

**GEOLOGICAL WELL LOGGING  
PETROLEUM INDUSTRIAL LABORATORIES**



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DEN NORSKE STATS OLJESELSKAP A.S

STATOIL

CORE ANALYSIS

Stavanger, 13. juni 1977.

# REPORT

**Field**

**Well** 15/9-1

**Core**

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**File I.D. :** STO - 03

## Contents

- ROUTINE CORE DATA
- CAPILLARY PRESSURE MEASUREMENTS
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## **Routine Core Data**

FIELD \_\_\_\_\_  
WELL 15/9-1

CORE No. \_\_\_\_\_

**ROUTINE CORE DATA**

DEPTH (Sample)	POROSITY Ø %	PERMEABILITY K mD	GRAIN DENSITY g/cc	R E M A R K S
157	10,6	0,12		
199	20,0	486,0		
233	14,2	0,21		
304	17,5	1,25		
339	18,8	105,9		
386	15,5	4,54		

## Capillary Pressure Measurements

# Capillary Pressure Measurement

COMPANY STATOIL

CORE No                     

PLUG No 157 Fractured plug

PLUG PARAMETERS : Porosity  $\phi$ : 10,6 Permeability K: 0,12  
 Volumebulk: 12,125 Volumepore: 1.285

Capillary Pressure Pc ata	Saturation Hg %	"J" Factor: $J(S_{Hg}) = \frac{Pc}{\sigma \cos \theta} \left( \frac{K}{\phi} \right)^{\frac{1}{2}} \quad \cdot (1)$
1	0	
2	1,2	
4	2,0	
6	2,3	
8	2,7	
10	3,5	
14	5,1	
20	8,6	
30	16,7	
40	20,6	
50	23,0	
60	25,3	
70	28,4	
80	28,8	
100	30,3	
120	31,9	
140	31,9	
160	33,5	
180	34,6	
200	35,4	

\* (1) Pc - in dyn/cm<sup>2</sup>  
 $\sigma$  = 480 dyn/cm  
 $\cos \theta$  = 0,766  
 K - cm<sup>2</sup>

