

ELF NORGE
PUITS No 25/2-1
F.I.T.

GISEMENTS
ELF = NORGE

16 septembre 1973

- 1 – Outline and main results
- 2 – Sequence of events
- 3 – Well testing : Data sheet
- 4 – Gas flow rate calculations
- 5 – Oil flow rate calculations
- 6 – Bottom hole pressure element calibration
- 7 – Bottom hole pressure chart readings
- 8 – Bottom hole temperature chart readings
- 9 – Well fluids sampling
- 10 – Field measurements of well fluids samples

N.B. – Only the chapters marked with a cross appear in this report.

- 1 1** – Object
- 1 2** – Description of operations
- 1 3** – Well data
- 1 4** – Sketch of surface equipment set-up and materials check list
- 1 5** – Main results

N.B. – Only the subjects marked with a cross appear in this chapter.

OBJET

Enregistrement de la pression de fond pendant le
F.I.T. SCHLUMBERGER.

Résumé des opérations

F.I.T. No1 : 1973m

- L'outil SCHLUMBERGER est descendu à 1973m et enclenché. Enregistrement sur les deux Améradas de la pression flowing et de la pression build up
- Profondeur des Améradas : 1976m

F.I.T. No2

- L'outil SCHLUMBERGER est descendu sans Amérada.

F.I.T. No3 : 1974m

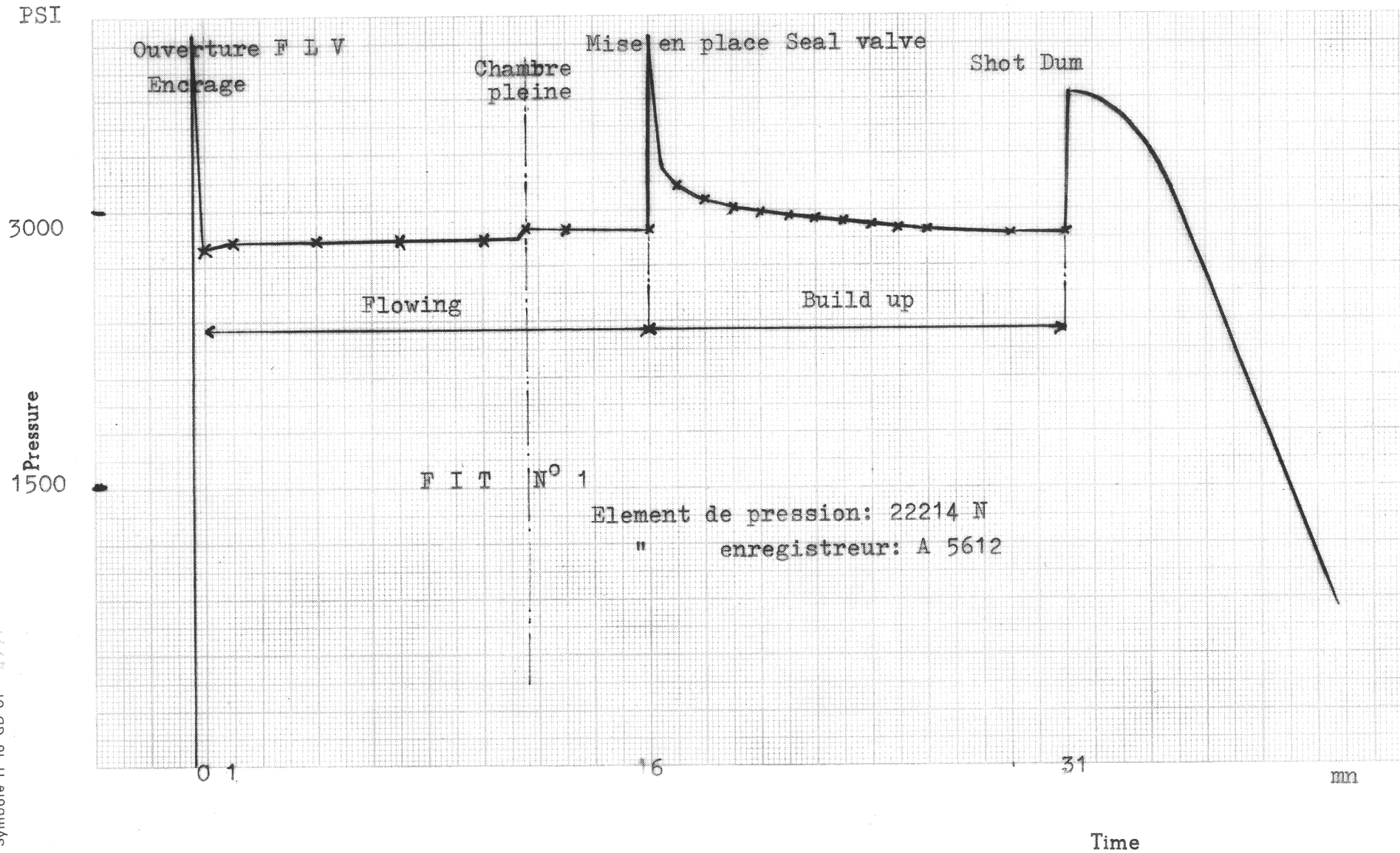
- L'outil SCHLUMBERGER est descendu à 1974m et enclenché. Enregistrement sur les deux Améradas de la pression flowing et de la pression build up
- Profondeur des Améradas : 1977m

