

# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Teshkepuuk STATE/COUNTY Alaska BOOK NO. 4 PAGE 42 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY VERT. CLIENT USGS DATE 15 BY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						ELEVATION		LR OR DR	HORIZONTAL		REMARKS
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD		RIGHT TURNED HORIZONTAL ANGLE	LINE	
				SLOPE										
1	Δ	BARR MARK	2640		89 53 64	5.0		-0.5					1	TS 98 AND BARR
2					270 06 55	5.0				75.4			2	MARK Elev 75.6
3		Also TS 98											3	ARE ONE IN THE SAME !!
4		TS 97	2200		89 40 52	11		1.3		76.4			4	
5		96	1760		89 40 53	11		-1.1		74.0			5	
6		95	1320		89 47 23	11		-6.1		69.0			6	
7		94	880		90 33 52	11		-19.7		55.4			7	
8		93	440		91 05 20	11		-19.4		55.7			8	
9	⊗	92	-0-		90	5A				75.1			9	
10		91	440		92 49 20	11		-32.7		42.4			10	
11		90	880		91 05 43	11		-27.8		47.3			11	
12		89	1320		90 53 13	11		-31.4		43.7			12	
13		88	1760		90 35 31	11		-29.1		46.0			13	
14													14	
15													15	
16													16	
17													17	

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SYMBOLS    Δ = BACKSIGHT    ⊗ = INSTRUMENT SET-UP    SS = SIDESHOT    ⊙ = FORESIGHT

# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Teshkepuuk STATE/COUNTY ALASKA BOOK NO. 4 PAGE B OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 BY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	  	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	LINE
									SLOPE	HORIZ			
1		BATT WALK	3520		90	7.6						1	
2		& TS 98										2	
3												3	
4		99	3080		89 52 08	11		-6.4		76.8		4	
5		100	2640		90 01 22	11						5	
6		101	2200		90 03 50	11						6	
7		102	1760		90 03 00	11						7	
8		103	1320		89 57 42	11						8	
9		104	880		90 05 00	11						9	
10		105	440		89 37 40	11						10	
11		106	0		90	5.4			83.2			11	
12		107	440		89 26 34	11						12	
13		108	880		<del>89 40 46</del>	<del>11</del>						13	
14		<del>109</del>	<del>1320</del>		89 40 53	11		-6.1				14	
15					270 19 09	11				77.1		15	
16												16	
17												17	

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# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Teshokpuk STATE/COUNTY ALASKA BOOK NO. 4 PAGE 14 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 W.H. CREW NO. 1186

LINE	  	STATION	VERTICAL					ELEVATION		L/R OR DI	HORIZONTAL		REMARKS	
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST		ROD	RIGHT TURNED HORIZONTAL ANGLE		LINE
				SLOPE 										
1		SP 108	2640			89 31 46 11			-10.8				1	
2						270 28 18 11							2	
3		109	2200			89 46 51 11							3	
4		110	1760			89 50 00 11							4	
5		111	1320			89 43 31 11							5	
6		112	880			89 36 20 11							6	
7		113	440			89 16 16 11							7	
8		114	- 0 -			90 54				66.3			8	
9	off	114		250'		90 54							9	
10		115	440			89 15 35 11							10	
11		116	880			89 39 03 11							11	
12		117	1320			89 44 10 11							12	
13		118	1760			89 47 00 11							13	
14		119	2200			89 05 44 11							14	
15		120	2640			88 48 20 11							15	
16		121	3080			88 48 12 11			53.5		19.8		16	
17						291 11 53 11							17	

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SYMBOLS

= BACKSIGHT

= INSTRUMENT SET-UP

= SIDESHOT

= FORESIGHT

# HORIZONTAL AND VERTICAL SURVEY NOTES

4

GSI AREA Tesholokpak STATE/COUNTY ALASKA BOOK NO. 4 PAGE 18 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 5 BY 4 MO 81 YR  
 SURVEYOR M. O'BOADY INSTRUMENT DESC/SERIAL NO. T-2 wild CREW NO. 1186

