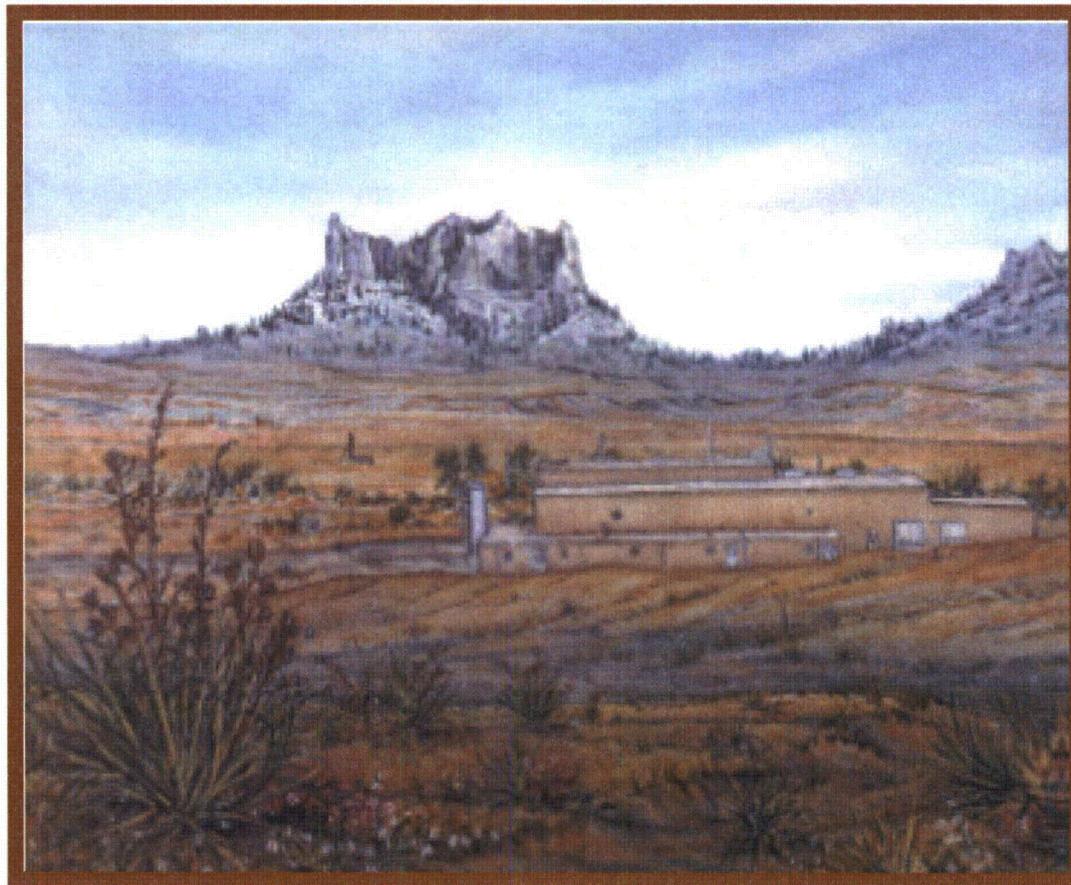


**Application for Amendment of
USNRC Source Materials License SUA-1534
Marsland Expansion Area
Crawford, Nebraska**

**Volume II
Technical Report
Appendices**



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May 2012

CROW BUTTE RESOURCES, INC.



Nuclear Regulatory Commission

Technical Report Appendices

Volume II

Marsland Expansion Area

May 2012



MEA Technical Report Appendices

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Appendix A

Water User Survey Information
for Active and Abandoned Water
Supply Wells within 2.25-Mile
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APPENDIX A
Water User Survey Information for Water Supply Wells
in 2.2-Mile Area of Review

Well Id	DNR Registration Number	Township Location	Range Location	Section Location	Screen Interval	Name of Strata	Water Quality	Owners Name	Street Address	City Address	State Address	Zip Code Address	Date	Permit Area	Contact Person	Telephone	Interviewer	Supply Source	Water Use Type	Well Status	Estimated Rate	History	Depth	Static Level	Drill Date	Casing Depth	Diameter	Pumping Method	Driller	Casing Type	Remarks	Easting	Northing	Remarks 2	Remarks 3	
0721		29	51	12				Tom Walters	112 Squaw Mound Rd.	Marsland	NE	69354	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well	Other	active		drillers pond								CBO drillers pond; off Squaw Mound Rd.	112014.8	440485.1				
0722		29	51	12				Tom Walters	112 Squaw Mound Rd.	Marsland	NE	69354	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well	livestock	active			160								follow REA poles	1124745.2	442385.0			
0723	G100831	29	51	11	180-220			Bonnie Chapman	1808 Oxford Dr.	Cheyenne	WY	82001	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well	domestic/livestock	active	10		220	150	19-May-99	180	9	submersible	Chubb	pvc	Wellings Rental, well is behind house	1119554.2	440690.5	Bonnie Chapman #307-632-3269		
0724		29	51	11				Bonnie Chapman	1808 Oxford Dr.	Cheyenne	WY	82001	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well	domestic/livestock	inactive											Wellings Rental, do not use well by corral	1119753.9	440732.5	Bonnie Chapman #307-632-3269		
0725	G094856	29	50	7	180-240			Bonnie Chapman	1808 Oxford Dr.	Cheyenne	WY	82001	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well	livestock	active	3		240	139	01-Jan-97	240	1	Windmill	Nelson	pvc	Bonnie Chapman #307-632-3269	1128286.3	442274.9			
0726		29	51	12				Bonnie Chapman	1808 Oxford Dr.	Cheyenne	WY	82001	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well		inactive			300	70-80							abandoned old oil test well, caved in			Bonnie Chapman #307-632-3269		
		29	51	10				Bonnie Chapman	1808 Oxford Dr.	Cheyenne	WY	82001	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Spring	livestock												Natural Springs, full since 1934					
0727		29	51	1				June Winget	808 2nd Street	Crawford	NE	69339	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well	livestock	active			180								pvc inside steel casing	1122822.4	446628.1			
0728	G088070	29	51	1	180-260			Geraldine Alloway	499 West Shore Village Rd.	Casper	WY	82601	24-Aug-10	Marsland	Tom Walters	308-665-2303(H) 308-430-5333(M)	Tatum Hlavacek	Well	livestock	active	10		260	112	01-Jan-96	200	1	submersible	Nelson	pvc		1121872.0	450812.2			
0729		29	50	6				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marsland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	livestock	active	10-15			180		01-Jan-60					leased by Tom Walters, spoke with Walters about	1128117.7	445802.1	well on 8-24-10		
0730		29	50	7				Bonnie Chapman	1808 Oxford Dr.	Cheyenne	WY	82001	24-Aug-10	Marsland	Tom Walters	308-665-2303(H); 308-430-5333(M)	Tatum Hlavacek	Well	Domestic	active											house used for vacation home	1126008.5	442756.2	old Cal Hollibaugh place	Bonnie Chapman #307-632-3269	
0731	G090120	29	50	18	120-180			Geraldine Alloway	499 West Shore Village Rd.	Casper	WY	82601	24-Aug-10	Marsland	Gerakline Alloway	307-237-8377(H); 307-259-0457(M)	Tatum Hlavacek	Well	livestock	active	3		180	106	01-Jan-96	147	1	submersible	Nelson	pvc	leased to Patti Hollibaugh	1125370.9	438301.7			
0732	G043958	29	50	17				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marsland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	Agricultural	active	1300		280	78	01-Jan-74	171	8	Turbine pump				1130680.7	436970.7			
0733		29	51	13				Pat Furman	3142 River Rd.	Marsland	NE	69354	23-Aug-10	Marsland	Pat Furman	308-665-2731(H); 308-430-1817(M)	Tatum Hlavacek	Well	livestock	active													1124205.4	435560.2		
0734	G094138	30	50	31	240-300			Geraldine Alloway	499 West Shore Village Rd.	Casper	WY	82601	24-Aug-10	Marsland	Tom Walters	308-665-2303(H); 308-430-5333(M)	Tatum Hlavacek	Well	livestock				300	1	01-Jan-98	300	9	cylinder pump	Nelson	pvc		1126994.5	453703.9			
0735	G148049	30	50	31	355-375			Patti Hollibaugh	971 Squaw Mound Rd.	Crawford	NE	69339	01-Sep-10	Marsland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek		livestock	active				375	210	01-Jan-07	375	9		Prosser	pvc	well registered in Patti Hollibaugh's name.	1127652.4	450927.5	ground owned by Dewayne Hollibaugh	
0736	G068634	29	50	17				Tomahawk Ranch & Cattle Co.	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	Agricultural	active	900		200	115	01-Jan-68	200	8					1133618.8	438066.8			
0737	G068635	29	50	17				Tomahawk Ranch & Cattle Co.	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	Agricultural	inactive	1200		340	110	01-Jan-73	340	8					1134975.2	437990.2			
0738	G097537	29	51	26	240-260			June Winget	808 W. 2nd Street	Crawford	NE	69339	24-Aug-10	Marsland	Tom Walters	308-665-2303(H); 308-430-5333(M)	Tatum Hlavacek	Well	livestock	active	3		260	178	01-Jan-98	260	9	Windmill	Chubb	pvc	land owned by June Winget, leased by Tom Walters.	1115236.8	425854.9	well registered in Lonnie Wilkins name		
0739	G113923	29	50	30	30-60			Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	livestock/garden	active	10		60	14	08-Nov-01		9	submersible	Chubb	pvc		1127342.4	425486.4			
0740	G108894	29	50	30	50-100			Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	Agricultural	active	850		110	8	02-Feb-01		6		Nelson	pvc		1127519.8	424396.8			
0741	G081600	29	50	29	50-170&170-190			Greg Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	domestic/livestock	active	20		190	42	01-Jan-94		2				house well; between the two houses	1131600.1	425727.9			
0742	G086157	29	50	31	40-60			Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	livestock	active	20		60	18	01-Jan-95		2	submersible	Chubb	pvc		1126845.0	423771.4			
0743	G106423	30	51	27	120-140			John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active			140	70	05-May-99	120	9	submersible	Chubb	pvc		1114725.2	461481.1			

APPENDIX A
Water User Survey Information for Water Supply Wells
in 2.2-Mile Area of Review

Well Id	DNR Registration Number	Township Location	Range Location	Section Location	Screen Interval	Name of Strata	Water Quality	Owners Name	Street Address	City Address	State Address	Zip Code Address	Date	Permit Area	Contact Person	Telephone	Interviewer	Supply Source	Water Use Type	Well Status	Estimated Rate	History	Depth	Static Level	Drill Date	Casing Depth	Diameter	Pumping Method	Driller	Casing Type	Remarks	Easting	Northing	Remarks 2	Remarks 3
0744		30	51	26				John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active			80	30	01-Jan-70	80	5	windmill/submersible	Chubb	pvc		1117989.3	459031.5		
0745		30	51	26				John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active												1118781.9	459206.3		
0746		30	51	36				John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active											state land	1121182.9	455178.1		
0747		30	51	35		Arikaree		John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active			225	200				Windmill submersible/Windmill				1117899.2	453783.8		
0748		29	51	3				John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active												1113046.1	448639.2		
0749		30	51	34				John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active												112776.7	452017.4		
0750		30	51	34				John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active												112710.4	454753.1		
0751		30	51	28				John Manning	1761 River Rd.	Marsland	NE	69354	03-Nov-10	Marsland	T.J. Manning	308-665-5333(M)	Tatum Hlavacek	Well	livestock	active												1105386.1	457186.6		
0752		29	50	29				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	domestic/livestock	active	10-20		200-300								barns	1132300.5	426415.9		
0753		29	50	29				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	domestic/livestock	active	50		200-300								by houses and barn	1130626.6	426414.2		
0754		29	50	29				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300								by houses and barn	1131539.7	425961.1		
0755		29	50	29				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1134050.4	427697.6		
0756		29	50	20				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active		old windmill fell over	200-300									1132462.9	432469.1		
0759		29	50	20				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1133622.5	429537.5		
0760		29	50	17				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	Agricultural	active	1000											1135189.3	439343.3		
0761		29	50	17				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20											1135341.9	439858.8		
0762		29	50	16				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300								state land	1138960.3	435635.4		
0763		29	50	16				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300								state land	1140565.5	437331.7		
0764		29	50	9				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1140646.2	441535.3		
0765		29	50	4				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1137611.0	447306.0		
0766		29	50	4				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1138031.7	449869.5		
0767		29	51	4				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300								not far from house	1107246.0	448328.8		
0768		29	51	4				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	Domestic	active		pumps good	200-300	60-120							house well	1107063.9	448333.0		
0769		29	51	4				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1105995.9	447845.8		
0770		29	51	5				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1102620.5	447700.3		
0771		29	51	5				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1103426.3	449697.7		
0772		29	51	9				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1108613.8	442822.8		
0773		29	51	9				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1106844.2	444555.1		
0774		29	51	4				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	domestic/livestock	active	10-20		200-300									1108808.9	449834.0		
0775	G095954	30	51	33				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10		220	117	06-Apr-98	200	9	submersible/Windmill	Chubb	pvc	submersible under windmill	1108465.3	454893.0		
0776		29	51	4				Bert Oetken	3211 River Rd.	Marsland	NE	69354	05-Nov-10	Marsland	Greg Oetken	308-665-2520	Tatum Hlavacek	Well	livestock	active	10-20		200-300									1105105.1	450500.5		
0777		29	50	30				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	domestic/garden	active	10-20		60									1127520.1	425634.3		
0778		29	50	30				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	garden	active	10-20		60									1127537.2	426508.6		
0779		28	51	12				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	livestock	active	3		140									1131744.1	410502.0		
0780		28	51	11				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	livestock	active	10-20		60									1127499.1	413063.4		
0781		28	51	2				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	livestock	active	10-20		60									1126319.7	416522.1		
0782	G134034	29	50	28				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	Agricultural	active	700		100	20	01-Jan-60						land bought from Chuck Turnbull	1139522.2	427841.1		
0783	G150312	29	50	28	50-70			Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	Domestic	active	15		70	24	01-Jan-08	70	9	submersible	Chubb	pvc	land bought from Chuck Turnbull	1139916.9	428674.7		
0784		29	50	27				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	livestock	inactive	10-20		40-60								usable but not being used, and bought from	1144451.6	427879.5		Chuck Turnbull
0785		28	51	1				Bruce Troester	3143 River Rd.	Marsland	NE	69354	08-Nov-10	Marsland	Bruce Troester	308-665-2353	Tatum Hlavacek	Well	livestock	inactive	3		140									1131834.3	418463.8		
0786	</																																		

APPENDIX A
Water User Survey Information for Water Supply Wells
in 2.2-Mile Area of Review

Well Id	DNR Registration Number	Township Location	Range Location	Section Location	Screen Interval	Name of Strata	Water Quality	Owners Name	Street Address	City Address	State Address	Zip Code Address	Date	Permit Area	Contact Person	Telephone	Interviewer	Supply Source	Water Use Type	Well Status	Estimated Rate	History	Depth	Static Level	Drill Date	Casing Depth	Diameter	Pumping Method	Drillor	Casing Type	Remarks	Eastings	Northings	Remarks 2	Remarks 3
0787		29	50	19				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	livestock	inactive	10		130		01-Jan-60			Windmill		pvc		1126168.2	433468.9		
0788		29	50	18				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	livestock	inactive	10		130-140		01-Jan-40			Windmill		steel		1128858.0	438296.6		
0790		29	50	8				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	livestock	active	10-20		160				Windmill		pvc		1134081.7	442038.2			
0791		29	50	9				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	livestock	active	10-20		160-170				Windmill		steel		1137066.2	441191.8			
0792		29	50	5				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	livestock	active	10		180				Windmill		steel	old well	1134397.3	445473.0			
0793		30	50	32				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	livestock	active	8-10		300				Windmill		pvc	windmill is not working	1133348.7	451314.8			
0794		30	50	31				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	domestic/livestock	active	10-15		300				submersible		pvc	well drilled between 1925-1930, house well	1129656.3	453879.2			
0795		30	50	31				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	domestic/livestock	active	10-15		350		01-Jan-90		submersible		pvc	well drilled in the 1990's, house well	1130072.5	453722.8			
0796		30	50	31				Dewayne Hollibaugh	1343 Canyon Dr.	Chadron	NE	69337	10-Nov-10	Marland	Dewayne Hollibaugh	308-432-6833	Tatum Hlavacek	Well	domestic/livestock	inactive	15		350		01-Jan-80		submersible		pvc	not in use, well drilled in the 1980's	1128914.6	452242.4			
0798		30	51	24				Melburn Franey	780 Perry Dr.	Chadron	NE	69337	11-Nov-10	Marland	Marvina Franey	308-432-8384	Tatum Hlavacek	Well	livestock	active	10-20		200		01-Jan-00		submersible	Chubb	pvc	Between Anderson and Franey-share well	1121934.8	465639.5	well drilled approximately 10 yrs ago		
0799		30	51	24				Melburn Franey	780 Perry Dr.	Chadron	NE	69337	11-Nov-10	Marland	Marvina Franey	308-432-8384	Tatum Hlavacek	Well	livestock	active	10-20		250				Windmill			1/4 mile south of Hough Rd. in middle of property, well is over 50 yrs old.	1122179.9	462541.3	Leonard Chubb works on windmill	old well	
0800		30	51	13				Jim Anderson	101 Linn Street	Crawford	NE	69339	12-Nov-10	Marland	Jim Anderson	308-665-2395	Tatum Hlavacek	Well	livestock	active							Windmill				1122174.9	469011.5	Leased by Travis Anderson		
0801	G116402	30	50	19				Mike Graves	132 Hough Rd.	Crawford	NE	69339	11-Nov-10	Marland	Mike Graves	308-665-1296	Tatum Hlavacek	Well	domestic/garden	active	15		220	70	06-Jul-02	220	9	submersible	Chubb	pvc		1126978.9	464282.7		
0802		30	51	25				Emmett Hale	1244 W. Belmont Rd.	Crawford	NE	69339	15-Nov-10	Marland	Emmett Hale	308-665-1714	Tatum Hlavacek	Well	livestock	active	10-20		180-200	80			Windmill	Chubb		started out being a domestic well in 1945	1121275.9	457656.7	house and buildings torn down, livestock ever sinc	old well	
0803		30	51	29				Edward Metz	211 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Edward Metz	308-665-1546	Tatum Hlavacek	Well	livestock	active							Windmill			drilled before 1984	1104542.3	461686.1			
0804		30	51	29				Edward Metz	211 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Edward Metz	308-665-1546	Tatum Hlavacek	Well	domestic/livestock	active			deep				submersible	Chubb		by house	1104468.4	461791.2			
0805		30	51	29				Edward Metz	211 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Edward Metz	308-665-1546	Tatum Hlavacek	Well	livestock	inactive	not good		shallow				Pump Jack			by house, do not use	1104640.5	461790.0	flow not great enough to handle	submersible	
0806		30	51	29				Edward Metz	211 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Edward Metz	308-665-1546	Tatum Hlavacek	Well	livestock	inactive							Windmill	Chubb		windmill is broken, do not use well	1104273.2	461660.7			
0807		30	51	29				David Verhage	112 Oetken Rd.	Crawford	NE	69339	14-Jan-11	Marland	David Verhage	308-665-2702	Tatum Hlavacek	Well	domestic/livestock	active	pumps good		200-220		01-Jan-76		submersible	Chubb	not cased	house well	1103080.4	458669.3			
0808		30	51	29				Russell Finneman	114 Oetken Rd.	Crawford	NE	69339	14-Jan-11	Marland	Russell Finneman	308-665-2756	Tatum Hlavacek	Well	domestic/livestock	active	pumps good		160	100	01-Jan-84		submersible	Chubb	galvanized	27 years old	1104002.9	458507.1			
0809		30	51	28				Adelaide Walther	361 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Adelaide Walther	308-665-1726	Tatum Hlavacek	Well	livestock	active	fairly good		300				Windmill			well drilled before 1947, located by barn	1109635.8	461243.9			
0810		30	51	28				Adelaide Walther	361 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Adelaide Walther	308-665-1726	Tatum Hlavacek	Well	domestic/livestock	active	1		>300		01-Jan-90		submersible	Prosser		well is at least 20 years old, by blue shed,	1109942.6	461542.5		house well	
0811		30	51	21				Adelaide Walther	361 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Adelaide Walther	308-665-1726	Tatum Hlavacek	Well	domestic/livestock	active	1/2		>300		01-Jan-90		Windmill	Panhandle Drilling		well drilled about 20 years ago	1110187.6	462030.2			
0812		30	51	21				Gary Fickel	327 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Gary Fickel	308-665-2439	Tatum Hlavacek	Well	domestic/livestock	active	good		260		01-Jan-71	220	submersible	Chubb		house well	1109662.5	465283.8			
0813		30	51	21				Gary Fickel	327 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Gary Fickel	308-665-2439	Tatum Hlavacek	Well	livestock	active			280		01-Jan-39		Windmill		steel		1109411.4	465224.8			
0814		30	51	21				Gary Fickel	327 E. Belmont Rd.	Crawford	NE	69339	14-Jan-11	Marland	Gary Fickel	308-665-2439	Tatum Hlavacek	Well	exploration	inactive								Crow Butte		CBO exploration hole	1106915.0	466807.6			