FLOPÉTROL
Center : NORTH SEA
Date : 16/09/73

Customer : ELF NORGE
Service Order :
Field : 25/2

Well : 25/2-1
Pay zone

AMERADA
Recorded Bottom Hole
Pressure vs - Time



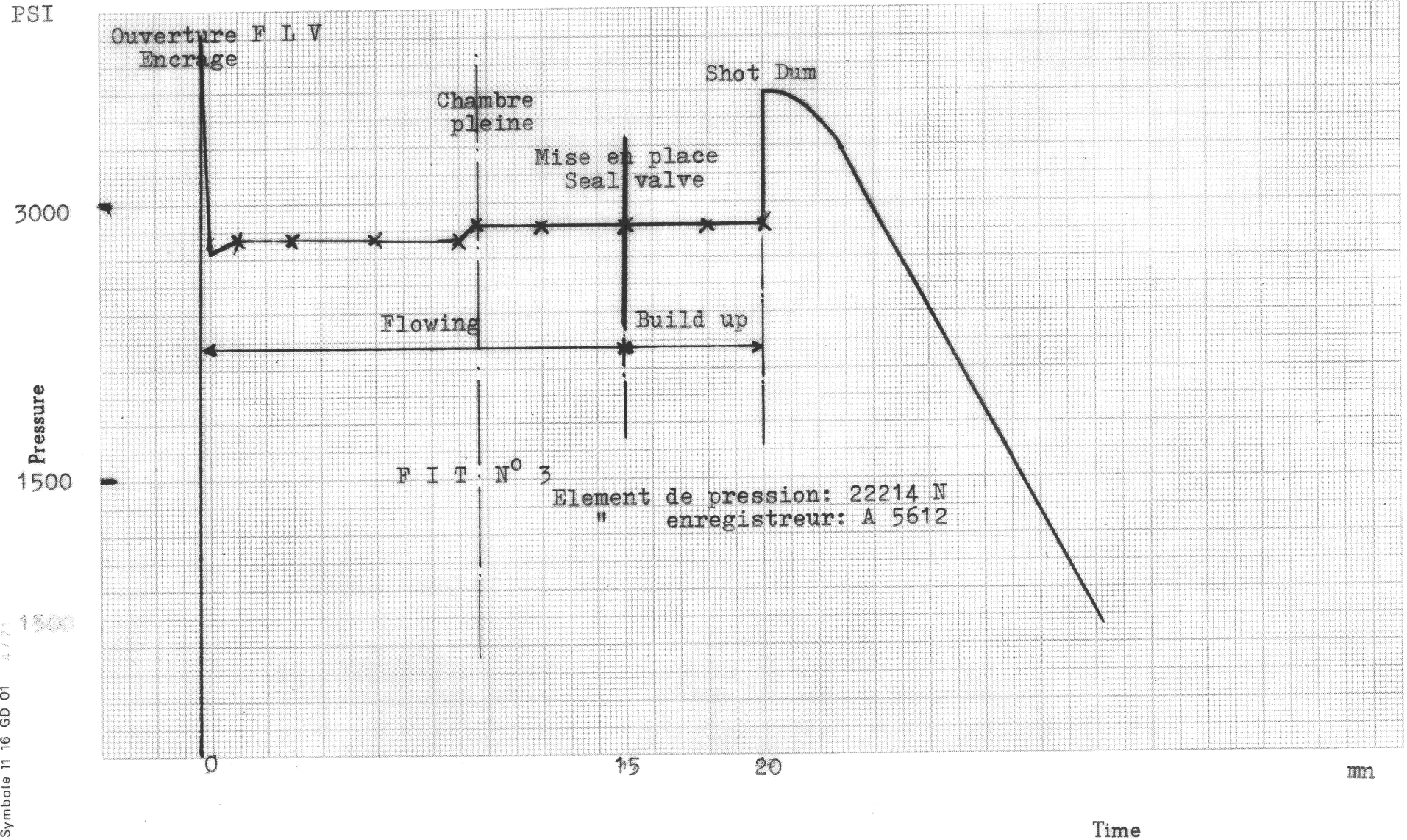
FLOPÉTROL

Center : NORTH SEA
Date : 16/09/73

Customer : ELF NORGE
Service Order :
Field : 25/2

Well : 25/2-1
Pay zone

AMERADA
Recorded Bottom Hole
Pressure vs - Time



FLOPETROLBase : NORTH SEA
Month - Year : 9-1973Customer : ELF NORGE

Service order N° : _____

Field : 25/2Well : 25/2-1Zone tested : FRIGG

Perforations from : _____

to : _____

**SEQUENCE OF
EVENTS**

Date	Time	Operations
16/9		<u>F.I.T. No1</u>
	06h30	Préparation des Améradas
	06h55	Montage des deux Améradas dans l'outil F.I.T. SCHLUMBERGER.
	07h00	Début de la descente de l'outil F.I.T.
	08h15½	F.I.T. à 1973m - shot flowing
	08h16	Shot mud valve
	08h32	Shot seal valve
	08h47	Shot Dump I
	08h48	Shot Dump II
	09h20	Outil F.I.T. au jour
	09h25	Démontage des Améradas
		<u>F.I.T. No3</u>
	14h00	Préparation des Améradas
	14h25	Montage des Améradas dans l'outil F.I.T.
	14h30	Début de la descente
	15h23	F.I.T. à 1974m - shot flowing
	15h23½	Shot mud valve
	15h38	Shot seal valve
	15h43	Shot Dump I
	15h45	Shot Dump II
	16h20	Outil F.I.T. au jour
	16h25	Démontage des Améradas

REMARKS

F.I.T. No2 : Pas d'Amérada

