

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY			LINE NO.	PAGE				
11/17/79		G. Catca p		R. Turner		6834		RWT			2	1 of 29				
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
KANSAS		Holton SE/Arrington		Kansas	JEFFERSON		8 S.	17 E.		L.O. Davis						
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
□																
	2040		259° 17.2' - 180°		+14.0	91° 18'	+46.3	+60.3	(60.4)	1031.0	BS				chiseled square (elev) 170.6	
	2040				+4.7	91° 34'	+55.8	+60.5			BS					
π	0				5.4	-		-5.4		1025.6	π					
⊥	1530		79° 53.2'		6.3	88° 26'	+41.8	+35.5			TP		386,150	2,686,830	scaled T-rd (north)	
⊥	1530				14.4	88° 8'	+49.8	+35.4	1066.4		TP					
	770		170° 52.6' + 180°	+8.6°	+10.8	91°	+13.4	+24.2		1090.6	BS	+770	-7+2			
	770				+6.3	91° 20'	+17.9	+24.2			BS					
1	660		170° 12.5'	+8.6°	9.3	91°	-11.5	-20.8		1069.8		-660	+14	386,260	2,686,839	dirt road
2	440		" "	"	14.7	-		-14.7		1075.9		-440	+9	386,480	2,686,834	↓
3	220		" "	"	8.1	-		-8.1		1082.5		-220	+5	386,700	2,686,830	
4	0				5.4	-		-5.4		1085.2	π	0	0	386,920	2,686,825	
5	220		350° 4.9'	+8.6°	8.9	-		-8.9		1081.7		+220	-5	387,140	2,686,820	
6	440		" "	"	10.2	91°	-7.7	-17.9		1072.7		+440	-10	387,360	2,686,815	
7	660		" "	"	10.6	91°	-11.5	-22.1		1068.5		+660	-15	387,580	2,686,810	
8	880		" "	"	11.7	BH	-4.4	-16.1		1074.5		+880	-20	387,800	2,686,805	
9	1100		" "	"	10.3	BH	-5.5	-15.8		1074.8		+1100	-25	388,020	2,686,800	
10	1320		" "	"	11.2	-		-11.2		1079.4		+1320	-30	388,240	2,686,795	↑
11	1540		" "	"	4.1	-		-4.1		1086.5		+1540	-35	388,460	2,686,790	Holton SE Quad.
12	1760		350° 4.9'	+8.6°	3.3	TH	+8.8	+5.5	(5.4)	1096.0	TP	+1760	-40+2	388,680	2,686,787	Arrington Quad.
12	1760				4.9	89° 46'	+10.2	+5.3			TP					↓

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE		
11/1/79		G. Catcamp		R. Turner		6834		RWT		2		2		
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER		
Kansas		ARRINGTON		Kansas		JEFFERSON		17E.				L.O. Davis		
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.	
12										1096.0				
	1980		170° 31.6' +180°	+8.6°	+3.8	89° 40'	-11.5	-7.7	1088.3		BS	+1980	-30	
	1980				+6.1	89° 36'	-13.8	-7.7			BS			
11	1850		170° 43.2'	+8.6°	1.7	89° 40'	+10.8	+9.1		1097.4		-1850	+22	388,810 2,686,779 Trd (west) (elev) 1097'
13	1760		170° 31.6'	+8.6°	4.0	89° 40'	+10.2	+6.2		1094.5		-1760	+27	388,900 2,686,789
14	1540		" "	"	6.5	89° 40'	+9.0	+2.5		1090.8		-1540	+23	389,120 2,686,780
15	1320		" "	"	6.3	89° 40'	+7.7	+1.4		1089.7		-1320	+20	389,340 2,686,777
16	1100		" "	"	3.1	TH	+5.5	+2.4		1090.7		-1100	+17	389,560 2,686,774
17	880		" "	"	3.8	-	-3.8			1084.5		-880	+13	389,780 2,686,770
18	660		" "	"	8.3	-	-8.3			1080.0		-660	+10	390,000 2,686,767
19	440		" "	"	9.3	-	-9.3			1079.0		-440	+7	390,220 2,686,764
20	220		" "	"	5.7	-	-5.7			1082.6		-220	+3	390,440 2,686,760
21	0				5.4	-	-5.4			1082.9	X	0	0	390,660 2,686,757
22	220		350° 34.7'	+8.6°	12.8	-	-12.8			1075.5		+220	-3	390,880 2,686,754
23	440		" "	"	13.2	91° -	-7.7	-20.9		1067.4		+440	-6	391,100 2,686,751
24	660		" "	"	6.5	92° -	-23.0	-29.5		1058.8		+660	-9	391,320 2,686,748
25	880		" "	"	9.4	92° -	-30.7	-40.1		1048.2		+880	-13	391,540 2,686,744
26	1100		" "	"	10.7	92° -	-38.4	-49.1		1039.2		+1100	-16	391,760 2,686,741
27	1320		" "	"	6.2	92° -	-46.0	-52.2		1036.1		+1320	-19	391,980 2,686,738
28	1540		" "	"	5.8	91° 30'	-40.3	-46.1		1042.2		+1540	-22	392,200 2,686,735
29	1760		" "	"	14.6	90° 44'	-22.5	-37.1		1051.2		+1760	-25	392,420 2,686,732

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/1/77		G. Cotcamp		R. Turner		6834		RWT		2	3						
AREA		TOPO MAP	STATE	COUNTY	TWP	RANGE	PPM	PARTY MANAGER									
Kansas		ARRINGTON	Kansas	JEFFERSON	8s./7s.	17E.		L.O. Davis									
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		
									1088.3								
30	1980		350° 34.7'	+8.6°	3.2	90° 40'	-23.0	-26.2		1062.1		+1980	-28	392,640	2,686,729		
31	2200		350° 34.7'	+8.6°	14.7	90° 8'	-5.1	-19.8			TP	+2200-2	-32	392,858	2,686,725		
31	2200				13.5	90° 10'	-6.4	-19.9		1068.4	TP						
	1980		170° 30' + 170°	+8.6°	+7.6	90° 40'	+23.0	+30.6			BS	+1980-3	-31				
	1980				+5.2	90° 44'	+25.3	+30.5	1098.9		BS						
32	1760		170° 30'	+8.6°	9.7	90° 50'	-25.6	-35.3		1063.6		-1760	+28	393,075	2,686,722		
33	1540		" "	"	12.8	90° 50'	-22.4	-35.2		1063.7		-1540	+24	393,295	2,686,718		
34	1320		" "	"	10.4	90° 50'	-19.2	-29.6		1069.3		-1320	+21	393,515	2,686,715		
35	1100		" "	"	14.7	BH	-5.5	-20.2		1078.7		-1100	+17	393,735	2,686,711	horiz. corr. y = -5', x = +4'	
36	880		" "	"	12.4	BH	-4.4	-16.8		1082.1		-880	+14	393,955	2,686,708	394,085 + 2,686,700(s)	
TP	750		170° 58.3'	+8.6°	14.6	BH	-3.8	-18.4		1080.5		-750	+6	394,085	2,686,700	4-way Intersect. (elev.) 1080'	
37	660		170° 30'	+8.6°	14.6	BH	-3.3	-17.9		1081.0		-660	+10	394,175	2,686,704		
38	440		" "	"	13.1	-		-13.1		1085.8		-440	+7	394,395	2,686,701		
39	220		" "	"	7.1	-		-7.1		1091.8		-220	+3	394,615	2,686,697		
40	0				5.4	-		-5.4		1093.5	TP	0	0	394,835	2,686,694		
41	220		350° 26.7'	+8.1°	8.5	-		-8.5		1090.4		+220	-6	395,055	2,686,688		
42	440		" "	"	13.3	BH	-2.2	-15.5		1083.4		+440	-11	395,275	2,686,683		
43	660		" "	"	11.0	91° -	-11.5	-22.5		1076.4		+660	-17	395,495	2,686,677		
44	880		" "	"	12.1	91° -	-15.4	-27.5		1071.4		+880	-22	395,715	2,686,672		
45	1100		" "	"	9.6	91° -	-19.2	-28.8		1070.1		+1100	-28	395,935	2,686,666		

