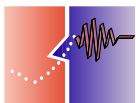
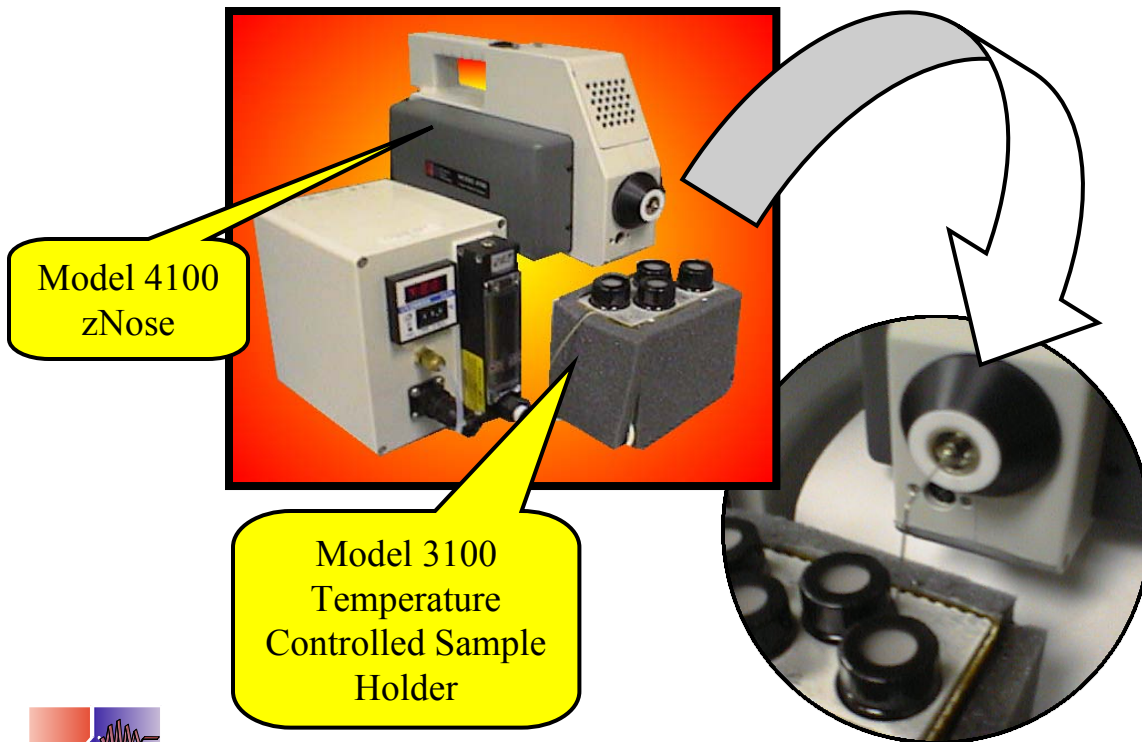
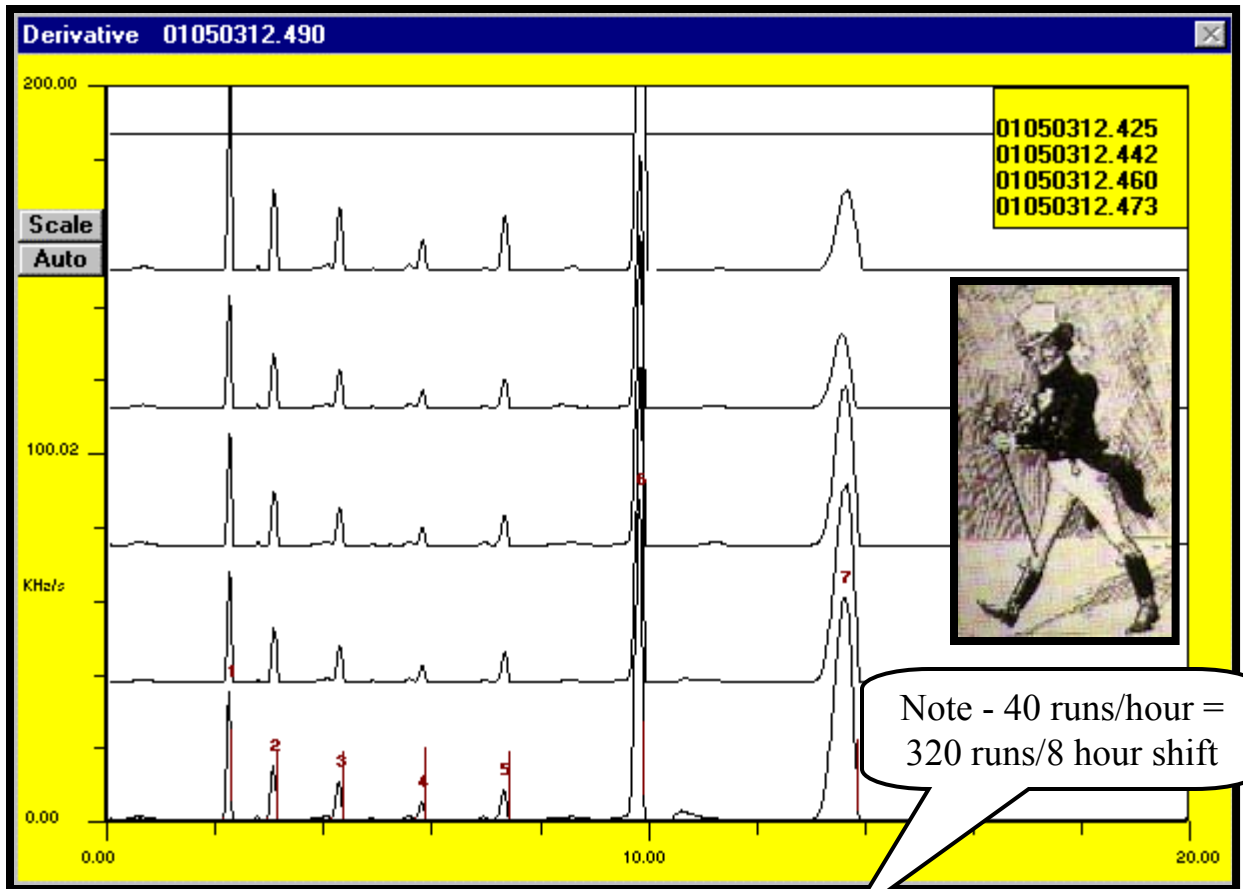


Authenticity Study Johnny Walker Whisky

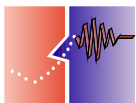
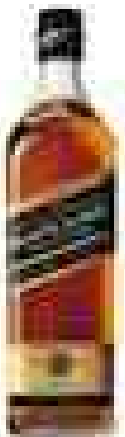
- zNoses equipped with DB-624 Columns, tenax preconcentrators, and SAW detector was used for study
- Hydrocarbon Analysis range: C6-C16
- Samples were tested in 40 mL vials with Septum lid(20 mL sample volume)
- Samples tested at RT
- Measurement Cycle Time: 90 seconds
- 10°/sec ramp, 40 - 140°C



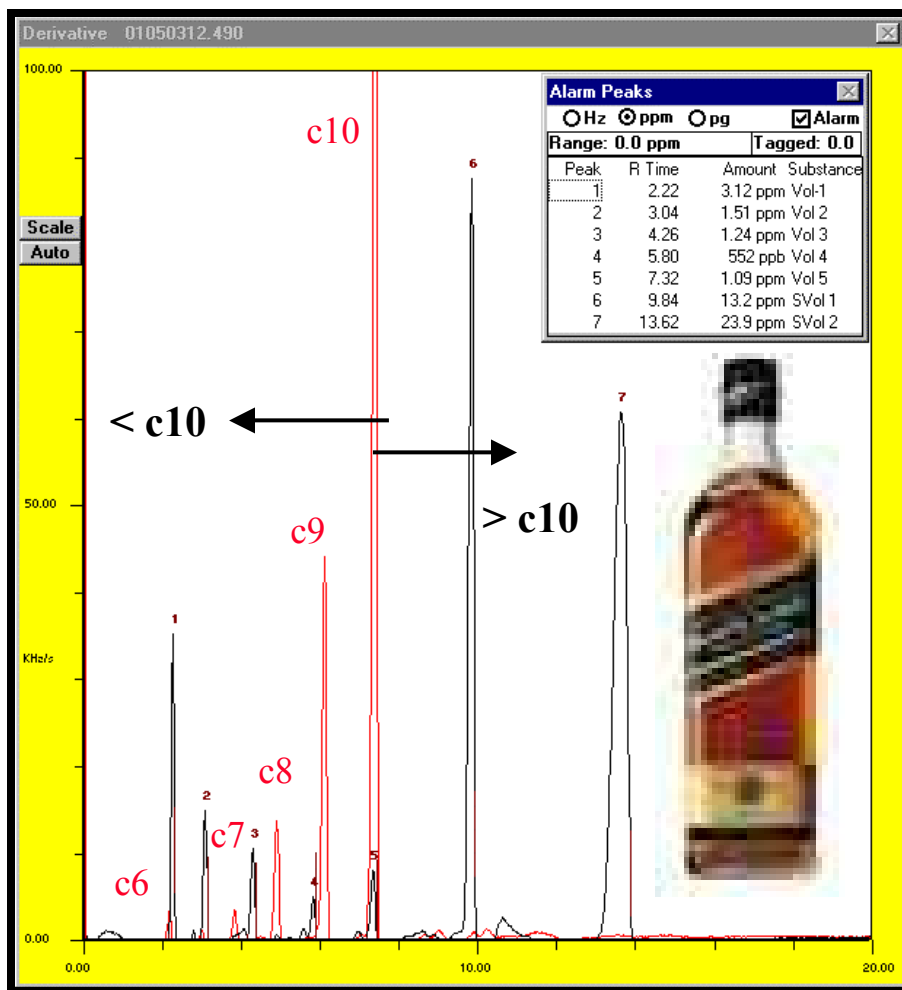
JW Whisky (Quick look at Sample No 1)



