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ROCKALL CONTINENTAL MARGIN PROJECT
FINAL GEOLOGICAL REPORT

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VOLUME 4: APPENDIX 3
ORGANIC GEOCHEMISTRY

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Cover photograph: Two sections of core from an interbedded sequence of upper Paleocene-lower Eocene clastic sediments and fine-grained, basaltic, pillow lavas recovered in borehole 94/3. Three separate pillow lavas were penetrated by this borehole; see Volume 2, Appendix 1, Fig. 10 for stratigraphical details.

The left-hand section (207.87-207.99m) illustrates the contact between the uppermost pillow lava and overlying, shelly, marine sandstones, whilst the right-hand section (208.48-208.62m) shows the contact between the middle pillow lava and overlying, shelly, marine mudstone. In both sections, the outer part of the pillow lavas is cracked, locally fragmented, and partially altered to paler coloured smectite or chlorite. The infiltration of sediment into the cracks suggests that they may represent cooling cracks. The mottled texture of the mudstone (upper right-hand section) may be due, in part, to the decomposition of the pale coloured, altered, lava fragments enclosed within the sediment.

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ROCKALL TROUGH SHALLOW CORE GEOCHEMISTRY

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and B P Vickers

MARCH 1995

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ROCKALL TROUGH SHALLOW CORE GEOCHEMISTRY

Report No W1/95/3C by R A Nicholson, C D Hughes and B P Vickers

TOTAL ORGANIC CARBON, GAS CHROMATOGRAPHY, TOTAL SCANNING FLUORESCENCE AND GAS CHROMATOGRAPHY MASS SPECTROMETRY

1. INTRODUCTION

Approximately 170 shallow gravity core samples from the sea area around Rockall Bank were collected using the vessel Kommander Therese during April/June1994. Two sub-samples from the base of the core (0.5m apart) were taken for geochemical analysis as soon as possible after core recovery, and these two samples were immediately deep-frozen for subsequent geochemical analysis. Analyses required were total organic carbon (TOC), gas chromatography (GC), total scanning fluorescence (TSF), headspace and occluded gas content and gas chromatography/mass spectrometry (GC/MS).

Three additional samples of rock core from borehole 94/1 were subsequently received for TOC, Rock Eval Pyrolysis, vitrinite reflectance (VR) and spore colouration (SC) studies.

Written work instruction procedures to be followed during sample collection, preparation and extraction are given in Appendix 1.

2. SAMPLE STORAGE AND PREPARATION

The samples for geochemical analysis were deep-frozen in 'SEET-type' bags (-18°C) immediately after collection, and were transported to the laboratory in chest freezers. Separate sub-samples were sealed in steel cans for headspace and occluded gas analysis, after adding a 2ppm solution of sodium azide to minimise biodegradation.

Approximately 150g of each sample were dried at 36°C on sheets of aluminium baking foil. The dried samples were then disaggregated by hand, using a porcelain mortar and pestle, and transferred to screw-cap glass jars. The samples were protected by covering the top of each jar with a layer of aluminium baking foil, underneath the bakelite cap, to prevent possible contamination. A small sub-sample of the disaggregated material was ground to a fine powder (<50μm) in an agate P5 planetary ball mill, and stored in glass vials for TOC analysis. All sample preparation equipment was cleaned with solvent before use and also between samples.

3. SAMPLE EXTRACTION AND ANALYSIS

The trace amounts of soluble organic component in surface geochemical samples can be extracted with organic solvents, separated and determined by gas chromatography. The quantity of organic material extracted is dependent on the type of kerogen and its maturity potential, although the presence of migrated oil will markedly affect the data.

Thirty grams (30g) of dried sediment samples were extracted by refluxing with 150ml HPLC-grade hexane for approximately twenty-four hours in a conventional Soxhlet apparatus. The Soxhlet system is designed to wash samples repeatedly, with recirculating solvent, by evaporation, condensation and syphoning. Squalane was added as an internal standard at an appropriate concentration. Squalane is a C_{24} hydrocarbon (2,6,10,15,19,23-hexamethyltetracosane) which does not occur naturally, and is therefore a useful indicator of the reproducibility of individual extraction procedures. Excess solvent was removed by vacuum rotary evaporation to a same volume of less than 5ml, which by careful temperature control during the evaporation process retains the maximum amount of extract. However, the more volatile components ($<C_{10}$)are likely to be lost at this stage together with the solvent. The extracts were removed to 5ml volumetric flasks, diluted to volume and transferred to screw-cap storage vials. The vials were then stored in a freezer to await analysis. It should be noted that it was necessary to re-extract less than 30g of some samples, because a precipitate formed during the rotary evaporation stage. The samples in which this occurred have been marked with an asterisk in the left-hand sample number column in Table 1.

3.1 TOC DETERMINATION

Total organic carbon determination is one of the preliminary screening techniques carried out prior to more detailed analytical procedures. TOC contents of 0.5% for shales, or 0.3% for carbonates, are considered to be the minimum acceptable lower limits for commercial oil generation. Up to 1.0% TOC may be of only marginal source potential, and the better quality source rocks contain in excess of 1.0% TOC.

Sub-samples of the fraction ground to <50μm were washed with dilute acid to remove calcium carbonate, rinsed with distilled water and dried in an oven at 110°C. Portions of the acid-washed material were then taken for the determination of TOC in an automatic CNS analyser. The analyser works on the principle of ignition of the solid sample in oxygen in a flow of high purity helium, removal of the contaminant gases such as SO_2 from the gas stream in a chemical absorbent, and measurement of the remaining carbon dioxide in a thermal conductance cell. The carbonate content was also calculated from the dataset to determine possible correlations between hydrocarbon content and carbonate-rich sediments. All numerical data for TOC is given in Table 1, and is shown spatially presented in Figure 1.

3.2 GC ANALYSIS

Chromatography is a process whereby separation of components is achieved using the differences in their partition between a stationary phase and a mobile phase, which causes variation in the time taken by each of the components to travel through a chromatography column. In capillary gas chromatography, the stationary phase is coated on the walls of a thin quartz column, and the mobile phase is provided by incorporating the injected sample as a vapour in a flow of carrier gas, usually helium. Measurement of eluted components is by flame ionisation detection (FID). The FID detector operates by burning the column eluant in a hydrogen flame, and measuring the current across the flame. The detector steady-state is disturbed each time a

component is eluted from the column, and detector output is captured electronically through an interface, and processed on a computer using commercially available software. Quantification is achieved by comparison of *unknown* component areas (the individual peaks) against peak areas for *known* prepared standard concentrations.

Three-microlitre (3µl) volumes of the stored solvent extract from the Soxhlet extraction were injected onto a J&W Scientific 30m length x 0.25mm internal diameter, bonded-phase capillary column, using an autosampler installed on a Varian 3400 GC. Temperature programming from 50°C to 310°C was employed to separate and quantify the alkanes C_{10} - C_{33} (the subscript numbers refer to the number of carbon atoms in the molecule, and are individually named according to their Latin derivation i.e. C_{16} - hexadecane). Individual alkane concentrations were subsequently determined using external standards traceable to primary reagents. The squalane internal standard peak may be observed between the C_{26} and C_{27} peaks. All numerical data is shown in Table 1 and the relevant chromatograms in Appendix 2. The spatial distribution of the total alkane concentrations is shown in Figure 2.

Kerogen is a solid organic material which yields petroleum-type hydrocarbons on heating and distillation. Alkanes are generated during the maturation of kerogen, and their distribution may be used to provide information on the type of organic matter present and its depositional environment. Kerogen derived from algal material will give an n-alkane profile centred around C_{15} to C_{17} with few higher homologues, whereas terrestrially-derived kerogen will contain greater concentrations of higher molecular weight compounds above C_{25}. For immature rocks the alkane distribution is dominated by high molecular weight alkanes in the C_{25}-C_{29} range with high carbon preference index (CPI) values. As thermal maturity increases so does the quantity of alkanes, and the distribution of the alkanes moves towards lower C-numbers with no odd/even predominance.

The isoprenoids pristane and phytane, which are branched-chain C_{19} and C_{20} alkanes respectively, elute from the GC column immediately after the C_{17} and C_{18} n-alkane peaks. These compounds are remnants of chlorophyll, and their abundance depends on the type of organic matter present and the depositional environment. Lesser amounts of these structures relative to the parent alkanes indicate higher maturity, and C_{17}/pristane and C_{18}/phytane ratios therefore tend to be greater than 1.0 in mature environments. Pristane/phytane ratios are unaffected to any great extent by maturation, but they generally reflect the origin of the organic material. Pristane/phytane ratios less than 1.5 indicate marine-shale carbonate precursors, whereas terrestrial organic debris generally produces ratios in excess of 2.0.

The ratio of odd to even carbon number, commonly called the carbon preference index (CPI) is also a maturity indicator. A high or low CPI may indicate immaturity whereas values approaching unity are usually indicative of more mature samples. However, this is a relatively simplistic view because odd-C predominance may derive from low level thermal maturity of higher plant waxes, and even-C predominance from highly-reducing environments. It is generally true to say that as the degree of maturation increases odd/even predominance will disappear.

3.3 TSF ANALYSIS

3-D scanning fluorescence has been used as a primary screening technique for surface geochemical samples, and is selectively sensitive to aromatic hydrocarbons. It allows semiquantitative assessment of the total aromatic content of a sample, which may be indicative of the presence of migrated hydrocarbons. The fluorescence intensity is measured over a range of excitation and emission wavelengths, and the maximum intensity is recorded. The position of the maxima will vary according to the type of organic matter present, and may show the presence of gas, condensate or oil-prone species. Multi-ring aromatic compounds produce intense fluorescence which is not indicative of migrated hydrocarbon. This fluorescence signal is commonly referred to as 'perylene fluorescence', and is easily recognised as a group of four closely-spaced peaks disassociated from any hydrocarbon-induced fluorescence, which is viewed as a a large 'hump' in the centre of the fluorogram.

Thirty two samples were selected for TSF analysis based on visual examination of the chromatograms, and evaluation of the numerical TOC data. Samples were chosen to include those containing relatively high TOC content combined with a good recovery of total n-alkane hydrocarbons. Conversely, a number of samples, which showed poor potential, were also selected for comparison. Fluorescence measurements were made between 200nm and 500nm excitation and 200nm and 500nm emission, on the hexane extracts obtained from the Soxhlet extractions. 3-D fluorograms were prepared from the raw data using a specific macro written within Microsoft Excel 4.0. The fluorograms are shown in Appendix 3.

3.4 HEADSPACE AND OCCLUDED GAS ANALYSIS

The determination of the relative proportions of hydrocarbon gases, contained in the sealed headspace above geochemical samples, is a rapid technique for screening samples for further evaluation as potential hydrocarbon sources. The most prevalent gas in immature and over-mature sediments is methane, usually comprising 90-100% of the total gas content. In more mature sediments the methane content declines to between 30-70%. An increase in wet-gas content (C_2-C_4) of up to 20% of the total indicates the onset of maturity, with further increases in maturity being marked by decreases in the ratio of iso- to n-butane.

One hundred and thirty core samples, being representative of one sample depth from each geochemical station occupied, were sent to Geolab UK for determination of headspace and occluded gas content. Unfortunately it was not possible to undertake this work at the Newcastle laboratories and they were therefore sent on to the Geolab headquarters in Trondheim, Norway. Standard Geolab methods were followed as indicated below. All data are shown in Tables 2 and 3. The spatial distribution of methane is shown in Figure 3.

3.4.1 HEADSPACE GAS

The cans were punctured through a septum and the pressure equalised by adding water. From each can, 2ml of free headspace gas was taken and injected into the gas chromatograph for analysis. The headspace gas was analysed on either a Perkin Elmer

model 8310, or a Varian 3400 gas chromatograph. A 50m PLOT (Porous Layer Open Tubular) fused silica column with 0.32mm internal diameter and 5µm Al_2O_3/KCl film thickness (Chrompack inc.) was used in both gas chromatographs. The temperature program on the column had an initial temperature of 70°C, 12°C/min heating rate up to 200°C and held for 5 mins. The detectors were standard FIDs. Correlation and quantification were achieved by the use of external standards.

3.4.2 OCCLUDED (INTERSTITIAL) GAS

A 50g (wet weight) aliquot of total sediment was ball-milled in a sealed container fitted with a septum from which the released interstitial gas was withdrawn for analysis by gas chromatography. The interstitial gas was analysed on either a Perkin Elmer model 8310, or a Varian 3400 gas chromatograph. A 50m PLOT fused silica column with 0.32mm internal diameter coated with 5µm Al_2O_3/KCl film (Chrompack inc.) was used in both gas chromatographs. The temperature program on the column had an initial temperature of 70°C, 12°C/min heating rate up to 200°C and held for 5 mins. The detectors were standard FIDs. Correlation and quantification were achieved by the use of external standards.

3.5 GC/MS

Linking a gas chromatograph to a mass spectrometer creates a powerful analytical tool. In the mass spectrometer, molecules are impacted with high energy state electrons causing fragmentation of the molecules into ions of varying mass (m) and charge (z). The fragmentation pattern is characterised by ions of different m/z values, and each mass spectrum is unique, and confers an identification capability which can be used to 'fingerprint' the organic residue in the sample. It is usual to routinely monitor masses m/z 191 and m/z 217 which are the main fragment ions of triterpanes and steranes respectively. These compounds (biomarkers) are multi-ring structures, prevalent in the C_{25}-C_{35} area of a gas chromatogram, and are similar to those occurring in the original organic matrix, and may thus be assumed to be characteristic of the source material.

Several parameters were reviewed prior to the selection of samples for high-resolution GC/MS analysis. These were (in order of significance) visual inspection of the gas chromatograms for their overall alkane distribution patterns, the resulting numerical data for the total alkane recovery, the corresponding TOC content using the limits detailed in 3.1, and the 3-D fluorograms for evidence of migrated hydrocarbons as outlined in 3.3. Nine samples (see below) were subsequently selected for HRGC/MS analysis to determine the presence and concentration of fossil biomarkers indicative of thermogenic source rocks. Sample 57-12/30 was chosen for the good recovery of alkanes over the whole molecular weight range, particularly at the lower carbon numbers, in spite of its TOC content being the lowest of any of the samples selected. The other samples were chosen using a combination of the above parameters, with none of the criteria used for selection being being fully met by all of the samples. The analysis was carried out at the BP Research Laboratories at Sunbury-on-Thames using the hexane extracts obtained in the BGS laboratories for the GC and TSF analyses. All analytical data are shown in Table 4, and selected GC/MS traces in Appendix 4.

Samples selected for HRGC/MS at BP Research Laboratories

Sample Number	Depth in core (m)	TOC (%)	Total Alkanes (ppb)
57-11/69	**1.32**	**0.34**	**2008**
57-12/14	**0.23**	**0.55**	**2089**
57-12/16	**2.76**	**0.48**	**1527**
57-12/30	**2.23**	**0.25**	**1711**
57-12/35	**2.46**	**0.46**	**1433**
57-13/35	**2.84**	**0.40**	**1165**
58-12/8	**1.98**	**0.44**	**1423**
58-13/15	**3.80**	**0.44**	**1900**
58-14/7	**2.14**	**0.39**	**1395**

4. DRILL CORES

The optical study of organic matter in both transmitted and reflected light can give indications of both kerogen type and degree of maturation. The individual constituents of buried organic matter are known as macerals, which may be divided into vitrinite, exinite and inertinite. As maturation increases, so does the carbon content and the degree of maceral reflectance, but only vitrinite reflectivity (R_0) is used as an indicator of thermal maturation because of its relative homogeneity. Oil formation is considered to start at R_0 values of 0.5%, ranging up to dry gas formation with R_0 values in excess of 3%. The technique depends to a great extent on the skill of the operator. The degree of darkening of individual organic species, or spore colouration, also gives an indication of the thermal history of the residual organic matter, and is therefore used as an additional maturation indicator.

Rock Eval pyrolysis is a technique designed to measure the potential of a source rock to generate hydrocarbons. The technique was developed originally to monitor rock chippings at the well-head, but is now established as a routine analytical procedure in many laboratories. Samples of powdered rock are heated in small crucibles in a temperature-programmed furnace, and the hydrocarbons evolved are determined by flame ionisation detection. At very low temperatures the hydrocarbon gases are given off first; the furnace temperature is then slowly increased to release the free hydrocarbons (S_1), followed by 'cracking' of the kerogen at still higher temperatures (S_2), and measurement of the residual carbon dioxide by thermal conductvity (S_3). The TOC content of the sample is calculated by summation of the carbon data from each stage of the process. The maximum temperature achieved during the analysis is recorded (T_{max}). Various indices are calculated from the data allowing assessment of the capacity of individual samples to generate hydrocarbons.

The Hydrogen Index (S_2/TOC) is the ratio of released hydrocarbons to the TOC content, and is a measure of the hydrocarbon-generating potential of the kerogen contained in the sample. In general mature source rocks give values ranging from 200-500 mg/g TOC; immature rocks give either very low values for poor sources, or

values in excess of 500 mg/g TOC, if the TOC content is high but the source is thermogenically immature.

The Oxygen Index (S_3/TOC) is the ratio of released CO_2 to TOC content.

The Production Index (S_1/S_1+S_2) is the ratio of the hydrocarbons released during the first heating stage to the total amount released during the pyrolysis. Immature sediments give values close to zero, and these increase gradually as maturity increases.

The Potential Yield (S_2) is a measure of the total hydrocarbons released by the cracking of the kerogen component relative to the original weight of sample. Values for immature sediments are generally less than 2000 mg/kg, up to 6000 mg/kg may be considered as fair, up to 20000 mg/kg as good and above 20000 mg/kg as very good.

$\mathbf{T_{max}}$ values are indicative of the maturity of the organic matter contained in the sample, but should be regarded as a guide only. Temperatures of a approximately 430°C indicate maturity, and temperatures above 460°C indicate dry gas formation.

Examination of borehole 94/1 yielded a section that contained a waxy material that warranted further geochemical investigation to evaluate its source rock potential. TOC content was determined in-house, vitrinite reflectance and spore colouration index were contracted to Southampton University, and Rock Eval Pyrolysis to Geolab UK in Newcastle. Data obtained are shown in Table 5.

5. RESULTS AND DISCUSSION

5.1 TOC AND CO_3 DATA

TOC concentrations range between 0.01% and 1.27% with a mean of 0.19% and a median of 0.17%. The highest value of 1.27% (57-16/12, 3.21m) is significantly higher than any of the other data, the next highest value being less than half this at 0.55%. The high value does not seem to be related to any indigenous hydrocarbon content, as the solvent extract from this sample contained only traces of n-alkanes; see Table 1. The TOC contents of all the remaining samples are less than marginal for good hydrocarbon source rocks. The carbonate contents of the sediments range from 20% to almost 90% with a mean of 37% and a median of 28%.

5.2 GC DATA

From the chromatographic data obtained (Table 1 and Appendix 2) it is observed that the data may be split into essentially four groups, the first two of which comprise the greatest number of samples. Firstly, there are those with background concentrations close to the blank values (virtually no peaks observed) and secondly, those containing medium to significant amounts of immature organic matter (pronounced odd-C over even-C predominance i.e. high CPI values), and strong peaks corresponding to C_{27}, C_{29} and C_{31}. Thirdly there are just three samples (58-14/22, 3.32m, 58-14/27, 2.04m and 58-14/49, 3.63m) displaying an homologous series of peaks which do not correspond to n-alkanes and fourthly, two samples (57-12/30, 2.23m) which shows a

broad range of n-alkanes across the whole chromatogram, and (57-13/73, 1.98m) with good concentrations of n-alkanes from C_{24} to C_{32}. The mean value for the total alkane concentration is 482ppb, median 334ppb, maximum 2089ppb and the minimum 6ppb. It can therefore be seen that the range of values is quite wide, which is not unexpected considering the overall size of the sampling area.

The inference from the GC data is that the organic material from which it was derived is immature. This supposition is based on the general overall poor recovery of alkanes achieved in many cases, particularly of the lower carbon numbers, and the simultaneous high CPI values obtained throughout the dataset. The high CPI values (odd predominance), and the greater recovery of higher molecular weight material above C_{25} in the majority of samples points towards a terrigenous source from higher plant waxes. It is presumed that the data obtained indicate the presence of transported material, and that there has been no migration of thermogenic material from depth to surface.

5.3 TSF DATA

Based on preliminary evaluation of the TOC and GC data, thirty two samples were selected for total scanning fluorescence. Measurements were carried out on the hexane extracts (Section 3) using a Hitachi F-4500 instrument capable of scanning at a rate of 30,000 nm/min. The 2-D and 3-D fluorograms are given in Appendix 3, which show that at least five of these samples have significant fluorescence maxima in the oil/condensate region of the fluorescence spectrum; these are 57-12/30, 2.23m, 57-13/34, 2.96m, 57-13/35, 2.84m, 58-13/15, 3.80m and 58-13/25, 2.82m. None of these contained less than 30g sample weight in the original extract. Many of the samples also show the typical 'perylene fluorescence' signature, which in many instances attributes a more-intense signal to the data than is possible from the peak(s) believed to be of hydrocarbon origin. However, it has been shown that a similar fluorescence signature can be caused by recent organic matter under certain conditions (BP Exploration, Stephen Hay - pers comm), and it should not therefore be assumed that the fluorescence determined in these particular samples indicates a thermogenic source. The data should therefore be reviewed in conjunction with that of the other parameters investigated. Little information is available on TSF measurements on samples from this area, and further studies are necessary to allow a reasonable database of information to be gathered.

5.4 HEADSPACE AND OCCLUDED GAS DATA

5.4.1 HEADSPACE GAS

The headspace gas composition was of little interest from this area, the mean methane value being only 1.05ng/g wet sediment, with a maximum value of 2.96ng/g. Even lower values were found for the higher homologues, and it is therefore concluded that headspace gas is too low in concentration to be of value in this survey. There was insufficient gas content in either the headspace, or the released occluded gas, to undertake $\delta^{13}C$ determinations in order to positively distinguish between a biogenic or thermogenic source.

5.4.2 OCCLUDED GAS

The data for the occluded gas content appeared much more promising, with a maximum value for methane of approximately 60ng/g wet sediment, a minimum of approximately 4ng/g, a mean of approximately 20ng/g and a median of approximately 18ng/g. Corresponding lower values were found for the higher homologues. The data was plotted spatially, and reference to Figure 3 shows that the highest concentrations of gas occur around the Rockall Bank. Similar distribution patterns were found for the other gases determined, although absolute concentrations of each were different. The determination of occluded gas relies on the release of gas from friable lithologies in the sample (Section 3.4.2) which usually includes carbonates, and it might therefore be expected that there would be good correlation with the carbonate content of the sediment. However, calculated correlation coefficients are only of the order of 0.5, and Figure 4 shows the methane data plotted against the carbonate content. The underlying reasons for the apparent higher concentrations of gases contained in the sediments from around the Rockall Bank merits further investigation.

5.4.3 HEADSPACE GAS ON DRILL-CORE SAMPLE

One of the samples obtained from a drill-core site (58-14/54) showed signs of intense degassing during recovery onboard ship, and a section of the core was therefore immediately sealed in one of the cans used for headspace gas samples. The methane content of the headspace in the can was determined to be approximately 2.3%, but this is obviously a significant under-estimate. A large proportion of the gas was atmospheric in origin, incorporated during the canning procedure, and the bulk of the hydrocarbon gas content would have been lost during sample transit from the seabed, and also during recovery from the drill-pipe on the deck of the ship. There was little indication of the presence of 'wet-gas' in this sample as higher homologues were only present in trace amounts. The δ^{13} C of the methane was determined to be -57.0‰ (relative to PDB) by mass spectrometry (BGS Wallingford), which is just within the boundary of >-60.0‰ for thermogenic sources and <-60.0‰ for biogenic sources. The methane *may* therefore be thermally derived, but have been altered (or diluted with biogenic gas) during migration. Typical deep sea marine sediments vary between -40‰ and -109‰ as reported in BGS Technical Report WE/89/3.

5.5 GC/MS DATA

The relative amounts of steranes and triterpanes present in a sediment extract give an indication of the type of organic matter present, and the distribution patterns and the ratios of certain components are characteristic of the original source material. Masses m/z 191, m/z 217, m/z 231 and m/z 253 were monitored using high resolution GC/MS in SIR (selective ion recording) mode. Biomarker identification codes and the GC/MS traces for each of the sample extracts analysed are presented in Appendix 4. Table 4 is a comprehensive list of all the biomarker indices calculated, based on the standard procedures used by BP Research Laboratories, and is for information to other consortium partners. Additional parameters have been added where appropriate.

Hopanes present in extracts of low maturity rocks are dominated by the 17β(H), 21β(H) stereochemistry, and the R-configuration at C_{22} (m/z 191). As the maturity increases, 17α(H), 21β(H) stereochemistry predominates in the chromatogram, plus increases in the 22S-configuration over the 22R-configuration for the hopanes and higher homologues. Increases in concentration of 22S-configuration components are not present in these samples, and in most instances no data has been recovered above C_{31} for the samples analysed, indicating probable low recoveries and hence the presence of a low maturity source.

Source rocks at a low maturity also contain relatively large amounts of moretanes, but the concentration of these compounds declines rapidly with increasing maturity. Thus the moretane/hopane ratio may be used as a maturation indicator, with values approaching 0.1 as the oil window is reached. Reference to Table 4 shows that ratios vary from 0.71 down to 0.31, which is still well above the requisite value. Similarly, the ratio of the C_{27} hopanes (Ts/Tm) is an important maturation indicator, although values are variable at low levels of maturity. Reference to Table 4 shows that ratios vary between 0.11 and 0.31, but that data has only been recovered for three of the nine samples, due to non-recognition of the Ts peak in many of the mass chromatograms.

In sedimentary materials the predominant steranes are the C_{27}, C_{28} and C_{29} components, being derivatives of the parent sterols present in the original organic matter. C_{27} steranes are predominantly marine-derived, and C_{29} steranes are compounds resulting from land plant materials. The greater proportion of C_{29} found relative to the C_{27} and C_{28} homologues is probably indicative of terrestrial source rocks. Similarly the individual percentages of C_{27}, C_{28} and C_{29} steranes are lower than would be expected from more-mature samples.

Indications are that the source material is of terrigenous origin and at a low level of maturity, and it is therefore likely to have been transported.

5.6 DRILL CORE DATA

SAMPLE NUMBER	DEPTH (m)	TOC (%)	S1 (mg/g)	S2 (mg/g)	S3 (mg/g)	HYDROGEN INDEX (mg/g TOC)	OXYGEN INDEX (mg/g TOC)	POTENTIAL YIELD (mg/kg)	PRODUCTION INDEX	Tmax (°C)	VIT REF	SCI
94/1	37.65-37.7	1.3	0.13	0.29	1.17	22.3	90.0	290	0.31	389	0.25	61
94/1	48.36-48.4	1.1	0.12	0.24	0.99	21.8	90.0	240	0.33	389	0.22	60
94/1	53.77-53.8	1.1	0.13	0.31	1.09	28.2	99.1	310	0.30	386	0.24	59

Table 5

The TOC contents of the samples are relatively good. However, the other indicators show that the overall maturity of these samples is generally low. The high oxygen index compared with the low hydrogen index shows that the samples are at best gas prone. Further work is necessary on this core, and the samples should be 'picked' to achieve a higher ratio of organic/inorganic matrix, thereby possibly improving the chances of recovering higher-maturity material.

6. CONCLUSIONS

- TOC contents of sediments are only marginal for good hydrocarbon source rocks, with those on waxy core material being slightly higher.
- Spore Colouration, Vitrinite Reflectance and Rock Eval Pyrolysis measurements on waxy core material indicate low maturity.
- CO_3 contents of sediments range from 20% to almost 90%.
- Headspace gas contents of sediments are very low, due either to poor gas retention or indicative of immaturity.
- Occluded (Interstitial) gas contents of are also low, but contain a fairly high proportion of wet gas (C_2-C_4). Gas contents may be too low to permit reliable calculation of data.
- Methane content of headspace gas from rockdrill sample (58-14/54) found to be 2.3%, with $\delta^{13}C$ on the limit between thermogenic and biogenic provenance.
- GC data indicate only one or two potential sites for more detailed study.
- TSF shows similar data, but little information on TSF measurements on samples from the Rockall area is currently available.
- GC/MS data indicate no thermogenically-derived organic matter present.
- Indications are that the residual organic material present in the samples is of too low maturity to merit source potential. However, there may be an impermeable seal preventing migration of thermogenic material to the surface layers.

7. FUTURE WORK

It is intended to extend the current work on existing samples to try to improve the chances of recovering additional organic material of possible thermogenic origin. Samples will therefore be chosen based on data obtained during this work, and will include all the samples mentioned in the aforegoing text as having shown some potential for hydrocarbon generation. There are still a number of samples not yet analysed, specifically where more than two sub-samples were taken from a particular core. These additional samples will therefore be investigated, if samples analysed from the same core have already shown interesting data. The samples will be 'picked' to try to obtain a greater concentration of organic component in the analytical sample.

Samples from cores 94/1 to 94/7 will be sub-sampled at pre-determined intervals to provide additional samples for geochemical analysis. This will apply particularly to the section containing the waxy material in borehole 94/1, which will be examined by gas chromatography, and possibly by GC/MS.

The role of total scanning fluorescence merits further investigation, in order to construct a TSF database for the area. There is some evidence of unreliability in the technique. However Rockall is a *new* area, and little information on TSF currently exists. It is therefore recommended that additional work be undertaken.

8. FIGURES

9. TABLES

10 APPENDICES

FIGURES

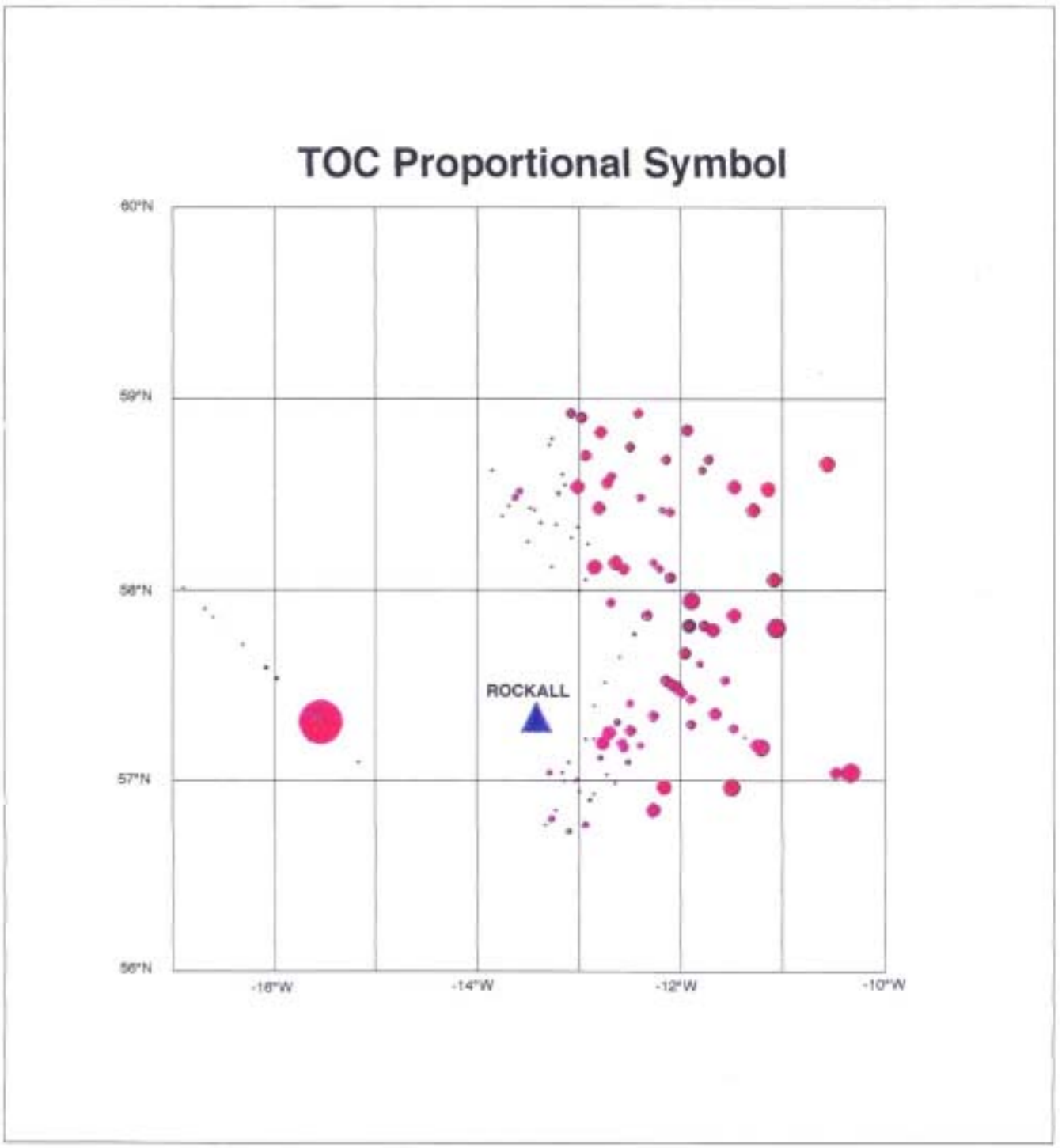
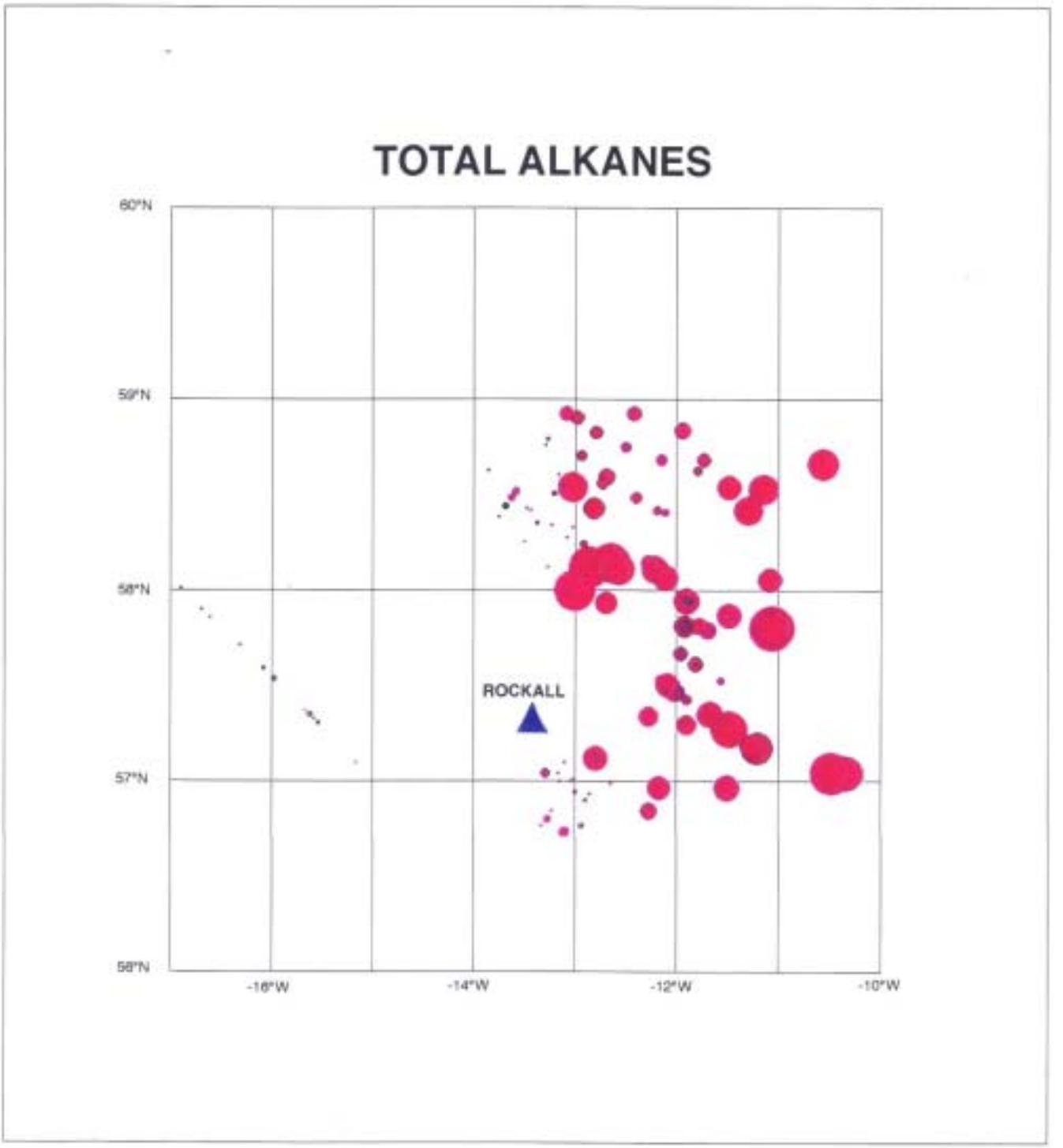

TOC Proportional Symbol
60°N
59°N
58°N
57°N
56°N
-16°W
-14°W
-12°W
-10°W
ROCKALL
Rockall by TOC
1.3
0.65
0.13

Figure 1


TOTAL ALKANES
60°N
59°N
58°N
57°N
56°N
-16°W
-14°W
-12°W
-10°W
ROCKALL

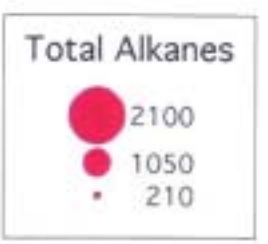

Total Alkanes
2100
1050
210

Figure 2

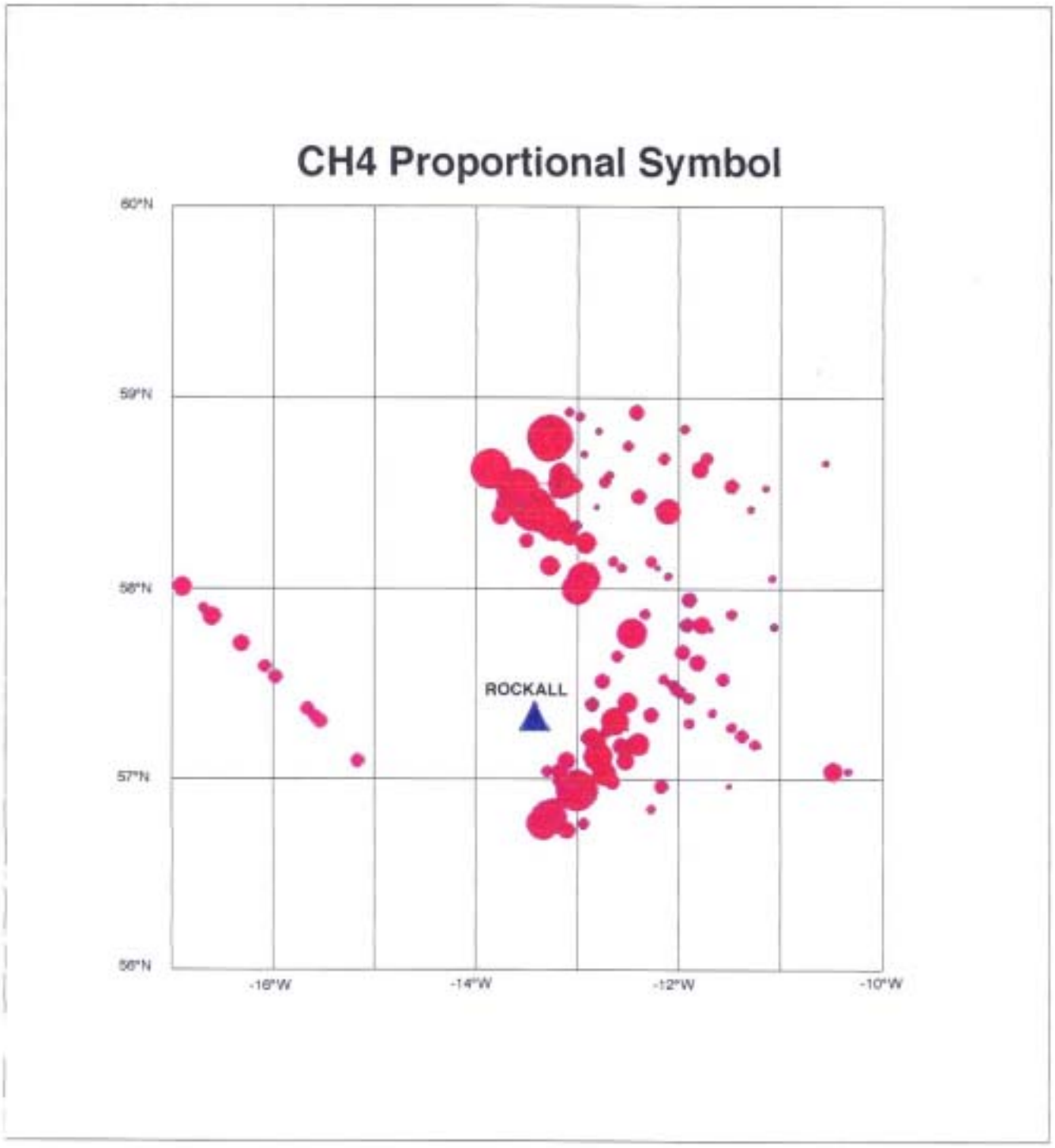

CH4 Proportional Symbol
60°N
59°N
58°N
57°N
56°N
-16°W
-14°W
-12°W
-10°W
ROCKALL
Methane Conc.
61
30.5
6.1

Figure 3

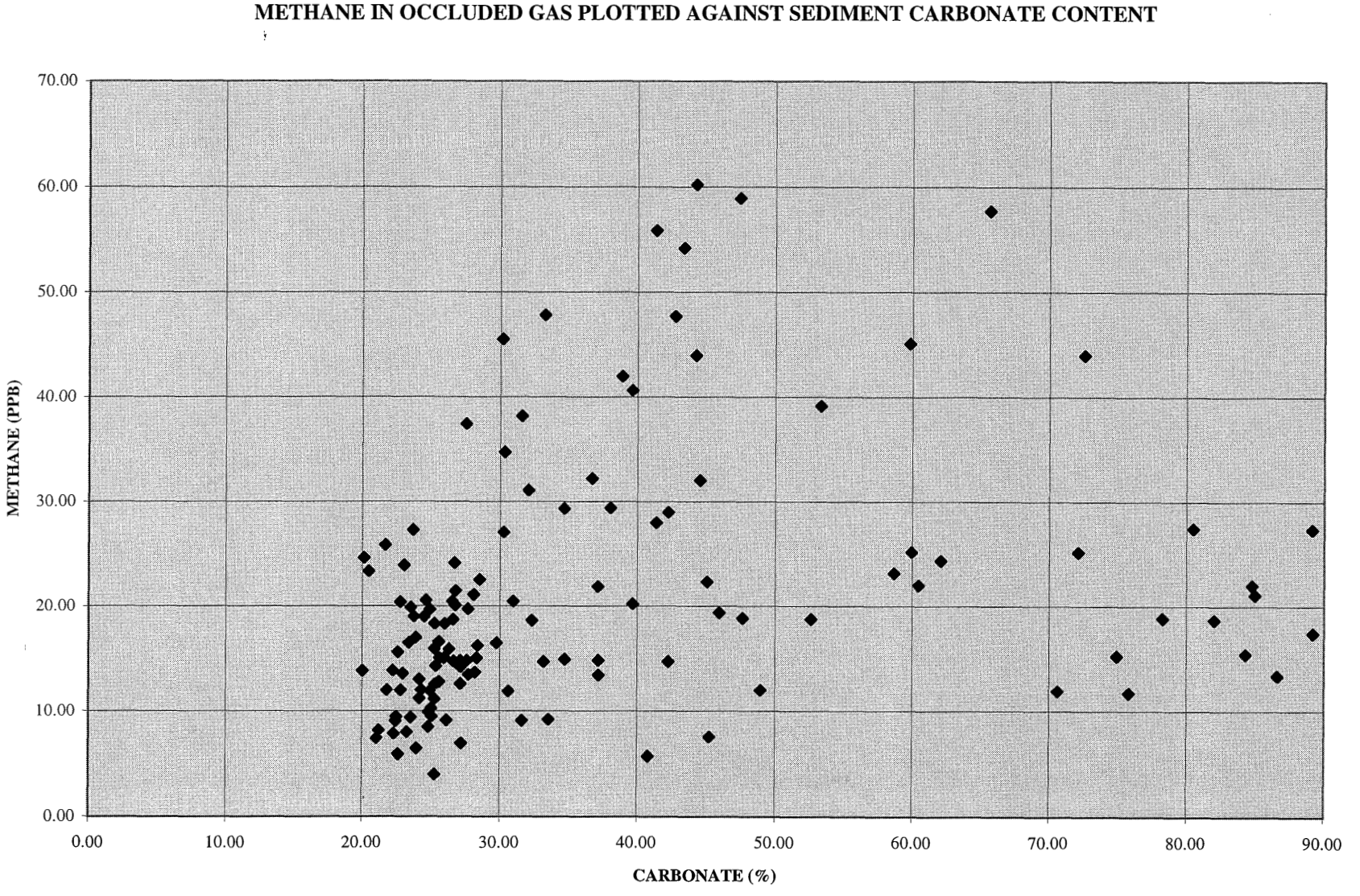

METHANE IN OCCLUDED GAS PLOTTED AGAINST SEDIMENT CARBONATE CONTENT
METHANE (PPB)
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
CARBONATE (%)

Figure 4

TABLES

ROCKALL DATA

Sample	Depth in	Water	Lat	Long	C15	C16	C17	Prist	C18	Phyt	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	Total	TOC	CO3	C17/Prist	C18/Phyt	Prist/Phyt	CPI
Number	core (m)	Depth (m)			(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	n-alkanes	(%)	(%)				
56-12/13 *	2.80	2248	56.9665	-11.5037	21	18	21	17	37	10	47	42	46	33	60	39	91	56	161	69	180	63	227	19	1230	0.48	24.0	1.2	3.7	1.7	2.3
56-12/13 *	3.45	2248	56.9665	-11.5037	27	26	38	28	27	13	49	38	49	38	54	32	66	47	125	56	142	42	187	17	1060	0.42	22.6	1.4	2.1	2.2	2.4
56-13/2	2.81	2134	56.9667	-12.1775		26	33	24	46	12	52	47	49	39	56	36	75	47	113	59	149	59	182	14	1082	0.42	23.8	1.4	3.8	2.0	2.0
56-13/2	3.46	2134	56.9667	-12.1775	24	21	28	21	39	15	46	43	37	27	39	29	61	42	100	47	134	34	178	19	948	0.42	23.4	1.3	2.6	1.4	2.2
56-13/3	2.95	2220	56.8378	-12.2758		11	17	12	23	8	29	32	25	17	24	17	33	29	72	29	145	24	245	12	784	0.25	24.3	1.4	2.9	1.5	3.2
56-13/3	3.45	2220	56.8378	-12.2758		10	15	8	18	6	26	24	21	15	24	18	43	22	68	34	120	26	175	14	673	0.39	28.4	1.9	3.0	1.3	2.9
56-13/4	2.98	2263	56.7672	-12.9318	7	6	12	13	13	11	10	10	8	7	9	8	14	8	23	10	32	9	36	4	226	0.19	28.3	0.9	1.2	1.2	2.1
56-13/4	3.58	2263	56.7672	-12.9318			4		5	3						3	4	2	6	3	11	2	18		58	0.06	65.7		1.7		
56-13/5	2.43	2026	56.9362	-12.8612		3	6	3	5	3	3	3		2	3	3	7	4	12	5	26	4	38	2	126	0.07	45.9	2.0	1.7	1.0	
56-13/5	3.08	2026	56.9362	-12.8612			6		3	3		3			4	3	6	3	8	3	10	2	13		64	0.06	53.6		1.0		
56-13/6	2.09	2071	56.9007	-12.8905			4		3		3			2	5	5	11	8	21	9	38	7	53	4	173	0.11	27.1				
56-13/6	2.74	2071	56.9007	-12.8905			9	4	4	3	3	3		2	5	5	12	8	24	9	40	7	56	4	191	0.08	25.0	2.3	1.3	1.3	
56-13/7	1.20	1940	56.9378	-12.9922	2	4	15	9	7	8	4	4	3	3	5	5	10	8	20	8	34	6	47	3	188	0.07	41.3	1.7	0.9	1.1	3.1
56-13/7	1.85	1940	56.9378	-12.9922		3	13	6	5	7	3	3			2	2	5	3	8	3	13	2	18		83	0.06	44.1	2.2	0.7	0.9	
56-13/8	2.43	2007	56.9847	-12.6552		2	12	6	6	6	3	3		3	4	4	9	6	17	6	27	5	34	3	144	0.07	26.5	2.0	1.0	1.0	
56-13/8	3.08	2007	56.9847	-12.6552		3	13	7	6	6	4	4	2	3	5	5	10	8	18	8	22	6	23	4	144	0.07	31.1	1.9	1.0	1.2	
56-14/5	2.25	2192	56.7385	-13.1130			6	3	5	3	3	4	2	5	11	10	30	22	69	23	105	20	117	9	441	0.16	20.5	2.0	1.7	1.0	
56-14/5	2.91	2192	56.7385	-13.1130		3	7	5	6	7	3	3			3	3	7	4	13	5	21	4	28	2	112	0.08	28.4	1.4	0.9	0.7	
56-14/6	2.81	1741	56.7617	-13.3313		3	6	4	6	3	3	3			2		4	2	7	2	9		11		58	0.04	44.2	1.5	2.0	1.3	
56-14/6	3.46	1741	56.7617	-13.3313			4		5	2	4	4			3	3	8	4	17	5	22	4	25		108	0.05	18.1		2.5		
56-14/7	0.81	1756	56.8045	-13.2768		9	15	11	11	8	17	20	13	10	15	11	21	15	39	15	53	14	71	7	356	0.19	33.2	1.4	1.4	1.4	
56-14/7	1.46	1756	56.8045	-13.2768		10	21	10	12	10	3	3			3	2	6	3	10	3	15	2	18		111	0.06	44.7	2.1	1.2	1.0	
56-14/8	0.07	1755	56.8427	-13.2302		4	17		9		3	3					3		5	2	9		11		66	0.04	38.0				
56-14/11	2.20	1750	56.9932	-13.0395	6	17	31	13	17	14	6	5													82	0.03	84.8	2.4	1.2	0.9	
56-14/11	2.85	1750	56.9932	-13.0395	4	8	19	10	11	9	3	4													49	0.03	81.3	1.9	1.2	1.1	
56-14/12	3.00	1542	56.9923	-13.1405	5	7	20	10	11	10	4	3			3	3	6	3	10	4	13	2	12		106	0.07	21.7	2.0	1.1	1.0	
56-14/12	3.65	1542	56.9923	-13.1405	5	8	23	11	9	9	3	4					3		6	2	8		8		79	0.06	65.7	2.1	1.0	1.2	
57-11/68 *	1.83	2218	57.0402	-10.3378	23	23	29	23	29	12	40		50	39	82	51	130	69	231	90	272	88	326	24	1596	0.53	23.5	1.3	2.4	1.9	
57-11/68 *	2.48	2218	57.0402	-10.3378	26	26	35	29	38	14	50	44	55	43	75	49	112	80	192	76	235	66	286	26	1514	0.41	24.0	1.2	2.7	2.1	2.5
57-11/69 *	1.32	2297	57.0422	-10.4818	43	42	56	44	46	31	85	77	91	80	113	74	144	92	215	146	245	82	343	34	2008	0.34	20.1	1.3	1.5	1.4	2.0
57-11/69	1.97	2297	57.0422	-10.4818	35	34	41	36	37	24	77	66	79	61	95	55	114	65	150	74	186	47	219	18	1453	0.34	19.9	1.1	1.5	1.5	2.3
57-12/14 *	0.23	2025	57.8038	-11.0612	19	18	30	25	41	12	47	52	62	51	97	66	168	78	299	121	368	111	422	39	2089	0.55	22.5	1.2	3.4	2.1	2.7
57-12/16 *	2.76	2025	57.8038	-11.0612	22	20	28	21	41	11	52	11	56	43	83	54	129	68	225	83	249	63	279	21	1527	0.48	23.3	1.3	3.7	1.9	2.9
57-12/16 *	3.32	2025	57.8038	-11.0612	29	26	37	28	30	13	56	9	62	50	86	58	135	71	223	87	247	68	282	23	1579	0.44	25.0	1.3	2.3	2.2	2.8
57-12/17	2.02	1991	57.5208	-11.5668	5	6	7	4	11	3	12	11	10	7	11	8	20	10	42	16	69	12	82	6	345	0.24	28.4	1.8	3.7	1.3	3.1
57-12/17	2.67	1991	57.5208	-11.5668		5	8	5	10	4	6	6	5	5	8	6	12	8	20	8	26	5	33	3	174	0.09	58.2	1.6	2.5	1.3	2.3
57-12/20	1.85	1797	57.9495	-11.8952	29	26	30	19	27	8	45	49	39	34	44	32	65	42	87	43	115	37	126	19	889	0.45	25.6	1.6	3.4	2.4	1.9

Table 1

ROCKALL DATA

Sample	Depth	Water	Lat	Long	C15	C16	C17	Prist	C18	Phyt	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	Total	TOC	CO3	C17/Prist	C18/Phyt	Prist/Phyt	CPI
Number	(metres)	Depth (m)			(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	n-alkanes	(%)	(%)				
57-12/20	2.50	1797	57.9495	-11.8952	18	18	20	12	25	9	25	22	19	14	19	14	29	16	45	18	74	14	117	8	515	0.24	28.5	1.7	2.8	1.3	2.7
57-12/21	2.45	1797	57.9495	-11.8952	26	23	28	20	41	10	50	50	49	42	63	44	93	50	142	67	172	59	203	31	1233	0.48	24.7	1.4	4.1	2.0	2.1
57-12/21	3.10	1797	57.9495	-11.8952	6	16	10	8	17	5	15	14	13	8	14	10	25	13	38	17	64	14	92	8	394	0.24	28.5	1.3	3.4	1.6	2.7
57-12/22	2.35	1932	57.8672	-11.4877	22	20	24	18	20	6	38	34	39	33	50	35	80	51	120	52	151	42	180	20	1011	0.41	24.2	1.3	3.3	3.0	2.4
57-12/22	3.00	1932	57.8672	-11.4877	22	20	25	18	23	7	45	41	48	12	63	43	95	63	153	60	136	49	230	14	1142	0.39	22.5	1.4	3.3	2.6	2.6
57-12/23	2.20	1845	57.7872	-11.6928	21	19	23	15	30	7	34	36	31	26	34	24	46	32	90	43	127	32	169	20	837	0.40	26.1	1.5	4.3	2.1	2.3
57-12/23	2.85	1845	57.7872	-11.6928	11	10	13	10	19	6	24	26	21	14	21	15	28	22	54	26	86	19	117	8	534	0.25	21.4	1.3	3.2	1.7	2.4
57-12/24	2.35	1770	57.6707	-11.9653	11	9	12	7	17	4	22	24	19	13	20	14	34	20	63	30	119	25	181	15	648	0.32	26.8	1.7	4.3	1.8	3.0
57-12/24	3.05	1770	57.6707	-11.9653	6	5	8	5	11	4	14	13	12	8	13	10	20	13	37	15	62	16	95	8	366	0.29	32.2	1.6	2.8	1.3	2.8
57-12/25	2.37	1760	57.6132	-11.8113			7	5	8	3		8	6	3	6	5	11	7	21	8	36	6	50	4	186	0.18	37.1	1.4	2.7	1.7	
57-12/25	2.98	1760	57.6132	-11.8113			3		3			2			4		3	2	6	3	9		14		49	0.07	54.0				
57-12/26	2.38	1822	57.4603	-11.9773	11	10	14	9	16	7	21	20	16	10	14	11	21	14	11	21	14	37	18	70	349	0.26	26.6	1.6	2.3	1.3	0.6
57-12/26	3.03	1822	57.4603	-11.9773	4	4	7	4	10	3	11	11	10	7	11	9	20	12	30	13	50	11	80	6	306	0.24	31.2	1.8	3.3	1.3	2.8
57-12/27	2.35	1795	57.4263	-11.8868	9	8	11	8	15	5	18	17	16	10	15	12	23	17	42	18	77	17	141	10	476	0.26	27.1	1.4	3.0	1.6	3.0
57-12/27	3.00	1795	57.4263	-11.8868	5	5	8	6	10	4	12	12	10	5	11	8	18	13	31	13	55	10	88	6	320	0.24	29.5	1.3	2.5	1.5	3.0
57-12/28	2.20	1964	57.3473	-11.6762	17	15	19	14	28	7	36	32	40	31	48	34	77	53	117	46	147	37	175	17	969	0.36	22.8	1.4	4.0	2.0	2.4
57-12/28	2.85	1964	57.3473	-11.6762	7	8	11	7	14	5	18	17	15	10	14	11	22	17	46	21	83	17	168	9	508	0.25	26.3	1.6	2.8	1.4	3.3
57-12/30	1.53	2108	57.2700	-11.4737			5	3	3	3	3	3	3	4	5	5	10	8	19	10	35	8	55	5	181	0.08	20.0	1.7	1.0	1.0	2.9
57-12/30	2.23	2108	57.2700	-11.4737	68	75	76	13	99	9	96	111	102	104	112	103	131	102	124	88	124	75	95	26	1711	0.25	17.7	5.8	11.0	1.4	1.2
57-12/32	2.32	2056	57.2342	-11.3803			6	3	5	4		3								2	2				18	0.02	89.2	2.0	1.3	0.8	
57-12/32	2.99	2056	57.2342	-11.3803			12	5	7	8		3													22	0.02	87.4	2.4	0.9	0.6	
57-12/34	2.25	2222	57.1837	-11.2493	25	23	30	18	25	11	48	47	48	41	55	37	83	46	124	52	167	42	231	16	1140	0.41	25.4	1.7	2.3	1.6	2.6
57-12/34	2.90	2222	57.1837	-11.2493	32	28	36	28	29	19	56	59	58	34	58	40	76	43	111	74	125	40	143	16	1058	0.27	18.4	1.3	1.5	1.5	2.0
57-12/35	2.46	2258	57.1692	-11.2125	35	35	51	33	38	23	64	68	70	49	98	68	130	60	159	64	172	49	203	20	1433	0.46	22.7	1.5	1.7	1.4	2.3
57-12/35	3.11	2258	57.1692	-11.2125	32	36	50	32	35	24	48	55	56	45	79	48	110	73	170	64	203	53	232	20	1409	0.43	20.9	1.6	1.5	1.3	2.4
57-12/36	2.73	1814	57.2943	-11.8868	19	17	24	14	18	12	35	36	27	17	25	18	37	31	76	38	159	35	301	16	929	0.23	22.2	1.7	1.5	1.2	3.3
57-12/36	3.38	1814	57.2943	-11.8868	26	31	41	21	48	29	33	26	15	10	16	11	26	13	41	18	74	13	117	7	566	0.24	26.5	2.0	1.7	0.7	2.5
57-12/37	2.79	1821	57.8090	-11.7718	24	25	37	20	43	18	38	37	28	21	29	21	44	24	75	31	125	28	193	14	837	0.29	23.1	1.9	2.4	1.1	2.6
57-12/37	3.44	1821	57.8090	-11.7718	25	33	49	21	37	17	34	27	18	13	20	14	32	16	39	20	63	14	94	11	559	0.27	25.7	2.3	2.2	1.2	2.3
57-12/38	2.68	1767	57.8095	-11.9147	30	30	49	24	30	23	52	44	38	24	41	28	63	33	81	36	117	39	159	19	913	0.33	25.0	2.0	1.3	1.0	2.4
57-12/38	3.33	1767	57.8095	-11.9147	25	33	48	22	31	23	30	26	15	11	17	12	28	14	31	15	51	12	80	9	488	0.24	32.2	2.2	1.3	1.0	2.3
57-12/39	2.70	1766	57.8097	-11.9188	20	20	35	16	29	18	24	23	16	13	16	11	26	13	29	15	53	13	90	9	455	0.23	32.3	2.2	1.6	0.9	2.3
57-12/39	3.35	1766	57.8097	-11.9188	18	18	22	12	33	16	26	25	15	11	16	12	28	15	48	23	69	17	22	12	430	0.26	31.6	1.8	2.1	0.8	1.7
57-12/40	2.47	1765	57.8097	-11.9232	32	33	51	26	57	23	57	45	42	28	46	31	69	39	84	50	99	40	157	21	981	0.37	25.3	2.0	2.5	1.1	1.9
57-12/40	3.12	1765	57.8097	-11.9232	25	29	48	22	33	24	29	25	17	14	20	15	32	17	36	22	58	14	89	11	534	0.30	31.3	2.2	1.4	0.9	2.2
57-13/20	2.30	1810	57.1142	-12.7995	18	19	64	25	39	31	17	21	9	9	14	11	26	15	36	20	64	16	93	9	500	0.14	31.5	2.6	1.3	0.8	2.3
57-13/20	2.95	1810	57.1142	-12.7995	8	13	37	14	22	19	10	11	4	4	4	3	6	3	7	4	9		11		156	0.07	49.5	2.6	1.2	0.7	

Table 1

ROCKALL DATA

Sample	Depth	Water	Lat	Long	C15	C16	C17	Prist	C18	Phyt	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	Total	TOC	CO3	C17/Prist	C18/Phyt	Prist/Phyt	CPI
Number	(metres)	Depth (m)			(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	n-alkanes	(%)	(%)				
57-13/24	2.40	1927	57.9495	-11.8952	14	34	59	21	35	29	14	16	5	5	6	4	10	6	14	7	25	6	37	3	300	0.07	44.5	2.8	1.2	0.7	2.1
57-13/24	3.05	1927	57.9495	-11.8952	13	15	47	17	22	20	9	12	4	4	5	4	10	6	13	7	25	7	38	3	244	0.08	26.1	2.8	1.1	0.9	2.3
57-13/25	2.65	1903	57.9495	-11.8952			4		5	4		4			4	3	6	4	8	5	12	4	16		75	0.07	58.7		1.3		
57-13/25	3.30	1903	57.8672	-11.4877	6	6	11	7	16	5	14	13	11	7	10	8	18	10	25	11	35	9	41	5	256	0.13	24.4	1.6	3.2	1.4	2.1
57-13/27	2.05	1866	57.8672	-11.4877	6	6	10	6	13	4	16	15	14	10	16	13	29	18	44	19	69	14	109	9	430	0.19	32.0	1.7	3.3	1.5	2.8
57-13/27	2.70	1866	57.7872	-11.6928	7	7	12	9	21	9	15	14	21	9	13	11	22	14	33	15	44	12	65	7	342	0.18	27.0	1.3	2.3	1.0	2.2
57-13/28	1.20	1825	57.7872	-11.6928			4		5	4							5		6	3	10		12		45	0.07	60.5		1.3		
57-13/28	1.85	1825	57.6707	-11.9653	21	22	29	20	29	14	30	27	23	16	23	18	39	21	48	23	79	26	121	15	610	0.30	30.1	1.5	2.1	1.4	2.2
57-13/30	0.80	1808	57.6707	-11.9653		4	22	13	16	15	7	10	7	8	5	4	5		4		7		9		108	0.05	70.6	1.7	1.1	0.9	
57-13/30	1.45	1808	57.6132	-11.8113	21	24	25	19	27	20	38	29	24	16	20	16	32	18	38	21	74	24	121	17	585	0.29	29.1	1.3	1.4	1.0	2.2
57-13/31	2.60	1796	57.6132	-11.8113	17	18	27	20	42	17	33	29	25	18	30	21	51	27	60	28	101	23	162	15	727	0.24	25.3	1.4	2.5	1.2	2.4
57-13/31	3.25	1796	57.4603	-11.9773	29	34	33	37	36	32	41	33	27	23	32	23	45	24	43	31	61	22	74	17	628	0.31	28.7	0.9	1.1	1.2	1.7
57-13/32	1.33	1760	57.4603	-11.9773	7	7	11	7	18	4	15	17	6	7	14	10	27	15	47	16	84	13	156	9	479	0.17	27.5	1.6	4.5	1.8	3.4
57-13/32	1.98	1760	57.4263	-11.8868	9	8	20	14	12	11	9	8	6	7	10	9	23	12	31	14	52	11	70	7	318	0.11	30.8	1.4	1.1	1.3	2.8
57-13/34	2.31	1739	57.4263	-11.8868			6	3	4	3		5		3	5	5	12	9	15	9	23	7	27	4	134	0.11	25.3	2.0	1.3	1.0	
57-13/34	2.96	1739	57.3473	-11.6762	15	16	23	19	29	11	37	53	44	38	70	49	114	57	129	71	155	98	172	31	1201	0.40	20.5	1.2	2.6	1.7	1.7
57-13/35	2.19	1730	57.3473	-11.6762	9	18	24	13	14	12	4	6		3	3	4	7	5	10	8	17	8	20		160	0.06	25.6	1.8	1.2	1.1	
57-13/35	2.84	1730	57.2700	-11.4737	17	17	23	24	21	14	33	49	36	34	64	48	110	54	127	72	151	97	174	38	1165	0.40	18.8	1.0	1.5	1.7	1.7
57-13/39	1.30	1563	57.2700	-11.4737			6		4	3		3		3	4	4	11	7	17	10	30	10	49	5	163	0.07	23.7		1.3		
57-13/39	1.95	1563	57.2342	-11.3803	5	5	10	5	10	9	4	5		4	4	4	6	4	6	4	6		5		82	0.02	52.0	2.0	1.1	0.6	
57-13/41	1.05	1248	57.2342	-11.3803	9	11	28	14	18	11	5	6		3	4	4	7	4	9	5	12	4	12		141	0.03	24.8	2.0	1.6	1.3	
57-13/41	1.60	1248	57.1837	-11.2493	6	8	22	11	13	11	4	5			3	2	5	3	6	3	7		6		93	0.02	40.4	2.0	1.2	1.0	
57-13/46	0.63	1101	57.1837	-11.2493	6	8	11	7	8	8	3	4					5	3	6	3	8		6		71	0.03	27.2	1.6	1.0	0.9	
57-13/46	1.28	1101	57.1692	-11.2125			6	3	7	8		3													16	0.02	60.0	2.0	0.9	0.4	
57-13/47	1.10	1101	57.1692	-11.2125	7	8	21	11	12	11	4	5		3	4	4	9	5	12	7	17	5	17		140	0.06	26.0	1.9	1.1	1.0	
57-13/47	1.75	1101	57.2943	-11.8868	6	7	20	12	13	13	7	6	3	4	4	4	7	4	8	5	11	3	11		123	0.04	47.8	1.7	1.0	0.9	
57-13/48	0.95	1458	57.2943	-11.8868		4	15	6	7	5	4	5	3	4	5	4	9	6	11	7	17	6	20		127	0.07	22.8	2.5	1.4	1.2	
57-13/48	1.60	1458	57.8090	-11.7718	5	16	17	9	10	10	3	4		3	5	5	12	6	12	5	13	3	12		131	0.03	63.8	1.9	1.0	0.9	
57-13/49	0.92	1576	57.8090	-11.7718		4	16	6	9	5	3								3		4		2		41	0.03	74.9	2.7	1.8	1.2	
57-13/49	1.57	1576	57.8095	-11.9147	4	4	17	8	5	7		3													33	0.03	77.3	2.1	0.7	1.1	
57-13/50	1.60	1687	57.8095	-11.9147		3	8	3	6	5	3	4			4	3	7	4	8	4	12	3	13		82	0.06	39.6	2.7	1.2	0.6	
57-13/50	2.25	1687	57.8097	-11.9188	8	9	15	11	13	6	12	13	10	7	11	9	20	10	27	11	34	9	38	3	259	0.12	38.7	1.4	2.2	1.8	2.2
57-13/51	2.70	1729	57.8097	-11.9188	11	10	15	11	31	9	24	24	22	14	21	16	36	23	46	24	93	17	161	13	601	0.23	27.7	1.4	3.4	1.2	2.6
57-13/51	3.35	1729	57.8097	-11.9232	16	16	25	21	35	17	30	26	24	17	28	20	43	23	50	22	70	23	98	14	580	0.30	26.6	1.2	2.1	1.2	2.0
57-13/55	2.50	1768	57.8097	-11.9232	10	9	14	10	24	9	17	16	14	10	17	12	30	16	49	17	81	15	147	12	510	0.22	30.2	1.4	2.7	1.1	3.0
57-13/55	3.15	1768	57.1142	-12.7995	14	15	21	21	26	17	18	17	14	10	13	11	21	13	31	14	56	13	82	7	396	0.20	25.4	1.0	1.5	1.2	2.3
57-13/58	2.20	1798	57.1142	-12.7995	19	16	22	17	35	11	45	47	44	31	53	36	81	45	127	55	179	43	265	24	1167	0.30	23.0	1.3	3.2	1.5	2.6

Table 1

ROCKALL DATA

Sample Number	Depth (metres)	Water Depth (m)	Lat	Long	C15 (ppb)	C16 (ppb)	C17 (ppb)	Prist (ppb)	C18 (ppb)	Phyt (ppb)	C19 (ppb)	C20 (ppb)	C21 (ppb)	C22 (ppb)	C23 (ppb)	C24 (ppb)	C25 (ppb)	C26 (ppb)	C27 (ppb)	C28 (ppb)	C29 (ppb)	C30 (ppb)	C31 (ppb)	C32 (ppb)	Total n-alkanes	TOC (%)	CO3 (%)	C17/Prist	C18/Phyt	Prist/Phyt	CPI
57-13/58	2.90	1798	57.5268	-12.1547	7	7	10	7	18	7	18	18	17	13	22	15	37	19	59	25	84	24	151	14	558	0.26	31.2	1.4	2.6	1.0	2.7
57-13/59	2.45	1809	57.5028	-12.0907	19	16	19	13	33	9	46	43	40	30	47	30	74	45	119	42	178	43	266	25	1115	0.34	24.9	1.5	3.7	1.4	2.7
57-13/59	3.10	1809	57.5028	-12.0907	8	6	12	6	13	4	18	19	15	10	18	13	32	17	54	24	87	23	155	13	537	0.24	30.5	2.0	3.3	1.5	3.0
57-13/60	2.50	1817	57.4883	-12.0518	14	12	17	11	28	6	25	27	21	13	19	14	31	20	54	25	106	25	220	15	686	0.28	26.3	1.5	4.7	1.8	3.0
57-13/60	3.15	1817	57.4883	-12.0518	17	15	21	18	21	14	32	26	24	15	25	18	41	24	67	36	97	32	155	19	685	0.33	27.8	1.2	1.5	1.3	2.4
57-13/61	2.03	1821	57.4738	-12.0132	19	18	23	16	39	11	34	40	30	21	31	23	46	27	76	40	128	38	273	23	929	0.25	22.6	1.4	3.5	1.5	2.6
57-13/61	2.68	1821	57.4738	-12.0132	14	12	18	16	25	14	25	22	21	13	22	16	37	21	60	23	97	28	149	16	619	0.27	29.1	1.1	1.8	1.1	2.6
57-13/62	2.59	1824	57.3338	-12.2613	18	16	21	15	29	9	35	43	32	24	33	24	51	28	84	43	127	38	253	21	920	0.28	23.5	1.4	3.2	1.7	2.5
57-13/62	3.24	1824	57.3338	-12.2613	7	6	8	5	21	7	16	15	14	11	18	14	33	17	54	20	89	16	160	11	530	0.21	28.2	1.6	3.0	0.7	3.1
57-13/72	1.96	1566	57.9322	-12.6970	5	6	17	9	10	10	3	4		4	4	5	10	8	16	8	23	7	24		154	0.06	21.5	1.9	1.0	0.9	
57-13/72	2.61	1566	57.9322	-12.6970	5	4	12	6	13	5	12	23	25	27	49	43	82	62	143	62	172	77	209	34	1054	0.24	21.3	2.0	2.6	1.2	2.1
57-13/73	1.98	1152	57.9978	-12.9995	8	16	34	14	31	18	19	16	18	33	63	111	156	202	218	210	215	196	208	156	1910	0.05	23.9	2.4	1.7	0.8	1.0
57-13/73	2.53	1152	57.9978	-12.9995	6	6	21	13	13	12	4	5			3		5	3	6	3	6		5		86	0.02	54.6	1.6	1.1	1.1	
57-13/74	1.70	1152	57.9978	-12.9995			9	6	6	5	3	4			4	4	9	5	15	5	19	4	20		107	0.04	38.9	1.5	1.2	1.2	
57-13/74	2.35	1152	57.9978	-12.9995		3	10	8	7	8	3	5			3	3	5	3	7	3	7		7		66	0.02	44.2	1.3	0.9	1.0	
57-14/38	1.00	1070	57.0432	-13.1653	5	9	25	14	16	15	7	6		4	4	3	6	4	10	4	16	4	20		143	0.03	28.5	1.8	1.1	0.9	
57-14/40	1.15	1748	57.0115	-13.0177	7	13	28	23	22	27	14	13	4	5											106	0.03	84.3	1.2	0.8	0.9	
57-14/41	2.85	659	57.0463	-13.2888	10	13	15	13	18	12	15	21	8	7	11	9	24	12	38	16	53	29	62	20	381	0.15	33.2	1.2	1.5	1.1	1.7
57-14/41	3.50	659	57.0463	-13.2888	15	18	21	19	27	18	17	31	8	7	9	7	19	10	31	13	42	17	47	18	357	0.15	33.3	1.1	1.5	1.1	1.5
57-14/46	0.96	1096	57.0972	-13.0948		8	15	11	11	10	6	6		3					5		8		7		69	0.05	62.1	1.4	1.1	1.1	
57-16/8	1.89	1158	57.5383	-15.9828			25	15	19	20	6	7		4			5		8		12		11		97	0.05	82.0	1.7	1.0	0.8	
57-16/8	2.54	1158	57.5383	-15.9828		5	25	15	19	18	7	7		3	7	6	16	8	30	10	44	8	56		251	0.10	51.8	1.7	1.1	0.8	
57-16/9	2.05	1077	57.3685	-15.6663		5	27	16	20	21	7	7					6		9		13		12		106	0.05	78.3	1.7	1.0	0.8	
57-16/9	2.70	1077	57.3685	-15.6663		3	6	4	9	9	4	5	4		4	4	9	5	16	5	27	5	32		138	0.07	63.2	1.5	1.0	0.4	
57-16/10	2.03	1064	57.3487	-15.6292		18	9	10	9	5							7	4	11	4	15		14		91	0.09	75.8	0.9	1.8	2.0	
57-16/10	2.68	1064	57.3487	-15.6292	6	9	16	11	15	13	7	8			6	5	13	7	24	8	41	7	52		224	0.11	49.0	1.5	1.2	0.8	
57-16/11	2.38	1046	57.3227	-15.5818		4	11	6	5	4	3	4		3	3	3	7	4	12	4	18	3	16		100	0.10	52.6	1.8	1.3	1.5	
57-16/11	3.03	1046	57.3227	-15.5818	5	6	13	11	12	7	6	7					5		8		12		10		84	0.15	68.3	1.2	1.7	1.6	
57-16/12	2.56	1030	57.3047	-15.5490		7	18	12	7	8	4	6	3	4	5	4	10	6	17	7	29	5	30		162	0.10	39.7	1.5	0.9	1.5	3.0
57-16/12	3.21	1030	57.3047	-15.5490			8	4	5	6									5		7		6		31	1.27	73.9	2.0	0.8	0.7	
57-16/15	2.16	506	57.0962	-15.1678		4	11	9	11	12	4	4		3			4		5		7		6		59	0.04	47.6	1.2	0.9	0.8	
57-16/15	2.81	506	57.0962	-15.1678			6	5						6	5	4	4								25	0.02	87.0	1.2			
57-17/1	1.66	1121	57.9050	-16.6803			21	12	14	14		6							4		5				50	0.05	86.6	1.8	1.0	0.9	
57-17/1	2.31	1121	57.9050	-16.6803		4	14	8	6	9		4					6	4	10	4	18		18		88	0.06	62.7	1.8	0.7	0.9	
57-17/2	1.86	1125	57.8597	-16.5930		4	10	7	10	13				3	3		6	3	9	4	14		12		78	0.07	60.0	1.4	0.8	0.5	
57-17/2	2.51	1125	57.8597	-16.5930			6			5							4		6		7		6		29	0.04	72.6				
57-17/3	1.78	1161	57.7092	-16.3052			7	4	5	5		3		3	4	3	8	4	13	6	26	5	32		119	0.09	45.0	1.8	1.0	0.8	

Table 1

ROCKALL DATA

Sample Number	Depth (metres)	Water Depth (m)	Lat	Long	C15 (ppb)	C16 (ppb)	C17 (ppb)	Prist (ppb)	C18 (ppb)	Phyt (ppb)	C19 (ppb)	C20 (ppb)	C21 (ppb)	C22 (ppb)	C23 (ppb)	C24 (ppb)	C25 (ppb)	C26 (ppb)	C27 (ppb)	C28 (ppb)	C29 (ppb)	C30 (ppb)	C31 (ppb)	C32 (ppb)	Total n-alkanes	TOC (%)	CO3 (%)	C17/Prist	C18/Phyt	Prist/Phyt	CPI
57-17/3	2.43	1161	57.7092	-16.3052			4		3	5					4	4	9	5	15	5	20	4	19		92	0.07	45.9		0.6		
57-17/4	2.26	1165	57.5933	-16.0858			6	3	4	5	2	3	3	4	6	6	13	10	24	10	39	9	50	4	193	0.10	29.7	2.0	0.8	0.6	2.9
57-17/4	2.91	1165	57.5933	-16.0858		3	10	5	4	5		3		2	4	4	8	5	14	6	19	4	16		102	0.07	42.9	2.0	0.8	1.0	
58-11/3	2.31	1866	58.6610	-10.5567	23	21	27	19	24	9	54	57	63	49	87	55	124	80	181	68	213	58	243	22	1449	0.42	22.4	1.4	2.7	2.1	2.4
58-11/3 *	2.96	1866	58.6610	-10.5567	27	22	26	18	33	11	39	35	40	32	46	33	67	35	129	53	147	42	220	21	1047	0.41	23.5	1.4	3.0	1.6	2.5
58-12/1	2.45	1960	58.0583	-11.0833	26	23	24	18	22	8	32	41	43	33	51	36	73	42	104	45	147	44	177	21	984	0.41	25.1	1.3	2.8	2.3	2.3
58-12/1	3.10	1960	58.0583	-11.0833	24	22	25	18	23	8	37	6	48	37	56	40	84	52	133	53	174	43	231	21	1109	0.37	23.4	1.4	2.9	2.3	2.9
58-12/2	2.71	1740	58.6792	-11.7322	8	8	11	8	23	7	20	19	18	12	20	15	36	26	64	29	110	29	197	14	659	0.26	23.4	1.4	3.3	1.1	2.9
58-12/2	3.36	1740	58.6792	-11.7322	8	8	9	8	21	11	18	18	14	10	15	12	24	17	39	21	83	17	129	11	474	0.22	22.2	1.1	1.9	0.7	2.6
58-12/3	2.75	1719	58.6322	-11.8002	9	9	14	10	16	7	14	13	11	8	12	9	22	13	35	14	71	12	119	8	409	0.19	26.8	1.4	2.3	1.4	3.2
58-12/3	3.40	1719	58.6322	-11.8002	3	3	6	4	11	3	9	13	10	6	9	8	17	12	33	15	61	13	97	8	334	0.21	24.6	1.5	3.7	1.3	2.8
58-12/4	2.93	1754	58.8343	-11.9405	25	27	30	20	33	10	33	31	26	19	27	20	40	24	62	28	104	29	179	15	752	0.33	24.2	1.5	3.3	2.0	2.5
58-12/4	3.58	1754	58.8343	-11.9405	10	9	13	8	14	7	18	19	15	9	16	12	30	18	52	19	97	16	191	11	569	0.23	25.7	1.6	2.0	1.1	3.7
58-12/6	2.26	1808	58.4167	-11.2878	28	28	33	23	46	12	60	59	63	50	78	52	107	70	145	60	173	50	222	19	1343	0.40	21.2	1.4	3.8	1.9	2.2
58-12/6	2.91	1808	58.4167	-11.2878	21	20	24	16	31	10	38	44	36	28	38	27	55	38	85	43	152	37	275	20	1012	0.31	21.6	1.5	3.1	1.6	2.6
58-12/7	2.09	1755	58.5438	-11.4877	34	31	35	23	30	10	54	55	49	38	55	38	74	44	105	64	129	47	196	23	1101	0.41	24.5	1.5	3.0	2.3	2.1
58-12/7	2.74	1755	58.5438	-11.4877	9	8	12	10	20	9	20	19	18	13	22	16	37	20	57	23	91	23	43	12	463	0.22	27.0	1.2	2.2	1.1	2.1
58-12/8	1.98	1816	58.5228	-11.1468	32	31	35	29	32	18	62	60	60	48	78	50	109	56	161	70	206	57	249	27	1423	0.44	22.3	1.2	1.8	1.6	2.4
58-12/8	2.63	1816	58.5228	-11.1468	33	30	34	23	29	13	50	57	51	38	56	39	80	55	122	62	173	53	218	24	1204	0.45	24.5	1.5	2.2	1.8	2.2
58-13/10	2.37	1719	58.0657	-12.1132	15	13	20	14	31	8	29	34	26	21	33	25	52	40	108	48	230	48	428	25	1226	0.25	25.1	1.4	3.9	1.8	3.4
58-13/10	3.02	1719	58.0657	-12.1132	16	17	27	22	39	16	35	32	29	20	35	24	65	39	111	38	165	39	312	36	1079	0.30	30.1	1.2	2.4	1.4	2.9
58-13/11	2.50	1680	58.1152	-12.2065	13	12	22	18	39	12	33	31	27	20	35	25	62	36	110	49	222	44	448	33	1261	0.21	45.2	1.2	3.3	1.5	3.5
58-13/11	3.15	1680	58.1152	-12.2065	11	13	26	19	36	13	20	22	16	13	21	17	43	23	77	26	133	27	274	19	817	0.21	33.2	1.4	2.8	1.5	3.3
58-13/12	2.62	1652	58.1420	-12.2635	8	9	18	14	27	13	21	19	15	11	19	15	38	20	72	25	137	24	288	16	782	0.22	27.6	1.3	2.1	1.1	3.9
58-13/12	3.28	1652	58.1420	-12.2635	15	17	34	25	37	21	17	20	12	11	15	16	31	24	47	25	79	21	158	15	594	0.20	39.1	1.4	1.8	1.2	2.3
58-13/13	2.25	1651	58.1070	-12.5592	30	33	45	35	39	24	57	52	44	36	54	37	89	48	147	59	223	51	371	34	1449	0.33	25.3	1.3	1.6	1.5	2.9
58-13/13	2.90	1651	58.1070	-12.5592		12	23	18	37	12	22	26	21	16	30	22	56	28	93	34	196	31	382	20	1049	0.21	27.3	1.3	3.1	1.5	3.8
58-13/14	2.90	1654	58.1393	-12.6472	72	75	88	60	107	31	96	88	70	64	77	58	111	65	147	74	210	63	349	50	1864	0.39	25.6	1.5	3.5	1.9	2.0
58-13/14	3.55	1654	58.1393	-12.6472	31	33	45	33	35	23	55	50	40	33	56	35	90	48	151	65	267	46	476	39	1595	0.35	33.0	1.4	1.5	1.4	3.4
58-13/15	3.15	1630	58.1217	-12.8608	12	24	37	21	26	15	21	25	21	21	32	29	64	48	118	54	179	61	246	32	1050	0.30	21.1	1.8	1.7	1.4	2.4
58-13/15	3.80	1630	58.1217	-12.8608	31	31	41	57	54	32	50	62	61	52	91	69	143	72	217	104	283	129	383	27	1900	0.44	17.5	0.7	1.7	1.8	2.2
58-13/16	1.18	1643	58.2447	-12.9068	12	17	43	20	26	17	9	13	4	3	5	4	10	7	23	11	51	8	100	5	351	0.07	41.3	2.2	1.5	1.2	3.2
58-13/16	1.83	1643	58.2447	-12.9068		3	14	7	6	3	3	4	3	3	5	6	11	10	23	11	51	9	107	6	275	0.09	28.5	2.0	2.0	2.3	3.9
58-13/17	2.45	1613	58.4312	-12.8170	11	12	17	12	30	6	24	25	20	12	21	17	35	22	78	27	154	34	290	30	859	0.22	27.2	1.4	5.0	2.0	3.2
58-13/17	3.10	1613	58.4312	-12.8170		18	24	19	39	13	36	33	28	19	35	23	58	32	96	39	155	34	290	30	989	0.36	30.3	1.3	3.0	1.5	2.9
58-13/18	2.30	1588	58.5927	-12.6965	13	13	20	13	26	9	18	19	14	9	17	14	35	18	61	21	127	23	277	17	742	0.24	30.6	1.5	2.9	1.4	3.9
58-13/18	2.95	1588	58.5927	-12.6965	27	27	37	25	24	17	26	21	15	11	17	14	32	17	52	20	96	20	191	14	661	0.27	30.6	1.5	1.4	1.5	3.3

Table 1

ROCKALL DATA

Sample Number	Depth (metres)	Water Depth (m)	Lat	Long	C15 (ppb)	C16 (ppb)	C17 (ppb)	Prist (ppb)	C18 (ppb)	Phyt (ppb)	C19 (ppb)	C20 (ppb)	C21 (ppb)	C22 (ppb)	C23 (ppb)	C24 (ppb)	C25 (ppb)	C26 (ppb)	C27 (ppb)	C28 (ppb)	C29 (ppb)	C30 (ppb)	C31 (ppb)	C32 (ppb)	Total n-alkanes	TOC (%)	CO3 (%)	C17/Prist	C18/Phyt	Prist/Phyt	CPI
58-13/19	1.90	1615	58.4873	-12.4022		8	13	8	15	4	14	15	8	8	14	11	29	15	48	16	96	15	206	12	543	0.21	30.9	1.6	3.8	2.0	4.0
58-13/19	2.55	1615	58.4873	-12.4022		7	15	10	14	8	6	7		4	11	9	24	14	37	12	60	11	110	8	349	0.09	52.5	1.5	1.8	1.3	3.3
58-13/20	2.70	1643	58.4137	-12.1983		7	13	8	14	4	16	14	5	4	12	10	23	12	37	14	69	13	138		401	0.17	37.2	1.6	3.5	2.0	3.9
58-13/20	3.35	1643	58.4137	-12.1983		8	16	9	10	4	5	5			5	7	10	7	18	8	34	7	74		214	0.07	51.8	1.8	2.5	2.3	
58-13/21	1.70	1515	58.9053	-12.9798	18	17	22	14	25	8	27	28	23	18	25	20	38	22	57	24	89	23	141	13	630	0.30	25.3	1.6	3.1	1.8	2.4
58-13/21	2.35	1515	58.9053	-12.9798	17	17	25	17	15	12	21	19	14	10	17	13	28	15	45	15	68	15	105	9	468	0.25	28.7	1.5	1.3	1.4	2.9
58-13/22	2.09	1420	58.0528	-12.9472			4								3	3	6	4	12	5	22	5	36	2	102	0.06	30.1				
58-13/22	2.74	1420	58.0528	-12.9472		3	14	7	8	7	3	3			3	3	5	4	7	4	7	3	7		74	0.03	56.2	2.0	1.1	1.0	
58-13/23	2.62	1676	58.6825	-12.1408	11	8	15	10	23	6	19	20	17	12	19	14	28	20	51	19	77	18	122	9	502	0.24	26.0	1.5	3.8	1.7	2.6
58-13/23	3.27	1676	58.6825	-12.1408	8	7	14	9	13	5	10	11	7	6	8	7	15	8	23	8	38	7	57	4	251	0.20	36.7	1.6	2.6	1.8	2.7
58-13/24	2.73	1617	58.7435	-12.4903	8	6	10	7	17	5	14	17	13	11	16	14	26	18	54	18	76	17	133	9	477	0.25	28.2	1.4	3.4	1.4	2.8
58-13/24	3.38	1617	58.7435	-12.4903		7	14		15		12	13	9	7	9	9	14	9	25	11	42	9	67	6	278	0.23	37.9				2.4
58-13/25	2.82	1604	58.9283	-12.4225		22	29	21	25	7	37	39	33	27	34	26	44	36	75	32	96	30	123	14	722	0.26	24.9	1.4	3.6	3.0	2.1
58-13/25	3.47	1604	58.9283	-12.4225		8	14	12	23	10	18	18	16	11	19	14	33	23	53	20	74	20	106	12	482	0.27	26.4	1.2	2.3	1.2	2.4
58-13/26	3.06	1558	58.8240	-12.7880	13	16	20	12	25	10	20	16	13	10	15	11	25	14	41	17	74	19	114	11	474	0.34	31.6	1.7	2.5	1.2	2.6
58-13/26	3.71	1558	58.8240	-12.7880	11	8	15	10	16	5	19	20	17	12	21	16	37	20	60	28	85	24	131	15	555	0.34	31.0	1.5	3.2	2.0	2.5
58-13/27	3.04	1562	58.7012	-12.9465	10	8	14	11	15	5	16	16	13	10	16	12	29	15	48	18	84	18	125	11	478	0.30	33.5	1.3	3.0	2.2	3.0
58-13/27	3.69	1562	58.7012	-12.9465	10	8	16	11	18	8	15	15	11	8	13	10	24	15	46	15	61	15	98	9	407	0.29	32.1	1.5	2.3	1.4	2.7
58-13/28	2.66	1581	58.5627	-12.7223	11	8	13	9	18	5	16	16	12	9	14	10	26	14	41	21	76	16	116	11	448	0.31	34.7	1.4	3.6	1.8	2.7
58-13/28	3.31	1581	58.5627	-12.7223		9	14	12	20	6	18	17	15	11	21	14	35	23	55	25	79	17	116	13	502	0.34	30.7	1.2	3.3	2.0	2.5
58-13/29	2.71	1662	58.4023	-12.1005	8	6	12	9	16	5	12	12	9	7	10	8	19	10	31	13	52	9	83	6	323	0.24	30.3	1.3	3.2	1.8	2.8
58-13/29	3.36	1662	58.4023	-12.1005		4	19	8	10	8	3	5			3	3	5	3	7	3	11	2	16		94	0.09	55.0	2.4	1.3	1.0	
58-14/3	0.60	1619	58.3313	-13.0152			6																		6	0.03	37.2				
58-14/4	2.46	1414	58.3435	-13.2192		3	13	5	5	3	3	5		3	3	3	5	3	3	7		7			63	0.03	59.8	2.6	1.7	1.7	
58-14/4	3.11	1414	58.3435	-13.2192		2	6	3	4	2	2			3	4	4	9	7	17	6	21	4	23		112	0.05	20.1	2.0	2.0	1.5	
58-14/5	2.18	1574	58.5017	-13.1983			5		6		5	7		4	9	7	17	12	28	10	47	8	69	4	238	0.12	42.3				
58-14/5	2.83	1574	58.5017	-13.1983					4		3	4		3	5	5	10	11	21	9	35	7	52	3	172	0.11	29.8				
58-14/6	2.24	1621	58.5498	-13.1383		3	15	4	6		5	8	7	5	6	5	7	5	9	4	10		11		106	0.05	53.3	3.8			
58-14/6	2.89	1621	58.5498	-13.1383			7		3								5	4	10	3	13		16		61	0.05	49.2				
58-14/7	2.14	1631	58.5397	-13.0282	31	31	36	20	49	10	50	58	48	41	58	43	94	55	142	63	202	52	305	37	1395	0.39	26.6	1.8	4.9	2.0	2.3
58-14/7	2.79	1631	58.5397	-13.0282		10	14	7	24	4	22	24	22	16	31	22	61	30	99	38	177	29	312	19	950	0.22	49.6	2.0	6.0	1.8	3.7
58-14/12	2.05	1504	58.9197	-13.0852	9	11	15	9	20	5	19	21	10	11	18	14	35	19	56	22	123	18	240	12	673	0.23	21.8	1.7	4.0	1.8	3.8
58-14/12	2.70	1504	58.9197	-13.0852		6	9	5	18	3	18	19	7	11	21	16	46	25	78	25	125	24	242	17	707	0.26	27.6	1.8	6.0	1.7	3.5
58-14/13	2.06	1616	58.7935	-13.2672			10		4				3	3	4	4	7	7	12	6	23	5	37		125	0.05	44.2				
58-14/13	2.71	1616	58.7935	-13.2672			8	3	4		3	4		3	4	4	7	6	12	6	27	6	56		150	0.08	30.5	2.7			
58-14/14	0.92	1583	58.7625	-13.2860			7		3					3	3	3	6	4	11	5	22	4	39		110	0.04	42.7				
58-14/14	1.57	1583	58.7625	-13.2860			5		4			3			3	4	11	6	16	8	28	6	46		140	0.08	21.6				

Table 1

ROCKALL DATA

Sample Number	Depth (metres)	Water Depth (m)	Lat	Long	C15 (ppb)	C16 (ppb)	C17 (ppb)	Prist (ppb)	C18 (ppb)	Phyt (ppb)	C19 (ppb)	C20 (ppb)	C21 (ppb)	C22 (ppb)	C23 (ppb)	C24 (ppb)	C25 (ppb)	C26 (ppb)	C27 (ppb)	C28 (ppb)	C29 (ppb)	C30 (ppb)	C31 (ppb)	C32 (ppb)	Total n-alkanes	TOC (%)	CO3 (%)	C17/Prist	C18/Phyt	Prist/Phyt	CPI
58-14/21	2.07	1242	58.6295	-13.8637			12		4			3			3	4	6	7	13	6	24	5	39		126	0.05	43.3				
58-14/21	2.70	1242	58.6295	-13.8637		3	9	4	6		3	4			3	3	7	5	13	5	18	4	28		111	0.04	47.7	2.3			
58-14/22	2.67	1284	58.4880	-13.6328			15	4	5										5		8		11		44	0.05	72.6	3.8			
58-14/22	3.32	1284	58.4880	-13.6328	7	6	C	6	17	3	12	12	6	7	9	8	16	12	37	15	66	12	111	10	363	0.19	35.1		5.7	2.0	
58-14/23	2.33	1216	58.4433	-13.6882	3	6	19	7	7	4	3			4	6	5	16	11	27	11	51	9	79	6	263	0.09	27.7	2.7	1.8	1.8	
58-14/23	2.98	1216	58.4433	-13.6882			14	6	5	4	3		3	4	5	5	15	9	21	9	41	8	70	5	217	0.06	48.4	2.3	1.3	1.5	
58-14/24	2.29	1213	58.4433	-13.6882			7		4						3	3	12	7	15	8	36	8	82	6	191	0.09	36.7				
58-14/24	2.94	1213	58.4433	-13.6882	4	3	12	6	4	5		3			3	3	7	4	12	6	20	5	27		113	0.05	38.1	2.0	0.8	1.2	
58-14/25	2.23	1277	58.4340	-13.4763		3	13	5	4	3				3	3	3		6	11	6	18	5	25		100	0.06	28.1	2.6	1.3	1.7	
58-14/25	2.88	1277	58.4340	-13.4763	6	10	33	15	18	16	7	6	3	3	3	3	7	6	8	4	11		16		144	0.04	54.4	2.2	1.1	0.9	
58-14/26	0.94	1303	58.4217	-13.4412	3	5	19	8	10	8	5		3	3	4	3	9	7	10	4	12		15		112	0.03	47.4	2.4	1.3	1.0	
58-14/27	1.39	1007	58.2528	-13.5085			10	3	3									3			3				19	0.02	85.0	3.3			
58-14/27	2.04	1007	58.2528	-13.5085		3	C	5	7	5	3						5	3	5		8		10		41	0.02	66.6		1.4	1.0	
58-14/28	1.70	962	58.1167	-13.2763			10	3	4										3		4		5		26	0.01	80.5	3.3			
58-14/28	2.35	962	58.1167	-13.2763			7		3																10	0.01	85.6				
58-14/33	1.00	1486	58.2752	-13.0852			7		4						3	3	13	10	16	8	23	6	33		126	0.06	26.7				
58-14/33	1.65	1486	58.2752	-13.0852			7		4					3	4	4	7	6	12	5	15	3	22		92	0.03	52.8				
58-14/35	2.85	1617	58.3310	-13.0150	16	6	29	11	10	11	5	5													71	0.01	48.9	2.6	0.9	1.0	
58-14/35	3.50	1617	58.3310	-13.0150	6	10	37	15	14	14	6	7													80	0.01	46.7	2.5	1.0	1.1	
58-14/37	2.32	1648	58.6107	-13.1650		7	24	10	11	10	7	5													54	0.01	40.8	2.4	1.1	1.0	
58-14/37	2.97	1648	58.6107	-13.1650	8	13	50	18	25	18	9	9													114	0.01	44.0	2.8	1.4	1.0	
58-14/46	0.81	1648	58.6107	-13.1650			8	3	3								4	3	8	3	13		21		63	0.05	34.7	2.7			
58-14/46	1.46	1648	58.6107	-13.1650		5	15	7	5	3		3					4	4	6	4	6		5		57	0.02	41.6	2.1	1.7	2.3	
58-14/47	2.75	1327	58.5192	-13.5937			9	4	4			4			4	3	6	4	12	4	19		28		97	0.06	65.7	2.3			
58-14/47	3.40	1327	58.5192	-13.5937	5	6	11	7	13	4	12	13	5	6	9	8	17	11	34	12	65	11	112	7	357	0.17	34.3	1.6	3.3	1.8	3.3
58-14/48	1.30	1082	58.3855	-13.7602			8		4										5		8		12		37	0.03	72.1				
58-14/48	1.95	1082	58.3855	-13.7602		5	16	7	7	7							4		7		11		17		67	0.04	59.3	2.3	1.0	1.0	
58-14/49	2.98	1319	58.3553	-13.3813		8	21	10	8	9	4		3	4	4	4	10	6	13	6	27	5	50		173	0.08	42.2	2.1	0.9	1.1	
58-14/49	3.63	1319	58.3553	-13.3813		6	C	8	7	7	3				4	4	9	7	15	6	25	6	36		128	0.06	43.8		1.0	1.1	
58-17/1	0.74	1131	58.0138	-16.8918	3	5	11	8	7	10	13	4		3	3	3	6	4	10	4	16		16		108	0.02	89.2	1.4	0.7	0.8	
58-17/1	1.39	1131	58.0138	-16.8918	7	12	19	9	8	8	3	3			3	2	6	3	9	4	12	4	11		106	0.04	62.7	2.1	1.0	1.1	

Table 1

Rockall Shallow Cores | Headspace Gas | Results in ng/g wet sediment

Sample	Lat	Long	Depth (m)	CO3	C1	C2	C2ene	C3	C3ene	iC4	nC4	C4ene	nC5	C5ene	nC6	C6ene	C1/ΣCn (%)
56-12/13	56.9665	-11.5037	2.85	23.99	1.22	0.07	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.3
56-13/02	56.9667	-12.1775	2.86	23.77	1.75	0.02	0.07	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.2
56-13/03	56.8378	-12.2758	2.85	24.32	1.89	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.0
56-13/04	56.7672	-12.9318	3.03	28.32	0.72	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.0
56-13/05	56.9362	-12.8612	2.48	45.94	1.37	0.06	0.04	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.5
56-13/06	56.9007	-12.8905	2.14	27.13	0.63	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.0
56-13/07	56.9378	-12.9922	1.25	41.32	1.04	0.06	0.03	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	90.1
56-13/08	56.9847	-12.6552	2.48	26.54	0.61	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.7
56-14/05	56.7385	-13.1130	2.30	20.45	0.63	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.2
56-14/06	56.7617	-13.3313	2.86	44.23	0.90	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.3
56-14/07	56.8045	-13.2768	0.86	33.24	0.95	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.8
56-14/08	56.8427	-13.2302	0.65	38.03	0.60	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.0
56-14/11	56.9932	-13.0395	2.25	84.79	0.77	0.07	0.08	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	82.1
56-14/12	56.9923	-13.1405	3.05	21.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
57-11/68	57.0402	-10.3378	1.88	23.55	1.47	0.06	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.0
57-11/69	57.0422	-10.4818	1.37	20.10	0.49	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.6
57-12/14	57.8038	-11.0612	0.28	22.50	1.38	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.0
57-12/16	57.8038	-11.0612	2.31	23.27	1.73	0.09	0.07	0.05	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	88.5
57-12/17	57.5208	-11.5668	2.07	28.39	0.81	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.3
57-12/20	57.9495	-11.8952	1.90	25.65	1.72	0.10	0.12	0.03	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	86.1
57-12/21	57.9495	-11.8952	2.50	24.65	1.11	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.4
57-12/22	57.8672	-11.4877	2.40	24.15	1.49	0.07	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.0
57-12/23	57.7872	-11.6928	2.25	26.13	1.29	0.02	0.06	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.2
57-12/24	57.6707	-11.9653	2.40	26.76	0.94	0.04	0.05	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.0
57-12/25	57.6132	-11.8113	2.42	37.11	1.26	0.05	0.07	0.01	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	88.1
57-12/26	57.4603	-11.9773	2.43	26.65	1.47	0.11	0.17	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.7
57-12/27	57.4263	-11.8868	2.40	27.13	1.71	0.04	0.09	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.6
57-12/28	57.3473	-11.6762	2.25	22.82	1.29	0.20	0.23	0.07	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	70.9
57-12/30	57.2700	-11.4737	1.58	20.02	1.11	0.06	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.8
57-12/32	57.2342	-11.3803	2.37	89.21	0.92	0.06	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.1
57-12/34	57.1837	-11.2493	2.30	25.37	1.11	0.01	0.06	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.7
57-12/35	57.1692	-11.2125	2.51	22.66	1.24	0.02	0.10	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	89.5
57-12/36	57.2943	-11.8868	2.78	22.23	1.17	0.13	0.17	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	77.6
57-12/37	57.8090	-11.7718	2.84	23.05	1.42	0.09	0.09	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.5
57-12/38	57.8095	-11.9147	2.73	24.95	0.83	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.8
57-12/39	57.8097	-11.9188	2.75	32.31	1.09	0.17	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	81.7
57-12/40	57.8097	-11.9232	2.52	25.27	1.07	0.03	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.8
57-13/20	57.1142	-12.7995	2.35	31.55	0.93	0.04	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.0
57-13/24	57.0328	-12.7380	2.45	44.51	1.03	0.09	0.08	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	80.9
57-13/25	57.0972	-12.5263	2.70	58.67	0.92	0.06	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.4
57-13/27	57.1875	-12.3927	2.10	32.04	0.78	0.04	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.4
57-13/28	57.1698	-12.5615	1.25	60.46	1.09	0.05	0.07	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.2
57-13/30	57.1965	-12.5762	0.85	70.63	1.17	0.08	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.0
57-13/31	57.2603	-12.4968	2.65	25.29	1.07	0.05	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.9
57-13/32	57.3060	-12.6223	1.38	27.52	0.99	0.03	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.5
57-13/34	57.2490	-12.7137	2.36	25.26	0.70	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.4
57-13/35	57.1907	-12.7787	2.24	25.59	0.66	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.8
57-13/39	57.2202	-12.8570	1.35	23.69	0.98	0.04	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.9
57-13/41	57.2215	-12.9318	1.10	24.82	0.51	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.5
57-13/46	57.3902	-12.8457	0.68	27.16	0.66	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.3
57-13/47	57.3902	-12.8457	1.15	25.98	0.86	0.07	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.2
57-13/48	57.5172	-12.7515	1.00	22.78	0.79	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.7

Table 2

Rockall Shallow Cores | Headspace Gas | Results in ng/g wet sediment

Sample	Lat	Long	Depth (m)	CO3	C1	C2	C2ene	C3	C3ene	iC4	nC4	C4ene	nC5	C5ene	nC6	C6ene	C1/ΣCn (%)
57-13/49	57.6433	-12.5977	0.97	74.91	2.49	0.11	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.5
57-13/50	57.7687	-12.4488	1.65	39.59	1.00	0.11	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.6
57-13/51	57.8708	-12.3277	2.75	27.71	1.26	0.03	0.07	0.03	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	87.7
57-13/55	57.4070	-12.5082	2.55	30.24	0.85	0.06	0.07	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	81.3
57-13/58	57.5268	-12.1547	2.25	22.96	1.27	0.06	0.12	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	84.6
57-13/59	57.5028	-12.0907	2.50	24.85	1.97	0.23	0.16	0.05	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	80.2
57-13/60	57.4883	-12.0518	2.55	26.33	1.84	0.06	0.07	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.2
57-13/61	57.4738	-12.0132	2.08	22.62	1.33	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.0
57-13/62	57.3338	-12.2613	2.64	23.54	1.00	0.04	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.9
57-13/73	57.9978	-12.9995	2.03	23.90	0.92	0.04	0.16	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	81.1
57-13/74	57.9978	-12.9995	1.75	38.87	0.90	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.8
57-14/38	57.0432	-13.1653	1.05	28.51	0.96	0.04	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.0
57-14/40	57.0115	-13.0177	1.20	84.31	0.68	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.7
57-14/41	57.0463	-13.2888	2.90	33.17	0.61	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.0
57-14/46	57.0972	-13.0948	1.01	62.09	0.72	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.3
57-16/08	57.5383	-15.9828	1.94	82.01	0.66	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.2
57-16/09	57.3685	-15.6663	2.10	78.25	0.77	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.2
57-16/10	57.3487	-15.6292	2.08	75.81	0.96	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.9
57-16/11	57.3227	-15.5818	2.43	52.60	1.10	0.07	0.08	0.12	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00	78.5
57-16/12	57.3047	-15.5490	2.61	39.67	0.97	0.03	0.03	0.05	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.00	86.4
57-16/15	57.0962	-15.1678	2.21	47.64	1.00	0.19	0.09	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	74.2
57-17/01	57.9050	-16.6803	1.71	86.63	0.84	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.1
57-17/02	57.8597	-16.5930	1.91	59.96	0.68	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.6
57-17/03	57.7092	-16.3052	1.83	45.04	0.81	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.8
57-17/04	57.5933	-16.0858	2.31	29.75	0.88	0.19	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.3
58-11/03	58.6610	-10.5567	2.36	22.44	2.42	0.12	0.16	0.06	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00	85.8
58-12/01	58.0583	-11.0833	2.50	25.06	1.03	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.3
58-12/02	58.6792	-11.7322	2.76	23.41	1.07	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.0
58-12/03	58.6322	-11.8002	2.80	26.78	0.58	0.05	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.1
58-12/04	58.8343	-11.9405	2.98	24.19	0.92	0.02	0.06	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.0
58-12/06	58.4167	-11.2878	2.31	21.21	1.07	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.0
58-12/07	58.5438	-11.4877	2.14	24.51	0.93	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.6
58-12/08	58.5228	-11.1468	2.03	22.31	1.09	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.2
58-13/10	58.0657	-12.1132	2.42	25.05	0.98	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.4
58-13/11	58.1152	-12.2065	2.55	45.23	0.77	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.0
58-13/12	58.1420	-12.2635	2.67	27.60	0.94	0.14	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.3
58-13/13	58.1070	-12.5592	2.30	25.27	1.01	0.02	0.05	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	88.7
58-13/14	58.1393	-12.6472	2.95	25.59	1.25	0.01	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.1
58-13/15	58.1217	-12.8608	3.20	21.05	0.42	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.5
58-13/16	58.2447	-12.9068	1.23	41.35	0.72	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.5
58-13/17	58.4312	-12.8170	2.50	27.20	1.16	0.04	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.3
58-13/18	58.5927	-12.6965	2.35	30.62	0.83	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.9
58-13/19	58.4873	-12.4022	1.95	30.95	1.14	0.02	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.4
58-13/20	58.4137	-12.1983	2.75	37.19	1.10	0.04	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	87.9
58-13/21	58.9053	-12.9798	1.75	25.26	1.06	0.00	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.7
58-13/22	58.0528	-12.9472	2.14	30.14	1.85	0.15	0.08	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.6
58-13/23	58.6825	-12.1408	2.67	25.96	0.60	0.02	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.3
58-13/24	58.7435	-12.4903	2.78	28.18	0.92	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.1
58-13/25	58.9283	-12.4225	2.87	24.93	1.85	0.10	0.10	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.2
58-13/26	58.8240	-12.7880	3.11	31.60	1.06	0.00	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.9
58-13/27	58.7012	-12.9465	3.09	33.53	0.90	0.02	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.1
58-13/28	58.5627	-12.7223	2.71	34.72	1.29	0.09	0.11	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	83.4

Table 2

Rockall Shallow Cores | Headspace Gas | Results in ng/g wet sediment

Sample	Lat	Long	Depth (m)	CO3	C1	C2	C2ene	C3	C3ene	iC4	nC4	C4ene	nC5	C5ene	nC6	C6ene	C1/ΣCn (%)
58-13/29	58.4023	-12.1005	2.76	30.33	0.69	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.6
58-14/03	58.3313	-13.0152	0.65	37.17	0.95	0.04	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.1
58-14/04	58.3435	-13.2192	2.51	59.79	0.69	0.03	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.8
58-14/05	58.5017	-13.1983	2.23	42.26	0.60	0.04	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.7
58-14/06	58.5498	-13.1383	2.29	53.33	0.55	0.02	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	92.1
58-14/07	58.5397	-13.0282	2.19	26.58	1.91	0.03	0.07	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.0
58-14/12	58.9197	-13.0852	2.10	21.81	0.86	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.7
58-14/13	58.7935	-13.2672	2.11	44.22	0.79	0.02	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	90.3
58-14/14	58.7625	-13.2860	0.97	42.73	1.12	0.09	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.5
58-14/21	58.6295	-13.8637	2.09	43.34	0.84	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	93.8
58-14/22	58.4880	-13.6328	2.72	72.56	0.74	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.0
58-14/23	58.4433	-13.6882	2.38	27.68	0.69	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.8
58-14/24	58.4433	-13.6882	2.34	36.68	0.81	0.04	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.6
58-14/25	58.4340	-13.4763	2.28	28.09	0.54	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.8
58-14/26	58.4217	-13.4412	0.99	47.43	0.87	0.01	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.6
58-14/27	58.2528	-13.5085	1.44	85.01	1.07	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	96.7
58-14/28	58.1167	-13.2763	1.75	80.49	1.40	0.02	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	88.9
58-14/33	58.2752	-13.0852	1.05	26.69	1.45	0.06	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.9
58-14/35	58.3310	-13.0150	2.90	48.95	1.05	0.08	0.06	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	85.3
58-14/37	58.6107	-13.1650	2.37	40.78	0.75	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.6
58-14/46	58.6107	-13.1650	0.86	34.67	0.97	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.6
58-14/47	58.5192	-13.5937	2.80	65.65	2.96	0.23	0.17	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	85.3
58-14/48	58.3855	-13.7602	1.35	72.11	1.25	0.05	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	94.1
58-14/49	58.3553	-13.3813	3.03	42.23	0.89	0.03	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	92.9
58-17/01	58.0138	-16.8918	0.79	89.15	1.07	0.10	0.21	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.0
Max				89.21	2.96	0.23	0.23	0.12	0.13	0.01	0.03	0.01	0.00	0.00	0.00	0.00	98.8
Min				20.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Mean				37.02	1.05	0.05	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.3
Median				28.18	0.97	0.03	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.6

Table 2

Rockall Shallow Cores | Occluded Gas | Results in ng/g wet sediment

Sample	Lat	Long	Depth (m)	CO3	C1	C2	C2ene	C3	C3ene	iC4	nC4	C4ene	CyC5	iC5	nC5	C5ene	CyC6	meC5	nC6	C6ene	C1/ΣCn (%)	C2-C4/ΣCn (%)	iC4/nC4
56-12/13	56.9665	-11.5037	2.85	23.99	6.44	1.54	1.65	0.99	1.77	0.07	0.45	0.00	0.00	0.13	0.29	0.32	0.00	0.00	0.00	0.00	47.2	47.5	0.16
56-13/02	56.9667	-12.1775	2.86	23.77	19.01	2.99	3.43	2.00	4.36	0.40	1.21	2.17	0.36	0.38	0.86	0.00	0.00	0.00	0.00	0.00	51.2	44.6	0.33
56-13/03	56.8378	-12.2758	2.85	24.32	12.00	1.46	1.62	0.82	1.71	0.00	0.38	0.68	0.19	0.00	0.34	0.15	0.00	0.00	0.00	0.00	62.0	34.5	0.00
56-13/04	56.7672	-12.9318	3.03	28.32	15.07	2.25	2.82	1.38	3.01	0.19	0.61	0.00	0.38	0.18	0.58	0.00	0.00	0.00	0.00	0.00	56.9	38.8	0.31
56-13/05	56.9362	-12.8612	2.48	45.94	19.36	2.35	3.16	1.30	3.37	0.12	0.57	1.03	1.24	0.00	0.58	0.32	0.00	0.00	0.00	0.00	58.0	35.6	0.21
56-13/06	56.9007	-12.8905	2.14	27.13	12.59	3.25	4.55	2.07	5.60	0.25	1.13	3.08	0.51	0.33	1.26	1.12	0.00	0.51	0.00	0.21	34.5	54.7	0.22
56-13/07	56.9378	-12.9922	1.25	41.32	55.85	8.24	8.95	5.21	10.20	0.96	2.60	4.02	1.72	1.30	1.97	1.37	0.00	0.59	0.54	0.00	53.9	38.8	0.37
56-13/08	56.9847	-12.6552	2.48	26.54	20.44	3.02	4.06	1.77	4.15	0.26	0.80	1.50	0.73	0.21	0.79	0.00	0.00	0.00	0.00	0.00	54.2	41.2	0.32
56-14/05	56.7385	-13.1130	2.30	20.45	23.32	5.26	6.85	3.36	7.80	0.48	1.65	0.25	1.13	0.58	1.42	0.12	0.00	0.33	0.43	0.00	44.0	48.4	0.29
56-14/06	56.7617	-13.3313	2.86	44.23	43.93	4.22	4.01	2.52	4.65	0.43	1.11	1.77	0.70	0.00	0.76	0.54	0.00	0.00	0.00	0.00	68.0	28.9	0.38
56-14/07	56.8045	-13.2768	0.86	33.24	47.80	8.21	6.86	6.52	8.34	1.45	3.28	3.61	0.30	1.41	1.86	1.35	0.00	0.78	0.00	0.00	52.1	41.7	0.44
56-14/08	56.8427	-13.2302	0.65	38.03	29.39	4.73	6.19	2.92	7.01	0.41	1.40	2.52	1.08	0.59	1.14	0.83	0.00	0.00	0.00	0.00	50.5	43.3	0.29
56-14/11	56.9932	-13.0395	2.25	84.79	22.01	7.30	8.81	5.04	9.22	0.80	2.56	4.24	0.13	1.18	1.55	1.92	0.00	0.62	0.48	0.68	33.1	57.1	0.31
56-14/12	56.9923	-13.1405	3.05	21.68	25.82	5.11	6.76	2.97	7.13	0.37	1.45	0.20	1.02	0.50	1.32	0.00	0.00	0.00	0.15	0.00	48.9	45.4	0.25
57-11/68	57.0402	-10.3378	1.88	23.55	9.36	1.68	1.91	1.02	1.96	0.00	0.42	0.77	0.13	0.13	0.28	0.18	0.00	0.00	0.00	0.00	52.5	43.4	0.00
57-11/69	57.0422	-10.4818	1.37	20.10	24.60	3.17	3.12	1.85	3.12	0.43	0.94	1.33	0.33	0.44	0.55	0.51	0.00	0.00	0.00	0.00	60.9	34.6	0.46
57-12/14	57.8038	-11.0612	0.28	22.50	9.43	1.88	2.39	1.00	2.43	0.00	0.45	0.92	0.24	0.41	0.00	0.00	0.00	0.00	0.00	0.00	49.3	47.4	0.00
57-12/16	57.8038	-11.0612	2.31	23.27	8.00	1.68	2.04	0.93	2.08	0.00	0.46	0.78	0.15	0.00	0.28	0.25	0.00	0.00	0.00	0.00	48.1	47.9	0.00
57-12/17	57.5208	-11.5668	2.07	28.39	16.24	2.02	2.30	1.26	2.61	0.00	0.58	0.96	0.75	0.00	0.49	0.00	0.00	0.00	0.00	0.00	59.7	35.8	0.00
57-12/20	57.9495	-11.8952	1.90	25.65	15.03	2.73	3.30	1.61	3.58	0.24	1.26	1.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.6	48.4	0.19
57-12/21	57.9495	-11.8952	2.50	24.65	20.55	2.67	2.78	1.51	3.12	0.19	0.69	1.38	0.19	0.27	0.48	0.50	0.00	0.00	0.00	0.00	59.9	36.0	0.28
57-12/22	57.8672	-11.4877	2.40	24.15	13.00	2.29	3.09	1.49	3.33	0.19	0.69	1.74	0.28	0.24	0.48	0.42	0.00	0.00	0.00	0.00	47.7	47.1	0.28
57-12/23	57.7872	-11.6928	2.25	26.13	9.11	1.66	2.24	0.95	2.51	0.00	0.40	0.78	0.46	0.00	0.41	0.00	0.00	0.00	0.00	0.00	49.2	46.1	0.00
57-12/24	57.6707	-11.9653	2.40	26.76	20.06	3.63	4.40	2.01	4.57	0.26	0.93	1.85	0.51	0.30	0.72	0.50	0.00	0.00	0.00	0.00	50.5	44.4	0.28
57-12/25	57.6132	-11.8113	2.42	37.11	21.85	3.11	3.67	1.76	4.20	0.28	0.92	1.87	0.62	0.33	0.86	0.79	0.00	0.00	0.00	0.39	53.8	38.9	0.30
57-12/26	57.4603	-11.9773	2.43	26.65	14.73	2.72	3.68	1.54	4.04	0.13	0.77	0.00	0.47	0.16	0.76	0.00	0.00	0.00	0.14	0.00	50.6	44.2	0.16
57-12/27	57.4263	-11.8868	2.40	27.13	14.77	2.06	2.38	1.17	2.73	0.00	0.54	1.15	0.47	0.15	0.53	0.39	0.00	0.00	0.00	0.00	56.1	38.1	0.00
57-12/28	57.3473	-11.6762	2.25	22.82	11.97	2.28	2.72	1.39	2.95	0.19	0.68	1.24	0.19	0.22	0.52	0.35	0.00	0.00	0.00	0.00	48.5	46.3	0.28
57-12/30	57.2700	-11.4737	1.58	20.02	13.83	2.90	4.48	1.74	5.24	0.15	0.76	1.92	0.94	0.11	1.02	0.59	0.00	0.00	0.59	0.00	40.4	50.2	0.19
57-12/32	57.2342	-11.3803	2.37	89.21	17.44	6.38	9.21	3.99	10.28	0.59	1.96	4.14	1.24	0.99	1.46	1.38	0.00	0.23	0.22	0.00	29.3	61.4	0.30
57-12/34	57.1837	-11.2493	2.30	25.37	14.28	1.67	1.96	0.95	2.04	0.00	0.43	0.81	0.00	0.00	0.39	0.25	0.00	0.00	0.00	0.00	62.7	34.5	0.00
57-12/35	57.1692	-11.2125	2.51	22.66	5.88	1.39	1.84	0.84	1.99	0.00	0.44	0.96	0.37	0.00	0.33	0.27	0.00	0.00	0.00	0.00	41.1	52.1	0.00
57-12/36	57.2943	-11.8868	2.78	22.23	13.86	2.05	2.79	1.16	3.11	0.11	0.57	1.08	0.51	0.00	0.63	0.27	0.00	0.00	0.05	0.00	52.9	41.5	0.19
57-12/37	57.8090	-11.7718	2.84	23.05	23.89	2.82	2.99	1.48	3.23	0.27	0.73	1.26	0.48	0.18	0.64	0.42	0.00	0.00	0.00	0.00	62.2	33.3	0.37

Table 3

Rockall Shallow Cores | Occluded Gas | Results in ng/g wet sediment

Sample	Lat	Long	Depth (m)	CO3	C1	C2	C2ene	C3	C3ene	iC4	nC4	C4ene	CyC5	iC5	nC5	C5ene	CyC6	meC5	nC6	C6ene	C1/ΣCn (%)	C2-C4/ΣCn (%)	iC4/nC4
57-12/38	57.8095	-11.9147	2.73	24.95	11.91	1.85	2.36	1.15	2.50	0.00	0.63	1.33	0.44	0.00	0.56	0.00	0.00	0.00	0.00	0.00	52.4	43.2	0.00
57-12/39	57.8097	-11.9188	2.75	32.31	18.62	3.09	3.23	1.96	3.62	0.34	1.00	1.62	0.34	0.33	0.77	0.59	0.00	0.26	0.31	0.00	51.6	41.2	0.34
57-12/40	57.8097	-11.9232	2.52	25.27	18.30	4.16	4.84	2.51	5.06	0.30	1.19	0.09	0.47	0.42	0.93	0.00	0.00	0.21	0.18	0.00	47.3	46.9	0.25
57-13/20	57.1142	-12.7995	2.35	31.55	38.14	6.64	9.45	3.87	10.32	0.46	1.70	3.82	1.67	0.70	1.82	1.22	0.00	0.00	1.15	0.00	47.1	44.8	0.27
57-13/24	57.0328	-12.7380	2.45	44.51	32.01	5.61	7.59	3.52	8.59	0.54	1.60	3.28	1.16	0.69	1.36	1.18	0.00	0.22	0.88	0.00	46.9	45.1	0.34
57-13/25	57.0972	-12.5263	2.70	58.67	23.14	4.08	5.41	2.54	6.09	0.23	1.09	2.18	0.67	0.29	0.97	0.67	0.00	0.00	0.06	0.00	48.8	45.6	0.21
57-13/27	57.1875	-12.3927	2.10	32.04	31.09	4.41	5.07	2.66	5.48	0.41	1.23	2.12	0.72	0.48	1.11	0.67	0.00	0.00	0.00	0.00	56.1	38.6	0.33
57-13/28	57.1698	-12.5615	1.25	60.46	22.00	5.36	7.24	3.67	8.43	0.46	1.86	3.62	0.62	0.69	1.29	1.29	0.00	0.00	0.00	0.00	38.9	54.2	0.25
57-13/30	57.1965	-12.5762	0.85	70.63	11.91	3.07	6.03	1.65	6.60	0.00	0.81	2.29	1.84	0.00	1.34	0.62	0.00	0.94	0.00	0.00	32.1	55.1	0.00
57-13/31	57.2603	-12.4968	2.65	25.29	3.94	0.46	0.67	0.30	0.78	0.08	0.17	0.03	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.00	60.9	38.5	0.45
57-13/32	57.3060	-12.6223	1.38	27.52	37.41	5.93	5.60	3.94	6.57	0.68	1.81	2.84	0.41	0.71	1.09	1.02	0.00	0.85	0.30	0.00	54.1	39.6	0.38
57-13/34	57.2490	-12.7137	2.36	25.26	15.92	4.03	6.58	2.46	7.43	0.25	1.24	3.00	1.33	0.35	1.28	1.00	0.00	0.00	0.00	0.00	35.5	55.7	0.20
57-13/35	57.1907	-12.7787	2.24	25.59	16.61	3.49	5.24	1.80	4.40	0.00	0.97	1.98	0.35	0.25	0.64	0.42	0.00	0.00	0.00	0.00	46.0	49.5	0.00
57-13/39	57.2202	-12.8570	1.35	23.69	27.26	5.27	8.16	3.09	9.30	0.34	1.57	3.83	2.13	0.60	1.85	1.07	0.00	0.00	0.07	0.00	42.3	48.9	0.22
57-13/41	57.2215	-12.9318	1.10	24.82	8.45	1.51	2.24	1.07	3.07	0.00	0.39	1.32	0.44	0.57	0.00	0.35	0.00	0.00	0.00	0.00	43.5	49.4	0.00
57-13/46	57.3902	-12.8457	0.68	27.16	14.17	2.91	4.27	1.51	4.54	0.00	0.72	1.88	1.34	0.00	0.87	0.57	0.00	0.00	0.00	0.00	43.2	48.3	0.00
57-13/47	57.3902	-12.8457	1.15	25.98	18.32	3.28	4.84	2.14	5.62	0.27	1.01	2.19	0.91	0.34	1.07	0.59	0.00	0.00	0.00	0.00	45.2	47.7	0.26
57-13/48	57.5172	-12.7515	1.00	22.78	20.37	4.17	6.11	2.39	7.01	0.25	1.00	2.89	1.44	0.46	1.35	0.84	0.00	0.00	0.85	0.00	41.5	48.5	0.25
57-13/49	57.6433	-12.5977	0.97	74.91	15.25	4.32	4.76	2.60	5.00	0.55	1.20	0.19	0.31	0.91	0.79	0.00	0.00	0.00	0.00	0.00	42.5	51.9	0.46
57-13/50	57.7687	-12.4488	1.65	39.59	40.61	7.63	10.36	4.47	11.53	0.50	2.34	4.44	1.59	0.96	2.09	1.28	0.00	0.00	0.11	0.00	46.2	46.9	0.22
57-13/51	57.8708	-12.3277	2.75	27.71	13.43	2.44	3.24	1.22	3.52	0.00	0.68	1.50	0.19	0.11	0.62	0.30	0.00	0.00	0.00	0.00	49.3	46.2	0.00
57-13/55	57.4070	-12.5082	2.55	30.24	27.05	4.06	4.00	2.35	4.42	0.36	1.04	1.95	0.59	0.35	1.04	0.73	0.00	0.55	0.24	0.00	55.5	37.3	0.34
57-13/58	57.5268	-12.1547	2.25	22.96	13.56	2.42	3.10	1.30	3.28	0.00	0.71	1.40	0.33	0.20	0.47	0.36	0.00	0.00	0.00	0.00	50.0	45.0	0.00
57-13/59	57.5028	-12.0907	2.50	24.85	9.88	1.75	2.21	1.14	2.61	0.00	0.58	1.19	0.26	0.12	0.52	0.47	0.00	0.00	0.30	0.00	47.0	45.1	0.00
57-13/60	57.4883	-12.0518	2.55	26.33	15.89	3.64	3.86	2.70	4.42	0.37	1.34	2.36	0.21	0.49	0.82	0.00	0.00	0.00	0.00	0.00	44.0	51.8	0.28
57-13/61	57.4738	-12.0132	2.08	22.62	15.59	3.45	3.43	2.37	3.76	0.24	0.00	1.78	0.00	0.42	0.63	0.66	0.00	0.00	0.00	0.00	48.2	46.5	0.00
57-13/62	57.3338	-12.2613	2.64	23.54	19.85	2.15	2.12	1.20	2.32	0.12	0.47	0.82	0.42	0.23	0.44	0.33	0.00	0.00	0.00	0.00	65.2	30.2	0.25
57-13/73	57.9978	-12.9995	2.03	23.90	16.98	3.17	4.60	2.02	5.10	0.19	1.19	2.03	0.57	0.28	0.74	0.68	0.00	0.00	0.00	0.00	45.2	48.7	0.16
57-13/74	57.9978	-12.9995	1.75	38.87	41.96	5.93	7.58	3.31	8.05	0.51	1.58	3.00	2.24	0.66	1.72	0.89	0.00	0.00	0.92	0.00	53.6	38.2	0.32
57-14/38	57.0432	-13.1653	1.05	28.51	22.51	6.05	9.40	3.89	10.50	0.55	2.05	0.20	2.50	1.15	1.94	0.21	0.00	0.27	0.44	0.00	36.5	53.0	0.27
57-14/40	57.0115	-13.0177	1.20	84.31	15.45	5.39	6.92	3.64	7.77	0.45	1.71	3.44	0.48	0.62	1.09	1.24	0.00	0.21	0.16	0.00	31.8	60.4	0.27
57-14/41	57.0463	-13.2888	2.90	33.17	14.72	3.55	4.76	2.59	5.74	0.40	1.17	2.51	0.32	0.43	0.79	1.04	0.00	0.00	0.00	0.00	38.7	54.5	0.34
57-14/46	57.0972	-13.0948	1.01	62.09	24.35	8.62	8.49	5.77	9.84	1.26	2.91	0.43	0.25	2.00	1.47	1.72	0.00	0.59	0.10	0.00	35.9	55.0	0.43
57-16/08	57.5383	-15.9828	1.94	82.01	18.71	5.67	7.07	4.14	7.85	0.65	2.13	0.31	0.03	0.00	0.86	0.09	0.07	0.70	0.53	0.00	38.3	57.0	0.31

Table 3

Rockall Shallow Cores | Occluded Gas | Results in ng/g wet sediment

Sample	Lat	Long	Depth (m)	CO3	C1	C2	C2ene	C3	C3ene	iC4	nC4	C4ene	CyC5	iC5	nC5	C5ene	CyC6	meC5	nC6	C6ene	C1/ΣCn (%)	C2-C4/ΣCn (%)	iC4/nC4
57-16/09	57.3685	-15.6663	2.10	78.25	18.85	4.36	7.21	3.20	8.41	0.42	1.62	4.11	0.35	0.44	1.04	1.32	0.00	0.36	0.46	0.00	36.1	56.3	0.26
57-16/10	57.3487	-15.6292	2.08	75.81	11.72	1.97	4.06	1.56	4.71	0.00	0.82	0.21	0.24	0.26	0.46	0.46	0.00	0.00	0.00	0.00	44.3	50.3	0.00
57-16/11	57.3227	-15.5818	2.43	52.60	18.77	3.43	5.27	1.89	5.75	0.52	0.90	1.99	1.12	0.31	1.27	0.65	0.00	0.00	0.49	0.00	44.3	46.6	0.58
57-16/12	57.3047	-15.5490	2.61	39.67	20.20	4.86	7.24	3.15	8.03	0.33	1.55	3.24	1.20	0.49	1.42	0.11	0.16	0.88	0.00	0.34	38.0	53.4	0.21
57-16/15	57.0962	-15.1678	2.21	47.64	18.86	3.52	5.65	1.91	6.00	0.23	0.82	2.22	1.30	0.42	1.00	0.67	0.00	0.00	0.30	0.00	44.0	47.4	0.28
57-17/01	57.9050	-16.6803	1.71	86.63	13.38	3.81	5.31	2.86	6.00	0.33	1.25	2.56	0.61	0.42	0.92	1.04	0.00	0.00	0.00	0.26	34.5	57.1	0.26
57-17/02	57.8597	-16.5930	1.91	59.96	25.19	5.25	7.12	3.39	8.12	0.45	1.63	3.16	0.81	0.53	1.32	1.33	0.00	0.58	0.54	0.00	42.4	49.0	0.28
57-17/03	57.7092	-16.3052	1.83	45.04	22.32	3.83	5.73	2.40	6.64	0.23	1.19	0.22	0.93	0.40	1.08	0.10	0.00	0.00	0.29	0.00	49.2	44.6	0.19
57-17/04	57.5933	-16.0858	2.31	29.75	16.47	3.37	5.85	2.14	6.63	0.12	1.02	2.63	1.37	0.27	1.24	0.83	0.00	0.00	0.12	0.00	39.2	51.7	0.12
58-11/03	58.6610	-10.5567	2.36	22.44	9.04	1.97	2.37	1.32	2.77	0.11	0.58	1.16	0.20	0.24	0.48	0.54	0.00	0.00	0.00	0.00	43.5	49.5	0.19
58-12/01	58.0583	-11.0833	2.50	25.06	9.47	1.86	2.27	1.13	2.38	0.16	0.53	0.98	0.17	0.16	0.22	0.37	0.00	0.00	0.00	0.00	48.1	47.3	0.29
58-12/02	58.6792	-11.7322	2.76	23.41	16.50	2.62	2.65	1.48	3.02	0.25	0.81	1.48	0.23	0.28	0.55	0.59	0.00	0.00	0.23	0.00	53.8	40.1	0.31
58-12/03	58.6322	-11.8002	2.80	26.78	21.43	3.15	3.46	1.81	3.76	0.24	0.82	1.60	0.46	0.28	0.81	0.46	0.00	0.00	0.29	0.00	55.6	38.5	0.29
58-12/04	58.8343	-11.9405	2.98	24.19	11.18	2.33	2.29	1.55	2.71	0.18	0.94	0.00	0.13	0.35	0.62	0.00	0.00	0.00	0.00	0.00	50.2	44.9	0.19
58-12/06	58.4167	-11.2878	2.31	21.21	8.16	1.74	2.20	1.06	2.24	0.02	0.42	1.01	0.11	0.23	0.37	0.32	0.00	0.00	0.00	0.00	45.6	48.6	0.05
58-12/07	58.5438	-11.4877	2.14	24.51	18.97	2.64	2.85	1.69	3.09	0.44	0.87	1.35	0.37	0.47	0.62	0.42	0.00	0.00	0.00	0.00	56.1	38.3	0.50
58-12/08	58.5228	-11.1468	2.03	22.31	7.85	1.76	2.24	0.97	2.32	0.08	0.46	1.03	0.15	0.14	0.33	0.28	0.00	0.00	0.00	0.00	44.6	50.3	0.18
58-13/10	58.0657	-12.1132	2.42	25.05	10.25	1.50	2.01	0.92	2.30	0.00	0.45	1.02	0.18	0.08	0.47	0.40	0.00	0.00	0.00	0.00	52.3	41.9	0.00
58-13/11	58.1152	-12.2065	2.55	45.23	7.52	1.21	1.60	0.69	1.67	0.00	0.30	0.66	0.20	0.00	0.34	0.27	0.00	0.00	0.00	0.00	52.0	42.4	0.00
58-13/12	58.1420	-12.2635	2.67	27.60	14.79	2.42	2.80	1.36	3.12	0.25	0.72	1.22	0.46	0.32	0.51	0.47	0.00	0.00	0.00	0.09	51.8	41.7	0.35
58-13/13	58.1070	-12.5592	2.30	25.27	11.14	2.30	3.06	1.25	2.95	0.00	0.59	1.32	0.45	0.26	0.63	0.50	0.00	0.00	0.00	0.00	45.6	47.0	0.00
58-13/14	58.1393	-12.6472	2.95	25.59	12.78	1.98	2.47	1.19	2.70	0.14	0.56	1.07	0.43	0.22	0.51	0.37	0.00	0.00	0.20	0.00	51.9	41.0	0.25
58-13/15	58.1217	-12.8608	3.20	21.05	7.39	1.64	2.53	1.19	2.83	0.00	0.38	1.14	0.38	0.00	0.47	0.35	0.00	0.00	0.26	0.00	39.9	52.3	0.00
58-13/16	58.2447	-12.9068	1.23	41.35	27.97	4.59	6.39	3.13	7.44	0.42	1.40	3.25	0.65	0.53	0.96	1.06	0.00	0.00	0.00	0.00	48.4	46.1	0.30
58-13/17	58.4312	-12.8170	2.50	27.20	6.91	1.39	2.26	0.83	2.32	0.00	0.43	0.85	0.29	0.00	0.42	0.00	0.00	0.00	0.00	0.00	44.0	51.5	0.00
58-13/18	58.5927	-12.6965	2.35	30.62	11.86	2.69	3.28	1.63	3.87	0.24	0.93	1.60	0.33	0.23	0.62	0.61	0.00	0.00	0.00	0.18	42.3	50.7	0.26
58-13/19	58.4873	-12.4022	1.95	30.95	20.44	3.34	3.68	2.02	4.00	0.25	0.86	1.43	0.38	0.45	0.65	0.56	0.00	0.00	0.00	0.00	53.7	40.9	0.29
58-13/20	58.4137	-12.1983	2.75	37.19	13.41	2.71	3.73	1.81	4.35	0.21	0.90	1.95	0.38	0.26	0.73	0.79	0.00	0.00	0.67	0.00	42.0	49.1	0.24
58-13/21	58.9053	-12.9798	1.75	25.26	12.50	2.59	3.37	2.00	4.15	0.05	0.18	1.53	0.44	0.35	0.58	0.44	0.00	0.00	0.00	0.00	44.3	49.2	0.29
58-13/22	58.0528	-12.9472	2.14	30.14	45.50	8.38	11.14	5.04	11.94	0.62	2.43	0.34	2.07	0.92	2.85	0.24	0.00	0.32	0.64	0.00	49.2	43.1	0.26
58-13/23	58.6825	-12.1408	2.67	25.96	15.05	3.28	4.00	1.90	4.46	0.27	1.07	2.07	0.31	0.29	0.69	0.83	0.00	0.39	0.40	0.00	43.0	48.7	0.25
58-13/24	58.7435	-12.4903	2.78	28.18	13.68	2.85	3.56	1.77	3.87	0.12	0.88	1.74	0.43	0.24	2.14	0.59	0.00	0.00	0.32	0.00	42.5	46.0	0.14
58-13/25	58.9283	-12.4225	2.87	24.93	19.65	3.06	3.62	1.90	4.47	0.34	0.92	1.83	0.32	0.34	0.76	0.67	0.00	0.00	0.31	0.00	51.5	42.3	0.37
58-13/26	58.8240	-12.7880	3.11	31.60	9.07	1.93	2.27	1.25	2.40	0.15	0.64	1.07	0.15	0.18	0.39	0.41	0.00	0.18	0.38	0.00	44.3	47.4	0.24

Table 3

Rockall Shallow Cores | Occluded Gas | Results in ng/g wet sediment

Sample	Lat	Long	Depth (m)	CO3	C1	C2	C2ene	C3	C3ene	iC4	nC4	C4ene	CyC5	iC5	nC5	C5ene	CyC6	meC5	nC6	C6ene	C1/ΣCn (%)	C2-C4/ΣCn (%)	iC4/nC4
58-13/27	58.7012	-12.9465	3.09	33.53	9.20	1.99	2.63	1.20	2.90	0.00	0.54	1.19	0.38	0.14	0.52	0.39	0.00	0.00	0.00	0.00	43.7	49.5	0.00
58-13/28	58.5627	-12.7223	2.71	34.72	14.91	2.92	3.09	1.74	3.40	0.23	0.95	1.43	0.52	0.35	0.64	0.53	0.00	0.00	0.00	0.00	48.5	44.8	0.24
58-13/29	58.4023	-12.1005	2.76	30.33	34.71	5.60	5.50	3.43	6.10	0.53	1.70	0.24	0.75	0.57	1.35	0.16	0.00	0.36	0.12	0.00	56.8	37.8	0.31
58-14/03	58.3313	-13.0152	0.65	37.17	14.84	3.05	6.03	1.70	6.62	0.00	0.76	2.29	1.98	0.00	1.54	0.64	0.00	0.00	0.00	0.00	37.6	51.8	0.00
58-14/04	58.3435	-13.2192	2.51	59.79	45.08	7.68	9.42	5.01	10.86	0.90	2.38	5.22	0.72	1.03	1.95	1.67	0.00	0.78	0.22	0.00	48.5	44.6	0.38
58-14/05	58.5017	-13.1983	2.23	42.26	14.71	1.76	2.73	0.83	2.90	0.00	0.50	1.06	1.30	0.00	0.67	0.25	0.00	0.00	0.00	0.00	55.1	36.6	0.00
58-14/06	58.5498	-13.1383	2.29	53.33	39.14	6.79	8.33	4.61	9.97	0.64	2.24	4.31	0.54	0.84	1.37	1.56	0.00	0.31	0.26	0.00	48.4	45.6	0.29
58-14/07	58.5397	-13.0282	2.19	26.58	18.70	2.81	3.16	1.75	3.31	0.53	1.47	1.92	0.35	0.39	0.54	0.49	0.00	0.00	0.00	0.00	52.8	42.2	0.36
58-14/12	58.9197	-13.0852	2.10	21.81	11.96	2.22	2.61	1.30	2.84	0.00	0.62	1.09	0.28	0.18	0.52	0.39	0.00	0.00	0.00	0.00	49.8	44.5	0.00
58-14/13	58.7935	-13.2672	2.11	44.22	60.18	9.62	9.92	6.45	11.42	1.30	3.24	5.10	0.90	1.55	1.94	1.85	0.37	0.64	0.53	0.00	52.3	40.9	0.40
58-14/14	58.7625	-13.2860	0.97	42.73	47.70	7.29	9.03	4.16	10.20	0.77	1.90	0.33	2.32	0.79	2.18	0.12	0.00	0.25	0.52	0.00	54.5	38.5	0.41
58-14/21	58.6295	-13.8637	2.09	43.34	54.19	10.04	12.87	6.81	14.22	1.62	3.22	5.62	1.16	1.32	2.40	0.81	0.00	0.83	0.76	0.00	46.8	46.9	0.50
58-14/22	58.4880	-13.6328	2.72	72.56	43.97	9.52	12.59	6.82	14.45	0.99	3.51	0.57	1.19	1.47	2.09	0.22	0.00	0.79	0.14	0.00	44.7	49.3	0.28
58-14/23	58.4433	-13.6882	2.38	27.68	19.72	4.70	5.98	3.04	6.90	0.40	1.44	3.12	0.95	0.50	1.45	1.03	0.00	0.33	0.26	0.00	39.6	51.3	0.28
58-14/24	58.4433	-13.6882	2.34	36.68	32.20	6.08	7.66	4.05	8.93	0.38	2.02	0.30	0.98	0.58	1.71	0.51	0.00	0.50	0.37	0.00	48.6	44.4	0.19
58-14/25	58.4340	-13.4763	2.28	28.09	21.09	3.89	5.24	2.41	6.04	0.30	1.06	0.17	0.83	0.37	0.95	0.80	0.00	0.21	0.40	0.00	48.2	43.7	0.28
58-14/26	58.4217	-13.4412	0.99	47.43	58.91	8.34	8.63	5.17	10.23	0.83	2.36	0.29	1.31	0.93	1.66	0.13	0.00	0.59	0.66	0.00	58.9	35.8	0.35
58-14/27	58.2528	-13.5085	1.44	85.01	21.09	3.12	4.63	1.88	4.96	0.38	0.91	1.99	0.27	0.28	0.67	0.70	0.00	0.00	0.20	0.00	51.4	43.5	0.42
58-14/28	58.1167	-13.2763	1.75	80.49	27.44	5.30	8.19	3.64	9.37	0.64	1.82	4.07	0.50	0.91	1.10	1.44	0.00	0.95	0.29	0.00	41.8	50.3	0.35
58-14/33	58.2752	-13.0852	1.05	26.69	24.09	4.62	6.27	2.85	7.31	0.39	1.28	0.22	1.12	0.40	1.35	0.08	0.00	0.00	0.53	0.00	47.7	45.4	0.30
58-14/35	58.3310	-13.0150	2.90	48.95	11.99	3.37	4.62	2.62	5.89	0.33	1.29	2.67	0.35	0.43	0.98	1.02	0.13	0.38	0.25	0.00	33.0	57.3	0.26
58-14/37	58.6107	-13.1650	2.37	40.78	5.68	1.72	2.79	1.04	3.15	0.20	0.55	1.37	0.48	0.28	0.62	0.42	0.00	0.07	0.15	0.00	30.7	58.4	0.37
58-14/46	58.6107	-13.1650	0.86	34.67	29.32	4.09	4.95	2.55	5.60	0.45	1.41	2.15	0.35	0.40	0.75	0.71	0.08	0.00	0.32	0.00	55.2	39.9	0.32
58-14/47	58.5192	-13.5937	2.80	65.65	57.71	9.77	15.70	5.72	16.21	1.14	2.81	0.00	2.24	0.85	2.58	0.22	0.00	0.49	0.75	0.00	49.7	44.2	0.40
58-14/48	58.3855	-13.7602	1.35	72.11	25.17	4.57	7.09	3.27	8.12	0.49	1.51	3.36	0.54	0.61	0.87	1.14	0.00	0.00	0.00	0.00	44.4	50.1	0.32
58-14/49	58.3553	-13.3813	3.03	42.23	28.97	5.76	8.17	3.62	9.27	0.65	1.75	0.19	2.08	0.74	1.98	0.00	0.00	0.00	0.89	0.00	45.2	45.9	0.37
58-17/01	58.0138	-16.8918	0.79	89.15	27.34	5.14	7.23	3.69	8.54	0.50	1.83	0.18	0.53	0.83	1.46	0.12	0.00	0.36	0.00	0.00	47.4	46.9	0.27
Max					60.18	10.04	15.70	6.82	16.21	1.62	3.51	5.62	2.50	2.00	2.85	1.92	0.4	0.95	1.15	0.68	67.98	61.42	0.58
Min					3.94	0.46	0.67	0.30	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	0.00	29.31	28.94	0.00
Mean					20.73	3.82	4.92	2.40	5.50	0.32	1.16	1.73	0.67	0.42	0.95	0.56	0.0	0.14	0.18	0.02	47.69	45.78	0.23
Median					18.30	3.17	4.06	1.91	4.54	0.25	0.95	1.43	0.47	0.34	0.79	0.47	0.0	0.00	0.00	0.00	48.20	46.06	0.26

Table 3

HRGC/MS ANALYSIS DATA

BIOMARKER IDENTIFICATION	57-11/69 (1.32M)	57-12/14 (0.23M)	57-12/16 (2.76M)	57-12/30 (2.23M)	57-12/35 (2.46M)	57-13/35 (2.84M)	58-12/8 (1.98M)	58-13/15 (3.80M)	58-14/7 (2.14M)
C32 HOPANES 22S/(22S+22R)			0.68						
C31 HOPANES 22S/(22S+22R)	0.12	0.05	0.09	0.05	0.07	0.04	0.09	0.07	0.09
C31 HOPANES 22S/22R	0.15	0.06	0.12	0.07	0.09	0.05	0.11	0.10	0.11
C30: HOPANE/(HOPANE+MORETANE)	0.72	0.66	0.74	0.58	0.70	0.59	0.70	0.65	0.76
C30: MORETANE/HOPANE	0.39	0.51	0.35	0.71	0.42	0.69	0.43	0.55	0.31
C30: BB HOPANE/C30 HOPANE (%)	72.40	198.77	116.36	183.45	129.90	195.14	134.02	128.95	82.18
HOPANE DISTRIBUTION RELATIVE TO C30	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
C31 HOPANES AS % OF C30 (205 CORRECTED)	185.44	1170.13	358.31	2004.60	531.73	1780.38	425.56	892.23	400.84
C32 HOPANES	70.57	118.54	62.49	158.35	53.47	103.21	78.85	75.23	42.82
C27 HOPANES Ts/(Ts+Tm)	0.11		0.26						0.31
C29 STERANES 20S/(20S+20R)	0.12	0.27	0.29	0.17	0.20	0.17	0.20	0.20	0.20
C29 STERANES ABB/(ABB+AAA)	0.20	~0.23	~0.31				0.33		0.34
STERANE DISTRIBUTION AAA C27 (%)	34.65	27.94	31.10	23.08	30.19	19.94	28.01	19.93	25.73
STERANE DISTRIBUTION AAA C28 (%)	21.30	20.12	22.35	16.48	21.45	19.58	20.32	22.20	22.84
STERANE DISTRIBUTION AAA C29 (%)	44.05	51.94	46.56	60.44	48.36	60.48	51.68	57.87	51.42
STERANE DISTRIBUTION ABB C27 (%)	22.03								
STERANE DISTRIBUTION ABB C28 (%)	33.89								
STERANE DISTRIBUTION ABB C29 (%)	44.08								
BA DIASTERANES/(BA DIASTERANES+AAA+ABB STERANES) (%)	11.43	~21.32	~22.53		21.17		~22.14		~29.53
STERANE INDEX C27/(C27+C29) (%) FROM S3	44.03	34.98	40.05	27.63	38.43	24.80	35.15	25.62	33.35
SUM C27 TO C35 HOPANES/SAME+C27 TO C29 STERANES	82.51	~94.36	90.31	~ 92.68	89.27	91.10	90.52	89.78	88.95
PHENANTHRENES (3ME+2ME)/(9ME+1ME)	1.19	1.08	1.08	1.14	1.18	1.06	1.31	1.01	1.17
MPI PHENANTHRENES (3ME+2ME)/(9ME+1ME+PHEN)*1.5	0.64	0.54	0.52	0.38	0.68	0.54	0.83	0.46	0.79
AROMATIC STERANES: C28 20R TRI/SAME =C29 20R 5A&B MONO 12	0.27	0.66	0.61	0.24	0.42	0.28	0.54	0.52	0.41
AROMATIC STERANES: SUM TRI/(SAME+SUM MONO)(F9&F12 SPLIT)	0.24	0.62	0.57	0.24	0.41	0.30	0.51	0.42	0.41
TRIAROMATIC STERANES: C20/(C20+C28 20R)	0.21	0.12	0.12	0.16	0.18	0.20	0.14	0.16	0.14
TRIAROMATIC (C20+C21)/SAME+SUM C26 TO C28	0.10	0.07	0.08	0.08	0.10	0.09	0.08	0.07	0.09
TRIAROMATIC STERANES: C26 20S/C28 20S	0.55	0.21	0.24	0.23	0.30	0.27	0.24	0.40	0.32
TRIAROMATIC STERANES: C27 20R/C28 20R	0.65	0.27	0.30	0.47	0.42	0.60	0.37	0.82	0.50
4-ME DIBENZOTHIOPHENE/1-ME DIBENZOTHIOPHENE	2.32	3.17	2.86	3.71	4.14	3.36	3.88	3.16	5.53
3-METHYLBIPHENYL/2-METHYLBIPHENYL	2.82	2.62	2.54	11.46	6.32	10.55	1.93	7.21	7.70

TABLE 4

APPENDIX 1

ROCKALL SHALLOW CORING SURVEY - PROJECT E26RAB25

PROCEDURES TO BE FOLLOWED FOR SUB-SAMPLING OF CORE SAMPLES RECOVERED FROM THE SEABED

PLEASE NOTE

UNDER NO CIRCUMSTANCES MUST THE SAMPLES BE ALLOWED TO COME INTO CONTACT WITH, OR BE CONTAMINATED BY, ANY OF THE FOLLOWING:

Diesel fuel, gasoline, other mineral oils, greases
Plastics, especially PVC etc
Cosmetics i.e. aftershave, perfumes
Human skin, dandruff etc
Fabrics

USE CLEAN METAL (PREFERABLY STAINLESS STEEL) SPATULAS, SCOOPS AND/OR TUBES FOR HANDLING SAMPLES TO MINIMISE CONTAMINATION. WIPE EACH ITEM WITH A SUITABLE SOLVENT SUCH AS DICHLOROMETHANE OR ACETONE (see safety note 1 below) PRIOR TO USE FOR THE FIRST TIME, OR IF BELIEVED TO HAVE SUBSEQUENTLY BECOME CONTAMINATED

SUB-SAMPLING PROCEDURES

1. IT IS REPEATED THAT it is essential that core samples do not come into contact with oil, grease or other contaminants during recovery and subsequent handling, and all personnel should be instructed in this requirement. Handle samples only with metal sampling equipment.

2. Following core recovery on board ship it is usual to remove an **UPPER** and a **LOWER** set of samples from each core, if the length of the core is sufficient to permit this operation.

3. As a minimum, 3 **(three)** duplicate samples **(0.5 - 1.0kg each)** are taken for headspace gas analysis from both the **UPPER** and **LOWER** positions. This is undertaken by reaming fresh sample from the centre of the core (using a scoop or tube) where the sample is not in contact with the core liner material. If the core has been sliced into two halves, ensure that there are no particles of plastic core liner entrained in the sample matrix. A biocide of an approximately 1ppm solution of sodium azide **(see safety note 2 below)** is added to these canned headspace samples **only**, leaving an unfilled space of about 2cm above the solid sample, to allow accumulation of the gases prior to subsequent gas chromatographic analysis. Carefully seal the cans using the machine-sealing device, shake thoroughly to mix the

sample and biocide, and store in a freezer at -20° Centigrade. Record the depth (measured from the top of the core) from which the samples were taken.

3. A further 3 **(three)** duplicate samples **(0.3 - 0.5kg each)** are also taken and stored in SEET bags for additional chemical analysis, again from both the **UPPER** and **LOWER** positions. This is undertaken by reaming fresh sample from the centre of the core (using a scoop or tube) where the sample is not in contact with the core liner material. If the core has been sliced ensure that there are no particles of plastic core liner entrained in the sample matrix. If SEET bags are not available the samples should be carefully wrapped in heavy duty aluminium baking foil and stored in polythene bags. It should be emphasised that this course of action should only be followed if the preferred sample storage media are not available. If core recovery is insufficient to take the required quantities of sample, then the largest possible amounts should be taken in each case, unless it is possible to redeploy the sampling device to obtain further sample material. Store in a freezer at -20° Centigrade. Record the depth (measured from the top of the core) from which the samples were taken.

4. Carefully mark all samples with unique identifying numbers, ensuring that numbers cannot be erased, and that marker-pen solvent does not contaminate the sample. If double-layering of the bagged samples is utilised than paper labels may be employed between the layers.

5. All reasonable care should be taken to minimise the time elapsed between retrieval of the core and the freezing of the samples.

SAFETY NOTES

1. **DO NOT BREATH ORGANIC VAPOURS FOR PROLONGED PERIODS IN CONFINED SPACES, AND AVOID LIQUID SOLVENT CONTACT WITH THE SKIN.**

2. **TAKE GREAT CARE WHILST HANDLING SODIUM AZIDE AS IT IS EXTREMELY TOXIC, PARTICULARLY IF IN CONTACT WITH ACIDS, AND THE SOLID REAGENT IS POTENTIALLY EXPLOSIVE. READ THE HEALTH AND SAFETY DOCUMENTATION CAREFULLY.**

R A Nicholson
6 April 1994

ROCKALL SHALLOW CORING SURVEY - PROJECT E26RAB25

WORK INSTRUCTIONS FOR SAMPLE PREPARATION

General comments

UNDER NO CIRCUMSTANCES MUST THE SAMPLES BE ALLOWED TO COME INTO CONTACT WITH, OR BE CONTAMINATED BY, ANY OF THE FOLLOWING:

Mineral oils, including waxed components such as cardboard inserts inside lids
Plastics especially PVC, polyethylene etc
Cosmetics i.e. aftershave etc
Human skin, dandruff etc
Fabrics

Preparation Procedures

1. Remove samples from the freezer and allow to thaw naturally.

2. After thawing, examine each sample carefully for homogeneity.

3. If more than one phase present, sample an approximately equal amount of each one during stage 4. Include 10% sample blanks (of agate sand?) i.e. one with each 50 samples.

4. Take approximately 150g of each sample, transfer to a suitable (clean) glass, metal or ceramic container and dry in an oven at **40°C**. Samples may take 48 - 72 hours to reach dryness. Ensure that containers used for drying do not contain any vestiges of the above potential contaminants; clean with a suitable solvent if necessary (dichloromethane), or line with aluminium foil. Also ensure that samples are not contaminated by depositional fallout during the drying process. Return any unused sample to the freezer.

5. Once dry the samples should be lightly crushed (preferably by hand) to disaggregate them (DO NOT GRIND), and transferred to clean, wide-mouth screw-top jars for storage. Protect each sample by covering the top of each jar with aluminium foil before closing. Ensure that the jars used for storage are thoroughly wiped *inside* before use. Number samples carefully.

6. Take a small sub-sample of each and grind to a fine powder in an agate P5 ball-mill. Store in a specimen tube for total organic carbon (TOC) analysis. Protect each sample by covering the top of each vial with aluminium foil before closing. Number samples carefully.

R A Nicholson
6 April 1994

ROCKALL SHALLOW CORING SURVEY - PROJECT E26RAB25

WORK INSTRUCTIONS FOR SAMPLE EXTRACTION

General comments

UNDER NO CIRCUMSTANCES MUST THE SAMPLES BE ALLOWED TO COME INTO CONTACT WITH, OR BE CONTAMINATED BY, ANY OF THE FOLLOWING:

Mineral oils, including waxed components such as cardboard inserts inside lids
Plastics especially PVC, polyethylene etc
Cosmetics i.e. aftershave, perfumes
Human skin, dandruff etc
Fabrics

USE METAL FORCEPS OR TONGS FOR HANDLING SAMPLES AND CLEANED EQUIPMENT TO MINIMISE CONTAMINATION

AVOID BREATHING HEXANE VAPOUR AND DO NOT ALLOW IT TO COME INTO CONTACT WITH THE SKIN

Extraction Procedures

1. Thoroughly clean all equipment by washing with hexane. Pre-extract glassware, cellulose thimbles and quartz wool with hexane.

2. Carefully weigh 30.00g crushed sample into an extraction thimble supported in clean glass beaker, cover with a plug of quartz wool and place the thimble plus sample into the Soxhlet apparatus.

3. Run a blank extraction with *at least* every thirty samples (omitting the sample), and with every new batch of hexane used.

4. Using a graduated syringe carefully add 100µl of squalane internal standard onto the top of the sample.

5. Using a measuring cylinder add 150ml HPLC-grade hexane into the round-bottomed flask at the base of the Soxhlet. Connect the reflux condenser to the flask, turn on the cooling water supply and switch on the mains power.

6. Allow the sample to reflux for approximately 24 hours, using an automatic timing device to switch off the system if required.

7. On completion of the extraction allow the apparatus to cool, and pour the solvent into a rotary evaporator, rinsing the extraction flask with hexane to ensure complete transfer. Evaporate to low volume and transfer the extract to a 5ml volumetric flask using a 500µl GC syringe modified to accept glass Pasteur pipette tips. Allow the flask to equilibrate and dilute to volume with hexane.

8. Transfer the extract to a labelled, screw-cap tube and store in a rack in the freezer until required for analysis by gas chromatography.

9. When the solvent has completely evaporated from the extracted samples, remove the quartz wool and discard. Tip out the spent sample, and knock the empty thimble with a glass rod to dislodge the remaining adhering sample material. Hold the thimble securely with tongs during this operation. Store in a clean beaker until ready for reuse.

