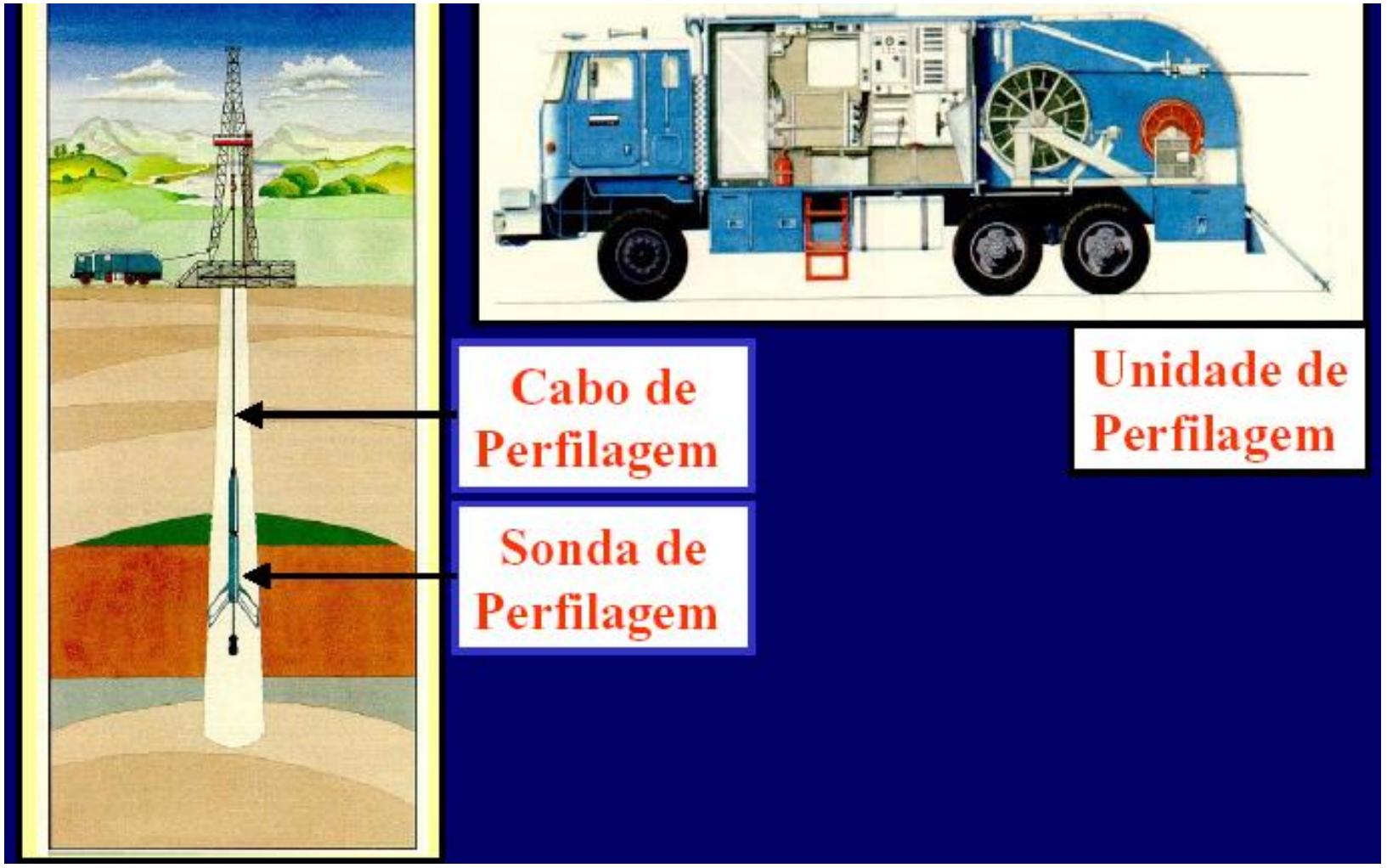
Perfis de calibre e gama natural

GSA0463-Geologia do Petróleo

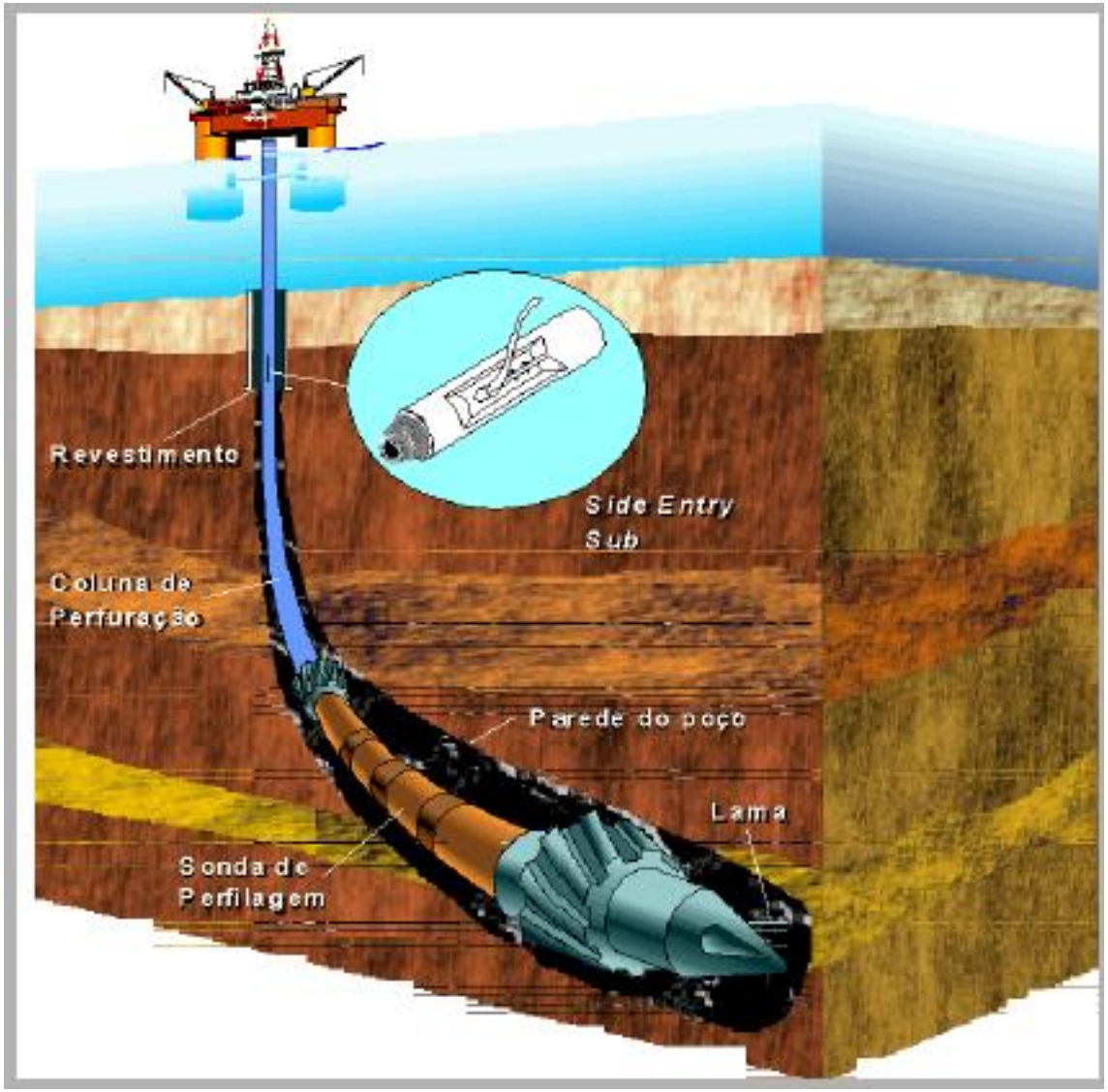
André Oliveira Sawakuchi

Perfilagem geofísica de poços



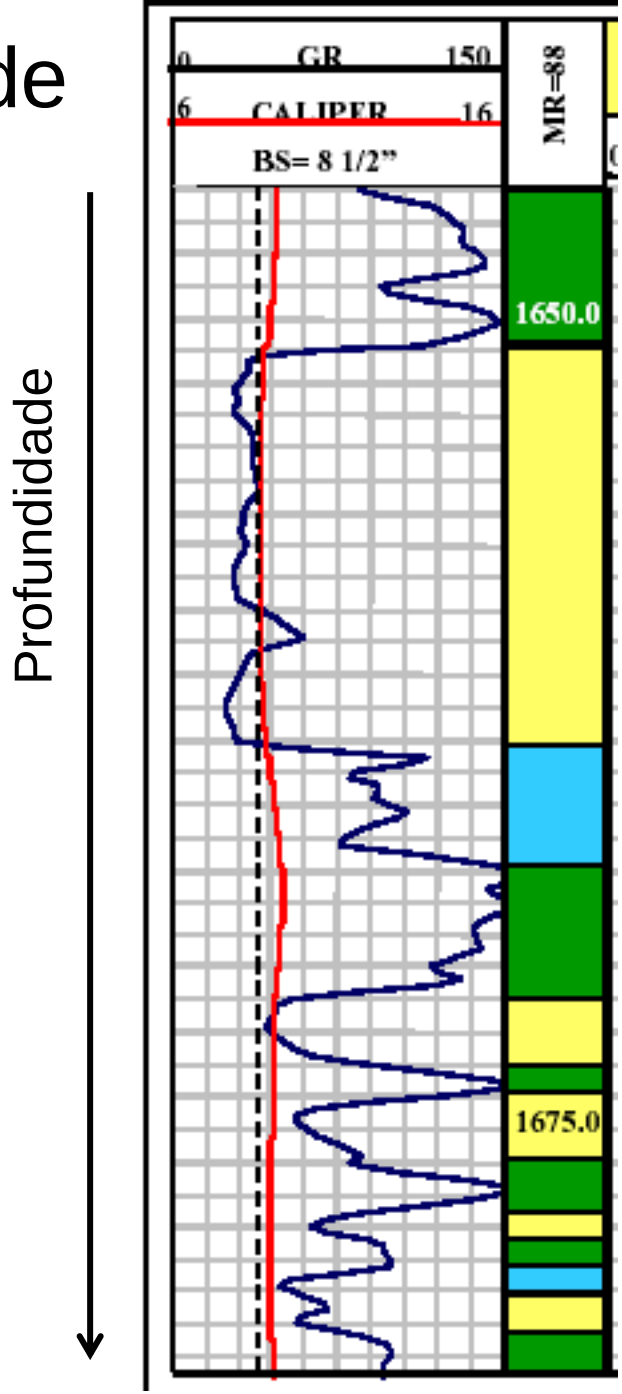
Soeiro (2005)

LWD



Soeiro (2005)

