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TEST REPORT

date: August 26, 2025
to: Robert Bernstein (SNL-NM), Michael Hibbs (SNL-NM)
from: Jason Brown and Ray Fuentes (SNL-NM)
subject: Outgassing Screening of AE3030 & AE3030LS
pages: Page 1 of 26

EXECUTIVE SUMMARY

AE3030 and AE3030LS conductive epoxy-based filler materials (products of ©Tatsuta Electric Wire & Cable Co., Ltd.) underwent cryo-focusing GC/MS headspace analysis. This study is intended to 1) evaluate the general outgassing characteristics of the materials and 2) screen for outgassing compounds suspected to increase the risk of corrosion reactions in closed systems (e.g., sulfur containing compounds). A complex range of outgassing compounds, most considered innocuous from an aging/compatibility perspective, was observed in both materials. No sulfur-bearing compounds were detected as outgassing products in either material. Very low concentrations of 12 distinct halogenated compounds were detected between the two materials (not an unexpected result for epoxy-based materials). In general, both the AE3030 and the AE3030LS appear to be relatively low outgassing and do not present any obvious concern from a reactivity/compatibility standpoint. A summary of the results of this study are presented below in Table 1. In this Table, the estimated concentrations of halogenated compounds and total outgassing is presented for each sample and duplicate, along with the average estimated concentration between the duplicates. Raw TICs and peak identifications are presented in Appendix A.

Table 1. Summary of results of AE3030/AE3030LS outgassing screening. Concentrations are expressed in parts per billion per gram of sample material in 100 cc headspace.

	Blank	AE3030	AE3030 dup	AE3030LS	AE3030LS dup
Total halogenated compounds (F, Cl)	(nd)	14.5	8.3	8.5	4.2
Total measured outgassing	279	3526	3506	2998	1637
AVERAGE OUTGASSING/ HALOGENATED		11.4		6.4	
AVERAGE TOTAL OUTGASSING		3516		2318	

BACKGROUND

Reactive outgassing compounds, even in low concentrations, can have the potential to facilitate undesirable chemical reactions in certain systems.[1] Several recent studies have revealed that low-molecular weight compounds of concern from a corrosion standpoint (e.g., carbonyl sulfide) can evolve from materials that contain ostensibly stable, higher molecular-weight sulfur-containing species through as-yet unknown chemical mechanisms.[2-7] The source of the corrosive sulfur outgassing products in these materials may be endemic to the material itself (like polyphenylene sulfide or PPS, which consists of aromatic rings linked by thioether groups) or exist as contamination (as seems to be the case with certain PAEK polymers, which have been found to contain residual *diphenyl sulfone* used in the synthesis process). Thus, it is not necessarily sufficient to simply evaluate the chemical structure or nominal composition of a given material as a basis for its qualification for use in a weapon environment, as the conditions by which volatile compounds are generated appear to be more nuanced than previously assumed. Instead, testing is needed to directly evaluate the outgassing characteristics of a given material.

Outgassing of volatile compounds from materials is a complex and dynamic phenomenon. The outgassing profile (i.e., chemical "fingerprint") of any given organic material often exhibits dozens or even hundreds of detectable chemical compounds, all of which evolve from the material at different rates over time and under different environmental conditions. It therefore becomes an almost untenable task to fully characterize and predict what the outgassing behavior of a material will be over its lifetime, let alone how each of those outgassing compounds will accumulate and potentially react in a closed system with multiple other materials, each with their own distinct outgassing "fingerprint." While dissertations could be written parsing the nuances of VOC outgassing in organic materials, the most important aspects to the scientist/engineer involved in the design of systems are 1. Does the material outgas anything that might pose a risk to the system in which it will be used? and 2. If it does, how much and for how long? It is the first of these two questions that the present study sought to address. The first question is a relatively easy question to answer as it can typically be addressed with a single analysis (i.e. outgassing "screening") of the material. The second question requires a more longitudinal approach, wherein multiple accumulations/headspace analyses are performed over a long period of time such that changes in the outgassing rate (inferred from the accumulated concentrations in the headspace) of the compound of interest can be characterized. (Fortunately, the initial screening of the materials interrogated in this study did not reveal the presence of any "bad actor" compounds that would merit a longitudinal outgassing study.)

In this study, the AE3030 & AE3030LS epoxy filler materials underwent an outgassing "screening." This consists of analyzing the accumulation of outgassing products in the sample headspaces via cryo-GC/MS after a 2-day heating accumulation hold. This type of analysis is intended to provide a general inventory of the volatile compounds that could be expected to evolve from the materials in the short term, but it does not characterize the longevity or total amount of those compounds that might evolve over the lifetime of the material. This is described below in further detail in the METHOD section.

It should be noted that there are different approaches in industry and research when it comes to the characterization of the outgassing properties of materials. Perhaps the most common test method in industry is a method outlined in ASTM-E 595. This is a material outgassing analysis that measures total mass loss of a material under thermal/vacuum conditions, but it does not place import on the *identification* of the outgassing products from the material. This test is often used in the aerospace industry to characterize materials in a high vacuum environment that have the

potential to outgas condensable compounds that could fog optical components. (This is the test by which NASA deems materials "low outgassing.") By contrast, designers and materials SMEs in the ND community are far more concerned about the *chemical identity* of the outgassing species evolved from materials, as reactive compounds (even in very low concentrations which would evade detection in ASTM-E 595) can have potentially catastrophic consequences in sealed, long-lifetime, high-consequence systems. Cryo-focusing GC/MS is the analysis of choice for the assaying of outgassing compounds in materials as it is extremely sensitive (with limits of detection into the parts per trillion), it is non-selective (i.e., the measured analyte concentrations are representative of actual gas-phase concentrations), and it is a well-established, robust technique in the ND analytical landscape.

METHOD

The two formulations of epoxy filler material samples (AE3030 and AE3030LS) and duplicates (4 samples total / 4 pellets each sample) were provided by Robert Bernstein (SNL-NM, 01853) via Matt Selter (KCNSC). Each sample was comprised of approximately 3.3 g material; the samples used in this study are pictured below in Figure 1.

Each sample was sealed in a 100 cc all-metal vessel (verified clean) and backfilled to 760 Torr with UHP zero air. Thes samples were prepared as-received with no bakeout, cleaning, solvent treatment, etc. A blank (empty) vessel was also prepared which underwent identical treatment (cleaning, heated accumulation, etc.) as the samples. Au-plated Cu gaskets were utilized to minimize reactive surfaces in the system. The outgassing vessels used in this study and general approach to the analysis are shown below in Figure 2. The method and parameters used in the GC/MS analysis are presented below in Table 2.

Figure 1. AE3030 and AE3030LS material samples used in this study. Note: samples prepared by Matt Selter (KCNSC).

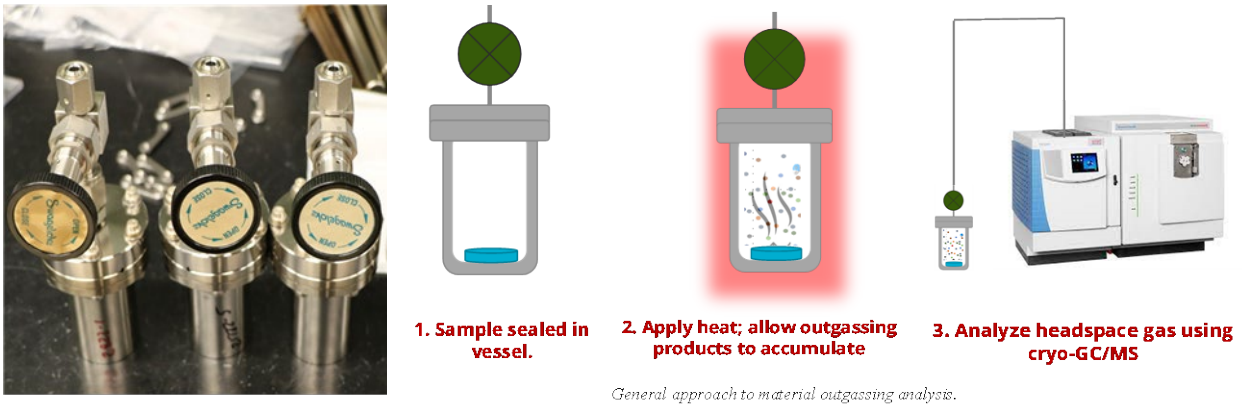

Figure 2. Stainless steel (electropolished) vessels (~100 cc) with Au-plated gaskets used in material outgassing analyses; general approach to analysis.

Table 2. Cryo-GC/MS method and parameters used in the AE3030/AE3030LS outgassing study.

Preconcentration Parameters	
Instrument:	Entech 7200 cryofocusing preconcentrator
Injection Volume:	20 cc
Method:	"Sandia-001.ctd3"
GC (Gas Chromatography) Parameters	
Instrument:	Thermo Trace 1310
Column:	Thermo-Scientific DB5 (60m x 0.32mmID x 1µm)
Method:	"-20-230-DB5"
Column Flow:	Constant, 1.5 mL/min

Method Parameters:	**Temp (°C)**	**Time (min)**	**Rate (°C/min)**
inject & hold:	-20	1	--
ramp to:	230	26	10
hold:	230	2	
total run time:		29	

Detector Parameters:	
Type:	Mass Spectrometer
Instrument:	Thermo ISQ 7000
Mass Range:	21-300 m/z
Dwell Time:	0.2 seconds

A Note on Cryofocusing GC/MS

In GC/MS, a Total Ion Chromatogram (TIC) is generated for each sample, which is a plot of the mass spectrometer detector response intensity vs. time. In these plots, each peak represents a unique chemical compound that was present in the gas sample and separated in the GC column. Cryo GC/MS can be generally described as follows: volatile and semi-volatile organic compounds (VOCs) that outgas from materials in a closed vessel accumulate in the gaseous headspace of the vessel. These VOCs are pre-concentrated from a gas sample by condensing them onto a cryogenically cooled surface. Permanent gases (N_2, O_2, Ar, etc.) invariably make up the bulk of the gas sample. These permanent gases (not of interest in this investigation) have freezing points much lower than the volatile compounds and therefore do not condense with the VOCs. The non-condensed permanent gases are flushed from the sample, leaving only the "frozen" VOCs on the cold surface. This concentrated VOC mix is then quickly heated and injected into the GC column and separated into its individual constituents. As the individual chemical compounds from the pre-concentrated mix elute from the GC column, they are ionized by the mass spectrometer and directed to a detector (electron multiplier) which generates an electrical current. This current is proportional to the amount of that particular chemical compound present in the original sample.

Major peaks in this analysis are identified using an automated search routine with a cursory manual verification. Peaks in each TIC were manually selected for integration. Peak identifications are based

on a best match from NIST library database, which was done using Thermo-Scientific Chromeleon (version 7.2 SR4) software and with automated mass spectral deconvolution and identification system (AMDIS version 2.72). Sample headspaces were compared directly with reference gas standard containing a mix of 65 organic compounds, each in a concentration of 100 ppb. Semi-quantitative estimations of compounds observed in the sample headspaces were made in reference to the average 100 ppb response factor from the VOC standard. While the automated peak identification routine used in this analysis is generally very accurate, the identifications herein (especially those of very low-abundance compounds) should be considered tentative without further verification and/or corroborating analysis.

