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AMOCO PRODUCTION COMPANY  
Tulsa, Oklahoma  
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FILE: TS 839054CH

CONFIDENTIAL

TO: C. J. Campbell, Amoco Norway

SUBJECT: Source Rock Evaluation Statoil 6407/1-2 Haltenbanken Area, North  
Sea, Norway

Attached is the confidential report on the geochemical characterization of  
the sedimentary section penetrated by the 6407/1-2 well.

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By

  
R. R. Thompson

LMR:pt  
Attachment (83216ART0090)

cc: C. L. Cain, Attn: J. G. C. M. Fuller, Amoco Europe  
B. G. Newton, Attn: M. J. Fryer, APC(I), Chicago

CONFIDENTIAL - TIGHT HOLE

83216ART0090

AMOCO PRODUCTION COMPANY  
RESEARCH CENTER

SOURCE ROCK EVALUATION

Statoil 6407/1-2 Well, Haltenbanken Area, North Sea, Norway

Geochemistry Services Group

L. M. Ross

Technical Service 839054CH  
Requested by C. J. Campbell

AMOCO NORWAY

*R. J. Ross (8/19/83)*

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Subject: Statoil 6407/1-2 Well Haltenbanken Area, North Sea, Norway

### INTRODUCTION

One hundred thirty cuttings samples between 1650 m (Paleocene) and 4560 m (Triassic) in the Statoil 6407/1-2 well, Haltenbanken area, Norwegian sector of the North Sea (Figure 1) were analyzed to determine source bed potential by total organic carbon content and Rock-Eval pyrolysis. Prospective intervals were then systematically analyzed to establish an organic maturation trend.

The cuttings samples are of questionable quality because of a combination of cave, probable mud additive contamination, and tarry residue. Visual examination of the washed cuttings recognized a black sand-size component between 2300 m and 4560 m (probably some type of mud additive) and cave. Solvent soluble tarry material was found in cuttings samples from 2382.5 m to 4560 m. The intervals were highgraded by removal of the cave, mud additive, and tar to provide the most accurate characterization of the indigenous organic material.

### SUMMARY

1. Peak oil generation is recognized around 3500 m in the Upper Jurassic, peak-past peak oil in the Triassic at 4485 m.
2. Good to excellent rated hydrocarbon source beds occur below 3500 m in the Jurassic and Triassic. This rating may be optimistic because the interpretation is based on the total organic carbon content.

Nonsource horizons predominate in the Paleocene and Upper Cretaceous above 3500 m.

3. Organic matter in the Upper Cretaceous, Paleocene, and Jurassic appear oxidized.
4. Biodegraded oil residues are observed below 3500 m, and if not some type of mud additive, may be evidence for an earlier episode of oil generation and expulsion.

#### EVALUATION

All of the cuttings samples were initially screened to define source quality by total organic carbon and generated hydrocarbon content from Rock-Eval pyrolysis. Results of those analyses are shown on the depth plots, Figure 2, Table 2.

Our experience has shown that the quantity of generated hydrocarbons is diagnostic of source bed quality in sediments that have not reached the peak stage of oil generation. Therefore, this technique is used for characterization in the sedimentary section above 3500 m. Peak oil generation is interpreted to occur around 3500 m at the top of the Upper Jurassic, therefore, below this depth we rely on the less accurate, and more optimistic, total organic carbon content to define petroleum generation capability.

Organic maturation and kerogen type determinations using elemental analysis and vitrinite reflectance were performed on selected intervals (Table 4, Figures 3, 4).

We rely on Dan Beju's palynologic analyses to define the visual carbonization scale and kerogen morphology to supplement the intervals we did not analyze, Table 4.

Although this report will not go through a detailed examination of the data, the discussion will focus on highlights and significant points.

Organic Maturation:

Questionable vitrinite reflectance values are observed at 3300 m and 3520 m and are not used in a maturation interpretation. Based on Beju's visual carbonization scale peak oil generation is encountered in the Upper Jurassic at approximately 3500 m.

A maturation level interpreted to be equivalent with a peak-past peak stage of oil generation is found in the Triassic section at 4485 m. This interpretation is supported by the elemental composition and position of data on the H/C vs. O/C plot (Figure 3), vitrinite reflectance, and visual carbonization estimates.

Organic material from the Tertiary and Cretaceous sections appear highly oxidized as demonstrated by the position of data on the H/C vs O/C plot (Figure 3). Although only a limited number of Jurassic samples were analyzed they contained amorphous and mixed kerogen morphology and based on the H/C vs O/C plot, they also prove to be oxidized. This oxidation has probably taken place in the environment of deposition.

Extract Characterization:

The distribution of hydrocarbons on the total extract chromatograms (Figure 5) yield a varied composition. Many samples shallower than 3300 m exhibit strong peaks in the C<sub>20-30</sub> carbon number range, and based on our experience these peaks are probably phthalates and adipates and may be products from either oxidation or contamination.

Hydrocarbon distributions characteristic of biodegraded oil residues are seen in the 3200 m, 3440 m, 3890 m, 4532.5 m (Figure 5c, d) intervals. Two tar samples selected from the cuttings and the hydrocarbon composition of these samples are shown in the 3720 m and 4112.5 m intervals. If tar-like material was not added to the mud system then the presence of these oil residues may be evidence of an earlier episode of oil migration.

A light oil component (C<sub>13-22</sub> predominance) is present in many of the units below 3500 m and supports the mature nature of the organic material.

Oil recovered from DST #1 in Middle Jurassic sands (3660-3770 m) is a typical North Sea Jurassic Type J oil according to J. A. Williams and J. C. Winters. This oil is sweet and appears to be free of asphaltenes. Additional information about this oil will be reported by the Research Group following a routine oil correlation evaluation.

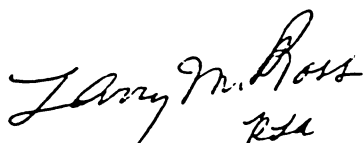
KFA Report-Evaluation:

The KFA report on the Statoil 6407/1-2 well states in their organic maturation level summary that..."any potential source beds bearing predominantly hydrogen-rich amorphous organic matter have experienced

adequate temperatures to initiate effective hydrocarbon generation below a depth of about 2800 m (0.5%  $R_o$ )". Amoco's interpretation differs from this and places the zone of effective oil generation at around 3500 m.

Amoco geochemical data predicts the potential for generating predominantly a gas to gas-oil (condensate) type of hydrocarbon product. That interpretation is consistent with KFA's summary statement on the quality of source rocks. KFA finds that most are hydrogen-lean Type III kerogen, derived predominantly from terrestrial vegetation.

KFA states that the mud additive Resinex was used in the well; this is probably the black granular material we saw. However, no reference could be found to the tarry residue Amoco observed. KFA observes an interval, 3925-4285 m, which exhibits very peculiar and unusual compositional features. The  $C_{15}+$  saturated hydrocarbon distribution is strongly bimodal with a pronounced background hump in the  $C_{27}+$  molecular region and high relative concentrations of (suspected) biomarkers. These compositional features are not in agreement with the maturity level of these samples and are unusual in general. They suspect that the saturated hydrocarbon fraction was contaminated by organic mud additives. I propose that this bimodality may be related to a biodegraded oil residue.

  
L. M. Ross

LMR:pt

Location map

Fig. 1

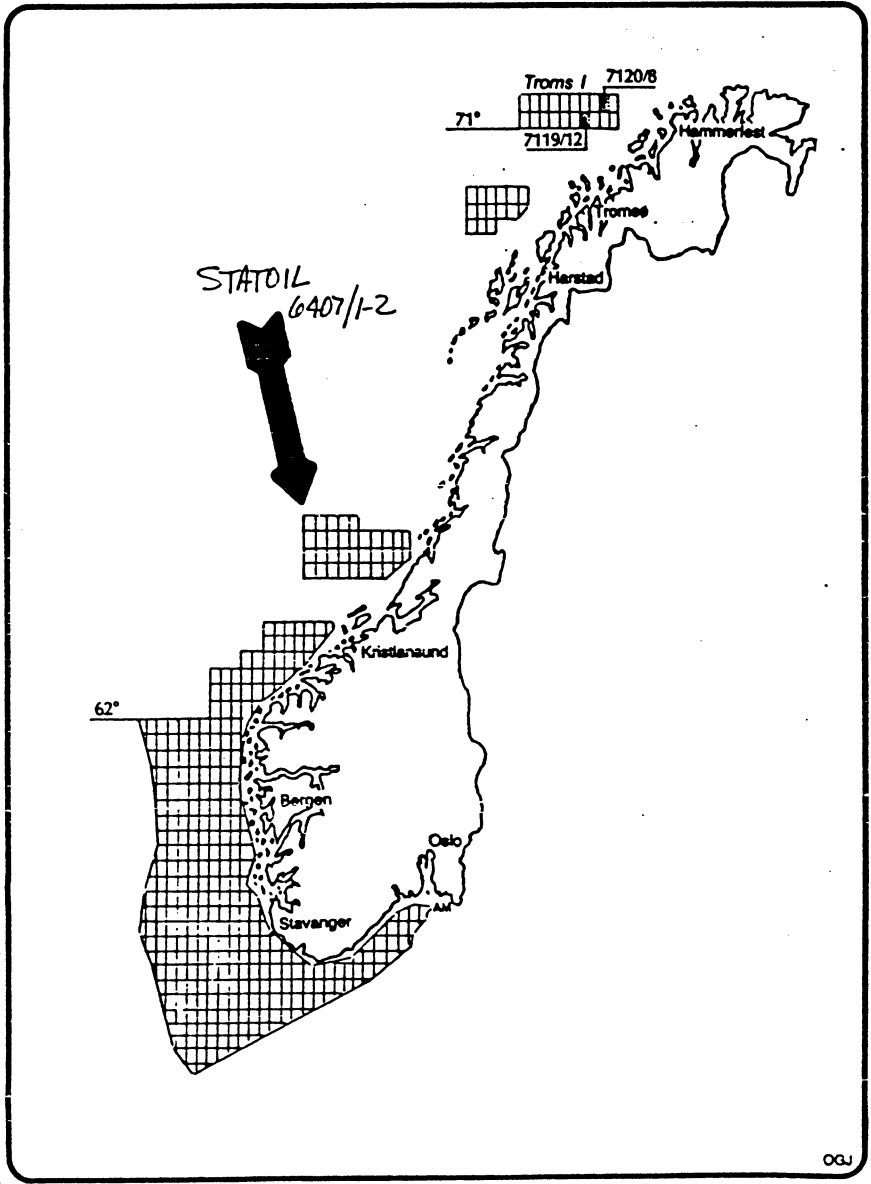


Fig. 1  
T.S. 839054 CH





SAMPLE NUMBER	SMPL TYPE	FORMATION	AGE	LITHOLOGY	FIELD NO. OR DEPTH METERS TOP***BASE	PETROLEUM GENERATION CAPABILITY	KEROGEN TYPE (OIL/GAS)	STAGE OF DIAGENESIS
STATE NORWAY	COUNTY	OFFSHORE	WELL LOCATION					
WELL NAME	STATOIL	LEASE 6407/1-2						
H-1614	CT	PALE SILT			2212.5 2220.0	NON SOURCE		
H-1615	CT	PALE SILT			2222.5 2230.0	NON SOURCE		
H-1616	CT	PALE SILT			2235.0 2242.5	NON SOURCE		
H-1617	CT	PALE SILT			2245.0 2255.0	NON SOURCE		
H-1618	CT	PALE SILT			2260.0 2270.0	NON SOURCE		
H-1619	CT	PALE SILT			2272.5 2282.5	NON SOURCE		
H-1620	CT	PALE SILT			2290.0 2300.0	NON SOURCE		
H-1621	CT	PALE SH			2305.0 2315.0	NON SOURCE		
H-1622	CT	PALE SH			2320.0 2330.0	NON SOURCE		
H-1623	CT	UCRE SH			2335.0 2345.0	NON SOURCE		
H-1624	CT	UCRE SH			2350.0 2357.5	NON SOURCE		
H-1625	CT	UCRE SH			2360.0 2367.5	NON SOURCE		
H-1626	CT	UCRE SH			2370.0 2380.0	NON SOURCE		
H-1627	CT	UCRE TARRY MT			2385.0	Not a sample for source rock analysis.		
H-1628	CT	UCRE SH			2382.5 2390.0	NON SOURCE		
H-1629	CT	UCRE SH			2400.0 2410.0	NON SOURCE		
H-1630	CT	UCRE SH			2415.0 2422.5	NON SOURCE		
H-1631	CT	UCRE SH			2437.5 2447.5	NON SOURCE		

