

Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 4/1/05

Satellite Name and
Element Set Satellite ID Iridium 25

Date of Element Set Used 3/30/05

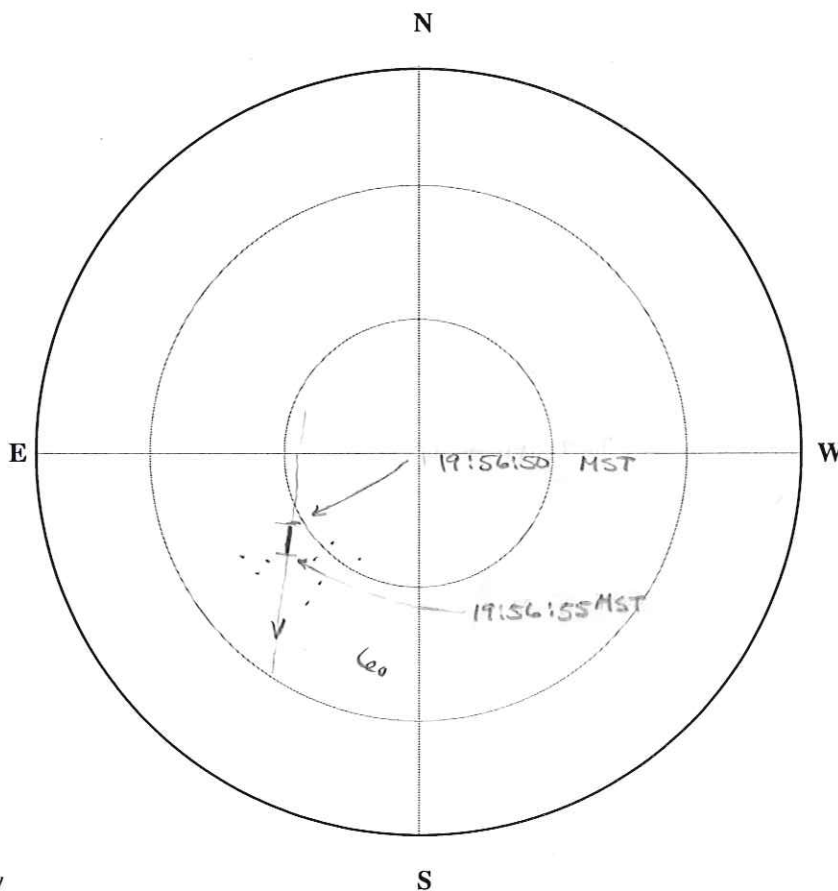
Location of Observer
Latitude 40.6° N
(use decimal degrees only)

Longitude 104.3° W
(use decimal degrees only, east is negative)

Elevation 5000 ft.
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments Got to -8 magnitude.



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone and daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 1

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia _____
	2 _____		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other _____

Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 <input checked="" type="checkbox"/>
	2 _____		2 _____
	3 _____		3 _____
	4 _____		4 _____ (one during daylight or civil twilight hours)

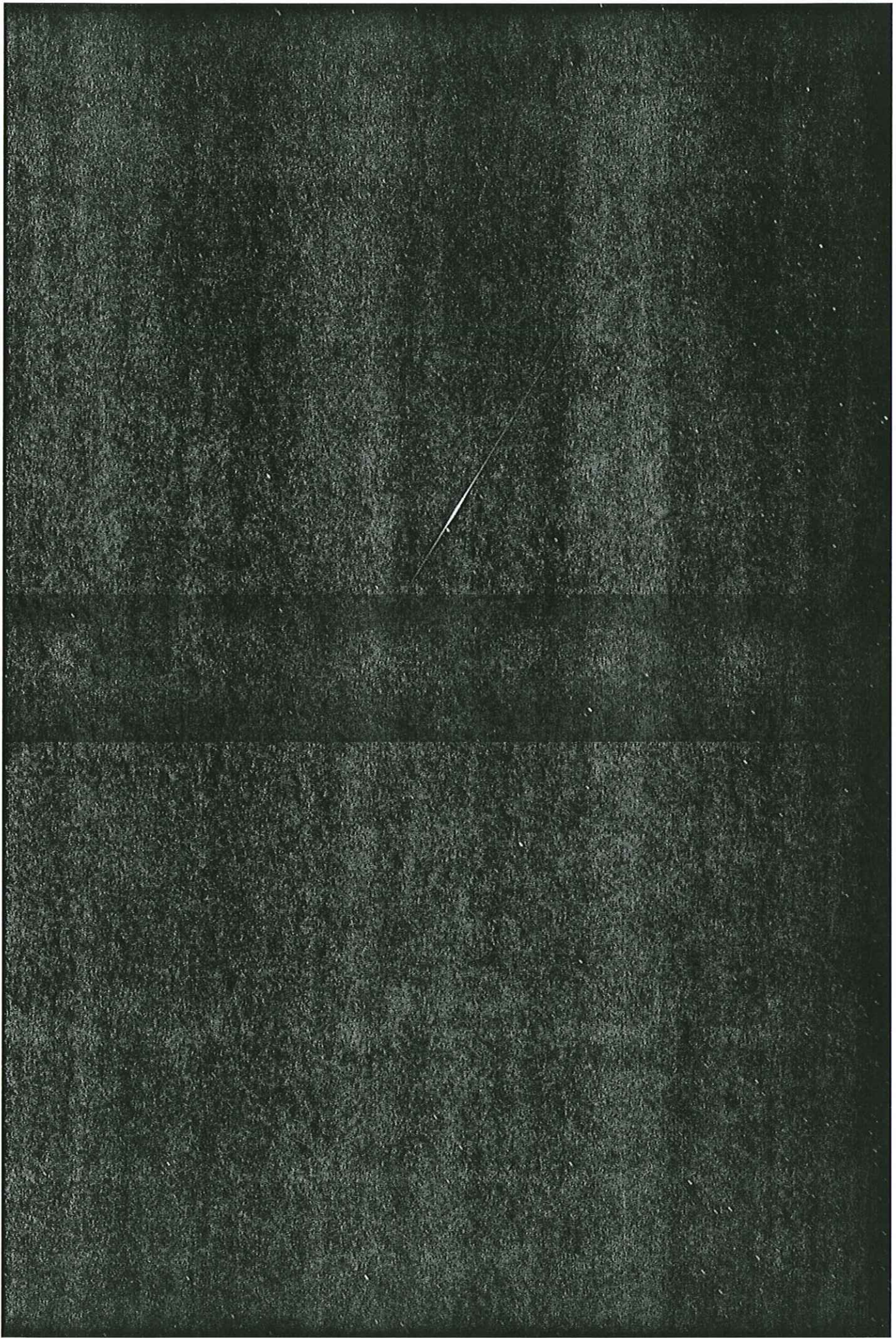
Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____

4/1/05

Iridium ZS
19:56:50 MST

50° elevation 109° ESE

-6 in intensity



Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 4/11/2005

Satellite Name and
Element Set Satellite ID Iridium 76

Date of Element Set Used 4/10/05

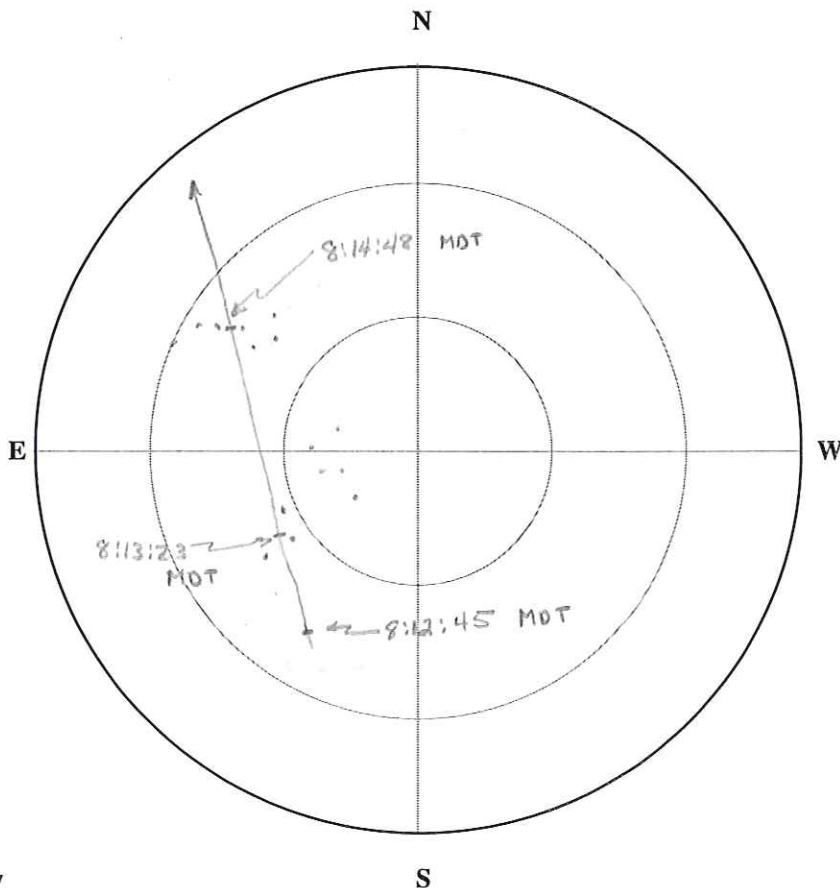
Location of Observer
Latitude 39.9° N
(use decimal degrees only)

Longitude 105.09° W
(use decimal degrees only, east is negative)

Elevation 5300'
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments Reached -9 magnitude
& stayed that across most of
track. Most unusual.



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone and daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 2

Observation Objective (subject to change - check only one task per observation)

- | | | |
|---|---|--|
| Active Payload (4) 1 _____
2 _____
3 _____
4 _____ | Manned Spaceflight (2)
STS _____
ISS _____
Other _____ | Multinational (4)
Russia _____
China _____
Japan _____
Brazil _____
Other _____ |
| Rocket Bodies (4) 1 _____
2 _____
3 _____
4 _____ | Iridium Flares (4) 1 _____
2 <input checked="" type="checkbox"/>
3 _____
4 _____ (one during daylight or civil twilight hours) | |
| Multipass (2) 1 a _____ b _____
2 a _____ b _____ | Formation (2) 1 a _____ b _____
2 a _____ b _____ | Aged Elsets (2) 1 a _____ b _____
2 a _____ b _____ |

Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hutter

Date of Observation 4/12/05

Satellite Name and
Element Set Satellite ID Ocean O Rocket

Date of Element Set Used 4/11/05

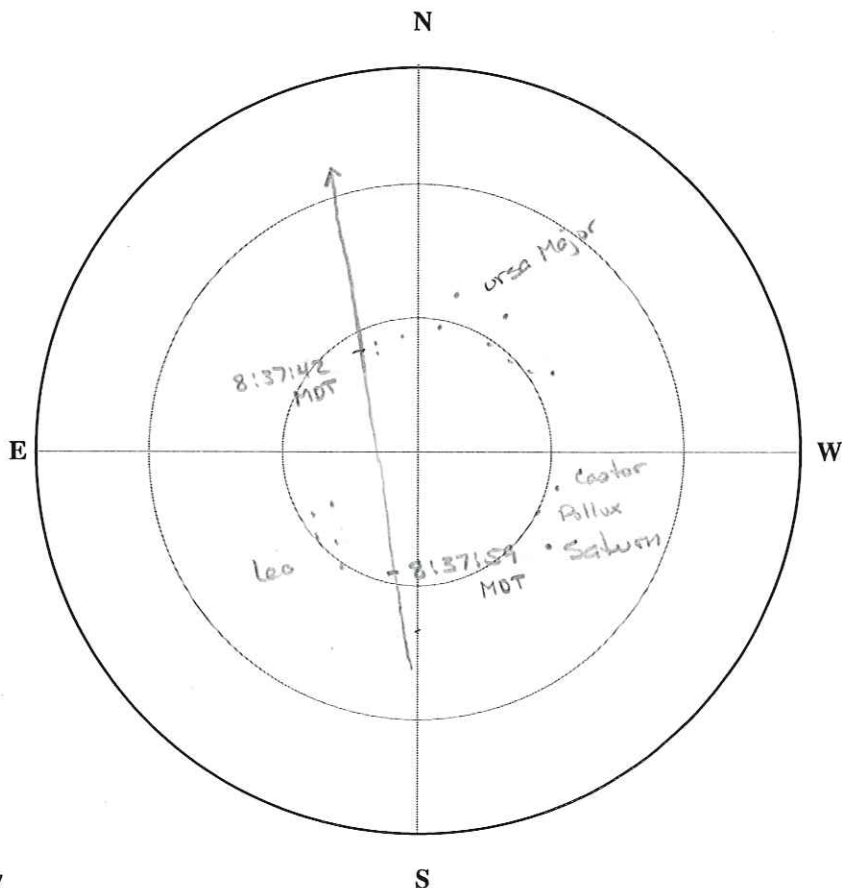
Location of Observer
Latitude 39.9° N
(use decimal degrees only)

Longitude 105.09° W
(use decimal degrees only, east is negative)

Elevation 5300'
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments Mag 2.8. Very bright.
went right overhead.



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the timezone and daylight/standard time references, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 3

Observation Objective (subject to change - check only one task per observation)

Active Payload (4) 1 _____
2 _____
3 _____
4 _____

Manned Spaceflight (2)
STS _____
ISS _____
Other _____

Multinational (4)
Russia _____
China _____
Japan _____
Brazil _____
Other _____

Rocket Bodies (4) 1
2 _____
3 _____
4 _____

Iridium Flares (4) 1 _____
2 _____
3 _____
4 _____ (one during daylight or civil twilight hours)

Multipass (2) 1 a _____ b _____
2 a _____ b _____

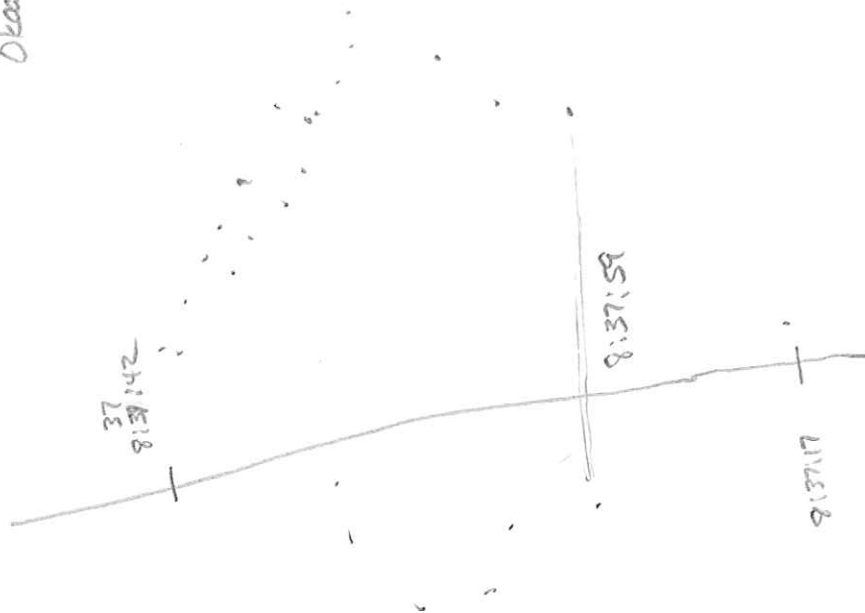
Formation (2) 1 a _____ b _____
2 a _____ b _____

Aged Elsets (2) 1 a _____ b _____
2 a _____ b _____

Developed and maintained by Chris Peat, Heavens-Above GmbH
Please read the updated FAQ before sending e-mail.

