



**FARPOINT OBSERVATORY**

# THE NEKAAL OBSERVER

August 2003

VOLUME 11, ISSUE 8

PO BOX 951, TOPEKA KS 66601

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The official newsletter of Farpoint Observatory and the Northeast Kansas Amateur Astronomers' League

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Your articles and other contributions to this newsletter are welcome and encouraged. Please get them to the editor at least 6 days prior to the next scheduled meeting.

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## FROM THE PREZ: By Jerry Majers

Most people have at some time or other seen a "shooting star" as it dashes through the Earth's atmosphere. The other night at the open house a guest ask the difference between a meteor and a meteorite. It was explained that an incoming particle is called a meteoroid, which gives rise to a meteor (that is, shooting star or falling star). If the falling particle is fortunate enough to survive the atmospheric passage to reach the Earth's surface, then it would become a meteorite. So, it would be incorrect for an observer to claim that he or she had seen " a meteorite streaking across the sky last night".

Most of the meteoroids entering our atmosphere are low-density dust fragments that originated in a comet. This is the case with Perseids meteor shower, where it was thought to be cometary meteor stream of Comet Swift-Tuttle. Interestingly, Brian Marsden of the Minor Planet Center has proposed that the Comet is identical with

Comet Kegler of 1737. This was confirmed in 1992. This shower ranges between July 25 and August 20, with a peak around August 12. Unfortunately, this year at its peak was also the peak of full moon. No' umbrella', however, was needed to protect one from this year's shower. While I was taking the dogs out for their early morning activities, I viewed at least five bright meteors from the radiant (where meteors appear to emanate from).

Even though the Perseids were not as certain, hopefully observers have been able to discover Mars. Even with the naked eye, Mars is easily visible throughout the night sky. This is a great opportunity for many of us to take advantage of these late summer skies to gaze at Mars through a larger telescope at either Farpoint or Crane Observatory. To see its polar cap and green surface features at this time is possibly the best that one will ever see of Mars.

## THE EYEPIECES THAT WALK

Recent cleaning and reorg at FPO has revealed a number of objects that have sprouted legs and run away from home. Some got homesick and came back, some are still lost out there. To try to keep track of these wanderers, please make note of any object that you find in a strange place, or that you

take home for a visit, or loan to someone in need. Just note the object's name and location on one of the FPO maintenance forms by the computer room. And could you check around your house to see if you have any stowaways around? They're may be getting really homesick.

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## SKY HIGHLIGHTS FOR SEPTEMBER: by Janelle Burgardt

September	First quarter moon
September 10	Full moon The Harvest Moon is defined as the full moon closest to the autumnal equinox. This year, that's the full moon of September. In years when the Harvest Moon occurs in October, September's full moon is called the Hunter's Moon, Corn Moon or Barley Moon.
September 18	Last quarter moon
September 22	Autumnal equinox at 5:47 a.m. CDT
September 25	New Moon
September 27	Mercury at greatest western elongation.

- \* Mars is still dominating the night sky. From its peak brightness of -2.9 at opposition last month, Mars will dim to a still-impressive magnitude -2.1 by the end of the month.
  - \* Uranus closes to within 4 degrees of Mars northwest of Mars.
  - \* Neptune and Pluto are still well-placed in the south, in Capricornus and Ophiuchus, respectively
- Jupiter re-emerges from behind the sun in the morning sky, in Leo.

## FRIENDS DON'T LET FRIENDS BUY DEPARTMENT STORE TELESCOPES:

by Russell Valentine

On the way back from a night out in Kansas City with a group of friends the topic of Mars came up. One of them had a telescope but didn't know how to use it very well. The idea was to use this telescope to look at Mars and teach her how to use this telescope. We went over to her house and got the telescope out. Immediately I cringed.

She had a 60mm department refractor telescope with several half inch eye pieces and a 3x barlow with a maximum possible magnification of 550x. At best a 60mm telescope could see at 120x magnification. I

couldn't tell everyone to forget it and put the telescope away, so I tried to do my best. The telescope had knobs that you loosen to move the telescope then tighten it in place. It was very difficult to even get it pointed at the Moon with this type of setup. It moved every time I let go after tightening the knobs. After a long time, with people impatiently waiting on me, a so called amateur astronomer, I got it on Mars. When I got it on Mars there where four images of Mars. On any type of bright object like the Moon or Mars, the telescope made terrible reflections making four images of the ob-

ject. What made it even worse was the irremovable light shield that was at the end of the telescope was made of shiny black plastic.