SAMPLE NUMBER	SMPL TYPE	FORMATION	AGE	LITHOLOGY	FIELD NO. OR DEPTH METERS TOP***BASE	PETROLEUM GENERATION CAPABILITY	KEROGEN TYPE (OIL/GAS)	STAGE OF DIAGENESIS
STATE NORWAY COUNTY OFFSHORE		WELL LOCATION						
WELL NAME STATOIL		LEASE 6407/1-2						
H-1632	CT		UCRE SH		2460.0 2470.0	NON	SOURCE	
H-1633	CT		UCRE SH		2480.0 2490.0	NON	SOURCE	
H-1634	CT		UCRE SH		2500.0 2510.0	NON	SOURCE	
H-1635	CT		UCRE SH		2520.0 2530.0	NON	SOURCE	
H-1636	CT		UCRE SH		2540.0 2550.0	NON	SOURCE	
H-1637	CT		UCRE SH		2560.0 2570.0	NON	SOURCE	
H-1638	CT		UCRE SH		2580.0 2590.0	NON	SOURCE	
H-1639	CT		UCRE SH		2600.0 2610.0	NON	SOURCE	
H-1640	CT		UCRE BLK	MUD ADDITIVE	2620.0 2630.0	MARGINAL	GAS	
H-1642	CT		UCRE SH		2642.5 2655.0	EXCELLENT	GAS+COND	PREGENERATION
H-1643	CT		UCRE SH		2670.0 2680.0	MARGINAL	GAS	PREGENERATION
H-1644	CT		UCRE SH		2692.5 2705.0	NON	SOURCE	
H-1645	CT		UCRE SH		2715.0 2727.5	NON	SOURCE	
H-1646	CT		UCRE SH		2745.0 2755.0	MARGINAL	GAS	PREGENERATION
H-1647	CT		UCRE SH		2770.0 2782.5	NON	SOURCE	
H-1648	CT		UCRE SH		2795.0 2812.5	NON	SOURCE	
H-1649	CT		UCRE SH		2825.0 2837.5	NON	SOURCE	
H-1650	CT		UCRE SH		2850.0 2860.0	MARGINAL	GAS	

SAMPLE NUMBER	SMPL TYPE	FORMATION	AGE	LITHOLOGY	FIELD NO. OR DEPTH METERS TOP***BASE	PETROLEUM GENERATION CAPABILITY	KEROGEN TYPE (OIL/GAS)	STAGE OF DIAGENESIS
STATE NORWAY	COUNTY	OFFSHORE	WELL LOCATION					
WELL NAME	STATOIL	LEASE 6407/1-2						
H-1651	CT	UCRE SH			2870.0 2880.0	NON SOURCE		
H-1652	CT	UCRE SH			2887.5 2897.5	NON SOURCE		
H-1653	CT	UCRE SH			2900.0 2907.5	GOOD	GAS/COND	PREGENERATION
H-1654	CT	UCRE SH-SD			2580.0 2630.0	COMP. *	GAS	PREGENERATION
H-1655	CT	UCRE SH			2642.5 2705.0	COMP.	GAS	PREGENERATION
H-1656	CT	UCRE SH			2745.0 2812.5	COMP.	GAS	PREGENERATION
H-1657	CT	UCRE SH			2870.0 2907.5	COMP.	GAS	PREGENERATION
H-1691	CT	UCRE SH			2910.0 2920.0	NON SOURCE		
H-1692	CT	UCRE SH			2930.0 2940.0	NON SOURCE		
H-1693	CT	UCRE SH			2950.0 2960.0	NON SOURCE		
H-1694	CT	UCRE SH			2970.0 2980.0	EXCELLENT	GAS	PREGENERATION
H-1695	CT	UCRE SH			2990.0 3000.0	MARGINAL	GAS	PREGENERATION
H-1696	CT	UCRE SH			3010.0 3020.0	NON SOURCE		
H-1697	CT	UCRE SH			3030.0 3040.0	MARGINAL	GAS+COND	
H-1698	CT	UCRE SH			3050.0 3062.5	GOOD	GAS	
H-1699	CT	UCRE SH			3080.0 3095.0	GOOD	GAS	
H-1700	CT	UCRE SH			3100.0 3110.0	NON SOURCE		
H-1701	CT	UCRE SH			3120.0 3130.0	NON SOURCE		

\* COMP. = COMPOSITED INTERVAL

SAMPLE NUMBER	SMPL TYPE	FORMATION	AGE	LITHOLOGY	FIELD NO. OR DEPTH METERS TOP***BASE	PETROLEUM GENERATION CAPABILITY	KEROGEN TYPE (OIL/GAS)	STAGE OF DIAGENESIS
STATE NORWAY COUNTY OFFSHORE		WELL LOCATION			LEASE 6407/1-2			
WELL NAME	STATOIL							
H-1702	CT	UCRE SH			3140.0 3150.0	GOOD	GAS	EARLY PEAK OIL
H-1703	CT	UCRE SH			3160.0 3170.0	NON SOURCE		
H-1704	CT	UCRE SH			3180.0 3190.0	MARGINAL	GAS	EARLY PEAK OIL
H-1705	CT	UCRE SH			3200.0 3210.0	GOOD**	GAS+COND	EARLY PEAK OIL
H-1706	CT	UCRE SH			3220.0 3230.0	NON SOURCE		
H-1707	CT	UCRE SH			3240.0 3250.0	NON SOURCE		
H-1708	CT	UCRE SH			3260.0 3270.0	NON SOURCE		
H-1709	CT	UCRE SH			3280.0 3290.0	NON SOURCE		
H-1710	CT	UCRE SH			3300.0 3310.0	GOOD	OIL?	EARLY PEAK OIL (amorphous kerogen possibly oxidized)
H-1711	CT	UCRE SH			3320.0 3330.0	GOOD		
H-1712	CT	UCRE SH			3340.0 3350.0	GOOD		
H-1713	CT	UCRE SH			3360.0 3370.0	GOOD		
H-1714	CT	UCRE SH			3380.0 3390.0	GOOD		
H-1715	CT	UCRE SH			3400.0 3410.0	GOOD		
H-1716	CT	UCRE SH			3420.0 3430.0	GOOD		
H-1717	CT	MCRE SH			3440.0 3450.0	GOOD		
H-1718	CT	MCRE SH			3460.0 3470.0	GOOD		
H-1719	CT	MCRE SH			3480.0 3490.0	GOOD		

\*\*Pet. gen. capability is probably optimistic and probably should only rank as marginal.

SAMPLE NUMBER	SMPL TYPE	FORMATION	AGE	LITHOLOGY	FIELD NO. OR DEPTH METERS TOP***BASE	PETROLEUM GENERATION CAPABILITY	KEROGEN TYPE (OIL/GAS)	STAGE OF DIAGENESIS
STATE NORWAY		COUNTY OFFSHORE	WELL LOCATION LEASE 6407/1-2					
WELL NAME	STATOIL							
H-1720	CT		UJUR SH		3500.0 3510.0	GOOD***		PEAK OIL
H-1721	CT		UJUR SH		3520.0 3530.0	EXCELLENT		PEAK OIL
H-1722	CT		UJUR SH		3540.0 3550.0	EXCELLENT		
H-1723	CT		UJUR SH		3560.0 3570.0	EXCELLENT		
H-1724	CT		UJUR SH		3580.0 3590.0	EXCELLENT		
H-1725	CT		OXFO SH		3600.0 3610.0	EXCELLENT		
H-1726	CT		OXFO SH		3620.0 3630.0	GOOD		
H-1727	CT		OXFO SH		3640.0 3650.0	EXCELLENT		
H-1728	CT		MJUR SH		3660.0 3670.0	EXCELLENT	GAS/COND	PEAK OIL
H-1729	CT		MJUR SH		3680.0 3687.5	GOOD		
H-1731	CT		MJUR SH		3700.0 3712.5	EXCELLENT		
H-1732	CT		MJUR		3720.0			
H-1733	CT		MJUR SH		3725.0 3735.0	EXCELLENT		
H-1734	CT		MJUR SH		3747.5 3762.5			
H-1735	CT		LJUR SH		3777.5 3787.5	EXCELLENT		
H-1736	CT		LJUR SH		3800.0 3810.0	EXCELLENT		
H-1737	CT		LJUR SS-SH		3822.5 3832.5	GOOD		
H-1738	CT		LJUR SS-SH		3835.0 3845.0	EXCELLENT		

\*\*\*Petroleum generation capability between 3300-4560M is based on total organic carbon content and is a speculation of what the petroleum generating potential was at lower maturation levels. This petroleum generation classification is probably over optimistic and these ratings should be considered with some conservatism.

