

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc. Client: COCORP

DATE 12/15/80	INSTRUMENT MAN G. Cotcamp	ROD MAN J. Cruz	PARTY NUMBER 6834	NOTES CHECKED BY Guc rlw	LINE NO. 9	PAGE 1 OF 13
AREA OKLAHOMA	TOPO MAP Putnam 15'	STATE Oklahoma	COUNTY Custer	TWP 15N	RANGE 15W	PPM
PARTY MANAGER LO 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	
TL				+8°48'						1753.0	R			275,420	1,775,695	Instrument - Wild T1A Chaining - 330' steel cable + pins → scaled
	2260		82°33' +180°	+88°	+0.7	TH	-11.3	-10.6	1742.4			+53+1	-2259+2			4-Way Intersect. el. 1753.
	2260				+14.9	89°22'	-25.0	-10.6								
1	990		82°33'	+88°	3.5	-		-3.5		1738.9		-23	+990	275,451	1,774,928	
2	660		"	"	13.7	-		-13.7		1728.7		-16	+660	275,458	1,774,098	
3	330		"	"	7.8	-		-7.8		1734.6		-8	+330	275,466	1,773,768	
4	0				5.4	-		-5.4		1737.0	π	0	0	275,474	1,773,438	
5	330		262°21'	+88°	7.8	-		-7.8		1734.6		+7	-330	275,481	1,773,108	
6	660		"	"	11.3	-		-11.3		1731.1		+13	-660	275,487	1,772,778	
7	990		"	"	14.8	-		-14.8		1727.6		+20	-990	275,494	1,772,448	
8	1320		"	"	9.1	BH	-6.6	-15.7		1726.7		+26	-1320	275,500	1,772,118	
9	1650		"	"	7.2	BH	-8.3	-15.5		1726.9		+33	-1650	275,507	1,771,788	
10	1980		262°21'	+88°	5.6	BH	-9.9	-15.5		1726.9	π	+40+1	-1980+2	275,515	1,771,960	
10	1980				13.2	90°4'	-2.3	-15.5			π					
	2640		82°23' +180°	+88°	+15.0	90°24'	+18.4	+33.4	1760.4		BS	+55	-2690+2			
	2640				+12.1	90°28'	+21.5	+33.6		+33.5		BS				
11	2310		82°23'	+88°	13.0	90°30'	-20.2	-33.2		1727.2		-48	+2310	275,522	1,771,132	
12	1980		"	"	14.2	90°30'	-17.3	-31.5		1728.9		-41	+1980	275,529	1,770,802	
13	1650		"	"	14.8	90°30'	-14.4	-29.2		1731.2		-34	+1650	275,536	1,770,472	
TL	1565		82°54.8'	+88°	14.0	90°30'	-13.7	-27.7		1732.7		-47	+1564	275,523	1,770,386	275,530 + 1,770,385 4-Way Intersect. el. 1732.
14	1320		82°23'	+88°	14.2	90°30'	-11.5	-25.7		1734.7		-27	+1320	275,543	1,770,142	

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DATE 12/15/80	INSTRUMENT MAN G. Cotcamp	ROD MAN J. Cruz	PARTY NUMBER 6834	NOTES CHECKED BY G.W.C. rlu	LINE NO. 9	PAGE 2 of 13
AREA Oklahoma	TOPO MAP Putnam 15'	STATE Oklahoma	COUNTY Custer	TWP 15N	RANGE 15W	PPM
				PARTY MANAGER L 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.	
									1760.4					
15	990		82° 23'	+8.8°	13.8	90° 30'	-8.6	-22.4		1738.0		-20	+990	275,550 1,769,812
16	660		" "	"	14.2	BH	-3.3	-17.5		1742.9		-14	+660	275,556 1,769,482
17	330		" "	"	9.8	-	-	-9.8		1750.6		-7	+330	275,563 1,769,152
18	0		" "	"	5.4	-	-	-5.4		1755.0	X	0	0	275,570 1,768,822
19	330		262° 13.9'	+8.8°	5.1	-	-	-5.1		1755.3		+6	-330	275,576 1,768,492
20	660		" "	"	5.0	-	-	-5.0		1755.4		+12	-660	275,582 1,768,162
21	990		" "	"	5.0	-	-	-5.0		1755.4		+18	-990	275,588 1,767,832
22	1320		" "	"	6.4	TH	+6.6	+0.2		1760.6		+24	-1320	275,594 1,767,502
23	1650		" "	"	1.8	TH	+8.3	+6.5		1766.9		+30	-1650	275,600 1,767,172
24	1980		" "	"	4.5	89° 30'	+17.3	+12.8		1773.2		+36	-1980	275,606 1,766,842
25	2310		" "	"	3.9	89° 30'	+20.2	+16.3		1776.7		+42	-2310	275,612 1,766,512
26	2640		262° 13.9'	+8.8°	3.3	89° 30'	+23.0	+19.7		1780.1	TP	+48	-2640+2	275,618 1,766,184
26	2640		" "	"	14.0	89° 16'	+33.8	+19.8			TP			
	2310		81° 45.6' +180°	+8.8°	+4.0	89° 20'	-26.9	-12.9	1767.2		BS	+23	-2310+1	
	2310		" "	"	+12.8	89° 22'	-25.5	-12.7			BS			
27	1980		81° 45.6'	+8.8°	2.4	89° 30'	+17.3	+14.9		1782.1		-19	+1980	275,622 1,765,855
28	1650		" "	"	3.0	89° 30'	+14.4	+11.4		1778.6		-16	+1650	275,625 1,765,525
29	1320		" "	"	3.9	89° 30'	+11.5	+7.6		1774.8		-13	+1320	275,628 1,765,195
IL IF	1287		82° 17.5'	+8.8°	4.1	89° 30'	+11.2	+7.1		1774.3		-25	+1287	275,616 1,765,162
30	990		81° 45.6'	+8.8°	8.3	89° 30'	+8.6	+0.3		1767.5		-10	+990	275,631 1,764,865