I gave up, but no one was satisfied and wanted to try for themselves. One person thought the unfocused Moon light was Moon craters. Odds are these people will forever be disappointed with astronomy. These department telescopes give amateur astronomy a bad name. Next time I come across a telescope like this I won't even try to use it. A paper towel tube is better to look through than these telescopes.

## Countywide Star Party at Heartland Park Topeka October 21, 2003 7-9 PM (Rain date October 28)

**IT'S OFFICIAL!** The Topeka Shawnee County Public Library is sponsoring a Stargazing Party at Heartland Park as part of the inaugural events of the On the Same Page Program. The first book chosen is Rocket Boys, by Homer Hickam. The book was the basis of the movie *October Sky*. More information is available on the internet at [www.samepagetopeka.org](http://www.samepagetopeka.org).

***This is where NEKAAL comes in.*** As part of the program, NEKAAL has been asked to host a stargazing party at heartland Park. The security lights will be turned off, and traffic will be directed by Heartland Park staff. TSCPL staff will be available to help as well.

***What do we do?*** Specifically, we need to provide 15 telescopes (or more) and people to run them. We'll need to develop a list of objects to observe and a plan to show them. For guided scopes, a working battery; electrical hookups won't be available.

***But I don't have a telescope.*** No problem. There's still plenty for you to do to participate. Pointing out sky objects, answering questions, using binoculars, even just explaining why astronomy is so interesting, to name a few.

***Please volunteer your time and your talent. This is an extraordinary opportunity to promote astronomy, and NEKAAL.*** Contact any board member as soon as possible to volunteer.

**BOARD MEETING SUMMARY:** Janelle Burgardt

August 17, 2003

Treasurer's report

Walt hasn't gotten a response to his inquiries about insurance coverage. He's frustrated, but will keep trying.

Farpoint Maintenance

--Jerry treated the walkway.

--The shed door still doesn't want to close properly; Bill will look into reinforcing the current closure or adding a second one.

--Norton anti-virus software for the server has been received. Now that school is in session, Graham can restart work on getting the wireless connection set up. Security software will be installed as soon as Internet access is regained.

Old Business

--Mission Valley construction: completion date scheduled for August 2004. Graham will re-emphasize that even the concession stand lights have to be available for us to turn off.

--Residential development on Mission Valley Road—Despite several attempts to contact the landowner, no response has been received. The only option we have appears to be the county lighting ordinance. The county appears to be more concerned with wind turbines at the moment.

--The video camera has been unearthed.

--A suggestion was made to install hooks for extension cords, labeled with the appropriate lengths. Bill gave a lively demonstration on how to store extension cords so they can be used without tangling.

New Business

--Marshall Miller has donated a refurbished computer to replace one of the antiques currently in use at FPO.

--The new webpage is now in service. There was discussion on password access and user groups. Janelle will check into options.

--The Observer is ready to be submitted via email. An article on the new format address verification will be in the next newsletter.

--The Topeka and Shawnee County Library has announced and published the date and times of the Heartland Party stargazing session on October 21. NEKAAL is the functional entity.

General Meeting speaker list—A suggestion was made to schedule a telescope demonstration session for the November meeting, possibly in conjunction with an additional short program.

**UPCOMING NEKAAL EVENTS**

Fri. & Sat., Sept. 5-6 Public Open House at FPO

Start time 9:00 PM. Mars will still be in prime viewing position. Public attendance anticipated to remain strong.

Sat., September 20 — Aerospace and Aviation Show at Manhattan Town Center.

NEKAAL will host a booth again this year. Anyone interested in manning the booth should contact Janelle or Graham.

Thur., October 2 – Hands-On Astronomy for Kids

Indoor activity for second through fifth grade. Volunteers with scopes still needed. Contact Janelle.

Fri. & Sat., Oct. 3-4 Public Open House at FPO

Start time 8:00 PM. Last scheduled open house until late November.

