162001

OPERATIONS AND INTERPRETATION REPORT

GEOCHEMICAL EXPLORATION PROGRAM
BASS BASIN - Blocks T/14P, T/18P

FEBRUARY 1989

PREPARED FOR

AMOCO AUSTRALIA PETROLEUM COMPANY

TRANSGLOBAL EXPLORATION & GEOSCIENCE, INC.

TABLE OF CONTENTS

SUMMARY OF THE REPORT NOTEBOOK SECTIONS

The following materials are contained in separate sections in this report notebook.

. Operations and interpretation report.

. Cross plots of the bottom-water data from the Bass T/14P and T/18P blocks and Gippsland Basin.

. Histograms of the geochemical data.

. Summary statistics of the geochemical data.

. Profile plots of the geochemical data for each survey line and for several lines from the Gippsland Basin.

. Survey log sheets.

- Gippsland Data

EXECUTIVE SUMMARY

In February 1989, Transglobal Exploration & Geoscience Inc. (TEG) conducted a proprietary geochemical bottom water exploration survey in the Bass Basin over blocks T/14P and T/18P for Amoco Australia Production Company. The survey was conducted aboard the RV Rig Seismic. Data collection commenced on February 3 and concluded on February 15, 1989. A total of 5090 light hydrocarbon analyses were collected over approximately 2000 kilometers of survey track.

Anomalous hydrocarbons in the water column were not detected in any portion of the survey area. The measured hydrocarbon levels were extremely low and consistent with levels created by natural marine processes. If migration pathways exist from the subsurface to the surface seafloor, the results of this survey would indicate a lack of subsurface petroleum at depth.

FIELD METHODS

This exploration program searched for hydrocarbon seepage into the water column. A general description of the exploration methodolgy and analytical system follow.

Bottom Water Geochemical Method

A bottom water exploration survey searches for evidence of hydrocarbon seepage from the sediments into the near-bottom seawater (Figure 1). A submersible unit containing sensors and a water pump was towed at speeds ranging from 5 to 6.5 knots. Near-bottom seawater was continuously pumped up to the ship by the submersible unit. The unit was generally kept within 10 meters of the bottom in the survey area to maximum water depths of 70 meters.

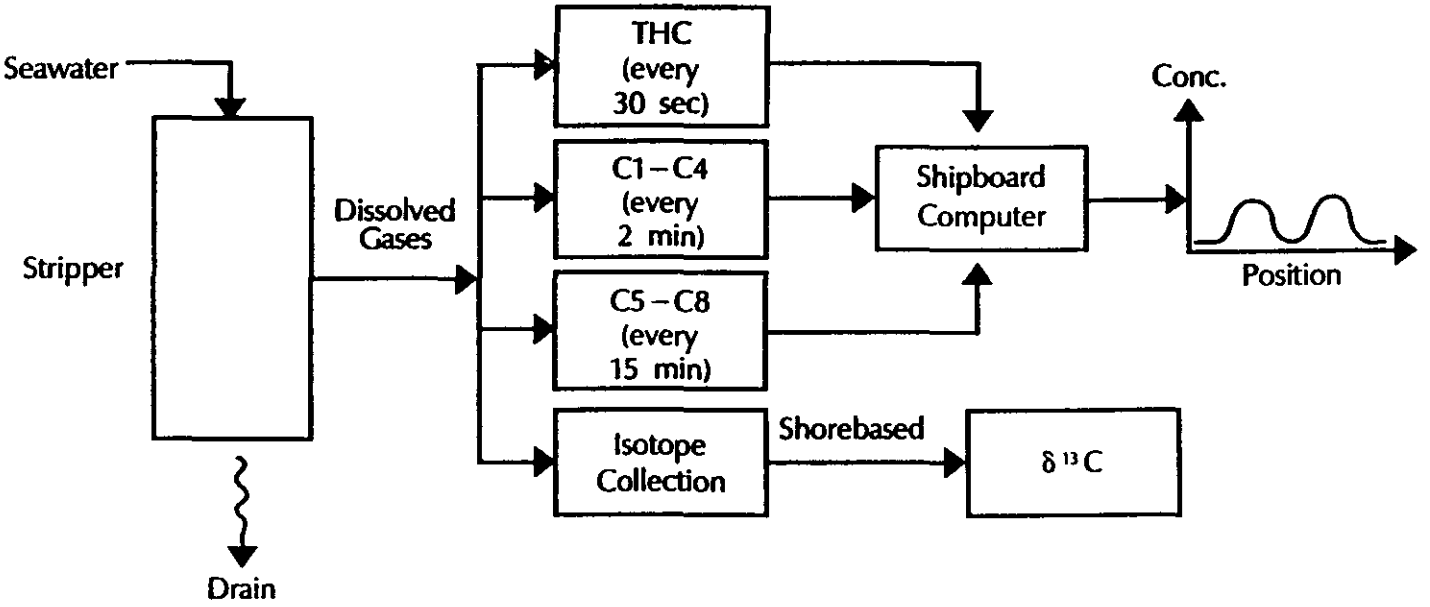
On board ship, the seawater was continuously degassed under vacuum in a closed chamber. Approximately 12 liters of water per minute were degassed, yielding approximately 200 ml of dissolved gas per minute. The stripped gases were passed through a series of analytical instruments for measurement of hydrocarbon compounds of interest (Figure 1). The following data were collected throughout the survey:

. Light hydrocarbons (C1-C4) every 2 minutes.
. Total hydrocarbons every 30 seconds.
. Salinity, temperature, and depth every 30 seconds.
. Gasoline-range hydrocarbons (C5-C8) every 10 minutes.
. Carbon dioxide every 2 minutes.

Calibration standards and system blanks with zero nitrogen were performed once each day. Calibrations were within 10% for the entire program and system blanks were less than 2 ppm for methane and 5 ppb for the C2+ compounds. Minimum detection limits were approximately 10 parts per billion in the stripped gas (equivalent to 0.02 nl/l). Characteristic chromatograms for all of the analytical analyses are shown in Figure 2.

All measured parameters were recorded by a shipboard computer and displayed immediately after the conclusion of each analysis to ensure data quality and to allow immediate recognition of anomalies.

BOTTOM-WATER GEOCHEMICAL EXPLORATION METHOD



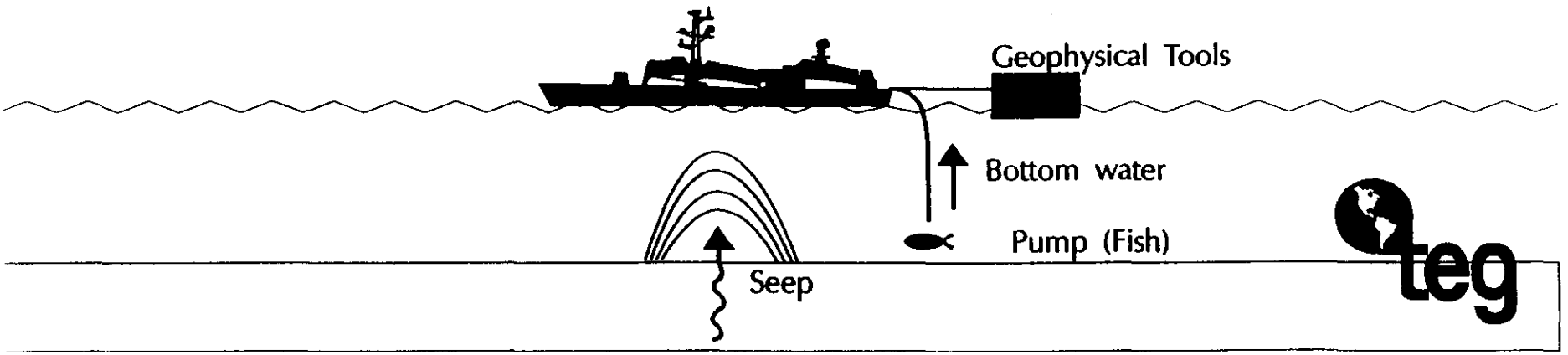


FIGURE 1

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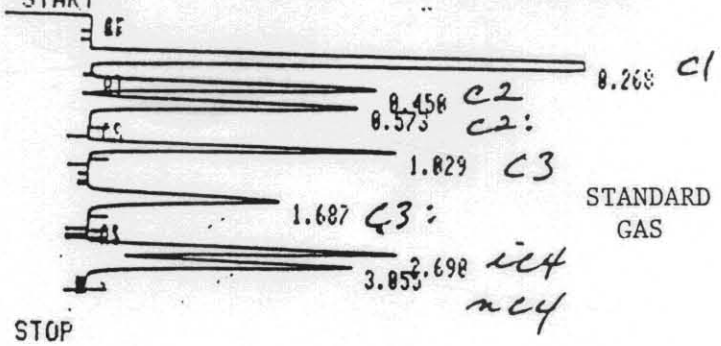

STANDARD GAS

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.573	210970	TVB	3R	.720
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1.687	319748	PB	5R	.826
2.698	423378	PV	6R	.879
3.055	415286	VV	7R	.904

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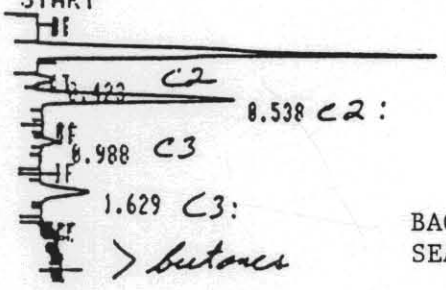

BACKGROUND SEAWATER

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.538	35637	PV	3R	.1
.988	4304	VV	4R	.0
1.629	20078	PV	5R	.0

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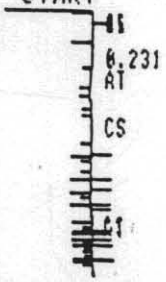

SYSTEM BLANK
ZERO NITROGEN

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* REPORT

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ESTD

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GIPPSLAND BASIN ANOMALY

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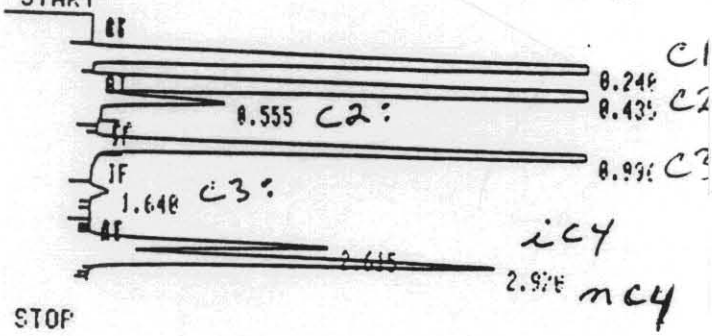

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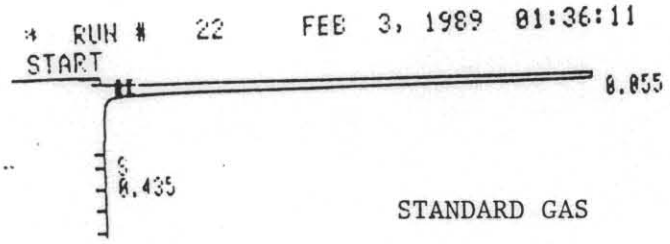
.435	793767	BV	2R	3.137
.555	22864	VB	3R	.088
.996	502685	PB	4R	1.332
1.648	7911	BV	5R	.020
2.615	79503	VV	6R	.150
2.978	156155	VV	7R	.320

FIGURE 2A. Chromatograms from TEG's C1-C4 hydrocarbon analysis.



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.055	3479246	SHB	1R	165.294

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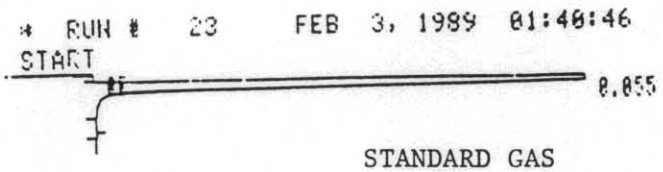

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ESTD

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.055	3487485	ISHH	1R	165.686

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FIGURE 2B. Chromatograms from TEG's Total Hydrocarbon analysis.

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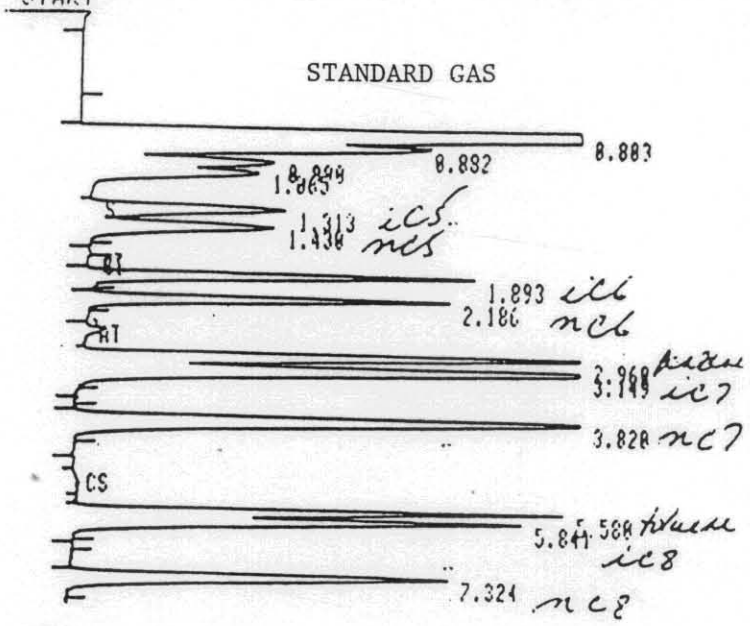

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REPORT FILE: H:Q7F09E23.RPT
ESTD

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1.313	91712	BV	1R	.620
1.430	87890	VB	2R	.609
1.893	110997	BB	3R	.720
2.186	105660	BB	4R	.787
2.960	106943	PV	9R	.884
3.149	126734	VB	5R	.786
3.820	127678	BB	6R	.896
5.580	147130	VV	10R	1.164
5.841	156876	VB	7R	.934
7.324	151292	BB	8R	1.076

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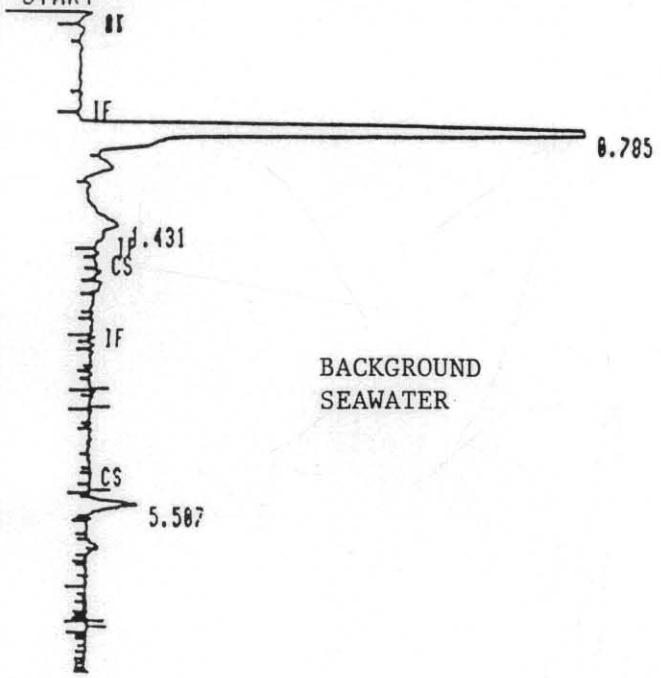

BACKGROUND
SEAWATER

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ESTD

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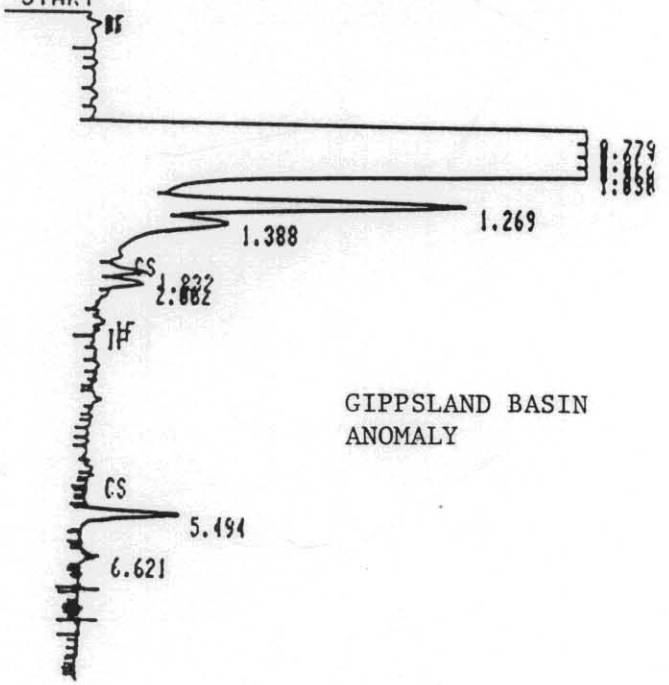

GIPPSLAND BASIN
ANOMALY

STOP

FIGURE 2C. Chromatograms from TEG's C5-C8 hydrocarbon analysis.

^BREAK

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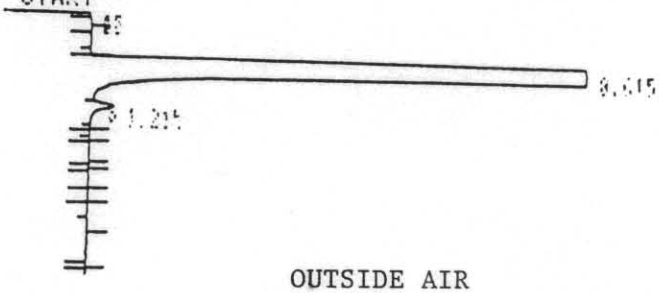

OUTSIDE AIR

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.615	45192480	>SBB	2R	1003020.00
1.215	14164	BB		336.728

TOTAL AREA=4.5207E+07
MUL FACTOR=1.0000E+00

FIGURE 2D. Chromatograms from TEG's carbon dioxide analysis.

.619	45526912	>SPB	2R	1010442.40
1.213	260437	BB	1R	6191.581

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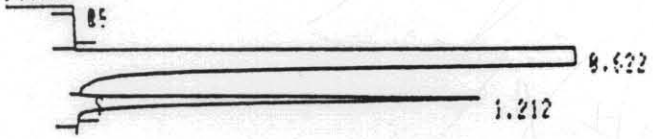

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REPORT FILE: H:Q7065258.RPT
ESTD

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.622	44165888	>SPB	2R	980235.520
1.212	252888	BB	1R	5992.826

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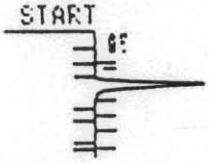

NITROGEN

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REPORT FILE: H:Q7065200.RPT
ESTD

RT	AREA	TYPE	CAL#	AMOUNT
.675	58021	BB	2R	1287.742

TOTAL AREA= 58021
MUL FACTOR=1.0000E+00

REVIEW OF FIELD OPERATIONS

Overview

In February 1989, TEG conducted a proprietary geochemical bottom water exploration survey in the Bass Basin over blocks T/14P & T/18P for Amoco Australia Production Company. The survey was conducted aboard the RV Rig Seismic. Data collection commenced on February 3 and concluded on February 15, 1989. A total of 5090 light hydrocarbon analyses were collected over approximately 2000 kilometers of survey track. A chronologic log of the bottom-water survey is enclosed in the back of this report notebook.

Navigation

Navigation was provided by a combination of Global Positioning Satellite (GPS), land-based Hi-fix, and transit satellite navigation. Accuracy of the recorded positions are +/- 20 meters when GPS or Hi-fix was operational and +/- 100 meters when transit satellite navigation was on-line.

Operational Problems

Overall, the geochemical analysis system performed trouble-free and operational downtime was minimal throughout the entire program. Low equipment downtime, combined with exceptionally calm weather conditions, resulted in an exceptionally high coverage rate per day (>200 kilometers/day). A few minor problems were incurred throughout the program which did not effect the quality of the program. These problems are described below.

Towbody Fathometer (Digital Depth)

The fathometer in the towbody was non-operational throughout the entire program. Fish height above the bottom (altitude) was monitored with an analog fathometer and the towbody's depth sensor (CTD). Reported altitude readings in the data files and printouts were hand entered by TEG personnel.

Total Hydrocarbons (THC)

Total hydrocarbon values were inaccurate in the beginning of the program (survey lines 18 to 34) due to contamination from an in-line water drier. This drier was not in-line with the other analytical instruments, and thus did not influence the results from the other analytical instruments.

Loss of the Towbody

The submersible towbody was lost during line 56 when the cable failed. A new towbody was attached and the survey resumed at the point of loss as line 56A. Measured values with the new towbody were the same as earlier values.

DESCRIPTION OF THE DELIVERABLE MATERIALS

Bottom Water Data Printout

This printout contains the hydrocarbon data for each of the C1 through C4 compounds, total hydrocarbons, carbon dioxide, salinity, temperature, towbody height, water depth, latitude, longitude, and hydrocarbon wetness. The data are listed by increasing line number. The units for each of these variables are as follows:

Hydrocarbon data: parts per million in the gas phase.
Salinity: parts per thousand.
Temperature: degrees centigrade.
Towbody height: meters.
Depth of submersible unit: meters.
Latitude & longitude: degrees, minutes, seconds.
Hydrocarbon wetness: fractional value (not percent).

Histograms and Statistical Summaries

Histograms and statistical summaries have been prepared for the light hydrocarbon compounds and carbon dioxide and are enclosed in labeled sections of the report notebook.

Survey Track Maps

This map depicts the ship's track during data collection. Line names are posted at the start of each line in blue and every tenth geochemical shotpoint is posted along each line. These maps have been plotted using latitude and longitude coordinates at a scale of 1:250,000.

Concentration Maps

These maps depict the values of the measured hydrocarbons at each sample location. Separate maps have been prepared for each of the C1 through C3 hydrocarbons (maps for the butanes have not been prepared because of the absence of significant quantities of these compounds). The values are color coded to facilitate the recognition of elevated values. Four colors are used, each representing approximately one-fourth of the measured range of each compound.

Black: values less than the statistical mean.
Blue: values lying between the mean and the mean + 1 standard deviation.
Green: values lying between the mean + 1 standard and the mean + 2 standard deviations.
Red: values higher than the mean + 2 standard deviations

TEG'S INTERPRETIVE METHODOLOGY

Sources and Characteristics of Light Hydrocarbons

As shown in Figure 3, three primary sources of hydrocarbon seepage exist in the marine environment:

1. Biological activity in the shallow sediments and water column.

2. Deep sediments in which hydrocarbons have been produced by the thermal degradation of organic matter (source rocks).

3. Reservoired petroleum (oil and gas).

Each source produces hydrocarbons with different geochemical signatures. Some of the primary differences in the light hydrocarbon signatures are summarized on Figure 4 and are discussed below.

Biologically derived hydrocarbons are predominantly composed of methane. Traces of the higher carbon number compounds (C2+) are produced, but the unsaturated hydrocarbon compounds (ethylene and propylene) are thought to be produced in greater quantities than their saturated homologs (ethane and propane). The ratio of the C2+ compounds to methane, termed the hydrocarbon wetness, generally is less than 0.1%. The carbon isotopic signature of the methane is extremely depleted in carbon-13 relative to carbon-12, having values less than -60 per mil.

Thermal processes produce larger quantities of the C2+ hydrocarbons (higher hydrocarbon wetnesses) and none of the unsaturated compounds. The relative amounts of the C2+ compounds, branched to straight chain compounds, and carbon-13 to carbon-12 of hydrocarbons produced by thermal mechanisms vary depending upon the type of organic matter and thermal maturity.

Hydrocarbon seepage from thermally produced gas generally lacks significant quantities of compounds greater than propane (C3) and tends to have hydrocarbon wetnesses less than 1.0%. Ethane is significantly more abundant than propane with ethane to propane ratios generally exceeding 5. Dry thermogenic gas may be quite similar in hydrocarbon composition to biogenically produced gas, but generally contains larger quantities of ethane and at least a trace of propane. The isotopic signature is helpful in distinguishing between a biogenic dry gas and a thermogenic dry gas.

Hydrocarbon seepage from reservoired oil tends to have the entire suite of light hydrocarbons (C1 through C4) and, depending upon the seepage rate, may contain significant quantities of the gasoline range (C5-C8), longer straight-chained hydrocarbons (C15+ alkanes), and 2-ring and 3-ring aromatic hydrocarbons. Hydrocarbon wetnesses tend to be

PRIMARY SOURCES OF HYDROCARBON SEEPS

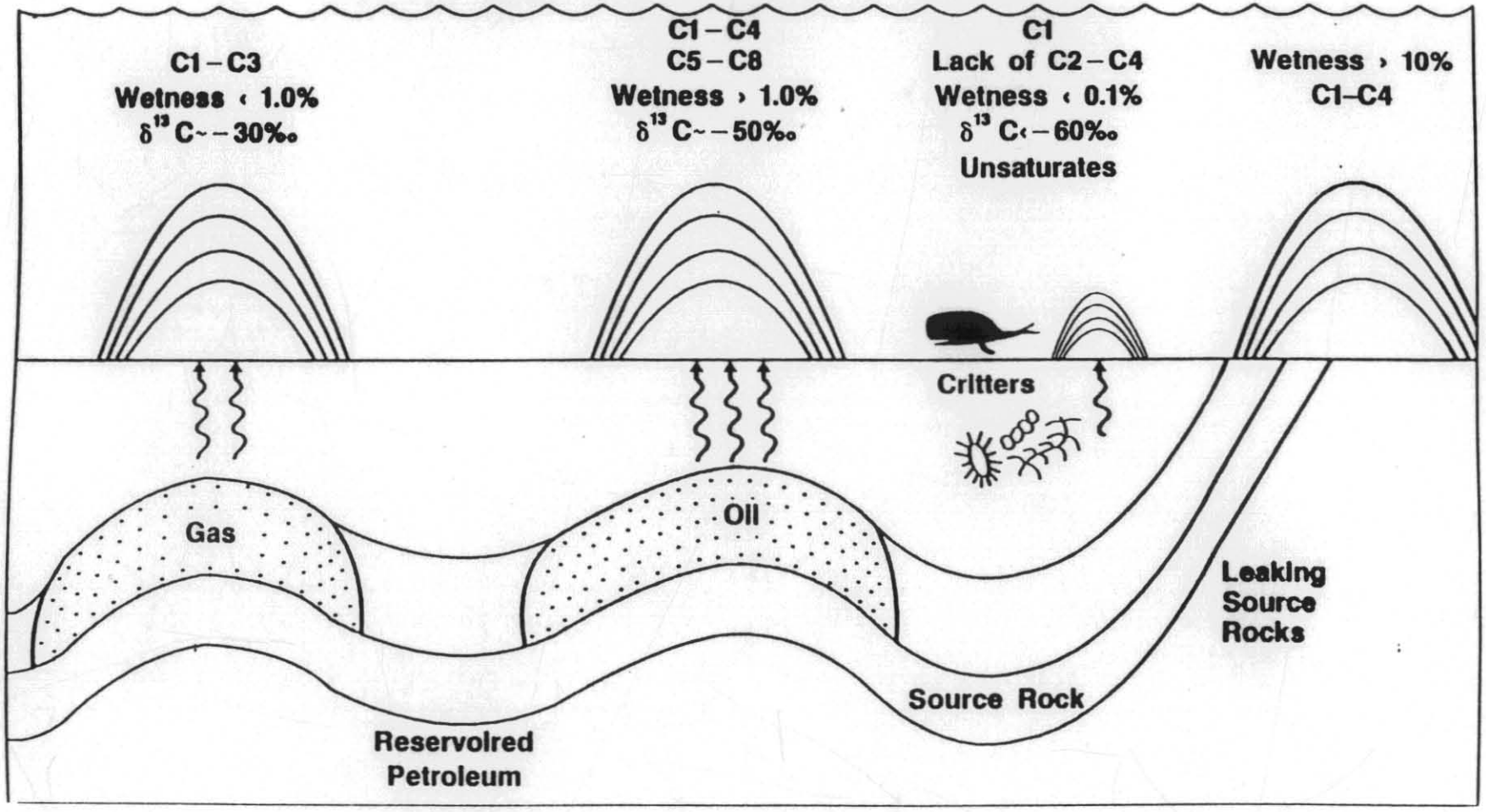


FIGURE 3

greater than 1%, the ratio of ethane to propane is less than 5, and the carbon isotopic signature of the methane is in the neighborhood of -50 per mil.

Seepage from condensates is likely to have a geochemical signature intermediate between thermal gases and oils, i.e., presence of methane, ethane, propane, and possibly butane; wetnesses in the range of 0.5% to 1.0%, and ethane to propane ratios of approximately 5.

The signature of hydrocarbons leaking from near-surface or outcropping source rocks may differ from the typical thermogenic signatures described previously because of the differing mobility of the hydrocarbon compounds. Although the entire suite of light hydrocarbons may be present, hydrocarbon wetnesses may be extremely high due to the preferential loss of methane.

A summary of the light hydrocarbon signatures for the primary sources of hydrocarbons in the marine environment is given in Table 1. Because natural variations exist in light hydrocarbons produced by the different mechanisms and secondary processes (oxidation, differential migration, etc.) may alter hydrocarbon compositions, it is important to realize that these criteria are not rigid. Nevertheless, they allow a geochemical interpretation which can be refined by integration with the subsurface geology and local oceanography.

The Mixing Model Interpretation Method

Interpretation of the source of hydrocarbon anomalies is based upon the differences in the hydrocarbon signatures from the various sources as summarized in Table 1. It is crucial to realize that these characteristic hydrocarbon signatures are applicable only to hydrocarbons from petroleum seepage.

In the natural environment, both marine and terrestrial, low quantities of natural hydrocarbons exist which are unrelated to petroleum seepage from depth (commonly referred to as the "background"). The processes creating and controlling the hydrocarbon background population are not well known, but include biological production and fractionation, photosynthetic production and destruction reactions, and chemical oxidation. Because the relative importance of these processes varies in different areas, the background population has extremely variable characteristics from one location to another, but is always characterized by low concentrations.

In areas where petroleum seepage from depth does occur, the seeping hydrocarbons mix with the natural hydrocarbons in the near-surface sediments and seawater. When hydrocarbon anomalies are measured in the shallow sediments or water column, the anomalies represent a mixture of the pure seepage with this hydrocarbon background. For this reason, it is

Table 1. Primary Light Hydrocarbon Geochemical Criteria Used to Characterize the Source of Hydrocarbon Seeps.

Hydrocarbon Source	Compounds Present	Wetness Ratio (%)	C2:/C2 Ratio	iC4/nC4 Ratio	δC13 (‰)
Oil-Related	C1,C2,C3,nC4	>1	<1	<1	-40 to -50
Wet gas/ condensate	C1,C2,C3	0.3 - 1.0	<1	1	-30 to -50
Thermal Dry Gas	C1,C2	<0.3	<1	<1	-25 to -40
Biogenic Dry Gas	C1,C2:,C3:	<0.1	>1	<1	-90 to -55

Abbreviations:

C1	Methane
C2	Ethane
C2:	Ethylene
C3	Propane
C3:	Propylene
iC4	isobutane
nC4	normal butane
δC13	Carbon isotopic ratio of methane
wetness	Ratio of the ethane and heavier compounds to methane as a %.

necessary to consider the effects that the background hydrocarbons may have on the characteristic ratios before attempting to apply the ratios for source determination of anomalies.

One approach to account for the hydrocarbon background is to define a background concentration (either statistically or graphically) and subtract the defined value from the measured data. This approach is problematic because the background population generally varies throughout the survey area and subtraction of a constant background level leads to erroneous conclusions.

A second and more powerful approach is to construct cross plots of key hydrocarbon parameters and to search for trends in the data indicative of a mixture of seeping hydrocarbons with the background hydrocarbons. The hydrocarbon background population appears on the plot as the majority of data at the lowest hydrocarbon values. When hydrocarbons are added to the background population (as from seepage, for example), a mixture of the two sources results and this appears on the plot as a trend of data extending away from the background (i.e., a mixing line). As the quantity of the hydrocarbons added to the background increases, higher and higher hydrocarbon values result, and the mixing line trends toward the composition of the pure hydrocarbon source. The model described here is identical to the mixing model used by geologists when working with mineral and rock formation from melts and to the model used by oceanographers when determining the relative inputs of fresh and salt water in estuaries.

A cross plot of two compounds (e.g., ethane vs. methane) indicates whether the compounds are being added to the natural hydrocarbons in an area. Positive trends on plots of one compound versus another indicate that both compounds are being added concurrently and thus, the source of the anomaly contains both compounds. The slope of the correlation line represents the ratio of the compound plotted on the y-axis versus the compound on the x-axis. A steep slope indicates a high ratio of the compound plotted on the y-axis versus the compound on the x-axis. In contrast, a gentle or horizontal slope indicates a low ratio of the two components.

Because a mixing trend is created by one hydrocarbon source supplying hydrocarbons to the background, all data on the same trend reflect the same source regardless of the absolute concentrations or absolute ratios. For example, an anomaly with ethane at 0.1 ppm would reflect the same hydrocarbon source as a second anomaly with ethane values at 1.0 ppm if the data from the two anomalies lie on the same mixing trend. Likewise, an anomaly with a wetness of 2% (oil-like) may actually represent a dry gas source if it falls on a mixing trend that has low wetnesses at higher concentrations.

This interpretive approach is illustrated in Figure 5 entitled "Cross-Plot Interpretation Method". This figure shows the expected trends in surface geochemical data if either ethane (C2) or hydrocarbon wetness (ratio of C2+ compounds to methane) is plotted against methane. The background hydrocarbons lie to the left-hand side of the plot (low methane values), and the pure hydrocarbon sources lie to the right side of the plot (high methane values). Based upon the criteria defined in Table 1, data representing hydrocarbons from biogenic and oil-associated sources would follow different mixing lines. Oil-sourced hydrocarbons would show positive trends because of the presence of high quantities of ethane and the higher hydrocarbons. In contrast, biogenic hydrocarbons would show negative trends because hydrocarbons from this source have little to no ethane or heavier compounds. Wet-gases and condensates would lie between these two trends. The exact direction and slope of the mixing lines vary depending upon the characteristics of the background hydrocarbons and the hydrocarbon source.

TEG's interpretation approach is to construct cross plots for all compounds and diagnostic ratios and determine the characteristics of the hydrocarbon sources by extrapolating observed trends to the pure end-member. The determined characteristics are then compared to the criteria in Table 1.

CROSS-PLOT INTERPRETATION METHOD

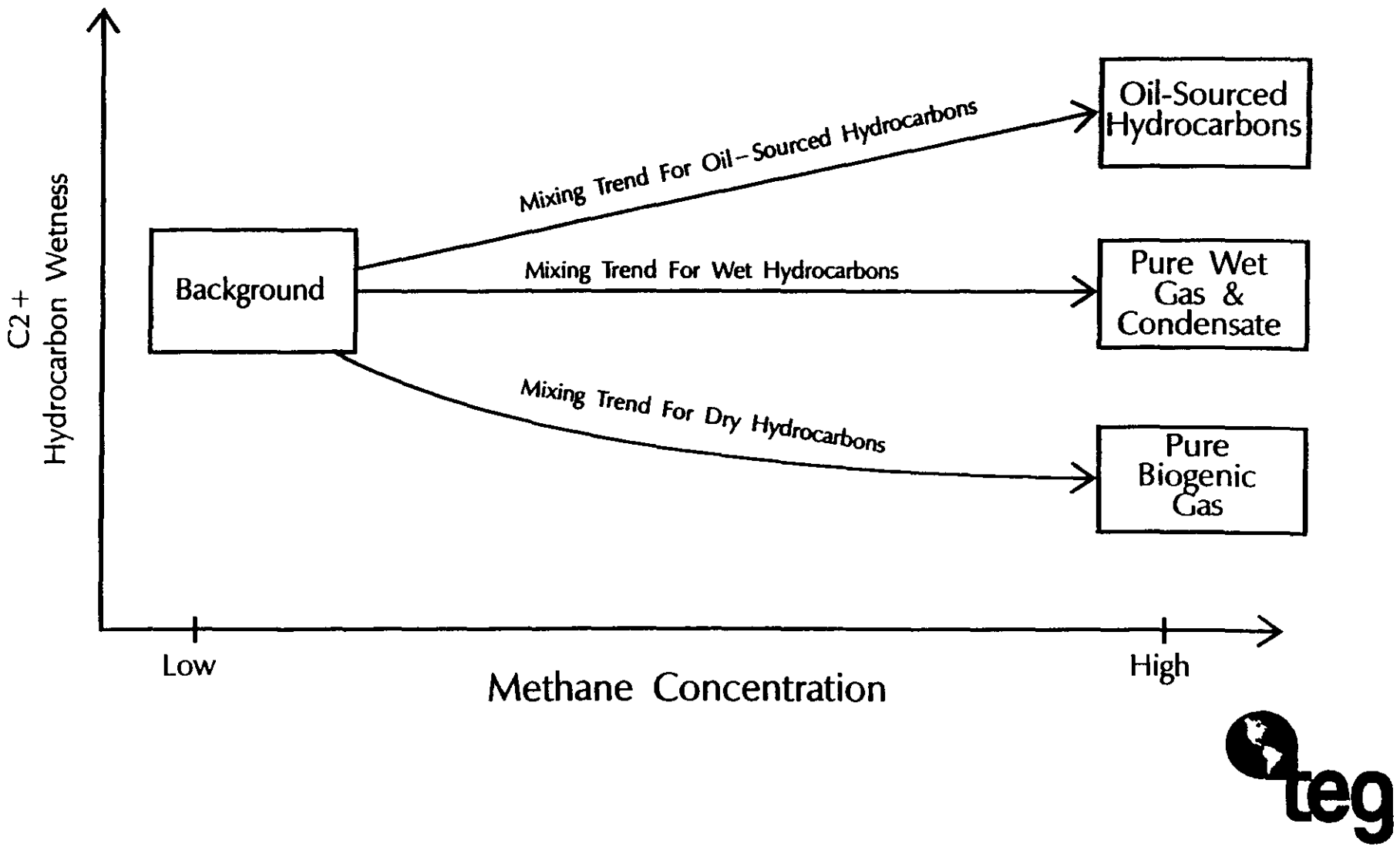


FIGURE 4

SURVEY RESULTS

Description of the Bass T/14P & T/18P Data

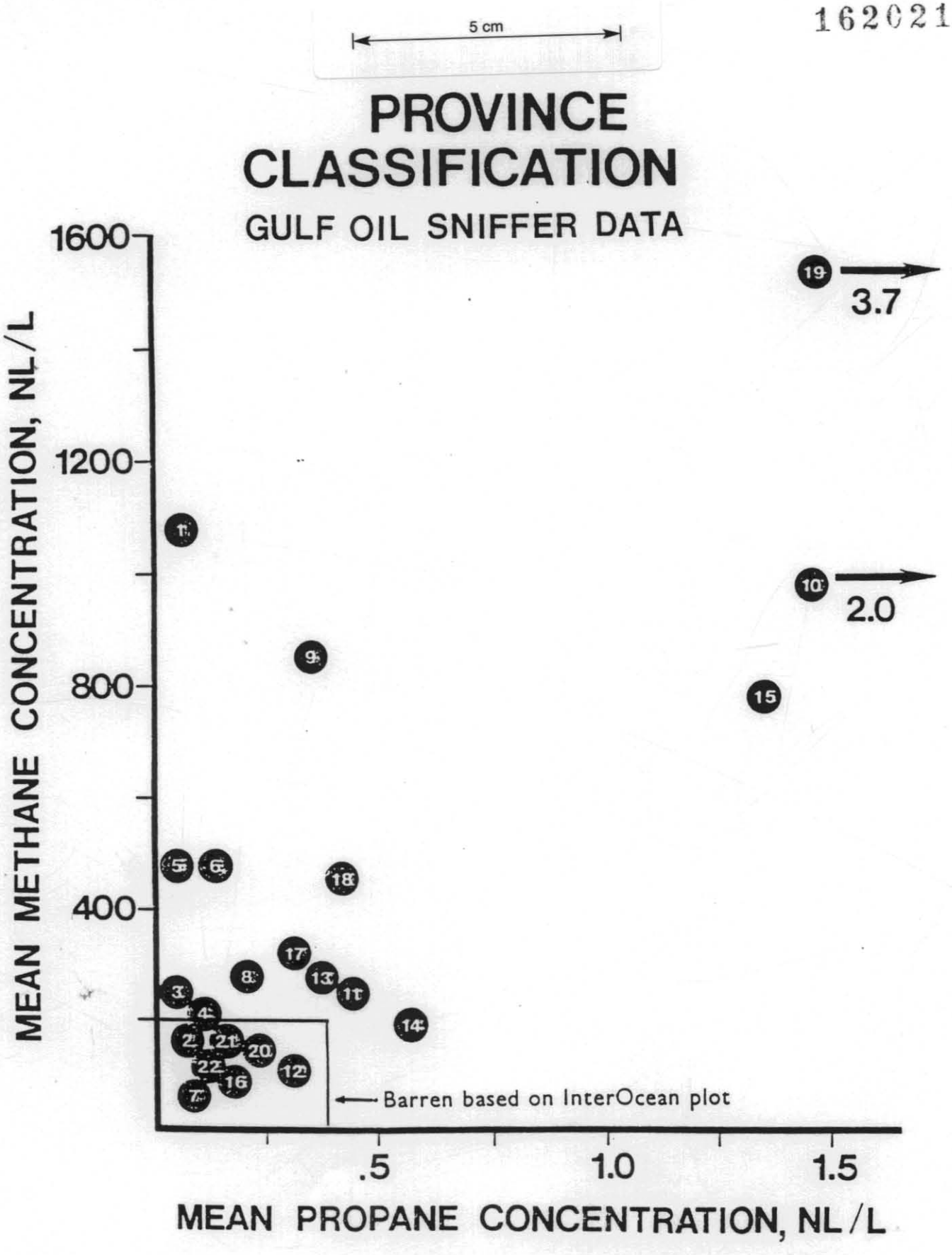
Cross plots of the light hydrocarbons and carbon dioxide for all the data from the Bass T/14P & T/18 blocks, approximately 5090 data points, are enclosed in the report section labeled "cross-plots". Observed concentrations of all the hydrocarbons are extremely low and no significant mixing trends exist on any of the plots. The observed variations, scattered appearance of the plots, and lack of trends are characteristics of natural background variations.

Inspection of the hydrocarbon data for low-level anomalies is possible from the hydrocarbon profile plots for each individual line. No significant anomalies for any of the saturate light hydrocarbons are apparent on any of the survey lines. Variations in ethylene, propylene, and carbon dioxide are apparent and are likely to represent biological activity. In general, these three compounds showed a strong dependance with water depth as typified by survey lines 36 and 37.

The extremely low magnitude of the hydrocarbon values in this area is best illustrated by comparison with data collected in the Gippsland Basin. Cross-plots of data from the Gippsland Basin are included in the section labeled "cross-plots" and plots of hydrocarbon versus shotpoint from the Gippsland Basin are included in the section of profile plots. Large values of the light hydrocarbons exhibiting strong mixing trends are apparent on the plots for this area. The high values and strong trends are characteritic of oil-sourced hydrocarbons. To further compare the two areas, a cross-plot of ethane versus methane for the Bass Basin data has been prepared to the same scale as the Gippsland Basin data. It is apparent that the Bass Basin has extremely low hydrocarbon levels, signifying a lack of hydrocarbon inputs into the water column by bottom seepage or anthropogenic sources.

Summary of the Geochemical Data & Implications on the Petroleum Potential of the Bass T/14P & T/18P Blocks

The average hydrocarbon value for the Bass Basin blocks T/14P & T/18P is compared to areas surveyed around the world by Gulf Oil Company in Figure 5 (a table of the locations is on the back of the figure). The values measured in this survey cluster with non-productive areas. If migration pathways exist from the subsurface to the surface seafloor, the results of this survey would indicate a lack of appreciable quantities of subsurface petroleum at depth.



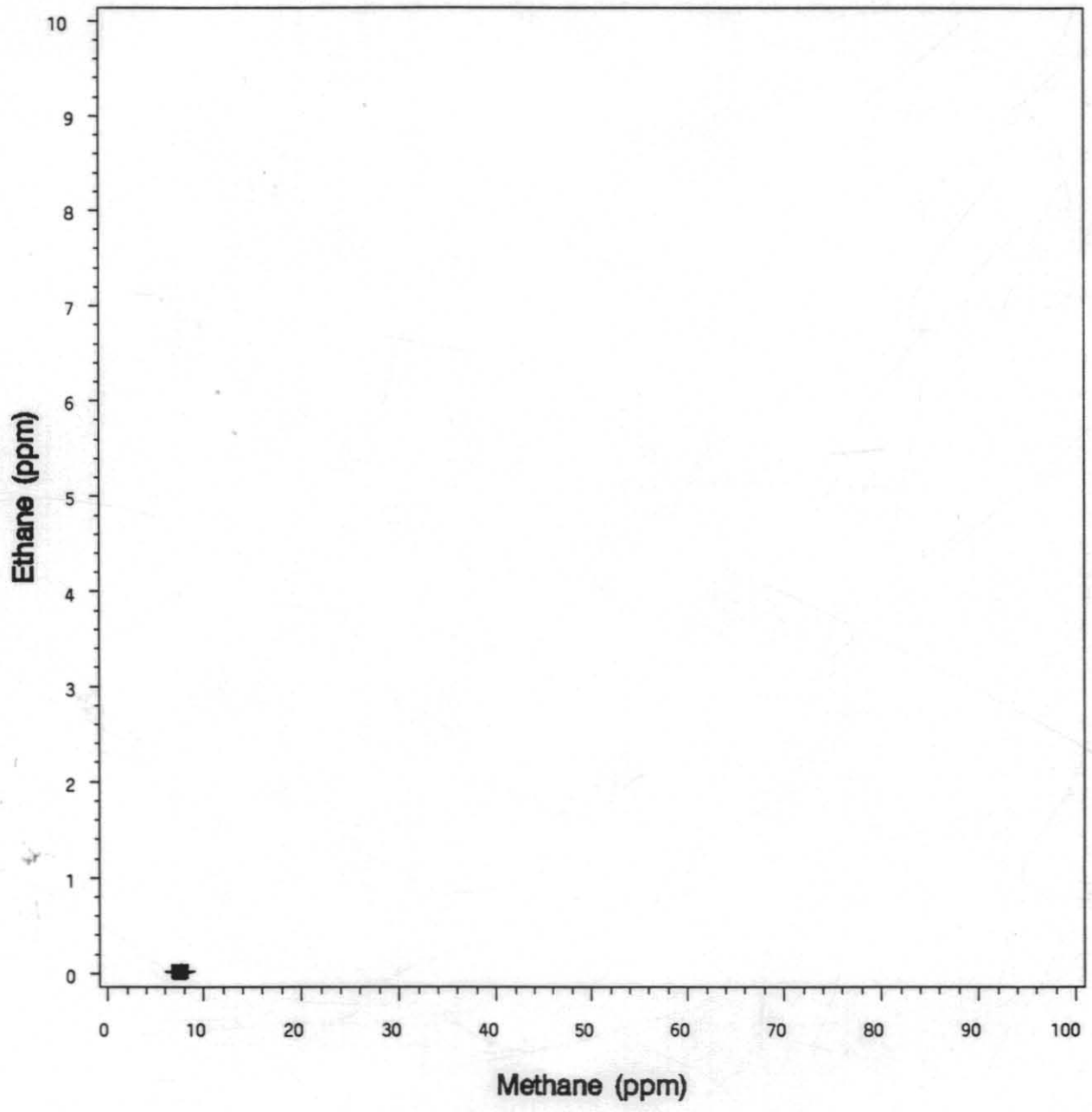
Mousseau, R.J. (1981), Role of the Hollis Hedberg in marine hydrocarbon geochemical prospecting on continental margins. Presented at: Hedberg Research Conference on Continental Margin Processes, January 1981.

FIGURE 5

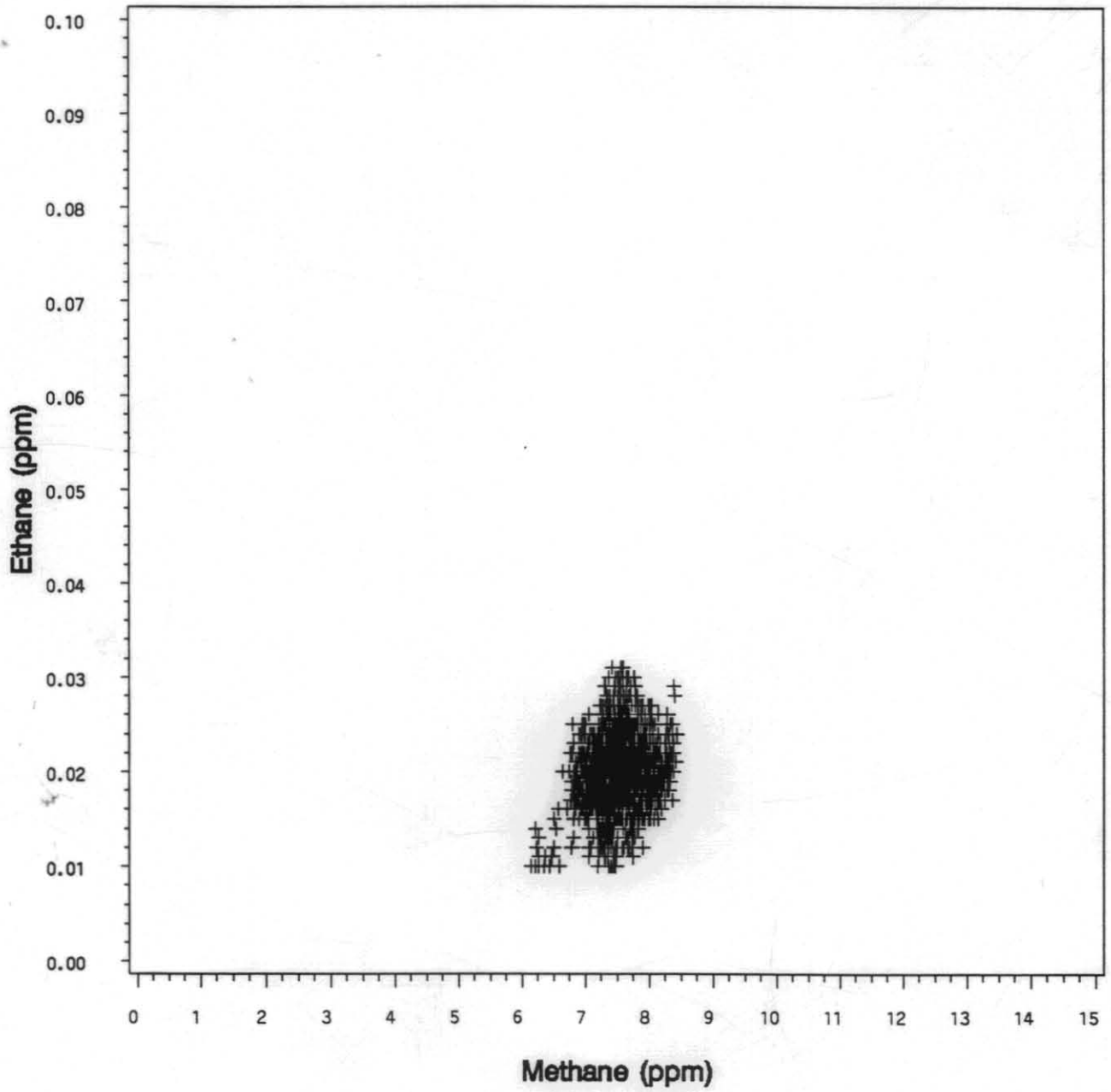
162022

CROSS PLOTS OF THE BOTTOM-WATER DATA FROM THE BASS T/14P & T/18P BLOCKS & GIPPSLAND BASIN

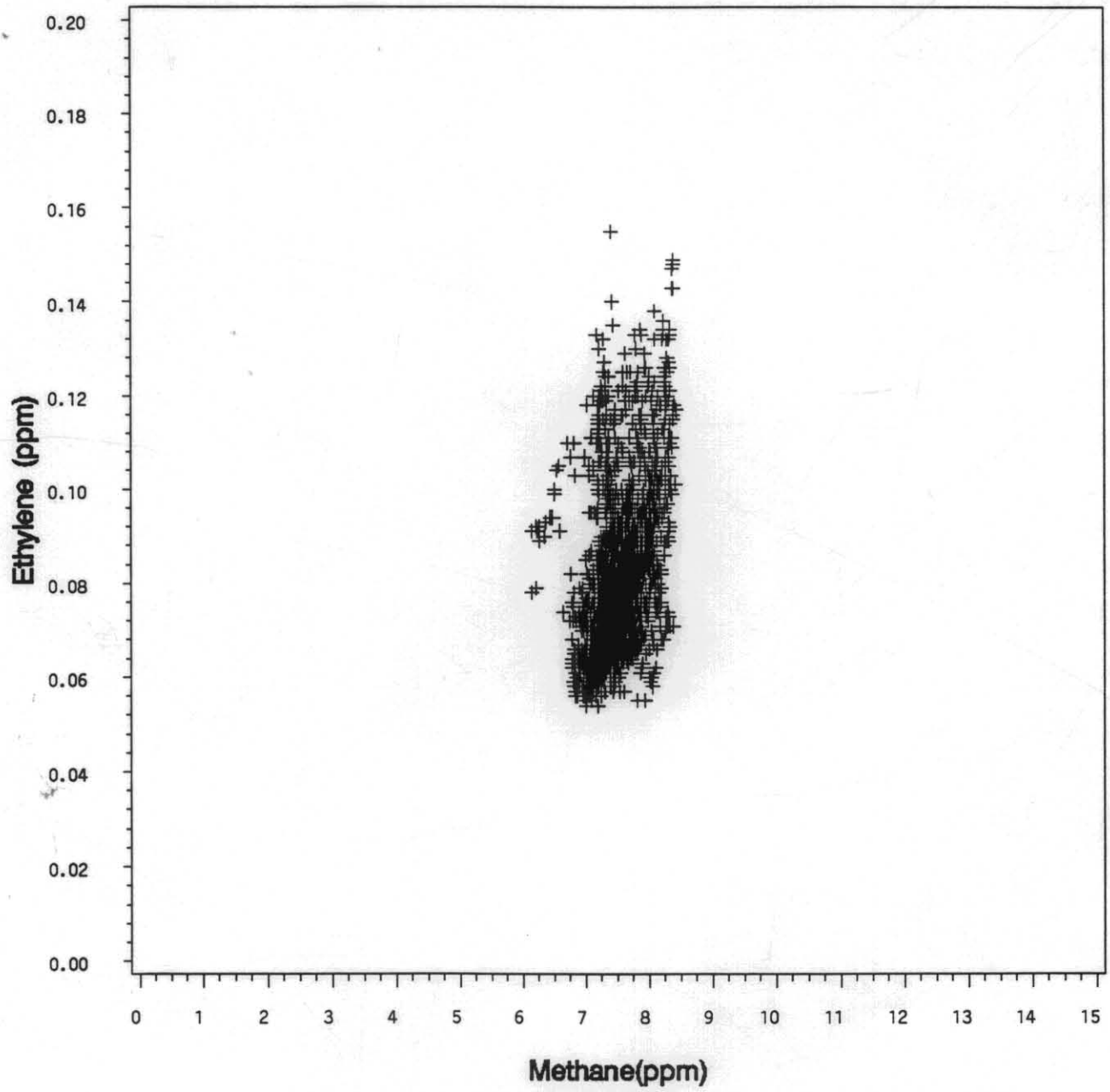
Bass Basin – Blocks T/14P, T/18P



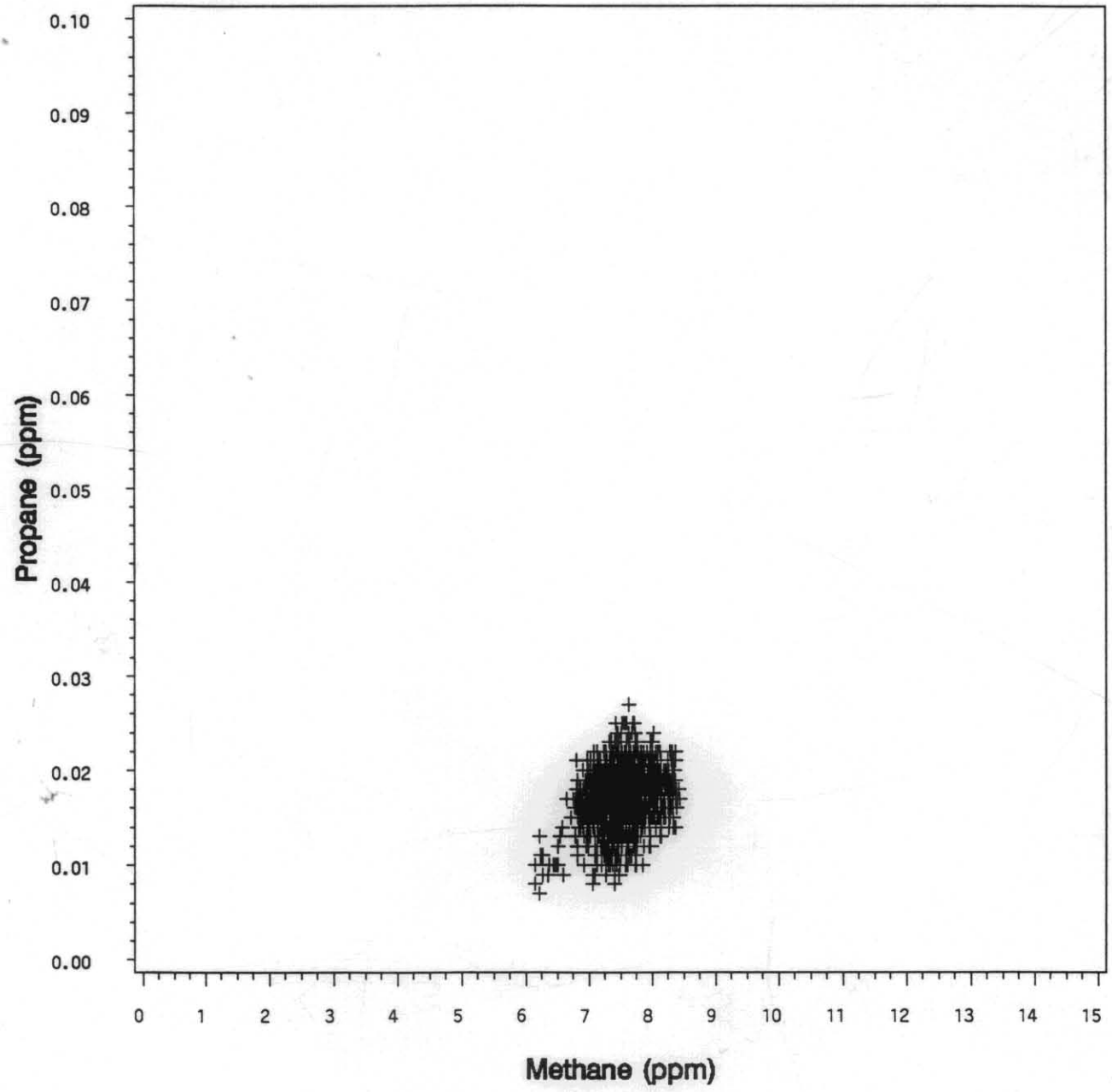
Bass Basin – Blocks T/14P, T/18P



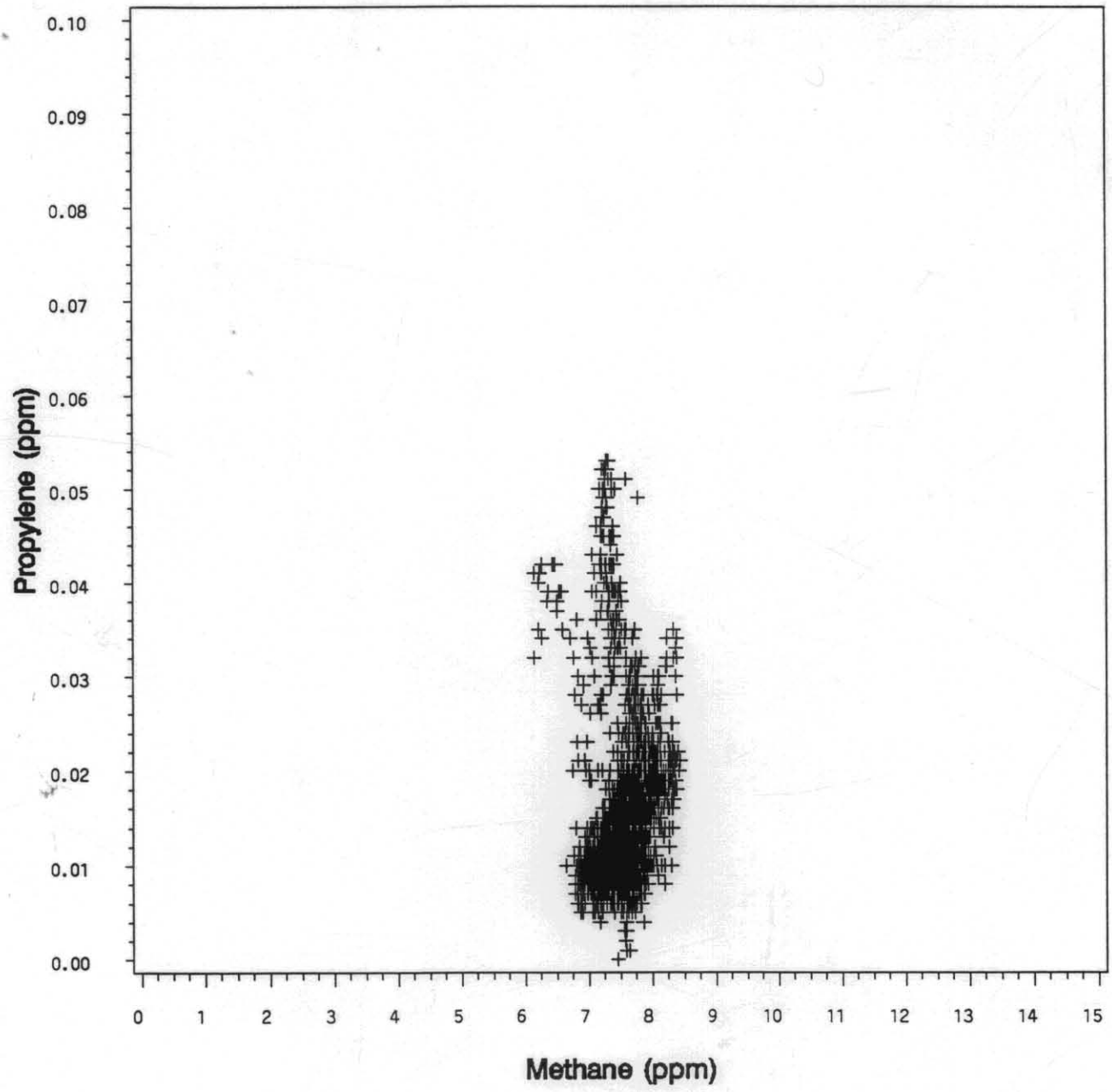
Bass Basin – Blocks T/14P, T/18P



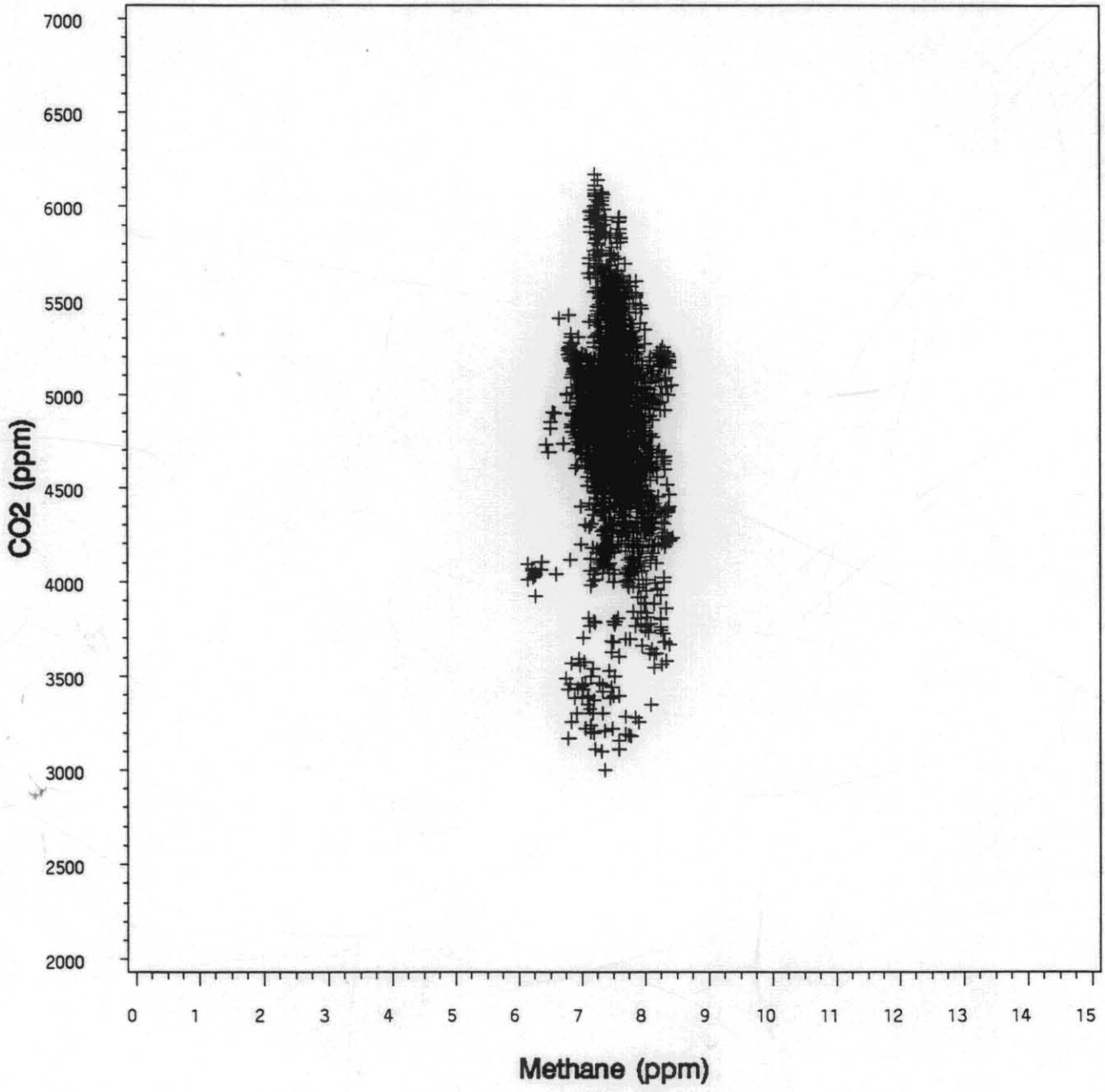
Bass Basin – Blocks T/14P, T/18P



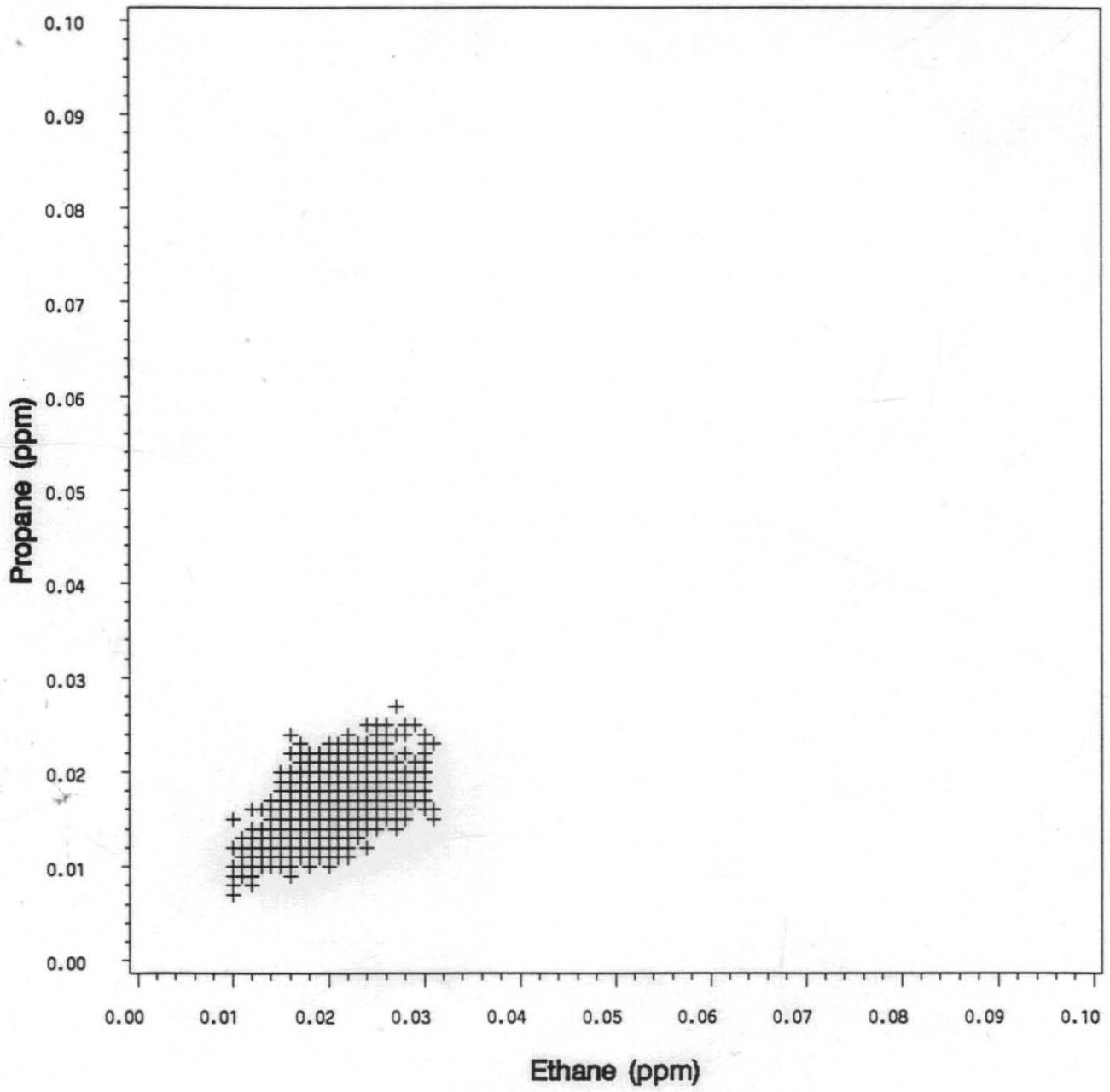
Bass Basin – Blocks T/14P, T/18P



Bass Basin – Blocks T/14P, T/18P



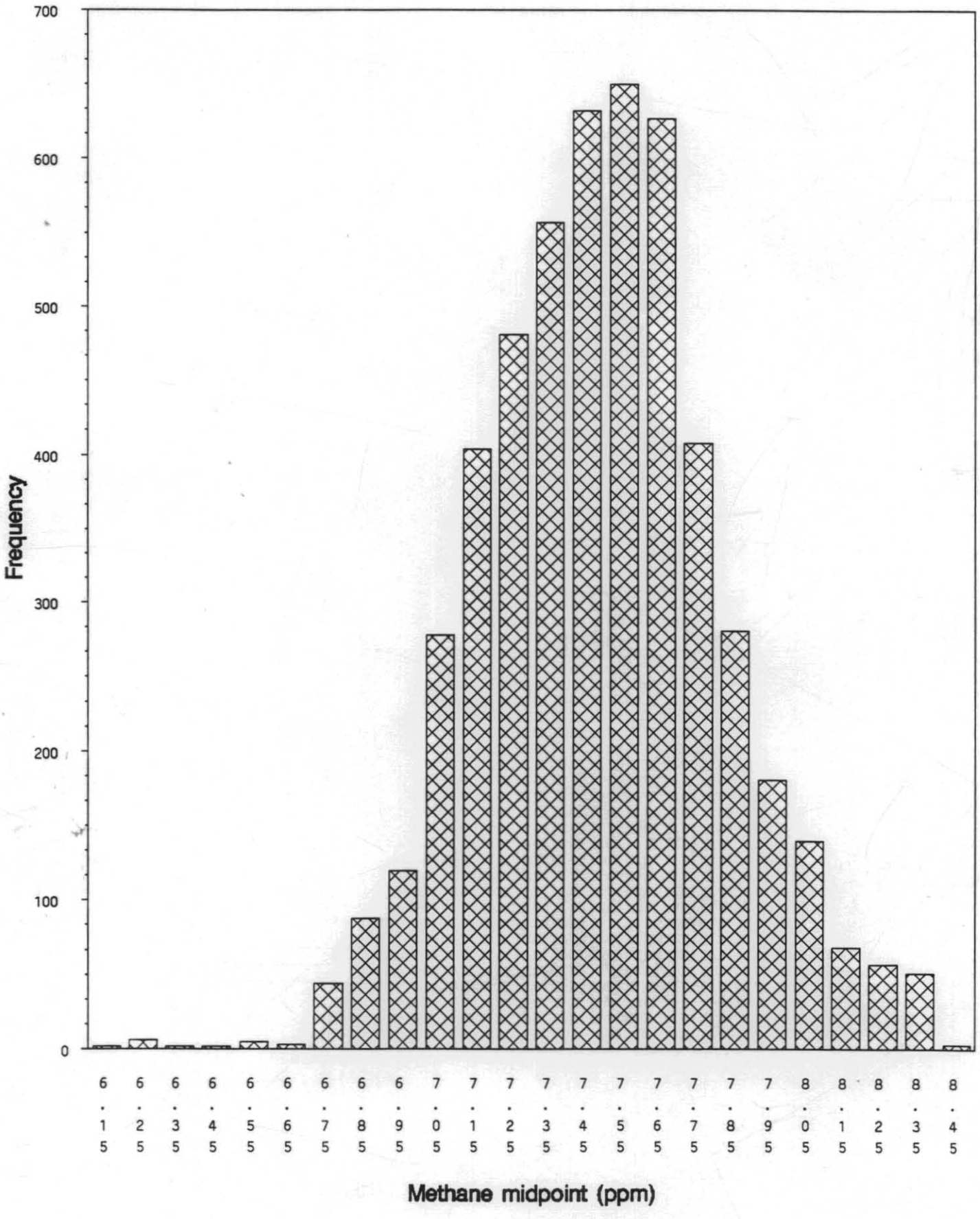
Bass Basin – Blocks T/14P, T/18P



HISTOGRAMS OF THE GEOCHEMICAL DATA

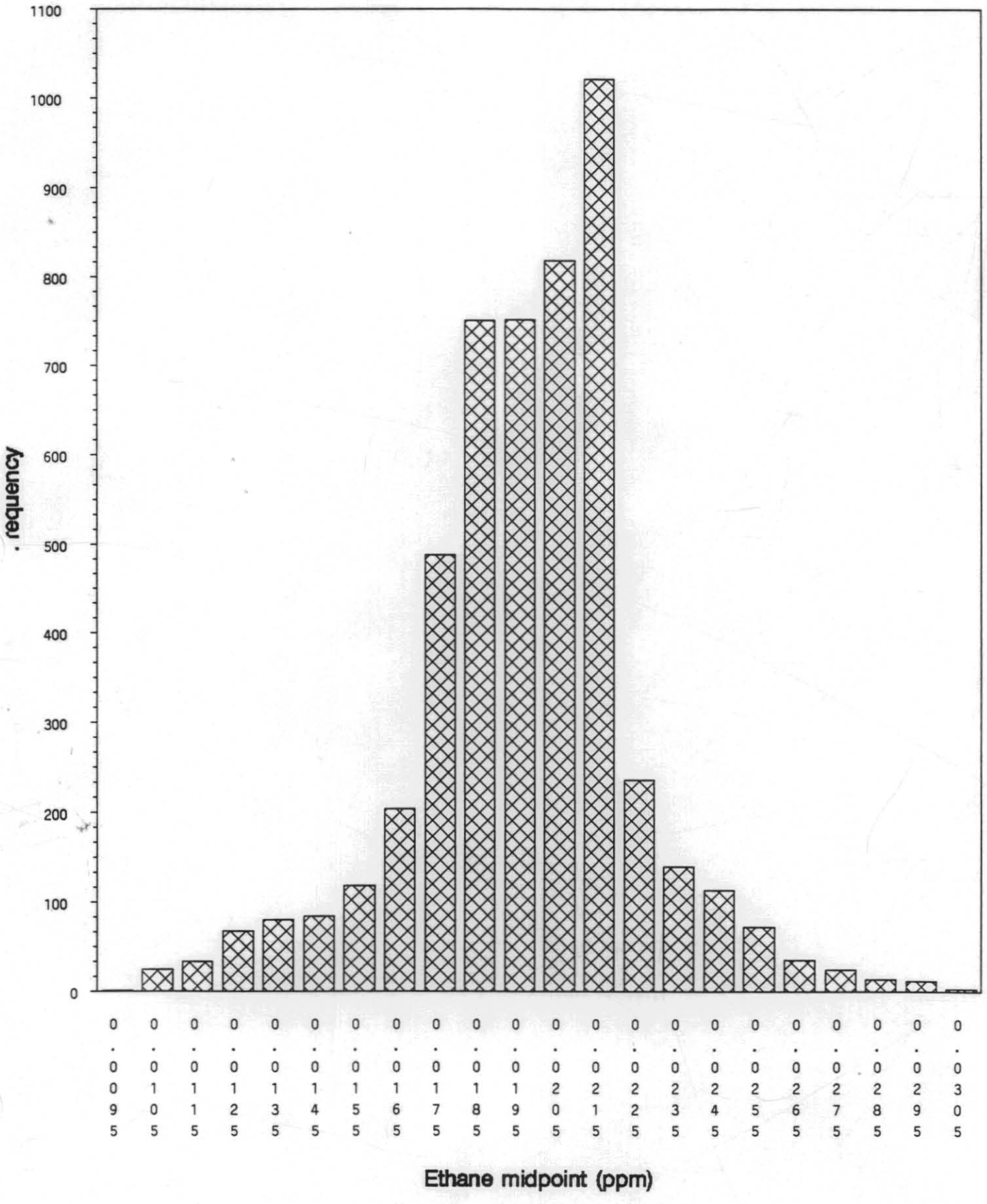
Bass Basin – Blocks T/14P, T/18P

162031

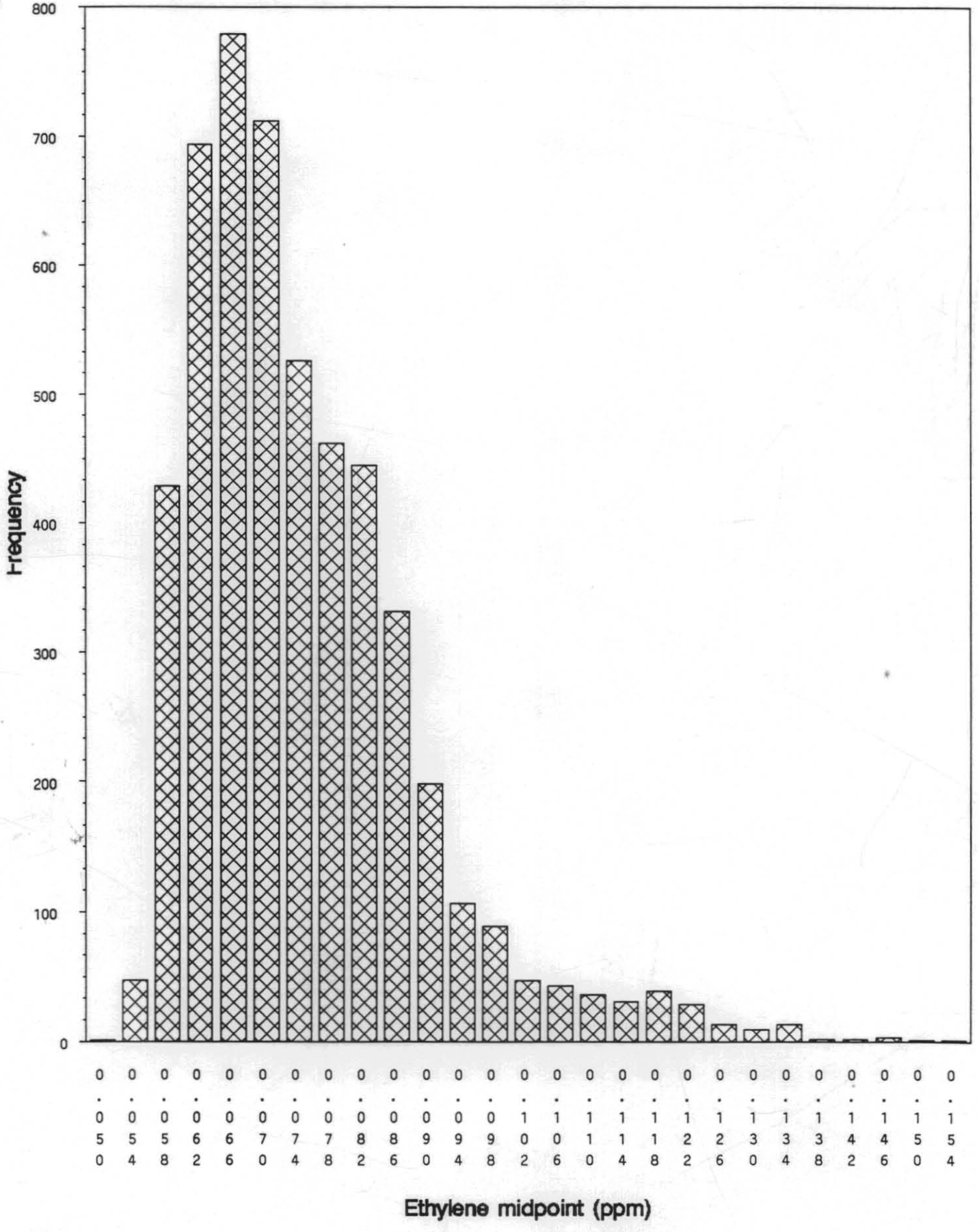


Bass Basin – Blocks T/14P, T/18P

162032

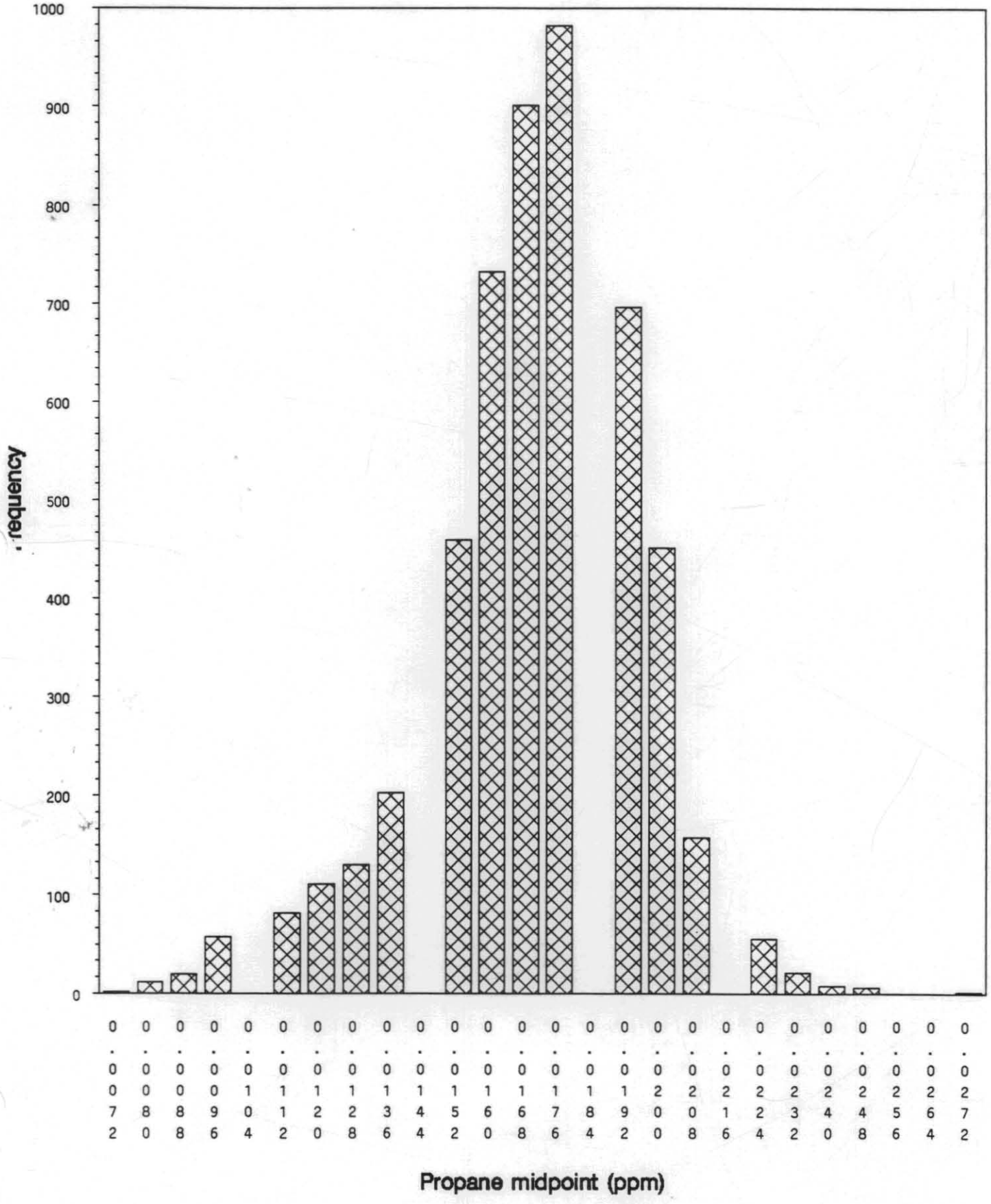


Bass Basin – Blocks T/14P, T/18P

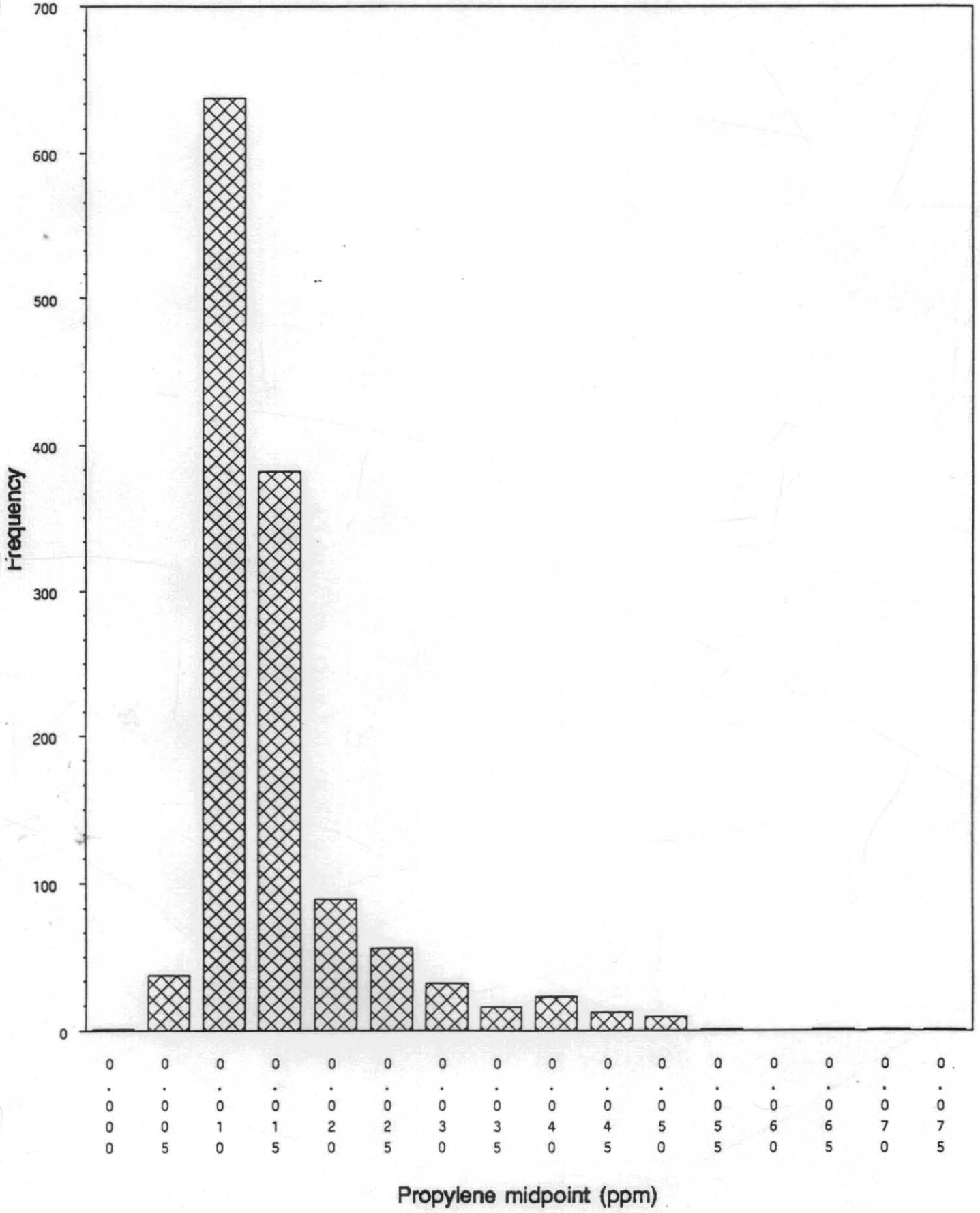


Bass Basin – Blocks T/14P, T/18P

162034

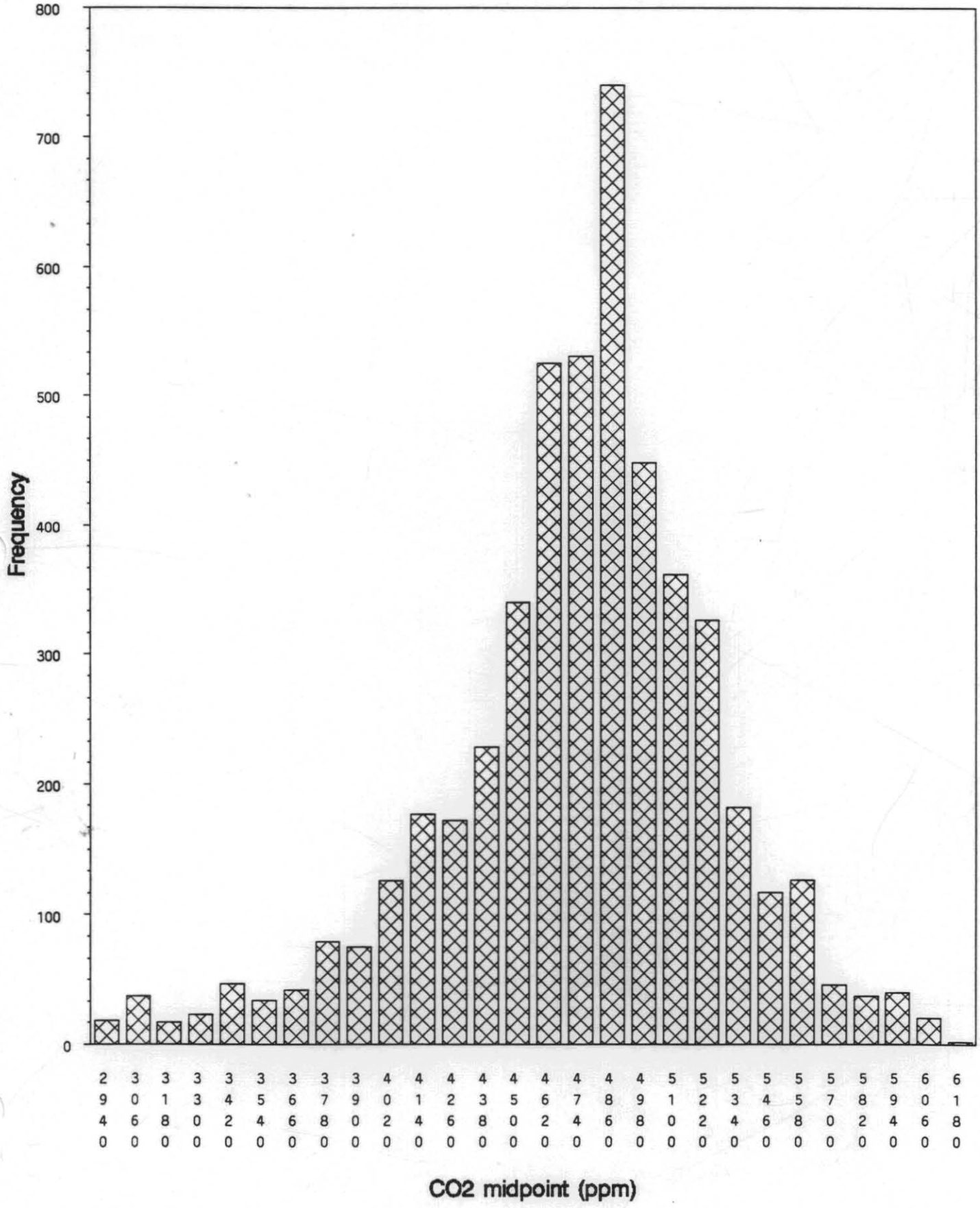


Bass Basin – Blocks T/14P, T/18P



Bass Basin – Blocks T/14P, T/18P

162036



SUMMARY STATISTICS OF THE GEOCHEMICAL DATA

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = Methane

Moments

N	5090	Sum Wgts	5090
Mean	7.481969	Sum	38068.26
Std Dev	0.32108	Variance	0.103092
Skewness	0.088847	Kurtosis	0.286593
USS	285350	CSS	524.4311
CV	4.291384	Std Mean	0.004501
T:Mean=0	1662.173	Prob>|T|	0.0
Sgn Rank	6473208	Prob>|S|	0.0
Num ^= 0	5090		

Quantiles(Def=5)

100% Max	8.54	99%	8.3
75% Q3	7.68	95%	8.03
50% Med	7.48	90%	7.89
25% Q1	7.26	10%	7.08
0% Min	6.14	5%	6.99
		1%	6.77
Range	2.4		
Q3-Q1	0.42		
Mode	7.54		

Extremes

Lowest	Obs	Highest	Obs
6.14(	1036)	8.39(	2188)
6.15(	1027)	8.41(	1077)
6.21(	1026)	8.42(	1461)
6.22(	1029)	8.44(	1075)
6.23(	1028)	8.54(	2189)

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = Ethane

Moments

N	5090	Sum Wgts	5090
Mean	0.01944	Sum	98.912
Std Dev	0.003041	Variance	9.245E-6
Skewness	0.00634	Kurtosis	1.107209
USS	1.969906	CSS	0.047032
CV	15.64095	Std Mean	0.000043
T:Mean=0	456.0478	Prob>|T|	0.0
Sgn Rank	6473208	Prob>|S|	0.0
Num ^= 0	5090		

Quantiles(Def=5)

100% Max	0.031	99%	0.028
75% Q3	0.021	95%	0.025
50% Med	0.019	90%	0.023
25% Q1	0.018	10%	0.016
0% Min	0.009	5%	0.014
		1%	0.011
Range	0.022		
Q3-Q1	0.003		
Mode	0.02		

Extremes

Lowest	Obs	Highest	Obs
0.009(	4533)	0.03(	2090)
0.01(	5032)	0.03(	2092)
0.01(	5029)	0.031(	1963)
0.01(	5028)	0.031(	1980)
0.01(	5003)	0.031(	2055)

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = Ethylene

Moments

N	5090	Sum Wgts	5090
Mean	0.074973	Sum	381.464
Std Dev	0.013929	Variance	0.000194
Skewness	1.496581	Kurtosis	3.132557
USS	29.58652	CSS	0.986918
CV	18.57819	Std Mean	0.000195
T:Mean=0	383.9461	Prob>|T|	0.0
Sgn Rank	6473208	Prob>|S|	0.0
Num ^= 0	5090		

Quantiles(Def=5)

100% Max	0.155	99%	0.123
75% Q3	0.082	95%	0.102
50% Med	0.072	90%	0.091
25% Q1	0.065	10%	0.061
0% Min	0.05	5%	0.059
		1%	0.057
Range	0.105		
Q3-Q1	0.017		
Mode	0.065		

Extremes

Lowest	Obs	Highest	Obs
0.05(	4979)	0.147(	966)
0.054(	3436)	0.148(	968)
0.054(	2727)	0.148(	970)
0.055(	4726)	0.149(	964)
0.055(	4711)	0.155(	900)

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = Propane

Moments

N	5090	Sum Wgts	5090
Mean	0.017075	Sum	86.879
Std Dev	0.002454	Variance	6.022E-6
Skewness	-0.64149	Kurtosis	1.077739
USS	1.514115	CSS	0.030632
CV	14.37111	Std Mean	0.000034
T:Mean=0	496.3445	Prob>|T|	0.0
Sgn Rank	6473208	Prob>|S|	0.0
Num ^= 0	5090		

Quantiles(Def=5)

100% Max	0.027	99%	0.022
75% Q3	0.019	95%	0.02
50% Med	0.017	90%	0.02
25% Q1	0.016	10%	0.014
0% Min	0.007	5%	0.012
		1%	0.01
Range	0.02		
Q3-Q1	0.003		
Mode	0.018		

Extremes

Lowest	Obs	Highest	Obs
0.007(	1029)	0.025(	2063)
0.008(	5032)	0.025(	2087)
0.008(	5021)	0.025(	2091)
0.008(	4626)	0.025(	2136)
0.008(	4617)	0.027(	2069)

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = Propylene

Moments

N	5090	Sum Wgts	5090
Mean	0.013494	Sum	68.683
Std Dev	0.006703	Variance	0.000045
Skewness	2.45428	Kurtosis	7.969172
USS	1.155467	CSS	0.228678
CV	49.67808	Std Mean	0.000094
T:Mean=0	143.6131	Prob>|T|	0.0
Sgn Rank	6475753	Prob>|S|	0.0
Num ^= 0	5089		

Quantiles(Def=5)

100% Max	0.053	99%	0.042
75% Q3	0.016	95%	0.027
50% Med	0.011	90%	0.02
25% Q1	0.01	10%	0.008
0% Min	0	5%	0.007
		1%	0.006
Range	0.053		
Q3-Q1	0.006		
Mode	0.01		

Extremes

Lowest	Obs	Highest	Obs
0(	1674)	0.052(	980)
0.001(	61)	0.052(	981)
0.001(	41)	0.053(	988)
0.002(	4494)	0.053(	989)
0.002(	88)	0.053(	994)

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = iButane

Moments

N	5090	Sum Wgts	5090
Mean	0.000183	Sum	0.93
Std Dev	0.000819	Variance	6.699E-7
Skewness	5.636326	Kurtosis	37.82216
USS	0.003578	CSS	0.003408
CV	447.7997	Std Mean	0.000011
T:Mean=0	15.92904	Prob>|T|	0.0001
Sgn Rank	26001.5	Prob>|S|	0.0001
Num ^= 0	322		

Quantiles(Def=5)

100% Max	0.01	99%	0.004
75% Q3	0	95%	0.002
50% Med	0	90%	0
25% Q1	0	10%	0
0% Min	0	5%	0
		1%	0
Range	0.01		
Q3-Q1	0		
Mode	0		

Extremes

Lowest	Obs	Highest	Obs
0(	5090)	0.008(	4677)
0(	5087)	0.008(	4679)
0(	5086)	0.009(	4661)
0(	5085)	0.009(	4667)
0(	5084)	0.01(	2131)

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = nButane

Moments

N	5090	Sum Wgts	5090
Mean	0.000191	Sum	0.971
Std Dev	0.000821	Variance	6.742E-7
Skewness	5.231956	Kurtosis	32.51258
USS	0.003615	CSS	0.00343
CV	430.2537	Std Mean	0.000012
T:Mean=0	16.57864	Prob>|T|	0.0001
Sgn Rank	27639	Prob>|S|	0.0001
Num ^= 0	332		

Quantiles(Def=5)

100% Max	0.01	99%	0.004
75% Q3	0	95%	0.002
50% Med	0	90%	0
25% Q1	0	10%	0
0% Min	0	5%	0
		1%	0
Range	0.01		
Q3-Q1	0		
Mode	0		

Extremes

Lowest	Obs	Highest	Obs
0(	5087)	0.008(	5055)
0(	5086)	0.009(	2062)
0(	5085)	0.009(	5074)
0(	5084)	0.009(	5078)
0(	5083)	0.01(	4224)

Bass Basin - Blocks T/14P, T/18P 8:47 Monday, March 20, 1989

UNIVARIATE PROCEDURE

Variable = CO2

Moments

N	4919	Sum Wgts	4919
Mean	4740.434	Sum	23318197
Std Dev	519.2079	Variance	269576.9
Skewness	-0.62591	Kurtosis	1.155243
USS	1.119E11	CSS	1.3258E9
CV	10.95275	Std Mean	7.402917
T:Mean=0	640.3468	Prob>|T|	0.0
Sgn Rank	6050370	Prob>|S|	0.0
Num ^= 0	4919		

Quantiles(Def=5)

100% Max	6170	99%	5917.7
75% Q3	5050	95%	5534.3
50% Med	4798.3	90%	5322
25% Q1	4498.5	10%	4076.1
0% Min	2929.6	5%	3777.1
		1%	3094.2
Range	3240.4		
Q3-Q1	551.5		
Mode	4820.4		