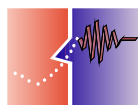
**Test Method: Repetitive runs every 90 seconds
2 second sample, 30 degree detector
DB 624 Column: 10°C/sec, 40-140°C**



Comparison with c6-c10 alkanes

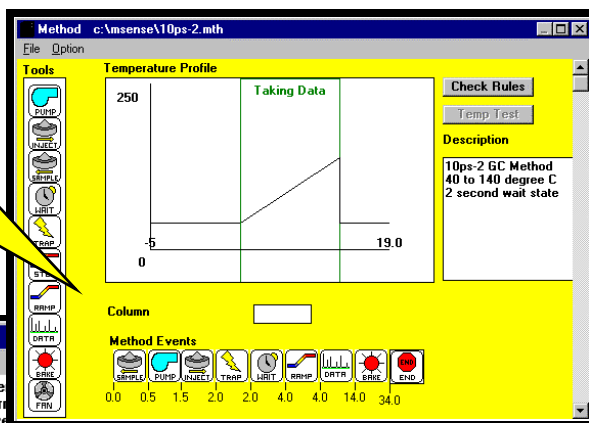


There are five (5) major volatile (<c10) and two (2) semi-volatile (>c10) compounds when compared with a mixture of c6-c10 alkanes. Alkane mixtures are ideal for referencing unknown compounds using Kovat Indices. From this preliminary look we decided to perform a component analysis using the seven (7) major analytes present.



Instrument Configuration

Graphical Wizards for creating GC methods



The screenshot shows a "Peak File" window for "c:\msense\alkan.pkd". It contains a table with the following data:

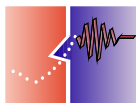
Retention Time	Percent Spread	Substance	Alarm Level	Conversion	Alarm Level			
2.200	2.500	C8	0.0100 ppm	0.0100	1000	0.0	X	
2.900	2.500	C9	0.100 ppm	0.100	1000	0.0	X	
3.620	2.500	C10	0.100 ppm	0.100	1000	0.0	X	
4.380	2.500	C11	0.100 ppm	0.100	1000	0.0	X	
5.160	2.500	C12	0.100 ppm	0.100	1000	0.0	X	
5.980	2.500	C13	1.000 ppm	1.000	1000	0.0	X	
6.820	2.500	C14	1.000 ppm	1.000	1000	0.0	X	

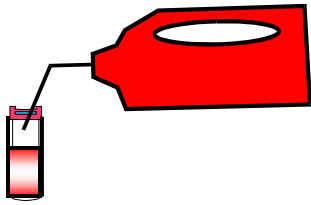
Below the table, there is a "File Description" field with the text "Peak file for n-Alkanes on dB624 column and 10ps-2 method". At the bottom, there are controls for "Units to Display" (Hz, ppm, pg) and "Peak Sum Range" (From: 0.0, To: 0.0).

Create Peak files for easy identification and setting virtual sensors

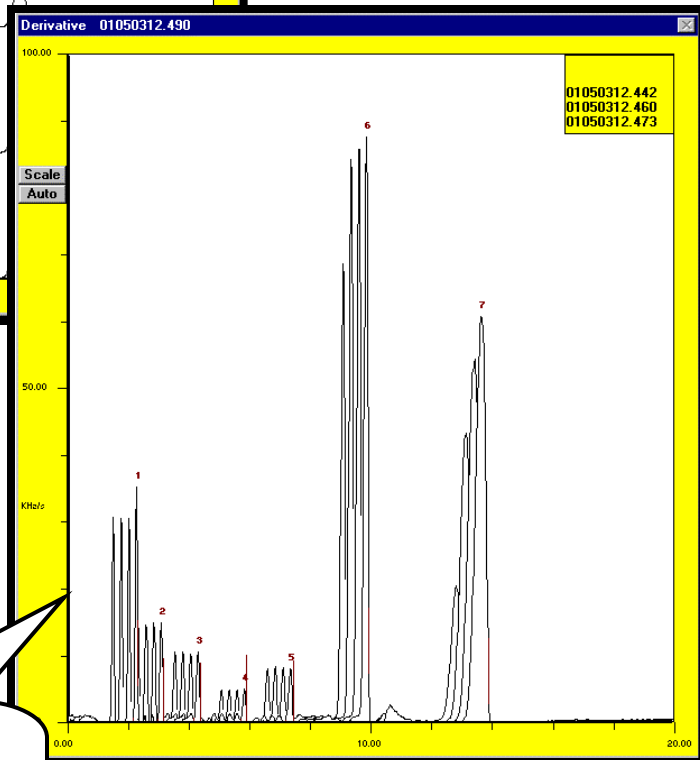
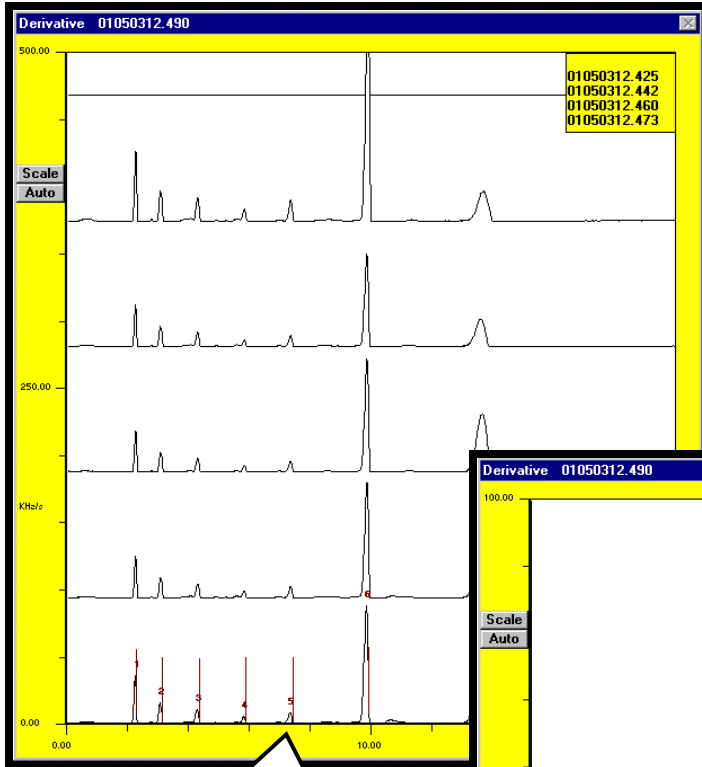


The zNose has been used to smell Price Winning Roses



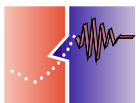


Whisky No 1 (1190)

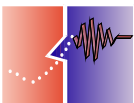
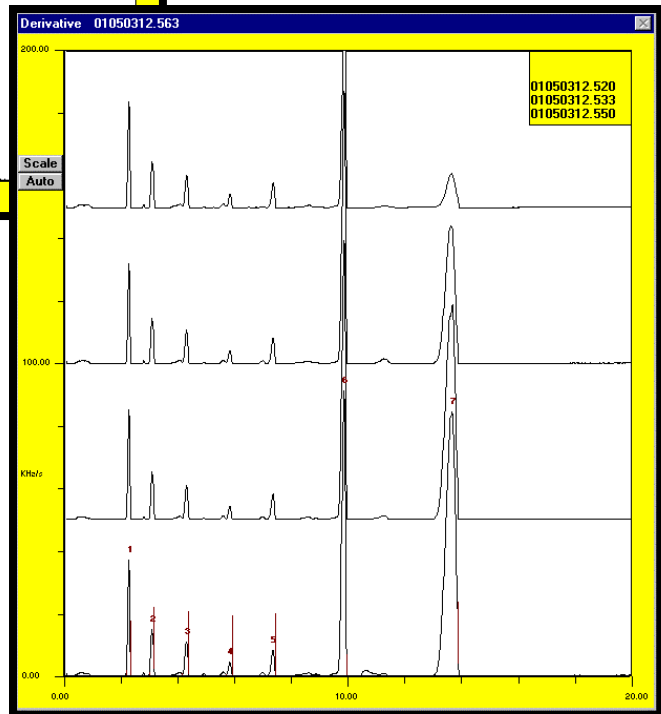
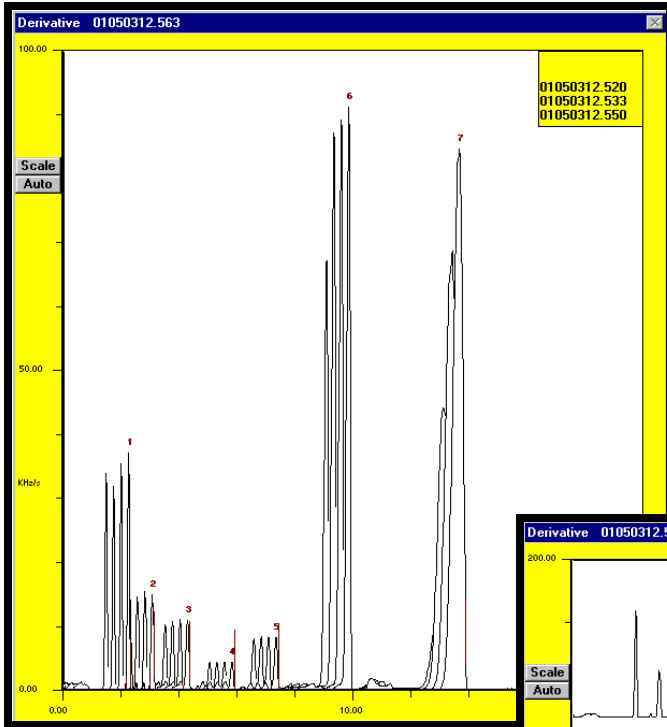