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/1/79		G. Cotcamp		R. Turner		6834		G.W.C.		2	4						
AREA		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER								
Kansas		ARRINGTON	Kansas	JEFFERSON		7 S.	17 E.		L.O. Davis								
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		
									1098.9								
46	1320		350° 26.7'	+8.1°	6.1	91° -	-23.0	-29.1		1069.8		+1320	-34	396,155	2,686,660		
47	1540		" "	"	3.7	91° -	-26.9	-30.6		1068.3		+1539	-39	396,374	2,686,655		
48	1760		" "	"	5.4	90° 50'	-25.6	-31.0		1067.9		+1759	-45	396,594	2,686,649		
49	1980		350° 26.7'	+8.1°	5.6	90° 40'	-23.0	-28.6		1070.3	TP	+1979-5	-50	396,809	2,686,694		
49	1980				2.1	90° 46'	-26.5	-28.6			TP						
	2200		170° 41.3' +180°	+7.7°	+104	-		+104	1080.7		BS	+2199-5	-62				
	2200				+9.0	90° 2'	+1.3	+10.3			BS						
50	1980		170° 41.3'	+7.7°	14.2	-		-14.2		1066.5		-1979	+56	397,024	2,686,638		
51	1760		" "	"	6.8	90° 40'	-20.5	-27.3		1053.4		-1759	+50	397,244	2,686,632		
52	1540		" "	"	13.7	90° 40'	-17.9	-31.6		1049.1		-1539	+43	397,964	2,686,625		
53	1320		" "	"	12.7	90° 40'	-15.9	-28.1		1052.6		-1319	+37	397,684	2,686,619		
54	1100		" "	"	9.8	90° 40'	-12.8	-22.6		1058.1		-1100	+31	397,903	2,686,613		
55	880		" "	"	14.2	-		-14.2		1066.5		-880	+25	398,123	2,686,607		
56	660		" "	"	12.4	-		-12.4		1068.3		-660	+19	398,343	2,686,601		
57	440		" "	"	11.0	-		-11.0		1069.7		-440	+12	398,563	2,686,594		
58	220		" "	"	5.7	-		-5.7		1075.0		-220	+6	398,783	2,686,588		
59	0				5.4	-		-5.4		1075.3	TP	0	0	399,003	2,686,582		
60	220		350° 48.5'	+7.7°	12.7	91° -	-3.8	-16.5		1064.2		+220	-6	399,223	2,686,576	399,380 + 2,686,550(s)	
60	362		349° 44'	+7.7°	12.9	92° -	-12.6	-25.5		1055.2		+362	-16	399,365	2,686,566	4-Way Intersect. el. 1056	
61	440		350° 48.8'	+7.7°	14.9	92° -	-15.3	-30.2		1050.5		+440	-11	399,443	2,686,571		

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
11/2/79		G. Cotcamp		R. Turner		6839		GWC		2		5			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Kansas		Arrington		Kansas		Jefferson		7S		17E				L.O. Davis	
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
									1080.7						
62	660		350° 48.8'	+7.7°	8.9	92° -	-23.0	-31.9		1048.8		+660	-17	399,663	2,686,565
63	880		" "	"	11.0	91° -	-15.4	-26.4		1054.3		+880	-23	399,883	2,686,559
64	1100		" "	"	1.8	91° -	-19.2	-21.0		1059.7		+1100	-29	400,103	2,686,553
65	1320		" "	"	10.3	84° -	-6.6	-16.9		1063.8		+1320	-34	400,323	2,686,548
66	1540		" "	"	10.3	-	-	-10.3		1070.4		+1539	-40	400,542	2,686,542
67	1760		" "	"	1.8	-	-	-1.8		1078.9		+1759	-46	400,762	2,686,536
68	1980		350° 48.8'	+7.2°	8.8	TH	+9.9	+1.1		1081.8	TP	+1979-5	-69	400,977	2,686,513
68	1980		" "	"	6.0	89° 46'	+6.9	+0.9			TP				
	1980	1979	171° 34.3' +180°	+7.2°	+2.3	88° -	-69.1	-66.8	1015.0		BS	+1979-5	-42		
	1980		" "	"	+4.7	87° 56'	-71.4	-66.7			BS				
69	1760	1759	171° 34.3'	+7.2°	0.5	88° -	+61.4	+60.9		1075.9		-1758	+38	404,193	2,686,509
70	1540	1539	" "	"	1.7	88° -	+53.7	+52.0		1067.0		-1539	+33	404,412	2,686,504
71	1320	1319	" "	"	2.1	88° -	+46.0	+43.9		1058.9		-1319	+28	401,632	2,686,499
72	1100	1099	" "	"	5.3	88° -	+38.4	+33.1		1048.1		-1099	+24	401,852	2,686,495
73	880	879	" "	"	10.3	88° -	+30.7	+20.4		1035.4		-879	+19	402,072	2,686,490
74	660		" "	"	0.2	89° -	+11.5	+11.3		1026.3		-660	+14	402,291	2,686,485
75	440		" "	"	2.1	89° -	+7.7	+5.6		1020.6		-440	+9	402,511	2,686,480
76	220		" "	"	1.9	-	-	-1.9		1013.1		-220	+5	402,731	2,686,476
77	0		" "	"	5.4	-	-	-5.4		1009.6	X	0	0	402,951	2,686,471
78	220		351° 56.8'	+6.8°	6.9	-	-	-6.9		1008.1		+220	-5	403,171	2,686,466

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/2/79		G. Cotcamp		R. Turner		6834		G.W.C.		2	6						
AREA		TOPO MAP	STATE	COUNTY		RANGE	PPM	PARTY MANAGER									
Kansas		Arrington	Kansas	Jefferson/Atchison		17E		L.O. Davis									
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		
									1015.0								
79	440		351° 56.8'	+6.8°	1.8	74	+2.2	+0.4		1015.4		+440	-10	403,391	2,686,461		
80	660		" "	"	2.7	89°	+1.5	+8.8		1023.8		+660	-14	403,611	2,686,457		
81	880		" "	"	8.0	89°	+15.4	+7.4		1022.4		+880	-19	403,831	2,686,452		
82	1100		" "	"	6.7	89°	+19.2	+12.5		1027.5		+1100	-24	404,051	2,686,447		
83	1320		" "	"	8.8	88° 30'	+34.5	+25.7		1040.7		+1320	-29	404,271	2,686,442	↑	
84	1540	1539	351° 56.8'	+6.8°	11.5	88°	+52.7	+42.2		1057.2	TP	+1539-5	-34	404,485	2,686,437	Jefferson Co.	
84	1540				5.1	88° 19'	+47.4	+42.3			TP						
	1540		171° 32' + 180°	+6.8°	+8.7	91° -	+26.9	+35.6	1092.8		BS	+1539	-45				
	1540				+13.3	90° 50'	+22.4	+35.7			BS						
71	1400		171° 57'	+6.8°	9.7	91° -	-24.4	-34.1		1058.7		-1400	+30	404,624	2,686,422	4-way Intersect. el. 1058.	
85	1320		171° 32'	+6.8°	10.0	91° -	-23.0	-33.0		1059.8		-1320	+38	404,704	2,686,430	Atchison/Jackson Co.	
86	1100		" "	"	9.9	91° -	-19.2	-29.1		1063.7		-1100	+32	404,924	2,686,424	↓	
87	880		" "	"	11.3	91° -	-15.4	-26.7		1066.1		-880	+26	405,144	2,686,418		
88	660		" "	"	12.8	91° -	-11.5	-24.3		1068.5		-660	+19	405,364	2,686,411		
89	440		" "	"	12.2	91° -	-7.7	-19.9		1072.9		-440	+13	405,584	2,686,405		
90	220		" "	"	12.1	-		-12.1		1080.7		-220	+6	405,804	2,686,398		
91	0				5.4	-		-5.4		1087.4	X	0	0	406,024	2,686,392		
92	220		351° 29'	+6.5°	4.8	-		-4.8		1088.0		+220	-8	406,244	2,686,384		
93	440		" "	"	7.1	-		-7.1		1085.7		+440	-15	406,464	2,686,377		
94	660		" "	"	9.6	-		-9.6		1083.2		+660	-23	406,684	2,686,369		

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
11/2/79		G. Cotcamp		R. Turner		6834		GWC		2	7				
AREA		TOPO MAP		STATE		COUNTY		RANGE		PARTY MANAGER					
Kansas		Arrington		Kansas		Atchison		17E		L.O. Davis					
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
									1092.8						
95	880		351° 29'	+6.5°	9.8	-		-9.8		1083.0		+879	-31	406903	2,686,361
96	1100		" "	"	5.1	-		-5.1		1087.7		+1099	-39	407,123	2,686,353
97	1320		351° 29'	+6.5°	9.3	-		-9.3		1083.5	TP	+1319-5	-46+2	407,338	2,686,348
97	1320				5.4	90° 10'	-3.8	-9.2			TP				
	2200		171° 39.3' +180°	+6.5°	+10.8	TH	-11.0	-0.2			BS	+2199-5	-71+2		
	2200				+6.1	89° 30'	-6.4	-0.3	1083.2		BS				
98	1980		171° 39.3'	+6.5°	6.1	-		-6.1		1077.1		-1979	+64	407,553	2,686,343
99	1760		" "	"	10.8	-		-10.8		1072.4		-1759	+57	407,773	2,686,336
100	1540		" "	"	11.8	OH	-7.7	-19.5		1063.7		-1539	+50	407,993	2,686,329
101	1320		" "	"	14.0	OH	-6.6	-20.6		1062.6		-1319	+42	408,213	2,686,321
102	1100		" "	"	13.3	OH	-5.5	-18.8		1064.4		-1099	+35	408,433	2,686,314
103	880		" "	"	14.7	91°	-15.4	-30.1		1053.1		-879	+28	408,653	2,686,307
104	660		" "	"	15.5	91°	-11.5	-27.0		1056.2		-660	+21	408,872	2,686,300
105	440		" "	"	13.1	91°	-7.7	-20.8		1062.4		-440	+14	409,092	2,686,293
106	220		" "	"	11.2	-		-11.2		1072.0		-220	+7	409,312	2,686,286
107	0		" "	"	5.4	-		-5.4		1077.8	X	0	0	409,532	2,686,279
108	220		351° 50'	+6.5°	13.0	91°	-3.8	-16.8		1066.4		+220	-6	409,752	2,686,273
108	368		350° 32.6'	+6.5°	10.5	92°	-12.8	-23.3		1059.9		+368	-19	409,900	2,686,260
109	440		351° 50'	+6.5°	7.3	92°	-15.3	-22.6		1060.6		+440	-13	409,972	2,686,266
110	660		" "	"	10.1	91°	-11.5	-21.6		1061.6		+660	-19	410,192	2,686,260

horiz. correct. y = -35'
x = +4'