Exemplo: Perfil de raios gama

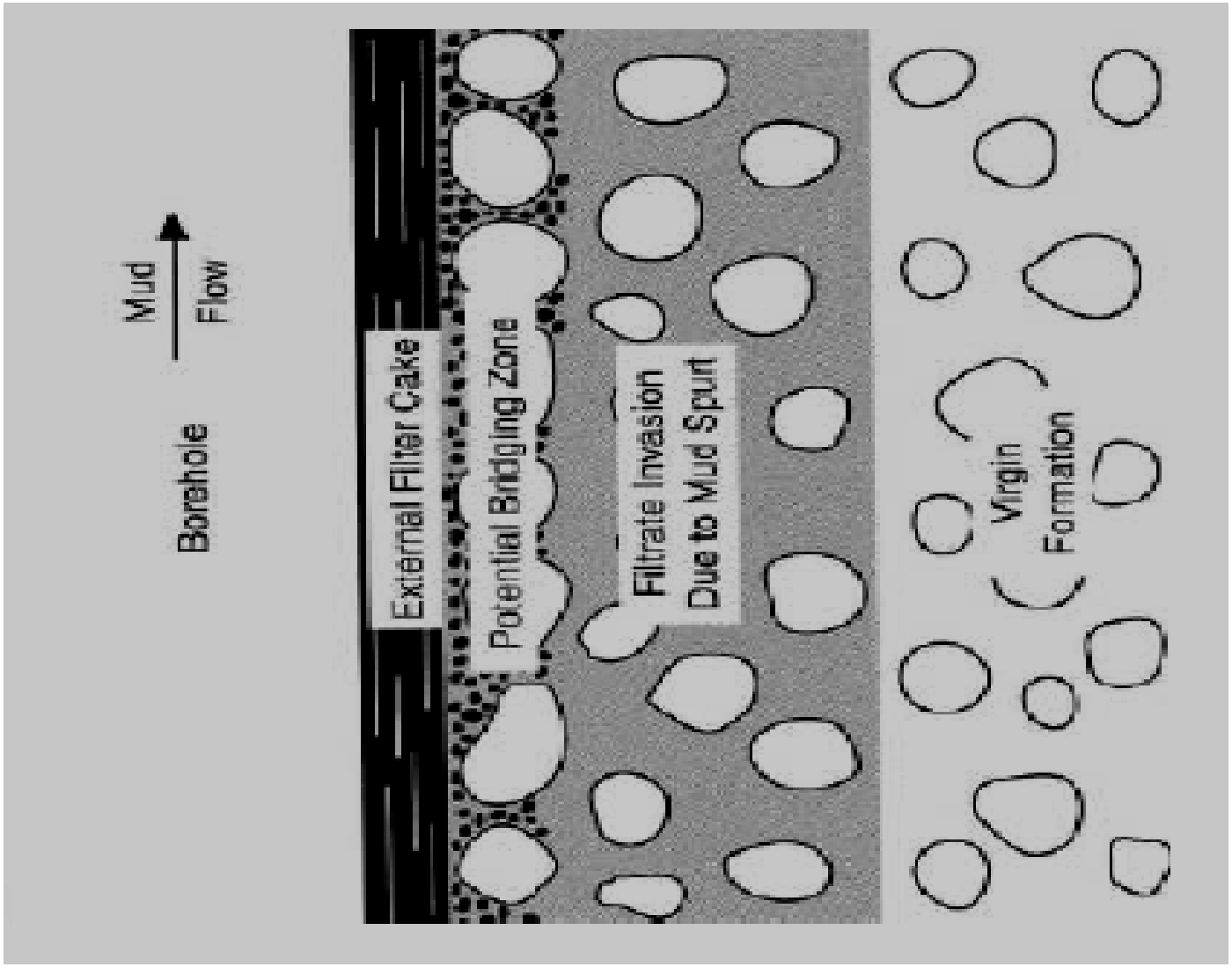


Folhelho

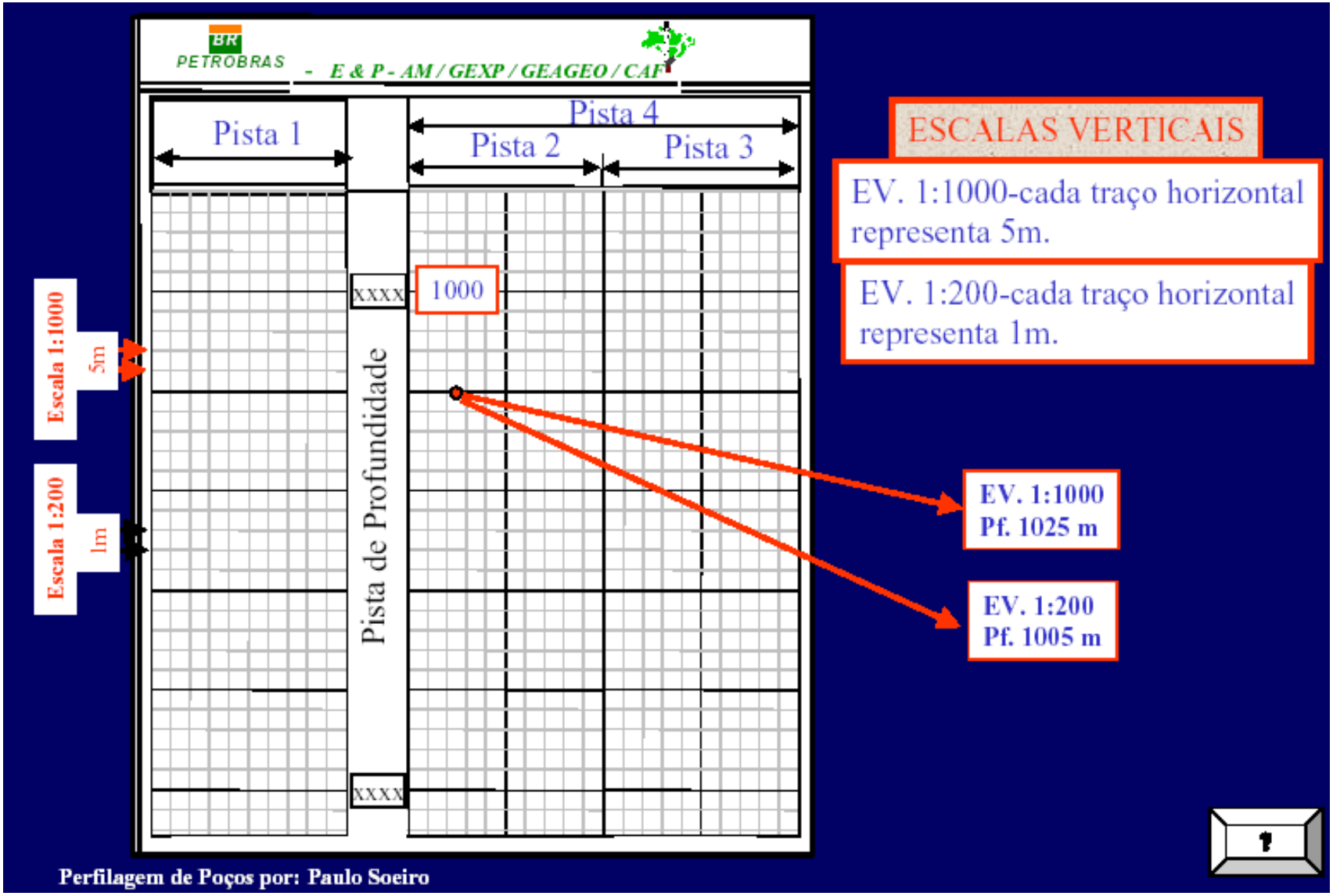
Arenito

Arenito siltoso

O ambiente de perfilagem



Base de registro dos perfis



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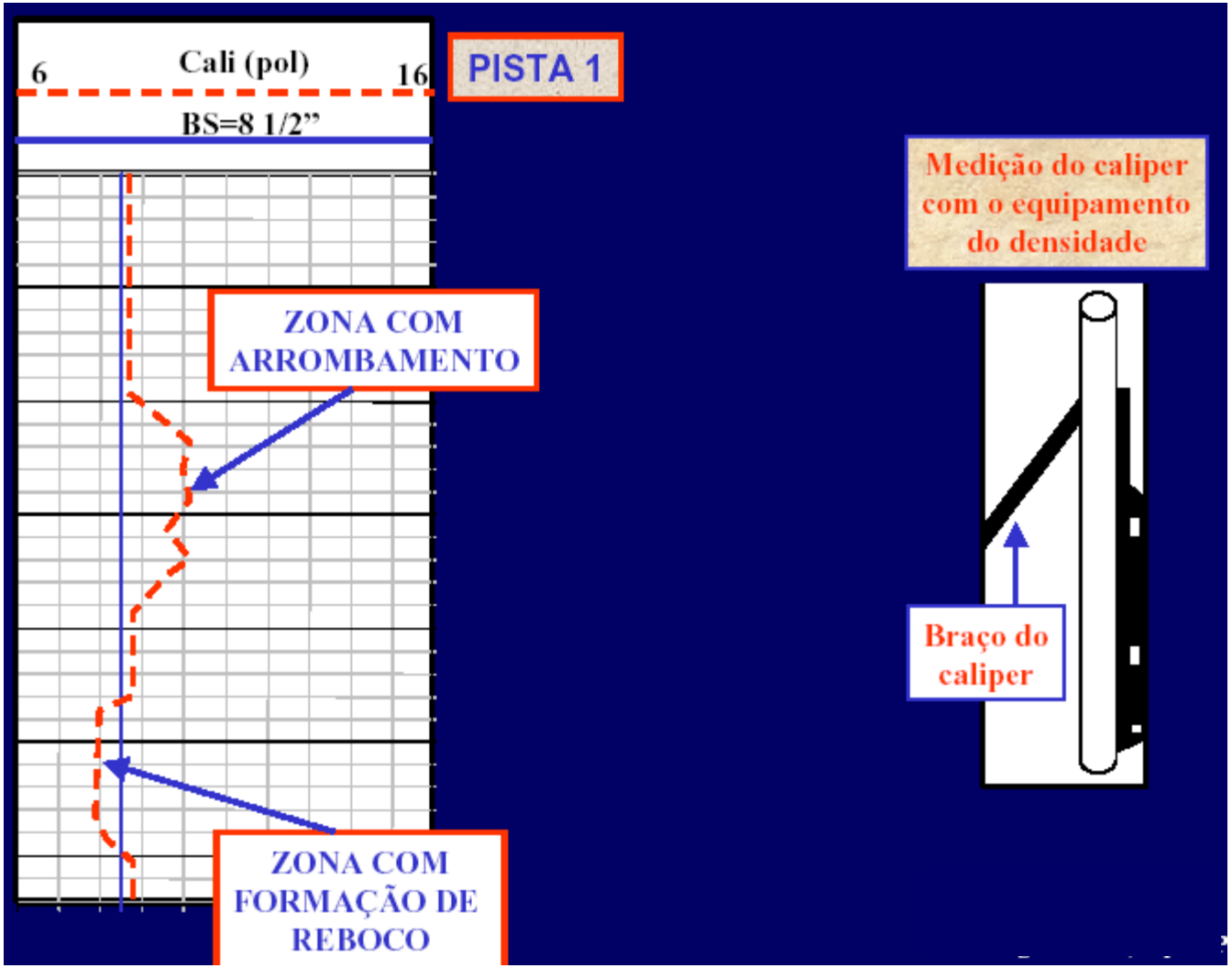