Chief Operator

Y. GARNIER

FLOPETROL

Calibration no 1

Date : 14-09-73

Miscellaneous Information

Pressure Element n° : 28701N Range : 5000 Gauge (Inner Housing) n° : A 7292
 Clock n° : 12087 Hours : 3 Constructor : KUSTER { Constructor : Coleman Range : 10 000
 Dead Weight Testers { Constructor : _____ Range : _____

Calibration Operation

Base line drawn at atmospheric pressure Reading D_0 = 0 Temp. = 15 °C
 Reference line reading D_R = Méca Reference pressure P_R = _____ Temp. = _____
 Max. Temperature expected = 150 °F Calibration Temp. = 150 °F Drawing of all calibration steps { With a crank
 { With a clock
 Equivalent Pressure p of level difference between DWT and the bellows during calibration
 Level difference h = _____ } p = 0 { plus in case of DWT above bellows
 Specific gravity of oil d = _____ } minus in case of DWT beneath bellows

Results of Calibration reading

P (Dwt)	D (1)	Y (4)	ΔY (5)	Y^2	YP	$P_c = KY + a$	Non linearity Correction $C = P - P_c$
PSI		"	"	Limits on this line		PSI	
2500		0,9761	0,1897	0,949842	2440,25	2489,138	+10,862
3000		1,1658	0,1894	1,359089	3497,40	2995,356	+ 4,644
3500		1,3552	0,1926	1,836567	4743,20	3500,774	- 0,774
4000		1,5478		2,395684	6191,20	4014,730	-14,730
13000		5,0449	Σ	6,541182	16872,05		$\Sigma^+ = 15,506$ $\Sigma^- = 15,504$