OFFICE APC (INTL) DISTRICT EUROPE  
 AUTHORIZED BY C J CAMPBELL  
 TECHNICAL SERVICE NUMBER 839054

SOURCE ROCK SUMMARY  
 TABLE 1.9  
 DATE 08/05/83

SAMPLE NUMBER LAB NO.	SMPL TYPE	FORMATION	AGE	LITHOLOGY	FIELD NO. OR DEPTH METERS TOP***BASE	PETROLEUM GENERATION CAPABILITY	KEROGEN TYPE (OIL/GAS)	STAGE OF DIAGENESIS
STATE NORWAY	COUNTY	OFFSHORE	WELL LOCATION		LEASE	6407/1-2		
H-1739	CT	LJUR	SS-SH		3855.0	3865.0	EXCELLENT	
H-1740	CT	LJUR	SS-SH		3875.0	3882.5	GOOD	
H-1741	CT	LJUR	SS-SH		3890.0	3897.5	GOOD	
H-1742	CT	LJUR	SS-SH		3910.0	3925.0	EXCELLENT	
H-1743	CT	LJUR	SS-SH		3940.0	3952.5	EXCELLENT	
H-1744	CT	LJUR	SS-SH		3967.5	3980.0	EXCELLENT	
H-1745	CT	LJUR			3992.5	4002.5		
H-1746	CT	LJUR			4032.5	4045.5	EXCELLENT	
H-1747	CT	LJUR			4070.0	4082.5	EXCELLENT	
H-1748	CT	LJUR	SS-SH		4092.0	4105.0	EXCELLENT	
H-1749	CT	LJUR			4112.5			
H-1750	CT	LJUR			4132.5	4137.5		
H-1796	CT	LJUR	SH-COAL		4432.5	4445.0	EXCELLENT	GAS PEAK OIL
H-1797	CT	LJUR	SH-COAL		4460.0	4472.5	EXCELLENT	GAS PEAK OIL
H-1798	CT	TRIA	COAL		4485.0	4502.5	EXCELLENT	GAS PEAK-PAST PEAK OIL
H-1799	CT	TRIA	COAL		4515.0	4525.0	EXCELLENT	GAS PEAK-PAST PEAK OIL
H-1800	CT	TRIA	COAL		4532.5	4542.5	EXCELLENT	GAS PEAK-PAST PEAK OIL
H-1801	CT	TRIA	COAL		4550.0	4560.0	EXCELLENT	GAS PEAK-PAST PEAK OIL

## T.S. R839054 ROCKEVAL PYROLYSIS DATA

* * *	SAMPLE NO.	TOP OF ANALYZED INTERVAL	FORMATION OR AGE	TOTAL ORGANIC CARBON WT% (TOC)	PPM VOLATILE HYDROCARBONS (S1 X 1000)	VOL/ TOC	PPM GENERATED HYDROCARBONS (S2 X 1000)	GEN/ TOC	TEMP OF MAX GEN	VOL/ VOL + GEN
	H-1596	1650	PALEOCEN	1.7	170	0.01	1250	0.07	417	0.12
	H-1597	1680	PALEOCEN	3.5	260	0.01	3150	0.09	418	0.08
	H-1598	1720	PALEOCEN	2.8	300	0.01	2600	0.09	416	0.10
	H-1599	1770	PALEOCEN	2.2	240	0.01	2180	0.10	413	0.10
	H-1600	1810	PALEOCEN	1.5	110	0.01	870	0.06	419	0.11
	H-1601	1850	PALEOCEN	1.6	90	0.01	780	0.05	415	0.10
	H-1602	1890	PALEOCEN	1.9	70	0.00	720	0.04	420	0.09
	H-1603	1930	PALEOCEN	2.0	50	0.00	550	0.03	419	0.08
	H-1604	1970	PALEOCEN	1.2	40	0.00	480	0.04	415	0.08
	H-1605	2010	PALEOCEN	0.8	20	0.00	280	0.04	442	0.07
	H-1606	2030	PALEOCEN	1.0	30	0.00	340	0.03	415	0.08
	H-1607	2050	PALEOCEN	0.6	10	0.00	220	0.04	394	0.04
	H-1608	2080	PALEOCEN	0.5	10	0.00	200	0.04	360	0.05
	H-1609	2110	PALEOCEN	0.7	0	0.00	230	0.03	359	0.00
	H-1610	2140	PALEOCEN	1.7	30	0.00	650	0.04	435	0.04
	H-1611	2160	PALEOCEN	1.0	10	0.00	350	0.03	433	0.03
	H-1612	2180	PALEOCEN	0.6	10	0.00	260	0.04	447	0.04
	H-1613	2202	PALEOCEN	1.0	10	0.00	330	0.03	428	0.03
	H-1614	2212	PALEOCEN	1.1	0	0.00	310	0.03	435	0.00
	H-1615	2222	PALEOCEN	1.8	20	0.00	500	0.03	432	0.04
	H-1616	2235	PALEOCEN	1.2	10	0.00	400	0.03	428	0.02
	H-1617	2245	PALEOCEN	0.6	0	0.00	170	0.03	360	0.00
	H-1618	2260	PALEOCEN	0.4	0	0.00	150	0.04	322	0.00
	H-1619	2272	PALEOCEN	0.6	10	0.00	200	0.03	321	0.05
	H-1620	2290	PALEOCEN	0.7	0	0.00	200	0.03	356	0.00
	H-1621	2305	PALEOCEN	0.9	10	0.00	220	0.02	380	0.04
	H-1622	2320	PALEOCEN	1.1	0	0.00	260	0.02	431	0.00
	H-1623	2335	U. CRETAC	0.9	0	0.00	210	0.02	433	0.00
	H-1624	2350	U. CRETAC	0.9	10	0.00	270	0.03	376	0.04
	H-1625	2360	U. CRETAC	0.8	10	0.00	270	0.03	401	0.04
	H-1626	2370	U. CRETAC	0.9	30	0.00	320	0.04	427	0.09
	H-1628	2382	U. CRETAC	0.9	70	0.01	400	0.04	424	0.15
	H-1629	2400	U. CRETAC	1.1	20	0.00	360	0.03	429	0.05
	H-1630	2415	U. CRETAC	1.1	50	0.00	380	0.03	426	0.12
	H-1631	2437	U. CRETAC	1.2	70	0.01	450	0.04	421	0.13
	H-1632	2460	U. CRETAC	0.9	60	0.01	380	0.04	422	0.14
	H-1633	2480	U. CRETAC	1.0	80	0.01	460	0.05	416	0.15
	H-1634	2500	U. CRETAC	1.2	100	0.01	590	0.05	420	0.14
	H-1635	2520	U. CRETAC	1.0	80	0.01	450	0.04	412	0.15
	H-1636	2540	U. CRETAC	1.0	90	0.01	520	0.05	422	0.15
	H-1637	2560	U. CRETAC	1.0	110	0.01	570	0.06	419	0.16
	H-1638	2580	U. CRETAC	1.0	120	0.01	520	0.05	411	0.19
	H-1639	2600	U. CRETAC	1.1	210	0.02	850	0.08	424	0.20
	H-1640	2620	U. CRETAC	2.3	180	0.01	1070	0.05	427	0.14



8:16 MONDAY, JULY 25, 1983

## T.S. R839054 ROCKEVAL PYROLYSIS DATA

* * *	SAMPLE NO.	TOP OF ANALYZED INTERVAL	FORMATION OR AGE	TOTAL ORGANIC CARBON WT% (TOC)	PPM VOLATILE HYDROCARBONS (S1 X 1000)	VOL/ TOC	PPM GENERATED HYDROCARBONS (S2 X 1000)	GEN/ TOC	TEMP OF MAX GEN	VOL/ VOL + GEN
	H-1641	2642	U. CRETAC	32.9	4410	0.01	33570	0.10	422	0.12
	H-1642	2642	U. CRETAC	3.4	1220	0.04	4100	0.12	421	0.23
	H-1643	2670	U. CRETAC	1.4	160	0.01	1170	0.08	435	0.12
	H-1644	2692	U. CRETAC	1.2	40	0.00	540	0.05	424	0.07
	H-1645	2715	U. CRETAC	1.4	90	0.01	600	0.04	420	0.13
	H-1646	2745	U. CRETAC	1.2	180	0.01	1030	0.09	434	0.15
	H-1647	2770	U. CRETAC	1.1	150	0.01	860	0.08	433	0.15
	H-1648	2795	U. CRETAC	1.2	80	0.01	580	0.05	426	0.12
	H-1649	2825	U. CRETAC	1.6	140	0.01	900	0.06	433	0.13
	H-1650	2850	U. CRETAC	1.9	160	0.01	1120	0.06	439	0.13
	H-1651	2870	U. CRETAC	1.0	150	0.01	780	0.08	437	0.16
	H-1652	2887	U. CRETAC	1.0	130	0.01	670	0.07	438	0.16
	H-1653	2900	U. CRETAC	1.6	450	0.03	3060	0.19	431	0.13
	H-1691	2910	U. CRETAC	1.3	170	0.01	910	0.07	425	0.16
	H-1692	2930	U. CRETAC	1.7	90	0.01	930	0.05	420	0.09
	H-1693	2950	U. CRETAC	0.9	20	0.00	340	0.04	342	0.06
	H-1694	2970	U. CRETAC	9.7	450	0.00	7210	0.07	428	0.06
	H-1695	2990	U. CRETAC	3.6	210	0.01	1870	0.05	428	0.10
	H-1696	3010	U. CRETAC	1.9	140	0.01	950	0.05	425	0.13
	H-1697	3030	U. CRETAC	1.7	320	0.02	1960	0.12	422	0.14
	H-1698	3050	U. CRETAC	5.7	250	0.00	3230	0.06	430	0.07
	H-1699	3080	U. CRETAC	3.2	320	0.01	2280	0.07	425	0.12
	H-1700	3100	U. CRETAC	1.7	110	0.01	580	0.03	369	0.16
	H-1701	3120	U. CRETAC	1.5	30	0.00	390	0.03	434	0.07
	H-1702	3140	U. CRETAC	5.8	240	0.00	3570	0.06	426	0.06
	H-1703	3160	U. CRETAC	1.7	30	0.00	470	0.03	426	0.06
	H-1704	3180	U. CRETAC	3.3	90	0.00	1480	0.04	422	0.06
	H-1705	3200	U. CRETAC	1.8	1980	0.11	2480	0.14	418	0.44
	H-1706	3220	U. CRETAC	1.3	180	0.01	820	0.06	394	0.18
	H-1707	3240	U. CRETAC	1.1	20	0.00	260	0.02	306	0.07
	H-1708	3260	U. CRETAC	1.5	30	0.00	450	0.03	324	0.06
	H-1709	3280	U. CRETAC	1.7	30	0.00	540	0.03	344	0.05
	H-1710	3300	U. CRETAC	1.9	70	0.00	710	0.04	358	0.09
	H-1711	3320	U. CRETAC	1.1	30	0.00	190	0.02	437	0.14
	H-1712	3340	U. CRETAC	1.6	50	0.00	550	0.03	340	0.08
	H-1713	3360	U. CRETAC	1.0	20	0.00	120	0.01	224	0.14
	H-1714	3380	U. CRETAC	1.6	30	0.00	410	0.03	312	0.07
	H-1715	3400	U. CRETAC	1.0	30	0.00	120	0.01	221	0.20
	H-1716	3420	U. CRETAC	1.1	290	0.03	550	0.05	298	0.35
	H-1717	3440	M. CRETAC	1.1	670	0.06	720	0.07	347	0.48
	H-1718	3460	M. CRETAC	1.3	50	0.00	150	0.01	260	0.25
	H-1719	3480	M. CRETAC	1.7	40	0.00	220	0.01	279	0.15
	H-1720	3500	U. JURASS	1.4	30	0.00	120	0.01	226	0.20
	H-1721	3520	U. JURASS	2.0	820	0.04	2750	0.14	428	0.23
	H-1722	3540	U. JURASS	5.8	2470	0.04	7050	0.12	425	0.26

