

WA•7/11-03•6(2)

SYNTHETIC SEISMOGRAM REPORT

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COD 7/11-3X

SYNTHETIC SEISMOGRAM REPORT

6

E-A Seismic Stratigraphy Section



COD 7/11-3X

SYNTHETIC SEISMOGRAM REPORT

6

By
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FEBRUARY 26, 1981

APPROVED BY:

R.P. Mott

R.P. MOTT

SYNTHETIC SEISMOGRAM REPORT

COD 7/11-3X

WELL: Cod 7/11-3X, Norway, North Sea.

CONCLUSIONS: The tie of the synthetic seismogram, levelled, minimum phase, negative polarity, to sp 123 on PGE 7/11-P, is considered to be very good in the prospective Paleocene interval. The Upper Tertiary levels show a poorer tie as a result of poorer hole conditions, a lack of density data and the fact that the basic wavelet was derived for the Paleocene interval.

WELL INFORMATION: Location -

57° 02' 58.8" N
02° 28' 18.8" E

212 meters west-southwest of sp 352, line PGE 7/11-E.
62 meters north-northwest of sp 123, line PGE 7/11-P.

KB: 87 ft.

TD: 10992 ft. RKB

Date Spudded - 17 October 1968

Date Completed - 7 January 1969

LOG INTEGRATION: Well Logs used -

Sonic Log - 3400-10986 ft. RKB

Checkshot Survey

Density Data Synthesized

Log Editing:

Sonic Log -

<u>Skip Zones (RKB)</u>	<u>Replacement Value</u>	<u>Problem</u>
0 - 87 ft.	0 μ sec/ft.	Above seismic datum
87 - 3400 ft.	165 μ sec/ft. (linear interpolation 162 - 172).	Over-sized hole
5138 - 5142	161 μ sec/ft.	Cycle skipping
5228 - 5234	162 μ sec/ft.	Cycle skipping

CHECKSHOTS:

Original Checkshots:

<u>Depth (RKB)</u>	<u>One-way time (RMSL)</u>
1500 ft.	0.249 sec. Above first sonic log value.
3000	0.480 Above first sonic log value.
6000	0.955
7500	1.184
9000	1.399
9956	1.529
10115	1.543
10491	1.575
10690 ft.	1.594 sec.

Checkshots for Sonic Log Integration:

<u>Depth (RKB)</u>	<u>One-way time (RMSL)</u>
87 ft.	0.000 sec.
6000	0.955
7500	1.184
9000	1.399
9956	1.529
10690	1.594

COMMENT:

Check shot values utilized in Sonic-Log Integration were chosen to simulate trends in time corrections on the basis of lithology or logging runs. The resulting cumulative time correction yielded time values which were within ± 2 ms of times achieved through integration using all checkshots.

TIME CORRECTION PLOTS:

Differential time between integrated sonic (uncorrected) and the Checkshots.

$$t = T_L - T_{CS}$$

t = time differential

T_L = time from uncorrected sonic

T_{CS} = time of checkshot

Depths (RKB)

Plot 1 - Time corrections cumulative and interval for all checkshots.

Plot 2 - Time corrections cumulative and interval for final checkshots chosen for sonic log integration.

Table of One-way travel time (RMSL) vs. Depth (RKB) - one ms sample rate.

Table of One-way travel time (RMSL) vs. Interval Velocity - one ms. sample rate.

DISPLAYS:

Sonic Log -

Integrated Sonic Log.

Synthetic Seismograms (primary events only) -

True Amplitude, zero-phase wavelet having amplitude spectrum 5/10/30/40 Hz. bandpass, positive polarity.

True Amplitude, zero-phase wavelet, having amplitude spectrum 5/10/30/40 Hz. bandpass, negative polarity.

Levelled (1000 ms window), zero-phase wavelet having amplitude spectrum 5/10/30/40 Hz. bandpass, positive polarity.

Levelled (1000 ms window), zero-phase wavelet having amplitude spectrum 5/10/30/40 Hz. bandpass, negative polarity.

Levelled (1000 ms window), minimum phase wavelet, 100 point, negative polarity, having amplitude spectrum from Line PGE 7/11-P.

Levelled (1000 ms window), minimum phase wavelet, 100 point, positive polarity, having amplitude spectrum from Line PGE 7/11-P.