Extremes

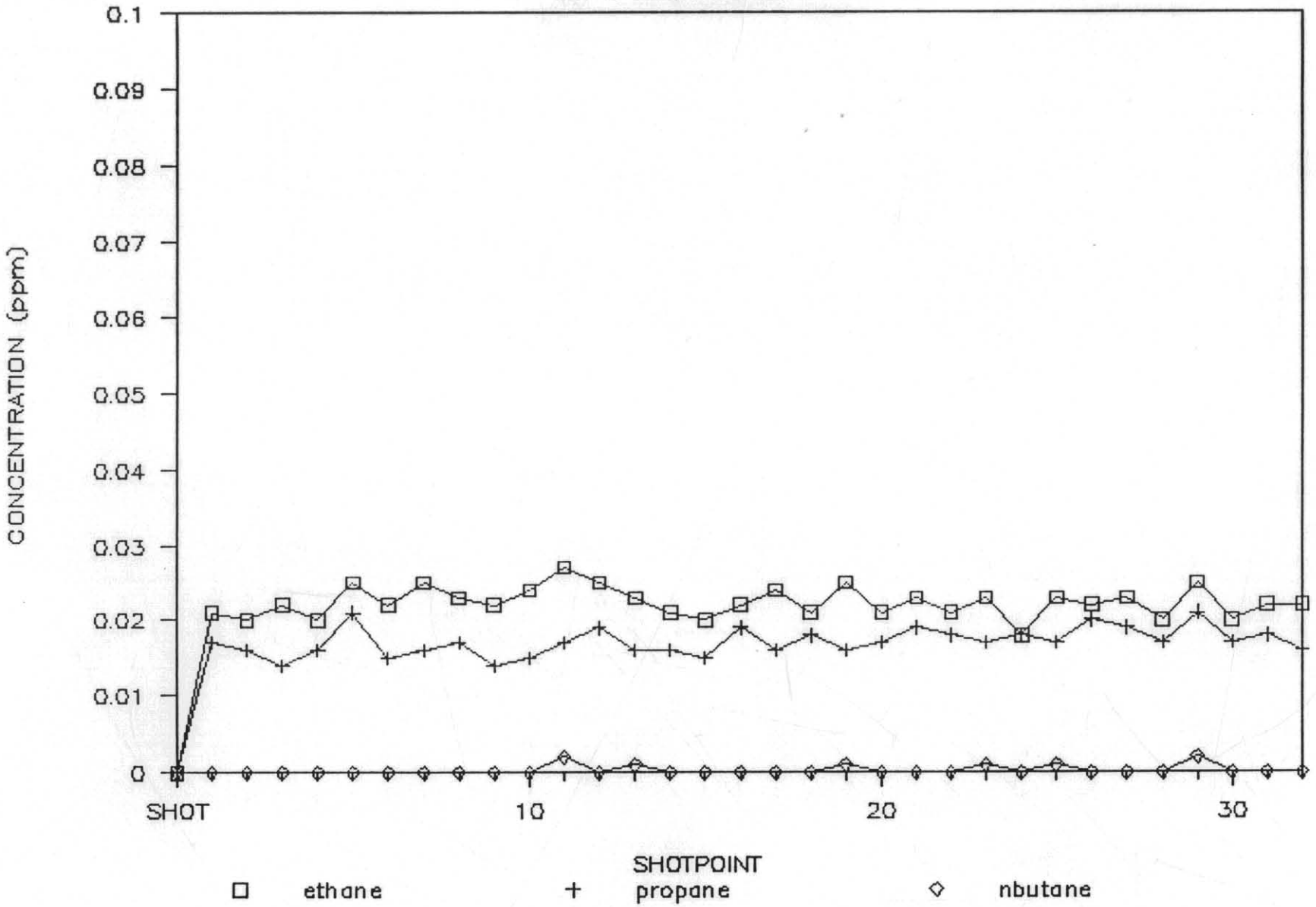
Lowest	Obs	Highest	Obs
2929.6(	4285)	6079.1(	558)
2948.3(	4286)	6091.4(	536)
2957.7(	4283)	6110(	538)
2959.1(	4284)	6142.1(	540)
2963(	4288)	6170(	539)

Missing Value	.
Count	169
% Count/Nobs	3.32

PROFILE PLOTS OF THE GEOCHEMICAL DATA FOR EACH SURVEY LINE & FOR SEVERAL LINES FROM THE GIPPSLAND BASIN

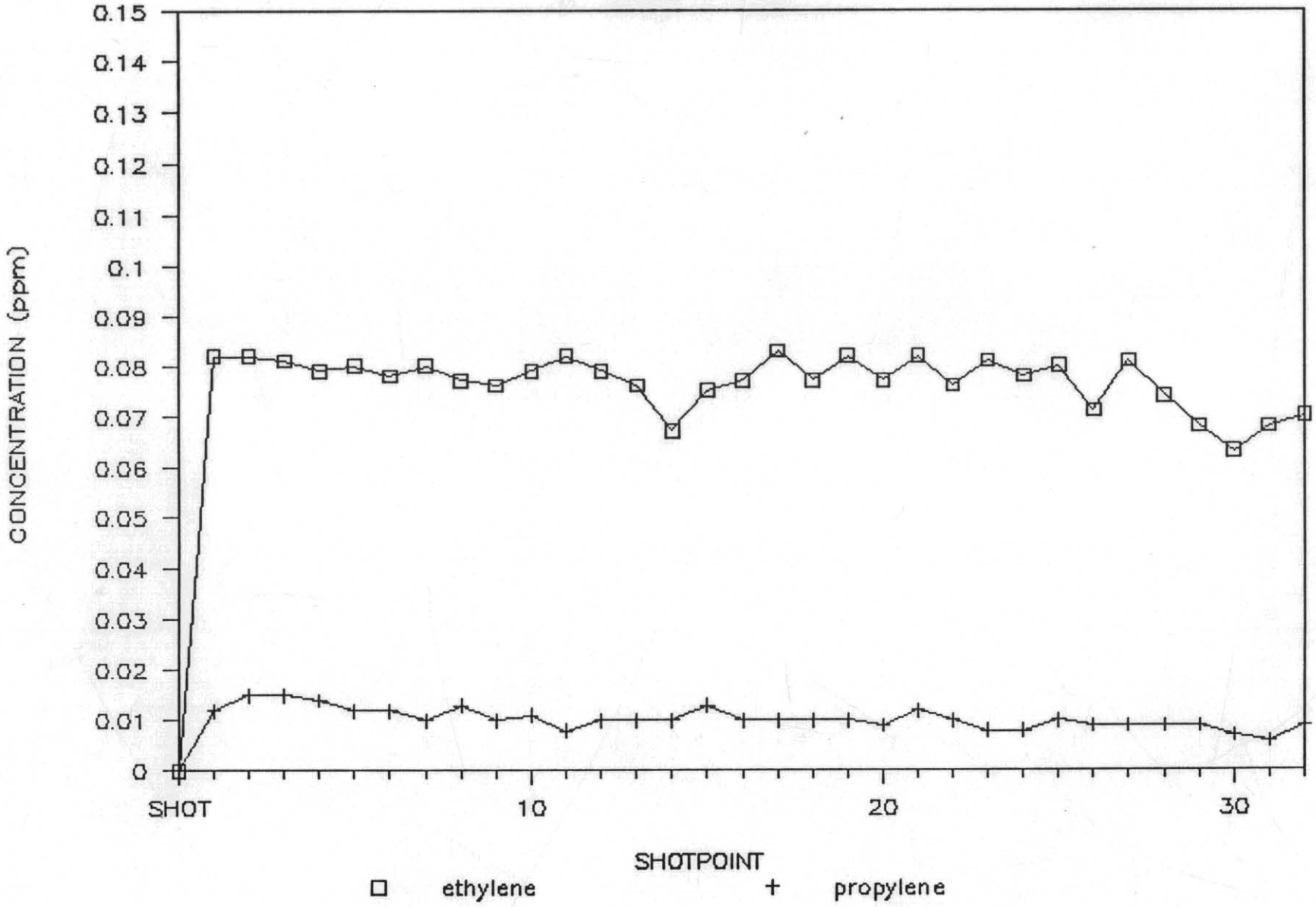
BASS BASIN

Survey Line 18



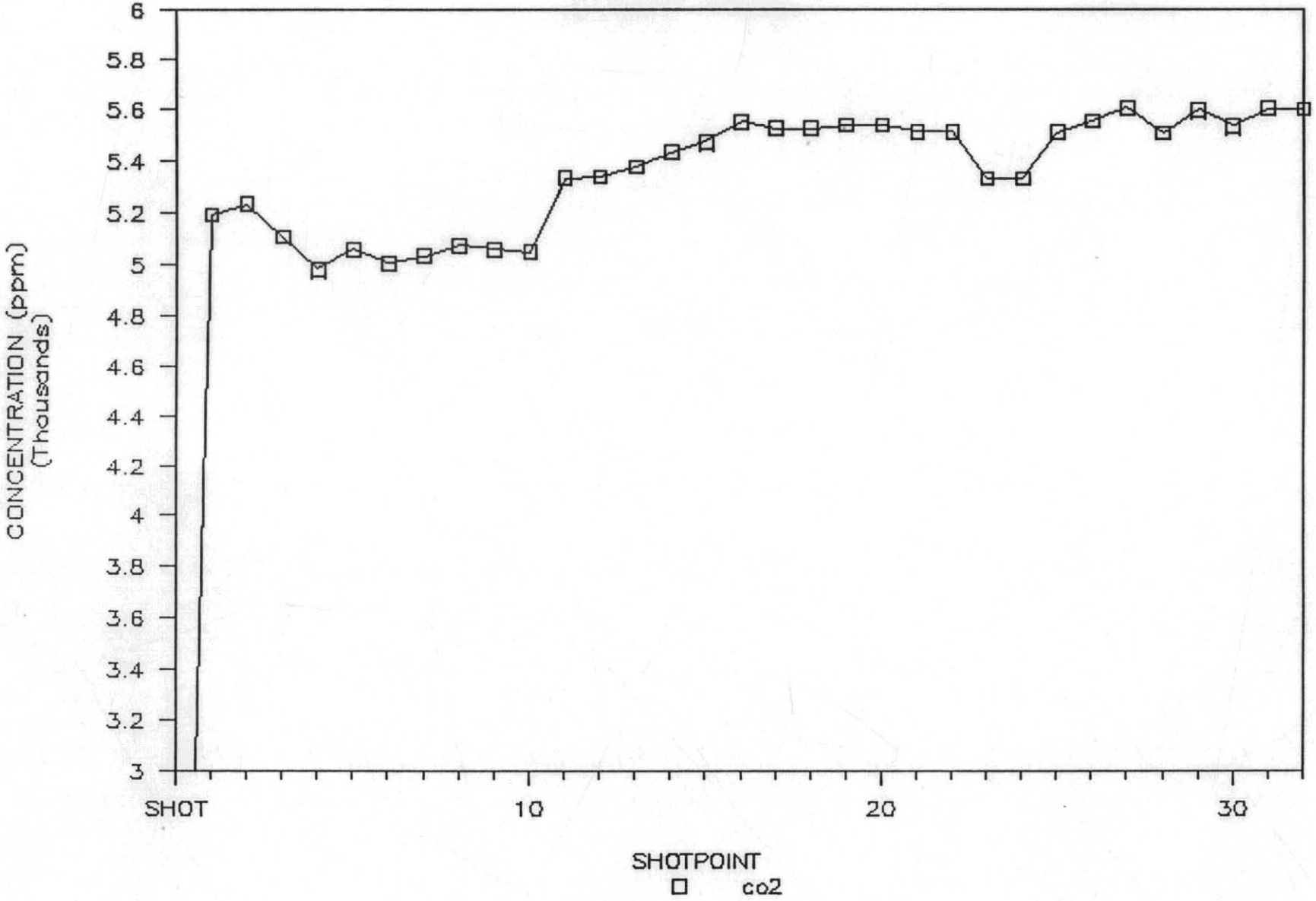
BASS BASIN

Survey Line 18



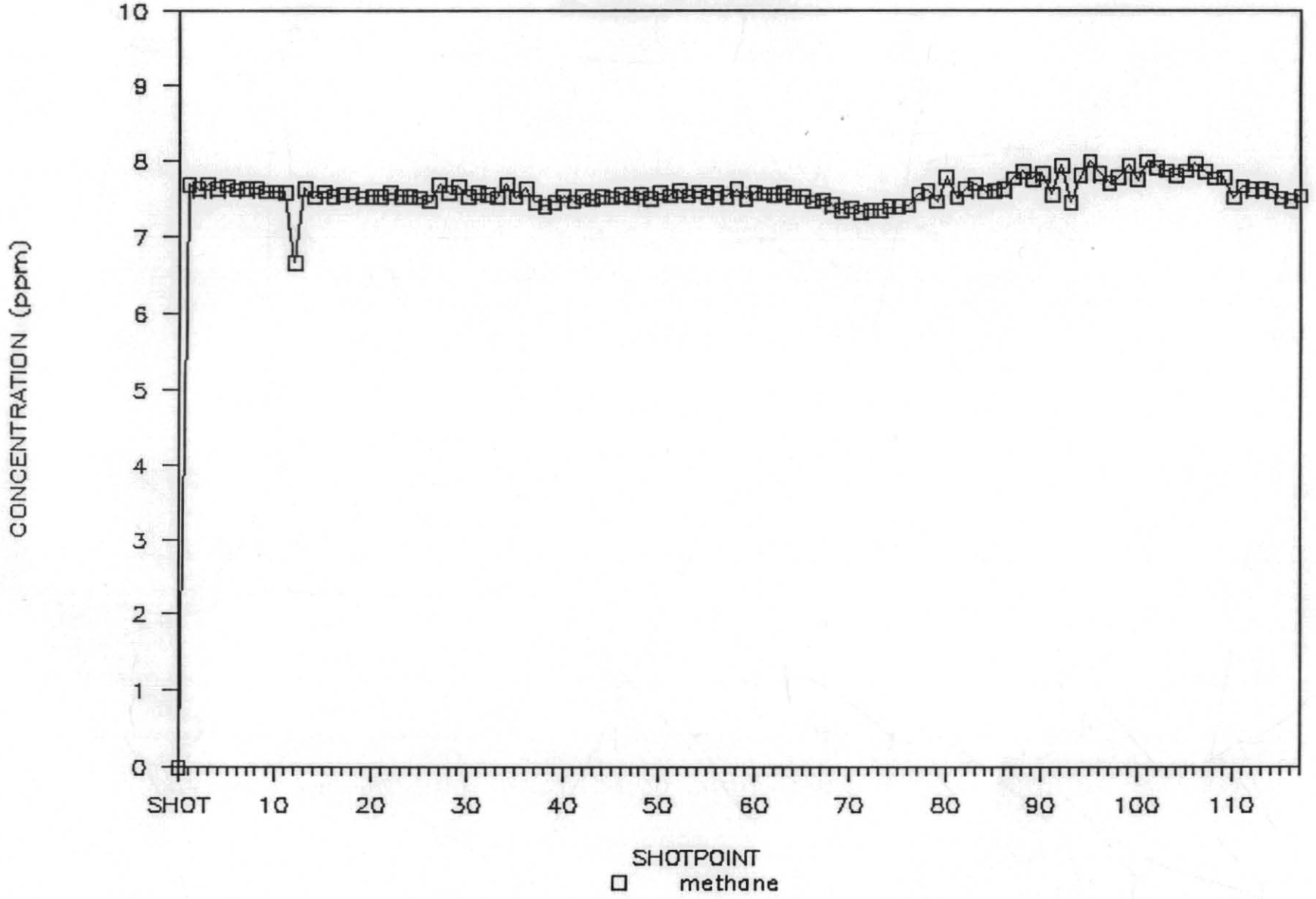
BASS BASIN

Survey Line 18



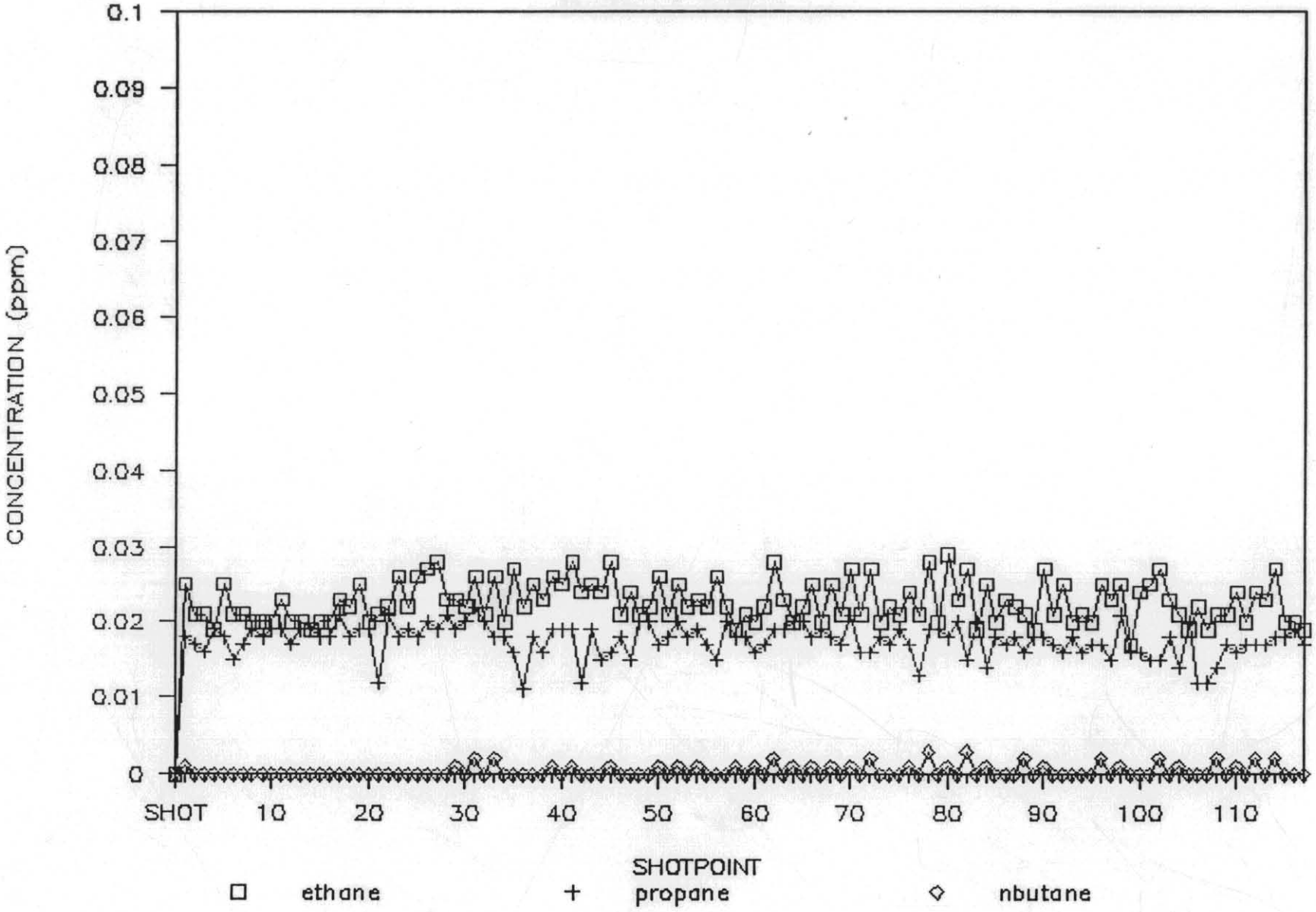
BASS BASIN

Survey Line 19



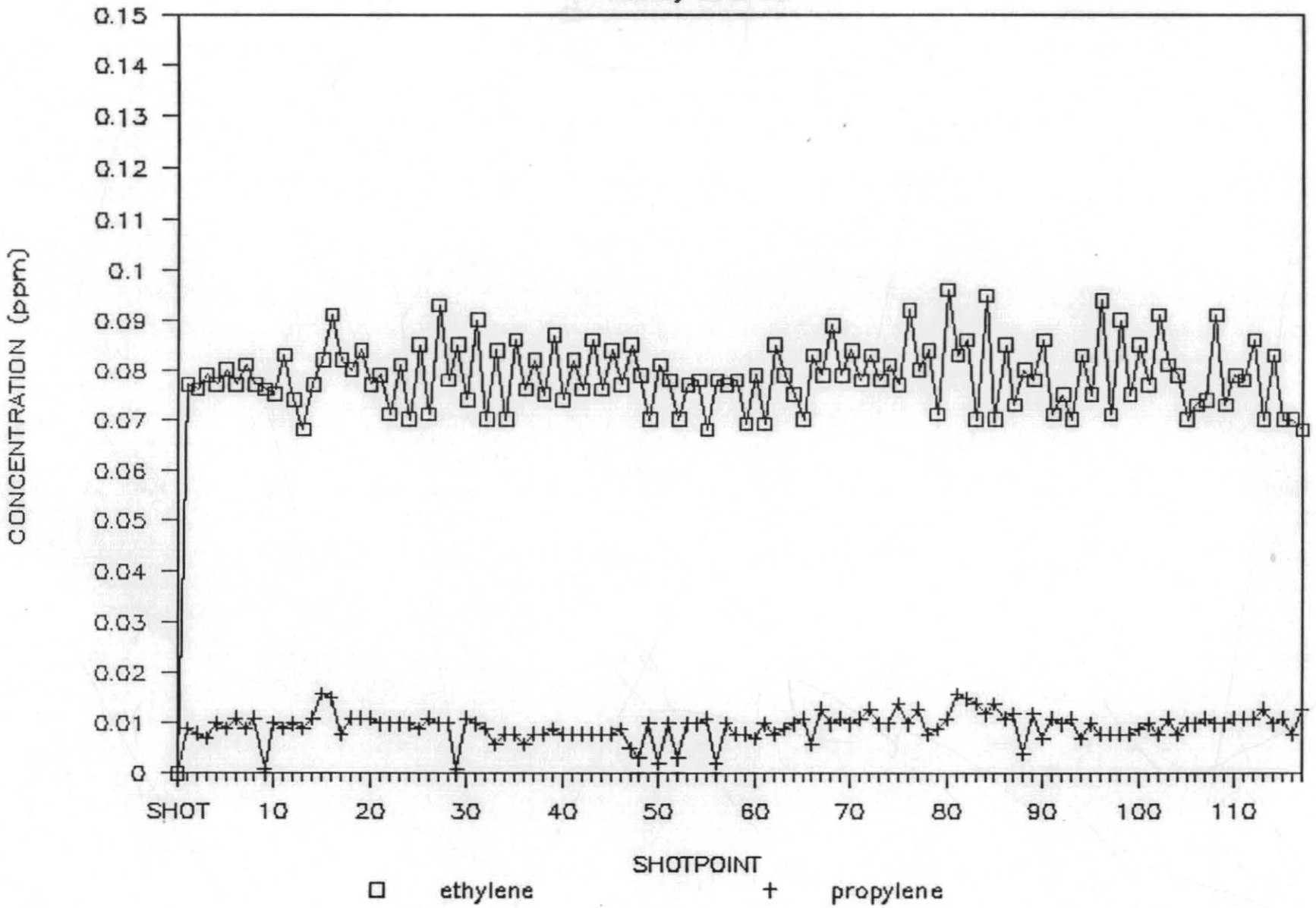
BASS BASIN

Survey Line 19



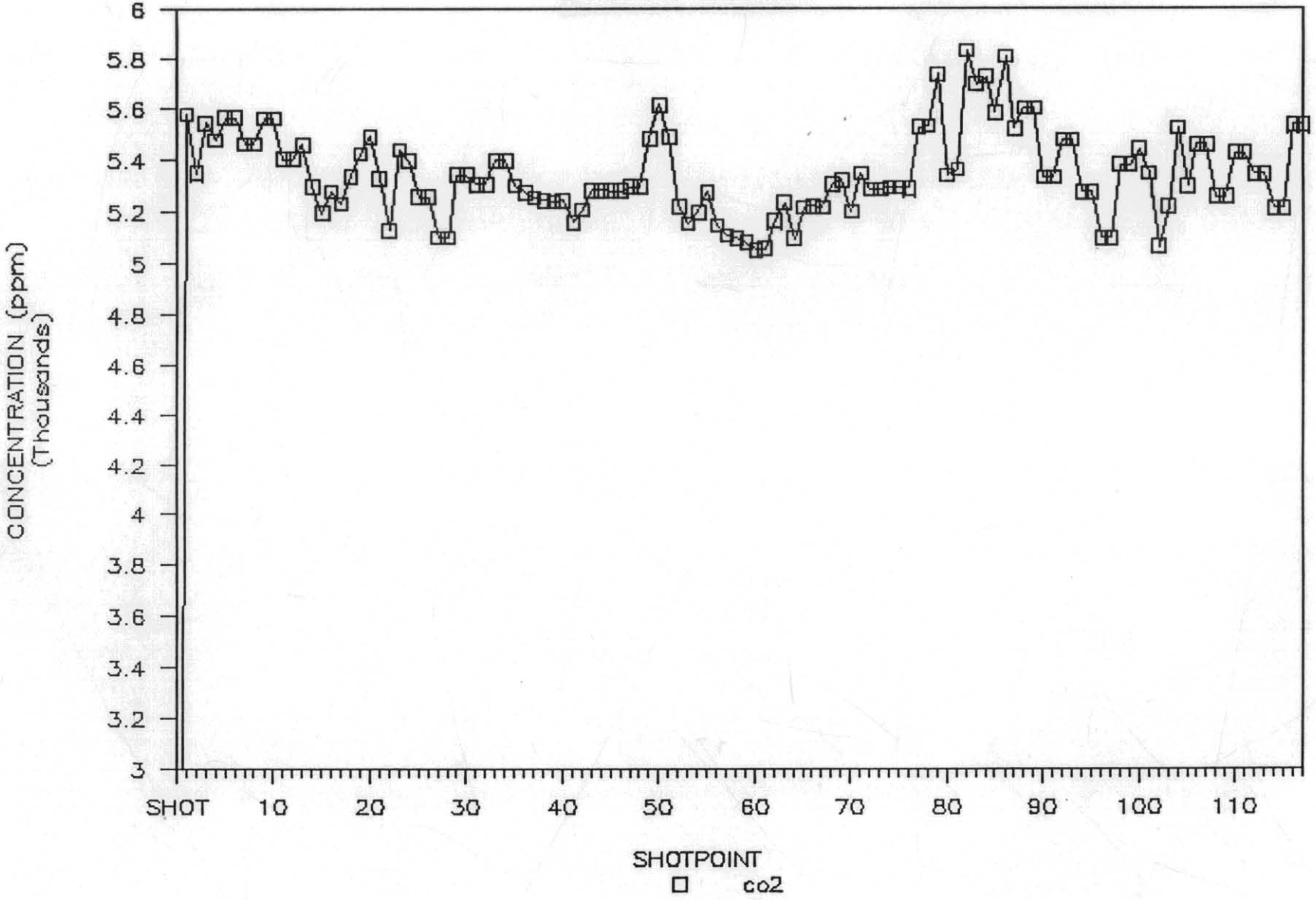
BASS BASIN

Survey Line 19



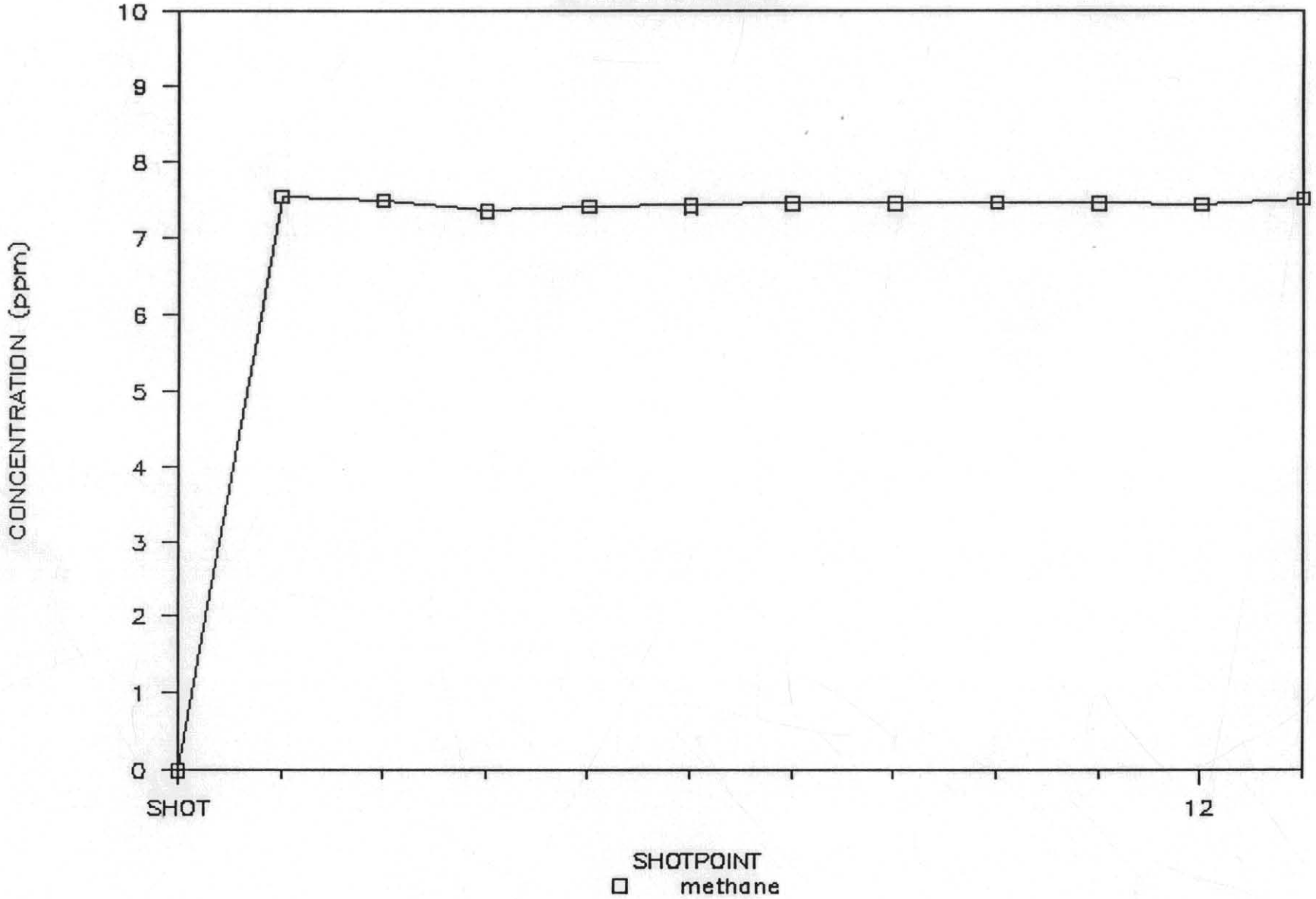
BASS BASIN

Survey Line 19



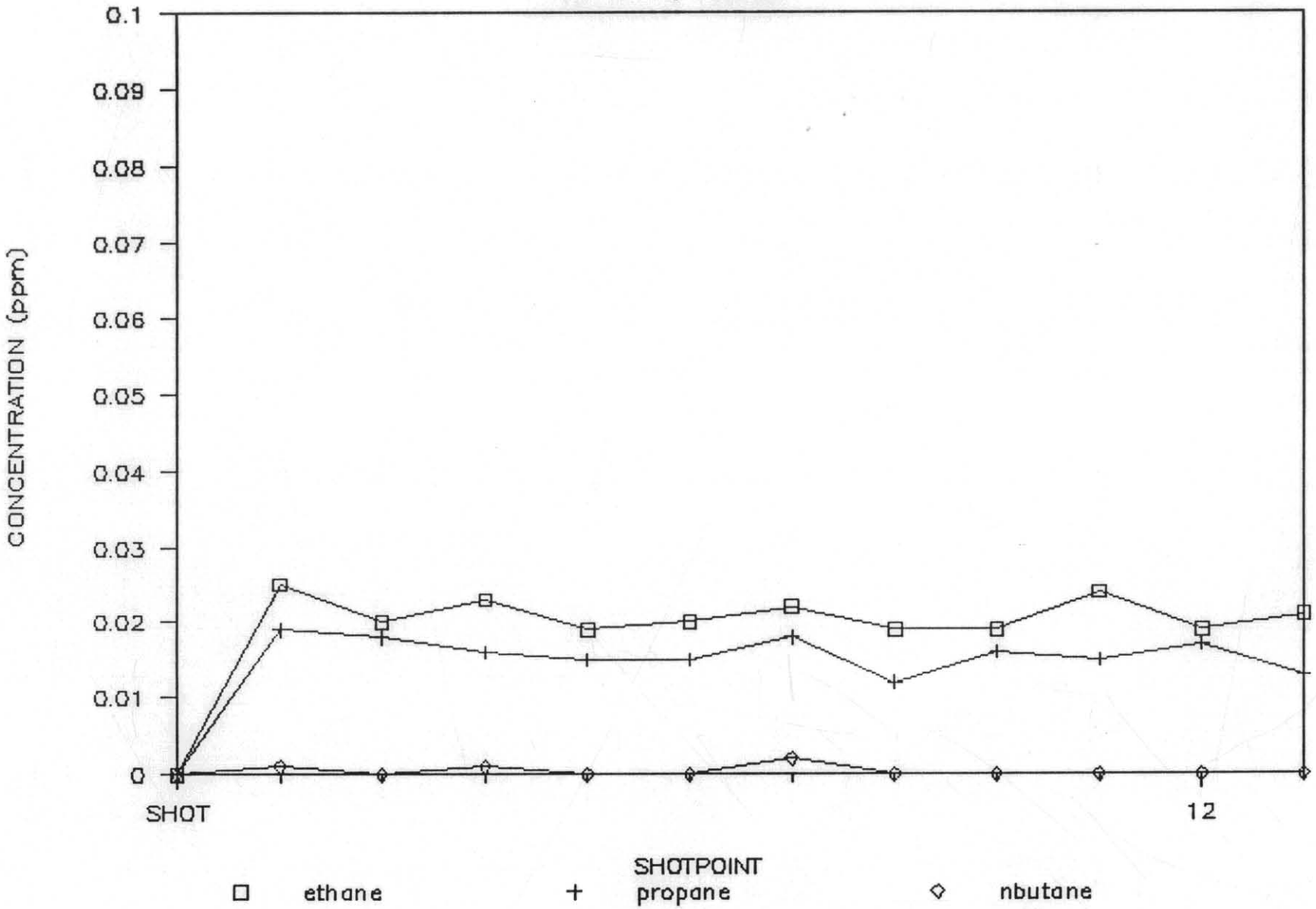
BASS BASIN

Survey Line 20



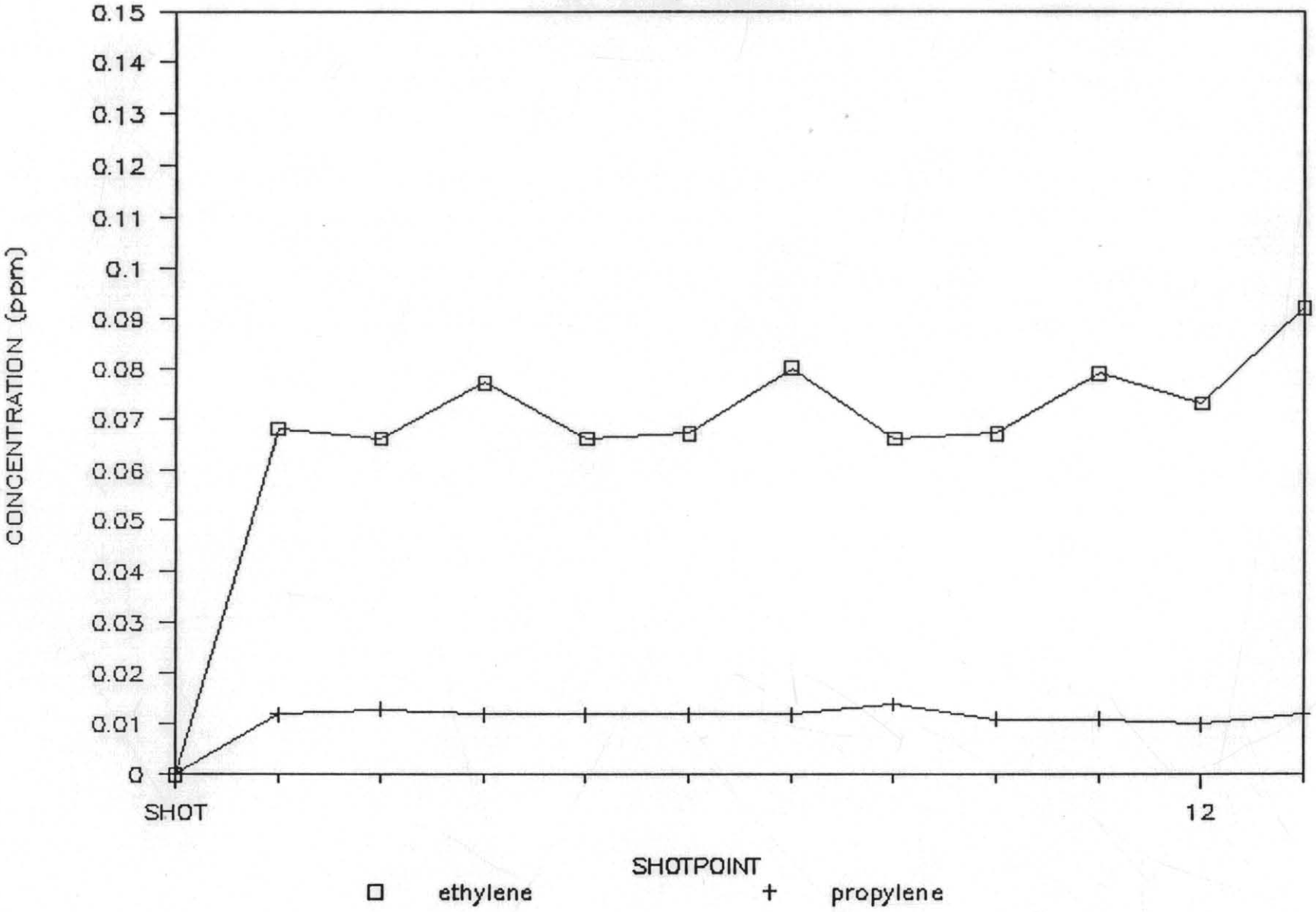
BASS BASIN

Survey Line 20



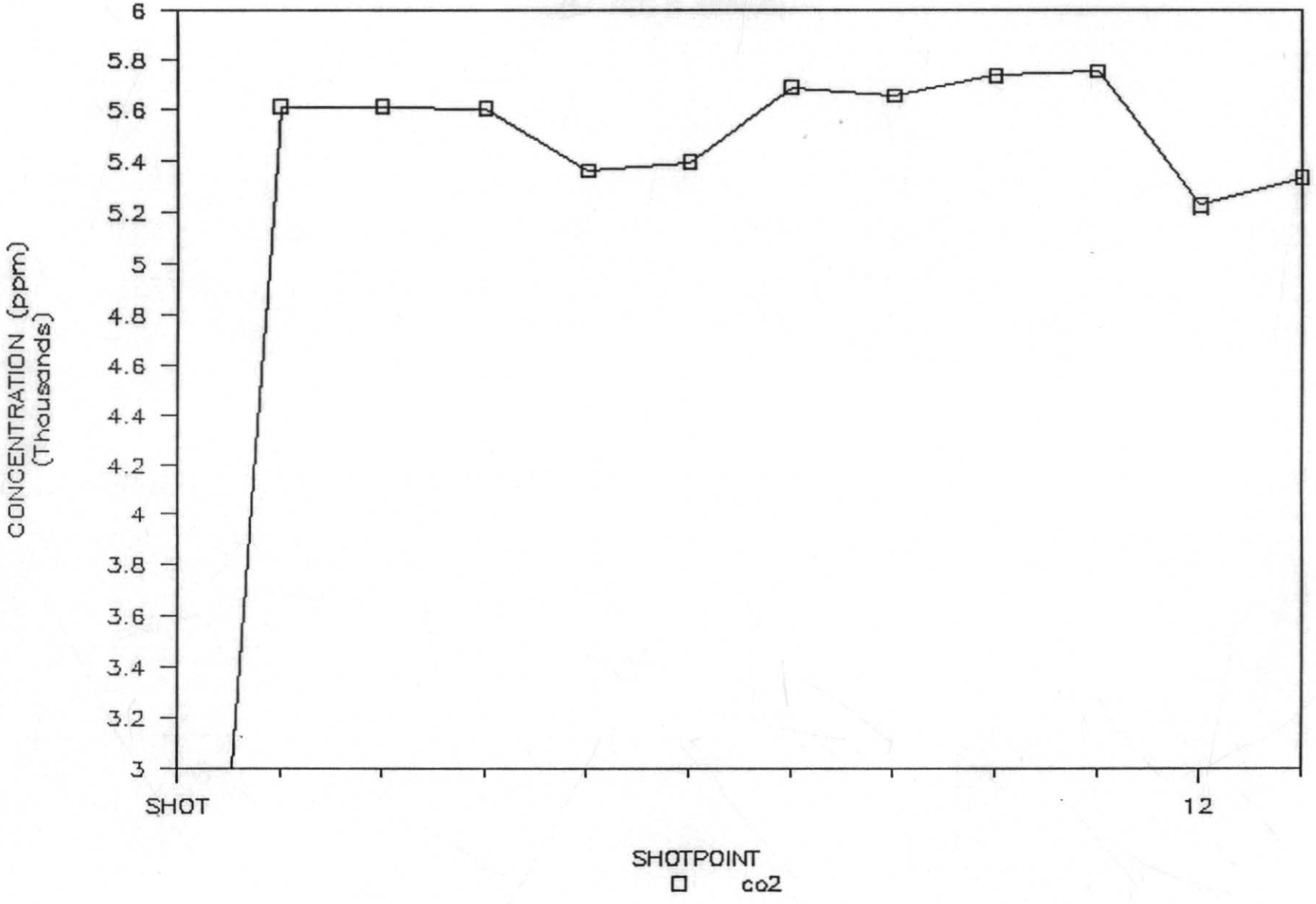
BASS BASIN

Survey Line 20



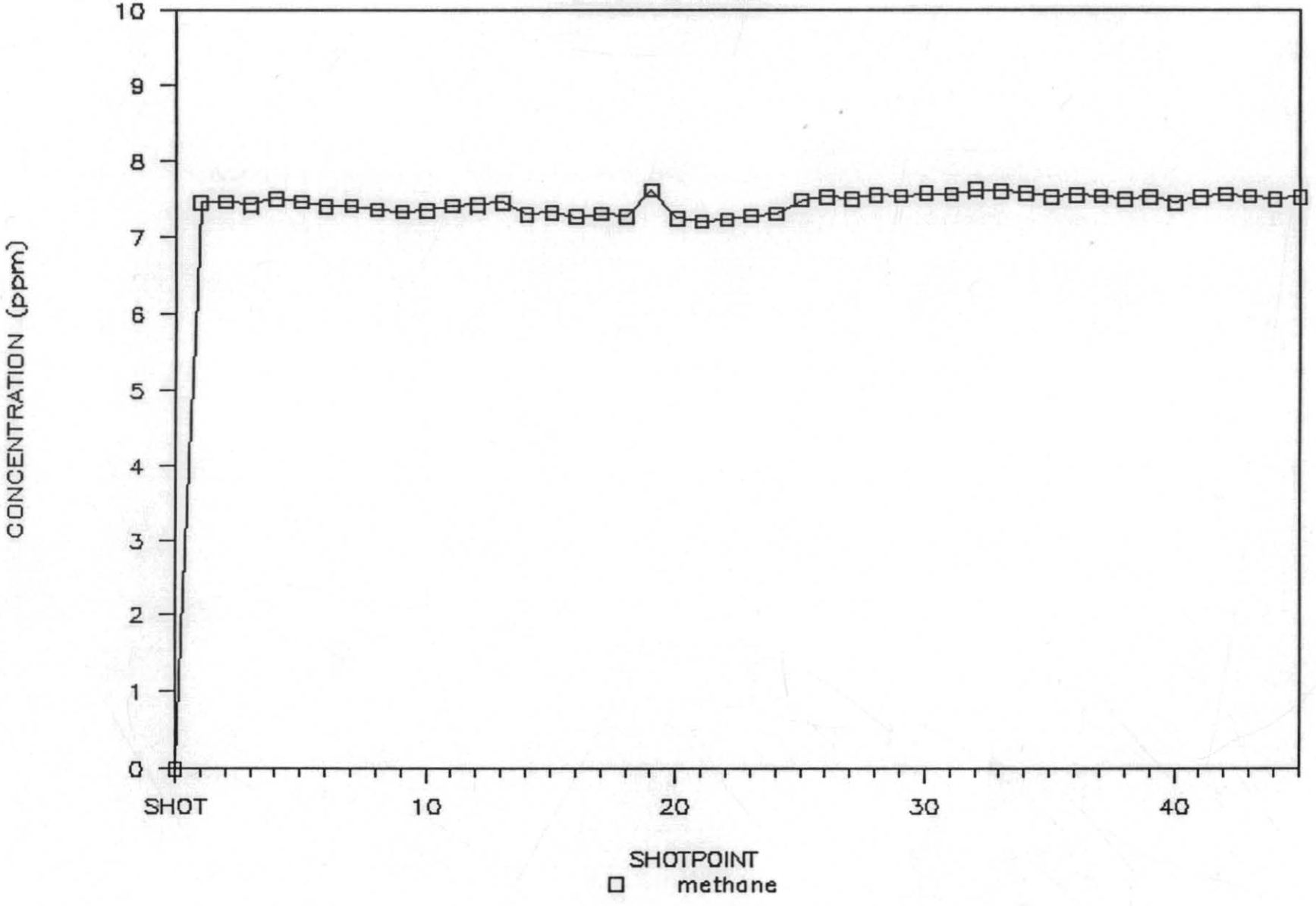
BASS BASIN

Survey Line 20



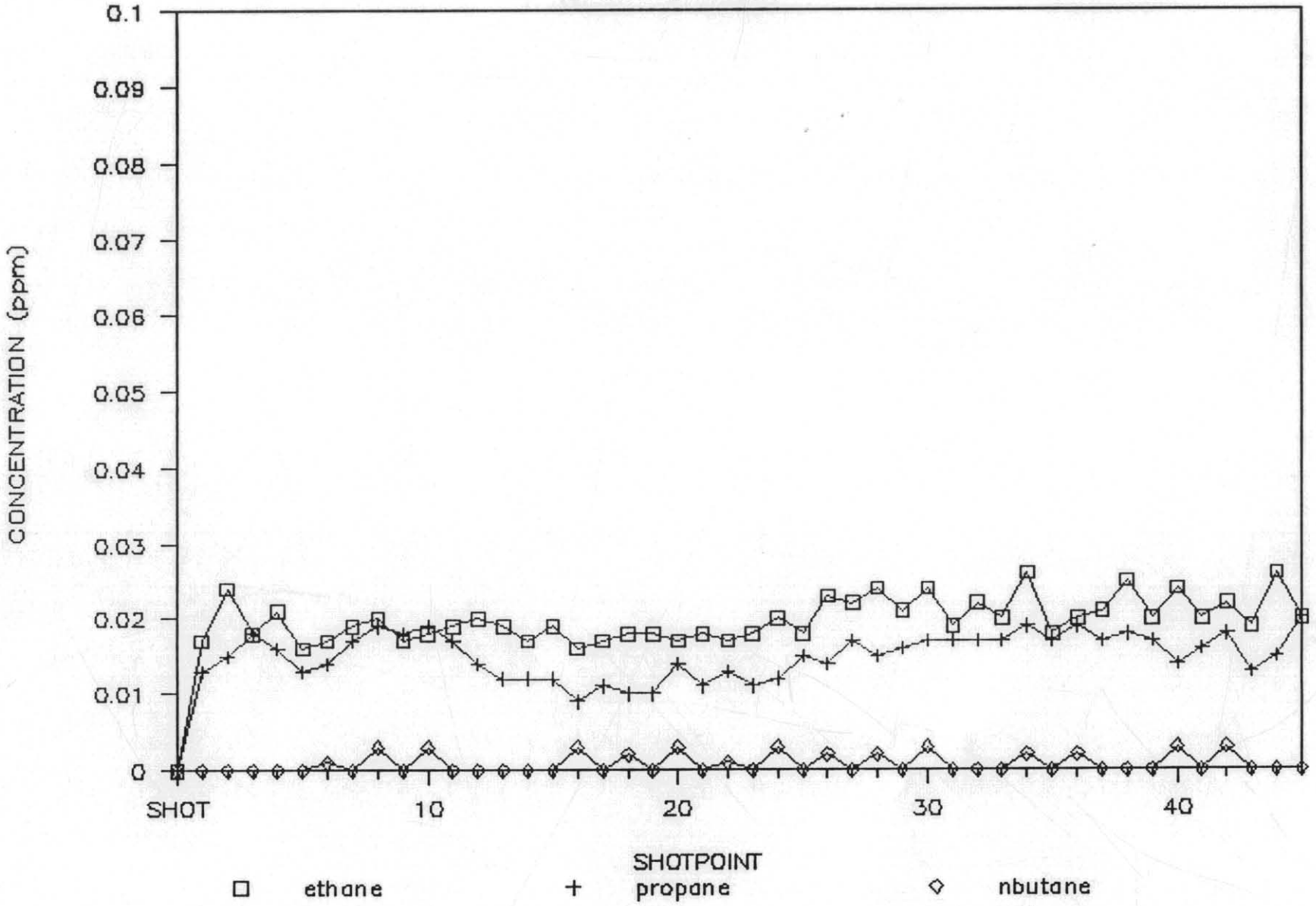
BASS BASIN

Survey Line 21



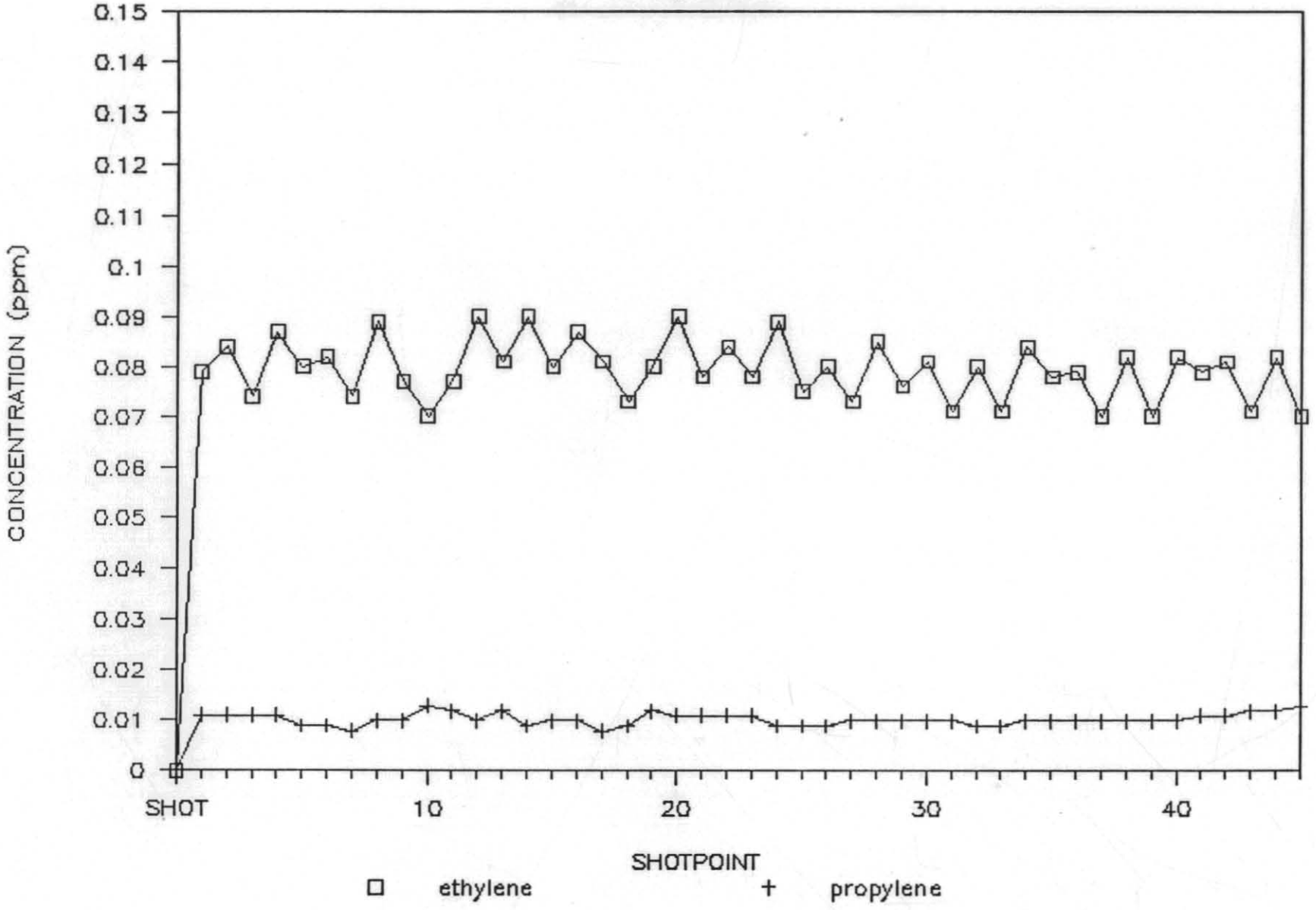
BASS BASIN

Survey Line 21



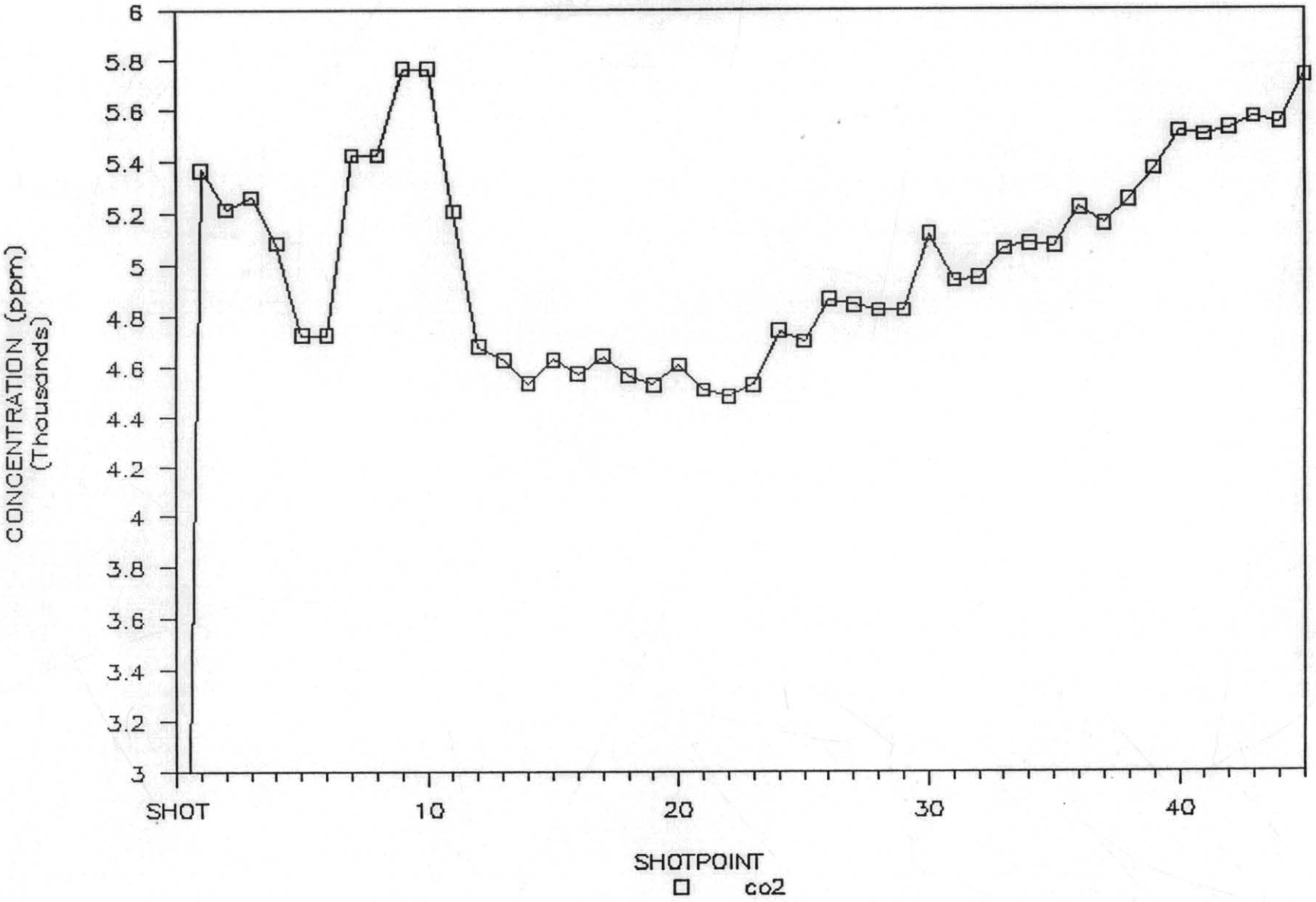
BASS BASIN

Survey Line 21



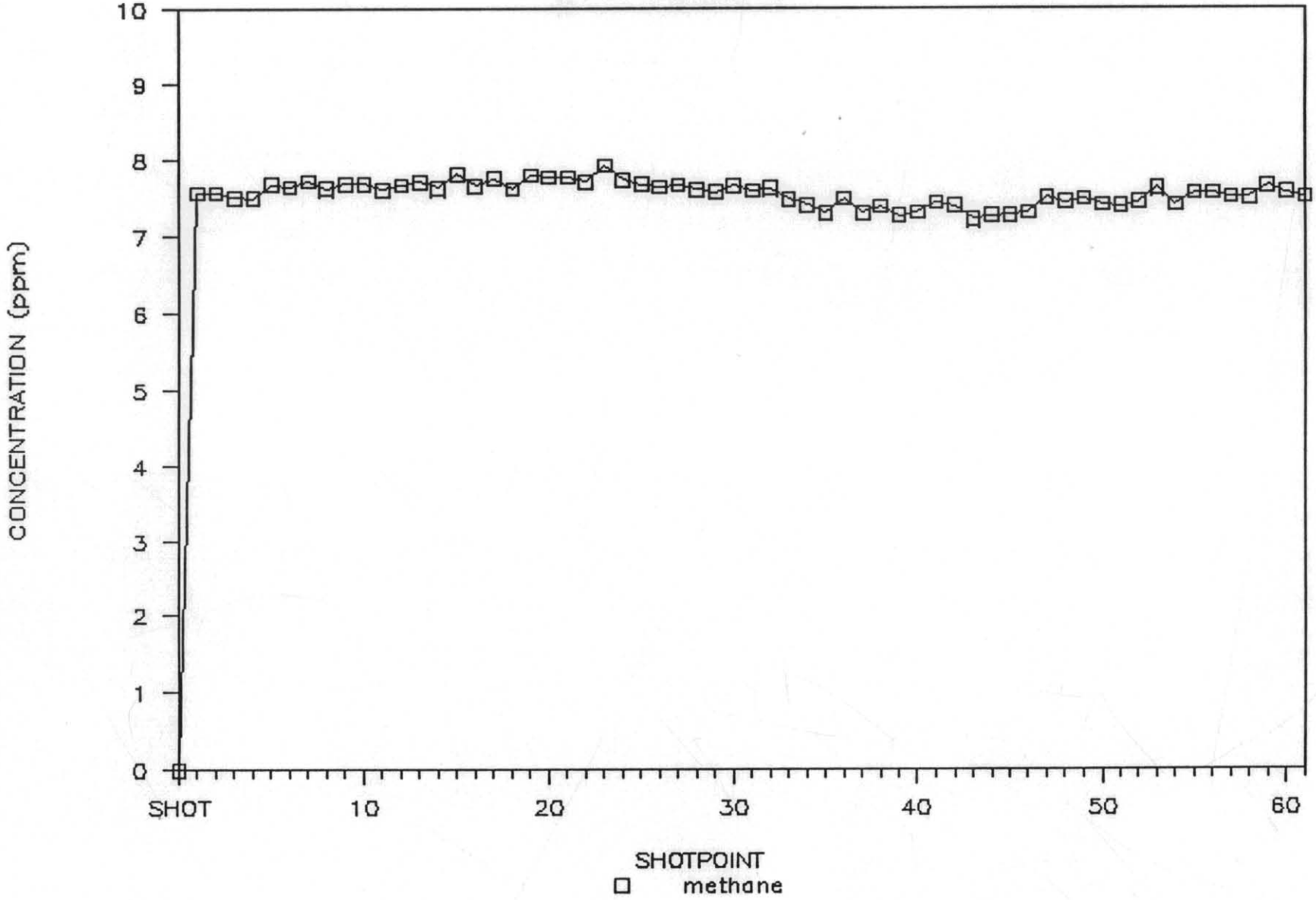
BASS BASIN

Survey Line 21



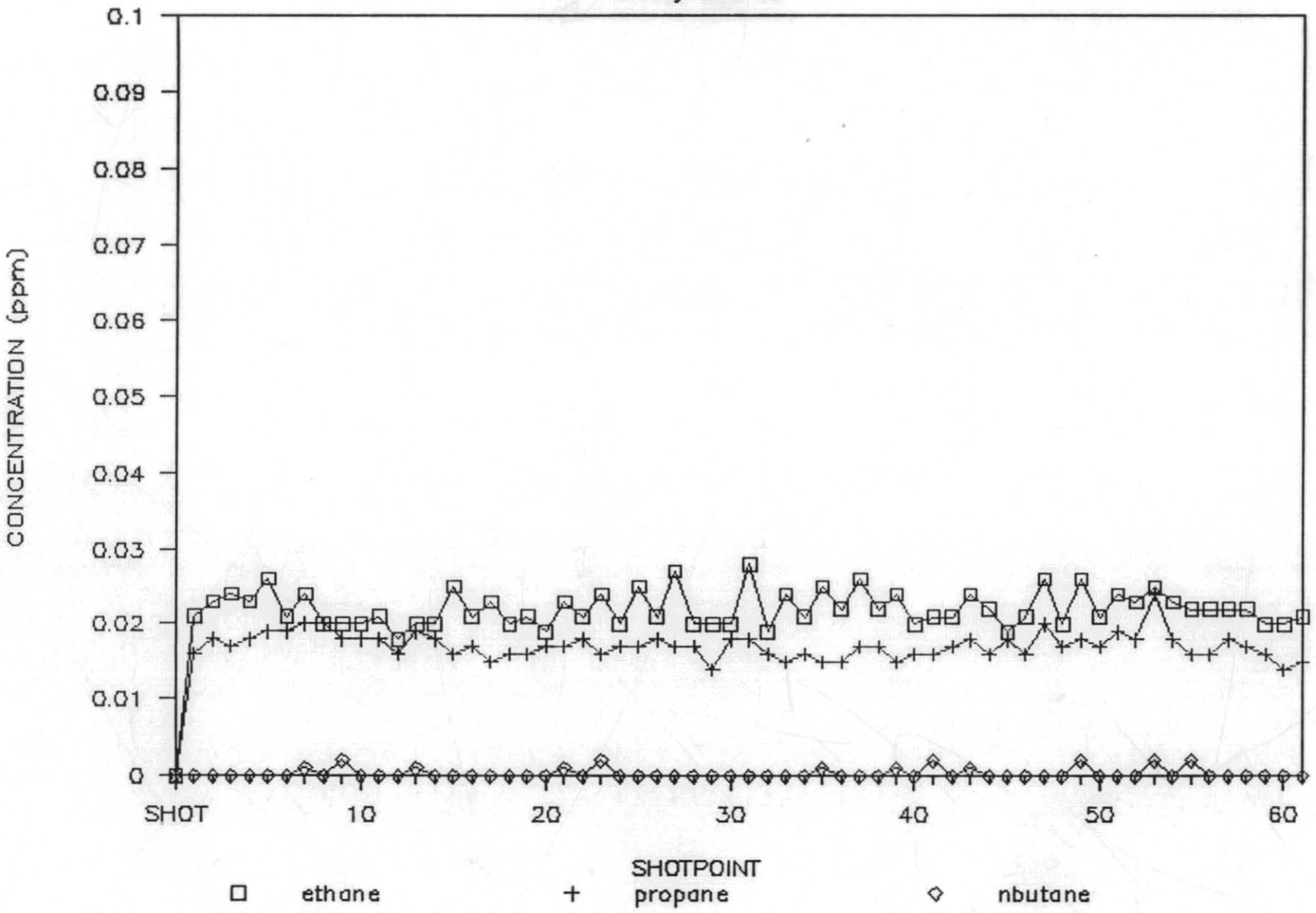
BASS BASIN

Survey Line 22



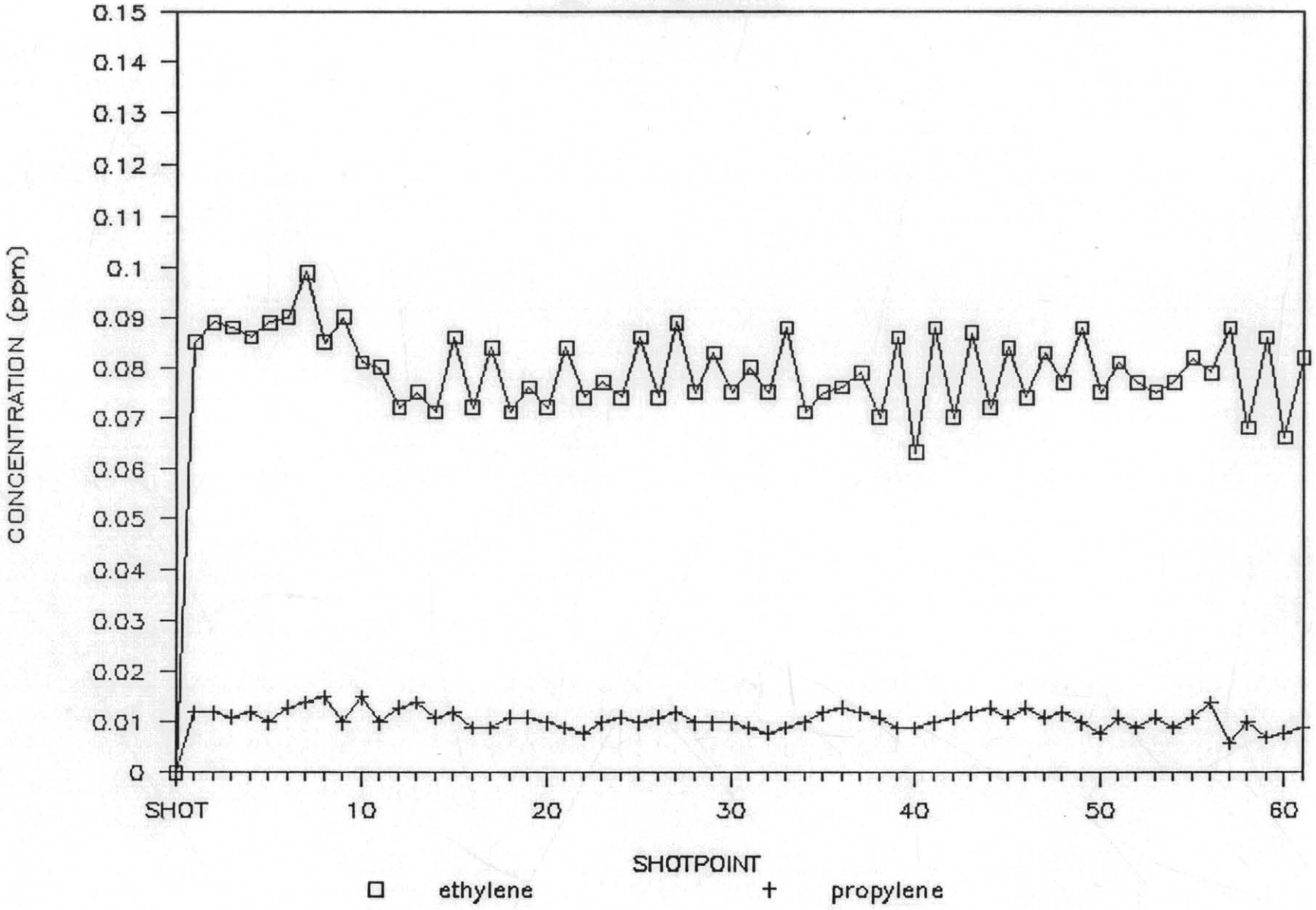
BASS BASIN

Survey Line 22



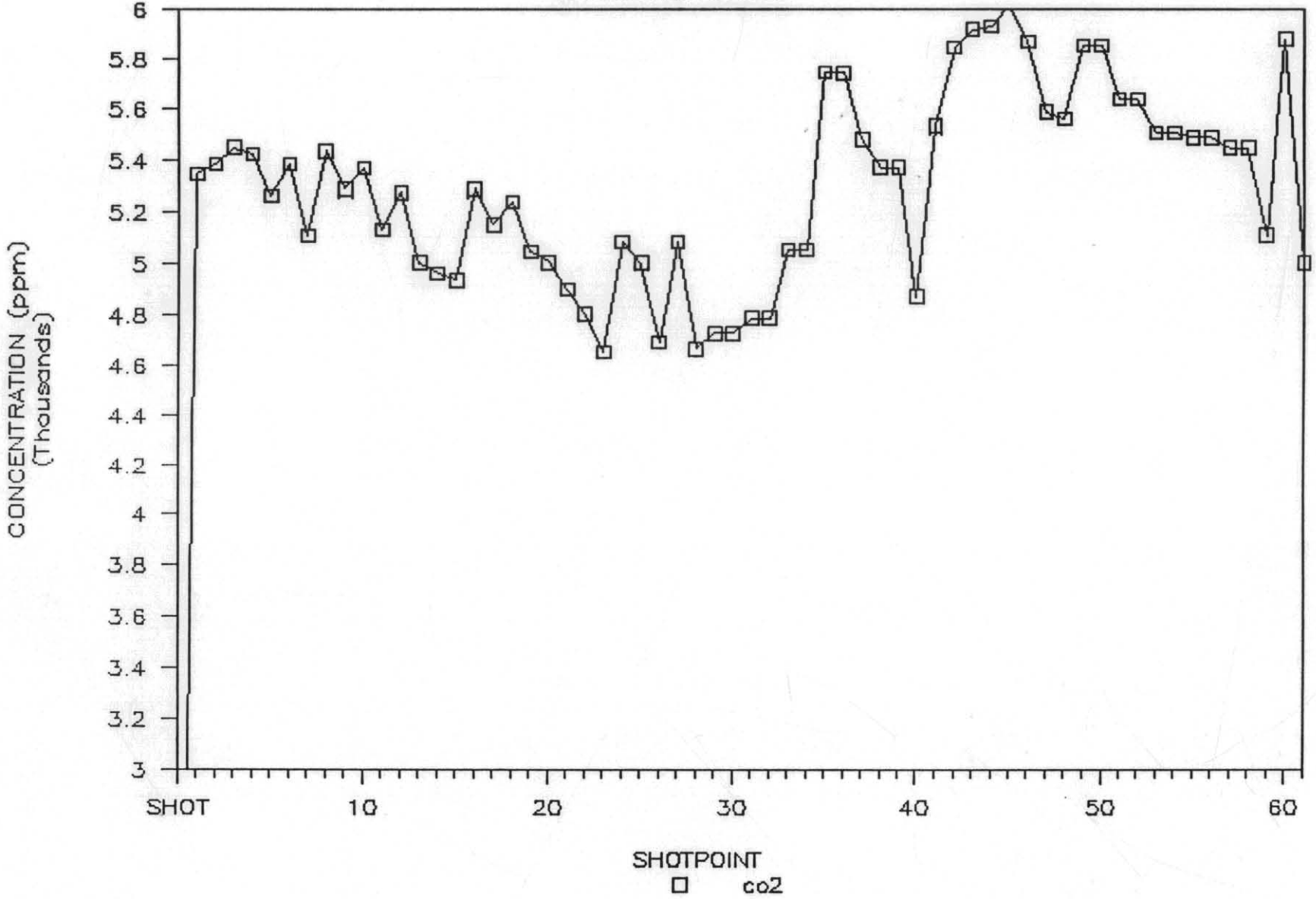
BASS BASIN

Survey Line 22



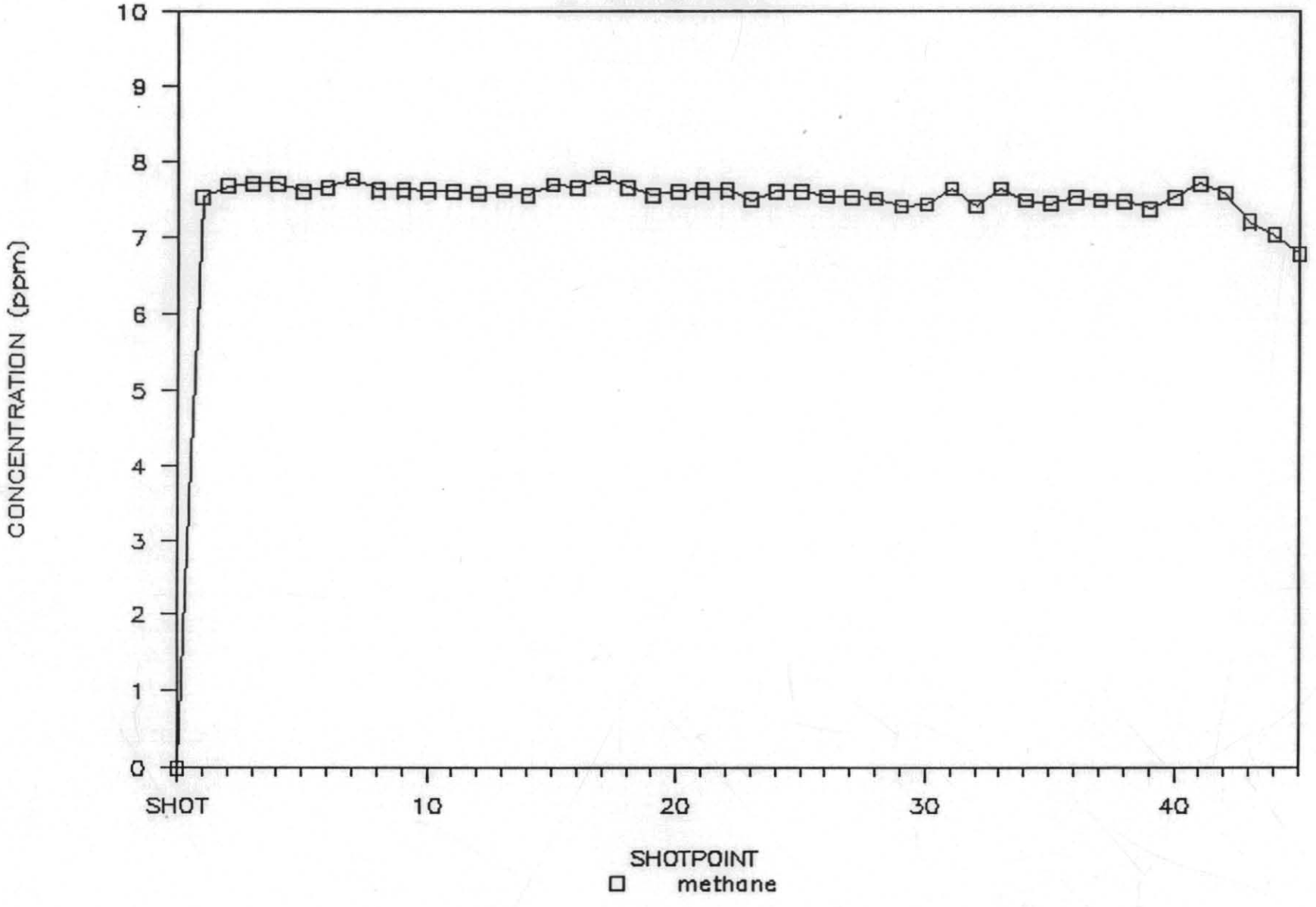
BASS BASIN

Survey Line 22



BASS BASIN

Survey Line 23



BASS BASIN

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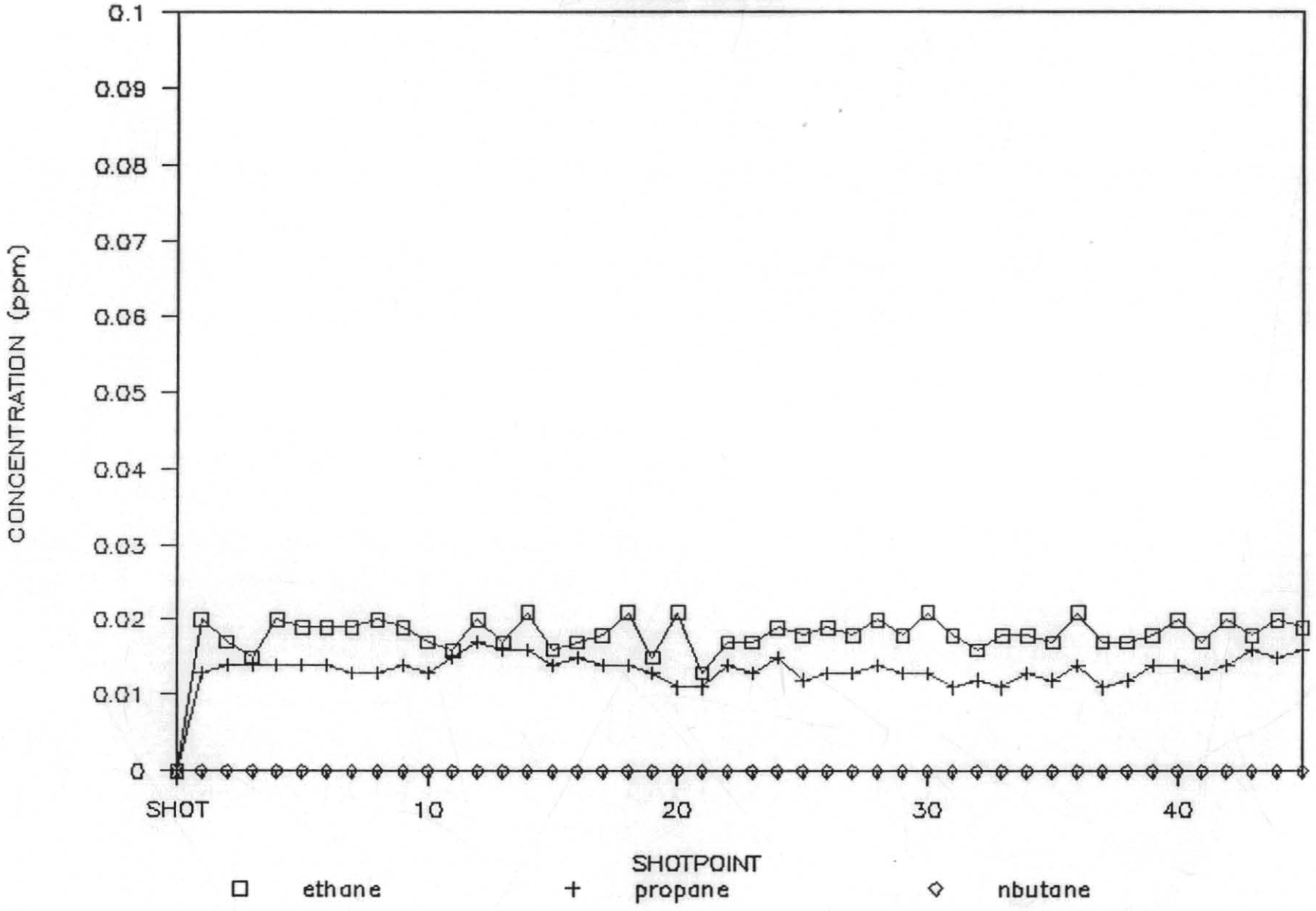
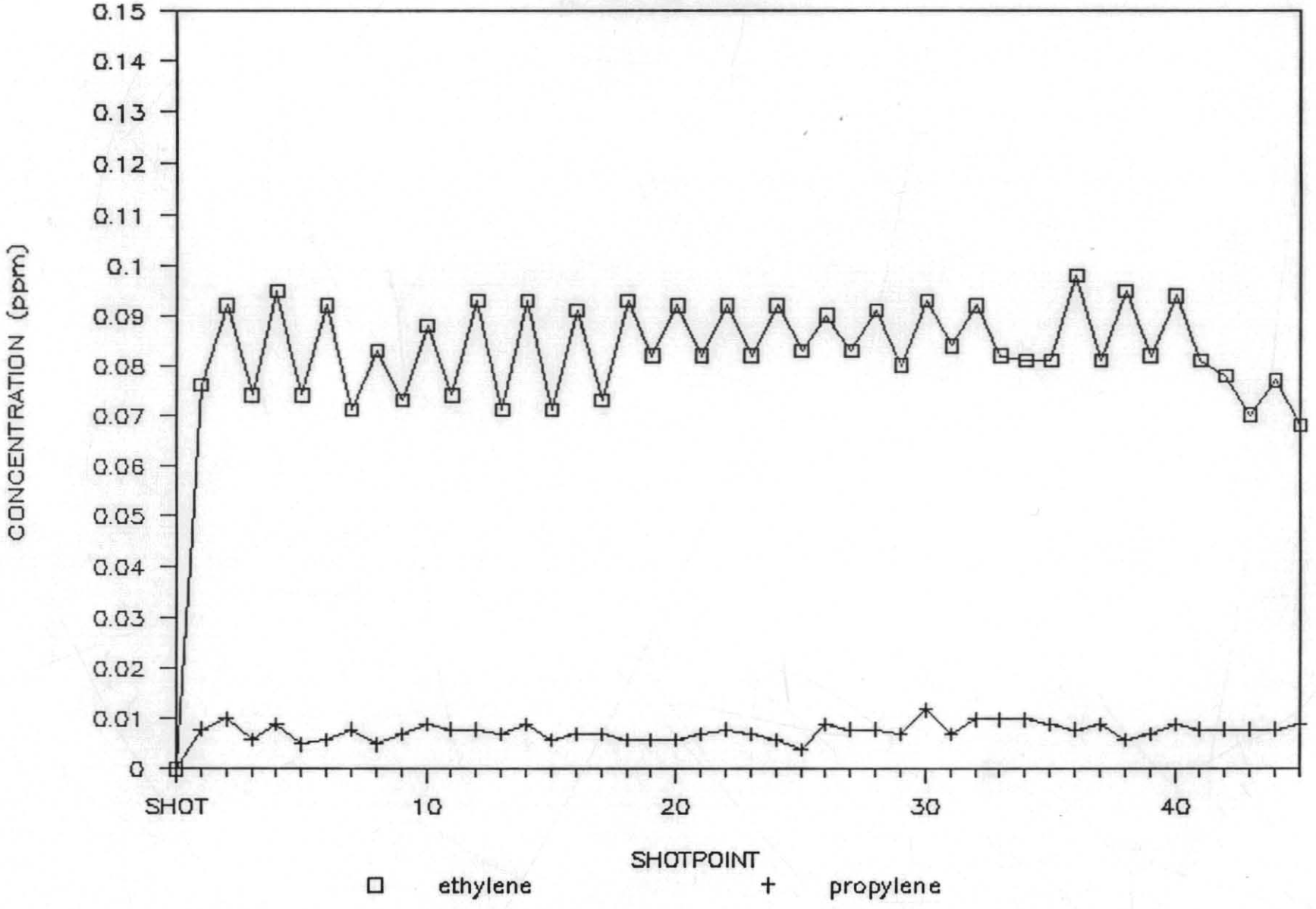


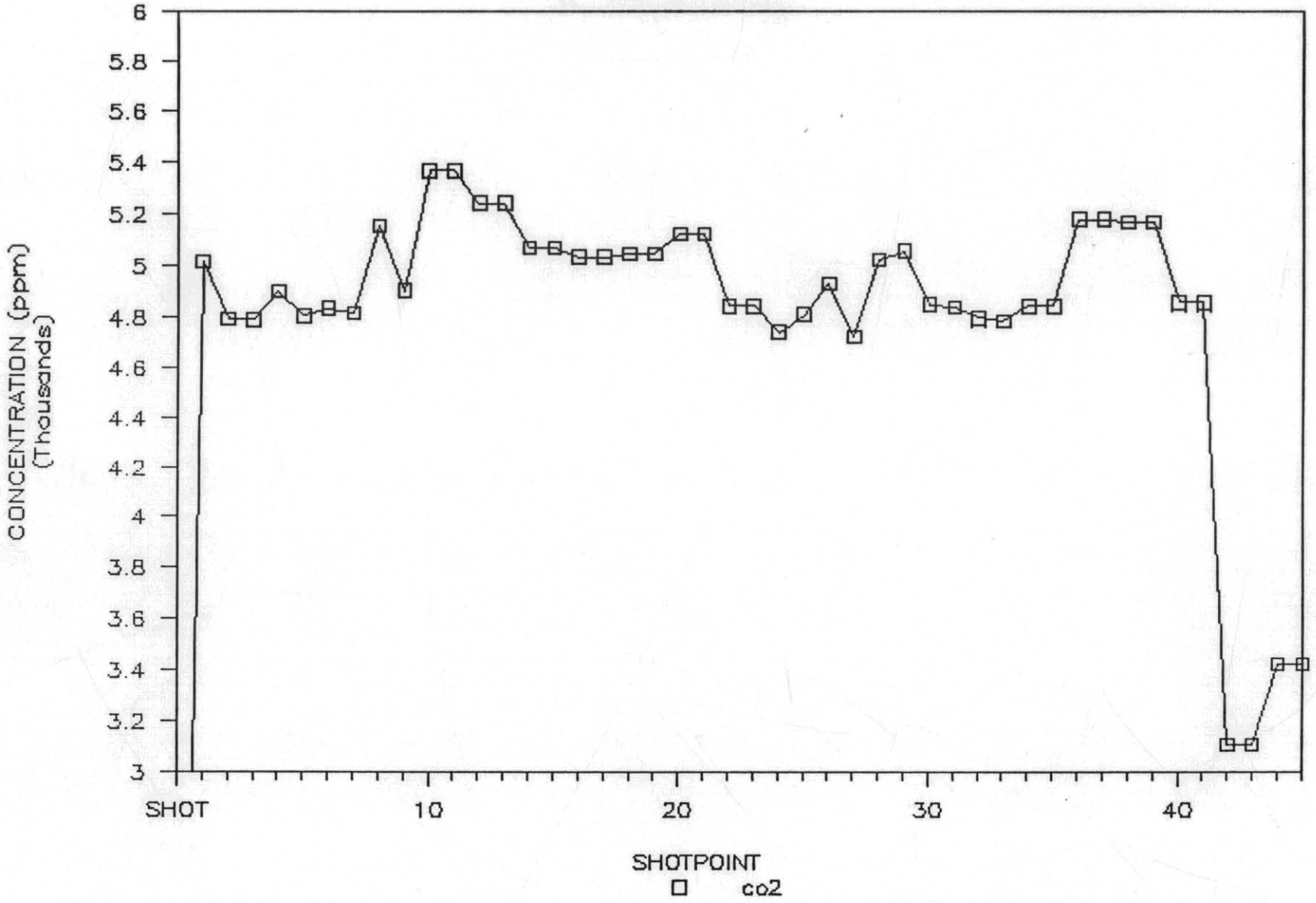
BASS BASIN

Survey Line 23



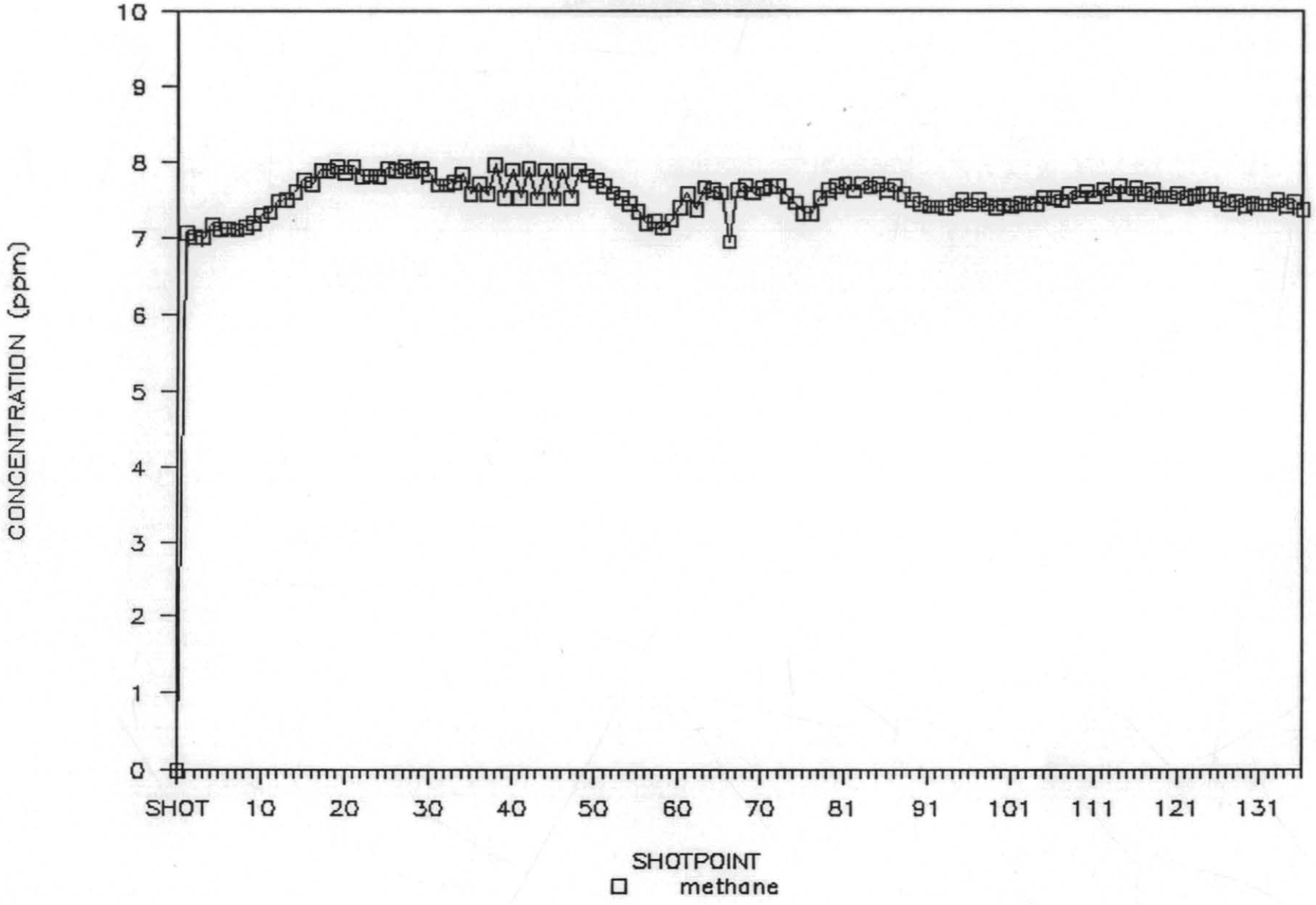
BASS BASIN

Survey Line 23



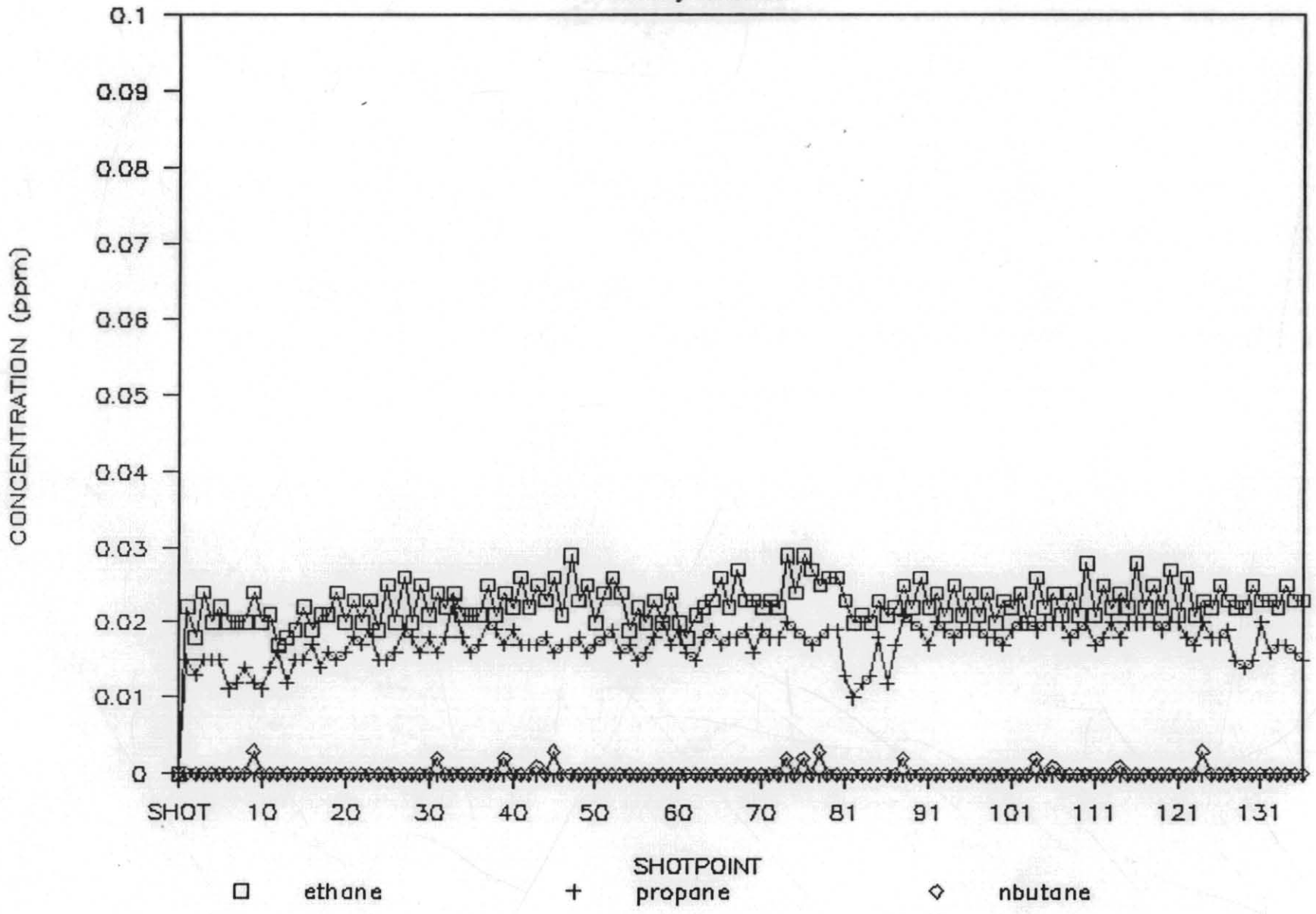
BASS BASIN

Survey Line 24



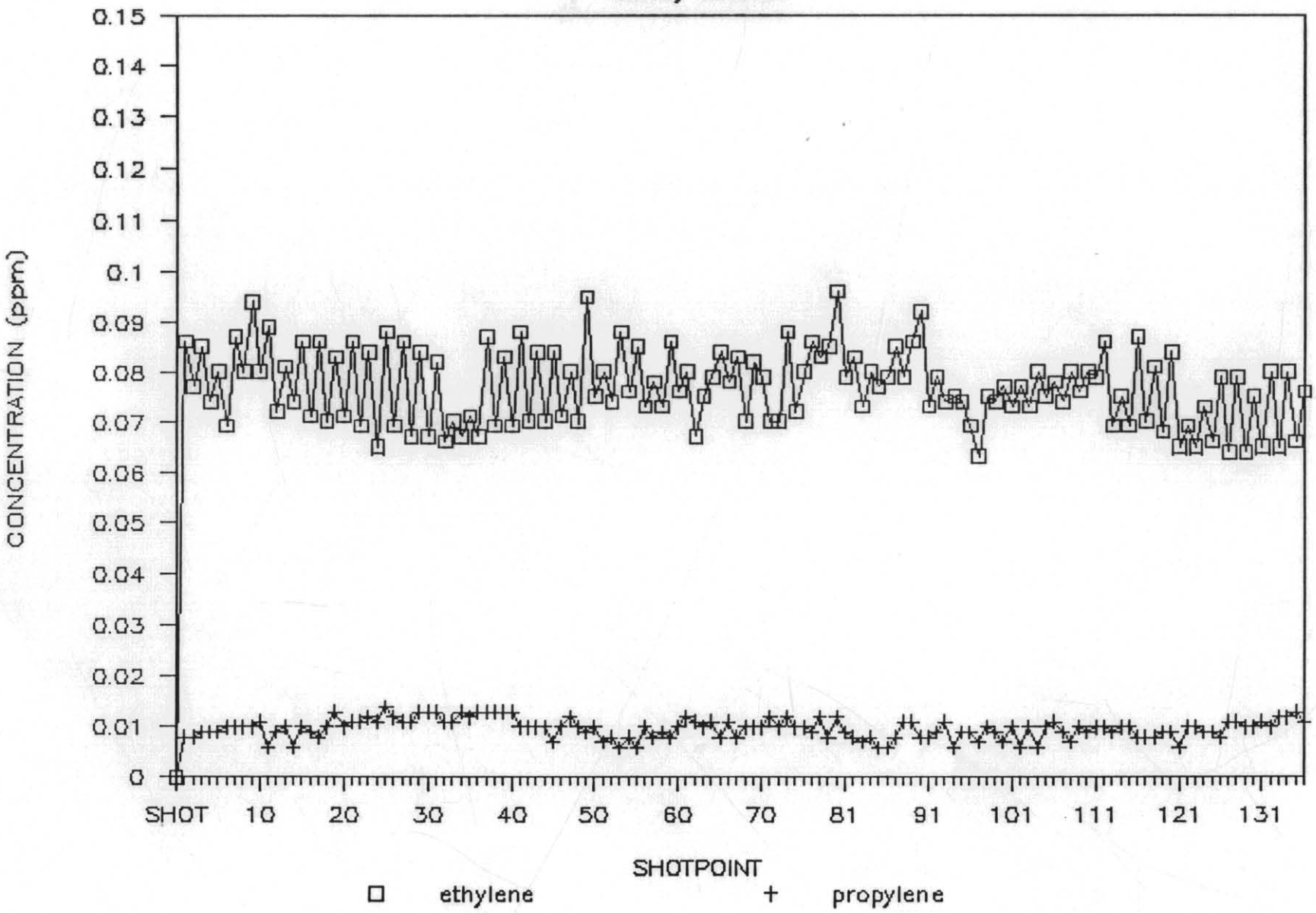
BASS BASIN

Survey Line 24



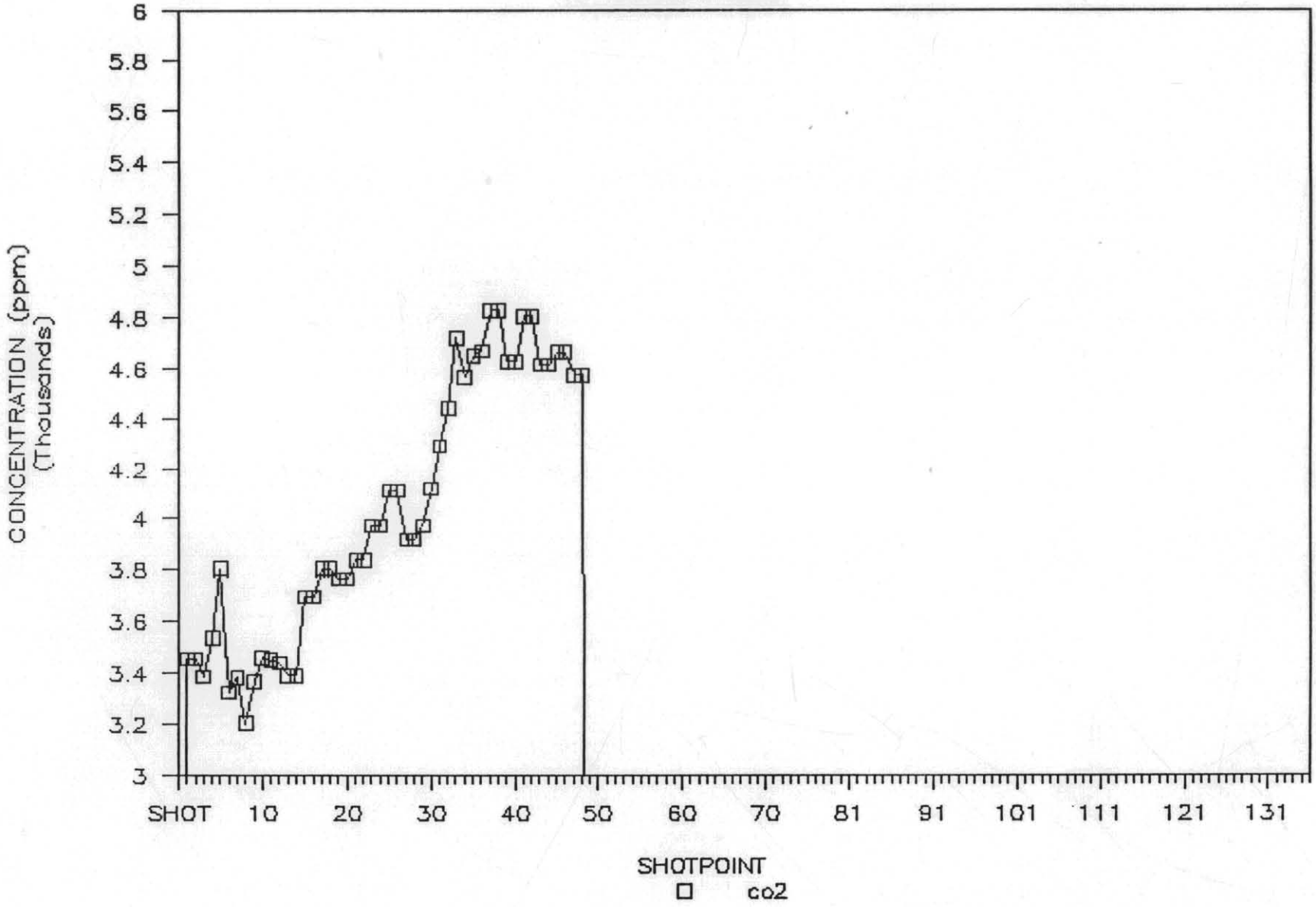
BASS BASIN

Survey Line 24



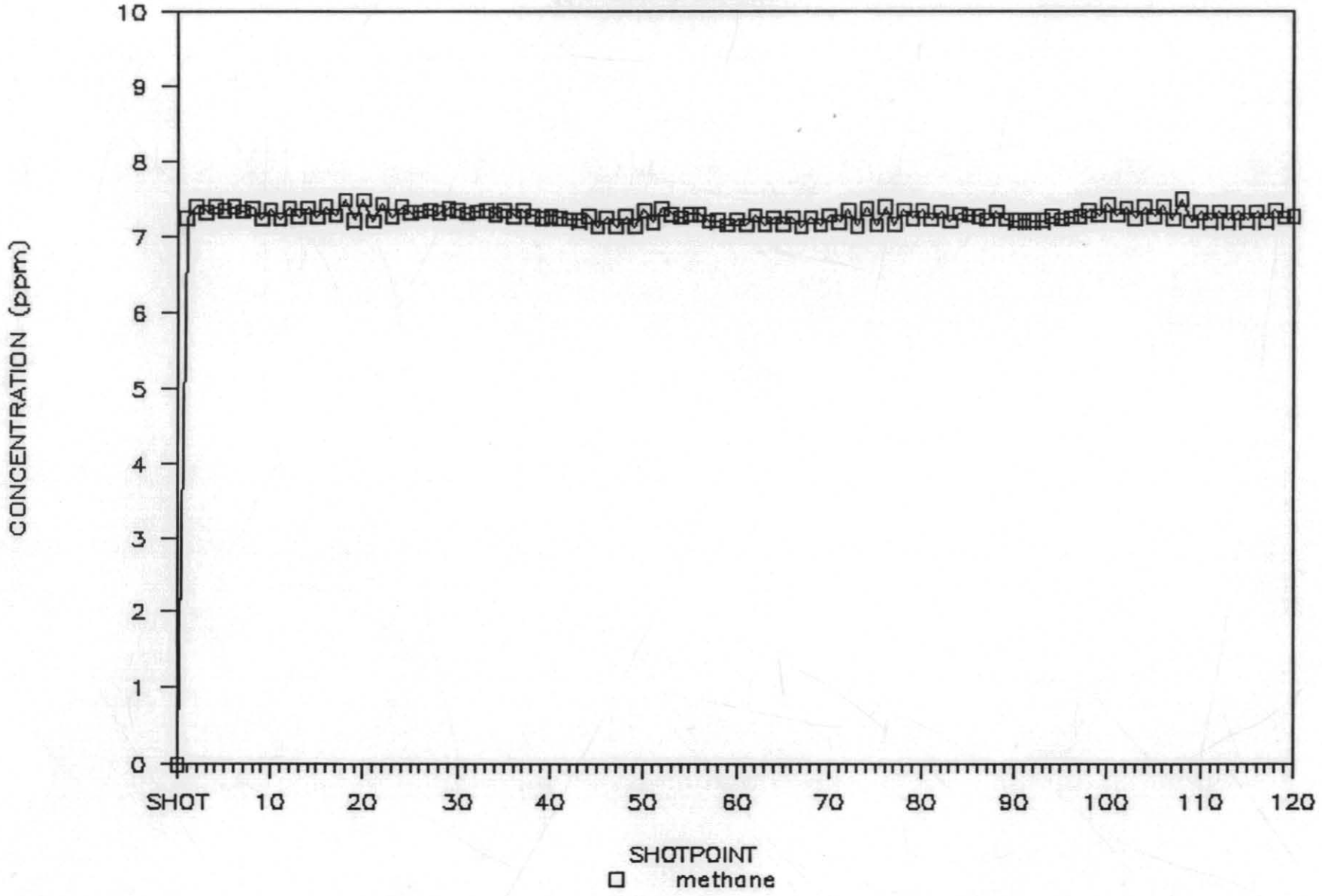
BASS BASIN

Survey Line 24



BASS BASIN

Survey Line 27



BASS BASIN

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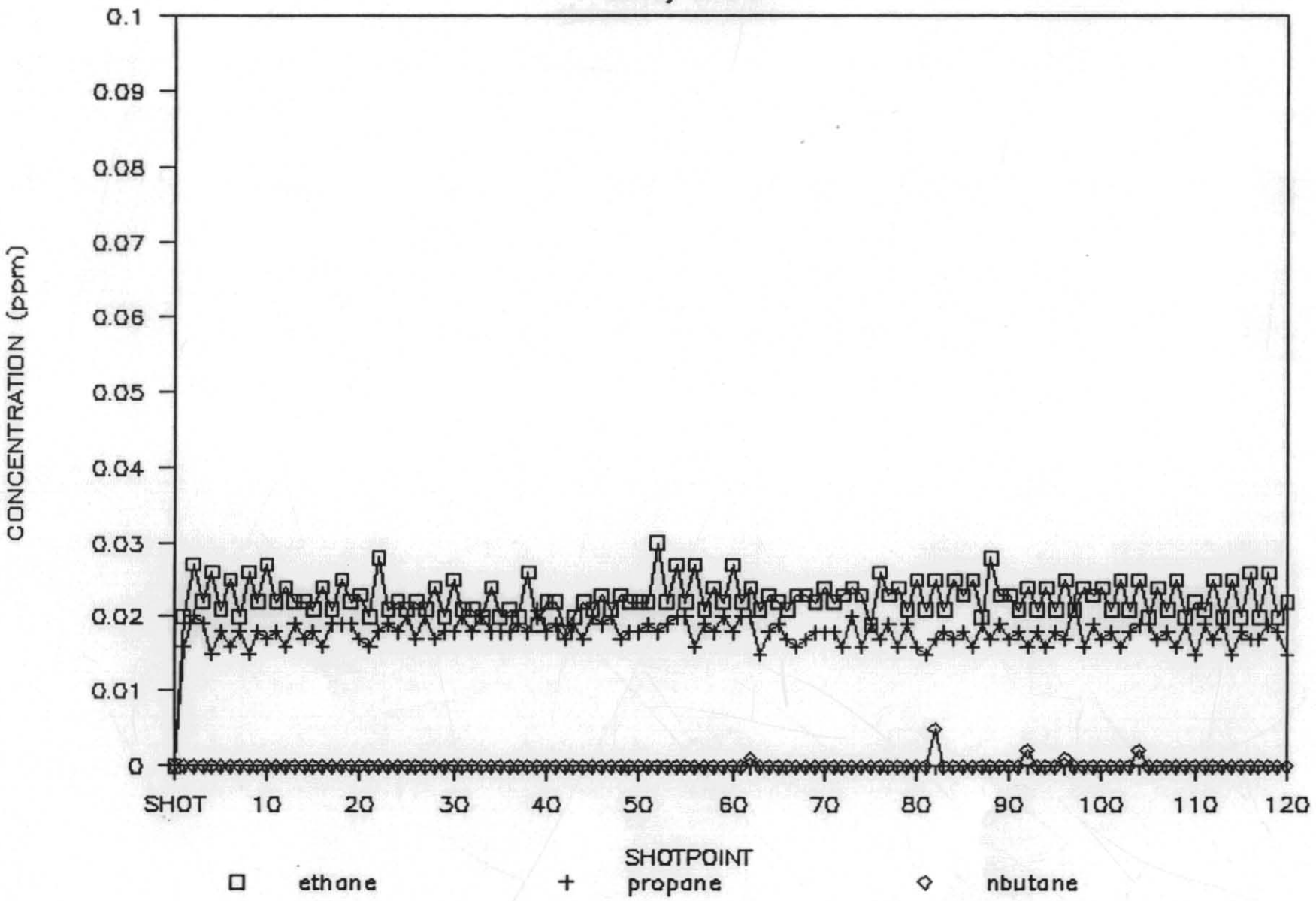