10. Keep all equipment covered when not in use.

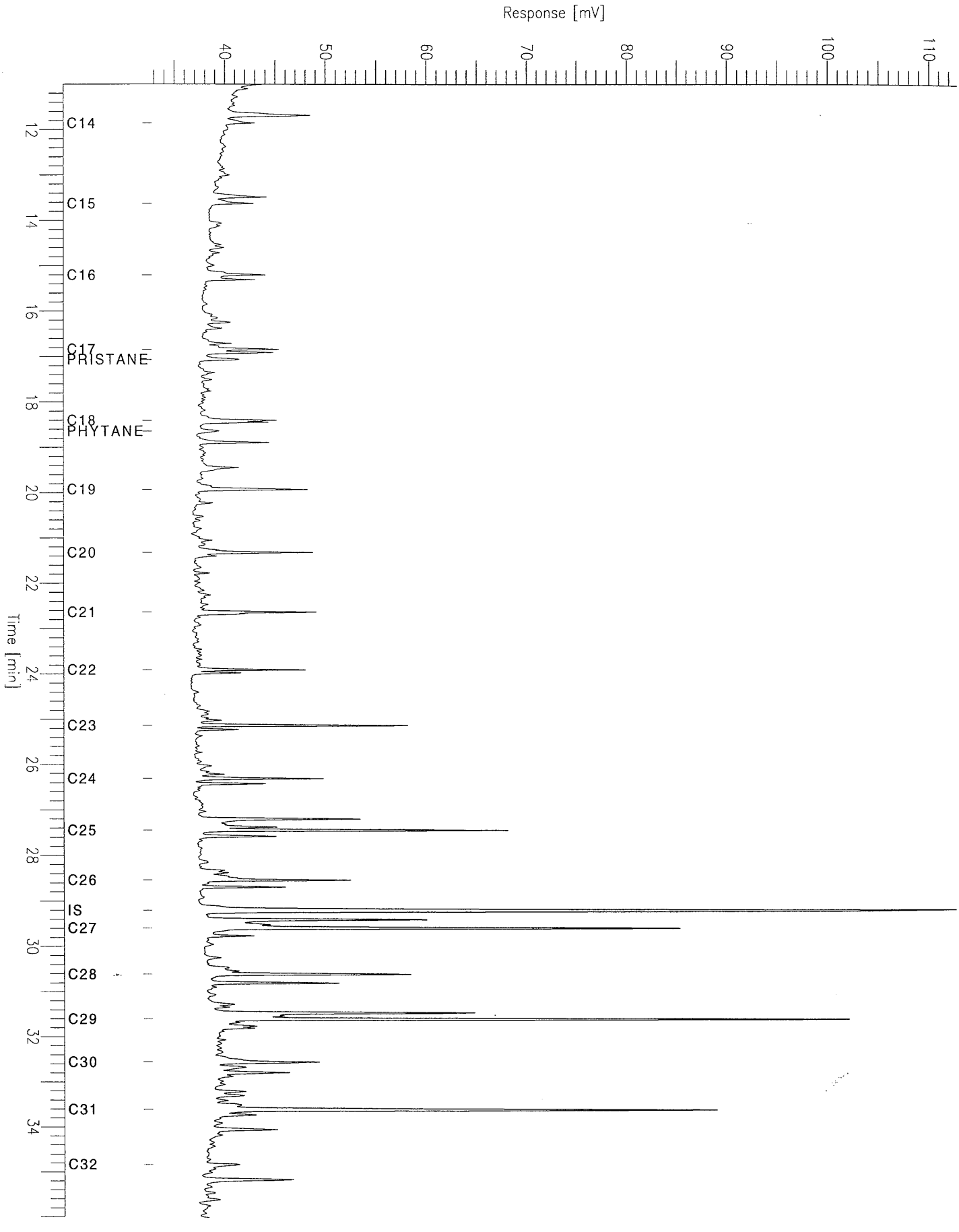
R A Nicholson
6 April 1994

APPENDIX 2

Rockall Chromatogram

Sample Name : 56-12/13 2.80m
FileName : C:\TC4\HYDROCAR\re30.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

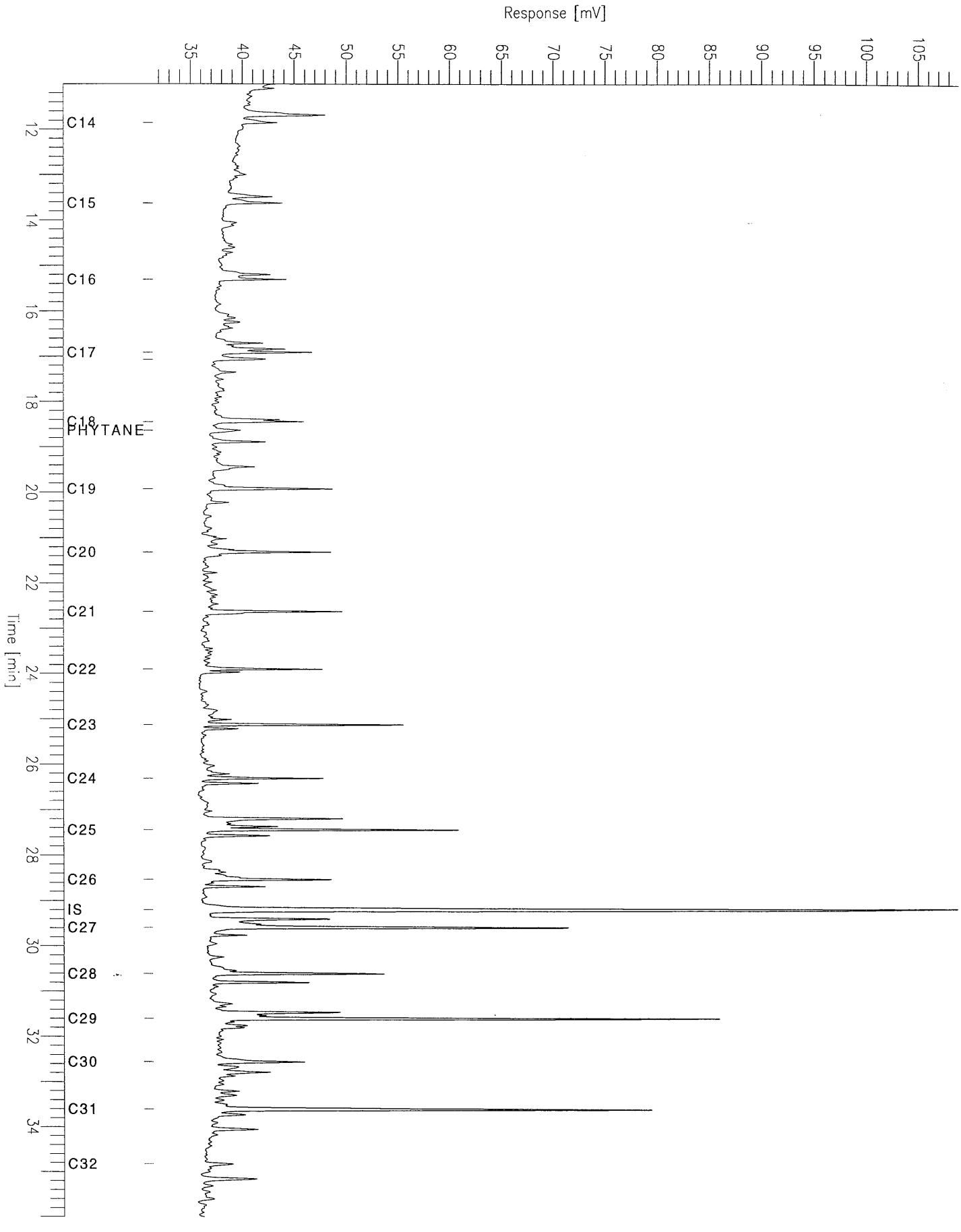
Sample #: Page 1 of 1
Date : 2/3/95 05:41 PM
Time of Injection: 10/15/94 01:00 PM
Low Point : 32.77 mV High Point : 112.79 mV
Plot Scale: 80.0 mV



Rockall Chromatogram

Sample Name : 56-12/13 3.45m
FileName : C:\TC4\HYDROCAR\re31.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

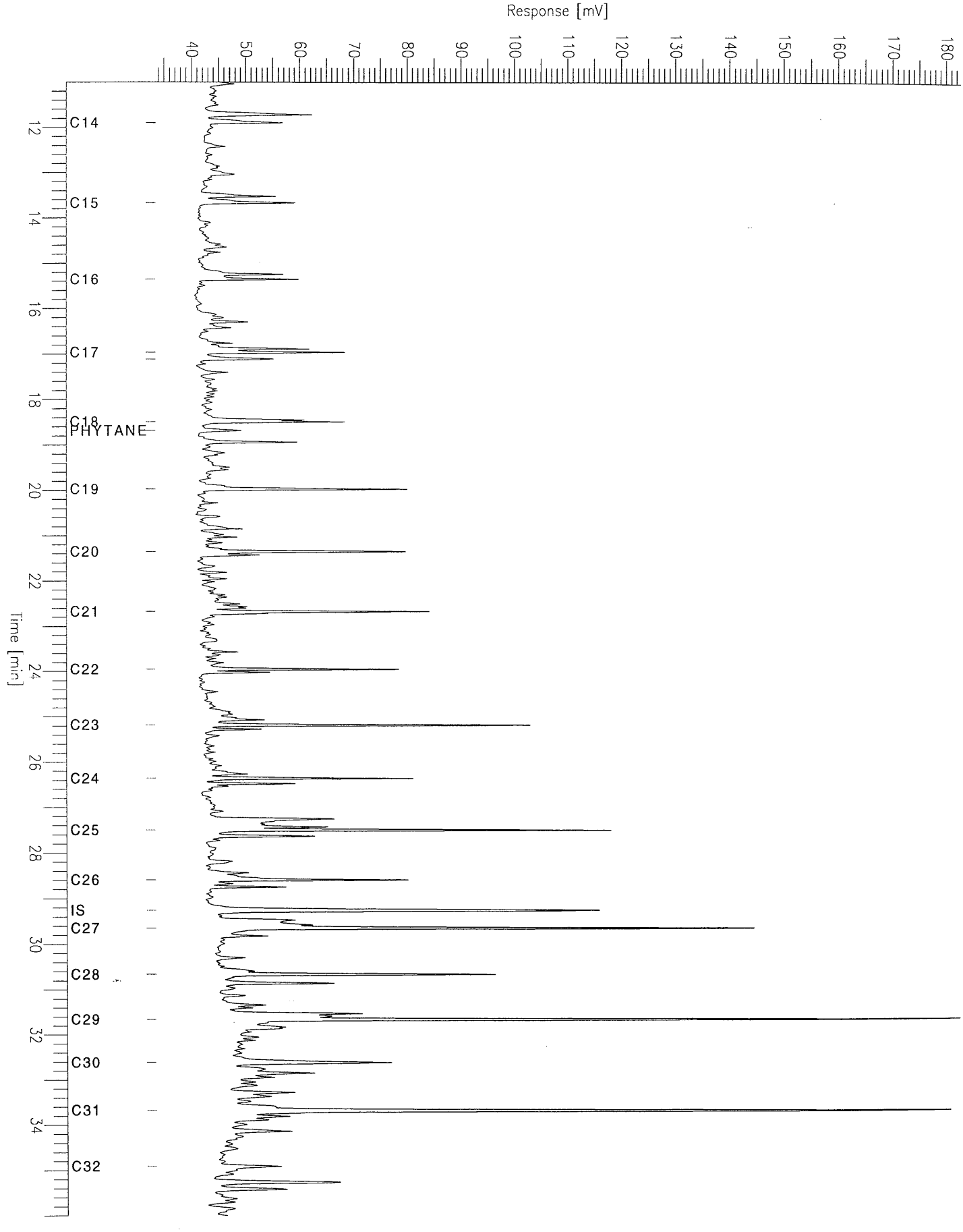
Sample #: Page 1 of 1
Date : 2/3/95 05:42 PM
Time of Injection: 10/15/94 01:55 PM
Low Point : 31.45 mV High Point : 108.90 mV
Plot Scale: 77.5 mV



Rockall Chromatogram

Sample Name : 56-13/2 2.81m
FileName : C:\TC4\HYDROCAR\Ra25.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

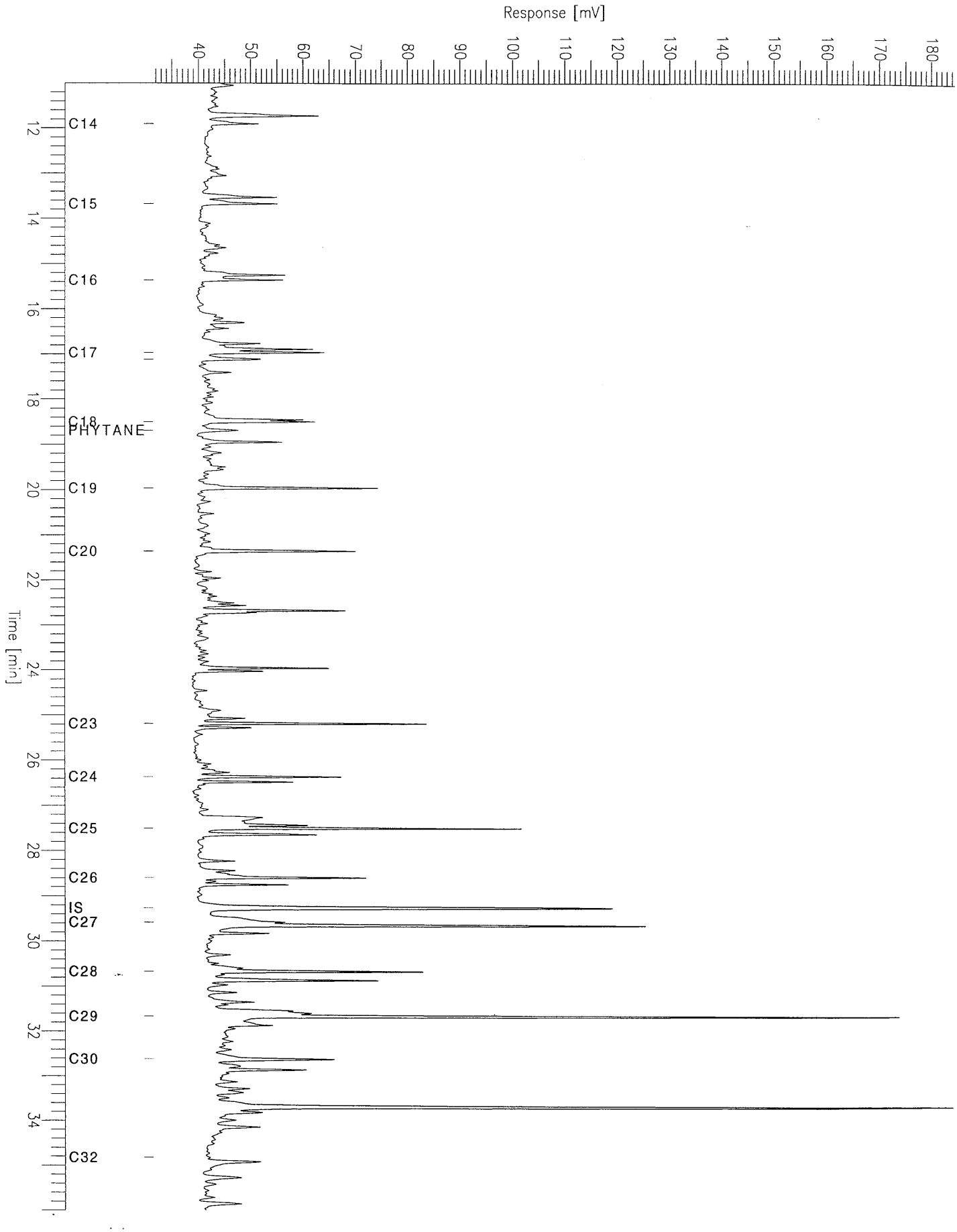
Sample #: Page 1 of 1
Date : 2/6/95 11:45 AM
Time of Injection: 10/6/94 09:34 AM
Low Point : 33.47 mV High Point : 182.66 mV
Plot Scale: 149.2 mV



Rockall Chromatogram

Sample Name : 56-13/2 3.46m
FileName : C:\TC4\HYDROCAR\Ra26.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

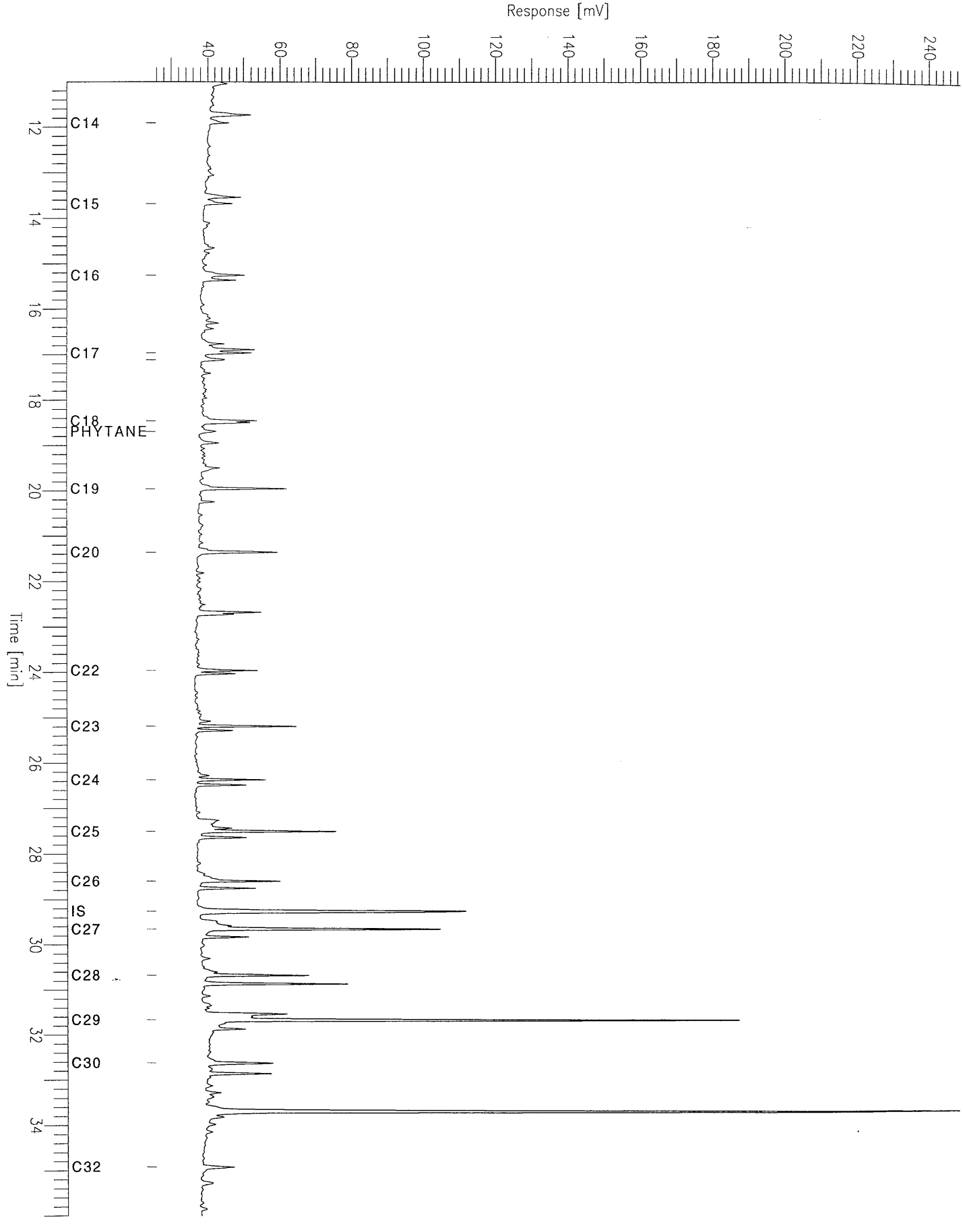
Sample #: Page 1 of 1
Date : 2/6/95 11:46 AM
Time of Injection: 10/6/94 10:29 AM
Low Point : 31.60 mV High Point : 184.38 mV
Plot Scale: 152.8 mV



Rockall Chromatogram

Sample Name : 56-13/3 2.95m
FileName : C:\TC4\HYDROCAR\Ra43.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 26 mV

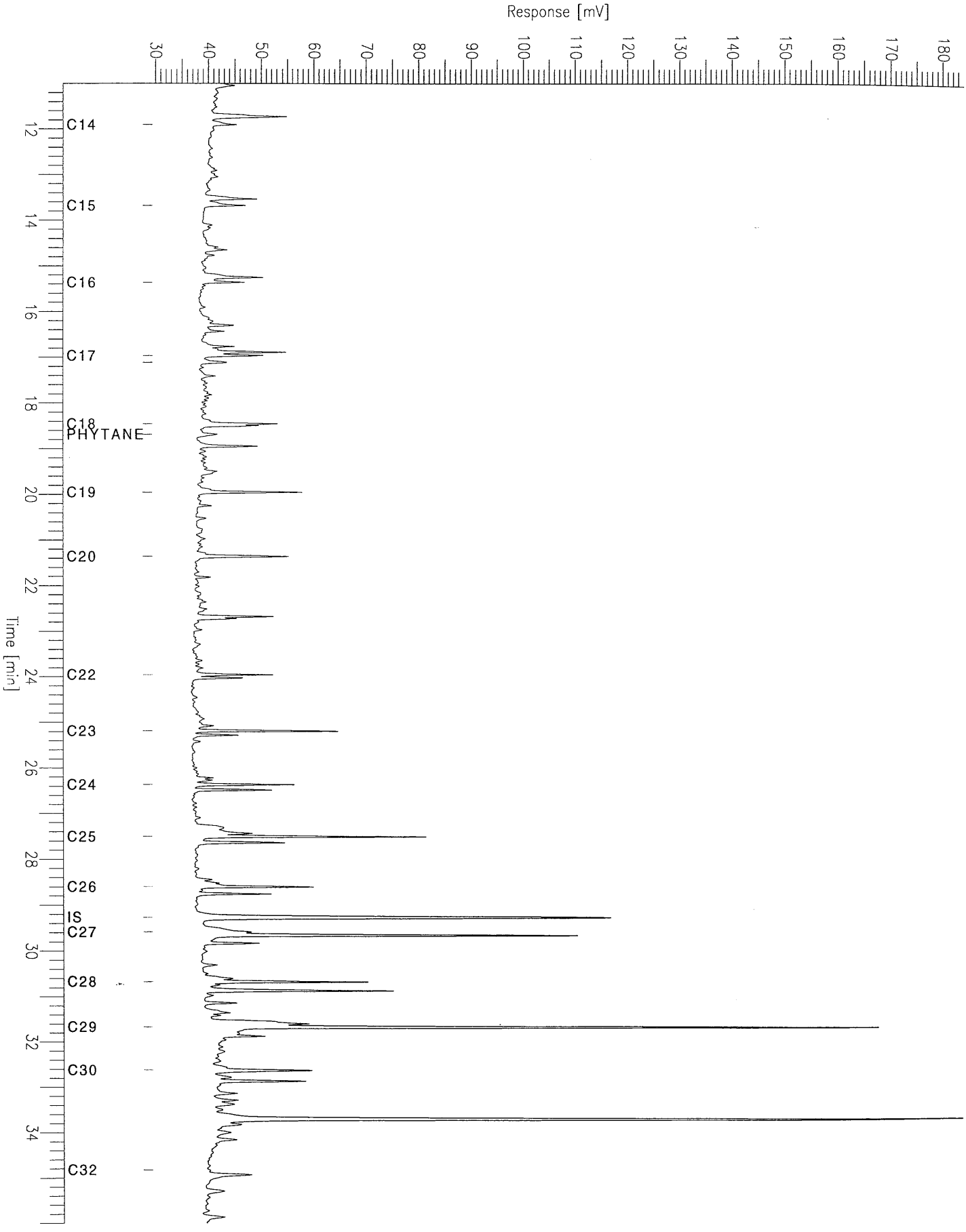
Sample #: Page 1 of 1
Date : 2/6/95 11:52 AM
Time of Injection: 10/7/94 02:02 AM
Low Point : 25.83 mV High Point : 248.67 mV
Plot Scale: 222.8 mV



Rockall Chromatogram

Sample Name : 56-13/3 3.45m
FileName : C:\TC4\HYDROCAR\Ra28.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

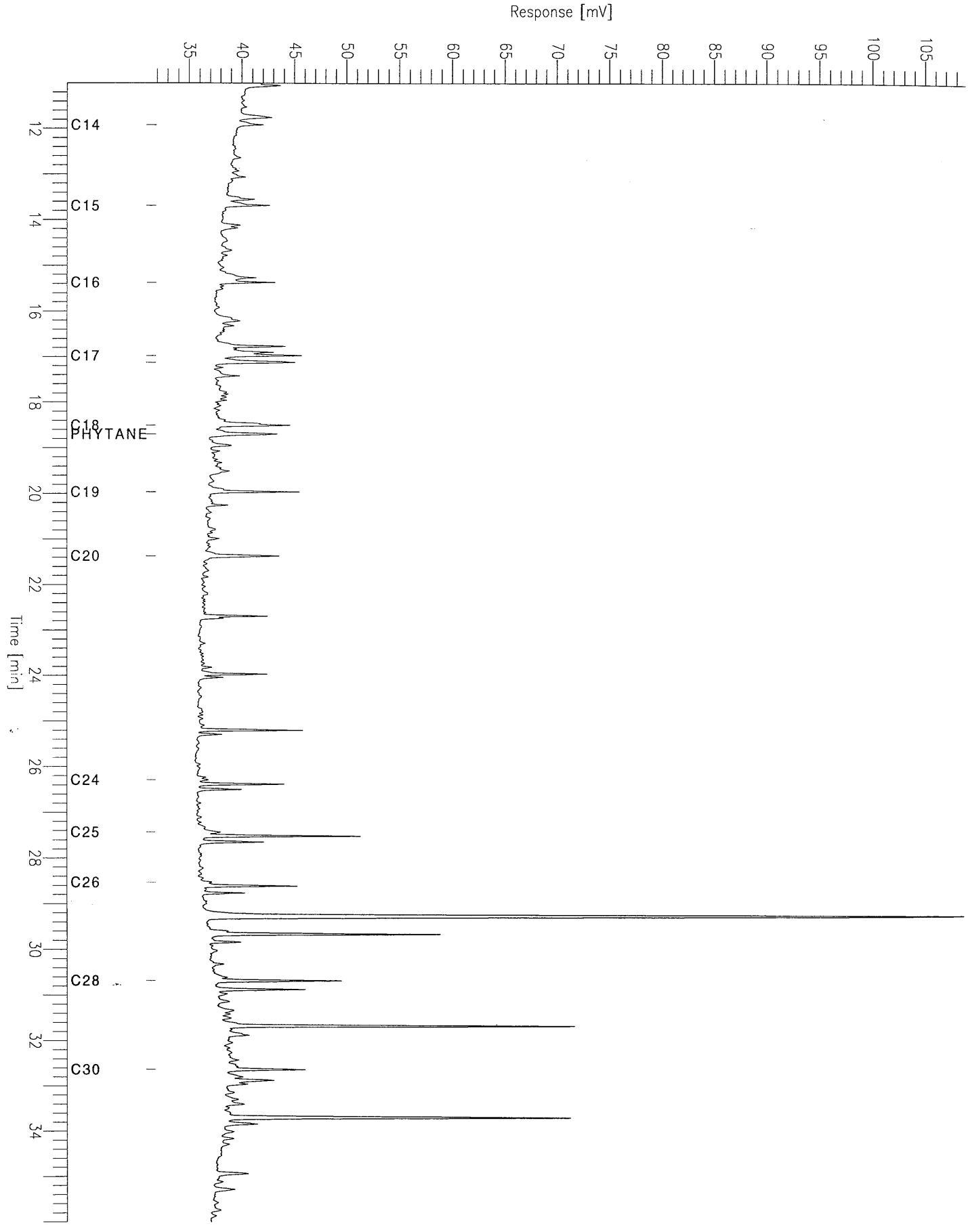
Sample #: Page 1 of 1
Date : 2/6/95 11:46 AM
Time of Injection: 10/6/94 12:19 PM
Low Point : 29.41 mV High Point : 183.91 mV
Plot Scale: 154.5 mV



Rockall Chromatogram

Sample Name : 56-13/4 2.98m
FileName : C:\TC4\HYDROCAR\Ra29.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

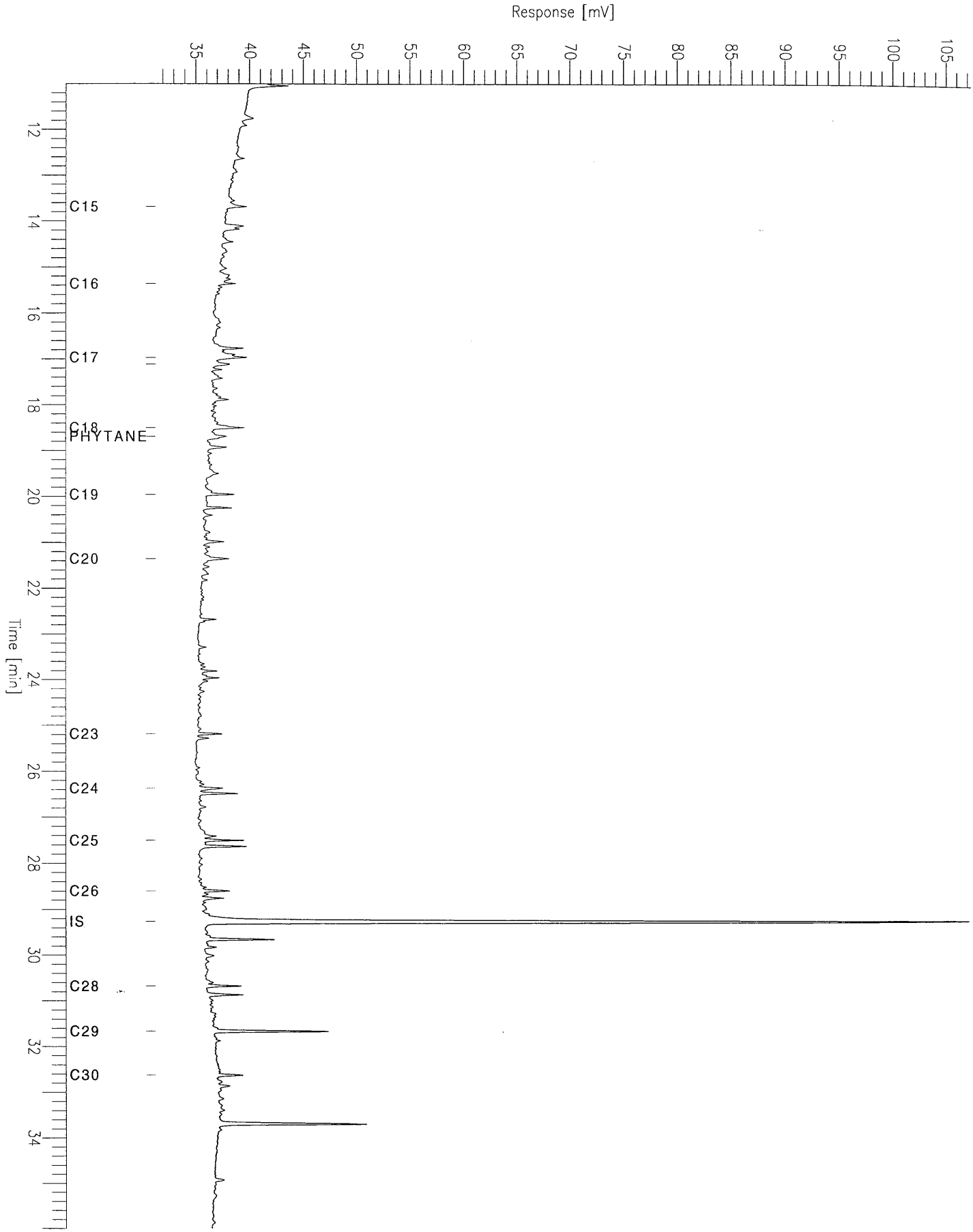
Sample #: Page 1 of 1
Date : 2/6/95 11:47 AM
Time of Injection: 10/6/94 01:14 PM
Low Point : 31.92 mV High Point : 108.79 mV
Plot Scale: 76.9 mV



Rockall Chromatogram

Sample Name : 56-13/4 3.58m
FileName : C:\TC4\HYDROCAR\Ra30.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

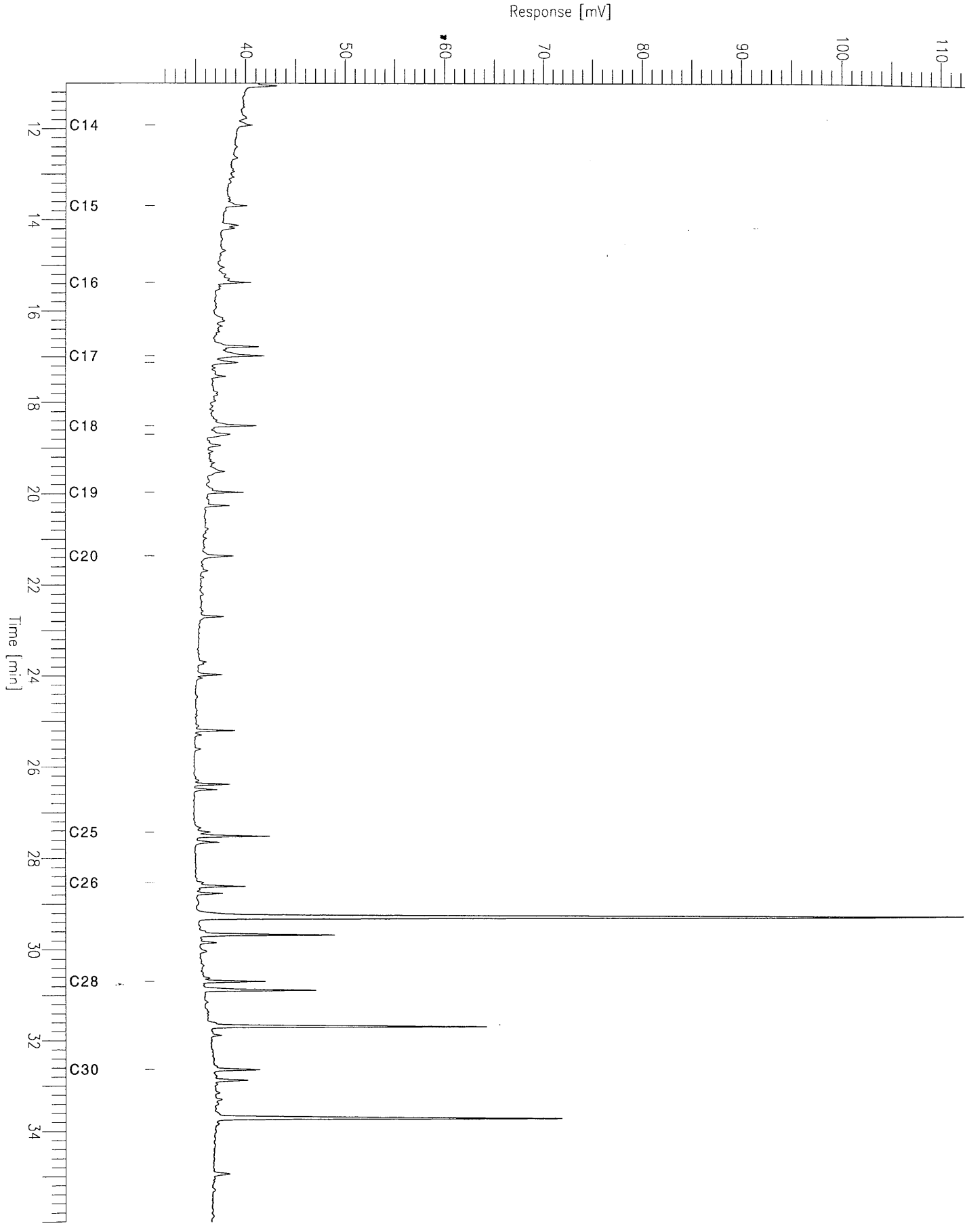
Sample #: Page 1 of 1
Date : 2/6/95 11:47 AM
Time of Injection: 10/6/94 02:09 PM
Low Point : 31.37 mV High Point : 107.29 mV
Plot Scale: 75.9 mV



Rockall Chromatogram

Sample Name : 56-13/5 2.43m
FileName : C:\TC4\HYDROCAR\Ra31.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

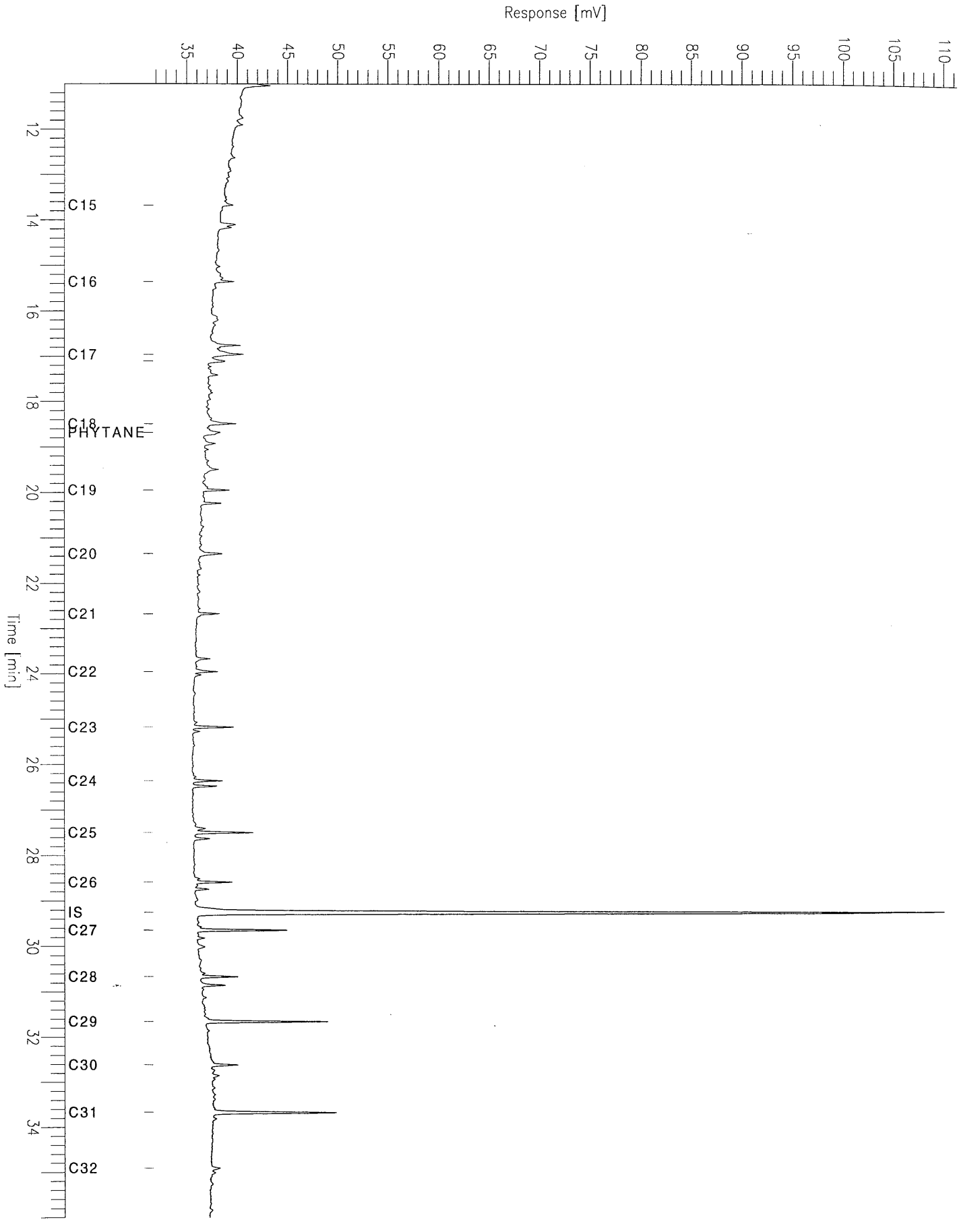
Sample #: Page 1 of 1
Date : 2/6/95 11:47 AM
Time of Injection: 10/6/94 03:04 PM
Low Point : 31.01 mV High Point : 112.37 mV
Plot Scale: 81.4 mV



Rockall Chromatogram

Sample Name : 56-13/5 3.08m
FileName : C:\TC4\HYDROCAR\Ra32.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

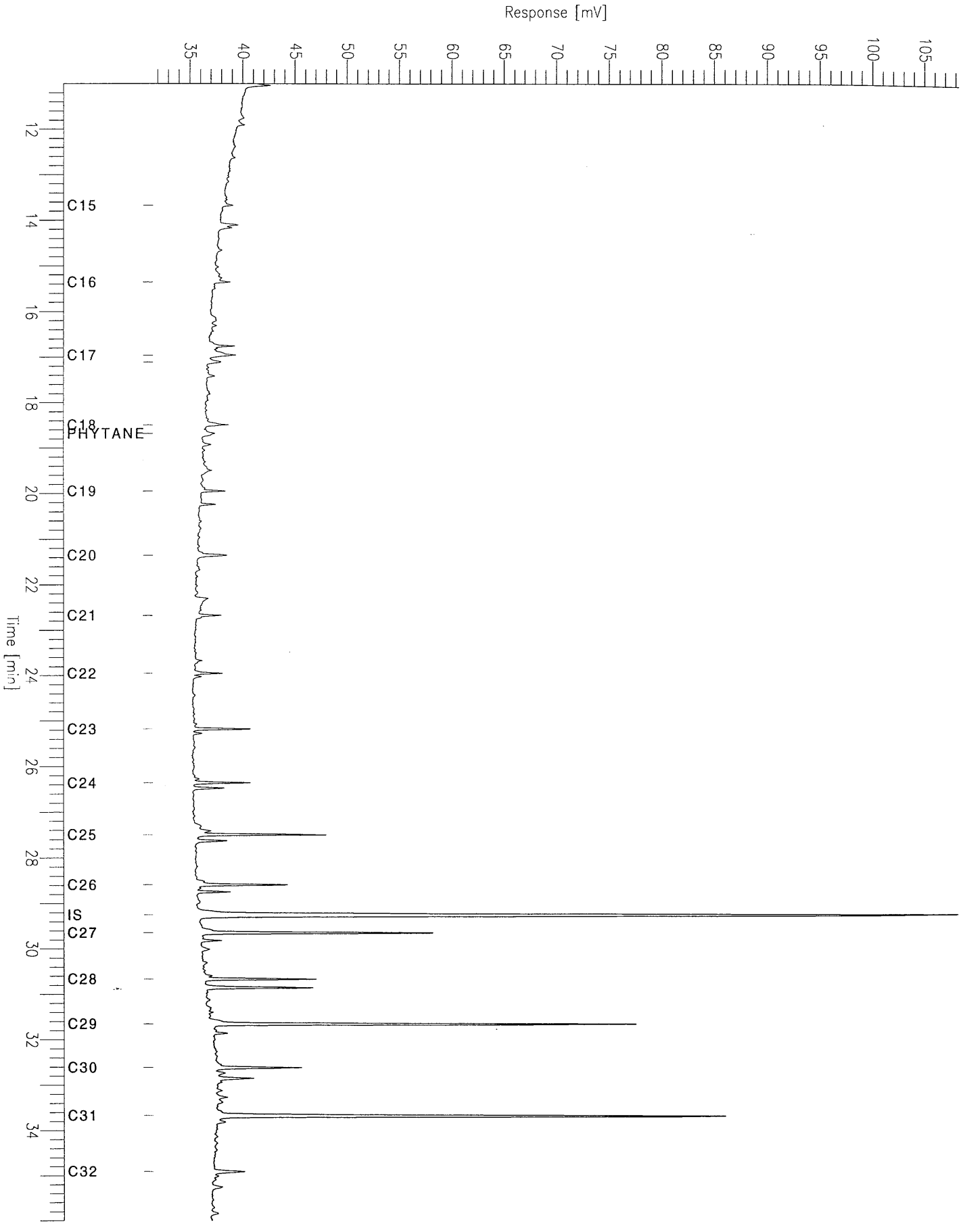
Sample #: Page 1 of 1
Date : 2/6/95 11:48 AM
Time of Injection: 10/6/94 03:59 PM
Low Point : 31.78 mV High Point : 111.29 mV
Plot Scale: 79.5 mV



Rockall Chromatogram

Sample Name : 56-13/6 2.09m
FileName : C:\TC4\HYDROCAR\Ra33.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

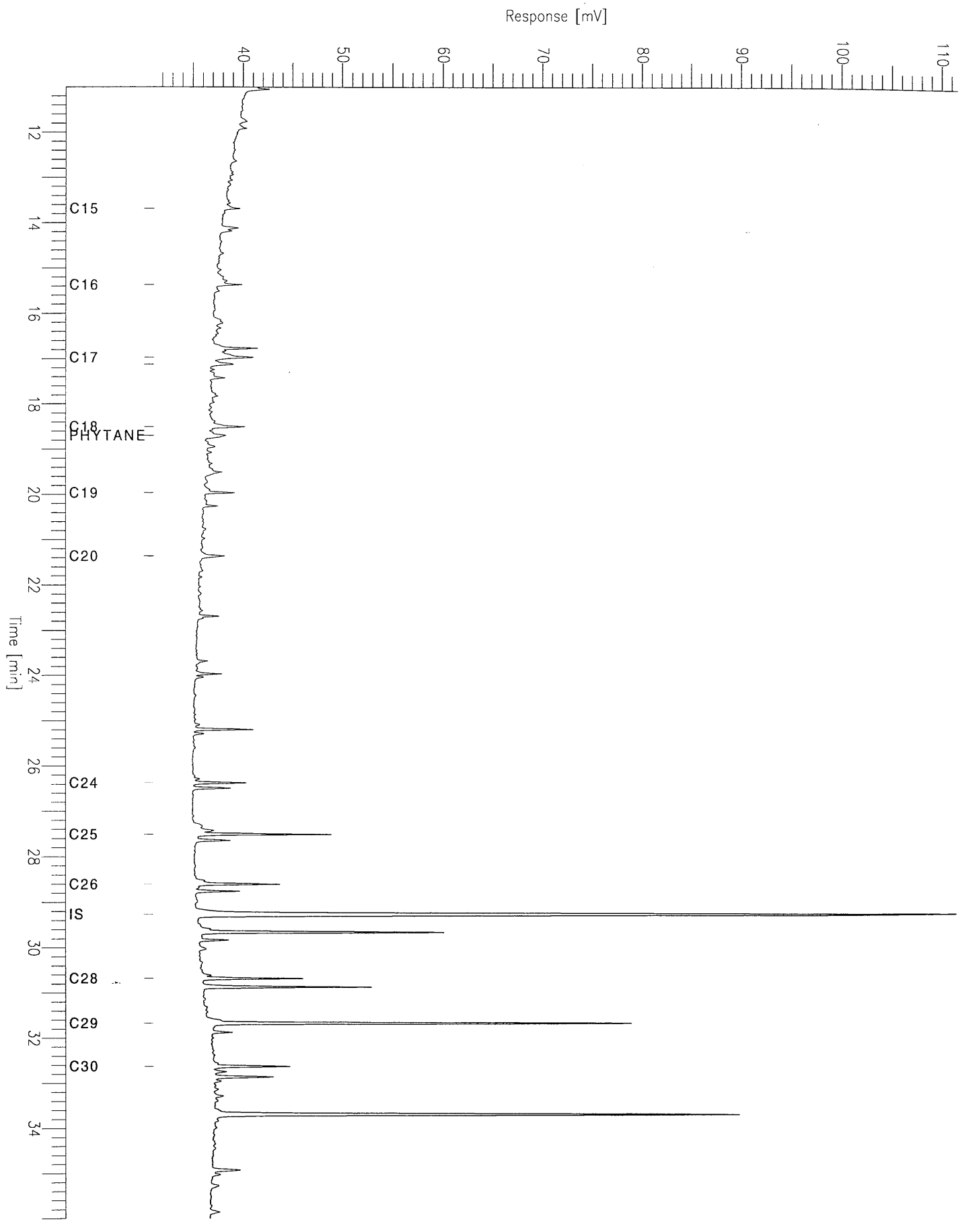
Sample #: Page 1 of 1
Date : 2/6/95 11:48 AM
Time of Injection: 10/6/94 04:54 PM
Low Point : 31.57 mV High Point : 108.25 mV
Plot Scale: 76.7 mV



Rockall Chromatogram

Sample Name : 56-13/6 2.74m
FileName : C:\TC4\HYDROCAR\Ra34.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

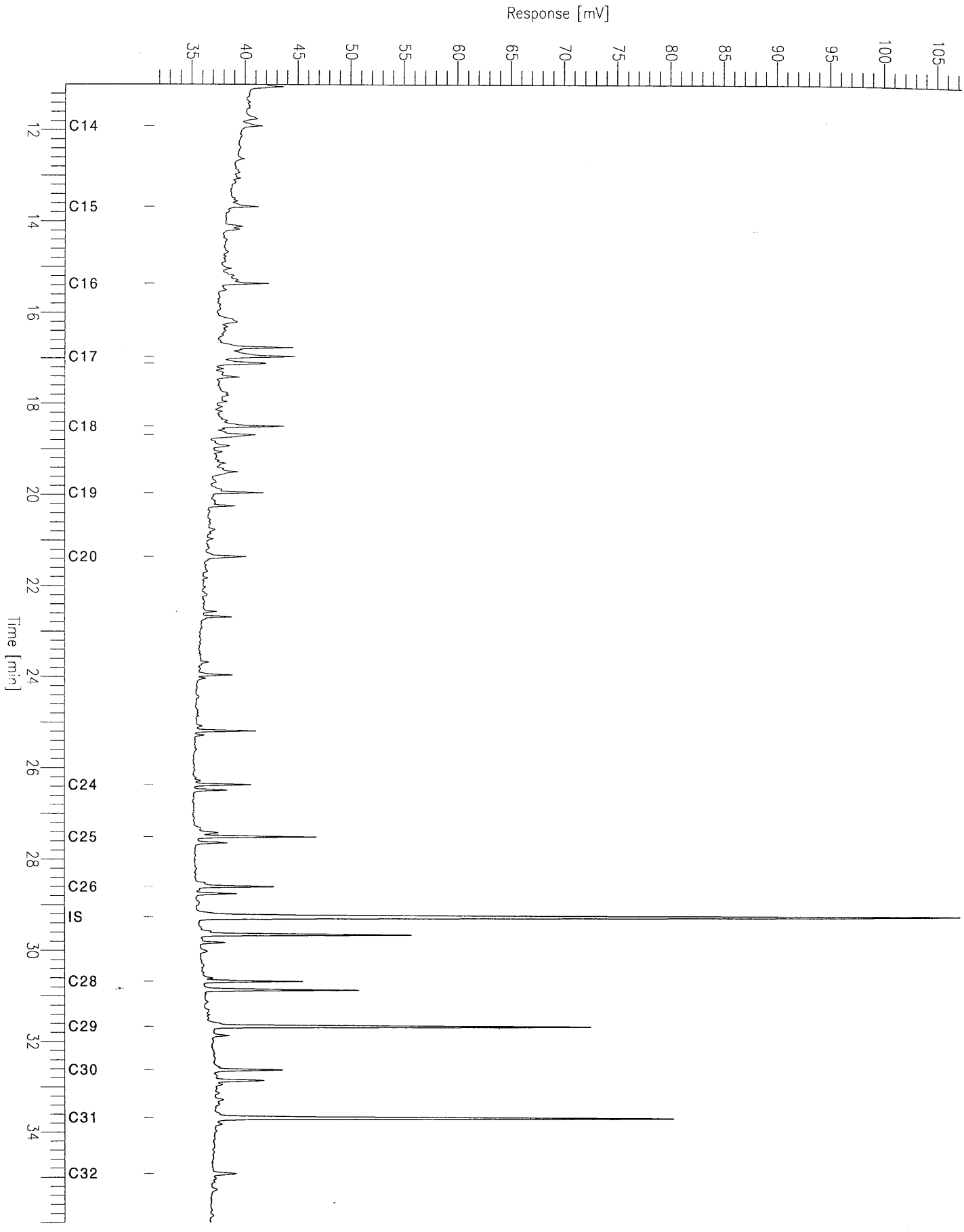
Sample #: Page 1 of 1
Date : 2/6/95 11:49 AM
Time of Injection: 10/6/94 05:49 PM
Low Point : 31.15 mV High Point : 111.53 mV
Plot Scale: 80.4 mV



Rockall Chromatogram

Sample Name : 56-13/7 1.20m
FileName : C:\TC4\HYDROCAR\Ra35.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

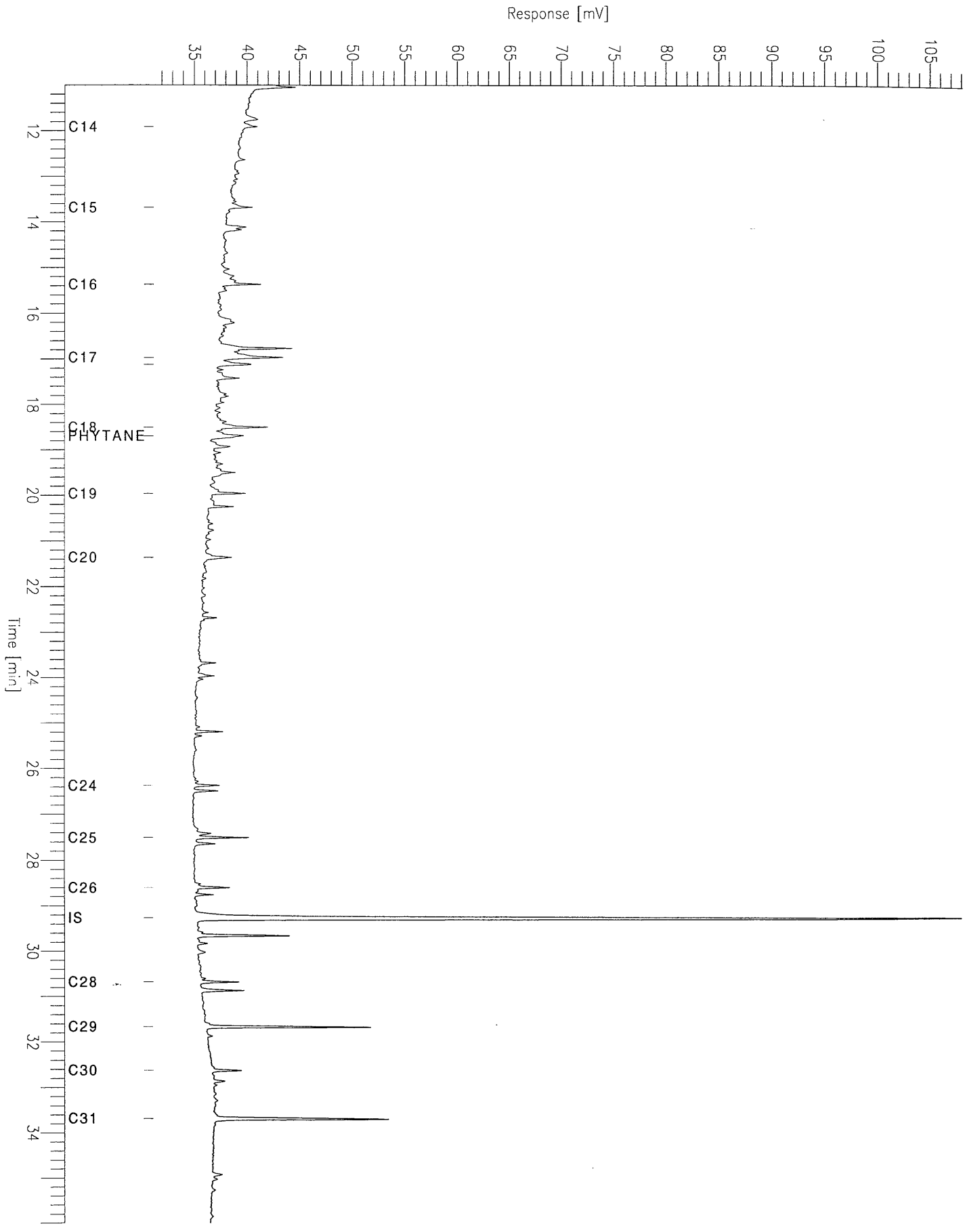
Sample #: Page 1 of 1
Date : 2/6/95 11:49 AM
Time of Injection: 10/6/94 06:44 PM
Low Point : 31.55 mV High Point : 107.20 mV
Plot Scale: 75.7 mV



Rockall Chromatogram

Sample Name : 56-13/7 1.85m
FileName : C:\TC4\HYDROCAR\Ra36.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

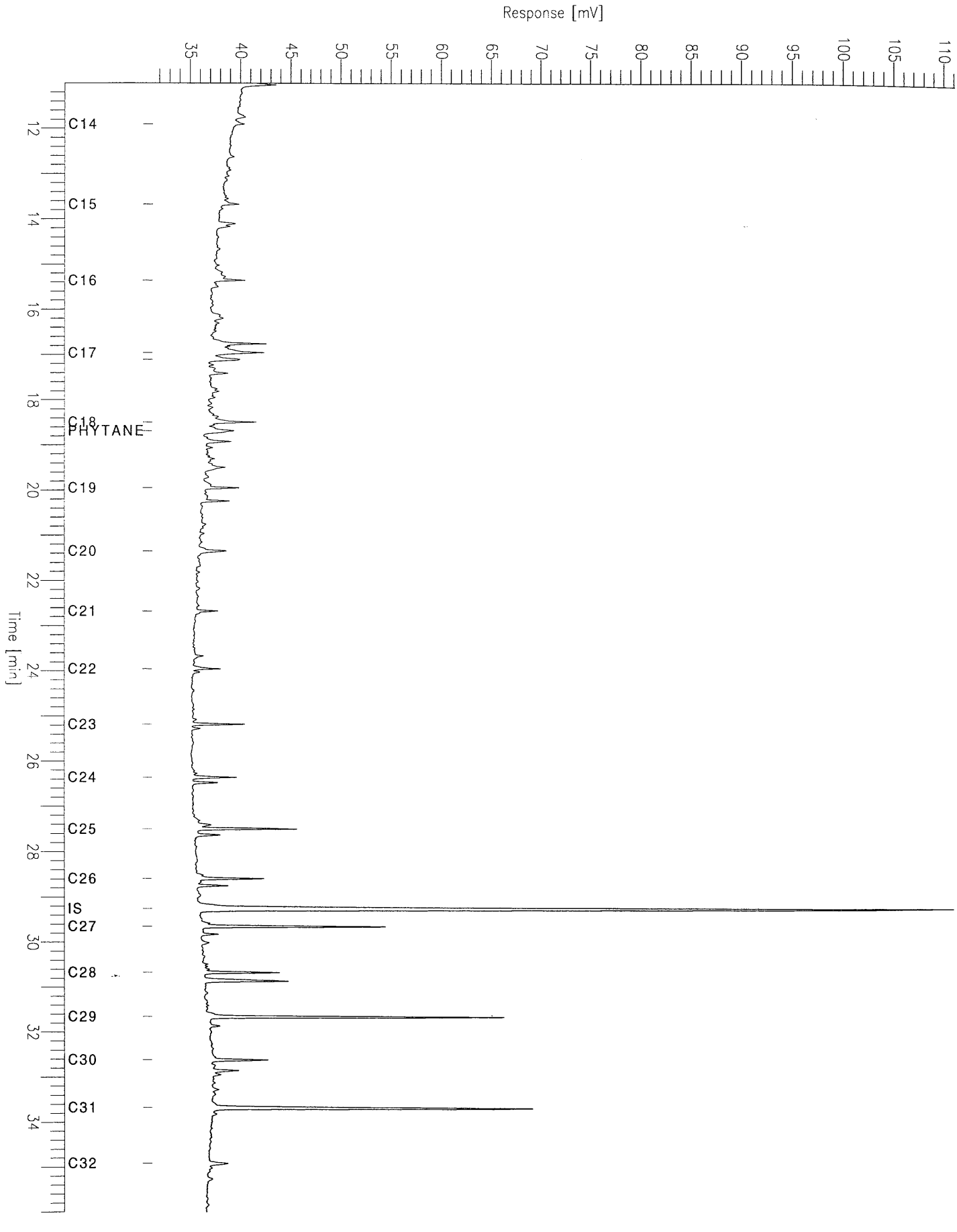
Sample #: Page 1 of 1
Date : 2/6/95 11:49 AM
Time of Injection: 10/6/94 07:38 PM
Low Point : 31.26 mV High Point : 108.08 mV
Plot Scale: 76.8 mV



Rockall Chromatogram

Sample Name : 56-13/8 2.43m
FileName : C:\TC4\HYDROCAR\Ra37.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

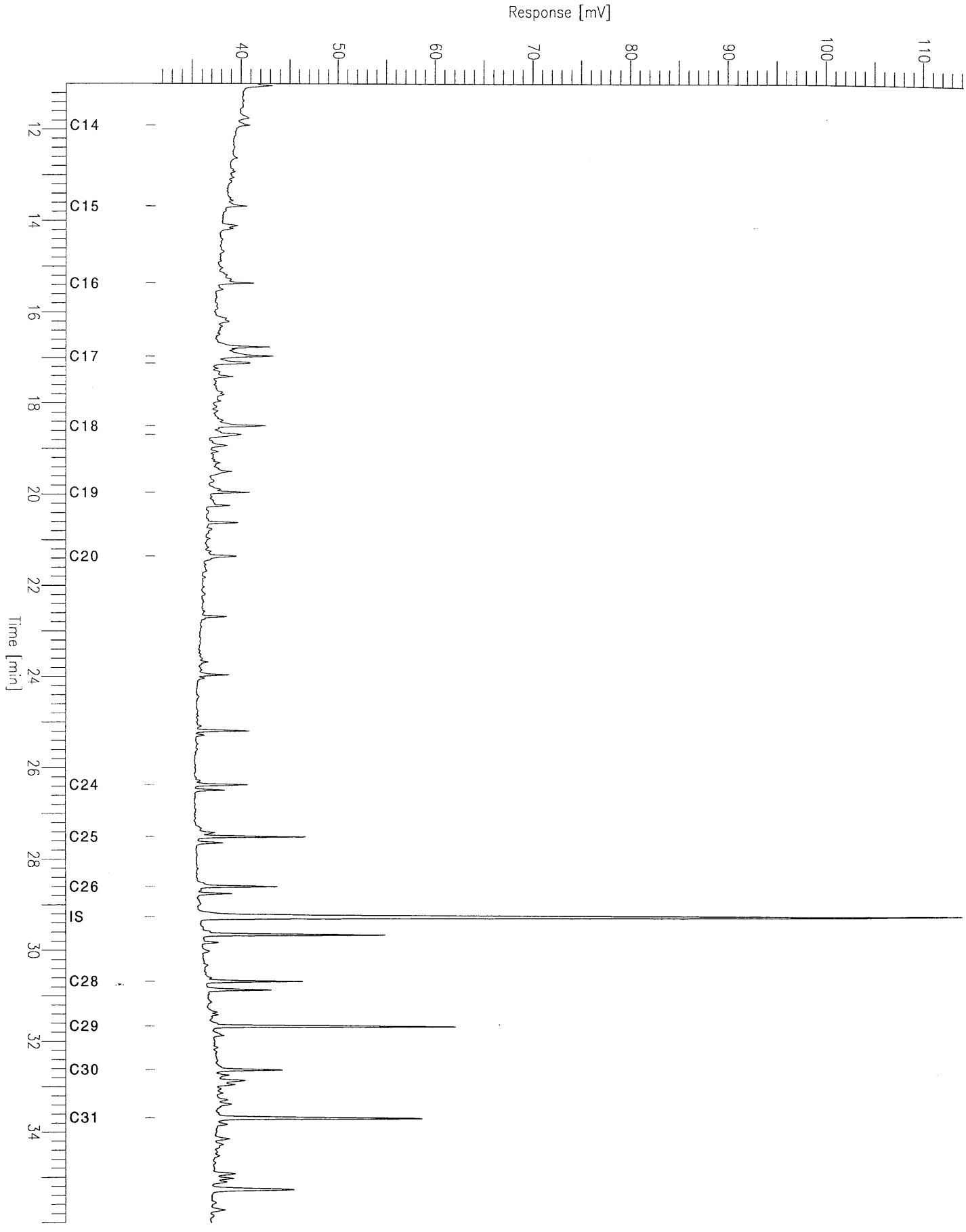
Sample #: Page 1 of 1
Date : 2/6/95 11:50 AM
Time of Injection: 10/6/94 08:33 PM
Low Point : 31.34 mV High Point : 111.04 mV
Plot Scale: 79.7 mV



Rockall Chromatogram

Sample Name : 56-13/8 3.08m
FileName : C:\TC4\HYDROCAR\Ra38.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

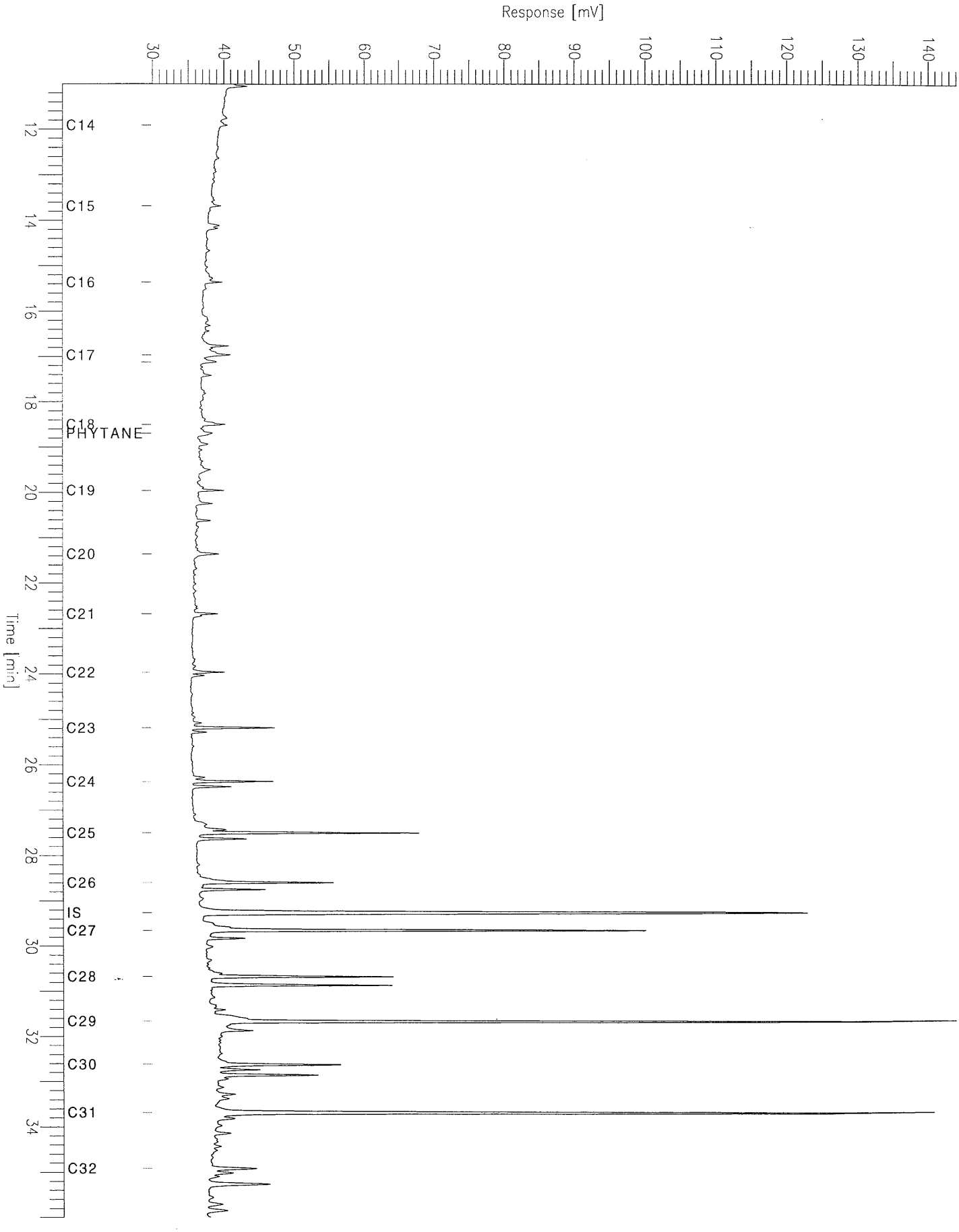
Sample #: Page 1 of 1
Date : 2/6/95 11:50 AM
Time of Injection: 10/6/94 09:28 PM
Low Point : 31.34 mV High Point : 114.11 mV
Plot Scale: 82.8 mV



Rockall Chromatogram

Sample Name : 56-14/5 2.25m
FileName : C:\TC4\HYDROCAR\Ra39.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

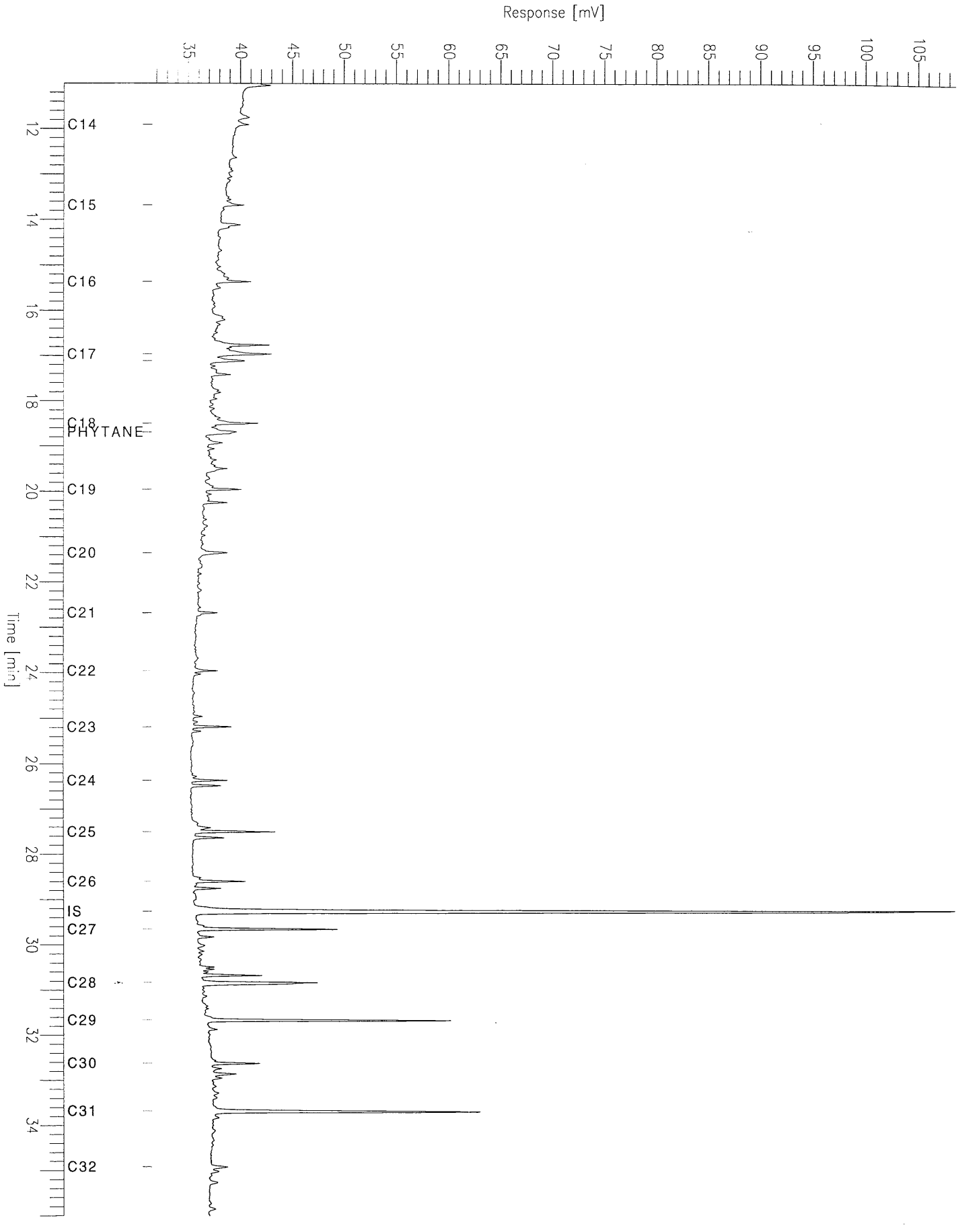
Sample #: Page 1 of 1
Date : 3/7/95 02:58 PM
Time of Injection: 10/6/94 10:23 PM
Low Point : 29.88 mV High Point : 144.06 mV
Plot Scale: 114.2 mV



Rockall Chromatogram

Sample Name : 56-14/5 2.91m
FileName : C:\TC4\HYDROCAR\Ra40.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

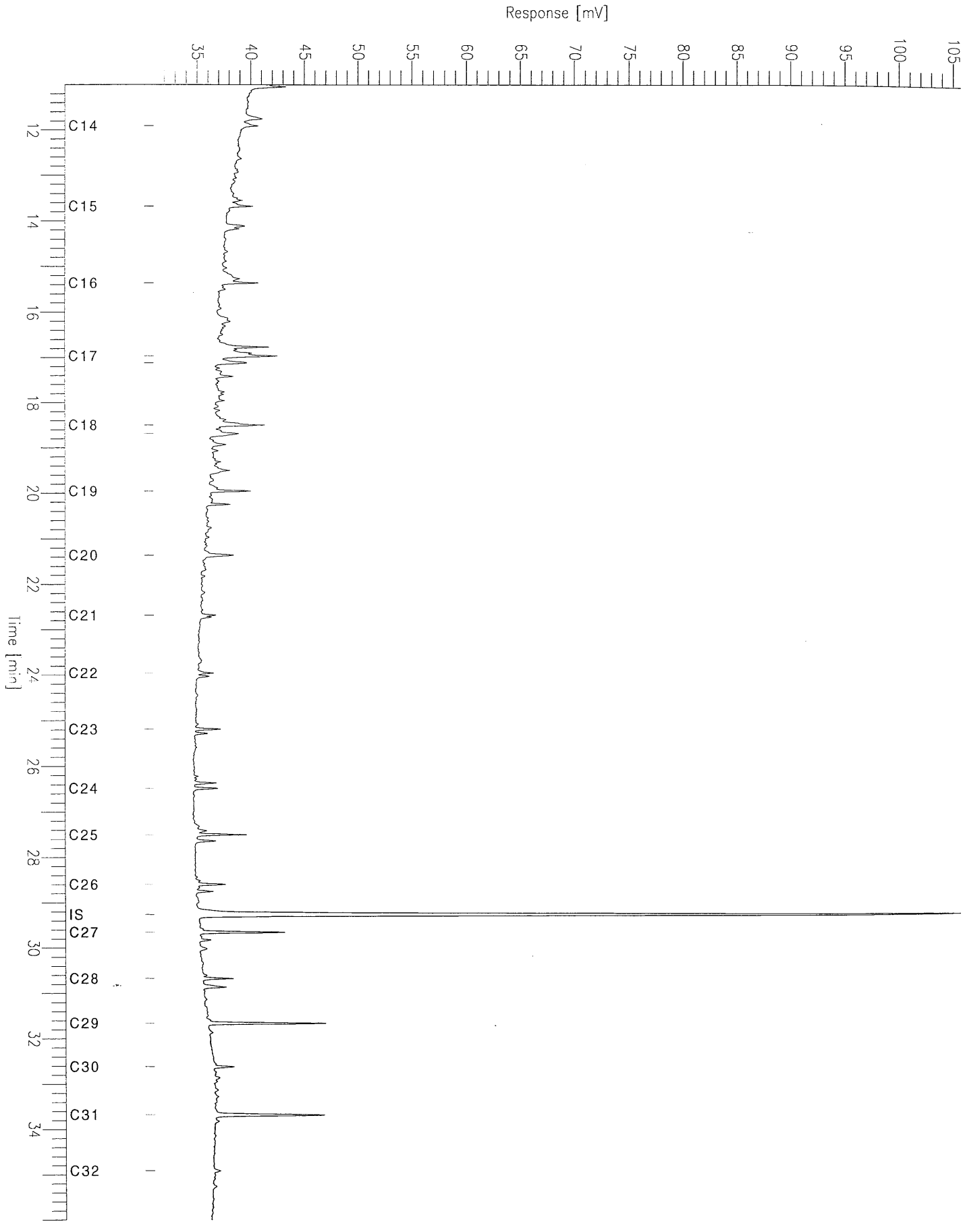
Sample #: Page 1 of 1
Date : 3/7/95 02:58 PM
Time of Injection: 10/6/94 11:17 PM
Low Point : 31.60 mV High Point : 108.55 mV
Plot Scale: 76.9 mV



Rockall Chromatogram

Sample Name : 56-14/6 2.81m
FileName : C:\TC4\HYDROCAR\Ra41.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

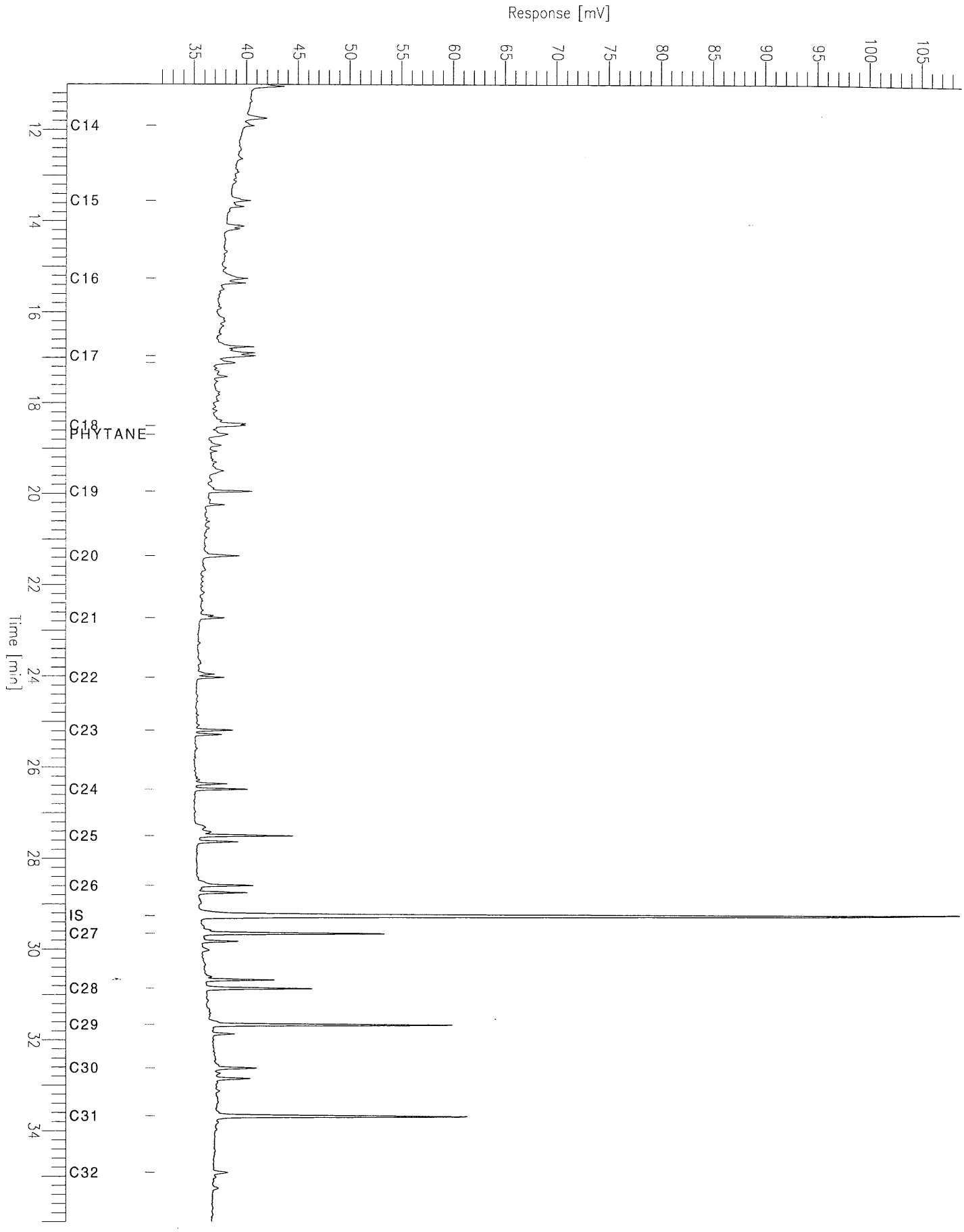
Sample #:
Date : 3/7/95 02:59 PM
Time of Injection: 10/7/94 12:12 AM
Low Point : 31.04 mV High Point : 105.68 mV
Plot Scale: 74.6 mV



Rockall Chromatogram

Sample Name : 56-14/6 3.46m
FileName : C:\TC4\HYDROCAR\Ra42.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

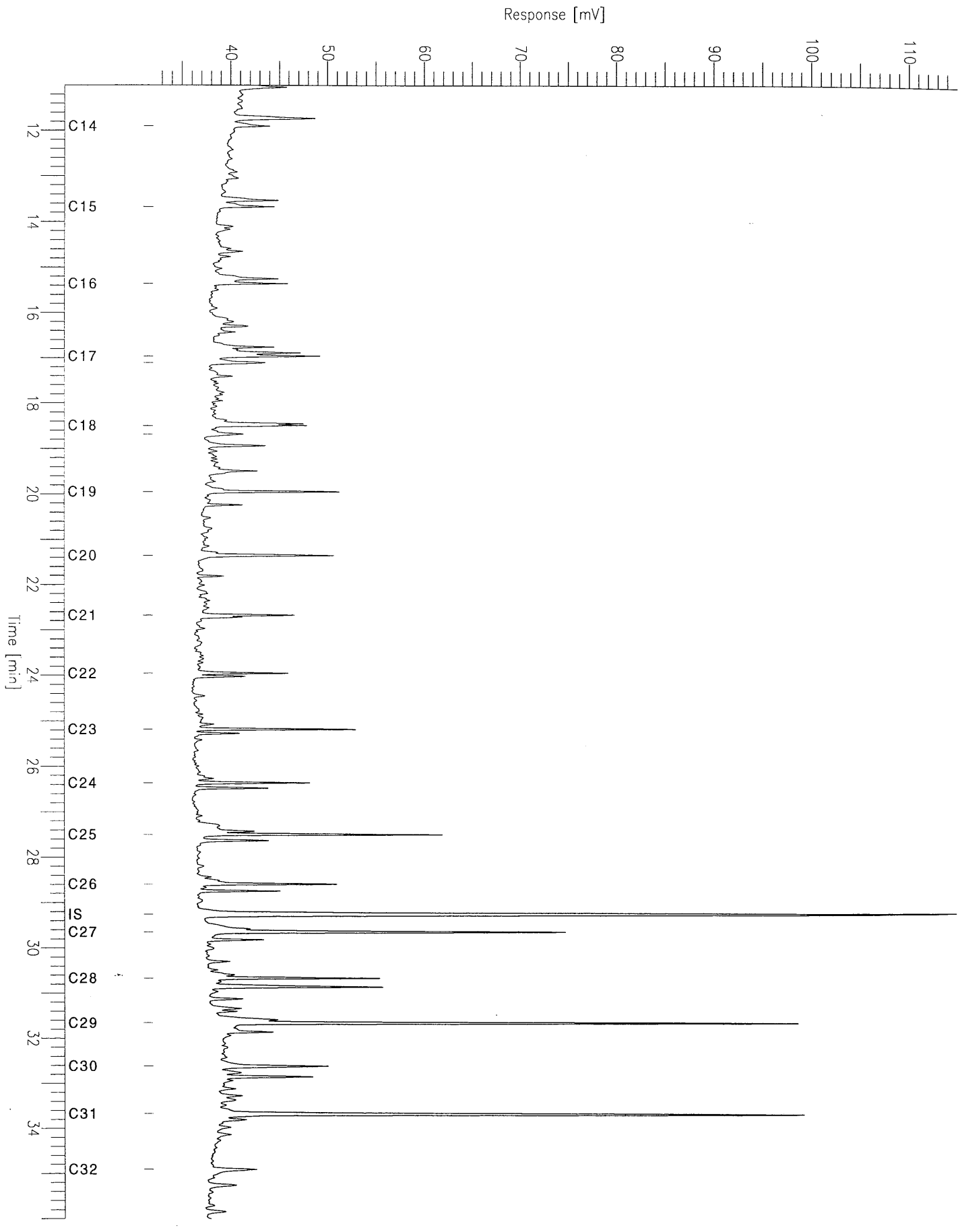
Sample #: Page 1 of 1
Date : 3/7/95 02:59 PM
Time of Injection: 10/7/94 01:07 AM
Low Point : 31.42 mV High Point : 108.84 mV
Plot Scale: 77.4 mV



Rockall Chromatogram

Sample Name : 56-14/7 0.81m
FileName : C:\TC4\HYDROCAR\Ra44.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

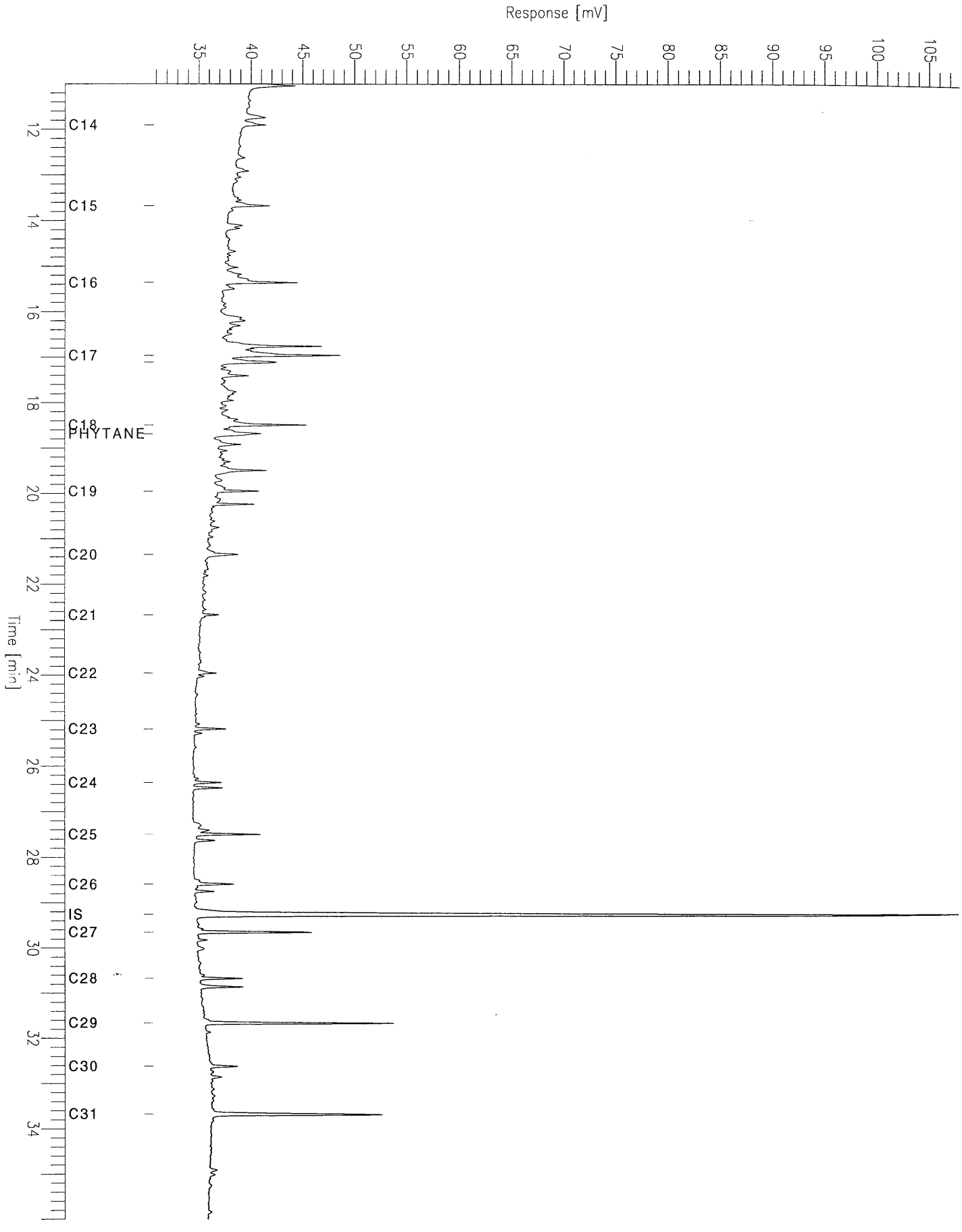
Sample #: Page 1 of 1
Date : 2/6/95 11:52 AM
Time of Injection: 10/7/94 02:56 AM
Low Point : 32.10 mV High Point : 114.98 mV
Plot Scale: 82.9 mV



Rockall Chromatogram

Sample Name : 56-14/7 1.46m
FileName : C:\TC4\HYDROCAR\Ra46.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

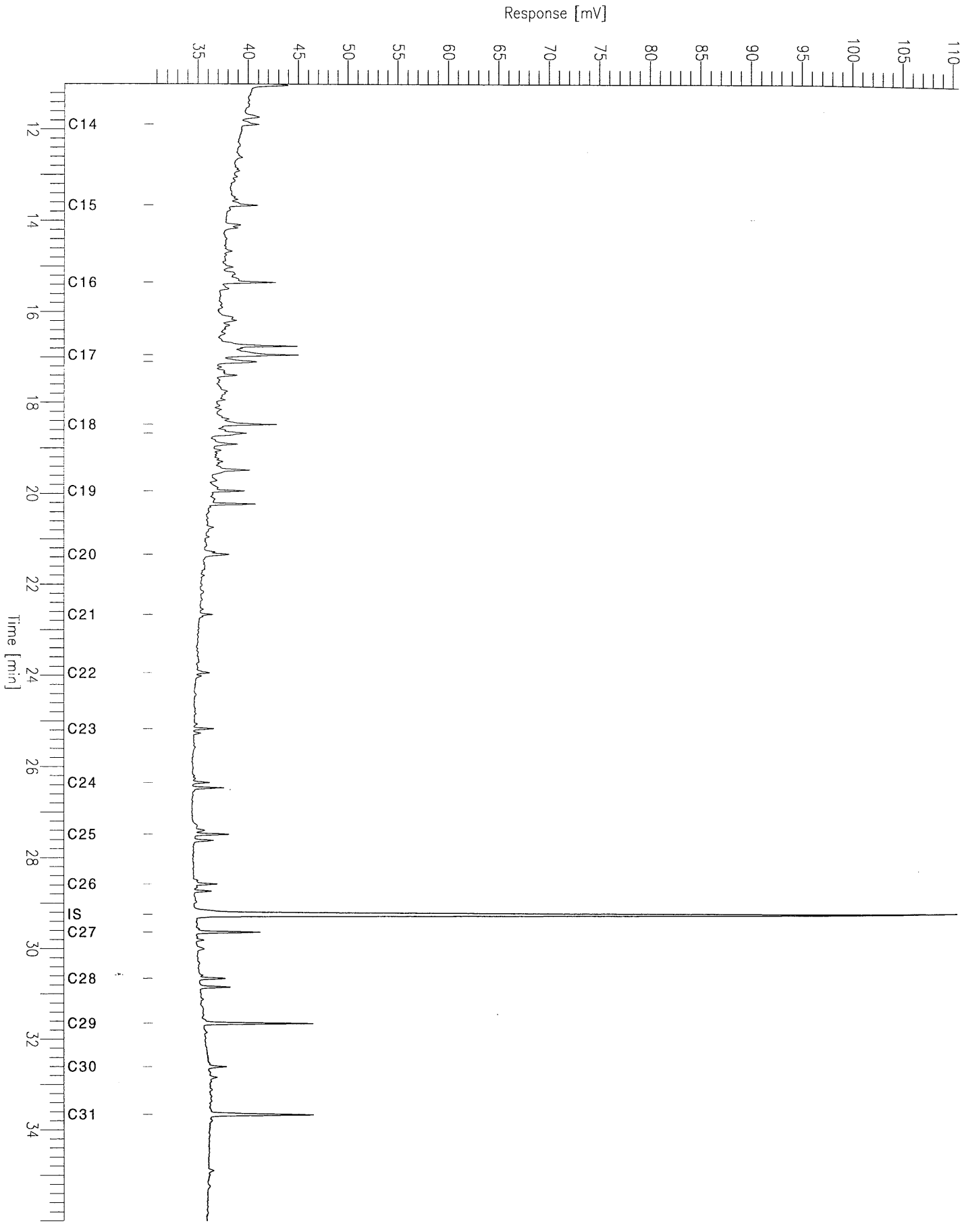
Sample #: Page 1 of 1
Date : 2/6/95 11:53 AM
Time of Injection: 10/7/94 04:46 AM
Low Point : 30.78 mV High Point : 107.82 mV
Plot Scale: 77.0 mV



Rockall Chromatogram

Sample Name : 56-14/8 0.07m
FileName : C:\TC4\HYDROCAR\Ra47.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

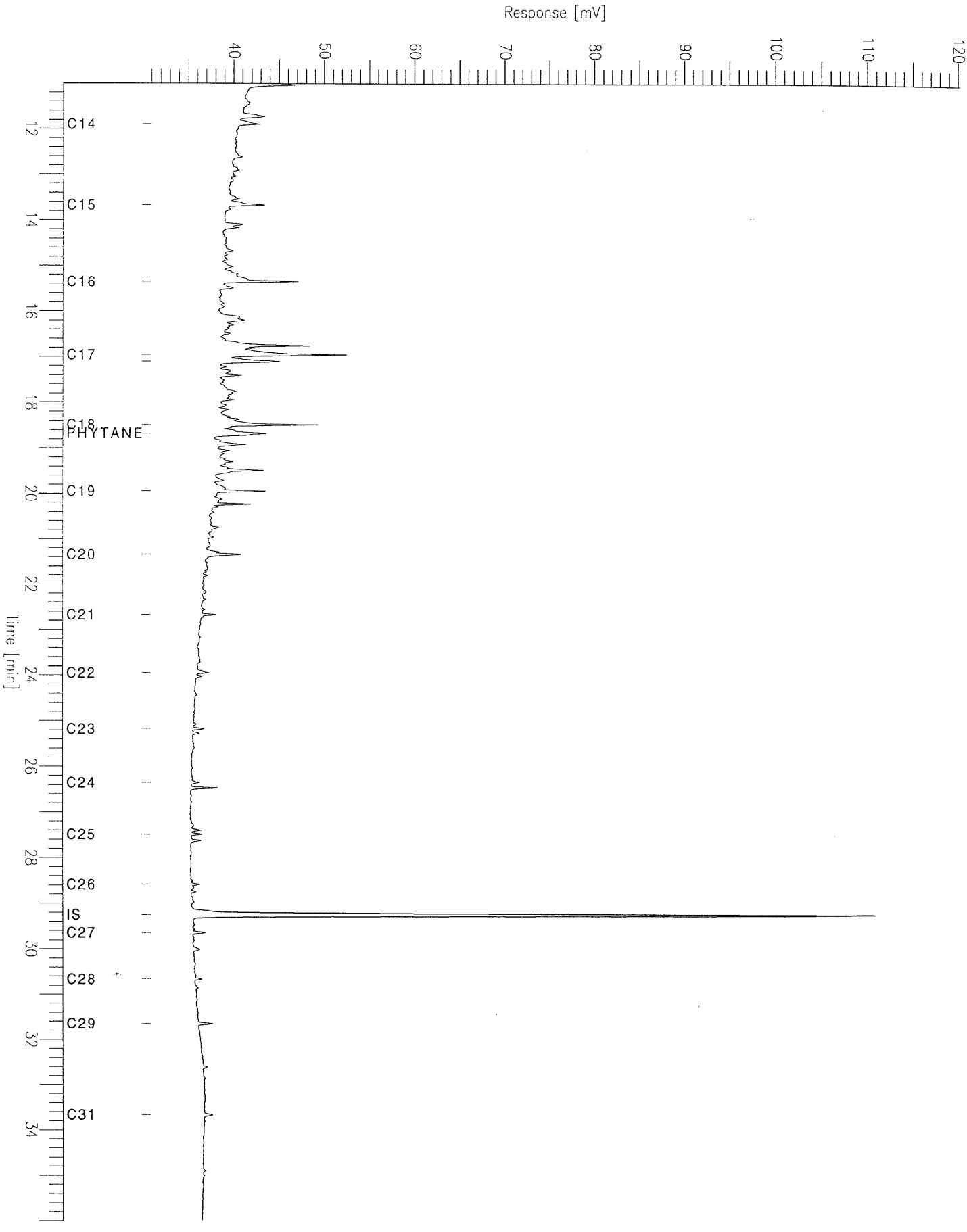
Sample #: Page 1 of 1
Date : 2/6/95 11:53 AM
Time of Injection: 10/7/94 05:40 AM
Low Point : 30.66 mV High Point : 110.51 mV
Plot Scale: 79.8 mV



Rockall Chromatogram

Sample Name : 56-14/11 2.20m
FileName : C:\TC4\HYDROCAR\rb5.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

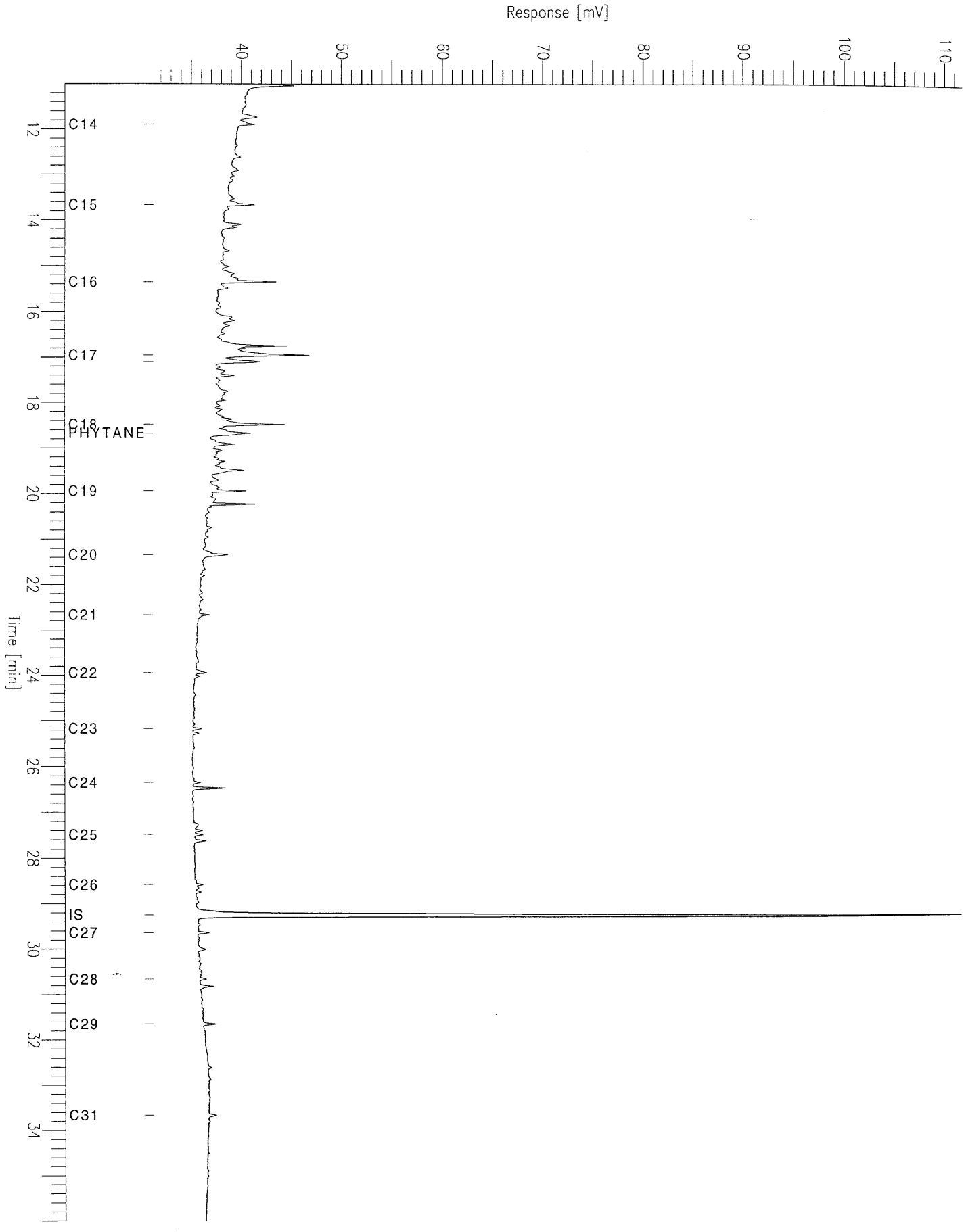
Sample #: Page 1 of 1
Date : 2/2/95 11:08 AM
Time of Injection: 10/7/94 03:04 PM
Low Point : 30.98 mV High Point : 120.15 mV
Plot Scale: 89.2 mV



Rockall Chromatogram

Sample Name : 56-14/11 2.85m
FileName : C:\TC4\HYDROCAR\rb6.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

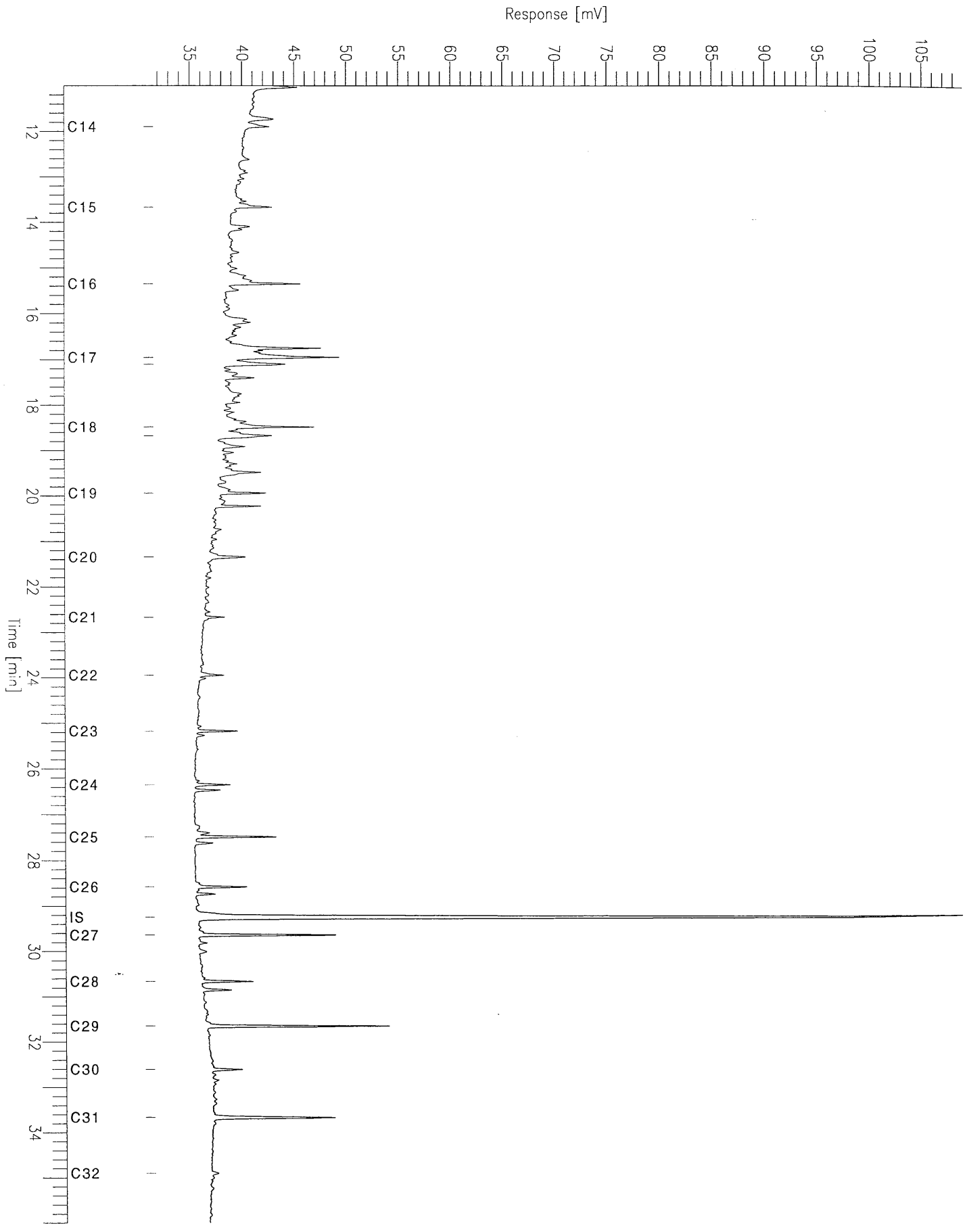
Sample #: Page 1 of 1
Date : 2/2/95 11:08 AM
Time of Injection: 10/7/94 03:58 PM
Low Point : 31.25 mV High Point : 111.70 mV
Plot Scale: 80.5 mV



Rockall Chromatogram

Sample Name : 56-14/12 3.00m
FileName : C:\TC4\HYDROCAR\rb7.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

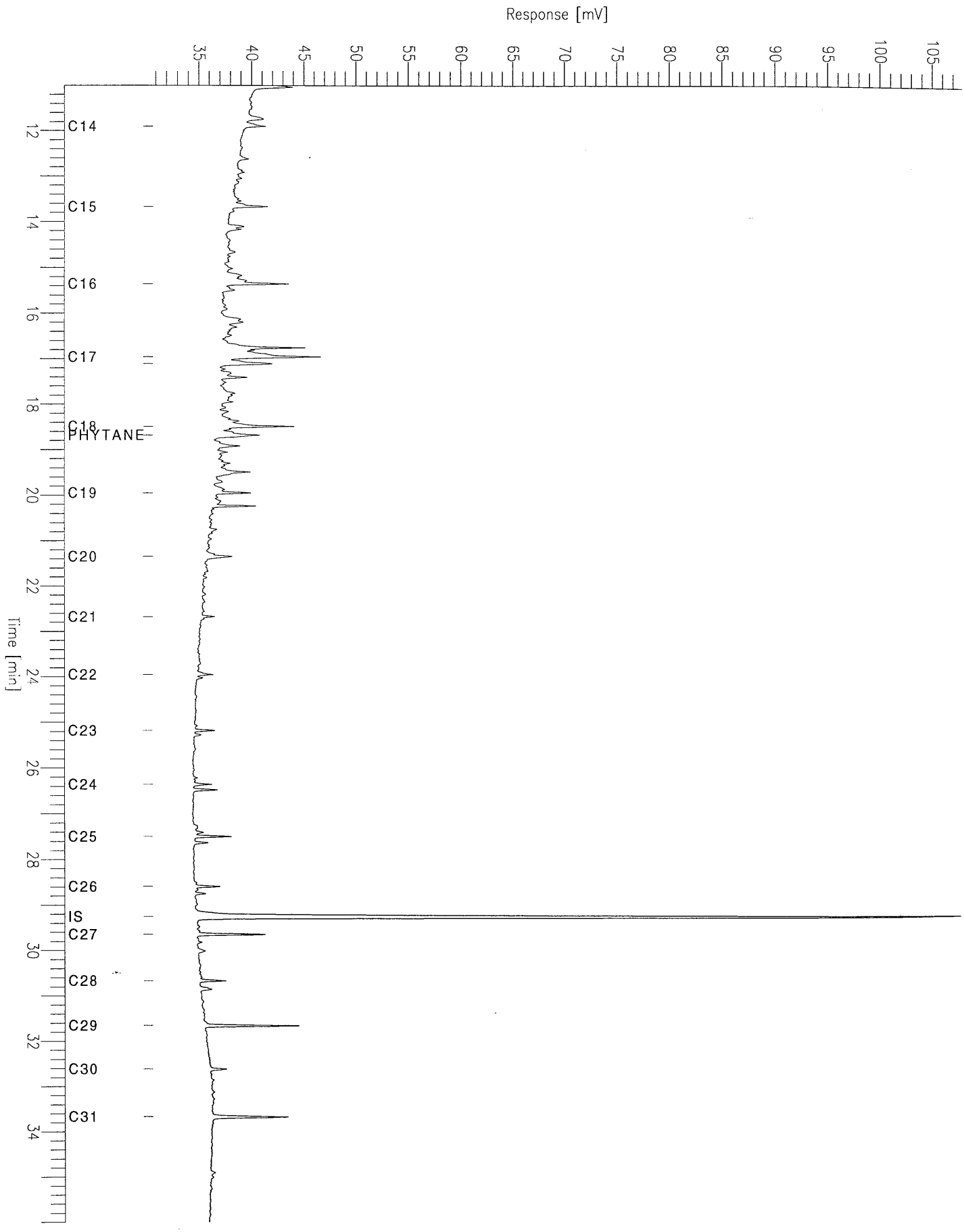
Sample #: Page 1 of 1
Date : 2/2/95 11:09 AM
Time of Injection: 10/7/94 04:54 PM
Low Point : 31.60 mV High Point : 108.90 mV
Plot Scale: 77.3 mV



Rockall Chromatogram

Sample Name : 56-14/12 3.65m
FileName : C:\TC4\HYDROCAR\rb9.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

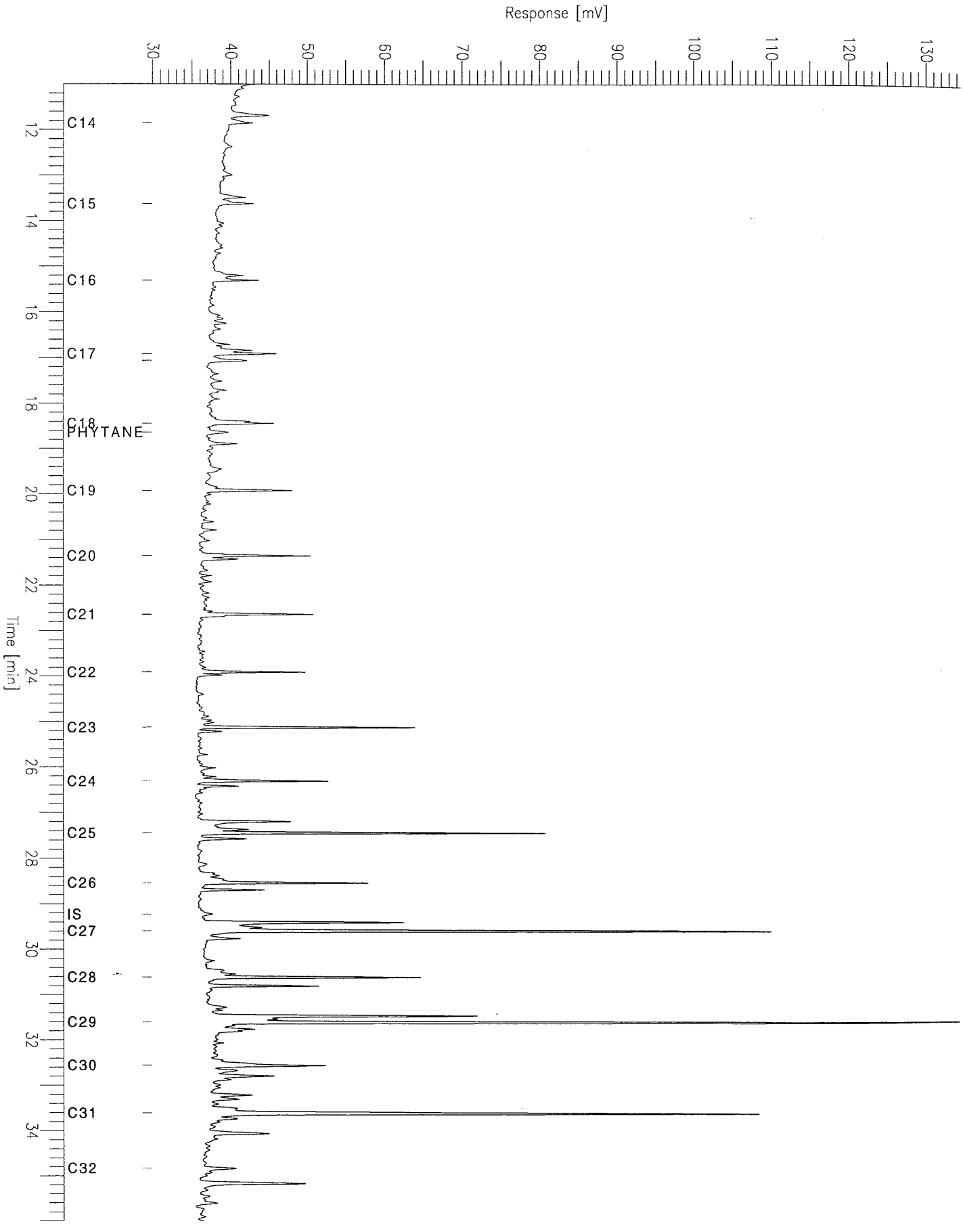
Sample #: Page 1 of 1
Date : 2/2/95 11:10 AM
Time of Injection: 10/7/94 06:44 PM
Low Point : 30.73 mV High Point : 107.81 mV
Plot Scale: 77.1 mV



Rockall Chromatogram

Sample Name : 57-11/68 1.83m
FileName : C:\TC4\HYDROCAR\re32.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

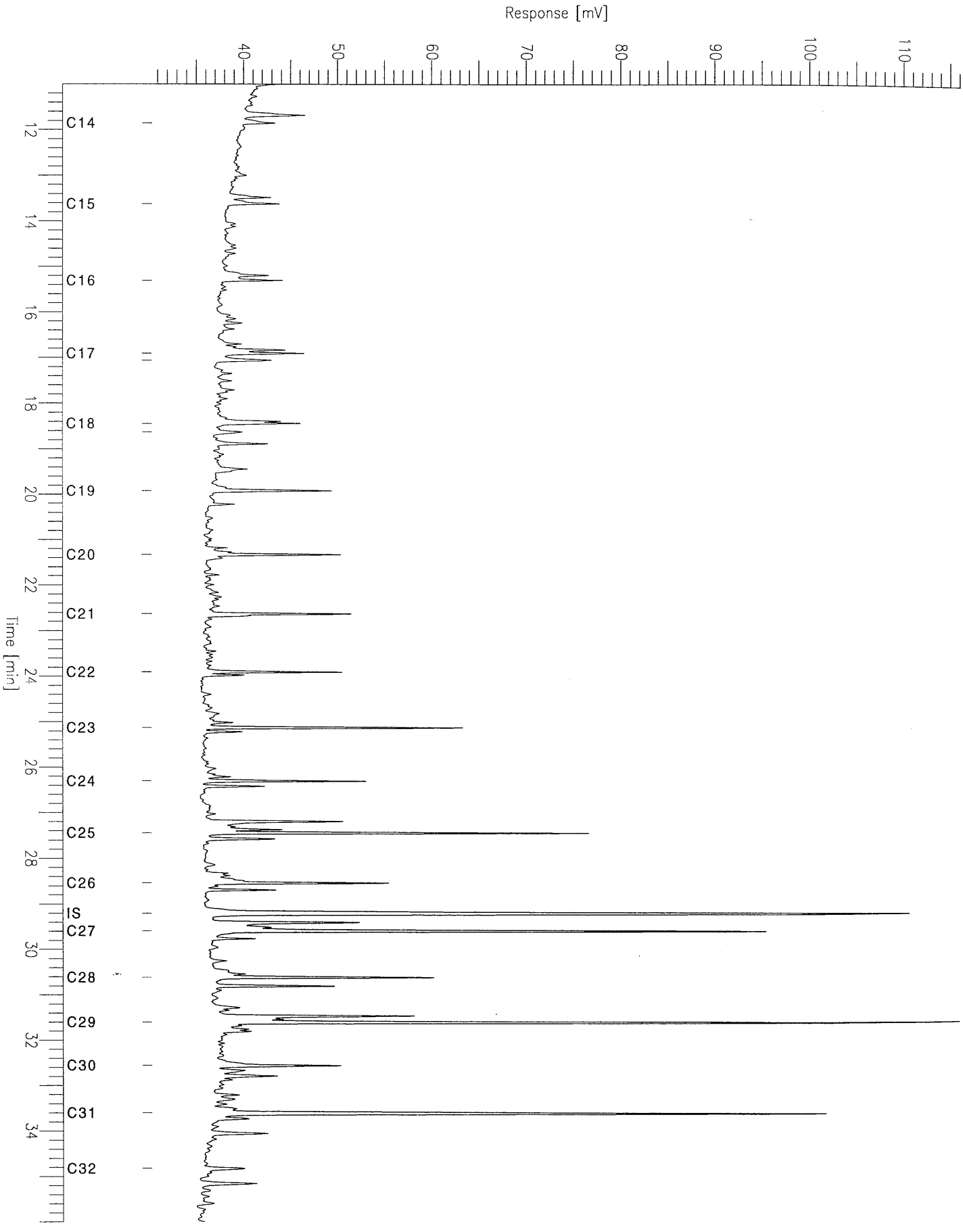
Sample #: Page 1 of 1
Date : 2/3/95 05:42 PM
Time of Injection: 10/15/94 02:50 PM
Low Point : 29.92 mV High Point : 134.45 mV
Plot Scale: 104.5 mV



Rockall Chromatogram

Sample Name : 57-11/68 2.48m
FileName : C:\TC4\HYDROCAR\re33.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

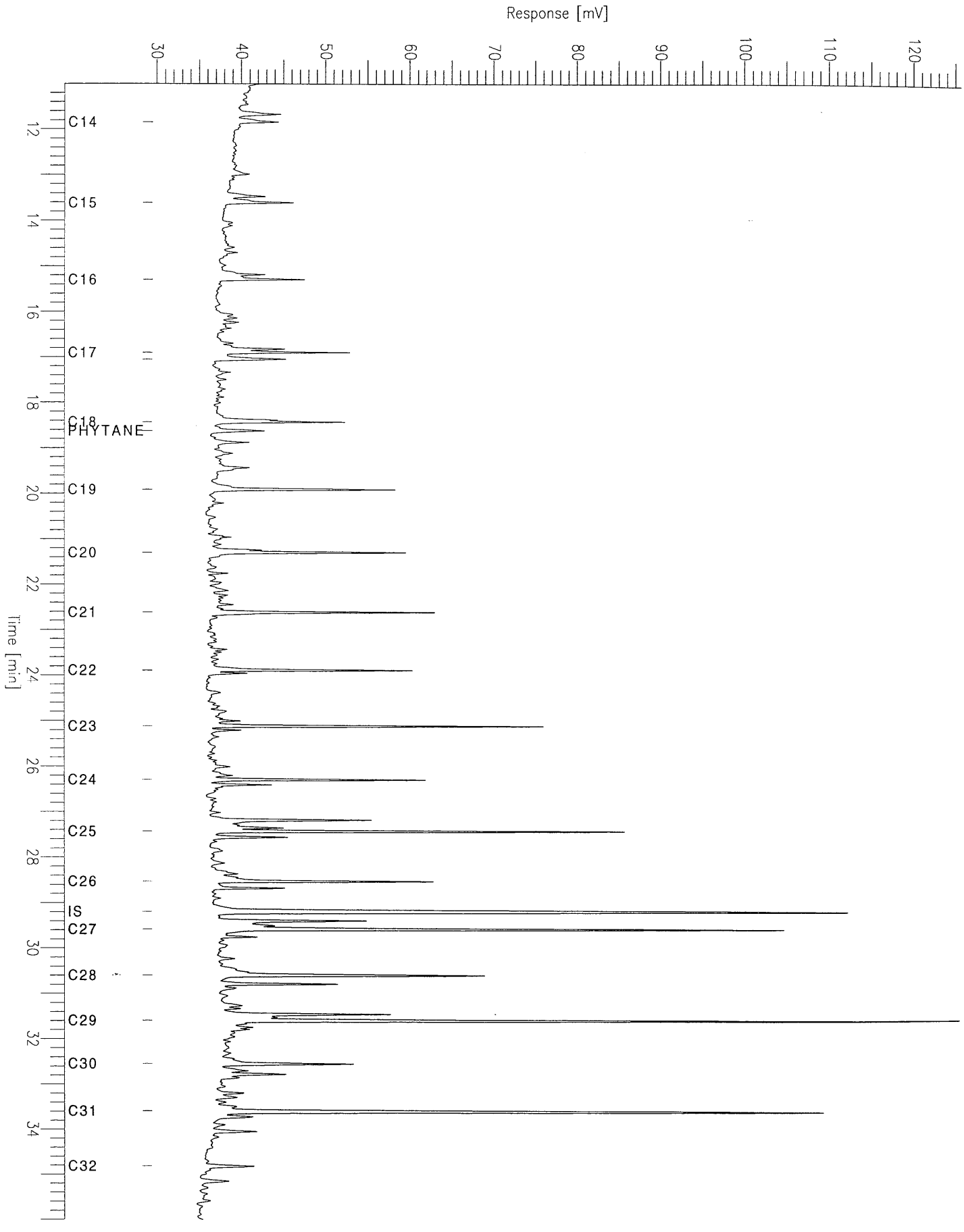
Sample #: Page 1 of 1
Date : 2/3/95 05:42 PM
Time of Injection: 10/15/94 03:46 PM
Low Point : 30.40 mV High Point : 116.03 mV
Plot Scale: 85.6 mV



Rockall Chromatogram

Sample Name : 57-11/69 1.32m
FileName : C:\TC4\HYDROCAR\re34.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

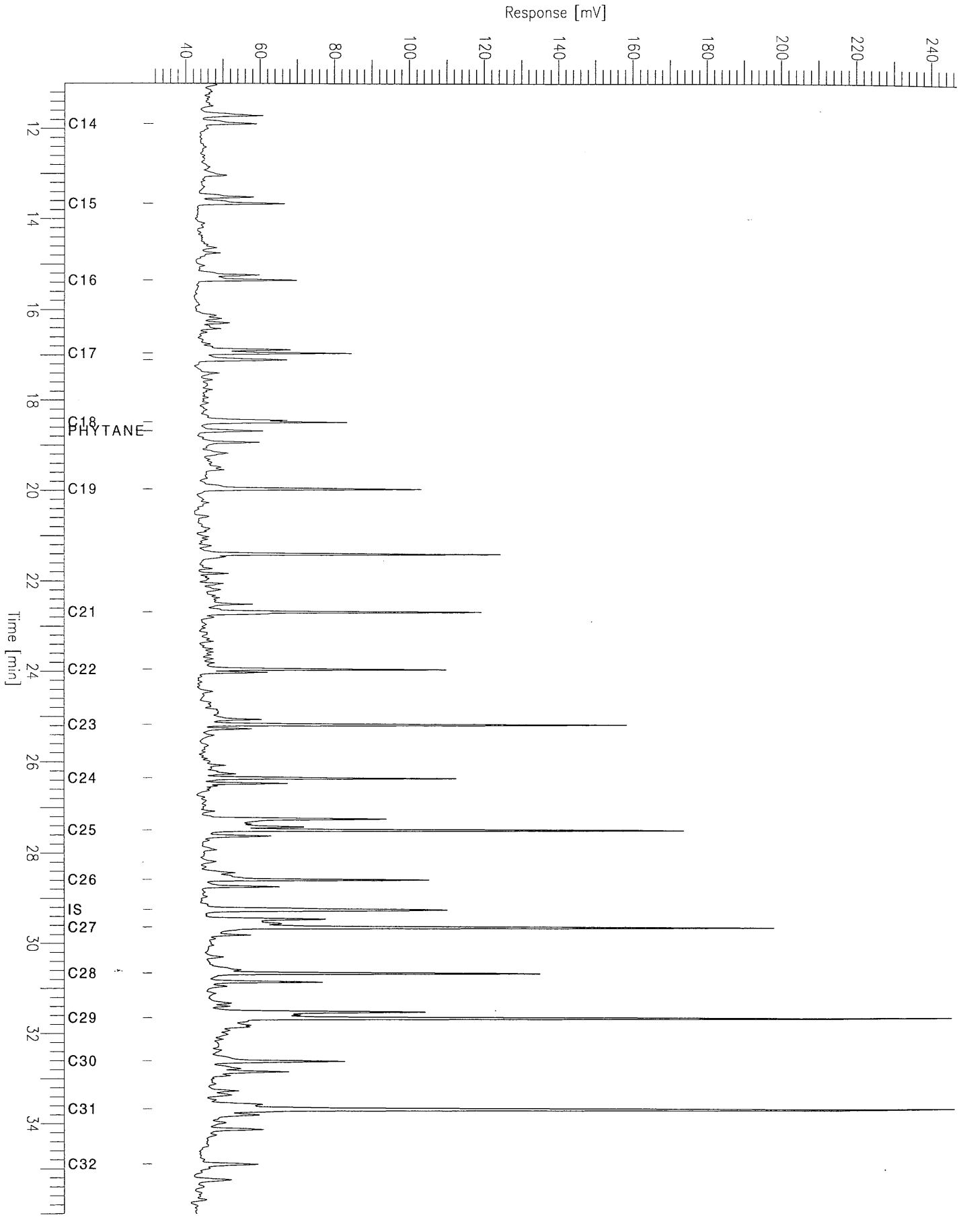
Sample #: Page 1 of 1
Date : 2/3/95 05:43 PM
Time of Injection: 10/15/94 04:41 PM
Low Point : 29.54 mV High Point : 125.63 mV
Plot Scale: 96.1 mV



Rockall Chromatogram

Sample Name : 57-11/69 1.97m
FileName : C:\TC4\HYDROCAR\rb13.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

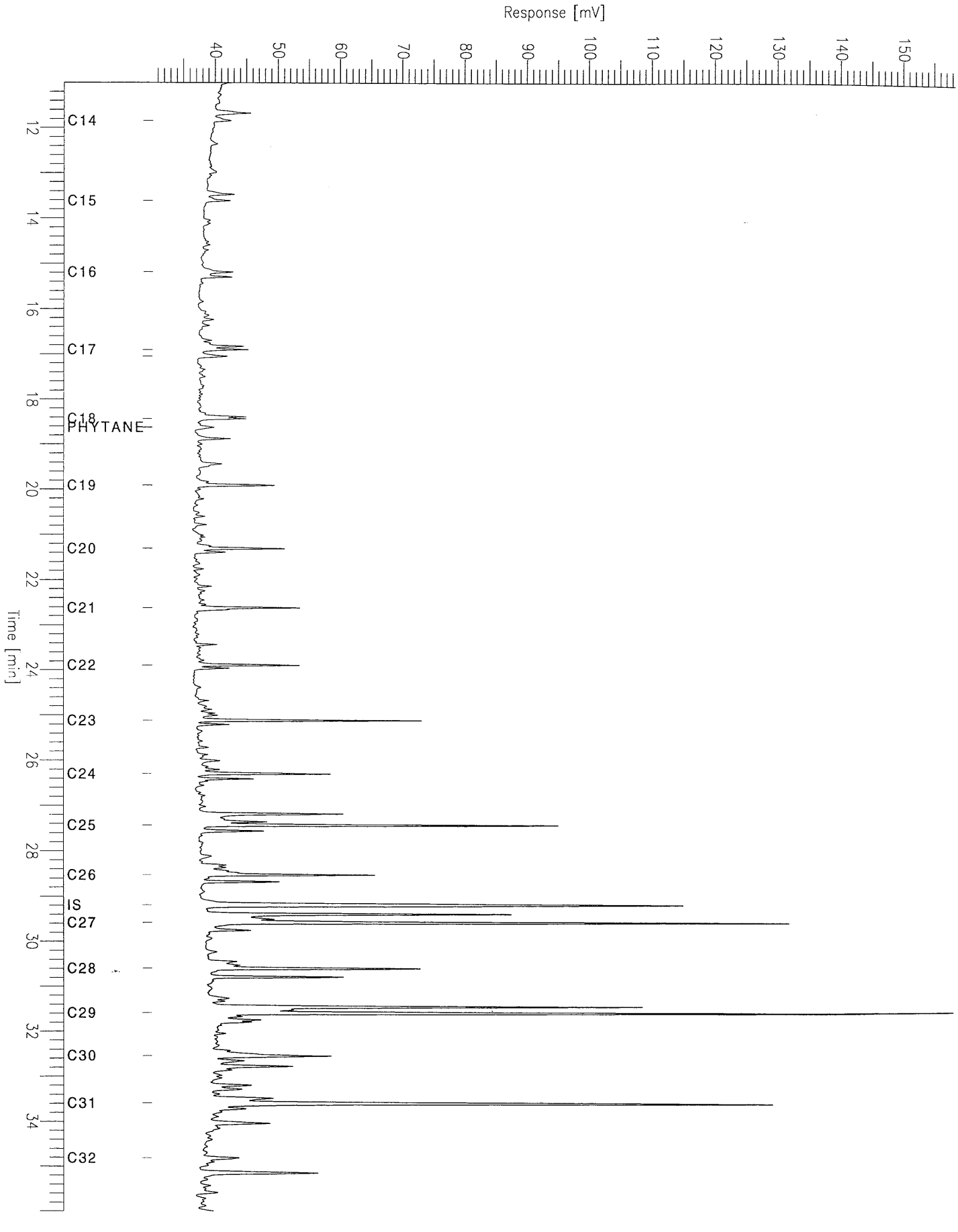
Sample #: Page 1 of 1
Date : 2/2/95 11:11 AM
Time of Injection: 10/7/94 10:25 PM
Low Point : 31.46 mV High Point : 246.74 mV
Plot Scale: 215.3 mV



Rockall Chromatogram

Sample Name : 57-12/14 0.23m
FileName : C:\TC4\HYDROCAR\re35.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

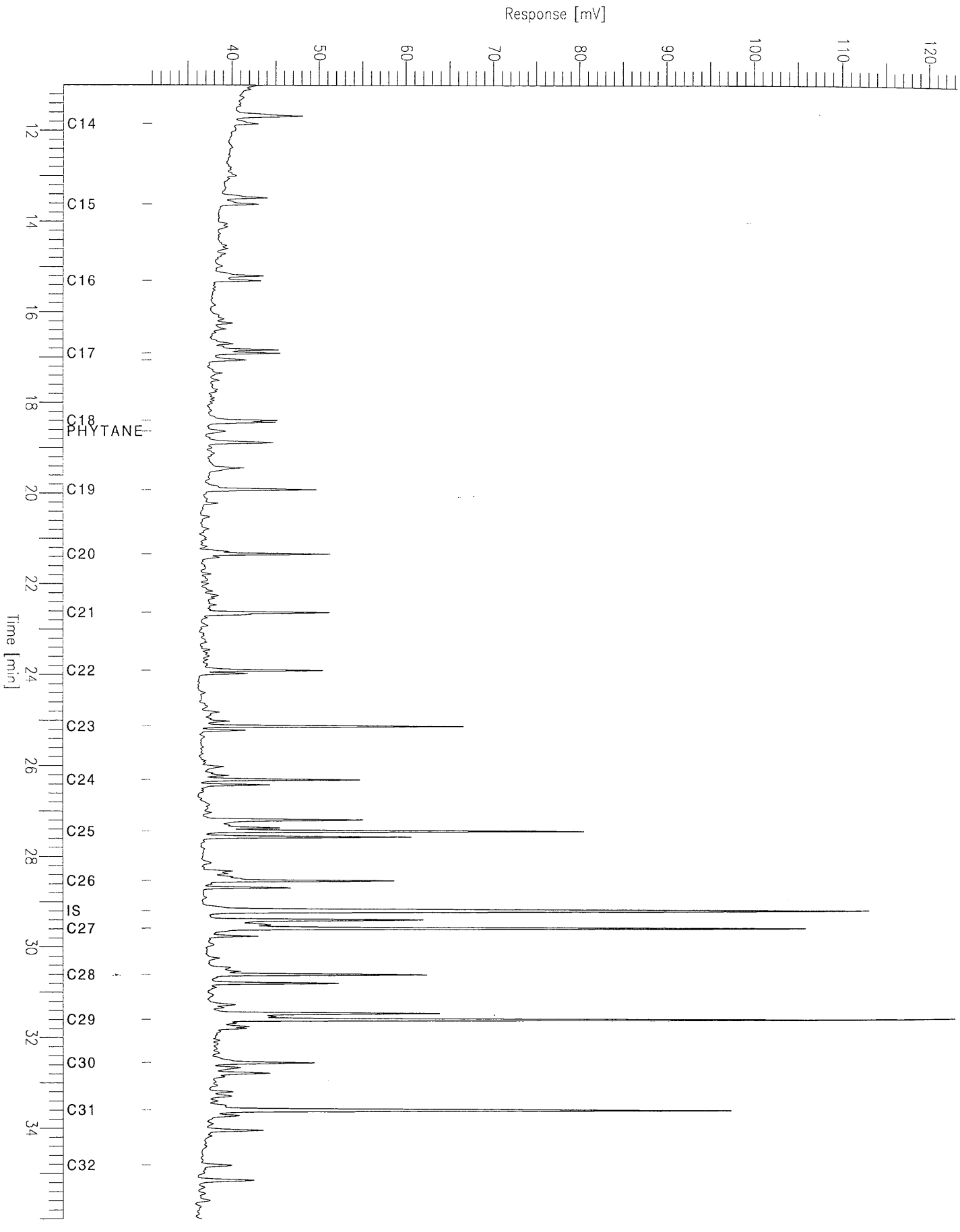
Sample #: Page 1 of 1
Date : 2/3/95 05:43 PM
Time of Injection: 10/15/94 05:36 PM
Low Point : 30.25 mV High Point : 158.36 mV
Plot Scale: 128.1 mV



Rockall Chromatogram

Sample Name : 57-12/16 2.76m
FileName : C:\TC4\HYDROCAR\re42.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

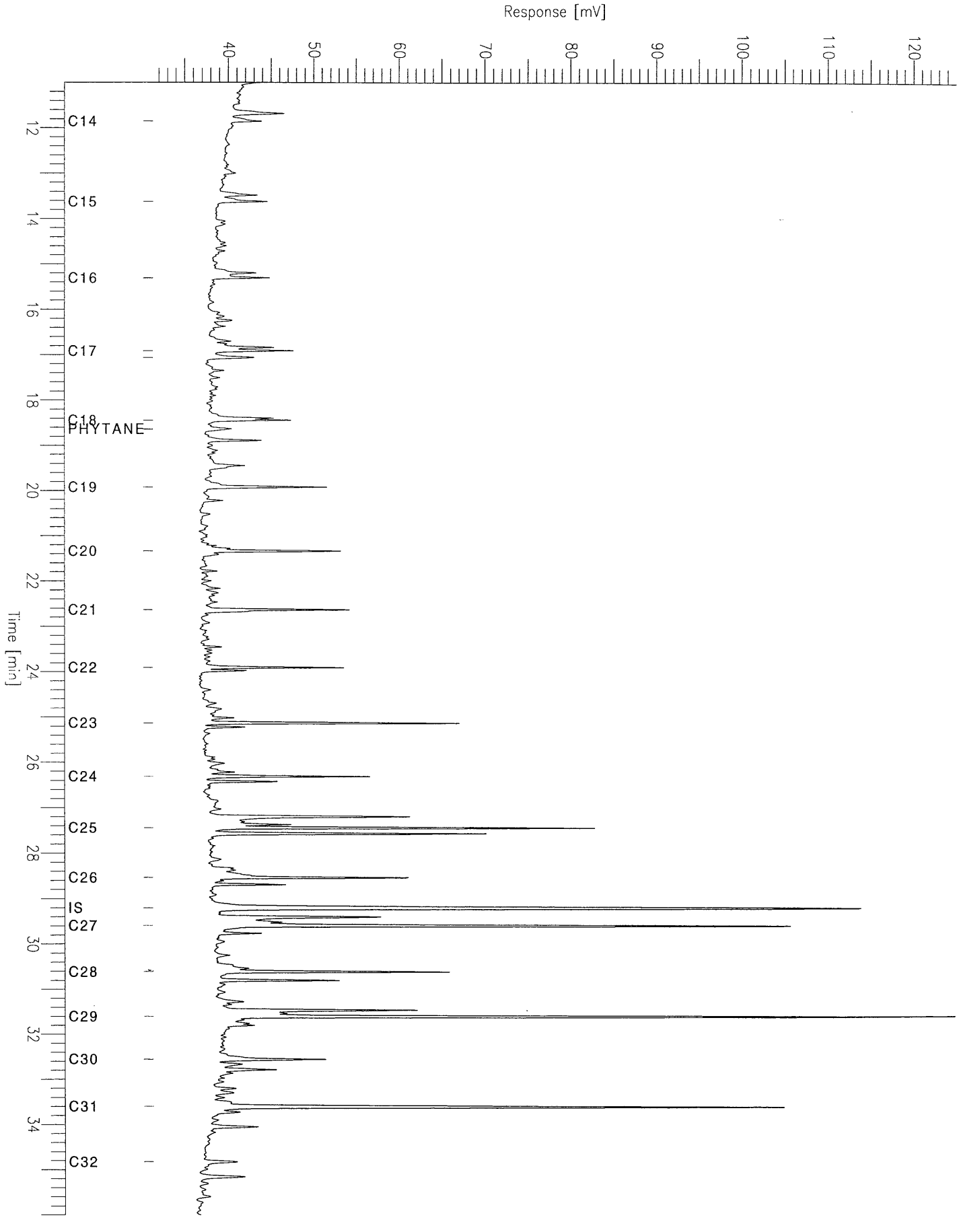
Sample #: Page 1 of 1
Date : 3/7/95 03:00 PM
Time of Injection: 10/16/94 12:02 AM
Low Point : 31.00 mV High Point : 123.23 mV
Plot Scale: 92.2 mV



Rockall Chromatogram

Sample Name : 57-12/16 3.32m
FileName : C:\TC4\HYDROCAR\re36.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

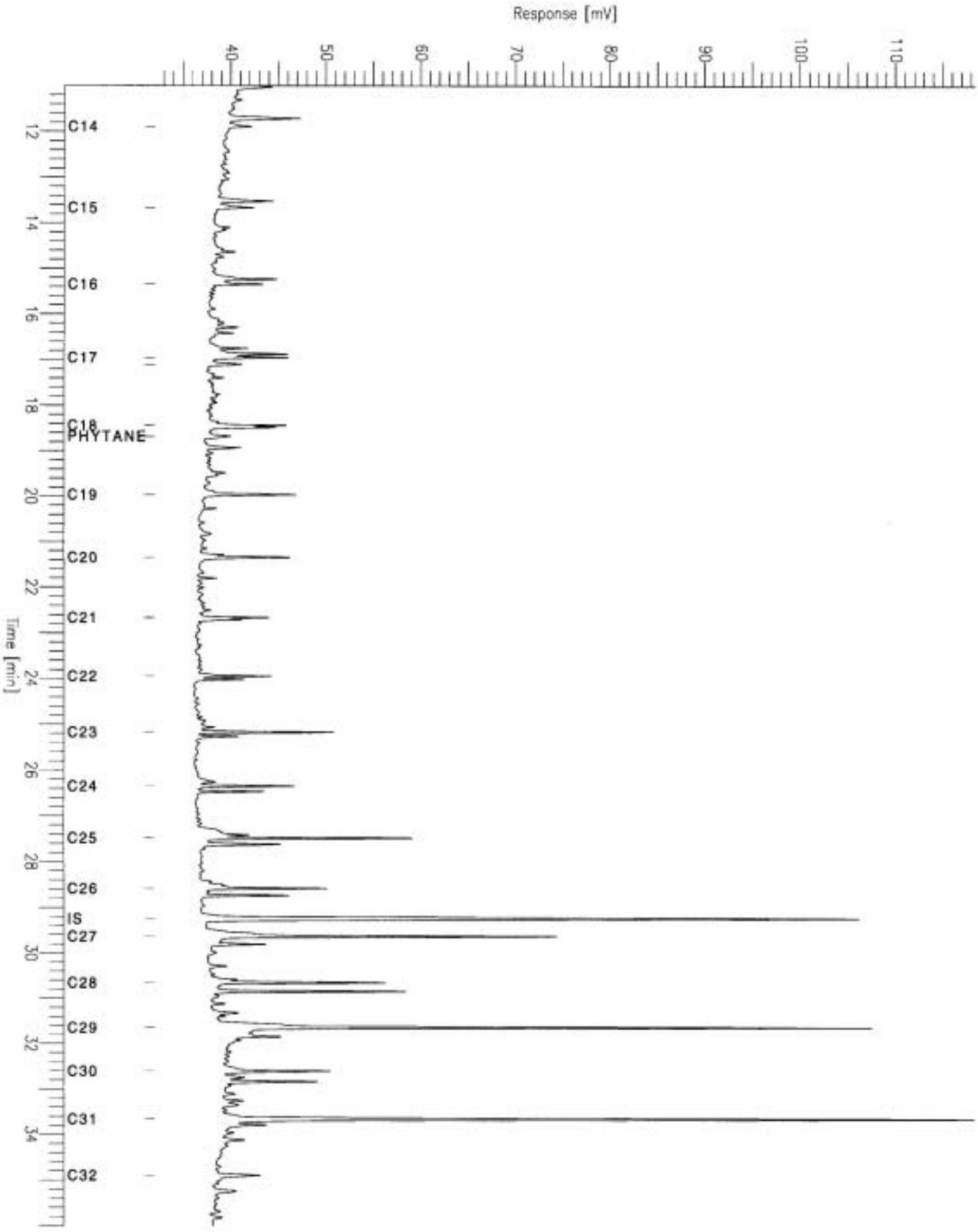
Sample #: Page 1 of 1
Date : 2/3/95 05:44 PM
Time of Injection: 10/15/94 06:32 PM
Low Point : 31.32 mV High Point : 124.93 mV
Plot Scale: 93.6 mV



Rockall Chromatogram

Sample Name : 57-12/17 2.02m
FileName : C:\TC4\HYDROCAR\RB17.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

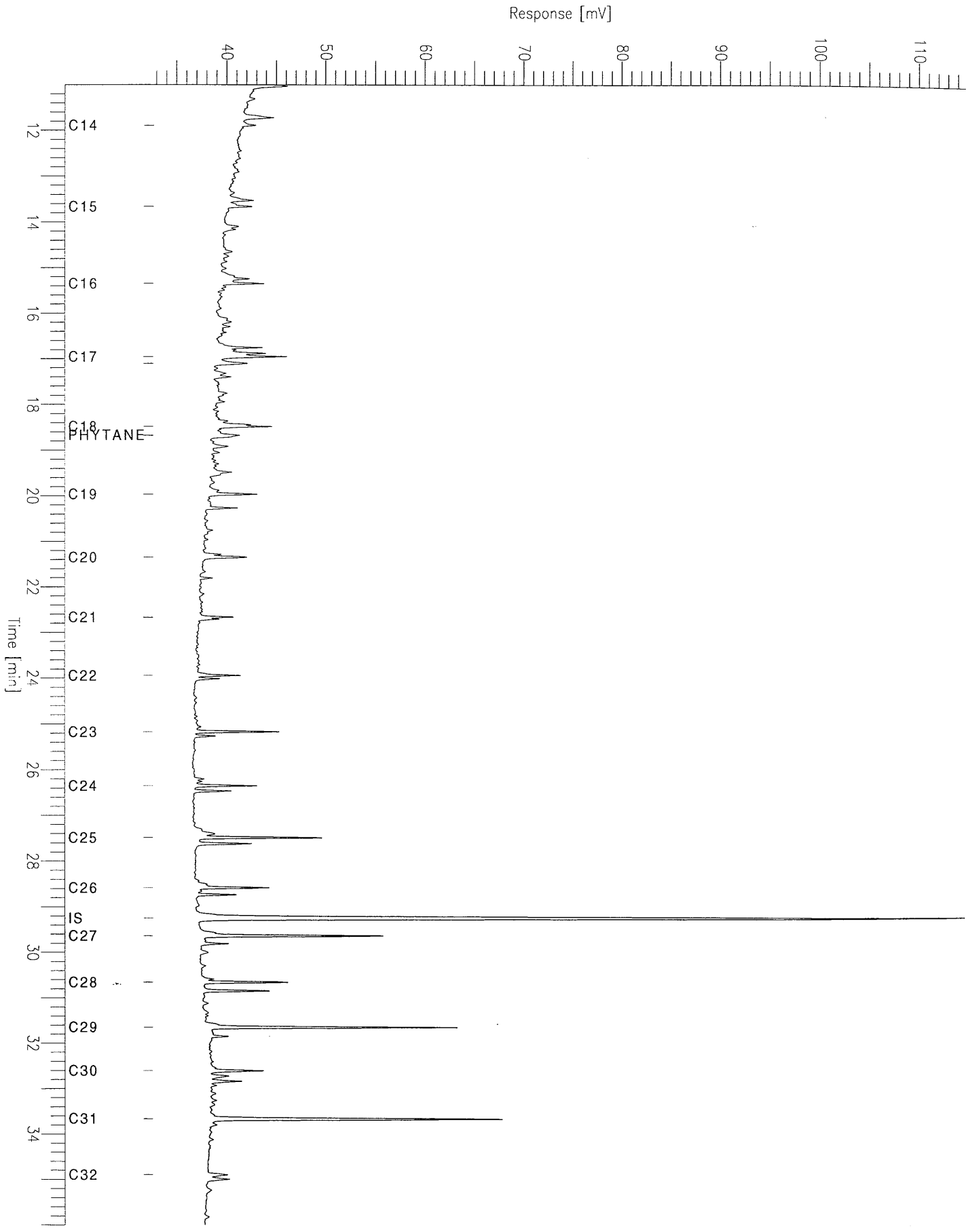
Sample #: Page 1 of 1
Date : 2/2/95 11:13 AM
Time of Injection: 10/8/94 02:07 AM
Low Point : 32.09 mV High Point : 118.37 mV
Plot Scale: 86.3 mV



Rockall Chromatogram

Sample Name : 57-12/17 2.67m
FileName : C:\TC4\HYDROCAR\RB18.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

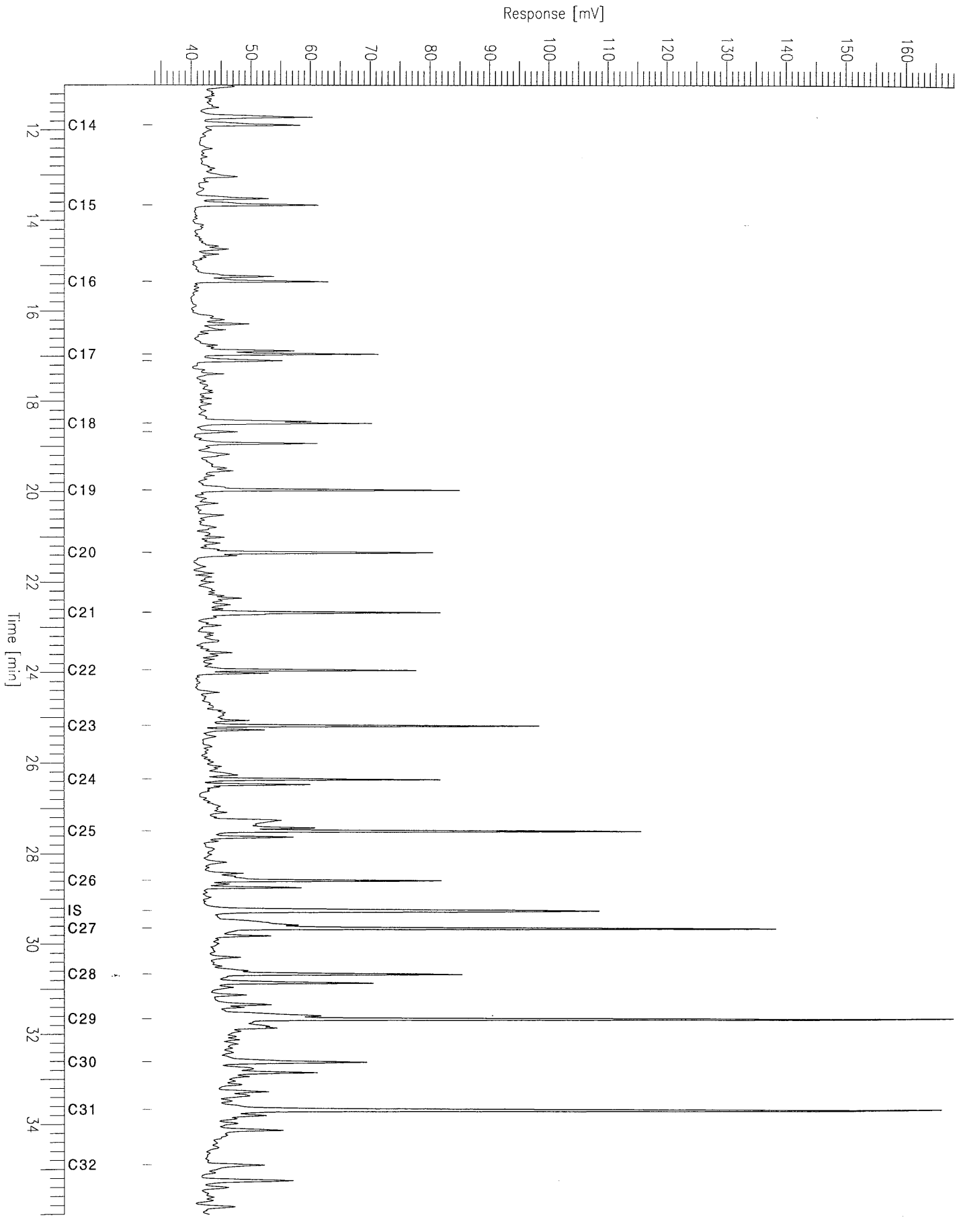
Sample #: Page 1 of 1
Date : 2/2/95 11:13 AM
Time of Injection: 10/8/94 03:01 AM
Low Point : 32.71 mV High Point : 114.73 mV
Plot Scale: 82.0 mV



Rockall Chromatogram

Sample Name : 57-12/20 1.85m
FileName : C:\TC4\HYDROCAR\rb19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 34 mV

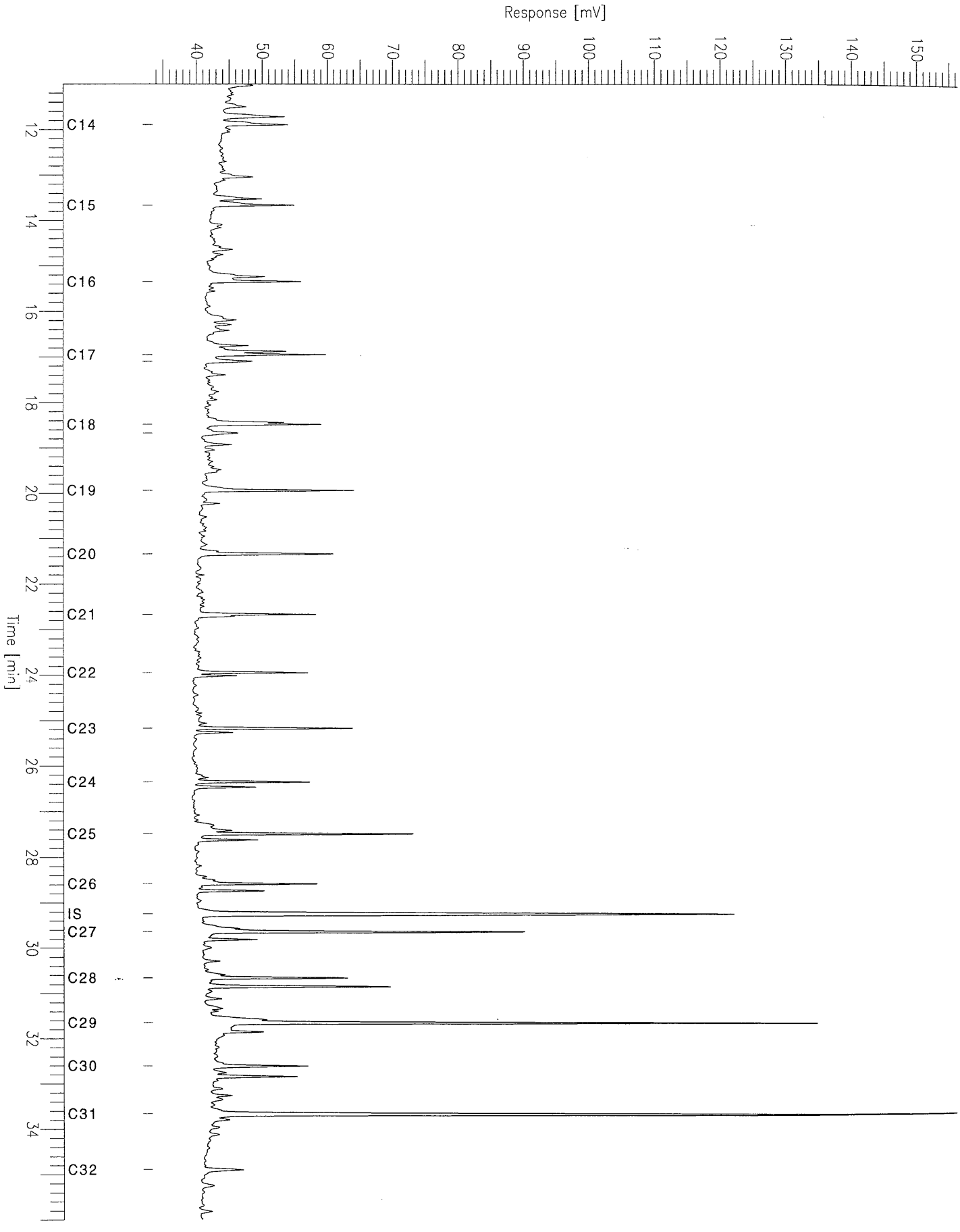
Sample #: Page 1 of 1
Date : 2/2/95 11:13 AM
Time of Injection: 10/8/94 03:57 AM
Low Point : 33.59 mV High Point : 168.02 mV
Plot Scale: 134.4 mV



Rockall Chromatogram

Sample Name : 57-12/20 2.50m
FileName : C:\TC4\HYDROCAR\rb20.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

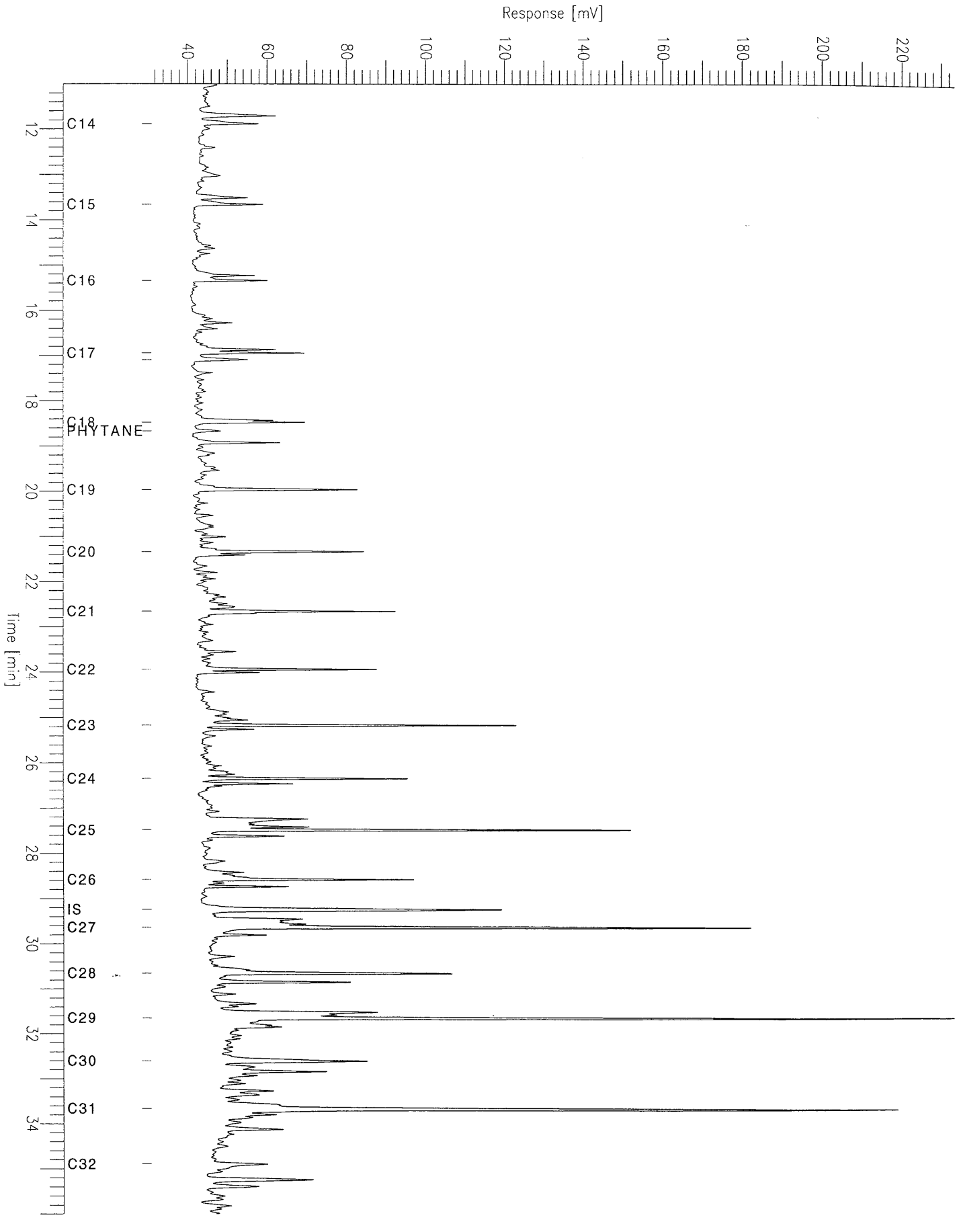
Sample #: Page 1 of 1
Date : 2/2/95 11:14 AM
Time of Injection: 10/8/94 04:52 AM
Low Point : 33.46 mV High Point : 156.29 mV
Plot Scale: 122.8 mV



Rockall Chromatogram

Sample Name : 57-12/21 2.45m
FileName : C:\TC4\HYDROCAR\rb21.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

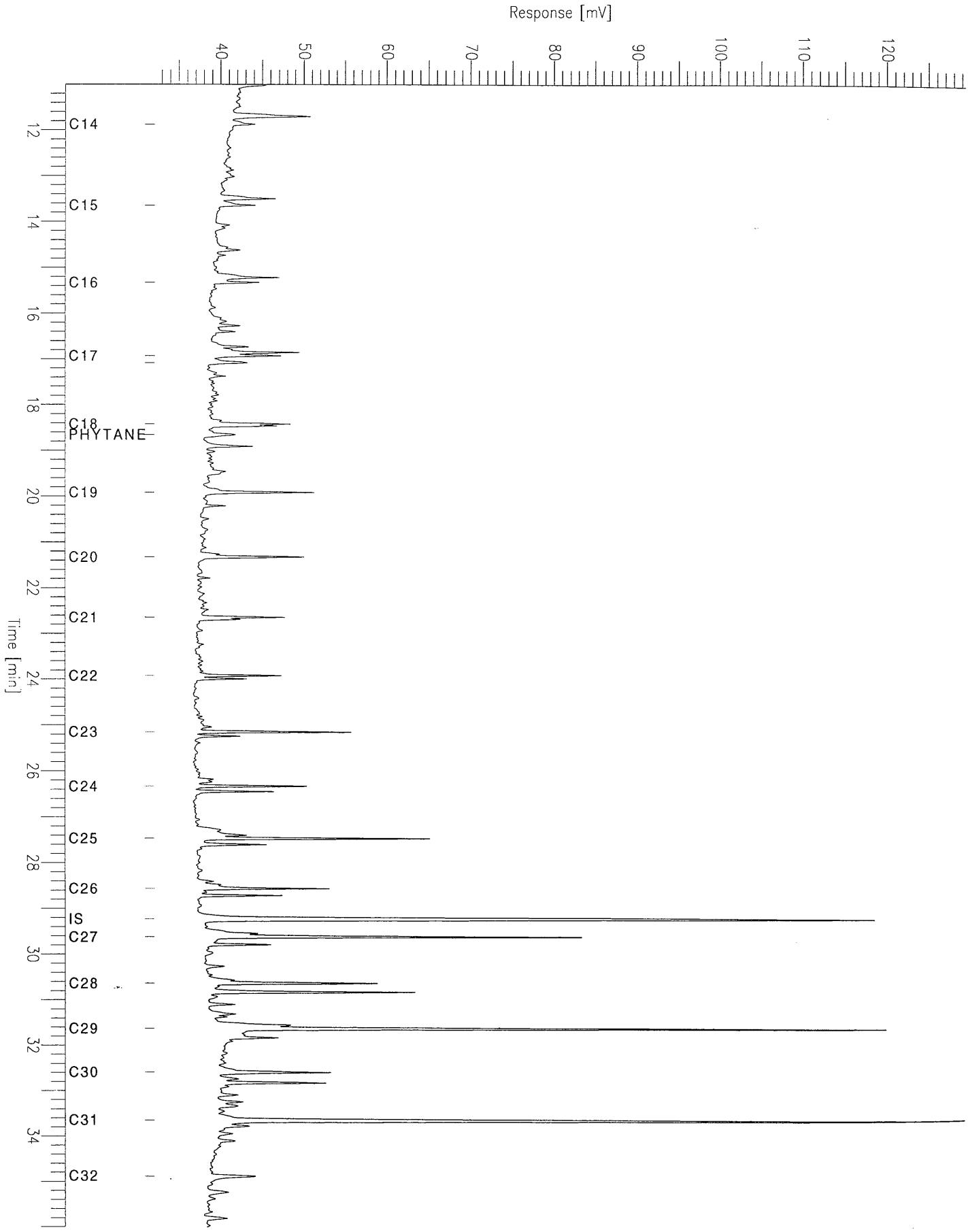
Sample #:
Date : 2/2/95 11:14 AM
Time of Injection: 10/8/94 05:47 AM
Low Point : 31.23 mV High Point : 233.30 mV
Plot Scale: 202.1 mV



Rockall Chromatogram

Sample Name : 57-12/21 3.10m
FileName : C:\TC4\HYDROCAR\rb22.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

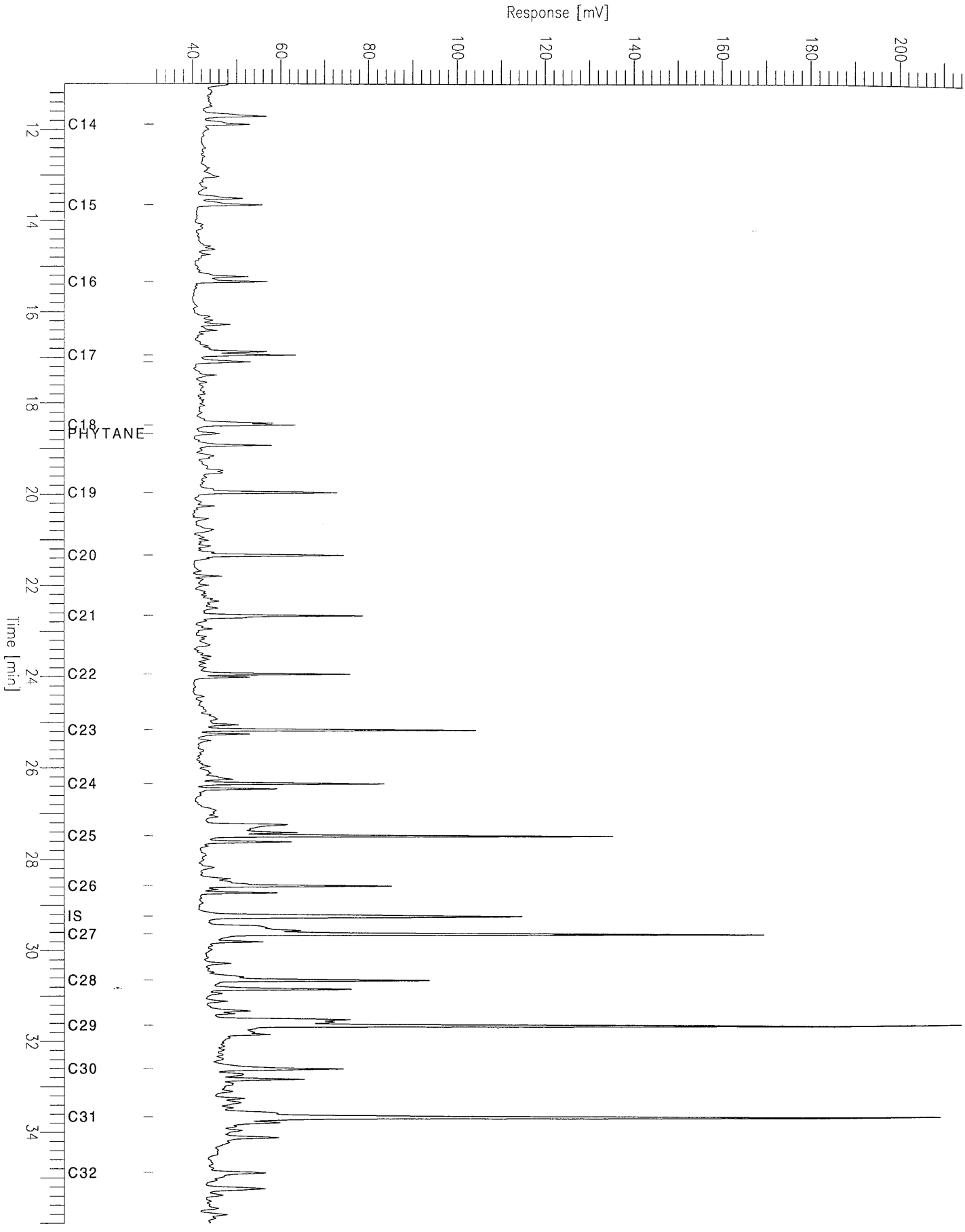
Sample #: Page 1 of 1
Date : 2/2/95 11:14 AM
Time of Injection: 10/8/94 06:43 AM
Low Point : 32.13 mV High Point : 129.33 mV
Plot Scale: 97.2 mV



Rockall Chromatogram

Sample Name : 57-12/22 2.35m
FileName : C:\TC4\HYDROCAR\rb23.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

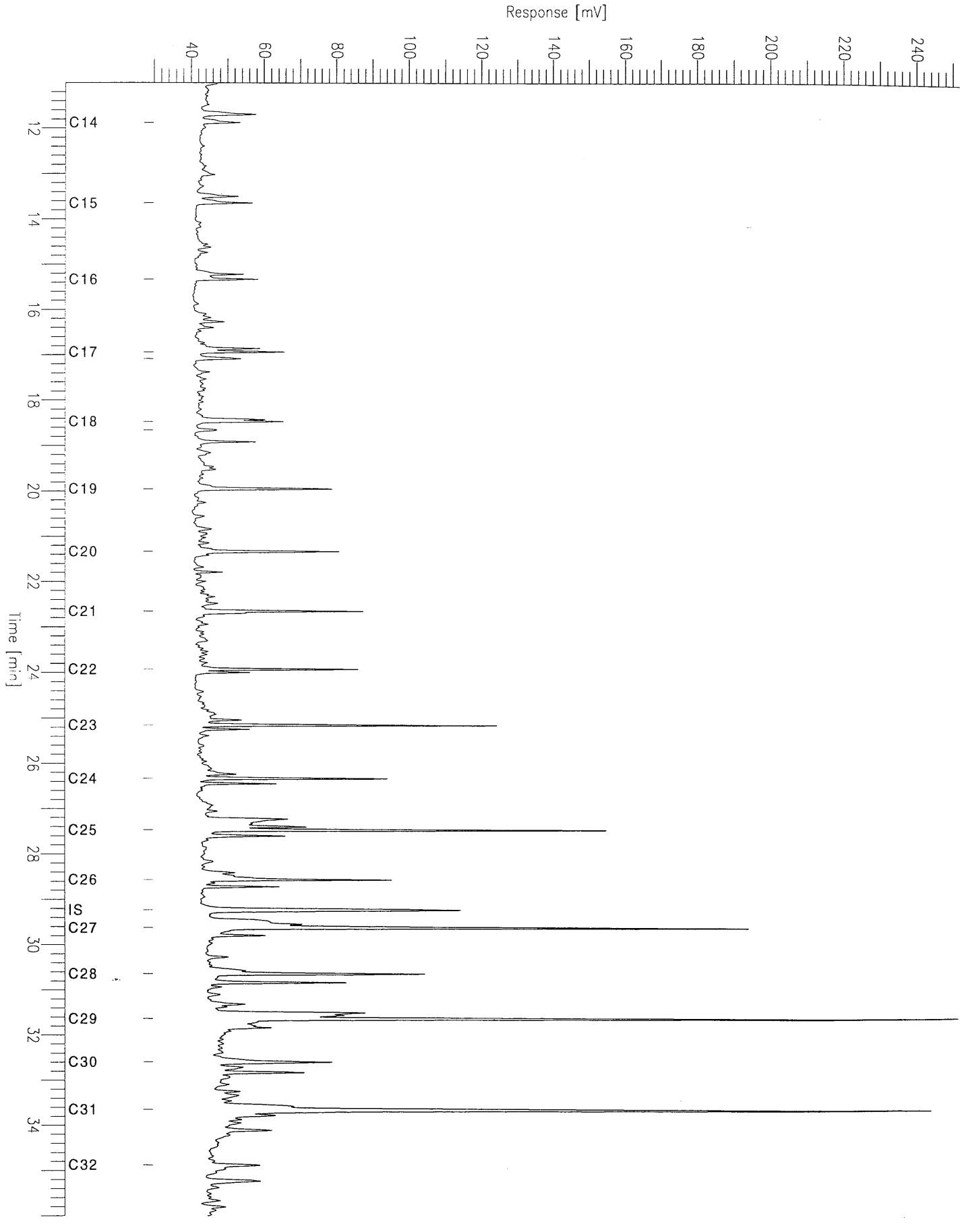
Sample #: Page 1 of 1
Date : 2/2/95 11:15 AM
Time of Injection: 10/8/94 07:38 AM
Low Point : 31.39 mV High Point : 214.09 mV
Plot Scale: 182.7 mV



Rockall Chromatogram

Sample Name : 57-12/22 3.00m
FileName : C:\TC4\HYDROCAR\rb24.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

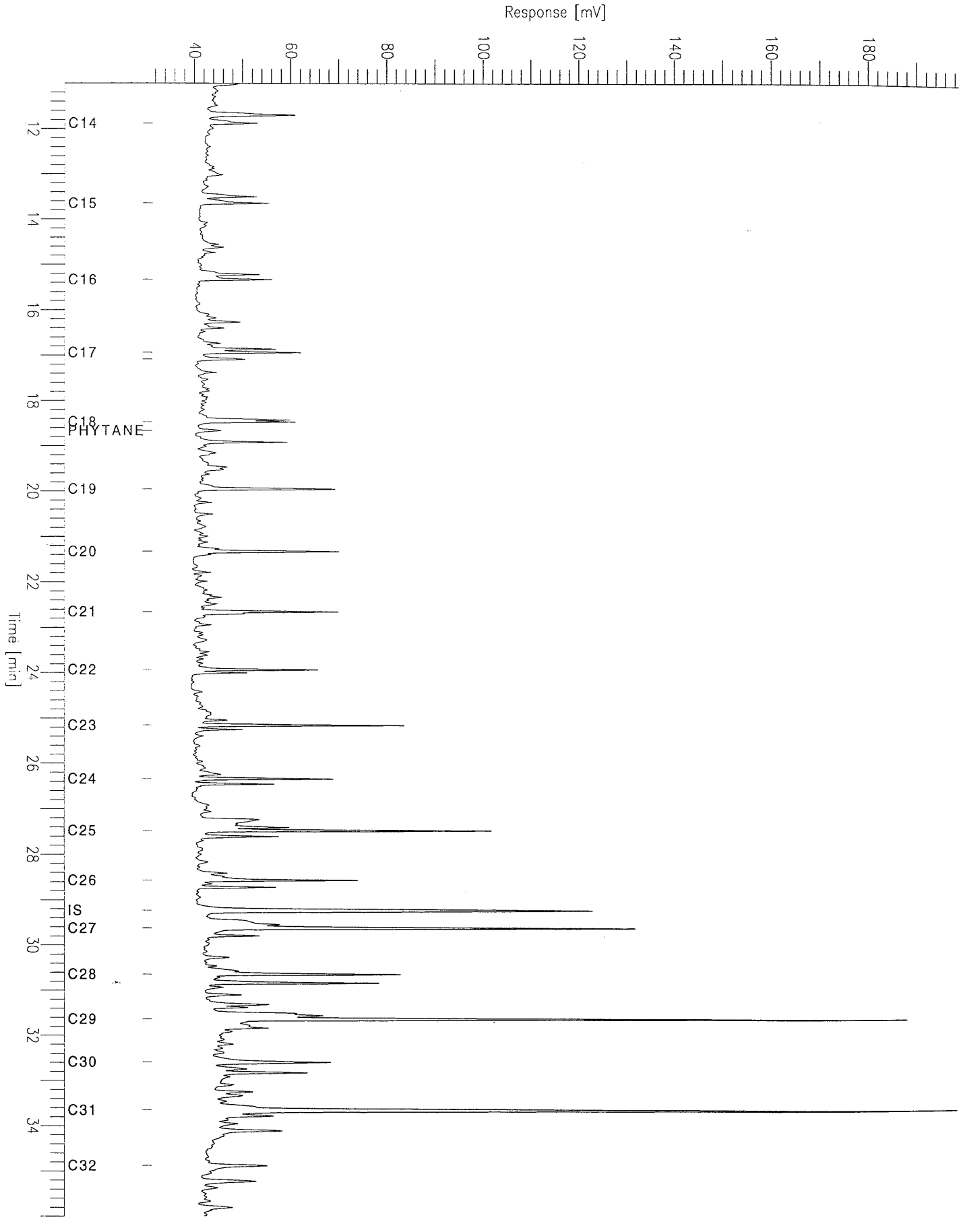
Sample #:
Date : 2/2/95 11:15 AM
Time of Injection: 10/8/94 08:33 AM
Low Point : 29.92 mV High Point : 251.67 mV
Plot Scale: 221.8 mV



Rockall Chromatogram

Sample Name : 57-12/23 2.20m
FileName : C:\TC4\HYDROCAR\rb26.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

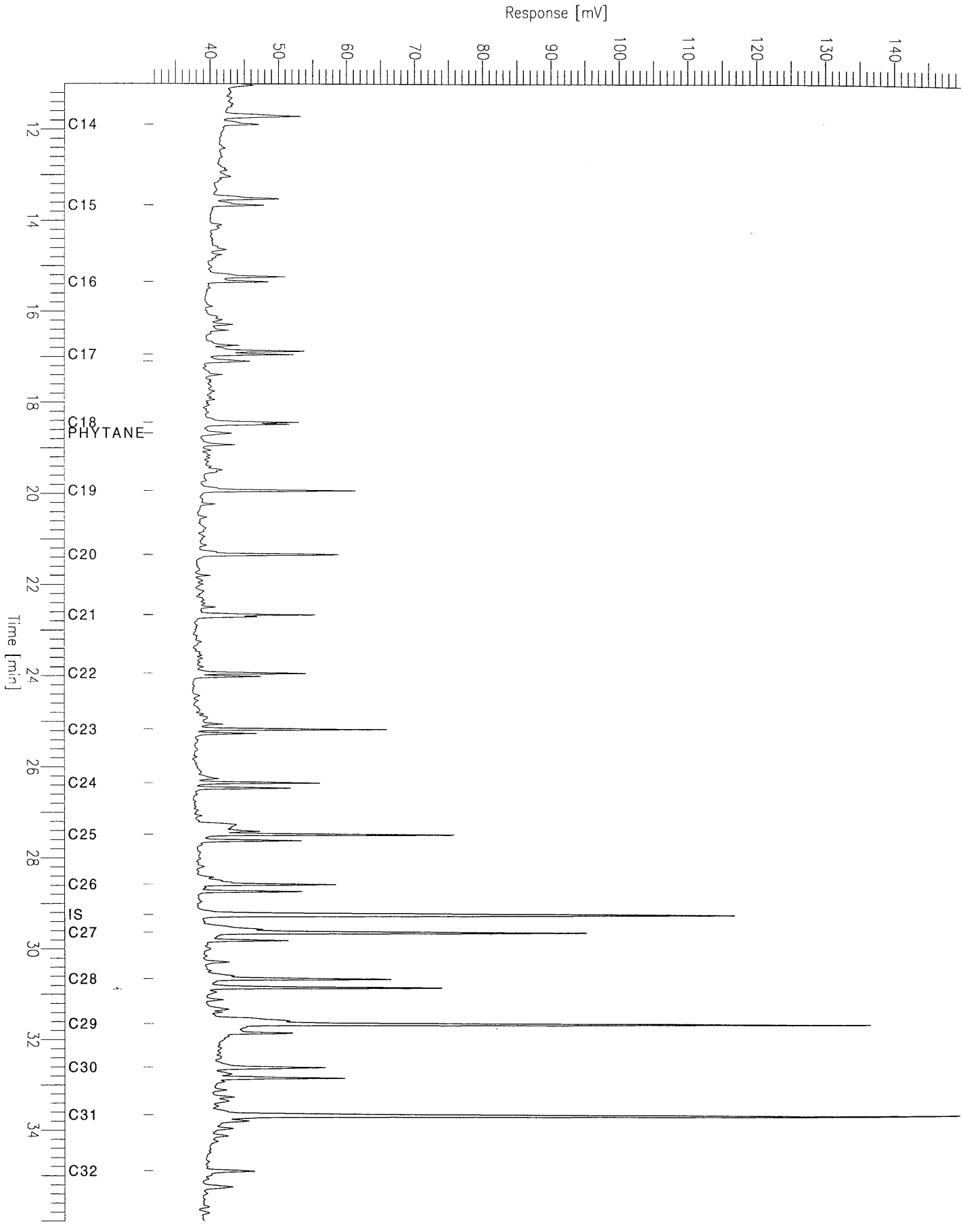
Sample #: Page 1 of 1
Date : 2/2/95 11:16 AM
Time of Injection: 10/8/94 10:24 AM
Low Point : 31.51 mV High Point : 198.69 mV
Plot Scale: 167.2 mV



Rockall Chromatogram

Sample Name : 57-12/23 2.85m
FileName : C:\TC4\HYDROCAR\rb27.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

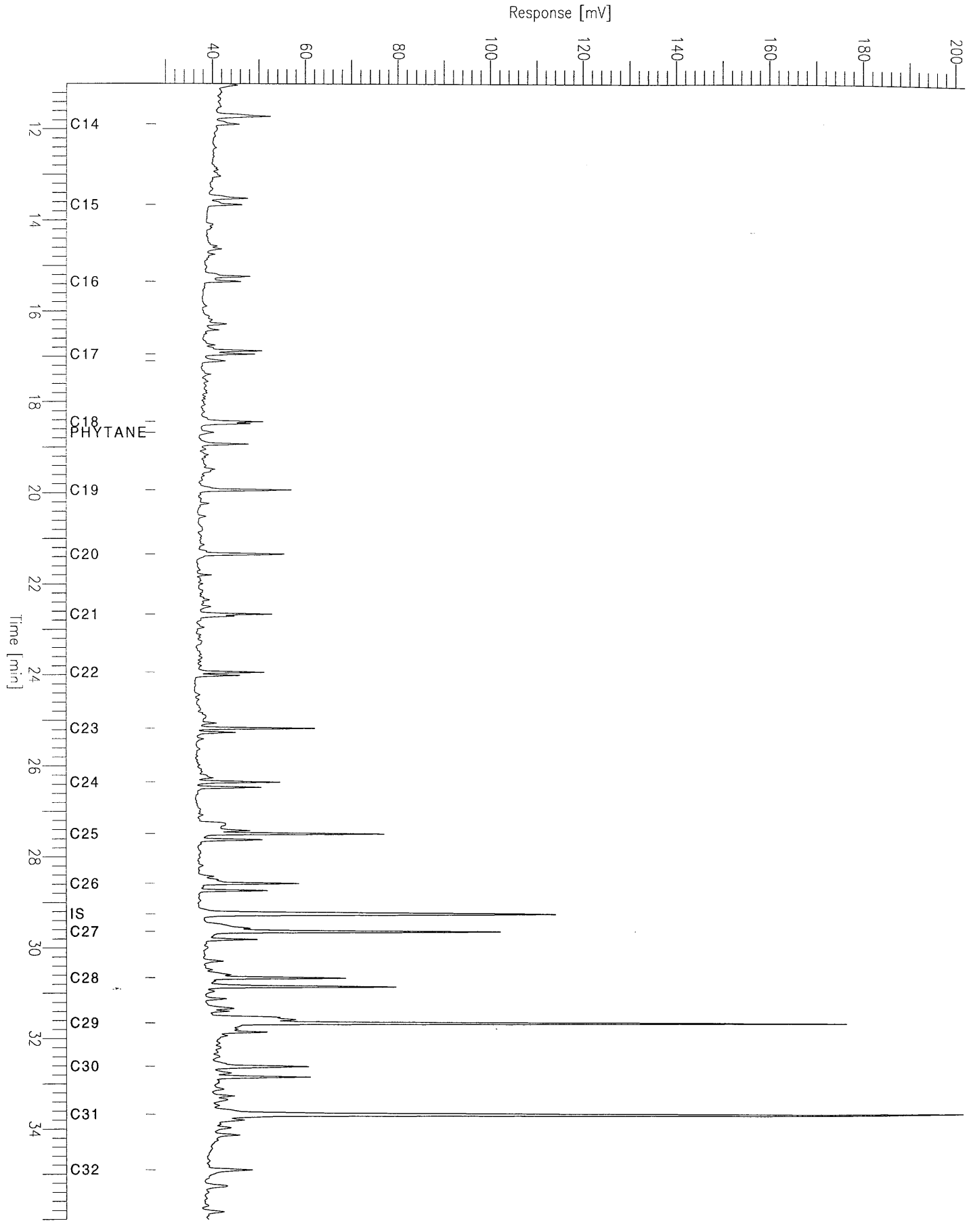
Sample #: Page 1 of 1
Date : 2/2/95 11:16 AM
Time of Injection: 10/8/94 11:19 AM
Low Point : 31.88 mV High Point : 149.72 mV
Plot Scale: 117.8 mV



Rockall Chromatogram

Sample Name : 57-12/24 2.35m
FileName : C:\TC4\HYDROCAR\rb28.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

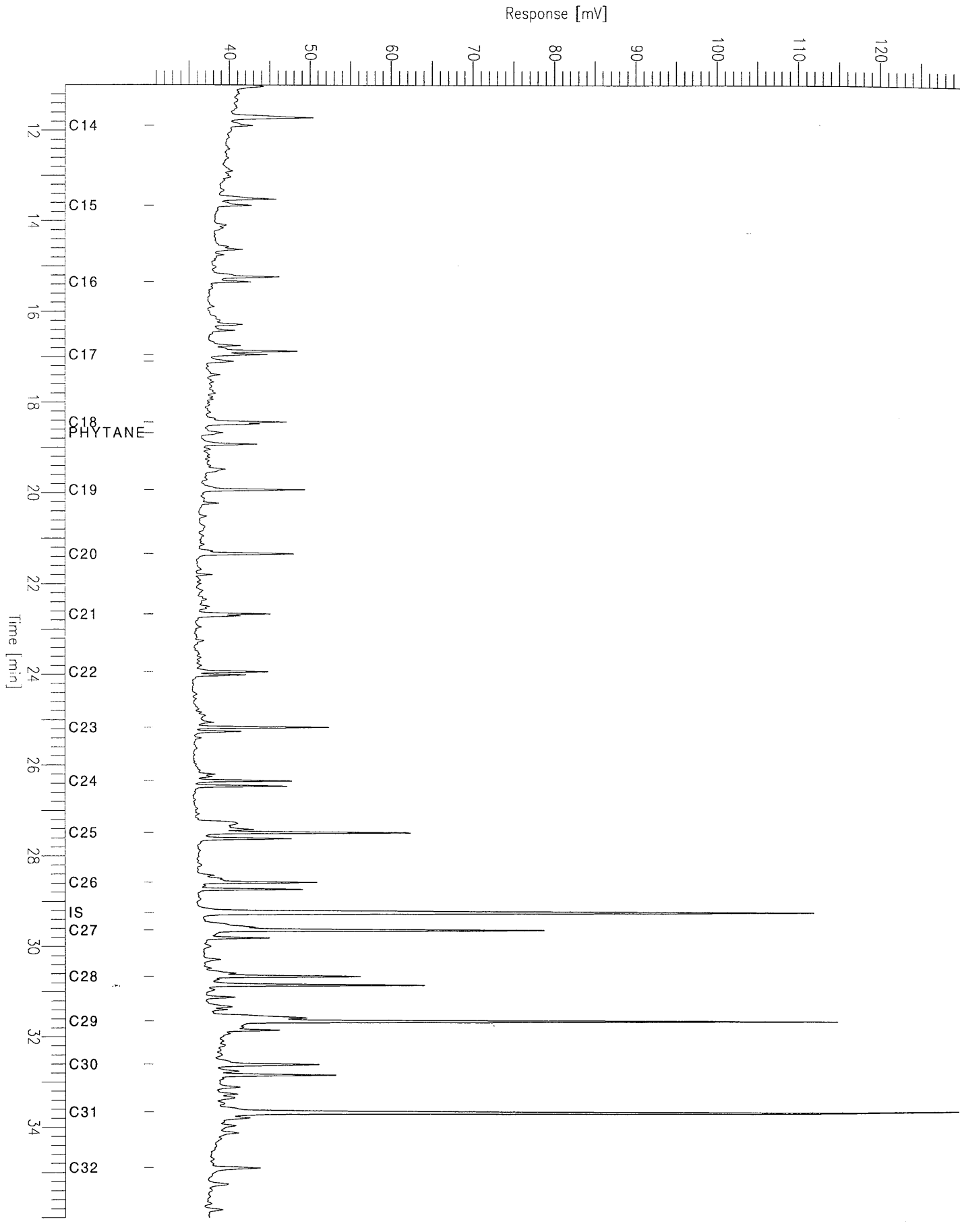
Sample #: Page 1 of 1
Date : 2/2/95 11:17 AM
Time of Injection: 10/8/94 12:14 PM
Low Point : 28.01 mV High Point : 201.95 mV
Plot Scale: 173.9 mV



