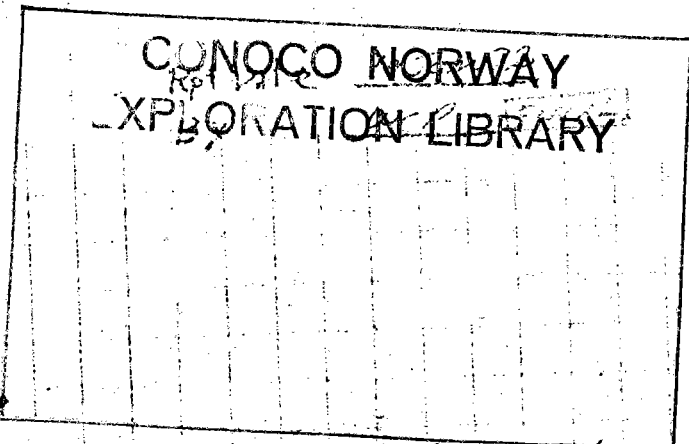


OPERATOR AMOSEAS  
 LSE 9/4 No. 1  
 LOCATION NORWAY



SOURCE ROCKS

Data above 3600' are suspect (unwashed mud which has paraffins in the 65 to 100% range - probably drilling mud).  
 Data below 3600 look OK with EPOC's in 7 to 28 percent range (normal for source rocks).

Five natural groups of Source Rock - Organic carbon (ignoring suspect data above 3600 feet) - see Figs 1A & 1B.

1. PALEOCENE (incl. Danian)	$\bar{x}$ 235 ppm	(190-343)
2. Maestrichtian - Coniacian	$\bar{x}$ 263 ppm	(141-320)
3. Albian	$\bar{x}$ 256 ppm	(221-277)
4. JURASSIC	$\bar{x}$ 653 ppm	(286-1171)
5. TRIASSIC	$\bar{x}$ 511 ppm	(187-1659)

PALEOTEMPERATURES

$T_g$  and  $T_z$  agree (Figure 2) but below 6400  $T_z$  is consistently cooler than  $T_g$  (averages about 35°F cooler). Paleotemperature of 256°F at 7300 ± 500 feet; 300°F at 11,100 ± 300 feet (Figure 3)

Clay data reflect drilling mud (not conglomeration - Table 3)

even  
 on  
 casing pt @ 3534 assoc.  
 w/ ch. in data

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914-1

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D-12

(RSP)  
Resist

EPOC = extract expressed  
as a percent of  
the organic carbon

REF. NO.	OPERATOR	LEASE	LOCATION	DEPTH	LITHOLOGY	Organic %	HC PPM	Asphalt %	Paraffin in HC%	EOM	OTHER
1	AMOSEAS	9/11-1	20021097 MERCURY P410C	1200-1240	54% mud cal	0.45	146	65	86	9.3%	
2	KN 1120-9720		1200 MISC.	1400-1480	"	1.20	771	79	44	32	
3	SWF (18)	7510-7877	1500 L.MISC	1600-1600	54% mud/sh cal	1.15	545	65	55	15	
4	WD 95	↑	2100 MISC	2000-2100	54% mud/sh cal	2.57	252	84	100	6.2	
5		run any that look like shale	2100 MISC	2400-2480	54% mud/sh cal	1.84	395	78	80	7.6	
6			↓	2800-2880	"	1.85	340	90	99	6.6	
7	36" 475		U.R.C.	3040-3120	57% mud/sh cal	2.60	1116	81	69	23	
8	20" 1097			3200-3280	"	2.78	970	99	62	13	
9	13 3/8 3564		3520 3521Z L.FOC.	3600-3640	54% mud/sh cal	1.16	254	98	80	9.8	
10			3603 MISC FOC.	3800-3860	"	0.72	227	66	80	9.4	
11	36" 1120		↓	3900-3940	54% mud/sh cal	0.62	348	63	80	15	235
12			4020 DRINK	4000-4060	"	0.63	199	62	83	10	
13			↓ DRK	4100-4160	54% mud/sh cal	0.92	190	95	80	8.4	
14			↓	4200-4260	N7 ssh ucal	0.71	229	64	78	7.0	
15			4090 U.R. MAR. L.	4300-4380	N7 ssh ucal	0.65	194	57	84	7.2	
16			↓	4500-4580	N8 ucal	0.43	311	54	91	16	
17			↓	4700-4730	"	0.31	213	34	51	10	
18			4935 ↓	4890-4940	"	0.18	161	33	100	13	263
19			5390 MISC	5200-5250	"	0.28	320	37	82	18	
20			5540 MISC	5500-5540	N7 Ls + sh ucal	0.49	261	54	97	12	
21			5470 MISC	5800-5840	N5 Ls + sh ucal	0.35	305	33	48	13	
22			5940 MISC	5950-5990	54% mud ucal	0.88	221	57	95	5.8	
23			↓	6000-6040	54% mud ucal	0.54	260	42	84	8.3	256
24			↓	6200-6230	54% mud ucal	0.55	266	42	64	8.4	
25			6410 U. JURASS Kimmeridgian	6340-6440	"	0.67	277	65	85	11	
26			↓	6800-6850	"	1.01	286	63	89	27	
27			7000 M. JURASS	7200-7290	N4 ssh ucal	0.95	197	60	46	7.5	653
28			7250 M. JURASS	7440-7490	54% ssh ucal	0.07	787	65	61	23	
29			7600 M. JURASS	7780-7820	54% ssh ucal	0.81	357	50	64	21	788

