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Devonian Duvernay Formation from the Western Canada
Sedimentary Basin, Alberta**

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INTRODUCTION

The Upper Devonian Duvernay Formation shale is a well-known petroleum source rock of the Devonian conventional petroleum systems in the south-central Alberta part of West Canada Sedimentary Basin (WCSB) (Creaney et al., 1994; Stasiuk and Fowler, 2002). It is also a proven liquid-rich unconventional shale gas play. A horizontal well reported by Macedo (2013) had a 30-day average initial production rate of 1,400 bbls/day of light hydrocarbons and 4 mmcf/day of natural gas, representing one of the best unconventional resource wells in WCSB. Knowledge of the hydrocarbon potential and character of the organic-rich Duvernay shale is of great importance to the success of the industrial activities targeting this unconventional resource play.

A total of 469 core samples of Duvernay Formation have been collected for Rock-Eval analysis for the purpose of evaluating their hydrocarbon potential. The sampling was done at about 1 sample/m interval in 12 wells identified based on a review of the well logging data of all the vertical boreholes with core taken from Upper Devonian Duvernay Formation in the Alberta part of WCSB. The locations of these wells are presented in Figure 1 and Table 1. The Rock-Eval analysis was carried out at the GSC-Calgary Organic Geochemical Laboratories using the Vinci's Rock-Eval 6 Turbo instruments following the standard Rock-Eval procedure (see below for details). The results are to be utilized for characterizing the source rock properties such as organic richness, type of organic matter and level of thermal maturation of the Duvernay shale across the WCSB, and ultimately for the unconventional hydrocarbon resources assessment.

ROCK-EVAL ANALYSIS

Rock-Eval analysis has been used extensively for petroleum source rock evaluation in geological basins by characterizing the organic richness, type of organic matter and thermal maturity of the sedimentary rocks. It is a thermal desorption and pyrolysis technique developed to measure the amount of hydrocarbons, CO and CO₂ released from a powdered rock sample upon heating treatment firstly in an inert and subsequently oxidizing environments. At the GSC-Calgary, typical Rock-Eval analysis of core and drill cuttings samples is performed on a Rock-Eval 6

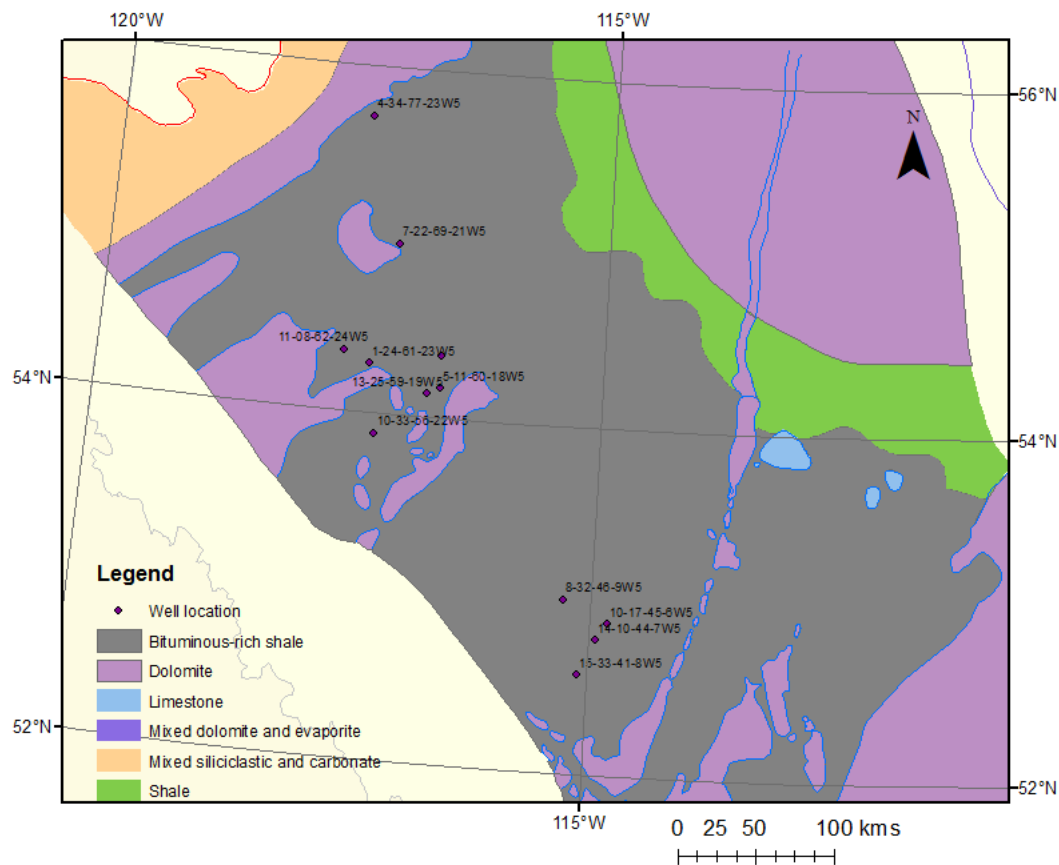


Figure 1. Well locations for the Devonian Duvernay cores analyzed by Rock-Eval

Table 1. Upper Devonian Duvernay cores for Rock-Eval analysis

Well Name	Well Location ID	Well UWI	Core Interval Sampled (m)		
			Top	Bottom	length
ECA HZ FERRIER 15-33-41-8	102153304108W500	102/15-33-041-08W5	3432.00	3471.55	39.55
CHEVRON HZ FOXCK 8-15-62-18	100081506218W500	100/08-15-062-18W5	2989.17	3036.05	46.88
PENN WEST PEMBINA 10-17-45-6	100101704506W500	100/10-17-045-06W5	2989.20	3026.95	37.75
CELTIC KAYBOBS 13-25-59-19	100132505919W500	100/13-25-059-19W5	3194.50	3239.55	45.05
AOSC GRIZZLY 1-24-61-23	100012406123W500	100/01-24-061-23W5	3681.30	3725.05	43.75
GALLEON DD GVILLEE 4-34-77-23	100043407723W500	100/04-34-077-23W5	2399.25	2424.95	25.70
COPRC 102 HZ WILLGR 14-10-44-7	100141004407W500	100/14-10-044-07W5	3075.05	3128.85	53.80
ECA SAXON 11-8-62-24	102110806224W500	102/11-08-062-24W5	3792.23	3837.05	44.82
HUSKY KAYBOBS 5-11-60-18	100051106018W500	100/05-11-060-18W5	3048.27	3085.05	36.78
XEREX STURLKS 7-22-69-21	100072206921W500	100/07-22-069-21W5	2690.80	2708.40	17.60
SDEL PEMBINA 8-32-46-9	100083204609W500	100/08-32-046-09W5	3098.35	3148.86	50.51
HUSKY WILD RIV 10-33-56-22	100103305622W500	100/10-33-056-22W5	4006.00	4085.66	79.66

Turbo device following the Basic Method as described by Lafrague et al. (1998) and Behar et al. (2001). The Rock-Eval 6 Turbo is equipped with a flame ionization detector (FID) for monitoring the amounts of hydrocarbons, and two infra-red (IR) cells for monitoring the amounts of CO and CO₂.

Aliquots of about 70 mg of each powdered core sample were used in single Rock-Eval analysis. Initially samples are heated at 300°C for 3 minutes under nitrogen flow to volatilize any free and adsorbed hydrocarbons (HC), and these are represented by the Rock-Eval S1 peaks from the FID- pyrograms. Ideally, the area under the S1 pyrolysis curve (mg HC/g rock) represents hydrocarbons naturally generated *in situ* over geologic time, but factors such as (1) sample impregnation by migrated hydrocarbons; (2) hydrocarbon expulsion from the source rock in the subsurface; (3) evaporative loss of hydrocarbons after cores and cuttings are brought to the surface; and (4) organic drilling contaminants (e.g. oil-based drilling mud) also affect the S1 values. Following this isothermal heating step, samples are heated linearly from 300°C to 650°C at a rate of 25°C/minute, yielding an S2 peak that represents thermal decomposition products from solid sedimentary organic matter, the kerogen. Under ideal conditions, the area under S2 curve (mg HC/g rock) represents the remaining hydrocarbon potential of the rock sample at increased thermal maturity or deeper burial depths; however, the results can also be affected by the presence of heavy bitumen or oil impregnation due to hydrocarbon migration and accumulation.

The temperature at the maximum of S2 peak (TpS2) varies with the thermal maturity of the sedimentary organic matter, and is converted to Tmax (°C), the widely accepted thermal maturity parameter established on the older Rock-Eval 2 model. Similar to S2 peak value, the Tmax and TpS2 can also be affected by the presence of heavy hydrocarbons that often appear as a front shoulder (S2' peak) to the S2 peaks. While the presence of heavy hydrocarbons may lower the Tmax values (Snowdon, 1995), Peters (1986) suggests that Tmax values may not be reliable either when S2 values are less than 0.2 mg HC/g rock, although this criterion likely varies depending on the type of organic matter and rock matrix. For example, Obermajer et al. (2007) suggested a minimum S2 value of 0.35 mg HC/g rock for correctly interpreting Tmax values based on data from the Arctic Islands, and Riediger et al. (2004) used a value of 0.5 mg HC/g rock in their study of Triassic rocks from north-eastern British Columbia.

The S3 curve corresponds to the amount of CO₂ (mg CO₂/g of initial rock) generated from organic matter during the initial isothermal heating step and the programmed heating phase up to 400°C. CO₂ generated between 400°C and 650°C is from the thermal decomposition of carbonate minerals. The Rock-Eval 6 instrument also records the amount of CO generated during pyrolysis and attributes various proportions to organic carbon and mineral sources depending on temperature (Behar et al., 2001 for details). The amount of pyrolysable or productive organic carbon (PC) is determined by combining the S1, S2, S3 (CO₂ and CO) contributions according to a pre-defined formula (Behar et al., 2001). Pyrolysis mineral carbon is determined from the high temperature portions of the CO and CO₂ pyrolysis curves.

Following pyrolysis, samples are transferred to an oxidation furnace of the Rock-Eval 6 instrument where they are linearly heated from 300°C to 850°C at 20°C/min under air flow to determine the amount of residual organic carbon (RC) and oxidation mineral carbon from CO and CO₂ generated during oxidation. The total organic carbon (TOC) is the sum of the productive and residual organic carbon. Similarly, mineral carbon (MinC) is the sum of the pyrolysis and oxidation mineral carbon.

Other key Rock-Eval parameters included in this report are production index ($PI = S1/(S1 + S2)$), hydrogen index ($HI = (S2 \times 100)/TOC$ in mg HC/g TOC), oxygen index ($OI = (S3 \times 100)/TOC$ in mg CO₂/g TOC), and oil saturation index ($OSI = 100 \times S1/TOC$ in mg HC/g TOC). PI is often used as a thermal maturity indicator because S1 and thus PI should increase with increasing maturation due to hydrocarbon generation. However, petroleum expulsion from a source rock at high maturation will result in lower S1 and PI values. In addition, a high PI may also indicate a pay zone due to oil accumulation. It should also be noted that S1 and PI values can be affected by drilling mud contamination. Plot of HI versus OI (Espitalié et al., 1977) has been used to determine the organic matter type and thermal maturity, and such plots are also included in this report. Sample contamination such as heavy bitumen impregnation, sample weathering and extremely low TOC content can affect both HI and OI values, therefore these results must be interpreted carefully. HI versus Tmax plots have also been often used to examine the type of organic matter and their thermal maturation pathways, and are especially useful in situations where OI values are anomalously high due to contributions from mineral carbon or other factors (Espitalié et al., 1984; Peters, 1986).

Peters (1986) discusses various factors that influence Rock-Eval parameters and presents guidelines for interpreting Rock-Eval data. For immature rocks, sample contamination (natural or drilling related) is indicated by multi-modal S2 peaks and PI values > 0.2 . For TOC values < 0.5 wt%, pyrolysate adsorption on the mineral matrix can affect S1, S2 and Tmax values, an effect most significant for argillaceous rocks.

