STATOIL

FORMATION RESISTIVITY FACTOR

WELL: 31/6-2

DATE: FEBRUARY 1984

GECO
GEOPHYSICAL COMPANY
OF NORWAY A·S

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The one inch samples were saturated as near as possible to 100% with the requested simulated formation water (50 000 ppm NaCl) using Hassler type holders set at 15 bar confining pressure. Formation resistivity factor was then measured using a frequency of 1 kHz. The parameters "a" and "m" in Archies formula were calculated both by least squares method forced through (FF=1.0, $\emptyset$=1.0) and least squares method with free fit.

Archies formula: $$FF = \frac{r_o}{r_w} = a \cdot \emptyset^{-m}$$

r_o = resistivity of sample (100% saturated)

r_w = resistivity of saturating formation water

a = FF-value at fractional porosity of 1.0

$\emptyset$ = fractional porosity

m = cementation factor

The data sets and the calculated values are presented in tabular and graphical form.

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Plug no.	Depth (m)	Sample resistivity ohm-meters	Formation Factor	Porosity (%)
89	1461.00	1.68	10.9	30.7
96	1463.00	1.88	12.2	27.2
103	1465.00	1.01	6.58	36.7
110	1467.25	1.32	8.59	31.6
120	1470.50	1.33	8.66	31.2
124	1472.00	1.07	6.96	31.0
134	1475.25	0.911	5.92	36.9
144	1478.50	1.85	12.0	29.1
154	1481.25	2.14	13.9	27.2
163	1483.50	1.63	10.6	31.0
174	1487.00	1.41	9.15	29.2
184	1491.75	0.983	6.38	37.4
194	1494.50	1.03	6.66	37.0
203	1497.00	1.02	6.63	34.8
213	1499.75	0.930	6.04	37.8
223	1502.50	1.67	11.7	29.5
233	1505.25	1.20	8.39	33.1
253	1511.25	0.921	6.44	37.8

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Plug no.	Depth (m)	Sample resistivity ohm-meters	Formation Factor	Porosity (%)
263	1514.00	1.10	7.71	32.2
273	1516.75	0.975	6.82	35.8
283	1519.50	0.912	6.38	33.5
293	1522.25	0.926	6.47	33.7
303	1525.00	0.895	6.26	37.0
313	1528.00	1.87	13.1	26.9
323	1530.75	1.34	9.38	32.7
333	1535.00	1.40	9.77	33.0
342	1537.25	1.39	9.74	34.0
353	1541.75	1.05	7.34	34.3
364	1545.25	1.38	9.61	32.2
373	1547.50	1.98	13.8	30.3
383	1550.50	1.96	13.7	29.2
396	1554.00	1.85	12.9	27.5
403	1556.00	2.04	14.3	26.4
413	1558.75	2.67	18.6	25.7
426	1562.50	1.14	7.99	33.8
433	1564.75	3.26	22.8	21.2

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Plug no.	Depth (m)	Sample resistivity ohm-meters	Formation Factor	Porosity (%)
443	1567.75	1.08	7.54	30.8
453	1570.50	1.28	8.97	33.9
462	1573.00	1.11	7.79	31.1
474	1576.50	2.64	18.4	27.3
483	1579.00	1.10	7.65	34.1
493	1582.25	1.53	10.7	29.8
503	1585.25	3.15	22.0	24.4
513	1588.50	1.52	10.6	34.6
523	1593.50	1.87	13.2	30.1
533	1596.25	2.75	19.4	22.7
543	1599.00	0.995	7.01	34.0
553	1601.75	1.32	9.26	32.6
563	1604.50	1.67	11.8	30.7
573	1607.25	2.46	17.3	24.7
583	1609.75	1.47	10.3	27.1
593	1612.50	1.94	13.7	27.4
603	1615.25	1.33	9.34	33.7
613	1618.00	1.81	12.7	29.5