Tues., October 21 – Stargazing Party at Heartland Park

NEKAAL co-hosting with Topeka and Shawnee County Library. See article on page 2.

**Conventions and Star Parties** by Graham Bell

A number of conventions, conferences, star parties and other significant events will be held in the next few months. Those which might be of interest to members are listed here:

**FARPOINT CLUB OBSERVING****Aug 22-23, 2003**

Lets get out and take advantage of this opportunity.

**FARPOINT OPEN HOUSE****September 5-6, October 3-4, 2003**

This is your chance to show the public what we do, and help promote astronomy in the area. We will concentrate on Mars for both of these weekends

**Great Plains Star Party****Sept 23-28, 2003, Scopeville, KS**

The 13th annual GPSP. Visit the web site at <http://www.astronomyvillage.org>. For information from registrar, contact Susan Carroll at [portia@sciastronet](mailto:portia@sciastronet)

**Enchanted Skies Star Party****September 25-28, 2003, Socorro, NM**

This is a well known Southwest Star Party, which holds special interest for NEKAAL. Our own Corrie Lambrecht

has helped with this the past two years, and will do so again this year. Information can be found at <http://www.socorro-nm.com/starparty>. Corrie can be emailed at [catherine\\_lambrech@writeme.com](mailto:catherine_lambrech@writeme.com)

**The Topeka Star Party****October 21, 2003 (rain date Oct. 28).**

Sponsored jointly by the Topeka-Shawnee Co. Library and NEKAAL. See page 2 for more information. We hope to have more details available next month.

## FACILITIES REPORT, AUGUST 2003 by Bill Leifer

- Jerry Majers sprayed the deck/walkway with wood seal. Thank you Jerry.
- July supplies and maintenance were performed. No major problems to report.
- What must have been thousands of angry wasps were driven from the shed or killed in a guerilla-style campaign. There were no casualties on our side, but it was close.
- Still no internet connection. This will not be established until the wireless connection to MVHS T-1 line is set up.
- The shed door was found open by Russ. This happens when uneven expansion of the frame happens with certain weather changes. Bill agreed to install a dead bolt to hold the door closed.
- The internet security software license arrived and will be kept on file in the filing cabinet in the computer room.
- Electrical meter sharing will not begin until the meter is installed at the high school in mid 2004. A new contract listing the name of the new president of USD 330 was signed by Jerry Majers.
- The lights in the telescope room were found non-functional until Janelle let us know about the existence of a reset button on the wall receptacle. They could use her in Cleveland....or Baghdad for that matter.
- The steel wheels which Gary Hug fashioned for the observatory roof mechanism have not been installed. This will require

### New Members

Jim Koch  
810 S.E. Ridgeview  
Topeka, KS 66609  
785 267-9868  
[james.koch@sbcglobal.net](mailto:james.koch@sbcglobal.net)

Dobbs family  
Kevin and Rachel  
Willow Garcia (10), Finnian Dobbs (4) and Persephone Dobbs (<1)  
829 Ohio  
Lawrence, KS 66044  
Home: 785-841-7495  
Work: 785-864-1512

Jim has already set up his scope and showed off Mars to visitors at Farpoint. Talk about hitting the ground running!

We like to get them interested in astronomy at an early age. Welcome!

## ABBREVIATED FINANCIAL STATEMENT— A/O AUGUST 17, 2003

Nekaal-Bank,Cash,CC Accounts 8/1703  
Cash Accounts  
As of 8/1703

NEKAAL Cash Flow Report  
1/1/03 Through 8/17/03

Acct	Balance
<b>ASSETS</b>	
Cash and Bank Accounts	
Money Market	1,367.72
Money Market 2-Telescope Fund	3,298.00
Nekaal-checking	463.02
<b>TOTAL Cash and Bank Accounts</b>	<b>5,128.74</b>
<b>TOTAL ASSETS</b>	<b>5,128.74</b>
<b>LIABILITIES</b>	<b>0.00</b>
<b>OVERALL TOTAL</b>	<b>5,128.74</b>

