

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Client-COCORP

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO		PAGE				
6-18-86		B. Cotcamp		J. Middleton		6834		J.M.		5		1				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER		
MONTANA		Tiber Dam-7 1/2'		MONT.		Liberty								S. Dinns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y	X
				+18.6						3244.0				487550	1616200	R. Tri-sta. Tiber
	4029		279 06 17	"	+12.9	89 30	-35.2	-22.3			BS	-1873	+3567			487550 + 1616200
	4029			"	+13.0	270 30	-35.2	-22.2	3221.8		BS					el. 3244.0
1	4462		279 40	"	8.0	89 36	+31.2	+23.2		3245.0		+2113	-3930	487789	1615838	
2	4132		279 36	"	6.2	89 36	+28.8	+22.6		3244.4		+1953	-3642	487629	1616126	
3	3802		279 30	"	7.3	89 36	+26.5	+19.2		3241.0		+1791	-3354	487467	1616414	
4	3472		279 20	"	5.1	89 44	+16.2	+11.1		3232.9		+1626	-3067	487302	1616701	
5	3142		279 05	"	6.4	89 50	+9.1	+2.7		3224.5		+1460	-2782	487136	1616986	
6	2813		278 52	"	5.6	-		-5.6		3216.2		+1297	-2496	486973	1617272	
7	2483		278 25	"	11.7	-		-11.7		3210.1		+1128	-2212	486804	1617556	
8	2155		278 -	"	7.9	BM	-10.8	-18.7		3203.1		+965	-1927	486641	1617841	
9	1840		278 -	"	7.0	90 30	-16.1	-23.1		3198.7		+737	-1686	486413	1618082	
10	1545		276 10	"	8.3	90 30	-13.5	-21.8		3200.0		+497	-1463	486173	1618305	
11	1262		262.55	"	7.8	90 30	-11.0	-18.8		3203.0		+252	-1237	485928	1618531	
12	985		254 10	"	6.3	90 30	-8.6	-14.9		3206.9		+48	-984	485724	1618784	
13	660		252 02	"	7.0	90 30	-5.8	-12.8		3209.0		+7	-660	485683	1619108	
14	330		-	"	5.1	90 30	-2.9	-8.0		3213.8		+4	-330	485680	1619438	
15	0		-	"	5.1	-		-5.1		3216.7	X	0	0	485676	1619768	
16	330		72 15	"	6.0	TM	+1.7	-4.3		3217.5		-5	+330	485671	1620098	
17	660		-	"	5.1	-		-5.1		3216.7		-10	+660	485666	1620428	
18	990		-	"	9.1	-		-9.1		3212.7		-15	+990	485661	1620758	

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6-19-86		B. Cotcamp		J. Middleton		6834		J.M.		5		2			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
mont.		Tiber Dam-7k'		mont.		Liberty								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									3221.8						
19	1320		72° 15'	+18.6	6.2	-	-6.2			3215.6		-20	+1320	485656	1621088
20	1650		-	"	10.7	-	-10.7			3211.1		-24	+1650	485652	1621418
21	1980		-	"	10.9	-	-10.9			3210.9		-29	+1980	485647	1621748
22	2310		-	"	12.1	-	-12.1			3209.7		-34	+2310	485642	1622078
23	2640		72° 15'	"	11.0	90° 04'	-3.1	-14.1		3207.7		-39	+2640	485637	1622408
24	2971		72° 23' 34"	"	14.8	90° 08'	-6.9	-21.7			TP	-51-1	+2971	485624	1622740
24	2971				14.7	269° 52'	-6.9	-21.6		3200.2	TP				
	3961		252° 05' 52"		+10.2	89° 00'	-57.6	-47.4	3152.8		BS	-48-1	+3961		
	3961				+10.1	270° 50'	-57.6	-47.5			BS				
25	3631		252° 10'		7.7	89° 20'	+42.2	+34.5		3187.3		+49	-3631	485624	1623071
26	3301		-		6.9	89° 26'	+32.6	+25.7		3178.5		+44	-3301	485619	1623401
27	2971		-		9.2	89° 26'	+29.4	+20.2		3173.0		+40	-2971	485615	1623731
28	2641		-		9.0	89° 30'	+23.0	+14.0		3166.8		+35	-2641	485610	1624061
29	2311		252° 10'		9.8	89° 30'	+20.2	+10.4		3163.2		+31	-2311	485606	1624391
30	1981		-		10.3	89° 30'	+17.3	+7.0		3159.8		+27	-1981	485602	1624721
31	1651		-		10.1	89° 30'	+14.4	+4.3		3157.1		+22	-1651	485597	1625051
32	1321		-		8.9	89° 30'	+11.5	+2.6		3155.4		+18	-1321	485593	1625381
33	991		-		8.0	89° 30'	+8.6	+0.6		3153.4		+13	-991	485588	1625711
34	661		-		5.9	89° 30'	+5.8	-0.1		3152.7		+9	-661	485584	1626041
35	479		253° 19'		6.1	89° 30'	+4.2	-1.9		3150.9	35	+16	-479	485591	1626223

4-way Intersect
485590+1626210

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6-19-86		B. Cotcamp		J. Middleton		6834				5		3			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
MONTANA		Tiber Dam		MONT.		Liberty								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									3152.8						
35	330		252 10	+18.6	6.4	89 30	+2.9	-3.5		3149.3		+4	-330	485579	1626372
36	0				5.1	-		-5.1		3147.7	X	0	0	485575	1626702
37	330		72 13	"	6.2	90 10	-1.0	-7.2		3145.6		-5	+330	485570	1627032
38	660		-	"	8.1	90 10	-1.9	-10.0		3142.8		-9	+660	485566	1627362
39	990		-	"	5.8	90 30	-8.6	-14.4		3138.4		-14	+990	485561	1627692
40	1320		-	"	5.9	90 30	-11.5	-17.4		3135.4		-19	+1320	485556	1628022
41	1650		72 13	"	6.1	90 30	-14.4	-20.5		3132.3		-24	+1650	485551	1628352
42	1980		-	"	6.0	90 30	-17.3	-23.3		3129.5		-28	+1980	485547	1628682
43	2310		-	"	5.9	90 30	-20.2	-26.1		3126.7		-33	+2310	485542	1629012
44	2640		-	"	5.4	90 30	-23.0	-28.4		3124.4		-38	+2640	485537	1629342
45	2970		72 13	"	5.1	90 30	-25.9	-31.0		3121.8		-42	+2970	485533	1629672
46	3300		-	"	7.1	90 30	-28.8	-35.9		3116.9		-47	+3300	485528	1630002
47	3630		-	"	8.7	90 30	-31.7	-40.4		3112.4		-52	+3630	485523	1630332
48	3960		72 17 18	"	14.5	90 25	-28.8	-43.3			TP	-61-1	+3960	485513	1630663
48	3960			"	14.4	269 35	-28.8	-43.2		3109.6	TP				
	4952		252 25 25	"	+14.5	89 20	-57.6	-43.1			BS	-88-1	+4951		
	4952			"	+14.8	270 40	-57.6	-42.8	42933066.7		BS				
49	4622		252 30	"	10.8	89 26	+45.2	+34.9		3101.6		+89	-4621	485513	1630994
50	4292		-	"	11.3	89 26	+42.4	+31.1		3097.8		+82	-4291	485506	1631324
51	4109		252 38 14	"	10.1	89 26	+40.6	+30.5		3097.2	44	+89	-4108	485513	1631507

4-way 1631495
485505 30780

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6-19-86		B. Cotcamp		J. Middleton		6834		J.M.		5		4			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
MONTANA		Tiber Dam-7 1/2'		mont.		Liberty								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									3066.7						
51	3960		252 30	+18.6	10.1	89 26	+39.2	+29.1		3095.8		+76	-3959	485500	1631656
52	3630		- -	"	11.7	89 26	+35.9	+24.2		3090.9		+70	-3629	485494	1631986
53	3300		- -	"	11.8	89 26	+32.6	+20.8		3087.5		+63	-3299	485487	1632316
54	2970		- -	"	8.1	89 26	+29.4	+21.3		3088.0		+57	-2969	485481	1632646
55	2640		252 30	"	6.4	89 26	+26.1	+19.7		3086.4		+51	-2640	485475	1632975
56	2310		- -	"	6.8	89 26	+22.8	+16.0		3082.7		+44	-2310	485468	1633305
57	1980		- -	"	8.7	89 26	+19.6	+10.9		3077.6		+38	-1980	485462	1633635
58	1650		- -	"	11.2	89 26	+16.3	+5.1		3071.8		+32	-1650	485456	1633965
59	1320		252 48 40	"	9.3	89 30	+14.1	+4.8		3071.5	11	+40	-1620	485464	1633995
60	990		252 30	"	10.0	89 30	+11.5	+1.5		3068.2		+25	-1320	485449	1634295
61	660		- -	"	8.7	89 30	+8.6	-0.1		3066.6		+19	-990	485443	1634625
62	330		- -	"	9.2	89 50	+1.9	-7.3		3059.4		+13	-660	485437	1634955
63	0		- -	"	9.7	89 50	+1.0	-8.7		3058.0		+6	-330	485430	1635285
64	330		72 32	"	5.1	-	-	-5.1		3061.6	11	0	0	485424	1635615
65	660		- -	"	5.4	89 50	+1.0	-4.4		3062.3		-7	+330	485417	1635945
66	990		- -	"	9.6	89 50	+1.9	-7.7		3059.0		-13	+660	485411	1636275
67	1045		72 -	"	11.1	-	-	-11.1		3055.6		-20	+990	485404	1636605
68	1320		72 32	"	11.8	-	-	-11.8		3054.9		-11	+1045	485413	1636660
69	1650		- -	"	11.8	-	-	-11.8		3054.9		-26	+1320	485398	1636935
70			- -	"	12.1	-	-	-12.1		3054.6		-33	+1650	485391	1637265

4-way
485410 + 1636665
EL 3055

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6-19-86		B. Cotcamp		J. Middleton		6834		J.M.		5		5			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
MONTANA		Circle Bridge		Mont.		Liberty								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									3066.7						
69	1980		72 32	+18.6	12.1	-	-12.1		3054.6			-39	+1980	485385	1637595
70	2310		-	"	10.9	-	-10.9		3055.8			-46	+2310	485378	1637925
71	2640		-	"	7.2	-	-7.2		3059.5			-52	+2639	485372	1638254
72	2970		-	"	10.9	TH	+14.9	+4.0	3070.7			-59	+2969	485365	1638584
73	3300		72 32	"	6.0	TH	+16.5	+10.5	3077.2			-65	+3299	485359	1638914
74	3630		-	"	4.7	TH	+18.2	+13.5	3080.2			-72	+3629	485352	1639244
75	3960		-	"	6.3	TH	+19.8	+13.5	3080.2			-78	+3959	485346	1639574
76	4292		72 37 15	"	14.0	89 41	+23.7	+9.7	3076.4		TP	-91-	+4294	485332	1639907
76	4292		-	"	14.1	270 19	+23.7	+9.6			TP				
	3961		252 32 44	"	+14.5	89 08	-59.9	-45.4			BS	-79-	+3960+		
	3961		-	"	+14.6	270 52	-59.9	-45.3	3031.1		BS				
77	3630		252 37	"	10.7	89 14	+48.6	+37.9	3069.0			+77	-3629	485329	1640239
78	3300		-	"	8.3	89 20	+38.4	+30.1	3061.2			+70	-3299	485322	1640569
79	2970		-	"	11.0	89 20	+34.6	+23.6	3054.7			+63	-2969	485315	1640899
80	2640		252 37	"	9.4	89 26	+26.1	+16.7	3047.8			+56	-2639	485308	1641229
81	2310		-	"	8.1	89 26	+22.8	+14.7	3045.8			+49	-2309	485301	1641559
82	1980		-	"	9.2	89 26	+19.6	+10.4	3041.5			+42	-1980	485294	1641888
Bm	1852		251 39 57	"	9.1	89 30	+16.2	+7.1	3038.2		Bm	+9	-1852	485261	1642016
83	1650		252 37	"	10.2	89 30	+14.4	+4.2	3035.3			+35	-1650	485287	1642218
84	1320		-	"	7.3	89 30	+11.5	+4.2	3035.3			+28	-1320	485280	1642548

u.s.c. + 65 A-368748 EL. 3038.