Calculations by least square Method

$A = \frac{\Sigma P}{n} = \frac{3250}{6} = 541,6667$ $B = \frac{\Sigma Y}{n} = \frac{1,261225}{6} = 0,210204$
 $D = \frac{\Sigma (YP)}{\Sigma Y} = \frac{3344,37749}{1,261225} = 2651,8392$ $C = \frac{\Sigma (Y^2)}{\Sigma Y} = \frac{1,296592}{1,261225} = 1,027999$
 $K = \frac{D - A}{C - B} = \frac{94,37749}{0,035367} = 2668,518392$
 $a = A - BK = -115,602108$ $D - CK = -115,602108$

- (1) D = Reading on the chart reader for the pressure P
- (2) D_0 = Reading for the base line
- (3) D_R = Reading for the reference line
- (4) Y = Deflection { $D - D_0$ if no reference line
 { $D - D_R$ if reference line drawn
- (5) ΔY = For checking
- (6) n = Number of calibration steps

REMARKS _____

Final results of Calibration

$K = 2668,518392$ PSI/inch
 $a + p = -115,602108$ PSI
 $D_R - D_0 = Y_R$ _____ $P_R =$ _____ $P_{RCE} =$ _____

Chief Operator
Y. GARNIER

Symbole : 1106 GDO1

- Pressure recorded with single bombs
- Pressure recorded with tandem bombs
 - 71 - Upper bombs
 - 72 - Lower bombs

$$P = KY + a + p + C$$

- K = Element modulus
 Y = Deflection for pressure P
 a = Zero or reference pressure correction
 C = Element curvature

READING USING BASE LINE

- $Y = D - D_o$
 D = Reading for pressure P
 D_o = Base line reading
 K, a, p and C are obtained from calibration

READING USING REFERENCE LINE

- $Y = D - D_R$
 D = Reading for pressure P
 D_R = Reference line reading for pressure P_R
 $a = P_{RCE} =$ Calculated pressure for reference line
 K, P_{RCE}, p and C are obtained from calibration

FLOPETROL

Base : NORTH SEA
Date : 16-9-73

Customer : ELF NORGE Well : 25/2-1
Service Order No : _____ Zone tested : FRIGG
Field : 25/2

BOTTOM HOLE PRESSURE ELEMENT Chart Reading Form

Ref. Time	True Cumulated Time	Choke Size	Depth	Well head Pressure DWT or Gauge	D	Y	non linearity Correction C *	P = KY+a+p+C	REMARKS
H	mn		m			"		PSI	Units on this line
			<u>F.I.T. No1</u>						
06h55			0	enclenchement du stylet					
07h00			0	début descente					
08h15 ¹ / ₂			1976	ouverture FIV					
08h16	0		"	encrage de l'outil					
08h17	1		"			1,1073		2839	débit initial
08h20	4		"			1,1081		2841	
08h26	10		"			1,1083		2841	
08h27 ¹ / ₂	11.30		"	chambre pleine		1,1181		2868	
08h32	16		"			1,1190		2870	fin du débit
"				mise en place de la vanne joint					
08h33	17		"	début fermé		1,2148		3126	
08h36	20		"			1,1657		2995	
08h45	29		"			1,1233		2882	
08h48	32		"	fin fermeture		1,1233		2882	
			0	outil au jour					

Pressure Element No : 28701 N Range : 5000 Constructor : Amérada
Clock No : 12087 Hour : 3 Type : Kuster Gauge (Inner housing) : A 7292
Other Devices run at the same time : F.I.T. SCHLUMBERGER+ Améradas

Run number : 1
Depth origin : RT
Depth of pressure Element : 1976

Chart Reading Calibration n° : 1 Date : 14-9-73 Before running in After pulling out
 Computed from former Calibration n° : _____ Date : _____ P_R = _____
K 2668,518392
a + p -115,602108
P_{RCE} = _____

Perforations : _____
Tubing size : _____
Tubing shoe : _____

Base Line reading D₀ = _____ Reference Line reading D_R = _____
Maximum Temperature recorded = _____ D_R - D₀ = _____

Chief Operator
Y. GARNIER

* On request of Customer and when the calibration range is significant for non linearity correction.

