MINISTÉRIO DAS MINAS E ENERGIA

DEPARTAMENTO NACIONAL DA PRODUÇÃO MINERAL

CONVÊNIO DNPM - CPRM

PROJETO SONDAGEM BAMBUÍ EM MINAS GERAIS

RELATÓRIO FINAL

ANEXOS

VOLUME V

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COMPANHIA DE PESQUISA DE RECURSOS MINERAIS

DIRETORIA DA ÁREA DE PESQUISA

SUPERINTENDÊNCIA REGIONAL DE BELO HORIZONTE

1980

PROJETO SONDAGEM BAMBUÍ EM MINAS GERAIS

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PROJETO SONDAGEM BAMBUÍ EM MINAS GERAIS

RELATÓRIO FINAL

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CPRM

CONSIDERAÇÕES GERAIS

Na prática, das três modalidades de perfís corridos nos trabalhos de perfilagem, sem dúvida o perfil de resistência foi o que evidenciou uma melhor inteiração com a divisão litológica macroscópica, sendo mais sensível às variações litológicas, seja nos grandes pacotes individualizáveis seja em variações apresentadas dentro dos mesmos, (às vezes discreta).

Os valores mais baixos de resistência coincidem com a passagem e/ou presença de rochas argilosas, argilo-carbonosas, ardosianas ou filitosas, (200 ohms a 400 ohms) enquanto os valores mais elevados correspondem à presença de dolomitos (baixa porosidade devido à dolomitização e silicificação 700 a 1.100 ohms), não havendo variações sensíveis nas zonas mineralizadas. Nos intervalos arenosos dentro de pacotes carbonosos ocorrem pequenos aumentos na resistência em relação ao pacote carbonoso, porém bem mais baixo que os valores de resistência dos pacotes de dolomito.

Os pacotes mais espêssos de Morro Agudo chegam a valores de 1.800 ohms, enquanto nos furos onde se tem calcários os valores mínimos variam de 400 a 600 ohms em média, atingindo até 1.200 ohms no máximo.

Em algumas zonas onde ocorrem fraturamentos com venulações às vezes portadoras de mineralizações com pirita, os valores de resistência podem baixar sensivelmente (furo 1-PSB-11-MG). Apesar dessa regra geral existem pacotes com intercalações de diferentes tipos litológicos, que apesar de diferentes fisicamente se comportam da mesma maneira em relação à passagem de corrente elétrica (furo

1-PSB-10-MG).

É notável no contexto geral a variação coincidente, dos valores de R, SP e também de Gama, nos contatos dos grandes pacotes individualizáveis, principalmente envolvendo rochas ardosianas ou folhelhos carbonosos e rochas carbonáticas dolomíticas ou calcíferas.

Os valores de R, SP baixam, na passagem de rocha carbonática, para ardósias ou folhelhos carbonosos e nos perfís essa baixa é marcante, enquanto os valores de Gama aumentam nessa passagem.

Os valores de Gama evidenciam discretamente passagens mais argilosas mostrando um maior contraste (dependente da escala utilizada) para rochas originalmente argilosas, carbonosas, que reunem condicionamento para fixação de elementos radiotivos, o suficiente para contrastar com os dolomitos onde o CPS tende a 0 (zero). Os picos máximos em rochas carbonosas ardosianas chegaram a 120 cps.

As curvas de SP apresentam uma baixa aplicabilidade na distinção litológica de horizontes menos espessos dentro de um pacote maior.

Não foi possível diagnosticar correlações entre os diversos perfís.

3,70 m

PERFILAGEM

CPRM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CLIENTE: DNPM

PROJETO: BAMBUI

FURO: 1PSB-01-MG

MUNICÍPIO: Vazante ESTADO: MG.

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prof.	1 / 1:500	1 / 1:500	1 / 1:500
Data	14 03 78	14 03 78	14 03 78
Primeira Leitura	1004,50 m	1005,00 m	1005,00 m
Última Leitura	00,00 m	168,00 m	168,00 m
Metragem Perfilada	1004,50 m	837,00 m	837,00 m
Prof. Alcançada	1004,50 m	1005,00 m	1005,00 m
Prof. Perfuração	1012,35 m	1012,35 m	1012,35 m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	20 cps/div	100 ohm/div	20 mv/div
Erro Percentual	%P.E.= 2		
Constante de Tempo	T.C.= 2,8 s		
Vel. de Registro	5,00 m/min	5,00 m/min	5,00 m/min
Natureza da Lama	Bentonita+Soda+Esper. .+Condet		
Dens. / Viscosidade	34 lb/gal s	lb/gal s	lb/gal s
P.H. / Perda d'água	8,5 / 15 c.c./30min	c.c./30min	c.c./30min
Resist. Lama	a °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Rebôco	a °c	a °c	a °c
Nível do Fluido	m	m	m
Broca ou Coroa	a m	a m	a m
Broca ou Coroa	a m	a m	a m
Revestimento N	0 a 168,20 m	0 a 168,20 m	a m
Revestimento	a m	a m	a m
Tempo de Operação	8 h 00 min	h min	h
Outros Perfis			
Repres. do Cliente			
OPERADOR	José Maria		

LOCAÇÃO DO FURO	DADOS DO EQUIPAMENTO	
COORDENADAS: Norte Sul / Oeste Leste	TIPO: Mount Sopris 3000 NB	
DO	SONDA	Nº 02
ELEVAÇÃO DA B.F.		Diâmetro do Cristal 1/2 pol.
m acima / abaixo		Comprimento do Cristal 1 1/2 pol.
Do		Tempo Morto 7 μ seg.
		Fator K 4,62x10⁻⁶
		Dist. Detetor-Ext. Inf. 0,50 cm
	CALIBRADOR	Nº 02
		Valor 6000 cps

OBSERVAÇÃO

REPERFILAGENS	SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
	cps/div	m	m		s	
	cps/div	m	m		s	
	cps/div	m	m		s	
	cps/div	m	m		s	
	cps/div	m	m		s	
	cps/div	m	m		s	
	cps/div	m	m		s	
	cps/div	m	m		s	
	cps/div	m	m		s	

20 cps/div	DE 1004,50	A 0,00	ESCALA DE PROFUNDIDADE	100 ohm/div	DE 1005,00	A 168,00
20 mv/div	DE 1005,00	A 168,00		div	DE	A

2,56 m

PERFILAGEM

GAMA – RESISTÊNCIA – POT. ESPONTANEO

CPRM

CLIENTE: DNPM

PROJETO: BAMBUI

FURO: 1PSB-02-MG

MUNICÍPIO: Vazante ESTADO: MG.

LOCAÇÃO DO FURO	DADOS DO EQUIPAMENTO		
COORDENADAS:	TIPO: M. Sopris 3000 NB		
______ Norte Sul	SONDA	Nº	02
______ Oeste Leste		Diâmetro do Cristal	1/2 pol.
DO ______		Comprimento do Cristal	11/2 pol.
ELEVAÇÃO DA B.F.		Tempo Morto	7 μ seg.
______ m acima / abaixo		Fator K	$4,62 \times 10^{-6}$
		Dist. Deletor-Ext. Int.	0,50 cm
Do ______	CALIBRADOR	Nº	02
		Valor	6000 cps

OBSERVAÇÃO

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prot.	1 / 1:500	1 / 1:500	1 / 1:500
Data	26 01 78	26 01 78	26 01 78
Primeira Leitura	699,50 m	700,00 m	700,00 m
Última Leitura	0,50 m	178,00 m	178,00 m
Metragem Perfilada	699,00 m	522,00 m	522,00 m
Prot. Alcançada	699,50 m	700,00 m	700,00 m
Prof. Perfuração	703,55 m	703,55 m	703,55 m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	10 cps/div	200 ohm/div	50 mv/div
Erro Percentual	%P.E= 2		
Constante de Tempo	T.C= 5,6 s		
Vel. de Registro	5,00 m/min	5,00 m/min	5,00 m/min
Natureza da Lama	Bentonita+ Soda+ Condet		
Dens. / Viscosidade	1,05 lb/gal / 30 s	lb/gal / s	lb/gal / s
P.H. / Perda d'água	9,5 / C.C/30min	C.C/30min	C.C/30min
Resist. Lama	a °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Rebôco	a °c	a °c	a °c
Nivel do Fluido	0,00 m	m	m
Broca ou Coroa H	0 a 159,35 m	a m	a m
Broca ou Coroa N	159,35 a 368,05 m	a m	a m
~~Revestimento~~ B	368,05 a 703,55 m	a m	a m
Revestimento N	0 a 178,00 m	a m	a m
Tempo de Operação	5 h 00 min	h min	h min
Outros Perfis			
Repres. do Cliente			
OPERADOR	José Maria		