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE	6-19-86	INSTRUMENT MAN	B. Cotcamp	ROD MAN	J. Middleton	PARTY NUMBER	6834	NOTES CHECKED BY	J.M.	LINE NO.	5	PAGE	6	
AREA	MONTANA	TOPO MAP		STATE	Mont.	COUNTY	Liberty	TWP		RANGE		PPM	PARTY MANAGER	S. Binns

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH +	EAST +	COORDINATES		REMARKS
												SOUTH -	WEST -	Y	X	
												LAT.	DEP.			
									3031.1							
85	990		252 37	+18.6	6.7	89 30	+8.6	+1.9		3033.0		+21	-990	485273	1642878	
86	660		- -	"	5.9	89 30	+5.8	-0.1		3031.0		+14	-660	485266	1643208	
87	330		- -	"	5.8	89 30	+2.9	-2.9		3028.2		+7	-330	485259	1643538	
88	0				5.1	-		-5.1		3026.0	X	0	0	485252	1643868	
89	330		72 34	+18.6	6.4	-		-6.4		3024.7		-7	+330	485245	1644198	
90	660		- -	"	8.1	-		-8.1		3023.0		-13	+660	485239	1644528	
91	990		- -	"	9.0	-		-9.0		3022.1		-20	+990	485232	1644858	
92	1320		- -	"	10.9	-		-10.9		3020.2		-27	+1320	485225	1645188	
93	1650		72 34	+18.6	11.7	-		-11.7		3019.4		-34	+1650	485218	1645518	
94	1980		- -	"	5.0	84	-9.9	-14.9		3016.2		-40	+1980	485212	1645848	
95	2310		- -	"	10.0	90 04	-2.7	-12.7		3018.4		-47	+2310	485205	1646178	
96	2640		- -	"	11.7	-		-11.7		3019.4		-54	+2639	485198	1646507	
97	2970		- -	"	11.7	-		-11.7		3019.4		-60	+2969	485192	1646837	
98	3300		- -	"	10.3	90 06	-5.8	-16.1		3015.0		-67	+3299	485185	1647167	
#	3352		72 24 47	+18.6	14.5	90 02	-2.0	-16.5		3014.6		-59	+3351	485193	1647219	4-way. 485200+ 1647215 3012.
99	3631		72 35 20	+18.6	14.8	90 05	-5.3	-20.1			TP	-75-1	+3630	485176	1647499	
99	3631				14.7	26 55	-5.3	-20.0		3011.1	TP					

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO		PAGE			
6-20-86		B. Cotcamp		J. Middleton		6834		J.M.		5		7			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
MONTANA		Circle Bridge		mont.										S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH -	EAST + WEST -		Y
										3011.1					
	5281		252 22 48	+18.6	8.4	89 50	-15.4	-6.8			BS	-90	+5280		
	5281				8.9	270 10	-15.4	-6.5	-6.6	3004.5	BS				
100	4950		252 28	"	8.0	89 50	+14.4	+6.4		3010.9		+92	-4949	485177	1647831
101	4620		-	"	7.1	89 50	+13.4	+6.3		3010.8		+86	-4619	485171	1648161
102	4290		-	"	5.7	89 50	+12.5	+6.8		3011.3		+80	-4289	485165	1648491
103	3960		-	"	6.9	89 50	+11.5	+4.6		3009.1		+74	-3959	485159	1648821
104	3630		252 28	+18.6	7.0	89 50	+10.6	+3.6		3008.1		+68	-3629	485153	1649151
105	3300		-	"	7.3	89 50	+9.6	+2.3		3006.8		+61	-3299	485146	1649481
106	2970		-	"	6.9	89 50	+8.6	+1.7		3006.2		+55	-2969	485140	1649811
107	2640		-	"	7.1	89 50	+7.7	+0.6		3005.1		+49	-2640	485134	1650140
108	2310		-	"	7.3	89 50	+6.7	-0.6		3003.9		+43	-2310	485128	1650470
109	2166		252 38 57	+18.6	7.6	89 50	+6.3	-1.3		3003.2		+47	-2165	485132	1650615
109	1986		252 28	"	7.3	89 50	+5.8	-1.5		3003.0		+37	-1980	485122	1650800
110	1650		-	"	6.7	89 50	+4.8	-1.9		3002.6		+31	-1650	485116	1651130
111	1320		-	"	7.1	89 50	+3.8	-3.3		3001.2		+25	-1320	485110	1651460
112	990		-	"	6.9	89 50	+2.9	-4.0		3000.5		+18	-990	485103	1651790
113	660		-	"	5.1	89 50	+1.9	-3.2		3001.3		+12	-660	485097	1652120
114	330		-	"	4.2	89 50	+1.0	-3.2		3001.3		+6	-330	485091	1652450
115	0		-	"	5.1	-	-	-5.1		2999.4	π	0	0	485085	1652780
-11	249		253 33 36	"	2.8	-	-	-2.8		3001.7		+9	-249	485094	1652531

485100 + 1652515
3000.0

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6-20-86		B. Cotcamp		J. Middleton		6834		J.M.		5		8			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Circle Bridge		Mont.										S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									3004.5						
116	330		72° 18'	+18.6	5.7	-	-5.7		2998.8			-5	+330	485080	165310
117	660		- -	"	7.9	TH	+3.3	-4.6	2999.9			-10	+660	485075	1653440
118	990		- -	"	7.1	TH	+5.0	-2.1	3002.4			-16	+990	485069	1653770
119	1320		- -	"	7.2	TH	+6.6	-0.6	3003.9			-21	+1320	485064	1654100
120	1650		72° 18'	"	8.9	TH	+8.3	-0.6	3003.9			-26	+1650	485059	1654430
121	1980		- -	"	9.7	TH	+9.9	+0.2	3004.7			-31	+1980	485054	1654760
122	2310		- -	"	7.7	TH	+11.6	+3.9	3008.4			-36	+2310	485049	1655090
123	2640		- -	"	9.1	TH	+13.2	+4.1	3008.6			-41	+2640	485044	1655420
124	2970		- -	"	10.2	TH	+14.9	+4.7	3009.2			-47	+2970	485038	1655750
125	3300		72° 18'	"	7.1	89° 48'	+11.5	+4.4	3008.9			-52	+3300	485033	1656080
126	3630		- -	"	10.0	89° 48'	+12.7	+2.7	3007.2			-57	+3630	485028	1656410
127	3960		- -	"	10.1	89° 50'	+11.5	+1.4	3005.9			-62	+3960	485023	1656740
128	4290		- -	"	9.0	89° 50'	+12.5	+3.5	3008.0			-67	+4289	485018	1657069
129	4620		- -	"	10.3	89° 50'	+13.4	+3.1	3007.6			-73	+4619	485012	1657399
Bm	4905		72° 32' 28"	"	14.6	89° 50'	+14.3	-0.3	3004.2		Bm	-98	+4904	484987	1657684 0-69 1968 3004.0
130	4952		72° 18' 22"	"	14.4	89° 50'	+14.4	±0.0	3004.4		TP	-78-1	+4951.1	485006	1657732
130	4952			"	14.7	270° 10'	+14.4	-0.3			TP				
	4622		252° 28' 25"	"	+6.5	TH	-23.1	-16.6	3004.4		BS	-87-1	+4621.1		
	4622			"	+6.8	TH ₂₀	-23.1	-16.3			BS				

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
6/20/86		B. Cotcamp		J. Middleton		6834		J.M.		5	9						
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Montana		Poverty Coulee SE		Montana	Liberty					S. Binns							
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
									2988.0								
131	4290		252°33'	+18.6	6.3	TH	+21.5	+15.2		3003.2		+86	-4289	485004	1658065		
132	3960		"	"	5.2	TH	+19.8	+14.6		3002.6		+79	-3959	484997	1658395		
133	3630		"	"	6.0	TH	+18.2	+12.2		3000.2		+73	-3629	484991	1658725		
134	3300		"	"	5.6	TH	+16.5	+10.9		2998.9		+66	-3299	484984	1659055		
135	2970		"	"	7.0	TH	+14.9	+7.9		2995.9		+60	-2969	484978	1659385		
136	2640		"	"	7.7	TH	+13.2	+5.5		2993.5		+53	-2639	484971	1659715		
137	2310		"	"	7.7	TH	+11.6	+3.9		2991.9		+46	-2310	484964	1660044		
138	1980		"	"	10.1	TH	+9.9	-0.2		2987.8		+40	-1980	484958	1660374		
139	1650		"	"	11.8	TH	+8.3	-3.5		2984.5		+33	-1650	484951	1660704		
140	1320		"	"	10.9	TH	+6.6	-4.3		2983.7		+26	-1320	484944	1661034		
141	990		"	"	8.2	TH	+5.0	-3.2		2984.8		+20	-990	484938	1661364		
142	660		"	"	7.0	TH	+3.3	-3.7		2984.3		+13	-660	484931	1661694		
143	330		"	"	4.8	-		-4.8		2983.2		+7	-330	484925	1662024		
144	0		-		5.1	-		-5.1		2982.9	X	0	0	484918	1662354		
145	330		72°31'	"	5.1			-5.1		2982.9		-6	+330	484912	1662684		
146	660		"	"	4.0	TH	+3.3	-0.7		2987.3		-13	+660	484905	1663014		
IF	727		72°07'18"	"	0.2	-		-0.2		2987.8		-9	+727	484909	1663081	484895+1663105 T-rd. 2985.0	
147	990		72°31'	"	6.2	TH	+5.0	-1.2		2986.8		-19	+990	484899	1663344		
148	1320		"	"	7.0	TH	+6.6	-0.4		2987.6		-26	+1320	484892	1663674		
149	1650		"	"	8.7	TH	+8.3	-0.4		2987.6		-32	+1650	484886	1664004		

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6-20-86		B. Cotcamp		T. Middleton		6834		F.M.		5		10			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
MONTANA		Circle Bridge / Poverty Cowlee SE		MONT.										S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2988.0						
150	1980		72 31	+186	7.3	TH	+9.9	+2.6		2990.6		-39	+1980	484879	1664334
151	2310		- -	"	3.4	TH	+11.6	+8.2		2996.2		-45	+2310	484873	1664664
152	2640		- -	"	3.7	TH	+13.2	+9.5		2997.5		-51	+2640	484867	1664994
153	2970		- -	"	6.2	TH	+14.9	+8.7		2996.7		-58	+2969	484860	1665323 Circle Bridge 7 1/2
154	3300		- -	"	8.1	TH	+16.5	+8.4		2996.4		-64	+3299	484854	1665653 Poverty Cowlee SE 1/4
155	3632		72 33 28	"	14.5	89 44	+16.9	+2.4	+23	2990.3	TP	-73-1	+3634	484844	1665986
155	3632			"	14.8	270 16	+16.9	+2.1			TP				
	2864		252 42 50	"	+6.5	89 20	-33.3	-26.8			BS	-66-1	+2863-1		
	2864			"	+6.6	270 46	-33.3	-26.7	2963.6		BS				
156	2534		252 45	"	9.9	89 20	+29.5	+19.6		2983.2		+60	-2533	484837	1666317
157	2204		- -	"	11.5	89 20	+25.6	+14.1		2977.7		+52	-2203	484829	166647
158	1874		- -	"	11.0	89 20	+21.8	+10.8		2974.4		+44	-1873	484821	1666977
159	1544		- -	"	9.7	89 20	+18.0	+8.3		2971.9		+36	-1544	484813	1667306
160	1214		- -	"	7.9	89 20	+14.1	+6.2		2969.8		+29	-1214	484806	1667636
161	884		- -	"	6.0	89 20	+10.3	+4.3		2967.9		+21	-884	484798	1667966
162	554		- -	"	5.9	89 20	+6.4	+0.5		2964.1		+13	-554	484790	1668296 X-country to 172
Bm	537		251 40 42	"	5.3	89 20	+6.2	+0.9		2964.5	Bm	+3	-537	484780	1668313 E-369 1948 B.F. 2985
163	224		252 45	"	4.5	89 20	+2.6	-1.9		2961.7		+5	-224	484782	1668626
K	0			"	5.1	-		-5.1		2958.5	K	0	0	484777	1668850
164	106		72 54	"	4.4	93 20	-6.2	-10.6		2953.0		-3	+106	484774	1668956

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO		PAGE				
6-20-86		B. Cotcamp		J. Middleton		6834		J.M.		5		11				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER		
MONTANA		Poverty Cove SE		MONT.		Liberty								S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y	X
									2963.6							
TP	231		74° 21' 10"	+18.6	13.1	93° 20'	-13.4	-26.5		2937.1	TP	-12-	+231+2	484764	1669083	X - Country
TP	231				13.1	266° 40'	-13.4	-26.5			TP					
	1721		251° 13' 40"	"	+6.1	TH	-8.6	-2.5	2934.6		BS	+5-	+17242			
	1721				+6.1	TH 210	-8.6	-2.5			BS					
165	1535		250° 20'	"	9.1	92° 10'	-58.0	-67.1		2867.5		-29	-1535	484739	1669271	X - Country
166	1208		251° 10'	"	14.7	93° 10'	-66.7	-81.4		2853.2		-5	-1208	484763	1669598	
167	882		252° 10'	"	5.4	95° -	-76.9	-82.3		2852.3		+12	-882	484780	1669924	
168	570		249° 10'	"	0.9	101° -	-108.8	-109.7		2824.9		-22	-569	484746	1670237	creek.
169	243		243° -	"	13.6	101° -	-46.4	-60.0		2874.6		-36	-240	484732	1670566	
X	0				5.1	-		-5.1		2929.5	X	0	0	484768	1670806	
170	99		97° 50'	"	6.7	91° -	-1.7	-8.4		2926.2		-44	+89	484724	1670895	
171	421		77° -	"	5.3	-		-5.3		2929.3		-41	+419	484727	1671225	
172	748		74° 35'	"	4.7	TH	+3.7	-1.0		2933.6		-42	+747	484726	1671553	
173	1077		72° 35'	"	7.3	89° -	+18.8	+11.5		2946.1		-22	+1077	484746	1671883	
174	1407		- -	"	11.2	89° -	+24.6	+13.4		2948.0		-29	+1407	484739	1672213	
175	1737		- -	"	7.4	89° 20'	+20.2	+12.8		2947.4		-36	+1737	484732	1672543	
176	2067		- -	"	11.3	89° 20'	+24.1	+12.8		2947.4		-43	+2067	484725	1672873	x=-15' y=+19'
177	2397		- -	"	14.2	89° 20'	+27.9	+13.7		2948.3		-50	+2396	484718	1673202	
178	2732		72° 24' 07"	"	19.9	89° 16'	+35.0	+15.1			TF	-48	+2732	484720	1673540	484720 + 1673540 14.8' 2951.0
178	2732			"	19.8	270° 44'	+35.0	+15.2		2949.8	TF		+2			1 mile offset south