Symbole : 1107 GD02

FLOPETROL

Base : NORTH SEA
 Date : 16-9-73

Customer : ELF NORGE Well : 25/2-1
 Service Order No : _____ Zone tested : FRIGG
 Field : 25/2

BOTTOM HOLE PRESSURE ELEMENT Chart Reading Form

Ref. Time	True Cumulated Time	Choke Size	Depth	Well head Pressure DWT or Gauge	D	Y	non linearity Correction C *	P = KY+a+p+C	REMARKS
H	mn		m			"		PSI	Units on this line
			<u>F.I.T. No1</u>						
06h55			0	enclenchement du stylet					
07h00			0	début descente					
08h15 ¹ / ₂			1976	ouverture FLV					
08h16	0		"	encrage de l'outil					
08h17	1		"			1,1073		2839	débit initial
08h20	4		"			1,1081		2841	
08h26	10		"			1,1083		2841	
08h27 ¹ / ₂	11.30"		"	chambre pleine		1,1181		2868	
08h32	16		"			1,1190		2870	fin du débit
"				mise en place de la vanne joint					
08h33	17		"	début fermé		1,2148		3126	
08h36	20		"			1,1657		2995	
08h45	29		"			1,1233		2882	
08h48	32		"	fin fermeture		1,1233		2882	
			0	outil au jour					

Pressure Element No : 28701 N Range : 5000 Constructor : Amérada
 Clock No : 12087 Hour : 3 Type : Kuster Gauge (Inner housing) : A 7292
 Other Devices run at the same time : F.I.T. SCHLUMBERGER+ Améradas

Run number : 1
 Depth origin : RT
 Depth of pressure Element : 1976
 Perforations : _____
 Tubing size : _____
 Tubing shoe : _____

Chart Reading { Calibration no : 1 Date : 14-9-73 { Before running in
 Computed from former Calibration no : _____ Date : _____ { After pulling out
 P_R = _____ P_{RCE} = _____
 K 2668,518392
 a + p = -115,602108

Base Line reading D₀ = _____ Reference Line reading D_R = _____
 Maximum Temperature recorded = _____ D_R - D₀ = _____

Chief Operator
Y. GARNIER

* On request of Customer and when the calibration range is significant for non linearity correction.

Symbole : 1107 GD02

FLOPETROL

Base : NORTH SEA
Date : 16-9-73

Customer : ELF NORGE Well : 25/2-1
Service Order No : _____ Zone tested : FRIGG
Field : 25/2

BOTTOM HOLE PRESSURE ELEMENT Chart Reading Form

Ref. Time	True Cumulated Time	Choke Size	Depth	Well head Pressure DWT or Gauge	D	Y	non linearity Correction C *	P = KY+a+p+C	REMARKS
H	mn		m			"		PSI	Units on this line
			<u>F.I.T. No3</u>						
14h25			0	enclenchement du stylet					
14h30			0	début descente					
15h23	0		1977	ouverture FLV					
15h23 ¹ / ₂	0		"	encrage de l'outil					début débit
15h26	3		"			1,1129		2804	
15h29	6		"			1,1122		2802	
15h32	9		"			1,1118		2801	
15h32 ¹ / ₂	9h30"		"	chambre pleine		1,1379		2867	
15h38	15					1,1384		2868	fin du débit
"	"		"	mise en place de la vanne joint					
15h41	18			début fermeture				2870	
15h43	20		"	fin fermeture				2870	
			0	outil au jour					

Pressure Element No : 22214 N Range : 5000 Constructor : Amérada
Clock No : 27825 Hour : 3 Type : Amérada Gauge (Inner housing) : A 5612
Other Devices run at the same time : F.I.T. SCHLUMBERGER + Amérada

Run number : 3
Depth origin : RT
Depth of pressure Element : 1977

Chart Reading { Calibration n° : 1 Date : 14-9-73 Before running in
 Computed from former Calibration n° : _____ Date : _____ After pulling out
P_R = _____

K 2533,630735
a + p = 15,913358
P_{RCE} = _____

Perforations : _____
Tubing size : _____
Tubing shoe : _____

Base Line reading D₀ = _____ Reference Line reading D_R = _____
Maximum Temperature recorded = _____ D_R - D₀ = _____

Chief Operator
Y. GARNIER

* On request of Customer and when the calibration range is significant for non linearity correction.

