February 26, 2026

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Chemical Fingerprint of MW-2-500 Sub-Surface Sheen
January 2026
Westlake Sulphur Dome Study

Dear Mr. Charpentier,

ERM-NewFields is pleased to provide you with this report of the chemical fingerprinting results for a floating sheen collected from MW-2-500 monitoring well as part of the on-going investigation of the Westlake US 2 LLC (Westlake) salt dome caverns in the Sulphur Mines oil field, Calcasieu Parish, Louisiana (the Site). I understand this monitoring well is installed at the base of the "500-ft" sand of the aquifer, which is screened between 502-512' below ground surface (bgs) but has an ~450' water column. Thus, the sheen was collected ~60' bgs but is envisioned to have originated (entered the well) approximately 510' bgs.

The current study follows 15 earlier chemical fingerprinting studies at the Site (**Table 1**). These earlier studies included nine oils collected from the 7B cavern well (between January 2023 and January 2025), 13 local crude oil samples collected from nine Yellow Rock wells and the Yellow Rock tank battery, three oils collected from PPG #4 cavern well (between May 2023 and Jan. 2025), and nine surface oils/sheens. Among other conclusions, these earlier studies showed:

- The 7B cavern oils are chemically distinct from the locally-produced (Yellow Rock) crude oils studied, which varied only slightly among themselves.
- The PPG4 cavern oils are comparable to 7B cavern oil and, as such, are also chemically distinct from the locally-produced (Yellow Rock) crude oils.
- There was no change in composition of the 7B and PPG4 cavern oils over the period of sampling (January 2023 and January 2025 and May 2023 to January 2025, respectively), indicating no local crude oil(s) had or was presently entering either cavern.
- The surface oils/sheens studied that contained oil are local crude oils and are chemically distinct from 7B and PPG4 cavern oils.

The current study expands upon these earlier conclusions as it reports, for the first time, on the character of a sub-surface oil (~500' bgs) within the MW-2 monitoring well.

Samples
Table 2 provides an inventory of samples included in the current study – along with all samples from previously studies for ease of reference. The MW-2-500 sheen was collected *in situ* (downhole) on January 21, 2026 by placing two pre-cleaned Teflon nets inside of a pre-cleaned,

stainless steel sampling cage.[1] The cage containing the nets was then lowered into the well and repeatedly bobbed up-and-down through the floating sheen-water interface, retrieved and then immediately placed inside a glass jar for shipment to the laboratory. Upon arrival the laboratory the netting was removed and prepared for analysis in the same manner as net/sheen samples collected from surface water.[2] A trip/field blank (pre-cleaned nets inside a pre-cleaned SS cage) was included in the study for quality control.

The samples were sent to ERM NewFields' alliance laboratory, Pace (formerly Alpha) Analytical (Mansfield, Massachusetts, USA) on January 21, 2026 where they arrived safely the next day. A copy of the chain-of-custody document received with the shipment and photographs of the MW-2-500 sample are shown in **Attachment 1**.

Objective

The objective of the current study was to determine the composition of the MW-2-500 sheen. Of particular interest were (1) confirm that the sheen was petroleum (*versus* natural organic matter), (2) if petroleum, whether that was a refined product (e.g., diesel fuel) or crude oil, and (3) if crude oil, was it typical of the area's local crude oil(s) or cavern oil(s).

Methods

The objective was pursued using specific chemical fingerprinting and interpretation methods based on the CEN oil spill identification protocol[3], as were described in the original study's report.[4] The chemical fingerprinting analyses performed herein remain unchanged from the previous reports (Table 1). The small volume of oil collected from the MW-2-500 sheen (see photo, Attachment 1) precluded its analysis for conventional crude oil assay (e.g., API gravity, sulfur content, or Ni and V concentrations), which to date have further confirmed the disparate character of the locally-produced crude oil(s) and various cavern oil(s).[5]

As first described in the study of May 2023 oils,[6] this study also included the (re-)analysis of the 7B cavern well oil collected in January 2023, that was adopted as a *site-specific reference oil*. As is appropriate for long-term fingerprinting studies,[7] this oil is being re-analyzed for quality control with each "batch" of samples analyzed from the Sulphur Dome site to assess the long-term precision (reproducibility) of diagnostic ratios (DRs) used in the quantitative (statistical) comparison of samples from the Site. An expanded discussion of this topic was provided earlier.[8] The reference oil was prepared and analyzed in duplicate to assess the short-term precision (repeatability) of DRs. Based on the new QC results, an updated table of the short-term and long-

[1] Stout, S.A. et al. (2016) Chemical fingerprinting of gasoline and distillate fuels. In: Standard Handbook of Oil Spill Environmental Forensics: Fingerprinting and Source Identification, 2nd Ed., S.A. Stout and Z. Wang, Eds., Elsevier Publishing Co., Boston, MA, p. 509-564.

[2] ASTM (2007) D 3326-07: Standard practice for preparation of samples for identification of waterborne oils. ASTM Int'l., W. Conshohocken, PA.

[3] Kienhaus, P.G.M. et al. 2016. CEN methodology for oil spill identification. In: *Standard Handbook of Oil Spill Environmental Forensics: Fingerprinting and Source Identification*, 2nd Ed., S.A. Stout and Z. Wang, Eds., Elsevier Publishing Co., Boston, MA, p. 685-728.

[4] See Report 1 (Table 1).

[5] Most recently summarized in Report 15 (Table 1).

[6] See Report 4 (Table 1).

[7] Stout, S.A. (2016) Oil spill fingerprinting method for oily matrices used in the Deepwater Horizon NRDA. Environ. Forensics 17(3): 218-243

[8] See Attachment 3 to Report 4 (Table 1).

term precision (repeatability and reproducibility) of DRs is provided in **Attachment 2**. There are no significant changes to either short- or long-term precision attained to date.

Results & Discussion

The complete Level 4 Pace Environmental Testing Report (ETR) including all sample preparation data, instrument calibrations, QC data and chromatograms is maintained on file by ERM NewFields (ETR L2604030). A copy of the complete Level 2 ETR was provided to you separately.

The tabulated results for the targeted compounds in each analysis performed are contained in **Attachment 3**. The full-size GC/FID chromatograms obtained in Tier 1 (modified EPA Method 8015D) analysis are provided in **Attachment 4** and selected extraction ion profiles (EIPs) obtained in Tier 2 (modified EPA Method 8270D) are provided in **Attachment 5**.

Specific results most relevant to the study's objective are presented in **Table 3** and **Figures 1 to 6**. Discussion of these results is provided in the following sections.

Tier 1 - General Character of the MW-2-500 Sub-Surface Sheen

Figure 1 shows the GC/FID (C8+) chromatogram for the MW-2-500 sub-surface sheen studied herein (Fig. 1A) and the study's field/trip blank (and unused downhole sampler and clean Teflon net; Fig. 1B). The absence of extractable material on the field/trip blank confirms the material recovered from MW-2 is authentic, the character of which is described in the following paragraphs.

The chromatogram for the MW-2-500 sub-surface sheen collected is comprised of a broad "hump" referred to as an unresolved complex mixture (UCM). The UCM spans from ~C12 to C45 with no resolved peaks characteristic of n-alkanes, acyclic isoprenoids (Pr or Ph), or prominent biomarkers (e.g., hopane or norhopane; Fig. 1A). The only resolved peaks present appear to be some (apparently recalcitrant) biomarkers (e.g., diasteranes and aromatic steroids; see Tier 2 results below). These Tier 1 features indicate that:

- The sub-surface sheen collected from MW-2-500 on January 21, 2026 is comprised of a severely biodegraded crude oil.

It is notable that the previously studied, surface sheens containing oil were collected from numerous bubble sites and Central Lake in the area were also comprised of biodegraded crude oil. These samples' overall comparability is demonstrated in **Figure 2**, which shows the GC/(FID (C8+) chromatograms for six surface sheens containing oil compared to the MW-2-500 sub-surface sheen studied herein.[9] Variability in the degrees of biodegradation (and evaporation) among the surface sheens was previously described.[10] For example, the retention of prominent, yet relatively susceptible hopanes (T15 and T19; 30-norhopane and hopane, respectively) in the Bubble Site 20 and 22 sheens (Fig. 2B and 2C) indicates they were somewhat less biodegraded than the other sheens, including the MW-2-500 sub-surface (Fig. 2G). Despite the variably degrees of biodegradation among the area's surface sheens:

[9] Two of the nine sheens previously studied (Bubble Site 14 and Central Lake sheens collected Sept. 11, 2023; Table 2) mostly contained naturally-occurring biological material(s), (e.g., plant debris) with only traces of severely biodegraded weathered crude oil (see Report 7, Table 1). The latter was only evident in GC/MS results and therefore these samples' chromatograms are not included in Figure 2. The chromatogram of a duplicate sample of the Bubble Site 22 sheen (Jan. 25, 2023; Fig. 2C) is also not included in Figure 2.

[10] Report 11 (Table 1) includes a *Review of Surface Oils/Sheens Studied to Date*.

- The sub-surface sheen from MW-2-500 is generally consistent with all of the previously studied surface sheens/oils collected throughout the study area.

- This finding is important because all of the previously studied surface sheens studied were demonstrated to consist of more highly weathered (biodegraded and evaporated) equivalents of the locally-produced crude oil, as represented by the 13 Yellow Rock oils studied to date.[11]

To explore this further, **Figure 3** shows the GC/FID (C8+) chromatograms for the MW-2-500 sub-surface sheen, the Bubble Site 24 surface oil collected in February 2024, a Yellow Rock produced oil collected in May 2023,[12] and the 7B cavern (reference) oil collected in January 2023 re-analyzed in the present study. As evident in Figure 2, the general comparability of the MW-2-500 and the Bubble Site 24 surface oil is obvious (Fig. 3A and 3B). Both these samples also are generally comparable to the locally-produced crude oil (Fig. 3C), albeit the latter is less biodegraded (and evaporated). Finally, the 7B cavern oil is seemingly unweathered and quite distinct from both the sheens and locally-produced oil(s) (Fig. 3D). Thus, based on the Tier 1 results:

- The MW-2-500 sheen is also anticipated to consist of a more highly weathered (biodegraded and evaporated) equivalents of the locally-produced crude oil. This anticipated result is explored using Tier 2 data in the next section.

Tier 2 – Detailed Character/Comparison of the MW-2-500 Sub-Surface Sheen

As in the earlier Sulphur Dome chemical fingerprinting studies (Table 1), diagnostic (source-specific and weathering resistant) features/ratios among PAHs, sulfur-containing aromatics, and petroleum biomarkers based on Tier 2's GC/MS results were used herein to reveal detailed characteristics of the MW-2-500 sub-surface sheen studied herein - and allow for qualitatively and quantitatively comparisons to representatives of the locally produced oil(s) and 7B cavern oil(s) (as in Figure 3).

Figures 4 and 5 allow for the qualitative comparisons of the triterpane and triaromatic steroid biomarker distributions for the same four samples from Figure 3. Figure 4 shows the *m/z* 191 extraction ion profiles (EIPs) for the MW-2-500 sub-surface sheen and the other samples, which shows the MW-2-500 sheen's triterpane distribution (Fig. 4A) closely matches that of the Bubble Site 24 surface oil studied previously (Fig. 4B). Both these samples' distributions are very different from those of the locally-produced oil (Fig. 4C) and 7B cavern oil (Fig. 4D), which appear generally similar.[13] Specifically, the MW-2-500 sub-surface sheen and Bubble Site 24 surface oil contain a relative abundance of tricyclic terpanes (T4-T10), tetracyclic terpane (T6a), oleanane (T18), norneohopane (T16), diahopane (T17) and an overall lack of hopanes (T11, T12, T15, T19, T21-T35; Fig. 4A and 4B). These features are evidence that the MW-2-500 sheen and Bubble Site 24 surface oil are both so severely biodegraded that their hopanes have been biodegraded thereby

[11] ibid

[12] See Report 5 (Table 1)

[13] It is worthwhile to remind the reader that a general similarity among biomarkers is unsurprising as many oils will contain biomarkers derived from comparable suites of ancient organic matter that gave rise to the oil over geologic time. Oil fingerprinting relies upon "the details", not general similarities, which in this case (Fig. 4C and 4D) - as summarized previously and in the next paragraph in the text above (i.e., "*As has been previously established*…").

allowing the more resistant terpenoids to predominate (Fig. 4A-4B).[14] Also predominating in the MW-2-500 sheen and Bubble Site 24 surface oil is the 22R-bishomohopane epimer (T27; Fig. 4A-4B), which was previously recognized as an interfering (apparent) marker compound common to all locally-produced crude oils studied to date (e.g., see Fig. 4C). Although presently unidentified, this marker compound appears resistant to the severe biodegradation experienced by the sub-surface sheen from MW-2-500 and numerous surface sheens previously studied, as represented here by the Bubble Site 24 surface oil (Fig. 4B).

As has been previously established in multiple earlier reports, despite exhibiting some general similarity, their detailed comparison reveal the locally-produced crude oils exhibit a lower relative abundance of tricyclic terpanes (T4-T10), bisnorhopane (T14a), norhopane (T15), and homohopanes (T21 to T35) and higher relative abundance of oleanane (T19) and moretanes (T17 and T20; Fig. 4C) compared to the 7B cavern oil (Fig. 4D).

Among other features, the prominence of oleanane (T18) in the severely biodegraded MW-2-500 sheen (and Bubble Site 24 surface oil) is evidence that it (they) must be derived from a locally-produced oil (which universally contain oleanane; e.g., Fig. 4C) that has been more severely biodegraded than the locally-produced (Yellow Rock) oils obtained from subsurface reservoirs (Fig. 4C) – and not from 7B cavern oil (which contains no oleanane; Fig. 4D).

Given the obvious effect of severe biodegradation on terpenoid biomarkers in the MW-2-500 sub-surface sheen studied herein (Fig. 4A), **Figure 5** shows the *m/z* 231 EIPs of the far more biodegradation-resistant biomarkers, *viz*., triaromatic steroids (TAS), in the same four samples shown in Figures 3 and 4. Inspection of these shows that the TAS distributions of the MW-2-500 sub-surface sheen (Fig. 5A) and the Bubble Site 24 surface oil (Fig. 5B) are highly comparable to one another and also to that of the locally-produced oil (Fig. 5C) except for the absence of C20-C22 pregnanes (TAS05-TAS08)[15] in the MW-2-500 sub-surface sheen (Fig. 5A) and Bubble Site 24 surface oil (Fig. 5B). As with the absence of hopanes (described above), the absence of these aliphatic compounds in both sheens is reasonably attributable to the severity of biodegradation in the MW-2-500 sheen and Bubble Site 24 surface oil, which has not affected the deep locally produced oil(s) or 7B cavern oil (Fig. 5C-5D). Notably, detailed differences among the authentic TAS in the MW-2-500 sheen, Bubble Site 24 surface oil, and locally-produced crude oil are distinct from the 7B cavern oil (e.g., TAS02/TAS03 ratios).

Thus, qualitative comparisons of biomarkers show that:

- Crude oil comprising the MW-2-500 sub-surface sheen appears to be derived from locally-produced crude oil – and not from 7B cavern oil.

Despite their qualitative comparability (Figs. 3 to 5) in keeping with previous fingerprinting studies, a quantitative (statistical) comparison was conducted between the MW-2-500 sub-surface sheen and the 7B cavern (reference) oil studied herein using the 30 diagnostic ratios (DRs) employed to date in previous Sulphur Dome fingerprinting studies. These DRs are contained in **Table 3**

[14] For example: Oleanane and tricyclic terpanes are considered more resistant to biodegradation than hopanes; e.g., Peters et al. (2004), *The Biomarker Guide*]. Notably, 25-norhopanes are not present in the MW-2-500 sheen or in the Bubble Site 24 surface oil. These somewhat unusual compounds were only found in one of the locally-produced crude oils studied to date; Yellow Rock 253998; see Report 6 (per Table 1).

[15] Pregnanes are not triaromatic steroids (TAS) but because they emit the same *m/z* 231 fragment ion they are quantified (and identified) as TAS.

wherein the 7B cavern (reference) oil collected in January 2023, which was re-analyzed as part of this study, are statistically compared to the MW-2-500 sub-surface sheen studied herein.

As in the past studies, those DRs that are presently determined to be less precisely measured over both the short term and long term of the Sulphur Dome studies (Attachment 2) are "greyed out" as they tend to exhibit higher standard errors under repeatability and/or reproducibility conditions (RSD_r and RSD_R) using the CEN protocol's 95% confidence level criteria.[16,17] The green and red color-coding in Table 3 reveals those DRs that statistically match (green) and statistically differ (red) from the 7B cavern (reference) oil re-analyzed herein.

The severity of biodegradation of terpenoid biomarkers (hopanes) in MW-2-500 sub-surface sheen studied herein (Fig. 4A) renders many hopane-based DRs equivocal in this statistical comparison. Those DRs based on the biodegradation resistant TAS (Fig. 5A), however, show multiple non-matching DRs between the sheen and 7B cavern oil (e.g., TAS09/TAS01 and TAS03/TAS01; Table 3). Thus, despite the severity of biodegradation of the surface oil near Bubble Site 24 studied herein, it is, nonetheless, a statistical "non-match" to the 7B cavern oil (Table 3).

Finally, as was provided in earlier fingerprinting reports, **Figure 6** shows a series of DR-based cross-plots that allow one to visualize the character of all samples from Sulphur Dome studied to date, i.e., 7B cavern oil, Yellow Rock well oils, surface sheens/oils, and the newly-studied MW-2-500 sub-surface sheen.[18] The severity of biodegradation of hopanes in the MW-2-500 sub-surface sheen sample has clearly affected those hopane-based DRs plotted in Fig. 4C, D, E, and F and thereby causing anomalous data points to be plotted (off-scale) when calculable. However, those DRs based upon the relative abundance of sulfur-containing aromatics and the TAS are minimally affected so that Figs. 6A-B show the MW-2-500 sheen's greater comparability to the surface sheens and locally-produced crude oil(s) - and not to 7B cavern oil.

Collectively, quantitative comparisons of the sample's available DRs (Table 3 and Fig. 6) show:

- The sub-surface sheen collected from MW-2-500 is consistent with the populations of locally-produced crude oils and the area's surface sheen/oils studied to date but is inconsistent and a statistical "non-match" (per CEN protocol) to the 7B cavern oil.