REPERFILAGENS

SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

Escala	Unidade	DE	A
10	cps/div	699,50	0,50
50	mv/div	700,00	178,00
200	ohm/div	700,00	178,00
	div		

ESCALA DE PROFUNDIDADE

2,52 m

PERFILAGEM

CPRM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CLIENTE: DNPM

PROJETO: SOND. BAMBUI

FURO: 1 PSB.04AMG

MUNICÍPIO: VAZANTE ESTADO: MG

PERFIL CORRIDO	GAMA			RESISTÊNCIA			POT. ESP.		
Corrida nº / Esc. Prot.	1	500		1	500		1	500	
Data	04	08	77	04	08	77	04	08	77
Primeira Leitura	891,50 m			894,00 m			894,00 m		
Última Leitura	230,00 m			232,50 m			232,50 m		
Metragem Perfilada	661,50 m			661,50 m			661,50 m		
Prot. Alcançada	891,50 m			894,00 m			894,00 m		
Prof. Perfuração	894,90 m			894,90 m			894,90 m		
Sapata Perfilagem	m			m			m		
Sapata Perfuração	m			m			m		
Sensibilidade	20 cps/div			ohm/div			mv/div		
Erro Percentual	%P.E= 2								
Constante de Tempo	T.C= 2,8 s								
Vel. de Registro	5,00 m/min			m/min			m/min		
Natureza da Lama	Bentonita +soda +Quick-Trol								
Dens. / Viscosidade	1,2 lb/gal	40 s		lb/gal	s		lb/gal	s	
P.H. / Perda d'água	10	C.C./30min			C.C./30min			C.C./30min	
Resist. Lama	a °c			a °c			a °c		
Resist. Filtrado	a °c			a °c			a °c		
Resist. Rebôco	a °c			a °c			a °c		
Nivel do Fluido	0, 00 m			m			m		
Broca ou Coroa H	0,00 a 19,40 m			a m			a m		
Broca ou Coroa N	79,40 a 865,40 m			a m			a m		
Revestimento H	0,00 a 79,40 m			a m			a m		
Revestimento N	0,00 a 232,65 m			a m			a m		
Tempo de Operação	4,00 h min			h min			h min		
Outros Perfis									
Repres. do Cliente									
OPERADOR									

LOCAÇÃO DO FURO	DADOS DO EQUIPAMENTO	
COORDENADAS: ____ Norte Sul / ____ Oeste Leste	TIPO:	Mount.Sopris 3000 NB
ELEVAÇÃO DA B.F. ____ m acima / abaixo	SONDA	Nº 2A; Diâmetro do Cristal 1/2 pol; Comprimento do Cristal 1 1/2 pol; Tempo Morto 7,0 seg; Fator K 4,62 x 10^-6; Dist. Detetor-Ext. Int. 0,50 cm
	CALIBRADOR	Nº 2; Valor 6000 CPS

OBSERVAÇÃO: Registro de gama está deslocado de 5 mm acima do registro de R e SP

Broca Ø BQ 865,40 A 894,90

Não foi possível perfilar os 230,00 m iniciais devido arriamento no furo.

REPERFILAGENS	SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min
	cps/div	m	m		s	m/min

20 cps/div	DE 891,50	A 230,00	ESCALA DE PROFUNDIDADE	100 ohm/div	DE 894,00 A 232,50
10 mv/div	DE 894,00	A 232,50		div	DE A

2,88 m

PERFILAGEM

CPRM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CLIENTE: DNPM

SOND.

PROJETO: BAMBUÍ

FURO: PSB05-MG

MUNICÍPIO: PARACATU ESTADO: MG

LOCAÇÃO DO FURO

COORDENADAS: ______ Norte Sul; ______ Oeste Leste

DO ______

ELEVAÇÃO DA B.F. ______ m acima / abaixo

Do ______

DADOS DO EQUIPAMENTO

TIPO: Mount Sopris 3000 NB

SONDA: Nº 03; Diâmetro do Cristal 1/2 pol.; Comprimento do Cristal 1 1/2 pol.; Tempo Morto 7 Micro p.seg; Fator K ______; Dist. Detetor-Ext. Int. 0,50 cm

CALIBRADOR: Nº 03; Valor 5100 CPS

OBSERVAÇÃO: 1º Perfil Intermediário

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prof.	1 / 1:00	1 / 1:100	1 / 1:100
Data 23/09/76			
Primeira Leitura	149,00 m	149,50 m	149,50 m
Última Leitura	1,50 m	3,00 m	3,00 m
Metragem Perfilada	147,50 m	146,50 m	146,50 m
Prof. Alcançada	149,50 m	149,50 m	149,50 m
Prof. Perfuração	150,00 m	150,00 m	150,00 m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	5 cps/div	100 ohm/div	20 mv/div
Erro Percentual	%P.E.=		
Constante de Tempo	T.C.= s		
Vel. de Registro	2,00 m/min	2,00 m/min	2,00 m/min
Natureza da Lama	Bent.+Quik.Sod.		
Dens. / Viscosidade	1,04 lb/gal / 50 s	lb/gal s	lb/gal s
P.H. / Perda d'água	9 / c.c./30min	c.c./30min	c.c./30min
Resist. Lama Gel	32 a 58 °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Rebôco	a °c	a °c	a °c
Nivel do Fluido	0,00 m	m	m
Broca ou Coroa	a m	a m	a m
Broca ou Coroa	a m	a m	a m
Revestimento	a m	a m	a m
Revestimento	a m	a m	a m
Tempo de Operação	2 h 30 min	h min	h min
Outros Perfis			
Repres. do Cliente			
OPERADOR	José Maria, Dr. Ferrari e Airton		

REPERFILAGENS

SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

5 cps/div	DE 148,70	A 1,50	
20 mv/div	DE 149,50	A 3,00	
ESCALA DE PROFUNDIDADE	100 ohm/div	DE 149,50	A 3,00
	div	DE	A

mms

2,88 m

PERFILAGEM

CPRM

GAMA – RESISTÊNCIA – POT. ESPONTANEO

CLIENTE: DNPM

PROJETO: SONDAGEM BAMBUÍ

FURO: 1 PSB-06-MG

MUNICÍPIO: PARACATU   ESTADO: MG

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prot.	1 / 1:500	1 / 1:500	1 / 1:500
Data	24 / 02 / 77	24 / 02 / 77	24 / 02 / 77
Primeira Leitura	949,50 m	950,00 m	950,00 m
Última Leitura	39,50 m	40,00 m	40,00 m
Metragem Perfilada	910,00 m	910,00 m	910,00 m
Prof. Alcançada	950,00 m	950,00 m	950,00 m
Prof. Perfuração	950,00 m	950,00 m	950,00 m
Sapata Perfilagem	– m	– m	m
Sapata Perfuração	– m	– m	m
Sensibilidade	20 cps/div	200 e 50 ohm/div	10 mv/div
Erro Percentual	%P.E.= 2		
Constante de Tempo	T.C.= 28 s		
Vel. de Registro	3,3 m/min	3,3 m/min	3,3 m/min
Natureza da Lama	Bentonita + Quick-Trol		
Dens. / Viscosidade	1.03 lb/gal / 37 s	lb/gal / s	lb/gal / s
P.H. / Perda d'água	8 / – c.c./30min	c.c./30min	c.c./30min
Resist. Lama	12 a 16 °C	a °C	a °C
Resist. Filtrado	a °C	a °C	a °C
Resist. Rebôco	a °C	a °C	a °C
Nível do Fluido	0,00 m	0,00 m	0,00 m
Broca ou Coroa	NW a 520,90 m	a m	a m
Broca ou Coroa	BW a 950,00 m	a m	a m
Revestimento	a m	a m	a m
Revestimento	a m	a m	a m
Tempo de Operação	10 h 00 min	10 h 00 min	10 h 00 min
Outros Perfis			
Repres. do Cliente			
OPERADOR	JOSE MARIA – REPRES. CPRM – GERALDO		

LOCAÇÃO DO FURO

COORDENADAS:

____ Norte Sul

____ Oeste Leste

DO ____

ELEVAÇÃO DA B.F.

