 18:45 - 08:12	Sun: 18:46 - 08:11	Sun: 18:47 - 08:09	Sun: 18:48 - 08:08	Sun: 18:49 - 08:06 Uranus at opposition	Sun: 18:50 - 08:05 Hyde Observatory open to the public
29	30	31				
Sun: 18:51 - 08:03	Sun: 18:52 - 08:02	Sun: 18:53 - 08:00 PAC Meeting 7:30pm; Saurn 2 deg from Venus				

Moon phase images by: António Cidadão

Directions to Olive Creek Observing Site

Shorter:

Take Hwy 77 South out of Lincoln until you get to the Crete corner (junction Hwy 77 and Hwy 33). Go West on Hwy 33 (toward Crete) until you get to SW 72 St. Turn Left (South) on SW 72 St. and go about 5 miles until you get to SW Panama Rd. Turn right (West) until you get to SW 100 St. (SW 100 St does NOT go through to Hwy 33). Turn Left (South) on SW 100 St and go about 1 to 1 1/2 miles until you see the sign and entrance to Olive Creek (this is the West side of the Park). It's on your left (East) side of the road. More Black Top:

Take Hwy 77 South out of Lincoln until you get to the Crete corner (junction Hwy 77 and Hwy 33). Go West on Hwy 33 (toward Crete) until you get to about SW 114 St. - the first intersection after SW 100 St. (forgot to look at this street sign, sorry - you'll see a sign for Olive Creek though at this road- but don't count on anymore signs after that, I didn't see any). Turn Left (South) on SW 114 St and go about 5 miles or so until you get to SW Panama Rd (you'll see a church and small school on your right). Turn Left (East) and go about a mile to SW 100 St, then turn Right (South) and go 1 to 1 1/2 miles until you see the Olive Creek entrance and sign (on your left hand side of the road).

OFFICERS
OF THE PRAIRIE ASTRONOMY CLUB

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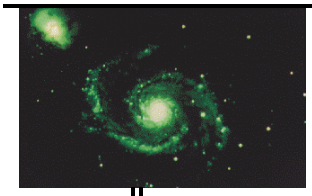
Club Observing Chair	*Jeff King* 483-0599
Hyde Volunteer Coordinator:	*Dave Churilla* *(402) 467-1514* *weber2@inebraska.com*



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Next PAC Meeting
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7:30 PM
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