Rockall Chromatogram

Sample Name : 57-12/24 3.05m
FileName : C:\TC4\HYDROCAR\rb29.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

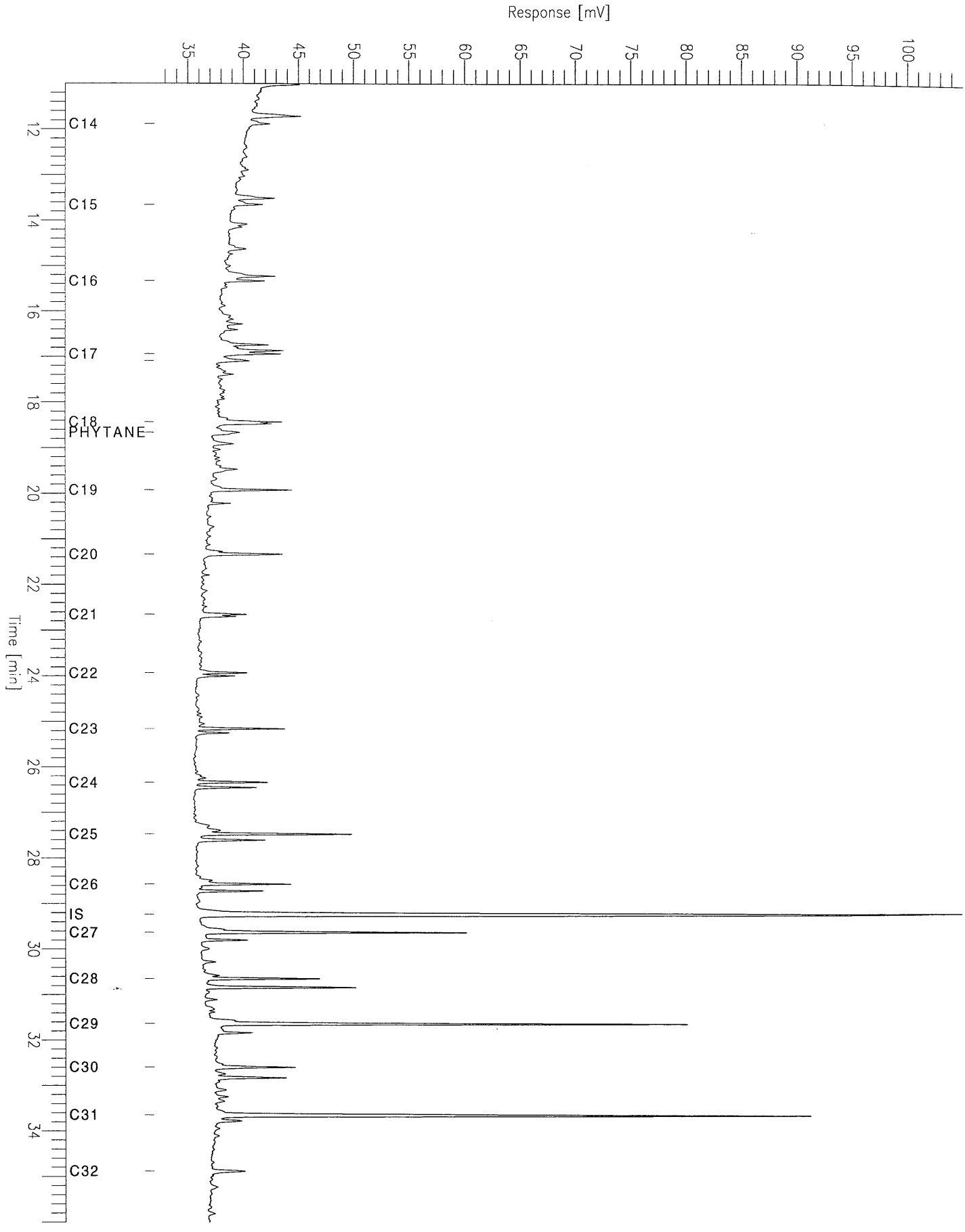
Sample #:
Date : 2/2/95 11:17 AM
Time of Injection: 10/8/94 01:09 PM
Low Point : 30.73 mV High Point : 129.70 mV
Plot Scale: 99.0 mV



Rockall Chromatogram

Sample Name : 57-12/25 2.37m
FileName : C:\TC4\HYDROCAR\rb30.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

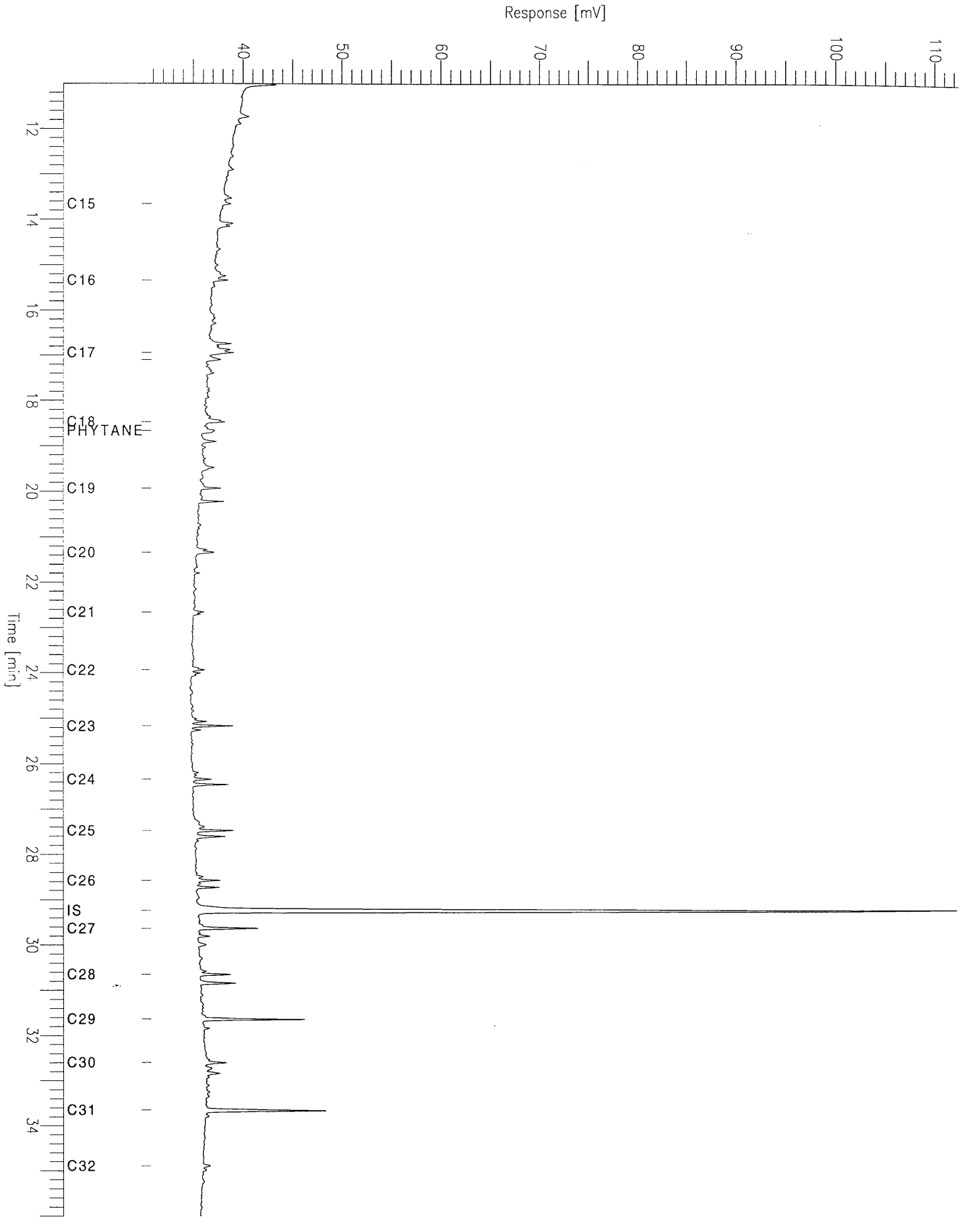
Sample #: Page 1 of 1
Date : 2/2/95 11:17 AM
Time of Injection: 10/8/94 02:04 PM
Low Point : 32.02 mV High Point : 104.99 mV
Plot Scale: 73.0 mV



Rockall Chromatogram

Sample Name : 57-12/25 2.98m
FileName : C:\TC4\HYDROCAR\rb31.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

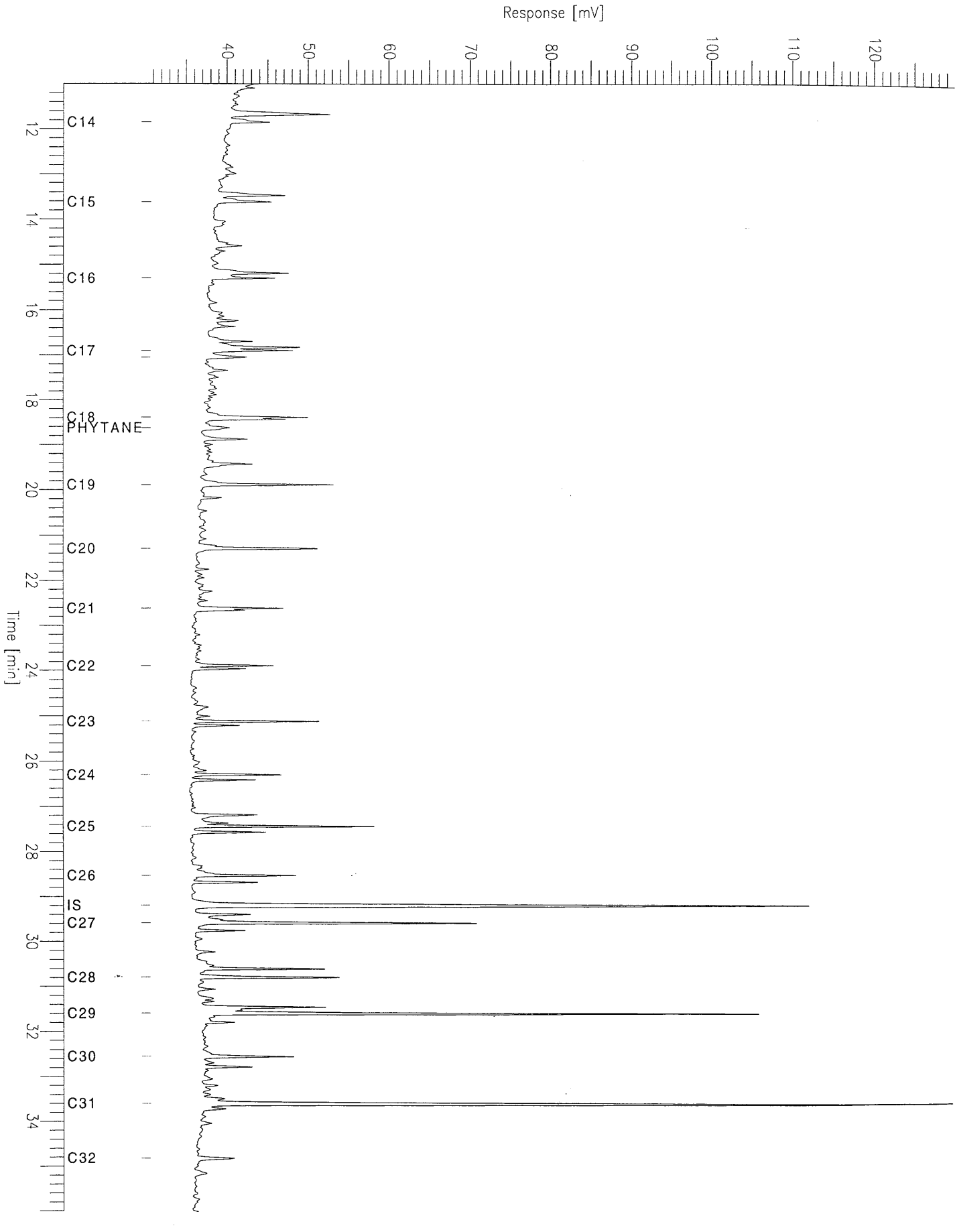
Sample #: Page 1 of 1
Date : 2/2/95 11:18 AM
Time of Injection: 10/8/94 02:59 PM
Low Point : 30.84 mV High Point : 112.40 mV
Plot Scale: 81.6 mV



Rockall Chromatogram

Sample Name : 57-12/26 2.38m
FileName : C:\TC4\HYDROCAR\re28.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

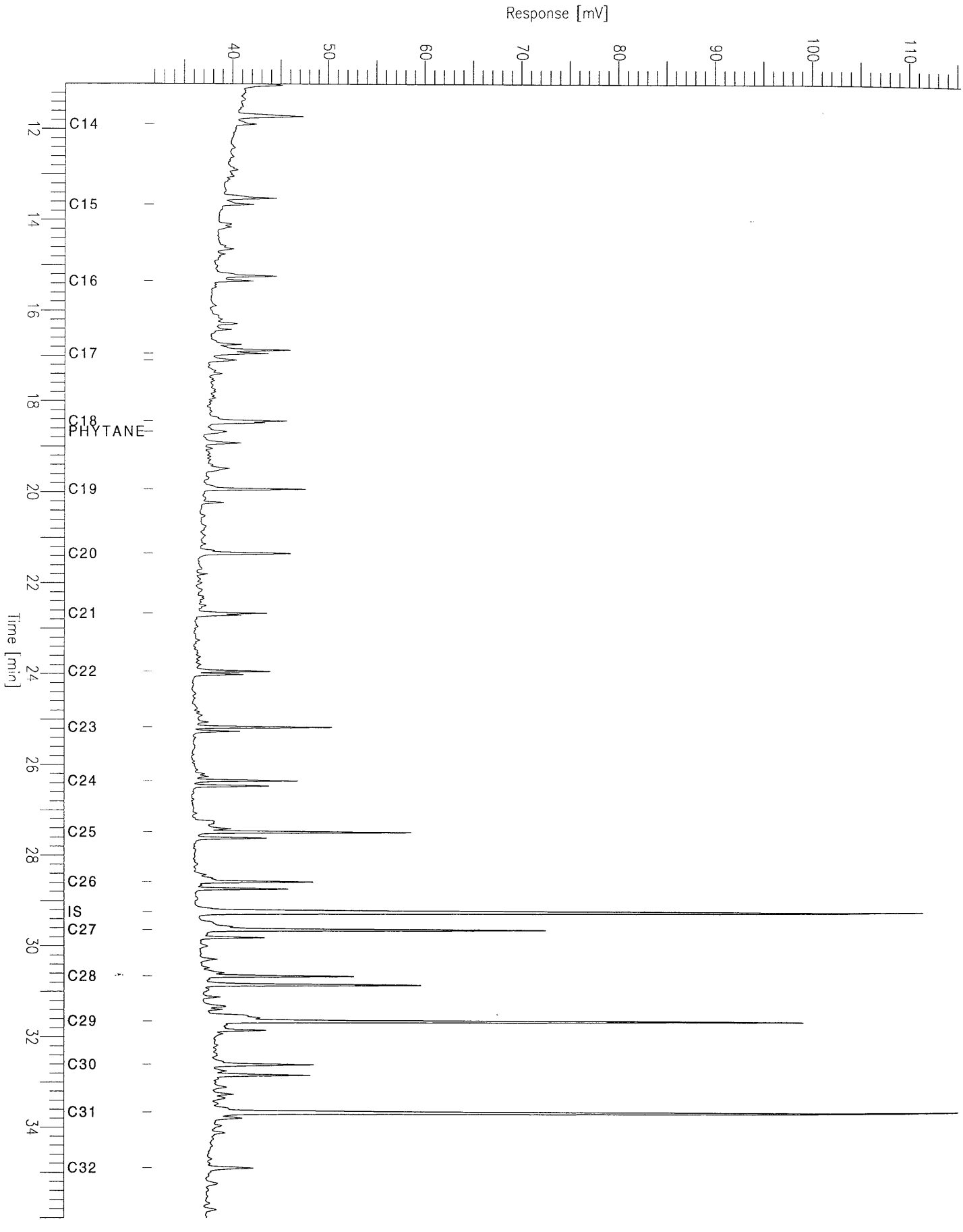
Sample #:
Date : 3/7/95 03:00 PM
Time of Injection: 10/15/94 11:10 AM
Low Point : 30.74 mV High Point : 129.85 mV
Plot Scale: 99.1 mV



Rockall Chromatogram

Sample Name : 57-12/26 3.03m
FileName : C:\TC4\HYDROCAR\rb34.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

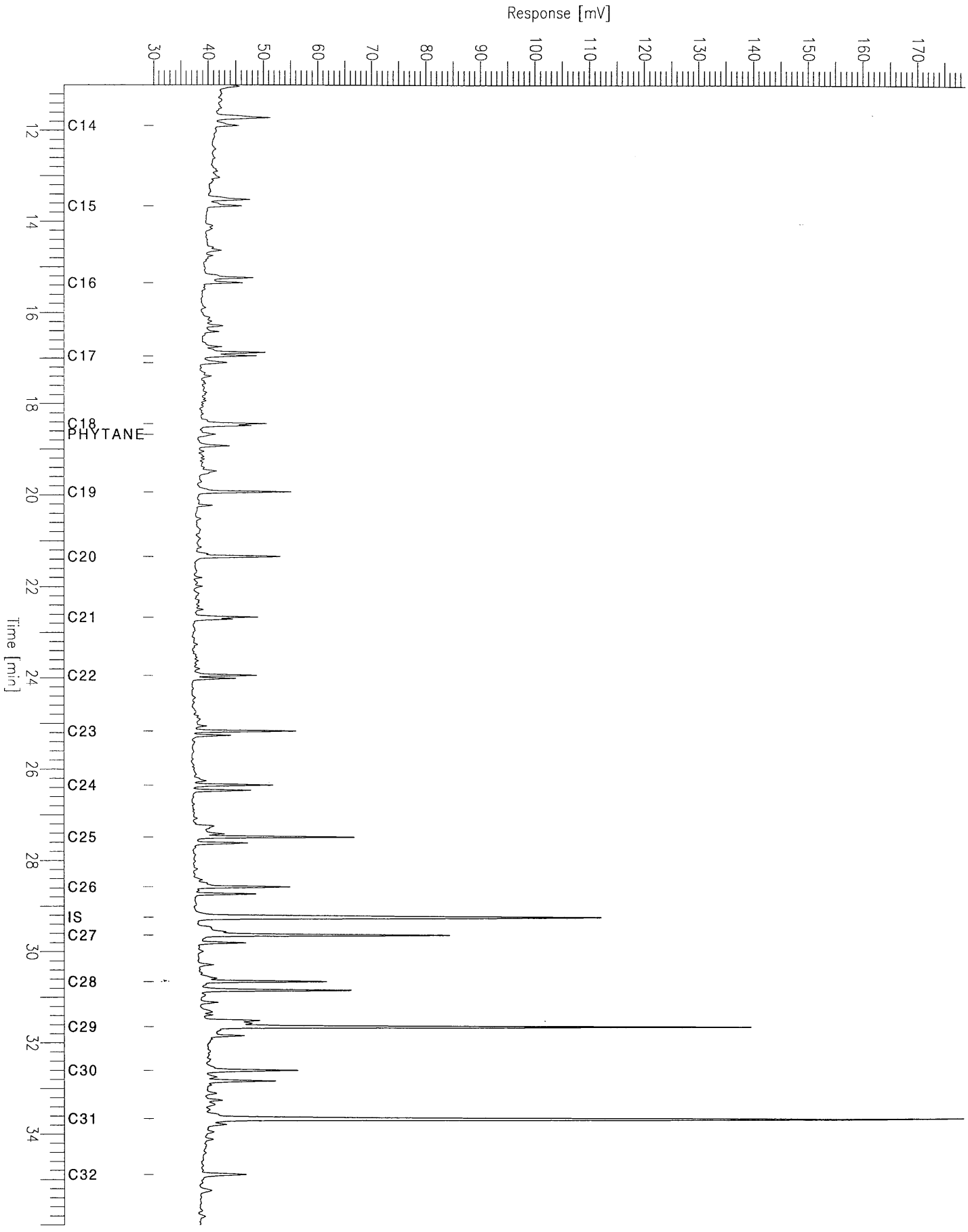
Sample #: Page 1 of 1
Date : 2/2/95 11:19 AM
Time of Injection: 10/8/94 05:45 PM
Low Point : 31.96 mV High Point : 115.30 mV
Plot Scale: 83.3 mV



Rockall Chromatogram

Sample Name : 57-12/27 2.35m
FileName : C:\TC4\HYDROCAR\rb35.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

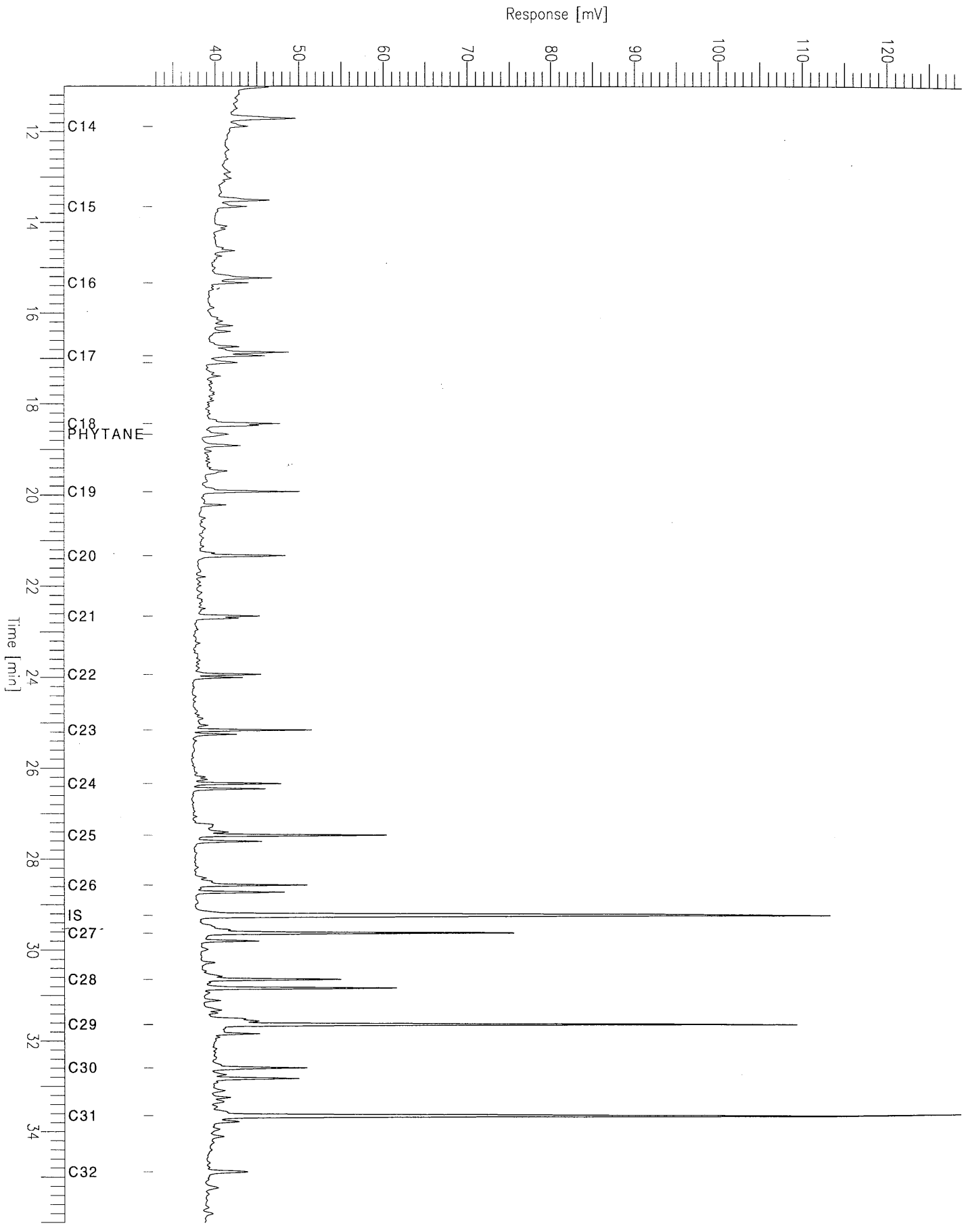
Sample #: Page 1 of 1
Date : 2/2/95 11:19 AM
Time of Injection: 10/8/94 06:39 PM
Low Point : 29.96 mV High Point : 178.74 mV
Plot Scale: 148.8 mV



Rockall Chromatogram

Sample Name : 57-12/27 3.00m
FileName : C:\TC4\HYDROCAR\rb36.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

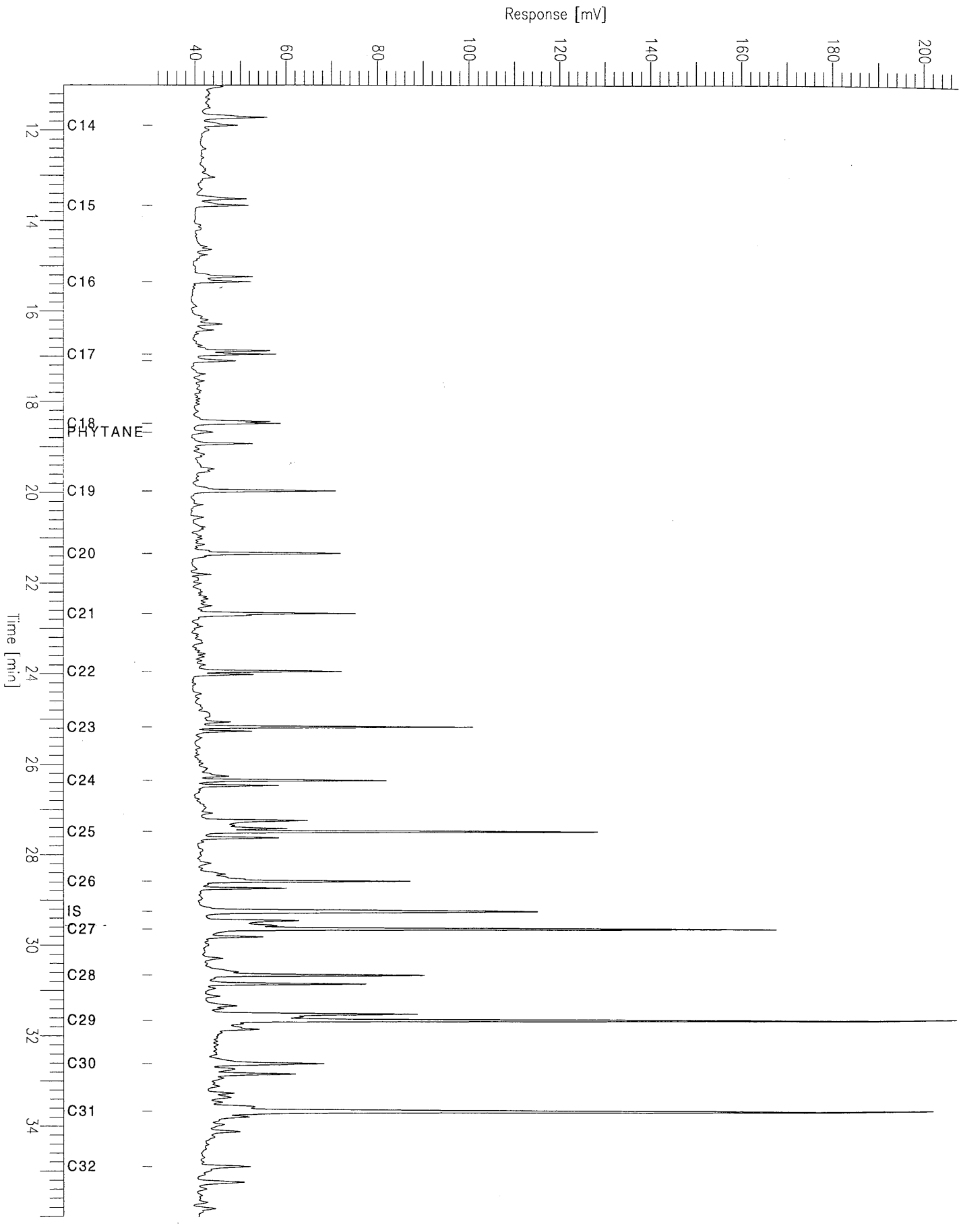
Sample #: Page 1 of 1
Date : 2/2/95 11:19 AM
Time of Injection: 10/8/94 07:35 PM
Low Point : 32.62 mV High Point : 128.83 mV
Plot Scale: 96.2 mV



Rockall Chromatogram

Sample Name : 57-12/28 2.20m
FileName : C:\TC4\HYDROCAR\rb37.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

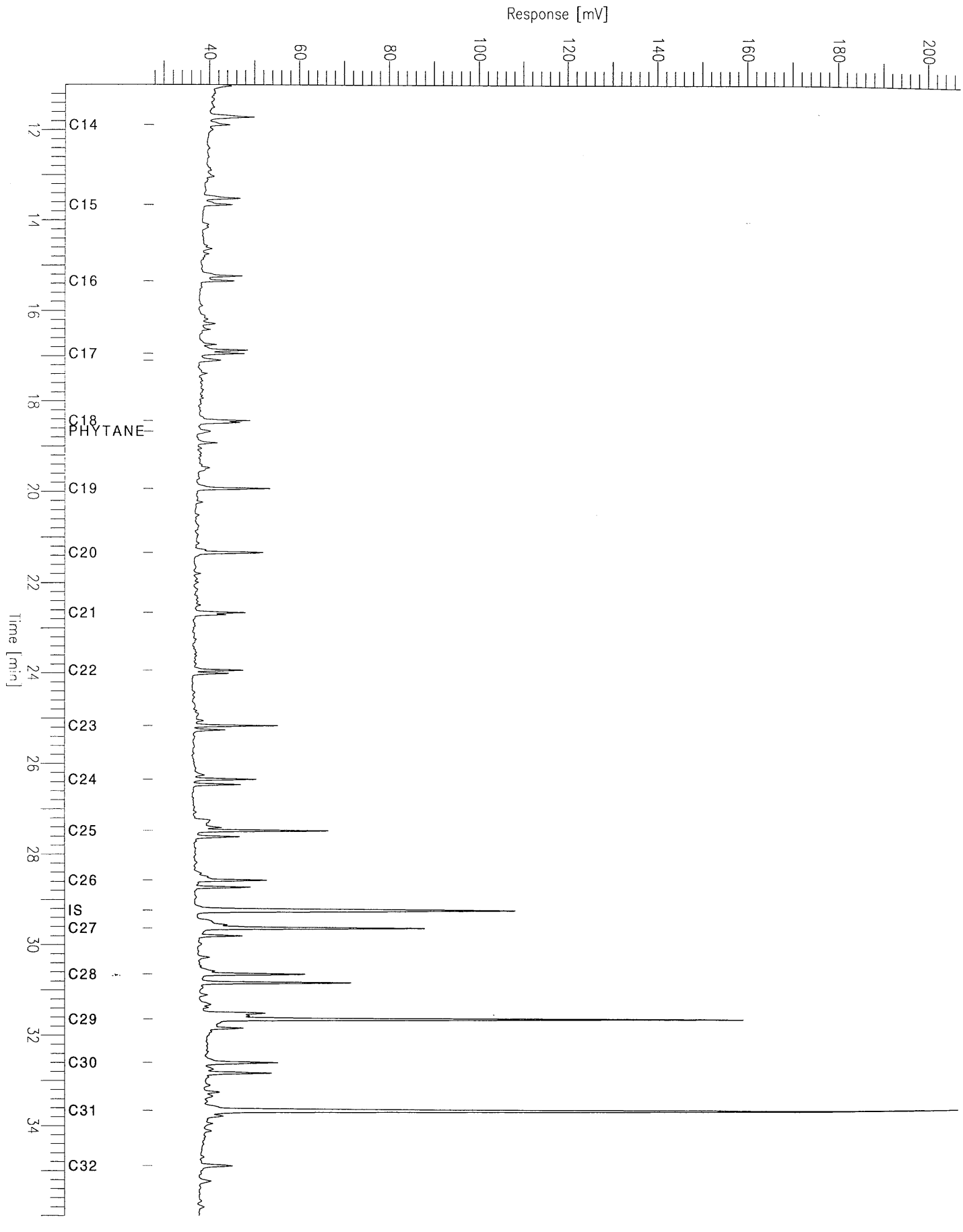
Sample #: Page 1 of 1
Date : 2/2/95 11:20 AM
Time of Injection: 10/8/94 08:30 PM
Low Point : 30.70 mV High Point : 207.47 mV
Plot Scale: 176.8 mV



Rockall Chromatogram

Sample Name : 57-12/28 2.85m
FileName : C:\TC4\HYDROCAR\rb38.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

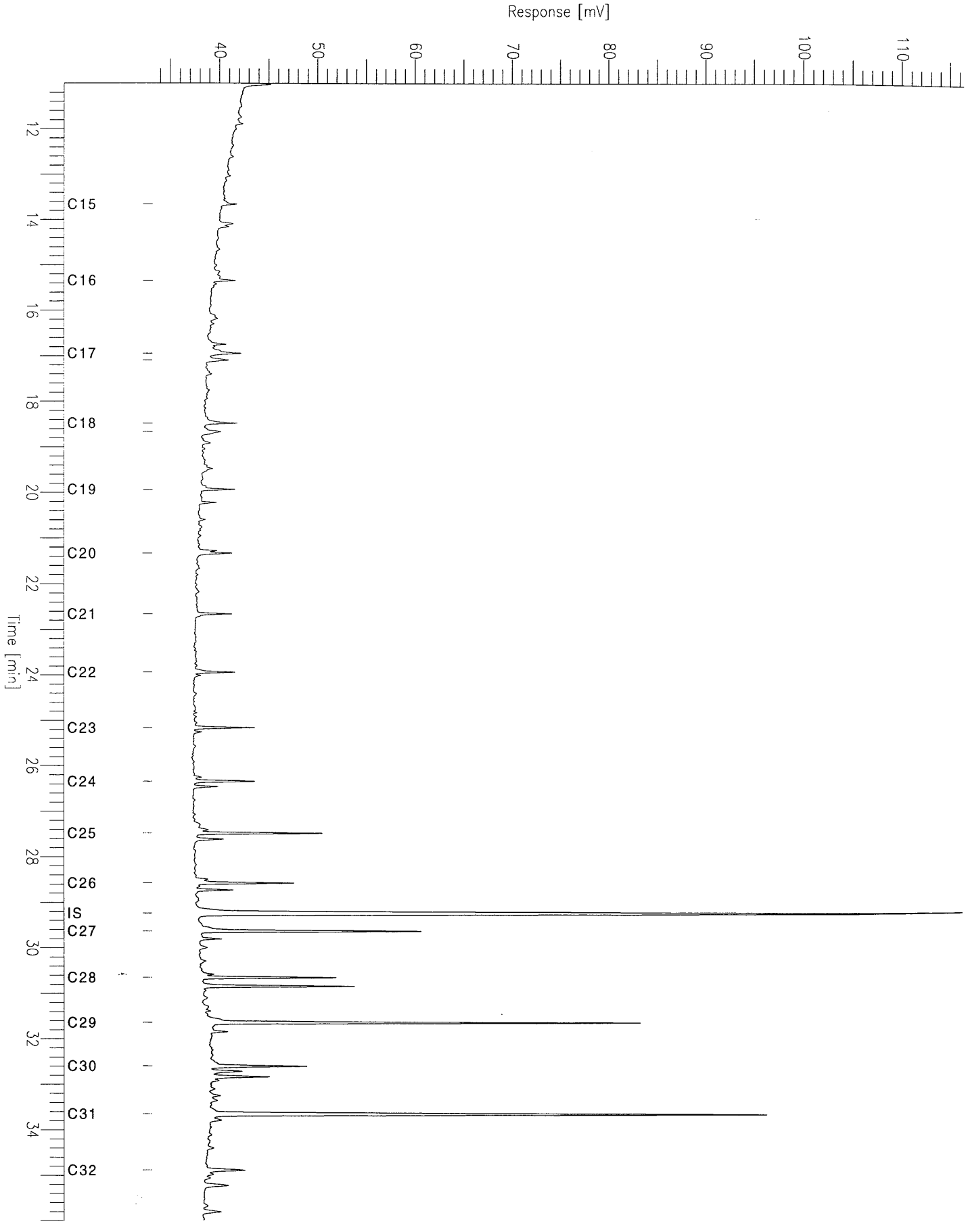
Sample #: Page 1 of 1
Date : 2/2/95 11:20 AM
Time of Injection: 10/8/94 09:24 PM
Low Point : 27.77 mV High Point : 207.20 mV
Plot Scale: 179.4 mV



Rockall Chromatogram

Sample Name : 57-12/30 1.53m
FileName : C:\TC4\HYDROCAR\rb39.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

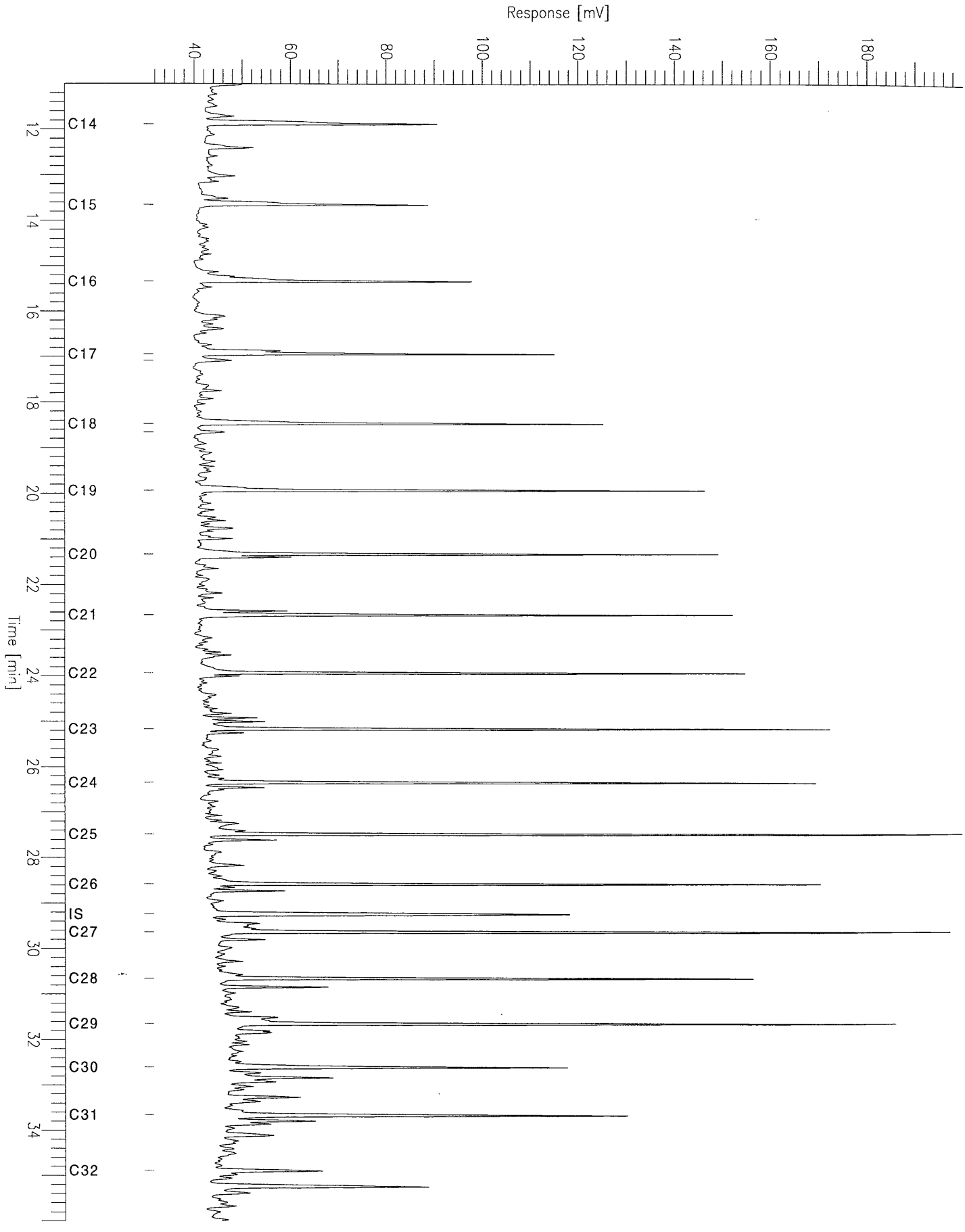
Sample #: Page 1 of 1
Date : 2/2/95 11:20 AM
Time of Injection: 10/8/94 10:20 PM
Low Point : 33.25 mV High Point : 116.35 mV
Plot Scale: 83.1 mV



Rockall Chromatogram

Sample Name : 57-12/30 2.23m
FileName : C:\TC4\HYDROCAR\rb40.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

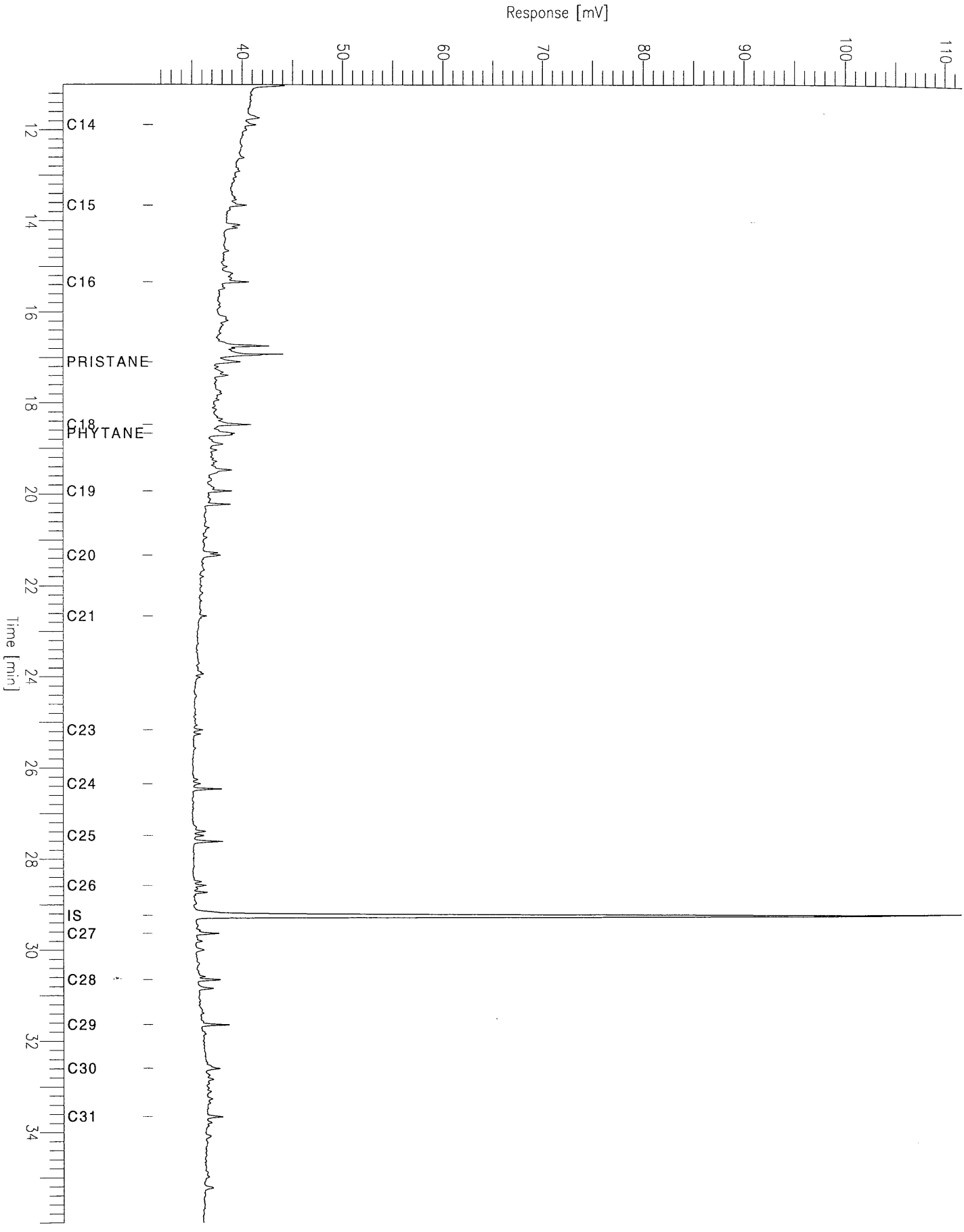
Sample #: Page 1 of 1
Date : 2/2/95 11:21 AM
Time of Injection: 10/8/94 11:15 PM
Low Point : 31.72 mV High Point : 199.98 mV
Plot Scale: 168.3 mV



Rockall Chromatogram

Sample Name : 57-12/32 2.32m
FileName : C:\TC4\HYDROCAR\rb41.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

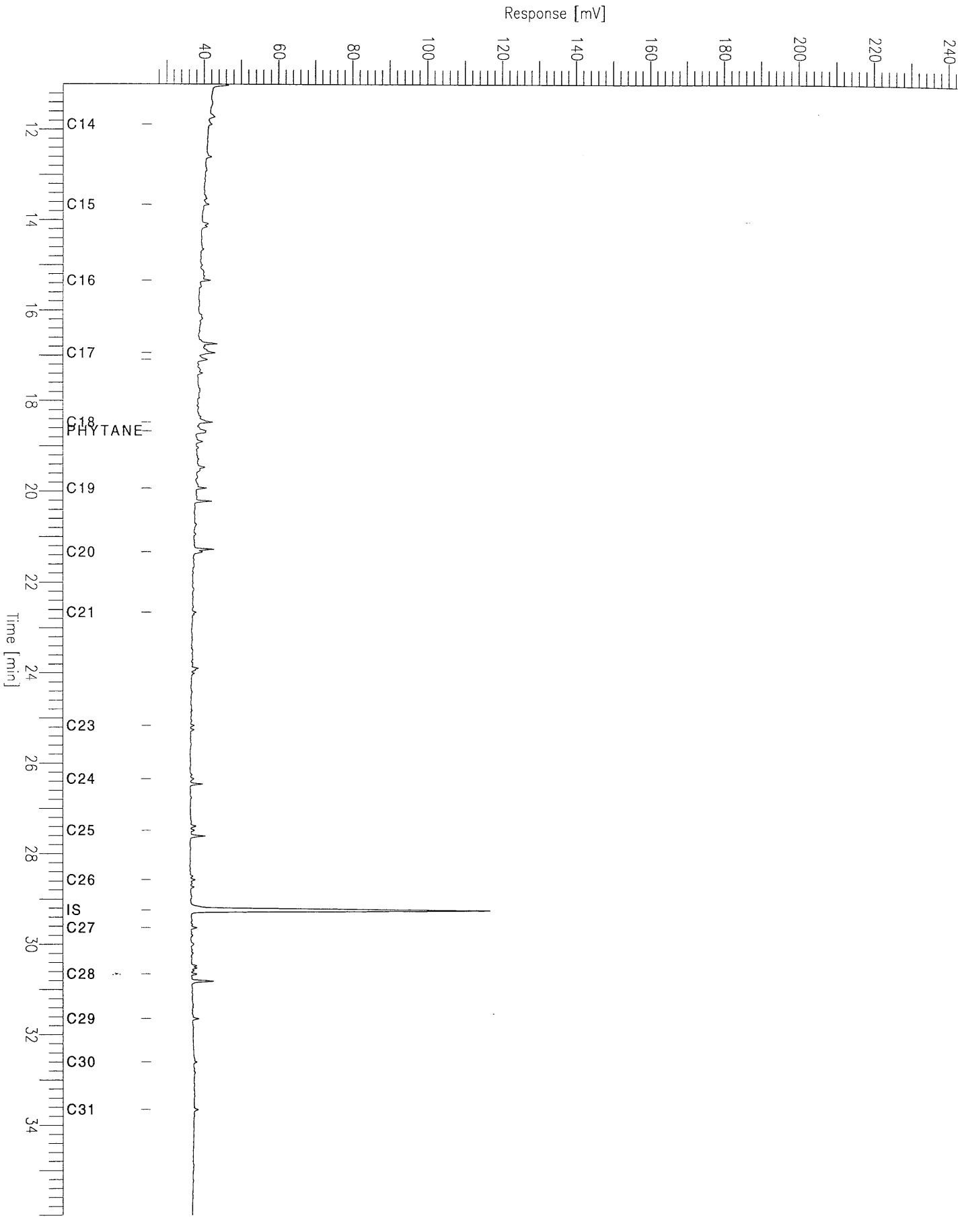
Sample #: Page 1 of 1
Date : 2/2/95 11:21 AM
Time of Injection: 10/9/94 12:09 AM
Low Point : 31.21 mV High Point : 111.68 mV
Plot Scale: 80.5 mV



Rockall Chromatogram

Sample Name : 57-12/32 2.99m
FileName : C:\TC4\HYDROCAR\rb42.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 26 mV

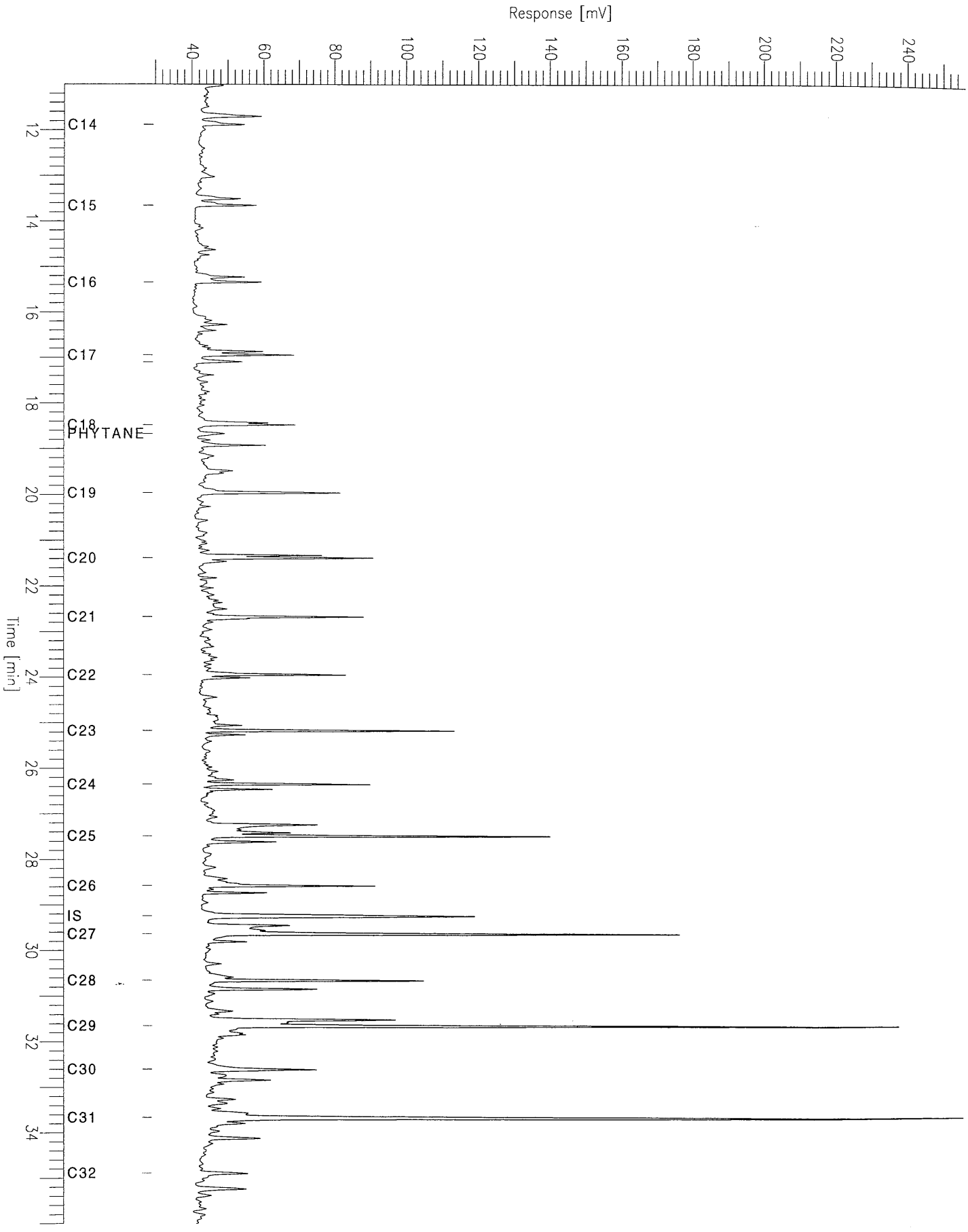
Sample #: Page 1 of 1
Date : 2/2/95 11:22 AM
Time of Injection: 10/9/94 01:05 AM
Low Point : 26.07 mV High Point : 242.25 mV
Plot Scale: 216.2 mV



Rockall Chromatogram

Sample Name : 57-12/34 2.55m
FileName : C:\TC4\HYDROCAR\rb43.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

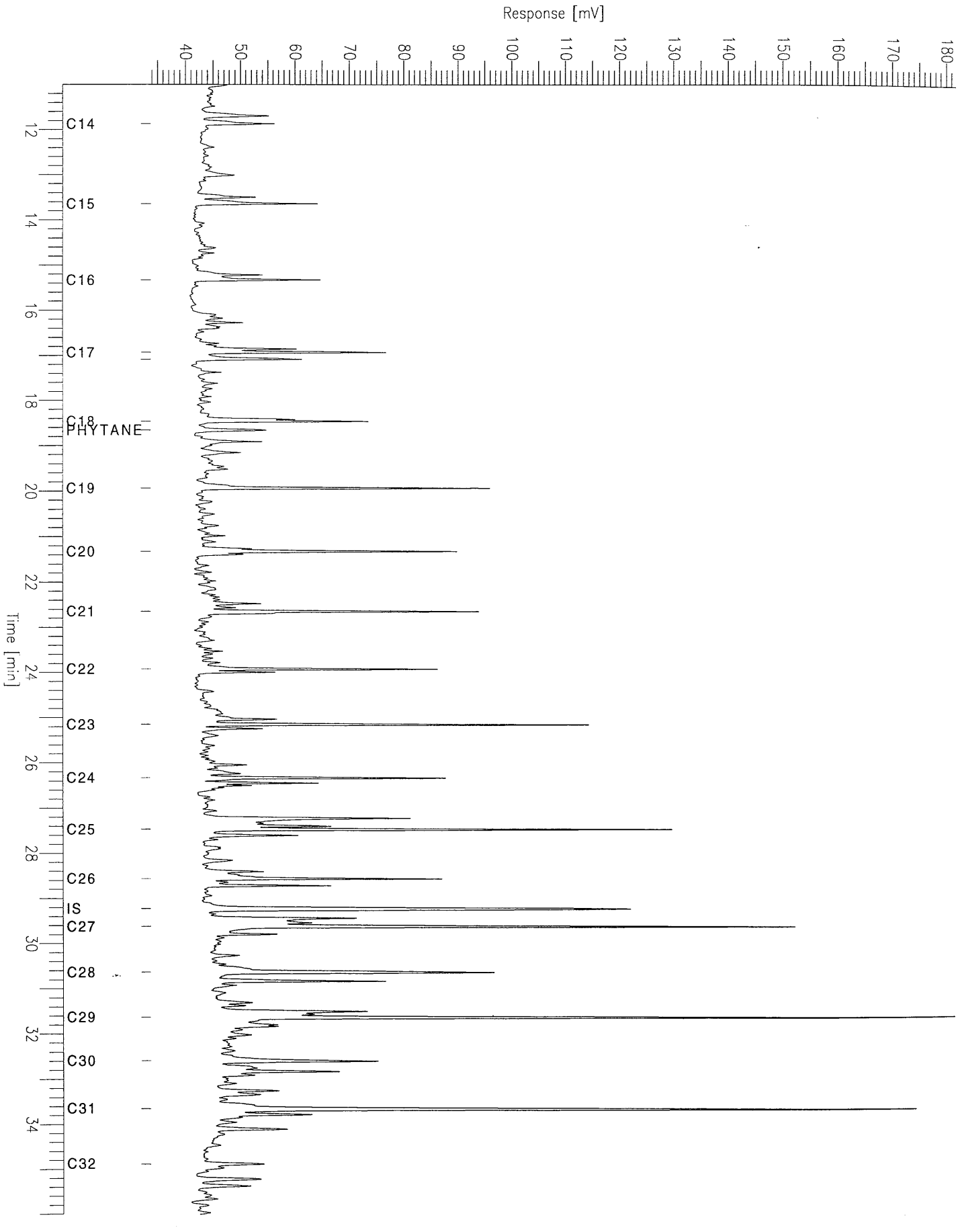
Sample #: Page 1 of 1
Date : 2/2/95 11:22 AM
Time of Injection: 10/9/94 01:59 AM
Low Point : 29.49 mV High Point : 255.99 mV
Plot Scale: 226.5 mV



Rockall Chromatogram

Sample Name : 57-12/34 2.90m
FileName : C:\TC4\HYDROCAR\rb44.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 34 mV

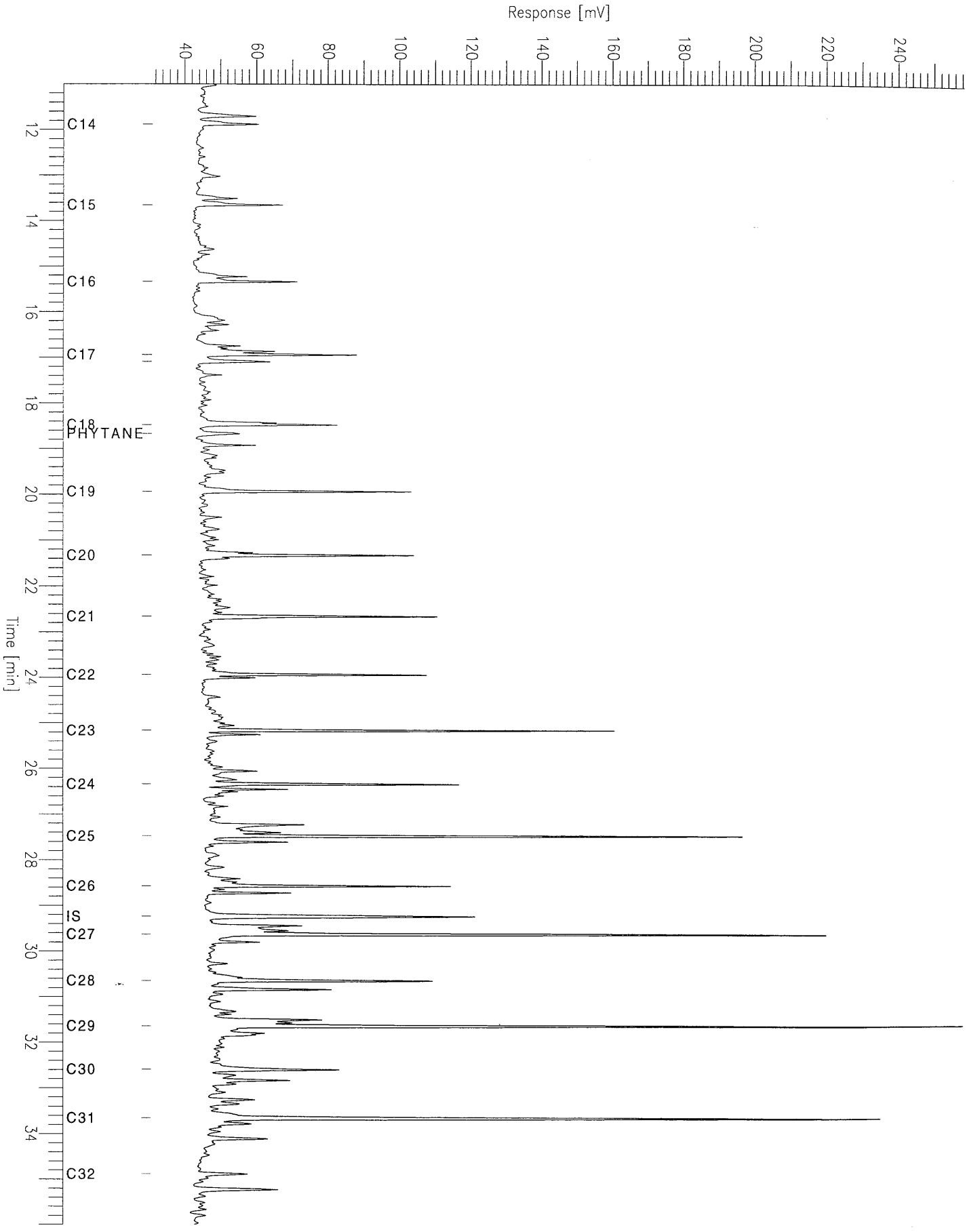
Sample #: Page 1 of 1
Date : 2/2/95 11:22 AM
Time of Injection: 10/9/94 02:54 AM
Low Point : 33.80 mV High Point : 181.69 mV
Plot Scale: 147.9 mV



Rockall Chromatogram

Sample Name : 57-12/35 2.46m
FileName : C:\TC4\HYDROCAR\rb45.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

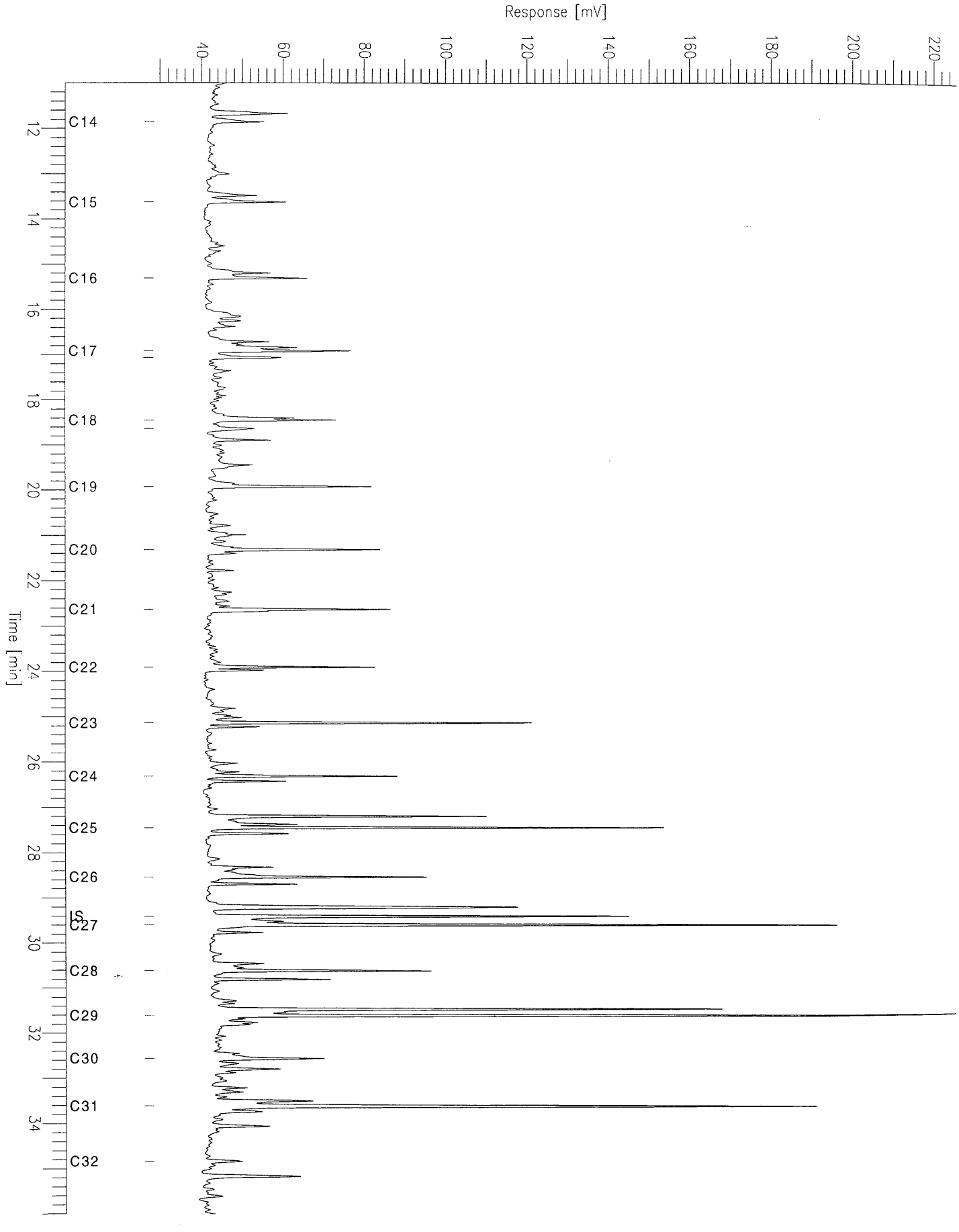
Sample #: Page 1 of 1
Date : 2/2/95 11:23 AM
Time of Injection: 10/9/94 03:49 AM
Low Point : 31.12 mV High Point : 258.36 mV
Plot Scale: 227.2 mV



Rockall Chromatogram

Sample Name : 57-12/35 3.11m
FileName : C:\TC4\HYDROCAR\re29.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

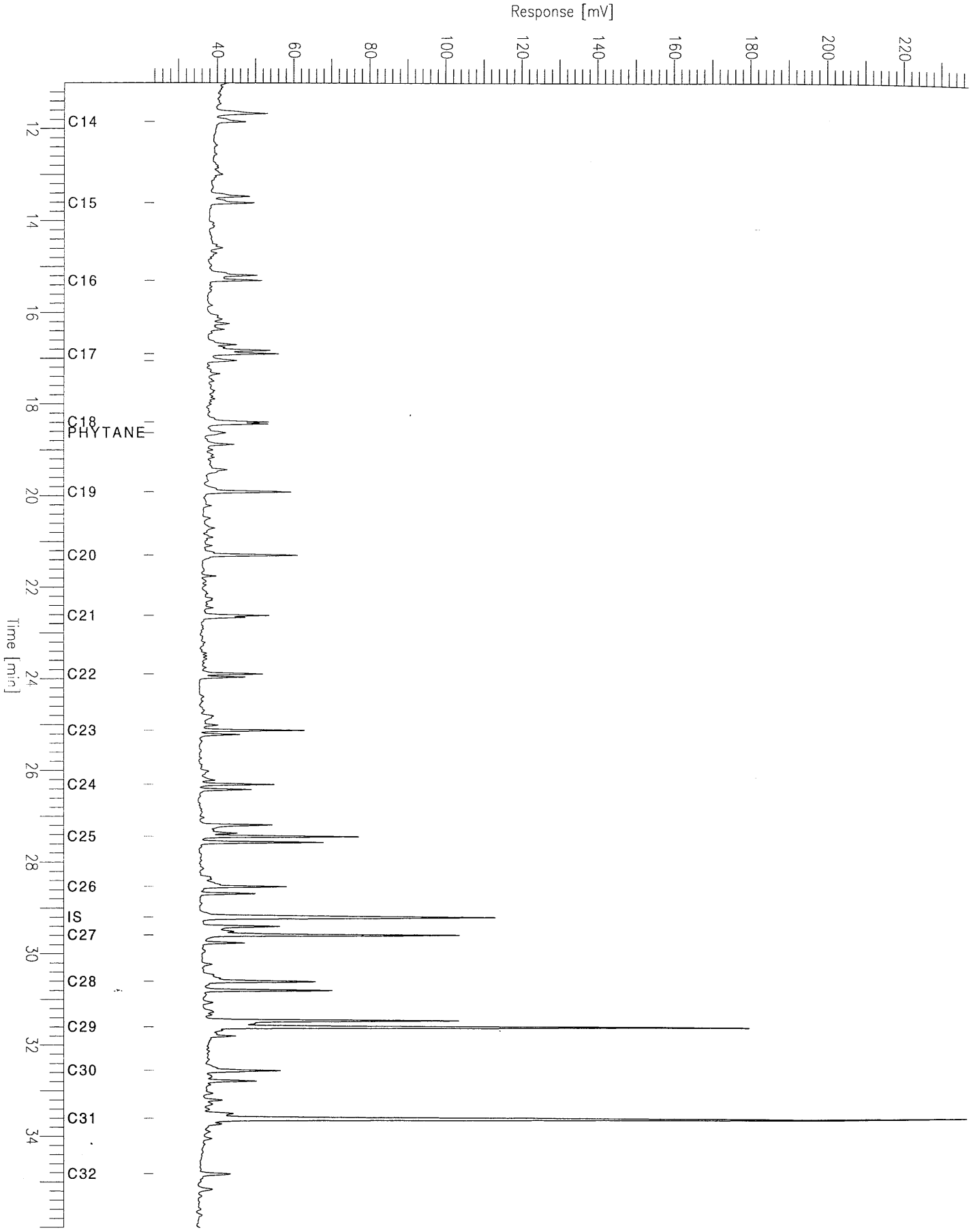
Sample #: Page 1 of 1
Date : 3/7/95 03:00 PM
Time of Injection: 10/15/94 12:05 PM
Low Point : 28.56 mV High Point : 225.62 mV
Plot Scale: 197.1 mV



Rockall Chromatogram

Sample Name : 57-12/36 2.73m
FileName : C:\TC4\HYDROCAR\re37.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 24 mV

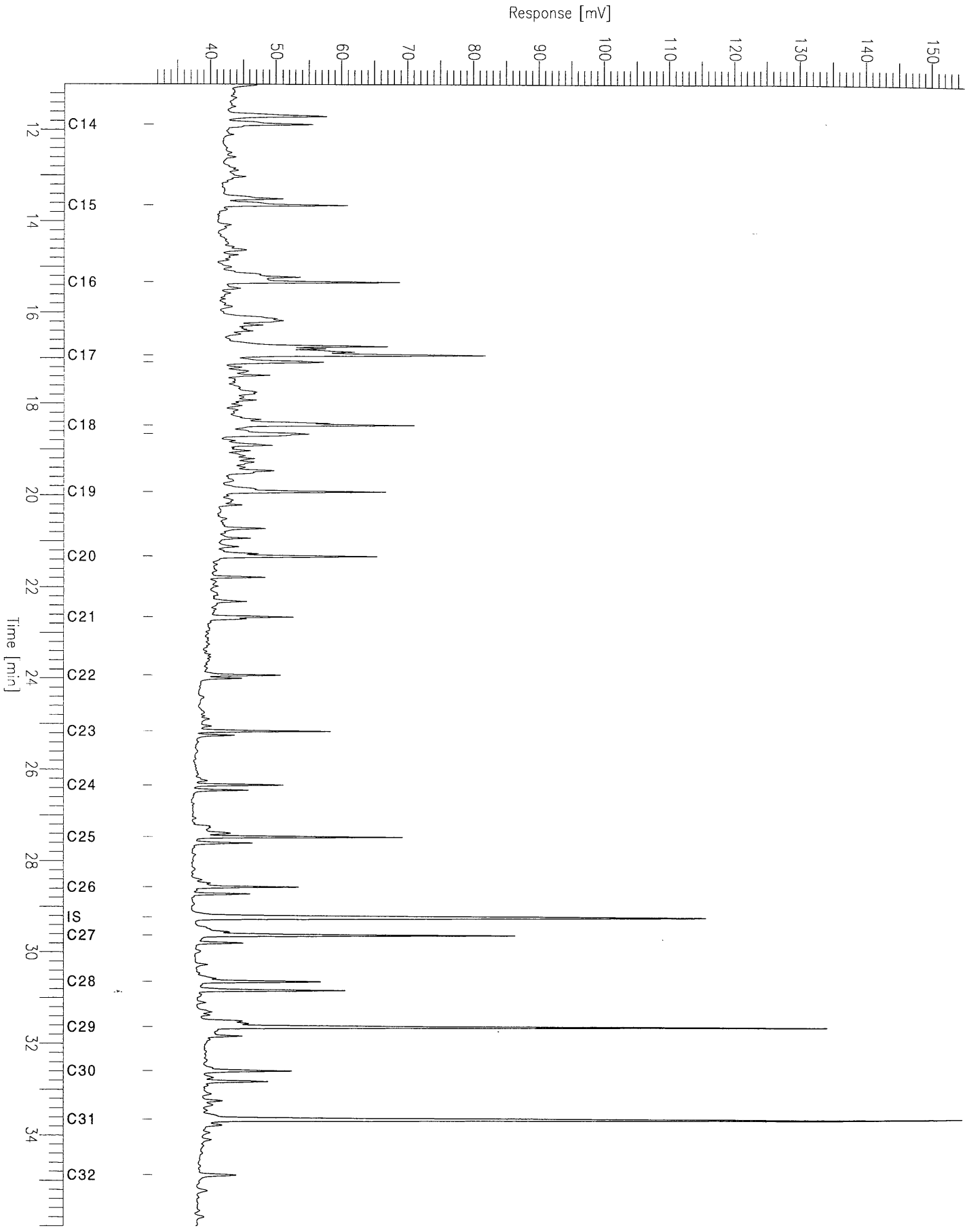
Sample #:
Date : 2/3/95 05:44 PM
Time of Injection: 10/15/94 07:26 PM
Low Point : 23.96 mV High Point : 237.06 mV
Plot Scale: 213.1 mV



Rockall Chromatogram

Sample Name : 57-12/36 3.38m
FileName : C:\TC4\HYDROCAR\rb47.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

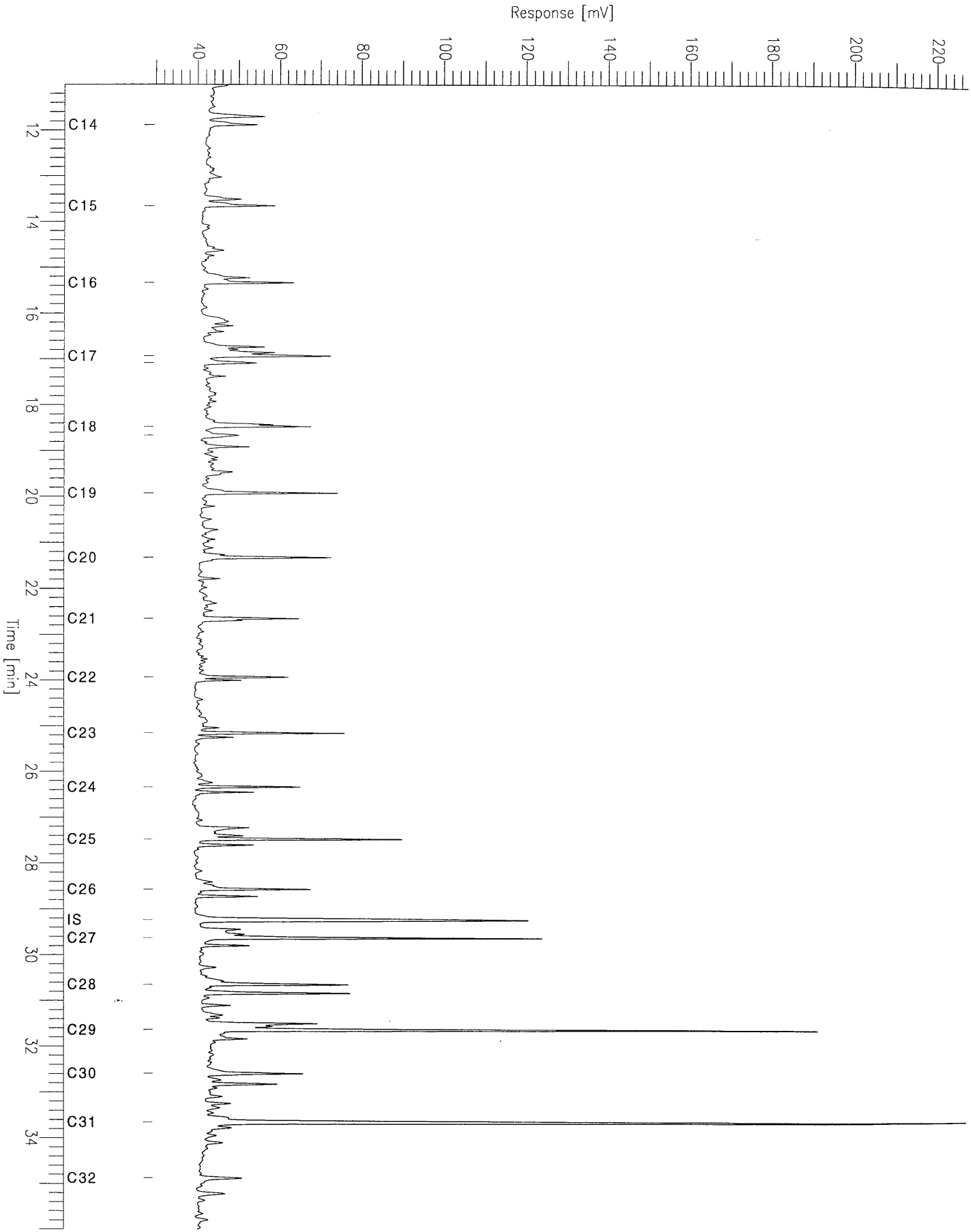
Sample #:
Date : 2/2/95 11:23 AM
Time of Injection: 10/9/94 05:39 AM
Low Point : 31.41 mV High Point : 154.91 mV
Plot Scale: 123.5 mV



Rockall Chromatogram

Sample Name : 57-12/37 2.79m
FileName : C:\TC4\HYDROCAR\rb48.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

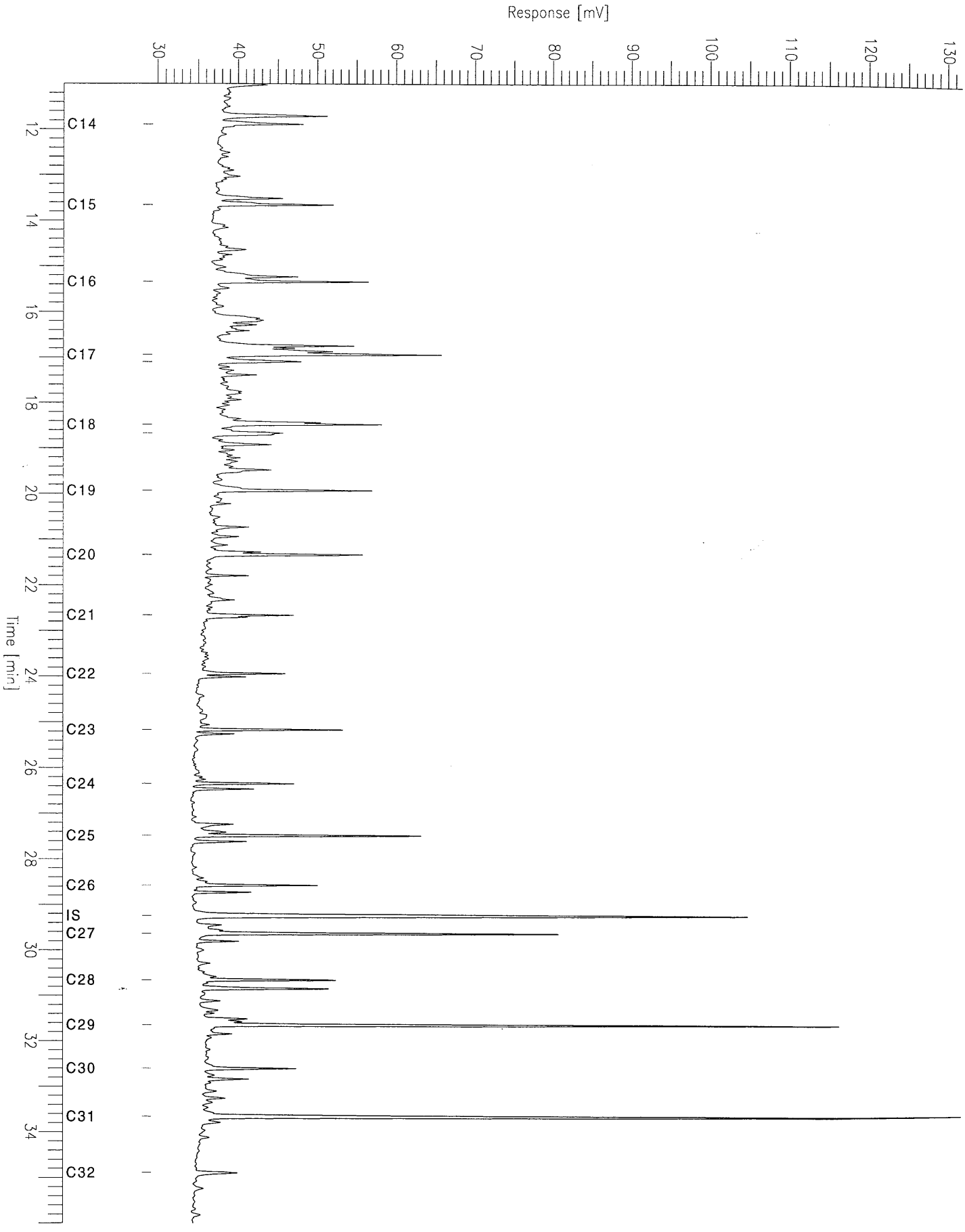
Sample #: Page 1 of 1
Date : 2/2/95 11:24 AM
Time of Injection: 10/9/94 06:35 AM
Low Point : 29.55 mV High Point : 227.35 mV
Plot Scale: 197.8 mV



Rockall Chromatogram

Sample Name : 57-12/37 3.44m
FileName : C:\TC4\HYDROCAR\rc5.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

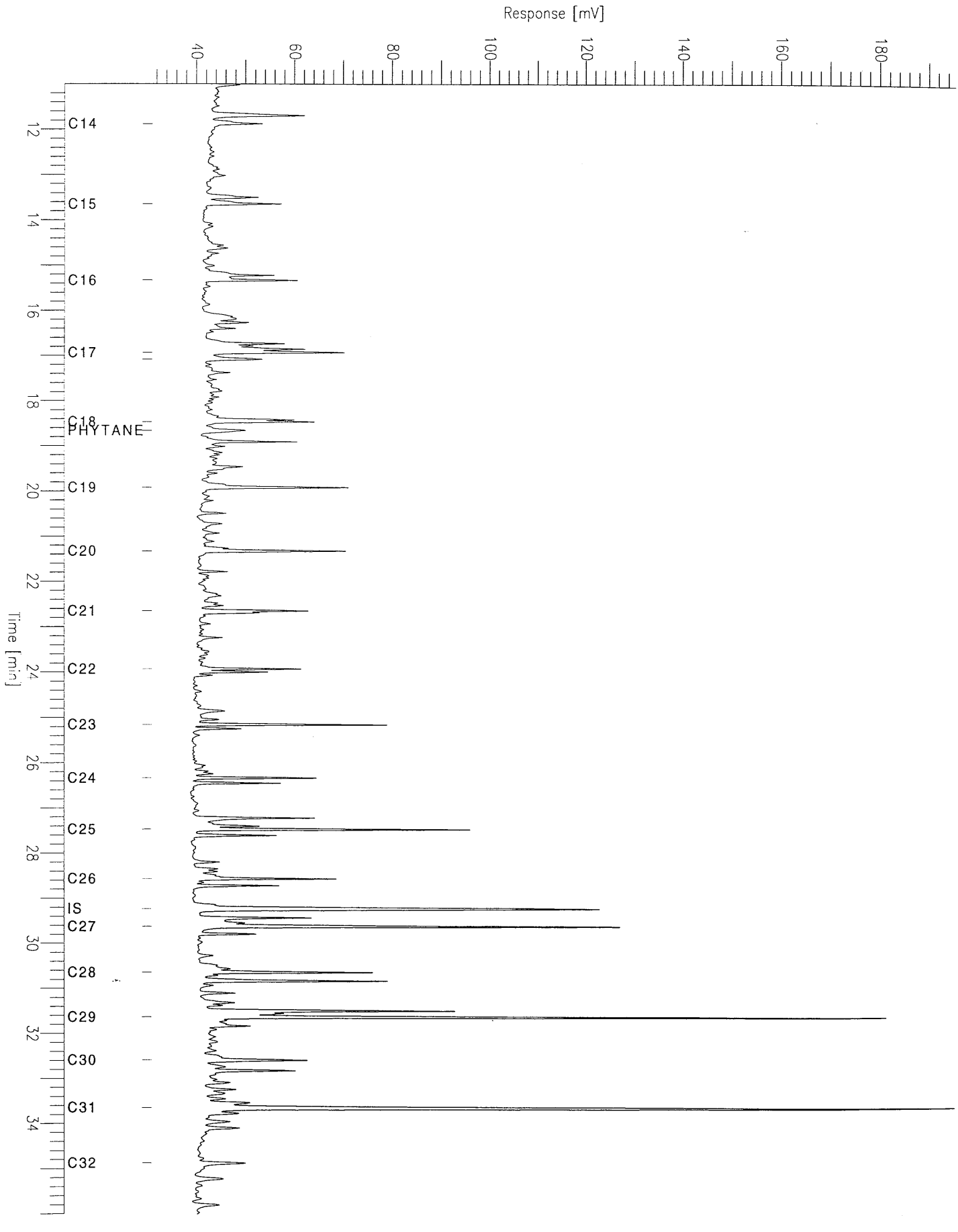
Sample #:
Date : 2/2/95 05:22 PM
Time of Injection: 10/10/94 02:00 PM
Low Point : 29.36 mV High Point : 131.73 mV
Plot Scale: 102.4 mV



Rockall Chromatogram

Sample Name : 57-12/38 2.68m
FileName : C:\TC4\HYDROCAR\rc6.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

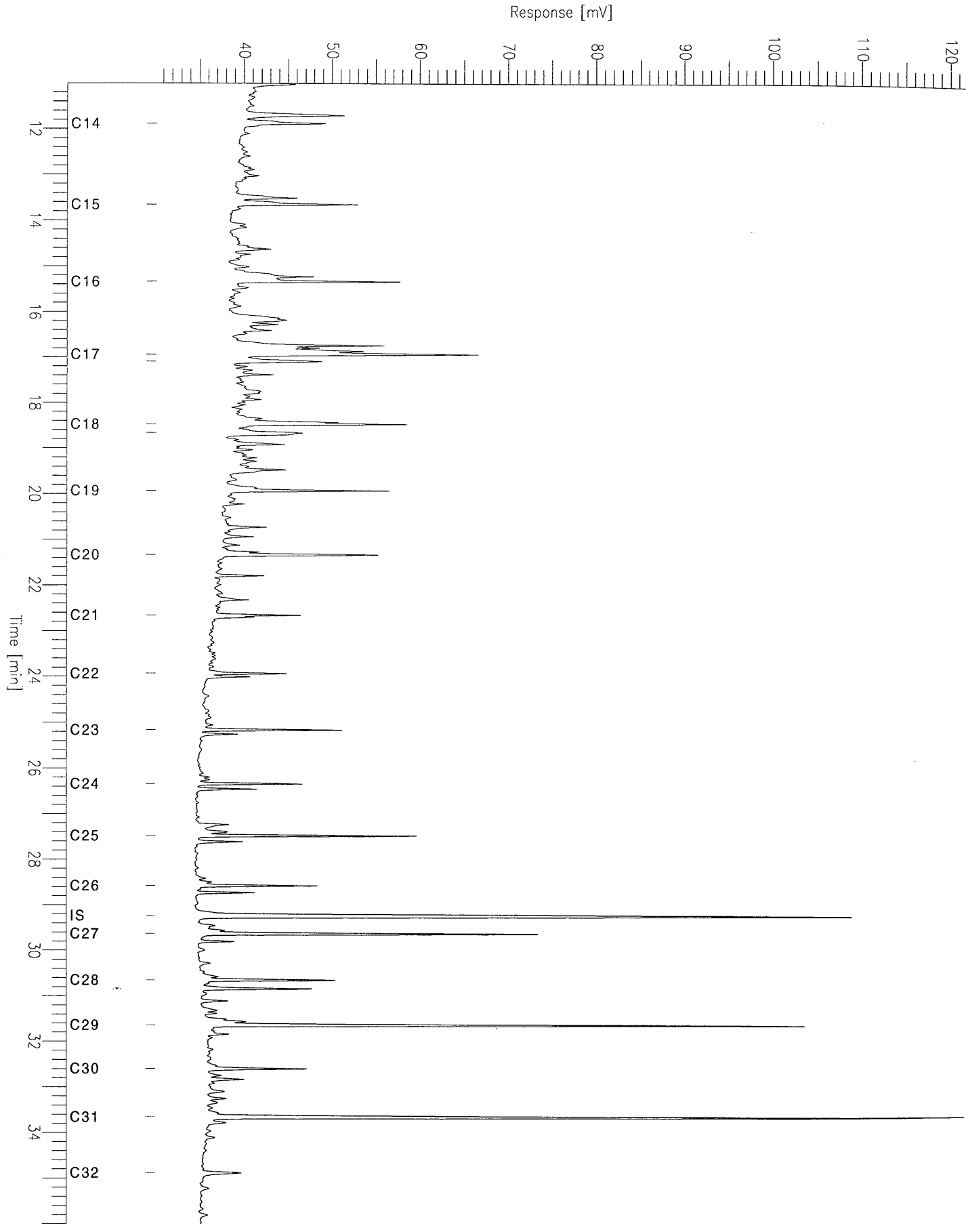
Sample #:
Date : 2/2/95 05:22 PM
Time of Injection: 10/10/94 02:55 PM
Low Point : 31.13 mV High Point : 195.33 mV
Plot Scale: 164.2 mV



Rockall Chromatogram

Sample Name : 57-12/38 3.33m
FileName : C:\TC4\HYDROCAR\rc7.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

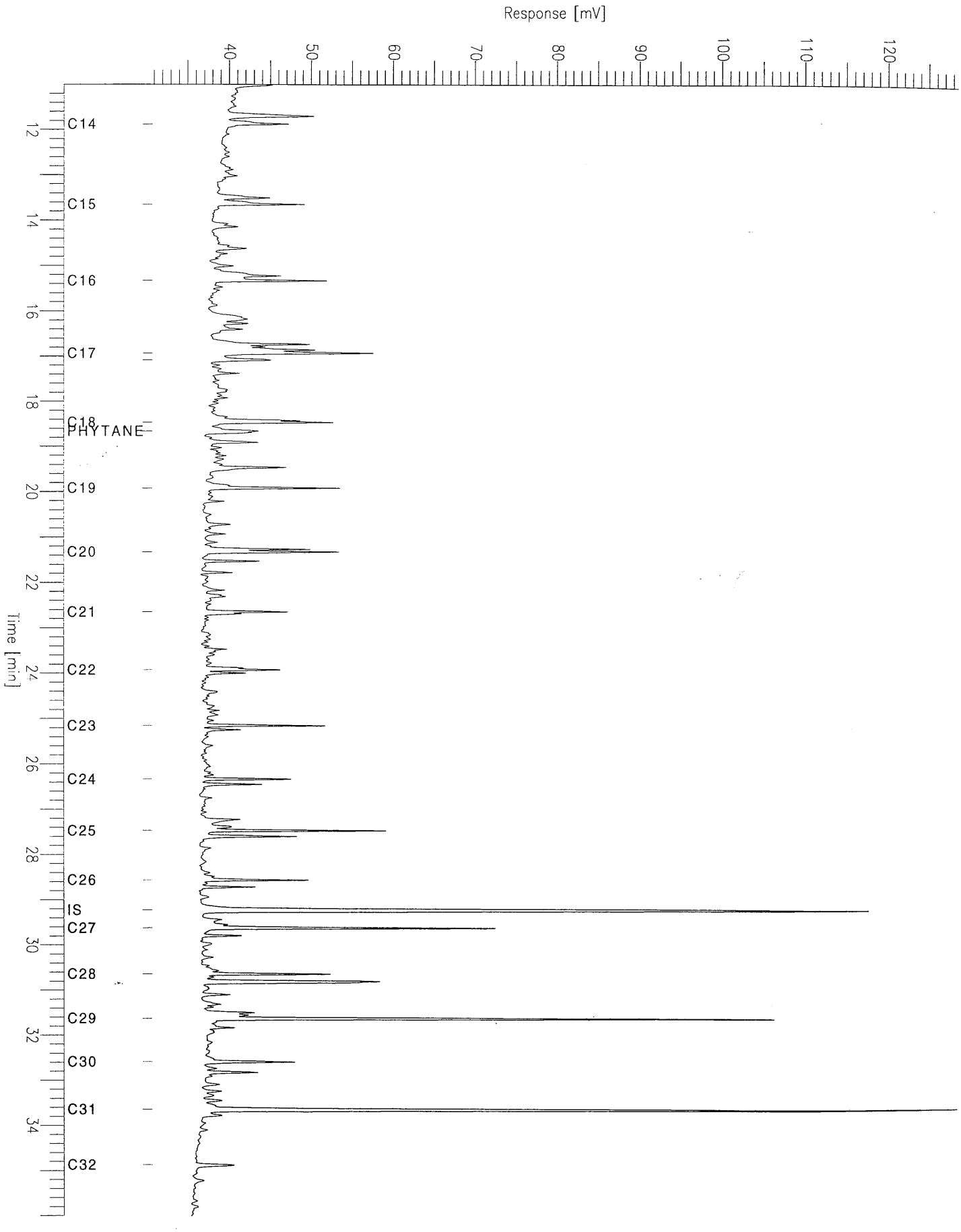
Sample #:
Date : 2/2/95 05:22 PM
Time of Injection: 10/10/94 03:50 PM
Low Point : 30.24 mV High Point : 121.68 mV
Plot Scale: 91.4 mV



Rockall Chromatogram

Sample Name : 57-12/39 2.70m
FileName : C:\TC4\HYDROCAR\rc8.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

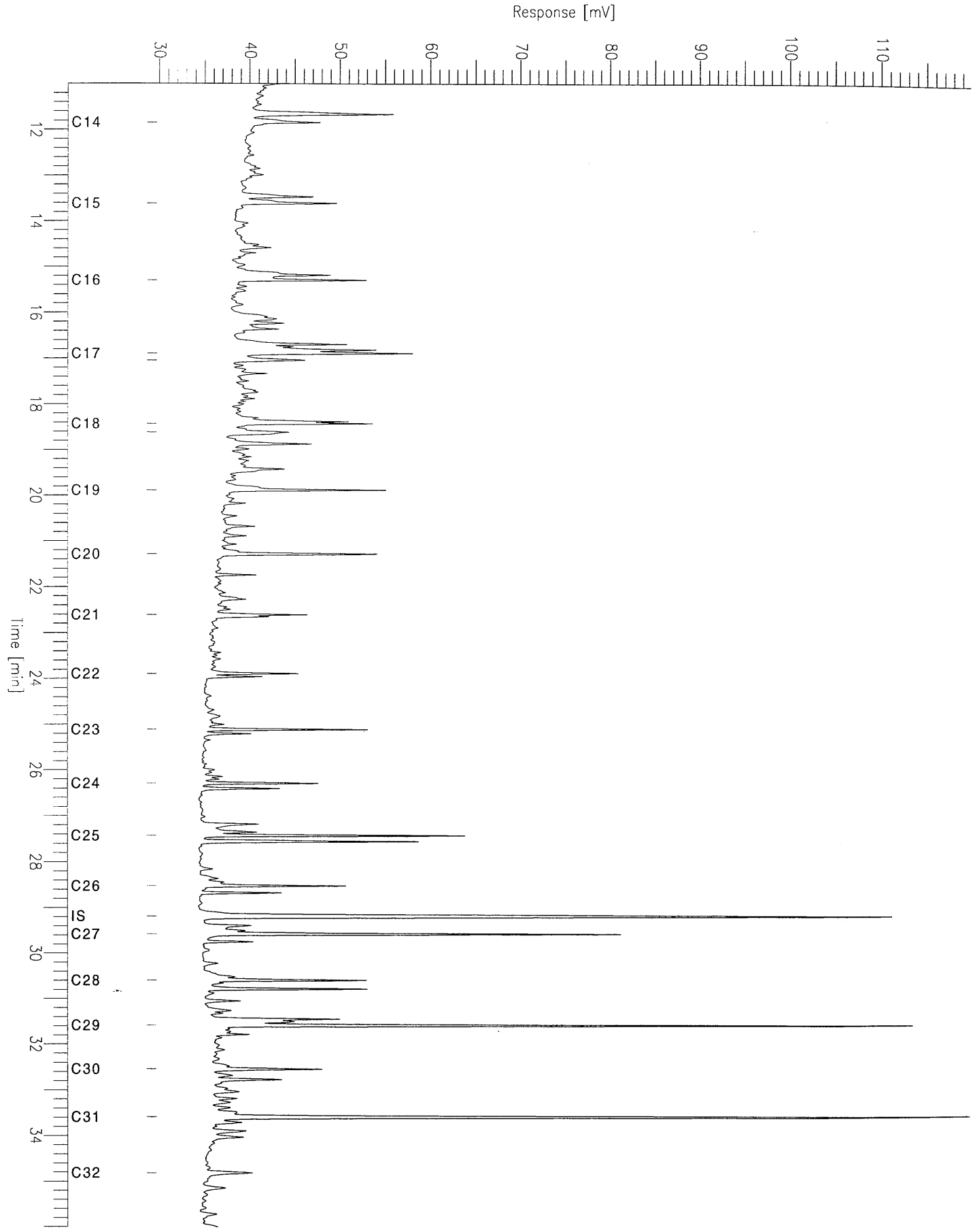
Sample #: Page 1 of 1
Date : 2/2/95 05:23 PM
Time of Injection: 10/10/94 04:45 PM
Low Point : 30.82 mV High Point : 128.46 mV
Plot Scale: 97.6 mV



Rockall Chromatogram

Sample Name : 57-12/39 3.35m
FileName : C:\TC4\HYDROCAR\re38.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

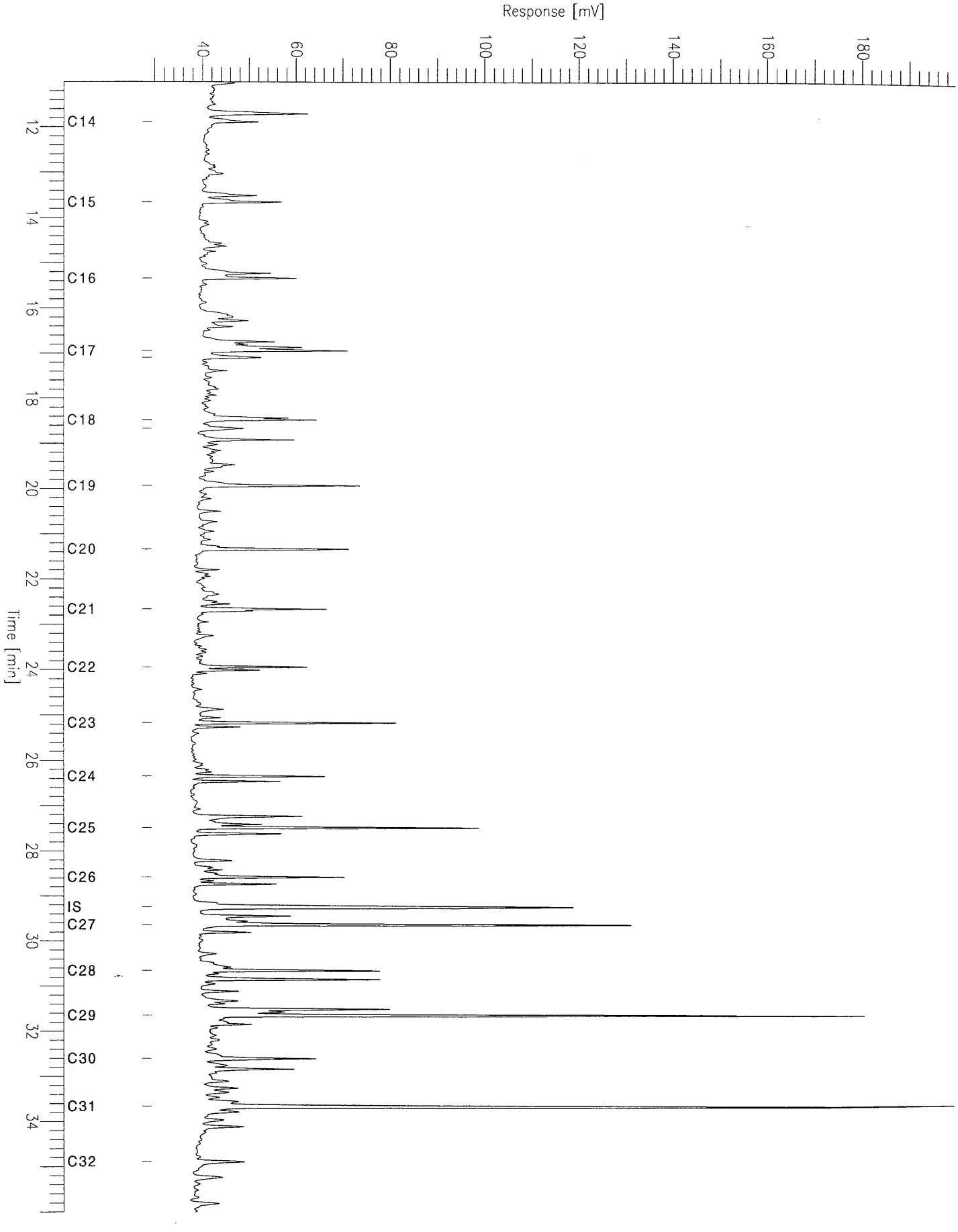
Sample #: Page 1 of 1
Date : 2/6/95 02:36 PM
Time of Injection: 10/15/94 08:21 PM
Low Point : 29.76 mV High Point : 119.78 mV
Plot Scale: 90.0 mV



Rockall Chromatogram

Sample Name : 57-12/40 2.47m
FileName : C:\TC4\HYDROCAR\rc10.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

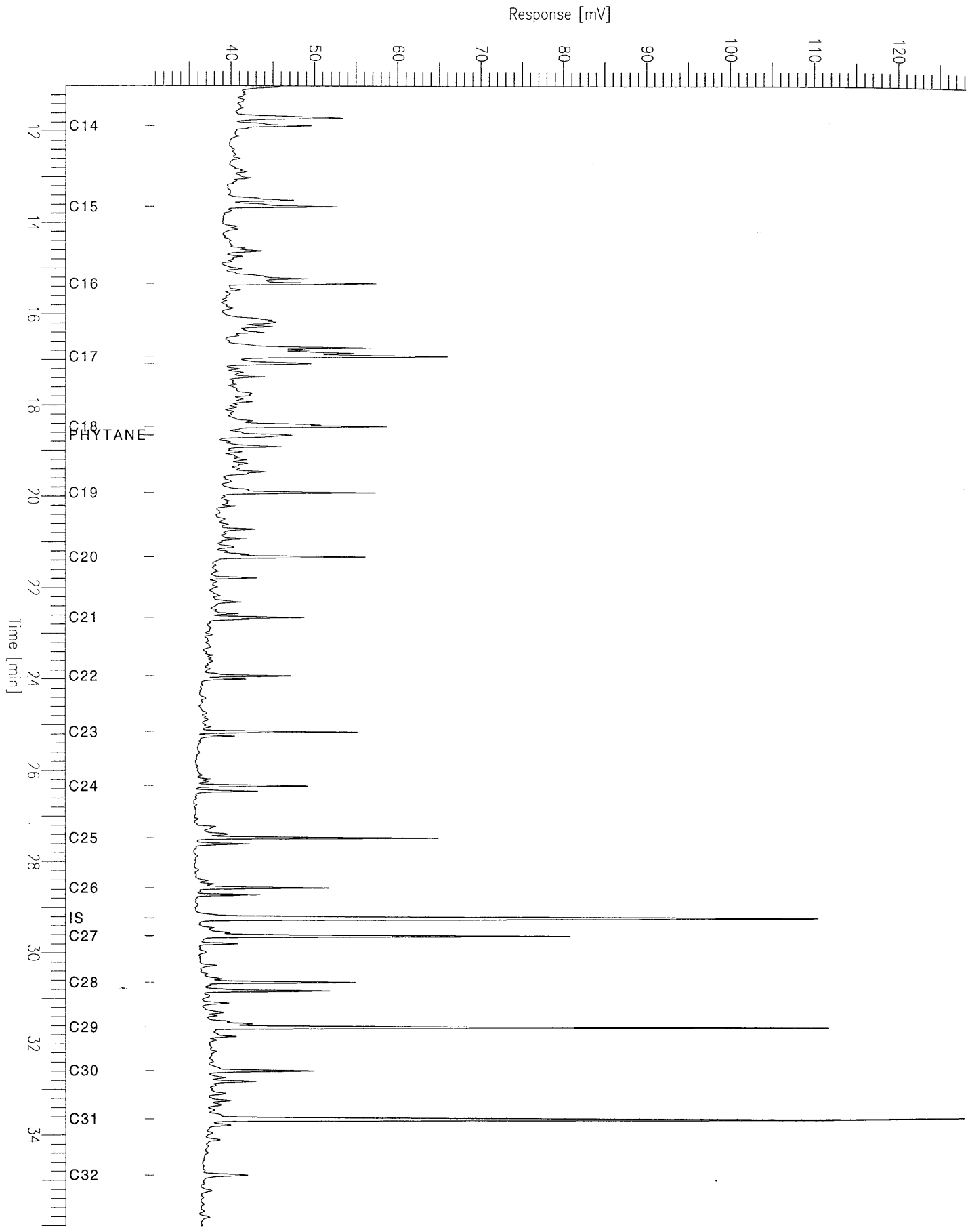
Sample #: Page 1 of 1
Date : 2/2/95 05:24 PM
Time of Injection: 10/10/94 06:35 PM
Low Point : 29.45 mV High Point : 199.60 mV
Plot Scale: 170.1 mV



Rockall Chromatogram

Sample Name : 57-12/40 3.12m
FileName : C:\TC4\HYDROCAR\rc11.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

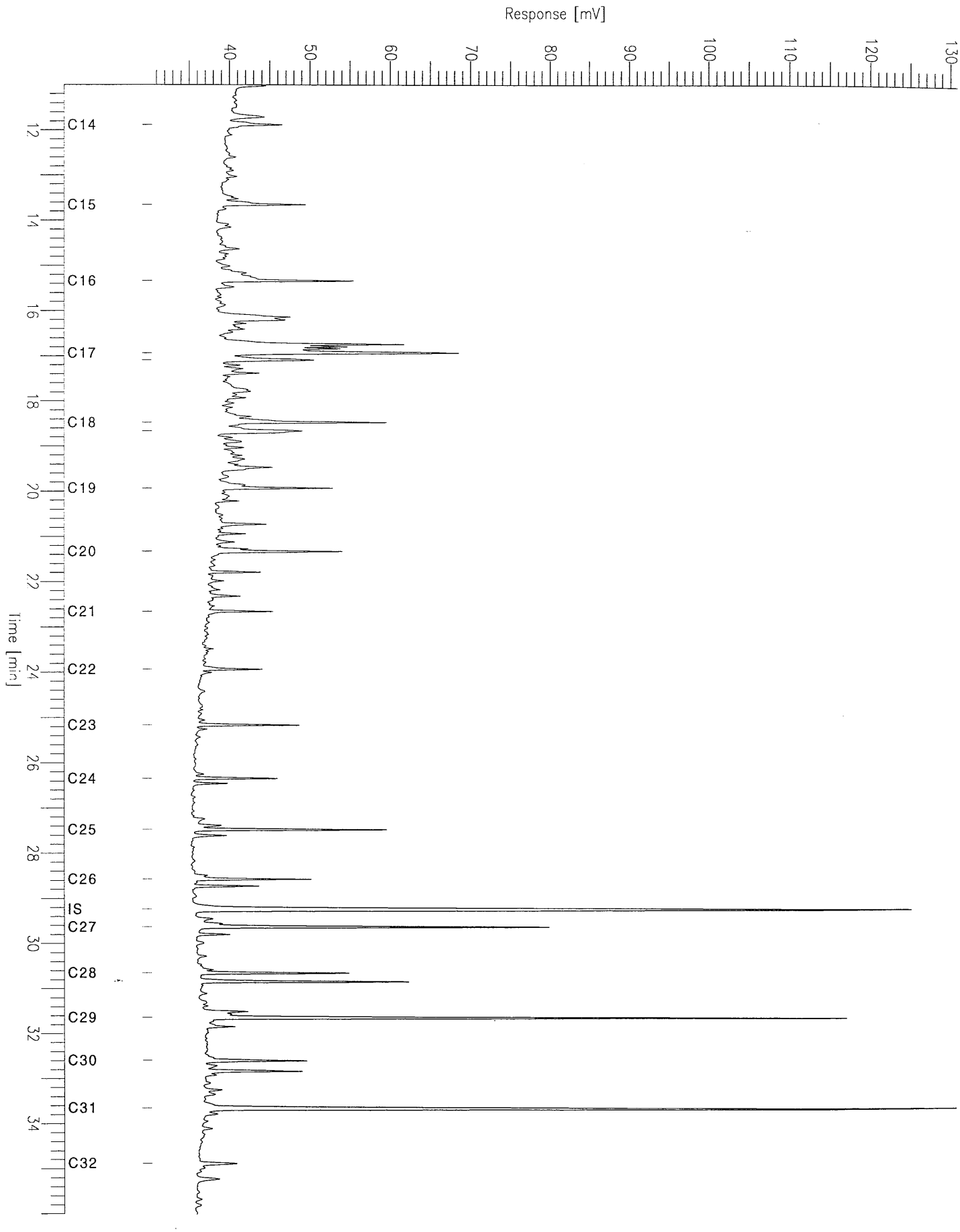
Sample #: Page 1 of 1
Date : 2/2/95 05:24 PM
Time of Injection: 10/10/94 07:31 PM
Low Point : 30.95 mV High Point : 128.07 mV
Plot Scale: 97.1 mV



Rockall Chromatogram

Sample Name : 57-13/20 2.30m
FileName : C:\TC4\HYDROCAR\rc12.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

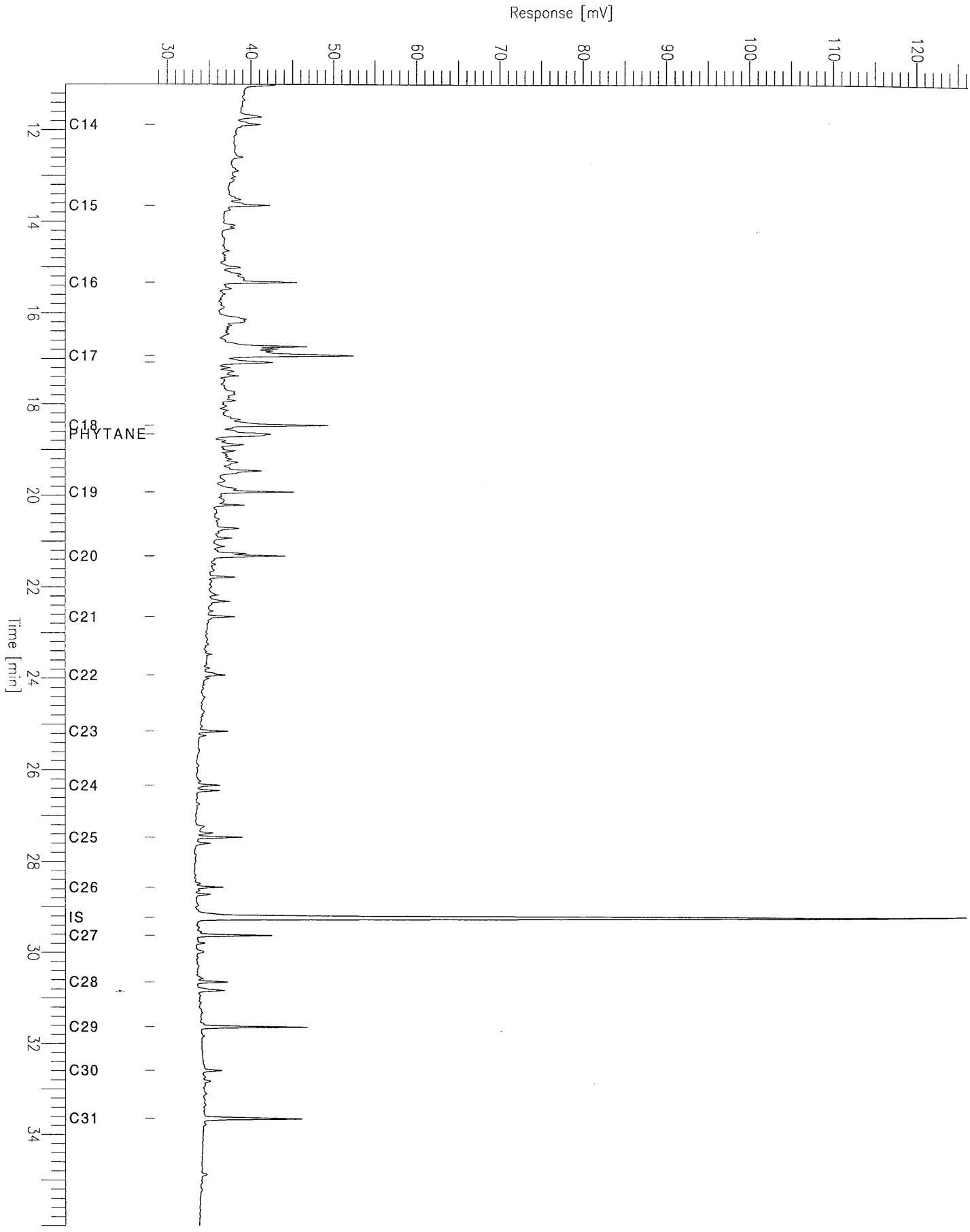
Sample #: Page 1 of 1
Date : 2/2/95 05:24 PM
Time of Injection: 10/10/94 08:25 PM
Low Point : 30.46 mV High Point : 130.82 mV
Plot Scale: 100.4 mV



Rockall Chromatogram

Sample Name : 57-13/20 2.95m
FileName : C:\TC4\HYDROCAR\rc13.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

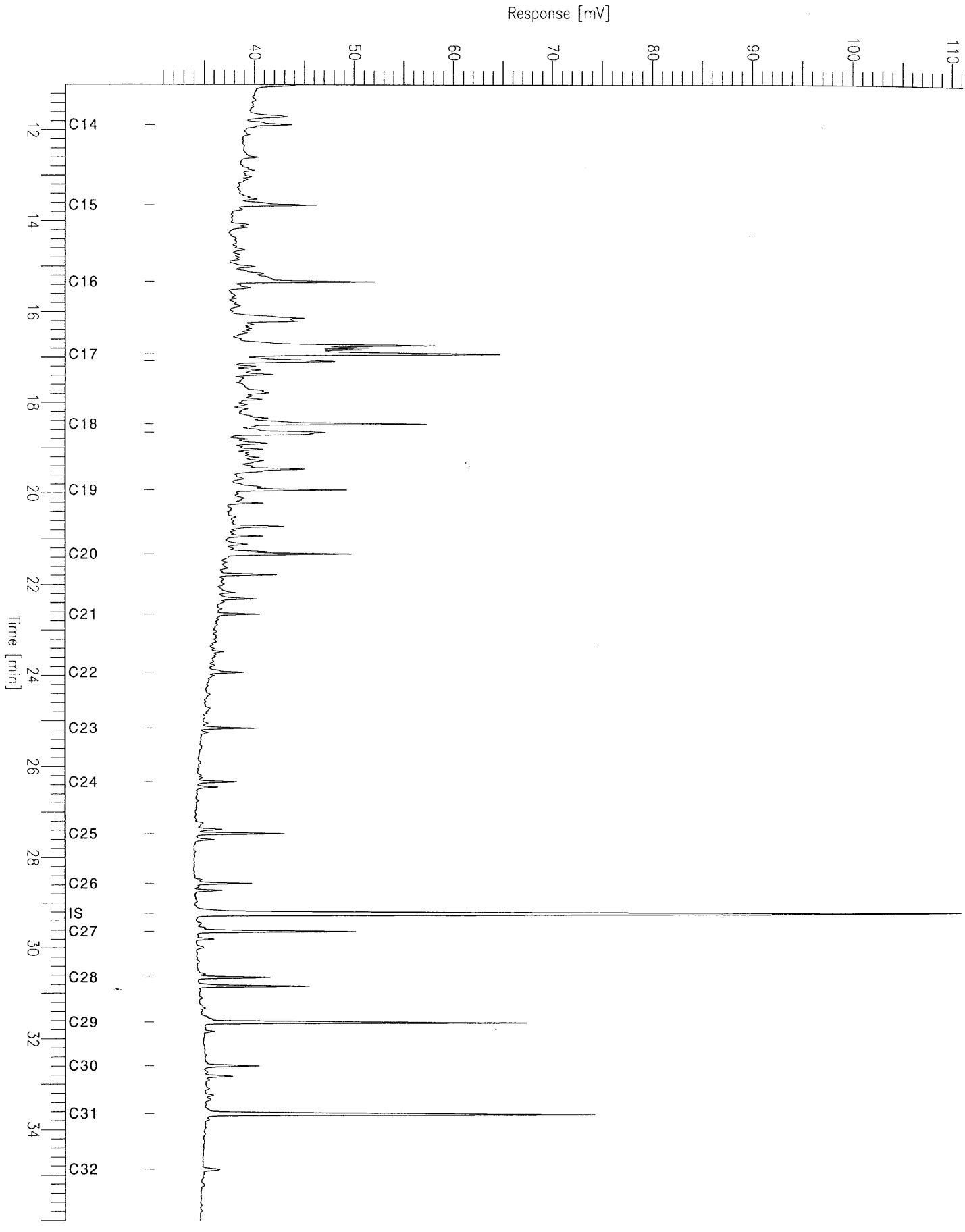
Sample #: Page 1 of 1
Date : 2/2/95 05:25 PM
Time of Injection: 10/10/94 09:20 PM
Low Point : 28.57 mV High Point : 126.13 mV
Plot Scale: 97.6 mV



Rockall Chromatogram

Sample Name : 57-13/24 2.40m
FileName : C:\TC4\HYDROCAR\rc14.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

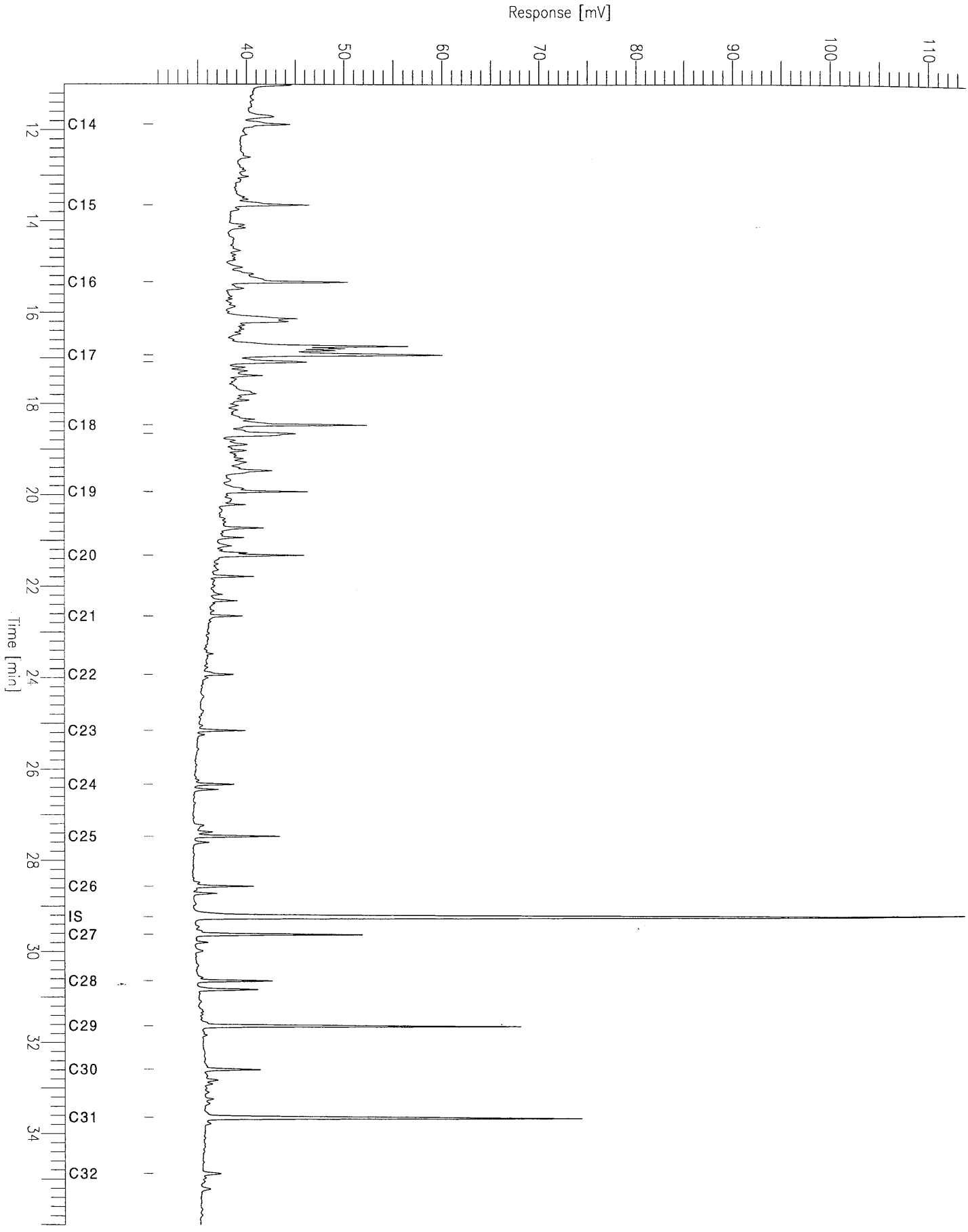
Sample #: Page 1 of 1
Date : 2/2/95 05:25 PM
Time of Injection: 10/10/94 10:15 PM
Low Point : 30.12 mV High Point : 111.07 mV
Plot Scale: 81.0 mV



Rockall Chromatogram

Sample Name : 57-13/24 3.05m
FileName : C:\TC4\HYDROCAR\Rc15.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

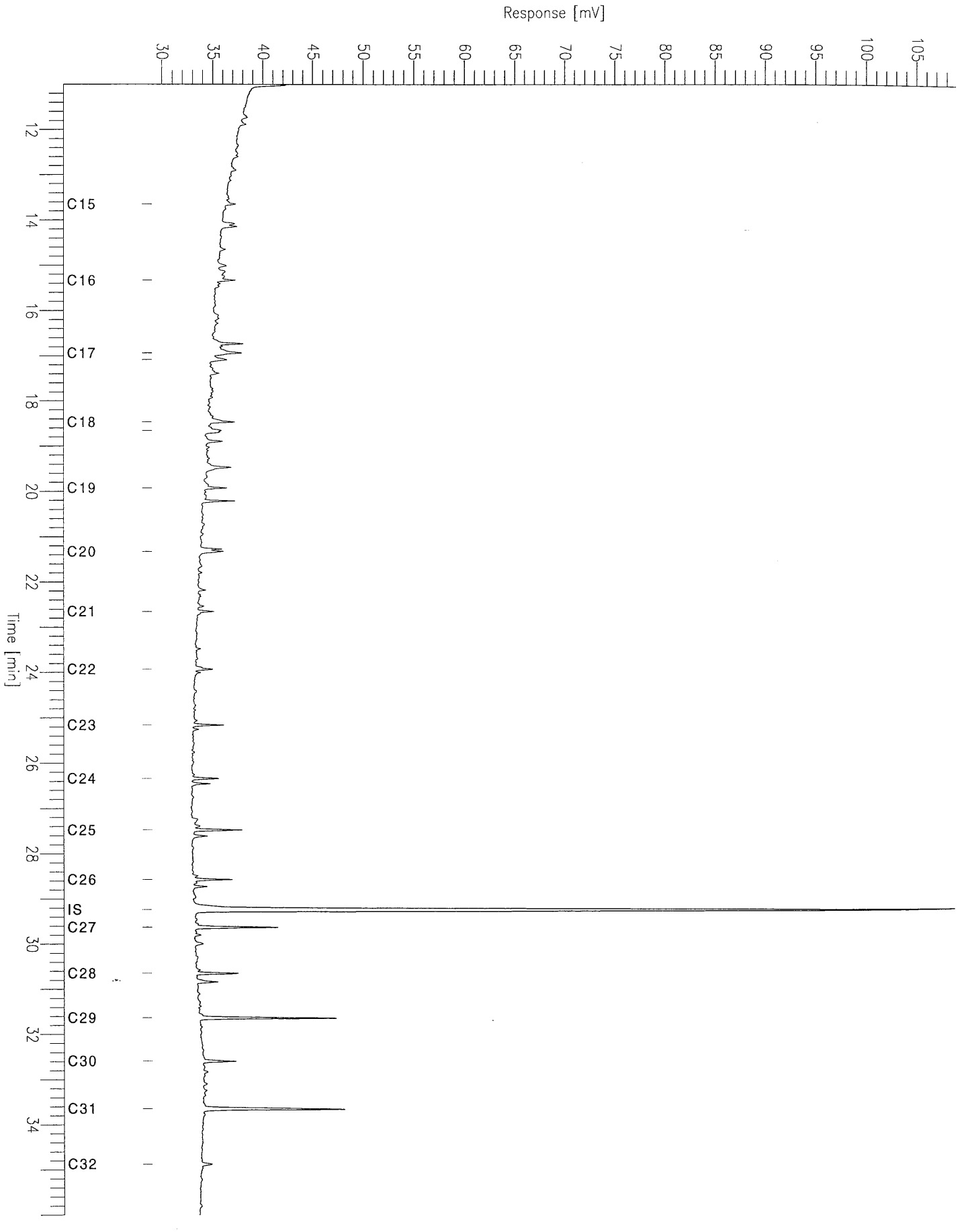
Sample #: Page 1 of 1
Date : 2/2/95 05:25 PM
Time of Injection: 10/10/94 11:10 PM
Low Point : 30.48 mV High Point : 113.79 mV
Plot Scale: 83.3 mV



Rockall Chromatogram

Sample Name : 57-13/25 2.65m
FileName : C:\TC4\HYDROCAR\Rc16.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

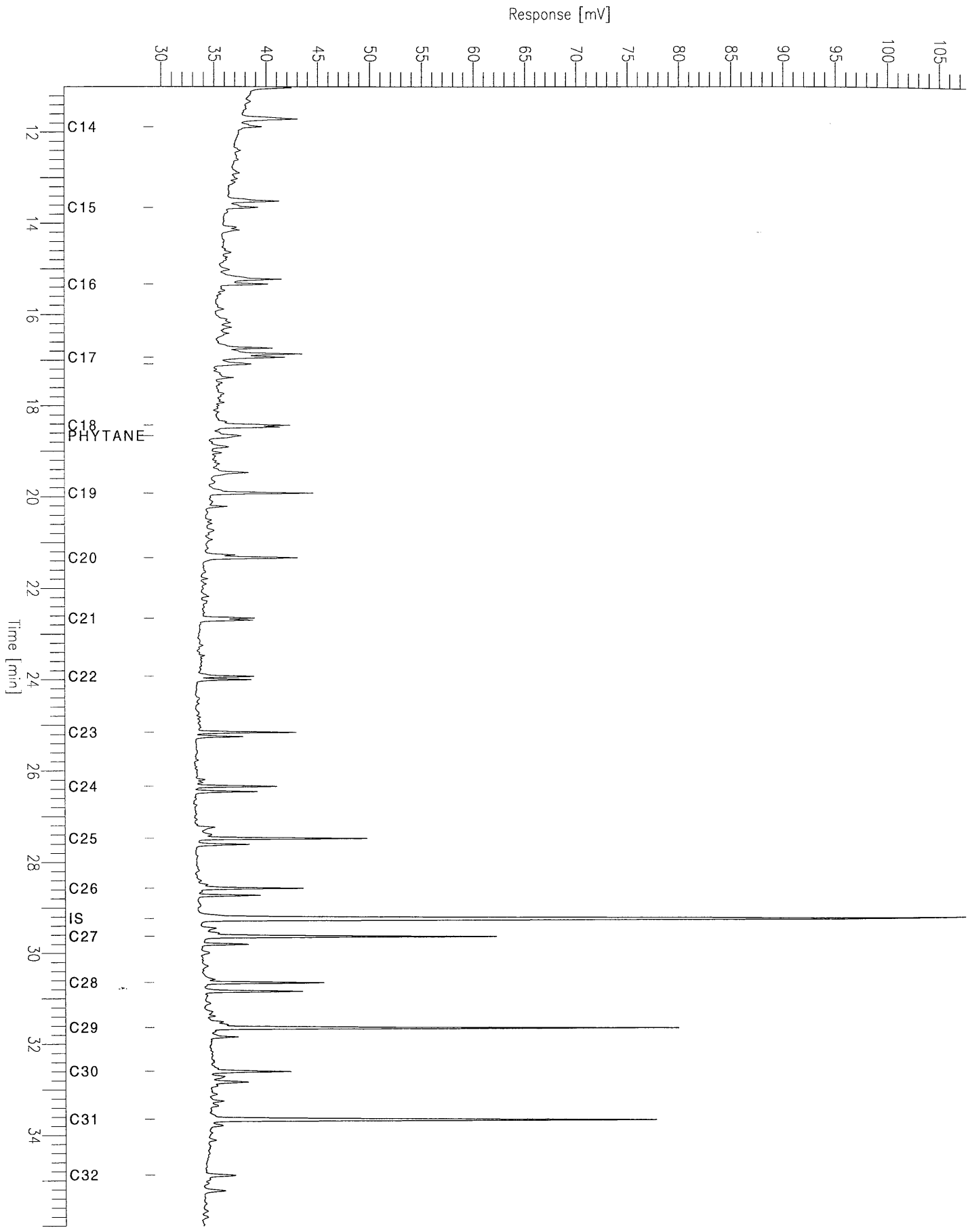
Sample #: Page 1 of 1
Date : 2/2/95 05:26 PM
Time of Injection: 10/11/94 12:05 AM
Low Point : 29.06 mV High Point : 108.83 mV
Plot Scale: 79.8 mV



Rockall Chromatogram

Sample Name : 57-13/25 3.30m
FileName : C:\TC4\HYDROCAR\Rc17.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

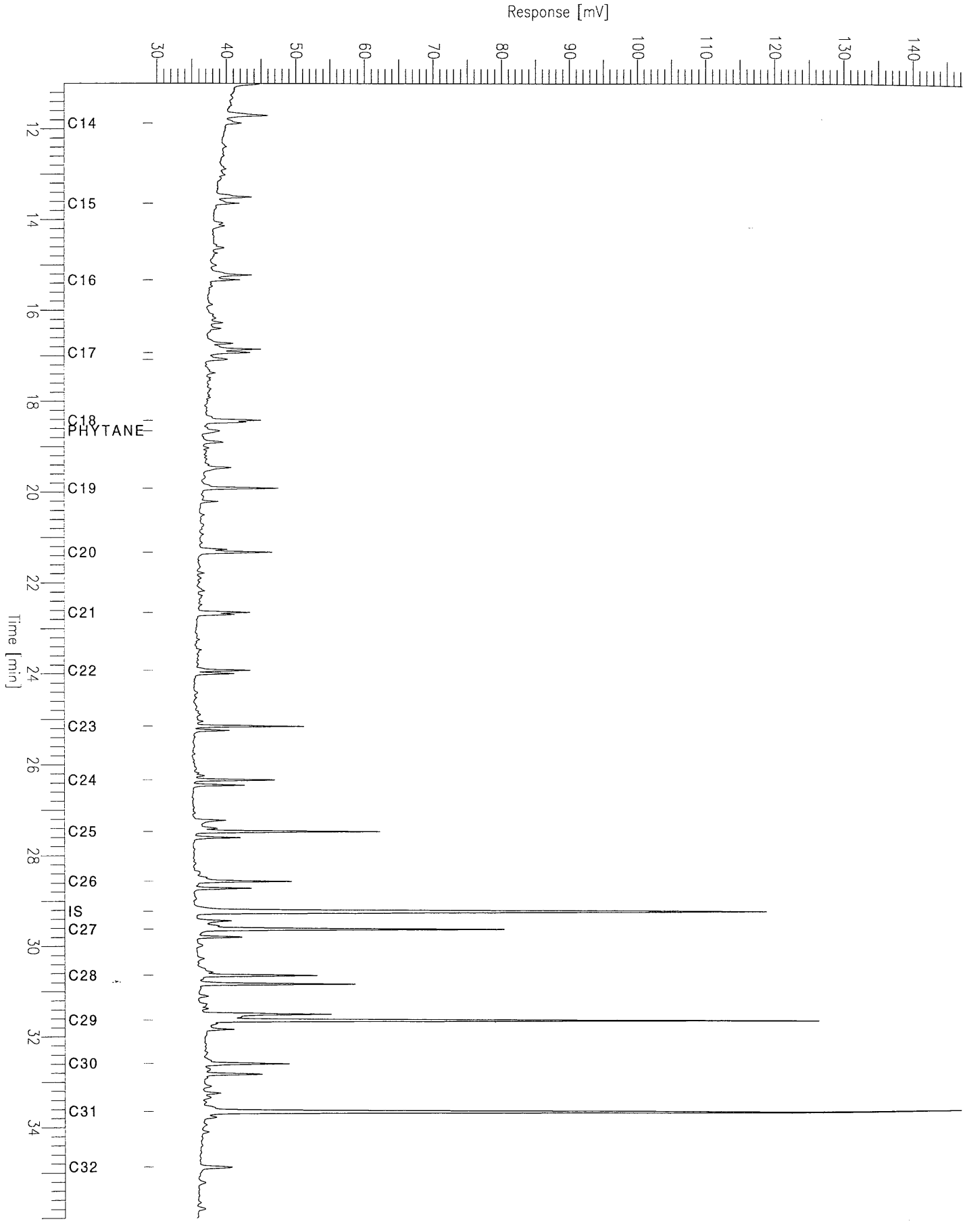
Sample #: Page 1 of 1
Date : 2/2/95 05:26 PM
Time of Injection: 10/11/94 12:59 AM
Low Point : 29.29 mV High Point : 107.54 mV
Plot Scale: 78.3 mV



Rockall Chromatogram

Sample Name : 57-13/27 2.05m
FileName : C:\TC4\HYDROCAR\Rc18.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

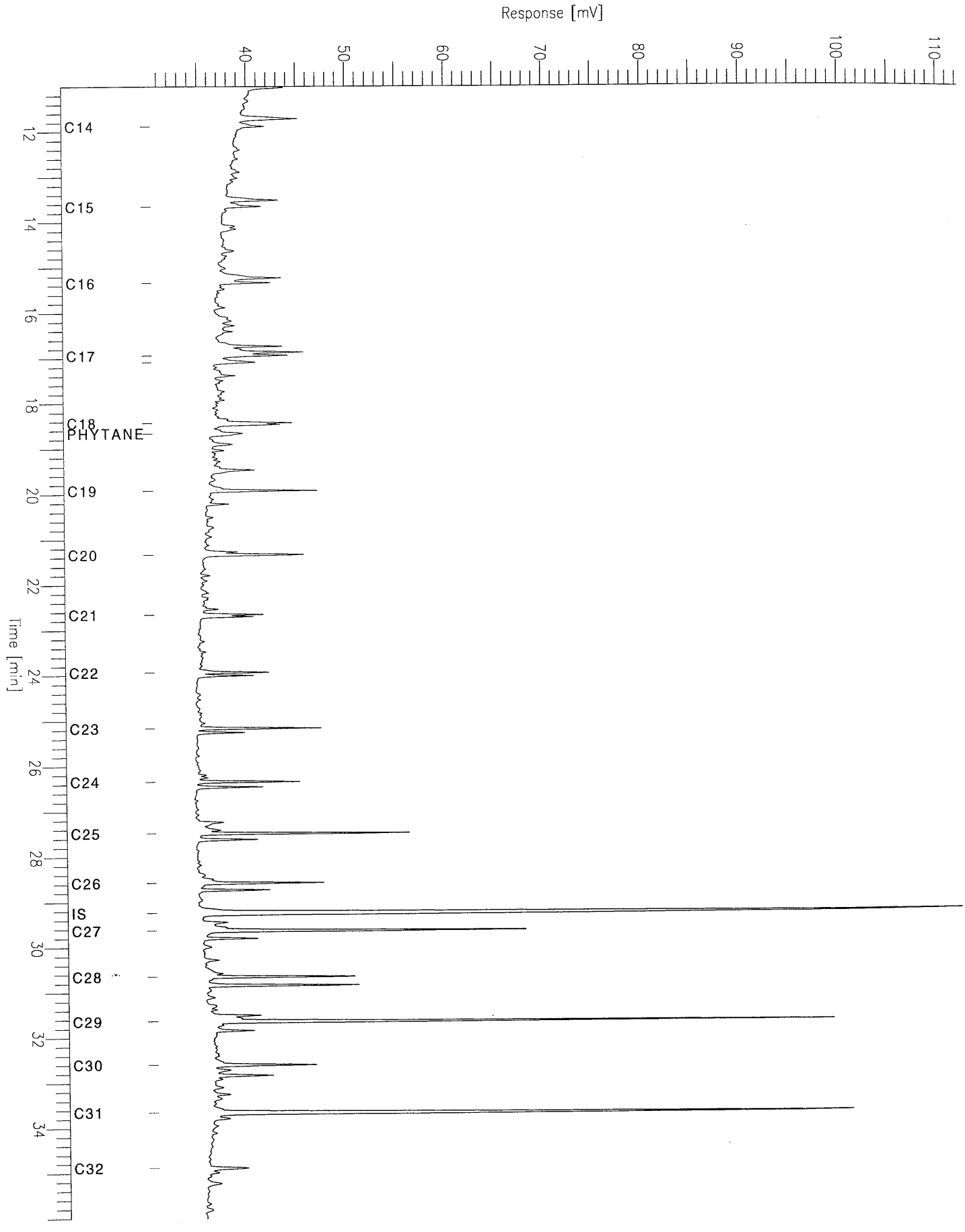
Sample #: Page 1 of 1
Date : 2/2/95 05:26 PM
Time of Injection: 10/11/94 01:54 AM
Low Point : 29.44 mV High Point : 147.21 mV
Plot Scale: 117.8 mV



Rockall Chromatogram

Sample Name : 57-13/27 2.70m
FileName : C:\TC4\HYDROCAR\rc19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

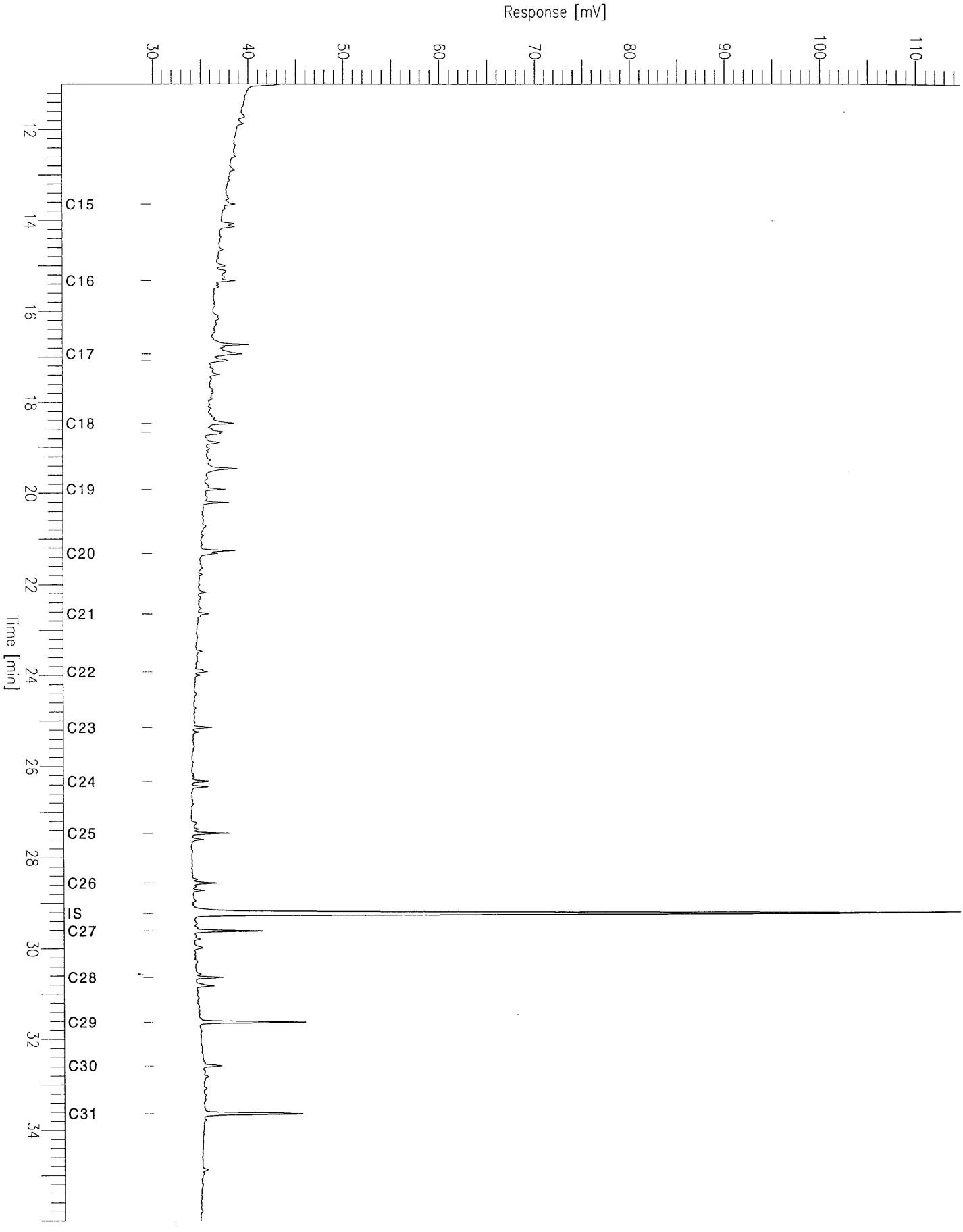
Sample #:
Date : 2/2/95 05:27 PM
Time of Injection: 10/11/94 02:50 AM
Low Point : 30.40 mV High Point : 112.24 mV
Plot Scale: 81.8 mV



Rockall Chromatogram

Sample Name : 57-13/28 1.20m
FileName : C:\TC4\HYDROCAR\rc20.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

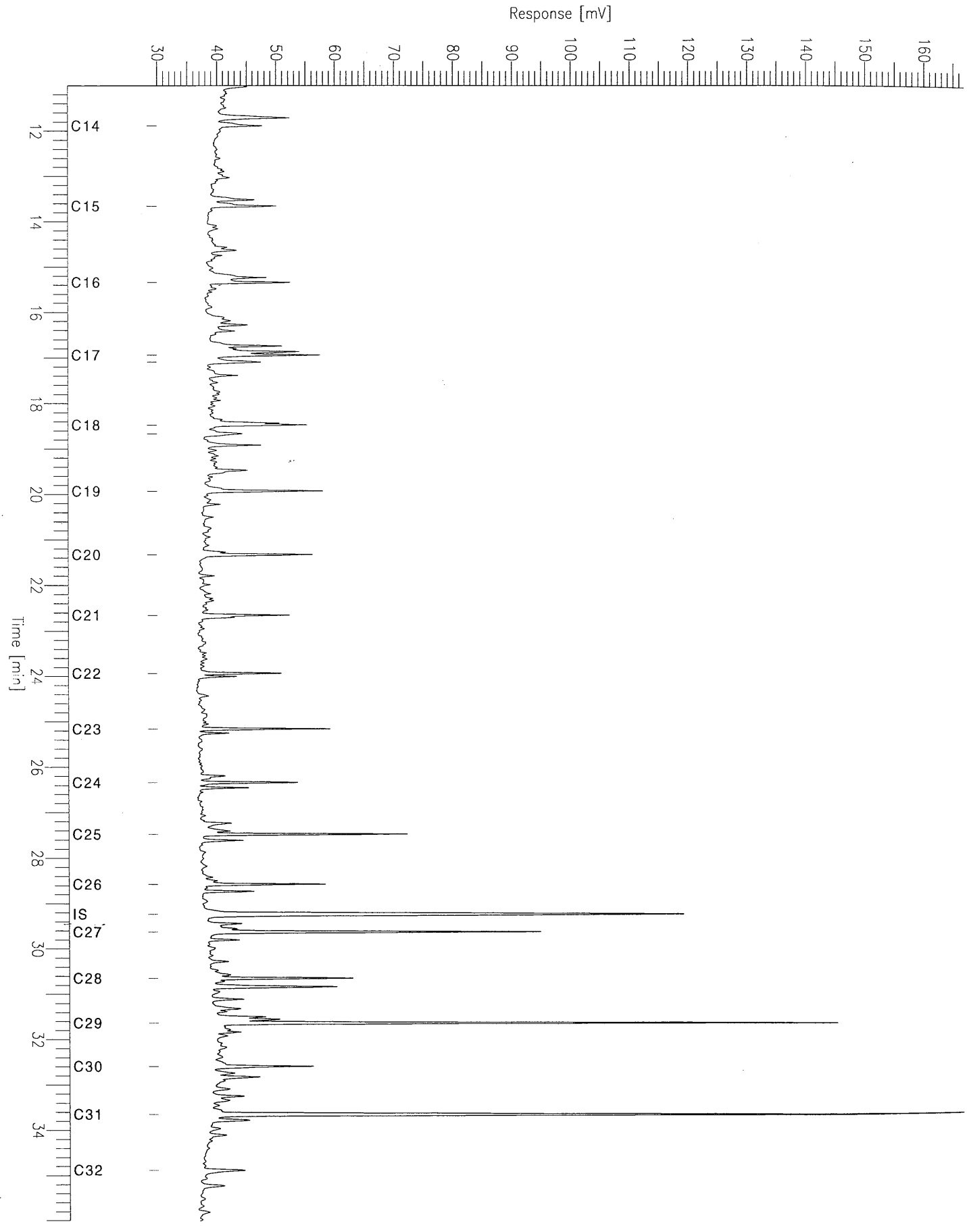
Sample #: Page 1 of 1
Date : 2/2/95 05:27 PM
Time of Injection: 10/11/94 03:45 AM
Low Point : 29.85 mV High Point : 114.58 mV
Plot Scale: 84.7 mV



Rockall Chromatogram

Sample Name : 57-13/28 1.85m
FileName : C:\TC4\HYDROCAR\rc21.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

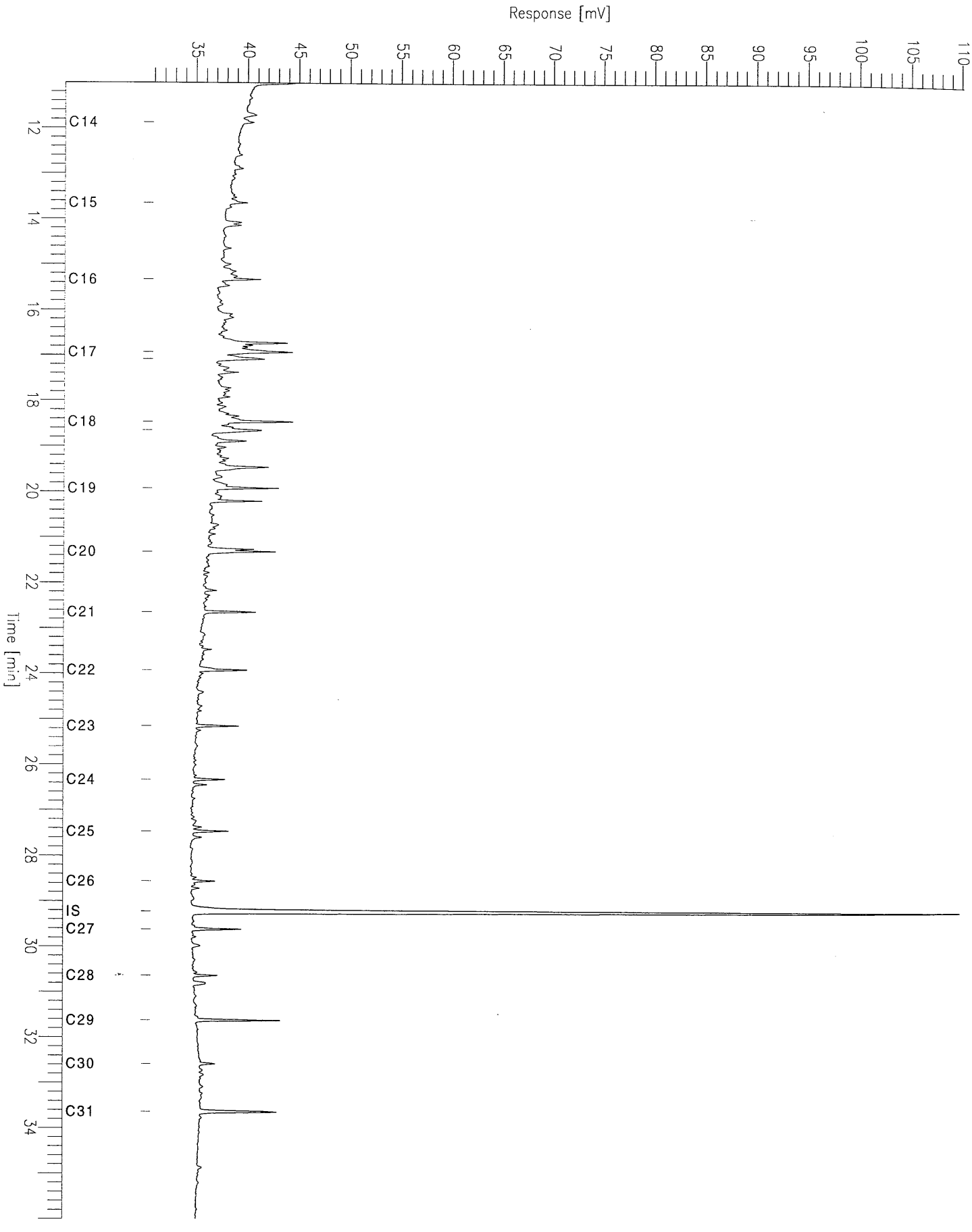
Sample #: Page 1 of 1
Date : 2/2/95 05:28 PM
Time of Injection: 10/11/94 04:40 AM
Low Point : 29.95 mV High Point : 166.76 mV
Plot Scale: 136.8 mV



Rockall Chromatogram

Sample Name : 57-13/30 0.80m
FileName : C:\TC4\HYDROCAR\rc22.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

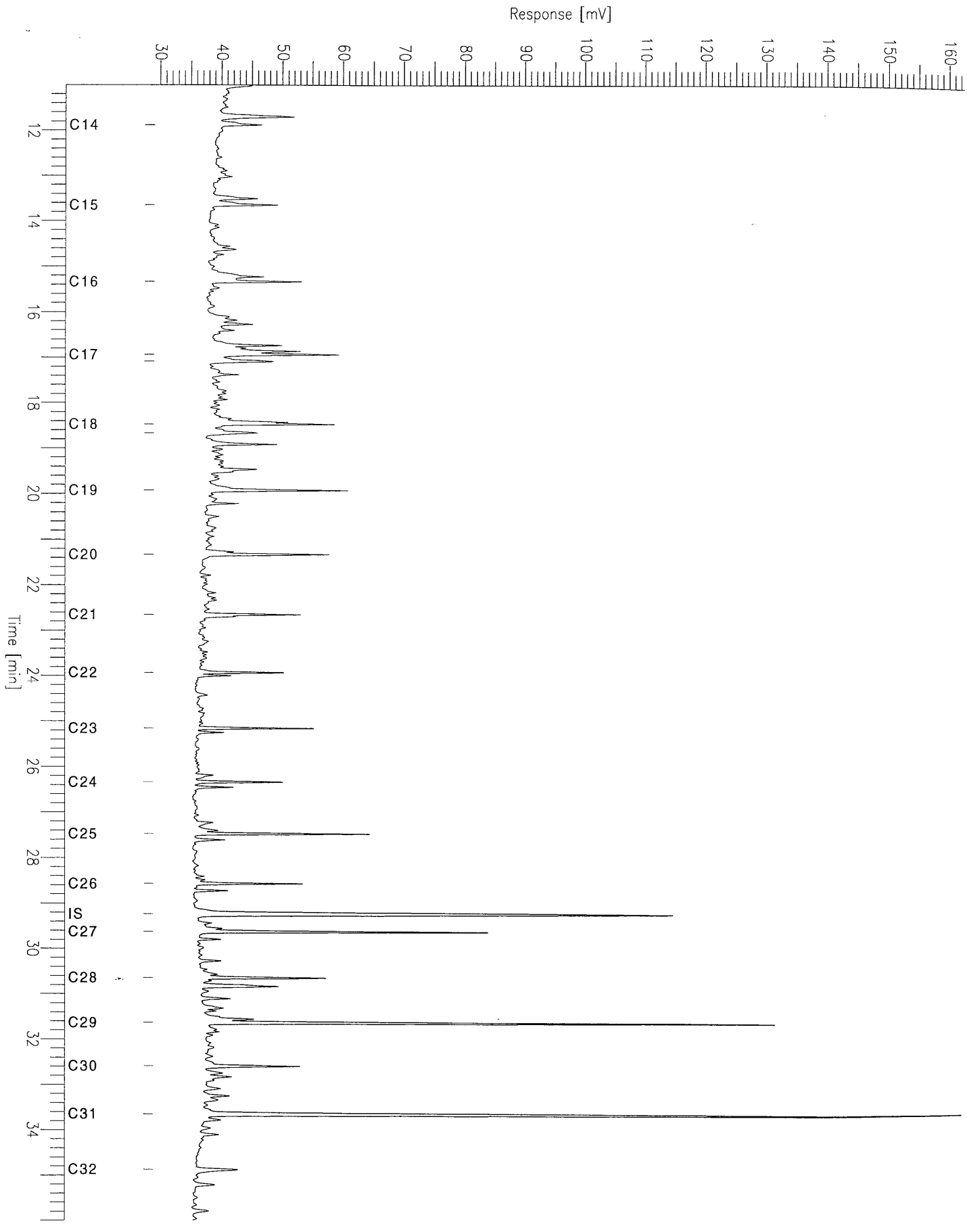
Sample #: Page 1 of 1
Date : 2/2/95 05:28 PM
Time of Injection: 10/11/94 05:36 AM
Low Point : 30.89 mV High Point : 110.09 mV
Plot Scale: 79.2 mV



Rockall Chromatogram

Sample Name : 57-13/30 1.45m
FileName : C:\TC4\HYDROCAR\rc23.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

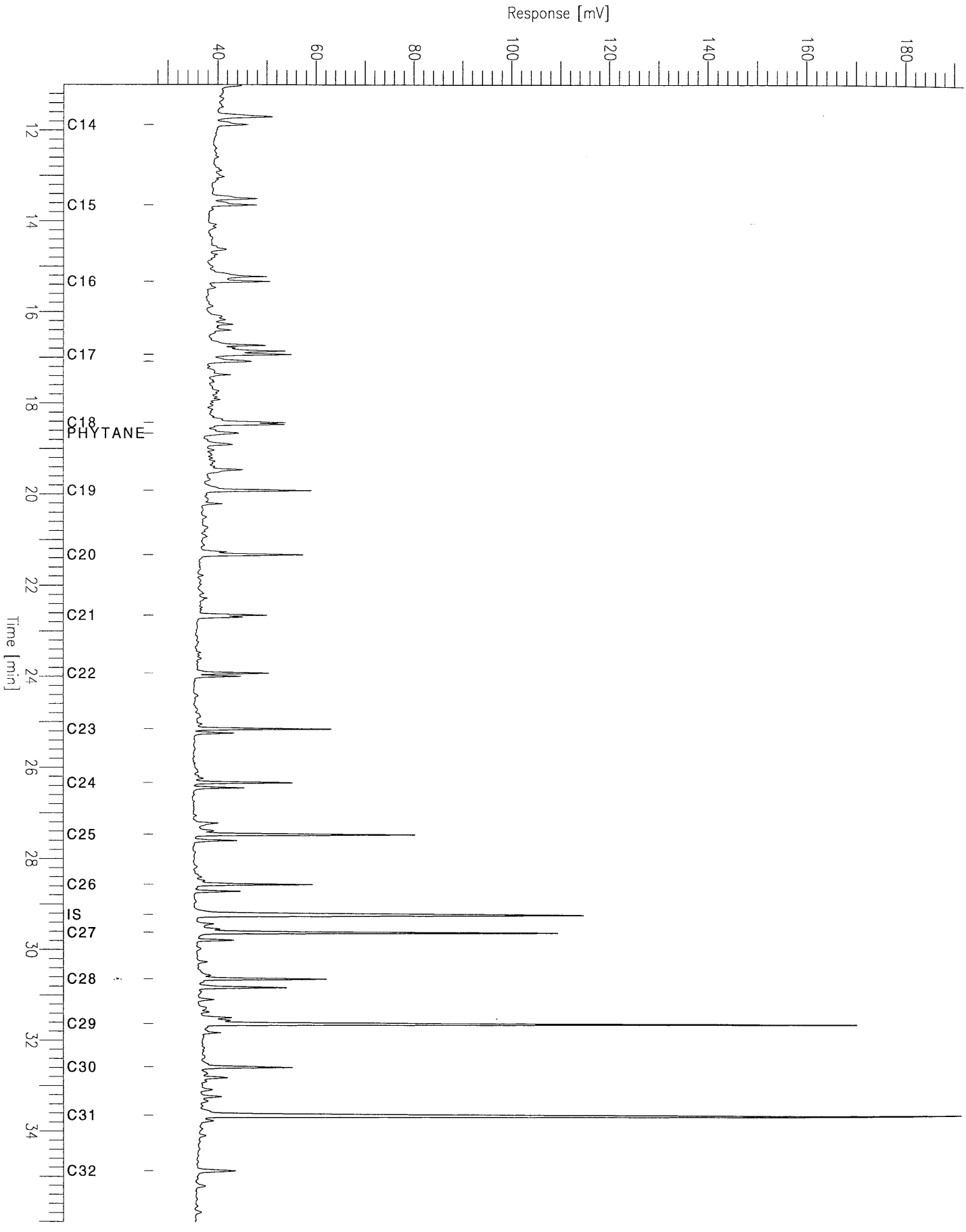
Sample #: Page 1 of 1
Date : 2/2/95 05:28 PM
Time of Injection: 10/11/94 06:30 AM
Low Point : 29.07 mV High Point : 162.45 mV
Plot Scale: 133.4 mV



Rockall Chromatogram

Sample Name : 57-13/31 2.60m
FileName : C:\TC4\HYDROCAR\rc24.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

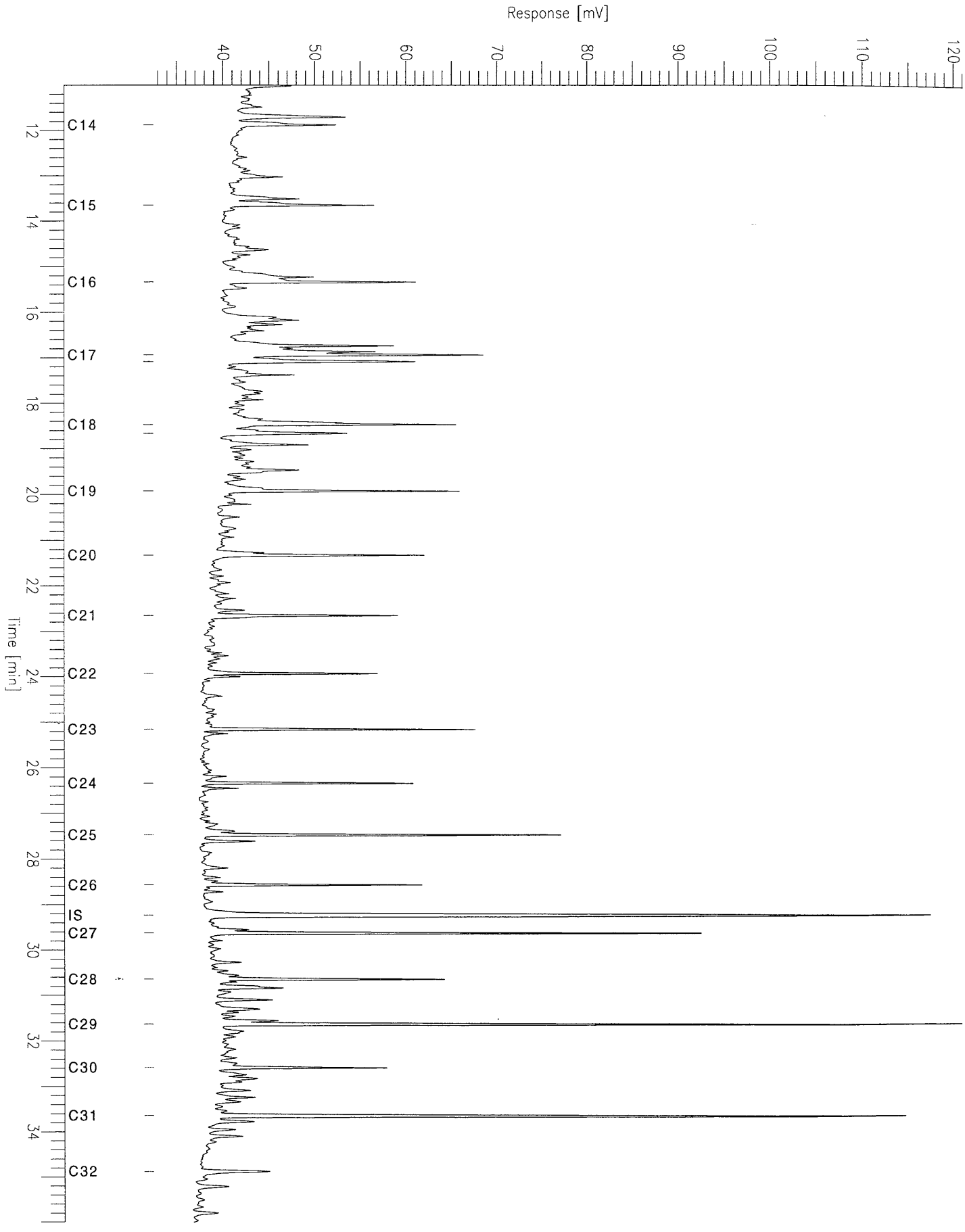
Sample #: Page 1 of 1
Date : 2/2/95 05:29 PM
Time of Injection: 10/11/94 07:26 AM
Low Point : 27.20 mV High Point : 191.77 mV
Plot Scale: 164.6 mV



Rockall Chromatogram

Sample Name : 57-13/31 3.25m
FileName : C:\TC4\HYDROCAR\rc26.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

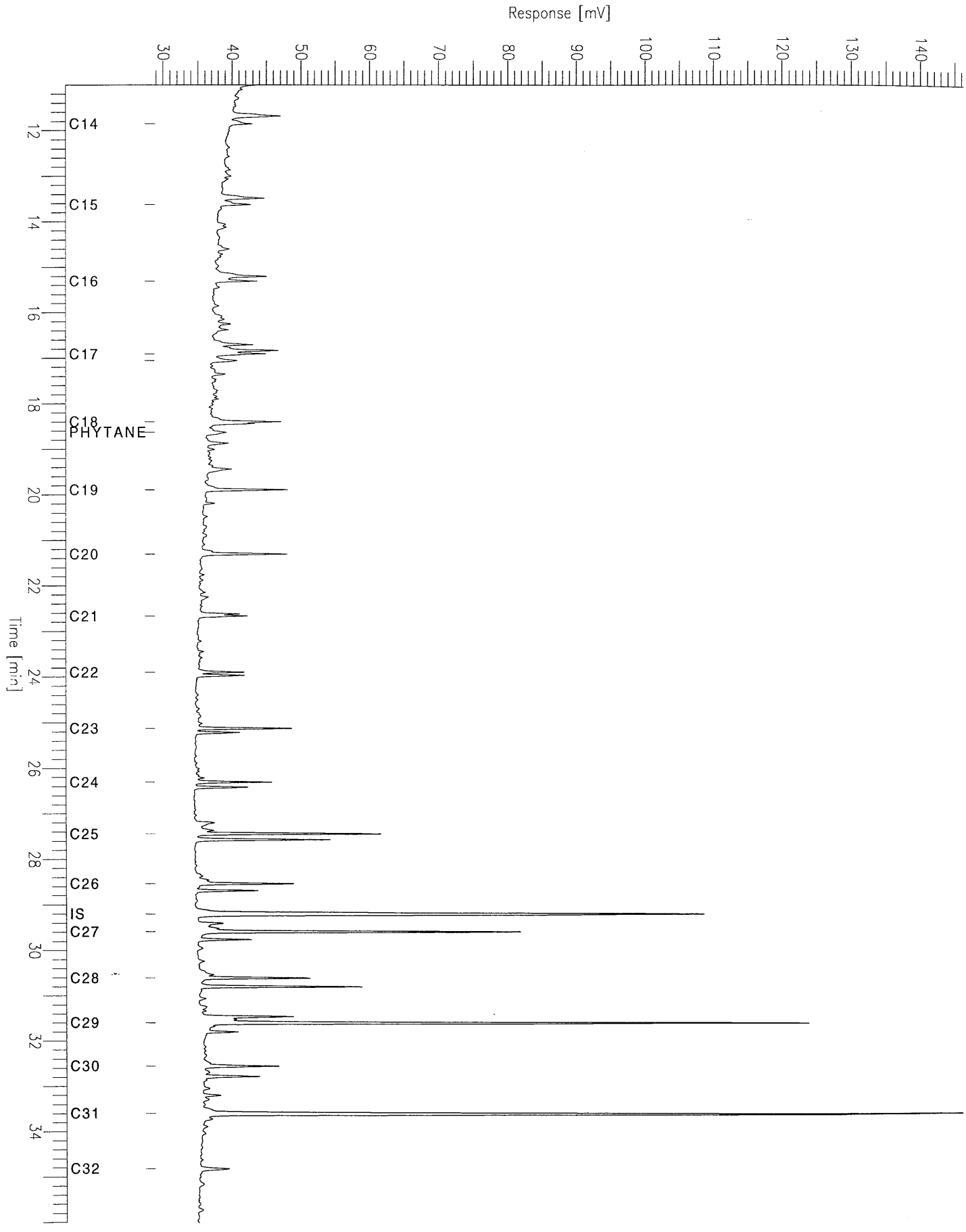
Sample #: Page 1 of 1
Date : 2/2/95 05:29 PM
Time of Injection: 10/11/94 09:16 AM
Low Point : 32.54 mV High Point : 121.05 mV
Plot Scale: 88.5 mV



Rockall Chromatogram

Sample Name : 57-13/32 1.33m
FileName : C:\TC4\HYDROCAR\re39.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

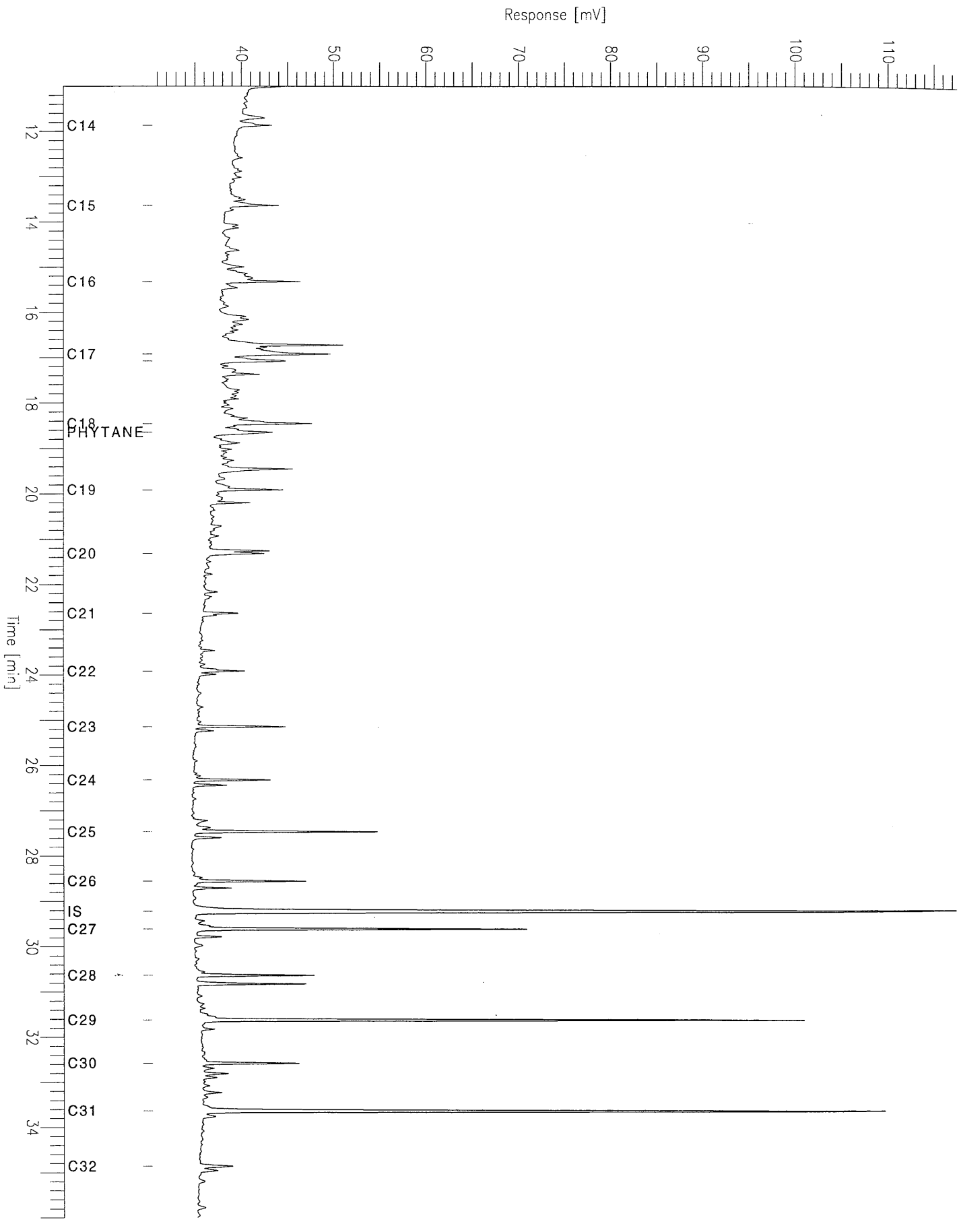
Sample #: Page 1 of 1
Date : 2/6/95 02:36 PM
Time of Injection: 10/15/94 09:17 PM
Low Point : 28.82 mV High Point : 146.23 mV
Plot Scale: 117.4 mV