This type of analysis is intended to provide a general summary of the major VOC components present in the sample headspace gas and a first-order approximation of their respective contributions to the overall VOC profile. It should be understood that conclusions about the absolute amount of a compound that can be expected to exist in the system in which the sample material is used cannot be drawn from this analysis alone. This analytical technique can be very useful as an initial screening to identify VOC products that may be of concern in a particular system or application. However, without rigorous analyses to quantitate these compounds and the extent to which they persist in the long-term outgassing profiles of the materials, it is generally not possible to draw conclusions about the amounts of these compounds that could be expected to accumulate in an actual system or component.

Estimation of Analyte Concentrations

The concentrations of each detected analyte in this study are estimated using one of two approaches. Compound concentrations in this study which were estimated using a method other than the average VOC response factor (first method below) are designated with a specific symbol. (These can be seen in the tables and figures in subsequent sections which list the detected outgassing compounds.)

- **Semi-quantitation using average response factor**: A 65-component volatile organic compound (VOC) standard gas of known concentration (each VOC component at 100 ppb) was analyzed under the same conditions as the sample (same vessel, pressure, temperature, injection volume, instrument method). Each peak in the resulting chromatogram was integrated and the average 100 ppb response was calculated. This average response factor was applied to observed analyte peak areas as a first-order approximation of concentration. Unless otherwise indicated, analyte concentrations were estimated using this approach.

  NOTE: In general, peak areas correspond to analyte concentration. However, instrument trapping and ionization efficiency is analyte-dependent and can vary significantly (this is illustrated below in Figure 3), so definitive conclusions about the absolute concentration of any analyte cannot be made without comparison to a component-specific standard.

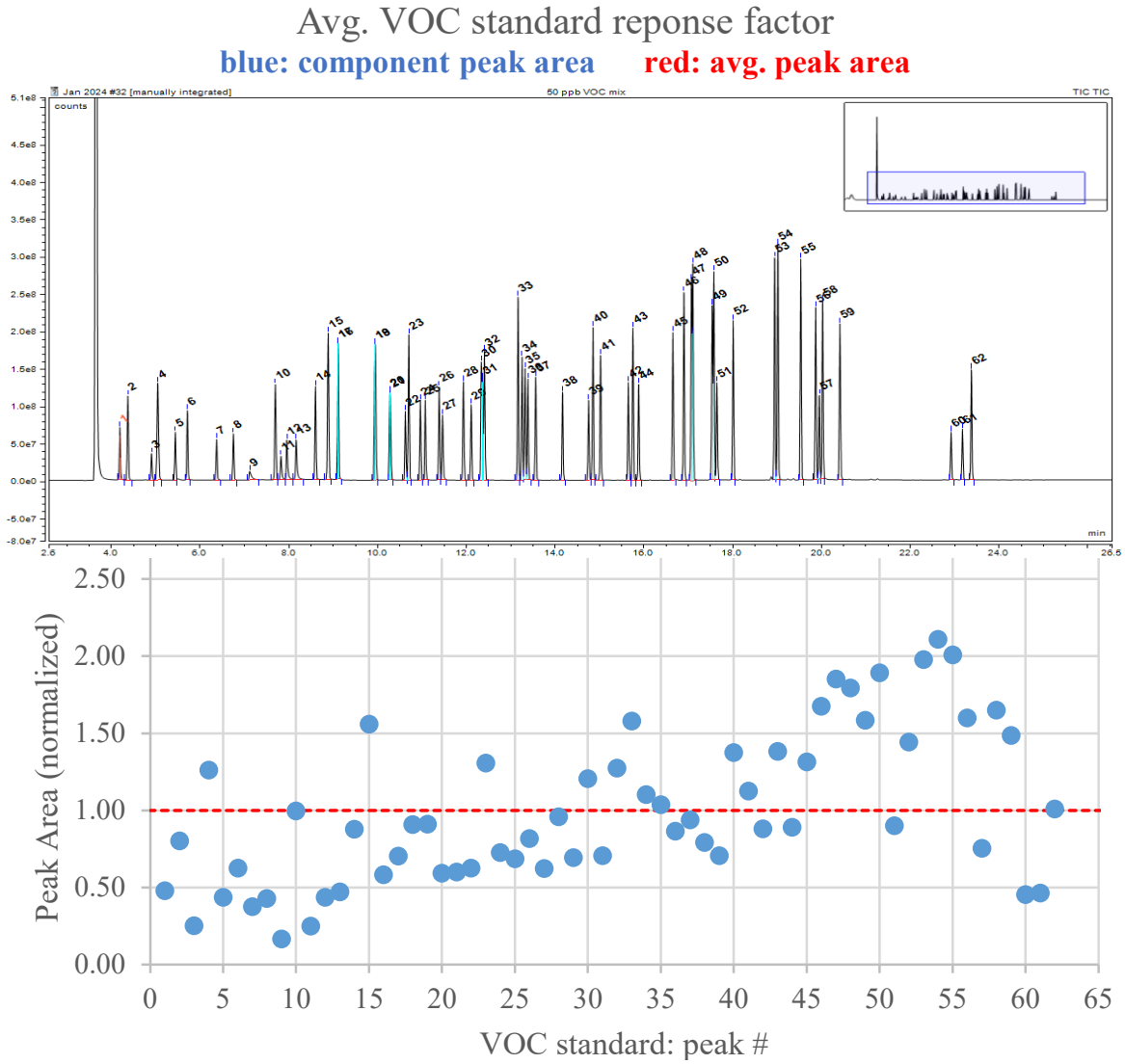

Figure 3. ***Average peak area for 62 analytes in a 50 ppb standard gas mix (red dotted line) vs. individual analyte (each at 50 ppb) peak areas (blue points). For analytes in the sample headspaces that also appear in the standard, the analyte-specific response factor was used to estimate concentration.***

- **<u>Semi-quantitation using analyte-specific response factor</u>:†** Some analytes that appear in the sample headspaces are present in the 65-component VOC mix. Rather than applying the average response factor to estimate the concentration of these peaks, the corresponding *component-specific* response factor for that compound was used. This is likely to result in a slightly more accurate estimation of the true concentration for that particular analyte than by applying the average response factor. This approach is also referred to as "one-point calibration." Analyte concentrations estimated using this approach are denoted in this report by the following symbol: **†**

- **<u>Weight-normalized units of concentration</u>:** Estimated analyte concentrations in this study are reported in weight-normalized concentrations (units of parts per billion analyte per gram of sample in 100 cc headspace). The concentration of all observed outgassing compounds, or that of a specific analyte, can theoretically be mapped onto a system where the volume, amount of material, and total pressure may differ from those used in this study. The theoretical equivalent concentration in a given system C_{system} is given by:

$$C_{system} = C_{1norm} W_{system} \left(\frac{V_1}{V_{system}} \right) \left(\frac{P_1}{P_{system}} \right)$$

Where

C_{1norm} is the reported weight-normalized (per-gram basis) concentration in this study
W_{system} is the weight of material used in the system (in grams)
V_1 is the headspace volume used in this study (100 cc)
V_{system} is the headspace volume in the system
P_1 is the vessel pressure used in this study (~1 atmosphere)
P_{system} is the gas pressure in the system

RESULTS

GC/MS headspace analysis results in the generation of a Total Ion Chromatogram (TIC), an intensity vs. time plot, wherein a total mass spectral response is recorded for each compound at the time it elutes from the GC column (its *retention time*). TICs for AE3030/AE3030LS (48 hrs @ 80C analysis), blank, and 100 ppb / 65 component VOC (volatile organic compound) gas standard are shown below in Figure 4, wherein several of the major peaks are labeled. In general, peak areas correspond to analyte concentration. However, instrument trapping and ionization efficiency is analyte-dependent and can vary significantly, so definitive conclusions about the absolute concentration of any analyte cannot be made without direct comparison to a standard. (Note: raw TICS and compounds identified in this outgassing screening are presented in Appendix A.)

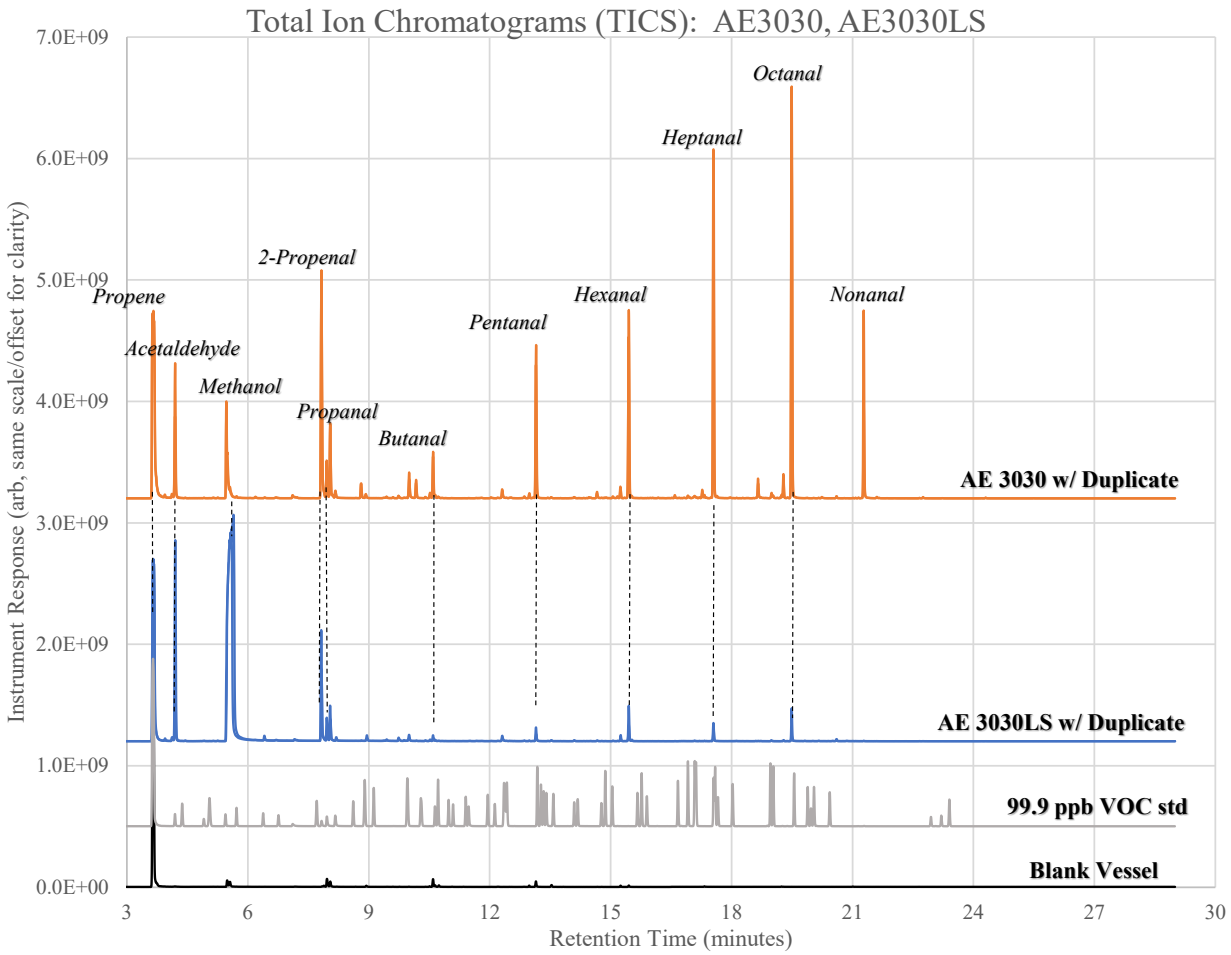

Figure 4. Total ion chromatograms (TICs) for initial outgassing screening (2 days/80 C accumulation) of AE3030/AE3030LS material headspaces, 100 ppb VOC standard, and blank vessel. (Note: Raw TICs are presented on the same intensity scale but offset for clarity.)