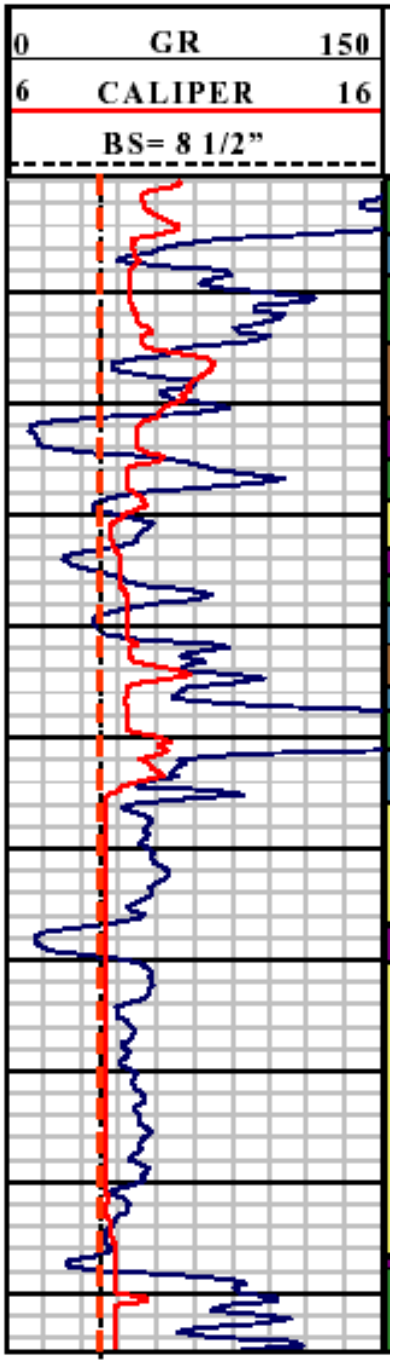
Perfil de calibre (“caliper”)



Soeiro (2005)

Vamos analisar a curva de calibre



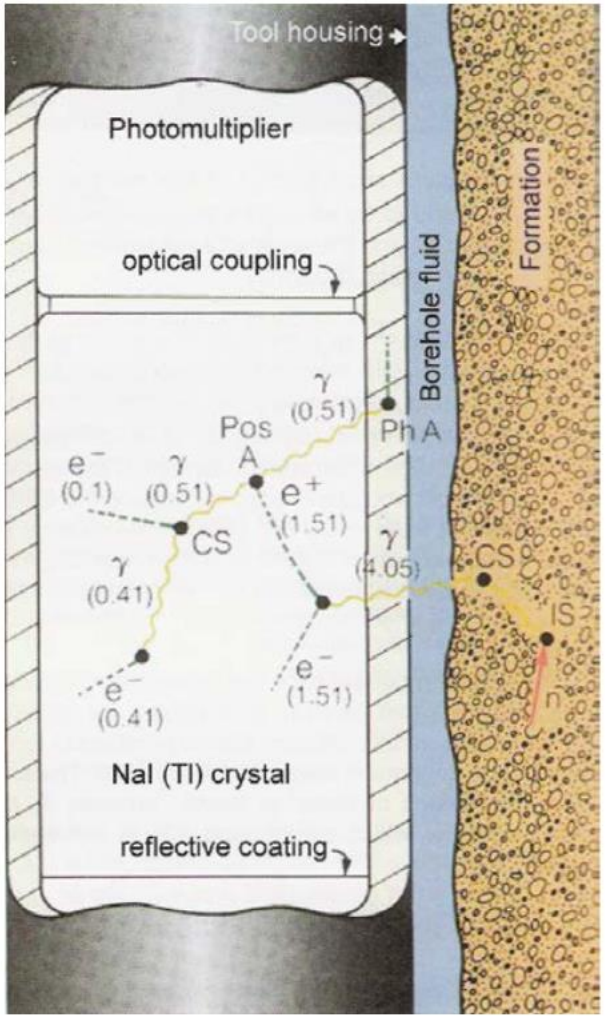
Soeiro (2005)

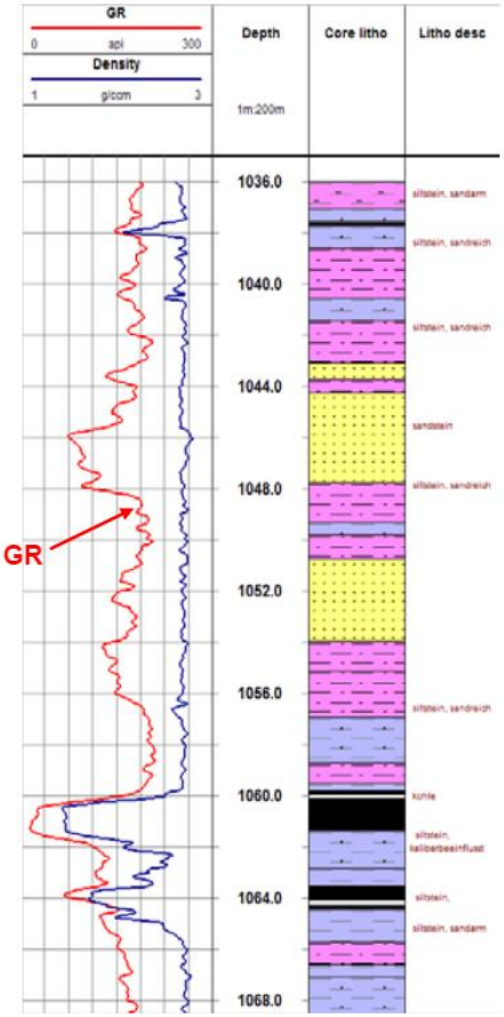
Principais usos

- Avaliar qualidade dos dados dos demais perfis (acoplamento da ferramenta de perfilagem).