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE				
6-20-86		B. Stamp		J. Middleton		6834		J.M.		5		12				
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER		
MONTANA		Poverty Gulch SE		Mont.		Liberty								S. Dinns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS		
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y	X
K.	Bureau of Reclamation Bm, J-369	1948	FAW.	2958.5						2958.5				479380	1673500	K. 2958.5
	1613		250 57 52	+18.6	+9.7	TH	-8.1	+1.6			BS	+12.0	+1613.0			479380+1673500
	1613			+9.8	TH20	-8.1	+1.7		2960.2		BS					
179	1320		251 54	"	10.1	TH	+6.6	-3.5		2956.7		+12	-1320	479401	1673787	
180	990		- -	"	7.9	-		-7.9		2952.3		+9	-990	479398	1674117	
181	660		- -	"	9.1	-		-9.1		2951.1		+6	-660	479395	1674447	
182	330		- -	"	7.9	-		-7.9		2952.3		+3	-330	479392	1674777	
183	0			"	5.1	-		-5.1		2955.1	T	0	0	479389	1675107	
184	330		72 -	"	10.0	-		-10.0		2950.2		-3	+330	479386	1675437	
185	660		- -	"	12.1	BH	-3.3	-15.4		2944.8		-7	+660	479382	1675767	
186	990		- -	"	10.2	90 30	-8.6	-18.8		2941.4		-10	+990	479379	1676097	
187	1320		72 30	"	10.3	90 30	-11.5	-21.8		2938.4		-25	+1320	479364	1676427	
188	1650		72 40	"	8.5	90 30	-14.4	-22.9		2937.3		-36	+1650	479353	1676757	
189	1980		72 50	"	6.0	90 30	-17.3	-23.3		2936.9		-50	+1979	479339	1677086	
190	2310		72 58	"	9.3	90 20	-13.4	-22.7		2937.5		-63	+2309	479326	1677416	
191	2640		- -	"	8.6	90 20	-15.4	-24.0		2936.2		-72	+2639	479317	1677746	
192	2970		- -	"	8.0	90 20	-17.3	-25.3		2934.9		-81	+2969	479308	1678076	
193	3300		- -	"	8.1	90 20	-19.2	-27.3		2932.9		-90	+3299	479299	1678406	
194	3630		72 58	"	7.0	90 20	-21.1	-28.1		2932.1		-99	+3629	479290	1678736	
195	3960		- -	"	6.2	90 20	-23.0	-29.2		2931.0		-108	+3959	479281	1679066	

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO		PAGE			
6-20-86		B. Cotcamp		J. Middleton		6834		J.M.		5		13			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
MONTANA		Poverty Coulee SE		Mont.		Liberty								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
196	4290		72 55 48	+18.6	12.7	90 14	-17.5	-30.2	2960.2	2929.9	TP	-115-3	+4288.6	479271	1679389
196	4290				13.0	269 46	-17.5	-30.5	2903		TP				
	3958		252 08 34	"	+13.4	90 04	+4.6	+18.0			BS	-51-3	+3958.6		
	3958				+13.7	269 56	+4.6	+18.3	+18.2	2948.1	BS				
197	3630		252 13	"	10.8	90 08	-8.4	-19.2		2928.9		+52	-3630	479269	1679711
198	3300		- -	"	11.1	90 14	-13.4	-24.5		2923.6		+47	-3300	479264	1680041
199	2970		- -	"	8.3	90 10	-8.6	-16.9		2931.2		+42	-2970	479259	1680371
200	2640		- -	"	7.1	90 10	-7.7	-14.8		2933.3		+38	-2640	479255	1680701
201	2310		252 13	"	8.2	90 10	-6.7	-14.9		2933.2		+33	-2310	479250	1681031
202	1980		- -	"	8.6	90 10	-5.8	-14.4		2933.7		+28	-1980	479245	1681361
203	1650		- -	"	8.0	90 10	-4.8	-12.8		2935.3		+24	-1650	479241	1681691
204	1320		252 13	"	6.3	90 10	-3.8	-10.1		2938.0		+19	-1320	479236	1682021
205	990		- -	"	5.9	-	-	-5.9		2942.2		+14	-990	479231	1682351
206	660		- -	"	5.0	-	-	-5.0		2943.1		+9	-660	479226	1682681
207	330		- -	"	5.7	-	-	-5.7		2942.4		+5	-330	479222	1683011
208	0		- -	"	5.1	-	-	-5.1		2943.0	X	0	0	479217	1683341
209	330		72 26	"	5.1	-	-	-5.1		2943.0		-6	+330	479211	1683671
210	660		- -	"	4.7	-	-	-4.7		2943.4		-12	+660	479205	1684001
Bm	684		69 29 40	"	4.9	-	-	-4.9		2943.2		+23	+684	479240	1684025

6-369 1948 Bur. of Rec.
2942

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO		PAGE			
6-20-86		B. Cotcamp		J. Middleton		6834		J.M.		5		14			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Poverty Coulee SE		mont		Liberty								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2948.1	-					
211	990		72 26'	+18.6	7.4	TH	+5.0	-2.4		2945.7		-18	+990	479199	1684331
212	1320		- -	"	7.0	TH	+6.6	-0.4		2947.7		-24	+1320	479193	1684661
213	1650		- -	"	8.0	TH	+8.3	+0.3		2948.4		-30	+1650	479187	1684991
214	1980		72 26'	+18.6	9.9	TH	+9.9	0.0		2948.1		-36	+1980	479181	1685321
215	2310		- -	"	11.1	TH	+11.6	+0.5		2948.6		-42	+2310	479175	1685651
216	2640		- -	"	8.3	89 48'	+9.2	+0.9		2949.0		-48	+2640	479169	1685981
217	2970		- -	"	9.3	89 48'	+10.4	+1.1		2949.2		-54	+2970	479163	1686311
218	3300		72 33 15'	"	14.7	89 44'	+15.4	+0.7	} x0.9	2949.0	TP TP	-66-4	+3296	479147	1686634
218	3300				14.4	270 16'	+15.4	+1.0							
	6270		251° 45' 30"	"	+15.0	89 50'	-18.2	-3.2	} 2945.8	-	BS BS	-39-4	+6270-6		
	6270				+14.9	270 10'	-18.2	-3.3							
219	5940		251° 45'	"	10.1	89 52'	+13.8	+3.7		2949.5		+36	-5940	479146	1686958
220	5610		"	"	10.2	89 52'	+13.1	+2.9		2948.7		+34	-5610	479138	1687288
221	5280		"	"	0.3	-	-	-0.3		2945.5		+32	-5280	479136	1687618
222	4950		"	"	2.0	-	-	-2.0		2943.8		+30	-4950	479134	1687948
223	4620		"	"	3.1	-	-	-3.1		2942.7		+28	-4620	479132	1688278
224	4290		"	"	5.2	-	-	-5.2		2940.6		+26	-4290	479130	1688608
225	3960		"	"	6.6	-	-	-6.6		2939.2		+24	-3960	479128	1688938
226	3630		"	"	6.7	-	-	-6.7		2939.1		+22	-3630	479126	1689268
JL JT	3552		251° 49'	"	4.5	90° 02'	-2.1	-6.6		2939.2		+26	-3552	479130	1689346 4-way Inter.

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
6/24/86		G. Cotcamp		J. Middleton		6834		J.M.		5	15					
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Montana		Poverty Coulee SE	Montana	Liberty/Hill					S. Binns							
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS
												LAT.	DEP.	Y	X	
									2945.8							
227	3300		251°45'	+18.6'	8.3	-		-8.3		2937.5		+20	-3300	479124	1689598	
228	2970		"	"	8.4	-		-8.4		2937.4		+18	-2970	479122	1689928	
229	2640		"	"	2.3	BH	-13.2	-15.5		2930.3		+16	-2640	479120	1690258	
230	2310		"	"	7.6	BH	-11.6	-19.2		2926.6		+14	-2310	479118	1690588	
231	1980		"	"	8.1	BH	-9.9	-18.0		2927.8		+12	-1980	479116	1690918	
232	1650		"	"	12.4	-		-12.4		2933.4		+10	-1650	479114	1691248	
233	1320		"	"	9.7	-		-9.7		2936.1		+8	-1320	479112	1691578	
234	990		"	"	9.8	-		-9.8		2936.0		+6	-990	479110	1691908	
235	660		"	"	8.9	-		-8.9		2936.9		+4	-660	479108	1692238	
236	330		"	"	6.8	-		-6.8		2939.0		+2	-330	479106	1692568	
237	0				5.2	-		-5.2		2940.6	π	0	0	479104	1692898	
238	330		71°45'	"	5.1	-		-5.1		2940.7		-2	+330	479102	1693228	
239	660		"	"	4.6	-		-4.6		2941.2		-4	+660	479100	1693558	
240	990		"	"	4.4	-		-4.4		2941.4		-6	+990	479098	1693888	
241	1320		"	"	4.7	-		-4.7		2941.1		-8	+1320	479096	1694218	corr. x=+30' y=+17'
242	1650		"	"	6.1	-		-6.1		2939.7		-10	+1650	479094	1694548	Liberty Co. 479,100 1694635 el. 2939 T.cd.
Σ	1737		71°31'	"	4.5	90°0236	-1.3	-5.8		2940.0		-4	+1737	479100	1694635	
243	1980		71°45'	"	4.9	-		-4.9		2940.9		-12	+1980	479092	1694878	Hill Co.
244	2310		"	"	5.8	-		-5.8		2940.0		-14	+2310	479090	1695208	↓ ↑
245	2640		"	"	8.1	-		-8.1		2937.7		-16	+2640	479088	1695538	Poverty Coulee SE

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/24/86		G. Cotcamp		J. Middleton		6834		F.M.		5		16			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Rocky Coulee SW		Hill										S. Binns,	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2945.8						
246	2970		71°45'	+18.6°	8.1	-		-8.1		2937.7		-18	+2970	479086	1695868
247	3300		"	"	10.1	-		-10.1		2935.7		-20	+3300	479084	1696198
248	3630		"	"	10.2	-		-10.2		2935.6		-22	+3630	479082	1696528
249	3960		"	"	10.1	-		-10.1		2935.7		-24	+3960	479080	1696858
≡	4268		71°35'	"	14.8	89°57'	+3.7	-11.1		2934.7		-14	+4268	479090	1697166 fence 2932.
250	4290		71°44'36"	"	14.2	89°58'	+2.5	-11.7		2934.1		-26	+4290	479078	1697188
251	4620				11.1	90°00'		-11.1		2934.7		-28	+4620	479076	1697518
252	4950		71°45'42"	"	15.0	89°58'	+2.9	-12.1		2933.8	TP	-31+s	+4950	479078	1697849
252	4950				14.7	270°02'	+2.9	-11.8	-12.0		TP				
	1980		251°47'18"	"	+136	89°53'	-4.0	+9.6	(29.6)		BS	-13+s	+1980+1		
	1980				+11.2	270°03'	-1.7	+9.5	2943.4		BS				
253	1650		251°47'	"	11.4	-		-11.4		2932.0		+11	-1650	479081	1698180
254	1320		"	"	10.8	-		-10.8		2932.6		+9	-1320	479079	1698510
255	990		"	"	10.8	-		-10.8		2932.6		+7	-990	479077	1698840
256	660		"	"	6.8	-		-6.8		2936.6		+4	-660	479074	1699170
257	330		"	"	2.2	-		-2.2		2941.2		+2	-330	479072	1699500
258	0		"	"	5.2	-		-5.2		2938.2	π	0	0	479070	1699830
259	330		71°05'59"	"	6.3	-		-6.3		2937.1		-3	+330	479067	1700160
260	660		"	"	4.9	-		-4.9		2938.5		-7	+660	479063	1700490
261	990		"	"	4.2	-		-4.2		2939.2		-10	+990	479060	1700820

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/24/86		G. Cotcamp		J. Middleton		6834		J.M.		5		17			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Rocky Cowlee SW		Montana		Hill									
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2943.4						
262	1320		71° 59'	+18.6	2.2	-		-2.2		2941.2		-13	+1320	479057	1701150
263	1650		"	"	3.6	-		-3.6		2939.8		-17	+1650	479053	1701480
264	1980		"	"	5.5	-		-5.5		2937.9		-20	+1980	479050	1701810
265	2310		"	"	6.1	-		-6.1		2937.3		-24	+2310	479046	1702140
	2632		71° 48'	"	5.8	-		-5.8		2937.6		-18	+2632	479052	1702462 Trd south
266	2640		71° 59'	"	6.1	-		-6.1		2937.3		-27	+2640	479043	1702470
267	2970		71° 59' 30"	"	14.8	89° 51'	+7.8	-7.0		2937.0	TP	-31+5	+2970	479044	1702801
267	2970			"	15.0	82° 10'	+8.6	-6.4	-6.203		TP				
	3300		251° 45' 42"	"	+14.0	89° 39'	-20.2	-6.2	-6.403		BS	-21+5	+3300-1		
	3300			"	+13.6	270° 21'	-20.2	-6.6	-6.403	2930.9	BS				
268	2970		251° 46'	"	8.5	TH	+14.9	+6.4		2937.3		+19	-2970	479047	173132
269	2640		"	"	9.2	TH	+13.2	+4.0		2934.9		+17	-2640	479045	1703462
270	2310		"	"	7.9	TH	+11.6	+3.7		2934.6		+15	-2310	479043	1703782
271	1980		"	"	6.1	TH	+9.9	+3.8		2934.7		+13	-1980	479041	1704122
272	1650		"	"	6.3	TH	+8.3	+2.0		2932.9		+11	-1650	479039	1704452
273	1320		"	"	1.5	-		-1.5		2929.4		+8	-1320	479036	1704782
274	990		"	"	1.4	-		-1.4		2929.5		+6	-990	479034	1705112
	978		252° 14'	"	4.5	89° 48'	+3.4	-1.1		2929.8		+14	-978	479042	1705124 4Way Inter.
275	660		251° 46'	"	4.1	-		-4.1		2926.8		+4	-660	479032	1705442
276	330		"	"	5.1	-		-5.1		2925.8		+2	-330	479030	1705772