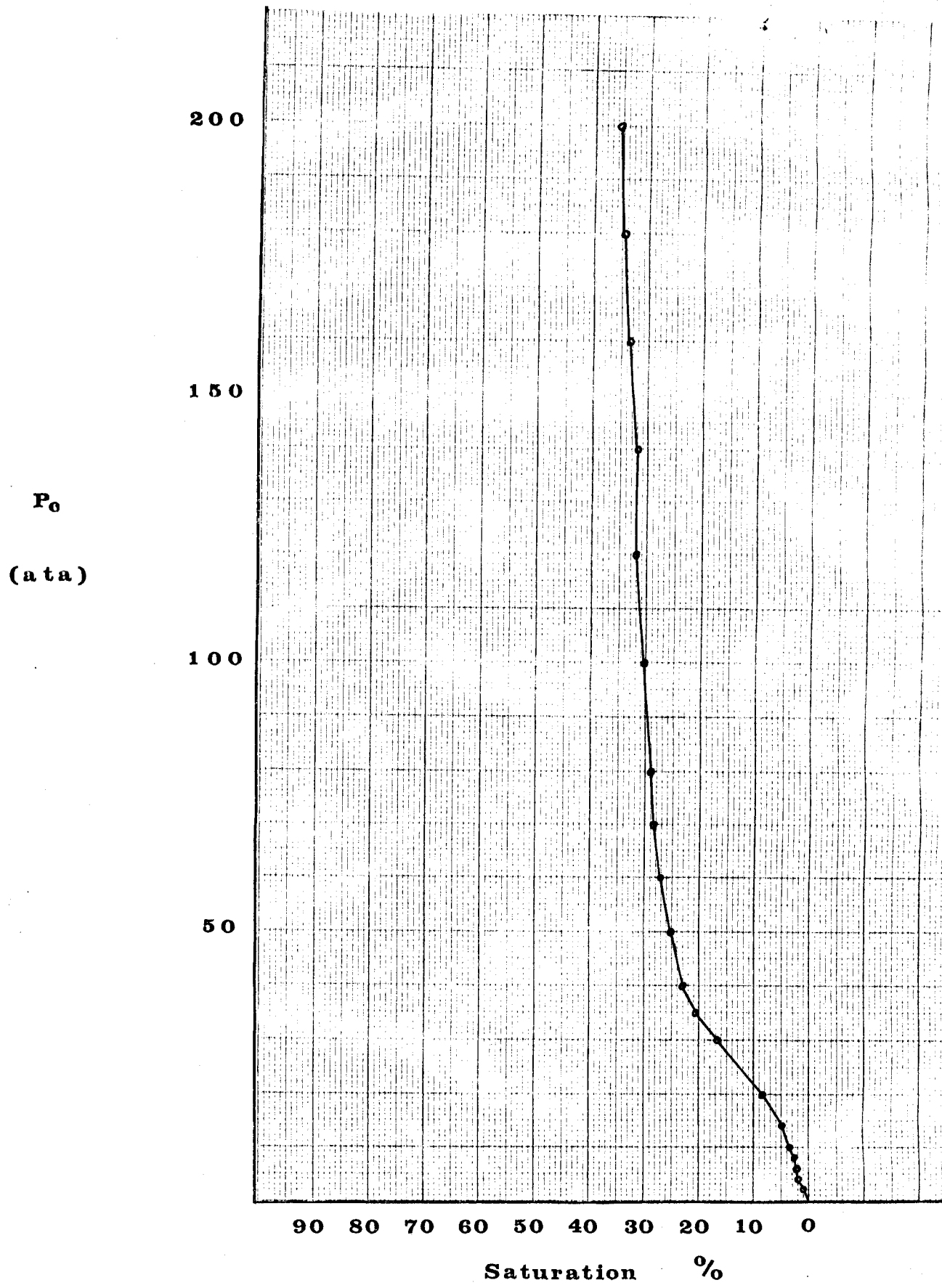
### Capillary Pressure Measurement

$\phi$ : 10,6 %

Core No.:

Depth: plug 157

K: 0,12 mD



# Capillary Pressure Measurement

COMPANY STATOIL  
 CORE No                       
 PLUG No 199

PLUG PARAMETERS : Porosity Ø: 20,0 Permeability K: 486,0  
 Volumebulk: 11.975 Volumepore: 2.395

Capillary Pressure Pc ata	Saturation Hg %	"J" Factor: $J(S_{Hg}) = \frac{Pc}{\sigma \cos \theta} \left( \frac{K}{\phi} \right)^{\frac{1}{2}}$ * (1)
1	44,15	
2	69,9	
4	75,8	
6	79,7	
8	81,3	
10	83,1	
20	88,3	
30	88,7	
40	88,9	
50	90,0	
60	90,2	
80	91,0	
100	91,2	
120	91,4	
140	92,5	
160	92,7	
180	92,9	
200	93,1	

\* (1) Pc - in dyn/cm<sup>2</sup>  
 σ = 480 dyn/cm  
 cos θ = 0,766  
 K - cm<sup>2</sup>