275,615 + 1,765,150
4-Way Intersect. @ 1,773.

SURVEY NOTES-HIGH RESOLUTION DATA

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DATE	INSTRUMENT MAN	ROD MAN	PARTY NUMBER	NOTES CHECKED BY	LINE NO.	PAGE
12/15/80	G. Cotcamp	J. Cruz	6837	G.W.C. rlu	9	3 of 13
AREA	TOPO MAP	STATE	COUNTY	TWP	RANGE	PPM
Oklahoma	Putnam 15'	Oklahoma	Custer	15 N	15 W	
					PARTY MANAGER	
					L. 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.	
									1767.2					
31	660		81° 45.6'	+8.8°	6.4	-		-6.4		1760.8		-6	+660	275,635 1769,535
32	330		" "	"	7.1	-		-7.1		1760.1		-3	+330	275,638 1769,205
33	0				5.4	-		-5.4		1761.8	X	0	0	275,641 1763,875
34	330		261° 31.2'	+8.8°	8.4	-		-8.4		1758.8		+2	-330	275,643 1763,545
35	660		" "	"	15.3	BH	-3.3	-18.6		1748.6		+4	-660	275,645 1763,215
36	990		" "	"	8.9	91°-	-17.3	-26.2		1741.0		+6	-990	275,647 1762,885
37	1320		" "	"	11.4	BH	-6.6	-18.0		1749.2		+7	-1320	275,648 1762,555
38	1650		" "	"	5.5	-		-5.5		1761.7		+9	-1650	275,650 1762,225
39	1980		" "	"	2.0	-		-2.0		1765.2		+11	-1980	275,652 1761,895
40	2310		261° 31.2'	+8.8°	0.1	-		-0.1		1767.1	TP	+13	-2310 ₂	275,654 1761,567
40	2310				11.7	TH	+11.6	-0.1			TP			
	1320		81° 39.4' + 180°	+8.8°	+6.4	-		+6.4	1773.5		BS	+11	-1320	
	1320				+13.0	TH	-6.6	+6.4			BS			
41	990		81° 39.4'	+8.8°	4.6	-		-4.6		1768.9		-8	+990	275,657 1761,237
42	660		" "	"	3.4	-		-3.4		1770.1		-5	+660	275,660 1760,907
43	330		" "	"	3.4	-		-3.4		1770.1		-3	+330	275,662 1760,577
44	0				5.4	-		-5.4		1768.1	X	0	0	275,665 1760,247
45	330		261° 22.3'	+8.8°	15.1	-		-15.1		1758.4		+1	-330	275,666 1759,917
<u>IL</u>	420		259° 16'	+8.8°	12.1	91°-	-7.3	-19.4		1754.1		-14	-420	275,651 1759,827
46	660		261° 22.3'	+8.8°	15.2 12.1	91°- 91°-	-11.5	-27.7		1745.8		+2	-660	275,667 1759,587

275,640 + 1,759,815
T-rd (north) el. 1754.

