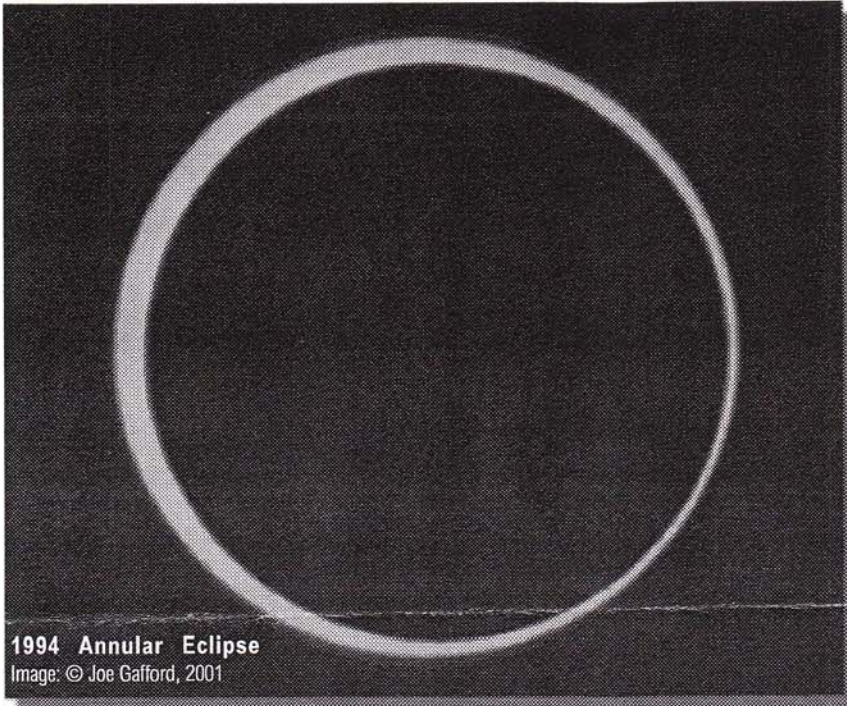


The

DENVER OBSERVER

Newsletter of the Denver Astronomical Society

One Mile Nearer the Stars



1994 Annular Eclipse
Image: © Joe Gafford, 2001

An Annular Eclipse Rings in the Holidays

If you fancy a vacation in Costa Rica or Nicaragua, this holiday season may be a good time—on December 14 the moon will eclipse the sun for the last time this year. An annular eclipse is different from a total solar eclipse in that the moon is farther away from the earth and doesn't completely cover the sun. Instead, a thin ring remains visible at maximum. You'll see more of the sun eclipsed the farther south you live or travel in America. Those of us in Denver will see about 15% eclipsed (See map on Page 3).

A Holiday "Ring of Fire"

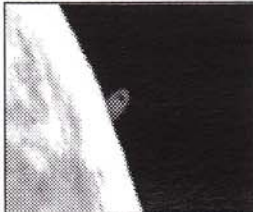
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DECEMBER SKIES 2001

December is a banner month for our solar system—with Saturn at its brightest in years, a holiday comet, yet *another* occultation of Saturn, a meteor shower, an annular eclipse on December 14, and a penumbral lunar eclipse—the holiday season offers a number of celestial gifts whether you're a die-hard observer or an occasional stargazer. Comet LINEAR (C/2000 WM1) may reach 4th magnitude during the first two weeks of the month in the early evening sky (See page 6). Get a clear southern horizon and sweep around Fomalhaut and Beta (β) Ceti. The Geminids meteor shower is usually a good one, although some of us may never look at a meteor shower quite the same after the Leonids last month. The penumbral eclipse will be a tough observation, but some folks will succeed in seeing it. Good luck—I hope your skies will be dark, and your holidays bright. —Patti Kurtz

7 Last quarter moon
13 Geminid meteor shower peaks
14 New moon
21 Winter Solstice (12:21 P.M.)
22 First quarter moon
28 Moon occults Saturn (1:36:12 A.M.)
30 Full moon,
 Penumbral Lunar Eclipse (Max: 3:30 A.M.)



In September and November Saturn was occulted by the moon. Watch for a repeat performance this month.

Image: © Ken Florentino, 2001



Where are the presents? From left to right: David Shouldice, Ron Pearson, Dan Wray, and Ivan Geisler awaited Santa Claus at last year's Holiday Potluck. Santa had a previous engagement but everyone enjoyed the party anyway.