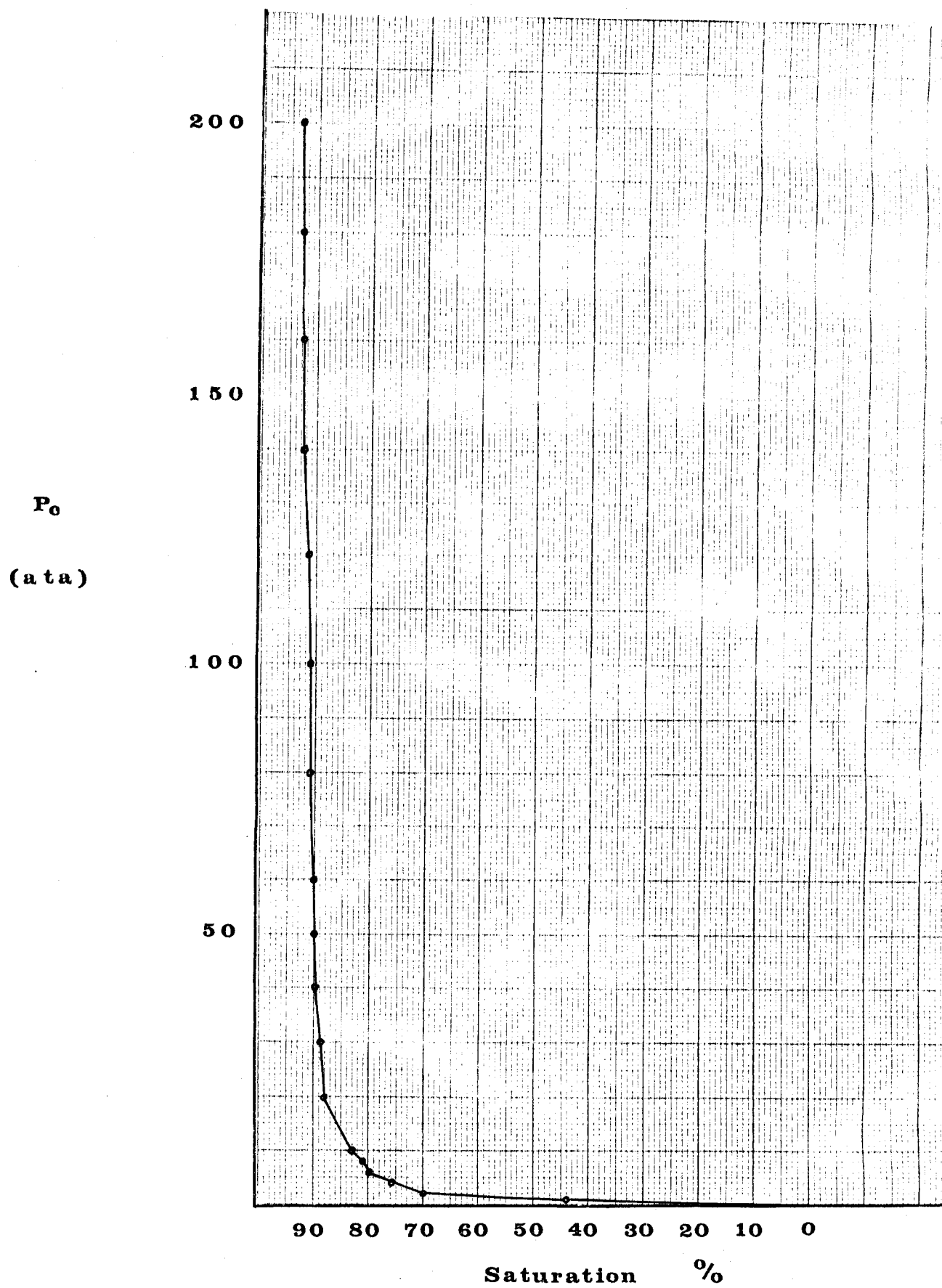
### Capillary Pressure Measurement

$\phi$ : 20,0 %

Core No.:

Depth: plug 199

K: 486,0 mD



Capillary Pressure Measurement



COMPANY STATOIL  
 CORE No                       
 PLUG No 233

PLUG PARAMETERS : Porosity Ø: 14,2 Permeability K: 0,21  
 Volumebulk: 11,550 Volumepore: 1.640

Capillary Pressure Pc ata	Saturation Hg %	"J" Factor: $J(S_{Hg}) = \frac{Pc}{\sigma \cos \theta} \left( \frac{K}{\phi} \right)^{\frac{1}{2}}$ * (1)
1	0	
2	0	
4	0	
6	1,5	
8	3,0	
10	6,4	
14	14,0	
20	24,4	
25	27,1	
30	30,2	
40	33,5	
50	36,6	
60	38,4	
80	42,1	
100	45,7	
120	48,8	
140	52,1	
160	54,6	
180	57,3	
200	60,1	