409,900 + 2,686,260 (s)
T-rod (exact) el. 1066'

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
11/2/79		G. Cotcamp		R. Turner		6834		G.W.C.		2	8				
AREA		TOPO MAP		STATE		COUNTY		RANGE	PPM	PARTY MANAGER					
Kansas		Arrington		Kansas		Atchison		17E		L.O. Davis					
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
									1083.2						
111	880		351° 50'	+6.5°	17.5	91° 40'	-25.6	-43.1		1040.1		+880	-26	410,912	2,686,253
112	1100		" "	"	14.2	91° 40'	-32.0	-46.2		1037.0		+1100	-32	410,632	2,686,247
113	1320		" "	"	4.9	91° -	-23.0	-27.9		1055.3		+1319	-38	410,851	2,686,241
114	1540		351° 50'	+6.7°	12.5	90° 30'	-13.4	-25.9		1057.3	TP	+1539	-39	411,071	2,686,240
114	1540				9.8	90° 36'	-16.1	-25.9			TP				
	2200	2197	171° 7' +180°	+6.7°	+8.1	87° -	-115.0	-106.9	950.4		BS	+2195	-84		
	2200				+1.7	87° 10'	-108.6	-106.9			BS				
115	1980	1978	171° 7'	+6.7°	6.0	87° 20'	+92.0	+86.0		1036.4		-1977	+75	411,289	2,686,231
116	1760	1759	" "	"	2.7	88° -	+61.4	+58.7		1009.1		-1758	+67	411,508	2,686,223
117	1540	1539	" "	"	8.1	88° -	+53.7	+45.6		996.0		-1538	+59	411,728	2,686,215
118	1320	1319	" "	"	9.0	88° -	+46.0	+37.0		987.4		-1318	+50	411,948	2,686,206
119	1100	1099	" "	"	7.3	88° -	+38.4	+31.1		981.5		-1098	+42	412,168	2,686,198
120	880	879	" "	"	8.9	88° -	+30.7	+21.8		972.2		-878	+33	412,388	2,686,189
121	660		" "	"	0.5	TH	+33	+2.8		953.2		-660	+25	412,606	2,686,181
122	440		" "	"	4.8	-		-4.8		945.6		-440	+17	412,826	2,686,173
123	220		" "	"	4.4	-		-4.4		946.0		-220	+8	413,046	2,686,164
124	0				5.4	-		-5.4		945.0	TP	0	0	413,266	2,686,156
125	220		352° 22.3'	+6.7°	3.4	-		-3.4		947.0		+220	-4	413,486	2,686,152
126	440		" "	"	5.2	-		-5.2		945.2		+440	-7	413,706	2,686,149
127	660		" "	"	2.6	-		-2.6		947.8		+660	-11	413,926	2,686,145

set-up opposite station

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/2/79		G. Cotcamp		R. Turner		6834		Gwc		2	9						
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Kansas		Arrington		Kansas	Atchison		7S	17E		L.O. Davis							
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		
									950.4								
128	880		352°22.3'	+6.7°	4.2	TH	+4.4	+0.2		950.6		+880	-14	414,146	2,686,142		
129	1100		" "	"	9.0	89°-	+19.2	+10.2		960.6		+1100	-18	414,366	2,686,138		
130	1320		" "	"	8.3	88°30'	+34.5	+26.2		976.6		+1320	-21	414,586	2,686,135		
131	1540	1539	" "	"	13.5	88°-	+53.7	+40.2		990.6		+1539	-25	414,805	2,686,131		
132	1760	1759	" "	"	9.8	88°-	+61.4	+51.6		1002.0		+1759	-28	415,025	2,686,128		
132	1900	1899	352°15'	+6.7°	8.1	88°-	+66.3	+58.2		1008.6		+1899	-35	415,165	2,686,121	415,150 + 2,686,125(±) + Way Intersect. el. 1009.	
133	1980	1979	352°22.3'	+6.7°	8.9	88°-	+69.1	+60.2		1010.6		+1979	-32	415,245	2,686,124		
134	2200	2199	" "	"	14.0	88°-	+76.7	+62.7		1013.1		+2199	-36	415,025	2,686,120		
135	2420	2419	" "	"	11.2	88°10'	+77.4	+66.2		1016.6		+2419	-39	415,685	2,686,117		
136	2640	2639	352°22.3'	+6.7°	10.4	88°10'	+84.4	+74.0		1024.4	TP	+2639	-43-1	415,905	2,686,112		
136	2640				15.0	88°9'	+89.0	+74.0			TP						
	1100		171°53' +180°	+6.7°	+2.4	-		+2.4	1026.8		BS	+1100	-27-1				
	1100				+7.9	TH	-5.5	+2.4			BS						
137	880		171°53'	+6.7°	1.4	-		-1.4		1025.4		-880	+22	416,125	2,686,106		
138	660		" "	"	5.3	-		-5.3		1021.5		-660	+16	416,395	2,686,100		
139	440		" "	"	8.7	-		-8.7		1018.1		-440	+11	416,565	2,686,095		
140	220		" "	"	6.0	-		-6.0		1020.8		-220	+5	416,785	2,686,089		
141	0				5.4	-		-5.4		1021.4	π	0	0	417,005	2,686,084		
142	220		351°55.4'	+6.7°	11.3	-		-11.3		1015.5		+220	-5	417,225	2,686,079		
143	440		" "	"	12.7	91°-	-7.7	-20.4		1006.4		+440	-11	417,445	2,686,073		

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 11/5/79	INSTRUMENT MAN G. Cotcamp	ROD MAN H. Saucedo	PARTY NUMBER 6824	NOTES CHECKED BY GWC	LINE NO. 2	PAGE 10
AREA Kansas	TOPO MAP Arrington	STATE Kansas	COUNTY Atchison	TWP 7S	RANGE 17E	PPM
				PARTY MANAGER L.O. Davis		

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
									1026.8						
144	660		351°55.9'	+6.7°	7.1	92°-	-23.0	-30.1		996.7		+660	-16	417,665	2,686,068
145	880	879	" "	"	7.0	92°-	-30.7	-37.7		989.1		+879	-21	417,884	2,686,063
146	1100	1099	" "	"	3.2	92°-	-38.4	-41.6		985.2		+1099	-26	418,104	2,686,058
147	1320		" "	"	5.0	91°30'	-34.5	-39.5		987.3		+1320	-32	418,325	2,686,052
148	1540		351°55.9'	+6.7°	7.3	91°-	-26.9	-34.2		992.6	TP	+1540	-37	418,545	2,686,047
148	1540				14.5	90°44'	-19.7	-34.2			TP				
	1100		171°58.3' ±180°	+6.7°	4.9	-		+4.9	997.5		BS	+1100	-25		
	1100				10.9	TH	-5.5	+4.9			BS				
149	880		171°58.3'	+6.7°	12.7	-		-12.7		984.8		-880	+20	418,765	2,686,092
150	660		" "	"	14.8	8H	-3.3	-18.1		979.4		-660	+15	418,985	2,686,037
151	440		" "	"	13.1	-		-13.1		984.4		-440	+10	419,205	2,686,032
152	220		" "	"	5.1	-		-5.1		992.4		-220	+5	419,425	2,686,027
153	0				5.4	-		-5.4		992.1	TP	0	0	419,645	2,686,022 Town of Lockinburg
154	220		352°17.8'	+6.7°	9.5	-		-9.5		988.0		+220	-4	419,865	2,686,018
155	440		" "	"	13.5	8H	-2.2	-15.7		981.8		+440	-8	420,085	2,686,014
156	660		" "	"	12.7	91°-	-11.5	-24.2		973.3		+660	-12	420,305	2,686,010
156	803		351°19.3'	+6.7°	13.9	91°-	-14.0	-27.9		969.6		+803	-28	420,448	2,685,994 4-Way Intersect. el. 969.
157	880		352°17.8'	+6.7°	9.5	91°20'	-20.5	-30.0		967.5		+880	-15	420,525	2,686,007
158	1100		" "	"	14.7	91°20'	-25.6	-40.3		957.2		+1100	-19	420,745	2,686,003
159	1320		" "	"	12.7	91°30'	-34.5	-47.2		950.3		+1320	-23	420,965	2,685,999