8:16 MONDAY, JULY 25, 1983

## T.S. R839054 ROCKEVAL PYROLYSIS DATA

* SAMPLE NO.	TOP OF ANALYZED INTERVAL	FORMATION OR AGE	TOTAL ORGANIC CARBON WT% (TOC)	PPM VOLATILE HYDROCARBONS (S1 X 1000)	VOL/ TOC	PPM GENERATED HYDROCARBONS (S2 X 1000)	GEN/ TOC	TEMP OF MAX GEN	VOL/ VOL + GEN
H-1723	3560	U. JURASS	3.4	820	0.02	3540	0.10	430	0.19
H-1724	3580	U. JURASS	4.1	1220	0.03	5810	0.14	432	0.17
H-1725	3600	OXFORDIA	2.0	330	0.02	1870	0.09	433	0.15
H-1726	3620	OXFORDIA	1.7	320	0.02	1780	0.10	433	0.15
H-1727	3640	OXFORDIA	2.7	400	0.01	2490	0.09	433	0.14
H-1728	3660	M. JURASS	2.2	1260	0.06	4380	0.20	436	0.22
H-1729	3680	M. JURASS	1.6	340	0.02	2280	0.14	441	0.13
H-1731	3700	M. JURASS	3.0	650	0.02	3390	0.11	441	0.16
H-1733	3725	M. JURASS	2.8	810	0.03	2860	0.10	434	0.22
H-1734	3734	M. JURASS	3.2	450	0.01	2030	0.06	435	0.18
H-1735	3777	L. JURASS	3.5	740	0.02	3470	0.10	438	0.18
H-1736	3800	L. JURASS	3.4	570	0.02	3300	0.10	438	0.15
H-1737	3822	L. JURASS	1.0	120	0.01	320	0.03	441	0.27
H-1738	3835	L. JURASS	2.0	610	0.03	1740	0.09	434	0.26
H-1739	3855	L. JURASS	2.4	1130	0.05	2060	0.09	439	0.35
H-1740	3875	L. JURASS	1.7	270	0.02	880	0.05	441	0.23
H-1741	3890	L. JURASS	1.3	110	0.01	190	0.01	437	0.37
H-1742	3910	L. JURASS	3.5	1460	0.04	2620	0.07	424	0.36
H-1743	3940	L. JURASS	3.7	510	0.01	1700	0.05	431	0.23
H-1744	3967	L. JURASS	2.6	710	0.03	1820	0.07	428	0.28
H-1746	4032	L. JURASS	6.8	6380	0.09	14820	0.22	417	0.30
H-1747	4070	L. JURASS	3.0	1790	0.06	3870	0.13	418	0.32
H-1748	4092	L. JURASS	7.2	5310	0.07	10160	0.14	417	0.34
H-1796	4435	L. JURASS	12.2	3550	0.03	27430	0.22	461	0.11
H-1797	4460	L. JURASS	18.3	5270	0.03	37230	0.20	462	0.12
H-1798	4485	TRIASSIC	35.3	8290	0.02	79820	0.23	470	0.09
H-1799	4515	TRIASSIC	27.7	5480	0.02	60970	0.22	469	0.08
H-1800	4532	TRIASSIC	27.3	16310	0.06	62700	0.23	467	0.21
H-1801	4550	TRIASSIC	23.0	5210	0.02	51370	0.22	467	0.09

OFFICE APC (INTL)  
TECHNICAL SERVICE NUMBER

DISTRICT EUROPE  
839054

SOURCE ROCK DATA  
TABLE 3. a  
DATE 08/05/83

SAMPLE NUMBER	FIELD NO. OR DEPTH METERS TOP***BOTTOM	GEOL. AGE	INSOL RESID%	TOTAL ORG C WT%	BITUMEN BBL/AF	SAT HC PPM	SAT HC/ BITUMEN	BITUMEN/ TL ORG C	REMARKS
STATE NORWAY COUNTY OFFSHORE					WELL LOCATION				
WELL NAME STATOIL					LEASE 6407/1-2				
H-1596	1650.0	1670.0	PALE	89	1.7				
H-1597	1680.0	1700.0	PALE	91	3.5	13	699	.02	
H-1598	1720.0	1740.0	PALE	92	2.8				
H-1599	1770.0	1790.0	PALE	92	2.2				
H-1600	1810.0	1830.0	PALE	86	1.5				
H-1601	1850.0	1870.0	PALE	86	1.6				
H-1602	1890.0	1910.0	PALE	81	1.9				
H-1603	1930.0	1950.0	PALE	82	2.0				
H-1604	1970.0	1990.0	PALE	80	1.2				
H-1605	2010.0	2020.0	PALE	84	.8				
H-1606	2030.0	2040.0	PALE	80	1.0				
H-1607	2050.0	2070.0	PALE	84	.6				
H-1608	2080.0	2100.0	PALE	86	.5				
H-1609	2110.0	2130.0	PALE	87	.7				
H-1610	2140.0	2150.0	PALE	85	1.7				
H-1611	2160.0	2170.0	PALE	84	1.0				
H-1612	2180.0	2200.0	PALE	83	.6				
H-1613	2202.0	2210.0	PALE	83	1.0				
H-1614	2212.5	2220.0	PALE	80	1.1				

BBL/AF = (PPM X .0180)

OFFICE APC (INTL)  
 TECHNICAL SERVICE NUMBER

DISTRICT EUROPE  
 839054

SOURCE ROCK DATA  
 TABLE 3.b  
 DATE 08/05/83

SAMPLE NUMBER	FIELD NO. OR DEPTH METERS TOP***BOTTOM	GEOL. AGE	INSOL RESID%	TOTAL ORG C WT%	BITUMEN BBL/AF	SAT HC PPM	SAT HC BBL/AF	BITUMEN/TL ORG C	REMARKS
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BBL/AF = (PPM X .0180)

STATE NORWAY COUNTY OFFSHORE WELL LOCATION  
 WELL NAME STATOIL LEASE 6407/1-2

H-1615	2222.5	2230.0	PALE	82	1.8	5	275	.02	
H-1616	2235.0	2242.5	PALE	85	1.2				
H-1617	2245.0	2255.0	PALE	85	.6				
H-1618	2260.0	2270.0	PALE	76	.4				
H-1619	2272.5	2282.5	PALE	78	.6				
H-1620	2290.0	2300.0	PALE	83	.7				
H-1621	2305.0	2315.0	PALE	85	.9				
H-1622	2320.0	2330.0	PALE	82	1.1				
H-1623	2335.0	2345.0	UCRE	88	.9				
H-1624	2350.0	2357.5	UCRE	84	.9				
H-1625	2360.0	2367.5	UCRE		.8				
H-1626	2370.0	2380.0	UCRE	84	.9				
H-1627	2385.0		UCRE		42.0				
H-1628	2382.5	2390.0	UCRE		.9				
H-1629	2400.0	2410.0	UCRE	87	1.1				
H-1630	2415.0	2422.5	UCRE	86	1.1				
H-1631	2437.5	2447.5	UCRE	87	1.2				
H-1632	2460.0	2470.0	UCRE		.9				
H-1633	2480.0	2490.0	UCRE		1.0				

OFFICE APC (INTL)  
TECHNICAL SERVICE NUMBER

DISTRICT EUROPE  
839054

SOURCE ROCK DATA  
TABLE 3.c  
DATE 08/05/83

SAMPLE NUMBER	FIELD NO. OR DEPTH METERS TOP***BOTTOM	GEOL. AGE	INSOL RESID%	TOTAL ORG C WT%	BITUMEN BBL/AF PPM	SAT HC BBL/AF PPM	SAT HC/ BITUMEN/ TL ORG C	REMARKS
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BBL/AF = (PPM X .0180)

STATE	NORWAY	COUNTY	OFFSHORE	WELL NAME	STATOIL	WELL LOCATION LEASE	6407/1-2				
				H-1634	2500.0	2510.0	UCRE	1.2	11	627	.05
				H-1635	2520.0	2530.0	UCRE	1.0			
				H-1636	2540.0	2550.0	UCRE	1.0			
				H-1637	2560.0	2570.0	UCRE	1.0			
				H-1638	2580.0	2590.0	UCRE	1.0			
				H-1639	2600.0	2610.0	UCRE	1.1			
				H-1640	2620.0	2630.0	UCRE	2.3	48	2690	.12
				H-1642	2642.5	2655.0	UCRE	3.4	112	6221	.19
				H-1643	2670.0	2680.0	UCRE	1.4			
				H-1644	2692.5	2705.0	UCRE	87	1.2		
				H-1645	2715.0	2727.5	UCRE	83	1.4		
				H-1646	2745.0	2755.0	UCRE	1.2	10	562	.05
				H-1647	2770.0	2782.5	UCRE	1.1			
				H-1648	2795.0	2812.5	UCRE	86	1.2		
				H-1649	2825.0	2837.5	UCRE	86	1.6		
				H-1650	2850.0	2860.0	UCRE	85	1.9		
				H-1651	2870.0	2880.0	UCRE	1.0			
				H-1652	2887.5	2897.5	UCRE	1.0			
				H-1653	2900.0	2907.5	UCRE	1.6	209	11622	.71 *

\* - NONINDIGENOUS OIL MIGRATED OR CONTAMINANT

OFFICE APC (INTL)  
TECHNICAL SERVICE NUMBER

DISTRICT EUROPE  
839054

SOURCE ROCK DATA  
TABLE 3.d  
DATE 08/05/83

SAMPLE NUMBER	FIELD NO. OR DEPTH METERS TOP**BOTTOM	GEOL. AGE	INSOL RESID%	TOTAL ORG C WT%	BITUMEN BBL/AF PPM	SAT HC BBL/AF PPM	SAT HC/BITUMEN	BITUMEN/TL ORG C	REMARKS
BBL/AF = (PPM X .0180)									
STATE NORWAY	COUNTY OFFSHORE	WELL LOCATION							
WELL NAME	STATOIL	LEASE 6407/1-2							
H-1654	2580.0	2630.0	UCRE	<.1					
H-1655	2642.5	2705.0	UCRE	<.1					
H-1656	2745.0	2812.5	UCRE	<.1					
H-1657	2870.0	2907.5	UCRE	<.1					
H-1691	2910.0	2920.0	UCRE	87	1.3				
H-1692	2930.0	2940.0	UCRE	83	1.7				
H-1693	2950.0	2960.0	UCRE	88	.9				
H-1694	2970.0	2980.0	UCRE	77	9.7	37	2057	.02	
H-1695	2990.0	3000.0	UCRE	83	3.6				
H-1696	3010.0	3020.0	UCRE	87	1.9				
H-1697	3030.0	3040.0	UCRE	...	1.7				
H-1698	3050.0	3062.5	UCRE	82	5.7				
H-1699	3080.0	3095.0	UCRE	81	3.2				
H-1700	3100.0	3110.0	UCRE	81	1.7				
H-1701	3120.0	3130.0	UCRE	79	1.5				
H-1702	3140.0	3150.0	UCRE	72	5.8				
H-1703	3160.0	3170.0	UCRE	87	1.7				
H-1704	3180.0	3190.0	UCRE	83	3.3	14	794	.02	
H-1705	3200.0	3210.0	UCRE	83	1.8	130	7214	.41 *	