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Okean O Rocket



Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Notter

Date of Observation 4/12/05

Satellite Name and
Element Set Satellite ID Cosmos 1484

Date of Element Set Used 4/11/05

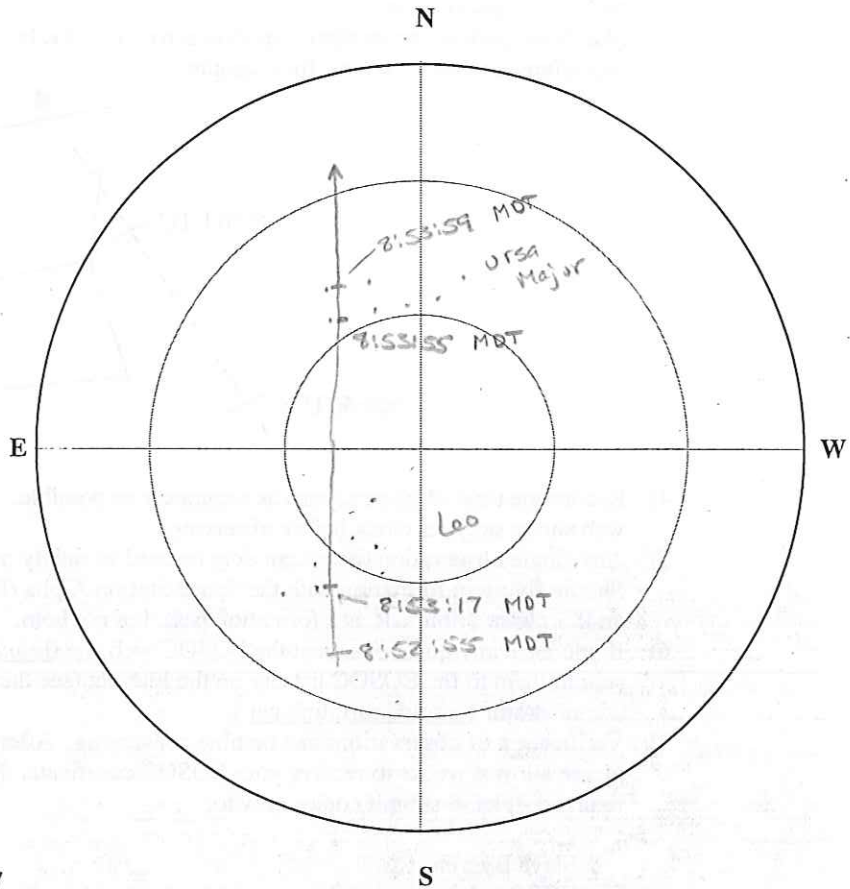
Location of Observer
Latitude 39.9°N
(use decimal degrees only)

Longitude 105.09°W
(use decimal degrees only, east is negative)

Elevation 5300'
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments Mag. 3.3. Spotted it below Leo & watched it dim. Worth of Big Dipper



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone and daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 4

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia <input checked="" type="checkbox"/>
	2 _____		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other _____

Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____
	2 _____		2 _____
	3 _____		3 _____
	4 _____		4 _____ (one during daylight or civil twilight hours)

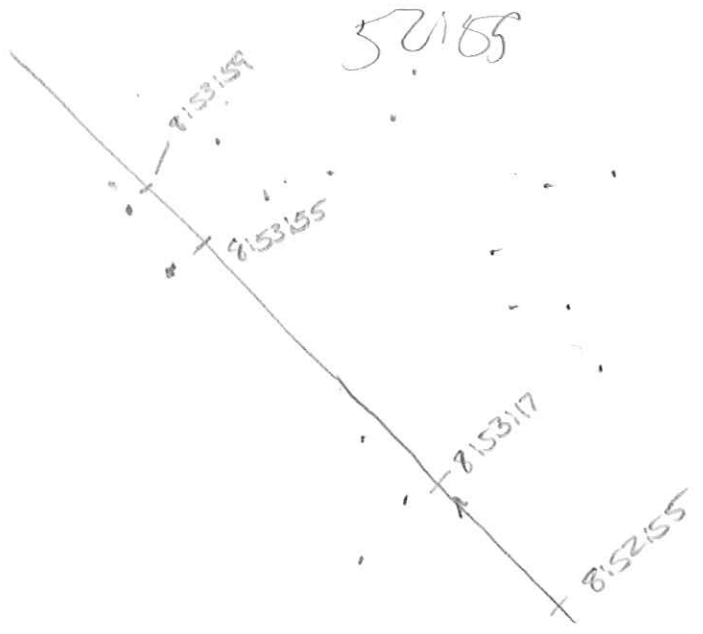
Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____

Sub-3-4-11-100

Diagrams

easy to see it

Cosmos 1484



Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 4/16/05

Satellite Name and
Element Set Satellite ID ISS

Date of Element Set Used 4/15/05

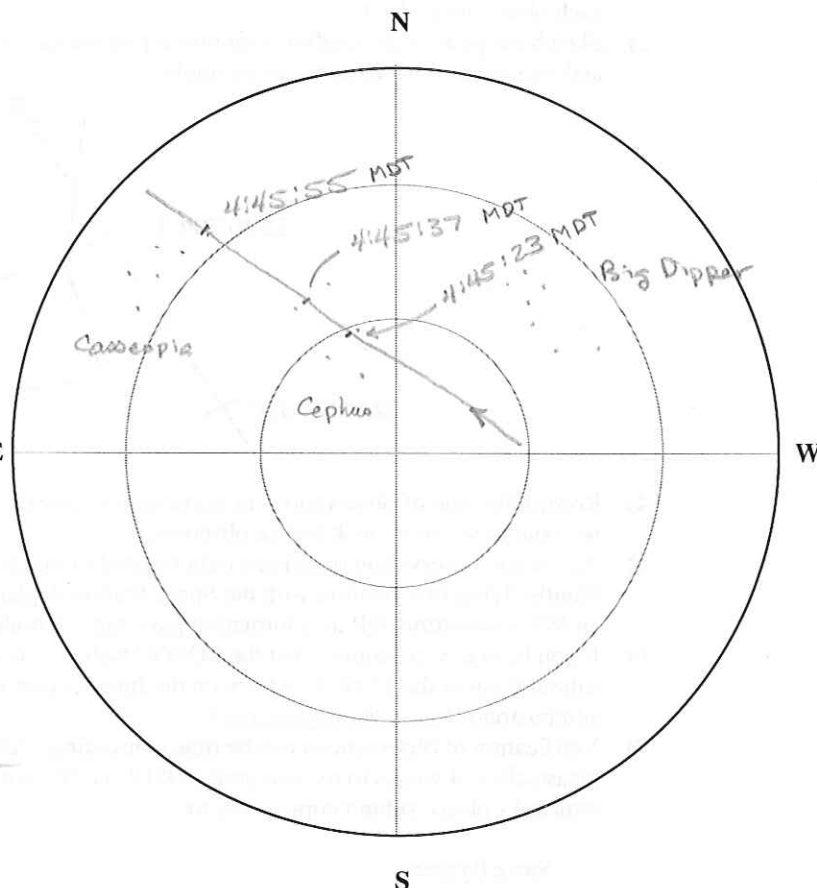
Location of Observer
Latitude 39.9°N
(use decimal degrees only)

Longitude 105.09°W
(use decimal degrees only, east is negative)

Elevation 5300 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments Reached -0.9 in magnitude



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the timezone and daylight/standard time references, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 5

Observation Objective (subject to change - check only one task per observation)

<p>Active Payload (4) 1 _____ 2 _____ 3 _____ 4 _____</p>	<p>Manned Spaceflight (2) STS _____ ISS <u>5</u> Other _____</p>	<p>Multinational (4) Russia _____ China _____ Japan _____ Brazil _____ Other _____</p>
<p>Rocket Bodies (4) 1 _____ 2 _____ 3 _____ 4 _____</p>	<p>Iridium Flares (4) 1 _____ 2 _____ 3 _____ 4 _____ (one during daylight or civil twilight hours)</p>	
<p>Multipass (2) 1 a _____ b _____ 2 a _____ b _____</p>	<p>Formation (2) 1 a _____ b _____ 2 a _____ b _____</p>	<p>Aged Elsets (2) 1 a _____ b _____ 2 a _____ b _____</p>



ISS - Visible Passes

| Home | Info. | Orbit | Prev. | Next | Help |

Search Period Start: 12:00 Tuesday, 12 April, 2005

Search Period End: 12:00 Friday, 22 April, 2005

Observer's Location: Broomfield (39.9210°N, 105.0860°W)

Local Time: Mountain Daylight Time (GMT - 6:00)

Orbit: 352 x 360 km, 51.6° (Epoch 11 Apr)

NEW! Click on the date to get a star chart and other pass details.

Date	Mag	Starts			Max. Altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
13 Apr	1.1	04:56:37	20	SSE	04:57:38	24	SE	05:00:06	10	ENE
✓ 14 Apr	-0.9	05:23:20	21	SW	05:25:04	83	WNW	05:28:04	10	NE
15 Apr	1.3	04:18:15	24	ESE	04:18:15	24	ESE	04:20:02	10	ENE
15 Apr	0.7	05:50:14	10	W	05:52:48	26	NNW	05:55:23	10	NNE
✓ 16 Apr	-0.8	04:44:43	67	WNW	04:44:50	68	NW	04:47:47	10	NE
17 Apr	2.6	03:39:27	12	ENE	03:39:27	12	ENE	03:39:47	10	ENE
17 Apr	0.9	05:11:06	17	WNW	05:12:30	23	NNW	05:14:59	10	NNE
18 Apr	1.3	04:05:44	28	NNE	04:05:44	28	NNE	04:07:22	10	NE
18 Apr	1.9	05:38:55	10	NW	05:40:21	13	NNW	05:41:49	10	NNE
19 Apr	1.2	04:31:56	21	NNW	04:32:04	21	NNW	04:34:26	10	NNE
20 Apr	2.7	03:26:26	13	NE	03:26:26	13	NE	03:26:47	10	NE
20 Apr	2.1	04:58:38	10	NW	04:59:54	12	NNW	05:01:08	10	N
21 Apr	2.0	03:52:30	16	N	03:52:30	16	N	03:53:44	10	NNE
22 Apr	2.2	04:18:30	11	NNW	04:19:17	11	NNW	04:20:19	10	N

Developed and maintained by Chris Peat, Heavens-Above GmbH
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Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 4/16/05

Satellite Name and
Element Set Satellite ID Cosmos 1154 Rocket

Date of Element Set Used 4/15/05

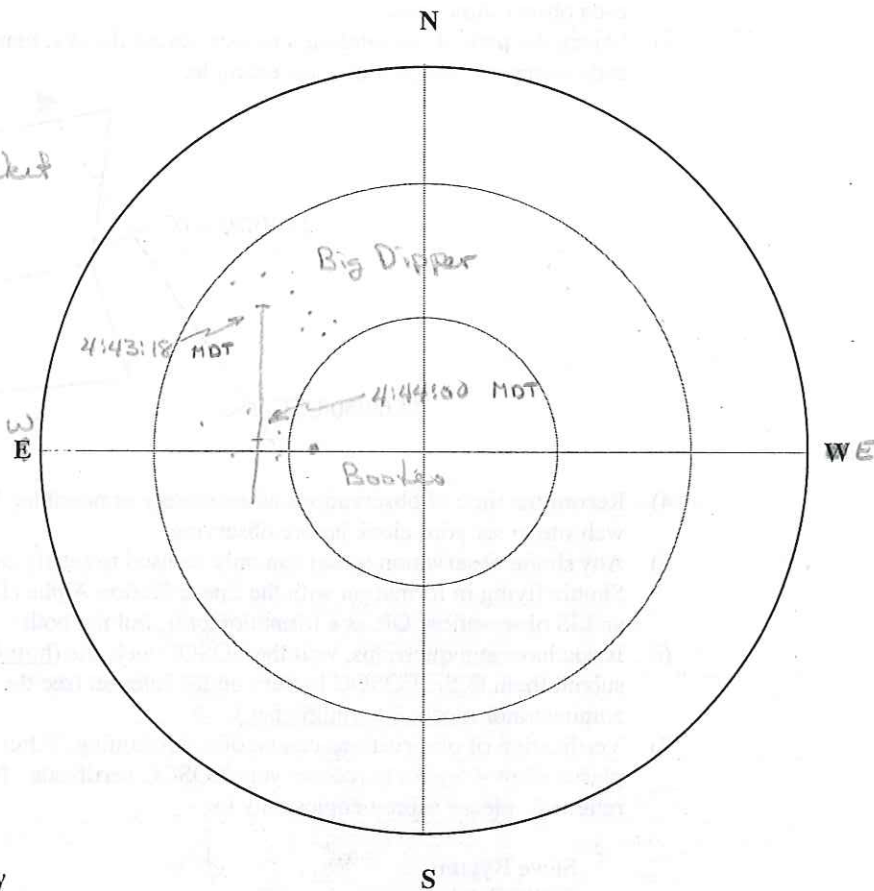
Location of Observer
Latitude 39.9°N
(use decimal degrees only)

Longitude 105.09°W
(use decimal degrees only, east is negative)

Elevation 5300 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments Partly Dim



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

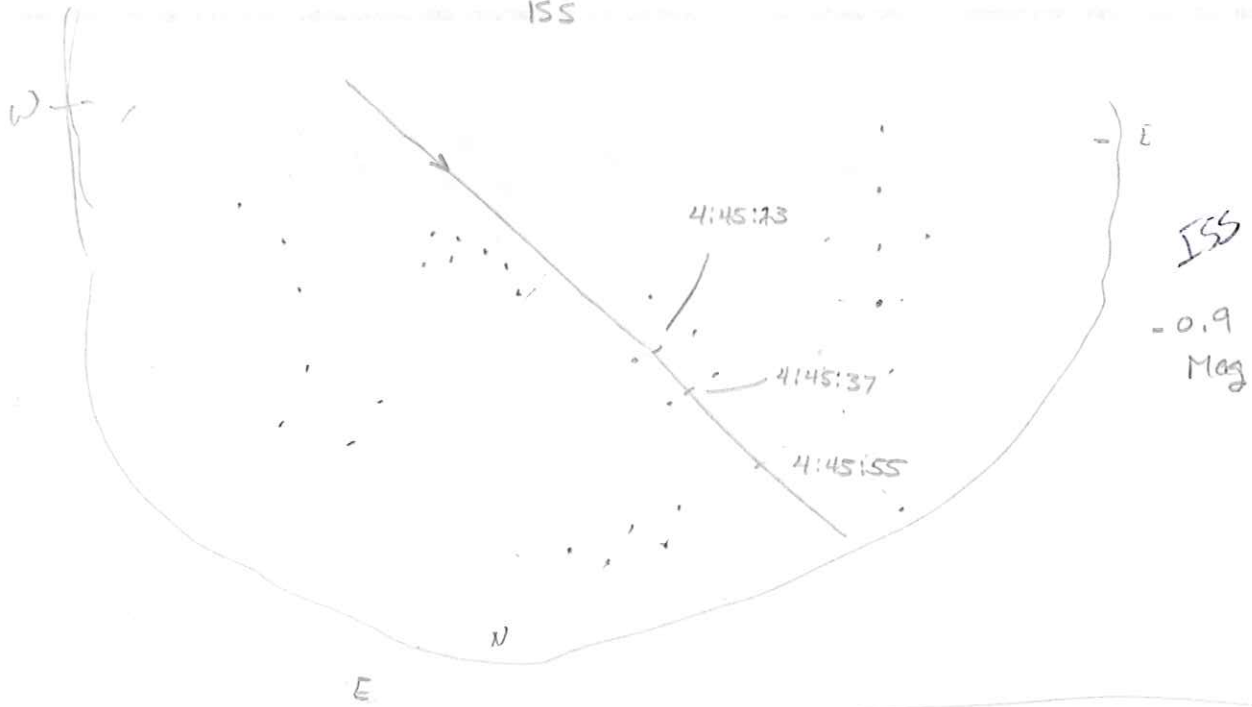
IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone* and *daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 6