PRESIDENT'S CORNER

We need volunteers. The DAS has had a great time putting on astronomy shows at elementary and secondary schools. It is a wonderful experience to see students, teachers, and parents looking through a telescope for the first time. If you do not have a scope, we can furnish you with a C-8 that belongs to the club



and you can use. You do not need to have a lot of experience—only a desire to go to the events. If you are interested, please let me know by e-mail and I'll get you on a notification list so you're alerted when we have a party.

Keep in mind if you have children in school, we can come to their events with members to set up scopes.

Have a wonderful and safe holiday season!
— Larry Brooks, Lbrooks100@aol.com

DAS Schedule

DECEMBER

- 7 E-Board meeting, 8 P.M.
- 8 Holiday Potluck (See Page 6)
- 10 First day of Chanukah
- 14-16 Dark Sky Site Weekend
- 22 Open House (Spectacular Saturn)
- 25 Christmas Day

JANUARY

- 4 E-Board meeting, 8 P.M.
- 11-13 Dark Sky Site Weekend
- 19 Open House (How to Use Your New Telescope)
- 25 General Meeting at Olin Hall, DU, 7:30 P.M.—Gary Emerson, "The Deep Impact Mission," and nominations of officers.

Public Nights are held every Tuesday and Thursday from 7:00-9:00 P.M. at Chamberlin Observatory
Costs to non-members are: \$2.00 adults, \$1.00 children
Please call (303) 871-4333 for reservations.

DAS Officers

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Jack Eastman	David Shouldice
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The Observer is available in color PDF format from the DAS website.

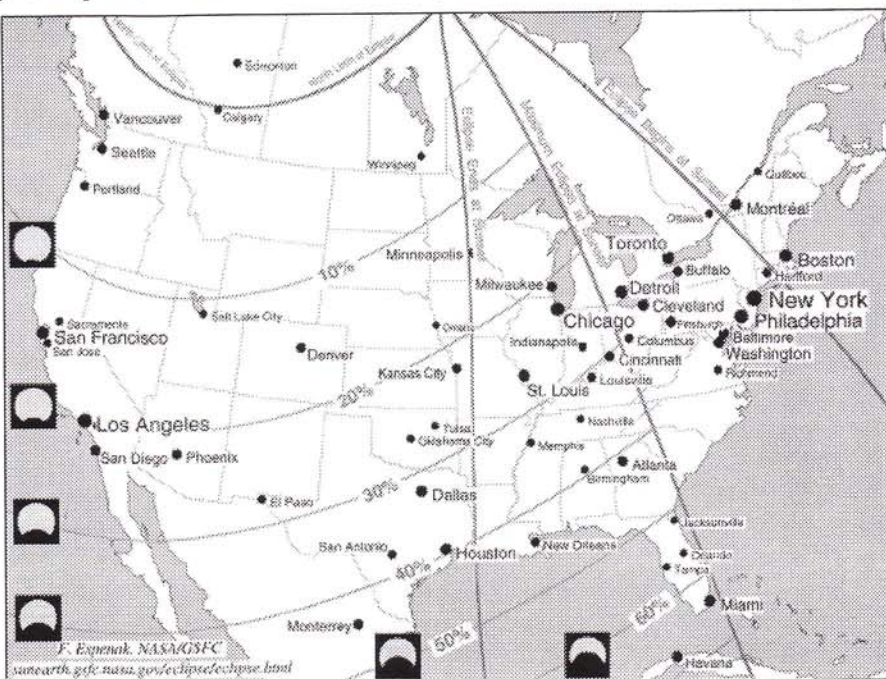
The Executive Board conducts the business of the DAS at 8 P.M. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.

www.denverastrosociety.org

United States Visibility Map for December 14, 2001 Annular Eclipse

Most of us in the U.S. will see a partial solar eclipse except for New England and parts of Alaska. The fun begins for Denverites around 1:48 P.M. If you happen to be in the eastern U.S. during this event, you'll see the sun eclipsed at sunset. For everything you ever wanted to know about eclipses, be sure to visit Fred Espenak's sites at <http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html>. As always, special protective eyegear is necessary.