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DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY			LINE NO.	PAGE				
12/15/80		G. Cotcamp		J. Cruz		6834		Gwl. rluw			9	4				
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Oklahoma		Putnam 15'		Oklahoma	Custer		15N	15w/16w		L. 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	
									1773.5							
47	990		261°22.3'	+8.8°	11.2	91°-	-17.3	-28.5		1745.0		+3	-990	275,668	1,759,257	
48	1320		261°22.3'	+8.8°	5.1	91°-	-23.0	-28.1	-28.2	1745.3	TP	+4	-1320	275,669	1,759,927	
48	1320				12.9	90°40'	-15.4	-28.3			TP					
	2640		81°35.4' ±180°	+8.8°	+6.3	91°-	+46.1	+52.4	1797.7		BS	+18	-2640			
	2640				+14.2	90°50'	+38.4	+52.6			BS					
49	2310		81°35.4'	+8.8°	9.8	91°-	-40.3	-50.1		1747.6		-16	+2310	275,671	1,758,597	
50	1980		"	"	5.9	91°-	-34.6	-40.5		1757.2		-13	+1980	275,674	1,758,267	
51	1650		"	"	6.1	91°-	-28.8	-34.9		1762.8		-11	+1650	275,676	1,757,937	
52	1320		"	"	10.0	91°-	-23.0	-33.0		1764.7		-9	+1320	275,678	1,757,607	
53	990		"	"	9.8	91°-	-17.3	-27.1		1770.6		-7	+990	275,680	1,757,277	
54	660		"	"	8.2	91°-	-11.5	-19.7		1778.0		-4	+660	275,683	1,756,947	
55	330		"	"	12.4	-		-12.4		1785.3		-2	+330	275,685	1,756,617	
56	0		"	"	5.4	-		-5.4		1792.3	π	0	0	275,687	1,756,287	
57	330		261°27.2'	+8.8°	2.5	89°-	+5.8	+3.3		1801.0		+1	-330	275,688	1,755,957	
58	660		"	"	5.8	89°-	+11.5	+5.7		1803.4		+3	-660	275,690	1,755,627	
59	990		"	"	10.0	89°-	+17.3	+7.3		1805.0		+4	-990	275,691	1,755,297	
60	1320		"	"	12.8	89°-	+23.0	+10.2		1807.7		+6	-1320	275,693	1,754,967	
61	1650		"	"	11.8	89°-	+28.8	+17.0		1814.7		+7	-1650	275,694	1,754,637	
7F	1680		260°57.8'	+8.8°	11.1	89°-	+29.3	+18.2		1815.9		-7	-1680	275,680	1,754,607	275,685 + 1,754,590 4-way Intersect.
62	1980		261°27.2'	+8.8°	7.5	89°-	+34.6	+27.1		1824.8		+9	-1980	275,696	1,754,307	

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DATE	12/15/80	INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE
AREA	Oklahoma	G. Cotcamp		J. Cruz		6834		Guc. ulw		9	5
		TOPO MAP	STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER		
		Putnam 15	Oklahoma	Custer		15N	16W		L. 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			
									1797.7									
63	2310		261° 27.2'	+8.8°	7.8	89° -	+40.3	+32.5		1830.2		+10	-2310	275,697	1,753,977			
64	2640		261° 27.2'	+8.8°	9.1	89° -	+46.1	+37.0		1834.7	TP	+12	-2640	275,699	1,753,647			
64	2640				4.4	89° 6'	+41.5	+37.1			TP							
	1650		81° 26.2' +180°	+8.8°	+8.4	-		+8.4	1843.1		BS	+7	-1650					
	1650				+13.4	89° 30'	-4.8	+8.6			BS							
65	1320		81° 26.2'	+8.8°	4.2	-		-4.2		1838.9		-5	+1320	275,701	1,753,317			
66	990		"	"	0.8	-		-0.8		1842.3		-4	+990	275,702	1,752,987			
67	660		"	"	0.5	-		-0.5		1842.6		-3	+660	275,703	1,752,657			
68	330		"	"	1.1	-		-1.1		1842.0		-1	+330	275,705	1,752,327			
69	0		"	"	5.4	-		-5.4		1837.7	TP	0	0	275,706	1,751,997			
70	330		261° 13.3'	+9.0°	11.7	91° -	-5.8	-17.5		1825.6		+1	-330	275,707	1,751,667			
71	660		"	"	12.2	91° 30'	-17.3	-29.5		1813.6		+3	-660	275,709	1,751,337			
72	990		"	"	12.9	91° 30'	-25.9	-38.8		1804.3		+4	-990	275,710	1,751,007			
73	1320		"	"	12.7	91° 30'	-34.5	-47.2		1795.9		+5	-1320	275,711	1,750,677			
74	1650	1649	"	"	8.8	91° 30'	-43.2	-52.0		1791.1		+6	-1649	275,712	1,750,348			
75	1980	1979	261° 13.3'	+9.0°	4.3	91° 30'	-51.8	-56.1		1787.0	TP	+8	-1979	275,714	1,750,018			
75	1980				14.5	91° 12'	-41.5	-56.0			TP							
	1980		81° 23' +180°	+9.0°	+9.0	TH	-9.9	-0.9	1786.1		BS	+13	-1980					
	1980				+4.9	89° 50'	-5.8	-0.9			BS							
76	1650		81° 23'	+9.0°	2.9	-		-2.9		1783.2		-11	+1650	275,716	1,749,688			

