

R. M. LORKOWSKI  
DENVER U.S.

83277ART0014

AMOCO PRODUCTION COMPANY  
RESEARCH CENTER

SOURCE ROCK EVALUATION

Ordovician and Pennsylvanian Cores, Six Kansas Wells

Geochemistry Services Group

R. J. Harwood

Technical Service 839327CS

Requested by R. M. Lorkowski

APC (USA) DENVER SOUTHERN

R.L. AMES (10-5-83)  
by R.J.H.  
RRJ

- Distribution:
- R. C. Brooke, Denver
  - J. S. Arbogast, Denver
  - G. W. Henderson, Denver
  - C. L. Conrad, Denver
  - R. M. Lorkowski, Denver
  - E. R. Bandurski
  - R. R. Thompson/E. R. Michaelis

Proprietary - for the exclusive use of Amoco Production Company and other wholly owned subsidiaries of Standard Oil Company (Indiana).

13

5-33w

#1 Raog

13-15-33w

OFFICE DENVER DISTRICT SOUTHERN  
 AUTHORIZED BY BOB LORKOWSKI  
 TECHNICAL SERVICE NUMBER 839327

SOURCE ROCK SUMMARY  
 TABLE 1  
 DATE 09/30/83

SAMPLE NUMBER	SMPL TYPE	FORMATION	AGE	LITHOLOGY	FIELD NO. OR DEPTH FEET TOP***BASE	PETROLEUM GENERATION CAPABILITY	KEROGEN TYPE (OIL/GAS)	STAGE OF DIAGENESIS
STATE KANSAS COUNTY RICE				WELL LOCATION SEC11-T20S-R8W				
WELL NAME SHELL				LEASE MAUGHLIN #1				
S-790	CR	VIOLA	ORD	SH	3221	3222	NON SOURCE	
STATE KANSAS COUNTY RICE				WELL LOCATION SEC33-T18S-R9W				
WELL NAME SHELL				LEASE PLOGG #1				
S-791	CR	SIMPSON	ORD	SH	3258	3259	NON SOURCE	
S-792	CR	SIMPSON	ORD	SH	3269	3270	NON SOURCE	
STATE KANSAS COUNTY ELLSWORTH				WELL LOCATION SEC18-T17S-R9W				
WELL NAME HOLLOW OIL				LEASE JANZEN #1				
S-793	CR	SIMPSON	ORD	SH	3248	3251	NON SOURCE	
STATE KANSAS COUNTY MCPHERSON				WELL LOCATION SEC16-T21S-R3W				
WELL NAME SHELL				LEASE KOEHN #4				
S-794	CR	SIMPSON	ORD	SH	3407	3412	EXCELLENT OIL	EARLY PEAK OIL
STATE KANSAS COUNTY NESS				WELL LOCATION SEC25-T20S-R26W				
WELL NAME MID CONTINENT				LEASE COLLINS #1				
S-795	CR	CHEROKEE	PENN	SH	4406	4407	EXCELLENT	NOT KNOWN PEAK GAS
S-796	CR	CHEROKEE	PENN	SH	4430	4431	MARGINAL	NOT KNOWN PEAK GAS
STATE KANSAS COUNTY LOGAN				WELL LOCATION SEC13-T15S-R33W				
WELL NAME ALMA OIL				LEASE WATCHHORN #1				
S-797	CR	MORROW	PENN	SH	4454	4455	NON SOURCE (GAS)	(EARLY PEAK GAS)