Rockall Chromatogram

Sample Name : 57-13/32 1.98m
FileName : C:\TC4\HYDROCAR\rc28.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

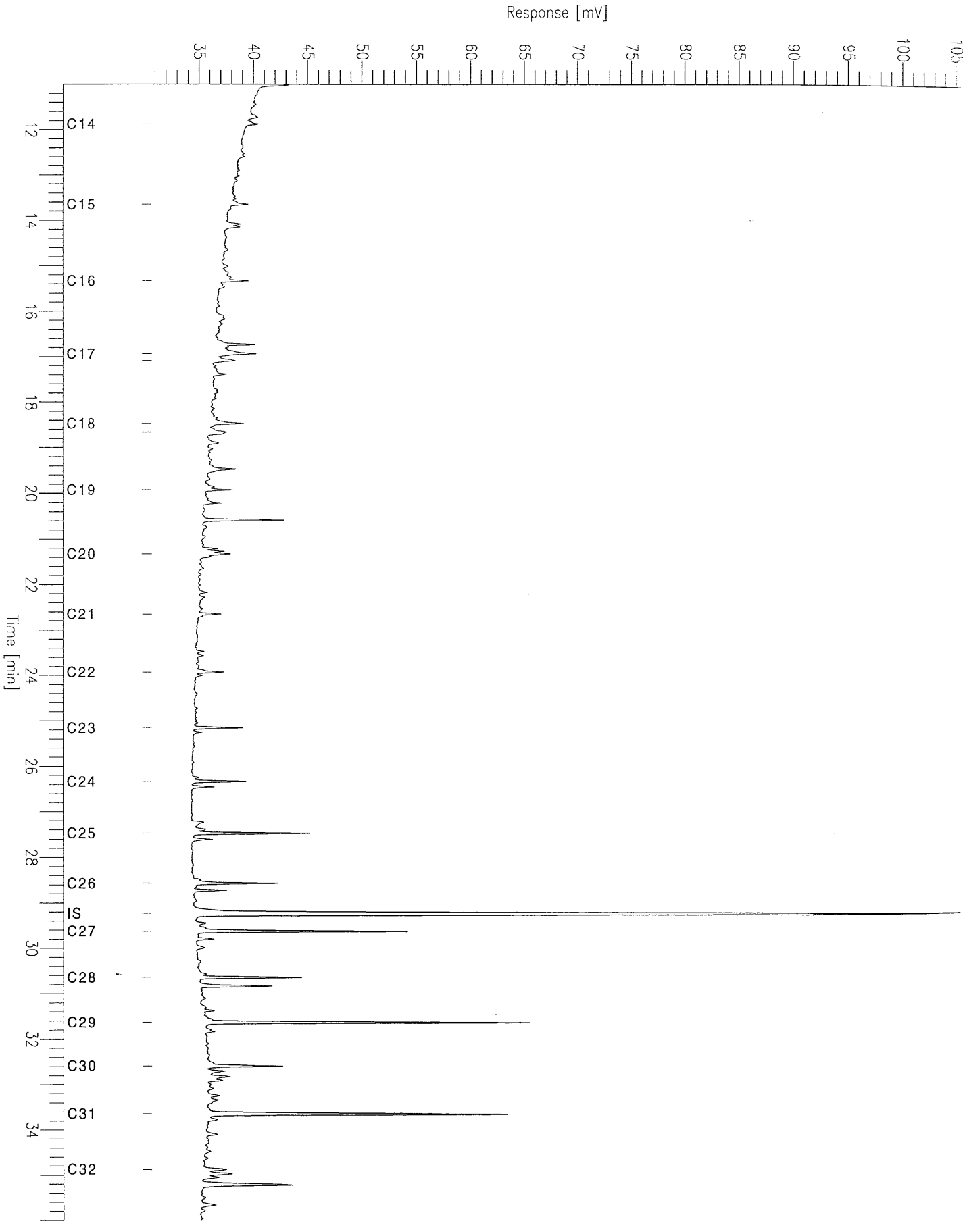
Sample #: Page 1 of 1
Date : 2/2/95 05:30 PM
Time of Injection: 10/11/94 11:07 AM
Low Point : 30.49 mV High Point : 117.48 mV
Plot Scale: 87.0 mV



Rockall Chromatogram

Sample Name : 57-13/34 2.31m
FileName : C:\TC4\HYDROCAR\rc29.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

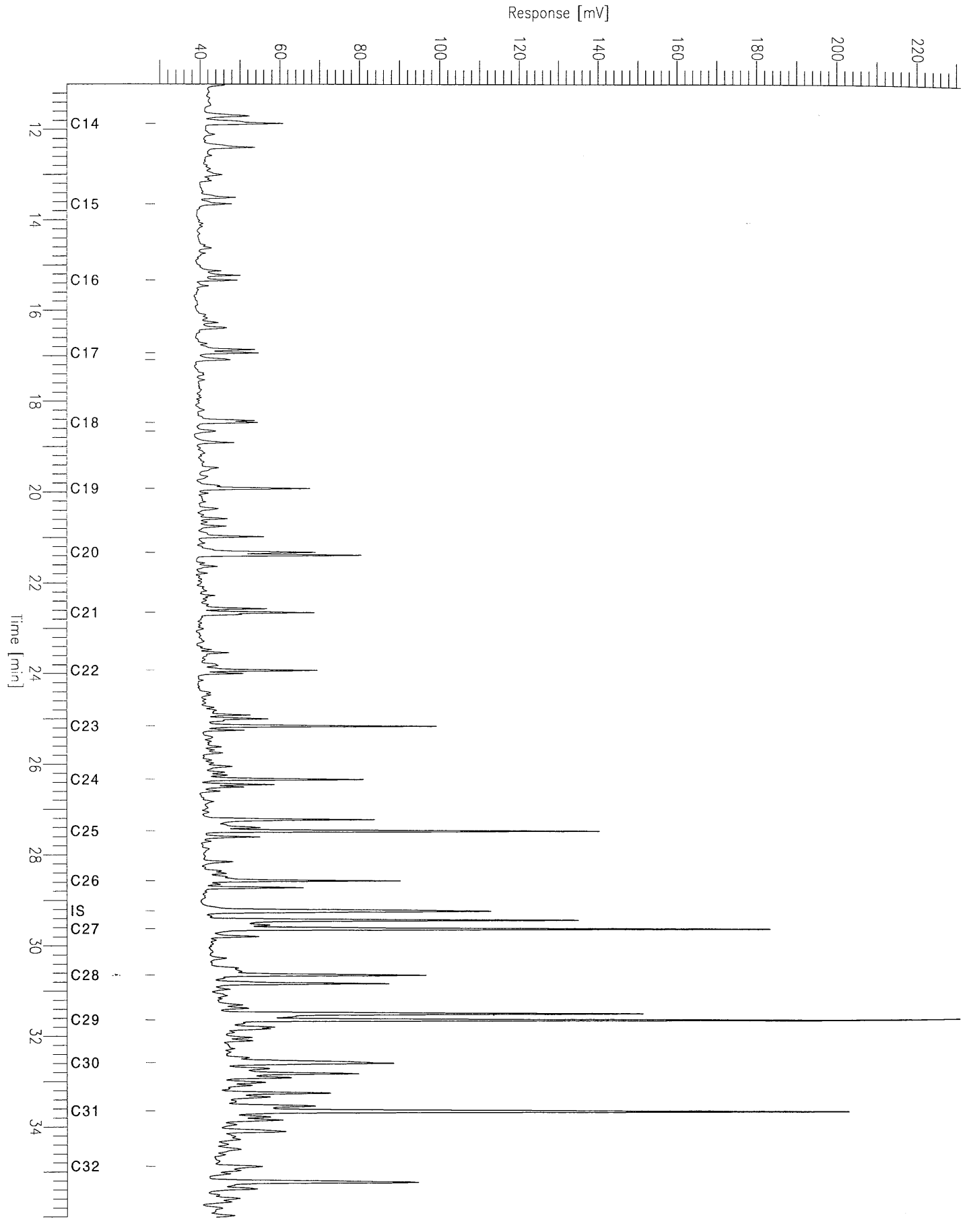
Sample #: Page 1 of 1
Date : 2/2/95 05:31 PM
Time of Injection: 10/11/94 12:02 PM
Low Point : 30.71 mV High Point : 105.41 mV
Plot Scale: 74.7 mV



Rockall Chromatogram

Sample Name : 57-13/34 2.96m
FileName : C:\TC4\HYDROCAR\rc30.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

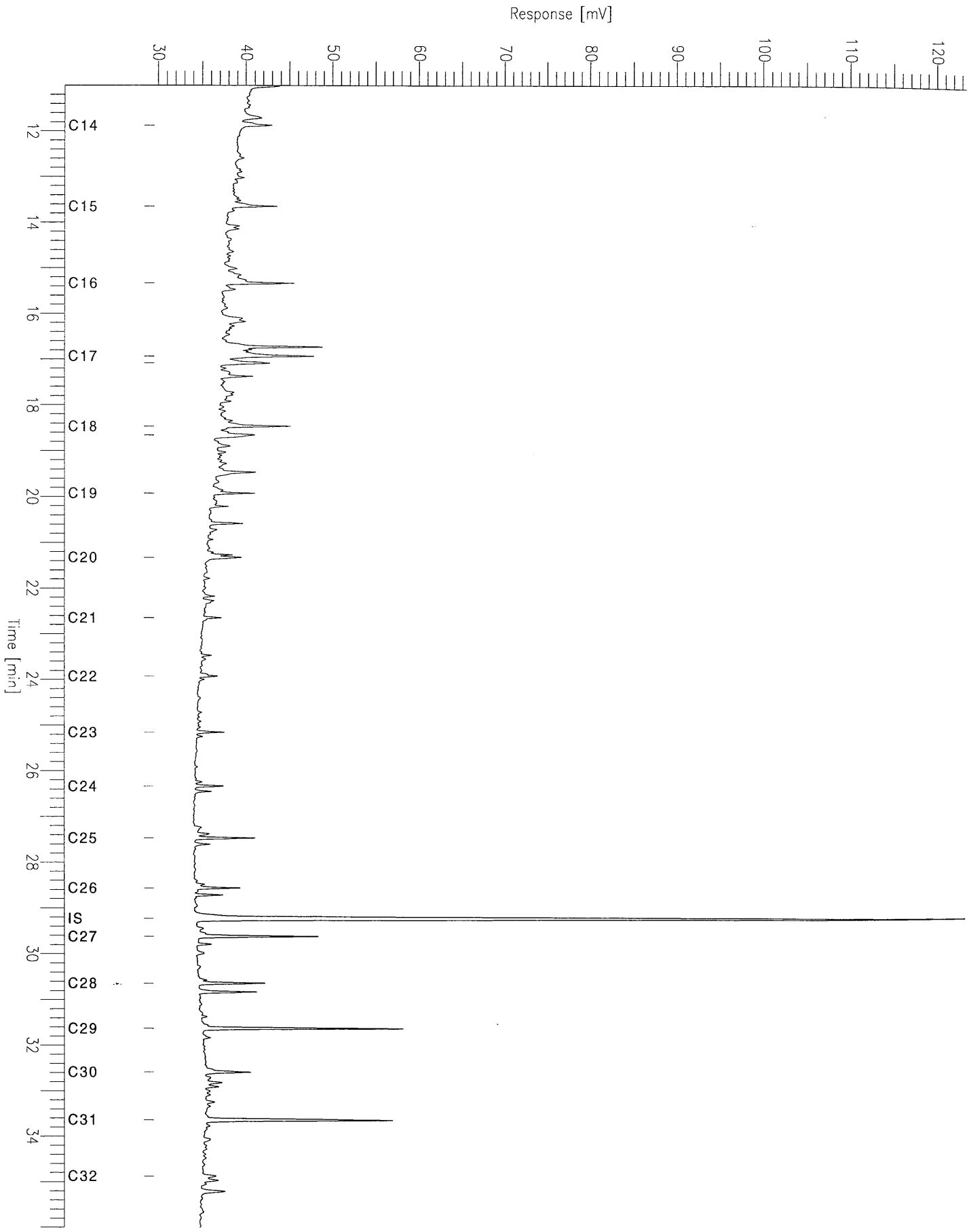
Sample #: Page 1 of 1
Date : 2/2/95 05:31 PM
Time of Injection: 10/11/94 12:57 PM
Low Point : 28.97 mV High Point : 230.94 mV
Plot Scale: 202.0 mV



Rockall Chromatogram

Sample Name : 57-13/35 2.19m
FileName : C:\TC4\HYDROCAR\rc31.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

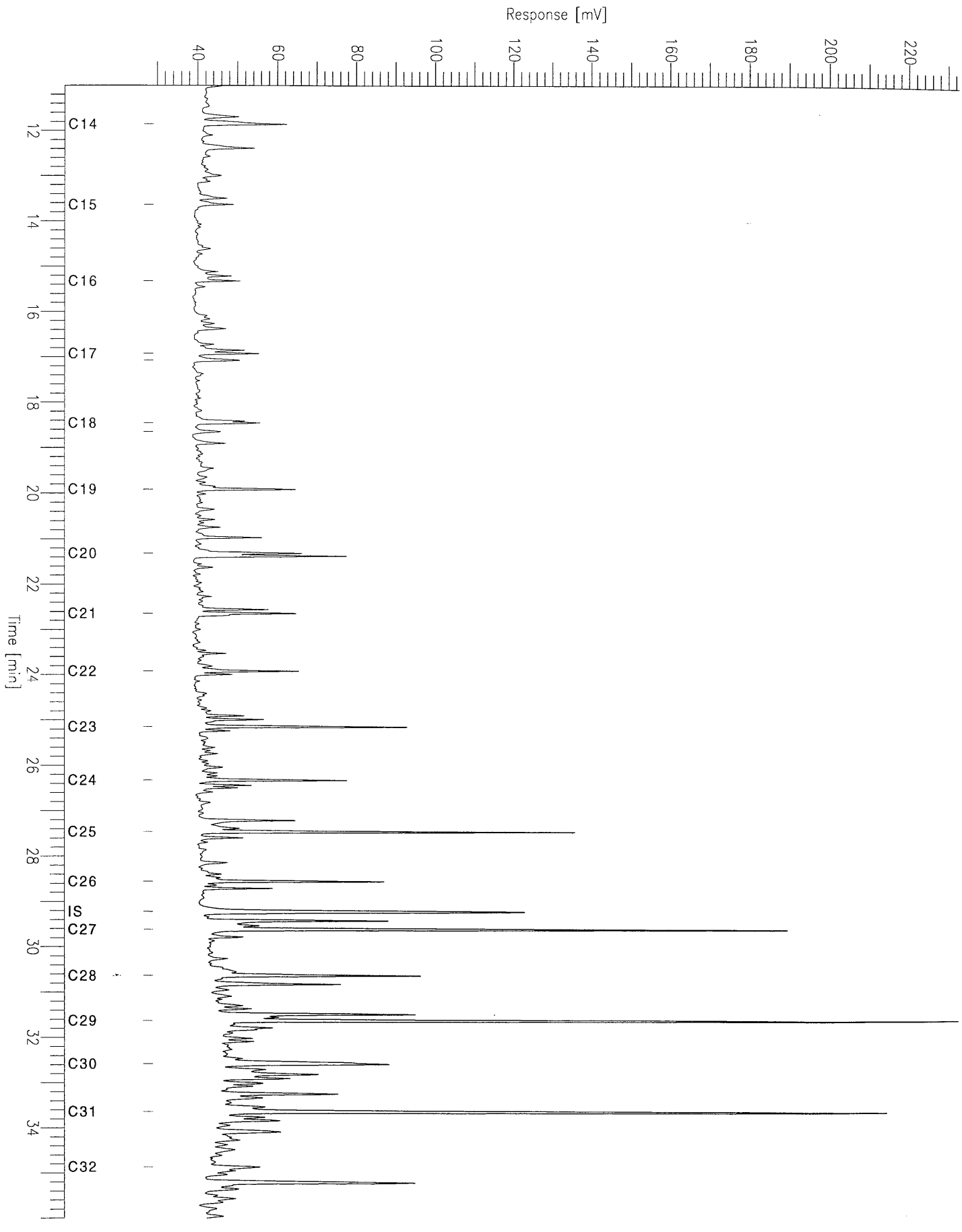
Sample #: Page 1 of 1
Date : 2/2/95 05:31 PM
Time of Injection: 10/11/94 01:52 PM
Low Point : 29.58 mV High Point : 123.39 mV
Plot Scale: 93.8 mV



Rockall Chromatogram

Sample Name : 57-13/35 2.84m
FileName : C:\TC4\HYDROCAR\rc32.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

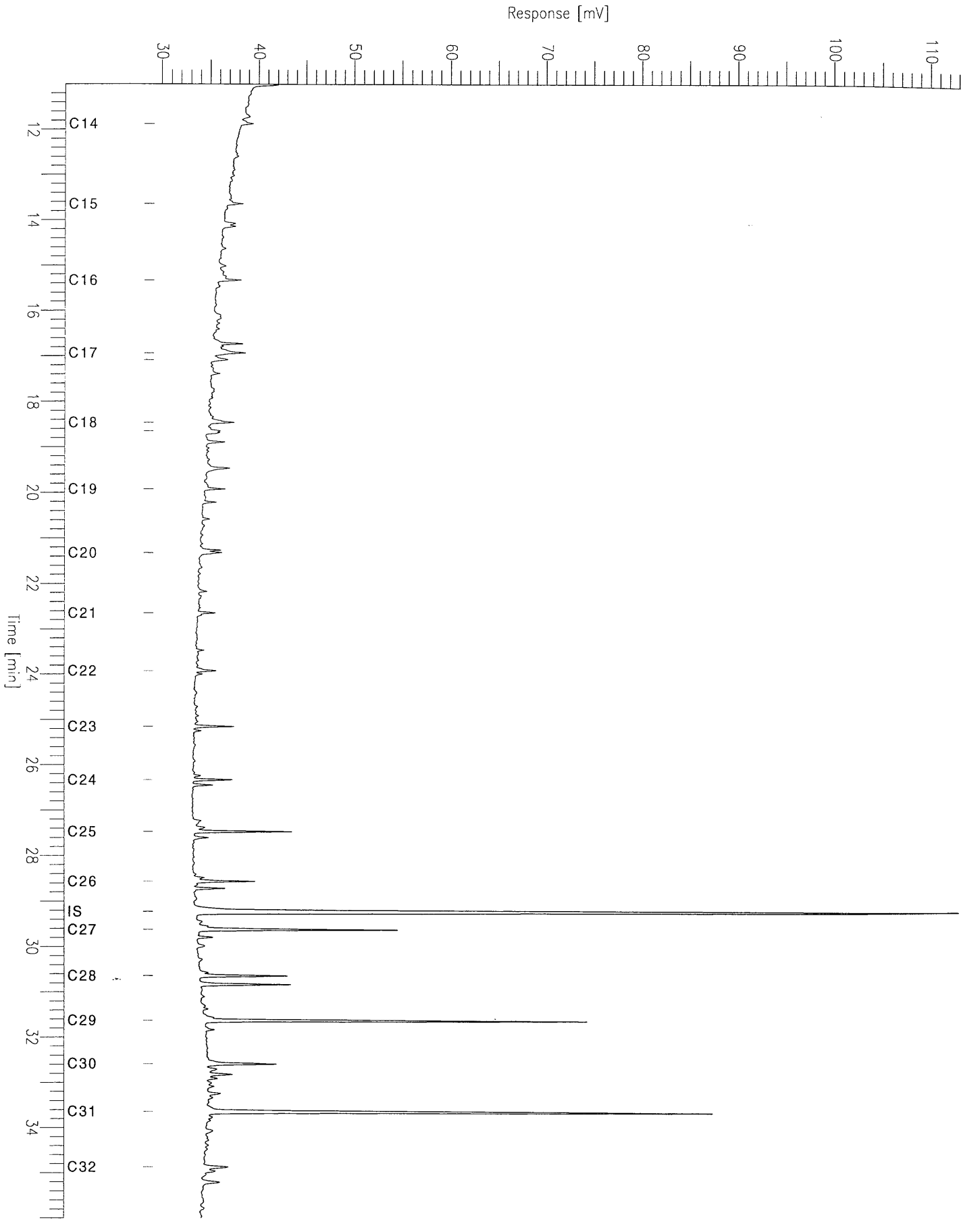
Sample #: Page 1 of 1
Date : 2/2/95 05:32 PM
Time of Injection: 10/11/94 02:47 PM
Low Point : 29.13 mV High Point : 232.60 mV
Plot Scale: 203.5 mV



Rockall Chromatogram

Sample Name : 57-13/39 1.30m
FileName : C:\TC4\HYDROCAR\rc33.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

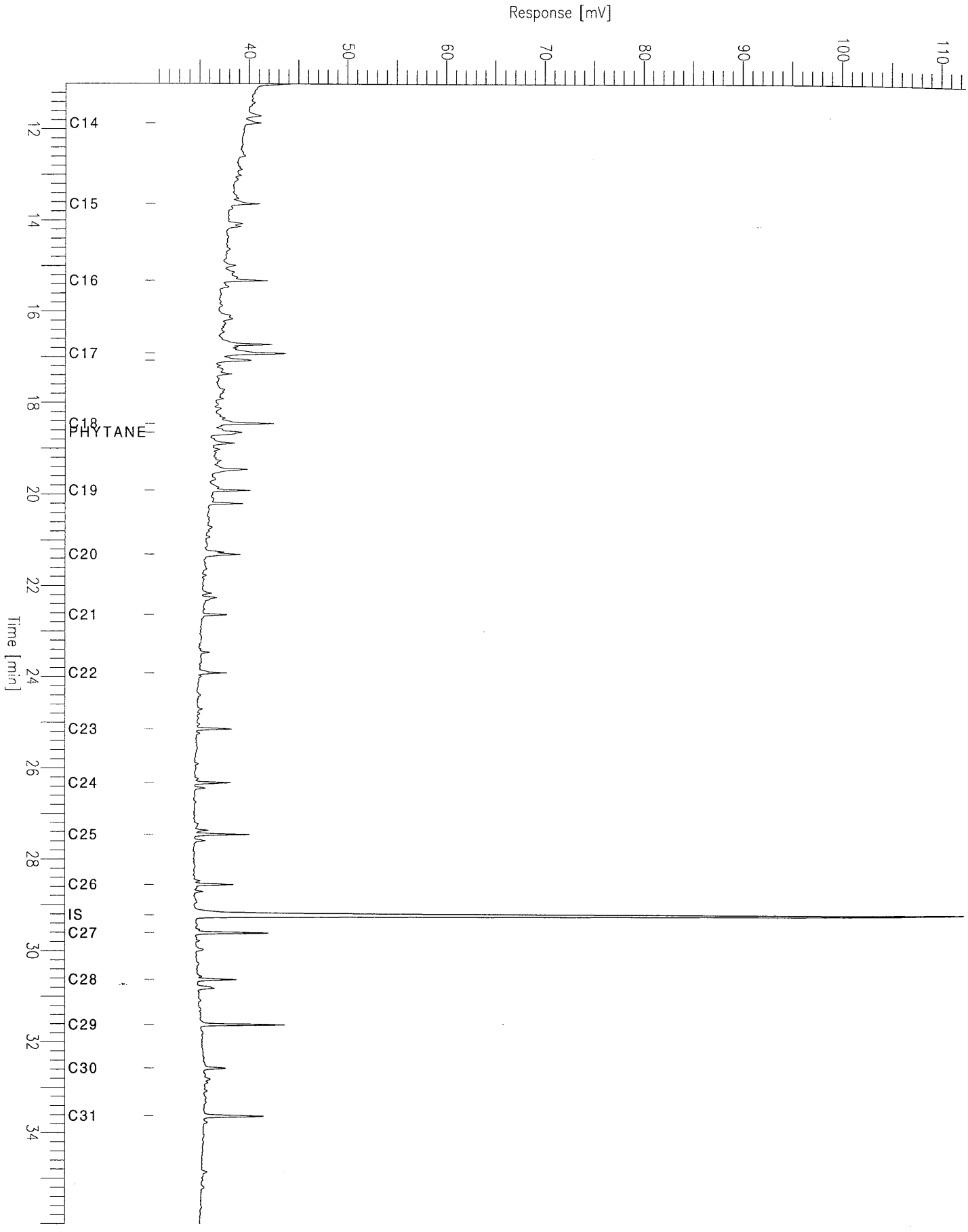
Sample #: Page 1 of 1
Date : 2/2/95 05:32 PM
Time of Injection: 10/11/94 03:42 PM
Low Point : 29.22 mV High Point : 113.06 mV
Plot Scale: 83.8 mV



Rockall Chromatogram

Sample Name : 57-13/39 1.95m
FileName : C:\TC4\HYDROCAR\rc34.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

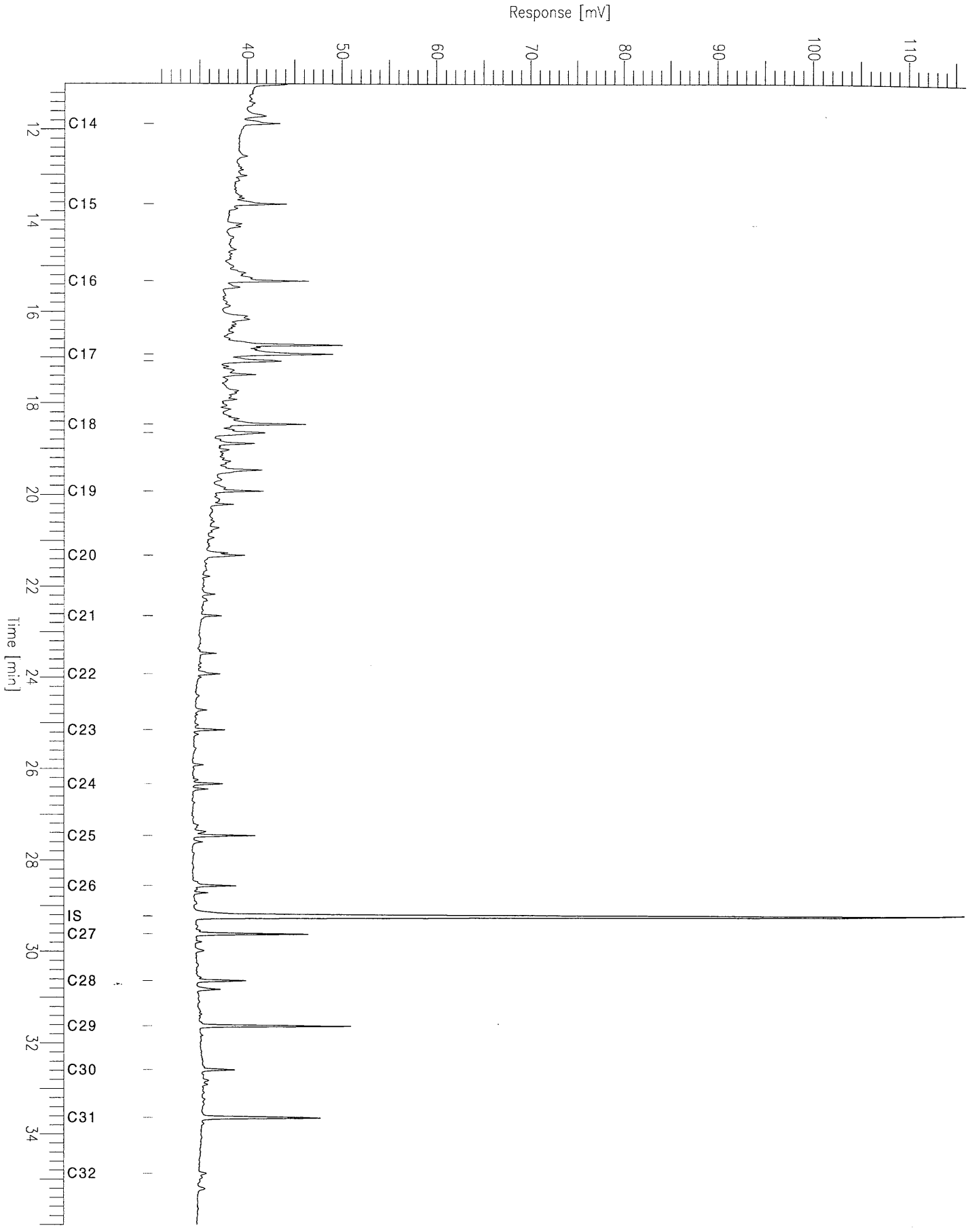
Sample #: Page 1 of 1
Date : 2/2/95 05:33 PM
Time of Injection: 10/11/94 04:37 PM
Low Point : 30.62 mV High Point : 112.38 mV
Plot Scale: 81.8 mV



Rockall Chromatogram

Sample Name : 57-13/41 1.05m
FileName : C:\TC4\HYDROCAR\rc35.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

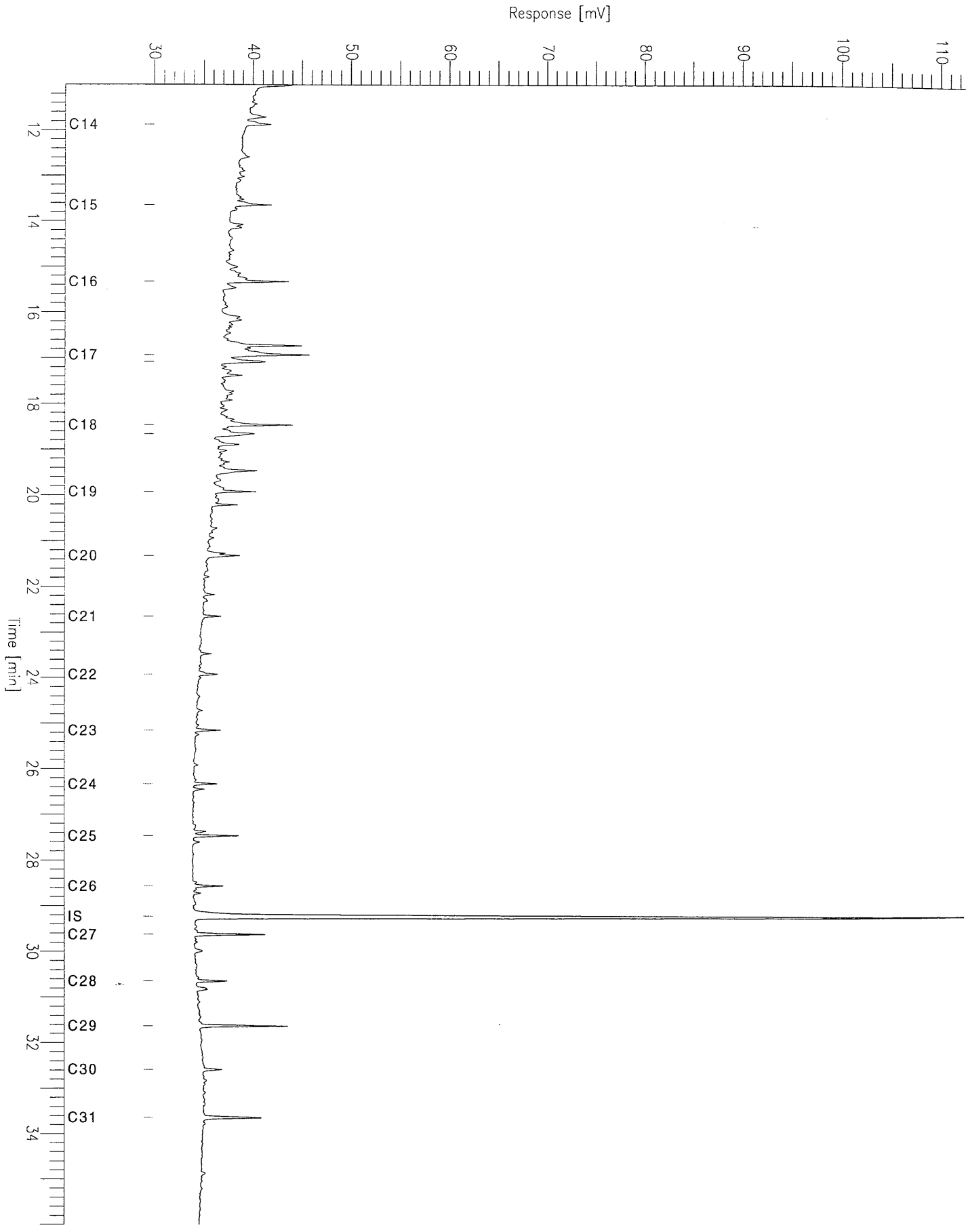
Sample #: Page 1 of 1
Date : 2/2/95 05:33 PM
Time of Injection: 10/11/94 05:32 PM
Low Point : 30.22 mV High Point : 115.98 mV
Plot Scale: 85.8 mV



Rockall Chromatogram

Sample Name : 57-13/41 1.60m
FileName : C:\TC4\HYDROCAR\rc36.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

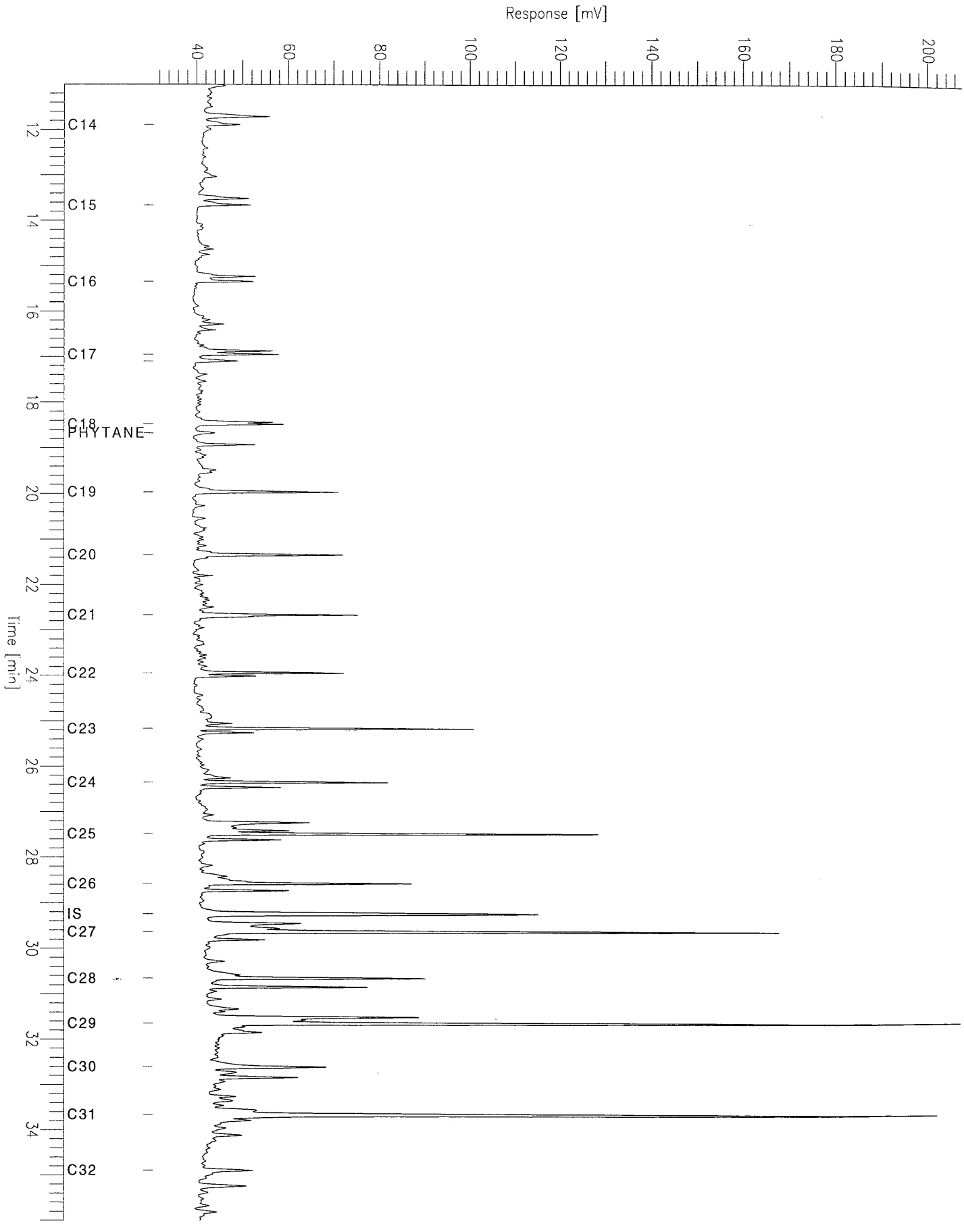
Sample #: Page 1 of 1
Date : 2/2/95 05:33 PM
Time of Injection: 10/11/94 06:28 PM
Low Point : 30.00 mV High Point : 112.45 mV
Plot Scale: 82.5 mV



Rockall Chromatogram

Sample Name : 57-13/46 0.63m
FileName : C:\TC4\HYDROCAR\rb37.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

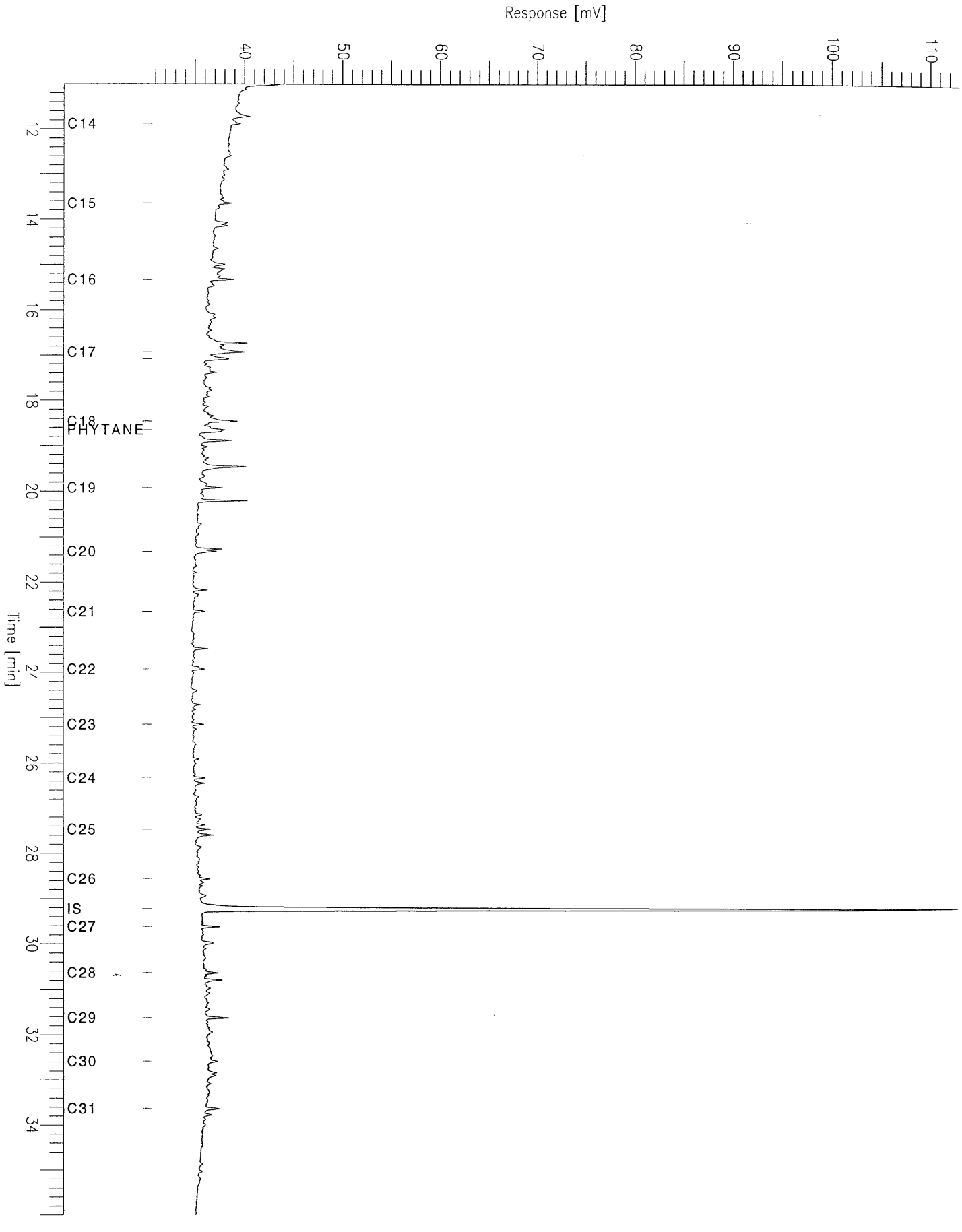
Sample #: Page 1 of 1
Date : 2/2/95 05:34 PM
Time of Injection: 10/8/94 08:30 PM
Low Point : 30.70 mV High Point : 207.47 mV
Plot Scale: 176.8 mV



Rockall Chromatogram

Sample Name : 57-13/46 1.28m
FileName : C:\TC4\HYDROCAR\rc38.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

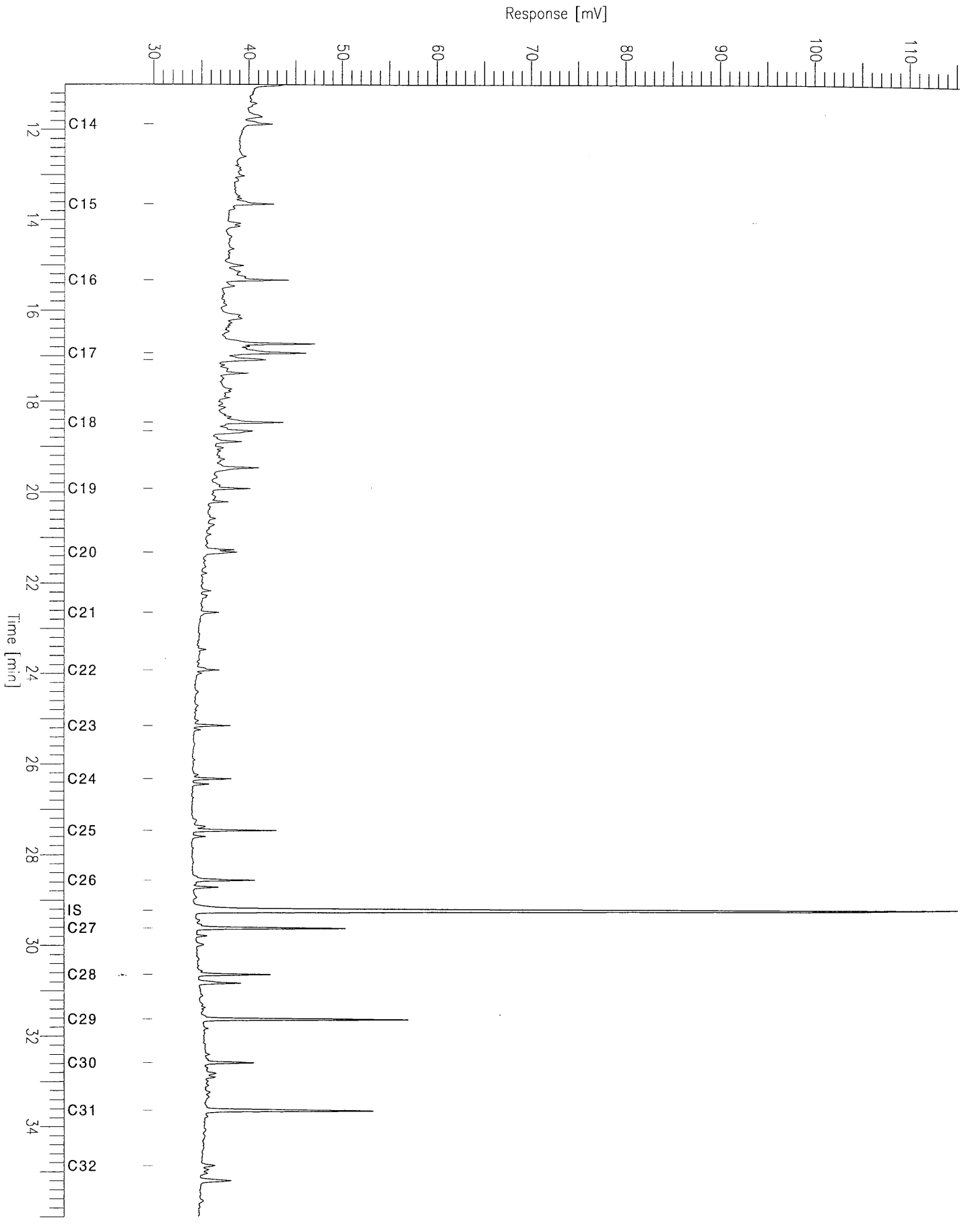
Sample #: Page 1 of 1
Date : 2/2/95 05:34 PM
Time of Injection: 10/11/94 08:17 PM
Low Point : 30.70 mV High Point : 112.92 mV
Plot Scale: 82.2 mV



Rockall Chromatogram

Sample Name : 57-13/47 1.10m
FileName : C:\TC4\HYDROCAR\rc39.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

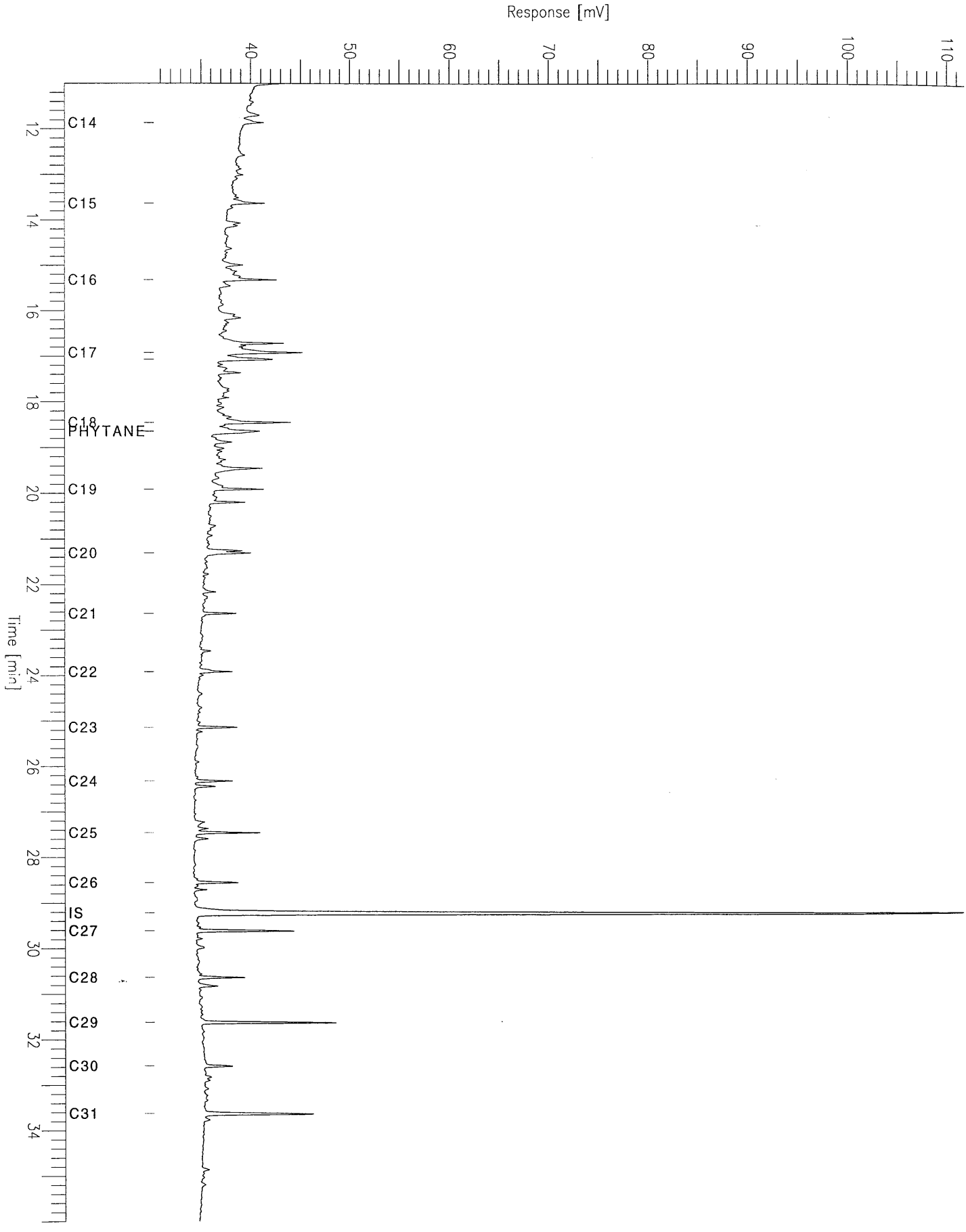
Sample #: Page 1 of 1
Date : 2/2/95 05:34 PM
Time of Injection: 10/11/94 09:12 PM
Low Point : 29.99 mV High Point : 115.20 mV
Plot Scale: 85.2 mV



Rockall Chromatogram

Sample Name : 57-13/47 1.75m
FileName : C:\TC4\HYDROCAR\rc40.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

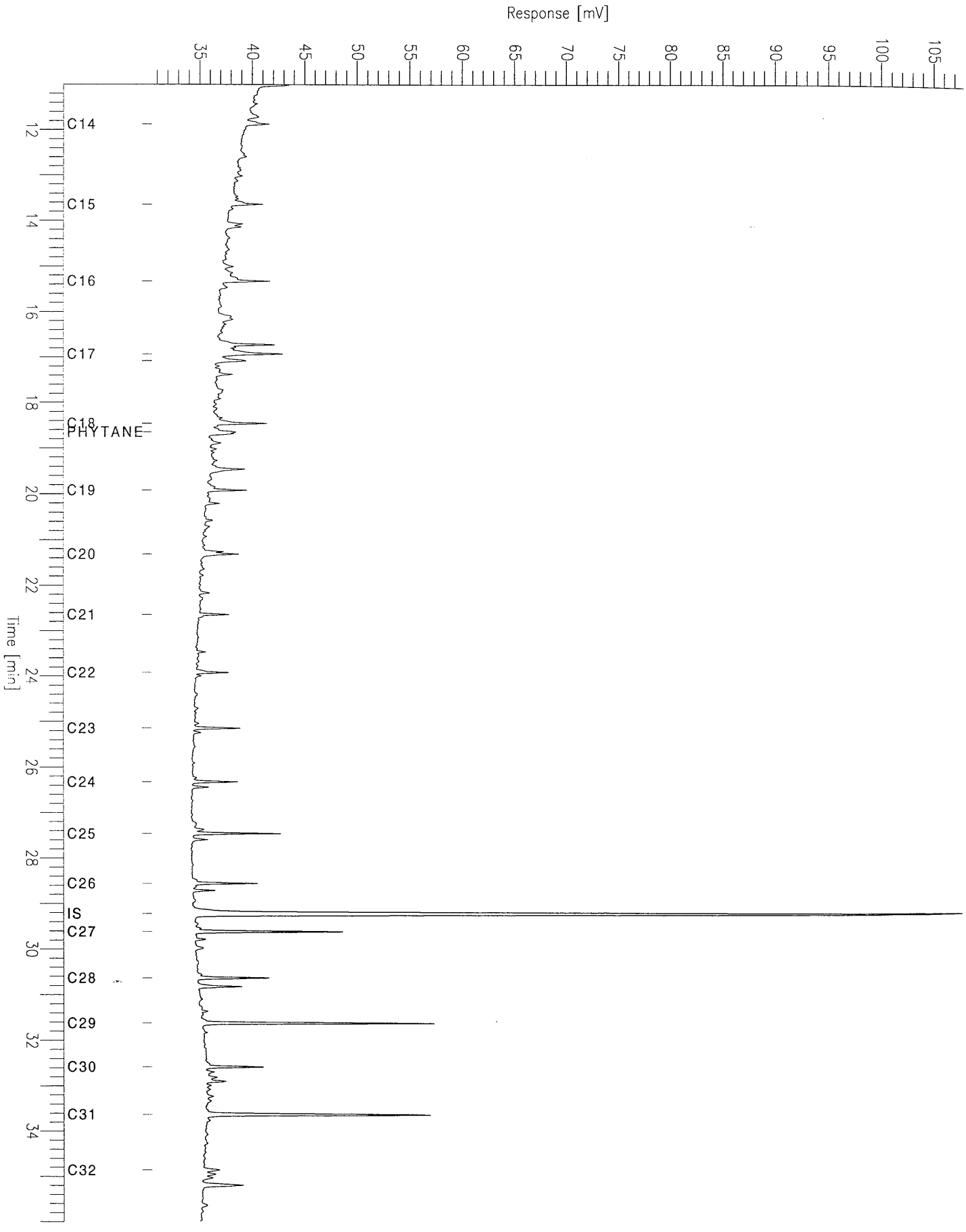
Sample #: Page 1 of 1
Date : 2/2/95 05:35 PM
Time of Injection: 10/11/94 10:07 PM
Low Point : 30.33 mV High Point : 111.71 mV
Plot Scale: 81.4 mV



Rockall Chromatogram

Sample Name : 57-13/48 0.95m
FileName : C:\TC4\HYDROCAR\rc41.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

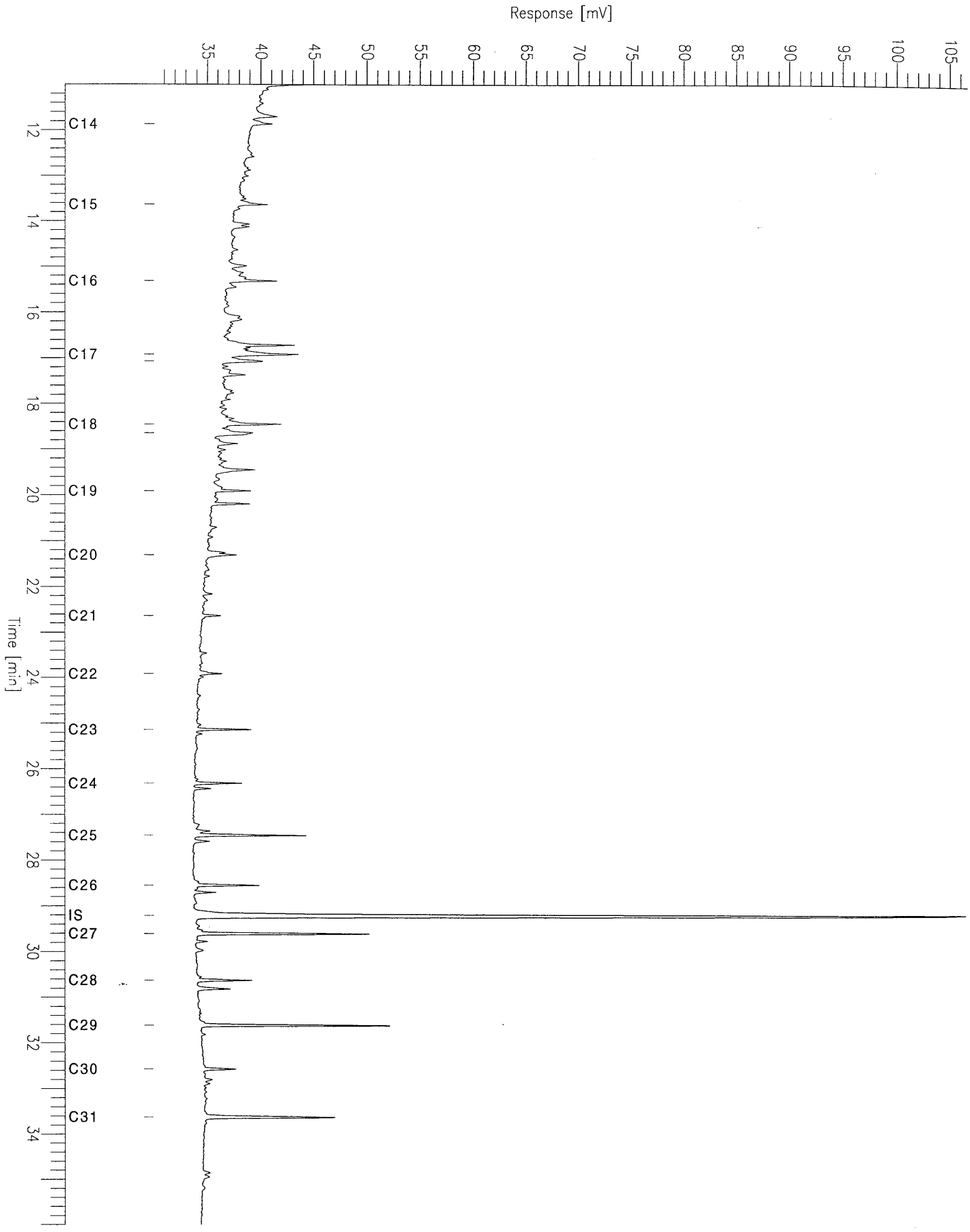
Sample #: Page 1 of 1
Date : 2/2/95 05:35 PM
Time of Injection: 10/11/94 11:03 PM
Low Point : 30.51 mV High Point : 107.80 mV
Plot Scale: 77.3 mV



Rockall Chromatogram

Sample Name : 57-13/48 1.60m
FileName : C:\TC4\HYDROCAR\rc42.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

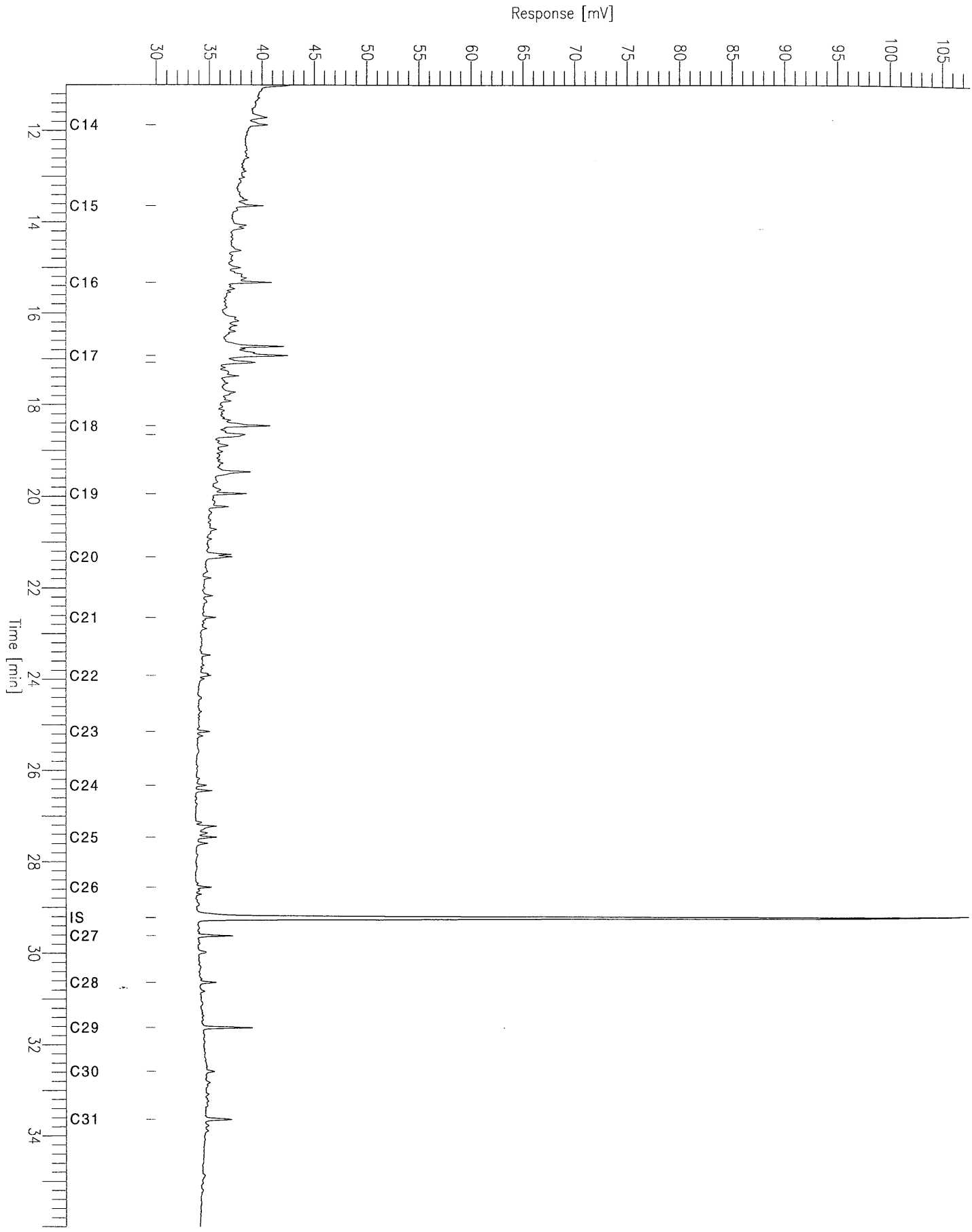
Sample #: Page 1 of 1
Date : 2/2/95 05:35 PM
Time of Injection: 10/11/94 11:58 PM
Low Point : 30.05 mV High Point : 106.59 mV
Plot Scale: 76.5 mV



Rockall Chromatogram

Sample Name : 57-13/49 0.92m
FileName : C:\TC4\HYDROCAR\rc43.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

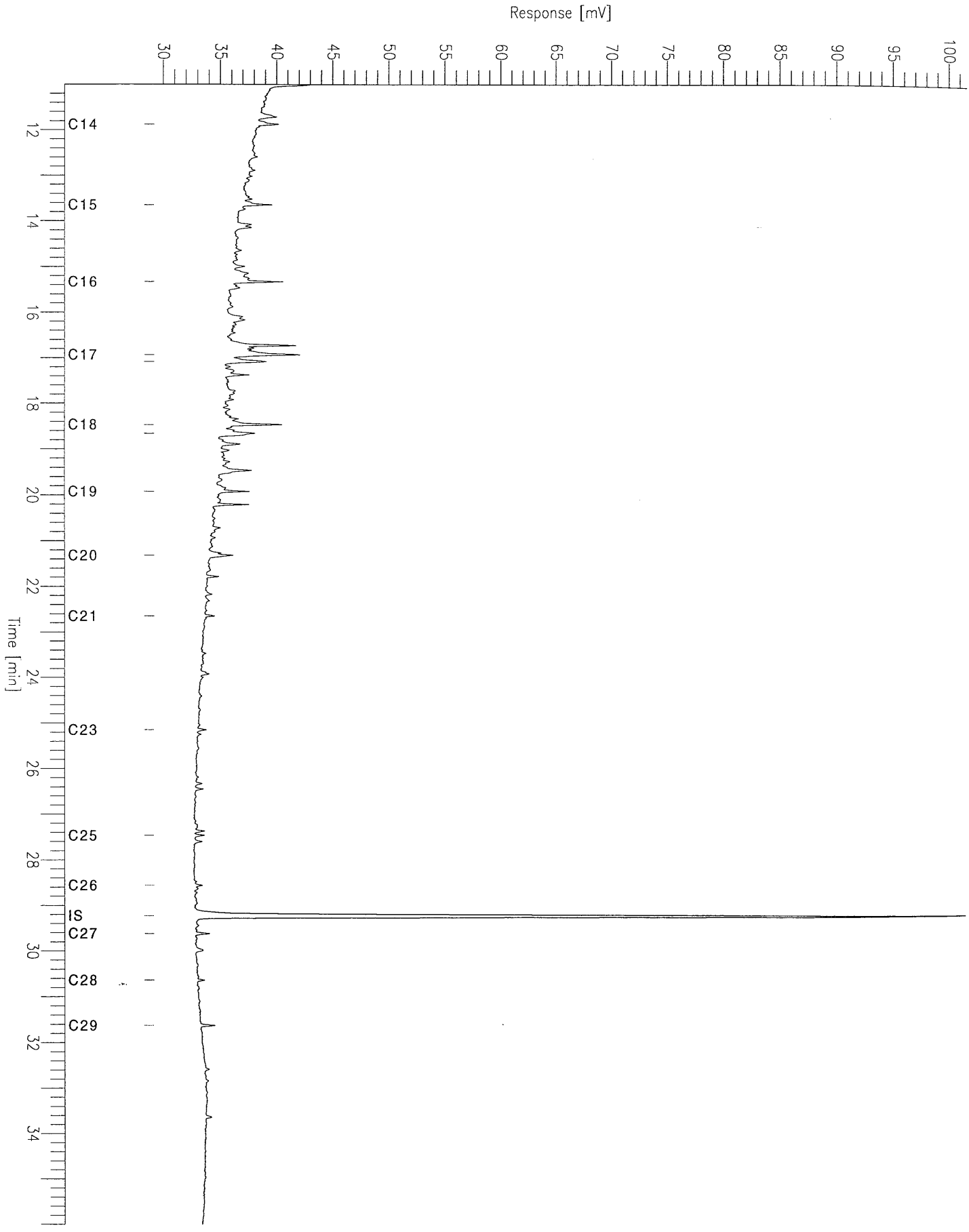
Sample #: Page 1 of 1
Date : 2/2/95 05:36 PM
Time of Injection: 10/12/94 12:53 AM
Low Point : 29.98 mV High Point : 107.61 mV
Plot Scale: 77.6 mV



Rockall Chromatogram

Sample Name : 57-13/49 1.57m
FileName : C:\TC4\HYDROCAR\rc44.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

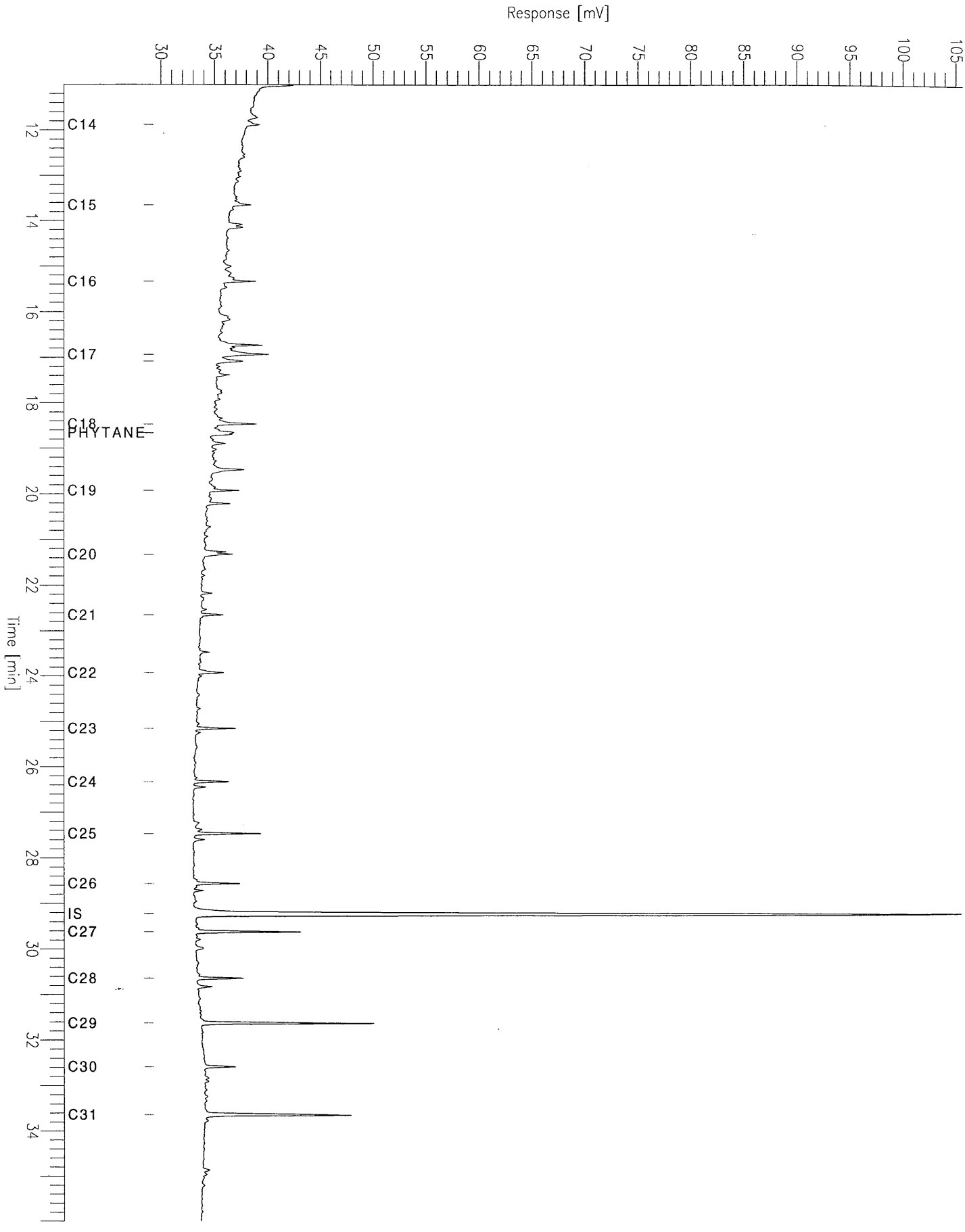
Sample #: Page 1 of 1
Date : 2/2/95 05:36 PM
Time of Injection: 10/12/94 01:47 AM
Low Point : 29.21 mV High Point : 101.57 mV
Plot Scale: 72.4 mV



Rockall Chromatogram

Sample Name : 57-13/50 1.60m
FileName : C:\TC4\HYDROCAR\rc45.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

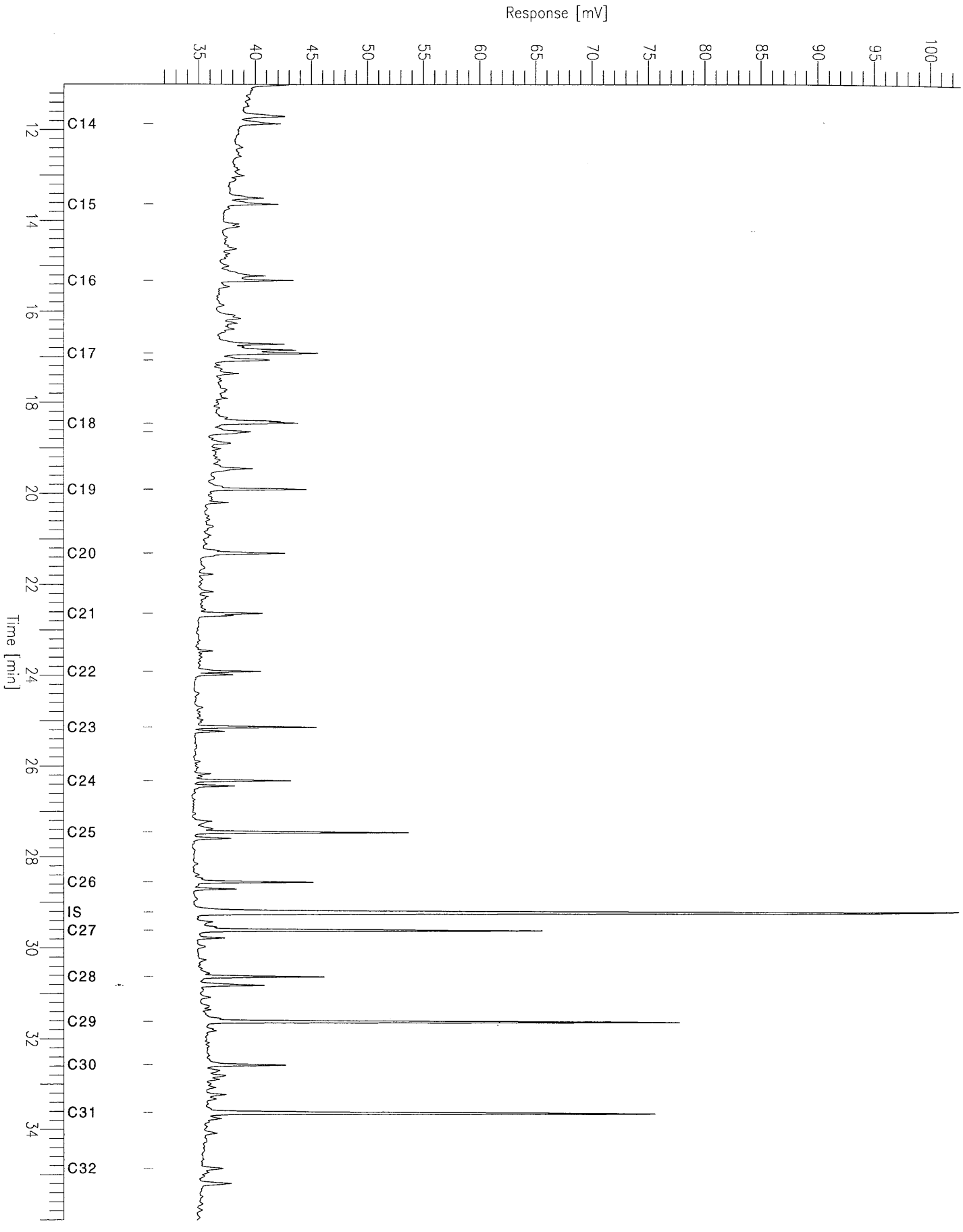
Sample #: Page 1 of 1
Date : 2/2/95 05:37 PM
Time of Injection: 10/12/94 02:42 AM
Low Point : 29.33 mV High Point : 105.61 mV
Plot Scale: 76.3 mV



Rockall Chromatogram

Sample Name : 57-13/50 2.25m
FileName : C:\TC4\HYDROCAR\rc46.raw
Method : RK
Start Time : 11.00 min
End Time : 36.00 min
Scale Factor: 1.0
Plot Offset: 31 mV

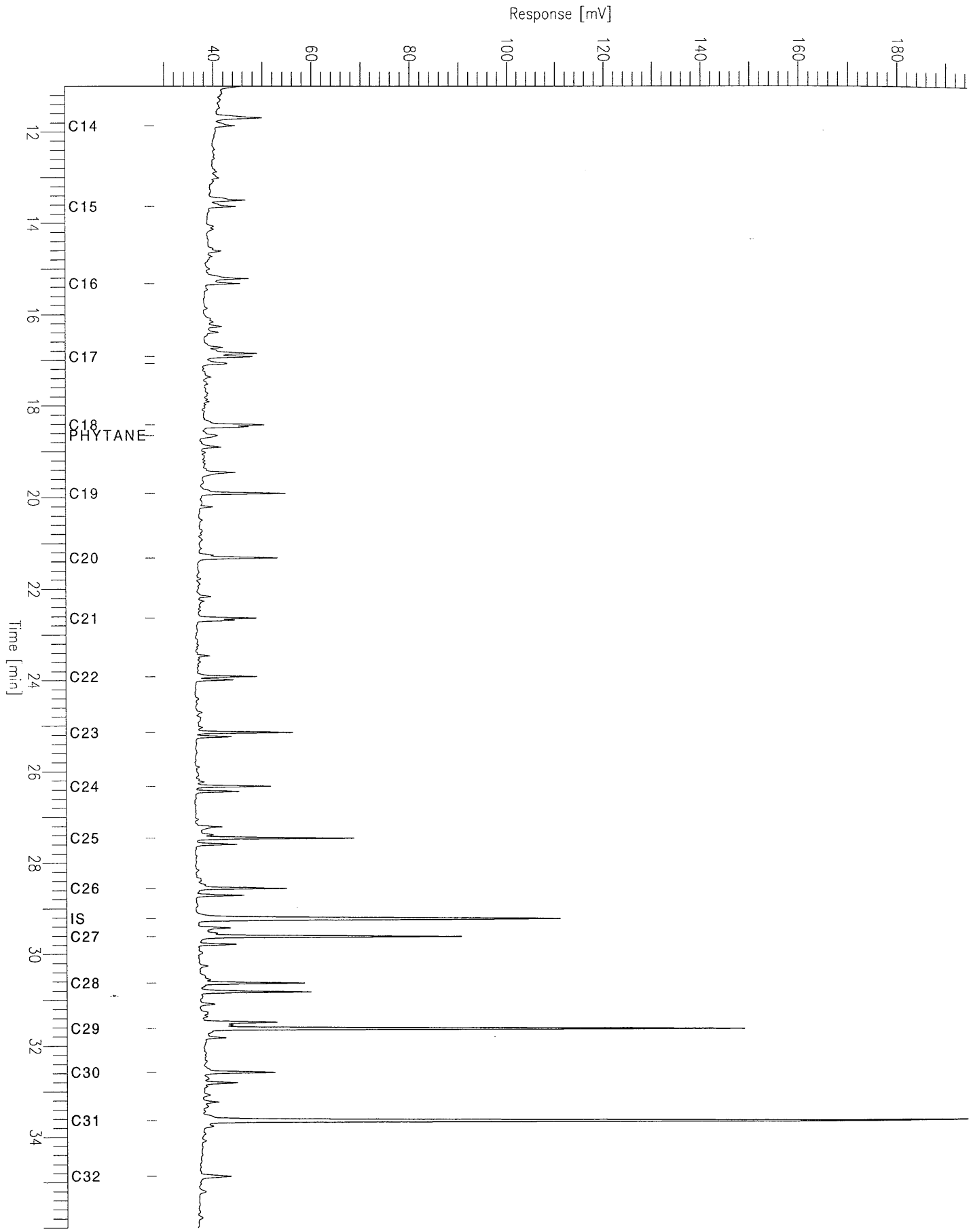
Sample #:
Date : 2/2/95 05:37 PM
Time of Injection: 10/12/94 03:37 AM
Low Point : 31.02 mV
High Point : 102.66 mV
Plot Scale: 71.6 mV



Rockall Chromatogram

Sample Name : 57-13/51 2.70m
FileName : C:\TC4\HYDROCAR\rc47.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

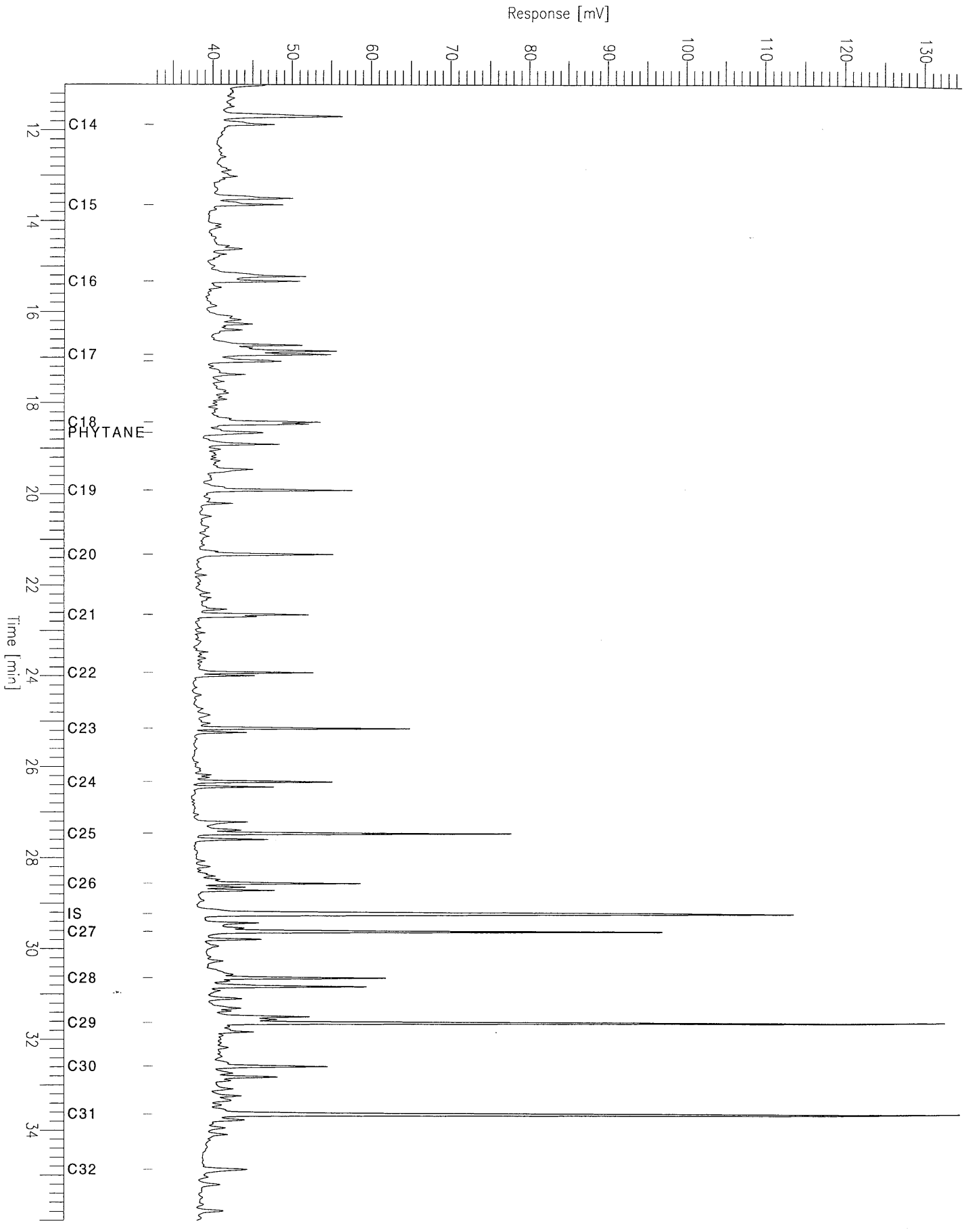
Sample #:
Date : 2/2/95 05:37 PM
Time of Injection: 10/12/94 04:33 AM
Low Point : 28.04 mV High Point : 194.40 mV
Plot Scale: 166.4 mV



Rockall Chromatogram

Sample Name : 57-13/51 3.35m
FileName : C:\TC4\HYDROCAR\rc48.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

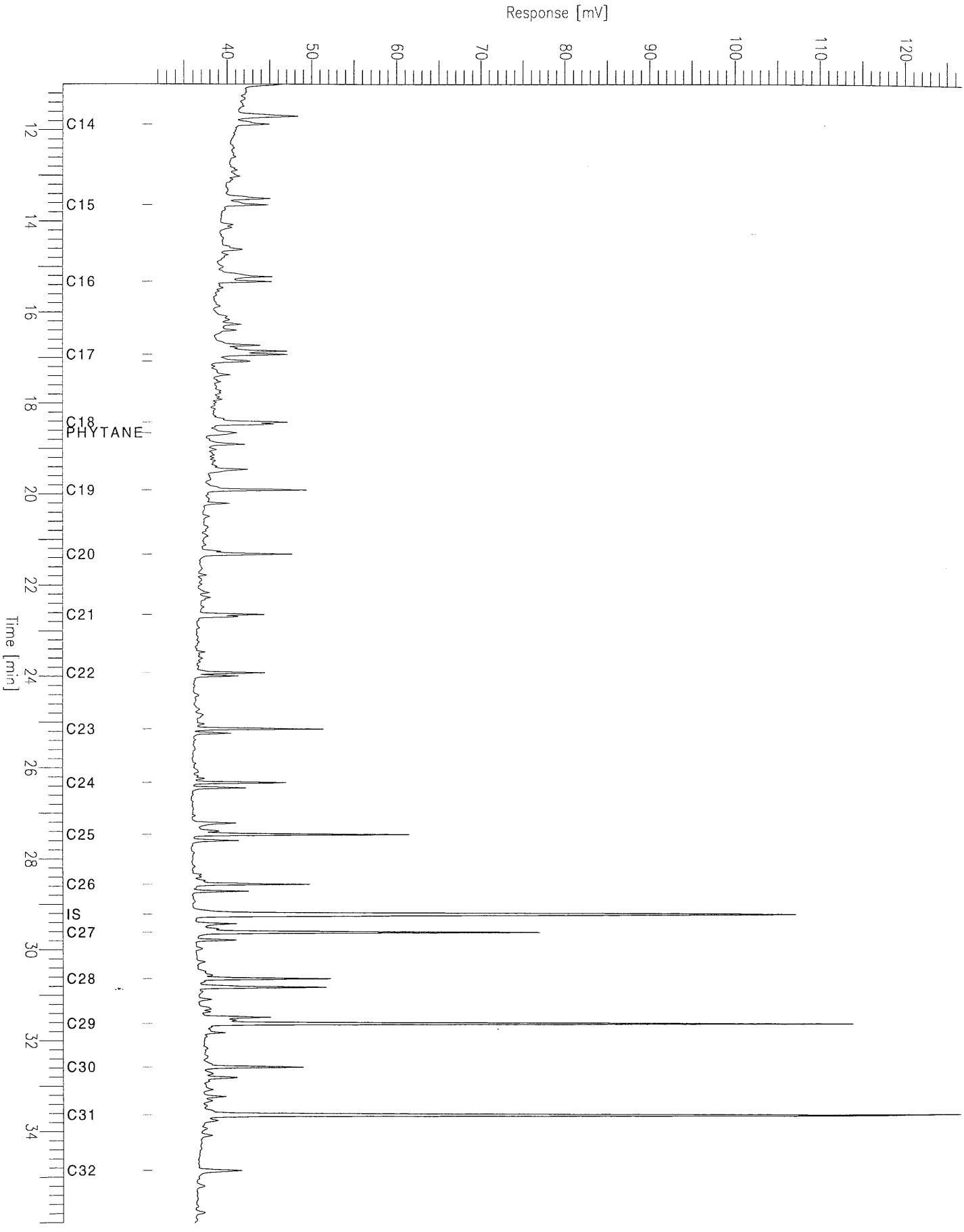
Sample #: Page 1 of 1
Date : 2/2/95 05:38 PM
Time of Injection: 10/12/94 05:28 AM
Low Point : 32.58 mV High Point : 134.61 mV
Plot Scale: 102.0 mV



Rockall Chromatogram

Sample Name : 57-13/55 2.55m
FileName : C:\TC4\HYDROCAR\rd5.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

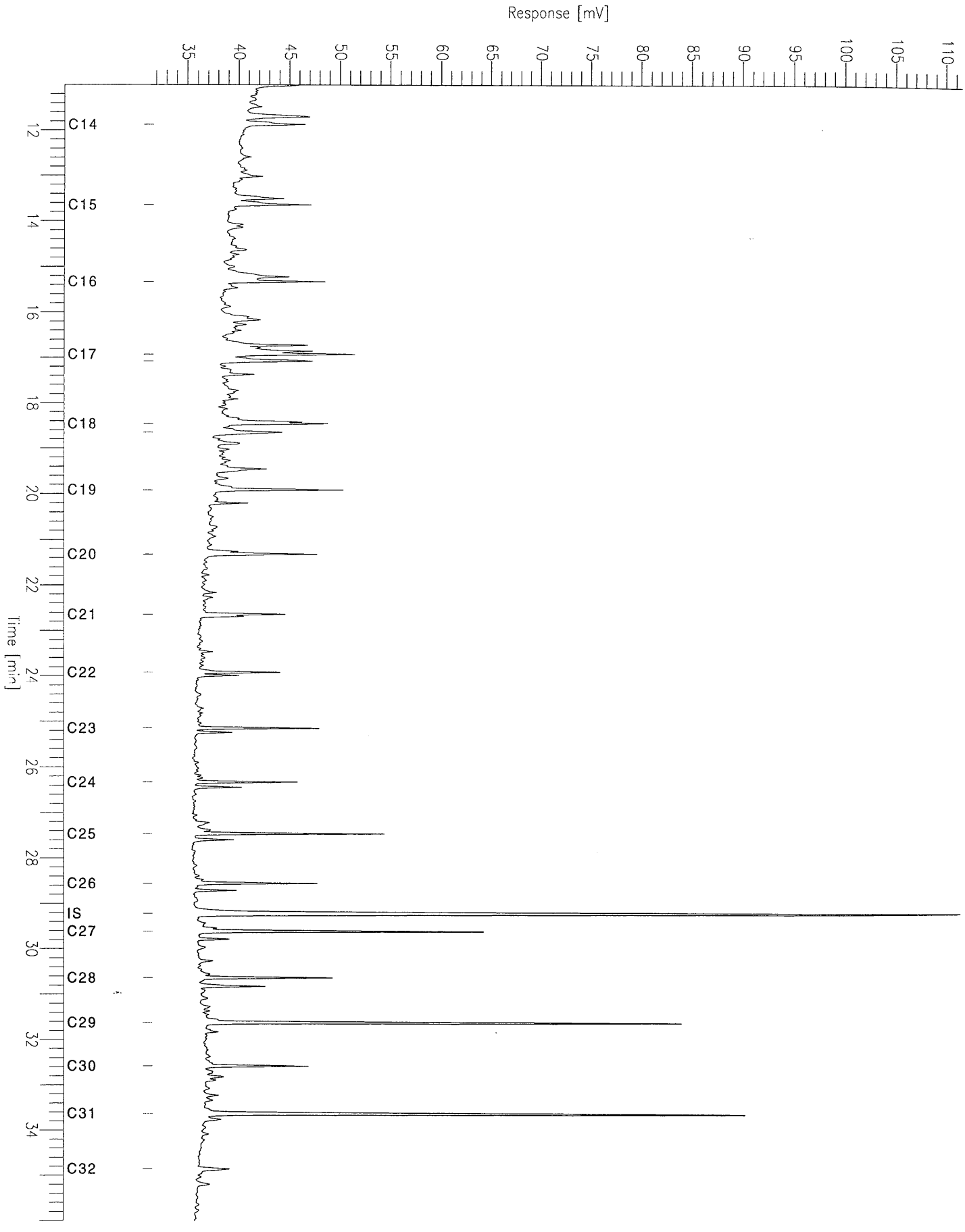
Sample #: Page 1 of 1
Date : 3/7/95 03:01 PM
Time of Injection: 10/12/94 01:56 PM
Low Point : 31.35 mV High Point : 126.70 mV
Plot Scale: 95.4 mV



Rockall Chromatogram

Sample Name : 57-13/55 3.15m
FileName : C:\TC4\HYDROCAR\RD6.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

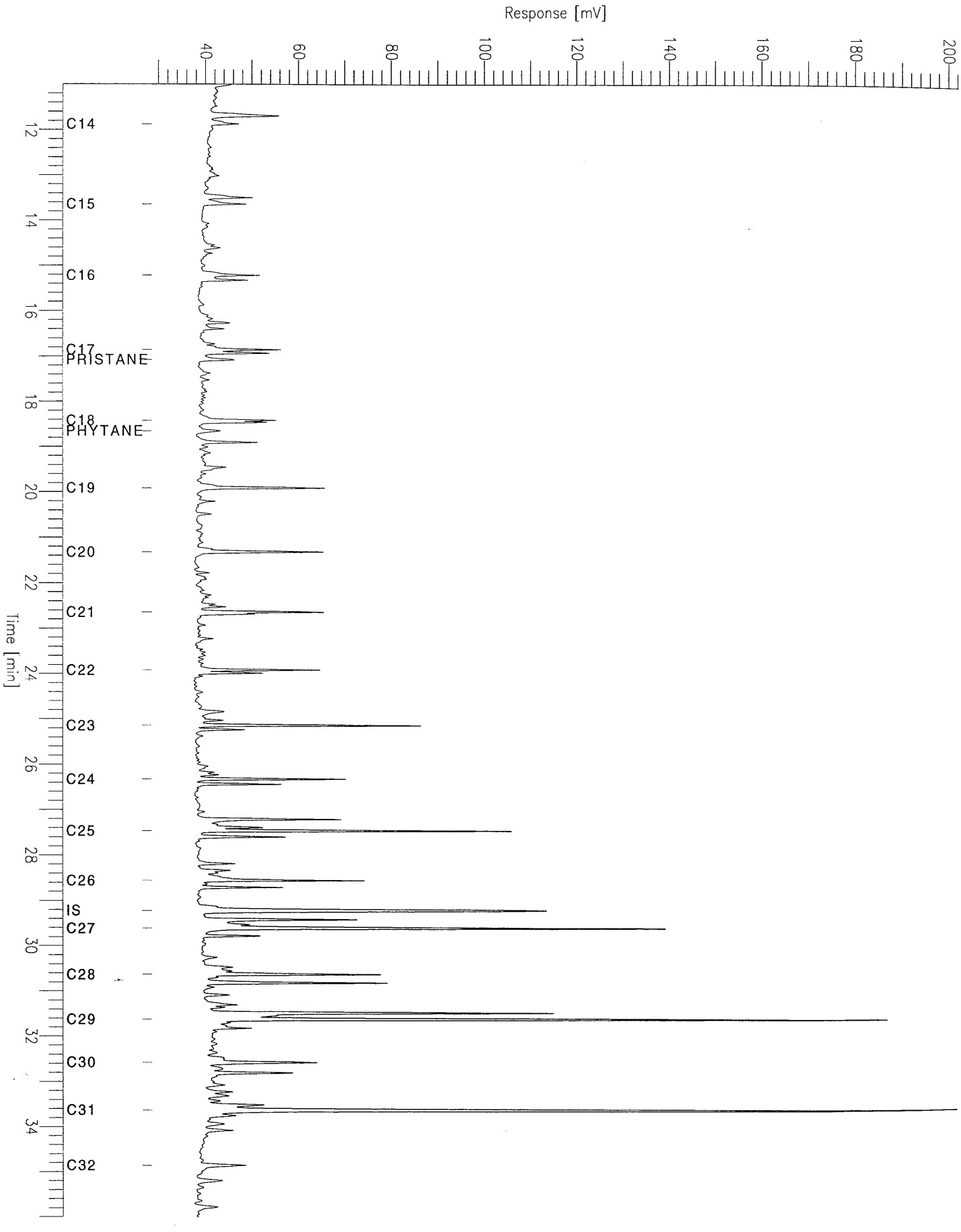
Sample #:
Date : 2/6/95 02:18 PM
Time of Injection: 10/12/94 02:51 PM
Low Point : 31.74 mV High Point : 111.53 mV
Plot Scale: 79.8 mV



Rockall Chromatogram

Sample Name : 57-13/58 2.20m
FileName : C:\TC4\HYDROCAR\RD7.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

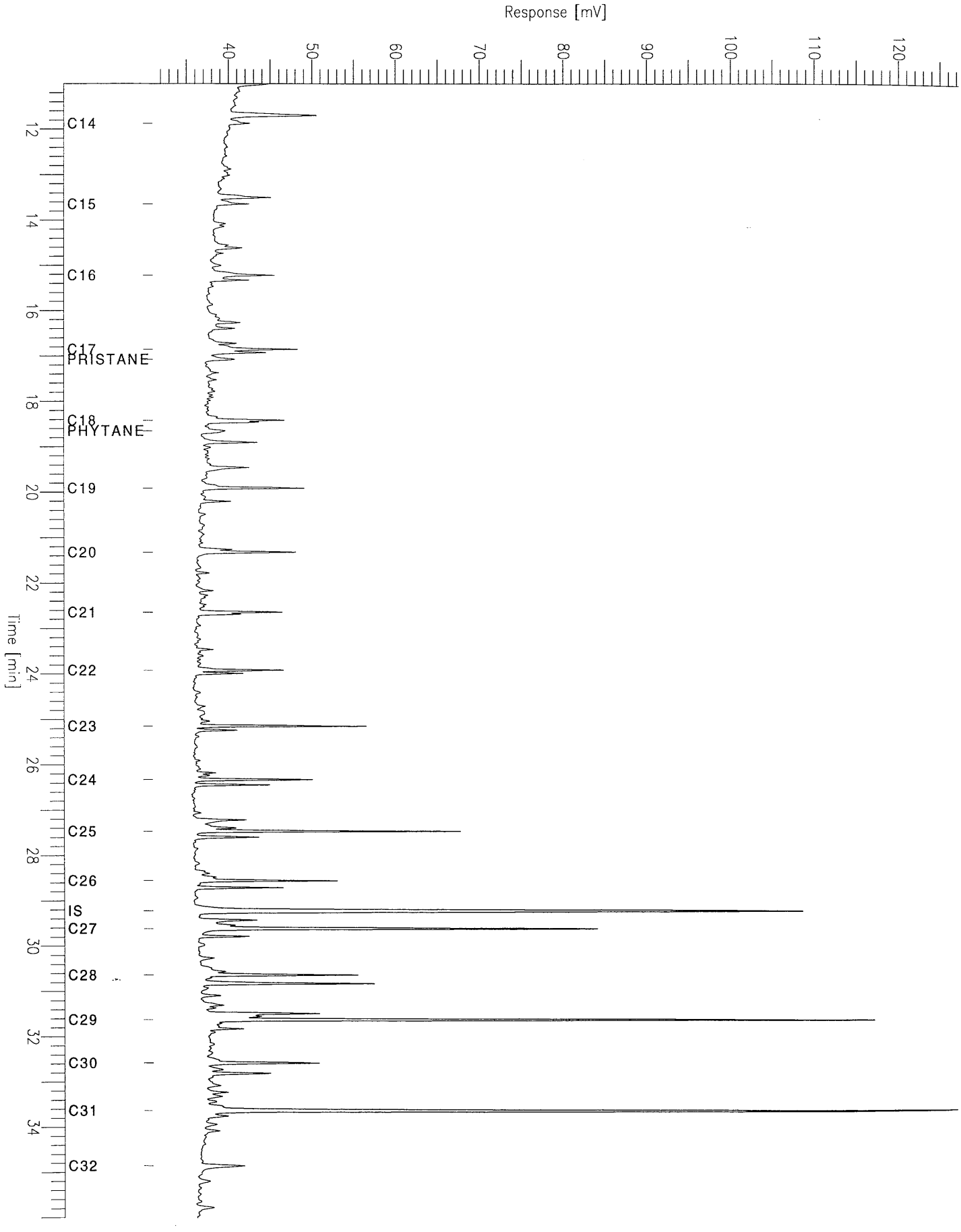
Sample #: Page 1 of 1
Date : 2/6/95 02:18 PM
Time of Injection: 10/12/94 03:46 PM
Low Point : 28.64 mV High Point : 202.03 mV
Plot Scale: 173.4 mV



Rockall Chromatogram

Sample Name : 57-13/58 2.90m
FileName : C:\TC4\HYDROCAR\RD8.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

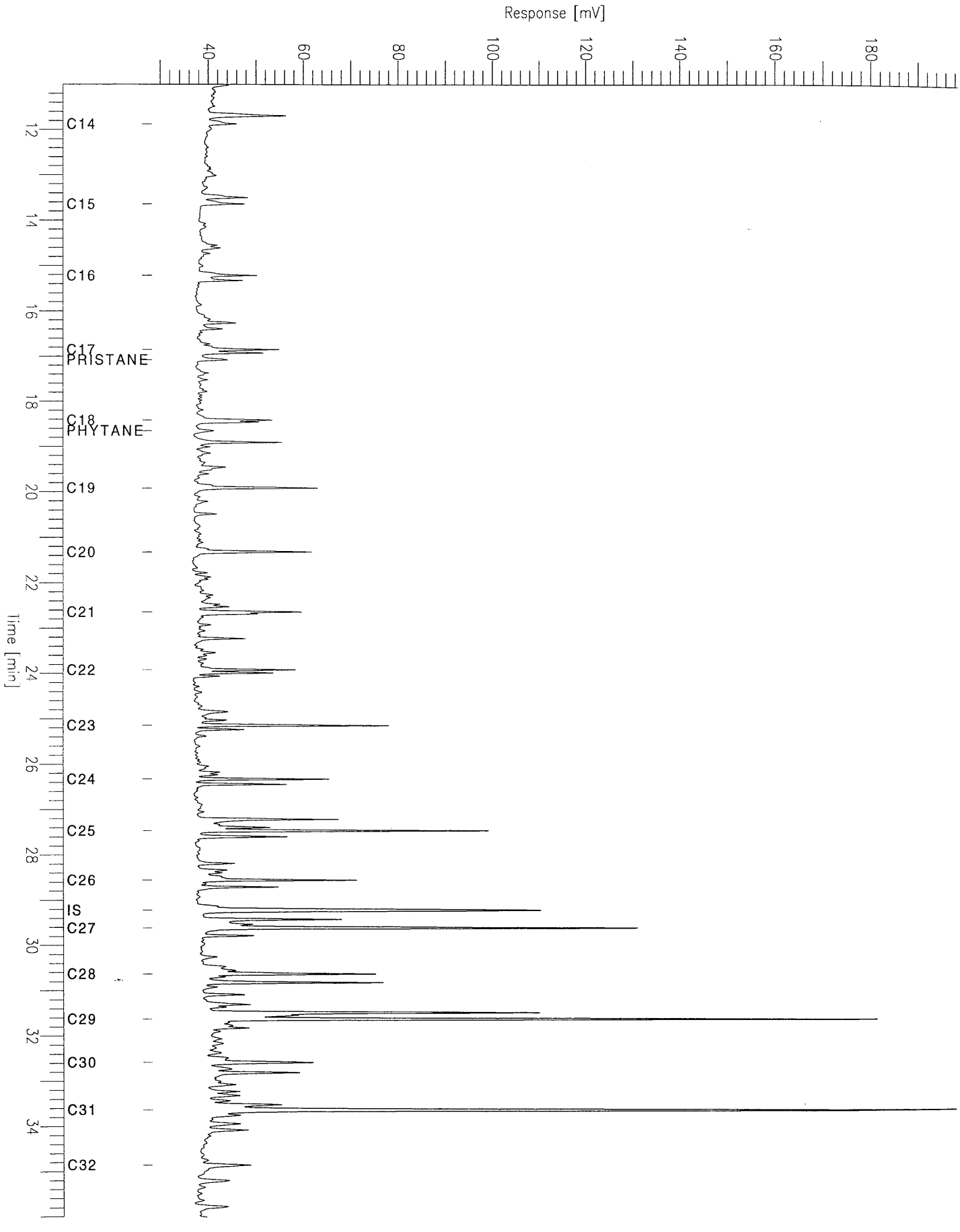
Sample #: Page 1 of 1
Date : 2/6/95 02:19 PM
Time of Injection: 10/12/94 04:41 PM
Low Point : 31.08 mV High Point : 127.18 mV
Plot Scale: 96.1 mV



Rockall Chromatogram

Sample Name : 57-13/59 2.45m
FileName : C:\TC4\HYDROCAR\RD9.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

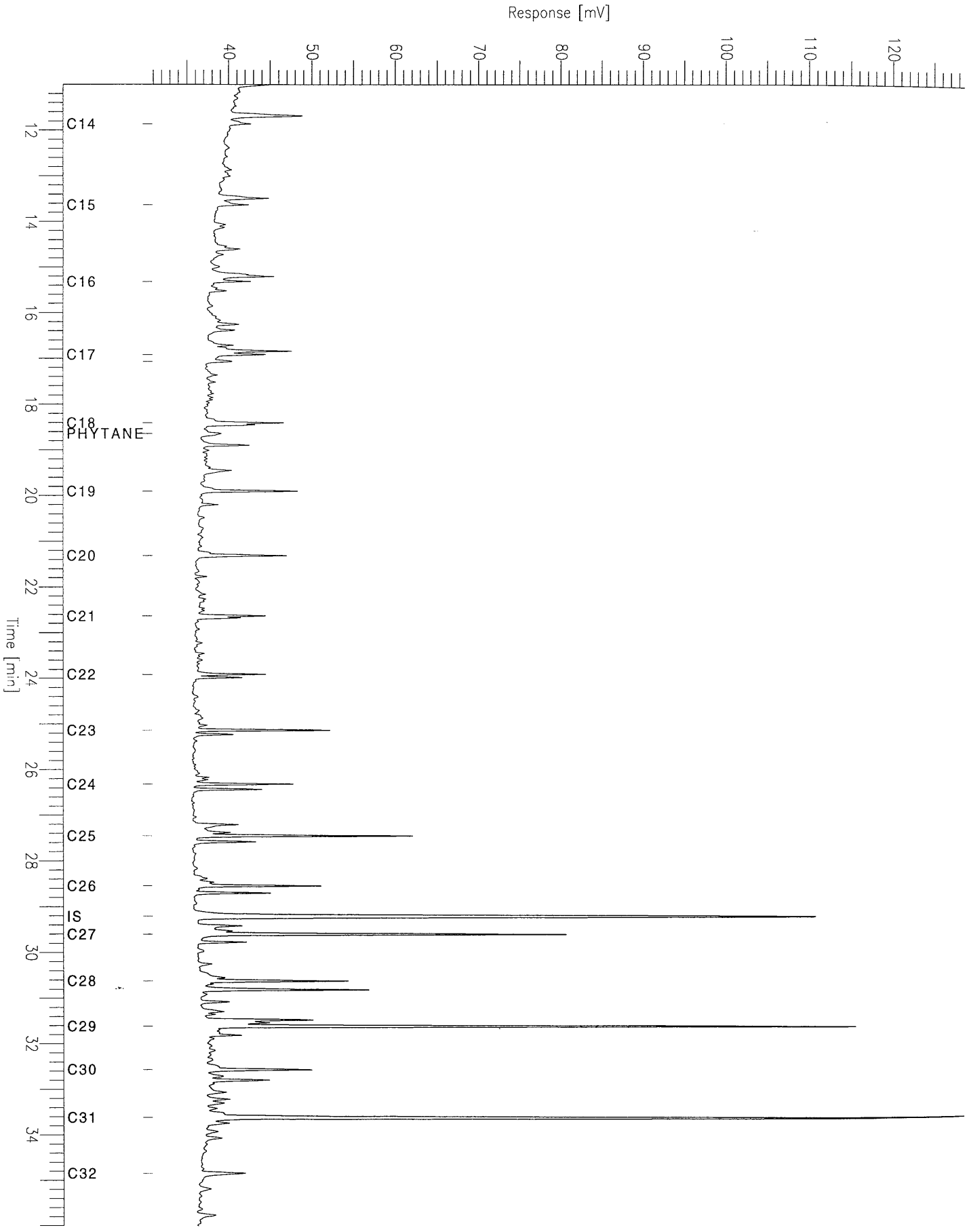
Sample #: Page 1 of 1
Date : 2/6/95 02:19 PM
Time of Injection: 10/12/94 05:36 PM
Low Point : 28.30 mV High Point : 198.40 mV
Plot Scale: 170.1 mV



Rockall Chromatogram

Sample Name : 57-13/59 3.10m
FileName : C:\TC4\HYDROCAR\rd10.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

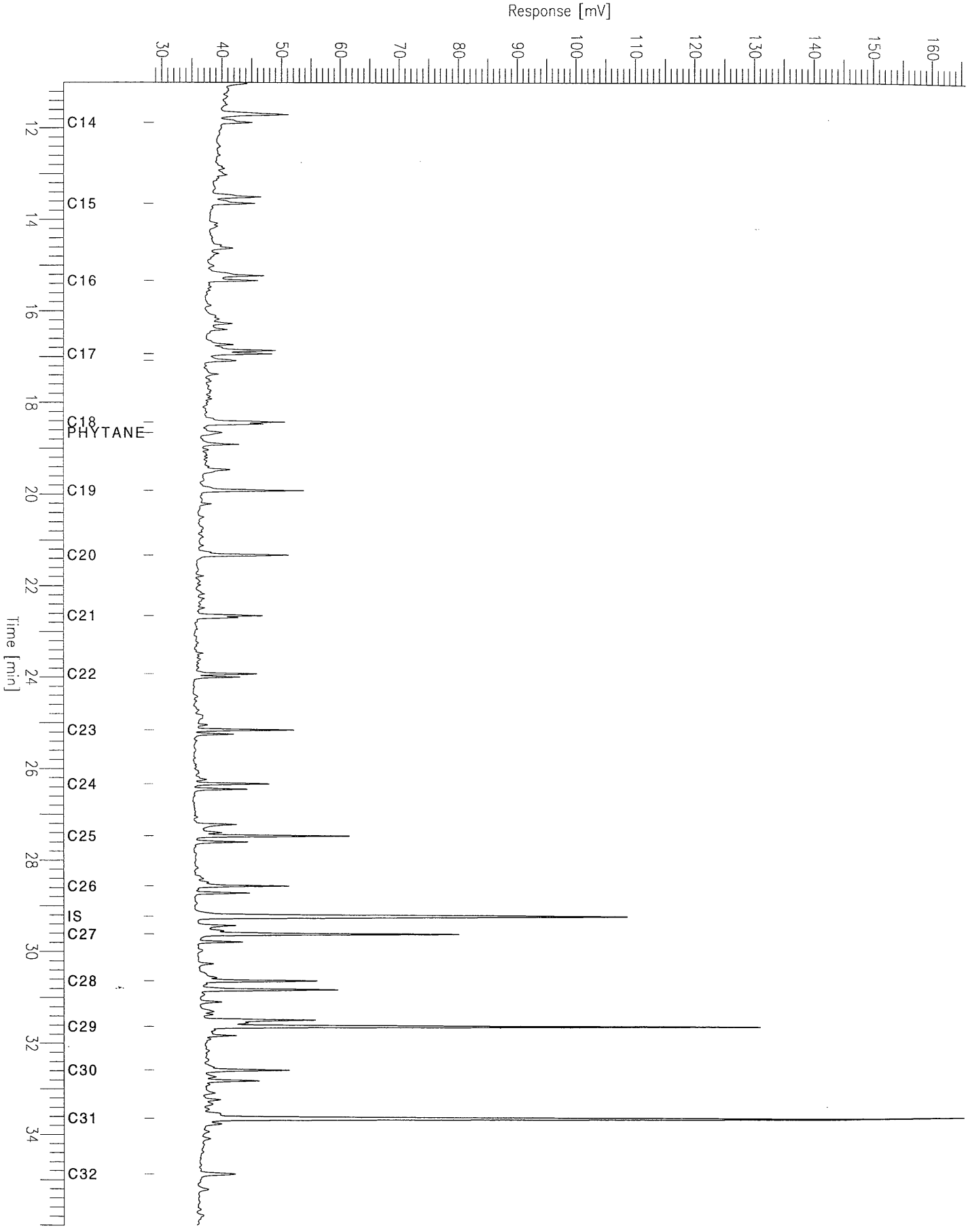
Sample #: Page 1 of 1
Date : 2/2/95 05:38 PM
Time of Injection: 10/12/94 06:31 PM
Low Point : 30.90 mV High Point : 128.57 mV
Plot Scale: 97.7 mV



Rockall Chromatogram

Sample Name : 57-13/60 2.50m
FileName : C:\TC4\HYDROCAR\rd11.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

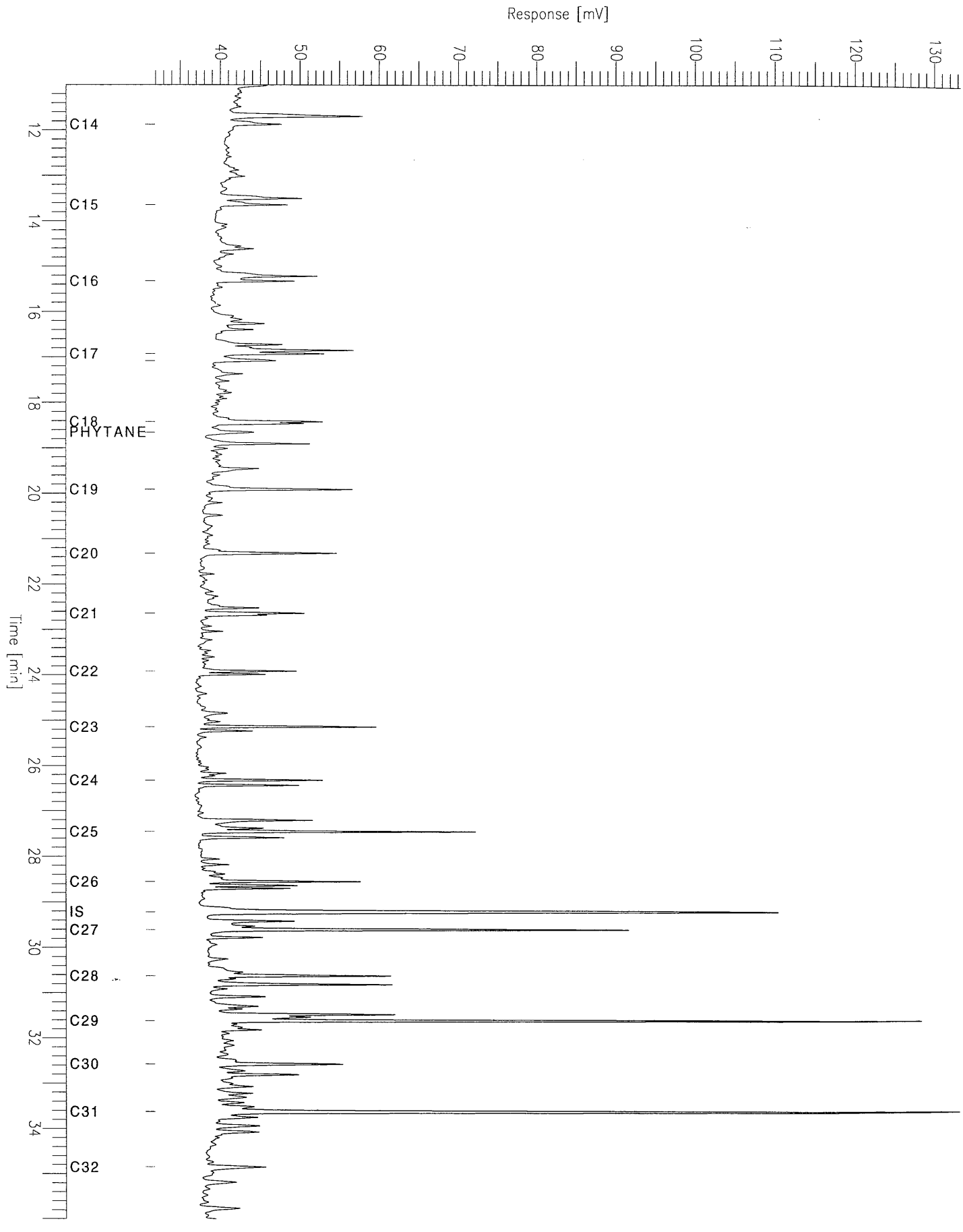
Sample #: Page 1 of 1
Date : 2/2/95 05:39 PM
Time of Injection: 10/12/94 07:26 PM
Low Point : 28.67 mV High Point : 165.62 mV
Plot Scale: 137.0 mV



Rockall Chromatogram

Sample Name : 57-13/60 3.15m
FileName : C:\TC4\HYDROCAR\rd13.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

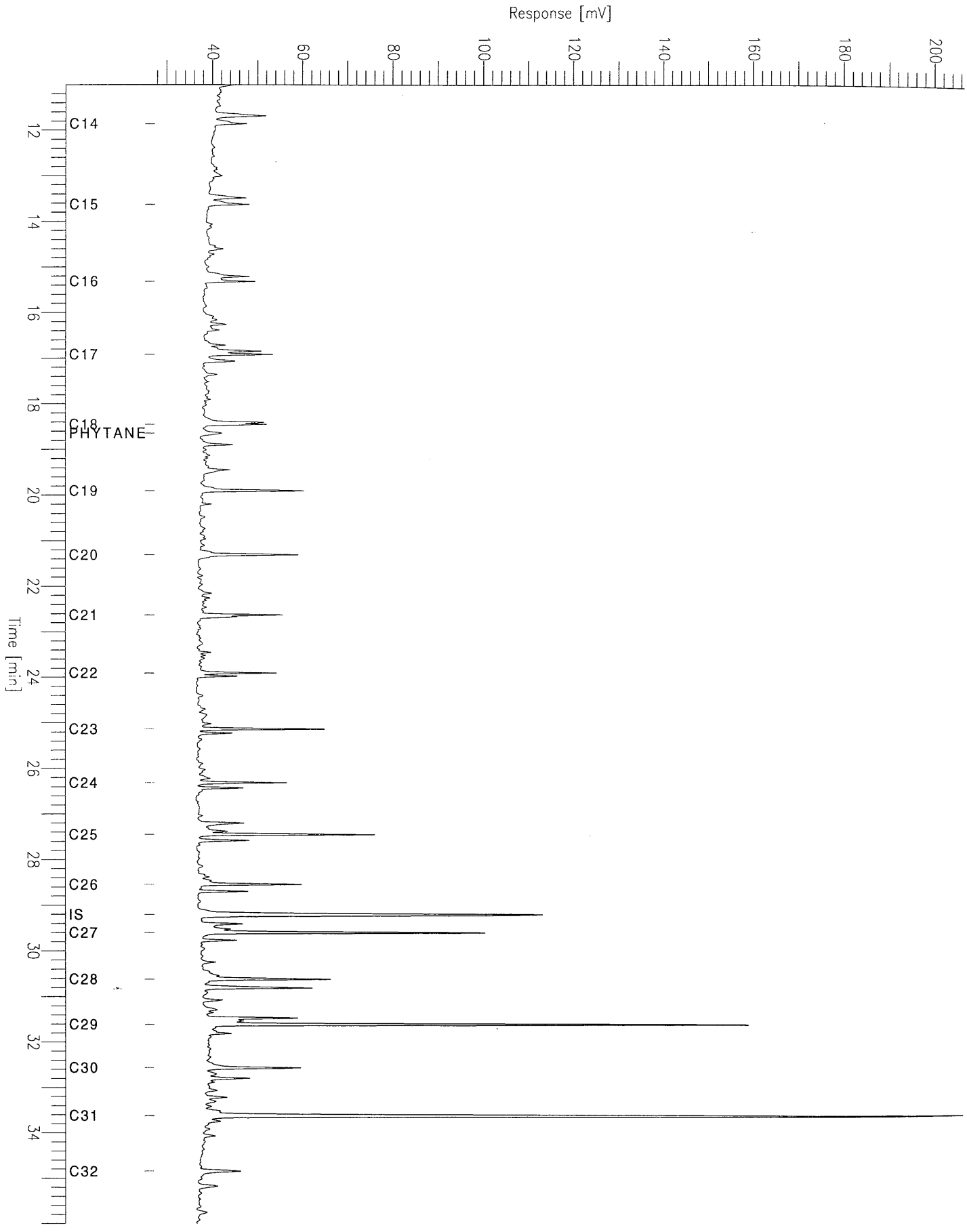
Sample #: Page 1 of 1
Date : 2/2/95 05:39 PM
Time of Injection: 10/12/94 09:15 PM
Low Point : 31.95 mV High Point : 133.31 mV
Plot Scale: 101.4 mV



Rockall Chromatogram

Sample Name : 57-13/61 2.03m
FileName : C:\TC4\HYDROCAR\rd14.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

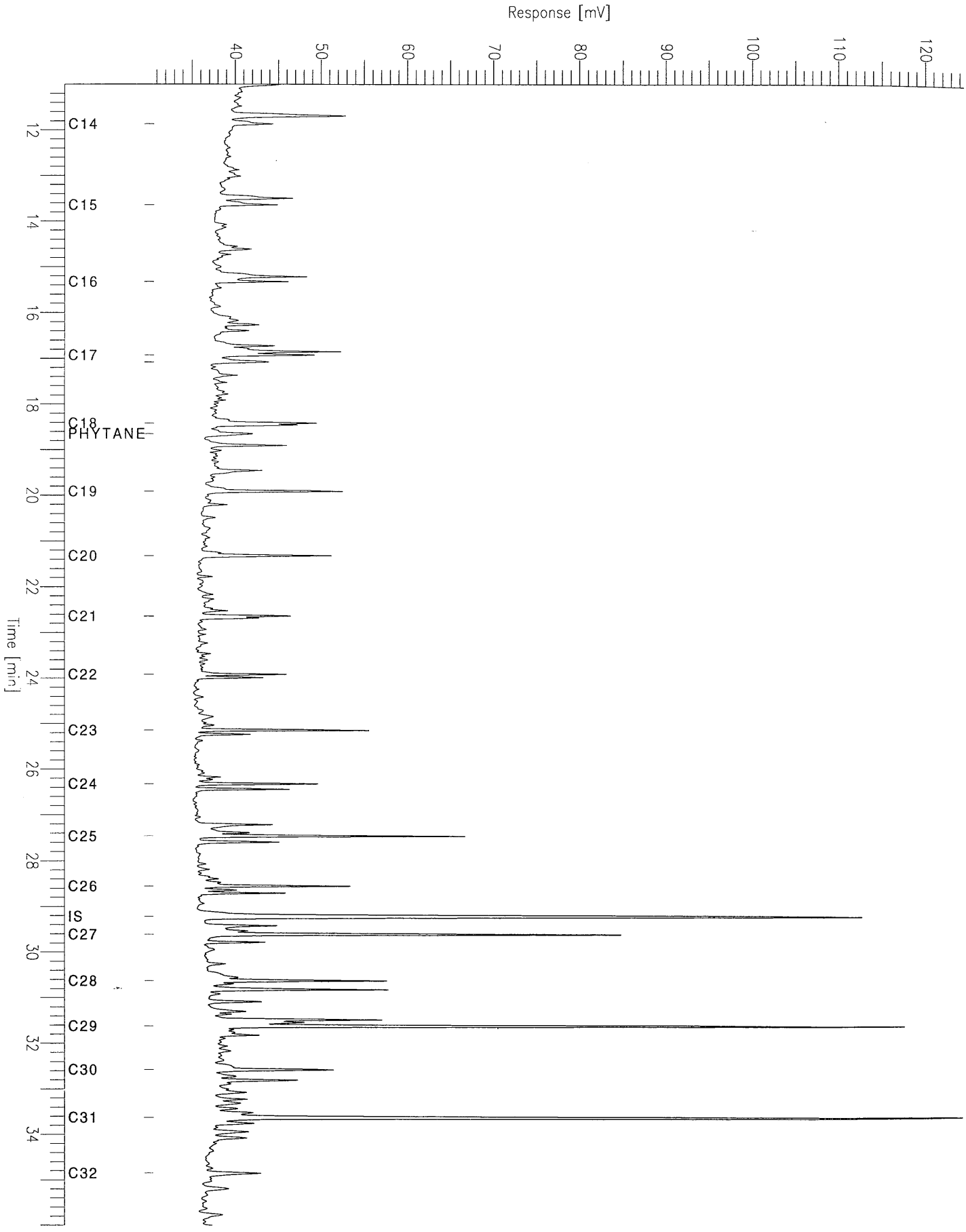
Sample #: Page 1 of 1
Date : 2/2/95 05:40 PM
Time of Injection: 10/12/94 10:10 PM
Low Point : 27.41 mV High Point : 206.50 mV
Plot Scale: 179.1 mV



Rockall Chromatogram

Sample Name : 57-13/61 2.68m
FileName : C:\TC4\HYDROCAR\Rd15.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

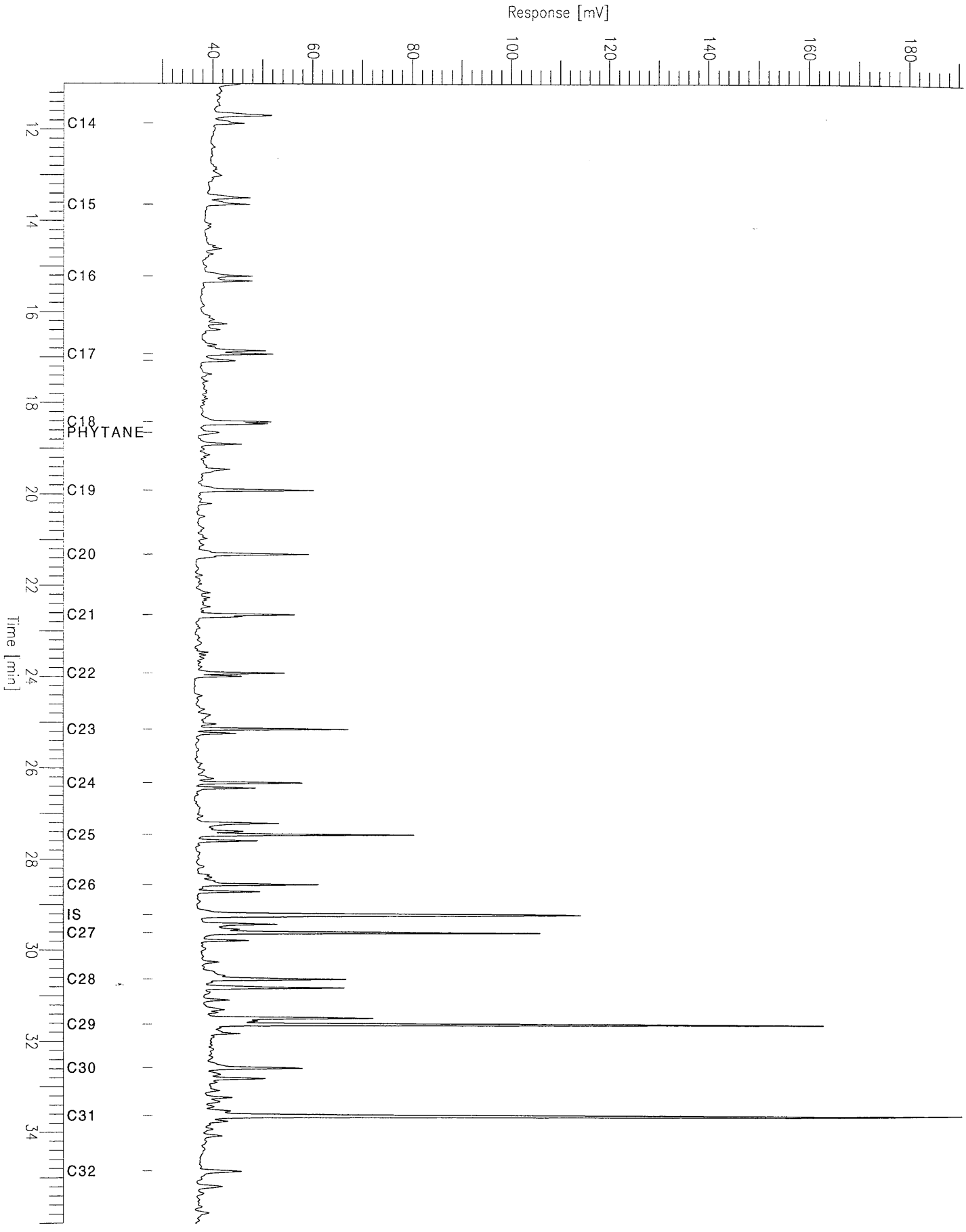
Sample #:
Date : 2/2/95 05:40 PM
Time of Injection: 10/12/94 11:05 PM
Low Point : 30.72 mV High Point : 124.43 mV
Plot Scale: 93.7 mV



Rockall Chromatogram

Sample Name : 57-13/62 2.59m
FileName : C:\TC4\HYDROCAR\RD16.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

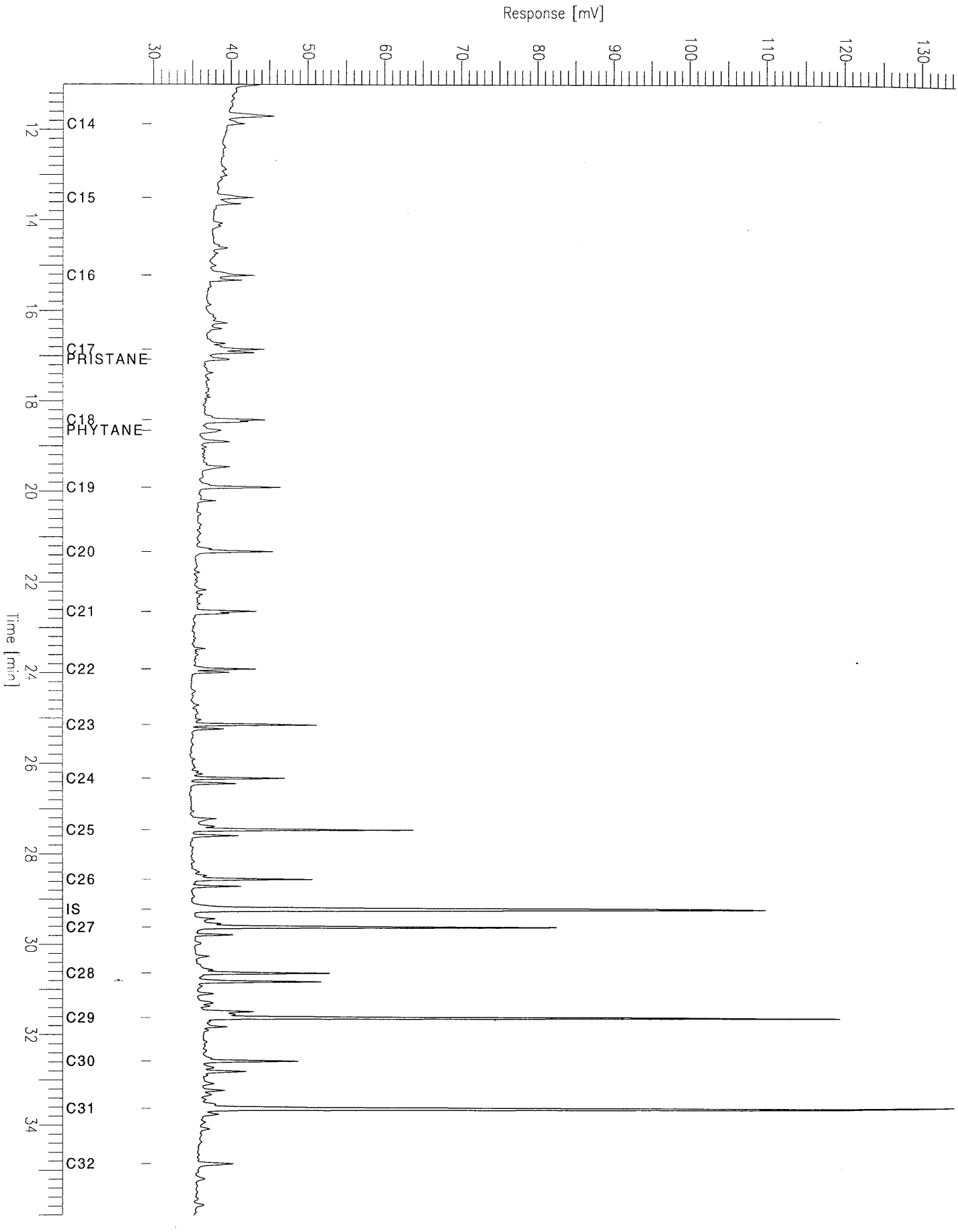
Sample #: Page 1 of 1
Date : 2/3/95 05:17 PM
Time of Injection: 10/13/94 12:00 AM
Low Point : 28.19 mV High Point : 190.78 mV
Plot Scale: 162.6 mV



Rockall Chromatogram

Sample Name : 57-13/62 3.24m
FileName : C:\TC4\HYDROCAR\RD17.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

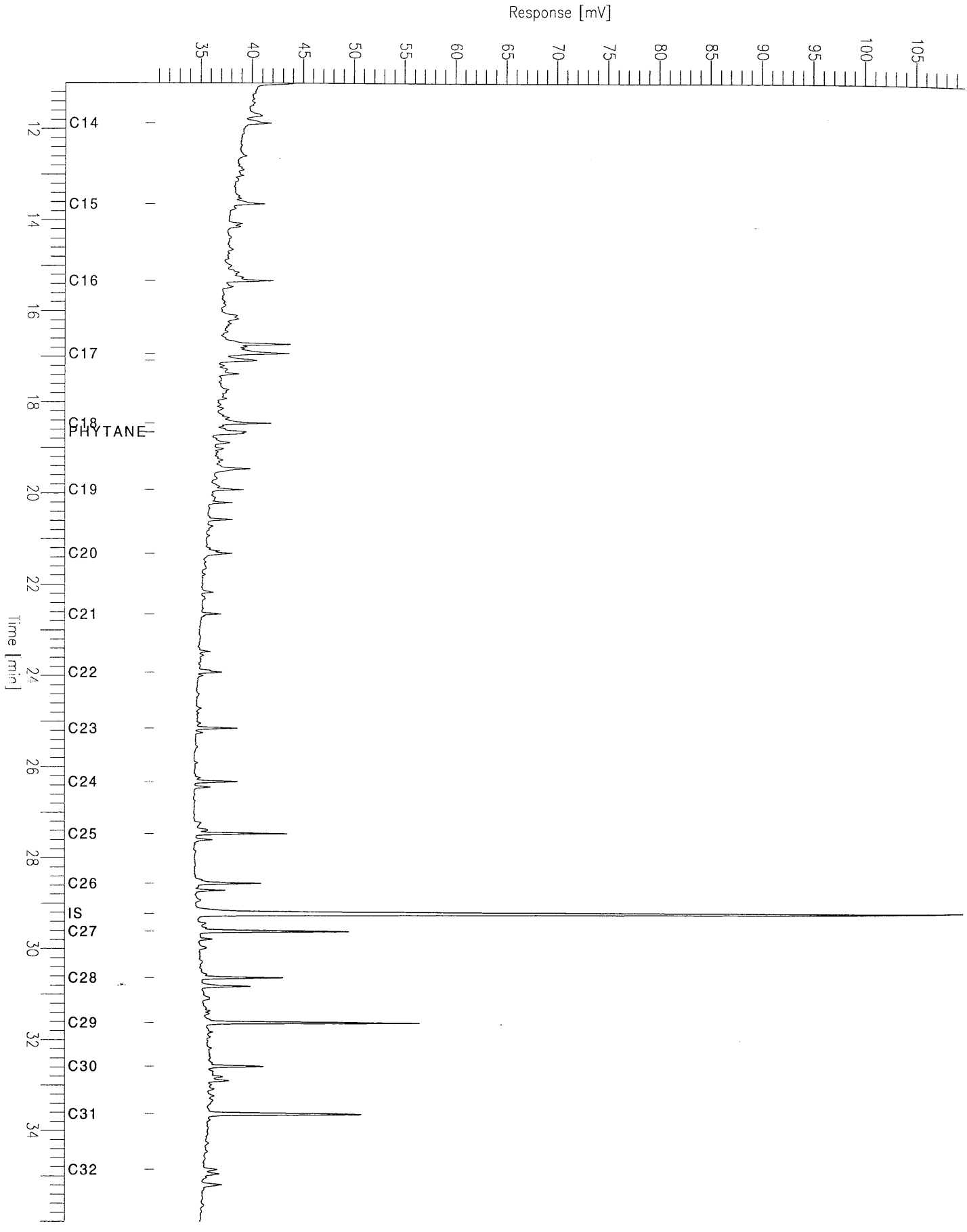
Sample #:
Date : 2/3/95 05:17 PM
Time of Injection: 10/13/94 12:55 AM
Low Point : 29.75 mV High Point : 134.27 mV
Plot Scale: 104.5 mV



Rockall Chromatogram

Sample Name : 57-13/72 1.96m
FileName : C:\TC4\HYDROCAR\RD19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

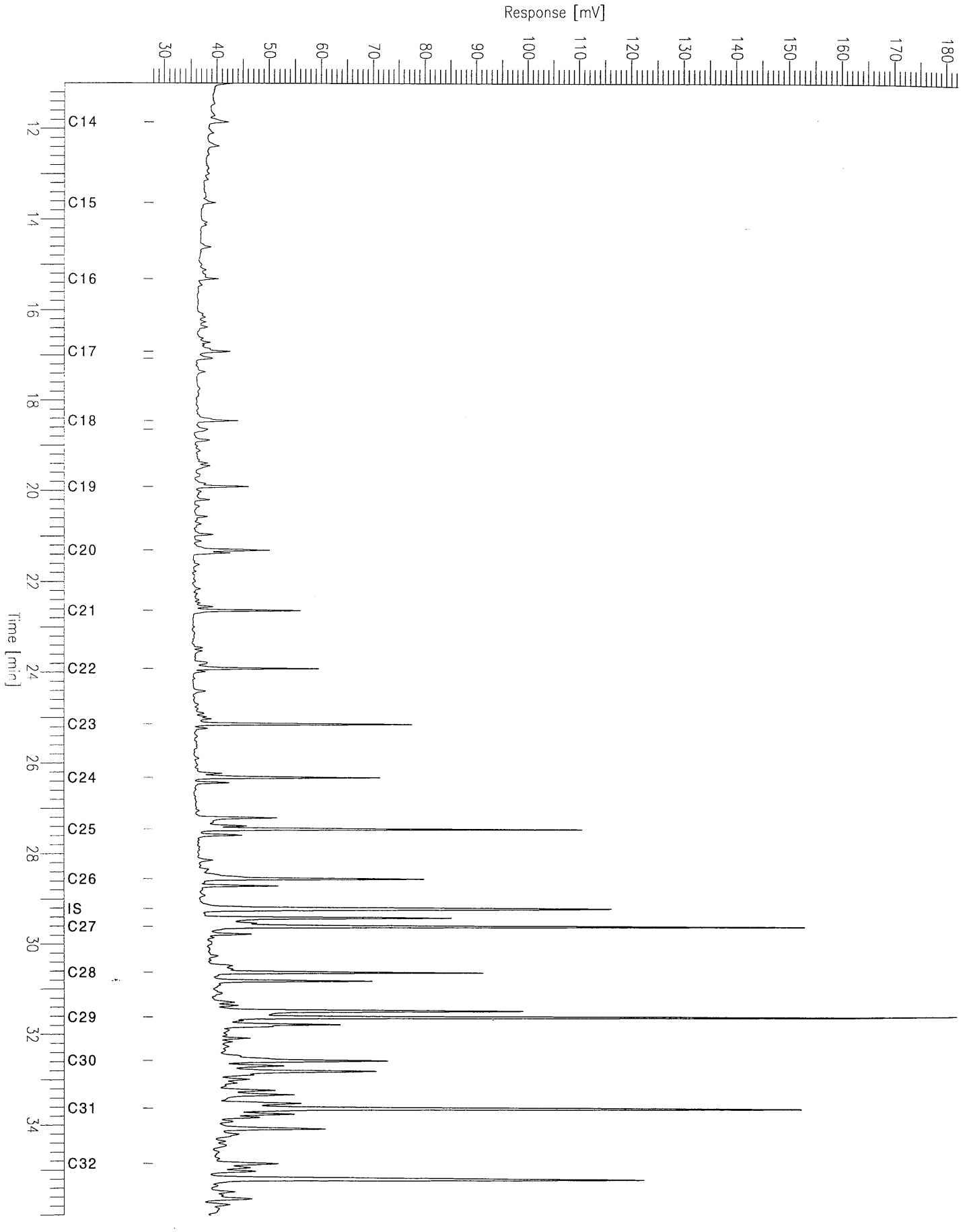
Sample #: Page 1 of 1
Date : 2/3/95 05:18 PM
Time of Injection: 10/13/94 02:46 AM
Low Point : 30.64 mV High Point : 109.73 mV
Plot Scale: 79.1 mV



Rockall Chromatogram

Sample Name : 57-13/72 2.61m
FileName : C:\TC4\HYDROCAR\RD20.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

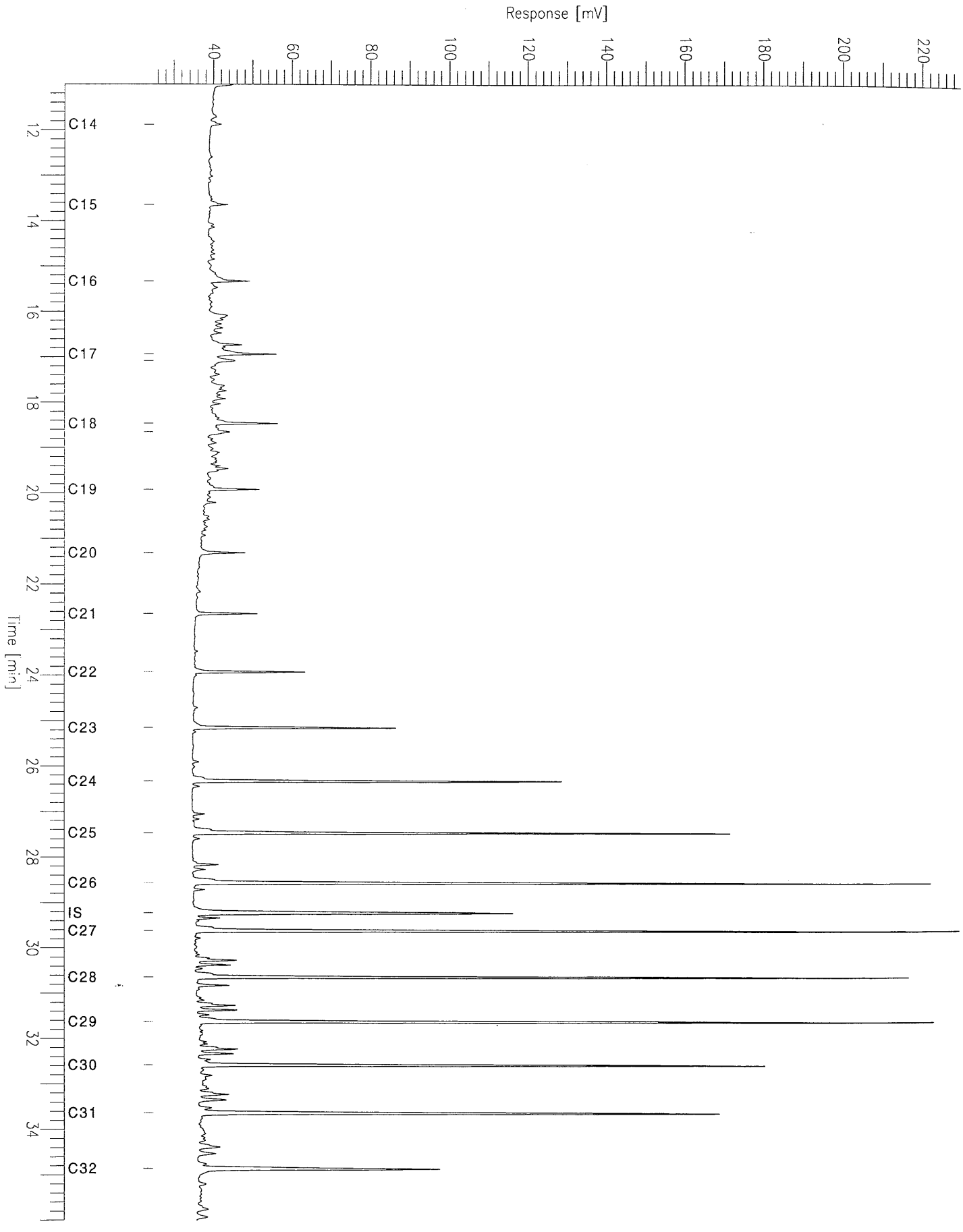
Sample #: Page 1 of 1
Date : 2/3/95 05:18 PM
Time of Injection: 10/13/94 03:41 AM
Low Point : 27.97 mV High Point : 182.21 mV
Plot Scale: 154.2 mV



Rockall Chromatogram

Sample Name : 57-13/73 1.98m
FileName : C:\TC4\HYDROCAR\RD21.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 25 mV

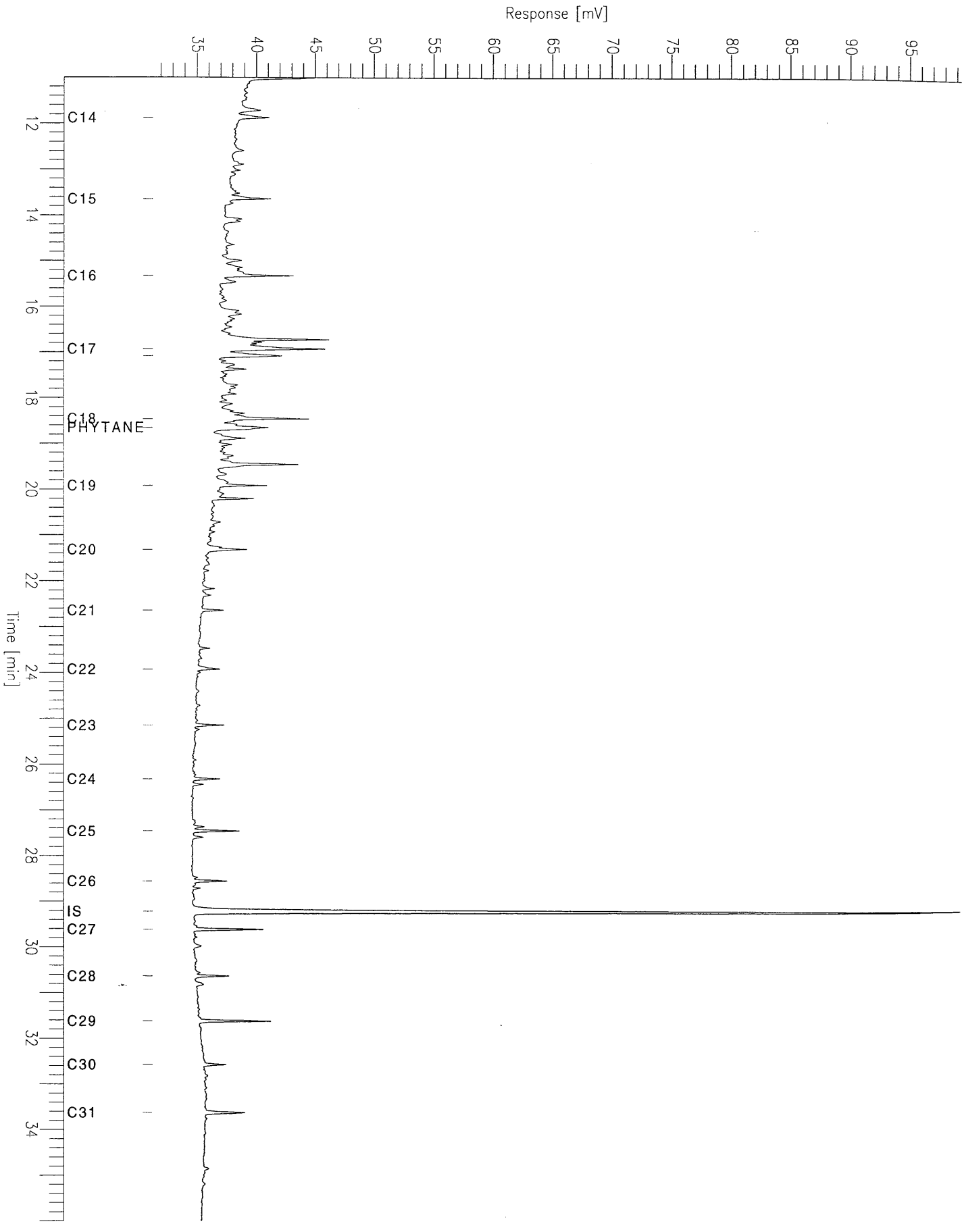
Sample #: Page 1 of 1
Date : 2/3/95 05:18 PM
Time of Injection: 10/13/94 04:36 AM
Low Point : 24.96 mV High Point : 229.49 mV
Plot Scale: 204.5 mV



Rockall Chromatogram

Sample Name : 57-13/73 2.53m
FileName : C:\TC4\HYDROCAR\RD22.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

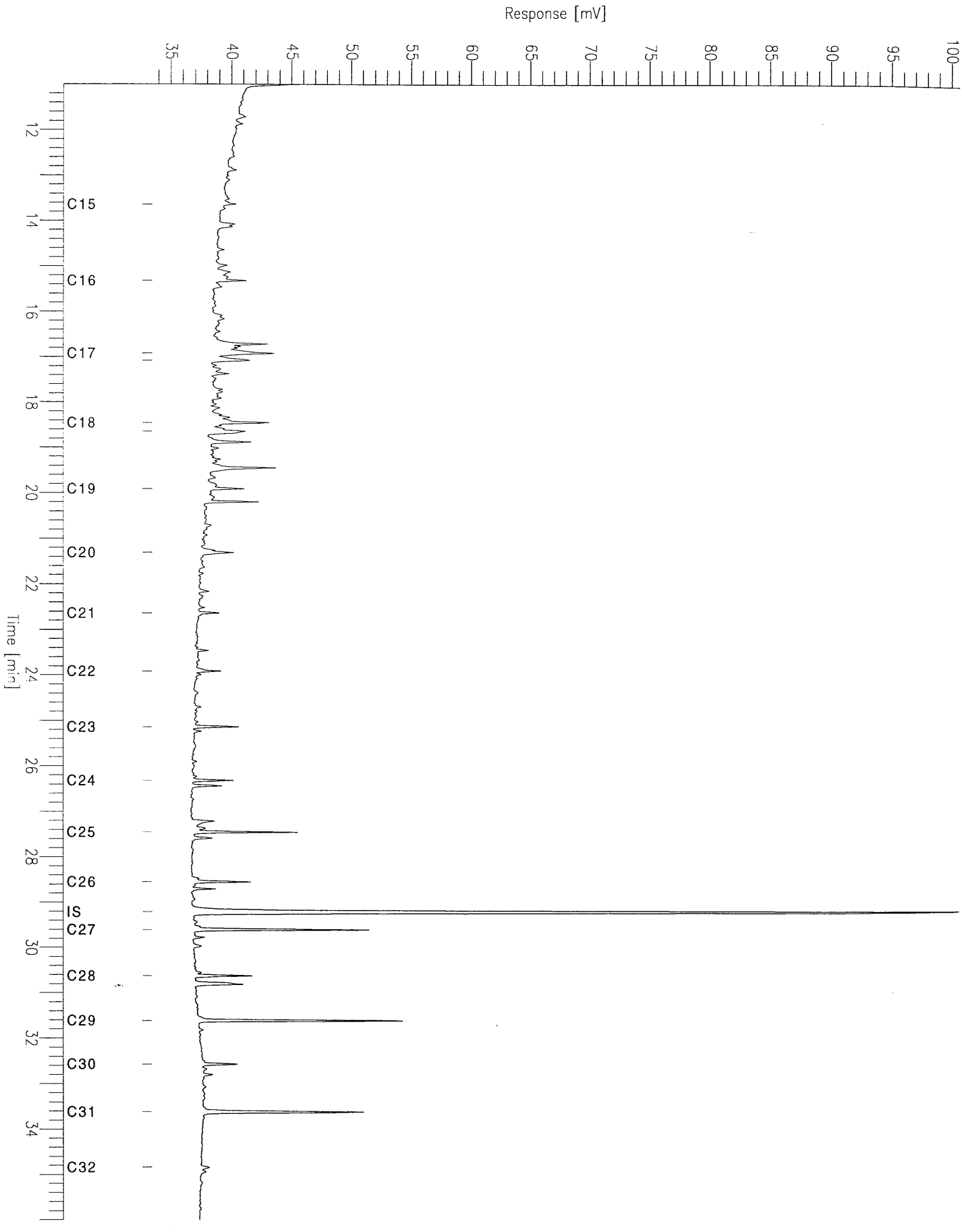
Sample #: Page 1 of 1
Date : 2/3/95 05:18 PM
Time of Injection: 10/13/94 05:31 AM
Low Point : 31.35 mV High Point : 99.29 mV
Plot Scale: 67.9 mV



Rockall Chromatogram

Sample Name : 57-13/74 1.70m
FileName : C:\TC4\HYDROCAR\RD23.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

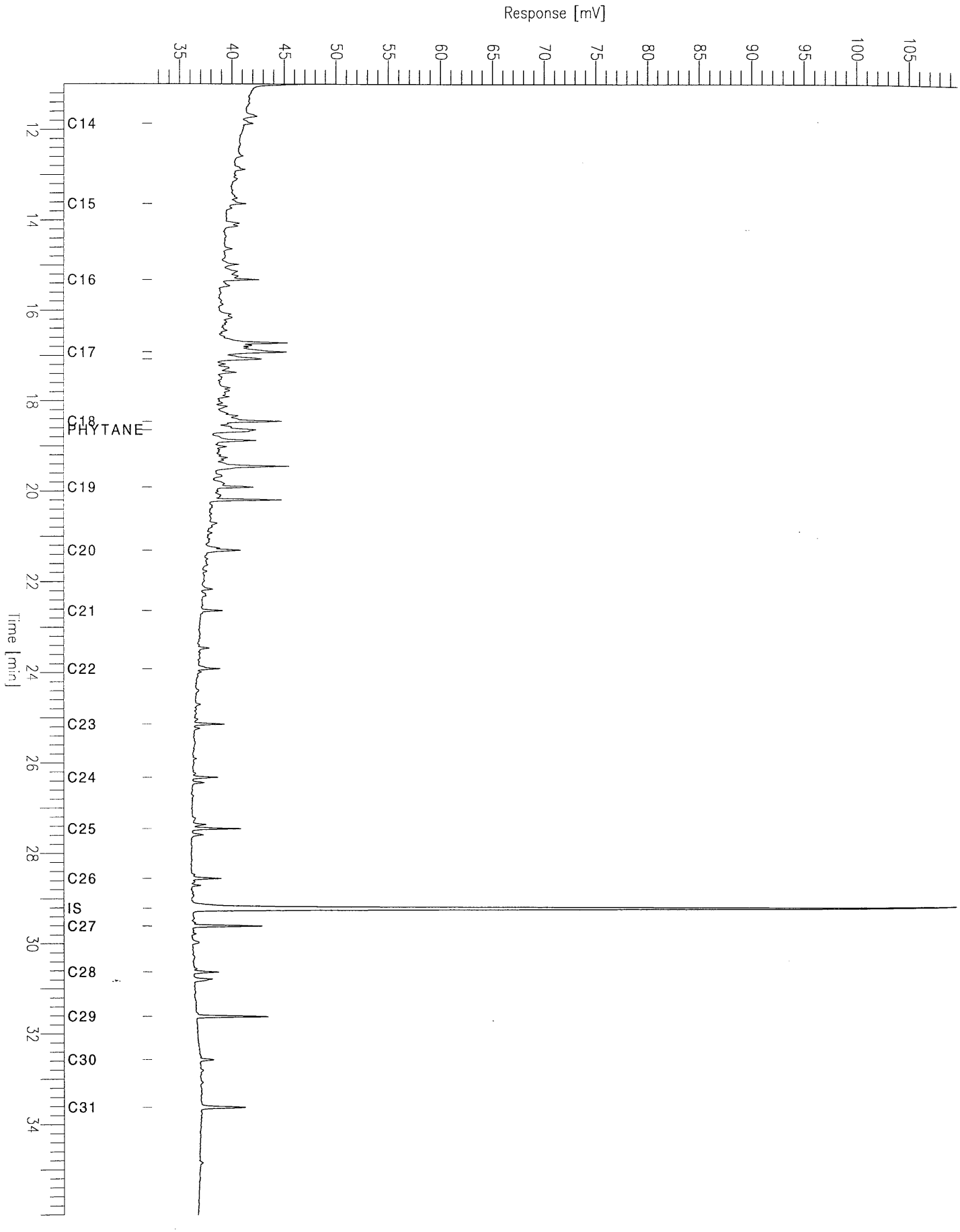
Sample #: Page 1 of 1
Date : 2/3/95 05:19 PM
Time of Injection: 10/13/94 06:27 AM
Low Point : 33.46 mV High Point : 100.63 mV
Plot Scale: 67.2 mV



Rockall Chromatogram

Sample Name : 57-13/74 2.35m
FileName : C:\TC4\HYDROCAR\RD24.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

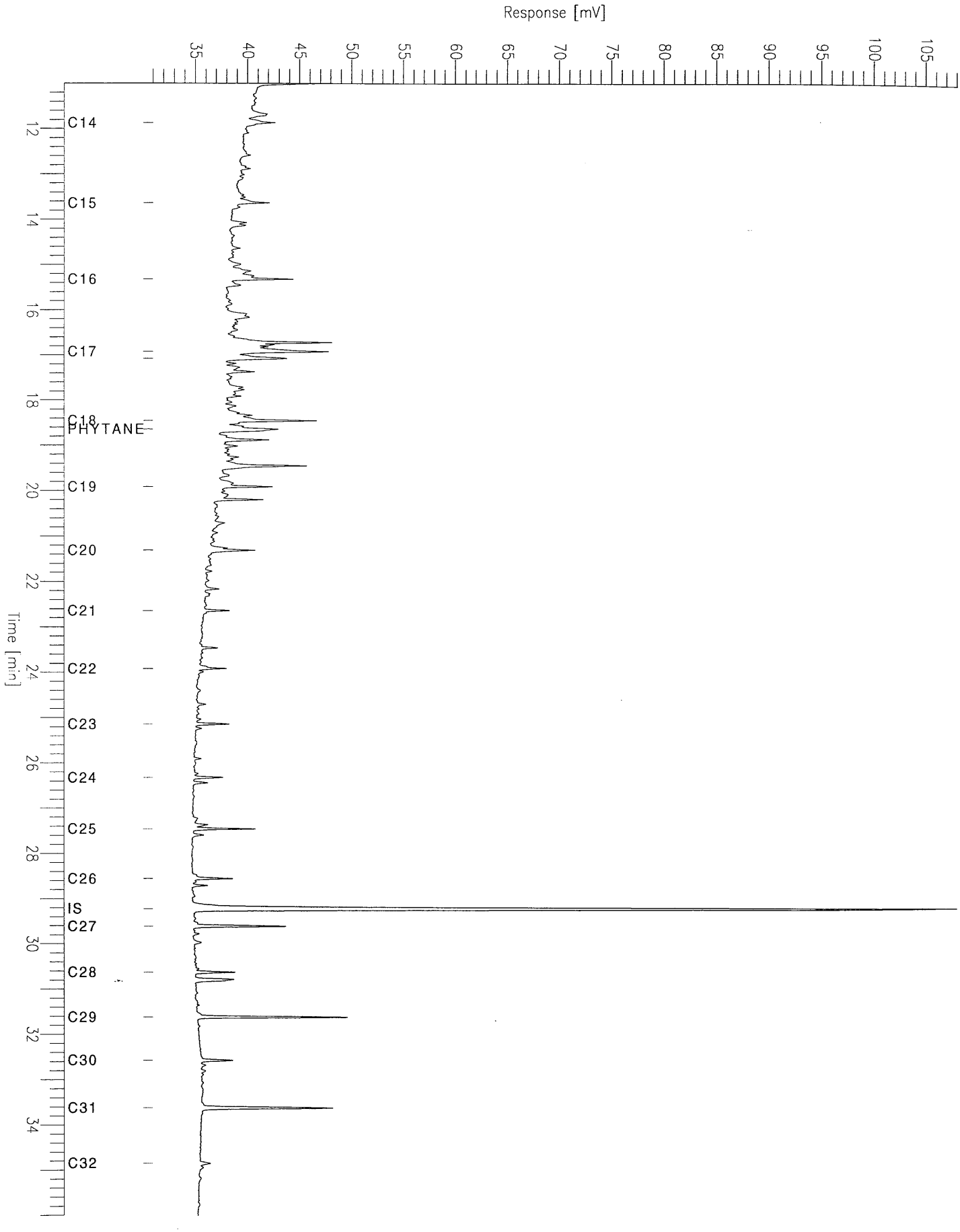
Sample #: Page 1 of 1
Date : 2/3/95 05:19 PM
Time of Injection: 10/13/94 07:22 AM
Low Point : 32.39 mV High Point : 109.64 mV
Plot Scale: 77.2 mV



Rockall Chromatogram

Sample Name : 57-14/38 1.00m
FileName : C:\TC4\HYDROCAR\RD26.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

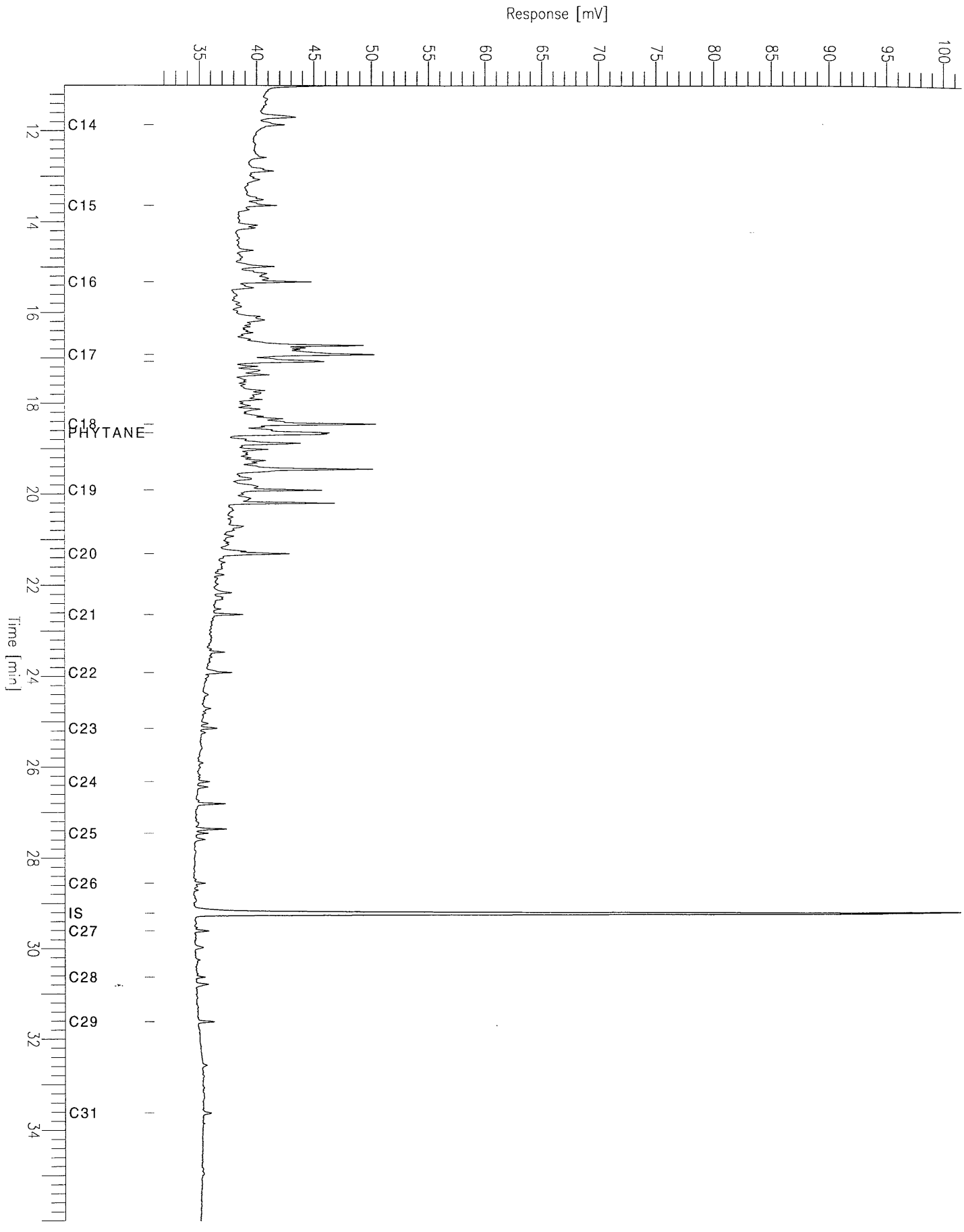
Sample #: Page 1 of 1
Date : 2/3/95 05:20 PM
Time of Injection: 10/13/94 09:12 AM
Low Point : 31.00 mV High Point : 108.04 mV
Plot Scale: 77.0 mV



Rockall Chromatogram

Sample Name : 57-14/40 1.15m
FileName : C:\TC4\HYDROCAR\RD27.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

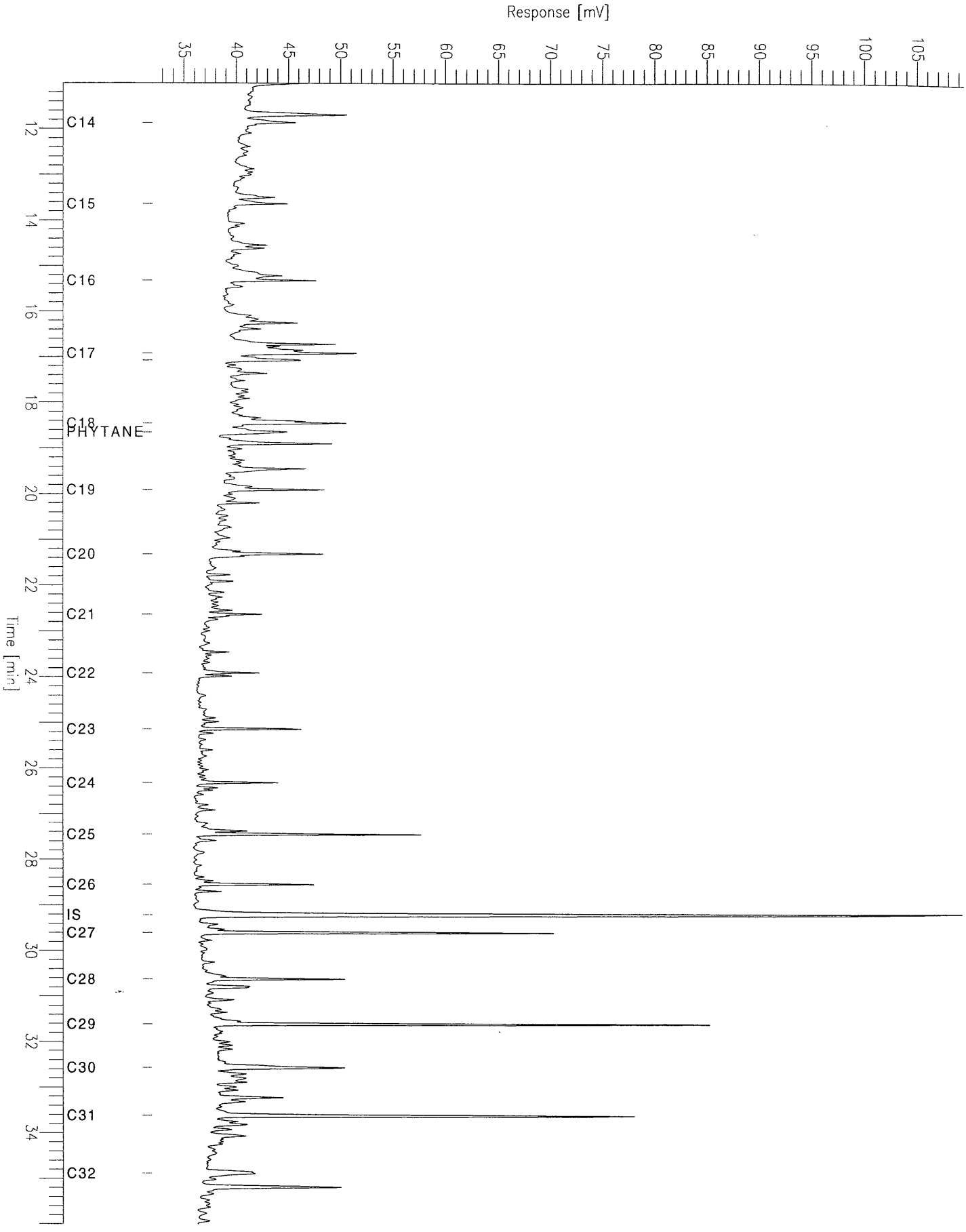
Sample #: Page 1 of 1
Date : 2/3/95 05:20 PM
Time of Injection: 10/13/94 10:07 AM
Low Point : 31.12 mV High Point : 101.57 mV
Plot Scale: 70.4 mV



Rockall Chromatogram

Sample Name : 57-14/41 2.85m
FileName : C:\TC4\HYDROCAR\RD28.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

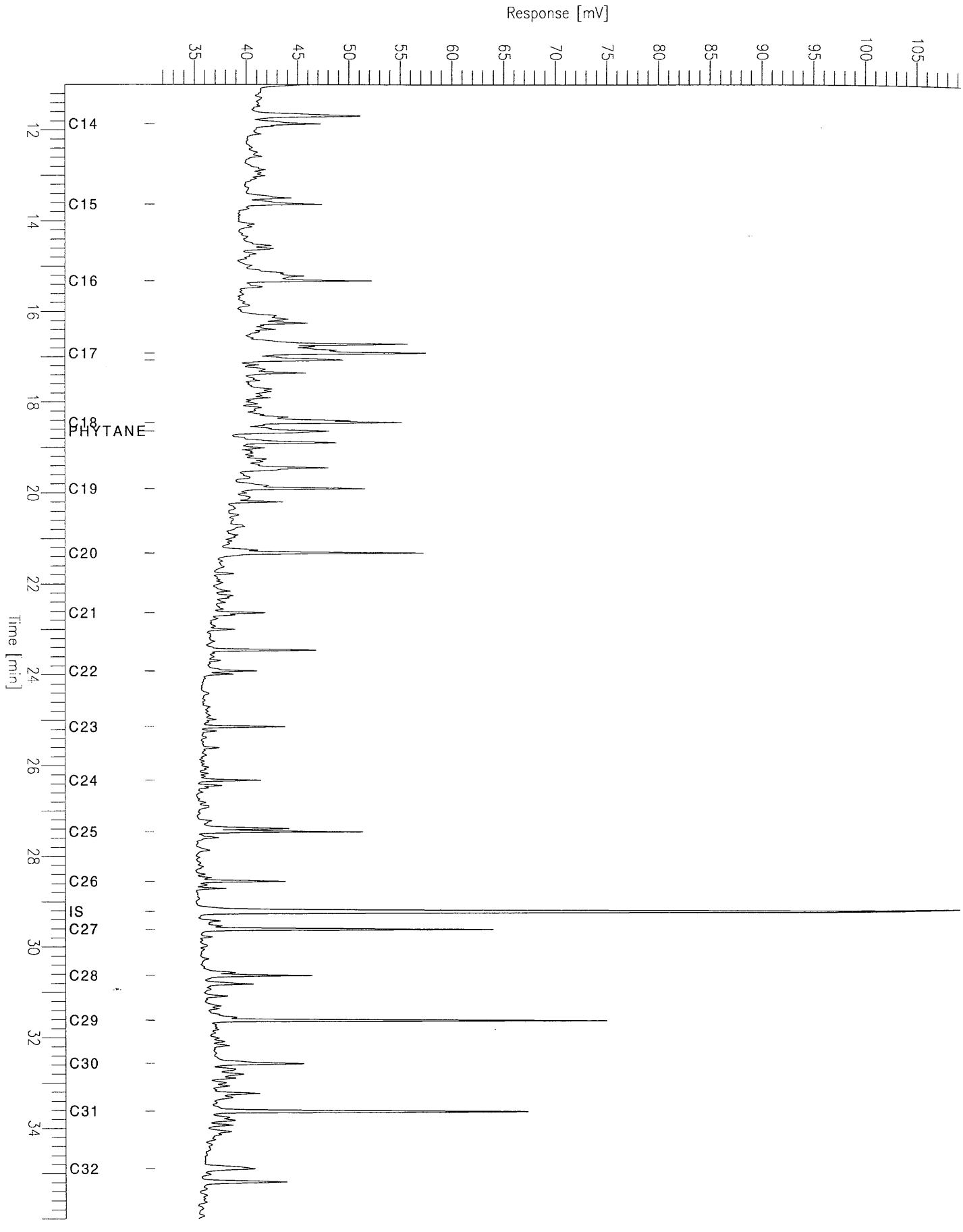
Sample #: Page 1 of 1
Date : 2/3/95 05:20 PM
Time of Injection: 10/13/94 11:03 AM
Low Point : 32.04 mV High Point : 109.41 mV
Plot Scale: 77.4 mV



Rockall Chromatogram

Sample Name : 57-14/41 3.50m
FileName : C:\TC4\HYDROCAR\RD29.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