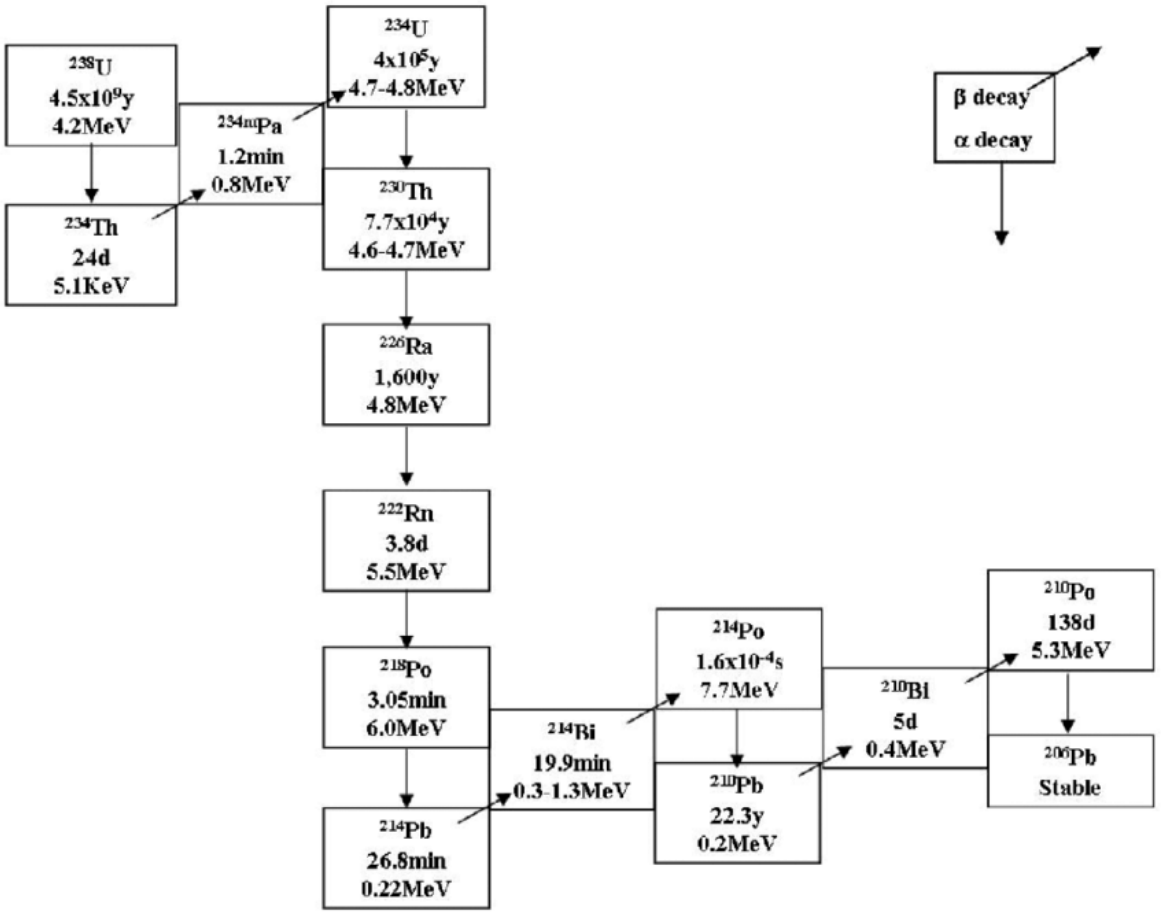
- Determinar zonas com invasão.

Perfil de raios gama naturais (“gama natural”)