RESULTS

Tables 2 to 13 present the Rock-Eval results for each individual well. Cross plots of HI vs Tmax and HI vs OI, as well as depth profiles of the major parameters are presented in the Appendix A for individual wells. These figures can be used to evaluate the present organic richness, type of organic matter and thermal maturation status of the Duvernay Formation shales across the basin. The hydrocarbon FID-pyrograms for all the 469 samples can be found in the Appendix B, in the order of the GSC sample ID as indicated in Tables 2 to 13. These pyrograms are useful for verifying whether the Rock-Eval results are reliable.

The results are being utilized for interpreting the shale gas and shale oil character and potential of the Duvernay Formation shale of the WCSB under the Geological Survey of Canada's Geoscience for New Energy Supply (GNES) program. A number of publications have been or are being made in the following areas: (1) the evolution of organic pores with thermal maturation in the Duvernay shales (Chen and Jiang, 2016a); (2) the manifestation of organic richness and thermal maturation of Duvernay shales on their well log characteristics (Wang et al., 2016); (3) kinetics model-assisted Rock-Eval data interpretation for evaluating the type of source rock organic matter (Cheng and Jiang, 2015; Chen et al., 2016b); (4) Effect of evaporative loss of volatile hydrocarbons from shale cores before lab analysis on the measured results (Jiang et al., 2016); (5) petroleum generation kinetics based on regular single rate Rock-Eval analysis (Chen et al., under review); (6) Evaluation of total carbonate contents using Rock-Eval MinC parameter (Jiang et al., under review).

When using the Rock-Eval data presented in this report, readers are referred to the above and future publications regarding their fitness, especially the maturity parameter Tmax. As the core intervals studied here are generally less than 80 meters long, the thermal maturity levels for

samples from the same wells are expected to be close to one another. However, the T_{max} values for some wells (e.g., 15-33-041-08W5) can range from 354°C up to 477°C (Figure 2a). When the hydrogen index and the content of dead carbon are plotted against depth (Figures 2b and 2c), only minor variation is noticed throughout the studied Duvernay samples from top to bottom of this well, showing that the organic matter in the cored interval has experienced similar thermal maturation and hydrocarbon generation. This clearly indicates that some of the Rock-Eval T_{max} values are problematic and cannot be used to estimate the maturity level of the Duvernay Formation in this well. A detailed examination of the hydrocarbon FID-pyrograms reveals that the S₂ peaks of those samples with abnormally low T_{max} values (e.g., samples C-579761, -579763, -579945 in Appendix B) are severely affected by the presence of soluble hydrocarbons that were not released into the S₁ peaks at 300°C. This resulted in front-shouldered or flattened S₂ peaks, with their maxima distorted decreasing T_{max} and T_{peak} values. Such samples are not supposed to be used for calculating the maturation level of the sample intervals such as by averaging the T_{max} values of samples from the interval. This issue will be discussed in detail in other publications.

The oil saturation index ($OSI=100 \times S_1/TOC$, in Table 2 to 13) is a measure of the free and adsorbed oil hosted in rock samples. A value of OSI larger than 100 has been proposed as a criterion for shale and tight plays that are capable of light oil production (Jarvie, 2012). However, it should be noted that evaporative loss of volatile hydrocarbons during core storage and sample preparation in the lab has significant impact on the Rock-Eval S₁ values, and this has been demonstrated by Jiang et al (2016) through comparison of time-series of analytical results on the same powdered shale samples. The contents of low molecular weight hydrocarbons (mainly those below C₁₂) were shown to decrease with increasing duration of storage time when the powdered samples were either exposed to air or stored in sealed containers. This is clearly reflected as decreasing Rock-Eval S₁ peaks with increasing time of storage (Jiang et al., 2016). Therefore, OSI should be used with caution for evaluating oil producing capability of high maturity shale intervals that tend to contain higher amount of volatile hydrocarbons.

Table 2. Rock-Eval Results for Duvernay Core Samples: Well 102/15-33-041-08W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-579761	3432.00	0.44	0.40	0.52	0.48	354	393	0.09	0.49	0.40	82	98	89.8	3.4
C-579762	3433.33	0.55	0.54	0.50	0.44	371	410	0.11	0.53	0.42	102	83	103.8	3.0
C-579763	3434.91	0.39	0.42	0.48	0.46	427	466	0.08	0.36	0.28	117	128	108.3	4.0
C-579764	3436.50	1.14	0.95	0.54	0.40	431	470	0.19	0.98	0.79	97	41	116.3	3.2
C-579765	3438.60	2.73	1.56	0.64	0.34	375	414	0.37	1.42	1.05	110	24	192.3	1.4
C-579904	3439.15	3.70	3.59	0.51	0.34	469	508	0.62	5.26	4.64	68	6	70.3	2.1
C-579933	3440.40	3.37	4.12	0.45	0.32	470	509	0.64	6.16	5.52	67	5	54.7	1.0
C-579934	3441.90	7.62	5.65	0.57	0.38	472	511	1.12	7.58	6.46	75	5	100.5	2.1
C-579935	3443.40	6.52	4.88	0.57	0.38	474	513	0.96	6.68	5.72	73	6	97.6	2.9
C-579936	3445.25	8.54	4.39	0.66	0.36	464	503	1.09	5.66	4.57	78	6	150.9	1.9
C-579937	3446.35	2.92	1.97	0.60	0.34	458	497	0.42	2.51	2.09	78	14	116.3	1.9
C-579938	3447.65	3.47	2.51	0.58	0.37	464	503	0.51	2.94	2.43	85	13	118.0	2.2
C-579939	3449.04	1.34	1.19	0.53	0.35	465	504	0.23	1.65	1.42	72	21	81.2	9.4
C-579940	3450.05	5.58	4.80	0.54	0.39	474	513	0.88	7.37	6.49	65	5	75.7	3.8
C-579941	3451.50	3.96	4.07	0.49	0.50	469	508	0.69	5.75	5.06	71	9	68.9	2.7
C-579942	3452.75	2.91	2.45	0.54	0.46	470	509	0.47	3.83	3.36	64	12	76.0	4.9
C-579943	3454.30	5.00	5.97	0.46	0.47	473	512	0.93	8.69	7.76	69	5	57.5	2.3
C-579944	3455.10	4.86	5.22	0.48	0.51	469	508	0.86	7.39	6.53	71	7	65.8	2.2
C-579945	3456.10	1.63	1.05	0.61	0.73	397	436	0.25	0.85	0.60	124	86	191.8	6.1
C-579946	3457.35	0.29	0.12	0.71	0.24	422	461	0.04	0.15	0.11	80	160	193.3	10.4
C-579947	3458.70	4.78	4.39	0.52	0.43	471	510	0.78	6.16	5.38	71	7	77.6	1.9
C-579948	3459.87	7.25	3.97	0.65	0.41	472	511	0.95	5.08	4.13	78	8	142.7	1.6
C-579949	3461.54	2.50	1.94	0.56	0.45	460	499	0.39	1.91	1.52	102	24	130.9	5.9
C-579950	3463.37	5.55	4.49	0.55	0.37	473	512	0.85	5.63	4.78	80	7	98.6	1.8
C-579951	3464.68	1.24	1.18	0.51	0.44	453	492	0.22	1.36	1.14	87	32	91.2	7.2
C-579952	3466.10	2.89	2.66	0.52	0.46	465	504	0.48	3.00	2.52	89	15	96.3	6.0
C-579953	3467.20	2.00	2.39	0.46	0.44	468	507	0.38	3.03	2.65	79	15	66.0	5.9
C-579954	3467.95	3.42	2.46	0.58	0.46	461	500	0.51	2.80	2.29	88	16	122.1	5.1
C-579955	3469.20	2.09	6.59	0.24	0.67	476	515	0.75	11.25	10.50	59	6	18.6	1.9
C-579956	3470.50	4.52	4.23	0.52	0.40	466	505	0.75	5.21	4.46	81	8	86.8	4.0
C-579957	3471.55	2.24	2.05	0.52	0.43	464	503	0.38	2.96	2.58	69	15	75.7	6.7

Note: S1: mg HC/g rock; S2: mg HC/g rock; PI: production index $S1/(S1+S2)$; S3: mg CO₂/g rock; Tpeak: in °C, temperature at the maximum of S2 peak; Tmax: in °C, maturity parameter; PC: % producible organic carbon in rock; TOC: % total organic carbon in rock; RC: % residual organic carbon in rock; HI: hydrogen Index $100 \times S2/TOC$; OI: Oxygen Index $100 \times S3/TOC$; OSI: Oil Saturation Index $100 \times S1/TOC$; MinC: % of mineral carbon in rock.

Table 3. Rock-Eval Results for Duvernay Core Samples: Well 100/08-15-062-18W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-579958	2989.17	2.67	4.78	0.36	0.28	453	492	0.63	3.85	3.22	124	7	69.4	2.1
C-579959	2990.38	5.88	5.10	0.54	0.30	455	494	0.93	4.16	3.23	123	7	141.3	2.4
C-579960	2991.77	3.19	4.10	0.44	0.30	456	495	0.62	3.11	2.49	132	10	102.6	3.3
C-579961	2992.75	5.34	4.20	0.56	0.33	457	496	0.81	3.67	2.86	114	9	145.5	3.9
C-579963	2994.00	2.37	2.25	0.51	0.32	455	494	0.40	2.03	1.63	111	16	116.7	5.8
C-579962	2994.65	2.57	2.29	0.53	0.36	450	489	0.42	1.77	1.35	129	20	145.2	6.1
C-579964	2995.55	1.94	2.03	0.49	0.33	452	491	0.34	1.44	1.10	141	23	134.7	6.1
C-579965	2996.50	3.33	2.08	0.62	0.40	442	481	0.47	2.08	1.61	100	19	160.1	5.0
C-579966	2997.69	2.37	2.84	0.46	0.33	457	496	0.45	2.18	1.73	130	15	108.7	5.3
C-579967	2999.27	3.13	2.84	0.52	0.39	449	488	0.51	1.98	1.47	143	20	158.1	5.4
C-579968	3000.53	4.89	5.16	0.49	0.34	459	498	0.85	4.16	3.31	124	8	117.5	4.5
C-579969	3002.04	2.86	4.07	0.41	0.30	455	494	0.59	2.87	2.28	142	10	99.7	2.3
C-579970	3003.59	4.98	4.25	0.54	0.28	455	494	0.78	3.39	2.61	125	8	146.9	2.2
C-579971	3004.93	1.99	2.65	0.43	0.36	459	498	0.40	2.34	1.94	113	15	85.0	7.7
C-579972	3006.55	4.21	4.85	0.46	0.27	452	491	0.76	3.74	2.98	130	7	112.6	1.4
C-579973	3007.92	7.44	5.78	0.56	0.29	459	498	1.11	5.16	4.05	112	6	144.2	2.1
C-579974	3009.28	5.89	4.96	0.54	0.25	460	499	0.91	4.03	3.12	123	6	146.2	2.3
C-579976	3011.91	5.72	5.50	0.51	0.27	455	494	0.95	4.17	3.22	132	6	137.2	1.7
C-579977	3013.58	3.75	3.98	0.49	0.25	459	498	0.66	3.41	2.75	117	7	110.0	2.7
C-579978	3014.53	6.75	4.61	0.59	0.31	458	497	0.96	3.57	2.61	129	9	189.1	2.0
C-579979	3016.10	6.28	5.79	0.52	0.28	460	499	1.01	4.72	3.71	123	6	133.1	1.6
C-579980	3016.29	6.37	5.99	0.52	0.28	460	499	1.04	4.86	3.82	123	6	131.1	1.4
C-579981	3016.53	4.61	5.18	0.47	0.32	459	498	0.83	4.25	3.42	122	8	108.5	1.9
C-579982	3016.71	3.13	4.92	0.39	0.30	460	499	0.68	3.30	2.62	149	9	94.8	1.9
C-579983	3016.93	4.83	5.27	0.48	0.25	459	498	0.85	4.20	3.35	125	6	115.0	1.4
C-579984	3017.20	6.65	6.38	0.51	0.34	458	497	1.10	5.27	4.17	121	6	126.2	1.2
C-579985	3017.33	2.46	3.04	0.45	0.33	459	498	0.47	2.34	1.87	130	14	105.1	3.9
C-579986	3018.90	3.32	3.86	0.46	0.27	457	496	0.61	2.44	1.83	158	11	136.1	2.0
C-579987	3020.43	6.49	6.45	0.50	0.29	461	500	1.09	5.53	4.44	117	5	117.4	2.3
C-579988	3021.53	5.69	6.69	0.46	0.28	460	499	1.04	5.10	4.06	131	5	111.6	2.5
C-579989	3022.80	4.56	6.56	0.41	0.29	461	500	0.94	5.38	4.44	122	5	84.8	2.5
C-579990	3023.90	6.57	5.81	0.53	0.28	461	500	1.04	4.81	3.77	121	6	136.6	2.7
C-579991	3024.90	3.00	1.75	0.63	0.30	449	488	0.41	1.53	1.12	114	20	196.1	5.4
C-579992	3027.05	1.60	2.45	0.40	0.35	461	500	0.35	1.47	1.12	167	24	108.8	6.2
C-579993	3028.53	2.41	3.60	0.40	0.35	462	501	0.51	2.61	2.10	138	13	92.3	4.4
C-579994	3029.15	0.52	0.30	0.63	0.25	441	480	0.08	0.23	0.15	130	109	226.1	10.6
C-579995	3030.65	0.18	0.13	0.57	0.27	430	469	0.04	0.15	0.11	87	180	120.0	10.5
C-579996	3033.40	0.12	0.11	0.51	0.26	431	470	0.03	0.10	0.07	110	260	120.0	10.3
C-579997	3034.65	0.12	0.18	0.40	0.34	446	485	0.04	0.16	0.12	112	213	75.0	6.8
C-579998	3036.05	0.23	0.21	0.52	0.32	442	481	0.05	0.16	0.11	131	200	143.8	5.8