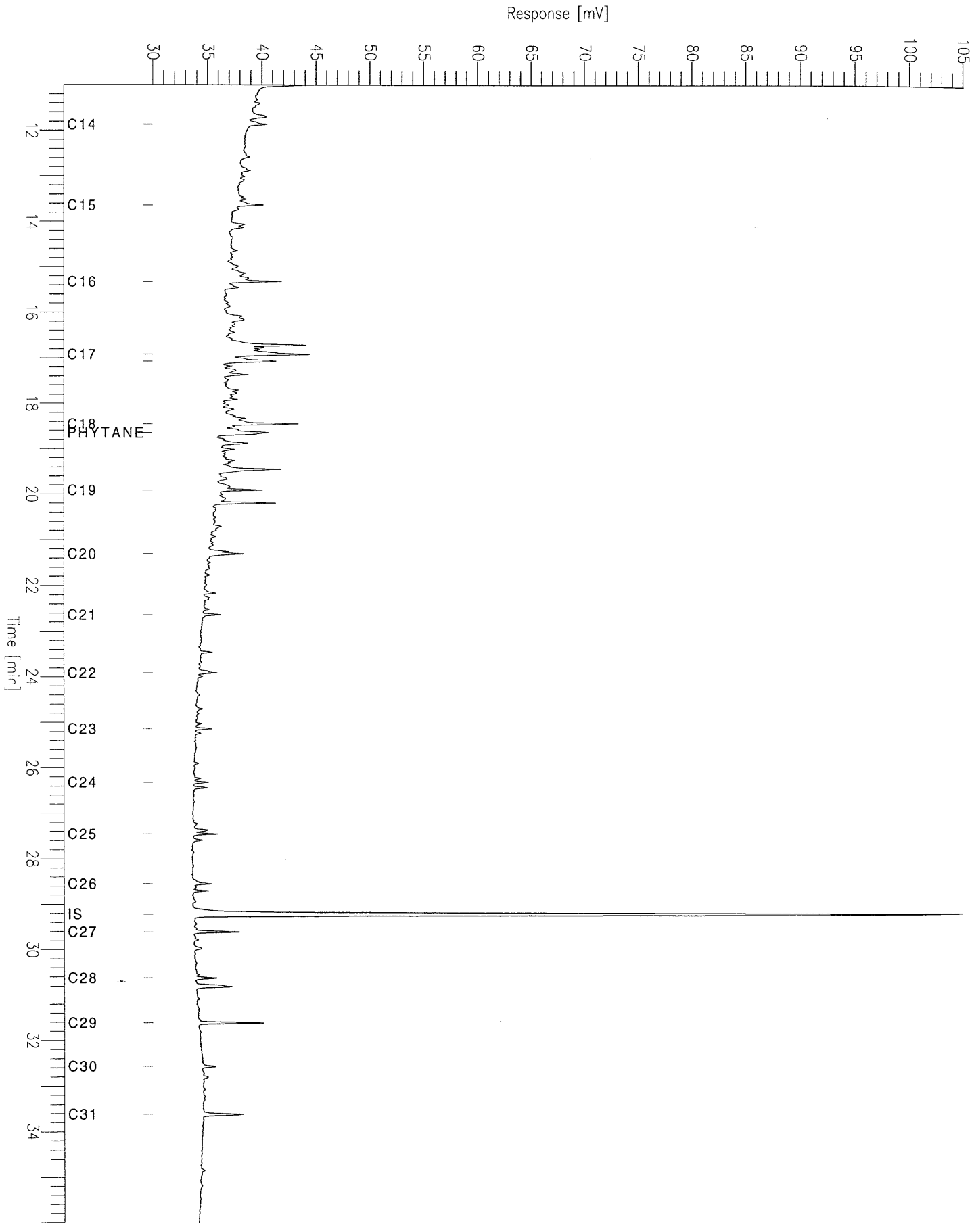
Sample #: Page 1 of 1
Date : 2/3/95 05:21 PM
Time of Injection: 10/13/94 11:58 AM
Low Point : 31.20 mV High Point : 109.24 mV
Plot Scale: 78.0 mV



Rockall Chromatogram

Sample Name : 57-14/46 0.96m
FileName : C:\TC4\HYDROCAR\RD30.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

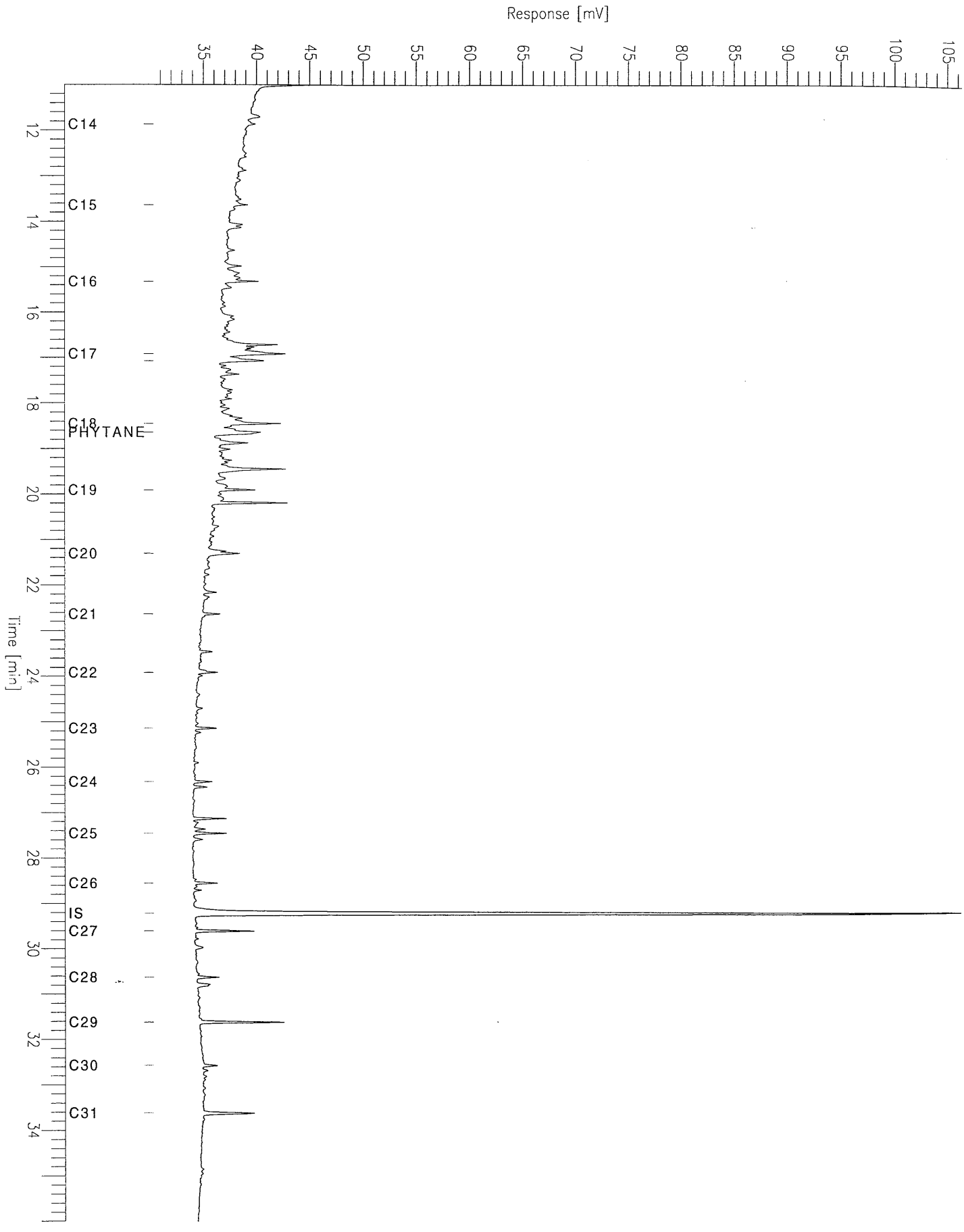
Sample #: Page 1 of 1
Date : 2/3/95 05:21 PM
Time of Injection: 10/13/94 12:52 PM
Low Point : 29.97 mV High Point : 105.03 mV
Plot Scale: 75.1 mV



Rockall Chromatogram

Sample Name : 57-16/8 1.89m
FileName : C:\TC4\HYDROCAR\RD31.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

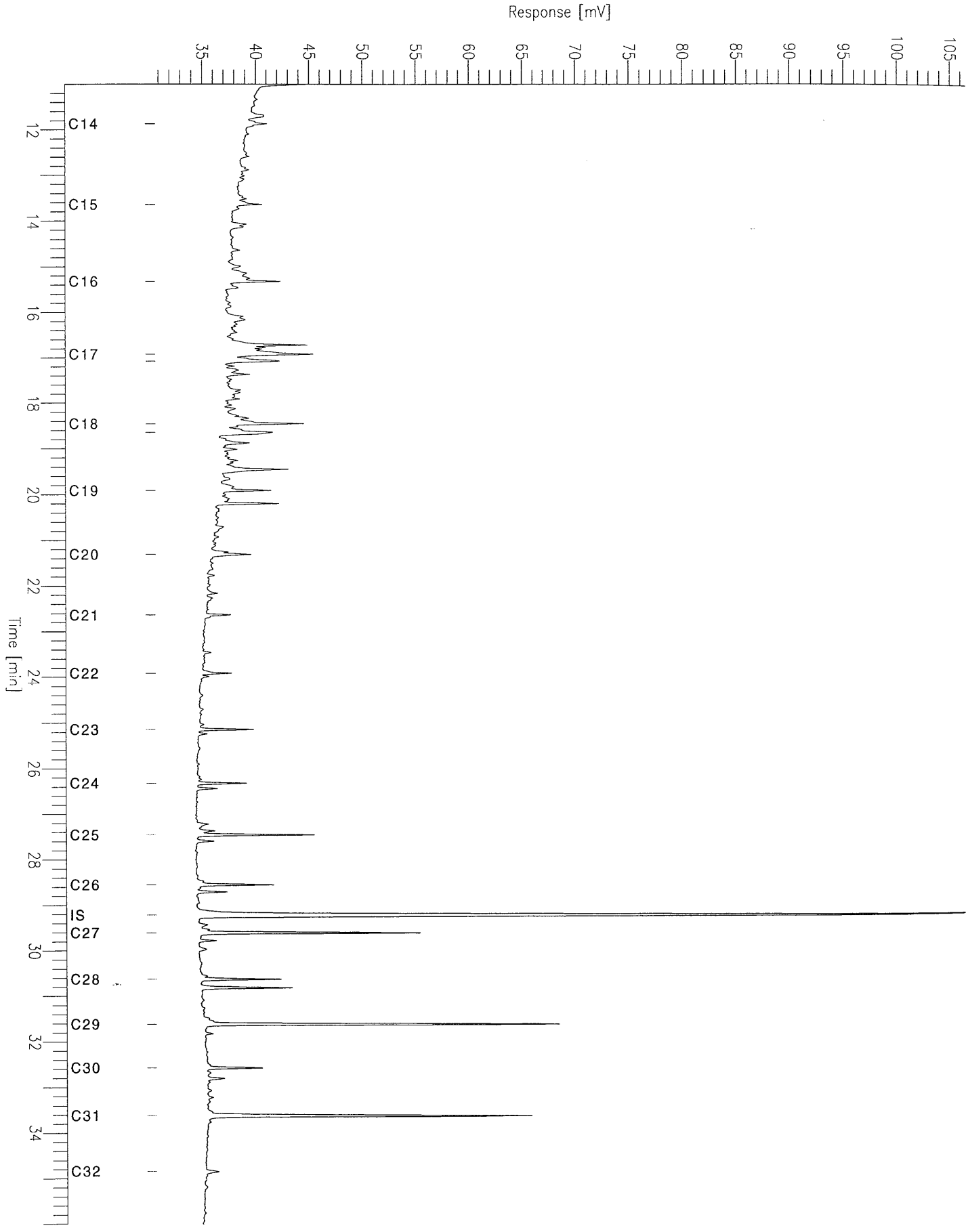
Sample #: Page 1 of 1
Date : 2/3/95 05:21 PM
Time of Injection: 10/13/94 01:47 PM
Low Point : 30.36 mV High Point : 106.30 mV
Plot Scale: 75.9 mV



Rockall Chromatogram

Sample Name : 57-16/8 2.54m
FileName : C:\TC4\HYDROCAR\RD32.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

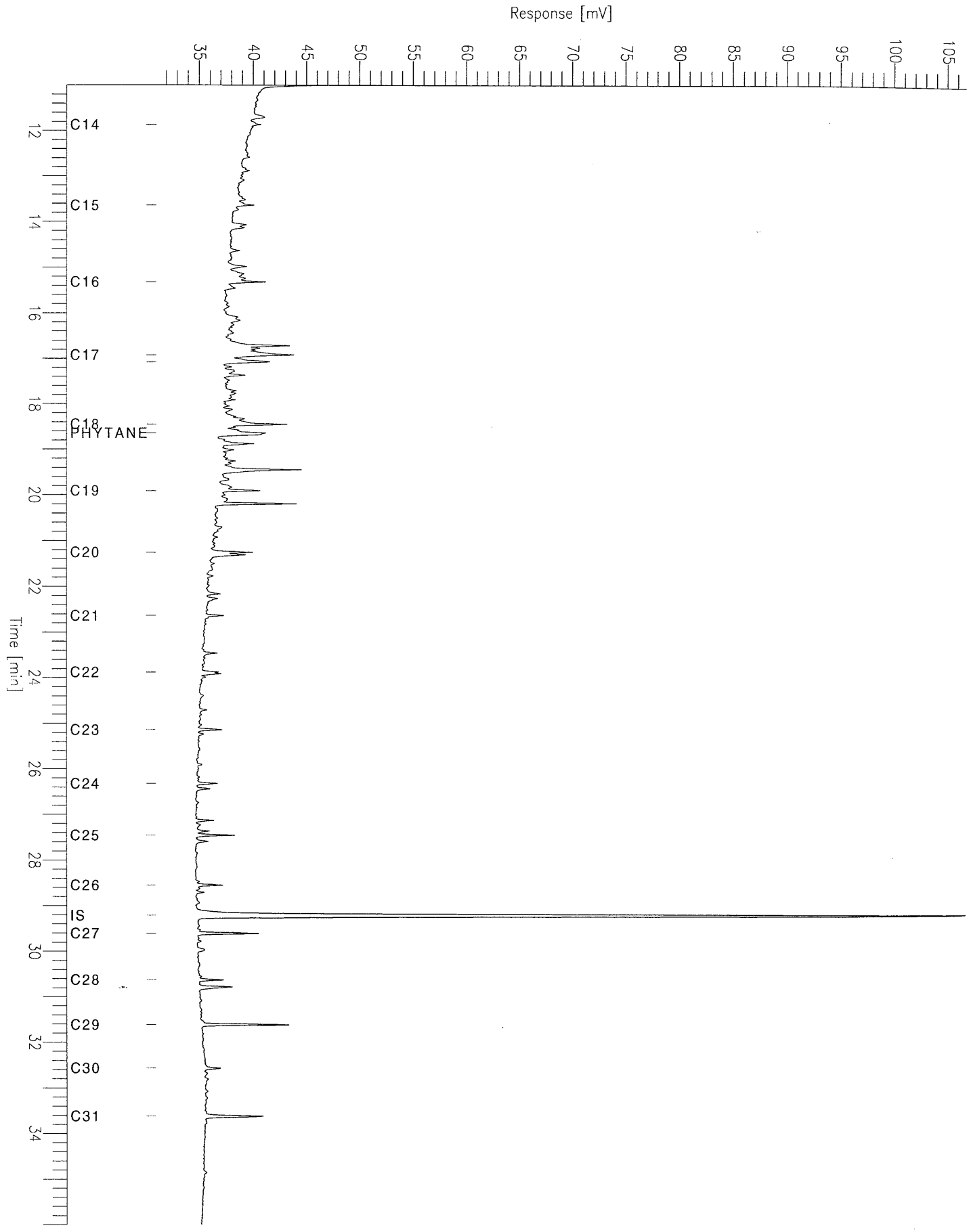
Sample #: Page 1 of 1
Date : 2/3/95 05:22 PM
Time of Injection: 10/13/94 02:43 PM
Low Point : 30.70 mV High Point : 106.50 mV
Plot Scale: 75.8 mV



Rockall Chromatogram

Sample Name : 57-16/9 2.05m
FileName : C:\TC4\HYDROCAR\RD33.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

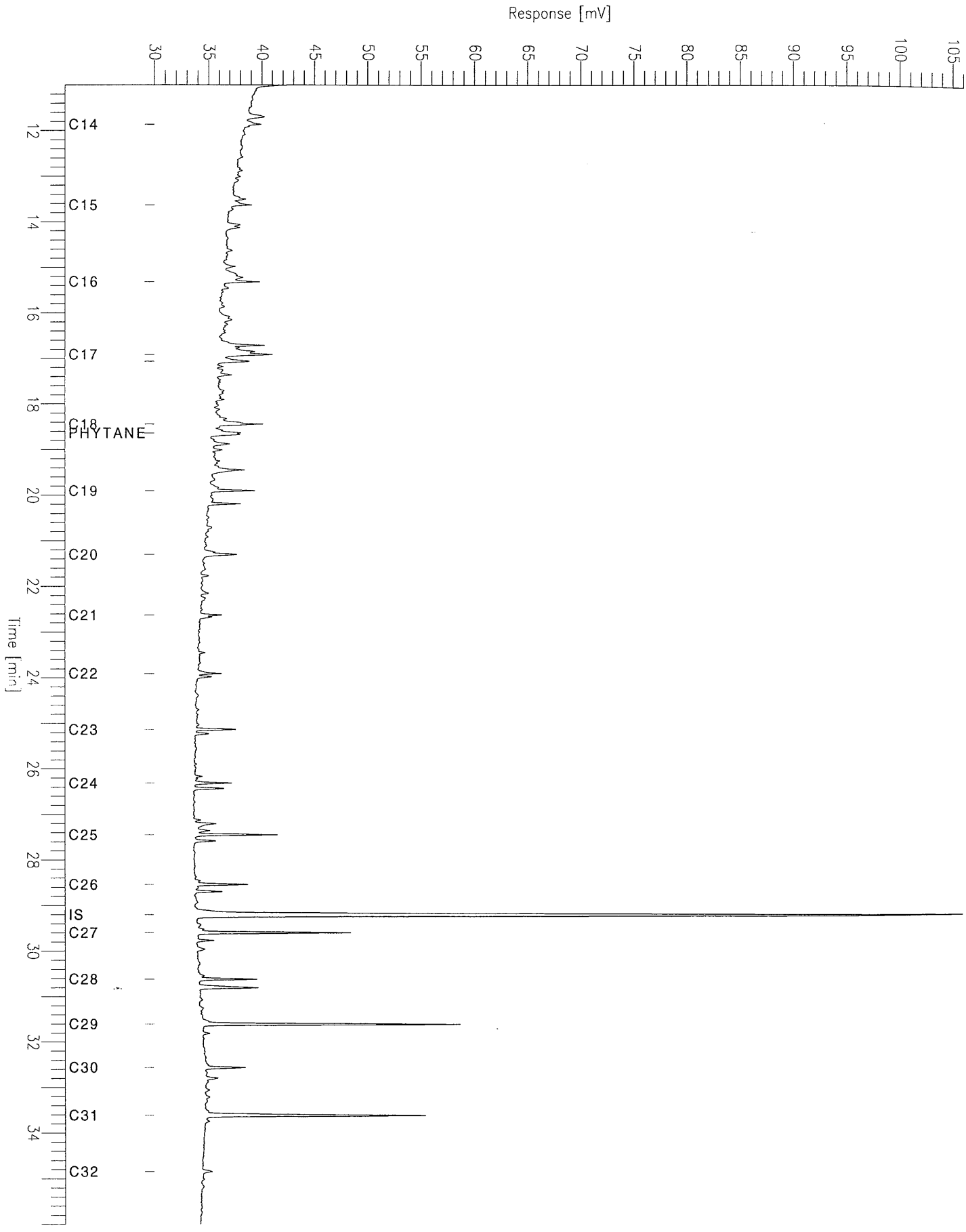
Sample #:
Date : 2/3/95 05:22 PM
Time of Injection: 10/13/94 03:38 PM
Low Point : 31.07 mV High Point : 106.72 mV
Plot Scale: 75.7 mV



Rockall Chromatogram

Sample Name : 57-16/9 2.70m
FileName : C:\TC4\HYDROCAR\RD34.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

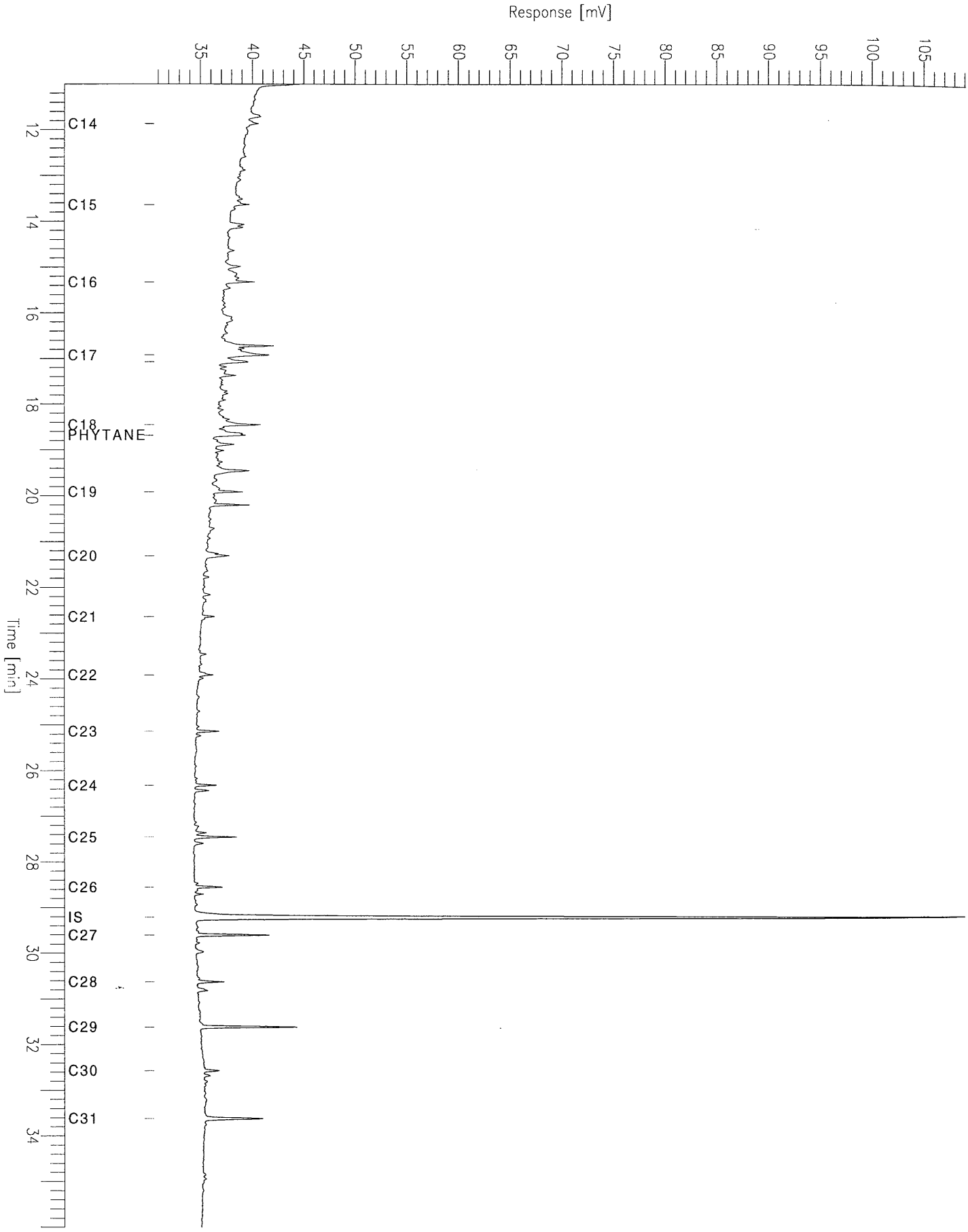
Sample #: Page 1 of 1
Date : 2/3/95 05:22 PM
Time of Injection: 10/13/94 04:32 PM
Low Point : 29.99 mV High Point : 106.00 mV
Plot Scale: 76.0 mV



Rockall Chromatogram

Sample Name : 57-16/10 2.03m
FileName : C:\TC4\HYDROCAR\RD35.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

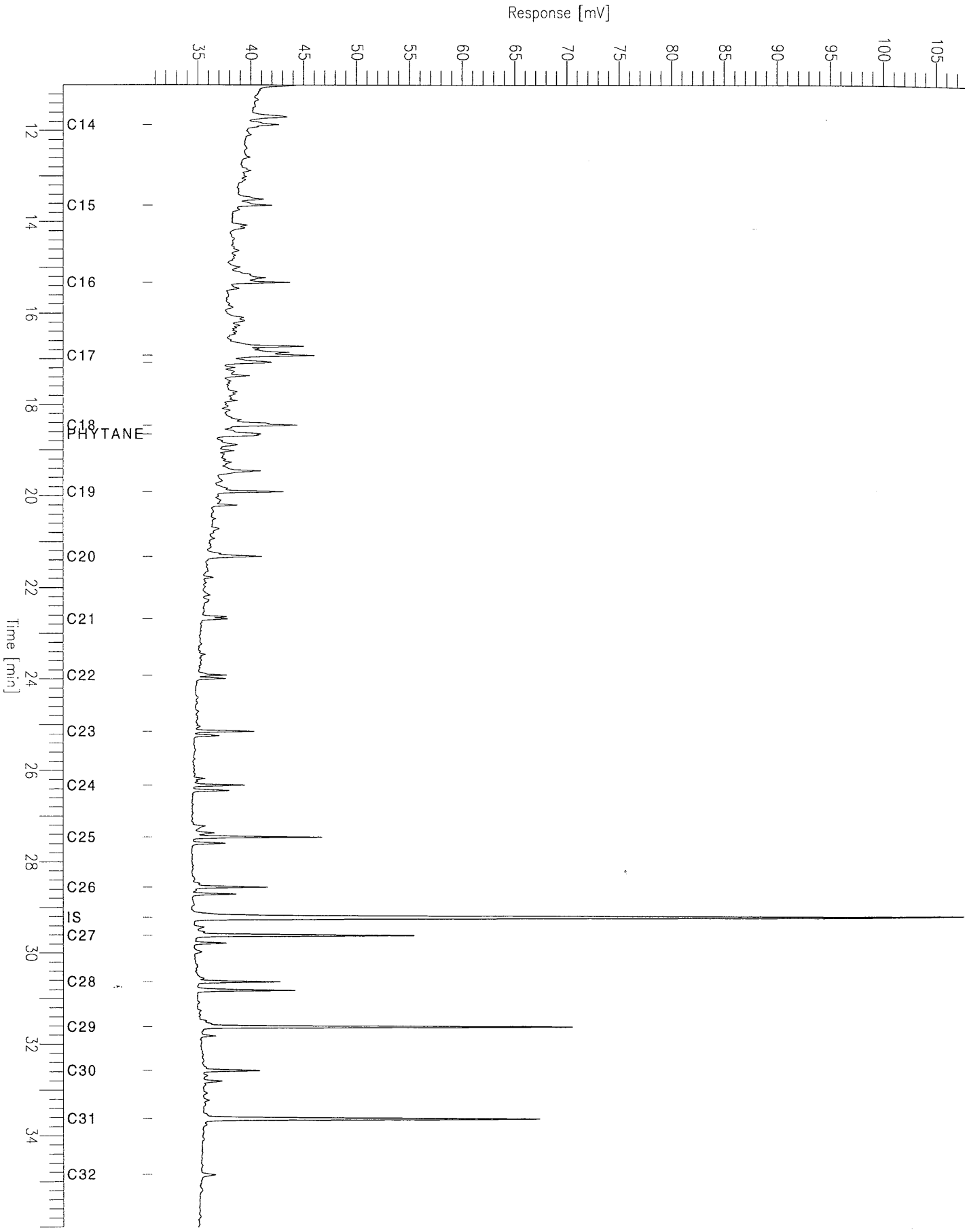
Sample #: Page 1 of 1
Date : 2/3/95 05:22 PM
Time of Injection: 10/13/94 05:28 PM
Low Point : 30.62 mV High Point : 109.03 mV
Plot Scale: 78.4 mV



Rockall Chromatogram

Sample Name : 57-16/10 2.68m
FileName : C:\TC4\HYDROCAR\RD36.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

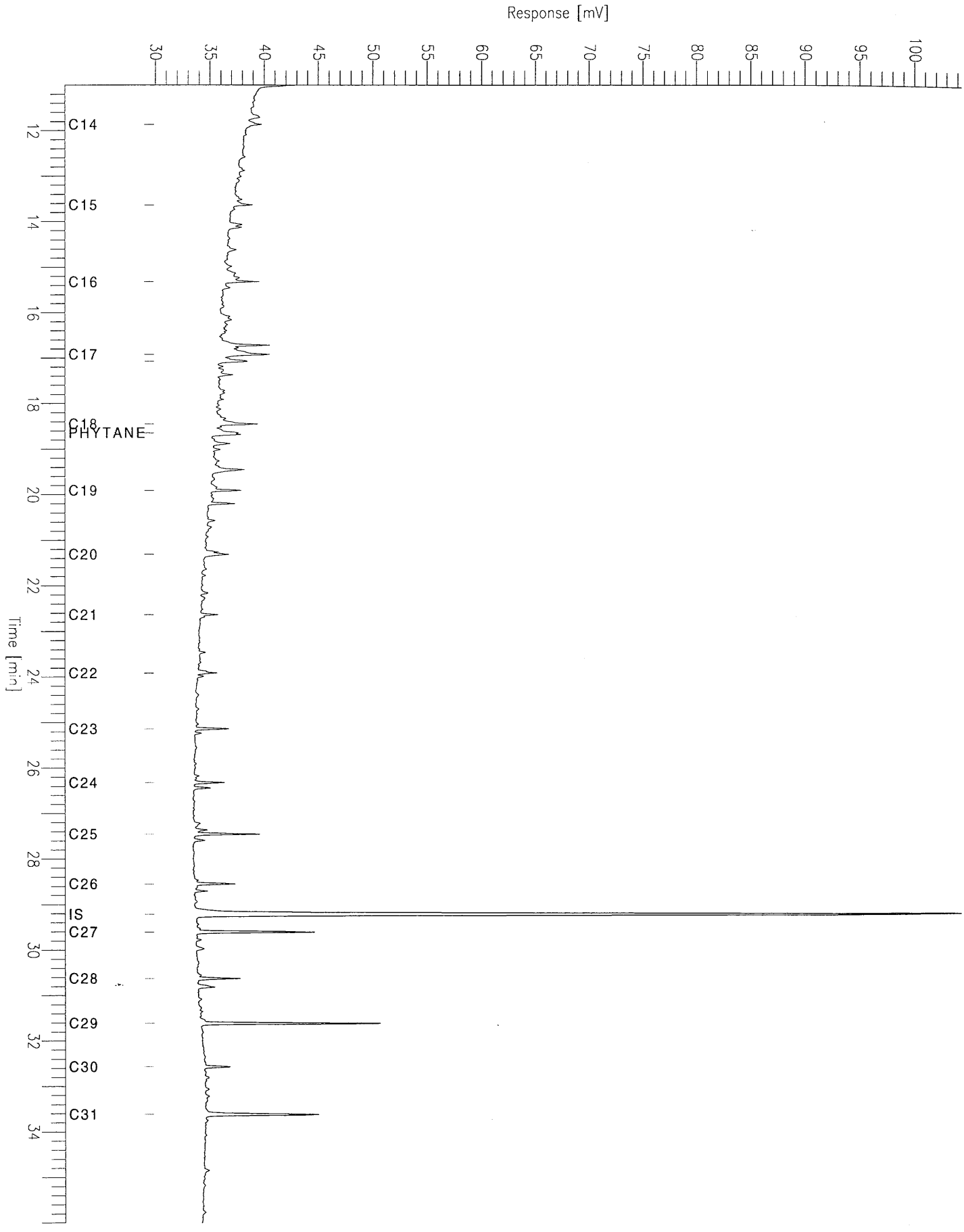
Sample #: Page 1 of 1
Date : 2/3/95 05:23 PM
Time of Injection: 10/13/94 06:23 PM
Low Point : 30.76 mV High Point : 107.71 mV
Plot Scale: 76.9 mV



Rockall Chromatogram

Sample Name : 57-16/11 2.38m
FileName : C:\TC4\HYDROCAR\RD37.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

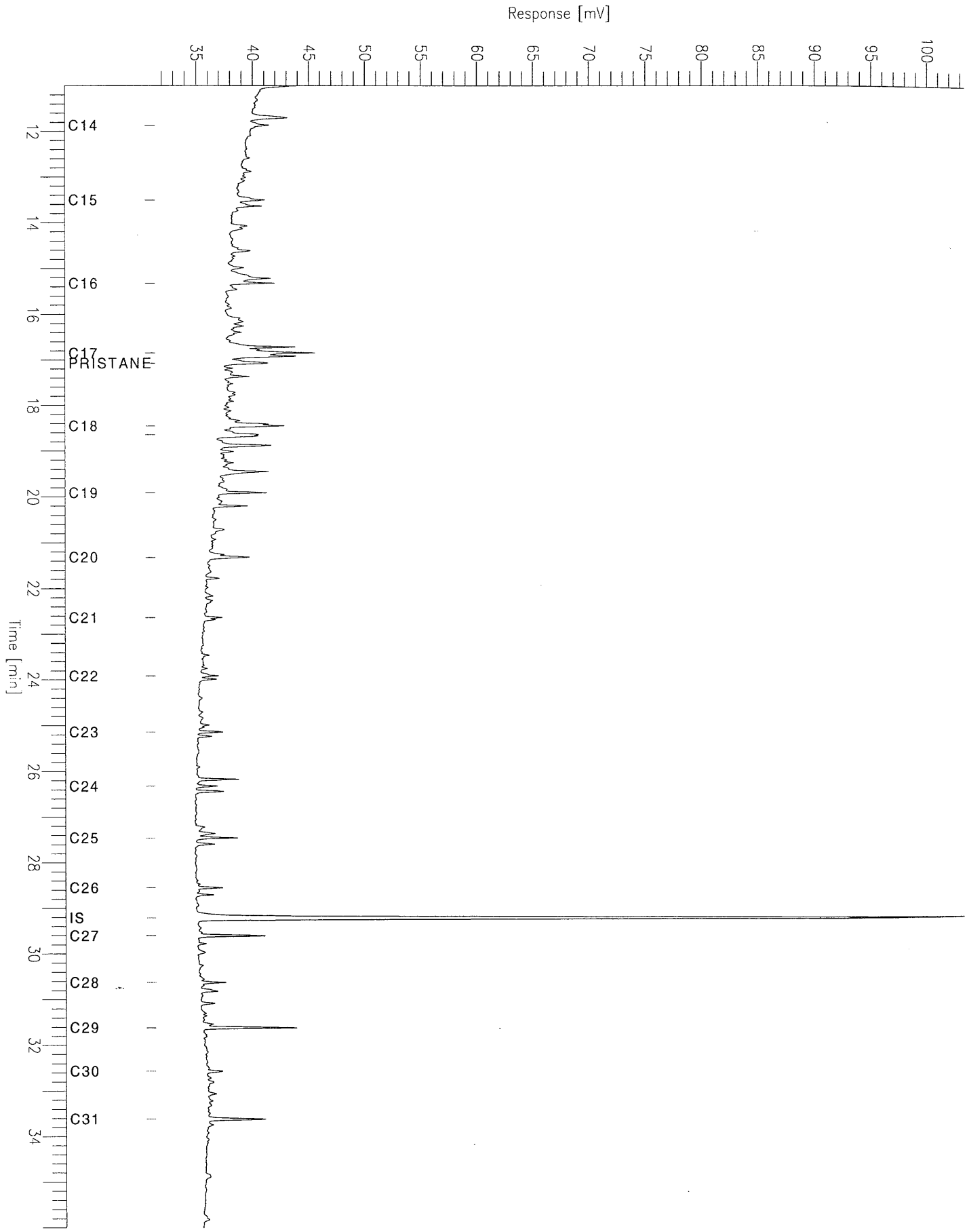
Sample #:
Date : 2/3/95 05:23 PM
Time of Injection: 10/13/94 07:18 PM
Low Point : 29.87 mV High Point : 104.32 mV
Plot Scale: 74.4 mV



Rockall Chromatogram

Sample Name : 57-16/11 3.03m
FileName : C:\TC4\HYDROCAR\RD38.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

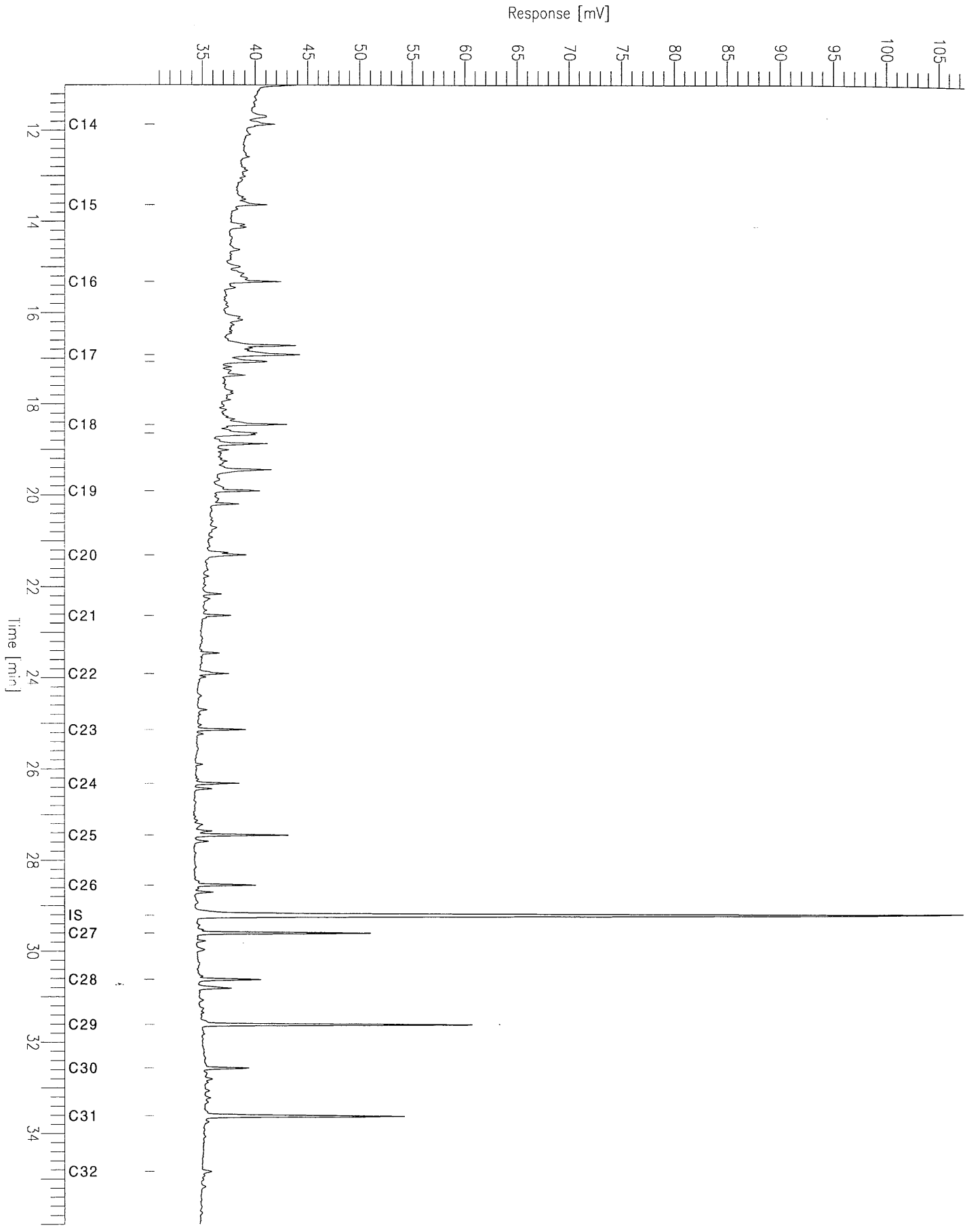
Sample #: Page 1 of 1
Date : 2/3/95 05:23 PM
Time of Injection: 10/13/94 08:13 PM
Low Point : 31.41 mV High Point : 103.33 mV
Plot Scale: 71.9 mV



Rockall Chromatogram

Sample Name : 57-16/12 2.56m
FileName : C:\TC4\HYDROCAR\RD39.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

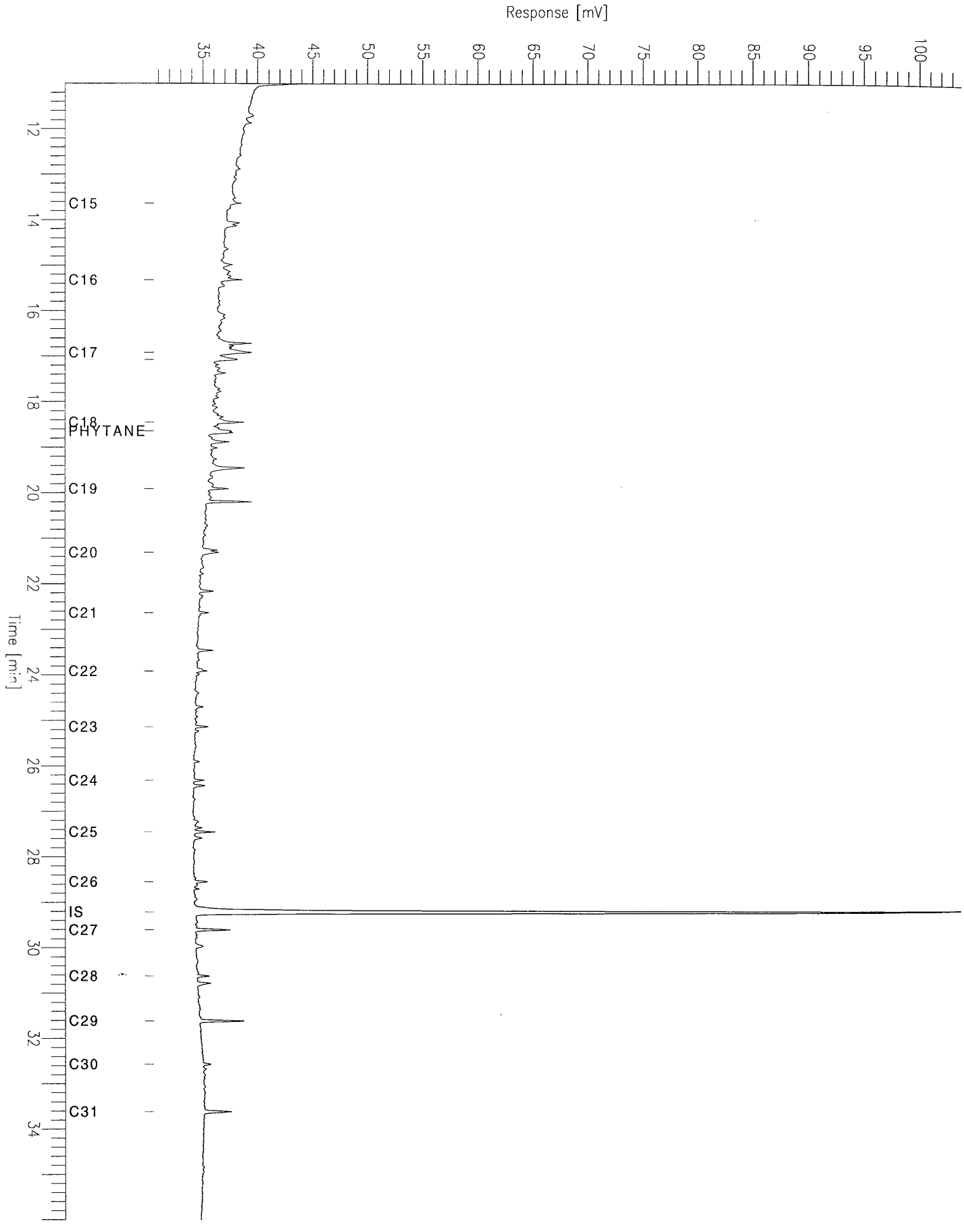
Sample #: Page 1 of 1
Date : 2/3/95 05:24 PM
Time of Injection: 10/13/94 09:08 PM
Low Point : 30.57 mV High Point : 107.41 mV
Plot Scale: 76.8 mV



Rockall Chromatogram

Sample Name : 57-16/12 3.21m
FileName : C:\TC4\HYDROCAR\RD40.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

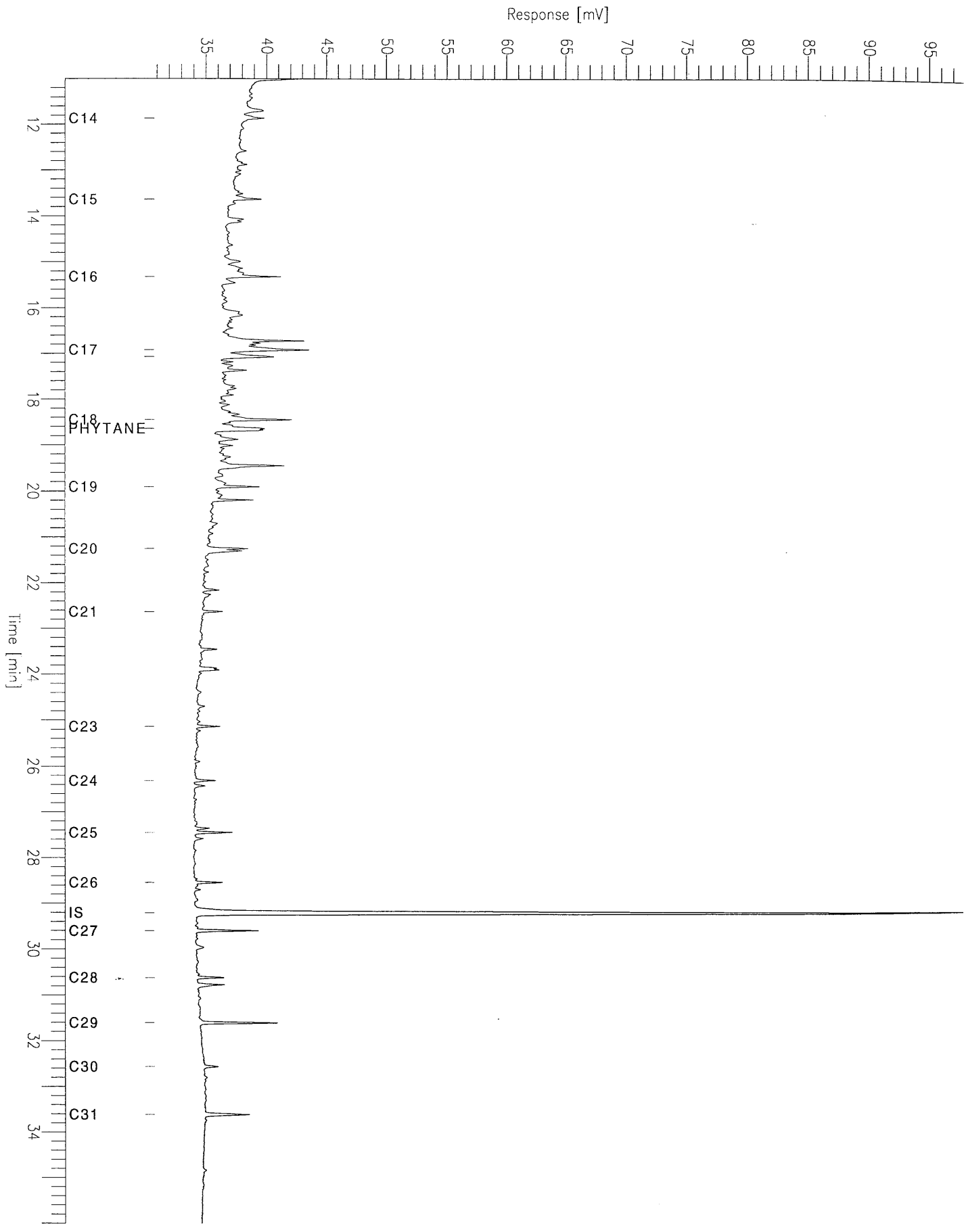
Sample #: Page 1 of 1
Date : 2/3/95 05:24 PM
Time of Injection: 10/13/94 10:03 PM
Low Point : 30.60 mV High Point : 103.73 mV
Plot Scale: 73.1 mV



Rockall Chromatogram

Sample Name : 57-16/15 2.16m
FileName : C:\TC4\HYDROCAR\RD41.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

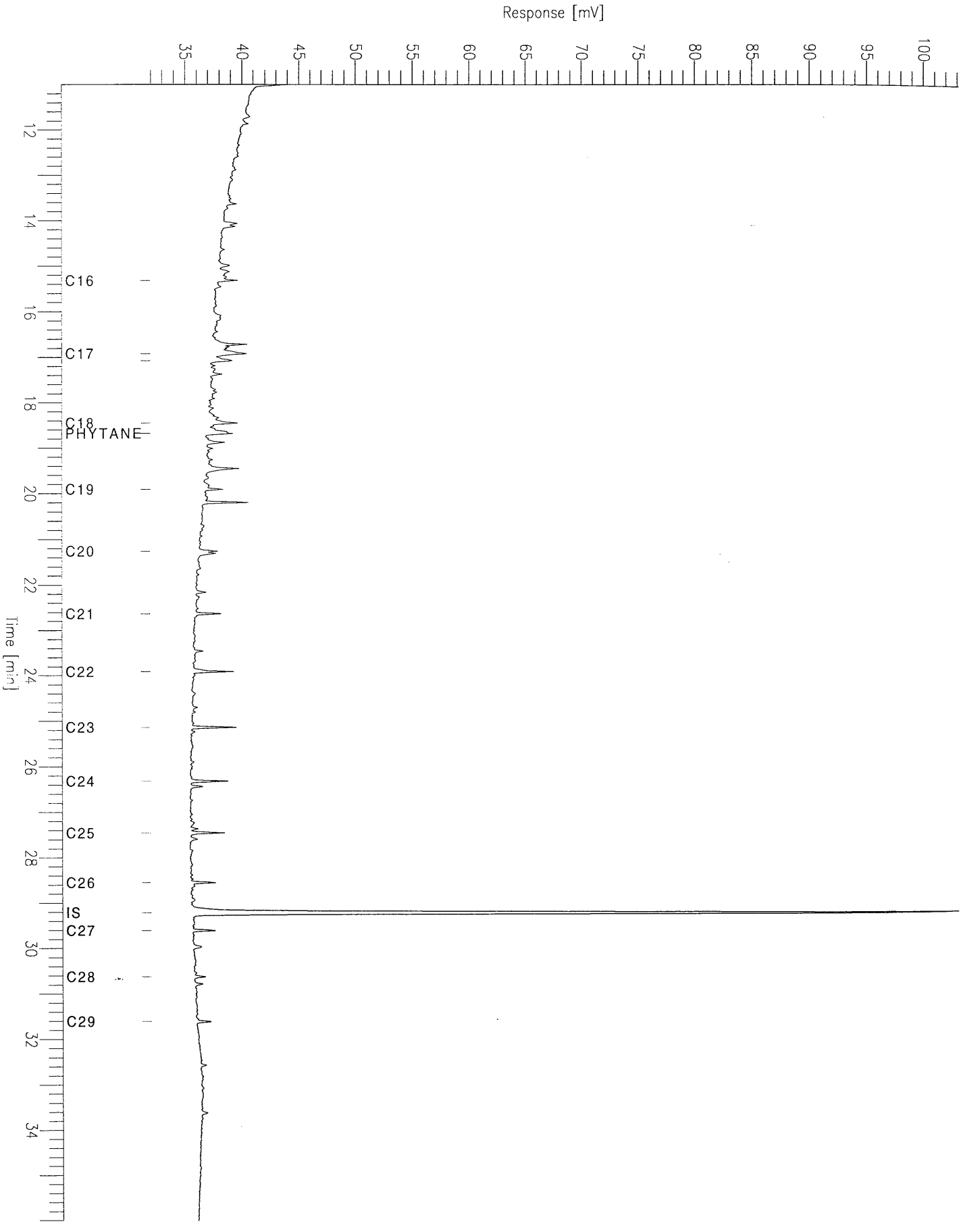
Sample #: Page 1 of 1
Date : 2/3/95 05:24 PM
Time of Injection: 10/13/94 10:58 PM
Low Point : 30.77 mV High Point : 97.79 mV
Plot Scale: 67.0 mV



Rockall Chromatogram

Sample Name : 57-16/15 2.81m
FileName : C:\TC4\HYDROCAR\RD42.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

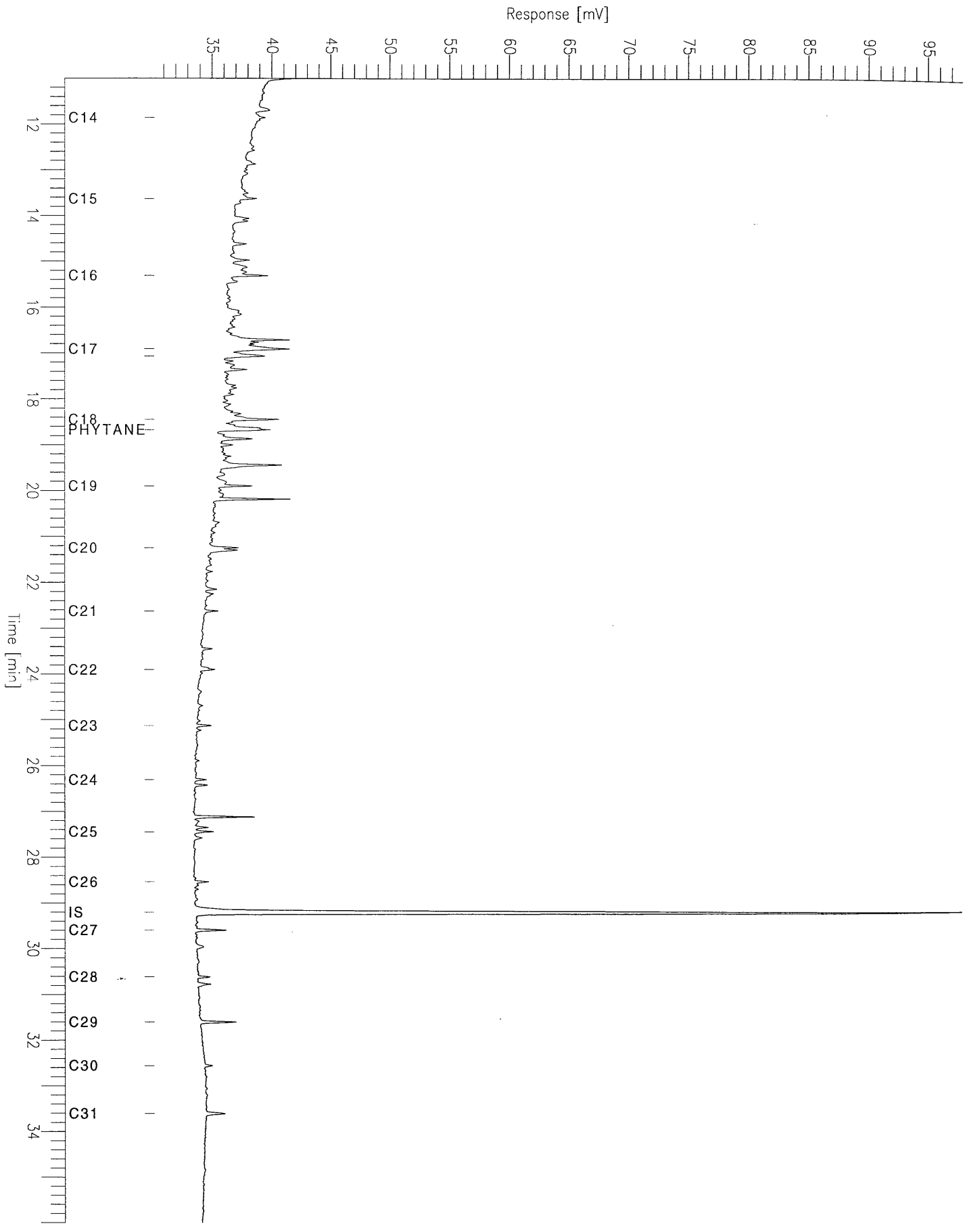
Sample #: Page 1 of 1
Date : 2/3/95 05:25 PM
Time of Injection: 10/13/94 11:53 PM
Low Point : 31.96 mV High Point : 103.08 mV
Plot Scale: 71.1 mV



Rockall Chromatogram

Sample Name : 57-17/1 1.66m
FileName : C:\TC4\HYDROCAR\RD43.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

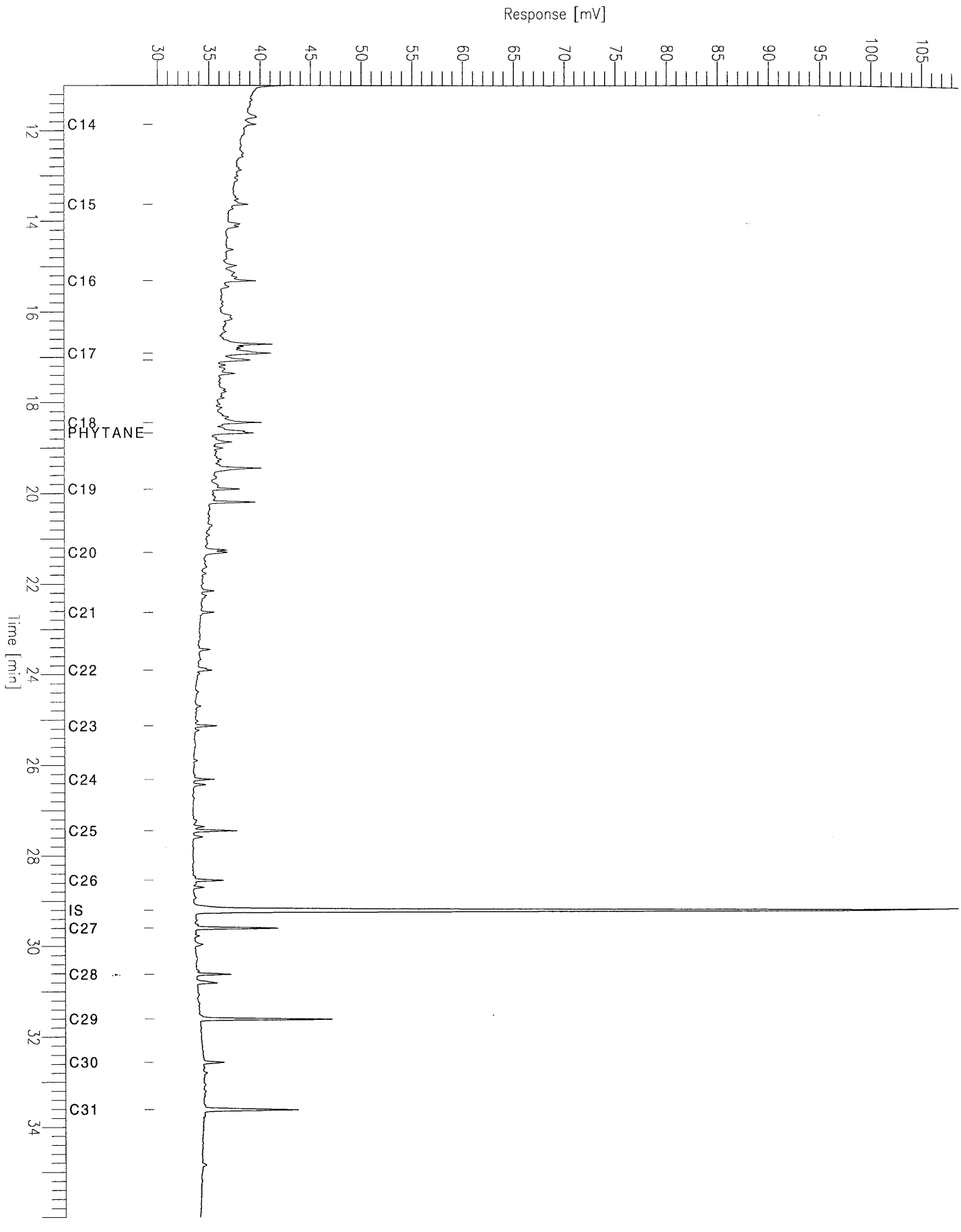
Sample #: Page 1 of 1
Date : 2/3/95 05:25 PM
Time of Injection: 10/14/94 12:48 AM
Low Point : 30.22 mV High Point : 97.85 mV
Plot Scale: 67.6 mV



Rockall Chromatogram

Sample Name : 57-17/1 2.31m
FileName : C:\TC4\HYDROCAR\RD44.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

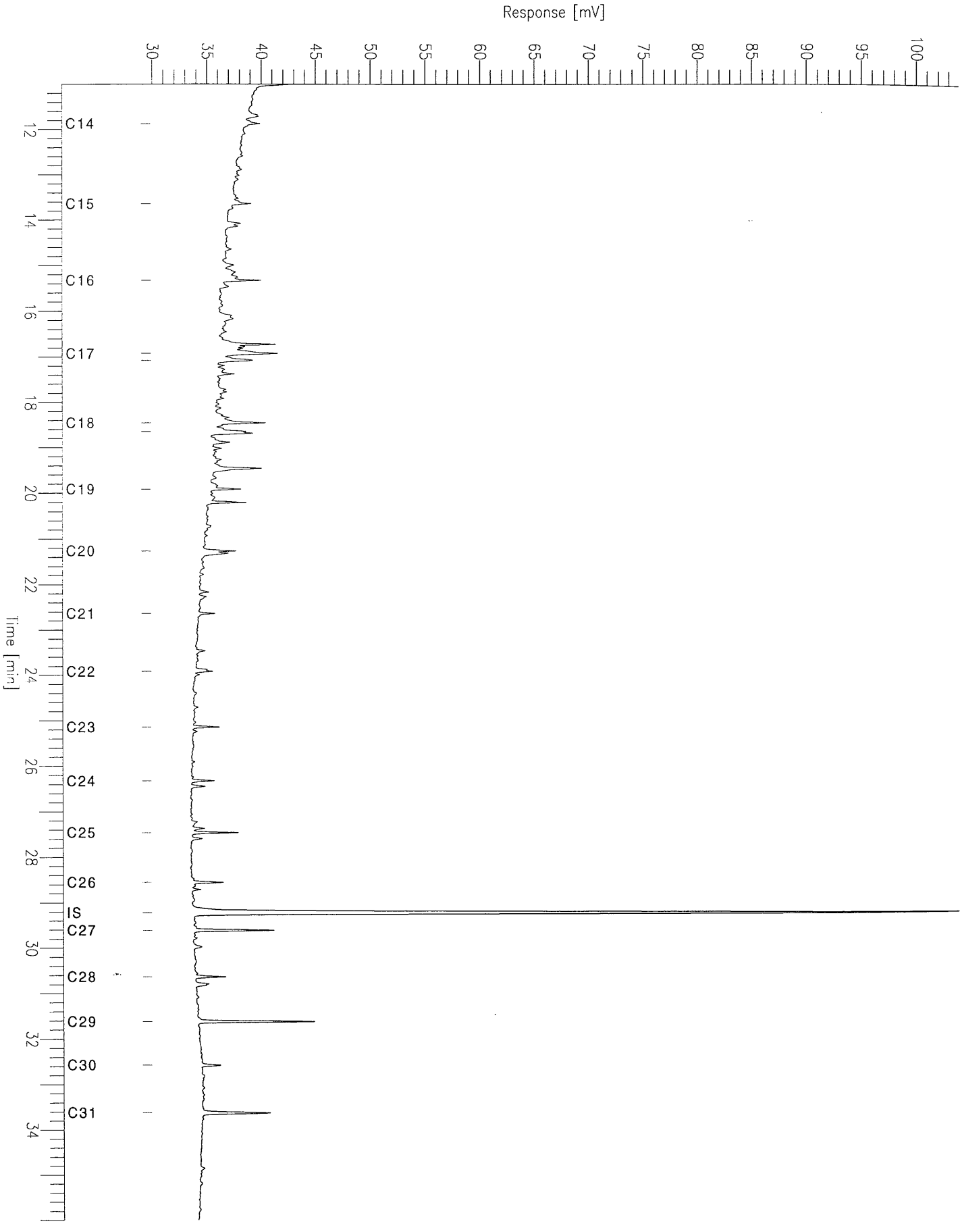
Sample #: Page 1 of 1
Date : 2/3/95 05:25 PM
Time of Injection: 10/14/94 01:42 AM
Low Point : 29.54 mV High Point : 108.65 mV
Plot Scale: 79.1 mV



Rockall Chromatogram

Sample Name : 57-17/2 1.86m
FileName : C:\TC4\HYDROCAR\RD45.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

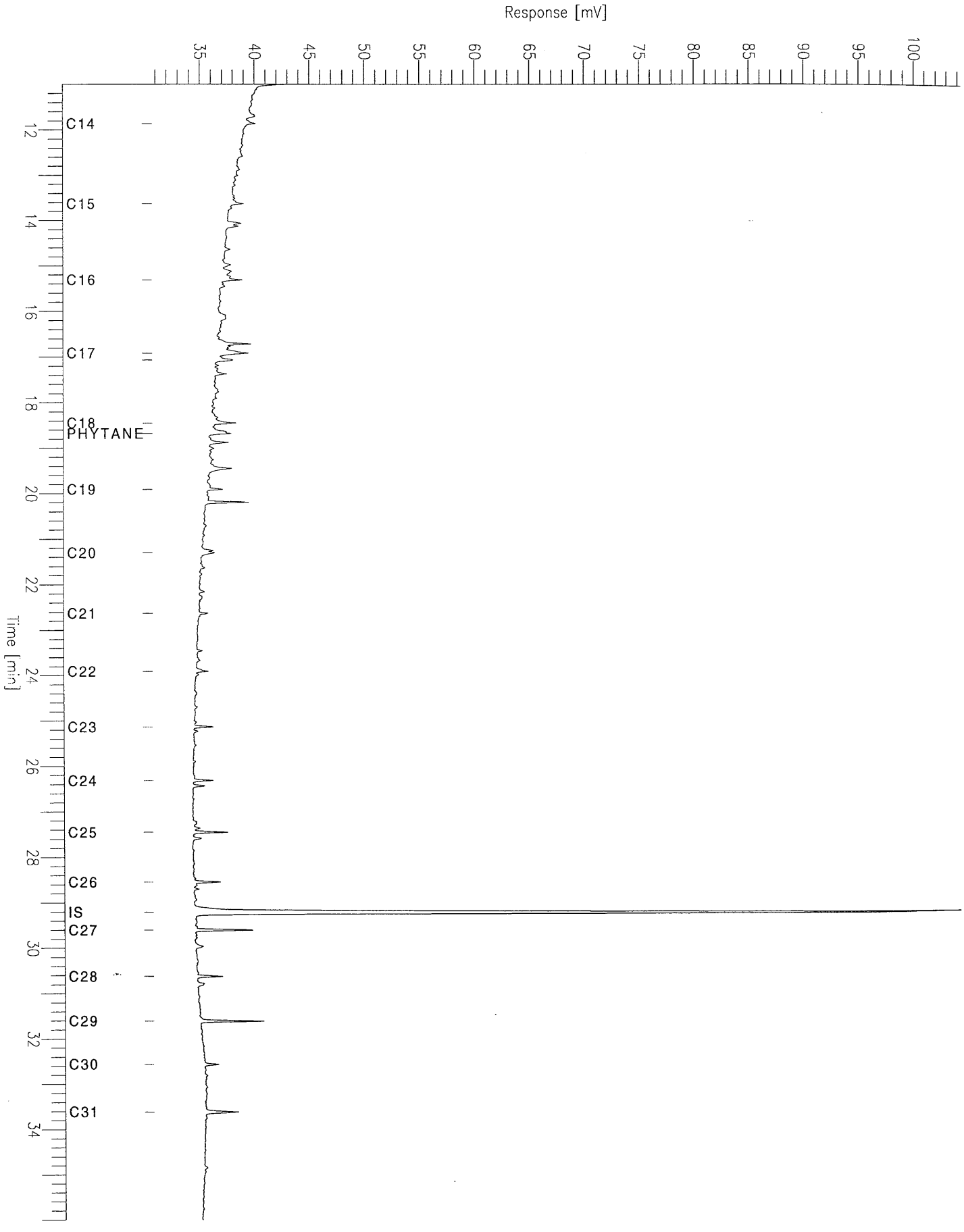
Sample #: Page 1 of 1
Date : 2/3/95 05:25 PM
Time of Injection: 10/14/94 02:36 AM
Low Point : 29.86 mV High Point : 103.83 mV
Plot Scale: 74.0 mV



Rockall Chromatogram

Sample Name : 57-17/2 2.51m
FileName : C:\TC4\HYDROCAR\RD46.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

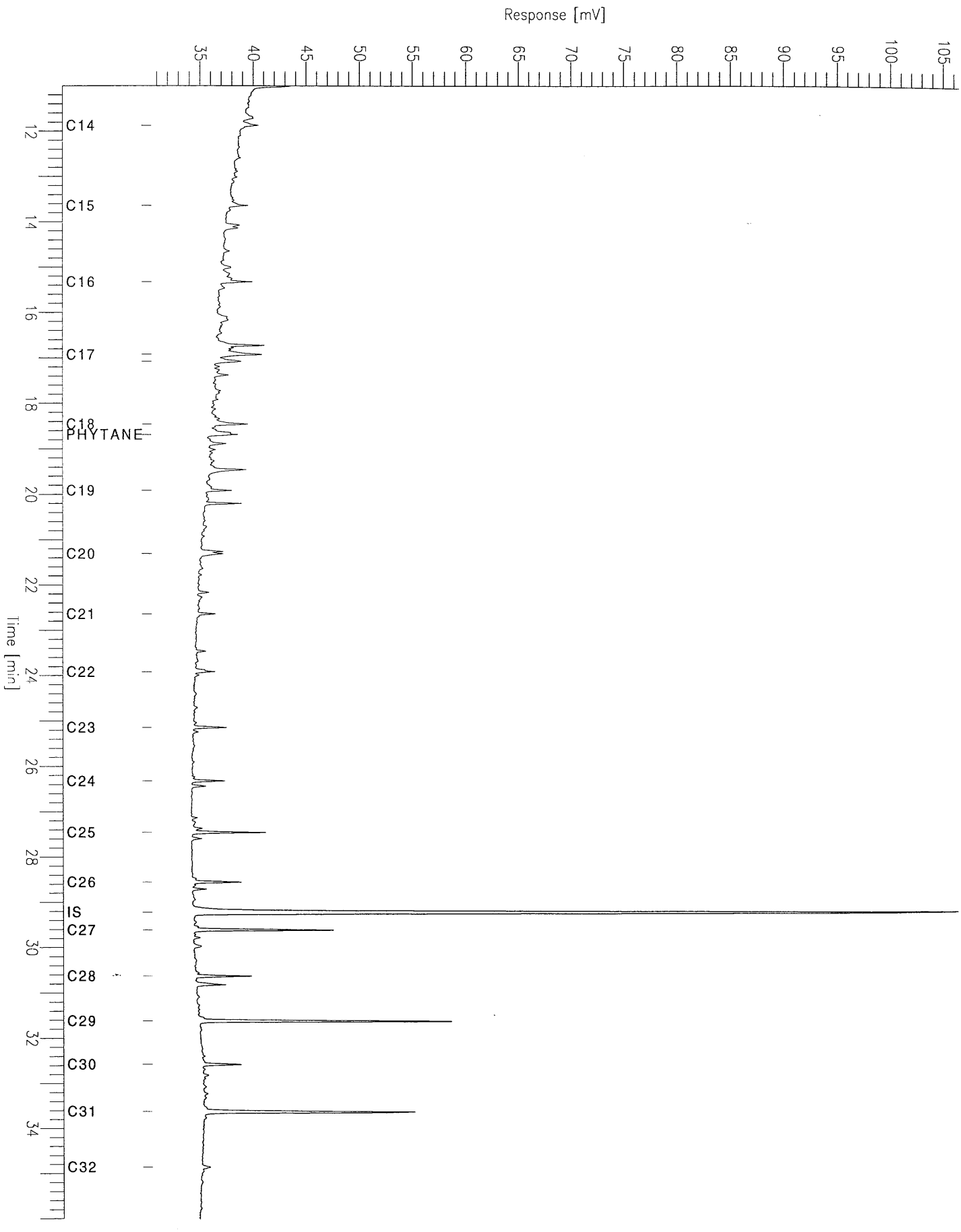
Sample #: Page 1 of 1
Date : 2/3/95 05:26 PM
Time of Injection: 10/14/94 03:32 AM
Low Point : 30.70 mV High Point : 104.28 mV
Plot Scale: 73.6 mV



Rockall Chromatogram

Sample Name : 57-17/3 1.78m
FileName : C:\TC4\HYDROCAR\RD47.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

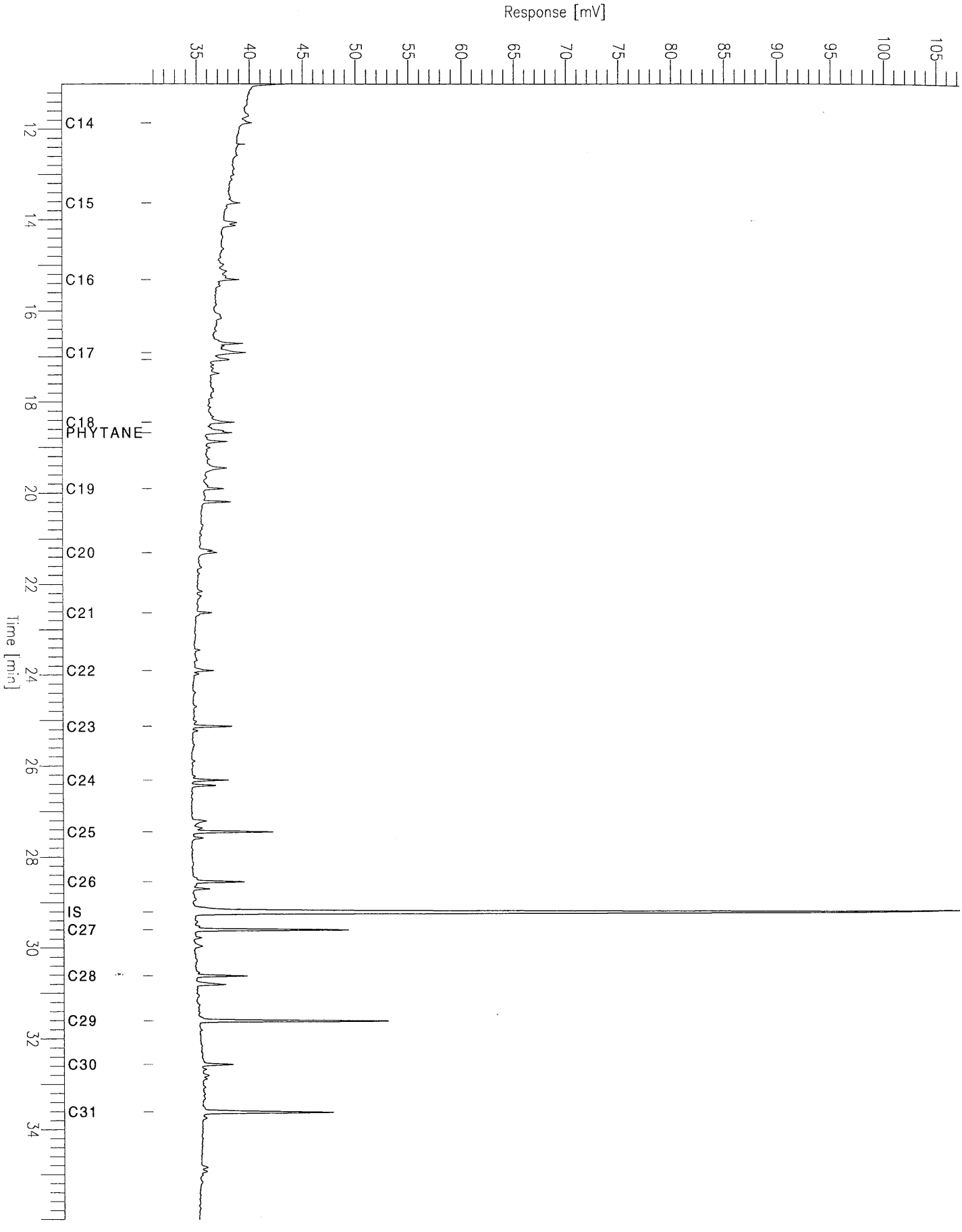
Sample #: Page 1 of 1
Date : 2/3/95 05:26 PM
Time of Injection: 10/14/94 04:27 AM
Low Point : 30.51 mV High Point : 106.43 mV
Plot Scale: 75.9 mV



Rockall Chromatogram

Sample Name : 57-17/3 2.43m
FileName : C:\TC4\HYDROCAR\RD48.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

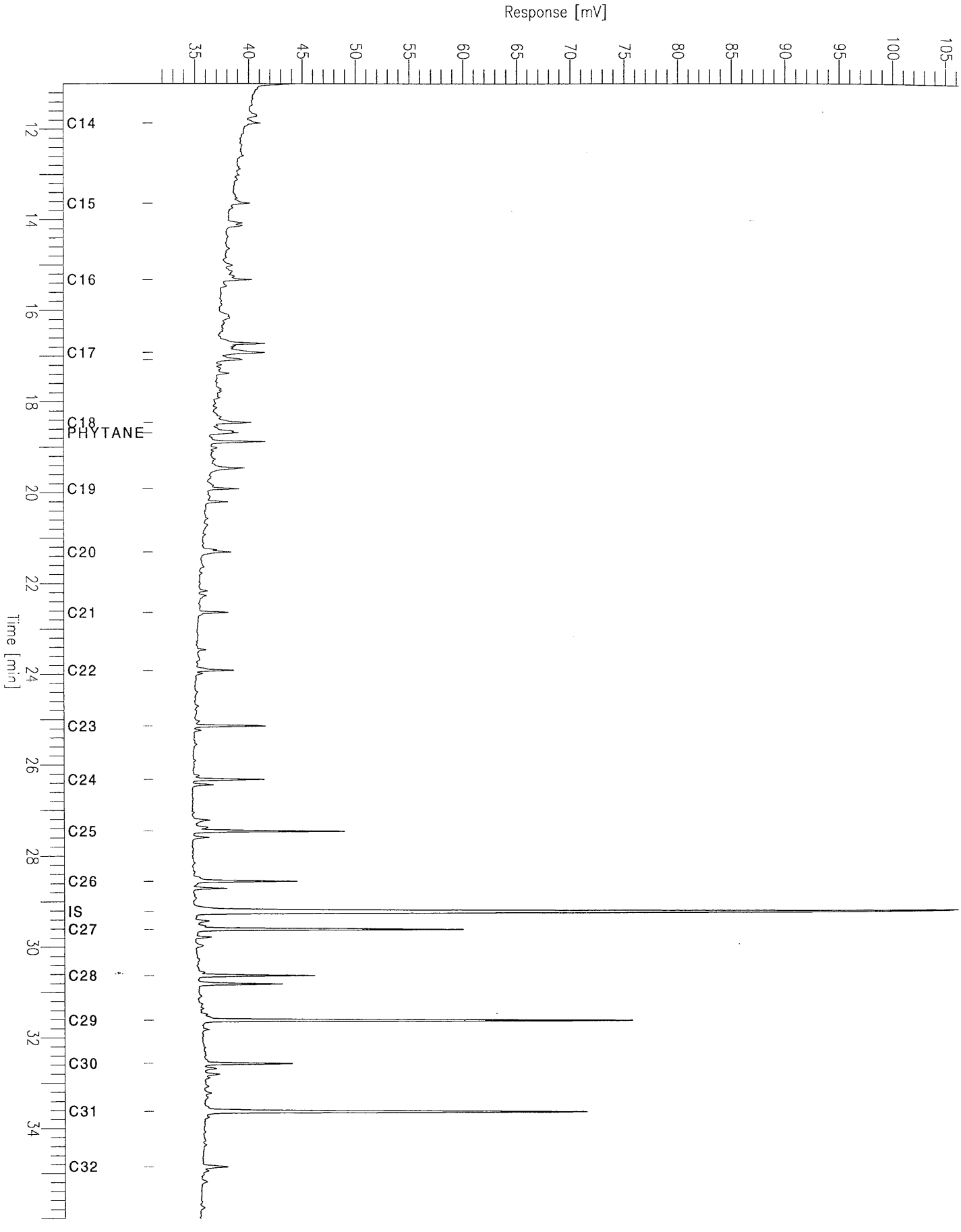
Sample #: Page 1 of 1
Date : 2/3/95 05:26 PM
Time of Injection: 10/14/94 05:23 AM
Low Point : 30.78 mV High Point : 107.20 mV
Plot Scale: 76.4 mV



Rockall Chromatogram

Sample Name : 57-17/4 2.26m
FileName : C:\TC4\HYDROCAR\re5.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

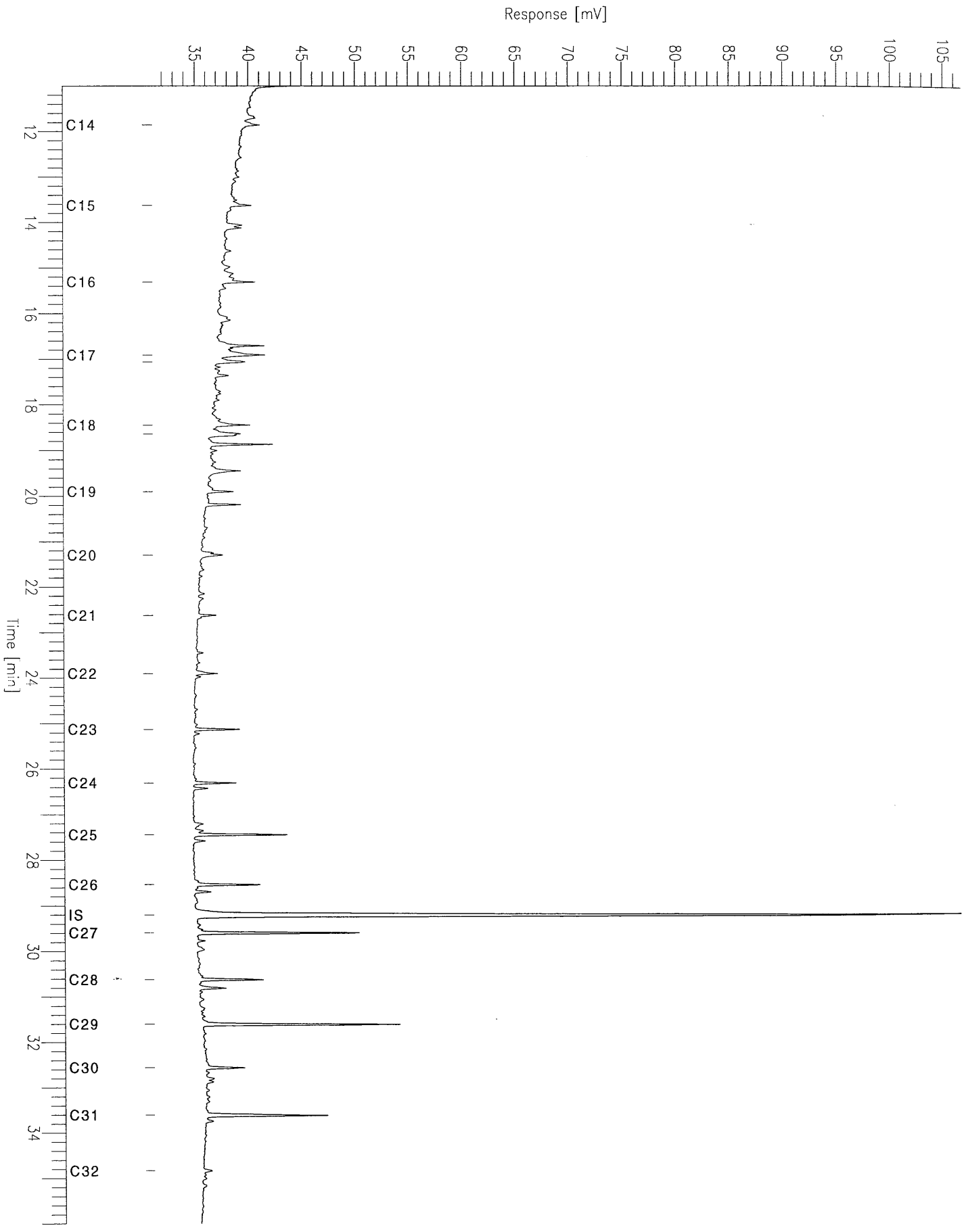
Sample #: Page 1 of 1
Date : 2/3/95 05:32 PM
Time of Injection: 10/14/94 02:01 PM
Low Point : 31.13 mV High Point : 106.18 mV
Plot Scale: 75.1 mV



Rockall Chromatogram

Sample Name : 57-17/4 2.91m
FileName : C:\TC4\HYDROCAR\re6.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

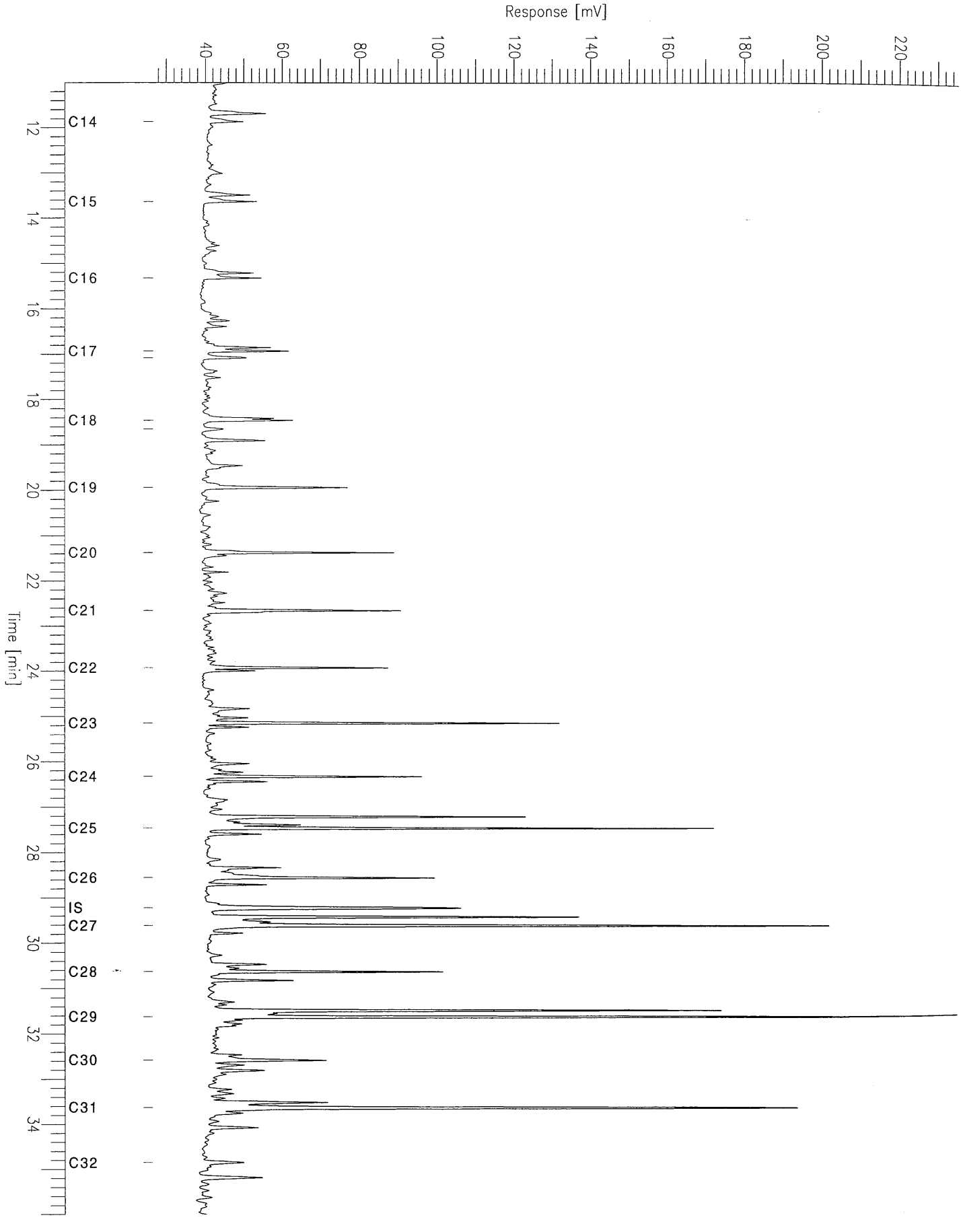
Sample #: Page 1 of 1
Date : 2/3/95 05:32 PM
Time of Injection: 10/14/94 02:56 PM
Low Point : 31.13 mV High Point : 106.70 mV
Plot Scale: 75.6 mV



Rockall Chromatogram

Sample Name : 58-11/3 2.31m
FileName : C:\TC4\HYDROCAR\re7.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

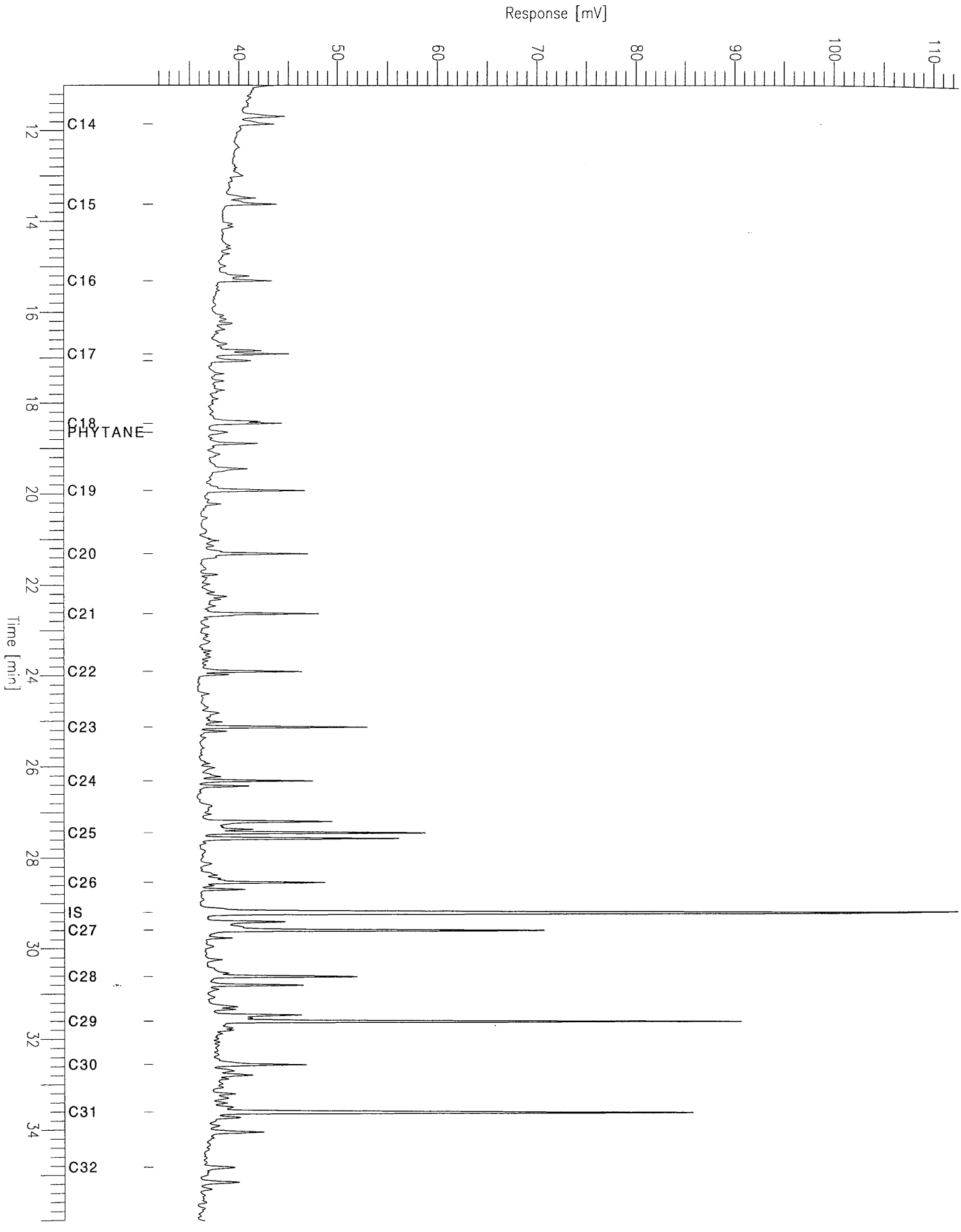
Sample #: Page 1 of 1
Date : 2/3/95 05:33 PM
Time of Injection: 10/14/94 03:51 PM
Low Point : 26.65 mV High Point : 235.21 mV
Plot Scale: 208.6 mV



Rockall Chromatogram

Sample Name : 58-11/3 2.96m
FileName : C:\TC4\HYDROCAR\re40.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

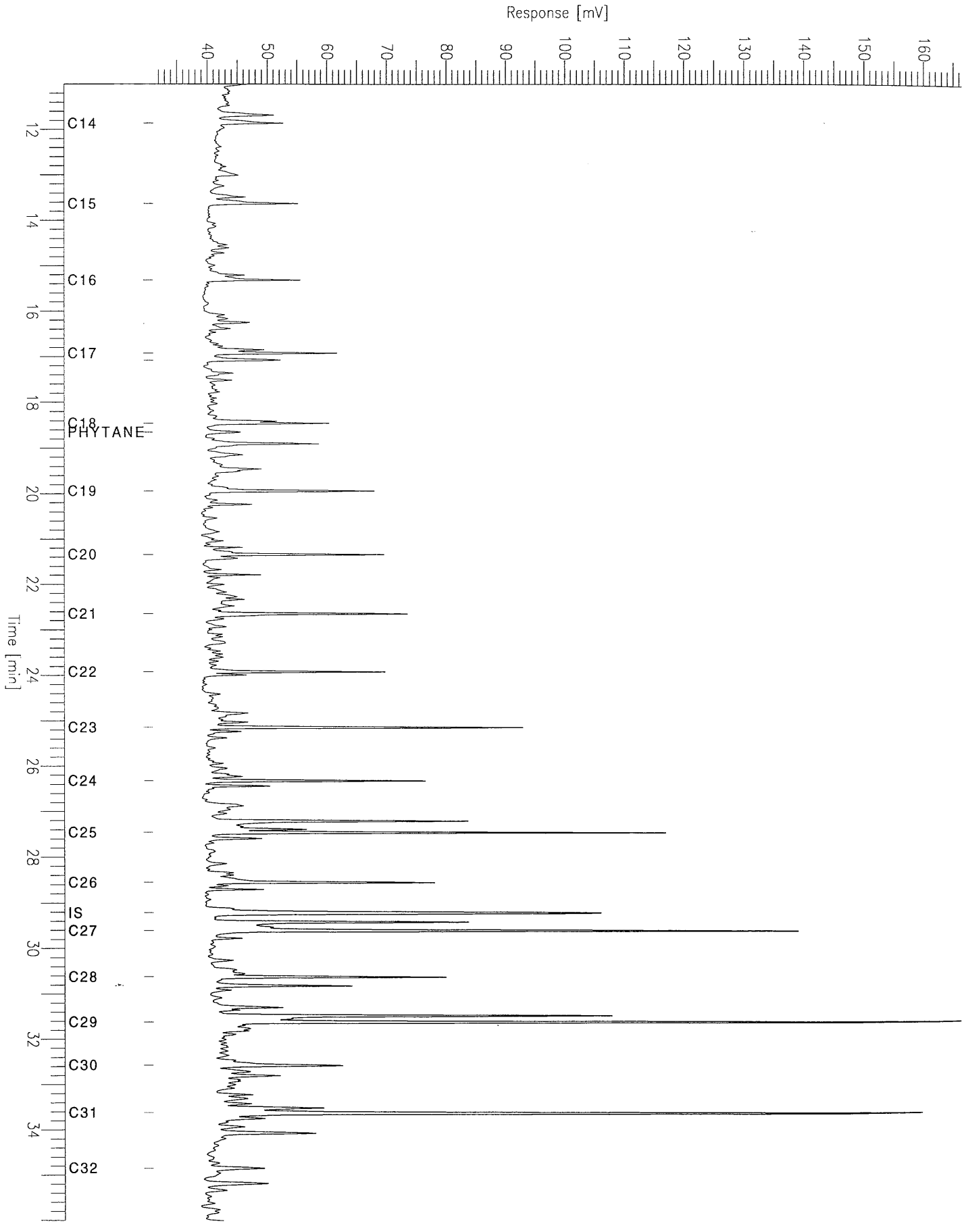
Sample #: Page 1 of 1
Date : 2/6/95 02:37 PM
Time of Injection: 10/15/94 10:12 PM
Low Point : 31.39 mV High Point : 112.50 mV
Plot Scale: 81.1 mV



Rockall Chromatogram

Sample Name : 58-12/1 2.45m
FileName : C:\TC4\HYDROCAR\re9.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

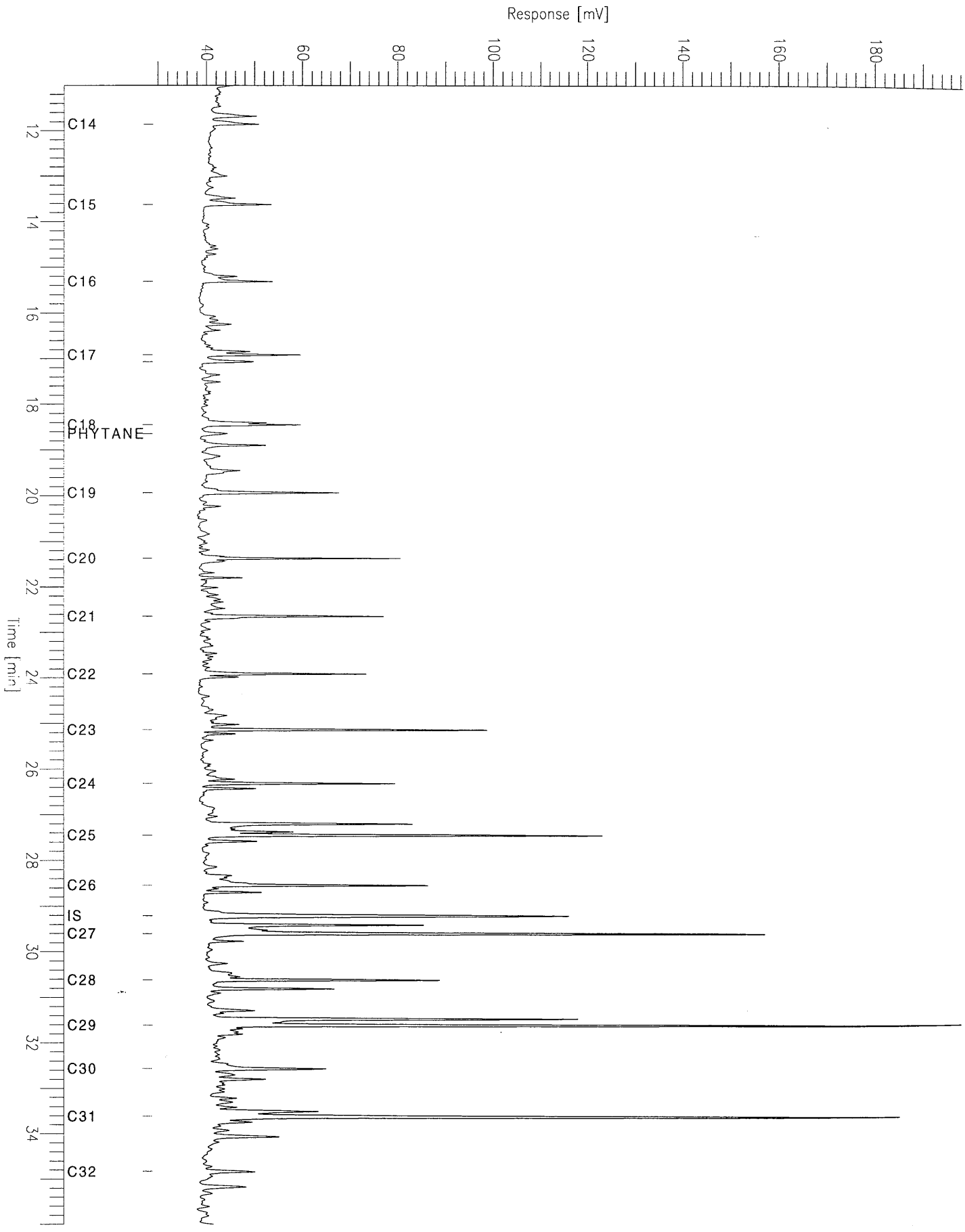
Sample #:
Date : 2/3/95 05:34 PM
Time of Injection: 10/14/94 05:41 PM
Low Point : 31.14 mV High Point : 166.44 mV
Plot Scale: 135.3 mV



Rockall Chromatogram

Sample Name : 58-12/1 3.10m
FileName : C:\TC4\HYDROCAR\re10.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

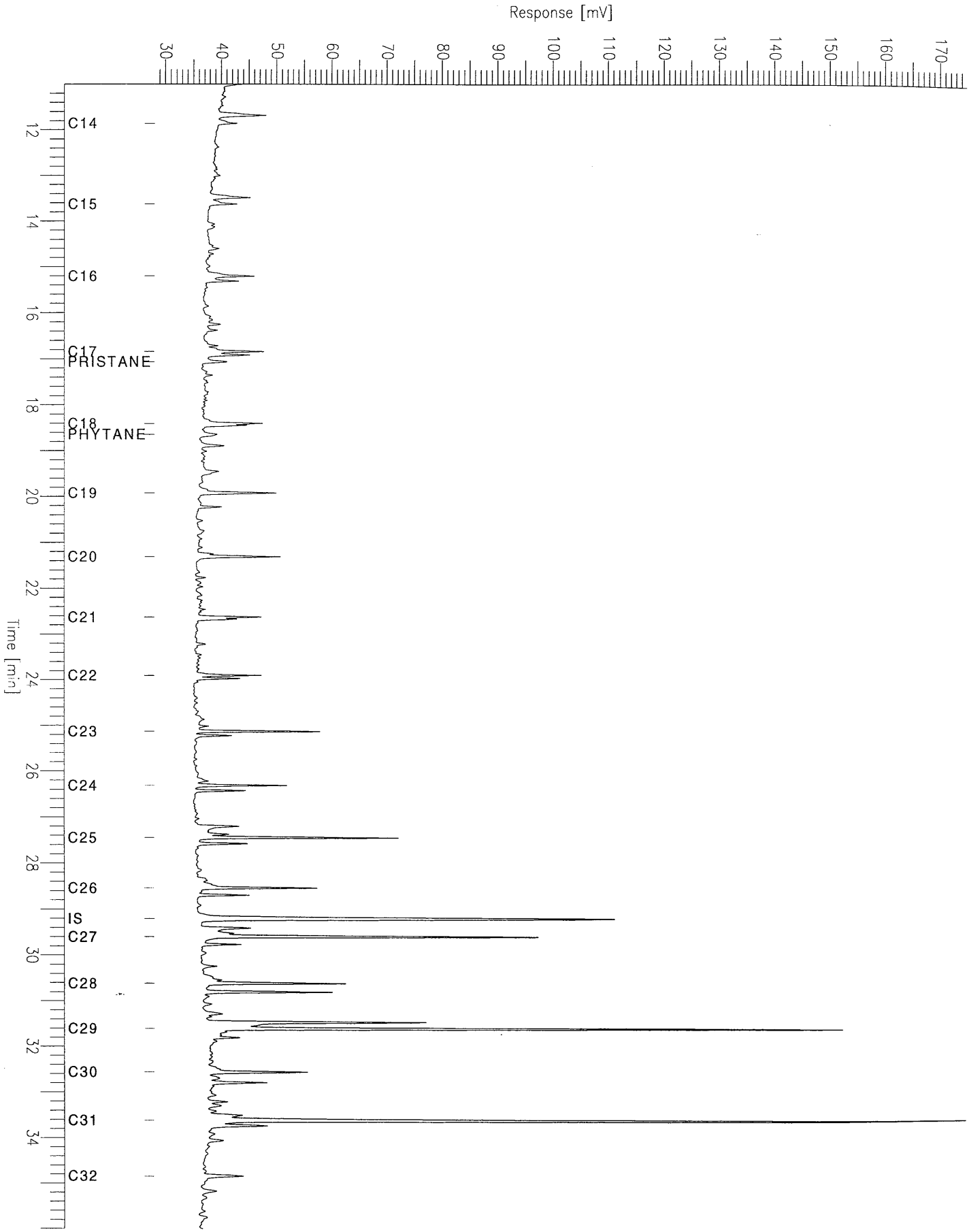
Sample #: Page 1 of 1
Date : 2/3/95 05:34 PM
Time of Injection: 10/14/94 06:37 PM
Low Point : 28.99 mV High Point : 198.32 mV
Plot Scale: 169.3 mV



Rockall Chromatogram

Sample Name : 58-12/2 2.71m
FileName : C:\TC4\HYDROCAR\re11.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

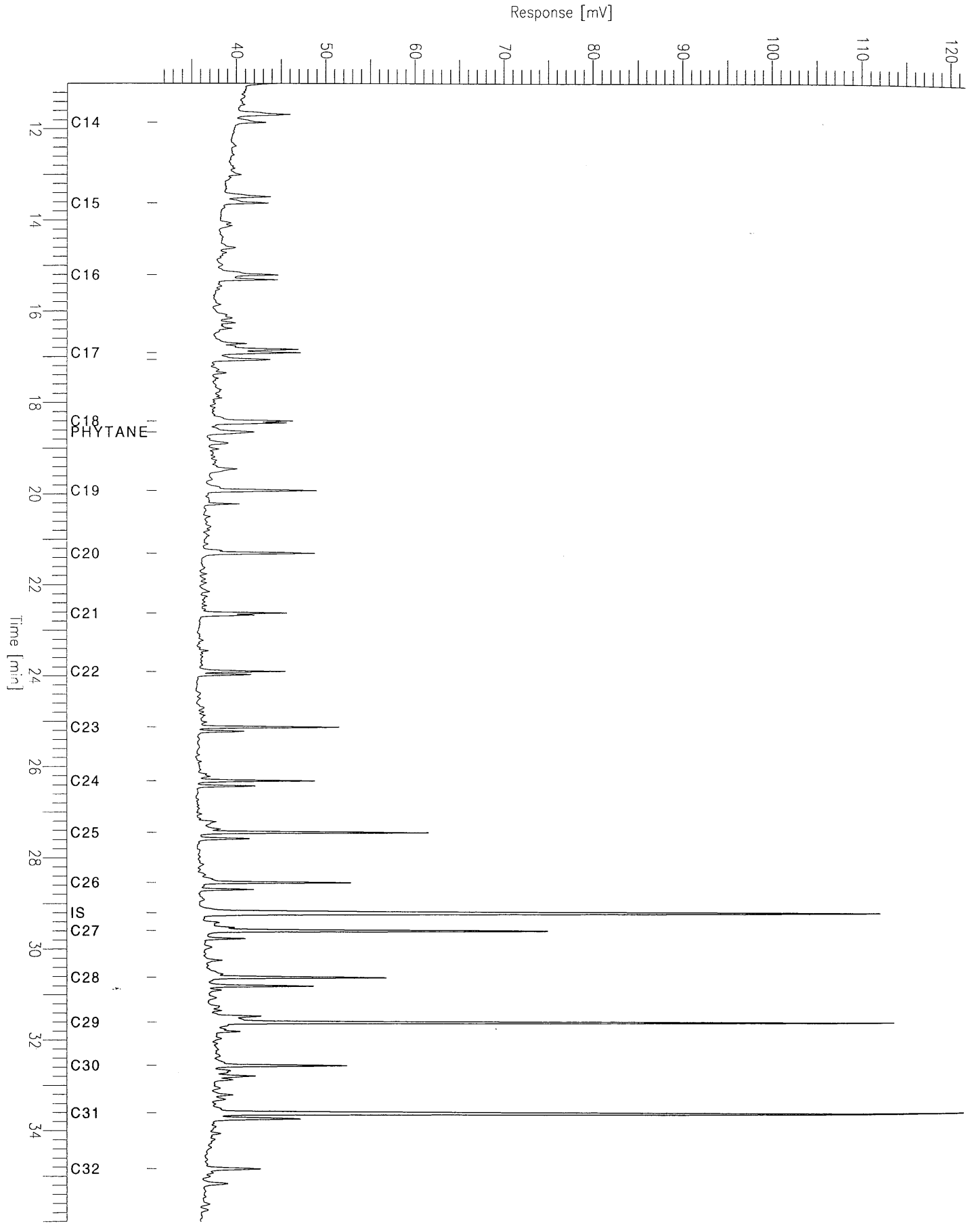
Sample #:
Date : 2/3/95 05:34 PM
Time of Injection: 10/14/94 07:32 PM
Low Point : 28.06 mV High Point : 174.76 mV
Plot Scale: 146.7 mV



Rockall Chromatogram

Sample Name : 58-12/2 3.36m
FileName : C:\TC4\HYDROCAR\re12.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

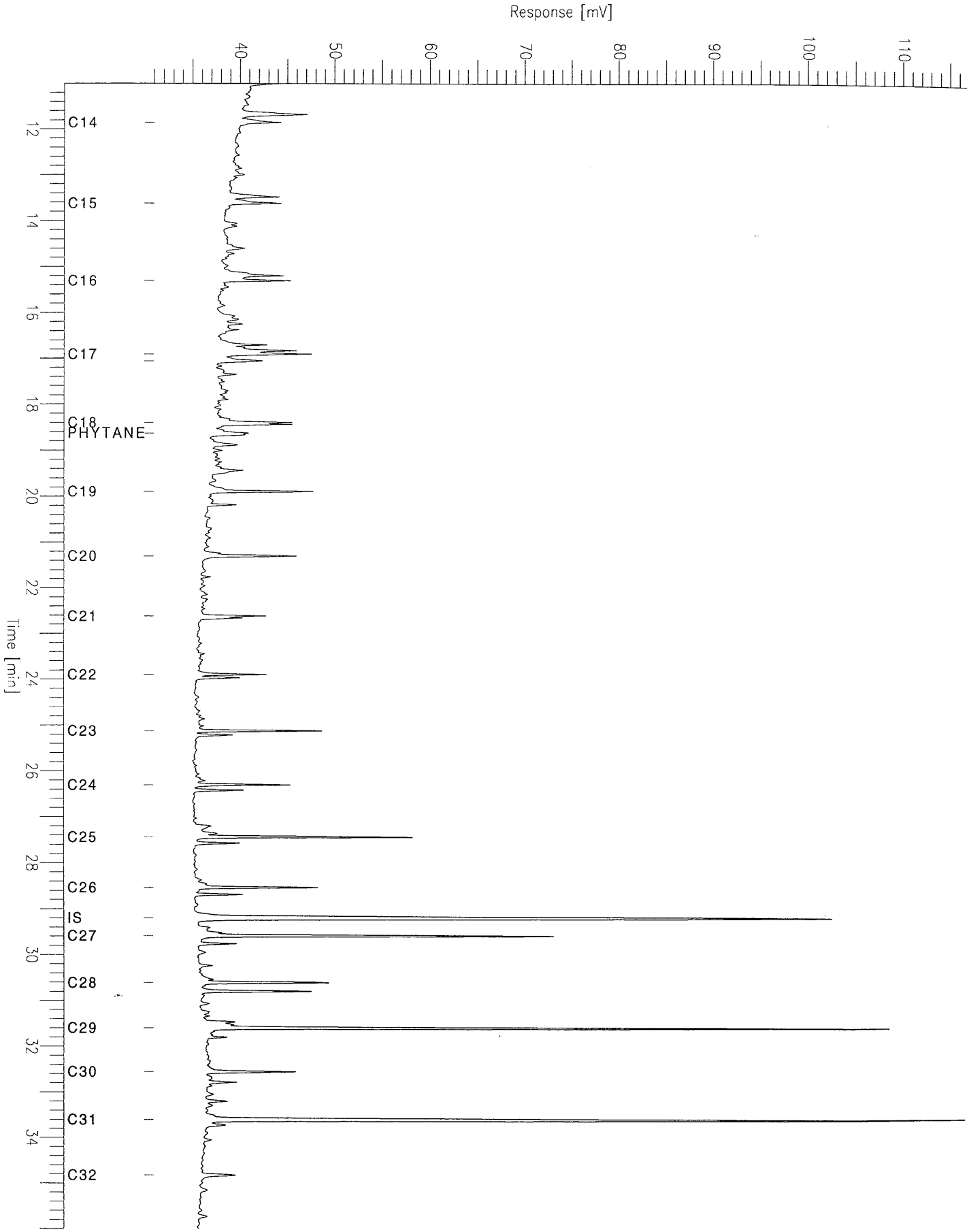
Sample #: Page 1 of 1
Date : 2/3/95 05:35 PM
Time of Injection: 10/14/94 08:26 PM
Low Point : 31.24 mV High Point : 121.60 mV
Plot Scale: 90.4 mV



Rockall Chromatogram

Sample Name : 58-12/3 2.75m
FileName : C:\TC4\HYDROCAR\re13.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

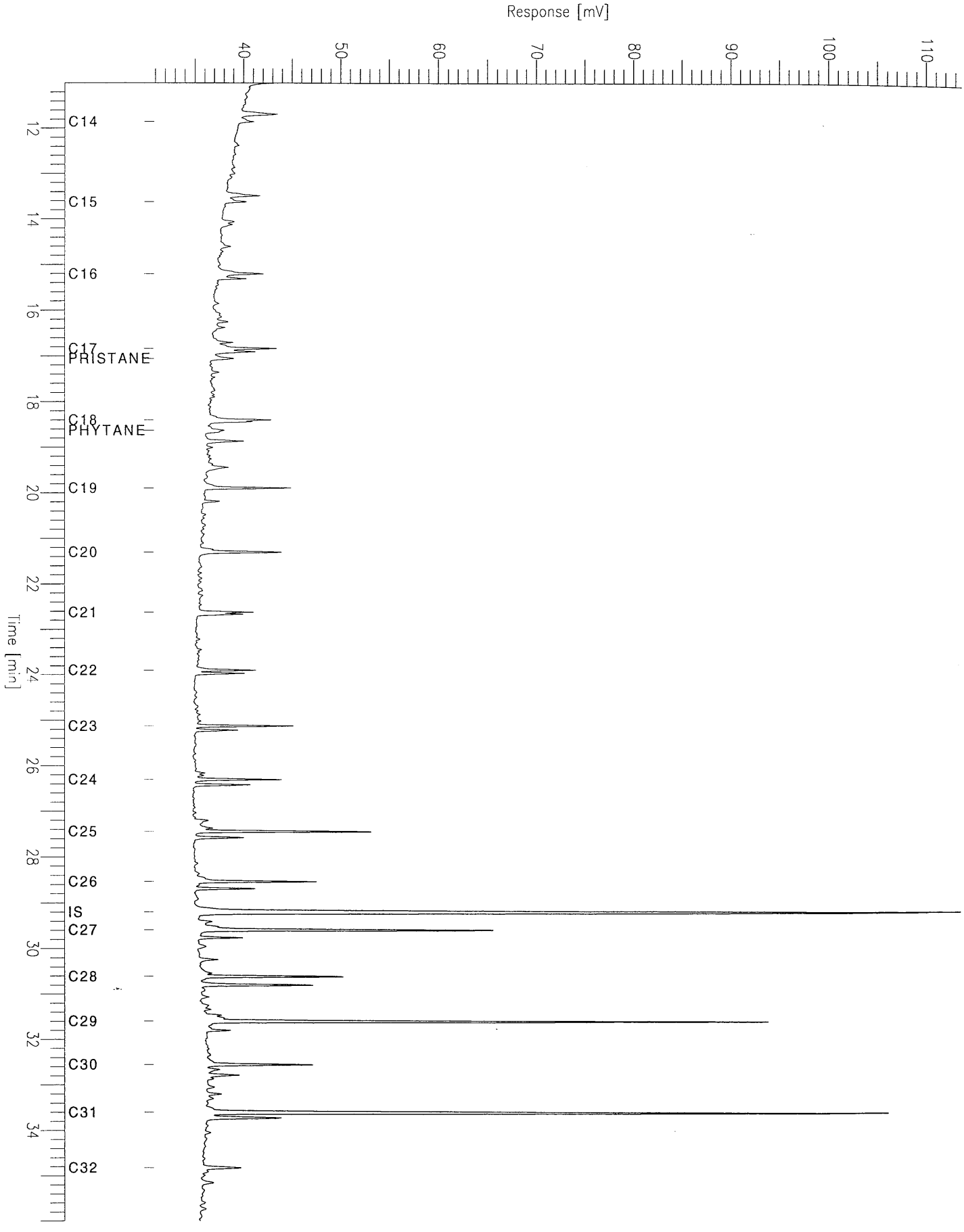
Sample #: Page 1 of 1
Date : 2/3/95 05:35 PM
Time of Injection: 10/14/94 09:21 PM
Low Point : 30.98 mV High Point : 116.68 mV
Plot Scale: 85.7 mV



Rockall Chromatogram

Sample Name : 58-12/3 3.40m
FileName : C:\TC4\HYDROCAR\re14.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

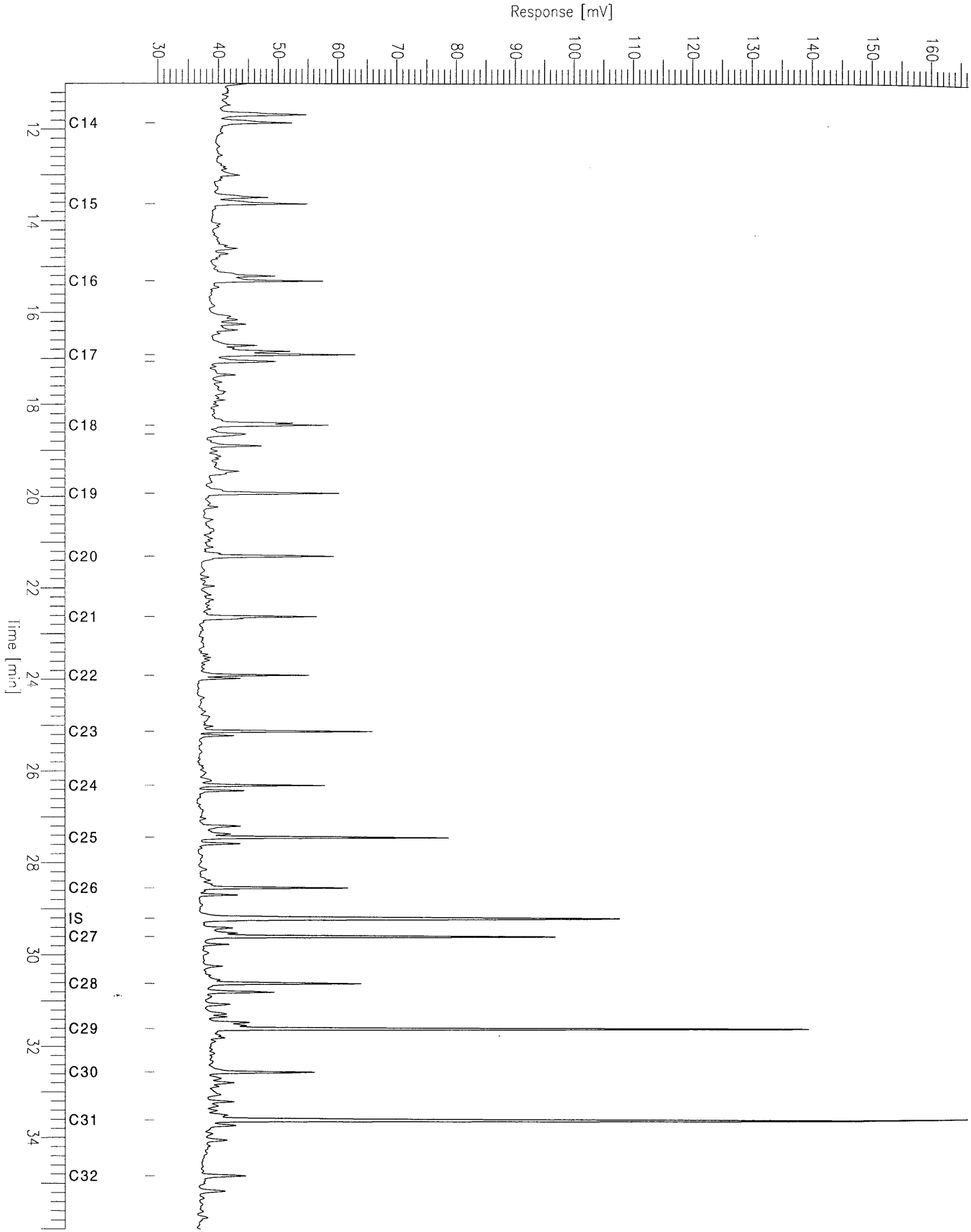
Sample #: Page 1 of 1
Date : 2/3/95 05:35 PM
Time of Injection: 10/14/94 10:17 PM
Low Point : 30.87 mV High Point : 113.57 mV
Plot Scale: 82.7 mV



Rockall Chromatogram

Sample Name : 58-12/4 2.93m
FileName : C:\TC4\HYDROCAR\Re15.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

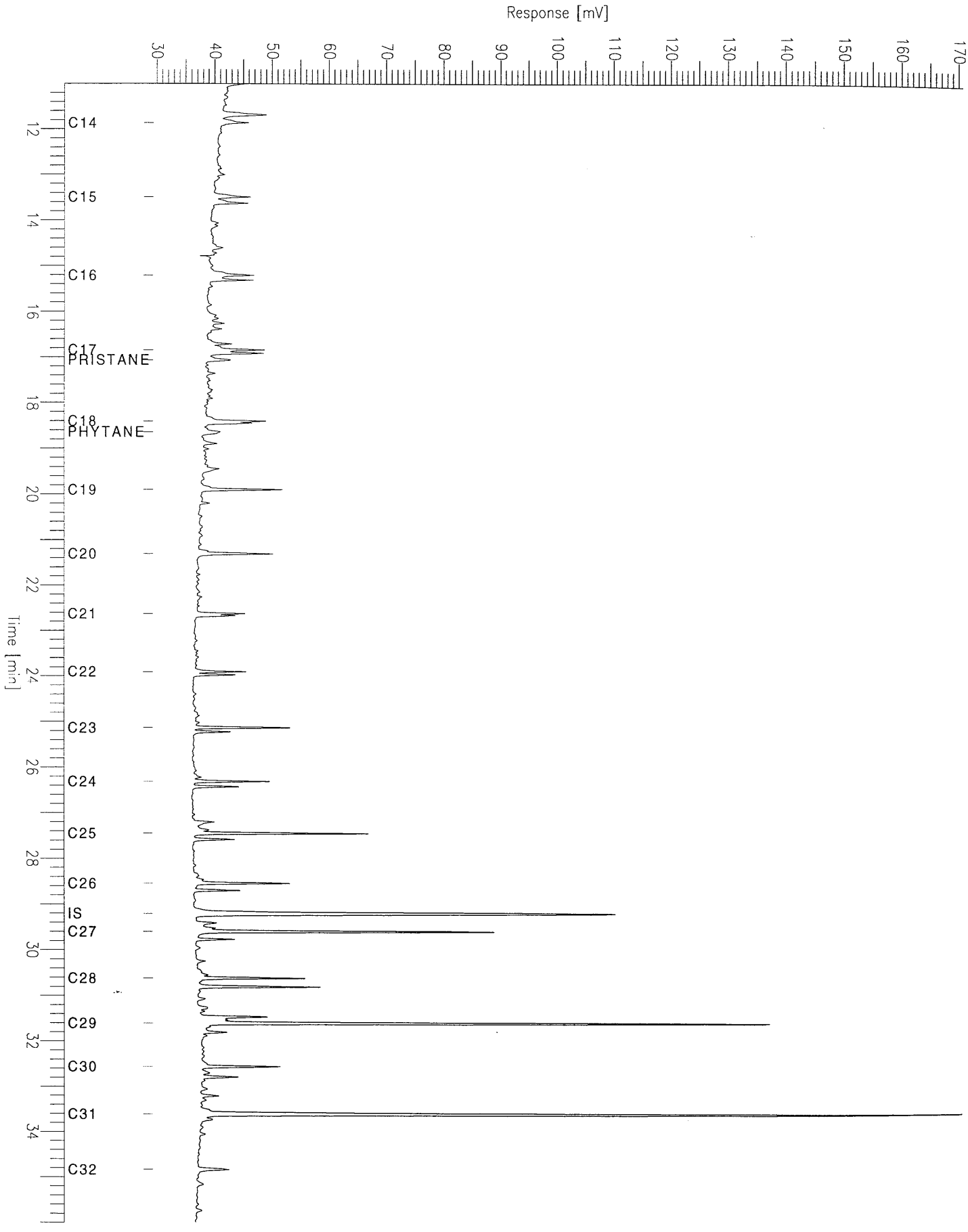
Sample #: Page 1 of 1
Date : 2/3/95 05:36 PM
Time of Injection: 10/14/94 11:12 PM
Low Point : 29.49 mV High Point : 166.21 mV
Plot Scale: 136.7 mV



Rockall Chromatogram

Sample Name : 58-12/4 3.58m
FileName : C:\TC4\HYDROCAR\Re16.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

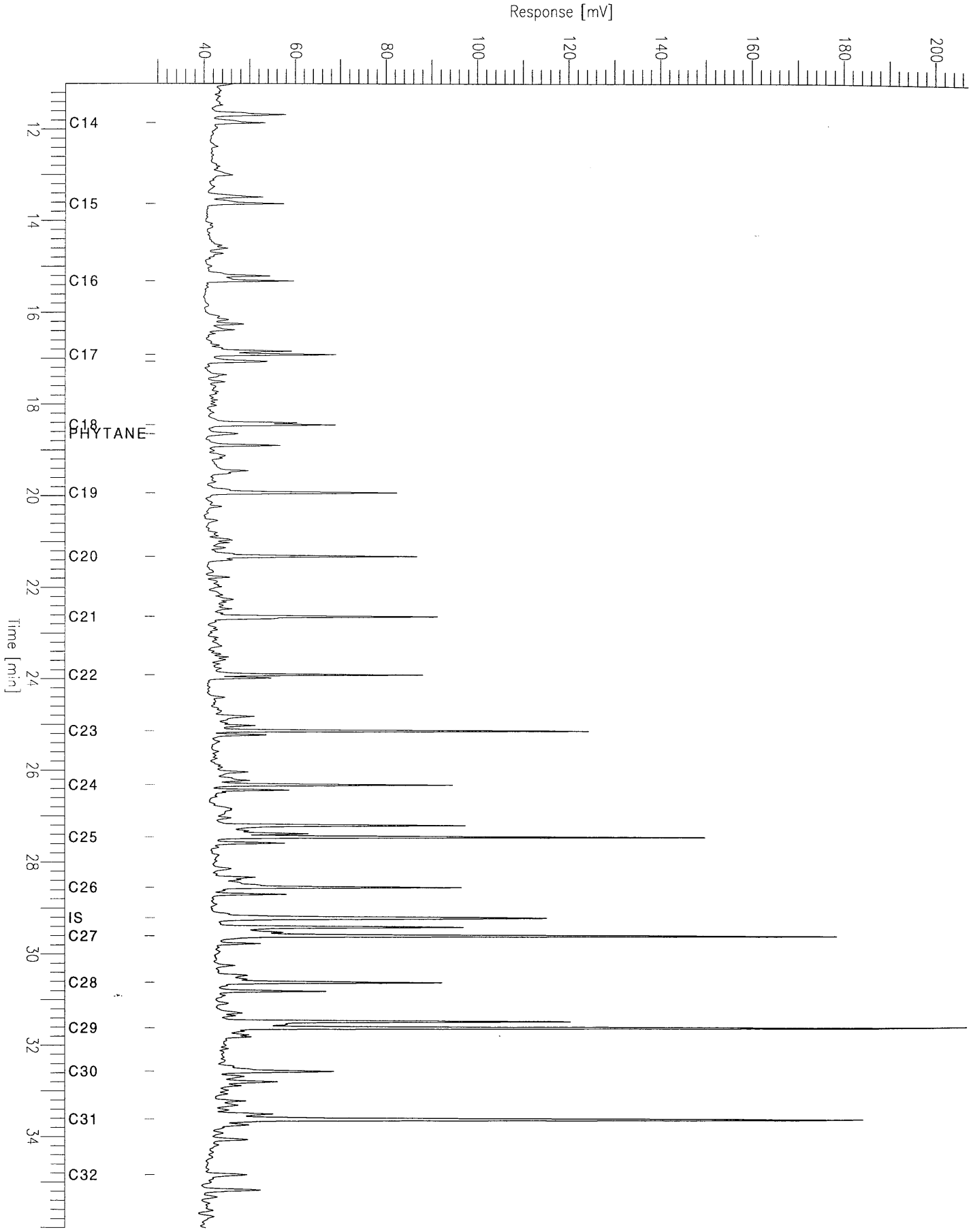
Sample #: Page 1 of 1
Date : 2/3/95 05:36 PM
Time of Injection: 10/15/94 12:07 AM
Low Point : 29.38 mV High Point : 170.63 mV
Plot Scale: 141.2 mV



Rockall Chromatogram

Sample Name : 58-12/6 2.26m
FileName : C:\TC4\HYDROCAR\Re17.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

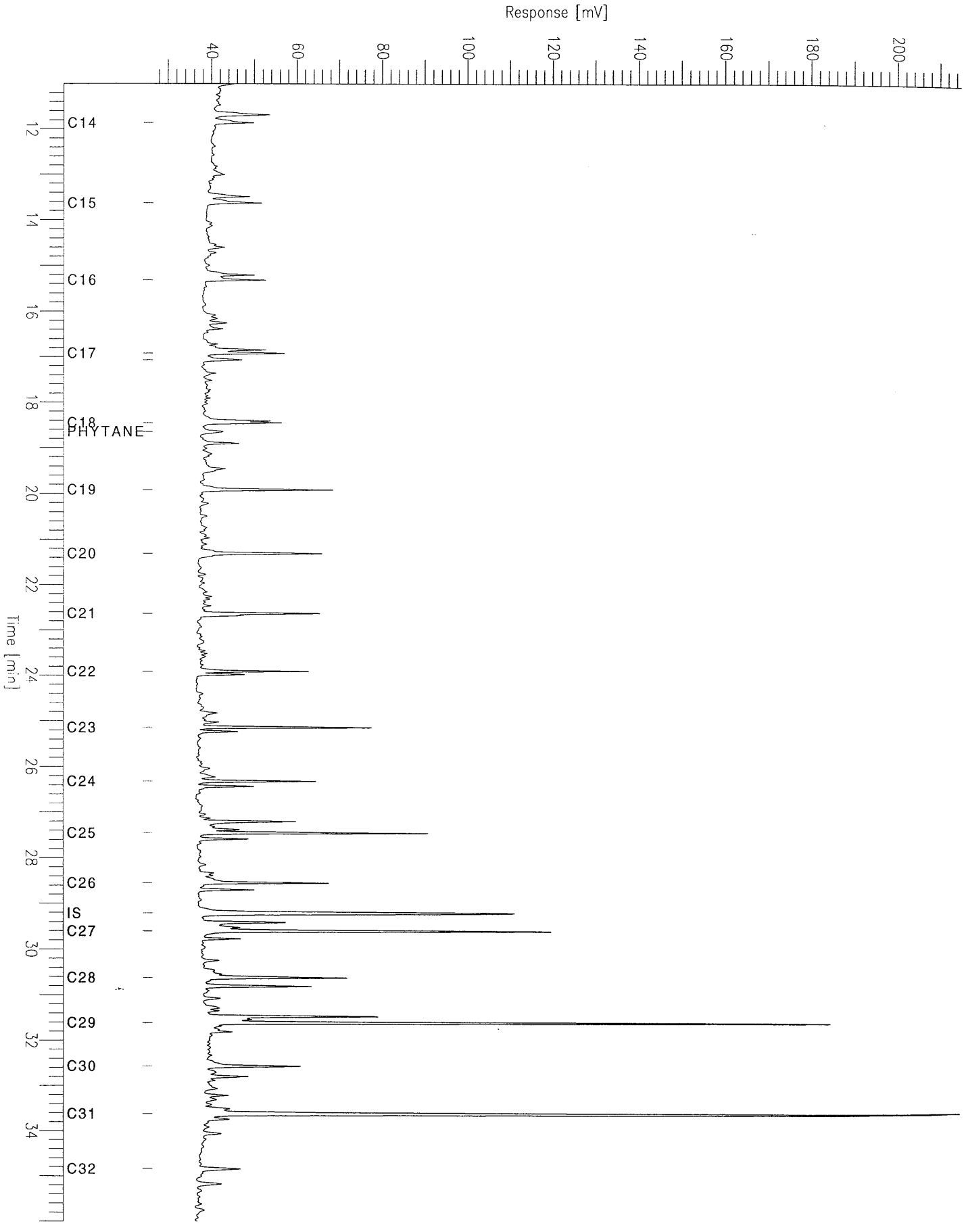
Sample #: Page 1 of 1
Date : 2/3/95 05:37 PM
Time of Injection: 10/15/94 01:03 AM
Low Point : 29.54 mV High Point : 207.02 mV
Plot Scale: 177.5 mV



Rockall Chromatogram

Sample Name : 58-12/6 2.91m
FileName : C:\TC4\HYDROCAR\re19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

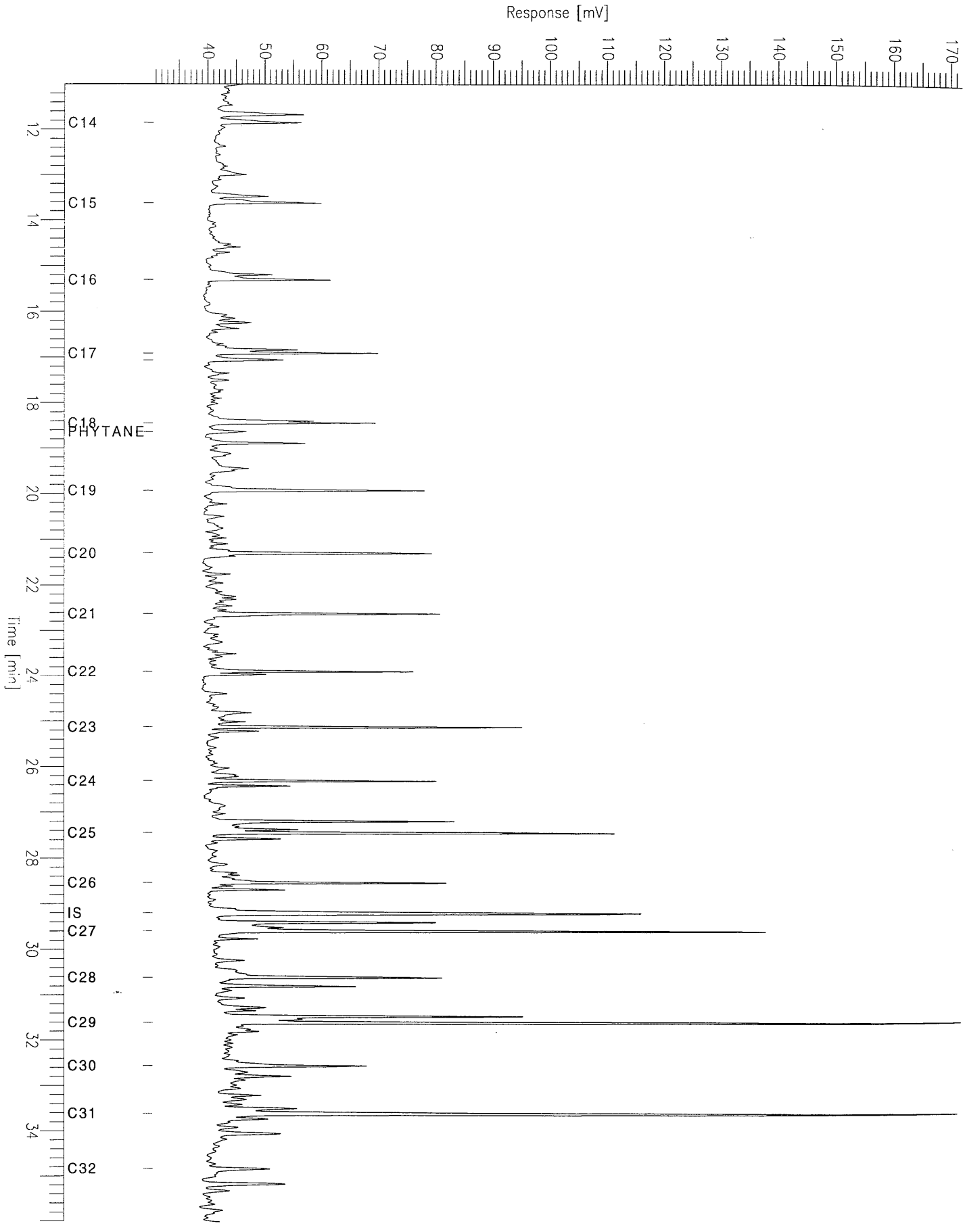
Sample #: Page 1 of 1
Date : 2/3/95 05:37 PM
Time of Injection: 10/15/94 02:53 AM
Low Point : 26.56 mV High Point : 214.85 mV
Plot Scale: 188.3 mV



Rockall Chromatogram

Sample Name : 58-12/7 2.09m
FileName : C:\TC4\HYDROCAR\re20.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

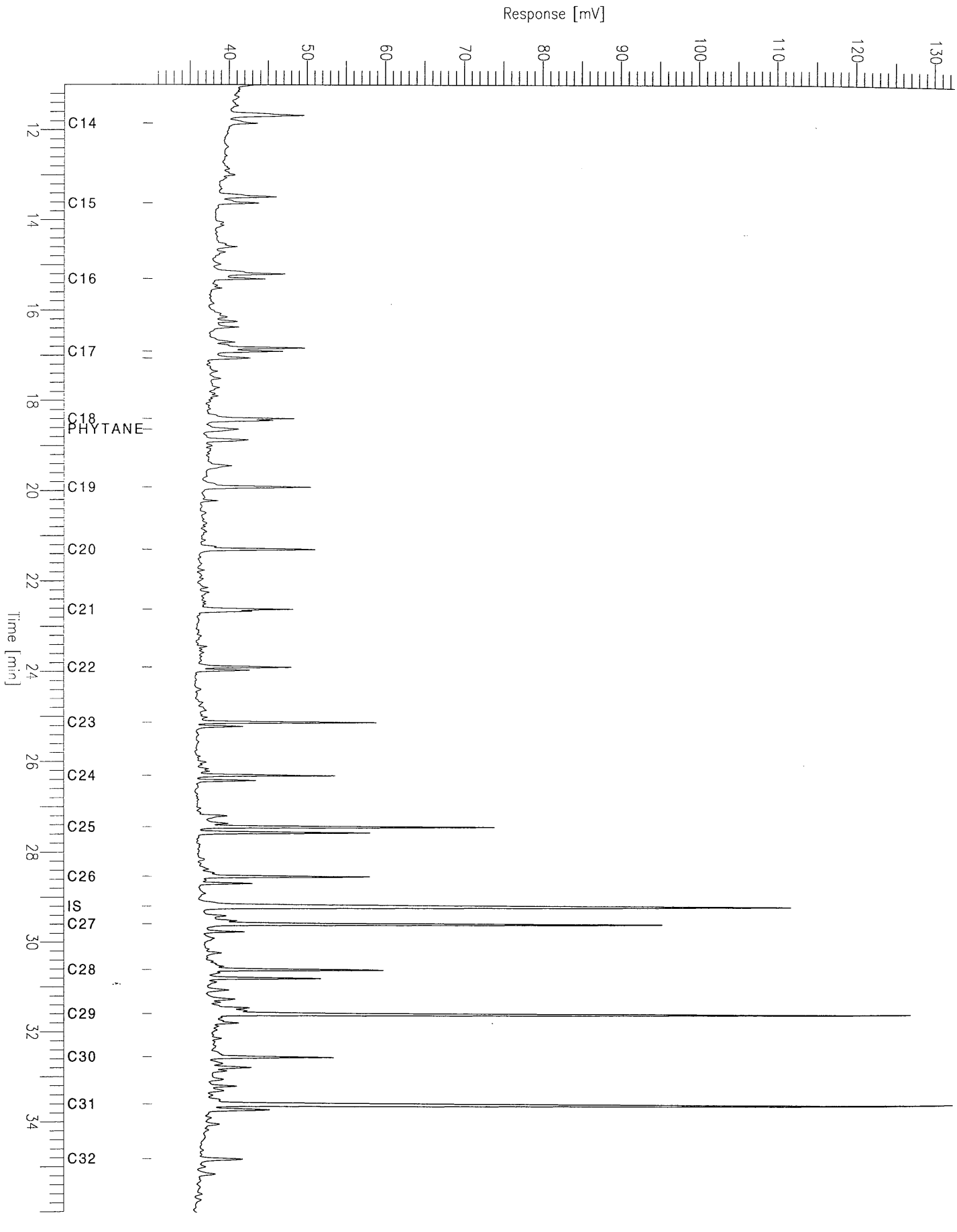
Sample #: Page 1 of 1
Date : 2/3/95 05:38 PM
Time of Injection: 10/15/94 03:49 AM
Low Point : 30.53 mV High Point : 171.87 mV
Plot Scale: 141.3 mV



Rockall Chromatogram

Sample Name : 58-12/7 2.74m
FileName : C:\TC4\HYDROCAR\re41.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

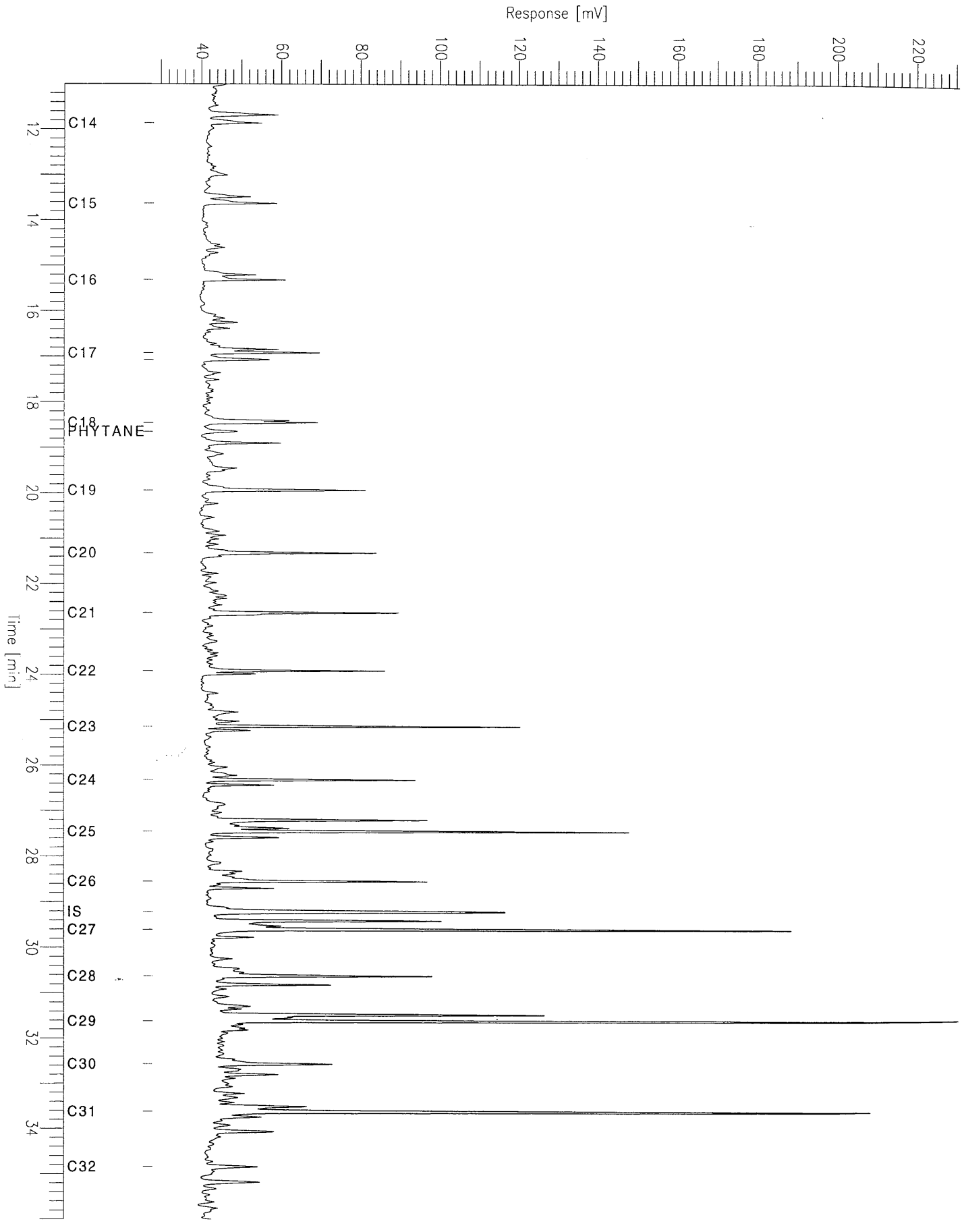
Sample #: Page 1 of 1
Date : 2/6/95 02:37 PM
Time of Injection: 10/15/94 11:07 PM
Low Point : 30.29 mV High Point : 132.45 mV
Plot Scale: 102.2 mV



Rockall Chromatogram

Sample Name : 58-12/8 1.98m
FileName : C:\TC4\HYDROCAR\re21.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

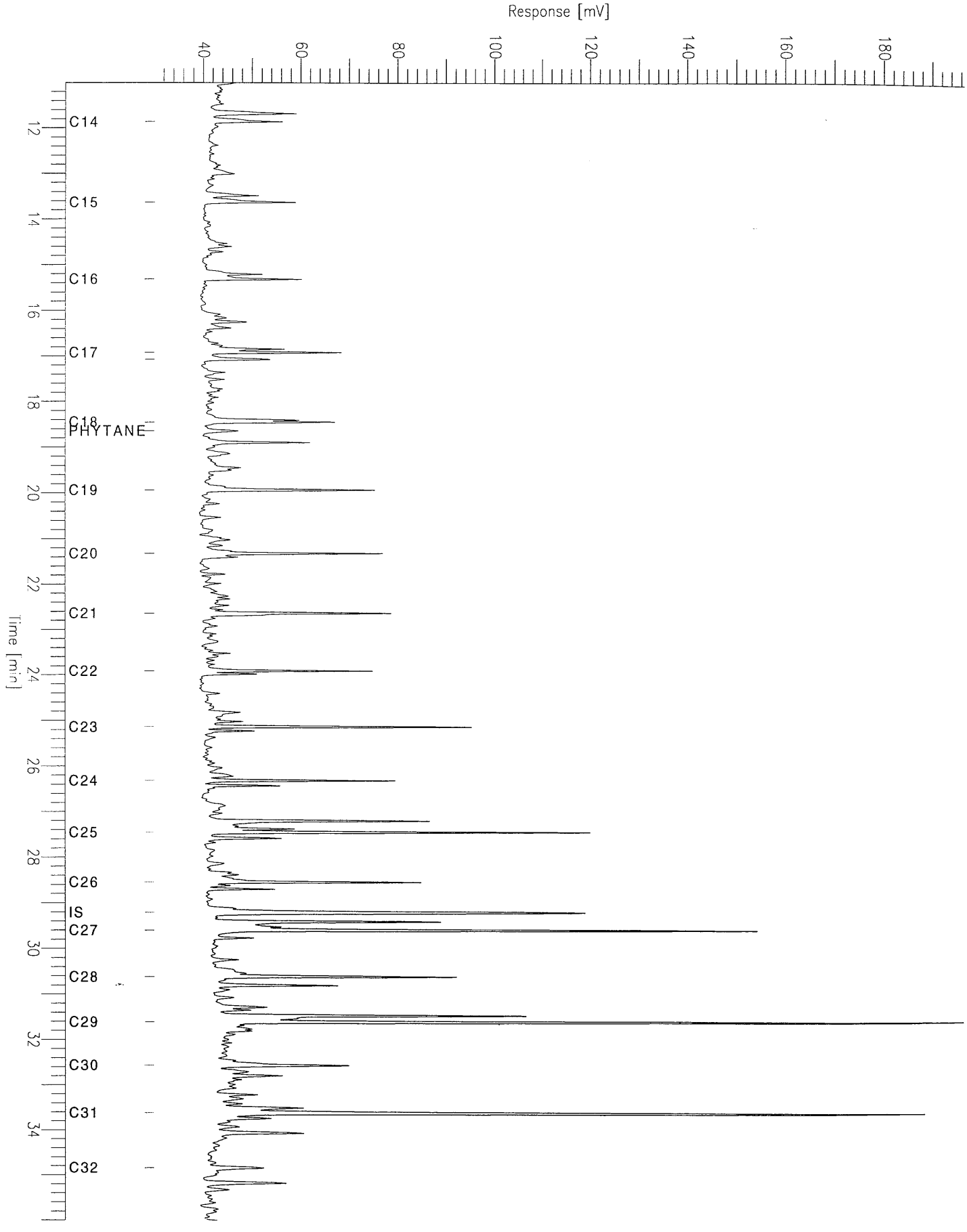
Sample #: Page 1 of 1
Date : 2/3/95 05:38 PM
Time of Injection: 10/15/94 04:44 AM
Low Point : 28.16 mV High Point : 230.64 mV
Plot Scale: 202.5 mV



Rockall Chromatogram

Sample Name : 58-12/8 2.63m
FileName : C:\TC4\HYDROCAR\re22.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

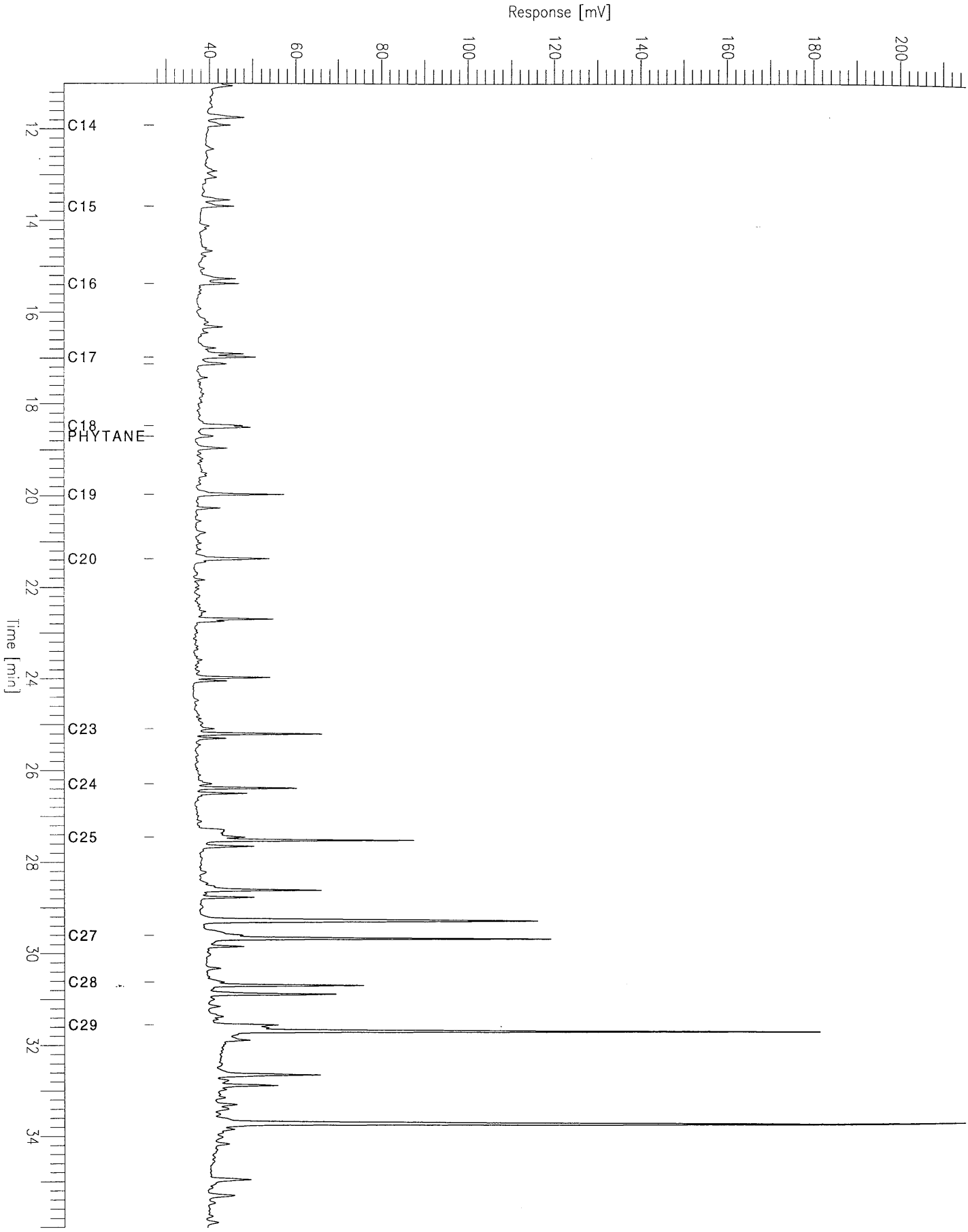
Sample #: Page 1 of 1
Date : 2/3/95 05:38 PM
Time of Injection: 10/15/94 05:40 AM
Low Point : 30.09 mV High Point : 196.51 mV
Plot Scale: 166.4 mV



Rockall Chromatogram

Sample Name : 58-13/10 2.37m
FileName : C:\TC4\HYDROCAR\rl24.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

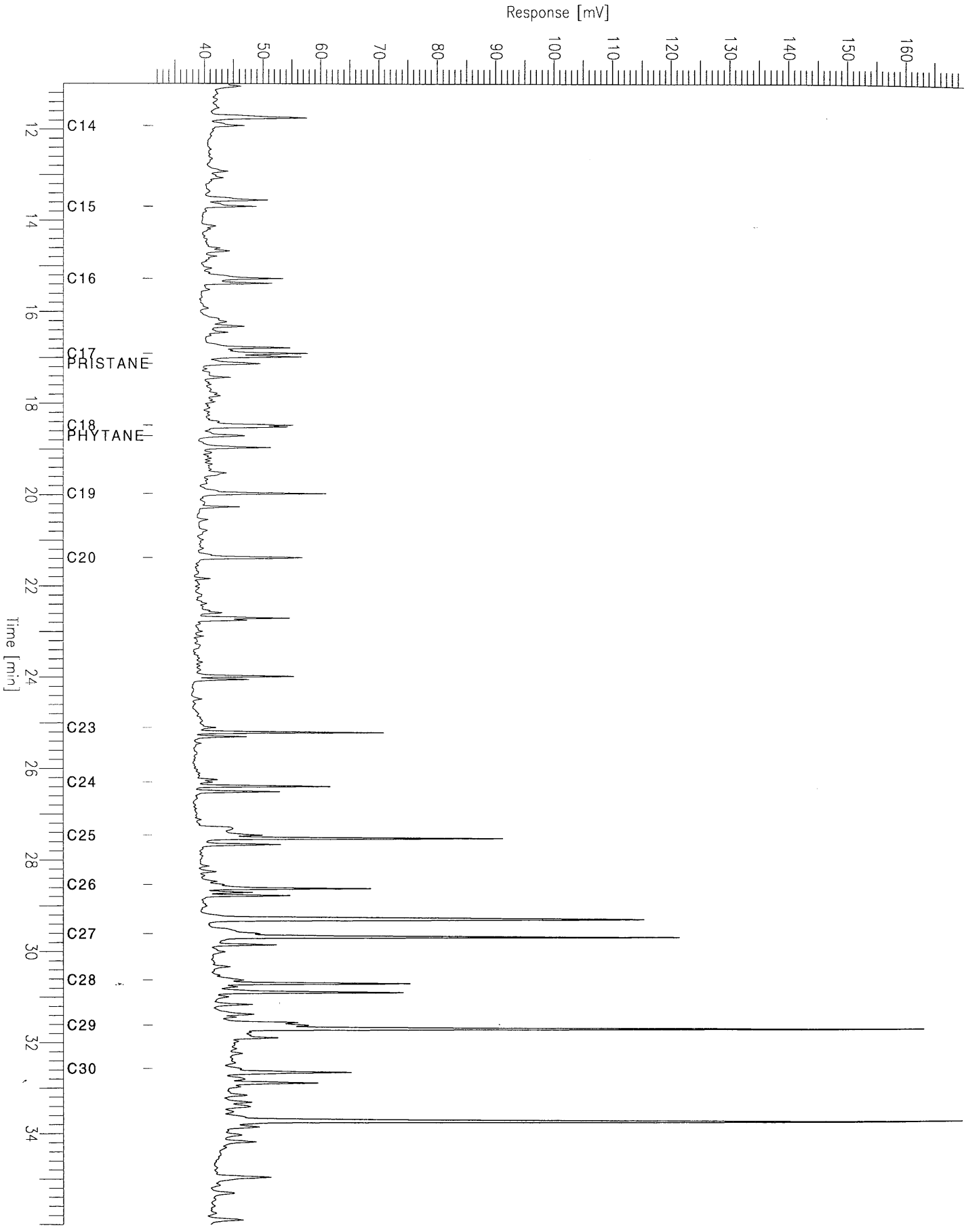
Sample #: Page 1 of 1
Date : 2/6/95 10:22 AM
Time of Injection: 10/4/94 07:50 AM
Low Point : 27.24 mV High Point : 215.04 mV
Plot Scale: 187.8 mV



Rockall Chromatogram

Sample Name : 58-13/10 3.02m
FileName : C:\TC4\HYDROCAR\rl26.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

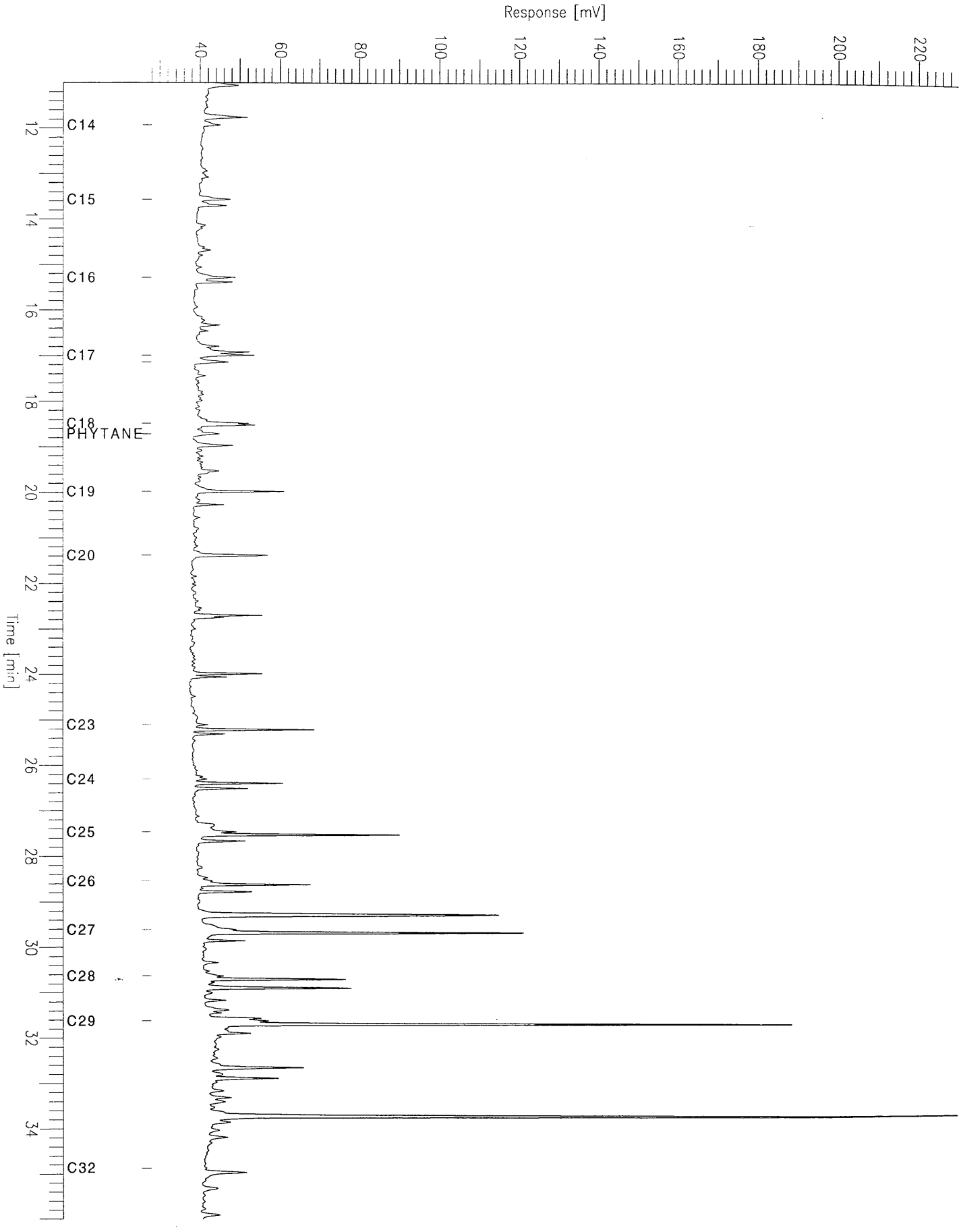
Sample #: Page 1 of 1
Date : 2/6/95 10:23 AM
Time of Injection: 10/4/94 09:40 AM
Low Point : 31.30 mV High Point : 169.87 mV
Plot Scale: 138.6 mV



Rockall Chromatogram

Sample Name : 58-13/11 2.50m
FileName : C:\TC4\HYDROCAR\RL33.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

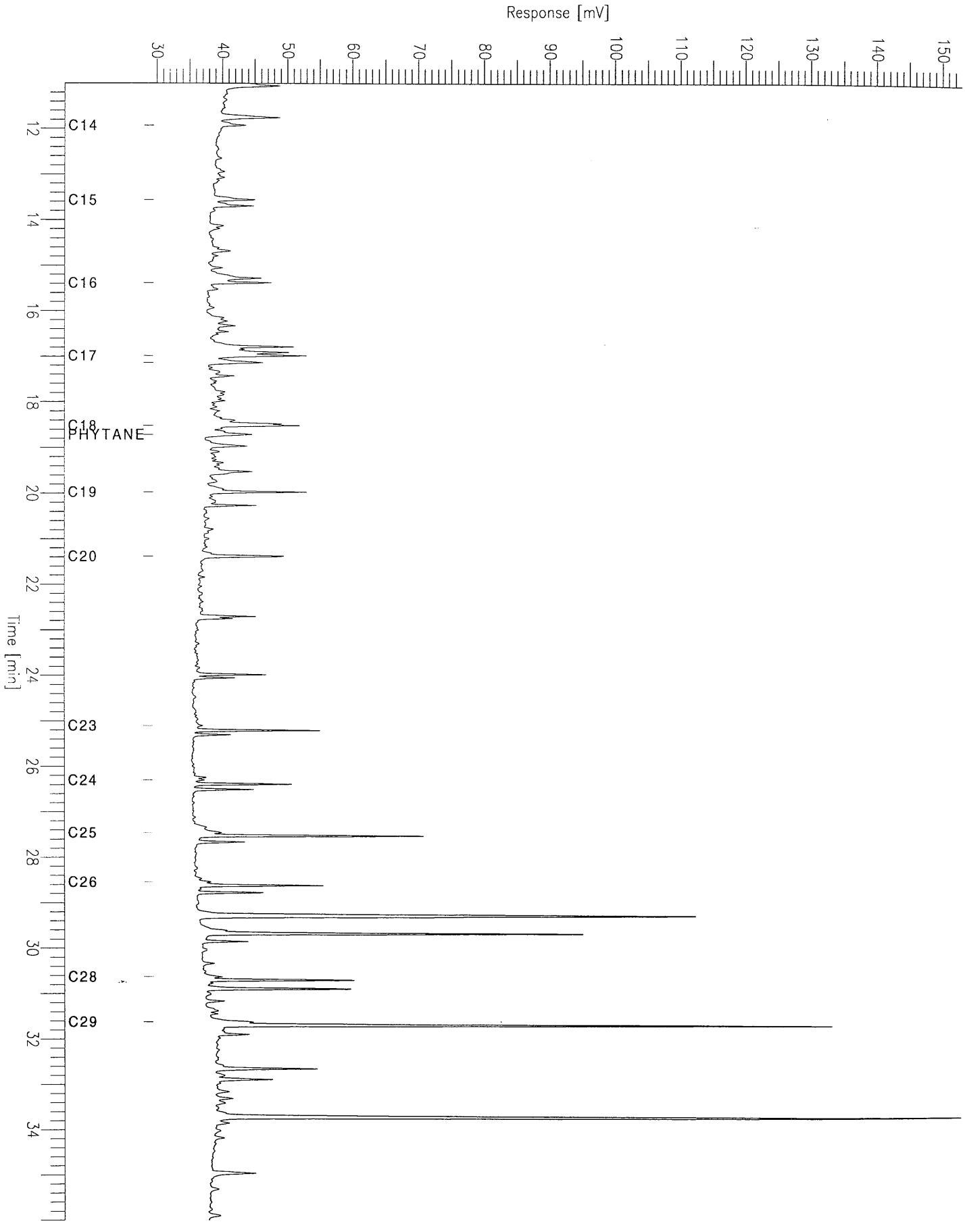
Sample #: Page 1 of 1
Date : 2/6/95 10:55 AM
Time of Injection: 10/4/94 04:08 PM
Low Point : 27.97 mV High Point : 229.65 mV
Plot Scale: 201.7 mV



Rockall Chromatogram

Sample Name : 58-13/11 3.15m
FileName : C:\TC4\HYDROCAR\RL34.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

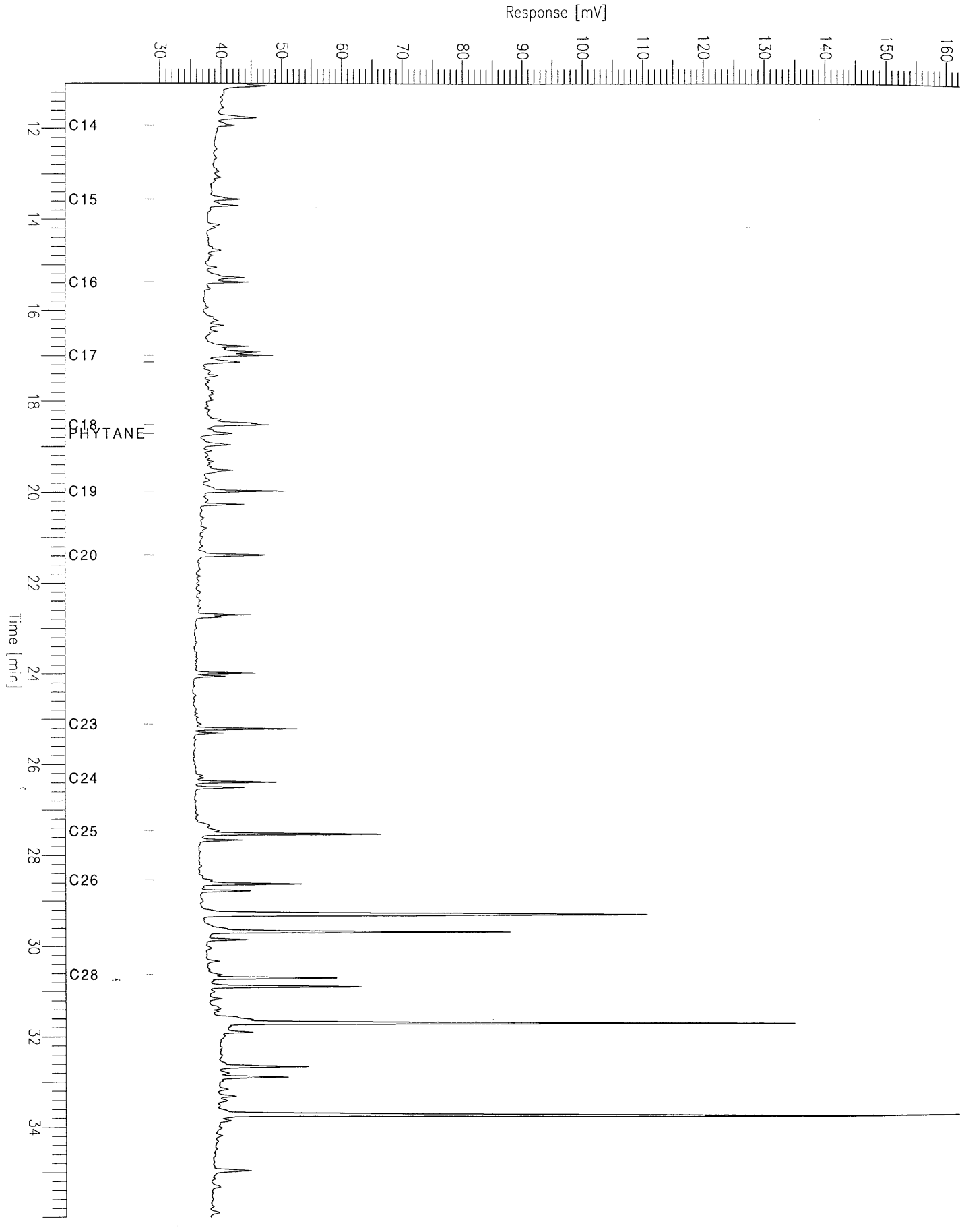
Sample #:
Date : 2/6/95 10:55 AM
Time of Injection: 10/4/94 05:03 PM
Low Point : 29.50 mV High Point : 152.85 mV
Plot Scale: 123.4 mV



Rockall Chromatogram

Sample Name : 58-13/12 2.62m
FileName : C:\TC4\HYDROCAR\RK35.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

