

FLOPETROL

DIVISION : NAR/NUD

BASE : ALKMAAR

REPORT N°: 32/1981

Well Testing Report Annexes —

Client : NEDERLANDSE AARDOLIE MIJ. BV

Field : S05 Well : S05-1

Zone : PRODUCTION Date : 08th of July 1981 until
TEST 1 15th of July 1981
LOWER ZONE

INDEX of ANNEXES

- ☐ 1 _ BOTTOM HOLE PRESSURE AND TEMPERATURE MEASUREMENT _
 - ☐ 1.1 - B.H. gauge calibration .
 - ☐ 1.2 - B.H. pressure calculation .
 - ☐ 1.3 - B.H. temperature calculation .
- ☐ 2 _ LIQUID PRODUCTION RATE MEASUREMENT _
 - ☐ 2.1 - Measurements with tank .
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- ☐ 3 _ GAS PRODUCTION RATE MEASUREMENT _
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FLOPETROL

DIVISION : NAR/NUD

BASE : ALKMAAR

REPORT N°: 33/1981

Well Testing Report

Client : NEDERLANDSE AARDOLIE MIJ. BV

Field : S05

Well : 1

Zone : PRODUCTION
TESTS 2 and 3

Date: 16th of July 1981 until
20th of July 1981

INDEX

- 1 _ TEST PROCEDURE _
- 2 _ MAIN RESULTS _
- 3 _ OPERATING AND MEASURING CONDITIONS _
- 4 _ SURFACE EQUIPMENT DATA _
- 5 _ WELL COMPLETION DATA _
- 6 _ SEQUENCE OF EVENTS _
- 7 _ WELL TESTING DATA _

Flopetrol chief operator

Name : E. BEEDIE

Client representative

Name : MR. J. RAN

- TEST PROCEDURE -

- 1) Nippled up wellhead.
- 2) Displaced 3½" tubing to nitrogen.
- 3) Schlumberger made three perforating runs to perforate from 1480 - 1491 Mtr. and 1430 - 1451 Mtr.
- 4) Opened at choke manifold to bleed off nitrogen.
- 5) Acidised.
- 6) Produced well using nitrogen lift. Total production 7071 m³.
- 7) Set "A" plug in packer.
- 8) Perforated third zone 1189 - 1200 Mtr. and 1225 - 1236 Mtr.
- 9) Acidised.
- 10) Produced well using nitrogen lift. Total production 2452 m³.
- 11) Set "A" plug in packer.
- 12) Killed well.
- 13) End of test.

- MAIN RESULTS -Tested interval: Production Test Nr. 2 Perforations: Zones 2 and 32nd zone 1430 - 1451 Mtr.
1480 - 1491 Mtr.
1189 - 1491 Mtr.
3rd zone 1225 - 1236 Mtr.

OPERATION	DURATION	BOTTOM HOLE PRESSURE	WELL HEAD PRESSURE	OIL PROD. RATE	GAS PROD. RATE	G.O.R
Units	MINS		BAR			
Zone Nr. 2						
Total produced fluid 70.71 m ³ .						
Well produced using nitrogen lift.						
Zone Nr. 3						
Total produced fluid 245.2 m ³ .						
Well produced using nitrogen lift.						

Depth of bottom hole measurements : - Reference : R.K.B.

Temperature : - at : - depth

Separator gas gravity (air : 1) at choke size : -

STO gravity at choke size : Water 1.06

BSW : Less than 1% Water cut : 180%

REMARKS AND OTHER OPERATIONS

Base : ALKMAAR

Field : S05

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OPERATING AND MEASURING CONDITIONSA - TYPE OF GAUGEBOTTOM HOLE :

Pressure : -

Temperature : -

WELL HEAD :

Pressure : Foxboro 0-5000 psi / 0-10000 psi, DWT 0-10000 psi

Temperature : Thermometer 0-200 °F

SEPARATOR :

Pressure : Barton 0-1500 psi

Temperature : Barton 0-200 °F

B - PRODUCTION RATE CONDITIONS AND SOURCESOIL PRODUCTION RATE

- ☐ Tank ☐ Floco
☐ Meter ☐ Rotron
☐ Dump ☐ Rotron
☐ _____

Reference conditions

- ☐ Separator
☐ Atmospheric
pressure 60°F

Shrinkage measurement

- ☐ With tank
☐ With shrinkage
tester

GAS PRODUCTION RATE

- ☐ Orifice meter
☐ _____

Standard conditionsWATER PRODUCTION RATE

- ☐ Tank
☐ Meter
☐ _____

C - WELL DATAWELL STATE DURING SURVEY :Well producing through : tubing ~~with pipe casing~~

Main casing size 7" set at 2226 Mtr. Total well depth 1843 Mtr.