Table 4. Rock-Eval Results for Duvernay Core Samples: Well 100/10-17-045-06W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-590279	2989.20	0.07	0.05	0.57	0.30	441	481	0.02	0.26	0.24	19	115	26.9	4.4
C-590364	2991.35	0.34	0.31	0.52	0.24	480	520	0.06	1.11	1.05	28	22	30.6	2.8
C-590280	2993.00	0.44	0.41	0.52	0.29	471	511	0.08	1.33	1.25	31	22	33.1	3.6
C-590281	2993.40	1.04	1.21	0.46	0.29	465	505	0.20	4.74	4.54	26	6	21.9	2.4
C-590282	2993.90	0.76	1.20	0.39	0.37	467	507	0.18	4.71	4.53	25	8	16.1	1.4
C-590283	2994.65	1.26	1.61	0.44	0.24	477	517	0.25	5.86	5.61	27	4	21.5	2.2
C-590284	2995.90	1.34	1.21	0.52	0.26	470	510	0.23	4.35	4.12	28	6	30.8	2.6
C-590285	2996.35	0.39	0.45	0.47	0.29	473	513	0.08	1.63	1.55	28	18	23.9	7.0
C-590286	2998.00	0.53	0.70	0.43	0.37	474	514	0.12	2.05	1.93	34	18	25.9	3.5
C-590287	2999.20	0.56	0.67	0.46	0.29	471	511	0.11	1.94	1.83	35	15	28.9	3.0
C-590288	3000.40	0.56	0.60	0.48	0.21	474	514	0.11	1.87	1.76	32	11	29.9	3.5
C-590289	3001.65	0.55	0.62	0.47	0.28	475	515	0.11	1.78	1.67	35	16	30.9	2.9
C-590290	3002.35	0.37	0.31	0.55	0.28	466	506	0.07	1.13	1.06	27	25	32.7	2.7
C-590291	3003.95	0.41	0.45	0.48	0.35	488	528	0.08	1.55	1.47	29	23	26.5	4.1
C-590292	3004.90	0.91	1.00	0.47	0.33	471	511	0.17	4.17	4.00	24	8	21.8	3.2
C-590293	3005.50	0.16	0.12	0.59	0.24	457	497	0.03	0.49	0.46	24	49	32.7	8.3
C-590294	3007.05	0.29	0.49	0.37	0.31	477	517	0.08	2.54	2.46	19	12	11.4	5.8
C-590295	3008.25	0.54	0.90	0.37	0.25	480	520	0.13	3.76	3.63	24	7	14.4	1.6
C-590296	3008.65	1.29	3.94	0.25	0.32	343	383	0.45	5.31	4.86	74	6	24.3	3.3
C-590297	3010.15	0.61	1.32	0.32	0.31	491	531	0.17	4.47	4.30	30	7	13.6	2.3
C-590298	3011.95	0.60	1.01	0.37	0.38	472	512	0.15	4.74	4.59	21	8	12.7	1.0
C-590299	3012.70	0.50	0.95	0.35	0.27	480	520	0.13	3.95	3.82	24	7	12.7	1.0
C-590300	3013.95	0.43	0.69	0.38	0.26	484	524	0.11	2.31	2.20	30	11	18.6	5.2
C-590301	3015.35	0.58	0.89	0.39	0.28	487	527	0.13	2.96	2.83	30	9	19.6	2.7
C-590302	3016.50	0.51	0.92	0.36	0.38	488	528	0.13	3.01	2.88	31	13	16.9	4.4
C-590303	3017.35	1.07	1.90	0.36	0.34	480	520	0.27	6.53	6.26	29	5	16.4	2.1
C-590304	3018.55	0.67	0.82	0.45	0.39	471	511	0.14	3.61	3.47	23	11	18.6	3.8
C-590305	3019.75	0.76	1.18	0.39	0.38	479	519	0.18	4.55	4.37	26	8	16.7	4.4
C-590306	3020.30	0.72	1.40	0.34	0.25	481	521	0.19	5.03	4.84	28	5	14.3	2.5
C-590307	3021.30	0.26	0.32	0.45	0.22	482	522	0.06	1.46	1.40	22	15	17.8	1.6
C-590308	3022.05	0.04	0.08	0.34	0.27	297	337	0.02	0.29	0.27	28	93	13.8	2.0
C-590309	3026.95	0.04	0.09	0.33	0.45	535	575	0.02	0.21	0.19	43	214	19.0	1.8

Table 5. Rock-Eval Results for Duvernay Core Samples: Well 100/13-25-059-19W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-590310	3194.50	9.28	3.90	0.70	0.38	455	495	1.11	4.38	3.27	89	9	211.9	4.3
C-590311	3194.90	9.50	4.23	0.69	0.27	456	496	1.15	4.54	3.39	93	6	209.3	3.4
C-590312	3195.40	9.16	3.61	0.72	0.32	451	491	1.08	3.75	2.67	96	9	244.3	3.3
C-590313	3196.45	8.20	3.51	0.70	0.33	447	487	0.99	3.60	2.61	98	9	227.8	4.9
C-590314	3197.85	5.27	2.03	0.72	0.37	441	481	0.62	2.19	1.57	93	17	240.6	6.4
C-590315	3198.80	9.41	4.17	0.69	0.33	453	493	1.14	4.79	3.65	87	7	196.5	2.0
C-590316	3200.10	8.49	2.90	0.75	0.40	448	488	0.97	2.81	1.84	103	14	302.1	3.9
C-590317	3201.20	7.86	4.13	0.66	0.37	456	496	1.02	5.22	4.20	79	7	150.6	4.4
C-590318	3202.55	2.88	2.01	0.59	0.45	450	490	0.43	2.17	1.74	93	21	132.7	3.3
C-590319	3203.30	2.06	1.74	0.54	0.40	448	488	0.33	1.93	1.60	90	21	106.7	4.2
C-590320	3204.45	6.89	2.69	0.72	0.37	439	479	0.81	2.54	1.73	106	15	271.3	3.3
C-590321	3205.55	4.39	3.36	0.57	0.34	456	496	0.66	3.46	2.80	97	10	126.9	2.3
C-590322	3206.80	4.72	3.34	0.59	0.46	448	488	0.69	2.81	2.12	119	16	168.0	3.5
C-590323	3207.85	4.68	3.12	0.60	0.38	453	493	0.67	3.15	2.48	99	12	148.6	3.2
C-590324	3208.70	5.90	4.12	0.59	0.33	451	491	0.85	3.64	2.79	113	9	162.1	2.7
C-590325	3209.75	2.46	1.43	0.63	0.35	455	495	0.34	1.57	1.23	91	22	156.7	5.2
C-590326	3211.05	10.96	4.27	0.72	0.32	456	496	1.28	4.76	3.48	90	7	230.3	5.5
C-590327	3212.25	11.61	5.21	0.69	0.28	466	506	1.41	5.73	4.32	91	5	202.6	3.8
C-590328	3212.85	11.32	5.16	0.69	0.33	467	507	1.39	5.88	4.49	88	6	192.5	4.0
C-590329	3213.80	13.30	4.31	0.76	0.29	462	502	1.48	4.77	3.29	90	6	278.8	3.2
C-590330	3214.30	5.16	5.78	0.47	0.33	471	511	0.93	7.24	6.31	80	5	71.3	2.8
C-590331	3215.35	5.59	6.40	0.47	0.35	470	510	1.02	7.94	6.92	81	4	70.4	3.2
C-590332	3216.25	5.97	4.71	0.56	0.33	469	509	0.91	5.37	4.46	88	6	111.2	2.7
C-590333	3218.00	9.39	4.83	0.66	0.39	452	492	1.20	5.15	3.95	94	8	182.3	3.3
C-590334	3219.40	9.90	3.81	0.72	0.29	467	507	1.15	4.38	3.23	87	7	226.0	4.5
C-590335	3220.80	14.66	5.92	0.71	0.33	463	503	1.73	6.23	4.50	95	5	235.3	2.2
C-590336	3221.85	13.27	5.38	0.71	0.34	455	495	1.57	5.97	4.40	90	6	222.3	2.2
C-590337	3222.70	6.96	4.50	0.61	0.33	466	506	0.97	5.25	4.28	86	6	132.6	2.3
C-590338	3224.05	6.40	4.05	0.61	0.35	468	508	0.89	4.69	3.80	86	7	136.5	2.1
C-590339	3224.95	7.12	3.95	0.64	0.33	463	503	0.93	4.34	3.41	91	8	164.1	1.8
C-590340	3226.50	14.87	5.72	0.72	0.32	458	498	1.73	6.30	4.57	91	5	236.0	2.6
C-590341	3227.45	10.66	5.19	0.67	0.35	465	505	1.33	5.98	4.65	87	6	178.3	2.6
C-590342	3228.60	14.67	5.89	0.71	0.43	450	490	1.73	6.50	4.77	91	7	225.7	2.8
C-590343	3229.50	13.23	5.18	0.72	0.40	457	497	1.55	5.92	4.37	88	7	223.5	2.9
C-590344	3230.70	5.77	4.40	0.57	0.39	468	508	0.87	5.56	4.69	79	7	103.8	3.1
C-590345	3231.85	5.18	4.63	0.53	0.36	471	511	0.83	6.08	5.25	76	6	85.2	2.8
C-590346	3232.70	4.80	4.71	0.50	0.31	474	514	0.81	5.72	4.91	82	5	83.9	3.2
C-590347	3234.25	7.23	5.60	0.56	0.34	471	511	1.08	6.22	5.14	90	5	116.2	3.3
C-590348	3235.30	1.04	0.41	0.72	0.21	448	488	0.13	0.59	0.46	69	36	176.3	10.4
C-590349	3236.40	4.86	5.01	0.49	0.33	475	515	0.84	5.97	5.13	84	6	81.4	1.8
C-590350	3237.55	14.16	4.98	0.74	0.31	455	495	1.60	5.09	3.49	98	6	278.2	2.0
C-590351	3238.55	12.99	5.92	0.69	0.32	467	507	1.59	6.38	4.79	93	5	203.6	1.9
C-590352	3239.55	14.15	6.18	0.70	0.44	447	487	1.71	6.49	4.78	95	7	218.0	2.3