Vertically spaced repetitive analyses of Whisky headspace

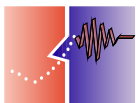
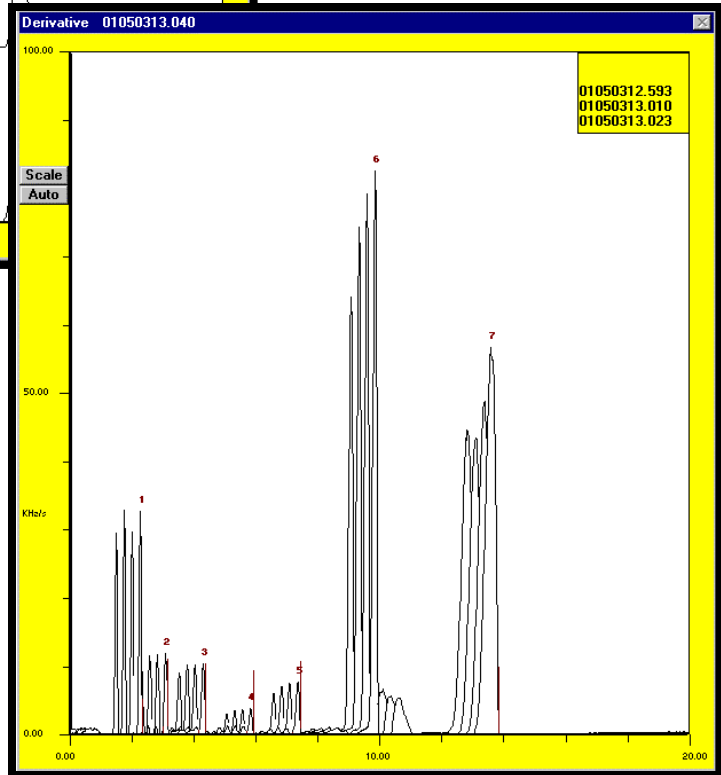
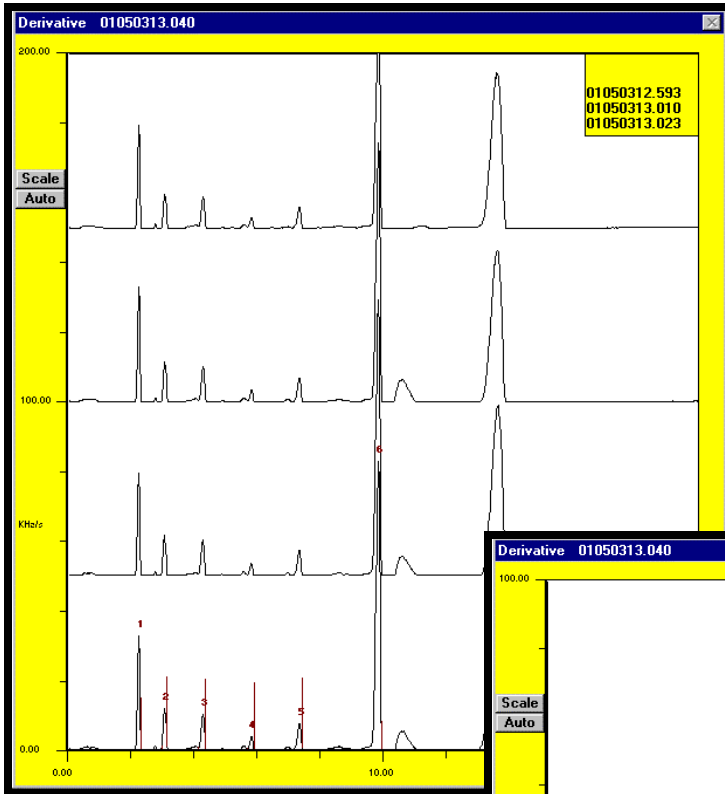
Horizontally spaced repetitive analyses of Whisky headspace



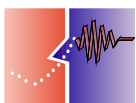
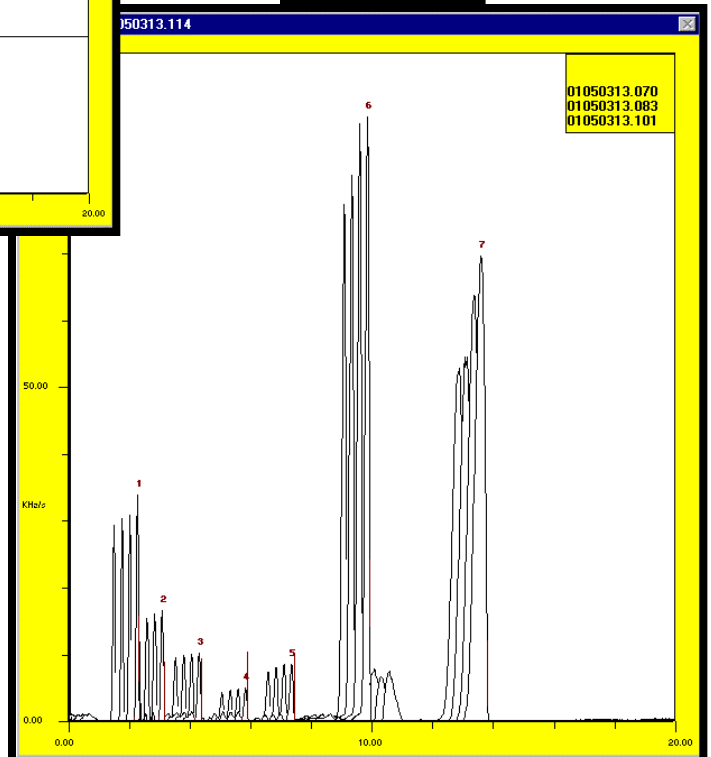
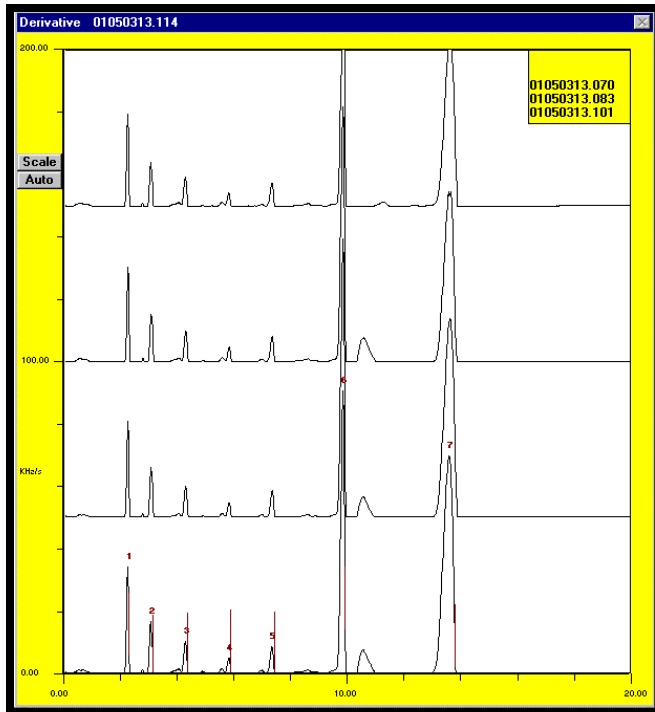
Whisky No 2 (1187)