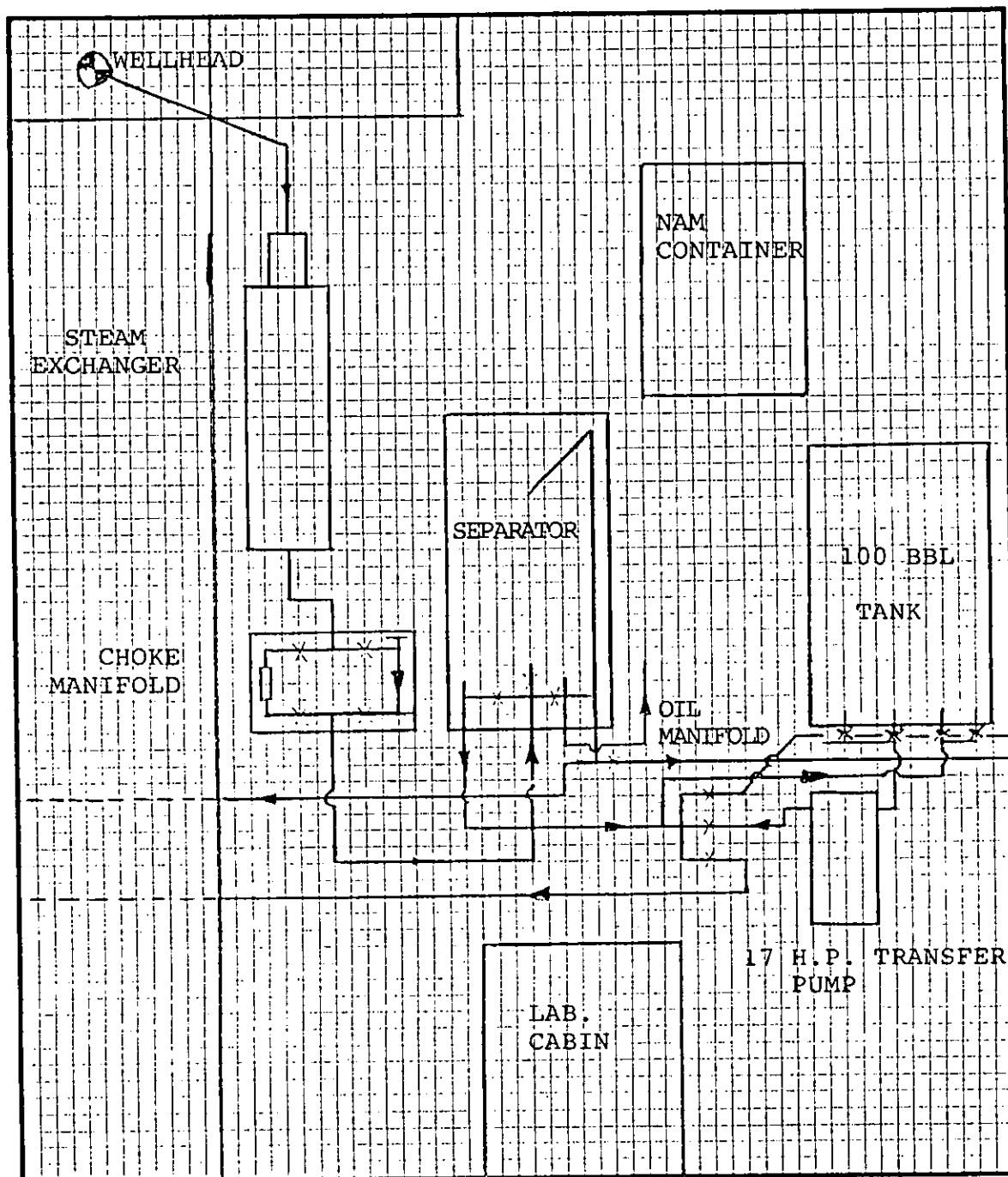
Tubing size 3½" VAM set at 1380 Mtr. Packer 7"84-40 set at 1130 Mtr.
7"85-47Perforations :

- Zone 2 From 1430 Mtr. to 1451 Mtr. From 1480 Mtr. to 1491 Mtr.
- Zone 3 From 1189 Mtr. to 1200 Mtr. From 1225 Mtr. to 1286 Mtr.