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[16] Kienhaus, P.G.M. et al. 2016. CEN methodology for oil spill identification. In: *Standard Handbook of Oil Spill Environmental Forensics: Fingerprinting and Source Identification*, 2nd Ed., S.A. Stout and Z. Wang, Eds., Elsevier Publishing Co., Boston, MA, p. 685-728.

[17] The quantitative (statistical) comparisons relied upon the 95% confidence level under conditions of repeatability ($r_{95\%}$) for each diagnostic ratio wherein:

$$r_{95\%} = 2.8 * RSD_r \text{ where } RSD_r = 5\% \text{ standard error, thus}$$

$$r_{95\%} = 14\%$$

If the $r_{95\%}$ between the measured diagnostic between two samples <14% the ratios were considered to statistically match, and *vice versa*. The comparable criterion ($R_{95\%}$) is used to compared precisely measured DRs under conditions of reproducibility (see Attachment 3).

[18] These same six plots were included in earlier reports (e.g., see Fig. 5 in Report 6, Fig. 4 in Report 7, Fig. 4 in Report 11), so the only additions to these plots are for the MW-2-500 sheen and 7B cavern (reference) oil samples analyzed herein.

Summary of New Findings

Chemical fingerprinting of a sub-surface sheen collected from MW-2-500 on January 21, 2026 shows:

- The MW-2-500 sub-surface sheen is comprised of a severely biodegraded crude oil that is consistent with locally-produced crude oils – and inconsistent (and a statistical non-match) with 7B cavern oil.

- A such, the MW-2-500 sub-surface sheen is also consistent with the population of previously studied sheens/oils collected from the surface of the Sulphur Dome area, which were also consistent with locally-produced crude oils - and inconsistent (and statistical non-matches) with 7B cavern oil.

- The MW-2-500 sub-surface sheen and the area's previously studied surface sheens/oils are severely biodegraded equivalents of the locally-produced oils obtained from deeper reservoirs (as represented by the Yellow Rock produced oils studied to date), which are only slightly-to-moderately biodegraded.

The MW-2-500 sheen is expected to have entered the well at a depth within the well's screened interval, i.e., ~500' bgs. Despite its greater depth (and as noted above), the MW-2-500 sheen is consistent with the population of sheens/oils collected from the surface (~0' bgs) environment.

- As previously reported, the occurrence of severely biodegraded local oil at the area's surface likely derives from either natural (upward) oil seepage that has reached the surface or from spillage during historic production activities.

- Although the origin of the severely biodegraded local crude oil hundreds of feet below the surface may seem more consistent with natural oil seepage, the potential impact at this depth from historic wells (leaking casings) would also seem possible.

Please let me know if you have any questions.

Sincerely,

Scott A. Stout, Ph.D., P.G.
Sr. Geochemist

PROFESSIONAL GEOLOGIST
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Attachments:
1: Chain-of-custody
2: Updated RSD table
3: Tabulated concentrations of TPH/SHC, PAH, and biomarkers
4: Full size GC/FID chromatograms
5: Selected GC/MS extraction ion profiles

Table 1: NewFields reports on the Westlake Sulfur Dome Study prepared to date prior to the current report.

All reports authored by S.A. Stout

Report No.	Title	Report Date
1	Chemical fingerprinting of oils, Westlake Sulphur Dome Study.	Mar. 10, 2023
2	Chemical fingerprint of oily net – No. 20, Westlake Sulphur Dome Study.	Apr. 27, 2023
3	Chemical fingerprint of 7B cavern oil – March 30, 2023, Westlake Sulphur Dome Study.	May 3, 2023
4	7B Cavern Oil, Cavern 4 Oil, Select Yellow Rock Well Oils, and a Bubble Site 24 Sheen – May 2023, Westlake Sulphur Dome Study.	July 11, 2023 – Amended July 14, 2023
5	Chemical fingerprint of 7B cavern oil, selected Yellow Rock well oils and a Central Lake sheen – June 2023, Westlake Sulphur Dome Study.	July 25, 2023
6	Chemical fingerprinting of additional Yellow Rock well oils – mid- to late-August 2023, Westlake Sulphur Dome Study.	Oct. 4, 2023
7	Chemical fingerprint of floating materials, Central Lake and Bubble Site 14 – September 11, 2023, Westlake Sulphur Dome Study.	Oct. 5, 2023
8	Chemical fingerprint of Bubble Site 14 sheen – September 20, 2023, Westlake Sulphur Dome Study.	Oct. 17, 2023
9	Chemical fingerprint of Bubble Site 19 sheen – October 15, 2023, Westlake Sulphur Dome Study.	Nov. 7, 2023
10	Chemical fingerprint of 7B cavern oil – October 2023, Westlake Sulphur Dome Study.	Nov. 21, 2023
11	Chemical Fingerprint of Surface Oil near Bubble Site 24 – February 26, 2024, Westlake Sulphur Dome Study	Mar. 25, 2024
12	Chemical fingerprint of 7B cavern oil – February 2024, Westlake Sulphur Dome Study.	Apr. 4, 2024
13	Chemical fingerprint of PPG4 & 7B cavern oils – August/September 2024, Westlake Sulphur Dome Study.	Oct. 29, 2024
14	Chemical fingerprint of 7B cavern oil – December 2024, Westlake Sulphur Dome Study.	Jan. 30, 2025
15	Chemical fingerprint of PPG4 & 7B cavern oils – January 2025, Westlake Sulphur Dome Study.	Feb. 14, 2025

Table 2: Inventory of samples from the current study and studied previously.

Current Study Samples

Client/ Field ID	Lab ID	Matrix	Date Collected	Description of Sample
MW-2-500 Sheen	L2604030-01	Net	1/21/2026	Sub-surface (downhole) sheen from MW-2
Field Blank	L2604030-02	Net	1/21/2026	Field/Trip blank of "clean" net
7B**	L2604030-03	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)

Previously-Studies Samples

Client/ Field ID	Lab ID	Matrix	Date Collected	Description of Sample
#4	L2502602-01	Oil	1/9/2025	Cavern oil from brine well PPG No. 4
7B Oil*	L2502602-02	Oil	1/9/2025	Cavern oil from brine well 7B
7B**	L2502602-03	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
7B Oil*	L2456658-02	Oil	12/18/2024	Cavern oil from brine well 7B
7B Oil*	L2456658-02	Oil	9/26/2024	Cavern oil from brine well 7B
PPG No. 004	L2456658-01	Oil	8/10/2024	Cavern oil from brine well PPG No. 4
7B**	L2361423-02	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
Bubble Site Oil	L2410930-01	Oil	2/26/2024	Surface oil collected near bubble site No. 24
7B**	L2361423-02	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
7B Oil*	L2407828-01	Oil	2/7/2024	Cavern oil from brine well 7B
7B**	L2361423-02	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
7B Oil*	L2363877-01	Oil	10/25/2023	Cavern oil from brine well 7B
7B**	L2361423-02	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
Westlake #19	L2361423-01	Net	10/15/2023	Surface sheen from bubble site No. 19
7B**	L2361423-02	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
No. 14 Sheen Sample	L2355855-01	Net	9/20/2023	Surface sheen from bubble site No. 14
7B**	L2355855-02	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
Algae Sample Central Lake	L2353106-02	Net	9/11/2023	Sheen with pond "scum/algae"; suspected biologic
No. 14 Sheen Sample	L2353106-03	Net	9/11/2023	Surface sheen from bubble site No. 14
7B**	L2353106-04	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
253998*	L2348036-01	Oil	6/16/2023	Yellow Rock 253998
41842	L2348036-02	Oil	6/16/2023	Yellow Rock 41842
189416 (1250')	L2348036-04	Oil	6/16/2023	Yellow Rock 189416 from 1250' (bottom of oil column)
189416 (170')	L2348036-05	Oil	6/16/2023	Yellow Rock 189416 from 170' (top of oil column)
7B**	L2348036-03	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
Pad Oil	L2335058-01	Oil	6/16/2023	Stock tank oil used as cavern blanket/pad
7B*	L2335058-02	Oil	6/16/2023	Cavern oil from brine well 7B
252112	L2335058-03	Oil	6/16/2023	Yellow Rock 252112
109963	L2335058-04	Oil	6/16/2023	Yellow Rock 109963
185997	L2335058-05	Oil	6/16/2023	Yellow Rock 185997
209459	L2335058-06	Oil	6/16/2023	Yellow Rock 209459
Sheen	L2335058-07	Net	6/12/2023	Surface sheen from central lake
7B**	L2335058-08	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
209459	L2325505-01	Oil	5/2/2023	Yellow Rock 209459
185997	L2325505-02	Oil	5/2/2023	Yellow Rock 185997
Cavern 4	L2325505-03	Oil	5/25/2023	Cavern oil from brine well PPG No. 4
Cavern 7B*	L2325505-04	Oil	5/25/2023	Cavern oil from brine well 7B
210185	L2325505-05	Oil	5/25/2023	Yellow Rock 210185
Tank Battery	L2325505-06	Oil	5/25/2023	Yellow Rock Tank Battery
7B**	L2325505-07	Oil	1/25/2023	Site-specific reference oil; 7B Cavern Oil (Jan 2023)
BS-24	L2325505-08	Net	5/22/2023	Surface sheen from bubble site No. 24
Cavern 7B*	L2317387-01	Oil	3/30/2023	Cavern oil from brine well 7B
No. 20	L2313362-01	Net	3/9/2023	Surface oil sheen on water body west of the salt dome
7B*	L2305221-04	Oil	1/25/2023	Cavern oil from brine well 7B
110159	L2305221-02	Oil	1/25/2023	Yellow Rock 110159
Stock Tank	L2305221-03	Oil	1/25/2023	Stock tank oil used as cavern blanket/pad
Brine Well 22 BS*	L2305221-01	Net	1/25/2023	Surface oil brine well 22 excavation
Central Pond	L2305221-05	Net	1/25/2023	Surface sheen from central pond

* sample prepared and analyzed in duplicate

**re-analysis of Jan. 25, 2023 oil (L2305221-04) for quality control only

Table 3: Diagnostic ratios for the 7B cavern (reference) oil (avg; re-analyzed in the current study) *versus* the MW-2-500 sub-surface sheen studied herein.

Top three ratios are derived from Tier 1 GC/FID data; all others from Tier 2 GC/MS data. Greyed-out DRs exhibit higher standard errors under repeatability and/or reproducibility conditions (RSD_r and RSD_R) using the CEN protocol's 95% confidence level criteria (per Attachment 3).

CEN - Diagnostic Ratios	CEN Diagnostic Ratios per Alpha Abbreviations	7B Cavern Oil (Jan 2023 Avg; n=2)	MW-2-500 Downhole Sheen
	Analysis Date	2/14/2026	2/13/2026
NR-C17/pris	C17/Pr	2.61	ndp
NR-C18/phy	C18/Ph	2.10	ndp
NR- pris/phy	Pr/Ph	0.96	ndp
NR-4-MD/1-MD	4-MDBT/1-MDBT	2.38	ndp
NR-2-MP/1-MP	2-MP/1-MP	1.12	ndp
NR-27Ts/30ab	T11/T19	0.24	0.70
NR-27Tm/30ab	T12/T19	0.26	0.69
NR-28ab/30ab	T14a/T19	0.20	0.00
NR-29ab/30ab	T15/T19	0.85	2.20
NR-30O/30ab	T18/T19	0.05	6.97
NR-31abS/30ab	T21/T19	0.58	0.00
NR-27dbR/27dbS	S4/S5	0.47	0.61
NR-27bb/29bb	(S14+S15)/(S26+S27)	0.86	0.67
NR-SC26/ RC26+SC27	TAS09/TAS01	0.14	0.35
NR-SC28/RC26 + SC27	TAS02/TAS01	0.68	0.76
NR-RC27/RC26+ SC27	TAS03/TAS01	0.76	0.53
NR-RC28/RC26+SC27	TAS04/TAS01	0.57	0.63
DR-Ts/Tm	T11/T12	0.93	1.02
DR-29Ts30ab	T16/T19	0.20	0.00
DR-29bb/29aa	(S26+S27)/(S25+S28)	1.42	1.05
DR-C2-dbt/C2-phe	DBT2/PA2	2.24	0.00
DR-C3-dbt/C3-phe	DBT3/PA3	2.74	0.00
DR-C28C29/30ab	T7 to T10/T19	0.20	3.84
DR-29aaS/29aaR=	S25/S28	1.41	ndp
DR-C20TA/C21TA	TAS05/TAS06	1.33	0.00
DR-TA21/ RC26+SC27	TS06/TAS01	0.40	0.03
DR-C24Tet/C26Tri	T6a/T6bc	1.66	1.93
DR-30ba/30ab	T20/T19	0.08	0.00
DR-35ab/30ab	(T34 to T35)/T19	0.32	0.51
DR-32abR/32abS	T27/T26	0.73	ndp

Conclusion: Non-Match

red: statistical non-match to 7B Cavern Ref. Oil (analyzed concurrently)

green:s statistical match to 7B Cavern Ref. Oil (analyzed concurrently)

grey: indicates less precision ratio (per Attachment 3)

ndp: no determination possible/division by zero

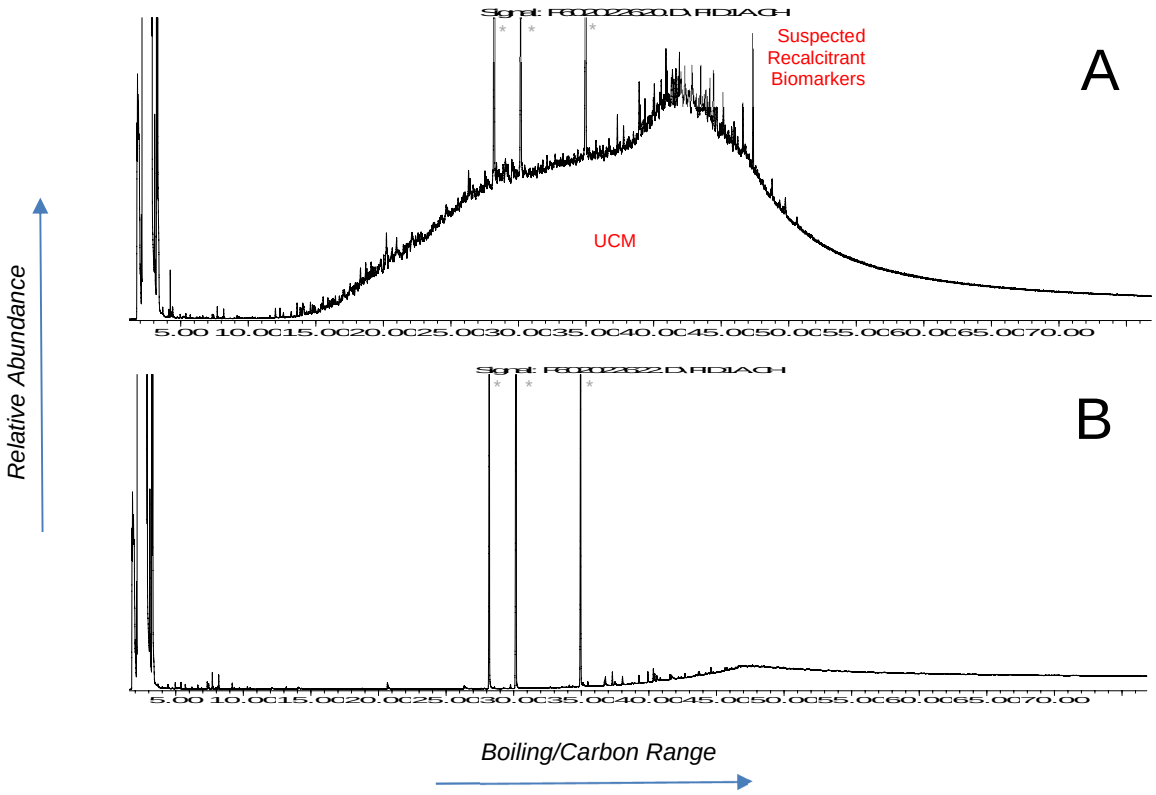

Figure 1: GC/FID (C8+) chromatograms for (A) MW-2-500 sheen collected January 21, 2026 and (B) Blank Teflon sampling net (field/trip blank) that accompanied the sheen's collection. UCM: unresolved complex mixture; *: internal standard.