\* - NONINDIGENOUS OIL MIGRATED OR CONTAMINANT

OFFICE APC (INTL)  
TECHNICAL SERVICE NUMBER

DISTRICT EUROPE  
839054

SOURCE ROCK DATA  
TABLE 3.e  
DATE 08/05/83

SAMPLE NUMBER	FIELD NO. OR DEPTH METERS		GEOL. AGE	INSOL RESID% 	TOTAL ORG C WT% 	BITUMEN		SAT HC		SAT HC/ BITUMEN	BITUMEN/ TL ORG C	REMARKS
	TOP***	BOTTOM				BBL/AF	PPM	BBL/AF	PPM			
STATE NORWAY COUNTY OFFSHORE												WELL LOCATION LEASE 6407/1-2
WELL NAME STATOIL												
H-1706	3220.0	3230.0	UCRE	85								
H-1707	3240.0	3250.0	UCRE	83								
H-1708	3260.0	3270.0	UCRE	84								
H-1709	3280.0	3290.0	UCRE	83								
H-1710	3300.0	3310.0	UCRE	81		10	580				.03	
H-1711	3320.0	3330.0	UCRE	83								
H-1712	3340.0	3350.0	UCRE	80								
H-1713	3360.0	3370.0	UCRE	79								
H-1714	3380.0	3390.0	UCRE	80								
H-1715	3400.0	3410.0	UCRE	79								
H-1716	3420.0	3430.0	UCRE	81								
H-1717	3440.0	3450.0	MCRE	83		62	3439				.31	
H-1718	3460.0	3470.0	MCRE	79		<del>53</del>	<del>2940</del>				<del>.23</del>	
H-1719	3480.0	3490.0	MCRE	74								
H-1720	3500.0	3510.0	UJUR	71								
H-1721	3520.0	3530.0	UJUR	70		53	2940				.15	
H-1722	3540.0	3550.0	UJUR	85								
H-1723	3560.0	3570.0	UJUR	69								
H-1724	3580.0	3590.0	UJUR	85								

BBL/AF = (PPM X .0180)

OFFICE APC (INTL)  
TECHNICAL SERVICE NUMBER

DISTRICT EUROPE  
839054

SOURCE ROCK DATA  
TABLE 3.f  
DATE 08/05/83

SAMPLE NUMBER	FIELD NO. OR DEPTH METERS TOP***BOTTOM	GEOL. AGE	INSOL RESID%	TOTAL ORG C WT%	BITUMEN BBL/AF	SAT HC PPM	SAT HC/BITUMEN	BITUMEN/TL ORG C	REMARKS
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BBL/AF = (PPM X .0180)

STATE	NORWAY	COUNTY	OFFSHORE	WELL NAME	STATOIL	WELL LOCATION LEASE	6407/1-2				
				H-1725	3600.0	3610.0	OXFO	71	2.0		
				H-1726	3620.0	3630.0	OXFO	71	1.7		
				H-1727	3640.0	3650.0	OXFO	77	2.7		
				H-1728	3660.0	3670.0	MJUR	86	2.2	310	17226
				H-1729	3680.0	3687.5	MJUR	90	1.6		
				H-1731	3700.0	3712.5	MJUR	91	3.0		
				H-1732	3720.0		MJUR		<.1		
				H-1733	3725.0	3735.0	MJUR	90	2.8		
				H-1734	3747.5	3762.5	MJUR	88	3.2		
				H-1735	3777.5	3787.5	LJUR	87	3.5		
				H-1736	3800.0	3810.0	LJUR	83	3.4		
				H-1737	3822.5	3832.5	LJUR	90	1.0		
				H-1738	3835.0	3845.0	LJUR	88	2.0		
				H-1739	3855.0	3865.0	LJUR	89	2.4	55	3060
				H-1740	3875.0	3882.5	LJUR	84	1.7		
				H-1741	3890.0	3897.5	LJUR	83	1.3		
				H-1742	3910.0	3925.0	LJUR	79	3.5	81	4490
				H-1743	3940.0	3952.5	LJUR	84	3.7		
				H-1744	3967.5	3980.0	LJUR	52	2.6		

\* - NONINDIGENOUS OIL MIGRATED OR CONTAMINANT





LAB SAMPLE NUMBER	FIELD NO. OR DEPTH METERS		GEOL. AGE	NORM. ELEMENTAL ANALYSIS, WT.				ATOMIC RATIO O/C	ATOMIC RATIO H/C	VISUAL KEROGEN TYPE	CARBNZ. SCALE	VIT REFLECT %RO
	TOP***	BOTTOM		CARBON	HYDROGEN	OXYGEN	NITROGEN					
STATE NORWAY	COUNTY	OFFSHORE	WELL LOCATION									*
WELL NAME	STATOIL		LEASE	6407/1-2								
H-1596	1650.0	1670.0	PALE						MIXED	3		
H-1597	1680.0	1700.0	PALE	72	3.7	22	2.2	.22	.62	AMORPHOUS	3	.46
H-1598	1720.0	1740.0	PALE						MIXED	3		
H-1599	1770.0	1790.0	PALE						STRUCTURED	3		
H-1600	1810.0	1830.0	PALE						MIXED	3		
H-1601	1850.0	1870.0	PALE						STRUCTURED	3		
H-1602	1890.0	1910.0	PALE						MIXED	3		
H-1603	1930.0	1950.0	PALE						MIXED	3		
H-1604	1970.0	1990.0	PALE						MIXED	3		
H-1605	2010.0	2020.0	PALE						MIXED	3		
H-1606	2030.0	2040.0	PALE						MIXED	3		
H-1607	2050.0	2070.0	PALE						MIXED	3		
H-1608	2080.0	2100.0	PALE						MIXED	3		
H-1609	2110.0	2130.0	PALE						MIXED	3		
H-1610	2140.0	2150.0	PALE						MIXED	3		
H-1611	2160.0	2170.0	PALE						MIXED	3		
H-1612	2180.0	2200.0	PALE						MIXED	3		
H-1613	2202.0	2210.0	PALE						MIXED	3		
H-1614	2212.5	2220.0	PALE						MIXED	3		

\*Visual carbonization scale estimates from Dan Beju (7-15-83)

LAB SAMPLE NUMBER	FIELD NO. OR DEPTH METERS		GEOL. AGE	NORM. ELEMENTAL ANALYSIS, WT.				ATOMIC	ATOMIC	VISUAL KEROGEN TYPE	CARBNZ. SCALE	VIT REFLECT %RO
	TOP***	BOTTOM		CARBON	HYDROGEN	OXYGEN	NITROGEN	RATIO O/C	RATIO H/C			
STATE NORWAY COUNTY OFFSHORE				WELL LOCATION								
WELL NAME STATOIL				LEASE 6407/1-2								
H-1615	2222.5	2230.0	PALE	70	3.6	25	1.7	.26	.63	MIXED	3	.46
H-1616	2235.0	2242.5	PALE							MIXED	3	
H-1617	2245.0	2255.0	PALE							MIXED	3	
H-1618	2260.0	2270.0	PALE							MIXED	3	
H-1619	2272.5	2282.5	PALE							MIXED	3	
H-1620	2290.0	2300.0	PALE							STRUCTURED	3	
H-1621	2305.0	2315.0	PALE							MIXED	3	
H-1622	2320.0	2330.0	PALE							MIXED	3	
H-1623	2335.0	2345.0	UCRE								3	
H-1624	2350.0	2357.5	UCRE								3	
H-1625	2360.0	2367.5	UCRE							MIXED	3	
H-1626	2370.0	2380.0	UCRE								3	
H-1627	2385.0		UCRE								3	
H-1628	2382.5	2390.0	UCRE							MIXED	3	
H-1629	2400.0	2410.0	UCRE							STRUCTURED	3	
H-1630	2415.0	2422.5	UCRE							STRUCTURED	3	
H-1631	2437.5	2447.5	UCRE							STRUCTURED	3	
H-1632	2460.0	2470.0	UCRE							STRUCTURED	3	
H-1633	2480.0	2490.0	UCRE							STRUCTURED	3	

LAB SAMPLE NUMBER	FIELD NO. OR DEPTH METERS		GEOL. AGE	NORM. ELEMENTAL ANALYSIS, WT.				ATOMIC	ATOMIC	VISUAL KEROGEN TYPE	CARBNZ. SCALE	VIT REFLECT %RO
	TOP**	BOTTOM		CARBON	HYDROGEN	OXYGEN	NITROGEN	RATIO	RATIO			
STATE NORWAY COUNTY OFFSHORE				WELL LOCATION								
WELL NAME STATOIL				LEASE 6407/1-2								
H-1634	2500.0	2510.0	UCRE	68	4.2	26	2.0	.28	.73	STRUCTURED	3	
H-1635	2520.0	2530.0	UCRE							STRUCTURED	3	
H-1636	2540.0	2550.0	UCRE							MIXED	3	
H-1637	2560.0	2570.0	UCRE							STRUCTURED	3	
H-1638	2580.0	2590.0	UCRE							STRUCTURED	3	
H-1639	2600.0	2610.0	UCRE							STRUCTURED	3	
H-1640	2620.0	2630.0	UCRE							STRUCTURED	3	
H-1642	2642.5	2655.0	UCRE								3	
H-1643	2670.0	2680.0	UCRE							STRUCTURED	3	
H-1644	2692.5	2705.0	UCRE							STRUCTURED	3	
H-1645	2715.0	2727.5	UCRE							MIXED	3	
H-1646	2745.0	2755.0	UCRE							MIXED	3	
H-1647	2770.0	2782.5	UCRE								3	
H-1648	2795.0	2812.5	UCRE							STRUCTURED	3	
H-1649	2825.0	2837.5	UCRE								3	
H-1650	2850.0	2860.0	UCRE							STRUCTURED	3	
H-1651	2870.0	2880.0	UCRE								3	
H-1652	2887.5	2897.5	UCRE							MIXED	3	
H-1653	2900.0	2907.5	UCRE							MIXED	3	

