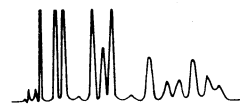


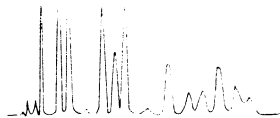
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ST17

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EST-LAB^{AS}
Analytical Services





Statoil
Den Norske Stats Oljeselskap

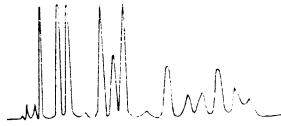
Tananger 21/9-84

Report : Statoil-40

Analysis of :

- Sample no. 1 - Mud ex. Active pits. 18.45 hrs. (1)
- " 2 - Seawater. Custion. Ex. drill. floor.
11.00 hrs. (2)
- " 3 - 03.15 hrs. Ex. test. sep., inlet.
DST#1. (3)
- " 4 - 03.45 hrs. Test. (4)
- " 5 - 04.14 hrs. Test sep. (5)
- " 6 - 08.40 hrs. (13)
- " 7 - Well : 6406/3-1. Test : DST# 1.
Depth : 3782,5 - 3787,5

Att : Reidun Kleven



Customer: Statoil/Reidun Kleven		Sample No: 1	Date Sampled: 31/7-84	
Field:	Legal description:		Job no: Statoil-40	
Lease or Unit:	Well:	Depth:	Formation:	Rate B/D:
Type of Water (Produced, supply, etc.)		Sampling Point	Sampled by	
Remarks (Any other relevant information) Mud ex. Active pits. 18,45 hrs. (1).				

DISSOLVED SOLIDS:

<u>CATIONS</u>	mg/l	me/l
Sodium, Na (meas)	20.605	896
Calcium, Ca	113	6
Magnesium, Mg	3,2	-
Barium, Ba	152	2
Iron, Fe	102	5
Strontium, Sr	7,3	-
Potassium, K	272	7
<u>ANIONS</u>		
Chloride, Cl	17.750	500
Sulfate, SO ₄	7.000	146
Carbonate, CO ₃	*	-
Bicarbonate HCO ₃	*	-
Hydroxide, OH	*	-

Total Dissolved Solids (calc.) = 46.005 mg/l

OTHER PROPERTIES:

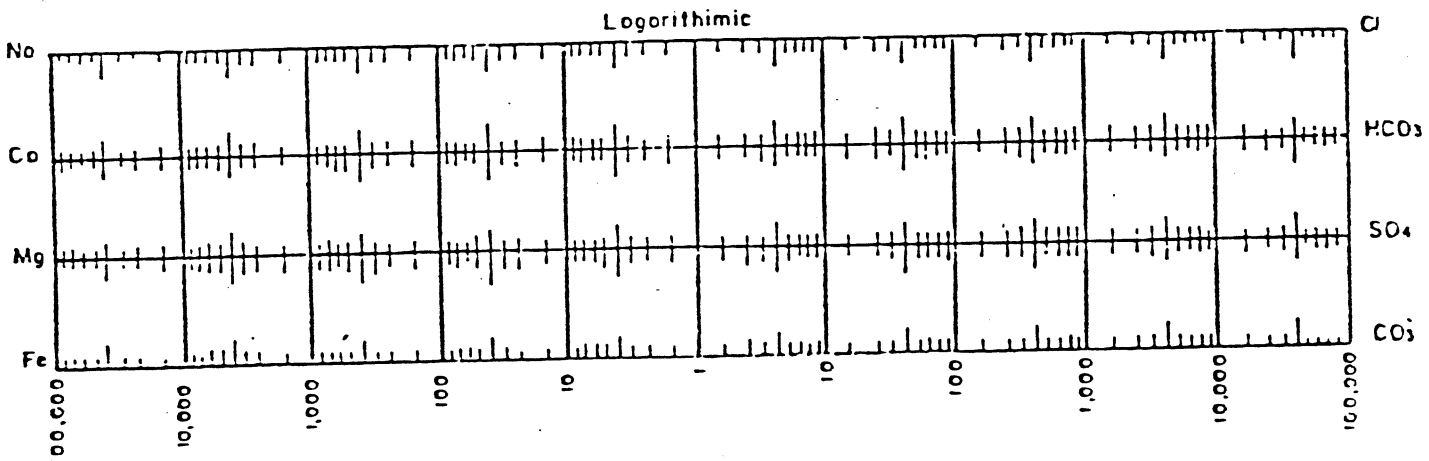
pH 9,46 20°C
 Specific Grav. 60/60 F 1,038
 Resistivity (ohm-meters) 0,192 20°C
 Sulfide as H₂S mg/l
 Suspended solids mg/l