12:39 FRIDAY, SEPTEMBER 30, 1983

R839327 ROCKEVAL PYROLYSIS DATA

SAMPLE NO.	TOP OF ANALYZED INTERVAL	FORMATION	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
Shell No. 1 Maughlin S-790	3221	VIOLA	0.4	110	0.03	550	0.14		0.17
Shell No. 1 Ploog S-791	3258	SIMPSON	0.2	10	0.01	<10	<.01		1.00
S-792	3269	SIMPSON	0.2	<10	<.01	<10	<.01		.
Hollow No. 1 Janzen S-793	3248	SIMPSON	0.2	90	0.05	1030	0.51		0.08
Shell No. 4 Koehn S-794	3407	SIMPSON	18.2	4720	0.03	120780	0.66		0.04
Mid Continent No. 1 Collins S-795	4406	CHEROKEE	2.3	160	0.01	300	0.01		0.35
S-796	4430	CHEROKEE	0.6	40	0.01	70	0.01		0.36
Alma No. 1 Watchhorn S-797	4454	MORROW	2.6	130	0.01	720	0.03		0.15

Table 2

OFFICE DENVER DISTRICT SOUTHERN  
 TECHNICAL SERVICE NUMBER 839327

SOURCE ROCK DATA  
 TABLE 3.  
 DATE 09/30/83

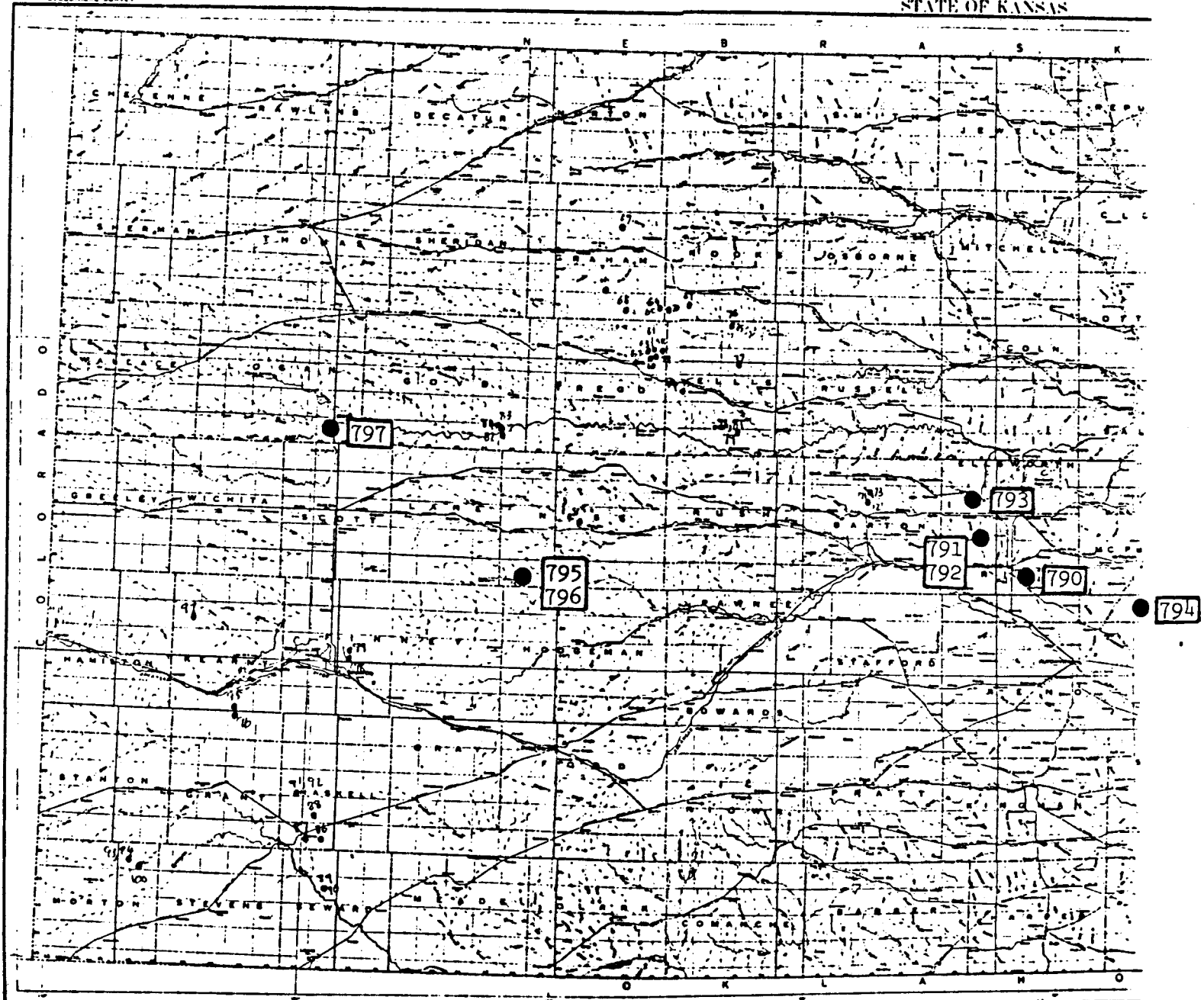
SAMPLE NUMBER	FIELD NO. OR DEPTH FEET		GEOLOGICAL AGE	INSOL RESID %	TOTAL ORG C WT %	BITUMEN		SAT HC		SAT HC / BITUMEN	BITUMEN / TL ORG C	REMARKS
	TOP	BOTTOM				BBL / AF	PPM	BBL / AF	PPM			
-----												
STATE KANSAS	COUNTY RICE	WELL LOCATION SEC11-T20S-R8W										
WELL NAME SHELL	LEASE MAUGHLIN #1											
S-790	3221	3222	ORD		.4							BBL/AF = (PPM X .0180) Saturate $\delta C^{13}$ ‰ Pristane/Phytane
-----												
STATE KANSAS	COUNTY RICE	WELL LOCATION SEC33-T18S-R9W										
WELL NAME SHELL	LEASE PLOOG #1											
S-791	3258	3259	ORD		.2							
S-792	3269	3270	ORD		.2							
-----												
STATE KANSAS	COUNTY ELLSWORTH	WELL LOCATION SEC18-T17S-R9W										
WELL NAME HOLLOW OIL	LEASE JANZEN #1											
S-793	3248	3251	ORD		.2							
-----												
STATE KANSAS	COUNTY MCPHERSON	WELL LOCATION SEC16-T21S-R3W										
WELL NAME SHELL	LEASE KOEHN #4											
S-794	3407	3412	ORD	18.2	90	5023	21	1159	.23	.03	-29.8	1.65
-----												
STATE KANSAS	COUNTY NESS	WELL LOCATION SEC25-T20S-R26W										
WELL NAME MID CONTINENT	LEASE COLLINS #1											
S-795	4406	4407	PENN	2.3	9	476	2	107	.23	.02		
S-796	4430	4431	PENN	.6	3	179				.03		
-----												
STATE KANSAS	COUNTY LOGAN	WELL LOCATION SEC13-T15S-R33W										
WELL NAME ALMA OIL	LEASE WATCHHORN #1											
S-797	4454	4455	PENN	2.6	5	264				.01		

