



Human Performance Attachment

Astronomical Data

Crozet, VA

HWY18MH005

(16 pages)

Sun and Moon Data for One Day

U.S. Naval Observatory Astronomical Applications Department

Crozet Crash (Longitude W78° 43', Latitude N38° 4')

Wednesday, January 31, 2018 Universal Time - 5h

Sun	
Begin civil twilight	06:52
Sunrise	07:20
Sun transit	12:28
Sunset	17:37
End civil twilight	18:05
Moon	
Moonrise	16:50 on preceding day
Moon transit	00:08
Moonset	07:20
Moonrise	18:00

Phase of the Moon on January 31, 2018: Full Moon at 08:27

Astronomical Applications Dept.
 U.S. Naval Observatory
 Washington, DC 20392-5420

CROZET CRASH

° , ° ,
 W 78 43, N38 04

Altitude and Azimuth of the Sun
 Jan 31, 2018

Zone: 5h West of Greenwich

	Altitude	Azimuth
		(E of N)
h m	°	°
06:21	-12.0	102.7
06:22	-11.8	102.9
06:23	-11.6	103.0
06:24	-11.4	103.2
06:25	-11.2	103.3
06:26	-11.0	103.5
06:27	-10.8	103.6
06:28	-10.6	103.8
06:29	-10.4	103.9
06:30	-10.3	104.0
06:31	-10.1	104.2
06:32	-9.9	104.3
06:33	-9.7	104.5
06:34	-9.5	104.6
06:35	-9.3	104.8
06:36	-9.1	104.9
06:37	-8.9	105.1
06:38	-8.7	105.2
06:39	-8.5	105.4
06:40	-8.4	105.5
06:41	-8.2	105.6
06:42	-8.0	105.8
06:43	-7.8	105.9
06:44	-7.6	106.1
06:45	-7.4	106.2
06:46	-7.2	106.4
06:47	-7.0	106.5
06:48	-6.8	106.7
06:49	-6.6	106.8
06:50	-6.5	107.0
06:51	-6.3	107.1
06:52	-6.1	107.3
06:53	-5.9	107.4
06:54	-5.7	107.6
06:55	-5.5	107.7
06:56	-5.3	107.9
06:57	-5.1	108.0

06:58	-5.0	108.2
06:59	-4.8	108.3
07:00	-4.6	108.4
07:01	-4.4	108.6
07:02	-4.2	108.7
07:03	-4.0	108.9
07:04	-3.8	109.0
07:05	-3.7	109.2
07:06	-3.5	109.3
07:07	-3.3	109.5
07:08	-3.1	109.6
07:09	-2.9	109.8
07:10	-2.7	109.9
07:11	-2.5	110.1
07:12	-2.4	110.2
07:13	-2.2	110.4
07:14	-2.0	110.6
07:15	-1.8	110.7
07:16	-1.6	110.9
07:17	-1.4	111.0
07:18	-1.3	111.2
07:19	-1.1	111.3
07:20	-0.9	111.5
07:21	-0.1	111.6
07:22	0.0	111.8
07:23	0.2	111.9
07:24	0.4	112.1
07:25	0.5	112.2
07:26	0.7	112.4
07:27	0.8	112.5
07:28	1.0	112.7
07:29	1.1	112.9
07:30	1.3	113.0
07:31	1.5	113.2
07:32	1.6	113.3
07:33	1.8	113.5
07:34	2.0	113.6
07:35	2.1	113.8
07:36	2.3	113.9
07:37	2.5	114.1
07:38	2.6	114.3
07:39	2.8	114.4
07:40	3.0	114.6
07:41	3.2	114.7
07:42	3.3	114.9
07:43	3.5	115.0
07:44	3.7	115.2
07:45	3.8	115.4
07:46	4.0	115.5
07:47	4.2	115.7
07:48	4.4	115.8
07:49	4.5	116.0
07:50	4.7	116.2
07:51	4.9	116.3
07:52	5.0	116.5
07:53	5.2	116.6
07:54	5.4	116.8