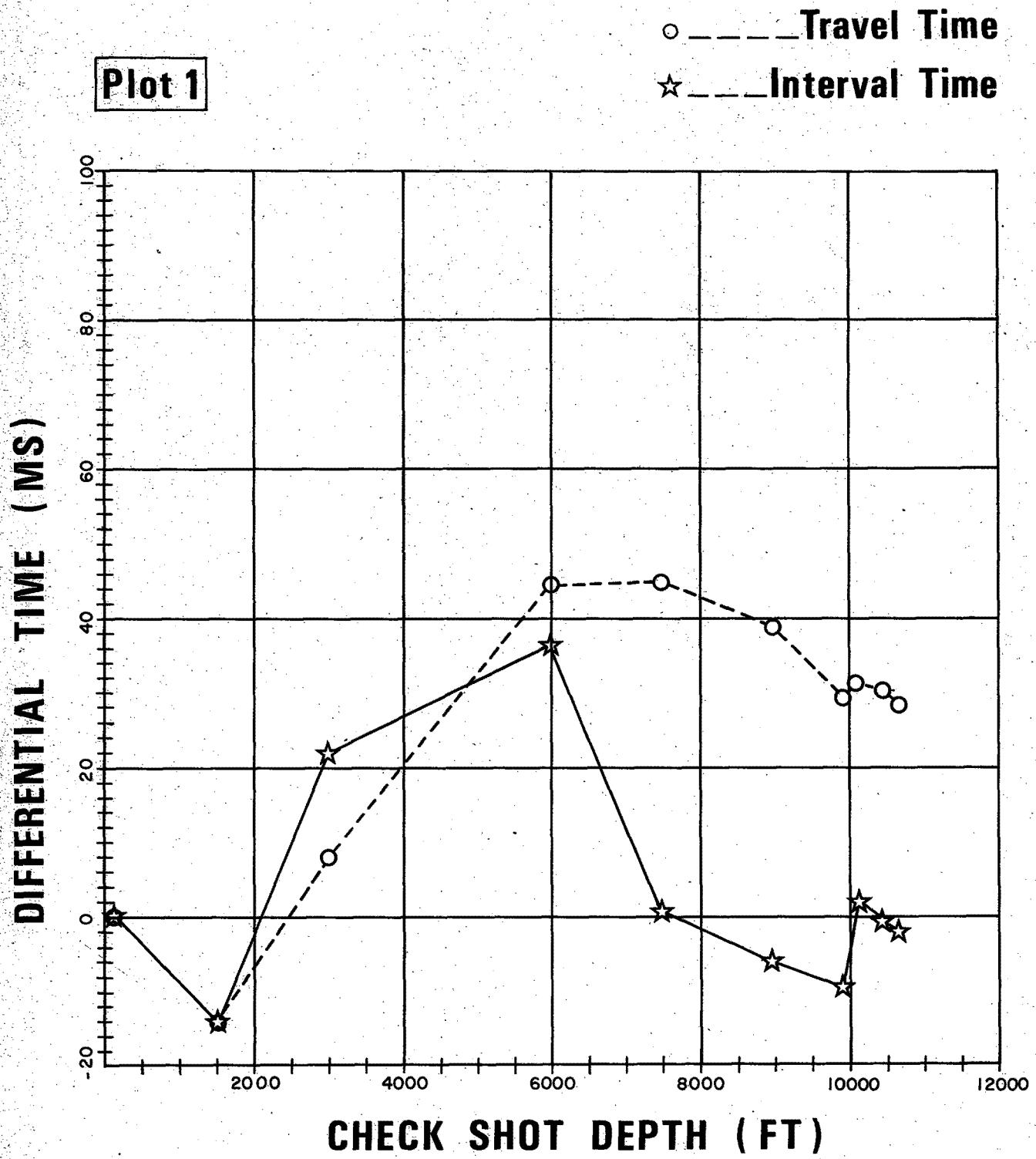
Seismic line PGE 7/11-P, equalised migration, with minimum phase, negative polarity synthetic seismogram inserted at approximate location of 7/11-3X well tie.

COMMENTS:

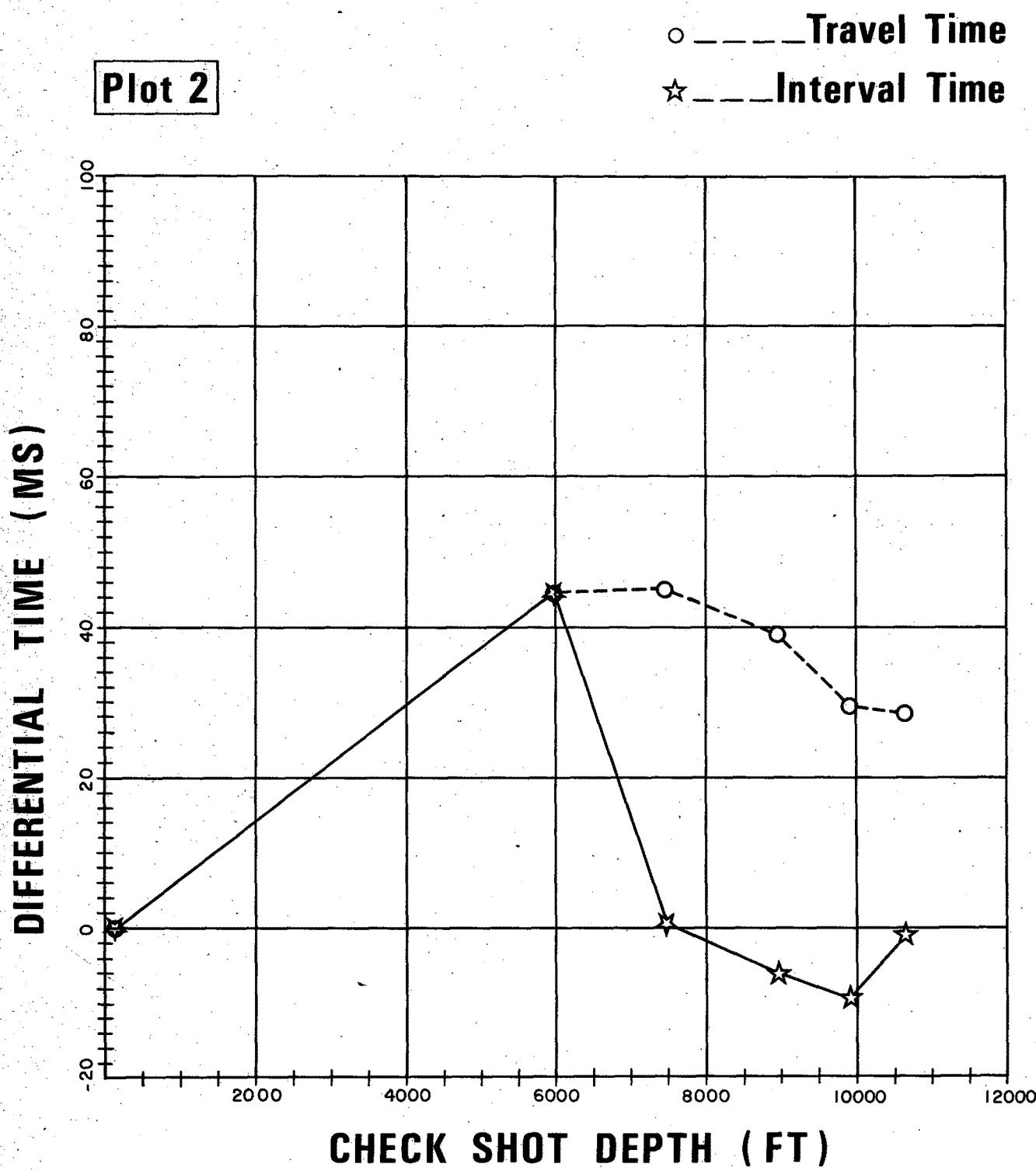
The construction of the synthetic seismogram for the 7/11-3X well was simplified by the relatively good condition of the original sonic log, particularly in the Paleocene interval. However, no density data was used since it was available on magnetic tape for the Paleocene interval only.