BASS BASIN

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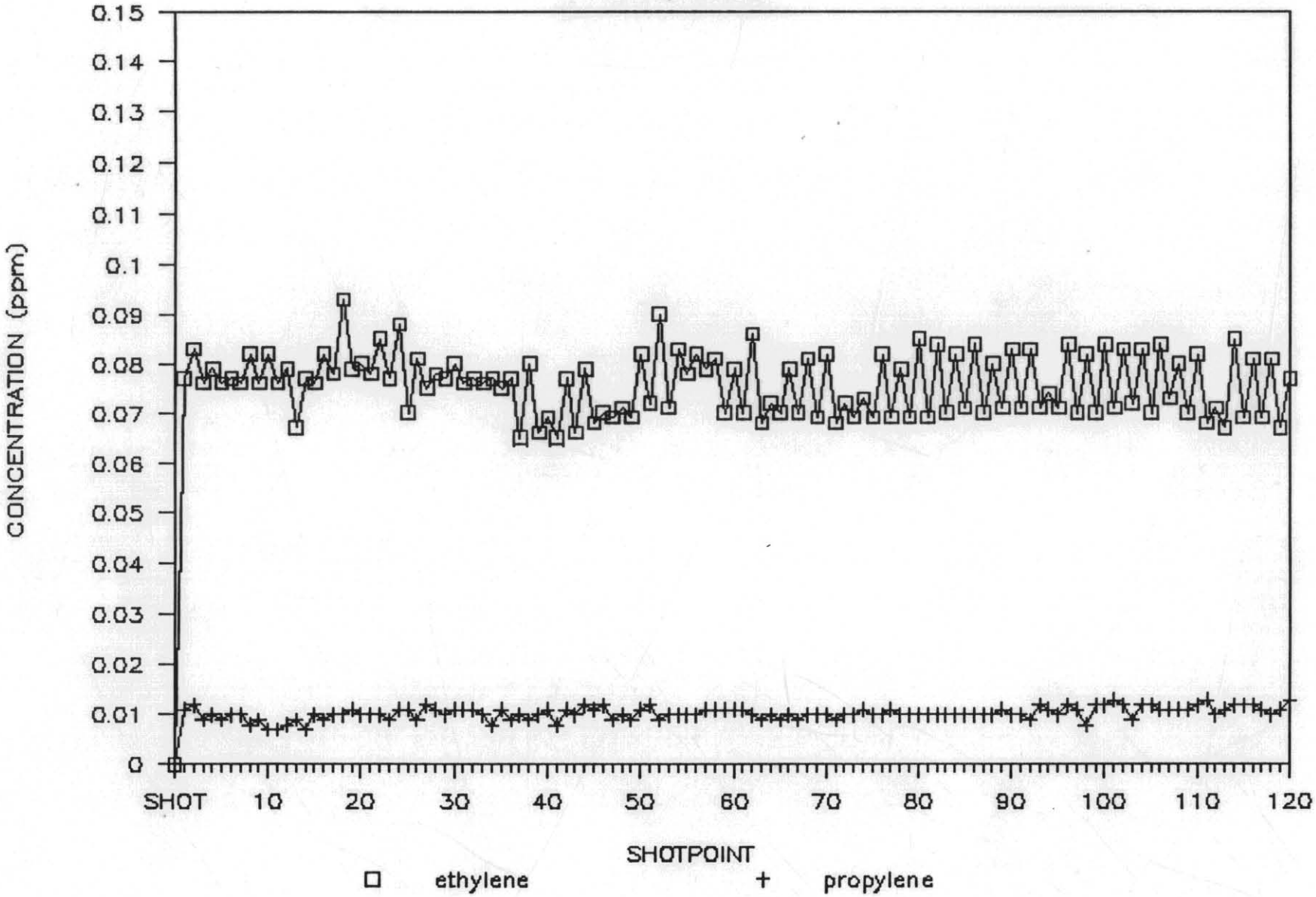
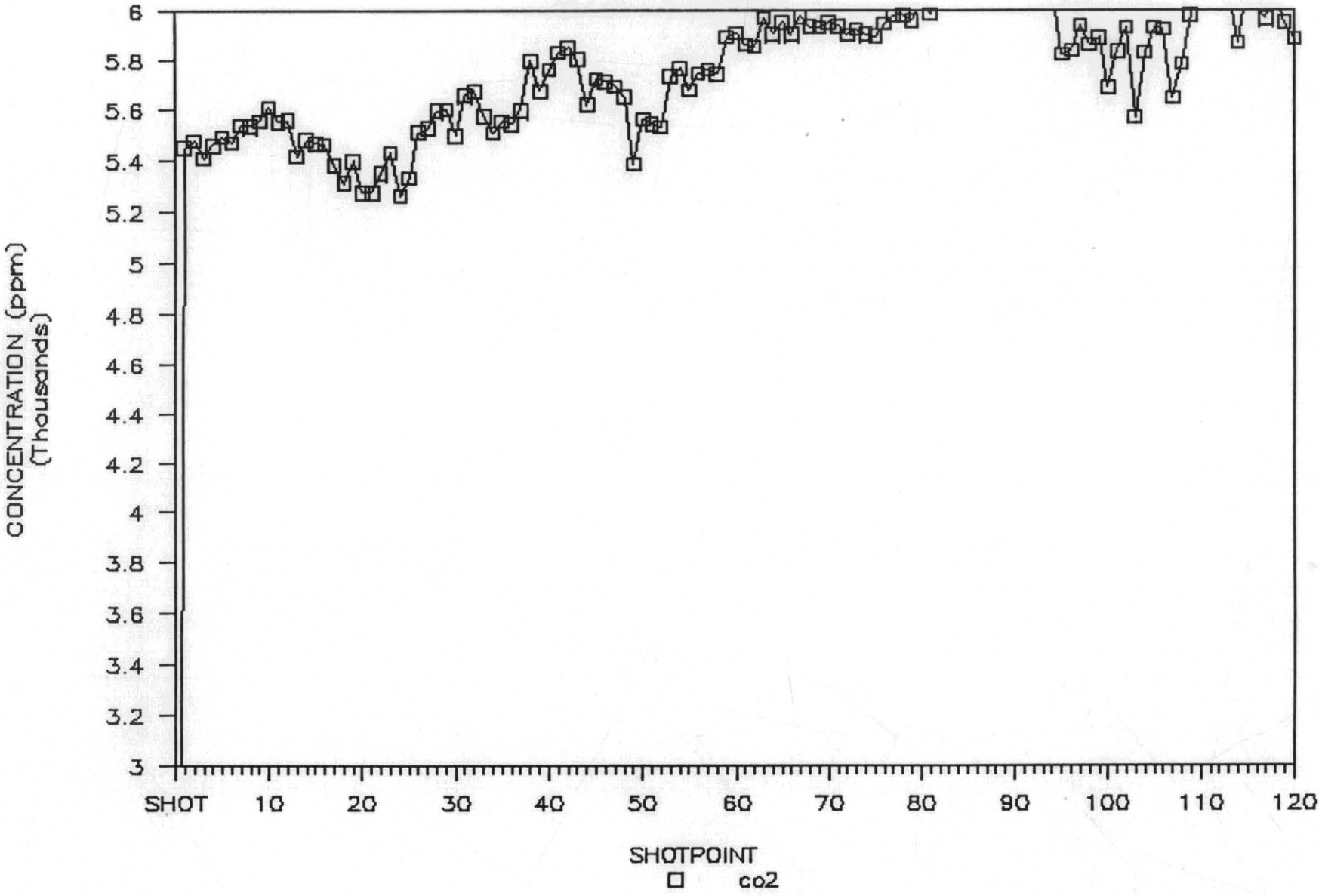


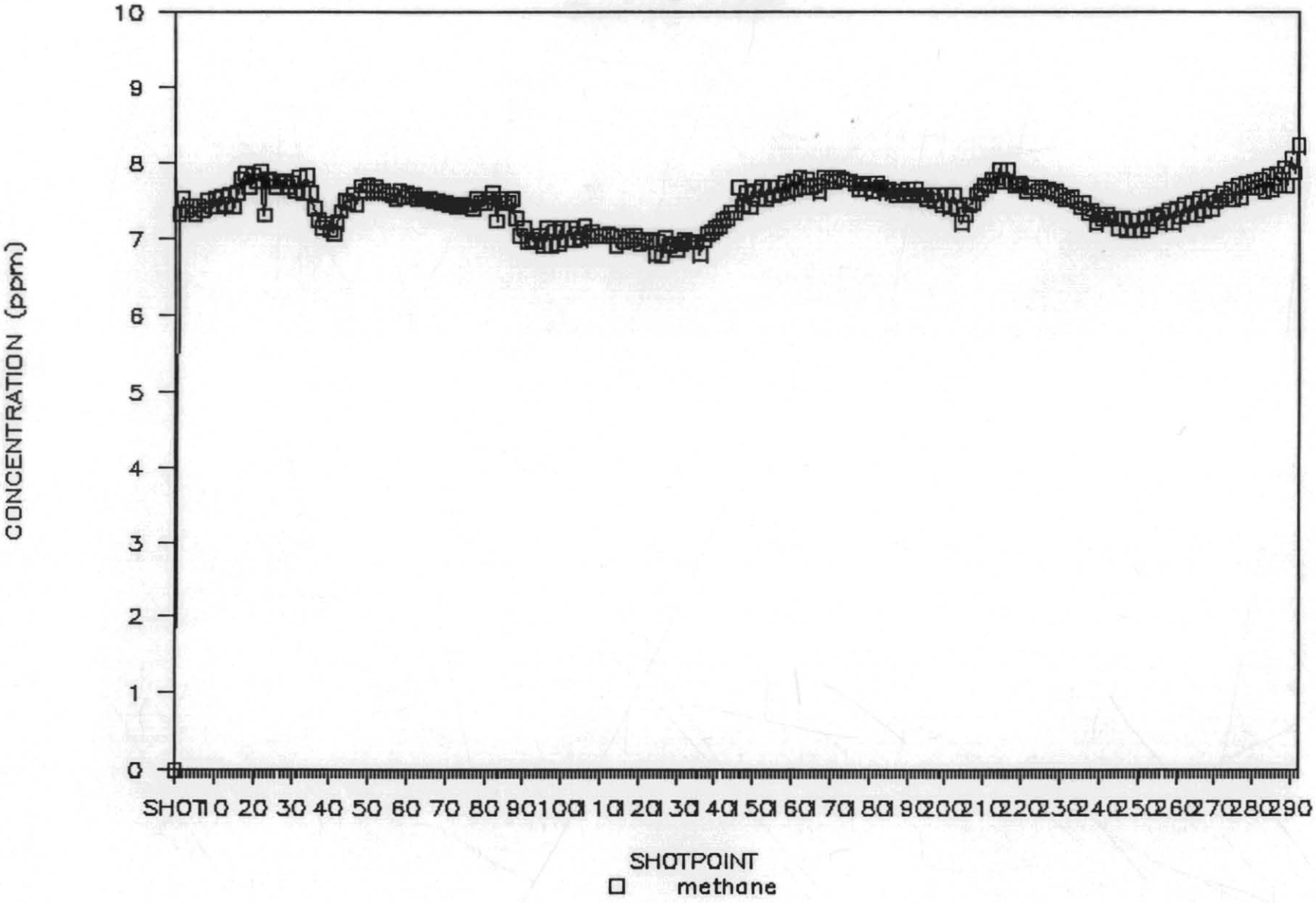
BASS BASIN

Survey Line 27



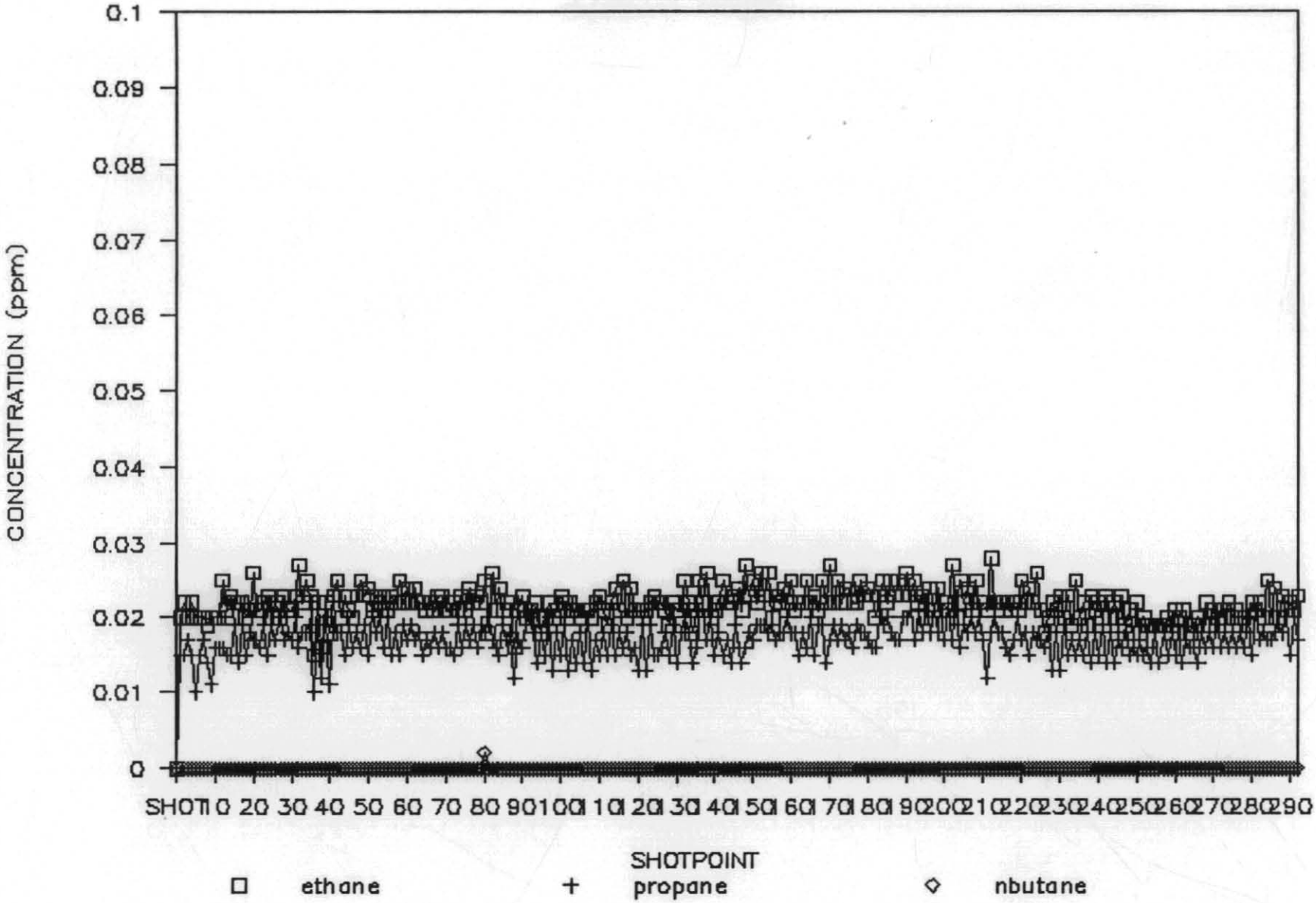
BASS BASIN

Survey Line 28



BASS BASIN

Survey Line 28



BASS BASIN

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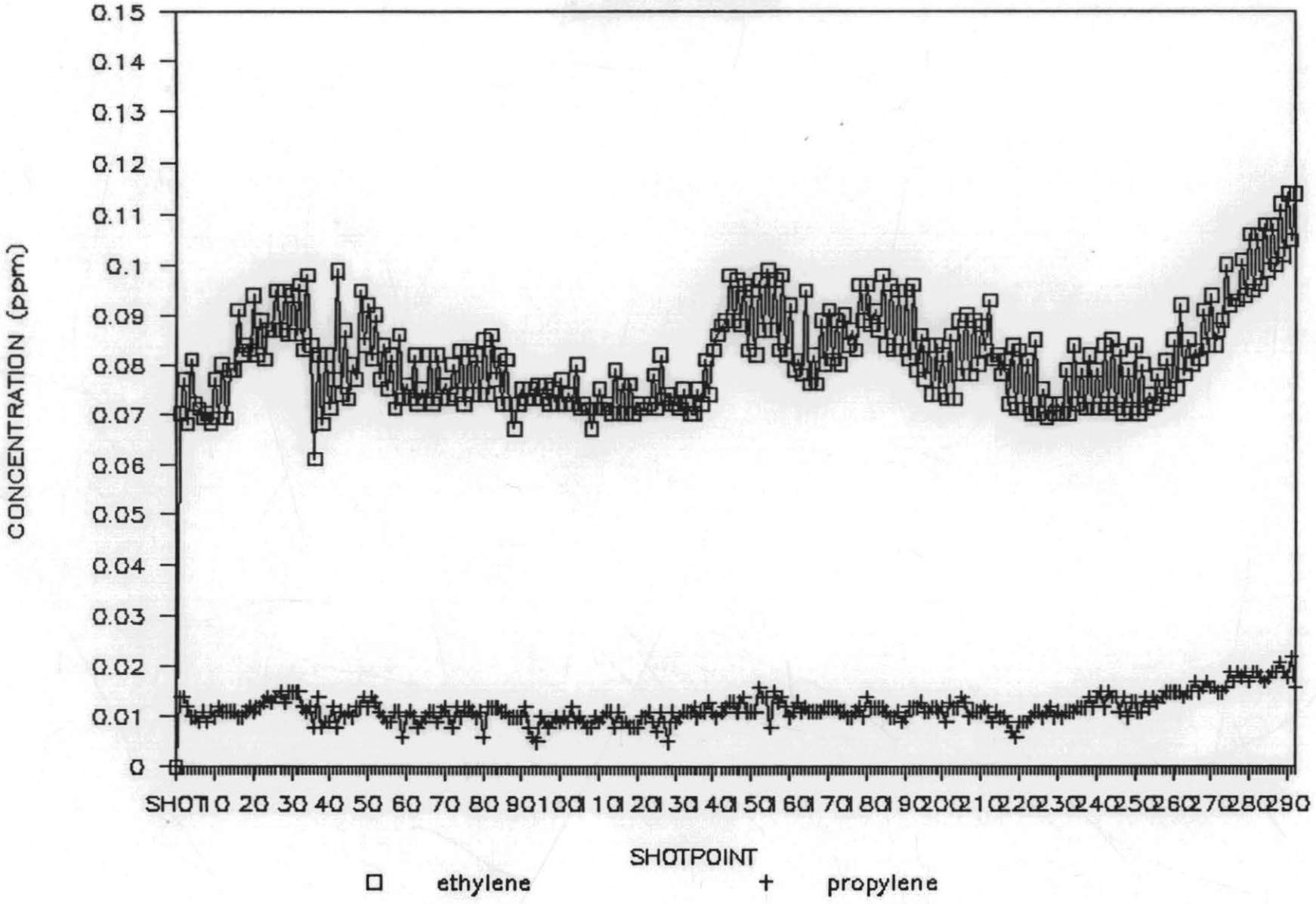

BASS BASIN

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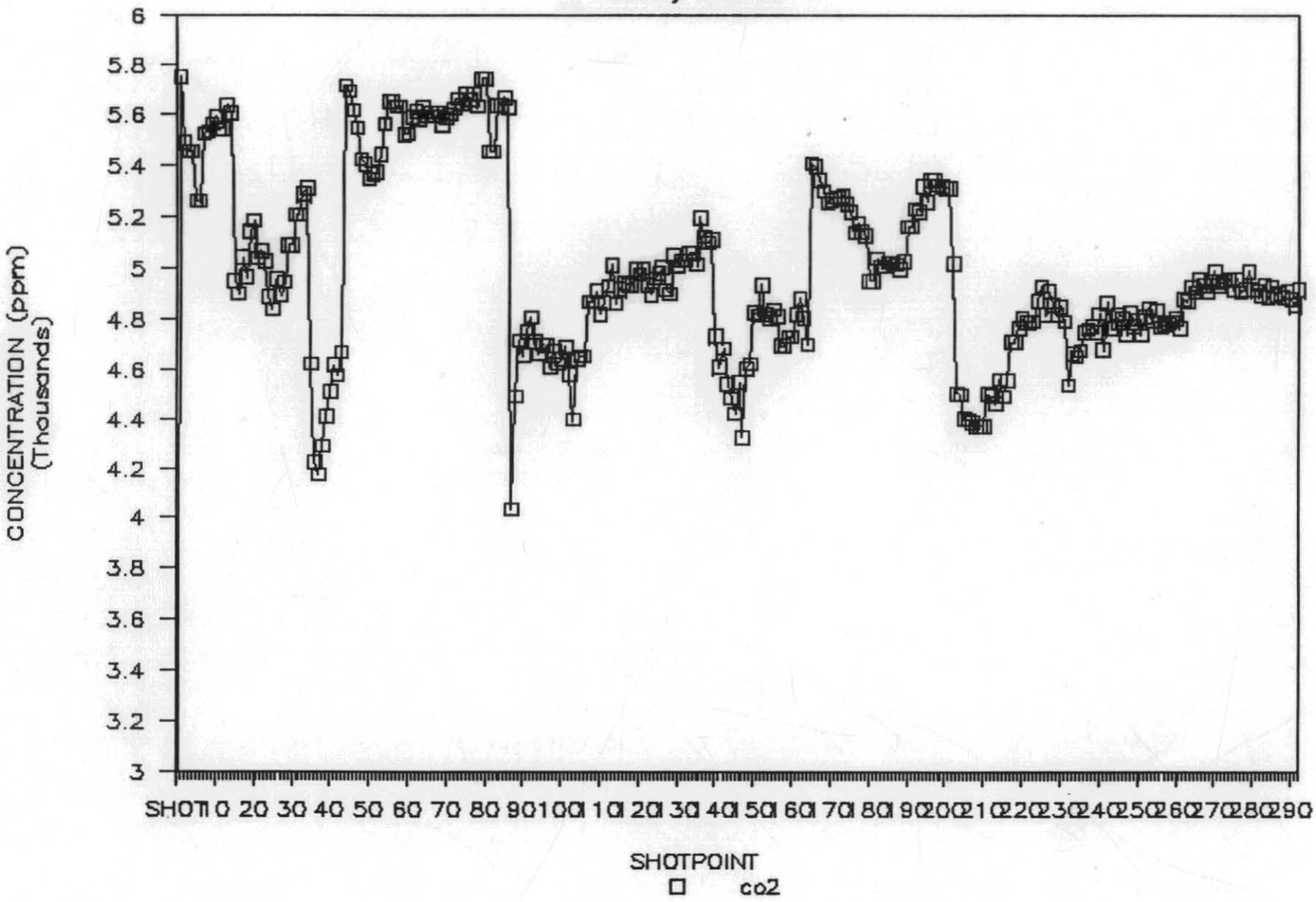

BASS BASIN

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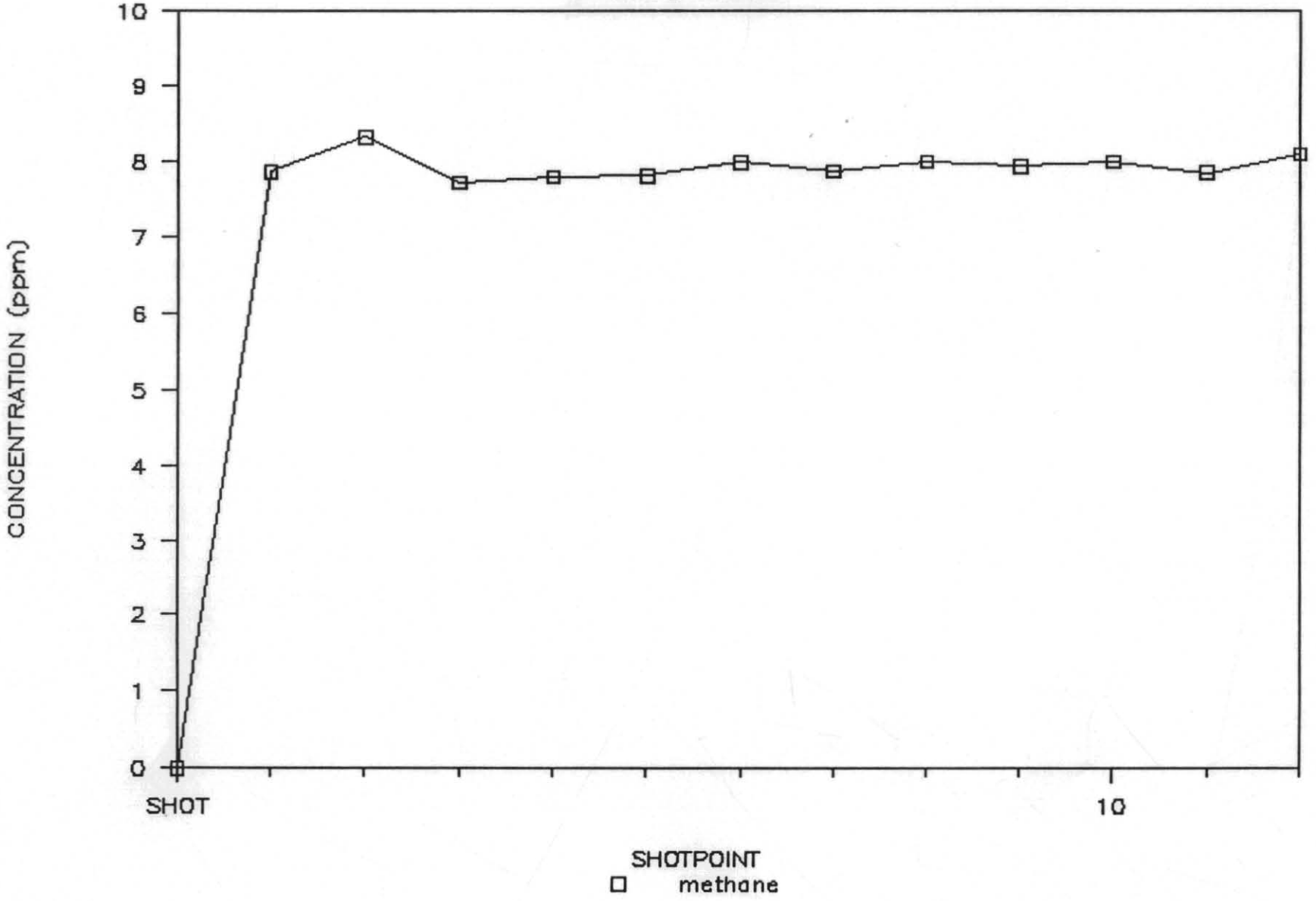

BASS BASIN

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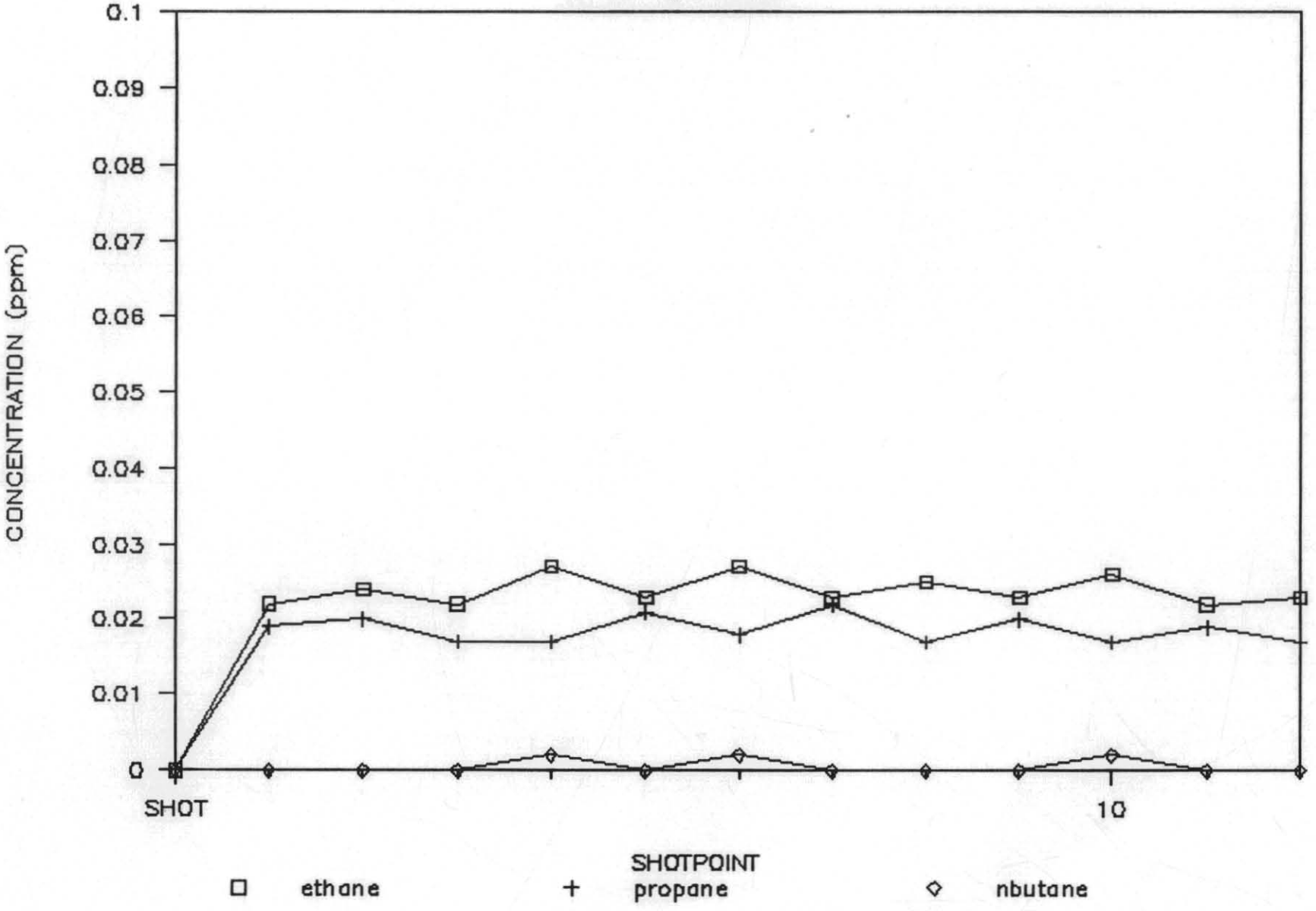

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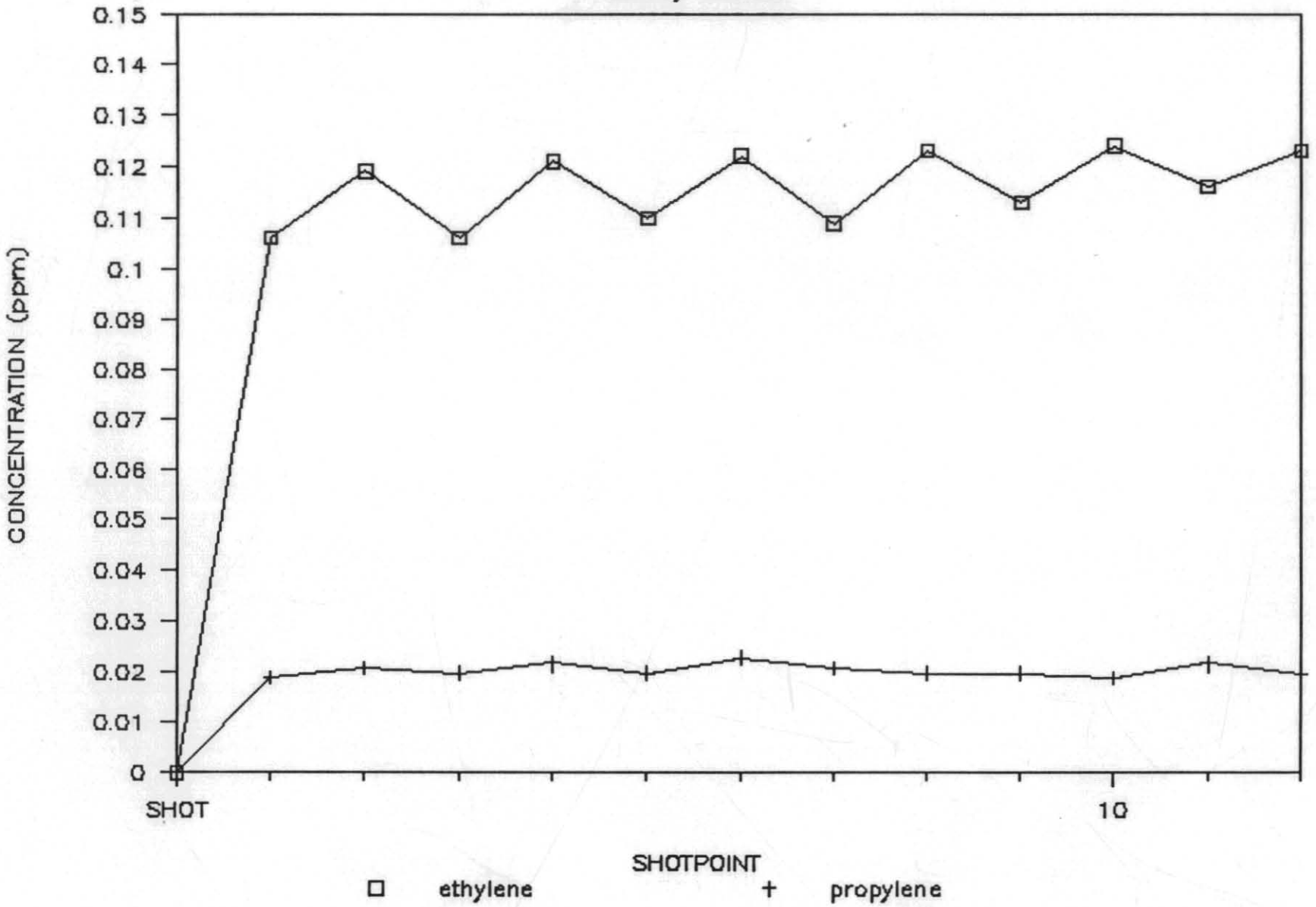

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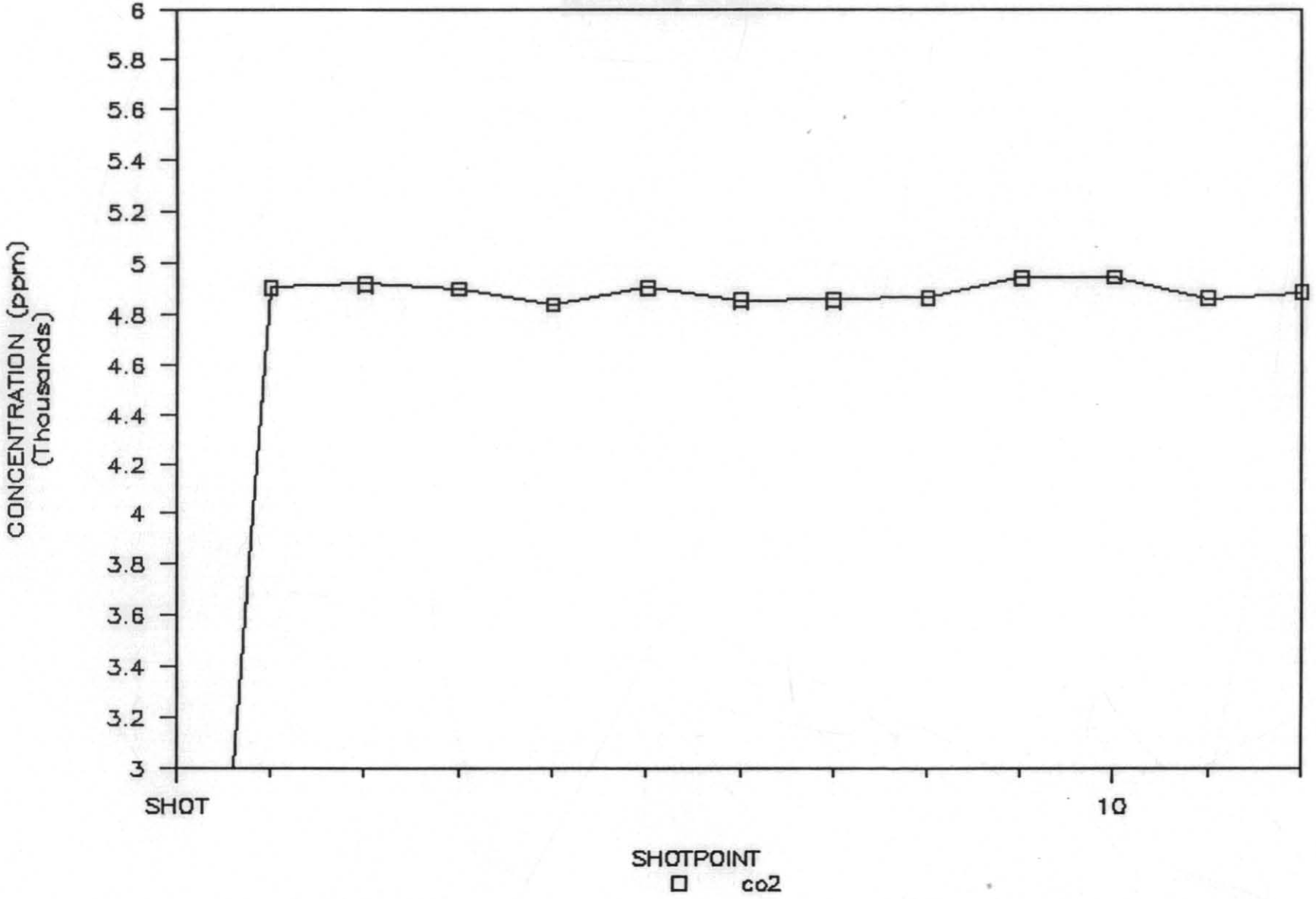
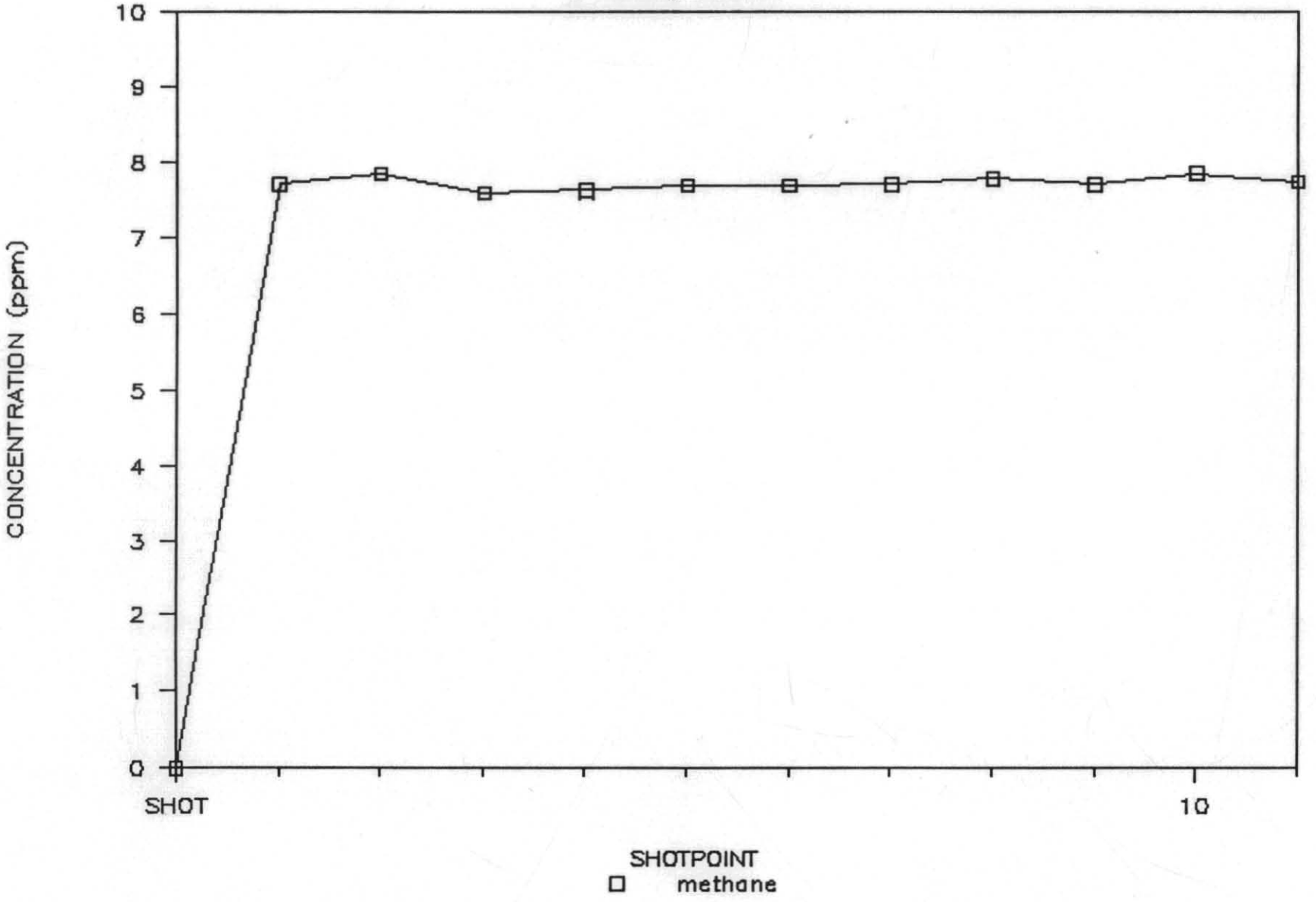


BASS BASIN

Survey Line 30



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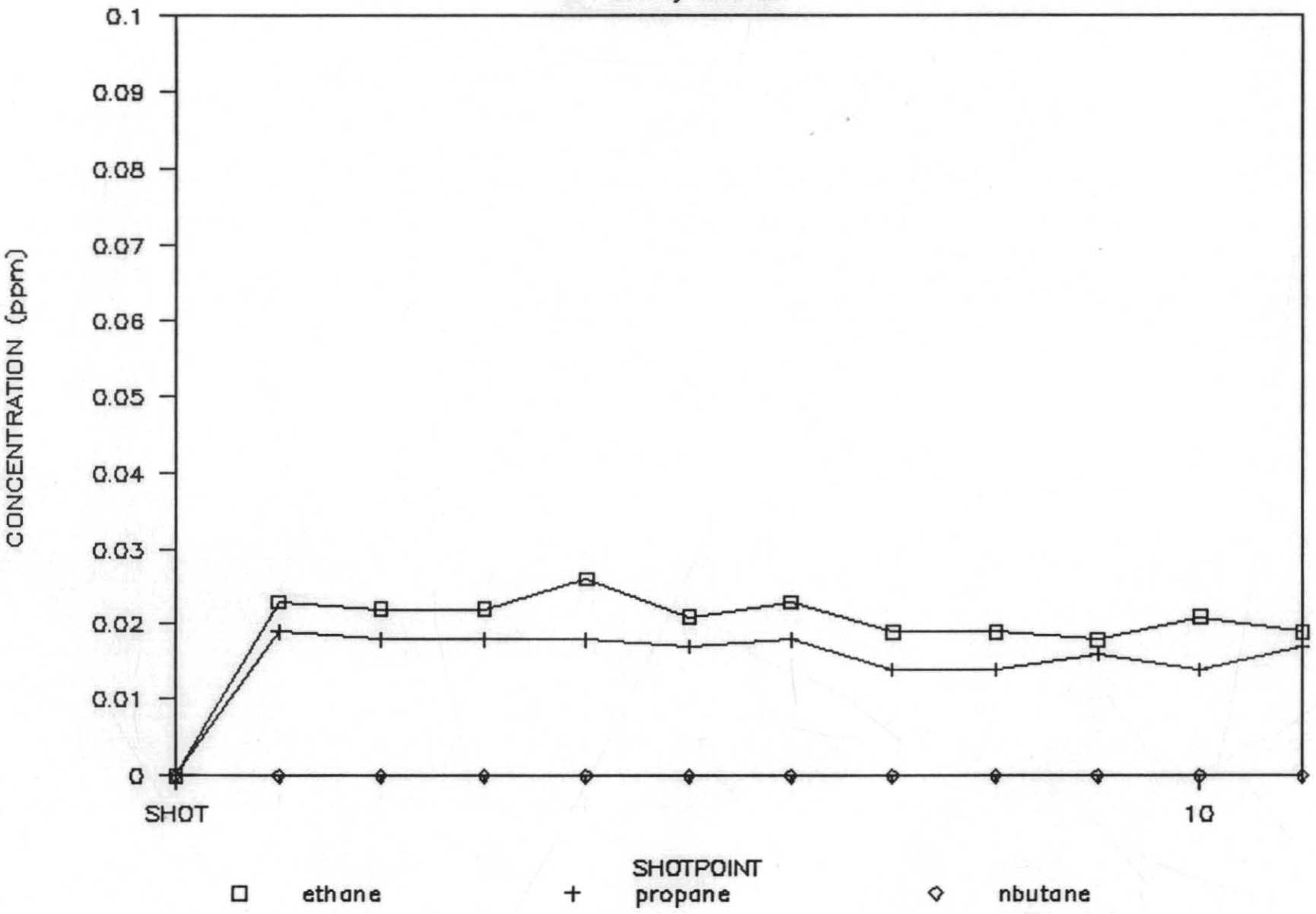

BASS BASIN

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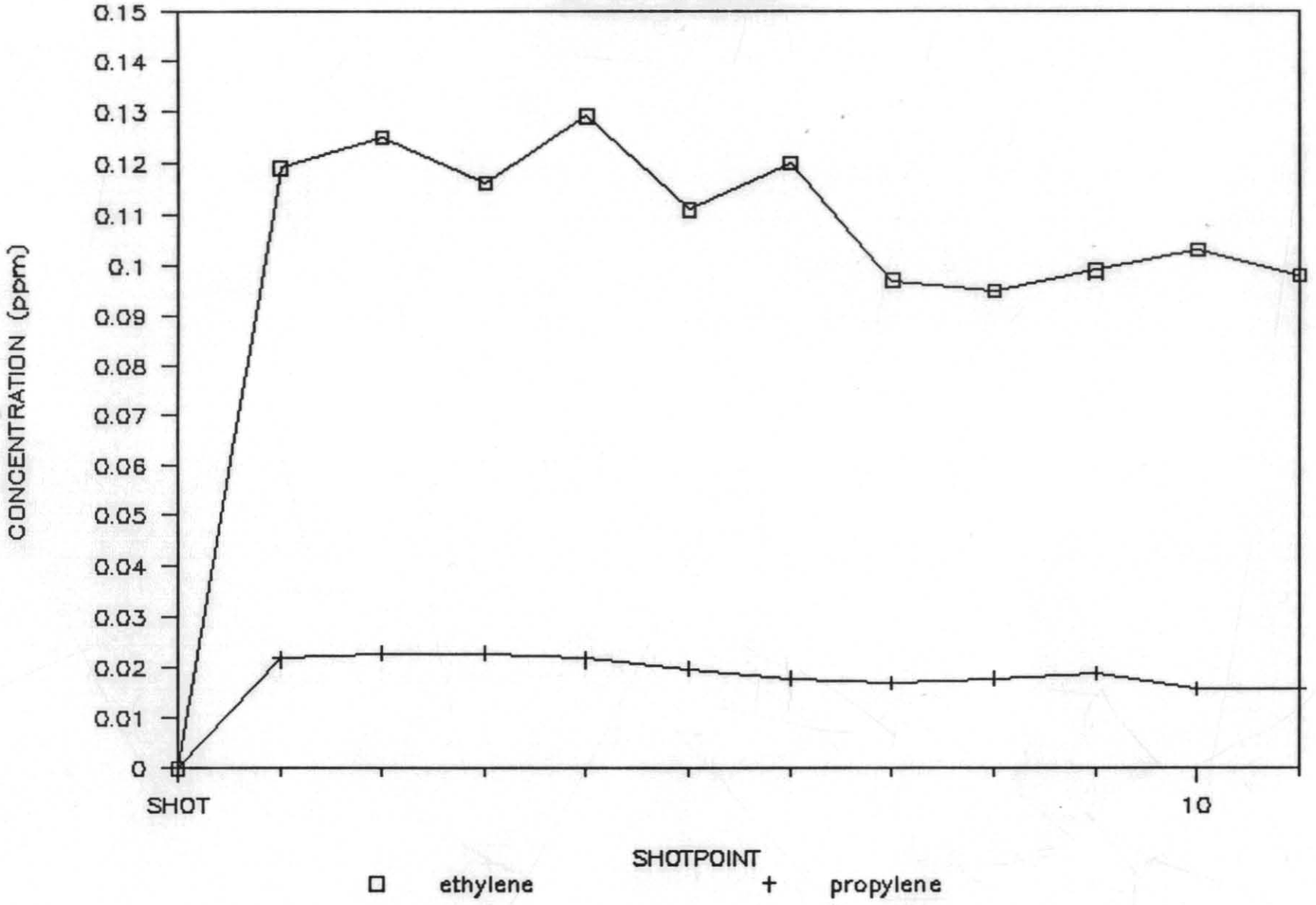
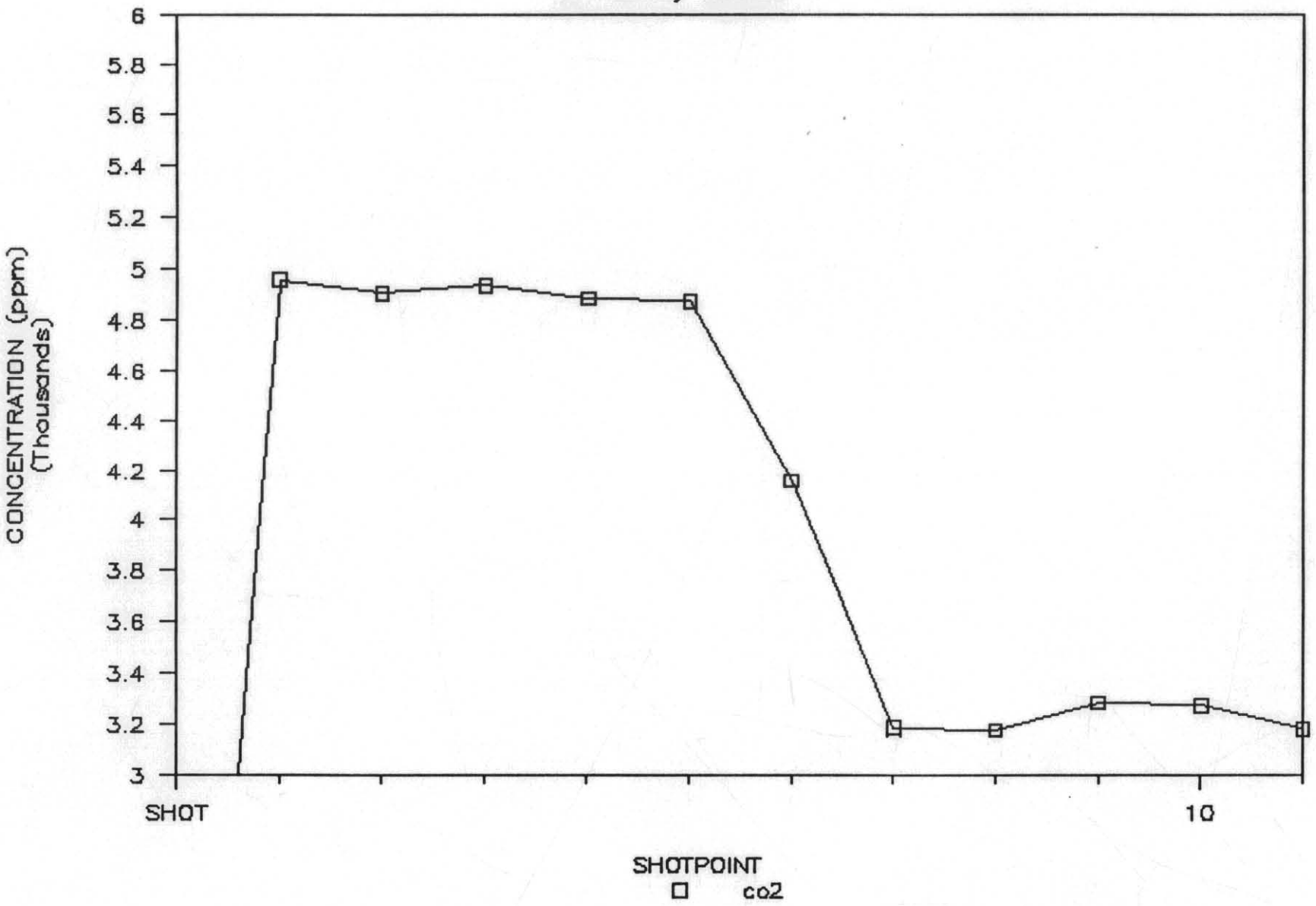


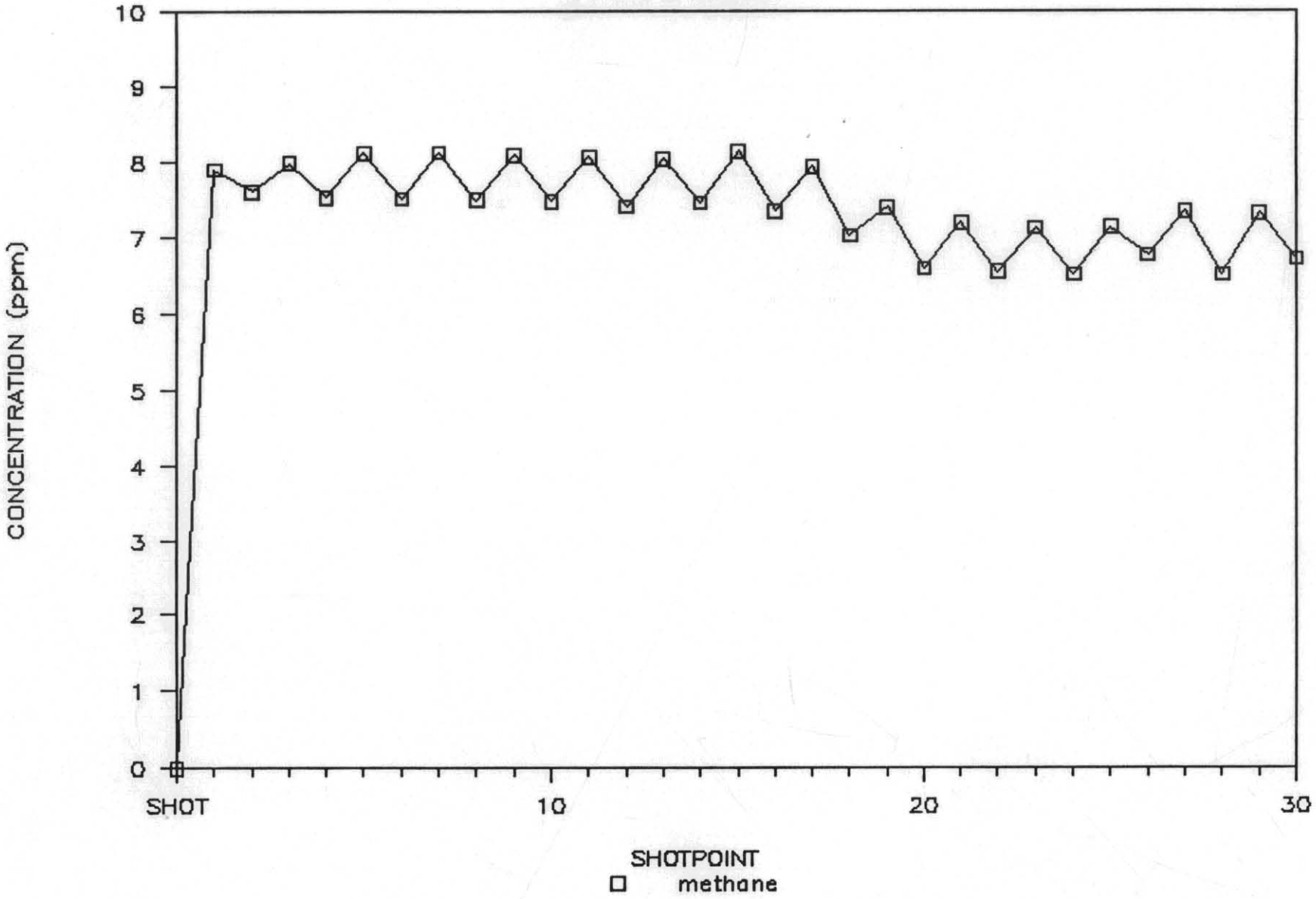
BASS BASIN

Survey Line 30



BASS BASIN

Survey Line 31



BASS BASIN

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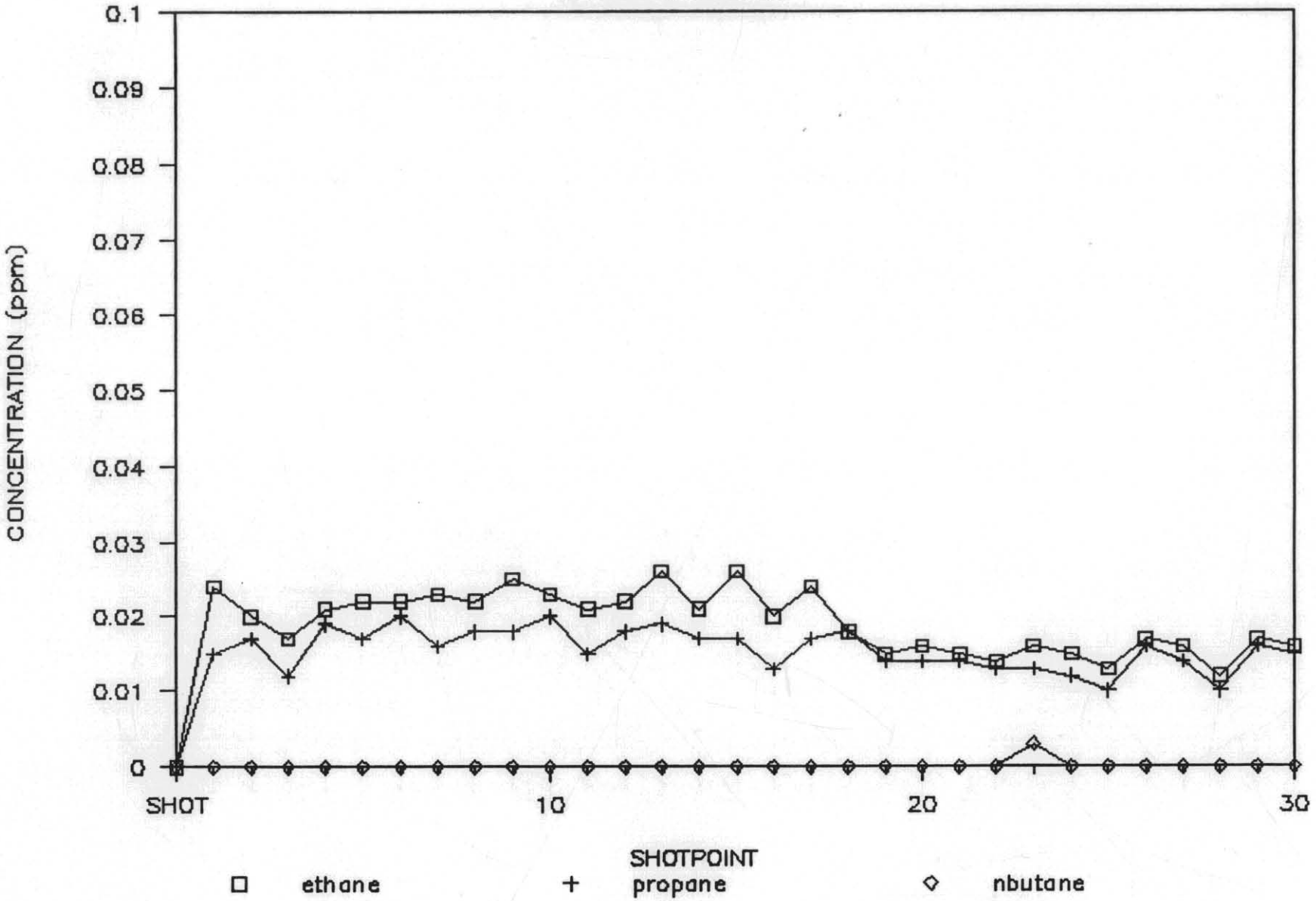

BASS BASIN

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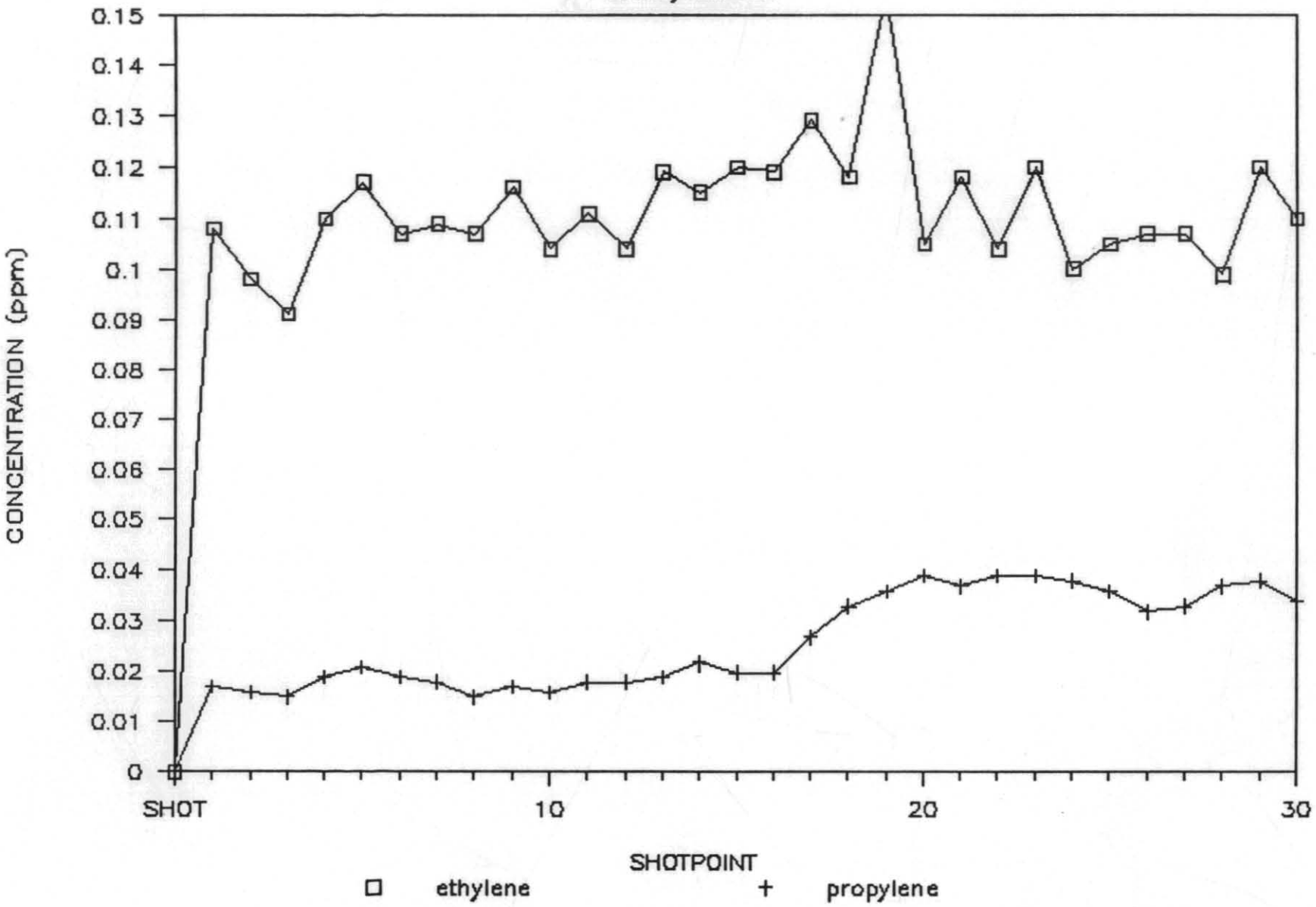

BASS BASIN

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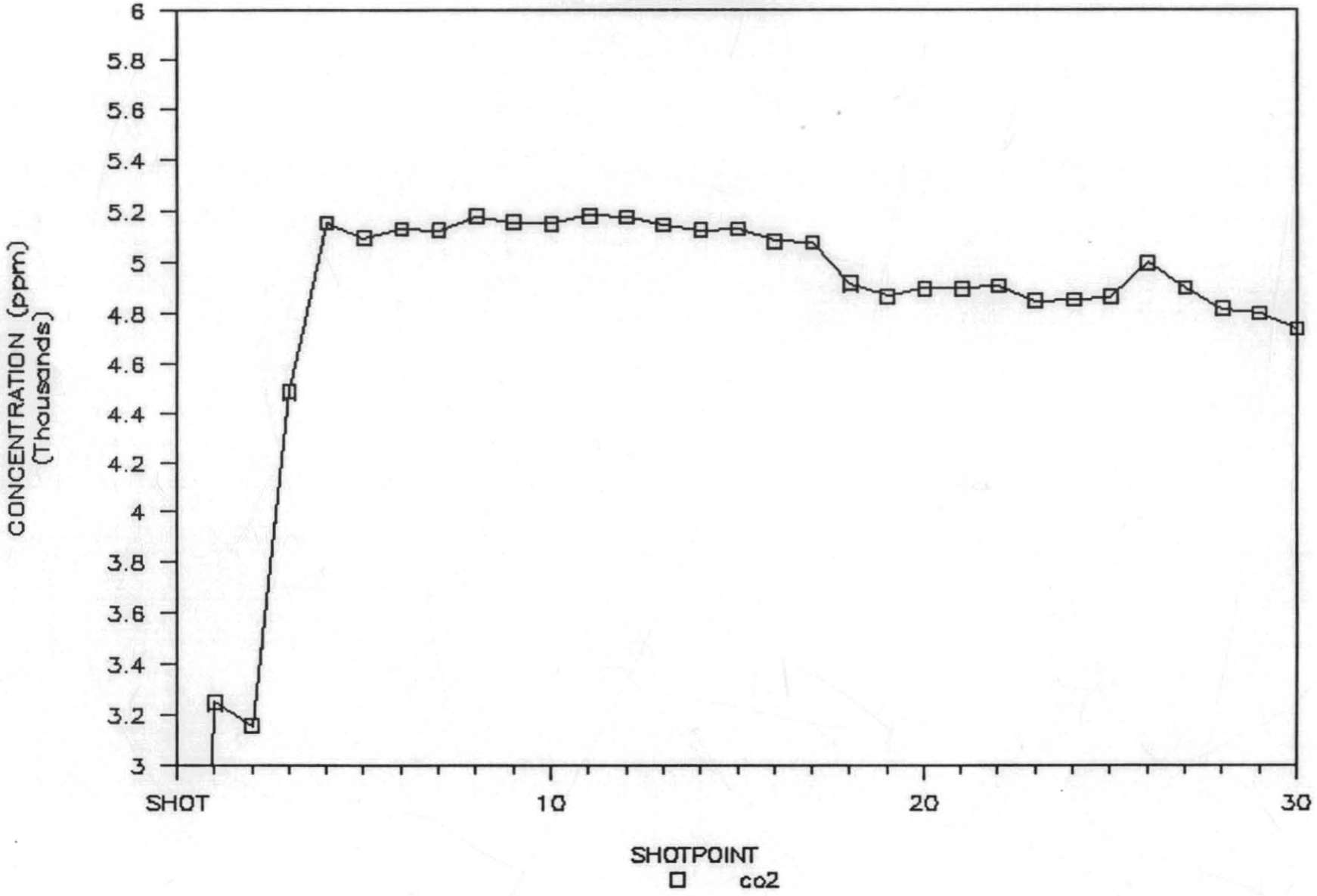
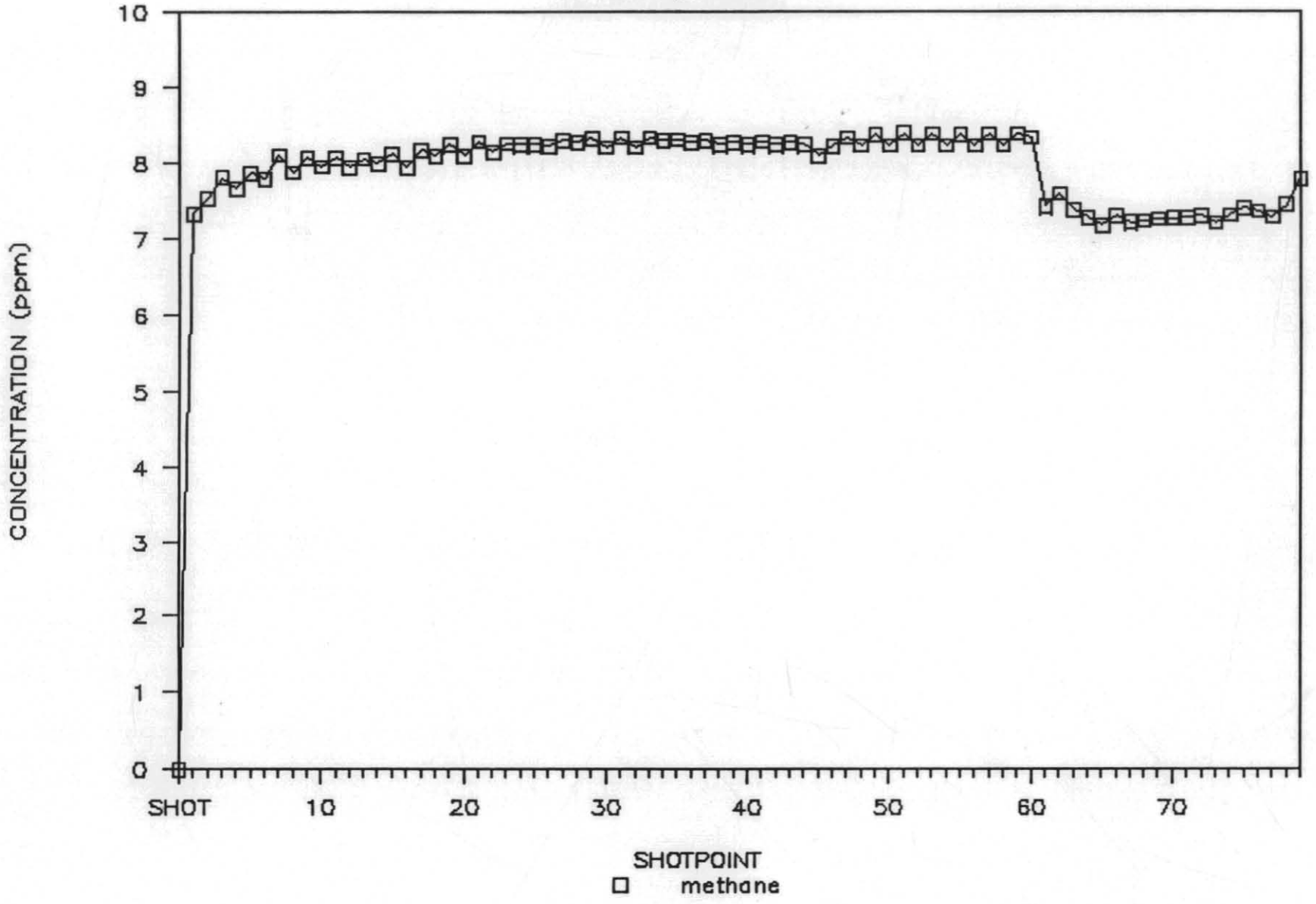


BASS BASIN

Survey Line 32



BASS BASIN

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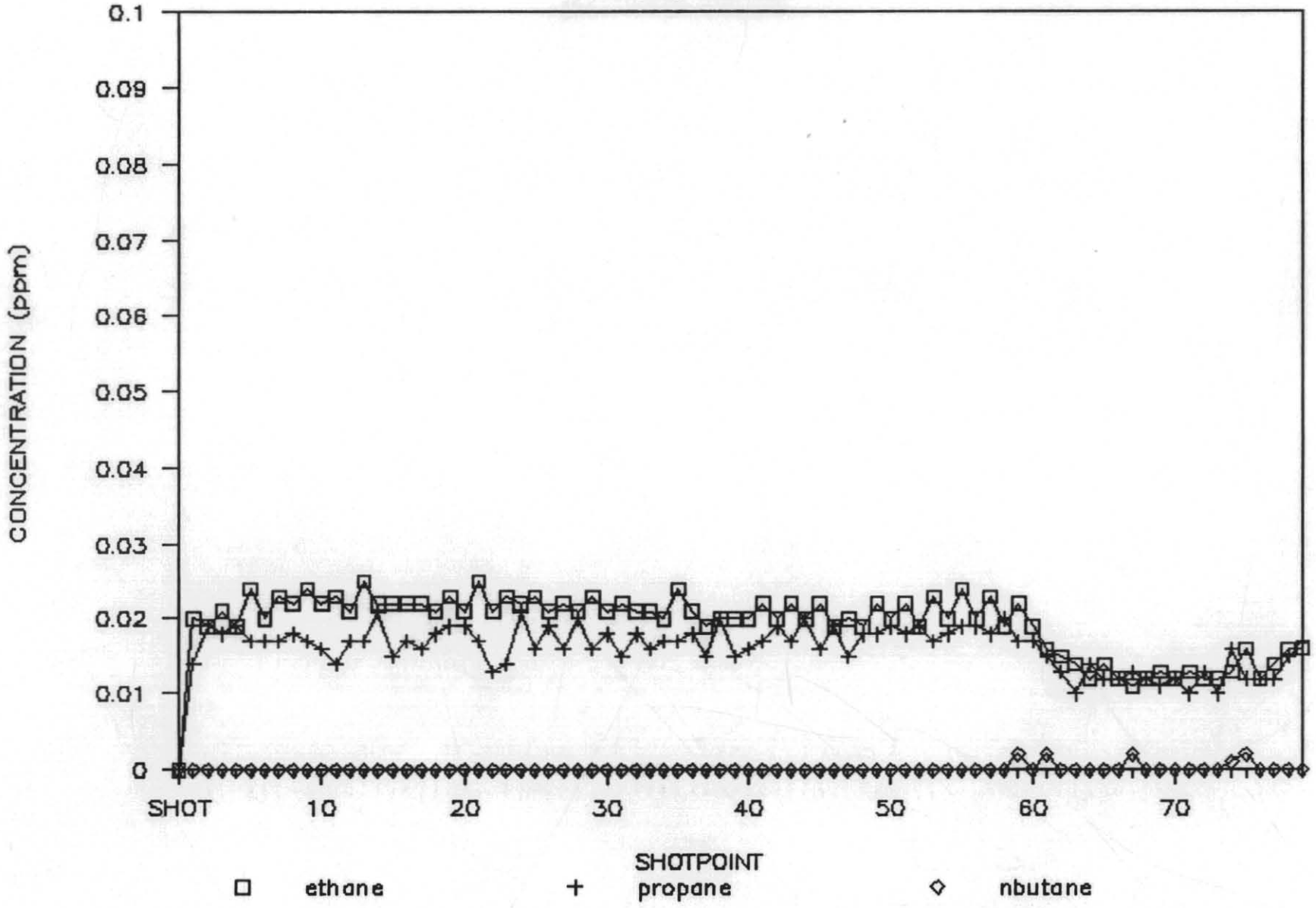
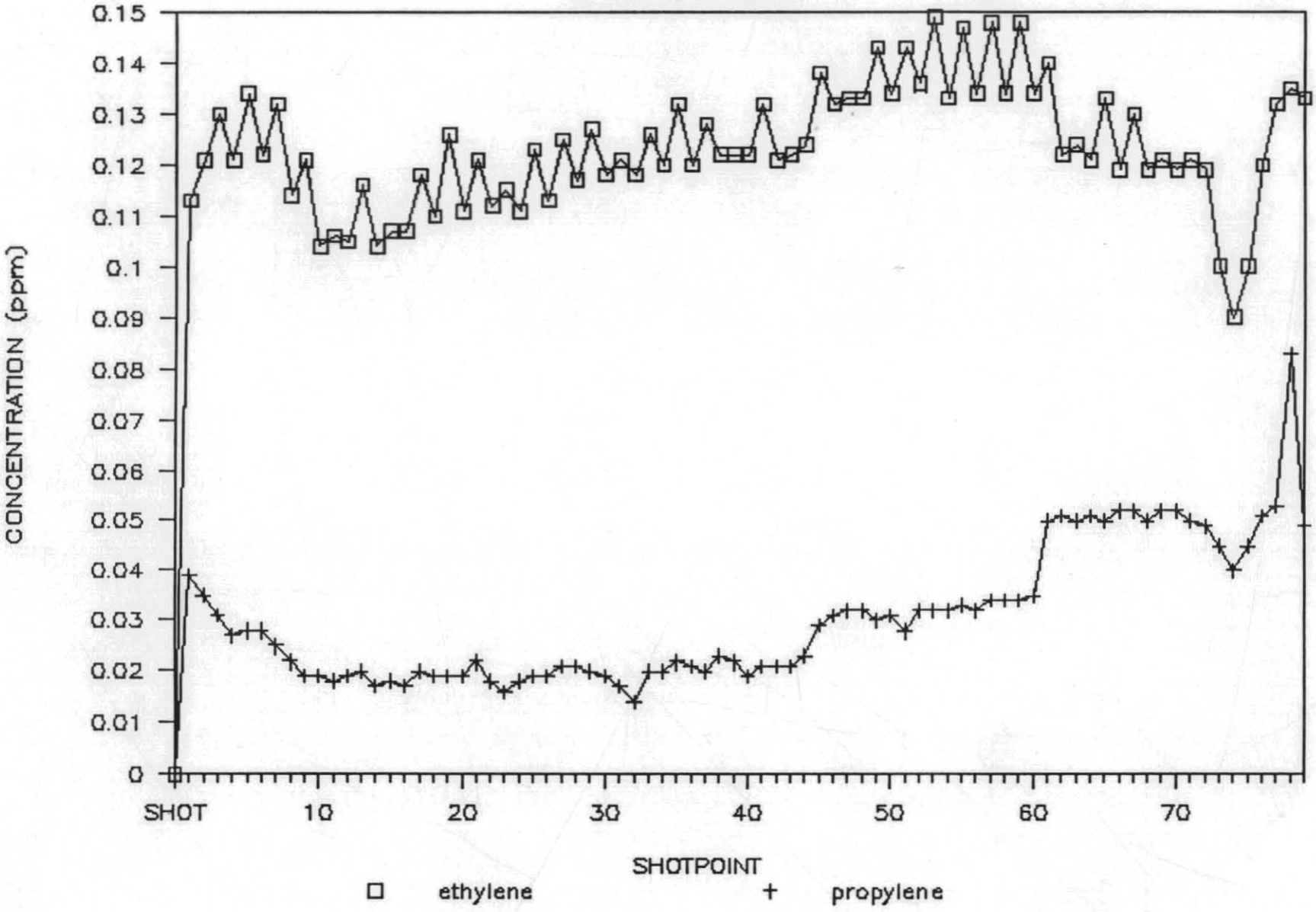