07:55	5.6	117.0
07:56	5.7	117.1
07:57	5.9	117.3
07:58	6.1	117.5
07:59	6.2	117.6
08:00	6.4	117.8
08:01	6.6	118.0
08:02	6.8	118.1
08:03	6.9	118.3
08:04	7.1	118.4
08:05	7.3	118.6
08:06	7.4	118.8
08:07	7.6	118.9
08:08	7.8	119.1
08:09	7.9	119.3
08:10	8.1	119.4
08:11	8.3	119.6
08:12	8.5	119.8
08:13	8.6	120.0
08:14	8.8	120.1
08:15	9.0	120.3
08:16	9.1	120.5
08:17	9.3	120.6
08:18	9.5	120.8
08:19	9.6	121.0
08:20	9.8	121.1
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08:22	10.1	121.5
08:23	10.3	121.7
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08:25	10.6	122.0
08:26	10.8	122.2
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08:28	11.1	122.5
08:29	11.3	122.7
08:30	11.5	122.9
08:31	11.6	123.1
08:32	11.8	123.2
08:33	11.9	123.4
08:34	12.1	123.6
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08:37	12.6	124.1
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08:42	13.4	125.0
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08:44	13.7	125.4
08:45	13.9	125.6
08:46	14.0	125.7
08:47	14.2	125.9
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08:49	14.5	126.3
08:50	14.7	126.5
08:51	14.8	126.7

08:52	15.0	126.8
08:53	15.1	127.0
08:54	15.3	127.2
08:55	15.5	127.4
08:56	15.6	127.6
08:57	15.8	127.8
08:58	15.9	128.0
08:59	16.1	128.2
09:00	16.2	128.3
09:01	16.4	128.5
09:02	16.5	128.7
09:03	16.7	128.9
09:04	16.8	129.1
09:05	17.0	129.3
09:06	17.2	129.5
09:07	17.3	129.7
09:08	17.5	129.9
09:09	17.6	130.1
09:10	17.8	130.3
09:11	17.9	130.5
09:12	18.1	130.7
09:13	18.2	130.9
09:14	18.4	131.0
09:15	18.5	131.2
09:16	18.6	131.4
09:17	18.8	131.6
09:18	18.9	131.8
09:19	19.1	132.0
09:20	19.2	132.2
09:21	19.4	132.4
09:22	19.5	132.6
09:23	19.7	132.8
09:24	19.8	133.0
09:25	20.0	133.2
09:26	20.1	133.4
09:27	20.2	133.7
09:28	20.4	133.9
09:29	20.5	134.1
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09:32	20.9	134.7
09:33	21.1	134.9
09:34	21.2	135.1
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09:36	21.5	135.5
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09:40	22.0	136.4
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09:43	22.5	137.0
09:44	22.6	137.2
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09:47	23.0	137.8
09:48	23.1	138.1

09:49	23.2	138.3
09:50	23.4	138.5
09:51	23.5	138.7
09:52	23.6	138.9
09:53	23.8	139.2
09:54	23.9	139.4
09:55	24.0	139.6
09:56	24.1	139.8
09:57	24.3	140.0
09:58	24.4	140.3
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10:00	24.7	140.7
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10:06	25.4	142.1
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10:08	25.6	142.5
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10:18	26.8	144.8
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10:27	27.8	147.0
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10:32	28.3	148.2
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10:36	28.7	149.2
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10:39	29.0	149.9
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10:43	29.4	150.9
10:44	29.5	151.2
10:45	29.6	151.4

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10:48	29.9	152.2
10:49	30.0	152.4
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10:52	30.2	153.2
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10:54	30.4	153.7
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10:56	30.6	154.2
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10:58	30.8	154.7
10:59	30.8	155.0
11:00	30.9	155.3
11:01	31.0	155.5
11:02	31.1	155.8
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11:07	31.5	157.1
11:08	31.6	157.4
11:09	31.6	157.6
11:10	31.7	157.9
11:11	31.8	158.2
11:12	31.9	158.4
11:13	31.9	158.7
11:14	32.0	159.0
11:15	32.1	159.2
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11:17	32.2	159.8
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11:22	32.5	161.1
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11:32	33.1	163.9
11:33	33.2	164.2
11:34	33.2	164.5
11:35	33.3	164.7
11:36	33.3	165.0
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11:38	33.4	165.6
11:39	33.5	165.8
11:40	33.5	166.1
11:41	33.6	166.4
11:42	33.6	166.7