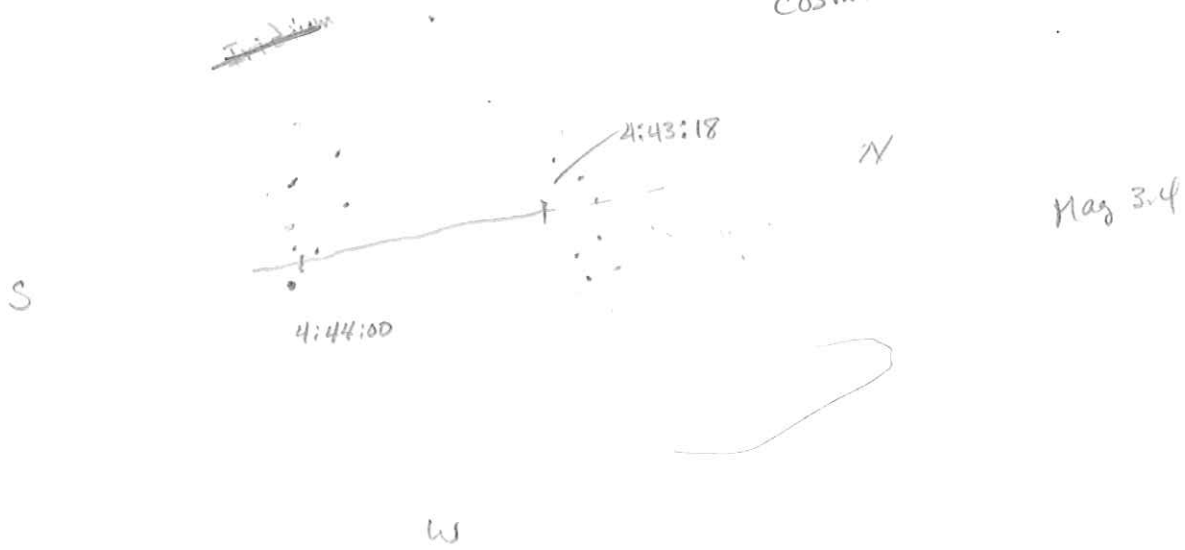
Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia _____
	2 _____		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other _____
Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____		
	2 <u>6</u>		2 _____		
	3 _____		3 _____		
	4 _____		4 _____ (one during daylight or civil twilight hours)		
Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____

Cosmos 1025



Cosmos 1154 Rocket



Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 4/16/05

Satellite Name and
Element Set Satellite ID Lacrosse 2

Date of Element Set Used _____

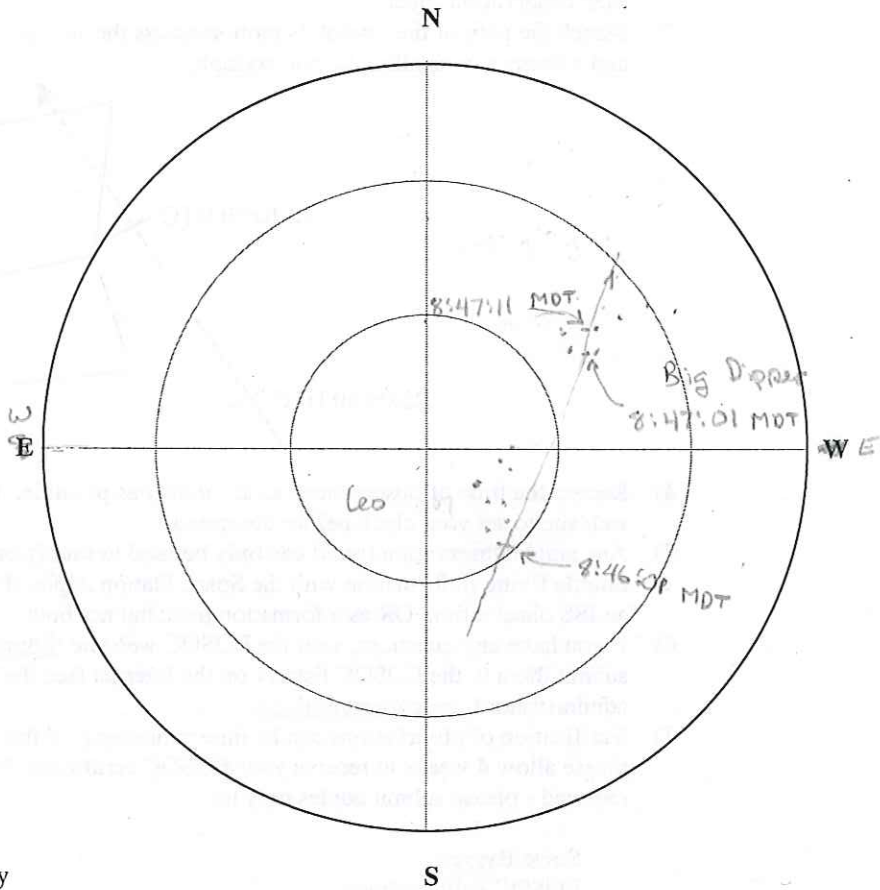
Location of Observer
Latitude 39.9° N
(use decimal degrees only)

Longitude 105.09° W
(use decimal degrees only, east is negative)

Elevation 5300 ft.
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope – specify aperture _____

Comments fairly Dim w/ 1st 1/4
moon



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone and daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 7

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia _____
	2 <u>7</u>		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other _____
Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____		
	2 _____		2 _____		
	3 _____		3 _____		
	4 _____		4 _____ (one during daylight or civil twilight hours)		

Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____



Binoculars.com

Zhumell

Daily predictions for brighter satellites

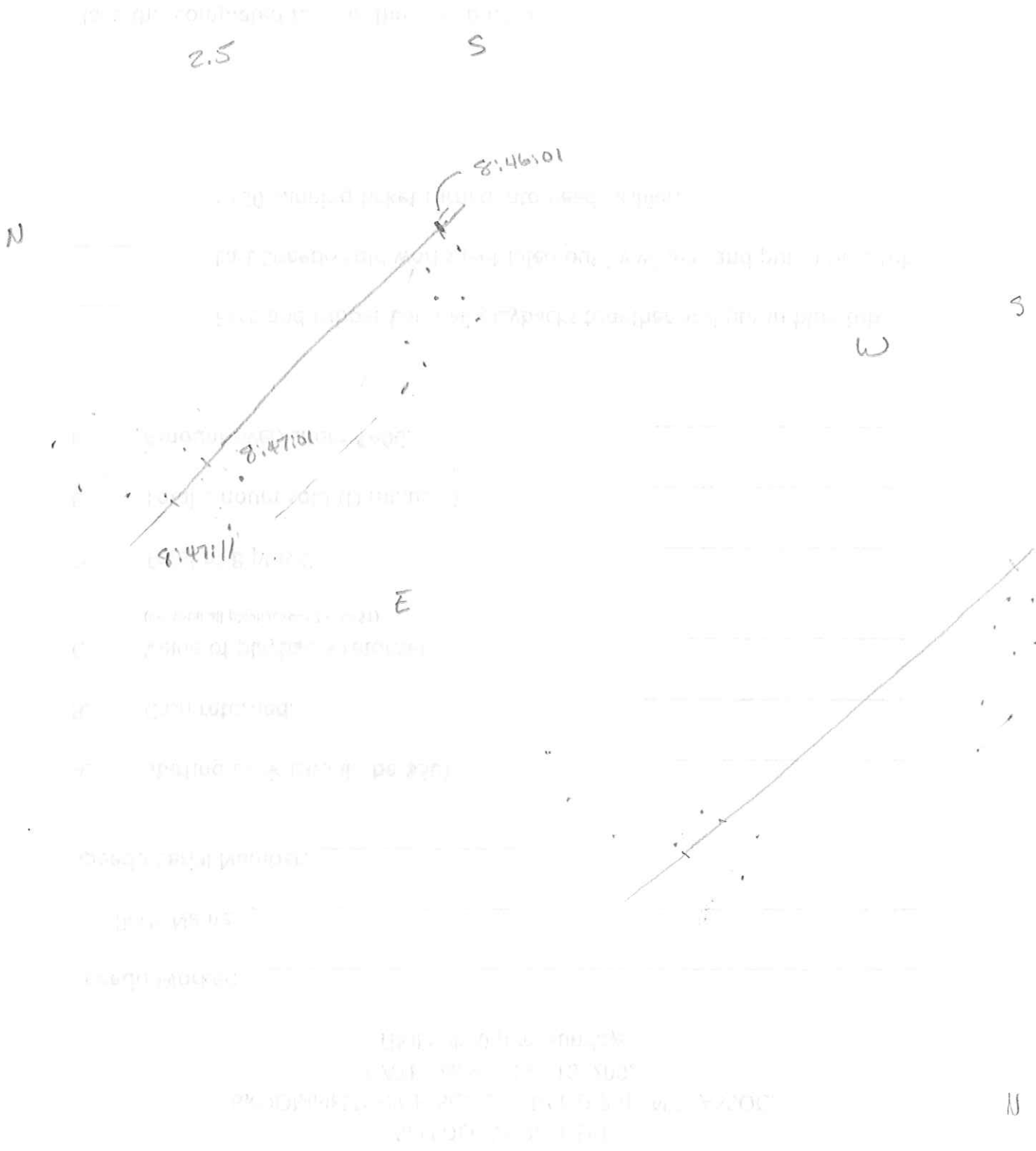
| Home | Prev. PM | Next PM | Prev. AM | Next AM | Help |

Search Period Start: 12:00 Saturday, 16 April, 2005
 Search Period End: 01:00 Sunday, 17 April, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 1151	4.2	20:25:07	10°	SSW	20:28:43	70°	W	20:32:23	10°	N
Okean O Rocket	2.8	20:31:22	10°	SSE	20:35:53	84°	N	20:40:08	10°	NNW
Helios 1A Rocket	3.3	20:35:41	10°	SSE	20:39:53	88°	WSW	20:44:10	10°	NNW
Lacrosse 2	2.5	20:41:43	10°	SSW	20:46:19	80°	ESE	20:50:59	10°	NNE
Cosmos 1346 Rocket	3.6	20:53:59	10°	S	20:58:02	79°	E	21:02:09	10°	NNE
WIRE	3.6	21:00:12	10°	NNE	21:03:34	86°	ENE	21:06:59	10°	SSW
Cosmos 1908 Rocket	4.3	21:02:55	10°	S	21:07:23	81°	E	21:11:52	10°	N
Cosmos 1437	3.9	21:04:20	10°	N	21:08:10	58°	E	21:09:34	34°	SE
Cosmos 1782 Rocket	4.4	21:05:34	13°	S	21:09:23	59°	E	21:13:41	10°	NNE
Cosmos 1656 Rocket	4.5	21:24:18	10°	NNW	21:29:44	75°	WSW	21:32:32	29°	S
Cosmos 1943 Rocket	3.3	21:32:06	10°	NNW	21:37:44	79°	SW	21:39:55	37°	SSE
Cosmos 1980 Rocket	3.5	21:32:08	10°	NNW	21:37:41	60°	ENE	21:39:08	45°	ESE
Cosmos 1697 Rocket	3.3	21:32:17	10°	NNW	21:37:56	70°	ENE	21:39:39	45°	SE
Lacrosse 3	2.4	21:34:26	10°	SW	21:39:10	83°	SE	21:43:54	10°	NE
Cosmos 1500	4.0	21:35:52	10°	N	21:39:53	86°	ENE	21:40:17	73°	SSE
Cosmos 2322 Rocket	4.0	21:55:01	10°	NNW	22:00:30	52°	WSW	22:02:28	36°	SSW
Meteor 1-31 Rocket	3.8	21:56:13	78°	N	21:56:13	78°	N	22:00:04	10°	NNW
Cosmos 405 Rocket	4.4	22:13:40	55°	NNW	22:13:40	55°	NNW	22:17:07	10°	N
Cosmos 2360 Rocket	4.4	22:28:36	10°	N	22:32:59	36°	NE	22:32:59	36°	NE
Cosmos 1833 Rocket	4.0	22:28:53	21°	SW	22:32:30	54°	WNW	22:38:03	10°	NNE

Lacrosse 2



Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 4/17/05

Satellite Name and
Element Set Satellite ID Iridium 94

Date of Element Set Used 4/17/05

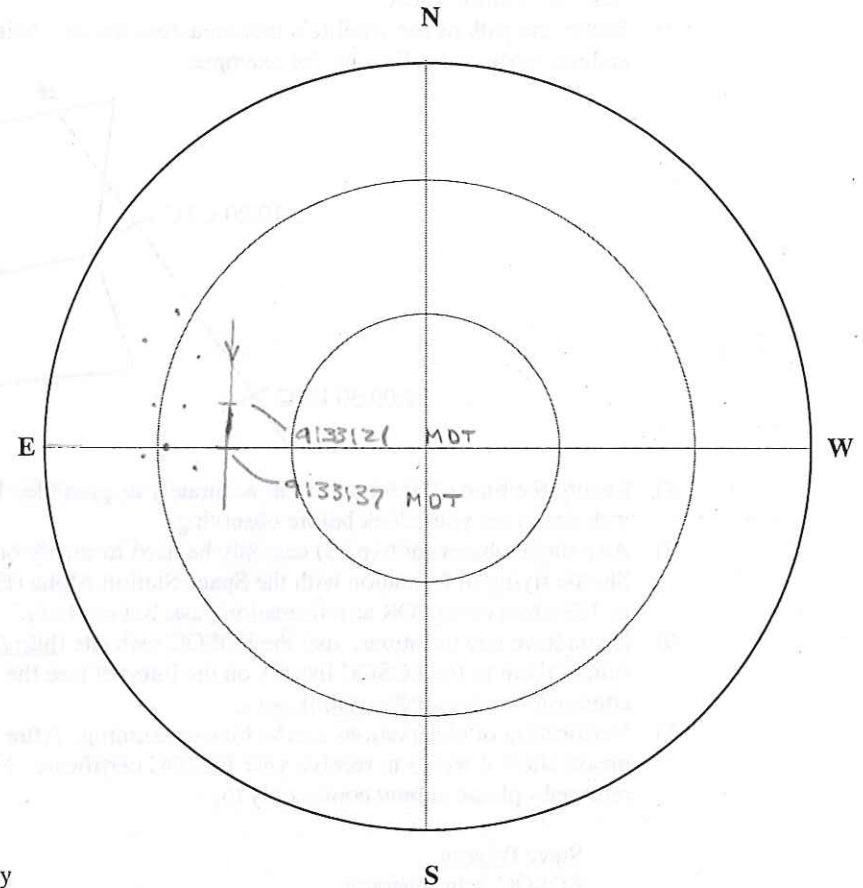
Location of Observer
Latitude 39.9°N
(use decimal degrees only)

Longitude 105.09°W
(use decimal degrees only, east is negative)

Elevation 5300 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments Got Bright between
9:33:24 - 9:33:28 to -9
Magnitude



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone and daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 8

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia _____
	2 _____		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other _____

Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____
	2 _____		2 _____
	3 _____		3 <u>8</u>
	4 _____		4 _____ (one during daylight or civil twilight hours)

Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____

Iridium 94

4/17/05

-9 Max

N

9:31:23

9:3

9:33:21

9:33:37

N



47°

S

E

S

Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 4/19/05

Satellite Name and
Element Set Satellite ID Cosmos 1943 Rocket

Date of Element Set Used 4/19/05

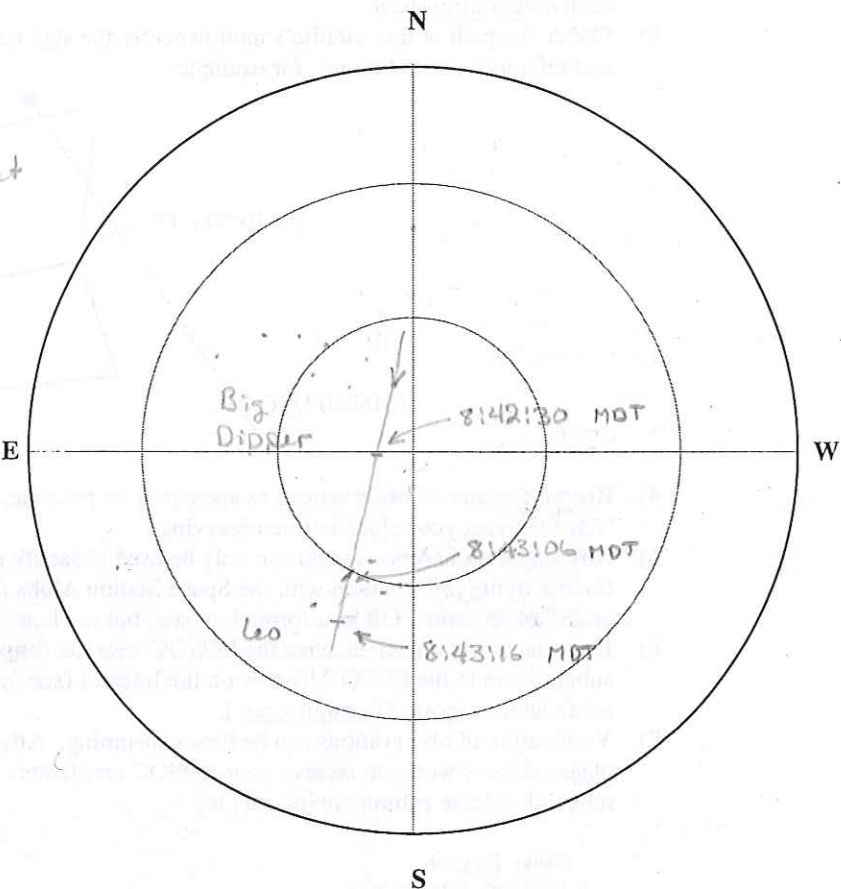
Location of Observer
Latitude 39.9°N
(use decimal degrees only)

Longitude 105.09°W
(use decimal degrees only, east is negative)

Elevation 5300 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments 3/4 → Full Moon, 3.3 mag.
Hard to see with this much
MOON.