In order to tie the minimum phase, negative synthetic seismogram with seismic line PGE 7/11-P, 20 ms must be subtracted from the seismogram. This is considered reasonable. As in the area of the A5 well, the Upper Paleocene and, in particular, the overlying Tertiary section in the area of the 3X well has few persistent and strong reflectors. The lack of lateral continuity of reflectors represents the rapid lateral and vertical facies changes comprising the Upper Paleocene turbidite fan depositional sequence and the overlying Tertiary clastic sequences. As a consequence of this, high quality ties within the Upper Tertiary are unlikely.

7/11-3x All Checkshots



7/11 - 3x Final Checkshots for Integration



LINEAR CORRECTION FACTORS

CHECK SHOT DEPTH	FACTOR
87.	-1.0000
6000.	-.0446
7500.	-.0018
9000.	.0295
9956.	.0792
10690.	.0174

DEPTH (FT) VS INTEGRATED TIME

TIME SAMPLED AT 1.0 MS (ONE WAY)

PRINT WINDOW .0 TO 1619.0 MS

TIMES RELATIVE TO MSL. DEPTHS RELATIVE TO KB.

TIME	DEPTH								
.0	.0	1.0	93.3	2.0	99.6	3.0	105.9	4.0	112.2
5.0	118.5	6.0	124.7	7.0	131.0	8.0	137.3	9.0	143.6
10.0	149.9	11.0	156.2	12.0	162.5	13.0	168.8	14.0	175.1
15.0	181.4	16.0	187.7	17.0	193.9	18.0	200.2	19.0	206.5
20.0	212.8	21.0	219.1	22.0	225.4	23.0	231.7	24.0	238.0
25.0	244.3	26.0	250.6	27.0	256.9	28.0	263.2	29.0	269.5
30.0	275.7	31.0	282.0	32.0	288.3	33.0	294.6	34.0	300.9
35.0	307.2	36.0	313.5	37.0	319.8	38.0	326.1	39.0	332.4
40.0	338.7	41.0	345.0	42.0	351.3	43.0	357.6	44.0	363.8
45.0	370.1	46.0	376.4	47.0	382.7	48.0	389.0	49.0	395.3
50.0	401.6	51.0	407.9	52.0	414.2	53.0	420.5	54.0	426.8
55.0	433.1	56.0	439.4	57.0	445.7	58.0	452.0	59.0	458.3
60.0	464.5	61.0	470.8	62.0	477.1	63.0	483.4	64.0	489.7
65.0	496.0	66.0	502.3	67.0	508.6	68.0	514.9	69.0	521.2
70.0	527.5	71.0	533.8	72.0	540.1	73.0	546.4	74.0	552.7
75.0	559.0	76.0	565.3	77.0	571.6	78.0	577.9	79.0	584.2
80.0	590.5	81.0	596.7	82.0	603.0	83.0	609.3	84.0	615.6
85.0	621.9	86.0	628.2	87.0	634.5	88.0	640.8	89.0	647.1
90.0	653.4	91.0	659.7	92.0	666.0	93.0	672.3	94.0	678.6
95.0	684.9	96.0	691.2	97.0	697.5	98.0	703.8	99.0	710.1
100.0	716.4	101.0	722.7	102.0	729.0	103.0	735.3	104.0	741.6
105.0	747.9	106.0	754.2	107.0	760.5	108.0	766.8	109.0	773.1
110.0	779.4	111.0	785.7	112.0	792.0	113.0	798.2	114.0	804.5
115.0	810.8	116.0	817.1	117.0	823.4	118.0	829.7	119.0	836.0
120.0	842.3	121.0	848.6	122.0	854.9	123.0	861.2	124.0	867.5
125.0	873.8	126.0	880.1	127.0	886.4	128.0	892.7	129.0	899.0
130.0	905.3	131.0	911.6	132.0	917.9	133.0	924.2	134.0	930.5
135.0	936.8	136.0	943.1	137.0	949.4	138.0	955.7	139.0	962.0
140.0	968.3	141.0	974.6	142.0	980.9	143.0	987.2	144.0	993.5
145.0	999.8	146.0	1006.1	147.0	1012.4	148.0	1018.7	149.0	1025.0
150.0	1031.3	151.0	1037.6	152.0	1043.9	153.0	1050.2	154.0	1056.5
155.0	1062.8	156.0	1069.1	157.0	1075.4	158.0	1081.7	159.0	1088.0
160.0	1094.3	161.0	1100.6	162.0	1106.9	163.0	1113.2	164.0	1119.5
165.0	1125.8	166.0	1132.1	167.0	1138.4	168.0	1144.7	169.0	1151.0
170.0	1157.3	171.0	1163.6	172.0	1170.0	173.0	1176.3	174.0	1182.6
175.0	1188.9	176.0	1195.2	177.0	1201.5	178.0	1207.8	179.0	1214.1
180.0	1220.4	181.0	1226.7	182.0	1233.0	183.0	1239.3	184.0	1245.6
185.0	1251.9	186.0	1258.2	187.0	1264.5	188.0	1270.8	189.0	1277.1
190.0	1283.4	191.0	1289.7	192.0	1296.0	193.0	1302.3	194.0	1308.6
195.0	1314.9	196.0	1321.2	197.0	1327.5	198.0	1333.8	199.0	1340.1
200.0	1346.4	201.0	1352.7	202.0	1359.0	203.0	1365.3	204.0	1371.6
205.0	1378.0	206.0	1384.3	207.0	1390.6	208.0	1396.9	209.0	1403.2
210.0	1409.5	211.0	1415.8	212.0	1422.1	213.0	1428.4	214.0	1434.7
215.0	1441.0	216.0	1447.3	217.0	1453.6	218.0	1459.9	219.0	1466.2
220.0	1472.5	221.0	1478.8	222.0	1485.1	223.0	1491.4	224.0	1497.7
225.0	1504.1	226.0	1510.4	227.0	1516.7	228.0	1523.0	229.0	1529.3
230.0	1535.6	231.0	1541.9	232.0	1548.2	233.0	1554.5	234.0	1560.8
235.0	1567.1	236.0	1573.4	237.0	1579.6	238.0	1585.9	239.0	1592.2
240.0	1598.5	241.0	1604.8	242.0	1611.1	243.0	1617.4	244.0	1623.7