FLOPETROL

Base : NORTH SEA
Date : 16-9-73

Customer : ELF NORGE Well : 25/2-1
Service Order No : _____ Zone tested : FRIGG
Field : 25/2

BOTTOM HOLE PRESSURE ELEMENT Chart Reading Form

Ref. Time	True Cumulated Time	Choke Size	Depth	Well head Pressure DWT or Gauge	D	Y	non linearity Correction C *	P = KY+a+p+C	REMARKS
H	mn		m			"		PSI	Units on this line
			<u>F.I.T. No3</u>						
14h25			0	enclenchement du stylet					
14h30			0	début descente					
15h23	0		1977	ouverture PLV					
15h23 $\frac{1}{2}$	0		"	encrage de l'outil					début débit
15h26	3		"			1,0900		2793	
15h29	6		"			1,0885		2789	
15h32	9		"			1,0875		2786	
15h32 $\frac{1}{2}$	9h30		"	chambre pleine		1,1116		2850	
15h38	15		"			1,1124		2853	fin débit
"	"		"	mise en place de la vanne joint					
15h41	18		"	début fermeture		1,1124		2853	
15h43	20		"	fin fermeture		1,1124		2853	
			0	outil au jour					

Pressure Element No : 28701 N Range : 5000 Constructor : Amérada
Clock No : 12087 Hour : 3 Type : Kuster Gauge (Inner housing) : A 7292
Other Devices run at the same time : F.I.T. SCHLUMBERGER + Améradas

Run number : 3
Depth origin : RT
Depth of pressure Element : 1977

Chart Reading { Calibration no : 1 Date : 14-9-73 { Before running in
 Computed from former Calibration no : _____ Date : _____ P_R = _____
 After pulling out P_{RCE} = _____

2668,518392
a + p = -115,60210
P_{RCE} = _____

Perforations : _____
Tubing size : _____
Tubing shoe : _____

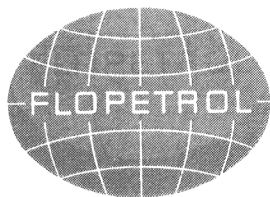
Base Line reading D₀ = _____ Reference Line reading D_R = _____
Maximum Temperature recorded = _____ D_R - D₀ = _____

Chief Operator

Y. GARNIER

* On request of Customer and when the calibration range is significant for non linearity correction.

Division : INTERNATIONAL



Center : NORTH SEA

Service order :

MR. PEUCHET-PARIS 2828

AMERADA CHART

Customer : ELF NORGE

Field : 25/2

Well : 25/2-1

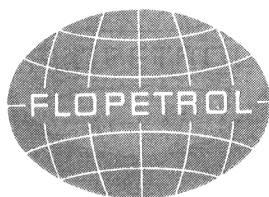
Date : 16-9-73

Remarks F.I.T.
run No 1

Pressure element 5000 psi n° 28 701N

Clock 3 hours n° 12 087

Division : INTERNATIONAL



Center : NORTH SEA

Service order :

MR. PEUCHET-PARIS 2828

AMERADA CHART

Customer : ELF NORGE

Field : 25/2

Well : 25/2-1

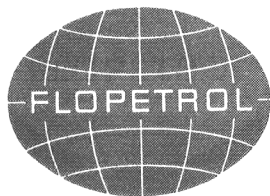
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Remarks F.I.T.
run No 1

Pressure element 5000 psi n° 22214N

Clock 3 hours n° 27 825

Division : INTERNATIONAL



Center : NORTH SEA

Service order :

MR. PEUCHET-PARIS 2828

AMERADA CHART

Customer : ELF NORGE

Field : 25/2

Well : 25/2-1

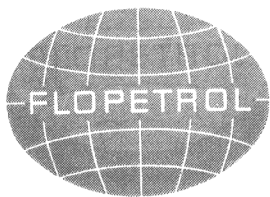
Date : 16- 9-73

Remarks F.I.T.
run No 3

Pressure element 5000 psi n° 22 214N

Clock 3 hours n° 27 825

Division : INTERNATIONAL



Center : NORTH SEA

Service order :

MR. PEUCHET-PARIS 2828

AMERADA CHART

Customer : ELF NORGE

Field : 25/2

Well : 25/2-1

Date : 16-9-73

Remarks F.I.T.
run No 3

Pressure element 5000 psi n° 28 701N

Clock 3 hours n° 12 087