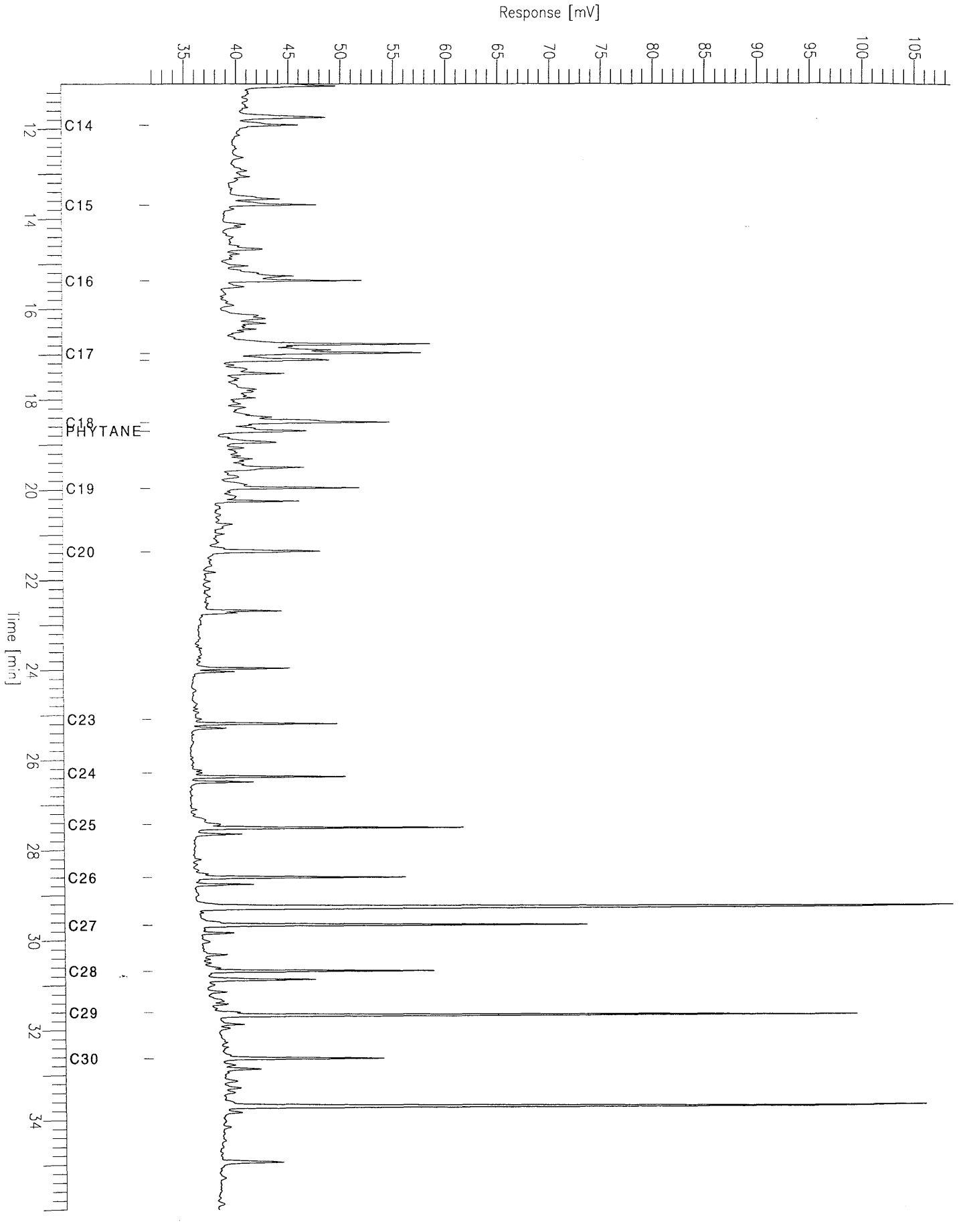
Sample #: Page 1 of 1
Date : 2/6/95 10:55 AM
Time of Injection: 10/4/94 05:58 PM
Low Point : 29.03 mV High Point : 162.28 mV
Plot Scale: 133.2 mV



Rockall Chromatogram

Sample Name : 58-13/12 3.28m
FileName : C:\TC4\HYDROCAR\RK36.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

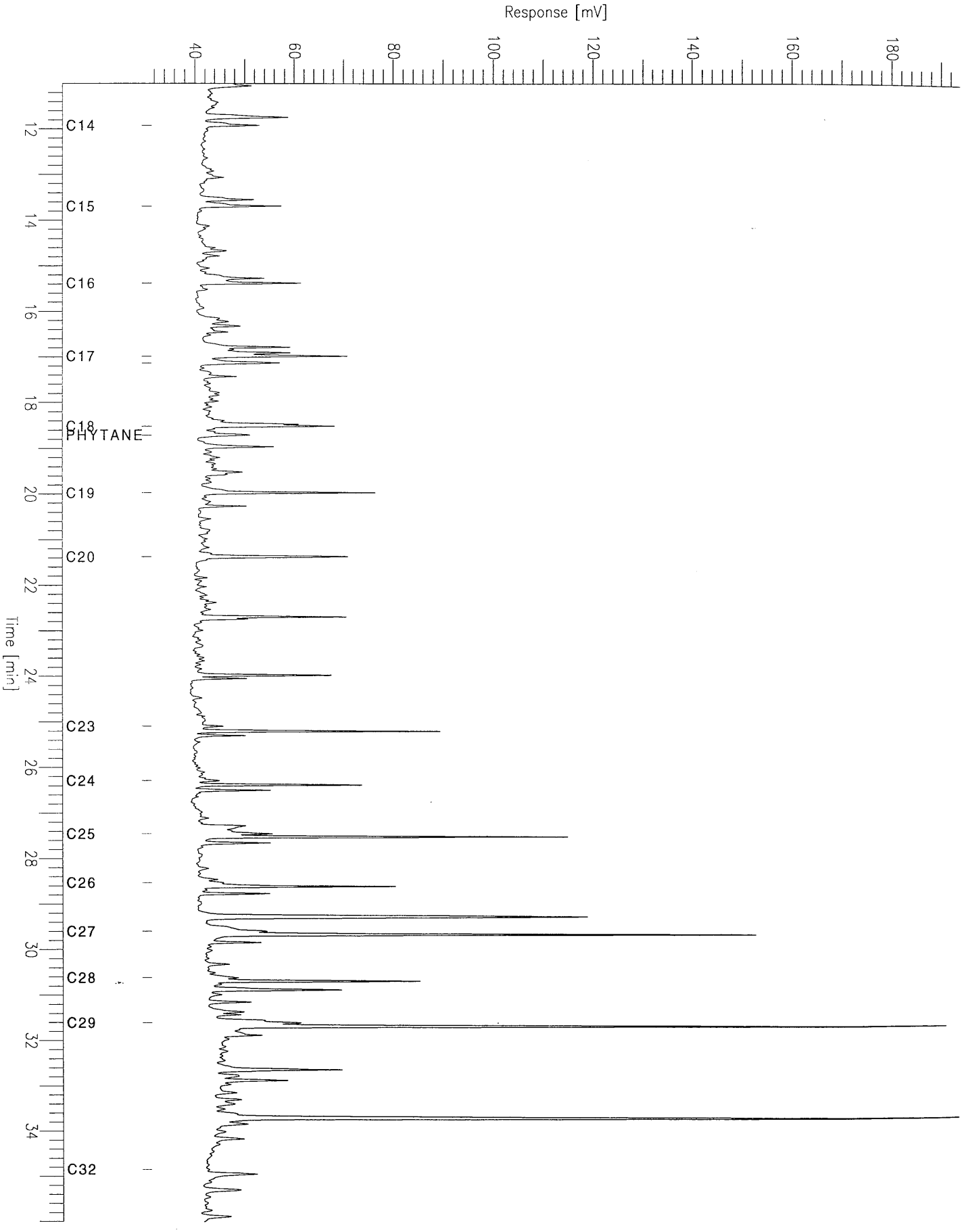
Sample #:
Date : 2/6/95 10:55 AM
Time of Injection: 10/4/94 06:53 PM
Low Point : 31.75 mV High Point : 108.47 mV
Plot Scale: 76.7 mV



Rockall Chromatogram

Sample Name : 58-13/13 2.25m
FileName : C:\TC4\HYDROCAR\RK37.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

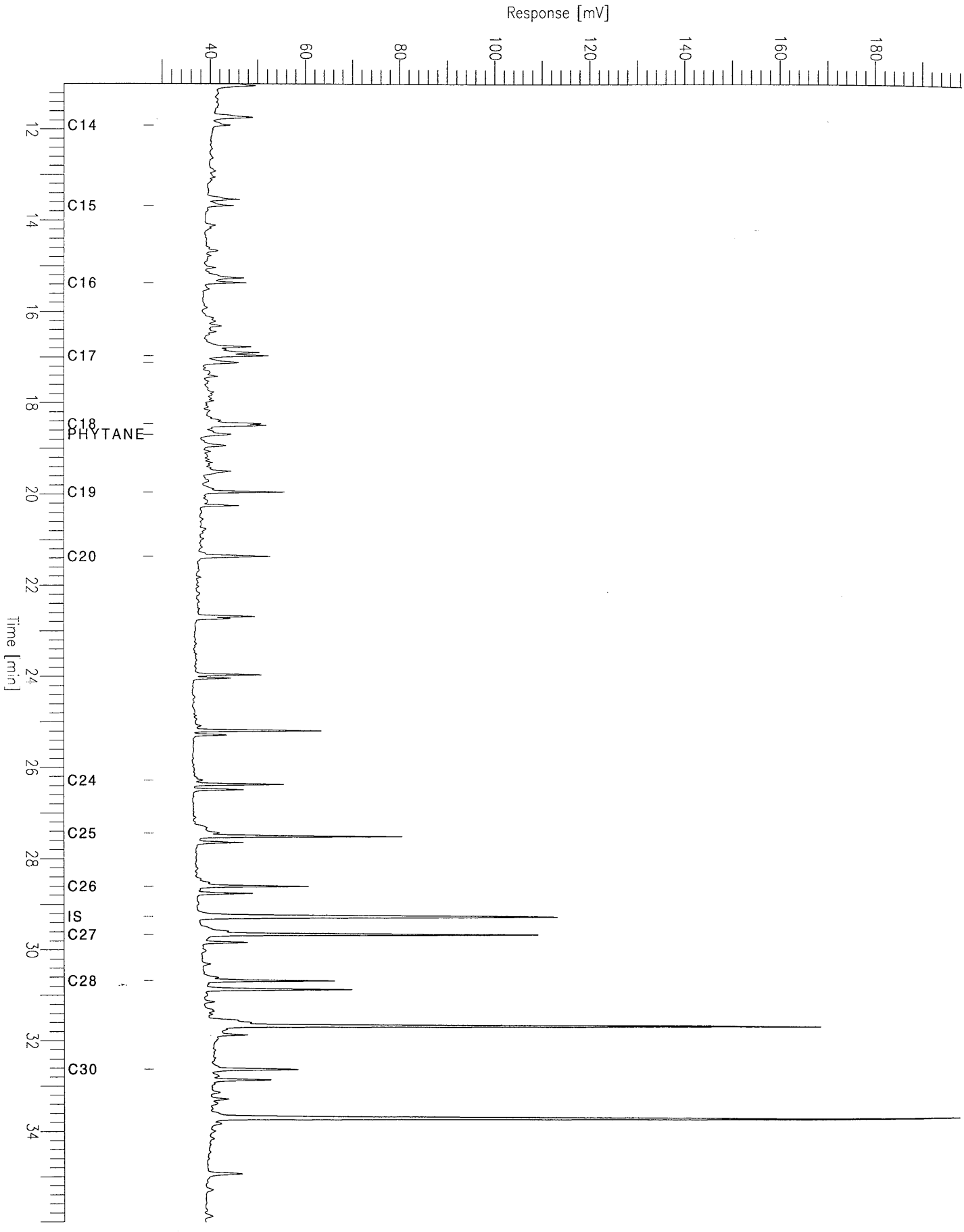
Sample #: Page 1 of 1
Date : 2/6/95 10:56 AM
Time of Injection: 10/4/94 07:48 PM
Low Point : 31.43 mV High Point : 193.69 mV
Plot Scale: 162.3 mV



Rockall Chromatogram

Sample Name : 58-13/13 2.90m
FileName : C:\TC4\HYDROCAR\RK38.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

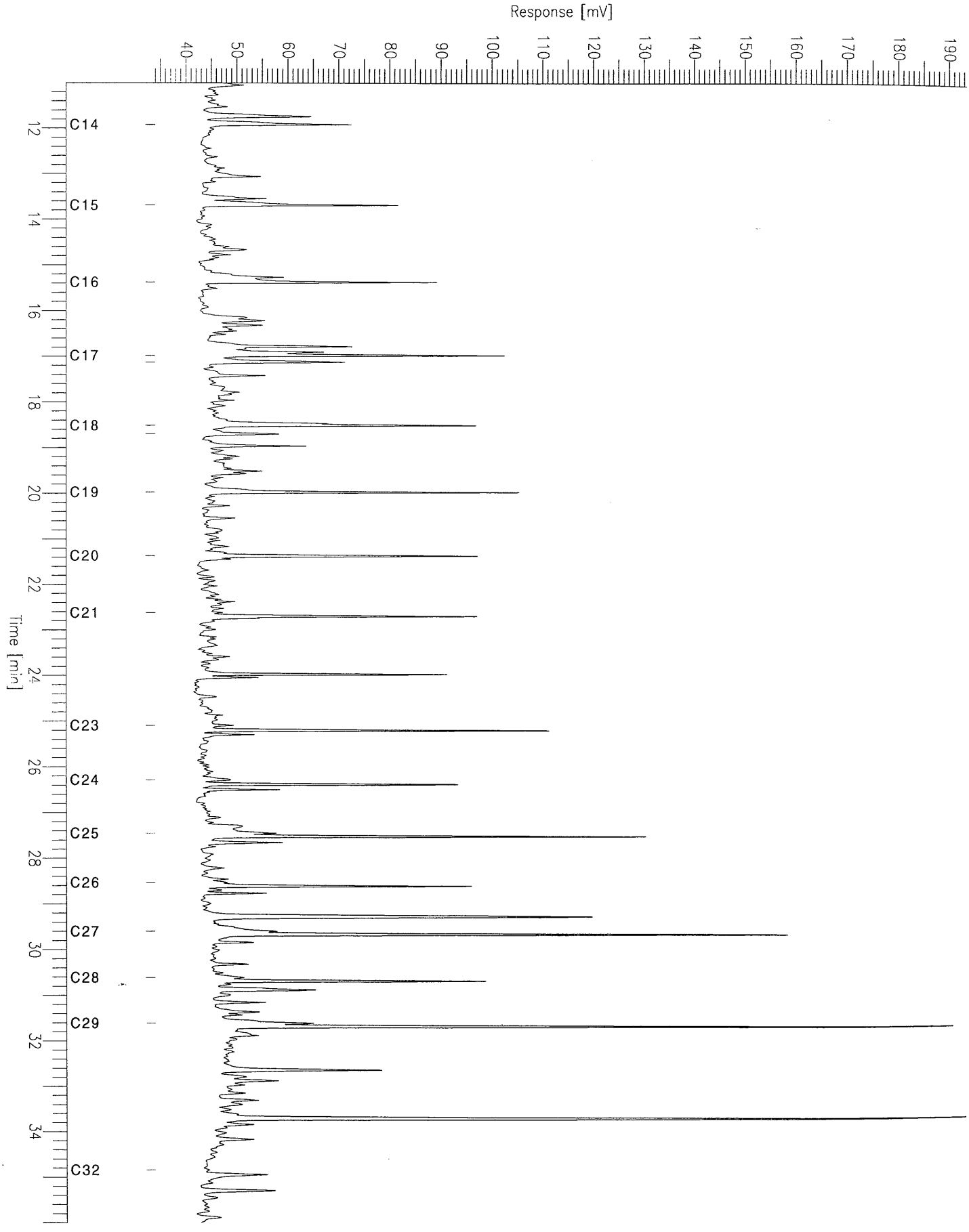
Sample #: Page 1 of 1
Date : 2/6/95 10:56 AM
Time of Injection: 10/4/94 08:44 PM
Low Point : 28.23 mV High Point : 198.27 mV
Plot Scale: 170.0 mV



Rockall Chromatogram

Sample Name : 58-13/14 2.90m
FileName : C:\TC4\HYDROCAR\rl27.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 34 mV

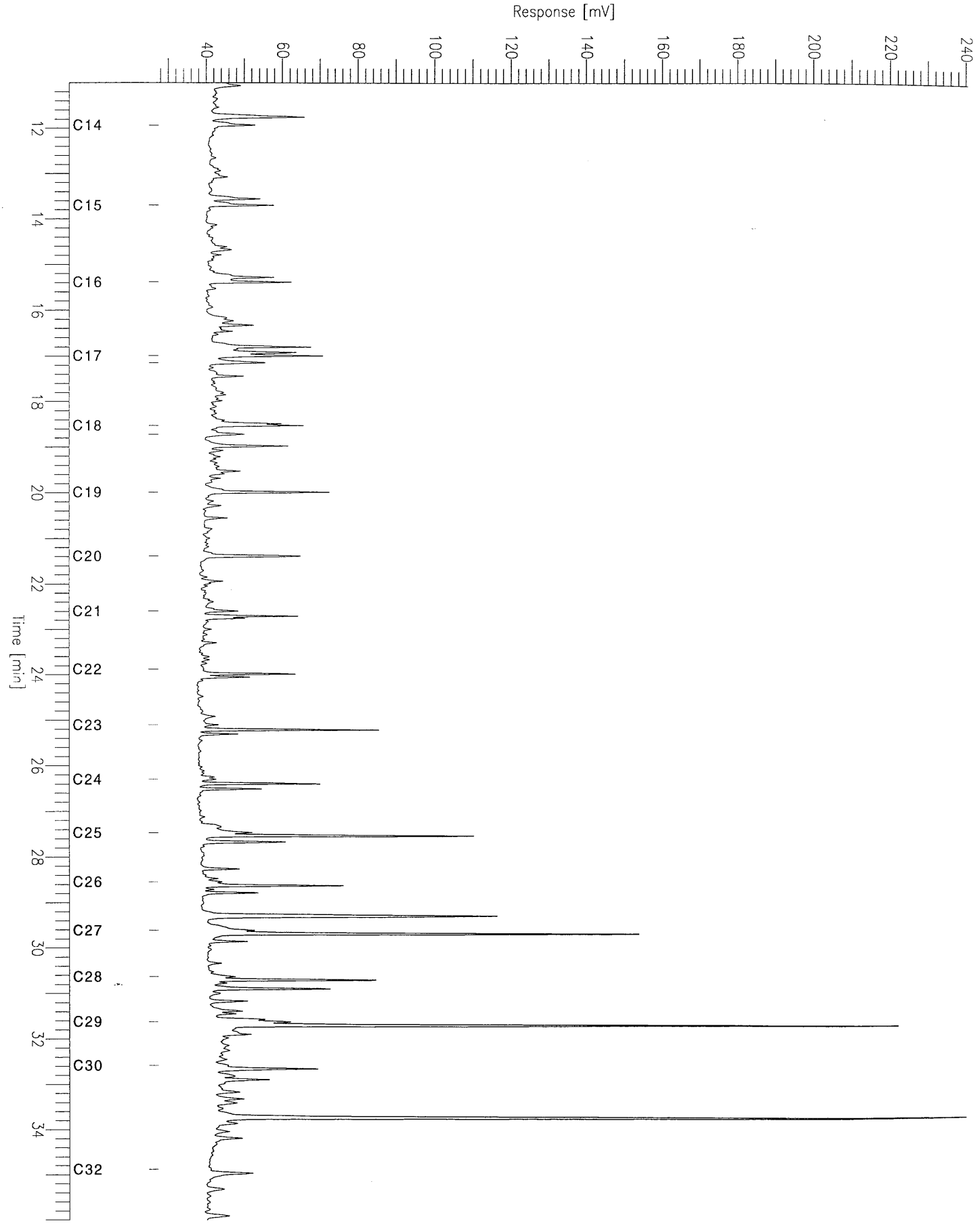
Sample #: Page 1 of 1
Date : 2/6/95 10:23 AM
Time of Injection: 10/4/94 10:36 AM
Low Point : 33.95 mV High Point : 193.35 mV
Plot Scale: 159.4 mV



Rockall Chromatogram

Sample Name : 58-13/14 3.55m
FileName : C:\TC4\HYDROCAR\rl28.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

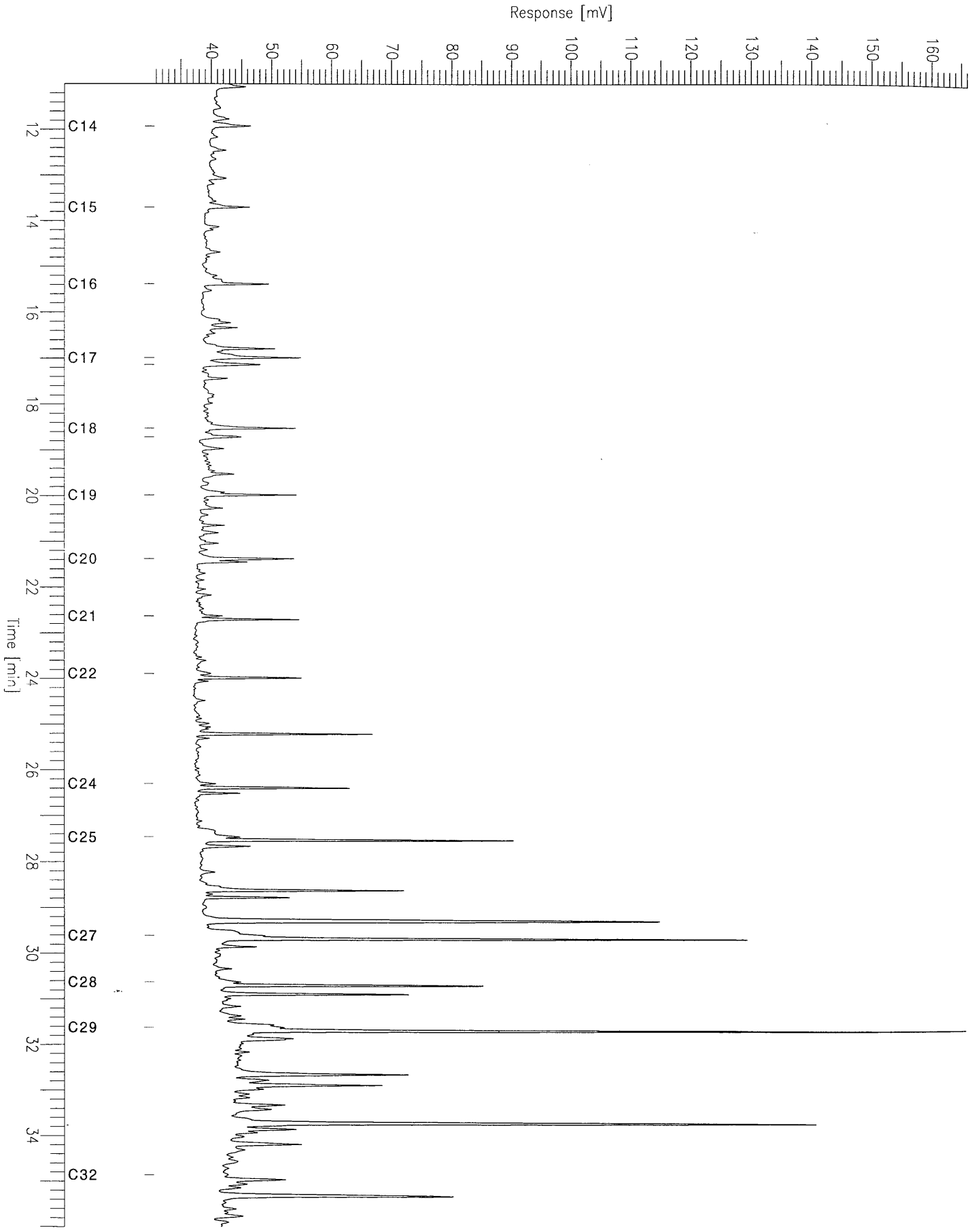
Sample #: Page 1 of 1
Date : 2/6/95 10:24 AM
Time of Injection: 10/4/94 11:31 AM
Low Point : 27.51 mV High Point : 240.37 mV
Plot Scale: 212.9 mV



Rockall Chromatogram

Sample Name : 58-13/15 3.15m
FileName : C:\TC4\HYDROCAR\rl29.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

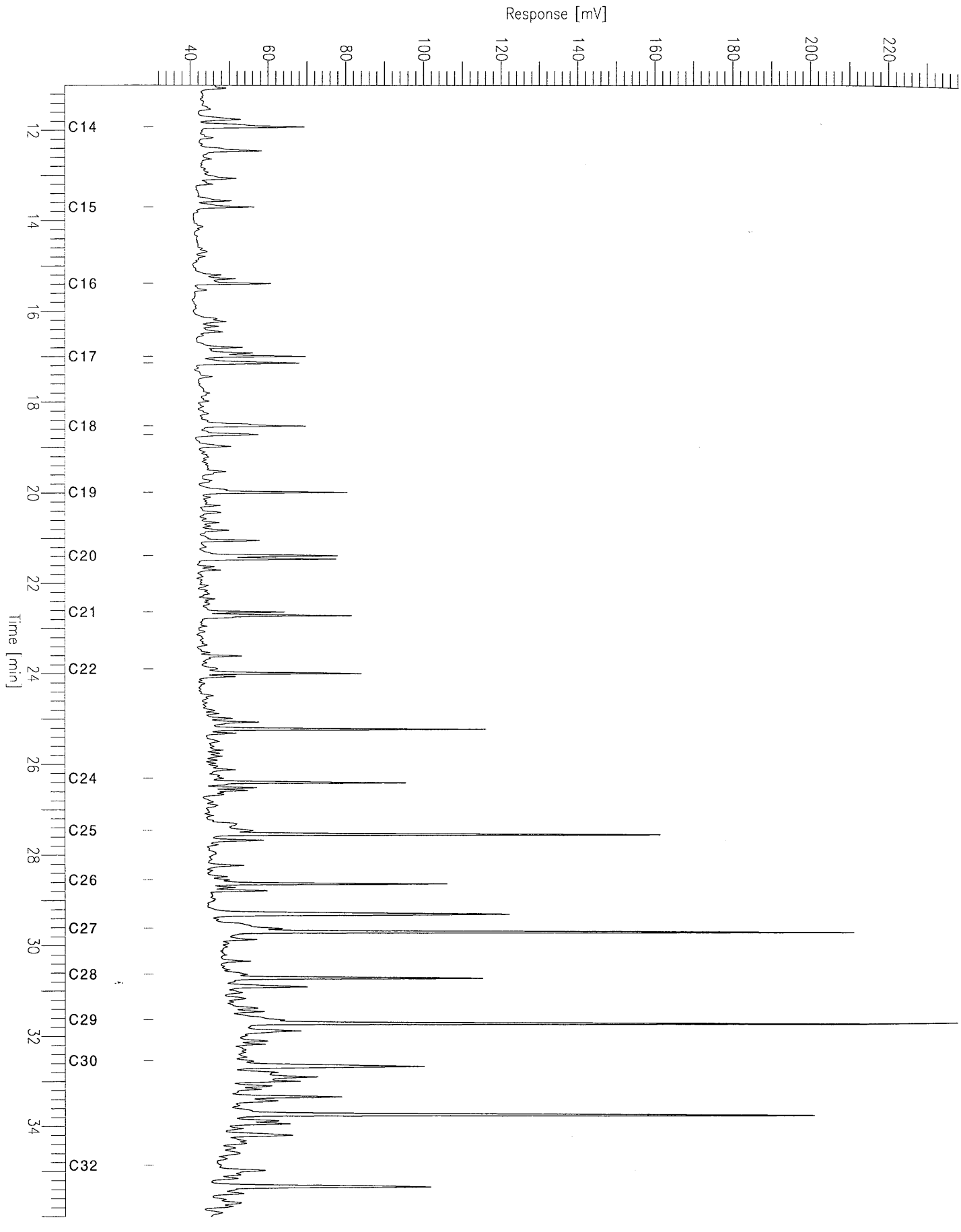
Sample #:
Date : 2/6/95 10:24 AM
Time of Injection: 10/4/94 12:26 PM
Low Point : 30.69 mV High Point : 166.03 mV
Plot Scale: 135.3 mV



Rockall Chromatogram

Sample Name : 58-13/15 3.80m
FileName : C:\TC4\HYDROCAR\RL30.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

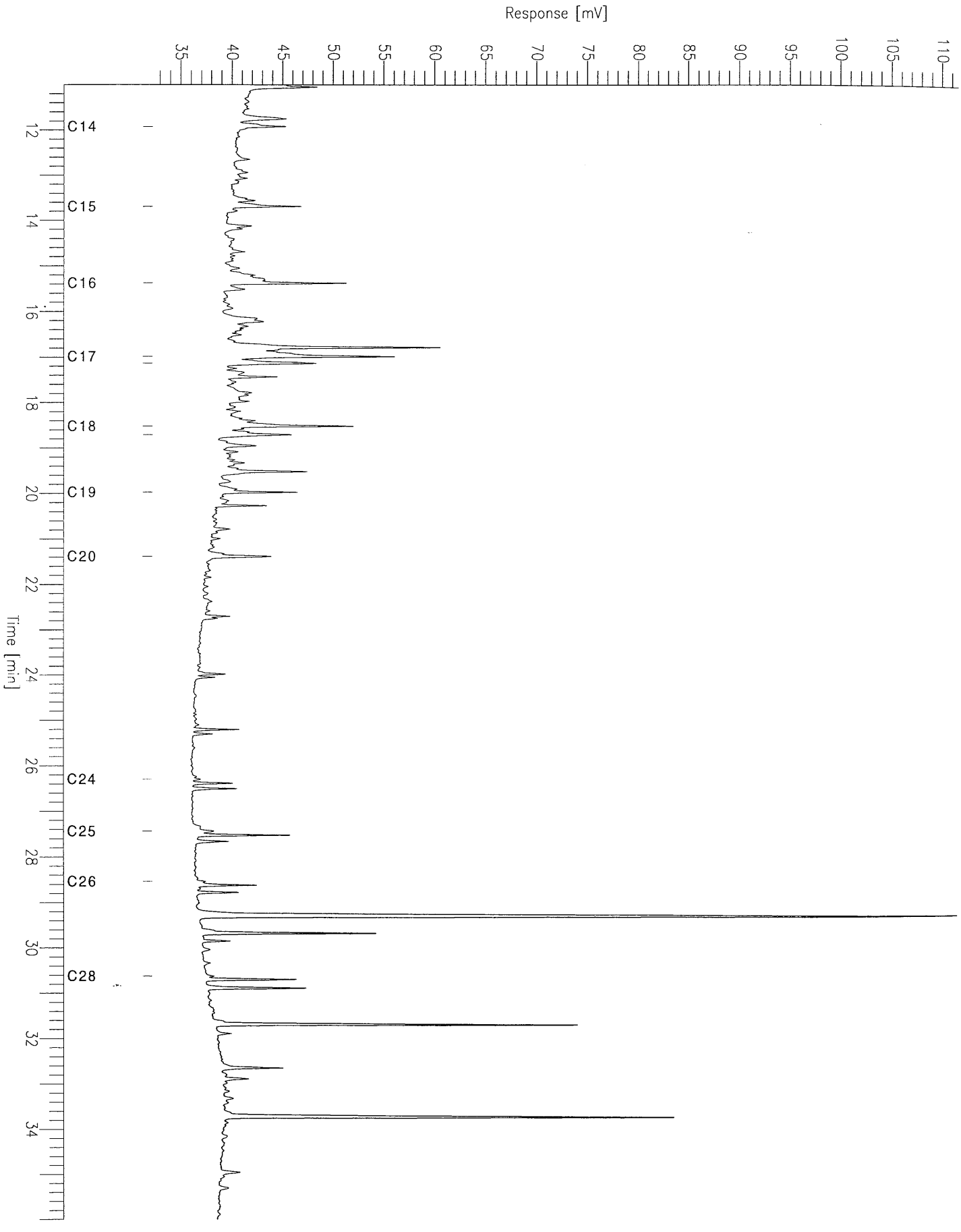
Sample #:
Date : 2/6/95 10:25 AM
Time of Injection: 10/4/94 01:21 PM
Low Point : 30.63 mV High Point : 238.11 mV
Plot Scale: 207.5 mV



Rockall Chromatogram

Sample Name : 58-13/16 1.18m
FileName : C:\TC4\HYDROCAR\rl31.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

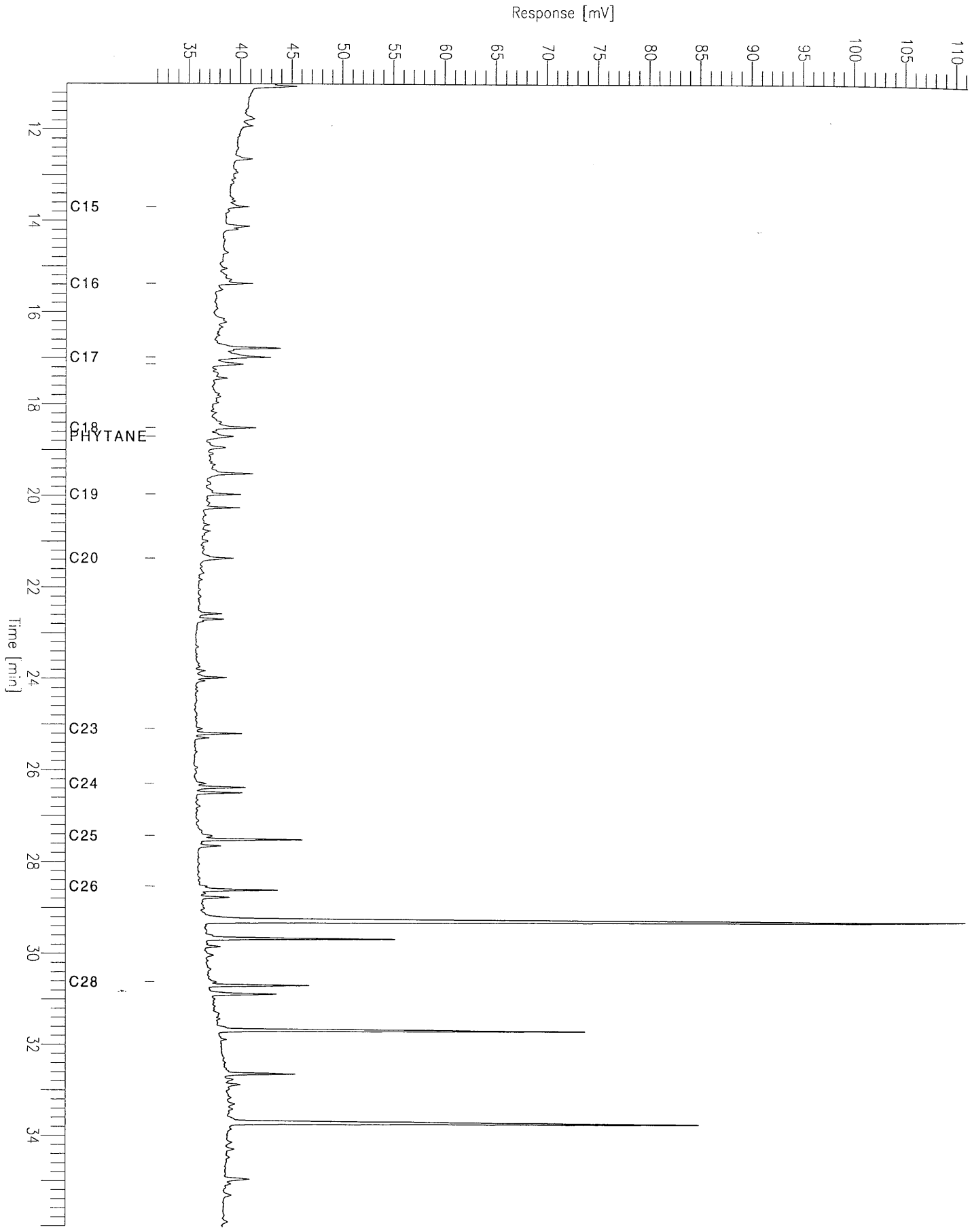
Sample #:
Date : 2/6/95 10:25 AM
Time of Injection: 10/4/94 02:17 PM
Low Point : 32.26 mV High Point : 111.58 mV
Plot Scale: 79.3 mV



Rockall Chromatogram

Sample Name : 58-13/16 1.83m
FileName : C:\TC4\HYDROCAR\rl32.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

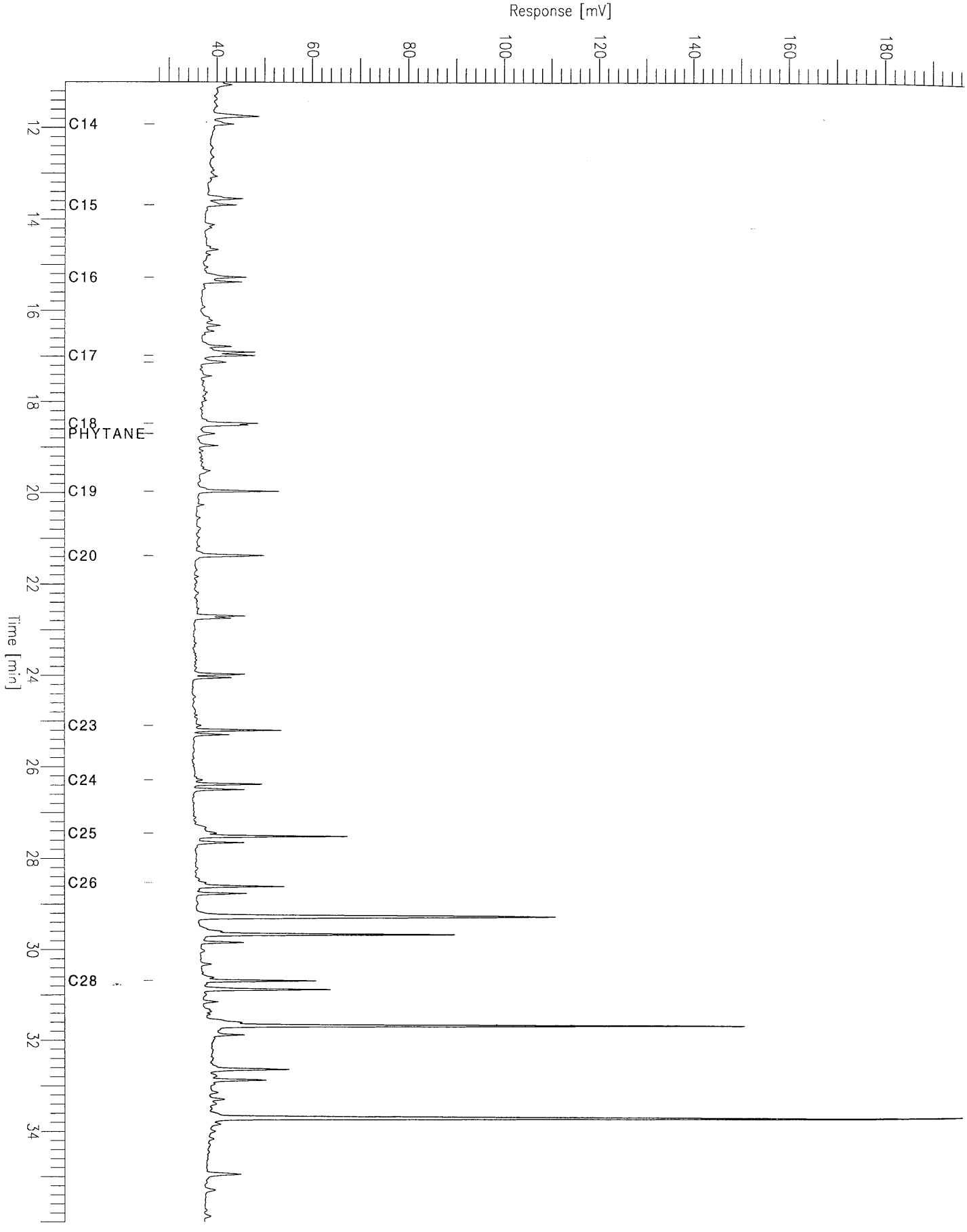
Sample #: Page 1 of 1
Date : 2/6/95 10:25 AM
Time of Injection: 10/4/94 03:13 PM
Low Point : 31.89 mV High Point : 111.09 mV
Plot Scale: 79.2 mV



Rockall Chromatogram

Sample Name : 58-13/17 2.45m
FileName : C:\TC4\HYDROCAR\RK39.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

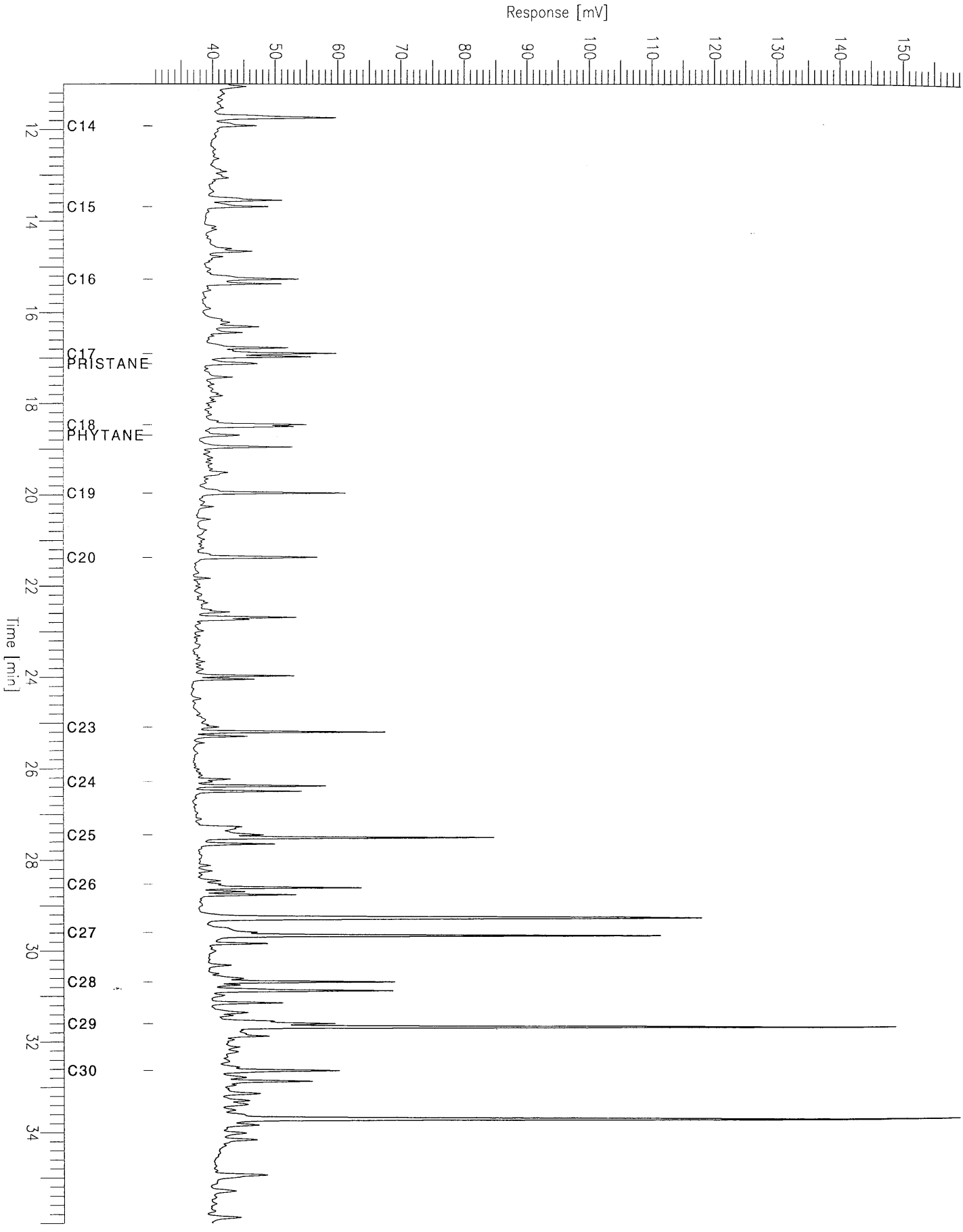
Sample #: Page 1 of 1
Date : 2/6/95 10:56 AM
Time of Injection: 10/4/94 09:38 PM
Low Point : 26.93 mV High Point : 196.54 mV
Plot Scale: 169.6 mV



Rockall Chromatogram

Sample Name : 58-13/17 3.10m
FileName : C:\TC4\HYDROCAR\RK41.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

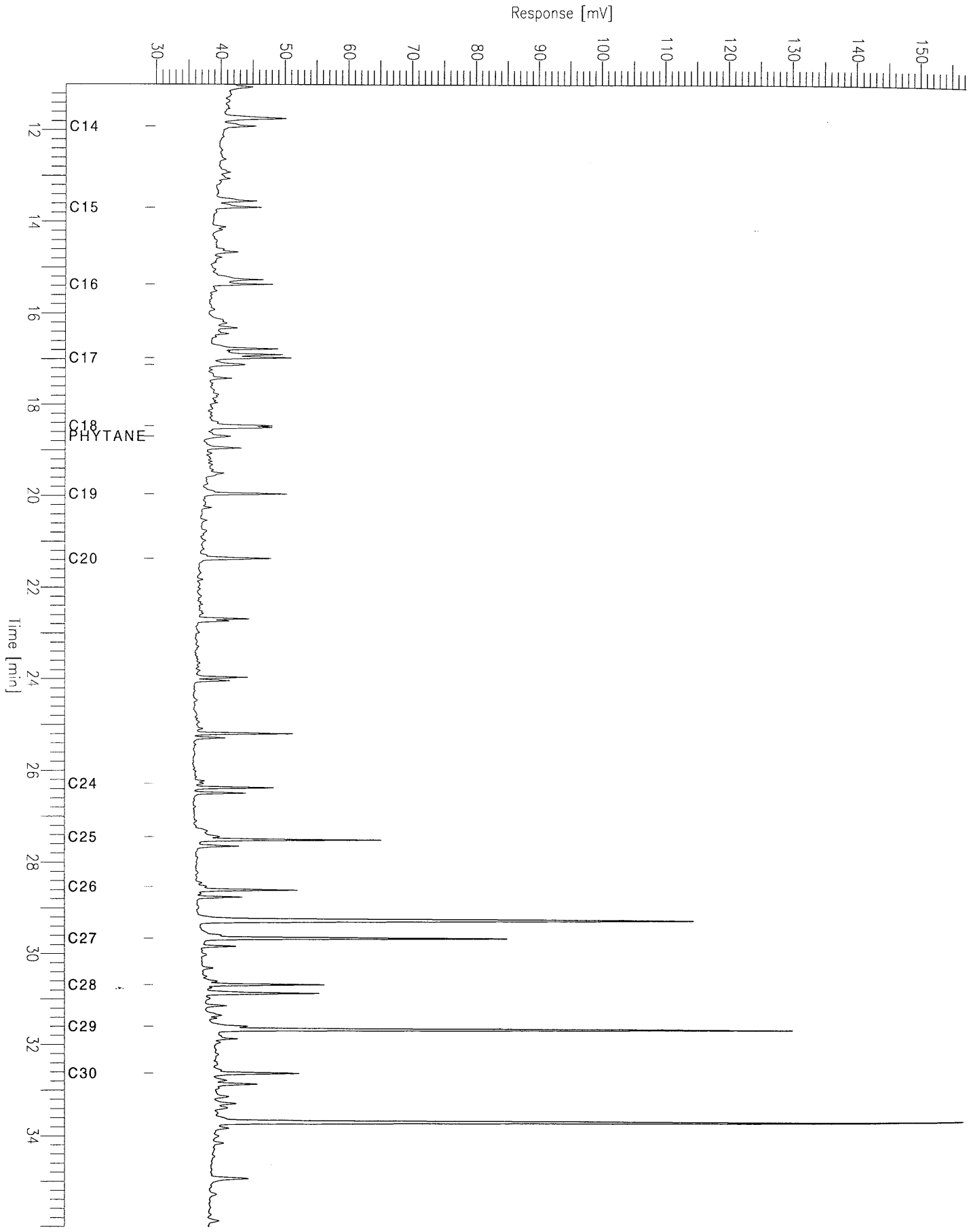
Sample #: Page 1 of 1
Date : 2/6/95 10:57 AM
Time of Injection: 10/4/94 11:28 PM
Low Point : 30.54 mV High Point : 159.13 mV
Plot Scale: 128.6 mV



Rockall Chromatogram

Sample Name : 58-13/18 2.30m
FileName : C:\TC4\HYDROCAR\RK42.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

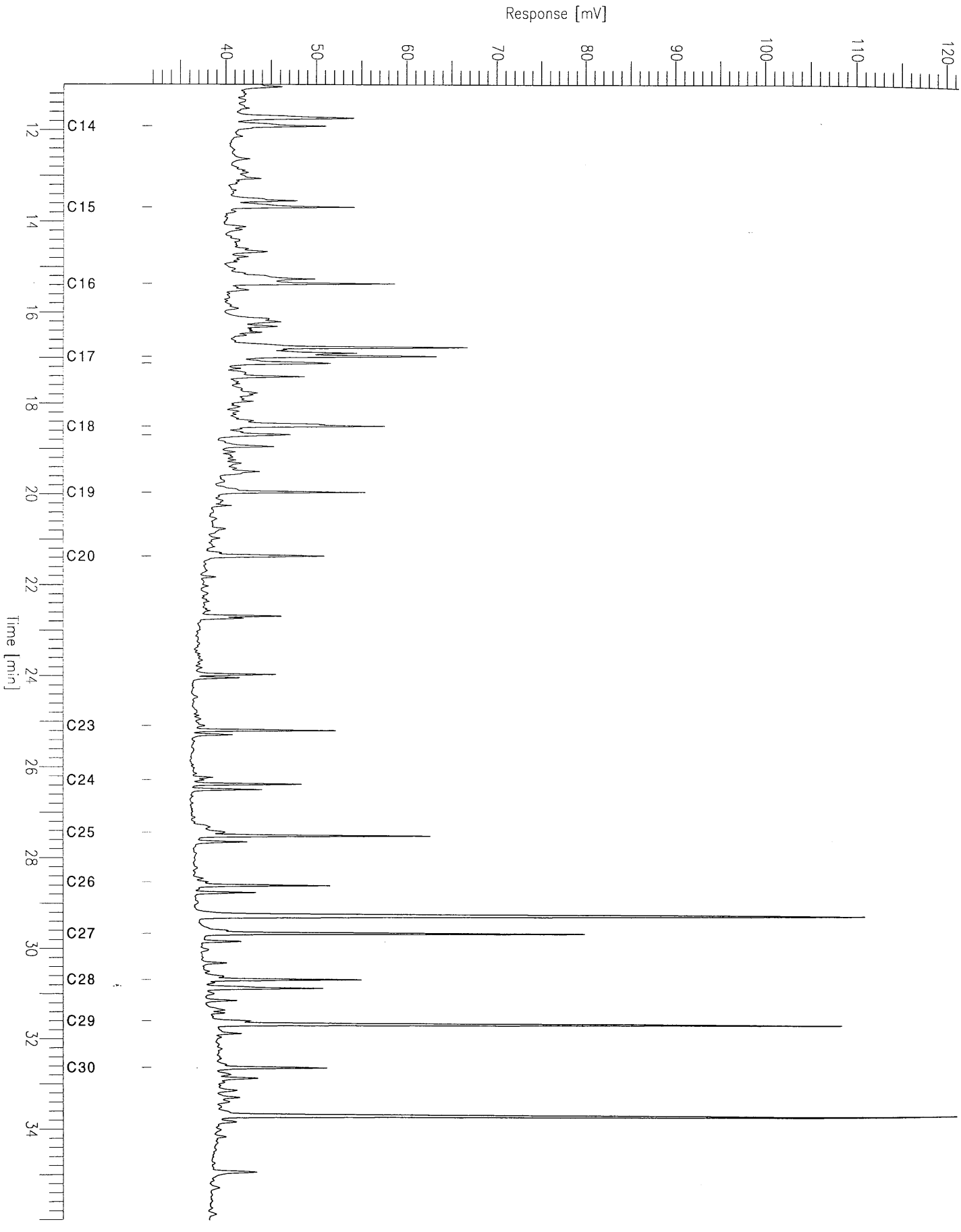
Sample #:
Date : 2/6/95 10:57 AM
Time of Injection: 10/5/94 12:23 AM
Low Point : 29.82 mV High Point : 157.17 mV
Plot Scale: 127.4 mV



Rockall Chromatogram

Sample Name : 58-13/18 2.95m
FileName : C:\TC4\HYDROCAR\RK43.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

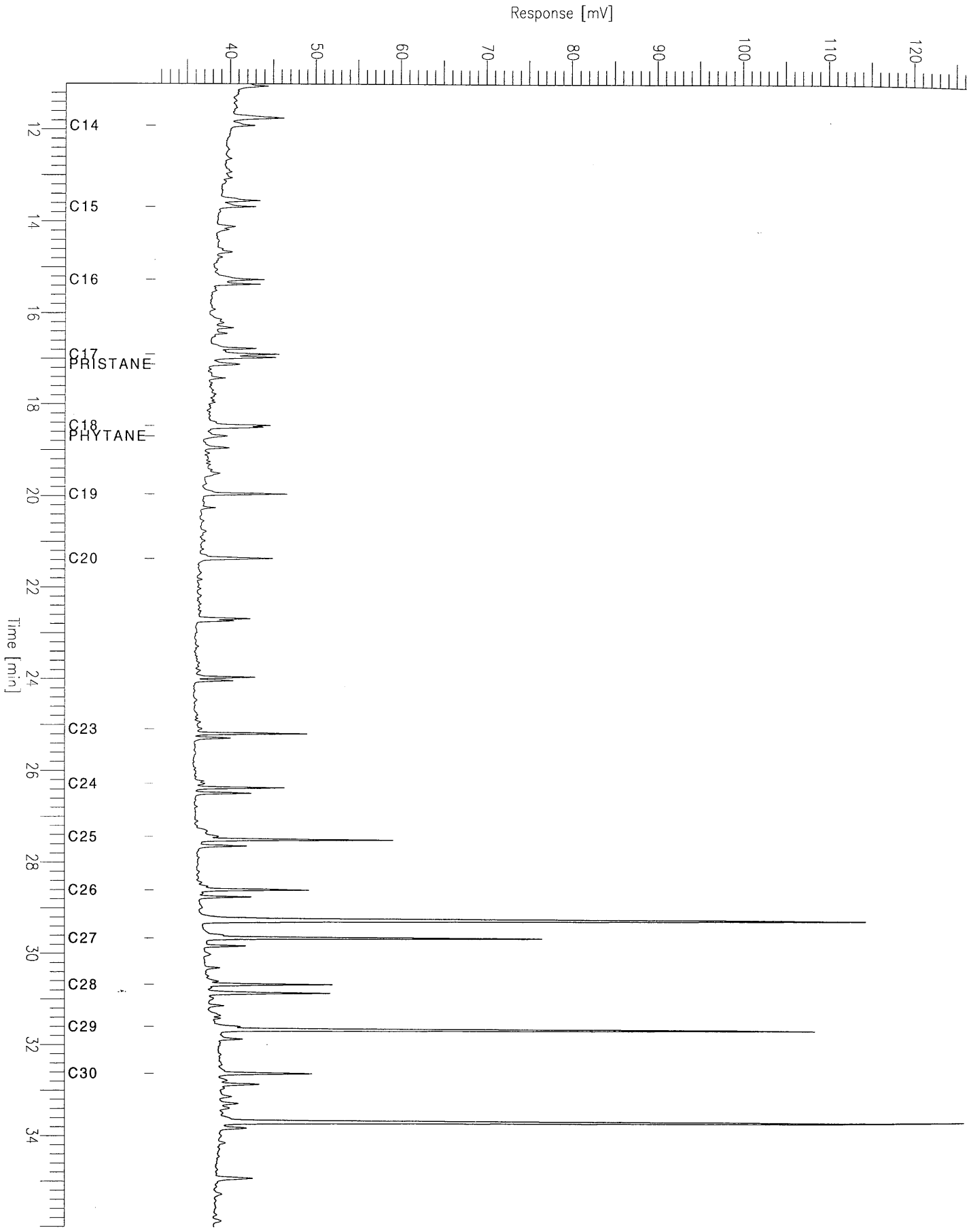
Sample #: Page 1 of 1
Date : 2/6/95 10:58 AM
Time of Injection: 10/5/94 01:19 AM
Low Point : 31.90 mV High Point : 121.29 mV
Plot Scale: 89.4 mV



Rockall Chromatogram

Sample Name : 58-13/19 1.90m
FileName : C:\TC4\HYDROCAR\RK44.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

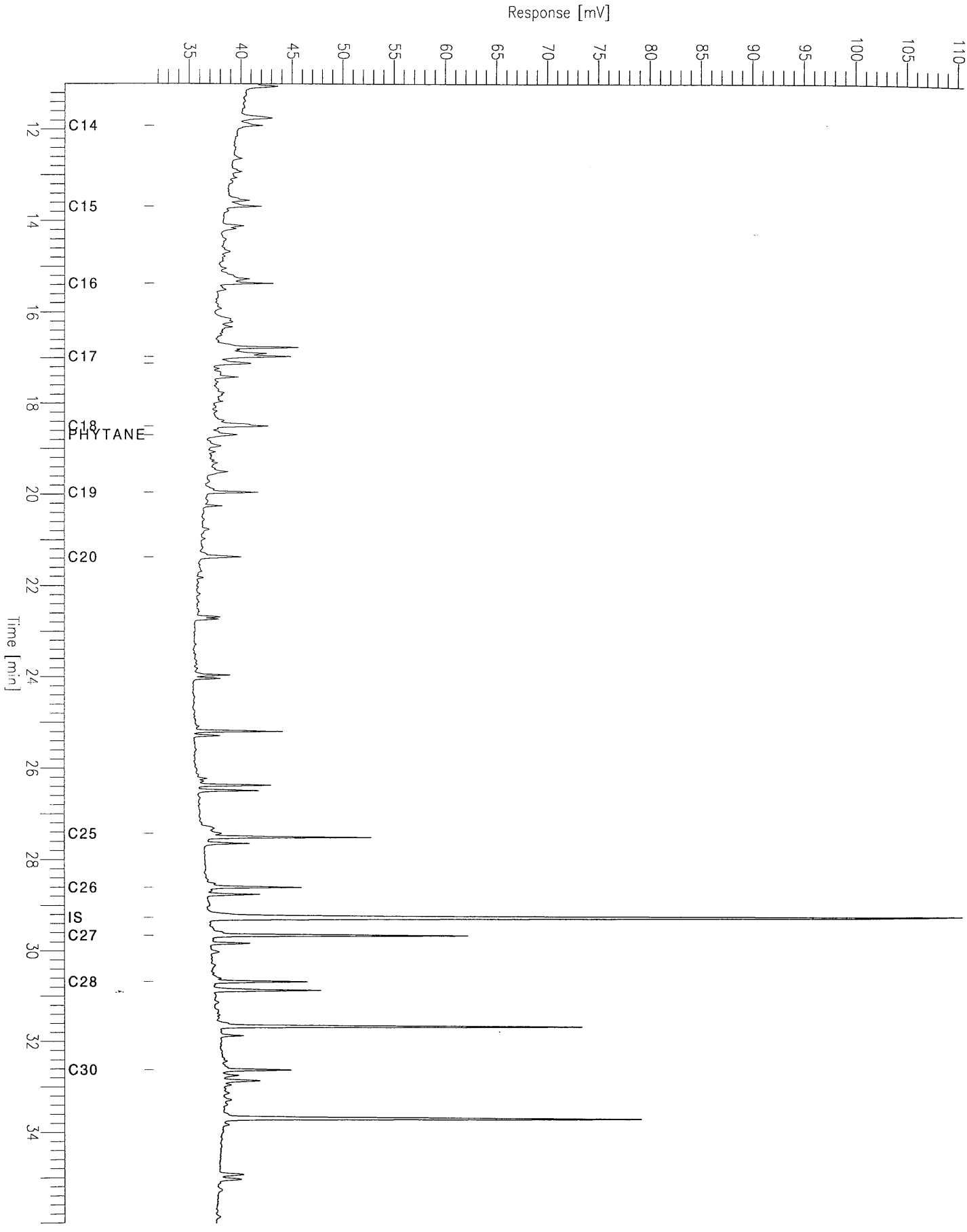
Sample #: Page 1 of 1
Date : 2/6/95 10:58 AM
Time of Injection: 10/5/94 02:14 AM
Low Point : 31.35 mV High Point : 126.07 mV
Plot Scale: 94.7 mV



Rockall Chromatogram

Sample Name : 58-13/19 2.55m
FileName : C:\TC4\HYDROCAR\RK45.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

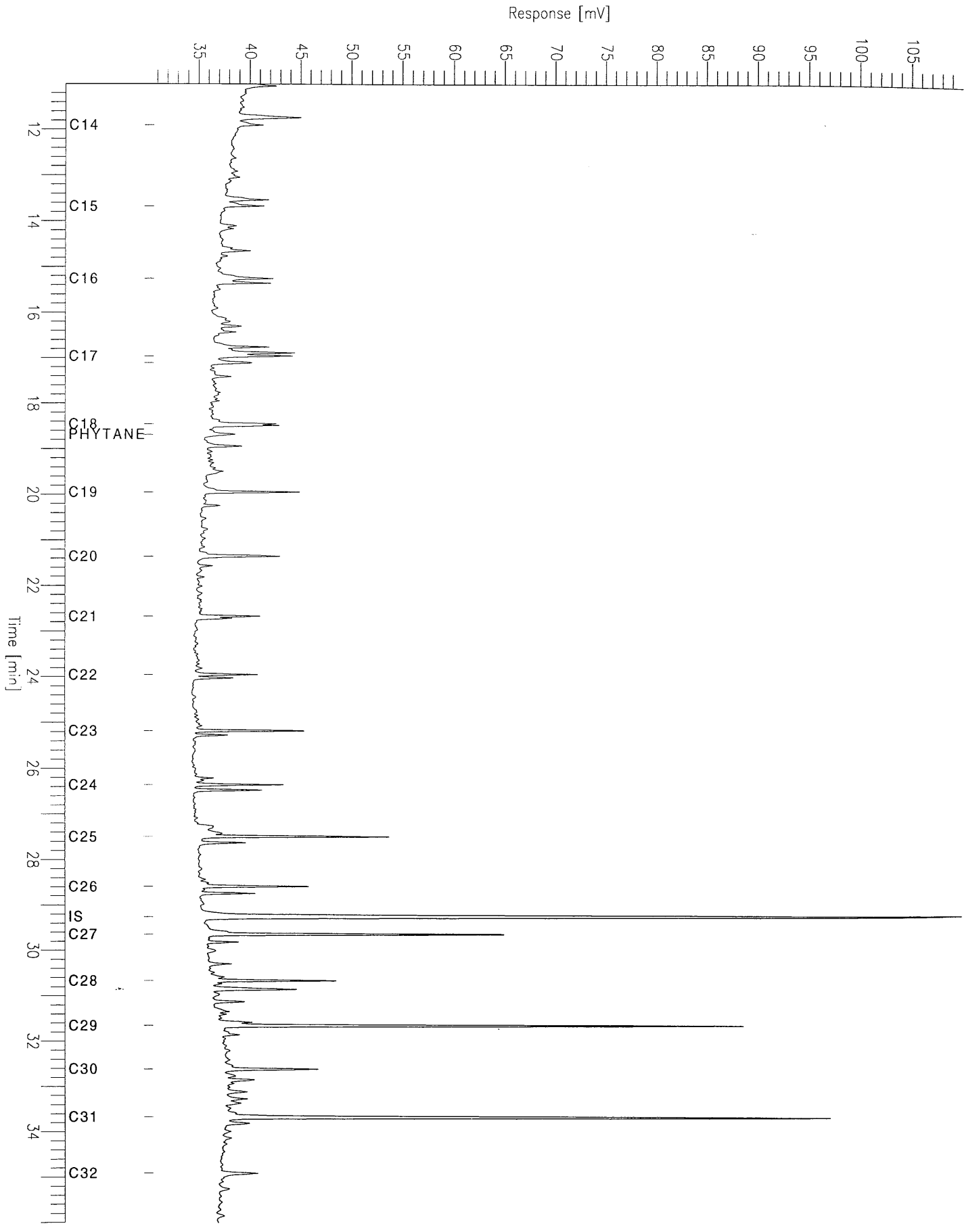
Sample #:
Date : 2/6/95 10:58 AM
Time of Injection: 10/5/94 03:10 AM
Low Point : 31.64 mV High Point : 110.51 mV
Plot Scale: 78.9 mV



Rockall Chromatogram

Sample Name : 58-13/20 2.70m
FileName : C:\TC4\HYDROCAR\RK47.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

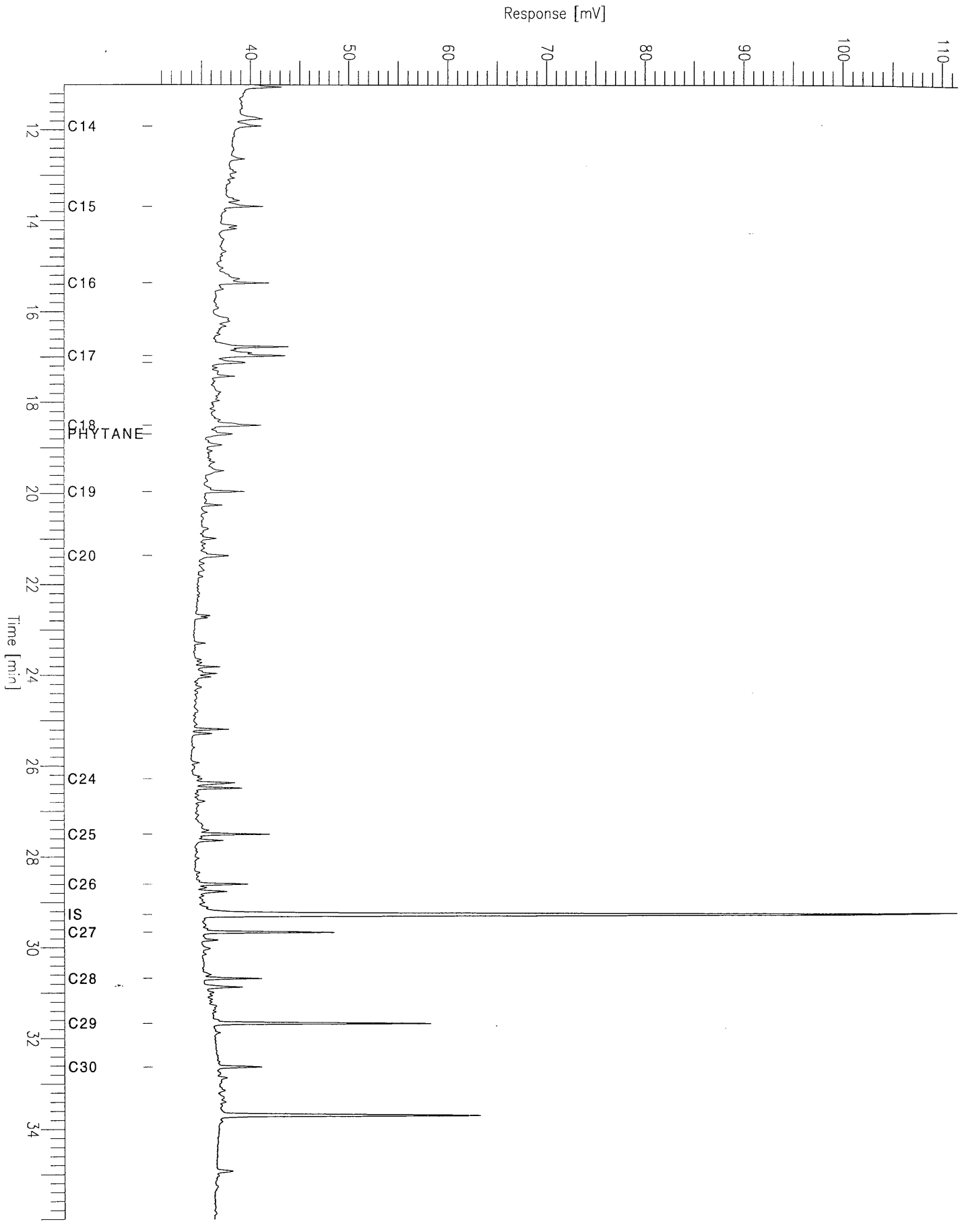
Sample #: Page 1 of 1
Date : 2/6/95 10:59 AM
Time of Injection: 10/5/94 04:59 AM
Low Point : 30.67 mV High Point : 109.96 mV
Plot Scale: 79.3 mV



Rockall Chromatogram

Sample Name : 58-13/20 3.35m
FileName : C:\TC4\HYDROCAR\rk48.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

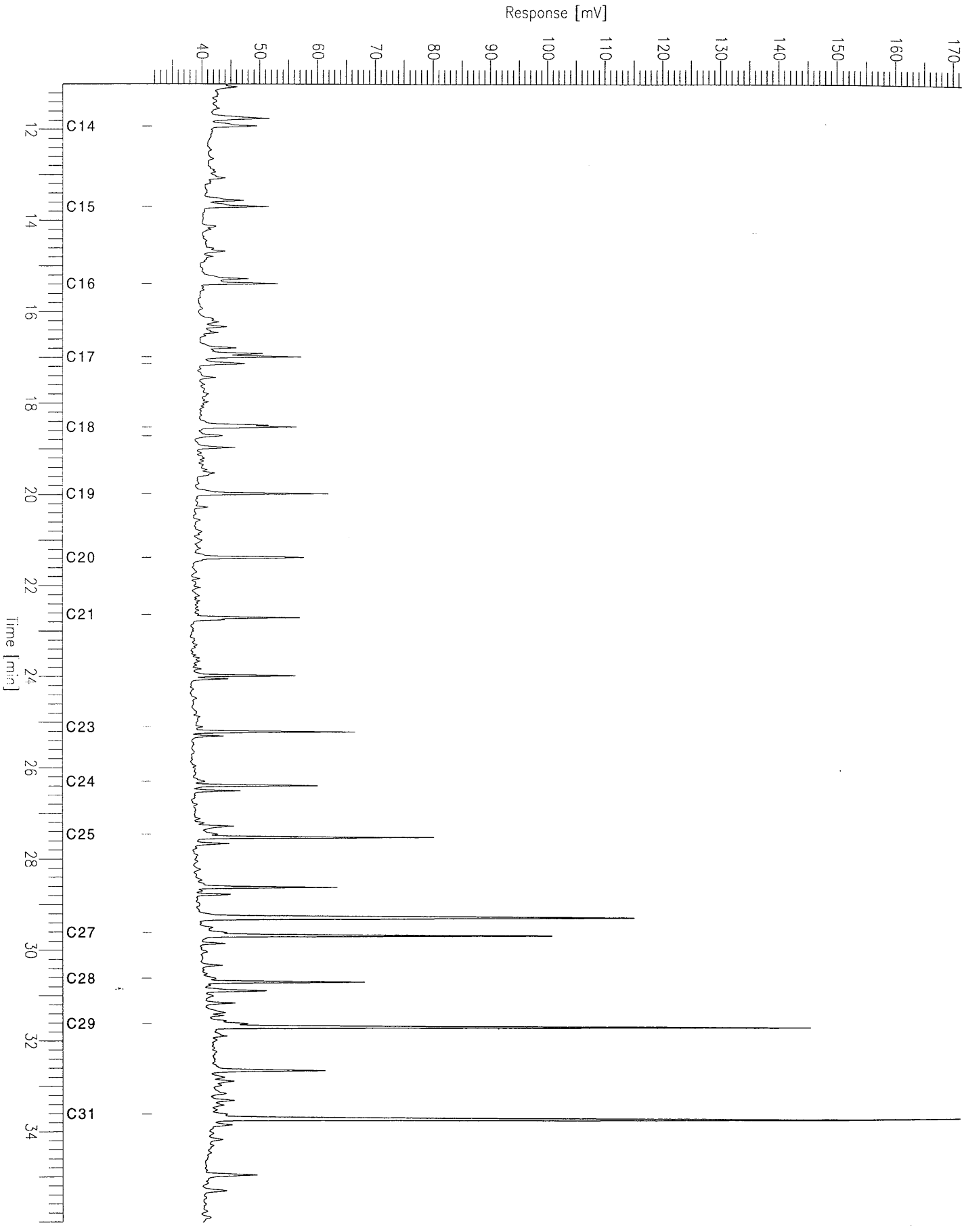
Sample #: Page 1 of 1
Date : 2/6/95 10:31 AM
Time of Injection: 10/5/94 05:54 AM
Low Point : 30.09 mV High Point : 111.54 mV
Plot Scale: 81.5 mV



Rockall Chromatogram

Sample Name : 58-13/21 1.70m
FileName : C:\TC4\HYDROCAR\Ra4.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

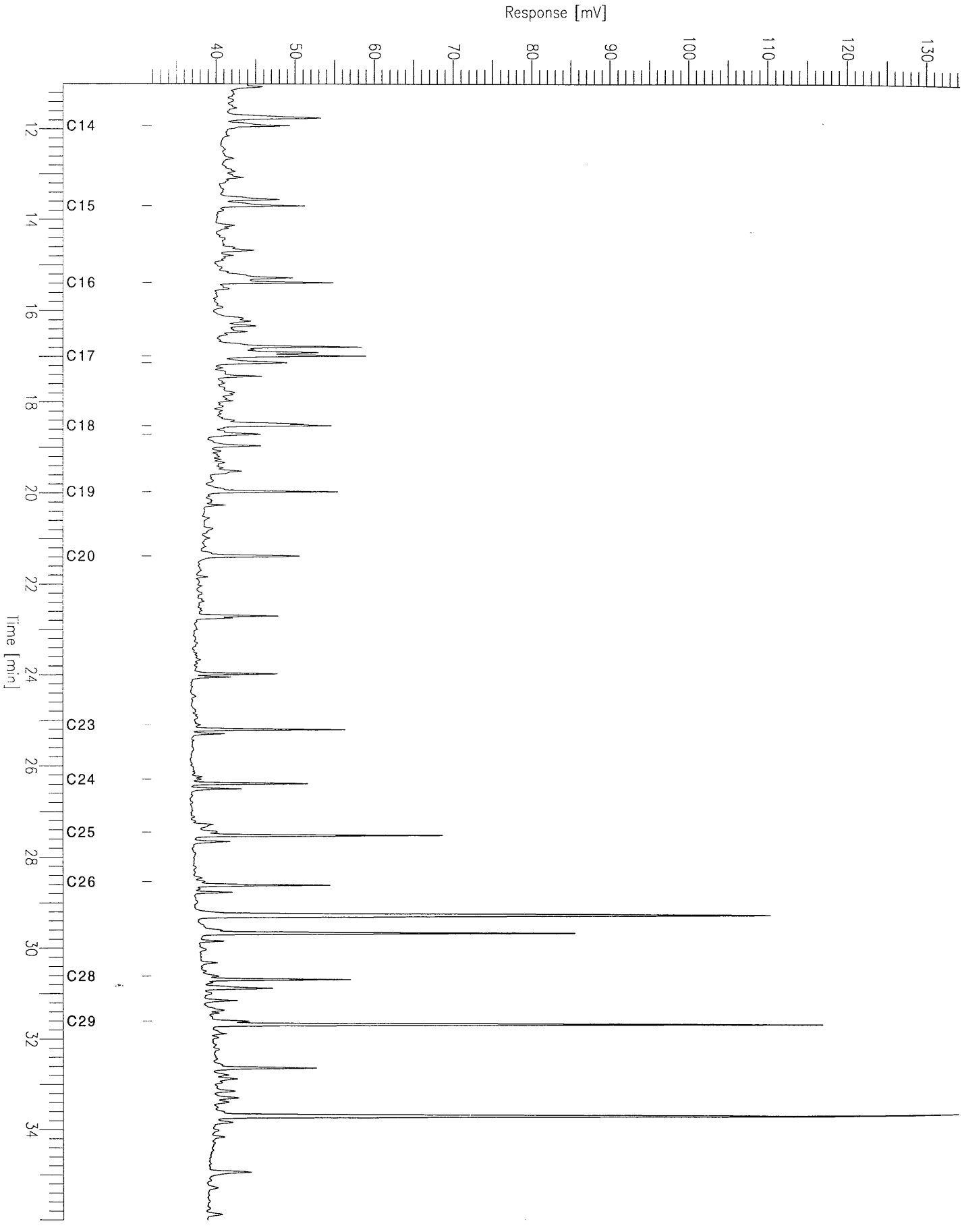
Sample #: Page 1 of 1
Date : 2/6/95 11:37 AM
Time of Injection: 10/5/94 02:20 PM
Low Point : 31.47 mV High Point : 171.39 mV
Plot Scale: 139.9 mV



Rockall Chromatogram

Sample Name : 58-13/21 2.35m
FileName : C:\TC4\HYDROCAR\Ra5.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

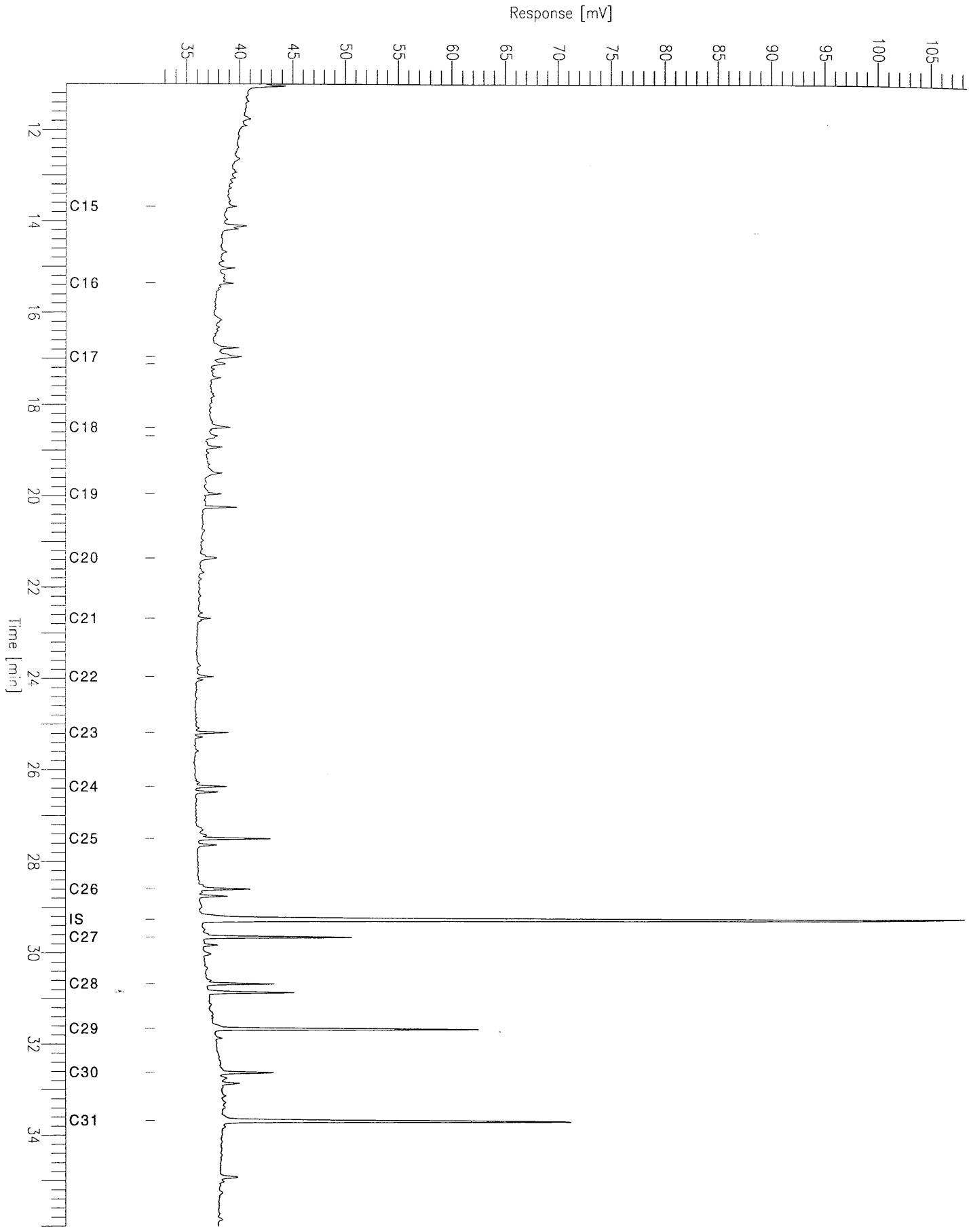
Sample #: Page 1 of 1
Date : 2/6/95 11:38 AM
Time of Injection: 10/5/94 03:15 PM
Low Point : 31.87 mV High Point : 134.21 mV
Plot Scale: 102.3 mV



Rockall Chromatogram

Sample Name : 58-13/22 2.09m
FileName : C:\TC4\HYDROCAR\Ra6.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

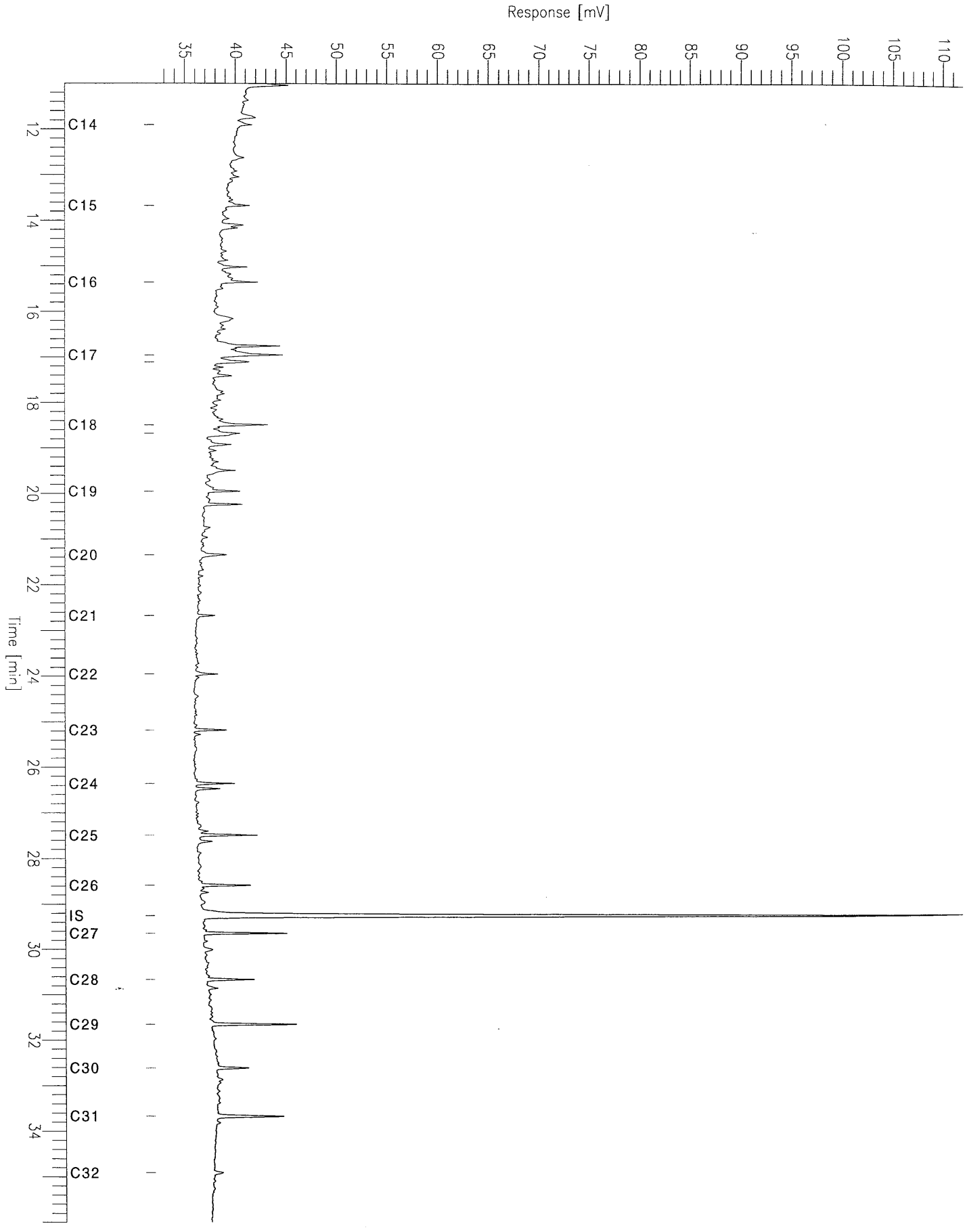
Sample #:
Date : 2/6/95 11:38 AM
Time of Injection: 10/5/94 04:11 PM
Low Point : 32.14 mV High Point : 108.33 mV
Plot Scale: 76.2 mV



Rockall Chromatogram

Sample Name : 58-13/22 2.74m
FileName : C:\TC4\HYDROCAR\Ra7.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

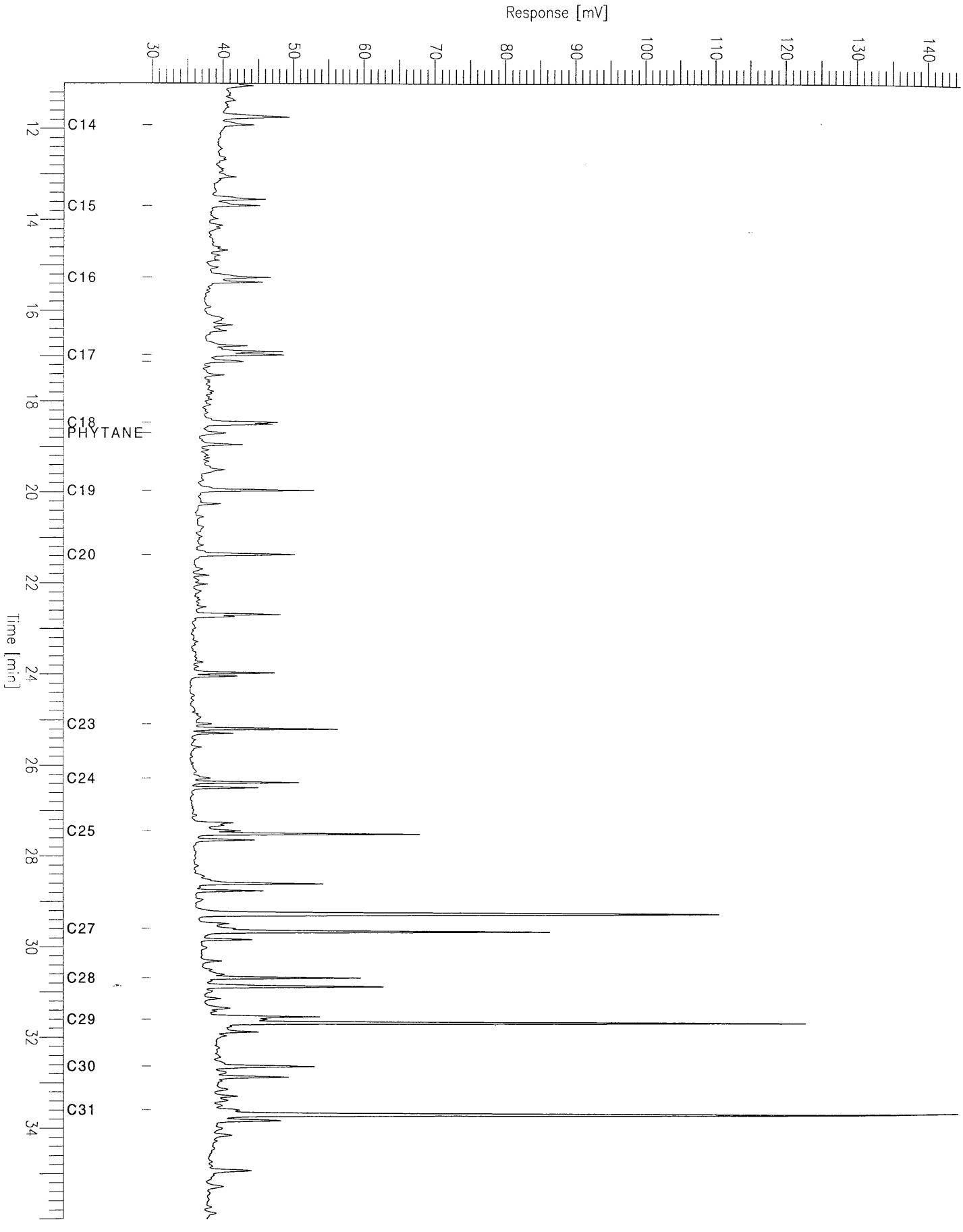
Sample #: Page 1 of 1
Date : 2/6/95 11:39 AM
Time of Injection: 10/5/94 05:06 PM
Low Point : 32.03 mV High Point : 111.90 mV
Plot Scale: 79.9 mV



Rockall Chromatogram

Sample Name : 58-13/23 2.62m
FileName : C:\TC4\HYDROCAR\Ra8.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

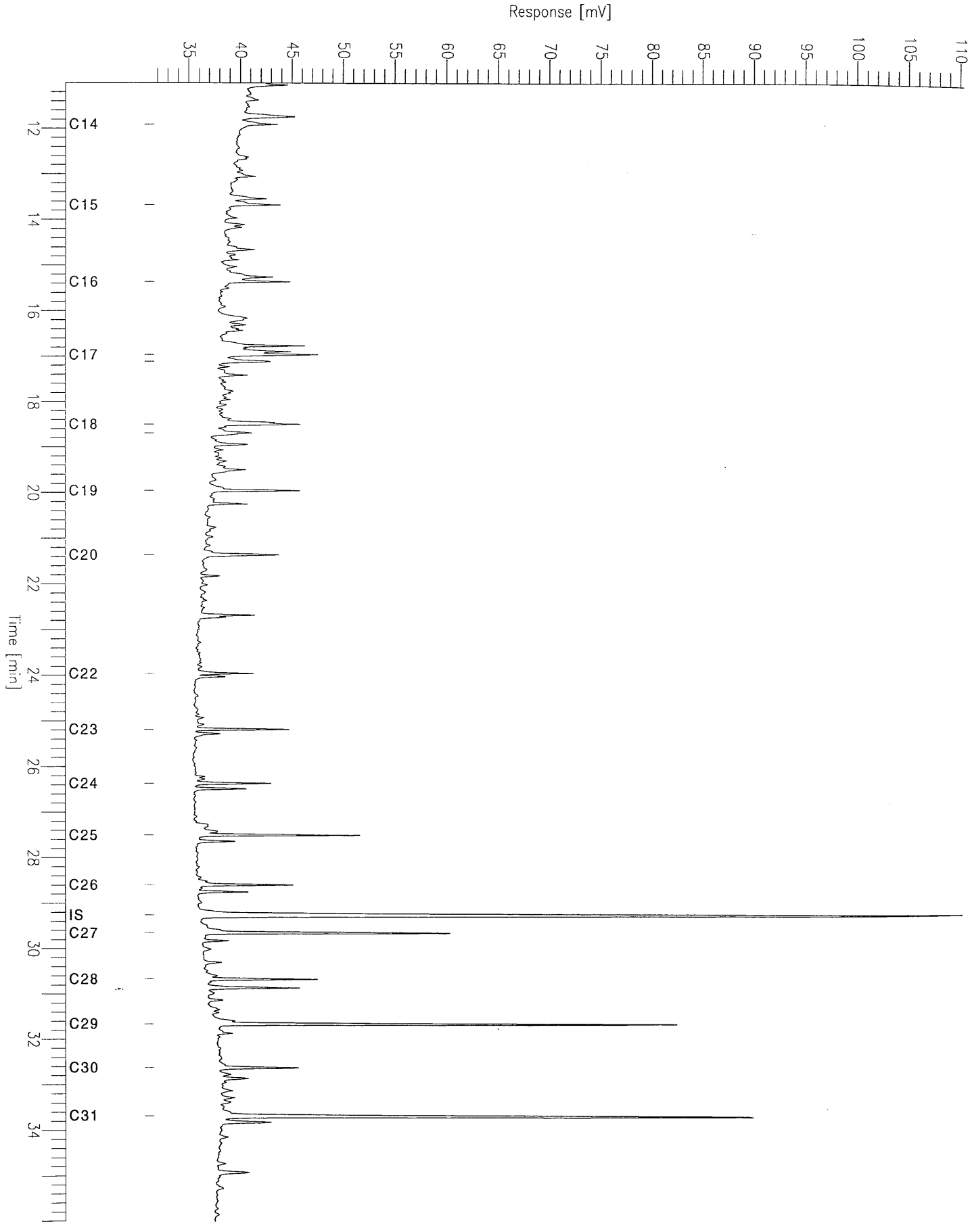
Sample #:
Date : 2/6/95 11:39 AM
Time of Injection: 10/5/94 06:00 PM
Low Point : 29.99 mV High Point : 144.55 mV
Plot Scale: 114.6 mV



Rockall Chromatogram

Sample Name : 58-13/23 3.27m
FileName : C:\TC4\HYDROCAR\Ra9.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

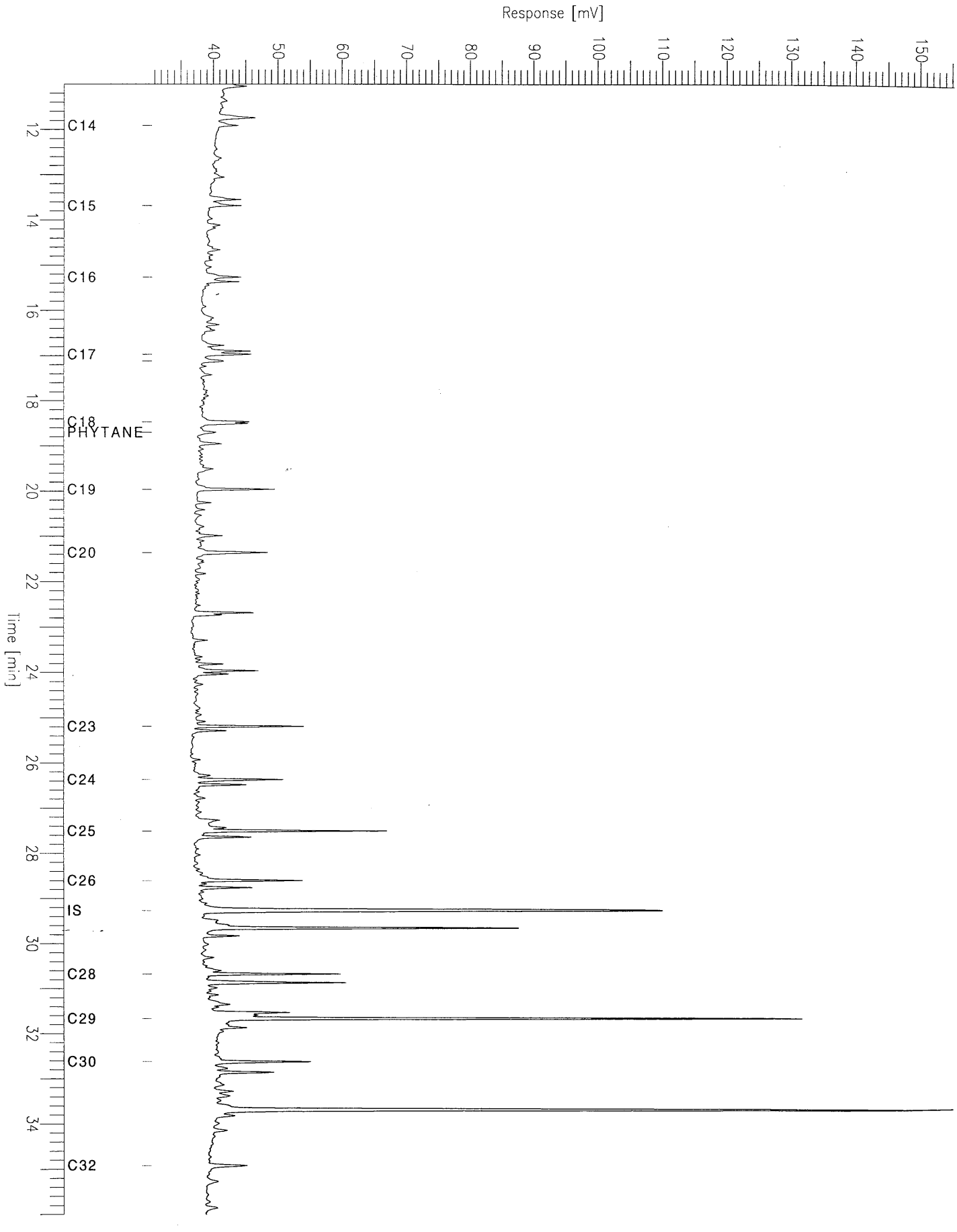
Sample #: Page 1 of 1
Date : 2/6/95 11:39 AM
Time of Injection: 10/5/94 06:55 PM
Low Point : 31.69 mV High Point : 110.29 mV
Plot Scale: 78.6 mV



Rockall Chromatogram

Sample Name : 58-13/24 2.73m
FileName : C:\TC4\HYDROCAR\Ra10.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

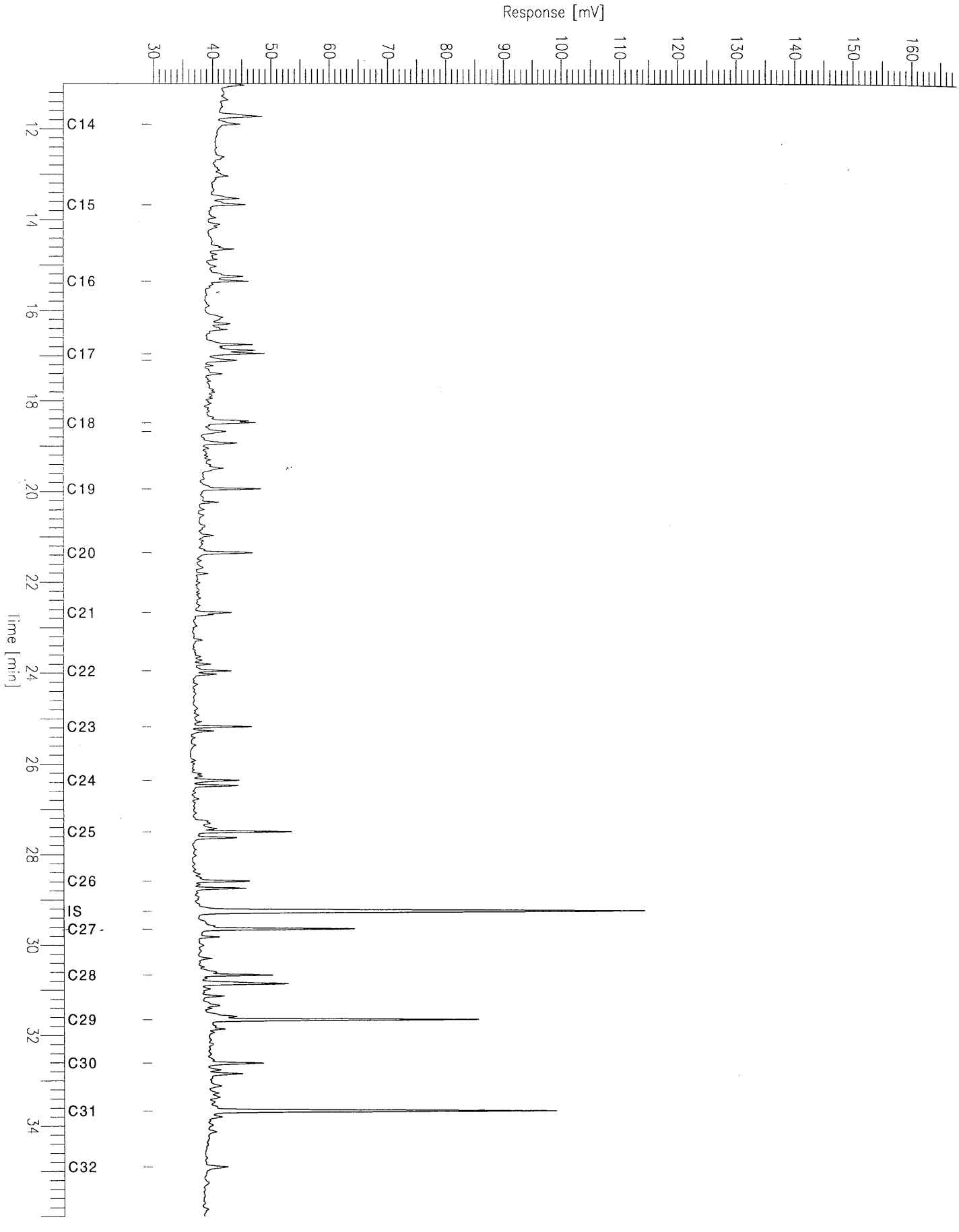
Sample #: Page 1 of 1
Date : 2/6/95 11:40 AM
Time of Injection: 10/5/94 07:50 PM
Low Point : 30.62 mV High Point : 155.19 mV
Plot Scale: 124.6 mV



Rockall Chromatogram

Sample Name : 58-13/24 3.38m
FileName : C:\TC4\HYDROCAR\Ra11.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

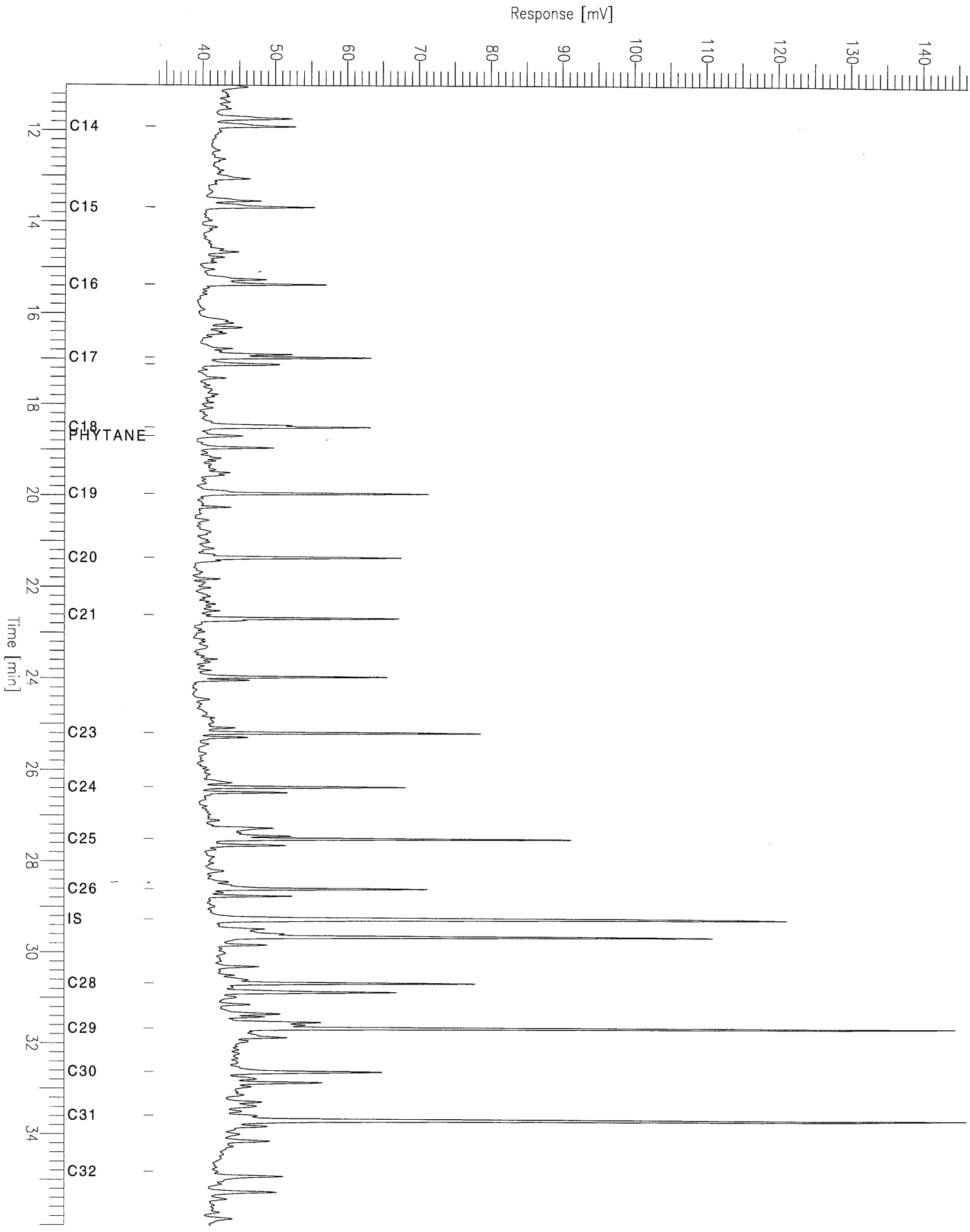
Sample #: Page 1 of 1
Date : 2/6/95 11:40 AM
Time of Injection: 10/5/94 08:46 PM
Low Point : 29.65 mV High Point : 167.70 mV
Plot Scale: 138.0 mV



Rockall Chromatogram

Sample Name : 58-13/25 2.82m
FileName : C:\TC4\HYDROCAR\Ra12.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 33 mV

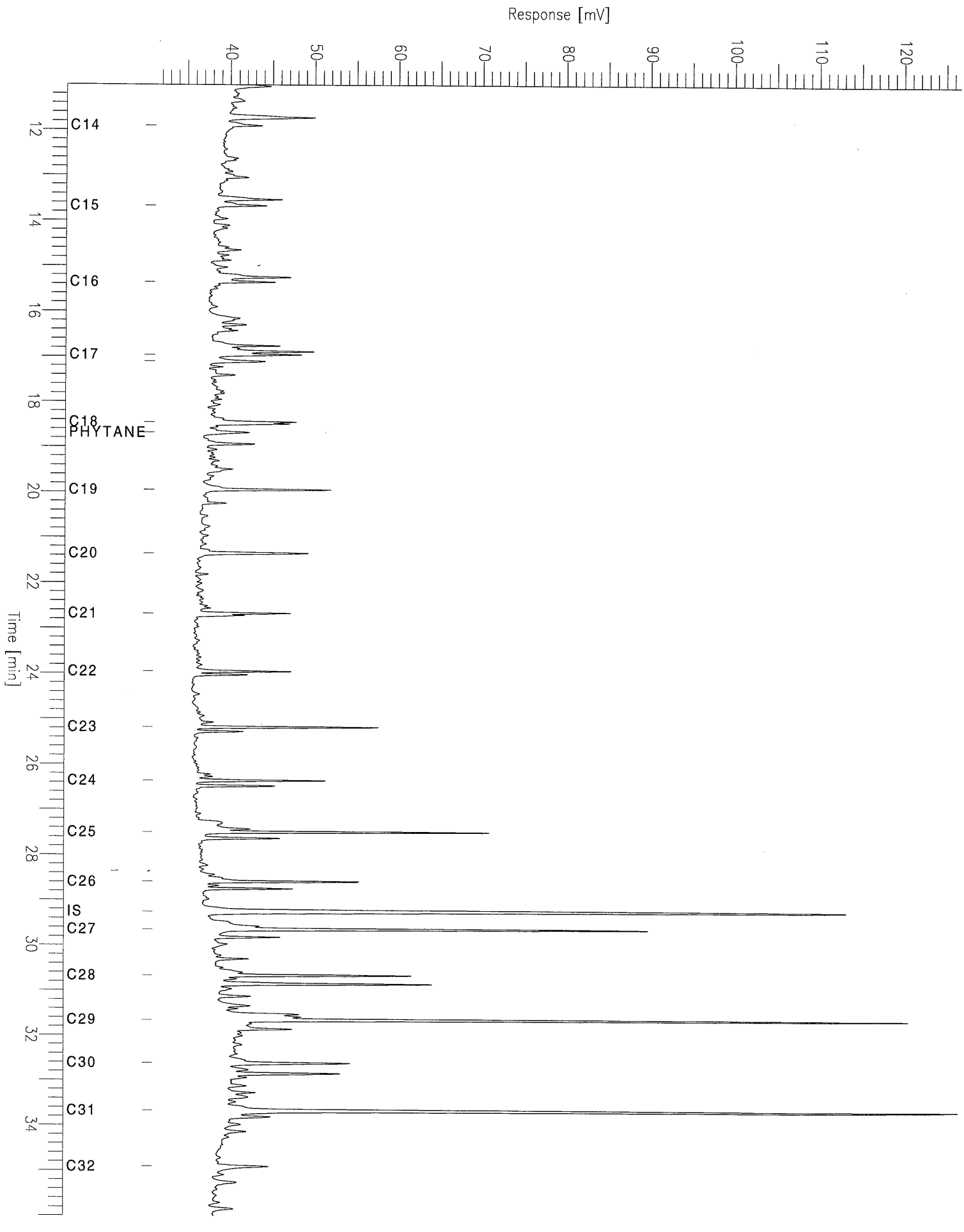
Sample #: Page 1 of 1
Date : 2/6/95 11:40 AM
Time of Injection: 10/5/94 09:41 PM
Low Point : 33.47 mV High Point : 146.07 mV
Plot Scale: 112.6 mV



Rockall Chromatogram

Sample Name : 58-13/25 3.47m
FileName : C:\TC4\HYDROCAR\Ra13.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

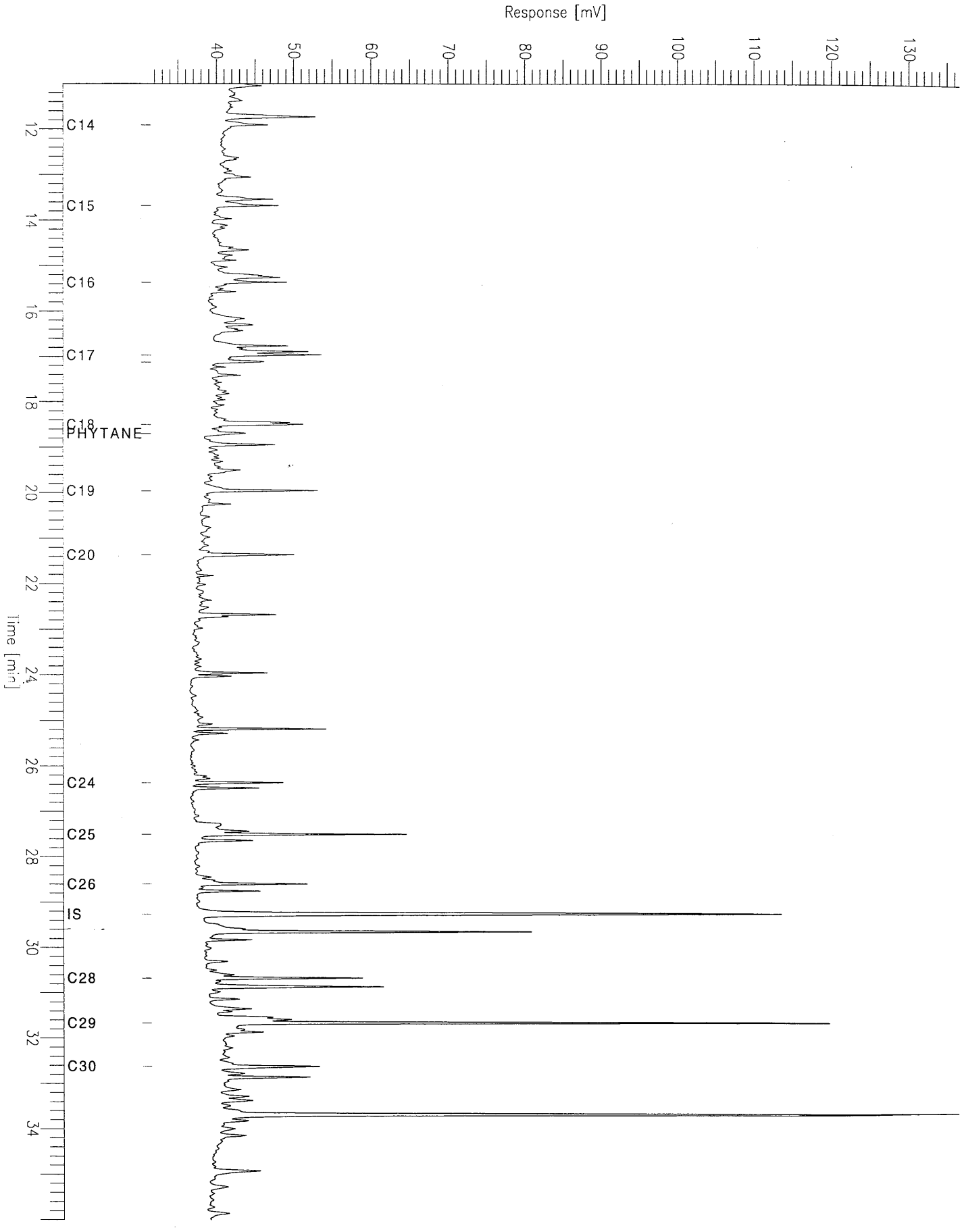
Sample #: Page 1 of 1
Date : 2/6/95 11:41 AM
Time of Injection: 10/5/94 10:35 PM
Low Point : 31.16 mV High Point : 126.62 mV
Plot Scale: 95.5 mV



Rockall Chromatogram

Sample Name : 58-13/26 3.06m
FileName : C:\TC4\HYDROCAR\Ra14.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

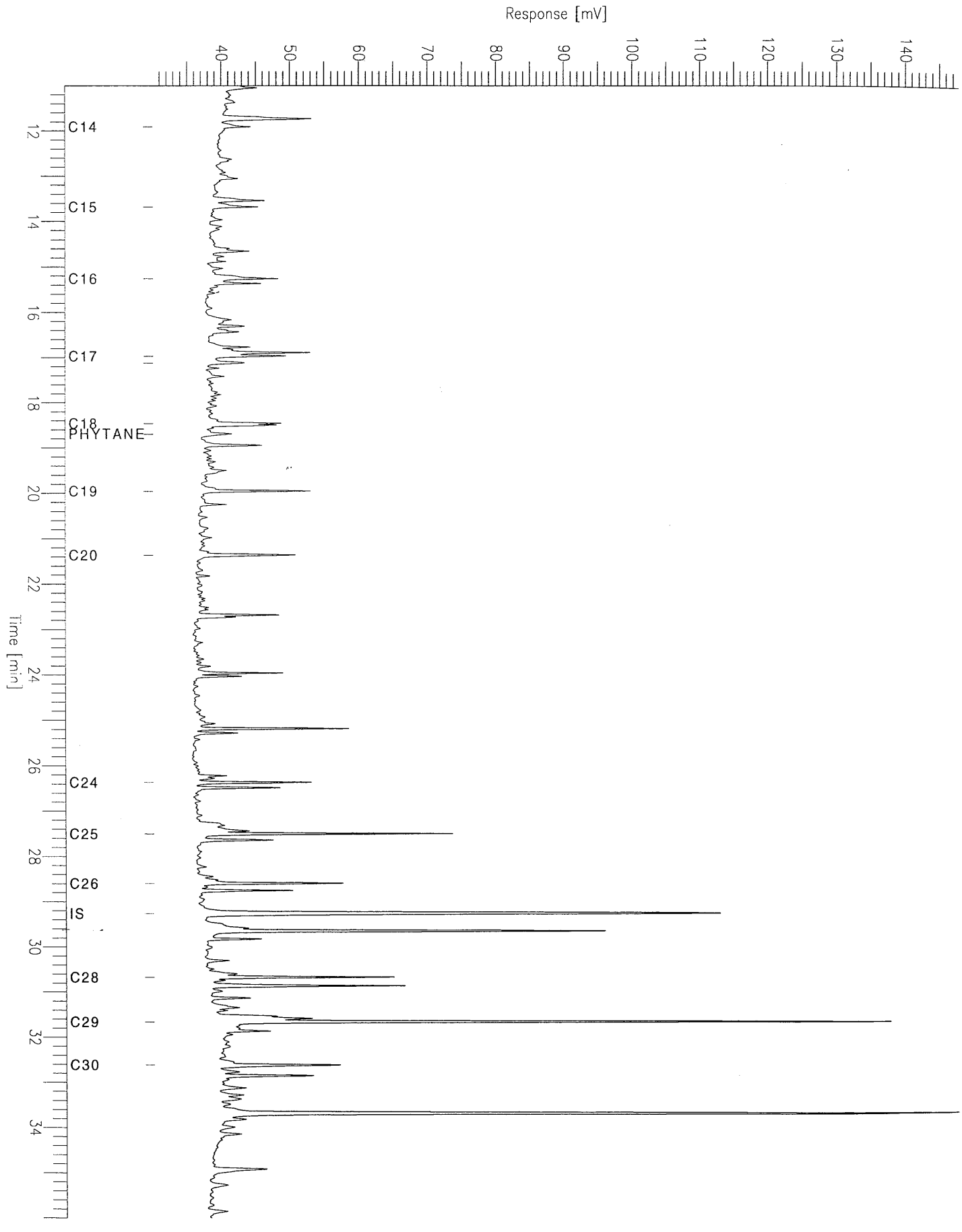
Sample #: Page 1 of 1
Date : 2/6/95 11:41 AM
Time of Injection: 10/5/94 11:31 PM
Low Point : 31.51 mV High Point : 136.55 mV
Plot Scale: 105.0 mV



Rockall Chromatogram

Sample Name : 58-13/26 3.71m
FileName : C:\TC4\HYDROCAR\Ra15.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

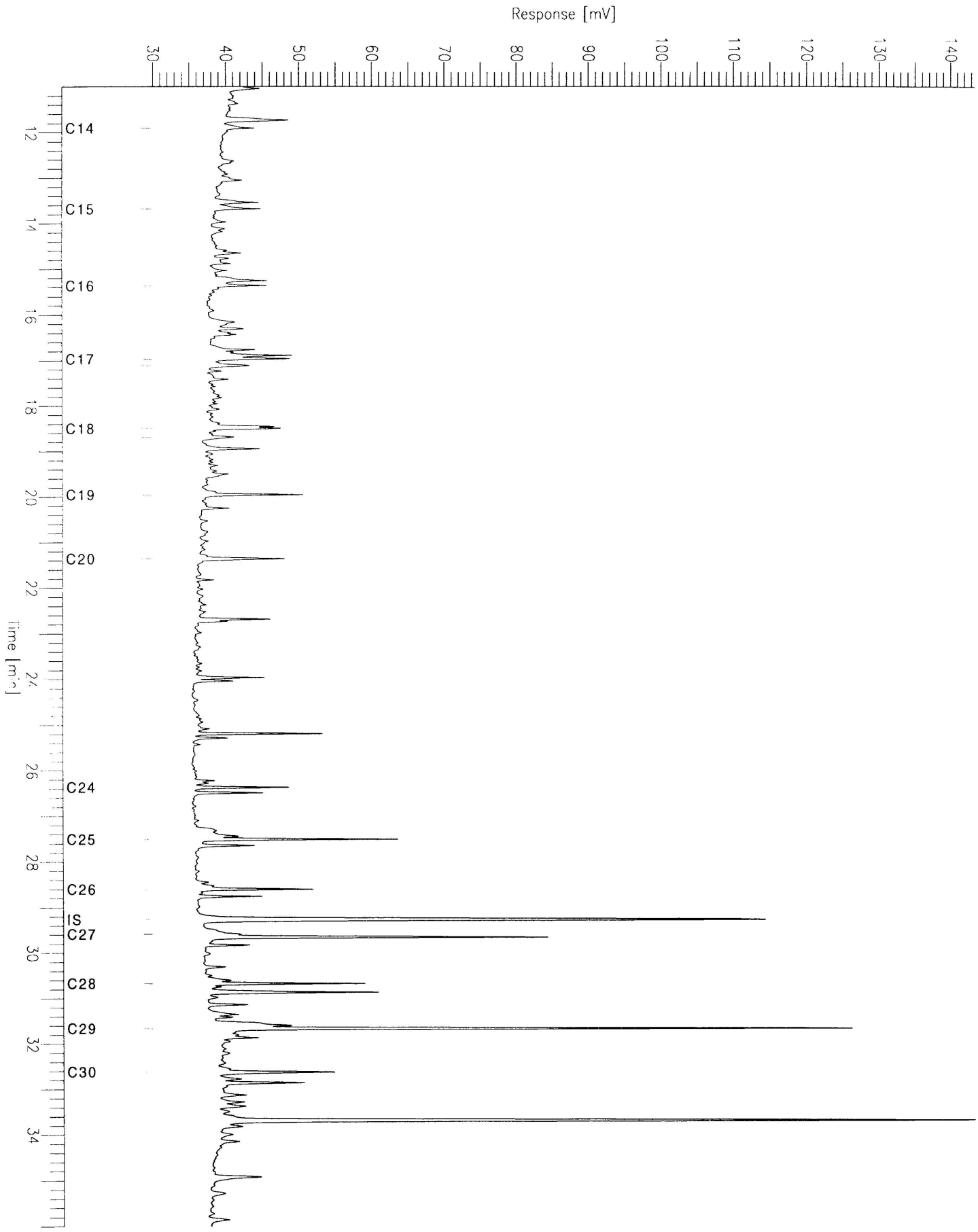
Sample #: Page 1 of 1
Date : 2/6/95 11:42 AM
Time of Injection: 10/6/94 12:25 AM
Low Point : 30.11 mV High Point : 147.74 mV
Plot Scale: 117.6 mV



Rockall Chromatogram

Sample Name : 58-13/27 3.04m
FileName : C:\TC4\HYDROCAR\Ra16.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

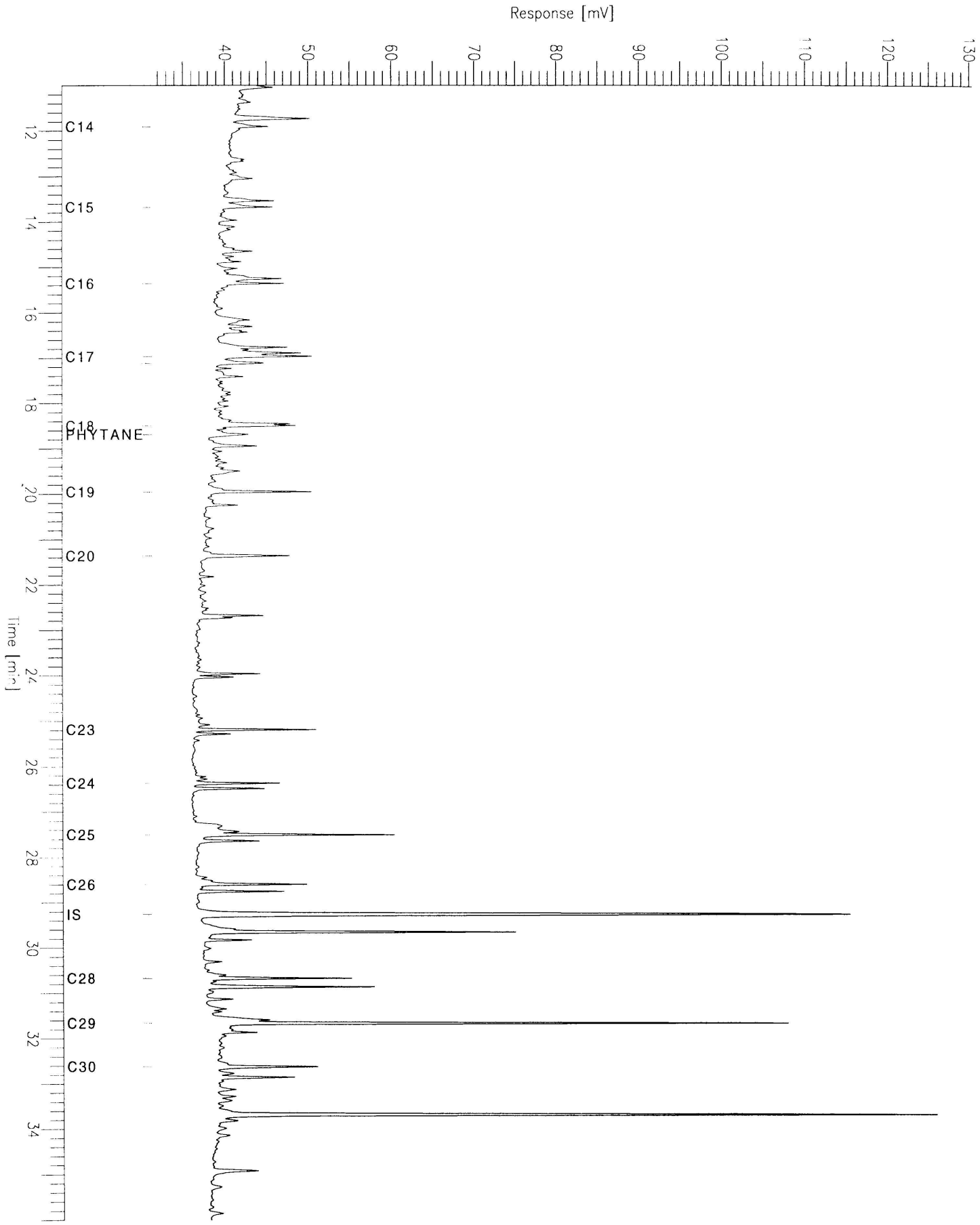
Sample #: Page 1 of 1
Date : 2/6/95 11:42 AM
Time of Injection: 10/6/94 01:19 AM
Low Point : 29.80 mV High Point : 143.40 mV
Plot Scale: 113.6 mV



Rockall Chromatogram

Sample Name : 58-13/27 3.69m
FileName : C:\TC4\HYDROCAR\Ra17.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

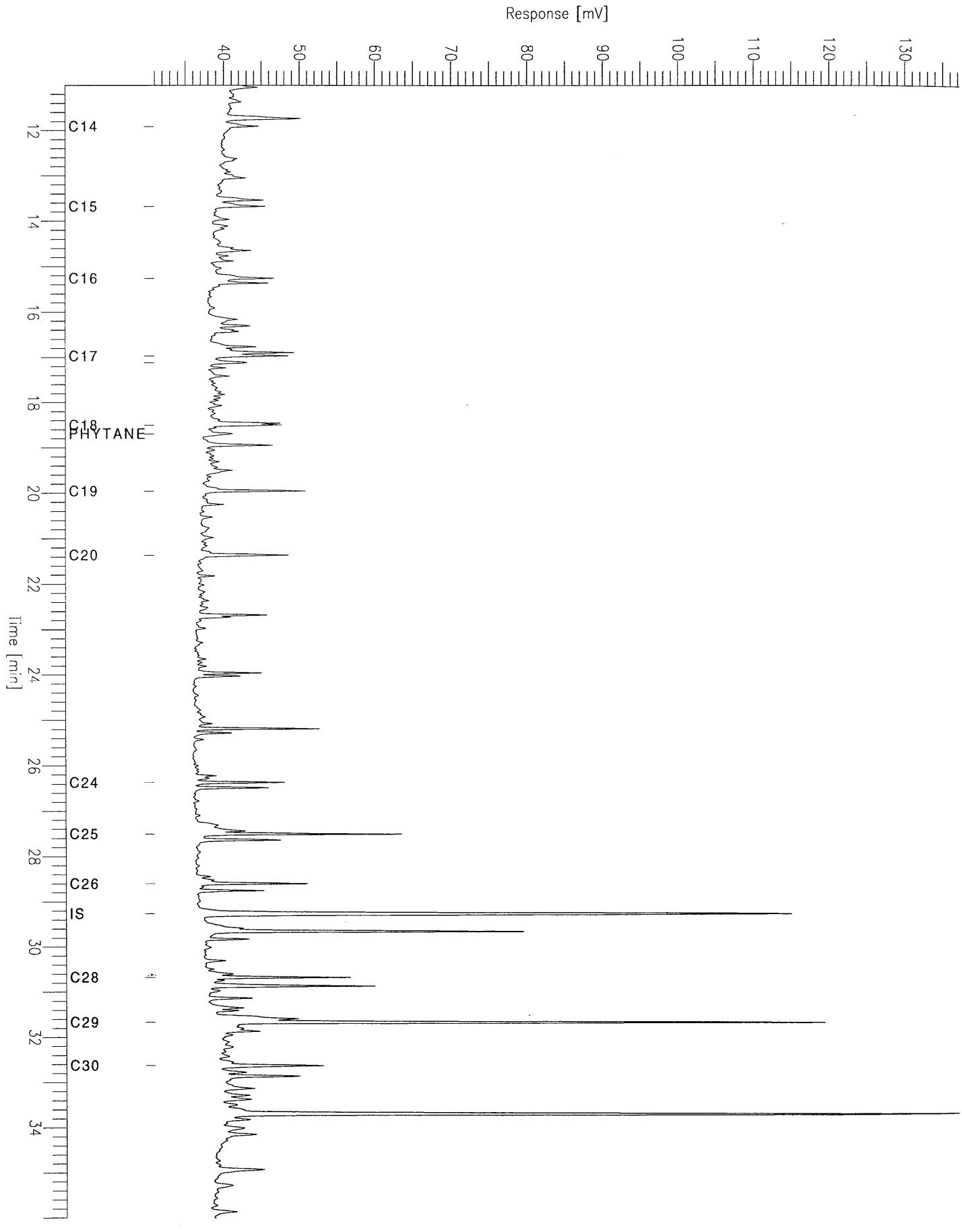
Sample #: Page 1 of 1
Date : 2/6/95 11:42 AM
Time of Injection: 10/6/94 02:15 AM
Low Point : 31.21 mV High Point : 130.35 mV
Plot Scale: 99.1 mV



Rockall Chromatogram

Sample Name : 58-13/28 2.66m
FileName : C:\TC4\HYDROCAR\Ra18.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

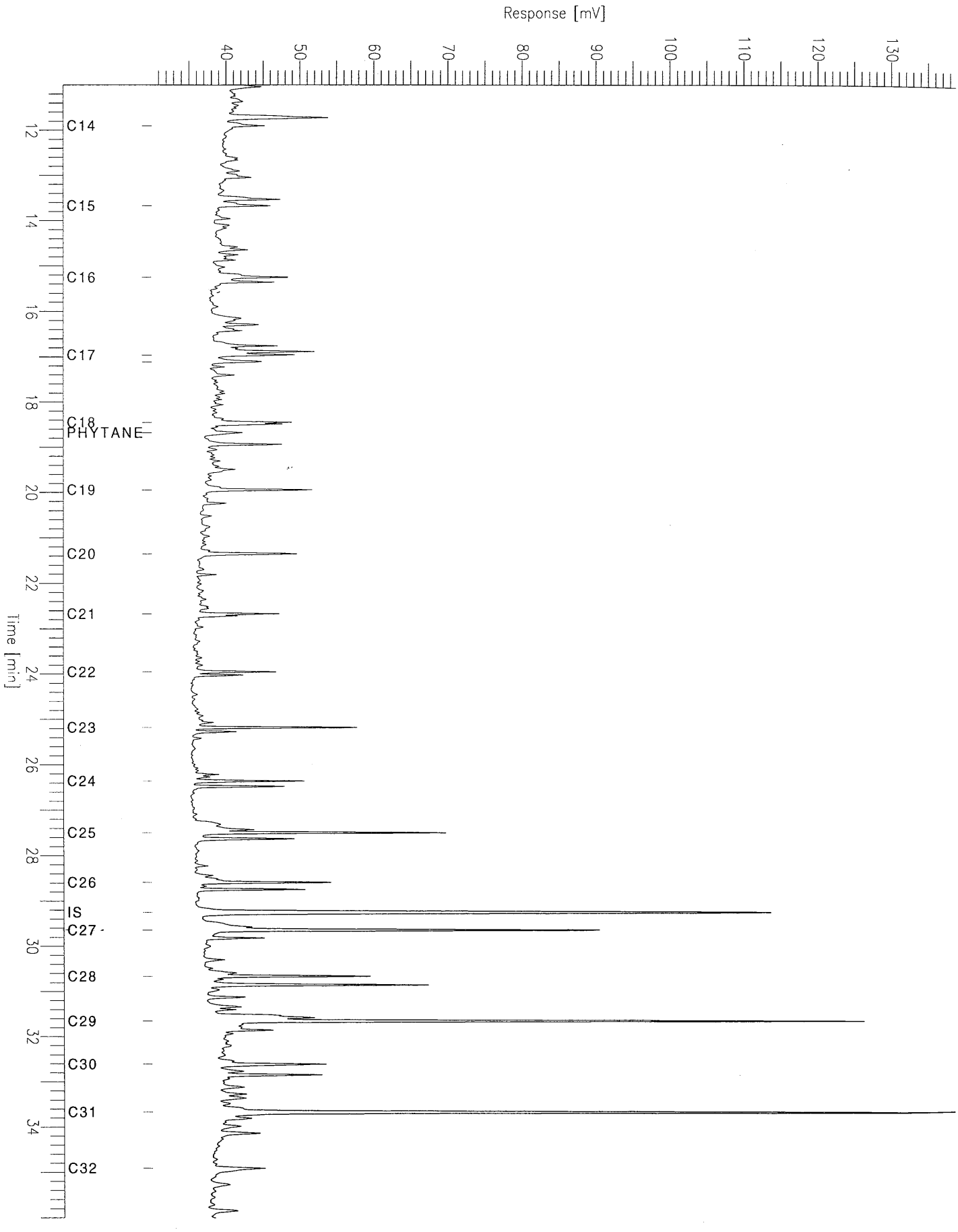
Sample #: Page 1 of 1
Date : 2/6/95 11:43 AM
Time of Injection: 10/6/94 03:10 AM
Low Point : 30.90 mV High Point : 137.19 mV
Plot Scale: 106.3 mV



Rockall Chromatogram

Sample Name : 58-13/28 3.31m
FileName : C:\TC4\HYDROCAR\Ra19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

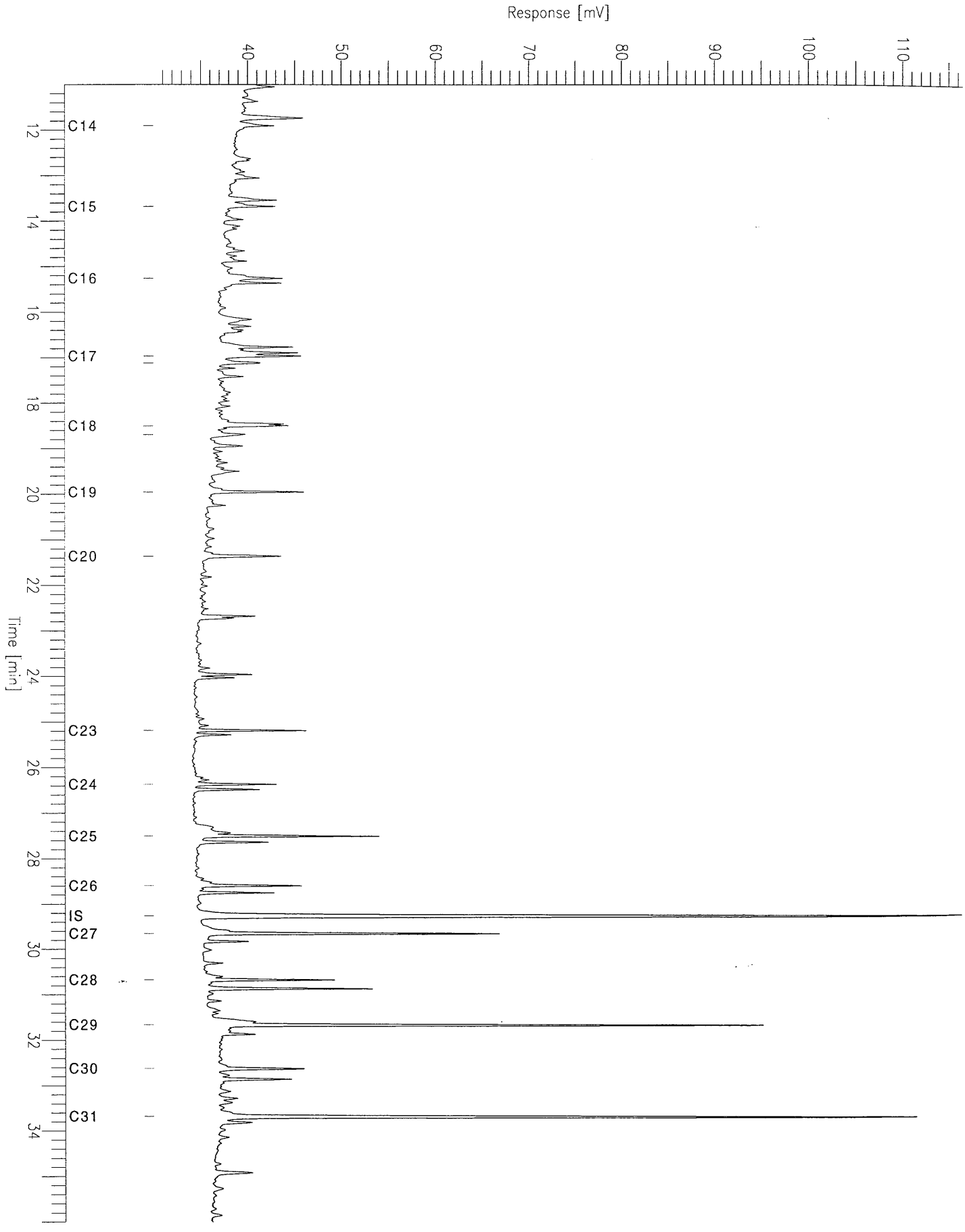
Sample #: Page 1 of 1
Date : 2/6/95 11:43 AM
Time of Injection: 10/6/94 04:05 AM
Low Point : 30.09 mV High Point : 138.66 mV
Plot Scale: 108.6 mV



Rockall Chromatogram

Sample Name : 58-13/29 2.71m
FileName : C:\TC4\HYDROCAR\Ra20.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

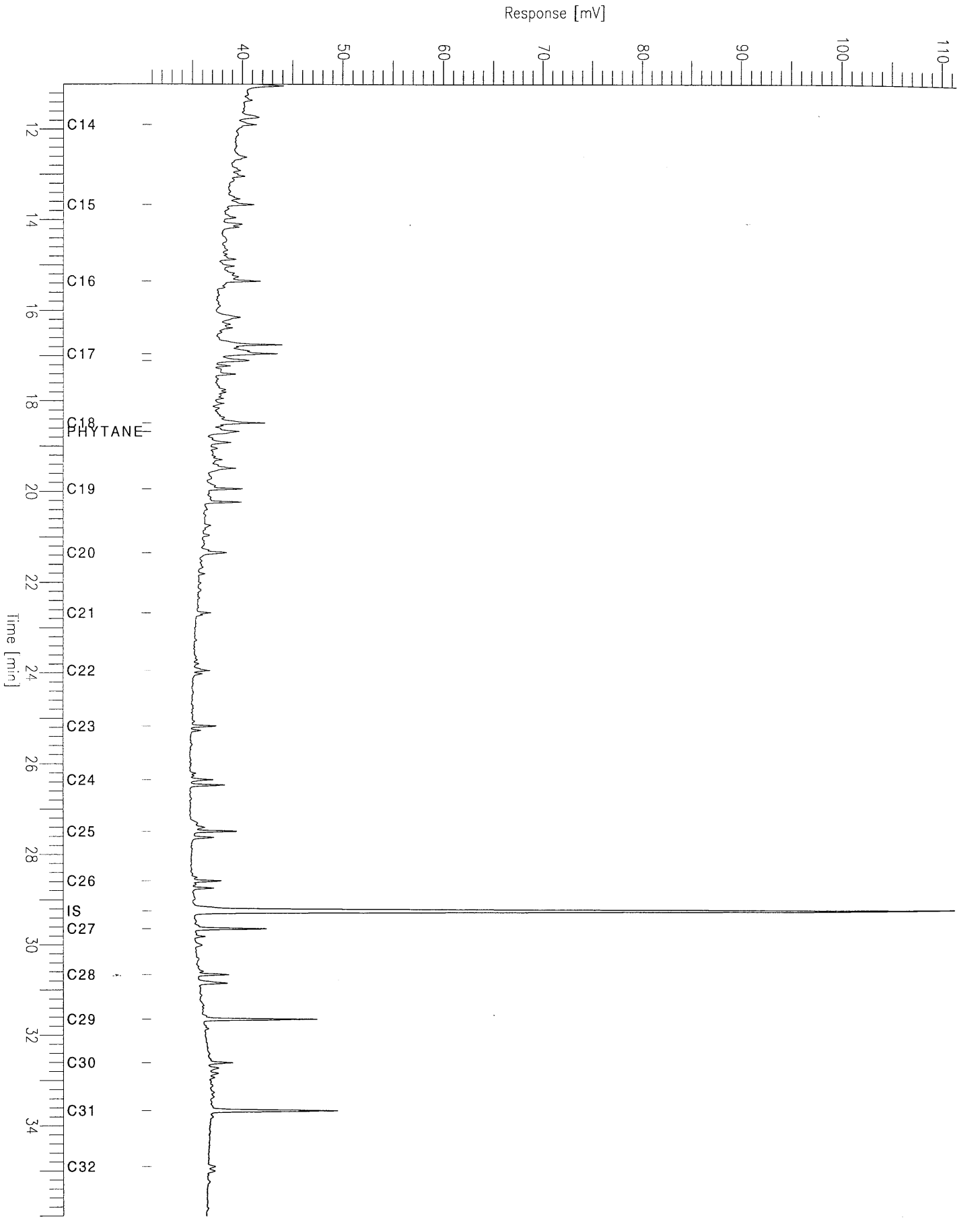
Sample #: Page 1 of 1
Date : 2/6/95 11:43 AM
Time of Injection: 10/6/94 04:59 AM
Low Point : 30.02 mV High Point : 116.43 mV
Plot Scale: 86.4 mV



Rockall Chromatogram

Sample Name : 58-13/29 3.36m
FileName : C:\TC4\HYDROCAR\Ra21.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

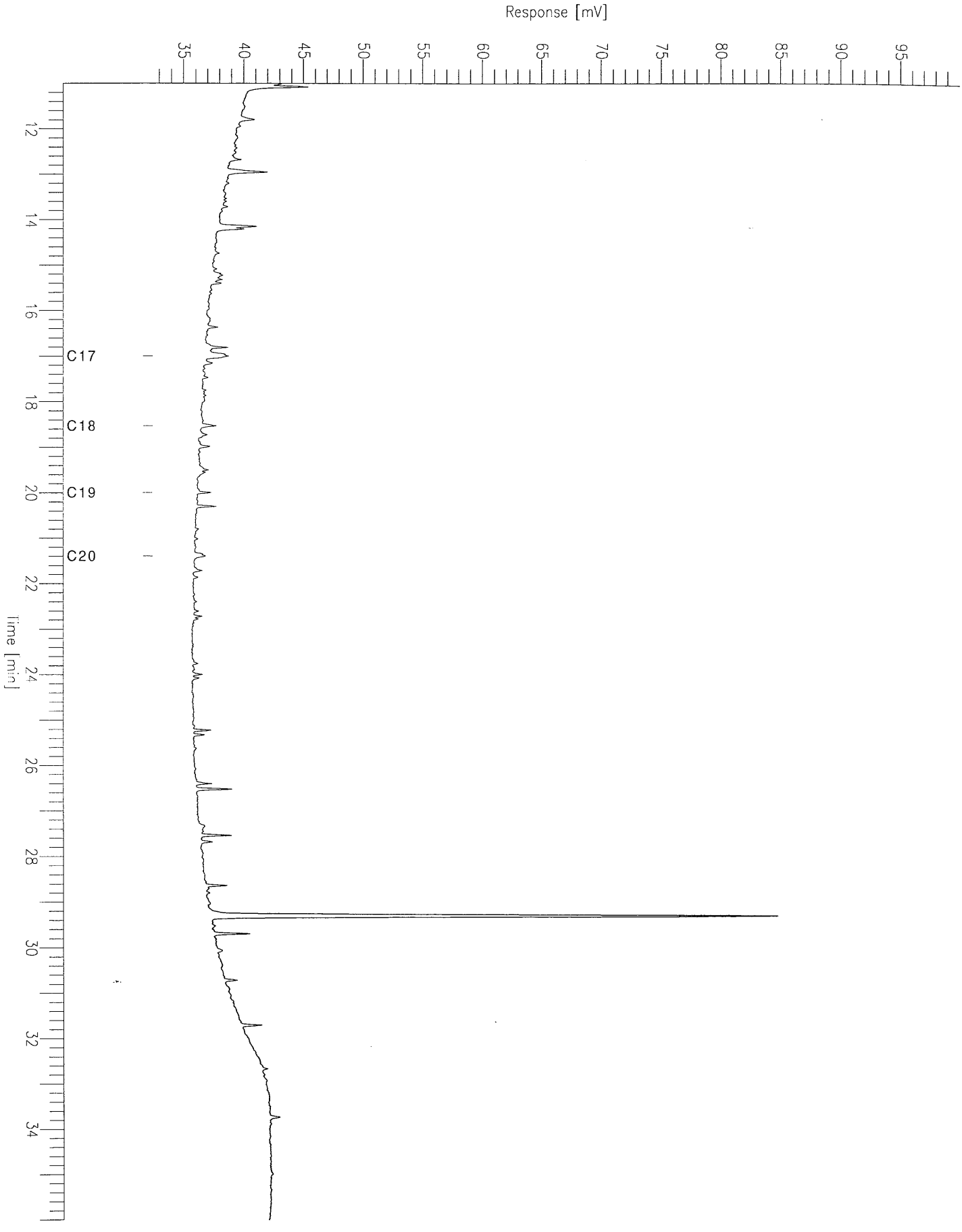
Sample #: Page 1 of 1
Date : 2/6/95 11:44 AM
Time of Injection: 10/6/94 05:54 AM
Low Point : 30.96 mV High Point : 111.40 mV
Plot Scale: 80.4 mV



Rockall Chromatogram

Sample Name : 58-14/3 0.60m
FileName : C:\TC4\HYDROCAR\rk5.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

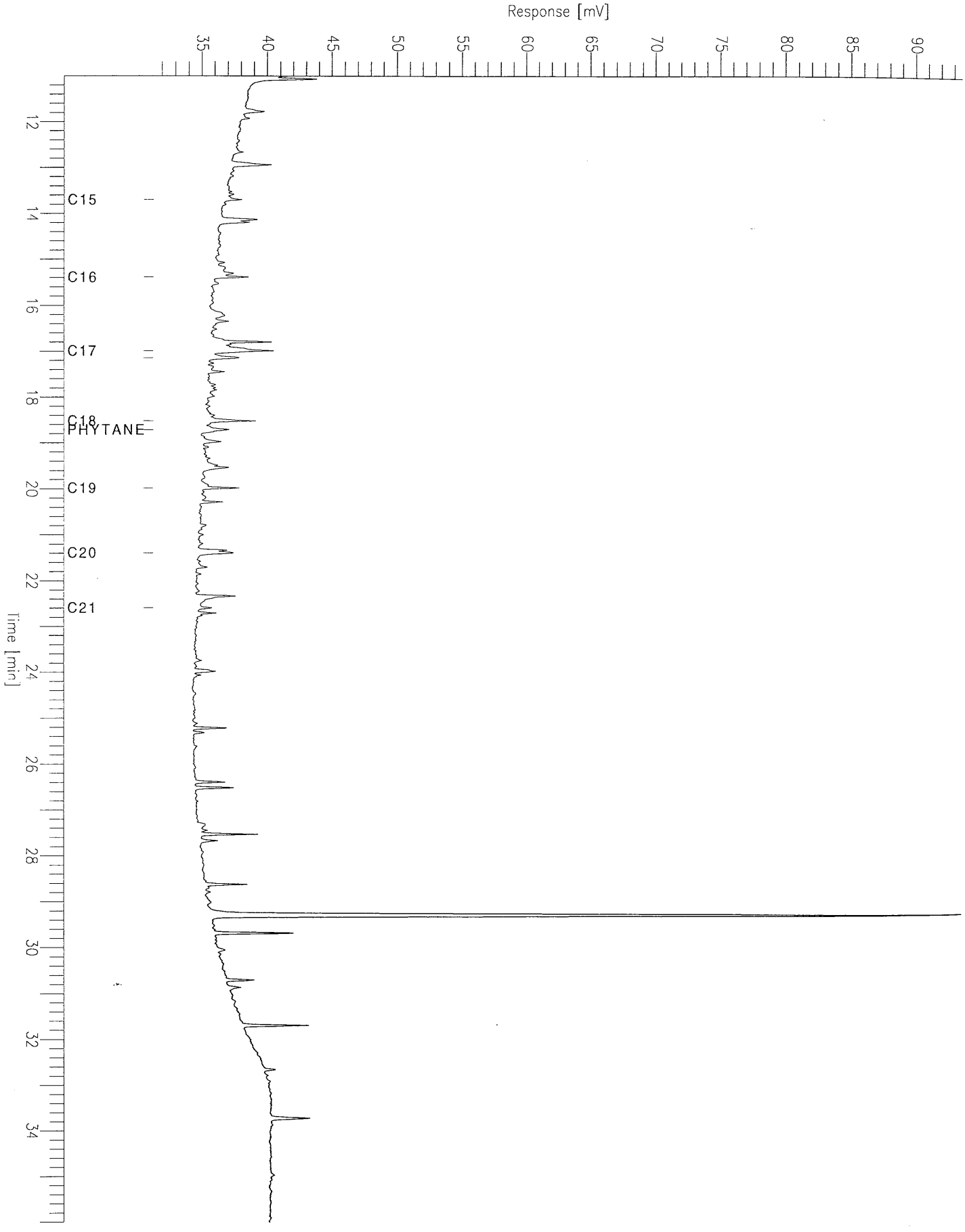
Sample #: Page 1 of 1
Date : 2/6/95 09:44 AM
Time of Injection: 9/30/94 07:41 PM
Low Point : 32.45 mV High Point : 99.99 mV
Plot Scale: 67.5 mV



Rockall Chromatogram

Sample Name : 58-14/4 2.46m
FileName : C:\TC4\HYDROCAR\rk6.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

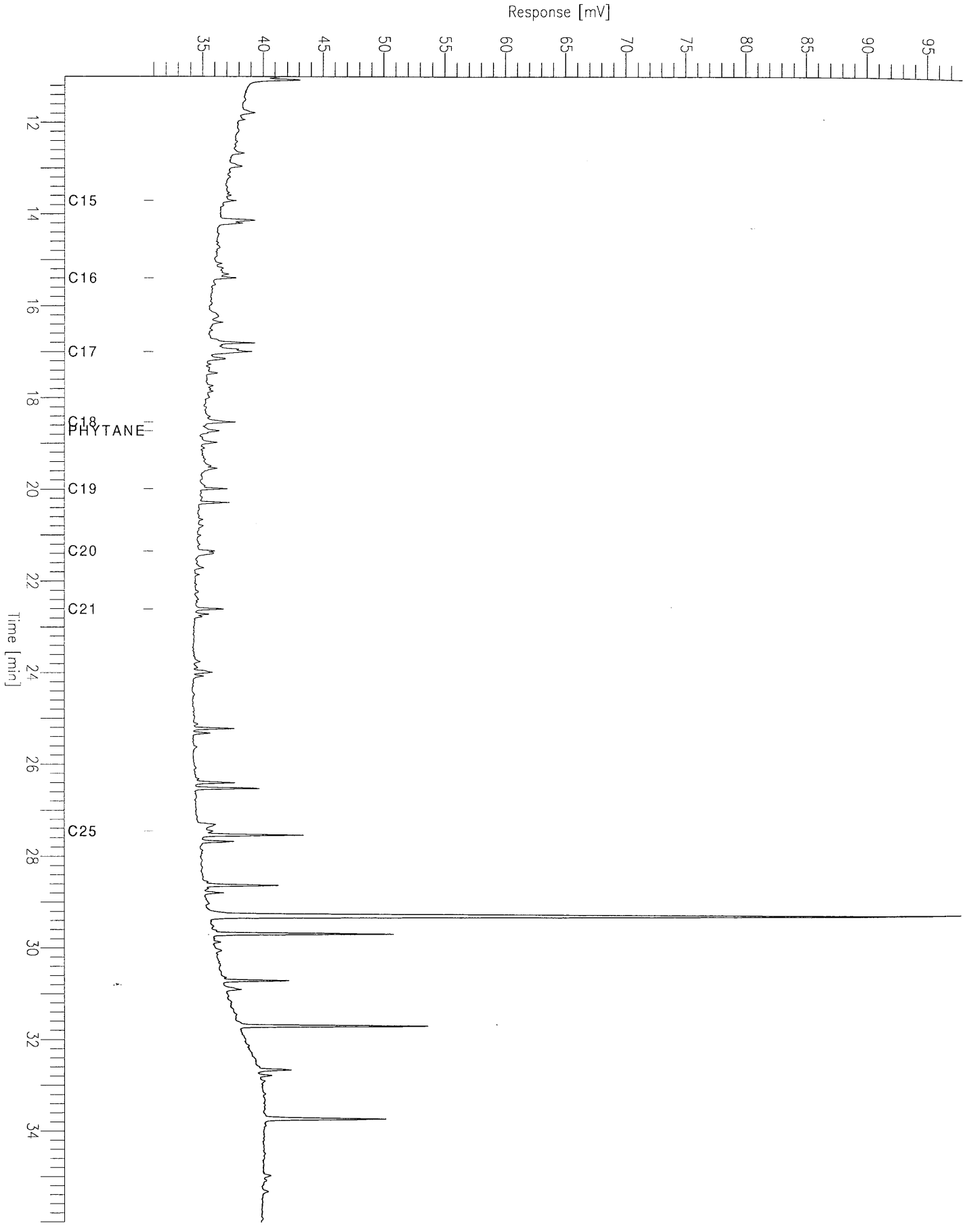
Sample #: Page 1 of 1
Date : 2/6/95 09:45 AM
Time of Injection: 9/30/94 08:36 PM
Low Point : 31.34 mV High Point : 93.54 mV
Plot Scale: 62.2 mV



Rockall Chromatogram

Sample Name : 58-14/4 3.11m
FileName : C:\TC4\HYDROCAR\rk7.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

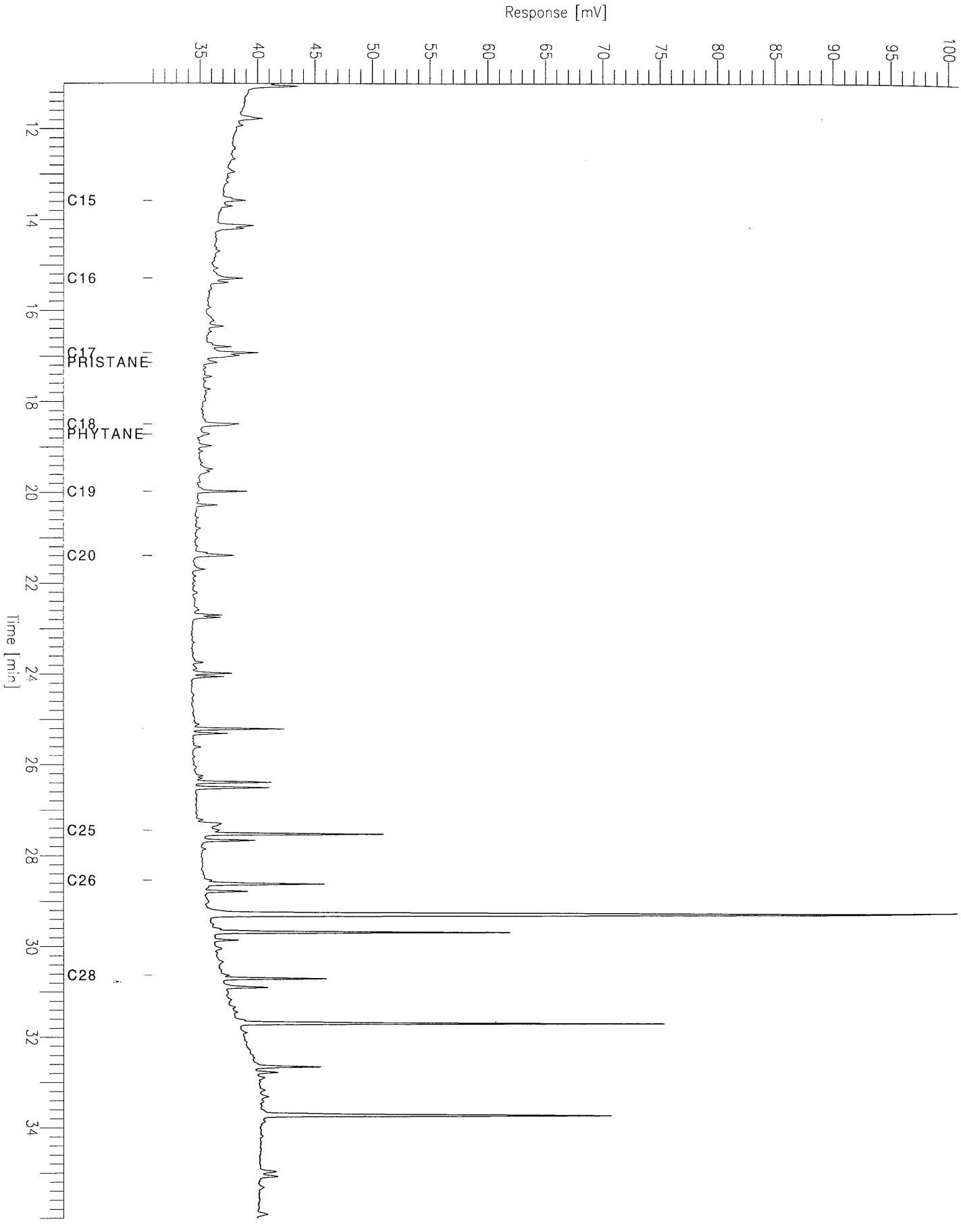
Sample #: Page 1 of 1
Date : 2/6/95 09:45 AM
Time of Injection: 9/30/94 09:31 PM
Low Point : 30.99 mV High Point : 97.89 mV
Plot Scale: 66.9 mV



Rockall Chromatogram

Sample Name : 58-14/5 2.18m
FileName : C:\TC4\HYDROCAR\rk8.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

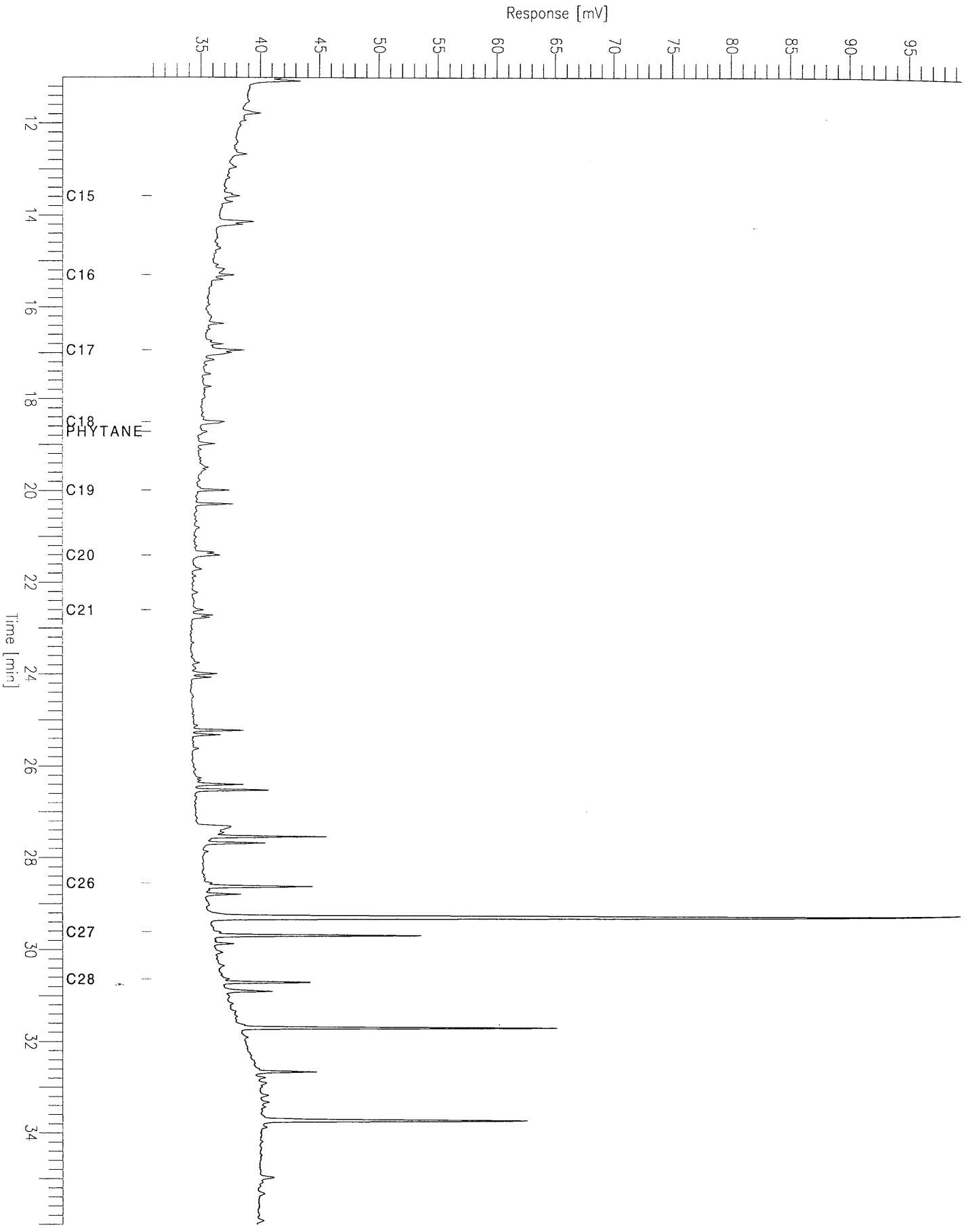
Sample #: Page 1 of 1
Date : 2/6/95 09:45 AM
Time of Injection: 9/30/94 10:26 PM
Low Point : 30.96 mV High Point : 100.84 mV
Plot Scale: 69.9 mV



Rockall Chromatogram

Sample Name : 58-14/5 2.83m
FileName : C:\TC4\HYDROCAR\rk9.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

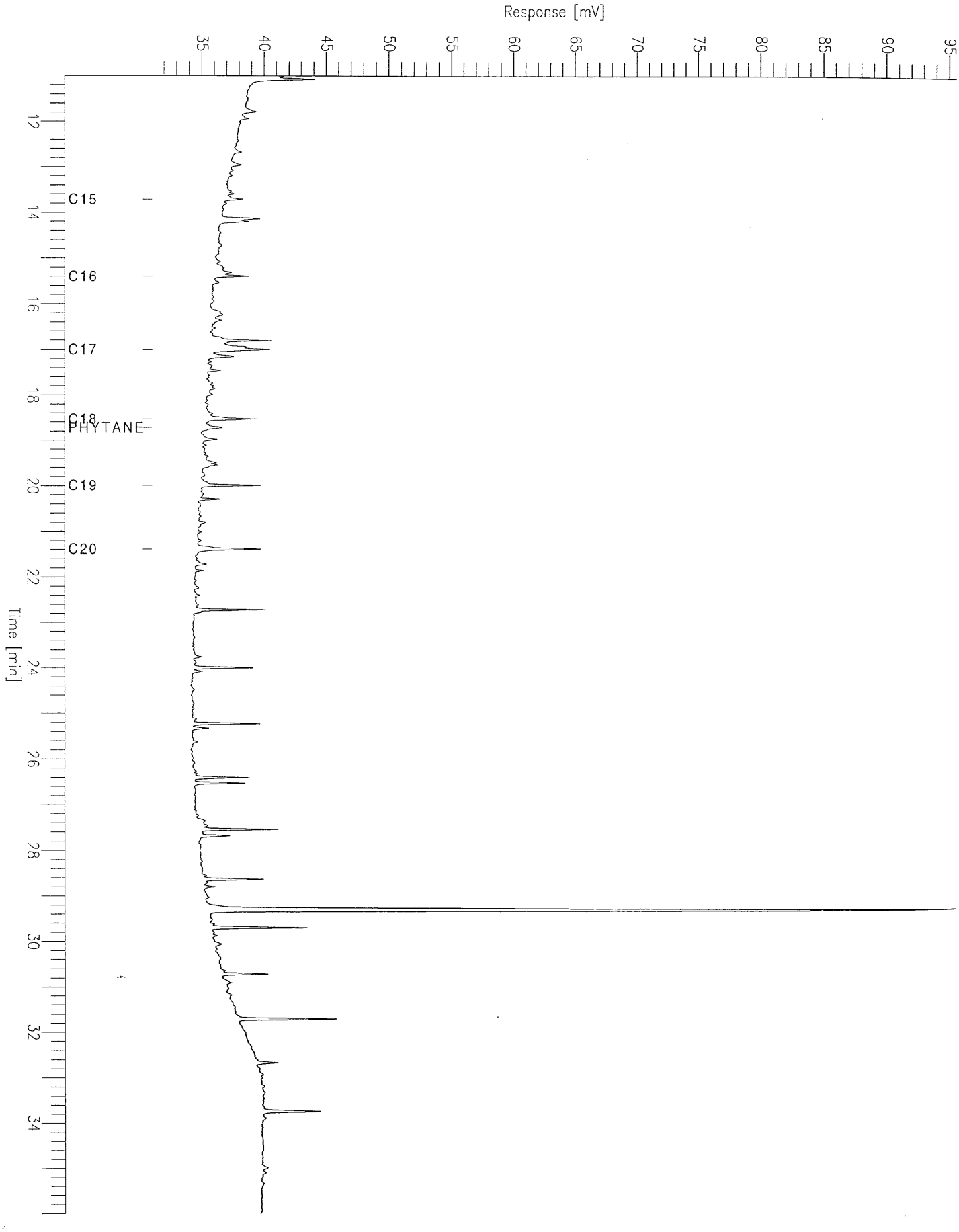
Sample #:
Date : 2/6/95 09:46 AM
Time of Injection: 9/30/94 11:21 PM
Low Point : 30.86 mV High Point : 99.41 mV
Plot Scale: 68.5 mV



Rockall Chromatogram

Sample Name : 58-14/6 2.24m
FileName : C:\TC4\HYDROCAR\rk10.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

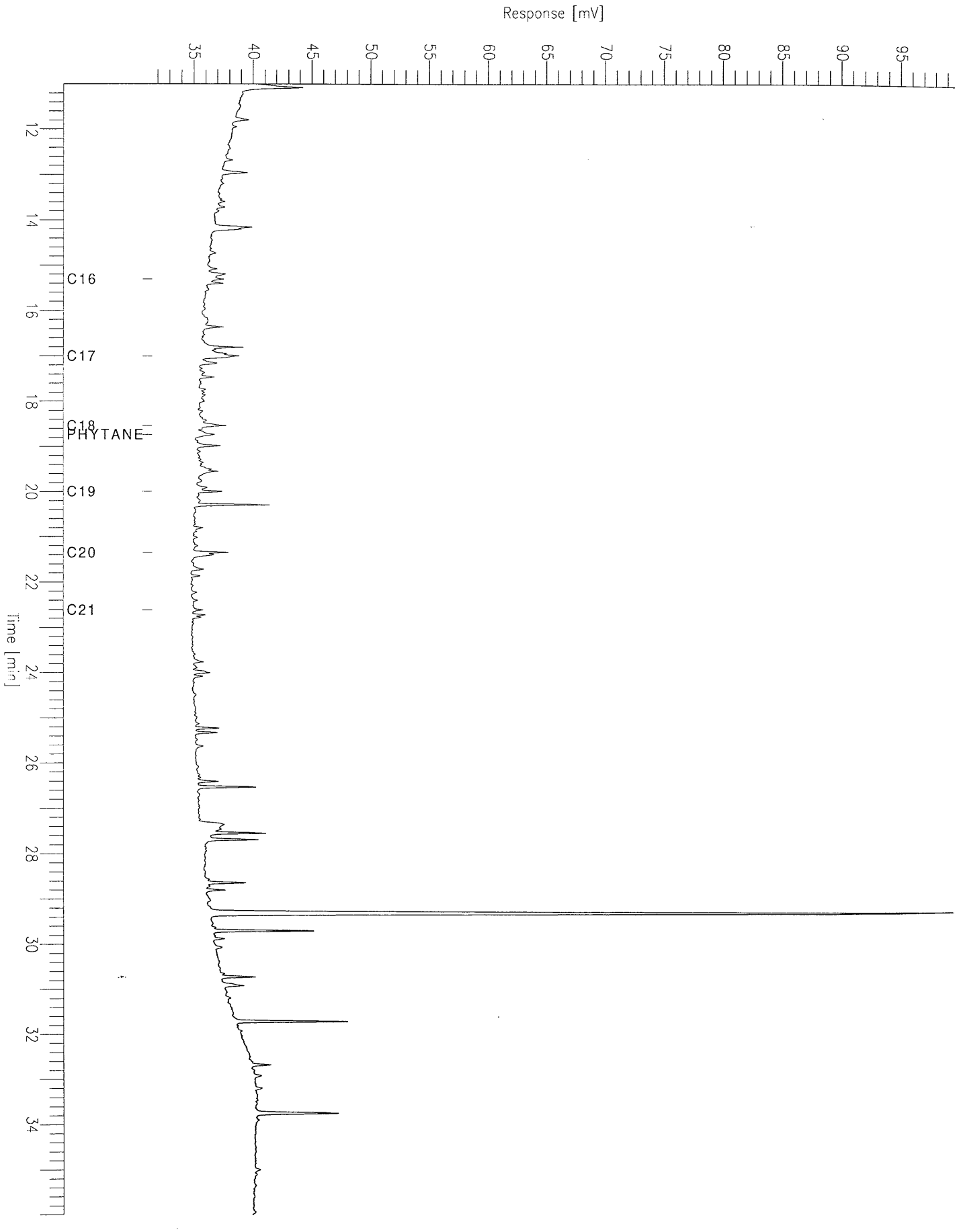
Sample #: Page 1 of 1
Date : 2/6/95 09:46 AM
Time of Injection: 10/1/94 12:17 AM
Low Point : 31.08 mV High Point : 95.53 mV
Plot Scale: 64.4 mV



Rockall Chromatogram

Sample Name : 58-14/6 2.89m
FileName : C:\TC4\HYDROCAR\rk11.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

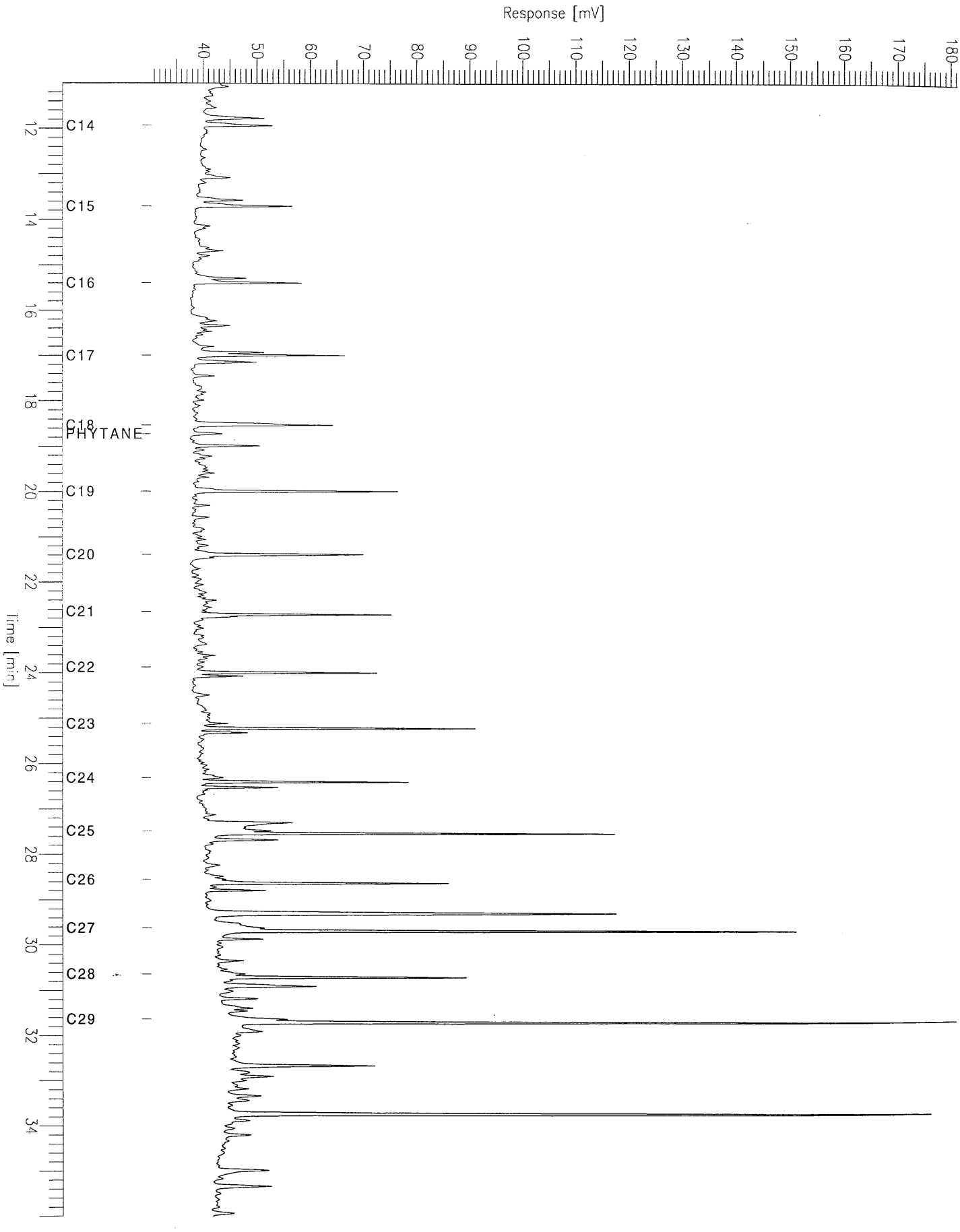
Sample #:
Date : 2/6/95 09:46 AM
Time of Injection: 10/1/94 01:13 AM
Low Point : 31.54 mV High Point : 99.53 mV
Plot Scale: 68.0 mV



