



Continental Shelf Institute

# Institutt for kontinentalsokkelundersøkelser

REPORT TITLE	
Source Rock - Crude Oil Correlation of Well 15/9 - 1.	
CONTRACTOR	
Statoil	
CONTRACTORS REF.:	JOB. NO.:
Svein G. Larsen	0 - 80.

SCIENTIST	DATE	PROJECT NO.
Malvin Bjørøy, Thor Hæg	14/6 - 77	0 - 80
DEPARTMENT	NO. OF PAGES	NO. OF ENCLOSURE
Environmental section	2	2
RESPONSIBLE SCIENTIST		
Cand. real. Malvin Bjørøy		

SUMMARY
Oil from well 15/9 - 1 was correlated with source rock from the same well by using G.C. fingerprinting of n-alkanes and isoprenoids. The oil does not correlate with the source rock in the well.

## KEY WORDS

Correlation.


## Report of source rock-crude oil correlation of well 15/9-1.

Samples of oil which had been and had not been through separator were analysed. In this report the oil which has been through separator will be given No.I and the oil which has not been through separator No.II.

Both the crude oils were analysed gaschromatographic on a 20 m. glascapillary column, coated with OV 101. There were only minute differences in the two chromatograms. The oil is waxy, but well matured.

The two oils were then analysed for asphaltenes and chromatographed on silica columns (Table I). The saturated fraction of the two oils were then run on a 25 m. OV 101 glascapillary column and the chromatograms correlated with the saturated fractions of extracts from different levels of the source rock found in this well.

The isoprenoid and  $nC_{14}$ - $nC_{18}$  distribution together with the  $nC_{22}$ - $nC_{29}$  distribution were studied (Fig. 1 and 2). The oil does not correlate with any of the levels which have a rich source rock potential in this well. (3350 - 3690).

The oil was also correlated with a sample above the rich source rock, 3320 m, and here the isoprenoid -  $nC_{14}$ - $nC_{18}$  distribution correlated well, while the correlation for the heavy end n-alkanes were not so well. This level has a poor potential as a source rock for oil and gas, and the sample gave very small amounts of heavy end n-alkanes, which again can influence the distribution. Even if the saturated fraction of the oil and the saturated fraction of the extracted organic matter from the cuttings from 3320 m correlate quite well, do we not think the oil comes from this level. This level has a too poor potential for oil and gas.

The physical properties of the oil was also analysed, and this is shown in Table II.

TABLE I

Chromatographic separation of the oils.

Oil	Sat	Aro	NSO	Asph.	Light fractions
I 560.0 mg	237.0 mg 42.3 %	138.6 mg 23.5 %	43.5 mg 7.8 %	13.8 mg 2.5 %	127.1 mg 23.9 %
II 487.0 mg	205.3 mg 42.7 %	118.4 mg 24.3 %	37.5 mg 7.7 %	9.7 mg 2.0 %	116.1 mg 23.8 %