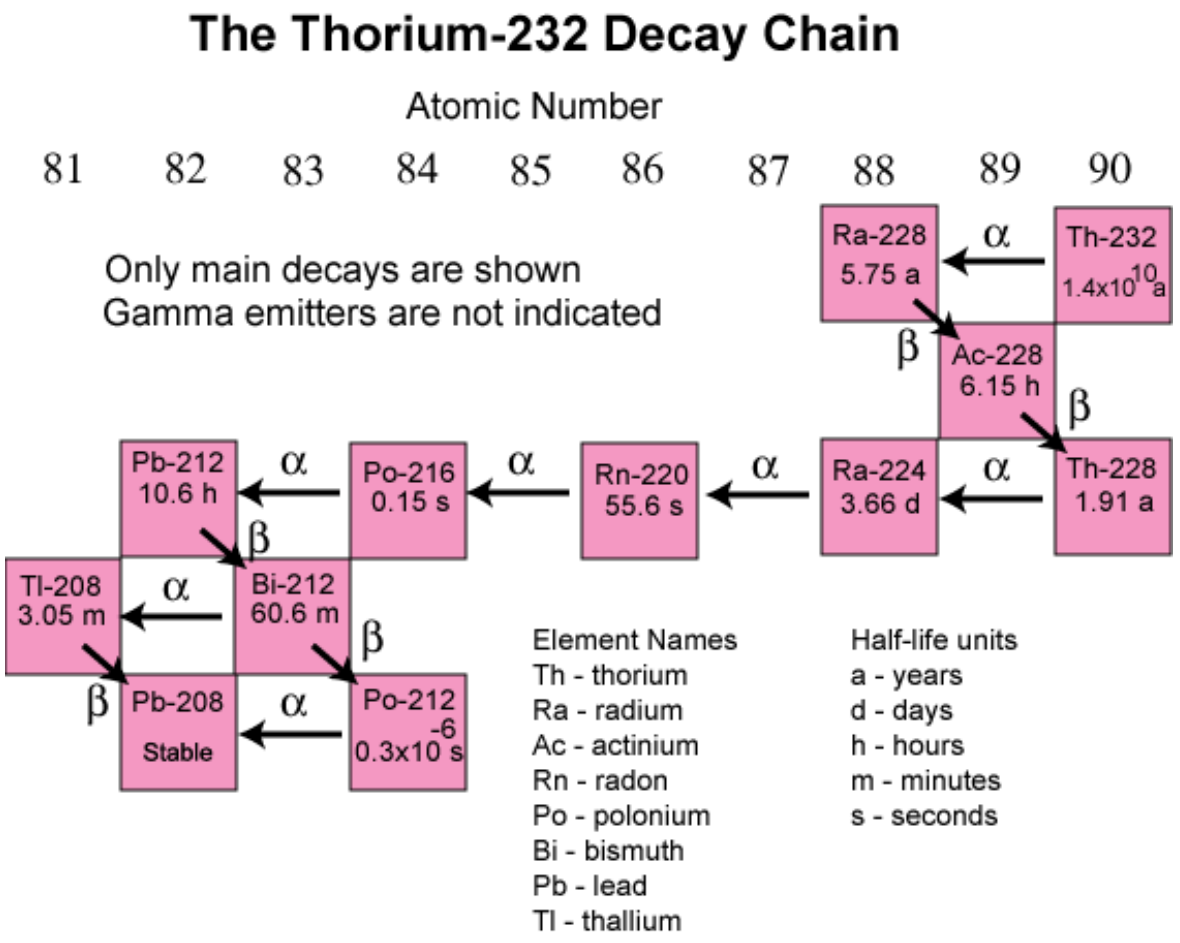


^{238}U

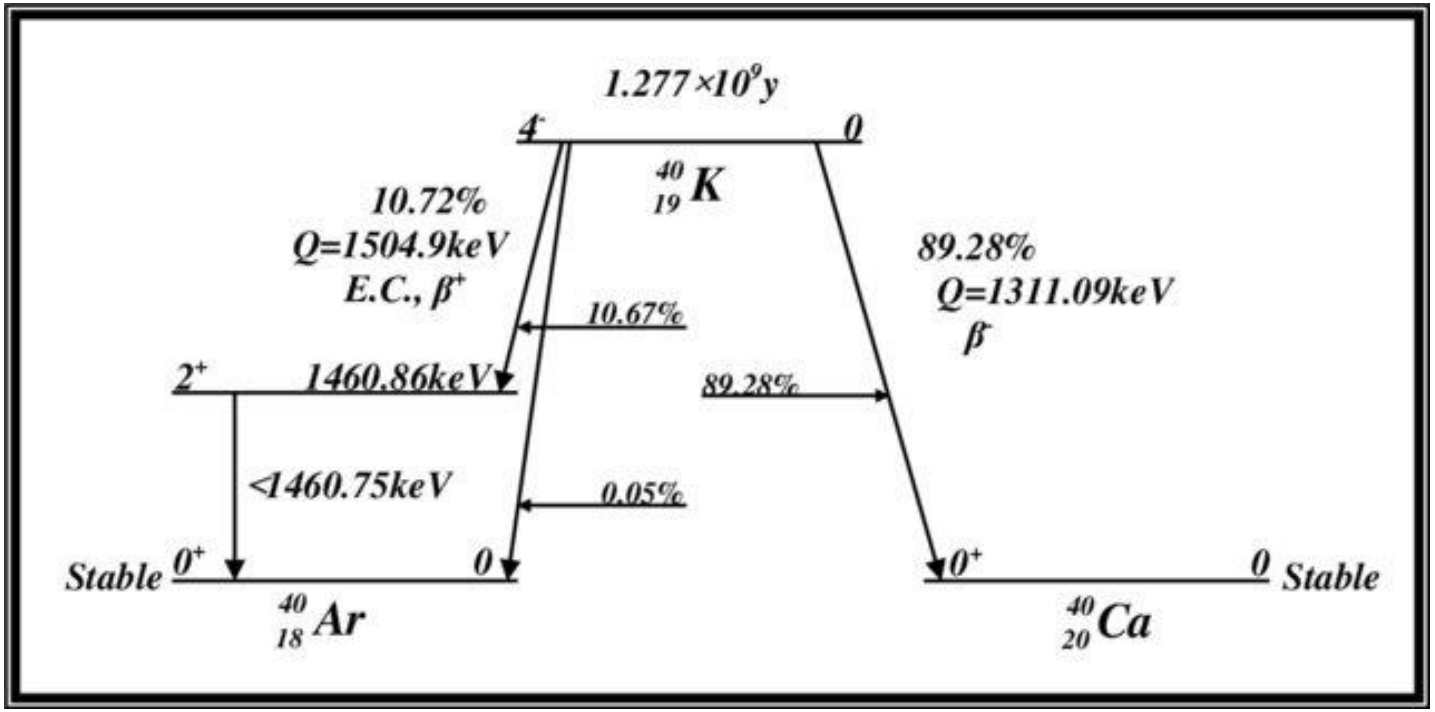