APPENDIX A
Water User Survey Information for Water Supply Wells
in 2.2-Mile Area of Review

Well Id	DNR Registration Number	Township Location	Range Location	Section Location	Screen Interval	Name of Strata	Water Quality	Owners Name	Street Address	City Address	State Address	Zip Code Address	Date	Permit Area	Contact Person	Telephone	Interviewer	Supply Source	Water Use Type	Well Status	Estimated Rate	History	Depth	Static Level	Drill Date	Casing Depth	Diameter	Pumping Method	Driller	Casing Type	Remarks	Easting	Northing	Remarks 2	Remarks 3	
0815		29	51	14				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	Domestic	active	5-6		140		01-Jan-55			submersible	Chubb	steel	house well, drill in 1955 or 1956	1119645.0	435833.7			
0816		29	51	14				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	4-6		140					submersible		steel	old well	1119247.7	435853.5			
0817		29	51	14				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	1-4		160			not cased to bottom		Windmill		steel		1119264.0	436157.5			
0818		29	51	15				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	1-2		140		01-Jan-50			Windmill	Chubb	steel		1112421.6	439735.3			
0819		29	51	22				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	1-2		140		02-Jan-00	cased to butte rock		Windmill	Pellren	steel	drilled in the early 1900's	1111644.7	435252.1			
0820		29	51	16				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	1-2		140		01-Jan-55			Windmill	Chubb	steel		1107876.9	438842.8			
0821		29	51	23				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	3		160		01-Jan-80			submersible	Peterson	pvc		1118356.5	432321.7			
0822		29	51	23				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	6-7		140		01-Jan-60			submersible	Chubb	steel		1116025.6	432731.4			
0823		29	51	26				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	1-2		100		01-Jan-50			Windmill	Chubb	steel		1116762.1	427344.1			
0824		29	51	35				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	Domestic	active	4		100		01-Jan-67			submersible	Chubb		by house, Hack's house	1116317.9	424238.9			
0825		29	51	21				Buzz Tollman	211 Squaw Mound	Marsland	NE	69354	14-Jan-11	Marsland	Buzz Tollman	308-665-2415	Tatum Hlavacek	Well	livestock	active	1-2		140		02-Jan-00			Windmill	Pellren	steel	drilled in the 1900's	1109095.9	432413.1			
0826		30	51	32				Scott and Robbie Diehl		Chadron	NE	69337	29-Oct-08	Marsland	Robbie Diehl		Tatum Hlavacek	Well	livestock	active								Pump Jack			leased by Oetkens	1102870.3	453954.3	does not know history of well		
0827		30	51	29				Scott and Robbie Diehl		Chadron	NE	69337	29-Oct-08	Marsland	Robbie Diehl		Tatum Hlavacek	Well	livestock	active											leased by Oetkens	1104365.7	457644.6	does not know history of well		
0828	G103966	30	51	29	140-160			Kenneth Kock	116 Oetken Rd	Crawford	NE	69339	14-Jan-11	Marsland	Kenneth Kock	308-665-1449	Tatum Hlavacek	Well	Domestic	active	10		160	31	10-Jul-99	100	9	submersible	Chubb	pvc	house well	1104688.8	458477.1			
0829		30	51	20				Alice Porter	801 1st Street	Crawford	NE	69339	15-Feb-11	Marsland	Alice Porter	308-665-3962	Tatum Hlavacek	Well	livestock	inactive								Windmill			windmill has broken, old abandoned homestead	1103921.4	462900.5			
0830	G118350	30	51	20				Alice Porter	801 1st Street	Crawford	NE	69339	15-Feb-11	Marsland	Alice Porter	308-665-3962	Tatum Hlavacek	Well	Domestic	active	10		300	145	09-Oct-02	300	9	electric	Chubb	pvc	house well, old abandoned homestead	1103884.8	463003.5			
0831		29	50	27				Dan Campbell	651 CR 63	Hemingford	NE	69348	24-Feb-11	Marsland	Deb Campbell	308-487-5330	Tatum Hlavacek	Well	Domestic	active											house well, old abandoned homestead	1144713.3	425895.6			
0832		29	50	34				Dan Campbell	651 CR 63	Hemingford	NE	69348	24-Feb-11	Marsland	Deb Campbell	308-487-5330	Tatum Hlavacek	Well	livestock	active											old abandoned homestead	1145622.6	422166.7			
0834		30	51	23				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	domestic/livestock	inactive	good		300		01-Jan-76			submersible		pvc	not used	1116102.0	462067.9			
0835		30	51	23				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	inactive	average		300					Windmill		pvc	windmill not standing anymore	1116080.4	462504.7	not used		
0836	G100106	30	51	23	200-220			Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	active	average		220	145	26-Mar-98		9	submersible		pvc		1120265.4	462677.2			
0837		30	51	23				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	active	average		300		01-Jan-69			submersible		pvc		1119802.0	465856.2			
0838		30	51	15		Arikaree		Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	active	average		300		01-Jan-64	20-30	6	Windmill		galvanized	tubular pipe	1112499.0	467397.3			
0839		30	51	15				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	active	average		300		01-Jan-58			Windmill		galvanized		1112158.6	467406.7			
0840		30	51	15				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	active	average		300		01-Jan-73		5	Windmill	Chubb	pvc		1114985.4	467289.5			
0841	G100105	30	51	22				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	active	average		220	155	25-Mar-99	220	9	submersible	Chubb	pvc		1111665.6	462209.9			
0842		30	51	14				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	inactive	average		300								pvc	cased hole, will be used for livestock well	1118307.0	469291.8	waiting for solar	
0843		30	51	22				Arlee Phillips	7600 Dodge Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Arlee Phillips	308-487-3876	Tatum Hlavacek	Well	livestock	active	average		300						Windmill		pvc	drilled before 1955	1115080.5	462090.2		
0844		29	50	35				Keri Votruba	8052 Cass Rd.	Hemingford	NE	69348	25-Feb-11	Marsland	Keri Votruba	308-760-1370(M); 308-487-5697(H)	Tatum Hlavacek	Well	livestock	active	6		170						Windmill		steel		1148015.3	418914.6		
0845		29	50	28				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	domestic/livestock	active									submersible				1137841.5	427243.4		
0846		29	50	33				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	livestock	active									Windmill				1137048.9	421179.0		

APPENDIX A
Water User Survey Information for Water Supply Wells
in 2.2-Mile Area of Review

Well Id	DNR Registration Number	Township Location	Range Location	Section Location	Screen Interval	Name of Strata	Water Quality	Owners Name	Street Address	City Address	State Address	Zip Code Address	Date	Permit Area	Contact Person	Telephone	Interviewer	Supply Source	Water Use Type	Well Status	Estimated Rate	History	Depth	Static Level	Drill Date	Casing Depth	Diameter	Pumping Method	Driller	Casing Type	Remarks	Eastings	Northings	Remarks_2	Remarks_3	
0847		28	50	6				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	livestock	Active								Windmill			1136345.2	414127.1				
0848		28	50	6				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	livestock	active								Windmill			1138992.0	416711.3				
0849		29	50	22				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	livestock	active								submersible			1142423.3	431322.9				
0850	G022646	29	50	22				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	Agricultural	active	840		200	71	01-Jan-62		8	Turbine pump			vertical shaft	1142735.9	432181.9			
0851	G000345A	29	50	22				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	Agricultural	active	500		140	60	10-Jun-04	140	8	submersible	Kelly-Deines Irrigation		144241.1	431350.1				
0852	G000345B	29	50	22				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	Agricultural	inactive								submersible			drilled in 2003 or 2004	1145455.9	432362.8			
0853	G126273	29	50	22				Steve Klaes	3333 River Rd.	Marsland	NE	69354	25-Feb-11	Marsland	Steve Klaes	308-665-1503	Tatum Hlavacek	Well	Agricultural	active	600		150	63	01-Jan-04	140	8	Gould Pump	Kelly-Deines Irrigation		1142384.3	434389.8				
0854		30	51	14				Monty Maginnis	36 Squaw Creek Rd.	Crawford	NE	69339	01-Mar-11	Marsland	Monty Maginnis	308-665-1522	Tatum Hlavacek	Well	domestic/livestock	active	4		310		01-Jan-89			submersible	Nelson	pvc	house well	1121332.7	471839.0			
0855		30	51	11				Monty Maginnis	36 Squaw Creek Rd.	Crawford	NE	69339	01-Mar-11	Marsland	Monty Maginnis	308-665-1522	Tatum Hlavacek	Well	livestock	active	3		220		02-Jan-00			Windmill			drilled in the early 1900's	1117275.9	474044.4	may not be cased below 20-30R		
0856		29	51	36										Marsland													Windmill			state land greater than 100 yrs. Old, leased by Furman's	112255.5	420726.5				
0857		29	51	25				Thomas Poole	8713 Kendall Ct.	Arvada	CO	80003	01-Mar-11	Marsland	Thomas Poole	303-431-6049	Tatum Hlavacek	Well	domestic/livestock	inactive	10		40-50					submersible	galvanized		1119931.4	424946.6	usable but inactive			
0858	G068633	29	50	15				Bert Oetken	360 Oetken Rd.	Crawford	NE	69339	01-Mar-11	Marsland	DNR Website								200	105	01-Jan-68		8				1142168.8	437589.0				
0859		29	51	27																		120	no water	01-Jan-20						cement block on top of well, cased down to butte	1114131.2	429920.5	rock, well is dry-no water			
0860		28	51	3				Robert Wehtje	291 CR 79	Hemingford	NE	69348	01-Mar-11	Marsland	Rose Wehtje	308-487-5340	Tatum Hlavacek	Well	livestock	active			500		01-Jan-70			Windmill			old oil test well	1122705.9	415992.2	filled with 2 cement plugs to bring depth up		
0861		30	50	19				Dugald Richardson	133 Hough Rd.	Crawford	NE	69339	02-Mar-11	Marsland	Dugald Richardson as per certified letter	308-665-1283	Tatum Hlavacek	Well	domestic/livestock/agriculture	active			40			6	6	submersible	galvanized			information as per certified letter				
0862	G89968	30	51	29	135-155			Nicole Stansinski	144 Oetken Rd.	Crawford	NE	69339	21-Mar-11	Marsland		308-665-970-785-2560	Tatum Hlavacek	Well	domestic/livestock	active	16		155	98	06-Aug-96		4.5	submersible	Chubb	pvc		1104113.1	459435.5			

Appendix B

Calibration Records for
Marsland Expansion area
Meteorological Station



AATA INTERNATIONAL, INC.

April 22, 2010

This meteorology station cost estimate was compiled using the most current prices available from Campbell Scientific, Met One Instruments, and Climatronics. Actual prices may vary depending on the ordering date. This cost estimate does not include taxes and shipping nor installation, maintenance, and repair. The estimate does not include any type of communication device such as cellular or satellite modems, but the data can be downloaded directly from the datalogger.

Meteorology Station Cost Estimate

<u>Item Description</u>	<u>Cost</u>
10 meter tower with base, cross arms, and guy wires	\$1,382.00
CR100 datalogger, enclosure, and hand display	\$2,060.00
Computer software (Loggernet)	\$599.00
70 Watt solar panel, regulator, and batteries	\$1000.00
Delta-T temperature sensors at 2 and 10 meters	\$525.00
Delta-T radiation shields	\$1,125.00
Relative humidity sensor and shield	\$670.00
Pyranometer and mount	\$485.00
Rain gage	\$396.00
Wind direction and speed	\$825.00
Consumables (zip ties, tape, poles, bolts, etc.)	\$100.00
Total	\$9,167.00

International Environmental Consultants

2240 Blake Street, Suite 210, Denver, Colorado 80205
Phone: 720-974-2550 Fax: 303-223-1333 Internet: <http://www.aata.com>

Meteorological Monitoring Station Calibration Report

Prepared for:

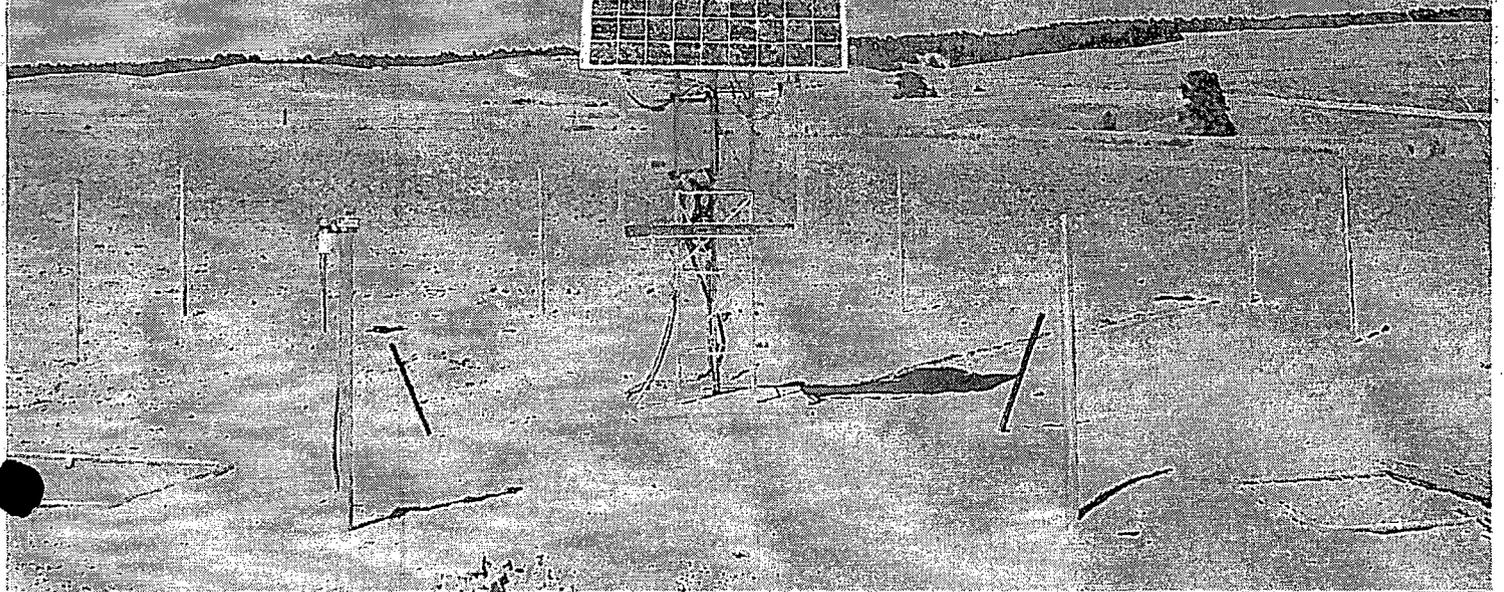
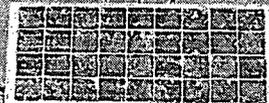


**Crow Butte Resources Inc.
Crawford Nebraska**

Prepared by:



**AATA International, Inc.
Denver and Fort Collins, Colorado, USA**



TEMPERATURE / Δ TEMPERATURE CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte **Date:** 8/22/2010 **Check One:**
Location: Crawford Nebraska **Start:** 10:20 **As Found:** ✓
Technician: Ethan Brown **End:** 11:20 **As Left:**

SENSOR INFORMATION

Make: Met One **2-Meter Probe SN:** K13981 (1 of 2)
Model: 062.MP **10-Meter Probe SN:** K13981 (2 of 2)
Operating Range: -50 to +50 C

CALIBRATION TEST EQUIPMENT

Item: Ertco-Eutechnics Thermistor Model 4400 (139000-45RS) **SN:** 306433
Item: Insulated water baths with mechanical stirring. **SN:** NA

PART B: CALIBRATION TEST RESULTS

Temperature Probe Calibration

Known Input		Observed Data Logger Response					
Water Bath	Temp. °C	2-m °C	2-m Error °C	Pass? Fail?	10-m °C	10-m Error °C	Pass? Fail?
Ice	0.28	0.28	0.00	PASS	0.28	0.00	PASS
Cool	25.74	25.70	-0.04	PASS	25.70	-0.04	PASS
Hot	49.53	49.52	-0.01	PASS	49.52	-0.01	PASS

Temperature Difference System Calibration

Known Input		Observed Response		
Water Bath	ΔT °C	2-10 ΔT °C	2-10 ΔT Error °C	Pass? Fail?
Ice	0.00	0.00	0.00	PASS
Cool	0.00	0.00	0.00	PASS
Hot	0.00	0.00	0.00	PASS

(NOTE: The water baths were constantly agitated with mechanical stirring during the calibration tests.)

(NOTE: During the ΔT calibration, both probes were placed together in the same bath.)

COMMENTS

To PASS, the temperature probes must have... Accuracy error = $\leq \pm 0.50$ °C per test point
To PASS, the ΔT system must have... Accuracy error = $\leq \pm 0.10$ °C per test point

PRECIPITATION GAUGE CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 8/22/2010 Check One:
Location: Crawford Nebraska Start: 9:32 As Found:
Technician: Ethan Brown End: 10:00 As Left:

SENSOR INFORMATION

Make: Met One Gauge Type: Tipping Bucket
Model: TE525WS Operating Range: NA
SN: NA Height Above Ground: 0.91 meters

CALIBRATION TEST EQUIPMENT

Item: Distilled water, graduated cylinders, drip device SN: NA

PART B: CALIBRATION TEST RESULTS

KNOWN INPUT		OBSERVED RESPONSE			
		DAS	Error	Error	Pass?
ml, H ₂ O	mm	mm	mm	%	Fail? ¹
250	7.60	7.37	-0.23	-3.1	PASS

COMMENTS

- Need to obtain serial number from unit.