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
6/24/86		G. Catcamp		J. Middleton		6834		J.M.		5	18				
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Montana		Rocky Coulee SW	Montana	Hill					S. Binns						
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2930.9						
277	0				5.2	-		-5.2'		2925.7	X	0	0	479028	1706102
278	330		72°02'	+18.6°	6.1	-		-6.1'		2924.8		-4	+330	479024	1706432
279	660		"	"	5.9	-		-5.9'		2925.0		-7	+660	479021	1706762
280	990		"	"	7.8	-		-7.8'		2923.1		-11	+990	478017	1707092
281	1320		"	"	9.8	-		-9.8'		2921.1		-15	+1320	479013	1707422
282	1650		"	"	7.3	-		-7.3'		2923.6		-18	+1650	479010	1707752
283	1980		"	"	6.7	-		-6.7'		2924.2		-22	+1980	479006	1708082
284	2310		"	"	9.9	-		-9.9'		2921.0		-26	+2310	479002	1708412
285	2640		"	"	9.0	-		-9.0'		2921.9		-29	+2640	478999	1708742
286	2970		"	"	12.2	-		-12.2'		2918.7		-33	+2970	478995	1709072
287	3300		72°02'	"	14.5	89 58	+1.9	-12.6'		2919.0	TP	-36+s	+3300	478997	1709403
287	3300				13.8	170 02	+1.9	-11.9'	-12.2+0.3		TP				
	3300		252 28 48	"	+13.6	89 47	-12.5	+1.1'			BS	-62+s	+3300+1		
	3300				+13.3	170 13	-12.5	+0.8'	+1.0+0.3	2920.3	BS				
288	2970		252°29'	"	1.8	-		-1.8'		2918.5		+56	-2969	478936	1709735
289	2640		"	"	0.3	-		-0.3'		2920.0		+50	-2640	478930	1710064
290	2310		"	"	0.2	-		-0.2'		2920.1		+44	-2310	478924	1710394
IF	2284		252°44'	"	11.2	TH	+11.4	+0.2'		2920.5		+53	-2283	478933	1710421
291	1980		252°29'	"	2.2	-		-2.2'		2918.1		+37	-1980	478917	1710724
292	1650		"	"	1.7	-		-1.7'		2918.6		+31	-1650	478911	1711054

4-Way (paved) 2920

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/24/86		G. Cotcamp		J. Middleton		6834		J.M.		5		19			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Rocky Coulee SF		Montana		Hill								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2920.3						
293	1320		252° 29'	+18.6	3.3	-		-3.3		2917.0		+25	-1320	478965	1711384
294	990		"	"	5.9	-		-5.9		2914.4		+19	-990	478959	1711714
295	660		"	"	6.9	-		-6.9		2913.4		+12	-660	478952	1712044
296	330		"	"	6.2	-		-6.2		2914.1		+6	-330	478946	1712374
297	0				5.2	-		-5.2		2915.1	TP	0	0	478940	1712704
298	330		72° 38'	+18.6	3.2	-		-3.2		2917.1		-7	+330	478933	1713034
299	660		"	"	3.3	-		-3.3		2917.0		-14	+660	478926	1713364
300	990		"	"	3.8	-		-3.8		2916.5		-21	+990	478919	1713694
301	1320		"	"	2.3	-		-2.3		2918.0		-28	+1320	478912	1714024
302	1650		"	"	2.8	-		-2.8		2917.5		-36	+1650	478904	1714354
303	1980		"	"	4.2	-		-4.2		2916.1		-43	+1980	478897	1714684
304	2310		"	"	4.6	-		-4.6		2915.7		-50	+2309	478890	1715013
305	2640		"	"	3.8	-		-3.8		2916.5		-57	+2639	478883	1715343
306	2970		"	"	3.8	-		-3.8		2916.5		-64	+2969	478876	1715673
TP	3008		72° 25'	"	14.3	89° 47'	+11.4	-2.9		2917.4		-53	+3008	478887	1715712 4-way Intersect.
307	3300		72° 38' 12"	"	14.9	89° 49'	+10.6	-4.3		2916.5	TP	-71.3	+3299.1	478872	1716004
307	3300				14.6	290 11	+10.6	-4.0			TP				
	3300		252° 46' 30"	"	4.105	90°		+10.5			BS	-79'	+3299.1		
	3300				4.103	270°		+10.3			BS				
308	2970		252° 46'	"	10.2	-		-10.2				+71	-2969	478864	1716385

SURVEY NOTES-HIGH RESOLUTION DATA

Geosource Inc.

DATE 6/26/86	INSTRUMENT MAN G. Cotcamp	ROD MAN J. Middleton	PARTY NUMBER 6834	NOTES CHECKED BY J.M.	LINE NO. 5	PAGE 20
AREA Montana	TOPO MAP Rocky Coulee SW	STATE Montana	COUNTY Hill	RANGE	PPM	PARTY MANAGER S. Binns

STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2927.2					
309	2640		252°46'	+18.6°	9.1	-	-9.1		2918.1			+63	-2639	478856 1716665
310	2310		"	"	9.0	-	-9.0		2918.2			+55	-2309	478848 1716995
311	1980		"	"	8.4	-	-8.4		2918.8			+47	-1979	478840 1717325
312	1650		"	"	8.8	-	-8.8		2918.4			+39	-1650	478832 1717654
313	1320		"	"	7.9	-	-7.9		2919.3			+31	-1320	478824 1717984
314	990		"	"	5.1	-	-5.1		2922.1			+24	-990	478817 1718314
315	660		"	"	4.0	-	-4.0		2923.2			+16	-660	478809 1718644
316	330		"	"	7.0	-	-7.0		2920.2			+8	-330	478801 1718974
317	0				5.2	-	-5.2		2922.0		π	0	0	478793 1719304
318	330		72°47'	+18.6°	6.7	-	-6.7		2920.5			-8	+330	478785 1719634
319	660		"	"	9.3	-	-9.3		2917.9			-16	+660	478777 1719964
320	990		"	"	10.8	-	-10.8		2916.4			-24	+990	478769 1720294
321	1320		"	"	12.7	-	-12.7		2914.5			-32	+1320	478761 1720624
322	1650		"	"	7.3	BH	-8.3	-15.6	2911.6			-40	+1650	478753 1720954
FF	1703		72°29'	+18.6°	7.0	BH	-8.5	-15.5	2911.7			-32	+1703	478761 1721007 4-Way Inter.
323	1980		72°47'	"	6.1	BH	-9.9	-16.0	2911.2			-48	+1979	478745 1721283
324	2310		"	"	6.5	BH	-11.6	-18.1	2909.1			-56	+2309	478737 1721613
325	2640		"	"	5.3	BH	-13.2	-18.5	2908.7			-64	+2639	478729 1721943
326	2970		"	"	4.0	BH	-14.9	-18.9	2908.3			-72	+2969	478721 1722273
327	3300		"	"	2.2	BH	-16.5	-18.7	2908.5			-80	+3299	478713 1722603

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/26/86		G. Cotcamp		J. Middleton		6834		F.M.		5		21			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Rocky Coulee SW / Coulee SE		Montana		Hill								S Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2927.2						
328	3630		72°47'	+18.6°	11.3	90°05'	-5.3	-16.6		2910.6		-88	+3629	478705	1722983
329	3960		72°46'54"	"	14.8	90°01'	-1.2	-16.0		2911.0	TP	-95	+3959	478698	1723264
329	3960				14.5	269°59'	-1.2	-15.7	-15.8 ^{+0.3}		TP				
	2640		253°18'54"	"	+4.7	90°		+4.7			BS	-88+1	+2639-1		
	2640				+4.5	270°0'		+4.5	+4.6 ^{+0.3}	2916.6	BS				
330	2310		253°19'	"	5.8	-		-5.8		2910.8		+77	-2309	478688	1723593
331	1980		"	"	7.9	-		-7.9		2908.7		+66	-1979	478677	1723923
332	1650		"	"	8.2	-		-8.2		2908.4		+55	-1649	478666	1724253
333	1320		"	"	7.9	-		-7.9		2908.7		+44	-1319	478655	1724583
334	990		"	"	8.0	-		-8.0		2908.6		+33	-989	478644	1724913
335	660		"	"	9.7	-		-9.7		2906.9		+22	-660	478633	1725242
336	330		"	"	9.0	-		-9.0		2907.6		+11	-330	478622	1725572
337	0				5.4	-		-5.4		2911.2	X	0	0	478611	1725902
338	330		72°50' 73°06'	"	10.7	-		-10.7		2905.9		-8	+330	478603	1726232
TP	398		72°20'	"	4.5	90°52'	-6.0	-10.5		2906.1		-6	+398	478605	1726300
339	660		73°50' 73°06'	"	10.2	-		-10.2		2906.4		-17	+660	478594	1726562
340	990		"	"	8.0	BH	-5.0	-13.0		2903.6		-25	+990	478586	1726892
341	1320		"	"	8.7	BH	-6.6	-15.3		2901.3		-33	+1320	478578	1727222
342	1650		"	"	7.5	BH	-8.3	-15.8		2900.8		-41	+1649	478570	1727551
343	1980		"	"	6.5	BH	-9.9	-16.4		2900.2		-50	+1979	478561	1727881

1 hor. correct.
y=+34
South side x=+8
478605 1726300
T-rd (south)
north side

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
6/26/86		G. Cotcamp		J. Middleton		6834		F.M.		5	22			
AREA		TOPO MAP		STATE		COUNTY		TWP	RANGE	PPM	PARTY MANAGER			
Montana		Rocky Cowlee SF		Montana		Hill					S. Binns			
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2916.6	-				
344	2310		72° 50'	+18.6°	5.0	BH	-11.6	-16.6		2900.0		-58	+2309	478553 1728211
345	2640		"	"	2.2	BH	-13.2	-15.4		2901.2		-66	+2639	478545 1728541
346	2970		"	"	11.4	90° 03'	-2.6	-14.0		2902.6		-74	+2969	478537 1728871
347	3300		"	"	10.9	90° 03'	-2.9	-13.8		2902.8		-83	+3299	478528 1729201
348	3630		"	"	11.3	90° 03'	-3.2	-14.5		2902.1		-91	+3629	478520 1729531
349	3960		72° 50' 30"	+17.6°	14.2	90° 01'	-1.2	-15.4		2901.7	TP	-31.2	+3960	478578 1729862
349	3960				13.9	269° 59'	-1.2	-15.1	-15.2		TP			
	3960		253° 22' 18"	"	+14.9	89° 40'	-23.0	-8.1	-8.2		BS	-67.2	+3959	
	3960				+14.7	270° 20'	-23.0	-8.3	-8.3		BS			
350	3630		253° 22'	"	12.5	TH	+18.2	+5.7		2899.5		+61	-3629	478570 1730192
351	3300		"	"	12.3	TH	+16.5	+4.2		2898.0		+56	-3300	478565 1730521
352	2970		"	"	1.3	-		-1.3		2892.5		+50	-2970	478559 1730851
353	2640		"	"	3.8	-		-3.8		2890.0		+45	-2640	478554 1731181
354	2310		"	"	3.6	-		-3.6		2890.2		+39	-2310	478548 1731511
354	2332		253° 12'	"	3.3	-		-3.3		2890.5		+33	-2332	478542 1731489 4-way Telen.
355	1980		253° 22'	"	2.5	-		-2.5		2891.3		+33	-1980	478542 1731841
356	1650		"	"	3.8	-		-3.8		2890.0		+28	-1650	478537 1732171
357	1320		"	"	8.0	-		-8.0		2885.8		+22	-1320	478531 1732501
358	990		"	"	8.0	-		-8.0		2885.8		+17	-990	478526 1732831
359	660		"	"	6.4	-		-6.4		2882.4		+11	-660	478520 1733161