LINE	<input type="checkbox"/> $\Delta$ <input type="checkbox"/> SS <input type="checkbox"/> $\odot$	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			LR OR DR	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST			
1	$\Delta$	SP 121	1320		89 23 20	11						1	
2					270 36 48	11						2	
3		122	3800		89 10 21	11						3	
4		123	440		88 21 24	11						4	
5		Intersection			87 56 21	11			116.3			5	
6		D-81 123+145			<del>87 56 21</del>							6	
7		33-81 440+149										7	
8	$\Delta$	124	-0-		90	5.5			116.7			8	
9		125	440		91 03 08	11						9	
10		126	980		91 50 03	11						10	
11		127	1320		91 18 00	11						11	
12		128	1760		90 58 24	11						12	
13		129	2200		90 20 50	11						13	
14	$\odot$	130	2640		90 12 46	11						14	
15					21.9 47 16	11				96.0		15	
16												16	
17												17	

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# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Teshkepuuk STATE/COUNTY ALASKA BOOK NO. 4 PAGE 16 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 81 YR  
 SURVEYOR M. O'GEADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE		STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE 					HORIZ 	INST			
1		SP 130	3685		90 01 19			+12.1				1	
2					269 58 43							2	
3		131	3245		90 06 41							3	
4		132	2805		90 29 03							4	
5		133	2365		90 46 29							5	
6		134	1925		90 51 00							6	
7		135	1485		90 47 41							7	
8		136	1045		90 36 55							8	
9		137	605		90 09 31							9	
10		138	165		88 41 23							10	
11		TP 138+165	0		90	5.5		108.1				11	
12		139	275		89 02 25							12	
13		140	715		90 08 12							13	
14		141	1155		90 35 00							14	
15		142	1595		90 36 30							15	
16		143	2035		90 50 48							16	
17												17	

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# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Teshkeput STATE/COUNTY ALASKA BOOK NO. 4 PAGE 17 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 BY 4 MO 81 YR  
 SURVEYOR M. O'Boonoy INSTRUMENT DESC/SERIAL NO. T-2 wild CREW NO. 1186

LINE	<input type="checkbox"/> $\Delta$ <input type="checkbox"/> $\nabla$ <input type="checkbox"/> SS <input type="checkbox"/> $\odot$	STATION	VERTICAL						HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST		
1		144	2475			90 51 53	11					1
2	$\odot$	145	2915			90 45 24	11		-49.3			2
3						269 14 35	11			58.8		3
4												4
5	$\Delta$	SP 145	1320			91 20 40	11		+41.9			5
6						268 39 13	11					6
7		146	880			91 54 16	11					7
8		147	440			91 04 42	11					8
9	$\nabla$	148	-0-			90	5.5			100.8		9
10		149	440			89 01 32	11					10
11		150	880			89 19 06	11					11
12		151	1320			89 29 50	11					12
13		152	1760			89 38 38	11					13
14	$\odot$	153	2200			89 46 58	11		-2.6			14
15						270 13 02	11			98.2		15
16												16
17												17

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Teshkeput STATE/COUNTY ALASKA BOOK NO. 4 PAGE 18 OF 7  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 BY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ◎	STATION	VERTICAL						HORIZONTAL		REMARKS			
			DISTANCE		<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		RIGHT TURNED HORIZONTAL ANGLE	LINE	
			SLOPE	HORIZ						INST				ROD
1	Δ	SP 153	1760		89 29 20	11		-4.8				1		
2					270 30 30	11						2		
3		15A	1320		89 35 13	11						3		
4		155	680		89 26 50	11						4		
5		156	440		88 52 50	11						5		
6		Interstation										6		
7		SNPR-8 P244		290'	88 19 47	11						7		
8		D-81 SP 156+145										8		
9	Δ	157	-0-		90	55		93.5				9		
10		158	440	"	90 30 50	11						10		
11		159	880		90 21 21	11						11		
12		160	1320		90 13 52	11						12		
13		161	1760		90 10 45	11						13		
14		162	2200		90 04 20	11						14		
15	◎	163	2640		90 04 06	11		-14.0		7A		15		
16					269 55 45	11						16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Teshik put STATE/COUNTY ALASKA BOOK NO. 4 PAGE 19 OF 8  
 LINE/LOOP NO. D-81 TYPE SURVEY vert CLIENT USGS DATE 15 BY 4 MO 81 YR  
 SURVEYOR M.O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> K <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST			
1	Δ	SP 163	2035		90 07 17		+15.2				1		
2					269 52 53						2		
3		164	1595		90 11 27						3		
4		165	1155		90 14 00						4		
5		166	715		90 19 25						5		
6		167	275		89 54 41						6		
7	K	JP 167+275	-0-		90 00 00	5.4		94.6			7		
8		168	165		90 39 35						8		
9		169	605		90 09 37						9		
10		170	1045		90 05 02						10		
11		171	1485		89 51 20						11		
12		172	1925		89 44 26						12		
13	⊙	173	2365		89 52 33		-5.8				13		
14					270 07 12			28.7			14		
15											15		
16											16		
17											17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Harrison Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 10 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 16 DY 4 MO 81 YR  
 SURVEYOR K. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 wild CREW NO. 186