____ m acima / abaixo

Do ____

DADOS DO EQUIPAMENTO

TIPO: MOUNT. SOPRI 3000 NB

SONDA: Nº 2A; Diâmetro do Cristal 1/2 pol.; Comprimento do Cristal 11/2 pol.; Tempo Morto 7 $\times 10^{-6}$ seg; Fator K 4,62 x 10^{-6}; Dist. Detetor-Ext. Int. 0,50 cm

CALIBRADOR: Nº 2; Valor 6000 CPS

OBSERVAÇÃO: Mudança de Escala a 870,00 m devido a grande variação na Resistência das Rochas Perfiladas

REPERFILAGENS – SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

				ESCALA DE PROFUNDIDADE				
20 cps/div	DE 949,50	A 39,50			200 ohm/div	DE 950,00	A 870,00
10 mv/div	DE 950,00	A 40,00			50 OHM/div	DE 870,00	A 40,00

9,70 m

PERFILAGEM

CPRM

GAMA – RESISTÊNCIA – POT. ESPONTANEO

CLIENTE DNPM

PROJETO SONDAGEM BAMBUÍ

FURO 1PSB-07-MG

MUNICÍPIO PARACATU **ESTADO** MG

LOCAÇÃO DO FURO	DADOS DO EQUIPAMENTO	
COORDENADAS:	TIPO: MOUNT. SOPRI 3000 NB	
____ Norte Sul	SONDA	Nº 2 - A
____ Oeste Leste		Diâmetro do Cristal 1/2 pol.
DO ____		Comprimento do Cristal 11/2 pol.
ELEVAÇÃO DA B.F.		Tempo Morto 7 10^{-6} seg.
____ m acima / abaixo		Fator K 4,62 x 10
		Dist. Detetor-Ext. Int. 0,50 cm
Do ____	CALIBRADOR	Nº 2
		Valor 6000 CPS

OBSERVAÇÃO

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prof.	1 / 1:500	1 / 1:500	1 / 1:500
Data	27 02 77	27 02 77	27 02 77
Primeira Leitura	897,50 m	898,00 m	898,00 m
Última Leitura	39,50 m	40,00 m	40,00 m
Metragem Perfilada	858,00 m	858,00 m	858,00 m
Prof. Alcançada	897,50 m	898,00 m	898,00 m
Prof. Perfuração	900,00 m	900,00 m	900,00 m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	20 cps/div	200 ohm/div	20 mV/div
Erro Percentual	%P.E.= 2		
Constante de Tempo	T.C.= 28 s		
Vel. do Registro	3,3 m/min	3,3 m/min	3,3 m/min
Natureza da Lama	Bentonita + Quick-Trol		
Dens. / Viscosidade	1.03 lb/gal / 62 s	lb/gal / s	lb/gal / s
P. H. / Perda d'água	8 / cc/30min	cc/30min	cc/30min
Resist. Lama	32 a 58 °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Reboco	a °c	a °c	a °c
Nivel do Fluido	0,00 m	0,00 m	0,00 m
Broca ou Coroa	NW a 600,00 m	a m	a m
Broca ou Coroa	BW a 900,00 m	a m	a m
Revestimento	a m	a m	a m
Revestimento	a m	a m	a m
Tempo de Operação	8 h 00 min	h min	h min
Outros Perfis			
Repres. do Cliente			
OPERADOR	JOSE MARIA -REPRES. CPRM - GERALDO		

REPERFILAGENS					
SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

20 cps/div	DE 897,50	A 39,50	ESCALA DE PROFUNDIDADE	200 ohm/div DE 898,00 A 40,00
20 mv/div	DE 898,00	A 40,00		div DE A

CPRM

PERFILAGEM
GAMA – RESISTÂNCIA – POTENCIAL ESPONTÂNEO

CLIENTE: SUDENE

PROJETO: DOMINGOS MARTINS

FURO: 1-DM-05-RN

MUNICÍPIO: PARNAÍBA — ESTADO: RN

LOCAÇÃO DO FURO

COORDENADAS: Norte Sul / Leste Oeste

ELEVAÇÃO DA BOCA: cota (metros)

DATA: /

OBSERVAÇÕES:

DADOS DO EQUIPAMENTO

SONDA: Tipo: BOYDEN BUFFALO-2,000-RH; Nº: 216; Diâmetro da Broca: 6 7/8"; Comprimento da Coluna: 1.000,00; Tipo e Ø: 4 1/2 EUE; Diâmetro Int. da Coluna: 3"; Nº: ; Nível: 6.000 FURO

CALIBRADOR

PERFIL	CORRIDA	BASE	REGISTRADO	REG. COM
Gamma-ATTEN. Prob.	1	13.000	13.000	13.000
Raio	1	13.000	13.000	13.000
Resistividade Lateral		675,00	675,00	675,00
Gama Lateral		675,00	675,00	675,00
Resistividade Normal		665,00	665,00	665,00
Raio Gamma-Gamma		674,50	674,50	674,50
Raio Perfurado		675,00	675,00	675,00
Potencial Espontâneo				
Temperatura				
Condutância		20	20	20
Gama Espectral				
Resistividade Normal		16"	16"	16"
Tipo de Fluido		1000	1000	1000
Nível de Fluido		0,00	0,00	0,00
Gama Lateral		1	1	1
Raio Gamma-Gamma		1	1	1
Raio Perfurado		1	1	1
Potencial Espontâneo		1	1	1
Temperatura		1	1	1
Gama Espectral		1	1	1
Resistividade Normal		1	1	1

ESCALAS	1:200	1:500
Gama Lateral	675,00	30,00

ESCALAS DE PROFUNDIDADES

SENSIBILIDADE	AM	AO	TR/G	TG	MAL
64					
32					
16					
8					
4					
2					
1					
0,5					
0,25					
0,125					

ESCALAS DE RESISTIVIDADES

ESCALAS	1:200	1:500
Resistividade Normal	675,00	30,00

CALIBRAÇÃO INICIAL

CALIBRAÇÃO FINAL

ESCALA 1:200

ESCALA 1:500

ESCALA 1:1000

ESCALA 1:2000

CPRM

PERFILAGEM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CLIENTE: DNPM

PROJETO: SONDAGEM DAMBRI

FURO: 1 PSB-08-MG

MUNICÍPIO: PARACATU — ESTADO: MG

LOCAÇÃO DO FURO

COORDENADAS: Norte Sul / Oeste Leste

DO

ELEVAÇÃO DA B.F.

De: a

DADOS DO EQUIPAMENTO

SONDA: TIPO MOUNT SOPRIS-3.000-MB; HP 224; Diâmetro da Coluna 1 1/2 pol; Comprimento da Coluna 312,00 m; Tempo Marte 7,0 s; Peso 4,6(2x)=9,2 kg; Diâmetro Est. 0,50 m

CALIBRADOR: HP 2; Volts 6,000 cps

PERFIL	CORRIDO	GAMA		RESISTÊNCIA		POT. ESP.
Escala nº	Esc. Prof.	1 1:500		1 1:500		1 1:500
Data		21 06 77		21 06 77		21 06 77
Primeira Leitura		950,50 m		953,00 m		953,00
Última Leitura		674,50 m		675,00 m		675,00
Metragem Perfilada		275,00 m		278,00 m		278,00
Prof. Atingida		950,50 m		953,00 m		953,00
Prof. Perfuração		953,25 m		953,25 m		953,25
Sapata Perfilagem						
Sapata Perfuração						
Consolidante		20 m		200 m		20
Erro Percentual		%+- 2				
Constante de Tempo		TC= 2,8				
Vel. de Registro		5,00 m		5,00 m		5,00 m
Natureza da Lama		Bentonita+Soda+Soper.+0,08-Dens.				
Dens.	Viscosidade	1,09 g/cm³ 30 s		g/cm³ s		g/cm³ s
P.H.	Perda d'água	9,5 cc		cc		cc
Resis. Lama		4,46 Ω		Ω		Ω
Resist. Filtrado		*		*		*
Resist. Reboco		*		*		*
Nível do Fluido		0,00 m		0,00 m		0,00
Broca ou Corpo		HW a 88,45 m		*		*
Broca ou Corpo		HQ a 953,25 m		*		*
Revestimento		*		*		*
Revestimento		*		*		*
Tempo de Operação		4 h 30 min		4 h 30 min		4 h 30
Outros Perfis						
Hora da Chegada						