Table 6. Rock-Eval Results for Duvernay Core Samples: Well 100/01-24-061-23W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-590353	3681.30	1.59	1.07	0.60	0.32	311	351	0.23	0.86	0.63	124	37	184.9	1.5
C-590354	3684.05	2.75	1.27	0.68	0.31	332	372	0.35	1.67	1.32	76	19	164.7	4.8
C-590355	3687.10	3.11	1.23	0.72	0.24	308	348	0.37	2.04	1.67	60	12	152.5	3.0
C-590356	3690.25	1.24	1.27	0.49	0.25	301	341	0.22	2.71	2.49	47	9	45.8	1.5
C-590357	3694.85	0.81	1.02	0.44	0.27	324	364	0.16	2.06	1.90	50	13	39.3	0.8
C-590358	3696.35	1.00	0.96	0.51	0.30	309	349	0.18	1.78	1.60	54	17	56.2	1.7
C-590359	3699.55	1.12	1.33	0.46	0.27	329	369	0.22	2.62	2.40	51	10	42.7	0.8
C-590360	3701.45	0.77	1.58	0.33	0.22	487	527	0.21	4.34	4.13	36	5	17.7	2.0
C-590361	3703.80	0.26	1.29	0.17	0.21	491	531	0.14	4.75	4.61	27	4	5.5	2.1
C-590362	3704.10	0.79	1.38	0.36	0.22	475	515	0.19	3.44	3.25	40	6	23.0	1.6
C-590363	3704.55	0.38	0.25	0.60	0.16	433	473	0.06	0.64	0.58	39	25	59.4	9.3
C-590365	3706.35	0.30	1.02	0.23	0.22	497	537	0.12	4.04	3.92	25	5	7.4	1.2
C-590366	3708.40	0.72	1.33	0.35	0.20	485	525	0.18	4.21	4.03	32	5	17.1	1.5
C-590367	3709.85	0.48	1.27	0.27	0.23	498	538	0.16	4.19	4.03	30	5	11.5	3.8
C-590368	3710.65	0.24	1.43	0.14	0.21	498	538	0.15	5.57	5.42	26	4	4.3	2.8
C-590369	3711.40	0.34	0.91	0.27	0.23	505	545	0.11	2.66	2.55	34	9	12.8	7.5
C-590370	3711.90	0.65	1.72	0.27	0.22	499	539	0.21	5.43	5.22	32	4	12.0	3.5
C-590371	3712.80	0.21	1.34	0.13	0.29	492	532	0.14	5.38	5.24	25	5	3.9	3.0
C-590372	3713.80	0.75	1.20	0.39	0.24	495	535	0.17	3.02	2.85	40	8	24.8	2.8
C-590373	3714.80	0.58	0.98	0.37	0.17	503	543	0.14	2.90	2.76	34	6	20.0	0.6
C-590374	3716.10	0.28	0.28	0.50	0.18	431	471	0.05	0.71	0.66	39	25	39.4	10.3
C-590375	3718.60	0.32	0.12	0.74	0.15	433	473	0.04	0.07	0.03	171	214	457.1	10.1
C-590376	3723.30	0.54	0.15	0.78	0.20	432	472	0.07	0.22	0.15	68	91	245.5	9.5
C-590377	3723.60	0.59	0.89	0.40	0.26	515	555	0.14	2.61	2.47	34	10	22.6	4.1
C-590378	3725.05	0.84	1.33	0.39	0.22	517	557	0.19	3.45	3.26	39	6	24.3	1.4

Table 7. Rock-Eval Results for Duvernay Core Samples: Well 100/04-34-077-23W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-590379	2399.25	0.26	2.03	0.11	0.73	438	478	0.22	0.78	0.56	260	94	33.3	3.8
C-590380	2400.30	0.57	5.08	0.10	0.78	438	478	0.51	1.64	1.13	310	48	34.8	2.6
C-590381	2401.65	0.38	3.02	0.11	0.52	439	479	0.30	0.86	0.56	351	60	44.2	1.6
C-590382	2402.60	0.85	6.10	0.12	0.51	437	477	0.60	1.85	1.25	330	28	45.9	1.0
C-590383	2403.45	0.93	7.56	0.11	0.45	437	477	0.73	2.04	1.31	371	22	45.6	1.2
C-590384	2404.25	0.58	4.21	0.12	0.58	438	478	0.42	1.27	0.85	331	46	45.7	1.2
C-590385	2405.30	1.38	11.44	0.11	0.62	432	472	1.10	3.10	2.00	369	20	44.5	3.2
C-590386	2406.20	1.69	20.01	0.08	0.53	432	472	1.84	4.75	2.91	421	11	35.6	1.2
C-590387	2407.25	2.55	25.64	0.09	0.49	433	473	2.37	5.26	2.89	487	9	48.5	1.0
C-590388	2408.30	2.00	22.32	0.08	0.36	433	473	2.04	4.71	2.67	474	8	42.5	0.7
C-590389	2409.35	3.11	25.72	0.11	0.55	431	471	2.42	5.49	3.07	468	10	56.6	3.2
C-590390	2410.10	3.13	32.96	0.09	0.50	429	469	3.03	6.33	3.30	521	8	49.4	2.6
C-590391	2411.10	1.65	9.35	0.15	0.35	432	472	0.93	2.15	1.22	435	16	76.7	5.6
C-590392	2412.15	2.07	19.27	0.10	0.41	433	473	1.81	4.43	2.62	435	9	46.7	1.4
C-590393	2413.35	2.60	27.00	0.09	0.56	432	472	2.49	5.66	3.17	477	10	45.9	0.7
C-590394	2414.40	5.56	59.54	0.09	0.78	431	471	5.45	11.21	5.76	531	7	49.6	2.3
C-590395	2414.95	3.53	28.76	0.11	0.43	433	473	2.71	5.86	3.15	491	7	60.2	3.6
C-590396	2416.05	1.36	13.83	0.09	0.34	434	474	1.28	2.92	1.64	474	12	46.6	1.1
C-590397	2416.65	0.59	9.42	0.06	0.42	436	476	0.85	2.02	1.17	466	21	29.2	2.4
C-590398	2417.95	1.67	14.28	0.10	0.44	436	476	1.35	3.05	1.70	468	14	54.8	3.2
C-590399	2419.15	0.03	0.08	0.29	0.35	426	466	0.02	0.10	0.08	80	350	30.0	9.5
C-590400	2420.10	0.02	0.07	0.23	0.61	426	466	0.02	0.17	0.15	41	359	11.8	6.8
C-590401	2421.15	0.04	0.08	0.35	0.48	429	469	0.02	0.08	0.06	100	600	50.0	8.5
C-590402	2421.95	0.07	0.17	0.28	0.55	430	470	0.04	0.24	0.20	71	229	29.2	7.4
C-590403	2422.90	0.09	0.17	0.33	0.52	430	470	0.04	0.25	0.21	68	208	36.0	8.4
C-590404	2424.95	0.07	0.15	0.32	0.62	427	467	0.04	0.21	0.17	71	295	33.3	5.2

Table 8. Rock-Eval Results for Well Duvernay Core Samples: 100/14-10-044-07W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-590405	3075.05	0.08	0.22	0.26	0.52	335	375	0.04	0.22	0.18	100	236	36.4	3.6
C-590406	3075.96	1.60	0.93	0.63	0.41	367	407	0.23	0.38	0.15	245	108	421.1	5.5
C-590407	3076.50	3.07	1.75	0.64	0.49	381	421	0.42	0.58	0.16	302	84	529.3	3.8
C-590408	3079.20	1.89	1.32	0.59	0.48	372	412	0.28	0.44	0.16	300	109	429.5	3.7
C-590409	3079.85	1.33	0.56	0.70	0.29	424	464	0.17	0.25	0.08	224	116	532.0	10.4
C-590410	3081.25	3.29	1.68	0.66	0.44	424	464	0.43	0.99	0.56	170	44	332.3	4.7
C-590411	3083.30	4.07	2.23	0.65	0.46	424	464	0.54	1.54	1.00	145	30	264.3	2.7
C-590412	3085.85	1.84	1.26	0.59	0.43	349	389	0.27	0.74	0.47	170	58	248.6	3.6
C-590413	3087.20	1.36	0.88	0.61	0.43	360	400	0.20	0.57	0.37	154	75	238.6	4.7
C-590414	3088.55	0.61	0.49	0.55	0.39	377	417	0.10	0.22	0.12	223	177	277.3	5.7
C-590415	3090.10	2.49	1.37	0.65	0.48	392	432	0.34	0.57	0.23	240	84	436.8	4.2
C-590416	3091.45	4.03	1.19	0.77	0.46	397	437	0.45	0.76	0.31	157	61	530.3	7.1
C-590417	3092.65	2.97	2.11	0.59	0.44	425	465	0.44	1.28	0.84	165	34	232.0	2.4
C-590418	3093.95	2.01	0.72	0.74	0.37	431	471	0.24	0.61	0.37	118	61	329.5	9.1
C-590419	3095.70	1.78	0.58	0.75	0.34	434	474	0.21	0.42	0.21	138	81	423.8	9.6
C-590420	3096.90	1.63	2.19	0.43	0.40	470	510	0.34	4.77	4.43	46	8	34.2	2.1
C-590421	3097.90	3.34	3.08	0.52	0.33	480	520	0.55	5.10	4.55	60	6	65.5	1.8
C-590422	3098.95	2.40	1.53	0.61	0.28	441	481	0.34	2.19	1.85	70	13	109.6	5.4
C-590423	3099.90	8.54	2.85	0.75	0.40	442	482	0.96	3.26	2.30	87	12	262.0	6.5
C-590424	3100.75	2.18	1.35	0.62	0.37	311	351	0.31	1.47	1.16	92	25	148.3	4.2
C-590425	3102.75	4.22	2.55	0.62	0.42	306	346	0.58	2.69	2.11	95	16	156.9	2.2
C-590426	3104.15	4.97	2.80	0.64	0.51	432	472	0.67	3.24	2.57	86	16	153.4	1.1
C-590427	3105.30	5.90	4.36	0.57	0.38	303	343	0.87	4.95	4.08	88	8	119.2	3.4
C-590428	3105.70	4.62	0.71	0.87	0.35	428	468	0.46	0.65	0.19	109	54	710.8	10.7
C-590429	3106.05	2.67	0.94	0.74	0.36	433	473	0.31	0.67	0.36	140	54	398.5	8.5
C-590430	3106.65	3.78	0.74	0.84	0.34	426	466	0.39	0.74	0.35	100	46	510.8	9.9
C-590431	3106.95	2.54	1.81	0.58	0.40	321	361	0.38	1.87	1.49	97	21	135.8	2.3
C-590432	3107.75	3.82	3.68	0.51	0.36	472	512	0.64	6.12	5.48	60	6	62.4	4.5
C-590433	3109.10	2.86	1.41	0.67	0.37	305	345	0.37	1.59	1.22	89	23	179.9	5.9
C-590434	3110.60	6.34	0.88	0.88	0.43	429	469	0.62	1.07	0.45	82	40	592.5	8.9
C-590435	3110.85	0.92	0.20	0.82	0.23	434	474	0.10	0.24	0.14	83	96	383.3	10.9
C-590436	3112.35	10.12	4.52	0.69	0.35	302	342	1.23	4.91	3.68	92	7	206.1	2.2
C-590437	3113.35	10.70	5.01	0.68	0.44	304	344	1.33	5.63	4.30	89	8	190.1	2.0
C-590438	3114.20	9.68	6.04	0.62	0.55	294	334	1.33	6.04	4.71	100	9	160.3	1.0
C-590439	3115.25	1.74	2.20	0.44	0.34	476	516	0.34	3.59	3.25	61	9	48.5	2.8
C-590440	3117.05	8.13	3.89	0.68	0.39	309	349	1.02	4.11	3.09	95	9	197.8	2.6
C-590441	3118.35	11.06	5.51	0.67	0.42	307	347	1.39	6.26	4.87	88	7	176.7	4.0
C-590442	3119.45	1.47	0.44	0.77	0.28	410	450	0.17	1.26	1.09	35	22	116.7	7.4
C-590443	3121.00	5.51	3.82	0.59	0.35	302	342	0.79	4.66	3.87	82	8	118.2	2.0
C-590444	3122.45	2.41	0.92	0.72	0.40	307	347	0.29	0.65	0.36	142	62	370.8	2.2
C-590445	3123.90	2.16	1.17	0.65	0.43	338	378	0.29	0.51	0.22	229	84	423.5	2.7
C-590446	3125.25	8.06	2.84	0.74	0.59	374	414	0.93	1.22	0.29	233	48	660.7	3.1
C-590447	3126.45	2.01	0.92	0.69	0.43	301	341	0.26	0.51	0.25	180	84	394.1	2.6
C-590448	3127.60	3.14	1.11	0.74	0.37	303	343	0.37	0.71	0.34	156	52	442.3	3.7
C-590449	3128.85	2.82	1.07	0.72	0.41	327	367	0.34	0.72	0.38	149	57	391.7	4.6