WELL STATE BEFORE TEST :

- ☐ Well closed since _____
☐ Well flowing since _____ Producing zone _____
Choke size _____

- SURFACE EQUIPMENT LAYOUT -



REMARKS :

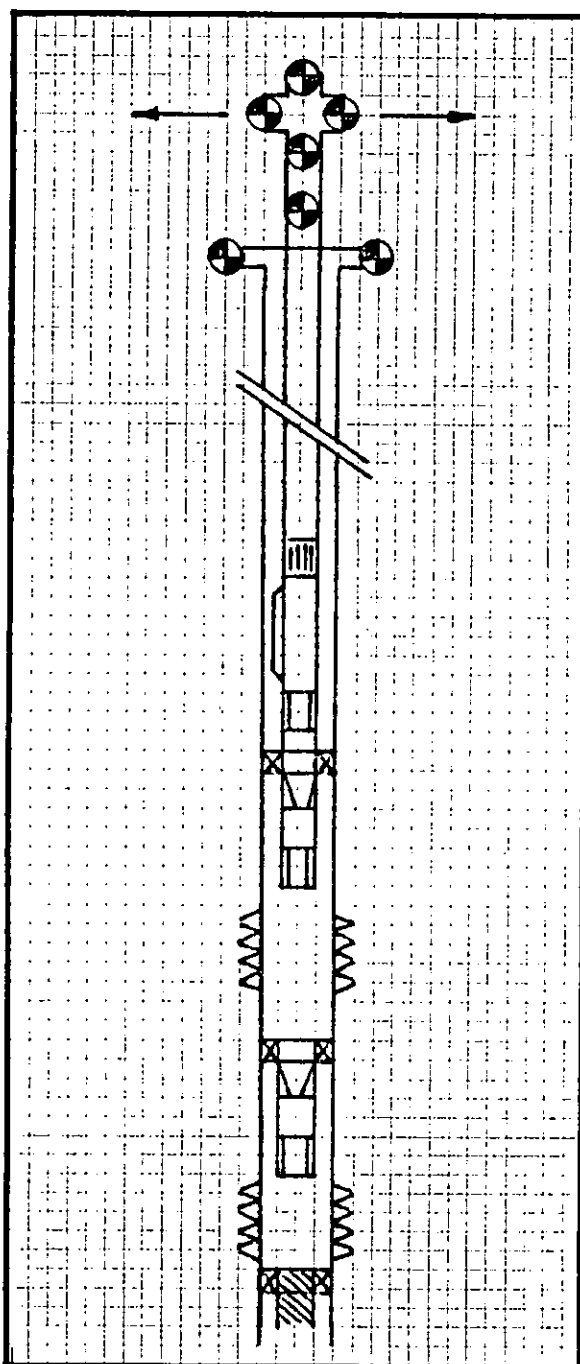
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WELL COMPLETION DATA

Wellhead

7" 84-40 at 1130 Mtr.

Perf. 1189 - 1200 Mtr. ZONE
1225 - 1236 Mtr. Nr. 3

7" 85-47 at 1380 Mtr.

Perf. 1430 - 1451 Mtr. ZONE
1480 - 1491 Mtr. Nr. 2

REMARKS :

FLOPETROL

Client : N.A.M.

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Field : S05

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SEQUENCE OF EVENTS - PRODUCTION TESTS ZONE 2 and 3.

DATE	TIME	OPERATION
16-7-81	07.00	Nippled down B.O.P.S.
	13.00	Nippled up wellhead.
	13.30	Pressure tested wellhead, connected flowline and pressure recorders.
	15.20	Pressure tested wellhead and choke manifold to 400 BAR.
	15.40	Closed kill line, swab valve and choke manifold.
	15.55	Started to rig up N.A.M. wireline.
	16.00	Pulled "F" plug from hanger nipple.
	16.10	Run in hole to H.U.D.
	16.25	H.U.D. at 1843 Mtr. Pull out of hole.
	16.55	Rig up Newsco coil tubing.
	18.54	Newsco run in hole. Start pumping N2 at 100 scft/min.
	19.07	Increase pump rate to 500 scft/min.
	19.35	Newsco on depth of 1702 Mtr.
	19.45	Increase pump rate to 750 scft/min.
	20.24	Newsco pull out of hole.
	20.42	Shut in well on choke manifold.
	21.15	Coil tubing on surface.
	22.35	Stop pumping N2 WHP = 184 BAR.
	22.40	Close master valve. Bleed down Newsco through flare line.
	22.50	Close swab valve. Open master valve.
	23.55	Schlumberger rig up.
17-7-81	00.15	Pressure test Schlumberger lubricator at 300 BAR.
	00.30	Finish pressure test. OK.
	06.00	Schlumberger prepare guns.