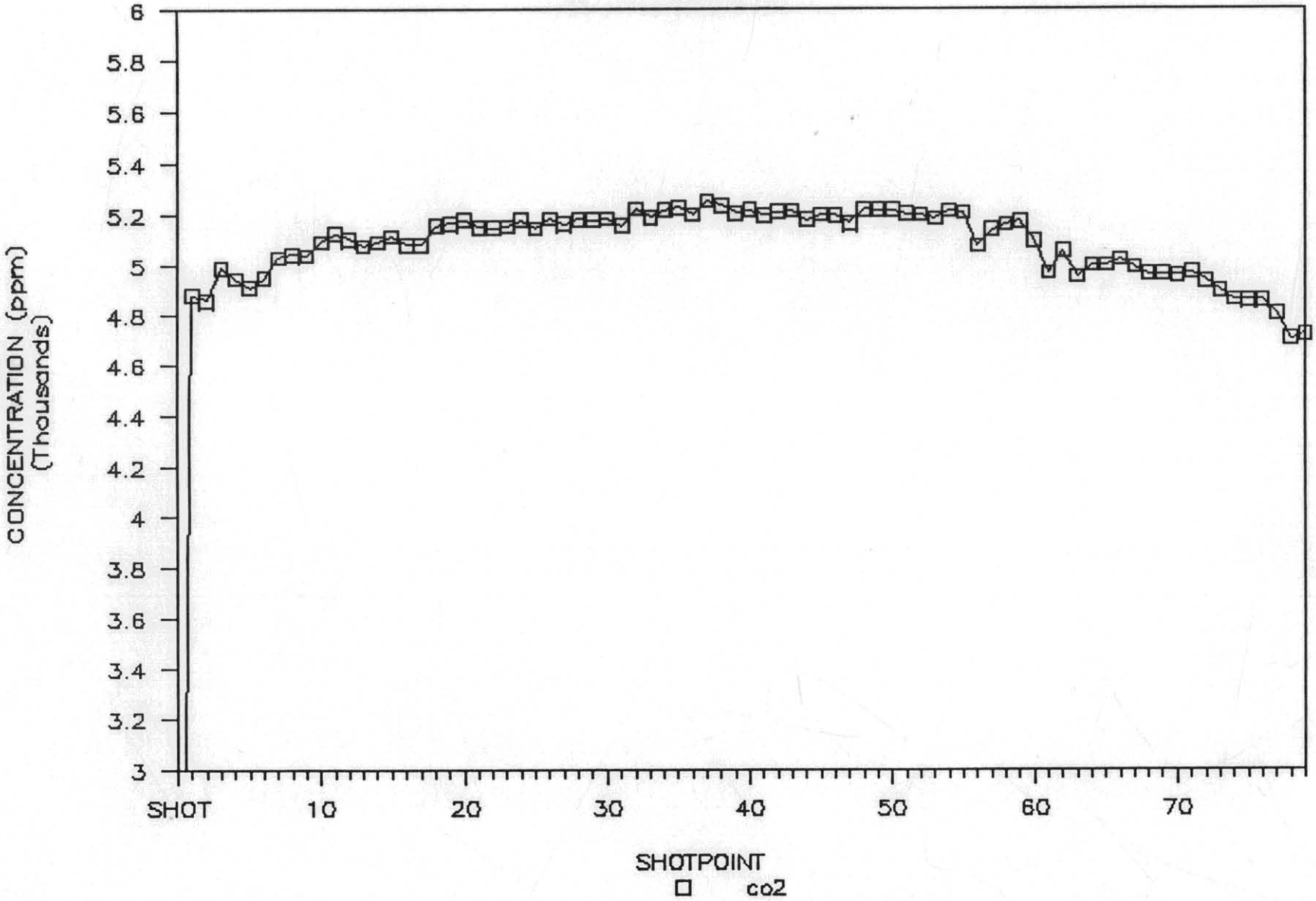
BASS BASIN

Survey Line 32



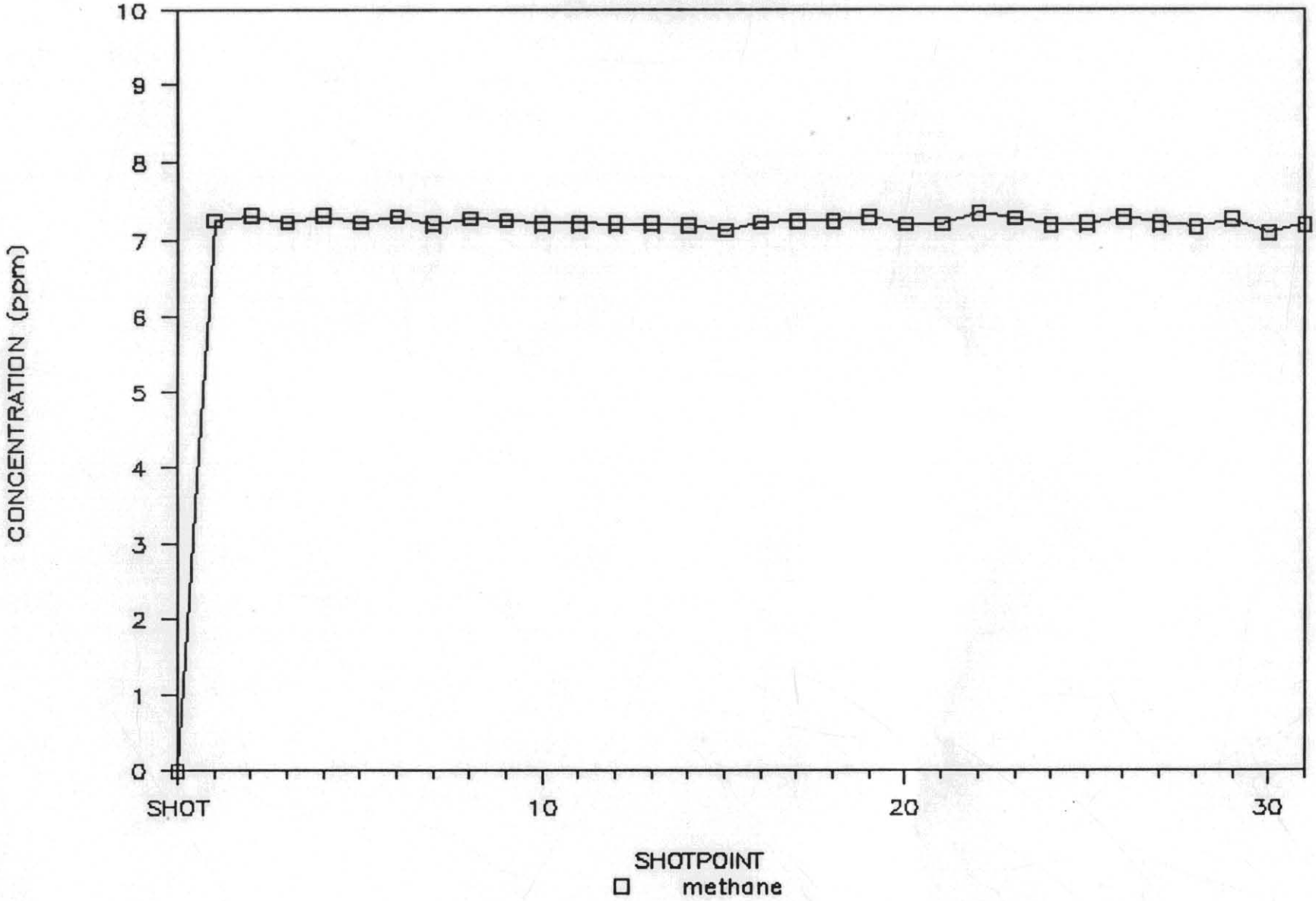
BASS BASIN

Survey Line 32



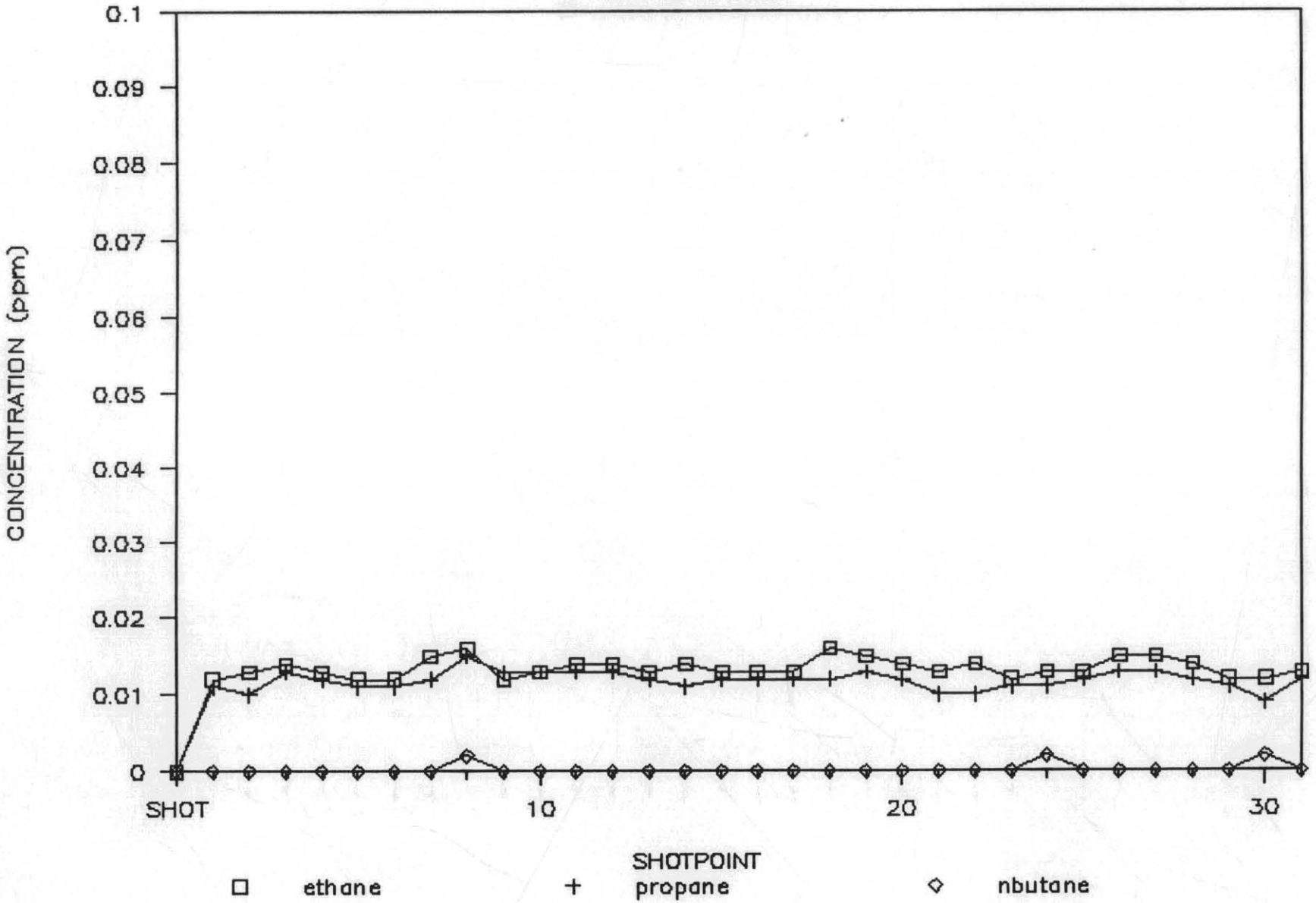
BASS BASIN

Survey Line 33



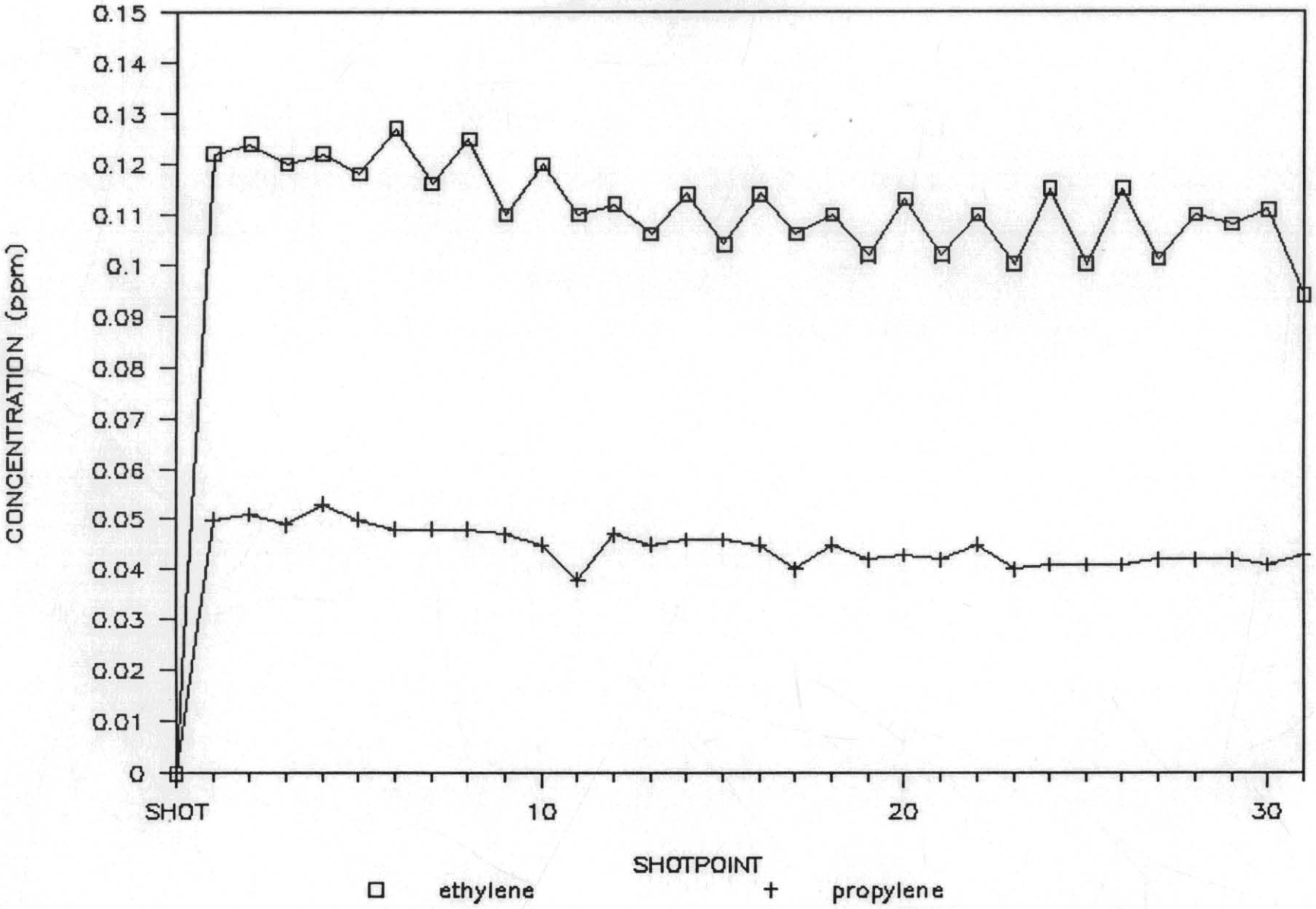
BASS BASIN

Survey Line 33



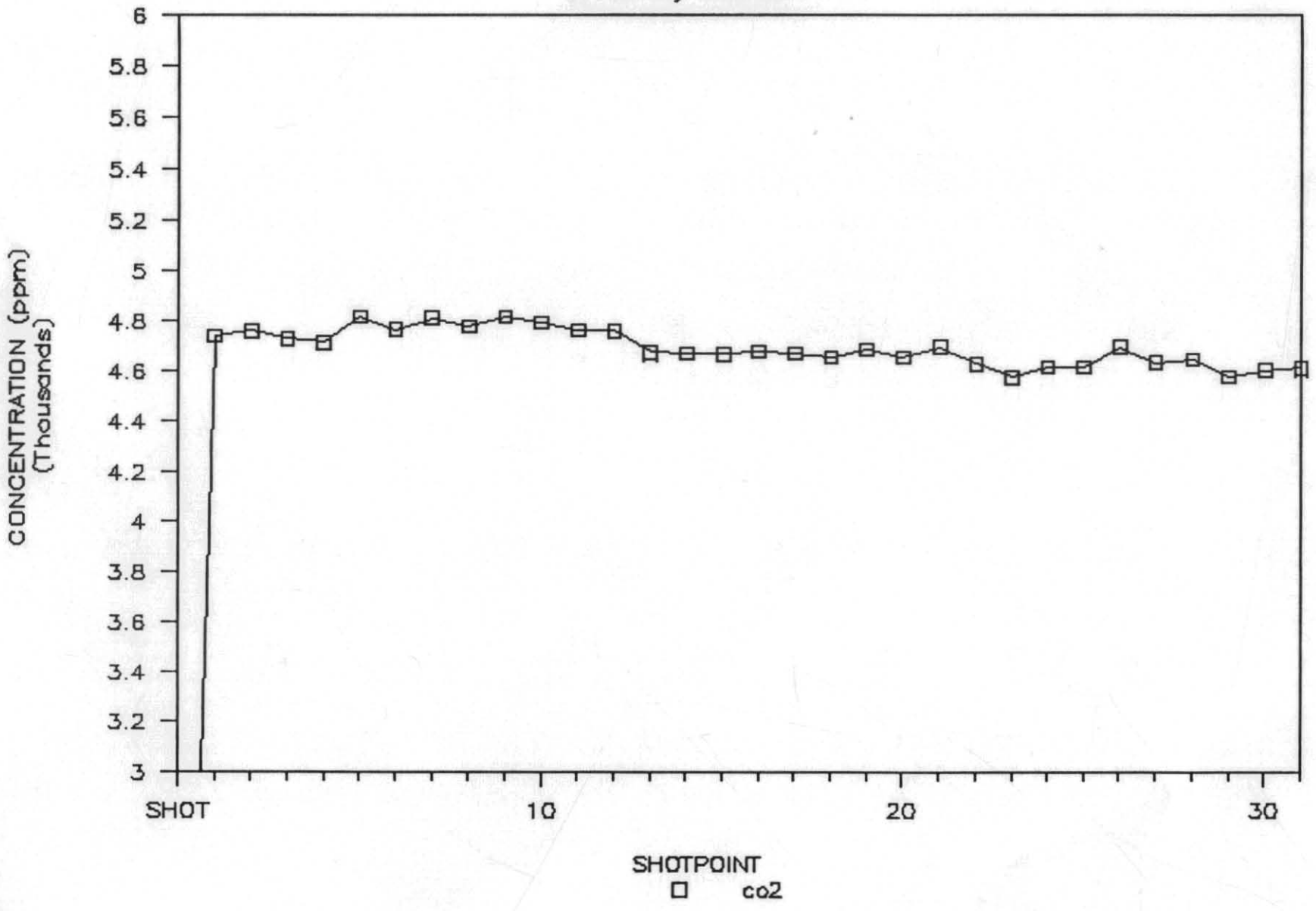
BASS BASIN

Survey Line 33



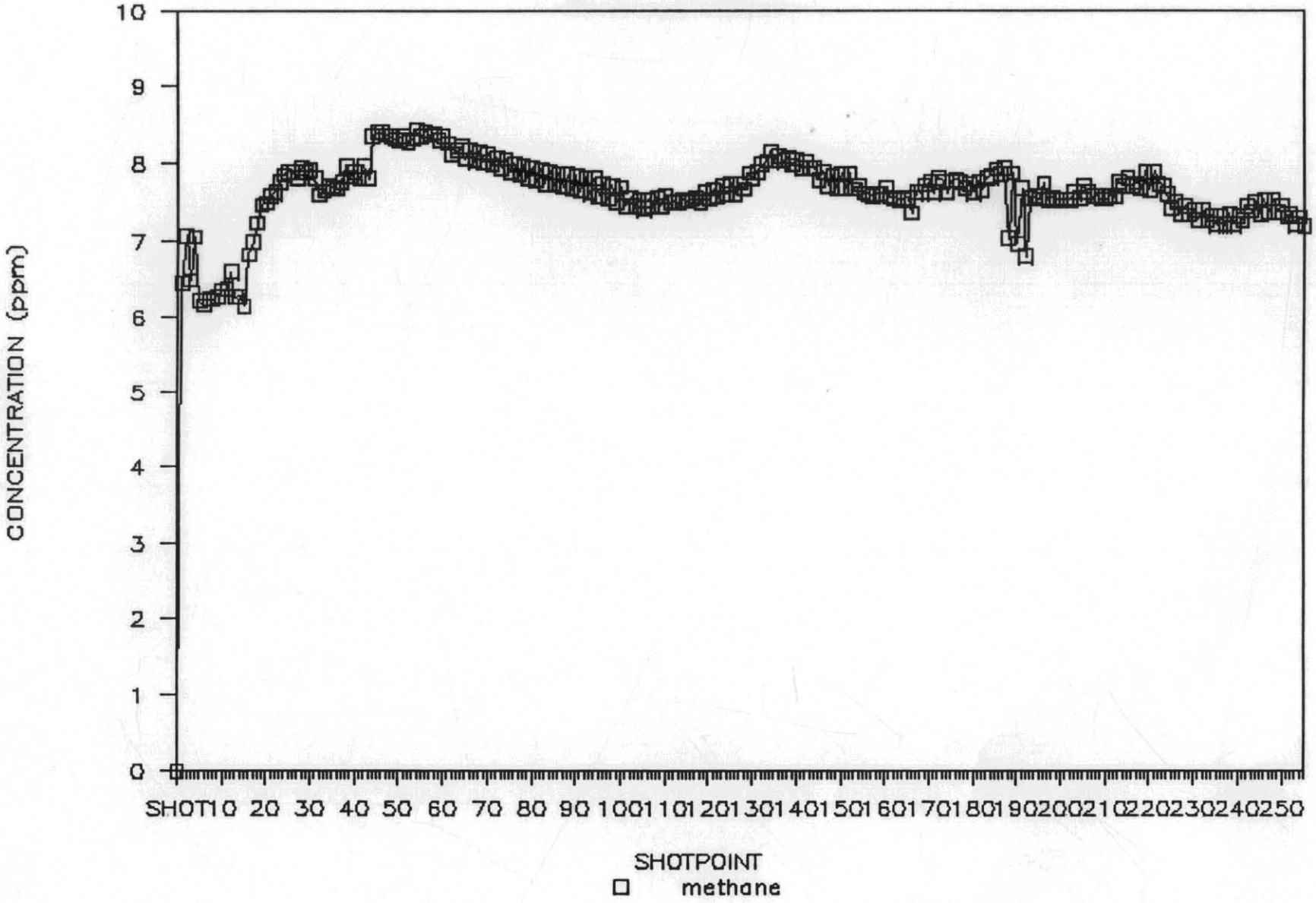
BASS BASIN

Survey Line 33



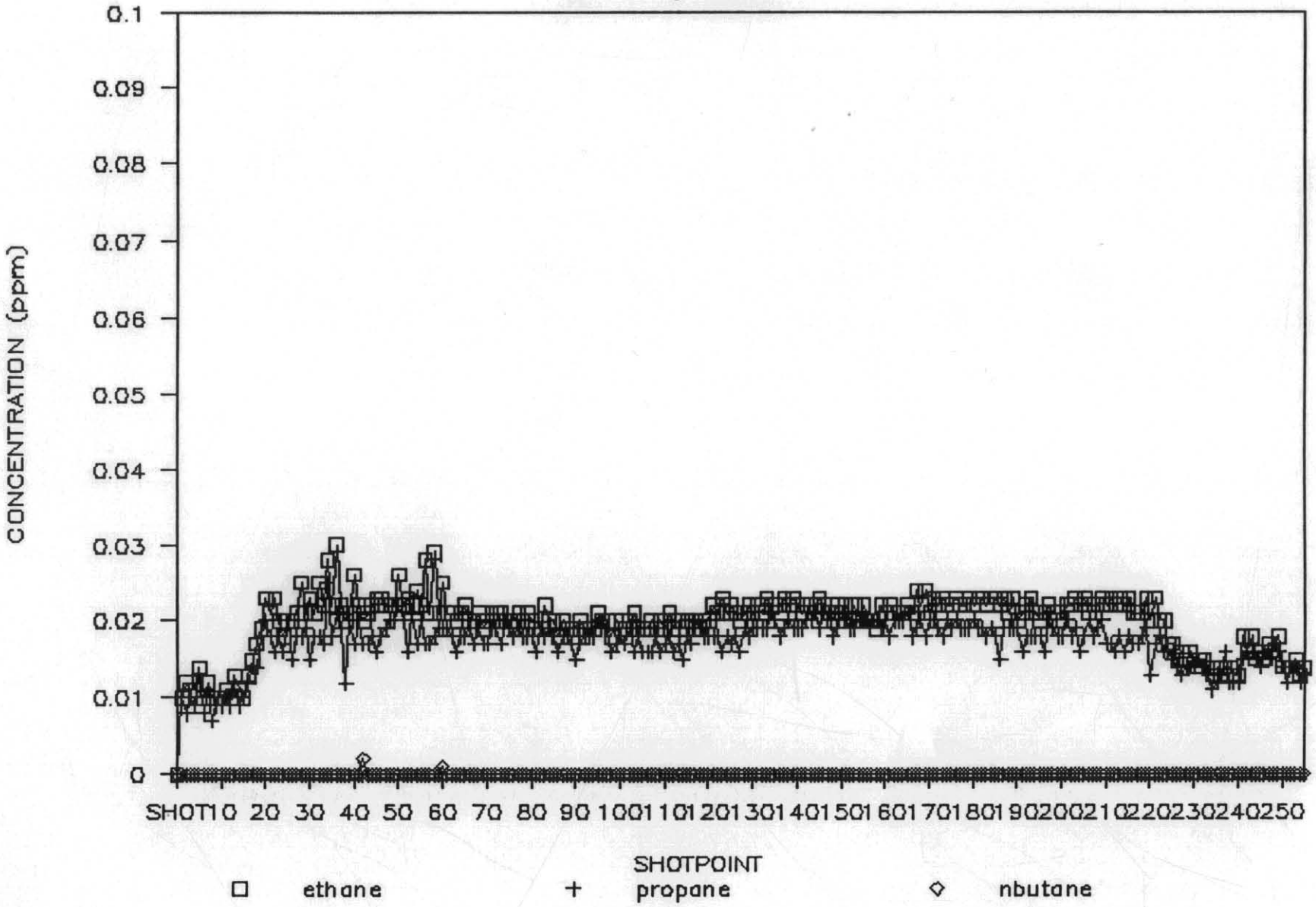
BASS BASIN

Survey Line 34



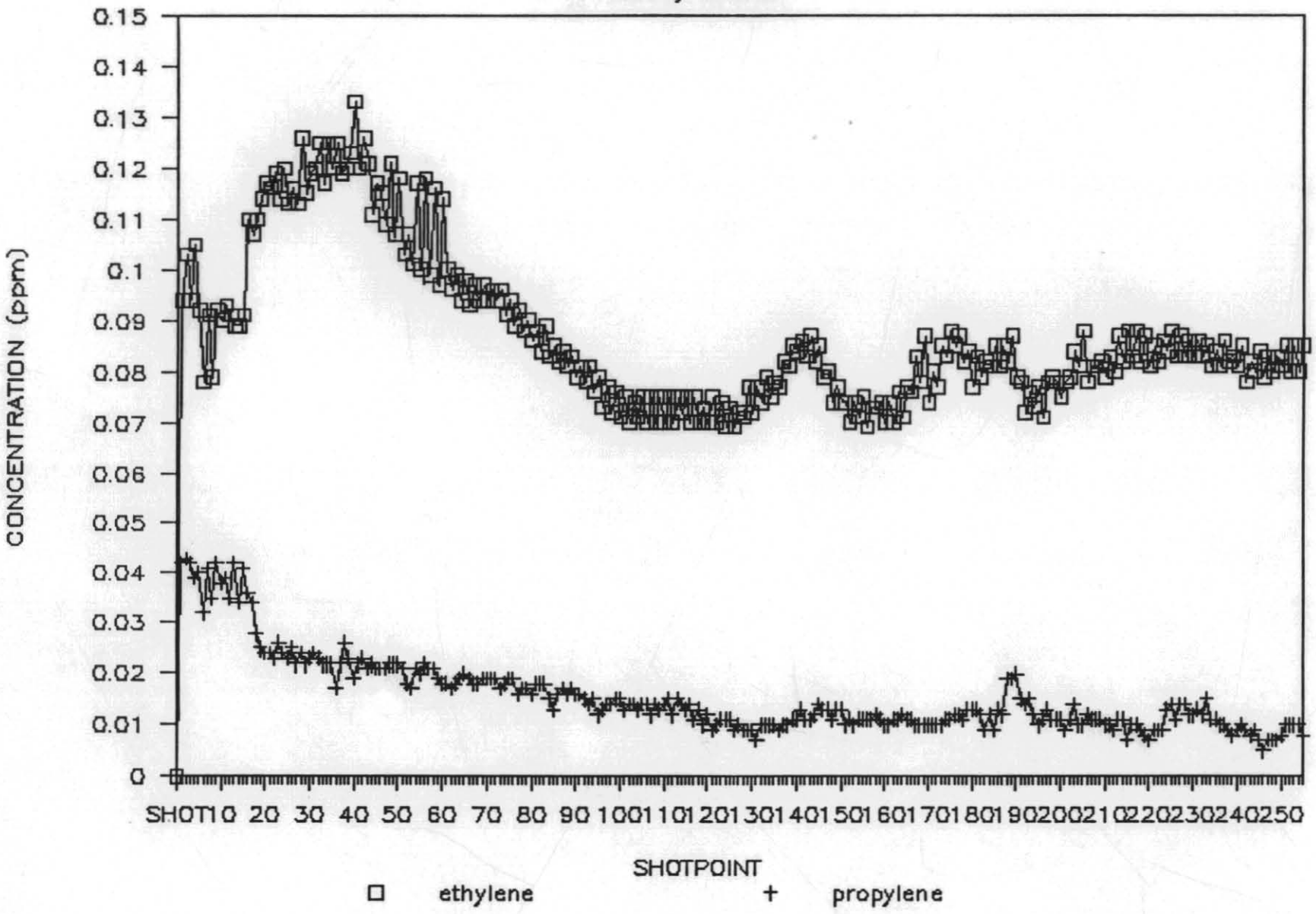
BASS BASIN

Survey Line 34



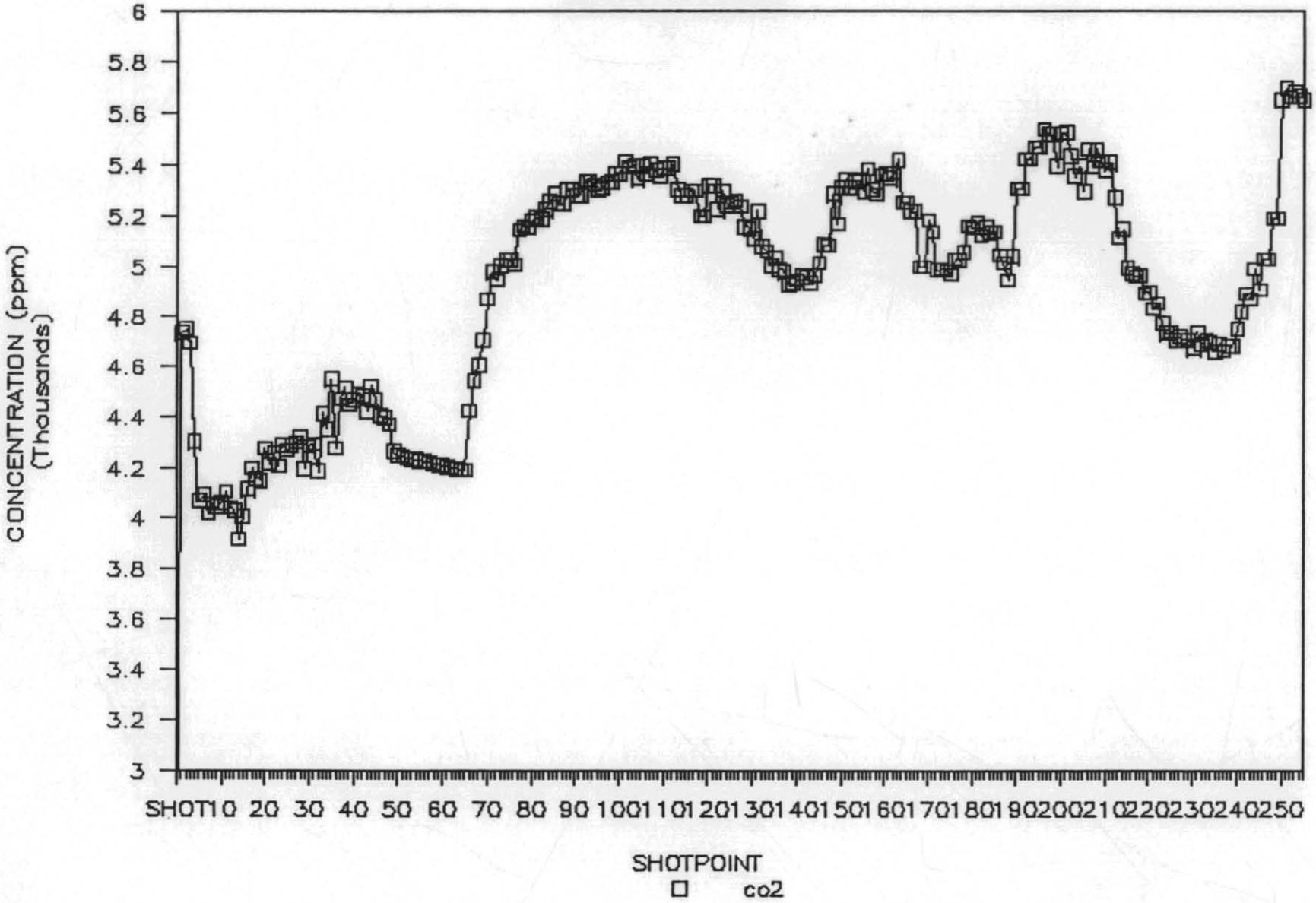
BASS BASIN

Survey Line 34



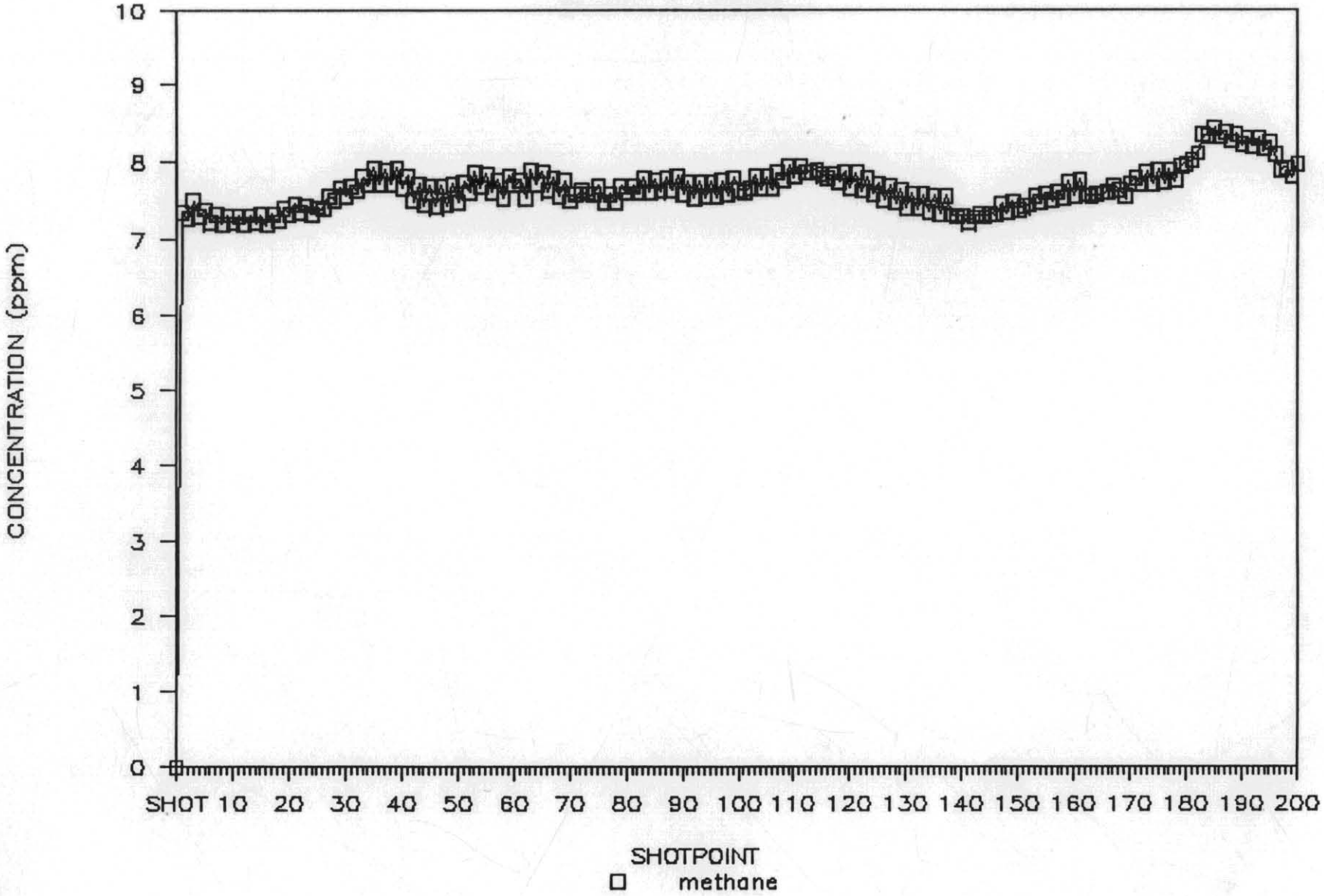
BASS BASIN

Survey Line 34



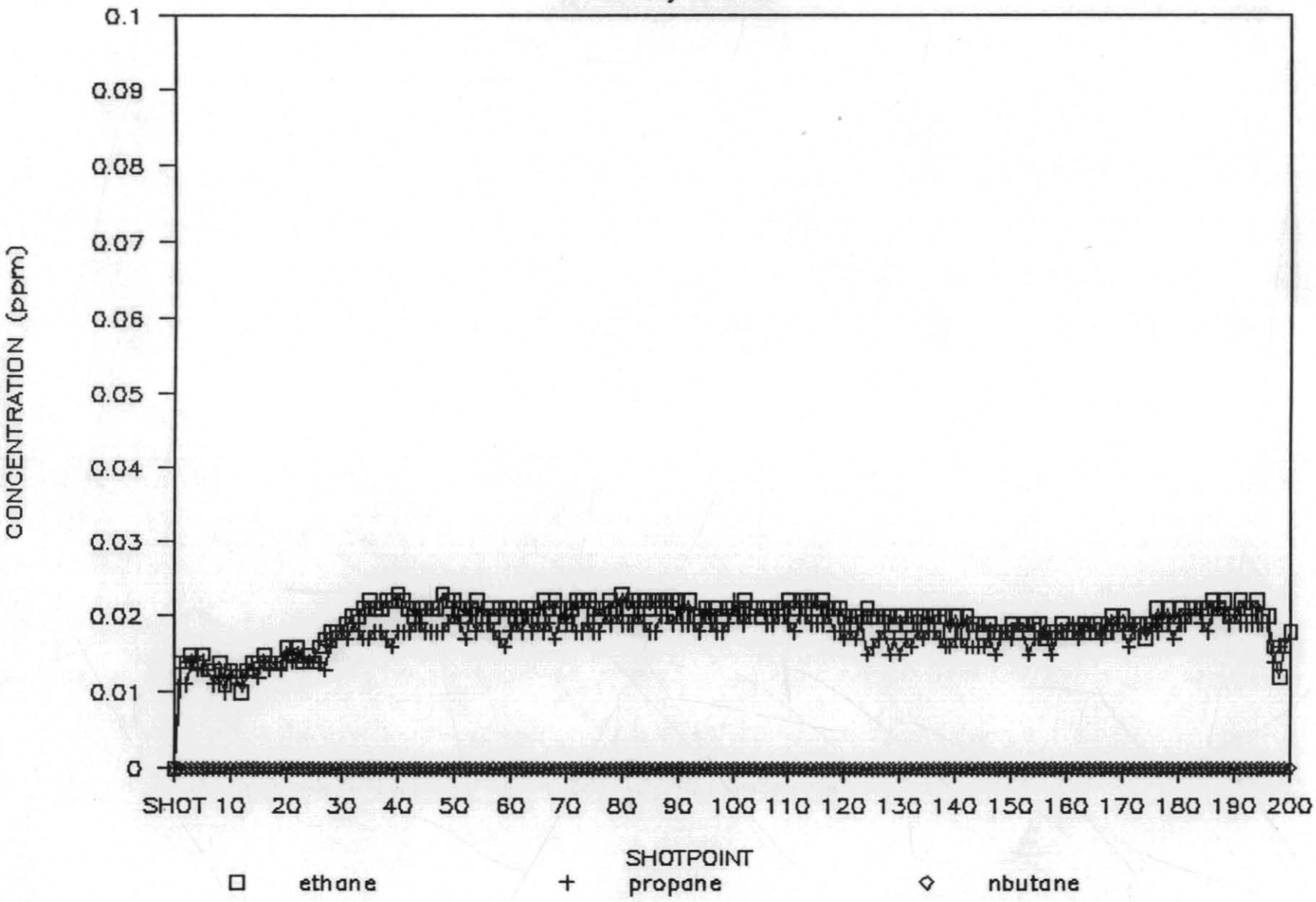
BASS BASIN

Survey Line 35



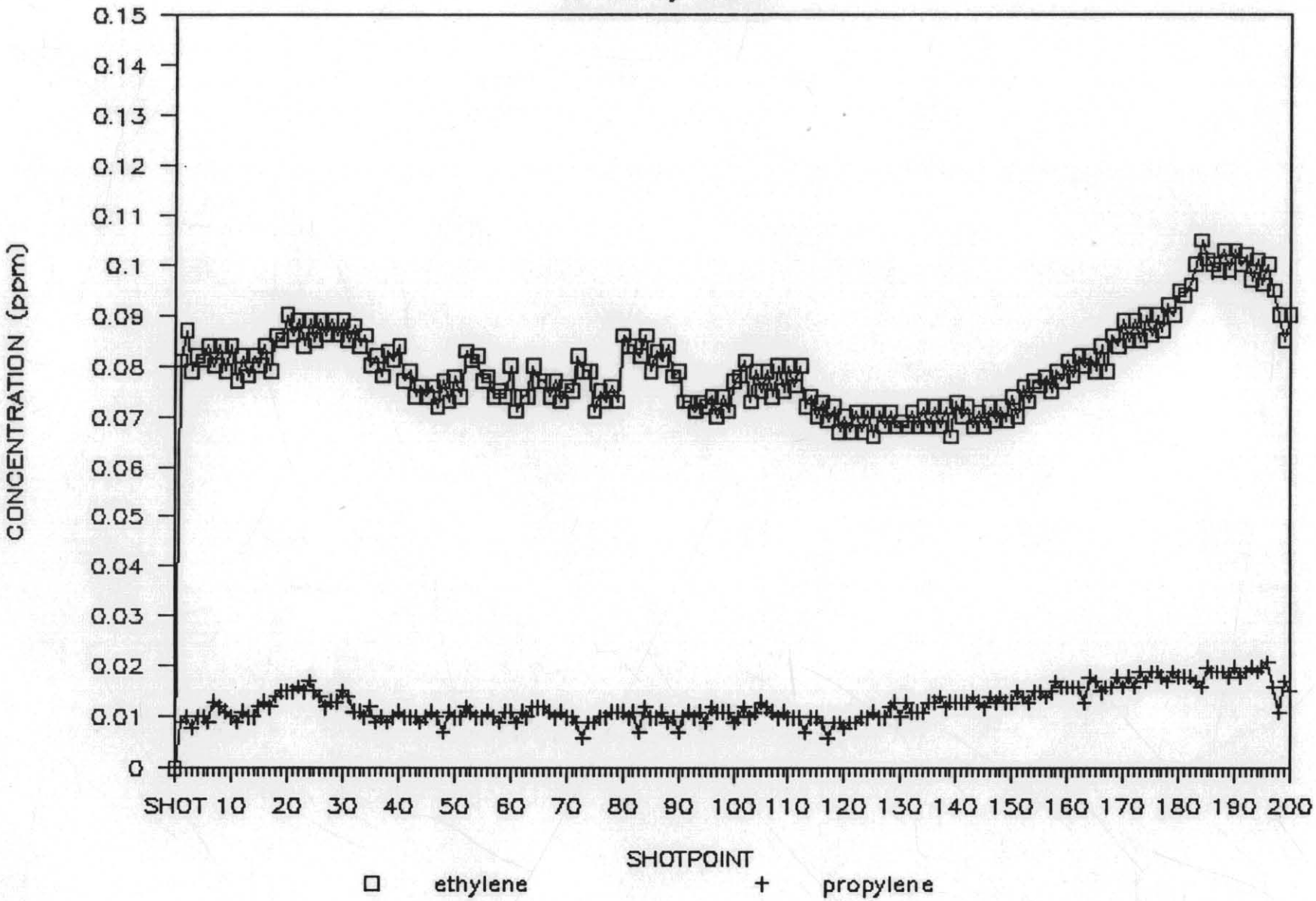
BASS BASIN

Survey Line 35



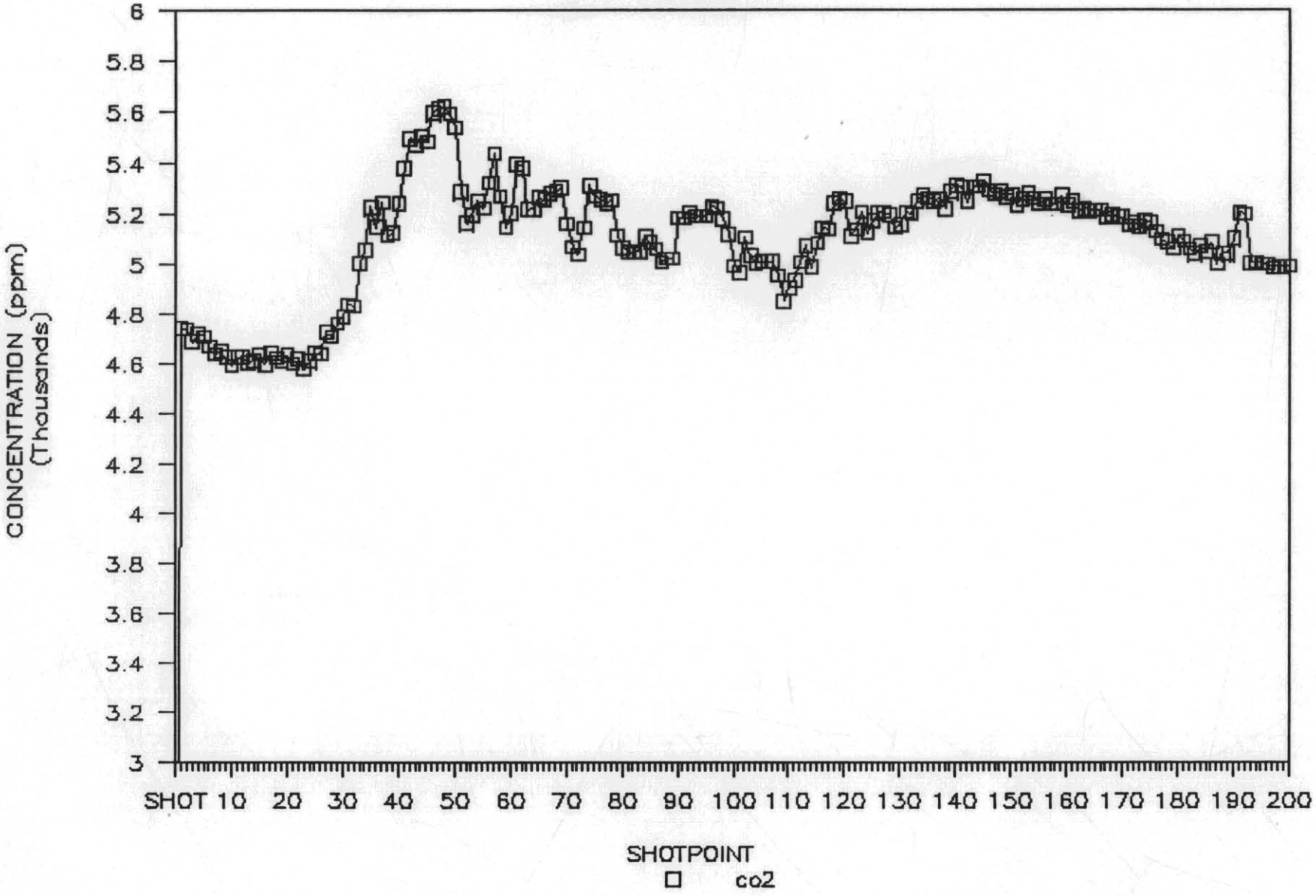
BASS BASIN

Survey Line 35



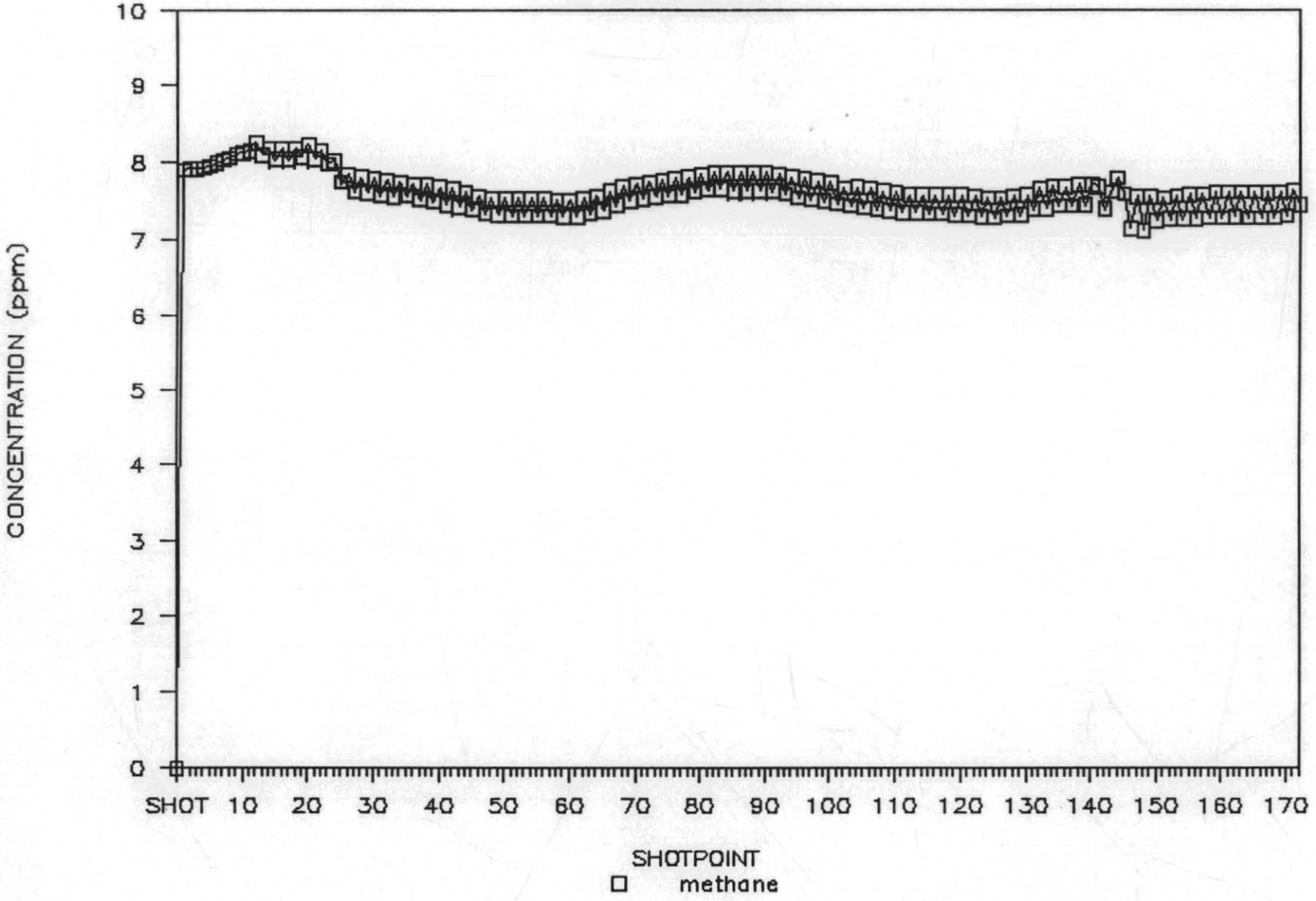
BASS BASIN

Survey Line 35



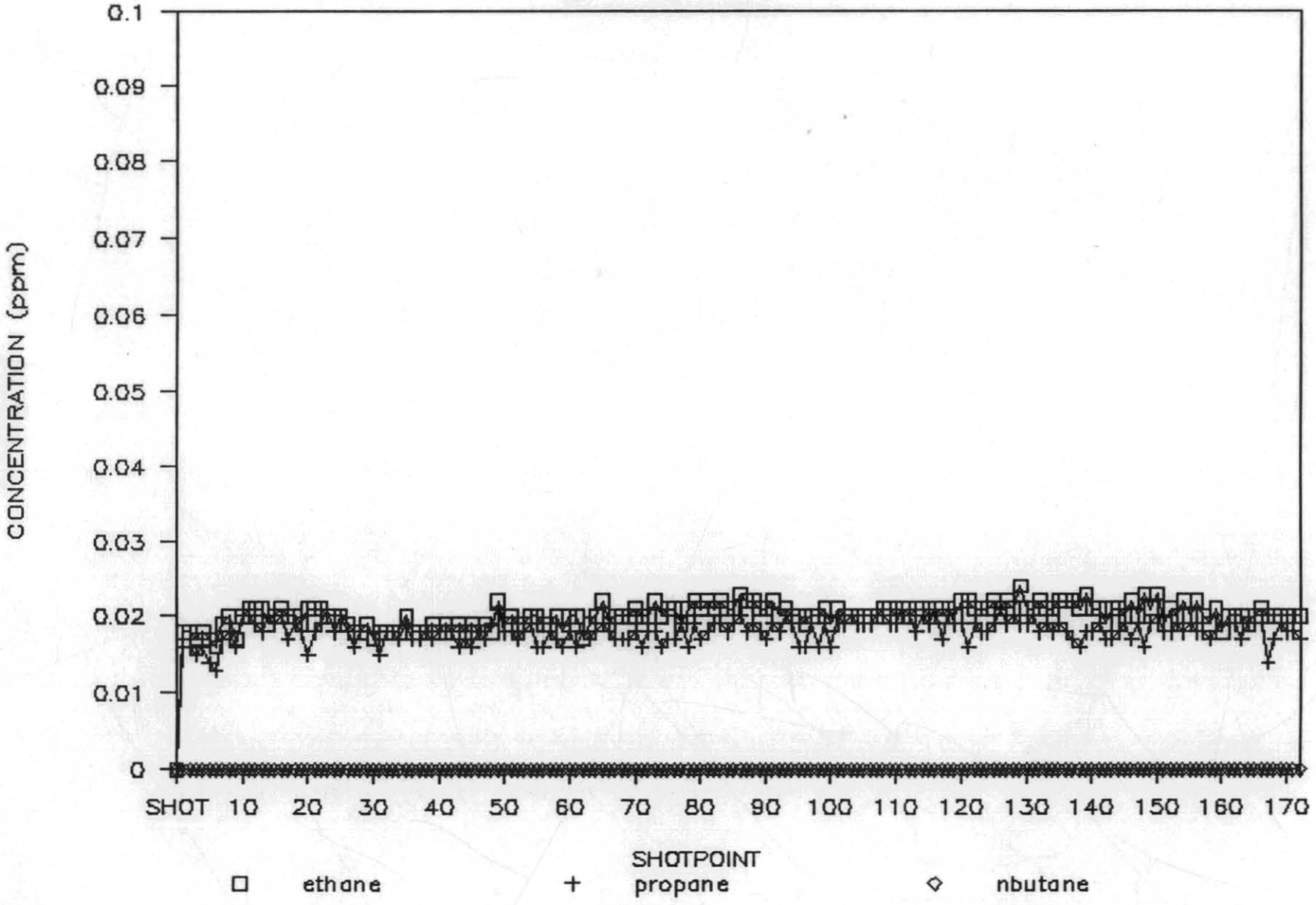
BASS BASIN

Survey Line 36



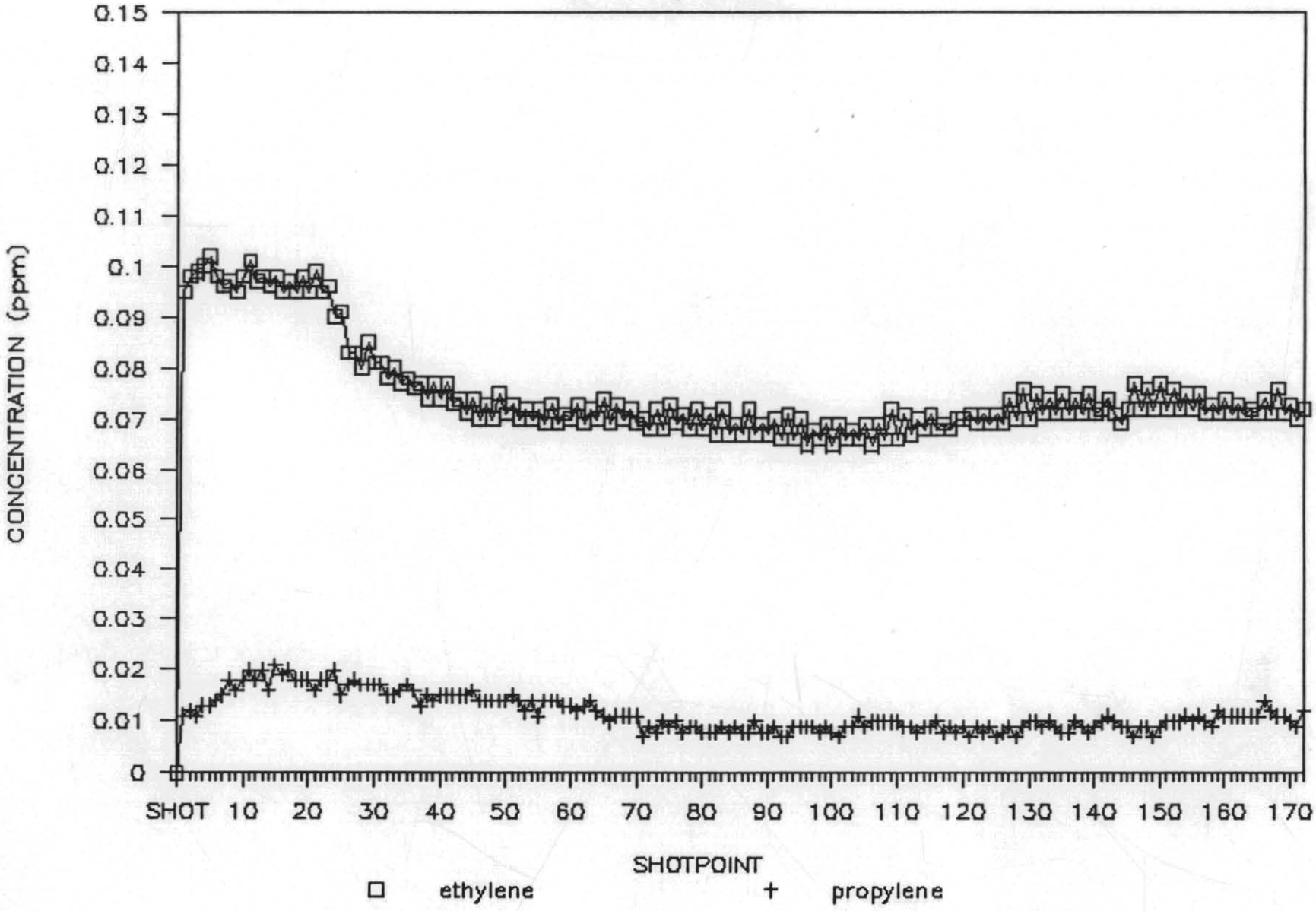
BASS BASIN

Survey Line 36



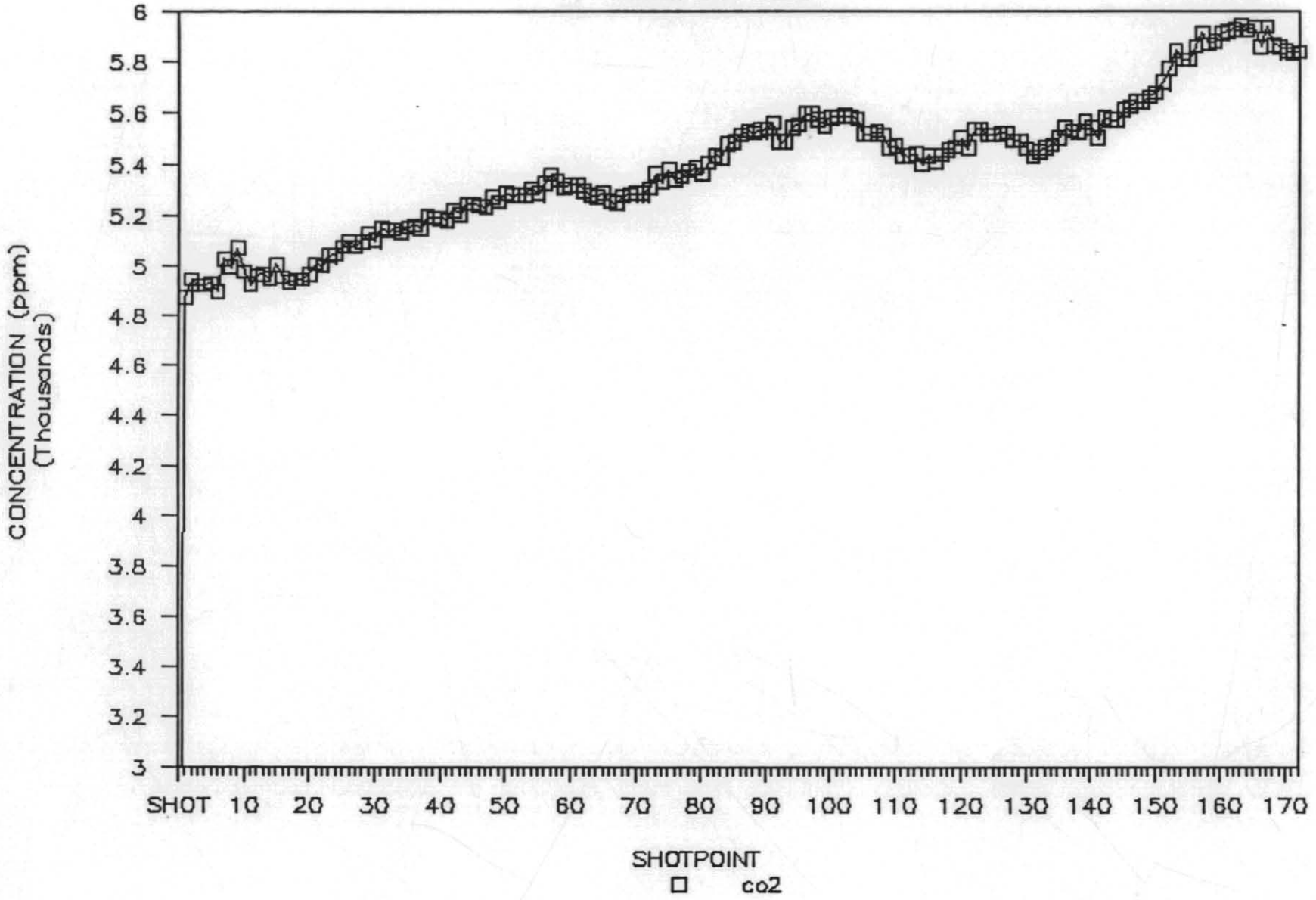
BASS BASIN

Survey Line 36



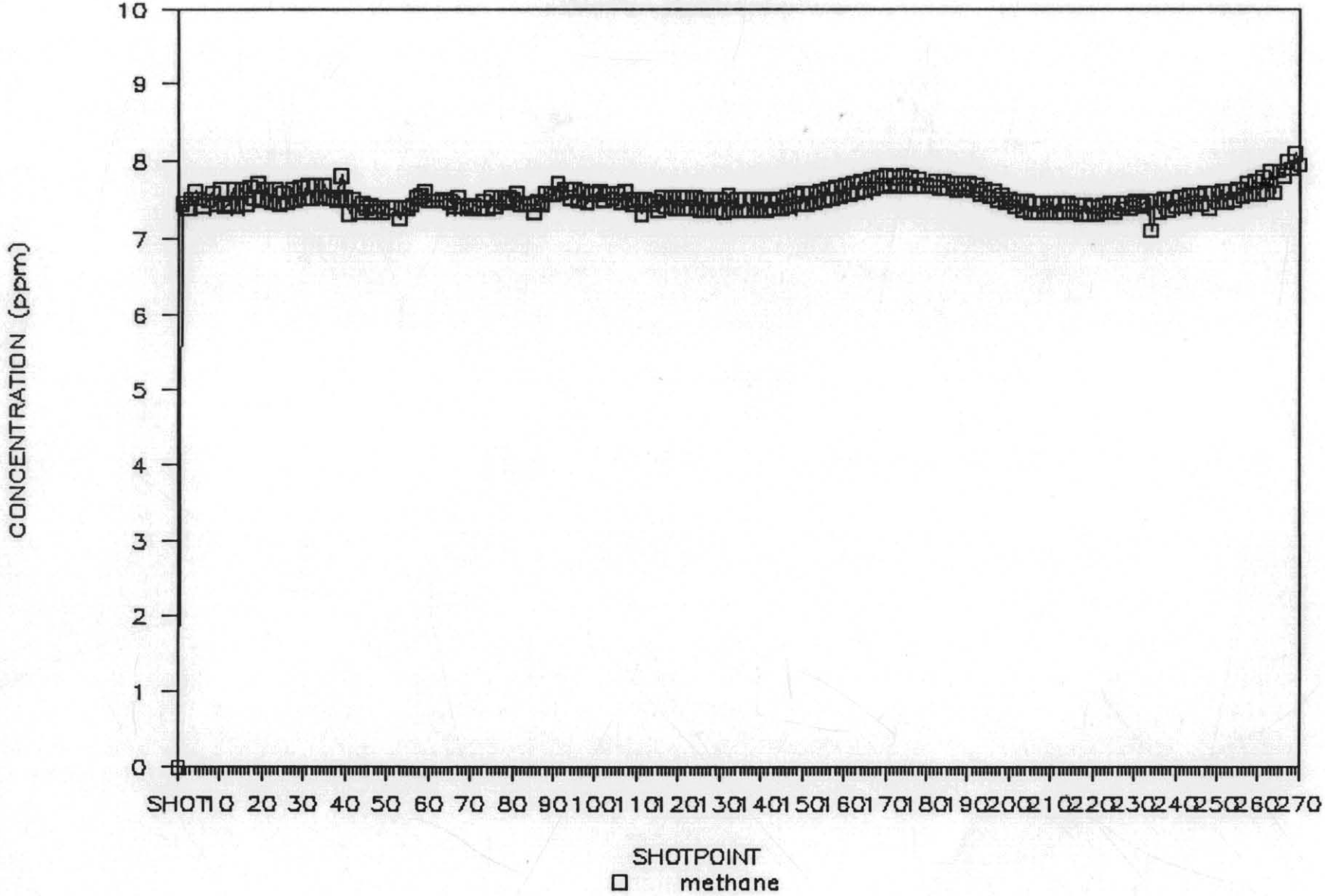
BASS BASIN

Survey Line 36



BASS BASIN

Survey Line 37



BASS BASIN

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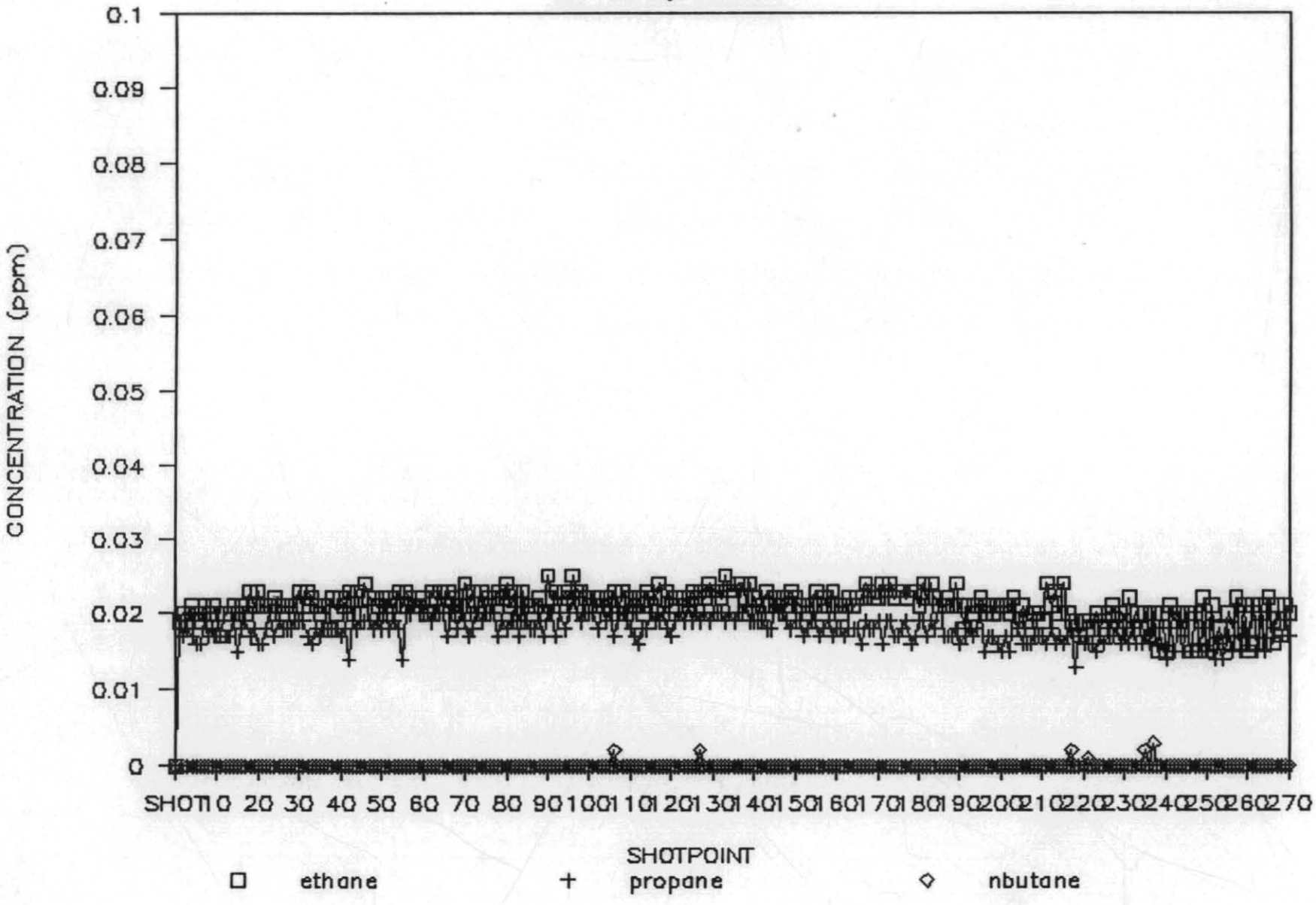

BASS BASIN

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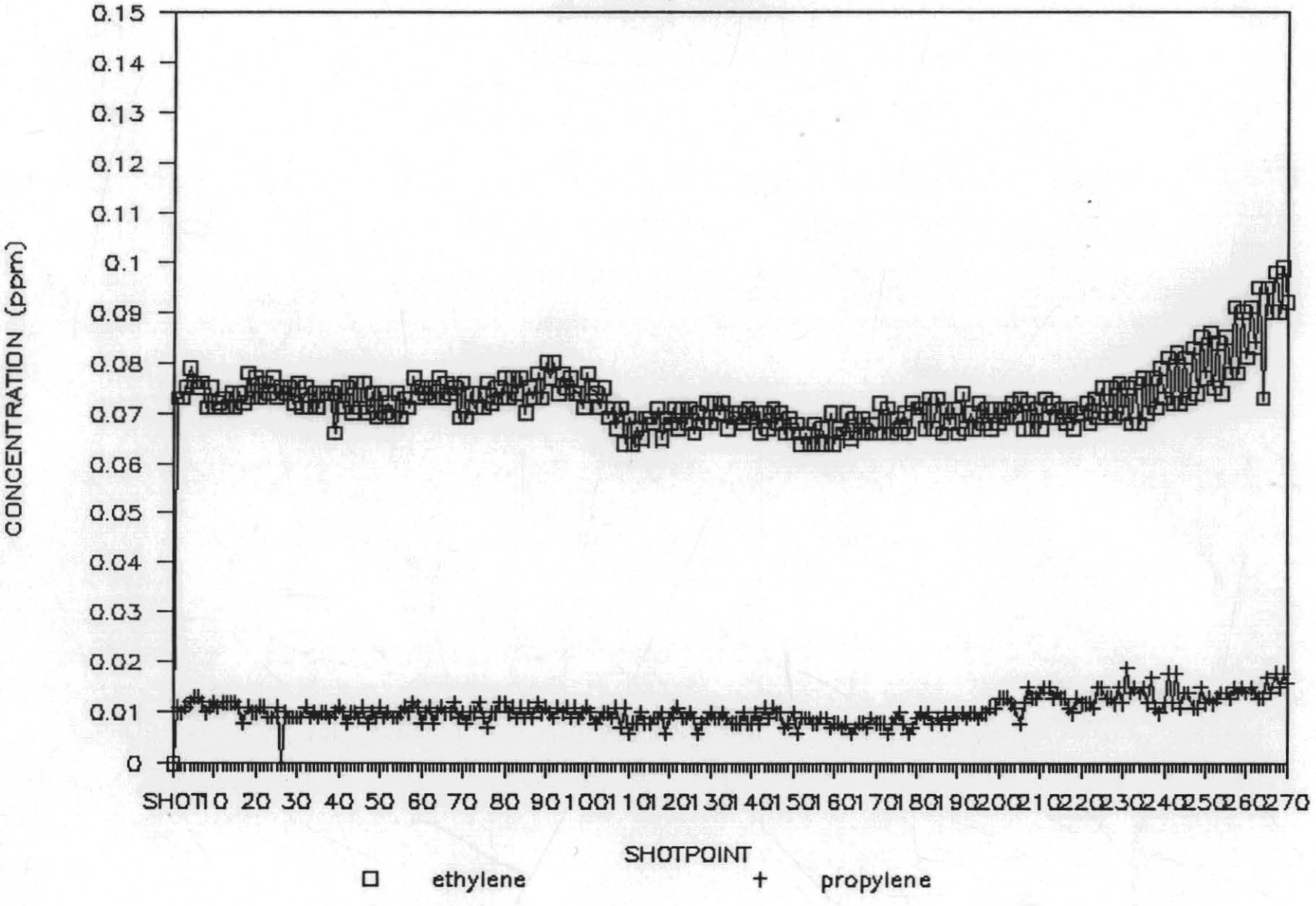

BASS BASIN

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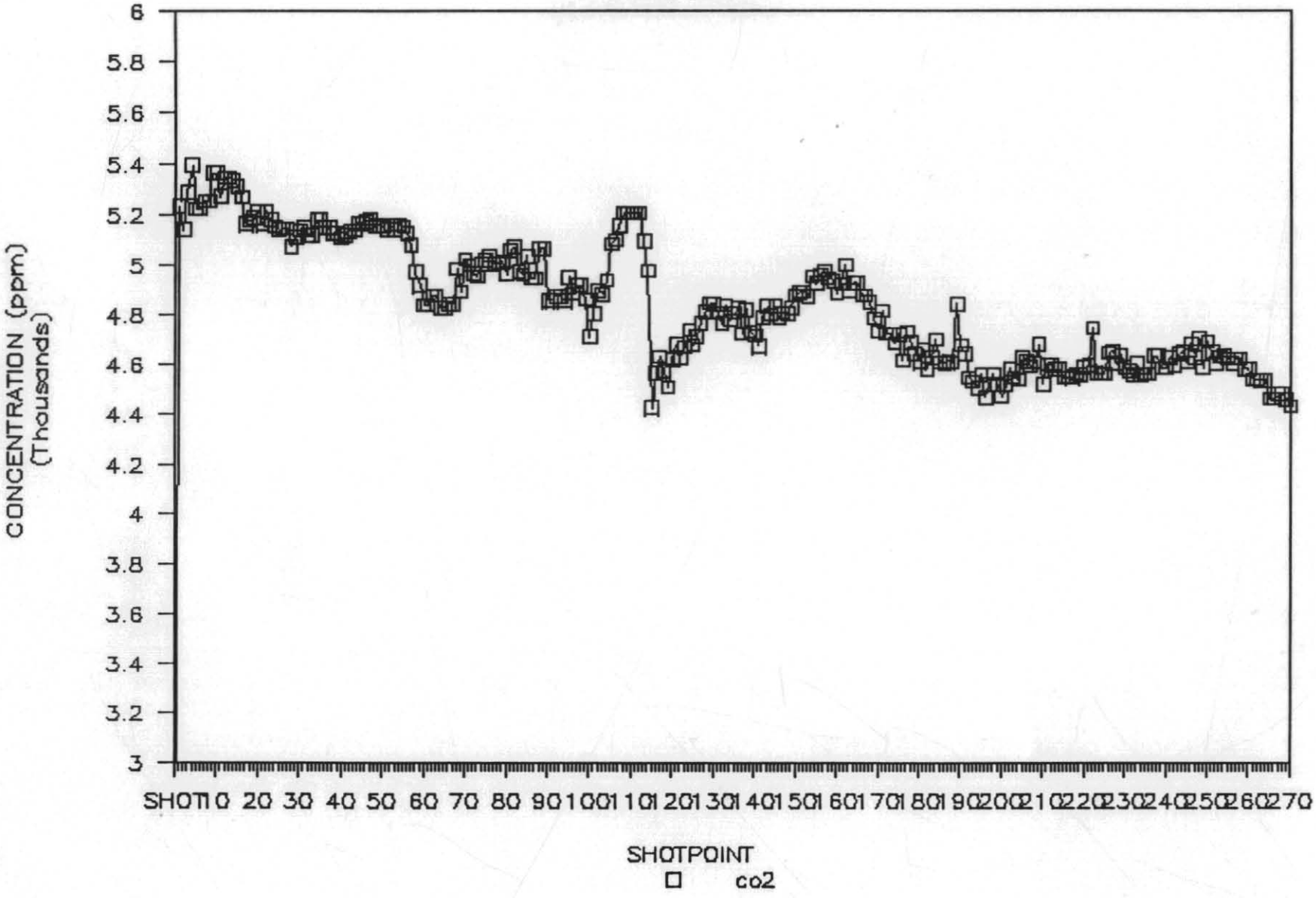
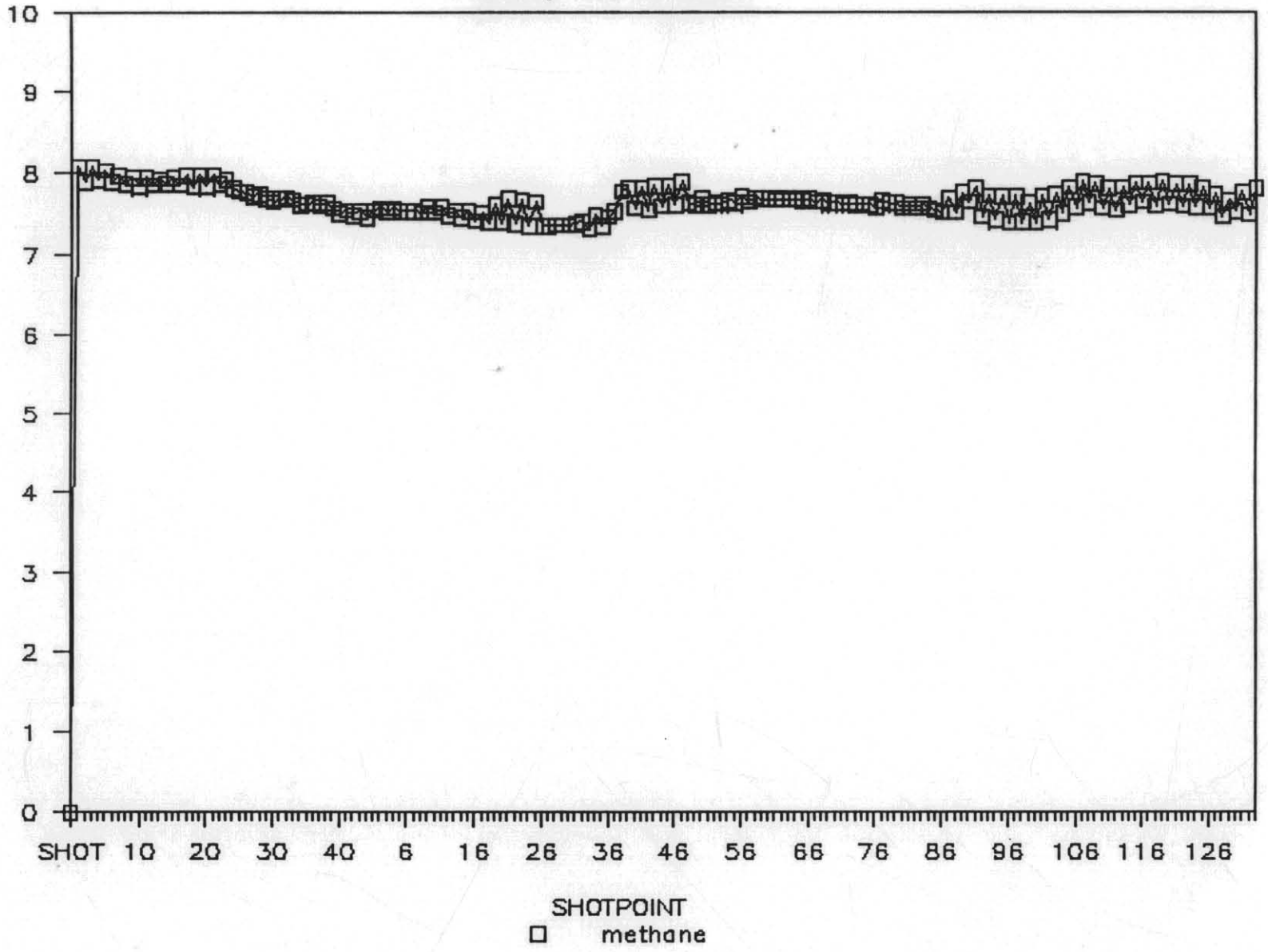


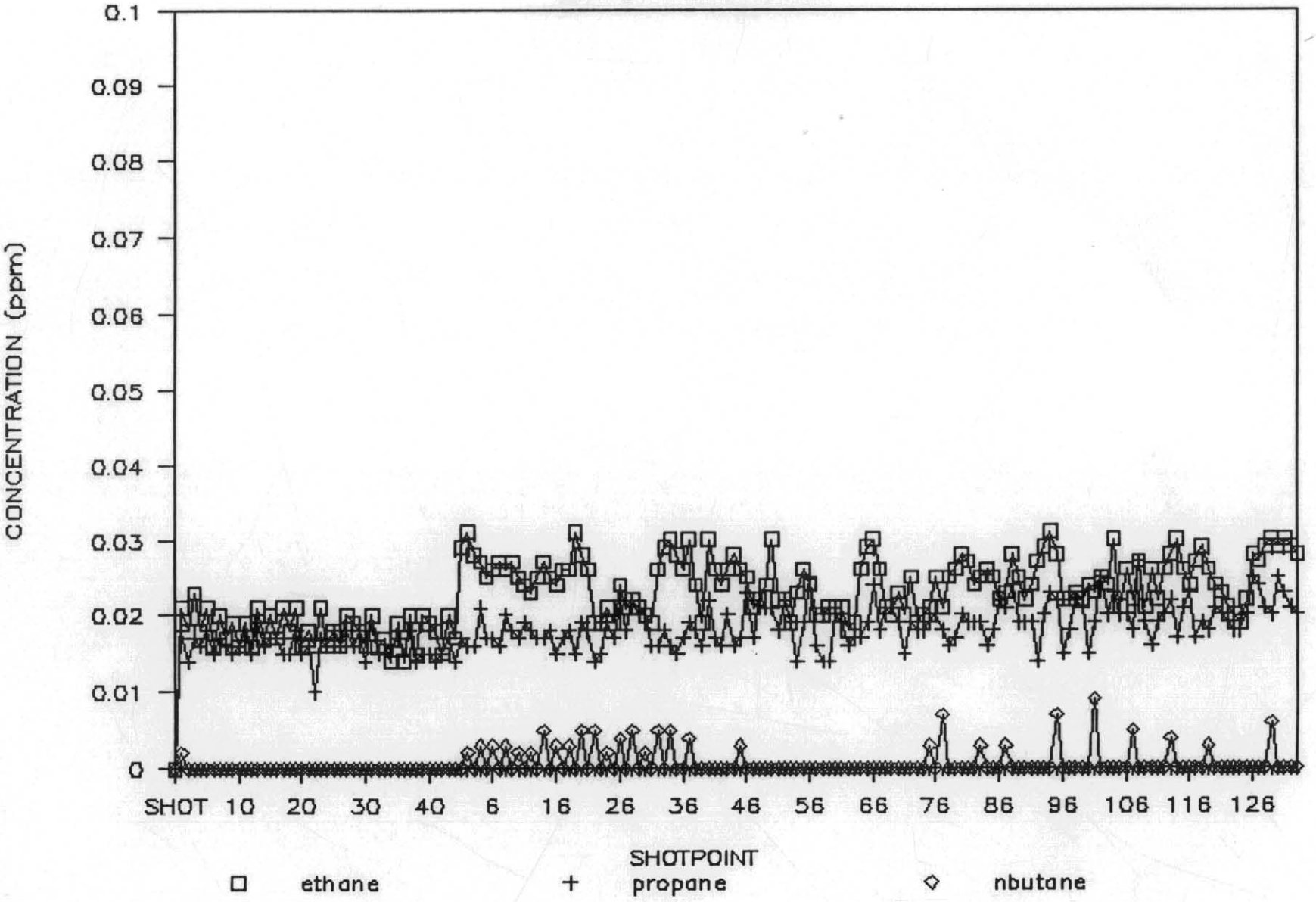
BASS BASIN

Survey Line 38 & 38A



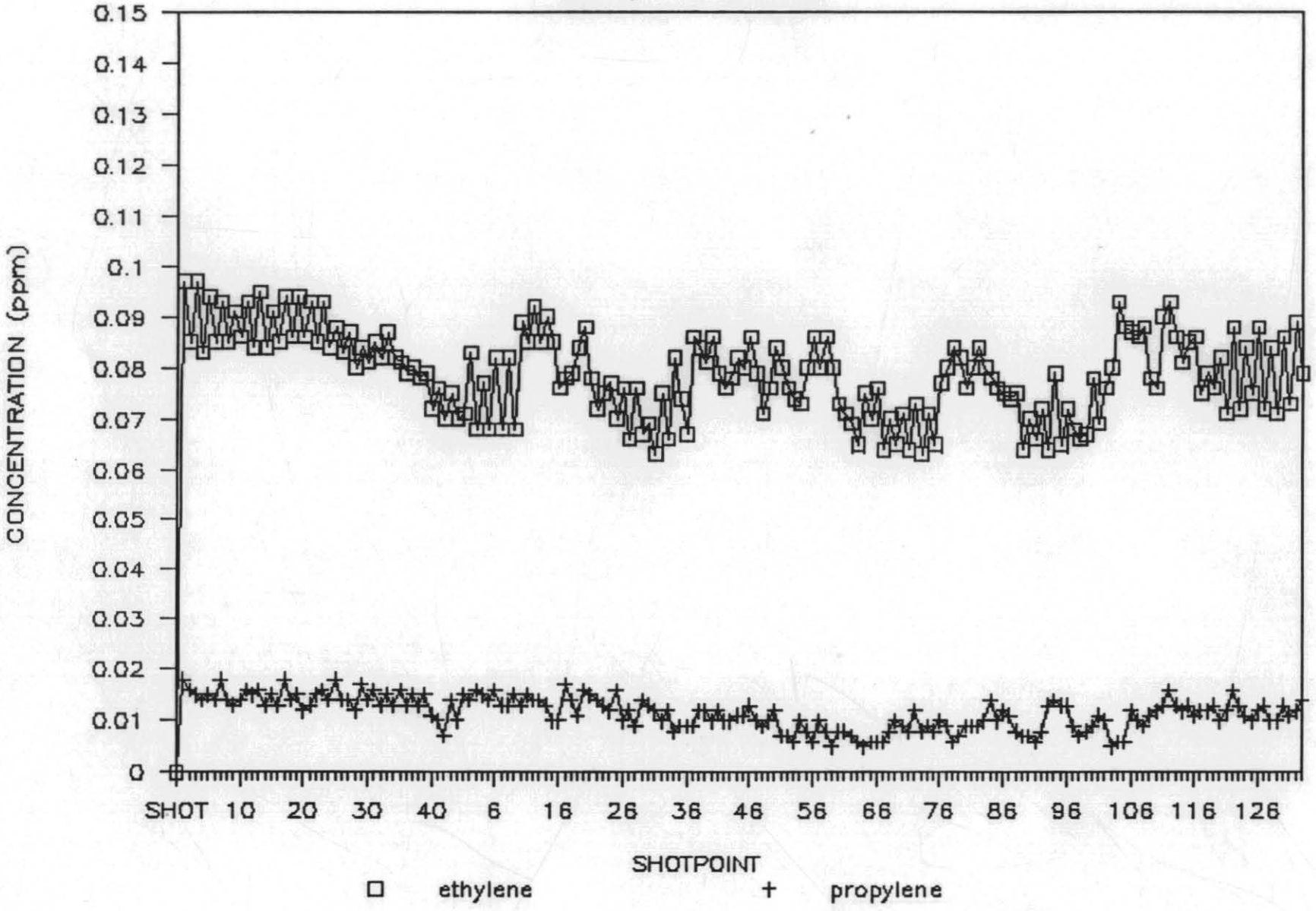
BASS BASIN

Survey Line 38 & 38A



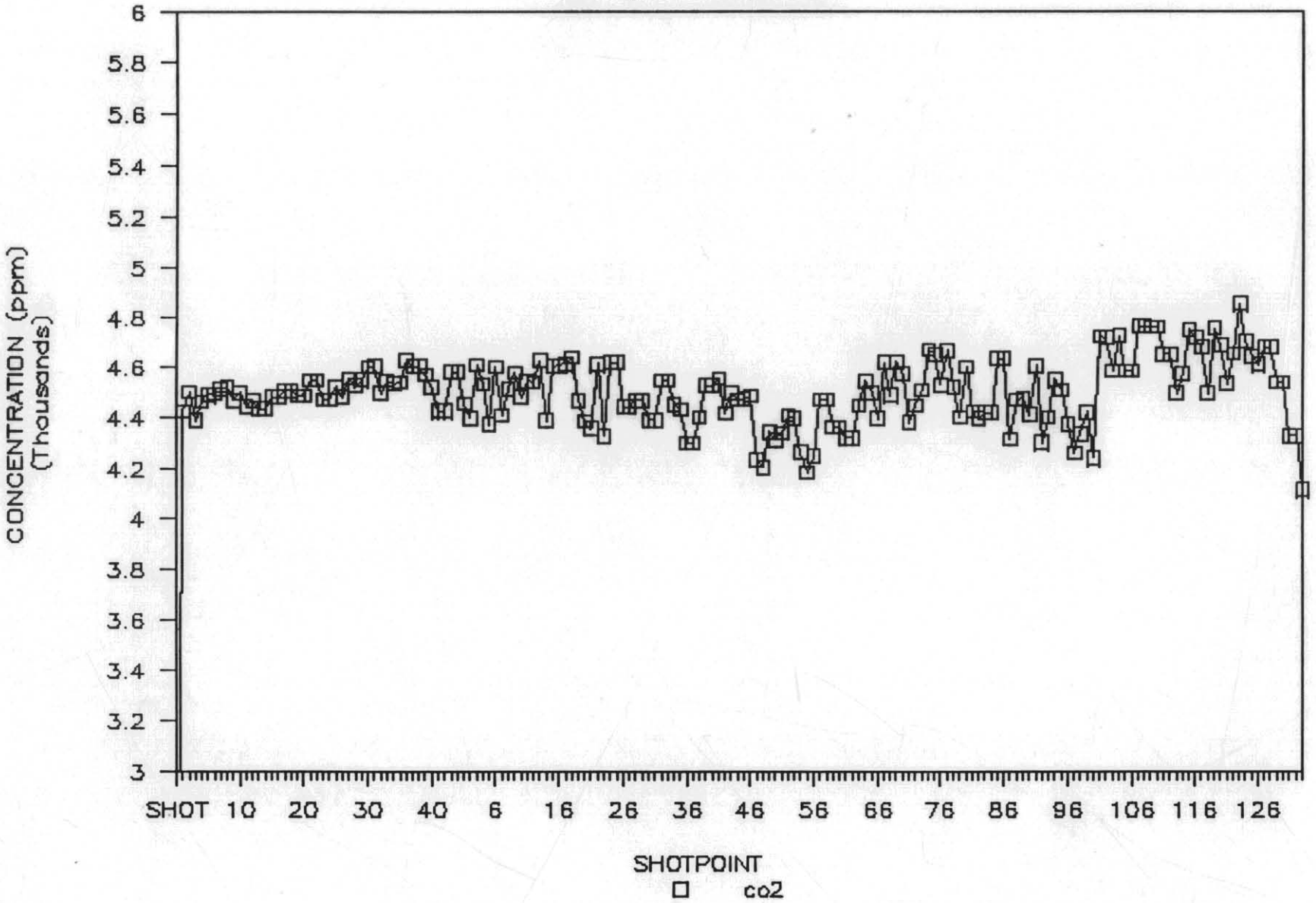
BASS BASIN

Survey Line 38 & 38A



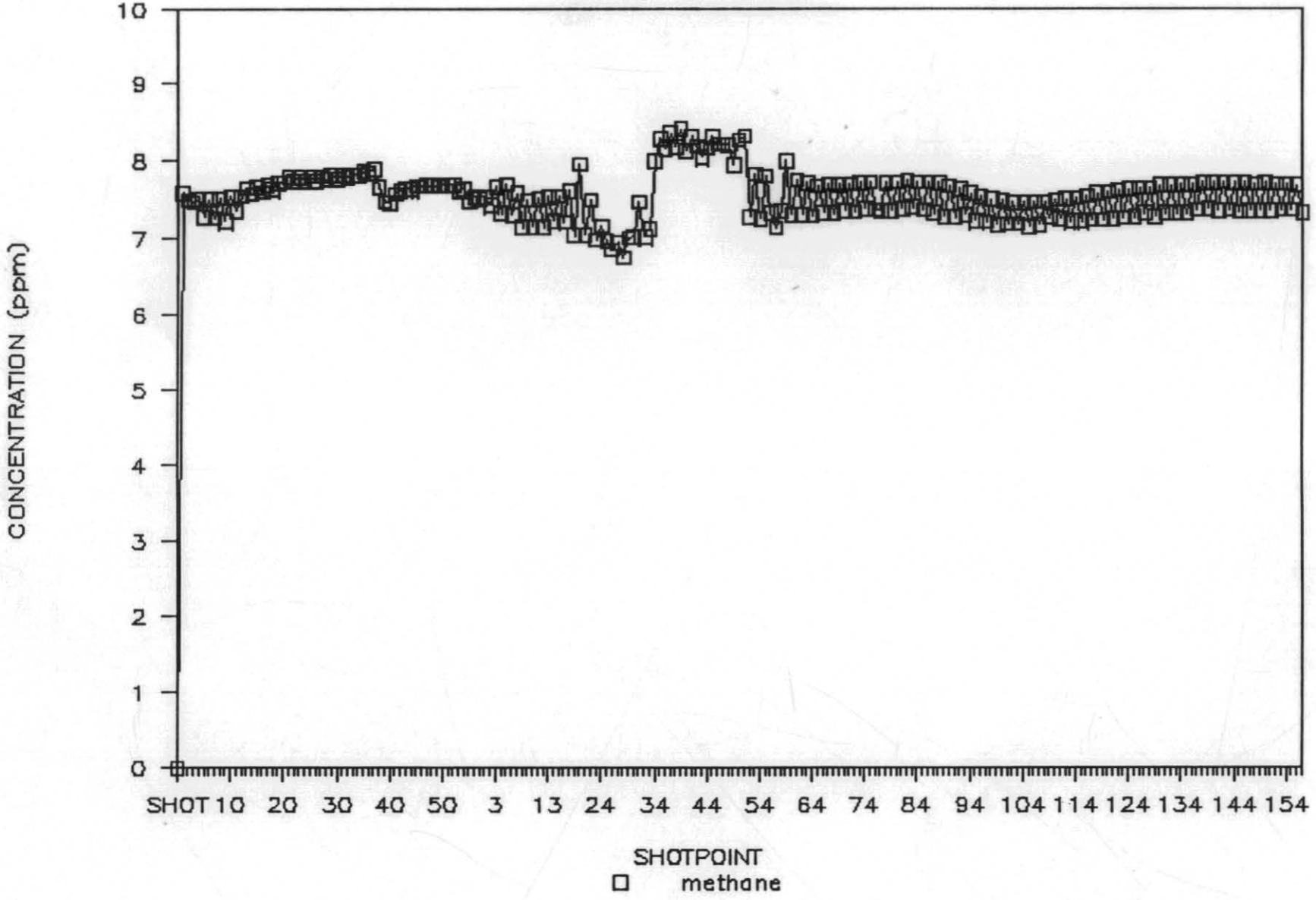
BASS BASIN

Survey Line 38 & 38A



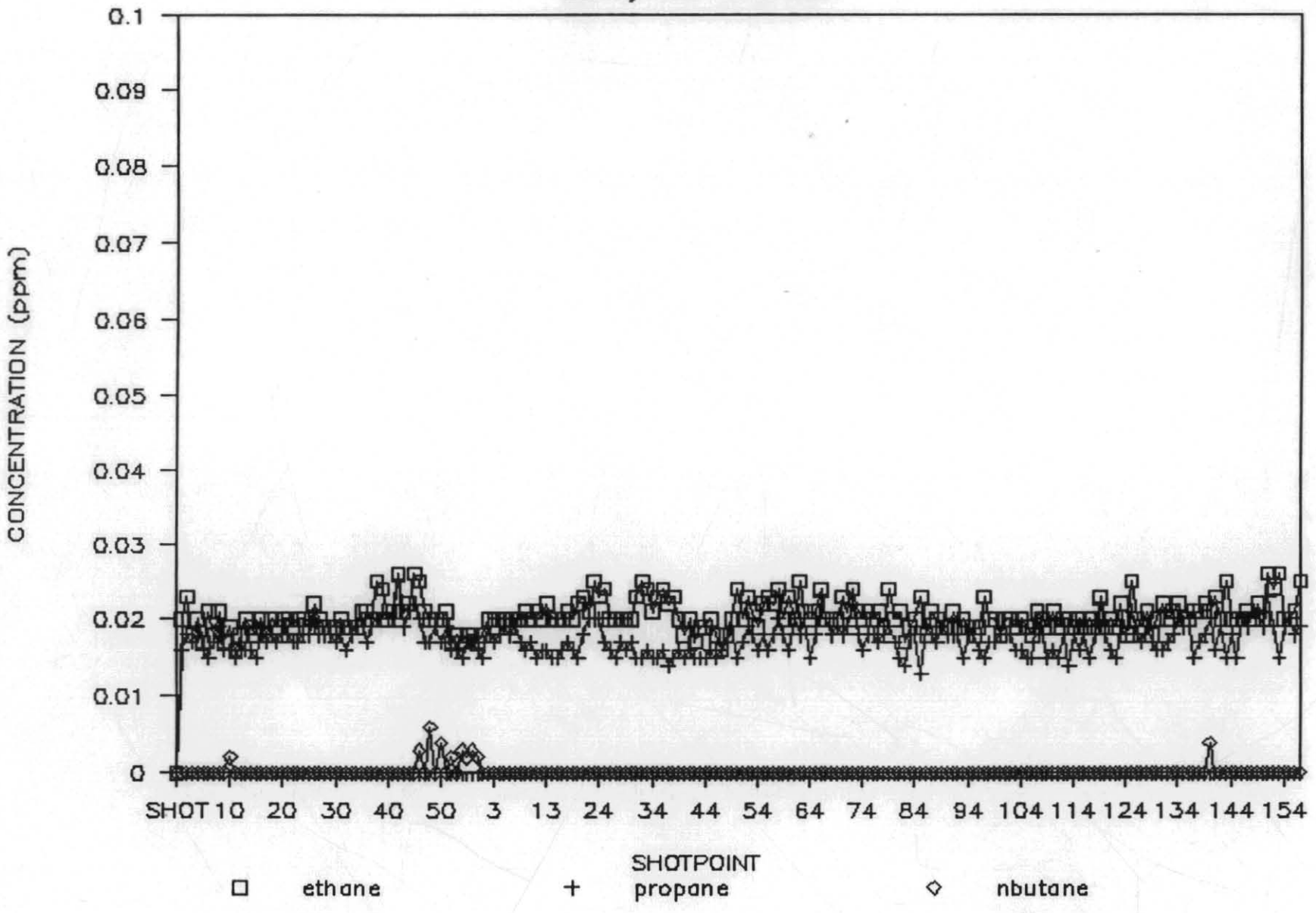
BASS BASIN

Survey Line 39 & 39A



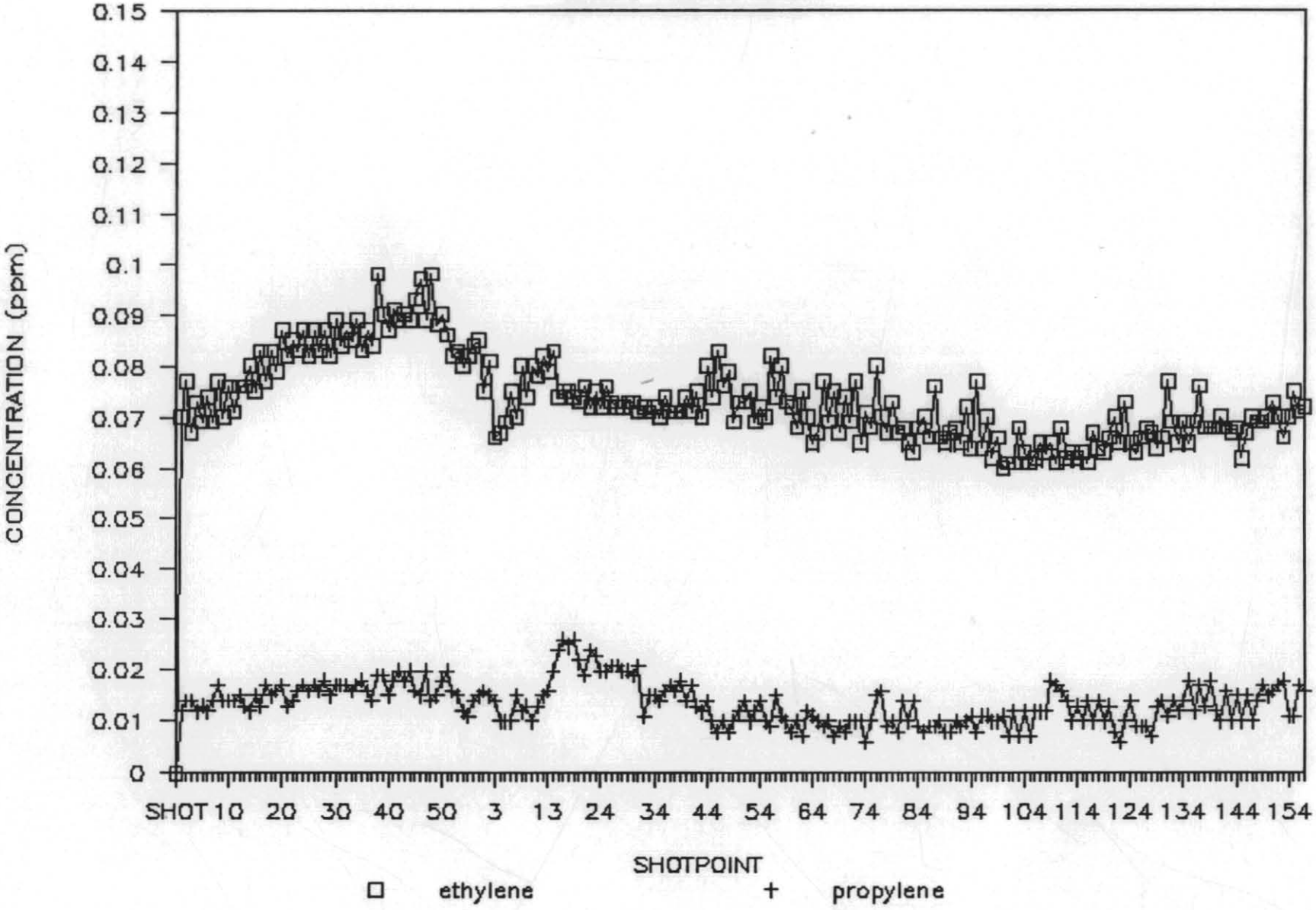
BASS BASIN

Survey Line 39 & 39A



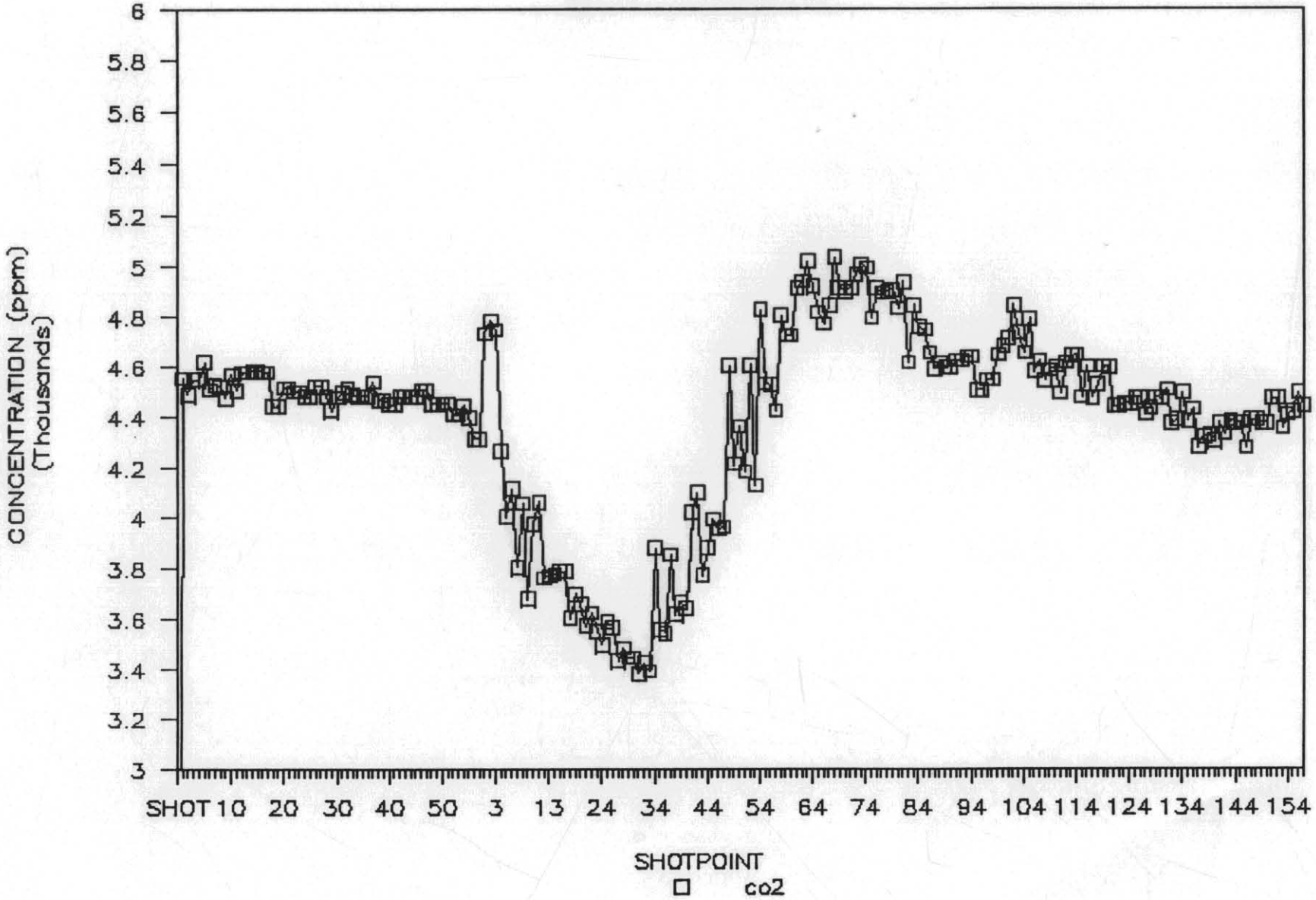
BASS BASIN

Survey Line 39 & 39A



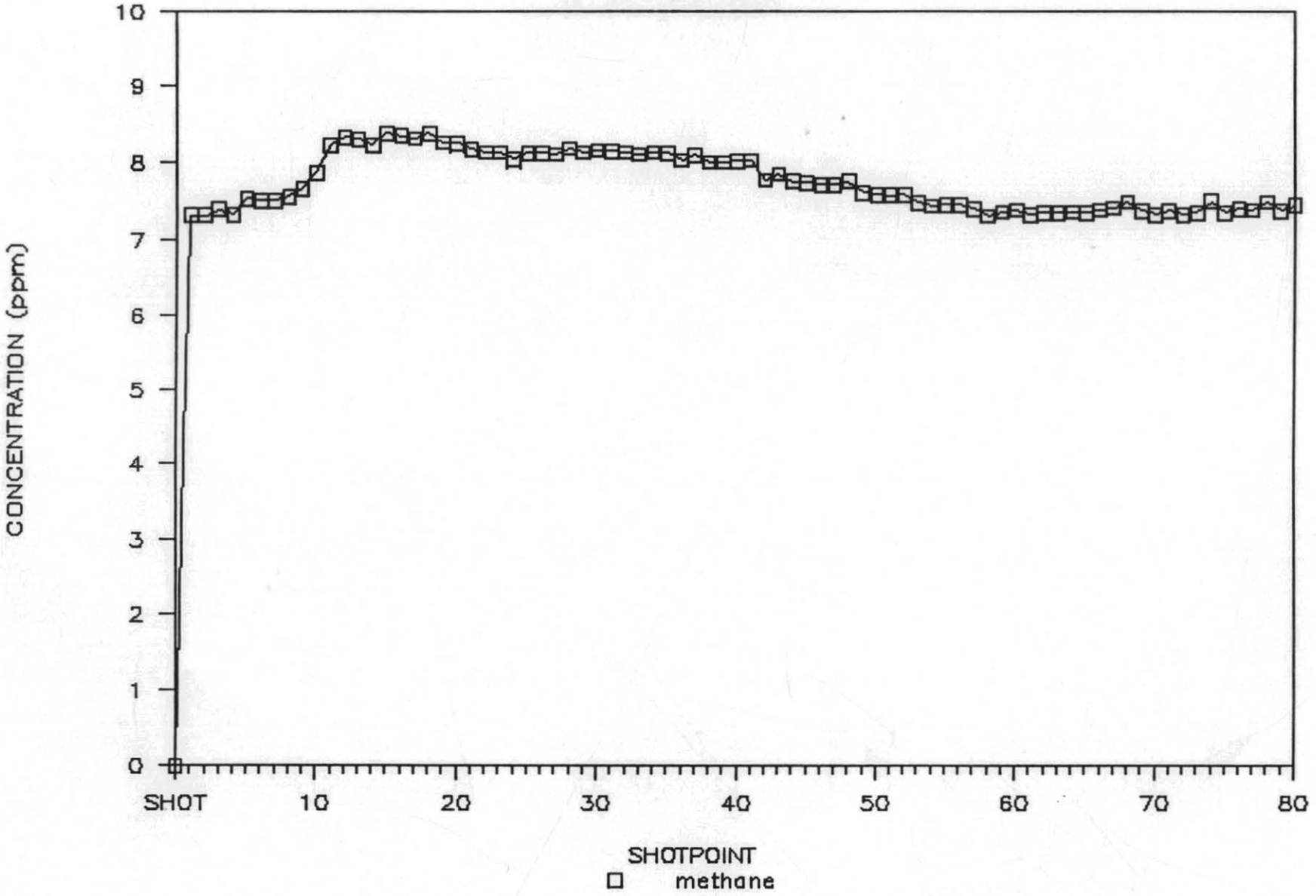
BASS BASIN

Survey Line 39 & 39A



BASS BASIN

Survey Line 40



BASS BASIN

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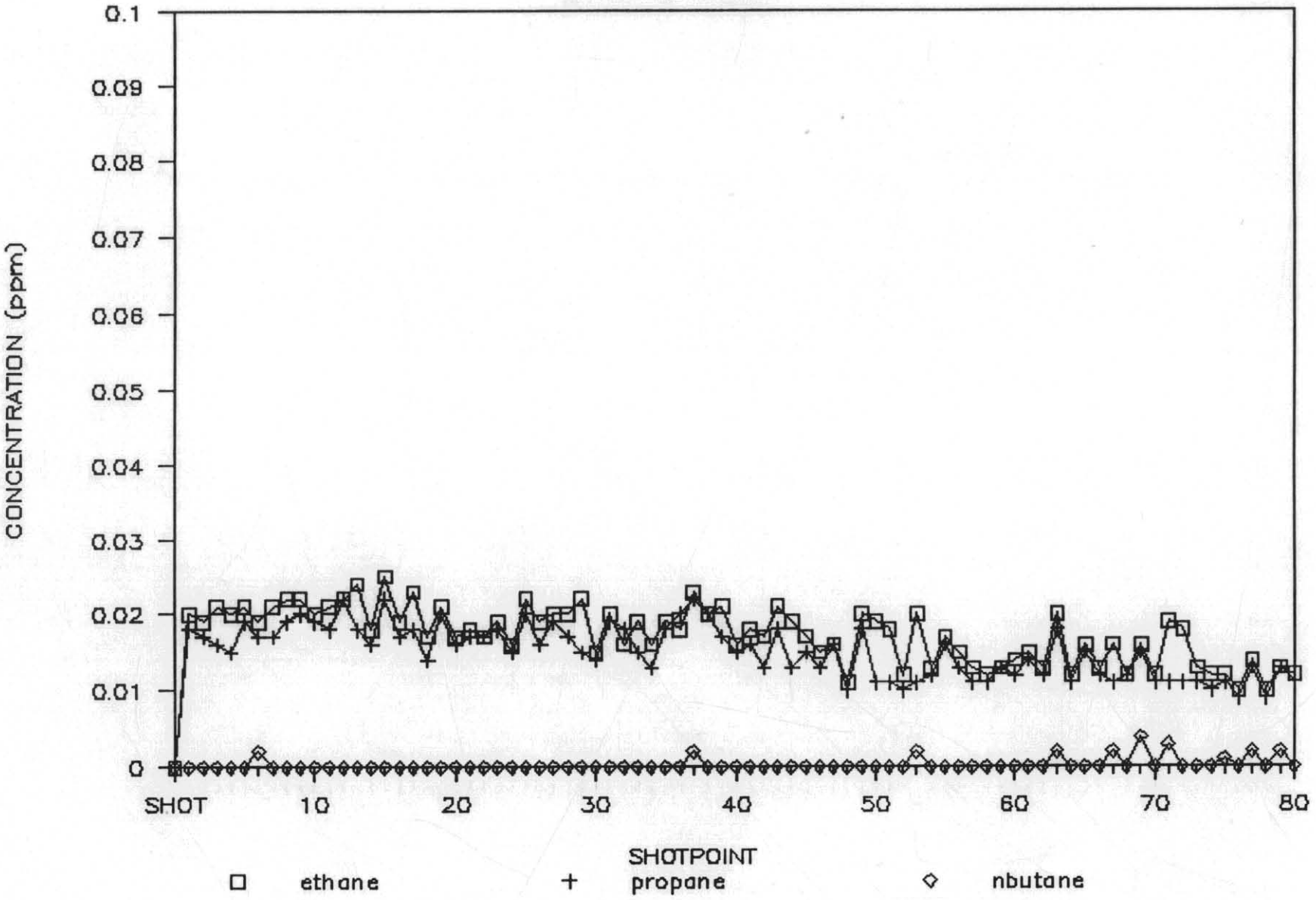
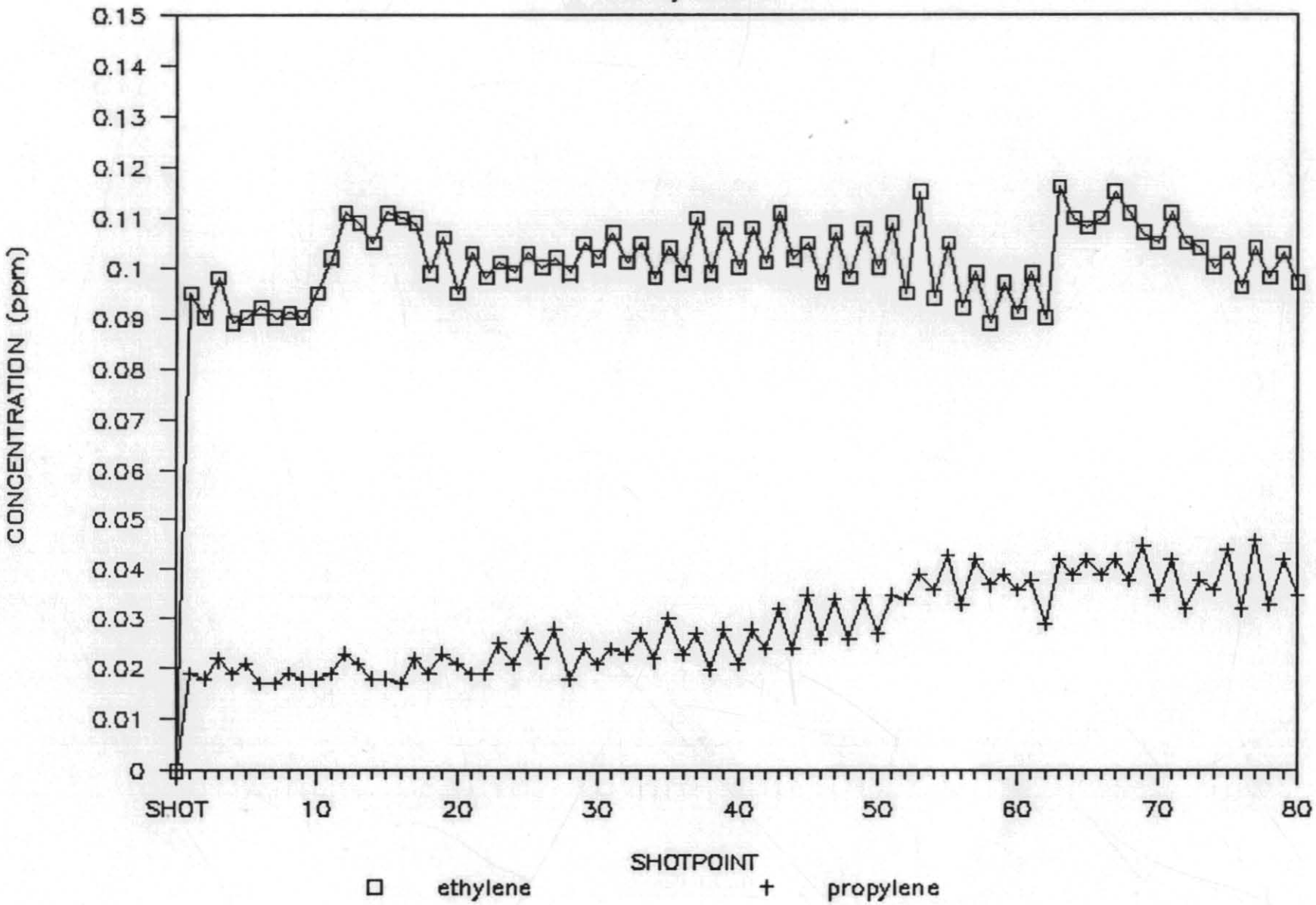


