THE NEKAAL OBSERVER

September 2004 VOLUME 12, ISSUE 8

PO BOX 951, TOPEKA KS 66601
(785) 806-1177 **www.nekaal.org**
The official newsletter of Farpoint Observatory and the Northeast Kansas Amateur Astronomers' League

The *NEKAAL Observer* is the official publication of the Northeast Kansas Amateur Astronomers' League and Farpoint Observatory. NEKAAL, Inc. is an educational and scientific nonprofit corporation approved by the federal and state governments.

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.

Editor : Graham Bell
12229 Blazingstar Rd
Maple Hill, KS 66507
(785) 256-6281
gebell@mindspring.com

Member of the Astronomical League
www.astroleague.org

FROM THE PREZ: By Graham Bell

Tombaugh Project: .Jerry Foote at ScopeCraft is busy with final design. The primary and secondary are being aluminized. We had intended to use the secondary mirror from the KU optics as the tertiary in the Tombaugh, but Jerry indicated that it is too large. We are attempting to buy a 4.5" to replace that.

The current schedule still appears to call for installation to take place in mid-January.

Neo Training: Two FAST members are now certified to do team NEO work. Congratulations to Russ and Bill. Two other members are close, one needs a little more practice with equipment, the other needs to complete the astrometry exercises.

FAST members who have not completed their astrometry exercises are encouraged to do so ASAP. We ask that you become proficient with the astrometry before working the equipment at FPO. Some have become proficient with the equipment, but have not done the astrometry. It is essential that you do so before moving on.

E/PO Grant: Several months ago we submitted a grant proposal to NASA for some Education/Public Outreach funds. Jan Burgardt put this proposal together. Recently we received word that the grant had been recommended for funding by NASA. We had to clarify a rew items before they would approve it. The additional information requested by NASA was provided, and we expected to hear right back with an announcement that we were being awarded the grant.

So far, however, we have heard nothing since. So we still do not have that grant, but we are quite optimistic that is will be forthcoming at, probably, the typical NASA pace.

A ROOKIE'S FIRST NIGHT AT THE NEBRASKA STAR PARTY: By Jan Burgardt

Ever since I joined NEKAAL, I've heard about the Nebraska Star party. It sounded very appealing; a week of nights under skies free of light pollution, where all the flashlights are red and no one is suspicious of "what you're doing out there". But life got in the way, and I was never able to attend.

Until this year.

When I got the mailing about this year's event, I checked my calendar and saw no conflict—no big projects due at work, no children getting married, and a month after graduations were over. At one time, fellow NEKAALer Julee Fisher and I had daydreamed aloud about how we should pool our shortcomings and make the trip some day—she'd been there years ago and could navigate, I had a car that could survive the trip. Maybe it was time to do it. I contacted Julee, and soon we were sending in our registrations. I was finally going to NSP!

By mutual and emphatic agreement, we decided that we would not camp out, opting for very comfortable digs at a motel in nearby Valentine, Nebraska. After dumping our stuff, we headed out for Merritt Reservoir. After registration, we drove to the observing site to reconnoiter. There were already a number of people set

(Continued on page 2)

In this issue...

SKY HIGHLIGHTS FOR SEPTEMBER: by *Janelle Burgardt - Astronomy Program Director*

September 6	Last quarter moon
September 9	Mercury at greatest elongation
September 10	Mercury 0.7 degrees from Regulus
September 14	New moon
September 15	Mars in conjunction with the sun
September 21	First quarter moon
	Jupiter in conjunction with the sun
September 22	Autumnal equinox
September 28	Full Moon This year's Harvest Moon, defined as the full moon closest to the autumnal equinox.

Prominent Planets in the Morning Sky in September

Mercury Low in the east most of the month. Begins at magnitude 1.8 on the 1st, brightening to -1.0 by midmonth. Disappears into the sun's glare by the 30th.

Venus Rises 4 hours before sunrise, dominating the morning sky. September 12-15, just south of the Beehive Cluster (M44) in Cancer. Approaching Regulus in Leo at the end of the month.

Saturn Still in Gemini, Saturn is only 2 degrees from Venus on the morning of September 1.

Zodiacal Light

The zodiacal light is a large, cone-shaped glow that rises from the horizon in March and September. It is the glow of sunlight reflected off dust particles in the solar system left from comets and asteroid collisions. The best time to look for it this fall in the east during morning twilight September 13-26.