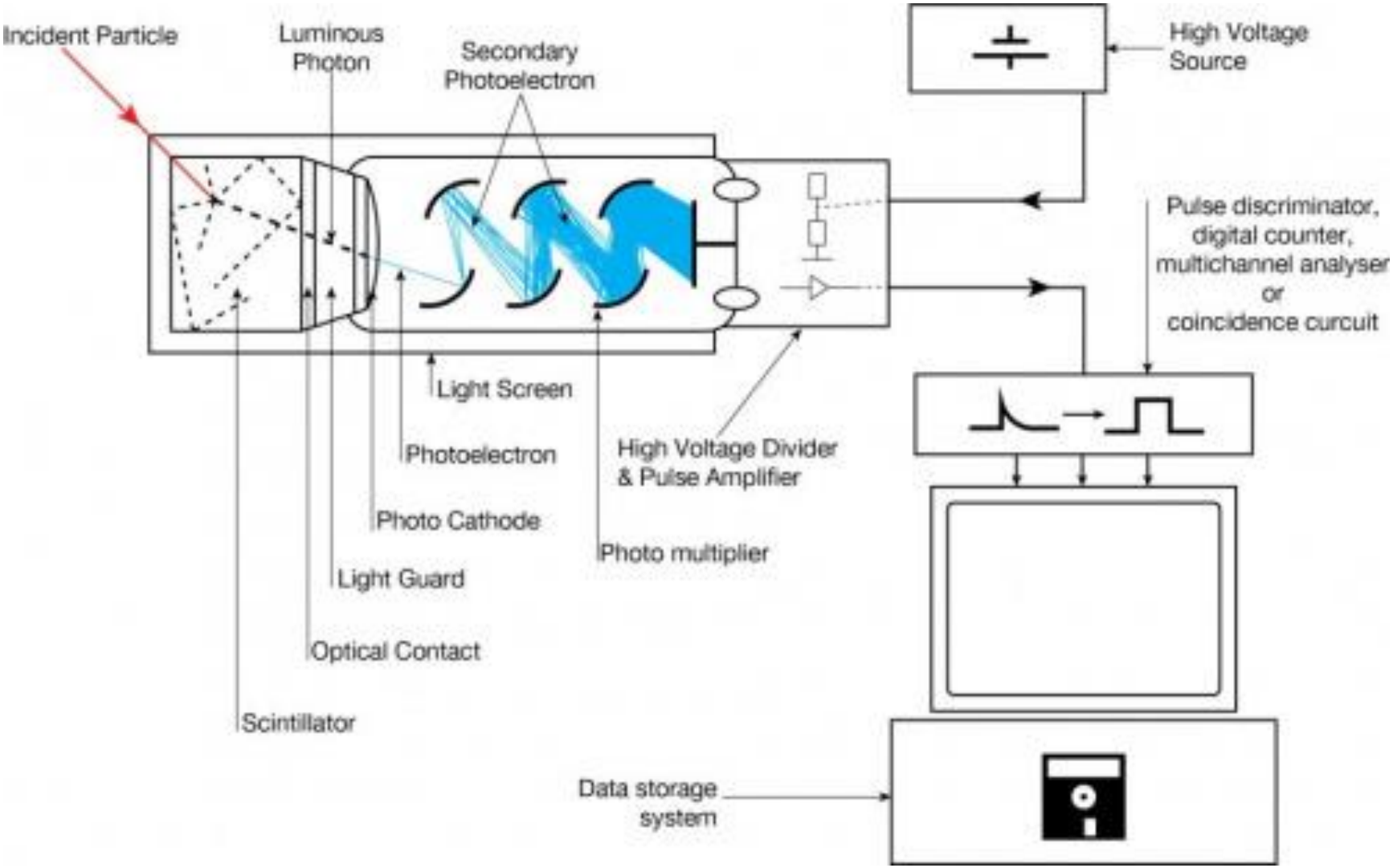
https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html