Sky & Telescope sends only one notice before subscriptions end. The DAS sends only one issue of The Denver Observer after dues expire. The cost of magazines (Astronomy and Sky & Telescope) is in addition to the annual dues. For questions concerning memberships, please contact DAS Treasurer, Chuck Carlson (cbcarlso@du.edu). See the back page of this newsletter for more information.



The DAS Website Has Moved

Our former webmaster, Terry Chatterton, is launching a new data site. Kiowa Observatory now has an official minor planet observatory number and Terry hopes to shoot more than 200 data images per night. Terry has made a huge difference to the DAS for a number of years. Without his

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efforts, we might not have the Dark Sky Site we have now. His willingness to stay in contact by managing the DAS website even after his move to New Mexico, has helped us not feel his absence quite so strongly. Many, many thanks to Terry, and to Jon Goldberg who hosted the website on his server for the last 18 months or so. Good luck with Kiowa; discover many comets and asteroids, guys—and thanks!

The new DAS URL is:
www.denverastro.org

Check it frequently for alerts. Another couple of websites to peruse this month are: <http://www.lunar-occultations.com/iotal/iotandx.htm> (for Saturn occultation maps and timings) and <http://www.MrEclipse.com/Special/LEprimer.html> (for lunar eclipse information).

DAS Bookstore and More (!)

We know—you hoped you'd win this at Colorado Astronomy Day when it was given out as a door prize. Since you didn't, now you can buy it as a holiday gift from the DAS Bookstore. You could even keep it for yourself. . .



Note from the editor:

Newsletter contributions (ccd and film astrophotos, members with telescopes, star party candid, short observing anecdotes, observing and imaging tips, etc.) are welcome and encouraged. This is your chance to strut your stuff! **Please submit by the 15th of each month as follows:**

Film: Glossy prints by mail** or scanned and uploaded (high res.) to the listserve upload area.

CCD: Uploaded to the listserve upload area (resolution as high as possible, please).

Text: Articles should be no more than 250 words, please. Please paste article(s) into an email and send to me at: pkurtz@starfirecreations.com.

If you don't receive a confirmation email from me, I didn't get your email. Also, be sure to let me know if you've uploaded a file. Thank you!

**Patti Kurtz

(call for mailing address)

(303) 948-5825

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o d d s ' n e n d s

Catching the Lion's Share

Leonid Observing Reports

by

Members of the Denver Astronomical Society

If you saw the storm under clear skies, good for you! It was spectacular, wasn't it? If you slept through the show, the following reports aren't going to make you feel better. I've read many, many reports from around the globe (nothing yet from Australia/Asia). Our numbers here in Colorado rival the best of them. We must have had a "Mile-hi Edge." —*Patti Kurtz*

ROCKY MOUNTAIN MAGIC

I'm just back from Dan's cabin in South Park. THE SHOWER WAS AWESOME!

Saw more meteors in 30 minutes than I've seen in my whole life, I think. I caught the setting moon on video through a short-tube 90 in the evening—who knows if it got any impacts. The sky was clear for awhile and then it closed in on us by 10 P.M. We decided to stick it out hoping it would clear from the west. At 1:30 A.M. Dan woke us up with a yell that it was

spectacularly clear and he'd seen a bright one just looking out the door. We stayed out until 5:30 A.M. We also thought the peak was around 3:15 to 3:30 A.M. as Roger said. It seemed to come in waves with it raining meteors in different parts of the sky at different periods. I didn't sit down for more than 10 minutes the entire night. We saw several bright bursts and trains that lasted minutes. Sure wish I'd had one of those "meteor cam hats"!

I shot with three cameras—two 35mm and one medium format. I also shot video, but I screwed up the video. Dan was also shooting video, but just the sound of everyone "ooohing" and screaming on tape should be worth it—especially Patti, who isn't particularly quiet anyway! Drove back through heavy snow squalls in South Park late this morning. Did we luck out or what?! —*Ron Pearson*

THE DARK SKY SITE

We had excellent dark-sky observing at the DSS until clouds moved in around 11:00. I counted 43 scopes set up by 5:00 P.M., with many people still arriving. We had a heavy influx of Leonid-only attendees after midnight. The North and South observing areas pretty much expanded along the road and met in the middle. We had an amazing density of scopes at the North end, with four SCTs on one of the pads. I heard total attendance estimates ranging from 100 to 150 people. This certainly set an attendance record for the DSS.