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- SEQUENCE OF EVENTS - (Continuation)

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DATE	TIME	OPERATION
17-7-81	06.15	Schlumberger run in hole to perforate first run.
	06.30	Bled off at choke manifold to 150 BAR.
	06.42	Shut in at choke manifold.
	06.57	Schlumberger perforated from 1480 - 1491 Mtr.
	07.00	Schlumberger pull out of hole.
	07.35	Schlumberger run in hole. Second run.
	08.12	Schlumberger perforated from 1440.5 - 1451 Mtr.
	08.15	Schlumberger pull out of hole.
	08.30	Schlumberger on surface.
	08.55	Schlumberger run in hole. Third run.
	09.23	Schlumberger perforated 1430 - 1440.5 Mtr.
	09.25	Schlumberger pull out of hole.
	09.40	Schlumberger on surface.
	09.55	Well opened at choke manifold on 24/64" adjustable.
	10.20	Increased choke to 28/64" adjustable.
	10.37	Increased choke to 32/64" adjustable.
	10.45	Increased choke to 40/64" adjustable.
	10.50	Increased choke to 64/64" adjustable.
	10.55	Increased choke to 128/64" adjustable.
	11.30	Shut in at choke manifold.
	12.15	Rig up N.A.M. wireline to check fluid level and
		H.U.D.
	12.30	Run in hole with wireline.
	12.45	Fluid level at 1280 Mtr., H.U.D. 1843 Mtr.
	13.15	N.A.M. wireline on surface, rig down.
	13.45	Schlumberger rig up.
	13.55	Schlumberger run in hole with first DST
		Sample taken at 1430 Mtr.
	14.20	Schlumberger pull out of hole.

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DATE	TIME	OPERATION
17-7-81	14.35	Schlumberger at surface.
	14.45	Schlumberger run in hole with second DST.
		Sample taken at 1430 Mtr.
	15.20	Schlumberger pull out of hole.
	15.40	Schlumberger out of hole.
	16.40	Rig up Nowsco.
	17.00	Pressure test Nowsco to 345 BAR.
	17.55	Bled off pressure, opened at choke manifold to gauge tank.
	18.00	Nowsco run in hole with coil tubing to 1500 Mtr.
	19.00	Halliburton start pump seawater.
		Nowsco at 1500 Mtr.
	22.38	Seawater on surface. Total amount displaced 11.9 m ³ .
	22.55	Halliburton pressure test acid lines.
	23.35	Pressure test at 360 BAR. "OK".
	23.49	Halliburton start pumping acid.
18-7-81	00.47	Shut in well on choke manifold.
		Displaced 3.1 m ³ .
	00.55	Start squeezing at 80 Ltr/min at 330 BAR.
	01.50	Coil tubing pull up to 1400 Mtr. Start pumping.
	07.10	Acid squeeze completed.
	07.15	Run in hole with coil tubing to 1520 Mtr.
	07.22	Opened at choke manifold at 32/64" adjustable.
	07.30	Nowsco start pumping 500 scf/min.
	07.32	Nowsco stop pumping. Flow to gauge tank.
	08.35	Increased choke to 48/64" adjustable.
	08.45	Acid to surface.
	08.50	Switched flow through separator to tank.
	09.30	Increased choke to 64/64" adjustable.

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DATE	TIME	OPERATION
18-7-81	09.35	Pull out of hole with coil tubing.
	10.10	Nowsco stopped pumping.
	10.30	Switched flow to tank, pressure tested 7" csg to 120 BAR.
	10.45	Closed master valve, bled off casing pressure through choke manifold.
	10.55	Opened master valve and flowed well to tank on 48/64" adjustable.
	11.00	Increased choke to 64/64". Switched flow to separator.
	11.05	By-passed separator to gas flare.
	11.15	Switched flow to gauge tank.
	12.55	Bled off 7" casing pressure.
	13.00	Pressure tested 7" casing to approx. 100 BAR to see if check valve on kill wing is leaking.
	13.07	Run in hole with Nowsco coil tubing to 1500 Mtr. Well open at choke manifold on 32/64" adjustable. Flowing to gauge tank.
	14.00	Increased choke to 48/64" adjustable.
	14.05	Increased choke to 64/64" adjustable.
	14.45	Switched flow to burner, Nowsco pull out of hole.
	15.20	Nowsco on surface, shut in at choke manifold.
	15.45	Open at choke manifold on 64/64" adjustable to bleed off tubing.
	16.00	Rig up N.A.M. wireline to run in hole with "A" plug.
	16.25	Shut in at choke manifold.
	16.45	Run in hole with "A" plug.
	17.10	Wireline lost "A" plug in hole.
	17.25	Wireline run in hole with second "A" plug.