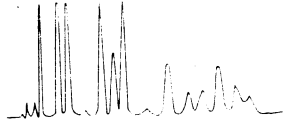
REMARKS & RECOMMENDATIONS

*) Too small sample volume to perform the analysis

Analyses by: T.F. / A.M.I.L.

WATER PATTERNS _____ me/l





Customer: Statoil/Reidun Kleven		Sample No: 2	Date Sampled: 1/8-84	
Field:	Legal description:		Job no: Statoil-40	
Lease or Unit:	Well:	Depth:	Formation:	Rate B/D:
Type of Water (Produced, supply, etc.) Watersample			Sampling Point	Sampled by
Remarks (Any other relevant information) Seawater. Custon. Ex. drill. floor. 11.00 hrs. (2).				

DISSOLVED SOLIDS:

CATIONS	mg/l	me/l
Sodium, Na (meas)	11.309	492
Calcium, Ca	397	20
Magnesium, Mg	1.362	112
Barium, Ba	0,1	-
Iron, Fe	0,3	-
Strontium, Sr	7,5	-
Potassium, K	454	12
ANIONS		
Chloride, Cl	20.058	565
Sulfate, SO ₄	2.300	48
Carbonate, CO ₃	0	-
Bicarbonate HCO ₃	137	2
Hydroxide, OH	0	-

Total Dissolved Solids (calc.) = 36.025 mg/l

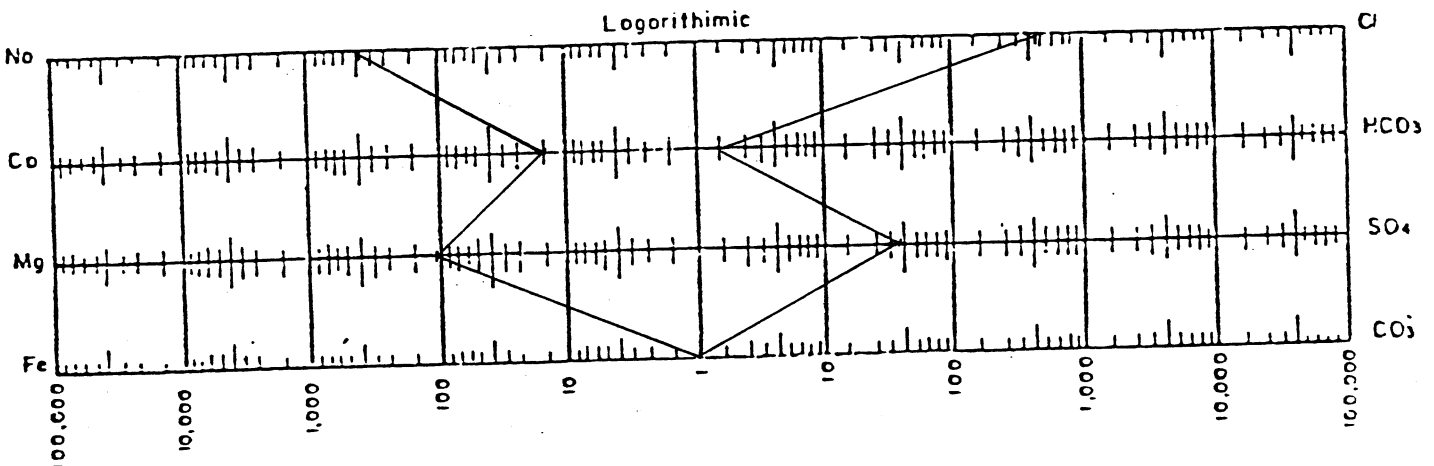
OTHER PROPERTIES:

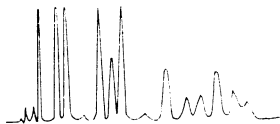
pH	7,97	20°C
Specific Grav. 60/60 F	1,028	
Resistivity (ohm-meters)	0,213	20°C
Sulfide as H ₂ S mg/l		
Suspended solids mg/l	2,3	

REMARKS & RECOMMENDATIONS

Analyses by: T.F. / A.M.I.L.