NEBRASKA STAR PARTY:

(Continued from page 1)

up for both camping and observing, but there was still plenty of room available. The Nebraska Sandhills are low hills covered with distinctly sandy soil and clumps of grass. We picked out a few potential sites, located the outdoor plumbing and went back to pack up our gear and drench ourselves in DEET. We returned to the site around sunset and found a lot more people, setting up a lot more scopes. Undaunted by some inconsiderate Californians who plopped down in the middle of our access road, we went overland in my trusty all-wheel-drive Subaru Outback, dodging tents, scopes, kids and Frisbees. Near the top of a rise, we parked and started assembling our viewing site.

Did you know that there is prickly-pear cactus in the Nebraska Sandhills? I discovered these little darlings by kneeling down on my tarp, and having it and my knee pierced by one of the little sucker's spines. We started scouting the area and found them all over the place, from less than an inch to a massive two-incher. As a K-State fan, I chalked it up to revenge from Husker Land, pulled my jeans over my shorts, and went back to work. We talked a bit with a young man from the Kansas City area who'd been there for several days already before getting back to his job on Tuesday. Nice young man. Ten-inch Schmidt-Cass. That's how we referred to people: "the frat guys with the open-truss dobs", "the kids with the 90mm", "the aluminum-foil dob guy". Looking over the hills, we saw all kinds of telescopes: small refractors, lots of catadioptic, lots of dobs. Since Julee and I are both enthusiastic Defenders of Dobs, we were surprised and pleased at the number of dobs in use, quite a few of them 16-20" open truss models in rocker boxes. The light in the west faded and the darkness crept over the sand hills. The show began.

Julee had said that she might spend a whole night just using her binoculars. I couldn't picture the Human Telrad without her scope, but, whatever. Then it got dark. **Really** dark. Nebraska Star Party dark. The Milky Way didn't just look cloudy; it *glowed.* I stood under that luminous sky-river, stunned. I never imagined it could look like that. All across the sky I saw things that were maybe-binocular objects at home. Cygnus was nearly lost in the fog of stars; even Deneb didn't stand out! I had planned to really study and differentiate a number of objects in Sagittarius, but I never expected to do it naked-eye!

Julee and I went back and forth between scopes, binocs and naked eye observing, amazed at how much we could see. After a few hours a searing light exploded in the western sky, jerking me away from the eyepiece. Shouts from our neighbors identified the phenomenon as an iridium flare. Satellites abandoned after a failed business venture were left in orbit, reflecting sunlight like a strobe light on a predictable schedule. Consulting the schedule we'd gotten at registration, we were ready when the second one came later that night.

It was quiet, the only sounds being a distant radio, a telescope motor, intermittent "oohs" and "ahs". Our 10-year old friend with the 90mm exclaimed excitedly to his father that he'd seen a black hole with his own telescope! Early in the morning, I took a break and looked up and around. Looking east of the Great Square, I saw something that just couldn't be. I double-checked my celestial bearing, then just stared, amazed. It took at least a minute until I could speak (those of you who know me can appreciate that I must have been *flabbergasted!).* I called Julee over. We could see the Andromeda Galaxy as a huge oval, complete with central brightening, with the naked eye. Julee couldn't believe it either. We both grabbed our binoculars and just looked at it. I don't think I breathed.

We stayed up all night, leaving just after 5AM. On the drive home, the clouds of sunrise were beautiful pink and purple cobblestones. I was fighting sleep, but full of mental images of what had just happened, all that I'd seen.

My first night at the NSP. I'll be back again.

NEKAALERS CLEAN UP AT NSP by Jan Burgardt

A memorable vacation for the Kevin Dobbs family of Lawrence! At this year's Nebraska Star party, not only did all of the kids win door prizes, but little Persephone Dobbs won the children's Grand Prize of a 6" reflector! To top off the week, she and big sister Willow appeared in a photograph in the Omaho Herald story about NSP. See what can happen when you join NEKAAL?

Congratulations to all!

NEW MOONS: by Dr. Edwin Woerner

Tuesday, August 17 was the first day of the seventh month, called *Hajab*, of the year 1425 in the Islamic calendar. A new month begins when the new moon is sighted. No month can be more than 30 days, so clouds are not an excuse.

Hunting for very young moons has a long history in the Middle East. In fact, the youngest new moon ever observed was seen from Iran when it was just over 12 hours old. This observer was experienced and had huge binoculars. The record for the youngest moon seen with the naked eye is for one about 16 hours old.