AE3030 and AE3030LS exhibited very similar outgassing behavior (i.e., the two materials showed broad overlap in their respective outgassing profiles). However, there are some clear differences in the outgassing characteristics; the AE3030LS exhibited overall lower concentrations of accumulated

outgassing species than the legacy AE3030. Also, a number of distinct compounds were detected unique to one of the sample materials or the other, clearly illustrated in the following Figures. (These differences in the outgassing profiles of the materials likely reflect minor differences in formulation between the legacy AE3030 and the AE3030LS.) To retain visible structure in the plots, the detected analytes have been grouped into 3 plots: Major compounds with concentrations > 120 ppb/g (Figure 5), Mid-range compounds with concentrations between 120 and 12 ppb (Figure 6), and Trace-level compounds with concentrations below 12 ppb/g (Figure 7 and Figure 8).

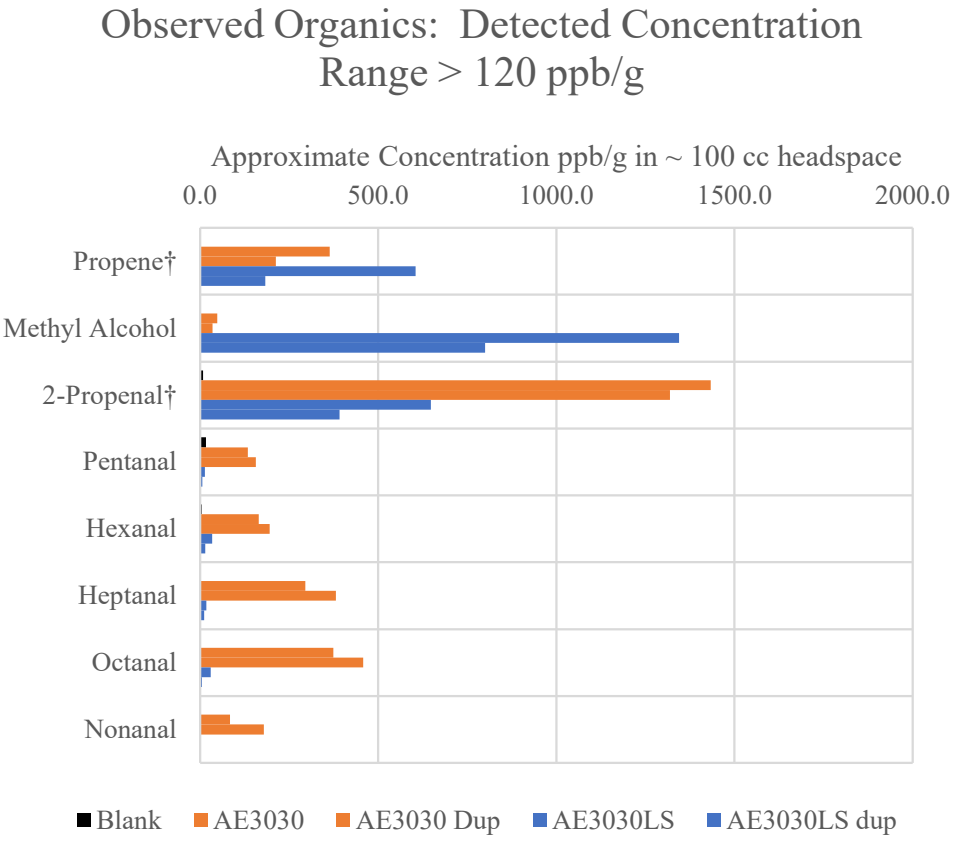

Figure 5. Major compounds (>120 ppb/g sample in 100 cc headspace) detected in AE3030/AE3030LS headspaces.

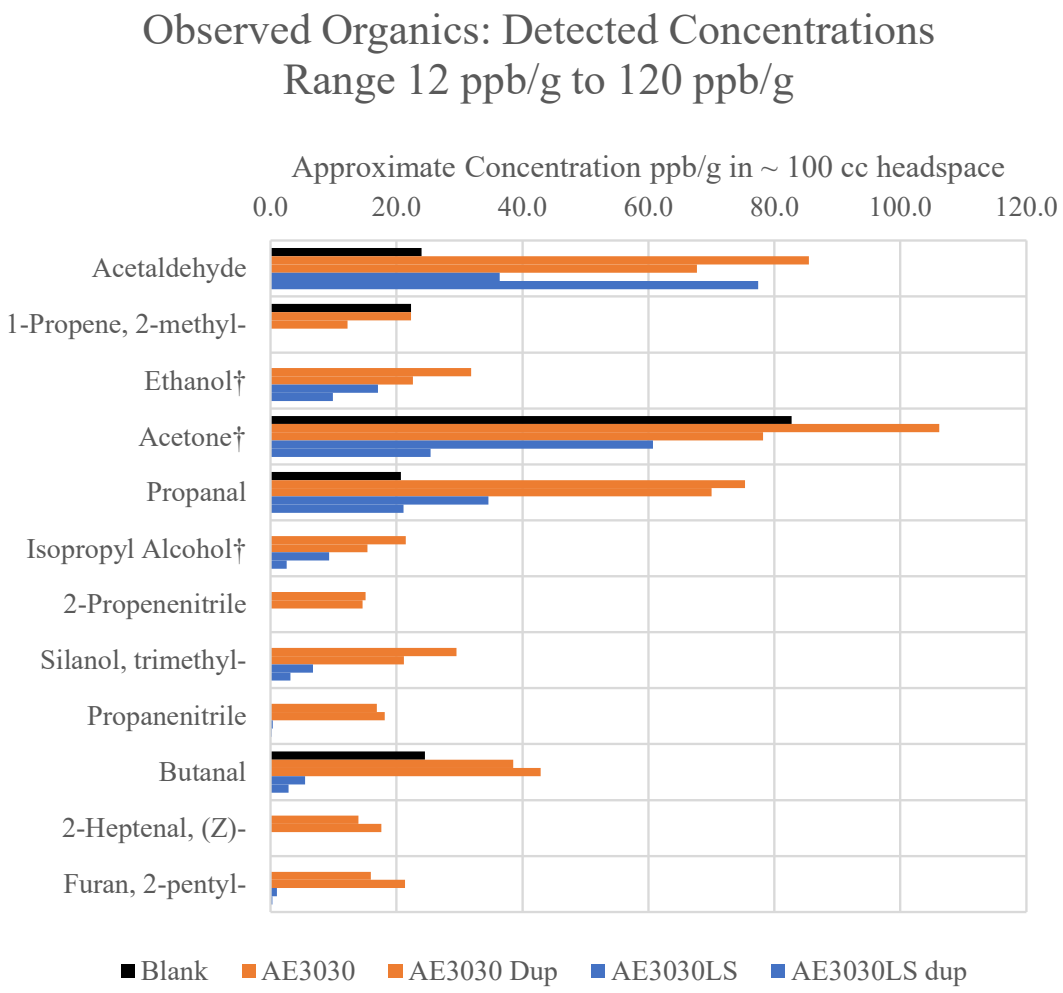

Figure 6. Mid-range compounds (concentrations between 120 and 12 ppb/g sample in 100 cc headspace) detected in AE3030/AE3030LS headspaces.

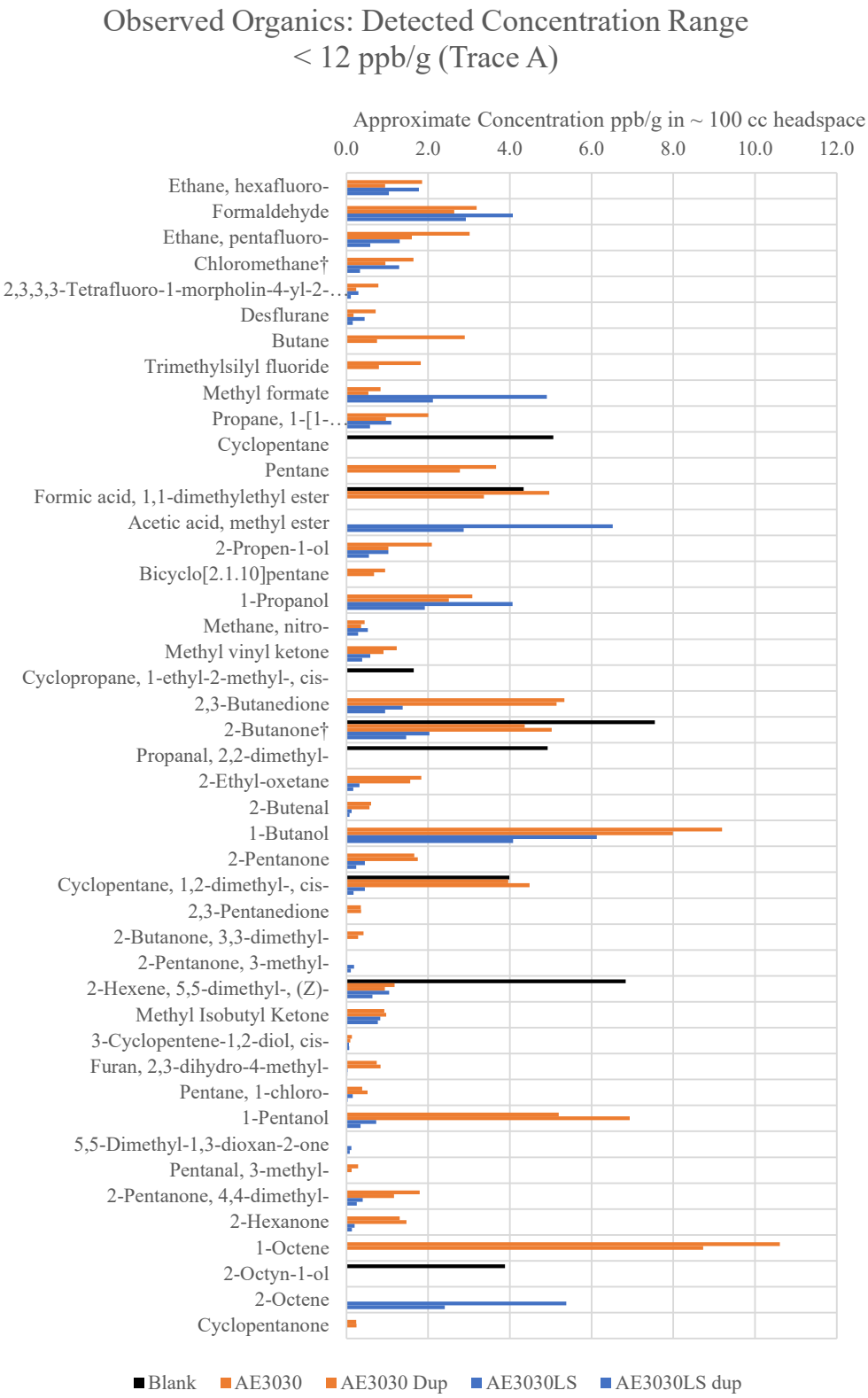

Figure 7. Trace-level compounds A (concentrations below 12 ppb/g sample in 100 cc headspace) detected in AE3030/AE3030LS headspaces. Note: compounds in this category are divided between two Figures.)