\* (1) Pc - in dyn/cm<sup>2</sup>  
 σ = 480 dyn/cm  
 cos θ = 0,766  
 K = cm<sup>2</sup>

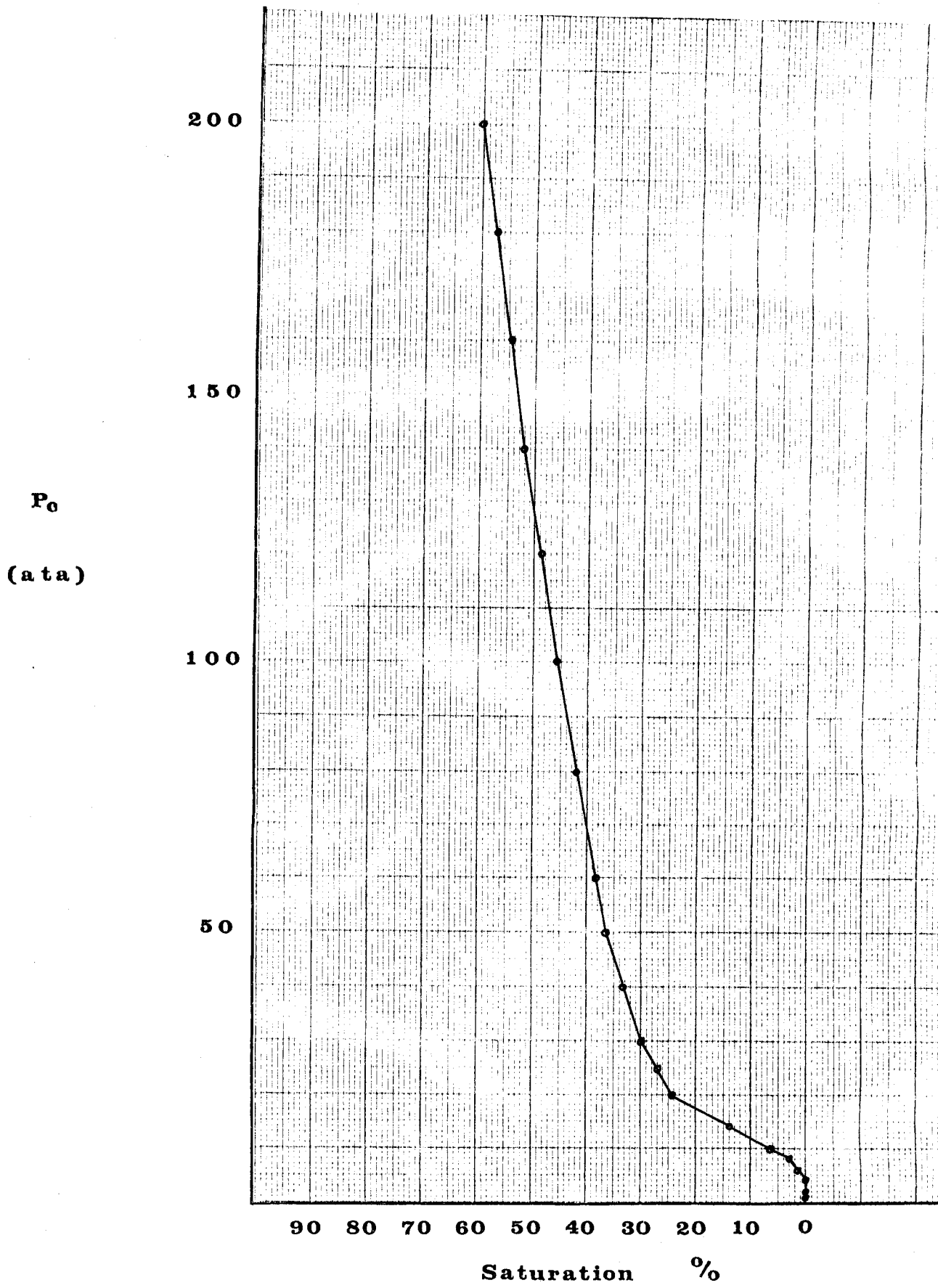
# Capillary Pressure Measurement

$\phi$ : 14,2 %

Core No.:

Depth: plug 233

K: 0,21 mD



Capillary Pressure Measurement



COMPANY STATOIL  
 CORE No                       
 PLUG No 304

PLUG PARAMETERS : Porosity Ø: 17,5 Permeability K: 1,25  
 Volumebulk: 12,000 Volumepore: 2.100

Capillary Pressure Pc ata	Saturation Hg %	"J" Factor: $J(S_{Hg}) = \frac{Pc}{\sigma \cos \theta} \left( \frac{K}{\phi} \right)^{\frac{1}{2}}$ * (1)
1	0	
2	3,6	
4	13,3	
6	24,5	
8	32,4	
10	37,4	
14	42,6	
20	47,6	
30	52,1	
40	55,7	
50	58,6	
60	61,0	
80	65,2	
100	68,8	
120	72,4	
140	74,5	
160	76,2	
180	77,9	
200	79,0	

\*(1) Pc - in dyn/cm<sup>2</sup>  
 σ = 480 dyn/cm  
 cos θ = 0,766  
 K - cm<sup>2</sup>

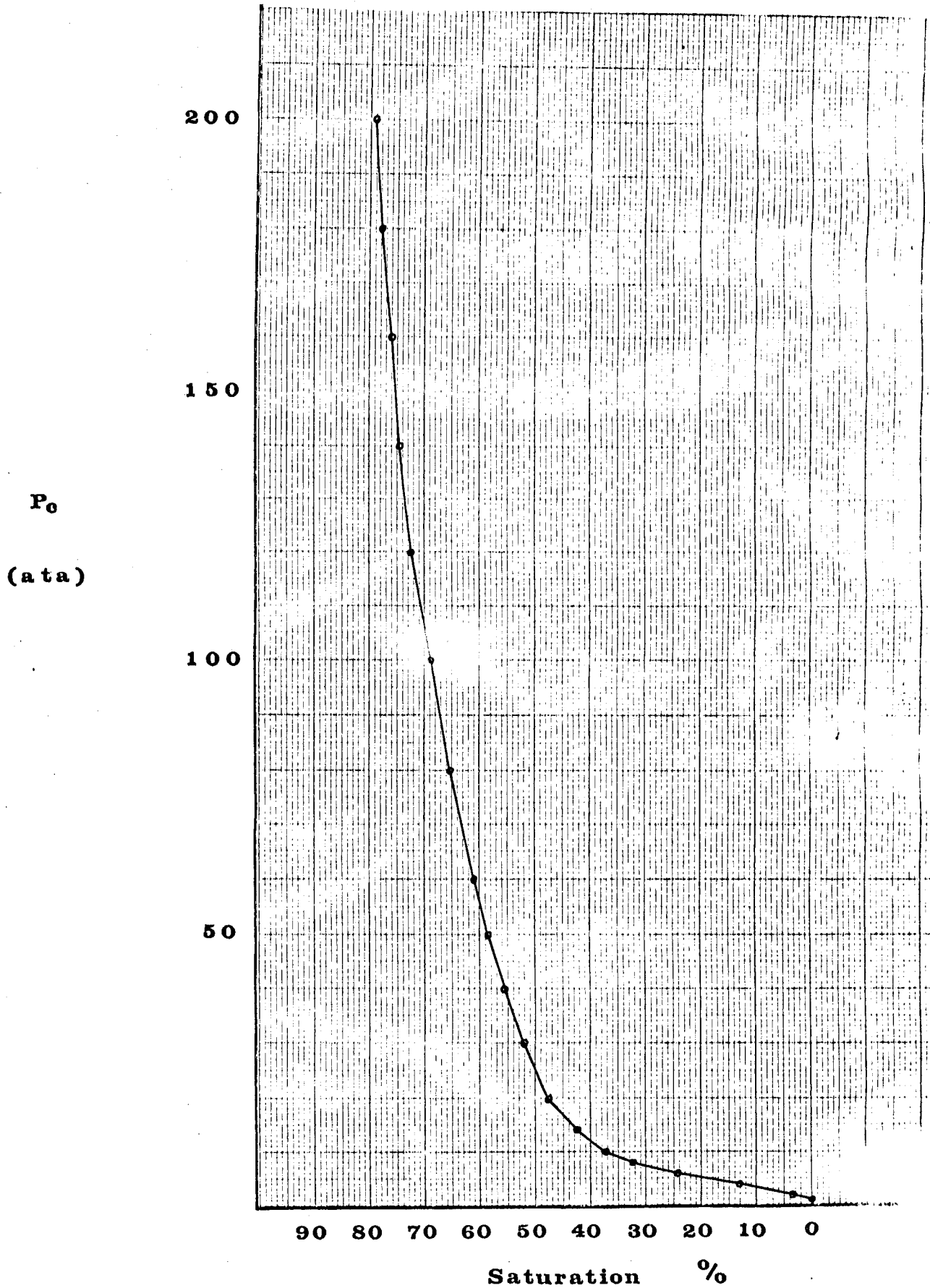
# Capillary Pressure Measurement

$\phi$ : 17,5 %

Core No.:

Depth: plug 304

K: 1,25 mD



# Capillary Pressure Measurement



COMPANY STATOIL

CORE No                     

PLUG No 339

PLUG PARAMETERS : Porosity Ø: 18,8 Permeability K: 105,9  
 Volumebulk: 13,075 Volumepore: 2.458

Capillary Pressure Pc ata	Saturation Hg %	"J" Factor: $J(S_{Hg}) = \frac{Pc}{\sigma \cos \theta} \left( \frac{K}{\phi} \right)^{\frac{1}{2}} \quad \cdot (1)$
1	34,8	
2	53,9	
4	60,6	
6	64,5	
8	67,5	
10	69,6	
14	71,8	
20	74,0	
30	76,9	
40	78,9	
50	80,3	
60	81,8	
80	84,4	
100	86,7	
120	87,1	
140	87,9	
160	88,7	
180	89,5	
200	90,3	

\*(1) Pc - in dyn/cm<sup>2</sup>  
 σ = 480 dyn/cm  
 cos θ = 0,766  
 K = cm<sup>2</sup>