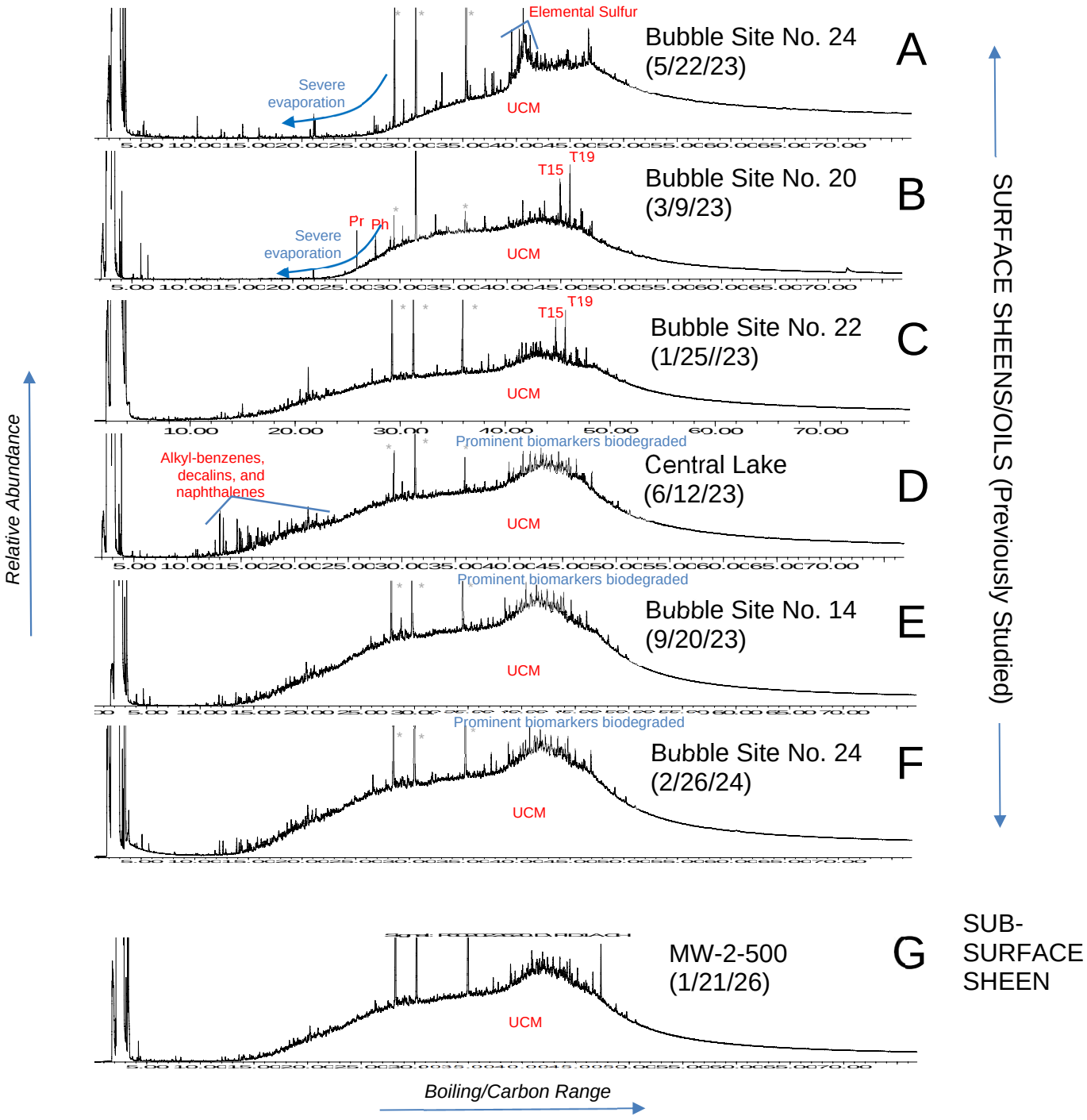

Figure 2: GC/FID (C8+) chromatograms for (A-F) the six surface oils/sheens from the Sulphur Dome area studied to date compared to (G) the MW-2-500 sub-surface sheen studied herein. All of these samples are comprised of evaporated and biodegraded crude oil. UCM: unresolved complex mixture; *: internal standard. All chromatograms (except G) were previously presented and described in earlier fingerprinting reports.

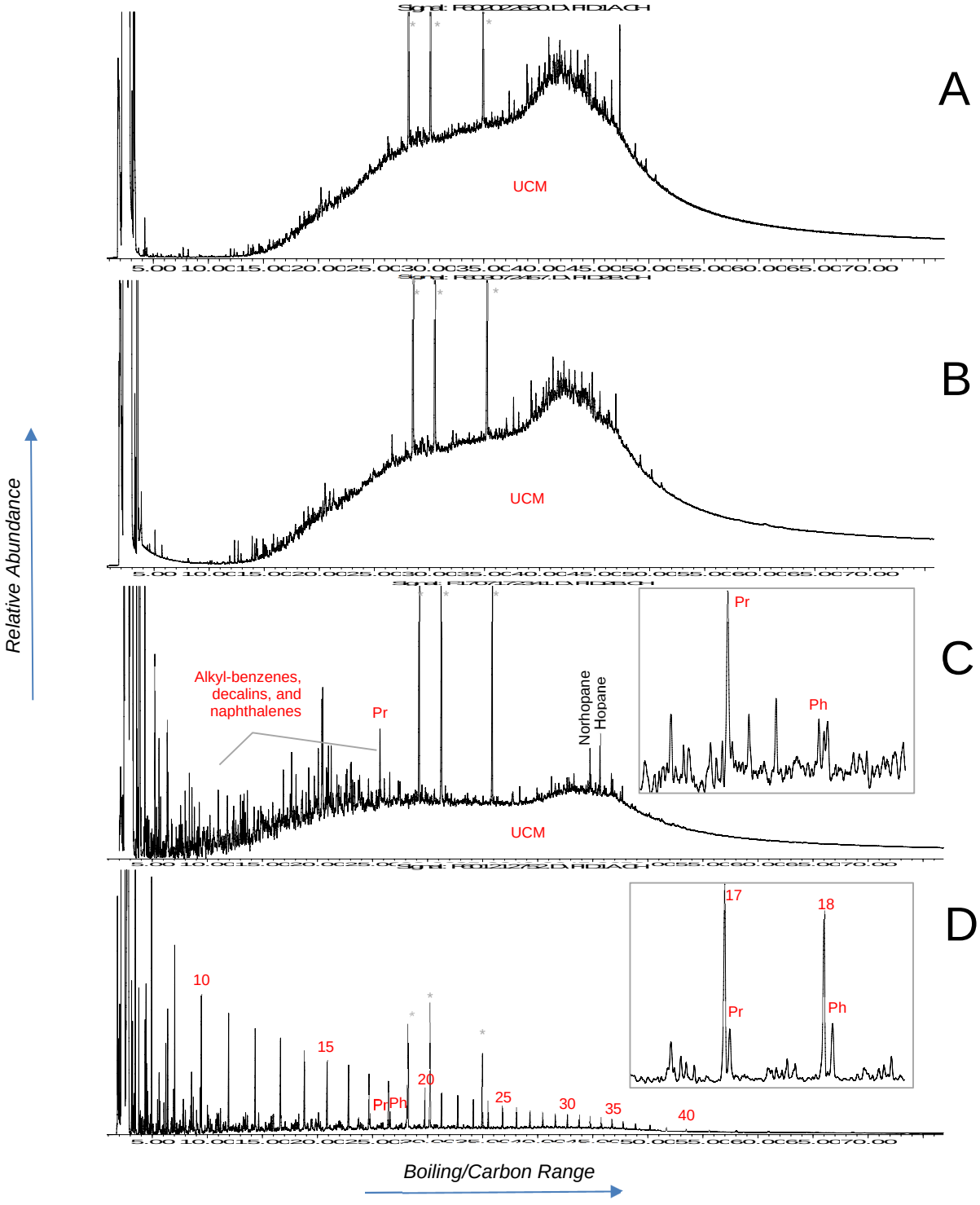

Figure 3: GC/FID (C8+) chromatograms for (A) MW-2-500 sheen collected January 21, 2026 analyzed herein, (B) Bubble Site 24 (surface) sheen collected February 26, 2024 and previously analyzed, (C) a typical locally-produced crude oil (Yellow Rock Well 209459), and (D) 7B Cavern (Reference) oil collected January 25, 2023 and re-analyzed herein. Insets show further expanded view of C17-C18 range. #: n-alkane carbon number; Pr: pristane; Ph: phytane; UCM: unresolved complex mixture; *: internal standard.

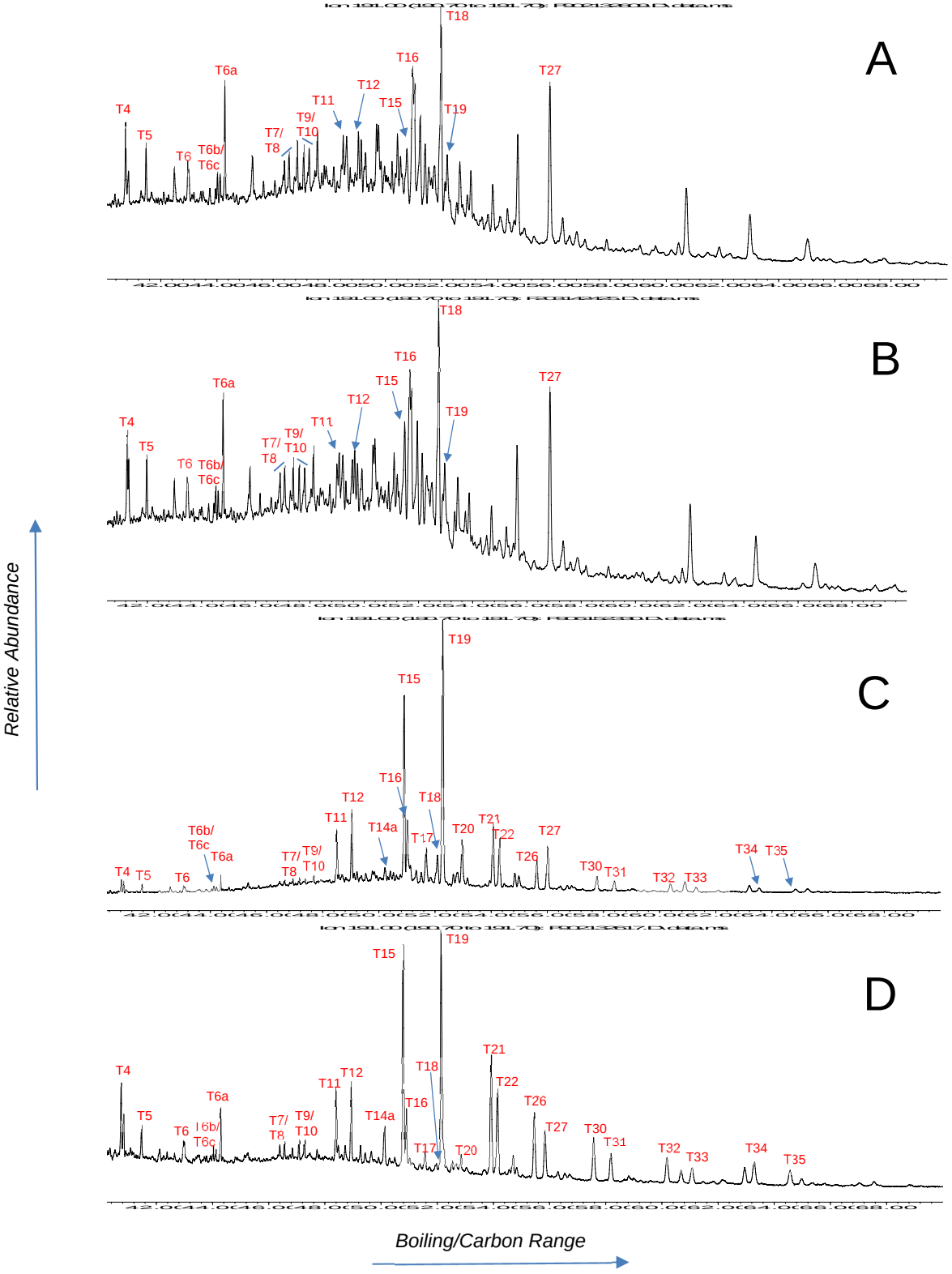

Figure 4: Partial extracted ion chromatograms (*m/z* 191) (A) MW-2-500 sheen collected January 21, 2026 analyzed herein, (B) Bubble Site 24 (surface) sheen collected February 26, 2024 and previously analyzed, (C) a typical locally-produced crude oil collected May 2, 2023 (Yellow Rock Well 209459), and (D) 7B Cavern (Reference) oil collected January 25, 2023 and re-analyzed herein. red labels: various triterpane biomarkers, see Attachment 3 for compound names.

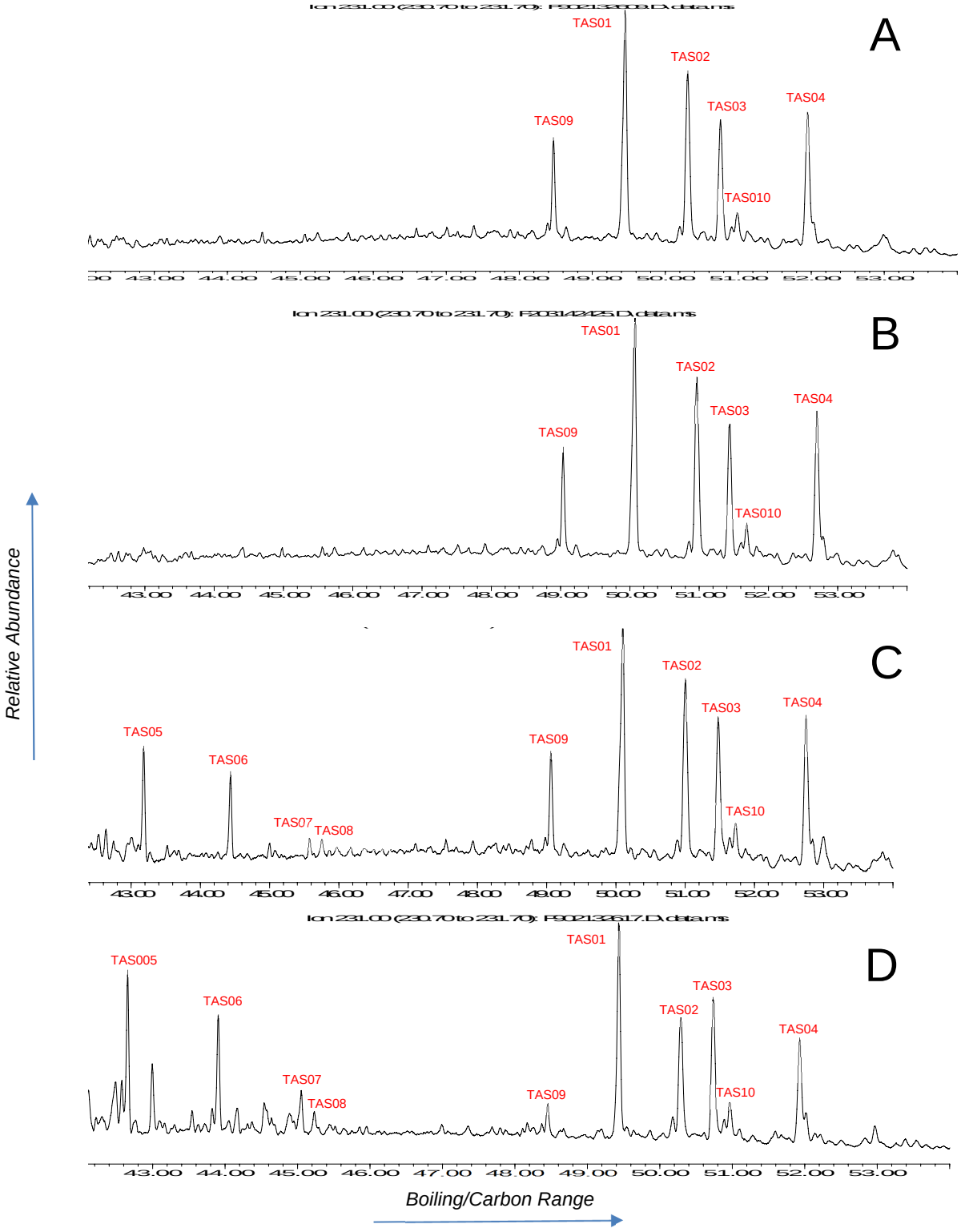

Figure 5: Partial extracted ion chromatograms (*m/z* 231) (A) MW-2-500 sheen collected January 21, 2026 analyzed herein, (B) Bubble Site 24 (surface) sheen collected February 26, 2024 and previously analyzed, (C) a typical locally-produced crude oil collected May 2, 2023 (Yellow Rock Well 209459), and (D) 7B Cavern (Reference) oil collected January 25, 2023 and re-analyzed herein. red labels: various triaromatic steroid biomarkers, see Attachment 3 for compound names.

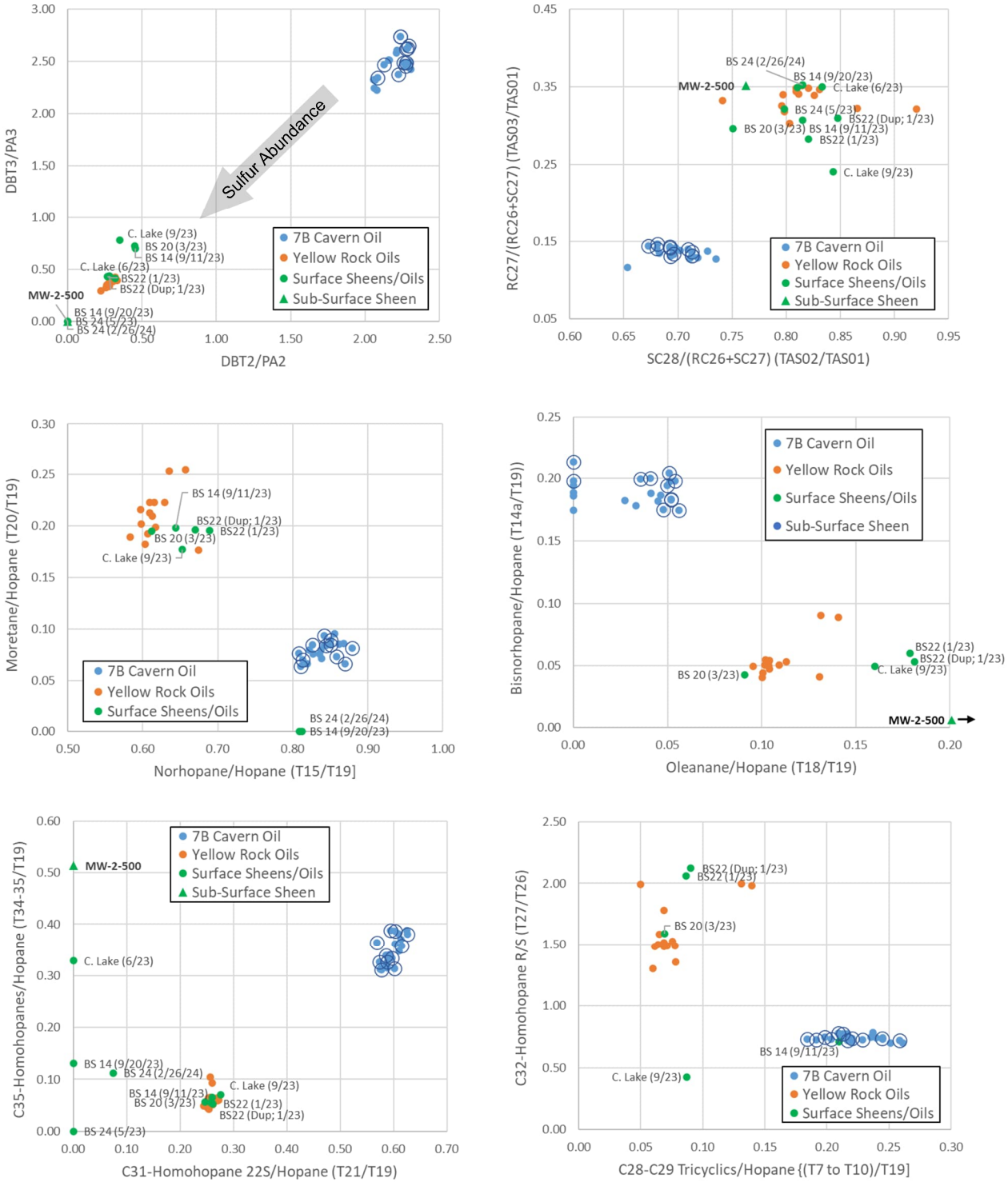

Figure 6: Cross-plots of select diagnostic ratios for all oil samples, surface oil/sheen samples, and the MW-2-500 sub-surface sheen sample (bolded) that visually conveys the disparity between the populations of 7B cavern oil *versus* that of the Yellow Rock well locally produced oils and the area's surface and (lone) sub-surface oils/sheens. See text for description. Open black circles indicate 7B cavern (reference) oils re-analyzed over time.