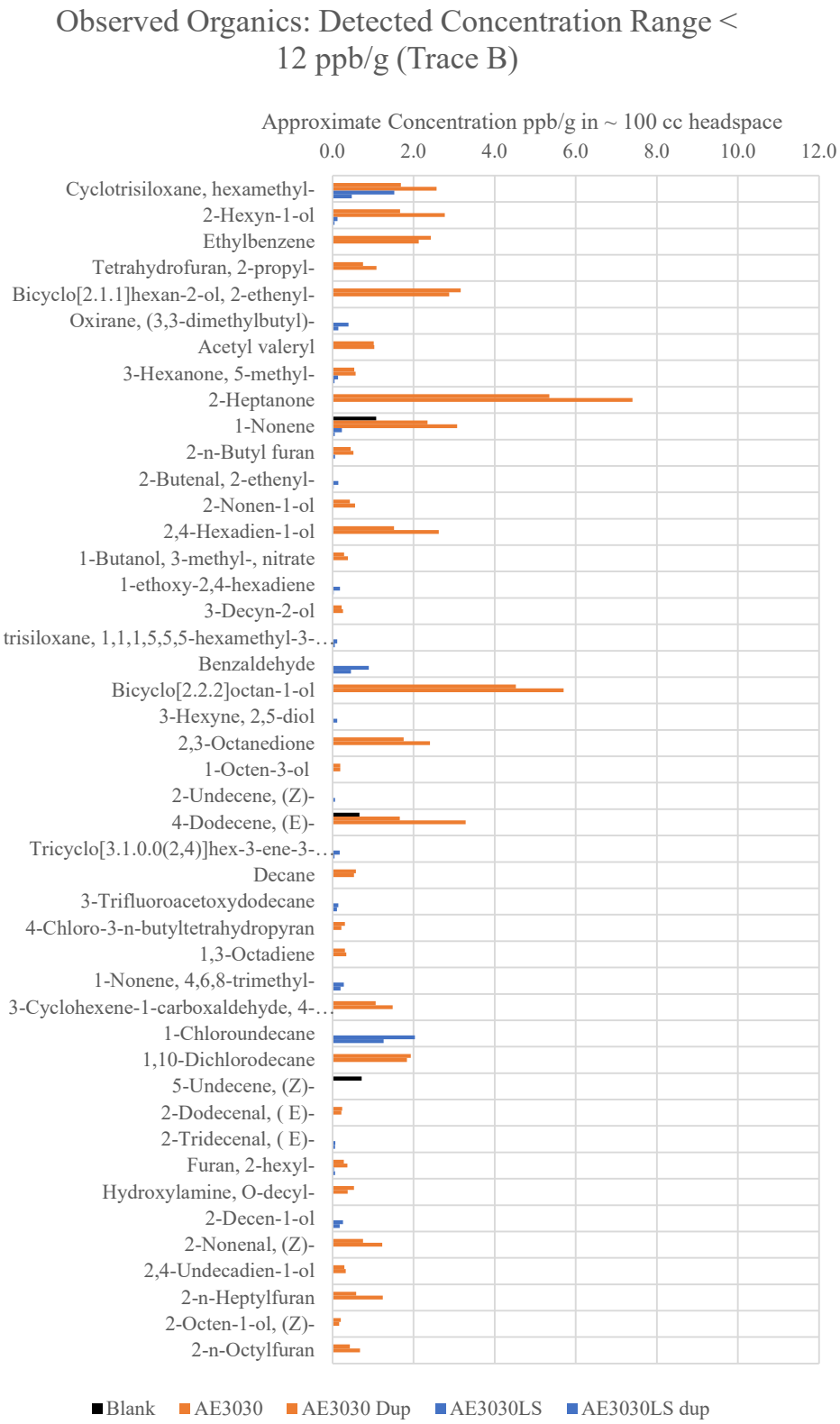

Figure 8. Trace-level compounds B (concentrations below 12 ppb/g sample in 100 cc headspace) detected in AE3030/AE3030LS headspaces. Note: compounds in this category are divided between two Figures.)

The majority of compounds detected in the AE3030/AE3030LS headspaces in this study are generally considered innocuous from a reactivity perspective. Halogenated compounds are sometimes classified as potential compounds of concern in closed systems owing to their potential to react with water and form corrosive acids. However, it should be noted that this class of outgassing compound is fairly ubiquitous in a range of organic materials, and the concentrations of halo-alkanes detected in the sample headspaces are very low. The halogenated (chlorine or fluorine-bearing) compounds detected in this study and their estimated concentrations are presented below in Table 3.

Table 3. Halogenated outgassing compounds detected in AE3030/AE3030LS headspaces. Concentrations are expressed in ppb/g sample in 100 cc headspace. Note: blank fields indicate none detected.

	RT	Blank	AE3030	AE3030 Dup	AE3030LS	AE3030LS Dup
Ethane, hexafluoro-	3.947		1.9	0.9	1.8	1.0
Ethane, pentafluoro-	4.451		3.0	1.6	1.3	0.6
Chloromethane†	4.917		1.6	1.0	1.3	0.3
2,3,3,3-Tetrafluoro-1-morpholin-4-yl-2-[1,	5.141		0.8	0.2	0.3	0.1
Desflurane	5.253		0.7	0.2	0.4	0.2
Trimethylsilyl fluoride	6.195		1.8	0.8		
Propane, 1-[1-[difluoro[(trifluoroethenyl)o	6.702		2.0	1.0	1.1	0.6
Pentane, 1-chloro-	14.511		0.4	0.5	0.2	0.0
3-Trifluoroacetoxydodecane	20.011				0.1	0.1
4-Chloro-3-n-butyltetrahydropyran	20.035		0.3	0.2		
1-Chloroundecane	20.599				2.0	1.3
1,10-Dichlorodecane	20.603		1.9	1.8		
TOTAL HALOGENATED COMPOUNDS			14.5	8.3	8.5	4.2

DISCUSSION

Many organic materials tend to exhibit outgassing characteristics far more complex than a mere evaluation of its nominal composition would suggest. It is inevitable that impurities, residual compounds from the original synthesis of the material, or peripheral compounds used in various processing steps will be present in the bulk material and likely contribute to its overall outgassing profile in ways that cannot be easily predicted. As such, it is important in the design of high-consequence hermetically-sealed systems to characterize the outgassing properties of the materials in the system through direct analysis such as the study described herein.

The general approach to interpreting a material screening of this type is to evaluate the inventory of observed compounds for certain classes known to be reactive or present the potential for active chemistry to take place in a system. In general, there are categories of compounds deemed to be of particular interest in the materials community including acids, halogenated compounds, and sulfur containing compounds (though it should be noted that interest from a reactivity standpoint is not always relegated to those categories alone). If in the initial outgassing screening any compounds of interest are identified, then further analyses can be deployed to better characterize the long-term outgassing behavior of that compound and better predict whether or not the material poses a potential risk.

It is impossible to predict from an analysis of this type alone the potential for active chemistries to manifest in whatever system or application the material will eventually be used, and results like those presented herein should always be shared with materials SMEs familiar with the applications and systems in which the test materials are intended to be used. That being said, in the case of the AE3030/AE3030LS materials, it is a fortunate result that no compounds of obvious concern were detected in the outgassing profiles, either in terms of their concentrations or their chemical identity (i.e., reactivity).

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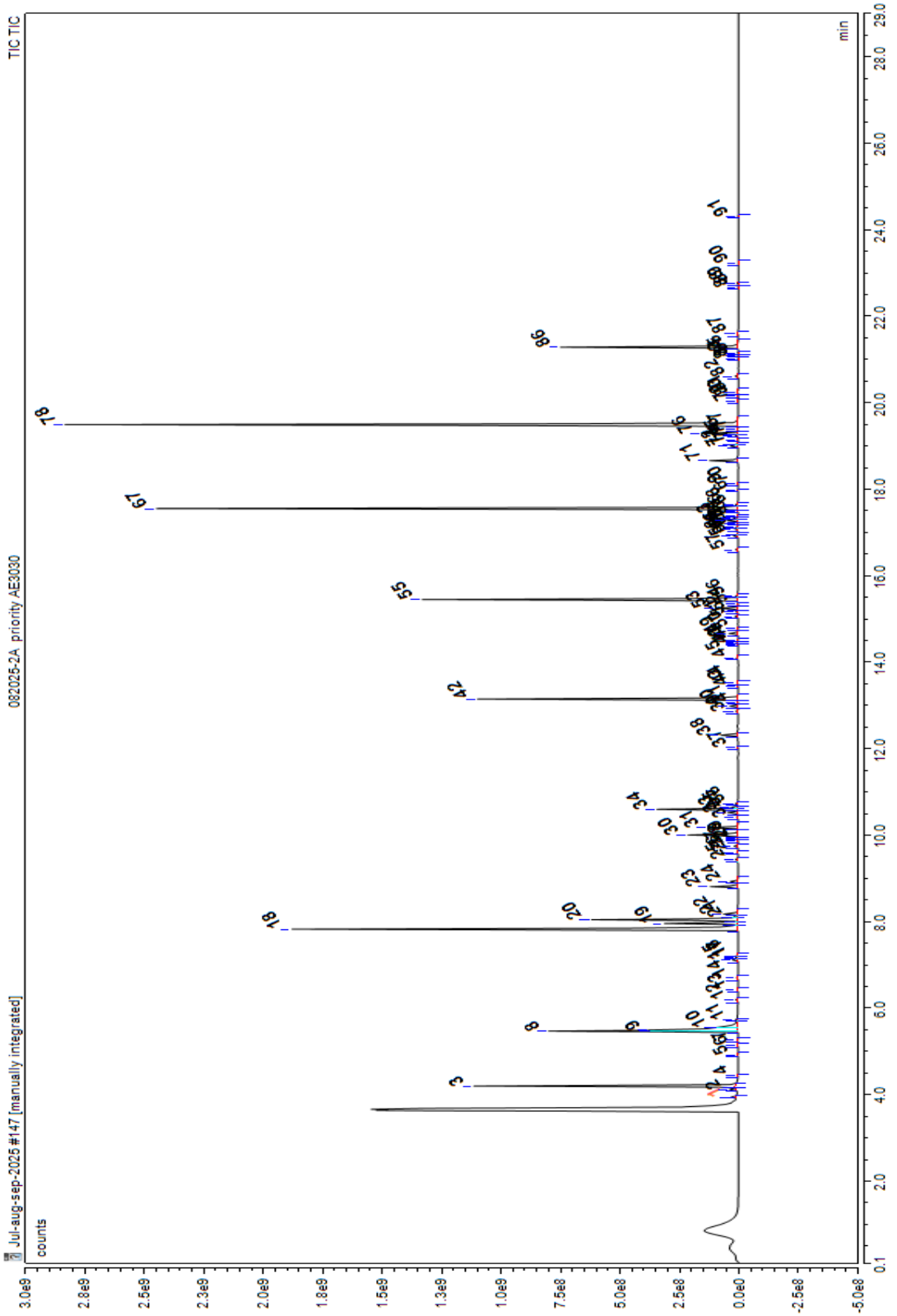
APPENDIX A