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- SEQUENCE OF EVENTS - (Continuation)

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DATE	TIME	OPERATION
18-7-81	17.55	Wireline set "A" plug in packer at 1380 Mtr.
	17.58	Wireline pull out of hole.
	18.05	Bled off 7" casing pressure to zero.
	18.10	Wireline on surface.
	18.15	Pressure test tubing to 200 BAR.
	18.32	Bleed down tubing to zero. Pressure test OK.
	18.45	W.L. rig down. Schlumberger rig up.
	20.48	Schlumberger run in hole with cement bailer No. 1
	21.15	Release cement. Pull out of hole.
	21.30	Schlumberger on surface.
	22.20	Schlumberger run in hole with cement bailer.
	22.50	Release cement. Pull out of hole.
	23.12	Schlumberger on surface.
	23.30	Set x-as tree to pressure test "A" plug.
	23.35	W.L. rig up.
	23.50	"A" plug OK.
19-7-81	00.03	W.L. run in hole to pull camco RD.
	00.26	W.L. pull out of hole.
	00.37	W.L. on surface.
	01.00	W.L. run in hole with new camco.
	01.20	W.L. set camco. Pull out of hole.
	01.29	W.L. on surface.
	01.35	W.L. run in hole with shifting tool to check S.S.D.
	01.50	W.L. pull out of hole. S.S.D. "OK".
	01.59	W.L. on surface.
	02.15	Pressure test tubing to 200 BAR.
	02.35	Pressure test OK. Bleed tubing. W.L. rig down.
	03.10	Nowsco rig up.
	03.58	Open master valve.

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DATE	TIME	OPERATION
19-7-81	04.02	Nowsco run in hole.
	04.32	Nowsco on depth.
	04.51	Nowsco pull out of hole.
	05.27	Nowsco on surface.
	05.28	Shut in well at choke manifold.
	05.45	Nowsco start pumping.
	06.35	Stopped pumping nitrogen.
	06.45	Closed valve and bled off C.T.
	07.05	Closed swab valve, open master valve.
	07.10	Rigged down Nowsco.
	07.20	Started to rig up Schlumberger.
	08.25	Opened swab valve and run in hole with first perforating run.
	08.35	Bled off tubing to 150 BAR.
	08.57	Schlumberger perforated from 1225 - 1236 Mtr.
	09.00	Schlumberger pull out of hole.
	09.12	Schlumberger on surface.
	09.15	Pressure drop at surface.
	09.20	Schlumberger rig up for second run.
	09.30	Schlumberger run in hole.
	10.02	Schlumberger perforated from 1189 - 1200 Mtr.
	10.05	Schlumberger pull out of hole.
	10.15	Schlumberger on surface.
	10.30	Well opened at choke manifold on 24/64" adjustable.
	10.32	Increased choke to 28/64" adjustable.
	10.35	Increased choke to 32/64" adjustable.
	10.38	Increased choke to 36/64" adjustable.
	10.40	Increased choke to 48/64" adjustable.
	12.00	Reduce choke to 32/64" adjustable.

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- SEQUENCE OF EVENTS - (Continuation)

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DATE	TIME	OPERATION
19-7-81	12.10	Rig up N.A.M. wireline to check HUD and liquid level.
	12.30	Run in hole with wireline. Liquid level 1250 Mtr. H.U.D. 1378 Mtr.
	12.48	Wireline on surface.
	13.15	Rig up Halliburton to bullhead 22 m ³ into formation.
	14.35	Flush Halliburton lines with water for pressure test.
	14.45	Pressure test Halliburton lines to 300 BAR.
	14.50	Halliburton lines leaking, repair leak.
	15.10	Flushed through Halliburton lines.
	15.15	Pressure tested Halliburton to 300 BAR, leak at "X" over.
	15.25	Bled off pressure, connect Halliburton to kill line side of wellhead.
	15.40	Pressure test to 380 BAR, leak.
	15.50	Bled off to repair leak.
	15.55	Pressure test acid line against master and downstream of flowline 300 BAR.
	16.00	Pressure test OK. Start to pump acid.
	16.25	Finished pumping acid.
	16.26	Flush through flowline with seawater.
	16.35	Rig up Nowsco.
	16.40	Well opened at choke manifold on 48/64" adjustable.
	17.20	Pressure test Nowsco to 300 BAR.
	17.33	Annulus pressure increased to 240 BAR.
	17.35	Annulus pressure bled off, Halliburton cement unit pumping down 7" casing? Rupture disc in packer burst.
	17.55	Rig down Nowsco.
	18.15	Reverse circulate to tank 20 m ³ .

