



April 18, 1974

INTER-OFFICE CORRESPONDENCE / SUBJECT:
BARTLESVILLE, OKLAHOMA

Thermal Alteration and Source Rock
Potential study of sidewall cores
from PFCo ~~2/4-11~~ Espen and PFCo 2/7-9
Eldfisk, Norway

file

J. Schriber
Attention: W. Byrd
Stavanger Office

A total of 14 sidewall core samples were examined from the 2/4-11 well for relative abundance of amorphous kerogen; of these samples eight contained enough organic material to permit Reflectance studies. Results of these studies are illustrated on the accompanying attachment for the Espen well.

A summary of the attached Espen well data indicates: A secondary source rock at 9700' with a fairly low thermal history; direct measurements were not possible but samples at 9400' and 9900' with .55 and .54 R_o (Reflectivity) respectively.

At 12,470' the R_o value is .59 compared to .86 R_o at 12,618'. Subsequently studied samples stratigraphically lower indicate this increase at 12,618' is not an isolated increase. R_o values of .88 at 13,075'; .92 at 13,320'; and .89 at 13,510' were measured. These data are interpreted as indicating a much higher thermal history for rocks from 12,618' through 13,510' and may be related to salt tectonics with subject interval of higher R_o values absorbing temperature increase and not allowing elevated temperatures to penetrate sediments at 12,470'.

An alternate interpretation may be that sediments from 12,470' and younger were not present when the elevated temperatures occurred and would thus effectively date this period of elevated thermal alteration.

Also, it should be noted that potential primary and secondary source rocks are indicated at 13,075' and 13,320' respectively.

A total of 15 sidewall core samples were studied from the 2/7-9 Eldfisk well for relative abundance of amorphous kerogen. Unfortunately only four of these samples contained sufficient organics to evaluate them for reflectivity. See 2/7-9 Eldfisk well attachment.

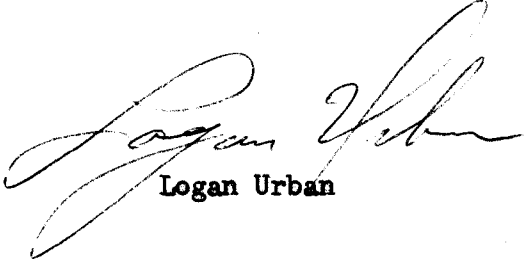
A summary of these data indicate: a rapid increase in reflectivity from 9053' through 9948' with R_o values increasing from .37 to .83 respectively. As mentioned above, sufficient organics were not recovered below 9948' to make reflectance readings. However, in transmitted light the meager amount of organics observed appeared black, indicating a high thermal history, and in ultraviolet light would not fluoresce.

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Relative abundance of amorphous kerogen indicates potential primary source rocks at 9585', and potential secondary source rocks at 9800' and 13,830'.

In conclusion, from presently available data there does not appear to be an abundance of liquid hydrocarbon generating organics at optimum reflective values, i.e., .70 R_0 through 1.0 R_0 to suggest major source beds in the sedimentary sequences studied.