To PASS, the sensor must have... 1) Percent Error = $\leq 10\%$

SOLAR RADIATION SENSOR CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 8/21/2010 Check One:
 Location: Crawford Nebraska Start: 15:22 8/21/2010 As Found: ✓
 Technician: Ethan Brown End: 11:00 8/23/2010 As Left:

SENSOR INFORMATION

Make: LiCor Operating Range: 0 to 1,400 W/m²
 Model: 200 Pyranometer Height Above Ground: 1.3 meters
 SN: PY68828

CALIBRATION TEST EQUIPMENT

Item: Kipp & Zonen CM-3 pyranometer SN: 58211
 Item: Fluke, Model 289, digital multimeter (4.5 digits, True RMS) SN: 96210097

PART B: CALIBRATION TEST RESULTS

Known Input		Observed DAS Response				
Period hhmm	Value W/m ²	DAS W/m ²	Error W/m ²	Error %	Error % F.S.	Pass? Fail? ⁴
Covered	0.0	0	0	NA	NA	NA
17:00	438	443	5	1.1	0.4	PASS
16:51	469	472	3	0.6	0.2	PASS
16:43	484	492	8	1.7	0.6	PASS
14:33	762	766	4	0.5	0.3	PASS
12:26	842	836	-6	-0.8	-0.5	PASS

Calibration Curve Results ⇒ Slope: ¹

0.9960	PASS
--------	------

 Intercept: ²

4.302	PASS
-------	------

 Corr. Coeff: ³

0.9999	PASS
--------	------

COMMENTS

- It was difficult to get a large range of values because of constant clear skies. The pyranometer performed very well against the CM-3

To PASS, the sensor must have... ¹ Slope = 1.0 ±0.05
² Intercept = ≤ 1% of Full Scale
³ Correlation Coefficient = ≥ 0.9950
⁴ Error per test point = ±5% of observed

RELATIVE HUMIDITY SENSOR CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 8/22/2010 - 8/23/2010 Check One:
Location: Crawford Nebraska Start: 12:54 As Found:
Technician: Ethan Brown End: 10:00 As Left:

SENSOR INFORMATION

Make: Vaisala Operating Range: 0-100%
Model: HMP45AC Height Above Ground: 2 meters
SN: F2450239

CALIBRATION TEST EQUIPMENT

Item: Fisher Scientific Traceable Hygrometer, Thermometer, Dew Point SN: 72366727

PART B: CALIBRATION TEST RESULTS

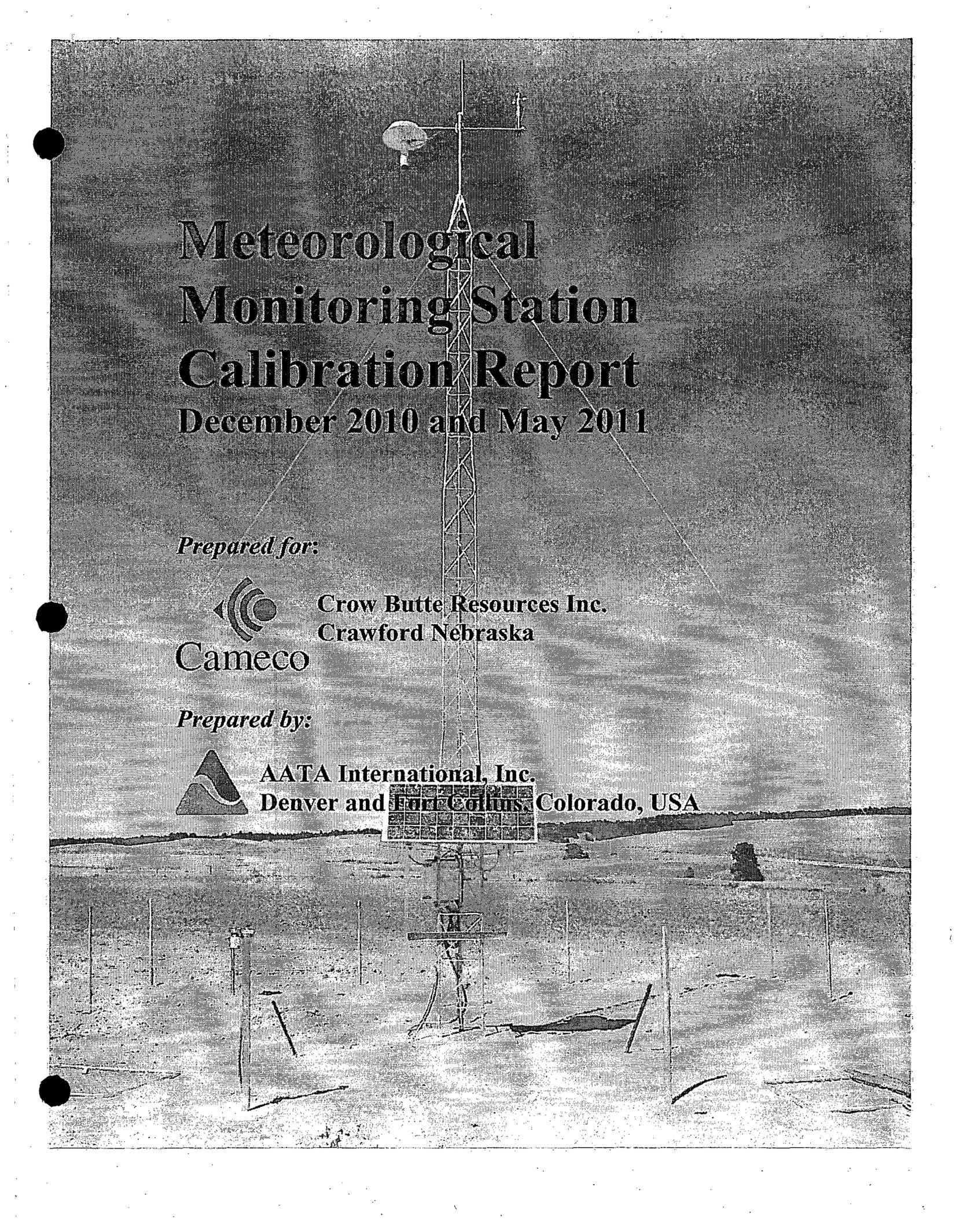
KNOWN INPUT		OBSERVED RESPONSE		
		DAS	Error	Pass?
Test	%RH	%RH	%RH	Fail?
Ambient	46.9	47.1	0.2	PASS
Chmbr.	55.2	55.7	0.5	PASS

COMMENTS

- Could not get chamber higher than 60 % relative humidity. The Vaisala sensor comes with a calibration certificate. Even though it passed this audit, a new chamber will need to be used for the 6-month calibration. Suggest using salts instead of the Fisher Scientific Hygrometer.

To PASS, the sensor must have... 1) Percent Error = $\leq 10\%$

Prepared 8/5/2010



Meteorological Monitoring Station Calibration Report

December 2010 and May 2011

Prepared for:



**Crow Butte Resources Inc.
Crawford Nebraska**

Prepared by:



**AATA International, Inc.
Denver and Fort Collins, Colorado, USA**

WIND SPEED SENSOR CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 12/01/2010 Check One:
 Location: Crawford Nebraska Start: 10:30 12/01/2010 As Found:
 Technician: Ethan Brown End: 13:00 12/01/2010 As Left:

SENSOR INFORMATION

Make: Met One Propeller SN: NA
 Model: 034B Operating Range: 0 to 75 mps
 SN: K18760 Height Above Ground: 10 meters

CALIBRATION TEST EQUIPMENT

Item: Variable motor. R.M.Young, 18820A/18830A (200 to 15,000 rpm) SN: CA03277
 Item: Variable motor. R.M.Young, 18820A/18831A (0 to 300 rpm) SN: CA03277
 Item: Torque disk device. R.M.Young, 18312 SN: NA

PART B: CALIBRATION TEST RESULTS

Sensor Starting Threshold: 0.2 gm-cm equal to 0.38 mps Pass? / Fail?: Pass
gm-cm mps ≤ 0.50 mps

Known Input		Observed Data Logger Response					
Motor rpm	Motor mps	Output mps	Error mps	Error %	Limit mps	Limit %	Pass? Fail?
0.0	0.00	0.00	0.00	NA	NA	NA	NA
150	4.27	4.28	0.01	0.1	≤ ±0.20	---	PASS
300	8.27	8.27	0.00	0.0	---	≤ ±5%	PASS
700	19.06	19.06	0.00	0.0	---	≤ ±5%	PASS
1,300	35.04	35.63	0.59	1.7	---	≤ ±5%	PASS

COMMENTS

- 1,300 was the highest RMP obtained with the drive unit available. 35 mps is equivalent to 78 miles per hour.
- Need to get wind speed attachment for 034B.
- Accomplished starting threshold by marking the wind speed arm and placing screw on arm.

To PASS, the sensor must have... 1) Starting Torque Threshold = ≤ 0.50 mps
 2) Wind speed input ≤ 5.0 mps = ≤ ±0.20 mps error
 3) Wind speed input > 5.0 mps = ≤ ±5% of input speed

WIND SPEED SENSOR CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 5/27/2011 Check One:
 Location: Crawford Nebraska Start: 10:20 5/27/2011 As Found:
 Technician: Ethan Brown End: 13:55 5/27/2011 As Left:

SENSOR INFORMATION

Make: Met One Propeller SN: NA
 Model: 034B Operating Range: 0 to 75 mps
 SN: K18760 Height Above Ground: 10 meters

CALIBRATION TEST EQUIPMENT

Item: Variable motor. R.M.Young, 18820A/18830A (200 to 15,000 rpm) SN: CA03277
 Item: Variable motor. R.M.Young, 18820A/18831A (0 to 300 rpm) SN: CA03277
 Item: Torque disk device. R.M.Young, 18312 SN: NA

PART B: CALIBRATION TEST RESULTS

Sensor Starting Threshold: 0.2 gm-cm, equal to 0.38 mps Pass? / Fail?: Pass
≤ 0.50 mps

Known Input		Observed Data Logger Response					
Motor rpm	Motor mps	Output mps	Error mps	Error %	Limit mps	Limit %	Pass? Fail?
0.0	0.00	0.00	0.00	NA	NA	NA	NA
150	4.27	4.27	0.00	-0.1	≤ ±0.20	---	PASS
300	8.27	8.27	0.00	0.0	---	≤ ±5%	PASS
700	18.92	19.05	0.13	0.7	---	≤ ±5%	PASS
1,300	34.90	34.63	-0.27	-0.8	---	≤ ±5%	PASS

COMMENTS

- 1,300 was the highest RMP obtained with the drive unit available. 35 mps is equivalent to 78 miles per hour.
- Accomplished starting threshold by marking the wind speed arm and placing screw on arm.

To PASS, the sensor must have... 1) Starting Torque Threshold = ≤ 0.50 mps
 2) Wind speed input ≤ 5.0 mps = ≤ ±0.20 mps error
 3) Wind speed input > 5.0 mps = ≤ ±5% of input speed

TEMPERATURE / Δ TEMPERATURE CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 5/27/2011 Check One: _____
 Location: Crawford Nebraska Start: 10:20 5/27/2011 As Found: ✓
 Technician: Ethan Brown End: 13:55 5/27/2011 As Left: _____

SENSOR INFORMATION

Make: Met One 2-Meter Probe SN: K13981 (1 of 2)
 Model: 062 MP 10-Meter Probe SN: K13981 (2 of 2)
 Operating Range: -50 to +50 C

CALIBRATION TEST EQUIPMENT

Item: Dostmann Electronic GmbH P650-PT SN: 65010081147
 Item: Insulated water baths with mechanical stirring. SN: NA

PART B: CALIBRATION TEST RESULTS

Temperature Probe Calibration

Known Input		Observed Data Logger Response					
Water Bath	Temp. °C	2-m °C	2-m Error °C	Pass? Fail?	10-m °C	10-m Error °C	Pass? Fail?
Ice	-0.15	-0.02	0.13	PASS	-0.03	-0.12	PASS
Cool	18.12	18.09	-0.03	PASS	18.04	-0.08	PASS
Hot	36.09	36.06	-0.03	PASS	36.06	-0.03	PASS

Temperature Difference System Calibration

Known Input		Observed Response		
Water Bath	ΔT °C	2-10 ΔT °C	2-10 ΔT Error °C	Pass? Fail?
Ice	0.00	0.02	0.02	PASS
Cool	0.00	0.05	0.05	PASS
Hot	0.00	0.00	0.00	PASS

(NOTE: The water baths were constantly agitated with mechanical stirring during the calibration tests.)

(NOTE: During the ΔT calibration, both probes were placed together in the same bath.)

COMMENTS

To PASS, the temperature probes must have... Accuracy error = $\leq \pm 0.50$ °C per test point

To PASS, the ΔT system must have... Accuracy error = $\leq \pm 0.10$ °C per test point

PRECIPITATION GAUGE CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 5/27/2011 Check One:
 Location: Crawford Nebraska Start: 09:30 5/27/2011 As Found: ✓
 Technician: Ethan Brown End: 11:04 5/27/2011 As Left: _____

SENSOR INFORMATION

Make: Mét One Gauge Type: Tipping Bucket
 Model: TE525WS Operating Range: NA
 SN: 44745-710 Height Above Ground: 0.91 meters

CALIBRATION TEST EQUIPMENT

Item: Distilled water, graduated cylinders, drip device SN: NA

PART B: CALIBRATION TEST RESULTS

KNOWN INPUT		OBSERVED RESPONSE			
		DAS	Error	Error	Pass?
ml, H ₂ O	mm	mm	mm	%	Fail? ¹
500	15.10	13.97	-1.13	-7.5	PASS

COMMENTS

To PASS, the sensor must have... 1) Percent Error = $\leq 10\%$

SOLAR RADIATION SENSOR CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte **Date:** 5/27/2011 **Check One:**
Location: Crawford Nebraska **Start:** 10:20 5/27/2011 **As Found:**
Technician: Ethan Brown **End:** 13:55.5/27/2011 **As Left:**

SENSOR INFORMATION

Make: LiCor **Operating Range:** 0 to 1,400 W/m²
Model: 200 Pyranometer **Height Above Ground:** 1.3 meters
SN: PY68828

CALIBRATION TEST EQUIPMENT

Item: Kipp & Zonen CM-3 pyranometer **SN:** 58211
Item: Fluke, Model 289; digital multimeter (4.5 digits, True RMS) **SN:** 96210097

PART B: CALIBRATION TEST RESULTS

Known Input		Observed DAS Response				
Period hhmm	Value W/m ²	DAS W/m ²	Error W/m ²	Error %	Error % F.S.	Pass? Fail? ⁴
10:51	0.0	0	0	NA	NA	NA
10:03	933	941	7	0.8	0.5	PASS
10:32	973	944	-29	-3.0	-2.1	PASS
11:27	1153	1125	-28	-2.4	-2.0	PASS
11:28	1167	1142	-25	-2.1	-1.8	PASS
11:49	1020	988	-32	-3.1	-2.3	PASS

Calibration Curve Results ⇨

Slope: ¹	0.9769	PASS
Intercept: ²	2.552	PASS
Corr. Coeff: ³	0.9995	PASS

COMMENTS

- It was difficult to get a large range of values because of constant clear skies. The pyranometer performed very well against the CM-3.

- To PASS, the sensor must have...
- ¹ Slope = 1.0 ±0.05
 - ² Intercept = ≤1% of Full Scale
 - ³ Correlation Coefficient = ≥ 0.9950
 - ⁴ Error per test point = ±5% of observed

RELATIVE HUMIDITY SENSOR CALIBRATION REPORT

PART A: ANCILLARY INFORMATION

Project: Crow Butte Date: 5/27/2011 Check One:
Location: Crawford Nebraska Start: 10:20 5/27/2011 As Found:
Technician: Ethan Brown End: 13:55 5/27/2011 As Left:

SENSOR INFORMATION

Make: Vaisala Operating Range: 0-100%
Model: HMP45AC Height Above Ground: 2 meters
SN: F2450239

CALIBRATION TEST EQUIPMENT

Item: Fisher Scientific Traceable Hygrometer, Thermometer, Dew Point SN: 102060060

PART B: CALIBRATION TEST RESULTS

KNOWN INPUT		OBSERVED RESPONSE		
		DAS	Error	Pass?
Test	%RH	%RH	%RH	Fail? ¹
Ambient	38.6	34.4	-4.2	PASS
Chmbr.	100.0	96.5	-3.5	PASS

COMMENTS

To PASS, the sensor must have... 1) Percent Error = $\leq 10\%$

Prepared 8/5/2010.



CALIBRATION PROCEDURE
18802/18811 ANEMOMETER DRIVE

DWG: CP18802(C)

REV: C101107 PAGE: 4 of 4
 BY: TJT DATE: 10/11/07
 CHK: JC W.C. GAS-12

CERTIFICATE OF CALIBRATION AND TESTING

R. M. Young Company certifies that the equipment listed below was inspected and calibrated prior to shipment in accordance with established manufacturing and testing procedures. Standards established by R.M. Young Company for calibrating the measuring and test equipment used in controlling product quality are traceable to the National Institute of Standards and Technology.

MODEL: 18802 / 18811

SERIAL NUMBER: CA03277

(18802 Comprised of Models 18820A Control Unit & 18830A Motor Assembly)
 (18811 Comprised of Models 18820A Control Unit & 18831A Motor Assembly)

COPY

Nominal Motor RPM	27106D Output Frequency (Hz) (1)	Calculated Rpm (1)	Indicated Rpm (2)
18802		<input checked="" type="checkbox"/> CW / CCW rotation verified	
300	50	300	300
2700	450	2700	2700
5100	850	5100	5100
7500	1250	7500	7500
10,200	1700	10200	10200
12,600	2100	12600	12600
15,000	2500	15000	15000
18811		<input checked="" type="checkbox"/> CW / CCW rotation verified	
30.0	5	30.0	30.0
150.0	25	150.0	150.0
300.0	50	300.0	300.0
450.0	75	450.0	450.0
600.0	100	600.0	600.0
750.0	125	750.0	750.0
990.0	165	990.0	990.0

- (1) Measured frequency output of RM Young Model 27106D standard anemometer attached to motor shaft - 27106D produces 10 pulses per revolution of the anemometer shaft.
- (2) Indicated on the Control Unit LCD display.

* Indicates out of tolerance

No Calibration Adjustments Required As Found As Left

Traceable frequency meter used in calibration Model: 5740 SN: 4863

Date of inspection 27 Apr 2010
 Inspection Interval One Year

Tested By EC



CALIBRATION PROCEDURE
18802/18811 ANEMOMETER DRIVE

DWG: CP18802(C)
 REV: C101107 PAGE: 4 of 4
 BY: TJT DATE: 10/11/07
 CHK: JC W.C. GAS-12

CERTIFICATE OF CALIBRATION AND TESTING

R. M. Young Company certifies that the equipment listed below was inspected and calibrated prior to shipment in accordance with established manufacturing and testing procedures. Standards established by R.M. Young Company for calibrating the measuring and test equipment used in controlling product quality are traceable to the National Institute of Standards and Technology.

MODEL: **18802 / 18811** SERIAL NUMBER: CA03277
 (18802 Comprised of Models 18820A Control Unit & 18830A Motor Assembly)
 (18811 Comprised of Models 18820A Control Unit & 18831A Motor Assembly)

Nominal Motor RPM	27106D Output Frequency (Hz) - (1)	Calculated Rpm (1)	Indicated Rpm (2)
18802		<input checked="" type="checkbox"/> CW / CCW rotation verified	
300	50	300	300
2700	450	2700	2700
5100	850	5100	5100
7500	1250	7500	7500
10,200	1700	10200	10200
12,600	2100	12600	12600
15,000	2500	15000	15000
18811		<input checked="" type="checkbox"/> CW / CCW rotation verified	
30.0	5	30.0	30.0
150.0	25	150.0	150.0
300.0	50	300.0	300.0
450.0	75	450.0	450.0
600.0	100	600.0	600.0
750.0	125	750.0	750.0
990.0	165	990.0	990.0

- (1) Measured frequency output of RM Young Model 27106D standard anemometer attached to motor shaft - 27106D produces 10 pulses per revolution of the anemometer shaft.
- (2) Indicated on the Control Unit LCD display.

* Indicates out of tolerance

No Calibration Adjustments Required As Found As Left

Traceable frequency meter used in calibration Model: DP5740 SN: 4863

Date of inspection 30 JUN 2011
 Inspection Interval One Year

Tested By EC



10 Millpond Drive, Unit 2, Lafayette, NJ 07848
 T: 973-300-9100 F: 973-255-1000

NIST TRACEABLE CALIBRATION CERTIFICATE

Calibration Report No.	A6017	Calibration Date	12/15/2010	Calibration Due Date	12/2011
------------------------	-------	------------------	------------	----------------------	---------

Customer	AATA International Inc.
Test References	ASTM: E644-06 Standard test methods for Resistance Thermometers ASTM E-1137 Resistance versus Temperature.