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DATE	TIME	OPERATION
19-7-81	18.30	W.L. rig up.
	19.06	Rig pump stop pumping. No returns.
	19.11	W.L. run in hole to pull camco RD.
	19.20	W.L. pull out of hole.
	19.38	W.L. on surface.
	19.48	W.L. run in hole with new camco.
	20.09	W.L. set camco. Pull out of hole.
	20.20	W.L. on surface.
	20.25	Pressure test camco. 100 BAR OK.
	20.45	NowSCO rig up.
	21.05	Pressure test NowSCO C.T. to 300 BAR OK.
	21.35	NowSCO run in hole. Open well at C.M.
	21.45	Start pumping N2 500 scft/min.
	22.15	Bleed down 7" annulus to 0 BAR.
	22.45	NowSCO on depth.
	23.30	Switch flow to separator.
20-7-81	02.50	NowSCO pull out of hole. Total displaced 80.5 m ³ .
	03.00	NowSCO stopped pumping.
	03.30	NowSCO on surface.
	03.36	NowSCO run in hole.
	04.16	NowSCO on depth pump 500 scf/min.
	09.25	NowSCO pull out of hole.
	10.05	NowSCO on surface.
	10.45	By-pass separator, flow to gas flare.
	10.50	Rigged up N.A.M. wireline.
	11.30	Shut in at choke manifold, run in hole to set "A" plug in packer.
	11.50	Set "A" plug in packer.
	12.20	Fill up tubing to pressure test "A" plug.

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FLOPETROLClient : N.A.M.Field : S05Well : 1Base : ALKMAAR**- WELL TESTING DATA SHEET -**Section : **7**Page : 7.1Report N°: 33/81

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR	Displaced liquid		
Time Hrs	Cumul Min	BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			Δ m ³	Cumul m ³	Units
		Temp.	Pressure	Tg.temp	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity Air = 1				
		16th of July 1981															
16.00		N.A.M. wireline pull "F" plug.															
16.10		W.L. run in hole to HUD.															
16.25		W.L. pull out of hole. HUD at 1843 Mtr.															
16.55		Noweco C.T. rig up. Pressure test to 345 BAR.															
18.54		Noweco run in hole. Start pumping N2 at 100 scft/min.															
19.07		Increase pump rate to 500 scft/min														0	
19.35		Noweco at depth of 1702 Mtr.														3.8	3.8
19.45		Increase pump rate to 750 scft/min														2.5	6.3
20.00																3.2	9.5
20.15																4.9	14.4
20.20																0.7	15.1
20.24		Noweco pull out of hole.															
20.42		Shut in well on choke manifold.															

LIQUID FLOW RATE MEASURING CONDITIONS :TESTED INTERVAL : Zones 2 and 3DEPTH REFERENCE : R.K.B.DEPTH OF B.H. MEASUREMENTS : -

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	Displaced liquid		
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			m ³		
Time	Cumul	Temp.	Pressure	Tgtemp	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		tank		
Hrs	Min			°C	BAR								Air = 1		cumul		Units
		17th of July 1981															
15.00	210				5												
15.30	240				6.5												
16.00	270				6.95												
16.30	300				3.75												
16.40		Rig up Newsco.															
17.00					< 3.5												
17.30					< 3.5												
17.55					< 3.5				Open well at choke manifold to gauge tank.								
18.00					< 3.5				Newsco run in hole.						0		
18.30					< 3.5										-		
18.40					< 3.5										0.05		
19.00		Halliburton start pumping at 70 Ltr/min.													1.50		
20.00					< 3.5										2.60		
20.30					< 3.5										3.90		
21.00					< 3.5										5.40		
21.30					< 3.5										7.30		

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WELL TESTING DATA SHEET (Continuation)

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	Liquid displaced		
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			cumul		
Time	Cumul	Temp.	Pressure	Tg.temp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		tank		
Hrs	Min			°C	BAR	BAR							Air = 1		m³		Units
		17th of July 1981															
22.00					<3.5										9.30		
22.30					<3.5										11.30		
22.38					<3.5		Seawater on surface. Stop pumping.							Total	11.9 m³ displaced.		
22.55		Halliburton pressure test acid line to							360 BAR. OK.								
23.49		Halliburton start pumping acid through							C.T. Displaced liquid from well.								
		18th of July 1981													0.0		
00.00					<3.5										0.58	m³	
00.15					<3.5										1.6	m³	
00.30					<3.5										2.4	m³	
00.45					<3.5									Total	3.1 m³ displaced.		
00.47		Shut in well at choke manifold.															
00.55		Start squeezing acid into formation at							30 Ltr/min. at 330 BAR.								
01.50		C.T. pull up 1400 Mtr.															
07.10		Acid squeeze completed.															
07.15				14	<3.5	1											
07.22				14	<3.5	1			Opened at choke manifold on 32/64" adjustable.								