TIC TIC
082025-2A priority AE3030
Jul-aug-sep-2025 #147 [manually integrated]
counts
min

Peak #	ID	RT	CAS #	Formula	Match	MW (g/mol)	Peak Area	Approx. Conc. ppb/g
1	Ethane, hexafluoro-	3.941	76-16-4	C2F6	591	138	450974	1.9
2	Formaldehyde	4.117	50-00-0	CH2O	922	30	776244	3.2
3	Propene†	4.196	115-07-1	C3H6	971	42	33205885	363.8
4	Ethane, pentafluoro-	4.447	354-33-6	C2HF5	517	120	103507	0.4
5	Chloromethane†	4.913	74-87-3	CH3Cl	931	50	97516	1.6
6	uoro-2-[1,1,2,2-tetrafl	5.141		C14H8F19NO	598	647	191114	0.8
7	Desflurane	5.257		C3H2F6O	724	168	174720	0.7
8	Acetaldehyde	5.468	75-07-0	C2H4O	953	44	20819806	85.5
9	Methyl Alcohol	5.491	67-56-1	CH4O	884	32	11845956	48.6
10	1-Propene, 2-methyl-	5.539	115-11-7	C4H8	896	56	5434214	22.3
11	Butane	5.719	106-97-8	C4H10	837	58	705956	2.9
12	Trimethylsilyl fluoride	6.189	420-56-4	C3H9FSi	929	92	443304	1.8
13	Methyl formate	6.417	107-31-3	C2H4O2	901	60	202842	0.8
14	oxy]methyl]-1,2,2,2-tet	6.702	1644-11-7	C8F16O2	553	432	357307	1.5
15	Ethanol†	7.11	64-17-5	C2H6O	940	46	1056994	31.9
16	Ethane, pentafluoro-	7.172	354-33-6	C2HF5	537	120	300149	1.2
17	Ethane, pentafluoro-	7.189	354-33-6	C2HF5	626	120	331218	1.4
18	2-Propenal†	7.825	107-02-8	C3H4O	925	56	64223829	1433.6
19	Acetone†	7.954	67-64-1	C3H6O	942	58	9548774	106.2
20	Propanal	8.042	123-38-6	C3H6O	944	58	18349447	75.3
21	Pentane	8.104	109-66-0	C5H12	857	72	891410	3.7
22	Isopropyl Alcohol†	8.172	67-63-0	C3H8O	913	60	2107853	21.5
23	2-Propenenitrile	8.808	107-13-1	C3H3N	935	53	3669663	15.1
24	acid, 1,1-dimethyleth	8.927	762-75-4	C5H10O2	802	102	1208398	5.0
25	2-Propen-1-ol	9.44	107-18-6	C3H6O	747	58	508630	2.1
26	Bicyclo[2.1.10]pentane	9.6		C5H8	883	68	230681	0.9
27	1-Propanol	9.736	71-23-8	C3H8O	847	60	750102	3.1
28	Methane, nitro-	9.876	75-52-5	CH3NO2	678	61	109109	0.4
29	oxy]methyl]-1,2,2,2-tet	9.93	1644-11-7	C8F16O2	478	432	131198	0.5
30	Silanol, trimethyl-	10.001	1066-40-6	C3H10OSi	836	90	7187284	29.5
31	Propanenitrile	10.171	107-12-0	C3H5N	915	55	4110956	16.9
32	Methyl vinyl ketone	10.403	78-94-4	C4H6O	883	70	299055	1.2
33	2,3-Butanedione	10.522	431-03-8	C4H6O2	841	86	1300040	5.3
34	Butanal	10.593	123-72-8	C4H8O	879	72	9390560	38.6
35	2-Butanone†	10.644	78-93-3	C4H8O	851	72	657856	4.4
36	2-Ethyl-oxetane	10.719		C5H10O	850	86	446025	1.8
37	2-Butenal	12.028	4170-30-3	C4H6O	869	70	147018	0.6
38	1-Butanol	12.307	71-36-3	C4H10O	824	74	2238691	9.2
39	2-Pentanone	12.855	107-87-9	C5H10O	866	86	404506	1.7
40	pentane, 1,2-dimethyl	12.981	1192-18-3	C7H14	851	98	965204	4.0
41	2,3-Pentanedione	13.069	600-14-6	C5H8O2	791	100	85235	0.3
42	Pentanal	13.144	110-62-3	C5H10O	888	86	32740225	134.4
43	Butanone, 3,3-dimethy	13.44	75-97-8	C6H12O	798	100	101225	0.4
44	Hexene, 5,5-dimethyl-, (	13.522	39761-61-0	C8H16	755	112	287252	1.2
45	Methyl Isobutyl Ketone	14.093	108-10-1	C6H12O	813	100	226619	0.9
46	Cyclopentene-1,2-diol, (	14.406	694-29-1	C5H8O2	698	100	32020	0.1
47	an, 2,3-dihydro-4-meth	14.46	34314-83-5	C5H8O	830	84	180422	0.7
48	Pentane, 1-chloro-	14.504	543-59-9	C5H11Cl	839	106	93860	0.4
49	1-Pentanol	14.657	71-41-0	C5H12O	871	88	1265463	5.2
50	Pentanal, 3-methyl-	14.773	15877-57-3	C6H12O	772	100	69299	0.3

51	Pentanone, 4,4-dimeth	15.052	590-50-1	C7H14O	856	114	435993	1.8
52	2-Hexanone	15.168	591-78-6	C6H12O	882	100	317889	1.3
53	1-Octene	15.242	111-66-0	C8H16	846	112	2582691	10.6
54	Cyclopentanone	15.341	120-92-3	C5H8O	821	84	57653	0.2
55	Hexanal	15.447	66-25-1	C6H12O	893	100	40115718	164.7
56	lotrisiloxane, hexametl	15.518	541-05-9	C6H18O3Si3	845	222	410926	1.7
57	2-Hexyn-1-ol	16.593	764-60-3	C6H10O	824	98	405666	1.7
58	Ethylbenzene	16.916	100-41-4	C8H10	924	106	590939	2.4
59	etrahydrofuran, 2-propy	16.953	3208-22-8	C7H14O	802	114	183377	0.8
60	o[2.1.1]hexan-2-ol, 2-et	17.082		C8H12O	775	124	769753	3.2
61	Acetyl valeryl	17.12	96-04-8	C7H12O2	703	128	247206	1.0
62	3-Hexanone, 5-methyl-	17.202	623-56-3	C7H14O	826	114	130162	0.5
63	2-Heptanone	17.273	110-43-0	C7H14O	841	114	1302678	5.3
64	1-Nonene	17.327	124-11-8	C9H18	847	126	570446	2.3
65	2-n-Butyl furan	17.375	4466-24-4	C8H12O	849	124	109975	0.5
66	2-Nonen-1-ol	17.491	22104-79-6	C9H18O	702	142	104660	0.4
67	Heptanal	17.548	111-71-7	C7H14O	940	114	72069217	295.9
68	2,4-Hexadien-1-ol	17.64	111-28-4	C6H10O	765	98	369833	1.5
69	butanol, 3-methyl-, nitr	17.967	543-87-3	C5H11NO3	783	133	69497	0.3
70	3-Decyn-2-ol	18.123	69668-93-5	C10H18O	781	154	55670	0.2
71	2-Heptenal, (Z)-	18.657	57266-86-1	C7H12O	819	112	3398864	14.0
72	Bicyclo[2.2.2]octan-1-o	18.994	20534-58-1	C8H14O	728	126	1102535	4.5
73	2,3-Octanedione	19.028	585-25-1	C8H14O2	726	142	427570	1.8
74	1-Octen-3-ol	19.137	3391-86-4	C8H16O	791	128	46544	0.2
75	4-Dodecene, (E)-	19.242	7206-15-7	C12H24	812	168	404878	1.7
76	Furan, 2-pentyl-	19.286	3777-69-3	C9H14O	877	138	3875090	15.9
77	Decane	19.392	124-18-5	C10H22	828	142	140578	0.6
78	Octanal	19.49	124-13-0	C8H16O	898	128	90997268	373.7
79	oro-3-n-butyltetrahydrc	20.035	35952-06-8	C9H17ClO	763	176	75002	0.3
80	1,3-Octadiene	20.161	1002-33-1	C8H14	781	110	75570	0.3
81	ene-1-carboxaldehyde,	20.239	7560-64-7	C8H12O	819	124	259313	1.1
82	1,10-Dichlorodecane	20.603	2162-98-3	C10H20Cl2	804	210	470402	1.9
83	2-Dodecenal, (E)-	21.018	20407-84-5	C12H22O	814	182	58406	0.2
84	Furan, 2-hexyl-	21.079	3777-70-6	C10H16O	808	152	68841	0.3
85	Hydroxylamine, O-decyl	21.15	29812-79-1	C10H23NO	786	173	130074	0.5
86	Nonanal	21.279	124-19-6	C9H18O	902	142	20493212	84.2
87	2-Nonenal, (Z)-	21.603	60784-31-8	C9H16O	770	140	183633	0.8
88	2,4-Undecadien-1-ol	22.664	77657-78-4	C11H20O	813	168	71302	0.3
89	2-n-Heptylfuran	22.749	3777-71-7	C11H18O	841	166	142413	0.6
90	2-Octen-1-ol, (Z)-	23.232	26001-58-1	C8H16O	711	128	49824	0.2
91	2-n-Octylfuran	24.303	4179-38-8	C12H20O	839	180	103751	0.4
	Other						7583243	31.1
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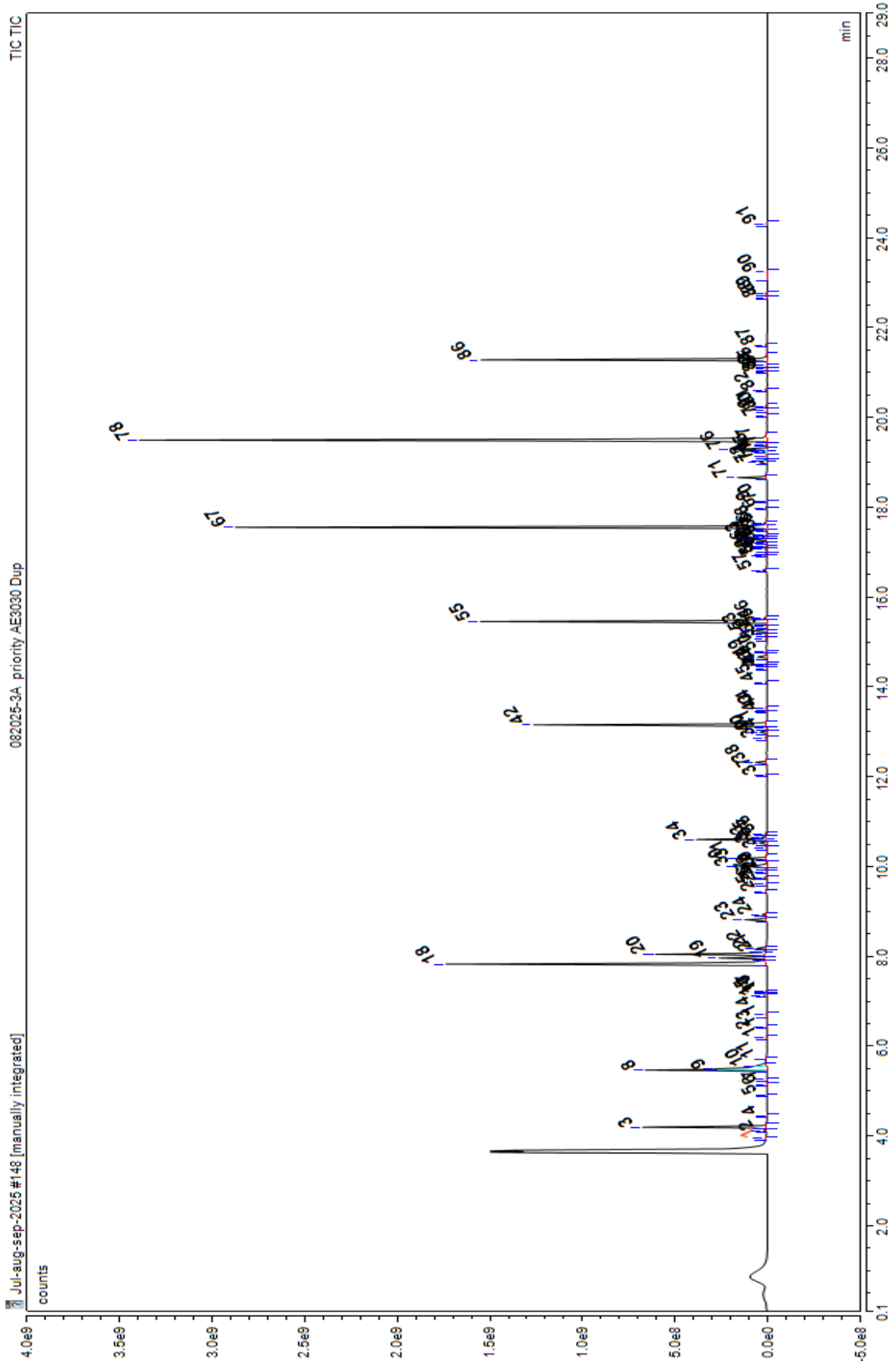
99% of peaks ID'd				99.9 ppb average response factor =			7262334	99.9