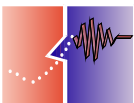
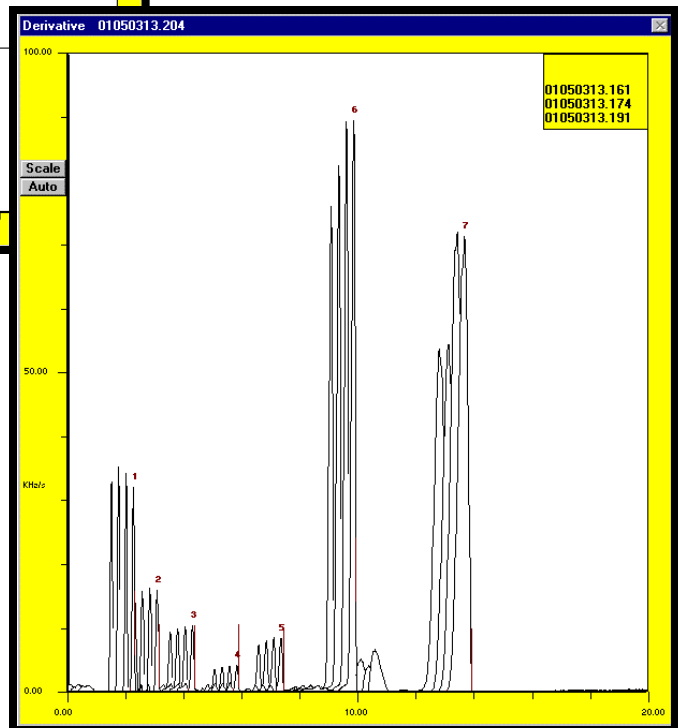
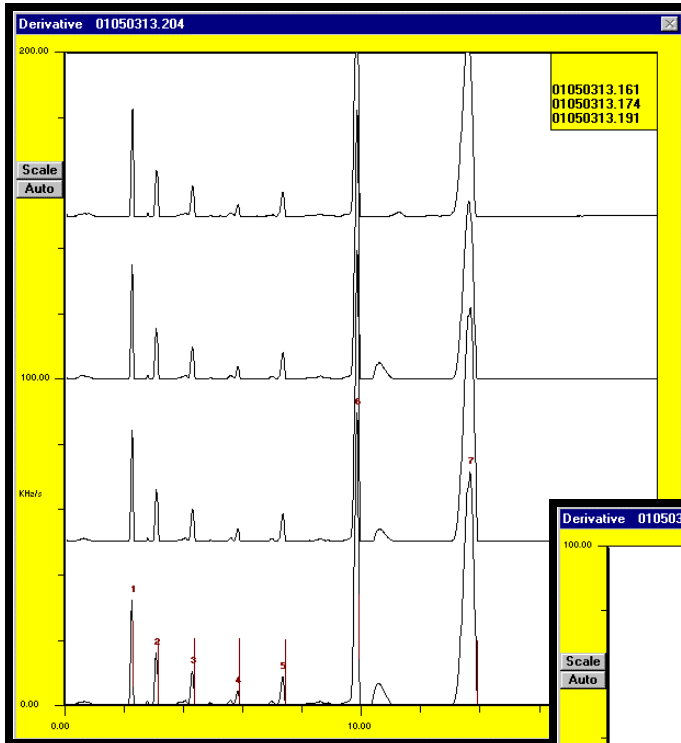
Whisky No. 3 (1191)



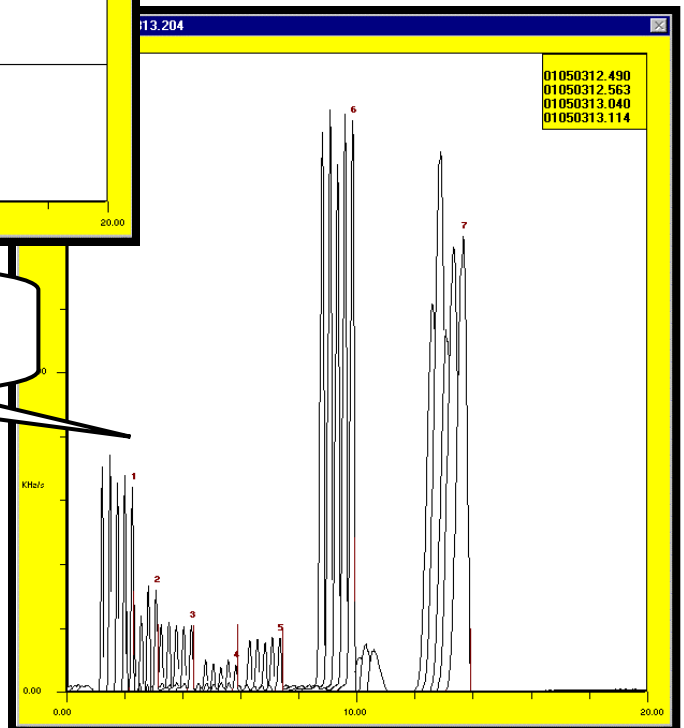
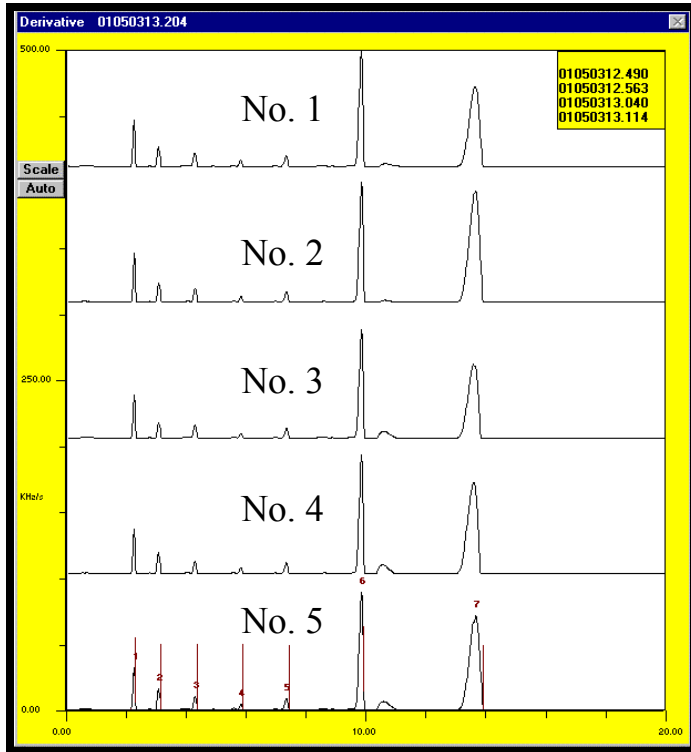
Whisky No. 4 (1185)



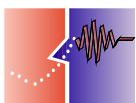
Whisky No. 5 (1186)



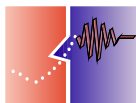
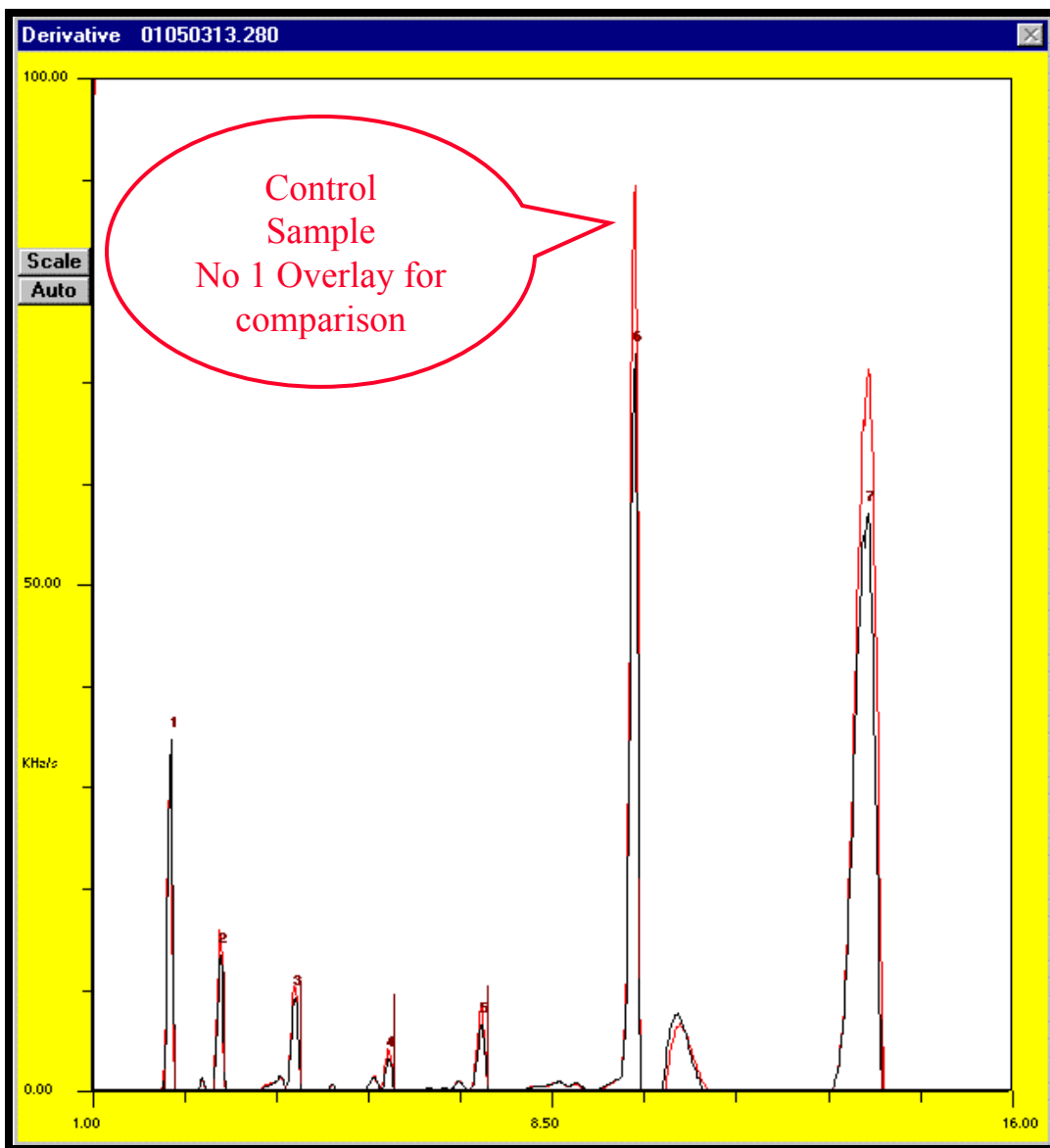
Comparing No 1-5 Whisky (Johnny Walker Black Label)