Forced fit: $FF = 1.0 \cdot \phi^{-1.96}$

Free fit : $FF = 0.56 \cdot \phi^{-2.45}$

FORMATION RESISTIVITY FACTOR VERSUS POROSITY

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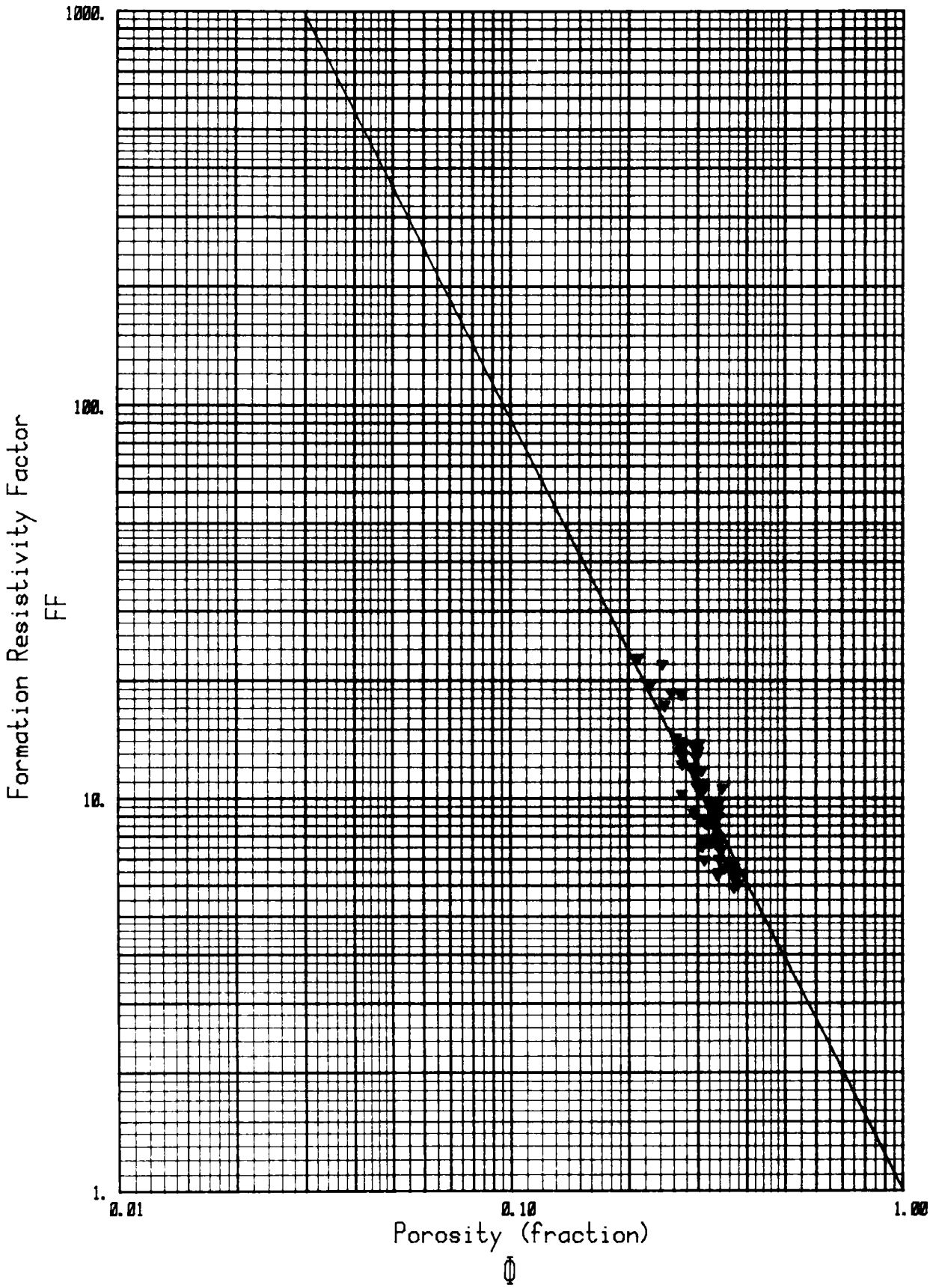
GEOPHYSICAL COMPANY OF NORWAY A.S
Petroleum laboratory

Company : STATOIL A/S
Well : 31/6-2
Forced fit. (15 bar)
$FF = 1.00 * \phi^{-1.96}$