OPERADOR: José Maria/Sei Jr

ESPECIFICAÇÕES	SENSIBILIDADE	DE	ATÉ	% ESC.	TC.	VEL.
	100	*	*		1	2
	200	*	*		1	4
	400	*	*		1	8
	800	*	*		1	16
	1600	*	*		1	32
	3200	*	*		1	64
	6400	*	*		1	128
	12800	*	*		1	256
	25600	*	*		1	512
	51200	*	*		1	1024

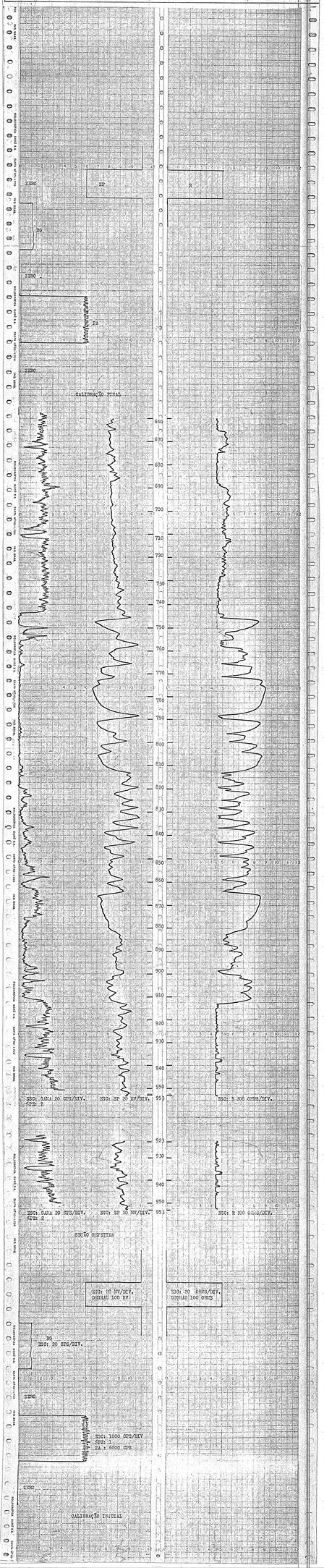
OBSERVAÇÃO

20 cps/div DE 952,50 A 674,50

ESCALA DE PROFUNDIDADE: 200 mm/div DE 953,00 A 675,00

1 m/div DE A

20 mV/div DE 953,00 A 675,00


CALIBRAÇÃO FINAL
CALIBRAÇÃO INICIAL
SEÇÃO RUPTIM
SENSIBILIDADE 400 A 1600
SENSIBILIDADE 800 A 1600
SENSIBILIDADE 1600 A 3200
SENSIBILIDADE 3200 A 6400
SENSIBILIDADE 6400 A 12800
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2,16m

PERFILAGEM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CPRM

CLIENTE: DNPM

PROJETO: SONDAGEM BAMBUÍ

FURO: 01/PSB/10/MG

MUNICÍPIO: UNAÍ ESTADO: MG

PERFIL CORRIDO	Densidade	Cáliper	POT. ESP.
Corrida nº / Esc. Prot.	1 / 1:500	1 / 1:500	
Data	21 07 78	21 07 78	
Primeira Leitura	800,00 m	800,00 m	m
Última Leitura	170,00 m	170,00 m	m
Metragem Perfilada	630,00 m	630,00 m	m
Prof. Alcançada	m	m	m
Prof. Perfuração	1.400,00 m	1.400,00 m	m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	200 cps/div	1"/DIV ohm/div	mv/div
Erro Percentual	%P.E.=		
Constante de Tempo	T.C.= s		
Vel. do Registro	3,00 m/min	3,00 m/min	m/min
Natureza da Lama	Bentonita + soda + condete		
Dens. / Viscosidade	1,10 lb/gal / 30 s	lb/gal / s	lb/gal / s
P. H. / Perda d'água	c.c. 30min	c.c. 30min	c.c. 30min
Resist. Lama	°C	°C	°C
Resist. Filtrado	°C	°C	°C
Resist. Rebôco	°C	°C	°C
Nivel do Fluido	m	m	m
Broca ou Coroa	m	m	m
Broca ou Coroa	m	m	m
Revestimento	N 172,20 m	m	m
Revestimento	B 871,40 m	m	m
Tempo de Operação	3 h 0,0 min	3 h 0,0 min	h min
Outros Perfis			
Repres. do Cliente			
OPERADOR	JOSÉ MARIA		

LOCAÇÃO DO FURO

COORDENADAS:

Norte Sul

Oeste Leste

DO

ELEVAÇÃO DA B.F.

m acima / abaixo

Do

DADOS DO EQUIPAMENTO

TIPO: Mount Sopris 5000

SONDA	Nº	33
	Diâmetro do Cristal	1/2 pol.
	Comprimento do Cristal	1 1/2 pol.
	Tempo Morto	1 μ seg
	Fator K	4,7 x 10-6
	Dist. Detetor-Ext. Int.	100 cm
CALIBRADOR	Nº	33
	Valor	5000

OBSERVAÇÃO

REPERFILAGENS

SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

200 cps/div	DE 800,00	A 170,00	ESCALA DE PROFUNDIDADE	ohm/div DE A
mv/div	DE	A		1"/div DE 800,00 A 170,00

PERFILAGEM
base - auxiliares - em construção

CLIENTE: PETROBRAS

PROJETO: PETROBRAS SUBSET

POÇO: 1ESTRELA1ESPM

LOCAÇÃO: Sheet ESTADO: RJ

LOCAÇÃO DO POÇO

Município:	
Km:	Rumo:
Km:	Rumo:
Km:	Rumo:
ELEVAÇÃO DA M.R.	
Cota:	
Km:	Rumo:
Km:	Rumo:

DADOS DO EQUIPAMENTO

Unidade: MPE Hoist Sigma 5000

Cabo: Nº 3 Tipo: 3-7-26
Diâmetro do Cabo: 0.32" Peso: 0.0000
Tração Máx.: 5 000 lbf
Cabo + Ext. 0.32" Peso: 0.0000
Extensão do Cabo: 0.000 m

Data: 12/05/

Operador: Sem registro

Testemunha: Sem registro

Observações: Sem registro de ocorrências de problemas durante as operações normais, exceto: - a curva do perfil Sem nome registrada, com problemas de qualidade, não foi utilizada na interpretação por não ser possível a sua correção; - Nenhum dos registros com a sigla CBL foi interpretado.

Nenhum dos registros com a sigla CBL foi interpretado.

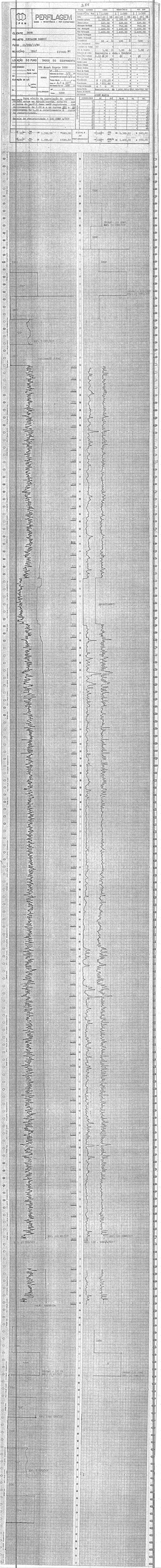
1	1ESTRELA1ESPM	1	1.399,00	443,00
2	1ESTRELA1ESPM	1	1.399,00	443,00

1	1ESTRELA1ESPM	1	1.399,00	443,00
2	1ESTRELA1ESPM	1	1.400,00	450,00

FOLHA	CURVA	REGISTRO	REF. CAP.
Cabeça/Fim Fol.	1 1.399	1 1.399	1 1.399
Cabeça/Fim Reg.	1 1.399	1 1.399	1 1.399
Tempo Lateral	443.00 0	443.00 0	443.00 0
Tempo Curva	443.00 0	443.00 0	443.00 0
Vel. Máxima	1.000.00 0	1.000.00 0	1.000.00 0
Vel. Normal	1.000.00 0	1.000.00 0	1.000.00 0
Vel. Mínima	1.000.00 0	1.000.00 0	1.000.00 0
Tensão Máxima	0	0	0
Tensão Mínima	0	0	0
Cota Inicial	20.00 00	20.00 00	0.00
Cota Intermed.	0.00	0	0
Cota Final	0.00	0	0
Fil. de Registro	5.00 0	5.00 0	5.00 0
Tolerância de Cabo	Desconhecida	Cabo + Ferramenta	
Tolerância de Cota	0.00 00	00	00
Fil. Zero Cota	0	0	0
Zero Cota	0	0	0
Zero Curva	0	0	0
Zero Tensão	0	0	0
Raio da Roda	0	0	0
Pulsos/Volta	12	12	12
Pulsos/Metro	0	0	0
Profundidade	0 0.000.00	0	0
Cabeça/Fim Fol.	0 0.000.00	0	0
Tensão Máxima	0 0	0	0
Tensão Mínima	0 0	0	0

Observações: Em 1.400,00m a MPE Hoist Sigma 5000 parou.