### Category Description

#### INFLOWS

Contributions	1,217.00
Contributions-in-kind	1482.33
Dues 2003	705.00
Interest Income	4.33
Net Sales:	-9.72
<b>TOTAL INFLOWS</b>	<b>1,844.22</b>

#### OUTFLOWS

Annual Report	40.00
Computer: Internet	120.00
Computer Software	1522.33
Total Computer	1642.33
Dues	125.50
FPO Utilities	310.08
Maintenance Bldg. Construction	322.81
Repair & Maint	827.89
Subscriptions:	
Magazine Subs	59.90
Subs.payments recd	-59.90
TOTAL Subscriptions	0.00
Telephone-Telephone Expense	246.44
<b>TOTAL OUTFLOWS</b>	<b>3515.05</b>

**OVERALL TOTAL -116.11**

### NEW MAILING ADDRESS

Dr. Edwin Woerner  
c/o American University in Dubai  
P.O. Box 28282  
Dubai  
United Arab Emirates

## CAREFUL PLANNING AND QUICK IMPROVISATION SUCCEED IN SPACE BIZ

by Dr. Tony Phillips

On December 18, 2001, ground controllers at JPL commanded NASA's Deep Space 1 (DS1) spacecraft to go to sleep. "It was a bittersweet moment," recalls Marc Rayman, the DS1 project manager. Everyone was exhausted, including Deep Space 1, which for three years had taken Rayman and his team on the ride of their lives.

DS1 blasted off atop a Delta rocket in 1998. Most spacecraft are built from tried-and-true technology-otherwise mission controllers won't let them off the ground. But Deep Space 1 was different. Its mission was to test 12 advanced technologies. Among them: an experimental ion engine, a solar array that focused sunlight for extra power, and an autopilot with artificial intelligence. "There was a good chance DS1 wouldn't work at all; there were so many untried systems," recalls Rayman.

Nevertheless, all 12 technologies worked; the mission was a big success.

Indeed, DS1 worked so well that in 1999 NASA approved an extended mission, which Rayman and colleagues had dreamed up long before DS1 left Earth—a visit to a comet. "We were thrilled," says Rayman.

And that's when disaster struck. DS1's orientation system failed. The spacecraft couldn't navigate!

What do you do when a spacecraft breaks and it is 200 million miles

away? "Improvise," says Rayman.

Ironically, the device that broke, the 'Star Tracker,' was old technology. The DS1 team decided to use one of the 12 experimental devices—a miniature camera called MICAS—as a substitute. With Comet Borrelly receding fast, they reprogrammed the spacecraft and taught it to use MICAS for navigation, finishing barely in time to catch the comet. "It was a very close shave."

In September 2001, DS1 swooped past the furiously evaporating nucleus of Comet Borrelly. "We thought the spacecraft might be pulverized," Rayman recalls, but once again DS1 defied the odds. It captured the best-ever view of a comet's heart and emerged intact.

By that time, DS1 had been operating three times longer than planned, and it had nearly exhausted its supply of thruster-gas used to keep solar arrays pointed toward the Sun. Controllers had no choice but to deactivate the spacecraft, which remains in orbit between Earth and Mars.

Rayman has moved on to a new project—Dawn, an ion-propelled spacecraft that will visit two enormous asteroids, Ceres and Vesta, in 2010 and 2014. "Dawn is based on technologies that DS1 pioneered," he says.

Even asleep, DS1 continues to amaze. Find out more about DS1 at <http://nmp.jpl.nasa.gov/ds1>. For kids, go to [http://](http://spaceplace.nasa.gov/ds1dots.htm)

[spaceplace.nasa.gov/ds1dots.htm](http://spaceplace.nasa.gov/ds1dots.htm) to do an interactive dot-to-dot drawing of Deep



Space 1.

*This was the final image of the nucleus of comet Borrelly, taken just 160 seconds before Deep Space 1's closest approach to it. This image shows the 8-km (5-mile) long nucleus from about 3417 kilometers (over 2,000 miles) away.*

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration*

## -- IMPORTANT-- DISTRIBUTION OF THE OBSERVER

by Graham Bell

For some time now Janelle and I have been donating the cost of printing and mailing the Observer. We normally print 50 copies, and mail about 30. The cost per copy of the mailed ones is about \$1.10 each, \$0.73 each for those not mailed.