The clouds were intermittent with large sucker holes, but there was haze even in the sucker holes. We were still able to observe planets and the brighter Leonids. The sky gradually began clearing with real sucker holes by 2:00 A.M. or so. The last clouds had moved off to the east by approximately 3:00, so we had an unobstructed view of the peak activity.

The storm was fantastic from my point of view, although I would have guessed that it peaked a bit later than Roger's estimate—maybe close to 3:30 or 3:45.

Some of the trails were very persistent, and we enjoyed watching the trails with binoculars. Then someone trained Theron's scope on one of the trails. Amazing detail. It appeared as if you were looking down a hollow tube with brighter knots.

We also did allot more deep-sky observing after the sky cleared. Altogether a fantastic night.—*Greg Marino*

CHASING THE STORM

The Leonid storm peak was spectacular!

It was the best meteor shower I've ever seen.

Meteors every couple of seconds, and many bursts of several at once. My impression is that the peak was more like 3:20 to 3:30 A.M., not the 3 A.M. predicted. But the rate was about predicted (3000-4000/hour, with sustained 2000/hour for over an hour.

I chased a sucker hole and lucked out.

I went to the DSS, but when it was mostly cloudy at 11p.m., I packed up and left at 11:20 p.m. It was clear to the east, so I headed east.



Image © Ron Pearson, 2001

Under dark pristine skies outside of a log cabin in South Park, a group of members "ooohed," "aaaahed," and hollered as the earth rolled into the debris left by comet Tempel-Tuttle. For several hours, the show was better than fireworks.

observers deck

At Ariba, I could see clouds ahead (east), back west, and south. I waited and listened to the weather radio. I took a few pictures.

The weather radio said cloudy everywhere, fog further east, but clear in Grand Junction (too far), and clear at Akron, to the north. I took a few pictures, and the meteor rate was building.

At about 1:15 a.m. the clouds started moving in from the south, and it was getting foggy. North looked good. Back to Limon to take highway 71 north. Just a few miles north of Limon, was this beautiful sucker hole. 80% clear, beautiful secluded side road (county road 3R).

No fog.

I stayed there and it got clearer—by 2:45 A.M. the meteor storm was building and it was 90% clear, the only clouds were on the horizon: east, west, south. But it just got better.

Several meteor trails lasted a couple of minutes. The brightest was a double meteor about 5 arc-minutes apart that was brighter than the full moon, and all colors of the rainbow. The trail last over five minutes. Other notable events were the multiple meteors, like five at once through the big dipper, similar to one of those 4th of July pop bottle rockets that explode in a burst shooting one direction.

There were enough meteors that the position of the radiant was pretty obvious, and it almost gave the sensation of moving through space. I think the rate needs to be two-three times higher for a good effect.

Because of the moving around, I didn't take as many photos. I only used four cameras: the 8x10 and three 35mm.

I saw many meteors go through the fields of view, so the question is how many were recorded and how good was the focus?

I hope you all had sucker holes too. It was amazing how fast the weather system started moving Saturday evening, after being stationary for a couple of days. —
Roger Clark

AT THE MUSEUM SITE

Hank Rael, his son Hank, Jr., two others, and myself went to the DU Research Institute site that Larry clued us to earlier in the week. We stayed from about 1:45 A.M. to 4 A.M. There was some

haziness early on, but it cleared up, and the thin clouds didn't hide many meteors from us.

This was the best display I've ever seen as well. There were some trails that I was able to see in binoculars that lasted for several minutes. —*Pat Ryan*

MOUNTAIN LAKESIDE LEONIDS

I went to Frisco and it was great. The skies clouded about 5:30 A.M. I wanted to take pictures of the meteors and the lake but the lake was down. What a great night!!!!!!! —*Larry Brooks*

MEMBERS ACROSS AMERICA

ARIZONA — My wife, my brother and his family, and some neighbors and I went to a site about 60 miles east of Phoenix to observe the Leonid meteor shower. We

arrived shortly before midnight (Nov. 17). The sky looked promising; there were some low clouds to the southwest. Previously, they would have skirted to the south.

