

TABLE 2. DETERMINATIONS OF MAGNETIC DECLINATION IN 1803-1806 AND 2003

Date <sup>1</sup>	USGS quad. <sup>2</sup>	Lat. <sup>3</sup>	Long. <sup>3</sup>	Altitude (corrected) <sup>4</sup>	Hour angle <sup>5</sup>	Solar decl. <sup>6</sup>	Eq 3 az. <sup>7</sup>	Eq 2 az. <sup>8</sup>	Compass azimuth <sup>9</sup>	M.d. <sup>10</sup> Eq 3	M.d. <sup>11</sup> eq. 2	Bgs <sup>12</sup> model	2003 Dec. <sup>13</sup>	Moulton vol/pg <sup>14</sup>
11/21/1803	Cache	37.09	89.29	22.9415	-38.455	-19.8269	141.42	140.56	133.5	7.9	7.1	7.44	-0.63	2/97
12/3/1803	Kaskaskia	37.99	89.95	20.7689	-36.398	-22.0565	143.69	143.97	136.25	7.4	7.7	7.60	-0.23	2/120
5/29/1804	Gasconade	38.68	91.55	35.7977	60.748	21.7025	270.38	271.91	263.0	7.4	8.9	8.16	0.85	2/263
6/2/1804	Osage	38.56	92.03	26.2625	74.223	22.2656	278.45	276.74	270.0	8.5	6.7	8.36	1.37	2/271-2
"	"	38.56	92.03	23.7168	77.290	22.2667	280.32	279.59	272.0	8.3	7.6			
"	"	38.56	92.03	21.5127	80.223	22.2677	281.93	281.40	274.0	7.9	7.4			
6/27/1804	Kansas City	39.12	94.61	40.2015	-56.178	23.3452	91.06	92.96	81.0*	10.1*	12.0*	9.31	3.33	2/326
"	"	39.12	94.61	28.5149	71.322	23.3304	278.00	278.12	268.0	10.0	10.1			
"	"	39.12	94.61	26.6729	73.710	23.3301	279.36	279.48	269.0	10.4	10.5			
7/11/1804	Rulo	40.03	95.37	19.5996	82.376	22.0668	282.81	282.83	271.0	11.8	11.8	9.59	3.87	2/372
"	"	40.03	95.37	19.0734	83.109	22.0665	283.22	283.22	271.0	12.2	12.2			
7/12/1804	"	40.03	95.37	15.7838	88.063	21.9256	285.62	285.54	274.0	11.6	11.5			
"	"	40.03	95.37	14.7211	89.522	21.9250	286.47	286.44	275.0	11.5	11.4			
7/17/1804	Hamburg	40.55	95.68	14.4889	88.607	21.1373	285.61	285.62	275.0	10.6	10.6	9.71	4.08	2/390
7/24/1804	Omaha S	41.16	95.88	37.1157	-57.202	19.8721	95.47	97.54	85.0*	10.5*	12.5*	9.79	4.22	2/418
8/1/1804	Ft. Calhoun	41.50	96.00	33.9631	-60.076	18.0182	95.62	96.43	86.0	9.6	10.4	9.84	4.28	2/433
8/14/1804	Ponca NE	42.35	96.42	29.2245		14.3597	97.21		87.0	10.2		10.02	4.58	2/481
"	"	42.35	96.42	30.5656	-61.356	14.3514	98.56	99.09	88.0	10.6	11.1			
8/27/1804	St. Helena	42.80	97.21	29.5970	-57.960	10.0382	104.64	106.27	95.0	9.6	11.3	10.36	5.18	3/18
"	"	42.80	97.21	30.5396	-56.876	10.0372	105.70	106.76	96.0	9.7	10.8			
9/8/1804	Marty NE	42.98	98.50	25.6261		5.6622	107.30		95.0	12.3		10.90	6.18	3/56
"	"	42.98	98.50	26.6067		5.6607	108.42		96.0	12.4				

(continued)

TABLE 2. DETERMINATIONS OF MAGNETIC DECLINATION IN 1803-1806 AND 2003 (continued)