734 ppm

8100  
9.1

AMOSEAS 9/11 No. 1

655-47-1-13-71

Page 1 of 2

Assumed

REF. NO.	OPERATOR	LEASE	LOCATION	DEPTH	LITHOLOGY	Organic %	HC PPM	Asphalt %	Paraffin in HC%	EPOL EOM	OTHER
2778	AMOSEAS	9/4-1									
11-30		no logs below	793° TRIAS	8200-9610	54% 15 4 mm ch. silty	0.85	187	72	86	7.8	
31				8190-8240	54% 15 4 mm ch. silty	0.98	333	60	62	8.6	
32				8400-8640	54% 4	0.51	270	57	89	13	
33				9000-9030	4	0.91	1674	35	69	2.8	511
34				9300-9330	4	0.82	314	65	94	10	
35				9500-9540	4	0.75	354	53	68	10	
36			9642 T/SILT	9650-9650	54% 4	1.13	406	63	88	9.6	
37			silt	9670-9720	54% 4 mlt + silty ch.	1.95	671	54	73	12.5	554 ppm
											$\bar{x}_9 = 511$
											$\bar{x}_8 = 365$
								511			
								2			
								2899			
								167			
								2922			
								167			
								365			

TABLE 1B

AMOSEAS 9/4 1/10.1

OTCP=Outcrop  
 RN=Roughneck Cuttings  
 PE=Paper Envelope, Cuttings

☐ = Core  
 SWC=Sidewall Core

430  
 86  
 175°F  
 $\frac{3.5 \times 2.4}{\pi \times 0.25} \times 10^4$

GORC=(Spins/Gram Organic Carbon) x 10<sup>17</sup>

Sock Page-No.	S.R. Cross Ref.	Spl. Type	QUALITY	LITHOLOGY <i>See Source RK Sheet</i>	DEPTH	% Org. C. off. HF	% Org. C. bef. HF	"g" (Gauss)	W (Gauss)	Row Spin Density	Ng (GORC Units)	T <sup>g</sup> (°F)	REMARKS (T <sup>g</sup> , Geol. Age, Unusual Features)		
													T <sup>g</sup>	Geol. Age	Unusual Features
84-1	118-1	211			1200-1240'	3.44 2.56	1.45	34.9	5.1	2.4x10 <sup>16</sup>	1.2	219	RCIF	Mesoz	175
84-2	118-2				1400-1480	8.84	1.20	35.7	5.8	2.0x10 <sup>16</sup>	2.3	232	125	TNg	183
-3	3				1600-1700	8.35	1.15	36.1	5.3	2.0x10 <sup>16</sup>	2.3	193	145		177
-4	4				2020-2100	12.04	2.59	39.3	4.9	7.0x10 <sup>15</sup>	5.6	125	245		160
-5	5	✓			2400-2480	5.82 6.02	1.84	38.7	5.2	2.0x10 <sup>16</sup>	3.4	138	182		153
-6	6				2800-2880	7.13 7.57	1.85	38.8	5.1	2.0x10 <sup>16</sup>	2.6	136	158		143
-7	7				3040-3120	10.10	2.60	37.8	5.5	3.8x10 <sup>16</sup>	3.2	157	174		164
-8	8				3200-3280	12.33	2.78	39.0	5.0	5.0x10 <sup>16</sup>	5.1	132	212		151
-9	9				3600-3680	7.48	1.16	38.4	5.3	1.2x10 <sup>16</sup>	2.0	145	184	(100)	141
-10	10	✓			3800-3880	3.73	0.72	34.7	5.8	1.2x10 <sup>16</sup>	3.2	223	176	(212)	237