OFFICE DENVER  
 TECHNICAL SERVICE NUMBER

DISTRICT SOUTHERN  
 839327

KEROGEN DATA  
 TABLE 4.  
 DATE 09/30/83

LAB SAMPLE NUMBER	FIELD NO. OR DEPTH FEET		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 KANSAS COUNTY RICE WELL NAME SHELL				WELL LOCATION SEC11-T20S-R8W LEASE MAUGHLIN #1								
S-790	3221	3222	ORD									
STATE KANSAS COUNTY RICE WELL NAME SHELL				WELL LOCATION SEC33-T18S-R9W LEASE PLOOG #1								
S-791	3258	3259	ORD									
S-792	3269	3270	ORD									
STATE KANSAS COUNTY ELLSWORTH WELL NAME HOLLOW OIL				WELL LOCATION SEC18-T17S-R9W LEASE JANZEN #1								
S-793	3248	3251	ORD									
STATE KANSAS COUNTY MCPHERSON WELL NAME SHELL				WELL LOCATION SEC16-T21S-R3W LEASE KOEHN #4								
S-794	3407	3412	ORD	81	9.7	8	.9	.07	1.44	STRUCTURED		
STATE KANSAS COUNTY NESS WELL NAME MID CONTINENT				WELL LOCATION SEC25-T20S-R26W LEASE COLLINS #1								
S-795	4406	4407	PENN	85	2.5	10	2.2	.08	.36	MIXED	1.54	
S-796	4430	4431	PENN	85	2.3	10	2.3	.08	.32	MIXED	1.56	
STATE KANSAS COUNTY LOGAN WELL NAME ALMA OIL				WELL LOCATION SEC13-T15S-R33W LEASE WATCHHORN #1								
S-797	4454	4455	PENN	83	2.8	12	1.8	.10	.41	STRUCTURED	4-5 .77	