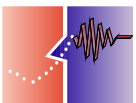
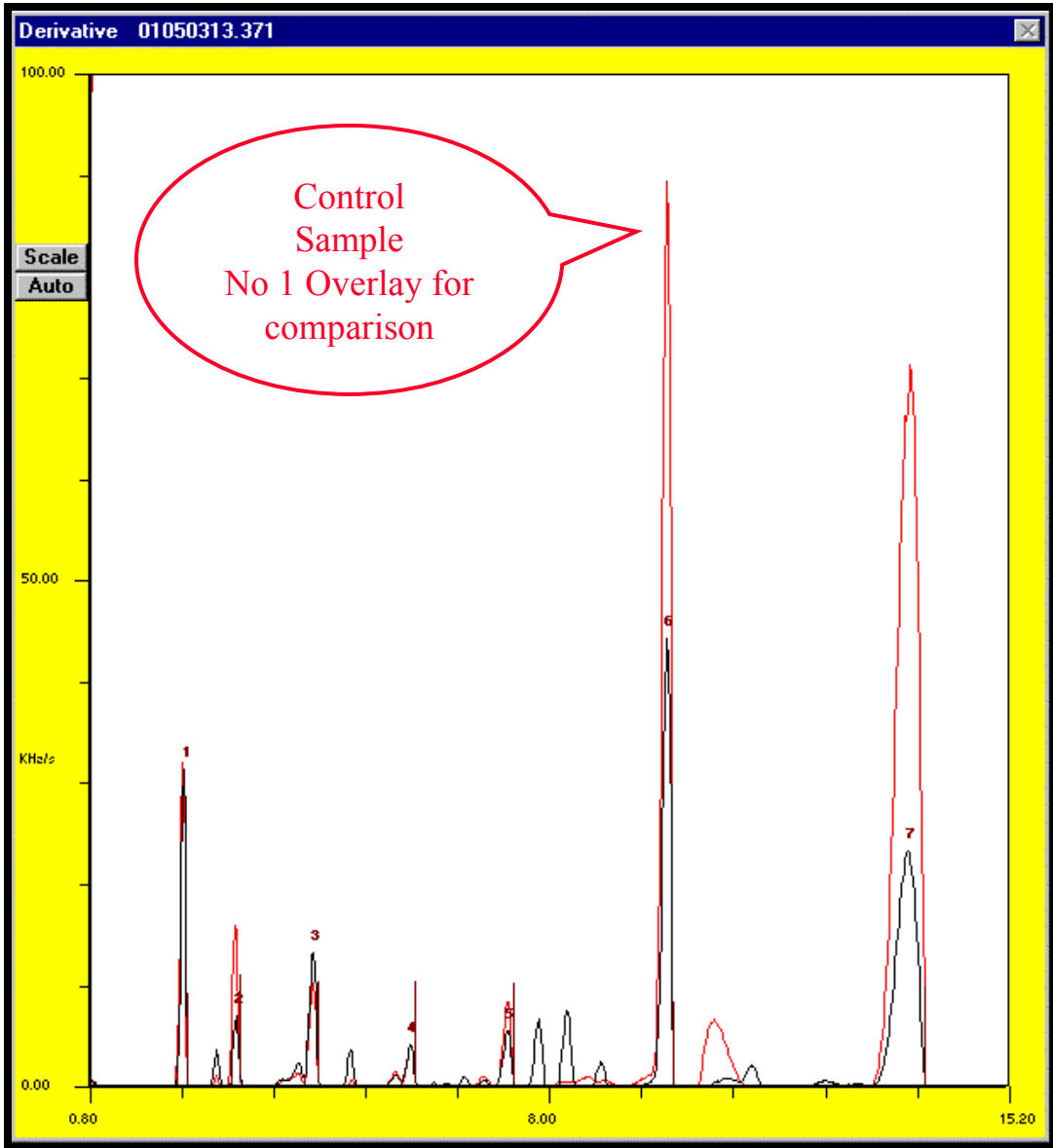
Very reproducible runs indicating good precision.



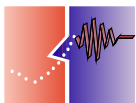
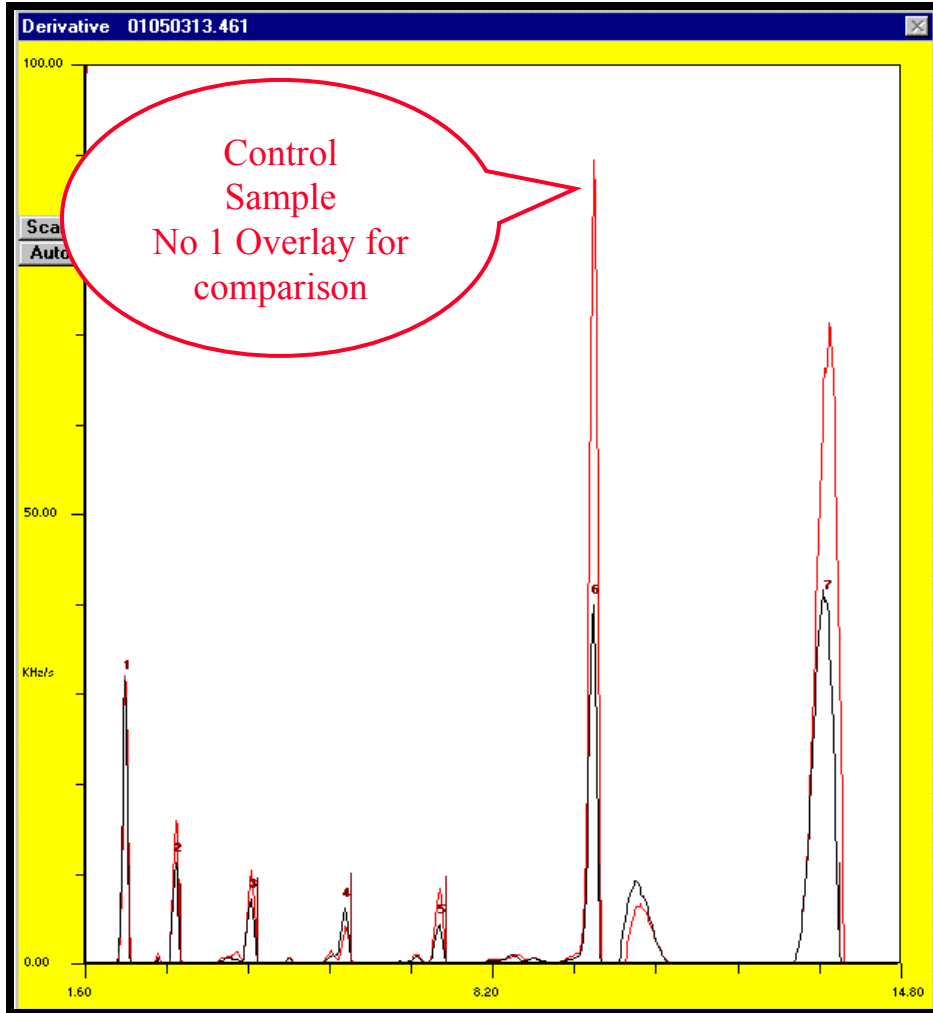
Unknown No. 1