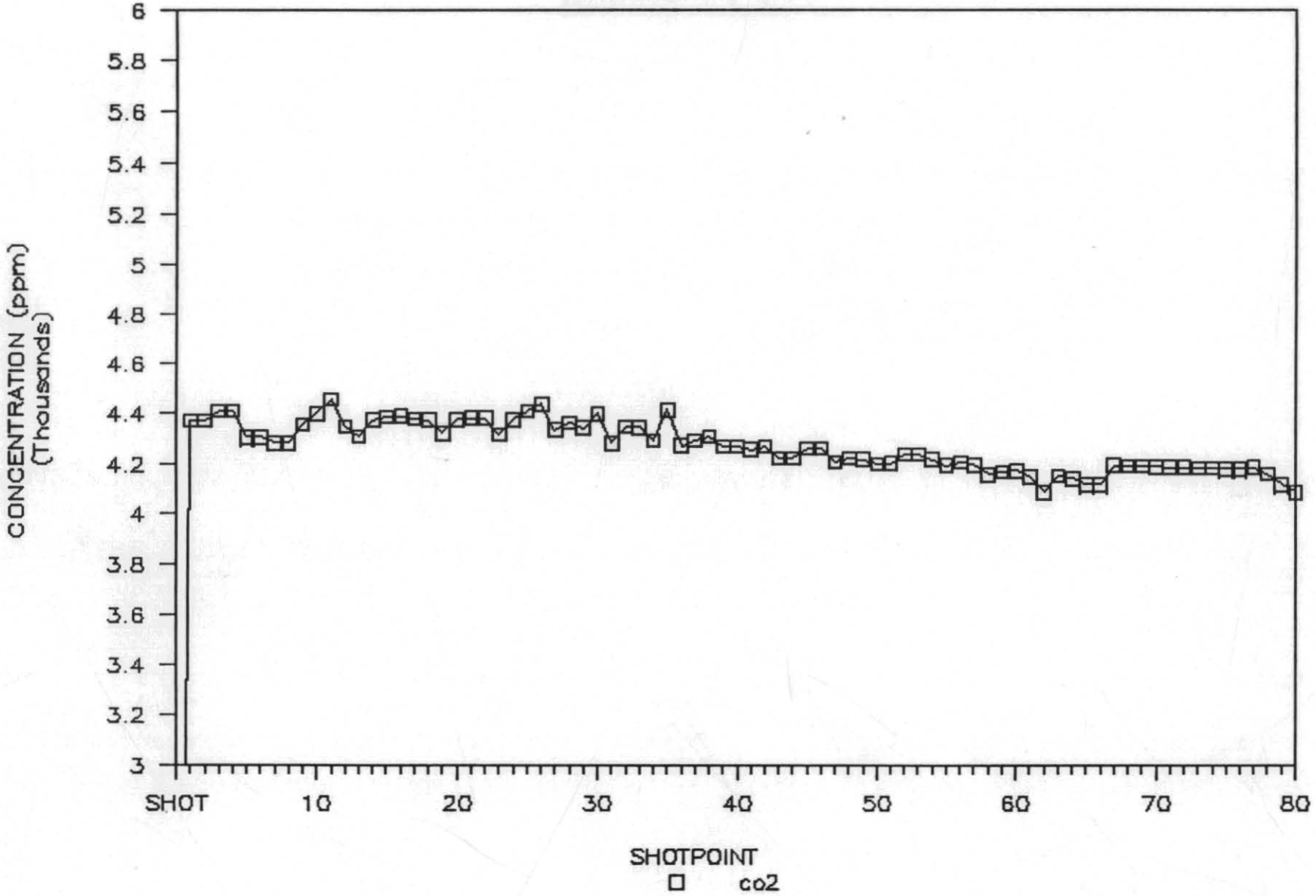
BASS BASIN

Survey Line 40



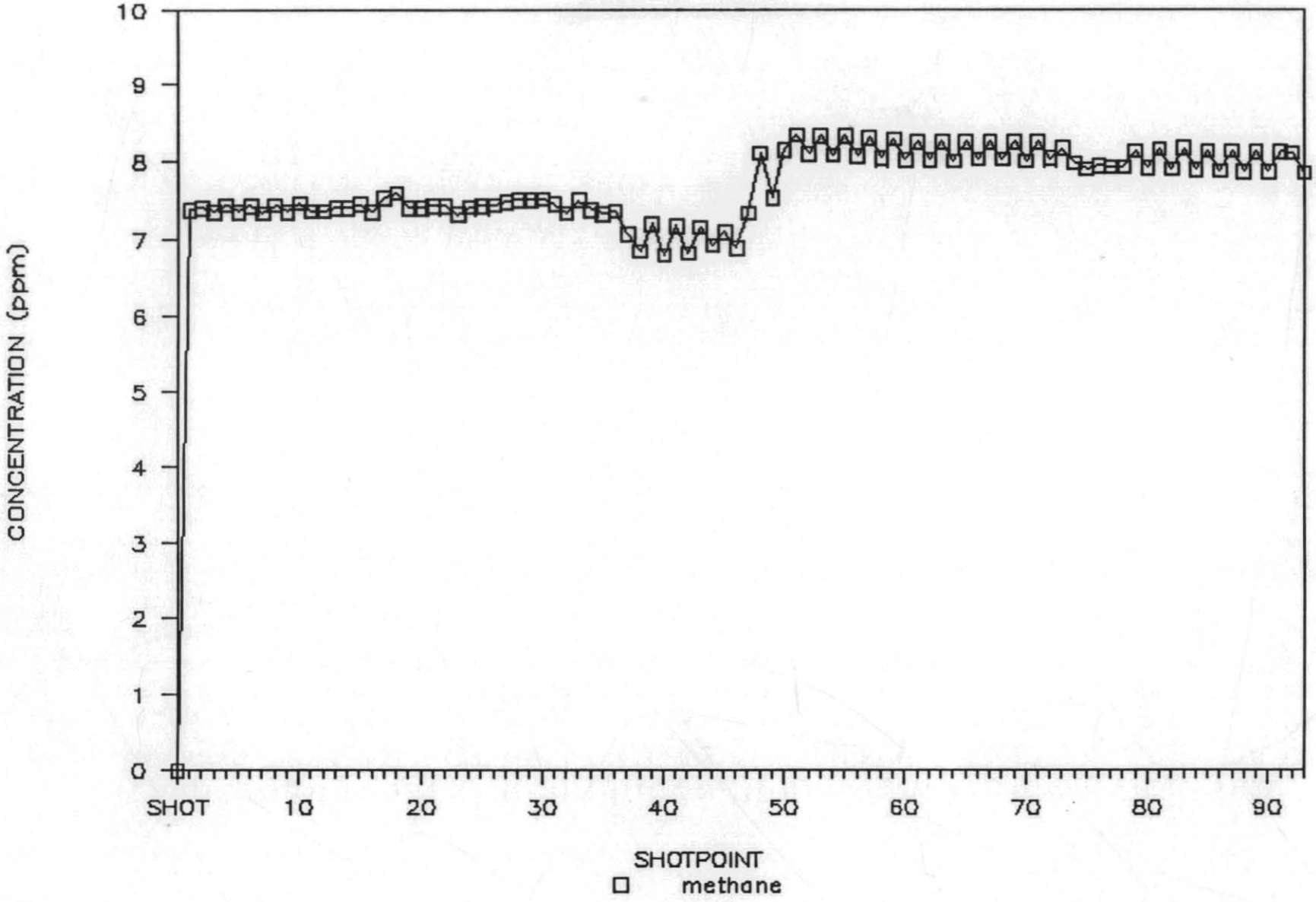
BASS BASIN

Survey Line 40



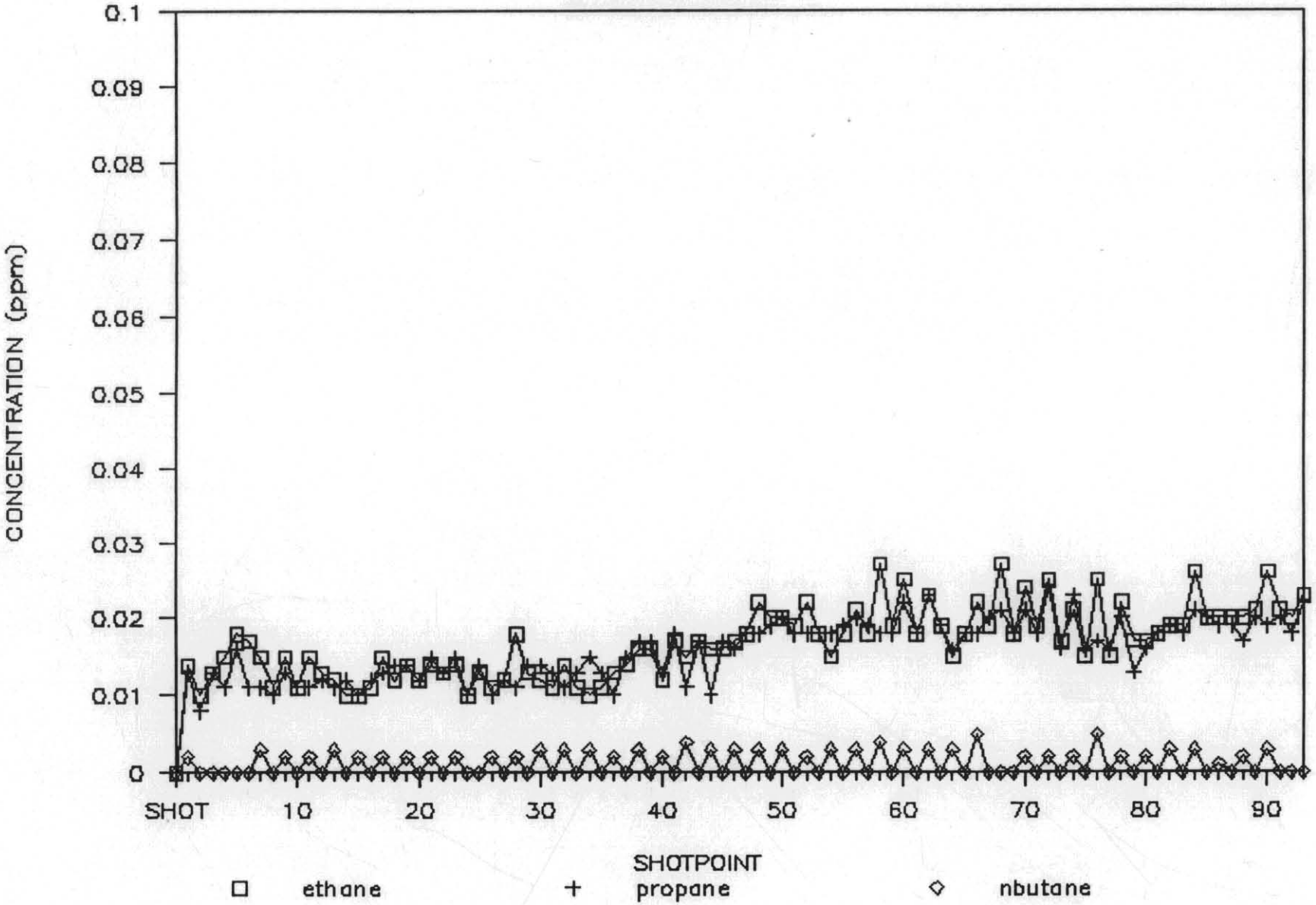
BASS BASIN

Survey Line 41



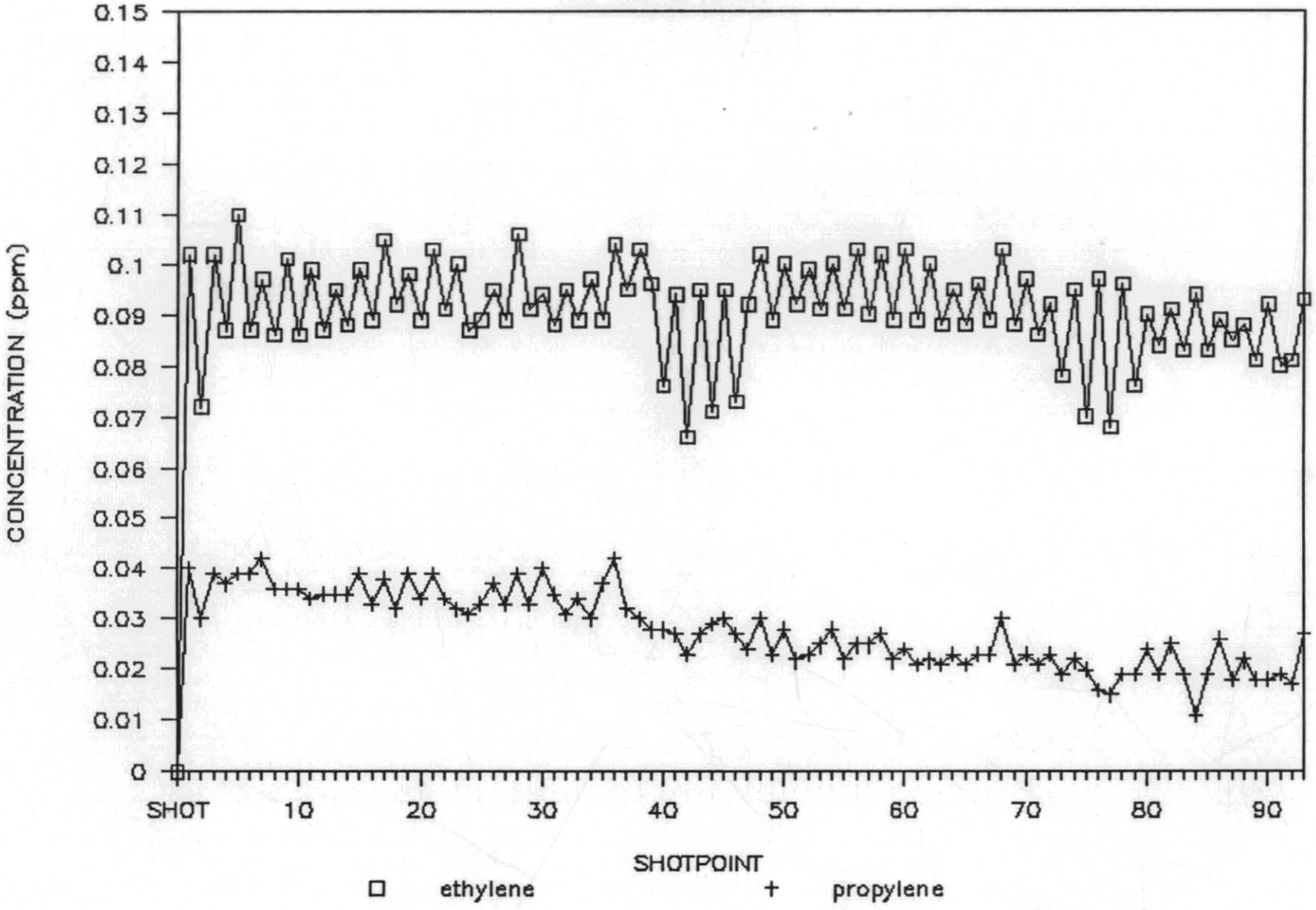
BASS BASIN

Survey Line 41



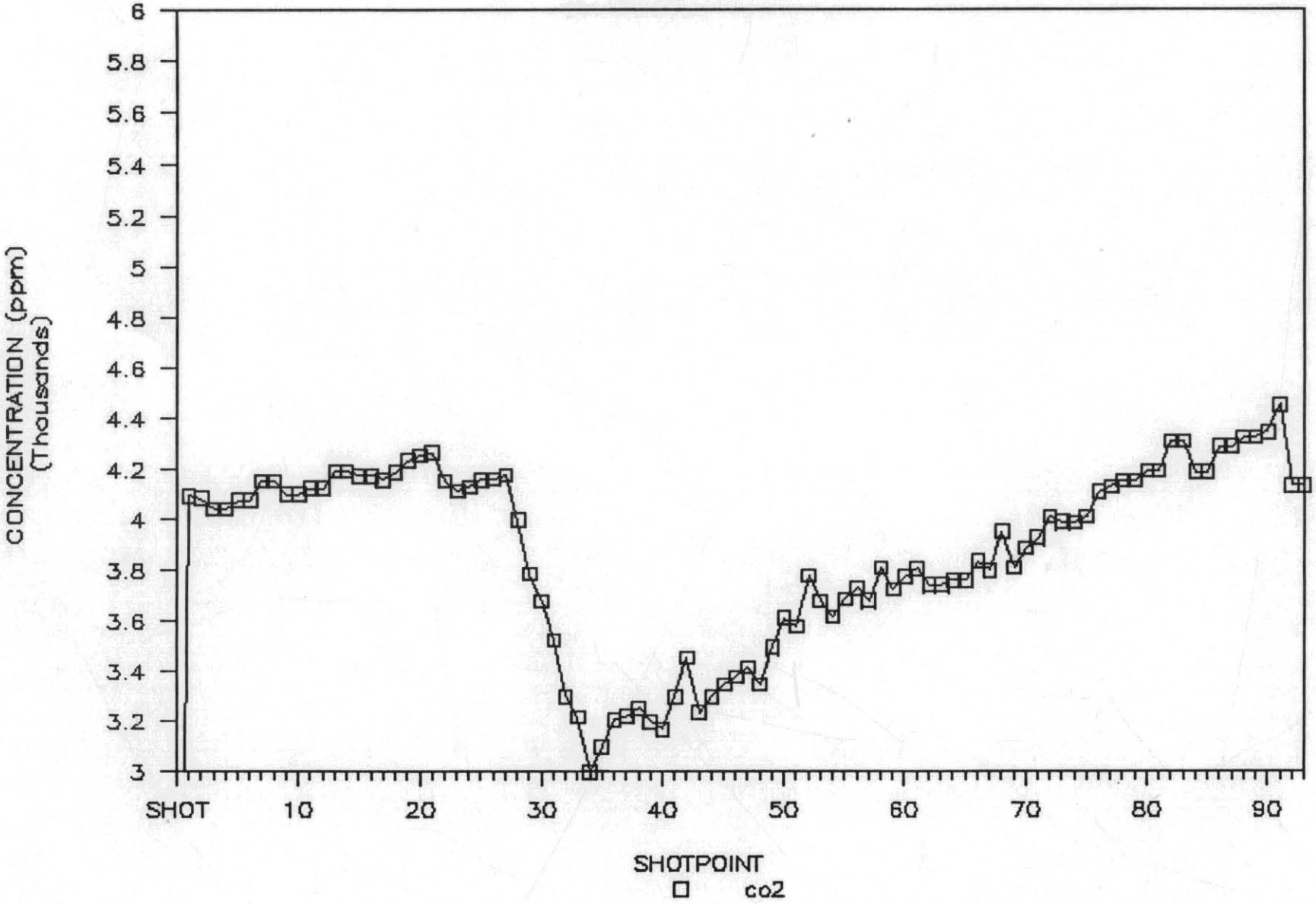
BASS BASIN

Survey Line 41



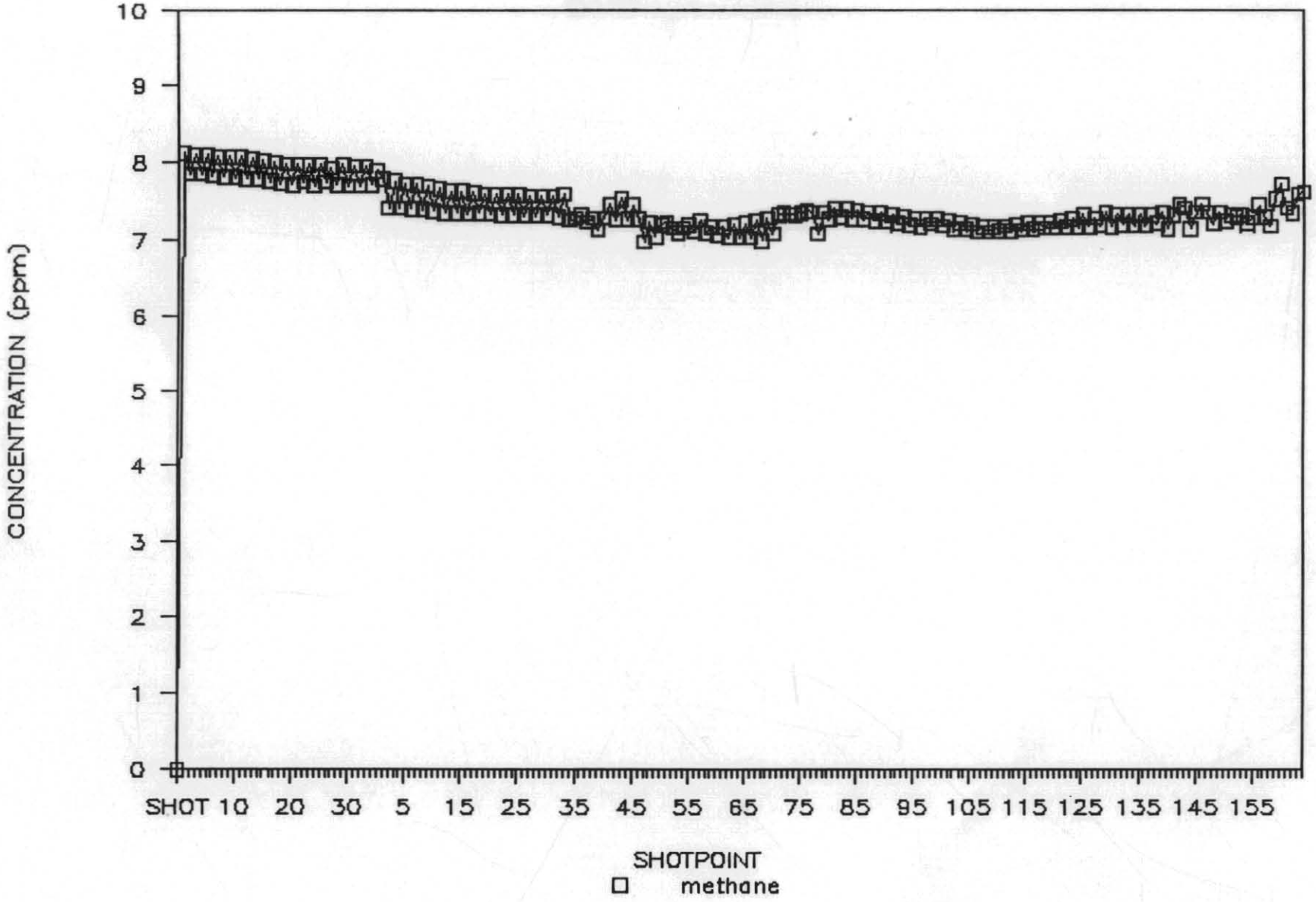
BASS BASIN

Survey Line 41



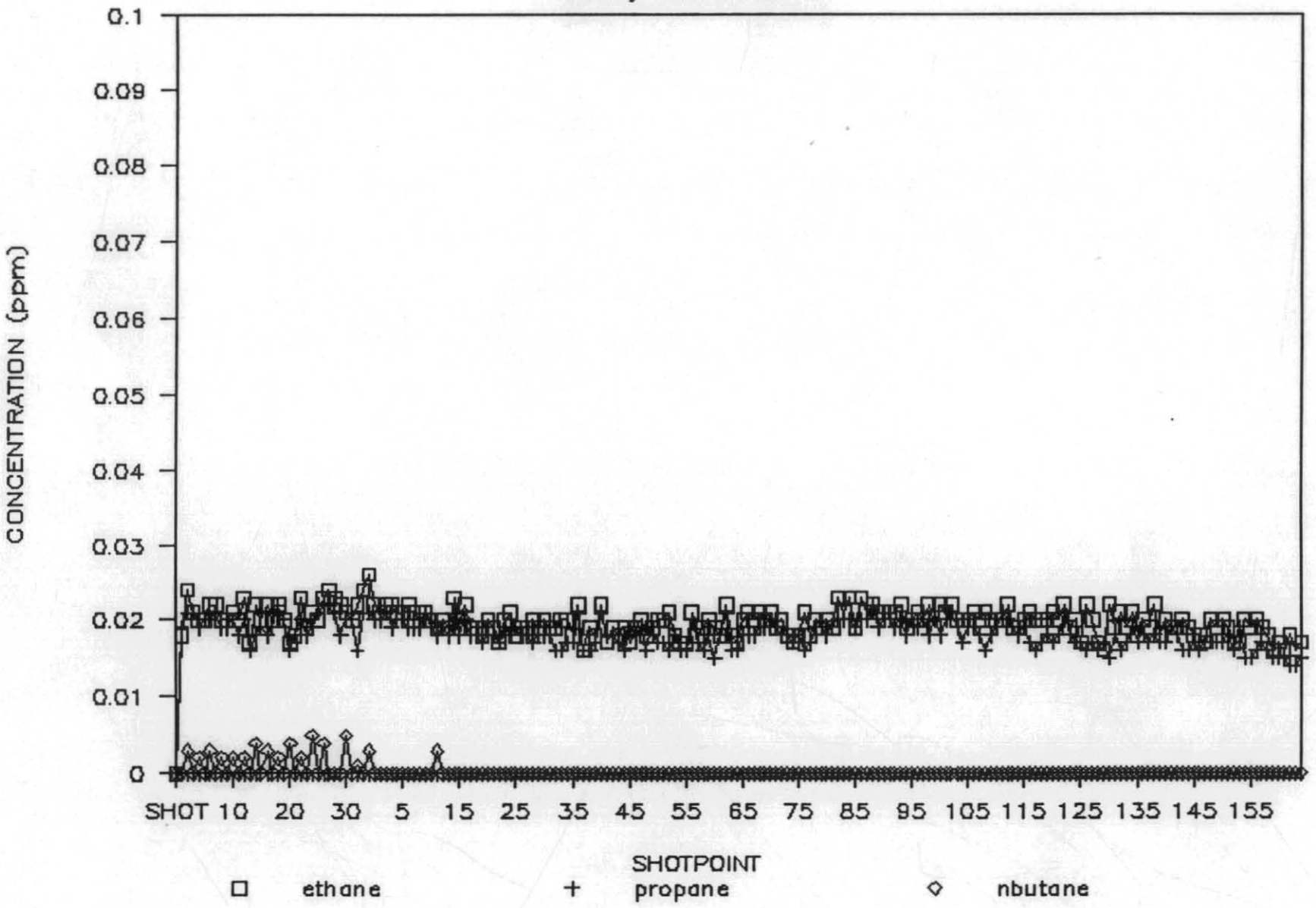
BASS BASIN

Survey Line 42 & 42A



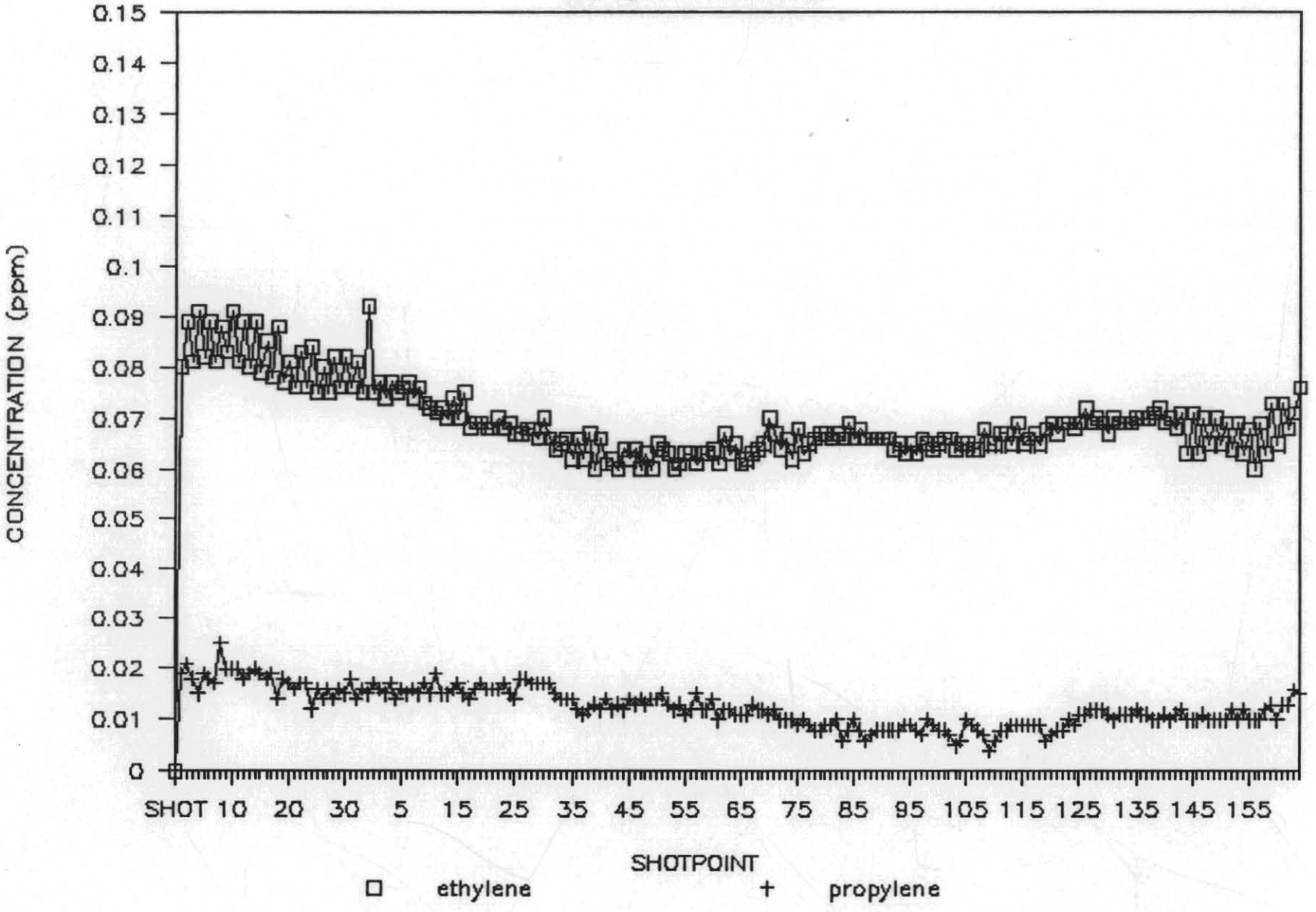
BASS BASIN

Survey Line 42 & 42A



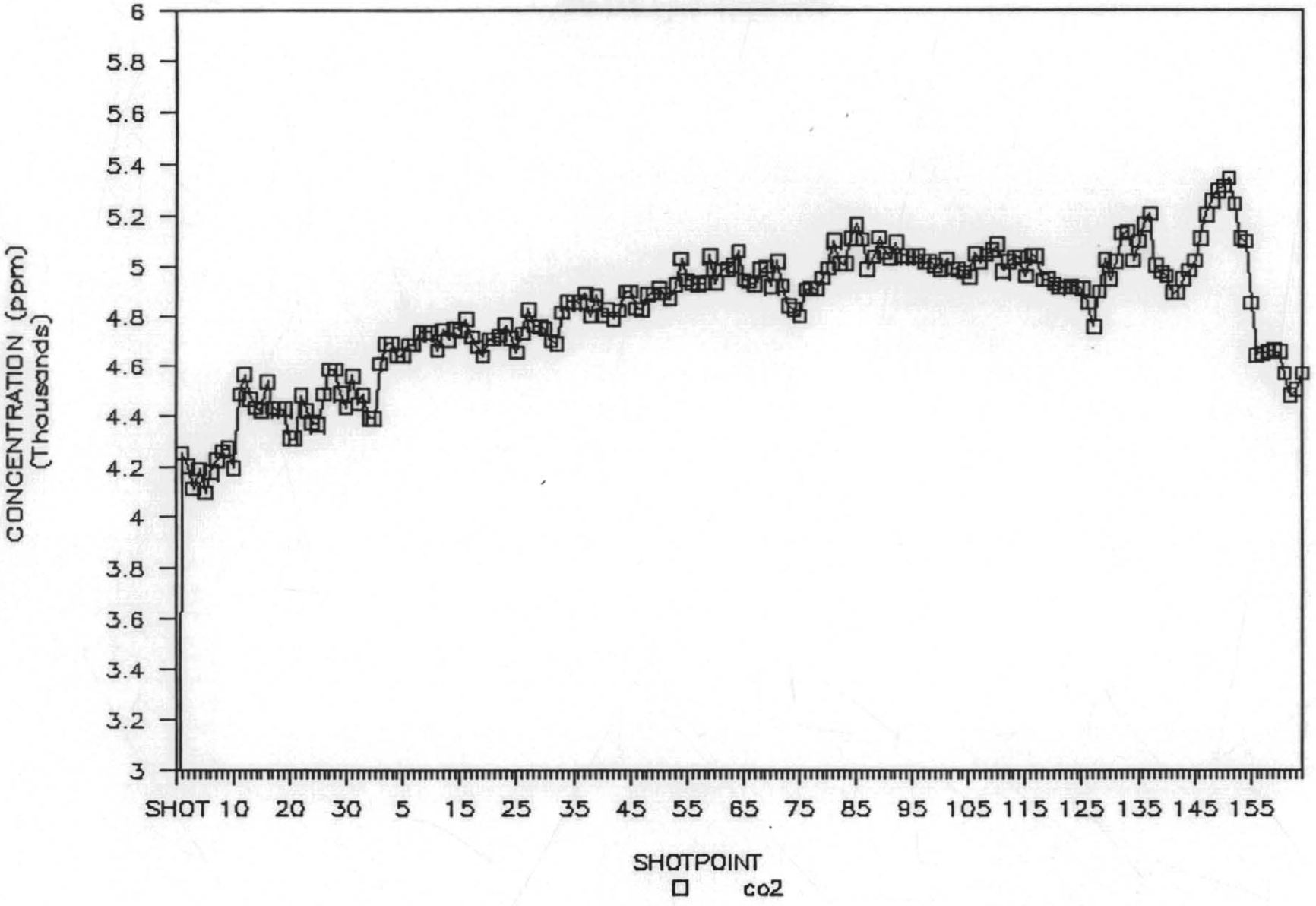
BASS BASIN

Survey Line 42 & 42A



BASS BASIN

Survey Line 42 & 42A



BASS BASIN

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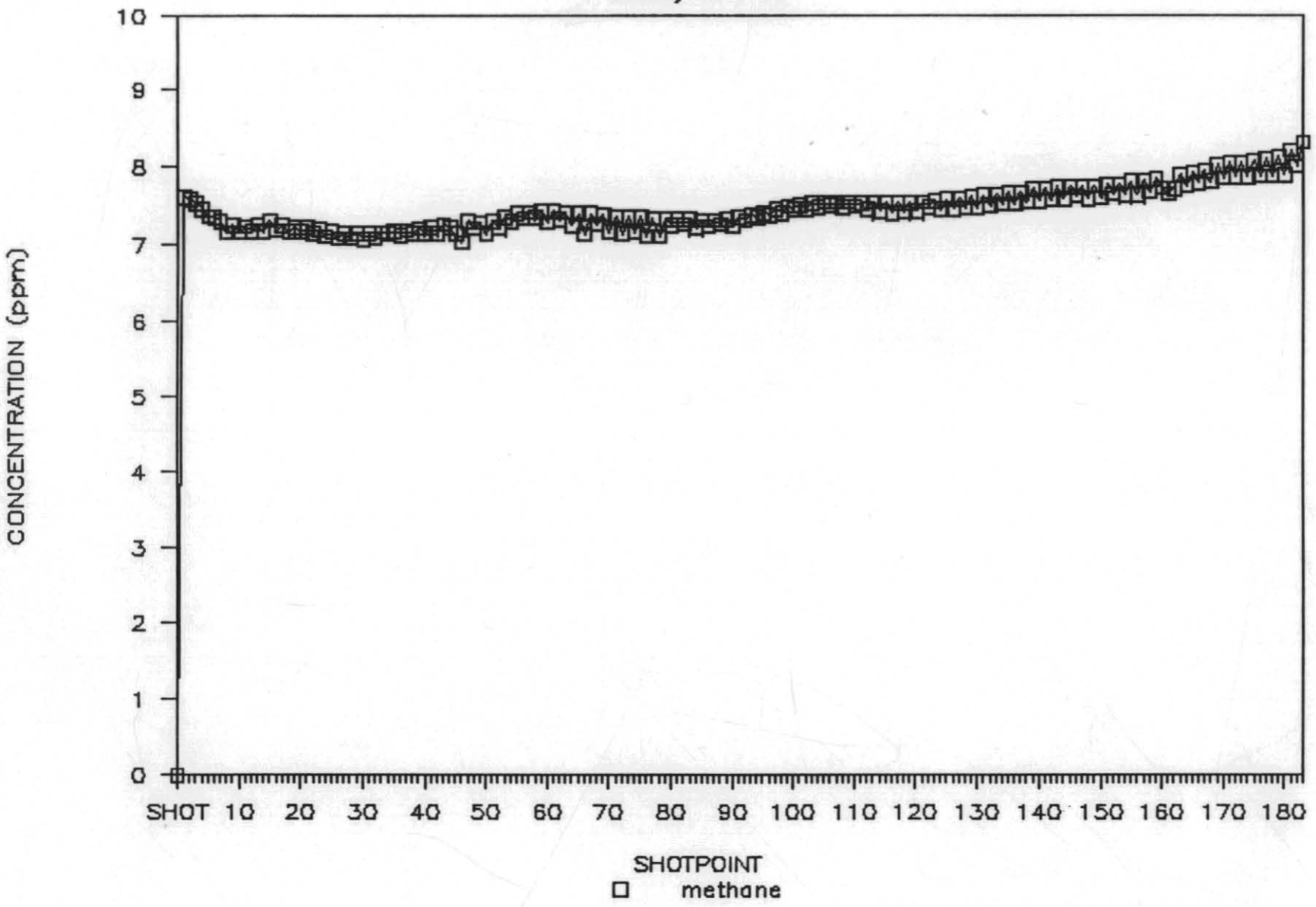
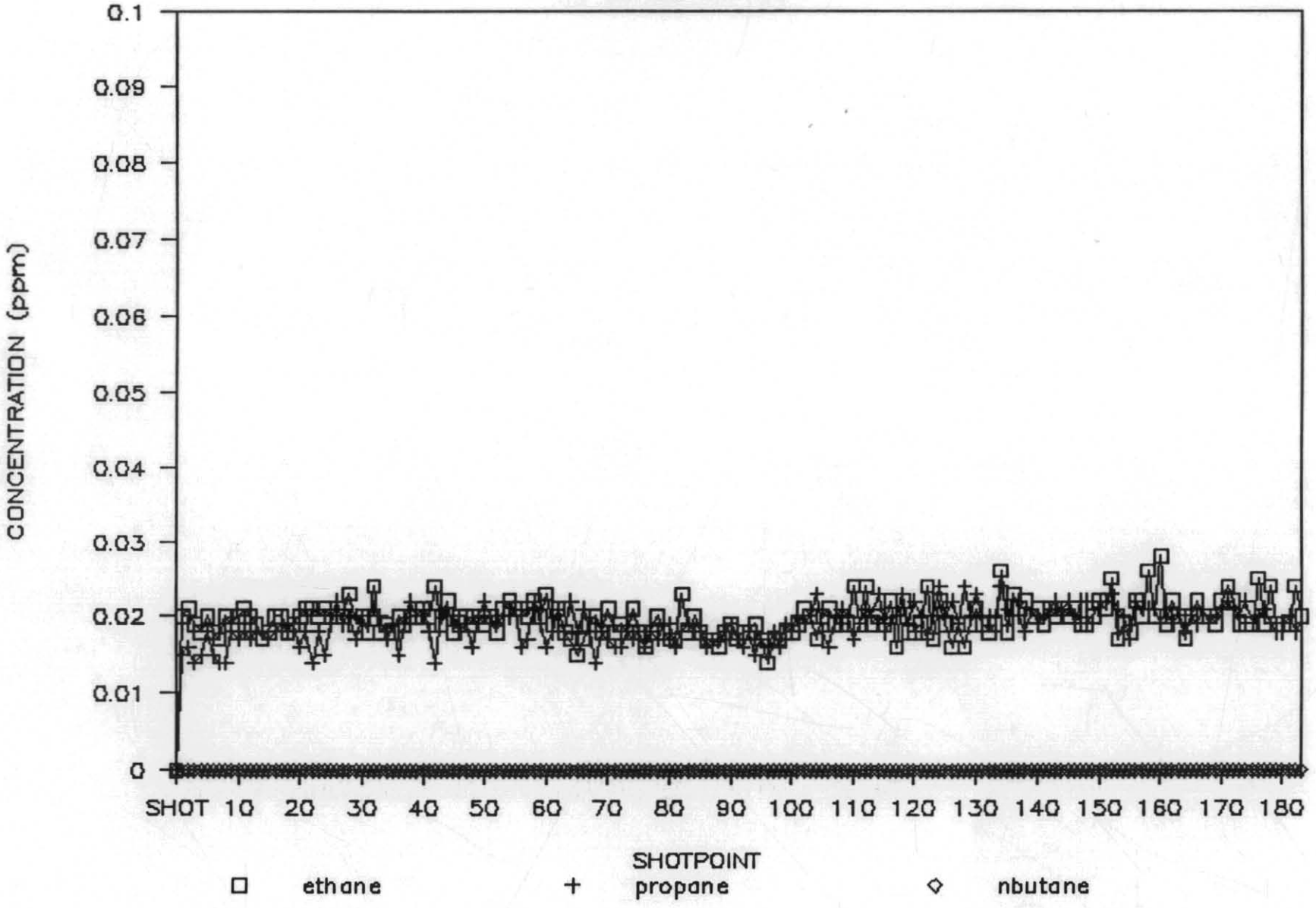


BASS BASIN

Survey Line 43



BASS BASIN

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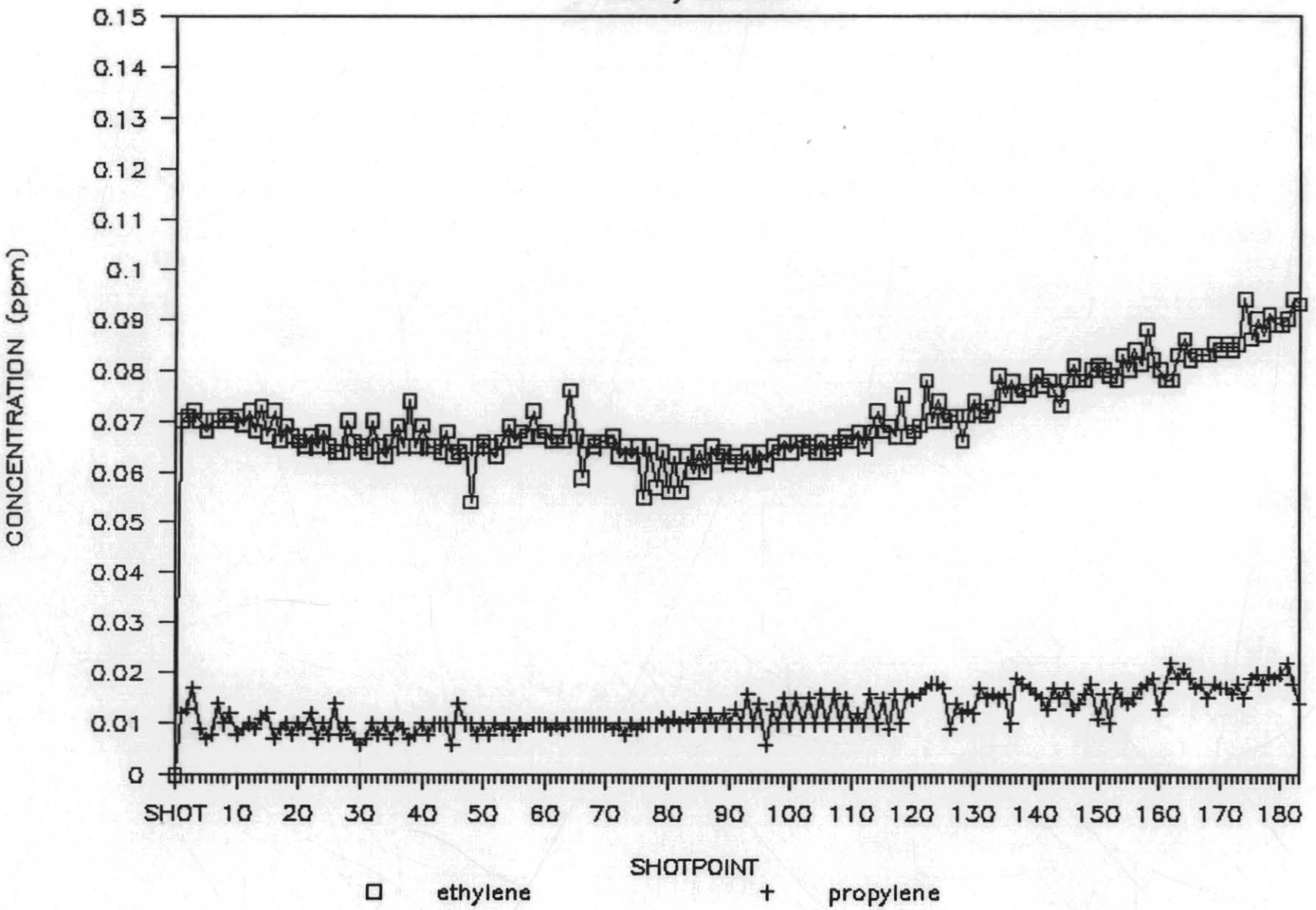
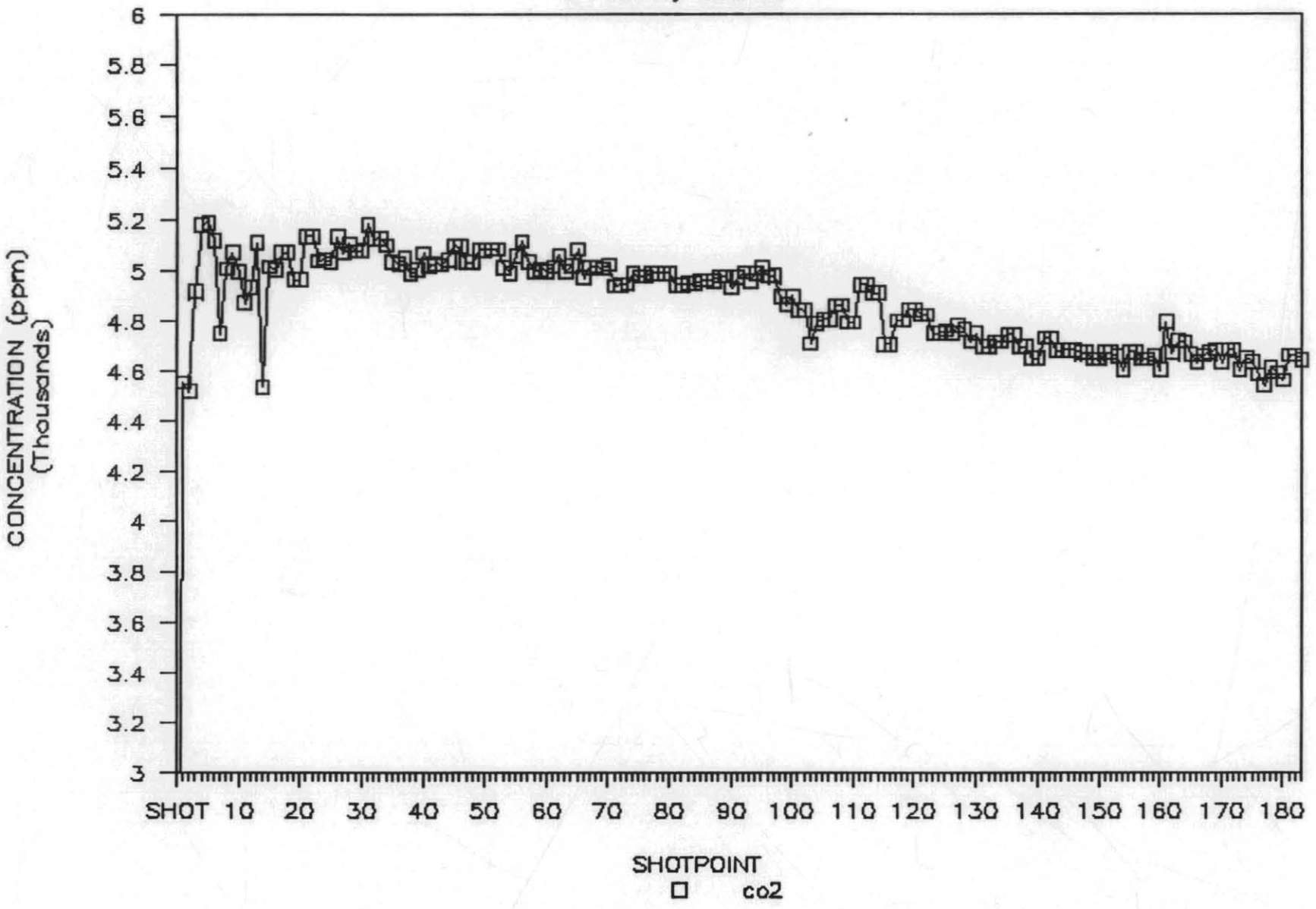


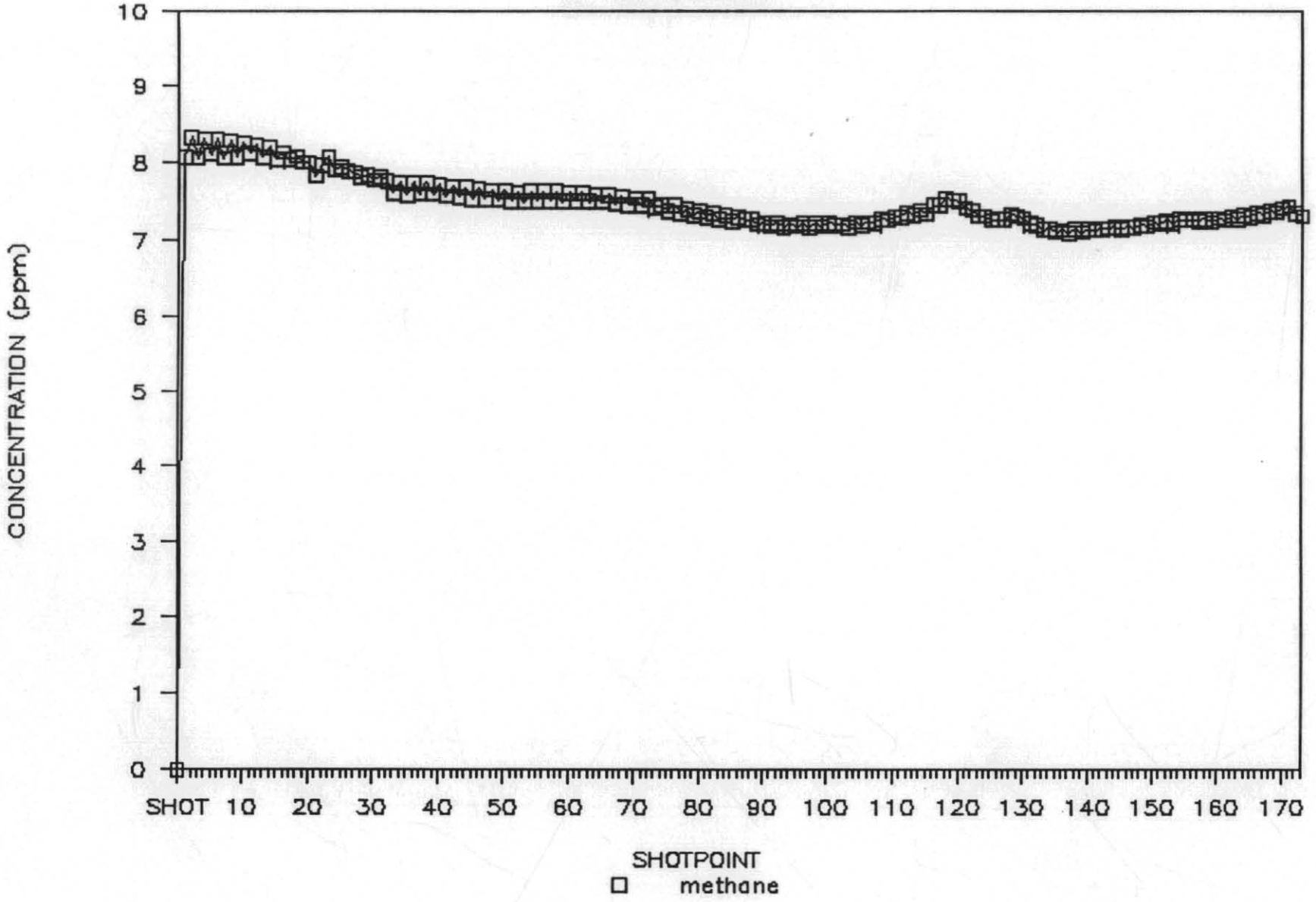
BASS BASIN

Survey Line 43



BASS BASIN

Survey Line 44



BASS BASIN

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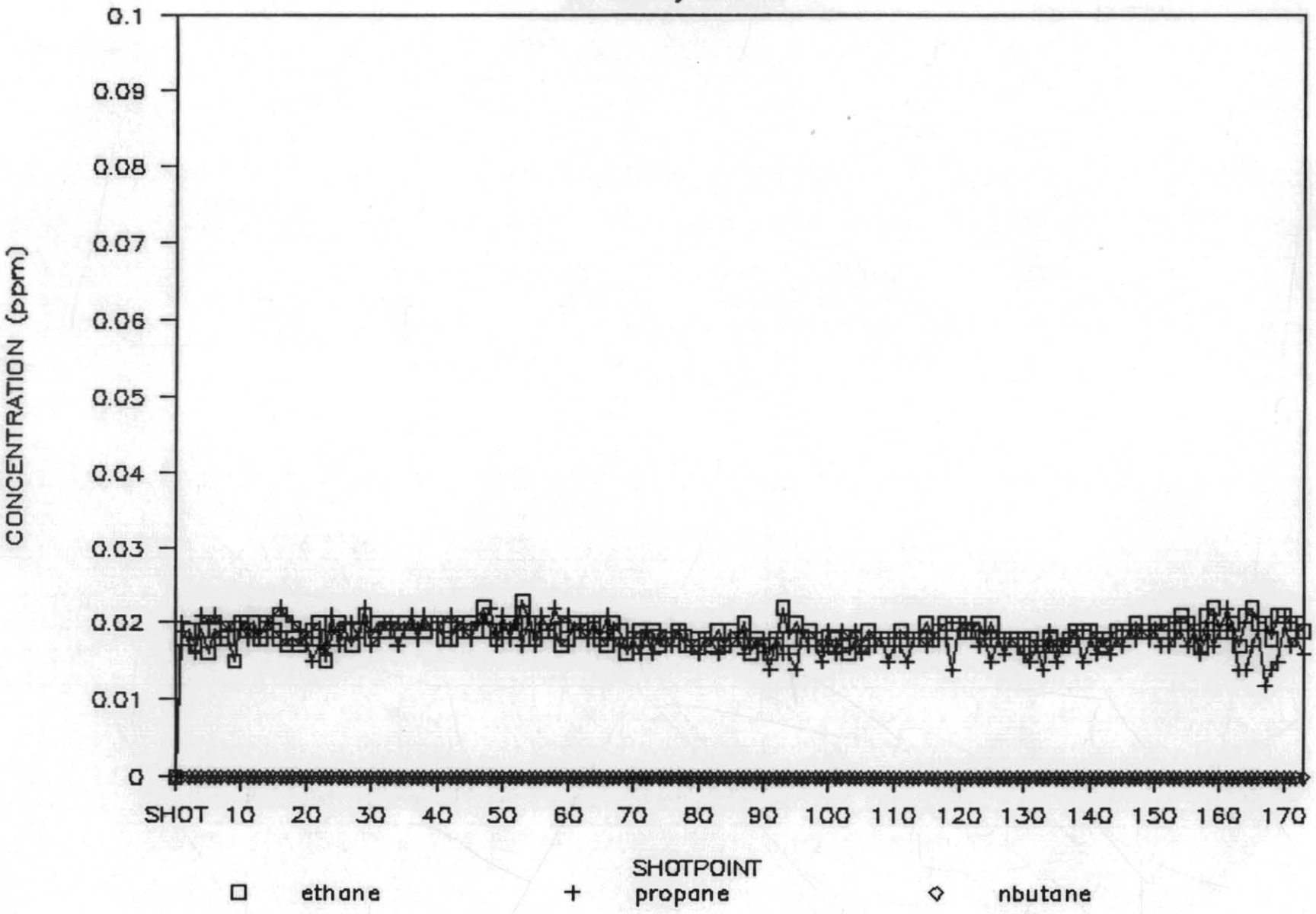

BASS BASIN

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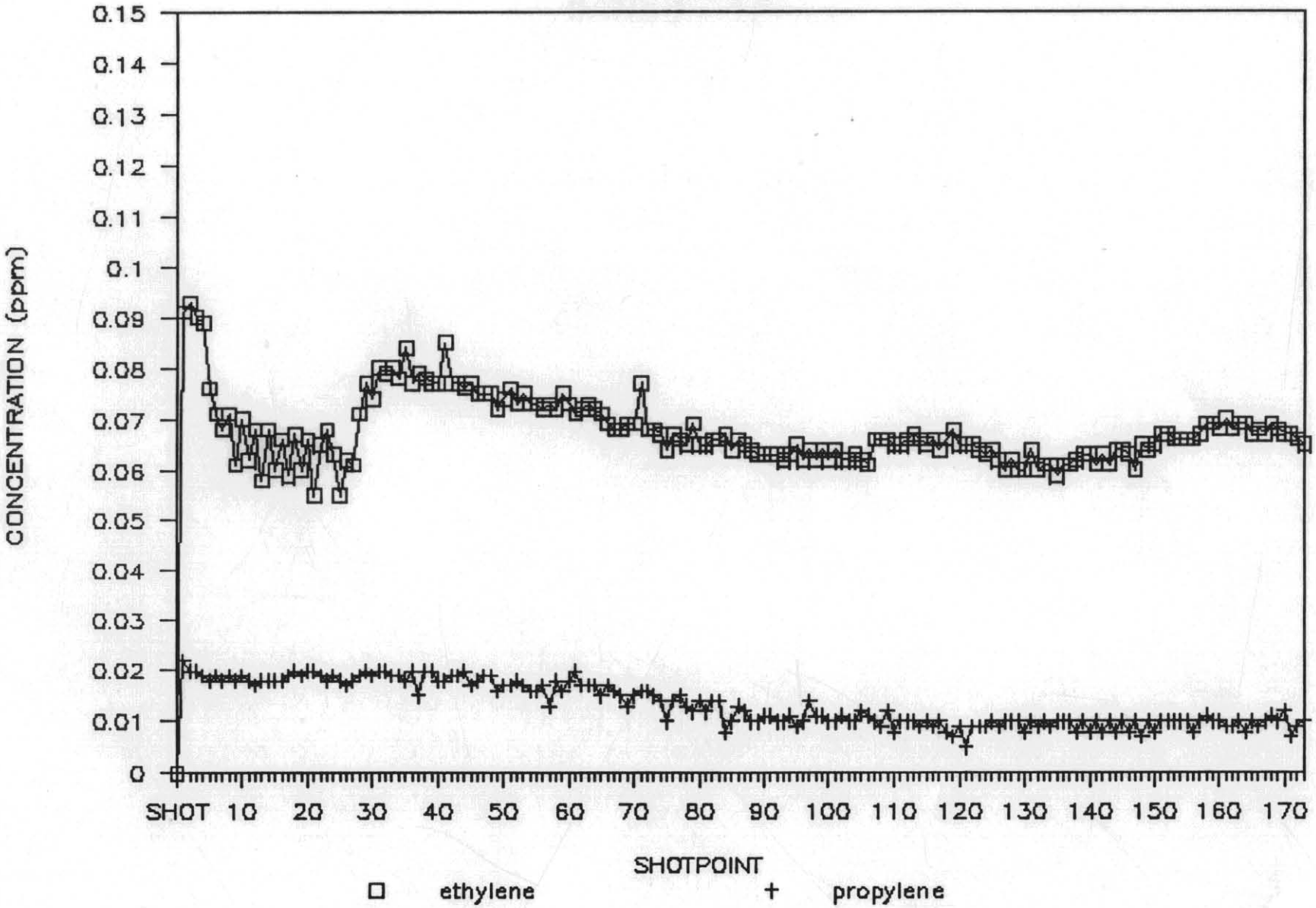

BASS BASIN

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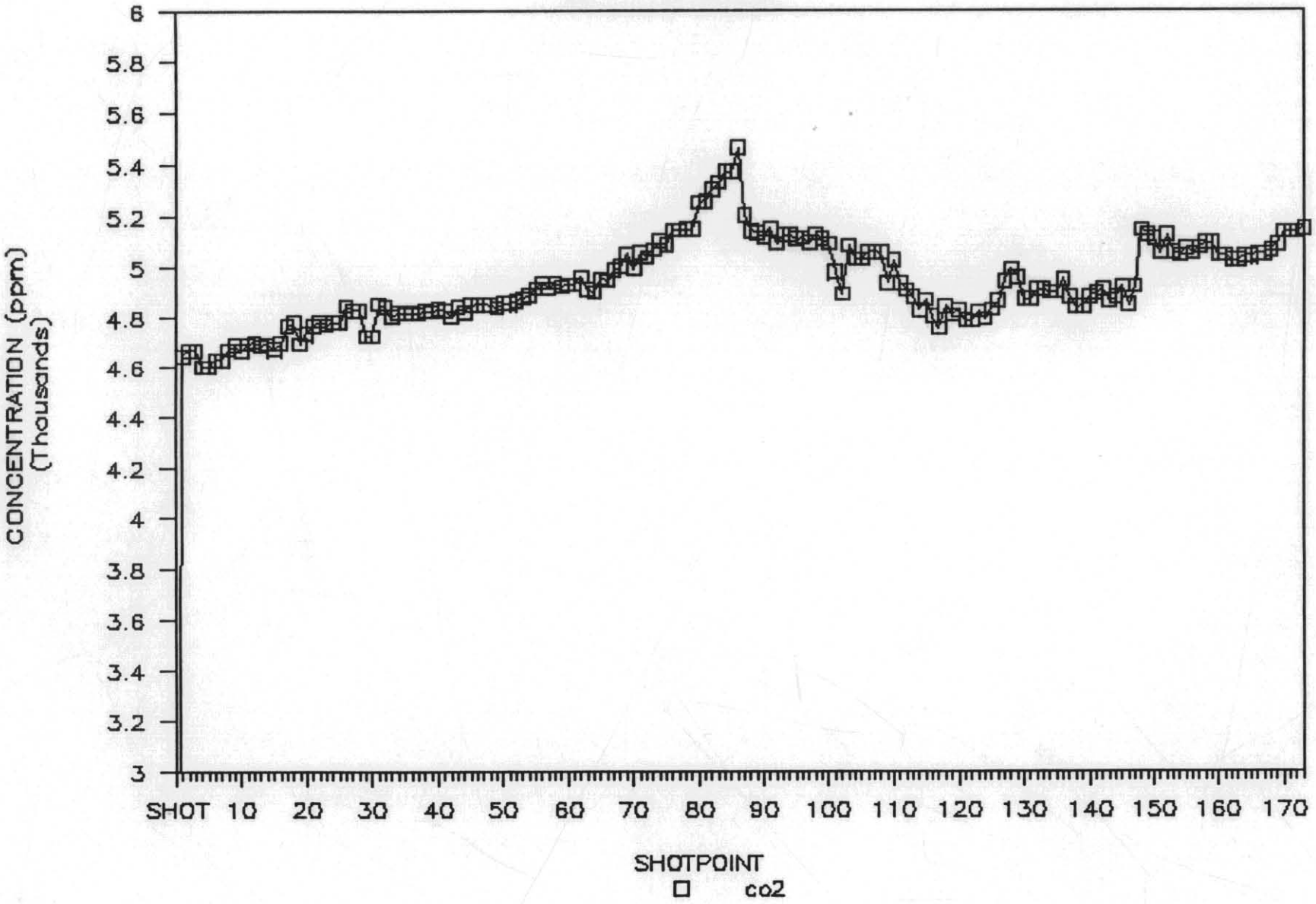
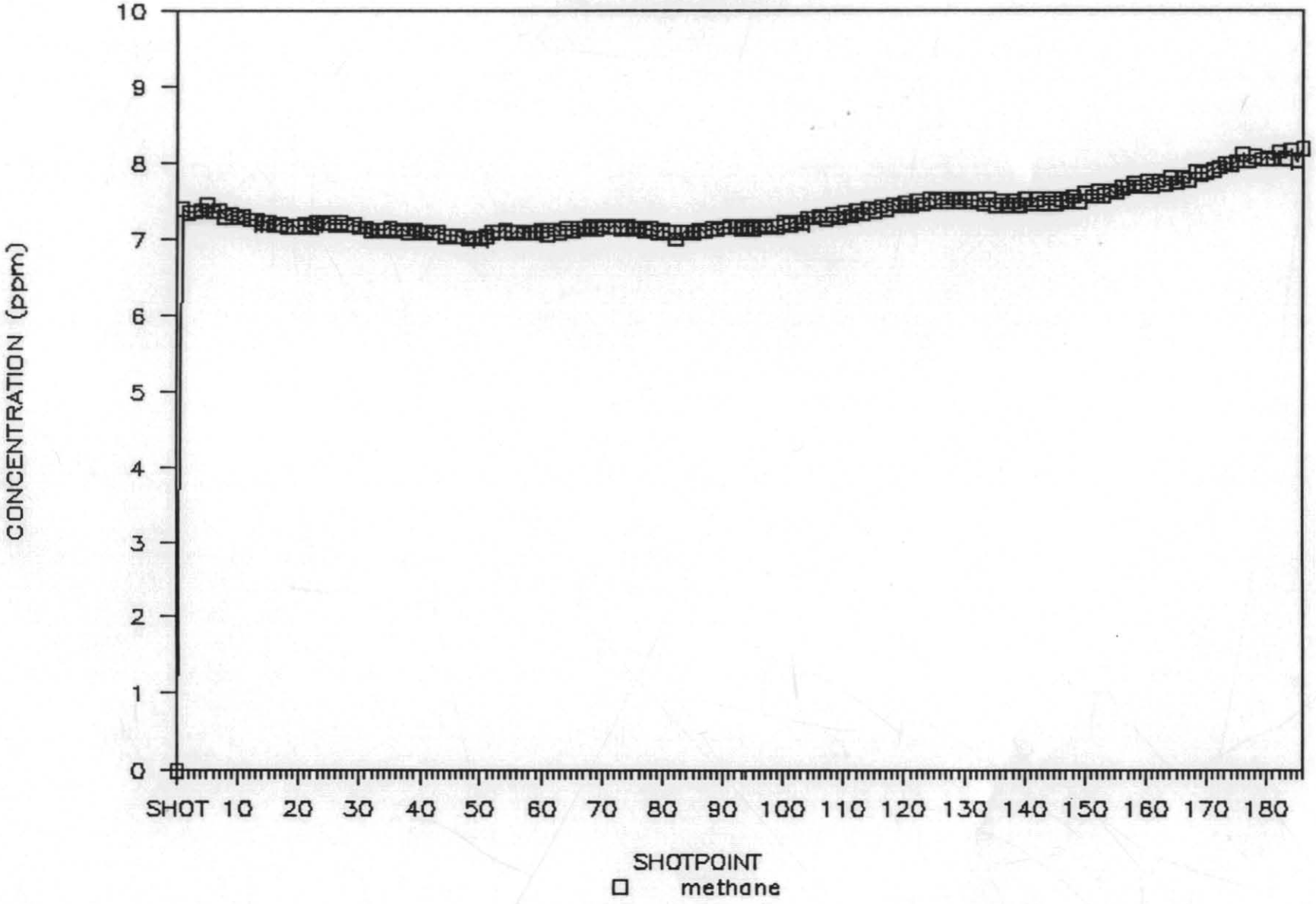


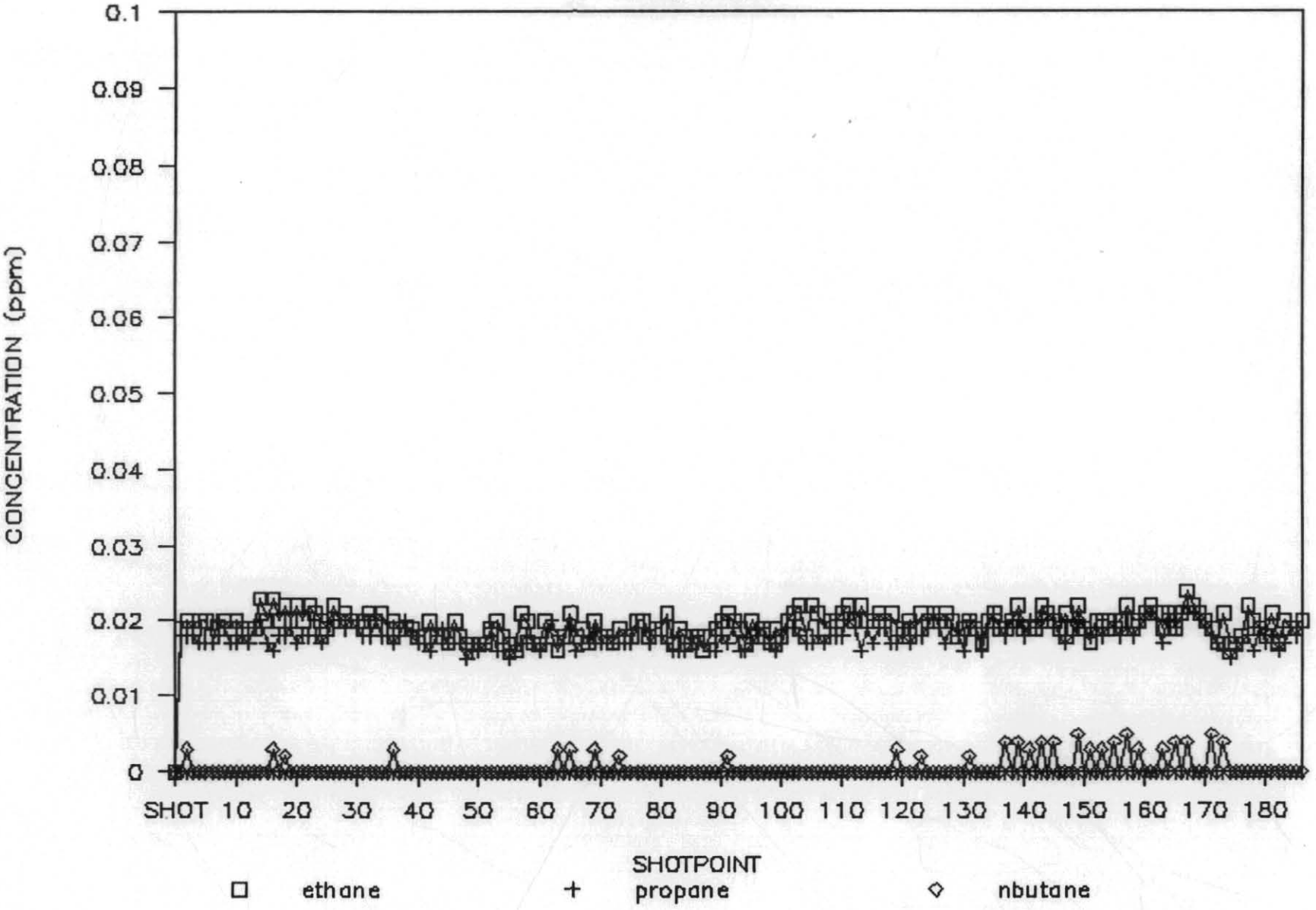
BASS BASIN

Survey Line 45



BASS BASIN

Survey Line 45



BASS BASIN

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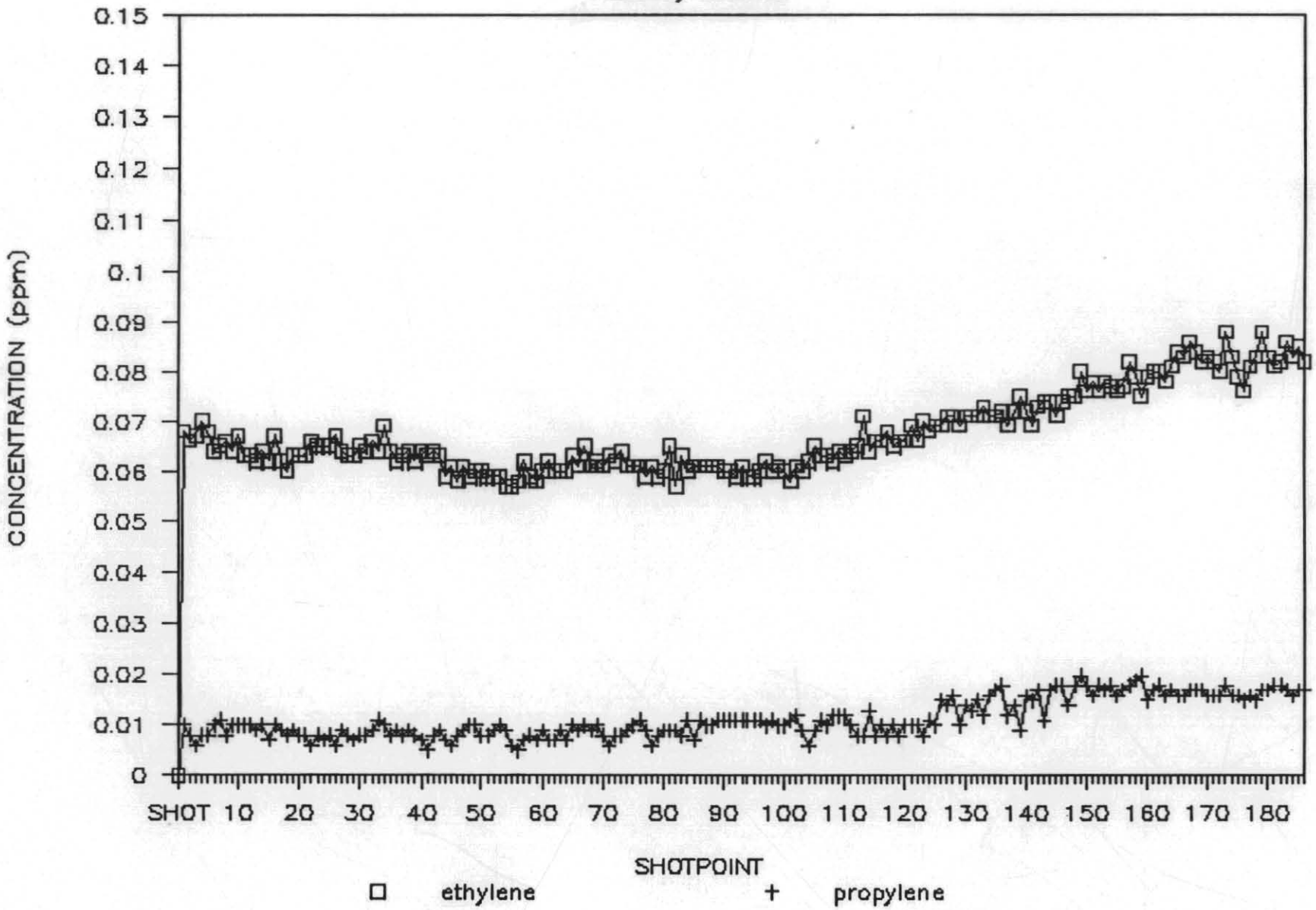

BASS BASIN

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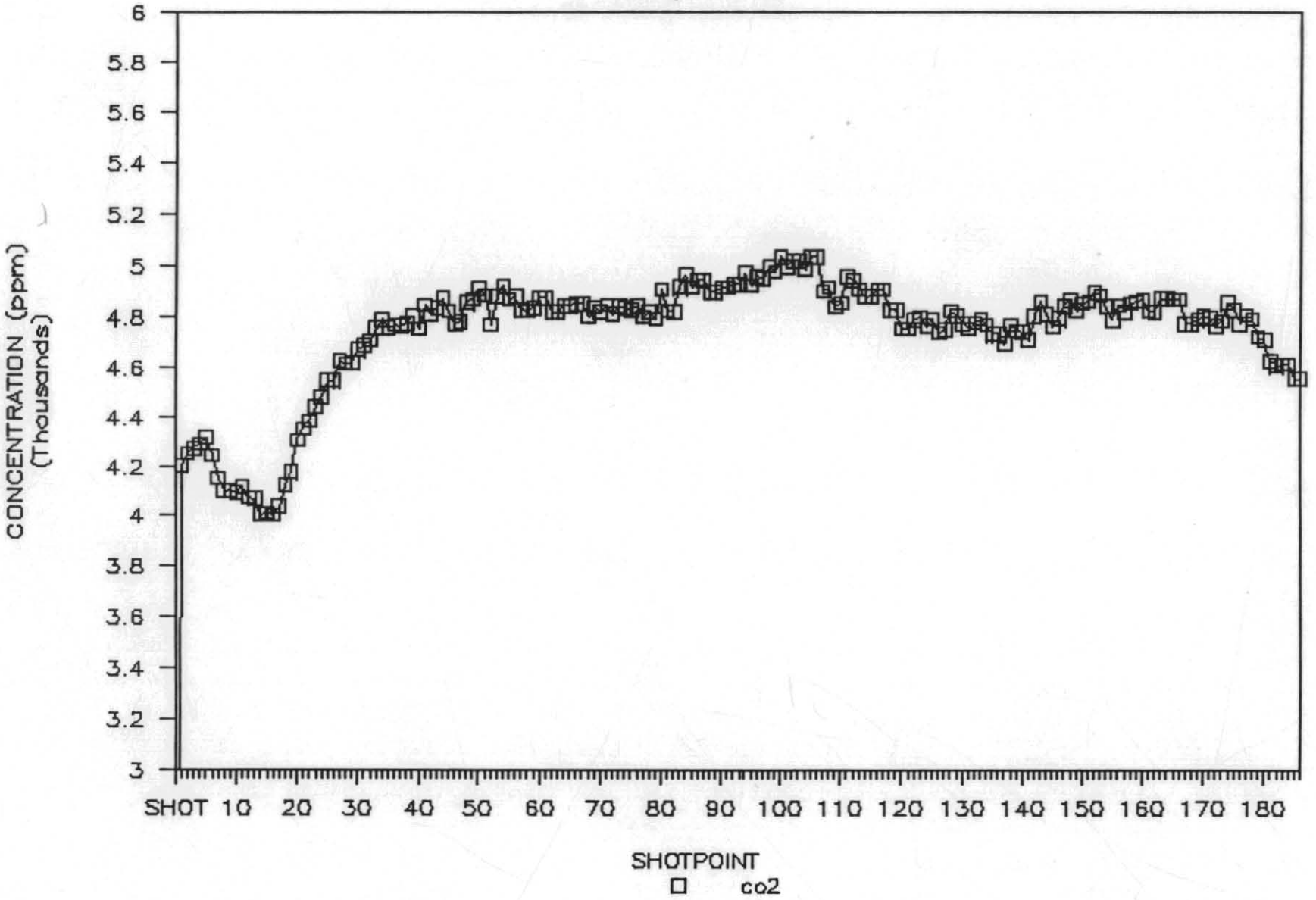
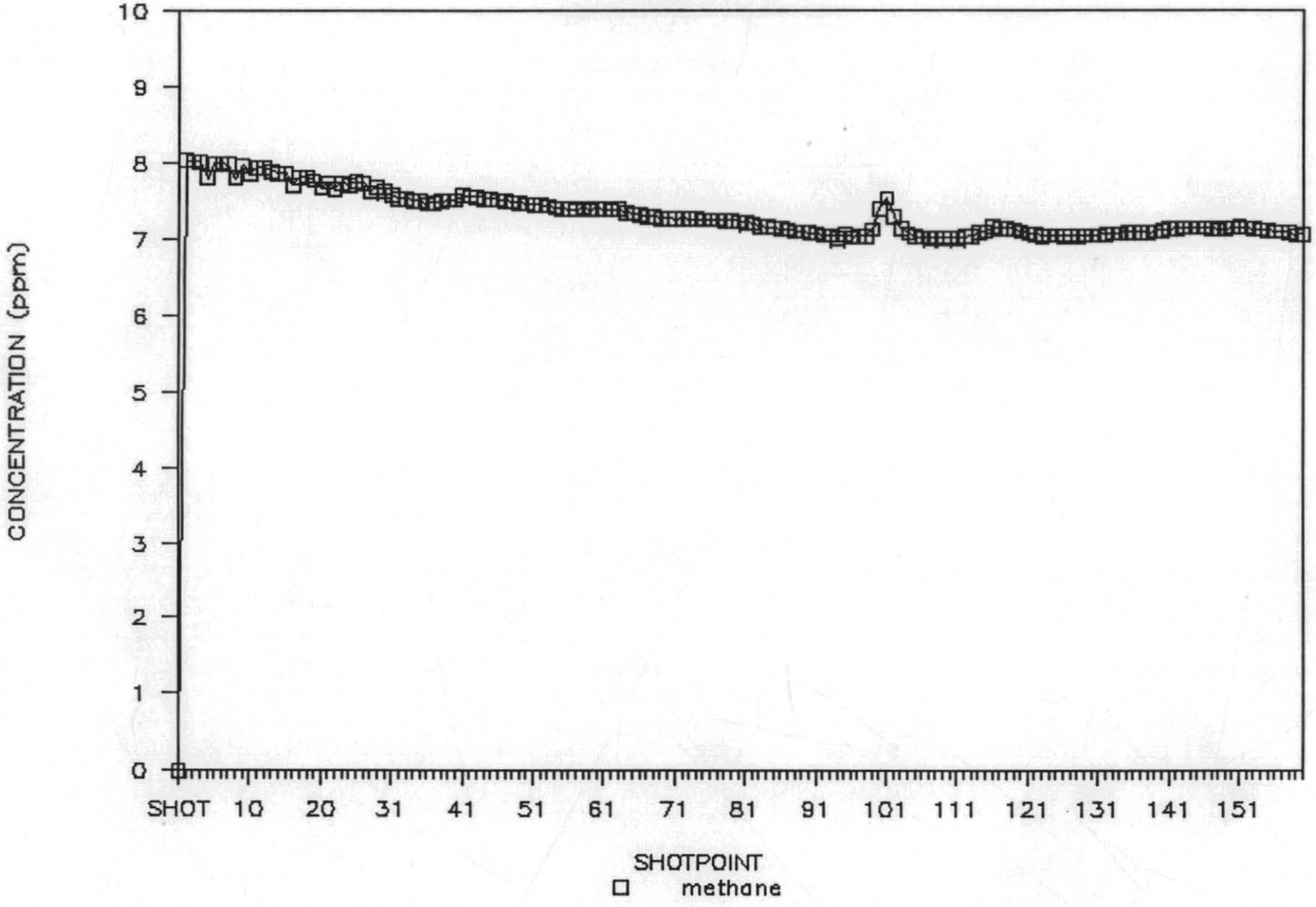


BASS BASIN

Survey Line 46



BASS BASIN

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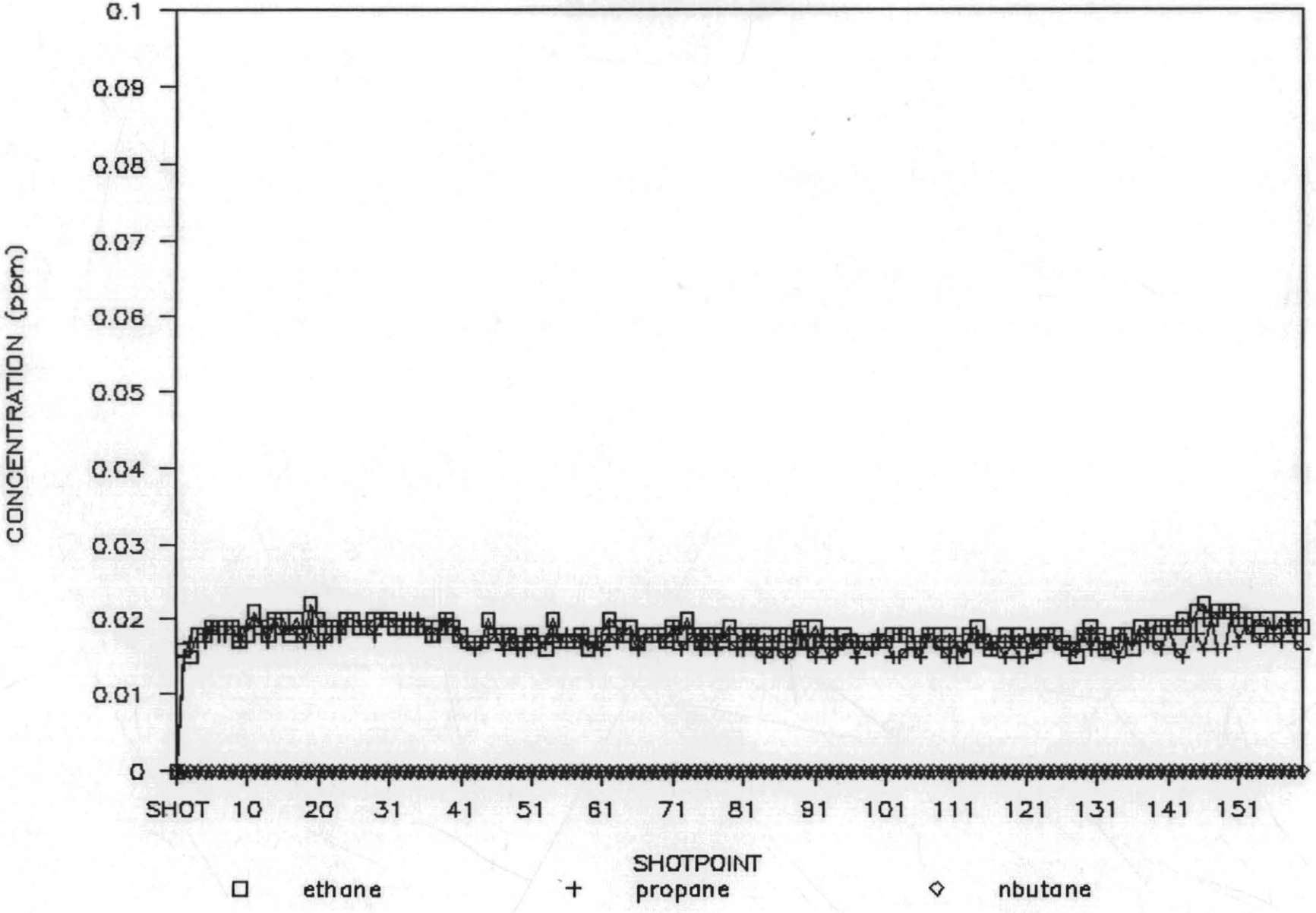
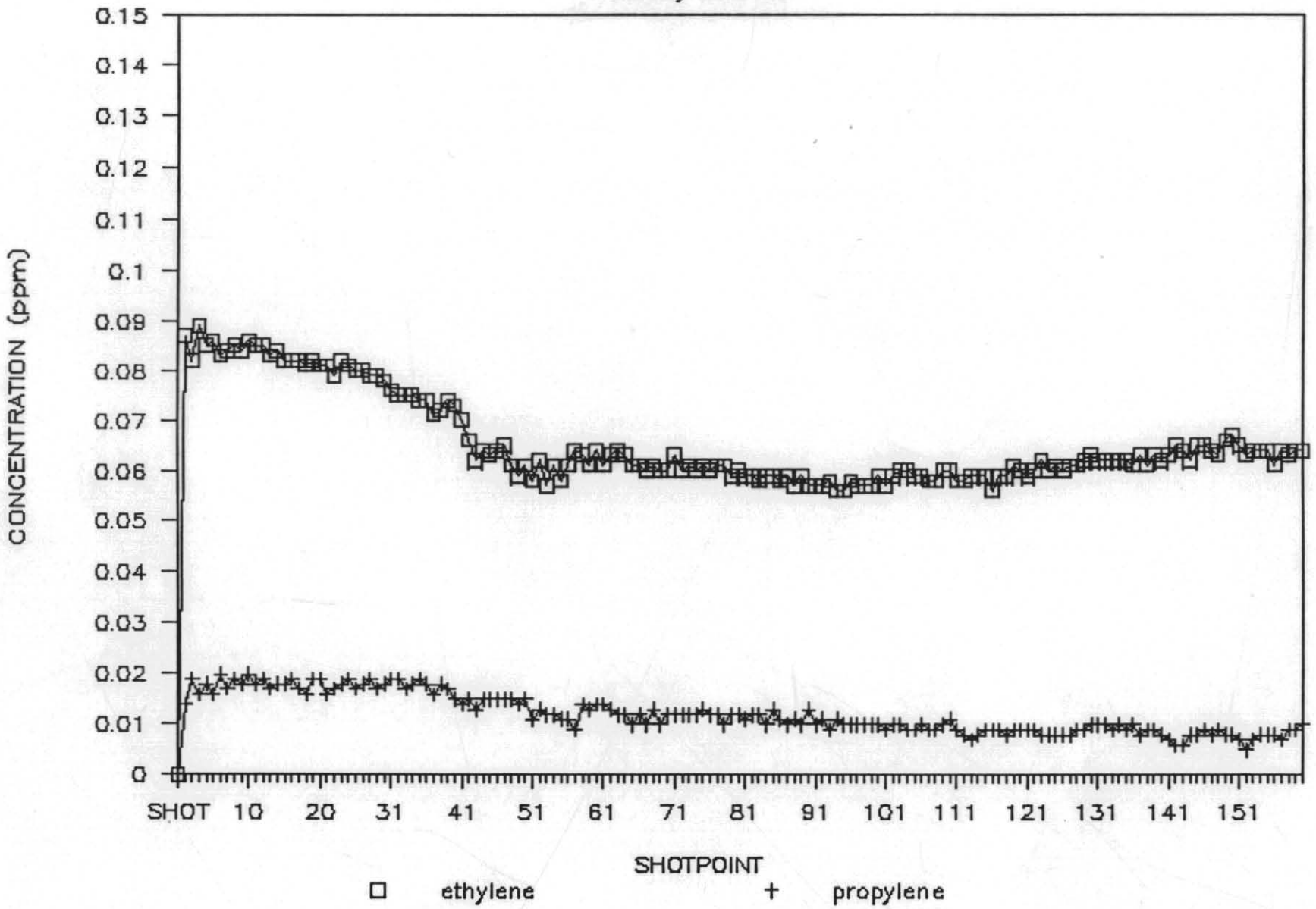


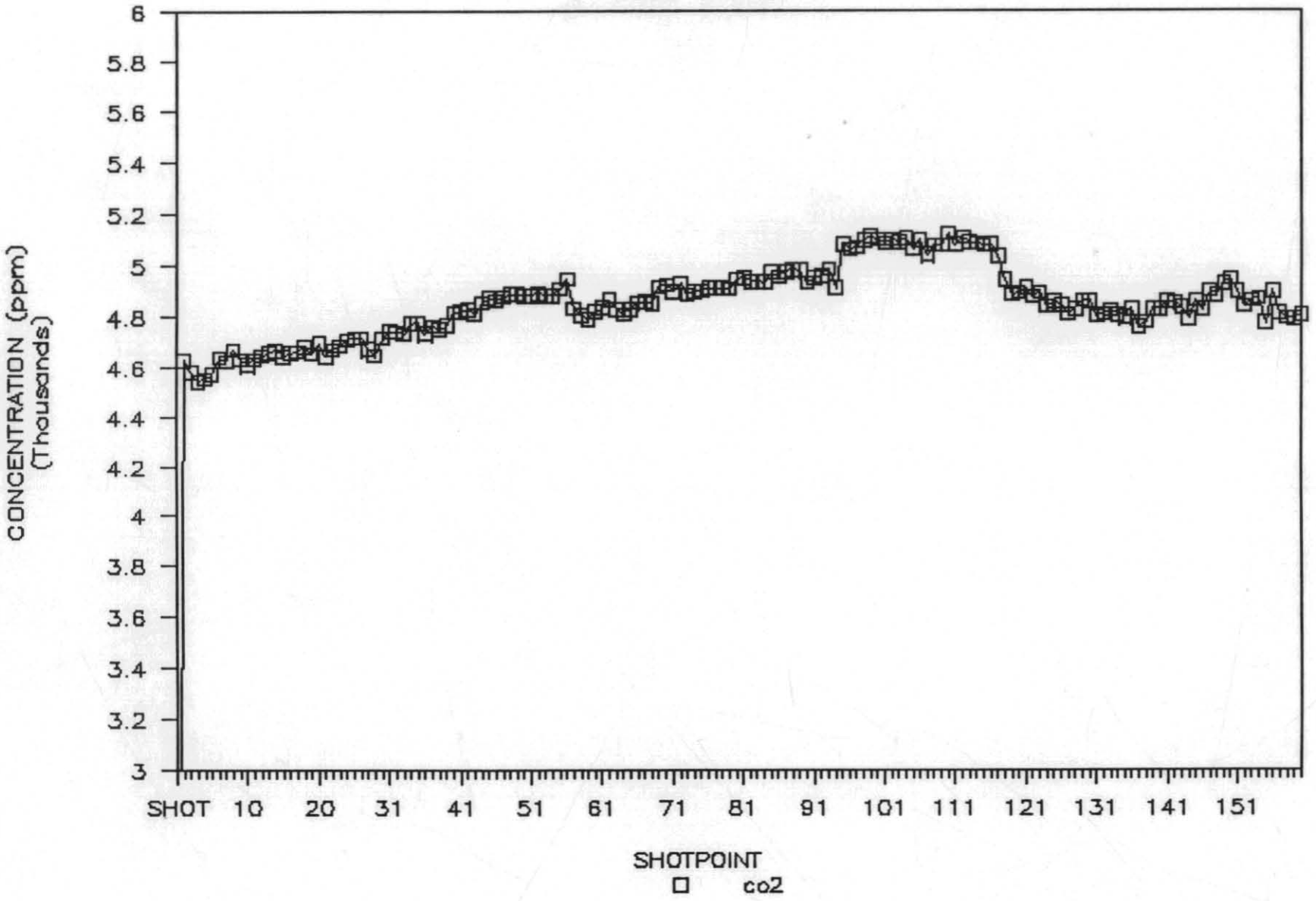
BASS BASIN

Survey Line 46



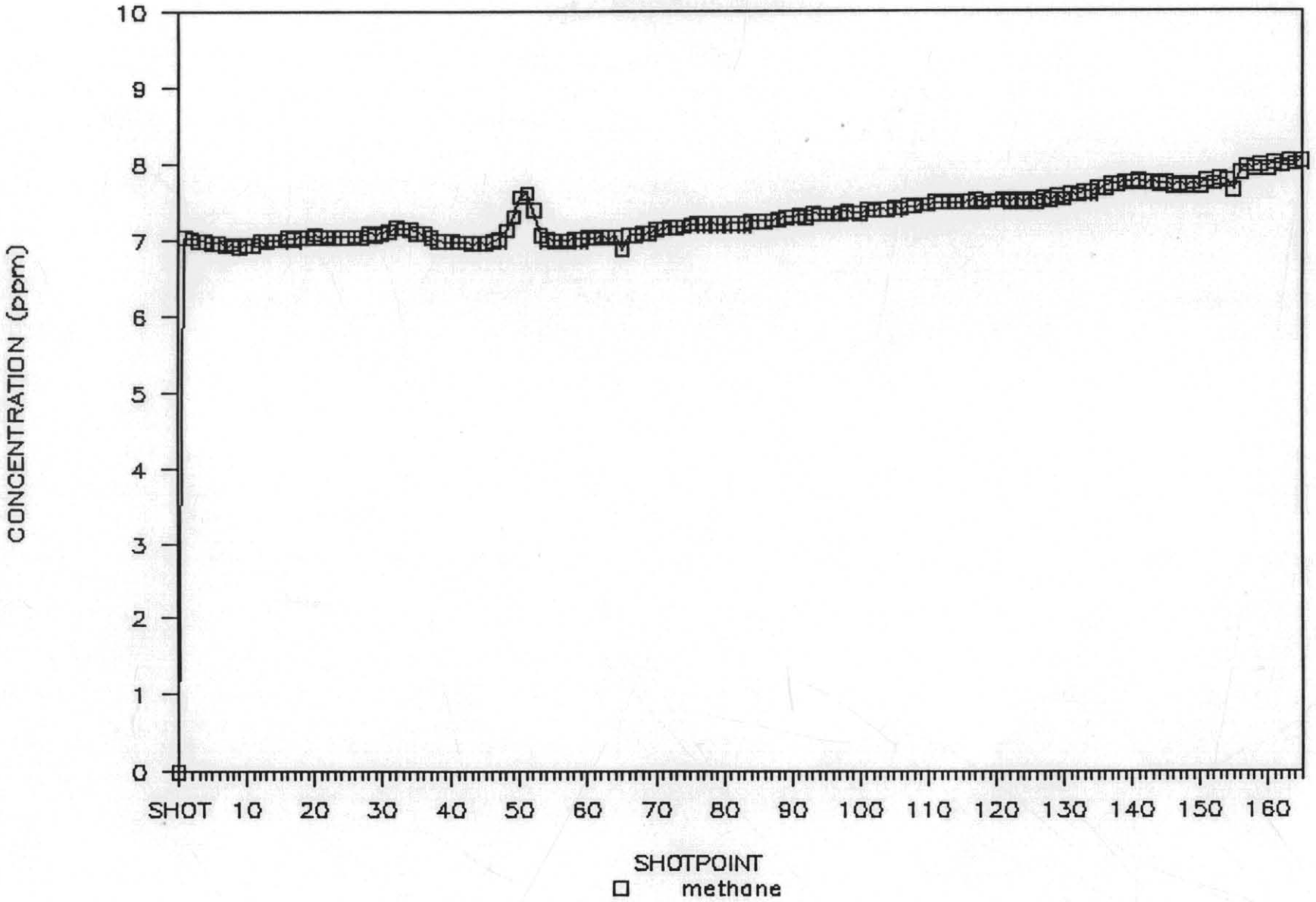
BASS BASIN

Survey Line 46



BASS BASIN

Survey Line 47



BASS BASIN

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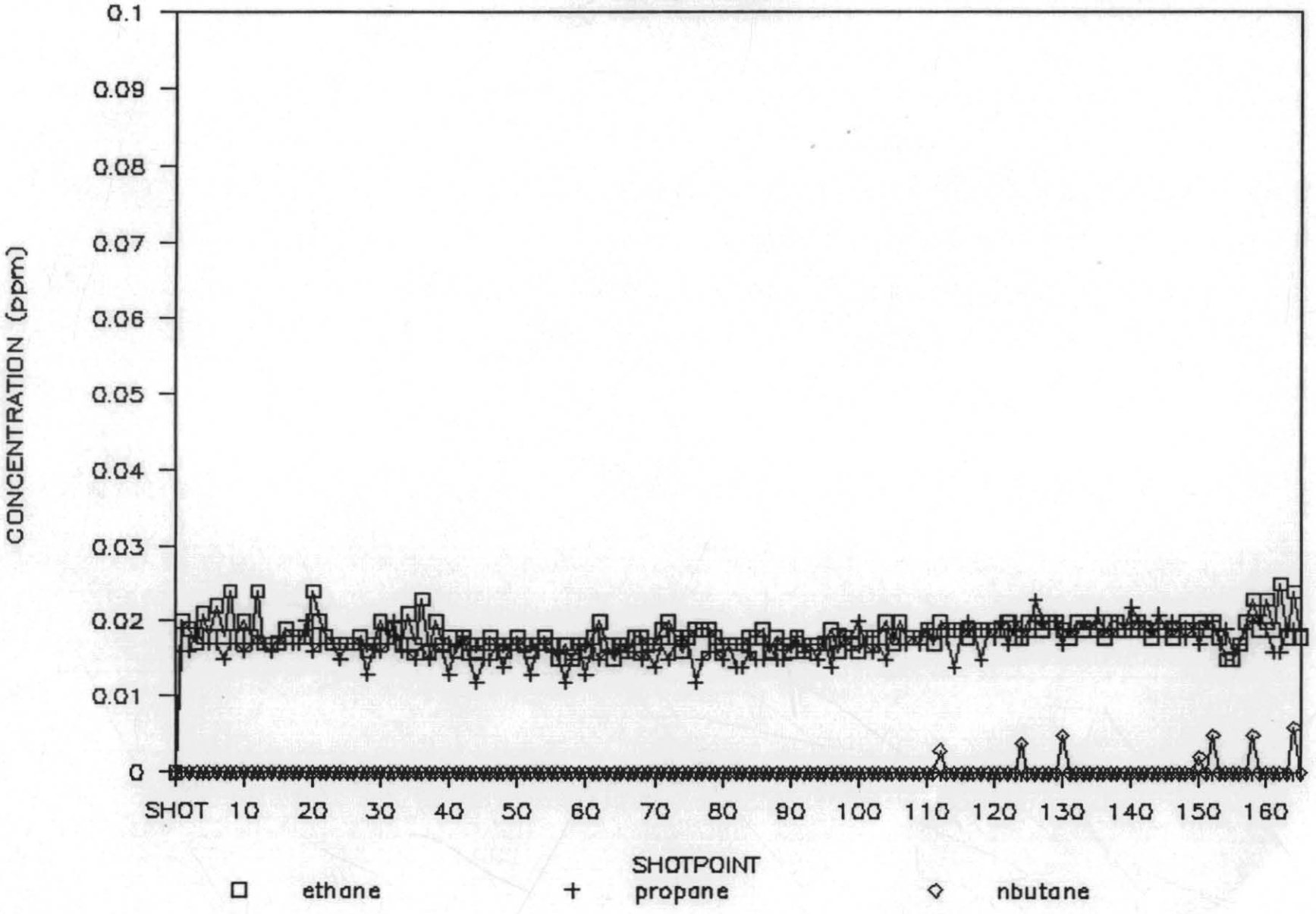
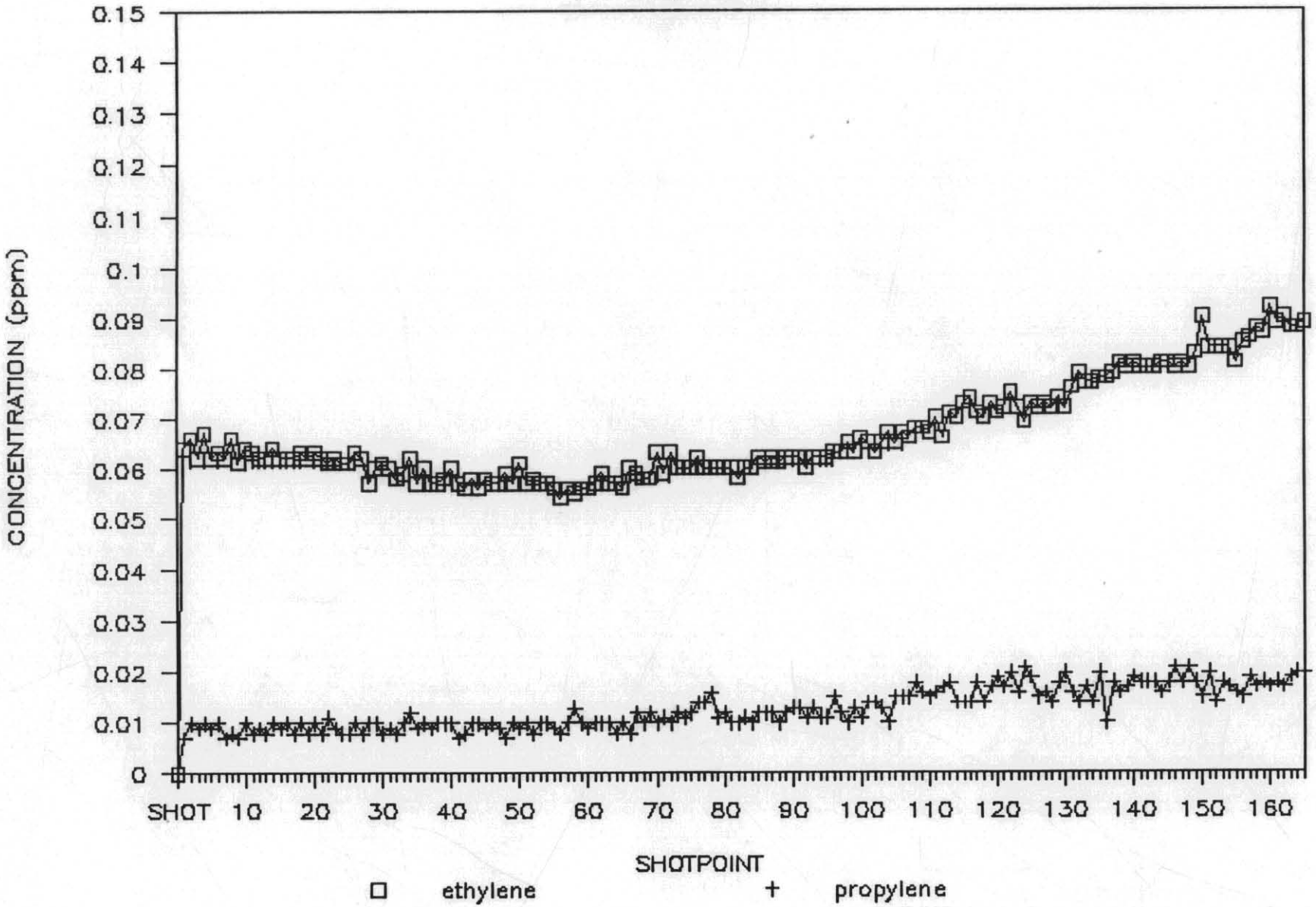