LINE	  	STATION	VERTICAL						HORIZONTAL		REMARKS			
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR D/I	RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1		SP 173	1925		90 23 18	11		+29.0				1		
2					269 36 49	11						2		
3		174	1485		90 33 44	11						3		
4		175	1045		90 52 35	11						4		
5		176	603		91 34 26	11						5		
6		177	165		91 57 00							6		
7		TP 177+165	0 -		90	5.0		112.7				7		
8		SP 178	215		90 20 31	11						8		
9		INTERSECT										9		
10		D-81 178+275		550	90 19 00	11						10		
11		SURV-5 VP 277										11		
12		SP 179	715		90 18 31	11						12		
13		180	1155		90 25 36	11						13		
14		181	1595		90 26 43	11						14		
15		182	2035		90 22 12	11						15		
16		183	2475		90 26 48	11						16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Harrison Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 10 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	  	STATION	VERTICAL						HORIZONTAL		REMARKS				
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DJ	RIGHT TURNED HORIZONTAL ANGLE	LINE	
				SLOPE	HORIZ					INST					ROD
1		SP 184	2915			90 16 56	11		-25.2					1	
2						269 42 52	11							2	
3														3	
4		SP 184	3080			89 52 07	11		+3.7					4	
5						270 08 02	11							5	
6		185	2640			89 47 00	11							6	
7		186	2200			89 46 52	11							7	
8		187	1760			89 3A 26	11							8	
9		188	1320			89 30 42	11							9	
10		189	880			89 31 30	11							10	
11		190	440			89 22 03	11							11	
12		191	-0-			90	5.5			91.1				12	
13		192	440			88 45 10	11							13	
14		193	880			89 03 26	11							14	
15		194	1320			89 05 14	11							15	
16		195	1760			89 10 38	11							16	
17														17	

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Harrison Bay STATE/COUNTY Alaska BOOK NO. 1 PAGE 52 OF 11  
 LINE/LOOP NO. D-21 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 8 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE		STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			LR OR DJI	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST			
1		SP 196	2260		89 17 21	11		+16.4				1	
2					270 42 28	11			107.4			2	
3												3	
4		SP 196	3080		89 46 24	11		-1.4				4	
5					270 13 30	11						5	
6		197	2640		89 48 13	11						6	
7		198	2200		89 47 25	11						7	
8		199	1760		89 43 12	11						8	
9		200	1320		89 47 38	11						9	
10		201	880		89 40 35	11						10	
11		202	440		89 21 21	11						11	
12		203	-0-		90	5.4			106.1			12	
13		204	440		89 05 02	11						13	
14		205	880		89 32 48	11						14	
15		206	1320		89 54 36	11						15	
16		207	1760		90 02 43	11						16	
17												17	