11:43	33.7	167.0
11:44	33.7	167.3
11:45	33.8	167.5
11:46	33.8	167.8
11:47	33.8	168.1
11:48	33.9	168.4
11:49	33.9	168.7
11:50	34.0	169.0
11:51	34.0	169.2
11:52	34.0	169.5
11:53	34.1	169.8
11:54	34.1	170.1
11:55	34.1	170.4
11:56	34.2	170.7
11:57	34.2	170.9
11:58	34.2	171.2
11:59	34.3	171.5
12:00	34.3	171.8
12:01	34.3	172.1
12:02	34.4	172.4
12:03	34.4	172.7
12:04	34.4	173.0
12:05	34.4	173.2
12:06	34.5	173.5
12:07	34.5	173.8
12:08	34.5	174.1
12:09	34.5	174.4
12:10	34.5	174.7
12:11	34.5	175.0
12:12	34.6	175.3
12:13	34.6	175.6
12:14	34.6	175.8
12:15	34.6	176.1
12:16	34.6	176.4
12:17	34.6	176.7
12:18	34.6	177.0
12:19	34.7	177.3
12:20	34.7	177.6
12:21	34.7	177.9
12:22	34.7	178.2
12:23	34.7	178.5
12:24	34.7	178.7
12:25	34.7	179.0
12:26	34.7	179.3
12:27	34.7	179.6
12:28	34.7	179.9
12:29	34.7	180.2
12:30	34.7	180.5
12:31	34.7	180.8
12:32	34.7	181.1
12:33	34.7	181.4
12:34	34.7	181.6
12:35	34.7	181.9
12:36	34.7	182.2
12:37	34.7	182.5
12:38	34.7	182.8
12:39	34.6	183.1

12:40	34.6	183.4
12:41	34.6	183.7
12:42	34.6	184.0
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12:46	34.6	185.1
12:47	34.5	185.4
12:48	34.5	185.7
12:49	34.5	186.0
12:50	34.5	186.3
12:51	34.5	186.6
12:52	34.4	186.9
12:53	34.4	187.1
12:54	34.4	187.4
12:55	34.4	187.7
12:56	34.3	188.0
12:57	34.3	188.3
12:58	34.3	188.6
12:59	34.2	188.9
13:00	34.2	189.1
13:01	34.2	189.4
13:02	34.1	189.7
13:03	34.1	190.0
13:04	34.1	190.3
13:05	34.0	190.6
13:06	34.0	190.9
13:07	34.0	191.1
13:08	33.9	191.4
13:09	33.9	191.7
13:10	33.9	192.0
13:11	33.8	192.3
13:12	33.8	192.6
13:13	33.7	192.8
13:14	33.7	193.1
13:15	33.6	193.4
13:16	33.6	193.7
13:17	33.5	194.0
13:18	33.5	194.3
13:19	33.4	194.5
13:20	33.4	194.8
13:21	33.3	195.1
13:22	33.3	195.4
13:23	33.2	195.6
13:24	33.2	195.9
13:25	33.1	196.2
13:26	33.1	196.5
13:27	33.0	196.8
13:28	33.0	197.0
13:29	32.9	197.3
13:30	32.9	197.6
13:31	32.8	197.9
13:32	32.7	198.1
13:33	32.7	198.4
13:34	32.6	198.7
13:35	32.5	199.0
13:36	32.5	199.2

13:37	32.4	199.5
13:38	32.3	199.8
13:39	32.3	200.0
13:40	32.2	200.3
13:41	32.1	200.6
13:42	32.1	200.9
13:43	32.0	201.1
13:44	31.9	201.4
13:45	31.9	201.7
13:46	31.8	201.9
13:47	31.7	202.2
13:48	31.6	202.5
13:49	31.6	202.7
13:50	31.5	203.0
13:51	31.4	203.3
13:52	31.3	203.5
13:53	31.3	203.8
13:54	31.2	204.0
13:55	31.1	204.3
13:56	31.0	204.6
13:57	30.9	204.8
13:58	30.9	205.1
13:59	30.8	205.4
14:00	30.7	205.6
14:01	30.6	205.9
14:02	30.5	206.1
14:03	30.4	206.4
14:04	30.3	206.6
14:05	30.3	206.9
14:06	30.2	207.2
14:07	30.1	207.4
14:08	30.0	207.7
14:09	29.9	207.9
14:10	29.8	208.2
14:11	29.7	208.4
14:12	29.6	208.7
14:13	29.5	208.9
14:14	29.4	209.2
14:15	29.3	209.4
14:16	29.2	209.7
14:17	29.1	209.9
14:18	29.0	210.2
14:19	28.9	210.4
14:20	28.8	210.7
14:21	28.7	210.9
14:22	28.6	211.2
14:23	28.5	211.4
14:24	28.4	211.7
14:25	28.3	211.9
14:26	28.2	212.2
14:27	28.1	212.4
14:28	28.0	212.6
14:29	27.9	212.9
14:30	27.8	213.1
14:31	27.7	213.4
14:32	27.6	213.6
14:33	27.5	213.8