Immediately, we started seeing sporadic meteors. As I was explaining the difference of a sporadic vs. a Leonid, a Leonid lit up the sky. Here are the numbers:

Time (MST)	Nos.	Sky Condition
12:00 to 1:00	20	low clouds to SW
1:00 to 2:00	252	more clouds
2:00 to 3:00	266	1/3 sky light clouds
3:00 to 4:00	301	2/3 sky covered light clouds
3:00 to 3:20	145	
3:20 to 3:40	69	
3:40 to 4:00	87	

From what I have gathered, I picked the only cloudy spot in Arizona. I received a

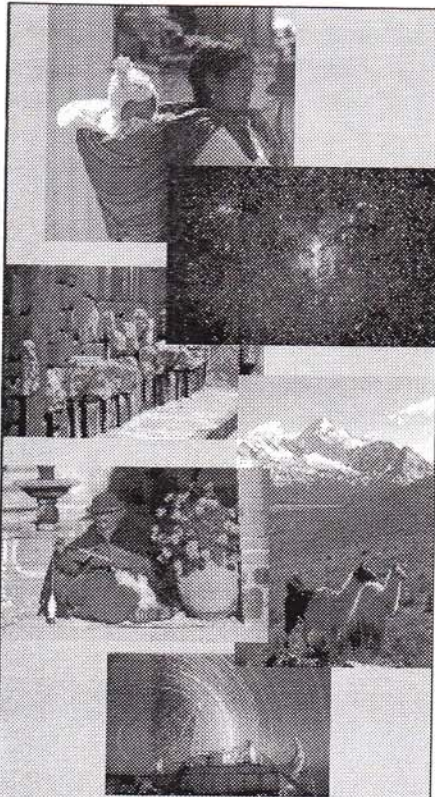
Continued on page 7



Image © Joe Gaiford, 2001

Leonids streak around Orion and Canis Major during the peak (November 18) at the Dark Sky Site. Orion is at center, Canis Major lower left, Hyades and Saturn at upper right, Jupiter at upper left. A bolide is seen at rear of "The Dog."

observers deck



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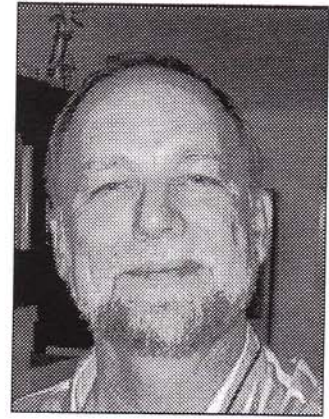
Welcome New Members!

The following folks joined the Denver Astronomical Society during the last month. Welcome new members!

- Monika Burkhardt • Tom Moglestad
- Barbara Camp
- Bob Jones

Dave Trott Appointed Deputy Director of Chamberlin

The University of Denver is pleased to announce the appointment of Dave Trott, past DAS president and DU astronomy instructor, as Deputy Director for Chamberlin Observatory. Professor Stencel notes that Mr. Trott was promoted to help with the many day to day needs of the historic observatory, and to work with the DAS and community on future initiatives. Dr. Stencel plans to focus his efforts on research and teaching, but to remain active



with documenting the complete history of Chamberlin Observatory.

—Dr. Robert Stencel

Holiday Potluck



Photo: © Raleigh Souther, 2001.

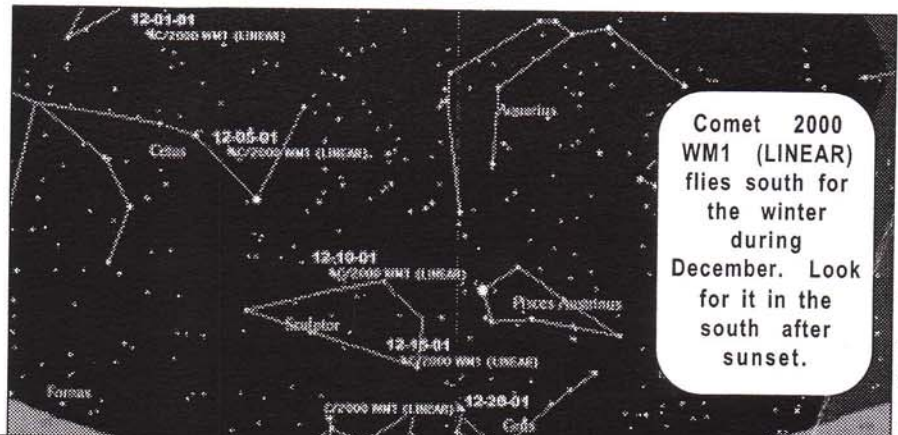
Carla Swartz enjoys her dessert at last year's Holiday Potluck. If you like great food and camaraderie, this is the party for you!