-11	11				3900-3940	3.72	0.62	34.1	5.3	2.2x10 <sup>16</sup>	5.9	236	238	(100)	235
-12	12				4000-4060	6.71 6.45	0.63	37.9	5.5	5.2x10 <sup>16</sup>	8.1	219	262	(245)	243
-13	13				4100-4160	7.33	0.92	35.3	6.0	5.5x10 <sup>16</sup>	4.7	217	272	(232)	215
-14	14				4200-4260	11.30	0.71	35.1	5.6	4.0x10 <sup>16</sup>	3.5	215	197	(218)	209
-15	15	✓			4300-4380	5.68	0.65	35.0	5.7	3.6x10 <sup>16</sup>	5.4	217	188	(252)	207
-16	16				4500-4550	7.06	0.43	34.7	5.2	3.0x10 <sup>16</sup>	4.3	223	(204)	210	213
-17	17				4700-4730	11.30	0.31	35.3	5.3	4.2x10 <sup>16</sup>	3.7	210	(190)	218	213
-18	18				4880-4940	12.43	0.18	35.5	5.3	2.2x10 <sup>16</sup>	2.0	206	(134)	215	212
-19	19				5200-5250	7.58	0.28	35.5	5.2	2.7x10 <sup>16</sup>	3.5	206	(185)	213	210
-20	20	✓			5500-5540	4.88 4.77	0.44	35.3	5.9	1.6x10 <sup>16</sup>	3.3	210		214	211
-21	21				5800-5840	5.89	0.35	34.6	5.5	2.2x10 <sup>16</sup>	4.1	225		238	229
-22	22				5950-5990	5.34	0.88	34.4	5.7	3.4x10 <sup>16</sup>	1.43	230		248	246
-23	23				6000-6040	4.13	0.54	35.7	5.7	5.2x10 <sup>16</sup>	12.7	202	(303)	268	224
-24	24				6200-6230	3.08	0.55	33.5	5.7	3.0x10 <sup>16</sup>	10.0	249		252	252
-25	25	✓			6300-6440	5.27	0.69	35.0	5.8	3.0x10 <sup>16</sup>	6.0	217		242	225
-26	26				6800-6850	5.15 6.72	1.01	32.8	4.5	5.9x10 <sup>16</sup>	11.1	264	(292)	260	263
-27	27				7200-7240	26.89	3.95	33.6	5.7	11.2x10 <sup>16</sup>	5.4	247		233	241
-28	28				7440-7490	21.20	3.09	22.9	5.5	15.1x10 <sup>16</sup>	6.6	262		258	257
-29	29				7700-7820	4.51	0.81	30.1	5.5	2.4x10 <sup>16</sup>	5.4	257	(224)	237	251
-30	30	✓			7900-7940	3.10 3.10	0.85	33.4	5.2	2.0x10 <sup>16</sup>	6.0	251	(237)	242	243

ESR of KEROGEN SUMMARY SHEET  
 Operator: JMO Seal Lease 9/11-1  
 Date: August 31/1971  
 Charge: 655-1-11  
 Len: 11/11/11  
 Page: 1 of 1  
 Book: 2 of 2

$T_g = 2T_g + 1Ng$



AMOSEAS 9/11

North Sea

719019-39 1546

2878-118-7, 13, 19, 24, 27, 29, 32, 34

DEPTH OR No.	CLAY PERCENTAGES					SR	COMMENTS
	C	K	I	M	ML		
3040-130		3	23	30	44	∞	poss. micaelite
4100-60	6	14	37	0	43	∞	Muscovite(?)
5200-50		8	36	32	24	∞	
6200-30	9	22	47	0	22	1.19	Muscovite(?)
7200-90	7	13	48	0	32	1.20	Muscovite(?)
7900-40	5	15	35	43	2	∞	disturbed Albite
8600-40	28	0	49	0	23	1.47	"
9300-30	23	0	45	0	23	1.37	" "