Table 9. Rock-Eval Results for Duvernay Core Samples: Well 102/11-08-062-24W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-594212	3792.23	2.12	1.61	0.57	0.48	461	501	0.33	1.88	1.55	86	26	112.8	5.9
C-594213	3793.25	3.83	1.95	0.66	0.41	458	498	0.50	2.07	1.57	94	20	185.0	6.1
C-594214	3794.32	4.81	4.32	0.53	0.39	463	503	0.79	4.15	3.36	104	9	115.9	2.7
C-594215	3795.25	4.25	3.91	0.52	0.43	459	499	0.70	3.56	2.86	110	12	119.4	3.0
C-594216	3796.10	3.10	3.28	0.49	0.38	463	503	0.55	3.64	3.09	90	10	85.2	3.0
C-594217	3797.15	5.46	4.08	0.57	0.38	460	500	0.81	3.77	2.96	108	10	144.8	2.6
C-594218	3798.35	4.44	4.02	0.52	0.44	461	501	0.73	3.66	2.93	110	12	121.3	2.8
C-594219	3799.25	3.73	2.94	0.56	0.67	461	501	0.59	3.32	2.73	89	20	112.3	2.6
C-594220	3799.80	2.84	3.41	0.45	0.49	463	503	0.54	3.55	3.01	96	14	80.0	3.4
C-594221	3800.68	4.85	4.12	0.54	1.13	464	504	0.79	3.89	3.10	106	29	124.7	3.6
C-594222	3801.27	7.58	4.71	0.62	0.40	461	501	1.04	4.01	2.97	117	10	189.0	2.3
C-594223	3802.12	1.80	2.32	0.44	0.40	464	504	0.37	2.75	2.38	84	15	65.5	4.2
C-594224	3803.16	2.80	3.66	0.43	0.35	466	506	0.57	4.21	3.64	87	8	66.5	4.1
C-594225	3804.12	7.14	5.00	0.59	0.35	459	499	1.03	4.75	3.72	105	7	150.3	2.4
C-594226	3805.25	5.43	3.67	0.60	0.26	459	499	0.77	3.05	2.28	120	9	178.0	0.7
C-594227	3806.27	6.15	4.42	0.58	0.36	462	502	0.90	3.75	2.85	118	10	164.0	2.3
C-594228	3807.35	9.86	6.24	0.61	0.37	466	506	1.36	5.36	4.00	116	7	184.0	3.0
C-594229	3808.15	6.13	5.93	0.51	0.57	466	506	1.03	5.75	4.72	103	10	106.6	2.4
C-594230	3809.35	9.20	4.81	0.66	0.34	466	506	1.19	4.41	3.22	109	8	208.6	2.4
C-594231	3810.16	6.84	4.16	0.62	0.38	462	502	0.94	4.08	3.14	102	9	167.6	2.6
C-594232	3811.27	5.19	4.83	0.52	0.32	468	508	0.85	4.26	3.41	113	8	121.8	2.2
C-594233	3812.25	5.30	8.28	0.39	0.36	470	510	1.16	8.47	7.31	98	4	62.6	2.4
C-594234	3813.38	6.12	9.98	0.38	0.38	469	509	1.36	9.48	8.12	105	4	64.6	2.6
C-594235	3814.08	3.71	5.57	0.40	0.33	468	508	0.80	6.41	5.61	87	5	57.9	1.9
C-594236	3815.21	4.63	5.78	0.44	0.39	466	506	0.89	5.55	4.66	104	7	83.4	1.8
C-594237	3816.25	5.73	5.41	0.51	0.38	464	504	0.95	4.83	3.88	112	8	118.6	1.5
C-594238	3817.27	4.35	4.76	0.48	0.38	468	508	0.79	4.71	3.92	101	8	92.4	3.3
C-594239	3818.98	4.50	5.86	0.43	0.46	464	504	0.89	5.74	4.85	102	8	78.4	2.5
C-594240	3820.08	8.46	7.13	0.54	0.36	462	502	1.32	5.62	4.30	127	6	150.5	0.6
C-594241	3821.00	6.79	7.73	0.47	0.42	468	508	1.23	7.30	6.07	106	6	93.0	2.4
C-594242	3821.95	2.11	1.47	0.59	0.33	460	500	0.32	1.78	1.46	83	19	118.5	6.5
C-594243	3823.02	4.15	6.11	0.40	0.37	467	507	0.88	6.33	5.45	97	6	65.6	1.2
C-594244	3823.95	5.88	5.13	0.53	0.26	465	505	0.93	4.56	3.63	112	6	128.9	0.6
C-594245	3824.95	8.47	6.76	0.56	0.36	466	506	1.29	6.22	4.93	109	6	136.2	1.7
C-594246	3825.88	8.05	5.20	0.61	0.33	464	504	1.12	4.86	3.74	107	7	165.6	1.5
C-594247	3826.95	5.18	4.47	0.54	0.33	466	506	0.82	4.55	3.73	98	7	113.8	1.4
C-594248	3827.90	6.18	4.59	0.57	0.32	464	504	0.91	4.24	3.33	108	8	145.8	1.6
C-594249	3828.85	5.54	3.53	0.61	0.36	463	503	0.77	3.28	2.51	108	11	168.9	1.9
C-594250	3830.00	2.97	2.55	0.54	0.47	464	504	0.48	2.93	2.45	87	16	101.4	2.8
C-594251	3831.00	2.60	2.40	0.52	0.53	465	505	0.44	2.75	2.31	87	19	94.5	4.7
C-594252	3832.00	3.43	4.11	0.46	0.28	468	508	0.65	4.47	3.82	92	6	76.7	0.6
C-594253	3833.00	2.39	2.87	0.45	0.47	468	508	0.46	3.84	3.38	75	12	62.2	6.1
C-594254	3833.94	5.73	3.16	0.64	0.26	308	348	0.75	1.65	0.90	192	16	347.3	0.4
C-594255	3835.40	1.41	1.35	0.51	0.43	448	488	0.25	1.29	1.04	105	33	109.3	1.4
C-594256	3836.15	1.72	1.63	0.51	0.53	455	495	0.30	1.75	1.45	93	30	98.3	2.3
C-594257	3837.05	1.52	1.32	0.54	0.51	336	376	0.25	1.09	0.84	121	47	139.4	1.4

Table 10. Rock-Eval Results for Duvernay Core Samples: Well 100/05-11-060-18W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-594258	3048.27	1.94	0.90	0.68	0.43	307	347	0.25	0.61	0.36	148	70	318.0	5.4
C-594259	3049.22	0.58	0.53	0.52	0.53	307	347	0.11	0.34	0.23	156	156	170.6	4.3
C-594260	3050.37	0.82	0.97	0.46	0.43	310	350	0.17	0.59	0.42	164	73	139.0	2.4
C-594261	3051.22	2.37	1.61	0.60	0.33	309	349	0.35	1.37	1.02	118	24	173.0	1.9
C-594262	3052.26	2.10	0.72	0.74	0.23	448	488	0.25	1.14	0.89	63	20	184.2	5.8
C-594263	3053.05	4.90	2.36	0.67	0.26	462	502	0.62	2.93	2.31	81	9	167.2	3.2
C-594264	3054.08	5.69	4.07	0.58	0.26	462	502	0.83	4.39	3.56	93	6	129.6	1.7
C-594265	3055.13	7.20	2.01	0.78	0.30	453	493	0.78	2.41	1.63	83	12	298.8	3.7
C-594266	3056.20	6.58	3.11	0.68	0.31	462	502	0.82	3.31	2.49	94	9	198.8	2.7
C-594267	3057.05	3.87	4.82	0.45	0.33	465	505	0.74	4.77	4.03	101	7	81.1	3.2
C-594268	3058.07	3.73	3.02	0.55	0.26	463	503	0.58	3.24	2.66	93	8	115.1	2.1
C-594269	3059.14	3.66	3.99	0.48	0.32	460	500	0.65	4.63	3.98	86	7	79.0	2.4
C-594270	3060.10	7.30	2.01	0.78	0.26	456	496	0.79	2.35	1.56	86	11	310.6	2.9
C-594271	3061.07	4.05	4.19	0.49	0.32	467	507	0.71	4.95	4.24	85	6	81.8	3.7
C-594272	3062.09	7.12	6.11	0.54	0.32	467	507	1.12	6.03	4.91	101	5	118.1	3.0
C-594273	3063.05	7.29	3.99	0.65	0.48	465	505	0.96	4.30	3.34	93	11	169.5	2.4
C-594274	3063.95	6.02	3.91	0.61	0.26	463	503	0.84	3.93	3.09	99	7	153.2	2.2
C-594275	3064.93	6.91	3.64	0.66	0.32	463	503	0.90	4.06	3.16	90	8	170.2	2.1
C-594276	3066.02	4.22	3.98	0.51	0.38	463	503	0.70	4.02	3.32	99	9	105.0	3.4
C-594277	3067.05	4.70	3.20	0.59	0.35	460	500	0.68	3.06	2.38	105	11	153.6	3.1
C-594278	3068.17	4.28	2.89	0.60	0.37	456	496	0.61	2.72	2.11	106	14	157.4	4.4
C-594279	3069.14	3.48	2.47	0.58	0.42	458	498	0.51	2.45	1.94	101	17	142.0	4.1
C-594280	3070.19	3.60	2.95	0.55	0.39	465	505	0.57	3.04	2.47	97	13	118.4	5.2
C-594281	3071.17	5.69	5.18	0.52	0.32	466	506	0.92	5.19	4.27	100	6	109.6	2.6
C-594282	3072.20	5.31	5.51	0.49	0.32	467	507	0.92	5.57	4.65	99	6	95.3	2.6
C-594283	3073.18	7.95	5.72	0.58	0.33	467	507	1.16	5.69	4.53	101	6	139.7	2.7
C-594284	3074.15	6.50	5.61	0.54	0.35	467	507	1.03	5.60	4.57	100	6	116.1	2.8
C-594285	3075.12	4.35	5.31	0.45	0.33	469	509	0.83	5.66	4.83	94	6	76.9	3.4
C-594286	3076.20	6.05	5.77	0.51	0.32	468	508	1.00	5.47	4.47	105	6	110.6	3.5
C-594287	3077.18	5.42	6.07	0.47	0.31	469	509	0.98	6.10	5.12	100	5	88.9	2.8
C-594288	3078.17	4.46	5.21	0.46	0.32	466	506	0.83	5.14	4.31	101	6	86.8	3.1
C-594289	3079.42	3.90	5.95	0.40	0.33	470	510	0.84	6.34	5.50	94	5	61.5	3.3
C-594290	3080.32	1.34	0.39	0.77	0.21	440	480	0.16	0.55	0.39	71	38	243.6	9.6
C-594291	3081.18	4.56	2.73	0.63	0.32	464	504	0.62	3.06	2.44	89	10	149.0	5.3
C-594292	3082.15	4.15	3.15	0.57	0.30	465	505	0.62	3.16	2.54	100	9	131.3	2.6
C-594293	3083.18	12.73	5.84	0.69	0.39	464	504	1.57	5.74	4.17	102	7	221.8	1.9
C-594294	3084.17	6.24	4.45	0.58	0.36	464	504	0.91	4.47	3.56	100	8	139.6	2.6
C-594295	3085.05	1.76	1.84	0.49	0.31	467	507	0.32	2.23	1.91	83	14	78.9	6.1