Rockall Chromatogram

Sample Name : 58-14/7 2.14m
FileName : C:\TC4\HYDROCAR\rk12.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

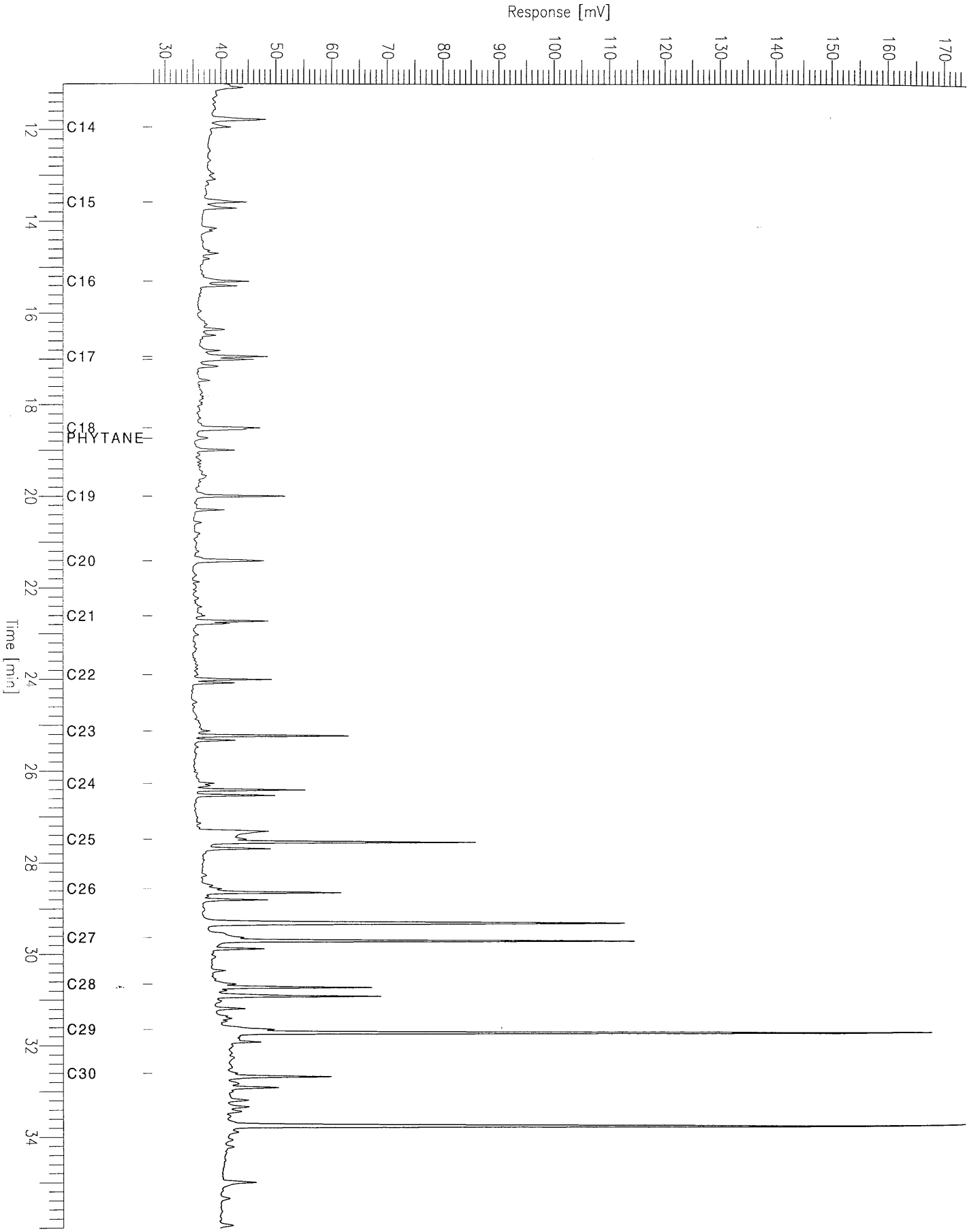
Sample #: Page 1 of 1
Date : 2/6/95 09:47 AM
Time of Injection: 10/1/94 02:07 AM
Low Point : 30.44 mV High Point : 181.14 mV
Plot Scale: 150.7 mV



Rockall Chromatogram

Sample Name : 58-14/7 2.79m
FileName : C:\TC4\HYDROCAR\rk13.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

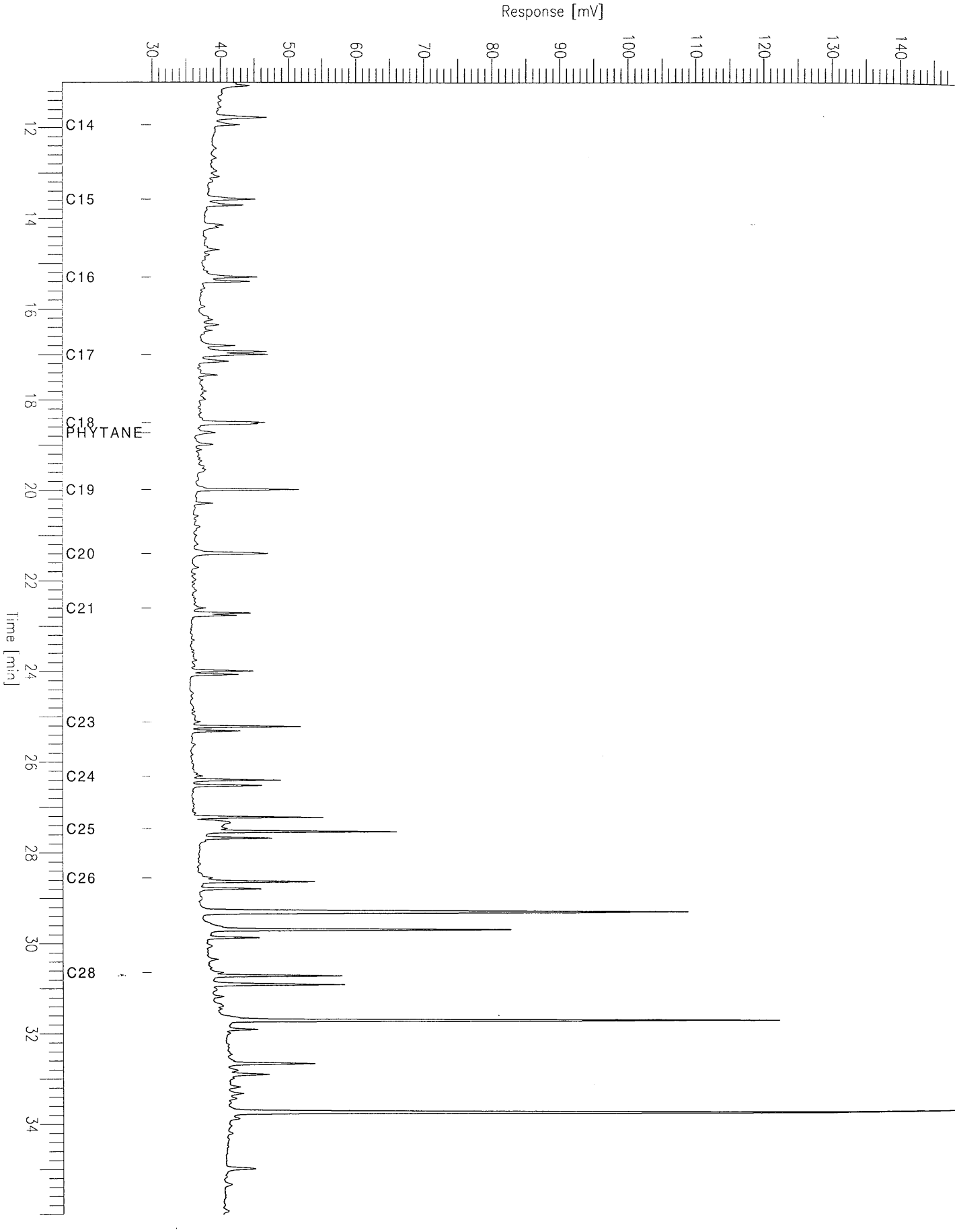
Sample #:
Date : 2/6/95 09:47 AM
Time of Injection: 10/1/94 03:02 AM
Low Point : 27.82 mV High Point : 173.86 mV
Plot Scale: 146.0 mV



Rockall Chromatogram

Sample Name : 58-14/12 2.05m
FileName : C:\TC4\HYDROCAR\rk14.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

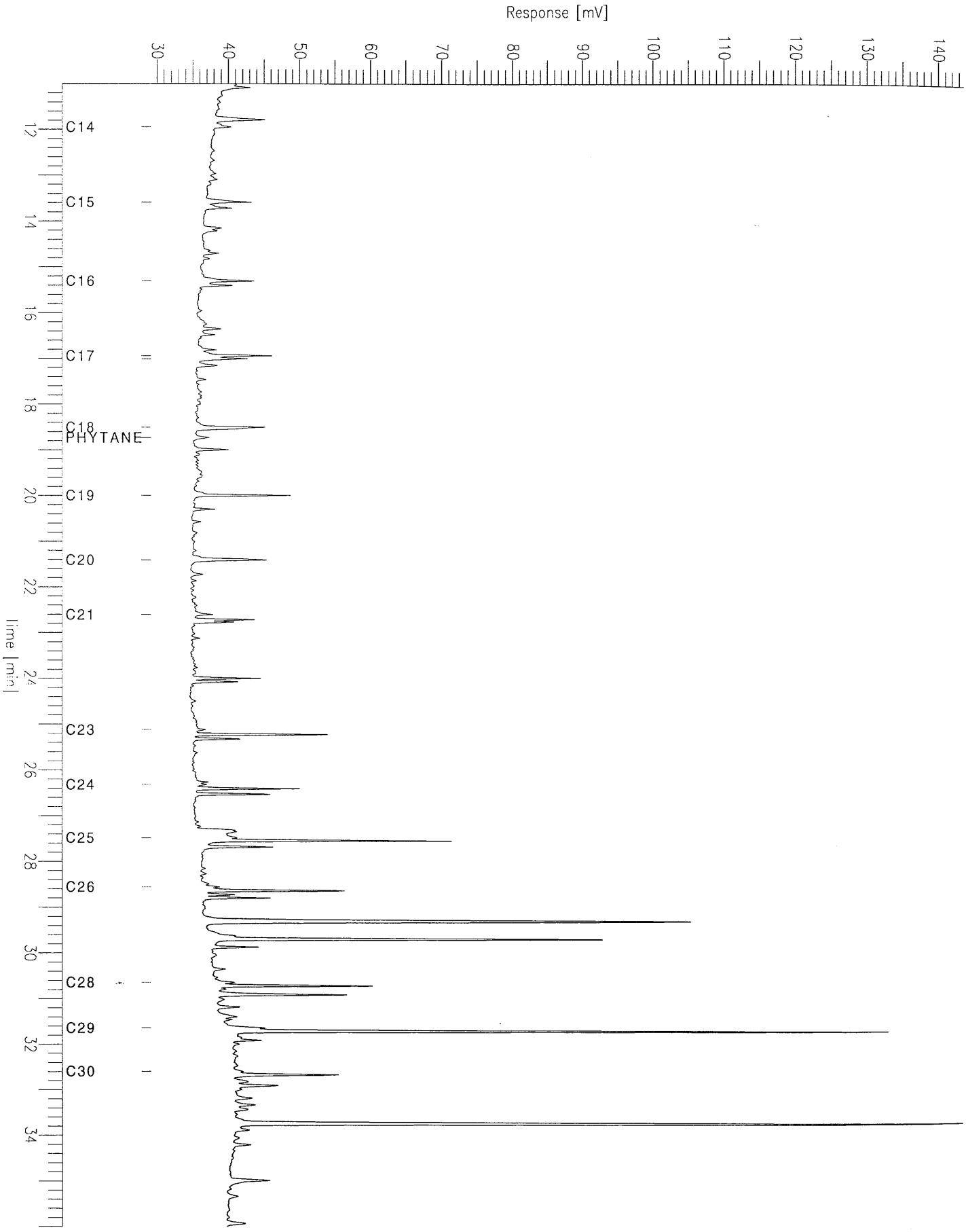
Sample #: Page 1 of 1
Date : 2/6/95 09:48 AM
Time of Injection: 10/1/94 03:57 AM
Low Point : 29.85 mV High Point : 147.97 mV
Plot Scale: 118.1 mV



Rockall Chromatogram

Sample Name : 58-14/12 2.70m
FileName : C:\TC4\HYDROCAR\Rk15.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

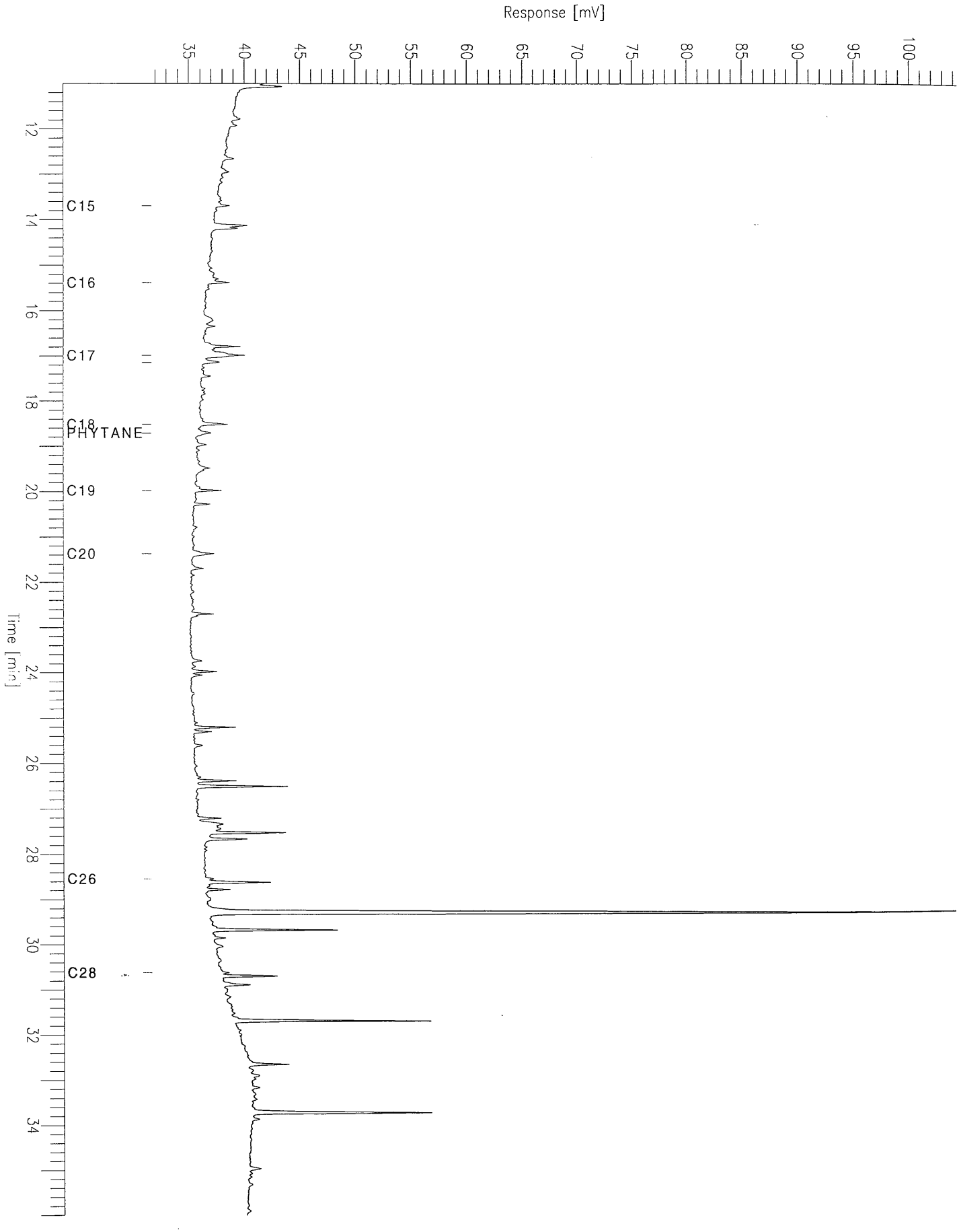
Sample #: Page 1 of 1
Date : 2/6/95 09:48 AM
Time of Injection: 10/1/94 04:52 AM
Low Point : 29.18 mV High Point : 143.57 mV
Plot Scale: 114.4 mV



Rockall Chromatogram

Sample Name : 58-14/13 2.06m
FileName : C:\TC4\HYDROCAR\Rk16.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

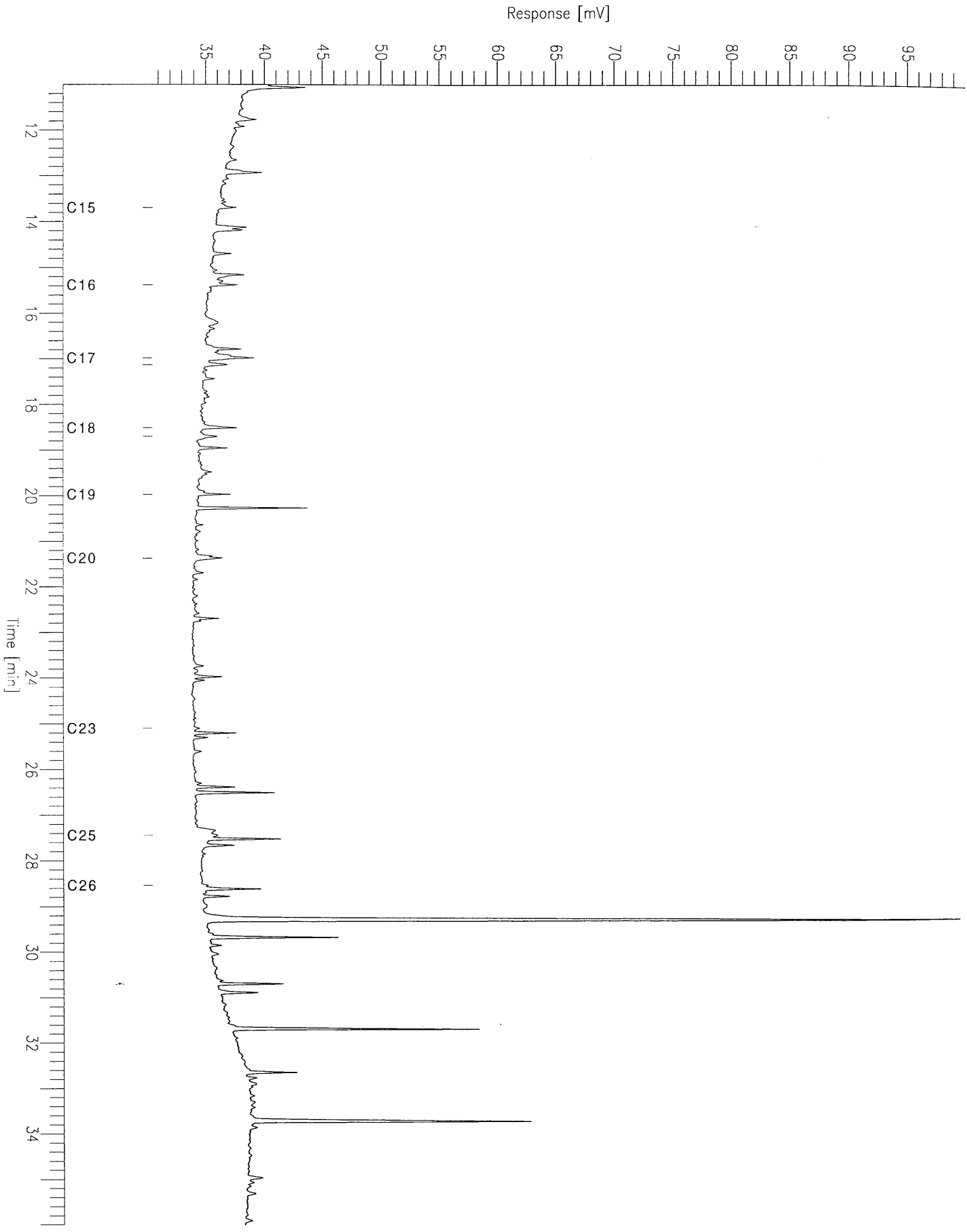
Sample #: Page 1 of 1
Date : 2/6/95 09:48 AM
Time of Injection: 10/1/94 05:47 AM
Low Point : 31.64 mV High Point : 104.31 mV
Plot Scale: 72.7 mV



Rockall Chromatogram

Sample Name : 58-14/13 2.71m
FileName : C:\TC4\HYDROCAR\Rk18.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

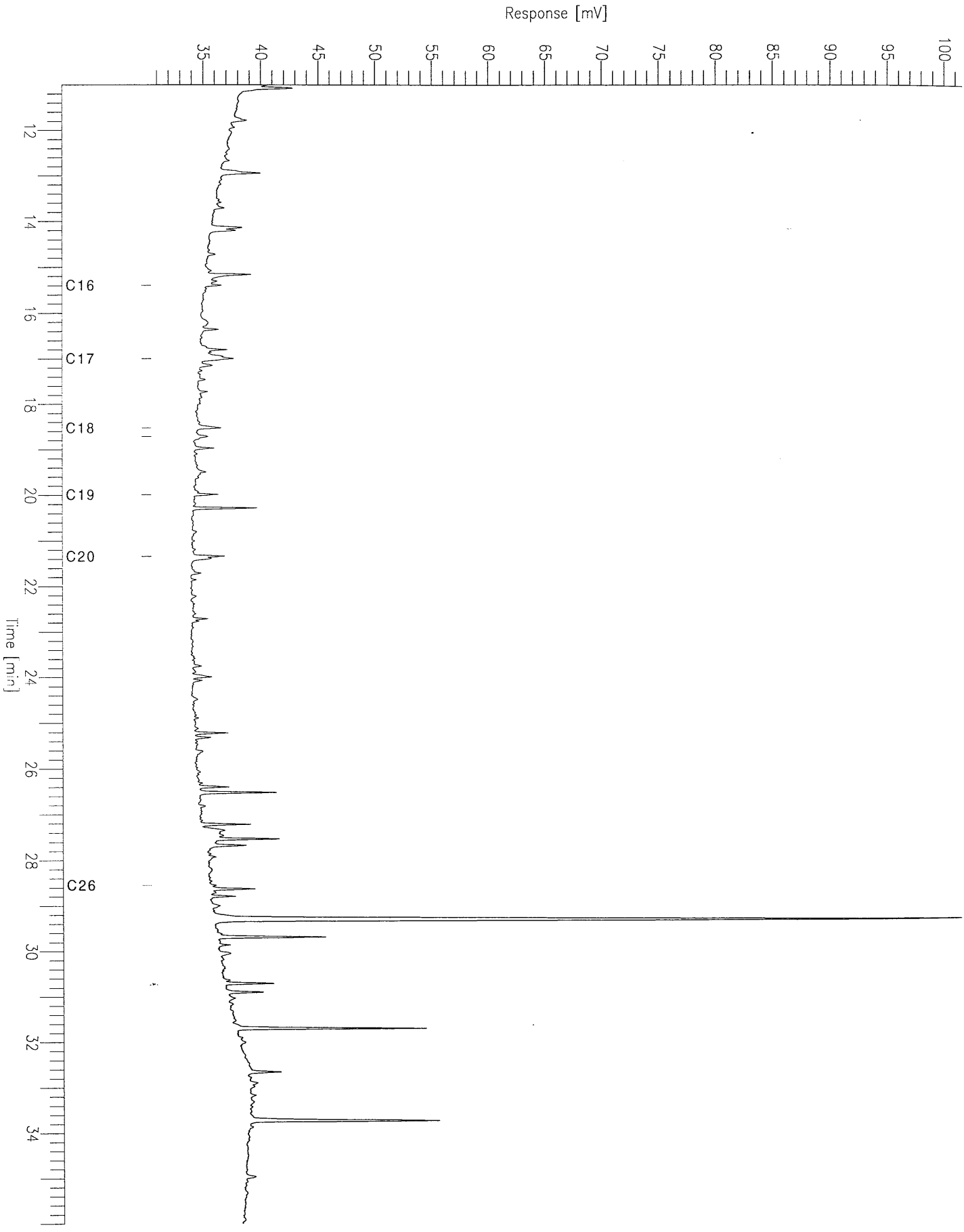
Sample #: Page 1 of 1
Date : 2/6/95 09:49 AM
Time of Injection: 10/1/94 07:37 AM
Low Point : 30.51 mV High Point : 99.94 mV
Plot Scale: 69.4 mV



Rockall Chromatogram

Sample Name : 58-14/14 0.92m
FileName : C:\TC4\HYDROCAR\rk19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

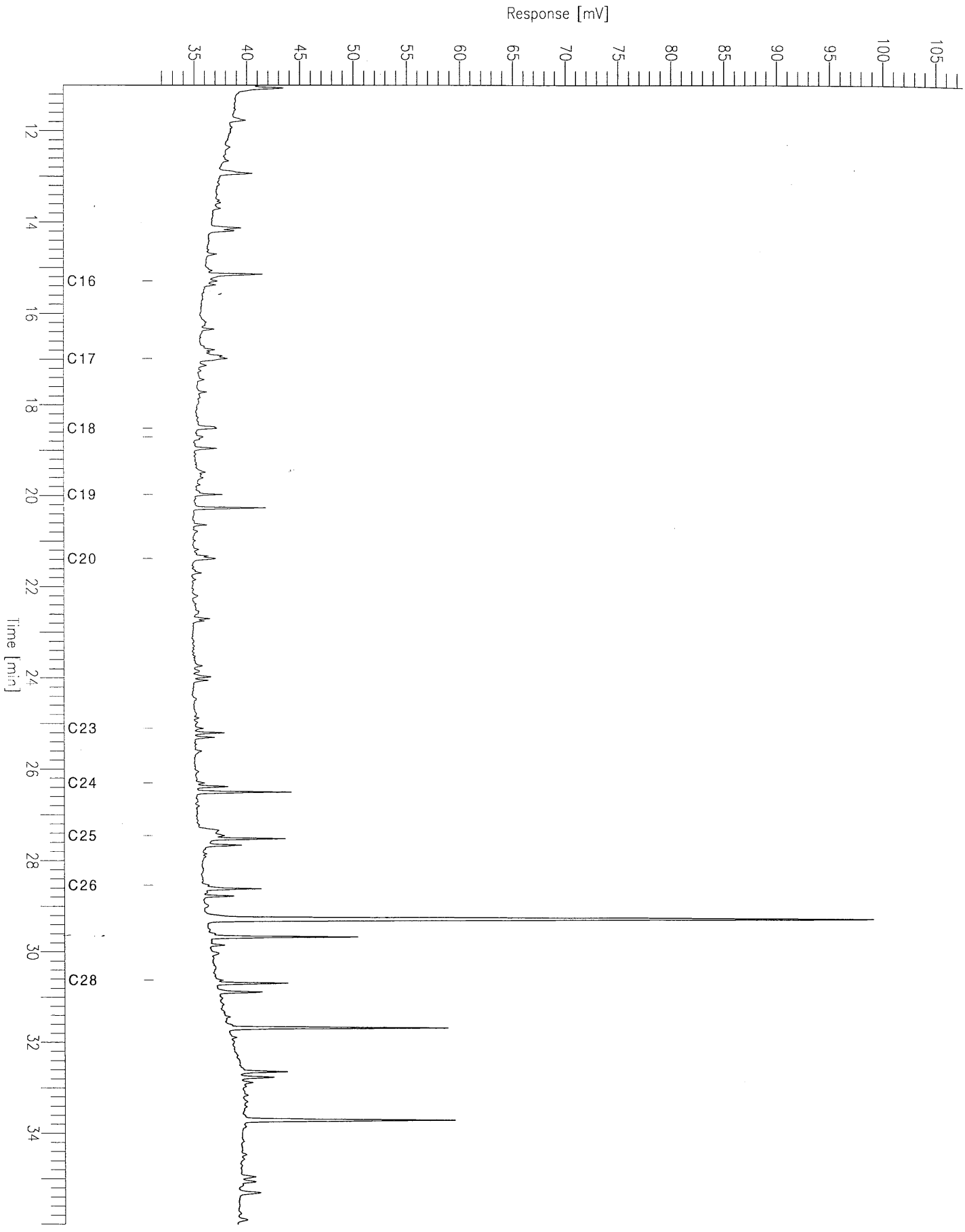
Sample #:
Date : 2/6/95 09:49 AM
Time of Injection: 10/1/94 08:31 AM
Low Point : 30.51 mV High Point : 101.55 mV
Plot Scale: 71.0 mV



Rockall Chromatogram

Sample Name : 58-14/14 1.57m
FileName : C:\TC4\HYDROCAR\rk20.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

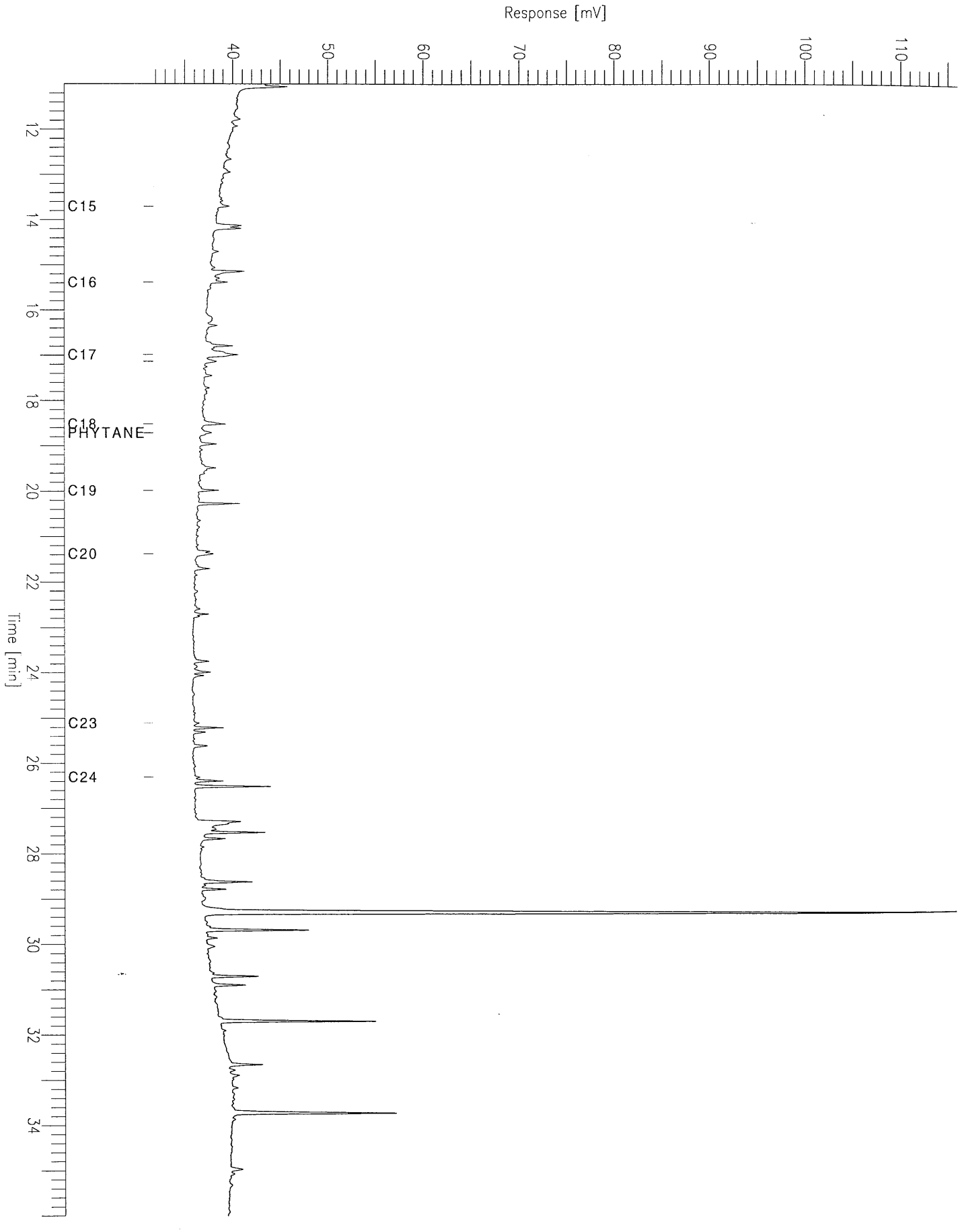
Sample #: Page 1 of 1
Date : 2/6/95 09:50 AM
Time of Injection: 10/1/94 09:27 AM
Low Point : 31.12 mV High Point : 107.51 mV
Plot Scale: 76.4 mV



Rockall Chromatogram

Sample Name : 58-14/21 2.01m
FileName : C:\TC4\HYDROCAR\rl5.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

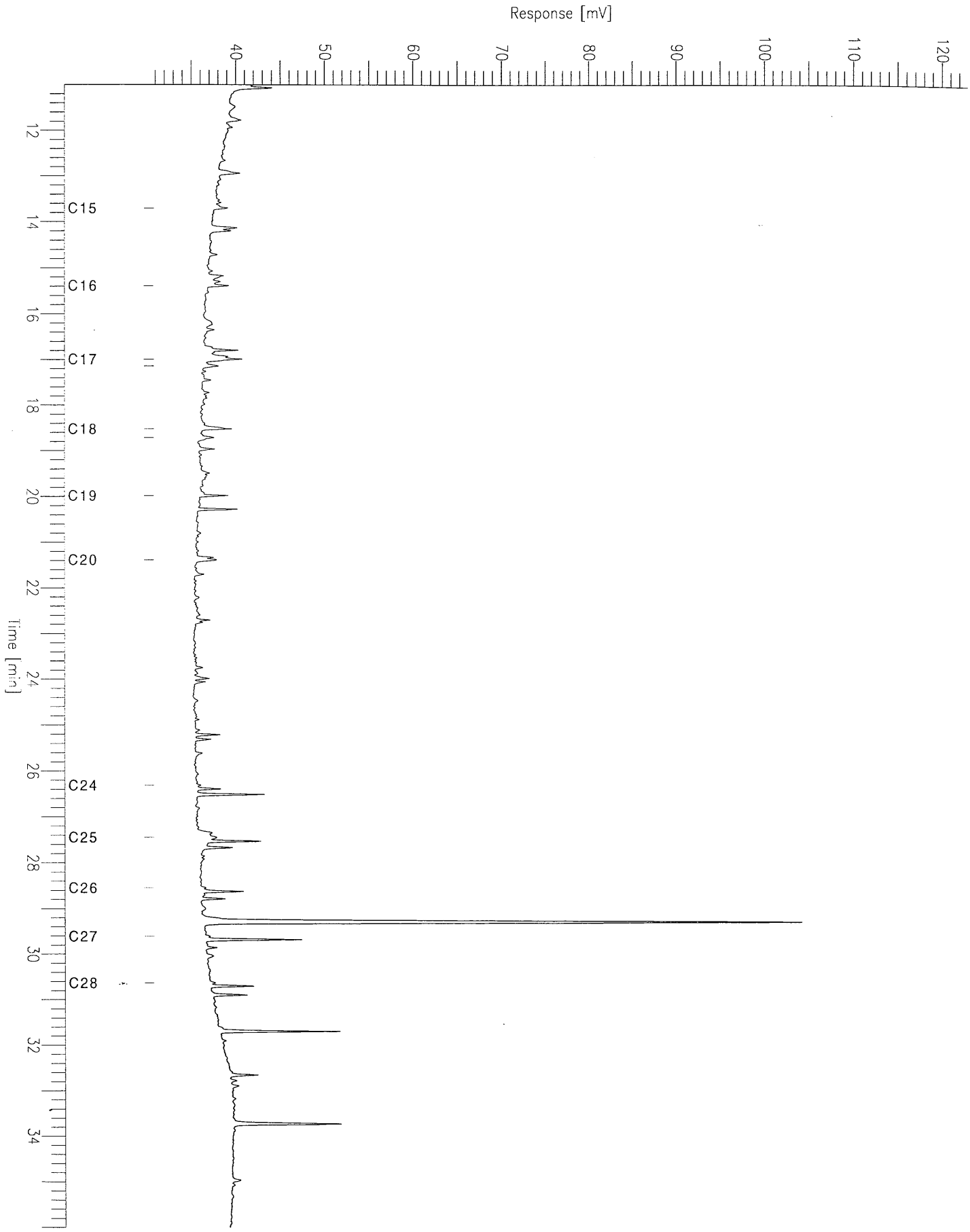
Sample #: Page 1 of 1
Date : 2/6/95 10:15 AM
Time of Injection: 10/3/94 02:24 PM
Low Point : 31.74 mV High Point : 115.94 mV
Plot Scale: 84.2 mV



Rockall Chromatogram

Sample Name : 58-14/21 2.70m
FileName : C:\TC4\HYDROCAR\rk22.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

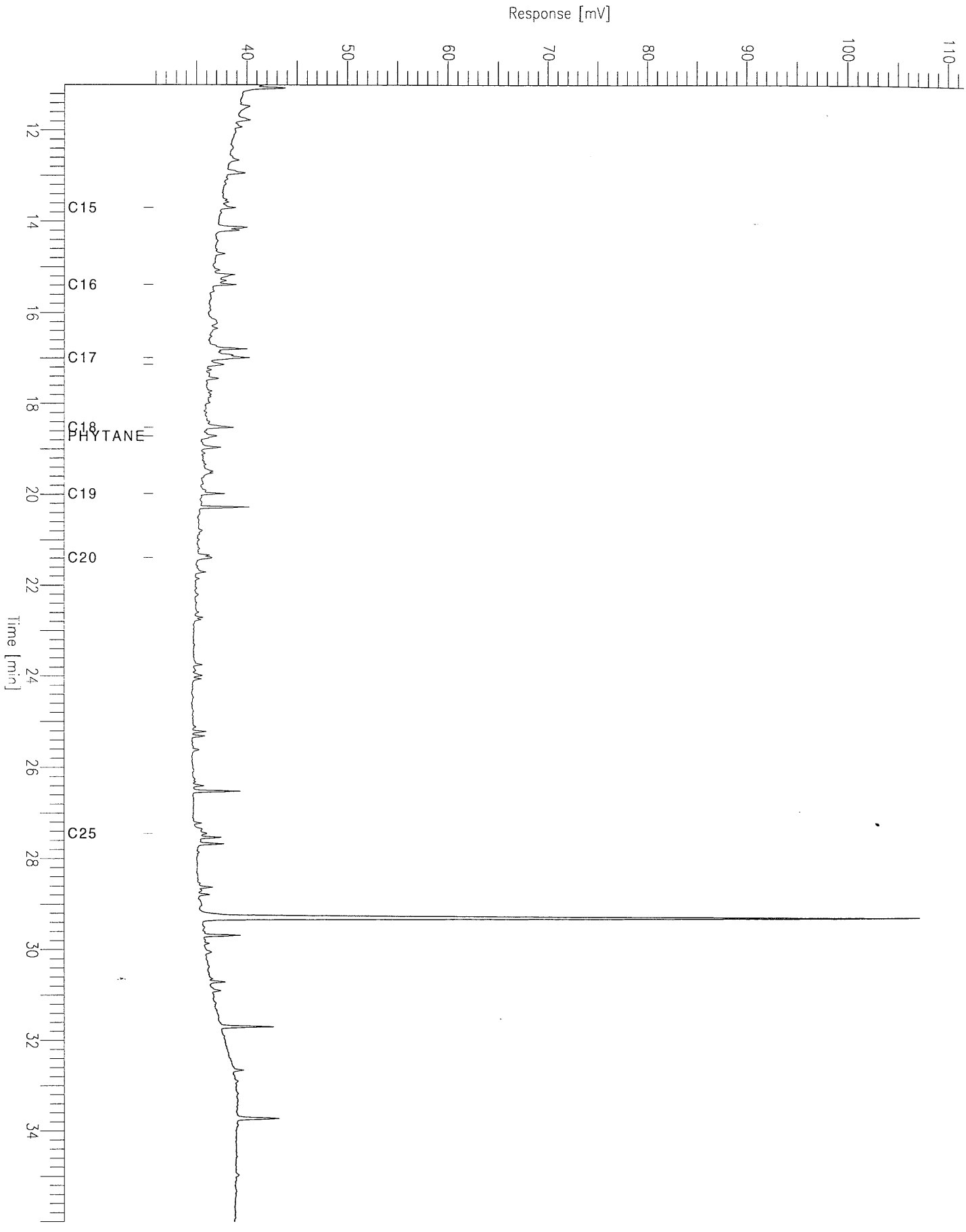
Sample #: Page 1 of 1
Date : 2/6/95 09:50 AM
Time of Injection: 10/1/94 11:17 AM
Low Point : 30.83 mV High Point : 122.87 mV
Plot Scale: 92.0 mV



Rockall Chromatogram

Sample Name : 58-14/22 2.67m
FileName : C:\TC4\HYDROCAR\rk24.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

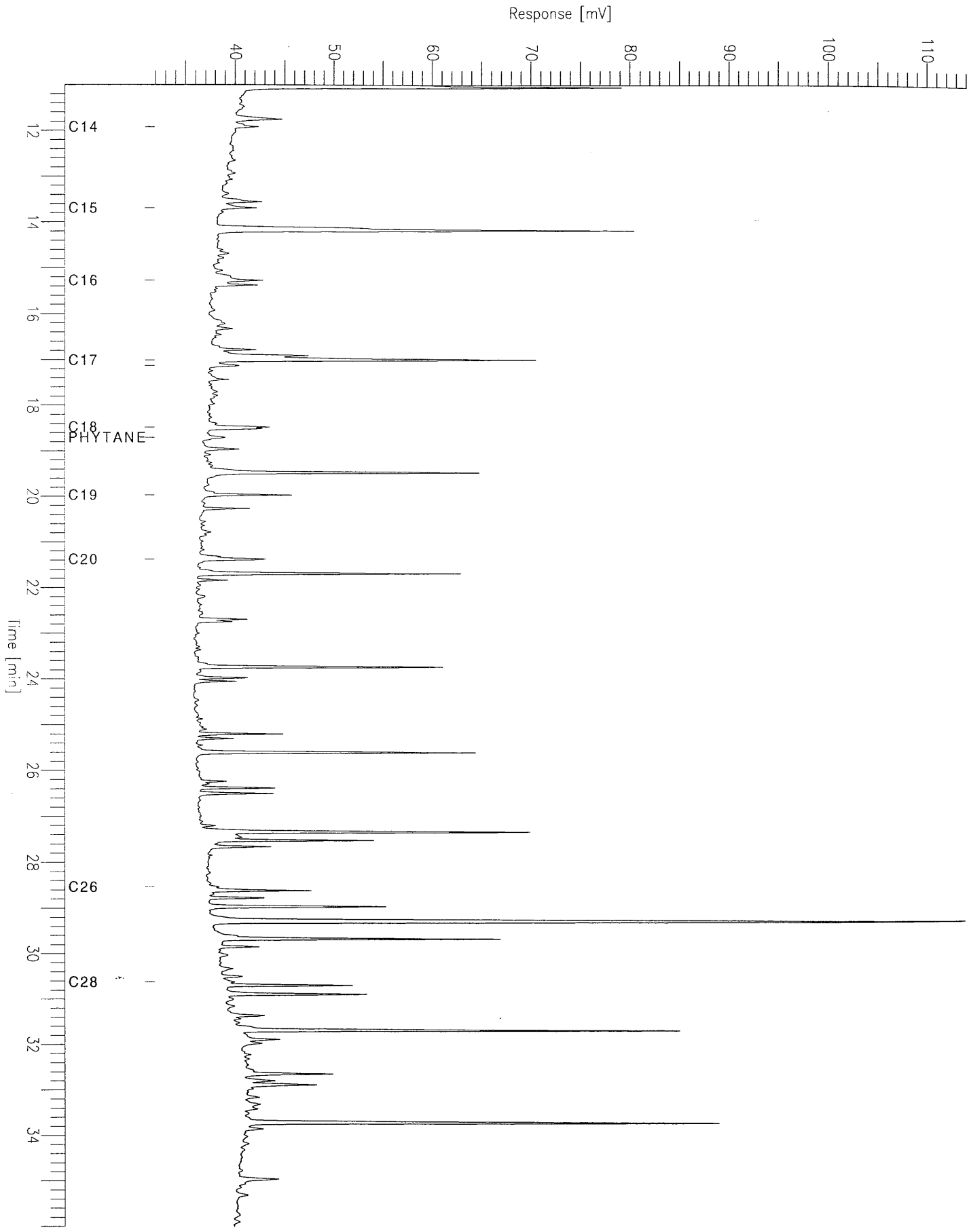
Sample #: Page 1 of 1
Date : 2/6/95 09:51 AM
Time of Injection: 10/1/94 01:08 PM
Low Point : 30.74 mV High Point : 111.52 mV
Plot Scale: 80.8 mV



Rockall Chromatogram

Sample Name : 58-14/22 3.32m
FileName : C:\TC4\HYDROCAR\rk26.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

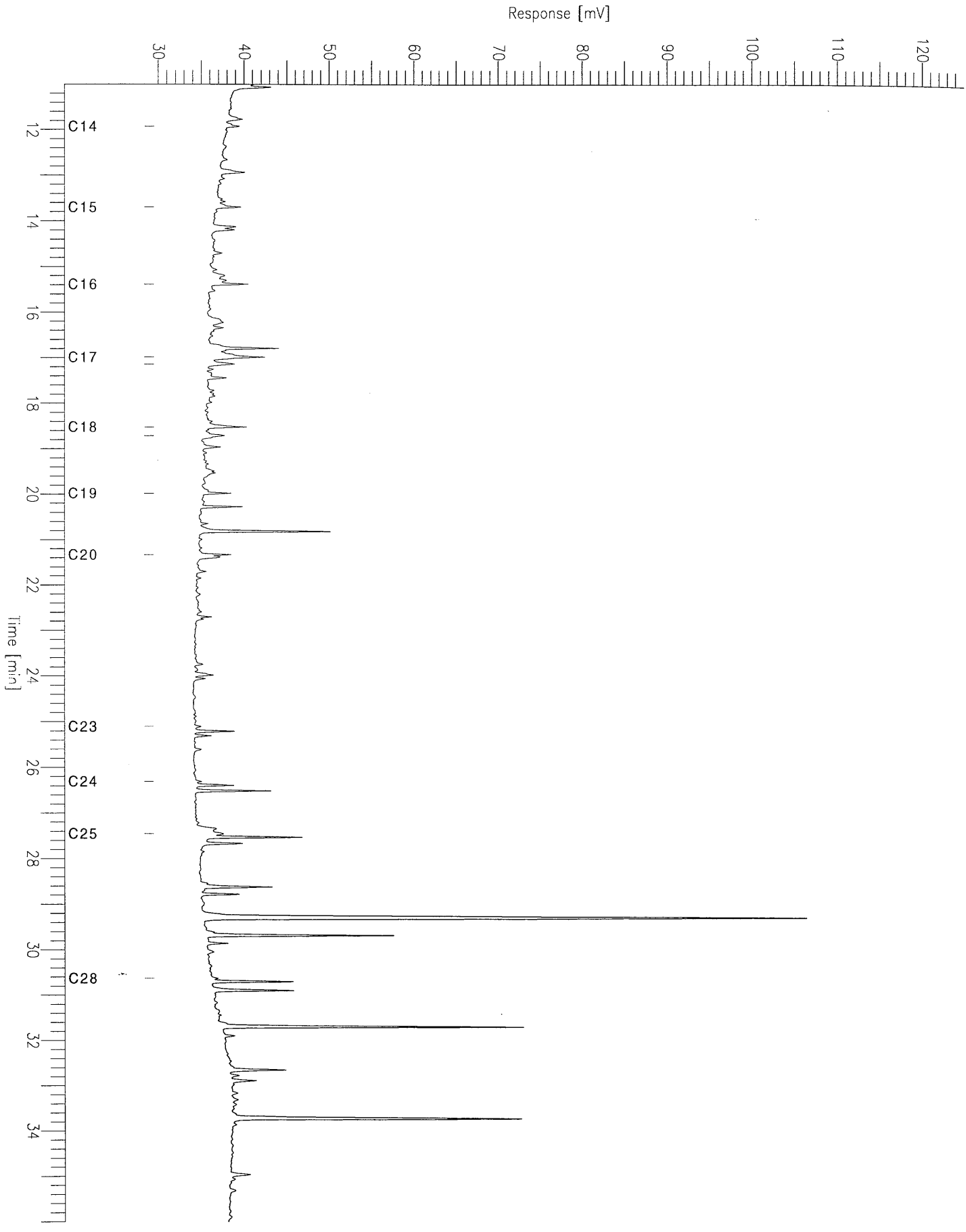
Sample #: Page 1 of 1
Date : 2/6/95 09:52 AM
Time of Injection: 10/1/94 02:58 PM
Low Point : 31.91 mV High Point : 114.01 mV
Plot Scale: 82.1 mV



Rockall Chromatogram

Sample Name : 58-14/23 2.33m
FileName : C:\TC4\HYDROCAR\rk27.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

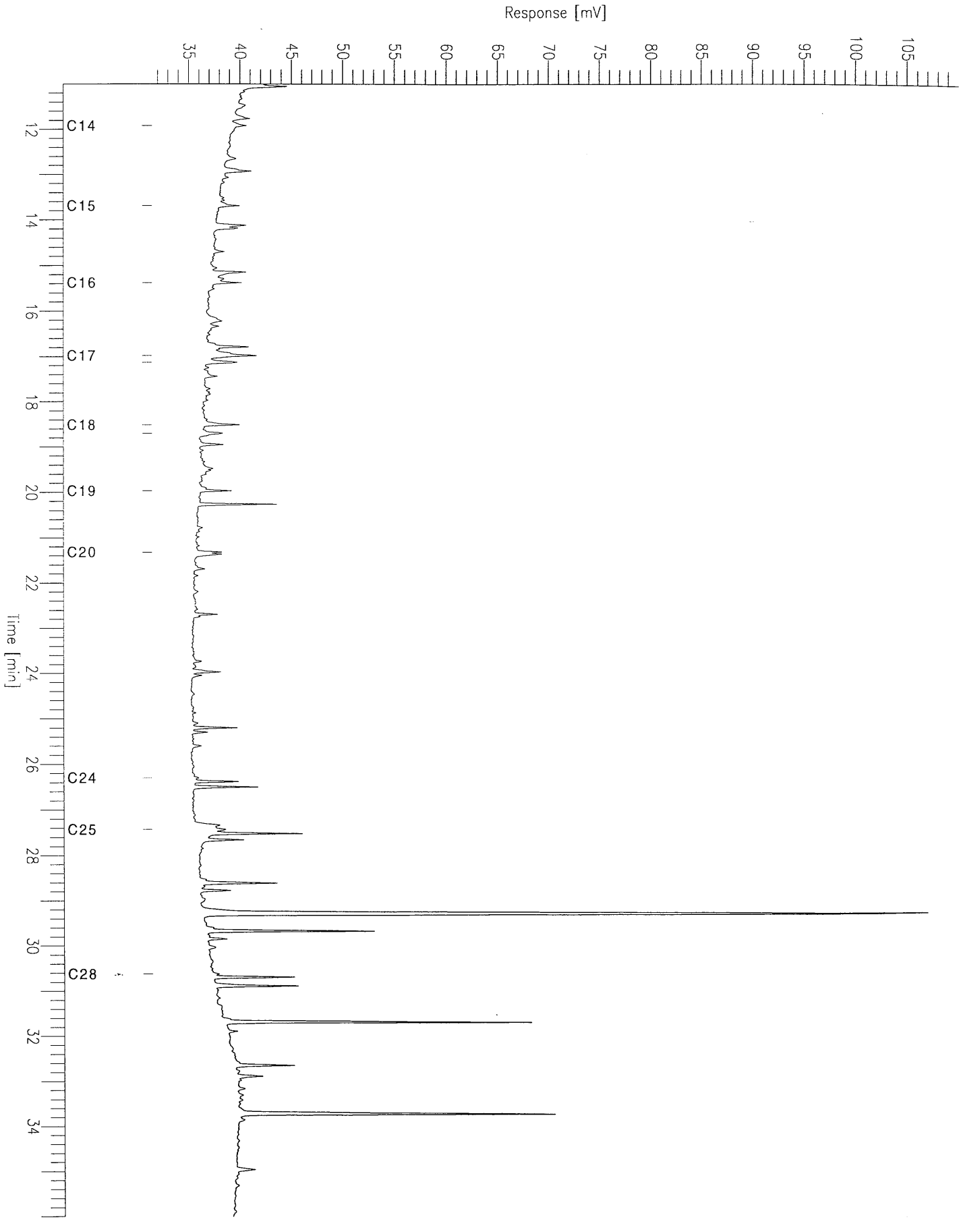
Sample #: Page 1 of 1
Date : 2/6/95 09:52 AM
Time of Injection: 10/1/94 03:52 PM
Low Point : 29.50 mV High Point : 124.98 mV
Plot Scale: 95.5 mV



Rockall Chromatogram

Sample Name : 58-14/23 2.98m
FileName : C:\TC4\HYDROCAR\rk28.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

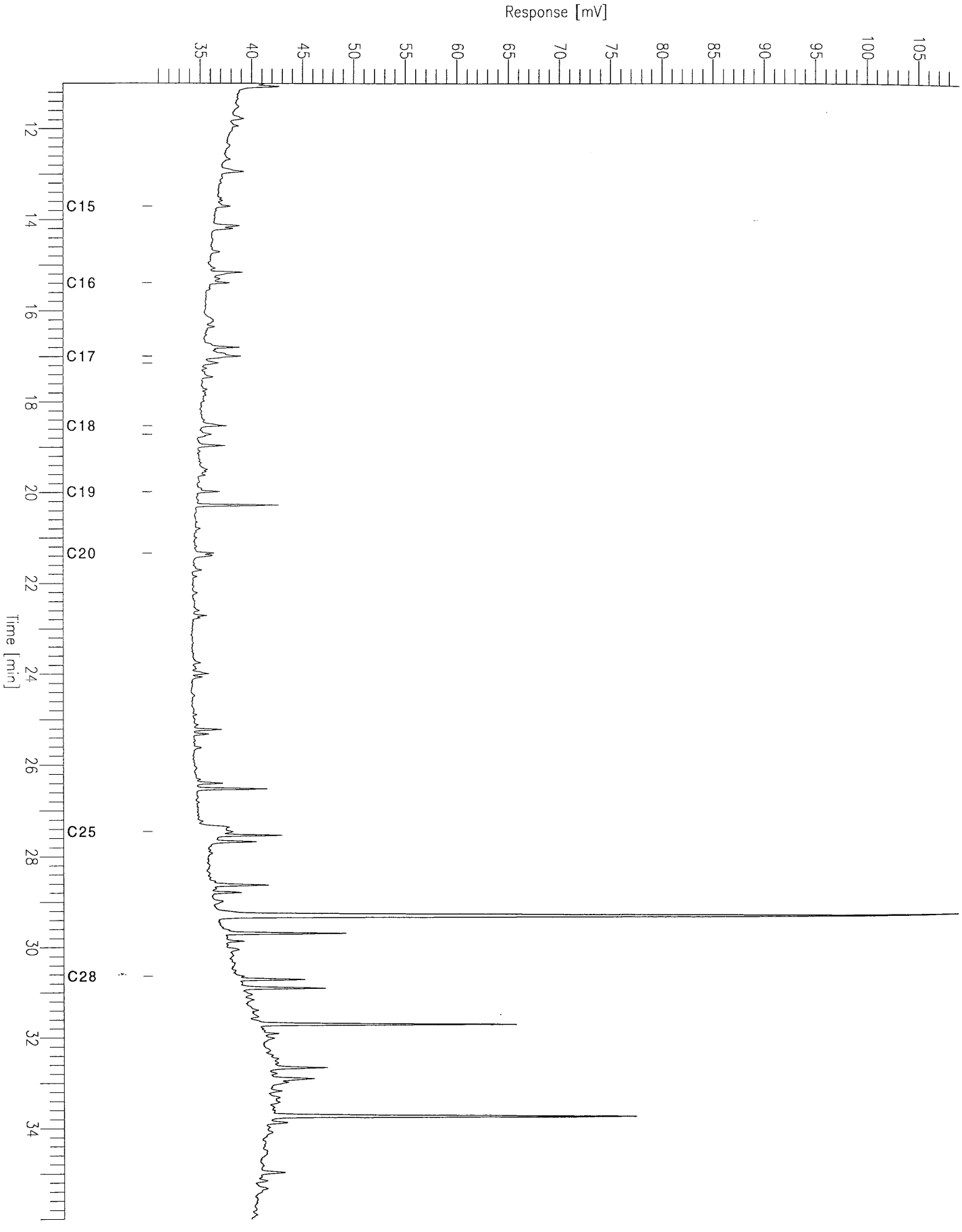
Sample #: Page 1 of 1
Date : 2/6/95 09:53 AM
Time of Injection: 10/1/94 04:48 PM
Low Point : 31.44 mV High Point : 109.98 mV
Plot Scale: 78.5 mV



Rockall Chromatogram

Sample Name : 58-14/24 2.29m
FileName : C:\TC4\HYDROCAR\rk29.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

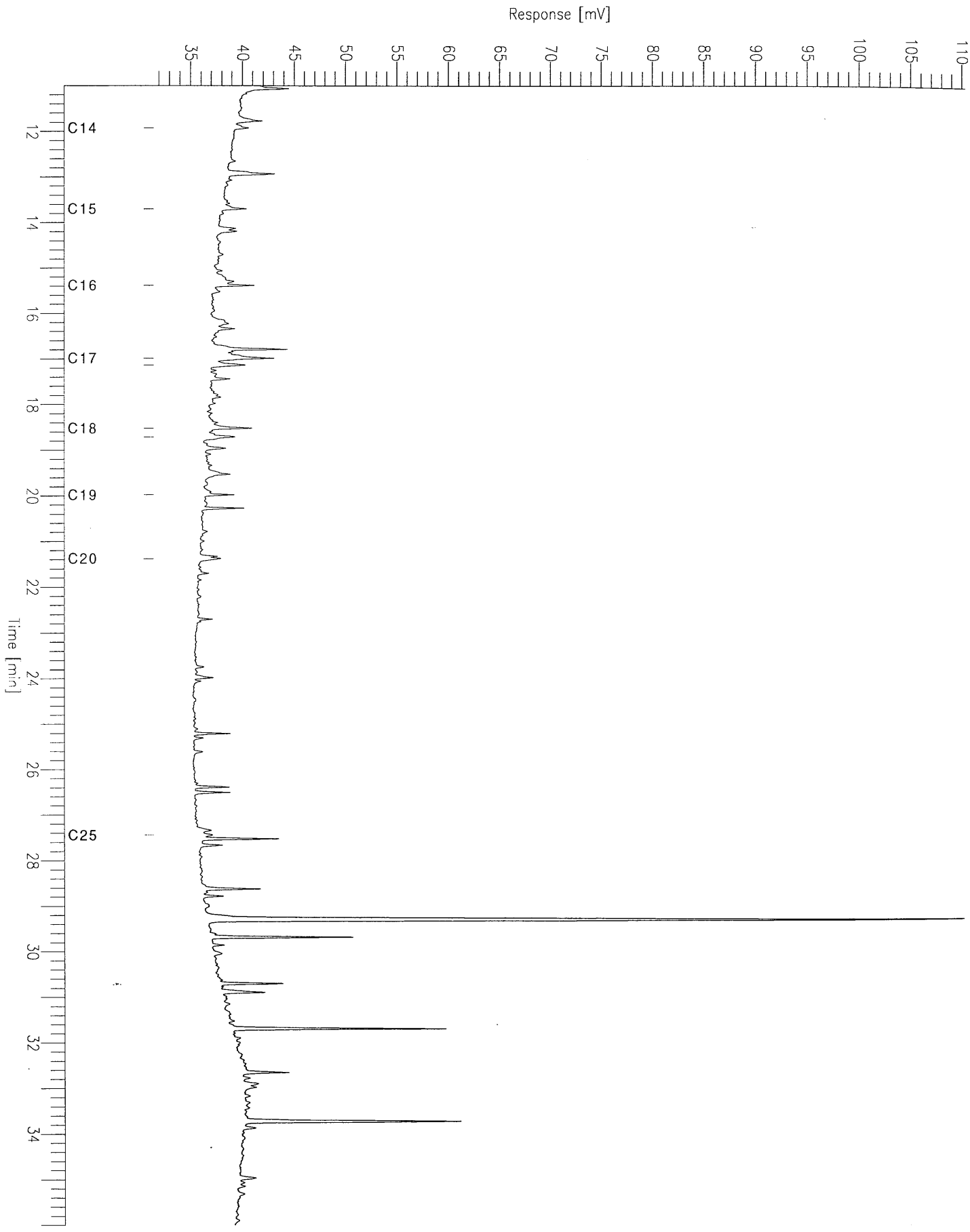
Sample #: Page 1 of 1
Date : 2/6/95 09:53 AM
Time of Injection: 10/1/94 05:42 PM
Low Point : 30.40 mV High Point : 108.94 mV
Plot Scale: 78.5 mV



Rockall Chromatogram

Sample Name : 58-14/24 2.94m
FileName : C:\TC4\HYDROCAR\rl8.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

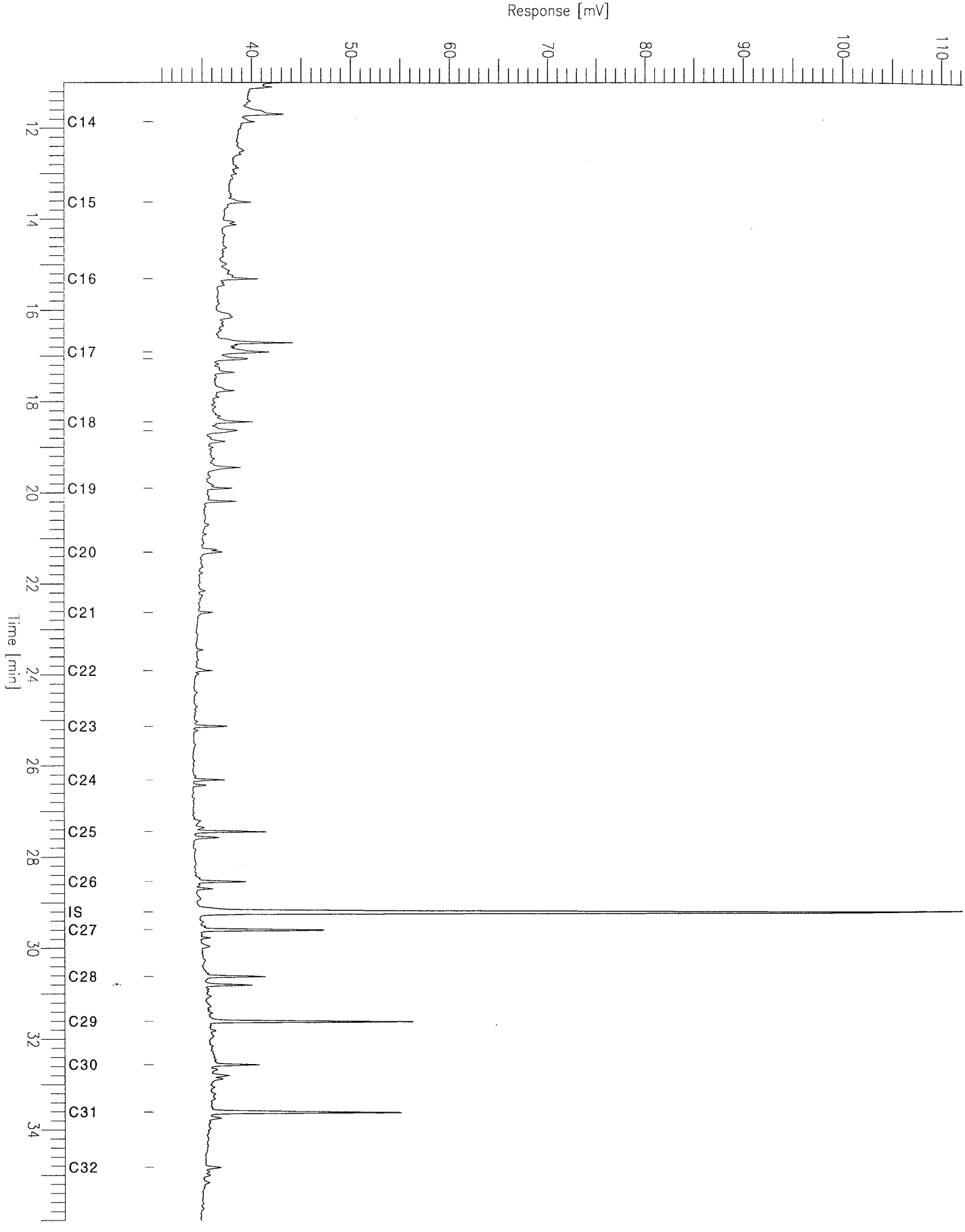
Sample #: Page 1 of 1
Date : 2/6/95 10:16 AM
Time of Injection: 10/3/94 05:10 PM
Low Point : 31.46 mV High Point : 110.32 mV
Plot Scale: 78.9 mV



Rockall Chromatogram

Sample Name : 58-14/24 2.94m
FileName : C:\TC4\HYDROCAR\re27.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

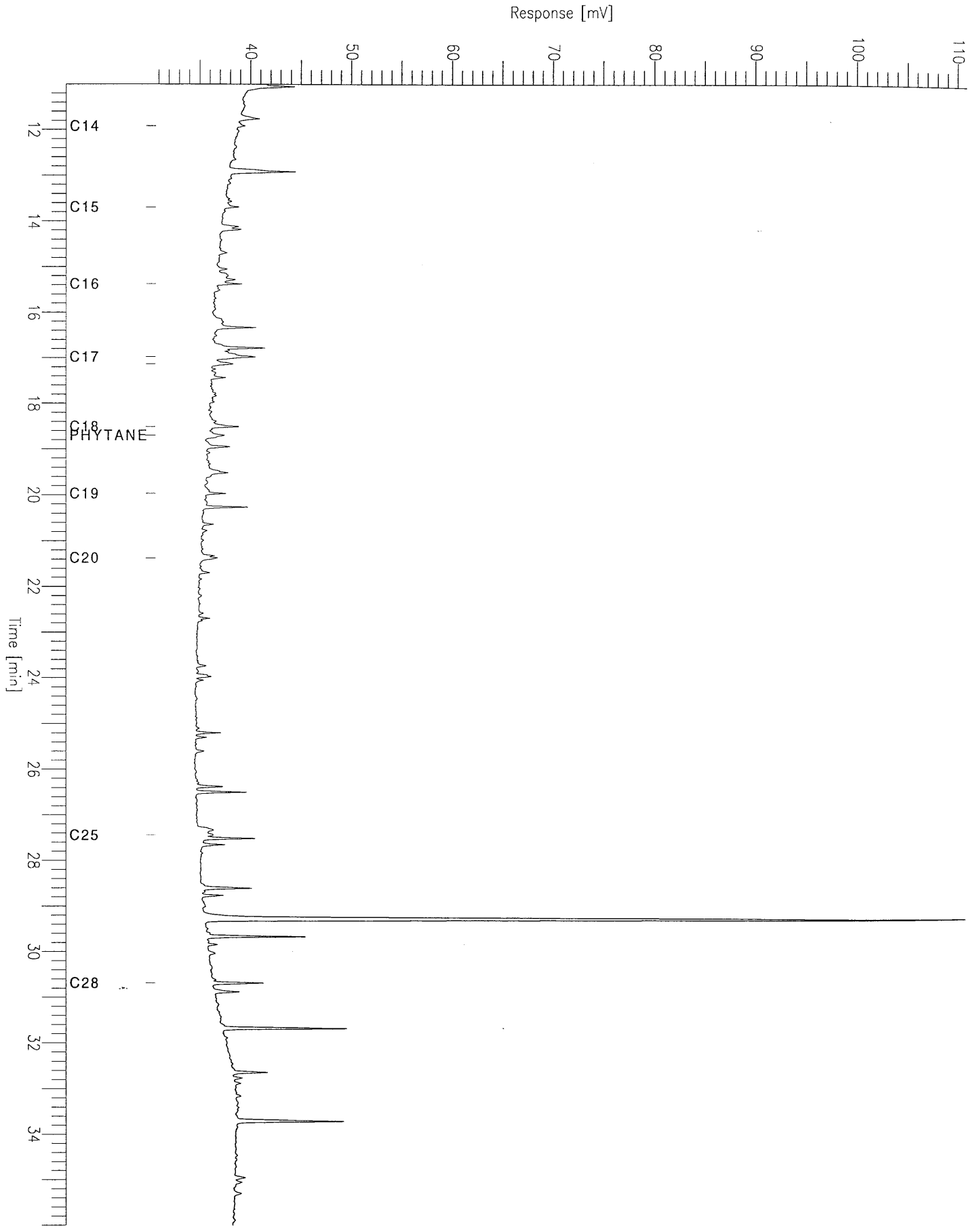
Sample #: Page 1 of 1
Date : 2/3/95 05:40 PM
Time of Injection: 10/15/94 10:14 AM
Low Point : 30.07 mV High Point : 112.17 mV
Plot Scale: 82.1 mV



Rockall Chromatogram

Sample Name : 58-14/25 2.23m
FileName : C:\TC4\HYDROCAR\r19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

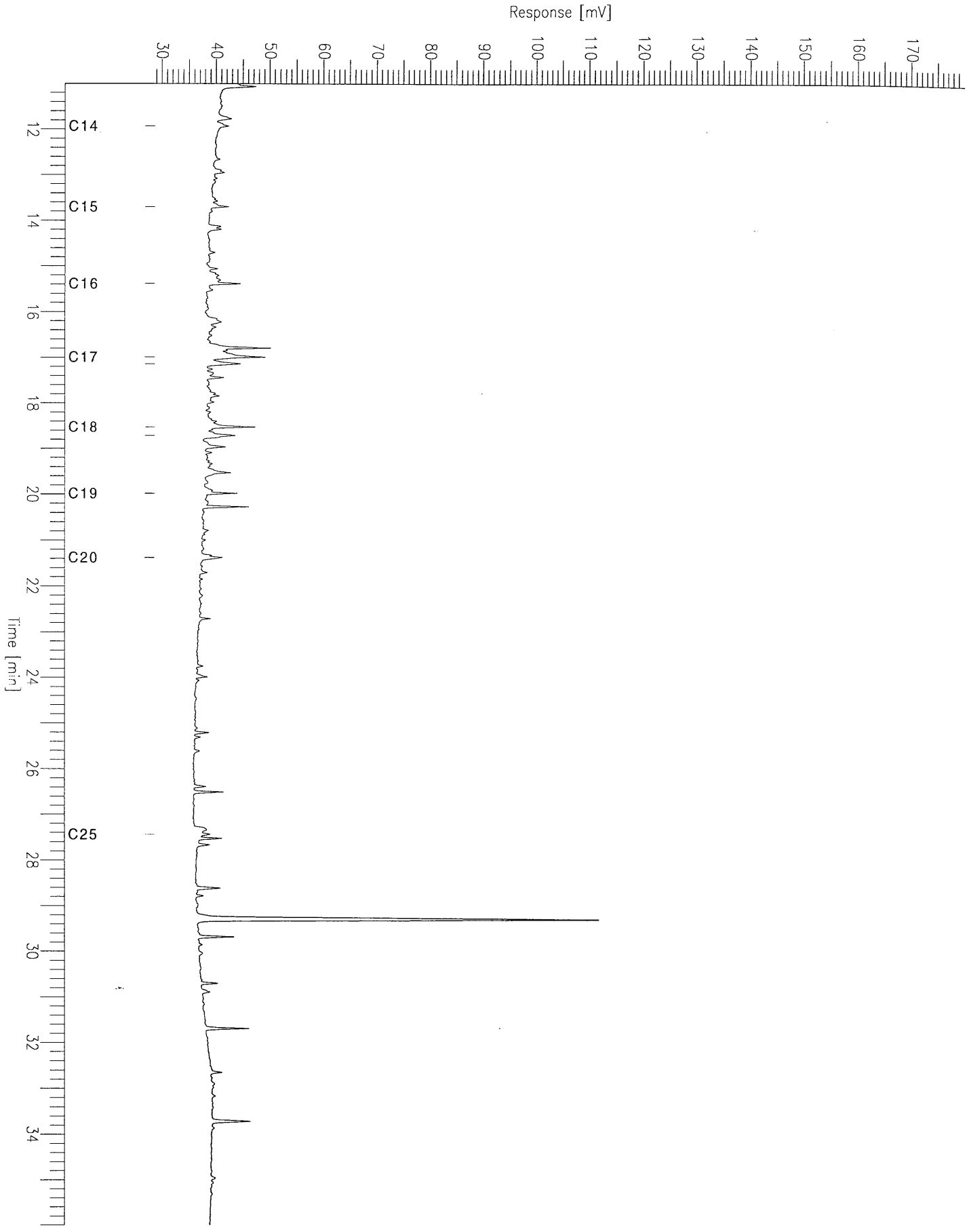
Sample #: Page 1 of 1
Date : 2/6/95 10:17 AM
Time of Injection: 10/3/94 06:04 PM
Low Point : 30.71 mV High Point : 110.86 mV
Plot Scale: 80.1 mV



Rockall Chromatogram

Sample Name : 58-14/25 2.88m
FileName : C:\TC4\HYDROCAR\rl10.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 29 mV

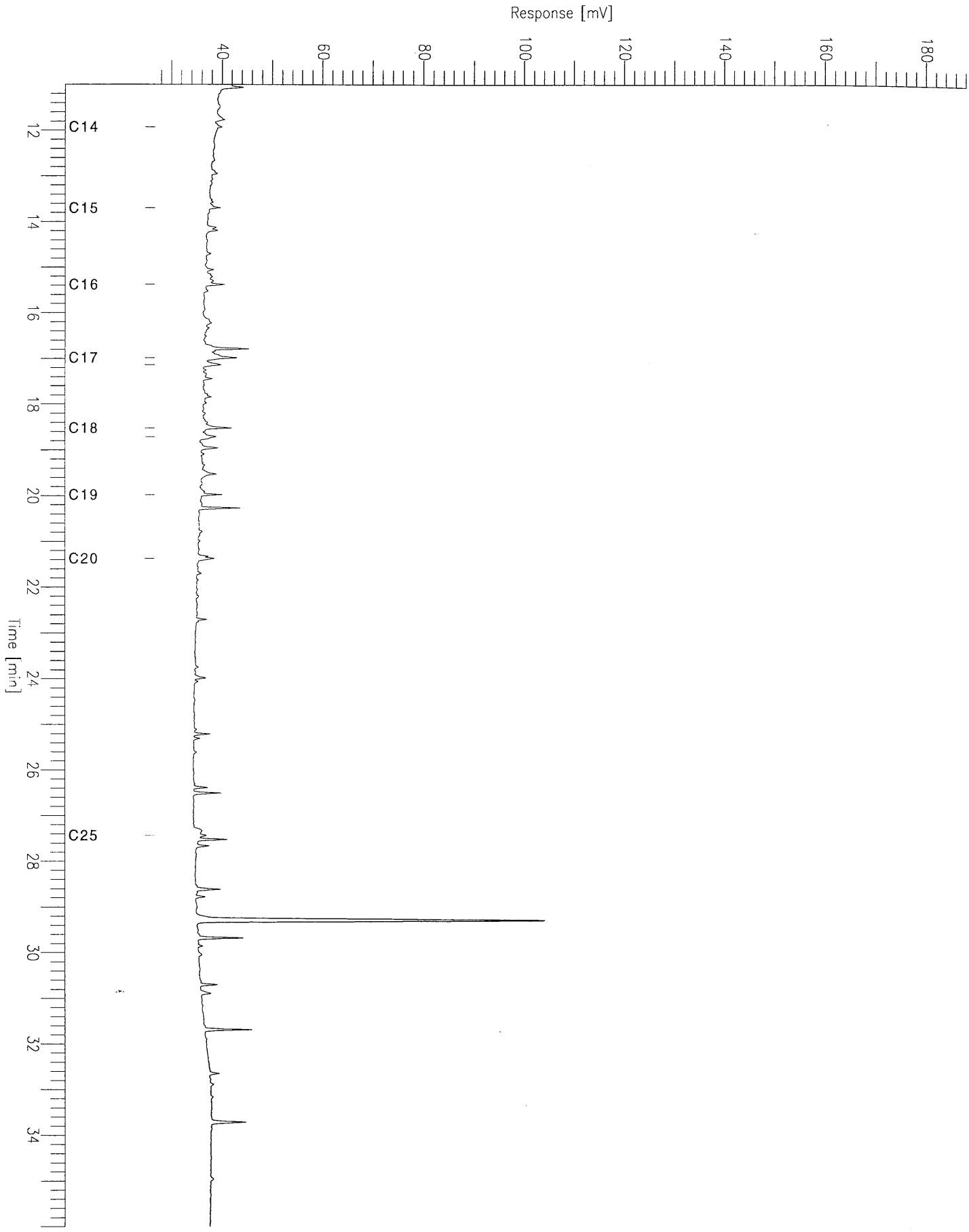
Sample #:
Date : 2/6/95 10:17 AM
Time of Injection: 10/3/94 07:00 PM
Low Point : 28.69 mV High Point : 179.98 mV
Plot Scale: 151.3 mV



Rockall Chromatogram

Sample Name : 58-14/26 0.94m
FileName : C:\TC4\HYDROCAR\rl11.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

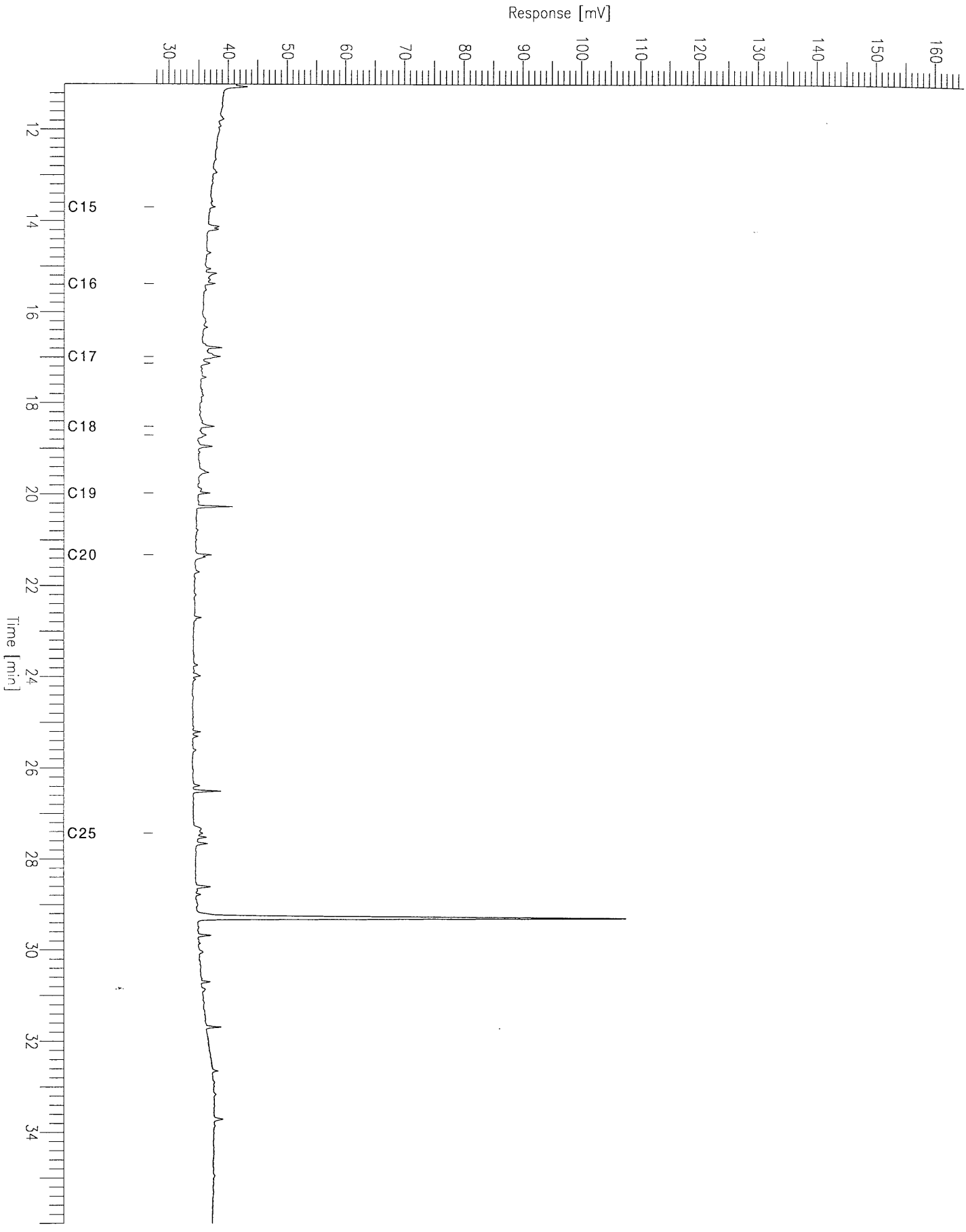
Sample #:
Date : 2/6/95 10:18 AM
Time of Injection: 10/3/94 07:55 PM
Low Point : 26.73 mV High Point : 188.00 mV
Plot Scale: 161.3 mV



Rockall Chromatogram

Sample Name : 58-14/27 1.39m
FileName : C:\TC4\HYDROCAR\rl12.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 28 mV

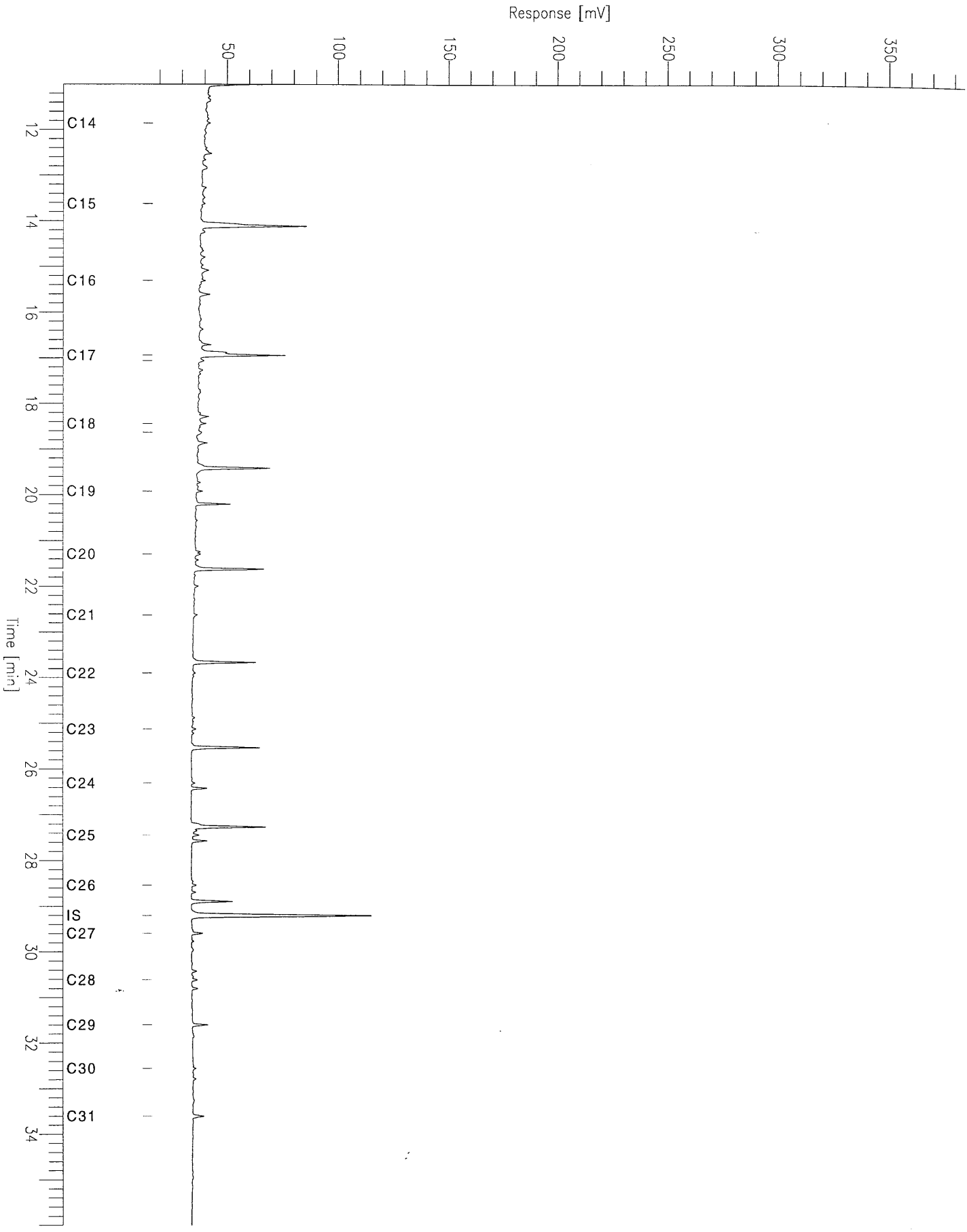
Sample #:
Date : 2/6/95 10:18 AM
Time of Injection: 10/3/94 08:49 PM
Low Point : 27.53 mV High Point : 164.79 mV
Plot Scale: 137.3 mV



Rockall Chromatogram

Sample Name : 58-14/27 2.04m
FileName : C:\TC4\HYDROCAR\re43.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 17 mV

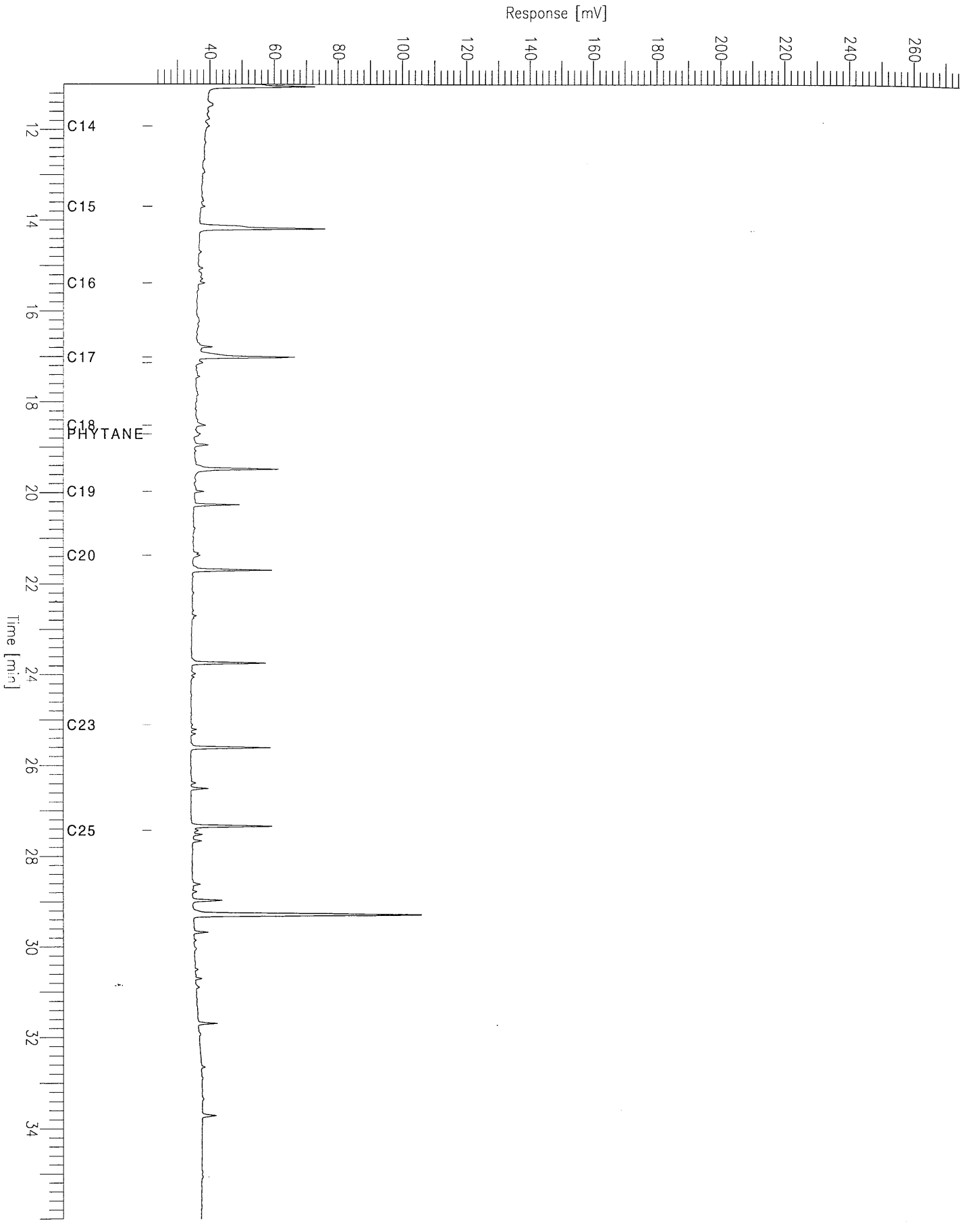
Sample #:
Date : 2/6/95 02:38 PM
Time of Injection: 10/16/94 12:58 AM
Low Point : 16.78 mV High Point : 384.19 mV
Plot Scale: 367.4 mV



Rockall Chromatogram

Sample Name : 58-14/27 2.04m
FileName : C:\TC4\HYDROCAR\rl13.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 22 mV

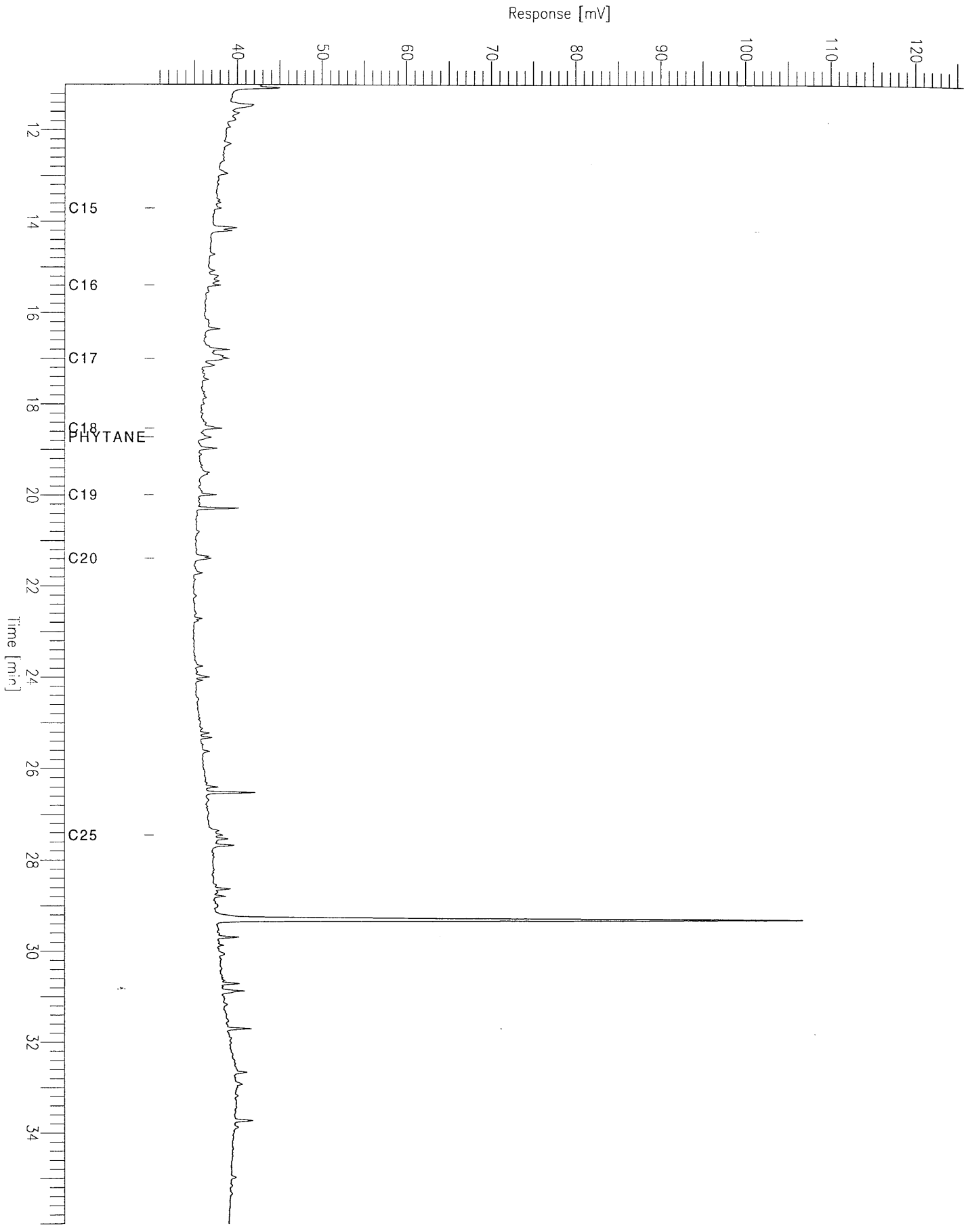
Sample #:
Date : 2/6/95 10:18 AM
Time of Injection: 10/3/94 09:44 PM
Low Point : 22.25 mV High Point : 274.18 mV
Plot Scale: 251.9 mV



Rockall Chromatogram

Sample Name : 58-14/28 1.70m
FileName : C:\TC4\HYDROCAR\rk30.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

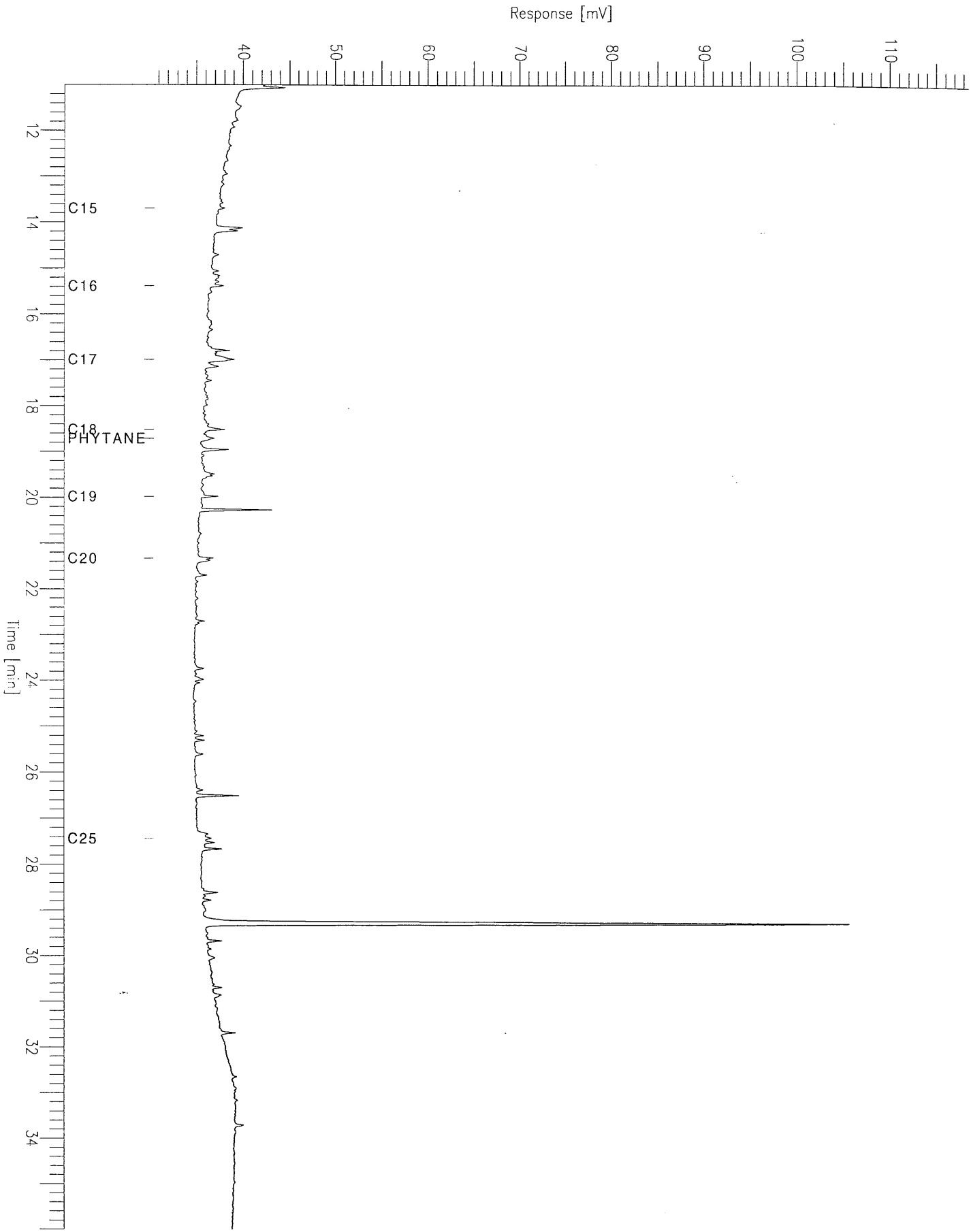
Sample #: Page 1 of 1
Date : 2/6/95 09:53 AM
Time of Injection: 10/1/94 06:38 PM
Low Point : 30.42 mV High Point : 125.64 mV
Plot Scale: 95.2 mV



Rockall Chromatogram

Sample Name : 58-14/28 2.35m
FileName : C:\TC4\HYDROCAR\rk31.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

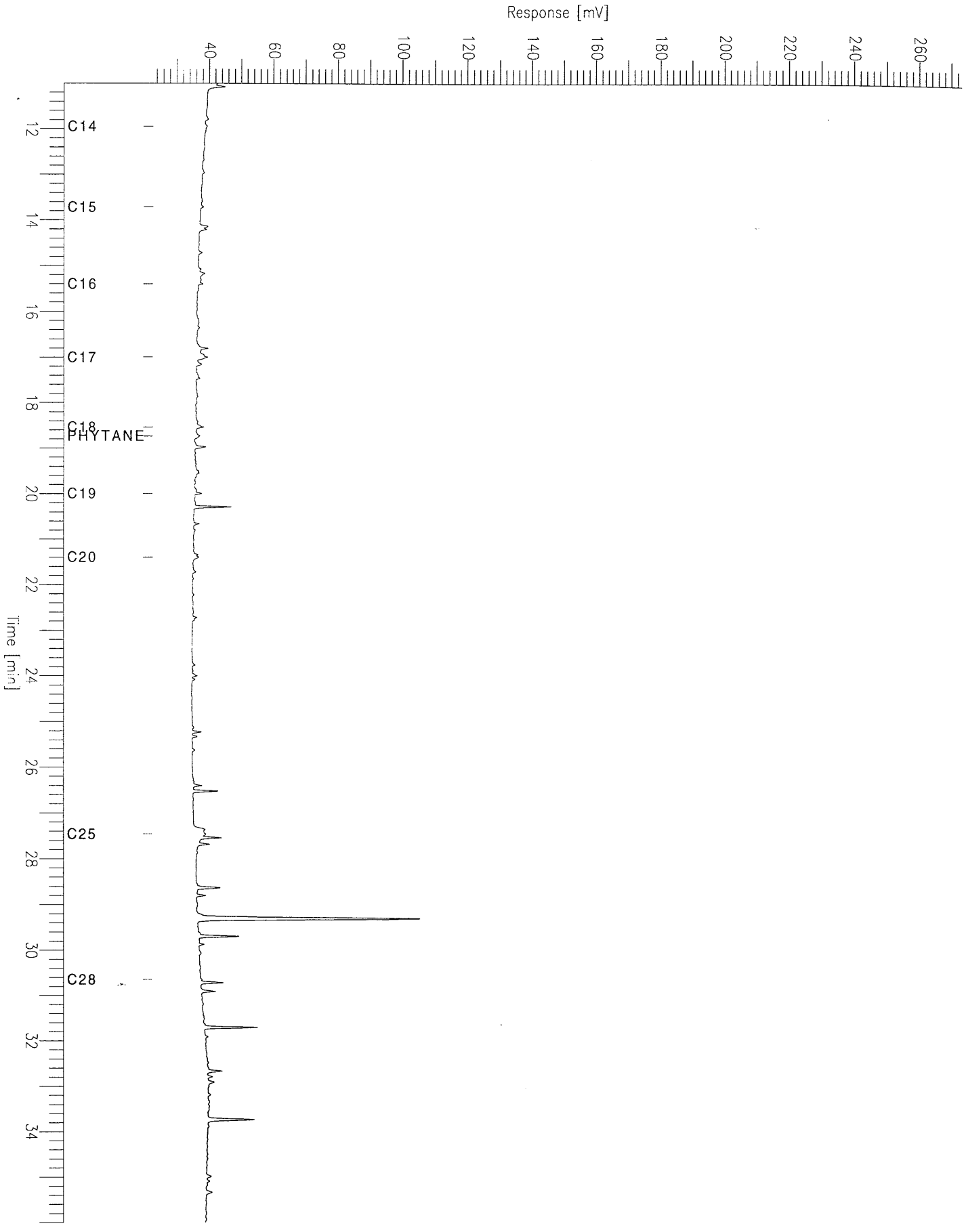
Sample #: Page 1 of 1
Date : 2/6/95 09:54 AM
Time of Injection: 10/1/94 07:33 PM
Low Point : 30.54 mV High Point : 118.43 mV
Plot Scale: 87.9 mV



Rockall Chromatogram

Sample Name : 58-14/33 1.00m
FileName : C:\TC4\HYDROCAR\rk32.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 23 mV

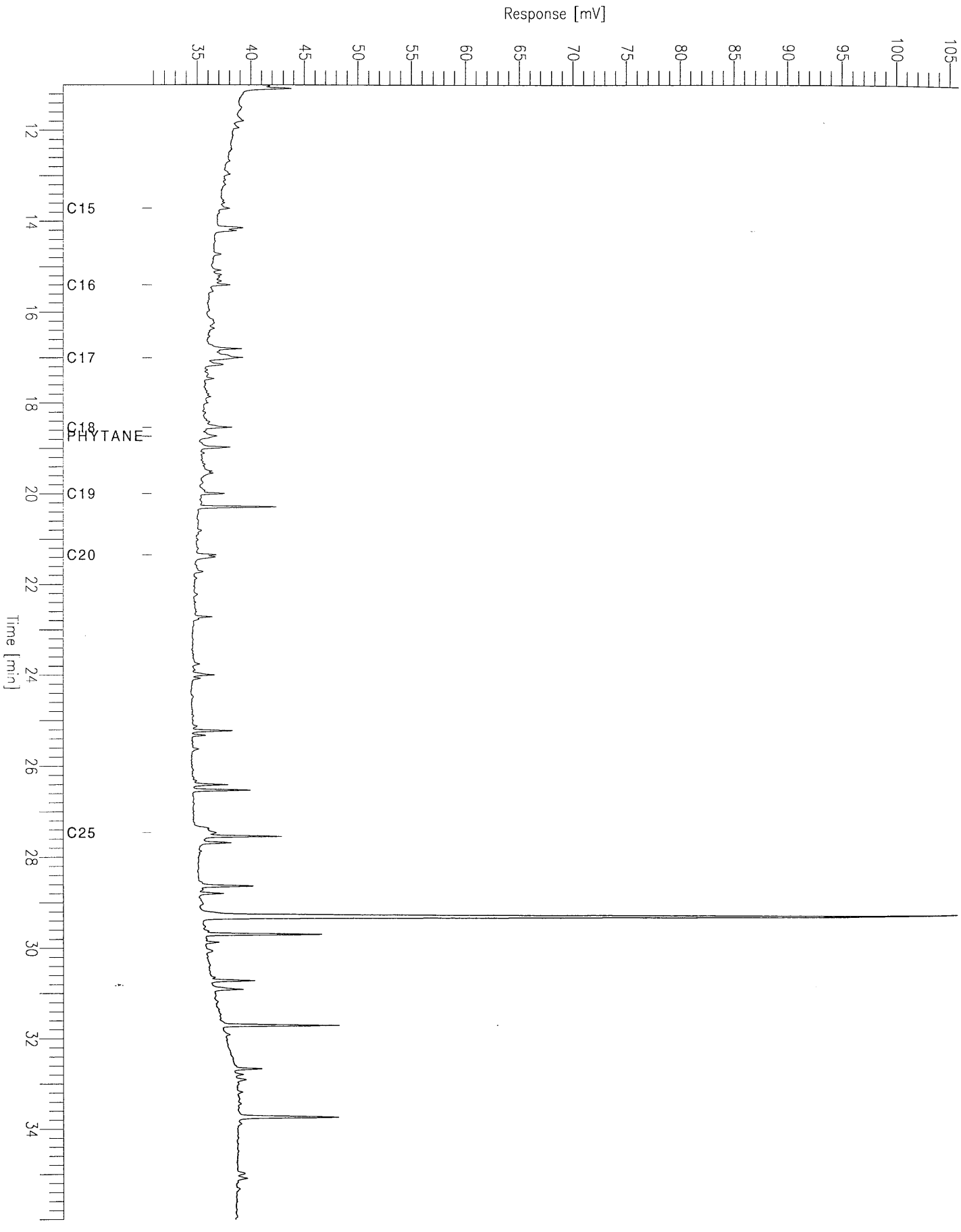
Sample #: Page 1 of 1
Date : 2/6/95 09:54 AM
Time of Injection: 10/1/94 08:28 PM
Low Point : 22.75 mV High Point : 272.96 mV
Plot Scale: 250.2 mV



Rockall Chromatogram

Sample Name : 58-14/33 1.65m
FileName : C:\TC4\HYDROCAR\rk33.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

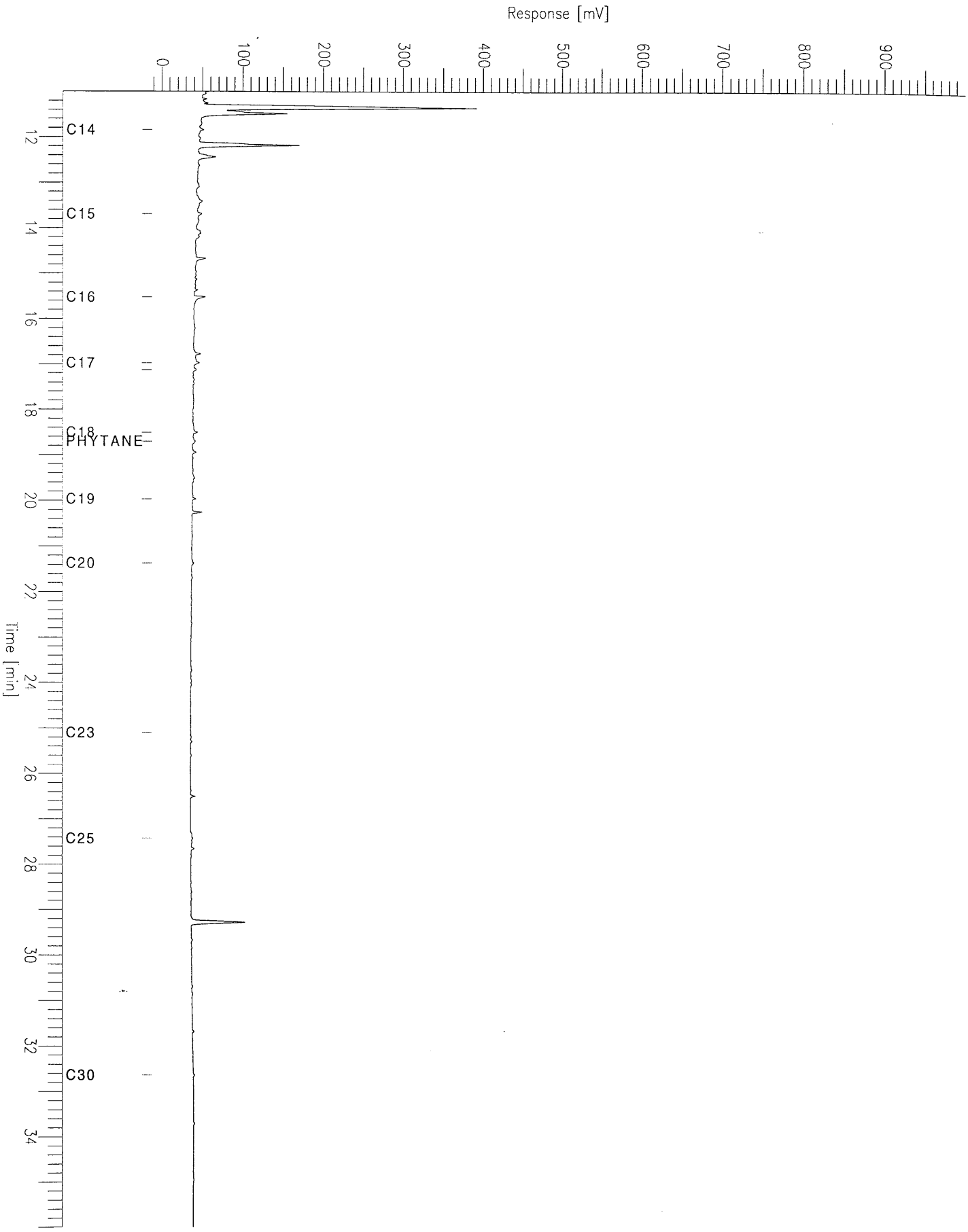
Sample #: Page 1 of 1
Date : 2/6/95 09:54 AM
Time of Injection: 10/1/94 09:23 PM
Low Point : 30.85 mV High Point : 105.76 mV
Plot Scale: 74.9 mV



Rockall Chromatogram

Sample Name : 58-14/35 2.85m
FileName : C:\TC4\HYDROCAR\rl6.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: -12 mV

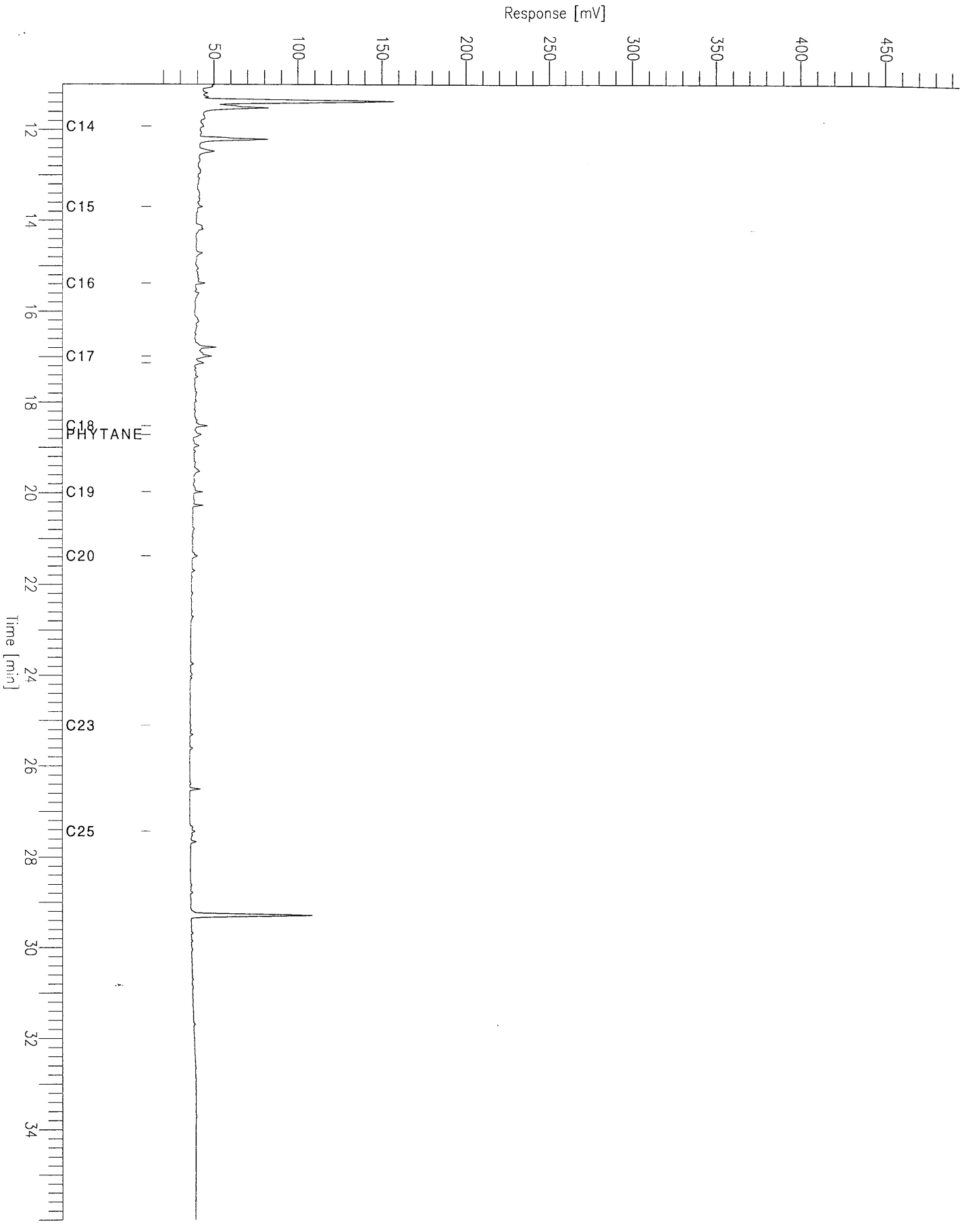
Sample #: Page 1 of 1
Date : 2/6/95 10:16 AM
Time of Injection: 10/3/94 03:19 PM
Low Point : -12.03 mV High Point : 1000.00 mV
Plot Scale: 1012.0 mV



Rockall Chromatogram

Sample Name : 58-14/35 3.50m
FileName : C:\TC4\HYDROCAR\rl7.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 13 mV

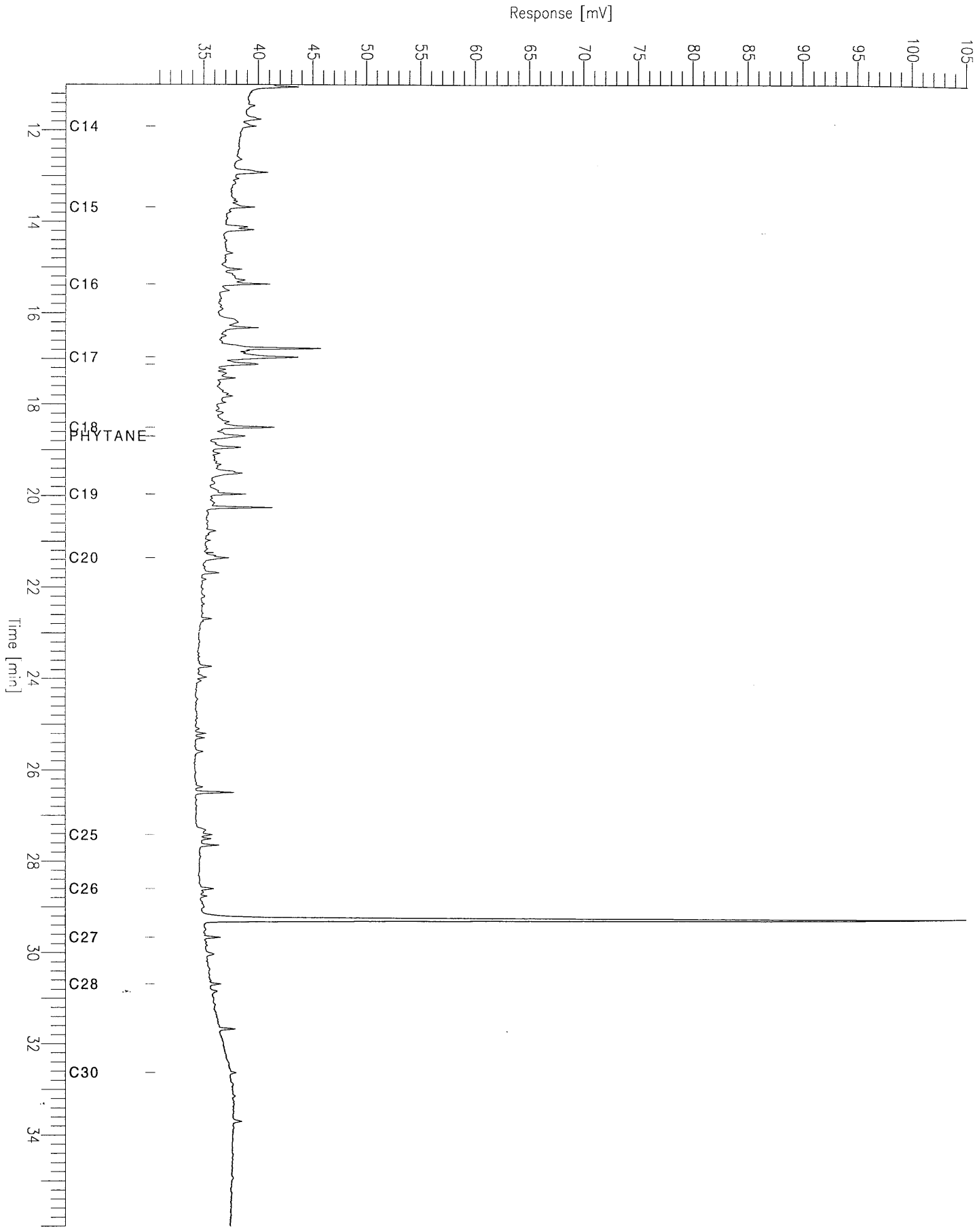
Sample #: Page 1 of 1
Date : 2/6/95 10:16 AM
Time of Injection: 10/3/94 04:14 PM
Low Point : 12.71 mV High Point : 493.84 mV
Plot Scale: 481.1 mV



Rockall Chromatogram

Sample Name : 58-14/37 2.32m
FileName : C:\TC4\HYDROCAR\rl14.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

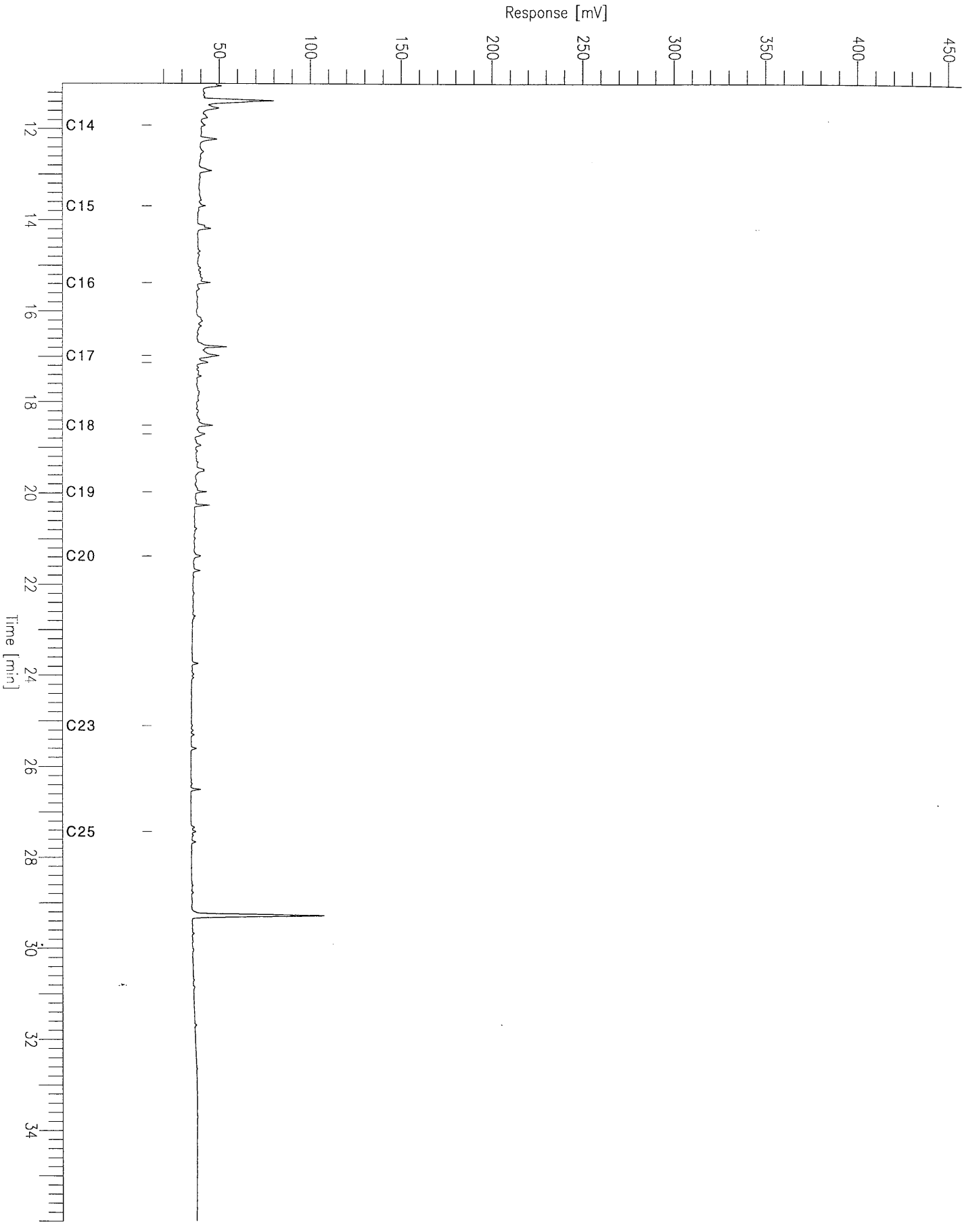
Sample #: Page 1 of 1
Date : 2/6/95 10:19 AM
Time of Injection: 10/3/94 10:38 PM
Low Point : 30.64 mV High Point : 105.08 mV
Plot Scale: 74.4 mV



Rockall Chromatogram

Sample Name : 58-14/37 2.97m
FileName : C:\TC4\HYDROCAR\rl15.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 13 mV

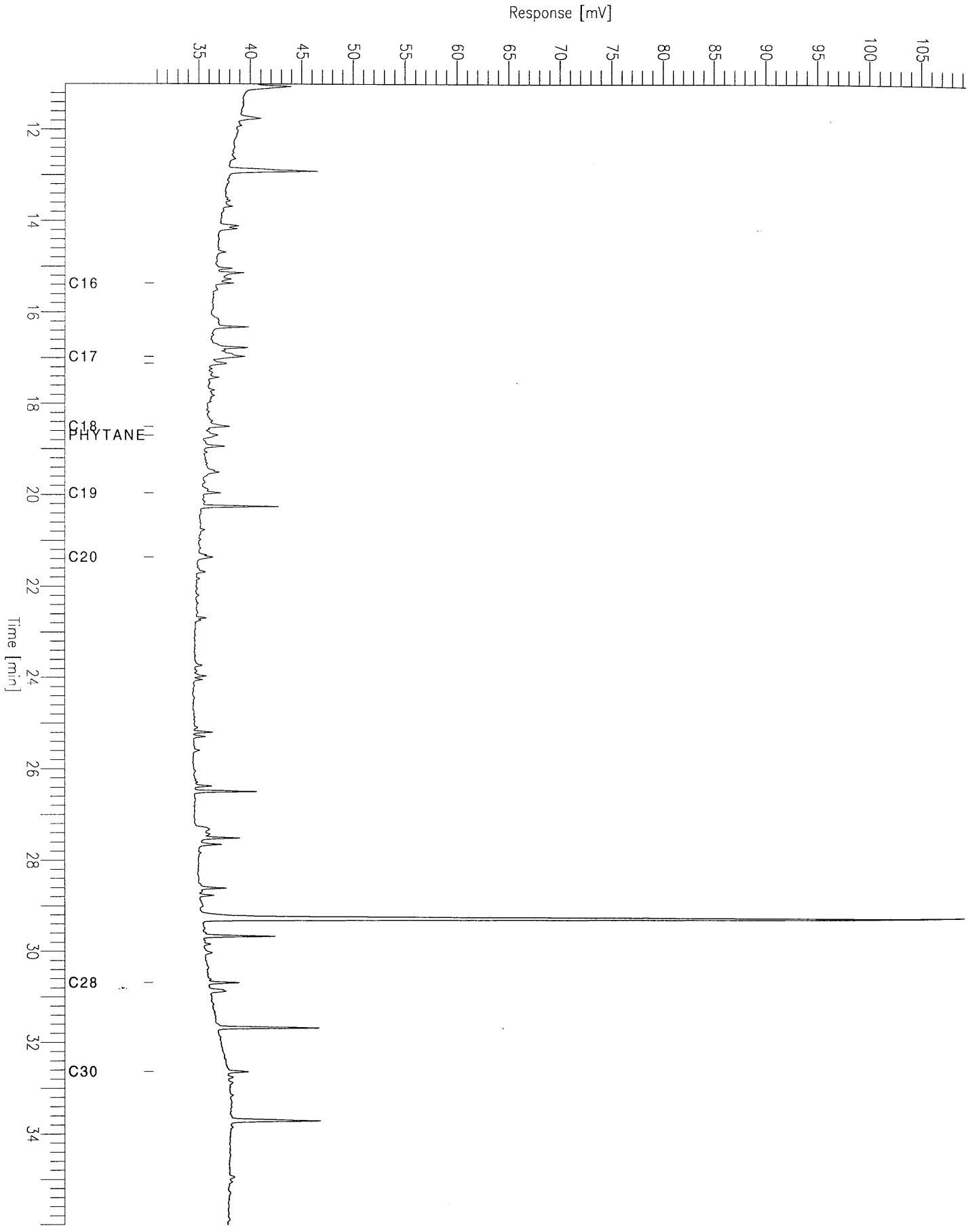
Sample #: Page 1 of 1
Date : 2/6/95 10:19 AM
Time of Injection: 10/3/94 11:33 PM
Low Point : 13.48 mV High Point : 457.13 mV
Plot Scale: 443.6 mV



Rockall Chromatogram

Sample Name : 58-14/46 0.81m
FileName : C:\TC4\HYDROCAR\rl16.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

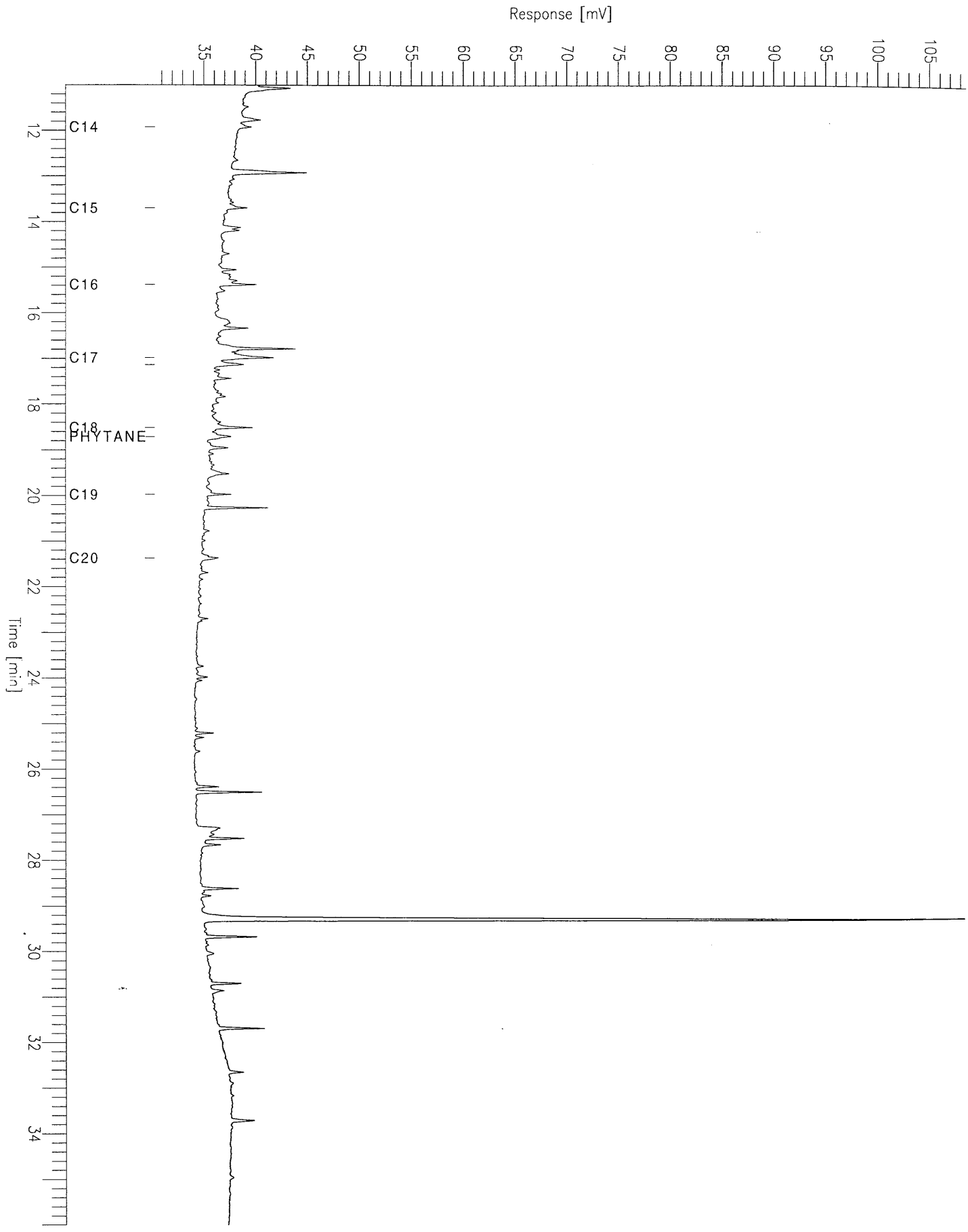
Sample #:
Date : 2/6/95 10:19 AM
Time of Injection: 10/4/94 12:29 AM
Low Point : 30.72 mV High Point : 109.29 mV
Plot Scale: 78.6 mV



Rockall Chromatogram

Sample Name : 58-14/46 1.46m
FileName : C:\TC4\HYDROCAR\rl17.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

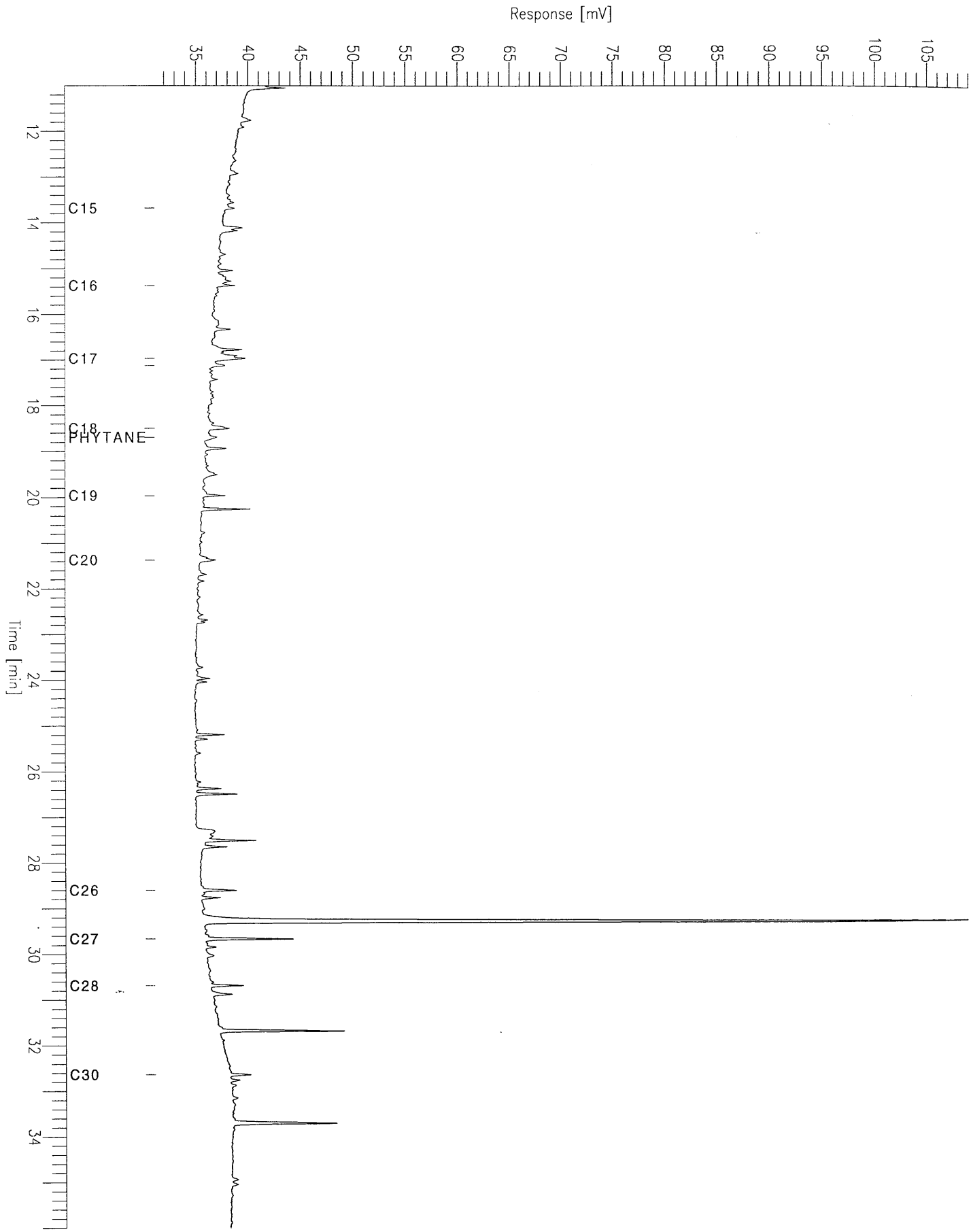
Sample #: Page 1 of 1
Date : 2/6/95 10:20 AM
Time of Injection: 10/4/94 01:23 AM
Low Point : 30.34 mV High Point : 108.49 mV
Plot Scale: 78.1 mV



Rockall Chromatogram

Sample Name : 58-14/47 3.40m
FileName : C:\TC4\HYDROCAR\rl18.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

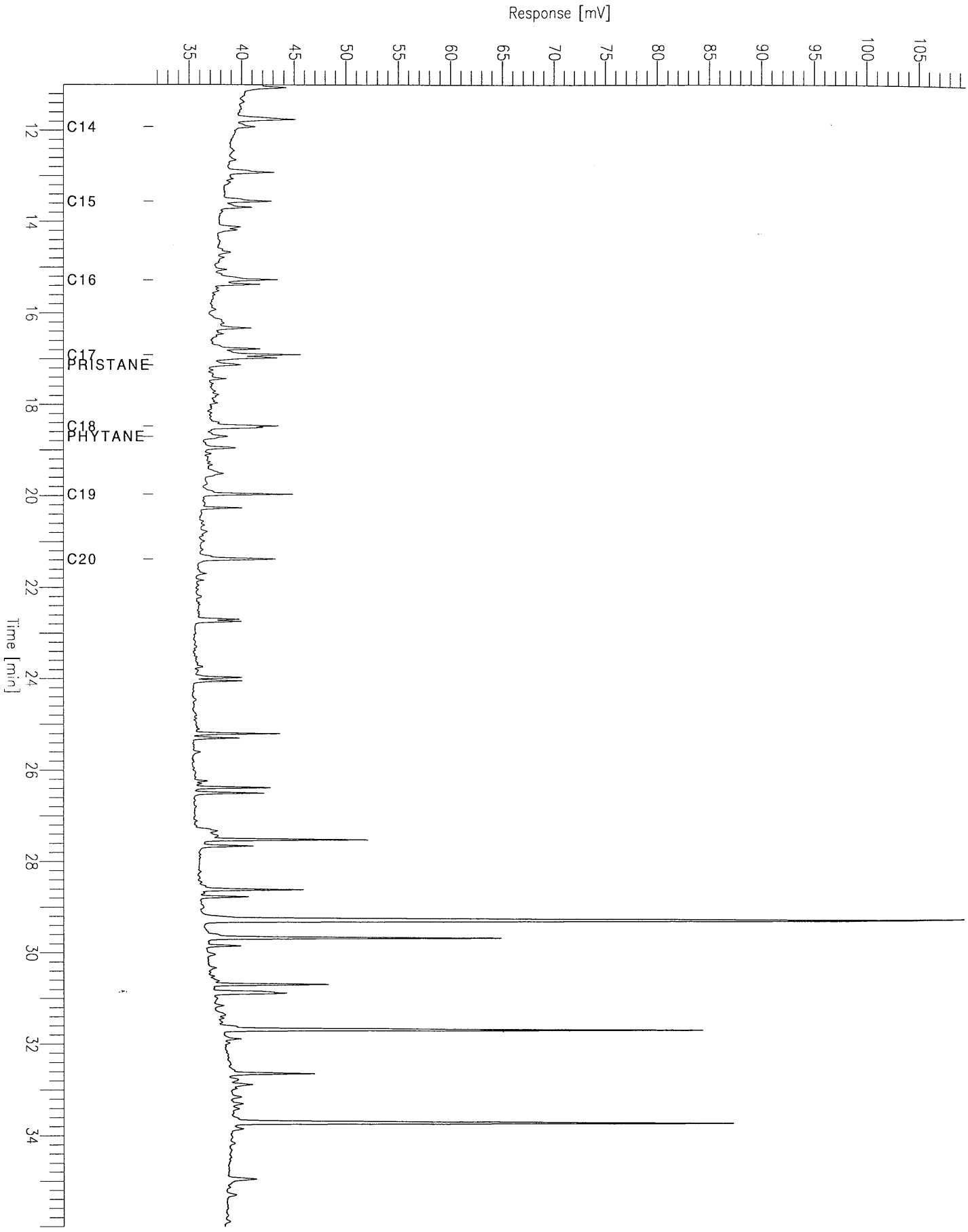
Sample #: Page 1 of 1
Date : 2/6/95 10:20 AM
Time of Injection: 10/4/94 02:19 AM
Low Point : 31.11 mV High Point : 109.01 mV
Plot Scale: 77.9 mV



Rockall Chromatogram

Sample Name : 58-14/47 3.40m
FileName : C:\TC4\HYDROCAR\rl19.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

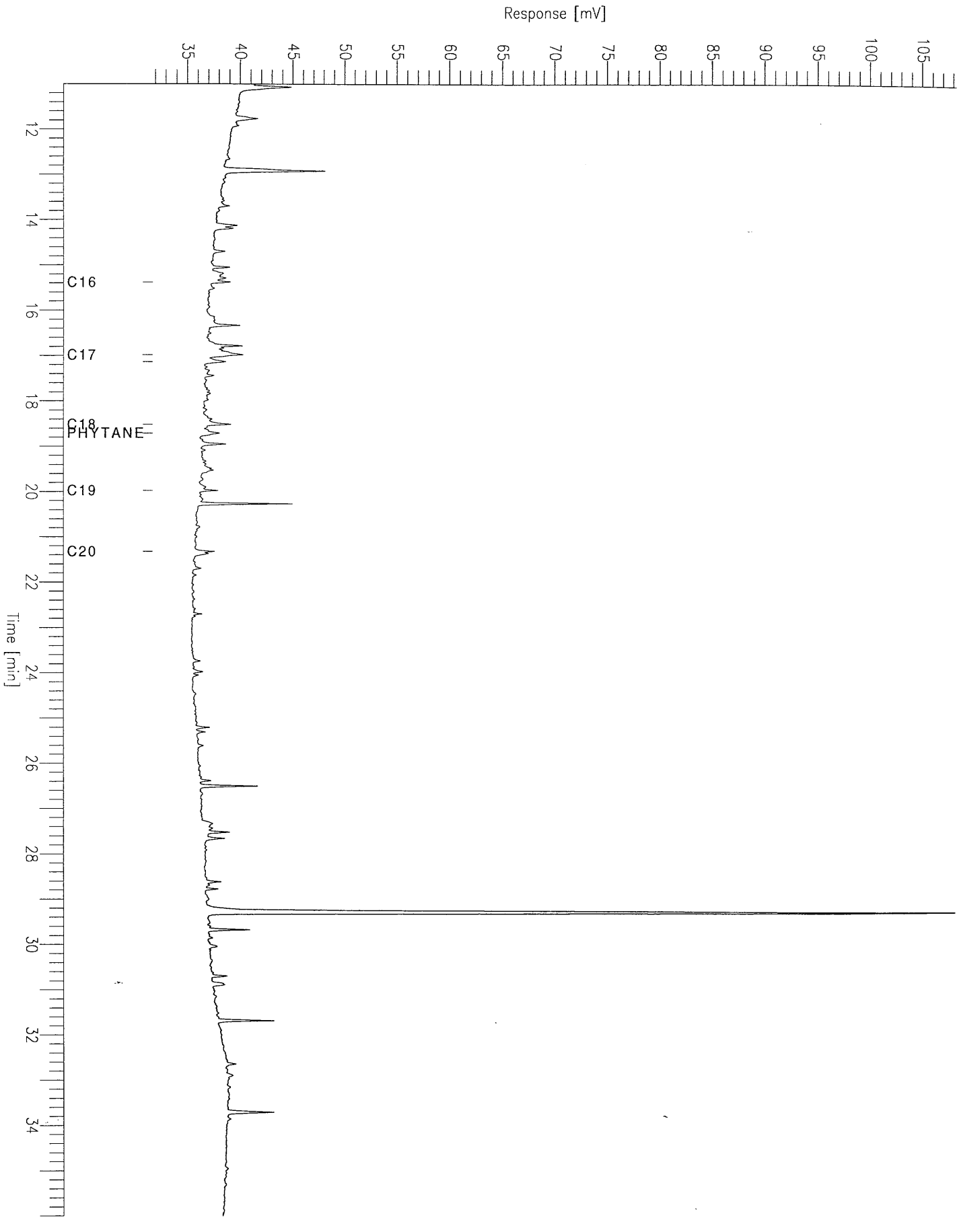
Sample #: Page 1 of 1
Date : 2/6/95 10:20 AM
Time of Injection: 10/4/94 03:14 AM
Low Point : 31.59 mV High Point : 109.47 mV
Plot Scale: 77.9 mV



Rockall Chromatogram

Sample Name : 58-14/48 1.30m
FileName : C:\TC4\HYDROCAR\rl20.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

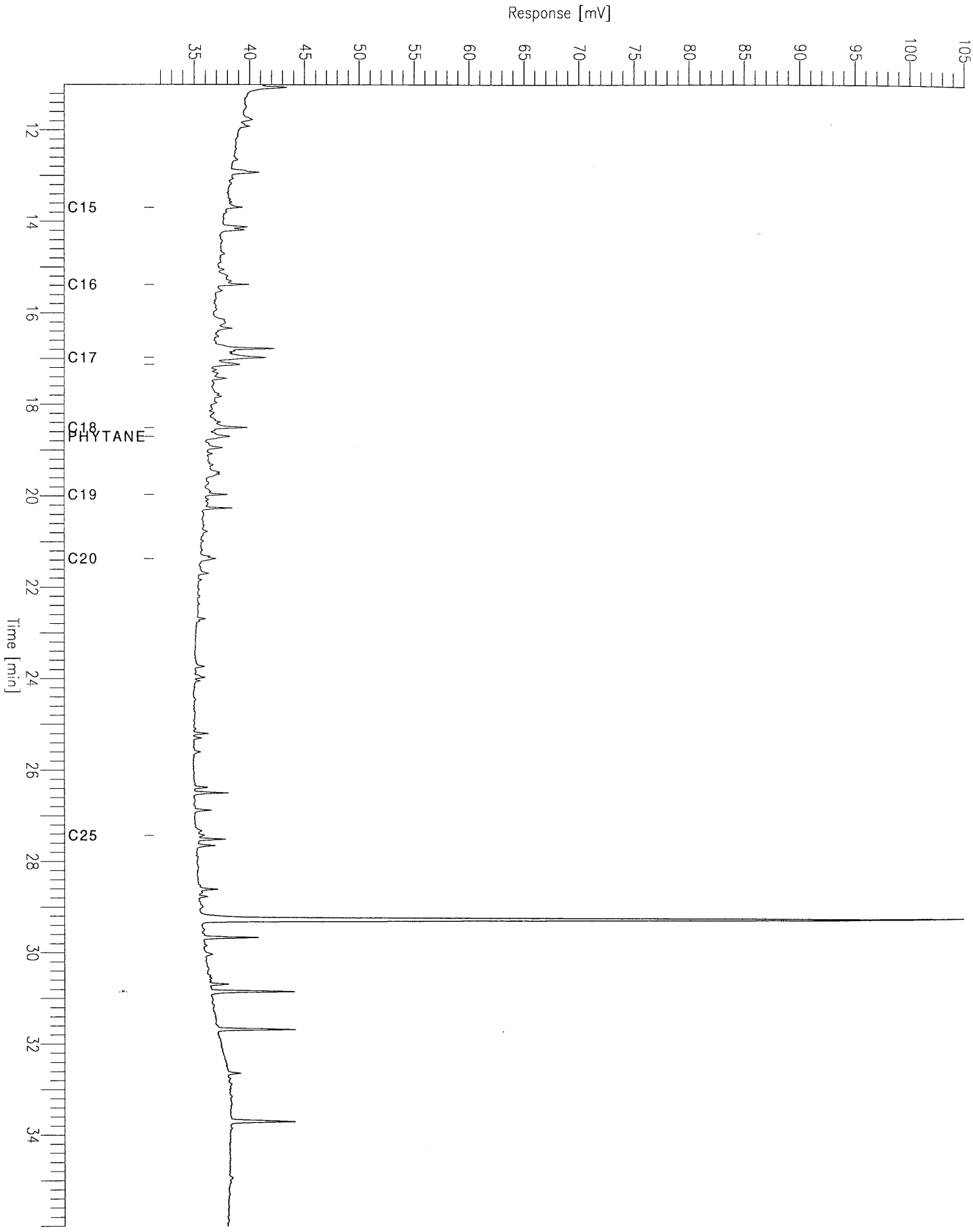
Sample #: Page 1 of 1
Date : 2/6/95 10:21 AM
Time of Injection: 10/4/94 04:10 AM
Low Point : 31.75 mV High Point : 108.24 mV
Plot Scale: 76.5 mV



Rockall Chromatogram

Sample Name : 58-14/48 1.95m
FileName : C:\TC4\HYDROCAR\rl21.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

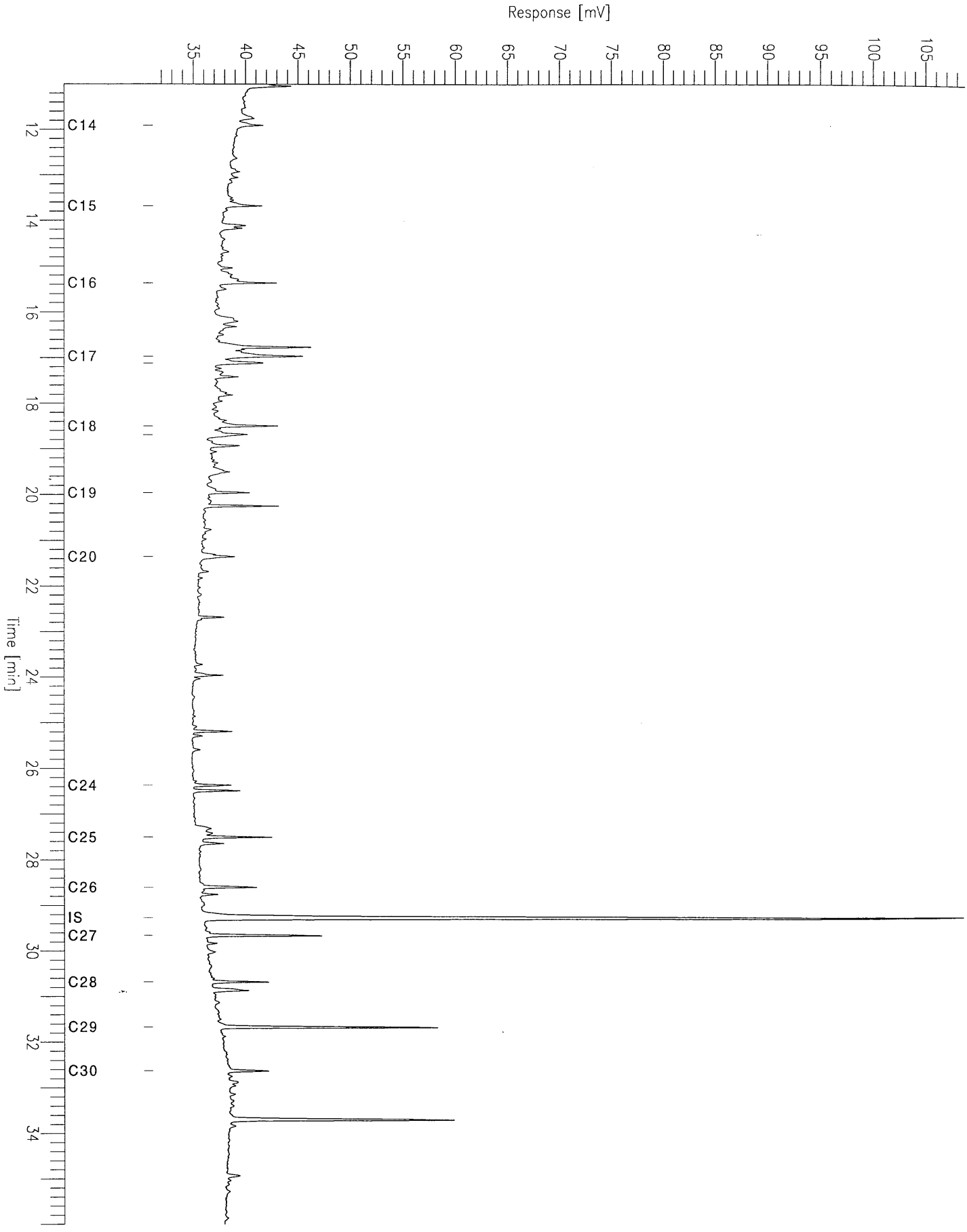
Sample #:
Date : 2/6/95 10:21 AM
Time of Injection: 10/4/94 05:05 AM
Low Point : 31.42 mV High Point : 105.03 mV
Plot Scale: 73.6 mV



Rockall Chromatogram

Sample Name : 58-14/49 2.98m
FileName : C:\TC4\HYDROCAR\rl22.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 31 mV

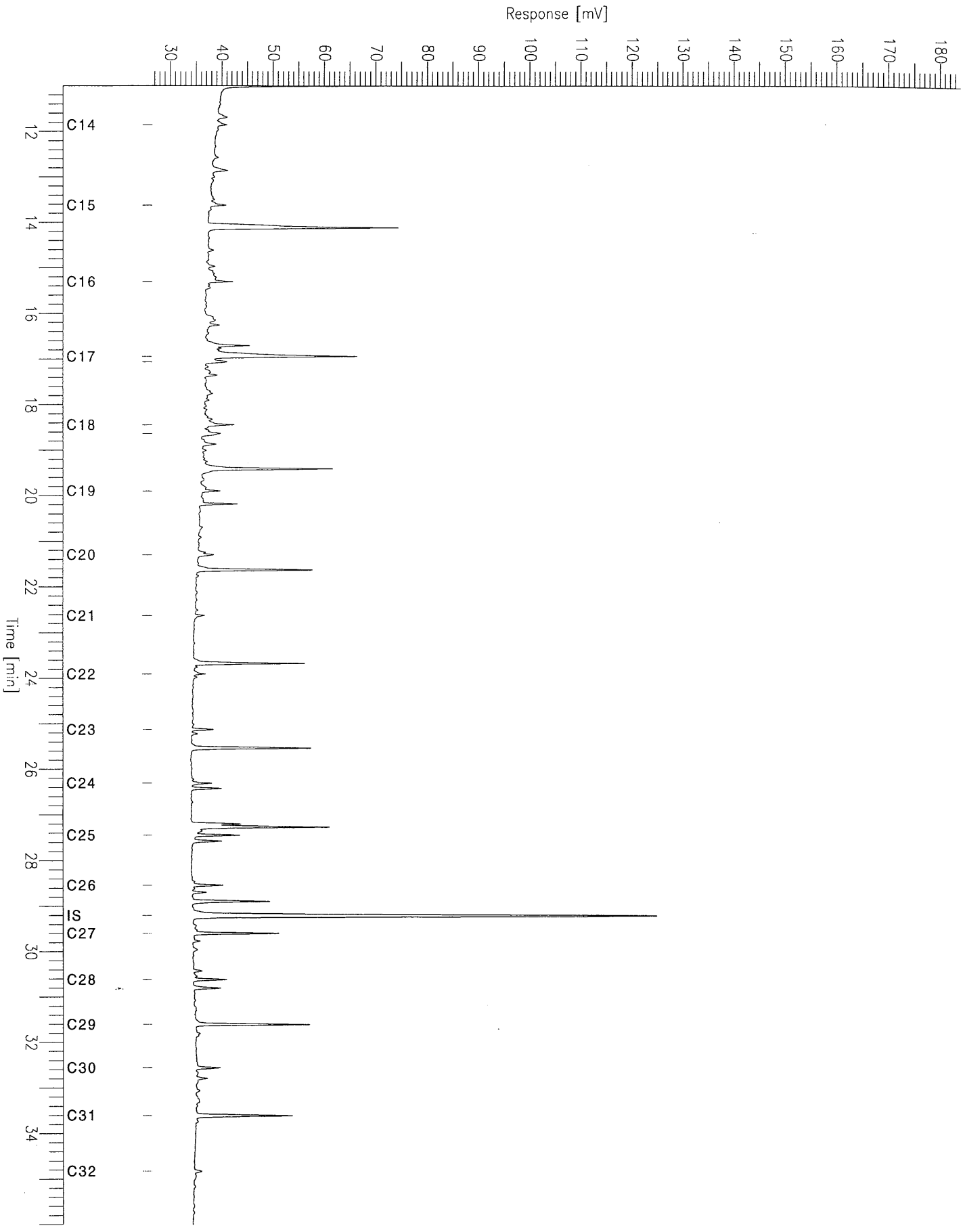
Sample #: Page 1 of 1
Date : 2/6/95 10:22 AM
Time of Injection: 10/4/94 06:00 AM
Low Point : 31.20 mV High Point : 108.72 mV
Plot Scale: 77.5 mV



Rockall Chromatogram

Sample Name : 58-14/49 3.63m
FileName : C:\TC4\HYDROCAR\re44.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 27 mV

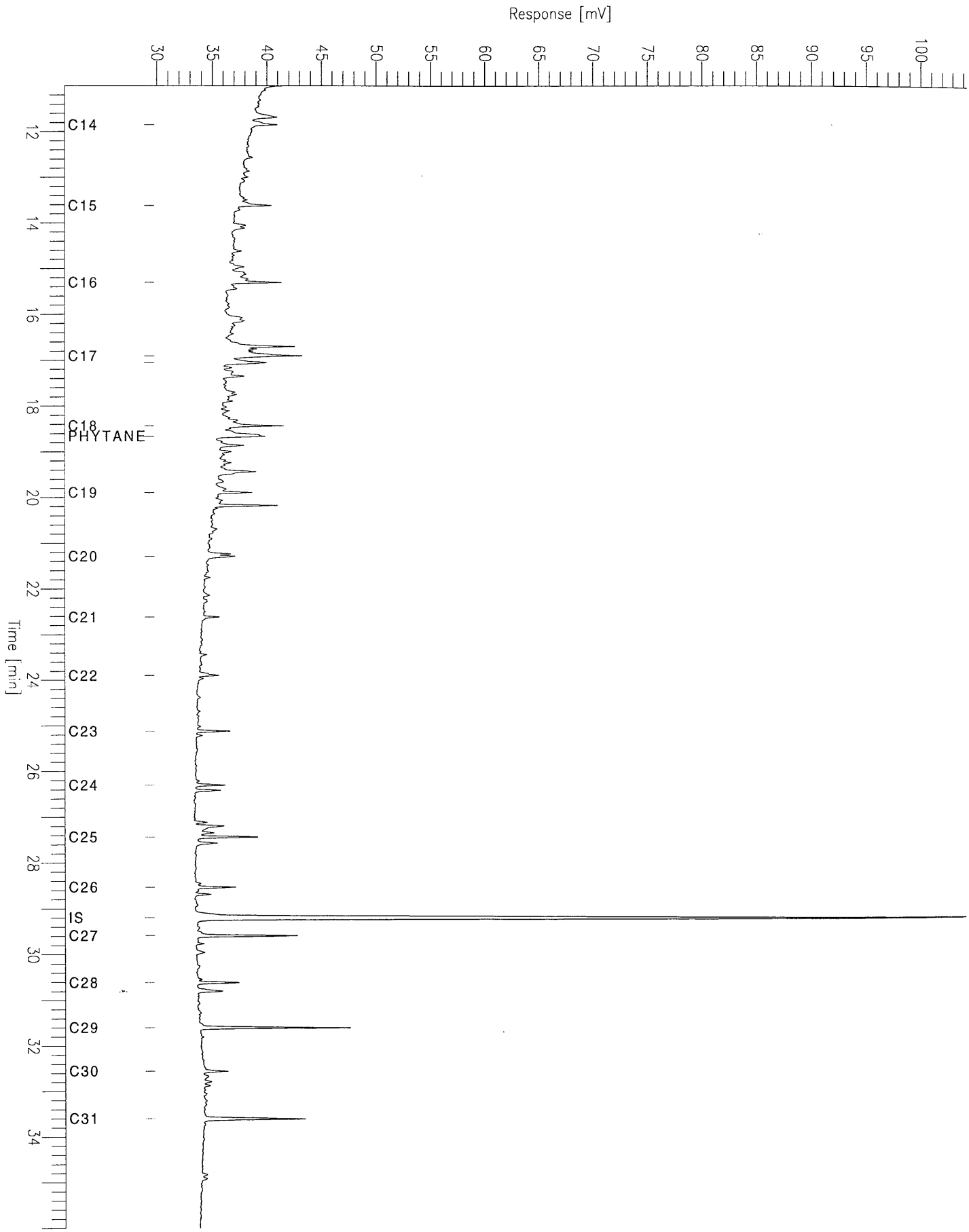
Sample #: Page 1 of 1
Date : 2/6/95 02:38 PM
Time of Injection: 10/16/94 01:52 AM
Low Point : 26.51 mV High Point : 183.98 mV
Plot Scale: 157.5 mV



Rockall Chromatogram

Sample Name : 58-17/1 0.74m
FileName : C:\TC4\HYDROCAR\re24.raw
Method : RK
Start Time : 11.00 min End Time : 36.00 min
Scale Factor: 1.0 Plot Offset: 30 mV

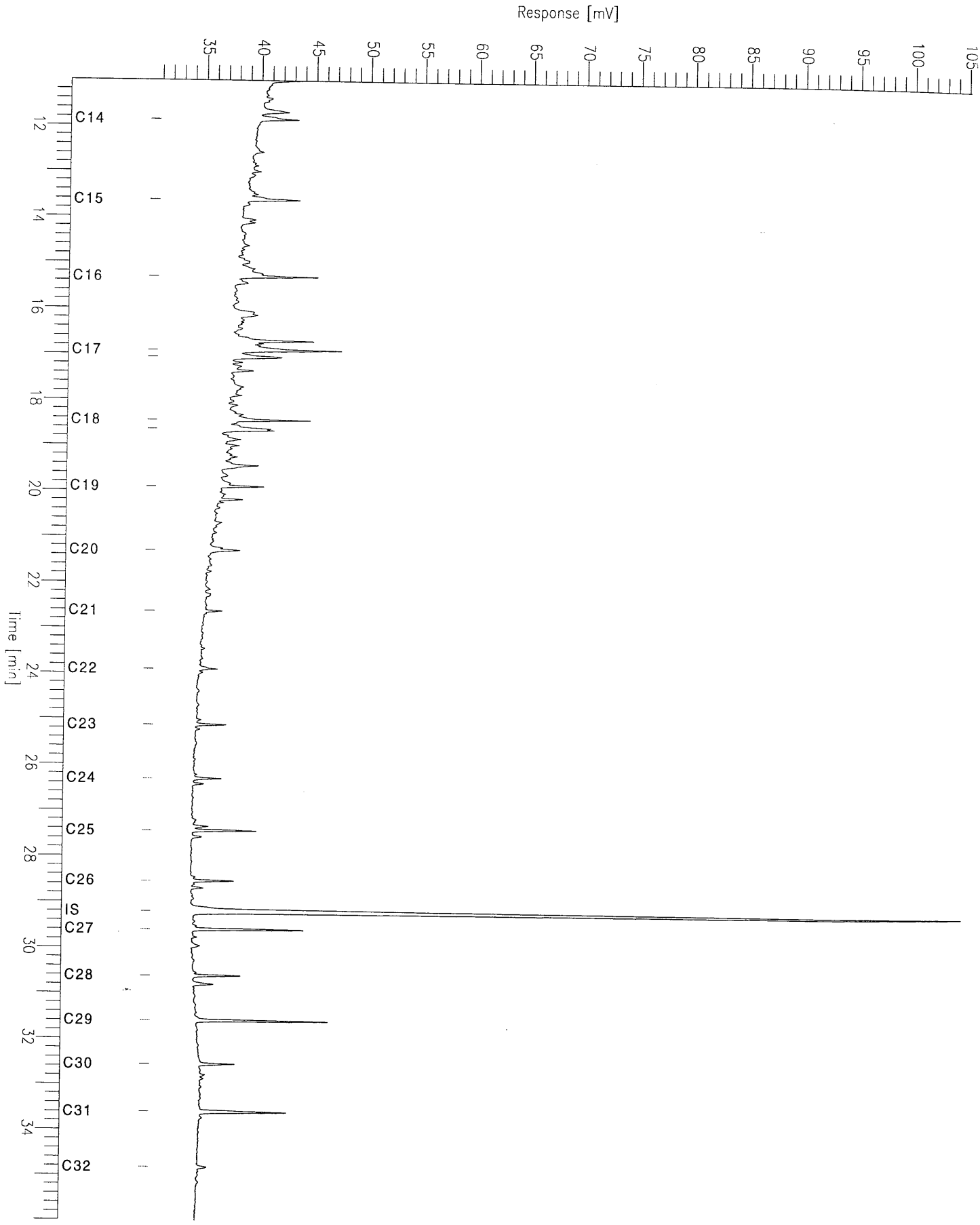
Sample #: Page 1 of 1
Date : 2/3/95 05:39 PM
Time of Injection: 10/15/94 07:29 AM
Low Point : 29.76 mV High Point : 104.22 mV
Plot Scale: 74.5 mV



Rockall Chromatogram

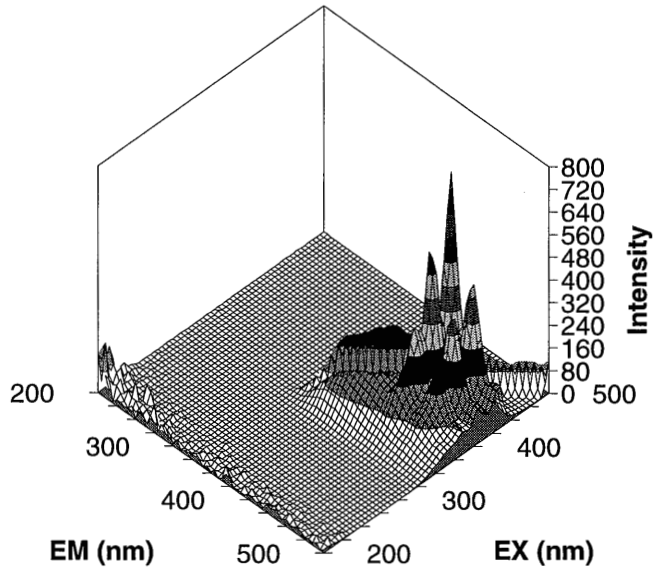
Sample Name : 58-17/1 1.39m
FileName : C:\TC4\HYDROCAR\re26.raw
Method : RK
Start Time : 11.00 min
Scale Factor: 1.0
End Time : 36.00 min
Plot Offset: 31 mV

Sample #:
Date : 2/3/95 05:40 PM
Time of Injection: 10/15/94 09:20 AM
Low Point : 30.80 mV
Plot Scale: 74.3 mV
High Point : 105.07 mV

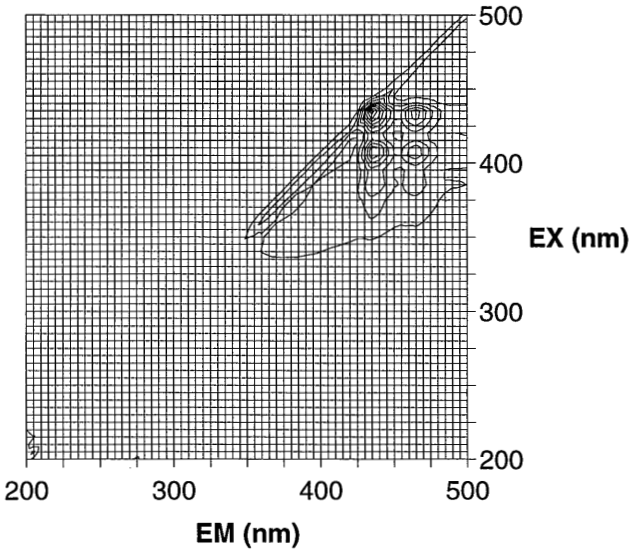


APPENDIX 3

3d Spectrum

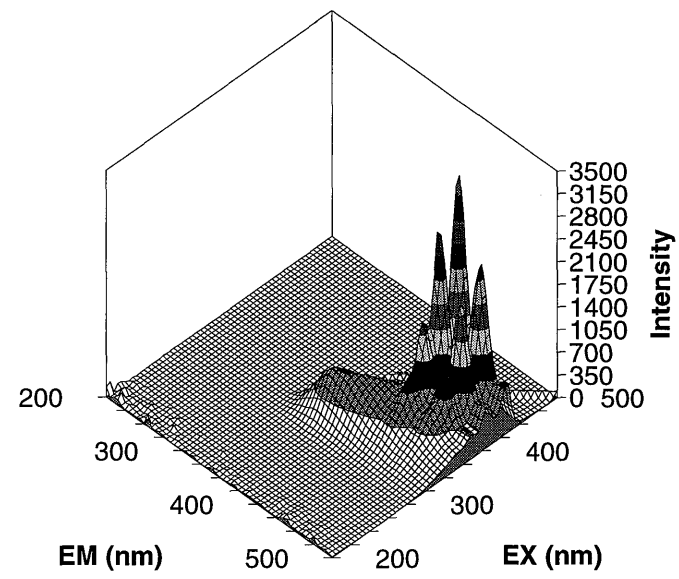


Contour Map

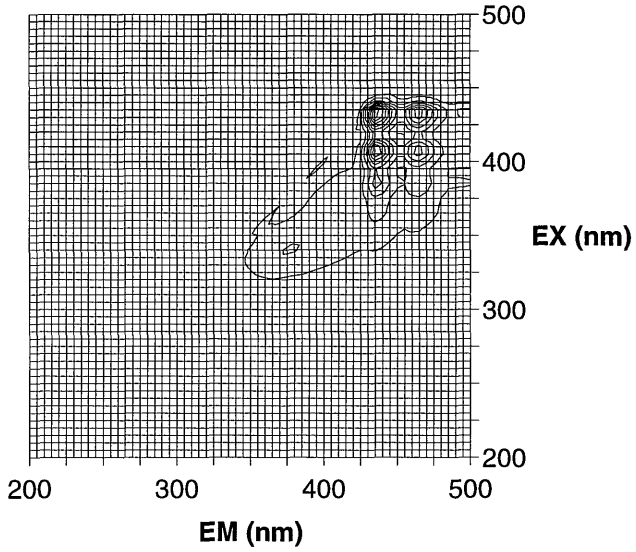


I_Max=	782	Max_Ex=	435	Max_Em=	435
Oil_Max=	177	Oil_Ex=	360	Oil_Em=	360
R1=	18.50			Contour=	80

3d Spectrum

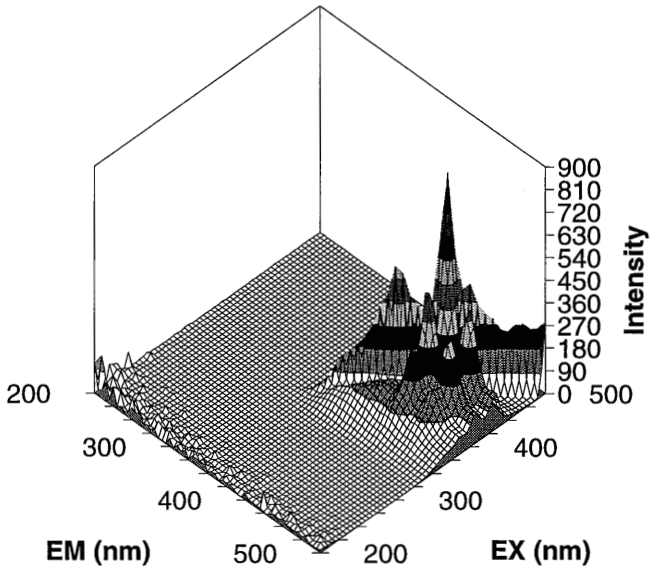


Contour Map

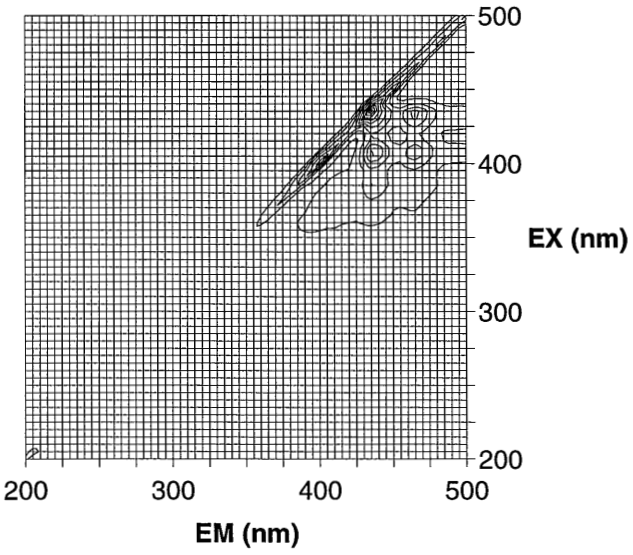


I_Max=	3429	Max_Ex=	435	Max_Em=	435
Oil_Max=	722	Oil_Ex=	340	Oil_Em=	375
R1=	2.84			Contour=	350