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
6/26/86		G. Cotcamp		J. Middleton		6834		J.M.		5	23					
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Montana		Rocky Cowlee SF		Montana	Hill					S. Dims						
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH +	EAST +	COORDINATES		REMARKS
												SOUTH -	WEST -	Y	X	
												LAT.	DEP.			
									2893.8							
360	330		253°12'	+17.6°	5.9	-		-5.9		2887.9		+5	-330	478514	1733491	
361	0				5.2	-		-5.2		2888.6	TP	0	0	478509	1733821	
362	330		73°20'	+17.1	4.3	-		-4.3		2889.5		-3	+330	478506	1734151	
363	660		"	"	4.3	-		-4.3		2889.5		-5	+660	478504	1734481	
364	990		"	"	4.5	-		-4.5		2889.3		-7	+990	478502	1734811	
365	1320		"	"	6.6	-		-6.6		2887.2		-10	+1320	478499	1735141	
366	1650		"	"	8.4	-		-8.4		2885.4		-12	+1650	478497	1735471	
367	1980		"	"	9.3	-		-9.3		2884.5		-15	+1980	478494	1735801	
368	2310		"	"	9.0	-		-9.0		2884.8		-17	+2310	478492	1736131	
369	2640		"	"	9.1	-		-9.1		2884.7		-20	+2640	478489	1736461	
BM	2902		74°15'	"	13.8	90°		-13.8		2880.0		-68	+2901	478441	1736722	USC+GS K368 2880.0
370	2970		73°20'	"	11.1	-		-11.1		2882.7		-22	+2970	478487	1736791	vert. correct, +3.0
371	3300		73°20'20"	+17.1	14.5	89°58'	+1.9	-12.6		2881.4	TP	-25-2	+3300-2	478482	1737119	
371	3300				14.2	270°02'	+1.9	-12.3	-12.4		TP					
	3048		253°35'24"	"	+14.5	89°45'	-13.3	+1.2			BS	-37-3	+3048-2			
	3048				+14.2	270°15'	-13.3	+0.9	+1.1	2882.5	BS					
372	2718		253°35'	"	1.8	-		-1.8		2880.7		+32	-2718	478474	1737447	
373	2388		"	"	1.7	-		-1.7		2880.8		+28	-2388	478470	1737777	
374	2058		"	"	1.7	-		-1.7		2880.8		+25	-2058	478467	1738107	
375	1728		"	"	1.5	-		-1.5		2881.0		+21	-1728	478463	1738437	

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445'

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/26/86		G. Cotcamp		J. Middleton		6834		J.M.		5		24			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Rocky Coulee SE		Montana		Hill								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2882.5						
376	1398		253°35'	+17.1	0.8	-	-0.8		2881.7			+17	-1398	478459	1738767
377	1068		"	"	1.0	-	-1.0		2881.5			+13	-1068	478455	1739097
378	738		"	"	0.3	-	-0.3		2882.2			+9	-738	478451	1739427
379	408		"	"	5.3	-	-5.3		2877.2			+5	-408	478447	1739757
380	78		"	"	5.5	-	-5.5		2877.0			+1	-78	478443	1740087
381	0		"	"	4.1	-	-5.2		2877.3	TP		0	0	478442	1740165
381	252		73°22'	"	9.1	-	-9.1		2873.4			-2	+252	478440	1740417
382	582		"	"	6.3	-	-6.3		2876.2			-5	+582	478437	1740747
383	912		"	"	4.8	-	-4.8		2877.7			-7	+912	478435	1741077
384	1242		"	"	2.1	-	-2.1		2880.4			-10	+1242	478432	1741407
385	1572		"	"	4.6	-	-4.6		2877.9			-13	+1572	478429	1741737
BM	1802		75°36'	"	5.9	-	-5.9		2876.6			-85	+1800	478357	1741965
386	1902		73°22'	"	3.3	-	-3.3		2879.2			-15	+1902	478427	1742067
387	2232		"	"	9.2	TH +11.2	+2.0		2884.5			-18	+2232	478424	1742397
388	2572		"	"	14.6	89°45' +11.2	-3.4		2879.1			-21	+2572	478421	1742737
389	2888		72°26'10"	"	14.9	89°33' +22.7	+7.8		2890.5	TP		+23-3	+2888-2	478462	1743051
389	2888			"	14.6	270°27' +22.7	+8.1	+8.0			TP				
	2640		253°36'56"	"	+14.8	89°45' -11.5	+3.3				BS	-33-2	+2640-2		
	2640			"	+14.6	270°16' -11.5	+3.1	+3.2	2893.7		BS				
390	2310		253°37'	"	2.7	-	-2.5					+29	-2310	478456	1743379

USC+G.C.
J368 2876.0

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
6/26/86		G. Cotcamp		J. Middleton		6834		J.M.		5	25			
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Rocky Coulee SE		Montana		Hill						S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2893.2					
391	1980		253°37'	+17.1	3.7	-	-3.7		2890.0			+25	-1980	478452 1743709
392	1650		"	"	4.2	-	-4.2		2889.5			+21	-1650	478448 1744039
393	1320		"	"	4.5	-	-4.5		2889.2			+17	-1320	478444 1744369
394	990		"	"	5.5	-	-5.5		2888.2			+12	-990	478439 1744699
395	660		"	"	4.8	-	-4.8		2888.9			+8	-660	478435 1745029
396	330		"	"	4.6	-	-4.6		2889.1			+4	-330	478431 1745359
397	0				5.2	-	-5.2		2888.5		X	0	0	478427 1745689
398	330		73°28'	"	6.3	-	-6.3		2887.4			-3	+330	478424 1746019
399	660		"	"	6.0	-	-6.0		2887.7			-7	+660	478420 1746349
400	990		"	"	4.9	-	-4.9		2888.8			-10	+990	478417 1746679
401	1320		"	"	3.8	-	-3.8		2889.9			-13	+1320	478414 1747009
402	1650		"	"	1.7	-	-1.7		2892.0			-16	+1650	478411 1747339
403	1980				1	-	-							
403	1621		74°02'	"	1.7	-	-1.7		2892.0			-32	+1621	478395 1747310 4-Way (paved)
403	1980		73°28'	"	1.7	-	-1.7		2892.0			-20	+1980	478407 1747669
404	2310		"	"	2.3	-	-2.3		2891.4			-23	+2310	478404 1747999
405	2640		73°28'03"	"	14.7	89°48'	+9.2	-5.5	2888.3		TP	-26-3	+2640-2	478398 1748327
405	2640				14.4	270°12'	+9.2	-5.2			TP			
	2310		253°34'50"	"	+14.3	89°45'	-10.1	+4.2			BS	-27-3	+2310.2	
	2310				+14.1	270°15'	-10.1	+4.0	2892.4		BS			

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
6/26/86		G. Cotcamp		J. Middleton		6834		F.M.		5		26		
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Rocky Coulee SE		Montana		Hill						S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH+ SOUTH- LAT.	EAST+ WEST- DEP.	
									2892.4					
406	1980		253°35'	+17.1	6.9	-	-6.9		2885.5			+24	-1980	478392 1748655
407	1650		"	"	8.5	-	-8.5		2883.9			+20	-1650	478388 1748985
408	1320		"	"	9.0	-	-9.0		2883.4			+16	-1320	478384 1749315
409	990		"	"	8.8	-	-8.8		2883.6			+12	-990	478380 1749645
410	660		"	"	8.3	-	-8.3		2884.1			+8	-660	478376 1749975
411	330		"	"	7.2	-	-7.2		2885.2			+4	-330	478372 1750305
412	0				5.2	-	-5.2		2887.2	X		0	0	478368 1750635
413	330		73°29'	"	4.0	-	-4.0		2888.4			-3	+330	478365 1750965
414	660		"	"	1.9	-	-1.9		2890.5			-7	+660	478361 1751295
415	990		"	"	0.9	TH	+5.0	+4.1	2896.5			-10	+990	478358 1751625 pavement ends
416	1320		75°53'	"	8.1	89°30'	+11.5	+3.4	2895.8			-69	+1318	478299 1751953
417	1650		75°25'	"	8.3	89°30'	+14.4	+6.1	2898.5			-72	+1648	478296 1752283
418	1980		74°27'	"	7.8	89°30'	+17.3	+9.5	2901.9			-54	+1979	478314 1752614
419	2310		"	"	11.0	89°36'	+16.1	+5.1	2897.5			-62	+2309	478306 1752944
420	2636		74°26'50"	"	14.9	89°36'	+18.4	+3.5			TP	-71-3	+2635.2	478294 1753268
420	2636				14.8	270°24'	+18.4	+3.6	2896.0		TP			
	2640		253°30'46"	"	+14.7	89°11'	-37.6	-22.9	2873.1		BS	-28-3	+2640.2	
	2640				+14.6	270°49'	-37.6	-23.0			BS			
421	2310		253°31'	"	5.3	89°20'	+26.9	+21.6	2894.7			+25	-2310	478288 1753596
422	1980		"	"	6.2	89°20'	+23.0	+16.8	2889.9			+21	-1980	478284 1753926

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
6/26/86		G. Cotcamp		J. Middleton		6834		F.M.		5		27		
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Rocky Coulee SE/ Fourteen Mile Coulee SW		Montana		Hill						S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2873.1					
423	1650		253°31'	+17.1°	9.8	89°20'	+19.2	+9.4		2882.5		+18	-1650	478281 1754256
424	1320		"	"	2.4	-		-2.4		2870.7		+14	-1320	478277 1754586
425	990		"	"	5.7	-		-5.7		2867.4		+11	-990	478274 1754916
426	660		"	"	5.9	-		-5.9		2867.2		+7	-660	478270 1755246
427	330		"	"	5.2	-		-5.2		2867.9		+4	-330	478267 1755576
428	0				5.2	-		-5.2		2867.9	TP	0	0	478263 1755906
429	330		73°27'	"	3.9	-		-3.9		2869.2		-3	+330	478260 1756236
430	660		"	"	3.8	-		-3.8		2869.3		-6	+660	478257 1756566 Rocky Coulee SE
431	990		"	"	1.7	-		-1.7		2871.4		-10	+990	478253 1756896 Fourteen Mile Coulee SW
432	1320		"	"	2.5	-		-2.5		2870.6		-13	+1320	478250 1757226
433	1650		"	"	4.3	-		-4.3		2868.8		-16	+1650	478247 1757556
<u>434</u>	1952		73°33'	"	15.0	TH	+9.8	-5.2		2867.9		-22	+1952	478241 1757858 +78245+1757865 T-rd(n) 2869
434	1980		73°27'	"	5.4	-		-5.4		2867.7		-19	+1980	478244 1757886
435	2310		"	"	3.3	-		-3.3		2869.8		-22	+2310	478241 1758216
436	2640		"	"	3.3	-		-3.3		2869.8		-25	+2640	478238 1758546
437	2970		"	"	0.2	-		-0.2		2872.9		-29	+2970	478234 1758876
438	3300		73°26'48"	"	14.7	89°39'	+20.2	+5.5		2878.6	TP	-31-3	+3300-2	478229 1759204
438	3300				14.6	270.41	+39.4	+24.8			TP			
	3630		253°55'34"	"	+14.9	90°03'	+3.2	+18.1	+18.0		BS	-6.5-3	+3629-2	
	3630				+14.6	269°57'	+3.2	+17.8		2896.6	BS			

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
6/26/86		G. Cotcamp		J. Middleton		6834		J.M.		5	28						
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER								
Montana		Fourteenmile Coulee SW	Montana	Hill					S. Binns								
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
									2896.6								
439	3300		253° 55'	+17.1°	4.4	BH	-16.5	-20.9		2875.7		+59	-3299	478220	1759532		
440	2970		"	"	4.5	BH	-14.9	-19.4		2877.2		+53	-2970	478214	1759861		
441	2640		"	"	8.8	BH	-13.2	-22.0		2874.6		+47	-2640	478208	1760191		
442	2310		"	"	11.2	BH	-11.6	-22.8		2873.8		+41	-2310	478202	1766521		
443	1980		"	"	9.8	BH	-9.9	-19.7		2876.9		+35	-1980	478196	1766851		
444	1650		"	"	9.7	BH	-8.3	-18.0		2878.6		+29	-1650	478190	1761181		
445	1320		"	"	9.1	BH	-6.6	-15.7		2880.9		+23	-1320	478184	1761511		
446	990		"	"	10.9	BH	-5.0	-15.9		2880.7		+18	-990	478179	1761841		
447	660		"	"	12.3	-		-12.3		2884.3		+12	-660	478173	1762171		
448	330		"	"	10.1	-		-10.1		2886.5		+6	-330	478167	1762501		
449	0				5.2	-		-5.2		2891.4	π	0	0	478161	1762831		
450	330		73° 34'	+17.1°	5.2	-		-5.2		2891.4		-4	+330	478157	1763161		
451	660		"	"	7.8	-		-7.8		2888.8		-8	+660	478153	1763491		
452	990		"	"	11.9	-		-11.9		2884.7		-12	+990	478149	1763821		
453	1320		"	"	6.9	-		-6.9		2889.7		-15	+1320	478146	1764151		
454	1650		"	"	9.4	-		-9.4		2887.2		-19	+1650	478142	1764481		
455	1980		"	"	10.8	-		-10.8		2885.8		-23	+1980	478138	1764811		
456	2310		"	"	9.2	-		-9.2		2887.4		-27	+2310	478134	1765141		
457	2640		"	"	6.0	-		-6.0		2890.6		-31	+2640	478130	1765471		
458	2970		"	"	2.0	-		-2.0		2894.6		-35	+2970	478126	1765801		