BASS BASIN

Survey Line 47



BASS BASIN

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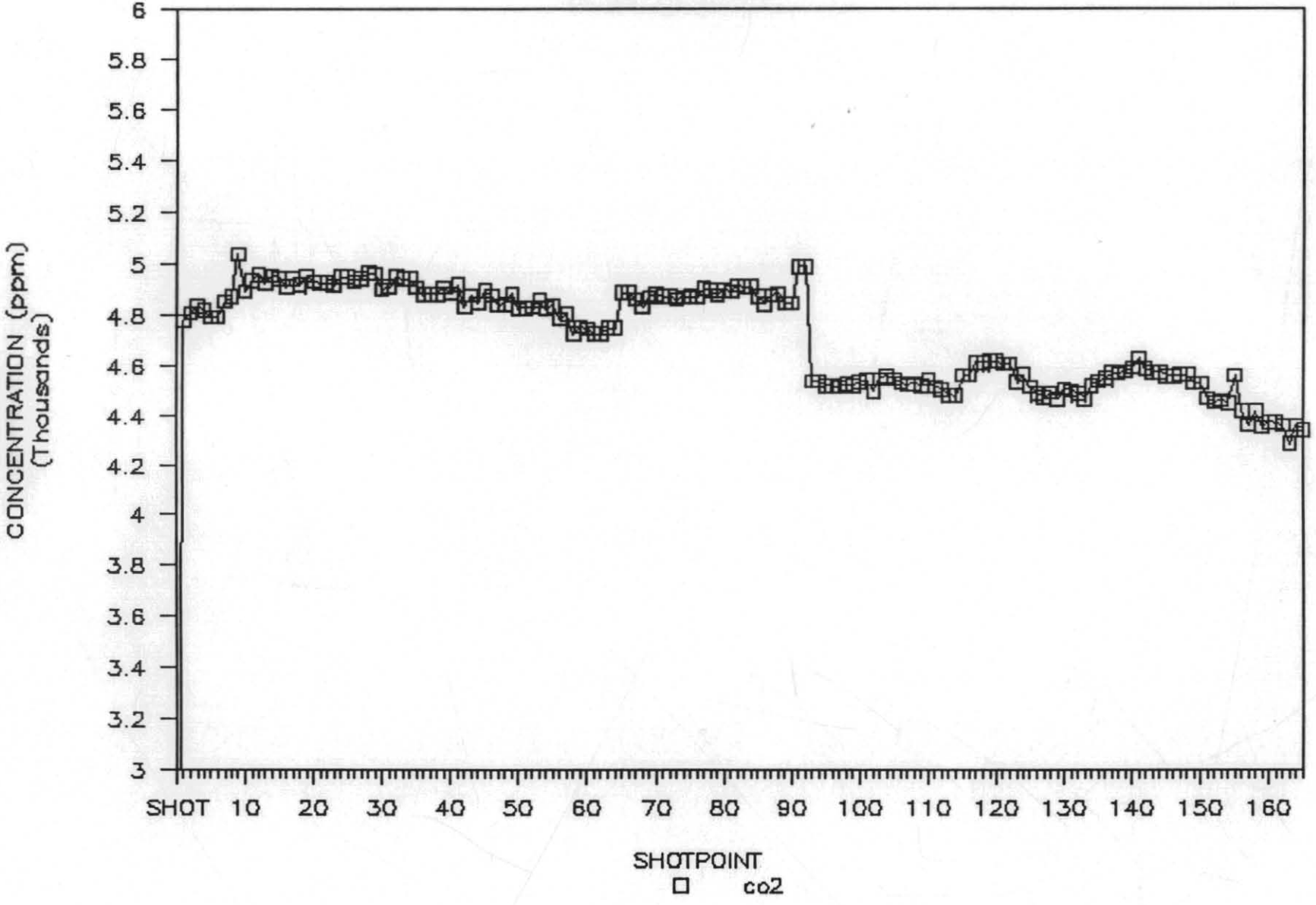
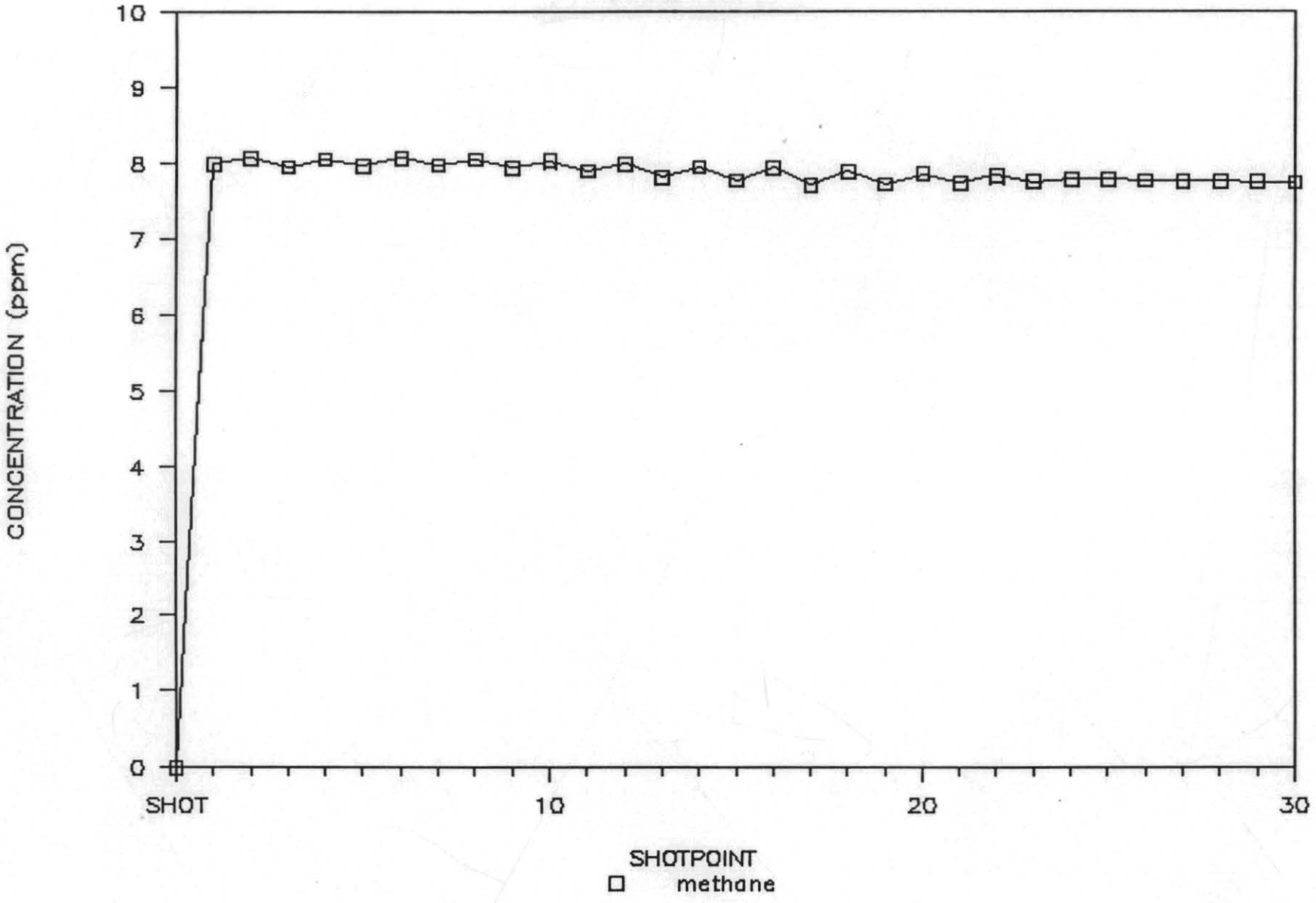


BASS BASIN

Survey Line 48



BASS BASIN

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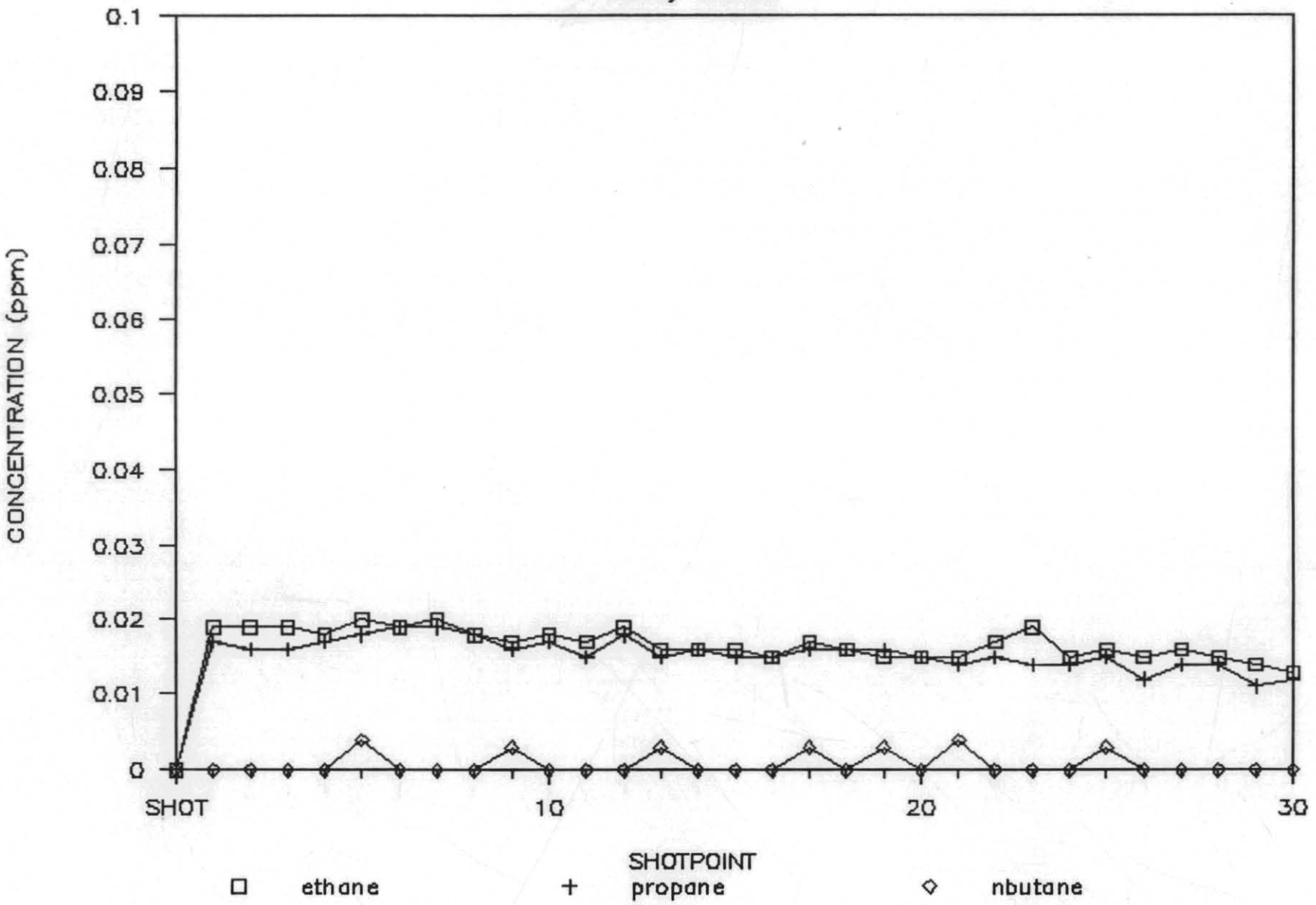

BASS BASIN

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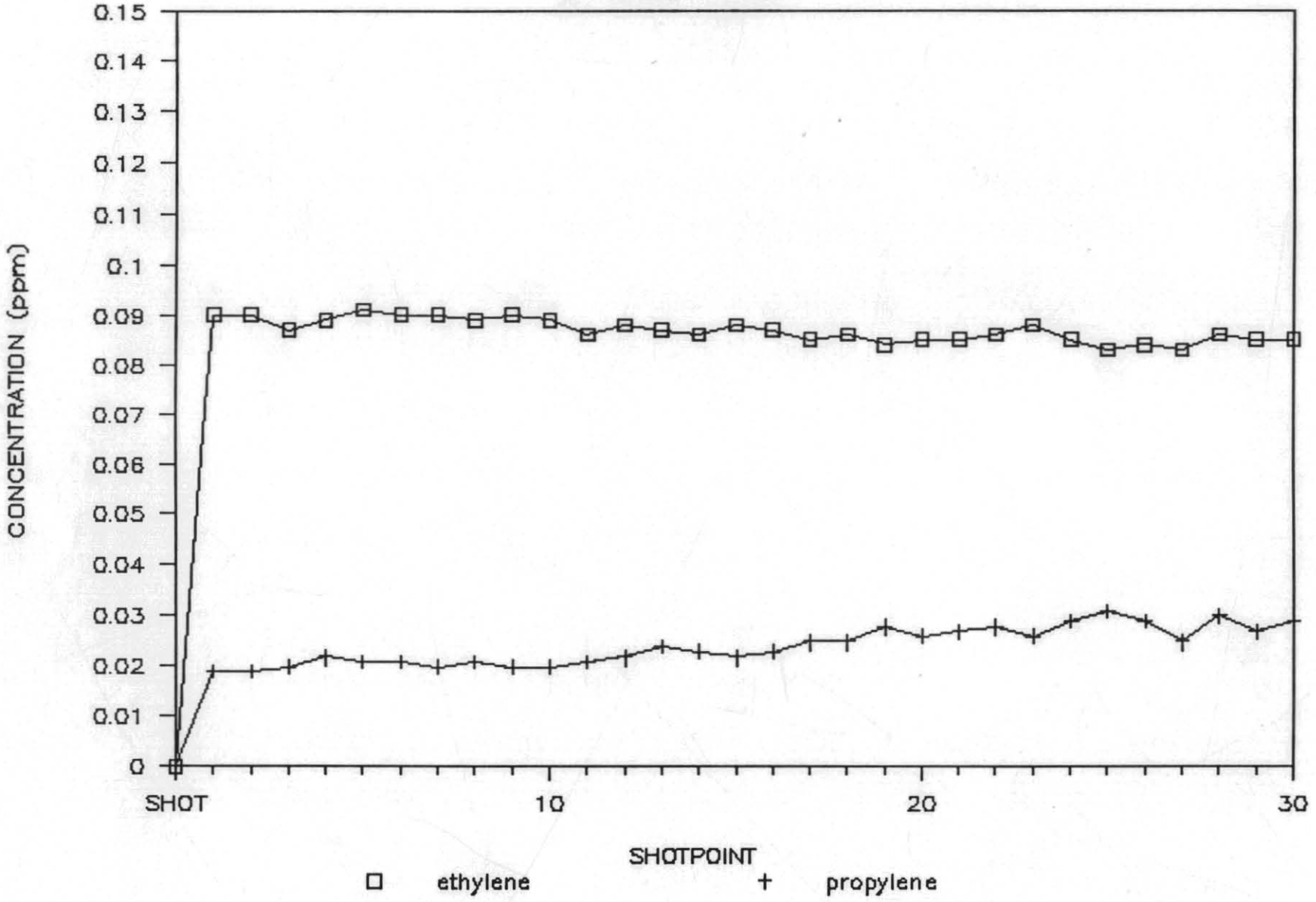

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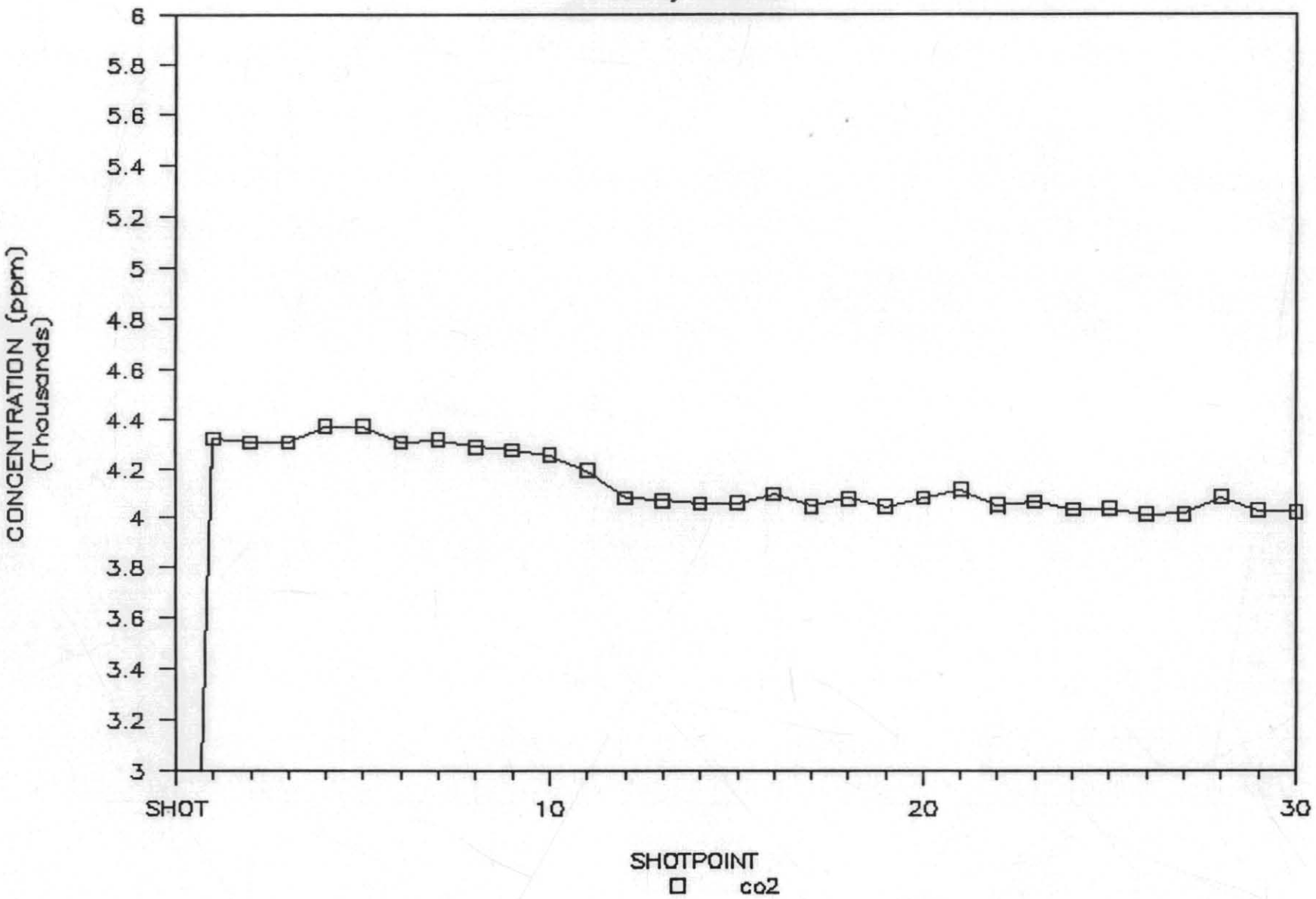
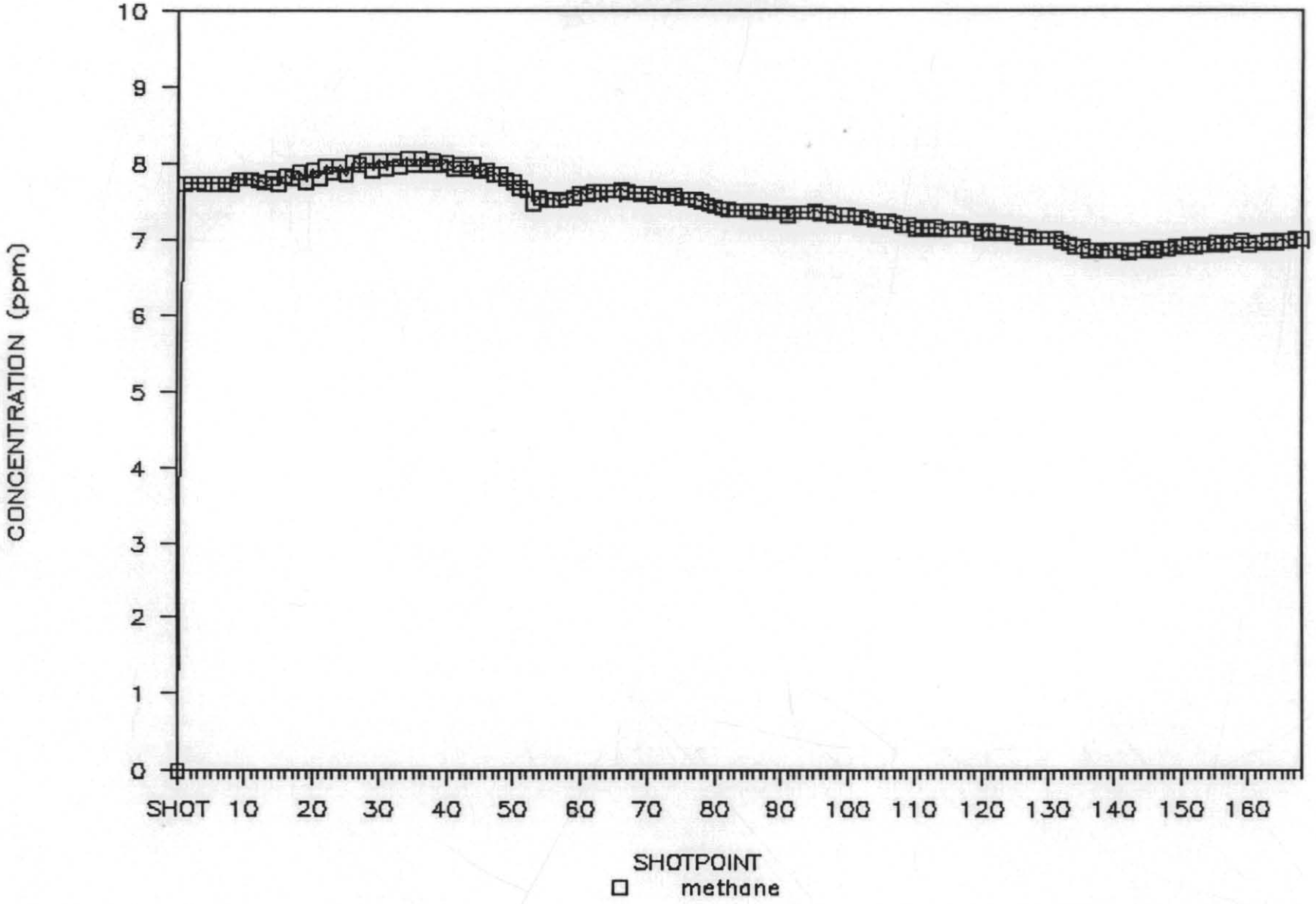


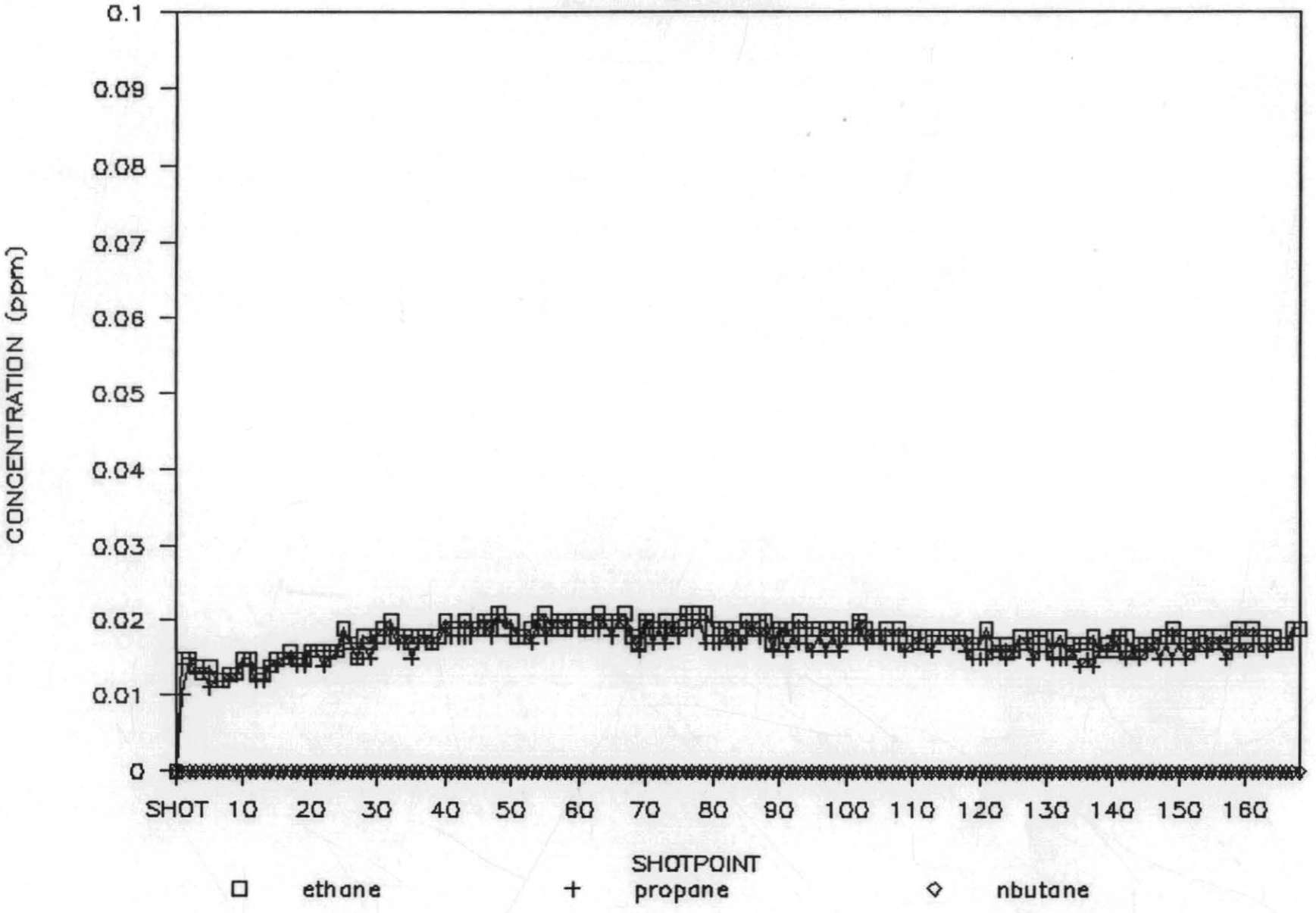
BASS BASIN

Survey Line 49



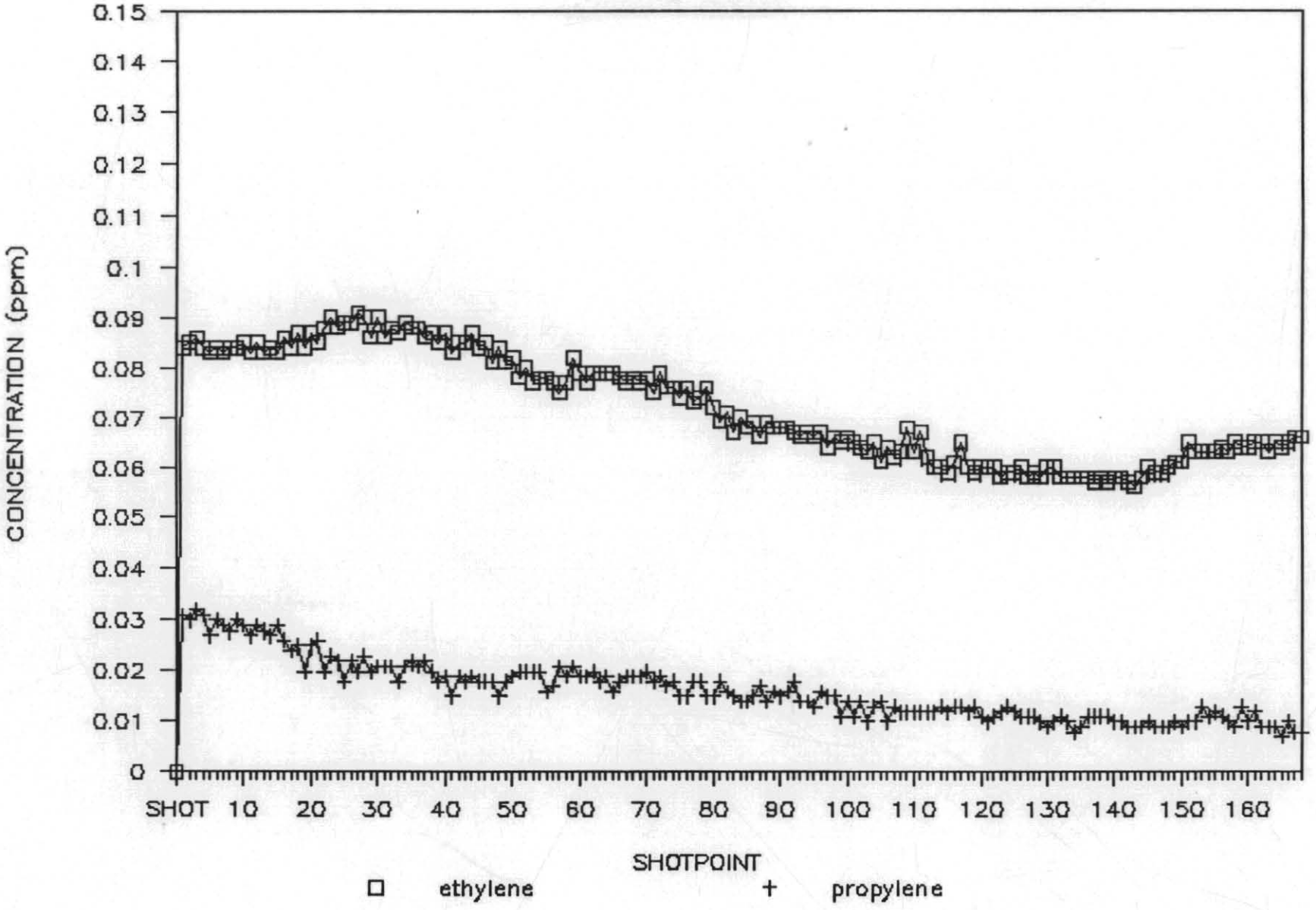
BASS BASIN

Survey Line 49



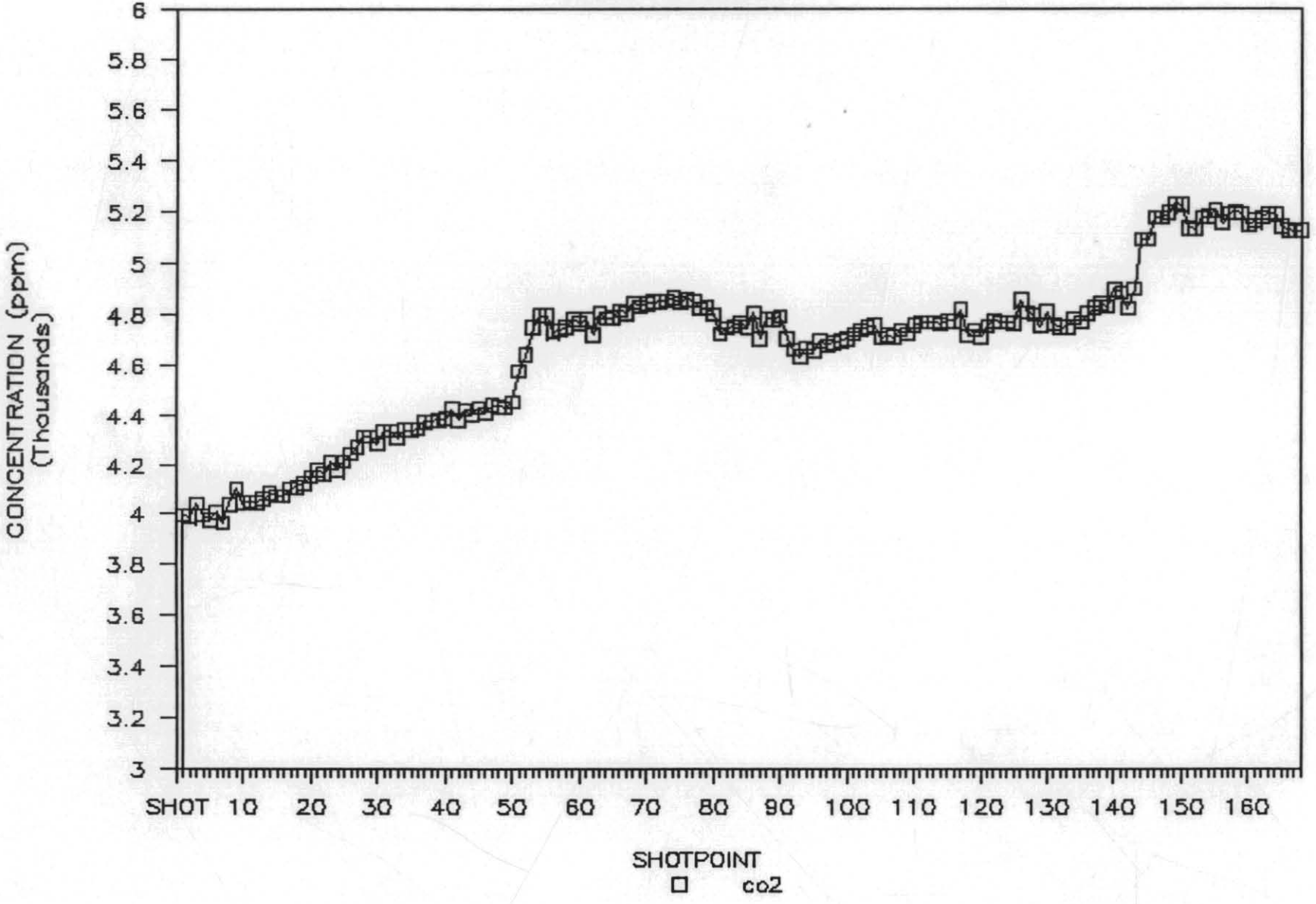
BASS BASIN

Survey Line 49



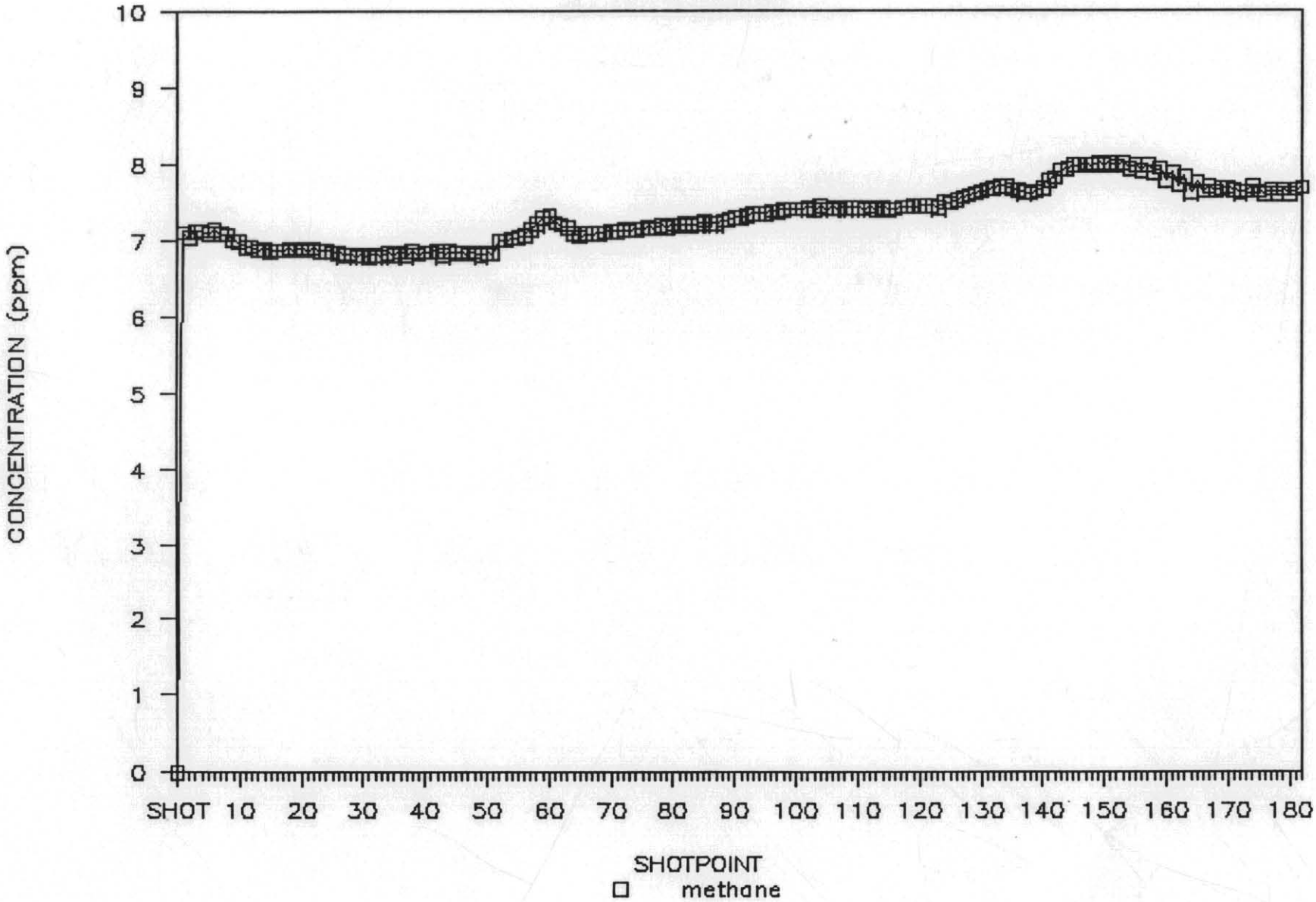
BASS BASIN

Survey Line 49



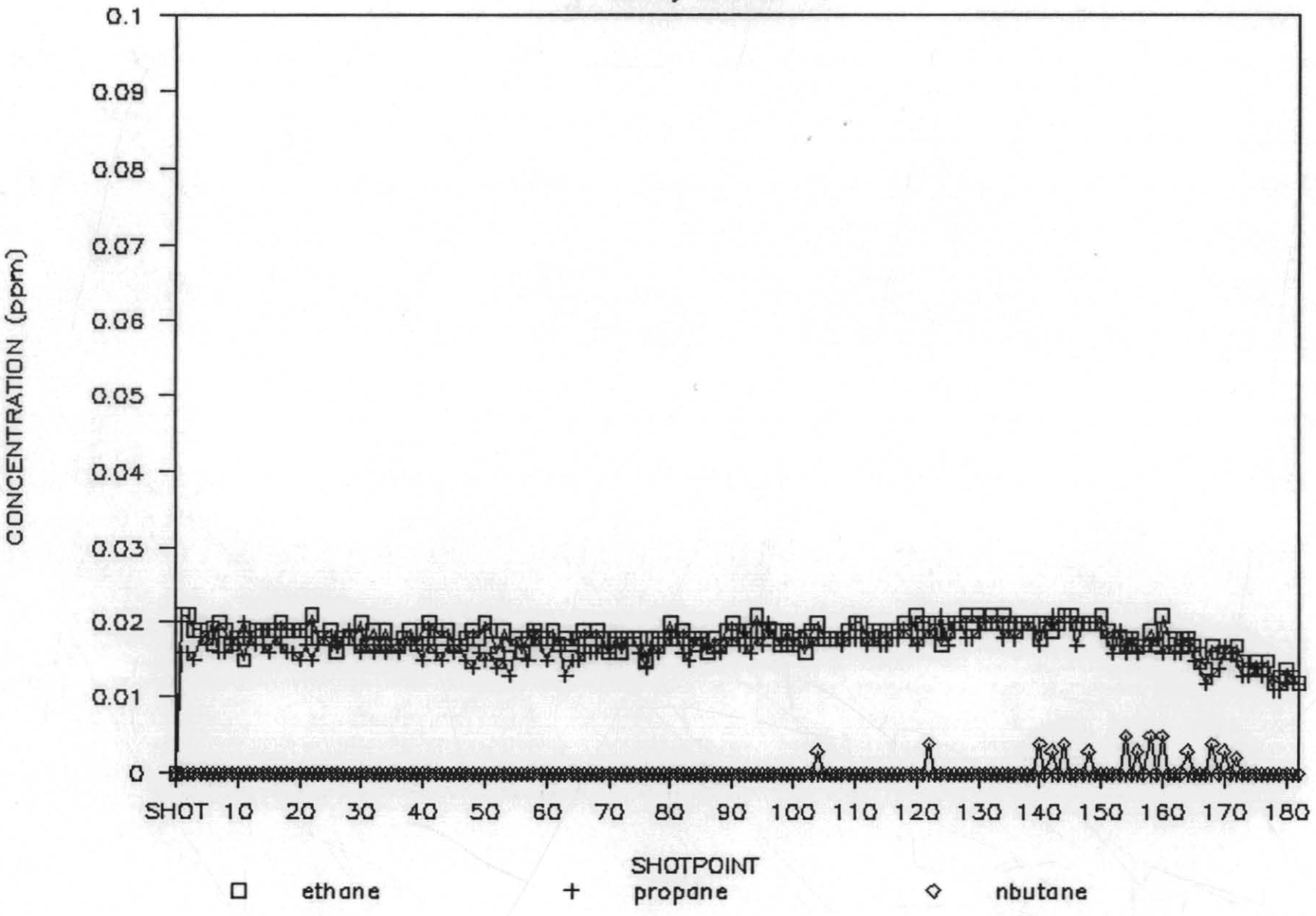
BASS BASIN

Survey Line 50



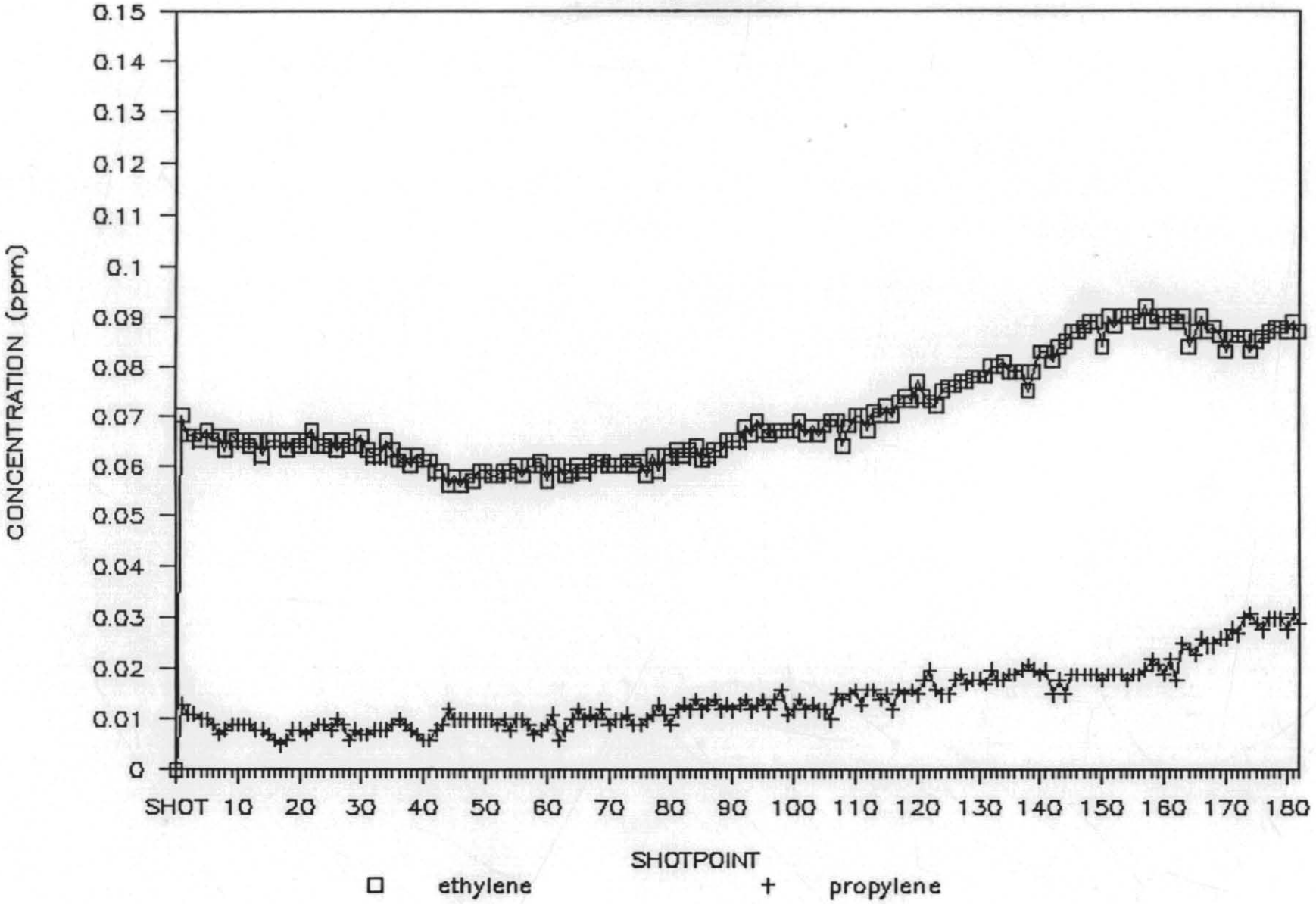
BASS BASIN

Survey Line 50



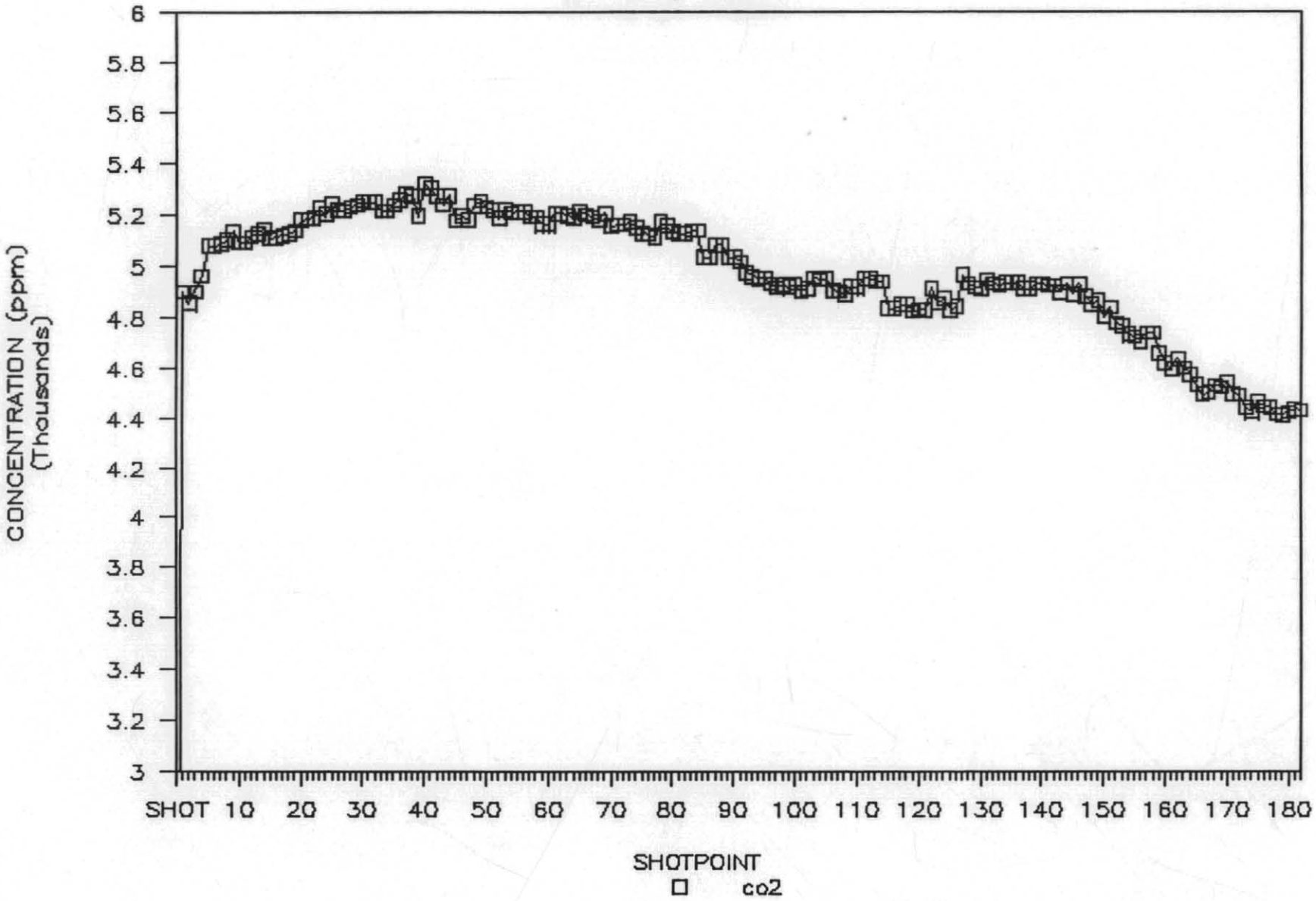
BASS BASIN

Survey Line 50



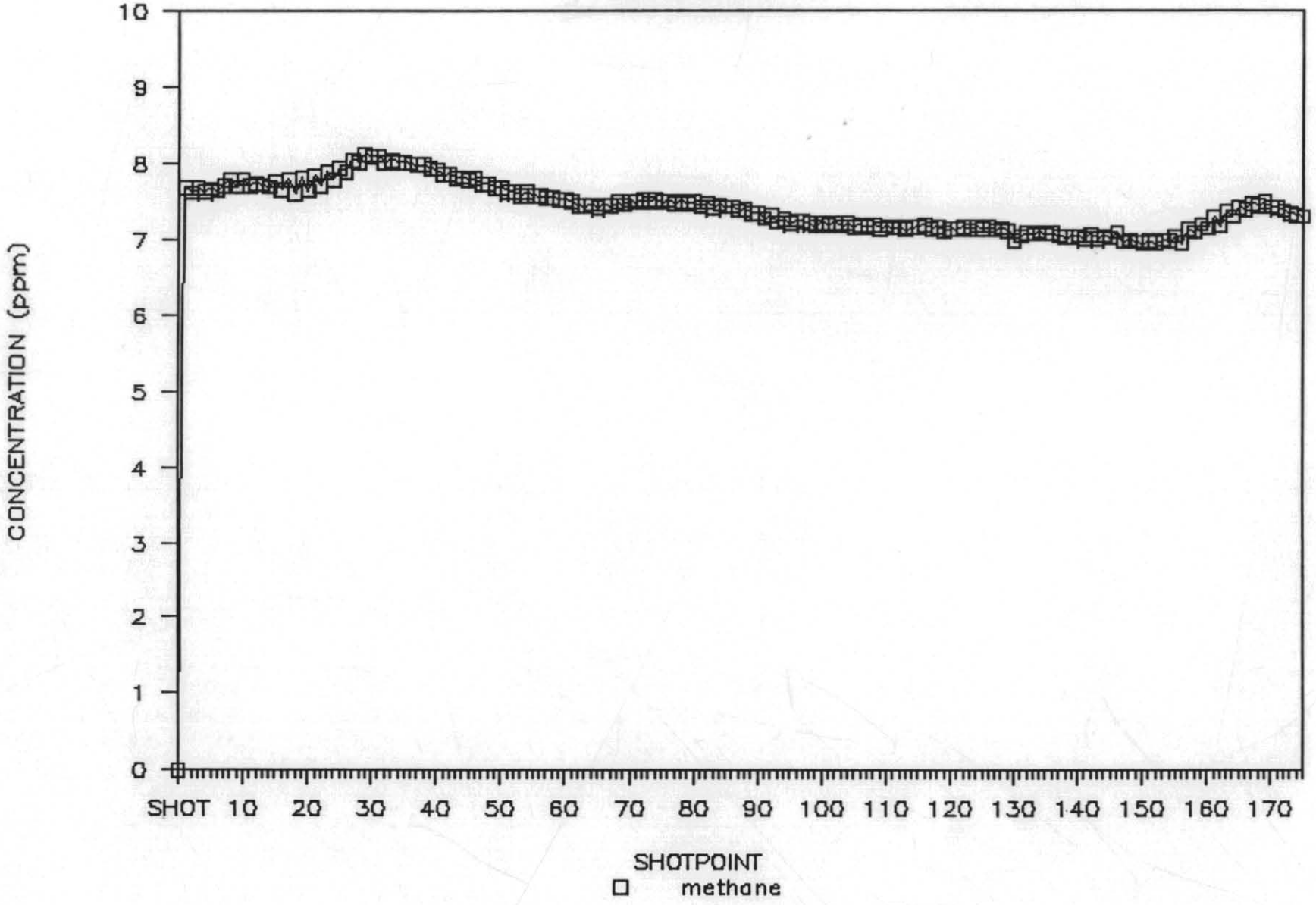
BASS BASIN

Survey Line 50



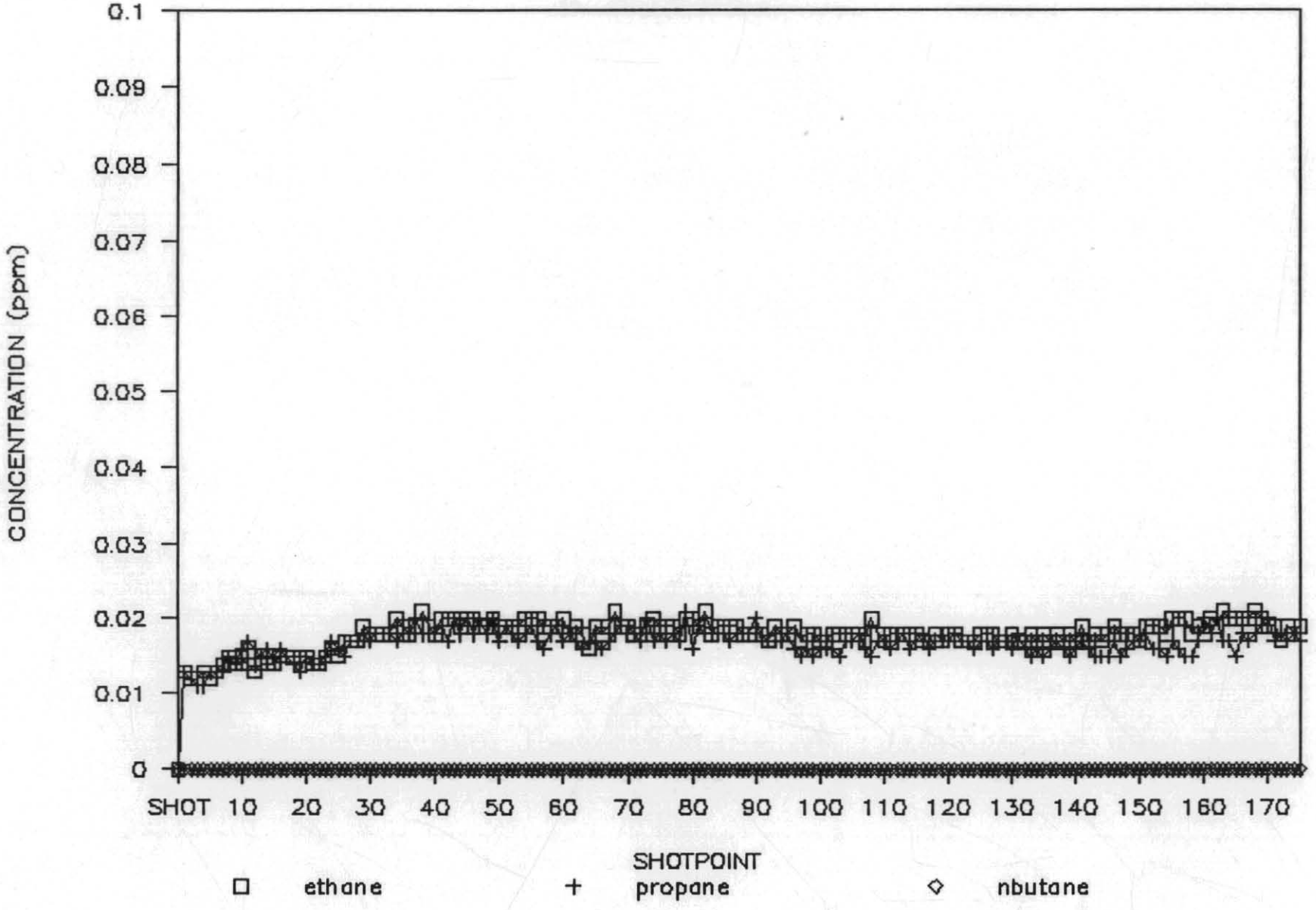
BASS BASIN

Survey Line 51



BASS BASIN

Survey Line 51



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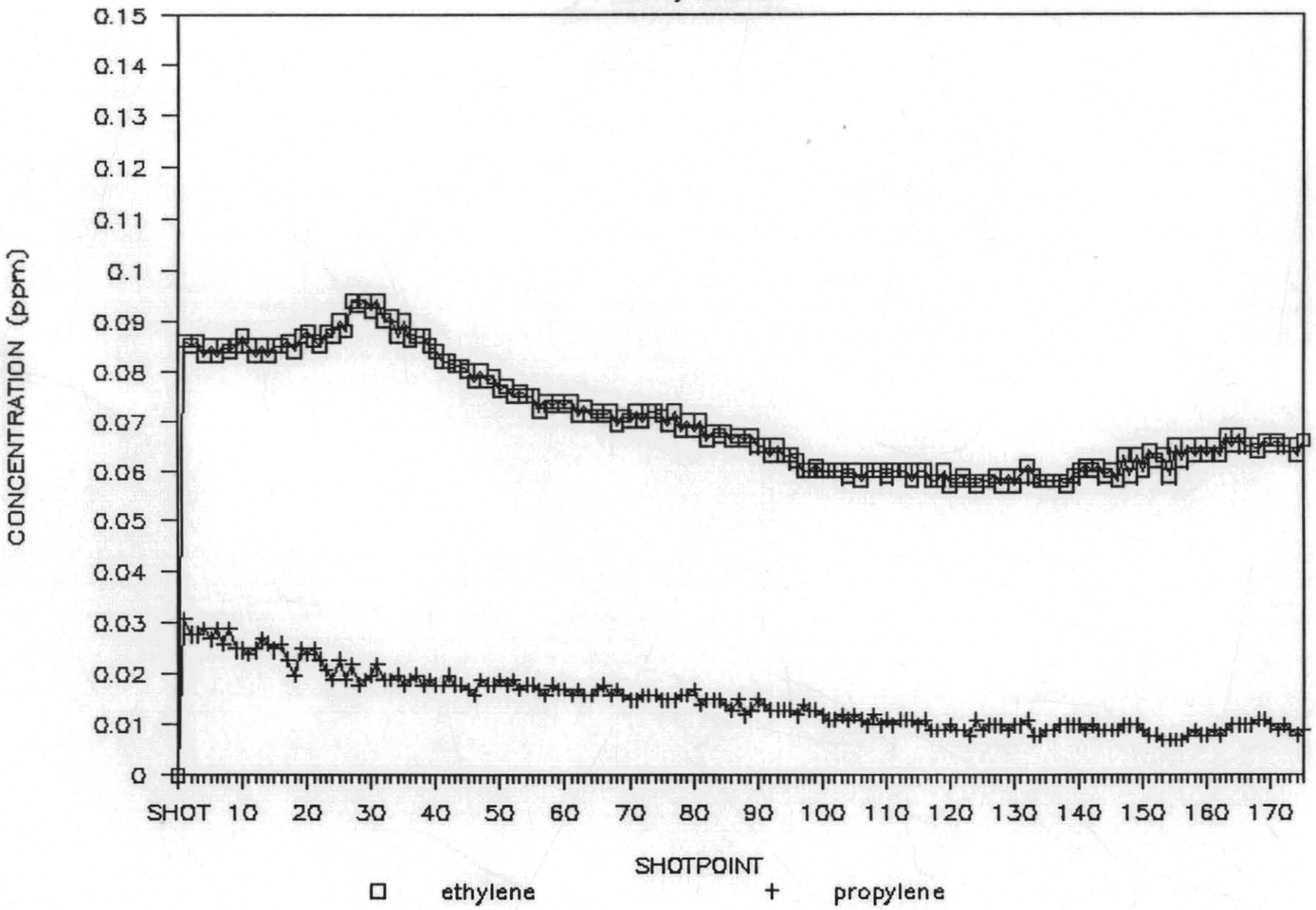

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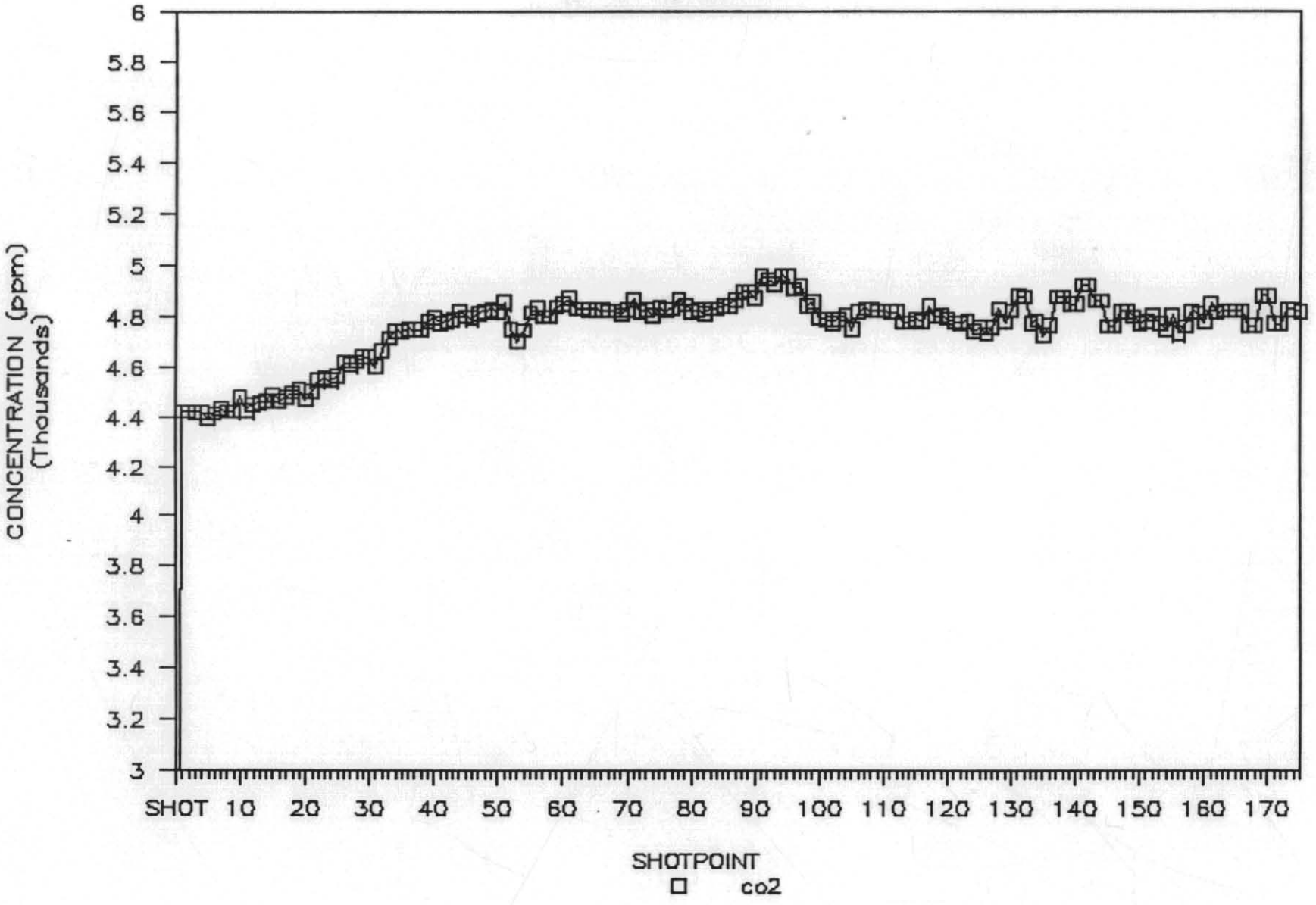
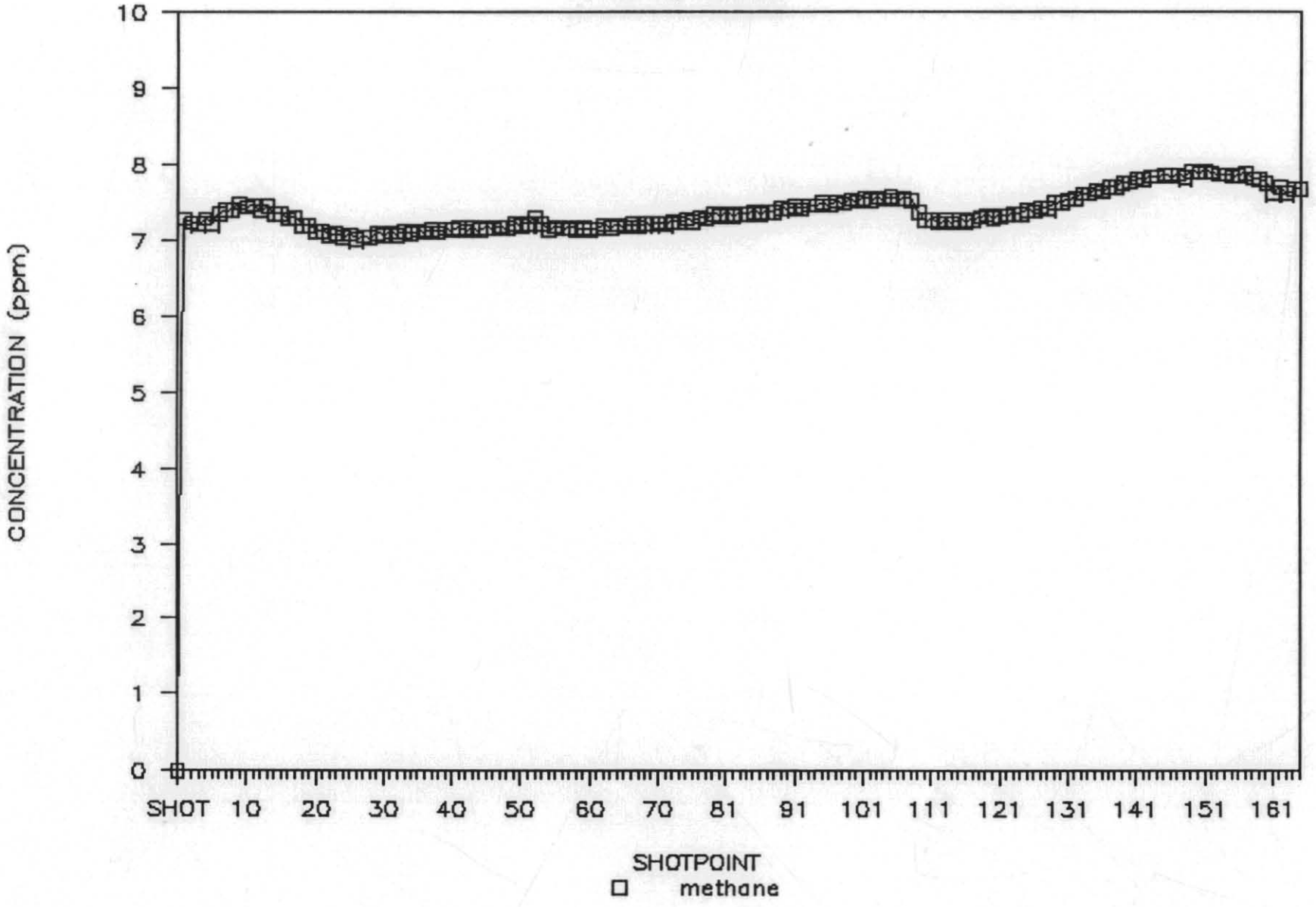