1351.0	7185.5	1352.0	7302.7	1353.0	7294.9	1354.0	7732.4	1355.0	7291.0
1356.0	7402.3	1357.0	7328.1	1358.0	7187.5	1359.0	7224.6	1360.0	7339.8
1361.0	7316.4	1362.0	7289.1	1363.0	7296.9	1364.0	7296.9	1365.0	7294.9
1366.0	7324.2	1367.0	7382.8	1368.0	7125.0	1369.0	7310.5	1370.0	7418.0
1371.0	7318.4	1372.0	7408.2	1373.0	7435.5	1374.0	7355.5	1375.0	7478.5
1376.0	7449.2	1377.0	7416.0	1378.0	7410.2	1379.0	7595.7	1380.0	7375.0
1381.0	7503.9	1382.0	7511.7	1383.0	7548.8	1384.0	7414.1	1385.0	7587.9
1386.0	7486.3	1387.0	7464.8	1388.0	7447.3	1389.0	7662.1	1390.0	7441.4
1391.0	7179.7	1392.0	7373.0	1393.0	7498.0	1394.0	7597.7	1395.0	7527.3
1396.0	7539.1	1397.0	7259.8	1398.0	7306.6	1399.0	7334.0	1400.0	6939.5
1401.0	6929.7	1402.0	6880.9	1403.0	7078.1	1404.0	7291.0	1405.0	6931.6
1406.0	7630.9	1407.0	7232.4	1408.0	6949.2	1409.0	7316.4	1410.0	7378.9
1411.0	7705.1	1412.0	7140.6	1413.0	6919.9	1414.0	7093.7	1415.0	7359.4
1416.0	7021.5	1417.0	7250.0	1418.0	7400.4	1419.0	6939.5	1420.0	6884.8
1421.0	6988.3	1422.0	7324.2	1423.0	7011.7	1424.0	7183.6	1425.0	6986.3
1426.0	7281.2	1427.0	6877.0	1428.0	6828.1	1429.0	6918.0	1430.0	6906.2
1431.0	6988.3	1432.0	7634.8	1433.0	7152.3	1434.0	7109.4	1435.0	7068.4
1436.0	7371.1	1437.0	6890.6	1438.0	7154.3	1439.0	7164.1	1440.0	7316.4
1441.0	7195.3	1442.0	7312.5	1443.0	7310.5	1444.0	7332.0	1445.0	7134.8
1446.0	7191.4	1447.0	7025.4	1448.0	6908.2	1449.0	7023.4	1450.0	7072.3
1451.0	6976.6	1452.0	7089.8	1453.0	7533.2	1454.0	6972.7	1455.0	6875.0
1456.0	6994.1	1457.0	7224.6	1458.0	7162.1	1459.0	6869.1	1460.0	7255.9
1461.0	7679.7	1462.0	7070.3	1463.0	7125.0	1464.0	7332.0	1465.0	7500.0
1466.0	7074.2	1467.0	7039.1	1468.0	7261.7	1469.0	7214.8	1470.0	7179.7
1471.0	7111.3	1472.0	6859.4	1473.0	7486.3	1474.0	7164.1	1475.0	7712.9
1476.0	7265.6	1477.0	7140.6	1478.0	7097.7	1479.0	7078.1	1480.0	6996.1
1481.0	7103.5	1482.0	7377.0	1483.0	7462.9	1484.0	7427.7	1485.0	7287.1
1486.0	7439.5	1487.0	7212.9	1488.0	7439.5	1489.0	7328.1	1490.0	7238.3
1491.0	7257.8	1492.0	7287.1	1493.0	7367.2	1494.0	7435.5	1495.0	7128.9
1496.0	7212.9	1497.0	7544.9	1498.0	7687.5	1499.0	7863.3	1500.0	7261.7
1501.0	7503.9	1502.0	7482.4	1503.0	8068.4	1504.0	7814.5	1505.0	7302.7
1506.0	7906.2	1507.0	8519.5	1508.0	8660.2	1509.0	8359.4	1510.0	7763.7
1511.0	7877.0	1512.0	7456.1	1513.0	7539.1	1514.0	7494.1	1515.0	8113.3
1516.0	7783.2	1517.0	8418.0	1518.0	8345.7	1519.0	7822.3	1520.0	8314.5
1521.0	7742.2	1522.0	7474.6	1523.0	8548.8	1524.0	7679.7	1525.0	7716.8
1526.0	7550.8	1527.0	7584.0	1528.0	7925.8	1529.0	8556.6	1530.0	9015.6
1531.0	10585.9	1532.0	10837.9	1533.0	10076.2	1534.0	9113.3	1535.0	9181.6
1536.0	9878.9	1537.0	9740.2	1538.0	9939.5	1539.0	10052.7	1540.0	9929.7
1541.0	9869.1	1542.0	10093.7	1543.0	10054.7	1544.0	10062.5	1545.0	9496.1
1546.0	9156.2	1547.0	9978.5	1548.0	12025.4	1549.0	10716.8	1550.0	11839.8
1551.0	11783.2	1552.0	11599.6	1553.0	11894.5	1554.0	11543.0	1555.0	11496.1
1556.0	11878.9	1557.0	11925.8	1558.0	12087.9	1559.0	12019.5	1560.0	12441.4
1561.0	12498.0	1562.0	12232.4	1563.0	12806.6	1564.0	12259.8	1565.0	12486.3
1566.0	12173.8	1567.0	12277.3	1568.0	12199.2	1569.0	12199.2	1570.0	12791.0
1571.0	12580.1	1572.0	12472.7	1573.0	11759.8	1574.0	11748.0	1575.0	11648.4
1576.0	12462.9	1577.0	11414.1	1578.0	12656.2	1579.0	12087.9	1580.0	11261.7
1581.0	11791.0	1582.0	11486.3	1583.0	11160.2	1584.0	11632.8	1585.0	11115.2
1586.0	11736.3	1587.0	11355.5	1588.0	11490.2	1589.0	11783.2	1590.0	12070.3
1591.0	11041.0	1592.0	10390.6	1593.0	11369.1	1594.0	11255.9	1595.0	10103.5
1596.0	9732.4	1597.0	9615.2	1598.0	9771.5	1599.0	10521.5	1600.0	10855.5
1601.0	11166.0	1602.0	10373.0	1603.0	10804.7	1604.0	11449.2	1605.0	11888.7
1606.0	10531.2	1607.0	10939.5	1608.0	11753.9	1609.0	9943.4	1610.0	10628.9
1611.0	11273.4	1612.0	11617.2	1613.0	12656.2	1614.0	11933.6	1615.0	13628.9
1616.0	11378.9	1617.0	13847.7	1618.0	14902.3	1619.0	15548.8		