NIST Traceable Calibration Instrument	Model Number & Serial Number	Test Interval NIST GMP-11 Table 4	Calibration Date	Calibration Due Date	Expanded Uncertainty (+/- °C) k=2 (95 % conf.)
Hart Scientific PRT Module	Model 1562 SN: A56655	Annual	8/13/2010	8/13/2011	-0.01mOhms @100Ohms
Burns 100ohm PRT	Model 5626-15 SN: 1085/1086/1095	Annual	8/13/2010	8/13/2011	3.0 mk@0.00°C

Description of Calibration:

The NIST traceable calibration instruments listed above were used to calibrate the resistance thermometer listed below at the noted test temperatures by a comparison method. A liquid bath was maintained at +/- 0.03°C during calibration. The physical integrity of the thermometer was verified and the accuracy of this system calibration is the root sum square of the sensor and meter. Any abnormalities are noted in this report. The temperature conditions at the time of test: 22.5C 50%RH

Calibration Results:

Thermometer Description	Therm ID	Scale error, max (°C)	Previous Calibration		New Calibration		Correction +/- (°C)
			Test Temp / Therm. Reading (°C)				
ACCD650PD6F Platinum PT100	65010081147 Meter/ probe# 100841	+/- 0.03C/ 0.05F	N/A	N/A	-20.00	-20.01	+0.01
					0.00	0.01	-0.01
					4.00	4.01	-0.01
					37.00	37.01	-0.01
					50.00	50.01	-0.01

Calibration Technician 



80 Orville Dr., Suite 100 T: 631-796-2308
Bohemia, NY 11716 F: 631-567-0611
www.accuflux.com E: info@accuflux.com

CERTIFICATE OF CALIBRATION

PYRANOMETER CALIBRATION DATA:

Model: CM3 (Kipp & Zonen)
Serial No: 058211
Sensitivity: 14.16 $\mu\text{V}/\text{Wm}^{-2}$
Calibration Date: April 30, 2010

CALIBRATION PROCEDURE:

The above pyranometer has been calibrated indoors in accordance with the ISO-9847 standard, "Calibration of Field Pyranometers By Comparison to a Reference Pyranometer". The calibration conditions are: 800 $\text{W}/\text{m}^2 \pm 1\%$ at normal irradiance, 20° C ambient nominal. The CM3 calibration transfer standard pyranometer is traceable to the WRR.

NOTICE:

It is advised to review the manufacturer's instructions manual prior to instrument installation and operation. The manufacturer's suggested calibration cycle for the CM3 model pyranometer is every two years. Calibration recertification per manufacturer recommendations is advised to ensure optimal sensor performance and measurement accuracy.

Signature: _____

Date: 4/30/2010



Calibration
Certificate No: 1750.01

Calibration complies with ISO 9001
ISO/IEC 17025 AND ANSI/NCSL Z540-1



Cert. No.: 4085-3268814

Traceable® Certificate of Calibration for Digital Hygrometer

Manufactured for and distributed by: Fisher Scientific, P.O. Box 1768, Pittsburgh, PA 15230

Instrument Identification:

Model: 11-661-7B S/N: 102060060 Manufacturer: Control Company

Standards/Equipment:

Description	Serial Number	Due Date	NIST Traceable Reference
Digital Thermometer	90969500	7/21/11	4000-3180177
Chilled Mirror Hygrometer	31874/H2048MCR	7/26/11	8493

Certificate Information:

Technician: 61 Procedure: CAL-18 Cal Date: 11/02/10 Cal Due: 11/02/12
Test Conditions: 23.5°C 41.0 %RH 1013 mBar

Calibration Data: (New Instrument)

Unit(s)	Nominal	As Found	In Tol	Nominal	As Left	In Tol	Min	Max	±U	TUR
%RH		N.A.		20.510	20.58	Y	19.01	22.01	0.870	1.7:1
%RH		N.A.		46.310	46.65	Y	44.81	47.81	0.870	1.7:1
%RH		N.A.		74.210	74.47	Y	72.71	75.71	0.870	1.7:1
°C		N.A.		27.056	27.05	Y	26.66	27.46	0.059	>4:1

This Instrument was calibrated using Instruments Traceable to National Institute of Standards and Technology:

A Test Uncertainty Ratio of at least 4:1 is maintained unless otherwise stated and is calculated using the expanded measurement uncertainty. Uncertainty evaluation includes the instrument under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor k=2 to approximate a 95% confidence level. In tolerance conditions are based on test results falling within specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. This certificate shall not be reproduced except in full, without written approval of Control Company.

Nominal=Standard's Reading; As Left=Instrument's Reading; In Tol=In Tolerance; Min/Max=Acceptance Range; ±U=Expanded Measurement Uncertainty; TUR=Test Uncertainty Ratio; Accuracy=±(Max-Min)/2; Min = Nominal(Rounded) - Tolerance; Max = Nominal(Rounded) + Tolerance; Date=MM/DD/YY

Nicol Rodriguez
Nicol Rodriguez, Quality Manager

Wallace Berry
Wallace Berry, Technical Manager

Maintaining Accuracy:

In our opinion once calibrated your Digital Hygrometer should maintain its accuracy. There is no exact way to determine how long calibration will be maintained. Digital Hygrometers change little, if any at all, but can be affected by aging, temperature, shock, and contamination.

Recalibration:

For factory calibration and re-certification traceable to National Institute of Standards and Technology contact Control Company.

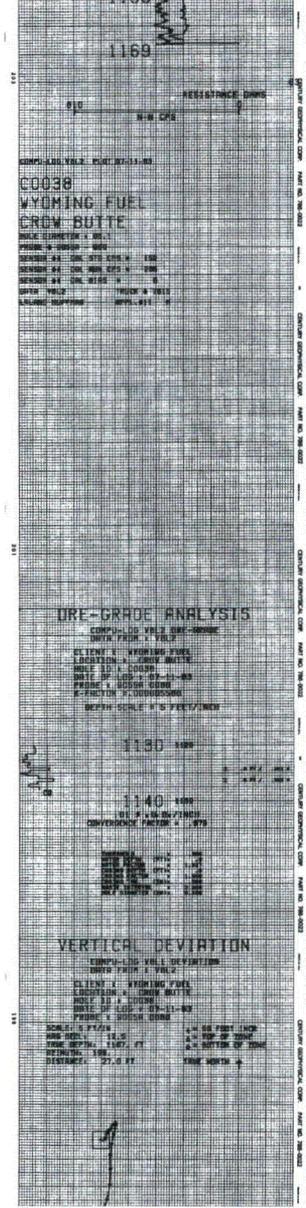
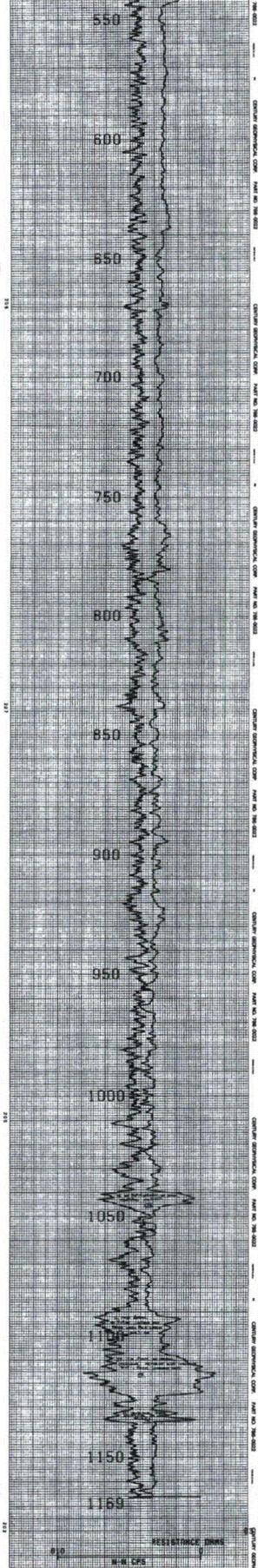
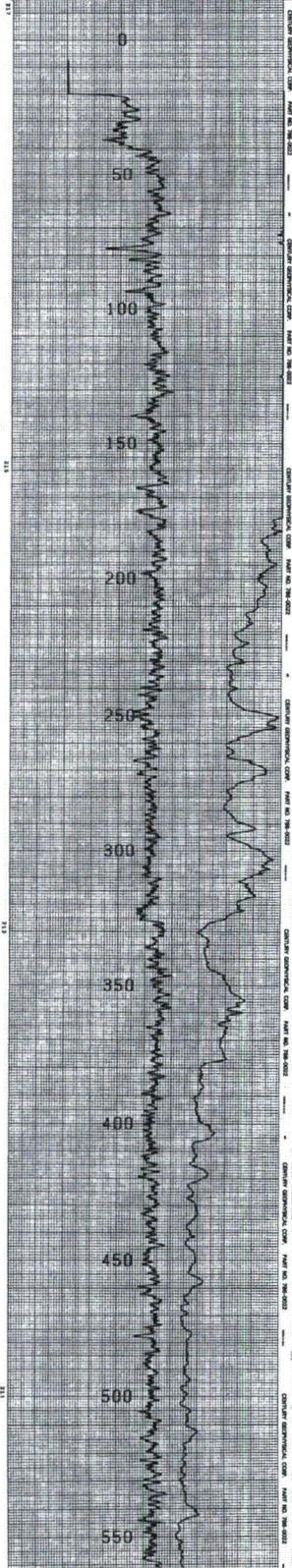
CONTROL COMPANY 4455 Rex Road Friendswood, TX 77546 USA
Phone 281 482-1714 Fax 281 482-9448 service@control3.com www.control3.com

Control Company is an ISO 17025:2005 Calibration Laboratory Accredited by (A2LA) American Association for Laboratory Accreditation, Certificate No. 1750.01.
Control Company is ISO 9001:2008 Quality Certified by (DNV) Det Norske Veritas, Certificate No. CERT-01805-2006-AQ-HOU-ANAB.
International Laboratory Accreditation Cooperation (ILAC) - Multilateral Recognition Arrangement (MRA).

Appendix C

Geophysical Boring Logs

CENTURY GEOPHYSICAL CORPORATION	
WYOMING FUEL	
CROW BUTTE	LOGS
DAWLS	NEF
WELL DATA	
WELL NO.	1169
DATE	07-11-83
LOGGERS	WILLIAM
CLIENT DATA	
CLIENT	CROW BUTTE
ADDRESS	1300 E. 13th St.
CITY	WYOMING
STATE	WY
ZIP	80501
EQUIPMENT DATA	
SYSTEM	1000
LOGGERS	WILLIAM
DATE	07-11-83



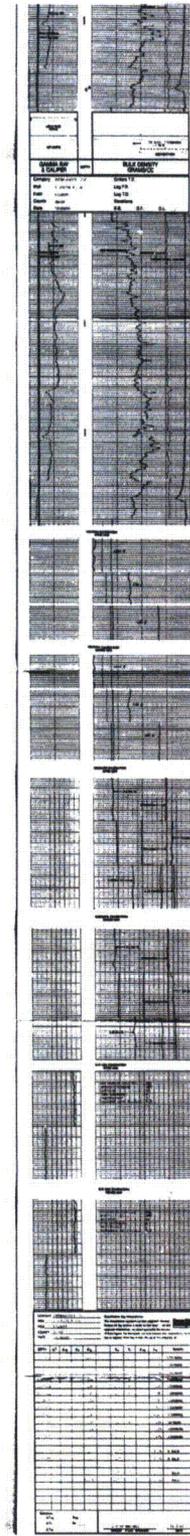
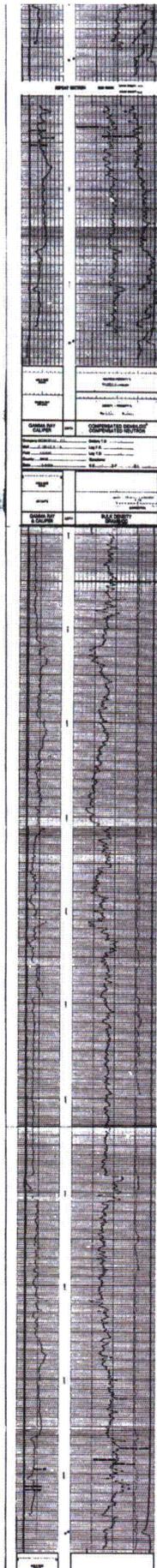
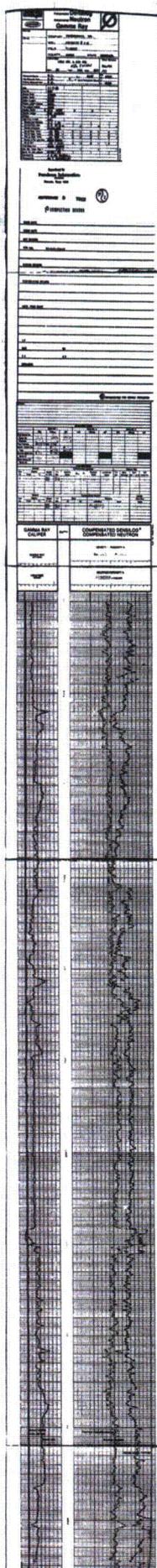


**CROW BUTTE
RESOURCES, INC.**

LOG C-38



630 Plaza Drive, Ste 100
Highlands Ranch, CO 80129
P: 720-344-3500 F: 720-344-3535
www.arcadis-us.com



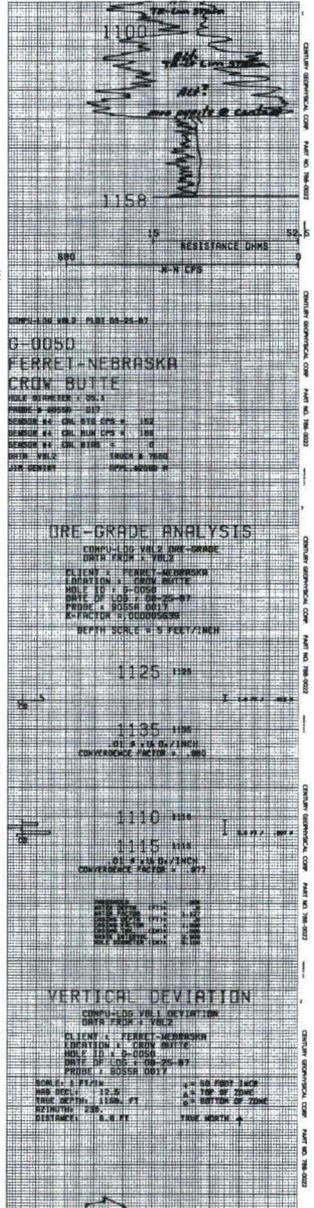
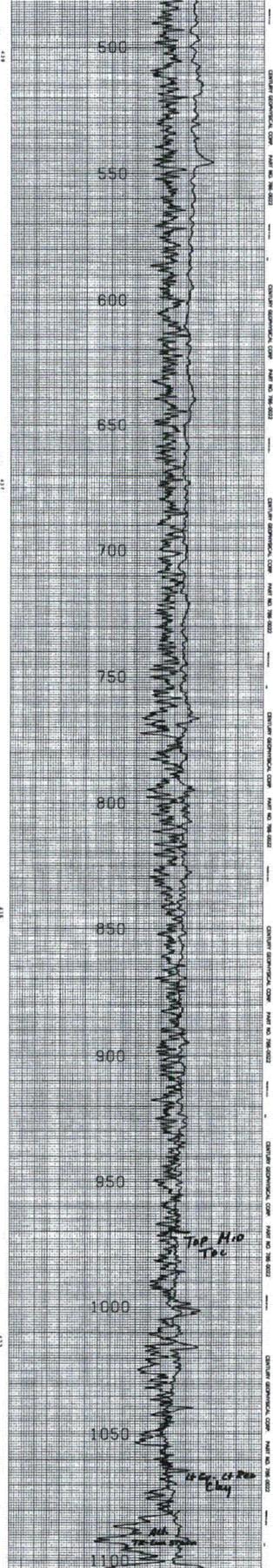
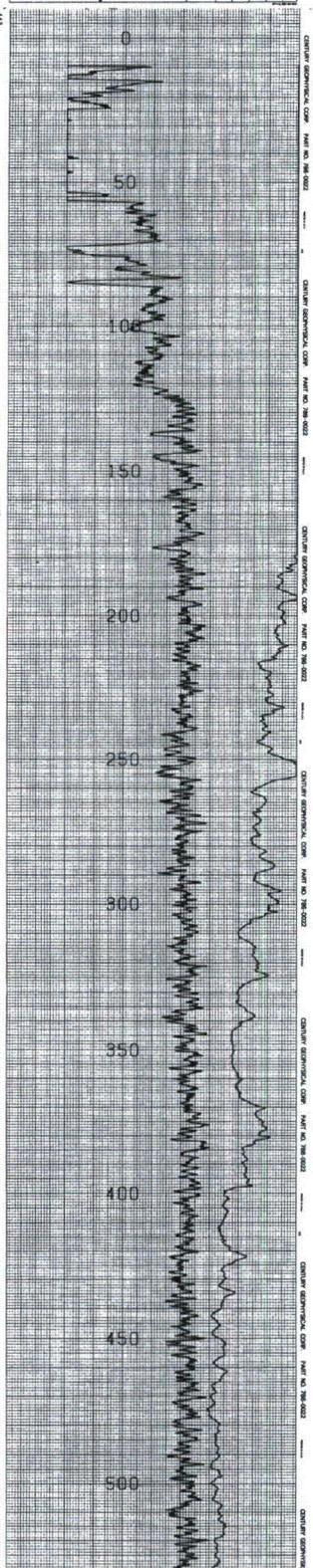
CROW BUTTE
RESOURCES, INC.

CHICOINE 1A LOG



630 Plaza Drive, Ste. 100
Highlands Ranch, CO 80129
P: 720-344-3500 F: 720-344-3535
www.arcadis-us.com

CENTURY GEOPHYSICAL CORPORATION
 6-0050 8-25-07
 1676 Ch. Denver, CO 80202
FERRET-NEBRASKA
 C-0050
 CROW BUTTE 3550
 DAWES NE
 55 30N 51W
 NW 3E
 100' N of G48
 Manning



COMPUTED LOG VOLTAGE PER FOOT
G-0050
FERRET-NEBRASKA
CROW BUTTE
 WELL NUMBER: C-0050
 PROBE: 4-0000-007
 SENSOR #1: CHL. STD. CFS # 152
 SENSOR #2: CHL. STD. CFS # 152
 SENSOR #3: CHL. STD. CFS # 152
 BATHY: 1000
 DATE: 08-25-07
 TIME: 11:00
 OPERATOR: J. CHEN

URE-GRADE ANALYSIS
 COMPUTED LOG VOLTAGE PER FOOT
 DATA FROM: 1100
 CLIENT: FERRET-NEBRASKA
 LOCATION: CROW BUTTE
 WELL ID: G-0050
 DATE OF LOG: 08-25-07
 PROBE: 4-0000-007
 K-FACTOR: 0.00000000
 DEPTH SCALE: 9 FEET/INCH

1125 1100
 1130 1100
 1110 1100
 1115 1100
 CONVERGENCE FACTOR: .00000000

VERTICAL DEVIATION
 COMPUTED LOG VOLTAGE PER FOOT
 DATA FROM: 1100
 CLIENT: FERRET-NEBRASKA
 LOCATION: CROW BUTTE
 WELL ID: G-0050
 DATE OF LOG: 08-25-07
 PROBE: 4-0000-007

SCALE: 1 FT/INCH
 HOLE DEPTH: 1100 FT
 BATHY: 1000 FT
 DISTANCE: 1.0 FT
 TIME: 11:00 AM
 DATE: 08-25-07



**CROW BUTTE
RESOURCES, INC.**

LOG G-50



630 Plaza Drive, Ste. 100
 Highlands Ranch, CO 80129
 P: 720-344-3500 F: 720-344-3535
 www.arcadis-us.com



Century

G-0065

COMPANY : PERRET-HERZOG
 WELL : G-0065
 LOCATION/FIELD : GOLD BUTTE
 COUNTY : SAGREY
 STATE : NEBRASKA
 SECTION : 35
 TOWNSHIP : 50N
 RANGE : 7E
 DATE : 10/21/87
 DEPTH DRILLER : J. J. JENSEN
 PERMIT NO. : 1000
 ELEV. FROM : 4000
 LOW MESSUR FROM : 4000
 CASINO DRILLER : 0
 CHIMNEY : 0
 CASINO TYPE : 0
 CASINO TYPE : 0
 BIT SIZE : 8.125
 MAGNETIC DEVIATION : 12.8
 MAGNETIC DEVIATION : 12.8
 FLUID DENSITY : 1.0
 FLUID DENSITY : 1.0
 RESISTIVITY MATRIX : 0
 RESISTIVITY MATRIX : 0
 REMARKS : 200' of 800
 HERRING