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Geosource Inc.

DATE 12/15/80	INSTRUMENT MAN G. Cotcamp	ROD MAN J. Cruz	PARTY NUMBER 6837	NOTES CHECKED BY GNC	LINE NO. 9	PAGE 6
AREA Oklahoma	TOPO MAP Putnam 15'	STATE Oklahoma	COUNTY Custer	TWP 15N	RANGE 16W	PPM
				PARTY MANAGER L. 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
									1786.1						
JL															
75	1395		81°56'	+9.0°	5.2	-		-5.2		1780.9		-23	+1395	275,704	1,749,433
77	1320		81°23'	+9.0°	5.9	-		-5.9		1780.2		-9	+1320	275,718	1,749,358
78	990		" "	"	9.7	-		-9.7		1776.4		-7	+990	275,720	1,749,028
79	660		" "	"	13.5	BH	-3.3	-16.8		1769.3		-4	+660	275,723	1,748,698
80	330		" "	"	12.2	-		-12.2		1773.9		-2	+330	275,725	1,748,368
81	0		" "	"	5.4	-		-5.4		1780.7	X	0	0	275,727	1,748,038
82	330		261°12.8'	+9.0°	1.9	-		-1.9		1784.2		+1	-330	275,728	1,747,708
83	660		" "	"	4.5	-		-4.5		1781.6		+2	-660	275,729	1,747,378
84	990		" "	"	1.9	-		-1.9		1784.2		+4	-990	275,731	1,747,048
85	1320		" "	"	2.6	TH	+6.6	+4.0		1790.1		+5	-1320	275,732	1,746,718
86	1650		" "	"	2.8	89°30'	+14.4	+11.6		1797.7		+6	-1650	275,733	1,746,388
87	1980		261°12.8'	+9.0°	6.9	89°30'	+17.3	+10.4		1796.5	TP	+7	-1980	275,737	1,746,061
87	1980		" "	"	10.3	89°24'	+20.7	+10.4			TP				
	1650		81°21.1'+180°	+9.0°	+5.1	88°30'	-33.6	-28.5	1768.0		BS	+10+1	-1650		
	1650		" "	"	+4.7	88°30'	-43.2	-28.5			BS				
88	1320		81°21.1'	+9.0°	6.2	88°30'	+26.9	+20.7		1788.7		-8	+1320	275,737	1,745,734
89	990		" "	"	3.0	88°30'	+20.2	+17.2		1785.2		-6	+990	275,739	1,745,404
90	660		" "	"	3.8	88°30'	+13.4	+9.6		1777.6		-4	+660	275,741	1,745,074
91	330		" "	"	1.4	-		-1.4		1766.6		-2	+330	275,743	1,744,744
92	0		" "	"	5.4	-		-5.4		1762.6	X	0	0	275,745	1,744,914

275,700 + 1,749,415
4-Way 275,700 el. 1780.

SURVEY NOTES-HIGH RESOLUTION DATA
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Geosource Inc.