ATTACHMENTS

1/31/23

NewFields
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~~L2305221~~
SEO 1/28/26

Chain of Custody

L2604030
1/28/26 SEO

Environmental Forensics Practice LLC

Proj. No	Proj. Name
0677804	Sulphur Dome

SAMPLERS: Signature
Scott Himes

DATE	TIME	LAB ID	CLIENT ID	SAMPLE DESCRIPTION	MATRIX (* see below)	GC-FID-TPH (C_6+)	GCMS-Alkyl PAH	GCMS-Biomarkers	PIANO - VOA	Organic Lead	METALS	PCB	Pesticides	PRESERVED	Total Number of Containers
1/25/23	1200	-01	Brine Well 22 B5	Sheen	O	X	X		X						1
1/25/23	1500	-02	110159	Oil	O	X	X		X						2
	1520	-03	Stock Tank	Oil	O	X	X		X						2
	1530	-04	TB L2604030-03	Oil	O	X	X		X						2
↓	1630	-05	Central Pond B	Sheen	O	X	X		X						1

Relinquished by:	Date/Time	Received by:	Date/Time
	1/30/23 1600	Fedex	
Relinquished by: Fedex	Date/Time	Received by:	Date/Time 1/31/23 11:27
Relinquished by:	Date/Time	Received by:	Date/Time

* O=Oil
SO=Soil
SE=Sediment
T=Tissue
W=Water

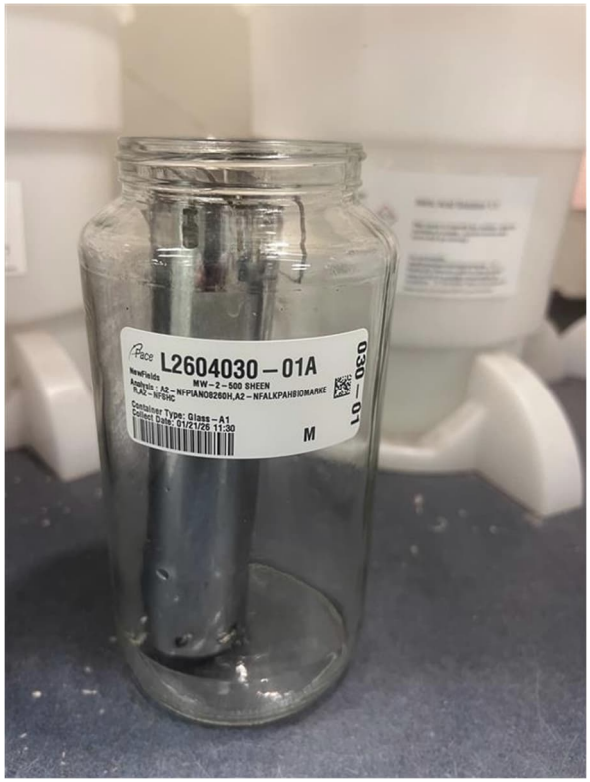
Samples to be shipped to: Alpha Laboratory
320 Forbes Blvd.
Mansfield, MA 02048
Tel: (508) 844-4117
Attn: Sue O'Neil

Comments: Contact Scott Stout for further details.

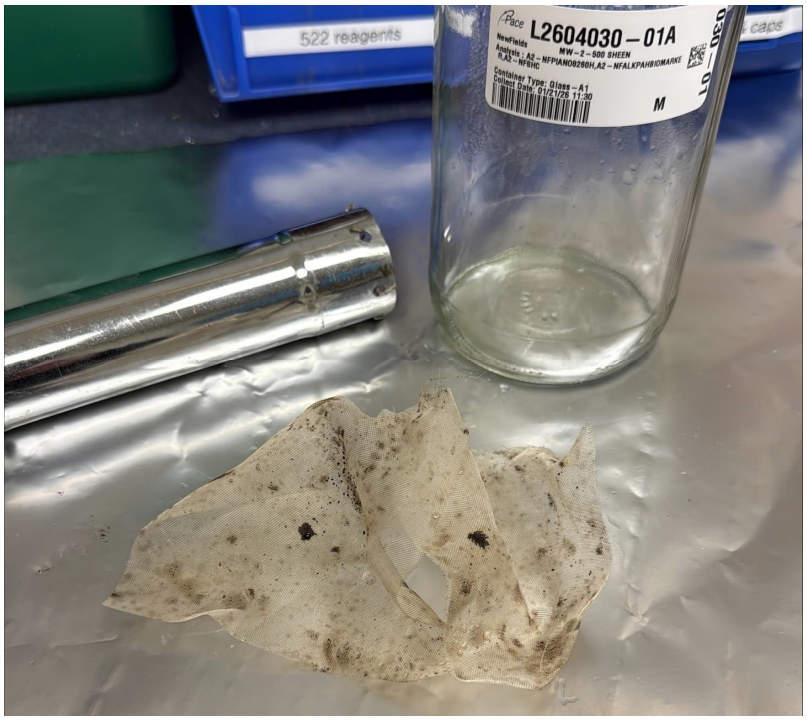
Attachment 1

Chain-of-Custody

Sample Photos upon Arrival as Laboratory



MW-2-500 stainless steel sampling cage inside glass jar (side and top view); Teflon net inside cage is not visible.



Oiled net removed from sampling cage

Attachment 2

Average short-term and long-term relative standard deviations (RSD_r and RSD_R) calculated for the 30 diagnostic ratios used in the Sulphur Dome monitoring studies to date.

CEN - Diagnostic Ratios	CEN Diagnostic Ratios per Alpha Abbreviations	Sulphur Dome Site Precision: Repeatability RSD_r	Sulphur Dome Site Precision: Reproducibility RSD_R	Most Precise Ratios*
NR-C17/pris	C17/Pr	1.6	5.5	
NR-C18/phy	C18/Ph	0.7	2.2	x
NR- pris/phy	Pr/Ph	1.4	4.4	x
NR-4-MD/1-MD	4-MDBT/1-MDBT	1.9	7.9	
NR-2-MP/1-MP	2-MP/1-MP	1.7	3.9	x
NR-27Ts/30ab	T11/T19	2.5	3.9	x
NR-27Tm/30ab	T12/T19	1.8	3.0	x
NR-28ab/30ab	T14a/T19	3.0	6.2	
NR-29ab/30ab	T15/T19	1.5	2.7	x
NR-30O/30ab	T18/T19	5.8	21	
NR-31abS/30ab	T21/T19	1.8	2.8	x
NR-27dbR/27dbS	S4/S5	7.8	13	
NR-27bb/29bb	(S14+S15)/(S26+S27)	2.7	2.2	x
NR-SC26/ RC26+SC27	TAS09/TAS01	2.1	4.6	x
NR-SC28/RC26 + SC27	TAS02/TAS01	2.3	2.4	x
NR-RC27/RC26+ SC27	TAS03/TAS01	1.7	1.7	x
NR-RC28/RC26+SC27	TAS04/TAS01	2.2	2.3	x
DR-Ts/Tm	T11/T12	2.3	4.5	x
DR-29Ts30ab	T16/T19	3.2	3.4	x
DR-29bb/29aa	(S26+S27)/(S25+S28)	3.5	11	
DR-C2-dbt/C2-phe	DBT2/PA2	0.5	3.4	x
DR-C3-dbt/C3-phe	DBT3/PA3	0.7	4.5	x
DR-C28C29/30ab	T7 to T10/T19	4.7	9.5	
DR-29aaS/29aaR=	S25/S28	6.6	19	
DR-C20TA/C21TA	TAS05/TAS06	3.6	8.6	
DR-TA21/ RC26+SC27	TS06/TAS01	3.1	7.6	
DR-C24Tet/C26Tri	T6a/T6bc	5.3	9.9	
DR-30ba/30ab	T20/T19	4.8	10	
DR-35ab/30ab	(T34 to T35)/T19	3.4	8.3	
DR-32abR/32abS	T27/T26	1.9	3.2	x

*both RSD_r and RSD_R < 5% based on current QC datasets

RSD_r = average RSD for sample duplicate pairs studied to date

RSR_R = average RSD for 7B cavern (reference) oil studied to date

Attachment 3

Tabulated Concentrations

Table A3-1: Concentrations (mg/kg) of n-alkanes and isoprenoids in the samples studied.

Client ID	MW-2-500 SHEEN	FIELD BLANK SHEEN	7B	7B (Dup)
Lab ID	L2604030-01	L2604030-02	L2604030-03	WG2169397-4
Date Collected	1/21/2026	1/21/2026	1/25/2023	1/25/2023
Date Analyzed	2/3/2026	2/3/2026	1/29/2026	1/29/2026
Analytes	Result	Result	Result	Result
n-Nonane (C9)	5	55	7,540	7,380
n-Decane (C10)	7	115	7,080	6,860
n-Undecane (C11)	nd	25	6,660	6,460
n-Dodecane (C12)	24	192	6,110	6,060
n-Tridecane (C13)	25	nd	5,810	5,720
2,6,10 Trimethyldodecane (1380)	nd	nd	1,000	970
n-Tetradecane (C14)	76	132	5,250	5,080
2,6,10 Trimethyltridecane (1470)	nd	nd	1,490	1,550
n-Pentadecane (C15)	nd	nd	4,900	4,800
n-Hexadecane (C16)	55	98	4,320	4,250
Norpristane (1650)	nd	nd	946	927
n-Heptadecane (C17)	nd	nd	3,640	3,590
Pristane	nd	nd	1,420	1,350
n-Octadecane (C18)	95	1,020	3,060	3,040
Phytane	nd	nd	1,450	1,450
n-Nonadecane (C19)	nd	nd	2,680	2,650
n-Eicosane (C20)	nd	nd	2,540	2,520
n-Heneicosane (C21)	nd	48	2,010	2,020
n-Docosane (C22)	nd	108	1,860	1,860
n-Tricosane (C23)	nd	292	1,560	1,540
n-Tetracosane (C24)	nd	468	1,510	1,480
n-Pentacosane (C25)	nd	1,120	1,290	1,250
n-Hexacosane (C26)	nd	785	1,130	1,060
n-Heptacosane (C27)	nd	768	980	887
n-Octacosane (C28)	nd	812	893	788
n-Nonacosane (C29)	nd	498	846	726
n-Triacontane (C30)	nd	455	792	676
n-Hentriacontane (C31)	nd	432	840	725
n-Dotriacontane (C32)	nd	150	669	532
n-Tritriacontane (C33)	nd	325	666	529
n-Tetratriacontane (C34)	nd	nd	582	452
n-Pentatriacontane (C35)	nd	nd	617	516
n-Hexatriacontane (C36)	nd	nd	440	338
n-Heptatriacontane (C37)	nd	nd	452	350
n-Octatriacontane (C38)	nd	nd	508	377
n-Nonatriacontane (C39)	nd	nd	415	326
n-Tetracontane (C40)	nd	nd	398	301
Total Saturated Hydrocarbons	286	7,900	84,400	81,400
Total Petroleum Hydrocarbons (C9-C44)	565,000	644,000	483,000	485,000

Table A3-2: Concentrations (mg/kg) of PAHs, related compounds and petroleum biomarkers in the samples studied.

	Client ID	MW-2-500 SHEEN	FIELD BLANK SHEEN	7B	7B (dup)
	Lab ID	L2604030-01	L2604030-02	L2604030-03	WG2169403-4
	Date Collected	1/21/2026	1/21/2026	1/25/2023	NA
	Date Analyzed	2/13/2026	2/14/2026	2/14/2026	2/14/2026
	Analytes	Result	Result	Result	Result
D0	cis/trans-Decalin	0	nd	264	267
D1	C1-Decalins	5	nd	454	460
D2	C2-Decalins	31	nd	408	406
D3	C3-Decalins	64	nd	262	261
D4	C4-Decalins	225	nd	254	256
BT0	Benzothiophene	nd	nd	11	11
BT1	C1-Benzo(b)thiophenes	2	nd	59	59
BT2	C2-Benzo(b)thiophenes	11	nd	190	189
BT3	C3-Benzo(b)thiophenes	45	nd	326	323
BT4	C4-Benzo(b)thiophenes	33	nd	244	243
N0	Naphthalene	1	16	307	310
N1	C1-Naphthalenes	1	18	839	838
N2	C2-Naphthalenes	3	19	1,300	1,290
N3	C3-Naphthalenes	12	20	1,090	1,080
N4	C4-Naphthalenes	41	nd	587	583
B	Biphenyl	0	7	39	40
DF	Dibenzofuran	1	17	29	29
AY	Acenaphthylene	nd	1.5	4.8	5.1
AE	Acenaphthene	nd	3.5	8.9	8.0
F0	Fluorene	0	9	58	57
F1	C1-Fluorenes	4	5	137	138
F2	C2-Fluorenes	19	nd	227	223
F3	C3-Fluorenes	33	nd	227	227
A0	Anthracene	nd	4	8	7
P0	Phenanthrene	1	38	103	103
PA1	C1-Phenanthrenes/Anthracenes	7	7	285	283
PA2	C2-Phenanthrenes/Anthracenes	19	nd	348	345
PA3	C3-Phenanthrenes/Anthracenes	29	nd	240	238
PA4	C4-Phenanthrenes/Anthracenes	78	nd	127	126
RET	Retene	nd	nd	nd	nd
DBT0	Dibenzothiophene	1	3	227	224
DBT1	C1-Dibenzothiophenes	nd	3	574	570
DBT2	C2-Dibenzothiophenes	nd	10	778	772
DBT3	C3-Dibenzothiophenes	nd	nd	657	652
DBT4	C4-Dibenzothiophenes	21	nd	350	347
BF	Benzo(b)fluorene	nd	nd	3.7	3.5
FL0	Fluoranthene	1.0	6.6	2.0	1.8
PY0	Pyrene	1	3	11	10
FP1	C1-Fluoranthenes/Pyrenes	14	nd	41	41
FP2	C2-Fluoranthenes/Pyrenes	22	nd	85	84
FP3	C3-Fluoranthenes/Pyrenes	67	nd	120	120
FP4	C4-Fluoranthenes/Pyrenes	125	nd	121	121
NBT0	Naphthobenzothiophenes	0	2	47	47
NBT1	C1-Naphthobenzothiophenes	12	nd	166	164
NBT2	C2-Naphthobenzothiophenes	32	nd	283	281
NBT3	C3-Naphthobenzothiophenes	43	nd	265	262
NBT4	C4-Naphthobenzothiophenes	63	nd	196	196
BA0	Benz[a]anthracene	nd	2.0	1.4	1.4
C0	Chrysene/Triphenylene	2	4	17	17
BC1	C1-Chrysenes	8	nd	42	42
BC2	C2-Chrysenes	46	nd	77	77
BC3	C3-Chrysenes	121	nd	111	112
BC4	C4-Chrysenes	111	nd	86	87

Table A3-2 (cont.)

	Client ID	MW-2-500 SHEEN	FIELD BLANK SHEEN	7B	7B (dup)
	Lab ID	L2604030-01	L2604030-02	L2604030-03	WG2169403-4
	Date Collected	1/21/2026	1/21/2026	1/25/2023	NA
	Date Analyzed	2/13/2026	2/14/2026	2/14/2026	2/14/2026
	Analytes	Result	Result	Result	Result
BBF	Benzo[b]fluoranthene	1.7	2.9	2.6	2.6
BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	nd	2.5	nd	nd
BAF	Benzo[a]fluoranthene	nd	nd	nd	nd
BEP	Benzo[e]pyrene	2.4	2.9	6.8	6.5
BAP	Benzo[a]pyrene	1.0	1.5	1.3	1.4
PER	Perylene	16.2	nd	1.4	1.3
IND	Indeno[1,2,3-cd]pyrene	0.8	5.6	0.8	0.5
DA	Dibenz[ah]anthracene/Dibenz[ac]anthrace	0.5	3.1	0.7	0.5
GHI	Benzo[g,h,i]perylene	2.9	9.2	3.0	2.7
CAR	Carbazole	nd	2.4	8.0	8.2
4MDT	4-Methyldibenzothiophene	nd	1	250	249
2MDT	2/3-Methyldibenzothiophene	nd	nd	208	207
1MDT	1-Methyldibenzothiophene	nd	nd	106	104
3MP	3-Methylphenanthrene	nd	1	53	52
2MP	2-Methylphenanthrene	nd	2	66	65
2MA	2-Methylanthracene	2.0	nd	2.3	2.7
9MP	9/4-Methylphenanthrene	1	1	100	99
1MP	1-Methylphenanthrene	nd	1	59	59
2MN	2-Methylnaphthalene	1	18	700	700
1MN	1-Methylnaphthalene	0	7	613	612
26DMN	2,6-Dimethylnaphthalene	0	8	554	553
235TMN	2,3,5-Trimethylnaphthalene	0	2	138	116
PY2	2-METHYLPYRENE	0.3	nd	2.7	2.7
PY4	4-METHYLPYRENE	0.4	nd	10.6	10.7
PY1	1-METHYLPYRENE	nd	nd	6.5	6.4
T4	C23 Tricyclic Terpane	31	nd	16	16
T5	C24 Tricyclic Terpane	22	3	7	7
T6	C25 Tricyclic Terpane	23	nd	9	9
T6a	C24 Tetracyclic Terpane	38	10	10	10
T6b	C26 Tricyclic Terpane-22S	9.7	nd	3.1	3.5
T6c	C26 Tricyclic Terpane-22R	9.8	nd	2.6	2.9
T7	C28 Tricyclic Terpane-22S	10.1	5.4	2.5	2.7
T8	C28 Tricyclic Terpane-22R	15.5	7.9	3.6	3.8
T9	C29 Tricyclic Terpane-22S	17.0	7.8	3.7	3.6
T10	C29 Tricyclic Terpane-22R	15.8	6.1	3.6	4.1
T11	18a-22,29,30-Trisnorneohopane-TS	11	47	17	17
T11a	C30 Tricyclic Terpane-22S	21.9	nd	3.6	3.7
T11b	C30 Tricyclic Terpane-22R	9.0	nd	4.9	4.3
T12	17a(H)-22,29,30-Trisnorhopane-TM	11	69	18	18
T14a	17a/b,21b/a 28,30-Bisnorhopane	nd	19	14	14
T14b	17a(H),21b(H)-25-Norhopane	nd	13.4	3.0	2.6
T15	30-Norhopane	33	219	60	59
T16	18a(H)-30-Norneohopane-C29Ts	nd	88	14	14
X	17a(H)-Diahopane	79.2	23.0	2.6	2.5
T17	30-Normoretane	24	70	6	6
T18	18a(H)&18b(H)-Oleananes	106.0	51.5	3.6	3.5
T19	Hopane	15	397	70	70
T20	Moretane	nd	82.8	5.1	5.9
T21	30-Homohopane-22S	nd	111	40	40
T22	30-Homohopane-22R	16	99	31	32

Table A3-2 (cont.)