OTHER SERVICES : NONE

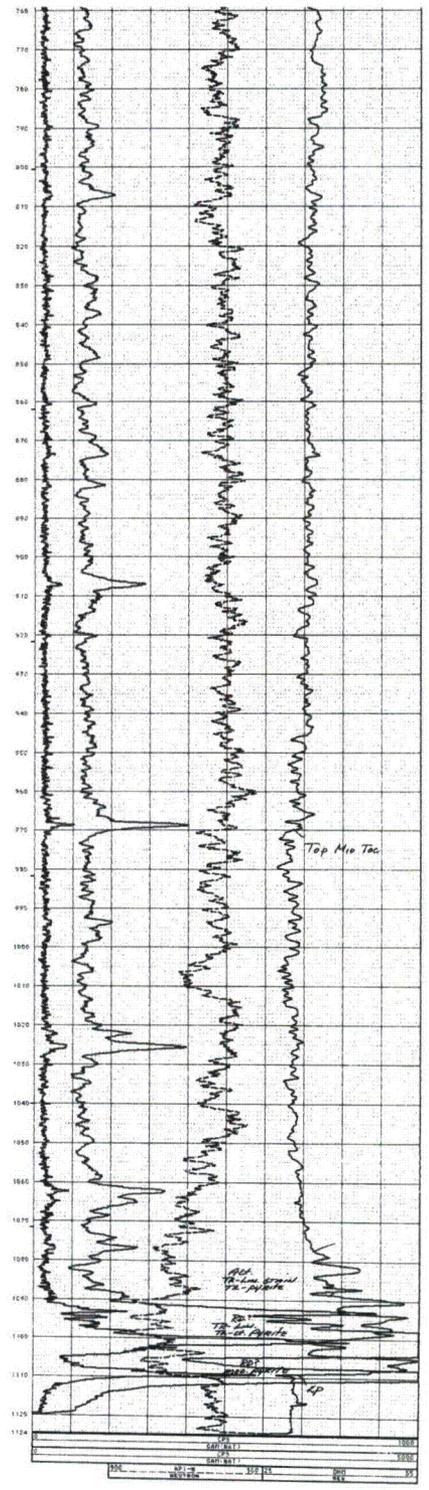
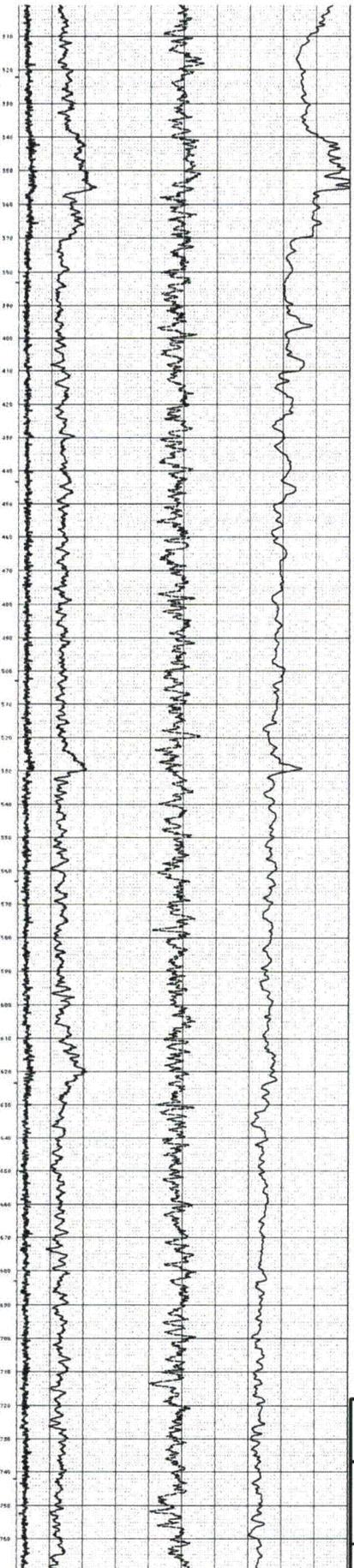
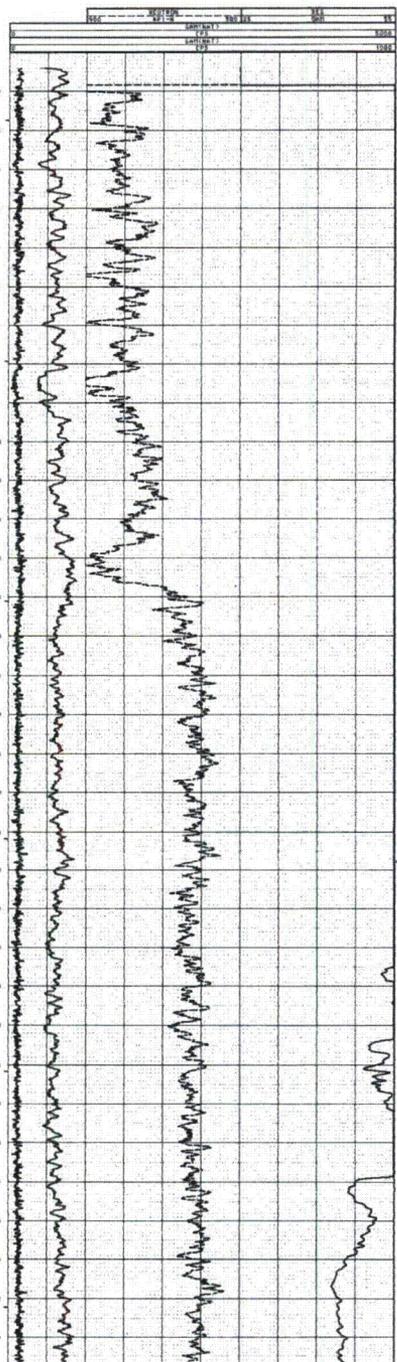
PERMITS : 1000
 ELEVATIONS : 4000
 SP : 1
 SL : 1

LOGGING UNIT : RTDM
 FIELD OFFICE : TADM
 RECORDED BY : JIM GENTY

BOREHOLE FLUID : H2O-SEL
 TEMPERATURE : 70
 TEMPERATURE : 70
 FLUID DELTA : 0
 FLUID DELTA : 0
 PRESSURE : 2500

FILE : ORIGINAL
 TYPE : BOREHOLE
 LOG : 1
 PLOT : LOGGING 14
 PLOT : 2500

ALL SERVICES PROVIDED SUBJECT TO CCC STANDARD TERMS AND CONDITIONS



CROW BUTTE RESOURCES, INC.

LOG G-65



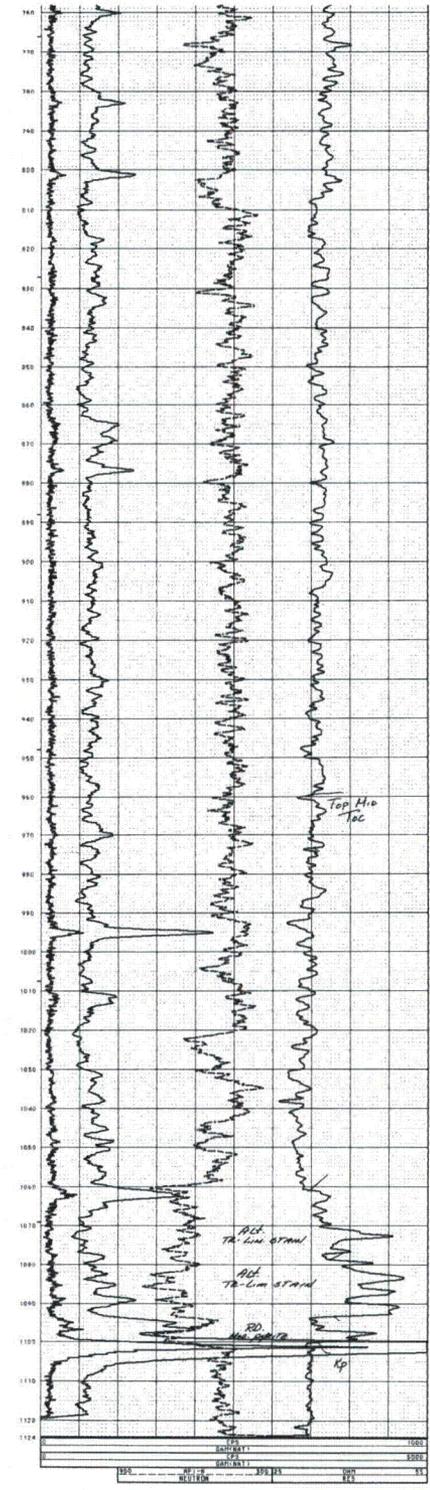
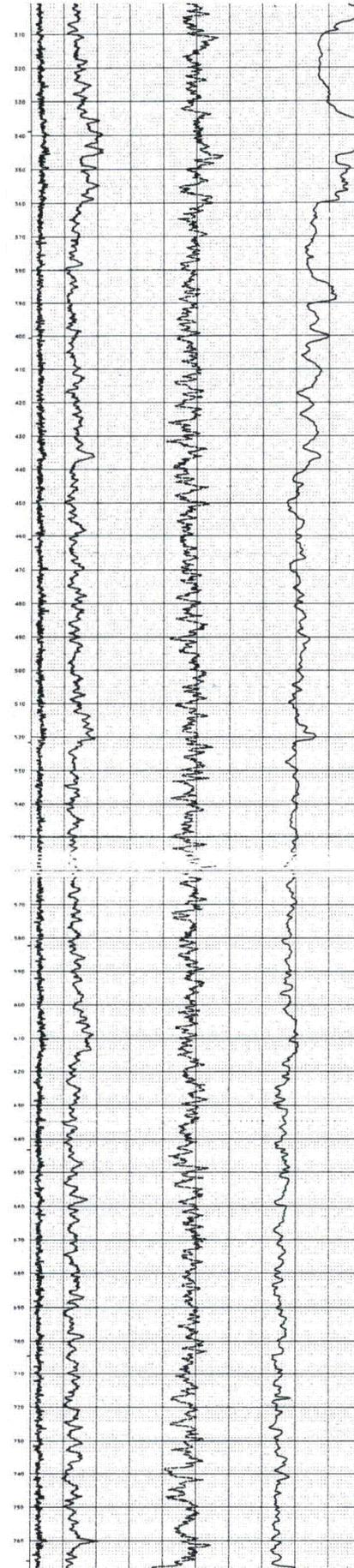
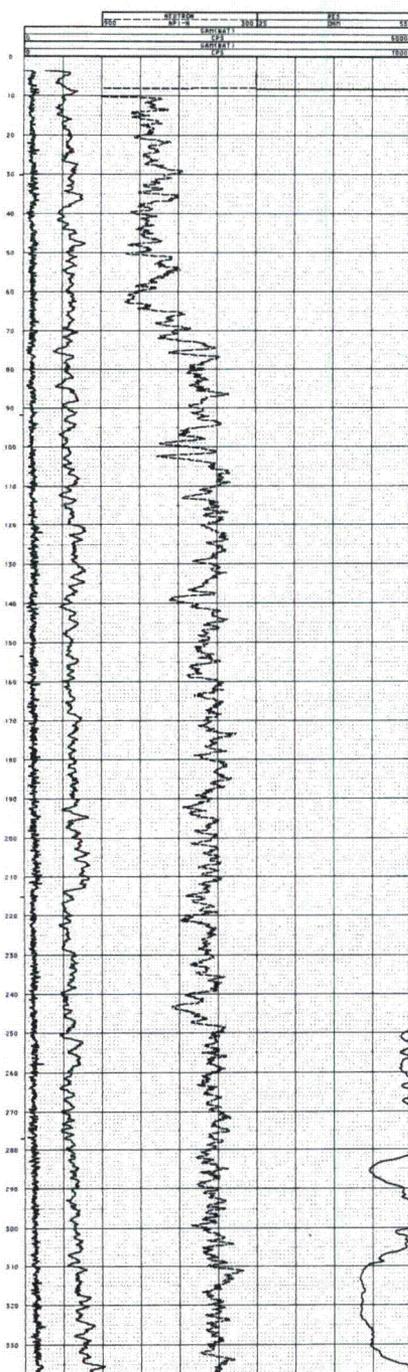
630 Plaza Drive, Ste. 100
 Highlands Ranch, CO 80129
 P: 720-344-3500 F: 720-344-3535
 www.arcadis-us.com

Century

G-0071

COMPANY : PERRET-NEBRASKA		OTHER SERVICES : NONE	
WELL : G-0071			
LOCATION/FIELD : CROW BUTTE			
COUNTY : SARASOTA			
STATE : NEBRASKA			
SECTION : 35 SEC 04E			
TOWNSHIP : 30N		RANGE : 8W	
DATE : 10/29/87	PERMANENT DATUM : GL	ELEVATION : 0	
DEPTH DRILLER : 1120	ELEV. PERM. DATUM : 6660	CR : ?	
LOG BOTTOM : 1124-40	LOG MEASURED FROM : GL	SF : ?	
LOG TOP : 5.70	DPL. MEASURED FROM : GL	GL : ?	
CASING DRILLER : 0	LOGGING UNIT : 0104		
CASING TYPE : 0	FIELD OFFICE : 1018		
CASING THICKNESS : 0	RECORDED BY : J.P. DEWITT		
BIT SIZE : 7.5125	ROCK/MOLE FLUID : H2O-DEL	FILE : ORIGINAL	
FRAGMENTS : 12.5	DR : 8.0	TYPE : HOSK	
MATRIX DENSITY : 2.48	RM TEMPERATURE : 70	LOG : 1.6	
FLUID DENSITY : 1.0	MATRIX DELTA : 85	PLDT : 100MM 16	
NEUTRON PHIS : 0.8850	FLUID DELTA : 210	FRACAL : 2000	
REMARKS : 420' 40" from CB			

ALL SERVICES PROVIDED SUBJECT TO CDC STANDARD TERMS AND CONDITIONS

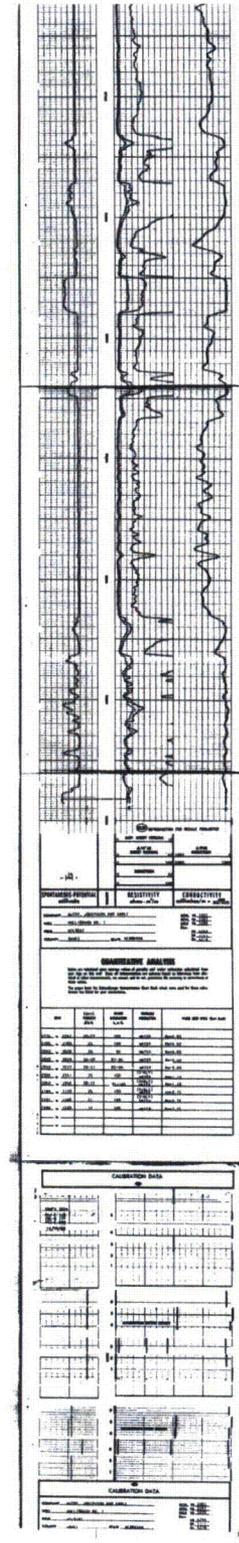
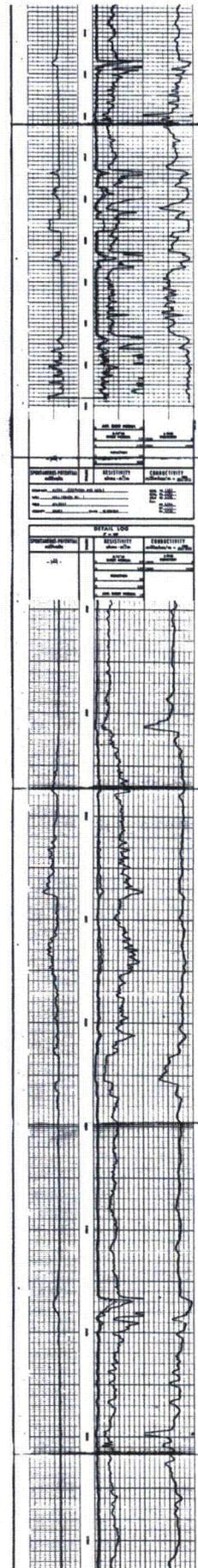
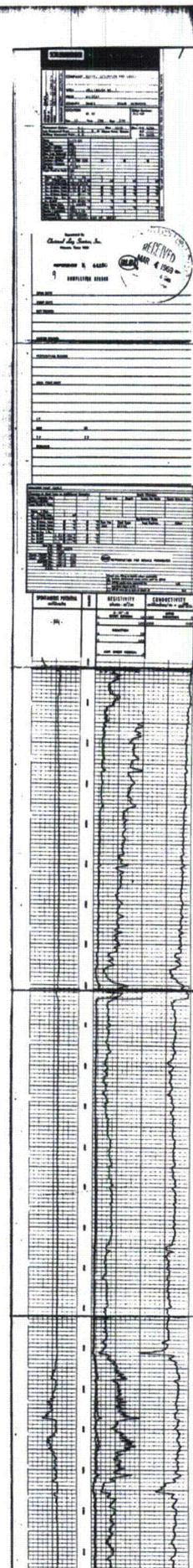


**CROW BUTTE
RESOURCES, INC.**

LOG G-71



ARCADIS
630 Plaza Drive, Ste. 100
Highlands Ranch, CO 80129
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www.arcadis-us.com



CROW BUTTE
RESOURCES, INC.