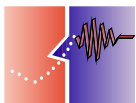
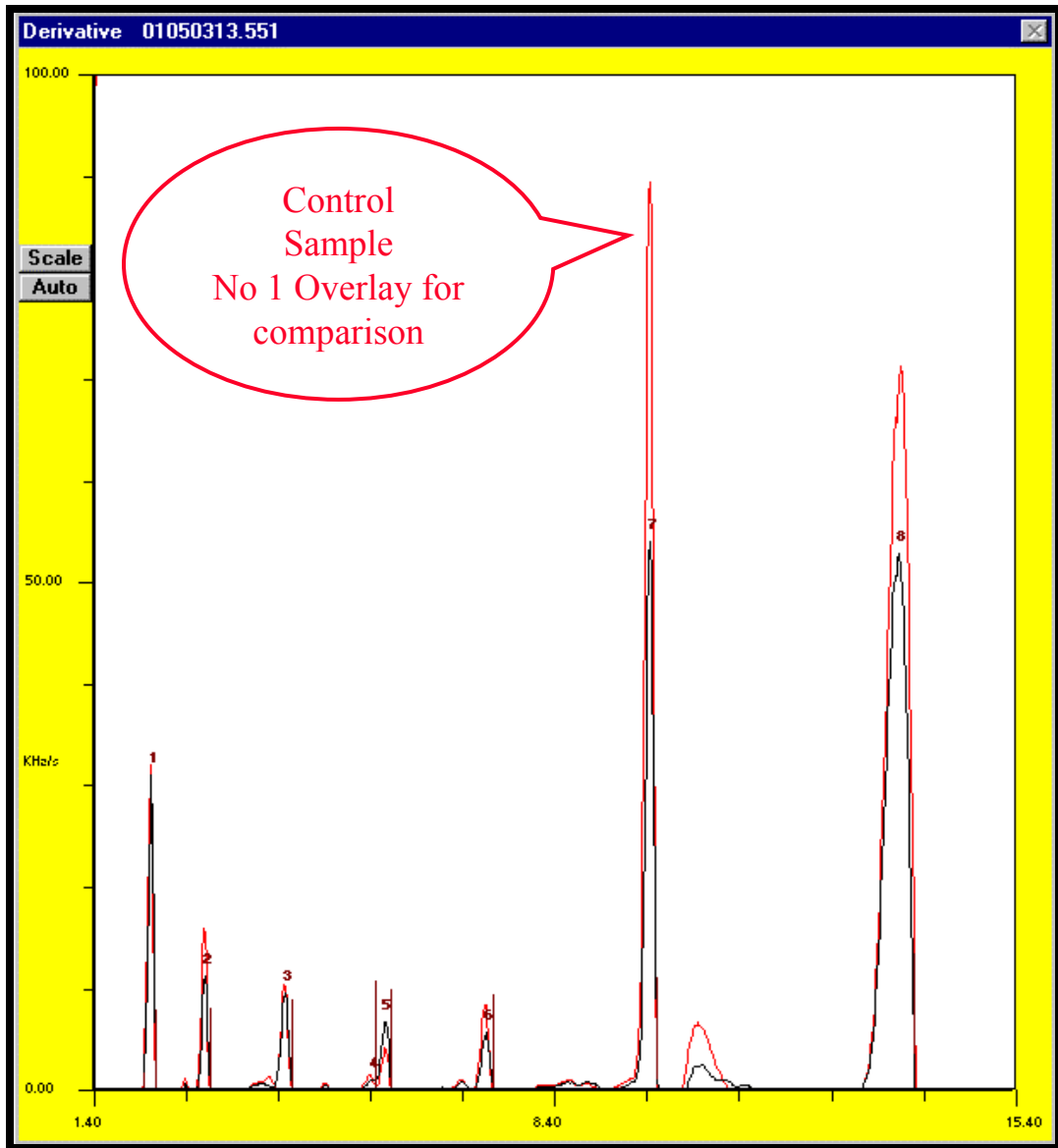
Unknown No 2



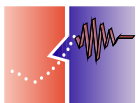
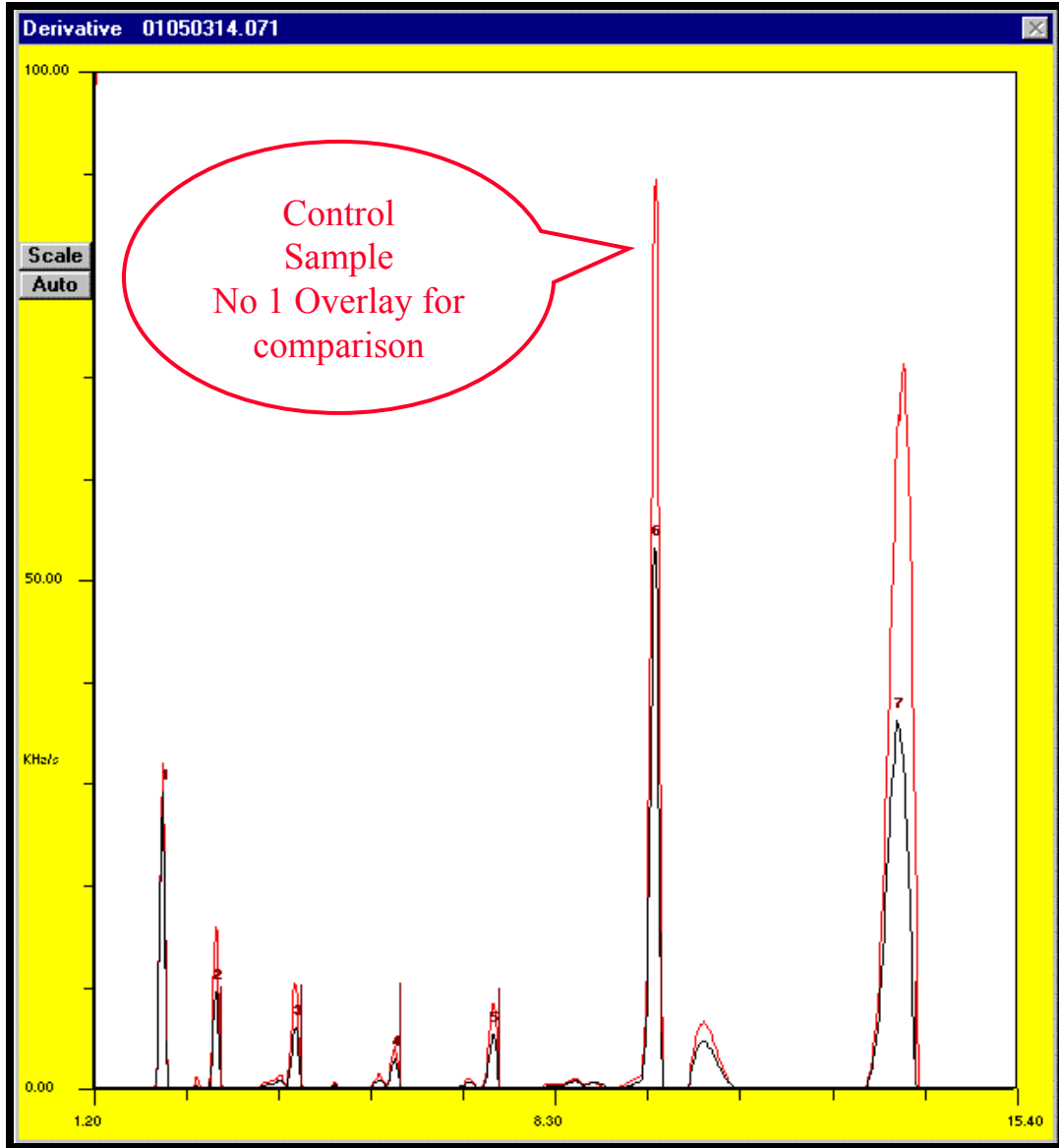
Unknown No 3



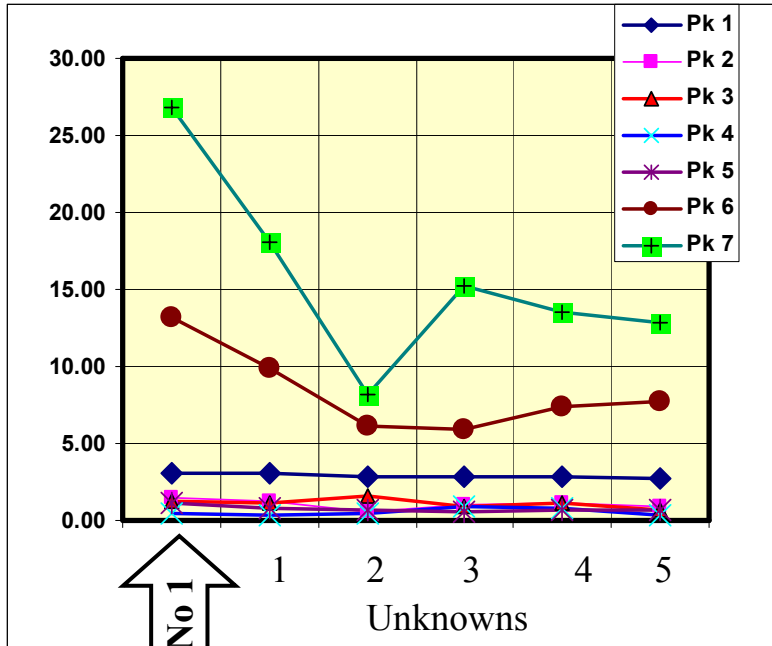
Unknown No 4



Unknown No 5

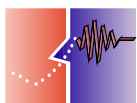
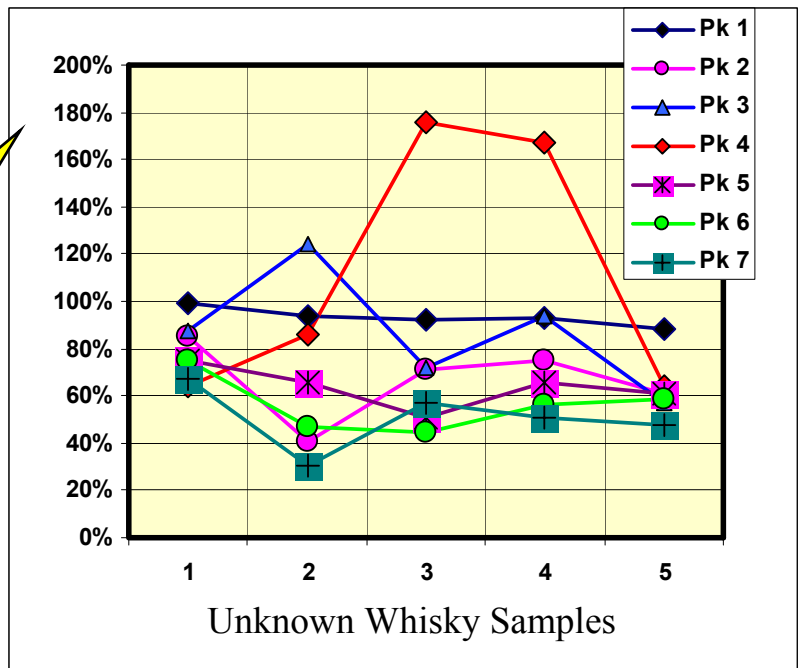