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SYMBOLS

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# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Harrison Bay STATE/COUNTY ALASKA BOOK NO. 4 PAGE 53 OF       
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 BY A MO 81 YR  
 SURVEYOR H. O'GRADY INSTRUMENT DESC/SERIAL NO.      CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> ⚓ <input type="checkbox"/> ⊙	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DJ		RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1		208	2200		90 01 49							1		
2	⊙	209	2650		90 07 26			-16.6				2		
3					269 52 36				89.5			3		
4												4		
5	Δ	SP 209	2690		89 39 54			-4.6				5		
6					210 20 06							6		
7		210	2200		89 43 56							7		
8		211	1760		89 49 21							8		
9		212	1320		89 47 49							9		
10		213	880		89 37 00							10		
11		214	440		89 14 18							11		
12	⚓	215	0		90	5.5			84.9			12		
13		216	440		89 22 21							13		
14		217	880		89 45 10							14		
15		218	1320		89 49 55							15		
16		219	1760		89 49 46							16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Harrison Bay STATE/COUNTY ALASKA BOOK NO. 4 PAGE 54 OF 13  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 81 YR  
 SURVEYOR M. O'BRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ○	STATION	VERTICAL						HORIZONTAL		REMARKS				
			DISTANCE		<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DR	RIGHT TURNED HORIZONTAL ANGLE	LINE	
			SLOPE	HORIZ						INST					ROD
1		SP 220	2200			89 48 48	11						1		
2	○	221	2640			89 55 12	11	-7.2					2		
3						210 09 44	11			77.8			3		
4													4		
5	Δ	SP 221	3080			89 49 24	11	+1.3					5		
6						210 10 39	11						6		
7		222	2640			89 49 18	11						7		
8		223	2200			89 48 20	11						8		
9		224	1760			89 46 43	11						9		
10		225	1320			89 41 50	11						10		
11		226	880			89 35 36	11						11		
12		INTERSECTION				89 30 58	11	-5.3		73.7			12		
13		D-81 226+202		67B									13		
14		I2-81 3AA+235											14		
15		227	440			89 22 22	11						15		
16	Δ	228	-0-			90	54		79.0				16		
17	○	INTERSECTION		67B		89 30 58	11			73.7			17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Tesho Ruck STATE/COUNTY Alaska BOOK NO. 4 PAGE 14 OF 14  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 12 BY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		LINE	REMARKS		
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION				LR OR DR	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST				
1	Δ	BAVY MARKER	-0-		90° 00' 00" 5.9						1	ELEV.		
2		# 81522									2	85.2		
3											3			
4	Δ	BAVY MARKER	-0-		90° 00' 00" 5.9			91.1			4			
5		81522									5			
6	⊙	♀ INTERSECTION		2060	90° 11' 46" 11		-18.0		73.1		6	73.1 - 73.7 = 0.6 tie		
7		D-81 & 12-81			269 48 07 11						7			
8											8			
9											9			
10	Δ	INTERSECTION		678	89 30 58 11		+5.3				10			
11											11			
12	Δ	228	-0-		90 5.9			78.4			12			
13											13			
14											14			
15											15			
16											16			
17											17			

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Harrison Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 56 OF 56  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 81 YR  
 SURVEYOR K. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> ⚓ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS			
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR D/I	RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1		229	440		89 21 25	11						1		
2		230	880		89 41 07	11						2		
3		231	1320		89 57 00	11						3		
4		232	1760		90 06 52	11						4		
5		233	2200		90 05 33	11						5		
6		234	2640		90 03 35	11						6		
7	⊙	235	3080		89 56 41	10		-6.0				7		
8					20 04 13	10					12.4	8		
9												9		
10	Δ	SP 235	2640		89 52 10	10		+3.9				10		
11					270 07 48	10						11		
12		236	2200		89 52 14	7.5						12		
13		237	1760		89 51 55	7.5						13		
14		238	1320		89 57 30	7.5						14		
15		239	880		90 11 20	7.5						15		
16		240	440		90 14 43	7.5						16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Harrison Bay STATE/COUNTY ALASKA BOOK NO. 4 PAGE 19 OF 16  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	  	STATION	VERTICAL						HORIZONTAL		REMARKS			
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR D/I	RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1		241	-0-		90	5.5						1		
2		242	440		90 55 54	7.3						2		
3		243	880		90 40 00	7.3						3		
4		244	1320		90 35 02	7.3						4		
5		245	1760		90 37 06	7.3						5		
6		246	2200		90 30 36	7.3						6		
7		247	2640		90 27 33	10.	-31.0					7		
8					269 32 30	10.			45.3			8		
9												9		
10		SP247	2640		89 50 14	10	+24					10		
11					210 09 49	10						11		
12		248	2200		89 52 08	7.5						12		
13		249	1760		89 50 15	7.5						13		
14		250	1320		89 42 21	7.5						14		
15		251	880		89 41 21	7.5						15		
16		252	440		89 39 44	7.5						16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HARRISON Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 18 OF 17  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 81 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS			
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR D/I	RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1	Δ	253	-0-		90	54			47.0			1		
2		254	440		89 53 04	7.3						2		
3		255	880		89 56 35	7.3						3		
4		256	1320		89 57 19	7.3						4		
5		257	1760		89 59 31	7.3						5		
6		258	2200		90 00 54	7.3						6		
7	⊙	259	2640		89 58 09	10.		-8.4				7		
8					270 01 45	10.0				39.1		8		
9												9		
10	Δ	259	2690		89 51 52	10		+3.6				10		
11					276 08 03	10						11		
12		260	2200		89 53 40	7.5						12		
13		261	1760		89 53 04	7.5						13		
14		262	1320		89 51 00	7.5						14		
15		263	880		89 44 52	7.5						15		
16		264	440		89 22 48	7.5						16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Harrison Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 59 OF 18  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 15 DY 4 MO 31 YR  
 SURVEYOR H. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2wild CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS	
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE
			SLOPE	HORIZ					INST	ROD		
1	<input checked="" type="checkbox"/>	265	-0-		90	55		42.8			1	
2		266	440		89 59 10	7.3					2	
3		267	880		89 59 38	7.3					3	
4		268	1320		89 49 14	7.3					4	
5		269	1760		89 52 20	7.3					5	
6		270	2200		89 51 13	7.3					6	
7		271	2640		89 51 53	7.3					7	
8	<input checked="" type="checkbox"/>	272	3080		89 52 35	10.	-3.2				8	
9					270 07 14	10.		39.5			9	
10											10	
11											11	
12											12	
13											13	
14											14	
15											15	
16											16	
17											17	