HOLIBAUGH 1 LOG

ARCADIS 630 Plaza Drive, Ste. 100
Highlands Ranch, CO 80129
P. 720-344-3500 F. 720-344-3535
www.arcadis-us.com

5400-5400

CENTURY GEOPHYSICAL CORPORATION
 11495 V55
 E 112552

FERRET EXPLORATION 2310 37'

M-3
 316 RED
 DAWES

DATE: 02-77
 NEBRASKA

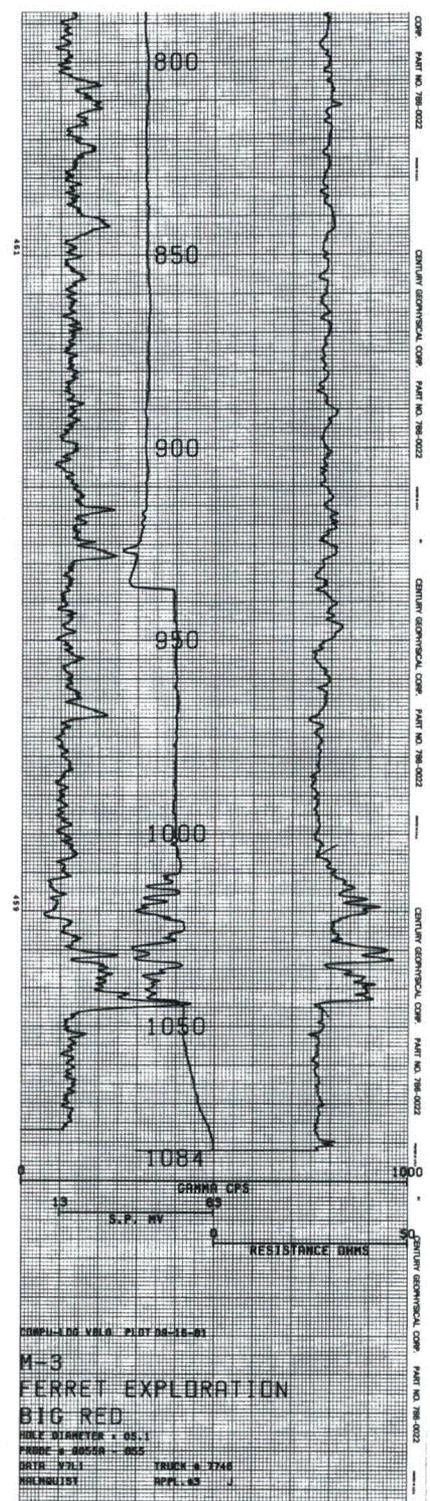
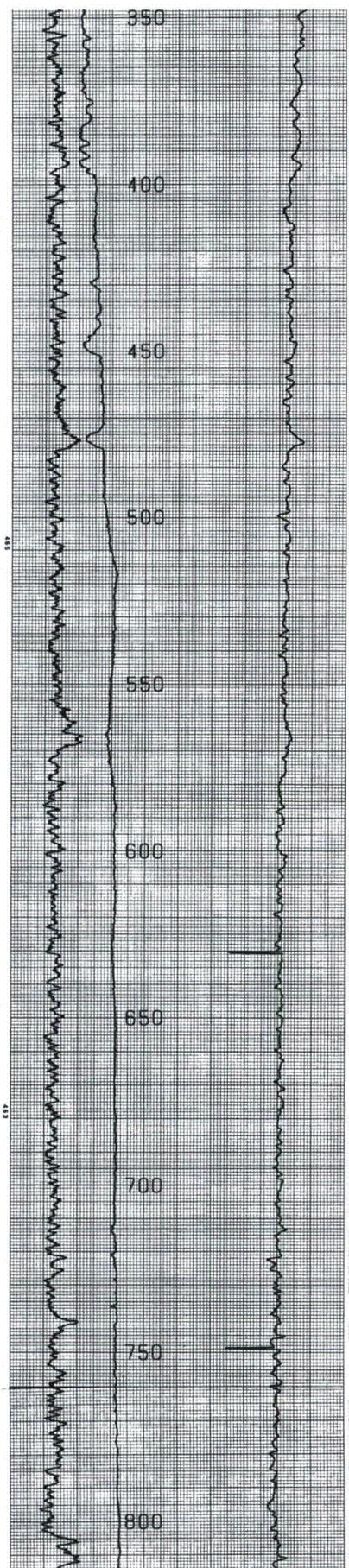
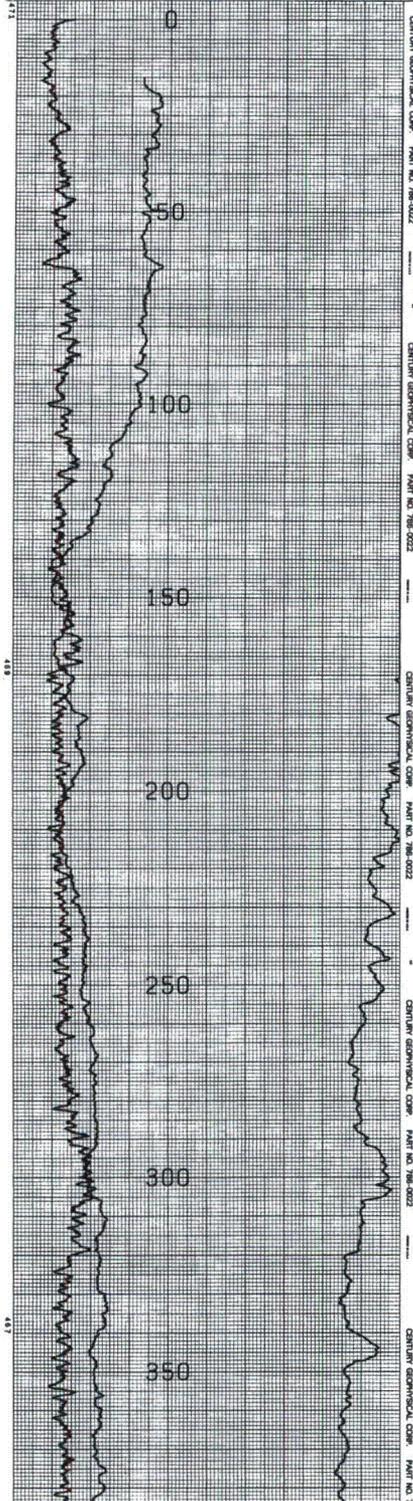
12. NE. 1/4 S1. N
 S1. W

HOLE DATA

TOTAL DEPTH - FEET	100	DEPTH - FEET	100
TOTAL DEPTH - METERS	30.5	DEPTH - METERS	30.5
LOGGING DEPTH - FEET	100	LOGGING DEPTH - METERS	30.5
LOGGING DEPTH - METERS	30.5	LOGGING DEPTH - FEET	100
LOGGING DEPTH - FEET	100	LOGGING DEPTH - METERS	30.5
LOGGING DEPTH - METERS	30.5	LOGGING DEPTH - FEET	100

GAUSS, SP. Q. DEV

5400-5400



**CROW BUTTE
 RESOURCES, INC.**

LOG M-3

ARCADIS
 630 Plaza Drive, Ste. 100
 Highlands Ranch, CO 80129
 P. 720-344-3500 F. 720-344-3535
 www.arcadis-us.com

525 L&S

CENTURY GEOPHYSICAL CORPORATION
 11010
 1122771

FERRET EXPLORATION / S. 6. R. 21. W. 4
 M-24
 MARSLAND
 DAWES
 4260 704.4
 NEB
 2.9 W
 SW

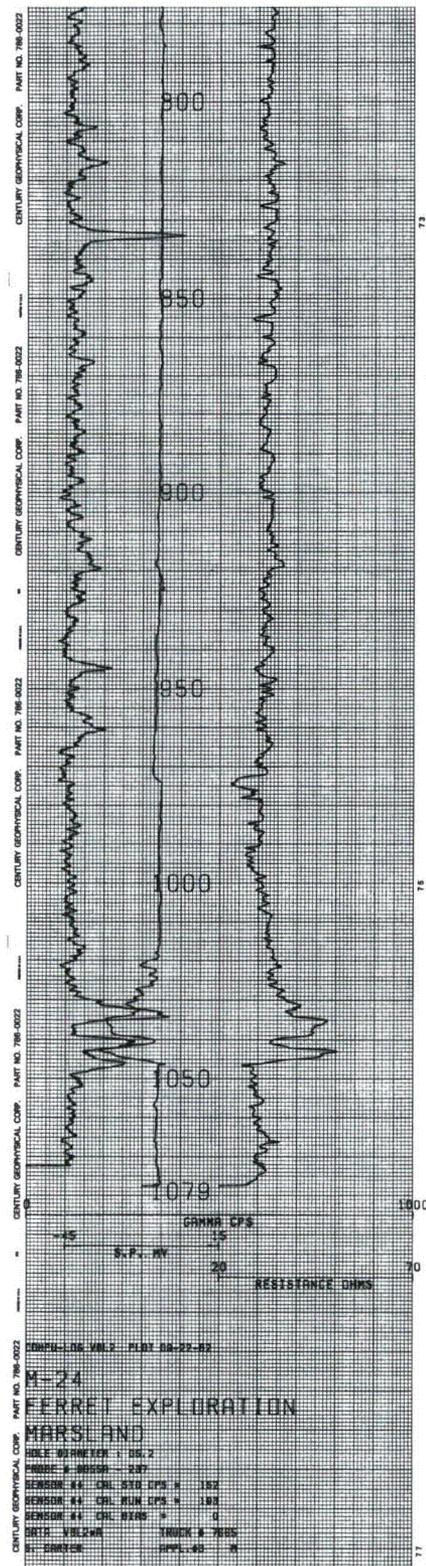
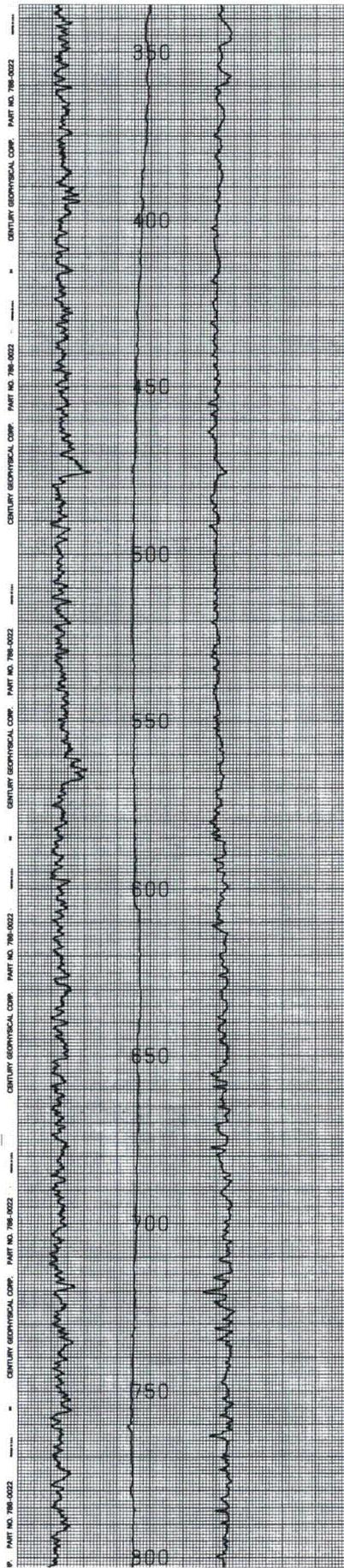
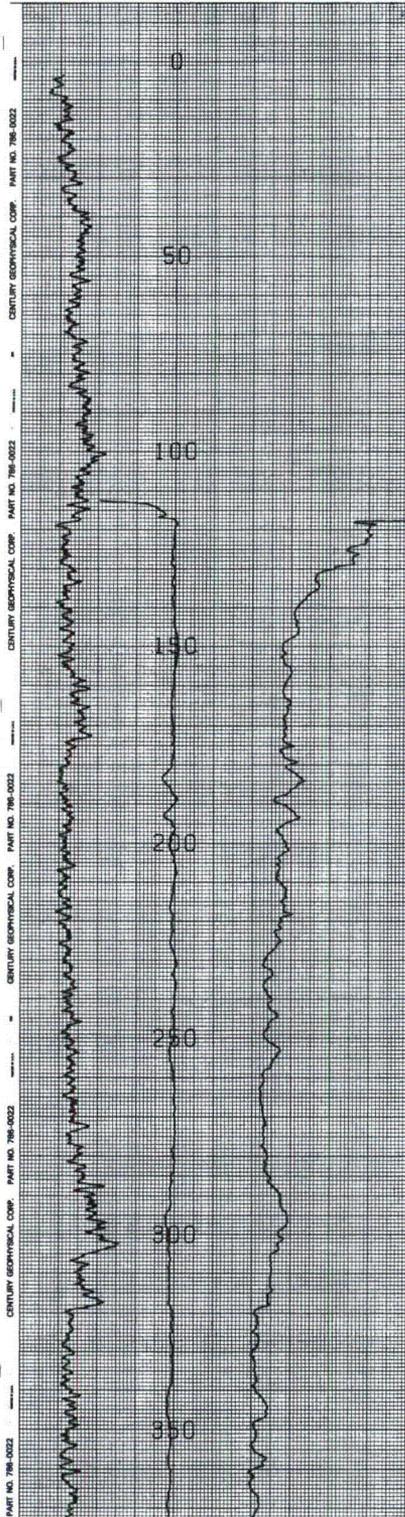
HOLE DATA

DATE	TIME	DEPTH	LOG
11-24	9:22-82		

EQUIPMENT DATA

TYPE	NO.	DATE
...

TIME 130-200
 4:00-11:21
 2750-2400
 2250' & 2550' OF NW COR

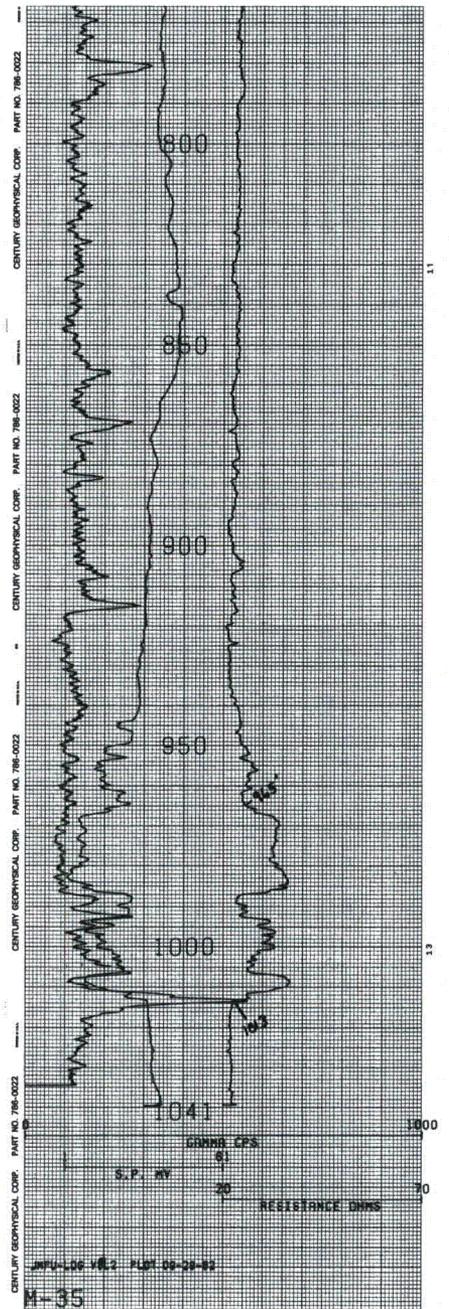
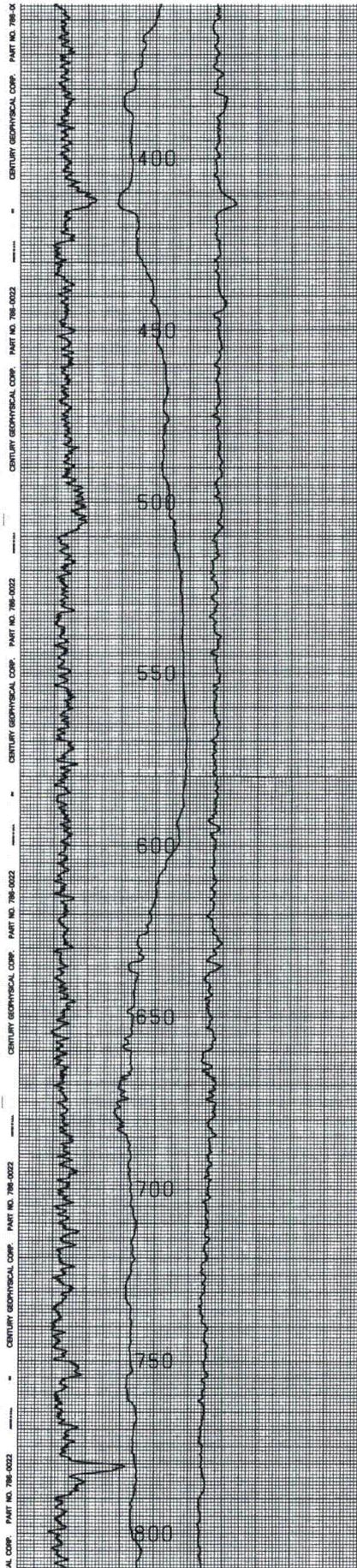
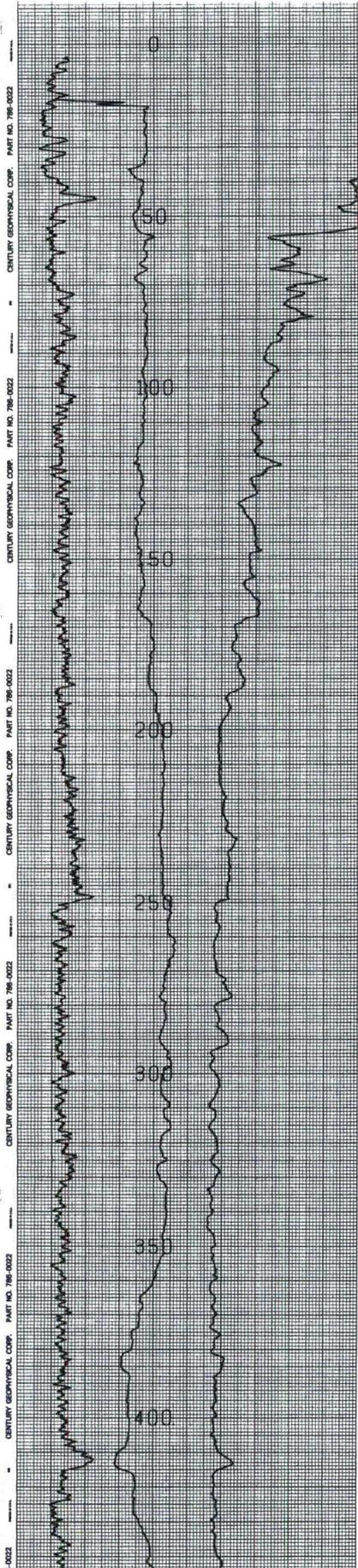


CROW BUTTE
 RESOURCES, INC.

LOG M-24



630 Plaza Drive, Ste. 100
 Highlands Ranch, CO 80129
 P: 720-344-3500 F: 720-344-3535
 www.arcadis-us.com



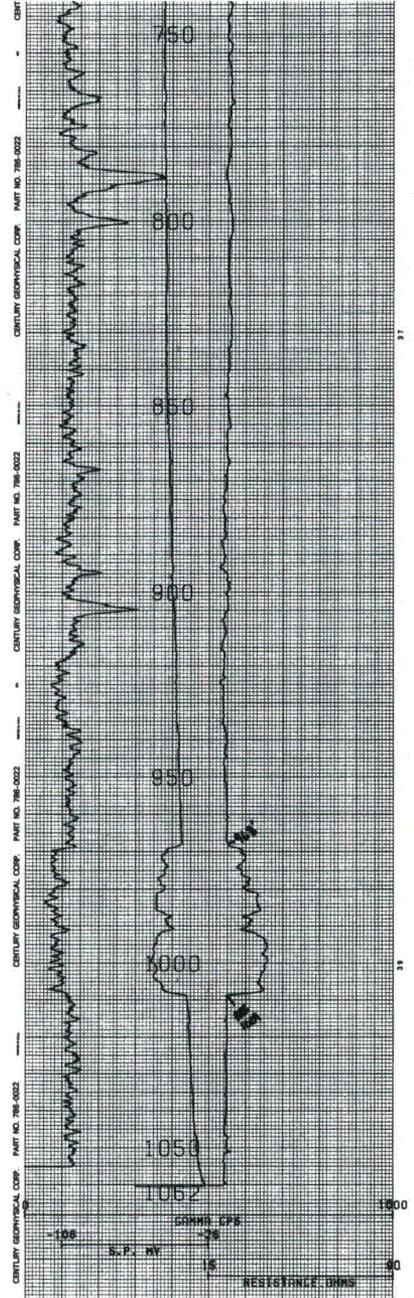
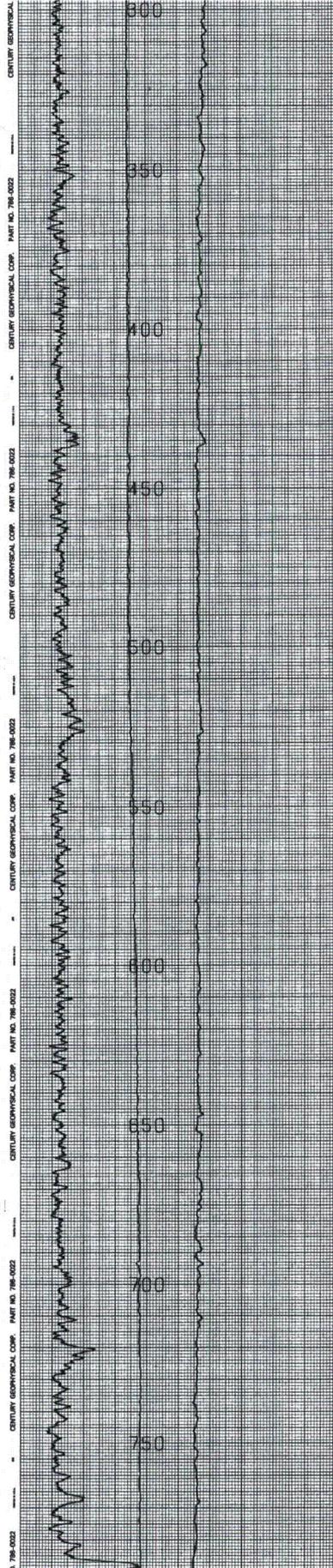
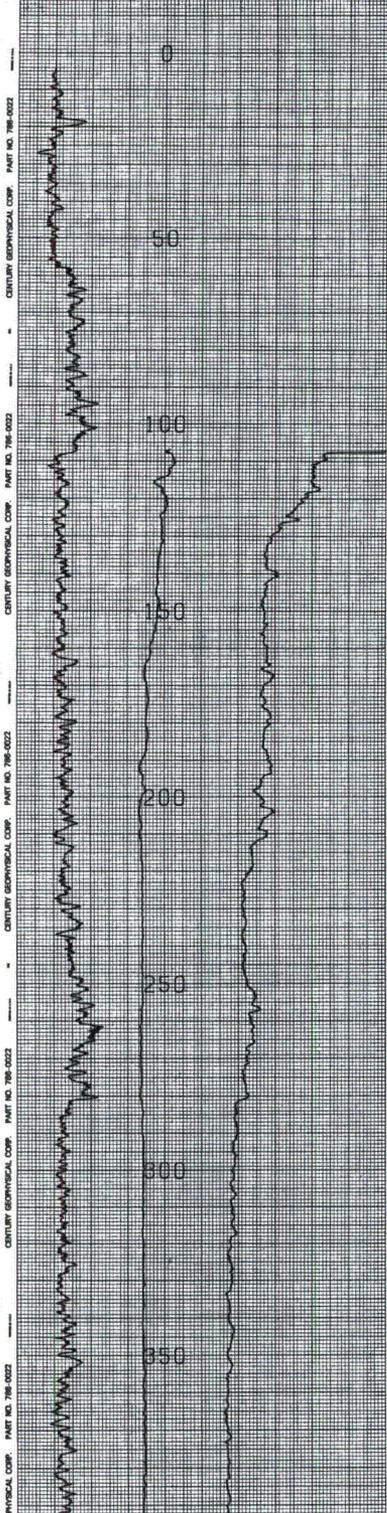
CROW BUTTE
RESOURCES, INC.