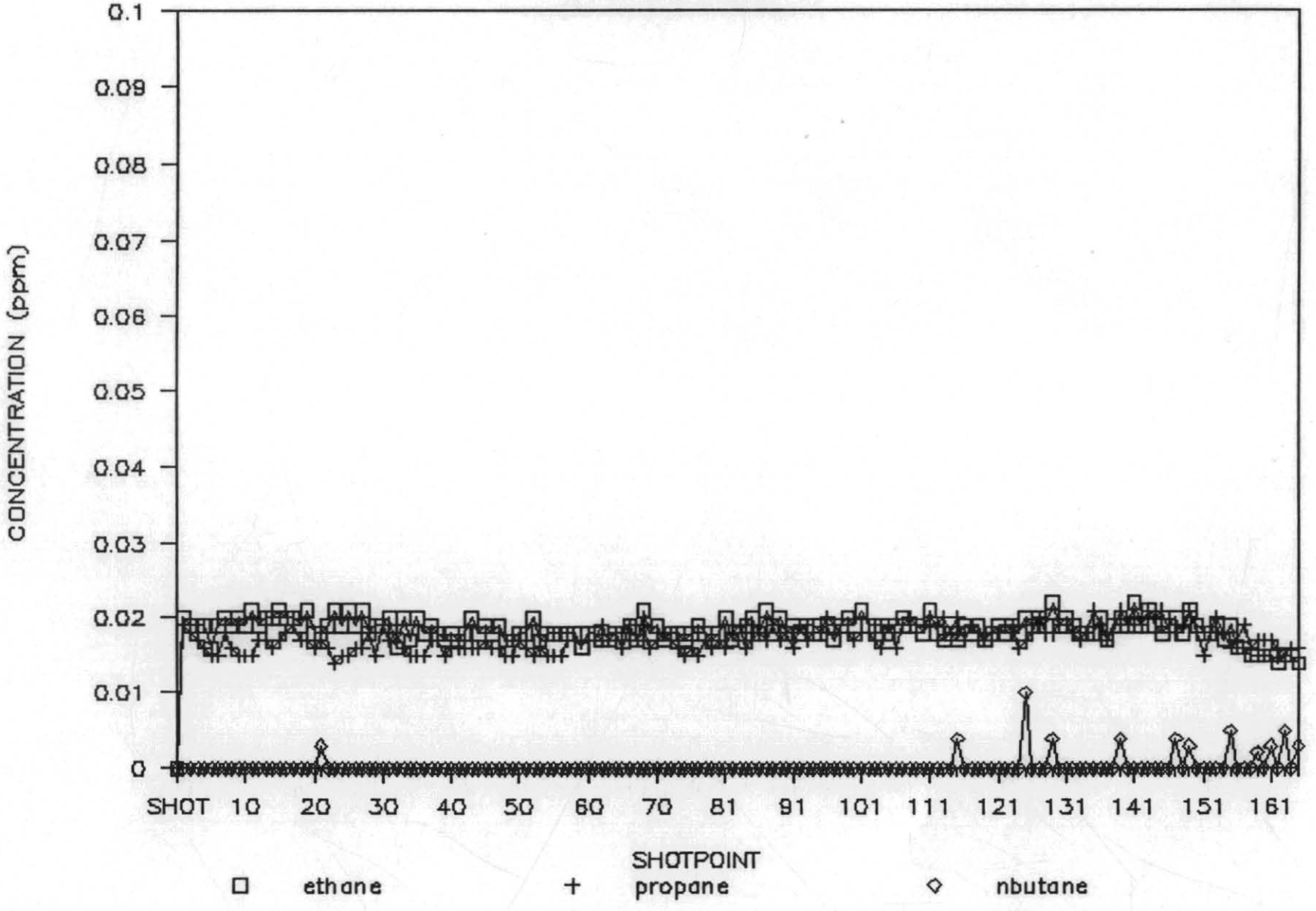
BASS BASIN

Survey Line 52



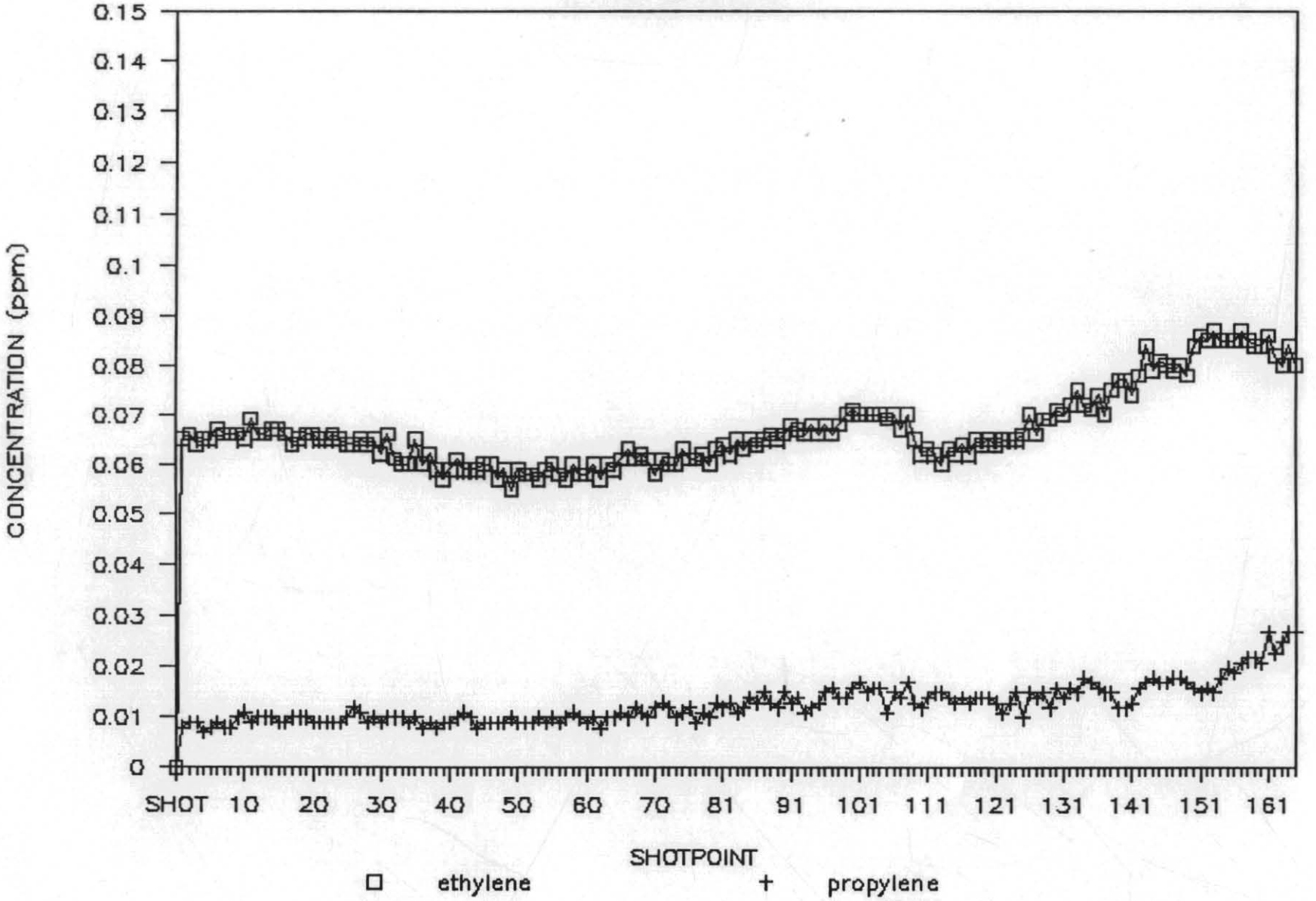
BASS BASIN

Survey Line 52



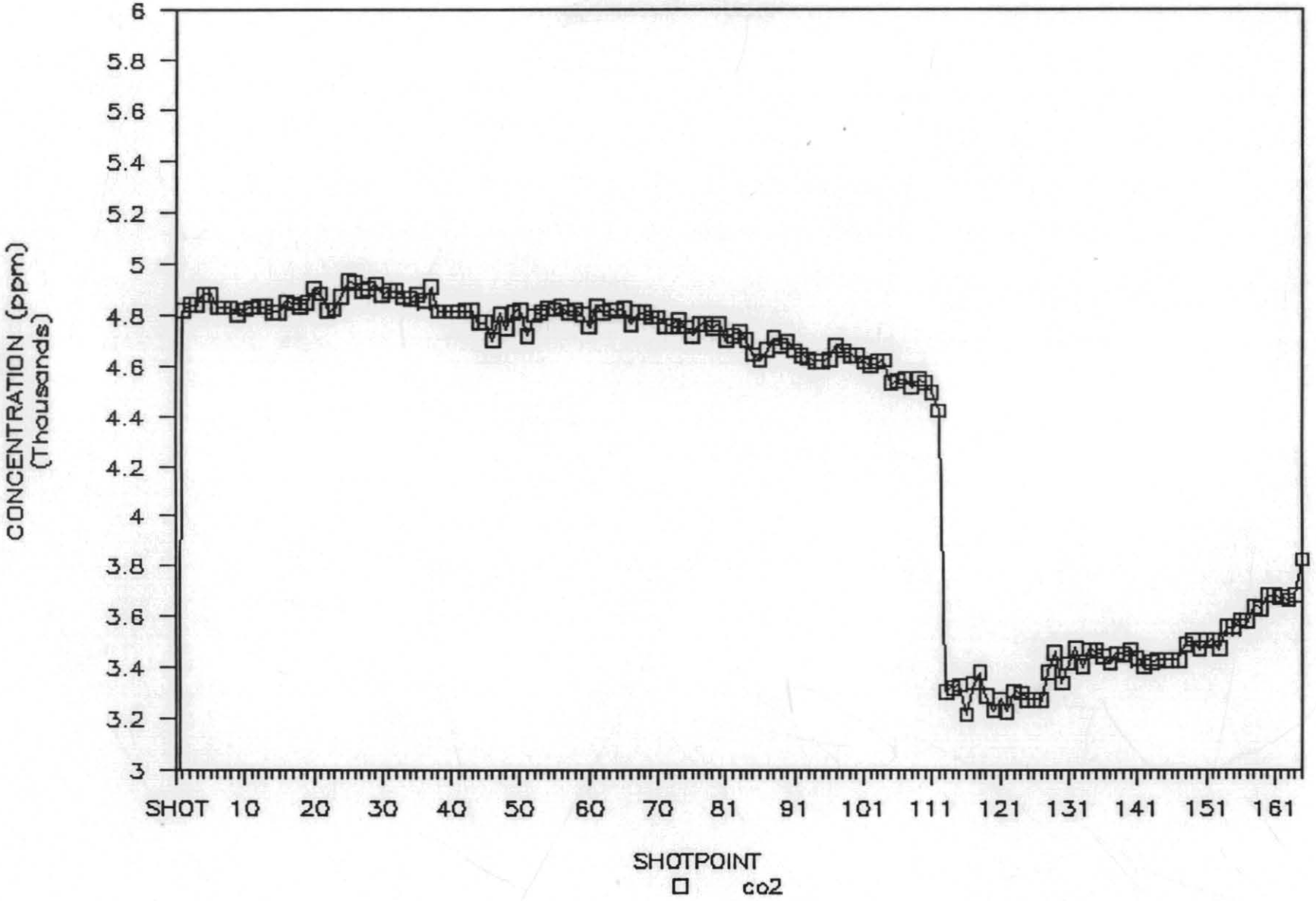
BASS BASIN

Survey Line 52



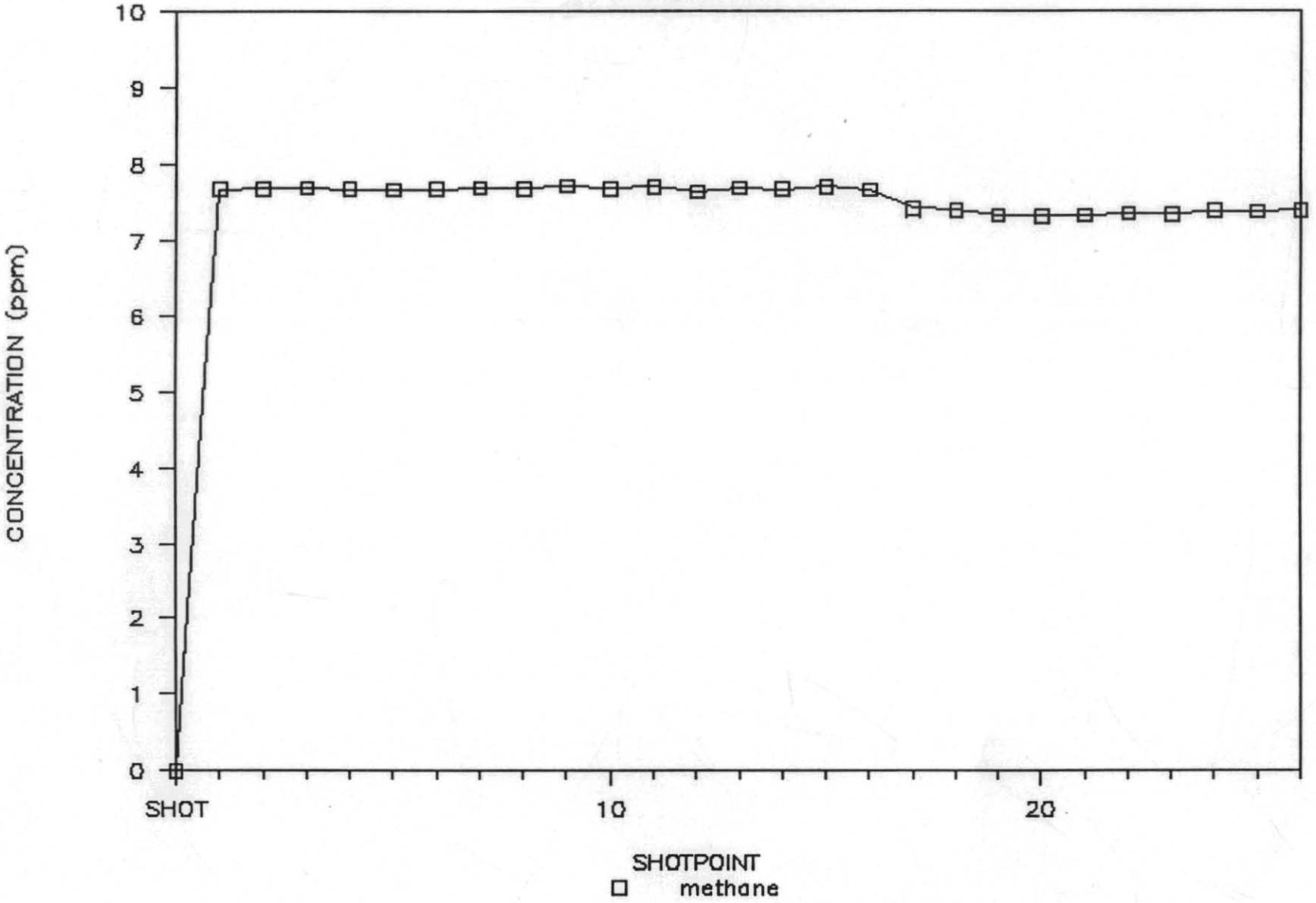
BASS BASIN

Survey Line 52



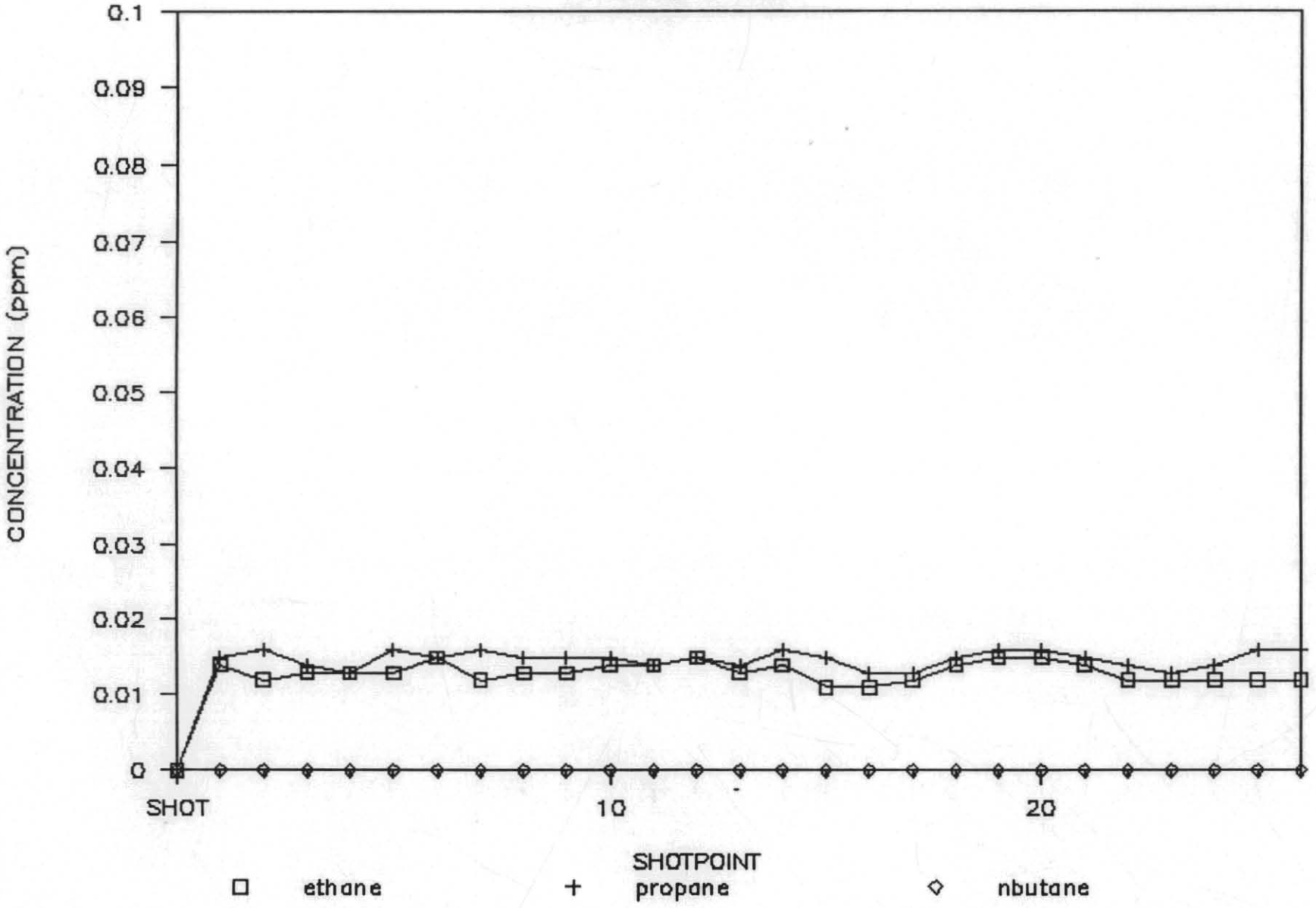
BASS BASIN

Survey Line 53



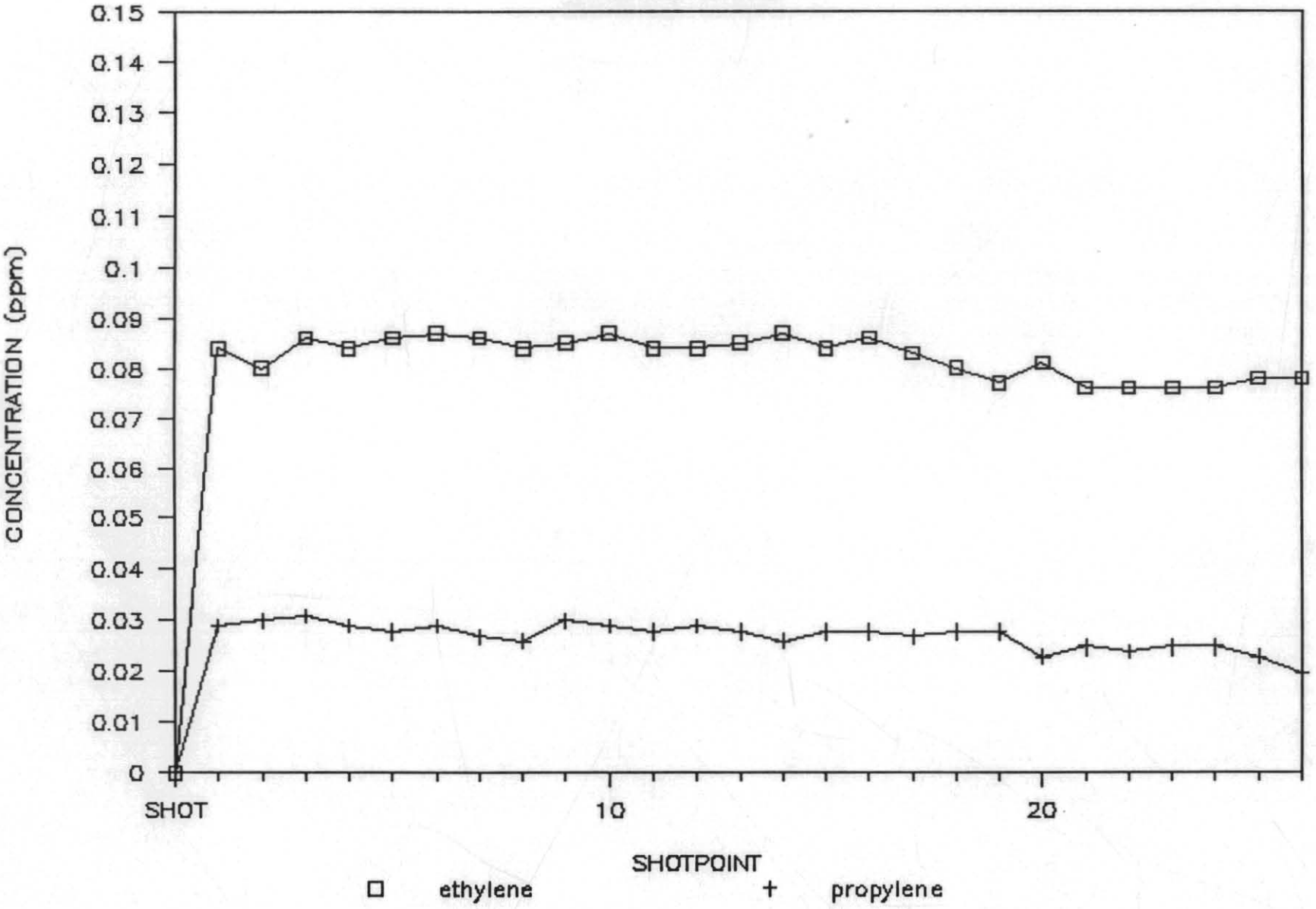
BASS BASIN

Survey Line 53



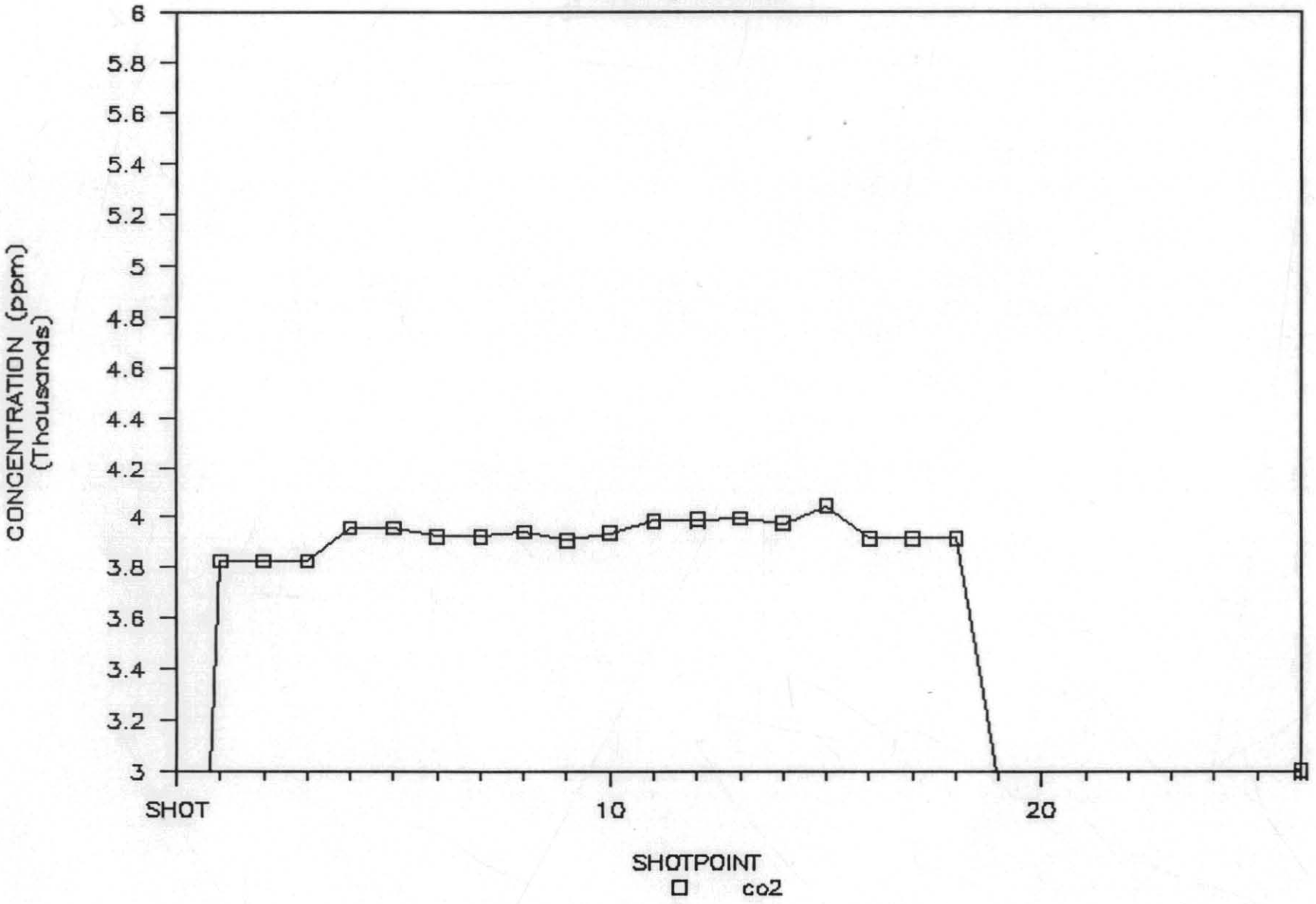
BASS BASIN

Survey Line 53



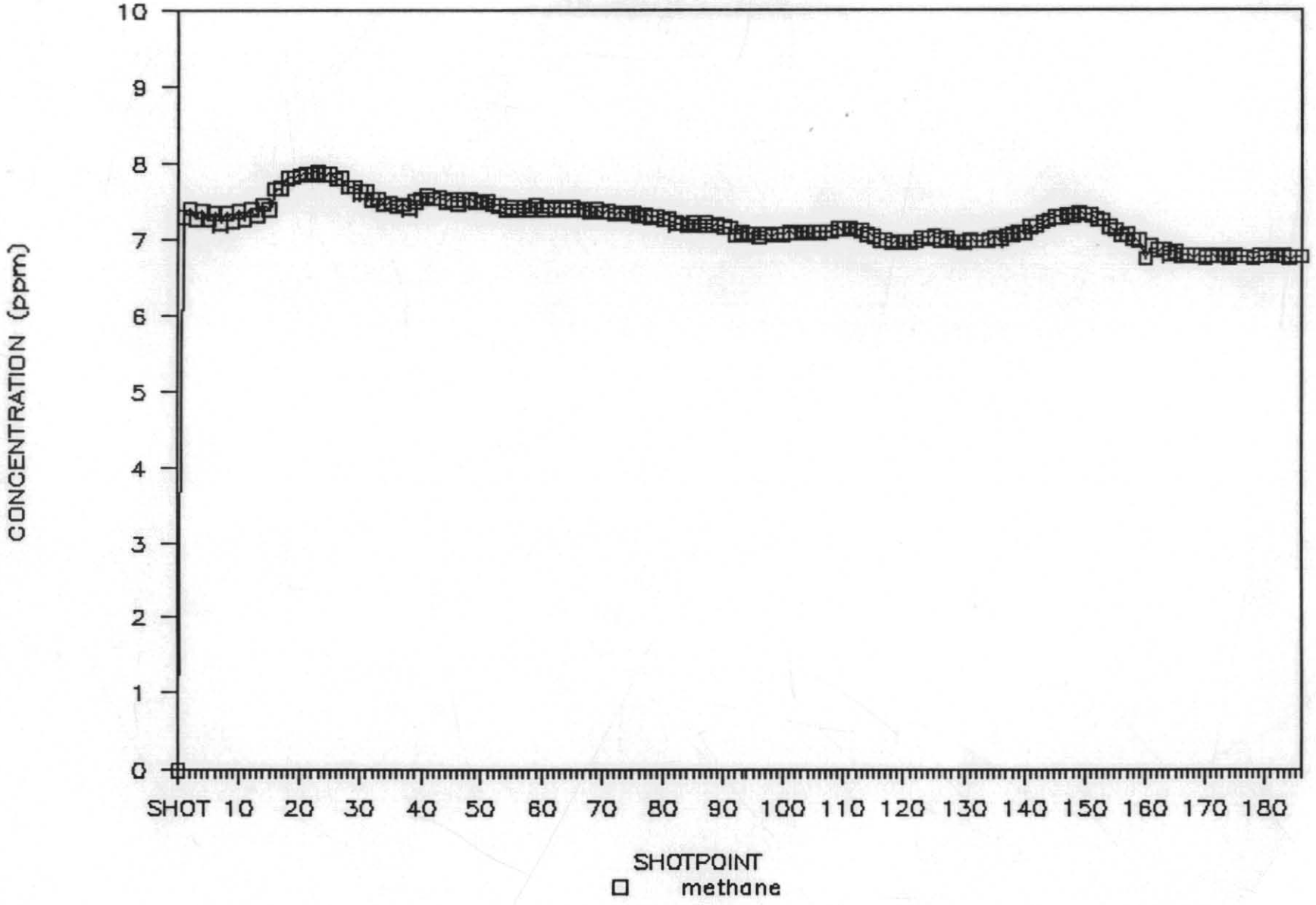
BASS BASIN

Survey Line 53



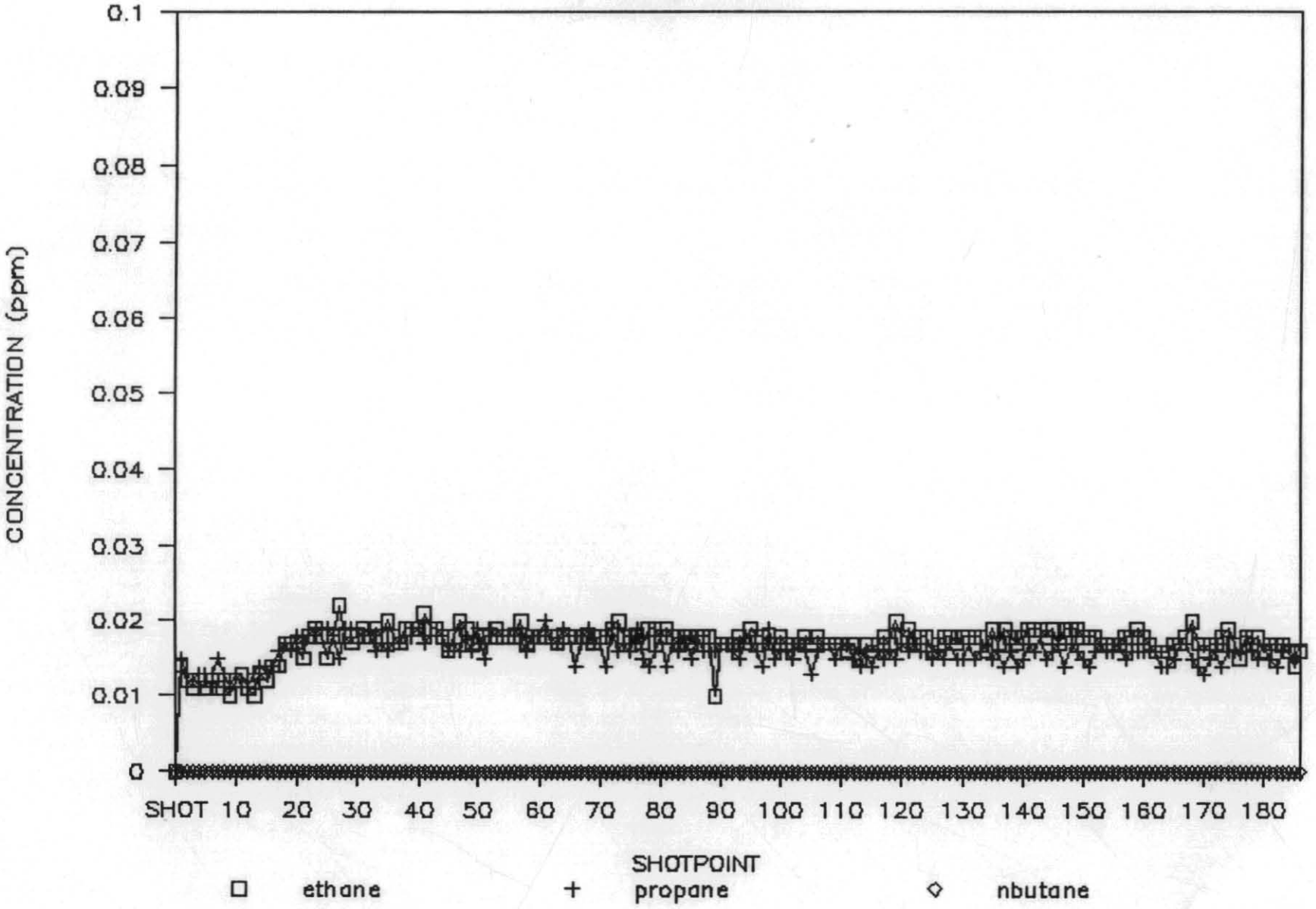
BASS BASIN

Survey Line 54



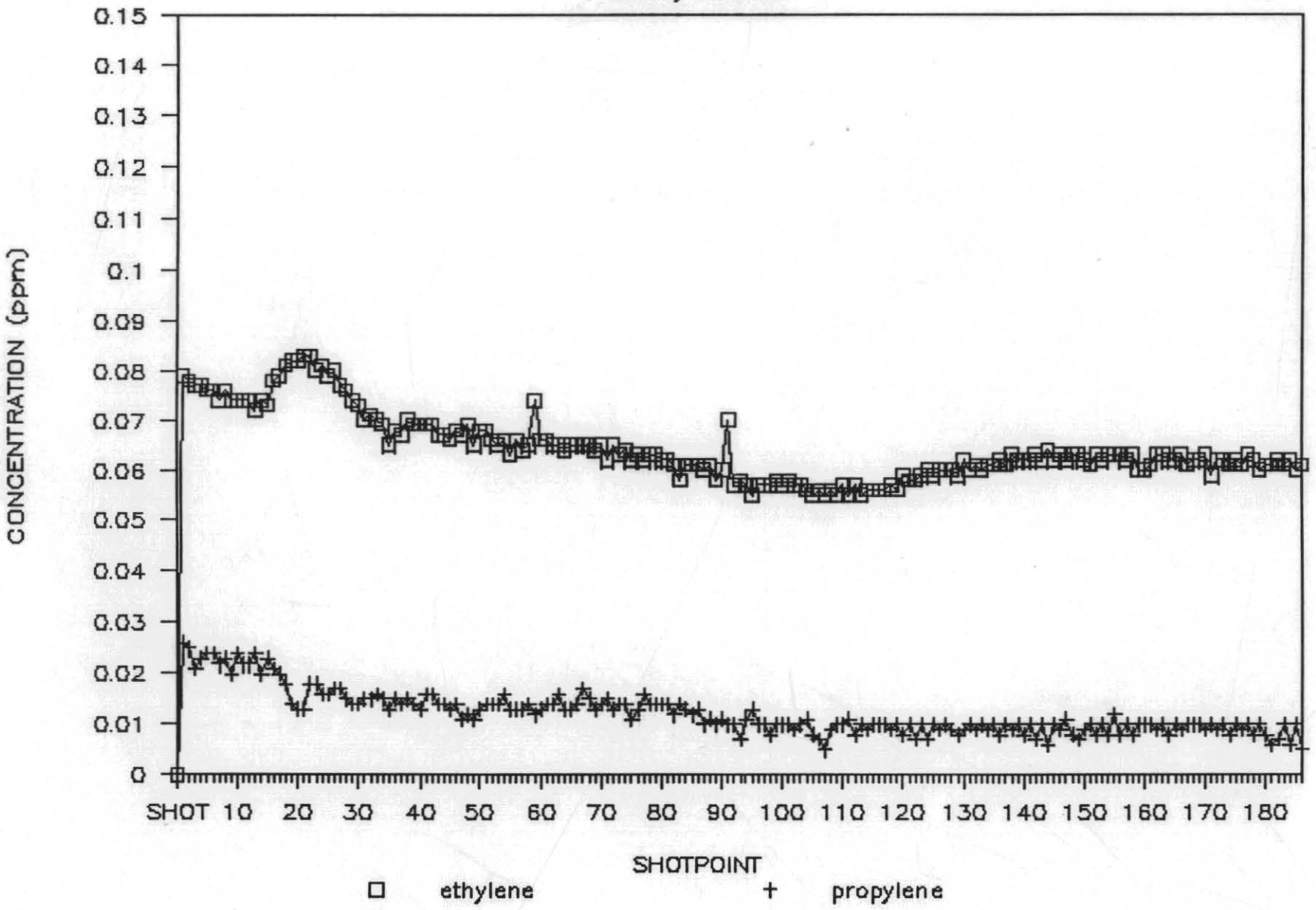
BASS BASIN

Survey Line 54



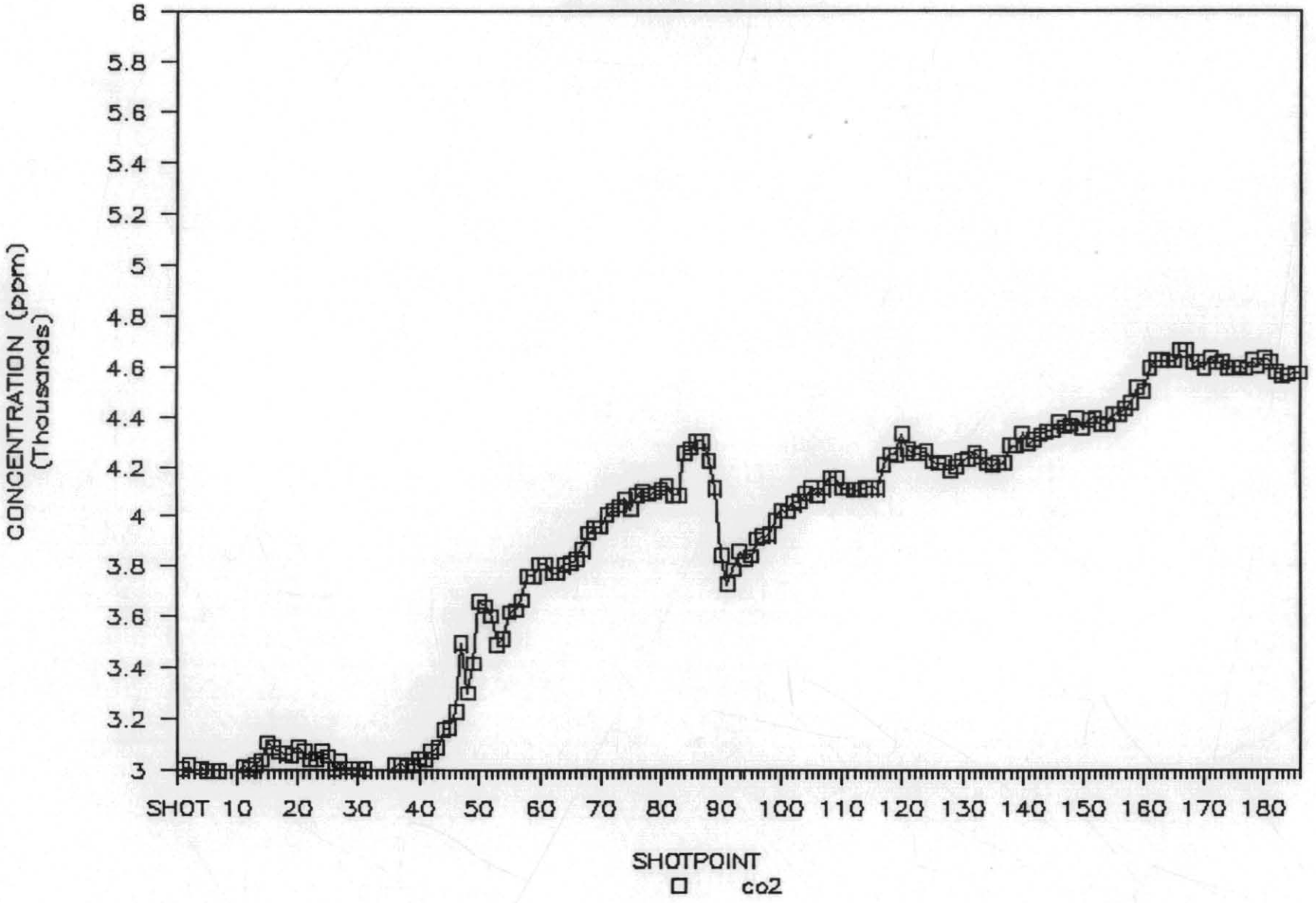
BASS BASIN

Survey Line 54



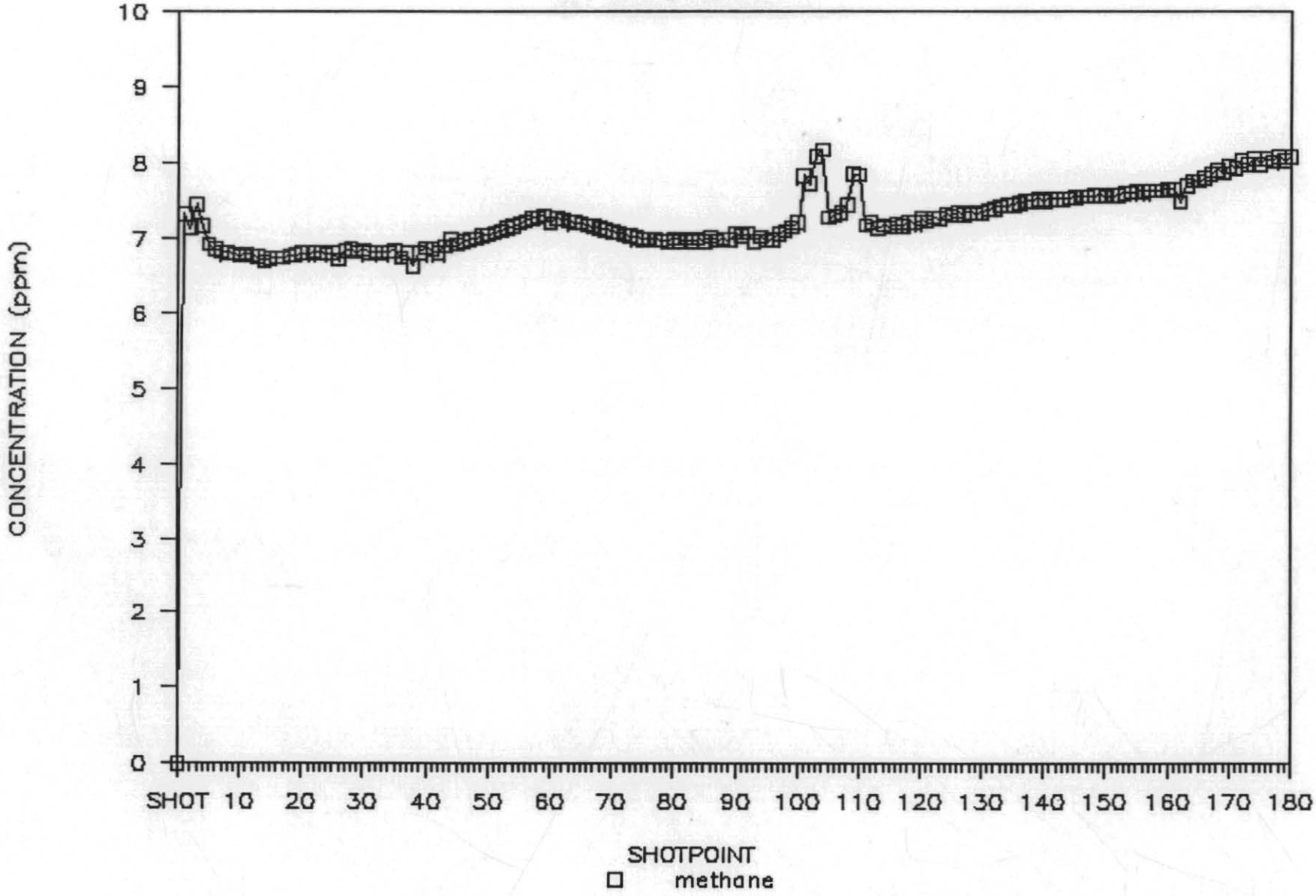
BASS BASIN

Survey Line 54



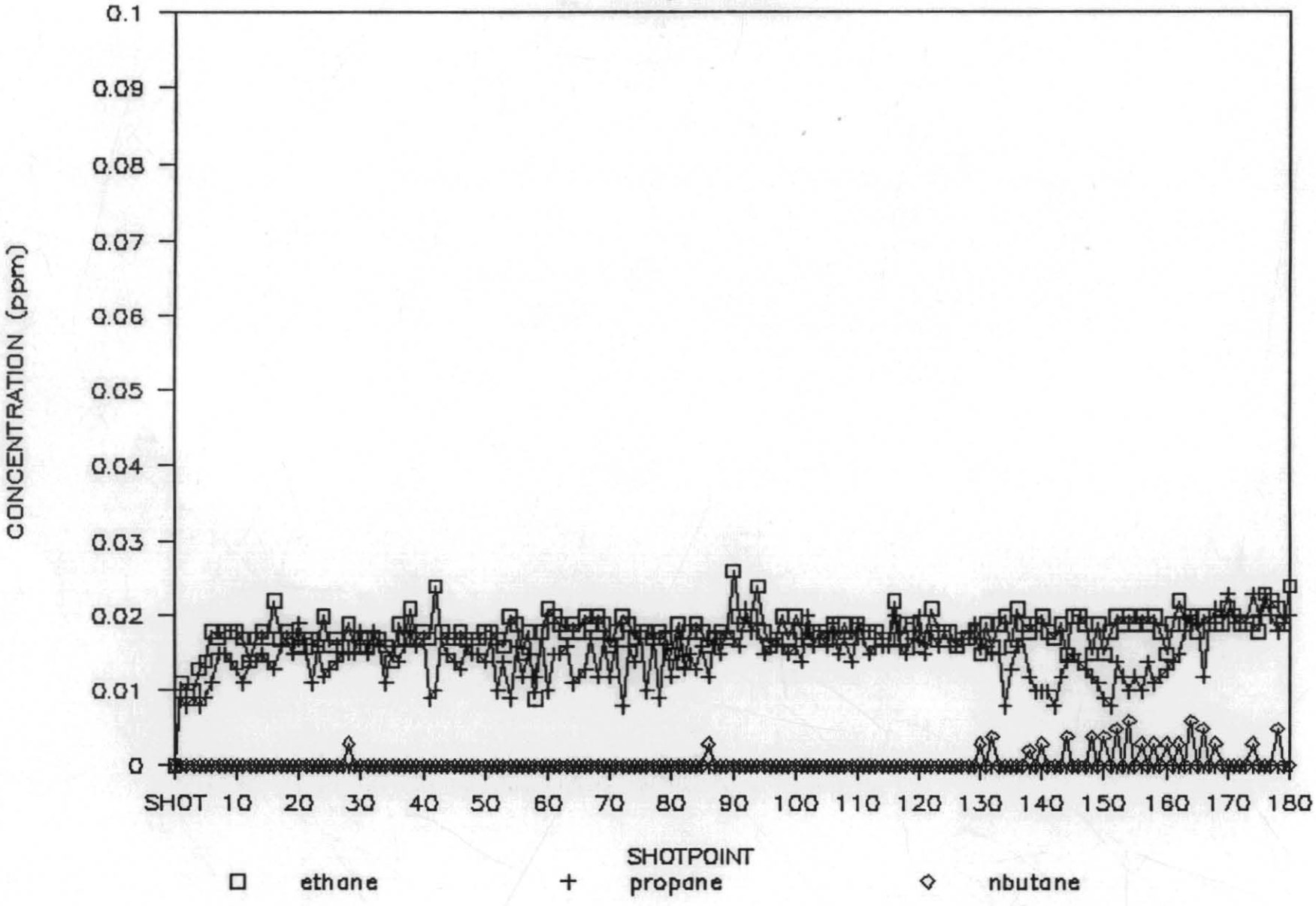
BASS BASIN

Survey Line 55



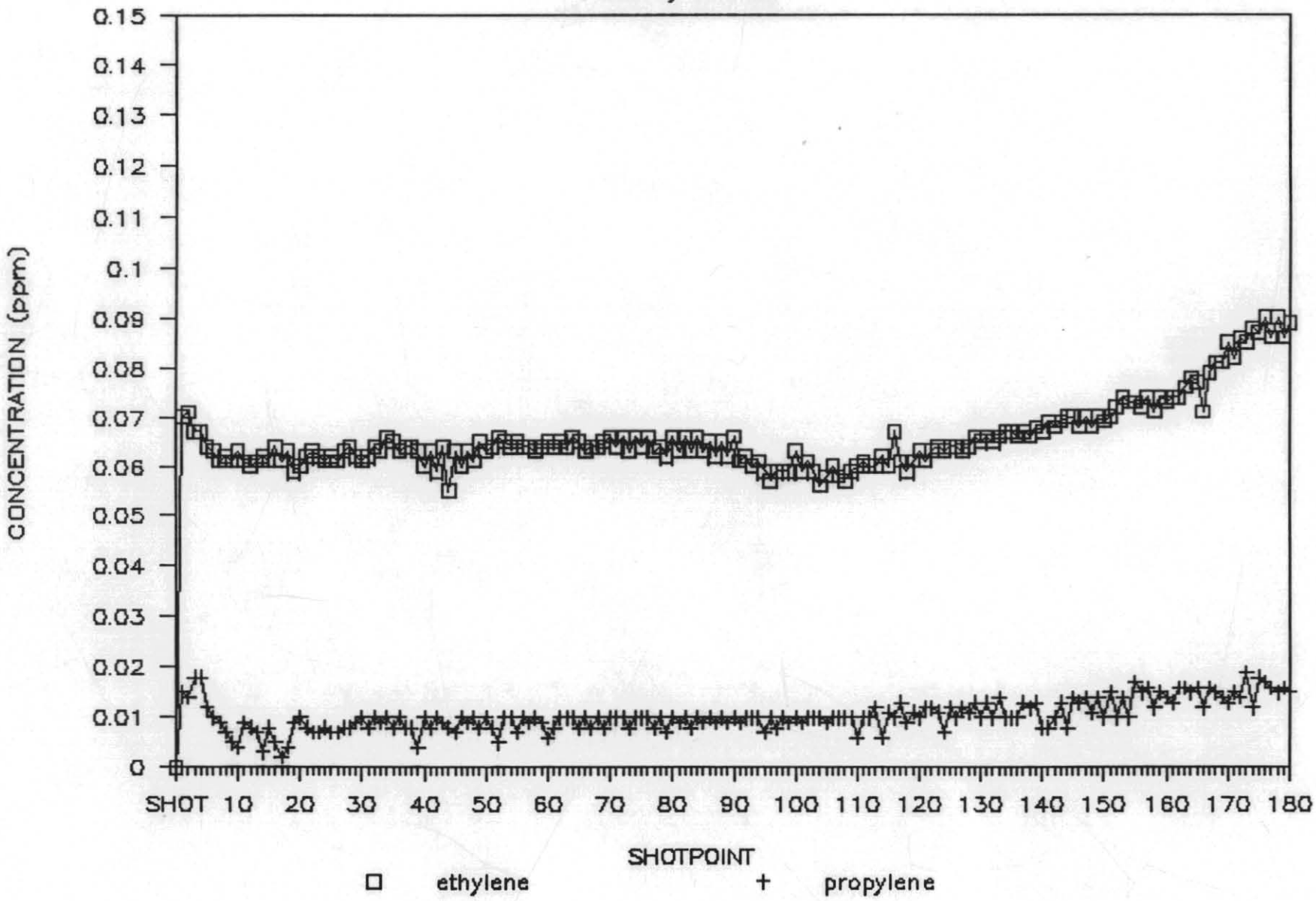
BASS BASIN

Survey Line 55



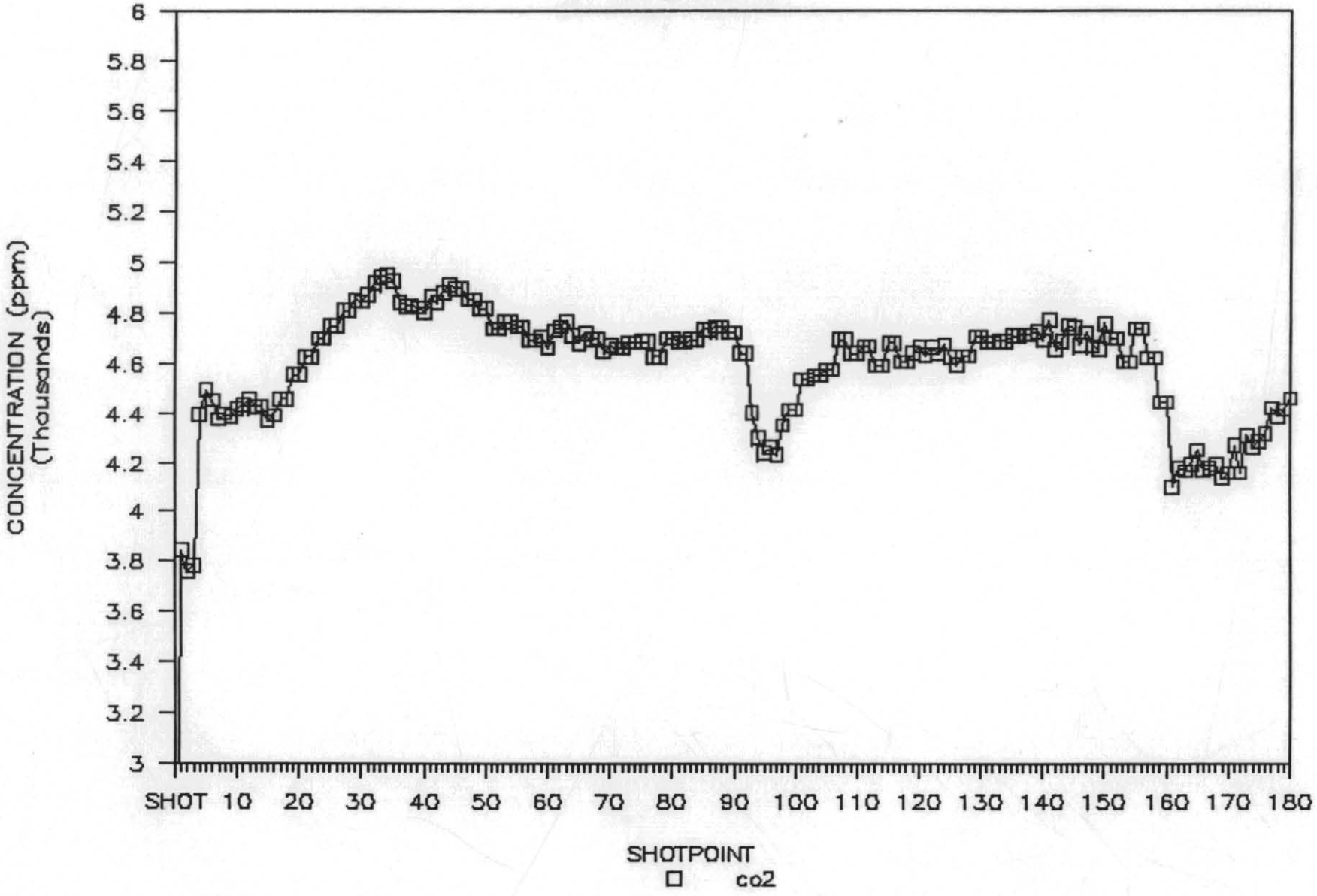
BASS BASIN

Survey Line 55



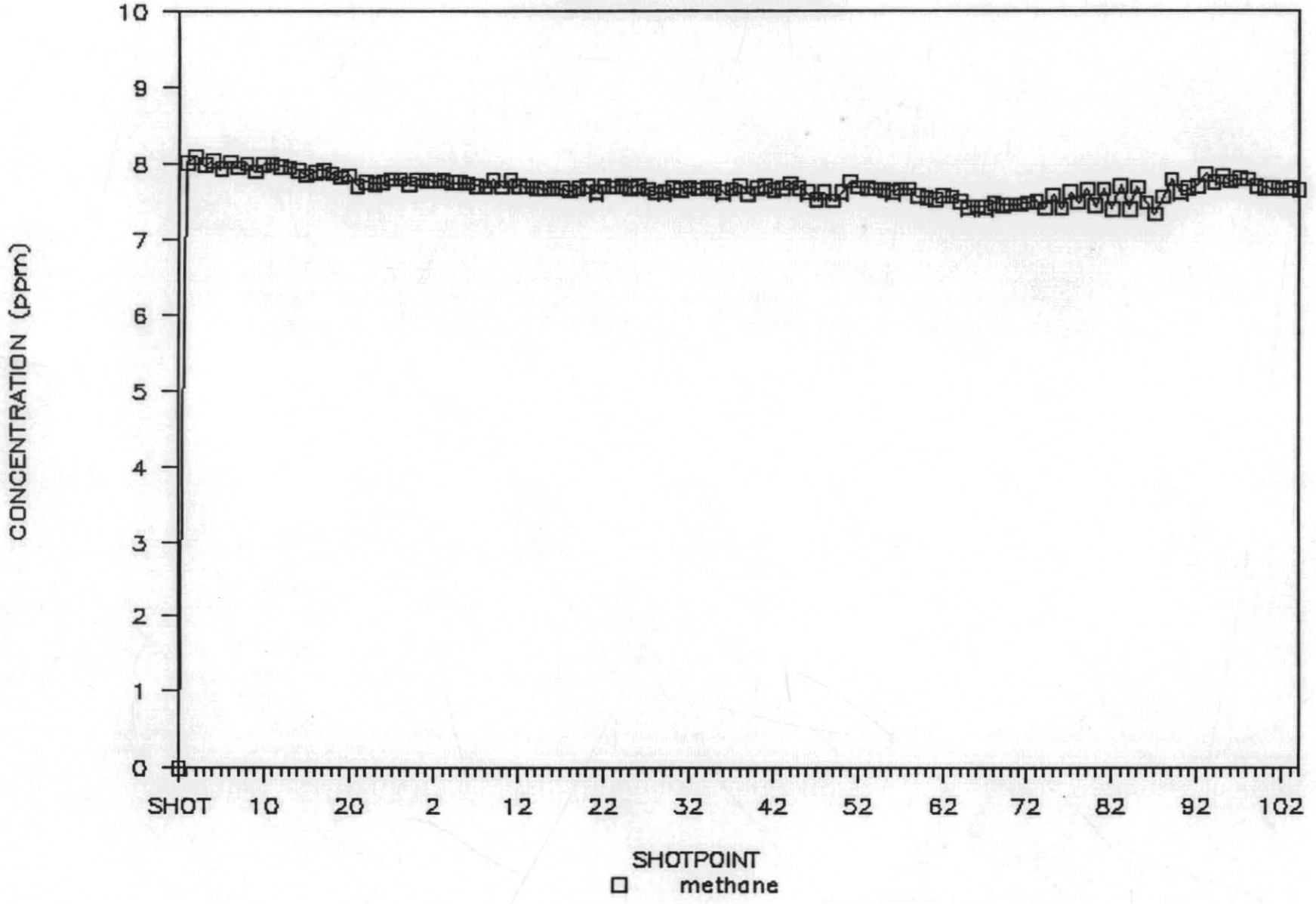
BASS BASIN

Survey Line 55



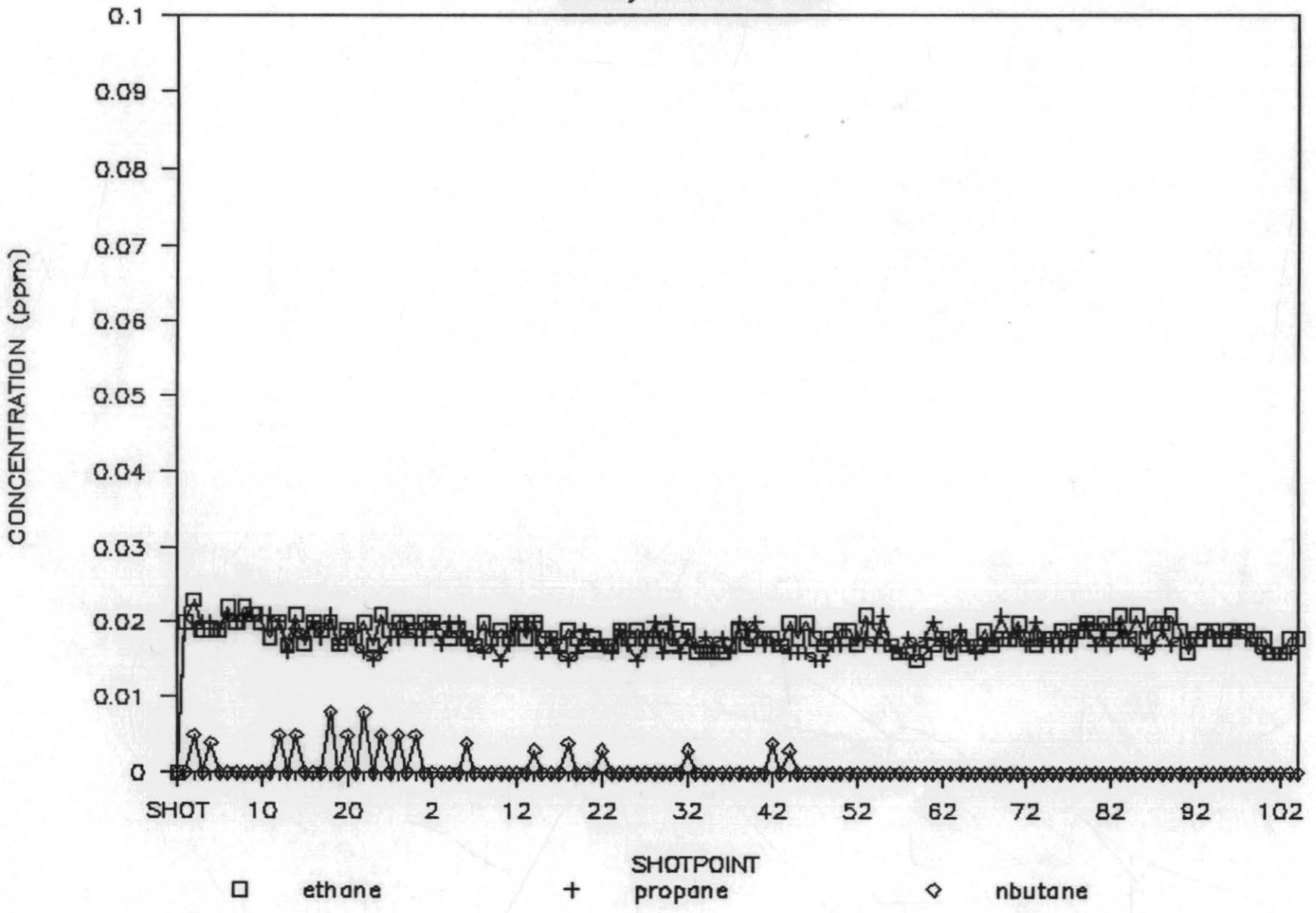
BASS BASIN

Survey Line 56 & 56A



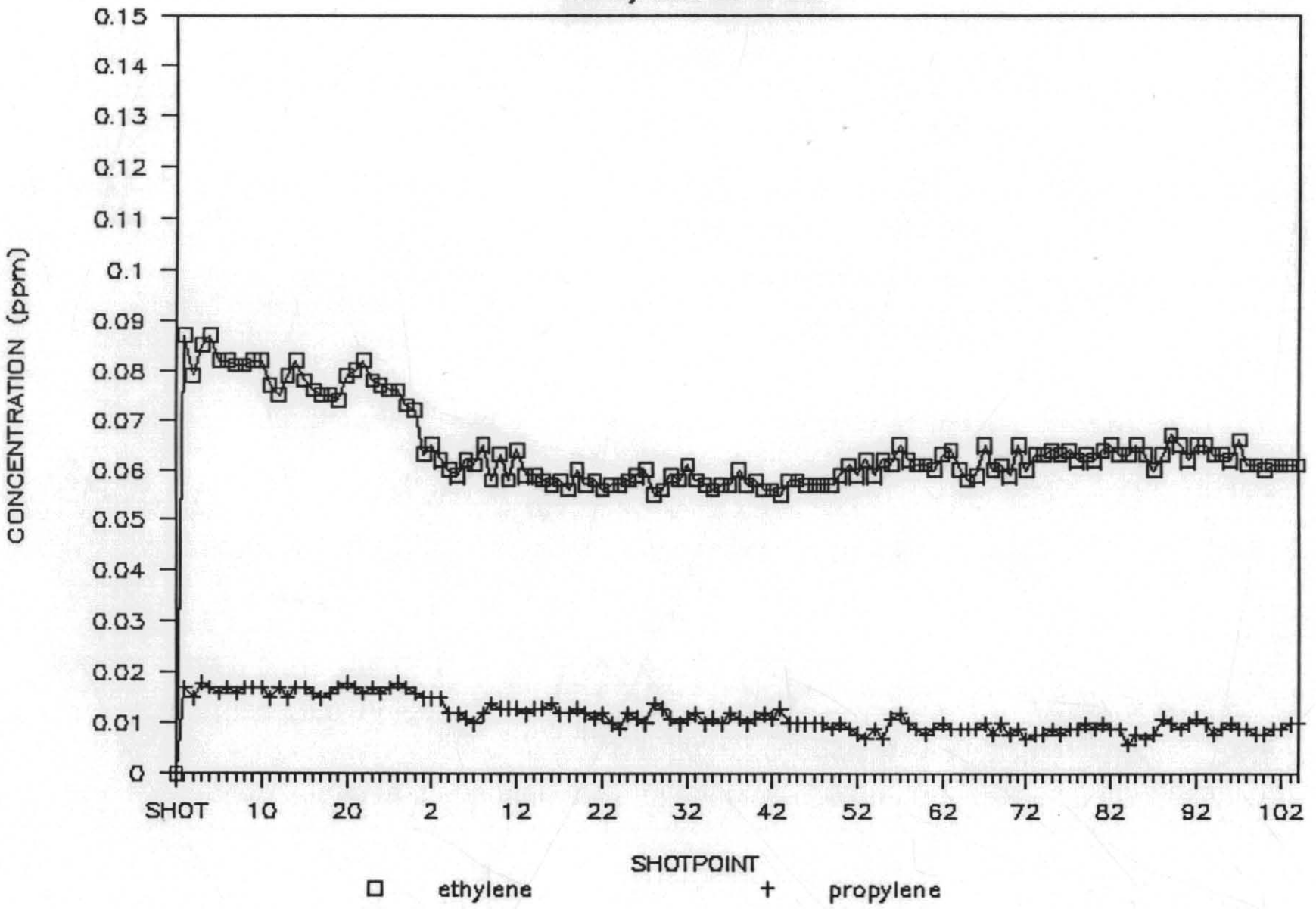
BASS BASIN

Survey Line 56 & 56A



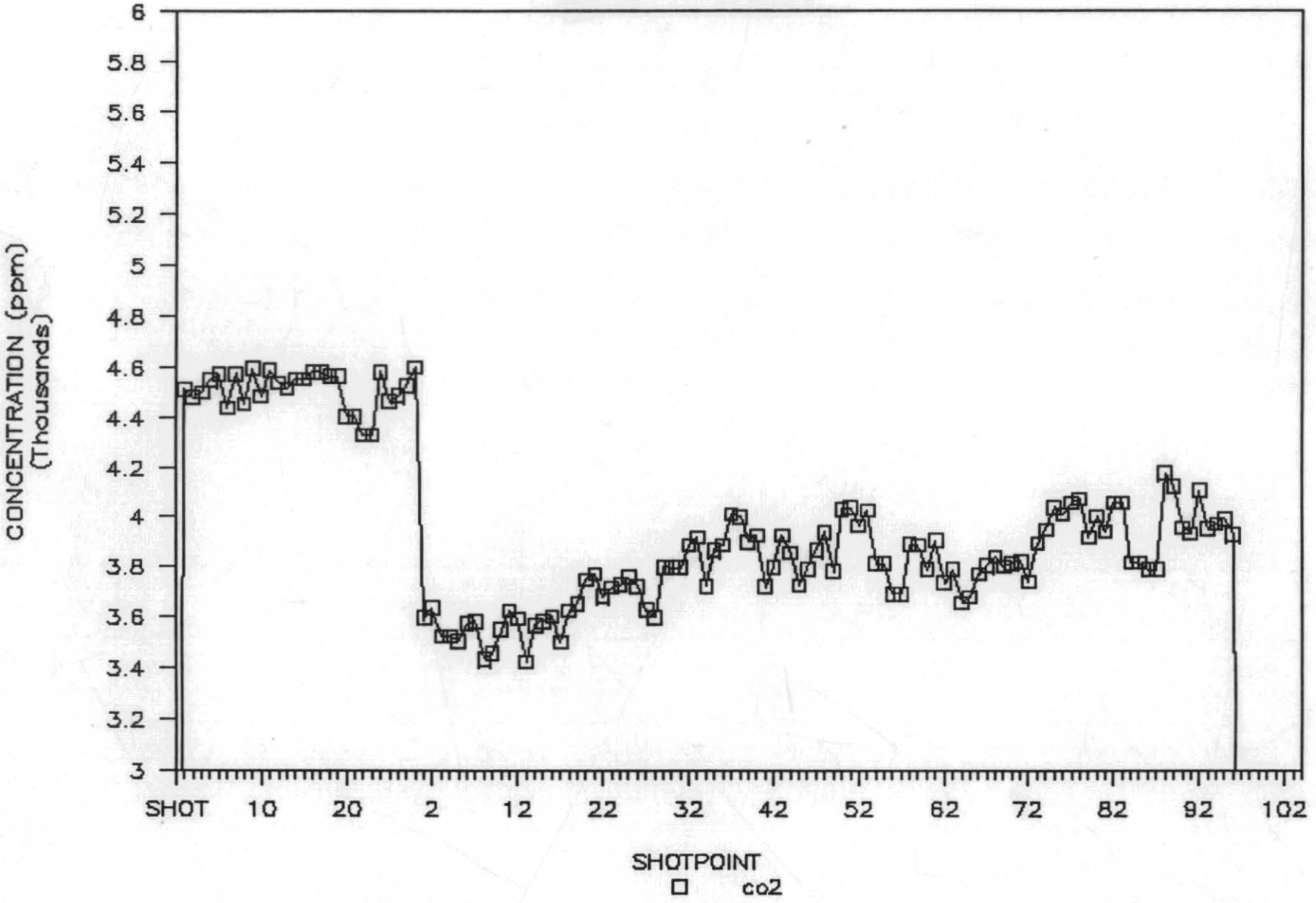
BASS BASIN

Survey Line 56 & 56a



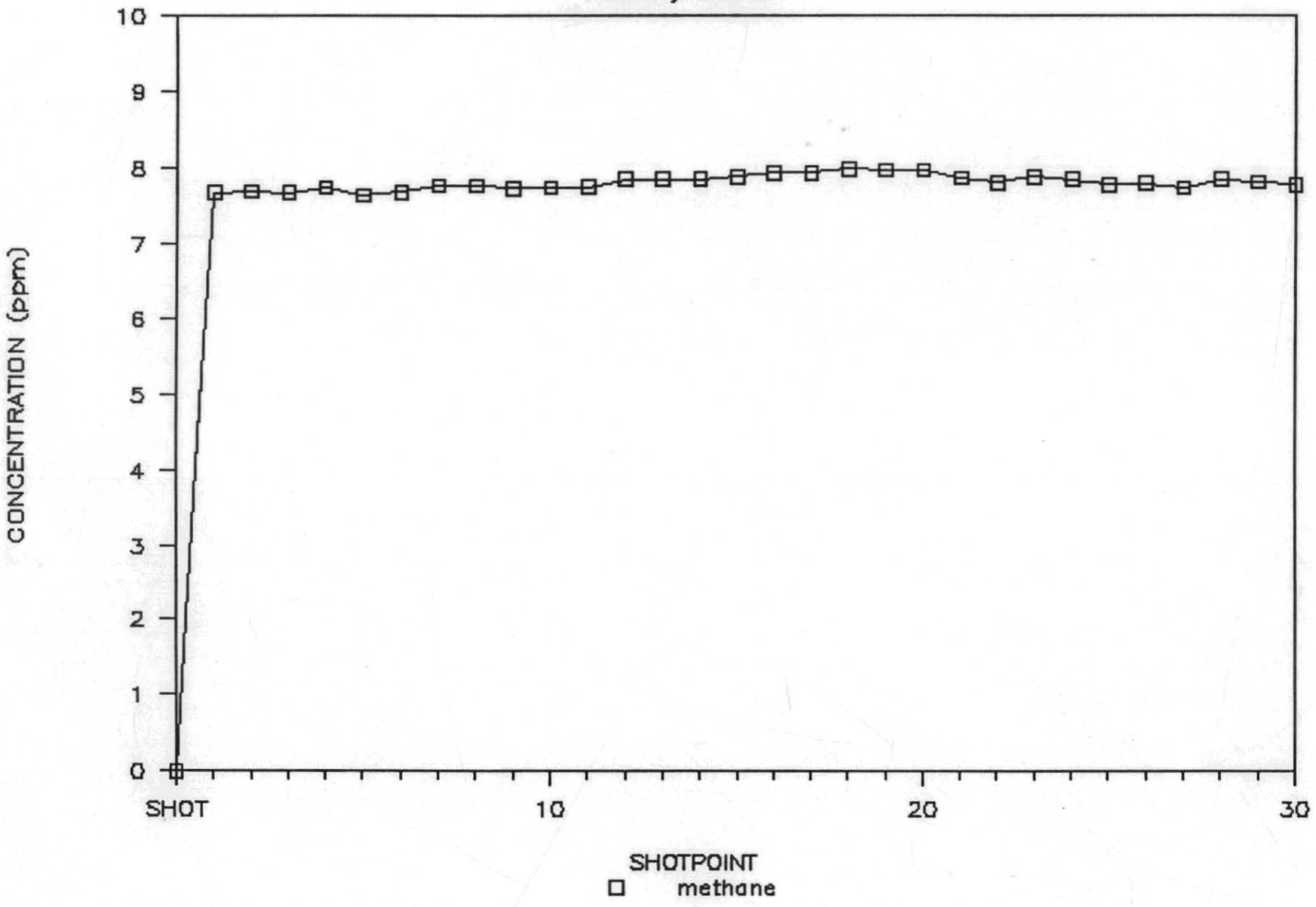
BASS BASIN

Survey Line 56 & 56A



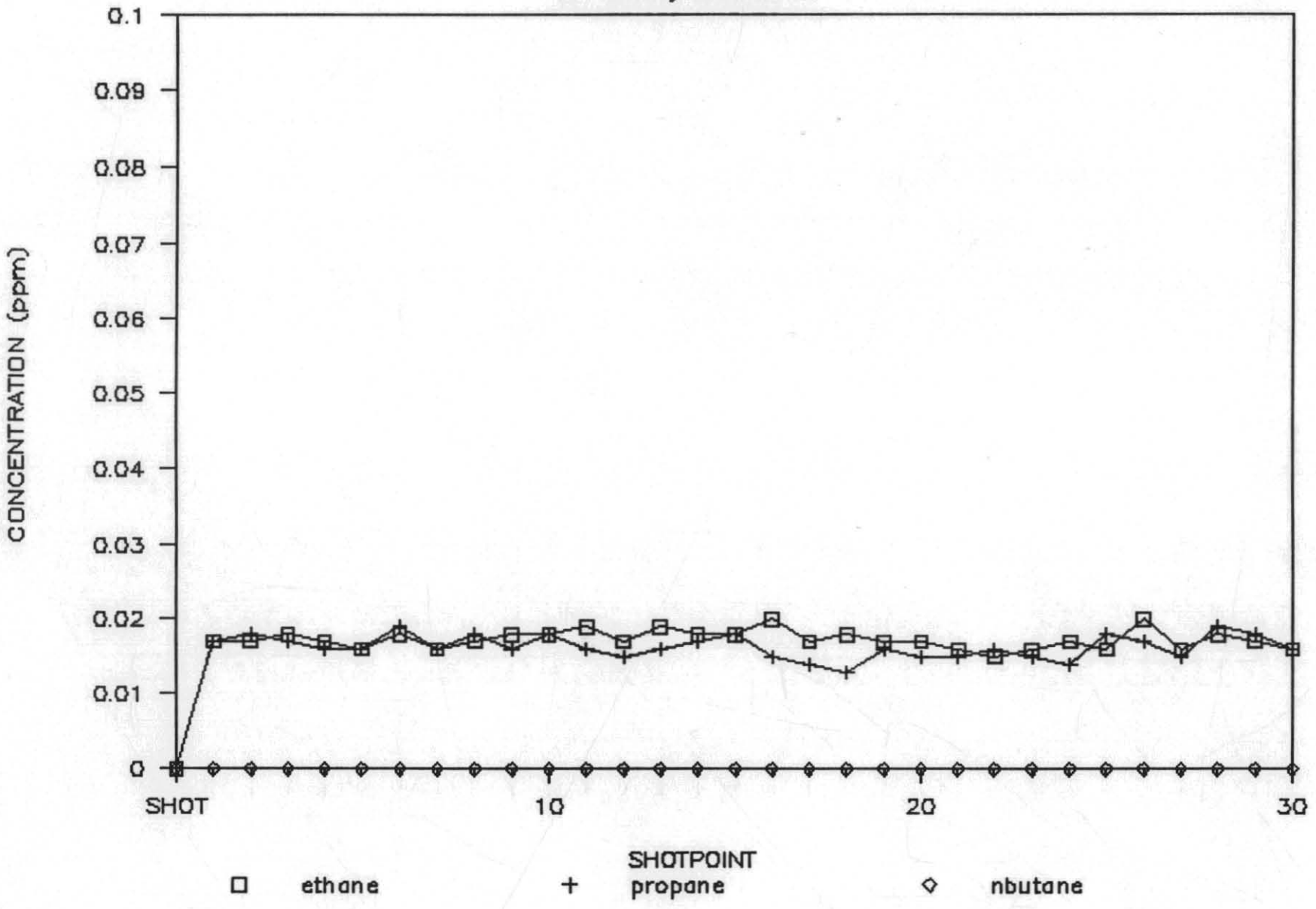
BASS BASIN

Survey Line 57



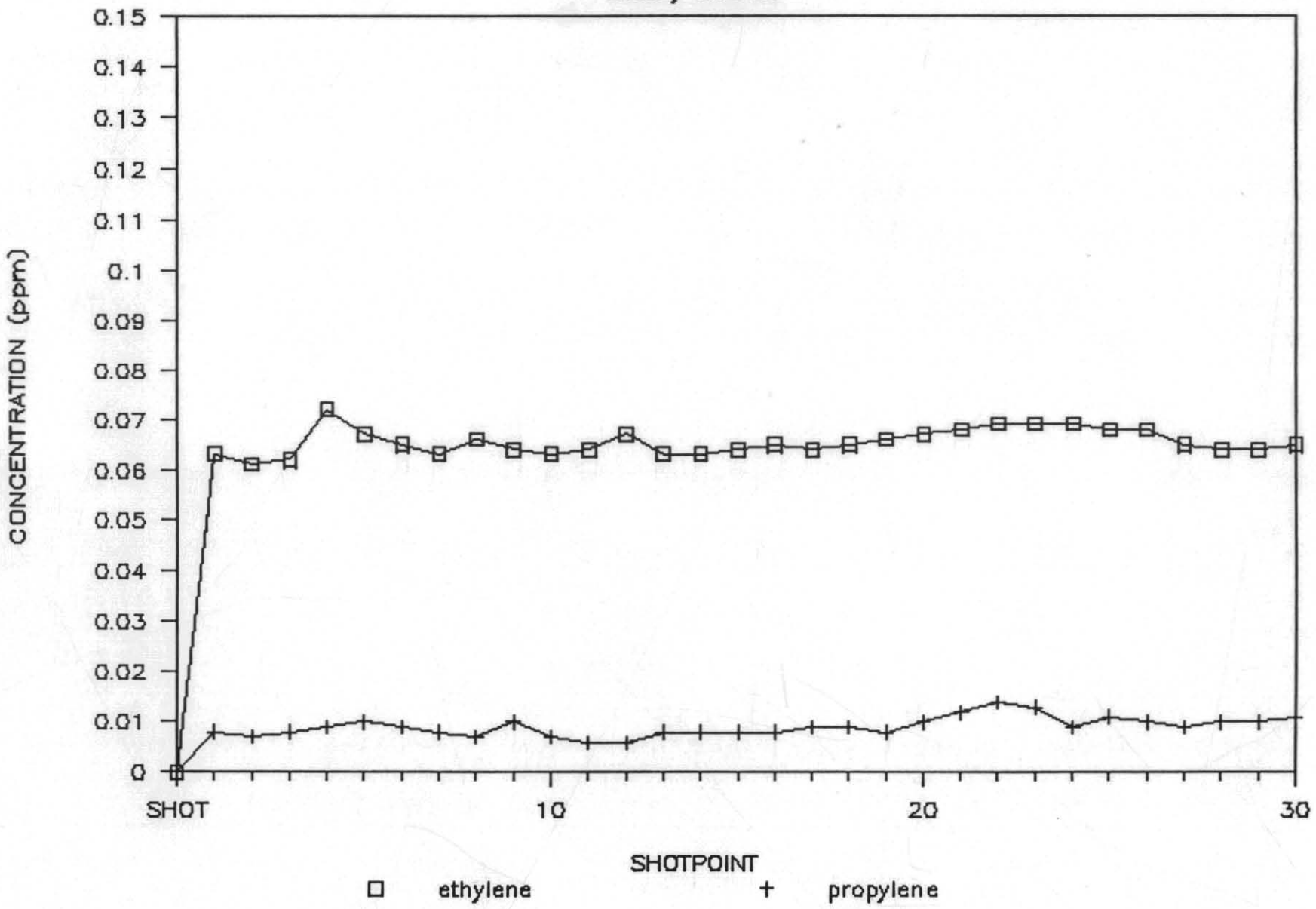
BASS BASIN

Survey Line 57



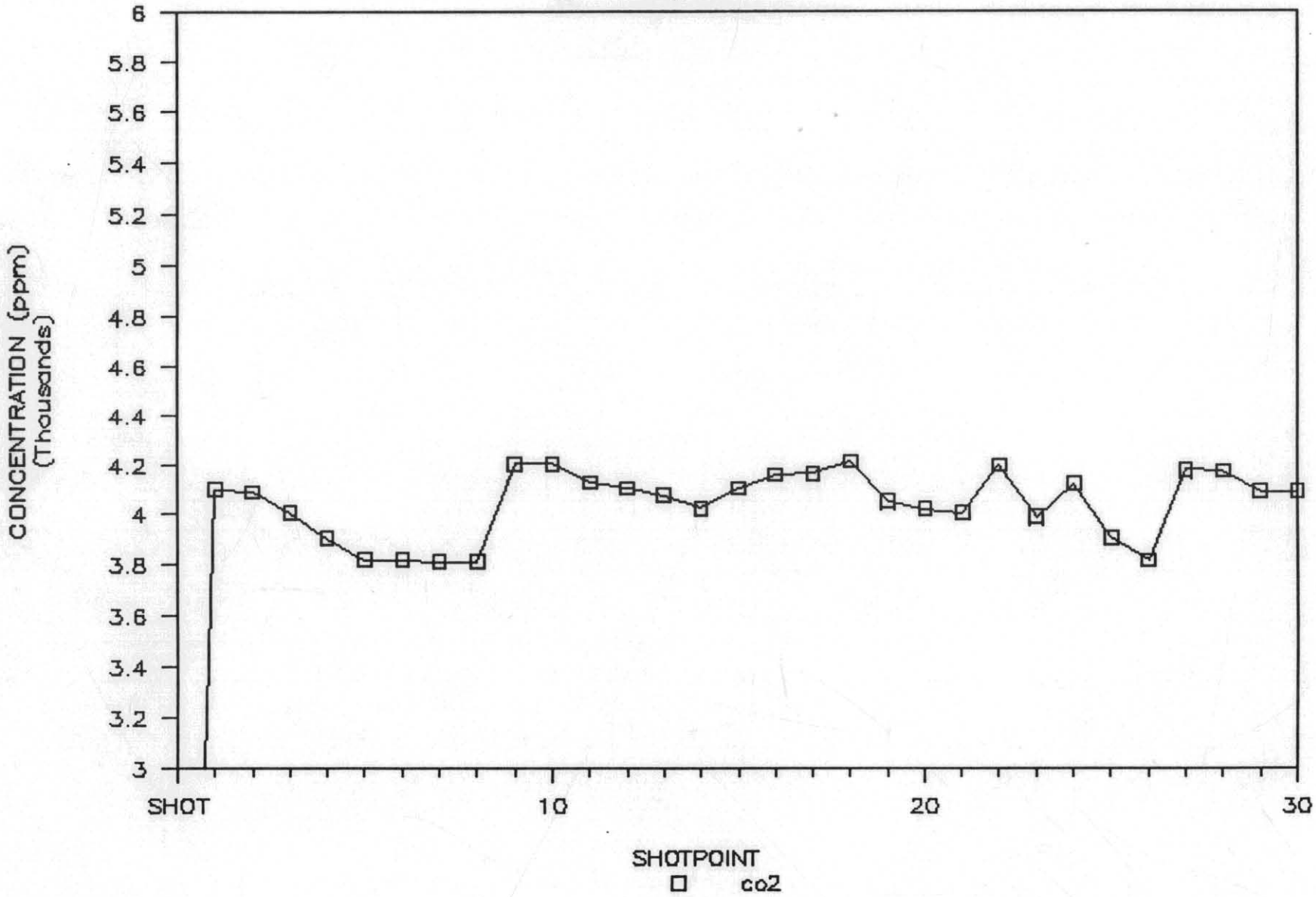
BASS BASIN

Survey Line 57



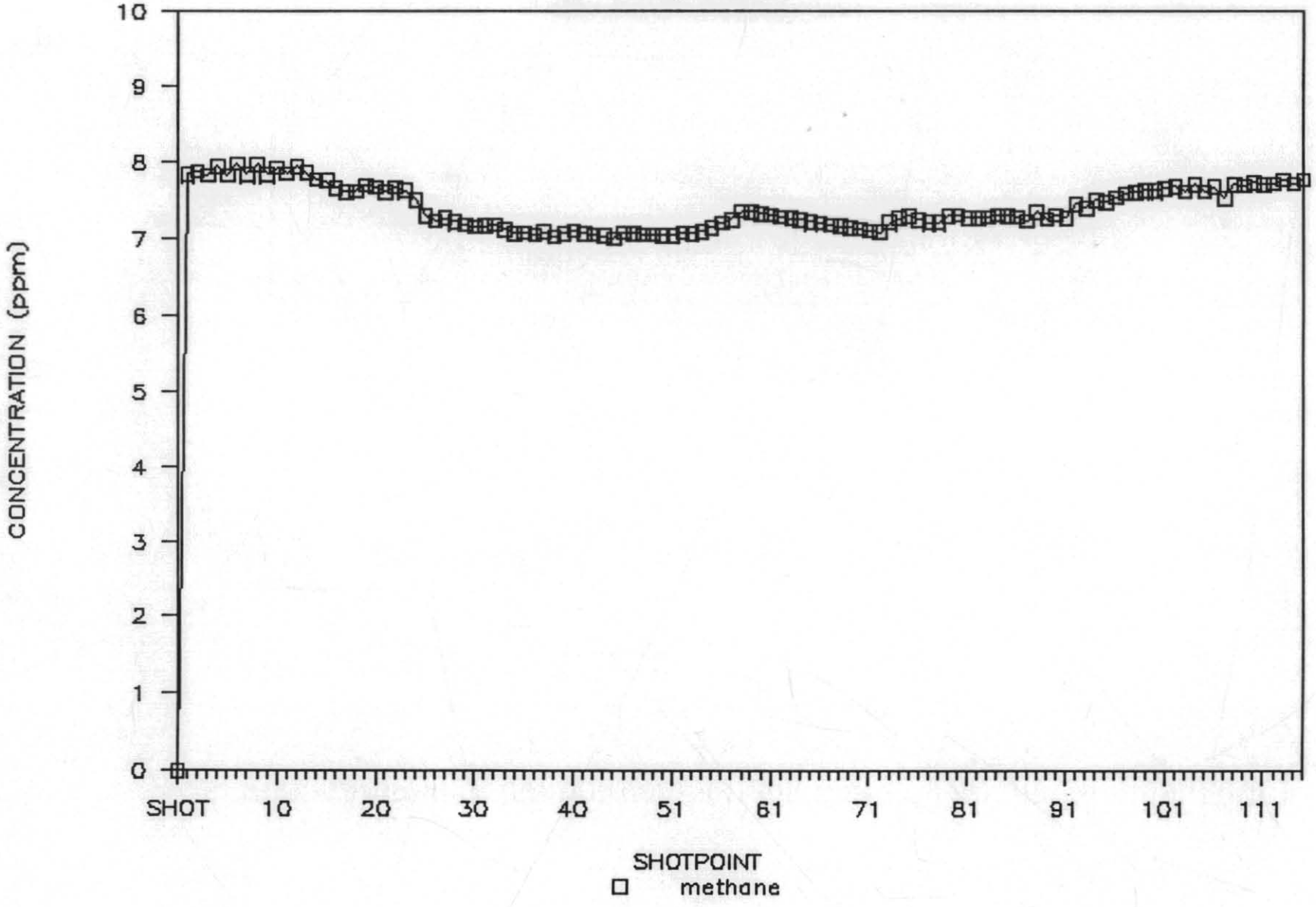
BASS BASIN

Survey Line 57



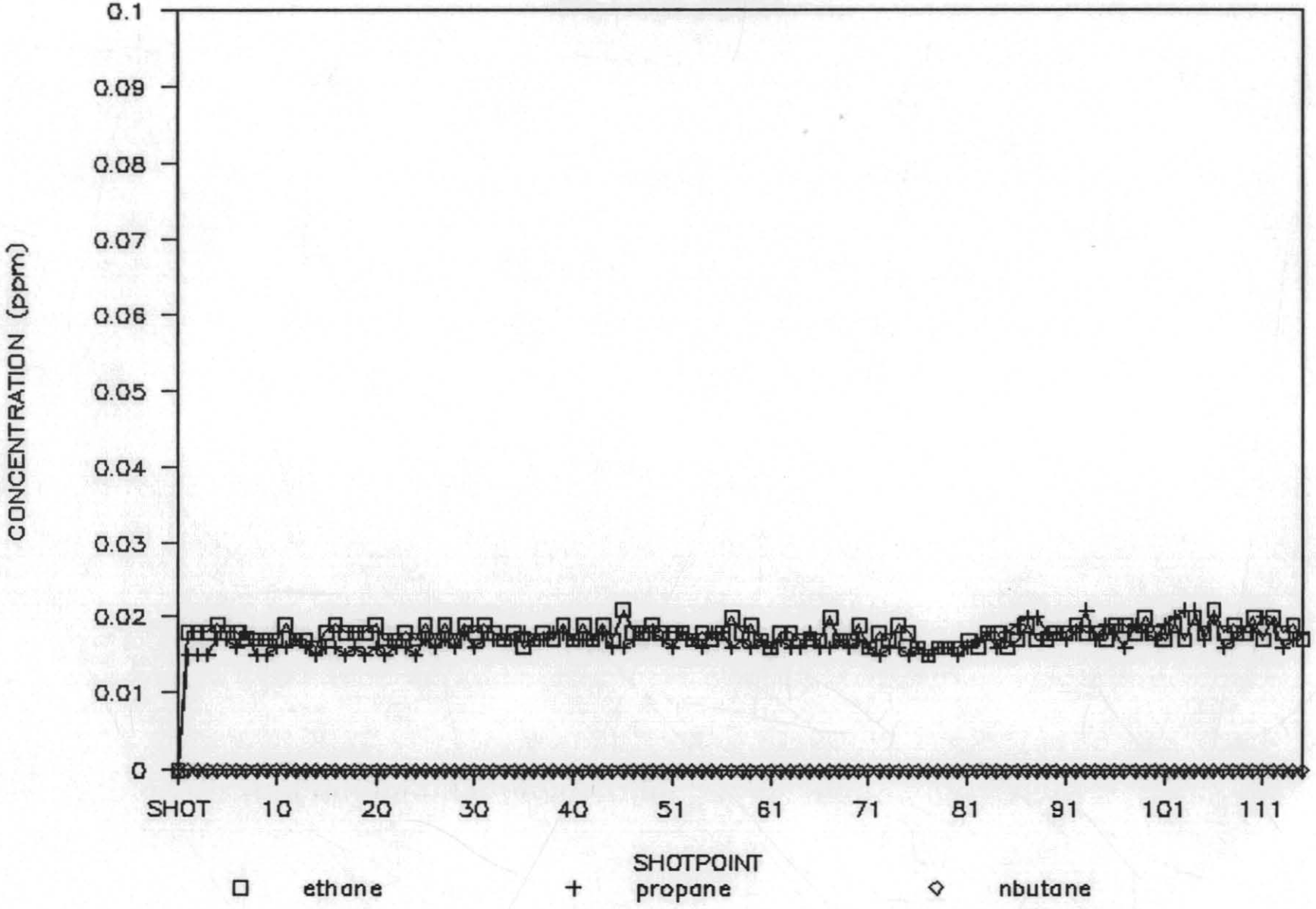
BASS BASIN

Survey Line 58



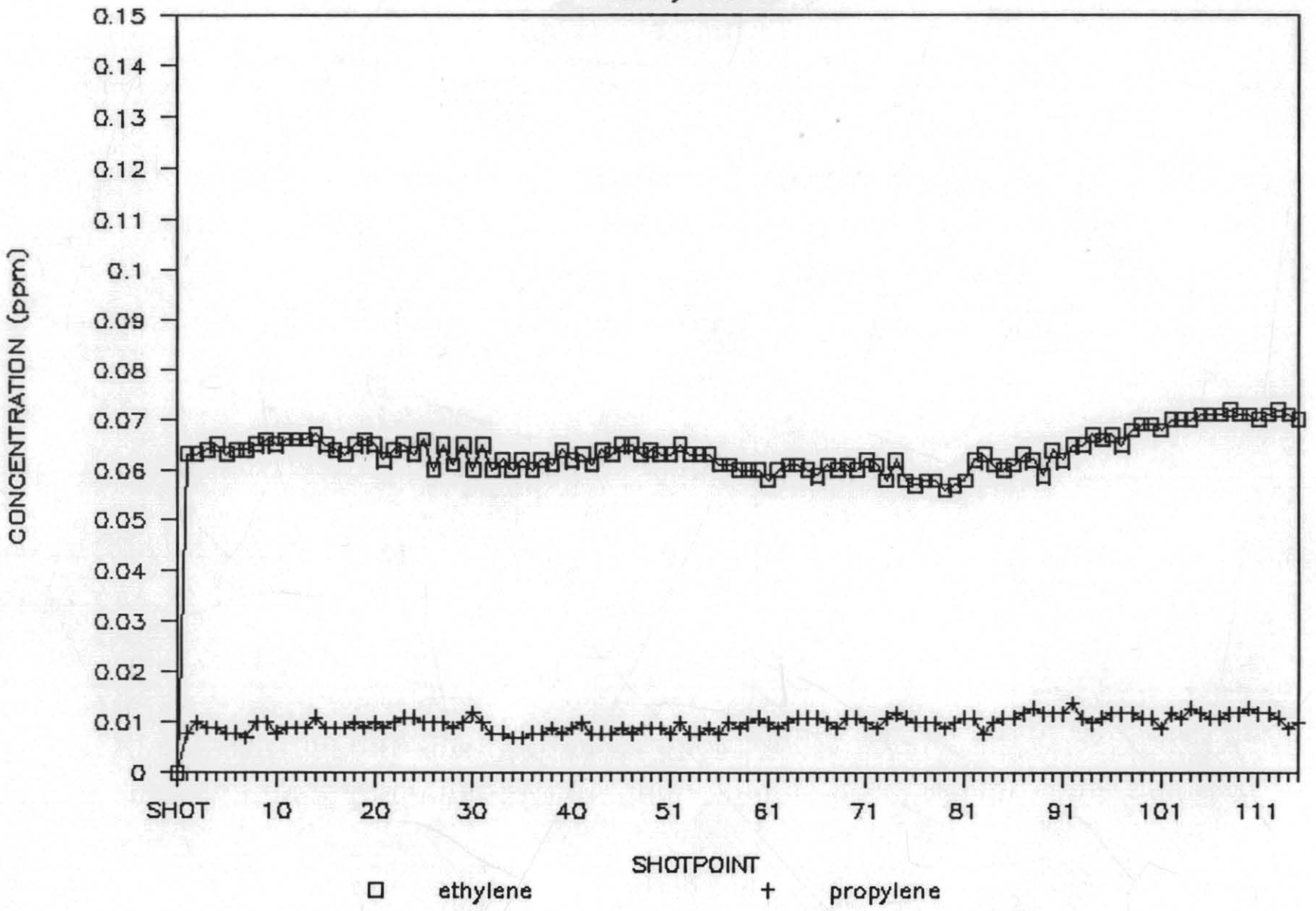
BASS BASIN

Survey Line 58



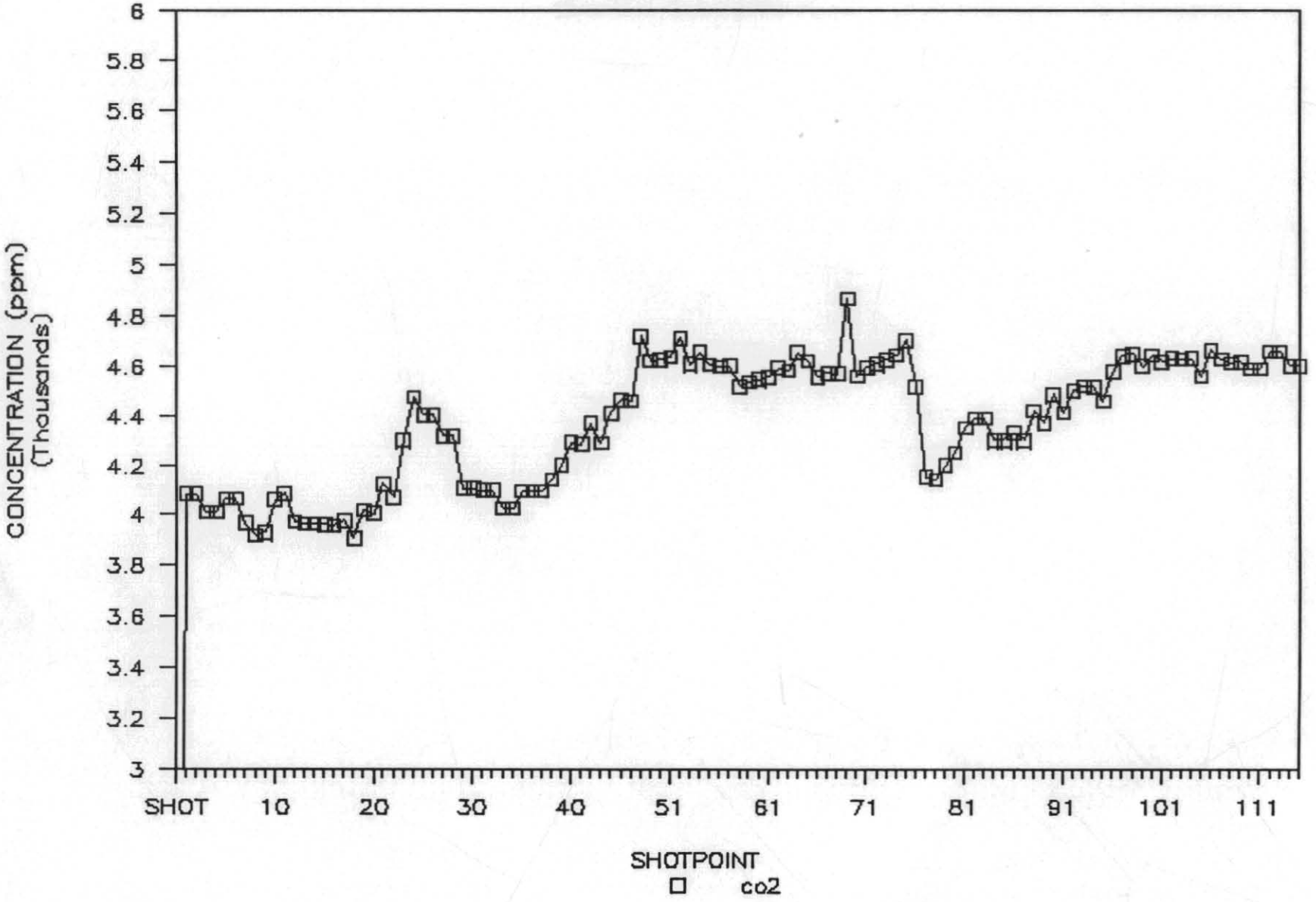
BASS BASIN

Survey Line 58



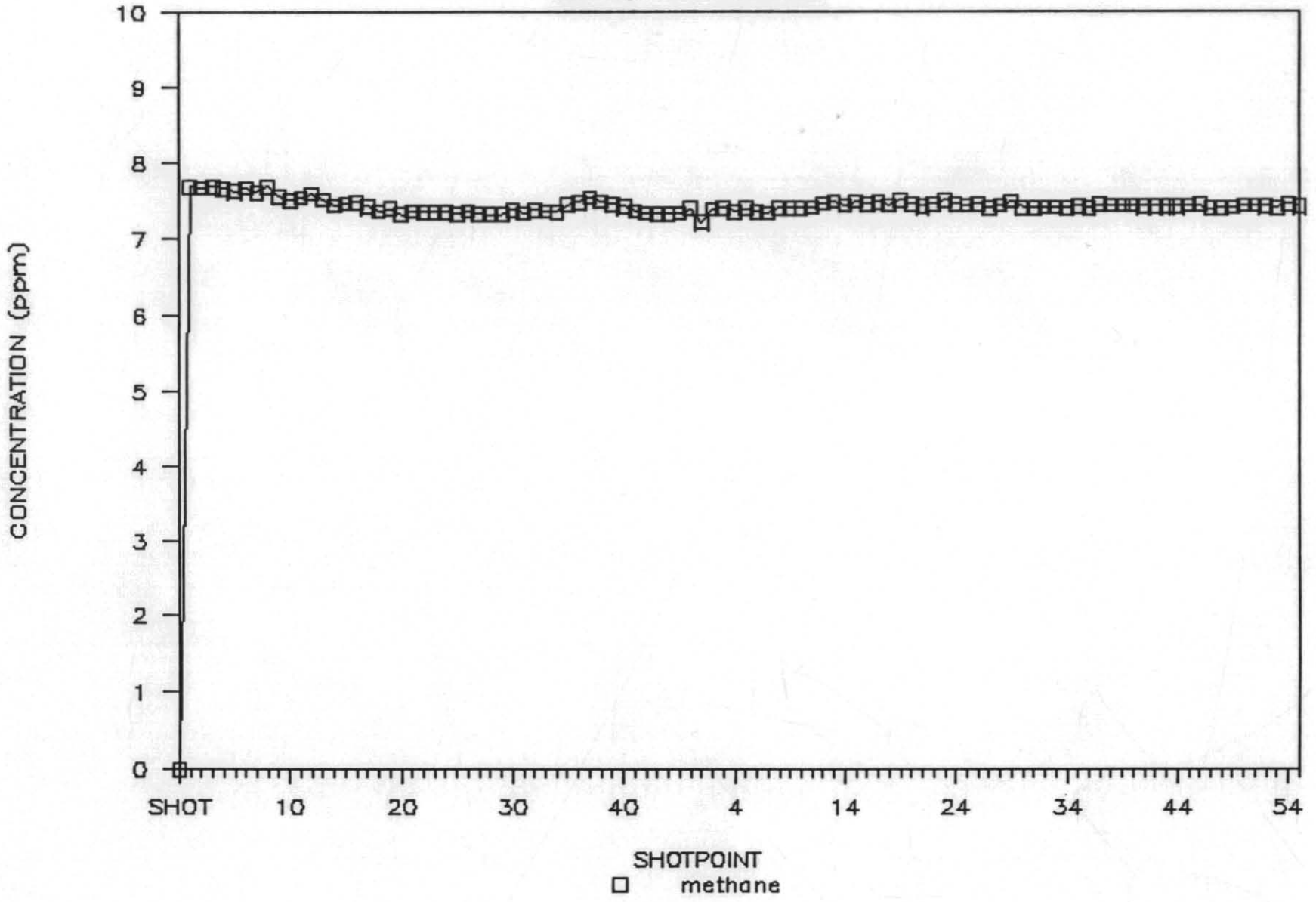
BASS BASIN

Survey Line 58



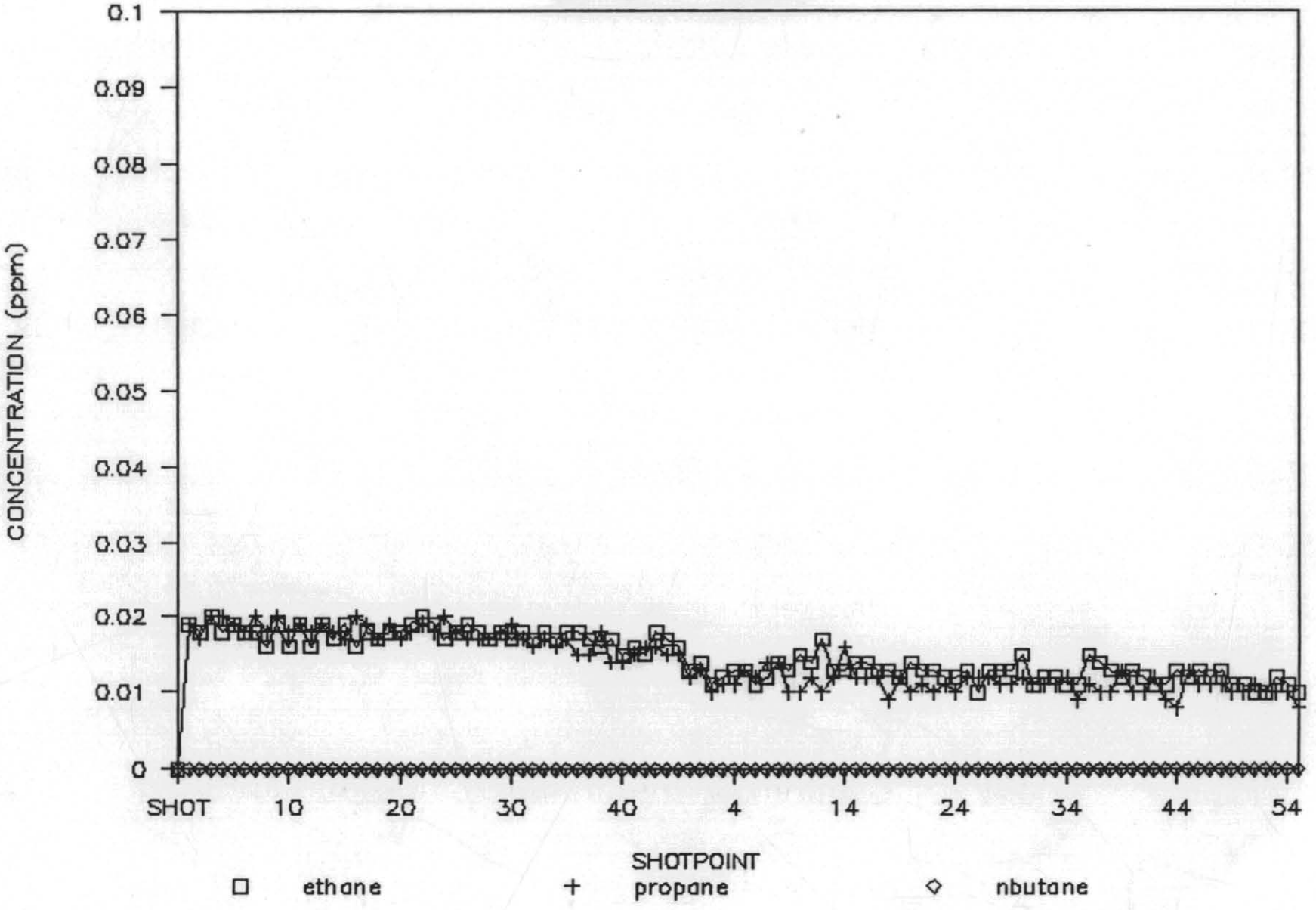
BASS BASIN

Survey Line 59 & 59A



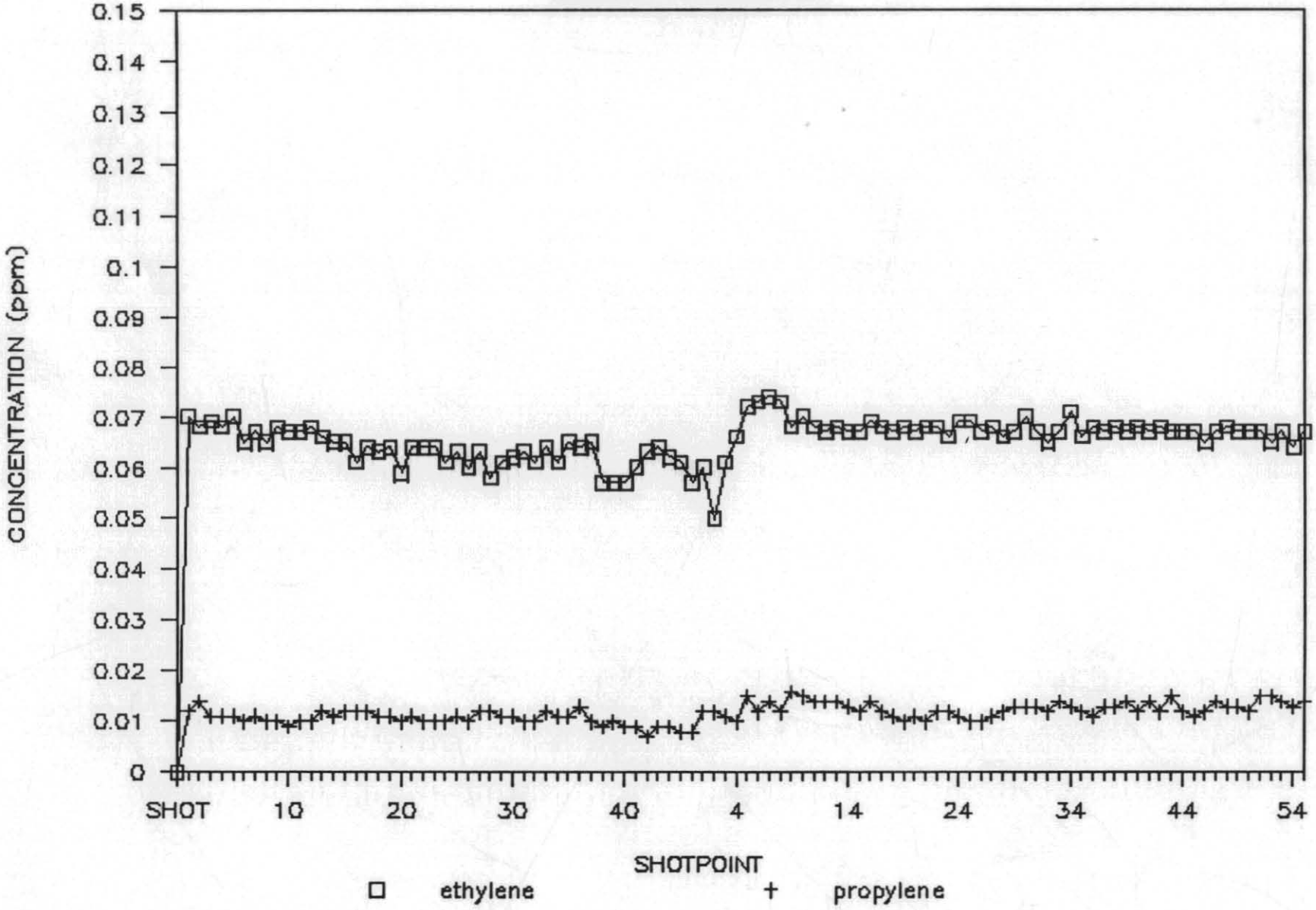
BASS BASIN

Survey Line 59 & 59A



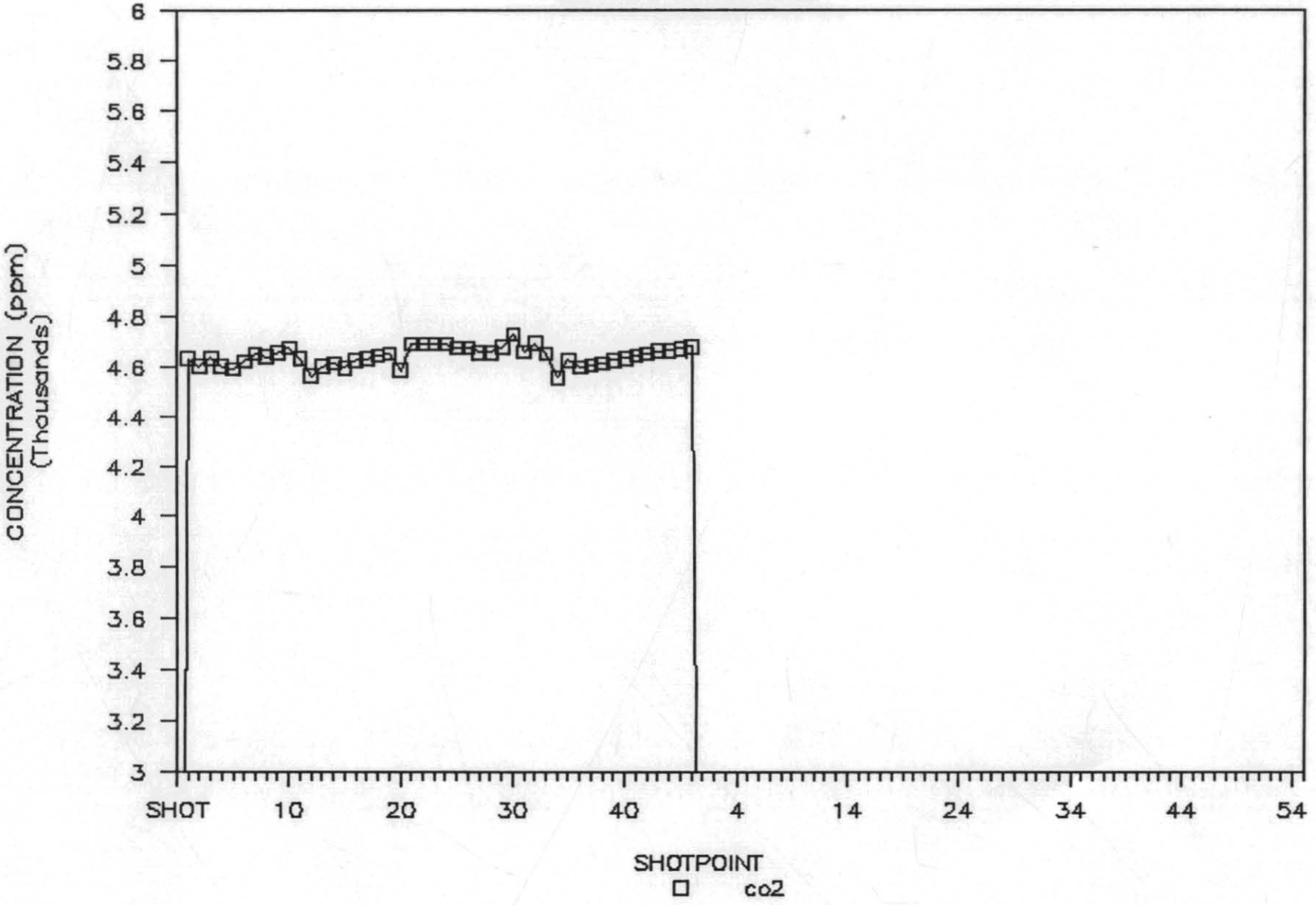
BASS BASIN

Survey Line 59 & 59A



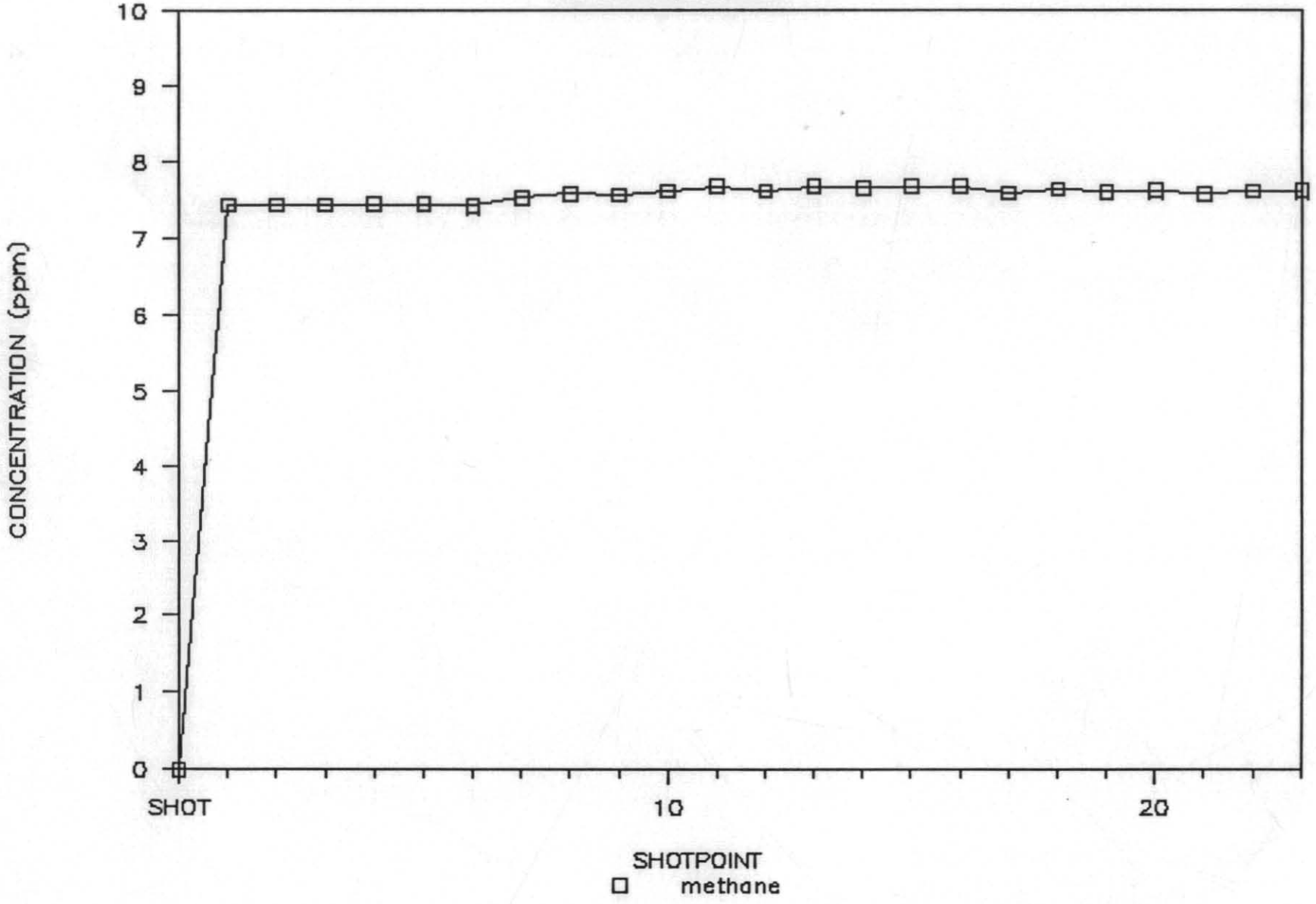
BASS BASIN

Survey Line 59 & 59A



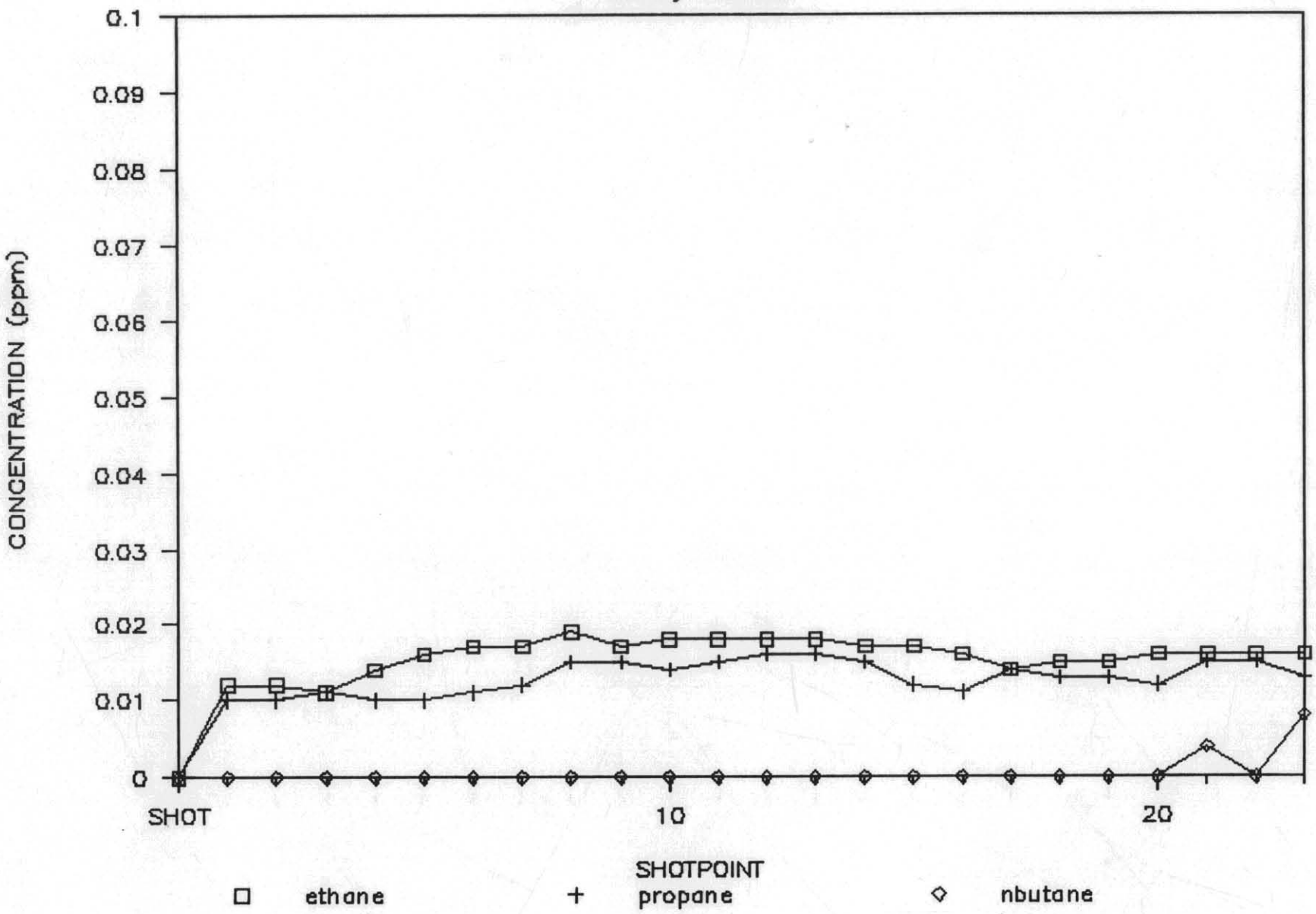
BASS BASIN

Survey Line 60



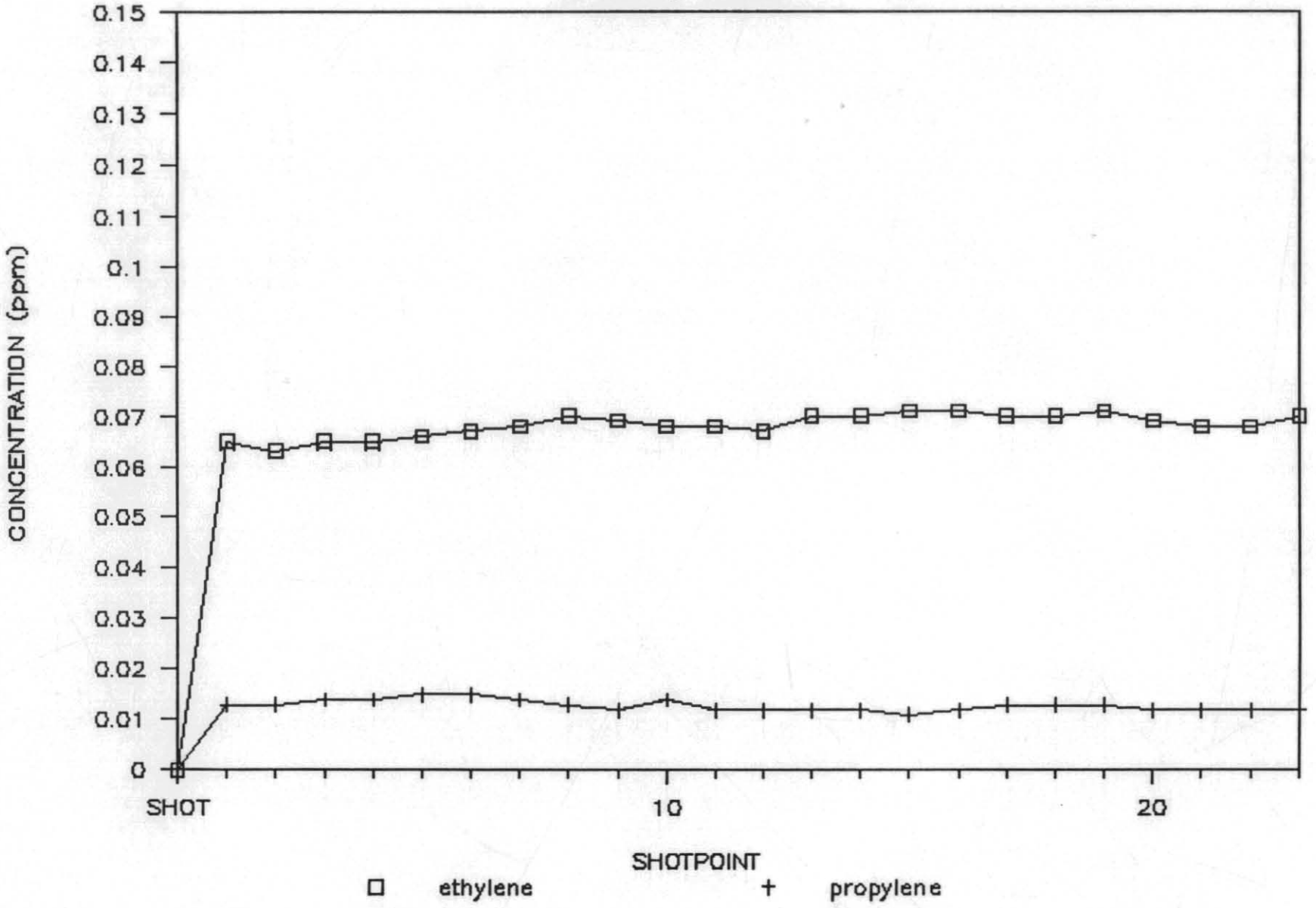
BASS BASIN

Survey Line 60



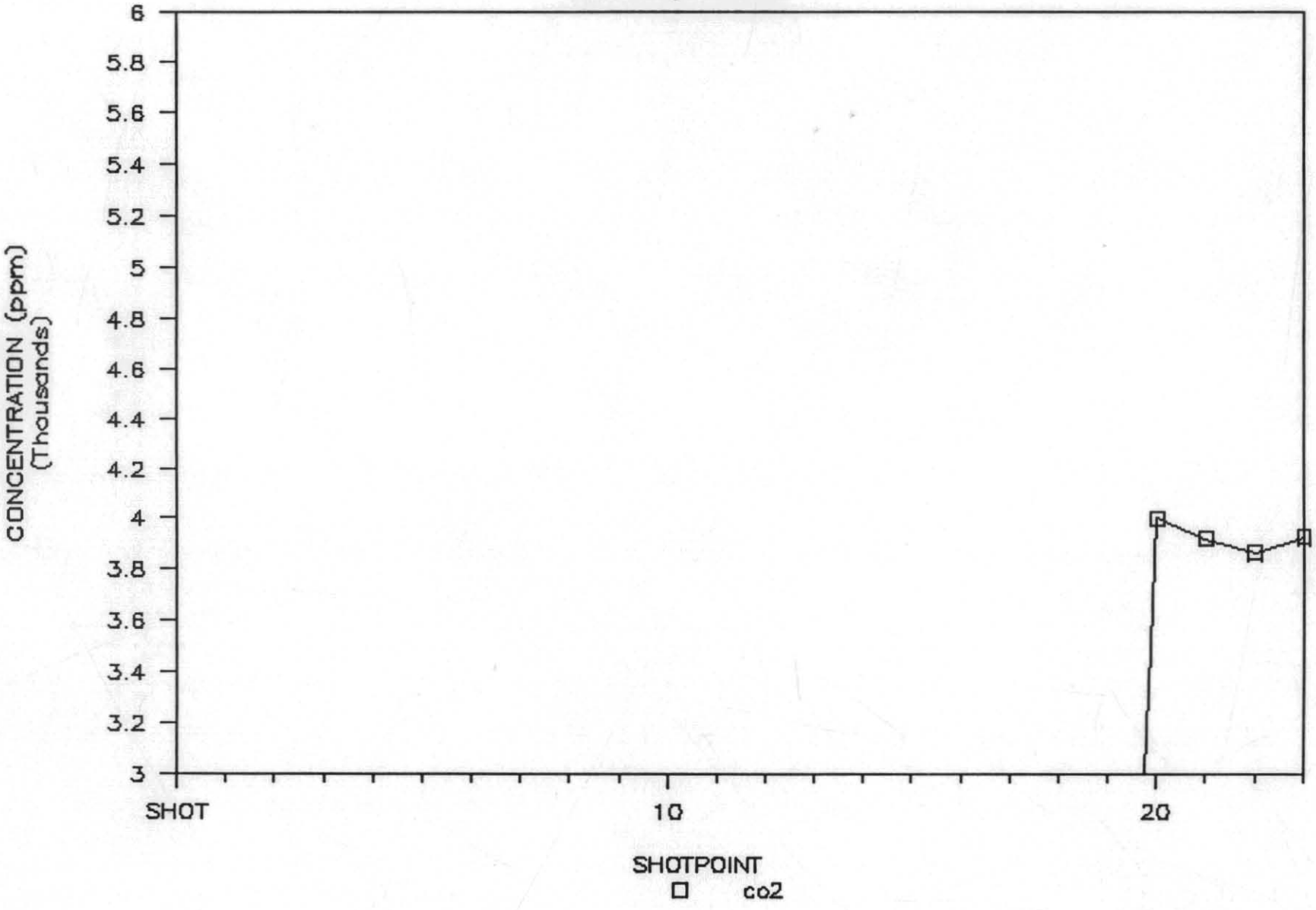
BASS BASIN

Survey Line 60



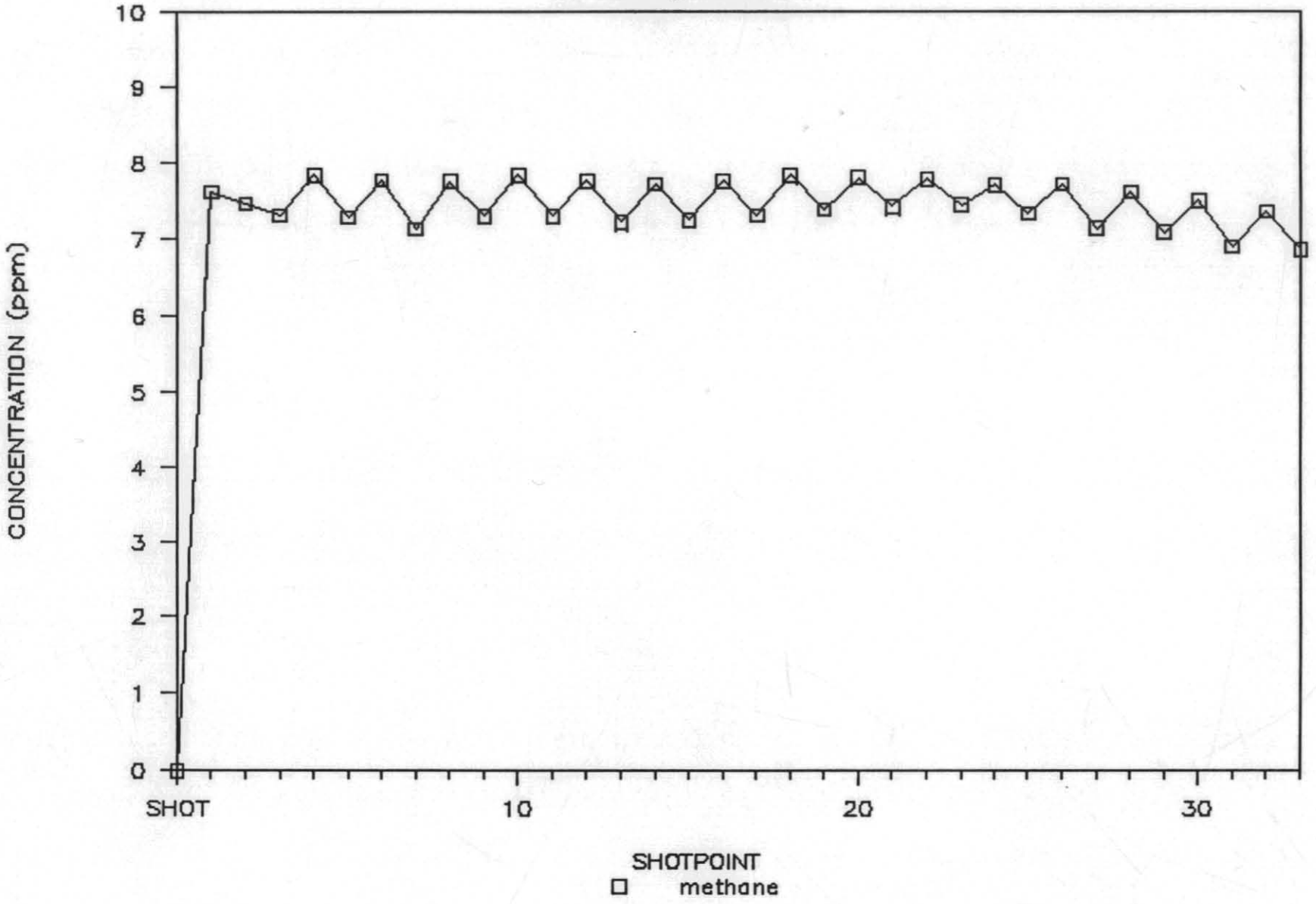
BASS BASIN

Survey Line 60



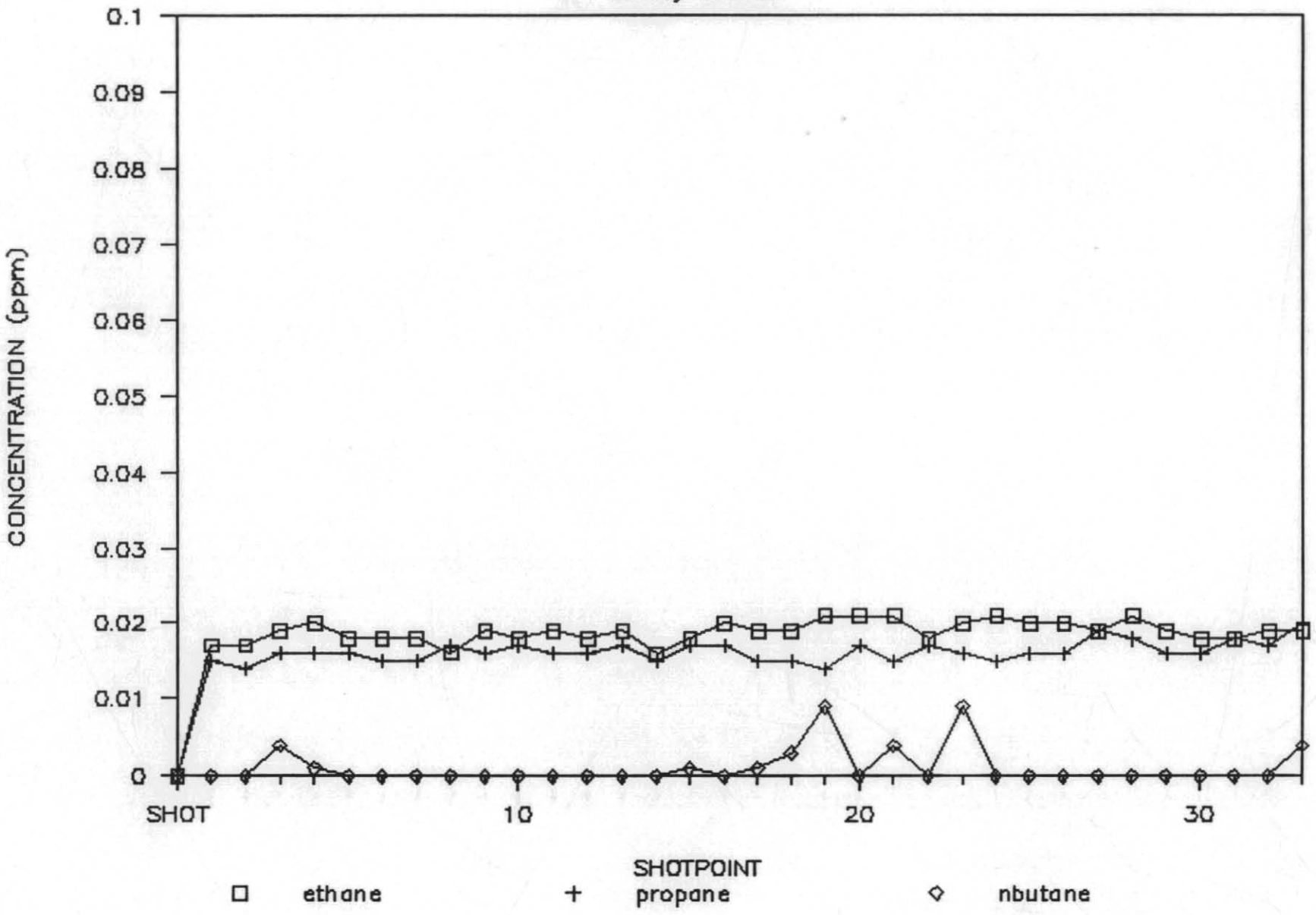
BASS BASIN

Survey Line 61



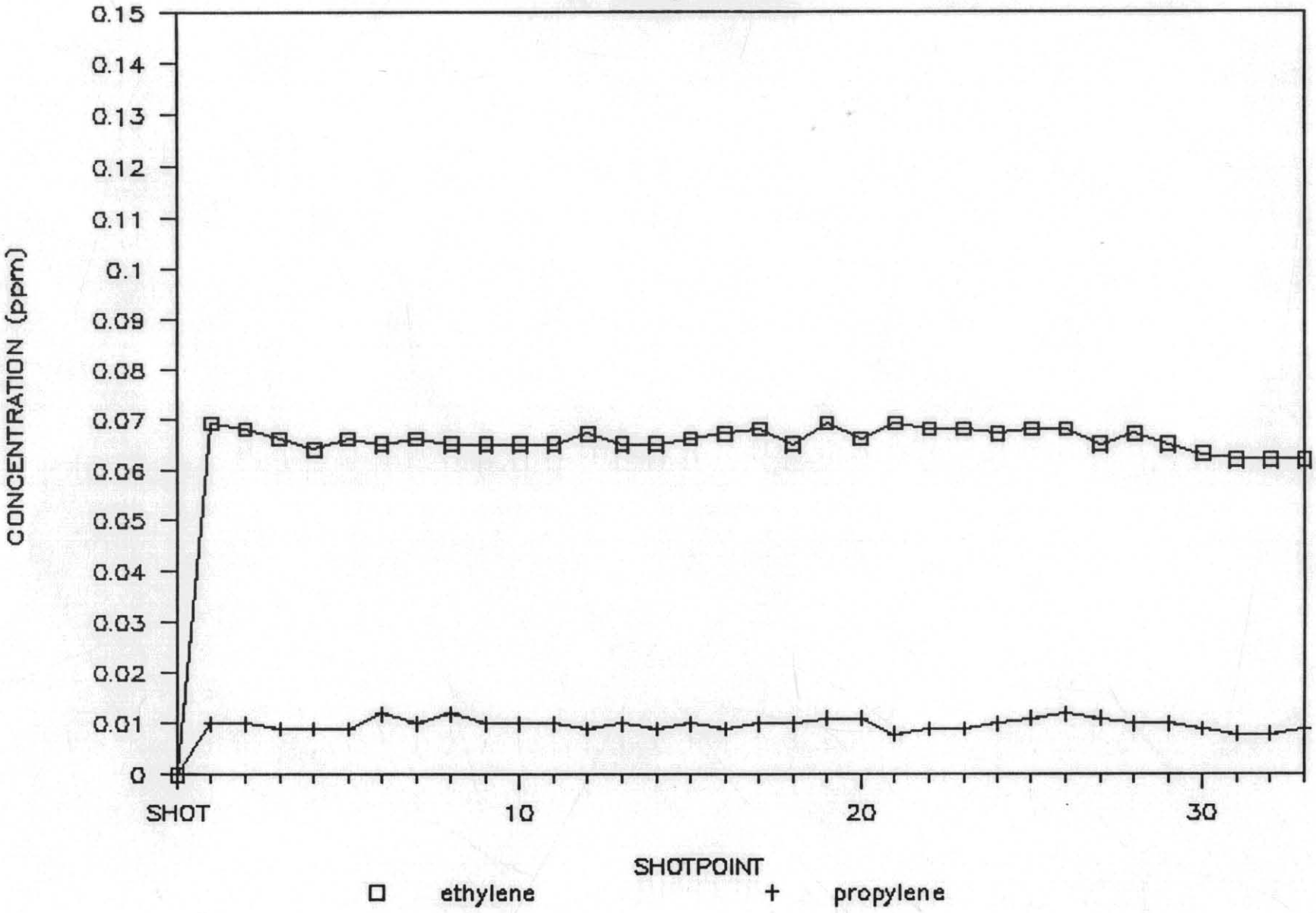
BASS BASIN

Survey Line 61



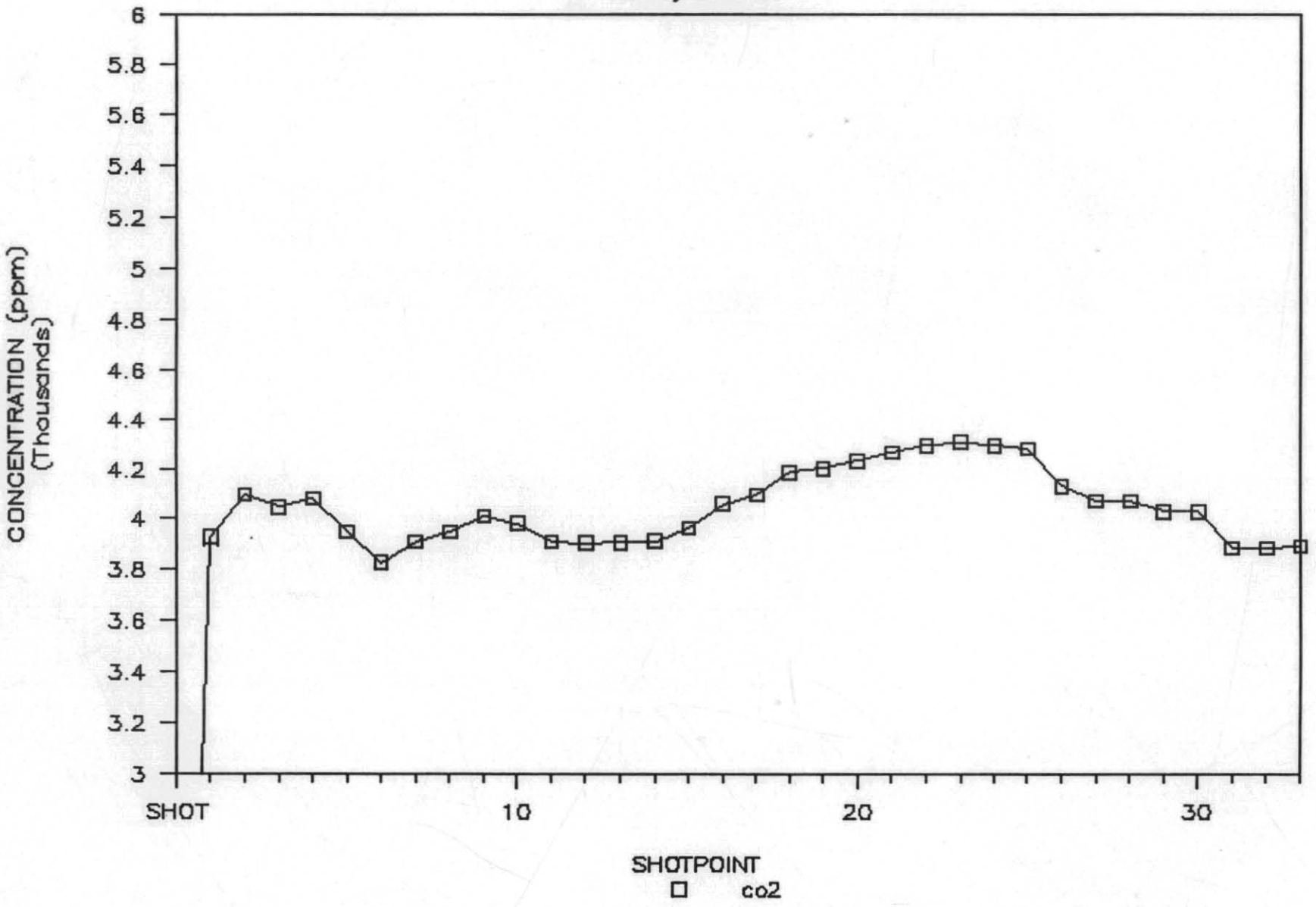
BASS BASIN

Survey Line 61



BASS BASIN

Survey Line 61



162214

SURVEY LOG SHEETS

162215

teg

SURVEY LOG SHEET

Line 18

RRR → RRR* → QQQ*

1.854 NM

7.9 NM

= 16.7 Km

JOBNAME Amoco BASS

PAGE 19

Floppy Disk # AmocoBASS1

LHC1 Roll # 3 LHC2 Roll # 1 IHC Roll # 3

HHC Roll # 1 CO2 Roll # 3

DATE	TIME	LINE	SHPT	Fish Ht.	COMMENTS
5 Feb 94	1919	18	1	13	start of line @ RRR
	1934	18	5	10	WAYpoint RRR* continue Line 18, change dessicator on THC
	1950		9	10	
	2024	18	22	13	THC running very high coming off line at end of line
	2043	18	32	13	End of line. No turn

IHC off line

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162216

Line 19
QQQ* → QQQ
24.518 nm
= 45.7 km

SURVEY LOG SHEET

NO IHC RUN

JOBNAME Amoco Bass

PAGE 20

Floppy Disk # AMOCOBASS1

LHC1 Roll # 3 **LHC2 Roll #** 1 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 3

DATE	TIME	LINE	SHPT		COMMENTS
5 Feb 88	2043	19	~~30~~ 1		Begin line Take IHC THC
					off line HHC still off.
	2124	19	20	17	
			24		THC back on line
					after [illegible]
			29		[illegible]
					LHC & THC
	2230	19	51	16	remove THC dessicant
			71	10	
	2330	19	80	15	THC still high
	2337	19	84	20	HHC on line
2/06	0041	BASS 19	115	19	FISH 60 m BOTTOM STILL 79
	0044	BASS 19	117		EOL

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162217

teg

NO IHC RUNNING
SURVEY LOG SHEET

BASS 20
QQQ - PPP
3.3 ~~Kts~~ Nm - 75.6 Km

JOBNAME AMOCOBASS **PAGE** 21

Floppy Disk # AMOCOBASS1

LHC1 Roll # 3 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 3

DATE	TIME	LINE	SHPT		COMMENTS
2/06	00:46	BASS 20	1	18 m	BOL Bottom 78 m
	00:49	BASS 20	2		TRUE BOL
	00:20		13		EOL
				18 m	BOTTOM 78 m

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162218

teg

BASS 21
PPP - 000
8.5 ~~Km~~ Nm 14.5 KM

SURVEY LOG SHEET
NO IHC RUN

JOBNAME AMOCOBASS **PAGE** 22

Floppy Disk # AMOCOBASS 1

LHC1 Roll # 1 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 3

DATE	TIME	LINE	SHPT		COMMENTS
FEB 6/89	0121	BASS 21	1	18m	BOL. 79m Bathm
					OOPS - GETTING INTO UNEXPECTED TURN
	0207		23	17m	17m
	0236		39		NEW DRIERITE LHC'S
	0256		47		EOL
	0300 - 0330				CALIBRATION CAL2061.*
	0330 - 0345				TN2061.*
					NEW DRIERITE

TOTAL SO FAR ~ 542 km

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162219

BASS 22
000 - NNN
12.3 NM

SURVEY LOG SHEET

NO IHC's RUNNING

JOBNAME AMOCOBASS **PAGE** 23

Floppy Disk # AMOCOBASS1

LHC1 Roll # 3 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 3

DATE	TIME	LINE	SHPT		COMMENTS
0206	0449	BASS 22	1		FISH 55 m BOTTOM 75
			24		FISH 59 m BOTTOM 79 m
	0512		40		NEW DMERITE FOR THC, EXCHANGED + TOOK OUT WATERTRAP.
	0543		55	23	EOL 22. HEADING INTO LOOP TO 23.
	0556		60		EOL TURN FINISHED.