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone* and *daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 9

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	1 _____	Multinational (4)	1 _____
	2 _____	STS	_____	Russia	_____
	3 _____	ISS	_____	China	_____
	4 _____	Other	_____	Japan	_____
				Brazil	_____
				Other	_____
Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____		
	2 <u>9</u>		2 _____		
	3 _____		3 _____		
	4 _____		4 _____		

(one during daylight or civil twilight hours)

Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____

Cosmos 1943 Rocket

3.3 Mag

20:36:40

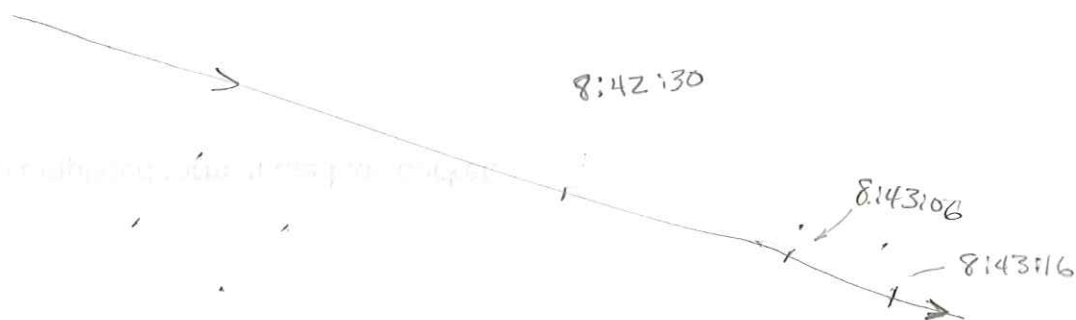
NW 10°

20:42:12

ENE 73°

20:47:31

ESE 11°



Moon $\frac{3}{4}$ → Full Tonight

Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 5/6/05

Satellite Name and
Element Set Satellite ID Envisat

Date of Element Set Used 4/29/05

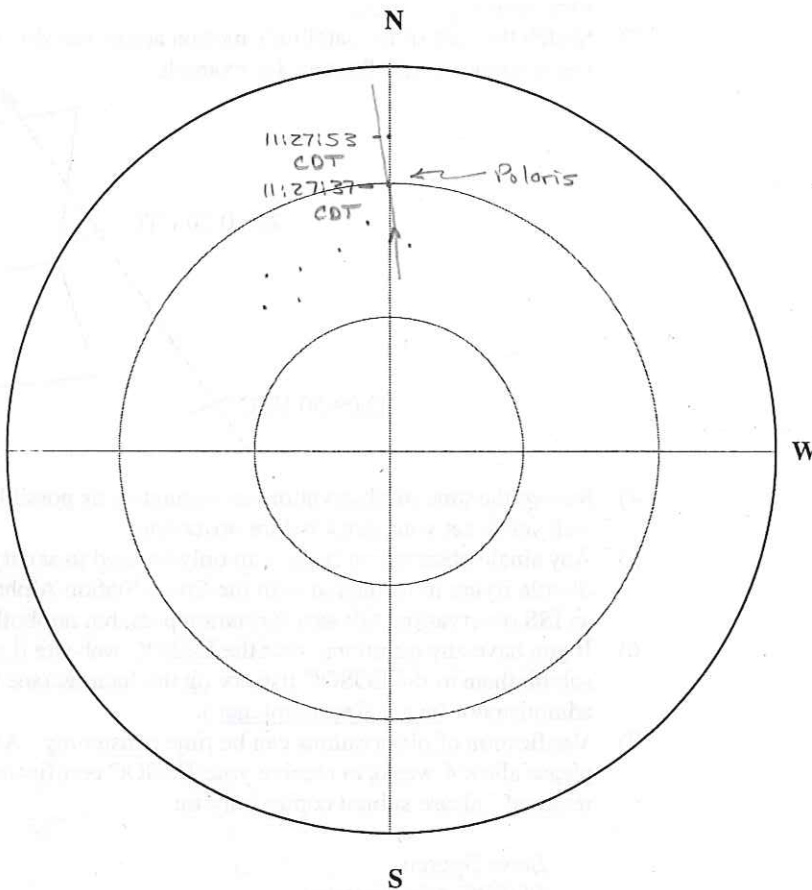
Location of Observer
Latitude 104° W
(use decimal degrees only)

Longitude 30.6° N
(use decimal degrees only, east is negative) E

Elevation 5000 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments It was faint.



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the *timezone* and *daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 10

Observation Objective (subject to change - check only one task per observation)

Active Payload (4) 1 10
 2 _____
 3 _____
 4 _____

Manned Spaceflight (2)
 STS _____
 ISS _____
 Other _____

Multinational (4)
 Russia _____
 China _____
 Japan _____
 Brazil _____
 Other _____

Rocket Bodies (4) 1 _____
 2 _____
 3 _____
 4 _____

Iridium Flares (4) 1 _____
 2 _____
 3 _____
 4 _____ (one during daylight or civil twilight hours)

Multipass (2) 1 a _____ b _____
 2 a _____ b _____

Formation (2) 1 a _____ b _____
 2 a _____ b _____

Aged Elsets (2) 1 a _____ b _____
 2 a _____ b _____



Binoculars.com

Zhumell



Daily predictions for brighter satellites

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Search Period Start: 12:00 Friday, 06 May, 2005
 Search Period End: 01:00 Saturday, 07 May, 2005
 Observer's Location: Texas Star Party (30.6000°N, 104.0000°W)
 Local Time: Central Daylight Time (GMT - 5:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

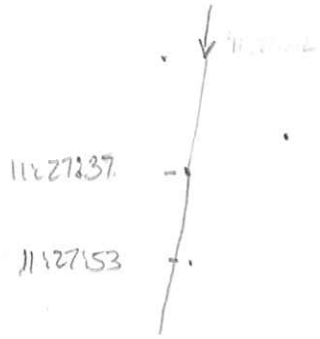
Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Okean-O	3.5	20:52:54	10°	SSE	20:57:21	88°	SW	21:01:53	10°	NNW
Cosmos 1484 Rocket	3.8	20:58:30	10°	S	21:02:21	82°	WSW	21:06:15	10°	NNW
CBERS 1 LM4 rocket	4.3	21:06:24	10°	S	21:11:26	82°	W	21:16:11	10°	NNW
Coronas F rocket	4.2	21:15:47	10°	SSW	21:19:16	64°	W	21:22:44	10°	N
Cosmos 1758	3.9	21:16:47	10°	N	21:21:03	84°	E	21:25:12	10°	S
Okean O Rocket	2.9	21:18:45	10°	SSE	21:23:02	59°	ENE	21:27:21	10°	N
Cosmos 2237 Rocket	3.4	21:24:00	10°	NNW	21:29:41	88°	W	21:35:23	10°	SSE
Helios 1A Rocket	3.3	21:44:01	10°	SSE	21:48:21	87°	NW	21:52:38	10°	NNW
Cosmos 1515	3.7	21:48:45	10°	S	21:52:46	74°	E	21:56:44	10°	N
WIRE	3.6	21:54:40	10°	N	21:58:04	82°	WSW	22:01:18	10°	SSW
Cosmos 1842	4.2	21:59:41	10°	SSW	22:03:47	69°	W	22:07:54	10°	N
Okean 3	4.2	22:00:30	10°	N	22:04:48	71°	E	22:06:46	31°	SSE
Cosmos 1184 Rocket	3.5	22:07:59	10°	N	22:11:51	89°	NNE	22:13:08	41°	S
Cosmos 2297 Rocket	3.9	22:10:03	10°	SSW	22:15:39	63°	WNW	22:21:17	10°	NNE
MOS 1 Rocket	4.4	22:12:43	40°	ESE	22:13:49	49°	ENE	22:18:07	10°	N
Cosmos 1300 Rocket	4.3	22:19:12	52°	SE	22:19:52	58°	E	22:24:07	10°	NNE
Cosmos 1340	4.1	22:23:25	33°	SSW	22:25:10	78°	WNW	22:29:12	10°	N
Cosmos 1484	4.3	22:24:36	37°	SW	22:25:30	48°	W	22:28:53	10°	NNW
Cosmos 2333 Rocket	3.5	22:28:11	10°	N	22:33:52	58°	ENE	22:34:55	50°	ESE
OA0 2 Rocket	4.2	22:45:58	10°	WNW	22:50:55	69°	NNE	22:51:13	67°	NE

Cosmos 2219 Rocket	3.9	23:00:58	10°	NNW	23:06:22	53°	WSW	23:07:06	49°	SW
Spot 4 Rocket	4.3	23:14:41	55°	WSW	23:14:46	55°	W	23:19:52	10°	NNW
Envisat	3.8	23:26:37	44°	N	23:26:37	44°	N	23:30:12	10°	N

Developed and maintained by Chris Peat, Heavens-Above GmbH
Please read the updated FAQ before sending e-mail.



5/6/05
 Envisat



Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 5/4/05

Satellite Name and
Element Set Satellite ID Cosmos 2237 Rocket

Date of Element Set Used 4/28/05

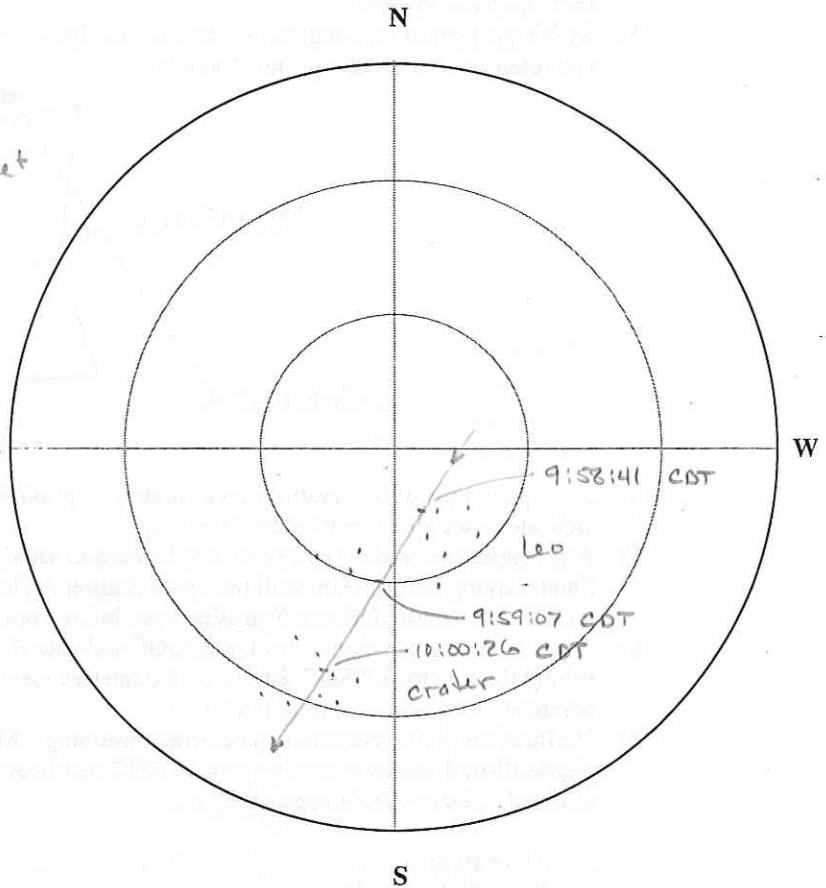
Location of Observer
Latitude 104°W
(use decimal degrees only)

Longitude 30.6°N
(use decimal degrees only, east is negative)

Elevation 5000 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments _____



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the timezone and daylight/standard time references, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 11

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia _____
	2 _____		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other _____

Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____
	2 _____		2 _____
	3 _____		3 _____
	4 <u>11</u>		4 _____ (one during daylight or civil twilight hours)

Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____

Cosmos 2237
Ocean + Rocket

Epoch:
4/28/05

5/4/05

TSP

10° ~~64°~~ NW
81° ~~64°~~ E WSW
18° ~~64°~~ NE

2850

9:58:27

10:00:26

E

W

9:58:41

9:59:27

10:00:26

S

Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 5/4/05

Satellite Name and
Element Set Satellite ID Rosat - German

Date of Element Set Used 4/27/05

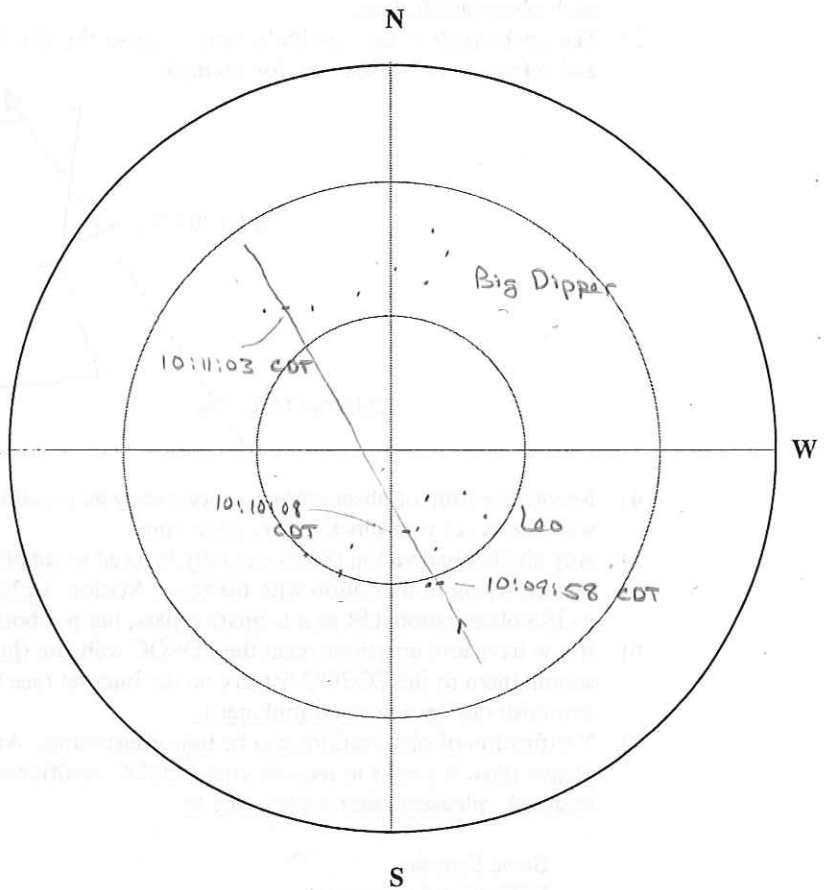
Location of Observer
Latitude 104° W
(use decimal degrees only)

Longitude 30.6° N
(use decimal degrees only, east is negative)

Elevation 5000 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments _____



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the timezone and daylight/standard time references, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 7

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia _____
	2 _____		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other <u>7</u>
Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____		
	2 _____		2 _____		
	3 _____		3 _____		
	4 _____		4 _____ (one during daylight or civil twilight hours)		
Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a _____ b _____