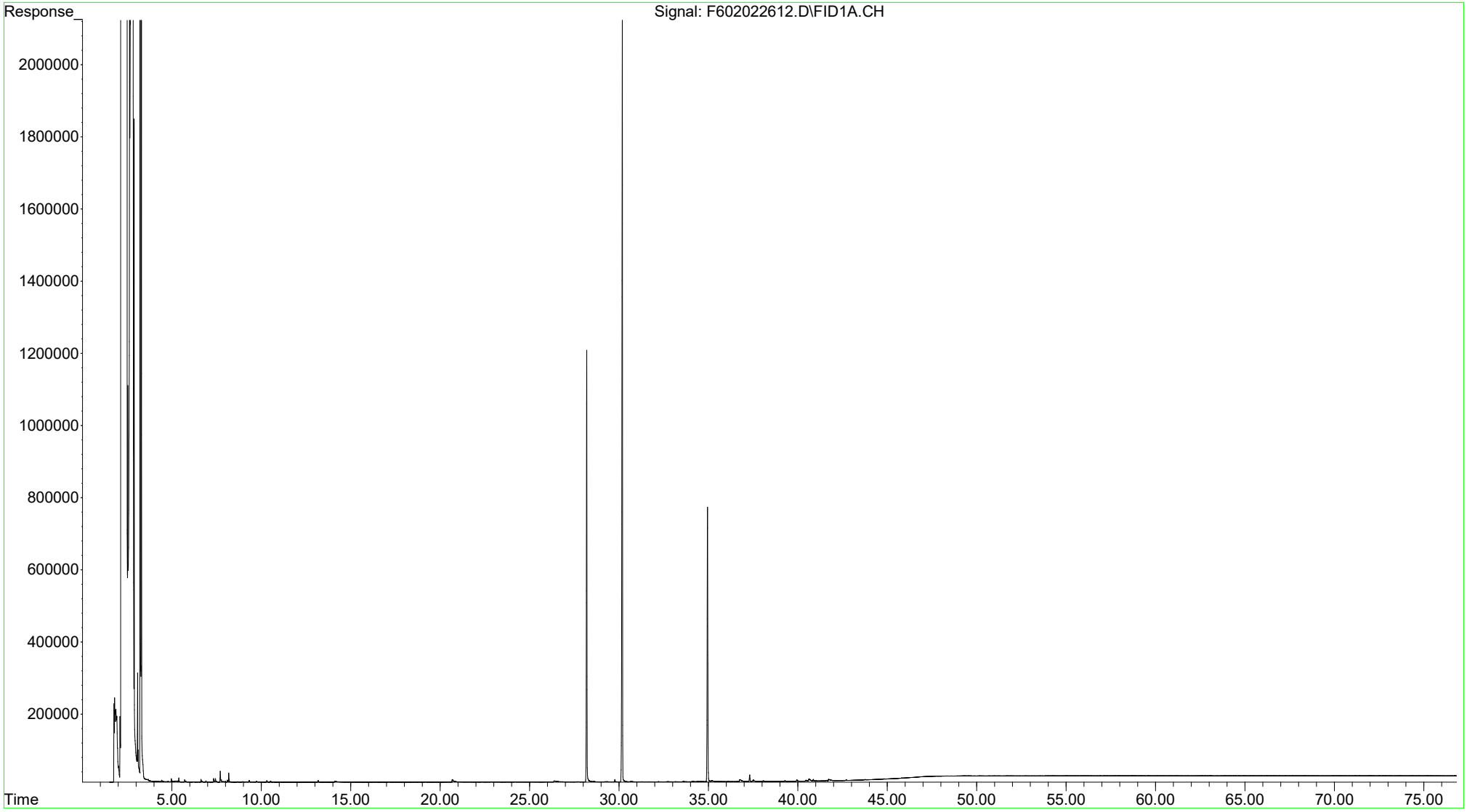
	Client ID	MW-2-500 SHEEN	FIELD BLANK SHEEN	7B	7B (dup)
	Lab ID	L2604030-01	L2604030-02	L2604030-03	WG2169403-4
	Date Collected	1/21/2026	1/21/2026	1/25/2023	NA
	Date Analyzed	2/13/2026	2/14/2026	2/14/2026	2/14/2026
	Analytes	Result	Result	Result	Result
T22A	T22a-Gammacerane/C32-diahopane	62	24	8	8
T26	30,31-Bishomohopane-22S	nd	64	25	25
T27	30,31-Bishomohopane-22R	111	69	18	18
T30	30,31-Trishomohopane-22S	nd	42	19	20
T31	30,31-Trishomohopane-22R	1	30	13	12
T32	Tetrakishomohopane-22S	5	26	13	13
T33	Tetrakishomohopane-22R	3	20	9	9
T34	Pentakishomohopane-22S	4	nd	13	14
T35	Pentakishomohopane-22R	4	nd	9	9
S4	13b(H),17a(H)-20S-Diacholestane	131	27	23	28
S5	13b(H),17a(H)-20R-Diacholestane	79	21	12	11
S23	14b,17b-20S-Methylcholestane	nd	29	32	33
S26	14b(H),17b(H)-20R-Ethylcholestane	16	44	41	44
S27	14b(H),17b(H)-20S-Ethylcholestane	2	31	28	26
TAS05	C20 PREGNANE	nd	nd	70.3	68.2
TAS06	C21 20-METHYLPREGNANE	12.8	nd	51.6	52.5
TAS07	C22 20-ETHYLPREGNANE (A)	9.9	nd	26.4	22.8
TAS08	C22 20-ETHYLPREGNANE (B)	13.1	nd	13.9	13.9
TAS09	C26,20S TAS	135.0	nd	18.4	19.0
TAS01	C26,20R+C27,20S TAS	384	nd	128	130
TAS02	C28,20S TAS	293	13	86	89
TAS03	C27,20R TAS	205	17	97	98
TAS04	C28,20R TAS	241	18	74	74
TAS10	C29,20S TAS	69.4	22.0	34.3	32.7
TAS11	C29,20R TAS	36.9	nd	15.7	15.1

Attachment 4

GC/FID Chromatograms

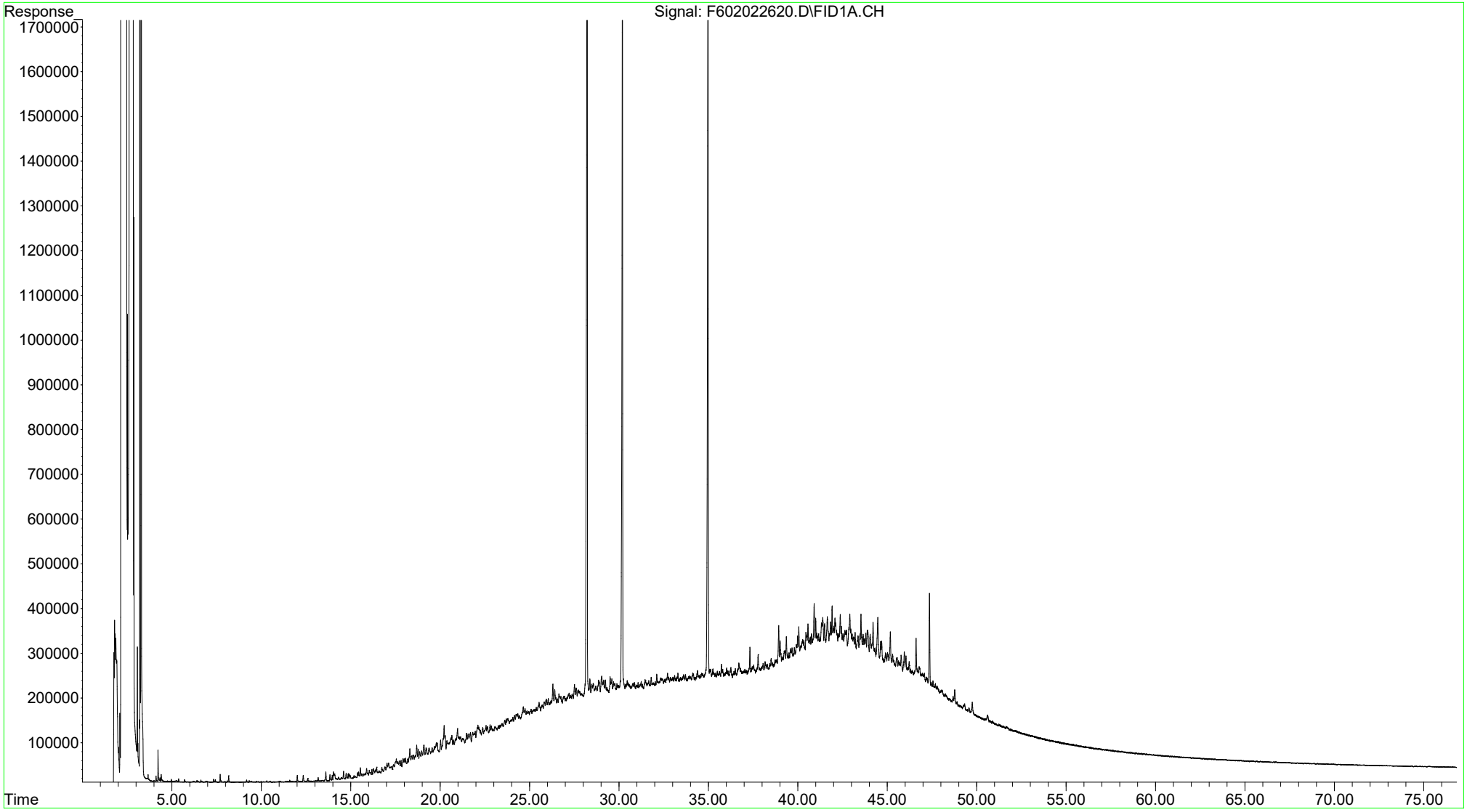
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\SHC\F602022612.D
Operator : FID6:WRR
Instrument : FID6
Acquired : 02 Feb 2026 6:54 pm using AcqMethod FID6A.M
Sample Name: WG2169684-1,42,,
Misc Info : WG2171448,WG2169684,ICAL22717

Procedural Blank
WG2169684



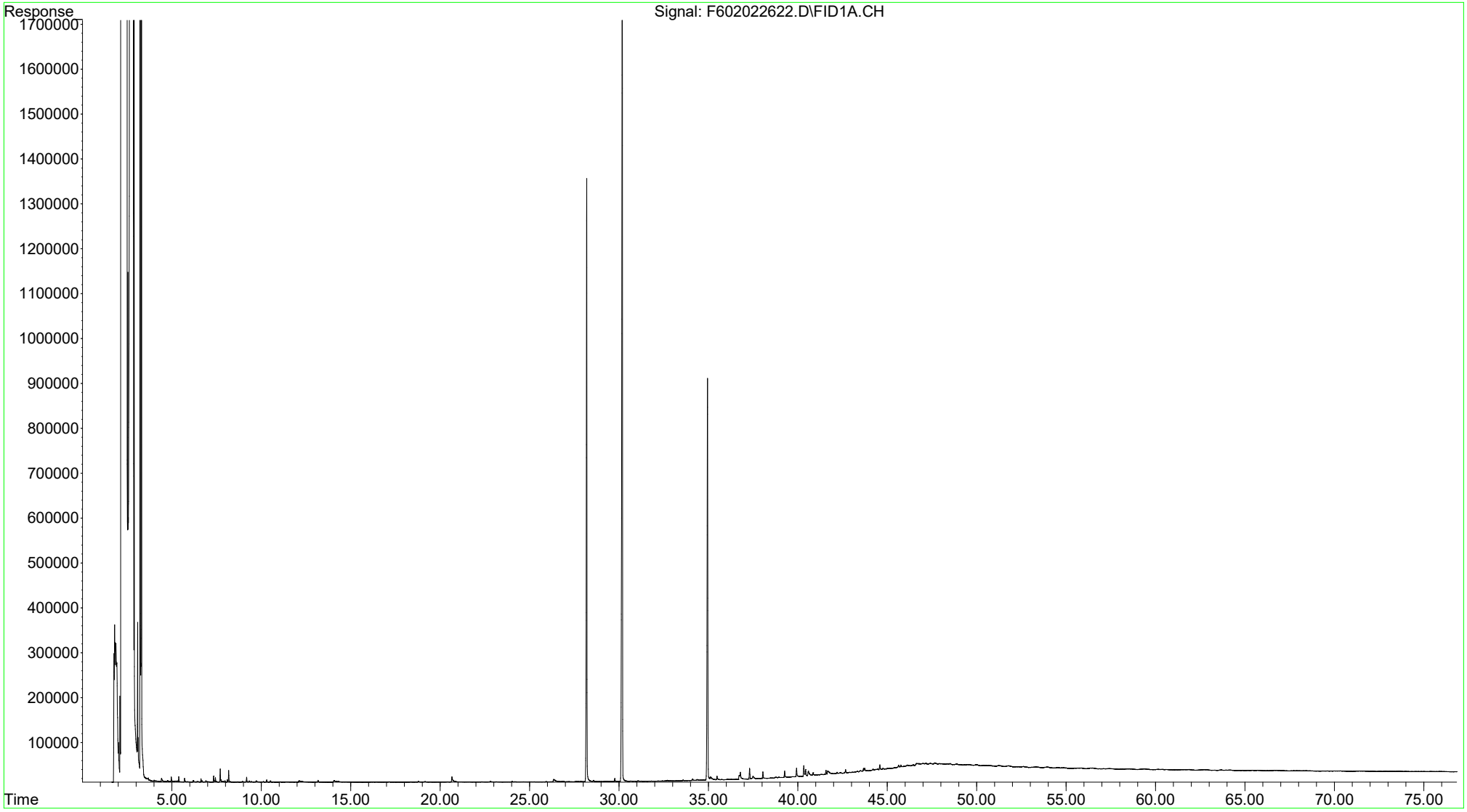
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\SHC\F602022620.D
Operator : FID6:WRR
Instrument : FID6
Acquired : 03 Feb 2026 0:43 am using AcqMethod FID6A.M
Sample Name: l2604030-01,42,,
Misc Info : WG2171448,WG2169684,ICAL22717

MW-2-500 SHEEN
L2604030-01



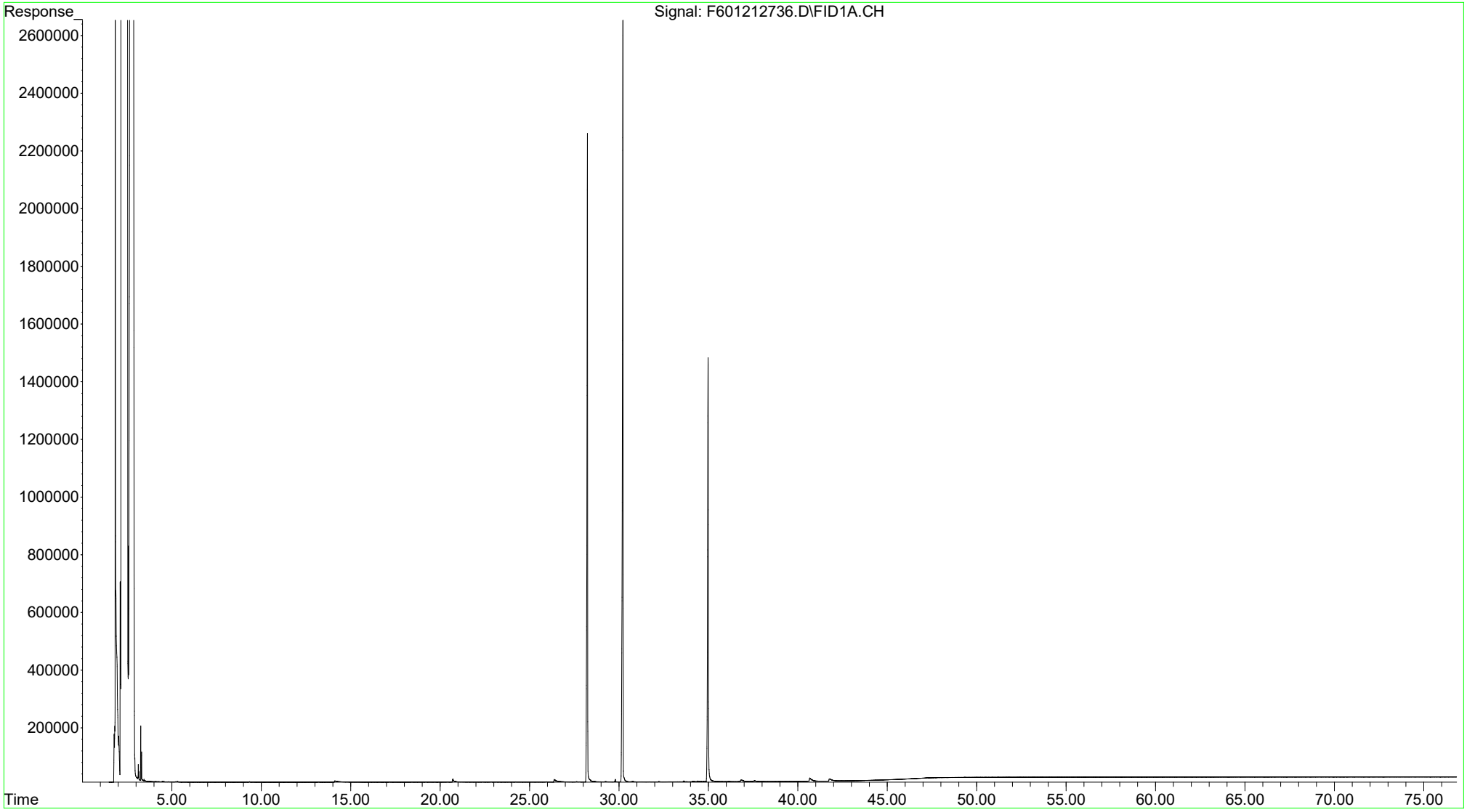
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\SHC\F602022622.D
Operator : FID6:WRR
Instrument : FID6
Acquired : 03 Feb 2026 2:11 am using AcqMethod FID6A.M
Sample Name: l2604030-02,42,,
Misc Info : WG2171448,WG2169684,ICAL22717