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162220

teg

NO INC'S RUNNING

SURVEY LOG SHEET

BASS 23
10 NM.
NNN - MMM

32 NM
-51.4 M

JOBNAME AMOCO BASS **PAGE** 24

Floppy Disk # AMOCOBASS 1

LHC1 Roll # 3 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 3

DATE	TIME	LINE	SHPT		COMMENTS
2/6/89	0557	BASS 23	1	20M	BOL. FISH 55M BOTTOM 75M
	0615				METHANE ON LHC1 STARTS
			19		MORNING - O_2 SEPARATION
	0633	↓	19	20.M	FISH 55M BOTTOM 75M
	0724		45		EOL. STARTING TURN
					NEW DENYDRITE

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162221

BASS 24

MMM - LLL *
60 km

teg

SURVEY LOG SHEET

NO IHC RUNNING

JOBNAME AMOCOBASS **PAGE** 25

Floppy Disk # AMOCOBASS1

LHC1 Roll # 3+4 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 3

DATE	TIME	LINE	SHPT	FISH HT.	COMMENTS
2/6/89	0726	BASS 24	1	17	BOL. FISH 56m BOTTOM 73m
	0917		54		NEW DRIERITE. TUBE APPEARS LEAKY
	~~093~~				→ CHANGE
	0931		60		THC OFFLINE TO FIX METHOD
					(LOST SPONTANEOUSLY)
	0932		62		TAKE OUT + REPLACE DRIERITE TUBE
					TO REMOVE GLASS-CHIPS.
	0951		72		NEW THC DRIERITE.
				18	FISH 56m BOTTOM 74m
	1103		103		NEW THC DEHYDRATE
	1128		115	16	BOTTOM 72m
	1211	24	136		End of Line

46 8.96
145 39.63

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162222

teg

SURVEY LOG SHEET

BASS 27

JOBNAME Amoco BASS

PAGE 28

Floppy Disk # Amoco BASS 2

LHC1 Roll # 4 LHC2 Roll # 2 IHC Roll # 3

HHC Roll # 2 CO2 Roll # 3

DATE	TIME	LINE	SHPT	Fish Alt.	COMMENTS
6 Feb 89	1638	27	3	~14	Change out THC dessicant
	1710	27	19	14	IHC offline
	1735	27	31	15	
6 Feb	1747	27	37	15	
	1758		42	17	
	1825	27	55	14	O.K.
	1925	27	86	12	changed THC dessicant
	2004	27	105	15	
6 Feb 89	2035	27	120	15	End of line offline for recalibration

Normal preplot @ 111 no turning data

End 39 40

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162223

BASS 28
HHH → BBB

SURVEY LOG SHEET
IHC NOT RUNNING

JOBNAME Amoco BASS **PAGE** 29

Floppy Disk # Amoco BASS 2 111.25 Km

LHC1 Roll # 4 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 3+4

DATE	TIME	LINE	SHPT	FISH HT	COMMENTS
6 ~~Feb~~ Feb 89	~~2202~~ 2202	28	1		Start of Line Prior to Waypoint HHH Calibration, except IHC completed
	22	28	~~8~~ 8	12	Start of preplot line 28 At waypoint HHH
	~~2244~~ 2244	28	21	17	
	~~2313~~ 2313		35	18	Change THC dessicant
	2319	28	38	20	Beginning of figure 8 turn
	1148	28	52	20	EEE
7 Feb 89	0047	28	82		DDD
	0059	28	87		NEW THC DRIERITE
	0137	28	106	19	GGG FISH 58, BOTTOM 77M
	0225	28	130		FFF
	0250	28	142		GETTING BACK ONTO STRAIGHT, FISH 50 M (6.8 Knots)
	0300		149	29 m	FISH 50 M BOTTOM 79M
	0336		165		NEW THC DRIERITE
	0350		171	26m	76 M
	0433		192	23m	93 M
	0453		202	21m	NEW THC DRIERITE BOTTOM 71
	0519		215	20	BOTTOM 70
	0557		234	21	BOTTOM 71
	0621		246	18	BOTTOM 68
	0640		255	15	BOTTOM 65
	0657		264	10	START RAISING BOTTOM 60
	0709		268	16	42M. NEW DRIERITE. BOTTOM 58
	0711		271	20	37M. BOTTOM 57
	0725		278	20	37 56

BBB 40 11.578 145 21.411

HHH 39 49.62 146 1.32

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BASS 28 CONT'D
HHH → BBB
111.25 KM TOTAL

SURVEY LOG SHEET
IHC NOT RUNNING

JOBNAME AMOCOBASS **PAGE** 30

Floppy Disk # AMOCOBASS 2

LHC1 Roll # 4 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 4

DATE	TIME	LINE	SHPT		COMMENTS
FEB 4 89	0752	BASS 28	290	11	FISH 37 M BOTTOM 48 M
			293		HEADING INTO TURN TOWARDS LINE 29
			293	3	FISH 39 M 40 M
				~~12~~	~~FISH 33 M~~ ~~45 M~~
					BEFORE TURN. 40 145

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162225

BASS 29
2.27 nm 3BB-AAA
=) 3.9 Km

SURVEY LOG SHEET
IHC NOT RUNNING

JOBNAME AMOCOBASS PAGE 31

Floppy Disk # AMOCOBASS 2

LHC1 Roll # 4 LHC2 Roll # 2 IHC Roll # 3
HHC Roll # 2 CO2 Roll # 4

DATE	TIME	LINE	SHPT		COMMENTS
FEB 7 89	0805	BASS 29	1	16	FISH 33 m BOTTOM 47 m
					(WON'T TAKE LINENAME CHANGE)
	0819	BASS 29	13		EOL

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162226

BASS 30
AAA - ZZ
2.7 nm = 4.6 KM

SURVEY LOG SHEET
INC NOT RUNNING

JOBNAME AMOCOBASS **PAGE** 32

Floppy Disk # AMOCOBASS 2

LHC1 Roll # 4 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 4

DATE	TIME	LINE	SHPT	8	COMMENTS
FEB 7, 89	08:21	30	1	14	FISH 33 m. BOL. BOTTOM 47 m
		↓			NEW DIERITE
	08:42	↓	12		EOL

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BASE 31
ZZZ - YYY - XXX
6.0 nm = 10.2 km

SURVEY LOG SHEET
IHC NOT RUNNING

JOBNAME AMOCOBASS **PAGE** 33

Floppy Disk # AMOCOBASS1

LHC1 Roll # 4 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 2 **CO2 Roll #** 4

DATE	TIME	LINE	SHPT		COMMENTS
FEB 7, 89	0844	31	1	10	BOL 31 33 m 47 m
			1	17	WOULD ACCEPT UNCHANGE 50 m
	0850				THC C METH NOW (LEAK TUBES) DELETE
	0859	↓	7	21	54 m
	0934	↓	24		HEADING INTO PIGTAIL TURN.
		↓			LINE WILL CONTINUE UNTIL XX
	0945	↓	28	22	59 m
	0948		30		EOL AT XX.

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BASS 32

SURVEY LOG SHEET
NO IHC RUNNING

XXX - WW
16.1 nm = 27.4 km

JOBNAME AMOCOBASS

PAGE 34

Floppy Disk # AMOCOBASS1

LHC1 Roll # 4 LHC2 Roll # 2 IHC Roll # 3
HHC Roll # 2 CO2 Roll # 4

DATE	TIME	LINE	SHPT		COMMENTS
FEB 7, 89	0949	BASS 32	1	21	BOL AT XX FISH 33 54 m
	0955		4	24	33 57 m
	1025		18	21	52 m
	1047		29		NEW DRIERITE TO THC
	1053		32	13	46 m
	1112		41	12	45
	1130		50	12	45 m
	1139		55	10	NEW THC DRIERITE 43 m
	1150		60	22	FISH 18 m 40 m
	1158		64	30	
				22	
	12:14		72		END of preplot line @ WW Continue to collect data on line to next line.
			73		Testing extractor by injecting standard through vent port.
			78		— standard + Air inject
			79		Start of line preplot 33

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162229

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SURVEY LOG SHEET

BASS 33

JOBNAME AMOCO BASS PAGE 35

Floppy Disk # AMOCOBASS1

W: → VV

LHC1 Roll # 4 LHC2 Roll # 2 IHC Roll # 3
HHC Roll # 2 CO2 Roll # 4

8.043 NM.
15 Km

DATE	TIME	LINE	SHPT	Fish +H	COMMENTS
2/17/89	1227	BASS 33	1	22	IHC off Test processed
					Date on screen wrong
					CO_2 date wrong
	1315	33	23	24	
	1332	33	31	24	End of preplot 33
					all systems offline

VV

145 8.89
40 15 63

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162230

TOTAL SO FAR = 1007 Km THRU END OF BASS 34.

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SURVEY LOG SHEET BASS 34

NO IHC RUNNING

VVV - TTT

JOBNAME Amoco BASS **PAGE** 36

Floppy Disk # Amoco BASS 2

52.44 NM

LHC1 Roll # 4 **JHC2 Roll #** 2 **IHC Roll #** 3 + 2.5 NM TRANSIT

HHC Roll # 2 of 3 **CO2 Roll #** 4 = 93.23 KM

DATE	TIME	LINE	SHPT		COMMENTS	
7 Feb 89	1347	Turn	1		start up All systems not on preplot line 34	
	1357	34	7		Start of Preplot At VV	
	14:14		14		FISH HT = 20 m	
			18		= 11 m	
	1453	34	33	14		
	1508	34	41	15		
			43		Water flow to extractor stops. Break off line	
	1533				Fish being brought up	
					Cable braid broken	
	1600 - 2200				Retrieve Fish	
	2200				Recalibrate System	
	2230				Fish back in water & pumping to extractor	
	2237		44	16=12	Resume line. All systems on except IHC	
	2313	34	61	15		
8 Feb 89	0000	34 99	99	7	Lower FISH TO 53 m	60 m
	0030	34	99	17	53 m	70 m
	0216	34	150	22		75 m
	0332		188	22		75
	0457		233	22		75
	0519		241		HEADING INTO U-TURN FROM	
					U-TURN TO TTT. SOME NAV PROBLEMS, MAY OVERSHOOT TURN A BIT.	
	0548	34	250	22	EOL 34	(75 m)

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39 46.41
146 5.85

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NO IHC RUNNING

SURVEY LOG SHEET

BASS 35

TT - 55
41 nm = 76.4 km

JOBNAME AMOCOBASS

PAGE 37

Floppy Disk # AMOCO BASS 1

LHC1 Roll # 4 **LHC2 Roll #** 2 **IHC Roll #** 3
HHC Roll # 3 **CO2 Roll #** 4

DATE	TIME	LINE	SHPT	CM	COMMENTS	
Fes 8/87	05:50	BASS 35	1	22	BOL.	BOTTOM 75m
	06:10		10	52	22	75
	06:21		16	52	22	75
	06:40		25	52	22	75
	06:56		33	52	22	78
	07:06		38		22	75
	07:22		46		NEW ORIENTE → LNC	
	07:56		61		16	66
	09:31		109	17		70
	09:41		114	19		72
	11:21		163	8		61
	11:36		170	6		59
	11:50		177	5	RAISING FISH TO 45m	58
	11:55		180	12		57
	12:05		185	16		51
	12:11	35	187	11	End of propbt, continue to take data until RR	
	12:37		201	10	End of turn @ RR	

39 45
146 5 End 55 46° 8.07
145 20.37

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SURVEY LOG SHEET

BASS 36
RR → UP

JOBNAME Amoco BASS

PAGE 38

Floppy Disk # Amoco BASS 1

39.91 NM

LHC1 Roll # 4 LHC2 Roll # 2, 3 IHC Roll # 3 = 74.3 Km
HHC Roll # 3 CO2 Roll # 4

DATE	TIME	LINE	SHPT	Fish HT	COMMENTS
Feb 8 89	1237	36	1	10	start of Preplot line 36 RR
	~~1241~~		3	13	Sample flow dropped off
	1257		9-10	16	Sample flow fine
	1300		11	20	
	1320	36	21	18	Drop fish 7 meters
					Drop fish
	1407	36	44	10	
			80	12	Fish to 62 m
	1548	36	93	14	
	1652		125	11	Fish up
	1726		140	14	New roll (3) on LHC 2
			146		Change Delrin tube Traps
			155	13	
	1828		172	15	End of Line
					Recalibration
					Fish inspection

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SURVEY LOG SHEET

BASS 37

LL = 1.993 NM PP → 00

MM = 3.612 NM

KK 2.442 NM

JJ 2.441

3997

PP 12.73 NM.

TL, NM =

JOBNAME Amoco BASS **PAGE** 39

Floppy Disk # AmocoBASS 2

LHC1 Roll # 4 **LHC2 Roll #** 3 **IHC Roll #** 3

HHC Roll # 3 **CO2 Roll #** 475

DATE	TIME	LINE	SHPT		COMMENTS
8 Feb 89	19:46	37	1	10	Start of line All systems online
					IHC back on line with ~~old~~ column LHC 1 down
			8		LHC 1 up off again
	2305	37	11		BT-1 off LHC 1 on
	2		13		~~IHC 1 off line~~
	20:29		22	18	
	20:52		34	15	Change IHC line
	"		34		
	2133		56	18	to LL + fig. 8
	2156		73-5	15	to MM
	2227	36	81		MM to KK
	~~2334~~		~~83~~		~~KK~~
	2256		95	20	start of KK to JJ
	2310		103	17	Drop fish to 58 m
	2317		105	17	Return to centerline
	2330		112		CO_2 + IHC offline - paper
			113		back on line.
	2337				Lost Water to Extract.
	2349				Fish on deck
Feb 9	0005				Fish over - water pumping
	0008		116		Resume Line at FISH 61 M

On

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BASS 37 CONT'D.

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SURVEY LOG SHEET

TOTAL 53.2 NM = 90.5 KM

JOBNAME AMOCOBASS

PAGE 40

+2.2nm (TURN)

Floppy Disk # AMOCOBASS #2

LHC1 Roll # 4+5 LHC2 Roll # 3 IHC Roll # 3

HHC Roll # 3 CO2 Roll # ~~4+5~~

	DATE	TIME	LINE	SHPT		COMMENTS	
THU	FEB 9	0042	BASS 37	132	14	BOTTOM BOW FISH 61m	
		0108		145		BACK ON STRAIGHT SEGMENT S.W.	26.4
		0135		158	19		80m
		0211		176	15		76m
		0251		194		SHIPS COMING - HEAD INTO LOOP TO EVADE	
		0311		204		BACK ON TRACK	
		0324		210	24		85m
		0418		237	8		69m
		0424		242	15	RAISE FISH TO 50m	65m
		0432		243	15	REDUCED SAMPLE-FLOW IN GE.	
		0502		258	13		60m
		0522		268	9		56m
		0533		273	8		55m
		0534		274		HEADING INTO TURN 000 - NN	
		0537		276	7		53
				282	4	EOL (INCL. TURN).	51

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162235

BASS 38
1st 1/2.

39.9mm = 67.9 KM

teg

SURVEY LOG SHEET

JOBNAME AMOCOBASS **PAGE** 41

Floppy Disk # AMOCOBASS2

LHC1 Roll # 4 5 **LHC2 Roll #** 4 **IHC Roll #** 3
HHC Roll # 3 **CO2 Roll #** 5

DATE	TIME	LINE	SHPT	FIX DIFFERANCE	COMMENTS FSN 17	
2/9/89	0557	BASS 38	1	3	BOL (SOME OFFLOADS)	52m
	~~0555~~	"	3	4	OFFICIAL BOL	51m
	0606		8	6		51m
	0612		10	8		55
	0630		19	11		58
	0646		27	14		61
	0655		32	17		64
	0712		40	19	CUTING ACROSS TO LINE 39	65
	0738		52		GETTING ONTO LINE 39	
					(WATCH FOR METHANE - O_2 SEPARATION	
					HIGH VALS ARE OK.	
					WILL CONTINUE 38 NORTH LATER	

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162236

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JASS 39
SOUTH 1/2.

SURVEY LOG SHEET

JOBNAME AMOCO BASS PAGE 42

Floppy Disk # AMOCOBASS 2

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3
HHC Roll # 3 CO2 Roll # 5

DATE	TIME	LINE	SHPT	F/S/H	COMMENTS
02/9/87	0738	BASS 39	1	21	INTO SOUTH HALF OF 39 · US / 66
	0823		22		METH-O$_2$ SEPARATION STOPPING..
	0830		24	11	56
	0850		35	20	RAISED FISH TO 35 M 46
	0937		57	10	EOL 45
			[illegible]		FISH HIGH [illegible] BOOM
	12				

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BASS 40

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SURVEY LOG SHEET

1 SHOT = 30.6 KM

JOBNAME AMOCOBASS

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Floppy Disk # AMOCOBASS 1

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3
HHC Roll # 3 CO2 Roll # 5

DATE	TIME	LINE	SHPT		COMMENTS
2/9/89	0936	40	1	5	BOL
	0954		8		LHC1 OFFLINE - BAD VALUES
					LHC1
	1015		10		INTO LOOP WHILE FID - AIR OUT
	1038		12		RESUME LINE AT COMPL. LOOP
					LEAVE NERVES OFF - DIRTY COLUMN
	1047		15		LHC'S BACK ON AFTER START - GLITCH
	1050		16	12	44m
	1110		21	10	45
	1142		42	16	LOOSE FISH (FOR HELICOPTER + REDUCED
					(CONT. 43) SPEED) to 24 m
	1157		50	11	IRRIDIUM BUTTON ~~STARBOARD~~ 40m
	1159		51	16	45m
	1250	40	74		ASCARITE Dessicant in lines
	1303		92		End of line REEF

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SURVEY LOG SHEET

Line 41
FFP → EE* T

JOBNAME Amoco BASS

20.63 NM = 38.4 Km

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Floppy Disk # Amoco BASS 1

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3
HHC Roll # 3 CO2 Roll # 5

DATE	TIME	LINE	SHPT	Sight HT	COMMENTS
9 Feb 89	1305	41	1		Start of preplot line 41 @ FF
			8		THC is down since start
	1326		10	30	HHC on line (Bottom rough in picks)
	1328	41	12	30	THC on line HHC on restore
	1353	41	24	30	HHC on line
			30		Change THC drive
			47	25	Lower fish
	15:20	BASS 41	66	12	Fish Lowered
	15:51		81	12	
					End of preplot line @ ~~FF~~ EE Turn SE line
	H/S		91		@ LHC 2 off change phase + on
			93		EOL BASS 42 @ WAYPOINT EEK

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SURVEY LOG SHEET

Line 42

JOBNAME Amscobass

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8.1nm.+

Floppy Disk # Amscobass

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3

HHC Roll # 3 CO2 Roll # 5

DATE	TIME	LINE	SHPT		COMMENTS
9 Feb 89	~~1618~~ 1618	BASS 42	1	15	This line will be broken off after a few miles to resume missing portions of 38 & 39.
					ALL SYSTEMS ON THE still lighting Depth: ASCARITE
					Weather getting bad. Ship in trough. Losing Baseline on GC's
	1646		13	~~15~~	IHC hier removed
	1705		21	12	
	1727		34	16	
	17:50		45	15	
	18:18		60	15	
			61		EOL LINE 42 at 9.4 miles intersection of line 38.
					This line included the segment from BASS 42 to BASS 38

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SURVEY LOG SHEET

Line BASS 38A

JOBNAME AMOCOBASS

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Floppy Disk # AMOCOBASS1

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3
HHC Roll # 3 CO2 Roll # 5

DATE	TIME	LINE	SHPT	A	COMMENTS
2/9	18:24	BASS 38A	1		Continuation of Line 38
					approx. 9.4 n.miles from SW end.
					All systems running.
					Sea rough
	19:13	38A	24	20	Rough Seas
	20:22	38A	56	10	" "
	20:31				Fish raised to 49m
	21:06	38A	78	15	
	21:35	38A	92	15	
			106	15	HHC - rough weather
	22:49		128	15	Rough Weather
			134		EOL at waypoint IF

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SURVEY LOG SHEET

Line: BASS 39A
HH →

JOBNAME ANOCOBASS

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42.5 miles = 79.2 Km

Floppy Disk # ANOCOBASS2

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3
HHC Roll # 3 CO2 Roll # 5

DATE	TIME	LINE	SHPT		COMMENTS
10 Feb 89	0011	BASS 39A	1		Rough seas Will tows ready all systems on
			3	20	
		00:37	14		ABORT LINE - TOO ROUGH 39 41.638 145 59.636 DOWN FOR WEATHER + MAINTENANCE
			1		Fish cable broken Retrieve fish
					Calibrate & Bomb test system
Feb 10	19:57		15		Resume BASS 39A at point of departure on prior heading
					Seas still rough
	21:17		49	15	All systems on. Rough weather
	21:51		69	15	all OK
	22:24		82	18	
	22:55		96	15	all OK.
	23:39		116	15	" " FISH SOWN
	00 01		130	24	LHC2 (ODD SHOTPOINTS) VERY NOISY. 24 VM
	0036		145		USE LHC1 FOR EDITS ONLY.
02/11/89	0055		156	20	CUTTING ACROSS TO 42A. FOM
	~~0113~~				WILL END THIS LINE AT START 42A.
	0113				NEW DRIERITE LHC
	0122		169	14	64 VM
	0129		172		RAISE FISH 2 m TO REPLACE MISSING FAIRINGS.
	0154		174		END OF 39A CONNECTION TO 42A.

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162242

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SURVEY LOG SHEET

BASS 42A
(NORTH HALF)
~~37 - 62.5 Km~~
72.5 Km

JOBNAME AMOCOBASS

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Floppy Disk # AMOCOBASS 2 (550K LEFT)

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3+4
HHC Roll # 3 CO2 Roll # 5+6

DATE	TIME	LINE	SHPT		COMMENTS	
FEB 10 89	0134	~~0134~~ 42A	1	17m.	BOL 42A (NORTHEAST) 65m-4Km	
		42A		22 m	REPAIRING MISSING FAIRINGS	
	0140	↓	2	20m		
	0202	↓	14	21m	51	~~51~~
	0315		~~28~~	23m	LOWER FISH TO 55m	~~75~~
	0327		55	15 m		70
	0341		63	20 m		75
	0410	77 →	~~80~~	20m		75
	0422		84	22		77
	0518		111	21		76
	0619		141	19		~~74~~
	0628		146		HEADING INTO TURN TOWARD 43.	
					(4 MILE TURN)	
	0659		160		O_2 - METH SEPARATION HAS BEGUN	
	"		"	20		75
	0709		166		EOL	

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SURVEY LOG SHEET

BASS 43
DD - CC
36.4 nm = 67.8 km

JOBNAME AMOCOBASS **PAGE** 49

Floppy Disk # AMOCOBASS 1 (250 KLEFF)

LHC1 Roll # 5 **LHC2 Roll #** 3 **IHC Roll #** 3
HHC Roll # 3,4 **CO2 Roll #** 5

DATE	TIME	LINE	SHPT		COMMENTS	
FEB 11/89	0713	43	1	19	.2 nm OFF START	74m
	0714		2		BOL 43	
	0804		26	20		72m
	0847		48			71m
	1043	43	106	14		
	1114	43	121	10		65
	1128		128	20	RAISE ↓ TO 45m	
	1140		134	18		63m
	1150	43	138	14		
		43	157	15		
	12:36	BASS43	160	11		
	13:04		175		Waypoint CC - continue data collection to BB	
	13:21		183		EOL BASS 43 at waypoint BB	

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162244

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SURVEY LOG SHEET

BASS 44
BB - AA

JOBNAME AMOCOBASS

PAGE 50

38 nm = 71 km

Floppy Disk # AMOCOBASS 2

LHC1 Roll # 5 LHC2 Roll # 3 IHC Roll # 3
HHC Roll # 4 CO2 Roll # 5

DATE	TIME	LINE	SHPT	COMMENTS
2/11/89	13:20	BASS 38	1	All systems on. Seas calm
	13:50		14	10 meters
	14:26		30	20 meters
	14:41		37	13 meters
	15:01		47	20 meters
			50	15 meters
	15:46		69	15 "
	16:00		75	15
	16:15		83	13
	16:58		104	15
	17:27		118	15 All systems OK.
	17:45		127	15
	18:28		144	13
	19:07		165	14
	19:16		171	EOL Line BASS 44 at Waypoint AA
				Bring fish up for inspection.
				Recalibrate

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BASS 45
37.4 nm 2→Y
=69.7 km

JOBNAME AMOCOBASS PAGE 51

Floppy Disk # AMOCOBASS 2

LHC1 Roll # 5 LHC2 Roll # 3&4 IHC Roll # 3
HHC Roll # 4 CO2 Roll # 5

DATE	TIME	LINE	SHPT	COMMENTS
2/11	20:14	BASS 45	1	All systems OK. Line started ~2 mi N of 7
	20:35		10	15 meters Waypoint 7
	21:05		25	12 meters
	21:15		30	15 m
	21:30		37	15 m
	21:45		45	13 m
	22:00		52	12
	22:13		59	12
	2232		67	13
	2248		75	14
	2300		81	14
	2313		87	17
	2336		99	13
	2340		101	16
2/12/89	0007		114	13 ⊲ 57 m
	0024		123	12 Bottom
	0045		127	11
	0050		128	6
	0051		136	10 ⊲ 49 m
	0059		140	17 59 m / ⊲ 43 m
	0155		167	12 55 m
	0210		174	11 54
	0217		178	9 51
	0221		180	At 'Y'. End of preplot line Line at Y / Continue data collection until "X"
	0236		188	END OF TURN. AT "X"

S.P. 1 AND 2?

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BASS 46

35.2 nm = 59 km

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JOBNAME AMOCOBASS **PAGE** 52

Floppy Disk # AMOCOBASS 3

LHC1 Roll # 5,6 **LHC2 Roll #** 4 **IHC Roll #** 3
HHC Roll # 4 **CO2 Roll #** 5

DATE	TIME	LINE	SHPT		COMMENTS
2/12/89	0237	BASS 46	1	12	BOL, 31° OFF COURSE | 54 M | FISH 42 m
	0242		2	12	TRUE BOL
	0310		16	16	58 M
	0346		30	19	61
	0414		37	23	65
	0424		41	15	LHC2 HUNG UP. RESTORED, O_2 SEPARATION
	"		"		LOWER CA TO 50M '65'
	0446		51	20	70
	0457		57	22	72
	0459		58	13	LOWER CA TO 59M 72
	0520		68	17	TIGHTEN DIGRITE TUBE. 76
	0610		93	16	
	0627		101	16	change paper LHC 1 #6
	0714		123	11	70
	0744		138	11	70
					HEADING INTO TURN. AT 'W' NOW.
					End of predot E W
	0802	"	147		WATER STILL ⇒ VALUES VERY STABLE
	0829		160		End of 52 start Line 47
					@ V

AMOCOBASS L: 308 K

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36km = 67.1 km

~~BASS~~ BASS #47

~~BA~~ PAGE 53

JOBNAME AmocoBASS

Floppy Disk # AmocoBASS #2

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # 3

HHC Roll # 4 CO2 Roll # 5

DATE	TIME	LINE	SHPT	Fish Ht.	COMMENTS	
2/12/89	~~0629~~	~~47~~	1	9	Start Line ~~47~~ 270° "V"	
	0836	47	4	16	RAISE FISH TO 55 M	
	0904	"	18	13	CALM SEAS → 3393's IN SYNC	
	0955		42	15		70
	1003		47	16	CONTAINER SYSTEM - SHUT-DOWN FOR SMOKE	71
	1153		101	9		64
	1206		108	~~16~~	RAISED ∞ TO 45 M	65
	1224		116	14		
	1238		122	12		
	1255		131	12	ALL OK	
	1319		143	13		
	1335		151	14		
	1423		165		EOL BASS 47 @ Wynoot 4	

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LINE 48
U → T
~5nm = 9.3 km

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SURVEY LOG SHEET

JOBNAME AMOCOBASS

PAGE 54

Floppy Disk # AMOCOBASS3

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # 3
HHC Roll # 4 CO2 Roll # 5

DATE	TIME	LINE	SHPT		COMMENTS
2/12/89	14:05	BASS 48	1		This line includes segment between U & T and pigtail turns on each end
			6	10	Waypoint U after 1st pigtail 10 Hales fish height
	14:26		11	15	Fish @ 15m
	14:57		26	15	Waypoint T, Beginning Turn Fish @ 15m
			30		EOL BASS 48 after second pigtail

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68.4 km BASS 49
T → S

JOBNAME AMOCOBASS PAGE 55

Floppy Disk # AMOCOBASS 3

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # 3 & 4
HHC Roll # 7 CO2 Roll # 5 & 6

DATE	TIME	LINE	SHPT		COMMENTS
2/12/89	15:06	BASS 49	1	15	Begin line at waypoint T Fish at 15 m
			3	10	
	16:21		37	15	
	16:57		55	19	
	17 36		75	15	
	18:05		93	15	
	18:34		103	20	
	18:40		106	12	
	19:03		117	13	
	19:46		138	12	
	20:01		145	14	
	20:36		162	13	
	20:46		168	12	EOL BASS 49 @ waypoint S
					Bring fish up for inspection. All ok
					Recalibrate system

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BASS 50
R → P

SURVEY LOG SHEET

JOBNAME AMOCOBASS PAGE 56

Floppy Disk # AMOCOBASS 2

37.4 nm = 69.1km

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # 4
HHC Roll # 4 CO2 Roll # 6

DATE	TIME	LINE	SHPT		COMMENTS
2/24/89	21:53	BASS 50	1	13	Start of line prior to waypoint R
	22		7	13	Waypoint R
	22 40		22	12	"
	22:51		28	10	
	23:11		38	12	
	23:38		51	10	
	23 41		53	12	
	2400		62	12	
	0038		81	12	
	0122		102	19	43m (RAISED FISH + FIXED BUNGY) 68
	0203		122	15	NEW DEHYDRITE 58
	0240		141	13	55
	0311		156	10	@42 51
	0352	50	176	10	End of preplot Line Data collection through turn to P
	0405		182	10	End of line and turn @ P

NOTE 2 S.P. at end of 50 reads 50 sp 12 should be 51 sp 1

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SURVEY LOG SHEET

BASS 51
P → O → N

JOBNAME Amoco BASS

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Floppy Disk # Amoco BASS 3

37.184 NM = 69.3 km

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # 4
HHC Roll # 4 CO2 Roll # 6

DATE	TIME	LINE	SHPT Fish Pt		COMMENTS
13 Feb 89	0405	51	1	8	start of line @ P
	0415		3	10	Program not accepting new name. Restart the integrators to resume
	0516		31	13	58
	0630		67	13	(5 sm) fish drop 65
	0730	51	97	20	
	0753	51		19	7
	0946	51	164	20	End of preplot line @ O continue sampling until N
	1017		178	20	End of Turn / line @ N

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BASS 52
N → M
35.75 nm = 67 km

JOBNAME Amoco BASS

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Floppy Disk # Amoco BASS #4

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # 4
HHC Roll # 4 CO2 Roll # 5

DATE	TIME	LINE	SHPT	fish HT	COMMENTS
13 Feb 89	1017	52	1	20	start of Line
			8		Reset timing on LHC's
	1114		29	18	FISH 51 m 69 m
	12:04		54	17	
	12:33		67	10	Fish lowered to 58 m
	12:48		74	8	
	13:04		82	13	Raise fish
	13:25		93	13	IHC off line for rest of survey will change to Oxygen/ methane detector
	13:44		101	10	
	14:05		109	15	Raise fish
	14:47		133	13	
	15:22		150	12	
			153	10	
	15:44		166	12	EOL @ waypoint 11

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SURVEY LOG SHEET

BASS 53
M → L

JOBNAME AMOCOBASS

PAGE 59

33 NM = 6 hrs

Floppy Disk # AMOCOBASS4

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # OFFLINE
HHC Roll # 4 CO2 Roll # 6

DATE	TIME	LINE	SHPT		COMMENTS
2/13/89	15:45	BASS 53	1	7	Begin line at waypoint M prior to pigtail turn.
	15:57	53	6	10	Waypoint M heading towards L
	16:13		13	10	
			20	12	Waypoint L. Start pigtail
	16:40	53	27	13	EOL at end of pigtail

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SURVEY LOG SHEET

BASS 54
L → K

JOBNAME ANADARKOBASS

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Floppy Disk # ANADARKOBASS3

41.4 nm = 77 km

LHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # OFFLINE
HHC Roll # 4 CO2 Roll # 6

DATE	TIME	LINE	SHPT		COMMENTS
2/13/89	16:42	BASS 54	1	12	EOL at waypoint L
			5	15	
	17:04		10	10	
	17:08		12	8	
	17 23		19	10	
	1745		30	15	
			44	15	
	1815		45	6	Lower fish
	1844		59	10	
	19:26		80	18	
	1940		86	10	Fish lowered (Depth 68 Fish at 54)
	20 13		103	10	
	2032		113	10	
	2105		129	12	
	2149		150	14	(Depth 72, Fish 58)
	22:22		167	14	
	2253		181	11	(Depth 70 Fish 59)
	22:58		184		EOL BASS 54 at Waypoint K
					Bring up fish to inspect
					OK.
					Recalibrate

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SURVEY LOG SHEET

BASS 55
J → I

JOBNAME AMOCO BASS

PAGE 61

34.7nm = 64.6 km

Floppy Disk # AMOCO BASS3

JHC1 Roll # 6 LHC2 Roll # 4 IHC Roll # OFFLINE
HHC Roll # 4 CO2 Roll # 6

DATE	TIME	LINE	SHPT		COMMENTS
2/13/89	23:33	BASS 55	1	1	Start Line prior to Waypoint J
			3	3	Waypoint J
	2354		11	13	Start Line 55
	0126		56	14	FISH 57m BOTTOM 71m
	0135		60		LHC2 O2 SEPARATION) - 100 FOR HI VALS.
	0156		70		NEW DRIERITE
	0239		92	15	92
	0240		94	23	RAISE ∝ TO 47 M
	0251		98		DAVE DISMEMBERING THC INTEGRATOR
			100		THC BACK TO NORMAL
	0427		146	167	(H3h - 42m) 63
			↑	↑	End of Proplot line @ I Continue sampling to H.
	0518		170	11	End of line @ H
	0542		182		END OF TURN (STILL "56)

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SURVEY LOG SHEET

computer file has name of ctdcal, NOT 56A
BASS Line 56 of 56A
H → G → F
24.2 nm = 41.14

JOBNAME Amoco BASS **PAGE** 62

Floppy Disk # Amoco BASS 3

LHC1 Roll # 6 **LHC2 Roll #** 485 **IHC Roll #** ff printer
HHC Roll # 4 **CO2 Roll #** 687

CONTINUATION OF 56 = 56A

DATE	TIME	LINE	SHPT		COMMENTS
14 Feb 89	0542	56	1	8	start of line ∝ 49 157m
	0625	2	21	15	∝ 50 65m
	0636		27		Restart LHC #2
					LOST fish cable parted
					at ~70m section
					~~27 39 40 10 45 1613~~
2/14/89	2205				FISH BACK IN WATER
	2247	BASS56A	1		IN SEQUOIEL START RUNS.
					APPROACHING ST. OF LINE
	2255				Back on original line 56
	23:06		10	15	USING NEW DEPTH - CONVERSION
	~~23:24~~		18	10	
	23 40		27	13	(D=65m . F=52)
	0011		42	20	51m 71m
	0107		69	9	61m (SPEED DOWN TO 4.5 knots) 70m
	0115		73	15	55m (SPEED 5.5 Knots) 70m
	0219		104	17	56m 72m
					HEADING INTO PIGTAIL
					(WILL BE 57)
					EOL

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SURVEY LOG SHEET

BASS LINE 57
INCLUDING PIGTAILS

3.2 + ~4 mile TURNS
= 12.24 Km

JOBNAME AMOCOBASS **PAGE** 63

Floppy Disk # AMOCOBASS B

LHC1 Roll # 6 **LHC2 Roll #** 5 **IHC Roll #** ____
HHC Roll # 4 **CO2 Roll #** 7

DATE	TIME	LINE	SHPT	FISH	COMMENTS
2/15/89	0221	57	1	17	START PIGTAIL INTO 57.
	0234	57	6	16	HEADING INTO DUE NORTH PART OF 57.
					"OFFICIAL" BOL.
	0244		12	19	W.D 72m
	0252		15	20	WD 73m
	0305	↓	22		EOL PREPLOT. HEADING ON PIGTAIL
	0320		29		EOL TURN.

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BASS LINE 58

SURVEY LOG SHEET 20.2 nm = 34.3 km

JOBNAME AMOCOBASS PAGE 64

Floppy Disk # AMOCOBASS 4

IHC MEASURING CH_4 ($no\ O_2$)

LHC1 Roll # 6+7 LHC2 Roll # 5 IHC Roll # HEGGIE METHANE 1

HHC Roll # 4 CO2 Roll # 7

DATE	TIME	LINE	SHPT	A	COMMENTS
2/15/89		BASS 58	1	18	BOL. FISH 55 m 5.3 KNOTS. 73m
2/15/89			17	19	53m 42m
	0427		32	16	55 m 5.3 " 71m
	0456		45	16	LNC1, CH4 OFFLINE → NEW PAPER
	0457		46		BACK ONLINE
	0531		55	16	55m (5.17 KNOTS) 71
	0536		57	16	LNC2 HAD LOCKED UP. BACK ONLINE.
	0554		66	15	56 71
	0618		78	13	55 68
	0624		80		LNC VALS VERY LOW FLOWS OK.
	0631		85	10	O2 SEPARATION IN LHC2. LNC1 OK NOW
	0633		86	16	RAISE FISH TO 49 m 65
	0709		103		AT POINT E, TURNING TOWARDS E
					EOL PRELOT
	0727		112	15	FISH 48 m 63
	0733		114		END OF TURN.

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SURVEY LOG SHEET

BASS 59
~~(INCLUDING TUNA)~~
21 NM = 35.7 Km

JOBNAME AMOCOBASS **PAGE** 65

Floppy Disk # AMOCOBASS 4

LHC1 Roll # 7 **LHC2 Roll #** 5 **IHC Roll #** HEGGIE METHANE 2
HHC Roll # 4 **CO2 Roll #** 7

DATE	TIME	LINE	SHPT		COMMENTS
2/15/89	0735	BASS 59	1	15	BOL BASS 59 FISH 51, DPTH 64
	0850		37	~~39~~	LHCL AR REJ SET FROM 1000 TO 500.
				20	50m 70m
	0919				LHC2 LHC1 STOPPED ALL TAKEN OFF
					LINE THEN START ALL.
	0923				LHC WOULD NOT START. NEW
					LINE 59A @ SP 46
	0932	59A	6		SAMPLEFLOWPROBLEMS. REMOVE TRAPS.
				21	SEEMS TO HELP.
	0942		7		THC OFFLINE FOR QUICK FIX
					(INTEGRATOR DIED)
					RELOADED METHODS + RE-STARTED
	1116 hrs	59	56		End of Line at C

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SURVEY LOG SHEET

Line 60

C → B

JOBNAME Amoco Bass

3.36 NM.

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=

Floppy Disk # Amocobass 3

LHC1 Roll # 7 LHC2 Roll # 5 IHC Roll # Hex ~~Meth~~ methane 2

HHC Roll # 4 CO2 Roll # 7

DATE	TIME	LINE	SHPT		COMMENTS
15 Feb 89	1118	60 ↓	1	20	start of Turn after C
	1120		2		SUBPUMP STOPPED. OK. NOW.
	1150		10	15	
	12:03		23	15	EOL at Waypoint B

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LINE 61
B → A

SURVEY LOG SHEET

JOBNAME AMOCO BASS PAGE 67

Floppy Disk # AMOCO BASS 3

LHC1 Roll # 7 LHC2 Roll # 5 ~~HHC~~ C1/O2 Roll # 2
HHC Roll # 4 CO2 Roll # 7

DATE	TIME	LINE	SHPT		COMMENTS
2/15/89	12:05	BASS 61	1	15	Waypoint B
	12:34		13	10	
	12:44		18	12	
	13:01		27	12	
			33	12	EOL LINE 61 at Waypoint A

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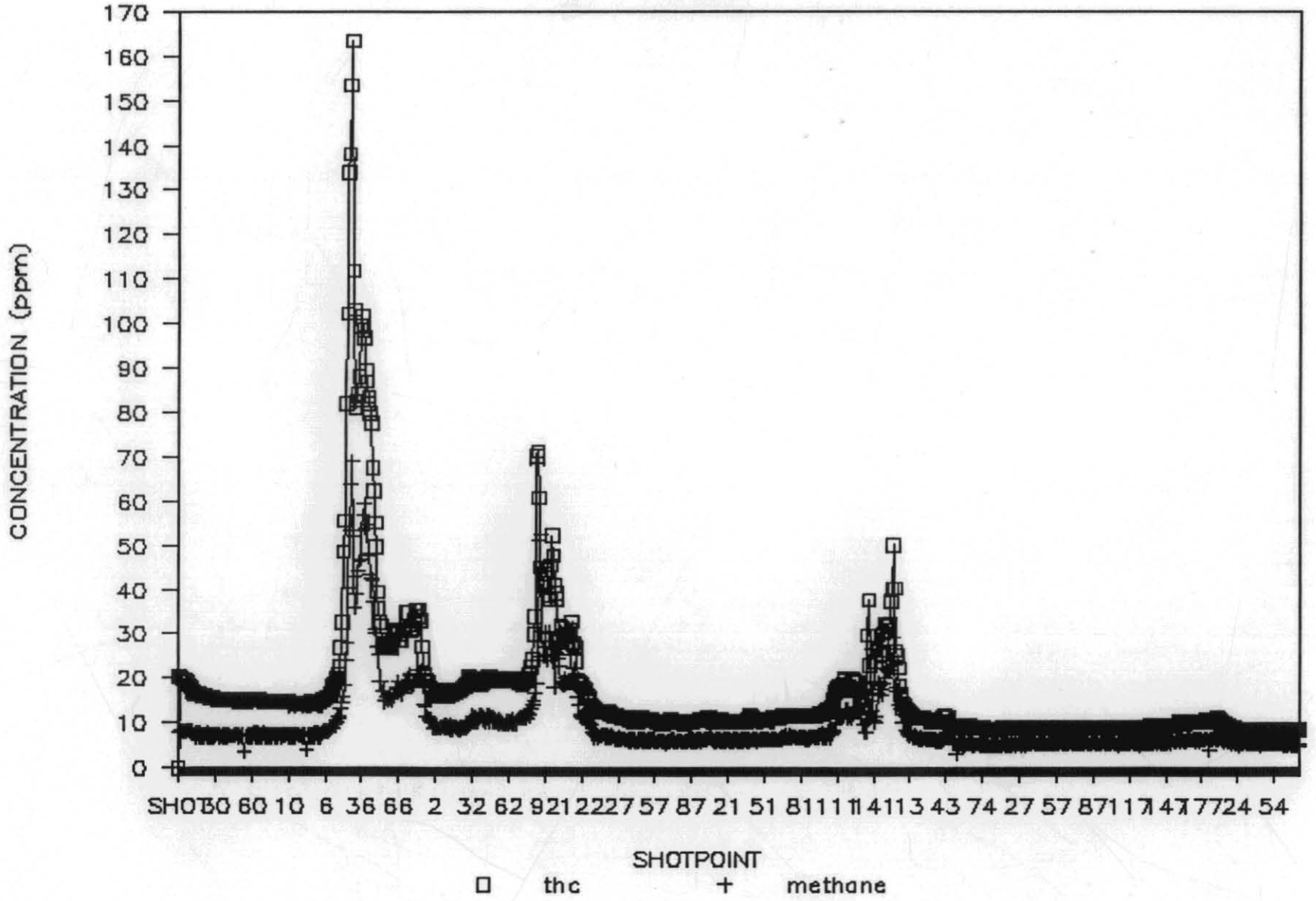
GIPPSLAND DATA

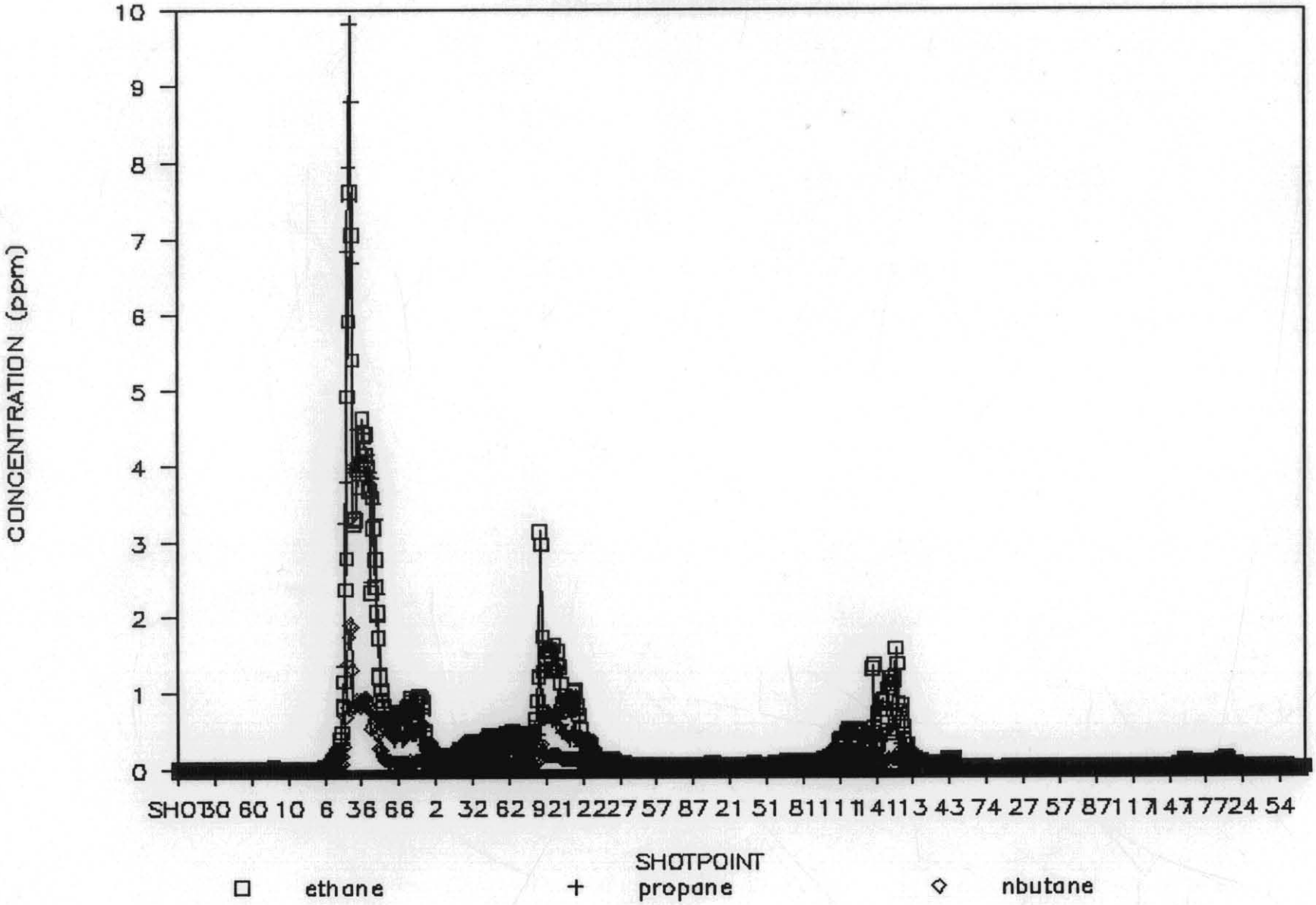
GIPPSLAND BASIN

All Data



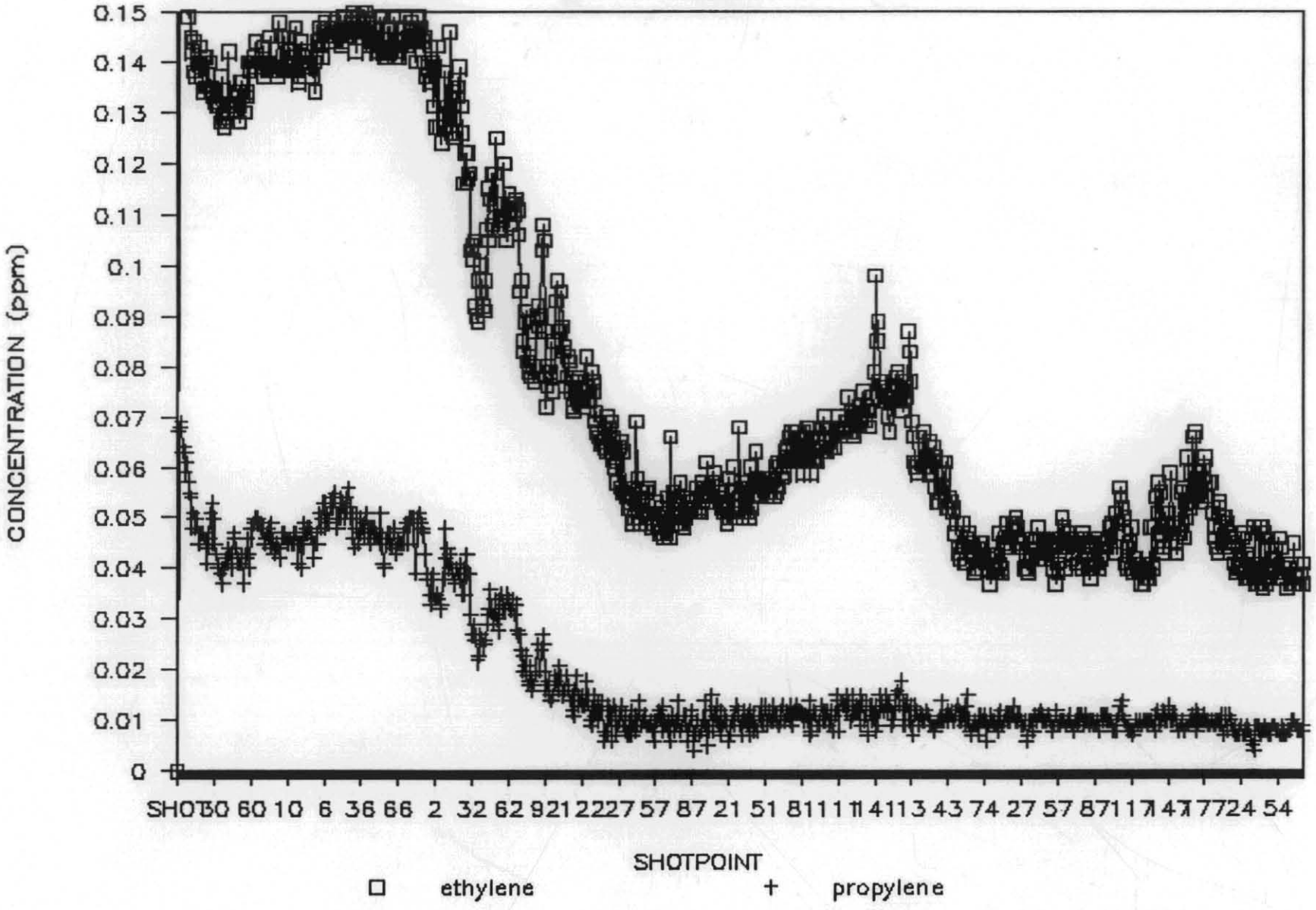
GIPPSLAND BASIN

All Data



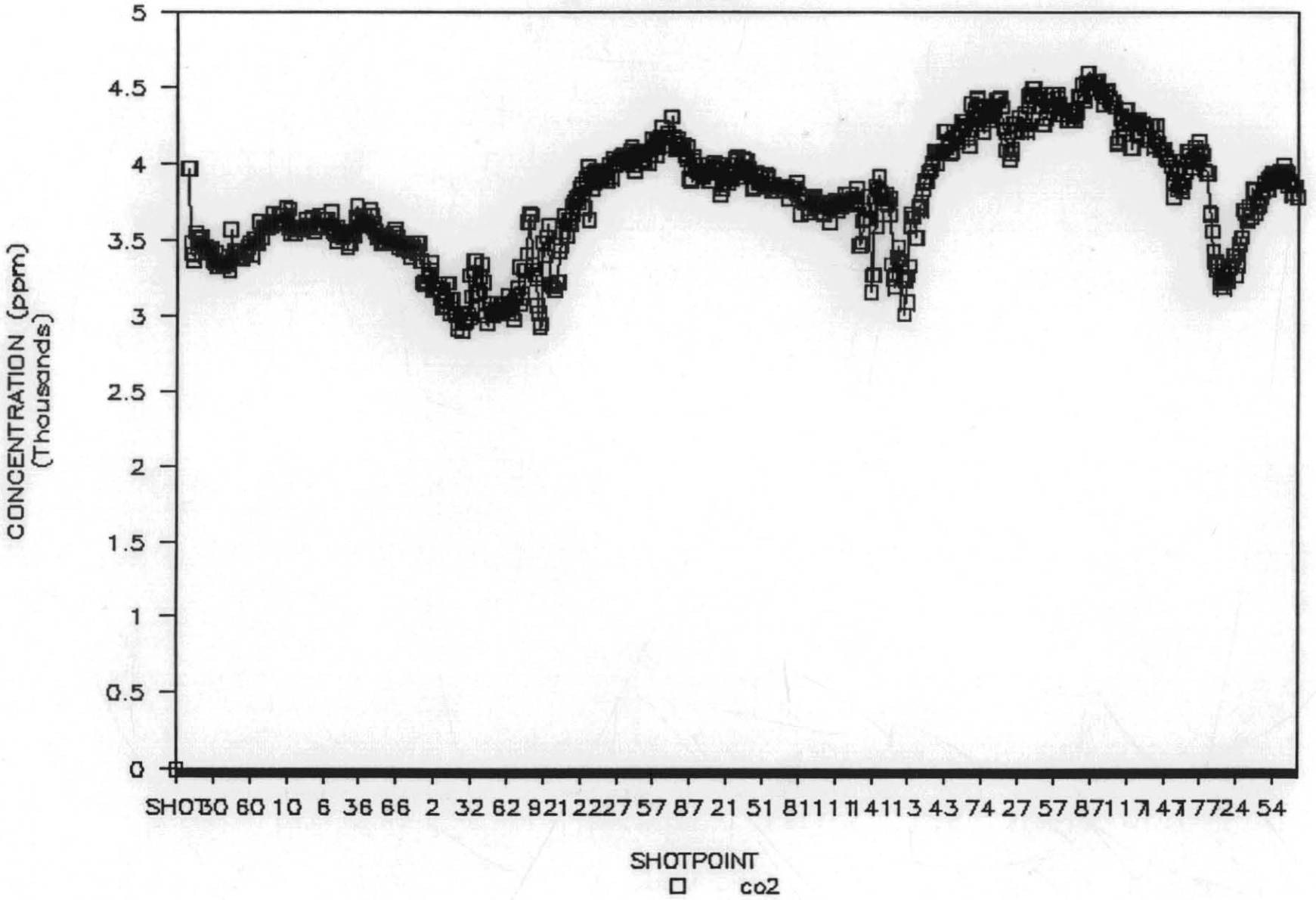
GIPPSLAND BASIN

All Data

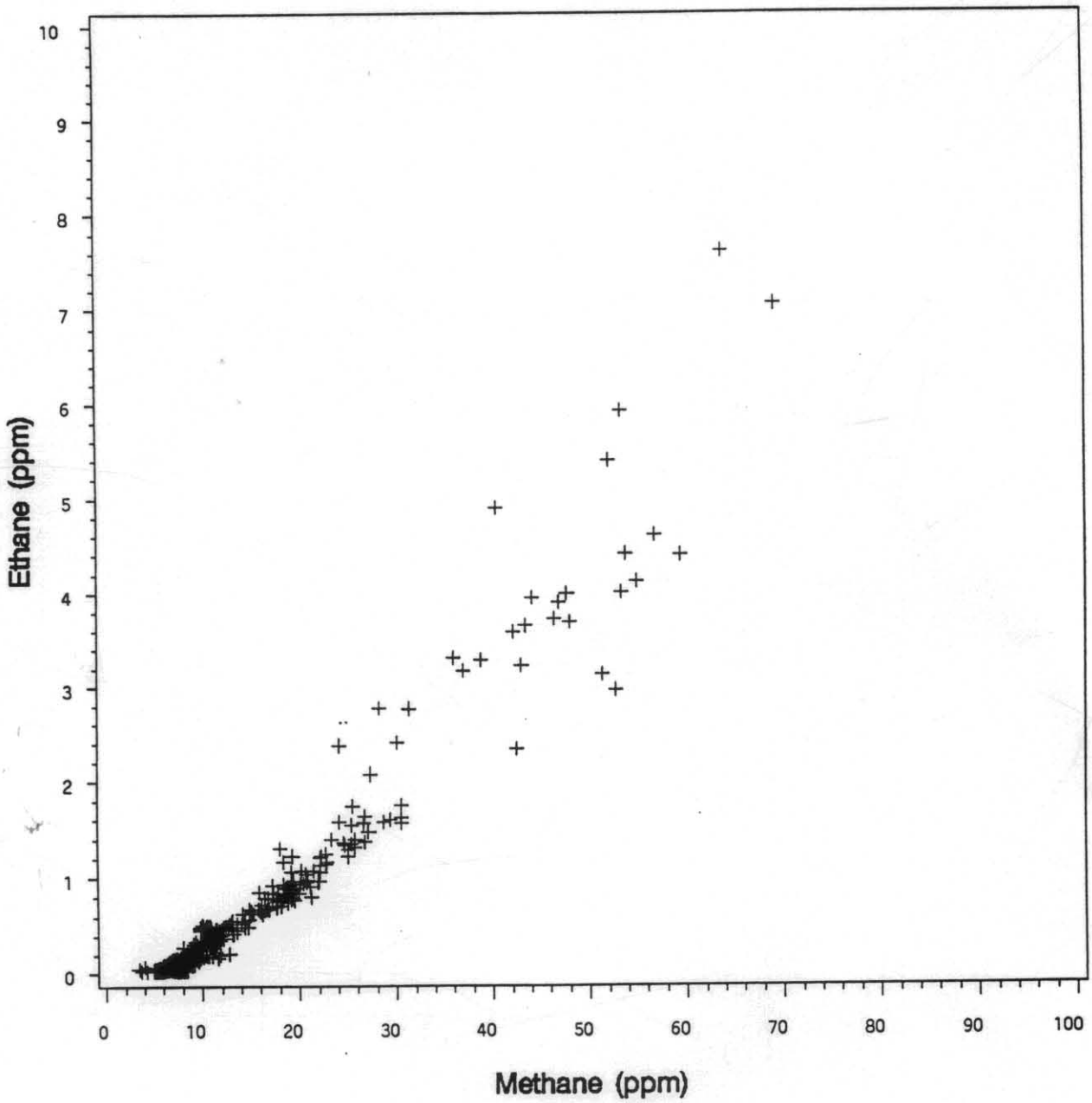


GIPPSLAND BASIN

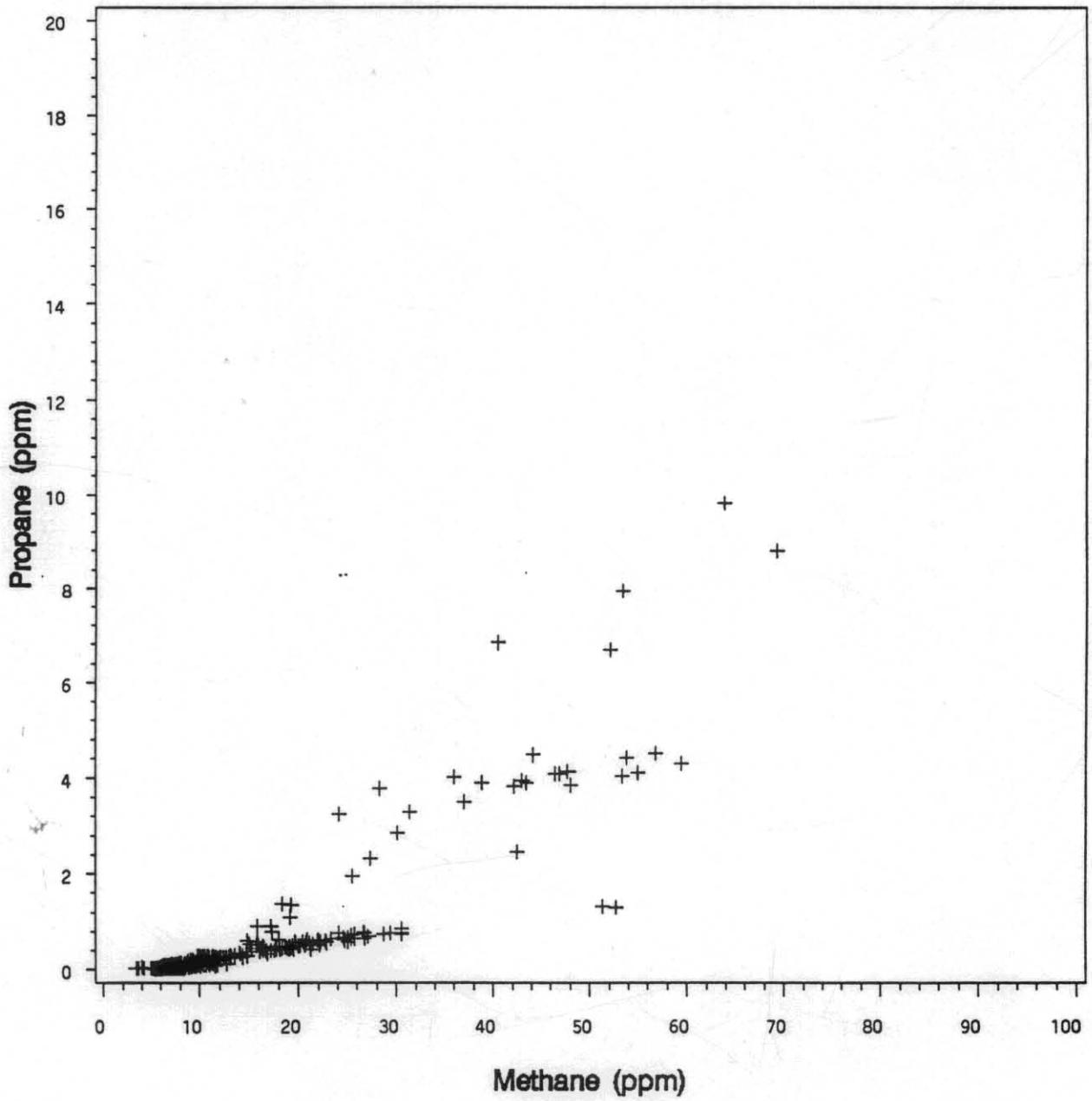
All Data



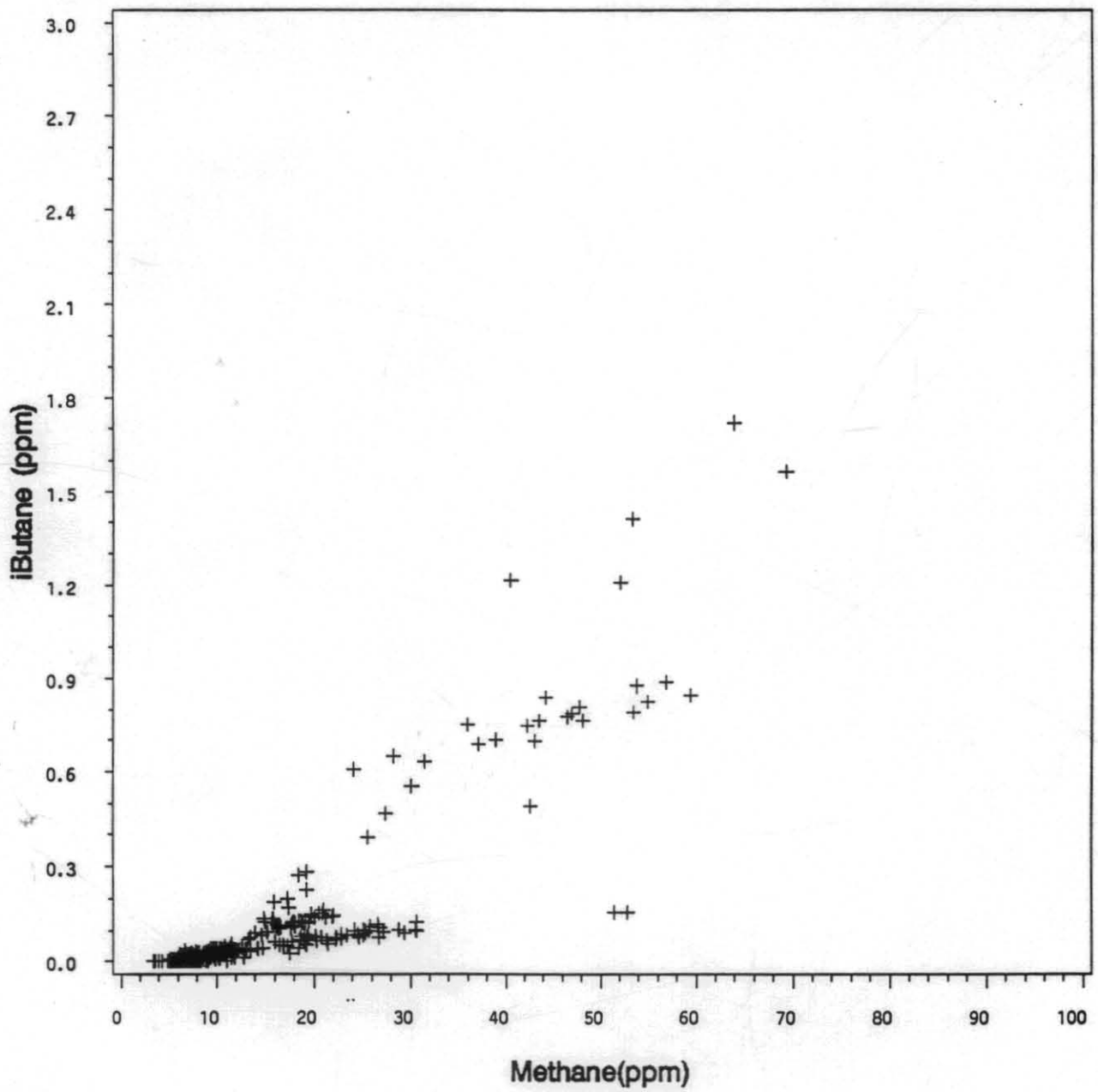
Gippsland Basin



Gippsland Basin



Gippsland Basin



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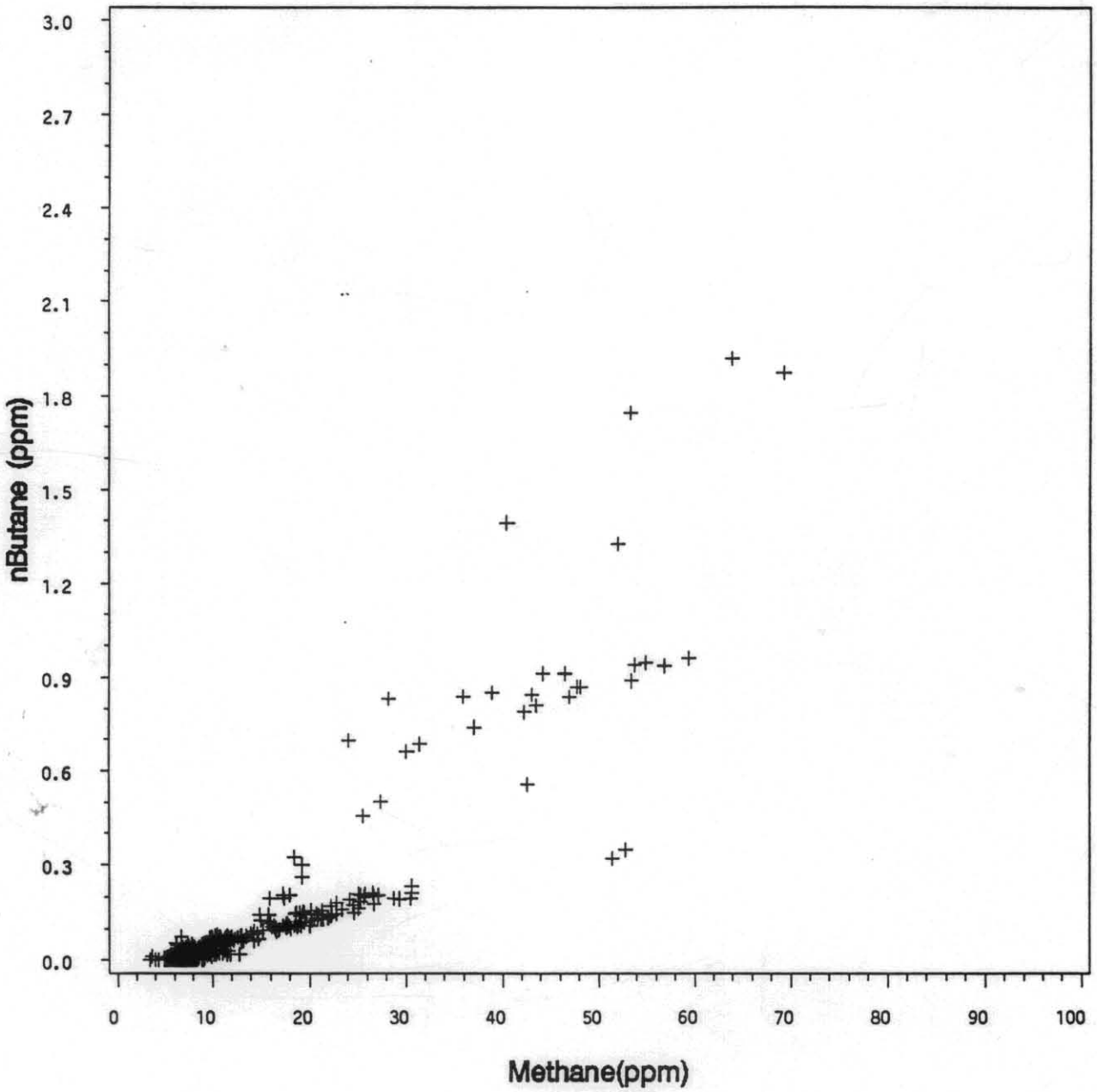

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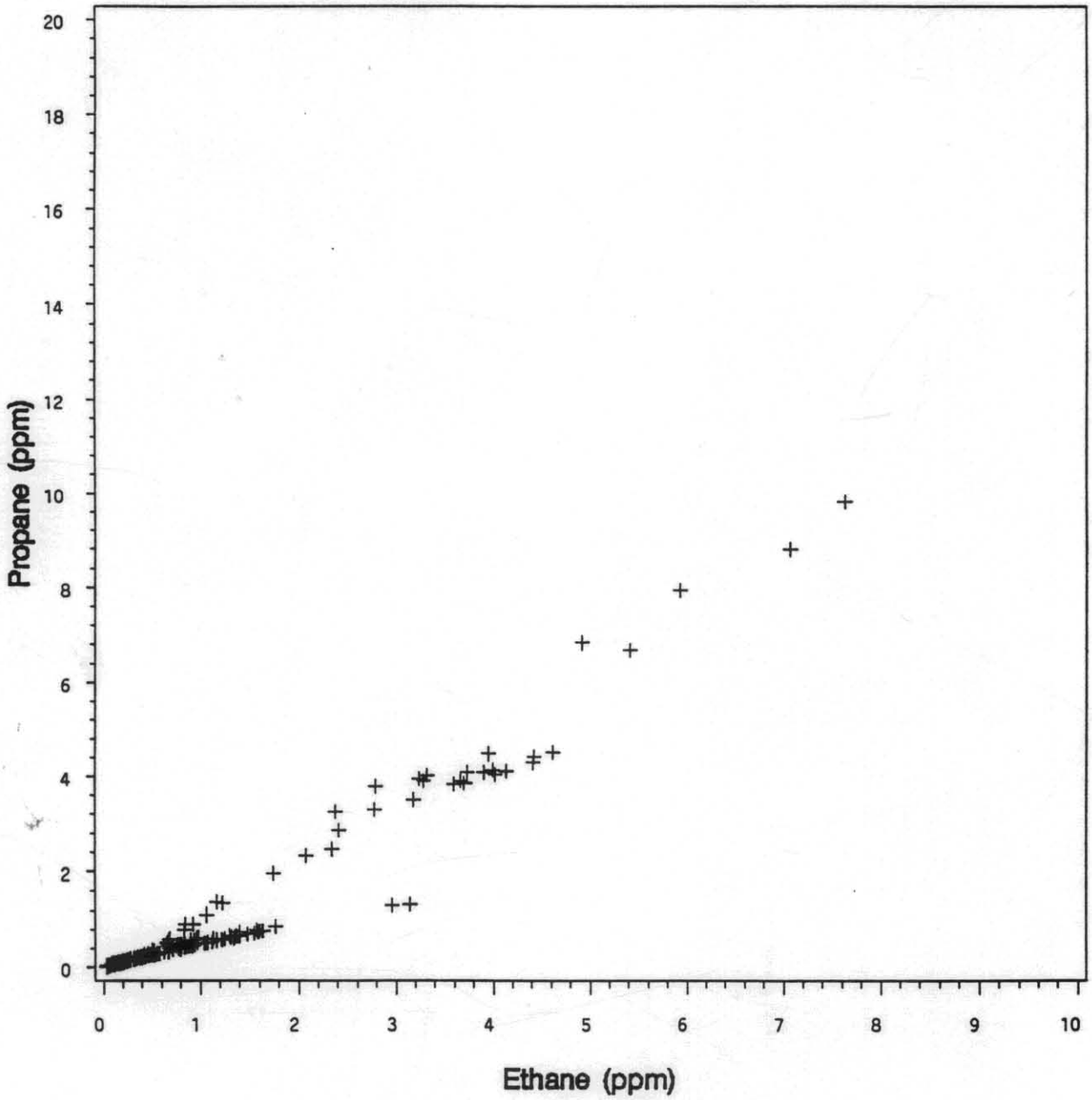

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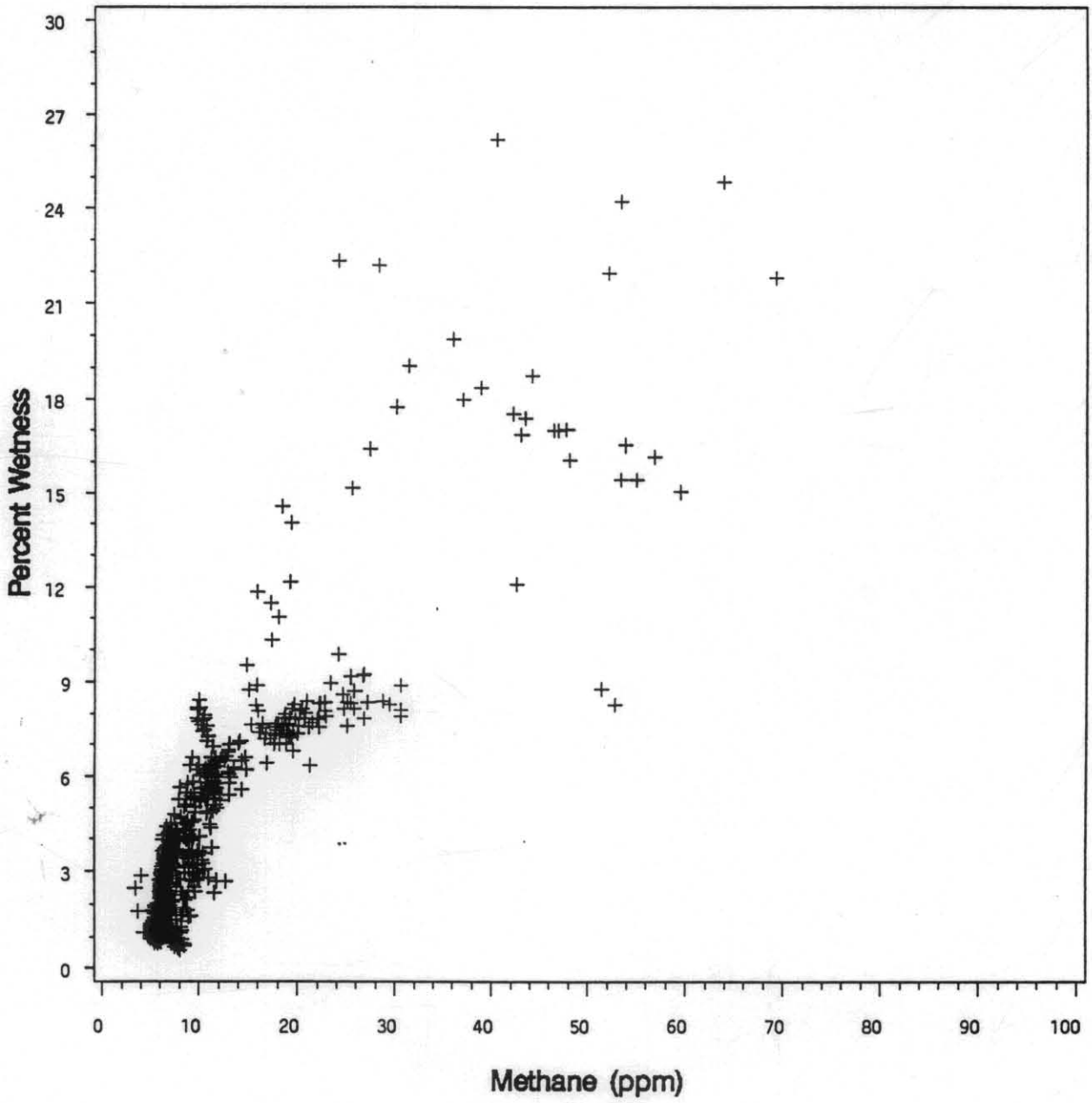
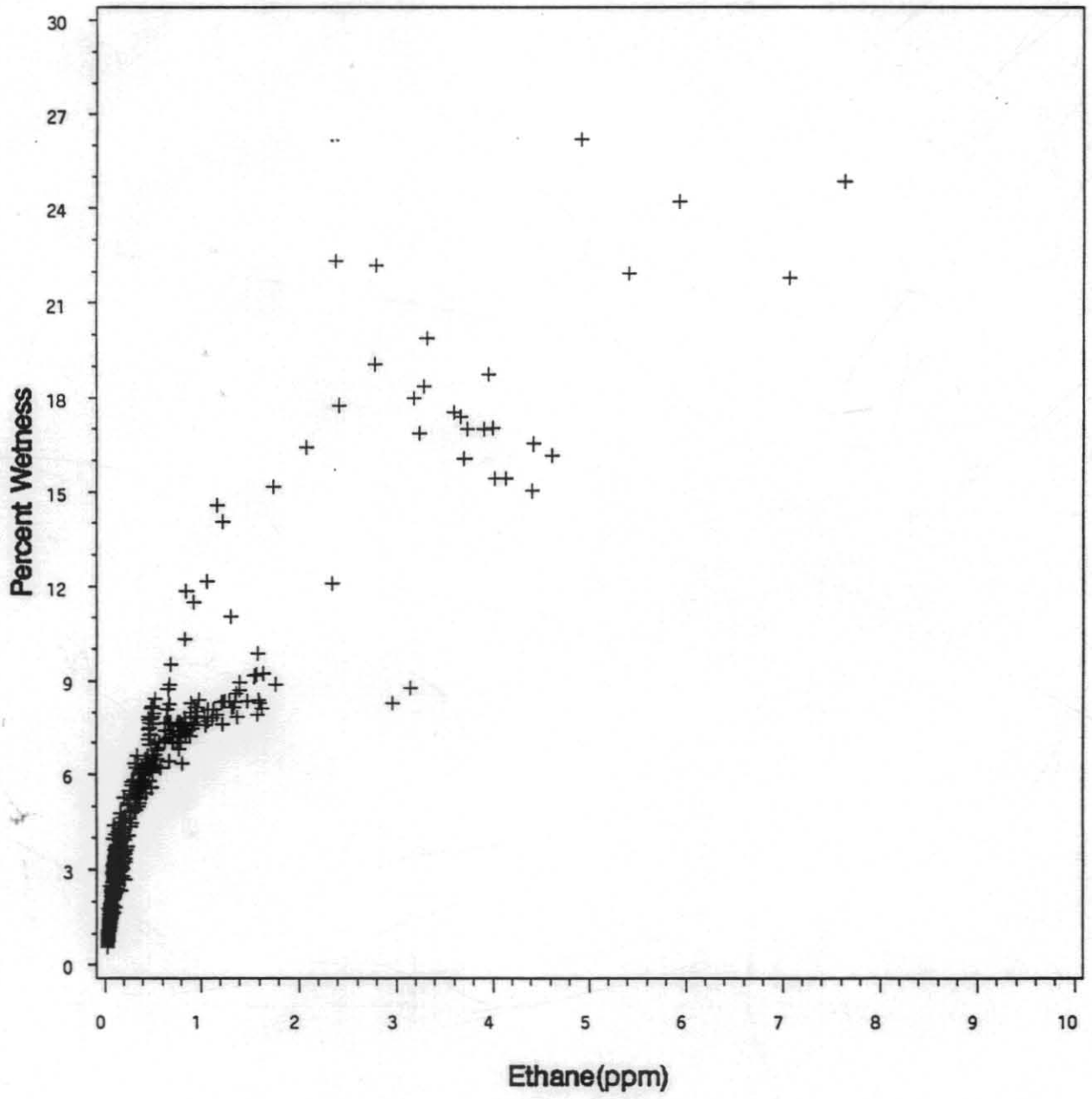
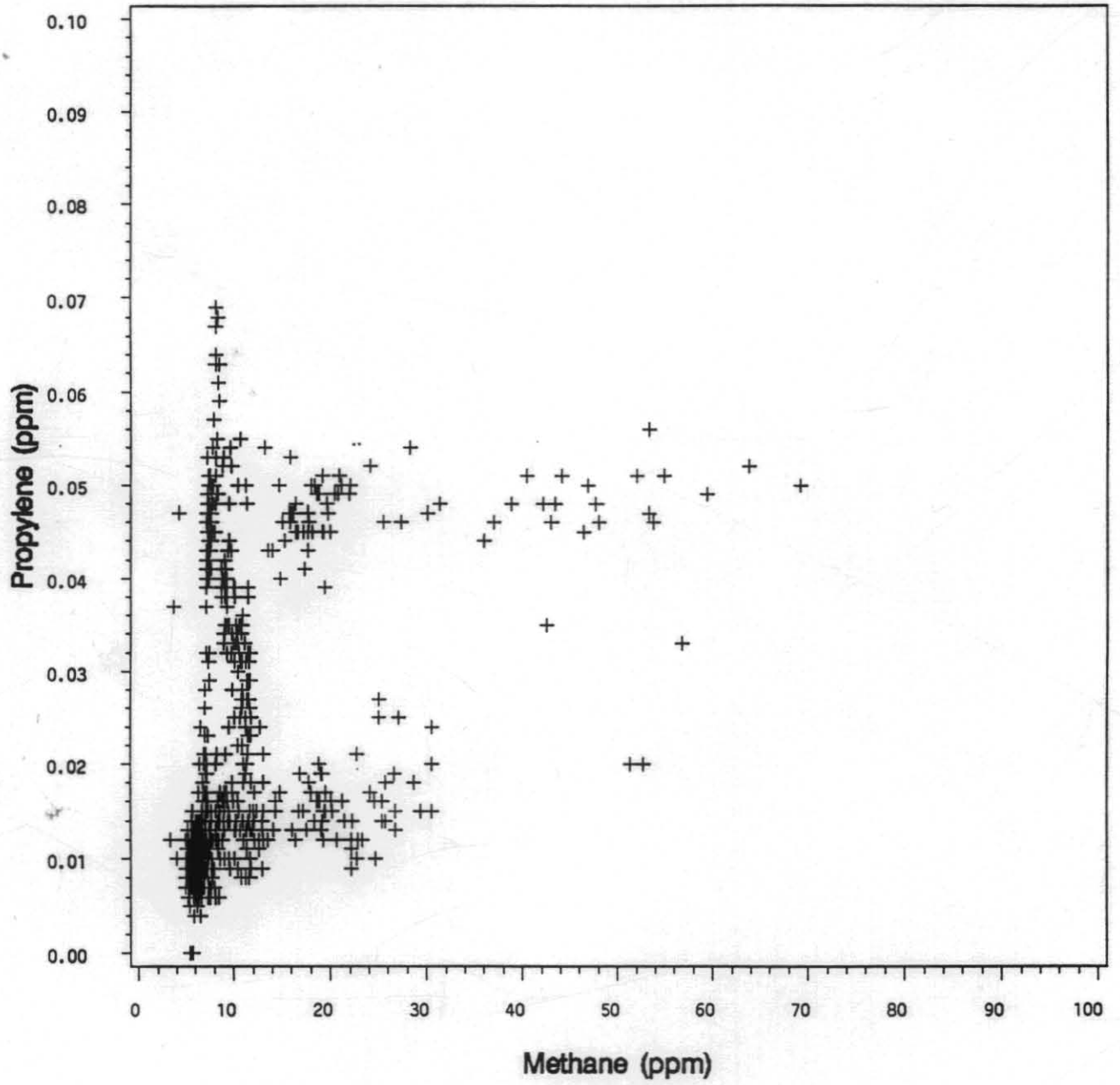


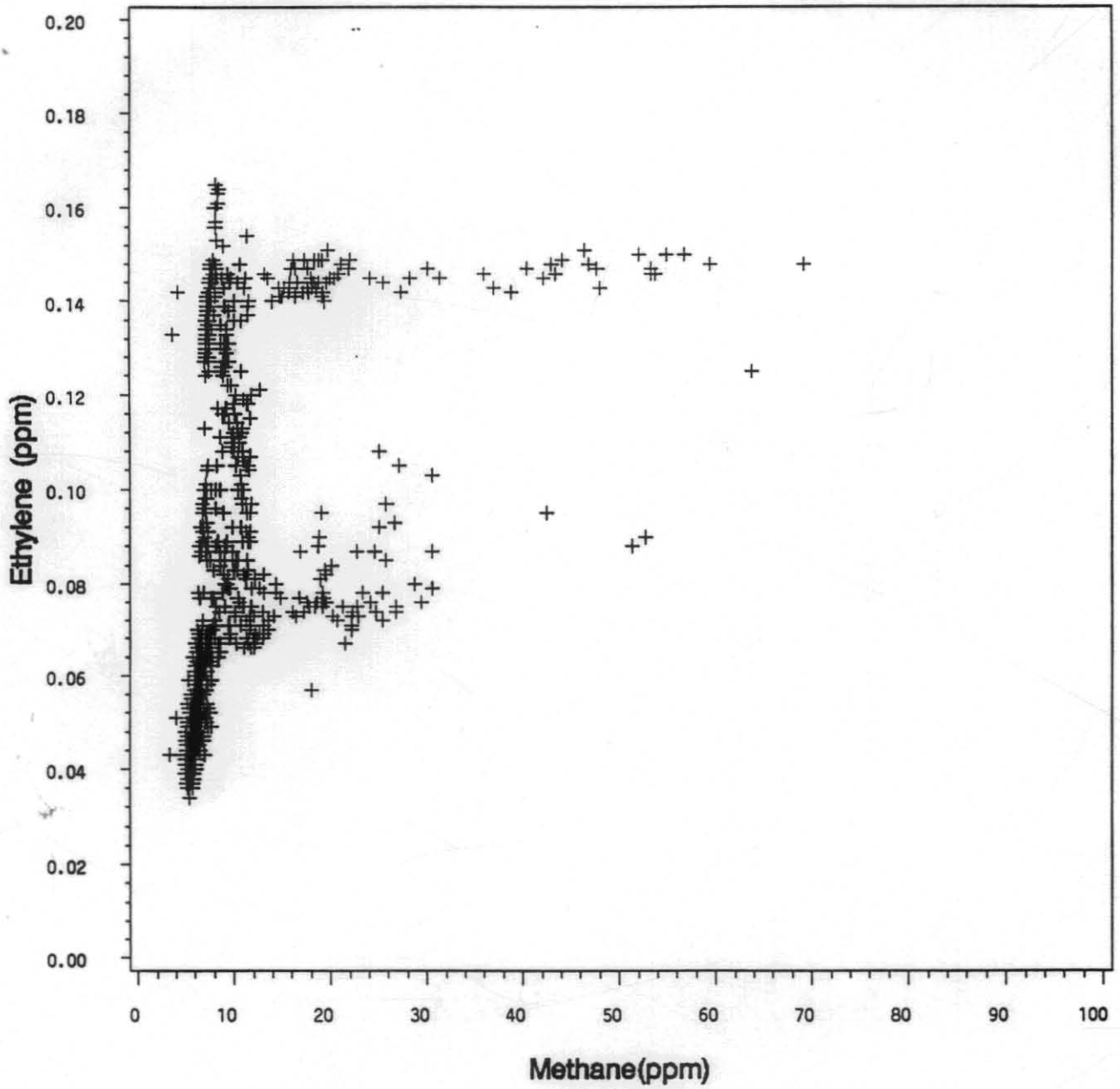
Gippsland Basin



Gippsland Basin



Gippsland Basin



Gippsland Basin