Table 11. Rock-Eval Results for Duvernay Core Samples: Well 100/07-22-069-21W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-594296	2690.80	0.35	1.70	0.17	0.60	447	487	0.19	0.61	0.42	279	98	57.4	2.5
C-594297	2691.80	0.27	0.65	0.30	0.70	445	485	0.10	0.42	0.32	155	167	64.3	3.4
C-594298	2693.00	0.46	2.18	0.18	0.49	447	487	0.24	0.76	0.52	287	64	60.5	1.3
C-594299	2694.15	0.34	0.97	0.26	0.59	445	485	0.13	0.46	0.33	211	128	73.9	2.8
C-594300	2695.30	1.14	3.96	0.22	0.37	446	486	0.44	1.48	1.04	268	25	77.0	1.3
C-594301	2696.20	1.93	7.94	0.20	0.31	447	487	0.84	2.59	1.75	307	12	74.5	0.8
C-594302	2697.35	2.11	6.06	0.26	0.38	446	486	0.70	2.06	1.36	294	18	102.4	3.5
C-594303	2698.30	0.60	1.57	0.28	0.21	444	484	0.19	0.60	0.41	262	35	100.0	8.5
C-594304	2699.55	3.12	12.12	0.20	0.23	444	484	1.29	3.65	2.36	332	6	85.5	1.0
C-594305	2700.35	3.34	19.20	0.15	0.33	443	483	1.91	5.31	3.40	362	6	62.9	1.5
C-594306	2701.55	3.35	11.31	0.23	0.20	446	486	1.24	3.51	2.27	322	6	95.4	1.2
C-594307	2702.70	2.69	7.67	0.26	0.22	448	488	0.89	2.55	1.66	301	9	105.5	0.9
C-594308	2703.75	3.40	11.26	0.23	0.22	445	485	1.23	3.31	2.08	340	7	102.7	1.5
C-594309	2704.86	1.44	1.23	0.54	0.20	422	462	0.24	0.45	0.21	273	44	320.0	10.2
C-594310	2705.80	0.23	0.48	0.32	0.17	442	482	0.07	0.24	0.17	200	71	95.8	10.2
C-594311	2707.10	0.33	1.14	0.22	0.33	446	486	0.14	0.45	0.31	253	73	73.3	8.7
C-594312	2707.80	0.45	1.59	0.22	0.37	448	488	0.19	0.72	0.53	221	51	62.5	6.6
C-594313	2708.40	0.26	0.84	0.24	0.39	448	488	0.11	0.36	0.25	233	108	72.2	8.2

Table 12. Rock-Eval Results for Duvernay Core Samples: Well 100/08-32-046-09W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-594314	3098.35	0.67	0.22	0.75	0.61	300	340	0.09	0.36	0.27	61	169	186.1	5.7
C-594315	3099.55	0.20	0.09	0.68	0.35	428	468	0.04	0.10	0.06	90	350	200.0	9.1
C-594316	3100.95	0.51	0.35	0.59	0.58	337	377	0.09	0.21	0.12	167	276	242.9	4.6
C-594317	3102.00	0.52	0.30	0.63	0.59	342	382	0.09	0.31	0.22	97	190	167.7	4.2
C-594318	3103.03	1.59	0.95	0.63	0.47	379	419	0.23	0.48	0.25	198	98	331.3	3.5
C-594319	3104.00	0.53	0.20	0.73	0.27	440	480	0.07	0.15	0.08	133	180	353.3	9.8
C-594320	3105.00	0.29	0.34	0.46	0.54	444	484	0.07	0.29	0.22	117	186	100.0	8.2
C-594321	3106.00	0.39	0.22	0.64	0.49	430	470	0.07	0.18	0.11	122	272	216.7	6.6
C-594322	3107.07	1.99	2.64	0.43	0.53	450	490	0.41	1.36	0.95	194	39	146.3	5.9
C-594323	3108.09	1.38	1.66	0.45	0.49	450	490	0.27	1.06	0.79	157	46	130.2	5.2
C-594324	3108.70	6.08	7.21	0.46	0.45	452	492	1.13	4.55	3.42	158	10	133.6	1.7
C-594325	3109.75	7.23	9.94	0.42	0.29	453	493	1.44	5.79	4.35	172	5	124.9	1.2
C-594326	3110.97	3.69	3.60	0.51	0.46	453	493	0.63	2.11	1.48	171	22	174.9	6.1
C-594327	3111.92	4.20	4.81	0.47	0.35	455	495	0.77	2.85	2.08	169	12	147.4	2.4
C-594328	3113.05	3.08	3.32	0.48	0.43	450	490	0.55	2.02	1.47	164	21	152.5	3.1
C-594329	3114.20	2.65	2.50	0.51	0.39	450	490	0.45	1.48	1.03	169	26	179.1	2.7
C-594330	3115.10	1.23	1.56	0.44	0.45	447	487	0.25	0.96	0.71	162	47	128.1	2.1
C-594331	3116.05	1.47	1.65	0.47	0.48	448	488	0.28	1.04	0.76	159	46	141.3	2.5
C-594332	3117.05	5.72	6.58	0.47	0.40	454	494	1.04	3.89	2.85	169	10	147.0	4.2
C-594333	3118.04	1.00	0.95	0.51	0.40	445	485	0.18	0.61	0.43	156	66	163.9	7.2
C-594334	3119.03	0.45	0.29	0.61	0.34	438	478	0.07	0.24	0.17	121	142	187.5	9.6
C-594335	3120.37	1.46	1.12	0.57	0.51	442	482	0.23	0.54	0.31	207	94	270.4	8.8
C-594336	3121.37	1.23	0.58	0.68	0.49	392	432	0.17	0.42	0.25	138	117	292.9	8.9
C-594337	3122.38	0.54	0.22	0.71	0.30	445	485	0.07	0.18	0.11	122	167	300.0	9.8
C-594338	3123.42	0.62	0.31	0.67	0.34	440	480	0.09	0.21	0.12	148	162	295.2	9.5
C-594339	3124.32	0.99	0.55	0.64	0.40	394	434	0.14	0.29	0.15	190	138	341.4	9.9
C-594340	3125.50	1.40	0.74	0.65	0.49	441	481	0.20	0.38	0.18	195	129	368.4	9.5
C-594341	3126.30	3.36	4.41	0.43	0.43	449	489	0.67	2.54	1.87	174	17	132.3	5.2
C-594342	3127.15	4.98	12.32	0.29	0.40	456	496	1.47	7.82	6.35	158	5	63.7	2.9
C-594343	3128.08	1.12	1.05	0.52	0.47	446	486	0.20	0.59	0.39	178	80	189.8	5.2
C-594344	3129.33	10.31	11.93	0.46	0.49	456	496	1.87	7.18	5.31	166	7	143.6	1.8
C-594345	3130.72	0.27	0.17	0.62	0.27	446	486	0.05	0.12	0.07	142	225	225.0	10.2
C-594346	3131.40	3.96	5.87	0.40	0.43	456	496	0.84	4.08	3.24	144	11	97.1	2.2
C-594347	3131.70	2.16	2.43	0.47	0.51	449	489	0.40	1.39	0.99	175	37	155.4	3.9
C-594348	3133.95	4.18	4.17	0.50	0.46	452	492	0.72	2.47	1.75	169	19	169.2	5.2
C-594349	3135.02	4.07	5.82	0.41	0.43	453	493	0.85	3.29	2.44	177	13	123.7	3.8
C-594350	3136.07	6.37	9.19	0.41	0.45	455	495	1.33	5.31	3.98	173	8	120.0	2.8
C-594351	3137.10	8.55	9.33	0.48	0.47	454	494	1.51	5.09	3.58	183	9	168.0	3.4
C-594352	3138.03	11.45	11.48	0.50	0.48	454	494	1.93	6.45	4.52	178	7	177.5	1.9
C-594353	3139.10	8.04	11.23	0.42	0.46	456	496	1.63	6.48	4.85	173	7	124.1	3.4
C-594354	3140.23	2.46	2.66	0.48	0.52	449	489	0.44	1.34	0.90	199	39	183.6	6.9
C-594355	3141.38	2.12	2.18	0.49	0.39	450	490	0.37	1.72	1.35	127	23	123.3	7.9
C-594356	3142.45	6.65	9.79	0.40	0.47	455	495	1.39	5.77	4.38	170	8	115.3	3.1
C-594357	3143.20	6.65	7.10	0.48	0.39	452	492	1.16	4.40	3.24	161	9	151.1	1.2
C-594358	3144.77	0.36	0.33	0.52	0.53	315	355	0.08	0.34	0.26	97	156	105.9	1.5
C-594359	3145.70	0.88	0.63	0.58	0.59	328	368	0.15	0.49	0.34	129	120	179.6	1.9
C-594360	3146.60	1.06	0.86	0.55	0.60	349	389	0.18	0.53	0.35	162	113	200.0	1.4
C-594361	3147.70	0.54	0.50	0.52	0.58	344	384	0.11	0.30	0.19	167	193	180.0	1.5
C-594362	3148.86	0.54	0.55	0.49	0.57	430	470	0.11	0.40	0.29	138	143	135.0	1.5