TABLE 3

# REPRESENTATIVE SHALE CURVES OF EXTRACTABLE HYDROCARBONS VS TOTAL ORGANIC CARBON

AMOSEAS  
9/4-1  
NORWAY

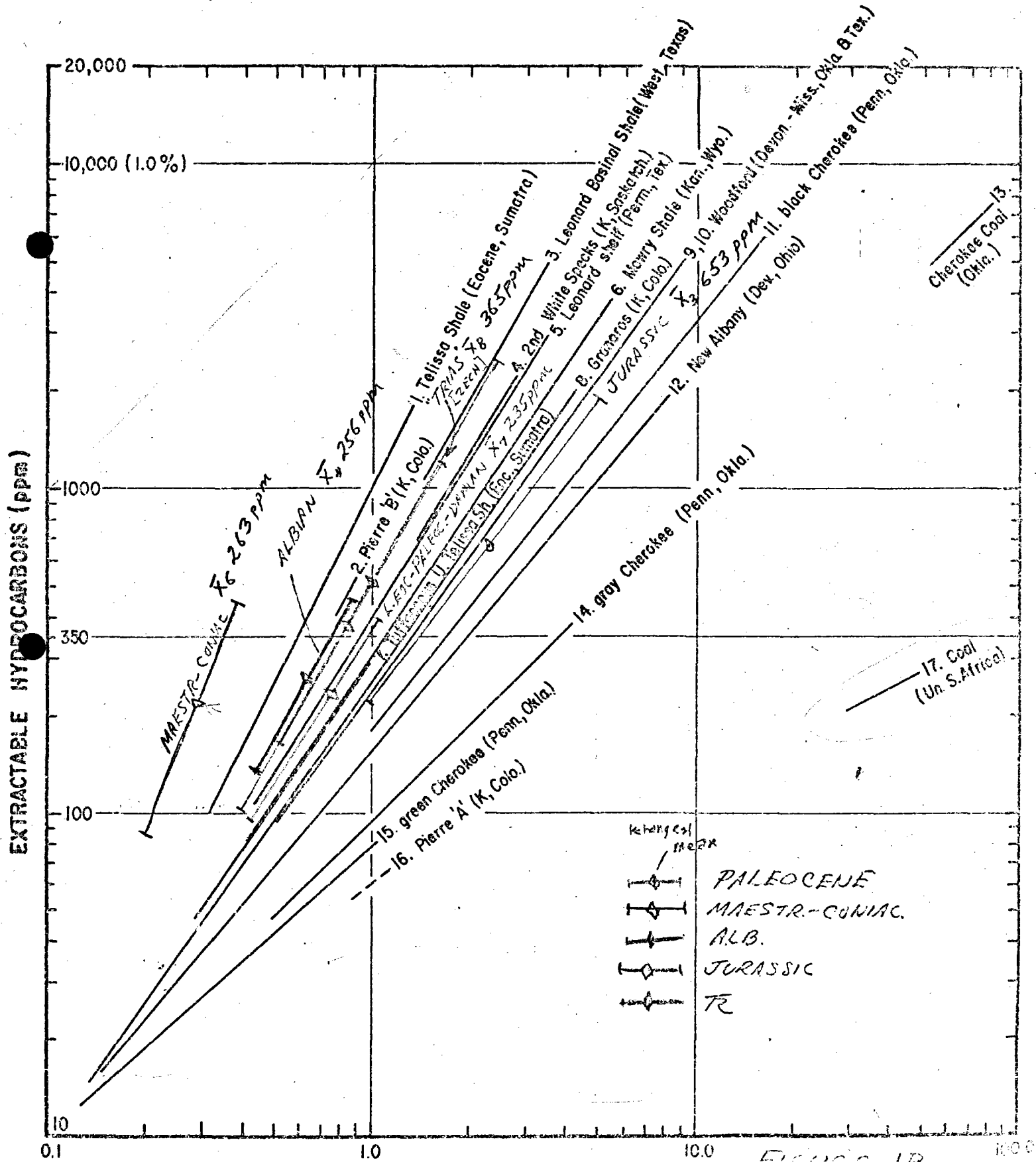
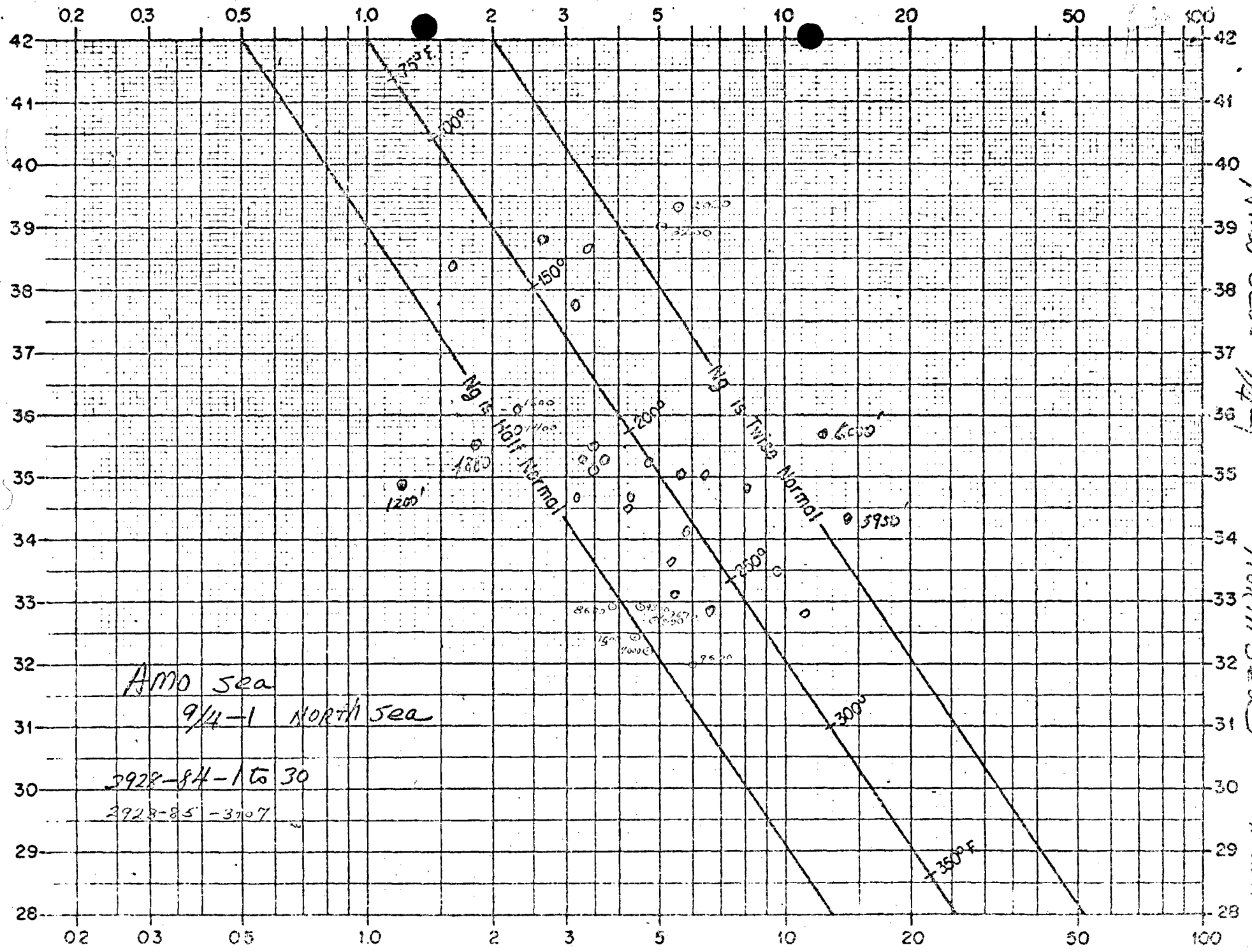