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Company : STATOIL A/S
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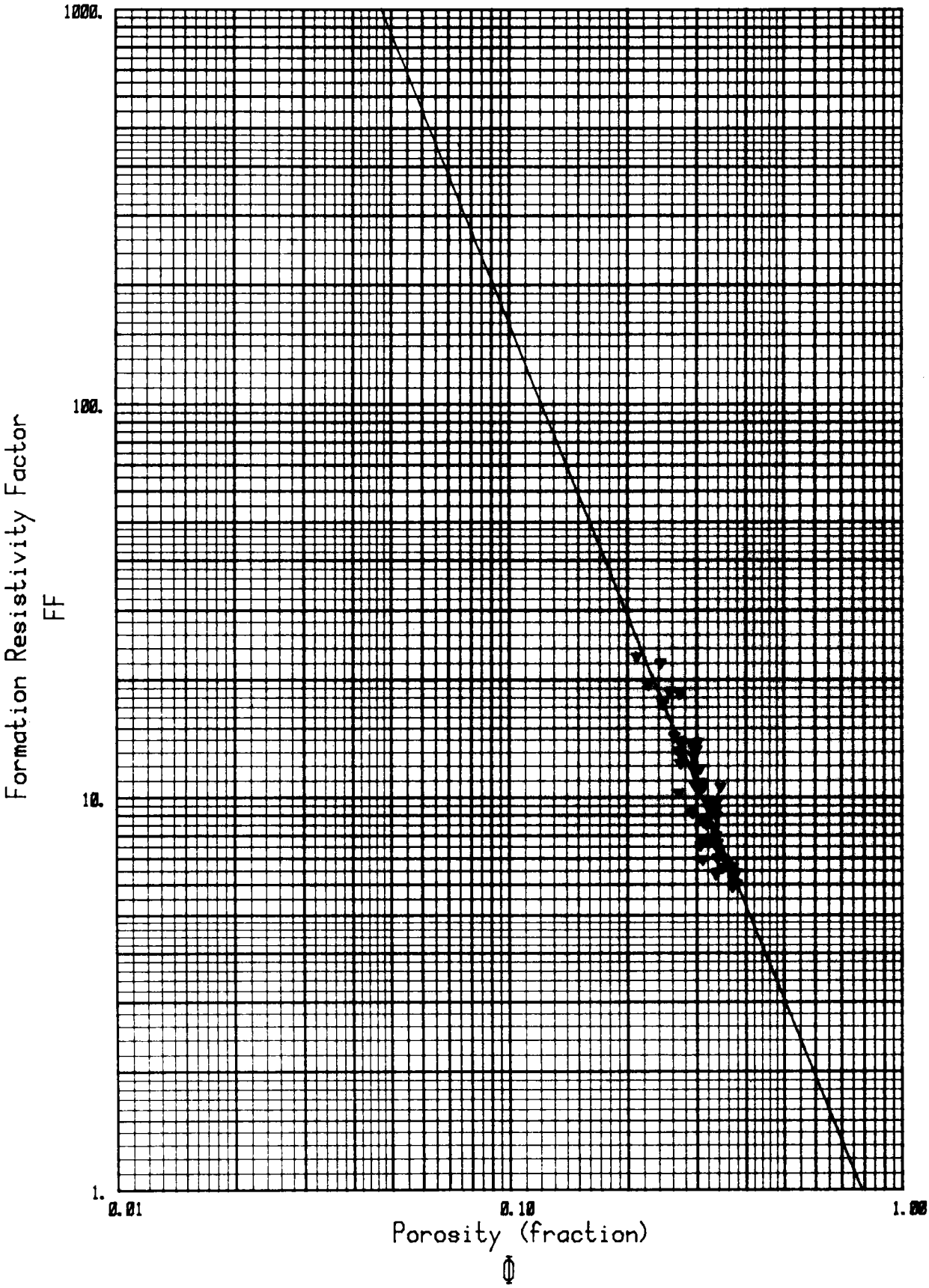
Free fit. (15 bar)
$FF = 0.56 * \Phi^{-2.45}$



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