Year 1 in the Islamic calendar was the year 622 A.D. of the Julian calendar – later the Gregorian calendar. The Prophet Mohammed fled for his life from his home city of Mecca to the city of Medina. His flight is called the *hijera*, and the Moslem calendar is called the *hajri* calendar. Dates on this calendar are labeled with an Arabic letter "h" while dates on the Gregorian calendar are labeled with an Arabic letter "m" for *mulid*, which means *birth*.

If we subtract 2004 minus 622, we obtain 1382, not 1425. Years in the Islamic calendar are shorter than in the Gregorian calendar. In fact, an Islamic year is exactly 12 lunations, hence about 355 days. Each year of the Moslem calendar is 10 to 11 days shorter than a year in the Gregorian calendar.

Every 35 or so years the Islamic calendar gains a year on the Gregorian calendar. In May of the year 20,874 (Gregorian), Islamic year 20,874 will begin. The Moslem calendar will take that long to catch up.

Only Saudi Arabia uses the Islamic calendar used for everyday time keeping. In other countries in the Middle East everybody uses the Gregorian calendar. However, amateur astronomers everywhere can have fun looking for young moons. It takes no special equipment, it can be done from anywhere a dozen times per year, and if you've never seen a very new moon, you don't know how beautiful they can appear.

Times for new moons are posted in *Sky & Telescope*. Look for the new moon on the evening of the following day as a pencil-thin crescent low in the west. The zodiac is highest in the west as sunset (and east at sunrise) around the time of the equinoxes, so the new moon should be easiest at those times. However you can see young moons year around.

What's the youngest I've seen? I have yet to see a moon less than 25 hours old, and I've been searching for several years. Seeing a moon younger than that depends on several circumstances coming together, such as the moon being new at exactly the right hour of the day, plus the correct geometry at sunset, and a sky that is clear to the horizon. Optimum conditions for seeing moons under 24 hours old happen about once per year at any given location, and so far I haven't been successful on these rare occasions.

However, for a challenge that will become easier as the fall and winter seasons approach, see how short you can make the time interval between a very old moon and the subsequent young crescent. As sunset gets earlier and sunrise becomes later, can you get the interval below 60 hours?

Good hunting.

HERE ARE SOME PRICES FROM THE NEKAAL STORE:

Periodicals

S&T $32.95
Astronomy $29.00

Merchandise

hats $8.00 marked down
Tshirts $8.00 marked down
Sweatshirt $10.00 marked down
Name tags *free*
Tote bags $8.00
Coffee Mugs $10.00

Please contact Walter or Nancy Cole to acquire any of these items.

FASTTRACKS: by Gary Hug

The weather has once again befuddled attempts of kicking off an extensive FAST campaign. The normally hot but dry months of July and August were somewhat cooler but a lot cloudier. Jerry Majers has continued to grant FAST the use of his 12" lx-200 (Thanks, Jerry), but we have a real need for a dew zapper and electronic focuser, especially going into the fall weather.

Of coarse the real push for FAST will come in January of next year as the new Tombaugh Telescope will be on line. I wonder if any of us realize just how much more we will be able to see and image with those optics. The new scope will have the center of its optical axis (and thereby its eyepiece center) at 6 foot from the observatory floor when the telescope tube is completely horizontal. From the floor to the very top of the telescope tube assemble when the scope is pointing straight overhead will be over 14 feet! That height will place the telescope end 2 feet above the higher north roof of Farpoint. Fortunately because of our tertiary mirror system the eyepiece height will be considerably less at just under 11 feet although still precariously high without a substantial ladder or support. We will have a clear aperture view to -30 declination and will be able to see Polaris (the North Star) with about 50% of the aperture (the roof will block a portion of the mirror). Without the new telescope, imaging objects close to the polar region was not allowed due to the inability of the ccd camera to pass through the forks of the schmidt-cassegrain. The drive system for the Tombaugh Telescope will also use a newer technology. Both R.A. and DEC. axis use a friction drive design (no gears). The principal essentially eliminates periodic error by not having tooth to tooth gear variations. Theoretically this system will track on an object for hours without errors given a good polar alignment. Of coarse wind and minor variations in roundness tolerances will still necessitate using a 'drive corrector'. This is accomplished through manipulating the counting pulses of the steeper motors. If you're interested in finding out more of how the tracking system will work, the Drivescope* manual can be accessed by visiting ScopeCraft's website at http://www.scopecraft.com . It is also available in the NEKAAL-FAST Yahoo groups file section, under Miscellaneous Documentation. There you will also find manuals for the Meade LX-200 series, both classical and GPS.