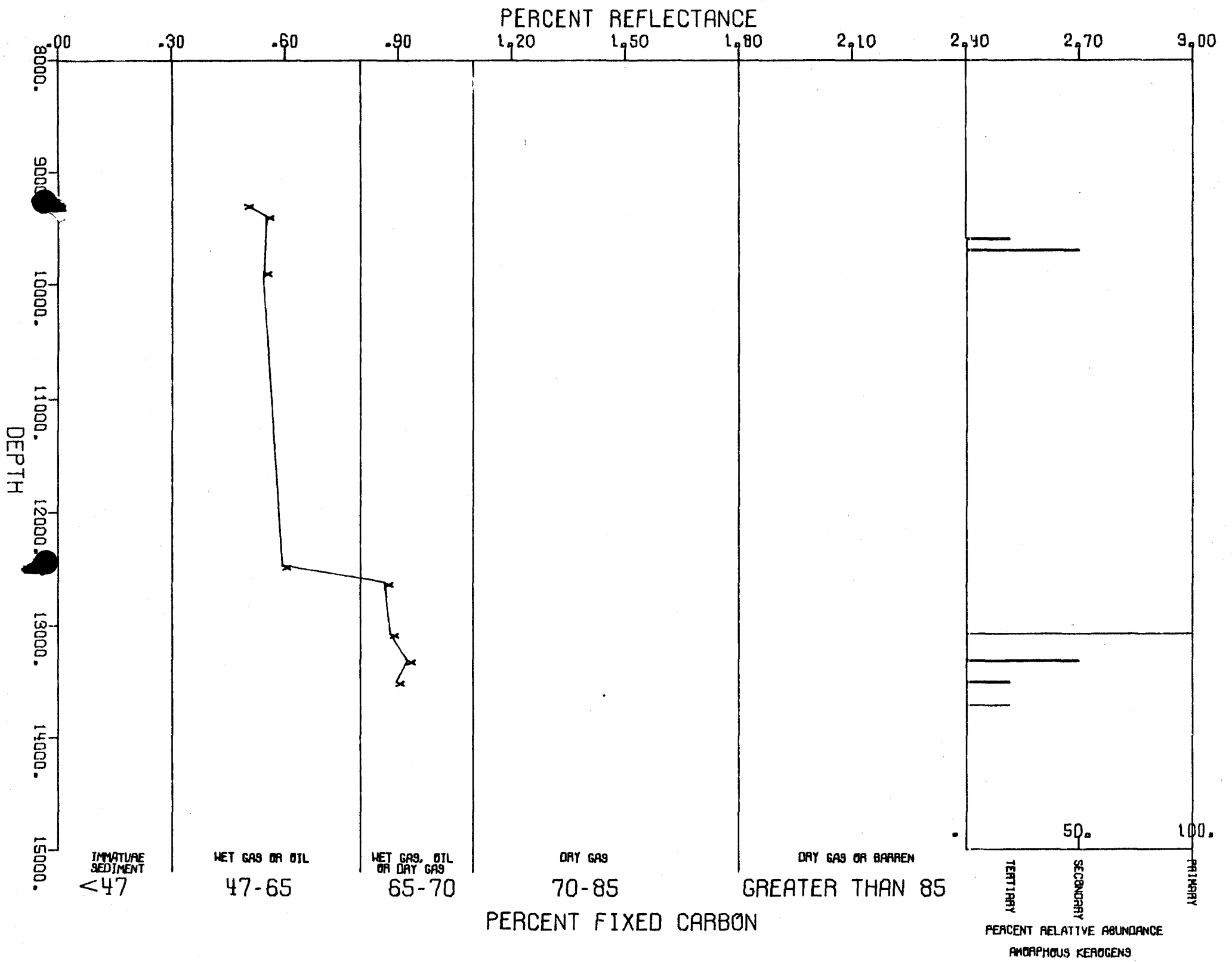


Logan Urban

LU:mm
Attach.

cc: W. E. Ryker (r) J. R. Davis - London
R. L. Rayl (r) P. A. Treckman
H. A. Kuehnert (r) R&EPS file