Table 13. Rock-Eval Results for Duvernay Core Samples: Well 100/10-33-056-22W5

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-594363	4006.00	0.08	0.05	0.63	0.58	293	333	0.03	0.58	0.55	9	100	13.8	2.8
C-594364	4008.00	0.13	0.07	0.64	0.50	293	333	0.03	0.31	0.28	23	161	41.9	3.0
C-594365	4010.00	0.20	0.09	0.68	0.57	296	336	0.04	1.04	1.00	9	55	19.2	2.3
C-594366	4011.00	0.12	0.06	0.68	0.60	289	329	0.03	1.09	1.06	6	55	11.0	4.5
C-594367	4012.06	0.30	0.14	0.68	0.67	293	333	0.06	1.85	1.79	8	36	16.2	4.3
C-594368	4013.26	0.14	0.10	0.59	0.59	288	328	0.04	2.21	2.17	5	27	6.3	5.0
C-594369	4014.28	0.14	0.13	0.52	0.60	294	334	0.04	2.98	2.94	4	20	4.7	4.0
C-594370	4015.15	0.16	0.15	0.51	0.52	295	335	0.04	2.24	2.20	7	23	7.1	3.8
C-594371	4016.20	0.10	0.07	0.60	0.40	293	333	0.03	2.34	2.31	3	17	4.3	3.8
C-594372	4017.15	0.12	0.09	0.57	0.50	294	334	0.03	1.03	1.00	9	49	11.7	2.3
C-594373	4018.20	0.37	0.26	0.59	0.57	291	331	0.07	4.21	4.14	6	14	8.8	3.4
C-594374	4019.26	0.29	0.28	0.51	0.60	605	645	0.07	3.43	3.36	8	17	8.5	6.0
C-594375	4020.45	0.23	0.18	0.56	0.57	604	644	0.06	3.51	3.45	5	16	6.6	3.8
C-594376	4021.55	0.26	0.16	0.62	0.52	293	333	0.05	2.67	2.62	6	19	9.7	3.9
C-594377	4022.65	0.34	0.27	0.56	0.42	292	332	0.07	4.21	4.14	6	10	8.1	3.0
C-594378	4023.65	0.54	0.36	0.60	0.55	294	334	0.10	4.05	3.95	9	14	13.3	3.4
C-594379	4024.70	0.29	0.21	0.58	0.50	602	642	0.06	3.88	3.82	5	13	7.5	3.4
C-594380	4025.55	0.27	0.19	0.60	0.41	294	334	0.05	3.24	3.19	6	13	8.3	2.6
C-594381	4026.60	0.13	0.14	0.48	0.45	602	642	0.04	2.29	2.25	6	20	5.7	3.9
C-594382	4027.55	0.16	0.16	0.50	0.49	600	640	0.04	2.34	2.30	7	21	6.8	3.5
C-594383	4028.64	0.46	0.22	0.68	0.49	293	333	0.08	2.33	2.25	9	21	19.7	5.4
C-594384	4029.60	0.30	0.20	0.59	0.55	295	335	0.06	2.32	2.26	9	24	12.9	3.6
C-594385	4030.71	0.38	0.22	0.63	0.55	293	333	0.07	2.72	2.65	8	20	14.0	4.1
C-594386	4031.82	0.56	0.25	0.69	0.55	293	333	0.09	2.44	2.35	10	23	23.0	4.8
C-594387	4032.68	0.33	0.19	0.64	0.58	290	330	0.06	2.04	1.98	9	28	16.2	4.3
C-594388	4033.65	0.18	0.13	0.58	0.62	293	333	0.05	1.63	1.58	8	38	11.0	2.1
C-594389	4034.58	0.34	0.20	0.63	0.51	296	336	0.06	1.73	1.67	12	29	19.7	2.3
C-594390	4035.39	0.15	0.18	0.46	0.54	602	642	0.05	2.48	2.43	7	22	6.0	2.5
C-594391	4036.61	0.04	0.11	0.29	0.49	602	642	0.03	2.72	2.69	4	18	1.5	1.8
C-594392	4037.65	0.26	0.23	0.53	0.53	296	336	0.06	2.70	2.64	9	20	9.6	1.4
C-594393	4039.00	0.51	0.27	0.65	0.46	294	334	0.08	3.06	2.98	9	15	16.7	4.8
C-594394	4040.00	0.38	0.22	0.63	0.50	291	331	0.07	3.06	2.99	7	16	12.4	4.6
C-594395	4040.95	0.47	0.22	0.68	0.53	289	329	0.08	4.35	4.27	5	12	10.8	4.0
C-594396	4041.81	0.22	0.15	0.59	0.54	604	644	0.05	3.82	3.77	4	14	5.8	2.7
C-594397	4042.79	0.24	0.14	0.63	0.46	289	329	0.05	3.51	3.46	4	13	6.8	2.9
C-594398	4043.50	0.48	0.26	0.65	0.43	605	645	0.08	3.75	3.67	7	11	12.8	2.9
C-594399	4044.71	0.23	0.20	0.53	0.55	292	332	0.06	3.51	3.45	6	16	6.6	3.9
C-594400	4045.60	0.20	0.22	0.48	0.56	292	332	0.06	3.11	3.05	7	18	6.4	4.4

Table 13. (Continued)

Sample ID	Depth (m)	S1	S2	PI	S3	Tmax	Tpeak	PC(%)	TOC	RC%	HI	OI	OSI	MinC%
C-594401	4046.50	0.48	0.27	0.64	0.52	293	333	0.08	3.95	3.87	7	13	12.2	3.7
C-594402	4047.52	0.32	0.20	0.61	0.56	292	332	0.06	3.10	3.04	6	18	10.3	3.0
C-594403	4048.55	0.23	0.22	0.51	0.50	602	642	0.06	4.18	4.12	5	12	5.5	3.1
C-594404	4049.47	0.53	0.36	0.60	0.59	299	339	0.10	3.40	3.30	11	17	15.6	3.0
C-594405	4050.49	0.15	0.11	0.57	0.59	605	645	0.04	2.95	2.91	4	20	5.1	2.5
C-594406	4051.40	0.15	0.12	0.55	0.42	604	644	0.04	3.03	2.99	4	14	5.0	3.0
C-594407	4052.79	0.20	0.15	0.56	0.53	290	330	0.05	3.00	2.95	5	18	6.7	2.3
C-594408	4054.40	0.06	0.06	0.48	0.42	599	639	0.03	1.94	1.91	3	22	3.1	4.4
C-594409	4055.50	0.43	0.31	0.59	0.60	294	334	0.09	4.77	4.68	6	13	9.0	3.7
C-594410	4056.47	0.40	0.24	0.63	0.61	292	332	0.08	4.73	4.65	5	13	8.5	3.4
C-594411	4057.43	0.16	0.21	0.44	0.49	602	642	0.05	4.03	3.98	5	12	4.0	3.4
C-594412	4058.47	0.29	0.21	0.58	0.63	292	332	0.07	4.77	4.70	4	13	6.1	3.2
C-594413	4059.58	0.42	0.34	0.55	0.56	294	334	0.09	4.86	4.77	7	12	8.6	3.4
C-594414	4060.79	0.53	0.37	0.59	0.53	294	334	0.10	4.65	4.55	8	11	11.4	2.7
C-594415	4061.81	0.68	0.16	0.81	0.49	294	334	0.09	1.64	1.55	10	30	41.5	6.2
C-594416	4062.60	0.33	0.39	0.46	0.53	605	645	0.08	5.29	5.21	7	10	6.2	4.0
C-594417	4063.51	0.12	0.24	0.32	0.71	604	644	0.06	6.74	6.68	4	11	1.8	3.4
C-594418	4064.61	0.51	0.30	0.63	0.48	299	339	0.09	3.03	2.94	10	16	16.8	3.4
C-594419	4065.57	0.37	0.24	0.60	0.45	292	332	0.07	2.39	2.32	10	19	15.5	3.6
C-594420	4066.68	0.26	0.24	0.52	0.55	602	642	0.06	4.76	4.70	5	12	5.5	3.6
C-594421	4067.64	0.35	0.21	0.63	0.39	604	644	0.06	2.74	2.68	8	14	12.8	4.8
C-594422	4068.54	0.71	0.34	0.68	0.37	293	333	0.10	3.25	3.15	10	11	21.8	3.2
C-594423	4069.74	0.16	0.09	0.64	0.36	286	326	0.03	0.92	0.89	10	39	17.4	8.3
C-594424	4070.65	0.08	0.09	0.49	0.52	596	636	0.03	1.51	1.48	6	34	5.3	5.3
C-594425	4071.78	0.10	0.09	0.53	0.55	598	638	0.03	1.68	1.65	5	33	6.0	5.5
C-594426	4072.65	0.07	0.04	0.62	0.36	598	638	0.02	1.51	1.49	3	24	4.6	5.9
C-594427	4073.80	0.25	0.19	0.56	0.46	599	639	0.06	3.52	3.46	5	13	7.1	2.0
C-594428	4074.56	1.73	1.15	0.60	0.52	297	337	0.26	5.63	5.37	20	9	30.7	4.7
C-594429	4075.88	0.82	0.41	0.67	0.40	296	336	0.12	2.86	2.74	14	14	28.7	7.4
C-594430	4076.90	0.33	0.33	0.50	0.50	296	336	0.07	3.76	3.69	9	13	8.8	7.1
C-594431	4077.68	0.36	0.23	0.60	0.42	294	334	0.07	3.00	2.93	8	14	12.0	7.8
C-594432	4078.85	0.12	0.09	0.57	0.44	597	637	0.03	1.71	1.68	5	26	7.0	3.5
C-594433	4079.80	0.12	0.11	0.51	0.45	600	640	0.03	2.26	2.23	5	20	5.3	2.8
C-594434	4081.21	0.36	0.12	0.75	0.34	297	337	0.05	0.85	0.80	14	40	42.4	7.7
C-594435	4082.42	0.12	0.13	0.49	0.54	588	628	0.04	2.27	2.23	6	24	5.3	3.8
C-594436	4083.16	0.13	0.11	0.54	0.51	302	342	0.04	2.16	2.12	5	24	6.0	3.9
C-594437	4084.36	0.15	0.09	0.64	0.39	299	339	0.03	0.93	0.90	10	42	16.1	6.6
C-594438	4085.66	0.19	0.11	0.63	0.45	293	333	0.04	1.74	1.70	6	26	10.9	5.1

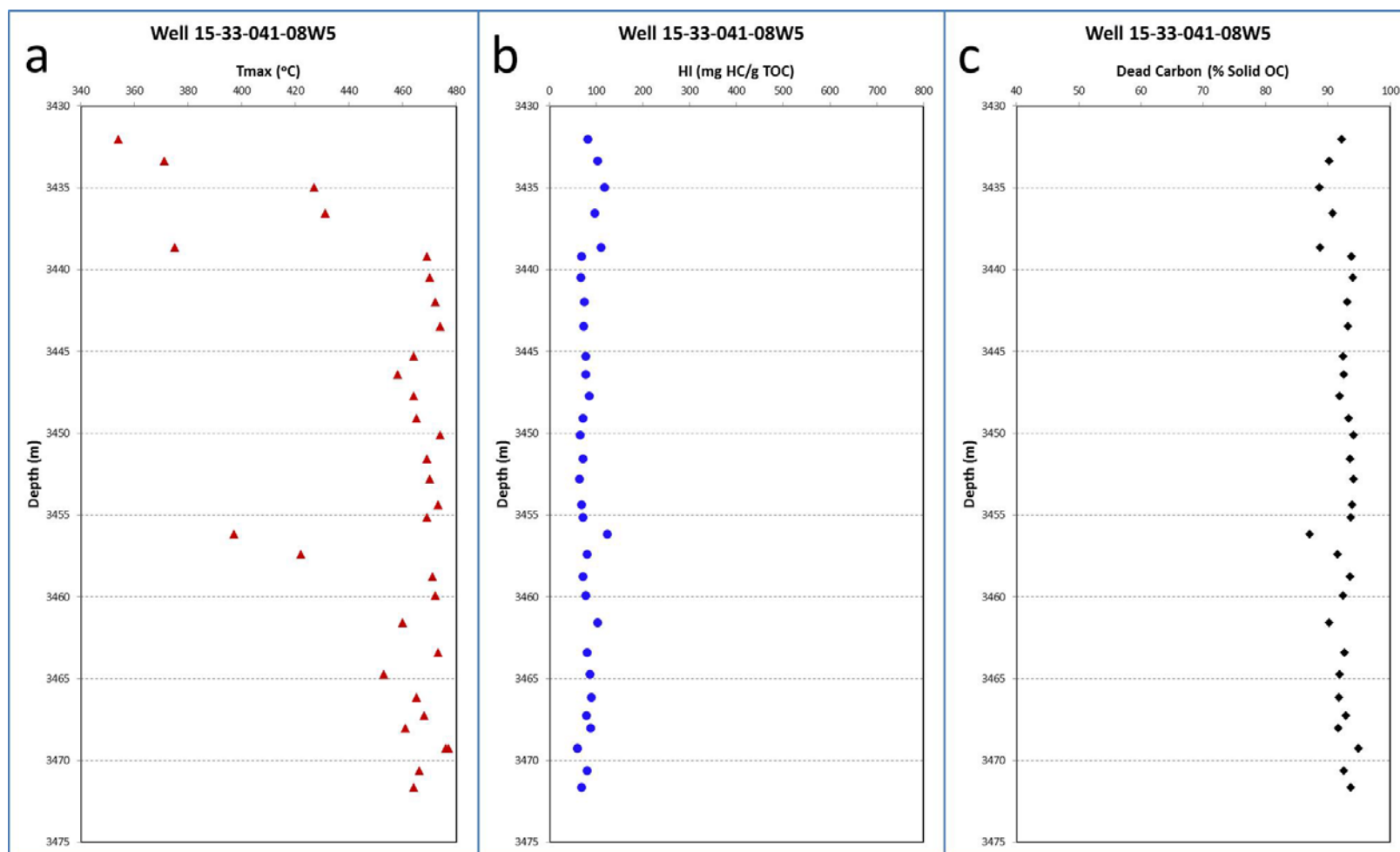


Figure 2. Depth profiles of Rock-Eval maturity parameters for the Duvernay Formation shale core samples from well 15-33-041-08W5