FIELD BLANK SHEEN
L2604030-02



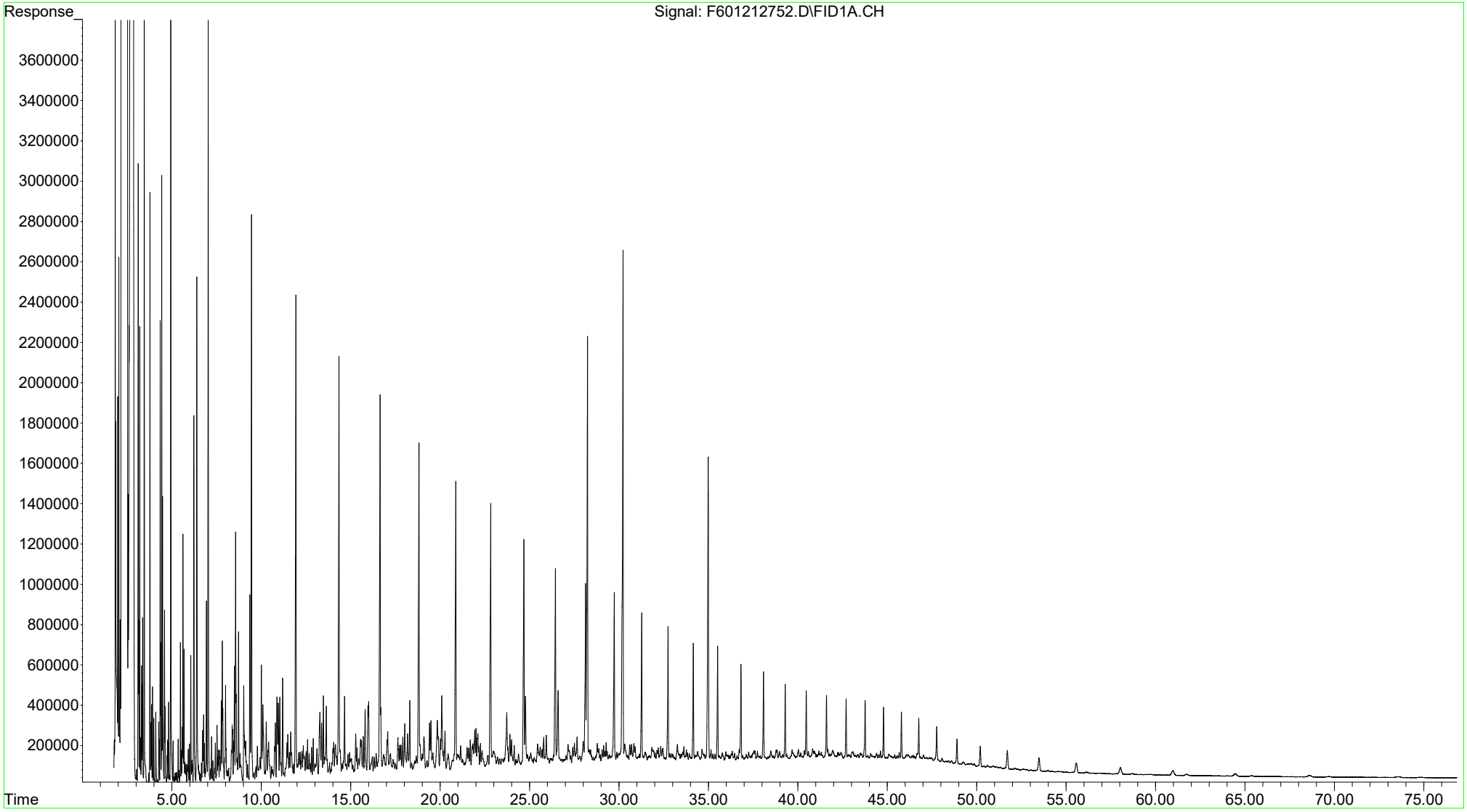
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\SHC\F601212736.D
Operator : FID6:WRR
Instrument : FID6
Acquired : 28 Jan 2026 1:49 pm using AcqMethod FID6A.M
Sample Name: WG2169397-1,42,,
Misc Info : WG2171394,WG2169397,ICAL22717

Procedural Blank
WG2169397-1



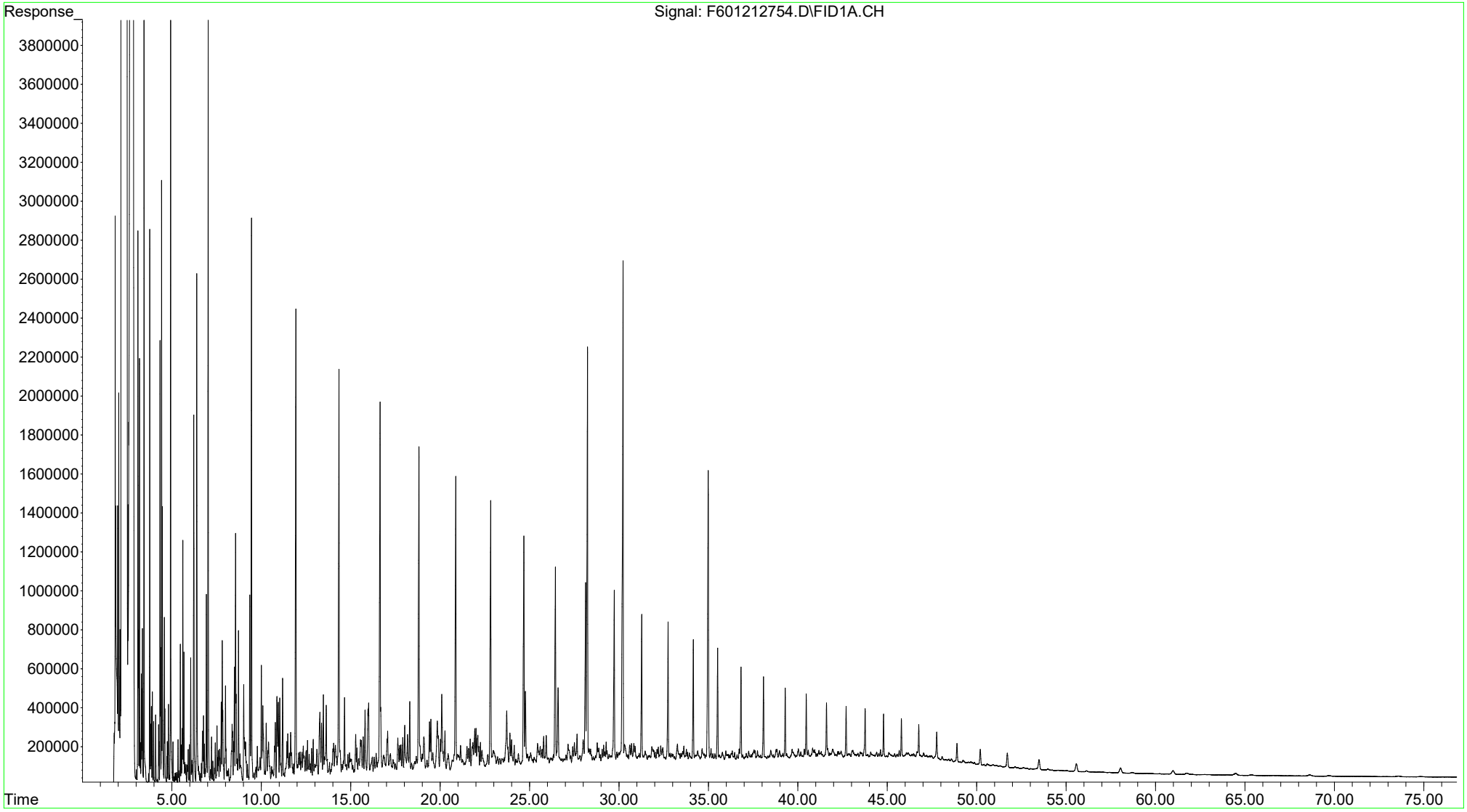
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\SHC\F601212752.D
Operator : FID6:WRR
Instrument : FID6
Acquired : 29 Jan 2026 1:29 am using AcqMethod FID6A.M
Sample Name: l2604030-03,42,,
Misc Info : WG2171394,WG2169397,ICAL22717

7B Source Oil
L2604030-03



File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\SHC\F601212754.D
Operator : FID6:WRR
Instrument : FID6
Acquired : 29 Jan 2026 2:56 am using AcqMethod FID6A.M
Sample Name: WG2169397-4,42,,
Misc Info : WG2171394,WG2169397,ICAL22717

7B Source Oil Duplicate
WG2169397-4

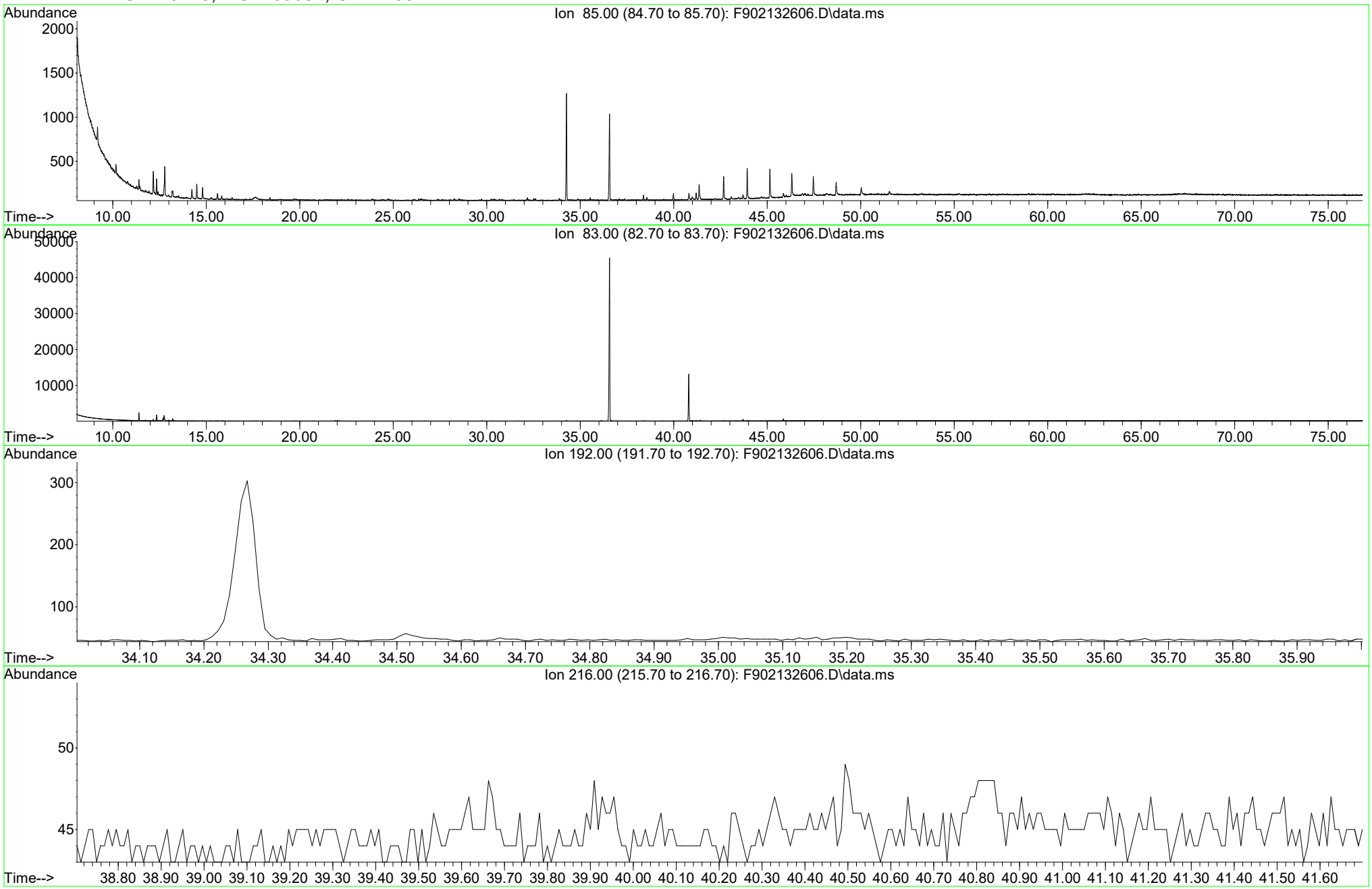


Attachment 5

GC/MS Extracted Ion Profiles

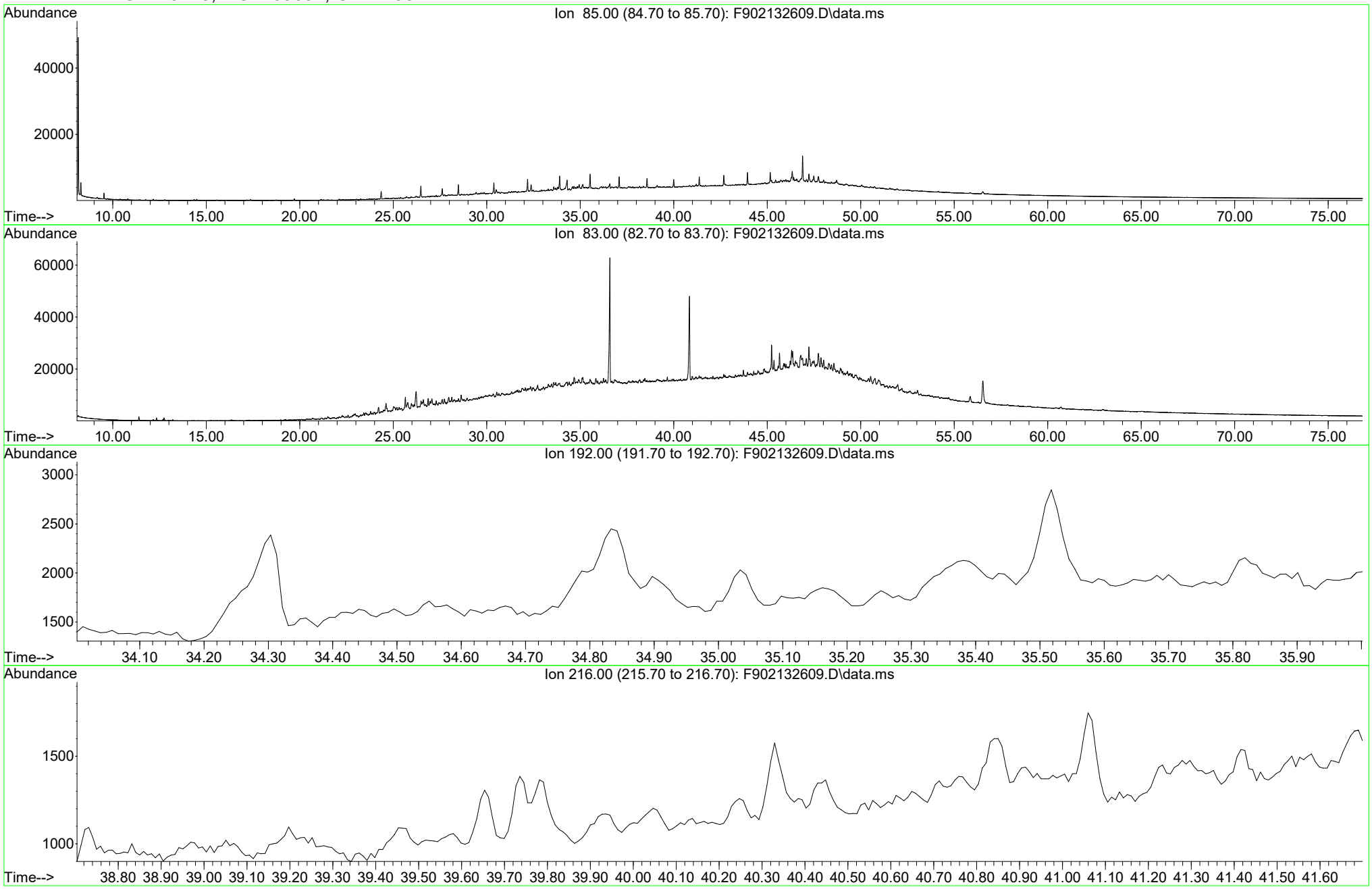
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132606.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 13 Feb 2026 7:33 pm using AcqMethod FRNC9ALT.M
Sample Name: WG2169684-1,32,,
Misc Info : WG2176123,WG2169684,ICAL22932