† Semi quant value derived from analyte specific response (1-point calibration)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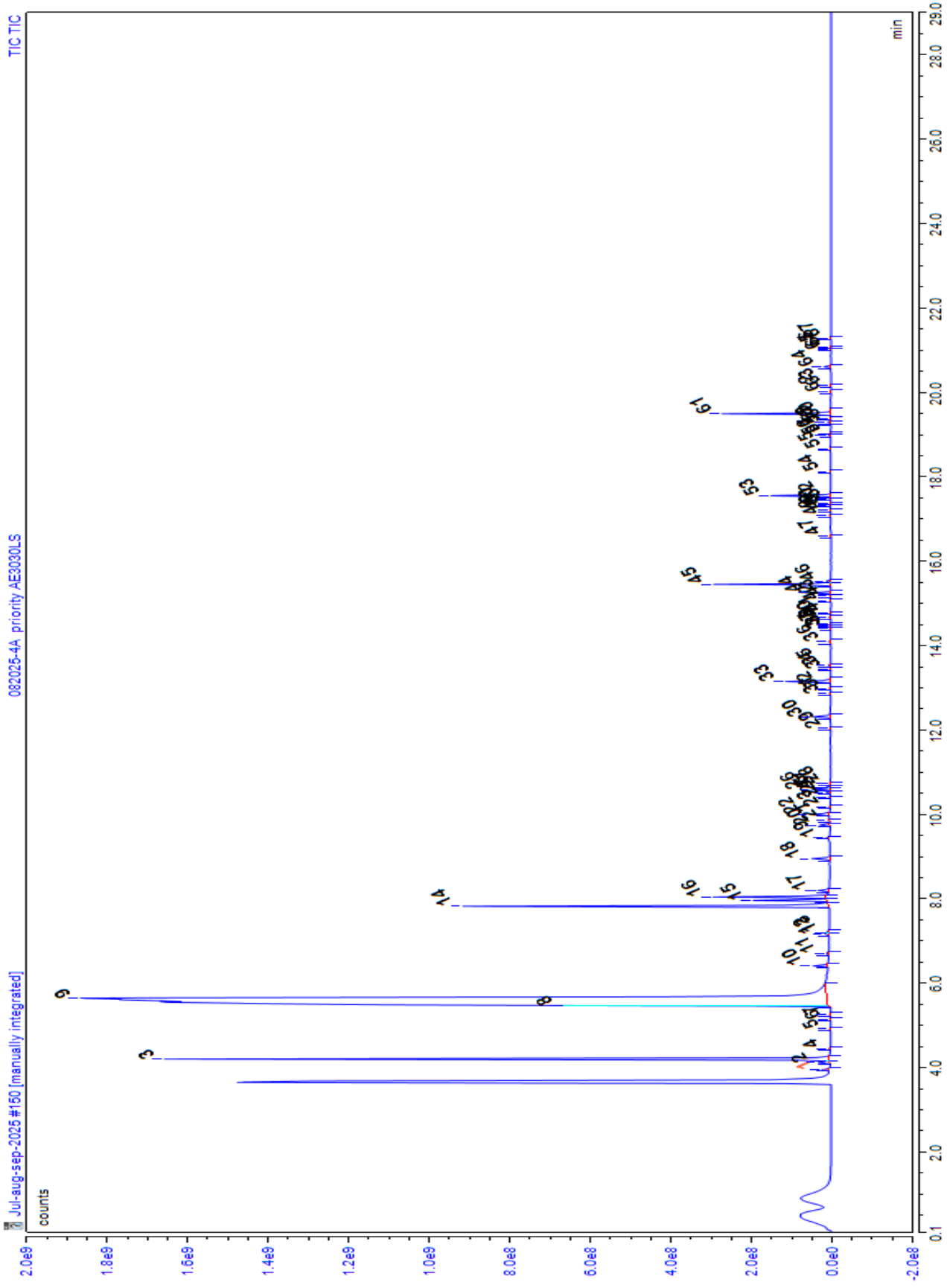
Peak #	ID	RT	CAS #	Formula	Match	MW (g/mol)	Peak Area	Approx. Conc. ppb/g
1	Ethane, hexafluoro-	3.944	76-16-4	C2F6	573	138	233058	0.9
2	Formaldehyde	4.117	50-00-0	CH2O	919	30	648194	2.6
3	Propene†	4.192	115-07-1	C3H6	936	42	19589512	212.7
4	Ethane, pentafluoro-	4.447	354-33-6	C2HF5	581	120	57872	0.2
5	Chloromethane†	4.91	74-87-3	CH3Cl	942	50	57321	1.0
6	.2-tetrafluoro-2-[1,1,2,2-tetrafluoro-2-(1	5.144		C14H8F19NC	609	647	58881	0.2
7	Desflurane	5.257		C3H2F6O	700	168	43480	0.2
8	Acetaldehyde	5.464	75-07-0	C2H4O	953	44	16642359	67.7
9	Methyl Alcohol	5.491	67-56-1	CH4O	871	32	8618384	35.1
10	1-Propene, 2-methyl-	5.539	115-11-7	C4H8	807	56	2995875	12.2
11	Butane	5.716	106-97-8	C4H10	777	58	184817	0.8
12	Trimethylsilyl fluoride	6.195	420-56-4	C3H9FSi	839	92	195438	0.8
13	Methyl formate	6.416	107-31-3	C2H4O2	869	60	132284	0.5
14	ethenyl)oxy]methyl]-1,2,2,2-tetrafluoroe	6.695	1644-11-7	C8F16O2	570	432	184478	0.8
15	Ethanol†	7.11	64-17-5	C2H6O	844	46	755577	22.6
16	Ethane, pentafluoro-	7.172	354-33-6	C2HF5	570	120	207216	0.8
17	Ethane, pentafluoro-	7.216	354-33-6	C2HF5	550	120	127672	0.5
18	2-Propenal†	7.825	107-02-8	C3H4O	921	56	59601274	1318.6
19	Acetone†	7.957	67-64-1	C3H6O	936	58	7096647	78.2
20	Propanal	8.042	123-38-6	C3H6O	926	58	17213489	70.1
21	Pentane	8.1	109-66-0	C5H12	759	72	683138	2.8
22	Isopropyl Alcohol†	8.171	67-63-0	C3H8O	881	60	1525053	15.4
23	2-Propenenitrile	8.811	107-13-1	C3H3N	926	53	3595134	14.6
24	Formic acid, 1,1-dimethylethyl ester	8.927	762-75-4	C5H10O2	811	102	827294	3.4
25	2-Propen-1-ol	9.44	107-18-6	C3H6O	686	58	251985	1.0
26	Bicyclo[2.1.10]pentane	9.603		C5H8	892	96	166374	0.7
27	1-Propanol	9.739	71-23-8	C3H8O	854	60	616682	2.5
28	Methane, nitro-	9.879	75-52-5	CH3NO2	615	61	87748	0.4
29	ethenyl)oxy]methyl]-1,2,2,2-tetrafluoroe	9.93	1644-11-7	C8F16O2	484	432	53316	0.2
30	Silanol, trimethyl-	10.001	1066-40-6	C3H10OSi	816	90	5208986	21.2
31	Propanenitrile	10.175	107-12-0	C3H5N	941	55	4455100	18.1
32	Methyl vinyl ketone	10.406	78-94-4	C4H6O	809	70	223141	0.9
33	2,3-Butanedione	10.522	431-03-8	C4H6O2	815	86	1263966	5.1
34	Butanal	10.596	123-72-8	C4H8O	891	72	10541299	42.9
35	2-Butanone†	10.647	78-93-3	C4H8O	842	72	763919	5.0
36	2-Ethyl-oxetane	10.722		C5H10O	841	86	383458	1.6
37	2-Butenal	12.032	4170-30-3	C4H6O	911	70	137745	0.6
38	1-Butanol	12.314	71-36-3	C4H10O	821	74	1964163	8.0
39	2-Pentanone	12.862	107-87-9	C5H10O	843	86	429217	1.7
40	Cyclopentane, 1,2-dimethyl-, cis-	12.984	1192-18-3	C7H14	863	98	1101609	4.5
41	2,3-Pentanedione	13.076	600-14-6	C5H8O2	745	100	88831	0.4
42	Pentanal	13.151	110-62-3	C5H10O	865	86	38397022	156.3
43	2-Butanone, 3,3-dimethyl-	13.447	75-97-8	C6H12O	747	100	70514	0.3
44	2-Hexene, 5,5-dimethyl-, (Z)-	13.528	39761-61-0	C8H16	716	112	230322	0.9
45	Methyl Isobutyl Ketone	14.1	108-10-1	C6H12O	841	100	239969	1.0
46	3-Cyclopentene-1,2-diol, cis-	14.409	694-29-1	C5H8O2	694	100	22887	0.1
47	Furan, 2,3-dihydro-4-methyl-	14.464	34314-83-5	C5H8O	824	84	205462	0.8
48	Pentane, 1-chloro-	14.508	543-59-9	C5H11Cl	819	106	127423	0.5
49	1-Pentanol	14.661	71-41-0	C5H12O	858	88	1704027	6.9
50	Pentanal, 3-methyl-	14.78	15877-57-3	C6H12O	742	100	30913	0.1