^{232}Th


The Thorium-232 Decay Chain
Atomic Number
81 82 83 84 85 86 87 88 89 90
Only main decays are shown
Gamma emitters are not indicated
Th-232
1.4x10^10 a
Ra-228
5.75 a
Ac-228
6.15 h
Th-228
1.91 a
Ra-224
3.66 d
Rn-220
55.6 s
Po-216
0.15 s
Pb-212
10.6 h
Bi-212
60.6 m
Tl-208
3.05 m
Po-212
0.3x10^-6 s
Pb-208
Stable
α
β
Element Names
Th - thorium
Ra - radium
Ac - actinium
Rn - radon
Po - polonium
Bi - bismuth
Pb - lead
Tl - thallium
Half-life units
a - years
d - days
h - hours
m - minutes
s - seconds

^{40}K


1.277×10^9 y
4^-
0
40 19 K
10.72%
Q=1504.9keV
E.C., β+
89.28%
Q=1311.09keV
β-
10.67%
2+
1460.86keV
89.28%
<1460.75keV
0.05%
Stable
0+
0
0+
0
Stable
40 18 Ar
40 20 Ca


Incident Particle
Luminous Photon
Secondary Photoelectron
High Voltage Source
Pulse discriminator, digital counter, multichannel analyser or coincidence curcuit
Light Screen
Photoelectron
High Voltage Divider & Pulse Amplifier
Photo Cathode
Photo multiplier
Light Guard
Optical Contact
Scintillator
Data storage system

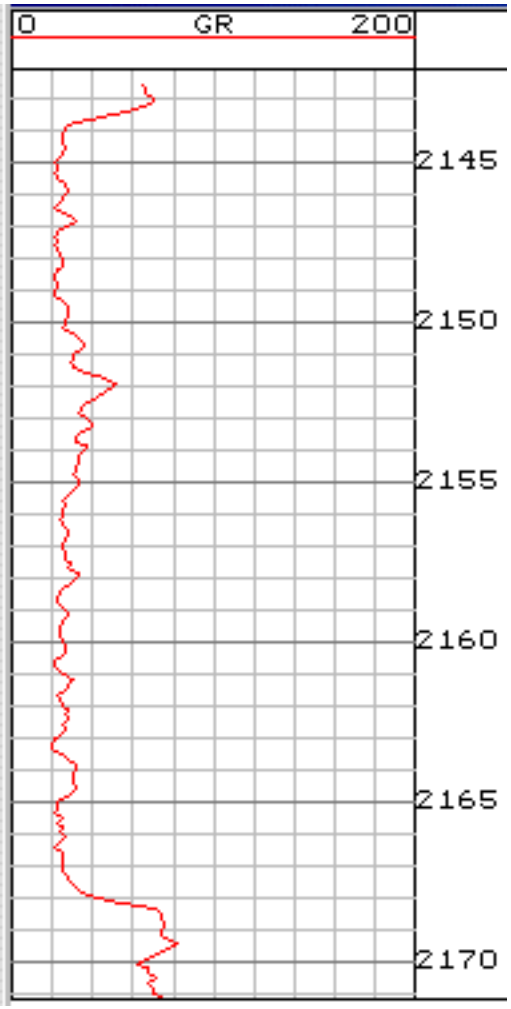
Utilização

- Identificação de litologias
- Correlação estratigráfica
- Determinação de argilosidade de reservatórios

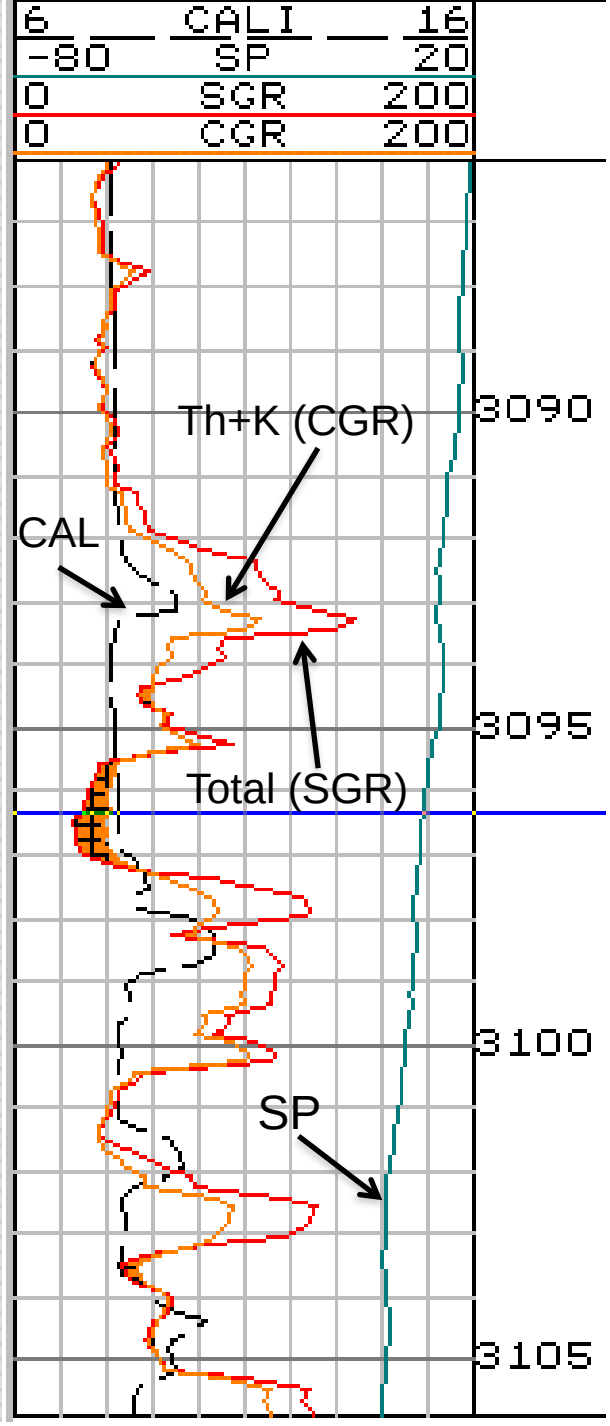
Características

- Registro: pista 1 , escala linear.
- Resolução vertical: ˜30 cm.
- Profundidade de investigação: 30-60 cm.
- Pode-se usado em poço com ou sem revestimento.