WATER PATTERNS _____ me/l





Customer: Statoil/Reidun Kleven		Sample No: 3	Date Sampled: 2/8-84	
Field:	Legal description:		Job no: Statoil-40	
Lease or Unit:	Well:	Depth:	Formation:	Rate B/D:
Type of Water (Produced, supply, etc.) Watersample		Sampling Point	Sampled by	
Remarks (Any other relevant information) 03.15 hrs. Ex. test sep., inlet. DST#1. (3).				

DISSOLVED SOLIDS:

CATIONS	mg/l	me/l
Sodium, Na(meas)	20.645	898
Calcium, Ca	1.385	69
Magnesium, Mg	143	12
Barium, Ba	457	7
Iron, Fe	0,4	-
Strontium, Sr	150	3
Potassium, K	559	14
<u>ANIONS</u>		
Chloride, Cl	34.258	965
Sulfate, SO ₄	2	-
Carbonate, CO ₃	0	-
Bicarbonate HCO ₃	590	10
Hydroxide, OH	0	-
<hr/>		
Total Dissolved Solids(calc.)	58.189	===== mg/l

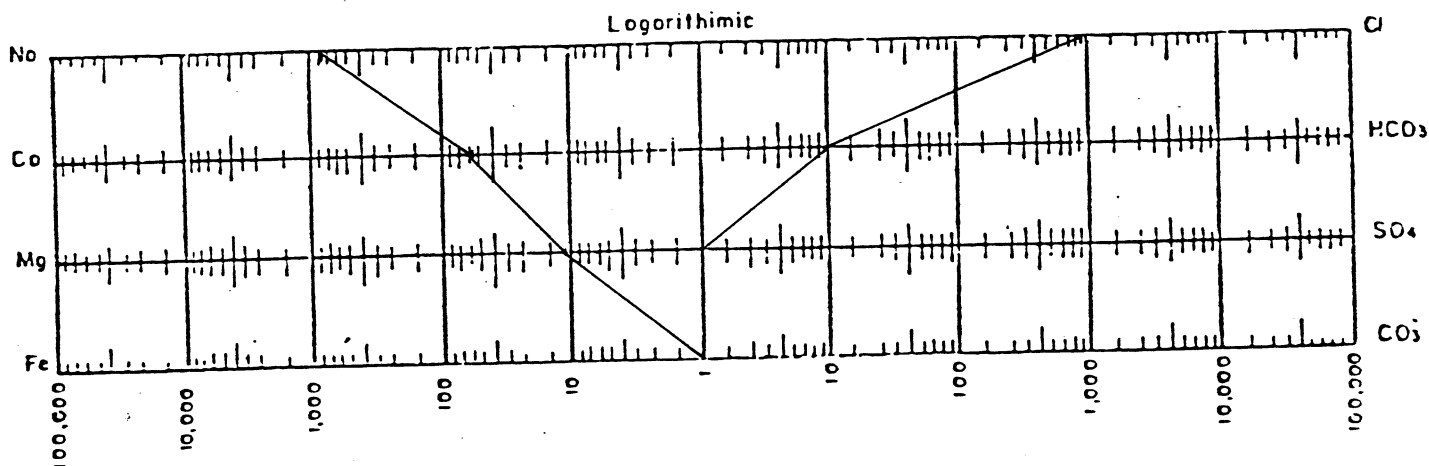
OTHER PROPERTIES:

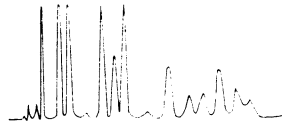
pH	6,77	20°C
Specific Grav. 60/60 F	1,042	
Resistivity(ohm-meters)	0,136	20°C
Sulfide as H ₂ S mg/l		
Suspended solids mg/l	4257,3	
<hr/>		
<hr/>		

REMARKS & RECOMMENDATIONS

Analyses by: T.F. / A.M.I.L.