This comes to about \$600 a year. We are going to reduce these costs considerably! I, for one, would rather be donating this money to Farpoint for utilities, upkeep or equipment.

Beginning next month, we will be distributing the Observers via email to those who have email addresses. Snail mail will still be used for those who do not have email. We are running a test case this month. All board members got their Observers via email this time. At some time in the future, but without rushing the process,

we plan to put these newsletters online so you can download them at your leisure. We will not do this until we are sure we are able to do it properly, so it may be a few months before we switch from email to online storage.

The Observer will be about 500k in size in the PDF format, so those of you with slow internet connections will be seeing a little delay in receiving this email. If your ISP will not allow email of this size let us know so we can continue snail mail until we get the Observer online. Note that most email servers that have restrictions have a limit much larger than 500K. Be sure that your email configuration (Internet Explorer, or Netscape, or whatever) does not have an option set which limits the email size.

The Observers will be in Adobe PDF

format. This is a standard format used for online and emailed documents, but it does require a special piece of software. This Adobe Acrobat PDF reader is available free from the Adobe Web site <http://www.adobe.com/products/acrobat/readermain.html>. It is available for Windows, Mac, Unix, Linux, Palm OS and other platforms.

**To be sure we have your correct email address**, Janelle is emailing a note to all members about this process. If you don't see this note in your email by September 4th, it is because we do not have your correct email address. Let Janelle know your correct email address by September 10th. She is at [sky\\_liebe@yahoo.com](mailto:sky_liebe@yahoo.com)

# 2003 - The Mars Year



During August 2003, Mars, the Red Planet, will be closer to Earth than it has ever been before in recorded history. On the date of closest approach, August 28, 2003, Mars will be only 55.8 million kilometers or 34,646,418 miles from Earth, little more than 1/3 of an Astronomical Unit (AU). An astronomical unit is the average distance from the Earth to the Sun, about 165 million kilometers. This will be the closest together Mars and Earth have been in the last 50,000 years!

## The Features of Mars

Of all the worlds in the solar system, Mars is the most Earthlike. It has ever-changing weather, seasonal thawing of polar ice caps, clouds, vast dust storms, and four seasons. The changes are what you want to observe.

**Polar Ice Caps:** The Martian polar ice caps are bright, easy to see, and undergo fascinating seasonal changes. They thaw in the spring in each Martian hemisphere and re-form each autumn in an annual cycle of the seasons.

**Martian Atmosphere:** Mars has an amazingly dynamic atmosphere. White water clouds, bluish limb hazes, and bright surface ice-fogs and frosts are regularly seen and tracked by Mars observers.

**Dust Storms:** Observations of Mars indicate that yellow dust storms occur around the time of southern summer solstice, soon after Mars reaches perihelion. During the opposition in June 2001, dust storms spread to the whole surface of Mars. It is unlikely that two major dust storms will occur on successive apparitions.



# AAAA

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## 2003 Mars Opposition Timetable

In July, Mars burns at magnitude -2.3, the brightest object in the sky. Mars begins retrograde motion relative to the stars July 29-30. The relative size of the planet is now 16" to 22"—the biggest it has appeared since 1988. The southern half of Mars is becoming ever more tilted toward Earth and the rapidly melting polar ice-cap is a fascinating sight. On the morning of July 17, viewers in North America can see Mars perched on the upper edge of the Moon; there will be a spectacular occultation of Mars for viewers in the extreme southeastern US.

In August, Mars, located in the constellation Aquarius, makes its closest approach to Earth on August 27, with an apparent diameter of 25.1" and a magnitude of -2.9. The planet reaches perihelion on August 30, only two days after opposition. Observers should see intricate details on the Martian surface, unless they are obscured by dust storms, but the southern polar ice-cap will now be a tiny speck as the Martian summer approaches. For observers in northern latitudes, Mars will be only 34 degrees above the southern horizon. If you have a fairly large telescope, try to catch a glimpse of the Martian moons, Phobos and Deimos.

In September, Mars still holds center stage at magnitude -2.9 and diameter 25". Earth now begins to pull rapidly away from the planet and Mars will begin to lose brightness. By month's end, magnitude will have decreased to -2.2 and diameter to 22". But Mars now reaches its highest point before midnight, making it convenient for observations, with a higher likelihood of steady skies.