51	2-Pentanone, 4,4-dimethyl-	15.055	590-50-1	C7H14O	860	114	286690	1.2
52	2-Hexanone	15.168	591-78-6	C6H12O	895	100	360478	1.5
53	1-Octene	15.246	111-66-0	C8H16	831	112	2146213	8.7
54	Cyclopentanone	15.344	120-92-3	C5H8O	800	84	60143	0.2
55	Hexanal	15.45	66-25-1	C6H12O	891	100	48135480	195.9
56	Cyclotrisiloxane, hexamethyl-	15.521	541-05-9	C6H18O3Si3	896	222	630762	2.6
57	2-Hexyn-1-ol	16.589	764-60-3	C6H10O	834	98	681008	2.8
58	Ethylbenzene	16.916	100-41-4	C8H10	900	106	522356	2.1
59	Tetrahydrofuran, 2-propyl-	16.95	3208-22-8	C7H14O	826	114	266281	1.1
60	Bicyclo[2.1.1]hexan-2-ol, 2-ethenyl-	17.079		C8H12O	768	124	707529	2.9
61	Acetyl valeryl	17.123	96-04-8	C7H12O2	778	128	253499	1.0
62	3-Hexanone, 5-methyl-	17.198	623-56-3	C7H14O	802	114	140183	0.6
63	2-Heptanone	17.273	110-43-0	C7H14O	848	114	1818831	7.4
64	1-Nonene	17.324	124-11-8	C9H18	839	126	756189	3.1
65	2-n-Butyl furan	17.371	4466-24-4	C8H12O	796	124	126327	0.5
66	2-Nonen-1-ol	17.487	22104-79-6	C9H18O	693	142	137638	0.6
67	Heptanal	17.552	111-71-7	C7H14O	945	114	93674854	381.2
68	2,4-Hexadien-1-ol	17.637	111-28-4	C6H10O	759	98	643660	2.6
69	1-Butanol, 3-methyl-, nitrate	17.967	543-87-3	C5H11NO3	772	133	93722	0.4
70	3-Decyn-2-ol	18.123	69668-93-5	C10H18O	748	154	63173	0.3
71	2-Heptenal, (Z)-	18.657	57266-86-1	C7H12O	829	112	4320327	17.6
72	Bicyclo[2.2.2]octan-1-ol	18.99	20534-58-1	C8H14O	716	126	1401019	5.7
73	2,3-Octanedione	19.028	585-25-1	C8H14O2	710	142	591429	2.4
74	1-Octen-3-ol	19.13	3391-86-4	C8H16O	768	128	47398	0.2
75	4-Dodecene, (E)-	19.239	7206-15-7	C12H24	827	168	806838	3.3
76	Furan, 2-pentyl-	19.286	3777-69-3	C9H14O	903	138	5238894	21.3
77	Decane	19.392	124-18-5	C10H22	754	142	130575	0.5
78	Octanal	19.49	124-13-0	C8H16O	894	128	112622462	458.4
79	4-Chloro-3-n-butyltetrahydropyran	20.035	35952-06-8	C9H17ClO	661	176	54159	0.2
80	1,3-Octadiene	20.16	1002-33-1	C8H14	789	110	83568	0.3
81	Cyclohexene-1-carboxaldehyde, 4-meth	20.239	7560-64-7	C8H12O	821	124	364488	1.5
82	1,10-Dichlorodecane	20.603	2162-98-3	C10H20Cl2	812	210	451270	1.8
83	2-Dodecenal, (E)-	21.011	20407-84-5	C12H22O	799	182	53108	0.2
84	Furan, 2-hexyl-	21.075	3777-70-6	C10H16O	815	152	90203	0.4
85	Hydroxylamine, O-decyl-	21.15	29812-79-1	C10H23NO	776	173	92257	0.4
86	Nonanal	21.276	124-19-6	C9H18O	915	142	43925907	178.8
87	2-Nonenal, (Z)-	21.602	60784-31-8	C9H16O	790	140	302339	1.2
88	2,4-Undecadien-1-ol	22.66	77657-78-4	C11H20O	716	168	81121	0.3
89	2-n-Heptylfuran	22.749	3777-71-7	C11H18O	829	166	305386	1.2
90	2-Octen-1-ol, (Z)-	23.232	26001-58-1	C8H16O	696	128	41090	0.2
91	2-n-Octylfuran	24.303	4179-38-8	C12H20O	801	180	167375	0.7
	Other						11746083	47.8
98% of peak area ID'd						Total =	544462839	3505.6
† Semi quant value derived from analyte specific response (1-point calibra					99.9 ppb average response factor =		7262334	99.9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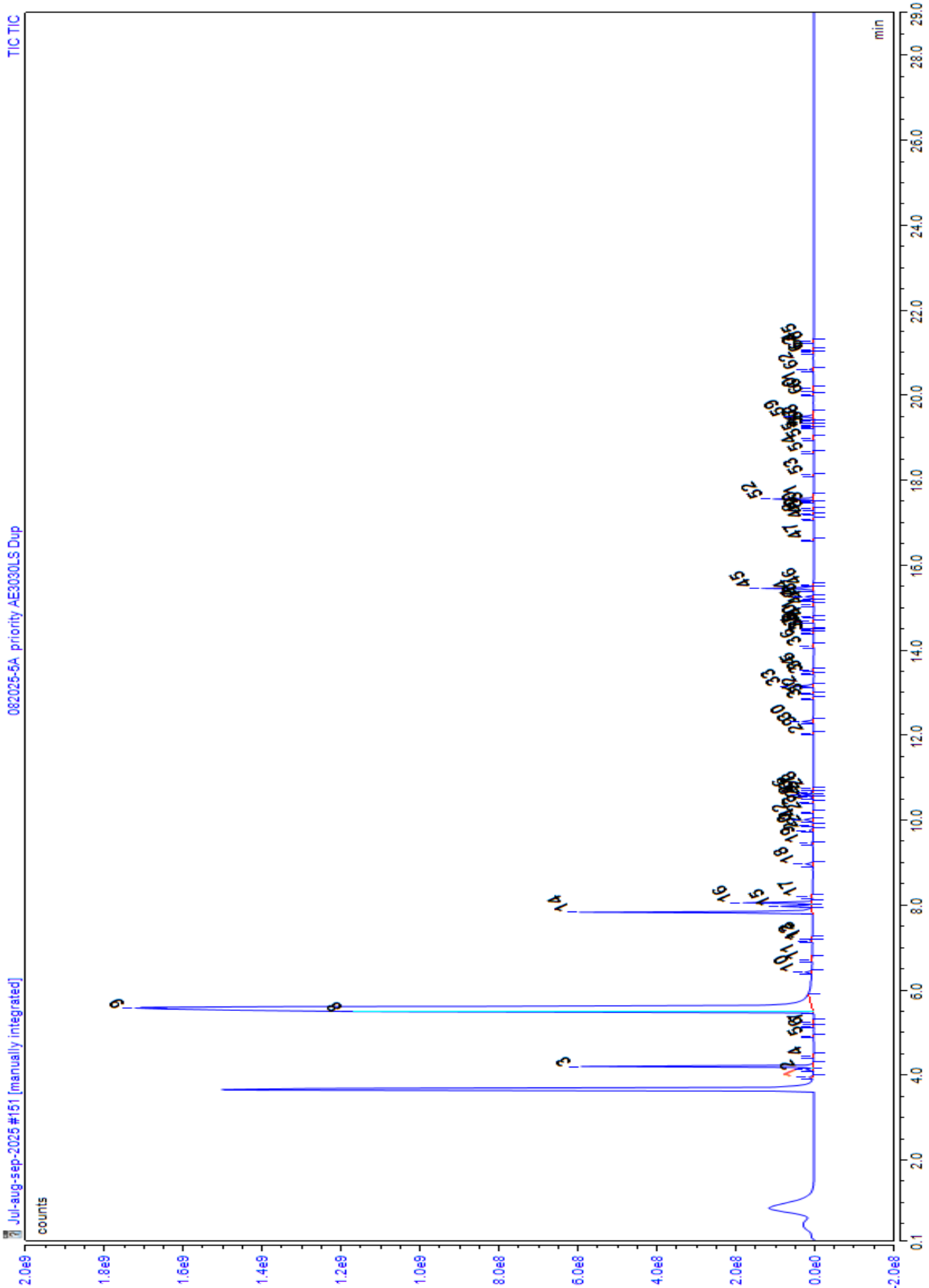
Peak #	ID	RT	CAS #	Formula	Match	MW (g/mol)	Peak Area	Approx. Conc. ppb/g
1	Ethane, hexafluoro-	3.947	76-16-4	C2F6	600	138	421405	1.8
2	Formaldehyde	4.121	50-00-0	CH2O	953	30	967859	4.1
3	Propene†	4.199	115-07-1	C3H6	887	42	53884902	604.8
4	Ethane, pentafluoro-	4.447	354-33-6	C2HF5	598	120	119649	0.5
5	Chloromethane†	4.917	74-87-3	CH3Cl	768	50	75031	1.3
6	2,3,3,3-Tetrafluoro-1-morpholin-4-yl-2-[:	5.141		C14H8F19NC	613	647	69508	0.3
7	Desflurane	5.253		C3H2F6O	682	168	104993	0.4
8	Acetaldehyde	5.46	75-07-0	C2H4O	951	44	8652600	36.4
9	Methyl Alcohol	5.644	67-56-1	CH4O	938	60	319664945	1344.7
10	Methyl formate	6.41	107-31-3	C2H4O2	928	60	1165726	4.9
11	Propane, 1-[1-[difluoro[(trifluoroethenyl	6.702	1644-11-7	C8F16O2	553	432	260584	1.1
12	Ethanol†	7.154	64-17-5	C2H6O	669	46	552856	17.1
13	Ethane, pentafluoro-	7.199	354-33-6	C2HF5	600	120	190090	0.8
14	2-Propenal†	7.821	107-02-8	C3H4O	936	56	28324242	647.7
15	Acetone†	7.957	67-64-1	C3H6O	939	58	5330894	60.7
16	Propanal	8.039	123-38-6	C3H6O	884	58	8230518	34.6
17	Isopropyl Alcohol†	8.192	67-63-0	C3H8O	901	60	894120	9.3
18	Acetic acid, methyl ester	8.95	79-20-9	C3H6O2	901	74	1549220	6.5
19	2-Propen-1-ol	9.443	107-18-6	C3H6O	847	58	244574	1.0
20	1-Propanol	9.739	71-23-8	C3H8O	860	60	966403	4.1
21	Methane, nitro-	9.875	75-52-5	CH3NO2	894	61	124671	0.5
22	Silanol, trimethyl-	9.998	1066-40-6	C3H10OSi	804	90	1607711	6.8
23	Propanenitrile	10.178	107-12-0	C3H5N	832	55	88297	0.4
24	Methyl vinyl ketone	10.403	78-94-4	C4H6O	846	70	139305	0.6
25	2,3-Butanedione	10.518	431-03-8	C4H6O2	831	86	327445	1.4
26	Butanal	10.593	123-72-8	C4H8O	852	72	1307189	5.5
27	2-Butanone†	10.644	78-93-3	C4H8O	827	72	299209	2.0
28	2-Ethyl-oxetane	10.736		C5H10O	715	86	75377	0.3
29	2-Butenal	12.035	4170-30-3	C4H6O	859	70	31094	0.1
30	1-Butanol	12.311	71-36-3	C4H10O	820	74	1457341	6.1
31	2-Pentanone	12.858	107-87-9	C5H10O	836	86	107905	0.5
32	Cyclopentane, 1,2-dimethyl-, cis-	12.977	1192-18-3	C7H14	857	98	107594	0.5
33	Pentanal	13.147	110-62-3	C5H10O	864	86	3282417	13.8
34	2-Pentanone, 3-methyl-	13.447	565-61-7	C6H12O	706	100	44063	0.2
35	2-Hexene, 5,5-dimethyl-, (Z)-	13.528	39761-61-0	C8H16	811	112	248796	1.0
36	Methyl Isobutyl Ketone	14.096	108-10-1	C6H12O	856	100	197203	0.8
37	3-Cyclopentene-1,2-diol, cis-	14.406	694-29-1	C5H8O2	704	100	14856	0.1
38	Furan, 2,3-dihydro-4-methyl-	14.463	34314-83-5	C5H8O	754	84	7101	0.0
39	Pentane, 1-chloro-	14.504	543-59-9	C5H11Cl	803	106	35872	0.2
40	1-Pentanol	14.668	71-41-0	C5H12O	798	88	172876	0.7
41	5,5-Dimethyl-1,3-dioxan-2-one	14.78	3592-12-9	C6H10O3	742	130	29128	0.1
42	2-Pentanone, 4,4-dimethyl-	15.059	590-50-1	C7H14O	818	114	95360	0.4
43	2-Hexanone	15.171	591-78-6	C6H12O	790	100	47605	0.2
44	2-Octene	15.249	111-67-1	C8H16	793	112	1279034	5.4
45	Hexanal	15.45	66-25-1	C6H12O	854	100	8111343	34.1
46	Cyclotrisiloxane, hexamethyl-	15.525	541-05-9	C6H18O3Si3	921	222	362863	1.5
47	2-Hexyn-1-ol	16.599	764-60-3	C6H10O	811	98	29836	0.1
48	Oxirane, (3,3-dimethylbutyl)-	17.082	53907-77-0	C8H16O	766	128	93567	0.4
49	3-Hexanone, 5-methyl-	17.205	623-56-3	C7H14O	758	114	32771	0.1
50	1-Nonene	17.327	124-11-8	C9H18	825	126	55186	0.2
51	2-n-Butyl furan	17.375	4466-24-4	C8H12O	788	124	15425	0.1
52	2-Butenal, 2-ethenyl-	17.484	20521-42-0	C6H8O	701	96	33898	0.1
53	Heptanal	17.548	111-71-7	C7H14O	906	114	4142922	17.4
54	1-ethoxy-2,4-hexadiene	18.123		C8H14O	804	126	44164	0.2
55	trisiloxane, 1,1,1,5,5,5-hexamethyl-3-[(tr	18.66		C9H28O3Si4	858	296	27822	0.1
56	Benzaldehyde	18.987	100-52-7	C7H6O	896	106	212938	0.9
57	3-Hexyne, 2,5-diol	19.021	3031-66-1	C6H10O2	680	114	28227	0.1
58	2-Undecene, (Z)-	19.245	821-96-5	C11H22	738	154	15065	0.1
59	Furan, 2-pentyl-	19.29	3777-69-3	C9H14O	846	138	237250	1.0
60	Tricyclo[3.1.0.0(2,4)]hex-3-ene-3-carbon	19.378	103495-51-8	C7H5N	738	103	42229	0.2
61	Octanal	19.49	124-13-0	C8H16O	838	128	7142269	30.0
62	3-Trifluoroacetoxydodecane	20.017		C17H31F3O2	700	324	34164	0.1
63	1-Nonene, 4,6,8-trimethyl-	20.164	54410-98-9	C12H24	764	168	66875	0.3
64	1-Chloroundecane	20.602	2473-03-2	C11H23Cl	792	190	484134	2.0
65	2-Tridecenal, (E)-	21.011	7069-41-2	C13H24O	742	196	16590	0.1
66	Furan, 2-hexyl-	21.079	3777-70-6	C10H16O	718	152	8148	0.0
67	2-Decen-1-ol	21.279	22104-80-9	C10H20O	794	156	61669	0.3
	Other						18734409	78.8
96% of peak area ID'd						Total =	482831333	2998.2
† Semi quant value derived from analyte specific response (1-point calibratic					99.9 ppb average response factor =		7262334	99.9