DATE 12/15/80	INSTRUMENT MAN G. Cotcamp		ROD MAN J. Cruz		PARTY NUMBER 6837		NOTES CHECKED BY Cnc. rlu		LINE NO. 9	PAGE 7
AREA Oklahoma	TOPO MAP Putnam 15'	STATE Oklahoma	COUNTY Custer		TWP 15N	RANGE 16W	PPM	PARTY MANAGER L. 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 +	EAST +	COORDINATES		REMARKS
												SOUTH -	WEST -	Y	X	
												LAT.	DEP.			
									1768.0							
IL 7F	274		257°55'	+9.0°	5.4	-		-5.4		1762.6		-15	-274	275,730	1,744,140	275,730 + 1,744,140 4-Way Inter. @ 1762
93	330		261°20'	+9.0°	5.8	-		-5.8		1762.2		+2	-330	275,747	1,744,084	horiz. correct, y = +2'
94	660		" "	"	7.3	-		-7.3		1760.7		+4	-660	275,749	1,743,754	x = +17'
95	990		" "	"	9.6	-		-9.6		1758.4		+6	-990	275,751	1,743,424	
96	1320		" "	"	11.9	-		-11.9		1756.1		+8	-1320	275,753	1,743,094	
97	1650		261°20'	+9.2°	8.3	BH	-8.3	-16.6		1751.4	TP	+15+2	-1650+2	275,762	1,742,766	
97	1650				14.6	90°4'	-1.9	-16.5			TP					
	1650		81°22.3' + 180°	+9.2°	+4.9	89°30'	-19.2	-14.3	1737.1		BS	+16+2	-1650+2			
	1650				+9.8	89°10'	-24.0	-14.2			BS					
98	1320		81°22.3'	+9.2°	6.8	89°30'	+11.5	+4.7		1741.8		-13	+1320	275,767	1,742,438	
99	990		" "	"	3.5	-		-3.5		1733.6		-10	+990	275,770	1,742,108	
100	660		" "	"	5.2	-		-5.2		1731.9		-7	+660	275,773	1,741,778	
101	330		" "	"	5.6	-		-5.6		1731.5		-3	+330	275,777	1,741,448	
102	0		" "	"	5.4	-		-5.4		1731.7	TP	0	0	275,780	1,741,118	
103	330		261°18'	+9.2°	1.8	89°-	+5.8	+4.0		1741.1		+3	-330	275,783	1,740,788	
104	660		" "	"	4.0	88°-	+23.0	+19.0		1756.1		+6	-660	275,786	1,740,458	
105	990	989	" "	"	5.3	88°-	+34.5	+29.2		1766.3		+9	-989	275,789	1,740,129	
106	1320	1319	" "	"	7.2	88°-	+46.0	+38.8		1775.9		+12	-1319	275,792	1,739,799	
107	1650	1649	261°18'	+9.2°	9.7	88°-	+57.6	+47.9		1785.0	TP	+14+2	-1649+2	275,796	1,739,471	
107	1650		" "	"	4.9	88°10'	+52.8	+47.9			TP					

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 12/16/80	INSTRUMENT MAN G. Cotcamp		ROD MAN J. Cruz		PARTY NUMBER 6834		NOTES CHECKED BY vclw		LINE NO. 9	PAGE 8
AREA Oklahoma	TOPO MAP Putnam 15'	STATE Oklahoma	COUNTY Custer		TWP 15N	RANGE 16W	PPM	PARTY MANAGER L. 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.	
107										1785.0				
	2310		81°35.7' +180°	+9.2°	+12.9	84	+11.6	+24.5			BS	+32+2	-2310.32	
	2310				+15.0	90°14'	+9.4	+24.4	1809.4		BS			
108	1980		81°35.7'	+9.2°	11.0	84	-9.9	-20.9		1788.5		-27	+1980	275,803 1739,143
JL 7F	865 1730		82°8.9'	+9.2°	13.9	84	-8.7	-22.6		1786.8		-41	+1730	275,789 1,738,893 4-Way Intersect
109	1650		81°35.7'	+9.2°	15.2	84	-8.3	-23.5		1785.9		-23	+1650	275,807 1738,813
110	1320		"	"	12.0	90°30'	-11.5	-23.5		1785.9		-18	+1320	275,812 1738,483
111	990		"	"	10.8	90°30'	-8.6	-19.4		1790.0		-14	+990	275,816 1738,153
112	660		"	"	14.1	-	-	-14.1		1795.3		-9	+660	275,821 1737,823
113	330		"	"	8.0	-	-	-8.0		1801.4		-5	+330	275,825 1737,493
114	0		"	"	5.4	-	-	-5.4		1804.0	T	0	0	275,830 1737,163
115	330		261°31.8'	+9.2°	5.8	-	-	-5.8		1803.6		+4	-330	275,834 1736,833
116	660		"	"	8.1	-	-	-8.1		1801.3		+8	-660	275,838 1736,503
117	990		"	"	8.0	-	-	-8.0		1801.4		+13	-990	275,843 1736,173
118	1320		"	"	3.2	-	-	-3.2		1806.2		+17	-1320	275,847 1735,843
119	1650		"	"	6.1	-	-	-6.1		1803.3		+21	-1650	275,851 1735,513
120	1980		"	"	0.7	TH	+9.9	-9.2		1818.6		+25	-1980	275,855 1735,183
121	2310		261°31.8'	+9.2°	2.4	89°30'	+20.2	+17.8		1827.2	TP	+29+2	-2310+2	275,861 1734,855
121	2310				9.0	89°20'	+26.9	+17.9			TP			
	2310		81°0.3' +180°	+9.2°	+15.0	89°46'	-7.4	+5.6			BS	+8+1	-2310	
	2310				+12.2	89°50'	-6.7	+5.5	1832.7		BS			