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WELL TESTING DATA SHEET (Continuation)

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	water production			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS				cumul		
Time	Cumul	Temp.	Pressure	Tg.temp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity			prod.		
Hrs	Min			°C	BAR	BAR							Air = 1			m ³	Units	
		18th of July 1981																
07.30				19.5	< 3.5	1										0.0		
08.00				20.0	< 3.5	1			Nowsco start pumping N2.							0.46		
08.15				20.0	< 3.5											0.96		
08.30				25.0	8.35											2.18		
08.35		Increased choke to 48/64" adjustable.																
08.45		Spent acid to surface.															7.01	
08.50		Switched flow through separator to tank.																
09.00				32	42.0	50.0										9.87		
09.15				34	38.75	78.0										14.36		
09.30				36	30.55	96.0			Increased choke to 64/64" adjustable.					S.G. 1.06		19.32		
09.35				34	30.0	98.0			Nowsco pull out of hole.									
10.00				32	20.25	112.0										25.69		
10.15						117.0			Nowsco stopped pumping							29.58		
10.30				31	13.15	108.0			Started to pressure annulus. .971							30.55		
10.45				30	< 3.5	170.0			Closed master valve to bleed off 7" csg.							33.19		
10.55						0			Opened master valve.									

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR				
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS						
Time	Cumul	Temp.	Pressure	Tg.temp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity					
Hrs	Min				BAR	BAR							Air = 1				Units	
		18th of July 1981																
18.32		Bled down tubing to 0, pressure test "OK".																
18.45		W.L. rig down. Schlumberger rig up.																
20.48		Schlumberger run in hole with cement baller Nr. 1.																
21.15		Release cement. Pull out of hole.																
21.30		Schlumberger on surface.																
22.20		Schlumberger run in hole with cement baller Nr. 2.																
22.50		Release cement. Pull out of hole.																
23.12		Schlumberger on surface.																
23.20		Set x-mas tree to pressure test "A" plug.																
23.35					40	<1			Pressure test "A" plug. W.L. rig up.									
23.50					40	<1			"A" plug "OK".									
23.55					40	<1			Hold pressure on tubing, to pull camco RD.									
		19th of July 1981																
00.03					30				W.L. run in hole to pull camco RD.									
00.26		W.L. latch onto camco. Pull out of hole.																
00.37		W.L. on surface. Camco "OK".																

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	Tank		
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			Cumul		
Time	Cumul	Temp.	Pressure	Tgtemp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		m ³		Units
Hrs	Min				BAR	BAR							Air = 1				
		19th	of July 1981														
01.10					30	25			W.L. runs in hole with new camco.								
01.20		W.L.	set camco. Pull out of hole.														
01.29					20	20			W.L. on surface.								
01.35		W.L.	run in hole with shifting tool to check S.S.D.														
01.50		W.L.	pull out of hole. S.S.D. "OK".														
01.59					20	5			W.L. on surface.								
02.15					200.0				Pressure test annulus to 200 BAR.								
02.35					0.0	0.0			Pressure test "OK". Bleed down annulus.						W.L. rig down.		
03.10		Noweco	rig up. Pressure test to 300 BAR.														
03.58		Open	master valve.														
04.02		Noweco	run in hole.														
04.15		Noweco	start pumping at 660 Mtr.												1.1		
04.30					17	10									2.1		
04.32		Noweco	on depth increased pumping.														
						750	scft/min.										
04.45					15	15									6.2		

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	Tank		
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			Cumul		
Time	Cumul	Temp.	Pressure	Tgtemp	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		m ³		Units
Hrs	Min				BAR	BAR							Air - 1				
		19th of July 1981															
04.48		Stopped liquid production.												Total	7.2 m ³ displaced.		
04.51		Nowsco pull out of hole.															
05.00					7	17											
05.27		Nowsco on surface.															
05.28		Shut in well at choke manifold.															
05.45		Nowsco start pumping nitrogen.															
06.30		Continue to pump nitrogen.															
06.35		Stopped pumping.															
06.40					185.5	10											
06.45					0	10			Bled off above master valve.								
07.05		Closed swab valve, opened master valve.															
07.10					179.75	10			Rigged down Nowsco.								
07.30					178.85	10			Rigged up Schlumberger to perforate third zone.								
07.40		Closed master valve and bled off above.															
08.00																	
08.25					170.07				Opened swab valve and run in hole.								