FOLHA	CURVA	REG.	REF.	DIF.
1	1	1	1	1
1	2	1	1	1
1	3	1	1	1
1	4	1	1	1
1	5	1	1	1
1	6	1	1	1
1	7	1	1	1
1	8	1	1	1
1	9	1	1	1
1	10	1	1	1
1	11	1	1	1
1	12	1	1	1



3,49 m

PERFILAGEM

CPRM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CLIENTE: DNPM

PROJETO: Sond-Bambuí

FURO: 1 PSB-09-MG

MUNICÍPIO: PARACATU ESTADO: MG

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prot.	1 / 1:500	1 / 1:500	1 / 1:500
Data	17 03 77		
Primeira Leitura	999,50 m	1.000,00 m	1.000,00 m
Última Leitura	9,50 m	10,00 m	10,00 m
Metragem Perfilada	990,00 m	990,00 m	990,00 m
Prof. Alcançada	999,50 m	1.000,00 m	1.000,00 m
Prof. Perfuração	1.056,20 m	1.056,20 m	1.056,20 m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	20 cps/div	100 ohm/div	10 mv/div
Erro Percentual	%P.E.= 2		
Constante de Tempo	T.C.= 28 s		
Vel. de Registro	3,30 m/min	3,30 m/min	3,30 m/min
Natureza da Lama	Bentonita +	Quick-Trol	
Dens. / Viscosidade	1,03 lb/gal / 48 s	lb/gal / s	lb/gal / s
P.H. / Perda d'água	9 / c.c./30min	c.c./30min	c.c./30min
Resist. Lama	30 a 42 °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Rebôco	a °c	a °c	a °c
Nível do Fluido	0,00 m	m	m
Broca ou Coroa	H a 140,30 m	a m	a m
Broca ou Coroa	N a 949,40 m	B a 1.056,20 m	a m
Revestimento	H a 9,15 m	a m	a m
Revestimento	a m	a m	a m
Tempo de Operação	11 h 00 min	h min	h min
Outros Perfis			
Repres. do Cliente			
OPERADOR			

LOCAÇÃO DO FURO

COORDENADAS: ___ Norte Sul; ___ Oeste Leste

DO ___

ELEVAÇÃO DA B.F. ___ m acima / abaixo

Do ___

DADOS DO EQUIPAMENTO

TIPO: Mount.Sopris 3000 NB

SONDA: Nº 02; Diâmetro do Cristal 1/2 pol.; Comprimento do Cristal 1 1/2 pol.; Tempo Morto 7 μ seg; Fator K 4,62x10-6; Dist. Detetor-Ext. Inf. 050 cm

CALIBRADOR: Nº 02.; Valor 6.000 CPS

OBSERVAÇÃO: Mudança de Escala R a 225,00 m de 100 OHMS para 200 OHMS.

REPERFILAGENS — SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

			ESCALA DE PROFUNDIDADE			
20 cps/div	DE 999,50	A 9,50m		100 ohm/div	DE 1.000,00	A 10,00m
10 mv/div	DE 1.000,00	A 10,00m		200 OHM/div	DE 225,00	A 10,00m

CPRM

PERFILAGEM
BASE – MONITORAÇÃO – POÇO EXPERIMENTAL

CLIENTE: CPRM
PROJETO: SUBPROJ.
FURO: SP20-D-0140
MUNICÍPIO: ITAÚ ESTADO: PI.

LOCAÇÃO DO FURO — DADOS DO EQUIPAMENTO

coordenadas: N= E= Datum: SAD69
cota do terreno: 0,00 m
referência de nível (RN): Cimentação externa (0,00)
elevação da mesa rotativa: 0,00 m
altura da mesa rotativa ao RN: 0,00 m
elevação do RN: 0,00 m

Sonda: Mesa rotativa: Marca: Failing 1500 Modelo:

1ª etapa	0,00	a	704,60
2ª etapa	704,60	a	705,00
3ª etapa	705,00	a	705,00
4ª etapa	705,00	a	705,00
5ª etapa	705,00	a	705,00
6ª etapa	705,00	a	705,00

Fluido: Natural Tipo: Densidade: 1,00 g/cm³ Viscosidade: 0,00 s Nível: 0,00 m

Intervalo de Leitura: Descendente: 0,00 a 0,00 m Ascendente: 0,00 a 0,00 m

Raio Curto	0,00	m	0,00	m	0,00
Raio Longo	0,00	m	0,00	m	0,00
Raio Focal	0,00	m	0,00	m	0,00
Resistividade	0,00	Ω.m	0,00	Ω.m	0,00
Potencial Espontâneo	0,00	mV	0,00	mV	0,00
Gama Natural	0,00	cps	0,00	cps	0,00
Gama Gama	0,00	cps	0,00	cps	0,00
Raio de Furo	0,00	m	0,00	m	0,00
Temperatura	0,00	°C	0,00	°C	0,00
Velocidade	0,00	m/s	0,00	m/s	0,00
Caliper	0,00	m	0,00	m	0,00
Desvio	0,00	m	0,00	m	0,00
Azimute	0,00	m	0,00	m	0,00

Sonda Marca: Mesa rotativa: Marca: Failing 1500 Modelo: Sp 0,00 a 0,00 m Sp 0,00 a 0,00 m

Cond. Mesa: Marca: Modelo:

Equipamento	Nº	Marca	Modelo
Cabo	01		
Cabo	02		
Cabo	03		
Cabo	04		
Cabo	05		
Cabo	06		
Cabo	07		
Cabo	08		
Cabo	09		
Cabo	10		

Sonda: Mesa rotativa: Marca: Failing 1500 Modelo: 1000 Cota/Boca: 0,00 m

1ª etapa: 0,00 m a 704,60 m = 704,60 m
2ª etapa: 704,60 m a 705,00 m = 0,40 m
3ª etapa: 705,00 m a 705,00 m = 0,00 m
4ª etapa: 705,00 m a 705,00 m = 0,00 m
5ª etapa: 705,00 m a 705,00 m = 0,00 m
6ª etapa: 705,00 m a 705,00 m = 0,00 m
Total perfurado: 705,00 m

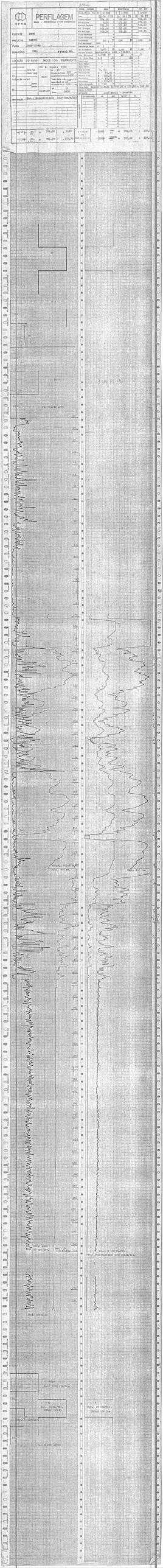
Sonda: Mesa rotativa: Marca: Failing 1500 Modelo: Sp 0,00 a 0,00 m Sp 0,00 a 0,00 m