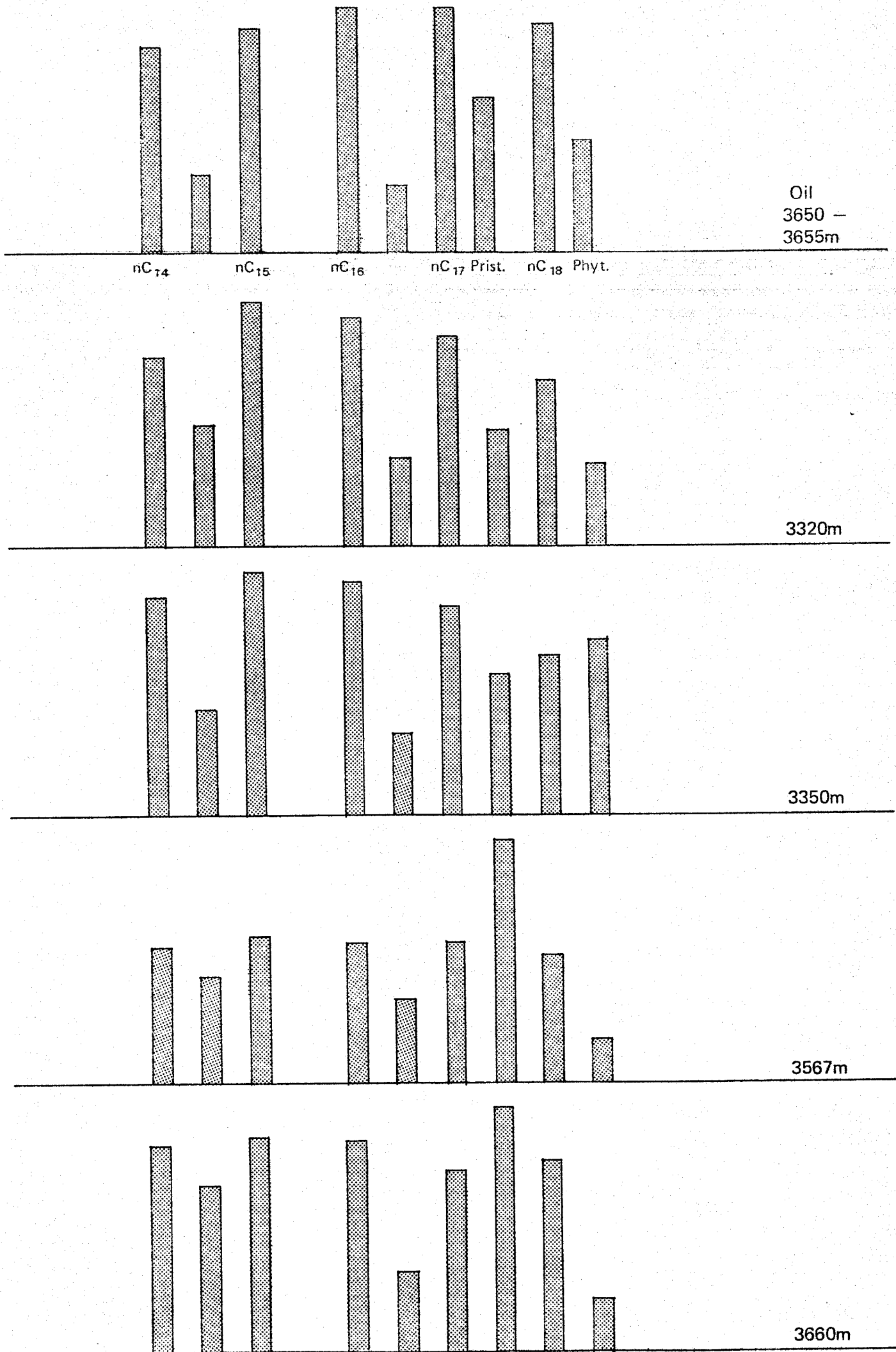
TABLE II

Physical properties of the oils.

Oil	Sp. gravity 60/60 °F. (g/ml)	Flash point (°C)	Ignition point (°C)	Pour point (°C)	Viscosity 38 °C
I	0.9064				35.000 c.st.
II	0.9013	33	42	16.5	41.944 c.st.