On another subject, congratulations to Janelle Burghardt, William Leifer, Dan Tibbets and Russ Valentine, members of the FAST training program who are nearing or have completed the FAST training program. They recently did a "solo" run and turned in data for an object listed on the NEO Confirmation Page. The data was accepted by the Minor Planet Center. There is still time to join the FAST team - See Graham Bell or me for details...

FAST Training Status

Students	**13**
Level 1 Certificate	**2**
Fully Cerfitied	**0**

AFFILIATED ORGANIZATIONS:

International Dark-Sky Association
IDA
http://www.darksky.org

Astronomical League
http://www.astroleague.org

5 Events Logged

NASA's Night Sky Network.
http://nightsky.jpl.nasa.gov/

OPEN HOUSE SATURDAY, SETEMBER 18, 2004

Please assist with the Open House on Saturday, September 18, 2004. It begins at 8:30, so it would help to get there around 8:00 to help set up and make coffee. Junk food is considered essential.

Resisting Retirement: Earth Observing 1 : by Patrick L. Barry

The Hubble Space Telescope isn't the only satellite that scientists have fought to keep alive beyond its scheduled retirement. Scientists also went to bat for a satellite called EO-1, short for Earth Observing 1, back in 2001 when the end of its one-year mission was looming.

The motivation in both cases was similar: like Hubble, EO-1 represents a "quantum leap" over its predecessors. Losing EO-1 would have been a great loss for the scientific community. EO-1, which gazes back at Earth's surface instead of out at the stars, provides about 20 times more detail about the spectrum of light reflecting from the landscape below than other Earth-watching satellites, such as Landsat 7.

That spectral information is important, because as sunlight reflects off forests and crops and waterways, the caldron of chemicals within these objects leave their "fingerprints" in the light's spectrum of colors. Analyzing that spectrum is a powerful way for scientists to study the environment and assess its health, whether it's measuring nitrate fertilizers polluting a lake or a calcium deficiency stressing acres of wheat fields.

Landsat 7 measures only 8 points along the spectrum; in contrast, EO-1 measures 220 points (with wavelengths between 0.4 to 2.5 µm) thanks to the prototype Hyperion "hyperspectral" sensor onboard. That means that EO-1 can detect much more subtle fingerprints than Landsat and reveal a more complete picture of the chemicals that comprise the environment.

As a NASA New Millennium Program mission, the original purpose for EO-1 was just to "test drive" this next-generation Hyperion sensor and other cutting-edge satellite technologies, so that future satellites could use the technologies without the risk of flying them for the first time. It was never meant to be a science data-gathering mission.

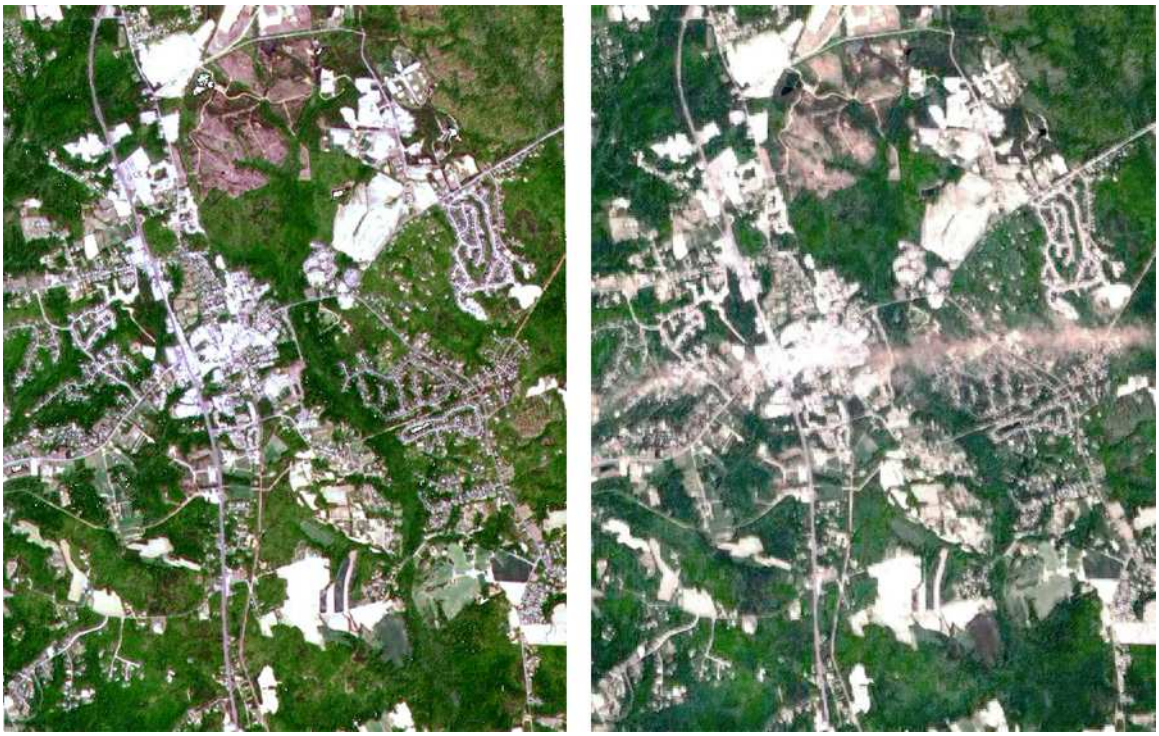
But it has become one. "We were the only hyperspectral sensor flying in space, so it was advantageous to keep us up there," says Dr. Thomas Brakke, EO-1 Mission Deputy Scientist at NASA's Goddard Space Flight Center.