Rosat

Germany

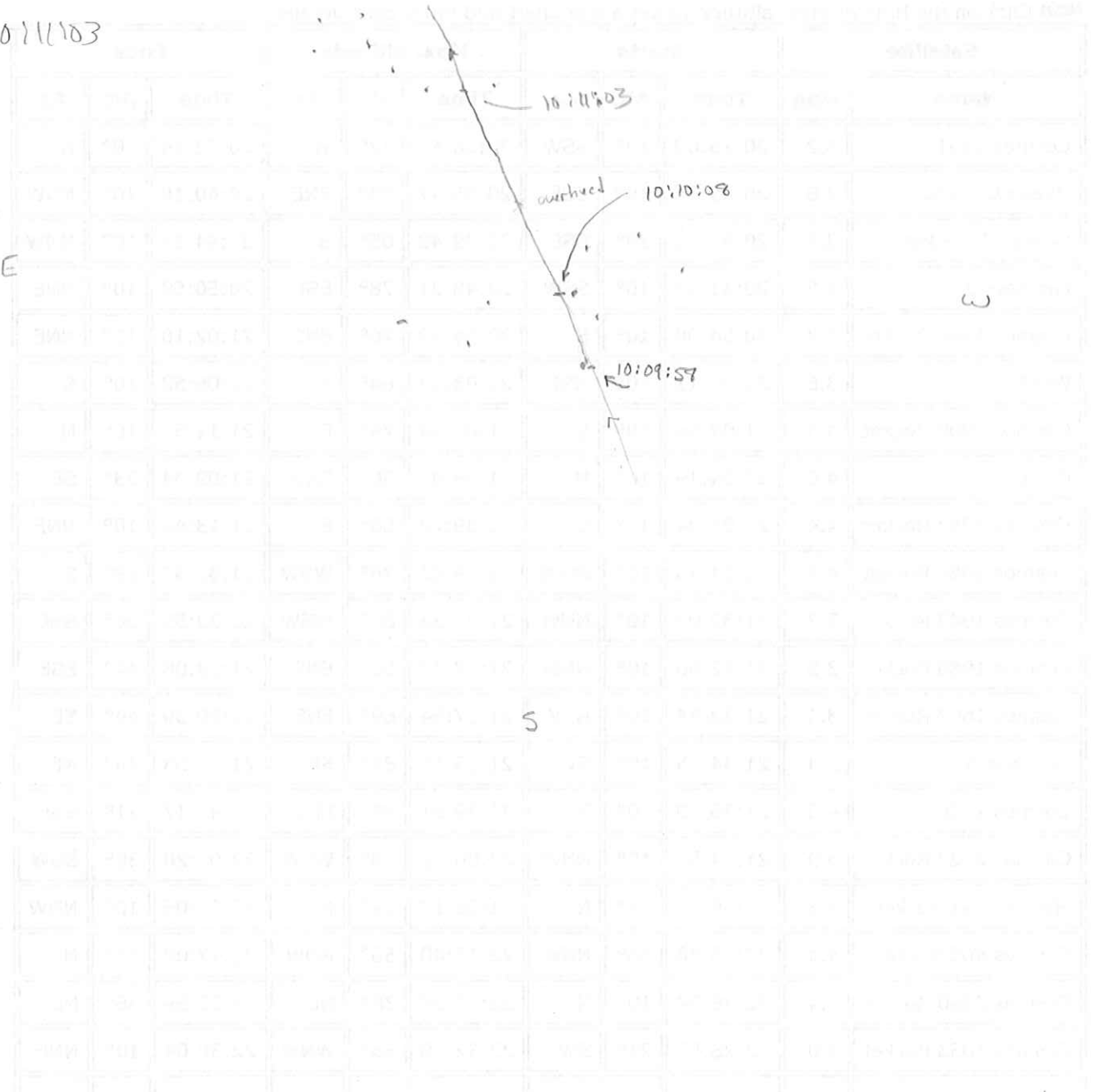
Epoch

4/27/05

N

22:06:59

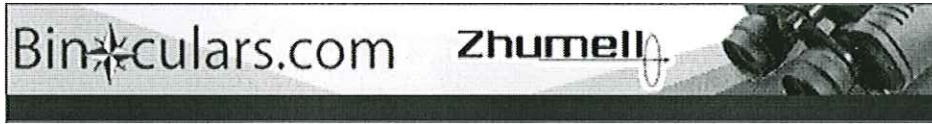
10:11:03



S

E

3



Daily predictions for brighter satellites

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Search Period Start: 12:00 Wednesday, 04 May, 2005
 Search Period End: 01:00 Thursday, 05 May, 2005
 Observer's Location: Texas Star Party (30.6000°N, 104.0000°W)
 Local Time: Central Daylight Time (GMT - 5:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 2227 Rocket	3.7	20:51:08	10°	SSW	20:56:45	74°	WNW	21:02:25	10°	NNE
Cosmos 1441	3.8	20:53:23	10°	S	20:57:07	84°	E	21:00:49	10°	N
Okean 1 Rocket	4.3	20:56:03	10°	S	21:00:21	64°	E	21:04:40	10°	NNE
Cosmos 1484 Rocket	3.8	20:59:14	10°	S	21:03:05	80°	WSW	21:06:59	10°	NNW
Helios 1A Rocket	3.9	21:14:35	10°	SE	21:18:33	38°	ENE	21:22:34	10°	N
Cosmos 1766	4.4	21:23:39	10°	N	21:27:51	78°	W	21:32:02	10°	S
WIRE	3.8	21:37:12	10°	NNE	21:40:22	48°	E	21:43:34	11°	S
GPS 2-05 Rocket1	4.1	21:47:24	10°	WSW	21:52:18	72°	N	21:56:30	13°	ENE
Cosmos 2237 Rocket	3.5	21:52:56	10°	NNW	21:58:37	81°	WSW	22:02:59	18°	SSE
Cosmos 1515	4.0	21:54:04	25°	SSE	21:56:06	48°	E	21:59:59	10°	NNE
Cosmos 1842	3.8	21:57:03	18°	S	22:00:00	64°	E	22:04:07	10°	NNE
Cosmos 1484	3.5	21:58:29	39°	SE	21:59:40	62°	ENE	22:03:01	10°	N
Cosmos 1666	4.3	22:01:09	10°	NNW	22:05:06	59°	W	22:08:18	15°	S
Rosat	3.1	22:06:58	10°	SW	22:10:22	89°	ESE	22:12:08	26°	NE
Okean O Rocket	4.4	22:08:25	10°	SSW	22:12:19	32°	W	22:16:16	10°	NNW
Cosmos 1892 Rocket	4.4	22:14:54	10°	N	22:19:16	56°	E	22:19:45	53°	ESE
Meteor 2-1 Rocket	4.5	22:25:47	10°	N	22:31:17	87°	W	22:33:24	40°	S
UARS	4.2	22:28:41	10°	WNW	22:32:21	31°	WSW	22:33:10	28°	SW
Cosmos 1340	4.1	22:31:07	63°	NE	22:31:07	63°	NE	22:34:41	10°	NNE
Spot 4 Rocket	3.9	22:35:32	55°	E	22:35:59	58°	ENE	22:41:05	10°	N

Gernon

Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 5/9/05

Satellite Name and
Element Set Satellite ID Lacrosse 3

Date of Element Set Used 5/8/05

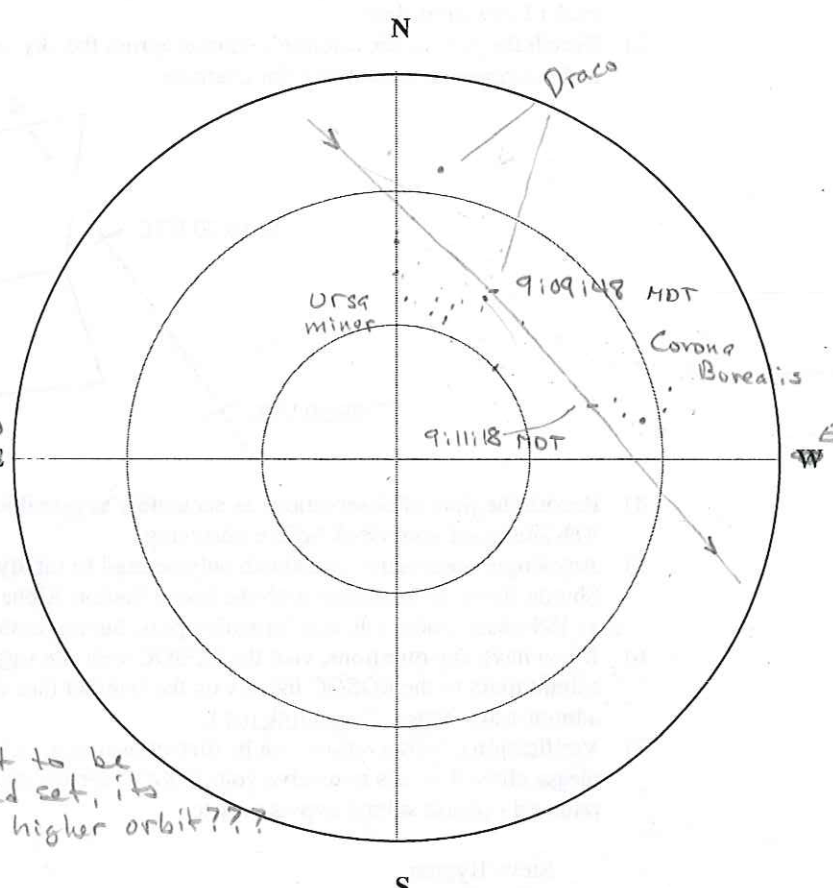
Location of Observer
Latitude 39.9°W
(use decimal degrees only)

Longitude 105.1°W
(use decimal degrees only, east is negative)

Elevation 5000 ft
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope - specify aperture _____

Comments I expected the element set to be earlier, but compared to the aged set, its +5 sec. later, thus indicating a higher orbit???



Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time "hacks" on at least two locations on the satellite track, including the timezone and daylight/standard time references, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).

Observation Number (1-28) 12

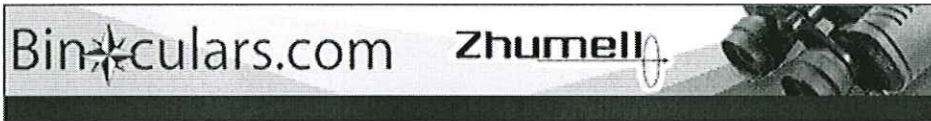
Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	Manned Spaceflight (2)	Multinational (4)
1 _____	STS _____	Russia _____
2 _____	ISS _____	China _____
3 _____	Other _____	Japan _____
4 _____		Brazil _____
		Other _____

Rocket Bodies (4)	Iridium Flares (4)	
1 _____	1 _____	
2 _____	2 _____	
3 _____	3 _____	
4 _____	4 _____ (one during daylight or civil twilight hours)	

Multipass (2)	Formation (2)	Aged Elsets (2)	
1 a _____ b _____	1 a _____ b _____	1 a <u>12</u> b _____	
2 a _____ b _____	2 a _____ b _____	2 a _____ b _____	

Aged Element Sats 4/19/05



Daily predictions for brighter satellites

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Search Period Start: 12:00 Monday, 09 May, 2005
 Search Period End: 01:00 Tuesday, 10 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 2297 Rocket	3.4	20:28:14	10°	SSW	20:33:51	72°	ESE	20:39:31	10°	NNE
ISS	2.3	20:28:17	10°	WNW	20:30:12	16°	NNW	20:32:08	10°	NNE
Cosmos 1515	3.9	20:45:55	10°	S	20:49:58	83°	WNW	20:53:59	10°	N
Cosmos 2333 Rocket	3.5	20:48:42	10°	NNW	20:54:29	78°	ENE	21:00:14	10°	SSE
GPS 2-05 Rocket1	4.2	20:49:49	10°	WSW	20:54:12	50°	S	20:58:20	13°	ESE
Lacrosse 3	3.4	21:06:17	10°	NNW	21:10:44	40°	NE	21:14:07	16°	ESE
Cosmos 2219 Rocket	4.0	21:10:17	10°	NNW	21:15:44	55°	WSW	21:21:09	10°	S
Cosmos 1340	4.4	21:14:42	10°	SSW	21:18:46	67°	WNW	21:22:48	10°	N
Cosmos 1484	4.0	21:16:41	10°	S	21:20:07	57°	W	21:23:34	10°	NNW
Cosmos 1455 Rocket	4.3	21:18:57	10°	S	21:23:21	70°	E	21:27:50	10°	NNE
Cosmos 1437 Rocket	4.2	21:29:19	10°	N	21:33:07	41°	ENE	21:34:29	30°	ESE
Zi Yuan 2	4.1	22:01:52	52°	E	22:02:04	53°	ENE	22:05:32	10°	N
Meteor 1-31 Rocket	4.3	22:12:27	37°	SSW	22:13:44	54°	W	22:17:43	10°	NNW
Cosmos 1206 Rocket	4.2	22:12:50	10°	NNW	22:16:27	49°	W	22:17:12	41°	SW
Lacrosse 4 Rocket	3.5	22:30:41	10°	N	22:34:09	30°	NE	22:34:09	30°	NE
Cosmos 1271 Rocket	3.9	22:31:16	10°	NNW	22:35:14	61°	W	22:35:14	61°	W
Envisat	2.9	22:32:09	57°	S	22:33:23	86°	NW	22:38:28	10°	NNW
Cosmos 1346	4.3	22:36:04	10°	NNW	22:39:36	59°	WNW	22:39:36	59°	WNW
Resurs 1-4 Rocket	3.6	22:41:47	50°	E	22:42:13	51°	ENE	22:47:21	10°	N
Terra	3.7	22:47:17	64°	ENE	22:47:17	64°	ENE	22:51:54	10°	N

4/19/05
4/21/05
4/20/05

Daily predictions for brighter satellites

Astronomy
We'll pay you now to complete survey! (aff, PaidSurveysO)