TIC TIC
082025-5A priority AE3030LS Dup
Jul-aug-sep-2025 #151 [manually integrated]
counts
min

Peak #	ID	RT	CAS #	Formula	Match	MW (g/mol)	Peak Area	Approx. Conc. ppb/g
1	Ethane, hexafluoro-	3.947	76-16-4	C2F6	575	138	260897	1.0
2	Formaldehyde	4.124	50-00-0	CH2O	852	30	732668	2.9
3	Propene†	4.199	115-07-1	C3H6	945	42	17179858	182.8
4	Ethane, pentafluoro-	4.451	354-33-6	C2HF5	596	120	46235	0.2
5	Chloromethane†	4.916	74-87-3	CH3Cl	837	50	20379	0.3
6	2,3,3,3-Tetrafluoro-1-morpholin-4-yl-	5.141		C14H8F19NC	594	647	27846	0.1
7	Desflurane	5.253		C3H2F6O	753	120	38109	0.2
8	Acetaldehyde	5.46	75-07-0	C2H4O	970	44	19418986	77.4
9	Methyl Alcohol	5.573	67-56-1	CH4O	917	32	200570960	799.7
10	Methyl formate	6.416	107-31-3	C2H4O2	885	60	531023	2.1
11	Propane, 1-[1-[difluoro[(trifluoroethe	6.702	1644-11-7	C8F16O2	584	432	144207	0.6
12	Ethanol†	7.158	64-17-5	C2H6O	799	46	338598	9.9
13	Ethane, pentafluoro-	7.202	354-33-6	C2HF5	586	120	100008	0.4
14	2-Propenal†	7.828	107-02-8	C3H4O	927	56	18069106	391.7
15	Acetone†	7.967	67-64-1	C3H6O	941	58	2353005	25.4
16	Propanal	8.049	123-38-6	C3H6O	929	58	5301755	21.1
17	Isopropyl Alcohol†	8.199	67-63-0	C3H8O	813	60	259153	2.6
18	Acetic acid, methyl ester	8.964	79-20-9	C3H6O2	877	74	720403	2.9
19	2-Propen-1-ol	9.454	107-18-6	C3H6O	674	58	138448	0.6
20	1-Propanol	9.749	71-23-8	C3H8O	734	60	481691	1.9
21	Methane, nitro-	9.882	75-52-5	CH3NO2	691	61	72362	0.3
22	Silanol, trimethyl-	10.005	1066-40-6	C3H10OSi	781	90	793558	3.2
23	Propanenitrile	10.188	107-12-0	C3H5N	735	55	41263	0.2
24	Methyl vinyl ketone	10.413	78-94-4	C4H6O	819	70	96361	0.4
25	2,3-Butanedione	10.528	431-03-8	C4H6O2	857	86	238277	1.0
26	Butanal	10.6	123-72-8	C4H8O	828	72	712127	2.8
27	2-Butanone†	10.651	78-93-3	C4H8O	855	72	226746	1.5
28	2-Ethyl-oxetane	10.743		C5H10O	745	86	41869	0.2
29	2-Butenal	12.035	4170-30-3	C4H6O	790	70	19189	0.1
30	1-Butanol	12.317	71-36-3	C4H10O	811	74	1023880	4.1
31	2-Pentanone	12.861	107-87-9	C5H10O	815	86	59907	0.2
32	Cyclopentane, 1,2-dimethyl-, cis-	12.984	1192-18-3	C7H14	761	98	43947	0.2
33	Pentanal	13.151	110-62-3	C5H10O	846	86	1652523	6.6
34	2-Pentanone, 3-methyl-	13.45	565-61-7	C6H12O	715	100	27390	0.1
35	2-Hexene, 5,5-dimethyl-, (Z)-	13.532	39761-61-0	C8H16	805	112	159425	0.6
36	Methyl Isobutyl Ketone	14.1	108-10-1	C6H12O	861	100	192926	0.8
37	3-Cyclopentene-1,2-diol, cis-	14.409	694-29-1	C5H8O2	609	100	17580	0.1
38	Furan, 2,3-dihydro-4-methyl-	14.467	34314-83-5	C5H8O	556	84	6078	0.0
39	Pentane, 1-chloro-	14.511	543-59-9	C5H11Cl	686	106	7886	0.0
40	1-Pentanol	14.671	71-41-0	C5H12O	767	88	87238	0.3
41	5,5-Dimethyl-1,3-dioxan-2-one	14.78	3592-12-9	C6H10O3	739	130	19853	0.1
42	2-Pentanone, 4,4-dimethyl-	15.059	590-50-1	C7H14O	815	114	63807	0.3
43	2-Hexanone	15.171	591-78-6	C6H12O	767	100	34013	0.1
44	2-Octene	15.249	111-67-1	C8H16	798	112	604258	2.4
45	Hexanal	15.45	66-25-1	C6H12O	857	100	3626333	14.5
46	Cyclotrisiloxane, hexamethyl-	15.525	541-05-9	C6H18O3Si3	850	222	119596	0.5
47	2-Hexyn-1-ol	16.596	764-60-3	C6H10O	677	98	12626	0.1
48	Oxirane, (3,3-dimethylbutyl)-	17.082	53907-77-0	C8H16O	771	128	35785	0.1
49	3-Hexanone, 5-methyl-	17.201	623-56-3	C7H14O	654	114	12835	0.1
50	1-Nonene	17.324	124-11-8	C9H18	752	126	14473	0.1
51	2-Butenal, 2-ethenyl-	17.487	20521-42-0	C6H8O	636	96	7963	0.0
52	Heptanal	17.552	111-71-7	C7H14O	875	114	2798806	11.2
53	1-ethoxy-2,4-hexadiene	18.123		C8H14O	700	126	8119	0.0
54	trisiloxane, 1,1,1,5,5,5-hexamethyl-3-	18.66		C9H28O3Si4	835	296	13826	0.1
55	Benzaldehyde	18.984	100-52-7	C7H6O	900	106	113722	0.5
56	2-Undecene, (Z)-	19.239	821-96-5	C11H22	738	154	3250	0.0
57	Furan, 2-pentyl-	19.29	3777-69-3	C9H14O	826	138	70830	0.3
58	Tricyclo[3.1.0.0(2,4)]hex-3-ene-3-carb	19.381	103495-51-8	C7H5N	691	103	12715	0.1
59	Octanal	19.49	124-13-0	C8H16O	819	128	1361496	5.4
60	3-Trifluoroacetoxydodecane	20.011		C17H31F3O2	621	324	27445	0.1
61	1-Nonene, 4,6,8-trimethyl-	20.16	54410-98-9	C12H24	766	168	50446	0.2
62	1-Chloroundecane	20.599	2473-03-2	C11H23Cl	811	190	317179	1.3
63	2-Tridecenal, (E)-	21.011	7069-41-2	C13H24O	727	196	15217	0.1
64	Furan, 2-hexyl-	21.072	3777-70-6	C10H16O	715	152	15457	0.1
65	2-Decen-1-ol	21.276	22104-80-9	C10H20O	766	156	45338	0.2
	Other						13331941	53.2
95% of peak area ID'd						Total =	294991194	1637.0
† Semi quant value derived from analyte specific response (1				99.9 ppb average response factor =			7262333.852	29.0