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY			LINE NO.	PAGE					
11/5/77		G. Cotcamp		H. Saucedo		6834		GwG			2	11					
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Kansas		Arrington		Kansas	Atchison		7S	17E		L. O. Davis							
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		
									997.5								
160	1540	1539	352° 17.8'	+6.7°	11.8	91° 30'	-40.3	-52.1		945.4	TP	+1539	-27	421,184	2,685,995		
160	1540				5.6	91° 44'	-46.6	-52.2			TP						
	2690		171° 46.3' + 180°	+6.7°	+3.6	-	-	+3.6	949.0		BS	+2639	-70				
	2690				+6.7	89° 56'	+3.1	+3.6			BS						
161	2920		171° 46.3'	+6.7°	4.5	-	-	-4.5		944.5		-2419	+65	421,404	2,685,990		
162	2200		" "	"	5.3	-	-	-5.3		943.7		-2199	+59	421,627	2,685,984		
163	1980		" "	"	6.0	-	-	-6.0		943.0		-1979	+53	421,844	2,685,978		
164	1760		" "	"	6.3	-	-	-6.3		942.7		-1759	+47	422,067	2,685,972		
165	1540		" "	"	7.1	-	-	-7.1		941.9		-1539	+41	422,284	2,685,966		
166	1320		" "	"	7.6	-	-	-7.6		941.4		-1320	+35	422,503	2,685,960		
167	1100		" "	"	7.6	-	-	-7.6		941.4		-1100	+29	422,723	2,685,954		
168	880		" "	"	7.9	-	-	-7.9		941.1		-880	+23	422,943	2,685,948		
169	560		" "	"	7.9	-	-	-7.9		941.1		-660	+18	423,163	2,685,943		
170	440		" "	"	7.4	-	-	-7.4		941.6		-440	+12	423,383	2,685,937		
171	220		" "	"	6.2	-	-	-6.2		942.8		-220	+6	423,603	2,685,931		
172	0				5.4	-	-	-5.4		943.6	X	0	0	423,823	2,685,925		
173	220		351° 48.9'	+6.7°	3.1	-	-	-3.1		945.9		+220	-6	424,043	2,685,919		
174	440		" "	"	1.8	-	-	-1.8		947.2		+440	-11	424,263	2,685,914		
175	660		" "	"	0.5	-	-	-0.5		948.5		+660	-17	424,483	2,685,908		
176	880		351° 9.8'	+6.7°	3.0	TH	+4.4	+1.4		950.4		+879	-33	424,702	2,685,892	bridge	

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/5/79		G. Cotcamp		H. Saucedo		6834		GWC.		2	13						
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Kansas		Arrington		Kansas	Atchison		6S	17E		L.O. Davis							
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		
									1021.9								
191	220		171° 47'	+6.7°	7.9	-		-7.9		1014.0		-220	+6	428,000	2,685,816	unable to locate BM.	
192	0				5.4	-		-5.4		1016.5	X	0	0	428,220	2,685,810		
193	220		351° 55'	+6.7°	3.9	-		-3.9		1018.0		+220	-5	428,490	2,685,805		
194	440		" "	"	3.8	-		-3.8		1018.1		+440	-11	428,660	2,685,799		
195	660		" "	"	3.2	-		-3.2		1018.7		+660	-16	428,880	2,685,794		
196	880		351° 55'	+6.9°	2.8	-		-2.8		1019.1	TP	+880-1	-18-1	429,099	2,685,791		
196	880				7.2	TH	+4.4	-2.8			TP						
	880		171° 32.9' +180°	+6.9°	+14.8	89° 34'	-6.7	+8.1	1027.3		BS	+880-1	-24-1				
	880				+14.4	89° 36'	-6.1	+8.3	+8.2		BS						
197	660		171° 32.9'	+6.9°	7.7	89° 30'	+5.8	-1.9		1025.4		-660	+18	429,318	2,685,784		
198	440		" "	"	2.0	89° 30'	+3.8	+1.8		1029.1		-440	+12	429,538	2,685,778		
199	220		" "	"	1.1	89° 30'	+1.9	+0.8		1028.1		-220	+6	429,758	2,685,772		
200	0				5.4	-		-5.4		1021.9	X	0	0	429,978	2,685,766		
201	220		352° 0'	+6.9°	13.2	91° -	-3.8	-17.0		1010.3		+220	-4	430,198	2,685,762		
202	440	439	" "	"	10.5	93° -	-23.0	-33.5		993.8		+439	-8	430,917	2,685,758		
203	660	659	" "	"	11.8	93° 30'	-40.2	-52.0		975.3		+659	-13	430,637	2,685,753		
204	880	878	" "	"	14.2	93° 30'	-53.6	-67.8		959.5		+878	-17	430,856	2,685,749		
205	1100	1098	" "	"	11.0	93° 30'	-67.0	-78.0		949.3		+1098	-21	431,076	2,685,745		
206	1320	1318	352° 0'	+6.9°	2.8	93° 30'	-80.4	-83.2	+8.3	944.0	TP	+1318-1	-25-1	431,295	2,685,740		
206	1320				14.4	93° -	-69.0	-83.4			TP						

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE			
11/6/79		G. Cotcamp		H. Saucedo		6834		GWC		2		14			
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER	
Kansas		Arrington/Whiting		Kansas		Atchison		6S		17E				L.O. Davis	
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
206										944.0					
	2640		171°29.8' +180°	+6.9°	+2.8	-		+2.8	946.9		BS	+2639-2	-74-1		
	2640				+13.8	89°46'	-10.7	+3.1	942.9		BS				
207	2420		171°29.8'	+6.9°	4.1	-		-4.1	942.8			-2419	+68	431,513	2,685,733
208	2200		" "	"	4.9	-		-4.9	942.0			-2199	+62	431,733	2,685,727
209	1980		" "	"	5.1	-		-5.1	941.8			-1979	+55	431,953	2,685,720
210	1760		" "	"	5.3	-		-5.3	941.6			-1759	+99	432,173	2,685,714
211	1540		" "	"	5.0	-		-5.0	941.9			-1539	+43	432,393	2,685,708
212	1320		" "	"	5.9	-		-5.9	941.0			-1319	+37	432,613	2,685,702
213	1100		" "	"	6.0	-		-6.0	940.9			-1100	+31	432,832	2,685,696
214	880		" "	"	5.9	-		-5.9	941.0			-880	+25	433,052	2,685,690
215	660		" "	"	6.1	-		-6.1	940.8			-660	+18	433,272	2,685,683
216	440		" "	"	6.1	-		-6.1	940.8			-440	+12	433,492	2,685,677
217	220		" "	"	5.4	-		-5.4	941.5			-220	+6	433,712	2,685,671
218	0				5.4	-		-5.4	941.5		X	0	0	433,932	2,685,665
219	220		351°35'	+6.9°	4.8	-		-4.8	942.1			+220	-6	434,152	2,685,659
220	440		" "	"	5.0	-		-5.0	941.9			+440	-12	434,372	2,685,653
221	660		" "	"	4.5	-		-4.5	942.4			+660	-17	434,592	2,685,648
222	880		" "	"	4.7	-		-4.7	942.2			+880	-23	434,812	2,685,642
223	1100		" "	"	4.5	-		-4.5	942.4			+1100	-29	435,032	2,685,636
224	1320		" "	"	4.1	-		-4.1	942.8			+1320	-35	435,252	2,685,630

↑
Arrington Quad.
Whiting Quad.
↓

DATE 11/6/79	INSTRUMENT MAN G. Cotcamp	ROD MAN H. Saucedo	PARTY NUMBER 6839	NOTES CHECKED BY G.W.C.	LINE NO. 2	PAGE 15
AREA Kansas	TOPO MAP Whiting	STATE Kansas	COUNTY Atchison	TWP 6S	RANGE 17E	PPM
				PARTY MANAGER L.O. Davis		

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
									946.9						
225	1540		351°35'	+6.9°	3.3	-		-3.3		943.6		+1539	-41	435,471	2,685,629
226	1760		" "	"	2.1	-		-2.1		944.8		+1759	-97	435,691	2,685,618
227	1980		" "	"	8.5	TH	+9.9	+1.4		948.3		+1979	-52	435,911	2,685,613
228	2140		351°25'	+6.9°	7.8	TH	+10.7	+2.9		949.8		+2139	-63	436,071	2,685,602 bridge el. 950
228	2200		351°35'	+6.9°	9.1	TH	+11.0	+1.9		948.8	TP	+2199-2	-58	436,129	2,685,607
228	2200				4.5	89°50'	+6.4	+1.9			TP				
	1760		171°27.7' + 180°	+6.9°	+7.2	-		+7.2			BS	+1759-2	-50		
	1760				+5.1	90°4'	+2.0	+7.1	955.9		BS				
229	1600		171°16.5'	+6.9°	11.7	-		-11.7		944.2		-1599	+51	436,287	2,685,608 T-rd (east)
229	1540		171°27.7'	+6.9°	12.1	-		-12.1		943.8		-1539	+44	436,397	2,685,601
230	1320		" "	"	13.0	-		-13.0		942.9		-1319	+38	436,567	2,685,595
231	1100		" "	"	12.0	-		-12.0		943.9		-1100	+31	436,786	2,685,588
232	880		" "	"	10.6	-		-10.6		945.3		-880	+25	437,006	2,685,582
233	660		" "	"	9.3	-		-9.3		946.6		-660	+19	437,226	2,685,576
234	440		" "	"	8.0	-		-8.0		947.9		-440	+13	437,446	2,685,570
235	220		" "	"	5.0	-		-5.0		950.9		-220	+6	437,666	2,685,563
236	0				5.4	-		-5.4		950.5	TP	0	0	437,886	2,685,557
237	220		351°30'	+7.1°	4.0	-		-4.0		951.9		+220	-5	438,106	2,685,552
238	440		" "	"	1.7	-		-1.7		954.2		+440	-11	438,326	2,685,546
239	660		" "	"	1.8	TH	+3.3	+1.5		957.4		+660	-16	438,546	2,685,541