Date <sup>1</sup>	USGS quad. <sup>2</sup>	Lat. <sup>3</sup>	Long. <sup>3</sup>	Altitude (corrected) <sup>4</sup>	Hour angle <sup>5</sup>	Solar decl. <sup>6</sup>	Eq 3 az. <sup>7</sup>	Eq 2 az. <sup>8</sup>	Compass azimuth <sup>9</sup>	M.d. <sup>10</sup> Eq 3	M.d. <sup>11</sup> eq. 2	Bgs <sup>12</sup> model	2003 Dec. <sup>13</sup>	Moulton vol/pg <sup>14</sup>
9/9/1804	Lk. Andes	43.07	98.70	21.5817		5.2898	103.54		91.0	12.5		10.99	6.33	3/56/60
"	West	43.07	98.70	22.5607		5.2883	104.58		92.0	12.6				
3/25/1805	Stanton SE	47.26	101.25	16.0842		1.9426	254.92		240.0	14.9		12.57	8.40	3/320
"	"	47.26	101.25	15.4760		1.9433	255.65		241.0	14.7				
"	"	47.26	101.25	14.1728		1.9457	257.19		243.0	14.2				
4/12/1805	Hay Flat & Twin Butte	47.60	102.25	26.2629		8.6728	106.92		92.0	14.9		13.10	9.20	4/25
"	"	47.60	102.25	27.0536		8.6740	107.95		93.0	14.9				
4/27/1805	Buford	47.98	103.98	22.5537	-72.384	13.8087	94.29	90.	81.0	13.3	9.0	13.96	10.52	4/76
"	"	47.98	103.98	23.7684	-70.572	13.8103	95.69	90.	82.0	13.7	8.0			
"	"	47.98	103.98	25.0580	-68.622	13.8120	97.19	93.42	83.0	14.2	10.4			
5/20/1805	Germaine	47.45	107.91	25.0859	74.188	20.0511	272.86	273.65	260.0*	12.9*	13.6*	15.36	12.98	4/174
"	Coulee W	47.45	107.91	23.3956	76.700	20.0525	274.65	275.08	262.0*	12.7*	13.1*			
"	"	47.45	107.91	21.7091	79.217	20.0540	276.43	276.67	265.0*	11.4*	11.7*			
6/9/1805	Loma E	47.93	110.48	28.6709	-71.919	22.9413	86.72	86.17	70.0	16.7	16.2	16.39	14.50	4/273
"	"	47.93	110.48	29.8139	-70.206	22.9416	87.96	87.05	71.0	17.0	16.0			
"	"	47.93	110.48	27.6408	73.460	22.9742	274.44	274.94	257.0	17.4	17.9			
"	"	47.93	110.48	26.8355	74.665	22.9745	275.30	275.70	258.0	17.3	17.7			
7/9/1805	SW Great Falls	47.46	111.30	30.8861	-67.677	22.4003	89.72	94.74	73.0	16.7	21.7	16.45	14.77	4/370
"	"	47.46	111.30	31.6763	-66.510	22.3999	90.58	94.89	74.0	16.6	20.9			
7/29/1805	Three Forks	45.93	111.50	36.5976	-56.201	18.7970	100.96	101.52	85.0	16.0	16.5	15.91	14.47	5/11
"	"	45.93	111.50	37.5837	-54.750	18.7961	102.15	102.69	86.0	16.2	16.7			

(continued)

TABLE 2. DETERMINATIONS OF MAGNETIC DECLINATION IN 1803–1806 AND 2003 (continued)

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10/6/1805	Ahsahka	46.50	116.33	21.0318	-51.620	-5.1177	122.96	123.23	105.0	18.0	18.2	17.27	16.48	5/247
"	"	46.50	116.33	22.7082	-48.645	-5.1209	125.56	125.86	107.0	18.6	18.9			
10/17/1805	Pasco	46.20	119.04	16.0720	-54.653	-9.2624	122.85	123.09	105.0	17.8	18.1	17.62	17.17	
"	"	46.20	119.04	16.6447	-53.661	-9.2634	123.68	123.92	106.0	17.7	17.9			
11/24/1805	Chinook	46.25	123.92	10.6432		-20.5874	135.54		116.0	19.5		18.30	18.17	6/82
"	"	46.25	123.92	11.1742		-20.5880	136.44		117.0	19.4				
"	"	46.25	123.92	11.6204		-20.5895	137.22		118.0	19.2				
4/5/1806	Camas	45.58	122.39	25.3361		5.9721	108.58		91.0	17.6		17.79	17.68	7/75
"	"	45.58	122.39	26.1164		5.9734	109.55		92.0	17.6				
6/5/1806	Kamah	46.25	116.04	28.9503		22.5667	273.23		256.0	17.2		17.10	16.32	7/335-6
"	"	46.25	116.04	27.7635		22.5672	274.43		257.0	17.4				

Notes: Units in this table in columns 3–14 are in degrees and decimal degrees.

1. Date of Lewis and Clark observation, in the order m/d/yr.

2. USGS 7.5 minute quadrangle.

3. Latitude and longitude of the point of observation, as deduced from modern maps, in decimal degrees.

4. Altitude of Sun's center from sextant observation, corrected for refraction, parallax and instrument error.

5. Hour angle, estimated as 15x the hourly difference between the times of observation and local noon.

6. Solar declination from 1803–1806 ephemeris tables, corrected for longitude and time of observation.

7. True azimuth of Sun from equation 3.

8. True azimuth of Sun from equation 2.

9. Compass azimuth directly measured in field. The \* indicates that the compass quadrant appears to be misreported, or, in the case of 20 May 1805, that the measurements were reported in the incorrect order (Sun moving south as it sets).

10. Best estimate of 1803–1806 Magnetic Declination, representing the difference between the true azimuth (eq. 3) and the compass bearing.

11. Alternate estimate of 1803–1806 Magnetic Declination, representing the difference between the true azimuth (eq. 2) and the compass bearing.

12. Magnetic Declination in 1803–1806 from model Bgs1800 (U.S. Geological Survey, 2003).

13. Magnetic Declination in 2003 from model IGRF-2000 (U.S. Geological Survey, 2003).

14. Volume and page number of Lewis and Clark observation, from Moulton (1986–1993).