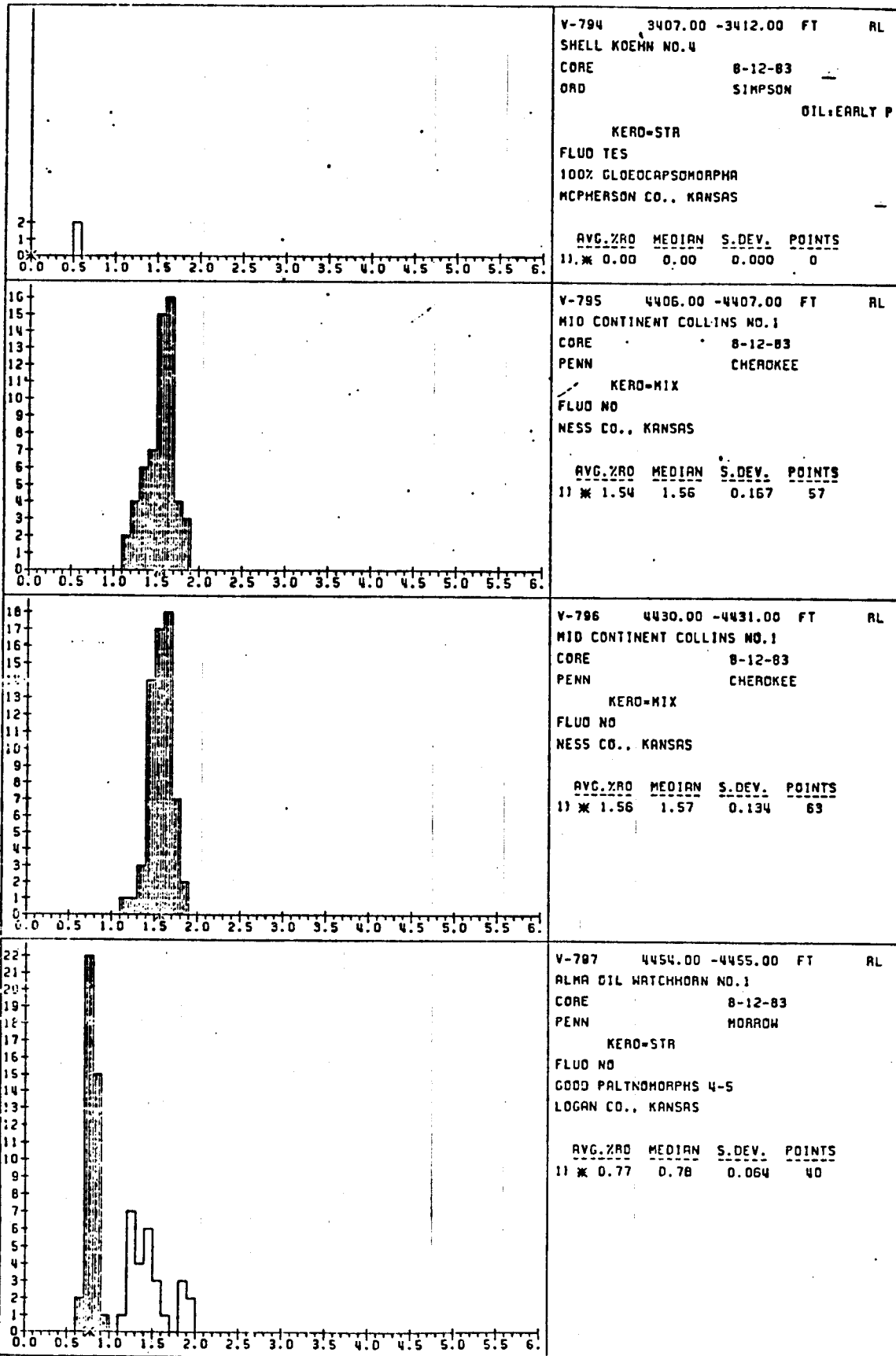


# VITRINITE REFLECTANCE ANALYSIS

VARIOUS LEASES, KANSAS.

LOCALITY 9327

TECH SVC NO: 9327



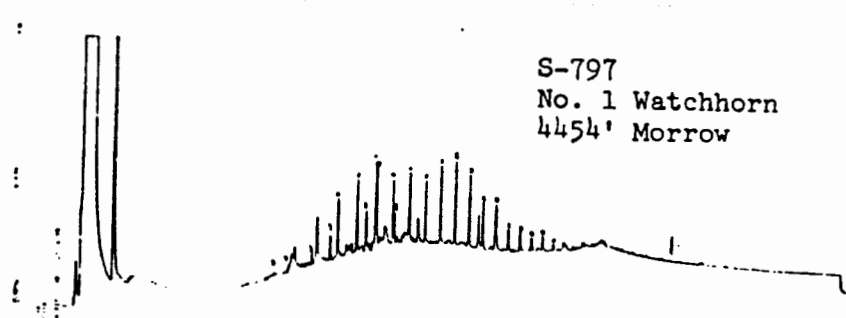