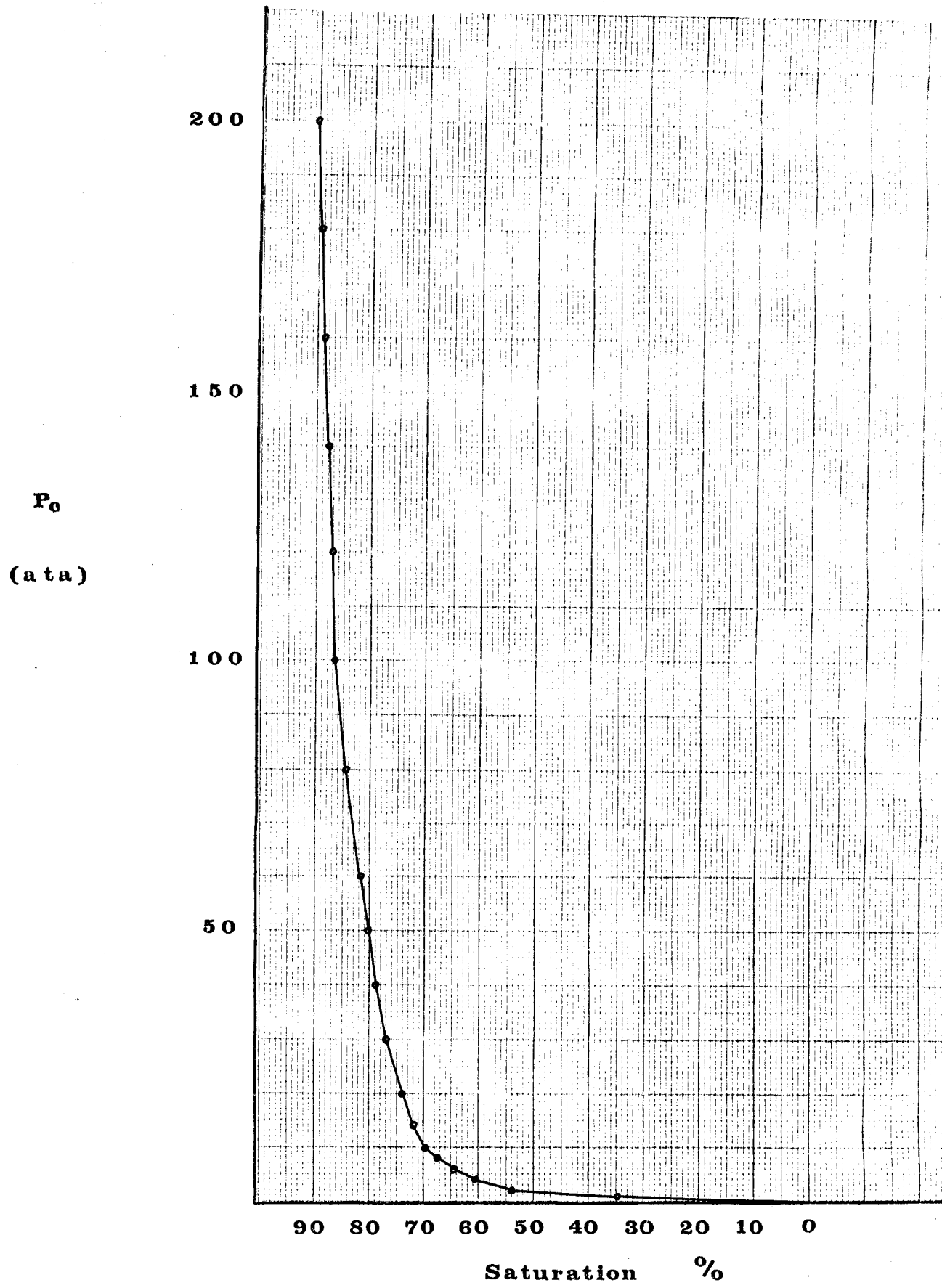
# Capillary Pressure Measurement

$\phi$ : 18,8 %

Core No.:

Depth: plug 339

K: 105,9 mD



# Capillary Pressure Measurement



COMPANY STATOIL

CORE No                     

PLUG No 386

PLUG PARAMETERS : Porosity  $\phi$ : 15,5 Permeability K: 4,54  
 Volumebulk: 11.570 Volumepore: 1.793

Capillary Pressure Pc ata	Saturation Hg %	"J" Factor: $J(S_{Hg}) = \frac{Pc}{\sigma \cos \theta} \left( \frac{K}{\phi} \right)^{\frac{1}{2}} \quad * (1)$
1	1,7	
2	5,3	
4	8,4	
6	12,0	
8	15,6	
10	22,0	
14	33,2	
20	44,6	
30	54,4	
40	61,1	
50	65,0	
60	68,6	
80	73,0	
100	75,8	
120	78,1	
140	80,3	
160	82,5	
180	84,2	
200	86,2	

\* (1) Pc - in dyn/cm<sup>2</sup>  
 $\sigma$  = 480 dyn/cm  
 $\cos \theta$  = 0,766  
 K = cm<sup>2</sup>