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/6/79		G. Cutcamp		H. Saucedo		6834		GWC		2	16						
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Kansas		Whiting		Kansas	Atchison		6S	17E		L.O. Davis							
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		
									955.9								
240	880		351°30'	+7.1°	9.9	89°-	+15.4	+5.5		961.4		+880	-22	438,766	2,685,535		
241	1100		" "	"	9.7	89°-	+19.2	+9.5		965.4		+1100	-27	438,986	2,685,530		
242	1320		351°30'	+7.1°	7.6	89°-	+23.0	+15.4		971.3	TP	+1319-2	-32	439,203	2,685,525		
242	1320				5.3	89°6'	+20.7	+15.4			TP						
	1980	1979	172°12'+180°	+7.1°	+7.3	91°20'	+46.1	+53.9			BS	+1979-2	-30				
	1980				+130	91°10'	+40.3	+53.3	1024.6		BS						
243	1760	1759	171°22'	+7.1°	7.3	91°20'	-40.9	-48.2		976.4		-1758	+47	439,422	2,685,542		
244	1540		" "	"	8.5	91°20'	-35.8	-44.3		980.3		-1539	+41	439,641	2,685,536		
245	1320		" "	"	11.5	91°20'	-30.7	-42.2		982.4		-1320	+35	439,860	2,685,530		
246	1100		" "	"	13.0	91°20'	-25.6	-38.6		986.0		-1100	+29	440,080	2,685,524		
247	880		" "	"	13.3	91°20'	-20.5	-33.8		990.8		-880	+24	440,300	2,685,519		
248	660		" "	"	12.4	91°20'	-15.4	-27.8		996.8		-660	+18	440,520	2,685,513		
249	440		" "	"	12.2	91°-	-7.7	-19.9		1004.7		-440	+12	440,740	2,685,507		
250	220		" "	"	12.0	-		-12.0		1012.6		-220	+6	440,960	2,685,501		
251	0				5.4	-		-5.4		1019.2	X	0	0	441,180	2,685,495	horiz. correct. y=-13' x=-9'	
252	220		351°44.9'	+7.1°	1.4	-		-1.4		1023.2		+220	-4	441,900	2,685,491	441,590 + 2,685,480(s)	
$\frac{1}{1}$ $\frac{1}{1}$	410		350°47'	+7.1°	1.8	TH	+2.1	+0.3		1024.9		+410	-15	441,590	2,685,480	4-way intersect. el. 1024.	
253	440		351°44.9'	+7.1°	2.1	TH	+2.2	+0.1		1024.7		+440	-9	441,620	2,685,486		
254	660		" "	"	6.5	89°-	+11.5	+5.0		1029.6		+660	-13	441,840	2,685,482		
255	880		" "	"	6.0	89°-	+15.4	+9.4		1034.0		+880	-18	442,060	2,685,477		

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/6/79		G. Cotcamp		H. Saucedo		6834		GWC		2	17						
AREA		TOPO MAP	STATE	COUNTY	TWP	RANGE	PPM	PARTY MANAGER									
Kansas		Whiting	Kansas	Atchison	6S	17E		L. D. Davis									
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		
									1024.6								
256	1100		351° 44'	+7.1°	5.6	89°	+19.2	+13.6		1038.2		+1100	-22	442,280	2,685,473		
257	1320		" "	"	4.5	89°	+23.0	+18.5		1043.1		+1320	-27	442,500	2,685,468		
258	1540		" "	"	3.9	89°	+26.9	+23.0		1047.6		+1540	-31	442,720	2,685,464		
259	1760		351° 44'	+6.5°	3.7	89°	+30.7	+27.0		1051.6	TP	+1759-2	-54	442,937	2,685,441		
259	1760				5.8	88° 56'	+32.8	+27.0			TP						
	2200		172° 14.8' + 180°	+6.5°	+7.8	84	+11.0	+18.8			BS	+2199-3	-48				
	2200				+6.1	90° 20'	+12.8	+18.9	1070.5		BS						
260	1980		172° 14.8'	+6.5°	12.0	84	-9.9	-21.9		1048.6		-1979	+43	443,154	2,685,436		
261	1760		" "	"	12.4	90° 30'	-15.4	-27.8		1042.7		-1760	+38	443,373	2,685,431		
262	1540		" "	"	4.3	91°	-26.9	-31.2		1039.3		-1540	+34	443,593	2,685,427		
263	1320		" "	"	6.2	91°	-23.0	-29.2		1041.3		-1320	+29	443,813	2,685,422		
264	1100		" "	"	6.6	91°	-19.2	-25.8		1044.7		-1100	+24	444,033	2,685,417		
265	880		" "	"	4.8	91°	-15.4	-20.2		1050.3		-880	+19	444,253	2,685,412		
266	660		" "	"	14.9	-		-14.9		1055.6		-660	+14	444,473	2,685,407		
267	440		" "	"	11.5	-		-11.5		1059.0		-440	+10	444,693	2,685,403		
268	220		" "	"	7.8	-		-7.8		1062.7		-220	+5	444,913	2,685,398		
269	0		" "	"	5.4	-		-5.4		1065.1	*	0	0	445,133	2,685,393		
270	220		352° 23.8'	+6.2°	3.2	-		-3.2		1067.3		+220	-5	445,353	2,685,388		
271	440		" "	"	4.1	-		-4.1		1066.4		+440	-11	445,573	2,685,382		
272	660		" "	"	5.4	-		-5.4		1065.1		+660	-16	445,793	2,685,377		

Geosource Inc.

DATE 11/6/79	INSTRUMENT MAN G. Cotcamp	ROD MAN H. Saucedo	PARTY NUMBER 6834	NOTES CHECKED BY GWC	LINE NO. 2	PAGE 18
AREA Kansas	TOPO MAP Whiting	STATE Kansas	COUNTY Atchison	TWP 6S	RANGE 17E	PPM
					PARTY MANAGER L.O. Davis	

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		
									1070.5								
273	880		352° 23.8'	+6.2°	6.1	-		-6.1		1064.4		+880	-22	446,013	2,685,371		
274	1100		" "	"	3.1	-		-3.1		1067.4		+1100	-27	446,233	2,685,366		
275	1320		" "	"	2.9	-		-2.9		1067.6		+1320	-32	446,453	2,685,361		
276	1540		352° 23.8'	+6.2°	10.8	-		-10.8		1059.7	TP	+1539-2	-38	446,670	2,685,355		
276	1540				14.4	89° 52'	+3.6	-10.8			TP						
	1980		172° 17' + 180°	+6.2°	+10.7	BH	+9.9	+20.6			BS	+1979-3	-52				
	1980				+3.4	90° 30'	+17.3	+20.7	1080.4		BS						
IL 7F	1780		172° 35.3'	+6.2°	11.8	90° 30'	-15.5	-27.3		1053.1		+1780	+38	446,866	2,685,391	446,895 + 2,685,325(w) 4-Way Intersect of .1052	
277	1760		172° 17'	+6.2°	13.0	90° 30'	-15.4	-28.4		1052.0		-1759	+47	446,887	2,685,350		
278	1540		" "	"	4.2	91° -	-26.9	-31.1		1049.3		-1539	+91	447,107	2,685,344		
279	1320		" "	"	9.0	91° -	-23.0	-32.0		1048.4		-1320	+35	447,326	2,685,338		
280	1100		" "	"	9.2	91° -	-19.2	-28.4		1052.0		-1100	+29	447,546	2,685,332		
281	880		" "	"	7.3	91° -	-15.4	-22.7		1057.7		-880	+23	447,766	2,685,326		
282	660		" "	"	12.8	BH	-3.3	-16.1		1064.3		-660	+17	447,986	2,685,320		
283	440		" "	"	10.9	-		-10.9		1069.5		-440	+12	448,206	2,685,315		
284	220		" "	"	7.4	-		-7.4		1073.0		-220	+6	448,426	2,685,309		
285	0				5.4	-		-5.4		1075.0	TP	0	0	448,646	2,685,303		
286	220		352° 38'	+5.8°	2.3	-		-2.3		1078.1		+220	-6	448,866	2,685,297		
287	440		" "	"	5.2	-		-5.2		1075.2		+440	-12	449,086	2,685,291		
288	660		" "	"	7.8	-		-7.8		1072.6		+660	-18	449,306	2,685,285		