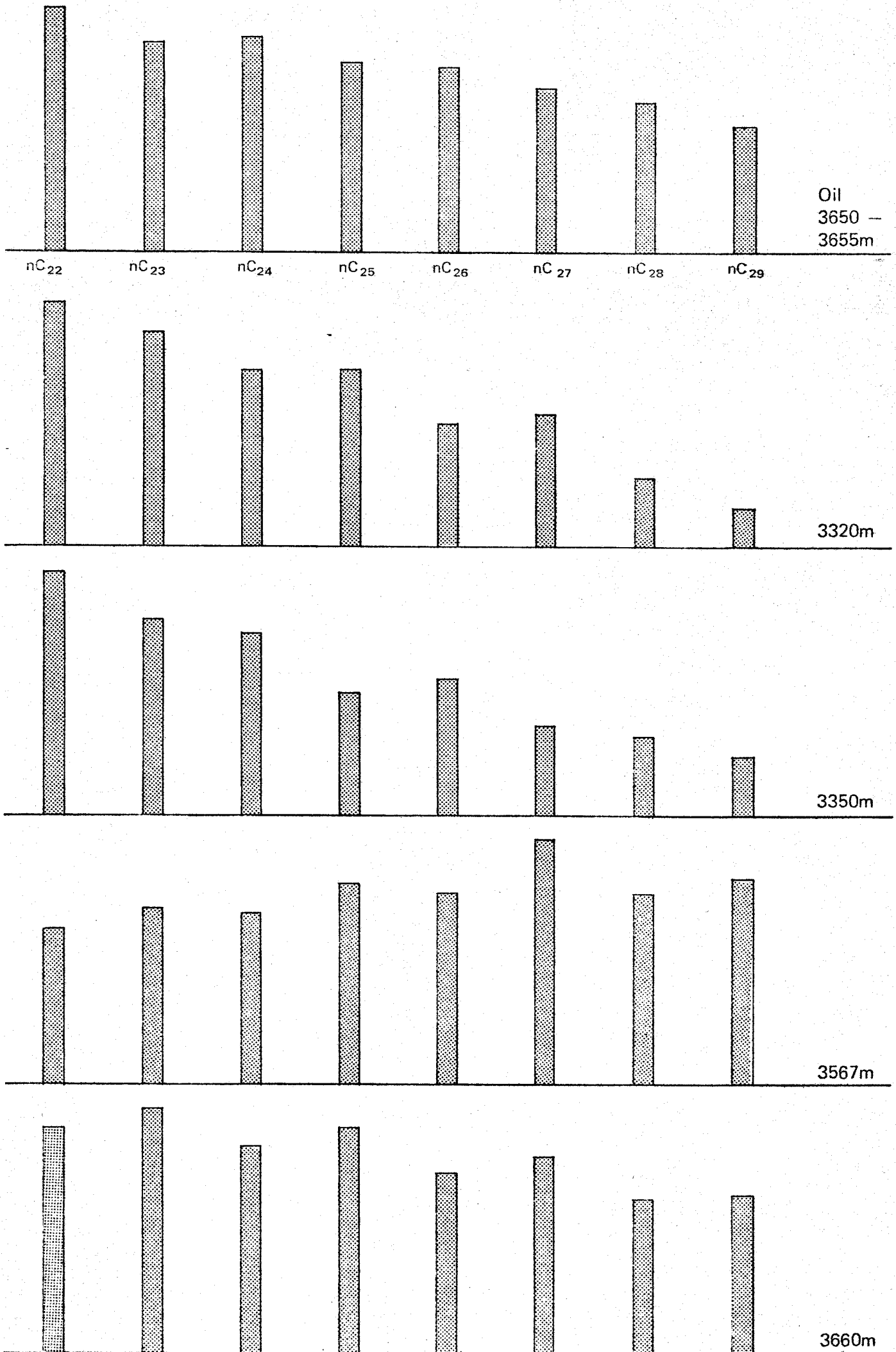
Isoprenoides and n - alkanes

Fig. 1



n - alkanes

Fig. 2



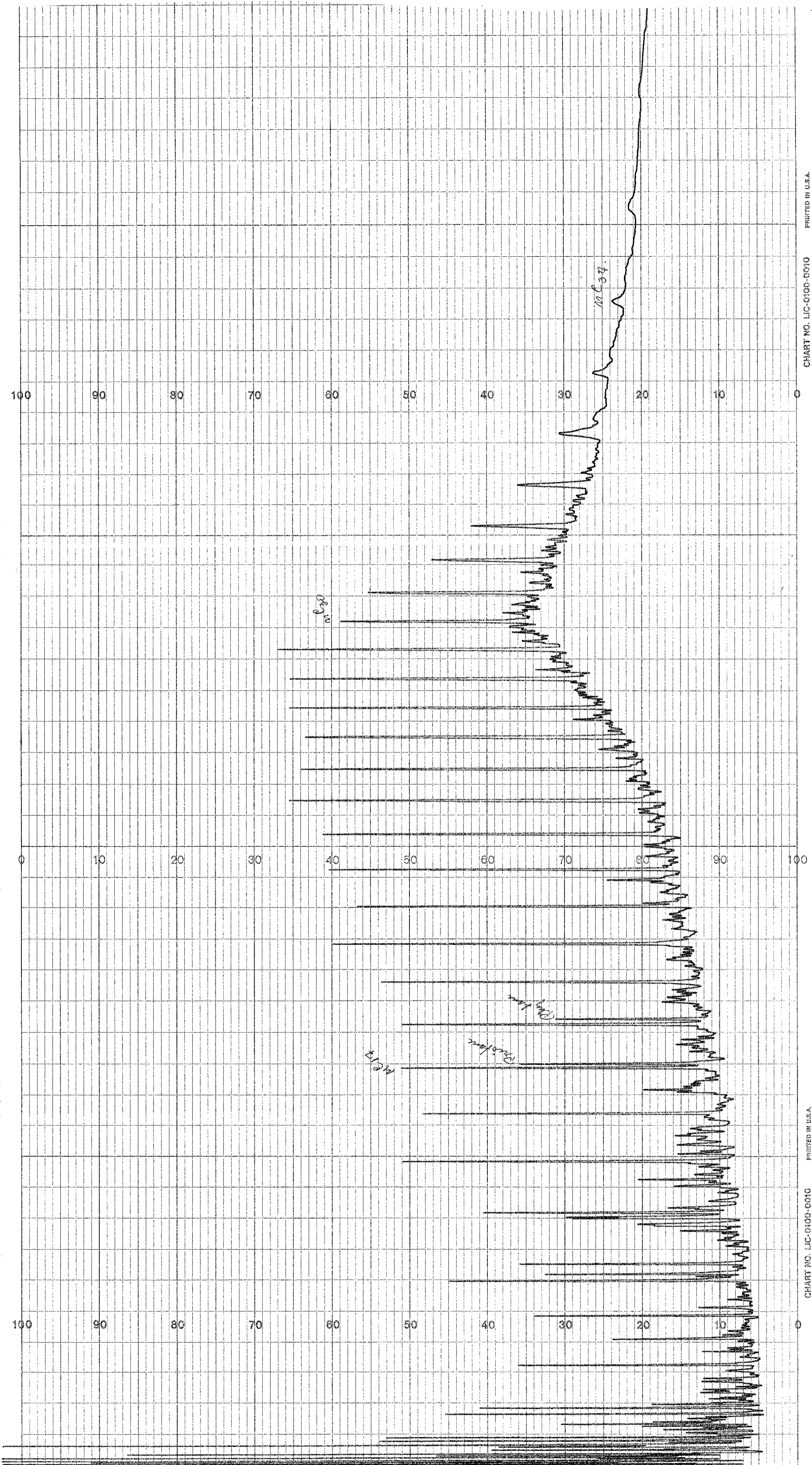


CHART NO. LIC-0100-0010  
PRINTED IN U.S.A.

CHART NO. LIC-0100-0010  
PRINTED IN U.S.A.

Räölje 15/9-1.  
Efter separator.