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
6/26/86		G. Cotcamp		J. Middleton		6834		J.M.		5	29				
AREA		TOPO MAP		STATE		COUNTY		TWP	RANGE	PPM	PARTY MANAGER				
Montana		Fourteemile Coulee SW		Montana		Hill					S. Binns				
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2896.6						
459	3300		73°34'	+17.1°	10.7	89°46'	+13.4	+2.7		2899.3		-38	+3300	478123	1766131
460	3630		73°34'18"	"	15.0	89°43'	+18.0	+3.0		2899.7	TP	-43.3	+3630	478115	1766460
460	3630				14.8	270°17'	+18.0	+3.2	+3.1		TP				
	2640		253°42'26"	"	+14.6	89°51'	-6.9	+7.7	+7.6		BS	-37.3	+2640		
	2640				+14.4	270°09'	-6.9	+7.5		2907.3	BS				
461	2310		253°42'	"	5.9	-		-5.9		2901.4		+32	-2310	478107	1766790
462	1980		"	"	7.8	-		-7.8		2899.5		+28	-1980	478103	1767120
463	1650		"	"	5.9	-		-5.9		2901.4		+23	-1650	478098	1767450
464	1320		"	"	8.6	-		-8.6		2898.7		+18	-1320	478093	1767780
465	990		"	"	8.3	-		-8.3		2899.0		+14	-990	478089	1768110
466	660		"	"	11.0	-		-11.0		2896.3		+9	-660	478084	1768440
467	330		"	"	11.7	-		-11.7		2895.6		+5	-330	478080	1768770
468	0				5.4	-		-5.4		2901.9	X	0	0	478075	1769100
469	330		73°51'	"	10.2	-		-10.2		2897.1		-5	+330	478070	1769430
470	660		"	"	11.6	-		-11.6		2895.7		-11	+660	478064	1769760
471	990		"	"	9.0	BH	-5.0	-14.0		2893.3		-16	+990	478059	1770090
472	1320		"	"	11.4	BH	-6.6	-18.0		2889.3		-22	+1320	478053	1770420
473	1650		"	"	10.1	BH	-8.3	-18.4		2888.9		-27	+1650	478048	1770750
474	1980		"	"	7.2	BH	-9.9	-17.1		2890.2		-33	+1980	478042	1771080
475	2310		"	"	4.0	BH	-11.6	-15.6		2891.7		-38	+2310	478037	1771410

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
6/26/86		G. Cotcamp		J. Middleton		6834		F.M.		5	30				
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Montana		Fourteemile Coulee SW	Montana	Hill					S. Binns						
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2907.3						
476	2640		73° 51'	+17.1°	7.1	BH	-13.2	-20.3		2887.0		-44	+2640	478031	1771740
477	2970		"	"	6.1	BH	-14.9	-21.0		2886.3		-49	+2970	478026	1772070
478	3300		"	"	3.0	BH	-16.5	-19.5		2887.8		-55	+3300	478020	1772400
479	3630		"	"	10.3	90° 08'	-8.4	-18.7		2888.6		-60	+3630	478015	1772730
480	3960		"	"	9.2	90° 08'	-9.2	-18.4		2888.9		-66	+3959	478009	1773059
≡	4218		73° 56' 54"	"	15.0	90° 03'	-3.7	-18.7			TP	-77.3	+4217	477995	1773317
≡	4218				14.9	269° 57'	-3.7	-18.6		2888.7	TP				
	1331		163° 36' 24"	"	+14.7	90° 12'	+4.6	+19.3			BS	+1331.3	+16		5296' offset
	1331				+14.4	269° 48'	+4.6	+19.0	+19.2	2907.9	BS				north (480-481)
π	0				5.2	-	-	-5.2		2902.7	π	0	0	479323	1773333
15	3965		343° 28' 22"	"	14.7	89° 48'	+13.8	-0.9		2907.2	TP	+3965.3	+40	483285	1773373
15	3965				14.3	270° 12'	+13.8	-0.5	-0.7		TP				Intersect.
	2713		253° 32' 52"	"	+14.8	90° 01'	+0.8	+15.6	+15.5		BS	-31.3	+2713		
	2713				+14.5	269° 59'	+0.8	+15.3	2922.7		BS				
481	2640		253° 40'	"	4.2	BH	-13.2	-17.4		2905.3		+35	-2640	483286	1773446
482	2310		"	"	9.2	BH	-11.6	-20.8		2901.9		+31	-2310	483282	1773776
483	1980		"	"	7.1	BH	-9.9	-17.0		2905.7		+26	-1980	483277	1774106
484	1650		"	"	11.4	BH	-8.3	-19.7		2903.0		+22	-1650	483273	1774436
485	1320		"	"	8.8	BH	-6.6	-15.4		2907.3		+18	-1320	483269	1774766
486	990		"	"	2.6	-	-	-7.6		2915.1		+13	-990	483264	1775096

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445'

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
6/26/86		G. Catcamp		J. Middleton		6834		F.M.		5		31		
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Fourteanile Coulee SW		Montana		Hill						S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2922.7					
487	660		253°40'	+17.1°	8.0	-	-8.0	-	2914.7			+9	-660	483260 1775426
488	330		"	"	6.0	-	-6.0	-	2916.7			+4	-330	483255 1775756
489	0				5.2	-	-5.2	-	2917.5	TP		0	0	483251 1776086
490	330		73°17'	"	5.9	-	-5.9	-	2916.8			-2	+330	483249 1776416
491	660		"	"	1.5	-	-1.5	-	2921.2			-4	+660	483247 1776746
492	990		"	"	4.8	TH	+5.0	+0.2	2922.9			-7	+990	483244 1777076
493	1320		"	"	11.3	TH	+6.6	-4.7	2918.0			-9	+1320	483242 1777406
494	1650		"	"	10.3	89°55'	+2.4	-7.9	2914.8			-11	+1650	483240 1777736
495	1980		"	"	12.5	89°58'	+1.2	-11.3	2911.4			-13	+1980	483238 1778066
496	2310		"	"	12.3	TH	+11.6	-0.8	2921.9			-15	+2310	483236 1778396
497	2640		73°17'32"	"	15.0	89°38'	+16.9	+1.9	2924.7	TP		-18.2	+2640	483231 1778726
497	2640				14.8	270°22'	+16.9	+2.1			TP			
	2970		254°11'18"	"	14.6	89°23'	-32.0	-17.4			BS	-67.2	+2969	
	2970				14.3	270°37'	-32.0	-17.7	2910.1		BS			
498	2640		254°11'	"	6.3	89°37'	+12.7	+11.4	2921.5			+59	-2639	483221 1779056
499	2310		"	"	4.5	89°37'	+15.5	+11.0	2921.1			+52	-2309	483214 1779386
500	1980		"	"	2.1	89°37'	+13.2	+11.1	2921.2			+44	-1980	483206 1779715
501	1650		"	"	2.9	89°37'	+11.0	+8.1	2918.2			+37	-1650	483199 1780045
502	1320		"	"	3.1	TH	+6.6	+3.5	2913.6			+30	-1320	483192 1780375
503	990		"	"	3.0	TH	+5.0	+2.0	2912.1			+22	-990	483184 1780705

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
6/26/86		G. Cotcamp		J. Middleton		6834		J.M.		5		32		
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Fourteemile Creek Sw		Montana		Hill						S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2910.1					
504	660		254°11'	17.1°	2.3	-	-2.3		2907.8			+15	-660	483177 1781035
505	330		"	"	6.3	-	-6.3		2903.8			+7	-330	483169 1781365
506	0				5.2	1-	-5.2		2904.9	TP		0	0	483162 1781695
507	330		73°49'	"	4.4	-	-4.4		2905.7			-5	+330	483157 1782025
508	660		"	"	4.8	-	-4.8		2905.3			-11	+660	483151 1782355
509	990		"	"	5.8	-	-5.8		2904.3			-16	+990	483146 1782685
510	1320		"	"	6.2	-	-6.2		2903.9			-21	+1320	483141 1783015
511	1650		"	"	7.1	-	-7.1		2903.0			-26	+1650	483136 1783345 ↑
512	1980		"	"	5.3	-	-5.3		2904.8			-32	+1980	483130 1783675 north side
BM	2232		75°03'	"	14.9	89°48'	+7.8	-7.1	2903.0			-84	+2230	483078 1783925 u.s. Geos A368 2901.
TP	2255		73°58'30"	"	5.4	-	-5.4		2904.7			-42	+2255	483120 1783950 4-way Intersect.
513	2310		75°73'49'		5.8	-	-5.8		2904.3			-37	+2310	483125 1784005 south side
514	2640		"		5.8	-	-5.8		2904.3			-42	+2640	483120 1784335 ↓
515	2970		"		1.7	-	-1.7		2908.4			-48	+2970	483114 1784665 y=+49'
516	3300		74°10'08"	+17.3°	14.6	89°48'	+11.5	-3.1			TP	-85-1	+3299	483076 1784994
					14.2	270°12'	+11.5	-2.2		2907.4	TP			
	2970		253°13'18"	+17.3°	+14.5	89°35'	-21.6	-7.1	29003		BS	-27-1	+2970	
	2970				+14.4	270°25'	-21.6	-7.2			BS			
517	2640		253°13'	+17.3°	7.0	TH	+13.2	+6.2		2906.5		+24	-2640	483072 1785324
518	2310		"		6.6	TH	+11.6	+5.0		2905.3		+21	-2310	483069 1785664

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
6/30/86		G. Catcamp		J. Middleton		6834		J.M.		5		33		
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Fourteenmile Coulee SW/SE		Montana		Hill						S. Bibas		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2900.3					
519	1980		253°13'	+173'	7.8	TH	+9.9	+2.1		2902.4		+18	-1980	483066 1785984
520	1650		"	"	7.3	TH	+8.3	+1.0		2901.3		+15	-1650	483063 1786314
521	1320		"	"	5.9	TH	+6.6	+0.7		2901.0		+12	-1320	483060 1786644 ↑
522	990		"	"	0.1	-		-0.1		2900.2		+9	-990	483057 1786974 Fourteenmile Coulee SW
523	660		"	"	1.2	-		-1.2		2899.1		+6	-660	483054 1787304 Fourteenmile Coulee SE
524	330		"	"	2.3	-		-2.3		2898.0		+3	-330	483051 1787634 ↓
525	0				5.2	-		-5.2		2895.1	X	0	0	483048 1787964
526	330		73°30'	+173'	7.9	-		-7.9		2892.4		-5	+330	483043 1788294
527	660		"	"	11.5	BA	-3.3	-14.8		2885.5		-9	+660	483039 1788624
528	990		"	"	3.8	91°	-17.3	-21.1		2879.2		-14	+990	483034 1788954
$\frac{1}{2}$	1268		73°01'	"	3.6	91°	-22.1	-25.7		2874.6		-7	+1268	483041 1789232 483035+1789250 Trd(n) 2873.
529	1320		73°30'	"	4.5	91°	-23.0	-27.5		2872.8		-18	+1320	483030 1789284
530	1650		"	"	6.0	91°	-28.8	-34.8		2865.5		-23	+1650	483025 1789614
531	1980		"	"	6.7	91°	-34.6	-41.3		2859.0		-28	+1980	483020 1789944
532	2310		"	"	6.0	91°	-40.3	-46.3		2854.0		-32	+2310	483016 1790274
533	2640		"	"	5.8	91°	-46.1	-51.9		2848.4		-37	+2640	483011 1790604
534	2970		"	"	6.9	91°	-51.8	-58.7		2841.6		-42	+2970	483006 1790934
535	3300		"	"	7.1	91°	-57.6	-64.7		2835.6		-46	+3300	483002 1791264
536	3630		73°29'36"	"	14.6	90°51'	-53.9	-68.5			TP	-50-1	+3630	482997 1791594
536	3630				14.3	261°09'	-53.9	-68.2		2832.1	TP			

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
6/30/86		G. Cotcamp		J. Middleton		6834		J.M.		5	34					
AREA		TOPO MAP		STATE		COUNTY		TWP	RANGE	PPM	PARTY MANAGER					
Montana		Fourteemile Codee SE		Montana		Hill					S. Binns					
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH +	EAST +	COORDINATES		REMARKS
												SOUTH -	WEST -	Y	X	
												LAT.	DEP.			
536										2832.1						
	3960		253°34'30"	+17.3°	+14.6	90°29'	+33.4	+48.0			BS	-60.1	+3960			
	3960				+14.5	269°31'	+33.4	+47.9	2880.0		BS					
537	3630		253°34'	"	11.1	90°36'	-38.0	-49.1		2830.9		+55	-3630	482991	1791924	
538	3300		"	"	11.2	90°40'	-38.4	-49.6		2830.4		+50	-3300	482986	1792254	
539	2970		"	"	11.1	90°44'	-38.0	-49.1		2830.9		+45	-2970	482981	1792584	
540	2640		"	"	10.1	90°44'	-33.8	-43.9		2836.1		+40	-2640	482976	1792914	
541	2310		"	"	8.2	90°44'	-29.6	-37.8		2842.2		+35	-2310	482971	1793244	
542	1980		"	"	6.2	90°44'	-25.3	-31.5		2848.5		+30	-1980	482966	1793574	
543	1650		"	"	9.0	90°30'	-14.4	-23.4		2856.6		+25	-1650	482961	1793904	
544	1320		"	"	9.0	90°30'	-11.5	-20.5		2859.5		+20	-1320	482956	1794234	
7T	1083		254°02'	"	4.5	90°40'	-12.6	-17.1		2862.9		+25	-1083	482961	1794471	482940 + 1794490 T-red (S)
545	990		253°34'	"	11.3	BH	-5.0	-16.3		2863.7		+15	-990	482951	1794564	
546	660		"	"	10.1	BH	-3.3	-13.4		2866.6		+10	-660	482946	1794894	
547	330		"	"	9.3	-	-	-9.3		2870.7		+5	-330	482941	1795224	
548	0		"	"	5.2	-	-	-5.2		2874.8	π	0	0	482936	1795554	
549	330		73°38'	"	3.8	-	-	-3.8		2876.2		-5	+330	482931	1795884	
550	660		"	"	1.9	-	-	-1.9		2878.1		-11	+660	482925	1796214	
551	990		"	"	1.4	-	-	-1.4		2878.6		-16	+990	482920	1796544	
552	1320		"	"	1.6	-	-	-1.6		2878.4		-22	+1320	482914	1796874	
553	1650		"	"	1.9	-	-	-1.9		2878.1		-27	+1650	482909	1797204	