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR				
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS						
Time	Cumul	Temp.	Pressure	Tg.temp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity					
Hrs	Min			°C	BAR	BAR							Air = 1				Units	
		19th of July 1981																
08.35					149.5	5												
08.55					147.35	5												
08.57		Schlumberger perforated Nr. 1.																
09.00					147.30	4												
09.15					122.50	<5												
09.30					117.25	<5			Schlumberger run in hole for second perforating run.									
09.45					113.50	<5												
10.00					112.10	<5												
10.02					112.10	<5			Schlumberger perforated Nr. 2.									
10.05					112.05	<5												
10.15					110.85	<5												
10.30				18	109.70	<1			Well opened at choke manifold on 24/64" adjustable.									
10.32				18					Increased choke to 28/64" adjustable.									
10.35				18	69.0	<1			Increased choke to 32/64" adjustable.									
10.38				18					Increased choke to 36/64" adjustable.									
10.40				18	20.35				Increased choke to 40/64" adjustable.									

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	Displaced liquid		
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			Ph.	Cumul	
Time	Cumul	Temp.	Pressure	Tg.temp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity			m ³	
Hrs	Min			°C	BAR	BAR							Air - 1				Units
		19th of July 1981															
19.38		W.L. on surface.															
19.48		W.L. run in hole with new camco.															
20.09		W.L. set camco. Pull out of hole.															
20.20		W.L. on surface.															
20.25					5	100			Pressure test camco to 100 BAR.								
20.40		Camco "OK".															
20.45		Nowsco rig up.															
21.05		Pressure test Nowsco C.T. to 300 BAR.															
21.25		Pressure test "OK".															
21.35	0			18	8	5			Nowsco run in hole. Open well at choke manifold.								
21.45	10			20	7	10			Start pumping N ₂ at 500 scft/min.						1		
22.00	25			23	20	20									1		
22.15	40			27	15	5			Bleed down 7" annulus to 0 BAR.						1		
22.30	55			29	20	0									1		
22.45	70			32	25	0			Nowsco on depth of 1350 Mtr.						1		
23.00	95			35	28	0			Total produced acid 11.5 m ³						1		

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	Displaced liquid		
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			Ph.	Cumul	
Time	Cumul	Temp.	Pressure	Tg.temp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity			m ³	
Hrs	Min			°C	BAR	BAR							Air • 1				Units
		19th of July 1981															
23.15	110			35	30	5			Switch flow to gauge tank						4	0	
23.30	125			37	30	5			Switch flow to separator						6	4.0	
23.45	140			39	28	5			Flow readings by positive dis. meter.						6	7.2	
24.00	155			39	27	5			No H ₂ S.						6	13.6	
		20th of July 1981															
00.15	170			41	27	5									6	20.3	
00.30	185			43	25	5			No H ₂ S.						7	26.8	
00.45	200			44	25	5									7	33.0	
01.00	215			44	26	5			No H ₂ S.						6	39.3	
01.15	230			45	26	5									6	44.3	
01.30	245			46	25	5									6	47.9	
01.45	260			46	24	5									6	54.1	
02.00	275			46	24	5			No H ₂ S.						6	60.0	
02.30	305			47	24	5									6	72.1	
02.50	325			47	24	5			Nowsco pull out of hole. Total displaced						6	80.5	
03.00					32	5			Nowsco stopped pumping.								

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Date - Time		Pressure and temperature measurements							Prod. rates and fluid properties					GOR	Water production		
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			Prod.	Cumul	
Time	Cumul	Temp.	Pressure	Tg.temp.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		Rate	Water	
Hrs	Min			°C	BAR	BAR							Air = 1		m ³ /day	m ³	Units
		20th of July 1981															
03.30		NowSCO on surface.															
03.36		NowSCO run in hole.												Estimation + 5	85.5		
04.16		NowSCO on depth 1360 Mtr. 500 scft/min.															
04.30				43	27	5										88.8	
05.00				48	27	5									672	102.8	
05.30				49	27	5									634	116.0	
06.00				49	25	5									643	129.4	
06.30				50	25	5							.969		648	142.9	
07.00				49	26.15	5									653	156.5	
07.30				50	24.75	5									658	170.2	
08.00				50	24.65	5		Less than 1% MUD, at 44 °C.	SG 1.053						648	183.7	
08.30				50	26.25	5									680	197.9	
09.00				50	25.25	5			Less than 1% MUD.						666	211.8	
09.30				50	24.85	5									662	225.6	
10.00				50	16.50	5									562	237.3	
10.30				47	10.36	5									379	245.2	

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