TOTAL NUMBER OF TIME LAYERS= 1620

AT ONE WAY SAMPLE RATE OF 1.0 MS

TOTAL ONE WAY TIME= 1619.0

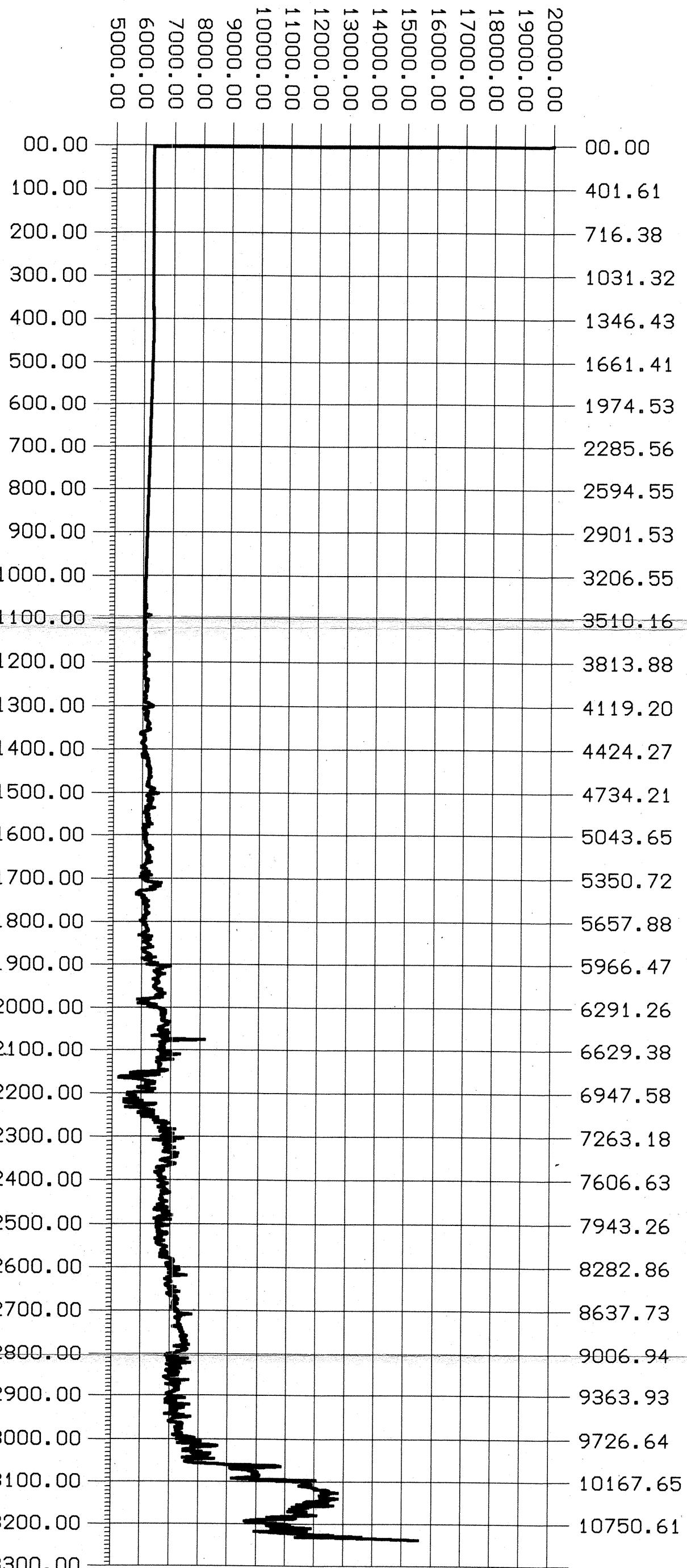
COD 7/11 3X

(CS)

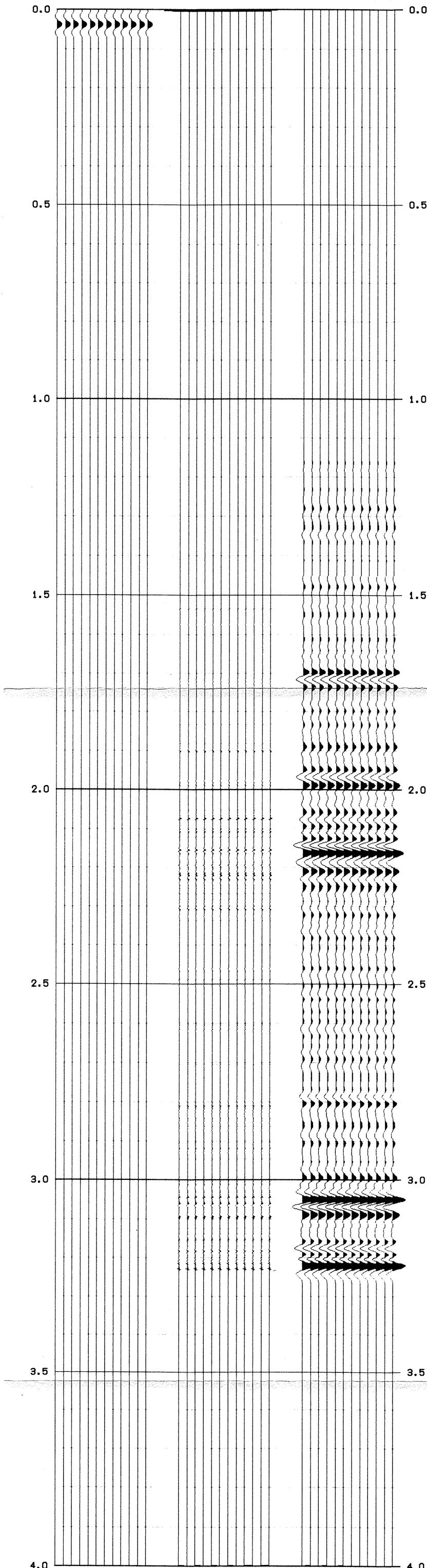
FEET / SECOND

TWO-WAY TRAVEL TIME IN SECONDS

DEPTH BELOW KB IN FEET



12/11/80



PHILLIPS PETROLEUM EUROPE/AFRICA



LONDON
SEISMIC DATA
PROCESSING
CENTRE

PHILLIPS PETROLEUM

SYNTHETIC SEISMØGRAM
CØD 7/11-3X

INPUT REEL HEADER INFORMATION

REEL NUMBER	S77
DATE CREATED	12/03/80
NUMBER SAMPLE/TRACE	2000
SAMPLE RATE IN MILLS	2.00
PROCESSOR	
LINE NUMBER	
JOB NUMBER	
SECTION NUMBER	
PROCESSING STEP	