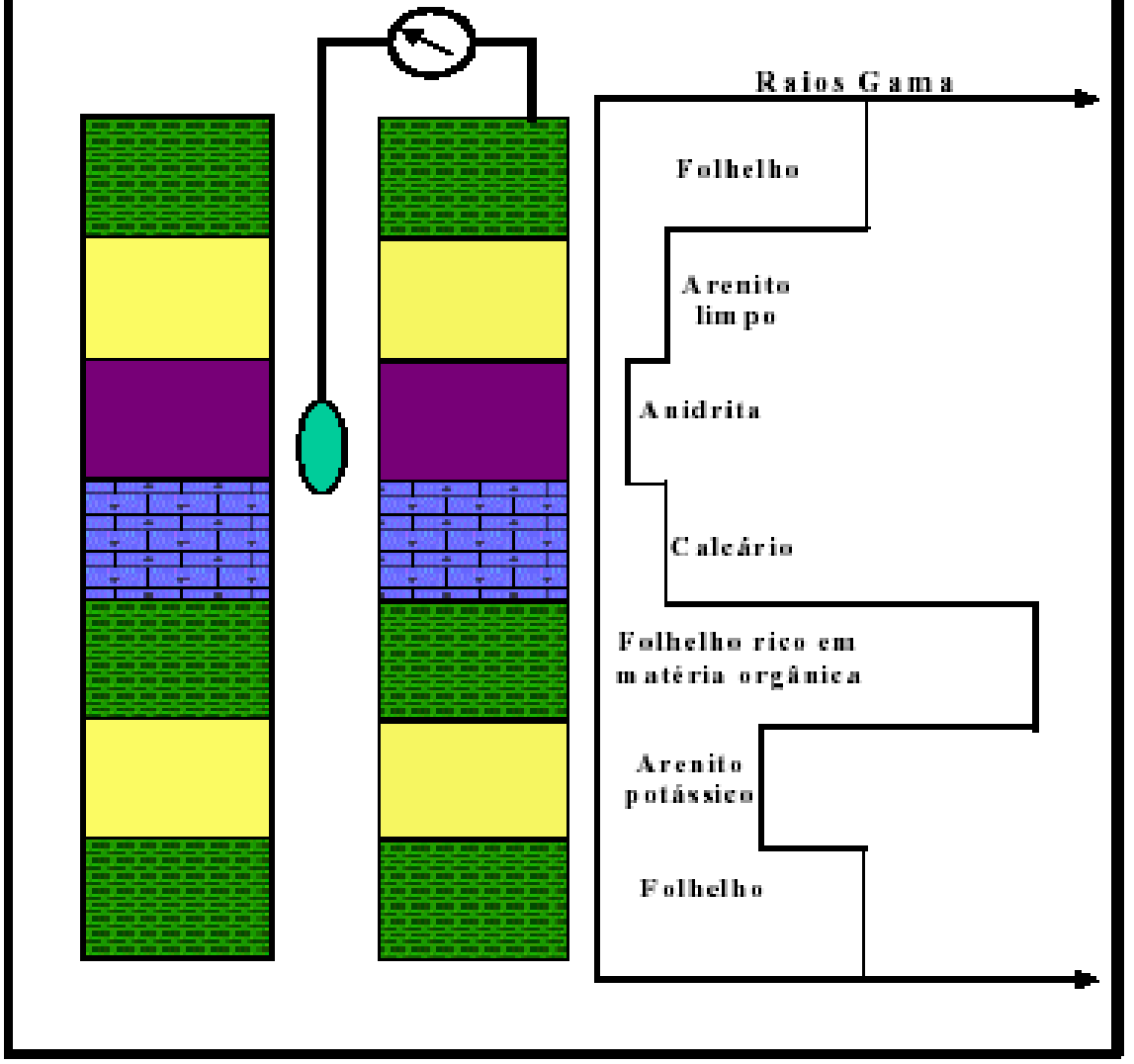
GR total



GR espectral

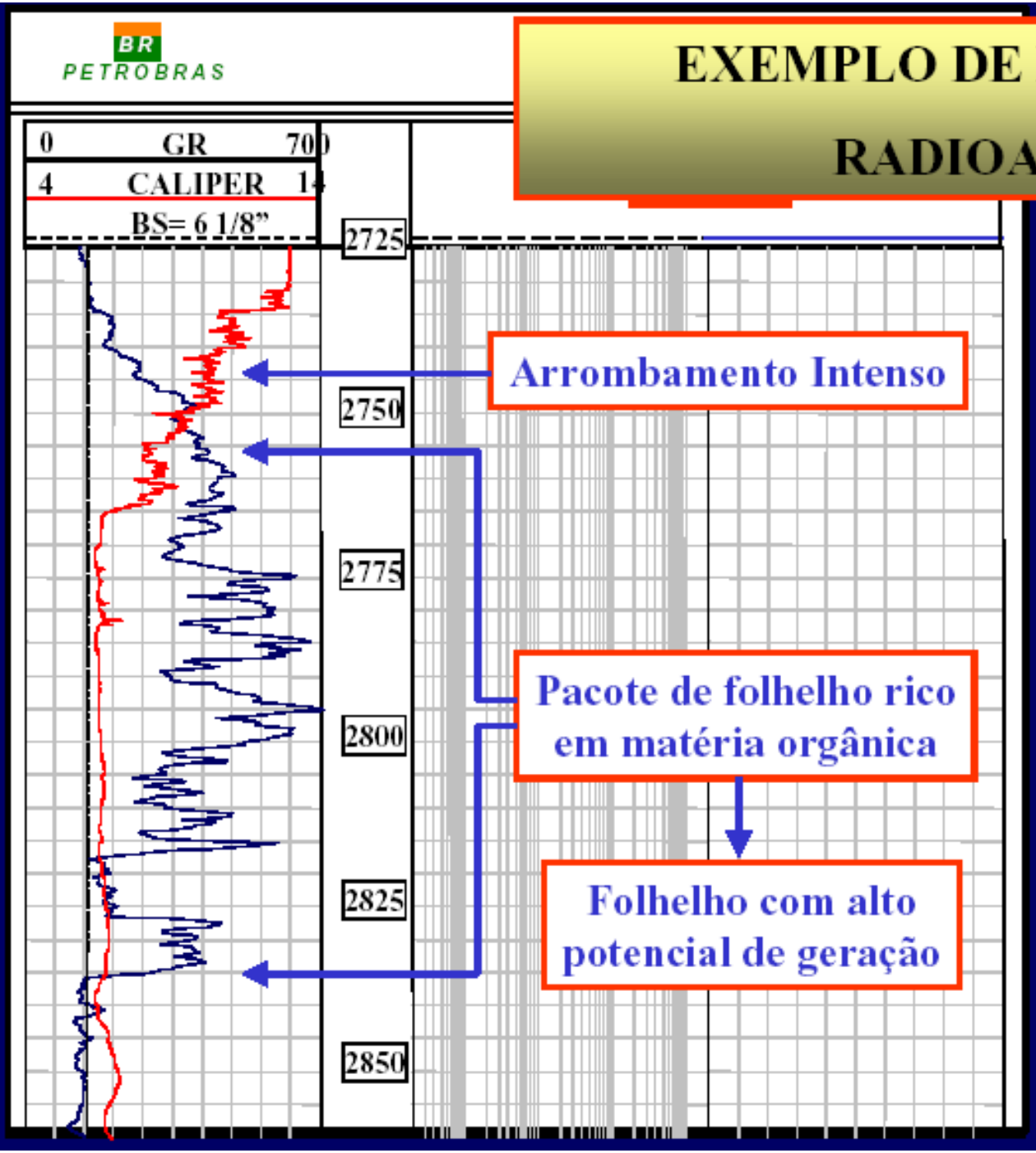


Medida do Raios Gama em Tipos Litológicos



Soeiro (2005)

EXEMPLO DE FOLHELHOS RADIOATIVOS



Soeiro (2005)


DEPTH
(M)
GR (gAPI)
0.
150.
HCAL (in)
6.
16.
4480
4490
4500
4510
4520
4530
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680