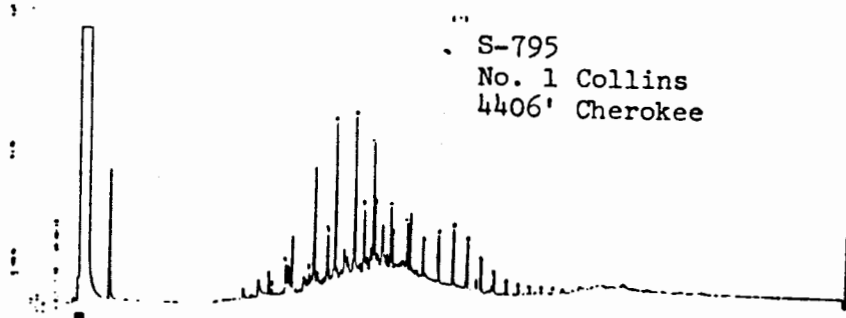
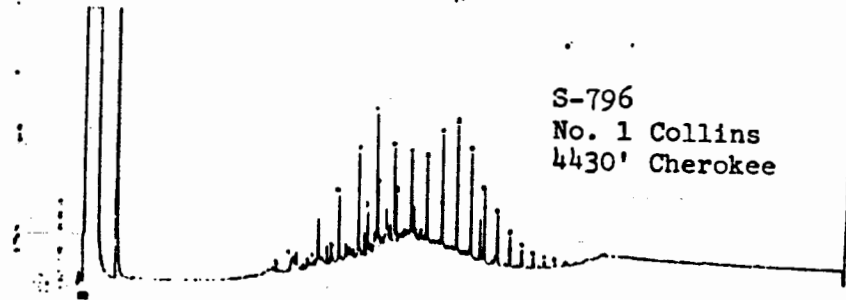
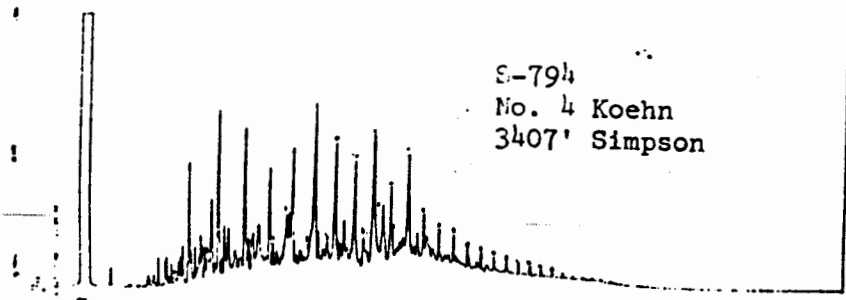
X-AXIS - PERCENT REFLECTANCE OF VITRINITE (%R0)