FIELD INFORMATION

PROCESSING SEQUENCE

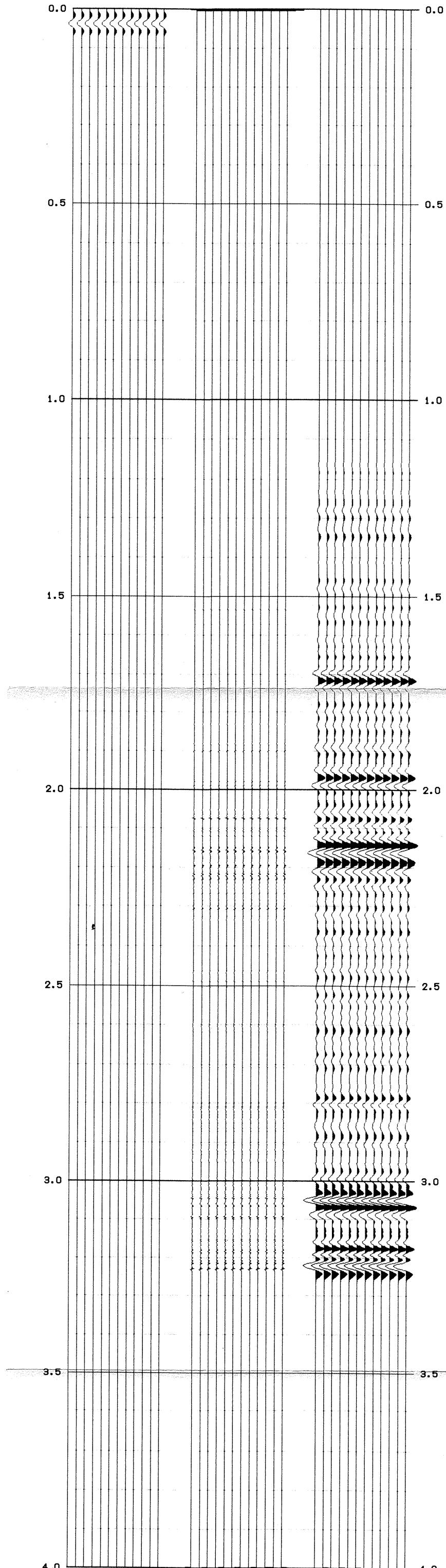
1ST DISPLAY:-WAVELET (ZERO PHASE) 5/10/30/40 HZ
2ND DISPLAY:- REFLECTION COEFFICIENTS.

3RD DISPLAY:- SYNTHETIC SEISMØGRAM.
(PRIMARIES ONLY).

***** FILMING PARAMETERS *****

PERCENT GAIN	100
HORIZONTAL SCALE	12.000 TR/IN
VERTICAL SCALE	3.940 IN/SEC
FILMING DIRECTION	LTR
PERCENT BAR	0
POLARITY	BLACK=POSITIVE
DATE FILMED	11/11/80

DATA PROCESSED BY
PHILLIPS E/R SDPC



PHILLIPS PETROLEUM EUROPE/AFRICA



LONDON
SEISMIC DATA
PROCESSING
CENTRE

PHILLIPS PETROLEUM

SYNTHETIC SEISMogram
C0D 7/11-3X

INPUT REEL HEADER INFORMATION

REEL NUMBER	S77
DATE CREATED	12/03/80
NUMBER SAMPLE/TRACE	2000
SAMPLE RATE IN MILLS	2.00
PROCESSOR	
LINE NUMBER	
JOB NUMBER	
SECTION NUMBER	
PROCESSING STEP	

FIELD INFORMATION

PROCESSING SEQUENCE

1ST DISPLAY:-WAVELET (ZERO PHASE) 5/10/30/40 HZ
2ND DISPLAY:- REFLECTION COEFFICIENTS.

3RD DISPLAY:- SYNTHETIC SEISMogram.
(PRIMARIES ONLY).

***** FILMING PARAMETERS *****

PERCENT GAIN	100
HORIZONTAL SCALE	12.000 TR/IN
VERTICAL SCALE	3.940 IN/SEC
FILMING DIRECTION	LTR
PERCENT BAR	0
POLARITY	BLACK=NEGATIVE
DATE FILMED	11/11/80

DATA PROCESSED BY
PHILLIPS E&P SDPC

PHILLIPS PETROLEUM EUROPE/AFRICA



LONDON
SEISMIC DATA
PROCESSING
CENTRE

PHILLIPS PETROLEUM

SYNTHETIC SEISMogram
C0D 7/11-3X

INPUT REEL HEADER INFORMATION

REEL NUMBER	S163
DATE CREATED	02/05/81
NUMBER SAMPLE/TRACE	2000
SAMPLE RATE IN MILLS	2.00
PROCESSOR	
LINE NUMBER	
JOB NUMBER	
SECTION NUMBER	
PROCESSING STEP	