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE		INSTRUMENT MAN		ROD MAN		PARTY NUMBER		NOTES CHECKED BY		LINE NO.	PAGE					
12/16/80		G. Cotcamp		T. Cruz		6834		Gwc. rlv		9	9					
AREA		TOPO MAP		STATE	COUNTY		TWP	RANGE	PPM	PARTY MANAGER						
Oklahoma		Putnam 15		Oklahoma	Custer		15N	16W		L. 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	
									1832.7							
122	1980		81° 0.3'	+9.2°	12.0	TH	+9.9	-2.1		1830.6		-7	+1980	275,863	1,734,525	
123	1660		" "	"	9.1	TH	+8.3	-0.8		1831.9		-6	+1650	275,864	1,734,195	
124	1320		" "	"	6.5	TH	+6.6	+0.1		1832.8		-5	+1320	275,865	1,733,865	
JL 7F	1065		81° 45'	+9.2°	0.3	-		-0.3		1832.4		-18	+1065	275,852	1,733,610	275,865 + 1,733,610 4-way Intersect. el. 1832.
125	990		81° 0.3'	+9.2°	1.2	-		-1.2		1831.5		-4	+990	275,866	1,733,535	
126	660		" "	"	3.0	-		-3.0		1829.7		-2	+660	275,868	1,733,205	
127	330		" "	"	4.6	-		-4.6		1828.1		-1	+330	275,869	1,732,875	
128	0		" "	"	5.4	-		-5.4		1827.3	π	0	0	275,870	1,732,545	
129	330		260° 58.3'	+9.2°	4.6	-		-4.6		1828.1		+1	-330	275,871	1,732,215	
130	660		" "	"	4.3	-		-4.3		1828.4		+2	-660	275,872	1,731,885	
131	990		" "	"	4.3	-		-4.3		1828.4		+3	-990	275,873	1,731,555	
132	1320		" "	"	3.1	-		-3.1		1829.6		+4	-1320	275,874	1,731,225	
133	1650		" "	"	0.3	TH	+8.3	+8.0		1840.7		+5	-1650	275,875	1,730,895	
134	1980		" "	"	5.5	89° 30'	+17.3	+11.8		1844.6		+6	-1980	275,876	1,730,565	
135	2310		260° 58.3'	+9.2°	12.8	89° 36'	+16.1	+3.3		1836.0	TP	+7	-2310	275,877	1,730,235	
135	2310		" "	"	14.1	89° 34'	+17.5	+3.4			TP					
	2310		80° 59.7' + 180°	+9.2°	+5.8	89° 26'	-22.8	-17.0			BS	+8	-2310			
	2310		" "	"	+15.0	89° 12'	-32.2	-17.2	1818.8		BS					
136	1980		80° 59.7'	+9.2°	5.2	89° 30'	+17.3	+12.1		1830.9		-7	+1980	275,878	1,729,905	
137	1650		" "	"	6.0	89° 30'	+14.4	+8.4		1827.2		-6	+1650	275,879	1,729,575	