Unknown Samples Comparisons (4th Rep)

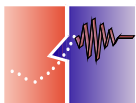
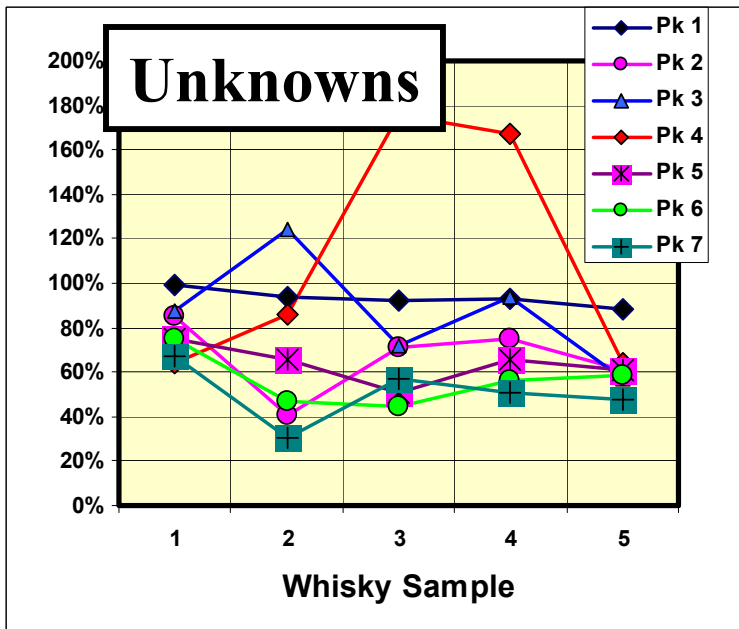
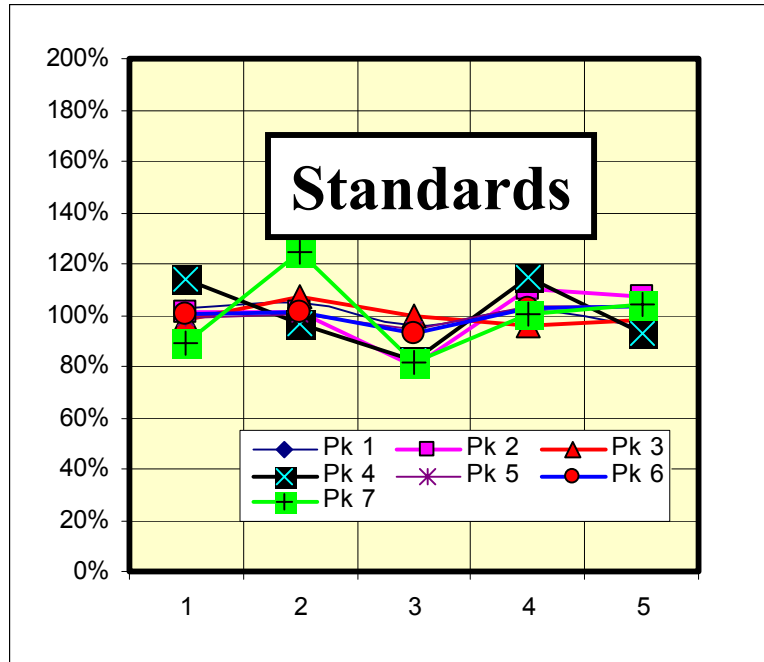


Std No 1

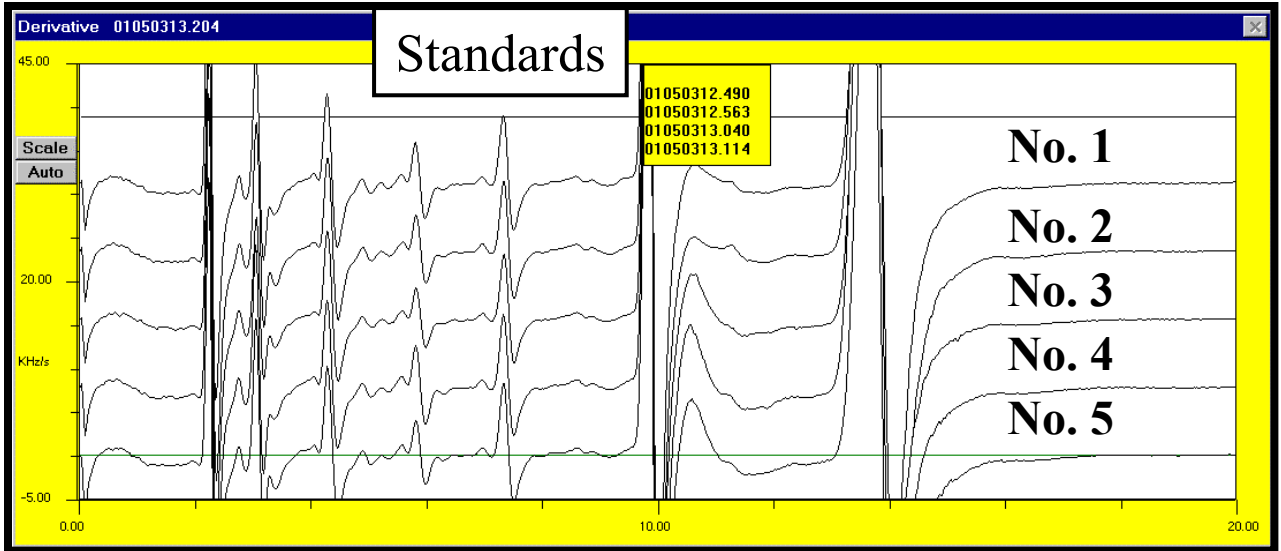
Percentage
(Avg of Standards)



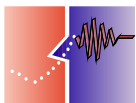
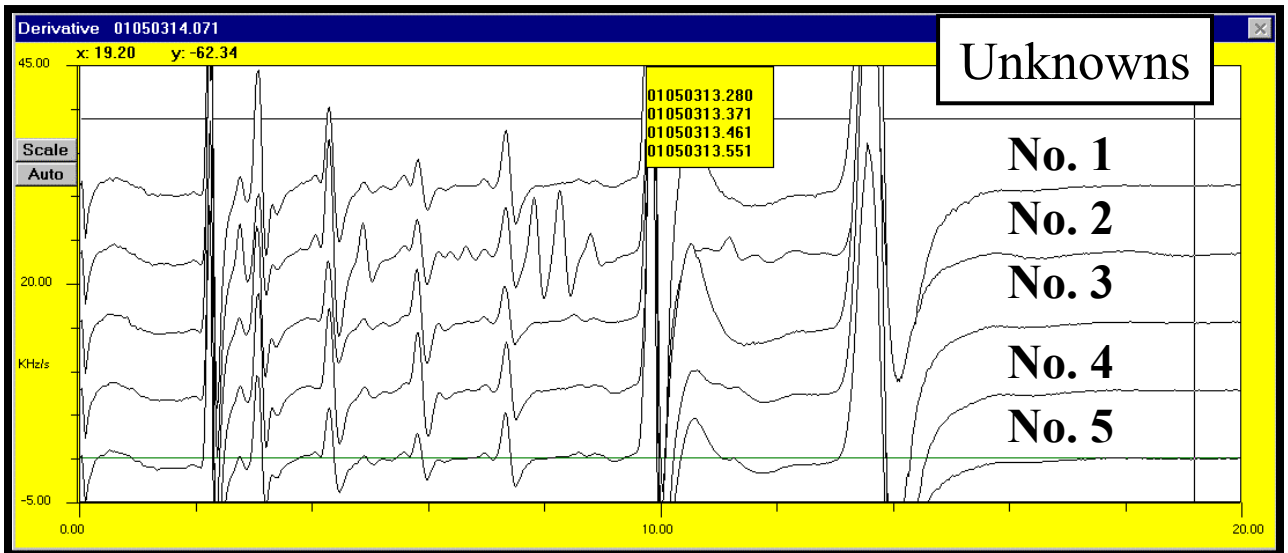
Component (Principal) Analyses