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
11/6/79		G. Cotcamp		H. Savceda		6834		GWC		2	19				
AREA		TOPO MAP		STATE		COUNTY		RANGE		PPM		PARTY MANAGER			
Kansas		Whiting		Kansas		Atchison		17E				L.O. Davis			
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
									1080.4						
289	880		352° 38'	+58°	7.8	-		-7.8		1072.6		+860	-24	449,526	2,685,279
290	1100		" "	"	6.8	-		-6.8		1073.6		+1100	-30	449,746	2,685,273
291	1320		" "	"	5.1	-		-5.1		1075.3		+1320	-36	449,966	2,685,267
292	1540		" "	"	6.4	-		-6.4		1074.0		+1539	-42	450,185	2,685,261
293	1760		352° 38'	+58°	15.0	90° 2'	-1.0	-16.0		1069.4	TP	+1759-2	-48+2	450,903	2,685,257
293	1760				13.0	90° 6'	-3.1	-16.1			TP				
	660		172° 44' +180°	+58°	+6.4	-		+6.4	1070.8		BS	+660-3	-17+2		
	660				+3.1	BH	+3.3	+6.4			BS				
294	440		172° 44'	+58°	12.1	-		-12.1		1058.7		-440	+11	450,620	2,685,253
295	220		" "	"	10.9	-		-10.9		1059.9		-220	+6	450,840	2,685,248
296	0				5.4	-		-5.4		1065.4	T	0	0	451,060	2,685,242
297	220		352° 37'	+58°	14.7	-		-14.7		1056.1		+220	-6	451,280	2,685,236
298	440		" "	"	10.1	92° -	-15.3	-25.4		1045.4		+440	-12	451,500	2,685,230
299	660		" "	"	10.0	91° -	-11.5	-21.5		1049.3		+660	-18	451,720	2,685,224
300	880		" "	"	11.1	91° 20'	-20.5	-31.6		1039.2		+880	-24	451,940	2,685,218
TP	1095		351° 54.8'	+58°	7.5	91° 20'	-25.5	-33.0		1037.8		+1094	-44	452,154	2,685,198
301	1100		351° 59'	+58°	7.6	91° 20'	-25.6	-33.2		1037.6		+1099	-43	452,159	2,685,199
302	1320		351° 56.5'	+58°	14.9	91° 10'	-26.9	-41.8		1029.0	TP	+1319-3	-52+1	452,376	2,685,191
302	1320				13.4	91° 14'	-28.4	-41.8			TP				

last sta. on road.
452,150 + 2,685,200(s)
T-intersect. el. 1038

in field - along west edge of N-S fence

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
11/7/79		G. Cotcamp		H. Saucedo		6834		GWC.		2	20					
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Kansas		Whiting		Kansas	Atchison		6S	17E		L.O. Davis						
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	
302	1100		172° 31.8' +180°	+5.8°	+8.7	88° 30'	-28.8	-20.1	1008.9	1029.0	BS	+1100	-32			in field - along west edge of N-S fence
	1100				+11.9	88° 20'	-32.0	-20.1			BS					
303	880		172° 31.8'	+5.8°	12.9	-		-12.9		996.0		-880	+26	452,596	2,685,185	
304	660		" "	"	10.3	91° -	-11.5	-21.8		987.1		-660	+19	452,816	2,685,178	
305	440		" "	"	10.9	92° -	-15.3	-26.2		982.7		-440	+13	453,036	2,685,172	
306	220		" "	"	11.0	-		-11.0		997.9		-220	+6	453,256	2,685,165	
307	0				5.4	-		-5.4		1003.5	X	0	0	453,476	2,685,159	
308	220		353° 1'	+5.8°	14.7	-		-14.7		994.2		+220	-5	453,696	2,685,154	
309	440		" "	"	12.0	91° -	-7.7	-19.7		989.2		+440	-9	453,916	2,685,150	
310	660		" "	"	12.6	91° -	-11.5	-24.1		984.8		+660	-14	454,136	2,685,145	
311	880		353° 1'	+5.8°	14.4	90° 40'	-10.2	-24.6		984.3	TP	+880	-18	454,356	2,685,141	
311	880				13.4	90° 44'	-11.3	-24.7			TP					
	220		173° 43' +180°	+5.8°	+6.1	89° -	-3.8	+2.3	986.6		BS	+220	-2			
	220				+3.3	TH	-1.1	+2.2			BS					
312	0				5.4	-		-5.4		981.2	X	0	0	454,576	2,685,139	
313	220		1° 22'	+5.8°	5.3	-		-5.3		981.3	TP	+218	+27	454,794	2,685,166	north side of creek
313	220				6.4	TH	+1.1	-5.3			TP					
	880		172° 49.7' +180°	+5.8°	+10.5	-		+10.5	991.8		BS	+880	-21			
	880				+6.1	OH	+4.4	+10.5			BS					
314	660		172° 49.7'	+5.8°	9.5	-		-9.5		982.3		-660	+16	455,014	2,685,161	

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/7/79		G. Cotcamp		H. Savceda		6834		GWC		2	21						
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER							
Kansas		Whiting		Kansas	Atchison		6S	17E		L.O. Davis							
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		
									991.8								
315	440		172°49.7'	+58°	6.6	-		-6.6		985.2		-440	+11	455,234	2,685,156		
316	220		" "	"	5.2	-		-5.2		986.6		-220	+5	455,454	2,685,150		
317	0				54	-		-5.4		986.4	π	0	0	455,674	2,685,145		
318	220		356°18'	+58°	1.2	-		-1.2		990.6		+220	+8	455,894	2,685,153		
319	440		359°15'	+58°	3.1	89°-	+7.7	+4.6		996.4		+438	+39	456,112	2,685,184		
320	660		1°39.5'	+58°	5.6	88°-	+23.0	+17.4			TP	+654	+86	456,328	2,685,231		
320	660				3.6	88°10'	+21.1	+17.5		1009.3	TP						
	220		171°44.3'-180°	+58°	+3.1	89°-	-3.8	-0.7	1008.6		BS	+220	-9				
	220				+7.0	88°-	-7.7	-0.7			BS						
321	0				54	-		-54		1003.2	π	0	0	456,548	2,685,222		
322	220		2°38'	+58°	7.5	-		-1.5		1007.1	TP	+218	+32	456,766	2,685,254		
322	220				2.6	TH	+1.1	-1.5			TP						
	220		204°45'-180°	+58°	+10.2	-		+10.2	1017.3		BS	+191	+110				
	220				-11.3	TH	-1.1	+10.2			BS						
323	0				54	-		-54		1011.9	π	0	0	456,957	2,685,364	east edge of railroad	
324	220		46°22.3'	+58°	1.3	88°-	+7.7	+6.4		1023.7		+135	+174	457,092	2,685,538		
325	440	439	" "	"	6.3	87°-	+23.0	+16.7		1034.0		+269	+347	457,226	2,685,711		
326	660	659	46°22.3'	+58°	6.8	87°-	+34.5	+27.7		1045.0	TP	+404	+521	457,361	2,685,885		
326	660				4.9	87°10'	+32.6	+27.7			TP						

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE						
11/7/79		G. Cotcamp		H. Saucedo		6834		Gwl.		2	22						
AREA		TOPO MAP	STATE	COUNTY	TWP	RANGE	PPM	PARTY MANAGER									
Kansas		Whiting	Kansas	Atchison	6S/5S	17E		L.O. Davis									
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		
326										1045.0							
	440		206°20.6'-180°	+5.8°	+126	91°	+7.7	+20.3	1065.3		BS	+373	+234				in field
	440				+101	91°20'	+10.2	+20.3			BS						↓
327	220		206°20.6'	+5.8°	11.6	-		-11.6		1053.7		-186	-117	457,548	2,686,002		
328	0				54	-		-5.4		1059.9	π	0	0	457,734	2,686,119		T.65
329	220		22°1'	+5.8°	1.6	89°-	+38	+2.2		1067.5		+195	+103	457,929	2,686,222		last sta. in field
	375		12°7.6'	+5.8°	4.5	86°30'	+9.8	+5.3		1070.6	TP	+357	+115	458,091	2,686,234		line#1
	375				7.8	88°-	+13.1	+5.3			TP						
	180		259°48'-180°	+5.8°	+79	-		+7.9	1078.5		BS	+14	+179				452' offset east
	180				+8.8	TH	-0.9	+7.9			BS						
	π				54	-		-5.4		1073.1	π	0	0	458,105	2,686,913		458,100 + 2,686,685(s)
	272		85°9.3'	+5.8°	12.4	91°-	-4.7	-17.1		1061.4	TP	-5	+272	458,100	2,686,685		Intersect. ed. 1063. Line#1 tie
	272				7.6	92°-	-9.5	-17.1			TP						
	2041		173°14.2'+180°	+5.5°	+11.4	89°30'	-17.8	-6.4	1055.0		BS	+2040	-95-2				
	2041				+14.9	89°24'	-21.4	-6.5			BS						
330	1980		172°59'	+5.5°	10.3	89°30'	+17.3	+7.0		1062.0		-1979	+52	458,161	2,686,690		T.55
331	1760		" "	"	10.8	89°30'	+15.4	+4.6		1059.6		-1759	+47	458,381	2,686,685		
332	1540		" "	"	10.0	89°30'	+13.4	+3.4		1058.4		-1539	+41	458,601	2,686,679		
333	1320		" "	"	5.2	89°30'	+11.5	+6.3		1061.3		-1320	+35	458,820	2,686,673		
334	1100		" "	"	4.6	89°30'	+9.6	+5.0		1060.0		-1100	+29	459,040	2,686,667		
335	880		" "	"	5.8	-		-5.8		1049.2		-880	+23	459,260	2,686,661		