LOG M-35



630 Plaza Drive, Ste. 100
Highlands Ranch, CO 80129
P: 720-344-3500 F: 720-344-3535
www.arcadis-us.com

CENTURY GEOPHYSICAL CORPORATION 11440 S. W. 11th St. Aurora, CO 80012		DATE: 5/12/2012 TIME: 10:30 AM
PROJECT: FERRET EXPLORATION		
WELL: H-36		
OPERATOR: MARSLAND		
LOGGERS: DAVIS		
TIME: 2.5 HRS		
LOCATION: 22.5° E of 50° N at SW COR		
HOLE DATA		
DEPTH (ft)	LOG	REMARKS
0	100	
100	100	
200	100	
300	100	
400	100	
500	100	
600	100	
700	100	
800	100	
900	100	
1000	100	
1050	100	
1062	100	



CROW BUTTE
RESOURCES, INC.

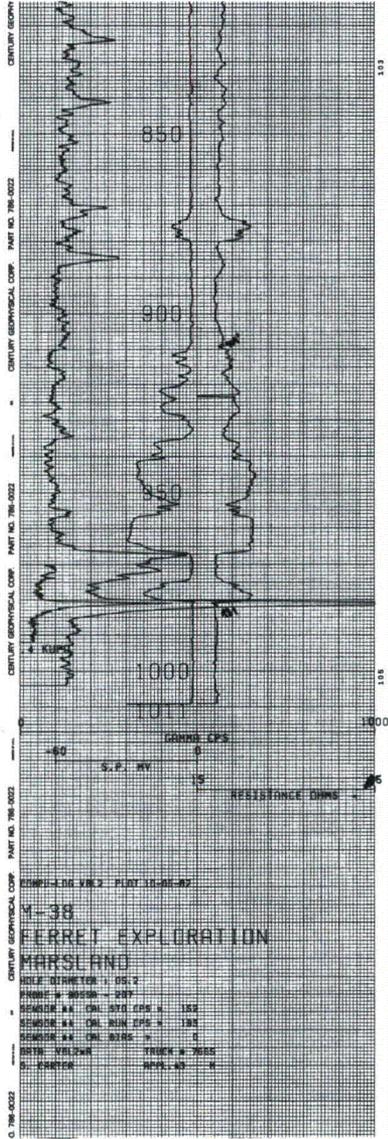
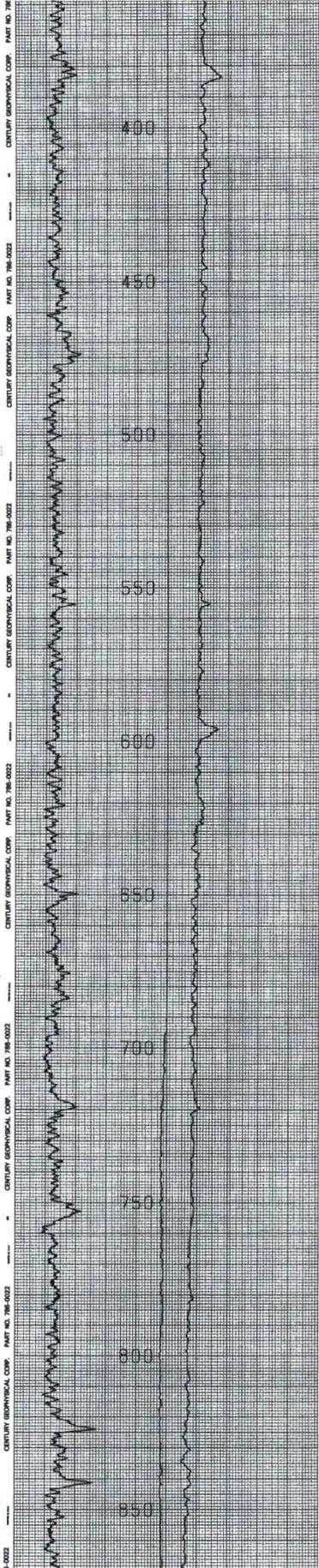
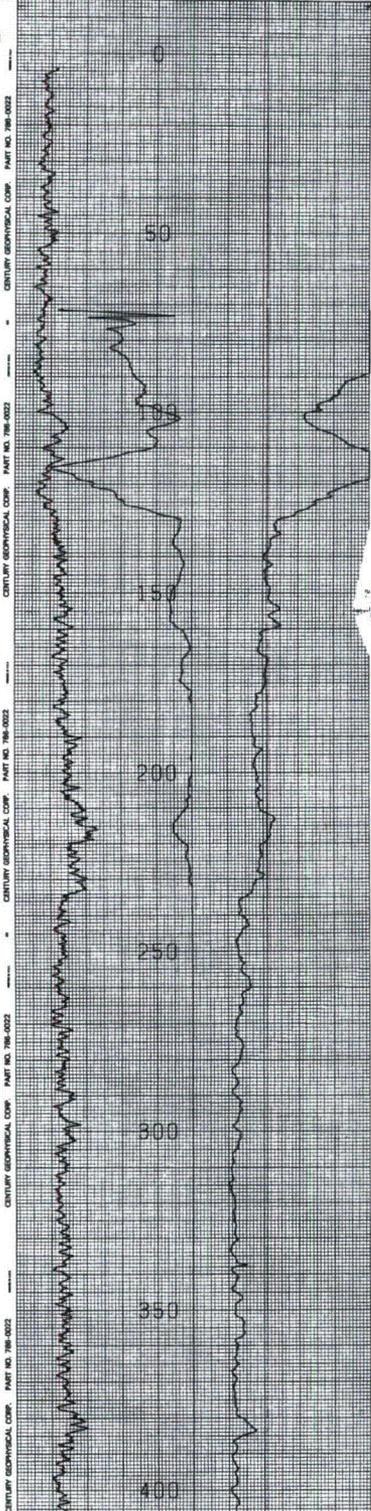
LOG M-36



630 Plaza Drive, Ste. 100
Highlands Ranch, CO 80129
P: 720-344-3500 F: 720-344-3535
www.arcadis-us.com

11-38
 MARS LAND
 DAWES
 18 base 2.9M 54m
 HOLE DATA
 1010
 0250-2650
 2400 W & 50' N at 7.8 CM

DATE	TIME	DEPTH	TEMP	RES	APP





**CROW BUTTE
RESOURCES, INC.**

LOG M-38



630 Plaza Drive, Ste. 100
Highlands Ranch, CO 80129
P. 720-344-3500 F. 720-344-3535
www.arcadis-us.com

5-10 1.88

CENTURY GEOPHYSICAL CORPORATION
 Title: **FERRET EXPLORATION**
 Well: **M-39** ID: **6-82**
 Date: **11/27/85** CASE: **266/AMMITE**

FERRET EXPLORATION 112.2
M-39
MARSLAND
DAWES **NEG**
19 SW/4 **R2M** **50W**

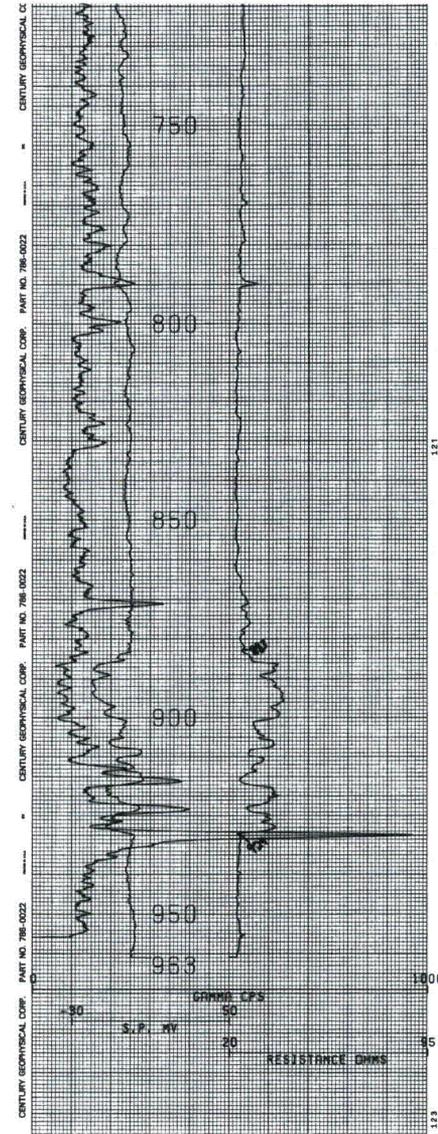
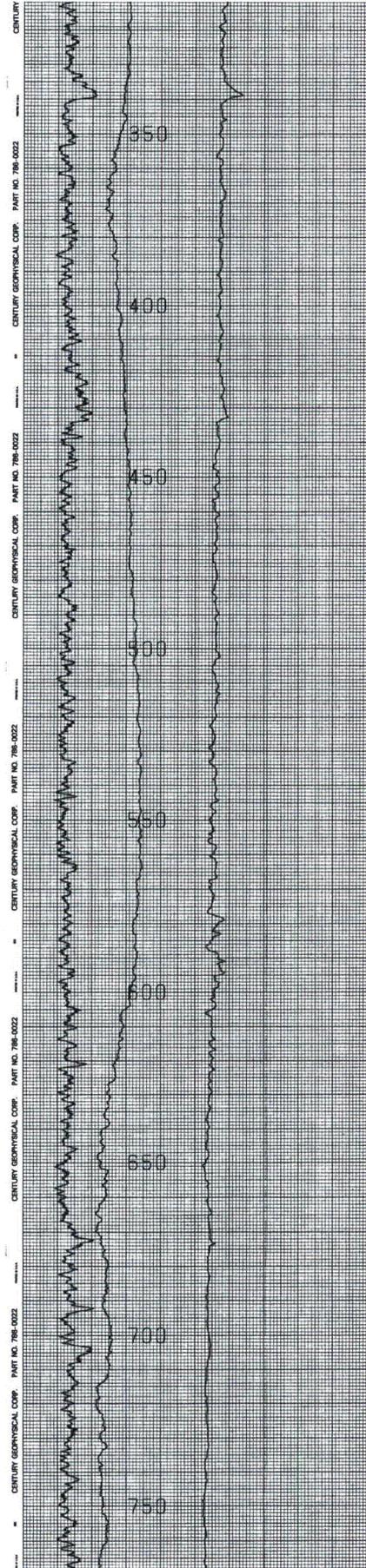
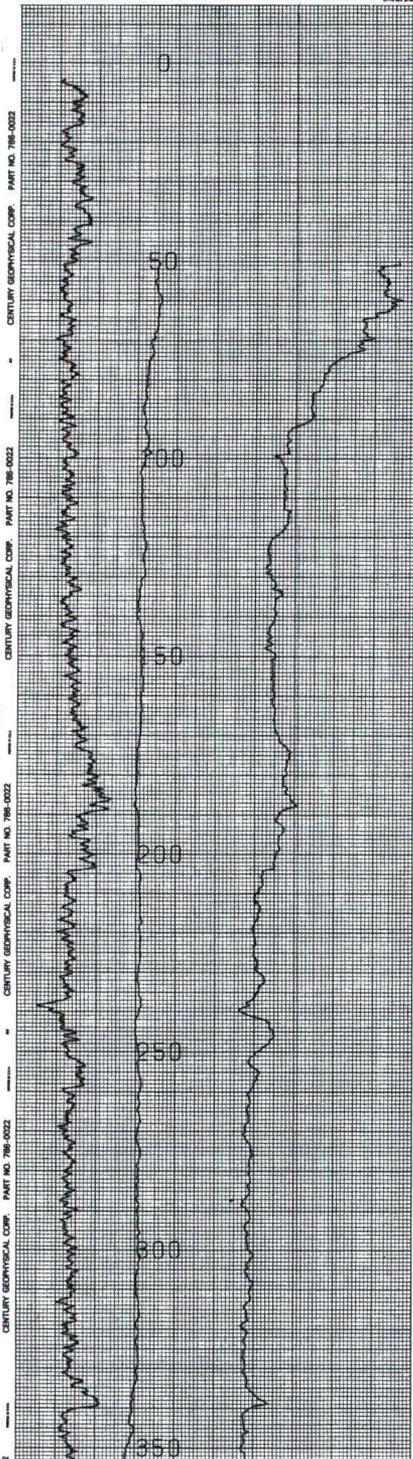
HOLE DATA

TOTAL DEPTH - CORRECT	900	BT DEPT	50'
TOTAL DEPTH - LOGGED	763	CORRECTION	NA
LOGGING INTERVAL	10'	LOGGING RATE	NA
LOGGING SPEED	6000'	LOGGING FLUID	LOG 2100
LOGGING UNIT	LOG 2100	LOGGING METHOD	NA
LOGGING CODE	LOG 2100	LOGGING TYPE	NA
LOGGING NO.	LOG 2100	LOGGING DATE	NA
LOGGING TIME	LOG 2100	LOGGING LOCATION	NA
LOGGING OPERATOR	LOG 2100	LOGGING INSTRUMENT	NA
LOGGING EQUIPMENT	LOG 2100	LOGGING ACCESSORIES	NA
LOGGING MATERIALS	LOG 2100	LOGGING NOTES	NA
LOGGING COMMENTS	LOG 2100	LOGGING SIGNATURE	NA
LOGGING CHECKED	LOG 2100	LOGGING APPROVED	NA
LOGGING DATE	LOG 2100	LOGGING TIME	NA
LOGGING LOCATION	LOG 2100	LOGGING SURFACE	NA
LOGGING ELEVATION	LOG 2100	LOGGING TEMPERATURE	NA
LOGGING PRESSURE	LOG 2100	LOGGING HUMIDITY	NA
LOGGING WIND	LOG 2100	LOGGING CLOUDS	NA
LOGGING RAIN	LOG 2100	LOGGING VISIBILITY	NA
LOGGING SOIL	LOG 2100	LOGGING ROCK	NA
LOGGING VEGETATION	LOG 2100	LOGGING OTHER	NA

TIME LOGS - 1100
TIME **LOGS** **RES.** **DEV.**
2600-2700 **LOGS** **RES.** **DEV.**
2600-2700 **LOGS** **RES.** **DEV.**

SCALE **BIAS**
SP **300** **-10**
RES **15** **-2.0**

2600 W & 2550 S AT NE COR.





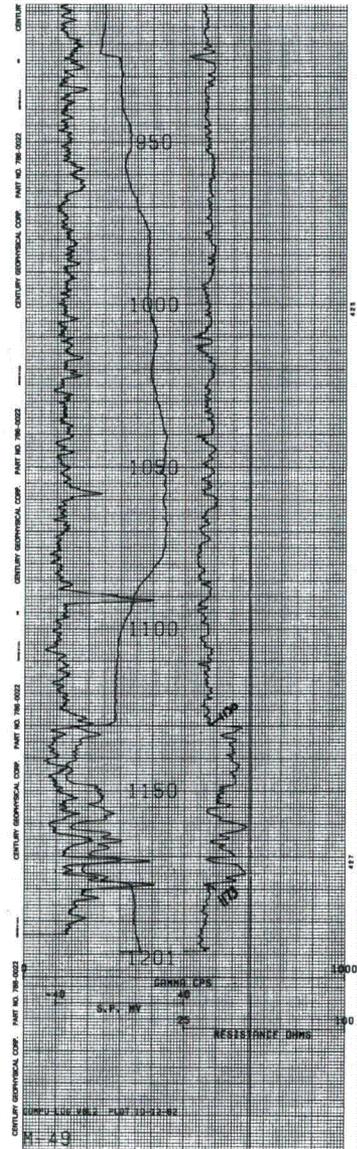
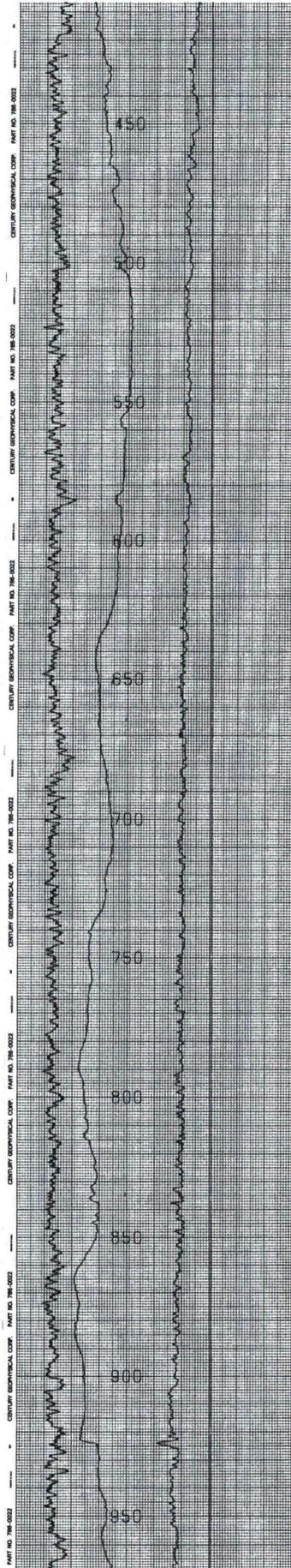
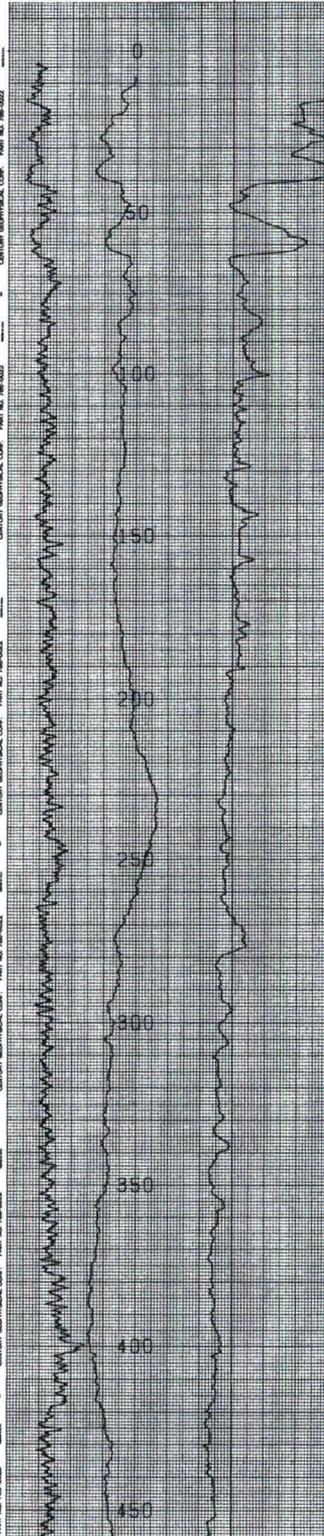
CROW BUTTE RESOURCES, INC.