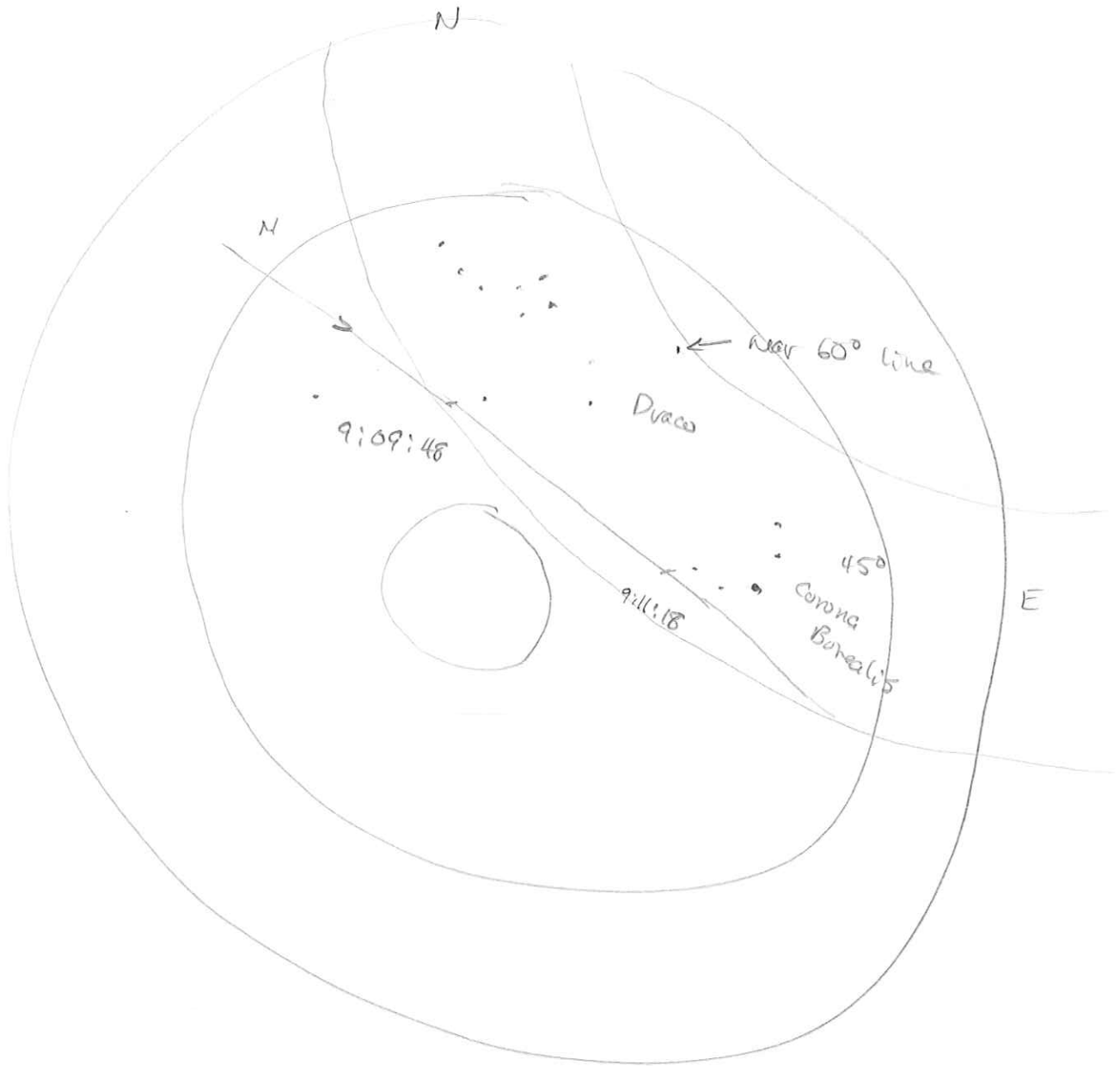
Search Period Start: 12:00 Monday, 09 May, 2005
 Search Period End: 01:00 Tuesday, 10 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 2297 Rocket	3.4	20:28:16	10°	SSW	20:33:54	73°	ESE	20:39:34	10°	NNE
ISS	2.3	20:29:25	10°	WNW	20:31:18	16°	NNW	20:33:12	10°	NNE
Cosmos 1515	3.9	20:46:07	10°	S	20:50:10	83°	WNW	20:54:11	10°	N
Cosmos 2333 Rocket	3.5	20:48:44	10°	NNW	20:54:32	79°	ENE	21:00:17	10°	SSE
GPS 2-05 Rocket1	4.3	20:50:02	10°	WSW	20:54:25	50°	S	20:58:34	13°	ESE
Lacrosse 3	3.4	21:06:23	10°	NNW	21:10:50	40°	NE	21:14:13	16°	ESE
Cosmos 2219 Rocket	4.0	21:10:27	10°	NNW	21:15:55	54°	WSW	21:21:20	10°	S
Cosmos 1340	4.4	21:15:09	10°	SSW	21:19:13	66°	WNW	21:23:15	10°	N
Cosmos 1484	4.0	21:16:46	10°	S	21:20:12	57°	W	21:23:39	10°	NNW
Cosmos 1455 Rocket	4.3	21:18:58	10°	S	21:23:22	70°	E	21:27:51	10°	NNE
Cosmos 1437 Rocket	4.2	21:29:13	10°	N	21:33:01	41°	ENE	21:34:22	30°	ESE
Zi Yuan 2	4.1	22:01:57	52°	E	22:02:09	53°	ENE	22:05:37	10°	N
Meteor 1-31 Rocket	4.3	22:12:26	37°	SSW	22:13:42	55°	W	22:17:41	10°	NNW
Cosmos 1206 Rocket	4.2	22:12:58	10°	NNW	22:16:34	49°	W	22:17:19	41°	SW
Lacrosse 4 Rocket	3.5	22:30:39	10°	N	22:34:08	30°	NE	22:34:08	30°	NE
Cosmos 1271 Rocket	3.9	22:31:09	10°	NNW	22:35:07	61°	W	22:35:07	61°	W
Envisat	2.9	22:32:09	57°	S	22:33:23	85°	NW	22:38:28	10°	NNW
Cosmos 1346	4.3	22:36:00	10°	NNW	22:39:31	59°	WNW	22:39:31	59°	WNW
Resurs 1-4 Rocket	3.6	22:41:47	50°	E	22:42:13	51°	ENE	22:47:22	10°	N
Terra	3.7	22:47:16	63°	ENE	22:47:16	63°	ENE	22:51:54	10°	N
Lacrosse 3	3.8	22:48:10	10°	WNW	22:52:07	31°	WSW	22:52:07	31°	WSW
Lacrosse 2	4.1	23:58:08	10°	NNW	00:01:11	33°	NNE	00:01:11	33°	NNE
Cosmos 2278 Rocket	4.0	00:33:29	53°	NNW	00:33:29	53°	NNW	00:38:22	10°	NNE
Lacrosse 4	4.3	00:48:38	29°	NE	00:48:38	29°	NE	00:51:02	10°	NNE
Cosmos 2082 Rocket	4.0	00:49:45	10°	NNW	00:54:12	55°	NNW	00:54:12	55°	NNW

Mag 3.4
Lacross 3 Pass

Epoch 5/8/05



Lacross 3

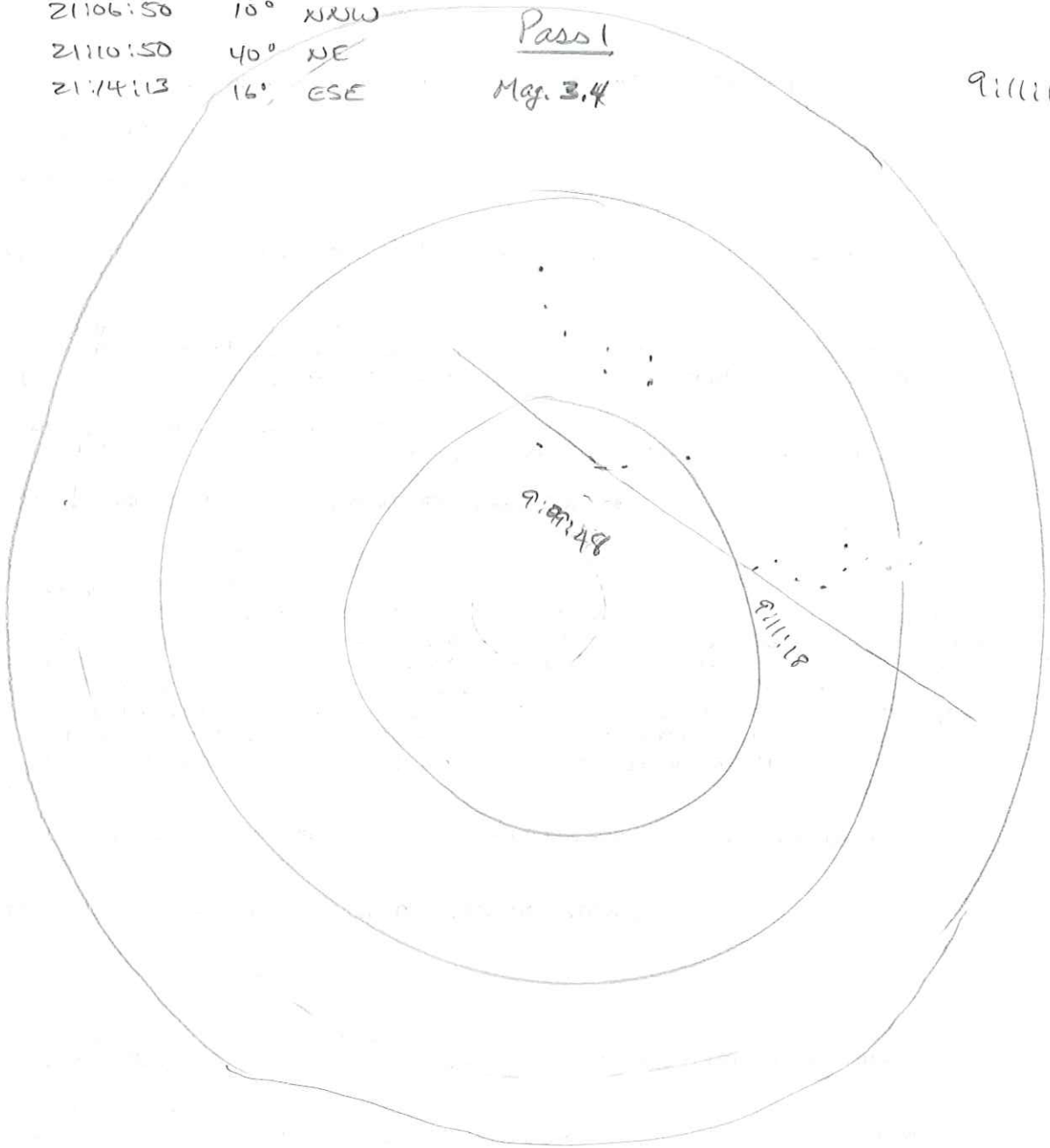
Epoch 5/8/05

N

21:06:50 10° NNW
21:10:50 40° NE
21:14:13 16° ESE

Pass 1
Mag. 3.4

911118



3

E

Astronomical League Earth Orbiting Satellite Observers Club Observation Report Form, Version 1.3

Observers Name Mike Hotka

Date of Observation 5/12/05

Satellite Name and
Element Set Satellite ID Cosmos 1484

Date of Element Set Used 4/21/05

Location of Observer
Latitude 39.9°N
(use decimal degrees only)

Longitude 105.1°W
(use decimal degrees only, east is negative)

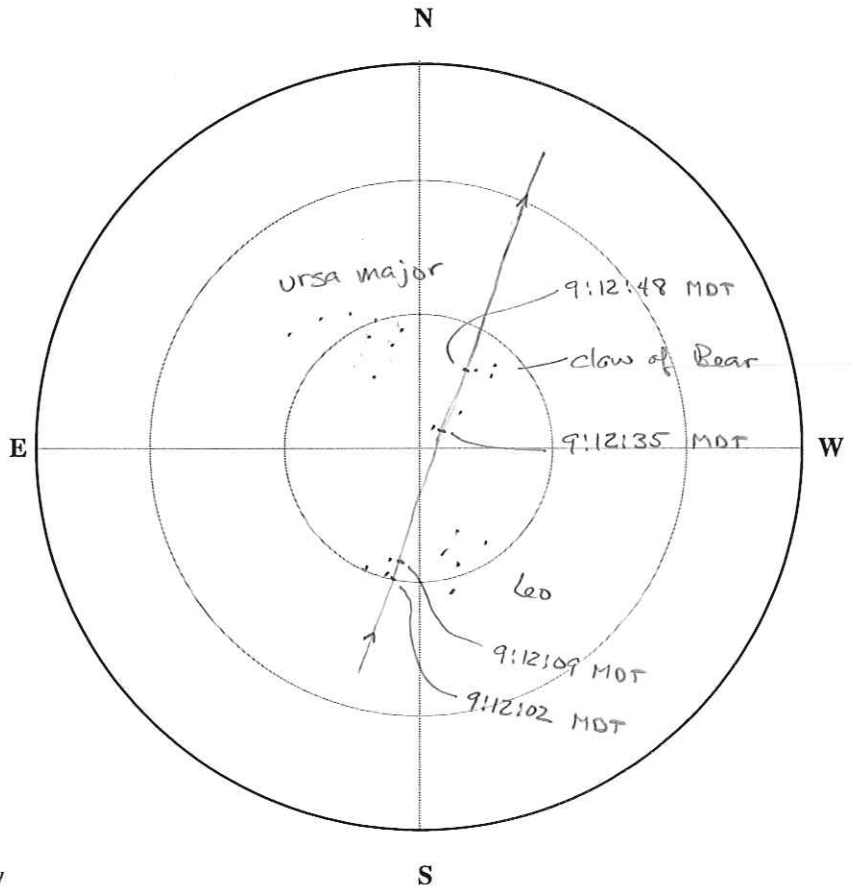
Elevation 5000 ft.
(specify feet or meters)

Instrument Used (check one)
 Unaided Eye
 Binoculars
 Telescope – specify aperture _____

Comments not any change in time due to Russian satellite highly elliptical orbits

Draw or sketch the path of the satellite across the sky relative to bright stars. The outer ring represents the horizon.

IMPORTANT - Place time “hacks” on at least two locations on the satellite track, including the *timezone and daylight/standard time references*, for example 01:20:50 UTC, 19:30:40 EST, 23:10:59 PDT, etc.).



Observation Number (1-28) 13

Observation Objective (subject to change - check only one task per observation)

Active Payload (4)	1 _____	Manned Spaceflight (2)	STS _____	Multinational (4)	Russia _____
	2 _____		ISS _____		China _____
	3 _____		Other _____		Japan _____
	4 _____				Brazil _____
					Other _____
Rocket Bodies (4)	1 _____	Iridium Flares (4)	1 _____		
	2 _____		2 _____		
	3 _____		3 _____		
	4 _____		4 _____ (one during daylight or civil twilight hours)		
Multipass (2)	1 a _____ b _____	Formation (2)	1 a _____ b _____	Aged Elsets (2)	1 a _____ b _____
	2 a _____ b _____		2 a _____ b _____		2 a <u>13</u> b _____