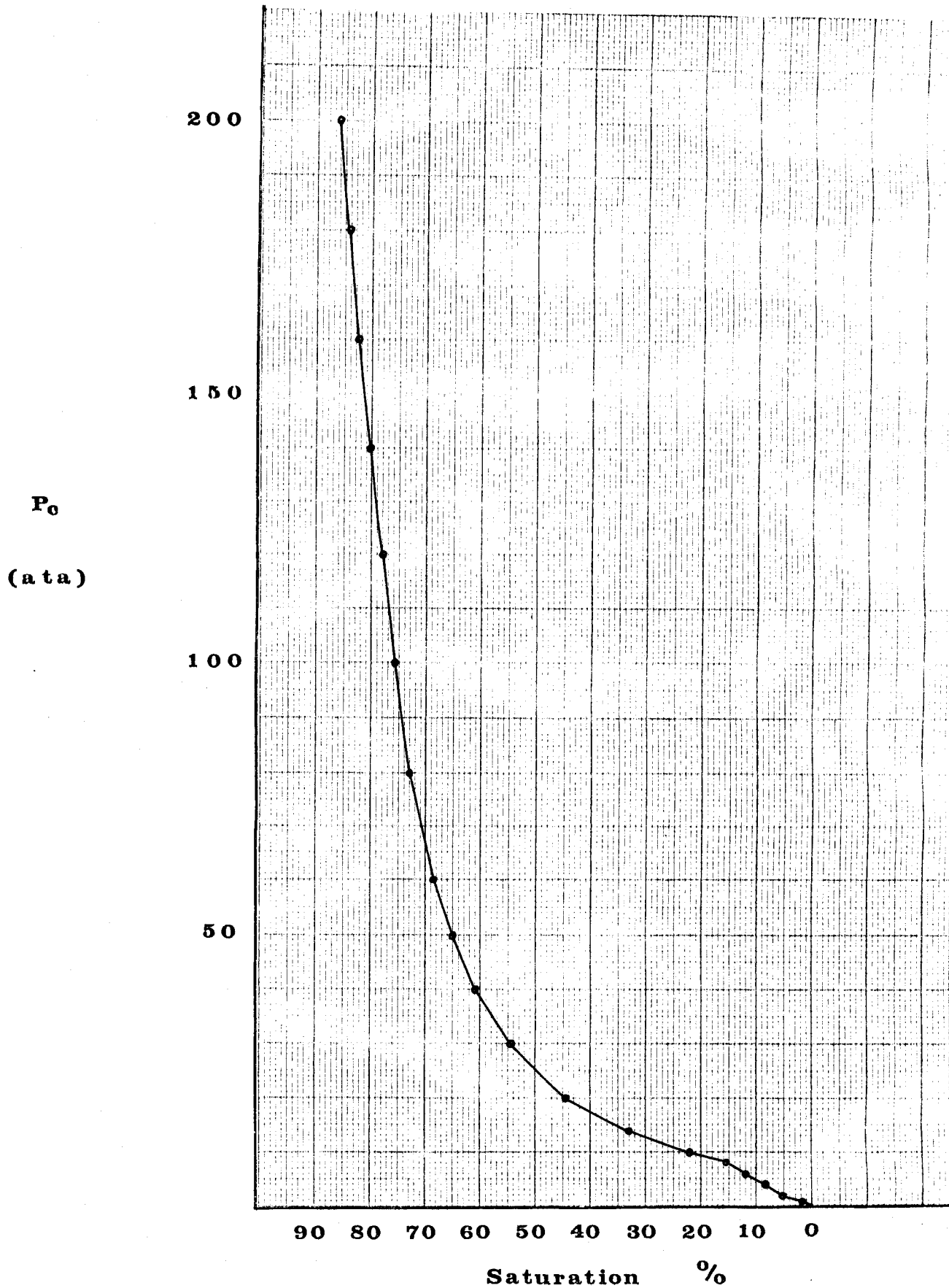
# Capillary Pressure Measurement

$\phi$ : 15,5 %

Core No.:

Depth: plug 386

K: 4,54 mD



## Comments

As a laboratorie routine we allways clean the core-samples before starting to measure rock-properties.

Though these samples were cleaned before,we found some hydrocarbons,especially in plug 386.

Another factor of great importance with respect to permeability measurments,is the shape of the plugs.To get acurate results,the plugs must be symetric around the length-axis.However,some of these did not have proper shape,and the given permeability-values therefore have to be seen in relation to this.