I

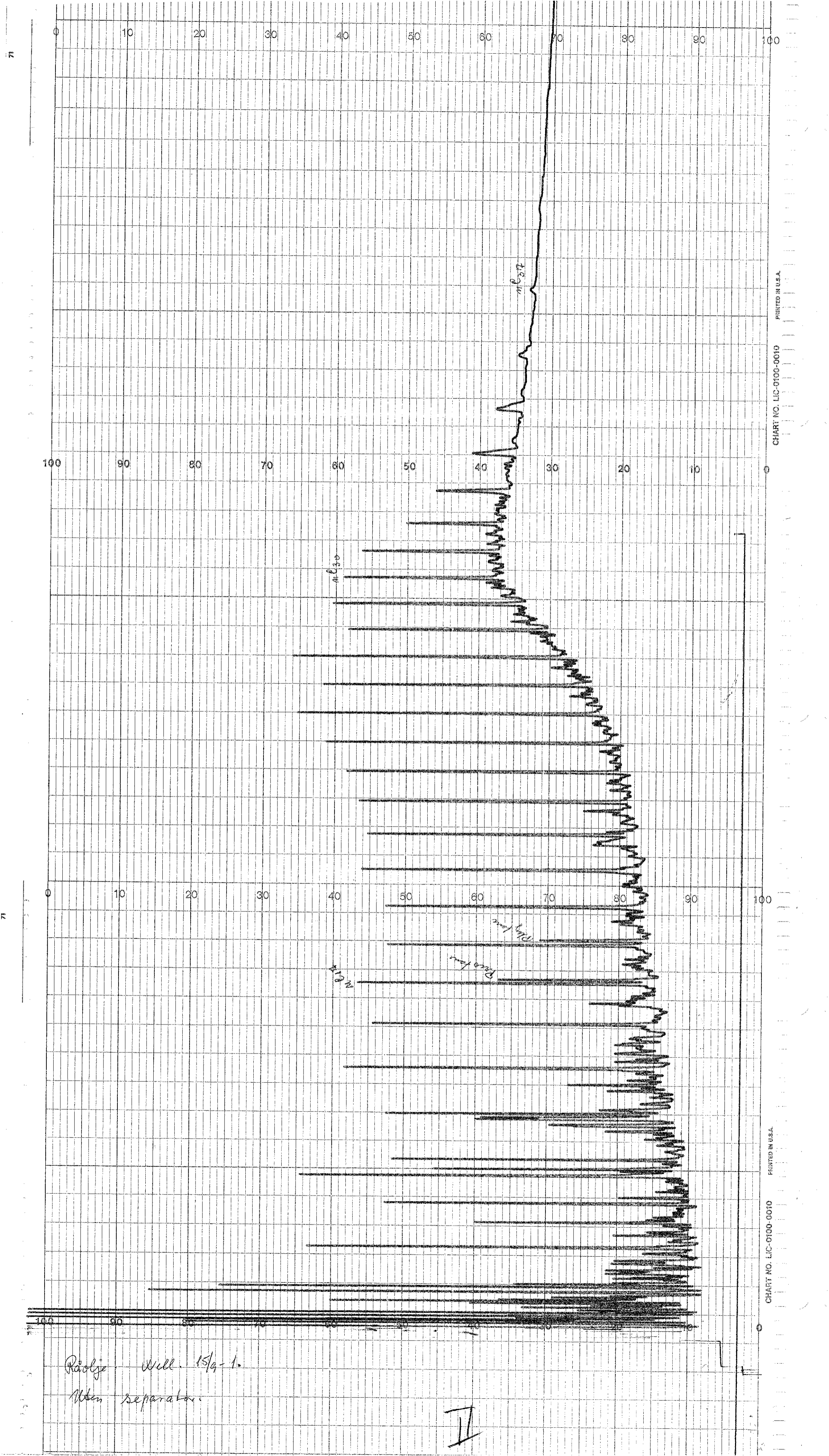


CHART NO. LIC-0100-0010  
PRINTED IN U.S.A.

CHART NO. LIC-0100-0010  
PRINTED IN U.S.A.

Ridge Well 15/9-1.  
Albin Separator

II