Y-AXIS - FREQUENCY

AVERAGE %R0 FOR POP. 1 - 0.97

Preparation - To Be Made in Confidence  
 Amoco Production Company

TS 839327CS  
 Figure 2



Whole Extract Chromatograms

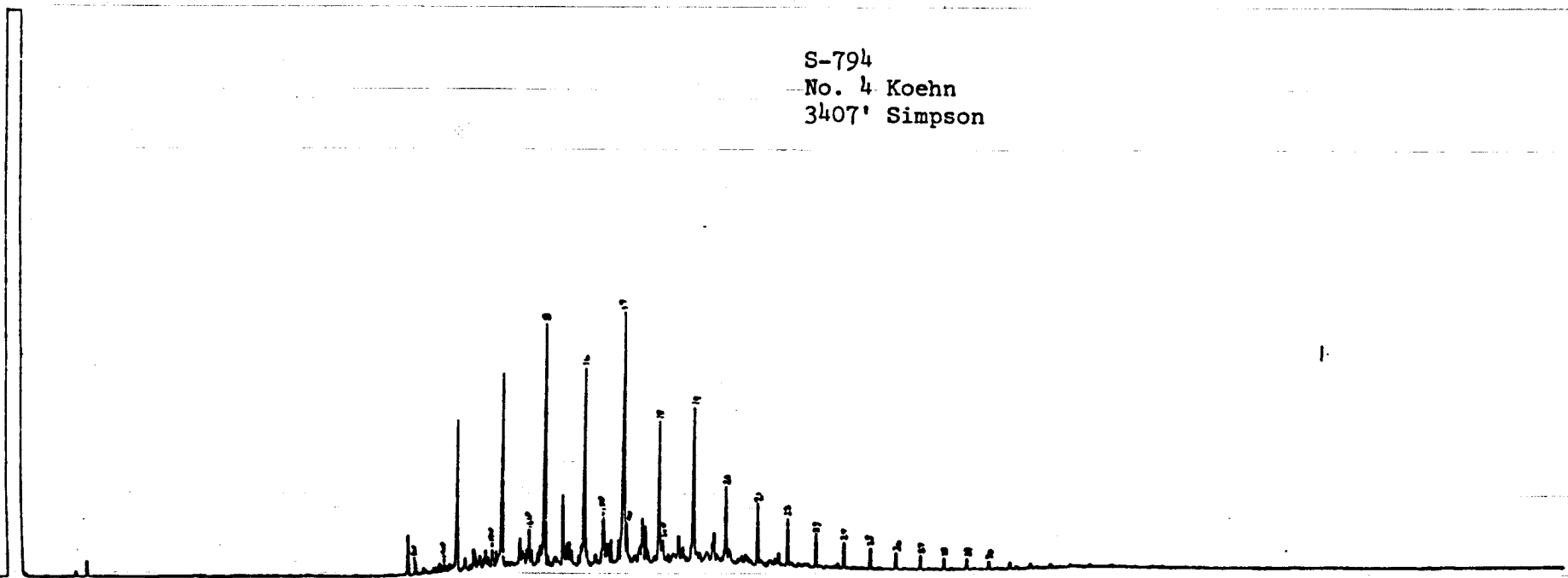
TS 8393270  
Figure 2

1000  
2000  
3000

170

S-794  
No. 4 Koehn  
3407' Simpson

TIME 21103107



Saturate Fraction Chromatogram

TS 839327CS