3d Spectrum

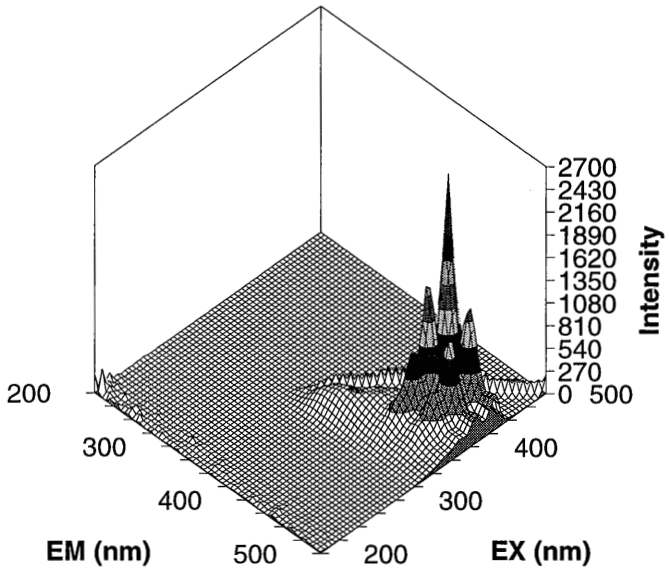


Contour Map

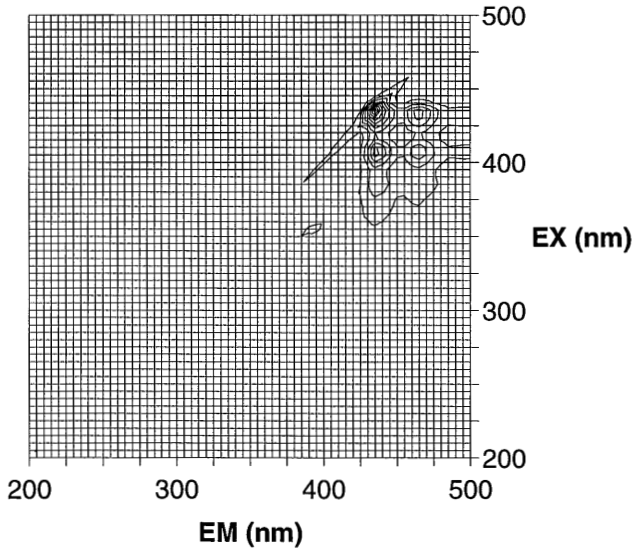


I_Max=	876	Max_Ex=	435	Max_Em=	435
Oil_Max=	146	Oil_Ex=	205	Oil_Em=	205
R1=	2.46			Contour=	90

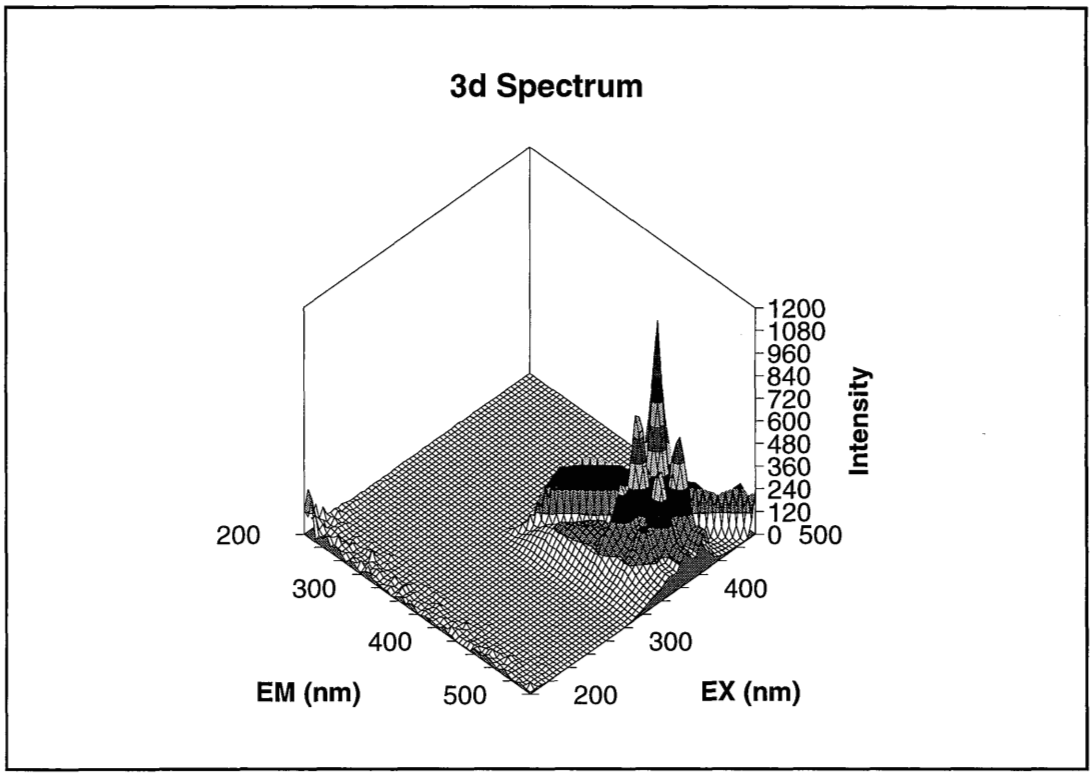
3d Spectrum

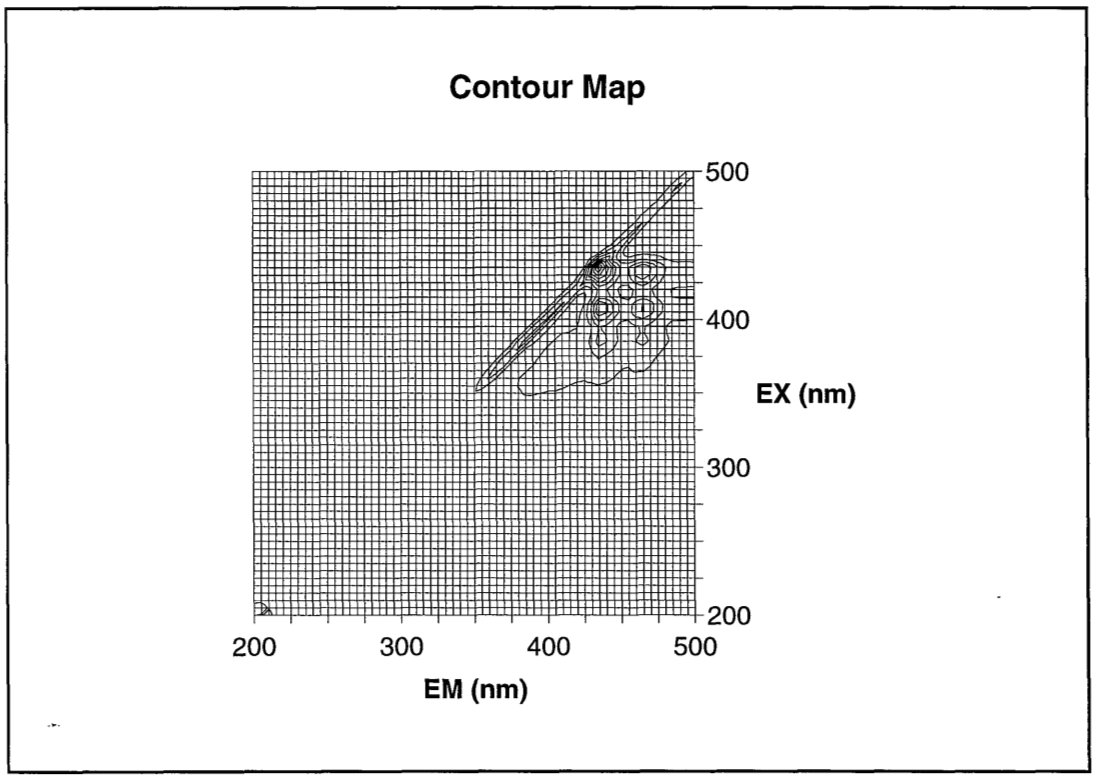


Contour Map



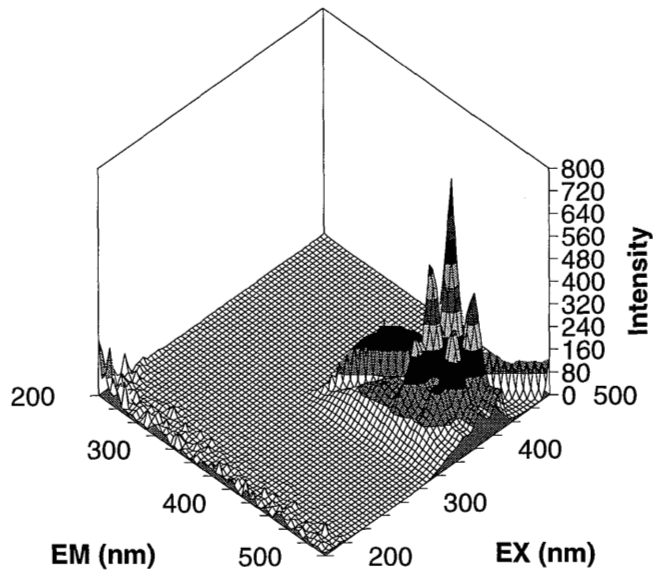
I_Max=	2607	Max_Ex=	435	Max_Em=	435
Oil_Max=	281	Oil_Ex=	205	Oil_Em=	205
R1=	3.66			Contour=	270



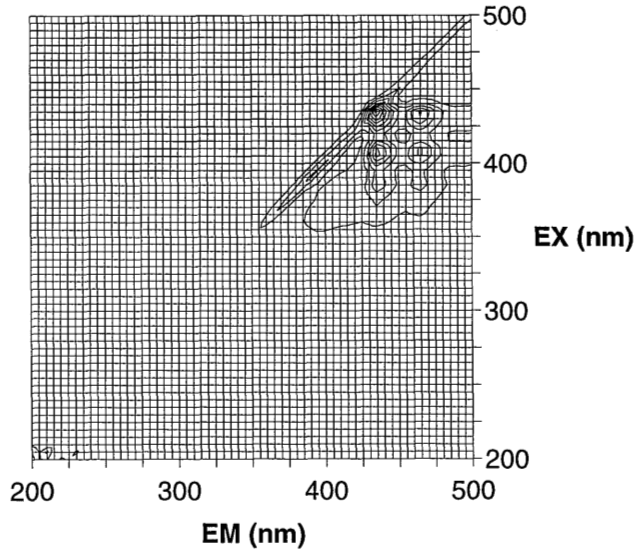


I_Max=	1131	Max_Ex=	435	Max_Em=	435
Oil_Max=	252	Oil_Ex=	360	Oil_Em=	360
R1=	3.22			Contour=	120

3d Spectrum

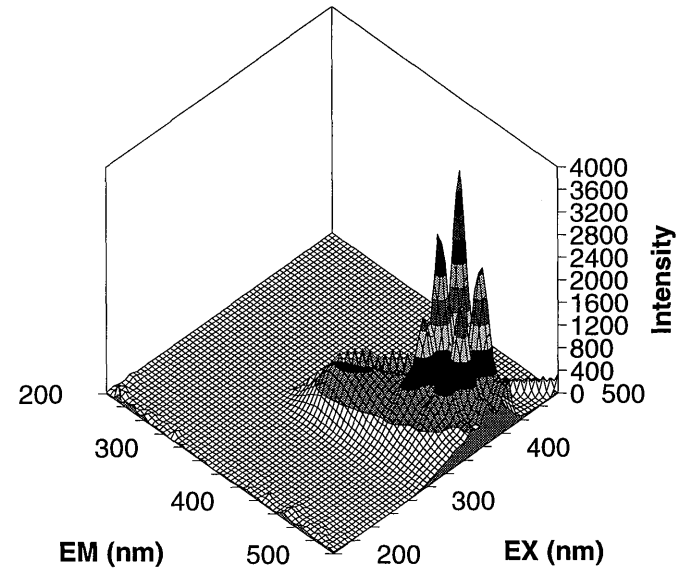


Contour Map

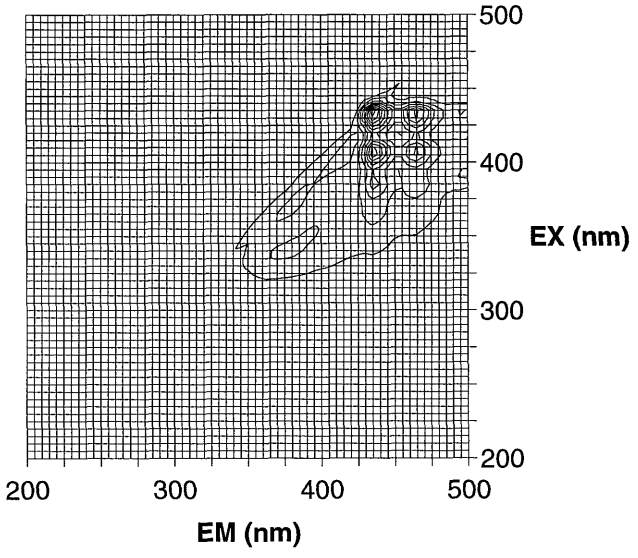


I_Max=	763	Max_Ex=	435	Max_Em=	435
Oil_Max=	194	Oil_Ex=	200	Oil_Em=	200
R1=	4.28			Contour=	80

3d Spectrum

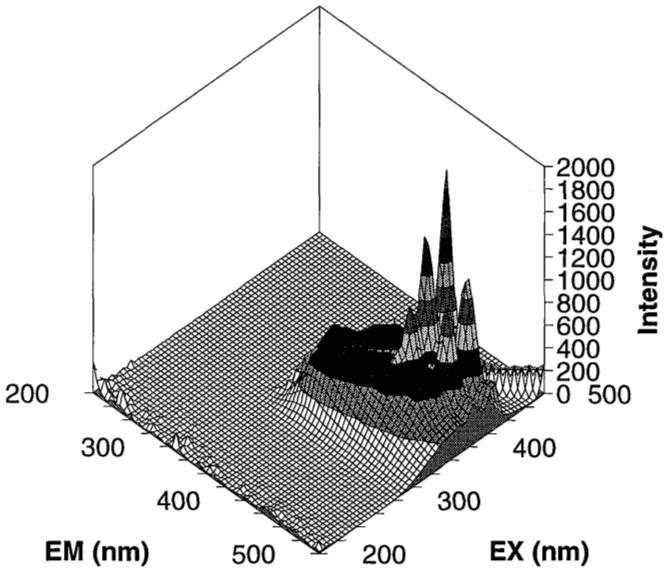


Contour Map

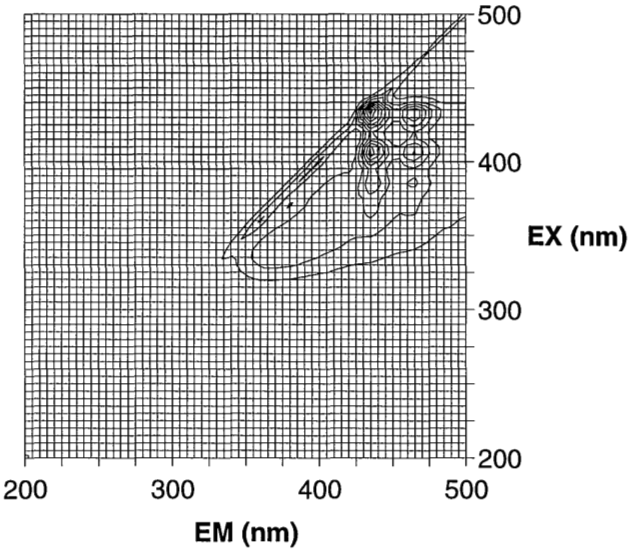


I_Max=	3943	Max_Ex=	435	Max_Em=	435
Oil_Max=	850	Oil_Ex=	340	Oil_Em=	375
R1=	21.15			Contour=	400

3d Spectrum

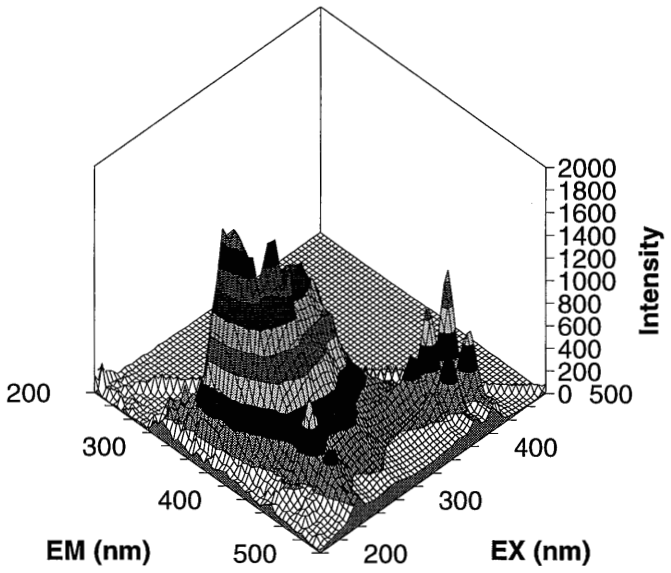


Contour Map

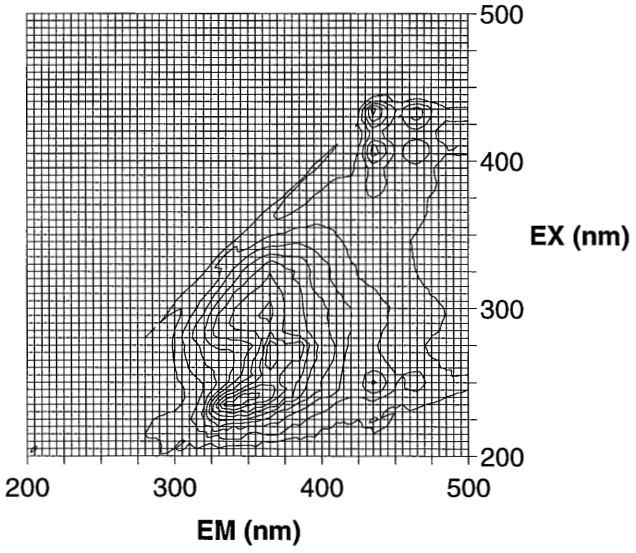


I_Max=	1967	Max_Ex=	435	Max_Em=	435
Oil_Max=	625	Oil_Ex=	360	Oil_Em=	360
R1=	1.35			Contour=	200

3d Spectrum

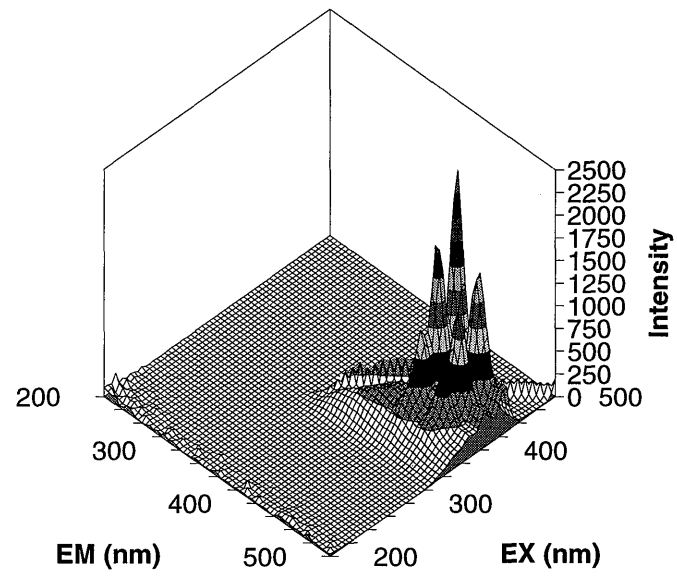


Contour Map

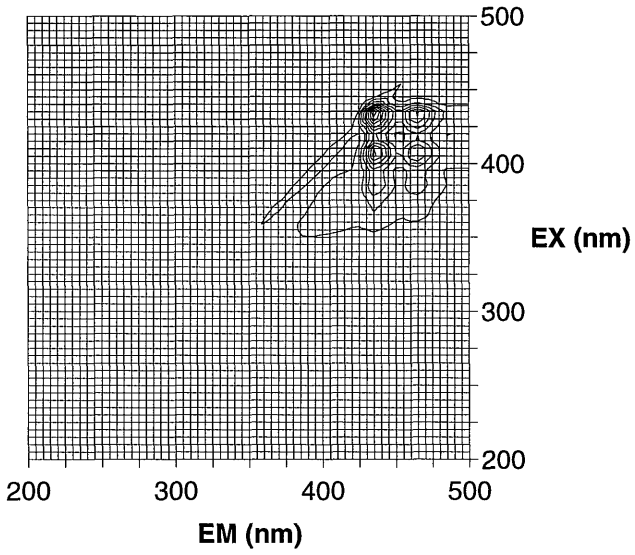


I_Max=	1938	Max_Ex=	240	Max_Em=	345
Oil_Max=	1938	Oil_Ex=	240	Oil_Em=	345
R1=	2.10			Contour=	200

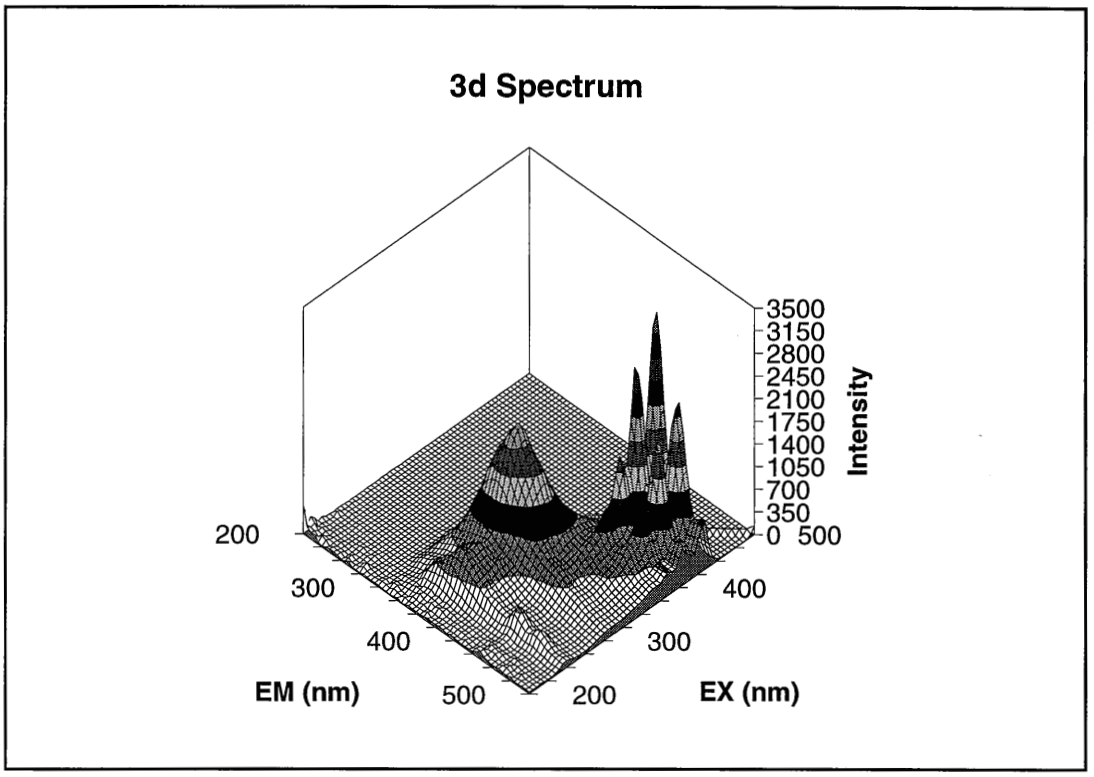
3d Spectrum

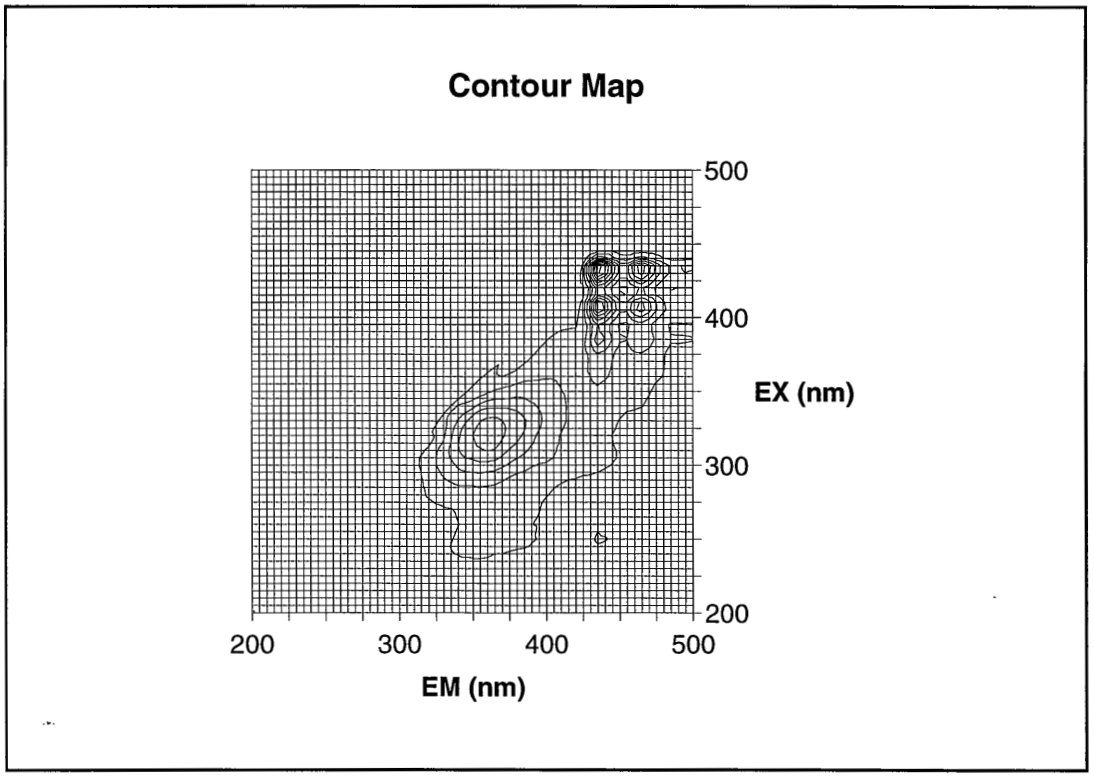


Contour Map



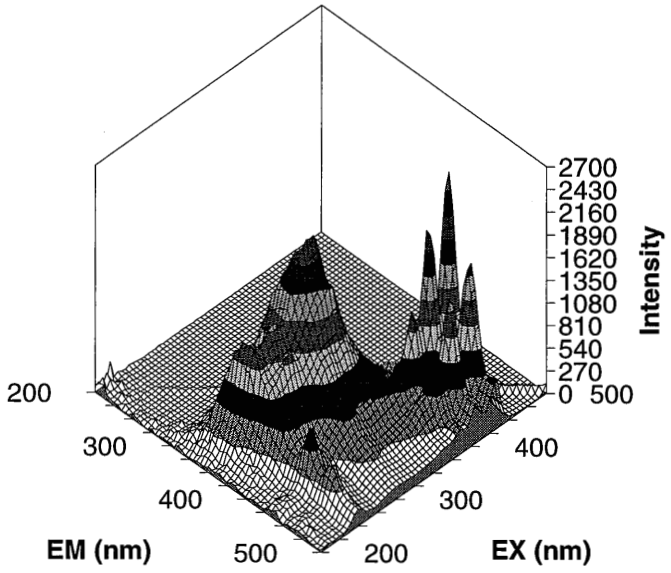
I_Max=	2493	Max_Ex=	435	Max_Em=	435
Oil_Max=	315	Oil_Ex=	360	Oil_Em=	400
R1=	1.63			Contour=	250



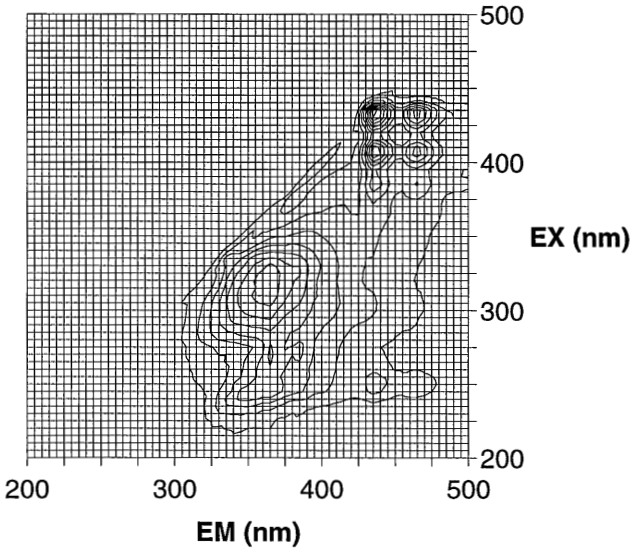


I_Max=	3427	Max_Ex=	435	Max_Em=	435
Oil_Max=	2002	Oil_Ex=	325	Oil_Em=	360
R1=	2.32			Contour=	350

3d Spectrum

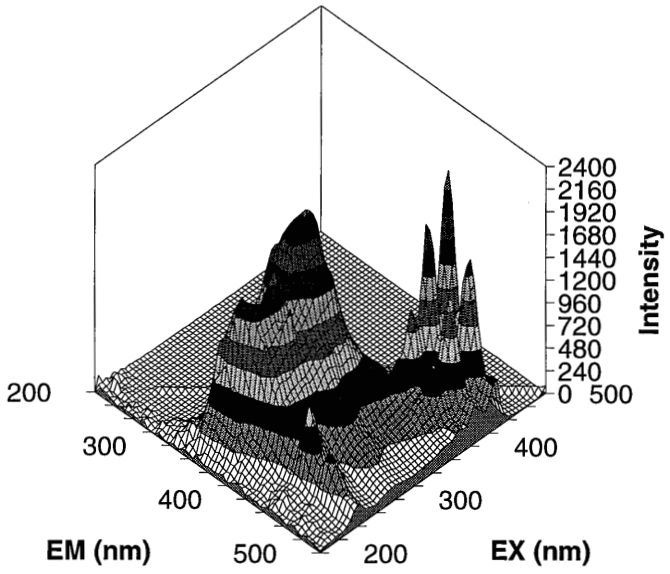


Contour Map

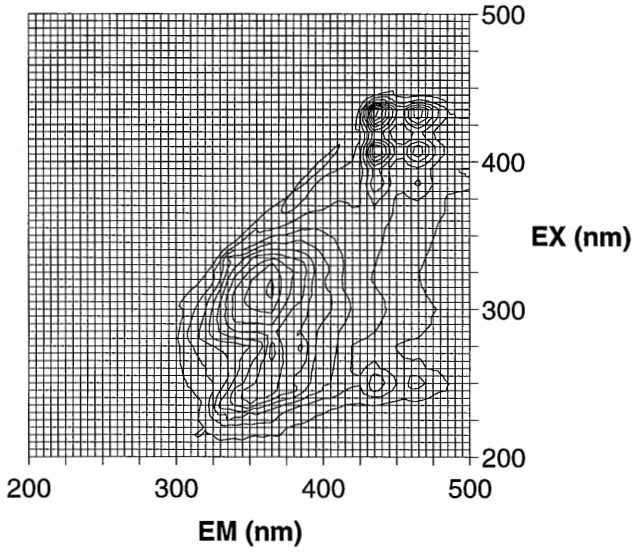


I_Max=	2630	Max_Ex=	435	Max_Em=	435
Oil_Max=	2135	Oil_Ex=	315	Oil_Em=	365
R1=	2.51			Contour=	270

3d Spectrum

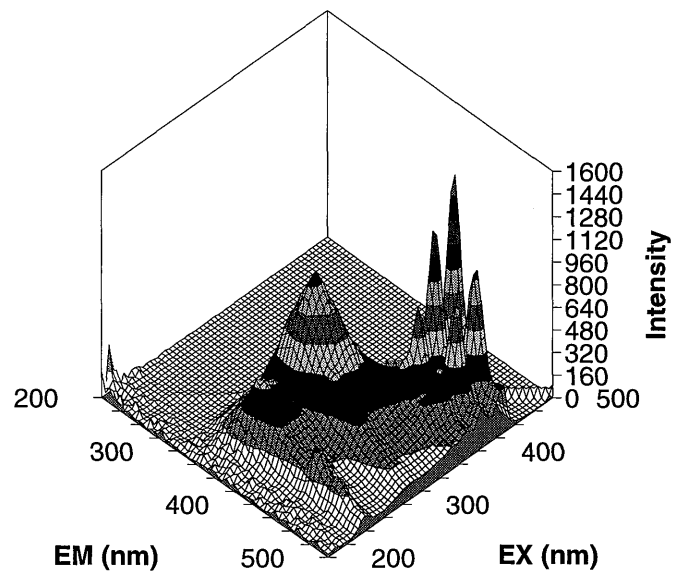


Contour Map

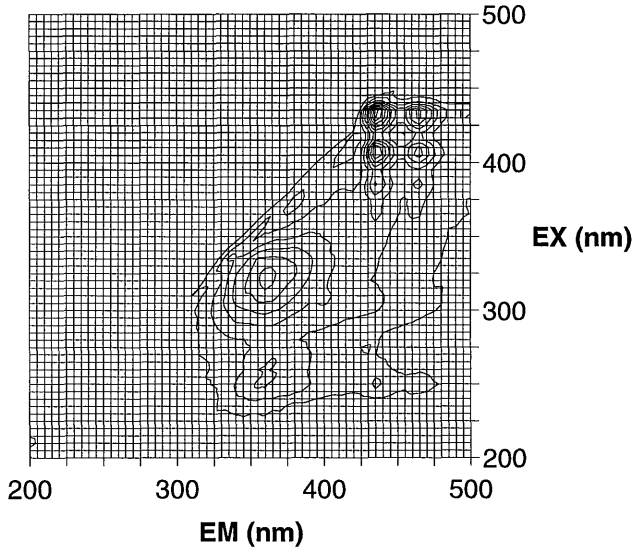


I_Max=	2348	Max_Ex=	435	Max_Em=	435
Oil_Max=	2214	Oil_Ex=	315	Oil_Em=	365
R1=	2.21			Contour=	240

3d Spectrum

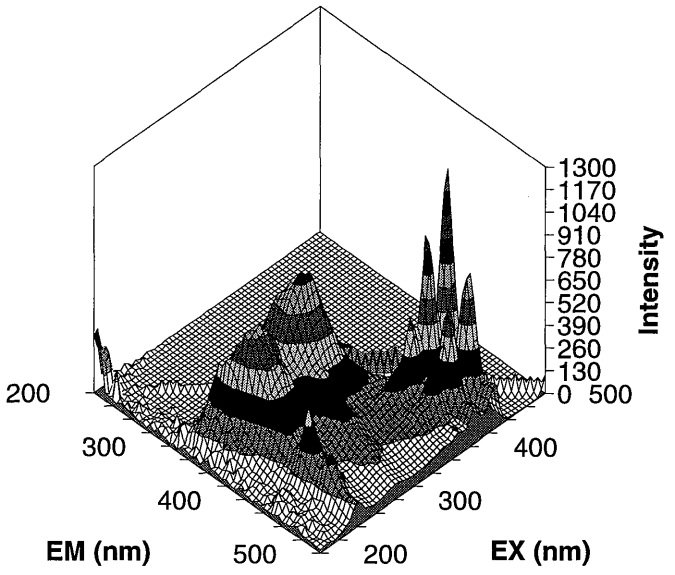


Contour Map

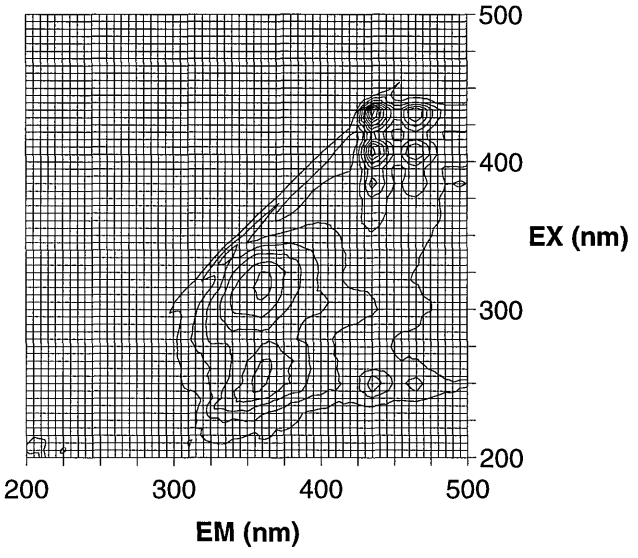


I_Max=	1574	Max_Ex=	435	Max_Em=	435
Oil_Max=	1026	Oil_Ex=	325	Oil_Em=	360
R1=	2.43			Contour=	160

3d Spectrum

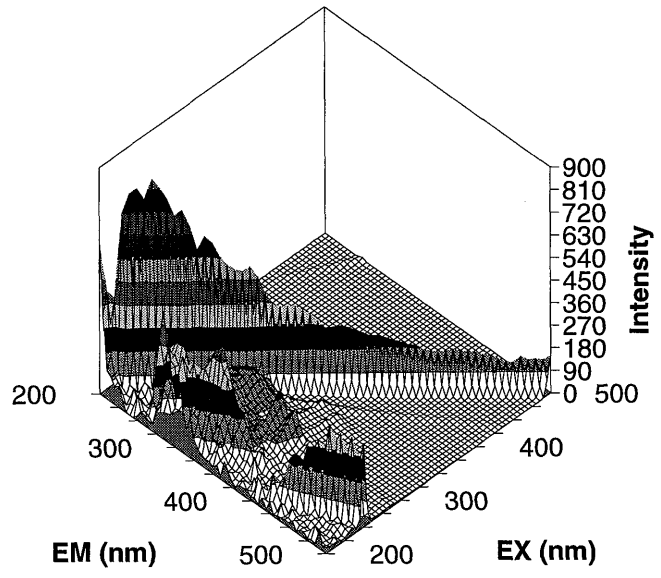


Contour Map

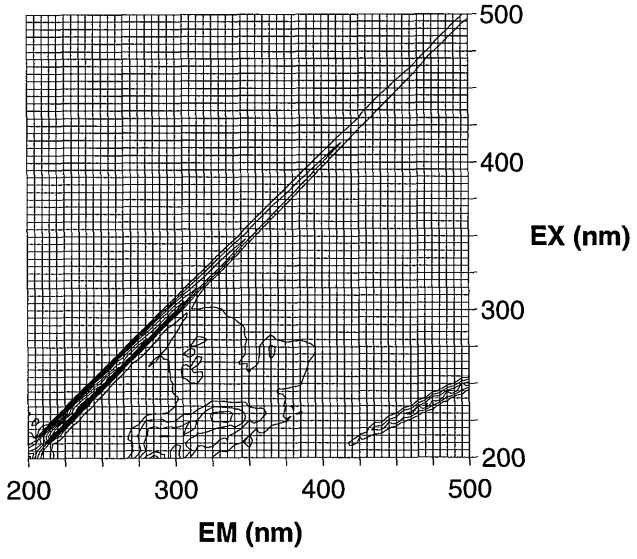


I_Max=	1289	Max_Ex=	435	Max_Em=	435
Oil_Max=	823	Oil_Ex=	315	Oil_Em=	360
R1=	2.19			Contour=	130

3d Spectrum

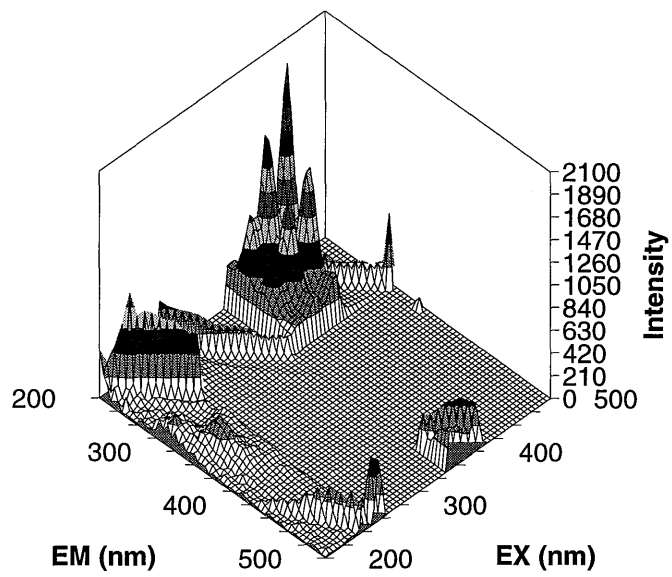


Contour Map

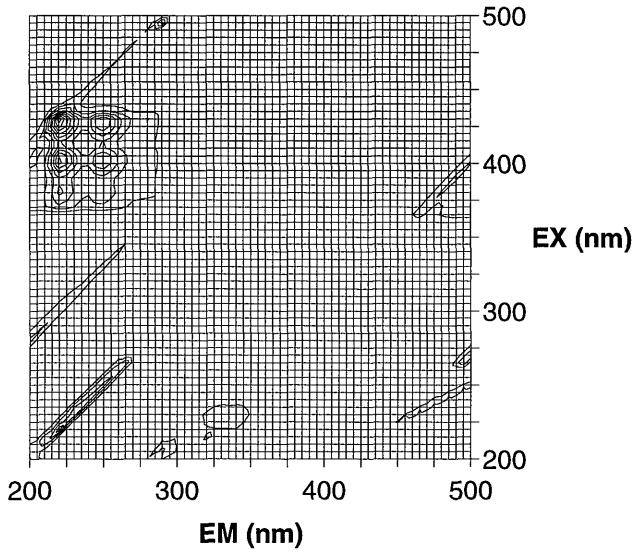


I_Max=	852	Max_Ex=	235	Max_Em=	235
Oil_Max=	852	Oil_Ex=	235	Oil_Em=	235
R1=	0.63			Contour=	90

3d Spectrum

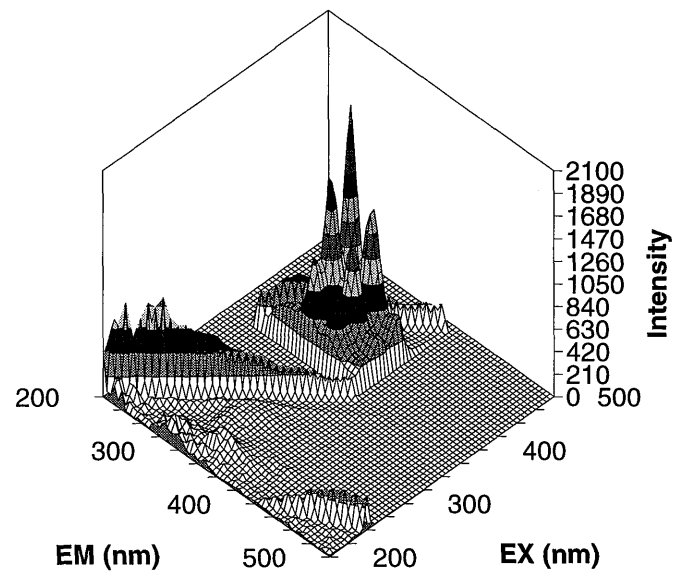


Contour Map

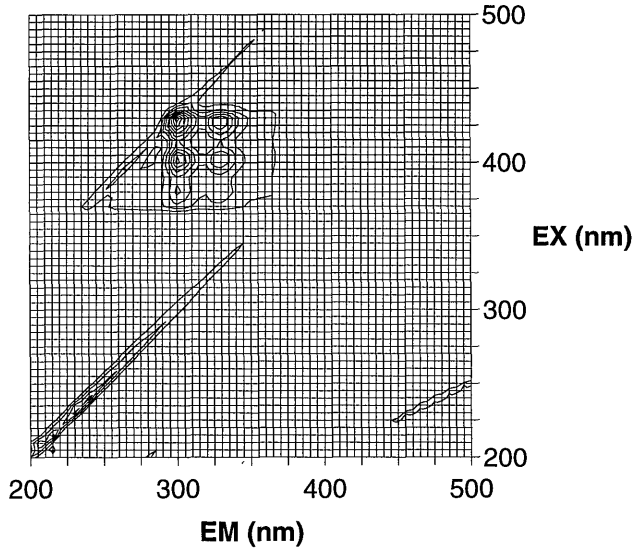


I_Max=	2063	Max_Ex=	430	Max_Em=	220
Oil_Max=	966	Oil_Ex=	220	Oil_Em=	220
R1=	0.57			Contour=	210

3d Spectrum

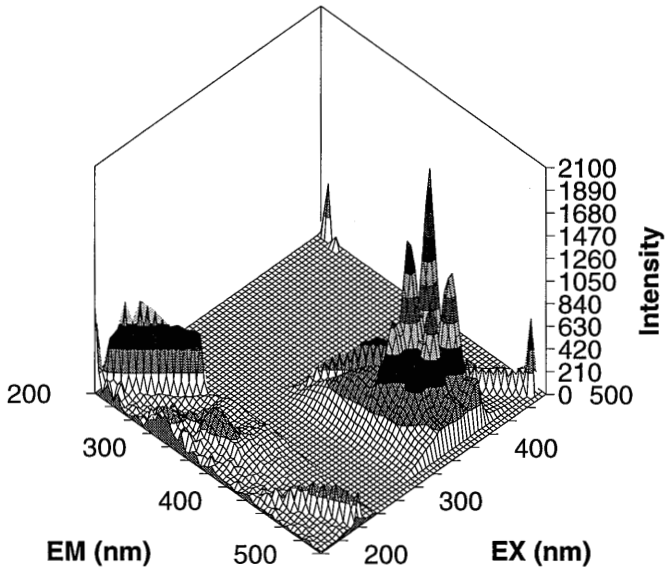


Contour Map

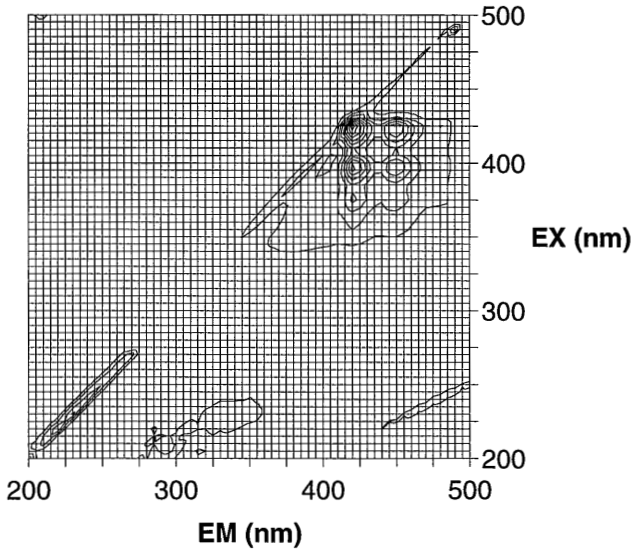


I_Max=	2063	Max_Ex=	430	Max_Em=	300
Oil_Max=	922	Oil_Ex=	240	Oil_Em=	240
R1=	0.46			Contour=	210

3d Spectrum

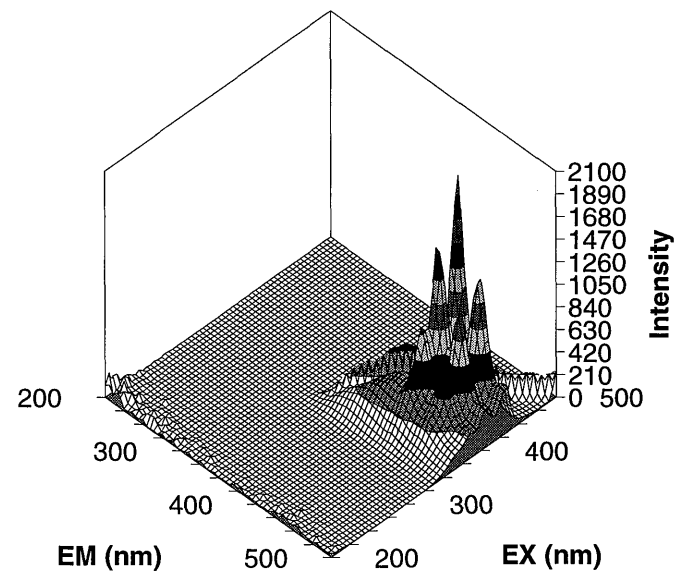


Contour Map

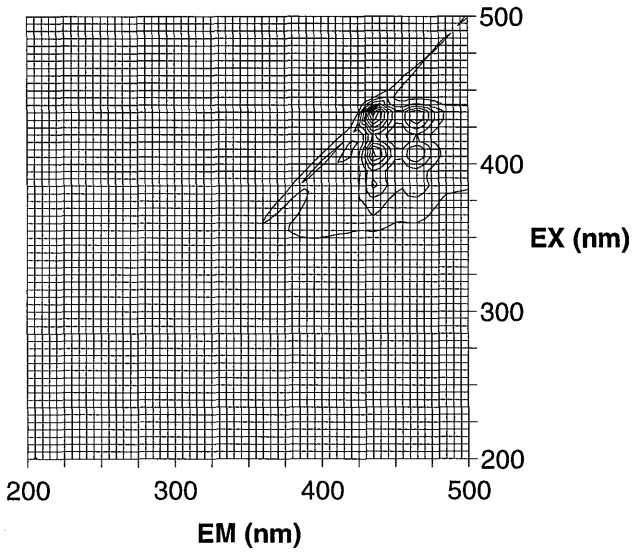


I_Max=	2063	Max_Ex=	425	Max_Em=	420
Oil_Max=	854	Oil_Ex=	230	Oil_Em=	230
R1=	1.07			Contour=	210

3d Spectrum

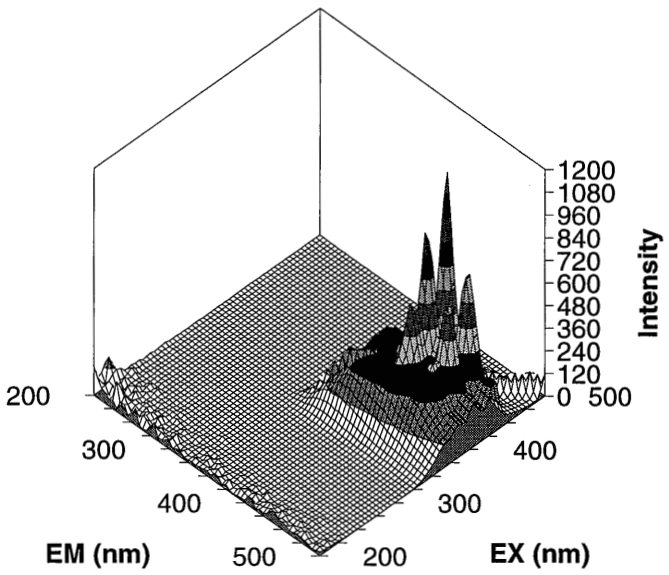


Contour Map

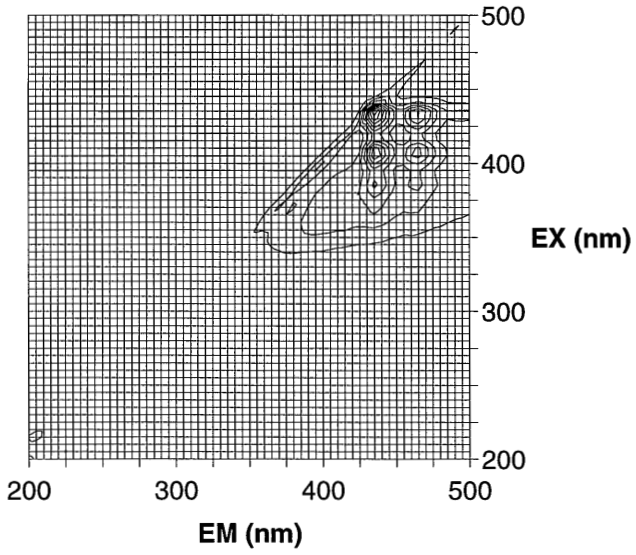


I_Max=	2063	Max_Ex=	435	Max_Em=	435
Oil_Max=	316	Oil_Ex=	360	Oil_Em=	400
R1=	4.57			Contour=	210

3d Spectrum

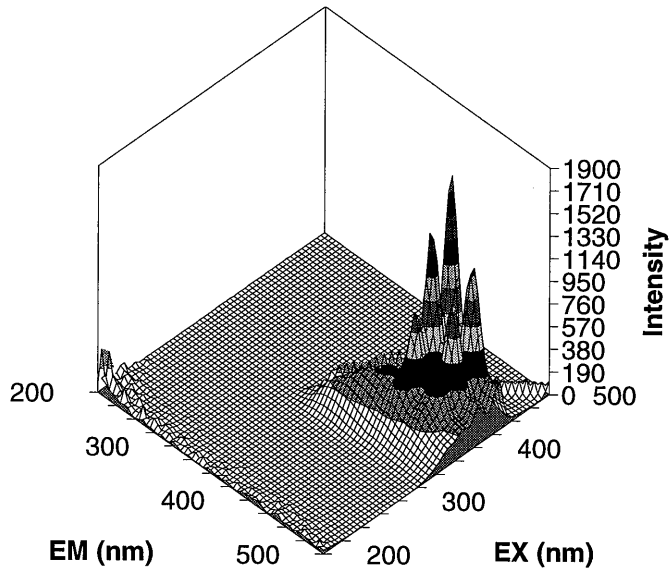


Contour Map

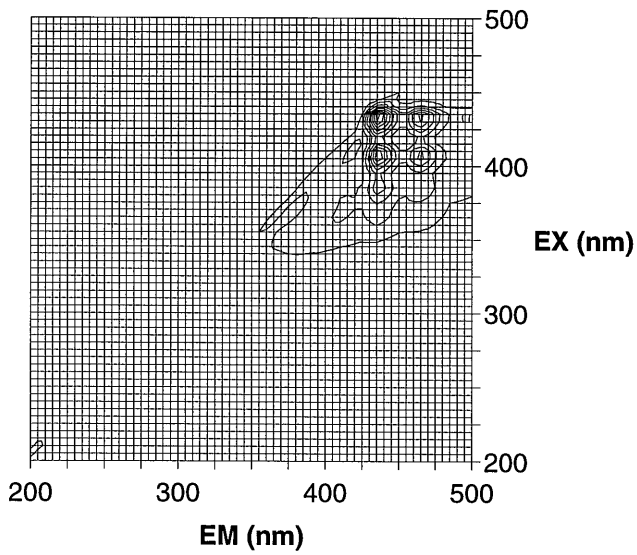


I_Max=	1183	Max_Ex=	435	Max_Em=	435
Oil_Max=	303	Oil_Ex=	360	Oil_Em=	400
R1=	1.51			Contour=	120

3d Spectrum

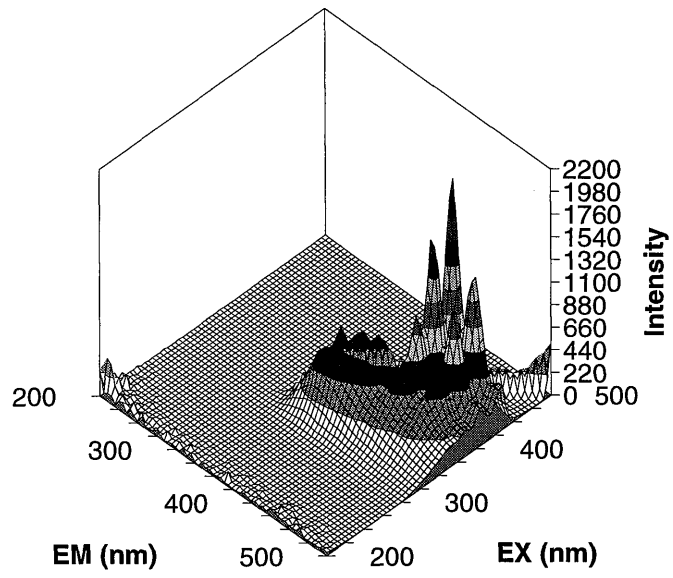


Contour Map

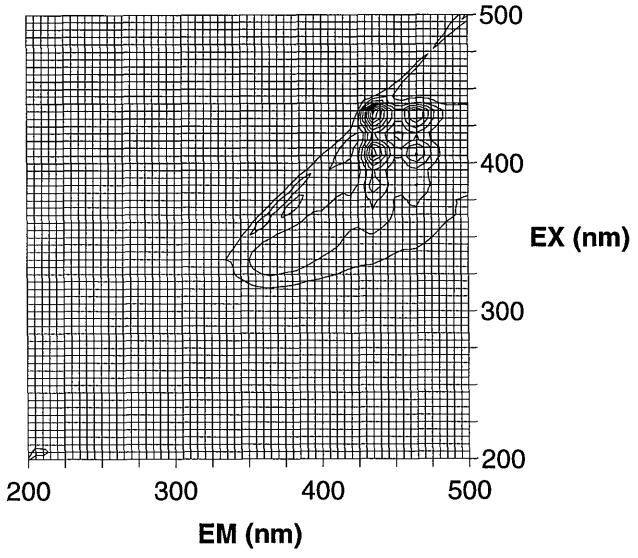


I_Max=	1833	Max_Ex=	435	Max_Em=	435
Oil_Max=	367	Oil_Ex=	360	Oil_Em=	400
R1=	1.33			Contour=	190

3d Spectrum

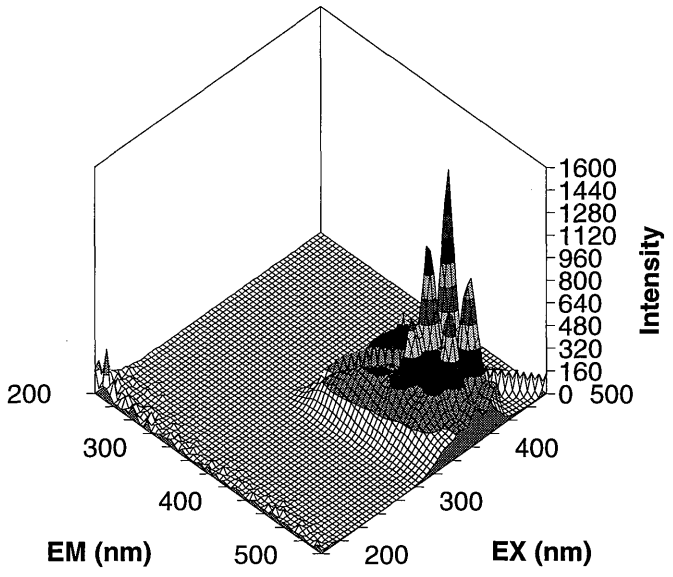


Contour Map

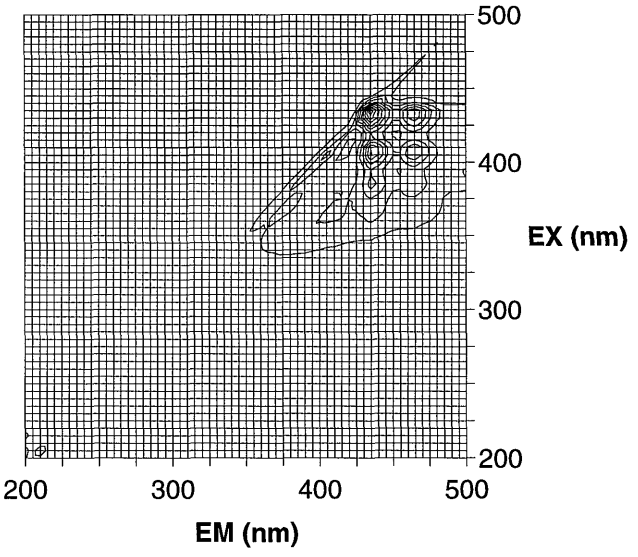


I_Max=	2106	Max_Ex=	435	Max_Em=	435
Oil_Max=	675	Oil_Ex=	360	Oil_Em=	360
R1=	1.11			Contour=	220

3d Spectrum

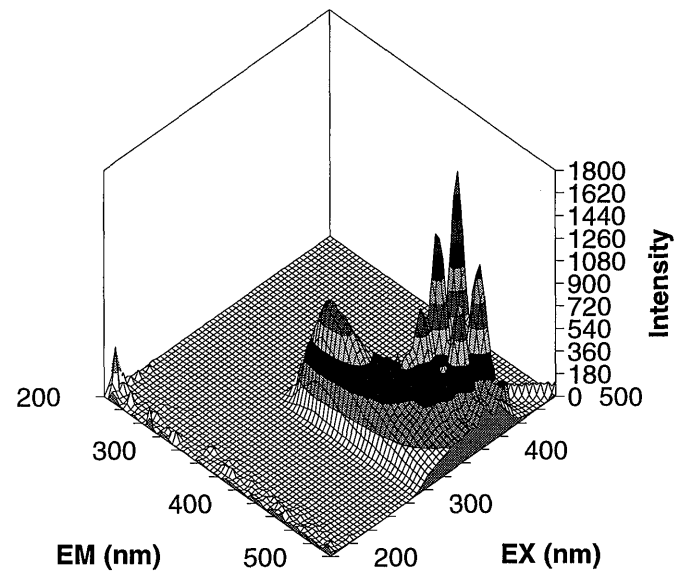


Contour Map

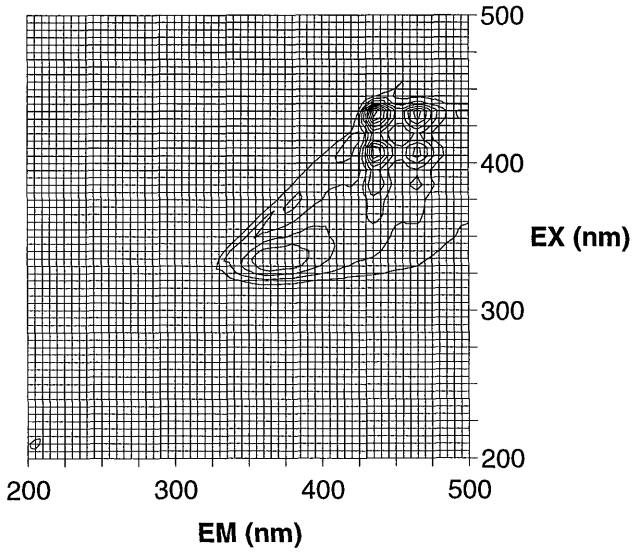


I_Max=	1583	Max_Ex=	435	Max_Em=	435
Oil_Max=	331	Oil_Ex=	205	Oil_Em=	210
R1=	0.66			Contour=	160

3d Spectrum

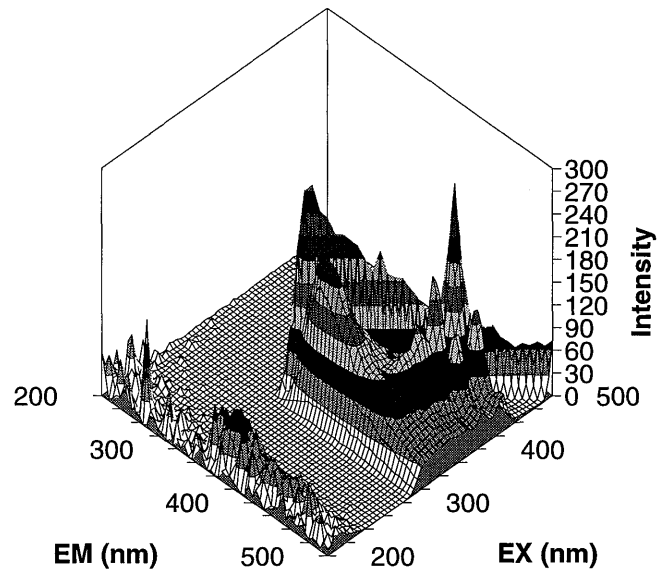


Contour Map

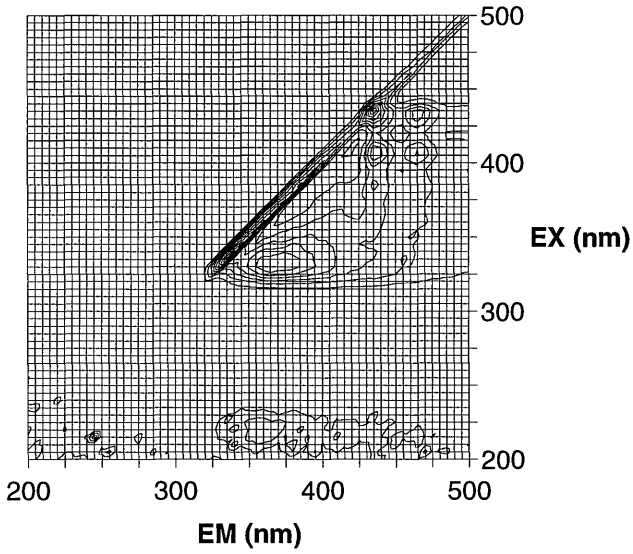


I_Max=	1790	Max_Ex=	435	Max_Em=	435
Oil_Max=	898	Oil_Ex=	335	Oil_Em=	370
R1=	0.58			Contour=	180

3d Spectrum

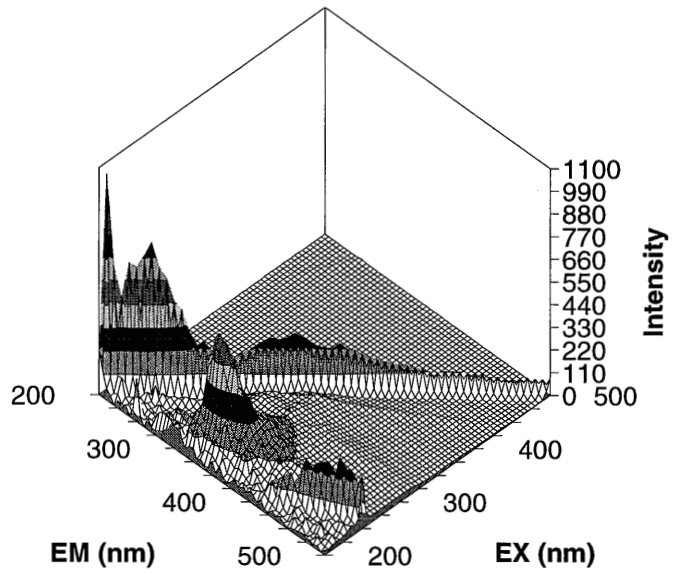


Contour Map

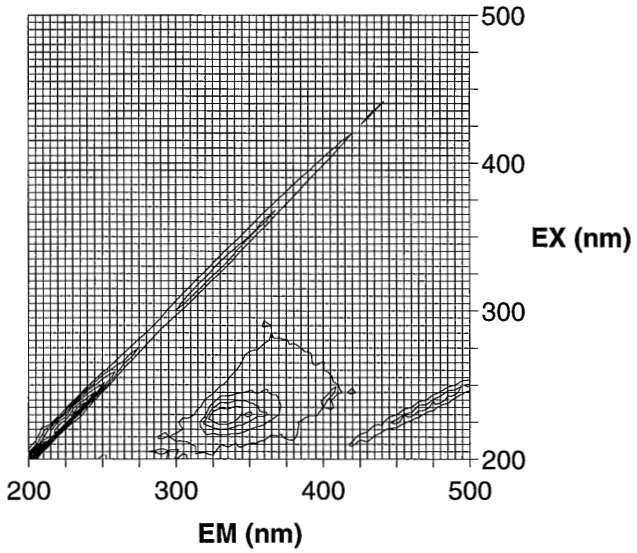


I_Max=	280	Max_Ex=	435	Max_Em=	435
Oil_Max=	277	Oil_Ex=	340	Oil_Em=	340
R1=	2.09			Contour=	30

3d Spectrum

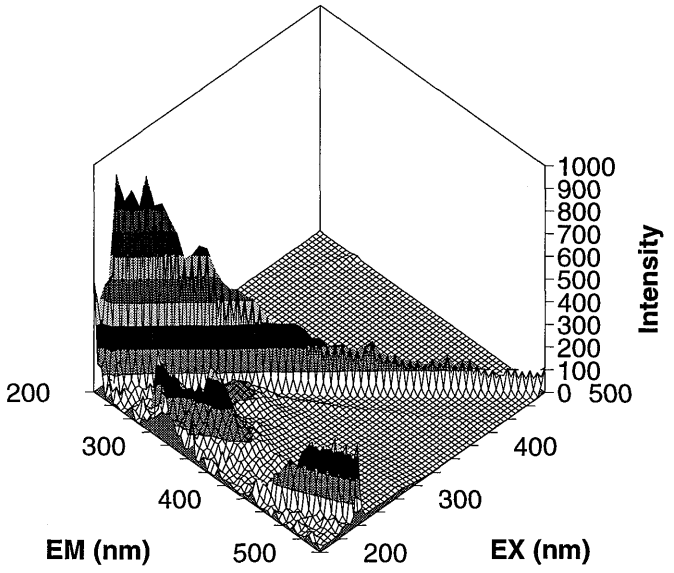


Contour Map

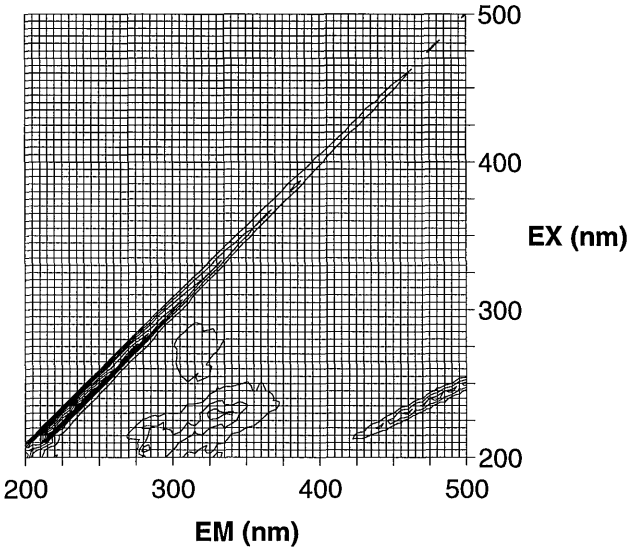


I_Max=	1069	Max_Ex=	205	Max_Em=	205
Oil_Max=	1069	Oil_Ex=	205	Oil_Em=	205
R1=	1.62			Contour=	110

3d Spectrum

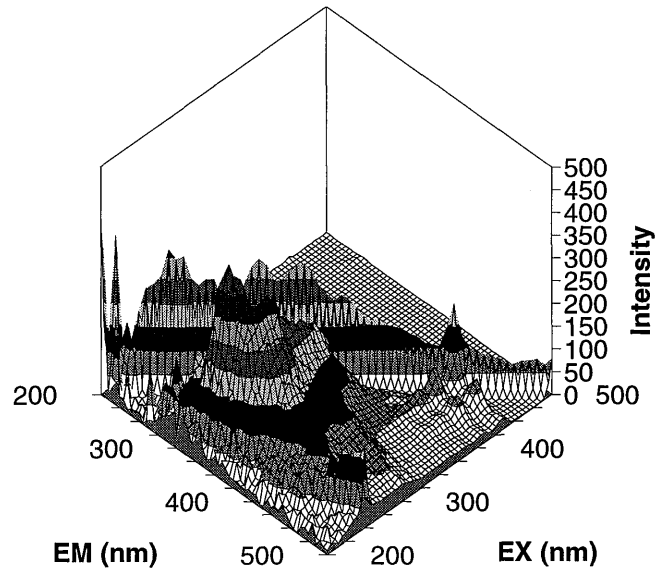


Contour Map

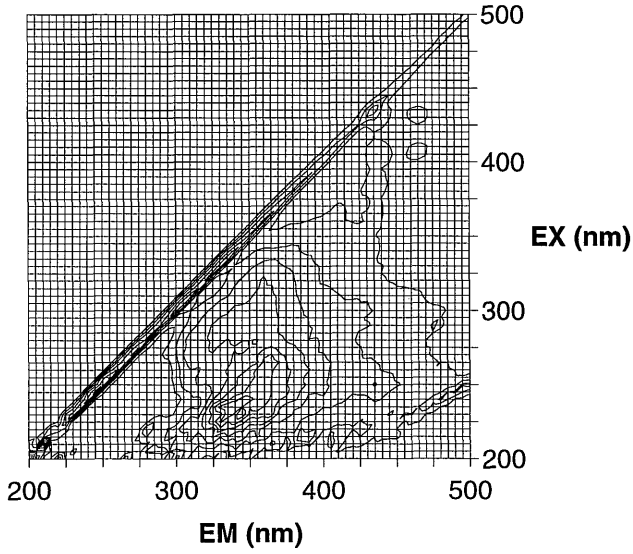


I_Max=	957	Max_Ex=	215	Max_Em=	215
Oil_Max=	957	Oil_Ex=	215	Oil_Em=	215
R1=	0.57			Contour=	100

3d Spectrum

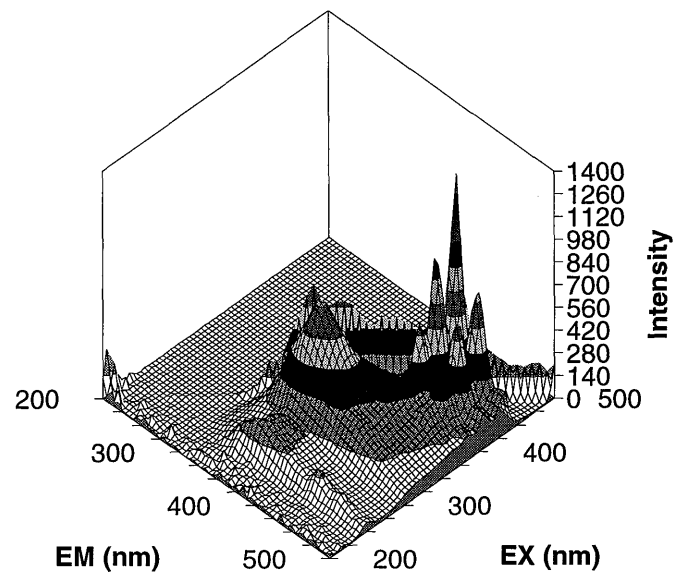


Contour Map

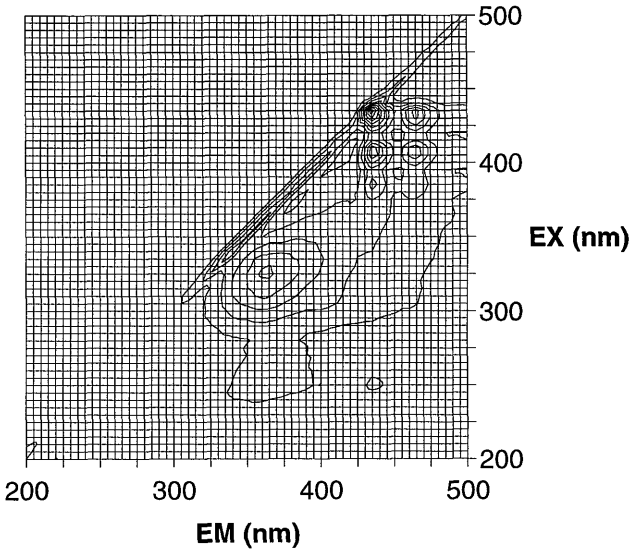


I_Max=	401	Max_Ex=	235	Max_Em=	335
Oil_Max=	401	Oil_Ex=	235	Oil_Em=	335
R1=	1.52			Contour=	50

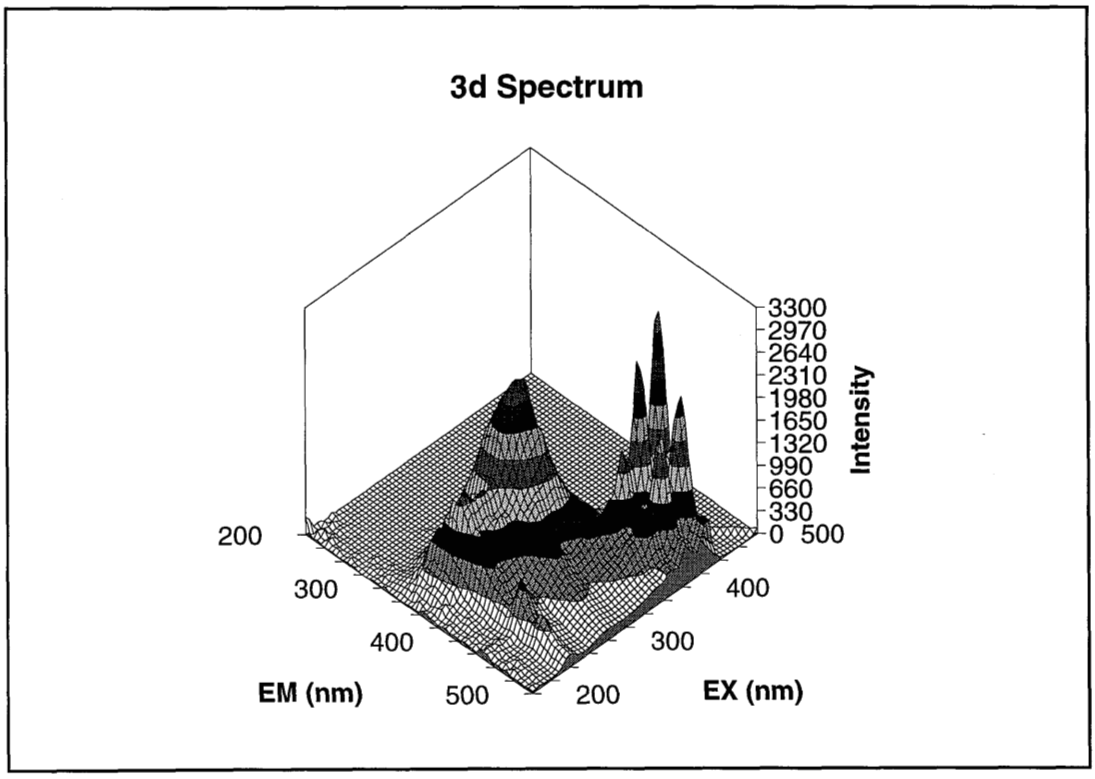
3d Spectrum

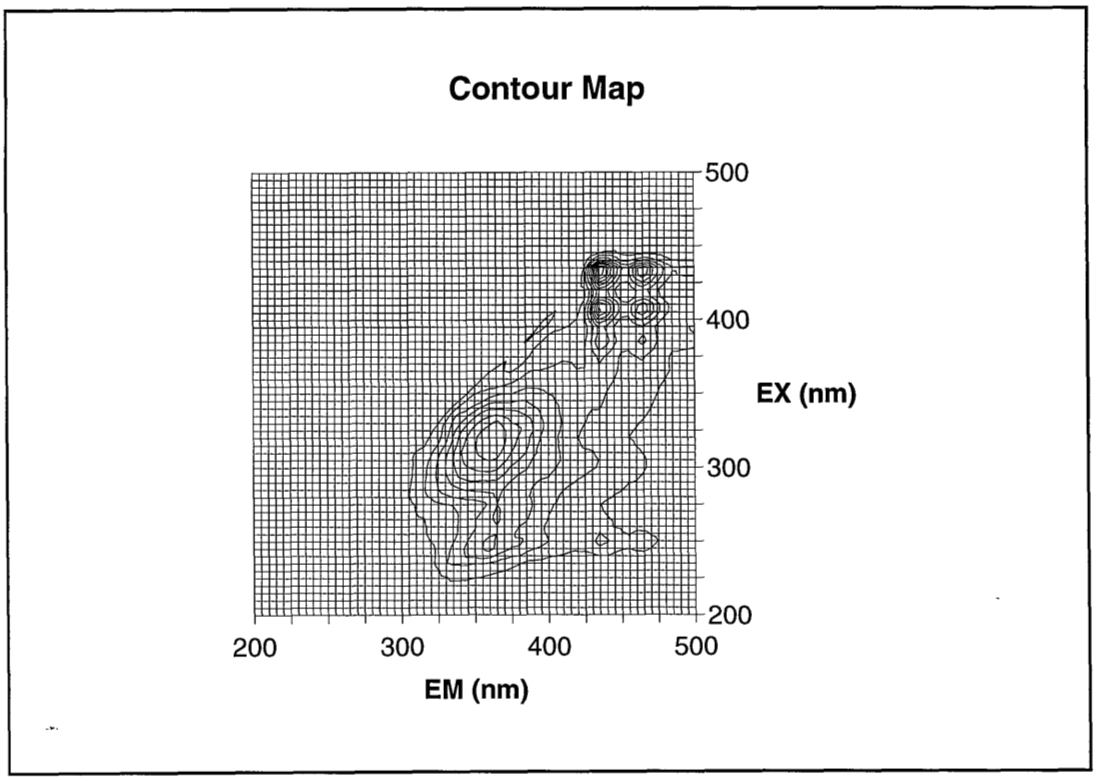


Contour Map



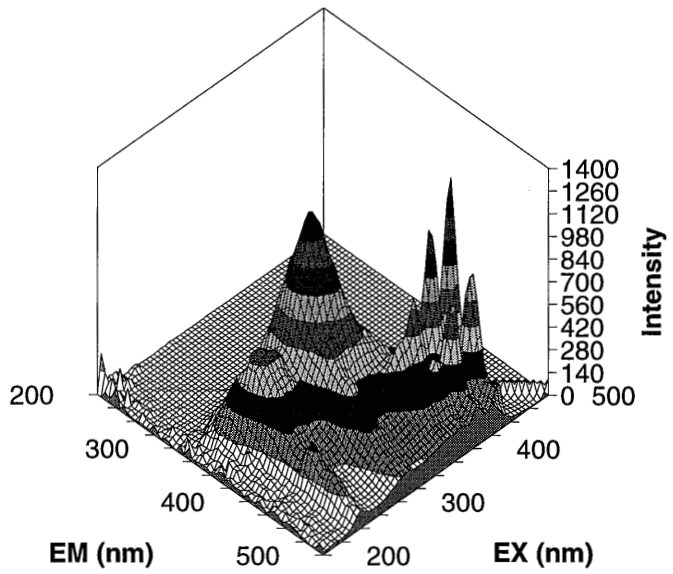
I_Max=	1383	Max_Ex=	435	Max_Em=	435
Oil_Max=	725	Oil_Ex=	325	Oil_Em=	360
R1=	2.77			Contour=	140



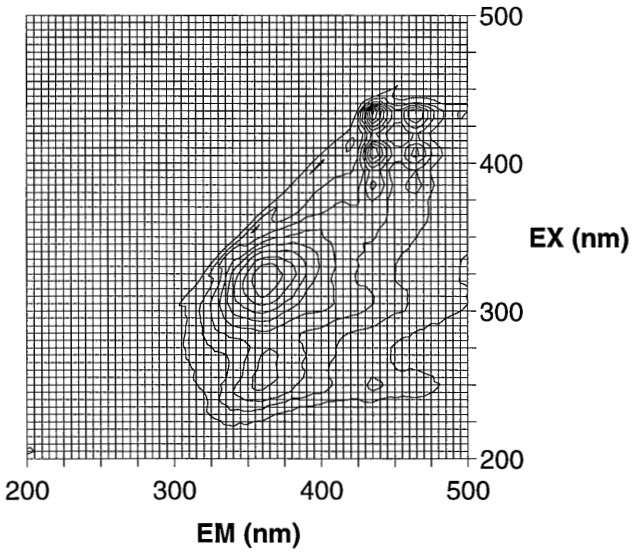


I_Max=	3239	Max_Ex=	435	Max_Em=	435
Oil_Max=	2598	Oil_Ex=	315	Oil_Em=	365
R1=	2.41			Contour=	330

3d Spectrum



Contour Map



I_Max=	1339	Max_Ex=	435	Max_Em=	435
Oil_Max=	1255	Oil_Ex=	320	Oil_Em=	360
R1=	2.60			Contour=	140

APPENDIX 4

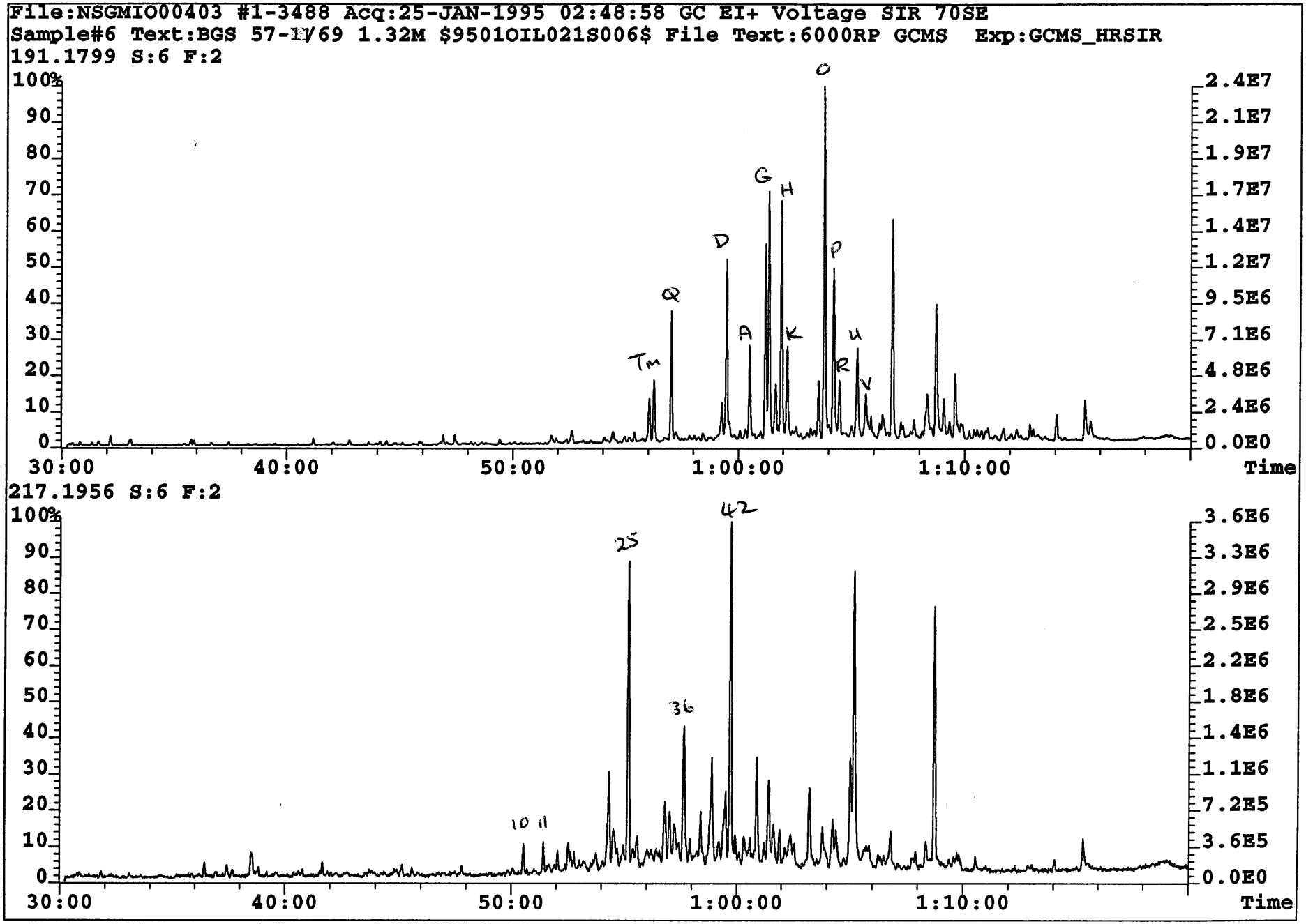
BIOMARKER IDENTIFICATION

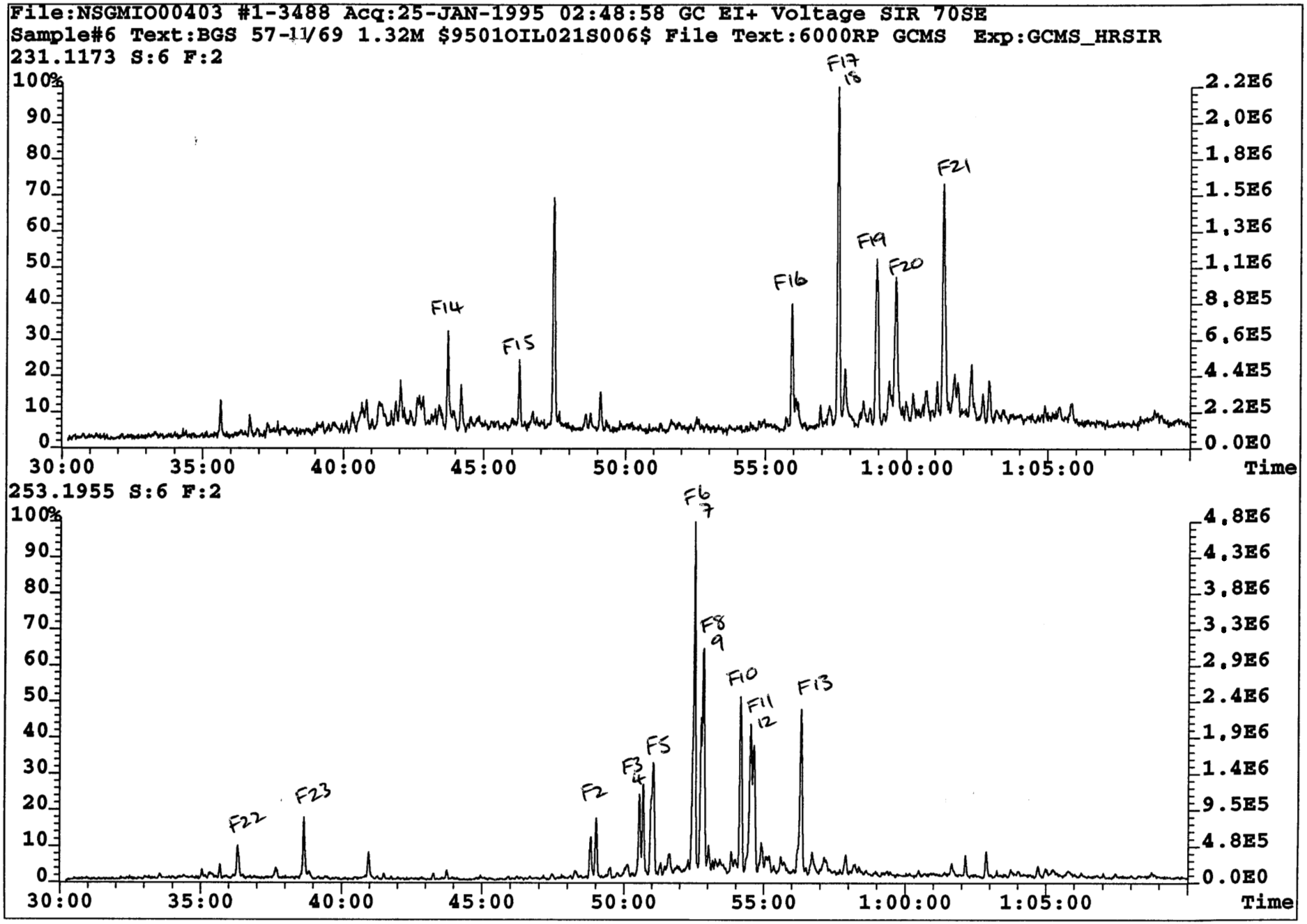
CODE	PENTACYCLIC HYDROCARBONS (m/z 191)
I	9-DODECYLPERHYDROANTHRACENE (IS)
Ts	18α (H)-22, 29, 30-TRISNORNEOHOPANE
Tm	17A (H)-22, 29, 30-TRISNORHOPANE
Q	17β (H)-22, 29, 30-TRISNORHOPANE
W	17A (H)-25, 30-BISNORHOPANE
X	17α (H), 18α (H), 21β (H)-28, 30-BISNORHOPANE
Y	17α (H)-25-NORHOPANE
D	17α (H), 21β (H)-30-NORHOPANE
D2	18α (H)-30-NORNEOHOPANE
π	17α (H), 15α (Me)-27-NORHOPANE
A	17β (H), 21α (H)-30-NORMORETANE
B	18α (H)-OLEANANE
G	17α (H), 21β (H)-HOPANE
H	17β (H), 21β (H)-30-NORHOPANE
K	17β (H), 21α (H)-MORETANE
N	(22S)-17α (H), 21β (H)-30-METHYLHOPANE
O	(22R)-17α (H), 21β (H)-30-METHYLHOPANE
S	GAMMACERANE
P	17β (H), 21β (H)-HOPANE
R	17β (H), 21α (H)-30-METHYLMORETANE
U	(22S)-17α (H), 21β (H)-30-ETHYLHOPANE
V	(22R)-17α (H), 21β (H)-30-ETHYLHOPANE
J	17β (H), 21β (H)-METHYLHOPANE
α	(22S)-17α (H), 21β (H)-30-n-PROPYLHOPANE
β	(22R)-17α (H), 21β (H)-30-n-PROPYLHOPANE
L	17β (H), 21β (H)-ETHYLHOPANE
γ	(22S)-17α (H), 21β (H)-30-n-BUTYLHOPANE
δ	(22R)-17α (H), 21β (H)-30-n-BUTYLHOPANE
ε	(22S)-17α (H), 21β (H)-30-n-PENTYLHOPANE
ζ	(22R)-17α (H), 21β (H)-30-n-PENTYLHOPANE

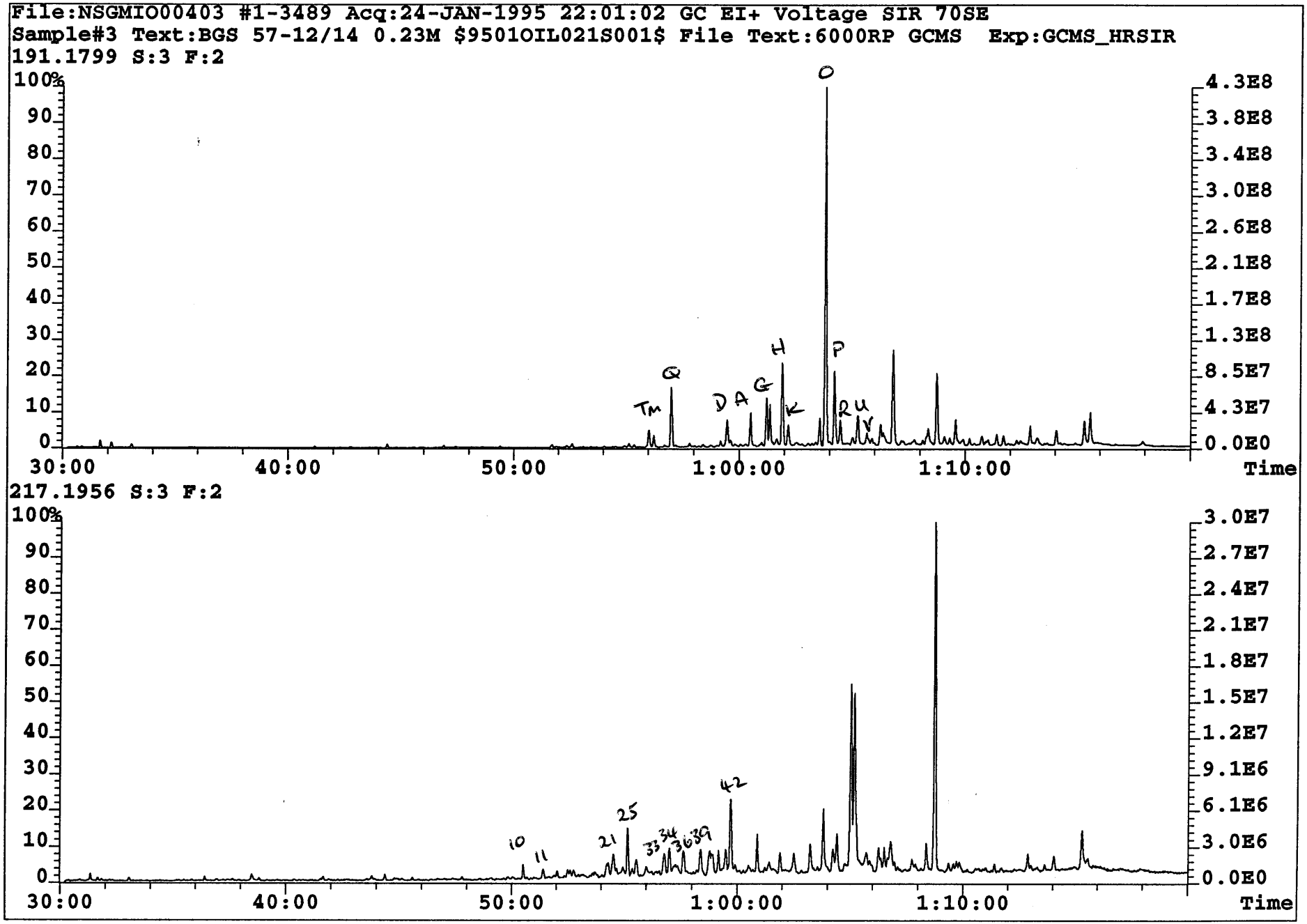
CODE	STERANES (m/z 217)
10	(20S)-13β (H), 17α (H)-DIACHOLESTANE
11	(20R)-13β (H), 17α (H)-DIACHOLESTANE
13	(20S)-13α (H), 17β (H)-DIACHOLESTANE
14	(20R)-13α (H), 17β (H)-DIACHOLESTANE
15	(24S/R)-(20S)-13β (H), 17α (H)-24-METHYLDIACHOLESTANE
16	(24R/S)-(20S)-13β (H), 17α (H)-24-METHYLDIACHOLESTANE
18	(24S/R)-(20R)-13β (H), 17α (H)-24-METHYLDIACHOLESTANE
19	(24R/S)-(20R)-13β (H), 17α (H)-24-METHYLDIACHOLESTANE
20A	(24S/R)-(20S)-13α (H), 17β (H)-24-METHYLDIACHOLESTANE
20B	(20S)-5α (H), 14α (H), 17α (H)-CHOLESTANE
21A	(24R+S)-(20S)-13β (H), 17α (H)-24-ETHYLDIACHOLESTANE
21B	(20R)-5α (H), 14β (H), 17β (H)-ISOCHOLESTANE
22	(20S)-5α (H), 14β (H), 17β (H)-ISOCHOLESTANE
25	(20R)-5α (H), 14α (H), 17α (H)-CHOLESTANE
27	(24S+R)-(20R)-13β (H), 17α (H)-24-ETHYLDIACHOLESTANE
29	(24S+R)-(20S)-13α (H), 17β (H)-24-ETHYLDIACHOLESTANE
33A	(24S+R)-(20R)-5α (H), 14β (H), 17β (H)-24-METHYLISOCHOLESTANE
33B	(24S+R)-(20R)-13α (H), 17β (H)-24-ETHYLDIACHOLESTANE
34	(24S+R)-(20S)-5α (H), 14β (H), 17β (H)-24-METHYLISOCHOLESTANE
36	(24S+R)-(20R)-5α (H), 14α (H), 17α (H)-24-METHYLCHOLESTANE
39	(24S+R)-(20S)-5α (H), 14α (H), 17α (H)-24-METHYLCHOLESTANE
40	(24S+R)-(20S)-5α (H), 14β (H), 17β (H)-24-ETHYLISOCHOLESTANE
41	(24S+R)-(20R)-5α (H), 14β (H), 17β (H)-24-ETHYLISOCHOLESTANE
42	(24S+R)-(20R)-5α (H), 14α (H), 17α (H)-24-ETHYLCHOLESTANE
43	(24S+R)-(20S)-5α (H), 14α (H), 17α (H)-24-PROPYLCHOLESTANE
44	(24S+R)-(20R)-5α (H), 14β (H), 17β (H)-24-PROPYLCHOLESTANE
45	(24S+R)-(20S)-5α (H), 14β (H), 17β (H)-24-PROPYLCHOLESTANE
46	(24S+R)-(20R)-5α (H), 14α (H), 17α (H)-24-PROPYLCHOLESTANE
47	C30 4α-ME-24-ETHYLCHOLESTANE
48	C30 4β-ME-24-ETHYLCHOLESTANE
49	C30 4α, 23, 24-TRIMETHYLCHOLESTANE

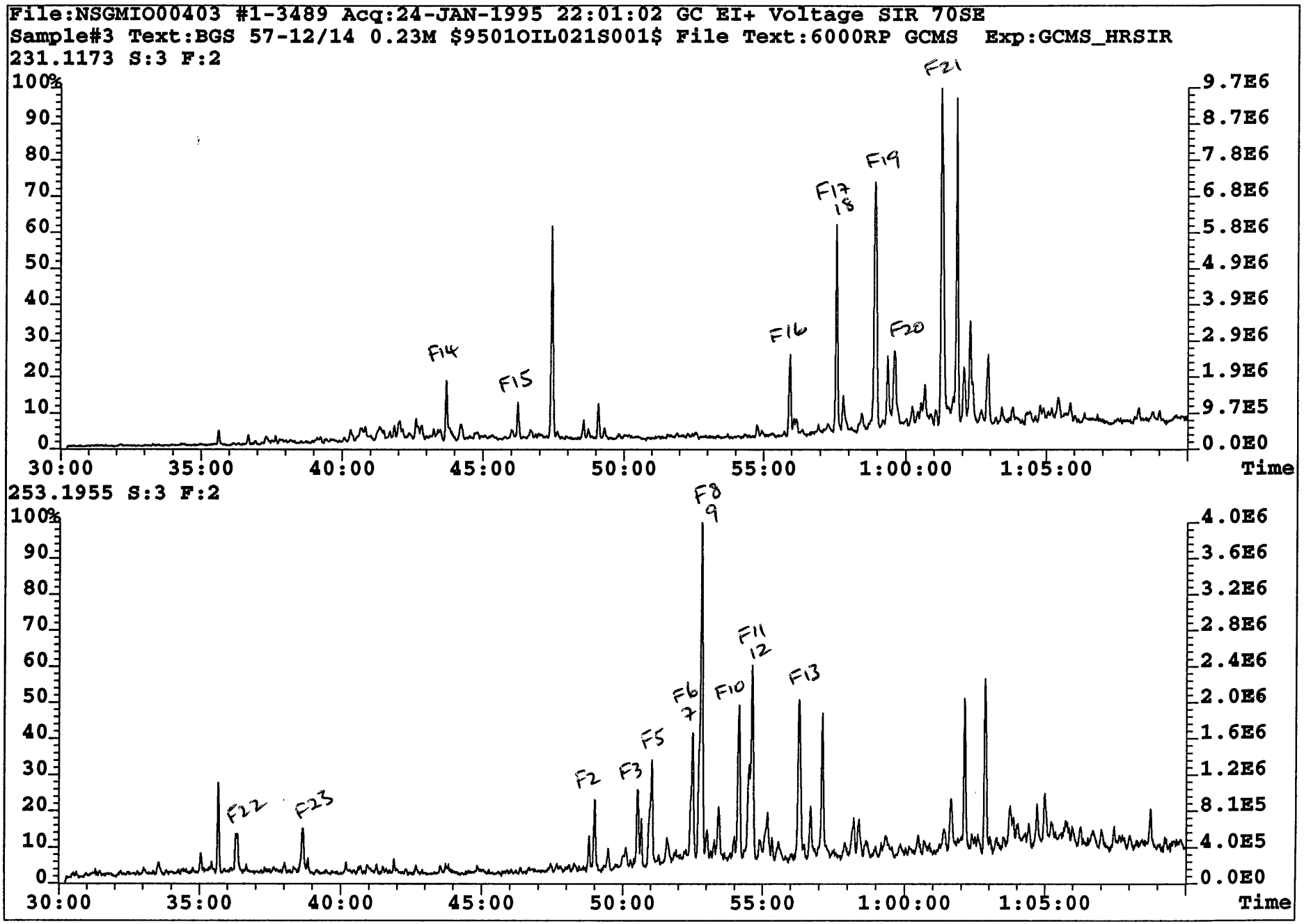
CODE	AROMATIC STERANES (m/z 253)
F22	C21 DIMETHYL MONOAROMATIC STEROID
F23	C22 DIMETHYL MONOAROMATIC STEROID
F2	C27 (20S) 5β (H) DIMETHYL MONOAROMATIC STEROID
F3	C27 (20R) 5β (H) DIMETHYL MONOAROMATIC STEROID
F4	C27 (20S) 5α (H) DIMETHYL MONOAROMATIC STEROID
F5	C28 (20S) 5β (H) DIMETHYL MONOAROMATIC STEROID
F6	C27 (20R) 5α (H) DIMETHYL MONOAROMATIC STEROID
F7	C28 (20S) 5α (H) DIMETHYL MONOAROMATIC STEROID
F8	C28 (20R) 5β (H) DIMETHYL MONOAROMATIC STEROID
F9	C29 (20S) 5β (H) DIMETHYL MONOAROMATIC STEROID
F10	C29 (20S) 5α (H) DIMETHYL MONOAROMATIC STEROID
F11	C28 (20R) 5α (H) DIMETHYL MONOAROMATIC STEROID
F12	C29 (20R) 5β (H) DIMETHYL MONOAROMATIC STEROID
F13	C29 (20R) 5α (H) DIMETHYL MONOAROMATIC STEROID

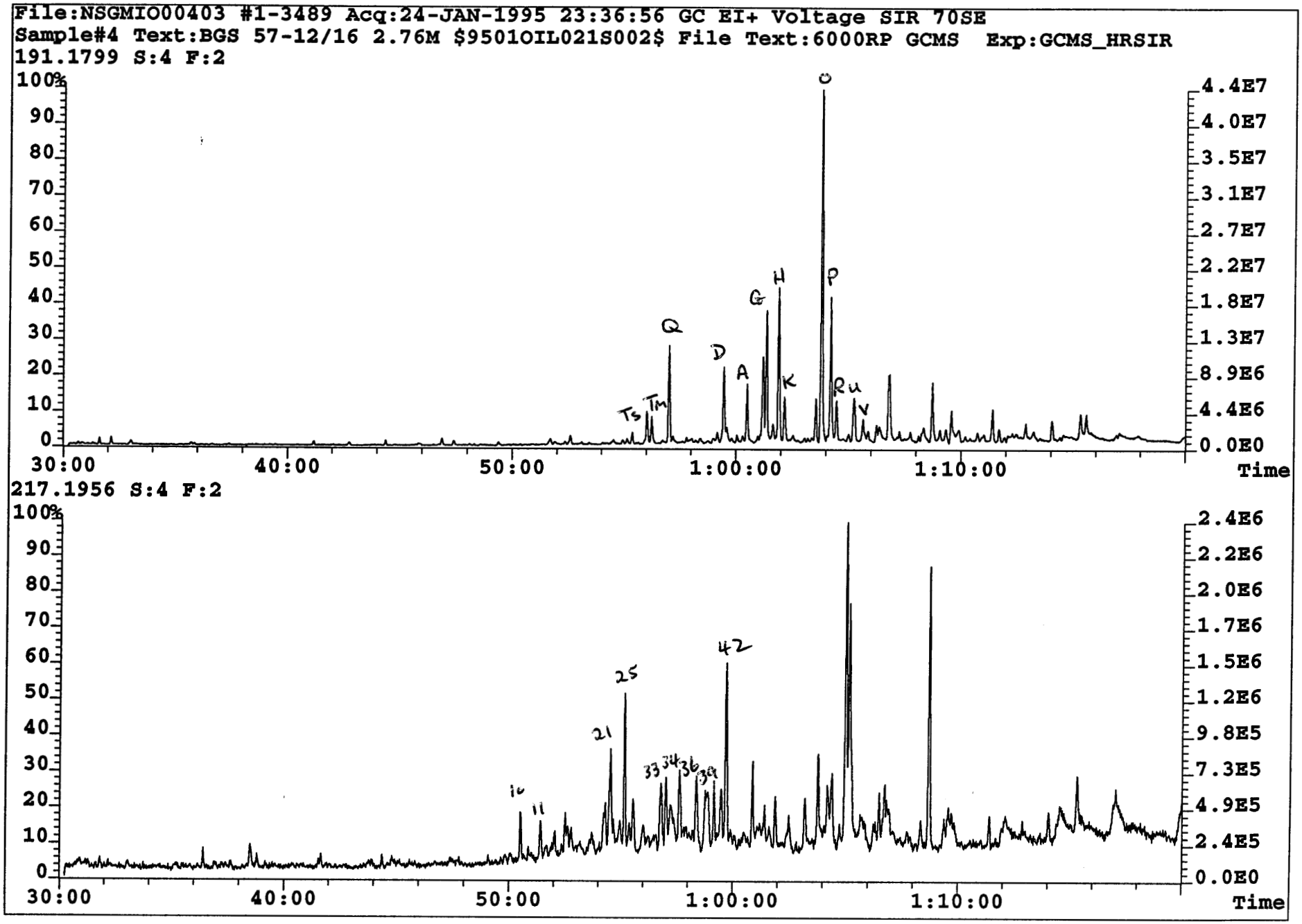
CODE	AROMATIC STERANES (m/z 231)
F14	C20 METHYL TRIAROMATIC STEROID
F15	C21 METHYL TRIAROMATIC STEROID
F16	C26 (20S) METHYL TRIAROMATIC STEROID
F17	C26 (20R) METHYL TRIAROMATIC STEROID
F18	C27 (20S) METHYL TRIAROMATIC STEROID
F19	C28 (20S) METHYL TRIAROMATIC STEROID
F20	C27 (20R) METHYL TRIAROMATIC STEROID
F21	C28 (20R) METHYL TRIAROMATIC STEROID

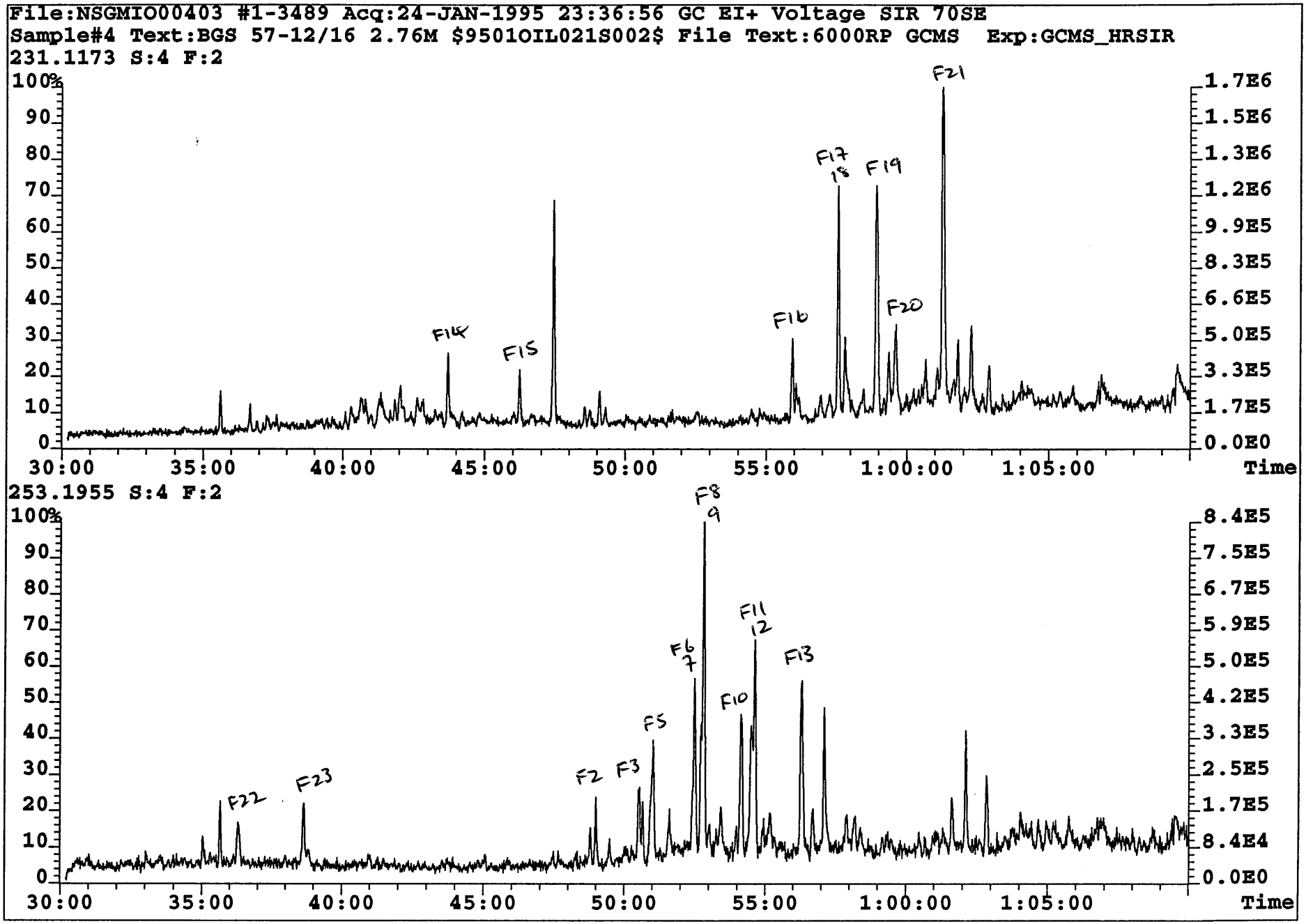

File:NSGMIO00403 #1-3488 Acq:25-JAN-1995 02:48:58 GC EI+ Voltage SIR 70SE
Sample#6 Text:BGS 57-11/69 1.32M $9501OIL021S006$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:6 F:2
100%
90
80
70
60
50
40
30
20
10
0
2.4E7
2.1E7
1.9E7
1.7E7
1.4E7
1.2E7
9.5E6
7.1E6
4.8E6
2.4E6
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
O
G
H
D
P
Q
A
K
U
Tm
R
V
217.1956 S:6 F:2
100%
90
80
70
60
50
40
30
20
10
0
3.6E6
3.3E6
2.9E6
2.5E6
2.2E6
1.8E6
1.4E6
1.1E6
7.2E5
3.6E5
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
42
25
36
10 11

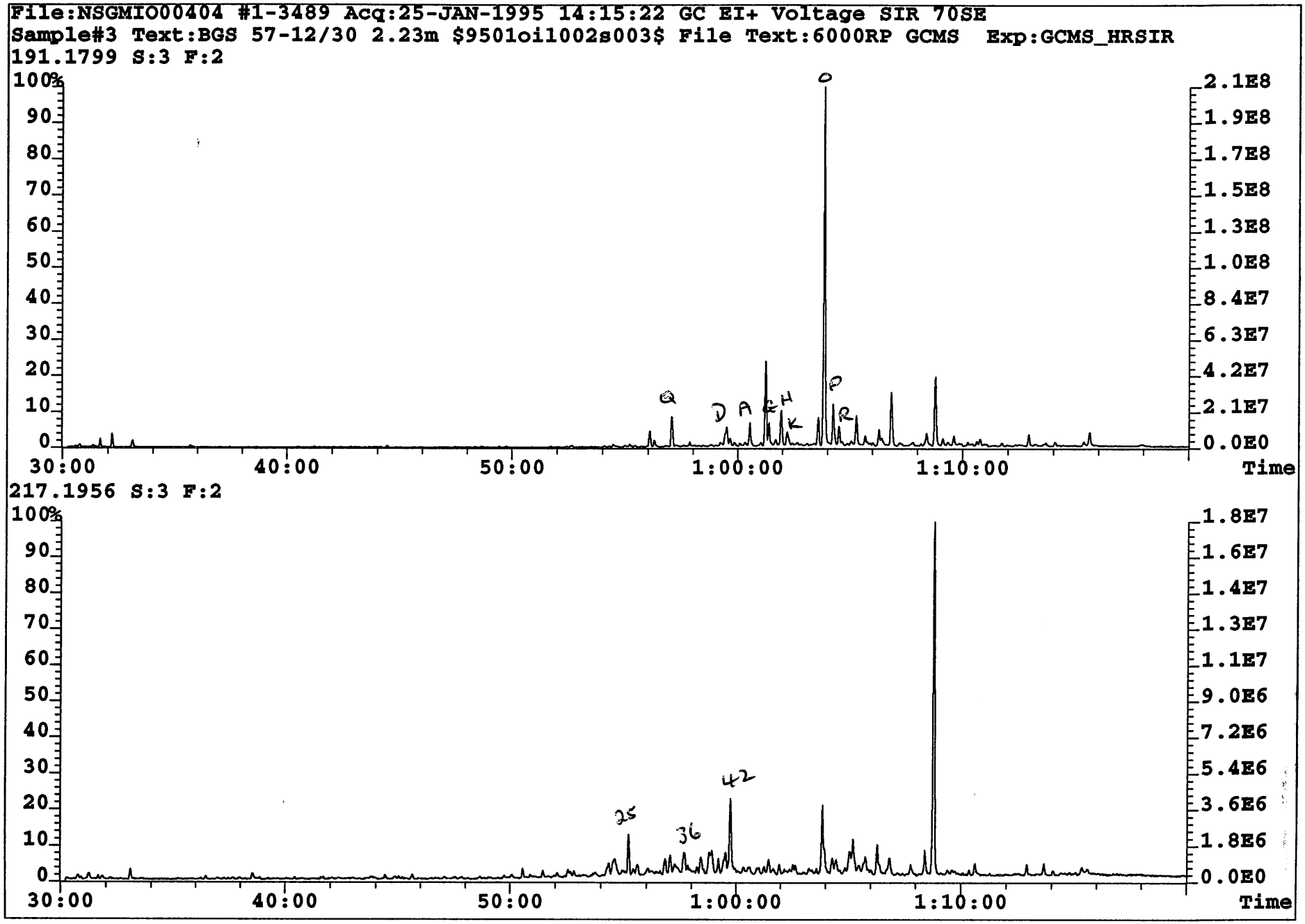

File:NSGMIO00403 #1-3488 Acq:25-JAN-1995 02:48:58 GC EI+ Voltage SIR 70SE
Sample#6 Text:BGS 57-11/69 1.32M $9501OIL021S006$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:6 F:2
F14
F15
F16
F17
18
F19
F20
F21
Time
253.1955 S:6 F:2
F22
F23
F2
F3
4
F5
F6
7
F8
9
F10
F11
12
F13
Time

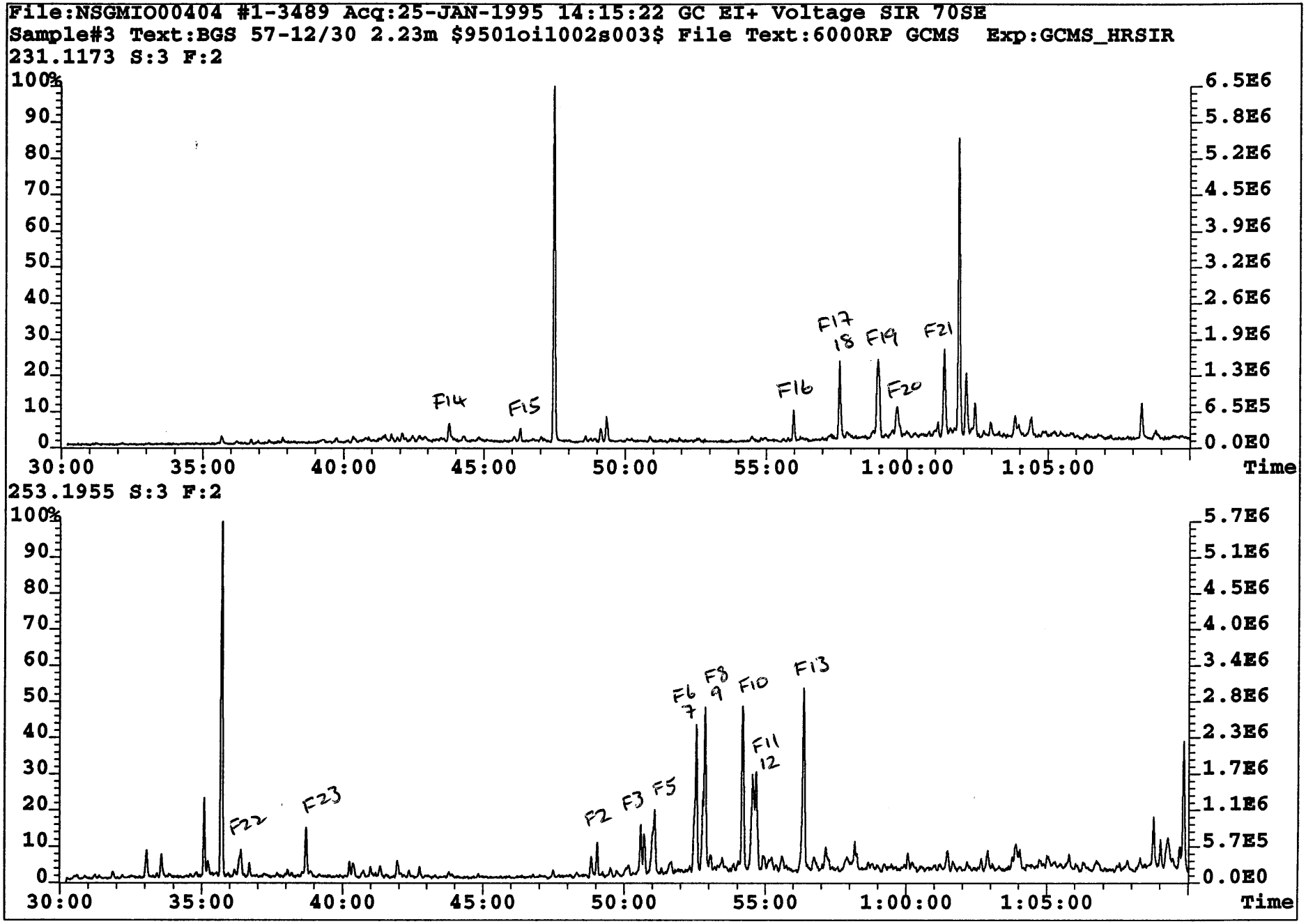

File:NSGMIO00403 #1-3489 Acq:24-JAN-1995 22:01:02 GC EI+ Voltage SIR 70SE
Sample#3 Text:BGS 57-12/14 0.23M $9501OIL021S001$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:3 F:2
100%
90
80
70
60
50
40
30
20
10
0
4.3E8
3.8E8
3.4E8
3.0E8
2.6E8
2.1E8
1.7E8
1.3E8
8.5E7
4.3E7
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
O
P
Q
H
G
A
D
K
R
U
V
Tm
217.1956 S:3 F:2
100%
90
80
70
60
50
40
30
20
10
0
3.0E7
2.7E7
2.4E7
2.1E7
1.8E7
1.5E7
1.2E7
9.1E6
6.1E6
3.0E6
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
10
11
21
25
33
34
36
39
42

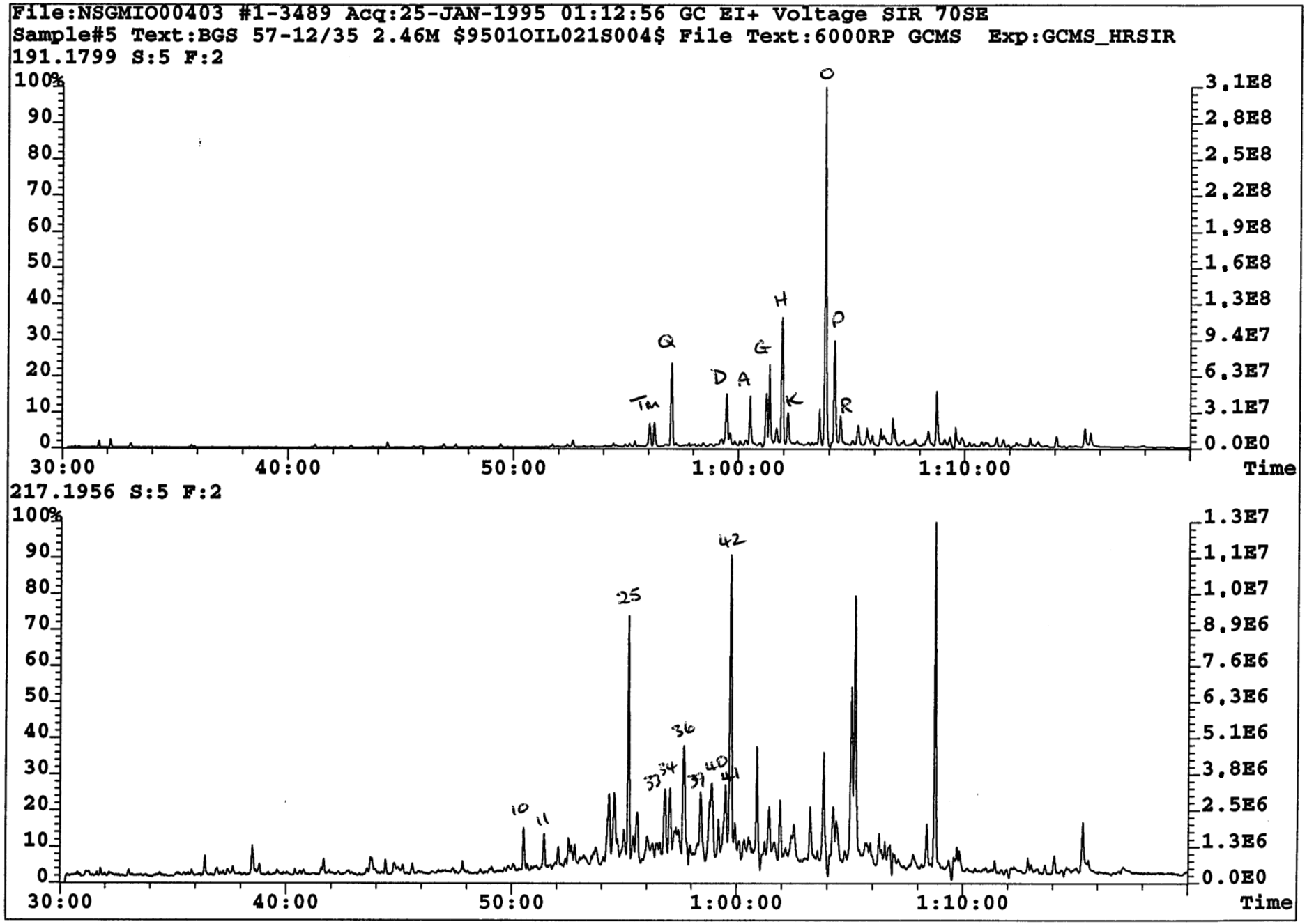

File:NSGMIO00403 #1-3489 Acq:24-JAN-1995 22:01:02 GC EI+ Voltage SIR 70SE
Sample#3 Text:BGS 57-12/14 0.23M $9501OIL021S001$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:3 F:2
100%
90
80
70
60
50
40
30
20
10
0
9.7E6
8.7E6
7.8E6
6.8E6
5.8E6
4.9E6
3.9E6
2.9E6
1.9E6
9.7E5
0.0E0
F14
F15
F16
F17
18
F19
F20
F21
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time
253.1955 S:3 F:2
100%
90
80
70
60
50
40
30
20
10
0
4.0E6
3.6E6
3.2E6
2.8E6
2.4E6
2.0E6
1.6E6
1.2E6
8.1E5
4.0E5
0.0E0
F2
F3
F5
F6
7
F8
9
F10
F11
12
F13
F22
F23
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time

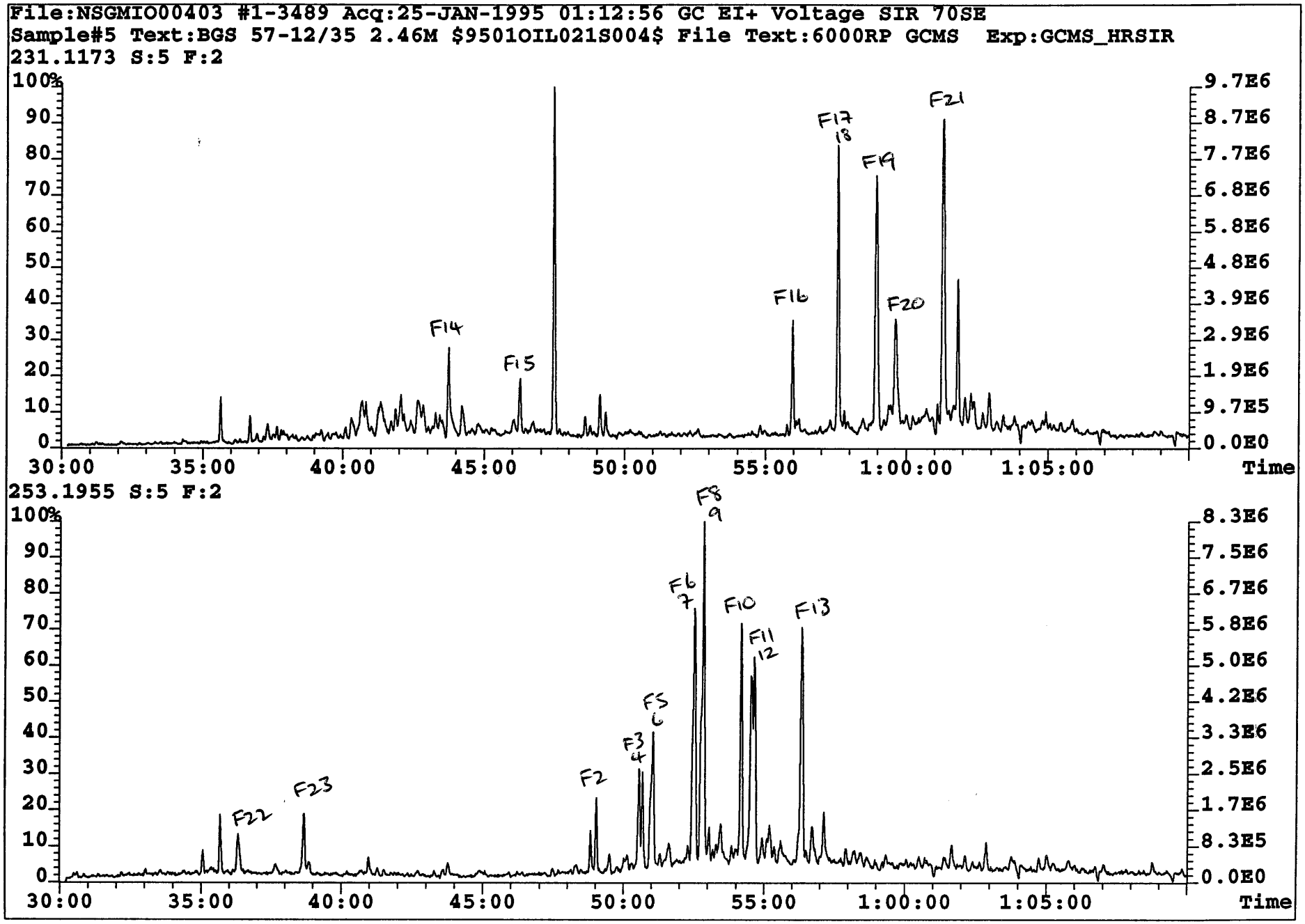

File:NSGMIO00403 #1-3489 Acq:24-JAN-1995 23:36:56 GC EI+ Voltage SIR 70SE
Sample#4 Text:BGS 57-12/16 2.76M $9501OIL021S002$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
4.4E7
4.0E7
3.5E7
3.1E7
2.7E7
2.2E7
1.8E7
1.3E7
8.9E6
4.4E6
0.0E0
Ts
Tm
Q
D
A
G
H
K
O
P
R
U
V
30:00
40:00
50:00
1:00:00
1:10:00
Time
217.1956 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
2.4E6
2.2E6
2.0E6
1.7E6
1.5E6
1.2E6
9.8E5
7.3E5
4.9E5
2.4E5
0.0E0
10
11
21
25
33
34
36
39
42
30:00
40:00
50:00
1:00:00
1:10:00
Time

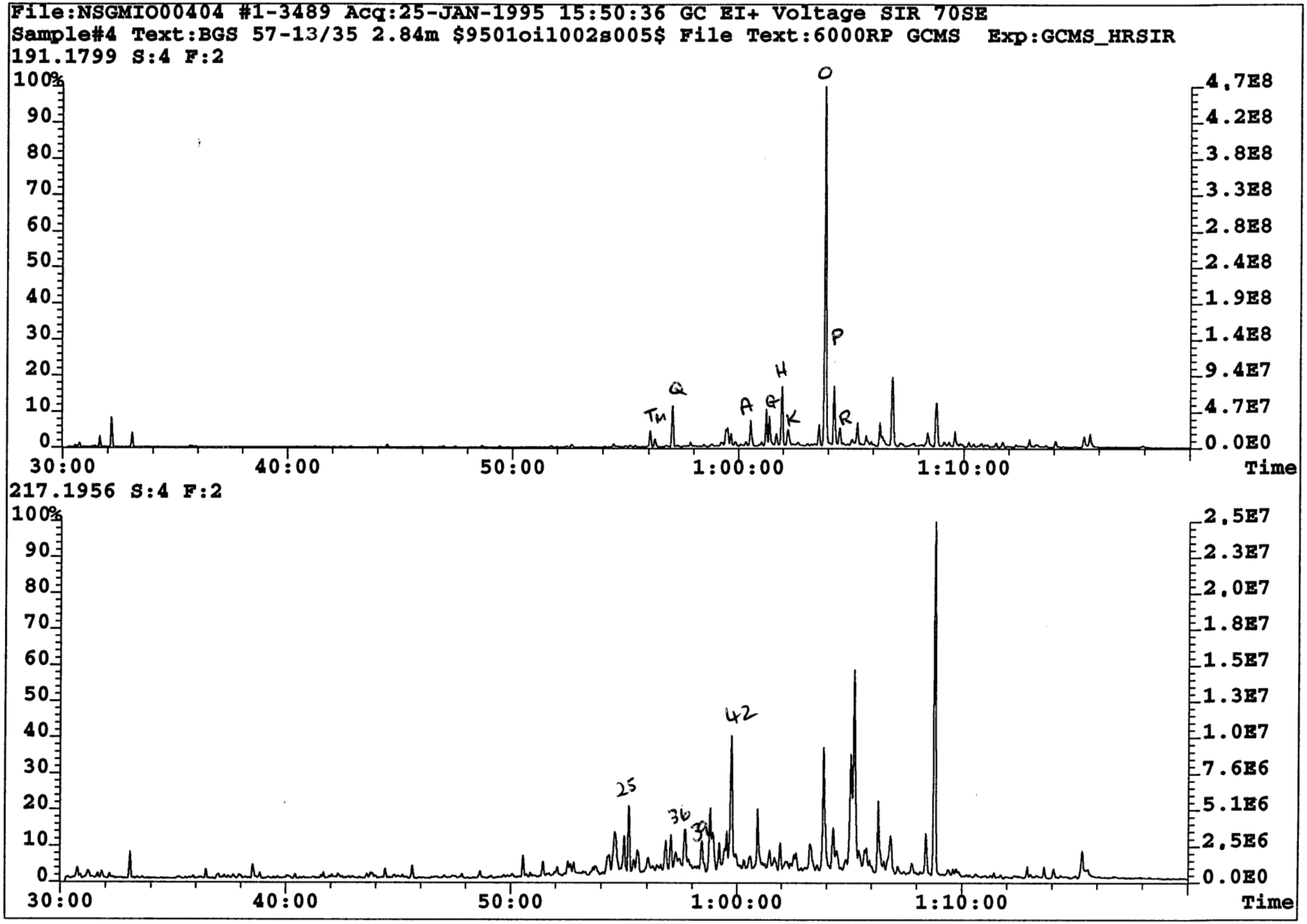

File:NSGMIO00403 #1-3489 Acq:24-JAN-1995 23:36:56 GC EI+ Voltage SIR 70SE
Sample#4 Text:BGS 57-12/16 2.76M $9501OIL021S002$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
1.7E6
1.5E6
1.3E6
1.2E6
9.9E5
8.3E5
6.6E5
5.0E5
3.3E5
1.7E5
0.0E0
F14
F15
F16
F17
18
F19
F20
F21
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time
253.1955 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
8.4E5
7.5E5
6.7E5
5.9E5
5.0E5
4.2E5
3.3E5
2.5E5
1.7E5
8.4E4
0.0E0
F22
F23
F2
F3
F5
F6
7
F8
9
F10
F11
12
F13
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time

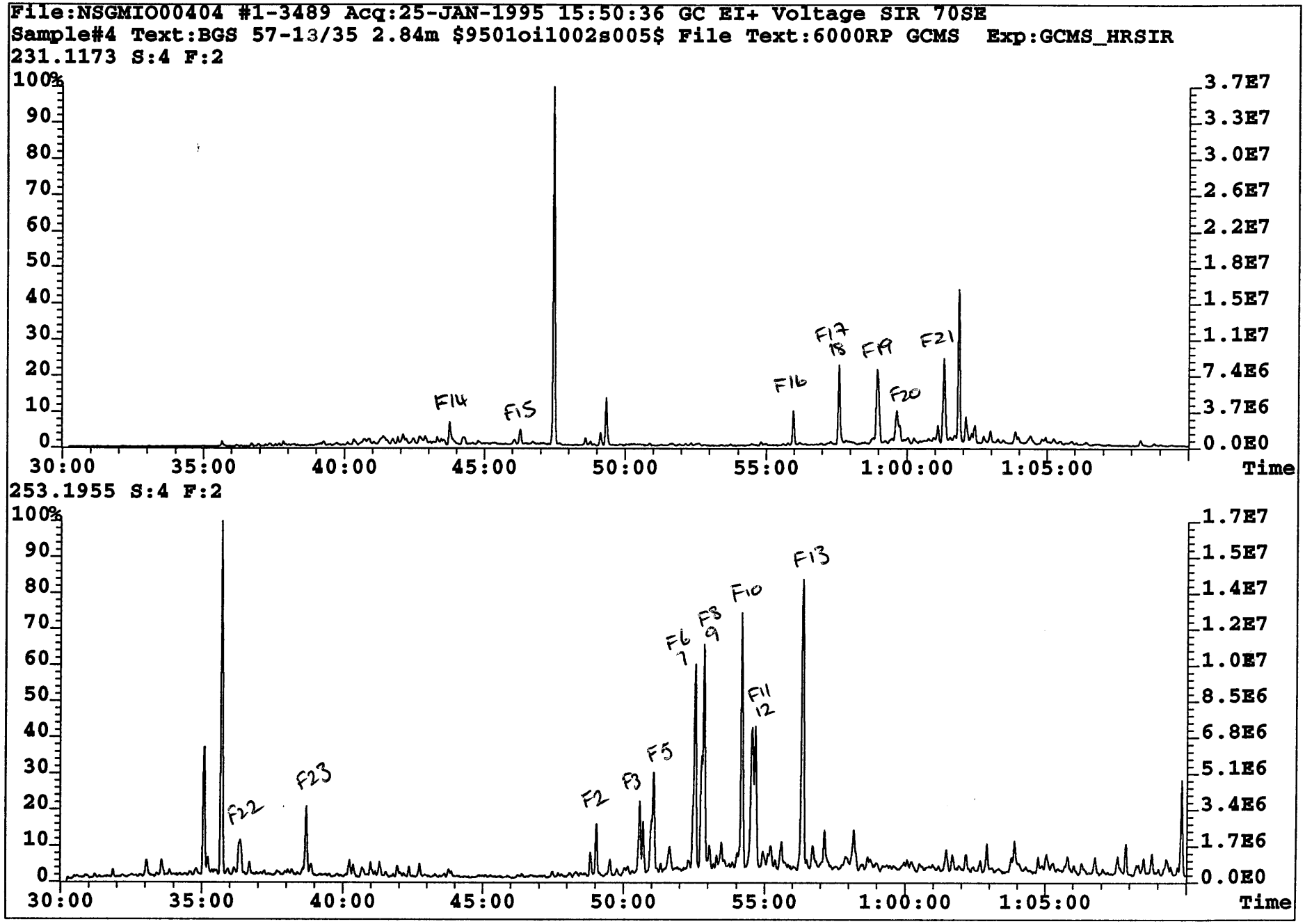

File:NSGMIO00404 #1-3489 Acq:25-JAN-1995 14:15:22 GC EI+ Voltage SIR 70SE
Sample#3 Text:BGS 57-12/30 2.23m $9501oil002s003$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:3 F:2
100%
90
80
70
60
50
40
30
20
10
0
2.1E8
1.9E8
1.7E8
1.5E8
1.3E8
1.0E8
8.4E7
6.3E7
4.2E7
2.1E7
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
Q
D
A
H
K
P
R
217.1956 S:3 F:2
1.8E7
1.6E7
1.4E7
1.3E7
1.1E7
9.0E6
7.2E6
5.4E6
3.6E6
1.8E6
0.0E0
25
36
42

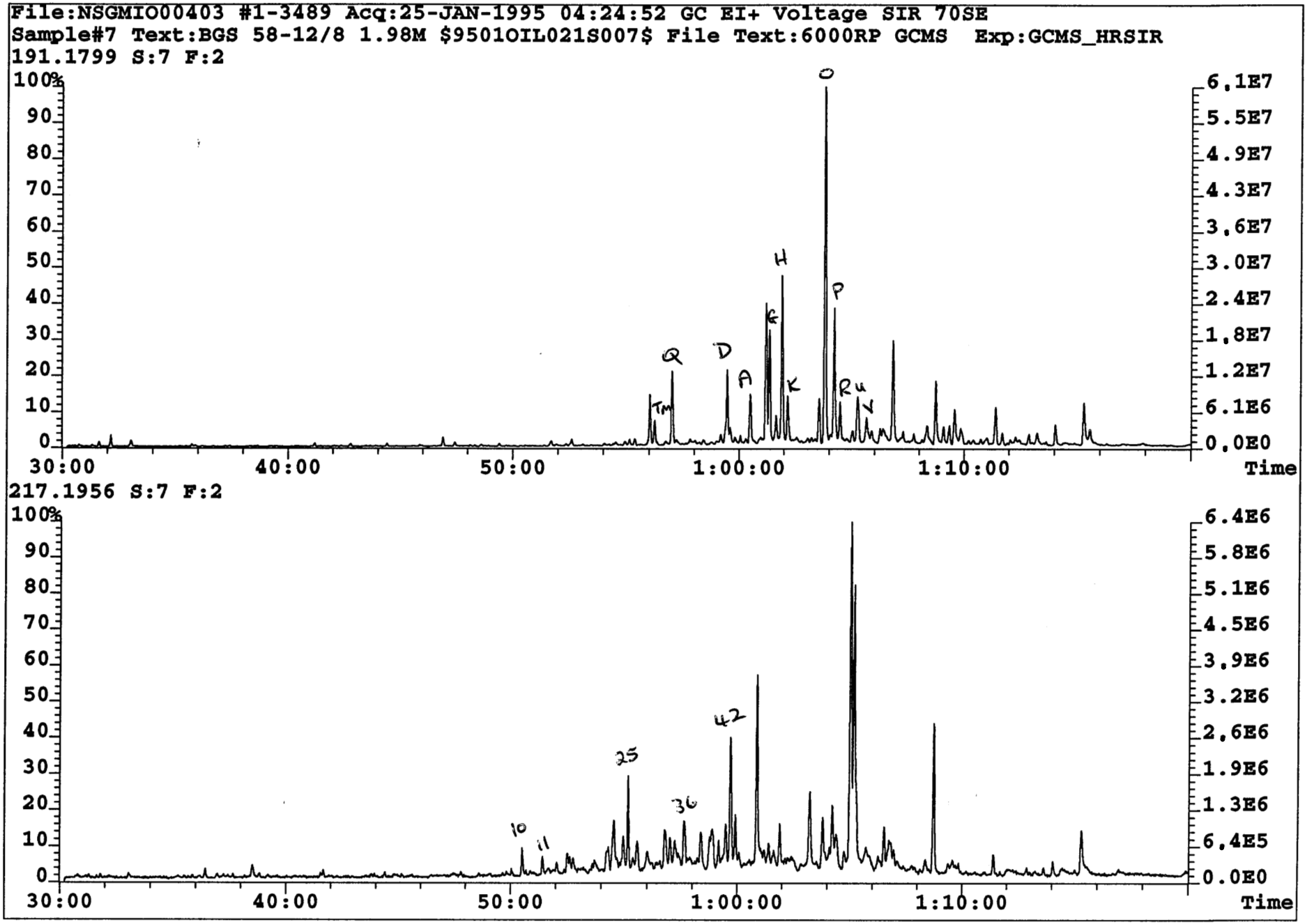

File:NSGMIO00404 #1-3489 Acq:25-JAN-1995 14:15:22 GC EI+ Voltage SIR 70SE
Sample#3 Text:BGS 57-12/30 2.23m $9501oil002s003$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:3 F:2
100%
90
80
70
60
50
40
30
20
10
0
6.5E6
5.8E6
5.2E6
4.5E6
3.9E6
3.2E6
2.6E6
1.9E6
1.3E6
6.5E5
0.0E0
F14
F15
F16
F17
18
F19
F20
F21
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time
253.1955 S:3 F:2
100%
90
80
70
60
50
40
30
20
10
0
5.7E6
5.1E6
4.5E6
4.0E6
3.4E6
2.8E6
2.3E6
1.7E6
1.1E6
5.7E5
0.0E0
F22
F23
F2
F3
F5
F6
7
F8
9
F10
F11
12
F13
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time

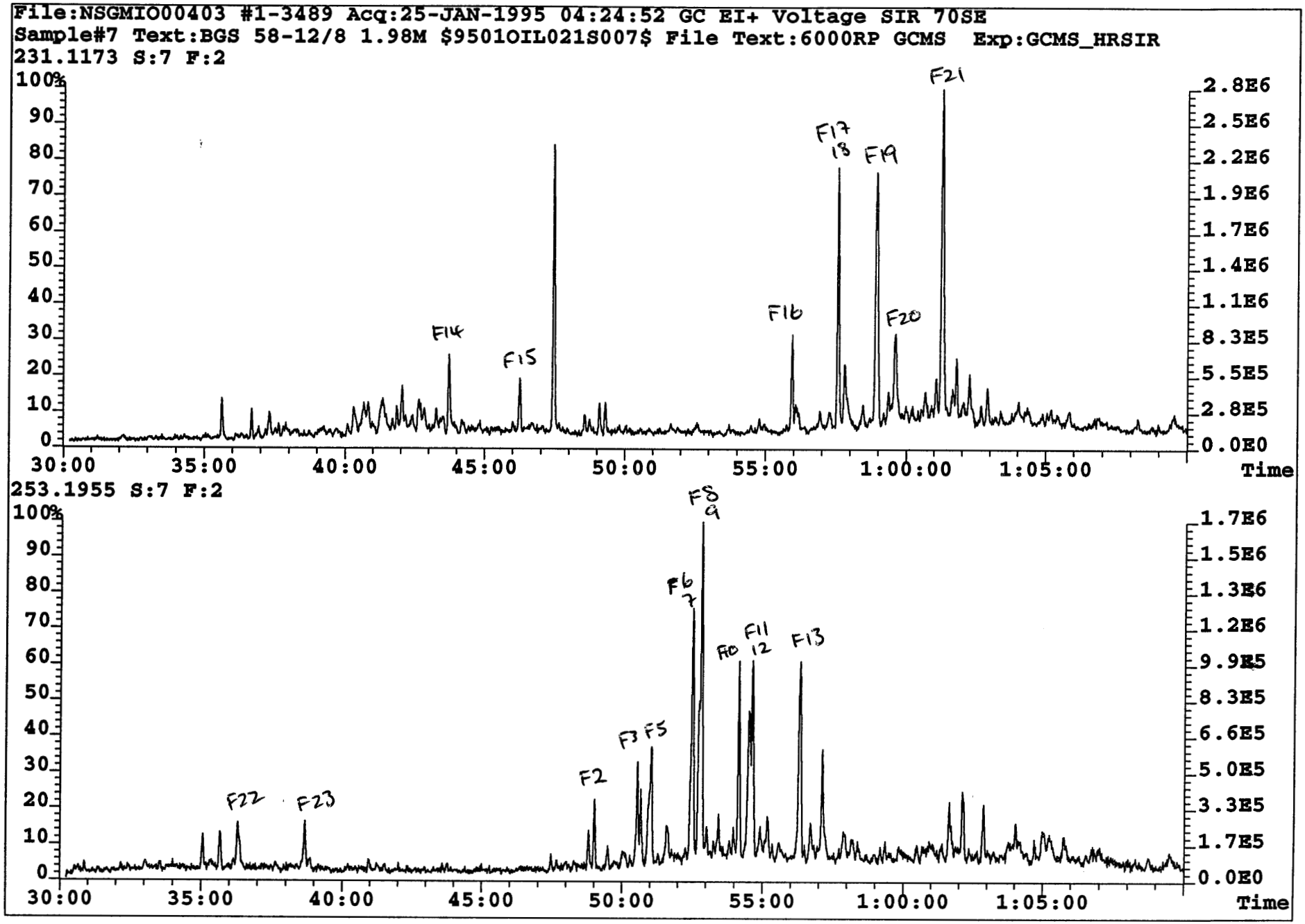

File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 01:12:56 GC EI+ Voltage SIR 70SE
Sample#5 Text:BGS 57-12/35 2.46M $9501OIL021S004$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:5 F:2
100%
90
80
70
60
50
40
30
20
10
0
3.1E8
2.8E8
2.5E8
2.2E8
1.9E8
1.6E8
1.3E8
9.4E7
6.3E7
3.1E7
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
Tm
Q
D
A
G
H
K
O
P
R
217.1956 S:5 F:2
100%
90
80
70
60
50
40
30
20
10
0
1.3E7
1.1E7
1.0E7
8.9E6
7.6E6
6.3E6
5.1E6
3.8E6
2.5E6
1.3E6
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
10
11
25
33
34
36
39
40
41
42

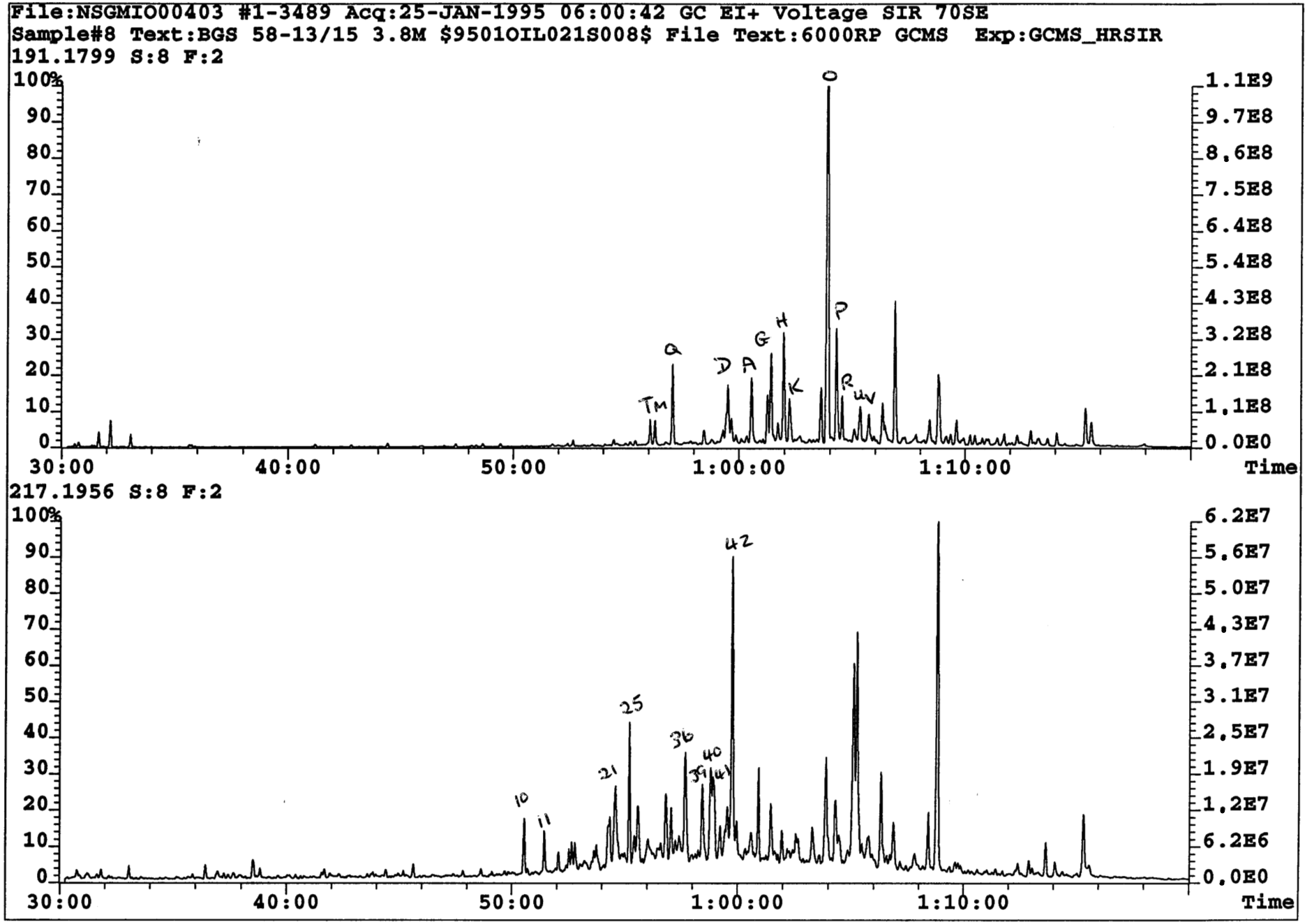

File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 01:12:56 GC EI+ Voltage SIR 70SE
Sample#5 Text:BGS 57-12/35 2.46M $9501OIL021S004$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:5 F:2
F14
F15
F16
F17 18
F19
F20
F21
253.1955 S:5 F:2
F22
F23
F2
F3 4
F5 6
F6 7
F8 9
F10
F11 12
F13
Time

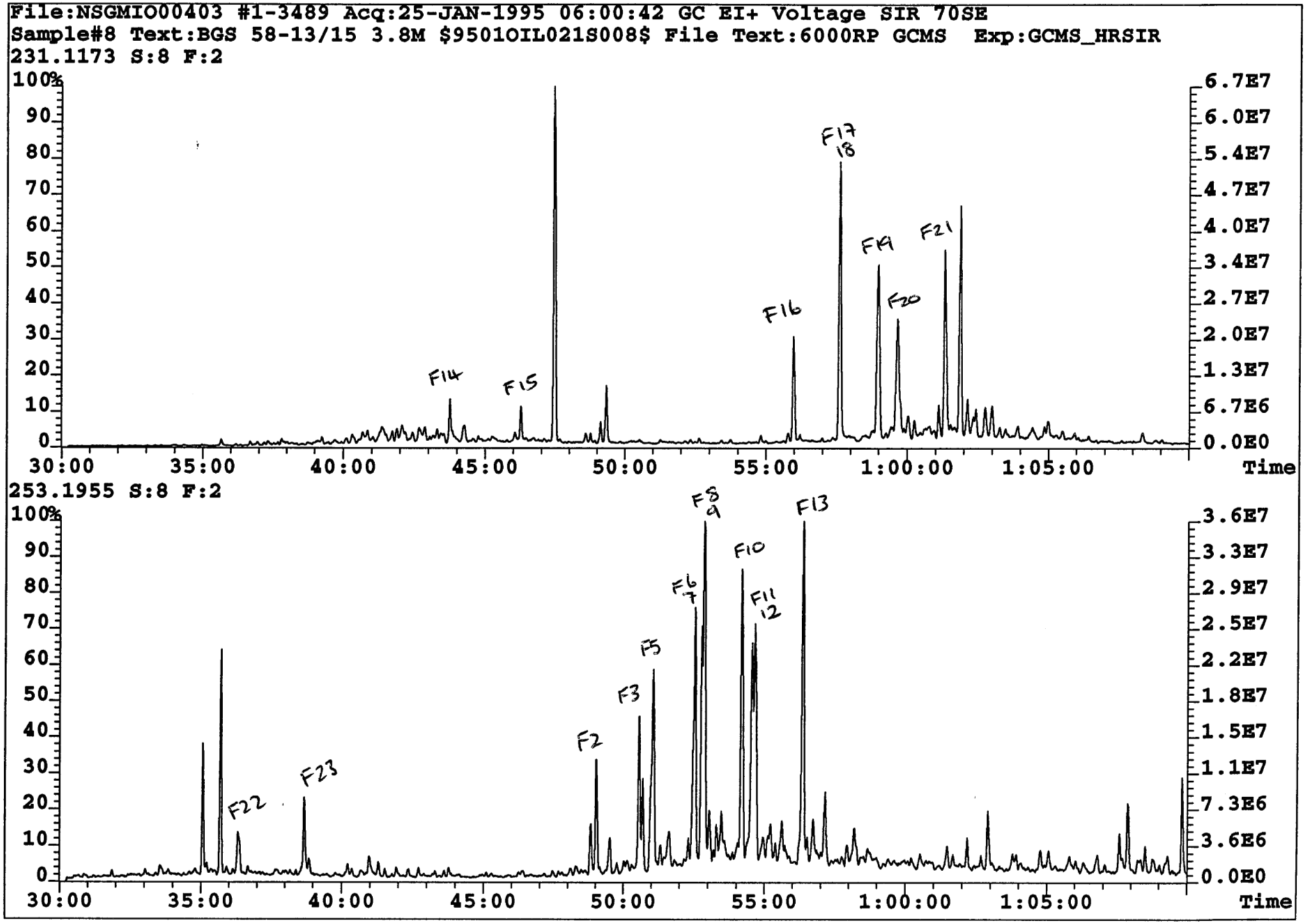

File:NSGMIO00404 #1-3489 Acq:25-JAN-1995 15:50:36 GC EI+ Voltage SIR 70SE
Sample#4 Text:BGS 57-13/35 2.84m $9501oil002s005$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
4.7E8
4.2E8
3.8E8
3.3E8
2.8E8
2.4E8
1.9E8
1.4E8
9.4E7
4.7E7
0.0E0
O
P
Q
H
A
G
K
R
Tm
30:00
40:00
50:00
1:00:00
1:10:00
Time
217.1956 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
2.5E7
2.3E7
2.0E7
1.8E7
1.5E7
1.3E7
1.0E7
7.6E6
5.1E6
2.5E6
0.0E0
42
25
36
30:00
40:00
50:00
1:00:00
1:10:00
Time

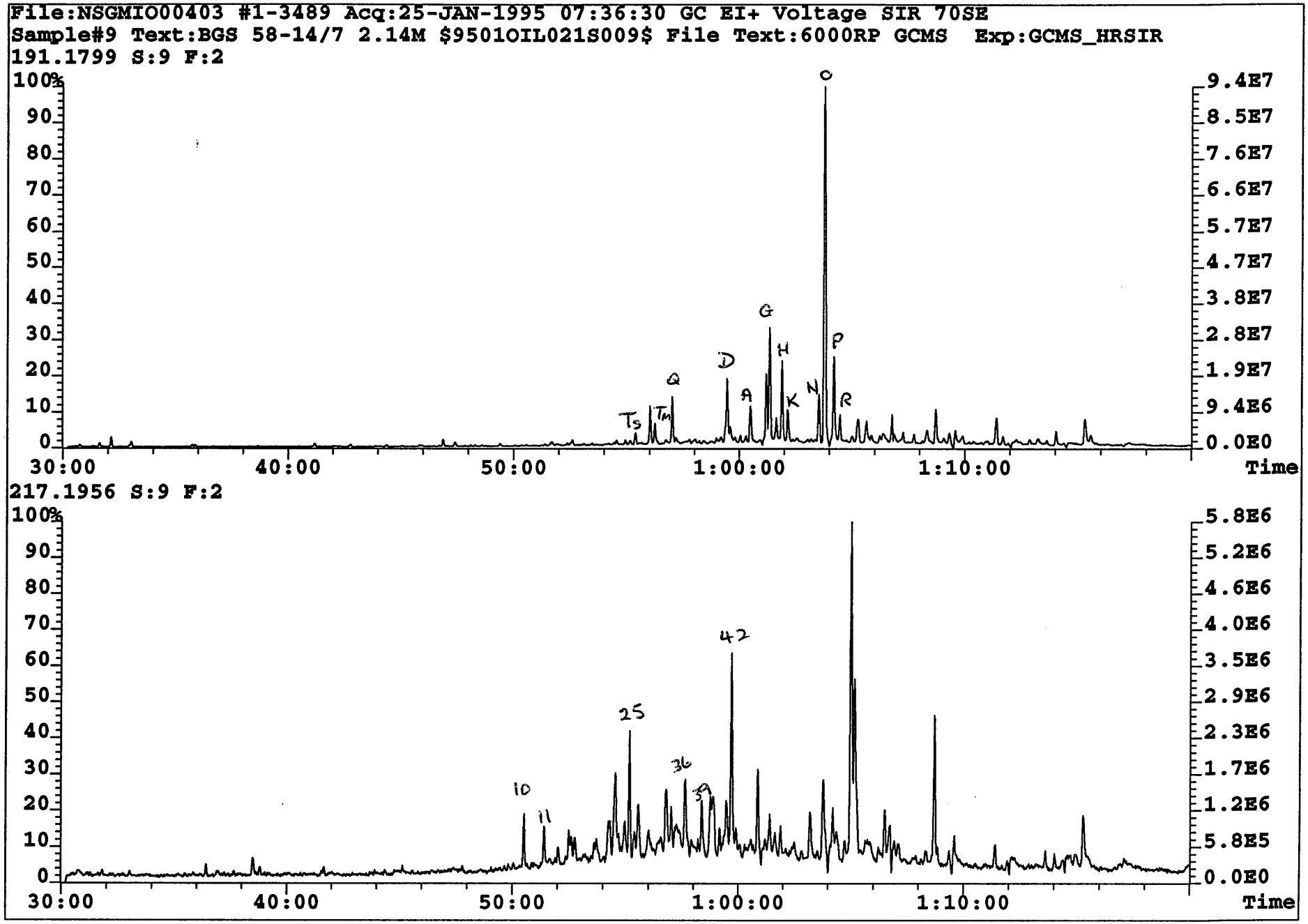

File:NSGMIO00404 #1-3489 Acq:25-JAN-1995 15:50:36 GC EI+ Voltage SIR 70SE
Sample#4 Text:BGS 57-13/35 2.84m $9501oil002s005$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
3.7E7
3.3E7
3.0E7
2.6E7
2.2E7
1.8E7
1.5E7
1.1E7
7.4E6
3.7E6
0.0E0
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time
F14
F15
F16
F17
18
F19
F20
F21
253.1955 S:4 F:2
100%
90
80
70
60
50
40
30
20
10
0
1.7E7
1.5E7
1.4E7
1.2E7
1.0E7
8.5E6
6.8E6
5.1E6
3.4E6
1.7E6
0.0E0
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time
F22
F23
F2
F3
F5
F6
7
F8
9
F10
F11
12
F13

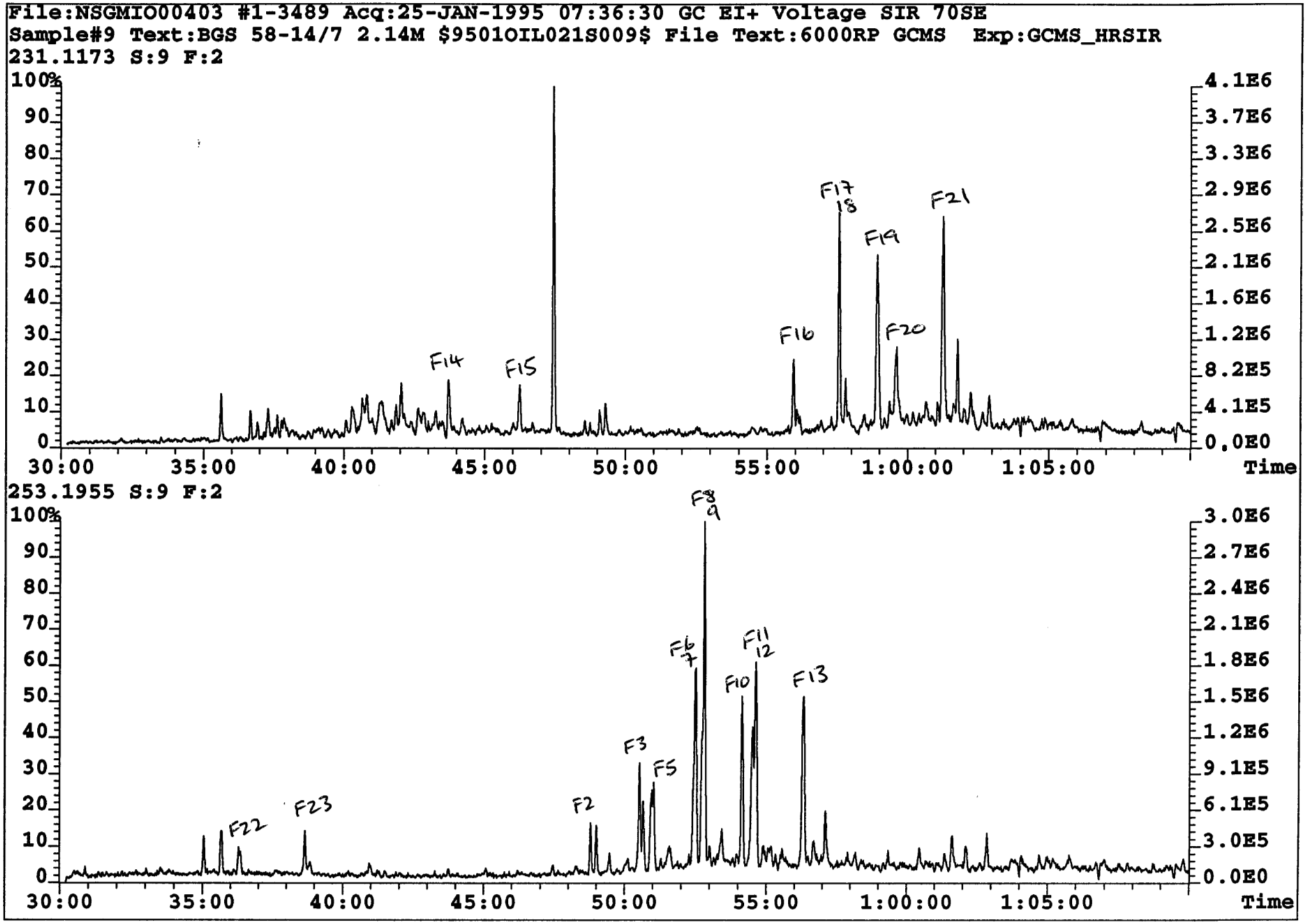

File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 04:24:52 GC EI+ Voltage SIR 70SE
Sample#7 Text:BGS 58-12/8 1.98M $9501OIL021S007$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:7 F:2
100%
90
80
70
60
50
40
30
20
10
0
6.1E7
5.5E7
4.9E7
4.3E7
3.6E7
3.0E7
2.4E7
1.8E7
1.2E7
6.1E6
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
O
P
H
K
Q
D
A
R
U
V
TM
217.1956 S:7 F:2
100%
90
80
70
60
50
40
30
20
10
0
6.4E6
5.8E6
5.1E6
4.5E6
3.9E6
3.2E6
2.6E6
1.9E6
1.3E6
6.4E5
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
10
11
25
36
42


File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 04:24:52 GC EI+ Voltage SIR 70SE
Sample#7 Text:BGS 58-12/8 1.98M $9501OIL021S007$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:7 F:2
F14
F15
F16
F17 18
F19
F20
F21
2.8E6
2.5E6
2.2E6
1.9E6
1.7E6
1.4E6
1.1E6
8.3E5
5.5E5
2.8E5
0.0E0
Time
253.1955 S:7 F:2
F2
F3 F5
F6 7
F8 9
F10
F11 12
F13
F22
F23
1.7E6
1.5E6
1.3E6
1.2E6
9.9E5
8.3E5
6.6E5
5.0E5
3.3E5
1.7E5
0.0E0
Time


File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 06:00:42 GC EI+ Voltage SIR 70SE
Sample#8 Text:BGS 58-13/15 3.8M $9501OIL021S008$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:8 F:2
100%
90
80
70
60
50
40
30
20
10
0
1.1E9
9.7E8
8.6E8
7.5E8
6.4E8
5.4E8
4.3E8
3.2E8
2.1E8
1.1E8
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
O
P
Q
R
TM
UV
D
A
G
H
K
217.1956 S:8 F:2
100%
90
80
70
60
50
40
30
20
10
0
6.2E7
5.6E7
5.0E7
4.3E7
3.7E7
3.1E7
2.5E7
1.9E7
1.2E7
6.2E6
0.0E0
30:00
40:00
50:00
1:00:00
1:10:00
Time
42
25
36
40
21
10
11


File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 06:00:42 GC EI+ Voltage SIR 70SE
Sample#8 Text:BGS 58-13/15 3.8M $9501OIL021S008$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:8 F:2
F14
F15
F16
F17
18
F19
F20
F21
Time
253.1955 S:8 F:2
F22
F23
F2
F3
F5
F6
7
F8
9
F10
F11
12
F13
Time


File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 07:36:30 GC EI+ Voltage SIR 70SE
Sample#9 Text:BGS 58-14/7 2.14M $9501OIL021S009$ File Text:6000RP GCMS Exp:GCMS_HRSIR
191.1799 S:9 F:2
100%
90
80
70
60
50
40
30
20
10
0
9.4E7
8.5E7
7.6E7
6.6E7
5.7E7
4.7E7
3.8E7
2.8E7
1.9E7
9.4E6
0.0E0
O
G
H
D
Q
P
A
K
N
R
Ts
Tm
30:00
40:00
50:00
1:00:00
1:10:00
Time
217.1956 S:9 F:2
100%
90
80
70
60
50
40
30
20
10
0
5.8E6
5.2E6
4.6E6
4.0E6
3.5E6
2.9E6
2.3E6
1.7E6
1.2E6
5.8E5
0.0E0
42
25
36
39
10
11
30:00
40:00
50:00
1:00:00
1:10:00
Time


File:NSGMIO00403 #1-3489 Acq:25-JAN-1995 07:36:30 GC EI+ Voltage SIR 70SE
Sample#9 Text:BGS 58-14/7 2.14M $9501OIL021S009$ File Text:6000RP GCMS Exp:GCMS_HRSIR
231.1173 S:9 F:2
100%
90
80
70
60
50
40
30
20
10
0
4.1E6
3.7E6
3.3E6
2.9E6
2.5E6
2.1E6
1.6E6
1.2E6
8.2E5
4.1E5
0.0E0
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time
F14
F15
F16
F17
18
F19
F20
F21
253.1955 S:9 F:2
100%
90
80
70
60
50
40
30
20
10
0
3.0E6
2.7E6
2.4E6
2.1E6
1.8E6
1.5E6
1.2E6
9.1E5
6.1E5
3.0E5
0.0E0
30:00
35:00
40:00
45:00
50:00
55:00
1:00:00
1:05:00
Time
F22
F23
F2
F3
F5
F6
7
F8
9
F10
F11
12
F13