Now, almost three years after it was scheduled to be de-orbited, EO-1 is still collecting valuable data about our planet's natural ecosystems. Scientists have begun more than a dozen environmental studies to take advantage of EO-1's extended mission. Topics range from mapping harmful invasive plant species to documenting the impacts of cattle grazing in Argentina to monitoring bush fires in Australia.

Not bad for a satellite in retirement.

Read about EO1 at eo1.gsfc.nasa.gov. See sample EO-1 images at http://eo1.usgs.gov/samples.php. Budding young astronomers can learn more at spaceplace.nasa.gov/eo1_1.htm.

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



These images, made from EO-1 data, are of La Plata, Maryland, before and after a tornado swept through May 1, 2002.

September Open House: Note that the September open house is scheduled for September 18, a Saturday. This was scheduled before we had the MVHS football schedule. Most of their games are on Fridays, so a Saturday Open house can be help without the football field being a source of light pollution. Please plan on assisting with this open house!

FINANCES: by Walter & Nancy Cole

Nekaal-Bank, Cash,CC Accounts 8/9/04
NEKAAL Cash Flow Report
1/1/04 Through 8/9/04

Category		
INFLOWS		
Contributions		1,251.00
Contributions-In Kind		33.77
Dues 2004		785.00
Int Inc-Interest Income		1.96
NASA Grant		29,498.00
Net Sales:		
Cost of Mdse	-392.66	
Sale of Mdse	104.00	
TOTAL Net Sales		-288.66
TOTAL INFLOWS		**31,281.07**
OUTFLOWS		
Annual Report		40.00
Computer:		
Internet access-dial up on line		33.77
TOTAL Computer		33.77
Dues		250.00
Equipment-astronomy Scope		21,784.65
Equipment-astronomy-Other		10,880.00
TOTAL Equipment-astronomy		**32,664.65**
FPO Utilities		379.73
Office-Office Expenses		18.40
Repair & Maint		57.33
Subscriptions:		
Magazine Subs	98.85	
Subs.payments recd	-98.85	
TOTAL Subscriptions		0.00
Supplies-Supplies		84.28
Telephone-Telephone Expense		254.81
TOTAL OUTFLOW		**33,782.97**
OVERALL TOTAL		**-2,501.90**
1/01/04 Beginning Cash		$5,312.42
Net outflow		2,501.90
8/08/04 Ending Balance		**$2,810.52**

Cash Account Balances– Assets and Liabilities 6/11/04

Assets	
Cash and Bank Accounts	
Money Market 1	1,571.39
Money Market 2 (Telescope)	698.00
NEKAAL—Checking	541.13
Total Cash and Bank Accounts	2,810.52
Total Assets	**2,810.52**
Liabilities	**0.00**
Overall Total	**2,810.52**

FACILITIES—AUG 2004: by Bill Leifer

August supplies and preventive maintenance were performed. A number of housekeeping items and food were added.