14:34	27.4	214.1
14:35	27.3	214.3
14:36	27.1	214.6
14:37	27.0	214.8
14:38	26.9	215.0
14:39	26.8	215.3
14:40	26.7	215.5
14:41	26.6	215.7
14:42	26.5	216.0
14:43	26.3	216.2
14:44	26.2	216.4
14:45	26.1	216.7
14:46	26.0	216.9
14:47	25.9	217.1
14:48	25.8	217.4
14:49	25.6	217.6
14:50	25.5	217.8
14:51	25.4	218.0
14:52	25.3	218.3
14:53	25.2	218.5
14:54	25.0	218.7
14:55	24.9	219.0
14:56	24.8	219.2
14:57	24.7	219.4
14:58	24.5	219.6
14:59	24.4	219.8
15:00	24.3	220.1
15:01	24.2	220.3
15:02	24.0	220.5
15:03	23.9	220.7
15:04	23.8	221.0
15:05	23.6	221.2
15:06	23.5	221.4
15:07	23.4	221.6
15:08	23.3	221.8
15:09	23.1	222.0
15:10	23.0	222.3
15:11	22.9	222.5
15:12	22.7	222.7
15:13	22.6	222.9
15:14	22.5	223.1
15:15	22.3	223.3
15:16	22.2	223.5
15:17	22.1	223.8
15:18	21.9	224.0
15:19	21.8	224.2
15:20	21.6	224.4
15:21	21.5	224.6
15:22	21.4	224.8
15:23	21.2	225.0
15:24	21.1	225.2
15:25	21.0	225.4
15:26	20.8	225.6
15:27	20.7	225.8
15:28	20.5	226.0
15:29	20.4	226.3
15:30	20.3	226.5

15:31	20.1	226.7
15:32	20.0	226.9
15:33	19.8	227.1
15:34	19.7	227.3
15:35	19.5	227.5
15:36	19.4	227.7
15:37	19.2	227.9
15:38	19.1	228.1
15:39	19.0	228.3
15:40	18.8	228.5
15:41	18.7	228.7
15:42	18.5	228.9
15:43	18.4	229.1
15:44	18.2	229.3
15:45	18.1	229.5
15:46	17.9	229.7
15:47	17.8	229.8
15:48	17.6	230.0
15:49	17.5	230.2
15:50	17.3	230.4
15:51	17.2	230.6
15:52	17.0	230.8
15:53	16.9	231.0
15:54	16.7	231.2
15:55	16.6	231.4
15:56	16.4	231.6
15:57	16.2	231.8
15:58	16.1	232.0
15:59	15.9	232.1
16:00	15.8	232.3
16:01	15.6	232.5
16:02	15.5	232.7
16:03	15.3	232.9
16:04	15.2	233.1
16:05	15.0	233.3
16:06	14.8	233.5
16:07	14.7	233.6
16:08	14.5	233.8
16:09	14.4	234.0
16:10	14.2	234.2
16:11	14.1	234.4
16:12	13.9	234.6
16:13	13.7	234.7
16:14	13.6	234.9
16:15	13.4	235.1
16:16	13.3	235.3
16:17	13.1	235.5
16:18	12.9	235.6
16:19	12.8	235.8
16:20	12.6	236.0
16:21	12.4	236.2
16:22	12.3	236.4
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16:27	11.5	237.2

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16:30	11.0	237.8
16:31	10.8	237.9
16:32	10.6	238.1
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16:34	10.3	238.5
16:35	10.1	238.6
16:36	10.0	238.8
16:37	9.8	239.0
16:38	9.6	239.2
16:39	9.5	239.3
16:40	9.3	239.5
16:41	9.1	239.7
16:42	9.0	239.8
16:43	8.8	240.0
16:44	8.6	240.2
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16:52	7.3	241.5
16:53	7.1	241.7
16:54	6.9	241.8
16:55	6.8	242.0
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16:58	6.3	242.5
16:59	6.1	242.7
17:00	5.9	242.8
17:01	5.7	243.0
17:02	5.6	243.2
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17:07	4.7	244.0
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17:14	3.5	245.1
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17:34	0.2	248.2
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17:53	-3.8	251.1
17:54	-4.0	251.3
17:55	-4.2	251.4
17:56	-4.4	251.6
17:57	-4.6	251.7
17:58	-4.8	251.9
17:59	-4.9	252.0
18:00	-5.1	252.1
18:01	-5.3	252.3
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18:03	-5.7	252.6
18:04	-5.9	252.7
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18:20	-8.9	255.1
18:21	-9.1	255.2

18:22	-9.3	255.4
18:23	-9.5	255.5
18:24	-9.7	255.7
18:25	-9.9	255.8
18:26	-10.0	256.0
18:27	-10.2	256.1
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18:29	-10.6	256.4
18:30	-10.8	256.6
18:31	-11.0	256.7
18:32	-11.2	256.8
18:33	-11.4	257.0
18:34	-11.6	257.1
18:35	-11.8	257.3
18:36	-12.0	257.4

[Back to form](#)