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Arrivison Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 00 OF 19  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert. CLIENT USGS DATE 16 BY 4 MO 81 YR  
 SURVEYOR M. O'BRADY INSTRUMENT DESC/SERIAL NO. T-2 wild CREW NO. 1126

LINE	  	STATION	VERTICAL						HORIZONTAL		REMARKS			
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE
									HORIZ	INST				
1		SP 272	3080		89 58 08	10		+8.1				1		
2					270 02 01	10						2		
3		273	2640		89 56 40	11						3		
4		274	2200		90 02 55	11						4		
5		275	1760		90 03 14	11						5		
6		276	1320		89 51 00	11						6		
7		277	880		89 45 55	11						7		
8		278	440		89 19 20	11						8		
9		279	-0-		90	5.5		+7.6				9		
10		280	440		89 12 34	11						10		
11		281	880		89 33 30	11						11		
12		282	1320		89 46 07	11						12		
13		283	1760		89 44 54	11						13		
14		284	2200		89 48 32	11						14		
15		285	2640		89 48 03	11						15		
16	①	286	3080		89 43 54	11		+3.6	51.3			16		
17					270 16 14	11						17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

20

GSI AREA Harrison Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 61 OF         
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 16 DY 4 MO 81 YR  
 SURVEYOR MIS'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186

LINE	<input type="checkbox"/> BS <input type="checkbox"/> SS <input type="checkbox"/> FS	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE										
1	<input checked="" type="checkbox"/> A	SP 286	3520		89 57 56	11		+8.6					1	
2					270 02 01	11							2	
3		287	3020		89 56 11	11							3	
4		288	2640		89 53 03	11							4	
5		289	2260		89 55 42	11							5	
6		290	1760		89 56 06	11							6	
7		291	1320		89 56 45	11							7	
8		292	880		90 02 17	11							8	
9		293	440		90 04 21	11							9	
10	<input checked="" type="checkbox"/> A	294	-0-		90	5.4			59.9				10	
11		295	440		89 58 26	11							11	
12		296	880		89 52 42	11							12	
13		297	1320		89 52 21	11							13	
14		298	1760		90 05 40	11							14	
15		299	2200		90 08 34	11							15	
16	<input checked="" type="checkbox"/> C	300	2640		90 13 02	11		-22.4		37.5			16	
17					289 44 59	11							17	

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# HORIZONTAL AND VERTICAL SURVEY NOTES

21

GSI AREA Harrison Bay STATE/COUNTY ALASKA BOOK NO. 4 PAGE 62 OF         
 LINE/LOOP NO. D-31 TYPE SURVEY Vert. CLIENT USGS DATE 16 BY 4 MO 8 YR 81  
 SURVEYOR M. OGRADY INSTRUMENT DESC/SERIAL NO. T-2 wild CREW NO. 1186