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
11/8/79		G. Cotcamp		H. Saucedo		6834		GWC		2	23					
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Kansas		Whiting		Kansas	Atchison		5S	17E		L. O. Davis						
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	
									1055.0							
336	660		172° 59'	+5.5°	11.7	-		-11.7		1043.3		-660	+17	459,480	2,686,655	
337	440		" "	"	11.4	-		-11.4		1043.6		-440	+12	459,700	2,686,650	
338	220		" "	"	8.0	-		-8.0		1047.0		-220	+6	459,920	2,686,644	
339	0		" "	"	5.4	-		-5.4		1049.6	TP	0	0	460,140	2,686,638	
340	220		353° 189'	+5.5°	14.8	91° -	-3.8	-18.6		1036.4		+220	-5	460,360	2,686,633	
341	440		" "	"	9.8	92° -	-15.3	-25.1		1029.9		+440	-9	460,580	2,686,629	
342	660		" "	"	12.0	91° -	-11.5	-23.5		1031.5		+660	-14	460,800	2,686,624	
343	880		" "	"	11.4	91° -	-15.4	-26.8		1028.2		+880	-18	461,020	2,686,620	
344	1100		" "	"	10.0	91° 30'	-28.8	-38.8		1016.2		+1100	-23	461,240	2,686,615	
345	1320		" "	"	12.0	91° 30'	-34.5	-46.5		1008.5		+1320	-27	461,460	2,686,611	
346	1540		" "	"	5.8	91° 30'	-40.3	-46.1		1008.9		+1540	-32	461,680	2,686,606	
347	1760		" "	"	9.3	91° -	-30.7	-40.0		1015.0		+1760	-37	461,900	2,686,601	
348	1980		353° 184'	+5.5°	4.7	91° -	-34.6	-39.3		1015.7	TP	+1979-1	-41-2	462,118	2,686,595	
348	1980				14.0	90° 44'	-25.3	-39.3			TP					
	1100		172° 46.3' + 180°	+5.5°	+7.2	89° -	-19.2	-12.0	1003.7		BS	+1099-2	-33-1			
	1100				+5.3	89° 6'	-17.3	-12.0			BS					
349	880		172° 46.3'	+5.5°	3.5	-		-3.5		1000.2		-880	+27	462,335	2,686,588	
350	660		" "	"	12.4	-		-12.4		991.3		-660	+20	462,555	2,686,581	
351	440		" "	"	14.8	-		-14.8		988.9		-440	+13	462,775	2,686,574	
352	220		" "	"	10.1	-		-10.1		993.6		-220	+7	462,995	2,686,568	

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE				
11/8/79		G. Cotcamp		H. Saucedo		6834		Gwc		2	24				
AREA		TOPO MAP		STATE		COUNTY		RANGE		PARTY MANAGER					
Kansas		Whiting		Kansas		Atchison		17E		L.O. Davis					
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
									1003.7						
363	0				54	-		-54		998.3	TP	0	0	463,215	2,686,561
1/2	170		349° 58'	+5.9°	11.3	-		-11.3		992.4		+169	-14	463,384	2,686,547
354	220		352° 49'	+5.9°	12.2	-		-12.2		991.5		+220	-7	463,435	2,686,554
355	440		" "	"	11.8	-		-11.8		991.9		+440	-14	463,655	2,686,547
356	660		" "	"	8.1	-		-8.1		995.6		+660	-21	463,875	2,686,540
357	880		" "	"	14.5	BH	-4.4	-18.9		984.8		+880	-28	464,095	2,686,533
358	1100		" "	"	12.2	90° 30'	-9.6	-21.8		981.9		+1099	-36	464,314	2,686,525
359	1320		" "	"	10.2	BH	-6.6	-16.8		986.9		+1319	-43	464,534	2,686,518
360	1540		" "	"	5.1	-		-5.1		998.6		+1539	-50	464,754	2,686,511
361	1760		352° 44.9'	+5.9°	12.1	-		-12.1			TP	+1759-2	-57	464,972	2,686,504
361	1760				10.0	90° 4'	-2.0	-12.0		991.7	TP				
	660		172° 57.7' +160°	+5.9°	+5.3	89° -	-11.5	-6.2	985.5		BS	+660-2	-19		
	660				+1.5	89° 20'	-7.7	-6.2			BS				
362	440		172° 57.7'	+5.9°	2.2	-		-2.2		983.3		-440	+13	465,190	2,686,498
363	220		" "	"	4.3	-		-4.3		981.2		-220	+6	465,410	2,686,991
364	0				54	-		-5.4		980.1	TP	0	0	465,630	2,686,485
365	220		353° 31.3	+5.9°	5.2	-		-5.2		980.3		+220	-4	465,850	2,686,481
1/2	380		352° 21'	+5.9°	3.5	-		-3.5		982.0		+380	-15	466,010	2,686,470
366	440		353° 31.3	+5.9°	4.8	-		-4.8		980.7	TP	+440	-8	466,070	2,686,477
366	440				7.0	BH	+2.2	-4.8			TP				

463,390 + 2,686,535(s)
trail (east) el. 994.

horiz correct. y = -7'
x = -5'

466,010 + 2,686,470(s)
4-Way Intersect. el. 983.

SURVEY NOTES-HIGH RESOLUTION DATA

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Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE			
11/8/79		G. Cotcamp		H. Saucedo		6834		G.W.C.		2	25			
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER				
Kansas		Whiting		Kansas	Atchison		6S	17E		L.O. Davis				
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.	
366										980.7				
	1760		173°5' +180°	+5.5°	+9.9	-		+9.9	990.6		BS	+1759.4	-44 +1	
	1760				+1.1	04	+8.8	+9.9			BS			
367	1540		173°5'	+5.5°	8.9	-		-8.9		981.7		-1539	+38	466,286 2,686,972
368	1320		" "	"	8.4	-		-8.4		982.2		-1320	+33	466,505 2,686,967
369	1100		" "	"	8.7	-		-8.7		981.9		-1100	+27	466,725 2,686,961
370	880		" "	"	8.8	-		-8.8		981.8		-880	+22	466,945 2,686,956
371	660		" "	"	6.6	-		-6.6		989.0		-660	+16	467,165 2,686,950
372	440		" "	"	5.1	-		-5.1		985.5		-440	+11	467,385 2,686,945
373	220		" "	"	4.5	-		-4.5		986.1		-220	+5	467,605 2,686,939
374	0				5.4	-		-5.4		985.2	TP	0	0	467,825 2,686,934
375	220		353°31'	+5.5°	4.8	-		-4.8		985.8		+220	-4	468,095 2,686,930
376	440		" "	"	5.1	-		-5.1		985.5		+440	-8	468,265 2,686,926
377	660		" "	"	4.9	-		-4.9		985.7		+660	-11	468,485 2,686,923
378	880		" "	"	3.2	-		-3.2		987.4		+880	-15	468,705 2,686,919
379	1100		" "	"	2.2	-		-2.2		988.4		+1100	-19	468,925 2,686,915
380	1320		" "	"	2.5	-		-2.5		988.1		+1320	-23	469,145 2,686,911
381	1540		" "	"	1.9	-		-1.9		988.7		+1540	-26	469,365 2,686,908
382	1760		353°31'	+5.5°	0.7	-		-0.7		989.9	TP	+1760.4	-30 +1	469,581 2,686,905
382	1760				9.5	TH	+8.8	-0.7			TP			

Geosource Inc.

DATE		INSTRUMENT MAN			ROD MAN		PARTY NUMBER		NOTES CHECKED BY			LINE NO.	PAGE				
11/13/79		G Cotcamp			H Saucedo		6834		GWC			2	26				
AREA		TOPO MAP		STATE	COUNTY			TWP	RANGE	PPM	PARTY MANAGER						
Kansas		Whiting		Kansas	Atchison			6S	17E		I O Davis						
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		
382										989.9							
	1980		173° 4.9' +180°	+5.5°	+5.6	89° 30'	-17.3	-11.7			BS	+1979.4	-49.1				
	1980				+4.5	89° 32'	-16.1	-11.6	978.3		BS						
383	1760		173° 4.9'	+5.5°	8.2	89° 30'	+15.4	+7.2		985.5		-1759	+44	469,797	2,686,401		
384	1540		" "	"	7.5	TH	+7.7	+0.2		978.5		-1540	+38	470,016	2,686,395		
385	1320		" "	"	6.7	TH	+6.6	-0.1		978.2		-1320	+33	470,236	2,686,390		
386	1265		173° 27'	+5.5°	6.0	TH	+6.3	+0.3		978.6		-1265	+23	470,291	2,686,380	S-T bridge	
386	1100		173° 4.9'	+5.5°	2.0	-		-2.0		976.3		-1100	+27	470,456	2,686,384		
387	880		" "	"	4.5	-		-4.5		973.8		-880	+22	470,676	2,686,379		
388	660		" "	"	4.5	-		-4.5		973.8		-660	+16	470,896	2,686,373		
389	440		" "	"	4.9	-		-4.9		973.4		-440	+11	471,116	2,686,368		
390	220		" "	"	4.5	-		-4.5		973.8		-220	+5	471,336	2,686,362		
391	0				5.4	-		-5.4		972.9	X	0	0	471,556	2,686,357		
392	220		353° 1'	+5.5°	4.4	-		-4.4		973.9		+220	-6	471,776	2,686,351		
393	440		" "	"	3.7	-		-3.7		974.6		+440	-11	471,996	2,686,346		
394	660		" "	"	2.5	-		-2.5		975.8		+660	-17	472,216	2,686,340		
395	880		" "	"	0.8	-		-0.8		977.5		+880	-23	472,436	2,686,334		
396	1100		" "	"	4.2	TH	+5.5	+1.3		979.6		+1100	-28	472,656	2,686,329		
397	1320		" "	"	2.9	TH	+6.6	+3.7		982.0		+1320	-34	472,876	2,686,323		
398	1540		" "	"	8.9	89° 20'	+17.9	+9.0		987.3		+1539	-40	473,095	2,686,317		
399	1760		" "	"	9.9	89° -	+30.7	+20.8		999.1		+1759	-46	473,315	2,686,311		