Cond. Mesa: Marca: Modelo:

Equipamento	Nº	Marca	Modelo
Cabo	01		
Cabo	02		
Cabo	03		
Cabo	04		
Cabo	05		
Cabo	06		
Cabo	07		
Cabo	08		
Cabo	09		
Cabo	10		

Sonda: Mesa rotativa: Marca: Failing 1500 Modelo: 1000 Cota/Boca: 0,00 m

1ª etapa: 0,00 m a 704,60 m = 704,60 m
2ª etapa: 704,60 m a 705,00 m = 0,40 m
3ª etapa: 705,00 m a 705,00 m = 0,00 m
4ª etapa: 705,00 m a 705,00 m = 0,00 m
5ª etapa: 705,00 m a 705,00 m = 0,00 m
6ª etapa: 705,00 m a 705,00 m = 0,00 m
Total perfurado: 705,00 m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Escala

3,10 m

PERFILAGEM

GAMA – RESISTÊNCIA – POT. ESPONTANEO

CPRM

CLIENTE: DNPM

PROJETO: Sondagem Bambuí

FURO: 1PSB-11-MG

MUNICÍPIO: Paracatu ESTADO: MG

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prot.	2 / 1:500	2 / 1:500	2 / 1:500
Data	07 01 78	07 01 78	07 01 78
Primeira Leitura	1.000,00 m	1.000,50 m	1.000,50 m
Última Leitura	1,50 m	164,00 m	164,00 m
Metragem Perfilada	998,50 m	836,50 m	836,50 m
Prof. Alcançada	1.000,00 m	1.000,50 m	1.000,50 m
Prof. Perfuração	1.002,50 m	1.002,50 m	1.002,50 m
Sapata Perfilagem	– m	– m	– m
Sapata Perfuração	– m	– m	– m
Sensibilidade	10 cps/div	200 ohm/div	10 mv/div
Erro Percentual	%P.E.= 2	–	–
Constante de Tempo	T.C.= s		
Vel. de Registro	5,00 m/min	5,00 m/min	5,00 m/min
Natureza da Lama	Bentonita/Serragem/Quick trol/soda		
Dens. / Viscosidade	1,2 lb/gal / 40 s	lb/gal / s	lb/gal / s
P.H. / Perda d'água	C.C./30min	C.C./30min	C.C./30min
Resist. Lama	a °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Rebôco	a °c	a °c	a °c
Nivel do Fluido	0,00 m	m	m
Broca ou Coroa N	164,95 a 798,35 m	a m	a m
Broca ou Coroa H	0 a 164,95 m	a m	a m
Revestimento N	0 a 167,75 m	a m	a m
Revestimento H	0 a 67,95 m	a m	a m
Tempo de Operação	4 h 30 min	h min	h min
Outros Perfis			
Repres. do Cliente			
OPERADOR	Geraldo Cardoso/Dalvio		

LOCAÇÃO DO FURO

COORDENADAS: ____ Norte Sul; ____ Oeste Leste

DO ____

ELEVAÇÃO DA B.F. ____ m acima/abaixo

Do ____

DADOS DO EQUIPAMENTO

TIPO: Mount Sopris 3.000

SONDA: Nº 2 – A; Diâmetro do Cristal 1/2 pol.; Comprimento do Cristal 1 1/2 pol.; Tempo Morto 7,0 p.seg; Fator K 4,62x10-6; Dist. Detetor-Ext. Int. 0,50 cm

CALIBRADOR: Nº 2; Valor 6.000 cps

OBSERVAÇÃO: Foi necessário fazer-se revisão no equipamento antes da perfilagem deste furo.

REPERFILAGENS – SENSIBILIDADE	DE	ATÉ	%P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

			ESCALA DE PROFUNDIDADE			
10 cps/div	DE 1.000,00	A 1,50		200 ohm/div	DE 1.000,50	A 164,00
10 mv/div	DE 1.000,50	A 164,00		div	DE	A

3,15 m

PERFILAGEM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CPRM

CLIENTE: DNPM

PROJETO: Sondagem Bambuí

FURO: 01PSB.12.MG

MUNICÍPIO: VAZANTE ESTADO: MG

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prof.	1 / 1:500	1:500	1:500
Data	10 08 78	10 08 78	10 08 78
Primeira Leitura	999,00 m	999,60 m	999,60 m
Última Leitura	0,00 m	333,00 m	333,00 m
Metragem Perfilada	999,00 m	666,60 m	666,60 m
Prof. Alcançada	1.000,00 m	1.000,00 m	1.000,00 m
Prof. Perfuração	1.001,30 m	1.001,30 m	1.001,30 m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	5 cps/div	100 ohm/div	20 mv/div
Erro Percentual	%P.E.=		
Constante de Tempo	T.C.= s		
Vel. de Registro	5,00 m/min	5,00 m/min	5,00 m/min
Natureza da Lama	Bentonita + Soda + Condet		
Dens. / Viscosidade	1,10 lb/gal / 30 s	lb/gal s	lb/gal s
P. H. / Perda d'água	c.c./30min	c.c./30min	c.c./30min
Resist. Lama	a °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Reboco	a °c	a °c	a °c
Nível do Fluido	m	m	m
Broca ou Coroa	a m	a m	a m
Broca ou Coroa	a m	a m	a m
Revestimento	H a 39,65 m	a m	a m
Revestimento	N a 334,15 m	a m	a m
Tempo de Operação	7 h 30 min	7 h 30 min	7 h 30 min
Outros Perfis			
Repres. do Cliente			
OPERADOR	José Maria		

LOCAÇÃO DO FURO

COORDENADAS:

______ Norte Sul

______ Oeste Leste

DO ______

ELEVAÇÃO DA B.F.

______ m acima / abaixo

Do ______

DADOS DO EQUIPAMENTO

TIPO: Mount Sopris 5000

SONDA	Nº 33
	Diâmetro do Cristal 1/2 pol.
	Comprimento do Cristal 1 1/2 pol.
	Tempo Morto 1 μ seg
	Fator K $4,71 \times 10^{-6}$
	Dist. Detetor-Ext. Int. 100 cm
CALIBRADOR	Nº 33
	Valor 5000

OBSERVAÇÃO: Revestimento "B" 468,10 m

REPERFILAGENS

SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
0-20 cps/div	770,00 m	762,50 m		1 s	1,5 m/min
0-20 cps/div	440,00 m	410,00 m		1 s	1,5 m/min
0-20 cps/div	389,00 m	377,50 m		1 s	1,5 m/min

				ESCALA DE PROFUNDIDADE			
5 cps/div	DE 999,00 m	A 0,00			100 ohm/div	DE 999,60 m	A 333,00 m
20 mv/div	DE 999,60 m	A 333,00			div	DE	A

3,78 m

PERFILAGEM

GAMA – RESISTÊNCIA – POT. ESPONTANEO

CPRM

CLIENTE D. N. P. M.

PROJETO Bambuí

FURO 1 PSB - 13 MG.

MUNICÍPIO Montalvânia ESTADO MG.

LOCAÇÃO DO FURO	DADOS DO EQUIPAMENTO	
COORDENADAS: ____ Norte Sul; ____ Oeste Leste; DO ____; ELEVAÇÃO DA B.F. ____ m aclma/abaixo; Do ____	TIPO:	Mount Sopris 5000 NB
	SONDA	Nº 33; Diâmetro do Cristal 1/2 pol.; Comprimento do Cristal 1 1/2 pol.; Tempo Morto 1 μ seg; Fator K 4,71x10^{-6}; Dist. Detetor-Ext. Int. ____ cm
	CALIBRADOR	Nº ____; Valor 5000 CPS

OBSERVAÇÃO Revestimento H- 9,76m.

Resistividade. Esc: 1000 OHm/m/Div.
De 1.300,00m A 10,00m
Metros Perfilados. 1.290,00m

Problemas no motor das penas de SP, provocaram cariações bruscas e ocilações na curva de SP.