WATER PATTERNS _____ me/l





Customer: Statoil/Reidun Kleven		Sample No: 4	Date Sampled:	
Field:	Legal description:		Job no: Statoil-40	
Lease or Unit:	Well:	Depth:	Formation:	Rate B/D:
Type of Water (Produced, supply, etc.) Watersample		Sampling Point	Sampled by	
Remarks (Any other relevant information) 03.45 hrs. Test. (4).				

DISSOLVED SOLIDS:

<u>CATIONS</u>	mg/l	me/l
Sodium, Na (meas)	20.213	879
Calcium, Ca	1.377	69
Magnesium, Mg	140	11
Barium, Ba	523	8
Iron, Fe	0,3	-
Strontium, Sr	154	4
Potassium, K	542	14
<u>ANIONS</u>		
Chloride, Cl	34.613	975
Sulfate, SO ₄	2	-
Carbonate, CO ₃	0	-
Bicarbonate HCO ₃	519	9
Hydroxide, OH	0	-

Total Dissolved Solids (calc.) = 58.083 mg/l

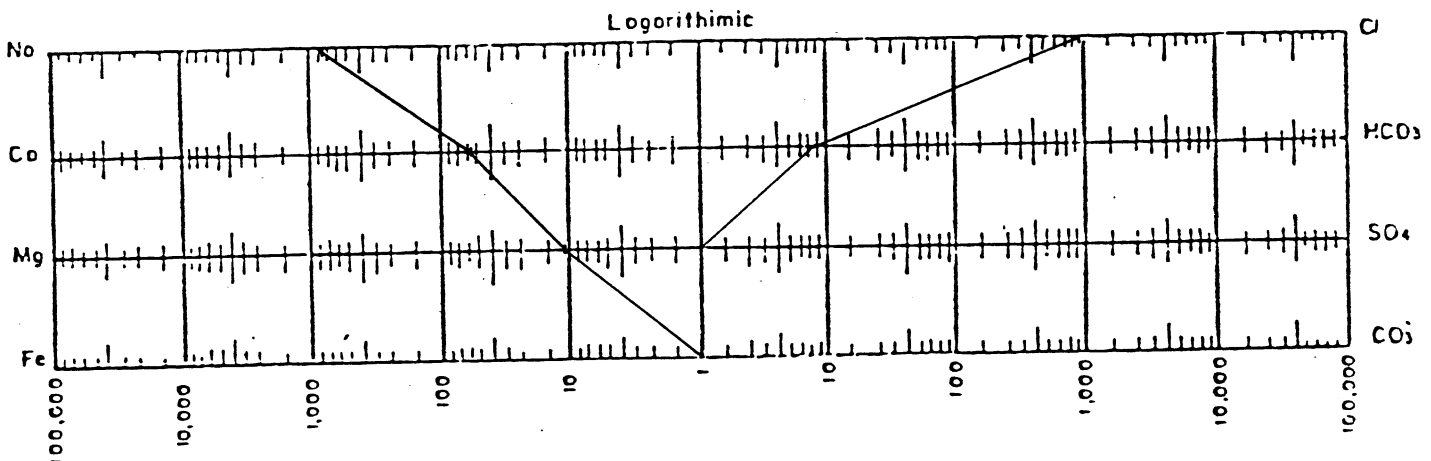
OTHER PROPERTIES:

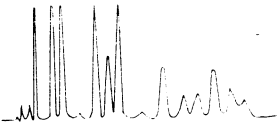
pH	6,90	20°C
Specific Grav. 60/60 F	1,042	
Resistivity (ohm-meters)	0,136	20°C
Sulfide as H ₂ S mg/l		
Suspended solids mg/l	786,8	

REMARKS & RECOMMENDATIONS

Analyses by: T.F. / A.M.I.L.

WATER PATTERNS _____ me/l





Customer: Statoil/Reidun Kleven		Sample No: 5	Date Sampled:	
Field:	Legal description:		Job no: Statoil-40	
Lease or Unit:	Well:	Depth:	Formation:	Rate B/D:
Type of Water (Produced, supply, etc.) Watersample		Sampling Point	Sampled by	
Remarks (Any other relevant information) 04.14 hrs. Test sep. (5).				