TABLE 2

$\delta^{13}C (PDB - 2.0000) \times 10^4$



AMO sea  
9/4-1 NORTH sea

2928-84-1 to 30  
2928-85-3 to 7

SPIN DENSITY (Spins/Gram Organic Carbon) x 10<sup>17</sup>

AMO SEA  
NORTH SEA





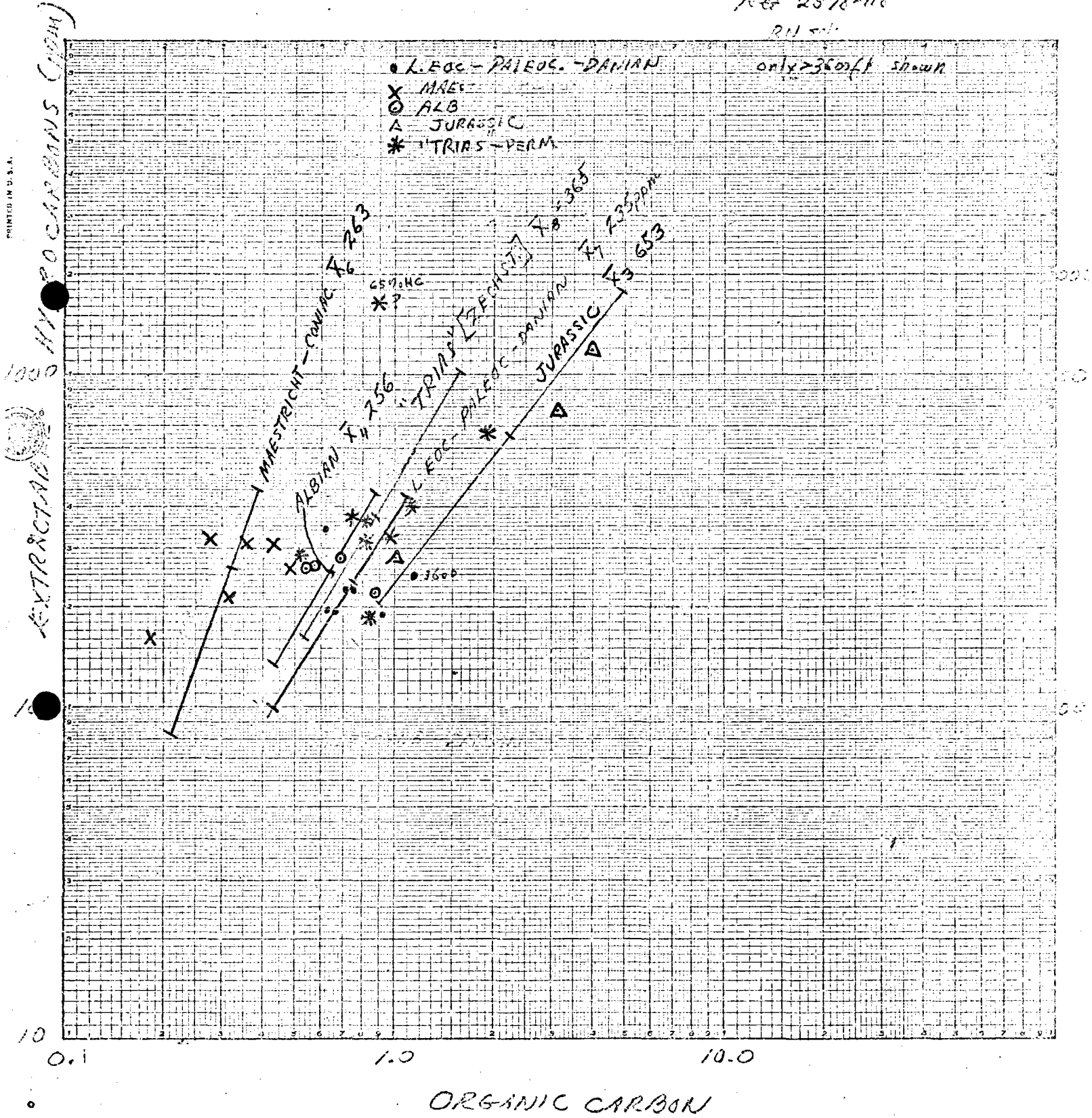
AMOSEAS  
9/11-1  
NORWAY

Ref 2878-118

211 501

only > 3600ft shown

- L. EOC - PALEOC. - DANIAN
- X MAESTR.
- ALB
- △ JURASSIC
- \* TRIAS - PERM.



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120  
50