LOG M-39

 **ARCADIS**

630 Plaza Drive, Ste. 100
 Highlands Ranch, CO 80129
 P: 720-344-3500 F: 720-344-3535
 www.arcadis-us.com

CENTURY GEOPHYSICAL
 Job Number: **5220-1000**
FERRET EXPLORATION
 H-49
 MARLAND
 DAVIES
 S.W. NW 3/4
 NE 51W
 HOLE DATA
 HOLE NO: **5220-1000**
 DATE: **5/20/09**
 LOGGERS: **JK**
 SUPERVISOR: **JK**
 GEOPHYSICIAN: **JK**
 FIELD TECH: **JK**
 TIME: **10:00 AM**
 WIND: **SE 5-10**
 TEMP: **65**
 PRESS: **30.0**
 HUMID: **45**
 VISIB: **10**
 CLOUDS: **0**
 MOON: **0**
 SUN: **0**
 COMMENTS: **1000' to 1050' S. of NW cor.**





**CROW BUTTE
RESOURCES, INC.**

LOG M-49



630 Plaza Drive, Ste. 100
 Highlands Ranch, CO 80129
 P: 720-344-3500 F: 720-344-3535
 www.arcadis-us.com

3-25 1-67

CENTURY GEOPHYSICAL CORPORATION
 1750 W. WASHINGTON AVE. BOULDER, CO 80502
 PHONE: 303-440-1234 FAX: 303-440-1235

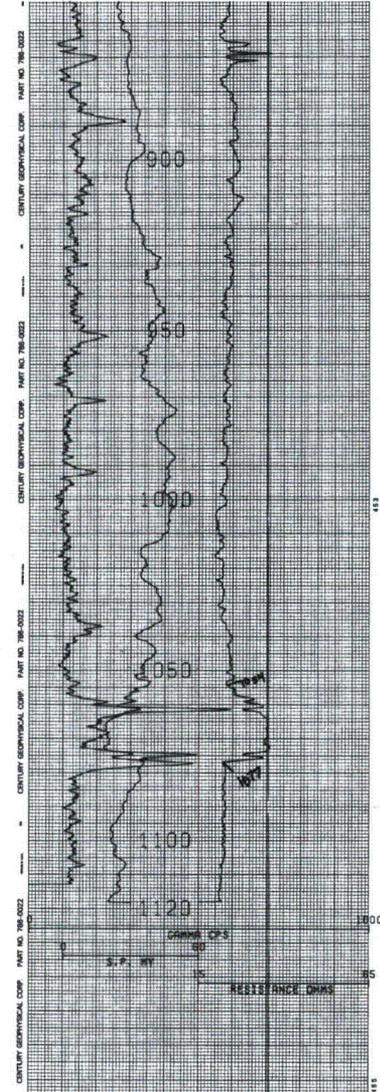
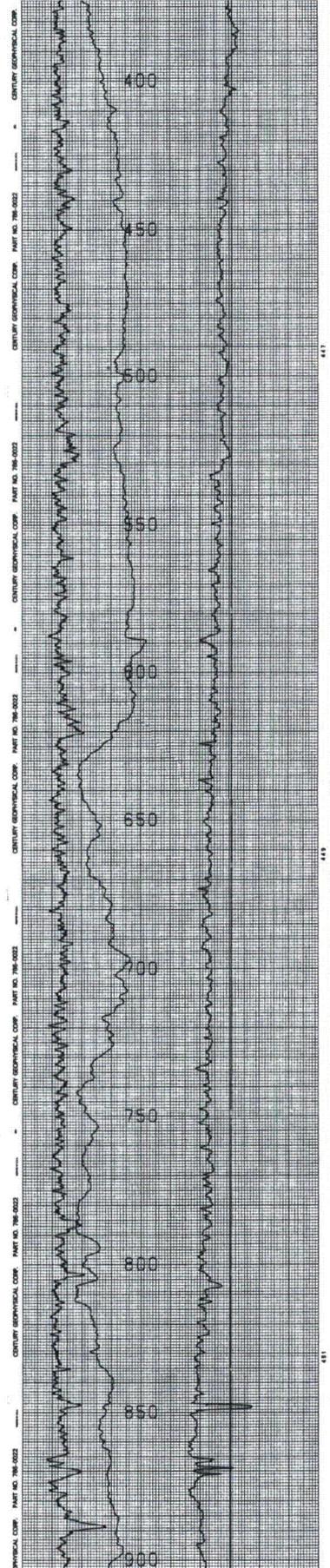
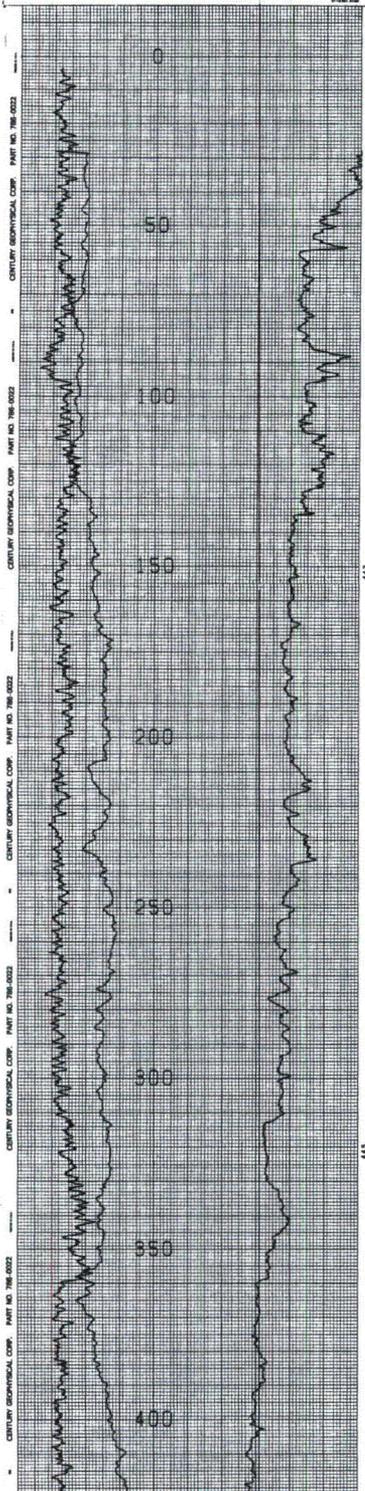
PERMIT EXPLORATION 3162 SVI

WELL NO. M-51
 FIELD NO. 1375
 DATES: 12/12/60
 LOCATION: 3 1/2 N 105 W 1/4 S1W

EQUIPMENT DATA
 LOGGING SYSTEM: S.P. WY
 LOGGING RATE: 1000 FT/HR
 LOGGING DEPTH: 400 FT

HOLE DATA
 HOLE NO.: 1375
 HOLE DEPTH: 400 FT
 HOLE DIAMETER: 3 1/2 IN
 HOLE TYPE: S.P. WY

LOG NO. 1375
 DATE: 12/12/60
 BY: J.C.





**CROW BUTTE
RESOURCES, INC.**

LOG M-51



630 Plaza Drive, Ste. 100
Highlands Ranch, CO 80129
P. 720-344-3500 F. 720-344-3535
www.arcadis-us.com

5-201 1745

CENTURY GEOPHYSICAL CORPORATION
10000 W. NORTH AVENUE
DENVER, CO 80231

FERRET EXPLORATION 97-12-2154

10-K-52

MARSLAND

DAWES

2.5M

81M

HOLE DATA

DATE	TIME	DRILLER	LOGGERS
02/22	08:00	MA	MA
02/23	08:00	MA	MA
02/24	08:00	MA	MA
02/25	08:00	MA	MA
02/26	08:00	MA	MA
02/27	08:00	MA	MA

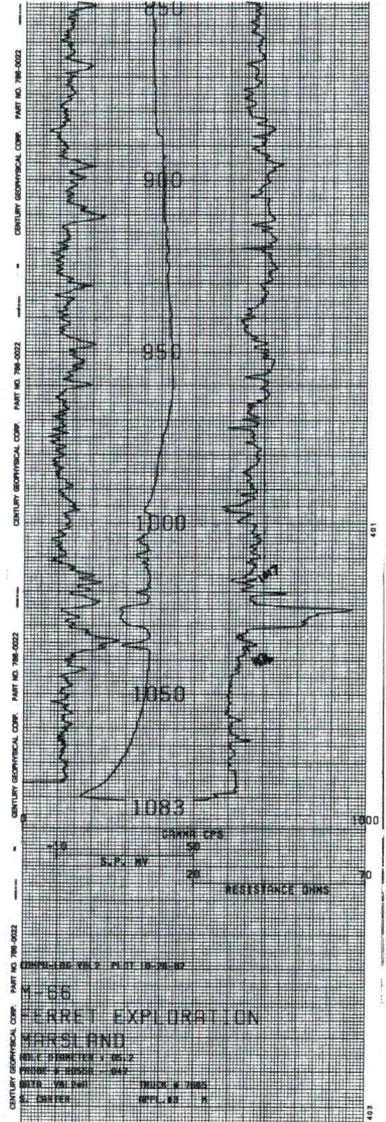
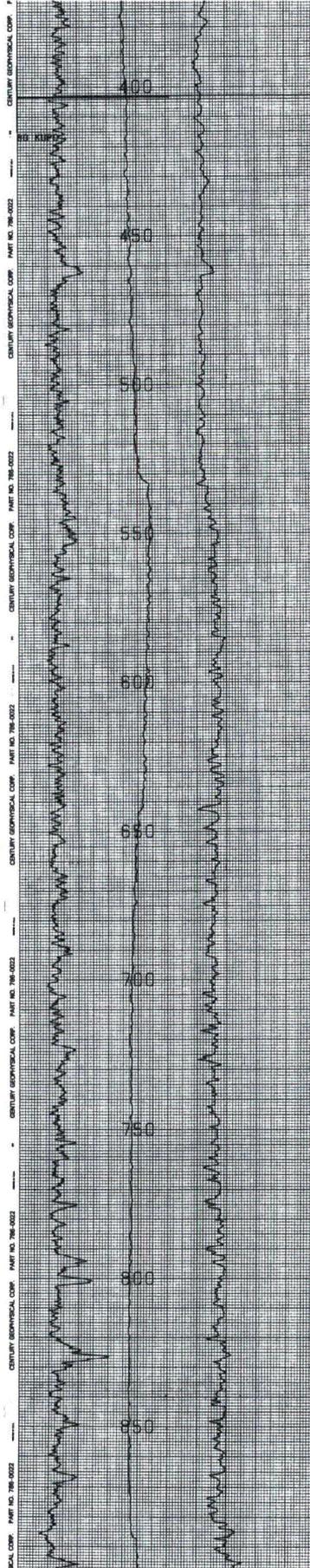
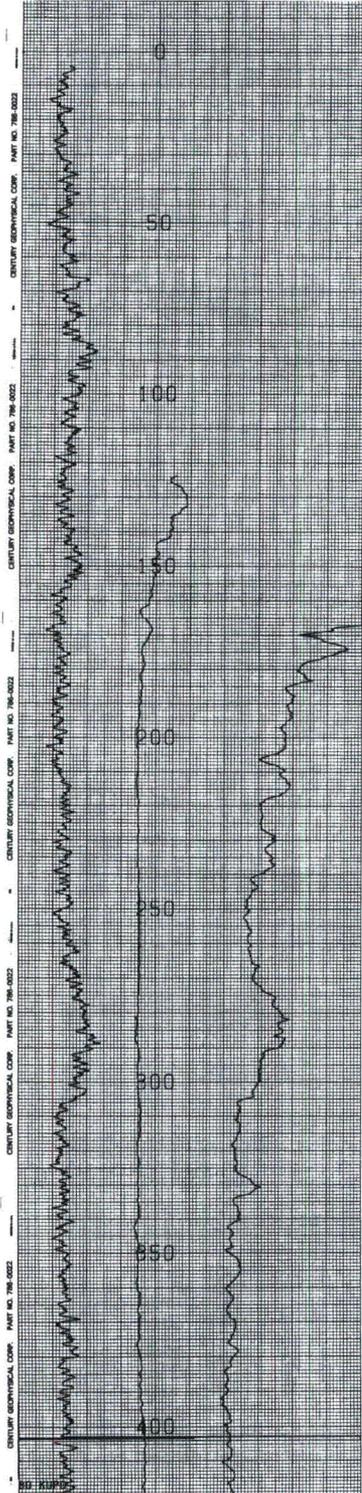
TYPE LOG - 720
GATTA, S.P. RES. DEV.

5400-5000

DISEMBARK SIGNAL AT 607
75m @ 50'S OF HOLE

EQUIPMENT DATA

LOGGING SYSTEM	LOGGING UNIT	LOGGING SOFTWARE
GEOPHYSICAL SYSTEM	GEOPHYSICAL UNIT	GEOPHYSICAL SOFTWARE
RESISTIVITY SYSTEM	RESISTIVITY UNIT	RESISTIVITY SOFTWARE
TEMPERATURE SYSTEM	TEMPERATURE UNIT	TEMPERATURE SOFTWARE





**CROW BUTTE
RESOURCES, INC.**

LOG M-66


ARCADIS

630 Plaza Drive, Ste. 100
 Highlands Ranch, CO 80129
 P. 720-344-3500 F. 720-344-3535
www.arcadis-us.com

5-15 1-98

CENTURY GEOPHYSICAL CORPORATION
 1400 S. W. 10th St. Suite 100
 Fort Collins, CO 80521
 Phone: 970-221-1111
 Fax: 970-221-1112
 E-Mail: info@centurygeophysical.com

M-72
FERRET EXPLORATION
MARSLAND

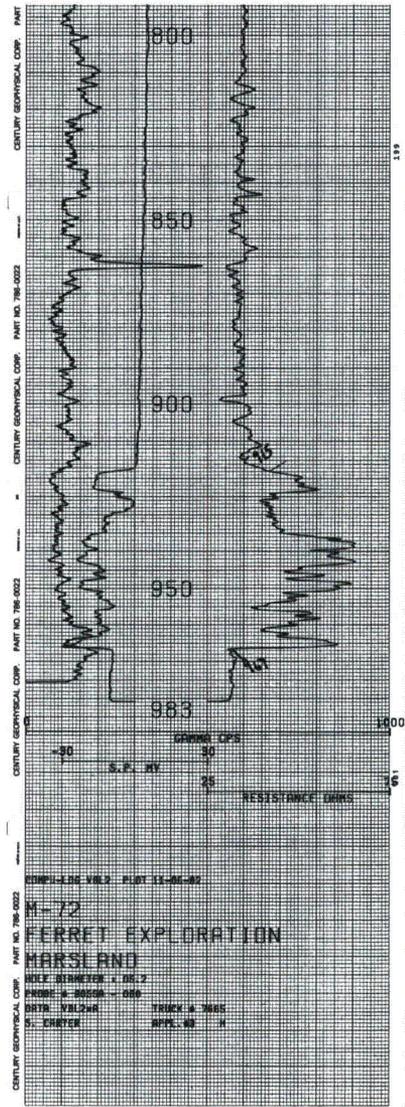
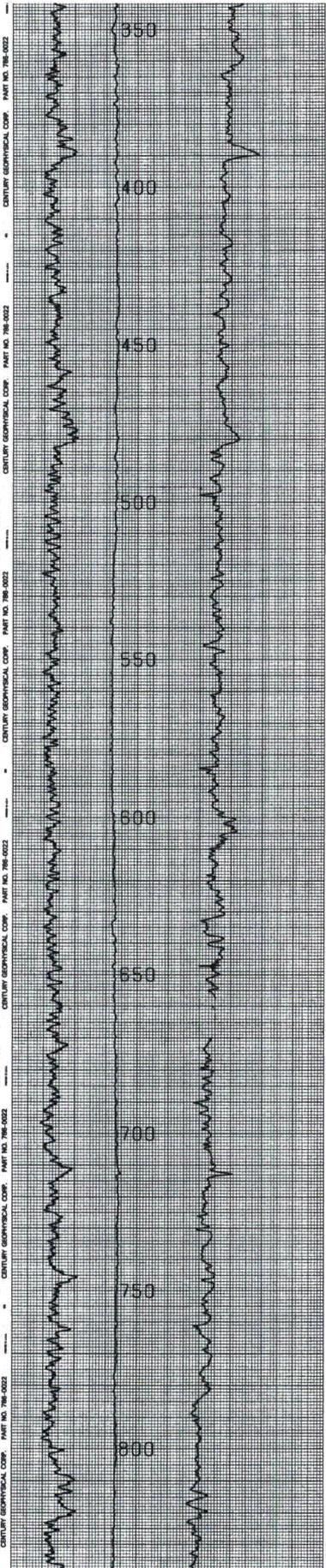
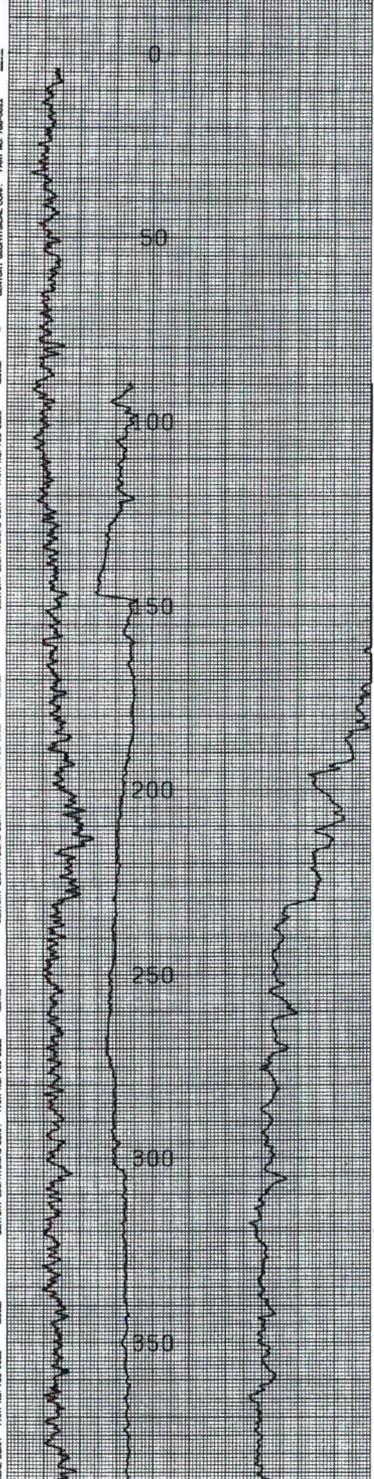
DATE: 11/27/02
 TIME: 10:00 AM
 LOCATION: 100' N of 56.000'

PROBE: 100' N of 56.000'
 TRUCK: 100' N of 56.000'

SCALE: 1:1000
 DATE: 11/27/02

100' N of 56.000'

TIME	DEPTH	RESISTANCE	TEMPERATURE	DEPTH	RESISTANCE	TEMPERATURE
10:00	0	100	10	100	100	10
10:05	50	100	10	100	100	10
10:10	100	100	10	100	100	10
10:15	150	100	10	100	100	10
10:20	200	100	10	100	100	10
10:25	250	100	10	100	100	10
10:30	300	100	10	100	100	10
10:35	350	100	10	100	100	10
10:40	400	100	10	100	100	10
10:45	450	100	10	100	100	10
10:50	500	100	10	100	100	10
10:55	550	100	10	100	100	10
11:00	600	100	10	100	100	10
11:05	650	100	10	100	100	10
11:10	700	100	10	100	100	10
11:15	750	100	10	100	100	10
11:20	800	100	10	100	100	10
11:25	850	100	10	100	100	10
11:30	900	100	10	100	100	10
11:35	950	100	10	100	100	10
11:40	1000	100	10	100	100	10





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