DISSOLVED SOLIDS:

<u>CATIONS</u>	mg/l	me/l
Sodium, Na (meas)	20.173	877
Calcium, Ca	1.377	69
Magnesium, Mg	140	11
Barium, Ba	540	8
Iron, Fe	0,3	-
Strontium, Sr	154	4
Potassium, K	538	14
<u>ANIONS</u>		
Chloride, Cl	35.145	990
Sulfate, SO ₄	2	-
Carbonate, CO ₃	0	-
Bicarbonate HCO ₃	516	8
Hydroxide, OH	0	-
<u>Total Dissolved Solids (calc.)</u>	58.585	

===== mg/l

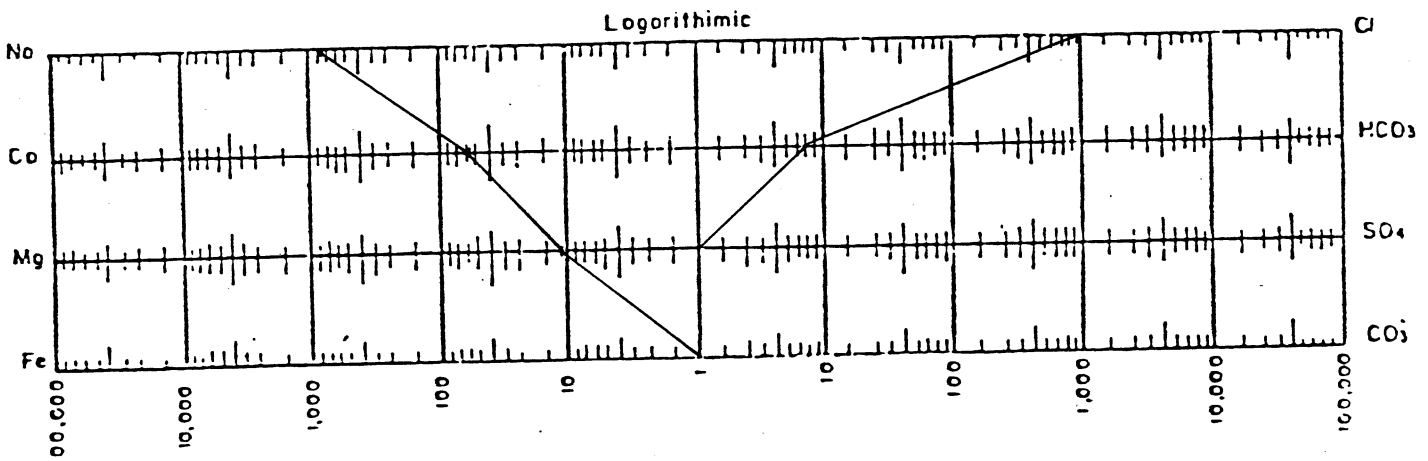
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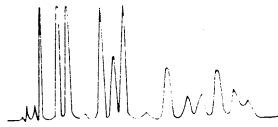
pH	7,06	20°C
Specific Grav. 60/60 F	1,042	
Resistivity (ohm-meters)	0,136	20°C
Sulfide as H ₂ S mg/l		
Suspended solids mg/l	407,8	

REMARKS & RECOMMENDATIONS

Analyses by: T.F. / A.M.I.L.

WATER PATTERNS _____ me/l





Customer: Statoil/Reidun Kleven		Sample No: 6	Date Sampled:	
Field:	Legal description:		Job no: Statoil-40	
Lease or Unit:	Well:	Depth:	Formation:	Rate B/D:
Type of Water (Produced, supply, etc.) Watersample			Sampling Point	Sampled by
Remarks (Any other relevant information) 08.40 hrs. (13).				