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE 12/16/80	INSTRUMENT MAN G. Cotcamp		ROD MAN J. Cruz		PARTY NUMBER 6834		NOTES CHECKED BY Gwc rlw		LINE NO. 9	PAGE 10
AREA Oklahoma	TOPO MAP Putnam 15'	STATE Oklahoma	COUNTY Custer		TWP 15N	RANGE 16W	PPM	PARTY MANAGER L. 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.	
									1818.8					
138	1320		80°59.7'	+9.2°	0.3	-		-0.3		1818.5		-4	+1320	275,881 1,729,245
139	990		" "	"	111	-		-11.1		1807.7		-3	+990	275,882 1,728,915
140	660		" "	"	10.9	-		-10.9		1807.9		-2	+660	275,883 1,728,585
±	408		83°27'	+9.2'	4.4	-		-4.4		1819.4		-19	+408	275,886 1,728,333 4-way Intersect el. 1813.
141	330		80°59.7'	+9.2°	3.9	-		-3.9		1819.9		-1	+330	275,884 1,728,255
142	0				5.4	-		-5.4		1813.7	π	0	0	275,885 1,727,925
143	330		261°17.5'	+9.2°	11.4	-		-11.4		1807.4		+3	-330	275,888 1,727,595
144	660		" "	"	14.4	BH	-3.3	-17.7		1801.1		+6	-660	275,891 1,727,265
145	990		" "	"	5.6	91°-	-17.3	-22.9		1795.9		+8	-990	275,893 1,726,935
146	1320		" "	"	14.7	BH	-6.6	-21.3		1797.5		+11	-1320	275,896 1,726,605
147	1650		" "	"	13.4	-		-13.4		1805.4		+14	-1650	275,899 1,726,275
148	1980		" "	"	5.1	-		-5.1		1813.7		+17	-1980	275,902 1,725,945
149	2310		261°17.5'	+9.2°	9.4	TH	+11.6	+2.2			TP	+20	-2310	275,905 1,725,615
149	2310				4.6	89°30'	+6.7	+2.1		1820.9	TP			
	1650		81°14.2'+180°	+9.2°	+10.9	BH	+8.3	+19.2			BS	+13	-1650	
	1650				+14.3	90°10'	+4.8	+19.1	1840.0		BS			
150	1320		81°14.2'	+9.2°	14.0	-		-14.0		1826.0		-10	+1320	275,908 1,725,285
151	990		" "	"	10.5	-		-10.5		1829.5		-8	+990	275,910 1,724,955
152	660		" "	"	9.2	-		-9.2		1830.8		-5	+660	275,913 1,724,625
153	330		" "	"	7.8	-		-7.8		1832.2		-3	+330	275,915 1,724,295

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE	INSTRUMENT MAN	ROD MAN	PARTY NUMBER	NOTES CHECKED BY	LINE NO.	PAGE
12/16/80	G. Co. Camp	J. Cruz	6834	C.W.C. J.W.	9	11
AREA	TOPO. MAP	STATE	COUNTY	TWP	RANGE	PPM
Oklahoma	Putnam 15'	Oklahoma	Custer	15N	16W/17W	
					PARTY MANAGER	
					L. 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.	
									1840.0					
154	0				5.4	-		-5.4		1834.6	T	0	0	275,918 1,723,965
155	330		261° 10.7'	+9.2°	2.9	89° -	+5.8	+2.9		1842.9		+2	-330	275,920 1,723,635
156	660		" "	"	10.2	88° -	+23.0	+12.8		1852.8		+4	-660	275,922 1,723,305
156	925		260° 20'	+9.2°	2.9	88° 30'	+24.2	+21.3		1861.3		-8	-925	275,910 1,723,090
157	990		261° 10.7'	+9.2°	2.8	88° 30'	+25.9	+23.1		1863.1		+7	-990	275,925 1,722,975
158	1320		" "	"	2.2	88° 30'	+34.5	+32.3		1872.3		+9	-1320	275,927 1,722,695
159	1650	1649	261° 10.7'	+9.2°	6.8	88° 30'	+43.2	+36.4		1876.4	TP	+11	-1699.4	275,929 1,722,320
159	1650				9.7	88° 24'	+46.1	+36.4			TP			
	990		81° 23' +180°	+9.2°	+9.2	89° -	-17.3	-8.1	1868.3		BS	+10	-990+4	
	990				+5.1	89° 14'	-13.2	-8.1			BS			
160	660		81° 23'	+9.2°	5.9	89° -	+11.5	+5.6		1873.9		-7	+660	275,932 1,721,994
161	330		" "	"	1.0	TH	+1.7	+0.7		1869.0		-3	+330	275,936 1,721,664
162	0				5.4	-		-5.4		1862.9	T	0	0	275,939 1,721,334
163	330		261° 0.2'	+9.2°	13.8	BH	-1.7	-15.5		1852.8		+1	-330	275,940 1,721,004
164	660		" "	"	6.0	92° -	-23.0	-29.0		1839.3		+2	-660	275,941 1,720,674
165	990	989	261° 0.2'	+9.2°	3.0	92° -	-34.5	-37.5		1830.8	TP	+4	-989+4	275,943 1,720,349
165	990				14.5	91° 20'	-23.0	-37.5			TP			
	2640		81° 13.2' +180°	+9.9°	+11.8	-		+11.8	1842.6		BS	+29+1	-2640+4	
	2640				+14.9	89° 56'	-3.1	+11.8			BS			
166	2310		81° 13.2'	+9.9°	12.4	-		-12.4		1830.2		-25	+2310	275,948 1,720,023

horiz. correct. y=+11'
x=+10'
275,910 + 1,723,090
4-Way Intersect. el. 1860.