FIELD INFORMATION

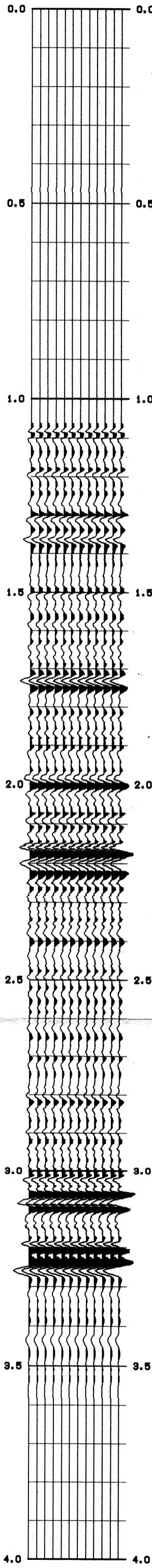
PROCESSING SEQUENCE

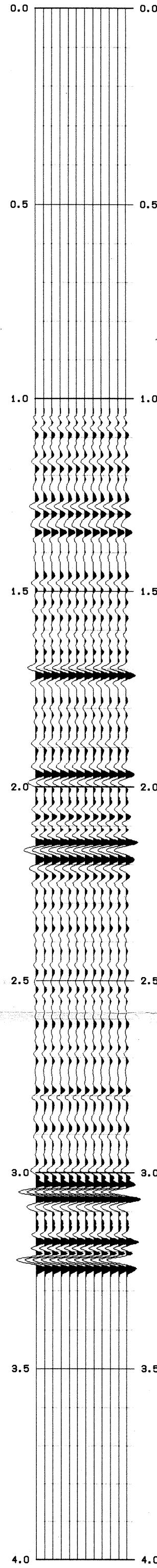
LEVELLED 1000 MSC WINDOW
WAVELET MINIMUM PHASE, 100 POINTS

***** FILMING PARAMETERS *****

PERCENT GAIN	100
HORIZONTAL SCALE	12.000 TR/IN
VERTICAL SCALE	3.940 IN/SEC
FILMING DIRECTION	LTOR
PERCENT BAR	0
POLARITY	BLACK=POSITIVE
DATE FILMED	09/06/81

DATA PROCESSED BY
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LONDON
SEISMIC DATA
PROCESSING
CENTRE

PHILLIPS PETROLEUM

SYNTHETIC SEISMOGRAM
C0D 7/11-3X

INPUT REEL HEADER INFORMATION

REEL NUMBER	S78
DATE CREATED	12/02/80
NUMBER SAMPLE/TRACE	2000
SAMPLE RATE IN MILLS	2.00
PROCESSOR	
LINE NUMBER	
JOB NUMBER	
SECTION NUMBER	
PROCESSING STEP	

FIELD INFORMATION

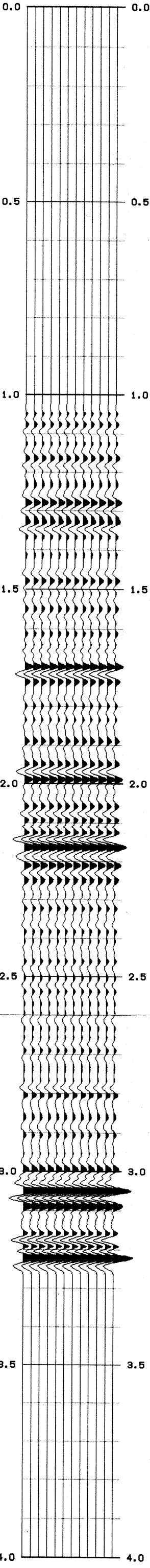
PROCESSING SEQUENCE

WAVELET = ZERO PHASE 5/10/30/40 HZ BANDPASS FILTER
LEVELLED 1000MS WINDOW

***** FILMING PARAMETERS *****

PERCENT GAIN	100
HORIZONTAL SCALE	12.000 TR/IN
VERTICAL SCALE	3.940 IN/SEC
FILMING DIRECTION	LTR
PERCENT BAR	0
POLARITY	BLACK=NEGATIVE
DATE FILMED	11/11/90

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SEISMIC DATA
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CENTRE

PHILLIPS PETROLEUM

SYNTHETIC SEISMogram
C0D 7/11-3X

INPUT REEL HEADER INFORMATION

REEL NUMBER	S78
DATE CREATED	12/02/80
NUMBER SAMPLE/TRACE	2000
SAMPLE RATE IN MILLS	2.00
PROCESSOR	
LINE NUMBER	
JOB NUMBER	
SECTION NUMBER	
PROCESSING STEP	

FIELD INFORMATION

PROCESSING SEQUENCE

WAVELET = ZERO PHASE 5/10/30/40 HZ BANDPASS FILTER
LEVELLED 1000MS WINDOW

***** FILMING PARAMETERS *****

PERCENT GAIN	100
HORIZONTAL SCALE	12.000 TR/IN
VERTICAL SCALE	3.940 IN/SEC
FILMING DIRECTION	LTR
PERCENT BAR	0
POLARITY	BLACK=POSITIVE
DATE FILMED	11/11/90

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C0D 7/11-3X

INPUT REEL HEADER INFORMATION

REEL NUMBER	S163
DATE CREATED	02/05/81
NUMBER SAMPLE/TRACE	2500
SAMPLE RATE IN MILLS	2.00
PROCESSOR	
LINE NUMBER	
JOB NUMBER	
SECTION NUMBER	
PROCESSING STEP	

FIELD INFORMATION

PROCESSING SEQUENCE

LEVELLED 1000MS WINDOW
WAVELET=MINIMUM PHASE, 100 POINTS

***** FILMING PARAMETERS *****

PERCENT GAIN	100
HORIZONTAL SCALE	12.000 TR/IN
VERTICAL SCALE	3.940 IN/SEC
FILMING DIRECTION	LTR
PERCENT BAR	0
POLARITY	BLACK=NEGATIVE
DATE FILMED	02/10/81

***** DATA PROCESSED BY *****
PHILLIPS E&P SDPC *****