DISSOLVED SOLIDS:

CATIONS	mg/l	me/l
Sodium, Na (meas)	20.284	882
Calcium, Ca	1.333	67
Magnesium, Mg	139	11
Barium, Ba	556	8
Iron, Fe	0,3	-
Strontium, Sr	155	4
Potassium, K	549	14
<u>ANIONS</u>		
Chloride, Cl	34.790	980
Sulfate, SO ₄	2	-
Carbonate, CO ₃	0	-
Bicarbonate HCO ₃	365	6
Hydroxide, OH	0	-

Total Dissolved Solids (calc.) = 58.173 mg/l

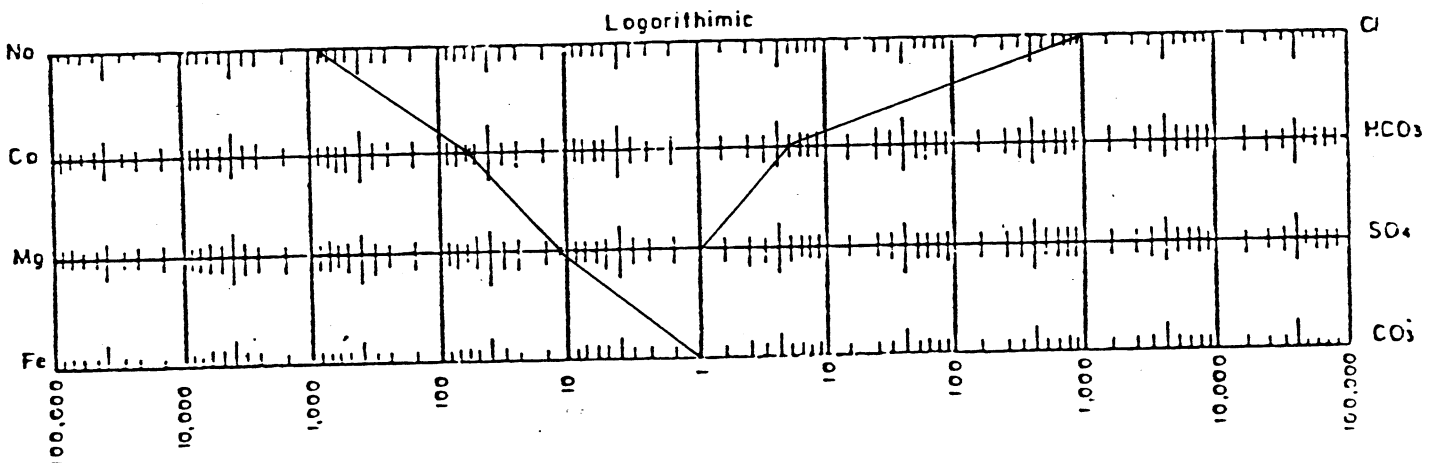
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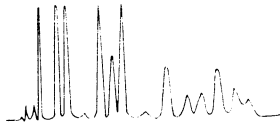
pH	6,78	20°C
Specific Grav. 60/60 F	1,042	
Resistivity (ohm-meters)	0,134	20°C
Sulfide as H ₂ S mg/l		
Suspended solids mg/l	360,9	

REMARKS & RECOMMENDATIONS

Analyses by: T.F. / A.M.I.L.

WATER PATTERNS _____ me/l





Customer: Statoil/Reidun Kleven		Sample No: 7	Date Sampled: 1/8-84, 14.00 hrs.	
Field:	Legal description:		Job no: Statoil-40	
Lease or Unit:	Well:	Depth:	Formation:	Rate B/D:
Type of Water (Produced, supply, etc.) Pit sample		Sampling Point	Sampled by	
Remarks (Any other relevant information) Well : 6406/3-1. Test : DST#1. Depth : 3782,5 - 3787,5				

DISSOLVED SOLIDS:

<u>CATIONS</u>	mg/l	me/l
Sodium, Na(meas)	20.855	907
Calcium, Ca	140	7
Magnesium, Mg	7,1	1
Barium, Ba	164	2
Iron, Fe	99	5
Strontium, Sr	7,8	-
Potassium, K	295	8
<u>ANIONS</u>		
Chloride, Cl	17.750	500
Sulfate, SO ₄	6.750	141
Carbonate, CO ₃	*	-
Bicarbonate HCO ₃	*	-
Hydroxide, OH	*	-
<hr/>		
Total Dissolved Solids(calc.)	46.068	===== mg/l

OTHER PROPERTIES:

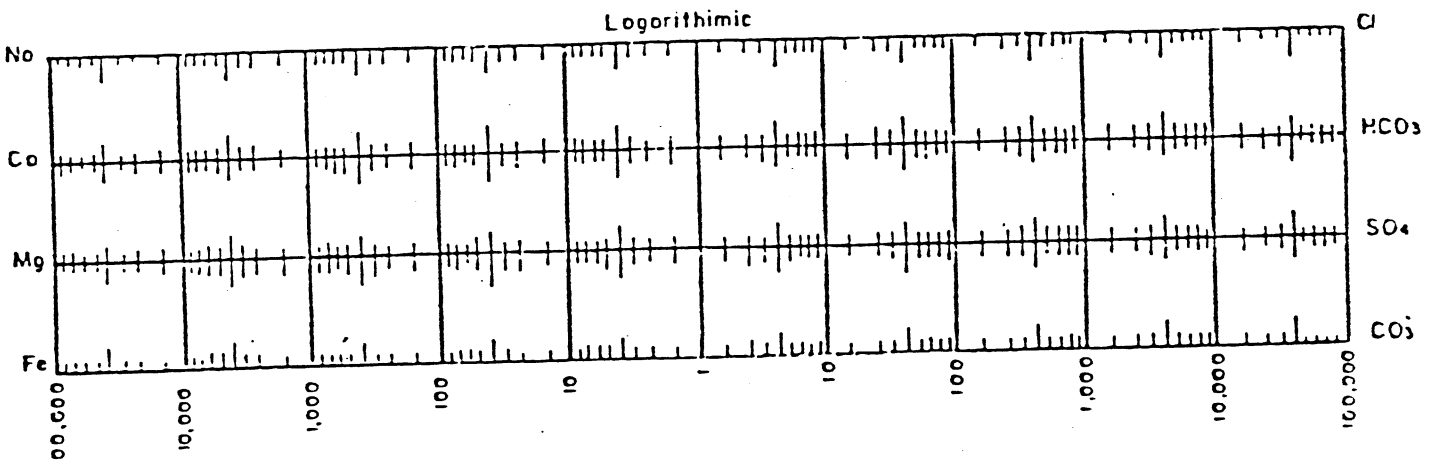
pH	9,56	200C
Specific Grav. 60/60 F	1,035	
Resistivity(ohm-meters)	0,191	200C
Sulfide as H ₂ S mg/l		
Suspended solids mg/l		

REMARKS & RECOMMENDATIONS

*) Too small sample volume to perform the analysis

Analyses by: T.F. / A.M.I.L.

WATER PATTERNS _____ me/l





statoil

LAB
25.09.84
RK/liv

N O T A T

TIL: Ingolf Julma, LET-H

CC: Arne M. Martinsen, LET-S
D. Malthe-Sørenssen, LAB
T. Lund, LAB

FRA: Reidun Kleven, LAB

Reidun Kleven

SAK: KOMMENTAR TIL RAPPORT SPORELEMENTANALYSE: PETROTECH a.s.
DRILLSTEAM TEST 7121/7-1.

Eksperimentelt (side 2)

VANNSONE DST 1

Ved prøvetakning hadde det vært ønskelig om halvparten av formasjonsvannprøvene var tilsatt 5 ml HNO_3 (ev. 5 ml HCl) pr liter prøve for å hindre utfelling av ioner.

Videre kan det være nyttig for videre analyse på laboratoriet onshore å få en nærmere beskrivelse av prøvene når de ble prøvetatt (lukt, farge og partikler).

GASSONE DST 2

Materialet av prøvetakningsflaskene kunne vært spesifisert. Særlig gjelder dette flaskene sendt til NILU for Hg-analyse siden vi vet at kvikksølv absorberer lett til forskjellige typer materialer.

TABELL 1 (side 7)

OVERSIKT OVER ANALYTISKE METODER

To typer drägerrør er benyttet for å skille kvantitativt mellom hydrogensulfid (H_2S) og merkaptaner ($R-SH$). Her vil interferens mellom disse to typer svovelkomponenter gi usikre analyseresultat. Hvis en ønsker å måle kvantitativt H_2S under 1 ppm og spormengder av andre svovelkomponenter som merkaptaner, COS , alkylsulfid og tiofener bør en bruke andre analysemetoder som gasskromatografi med flammefotometrisk detektor.