A wall switch has been placed to control the overhead lights in the observation room. It is mounted so that the switch faces the door when walking from the meeting room into the observation room and is approximately eye level if you are 5'8" like me.

A strip of runner carpet has been placed to cover the rip in the carpeting in the meeting room. It has been taped down and now looks like it belongs there for some great scientific purpose.

The sink faucet has not been serviced, because I was unable to notice a leak as reported by others. Let me know if you see this sucker leaking.

Russell Valentine has completed wireless internet connectivity. It is running at 45K bytes (450k) and is equivalent to a good DSL connection, speed wise.

The new sign at Farpoint is being re-assigned to the industrial arts students at Mission Valley High School. We are assuming that the "R" will point in the right direction.

USD 330 crew have been keeping the Farpoint grounds well mowed, so the mower blade and mower condition seems less pressing for now.

The trim around the door to the shed has finally been primed and painted.

An entranceway mat has still not been purchased.

The offers coming in to shampoo the carpet have been overwhelming. I am having to set up a new email server to handle this. Since I cannot accommodate everybody, it is my determination to avoid any hard feelings or jealousy by doing it myself.

Plans are underway to use Education/Public Outreach grant money coming in from NASA to plan and build a new building at Farpoint with a retractable roof, to accommodate members' telescopes, observing, and public viewing sessions, since the 27" Tombaugh Telescope to be completed in January will use up all the space in the current observing area. A new 12" telescope available for members' use will be a part of these new facilities as well.

Where are the Board Minutes?

If you get the Observer online, you can find the board minutes in the Files section of the NEKAAL MEMBERS Yahoo group.
If you get a hardcopy version of the Observer, the minutes are inserted into your copy.

September 2004

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6 last qtr 	7	8	9	10 **Club Observing**	11 **Club Observing**
12 Board 3:30—Farpoint	13	14 New	15	16	17	18 **Open House**
19	20	21 1st qtr 	22 Autumnal Equinox	23 General Meeting—7:30 Stoffer 103	24	25
26	27	28 full 	29	30		

2004 NEKAAL MEMBERSHIP FORM

Please check appropriate membership type:

☐ Individual $30 ☐ Family $35
☐ Student $10 for first year, $15 each succeeding yr

Name:

Address:

City State: Zip:

Phone Numbers:

E-mail:

Mail form and check to NEKAAL
PO BOX 951, TOPEKA, KS 66601

FARPOINT CONTRIBUTERS

Help us improve and maintain Farpoint Observatory. A $50 donation (membership dues not included) gets your name on a plaque on Farpoint's *Wall of Fame.*

☐ I am including an extra $10 for a one year subscription to the Observer

Contributer Name:

Address:

City: State: Zip:

Name on Plaque:

Donation is for ☐ Farpoint operating fund
☐ General fund ☐ Telescope fund
☐ Education/Outreach fund

Mail form and check to NEKAAL
PO BOX 951, TOPEKA, KS 66601

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 23, 2004, 7:30 pm
Stoffer Science Hall, Room 103
Dr. David Jeffries: *Supernovae*

Who to contact:

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

Graham Bell	256-6281	gebell@mindspring.com
Janelle Burgardt	266-5624	sky_liebe@yahoo.com
Walter Cole	266-4911	w.i.cole@worldnet.att.net
David Costales	256-2327	dcostales@bigfoot.com
Julee Fisher	234-2826	
Gary Hug	836-7828	frogstar@intergate.com
Bill Leifer	478-4249	williamleifer@usa.net
Jerry Majers	862-8869	jmajers@cox.net
David Ryan	272-0177	dlryan@cox.net
Dan Tibbets		Ddtfp@aol.com
Russell Valentine	862-5046	russ@coldstonelabs.org

These numbers and email addresses are not to be shared with others. They are to be used by members only!

"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 2004

February 13	7:30	July 23	9:30
March 12	7:30	August 20	9:00
March 26	7:30	**September 18**	**8:30**
April 30	9:00	October 23	8:00
May 28	9:00	November 20	7:30
June 25	9:30		

Club Observing Dates for 2004

January 23-24	July 16-17
February 20-21	August 13-14
March 19-20	**September 10-11**
April 16-17	October 15-16
May 21-22	November 12-13
June 18-19	December 20-21

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

The NEKAAL OBSERVER
NEKAAL
PO BOX 951
TOPEKA, KS 66601

ADDRESS SERVICE REQUESTED