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prot.	1 / 1:500	1 / 1:500	1 / 1:500
Data	23 11 78		
Primeira Leitura	1.299,00 m	1.299,60 m	1.299,60 m
Última Leitura	1,00 m	10,00 m	10,00 m
Metragem Perfilada	1.298,00 m	1.289,60 m	1.289,60 m
Prof. Alcançada	1.299,00 m	1.299,60 m	1.299,60 m
Prof. Perfuração	1.304,75 m	1.304,75 m	1.304,75 m
Sapata Perfilagem	m	m	m
Sapata Perfuração	m	m	m
Sensibilidade	10 cps/div	100 ohm/div	20 mv/div
Erro Percentual	%P.E=		
Constante de Tempo	T.C= s		
Vel. de Registro	5,00 m/min	5,00 m/min	5,00 m/min
Natureza da Lama			
Dens. / Viscosidade	lb/gal / s	lb/gal / s	lb/gal / s
P. H. / Perda d'água	9 / C.C./30min	9 / C.C./30min	9 / C.C./30min
Resist. Lama	a °c	a °c	a °c
Resist. Filtrado	a °c	a °c	a °c
Resist. Reboco	a °c	a °c	a °c
Nivel do Fluido	Água Surgente		
Broca ou Coroa	N 9,75 a 673,45 m	a m	a m
Broca ou Coroa	B 673,45 a 1.304,75 m	a m	a m
Revestimento	a m	a m	a m
Revestimento	a m	a m	a m
Tempo de Operação	6 h 30 min	h min	h min
Outros Perfis	RTV Esc. 1000 OHm/m/Div.		
Repres. do Cliente			
OPERADOR			

REPERFILAGENS

SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

				ESCALA DE PROFUNDIDADE			
10 cps/div	DE 1.299,00 A 1,00m				100 ohm/div	DE 1.290,60	A 10,00m
20 mv/div	DE 1.299,60 A 10,00m				1000 OHm/m/div	DE 1.300,00	A 10,00m

2,94

CPRM

PERFIL

GAMA R/ SP

	DADOS DO FURO	DADOS DO EQUIPAMENTO
COMPANHIA: C P R M	LOCALIZAÇÃO	
FURO: 1PSB-14-MG	Coordenadas: -	Marca: WILDCO
MUNICIPIO: B. DE MINAS ESTADO: MINAS GERAIS		Modêlo: W N.º 517
		N.º do Padrão: 146 Valor: 4500 CPS
DISTRITO: LONTRA SETOR: -	ALTITUDE	N.º da Sonda: 517 A
	Cota: -	Comprimento: 170cm Diâm.: 4,85cm
CAMPO: CATITU PROJETO: BAMBUÍ	M. R.: -	Fator K (Ar): $0,45 \times 10^{-5}$
		Tempo Morto: 6,0 u seg

	GAMA	R	SP
Data	01-02/02/79	IDEM	IDEM
Origem Medida	SUPERFÍCIE	"	"
Primeira Leitura	710,00	710,50	710,50
Última Leitura	1,20	10,00	10,00
Metragem Perfilada	708,80	700,50	700,50
Profundidade do Furo	710,60	IDEM	IDEM
Profundidade Alcançada	710,50	"	"
Prof. do Revestimento	6,10	"	"
Diâmetro do Revestimento	H	"	"
Diâmetro da Broca	H-100,20	"	"
Diâmetro da Broca	N- P. F.	"	"
Nível do Fluído	5,00	"	"
Tempo de Operação	9:00 h	"	"
Observador	-	-	-
Observador C P R M	JOSÉ MATILDES DOS SANTOS		
OPERADOR CPRM	ANTÔNIO CARLOS DOS REIS		

LAMA	CORRIDA N. 1	CORRIDA N. 2
Natureza	BENTONITA	
Densidade		
Viscosidade	a oF	a oF
Resistividade	a oF	a oF
Resistiv. no Fundo	a oF	a oF
pH		
Temp. de Circul.		
Temp. do Fundo		

Escalas de Sensibilidade	DE	ATÉ	T. C. ou % PE	Velocidade de Registro
2 CPS/DIV	710,00	339,50 m	1 SEG	5,0 m/min
10 CPS/DIV	339,50	1,20 m	1 SEG	5,0 m/min
10 CPS/DIV	705,00	691,50 m	2 SEG	1,5 m/min
—		m		m/min
—		m		m/min

OUTROS PERFIS — - - -

ESCALA DE PROFUNDIDADE: 1:500

OBSERVAÇÕES: SEÇÃO REPETIDA DE 710,50m ATÈ 680,00 m.
A PERFILAGEM FOI FEITA EM DUAS ETAPAS, DEVIDO O FURO ESTAR REVESTIDO ATÉ 335,50 MTS.

CPRM

PERFILAGEM

GAMA – RESISTÊNCIA – POT. ESPONTÂNEO

CLIENTE: DNPM

PROJETO: GONDAGIM BANDUT

FURO: GIFSB.15.MG

MUNICÍPIO: ITACARAMBI ESTADO: MG

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prof.	1 500	1 500	1 500
Data	26 01 79		
Primeira Leitura	419,50 m	420,00 m	420,00 m
Última Leitura	385,00 m	182,50 m	182,50 m
Intervalos Perfilados	419,50 m	237,50 m	237,50 m
Prof. Alcançada	420,00 m	420,00 m	420,00 m
Prof. Perfuração	420,40 m	420,40 m	420,40 m
Sapata Perfilagem	m	m	m
Fundo Perfuração (recalibrado)	m	100 m	20 m
Livre Penetrabilidade	m/h	m/h	m/h
Constante do Tanque	TQ. 1		
Vel. de Registro	1 5,0 m/m	5,0 m/m	5,0 m/m
Natureza do Lama	Densidade		
Visc. Viscosidade	cp	cp	cp
P.H. Perda d'água	cc	cc	cc
Reboco Lama	m	m	m
Pressão Filtrado	kg/cm²	kg/cm²	kg/cm²
Resist. Reboco	ohm	ohm	ohm
Nível do Fluido	182,50 m	182,50 m	182,50 m
Tempo de Corrida	h	h	h
Hora do Corte	h	h	h
Revestimento	II 167,75 m	N 493,25 m	B 426,40 m
Revestimento	m	m	m
Tempo de Operação	500 horas	h	h
Outros Perfis			
Tempos de Disparo			

LOCAÇÃO DO FURO — DADOS DO EQUIPAMENTO

COORDENADAS: Norte Sul ____ Oeste Leste ____

DO ____ ELEVAÇÃO DA B.P. ____ m [ ] rotativa [ ] cabo

Do ____

TIPO: WIDCO

SONDA: nº 535-A; Diâmetro do Circul. 4,90 m; Comprimento do Cabo 9,50; Tempo Marca 0,40 seg; Fator k 0,45 x 10⁻³; Dist. Fator Cal. (e) ____ cm; nº 147; Valor 4.800 cps

CALIBRADOR

OPERADOR: Antonio Carlos dos Reis

REGISTRO	DE	ATÉ	% ref.	TC.	VEL.
10	419,50 m	3,20 m		1	5,0 m/m
50	405,00 m	385,00 m		2	1,5 m/m

OBSERVAÇÕES: A sonda prendeu aos 424,00 mts, por isso descemos ao furo, começando a perfilagem aos 420,00 mts. Interrilagem de 405,00 m a 385,00 m escala de 50 cps/div.

10 cps/div. DE 419,50 A 1,20

20 cps/div. DE 420,00 A 182,50

ESCALA DE PROFUNDIDADE: 100 ohm/div. DE 420,00 A 182,50

1 m/div. DE 2 A

Zeros

SP R

Zero Eletrico

SP R

BA
Esc: 10 cps/div.
T.C. 2 seg.

Esc: 10 mv/div. Esc: 10 ohm/div.

P&M 10 pps/div.

Esc: 10 cps/div.

Zeros

SP R

Zero Eletrico

Padrão nº 147
Valor 4.800 cps
T.C. 3 seg.
Esc: 500 cps/div.

P&M 500 pps/div.

Esc: 500 cps/div.

Zero Eletrico

Calibração

Final

0,00 m. Boca do Furo

Coluna 120 m.

50

100

150

182,50 mts Fim da Perfilagem

200

250

300

350

Deslocamento

Resc. C.
Esc: 10 cps/div.
vel: 1,5 m/min.
T.C. 2 seg.

400

Esc: 10 cps/div.
vel: 5 cm/min.
T.C. 1 seg.

1,50 m. Sacistal

420,00 mts Perfilagem

Início da Perfilagem

Zeros

SP R

Zero Eletrico

SP R

BA
Esc: 10 cps/div.
T.C. 2 seg.