Procedural Blank
WG2169684-1



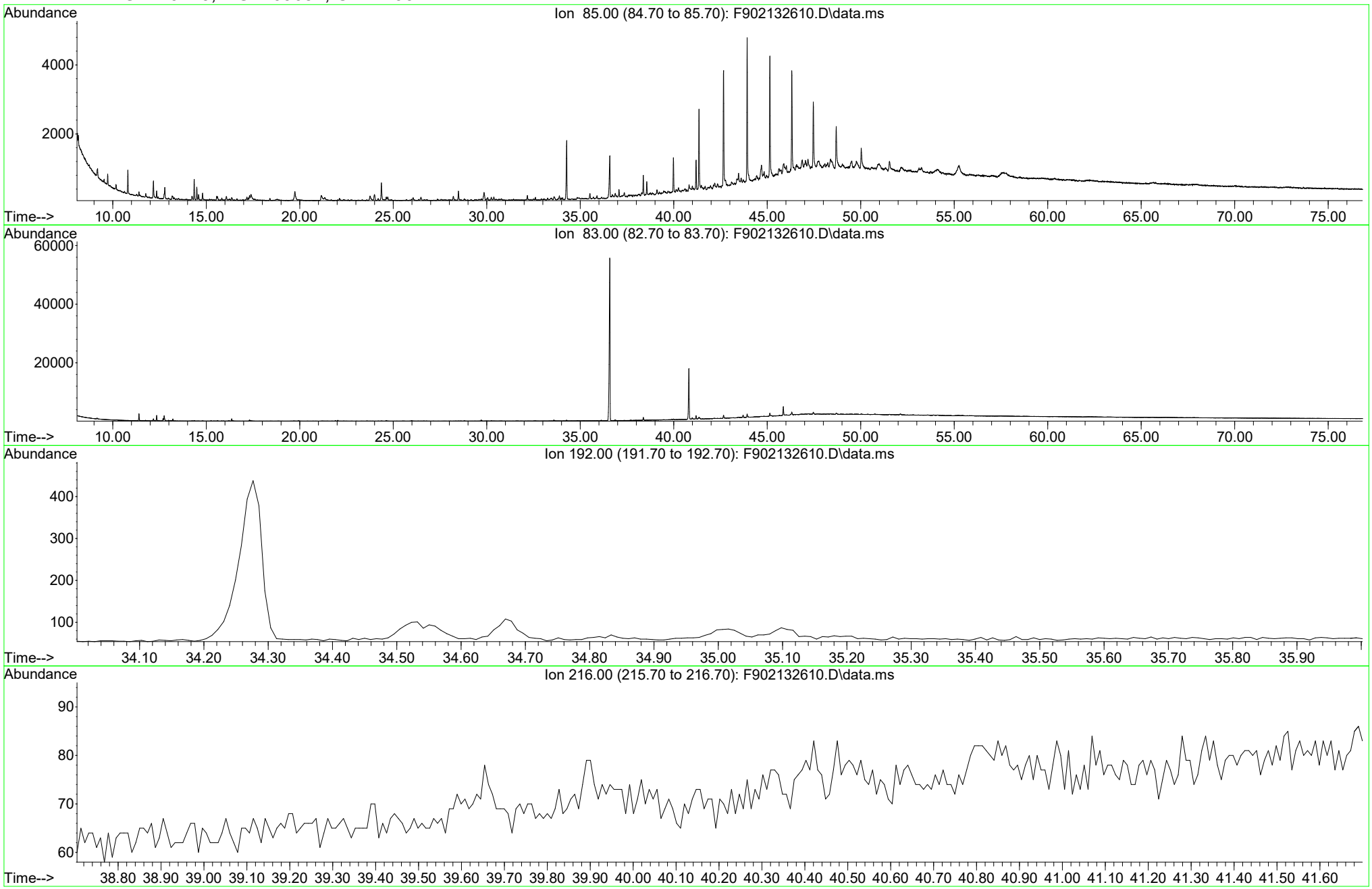
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132609.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 13 Feb 2026 11:44 pm using AcqMethod FRNC9ALT.M
Sample Name: L2604030-01,32,,
Misc Info : WG2176123,WG2169684,ICAL22932

MW-2-500 SHEEN
L2604030-01



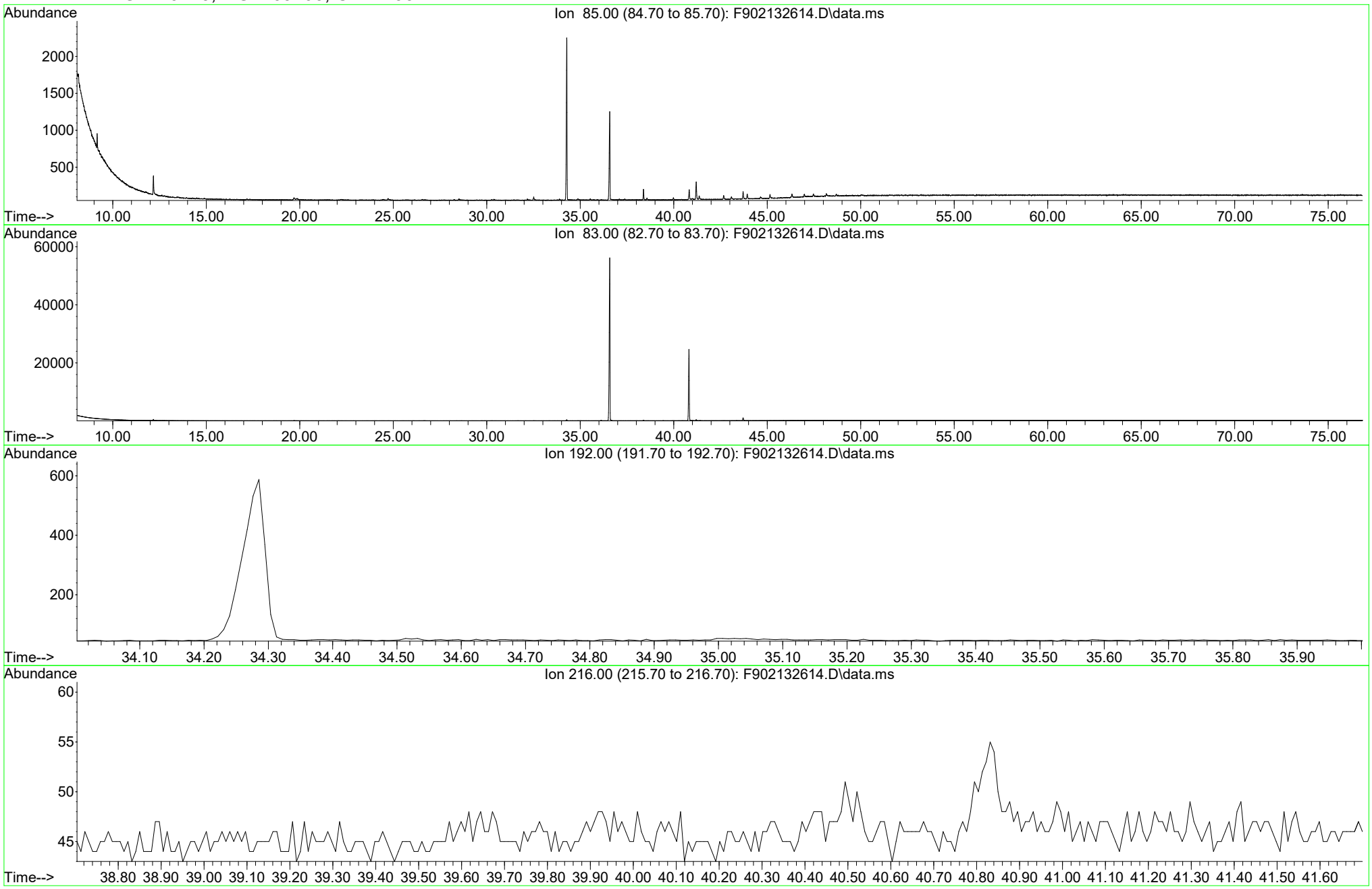
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132610.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 1:07 am using AcqMethod FRNC9ALT.M
Sample Name: L2604030-02,32,,
Misc Info : WG2176123,WG2169684,ICAL22932

FIELD BLANK SHEEN
L2604030-02



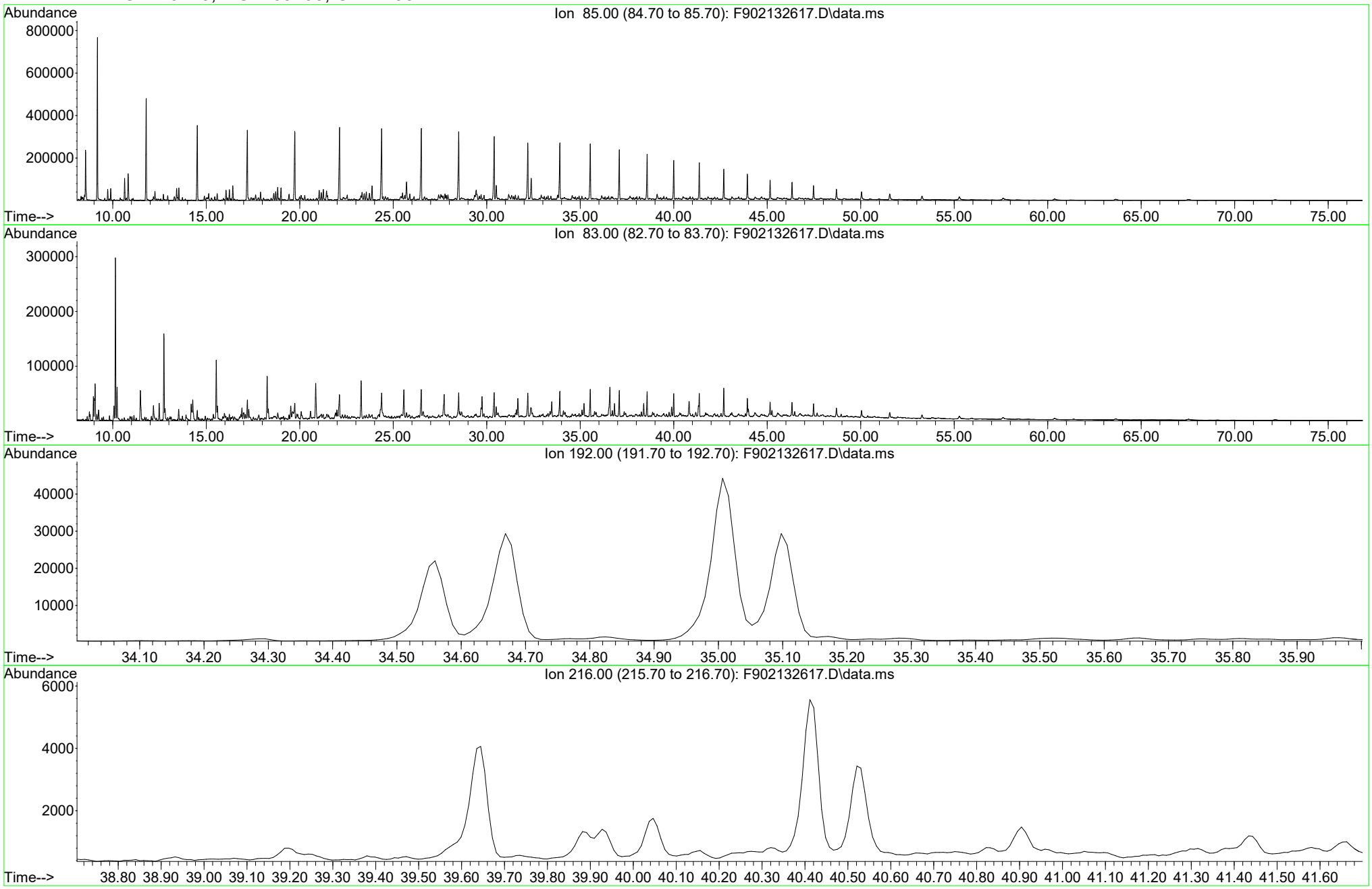
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132614.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 6:42 am using AcqMethod FRNC9ALT.M
Sample Name: WG2169403-1,32,,
Misc Info : WG2176123,WG2169403,ICAL22932

Procedural Blank
WG2169403-1



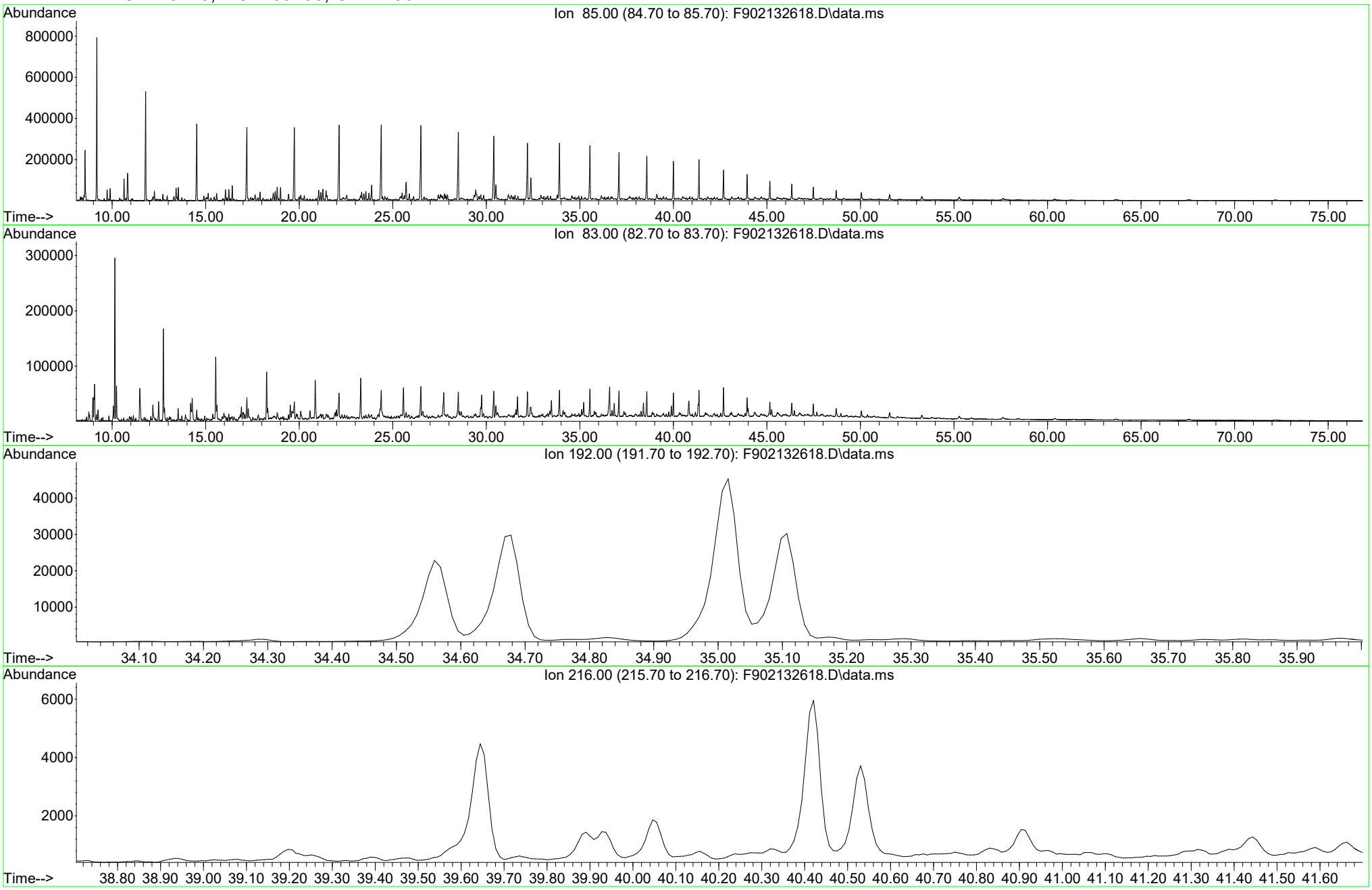
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132617.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 10:52 am using AcqMethod FRNC9ALT.M
Sample Name: L2604030-03,32,,
Misc Info : WG2176123,WG2169403,ICAL22932

7B Source Oil
L2604030-03



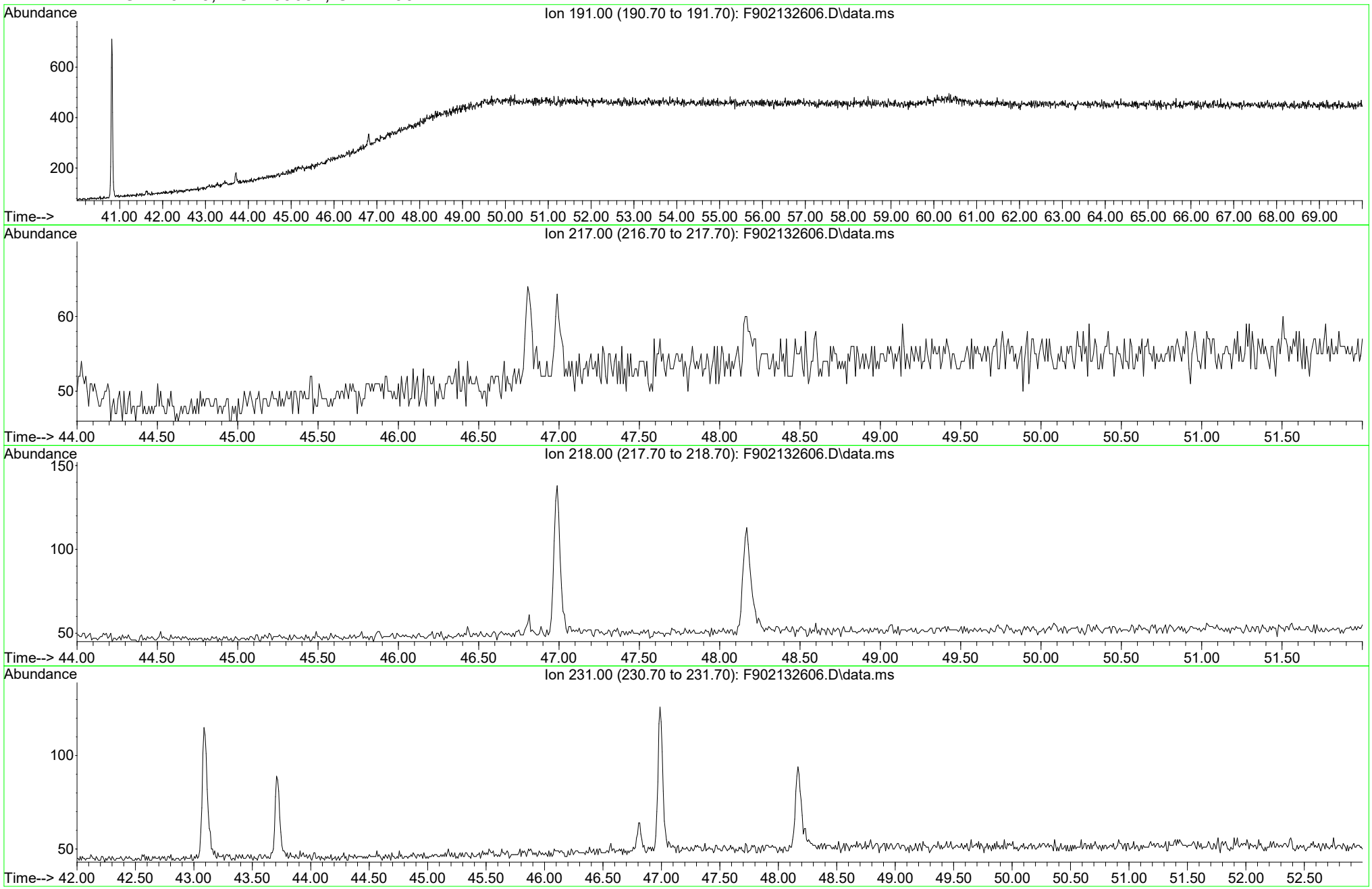
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132618.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 12:16 pm using AcqMethod FRNC9ALT.M
Sample Name: WG2169403-4,32,,
Misc Info : WG2176123,WG2169403,ICAL22932