THERMAL ALTERATION AND SOURCE ROCK POTENTIAL OF PHILLIPS PETROLEUM 2/4-11 ESPEN NORWAY



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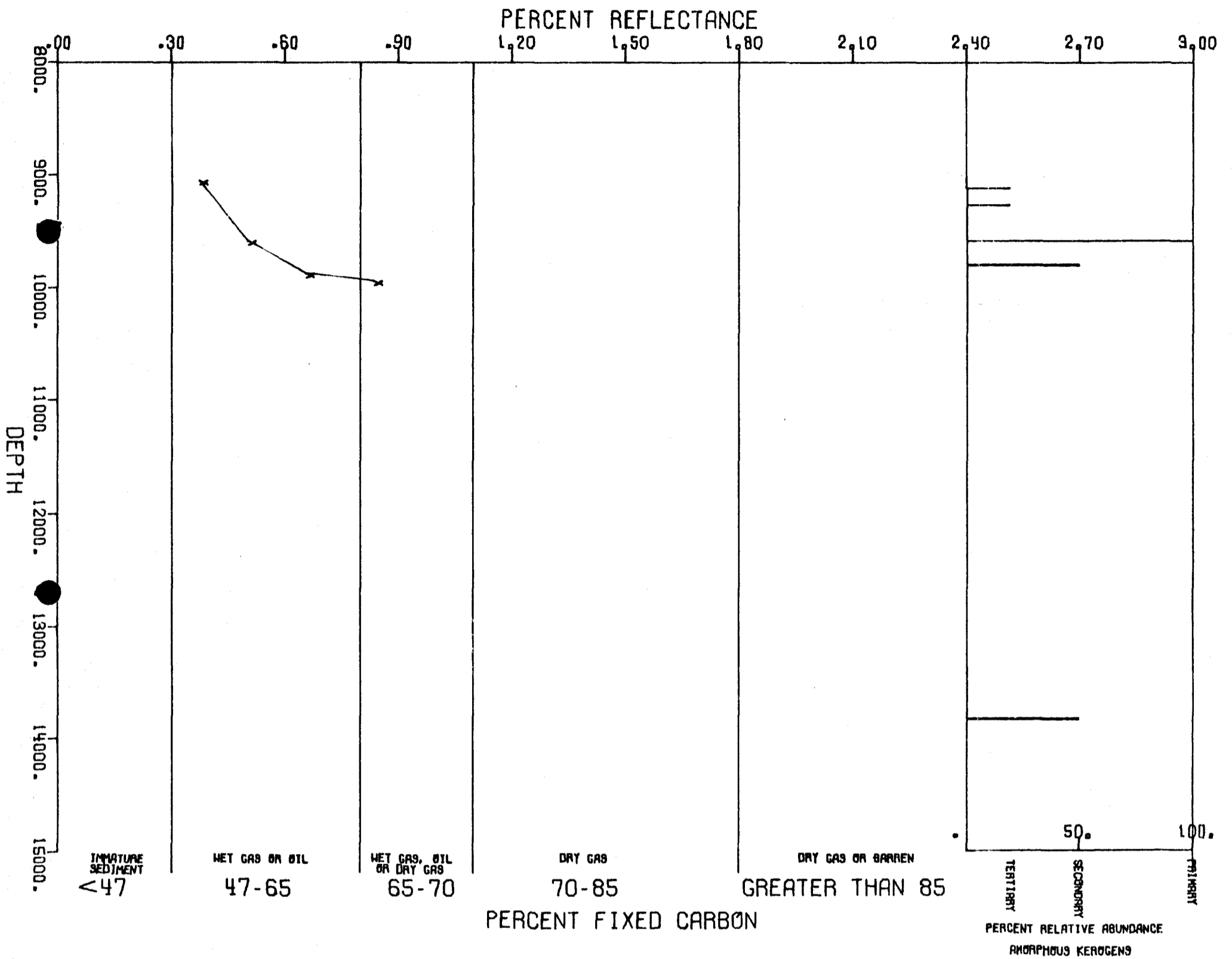
DEPTH MEAN STD DEV

9300.	0.498	0.025
9400.	0.551	0.029
9900.	0.545	0.038
12477.	0.596	0.040
12618.	0.365	0.047
13775.	0.881	0.052
13320.	0.925	0.038
13510.	0.894	0.055

TOP BASE PERCENT RELATIVE
 ABUNDANCE
 AMCRPHOLS KEROGENS

9200.	9201.	0.
9300.	9301.	0.
9400.	9401.	0.
9500.	9501.	0.
9600.	9601.	20.
9700.	9701.	50.
9900.	9901.	0.
12470.	12471.	0.
12618.	12619.	0.
12885.	12886.	0.
13075.	13075.	100.
13320.	13321.	50.
13510.	13511.	20.
13712.	13713.	20.

THERMAL ALTERATION AND SOURCE ROCK POTENTIAL OF PHILLIPS PETROLEUM 2/7-9 ELDFISK NORWAY



JOB F000 W.O. RXS68

DEPTH	MEAN	STD DEV
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9053.	0.377	0.025
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9585.	0.506	0.019
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9875.	0.660	0.040
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9948.	0.839	0.042
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TOP

BASE

PERCENT RELATIVE
ABUNDANCE
AMORPHOUS KEROGENS

9053.	9054.	0.
9126.	9127.	20.
9200.	9201.	0.
9275.	9276.	20.
9425.	9426.	0.
9496.	9497.	0.
9585.	9586.	100.
9654.	9655.	0.
9800.	9801.	50.
9875.	9876.	0.
9948.	9949.	0.
10026.	10027.	0.
13400.	13401.	0.
13496.	13497.	0.
13830.	13831.	50.

TOP

BASE

PERCENT RELATIVE
ABUNDANCE
AMORPHOUS KEROGENS

9053.	9054.	0.
9126.	9127.	20.
9200.	9201.	0.
9275.	9276.	20.
9425.	9426.	0.
9496.	9497.	0.
9585.	9586.	100.
9654.	9655.	0.
9800.	9801.	50.
9875.	9876.	0.
9948.	9949.	0.
10026.	10027.	0.
13400.	13401.	0.
13496.	13497.	0.
13830.	13831.	50.