LINE	<input type="checkbox"/> $\Delta$ <input type="checkbox"/> $\nabla$ <input type="checkbox"/> SS <input type="checkbox"/> $\odot$	STATION	VERTICAL					ELEVATION		L/R OR DI	HORIZONTAL		REMARKS	
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST		ROD	RIGHT TURNED HORIZONTAL ANGLE		LINE
				SLOPE										
1	$\Delta$	SP 300	2200		89 47 30	11		+2.9				1		
2					270 12 37	11						2		
3		301	1760		89 46 57	11						3		
4		302	1320		89 33 22	11						4		
5		303	880		89 33 13	11						5		
6		304	440		89 12 32	11						6		
7	$\Delta$	305	- J -		90	5.5		40.4	1			7		
8		306	440		89 20 35	11						8		
9		307	880		89 34 00	11						9		
10		308	1320		89 47 58	11						10		
11		309	1760		89 50 40	11						11		
12	$\odot$	310	2200		90 02 55	11		-12.8				12		
13					270 09 10	11			27.6			13		
14												14		
15	$\Delta$	SP 310	3080		89 50 56	11		+2.7				15		
16					270 09 19	11						16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HARRISON BAY STATE/COUNTY Alaska BOOK NO. 4 PAGE 63 OF 22  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 16 BY 4 MO 81 YR  
 SURVEYOR M.O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 Wild CREW NO. 1186





LINE	  	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE 										
1		311	2640		89 52 45	11						1		
2		312	2200		89 50 44	11						2		
3		313	1760		89 49 24	11						3		
4		314	1320		89 45 30	11						4		
5		315	880		89 38 56	11						5		
6		316	440		89 16 21	11						6		
7		317	-0-		90	5.5		30.2				7		
8		ARTHUR TRI-STATION		3000+	90°	0.0			30.2			8	Elev. 27.0	
9		1952										9		
10		318	440		89 05 31	11						10	30.2-27.0 = 3.2 tie	
11		Well location		740'	90	4.1			22.9			11		
12		318+299										12		
13		flange										13		
14		flange										14		
15		flange										15		
16		flange		740	90							16		
17		VALVE	up 6.5'									17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Harrison Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 64 OF 23  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 16 BY 4 MO 81 YR  
 SURVEYOR M. OGRADY INSTRUMENT DESC/SERIAL NO. T-2 wild CREW NO. 1186

LINE		STATION	VERTICAL					ELEVATION		LR OR DR	HORIZONTAL		REMARKS	
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST		ROD	RIGHT TURNED HORIZONTAL ANGLE		LINE
				SLOPE										
1		319	880		89 41 25							1		
2		320	1320		89 57 00							2		
3		311	1760		89 58 42							3		
4		322	2200		89 59 42							4		
5		323	2610		89 57 51		-9.2					5		
6					210 02 03			17.7				6		
7												7		
8		SP 323	880		89 32 30		+3.9					8		
9					210 27 28							9		
10		324	440		89 51 33							10		
11		SP 325	-0-		90 54			21.7	16.3			11		
12		TS 326	440		89 55 00		-10.4		11.3			12		
13		TS 327	886		89 58 06		-10.0		11.7			13		
14		TS 328	1320		90 04 00		-12.5		9.2			14		
15		TS 329	1760		90 03 55		-12.9		8.8			15		
16		TS 330	2200		90 03 30		-13.1		9.6			16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Amisano Bay STATE/COUNTY Alaska BOOK NO. 4 PAGE 62E OF 24  
 LINE/LOOP NO. D-81 TYPE SURVEY Vert CLIENT USGS DATE 16 BY 4 MO 8 YR  
 SURVEYOR M. O'GRADY INSTRUMENT DESC/SERIAL NO. T-2 wild CREW NO. 1186

LINE	<input type="checkbox"/> $\Delta$ <input type="checkbox"/> SS <input type="checkbox"/> $\odot$	STATION	VERTICAL						ELEVATION		LR OR DR	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
			SLOPE	HORIZ										
1		TS 331	2140		90 02 43			-12.9		88			1	
2		332	3080		90 02 10			-12.7		9.0			2	
3		333	3920		90 01 40			-12.5		9.2			3	
4		334	3960		89 52 47			-2.4		19.3			4	
5		335	4400		89 52 08			-0.5		21.2			5	
6		336	4840		89 53 21			-1.2		20.5			6	
7		337	5280		89 56 30			-5.1		16.6			7	
8													8	
9													9	
10													10	
11													11	
12													12	
13													13	
14													14	
15													15	
16													16	
17													17	

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