LAB SAMPLE NUMBER	FIELD NO. OR DEPTH METERS TOP***BOTTOM	GEOL. AGE	NORM. ELEMENTAL ANALYSIS, WT.				ATOMIC	ATOMIC	VISUAL KEROGEN TYPE	CARBNZ. SCALE	VIT REFLECT %RO	
			CARBON	HYDROGEN	OXYGEN	NITROGEN	RATIO O/C	RATIO H/C				
STATE NORWAY COUNTY OFFSHORE			WELL LOCATION									
WELL NAME STATOIL			LEASE 6407/1-2									
H-1654	2580.0	2630.0	UCRE	75	3.3	20	2.1	.20	.53	MIXED	3	.51
H-1655	2642.5	2705.0	UCRE	72	3.1	23	1.8	.23	.52		3	
H-1656	2745.0	2812.5	UCRE	74	3.5	21	1.9	.21	.56		3	
H-1657	2870.0	2907.5	UCRE	75	3.5	19	2.1	.18	.57	MIXED	3	.50
H-1691	2910.0	2920.0	UCRE								3	
H-1692	2930.0	2940.0	UCRE							MIXED	3	
H-1693	2950.0	2960.0	UCRE							MIXED	3	
H-1694	2970.0	2980.0	UCRE	66	3.6	29	1.4	.33	.66	STRUCTURED	3	.53
H-1695	2990.0	3000.0	UCRE							MIXED	3	
H-1696	3010.0	3020.0	UCRE							AMORPHOUS	3	
H-1697	3030.0	3040.0	UCRE							AMORPHOUS	3	
H-1698	3050.0	3062.5	UCRE							MIXED	3	
H-1699	3080.0	3095.0	UCRE							STRUCTURED	3	
H-1700	3100.0	3110.0	UCRE							STRUCTURED	3	
H-1701	3120.0	3130.0	UCRE							STRUCTURED	3	
H-1702	3140.0	3150.0	UCRE							STRUCTURED	3	
H-1703	3160.0	3170.0	UCRE							STRUCTURED	3	
H-1704	3180.0	3190.0	UCRE							STRUCTURED	3	.55
H-1705	3200.0	3210.0	UCRE							STRUCTURED	3	



LAB SAMPLE NUMBER	FIELD NO. OR DEPTH METERS TOP***BOTTOM		GEOL. AGE	NORM. ELEMENTAL ANALYSIS, WT.				ATOMIC	ATOMIC	VISUAL KEROGEN TYPE	CARBNZ. SCALE	VIT REFLECT %RO
				CARBON	HYDROGEN	OXYGEN	NITROGEN	O/C	H/C			
STATE NORWAY COUNTY OFFSHORE:			WELL LOCATION									
WELL NAME STATOIL			LEASE 6407/1-2									
H-1725	3600.0	3610.0	OXFO							MIXED	4	
H-1726	3620.0	3630.0	OXFO							MIXED	4	
H-1727	3640.0	3650.0	OXFO							MIXED	4	
H-1728	3660.0	3670.0	MJUR	84	5.1	9	1.8	.08	.74	MIXED	4	.86
H-1729	3680.0	3687.5	MJUR							STRUCTURED	4	
H-1731	3700.0	3712.5	MJUR								4	
H-1732	3720.0		MJUR								4	
H-1733	3725.0	3735.0	MJUR								4	
H-1734	3747.5	3762.5	MJUR								4	
H-1735	3777.5	3787.5	LJUR ?							MIXED	4-5	.74
H-1736	3800.0	3810.0	LJUR ?							MIXED	4-5	
H-1737	3822.5	3832.5	LJUR ?								4-5	
H-1738	3835.0	3845.0	LJUR ?							MIXED	4-5	
H-1739	3855.0	3865.0	LJUR ?								4-5	
H-1740	3875.0	3882.5	LJUR ?								4-5	
H-1741	3890.0	3897.5	LJUR ?								4-5	
H-1742	3910.0	3925.0	LJUR ?							MIXED	4-5	.83
H-1743	3940.0	3952.5	LJUR ?								4-5	
H-1744	3967.5	3980.0	LJUR ?							MIXED	4-5	

LAB SAMPLE NUMBER	FIELD NO. OR DEPTH METERS		GEOL. AGE	NORM. ELEMENTAL ANALYSIS, WT.				ATOMIC RATIO O/C	ATOMIC RATIO H/C	VISUAL KEROGEN TYPE	CARBNZ. SCALE	VIT REFLECT %RO
	TOP***	BOTTOM		CARBON	HYDROGEN	OXYGEN	NITROGEN					
STATE NORWAY COUNTY OFFSHORE				WELL LOCATION								
WELL NAME STATOIL				LEASE 6407/1-2								
H-1745	3992.5	4002.5	LJUR ?							MIXED	5	
H-1746	4032.5	4045.5	LJUR ?							MIXED	5	
H-1747	4070.0	4082.5	LJUR ?							MIXED	5	
H-1748	4092.0	4105.0	LJUR ?							MIXED	5	.80
H-1749	4112.5		LJUR ?								5	
H-1750	4132.5	4137.5	LJUR ?								5	
H-1796	4432.5	4445.0	LJUR ?								5	.91
H-1797	4460.0	4472.5	LJUR ?								5	.95
H-1798	4485.0	4502.5	TRIA								5+	1.11
H-1799	4515.0	4525.0	TRIA	89	4.2	5	1.7	.04	.57		5+	1.11
H-1800	4532.5	4542.5	TRIA	89	4.3	6	1.6	.04	.58		5+	1.08
H-1801	4550.0	4560.0	TRIA								5+	1.09

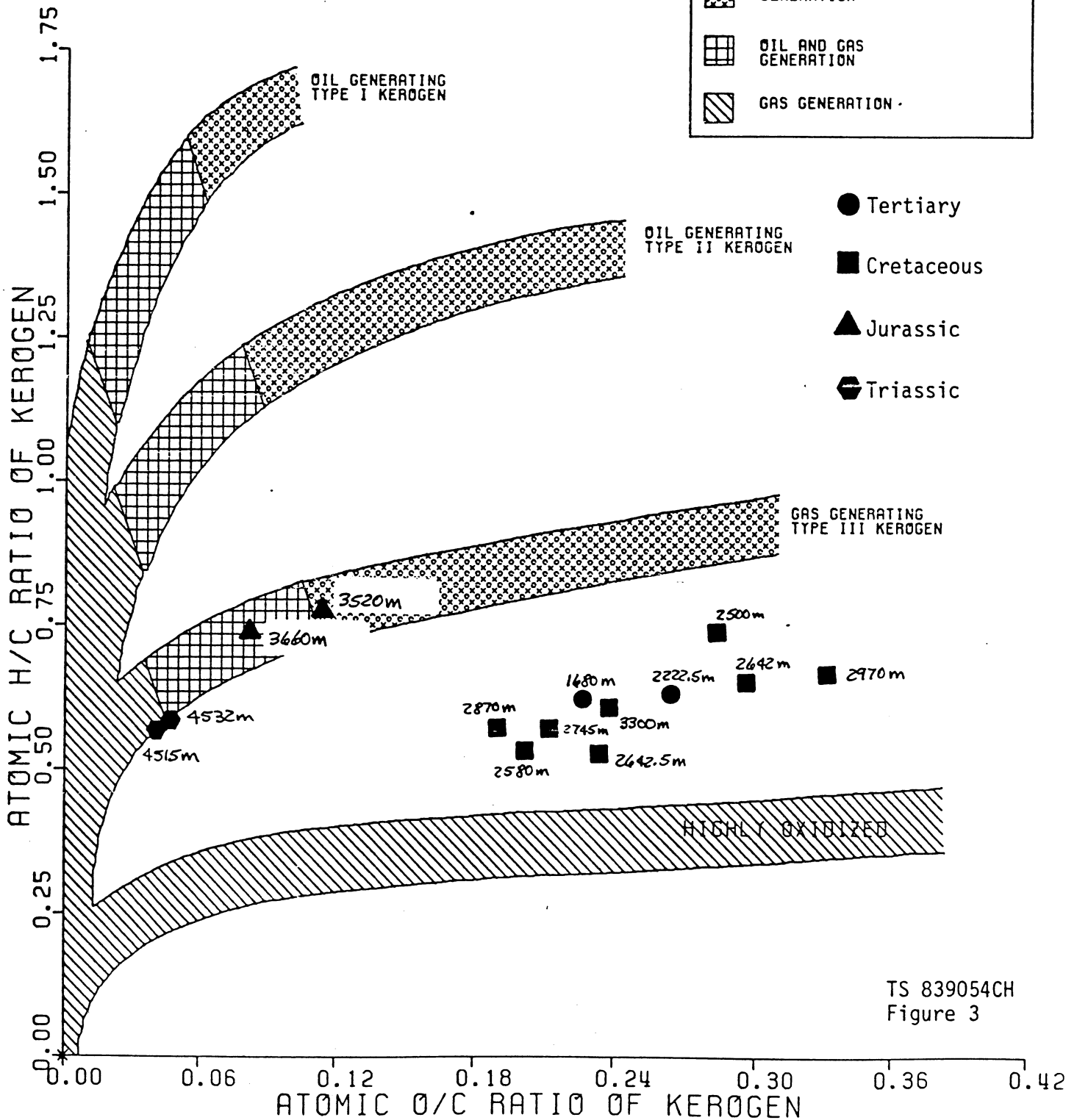
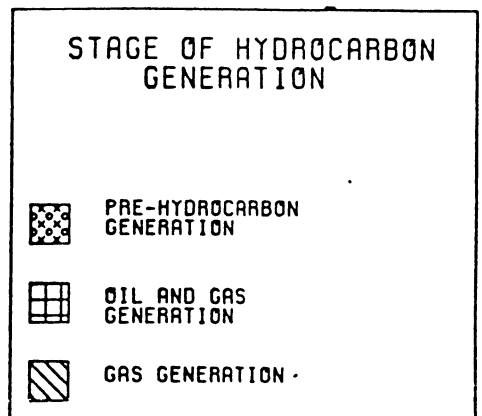