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/30/86		G. Cotcamp		J. Middleton		6834		F.M.		5		35			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Fourteenmile Coulee SE		Montana		Hill								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2880.0						
554	1980		73°38'	+17.3°	5.3	-	-5.3			2874.7		-32	+1980	482904	1797534
555	2310		73°38'	"	12.7	90°-	-12.7				TP	-38	+2310	482898	1797864
555	2310				12.5	270°-	-12.5			2867.5	TP				
	3630		253°30'30"	"	+14.3	89°32'	-29.6	-15.3	2852.2		BS	-51	+3630		
	3630				+14.1	270°26'	-29.6	-15.5			BS				
556	3300		253°30'	"	11.8	TH	+16.5	+4.7		2856.9		+46	-3300	482893	1798194
557	2970		"	"	6.7	-	-6.7			2845.5		+41	-2970	482888	1798524
558	2640		"	"	7.0	-	-7.0			2845.2		+37	-2640	482884	1798854
559	2310		"	"	8.0	-	-8.0			2844.2		+32	-2310	482879	1799184
560	1980		"	"	6.6	-	-6.6			2845.6		+28	-1980	482875	1799514
IF	1742		253°45'	"	4.5	-	-4.5			2847.7		+32	-1742	482879	1799752 4-Way Inter.
561	1650		253°30'	"	4.4	-	-4.4			2847.8		+23	-1650	482870	1799844
562	1320		"	"	6.9	-	-6.9			2845.3		+18	-1320	482865	1800174
563	990		"	"	9.1	-	-9.1			2843.1		+14	-990	482861	1800504
564	660		"	"	9.1	-	-9.1			2843.1		+9	-660	482856	1800834
565	330		"	"	8.2	-	-8.2			2844.0		+5	-330	482852	1801164
566	0		73°35'	"	5.2	-	-5.2			2847.0	TP	0	0	482847	1801494
567	330		"	"	4.7	-	-4.7			2847.5		-5	+330	482842	1801824
568	660		"	"	5.3	-	-5.3			2846.9		-10	+660	482837	1802154
569	990		"	"	5.8	-	-5.8			2846.4		-15	+990	482832	1802484

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

368.0

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
6/30/86		G. Cotcamp		J. Middleton		6834		J.M.		5		36			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Fourteenmile Codee SE		Montana		Hill								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2852.2						
570	1320		73° 35'	+17.3"	7.1	-	-7.1		2845.1			-20	+1320	482827	1802814
571	1650		"	"	5.9	-	-5.9		2846.3			-25	+1650	482822	1803144
572	1980		"	"	3.9	-	-3.9		2848.3			-31	+1980	482816	1803474
573	2310		"	"	2.3	-	-2.3		2849.9			-36	+2310	482811	1803804
574	2640		"	"	12.7	TH	+13.2	+0.5	2852.7			-41	+2640	482806	1804134
575	2970		"	"	2.2	-	-2.2		2850.5			-46	+2970	482801	1804464
576	3300		"	"	7.7	-	-7.7		2844.5			-51	+3300	482796	1804794
575	3578		73° 32'	"	13.4	89° 55'	+5.2	-8.2	2844.0			-52	+3578	482795	1805072
577	3630		73° 35'	"	11.7	89° 58'	+2.1	-9.6	2842.6			-56	+3630	482791	1805124
578	3960		"	"	16.2	89° 58'	+2.3	-13.9	2838.3			-61	+3960	482786	1805454
579	4290		"	"	26.0	89° 58'	+2.5	-23.5	2828.7			-66	+4289	482781	1805783
580	4620		"	"	29.0	89° 58'	+2.7	-26.3	2885.9			-71	+4619	482776	1806113
581	4950		"	"	25.0	89° 58'	+2.9	-22.1	2830.1			-76	+4949	482771	1806443
582	5280		"	"	9.2	89° 58'	+3.1	-6.1	2846.1			-81	+5279	482766	1806773
583	5610		"	"	1.8	89° 58'	+3.3	+1.5	2853.7			-86	+5609	482761	1807103
584	5940		"	"	8.1	89° 51'	+15.6	+7.5	2859.7			-92	+5939	482755	1807433
585	6270		"	"	5.5	89° 51'	+16.4	+10.9	2863.1			-97	+6269	482750	1807763
586	6600		"	"	2.3	89° 51'	+17.3	+15.0	2867.2			-102	+6599	482745	1808093
587	6930		73° 35' 30"	"	15.0	89° 42'	+36.3	+21.3			TP	-108	+6929	482739	1808422
587	6930				14.9	270° 18'	+36.3	+21.4	2873.6		TP				

482770 + 1805090
4-Way Inter.

SURVEY NOTES - HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
6/30/86		G. Cotcamp		J. Middleton		6834		J.M.		5	37			
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Fourteen Mile Coulee SE		Montana		Hill						S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
587										2873.6				
	2970		253° 59' 36"	+17.3°	+14.2	89° 45'	-13.0	+1.2	2874.8		BS	-63	+2969	
	2970				+14.2	270° 15'	-13.0	+1.2			BS			
588	2640		253° 55'	"	8.9	89° 50'	+7.7	-1.2		2873.6		+56	-2639	482732 1808750
589	2310		"	"	9.0	89° 50'	+6.7	-2.3		2872.5		+49	-2309	482725 1809080
590	1980		"	"	8.8	89° 50'	+5.8	-3.0		2871.8		+42	-1980	482718 1809409
591	1650		"	"	4.2	89° 50'	+4.8	+0.6		2875.4		+35	-1650	482711 1809739
592	1320		"	"	4.6	TH	+6.6	+2.0		2876.8		+28	-1320	482704 1810069
BM	1031		254° 29'	"	4.3	TH	+5.2	+0.9		2875.7		+32	-1031	482708 1810358
BM	999		257° 21'	"	6.4	TH	+5.0	-1.4		2873.4		+81	-996	482757 1810393 4-Way used. 0367 1948 2874.0
593	990		253° 55'	"	4.6	TH	+5.0	-0.4		2874.4		+21	-990	482697 1810399
594	660		"	"	0.7	-		-0.7		2874.1		+14	-660	482690 1810729
595	330		"	"	2.3	-		-2.3		2872.5		+7	-330	482683 1811059
596	0		"	"	5.2	-		-5.2		2869.6	X	0	0	482676 1811389
597	330		74° 08'	"	8.1	-		-8.1		2866.7		-8	+330	482668 1811719
598	660		"	"	7.8	-		-7.8		2867.0		-17	+660	482659 1812049
599	990		"	"	4.3	-		-4.3		2870.5		-25	+990	482651 1812379
600	1320		"	"	5.2	-		-5.2		2869.6		-33	+1320	482643 1812709
601	1650		"	"	3.8	-		-3.8		2871.0		-41	+1649	482635 1813038
602	1980		"	"	6.3	TH	+0.9	+3.6		2878.4		-50	+1979	482626 1813368
603	2310		"	"	6.3	TH	+11.6	+5.3		2880.1		-58	+2309	482618 1813698

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
6/30/86		G. Cotcamp		J. Middleton		6834		F.M.		5	38						
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER								
Montana		Lonesome Lake Fourteenmile Coulee SE	Montana	Hill					S. Binns								
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH + SOUTH -	EAST + WEST -	COORDINATES		REMARKS	
												LAT.	DEP.	Y	X		
									2874.8								
604	2640		74°08'	+17.3°	6.5	TH	+13.2	+6.7		2881.5		-66	+2639	482610	1814028		
605	2970		"	"	5.8	TH	+14.9	+9.1		2883.9		-74	+2969	482602	1814358		
606	3300		"	"	5.8	TH	+16.5	+10.7		2885.5		-83	+3299	482593	1814688		
607	3630		"	"	9.0	TH	+18.2	+9.2		2884.0		-91	+3629	482585	1815018		
608	3960		"	"	11.3	TH	+19.8	+8.5		2883.3		-99	+3959	482577	1815348		
609	4290		"	"	4.9	TH	+21.5	+16.6		2891.4		-107	+4289	482569	1815678		
610	4630		"	"	7.8	89°36'	+32.3	+24.5		2899.3		-116	+4629	482560	1816008		
611	4960		"	"	8.1	89°36'	+34.6	+26.5		2901.3		-124	+4958	482552	1816337		
612	5280		"	"	7.0	89°36'	+36.9	+29.9		2904.7		-132	+5278	482544	1816657		
613	5610				10.0	89°36'											
613	5610		74°08'18"	+16.8°	14.0	89°39'	+42.4	+28.4		2903.2	TP	-92	+5609.2	482584	1816996		
613	5610				14.0	270°26'	+42.4	+28.4			TP						
	2310		253°56'54"	"	+14.4	89°21'	-26.2	-11.8	2891.4		BS	-30	+2310.2				
	2310				+14.3	270°39'	-26.2	-11.9			BS						
614	1980		253°57'	"	5.2	89°30'	+17.3	+12.1		2903.5		+26	-1980	482580	1817324	Fourteenmile Coulee SE	
615	1650		"	"	1.2	89°30'	+14.4	+13.2		2904.6		+22	-1650	482576	1817654	Lonesome Lake	
616	1320		"	"	1.7	89°30'	+11.5	+9.8		2901.2		+17	-1320	482571	1817984	↓	
617	990		"	"	1.7	89°30'	+8.6	+6.9		2898.3		+13	-990	482567	1818314		
618	660		"	"	3.8	89°30'	+5.8	+2.0		2893.4		+9	-660	482563	1818644		

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
7/1/86		G. Catcamp		J. Middleton		6834		J.M.		5	39					
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Montana		Lonesome Lake	Montana	Hill					S. Binns							
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH +	EAST +	COORDINATES		REMARKS	
											SOUTH -	WEST -	Y	X		
								2891.4								
619	330		253°57'	16.8°	2.2	-	-2.2	2889.2			+4	-330	482558	1818974		
620	0				5.2	-	-5.2	2886.2	π		0	0	482559	1819309		
621	330		74°08'	"	9.3	91°	-5.8	2876.3			-5	+330	482549	1819634		
622	660		"	"	12.5	91°	-11.5	2867.4			-11	+660	482543	1819964		
623	990		"	"	11.8	91°	-17.3	2862.3			-16	+990	482538	1820294		
624	1320		"	"	9.2	91°	-23.0	2859.2			-22	+1320	482532	1820624		
TP	1623		73°43'	"	4.5	91°04'	-30.2	2856.7			-15	+1623	482539	1820927	Trd(s)	
625	1650		74°08'	"	6.3	91°	-28.8	2856.3			-27	+1650	482527	1820954		
626	1980		"	"	3.8	91°	-34.6	2853.0			-32	+1980	482522	1821289		
627	2310		"	"	8.7	90°46'	-30.9	2851.8			-38	+2310	482516	1821614		
628	2640		"	"	7.1	90°46'	-35.3	2849.0			-43	+2640	482511	1821944		
629	2970		"	"	2.5	90°46'	-39.7	2849.2			-48	+2970	482506	1822274		
630	3300		"	"	12.0	90°30'	-28.8	2850.6			-54	+3300	482500	1822604		
631	3630		"	"	6.1	90°30'	-31.7	2853.6			-59	+3630	482495	1822934		
632	3960		"	"	2.2	90°30'	-34.6	2854.6			-65	+3959	482489	1823263		
633	4290		"	"	10.9	90°20'	-25.0	2855.5			-70	+4289	482484	1823593		
634	4620		"	"	7.3	90°20'	-26.9	2857.2			-75	+4619	482479	1823933		
635	4950		74°08'24"	"	14.9	90°13'	-18.7	2856.2		TP	-81	+4949	482473	1824251		
635	4950				14.6	269°47'	-18.7	2858.1		TP						