7B Source Oil Duplicate
WG2169403-4



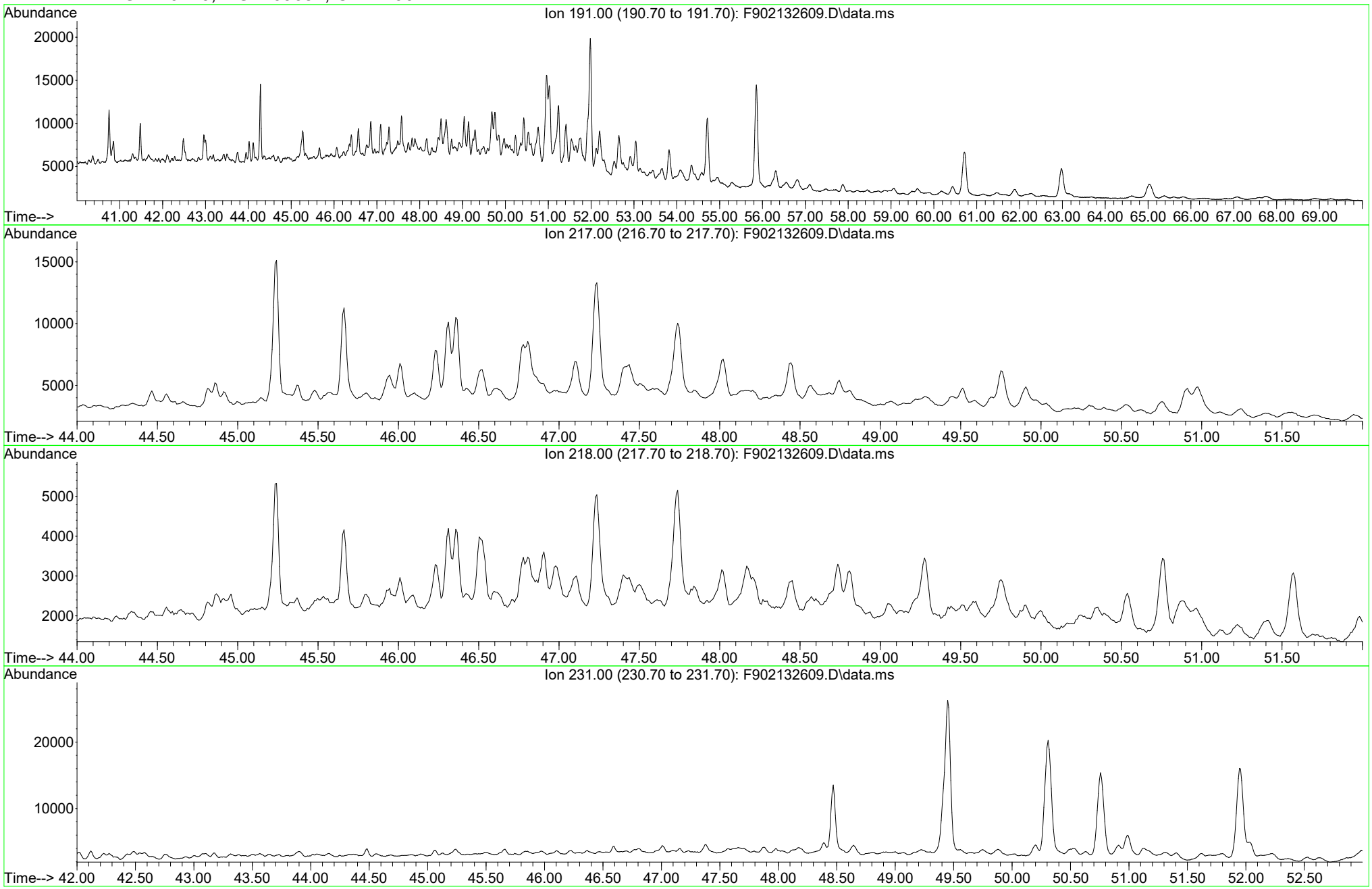
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132606.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 13 Feb 2026 7:33 pm using AcqMethod FRNC9ALT.M
Sample Name: WG2169684-1,32,,
Misc Info : WG2176123,WG2169684,ICAL22932

Procedural Blank
WG2169684-1



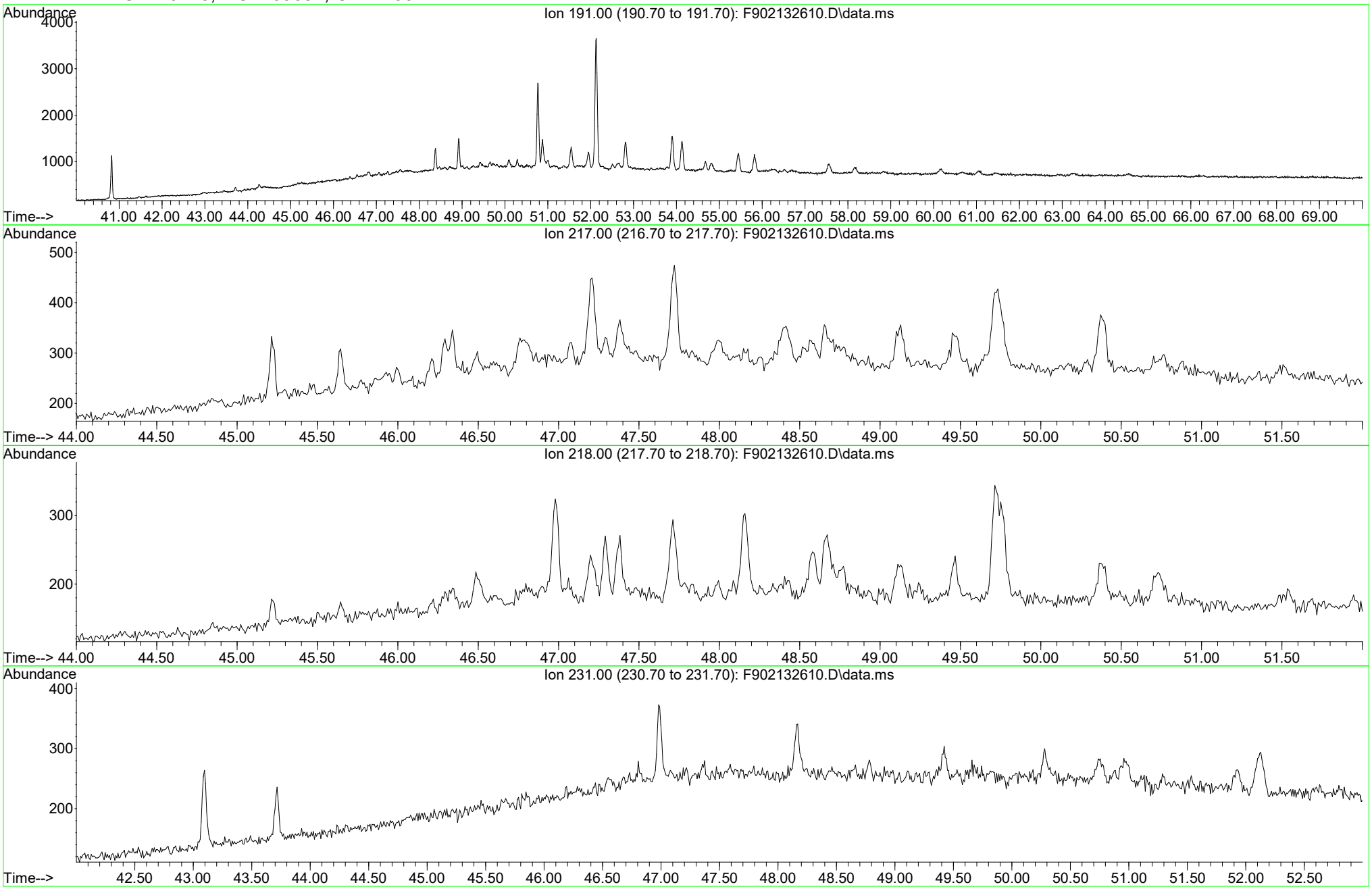
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132609.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 13 Feb 2026 11:44 pm using AcqMethod FRNC9ALT.M
Sample Name: L2604030-01,32,,
Misc Info : WG2176123,WG2169684,ICAL22932

MW-2-500 SHEEN
L2604030-01



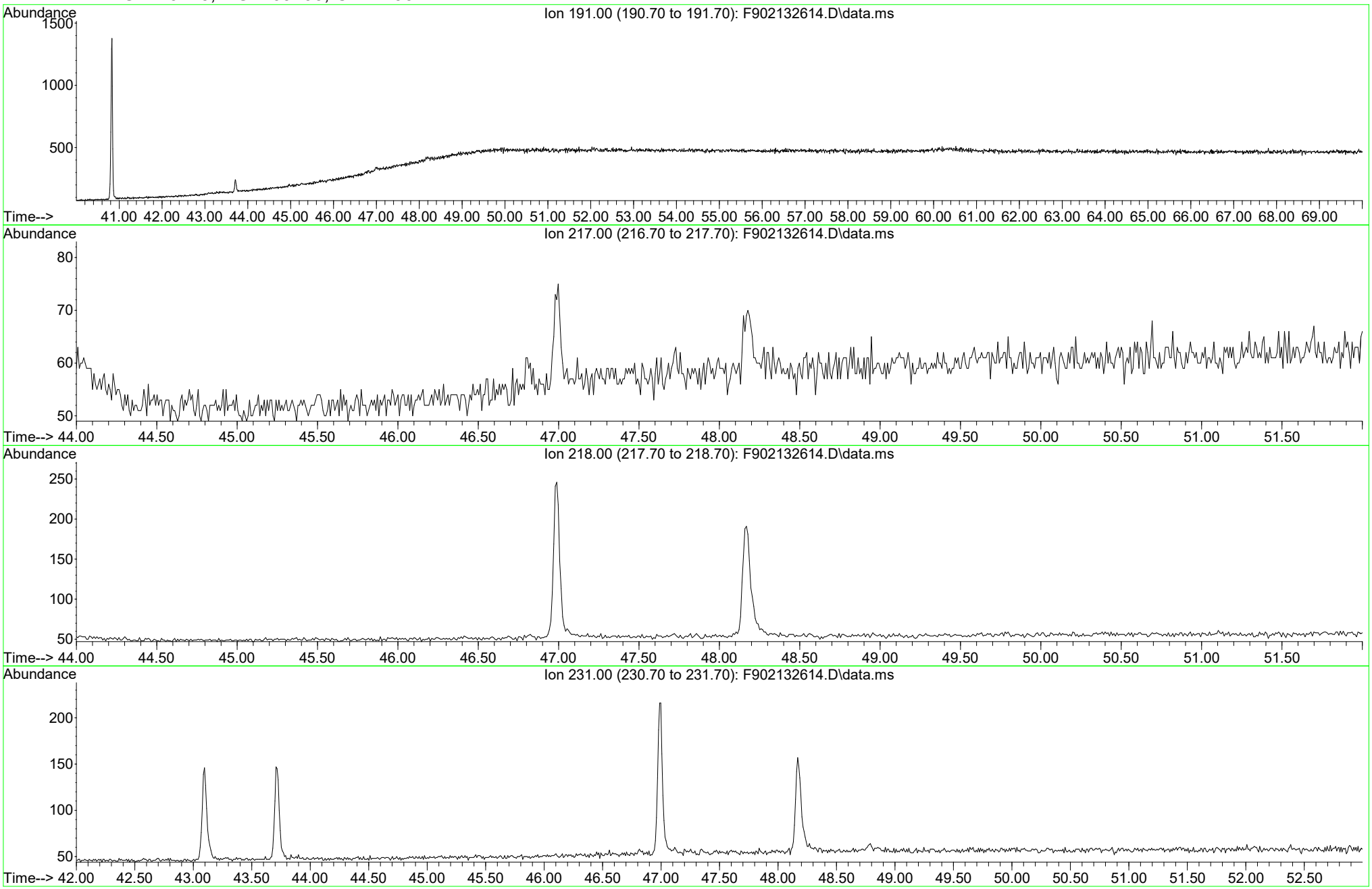
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132610.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 1:07 am using AcqMethod FRNC9ALT.M
Sample Name: L2604030-02,32,,
Misc Info : WG2176123,WG2169684,ICAL22932

FIELD BLANK SHEEN
L2604030-02



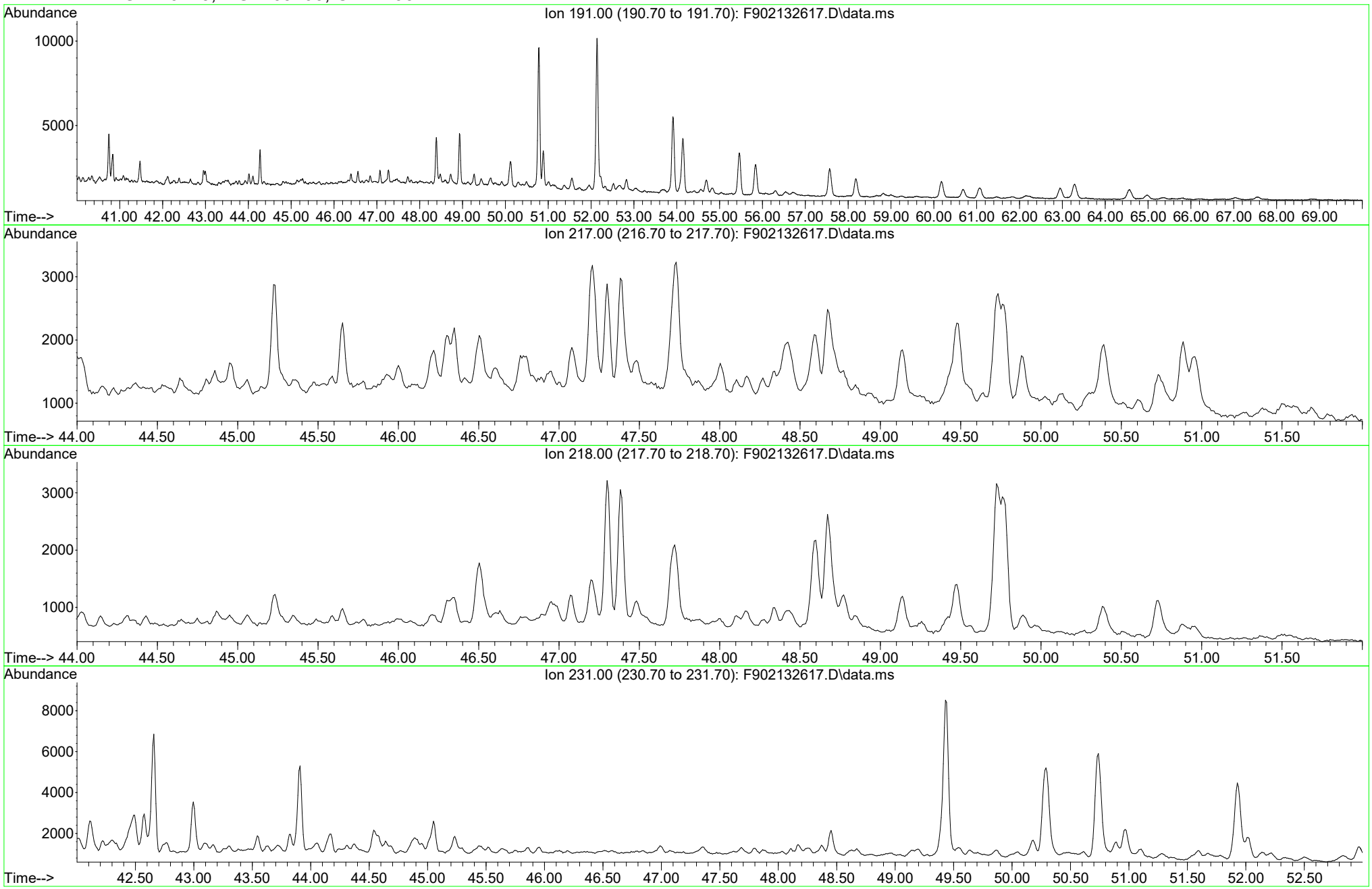
File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132614.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 6:42 am using AcqMethod FRNC9ALT.M
Sample Name: WG2169403-1,32,,
Misc Info : WG2176123,WG2169403,ICAL22932

Procedural Blank
WG2169403-1



File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132617.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 10:52 am using AcqMethod FRNC9ALT.M
Sample Name: L2604030-03,32,,
Misc Info : WG2176123,WG2169403,ICAL22932

7B Source Oil
L2604030-03



File :C:\Project Files\Westlake Salt Dome_Litigation.850.000079.02
... 3.SS\L2604030\ALKPAHBIO\F902132618.D
Operator : PAH9:MJS
Instrument : PAH 9
Acquired : 14 Feb 2026 12:16 pm using AcqMethod FRNC9ALT.M
Sample Name: WG2169403-4,32,,
Misc Info : WG2176123,WG2169403,ICAL22932

7B Source Oil Duplicate
WG2169403-4