Fire up your favorite recipe and join your fellow members for an evening of holiday cheer! The Holiday Potluck will take the place of the December general meeting on Saturday, December 8.

If you got some great photos of the Leonids this year, please bring a few along to share. Slide format will be best for everyone to enjoy at once.

As it was last year, the potluck will be at the Golden Ridge Condominiums in Golden. The address is 1290 Golden Circle. Thanks to Sherry Johnson's father for arranging the accommodations for us.

Directions—Take Highway 6 west to Golden. Turn left (south) on Heritage Road, which is the first light past the C470 interchange. Turn left (east) at the first light, into Golden Ridge condominiums. Go straight, and the clubhouse is at the far (east) end of the loop.



From TheSky software, courtesy of Software Bisque.

updates

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Catching the Lion's Share

Continued from page 5

report from another site 180 mile west of us, they recorded over 3000 meteors between 3:00 and 4:00 A.M. Just my luck. As we were driving home, in the city, one last Leonid lit up the sky. —Bob Kearney

Dark Sky Site Guidelines

The Dark Sky Site (DSS) is for the use of DAS members and their guests. If you are neither, please contact an officer of the DAS for a "guest pass," and read the DSS Guest Policy (below). Please remember that any light disrupts your eye's dark adaptation and can ruin astrophotography. Most members (astrophotographers may be the exception) are happy to share views from their telescopes, however, please introduce yourself and ask permission upon approaching a telescope owner. Please follow these simple guidelines to maintain a positive experience for everyone:

- ★ Try to arrive before dark. If you must arrive after dark, please turn off headlights when turning into the site, and try to arrive from the north.
- ★ Don't park on the graded graveled roads.
- ★ Turn off or disable all dome and trunk lights in your car (or cover with layered red tape or duct tape)
- ★ Use only dull RED FLASHLIGHTS.
- ★ NO OPEN or CHARCOAL FIRES.
- ★ If you're the last person to leave, close the gate.
- ★ If you leave before everyone else, ask for assistance in getting out of the site without headlights.

Other suggestions:

- ★ Wear warm clothing.
- ★ Bring your own toilet paper in case that in the porta-pottie has run out.

DARK SKY SITE GUEST POLICY

The DAS Dark Sky Site, while for the exclusive use of the membership for serious observing, will allow visitors on a limited basis. Groups or classes wishing to use the DSS may do so only with prior arrangement through the DAS president or vice president.

Directions to the Dark Sky Site

The DAS Deer Trail Dark Sky Site (DSS) is about 60 miles east of the "mousetrap" in downtown Denver.

Take I-70 east to the Deer Trail exit (exit 328), turn left at the end of the exit ramp, and turn left again on CR 217 (after the Texaco station). Take CR 217 just over 1/2 mile, and turn right (east) onto CR 34. Stay on CR 34 about 6 miles until you get to CR 241. Turn left (north) onto CR 241 and continue about 1.5 miles – you'll see a culvert with a wide gate on the right (east) side of the road.

Directions to DSS from Denver, arrival from the North (for after-dark arrivals):

Take I-25 eastbound to exit 316 (Byers). Turn left at end of ramp which puts you on eastbound US-36. Take US-36 east 17.2 miles to CR 241. Turn right (south) onto CR 241 and continue for 6.2 miles. The DSS entrance is on the left between two tall posts.

Note: Travel distance from Denver using the North route is actually 3.9 miles shorter than the traditional route. The first 5 miles of CR 241 going south from US-36 is narrow and somewhat rough. Be careful.

Warming Hut Rules

- The last people on the site must turn off the lights and the heat.
- A microwave will be provided for warming food. Please clean up after yourself.
- No pots and pans, appliances, or other supplies are to be left in the shed.
- No personal supplies are to be left in the shed overnight.
- Do not donate furniture or other things unless you clear it with the D.S.S. committee first.
- No food left overnight in the shed.
- No sleeping overnight in the shed.
- Quick naps are permitted if you feel you might fall asleep on the way home. We would prefer you get your nap rather than falling asleep on the road. However, we don't want it to become a tent for camping.
- Clean up after yourself before you leave the site.
- Please clean up all food that drops or is spilled, otherwise it will attract mice and insects.

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