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
7/1/86		G. Cotcamp		J. Middleton		6834		F.M.		5	40					
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Montana		Lonesome Lake	Montana						S. Binns							
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	NORTH +	EAST +	COORDINATES		REMARKS
												SOUTH -	WEST -	Y	X	
												LAT.	DEP.			
635										2858.1						
	1980		253°33'0"	+16.8°	+11.0	90°-		+11.0	2869.1		BS	-12	+1980.2			
	1980				+10.8	27°-		+10.8			BS					
636	1650		253°33'	"	9.8	-		-9.8		2859.3		+10	-1650	482471	1824579	
637	1320		"	"	6.0	-		-6.0		2863.1		+8	-1320	482469	1824909	
638	990		"	"	2.3	-		-2.3		2866.8		+6	-990	482467	1825239	
639	660		"	"	2.9	-		-2.9		2866.2		+4	-660	482465	1825569	
640	330		"	"	2.4	-		-2.4		2866.7		+2	-330	482463	1825899	
71	93		257°48'	"	4.5	89°34'	+0.2	-3.8		2865.3		+7	-93	482468	1826136	482,475 + 1826130 T-rd(s) 2867.0
641	0				5.2	-		-5.2		2863.9	X	0	0	482461	1826229	
642	330		73°47'	"	7.8	-		-7.8		2861.3		-3	+330	482458	1826559	
643	660		"	"	9.1	-		-9.1		2860.0		-7	+660	482454	1826889	
644	990		"	"	12.9	-		-12.9		2856.2		-10	+990	482451	1827219	
645	1320		"	"	9.2	BH	-6.6	-15.8		2853.3		-13	+1320	482448	1827549	
646	1650		"	"	12.4	BH	-8.3	-20.7		2848.4		-17	+1650	482444	1827879	
647	1980		"	"	0.1	90°30'	-17.3	-25.4		2843.7		-20	+1980	482441	1828209	
648	2310		"	"	4.9	90°30'	-20.2	-25.1		2844.0		-24	+2310	482437	1828539	
649	2640		"	"	9.1	90°20'	-15.4	-24.5		2844.6		-27	+2640	482434	1828869	
650	2970		"	"	5.9	90°20'	-17.3	-23.2		2845.9		-30	+2970	482431	1829199	
651	3300		"	"	1.8	90°20'	-19.2	-21.0		2848.1		-34	+3300	482427	1829529	

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
7/1/86		G. Cotcamp		J. Middleton		6834		F.M.		5		41			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Lonesome Lake		Montana		Hill								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2869.1						
652	3630		73°46'48"	+168°	14.8	90°10'	-10.6	-25.4			TP	-37	+3630	482424	1829857
652	3630				14.1	269°50'	-10.6	-25.0		2844.1	TP				
	4620		253°30'46"	"	+13.8	90°03'	+4.0	+17.8	2861.9		BS	-25	+4620		
	4620				+13.7	269°57'	+4.0	+17.7			BS				
653	4190		253°31'	"	1.0	BH	-21.0	-22.0		2839.9		+23	-4190	482422	1830285
654	3960		"	"	5.8	BH	-19.8	-25.6		2836.3		+22	-3960	482421	1830515
655	3630		"	"	9.0	BH	-18.2	-27.2		2834.7		+20	-3630	482419	1830845
656	3300		"	"	11.2	BH	-16.5	-27.7		2834.2		+18	-3300	482417	1831175
IF	3043		253°44'	"	14.4	90°14'	-12.4	-26.8		2835.1		+28	-3043	482427	1831432
657	2970		253°31'	"	12.3	BH	-14.9	-27.2		2834.7		+16	-2970	482415	1831505
658	2640		"	"	11.8	BH	-13.2	-25.0		2836.9		+15	-2640	482414	1831835
659	2310		"	"	11.0	BH	-11.6	-22.6		2839.3		+13	-2310	482412	1832165
660	1980		"	"	9.2	BH	-9.9	-19.1		2842.8		+11	-1980	482410	1832495
661	1650		"	"	6.1	BH	-8.3	-14.4		2847.5		+9	-1650	482408	1832825
662	1320		"	"	11.2	BH	-6.6	-17.8		2844.1		+7	-1320	482406	1833155
663	990		"	"	10.2	-		-10.2		2851.7		+5	-990	482404	1833485
664	660		"	"	6.7	-		-6.7		2855.2		+4	-660	482403	1833815
665	330		"	"	6.2	-		-6.2		2855.7		+2	-330	482401	1834145
666	0		"	"	5.2	-		-5.2		2856.7	X	0	0	482399	1834475
667	330		73°35'	"	5.3	-		-5.3		2856.6		-2	+330	482397	1834805

482425+1831440
4-way 2838.

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
7/1/86		G. Cotcamp		J. Middleton		6834		F.M.		5		42			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Lonesome Lake		Montana		Hill								S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2861.9						
668	660		73°35'	+16.7°	7.9	-	-7.9		2854.0			-3	+660	482396	1835135
669	990		"	"	12.1	-	-12.1		2849.8			-5	+990	482394	1835465
670	1320		"	"	8.0	BH	-6.6	-14.6	2847.3			-7	+1320	482392	1835795
671	1650		"	"	9.1	BH	-8.3	-17.4	2844.5			-8	+1650	482391	1836125
672	1980		"	"	12.2	BH	-9.9	-22.1	2839.8			-10	+1980	482389	1836455
673	2310		"	"	11.3	BH	-11.6	-22.9	2839.0			-11	+2310	482388	1836785
674	2640		"	"	10.9	90°20'	-15.4	-26.3	2835.6			-13	+2640	482386	1837115
675	2970		"	"	12.0	90°20'	-17.3	-29.3	2832.6			-15	+2970	482384	1837445
676	3300		"	"	12.0	90°23'	-22.1	-34.1	2827.8			-16	+3300	482383	1837775
677	3630		"	"	10.2	90°26'	-27.5	-37.7	2824.2			-18	+3630	482381	1838105
678	3960		"	"	8.1	90°26'	-29.9	-38.0	2823.9			-20	+3960	482379	1838435
679	4290		"	"	4.6	90°26'	-32.4	-37.0	2824.9			-21	+4290	482378	1838765
680	4620		"	"	10.8	90°12'	-16.1	-26.9	2835.0			-23	+4620	482376	1839095
681	4950		"	"	5.8	90°12'	-17.3	-23.1	2838.8			-24	+4950	482375	1839425
682	5280		"	"	3.8	90°12'	-18.4	-22.2	2839.7			-26	+5280	482373	1839755
683	5610		73°34'50"	16.7°	15.0	90°05'	-8.2	-23.2			TP	-27	+5610	482372	1840083
683	5610				14.8	269°55'	-8.2	-23.0	2838.9		TP				
	3630		253°13'18"	"	+14.1	89°30'	-31.7	-17.6	28213		BS	+5	+3630		
	3630			"	+139	270°30'	-31.7	-17.8			BS				
684	3300		253°13'	"	11.8	89°30'						-5	-3300	482372	1840411

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
7/1/86		G. Cotcamp		J. Middleton		6834		J.M.		5		43		
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Montana		Lonesome Lake		Montana		Hill						S. Binns		
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.	
									2821.3					
685	2970		253°13'	+16.7°	9.0	89°35'	+21.6	+12.6		2833.9		-4	-2970	482373 1840741
686	2640		"	"	8.1	89°35'	+19.2	+11.1		2832.4		-4	-2640	482373 1841071
687	2310		"	"	7.4	89°35'	+16.8	+9.4		2830.7		-3	-2310	482374 1841401
688	1980		"	"	7.4	89°35'	+14.4	+7.0		2828.3		-3	-1980	482374 1841731
IF	1671		253°32'	"	4.5	89°36'	+11.7	+7.2		2828.5		+7	-1671	482384 1842040 4-Way Inter.
689	1650		253°13'	"	7.8	89°36'	+14.4	+6.6		2827.9		-2	-1650	482375 1842061
690	1320		"	"	4.8	TH	+6.6	+1.8		2823.1		-2	-1320	482375 1842391
691	990		"	"	4.9	TH	+5.0	+0.1		2821.4		-1	-990	482376 1842721
692	660		"	"	2.3	-	-	-2.3		2819.0		-1	-660	482376 1843051
693	330		"	"	3.8	-	-	-3.8		2817.5		-0	-330	482377 1843381
694	0		"	"	5.2	-	-	-5.2		2816.1	π	0	0	482377 1843711
695	330		73°18'	"	9.8	-	-	-9.8		2811.5		+0	+330	482377 1844041
696	660		"	"	10.5	BH	-3.3	-13.8		2807.5		0	+660	482377 1844371
697	990		"	"	3.6	91°	-17.3	-20.9		2800.4		0	+990	482377 1844701
698	1320		"	"	1.3	91°	-23.0	-24.3		2797.0		0	+1320	482377 1845031
699	1650		"	"	8.9	90°30'	-14.4	-23.3		2798.0		0	+1650	482377 1845361
700	1980		"	"	11.1	90°30'	-17.3	-28.4		2792.9		0	+1980	482377 1845691
701	2310		"	"	10.0	90°30'	-20.2	-30.2		2791.1		0	+2310	482377 1846021
702	2640		"	"	6.1	90°30'	-23.0	-29.1		2792.2		0	+2640	482377 1846351

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
7/1/86		G. Cotcamp		J. Middleton		6834		J.M.		5		44			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Lonesome Lake/Box Elder		Montana										S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2821.3						
703	2970		73°18'0"	+16.7°	14.8	90°27'	-23.3	-38.17			TP	0	+2970	482377	1846679
703	2970				14.6	269°43' ^{33'}	-23.3	-37.95		2783.4	TP		-2		
	3300		253°41'42"	"	+14.5	89°44'	-15.4	-0.97	2782.5		BS	-23	+3300		
	3300				+14.4	270°16'	-15.4	-1.05			BS		-2		
704	2970		253°42'	"	2.3	-	-2.3		2780.2			+21	-2970	482375	1847007
705	2640		"	"	2.8	-	-2.8		2779.7			+18	-2640	482372	1847337
705	2612		254°02'	"	2.8	-	-2.8		2779.7			+33	-2612	482387	1847365 Trd (n)
706	2310		253°42'	"	5.7	-	-5.7		2776.8			+16	-2310	482370	1847667 Lonesome Lake
705	1980		"	"	1.5	-	-1.5		2781.0			+14	-1980	482368	1847997 Box Elder
708	1540 ¹⁶⁵⁰		"	"	4.3	-	-4.3		2778.2			+12	-1650	482366	1848327 ↓
709	1320		"	"	3.2	-	-3.2		2779.3			+9	-1320	482363	1848657
710	990		"	"	2.8	-	-2.8		2779.7			+7	-990	482361	1848987
711	660		"	"	6.1	-	-6.1		2776.4			+5	-660	482359	1849317
712	330		"	"	5.8	-	-5.8		2776.7			+2	-330	482356	1849647
713	0		"	"	5.2	-	-5.2		2777.3		X	0	0	482354	1849977
714	330		79°20'	"	9.9	-	-9.9		2772.6			-6	+330	482348	1850307
715	660		"	"	11.2	84	-3.3	-14.5		2768.0		-12	+660	482342	1850637
716	990		"	"	5.2	91°	-17.3	-22.5		2760.0		-18	+990	482336	1850967
717	1320		"	"	8.6	91°	-23.0	-31.6		2750.9		-24	+1320	482330	1851297
718	1650		"	"	14.0	91°06'	-31.7	-45.7		2736.8		-30	+1650	482324	1851627

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
7/1/86		G. Cotcamp		J. Middleton		6834		F.M.		5		45			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Montana		Box Elder		Montana										S. Binns	
STATION NO.	SLOPE DISTANCE	PLOTTING DISTANCE	AZIMUTH FROM MAGNETIC NORTH	DEC	ROD READING	VERTICAL ANGLE	VERTICAL CHANGE	DIFFERENCE IN ELEVATION	ELEVATION OF INSTRUMENT	ELEVATION OF STATION	BS X TP	COORDINATES		REMARKS	
												NORTH + SOUTH - LAT.	EAST + WEST - DEP.		Y
									2782.5						
719	1980		74°20'	+16.7°	13.5	91°06'	-38.0	-51.5		2731.0		-36	+1980	482318	1851957
720	2310		"	"	12.0	91°06'	-44.3	-56.3		2726.2		-42	+2310	482312	1852287
721	2640		"	"	6.1	91° -	-46.1	-52.2		2730.3		-48	+2640	482306	1852617
BM	2754		72°45'	"	14.8	90°48'	-38.5	-53.3		2729.2		-26	+2754	482328	1852731
BM	2727		73°52'	"	14.5	90°45'	-35.7	-50.2		2732.3		-27	+2727	482327	1852704
722	2970		74°20'	"	10.2	90°40'	-34.6	-44.8		2737.7		-54	+2970	482300	1852997
723	3300		"	"	1.7	90°40'	-38.4	-40.1		2742.4		-60	+3300	482294	1853277
724	3630		74°19'40"	+16.5°	14.6	90°23'	-24.3	-38.9			TP	-52	+3630	482302	1853605
724	3630				14.3	269°37'	-24.3	-38.6		2743.9	TP				
	2310		254°14'06"	"	+14.8	89°13'	-31.6	-16.8	2727.1		BS	-30	+2310		
	2310				+14.4	270°47'	-31.6	-17.2			BS				
725	1980		254°14'	"	2.3	89°30'	+17.3	+15.0		2742.1		+25	-1980	482297	1853933
726	1650		"	"	2.4	89°30'	+14.4	+12.0		2739.1		+21	-1650	482293	1854263
727	1320		"	"	3.5	89°30'	+11.5	+8.0		2735.1		+17	-1320	482289	1854593
728	990		"	"	3.8	89°30'	+8.6	+4.8		2731.9		+13	-990	482285	1854923
729	660		"	"	1.7	TH	+3.3	+1.6		2728.7		+8	-660	482280	1855253
730	330		"	"	1.7	-	-	-1.7		2725.4		+4	-330	482276	1855583
731	0				5.2	-	-	-5.2		2721.9	π	0	0	482272	1855913
732	330		74°08'	"	8.3	-	-	-8.3		2718.8		-4	+330	482268	1856243
733	660		"	"	10.9	GH	-3.3	-14.2		2712.9		-7	+660	482265	1856573

27320
K367 1948 26
482315+1852715
Intersect.

pavement

↓