In October, Mars is still a stunning sight, although it will fade from -2.2 to the brightness of Sirius by month's end. The diameter of the planet will also shrink from 22" to 15". Mars now does not set until well after midnight.

In November, Mars remains a bright object, but its diameter has dwindled from 15" to 11". It is still big enough to show some interesting surface markings on steady nights.

In December, Mars is still the most prominent object in the sky, shining at about 0 magnitude. Unfortunately, the planet is only 40% as wide as it was in August and shows few surface markings in medium-sized telescopes.

In 2003 Mars will reach opposition in the constellation Aquarius near the celestial equator. The moment of closest approach occurs on August 27, 2003, at 09:52 UT. Note that Uranus is also in Aquarius, and that Neptune is just next door in Capricorn.

At opposition, Mars will shine as a brilliant yellow-orange beacon in the sky. Through a telescope, Mars will at first present only a shimmering yellow-orange disk. To the visual observer viewing it at 80x magnification, Mars will appear as large as the Full Moon viewed with the naked eye. Mars is then 25 arc-seconds in diameter. To place this in perspective, this is the angular diameter of a basketball one mile away.

## Earth and Mars Compared

	Earth	Mars
Equatorial diameter (Km)	12756	6794
Density (kg/m <sup>3</sup> )	5517	3933
Mass (Earth=1)	1	0.107
Surface gravity (Earth=1)	1	0.38
Escape velocity (km/s)	11.2	5.03
Mean distance from sun (AU)	1	1.5236915
Mean distance from sun (miles)	93,381,000	141,381,000
Mean distance from sun (10 <sup>6</sup> Km)	149.6	227.9
Orbital period (Earth years)	1	1.88
Orbital period (Earth days)	365.24	686.95
Orbital velocity (Km/sec)	29.79	24.13
Average Surface Temperature (K)	280	210



## Meeting Schedule

NEKAAL meets monthly on the fourth Thursday, January through October, at Washburn's Stoffer Hall. The meetings are at 7:30 pm.

**Guests are always welcome to join us for the General Meetings and/or observing at Farpoint.**

**September General Meeting**  
Thursday, September 25, 2003, 7:30 pm  
Stoffer Science Hall, Room 103

**TBA**

## Whom do you contact:

<u>Meetings, Speakers:</u>	Jerry Majers
<u>Farpoint Functions:</u>	Janelle Burgardt
<u>Farpoint Maintenance:</u>	Bill Leifer
<u>Special Presentations, Groups:</u>	Janelle Burgardt
<u>Dues, Donations, Merchandise:</u>	Walter Cole
<u>FAST:</u>	Gary Hug
<u>Web Content</u>	Janelle or Graham
<u>Observer Articles</u>	Graham Bell
<u>Other Web Issues:</u>	Russell Valentine
<u>General Questions:</u>	Any board member

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David Ryan	272-0177	dryan@cox.net
Russell Valentine	862-5046	russ@coldstonelabs.org

## "The REAL MEETING" Gathering



Please join us for post-meeting eats at Perkins Restaurant, 1720 SW Wanamaker. Some members refer to this as "the real meeting" which follows our general meeting each month.

## Open House Dates for 2003

Feb 7-8	7:00	July 11-12	9:30
Mar 7-8	7:30	<b>Aug 1-2, 8-9</b>	<b>9:30</b>
Apr 11-12	9:00	Sept 5-6	9:00
May 9-10	9:00	Oct 3-4	8:00
Jun 6-7	10:00	Nov 28-29	7:00

## Club Observing Dates for 2003

January 3-4	<b>June 27-28</b>
Jan 31-Feb 1	<b>July 25-26</b>
Feb 28-Mar 1	Aug 22-23
March 28-29	Sept 26-27
April 4-5	Oct 24-25
May 2-3	Nov 21-22
May 30-31	Dec 19-20

## Farpoint Observatory

W. Long. 96°00'08.6" Elevation = 406 m  
N. Lat. 38°53'24.9" = 1320 Ft.



**The NEKAAL OBSERVER**

NEKAAL

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