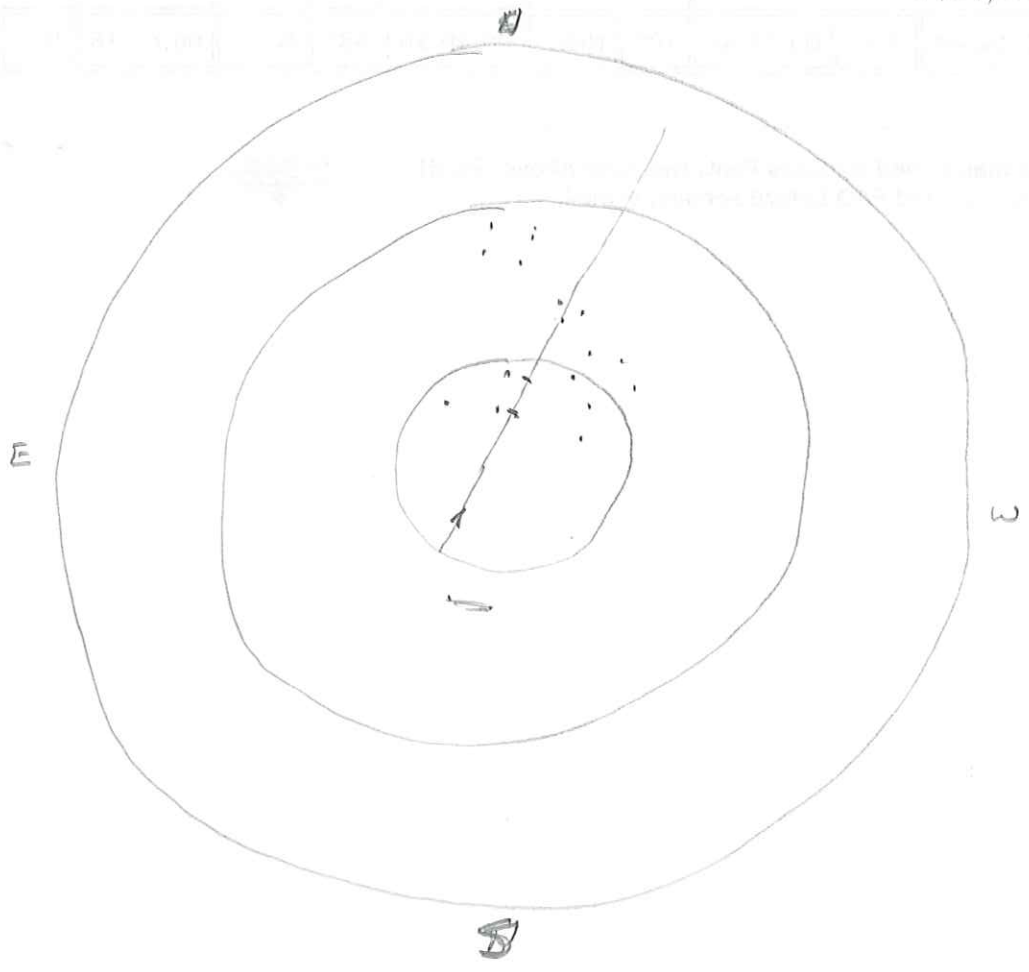
Cosmos 1484 ~~2220~~

Mag 3.6

21:08:59 10° S
21:12:28 77° W
21:15:57 10° NNW

EPOCH
4/21/05

Aged Set
Comparison
#13



Cosmos 148

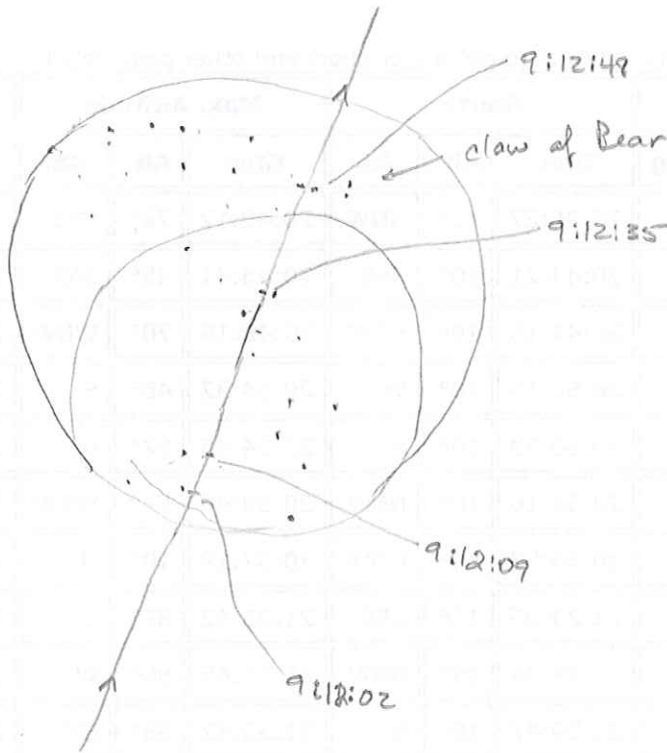
5/12/05

N

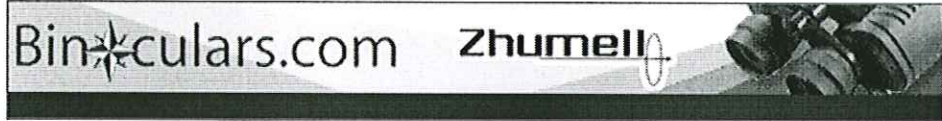
E

W

S



Aged Element Set



Daily predictions for brighter satellites

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Search Period Start: 12:00 Thursday, 12 May, 2005
 Search Period End: 01:00 Friday, 13 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Helios 1A Rocket	3.4	20:39:57	10°	SSE	20:44:17	88°	ENE	20:48:39	10°	NNW
Cosmos 1707	4.5	20:46:15	10°	SSE	20:50:05	38°	E	20:53:55	10°	NNE
Lacrosse 3	2.6	20:52:52	10°	NW	20:57:34	86°	NNE	21:01:50	13°	SE
Okean O Rocket	4.4	21:06:43	10°	SSW	21:10:42	34°	W	21:14:44	10°	NNW
Cosmos 1484	3.6	21:08:59	10°	S	21:12:28	77°	W	21:15:57	10°	NNW
MOS 1 Rocket	4.0	21:28:15	15°	SSE	21:31:55	86°	WSW	21:36:17	10°	NNW
OA0 3 Rocket	4.3	21:28:30	10°	WSW	21:33:00	45°	S	21:35:19	25°	ESE
Lacrosse 4 Rocket	3.9	21:28:42	10°	N	21:31:51	21°	NE	21:33:35	16°	E
Cosmos 1953 Rocket	4.3	21:29:56	10°	N	21:34:29	77°	E	21:37:25	21°	SSE
Cosmos 1437 Rocket	3.6	21:30:48	10°	N	21:34:50	89°	SW	21:37:28	21°	S
ISS	2.4	21:51:03	10°	N	21:51:40	10°	NNE	21:52:18	10°	NNE
Cosmos 1346	3.8	21:51:26	10°	N	21:55:17	73°	ENE	21:56:20	45°	SSE
Cosmos 1933	4.0	21:51:37	10°	N	21:55:42	61°	ENE	21:56:55	42°	SE
GPS 2-04 Rocket1	4.3	21:54:42	10°	SW	21:58:41	36°	S	21:58:41	36°	S
Cosmos 1726 Rocket	4.3	22:05:13	31°	S	22:07:19	87°	ESE	22:11:51	10°	N
Meteor 1-31 Rocket	4.4	22:14:34	33°	SSW	22:16:01	51°	W	22:19:57	10°	NNW
Cosmos 1242 Rocket	4.4	22:16:15	24°	SW	22:18:08	46°	WNW	22:21:45	10°	N
Zi Yuan 2	3.9	22:25:39	70°	WSW	22:25:43	70°	WSW	22:29:20	10°	NNW
Envisat	2.9	22:37:42	52°	S	22:38:58	78°	W	22:44:09	10°	NNW
Lacrosse 4 Rocket	3.5	23:07:19	10°	NW	23:10:23	33°	W	23:10:23	33°	W

4/19/05

4/21/05

4/20/05

Resurs 1-4 Rocket	3.2	23:09:18	83°	S	23:09:34	88°	NW	23:14:53	10°	NNW
Terra	3.9	23:17:57	61°	W	23:17:57	61°	W	23:22:25	10°	NNW
ISS	2.7	23:25:00	10°	NW	23:25:24	13°	NNW	23:25:24	13°	NNW
ADEOS Rocket	3.8	23:33:43	66°	WSW	23:33:45	66°	W	23:39:17	10°	NNW
Lacrosse 2	3.4	23:34:07	10°	NNW	23:37:34	47°	N	23:37:34	47°	N
Cosmos 2278 Rocket	3.6	23:49:36	65°	WNW	23:49:43	65°	WNW	23:55:23	10°	NNE
Cosmos 2082 Rocket	3.7	00:07:18	10°	NNW	00:12:18	65°	NNE	00:12:18	65°	NNE
Cosmos 1844 Rocket	4.4	00:30:32	37°	ENE	00:30:32	37°	ENE	00:34:11	10°	NNE
Cosmos 2263 Rocket	4.5	00:34:36	37°	WNW	00:35:06	38°	WNW	00:40:24	10°	N
Lacrosse 4	4.1	00:56:27	33°	NW	00:56:27	33°	NW	01:00:07	10°	N

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Search Period Start: 12:00 Thursday, 12 May, 2005
 Search Period End: 01:00 Friday, 13 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Helios 1A Rocket	3.4	20:40:01	10°	SSE	20:44:20	88°	ENE	20:48:43	10°	NNW
Cosmos 1707	4.5	20:46:27	10°	SSE	20:50:18	38°	E	20:54:09	10°	NNE
Lacrosse 3	2.6	20:52:58	10°	NW	20:57:42	86°	NNE	21:01:56	13°	SE
Okean O Rocket	4.4	21:06:44	10°	SSW	21:10:44	34°	W	21:14:46	10°	NNW

Epoch
5/12/05

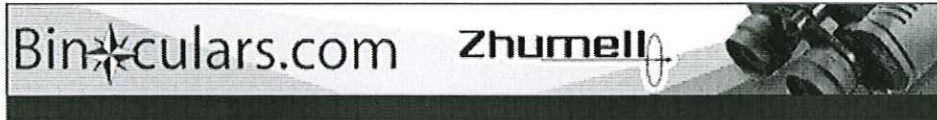
Cosmos 1484	3.6	21:08:58	10°	S	21:12:28	77°	W	21:15:57	10°	NNW
MOS 1 Rocket	4.0	21:28:15	15°	SSE	21:31:55	86°	WSW	21:36:18	10°	NNW
OA0 3 Rocket	4.3	21:28:36	10°	WSW	21:33:06	45°	S	21:35:25	25°	ESE
Lacrosse 4 Rocket	3.9	21:28:38	10°	N	21:31:47	21°	NE	21:33:32	16°	E
Cosmos 1953 Rocket	4.3	21:29:58	10°	N	21:34:29	77°	E	21:37:26	21°	SSE
Cosmos 1437 Rocket	3.6	21:30:40	10°	N	21:34:41	89°	SSW	21:37:19	21°	S
Cosmos 1346	3.8	21:51:17	10°	N	21:55:07	73°	ENE	21:56:10	45°	SSE
Cosmos 1933	4.0	21:51:45	10°	N	21:55:49	61°	ENE	21:57:03	42°	SE
ISS	2.4	21:53:02	10°	N	21:53:45	11°	NNE	21:54:28	10°	NNE
GPS 2-04 Rocket1	4.3	21:55:25	10°	SW	21:59:23	36°	S	21:59:23	36°	S
Cosmos 1726 Rocket	4.3	22:05:14	31°	S	22:07:20	88°	ESE	22:11:52	10°	N
Intercosmos 25	4.4	22:05:26	35°	S	22:07:02	89°	NE	22:10:19	10°	N
Meteor 1-31 Rocket	4.4	22:14:30	33°	SSW	22:15:57	51°	W	22:19:53	10°	NNW
Cosmos 1242 Rocket	4.4	22:16:18	24°	SW	22:18:11	46°	WNW	22:21:48	10°	N
Zi Yuan 2	3.9	22:25:41	70°	WSW	22:25:45	70°	WSW	22:29:22	10°	NNW
Envisat	2.9	22:37:42	52°	S	22:38:58	78°	W	22:44:08	10°	NNW
Lacrosse 4 Rocket	3.5	23:07:15	10°	NW	23:10:20	33°	W	23:10:20	33°	W
Resurs 1-4 Rocket	3.2	23:09:18	83°	S	23:09:34	88°	NW	23:14:53	10°	NNW
Terra	3.9	23:17:56	61°	W	23:17:56	61°	W	23:22:24	10°	NNW
ISS	2.7	23:27:05	10°	NW	23:27:25	12°	NW	23:27:25	12°	NW
ADEOS Rocket	3.8	23:33:43	66°	WSW	23:33:46	66°	W	23:39:18	10°	NNW
Lacrosse 2	3.4	23:34:11	10°	NNW	23:37:41	48°	N	23:37:41	48°	N
Cosmos 2278 Rocket	3.6	23:49:43	65°	WNW	23:49:51	65°	WNW	23:55:30	10°	NNE
Cosmos 2082 Rocket	3.7	00:07:10	10°	NNW	00:12:11	65°	NNE	00:12:11	65°	NNE
Cosmos 1844 Rocket	4.4	00:30:27	37°	ENE	00:30:27	37°	ENE	00:34:07	10°	NNE
Cosmos 2263 Rocket	4.5	00:34:49	37°	WNW	00:35:20	38°	WNW	00:40:38	10°	N
Lacrosse 4	4.1	00:56:28	33°	NW	00:56:28	33°	NW	01:00:09	10°	N

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Search Period Start: 12:00 Friday, 13 May, 2005
 Search Period End: 01:00 Saturday, 14 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

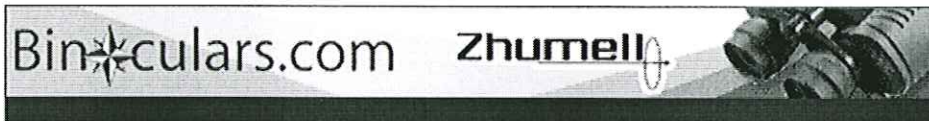
NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 1805	4.3	20:30:02	10°	N	20:34:01	44°	ENE	20:38:00	10°	SSE
Cosmos 1093 Rocket	3.4	20:33:27	10°	N	20:36:32	47°	ENE	20:39:35	10°	SSE
Cosmos 1484	4.3	20:35:49	10°	SE	20:39:00	34°	ENE	20:42:12	10°	N
Cosmos 389 Rocket	4.5	20:36:17	10°	SSW	20:40:11	56°	WNW	20:44:03	10°	N

Cosmos 1707	4.2	20:46:21	10°	SSE	20:50:22	47°	E	20:54:20	10°	NNE
Helios 1A Rocket	3.9	20:54:58	10°	S	20:59:15	63°	W	21:03:35	10°	NNW
Cosmos 1455 Rocket	4.4	20:55:13	10°	S	20:59:40	83°	ESE	21:04:11	10°	N
WIRE	3.7	21:06:43	10°	N	21:10:02	85°	WNW	21:13:20	10°	SSW
Cosmos 1328	4.2	21:07:18	10°	SSE	21:11:15	45°	E	21:15:11	10°	NNE
Cosmos 1825 Rocket	4.4	21:10:43	10°	N	21:15:02	59°	E	21:18:36	14°	SSE
Lacrosse 3	3.7	21:22:40	10°	WNW	21:27:00	37°	SW	21:30:36	14°	S
Cosmos 1437 Rocket	3.9	21:31:13	10°	NNW	21:35:16	69°	WSW	21:38:22	16°	S
Cosmos 1346	3.9	21:36:25	10°	N	21:40:12	59°	E	21:41:46	32°	SE
Lacrosse 4 Rocket	3.0	21:40:21	10°	N	21:44:12	36°	ENE	21:45:40	27°	E
Okean 3 Rocket	4.4	21:49:24	10°	N	21:53:56	89°	W	21:56:16	28°	S
Cosmos 1933	3.8	21:56:33	10°	N	22:00:43	87°	ENE	22:02:13	39°	S
Spot 4 Rocket	4.1	22:00:44	23°	S	22:04:03	67°	W	22:09:14	10°	NNW
OA0 3 Rocket	4.3	22:01:15	10°	WSW	22:05:44	45°	S	22:06:26	42°	SSE
GPS 2-04 Rocket1	4.0	22:01:56	10°	WSW	22:06:16	44°	S	22:06:19	43°	S
Zi Yuan 2	4.0	22:02:06	50°	ESE	22:02:27	54°	E	22:06:02	10°	N
Cosmos 1340 Rocket	4.0	22:04:10	44°	ESE	22:04:23	45°	E	22:08:14	10°	NNE
Cosmos 1242 Rocket	4.3	22:04:49	17°	SSW	22:07:29	50°	WNW	22:11:08	10°	N
Envisat	3.2	22:06:01	37°	SE	22:07:46	54°	ENE	22:12:48	10°	N
Meteor 1-31 Rocket	4.4	22:15:12	32°	SSW	22:16:41	50°	W	22:20:37	10°	NNW
Cosmos 1408 Rocket	4.4	22:15:19	10°	N	22:19:41	59°	E	22:20:11	55°	ESE
Cosmos 1733	4.2	22:17:55	10°	N	22:21:53	49°	ENE	22:21:53	49°	ENE
ISS	1.7	22:18:54	10°	NNW	22:20:58	17°	NNE	22:21:18	17°	NNE
Lacrosse 2	4.4	22:20:26	10°	N	22:23:46	19°	NE	22:24:49	18°	ENE
Terra	4.4	22:22:15	34°	E	22:22:49	36°	ENE	22:27:09	10°	N
Cosmos 1025 Rocket	4.2	22:37:56	10°	N	22:42:18	86°	E	22:42:19	85°	E
ADEOS Rocket	4.2	22:44:14	44°	E	22:45:02	47°	ENE	22:50:25	10°	N
Resurs 1-4 Rocket	3.5	22:44:47	52°	E	22:45:26	55°	ENE	22:50:38	10°	N
Lacrosse 4 Rocket	4.4	23:20:12	10°	WNW	23:22:29	18°	W	23:22:29	18°	W
Cosmos 2278 Rocket	3.6	23:34:57	63°	WSW	23:35:33	68°	WNW	23:41:13	10°	NNE
Cosmos 2082 Rocket	3.6	23:52:58	10°	NNW	23:58:14	67°	NNE	23:58:14	67°	NNE

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Search Period Start: 12:00 Friday, 13 May, 2005
 Search Period End: 01:00 Saturday, 14 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 1805	4.3	20:30:05	10°	N	20:34:05	45°	ENE	20:38:05	10°	SSE
Cosmos 1093 Rocket	3.4	20:33:09	10°	N	20:36:14	46°	ENE	20:39:17	10°	SSE
Cosmos 1484	4.3	20:35:51	10°	SE	20:39:02	34°	ENE	20:42:14	10°	N
Cosmos 389 Rocket	4.5	20:36:05	10°	SSW	20:39:58	56°	W	20:43:50	10°	N
Cosmos 1707	4.2	20:46:08	10°	SSE	20:50:07	47°	E	20:54:05	10°	NNE
Helios 1A Rocket	3.9	20:54:54	10°	S	20:59:11	63°	W	21:03:31	10°	NNW
Cosmos 1455 Rocket	4.4	20:55:12	10°	S	20:59:38	83°	ESE	21:04:10	10°	N
WIRE	3.7	21:07:02	10°	N	21:10:17	82°	NNW	21:13:40	10°	SSW
Cosmos 1328	4.2	21:07:04	10°	SSE	21:11:00	45°	E	21:14:57	10°	NNE
Cosmos 1825 Rocket	4.4	21:10:42	10°	N	21:15:01	59°	E	21:18:35	14°	SSE
Lacrosse 3	3.7	21:22:33	10°	WNW	21:26:53	37°	SW	21:30:29	14°	S
Cosmos 1437 Rocket	3.9	21:31:23	10°	NNW	21:35:27	69°	WSW	21:38:32	16°	S
Cosmos 1346	3.9	21:36:36	10°	N	21:40:24	60°	E	21:41:58	32°	SSE
Lacrosse 4 Rocket	3.0	21:40:25	10°	N	21:44:16	36°	ENE	21:45:44	27°	E
Okean 3 Rocket	4.4	21:49:23	10°	N	21:53:57	89°	W	21:56:17	28°	S
Cosmos 1933	3.9	21:56:23	10°	N	22:00:26	84°	NNE	22:02:05	39°	S
Spot 4 Rocket	4.1	22:00:43	22°	S	22:04:02	67°	W	22:09:13	10°	NNW
OA0 3 Rocket	4.3	22:01:08	10°	WSW	22:05:38	45°	S	22:06:20	42°	SSE
GPS 2-04 Rocket1	4.0	22:01:10	10°	WSW	22:05:30	43°	S	22:05:35	43°	S
Zi Yuan 2	4.0	22:02:05	50°	ESE	22:02:26	54°	E	22:06:02	10°	N