Esc: 10 mv/div. Esc: 10 cps/div.

P&M 10 pps/div.

Esc: 10 cps/div.

Zeros

SP R

Zero Eletrico

Padrão nº 147
Valor 4.800 cps
c.T. 3 seg
Esc: 500 cps/div.

P&M 500 pps/div.

Esc: 500 cps/div.

Zero Eletrico

Calibração

Inicial

IND. BRAS. — ROLOGRAFIA DAND S.A. — CARTA Nº RO-1-1976

2.45 m

PERFILAGEM

GAMA – RESISTÊNCIA – POT. ESPONTANEO

Calçado

CPRM

CLIENTE: DNPM

PROJETO: Sondagem Bambuí

FURO: 01 PSB 16 MG

MUNICÍPIO: Corinto — ESTADO: MG

LOCAÇÃO DO FURO	
COORDENADAS	___ Norte Sul
	___ Oeste Leste
DO	
ELEVAÇÃO DA B.F.	___ m acima / abaixo
Do	

DADOS DO EQUIPAMENTO		
TIPO	Mount Sopris	
SONDA	Nº	02 B
	Diâmetro do Cristal	1/2 pol.
	Comprimento do Cristal	1 1/2 pol.
	Tempo Morto	7,2 μ seg
	Fator K	$4,57 \times 10^{-6}$
	Dist. Detetor-Ext. Int.	0,50 cm
CALIBRADOR	Nº	02
	Valor	6000 cps

OBSERVAÇÃO: O perfil gama foi corrido separadamente devido problemas no equipamento.

PERFIL CORRIDO	GAMA	RESISTÊNCIA	POT. ESP.
Corrida nº / Esc. Prof.	1 / 500	1 / 500	1 / 500
Data	28 / 04 / 79	28 / 04 / 79	28 / 04 / 79
Primeira Leitura	699,00 m	700,00 m	700,00 m
Última Leitura	1,00 m	104,00 m	104,00 m
Metragem Perfilada	698,00 m	596,00 m	596,00 m
Prof. Alcançada	699,00 m	700,00 m	700,00 m
Prof. Perfuração	700,60 m	700,60 m	700,00 m
Sapata Perfilagem	m	– m	m
Sapata Perfuração	m	– m	m
Sensibilidade	10 cps/div	200 ohm/div	20 mv/div
Erro Percentual	%P.E.: 2	–	
Constante de Tempo	T.C.: 5,6 s		
Vel. de Registro	5,0 m/min	5,0 m/min	5,0 m/min
Natureza da Lama	Bentonita	–	–
Dens. / Viscosidade	lb/gal / 35 s	lb/gal / s	lb/gal / s
P.H. / Perda d'água	9. / c.c./30min	– / c.c./30min	– / c.c./30min
Resist. Lama	a °C	a °C	a °C
Resist. Filtrado	a °C	a °C	a °C
Resist. Reboco	a °C	a °C	a °C
Nível do Fluido	0 m	m	m
Broca ou Coroa H	0,00 100,65 m	a m	a m
Broca ou Coroa N	100,65 478,85	B-700,60 m	a m
Revestimento H	0,00 24,95 m	m	a m
Revestimento N	0,00 102,90 m	m	a m
Tempo de Operação	4 h 00 min	min	min
Outros Perfis			
Repres. do Cliente			
OPERADOR	José Maria		

REPERFILAGENS: SENSIBILIDADE	DE	ATÉ	% P.E.	T.C.	VEL.
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min
cps/div	m	m		s	m/min

ESCALA DE PROFUNDIDADE				
10 cps/div	DE 699,00	A 1,00	200 ohm/div	DE 700,00 A 104,00
20 mv/div	DE 700,00	A 104,00	div	DE A

4,58m

CPRM

PERFILAGEM

GAMA — RESISTÊNCIA — POT. ESPONTANEO

CLIENTE: TOTAL

PROJETO: Sondagem Bombas

FURO: 01 PSB 17 MO

MUNICÍPIO: Jequitaí — ESTADO: MG

LOCAÇÃO DO FURO — DADOS DO EQUIPAMENTO

COORDENADAS: Norte Sul / Oeste Leste

ELEVAÇÃO DA B.F.: — (acima / abaixo)

Do: —

TIPO: Mount Sopris

Nº	2G-H	
Diâmetro do Cabo	1/2	pol
Comprimento do Cabo	1/2	pol
Tempo Morto	7,2	ms
Fase K	4,47 x 10⁻⁶	
Dist.Detetor-Fonte	0,50	cm

SONDA

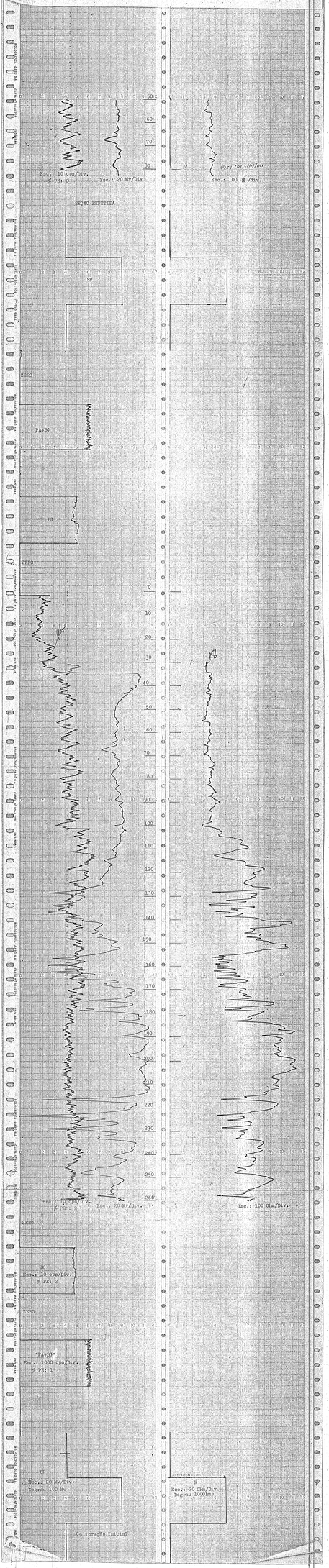
CALIBRADOR: nº 00 — Valor 6000 cps

OBSERVAÇÃO: Os tres perfis foram corridos ao mesmo tempo.

PERFIL CORRIDO	GAMA		RESISTÊNCIA		POT. ESP.	
Corrida nº	Exc.	Prof.	1	500	1	500
Data			30/04/79		30/04/79	
Primeira Leitura			293,00	260,00		260,00
Última Leitura			1,00	34,00		34,00
Metragem Perfilada			258,00	226,00		226,00
Prof. Atingida			259,50	250,00		260,00
Prof. Perfuração			264,60	264,60		264,60
Sapata Perfilagem						
Sapata Perfuração						
Sensibilidade			10	130		20
Erro Periódico			%A= 2			
Constante do Tempo			10	5,6		
Vel. de Registro			5,0	3,0	5,0	
Natureza do Lama			Bentonita			
Dens. Vis cosidade			35			
P.H. Perda d'água			9			
Reais Lama						
Resist. Filtrado						
Resist. Reboco						
Nível do Fluido			0,00			
Broca ou Corpo			0,00 125,00			
Broca ou Corpo			125,0 264,60			
Revestimento			0,0 13,65			
Revestimento			0,0 125,00			
Tempo de Operação			2,30			
Outros Perfis						
Horas. de Sonda						

OPERADOR: José Maria

PERFILAGENS	SENSIBILIDADE	DE	ATÉ	% FE.	TC.	VEL.
	1m	"	"	"	"	"
	2m	"	"	"	"	"
	4m	"	"	"	"	"
	8m	"	"	"	"	"
	16m	"	"	"	"	"
	32m	"	"	"	"	"
	64m	"	"	"	"	"
	128m	"	"	"	"	"
	256m	"	"	"	"	"
	512m	"	"	"	"	"
	1024m	"	"	"	"	"

10 cps/div — 20 mv/div — DE 259,00 A 1,00 — DE 260,00 A 34,00

ESCALA DE PROFUNDIDADE: 1:00 — 20m/div — DE 260,00 A 34,00 — DE A