# AMOCO PRODUCTION COMPANY GEOLOGICAL DATA

TECH SERVICE

905483

6407/1-2 Well  
Haltenbanken Area



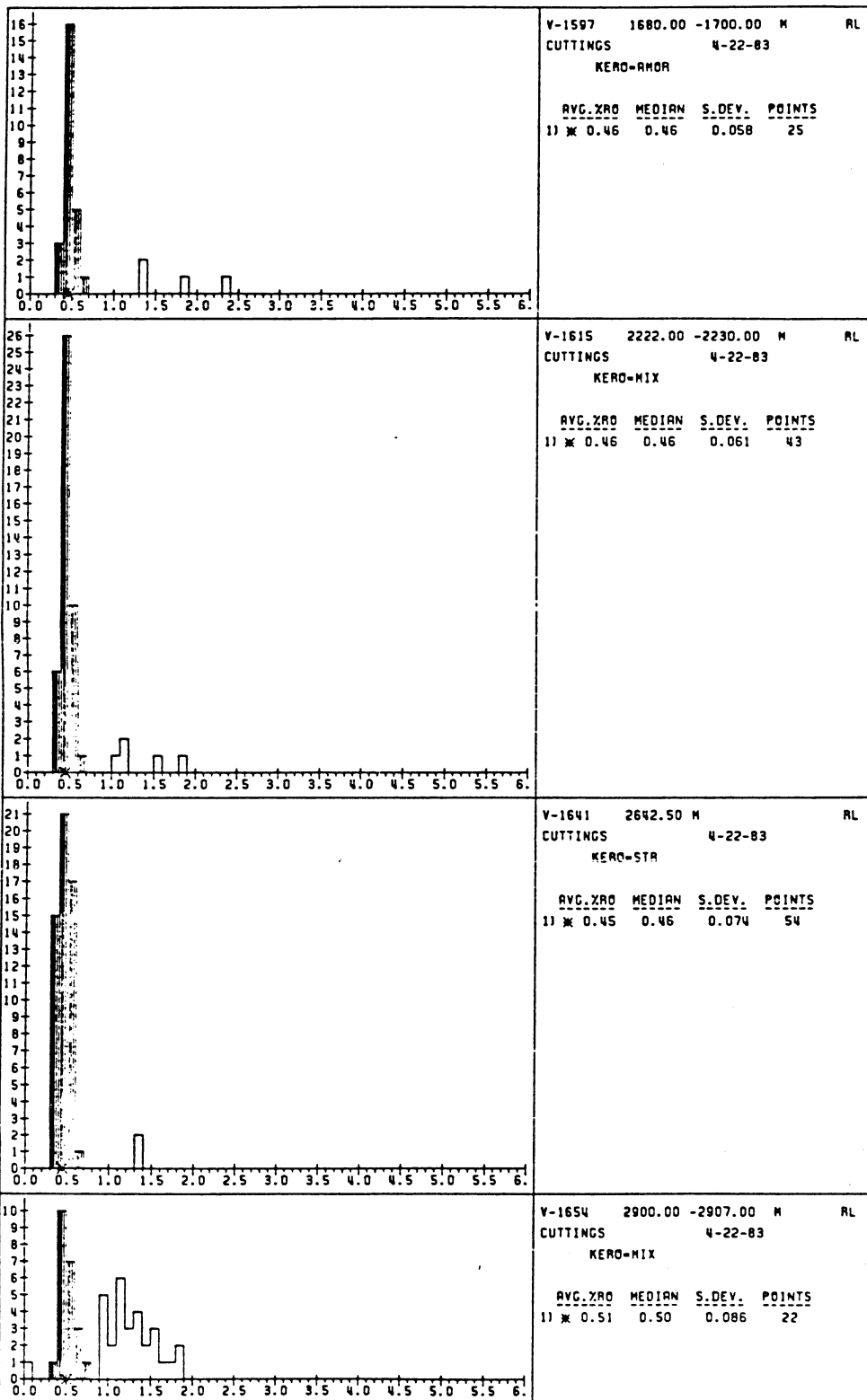
TS 839054CH  
Figure 3

# VITRINITE REFLECTANCE ANALYSIS

STATOIL 6407/1-2; OFFSHORE NORWAY

LOCALITY 9054

TECH SVC NO.9054



Paleocene

U. Cretaceous

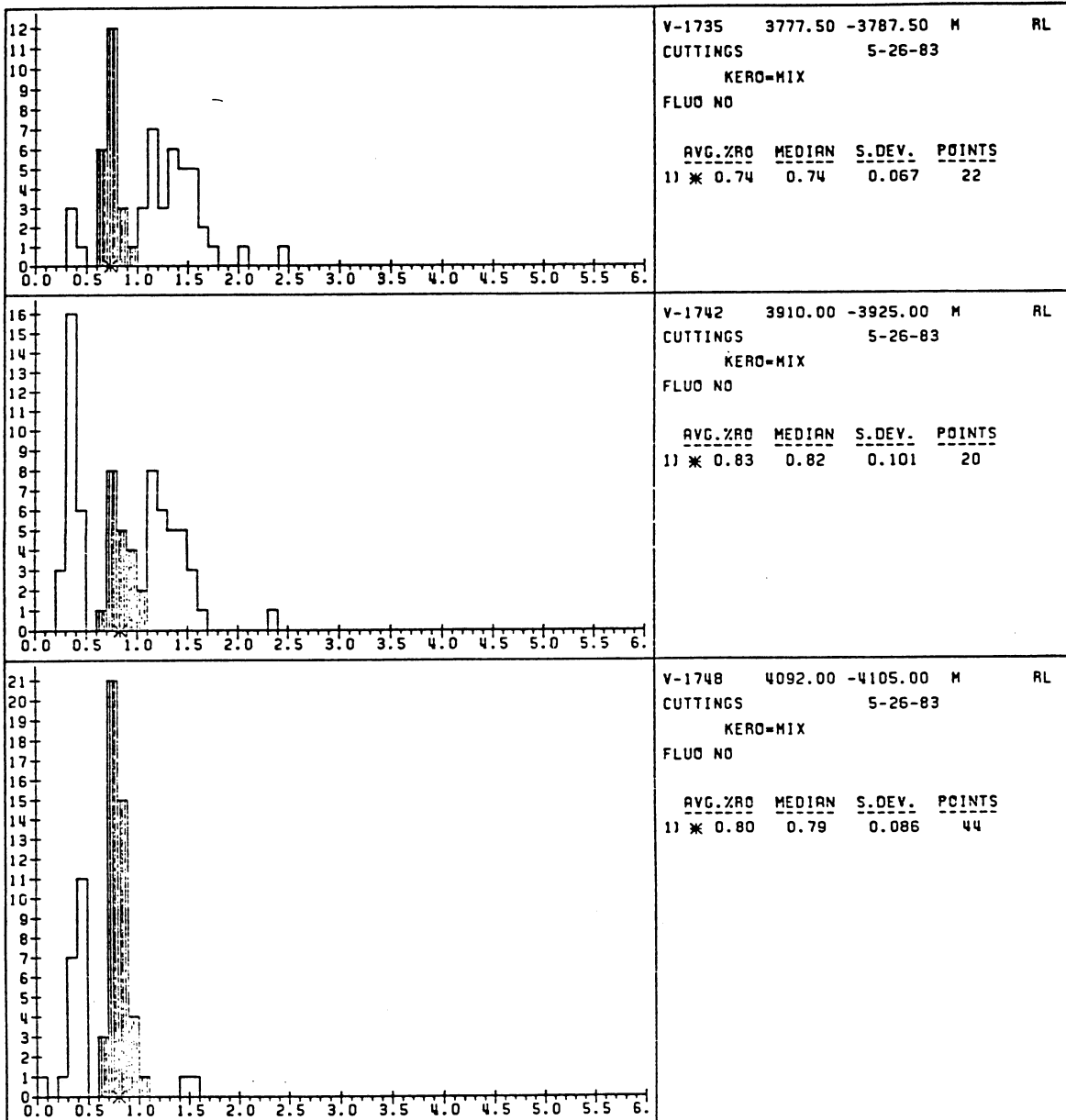
TS 839054CH  
Figure 4a

# VITRINITE REFLECTANCE ANALYSIS

STATOIL 6407/1-2; OFFSHORE NORWAY

LOCALITY 9054

TECH SVC NO.9054



L. Jurassic:?

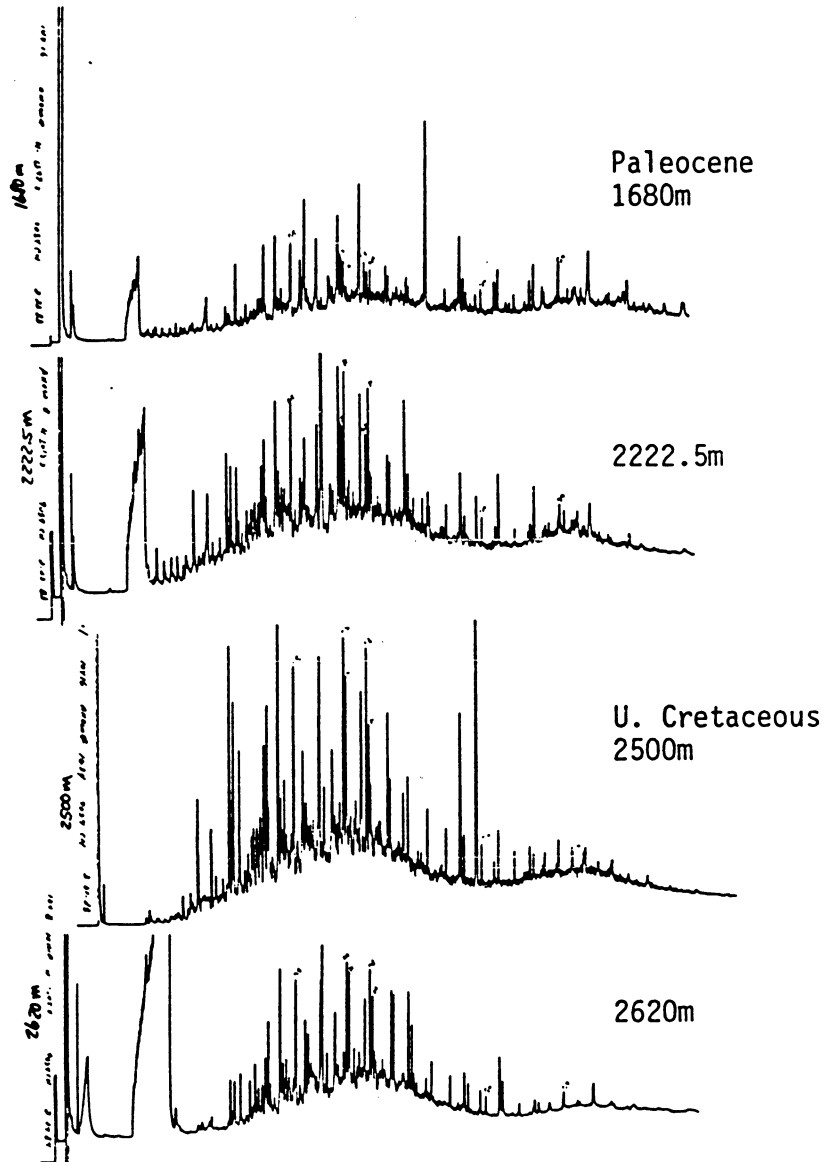
X-AXIS = PERCENT REFLECTANCE OF VITRINITE (%R0)