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.		PAGE						
11/13/79		G. Cotcamp		R. Saucedo		6834		GWC		2		27						
AREA		TOPO MAP		STATE		COUNTY		TWP		RANGE		PPM		PARTY MANAGER				
Kansas		Whiting		Kansas		Atchison		6S		17E				L.O. Davis				
STATION NO.	SLOPE DISTANCE	PLOT 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			
									978.3									
400	1980		353° 1'	+5.5°	4.9	89° -	+34.6	+29.7		1007.9	TP	+1979.4	-51.1	473,531	2,686,307			
400	1980				10.8	88° 50'	+40.3	+29.5	1026.6		TP							
	1980	1979	172° 59' +180°	+5.5°	+9.9	91° 40'	+57.6	+67.5	1075.4		BS	+1978.4	-52.1					
	1980				14.5	91° 32'	+53.0	+67.5			BS							
401	1760	1759	172° 59'	+5.5°	8.3	91° 30'	-46.1	-54.4		1021.0		-1758	+47	473,747	2,686,303			
401	1580	1579	173° 8.5'	+5.5°	8.0	91° 30'	-41.3	-49.3		1026.1		-1579	+37	473,926	2,686,293	4-Way Intersect. e.l. 1026.		
402	1540	1539	172° 59'	+5.5°	8.4	91° 30'	-40.3	-48.7		1026.7		-1538	+41	473,967	2,686,297			
403	1320	1319	" "	"	4.5	92° -	-46.0	-50.5		1024.9		-1319	+35	474,186	2,686,291			
404	1100	1099	" "	"	11.0	92° -	-38.4	-49.4		1026.0		-1099	+29	474,406	2,686,285			
405	880	879	" "	"	15.0	92° -	-30.7	-45.7		1029.7		-879	+23	474,626	2,686,279			
406	660	659	" "	"	9.2	93° -	-34.5	-43.7		1031.7		-659	+17	474,846	2,686,273			
407	440	439	" "	"	14.2	93° -	-23.0	-37.2		1038.2		-439	+12	475,066	2,686,268			
408	220		" "	"	12.3	92° -	-7.7	-20.0		1055.4		-220	+6	475,285	2,686,262			
409	0				5.4	-		-5.4		1070.0	X	0	0	475,505	2,686,256			
410	220		353° 3.2'	+5.7°	2.3	-		-2.3		1073.1		+220	-5	475,725	2,686,251			
411	440		" "	"	5.0	-		-5.0		1070.4		+440	-10	475,945	2,686,246			
412	660		" "	"	11.5	-		-11.5		1063.9		+660	-14	476,165	2,686,242			
413	880		" "	"	11.2	OH	-4.4	-15.6		1059.8		+880	-19	476,385	2,686,237			
414	1100		" "	"	10.9	OH	-5.5	-16.4		1059.0		+1100	-24	476,605	2,686,232			
415	1320		" "	"	12.0	-		-12.0		1063.4		+1320	-29	476,825	2,686,227			

DATE		INSTRUMENT MAN			ROD MAN			PARTY NUMBER		NOTES CHECKED BY			LINE NO.	PAGE		
11/13/79		G. Colcamp			H. Savceda			6839		G-wc			2	28		
AREA		TOPO MAP		STATE	COUNTY			TWP	RANGE	PPM	PARTY MANAGER					
Kansas		Whiting/Horton		Kansas	Atchison			6S	17E		L.O. Davis					
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	
									1075.4							
416	1540		353° 3.2'	+5.7°	8.9	0H	-7.7	-16.6			TP	+1540-9	-34	477,091	2,686,222	
416	1540				11.3	90° 12'	-5.4	-16.7		1058.7	TP					
	1540		172° 35.3' + 180°	+5.7°	+14.0	91° -	+26.9	+40.9	1099.6		BS	+1539	-46			
	1540				+5.1	91° 20'	+35.8	+40.9			BS					
417	1320	1319	172° 35.3'	+5.7°	3.5	92° -	-46.0	-49.5		1050.1		-1318	+39	477,262	2,686,215	
418	1100	1099	" "	"	14.9	92° -	-38.4	-53.3		1046.3		-1099	+33	477,981	2,686,209	
419	880	879	" "	"	11.8	92° 30'	-38.4	-50.2		1049.4		-879	+26	477,701	2,686,202	
420	660	659	" "	"	11.8	92° 30'	-28.8	-40.6		1059.0		-659	+20	477,921	2,686,196	
421	440		" "	"	13.2	91° 30'	-11.5	-24.7		1074.9		-440	+13	478,140	2,686,189	
422	220		" "	"	11.0	-		-11.0		1088.6		-220	+7	478,360	2,686,183	
423	0				5.9	-		-5.4		1094.2	X	0	0	478,580	2,686,176	
424	220		352° 35.2'	+5.7°	6.2	-		-6.2		1093.4		+220	-7	478,800	2,686,169	
425	440		" "	"	5.9	-		-5.9		1093.7		+440	-13	479,020	2,686,163	
$\frac{1L}{7F}$	630		351° 44'	+5.7°	5.7	-		-5.7		1093.9		+629	-28	479,209	2,686,148	479,213 + 2,686,140(s) 4-Way Intersect el. 1093
426	660		352° 35.2'	+5.7°	5.9	-		-5.9		1093.7		+660	-20	479,240	2,686,156	
427	880		" "	"	7.5	-		-7.5		1092.1		+880	-26	479,460	2,686,150	↑
428	1100		" "	"	8.5	-		-8.5		1091.1		+1100	-33	479,680	2,686,143	Whiting Quad.
429	1320		" "	"	7.4	-		-7.4		1092.2		+1319	-39	479,899	2,686,137	Horton Quad.
430	1540		" "	"	4.6	-		-4.6		1095.0		+1539	-46	480,119	2,686,130	↓

SURVEY NOTES-HIGH RESOLUTION DATA

Geosource Inc.

GEO-445

DATE: 11/13/79 INSTRUMENT MAN: C. Cotcamp ROD MAN: H. Saucedo PARTY NUMBER: 6839 NOTES CHECKED BY: G.W.C. LINE NO.: 2 PAGE: 29 of 29
 AREA: KANSAS TOPO MAP: Horton STATE: Kansas COUNTY: Atchison TWP: _____ RANGE: _____ PPM: _____ PARTY MANAGER: L.O. DAVIS

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
									1099.6						
431	1760		352°35.2'	+5.8°	7.2	TH	+8.8	+1.6			TP	+1759.4	-50.2	480,335	2,686,128
431	1760				3.7	89°50'	+5.1	+1.4		1101.0	TP				
	2200		172°40.2'+180°	+5.8°	+12.1	-		+12.1	1113.1		BS	+2199.4	-59.1		
	2200				+1.1	0H	+11.0	+12.1			BS				
432	1980		172°40.2'	+5.8°	14.0	-		-14.0	1099.1			-1979	+53	480,551	2,686,123
433	1760		" "	"	8.3	0H	-8.8	-17.1	1096.0			-1759	+47	480,771	2,686,117
434	1540		" "	"	11.0	0H	-7.7	-18.7	1094.4			-1539	+41	480,991	2,686,111
435	1320		" "	"	10.1	0H	-6.6	-16.7	1096.4			-1320	+35	481,210	2,686,105
436	1100		" "	"	12.0	-		-12.0	1101.1			-1100	+29	481,430	2,686,099
437	880		" "	"	5.0	-		-5.0	1108.1			-880	+23	481,650	2,686,093
438	660		" "	"	6.7	-		-6.7	1106.4			-660	+18	481,870	2,686,088
439	440		" "	"	8.0	-		-8.0	1105.1			-440	+12	482,090	2,686,082
440	220		" "	"	6.6	-		-6.6	1106.5			-220	+6	482,310	2,686,076 line shortened due
441	0				5.4	-		-5.4	1107.7		X	0	0	482,530	2,686,070 to Seismic Resources
442	220		352°42'	+5.8°	3.9	-		-3.9	1109.2			+220	-6	482,750	2,686,064 interference
443	440		" "	"	8.5	-		-8.5	1104.6			+440	-12	482,970	2,686,058
444	660		" "	"	12.8	-		-12.8	1100.3			+660	-17	483,190	2,686,053
445	880		" "	"	12.1	-		-12.1	1101.0			+880	-23	483,410	2,686,047
446	1100		" "	"	10.7	-		-10.7	1102.4			+1100	-29	483,630	2,686,041
447	1320		" "	"	8.9	-		-8.9	1104.2			+1320	-35	483,850	2,686,035