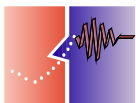
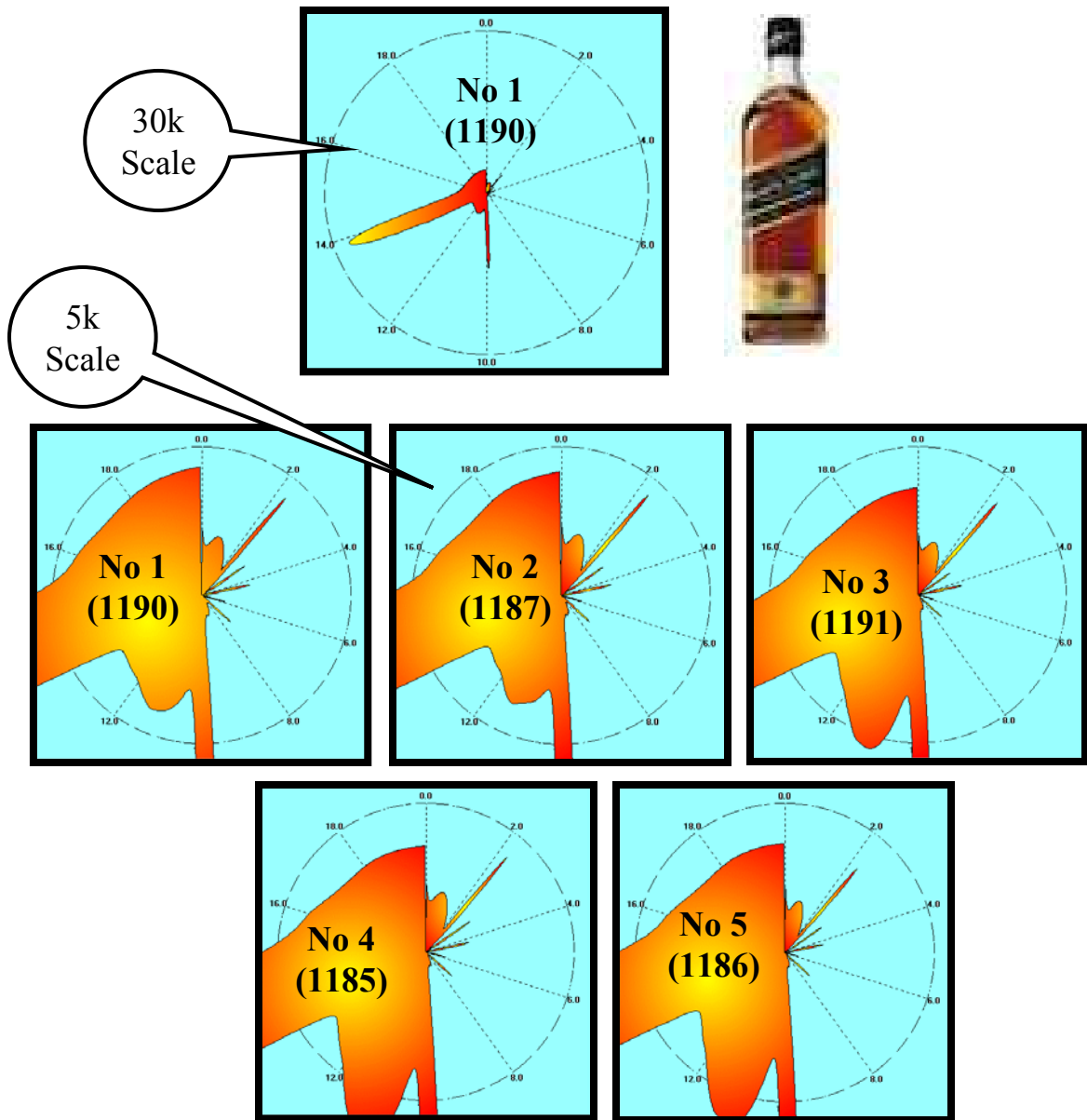
Trace Analysis



Pk 2 Pk 4 Pk 6 Pk 7
Pk 1 Pk 3 Pk 5



True Olfactory Images ala zNose Johnny Walker Black Label Standards

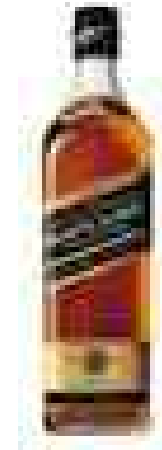
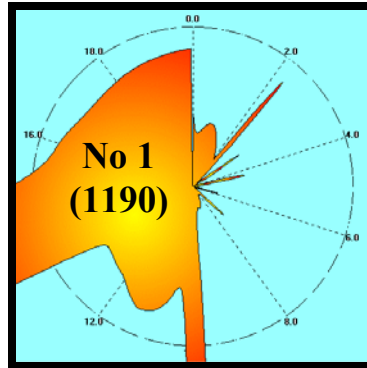


Olfactory Images

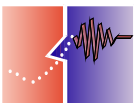
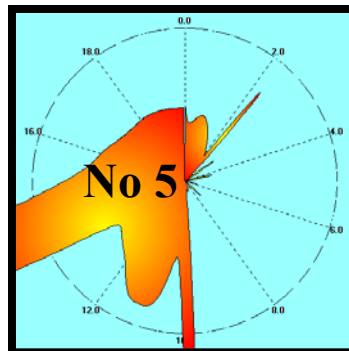
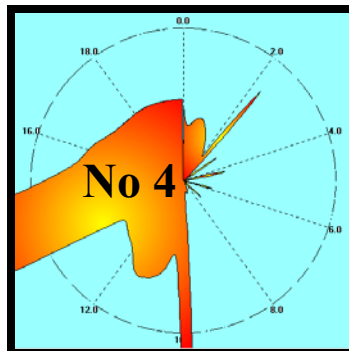
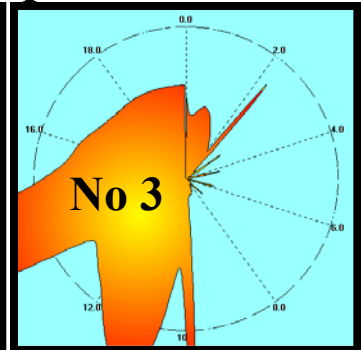
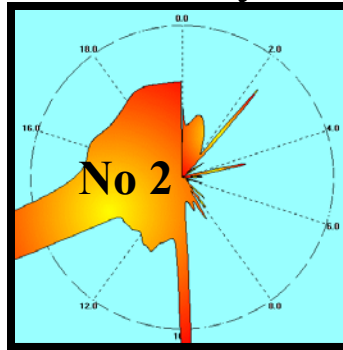
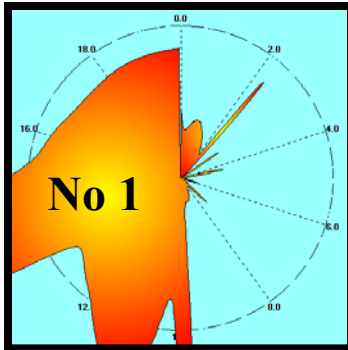
Unknowns



*Johnny Walker
Black Label
Standard*



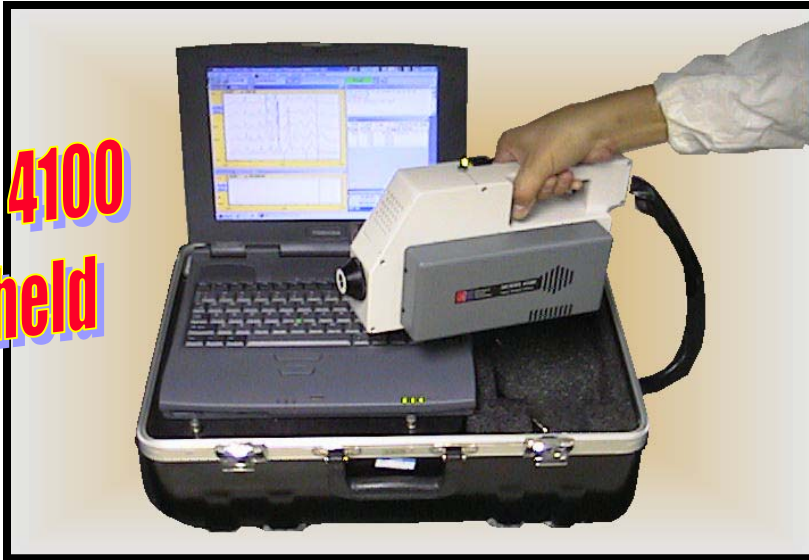
Unknown Whisky Samples



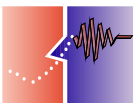
The zNose Comes in Two Models..Both CE Approved



**Model 4100
Handheld**



**Model 7100
Benchtop**



A zNose with a DB 624 column can quantify and create specific virtual sensors spanning the range C6-C16

(This is a summary figure showing what the zNose can do for you)

Peak Detection
&
Quantification

Peak	R Time	Amount	Substance
1	2.20	20 Hz	C8
2	2.90	158 Hz	C9
3	3.62	556 Hz	C10
4	4.38	684 Hz	C11
5	5.16	1,200 Hz	C12
6	5.98	1,837 Hz	C13
7	6.82	1,986 Hz	C14

Virtual Chemical
Sensor Arrays