Y-AXIS = FREQUENCY

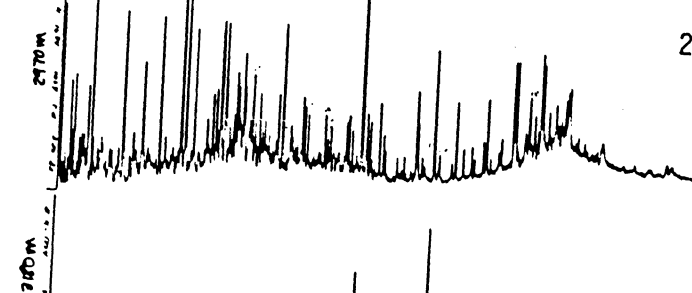
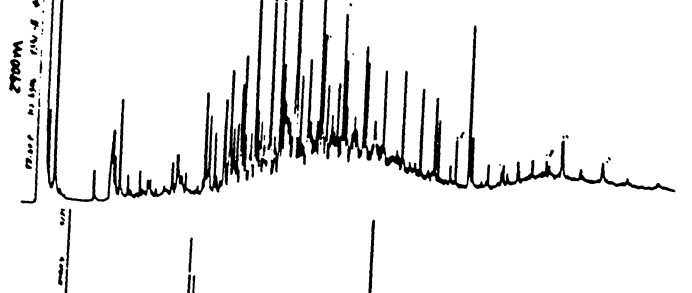
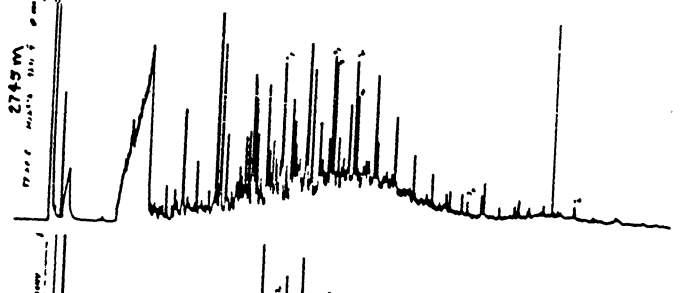
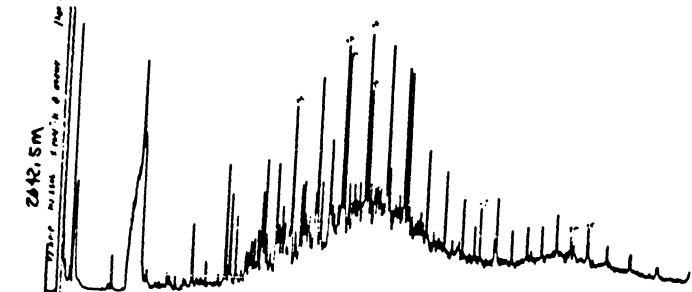
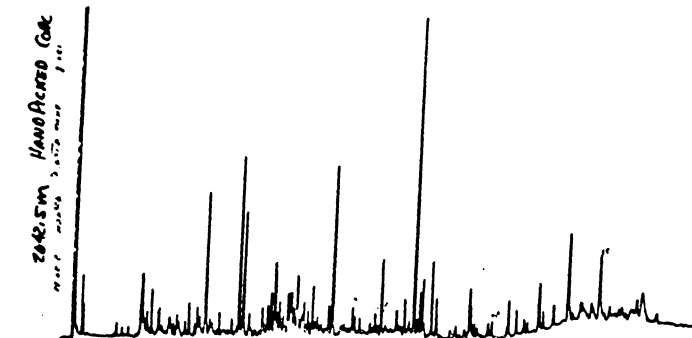
AVERAGE %R0 FOR POP.1 = 0.79

TS 839054CH  
Figure 4c

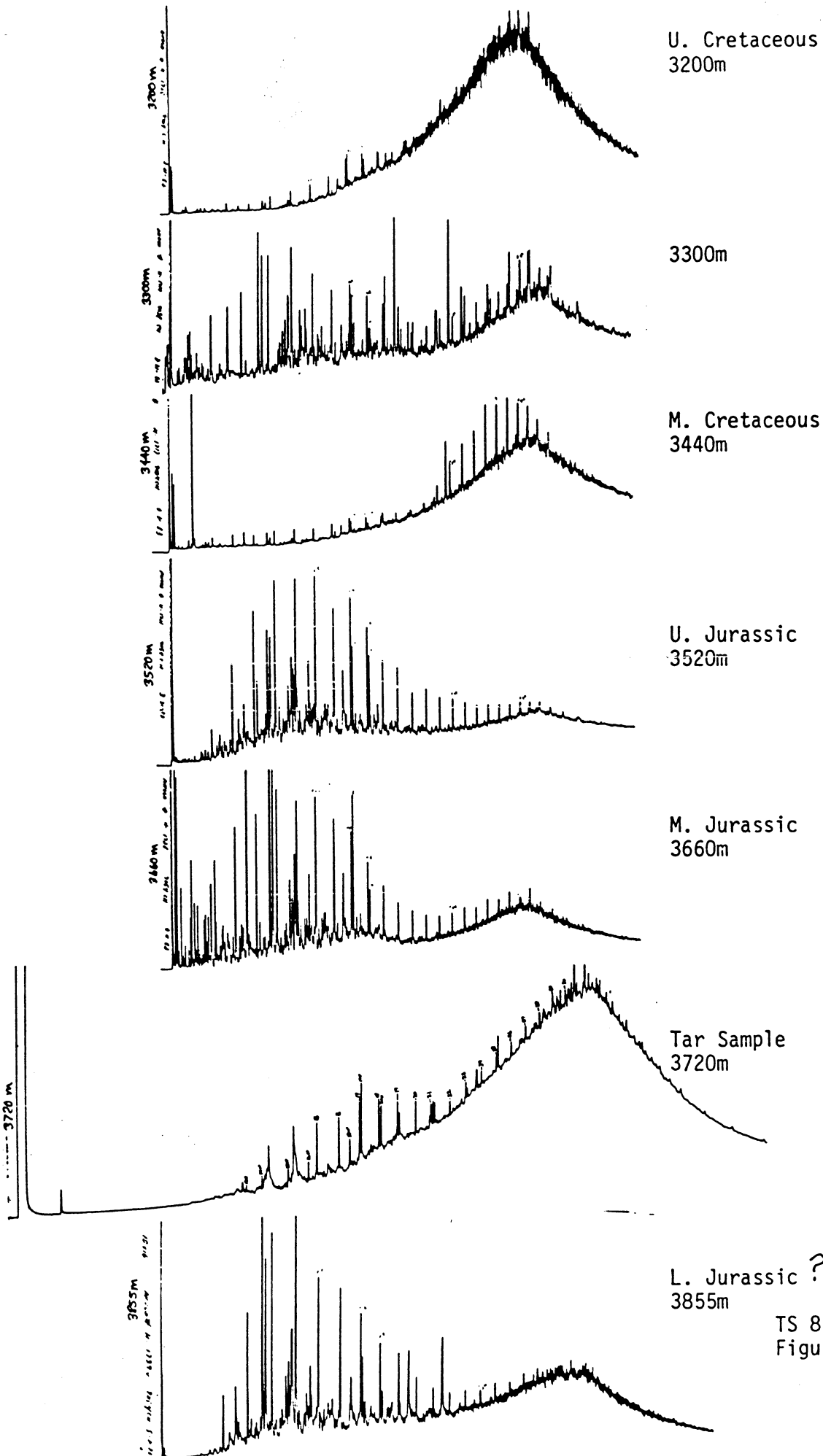
Total Extract Chromatograms  
Statoil 6407/1-2 Well  
Haltenbanken Area  
Norway



Total Extract Chromatograms  
Statoil 6407/1-2 Well



Total Extract Chromatograms  
Statoil 6407/1-2 Well



U. Cretaceous  
3200m

3300m

M. Cretaceous  
3440m

U. Jurassic  
3520m

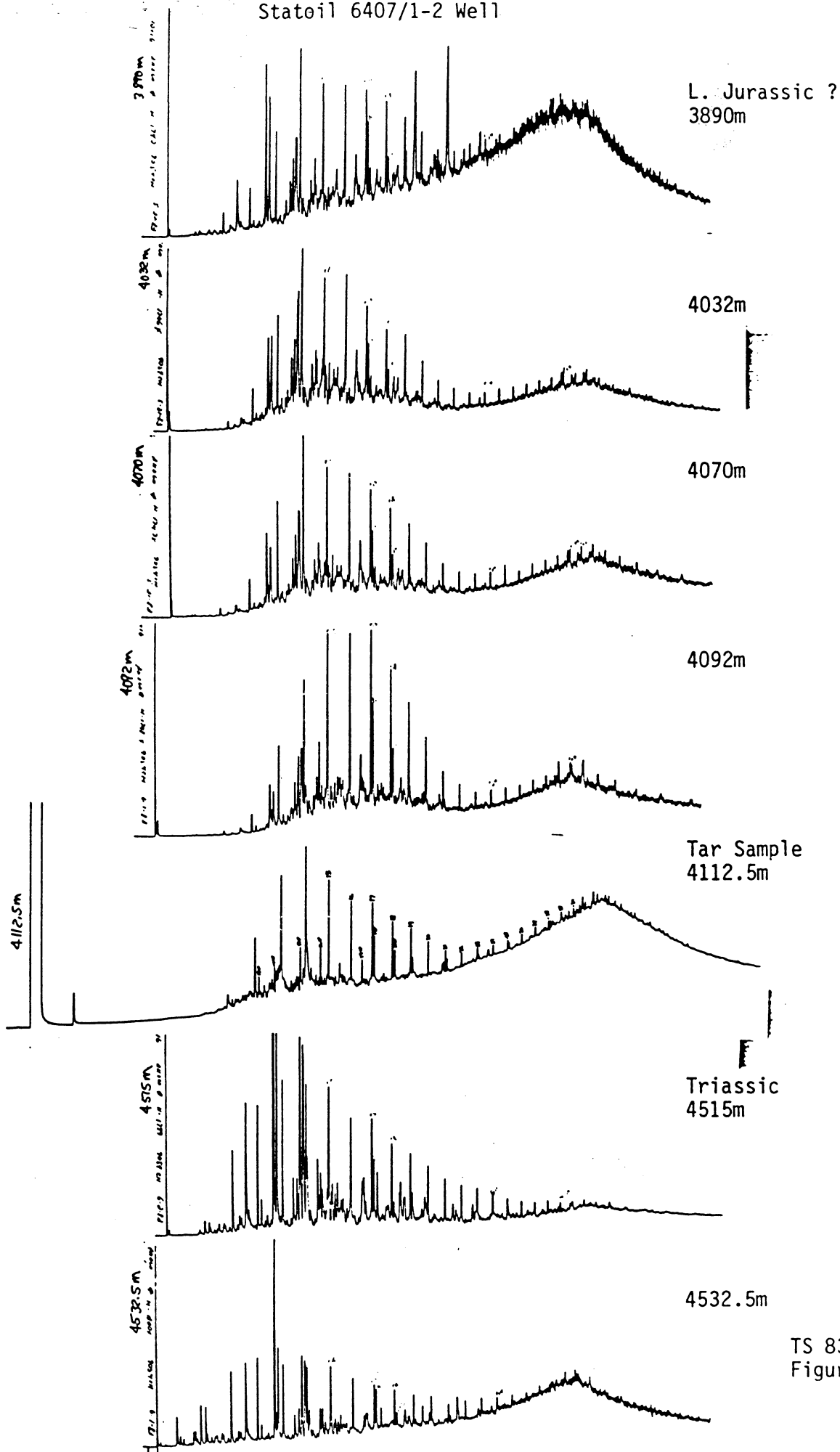
M. Jurassic  
3660m

Tar Sample  
3720m

L. Jurassic ?  
3855m

TS 839054CH  
Figure 5c

Total Extract Chromatograms  
Stateoil 6407/1-2 Well



TS 839054CH  
Figure 5d