SURVEY NOTES-HIGH RESOLUTION DATA

GEO-445

Geosource Inc.

DATE	12/17/80	INSTRUMENT MAN	G. Co. camp	ROD MAN	J. Cruz	PARTY NUMBER	6834	NOTES CHECKED BY	awa xlw	LINE NO.	9	PAGE	12 of 13	
AREA	Oklahoma	TOPO MAP	Pitnam 15'	STATE	Oklahoma	COUNTY	Custer	TWP	15N	RANGE	17W	PPM	PARTY MANAGER	L. 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.	
									1822.6					
167	1980		81° 13.2'	+9.9°	11.3	-		-11.3		1831.3		-21	+1980	275,952 1,719,693
168	1650		"	"	10.1	-		-10.1		1832.5		-18	+1650	275,955 1,719,363
169	1320		"	"	9.9	-		-9.9		1832.7		-14	+1320	275,959 1,719,033
170	990		"	"	14.2	-		-14.2		1828.4		-11	+990	275,962 1,718,703
171	660		"	"	14.9	BH	-3.3	-18.2		1824.4		-7	+660	275,966 1,718,373
172	330		"	"	13.9	-		-13.9		1822.7		-4	+330	275,969 1,718,043
IF	117		88° 30'	+9.9°	7.1	-		-7.1		1835.5		-16	+116	275,957 1,717,829
173	0				5.4	-		-5.4		1837.2	TP	0	0	275,973 1,717,713
174	330		241° 3.4'	+9.9°	4.1	-		-4.1		1838.5		+3	-330	275,976 1,717,383
175	660		"	"	11.3	-		-11.3		1831.3		+5	-660	275,978 1,717,053
176	990		"	"	14.9	BH	-5.0	-19.9		1822.7		+8	-990	275,981 1,716,723
177	1320		"	"	14.9	90° 30'	-11.5	-26.4		1816.2		+11	-1320	275,984 1,716,393
178	1650		"	"	13.5	90° 30'	-14.4	-27.9		1814.7		+13	-1650	275,986 1,716,063
179	1980		"	"	10.8	90° 30'	-17.3	-28.1		1814.5		+16	-1980	275,989 1,715,733
180	2310		"	"	7.3	90° 30'	-20.2	-27.5		1815.1		+18	-2310	275,991 1,715,403
181	2640		211° 2.4'	+9.9°	11.2	BH	-13.2	-24.4		1818.2	TP	+21+3	-2640+5	275,997 1,715,078
181	2640		"	"	13.6	90° 14'	-10.7	-24.3			TP			
	320		81° 12.2' + 180°	+9.9°	+14.4	91° 24'	+32.2	+46.6	1867.8		BS	+14+3	-1320+5	
	330		"	"	+12.1	91° 30'	+34.5	+46.6			BS			
182	990		81° 12.2'	+9.9°	12.3	91° 30'	-25.9	-38.2		1826.6		-10	+990	276,004 1,714,753

275,950 + 1,717,820
4-way Intersect.

SURVEY NOTES-HIGH RESOLUTION DATA
GEO-445

Geosource Inc.

DATE 12/17/80	INSTRUMENT MAN G. Cotcamp	ROD MAN J. Cruz	PARTY NUMBER 6834	NOTES CHECKED BY Gwc. rlu	LINE NO. 9	PAGE 13 of 13
AREA OKLAHOMA	TOPO MAP Putnam 15'	STATE Oklahoma	COUNTY Custer	TWP 15N	RANGE 17W	PPM
PARTY MANAGER L.O. DAVES						

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.	
									1854.8					
183	660		81° 12.2'	+9.9°	10.2	9:30'	-17.3	-27.5		1837.3		-7	+660	276,007 1,714,423
184	330		" "	"	14.7	-		-14.7		1850.1		-3	+330	276,011 1,714,093
185	0				5.4	-		-5.4		1859.4	π	0	0	276,014 1,713,763
186	330		260° 43'	+9.9°	3.1	-		-3.1		1861.7		+1	-330	276,015 1,713,433
187	660		" "	"	3.8	-		-3.8		1861.0		+1	-660	276,015 1,713,103
IF	1203		260° 15.4'	+9.9°	4.7	-		-4.7		1860.1		-7+3	-1203+5	276,010 1,712,565
														EOL *9 276,010 + 1,712,565 Intersection of 1860.1 * *Line #8 page 14