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Cosmos 1340 Rocket	4.0	22:04:12	44°	ESE	22:04:25	45°	E	22:08:17	10°	NNE
Cosmos 1242 Rocket	4.3	22:04:46	17°	SSW	22:07:26	50°	WNW	22:11:04	10°	N
Envisat	3.2	22:06:01	37°	SE	22:07:46	54°	ENE	22:12:49	10°	N
Meteor 1-31 Rocket	4.4	22:15:16	32°	SSW	22:16:46	50°	W	22:20:42	10°	NNW
Cosmos 1408 Rocket	4.4	22:15:17	10°	N	22:19:39	59°	E	22:20:09	55°	ESE
ISS	1.7	22:16:39	10°	NNW	22:18:40	17°	NNE	22:19:06	16°	NNE
Cosmos 1733	4.2	22:17:34	10°	N	22:21:31	49°	ENE	22:21:32	49°	E
Lacrosse 2	4.4	22:20:22	10°	N	22:23:41	19°	NE	22:24:42	18°	ENE
Terra	4.4	22:22:16	35°	E	22:22:50	36°	ENE	22:27:10	10°	N
Cosmos 1025 Rocket	4.2	22:37:54	10°	N	22:42:16	86°	E	22:42:18	85°	E
ADEOS Rocket	4.2	22:44:14	44°	E	22:45:01	47°	ENE	22:50:24	10°	N
Resurs 1-4 Rocket	3.5	22:44:47	52°	E	22:45:26	55°	ENE	22:50:38	10°	N
Lacrosse 4 Rocket	4.4	23:20:17	10°	WNW	23:22:33	18°	W	23:22:33	18°	W
Cosmos 2278 Rocket	3.6	23:34:49	63°	WSW	23:35:24	68°	WNW	23:41:04	10°	NNE
Cosmos 2082 Rocket	3.6	23:53:06	10°	NNW	23:58:22	67°	NNE	23:58:22	67°	NNE
Lacrosse 4	3.8	23:53:21	37°	NNE	23:53:21	37°	NNE	23:56:19	10°	NNE
Lacrosse 2	4.0	23:59:36	10°	NW	00:02:21	33°	WNW	00:02:21	33°	WNW
Cosmos 1844 Rocket	4.5	00:13:47	34°	ENE	00:13:47	34°	ENE	00:17:21	10°	NE
Cosmos 2263 Rocket	4.4	00:17:51	39°	W	00:18:38	41°	WNW	00:24:00	10°	N

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Search Period Start: 12:00 Saturday, 14 May, 2005
 Search Period End: 01:00 Sunday, 15 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 1805	4.1	20:30:32	10°	N	20:34:37	57°	ENE	20:38:44	10°	SSE
Cosmos 1707	4.0	20:46:04	10°	S	20:50:08	59°	E	20:54:13	10°	NNE
OA0 3 Rocket	4.3	20:50:20	10°	WSW	20:54:52	46°	S	20:59:13	11°	ESE
ISS	2.3	21:08:35	10°	N	21:09:27	11°	NNE	21:10:18	10°	NNE
Cosmos 1328	3.9	21:09:47	10°	S	21:13:51	61°	E	21:17:56	10°	NNE
Cosmos 1346	4.2	21:21:47	10°	N	21:25:31	49°	ENE	21:27:37	23°	SE
Cosmos 2058 Rocket	4.4	21:26:55	12°	S	21:30:58	61°	E	21:35:17	10°	NNE
Spot 4 Rocket	3.9	21:29:58	19°	SSE	21:33:44	65°	ENE	21:38:54	10°	N
Cosmos 1206 Rocket	4.4	21:31:31	10°	NNW	21:35:07	46°	W	21:38:32	11°	SSW
Cosmos 1437 Rocket	4.4	21:31:59	10°	NNW	21:35:53	52°	W	21:39:38	11°	S
MOS 1 Rocket	4.2	21:33:25	14°	S	21:37:15	74°	W	21:41:29	10°	NNW
Envisat	4.1	21:34:20	20°	ESE	21:36:44	28°	ENE	21:41:06	10°	N
Cosmos 1606 Rocket	4.3	21:43:04	18°	S	21:46:21	71°	E	21:50:50	10°	NNE
Cosmos 220 Rocket	4.3	21:44:29	10°	NNW	21:48:51	71°	ENE	21:50:47	33°	SSE
Lacrosse 4 Rocket	2.2	21:52:27	10°	NNW	21:56:35	71°	ENE	21:57:56	41°	SE
Cosmos 1242 Rocket	4.2	21:53:09	10°	SSW	21:56:43	53°	WNW	22:00:23	10°	N
Cosmos 1933	4.2	22:01:15	10°	NNW	22:05:22	66°	W	22:07:17	30°	SSW
Cosmos 1340 Rocket	3.7	22:04:57	48°	SE	22:05:45	60°	E	22:09:45	10°	NNE
GPS 2-04 Rocket1	3.9	22:07:44	10°	WSW	22:12:10	48°	S	22:12:15	48°	S
Cosmos 1812 Rocket	4.3	22:09:12	46°	SSE	22:10:16	63°	E	22:14:37	10°	NNE

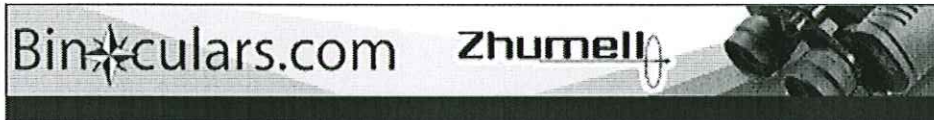
Cosmos 1733	4.0	22:15:34	10°	N	22:19:40	58°	E	22:19:53	56°	E
Meteor 1-31 Rocket	4.5	22:15:58	31°	SSW	22:17:32	49°	W	22:21:27	10°	NNW
Resurs 1-4 Rocket	4.2	22:20:15	30°	E	22:21:25	34°	ENE	22:26:10	10°	N
Cosmos 1408 Rocket	4.5	22:33:24	10°	NNW	22:37:48	70°	W	22:38:29	58°	SSW
Cosmos 2228	4.2	22:40:11	58°	ENE	22:40:11	58°	ENE	22:44:16	10°	NNE
ISS	1.4	22:42:41	10°	NW	22:44:21	26°	NNW	22:44:21	26°	NNW
Lacrosse 2	3.3	22:45:02	10°	NNW	22:49:24	41°	ENE	22:49:31	41°	ENE
Terra	3.5	23:05:27	84°	WSW	23:05:29	83°	W	23:10:14	10°	NNW
Envisat	4.1	23:14:56	31°	WSW	23:15:58	34°	W	23:20:40	10°	NNW
Cosmos 2278 Rocket	3.5	23:19:53	54°	SW	23:21:05	71°	WNW	23:26:46	10°	NNE
Cosmos 2082 Rocket	3.5	23:38:55	10°	NNW	23:44:27	68°	NE	23:44:27	68°	NE
ADEOS Rocket	4.1	23:41:43	55°	WSW	23:41:49	55°	W	23:47:19	10°	NNW
Cosmos 2263 Rocket	4.3	00:01:00	39°	W	00:02:10	44°	WNW	00:07:37	10°	N
Lacrosse 4	4.0	00:28:31	34°	NW	00:28:31	34°	NW	00:32:45	10°	N

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Search Period Start: 12:00 Saturday, 14 May, 2005
 Search Period End: 01:00 Sunday, 15 May, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

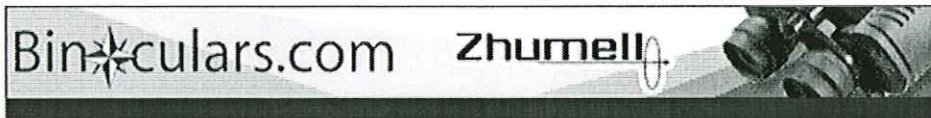
Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 1805	4.1	20:30:29	10°	N	20:34:32	56°	ENE	20:38:39	10°	SSE
Cosmos 1707	4.0	20:46:18	10°	S	20:50:25	60°	E	20:54:28	10°	NNE
OA0 3 Rocket	4.3	20:50:27	10°	WSW	20:54:59	46°	S	20:59:20	11°	ESE
Cosmos 1328	3.9	21:10:02	10°	S	21:14:08	62°	E	21:18:11	10°	NNE

ISS	2.3	21:10:36	10°	N	21:11:32	11°	NNE	21:12:28	10°	NNE
Cosmos 1346	4.2	21:21:33	10°	N	21:25:17	49°	ENE	21:27:23	23°	SE
Cosmos 2058 Rocket	4.4	21:26:57	12°	S	21:30:59	61°	E	21:35:19	10°	NNE
Spot 4 Rocket	3.9	21:29:59	19°	SSE	21:33:45	65°	ENE	21:38:54	10°	N
Cosmos 1206 Rocket	4.4	21:31:37	10°	NNW	21:35:12	46°	W	21:38:36	11°	SSW
Cosmos 1437 Rocket	4.4	21:31:49	10°	NNW	21:35:43	52°	W	21:39:27	11°	S
MOS 1 Rocket	4.2	21:33:25	14°	S	21:37:16	74°	W	21:41:29	10°	NNW
Envisat	4.1	21:34:20	20°	ESE	21:36:44	28°	ENE	21:41:06	10°	N
Cosmos 1606 Rocket	4.3	21:43:05	18°	S	21:46:23	71°	E	21:50:51	10°	NNE
Cosmos 220 Rocket	4.3	21:44:31	10°	NNW	21:48:53	71°	ENE	21:50:49	33°	SSE
Lacrosse 4 Rocket	2.2	21:52:22	10°	NNW	21:56:30	71°	ENE	21:57:52	41°	SE
Cosmos 1242 Rocket	4.2	21:53:13	10°	SSW	21:56:47	53°	WNW	22:00:27	10°	N
Cosmos 1933	4.2	22:01:25	10°	NNW	22:05:31	65°	W	22:07:25	30°	SSW
Cosmos 1340 Rocket	3.7	22:04:54	48°	SE	22:05:43	60°	E	22:09:42	10°	NNE
GPS 2-04 Rocket1	3.9	22:08:34	10°	WSW	22:13:00	48°	S	22:13:03	48°	S
Cosmos 1812 Rocket	4.3	22:09:16	46°	SSE	22:10:21	63°	E	22:14:41	10°	NNE
Meteor 1-31 Rocket	4.5	22:15:53	31°	SSW	22:17:26	49°	W	22:21:21	10°	NNW
Cosmos 1733	3.9	22:15:57	10°	N	22:20:02	58°	E	22:20:15	57°	E
Resurs 1-4 Rocket	4.2	22:20:15	30°	E	22:21:25	34°	ENE	22:26:10	10°	N
Cosmos 1408 Rocket	4.5	22:33:27	10°	NNW	22:37:50	69°	W	22:38:30	58°	SSW
Cosmos 2228	4.2	22:40:16	58°	ENE	22:40:16	58°	ENE	22:44:21	10°	NNE
ISS	1.5	22:44:42	10°	NW	22:46:20	25°	NNW	22:46:20	25°	NNW
Lacrosse 2	3.3	22:45:06	10°	NNW	22:49:30	41°	ENE	22:49:38	41°	ENE
Terra	3.5	23:05:26	84°	WSW	23:05:27	84°	W	23:10:13	10°	NNW
Envisat	4.1	23:14:55	31°	WSW	23:15:57	34°	W	23:20:39	10°	NNW
Cosmos 2278 Rocket	3.5	23:20:02	54°	SW	23:21:14	71°	WNW	23:26:56	10°	NNE
Cosmos 2082 Rocket	3.5	23:38:47	10°	NNW	23:44:19	68°	NE	23:44:19	68°	NE
ADEOS Rocket	4.1	23:41:44	55°	WSW	23:41:50	55°	W	23:47:20	10°	NNW
Cosmos 2263 Rocket	4.3	00:01:15	39°	W	00:02:26	44°	WNW	00:07:53	10°	N
Lacrosse 4	4.0	00:28:33	34°	NW	00:28:33	34°	NW	00:32:48	10°	N

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Search Period Start: 01:00 Sunday, 05 June, 2005
 Search Period End: 12:00 Sunday, 05 June, 2005
 Observer's Location: Broomfield (39.9210°N, 105.0860°W)
 Local Time: Mountain Daylight Time (GMT - 6:00)
 Limiting magnitude: 4.5

NEW! Click on the time of max. altitude to get a star chart and other pass details.

Satellite		Starts			Max. Altitude			Ends		
Name	Mag	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
Cosmos 1697 Rocket	4.1	01:18:07	41°	E	01:18:07	41°	E	01:23:12	10°	NE
Cosmos 1980 Rocket	3.7	01:38:28	53°	ESE	01:38:32	53°	ESE	01:43:58	10°	NNE
Cosmos 2151 Rocket	4.3	02:29:31	10°	N	02:34:02	78°	W	02:34:04	78°	WSW
Cosmos 1441	4.1	02:41:56	10°	NNW	02:45:06	61°	NW	02:45:06	61°	NW

Helios 1B	3.3	02:45:53	10°	NNE	02:50:15	55°	E	02:51:11	45°	SE
Radcat	3.0	02:53:49	82°	NW	02:53:50	82°	NW	02:57:23	10°	NNW
Helios 1A	4.0	02:54:45	10°	N	02:59:25	65°	W	03:00:14	53°	SW
Cosmos 1603 Rocket4	4.4	02:55:18	47°	SSW	02:57:03	89°	NNE	03:02:44	10°	NNE
UARS	4.1	02:57:22	29°	WNW	02:58:29	34°	NW	03:02:17	10°	NNE
Cosmos 1674 Rocket	4.2	03:21:51	45°	SSW	03:23:07	76°	W	03:27:30	10°	N
Lacrosse 4	3.8	03:22:07	10°	NNW	03:26:43	44°	ENE	03:31:18	10°	SE
AQUA	3.8	03:29:05	10°	N	03:33:32	40°	WNW	03:35:14	30°	WSW
Cosmos 1356 Rocket	3.7	03:29:37	10°	N	03:33:43	85°	E	03:36:04	25°	SSE
ERS-1 Rocket	3.8	03:35:25	10°	NNE	03:40:29	79°	E	03:43:43	23°	S
Cosmos 1222 Rocket	3.6	03:53:46	31°	SSW	03:55:22	59°	W	03:59:03	10°	N
Abrixas rocket	4.1	03:55:13	26°	WSW	03:57:28	78°	NNW	04:01:32	10°	ENE
Cosmos 2237 Rocket	3.5	04:12:49	14°	SSW	04:17:50	80°	ESE	04:23:28	10°	NNE
Cosmos 2360 Rocket	4.3	04:16:21	15°	WSW	04:20:17	34°	WNW	04:25:23	10°	N
Cosmos 389 Rocket	3.5	04:17:08	10°	NNW	04:20:57	72°	W	04:24:50	10°	S
Meteor 2-4 Rocket	4.5	04:20:29	10°	NNW	04:25:51	73°	W	04:31:18	10°	S
Cosmos 1515	3.9	04:26:33	10°	N	04:30:30	82°	N	04:34:45	10°	S
Cosmos 1340	4.0	04:26:35	10°	NNW	04:30:36	78°	W	04:34:39	10°	S
Uosat 12 SS-18 rocket	4.3	04:32:35	10°	SSW	04:38:02	78°	SE	04:45:07	10°	NE
Cosmos 1842	4.2	04:45:39	10°	NNW	04:49:37	48°	W	04:53:38	10°	SSW
Cosmos 2263 Rocket	3.4	04:50:00	10°	NNW	04:55:39	78°	WSW	05:01:16	10°	SSE
Cosmos 2278 Rocket	3.6	04:54:36	10°	NNW	05:00:07	53°	WSW	05:05:36	10°	S
Landsat 4	4.4	05:00:55	10°	S	05:04:55	59°	WSW	05:08:57	10°	NNW

Developed and maintained by Chris Peat, Heavens-Above GmbH
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