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APPENDIX A:

(1) Cross plots of Rock-Eval analysis HI vs Tmax

(2) Cross plots of Rock-Eval analysis HI vs OI

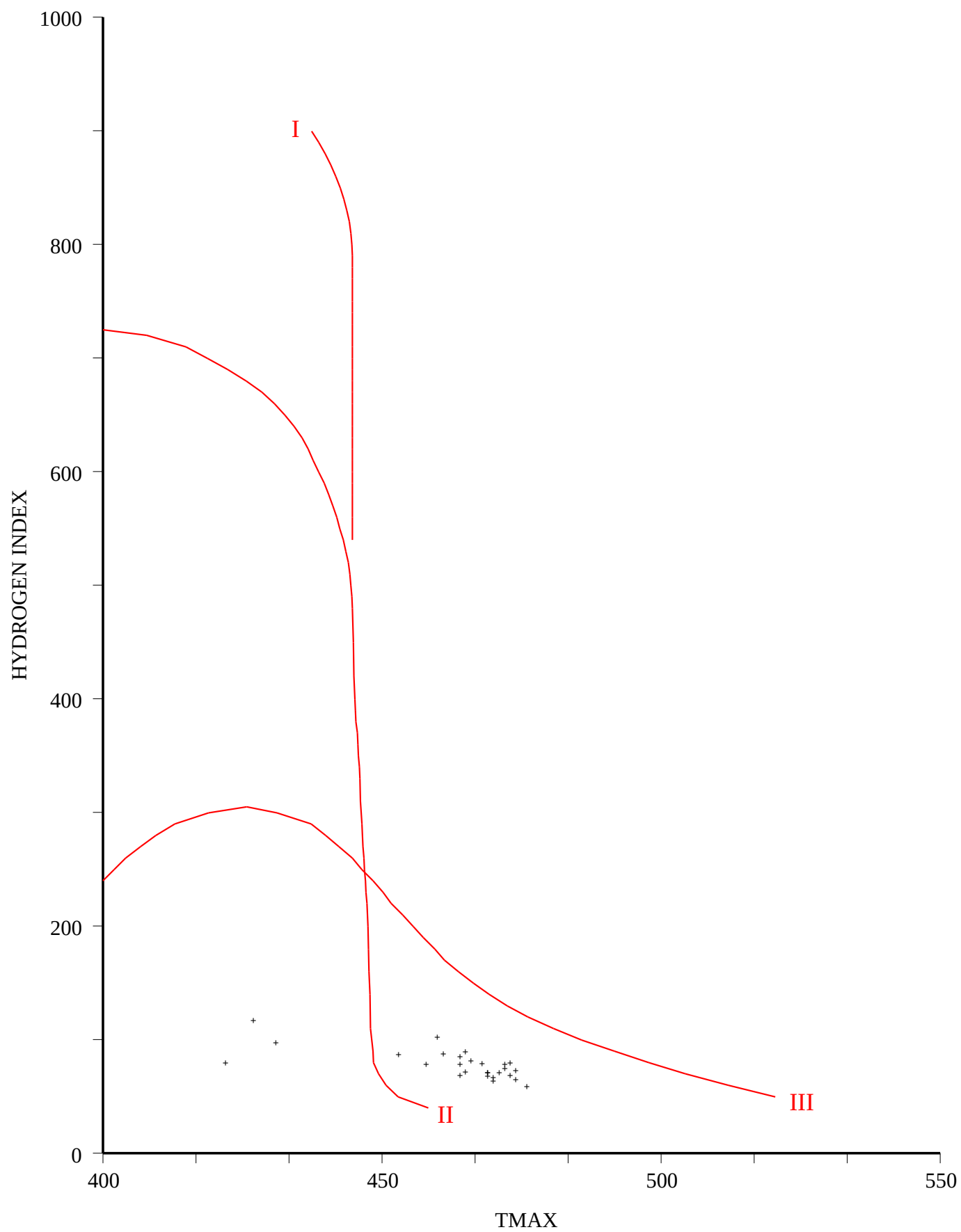
(3) Depth profiles of selected Rock-Eval parameters

for

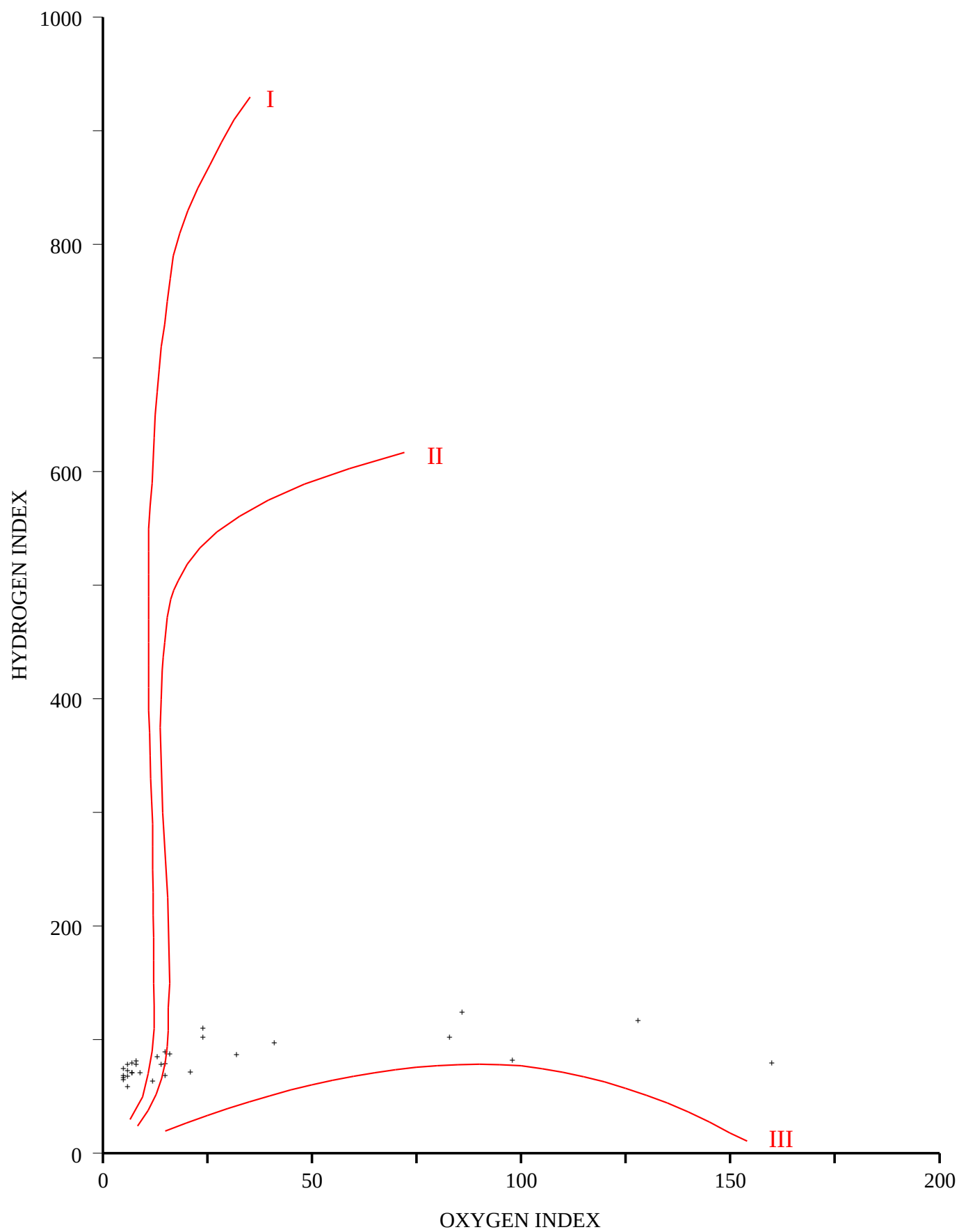
the Duvernay Formation Shale Cores

Western Canada Sedimentary Basin

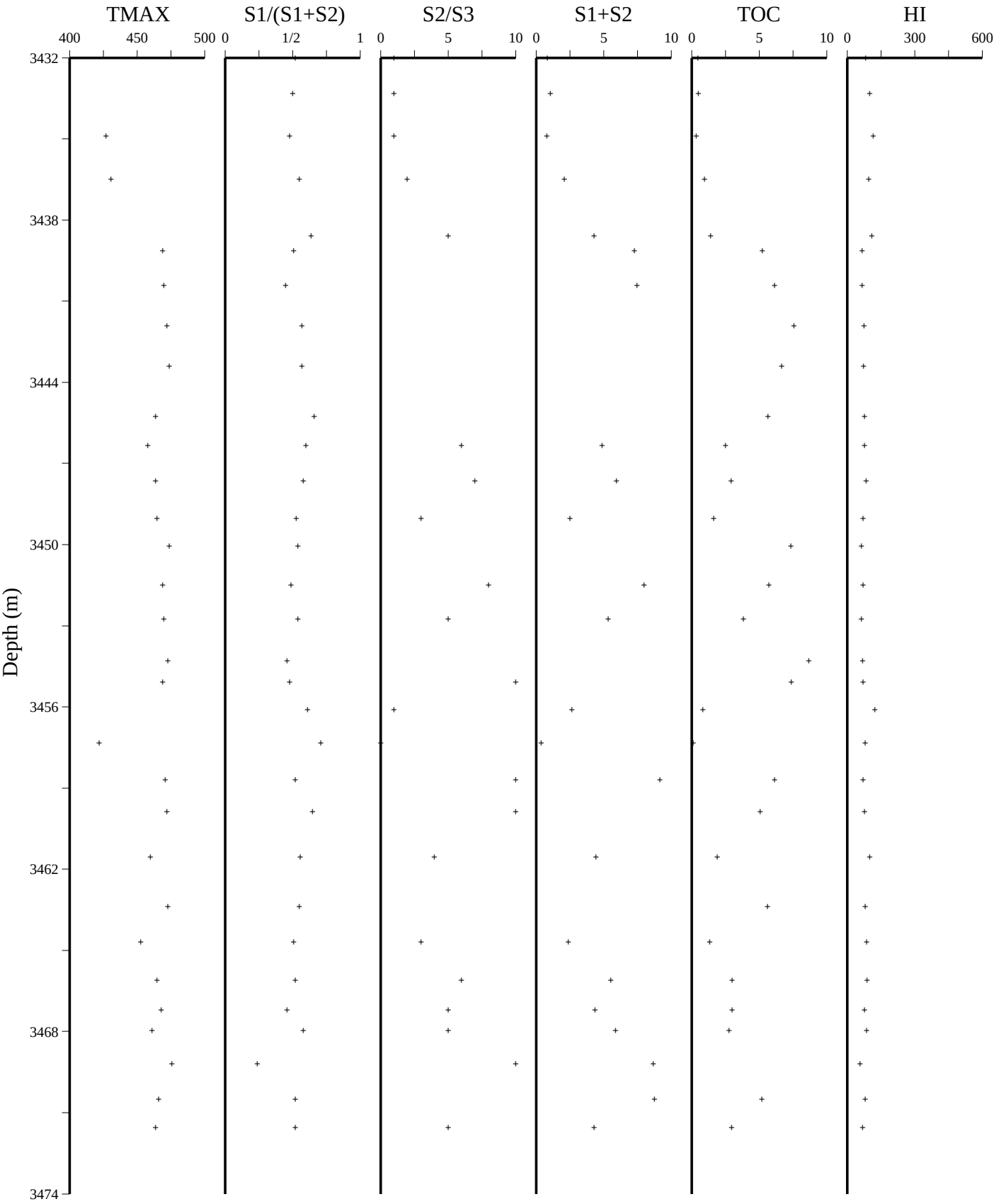
Eca HZ Ferrier 15-33-41-8



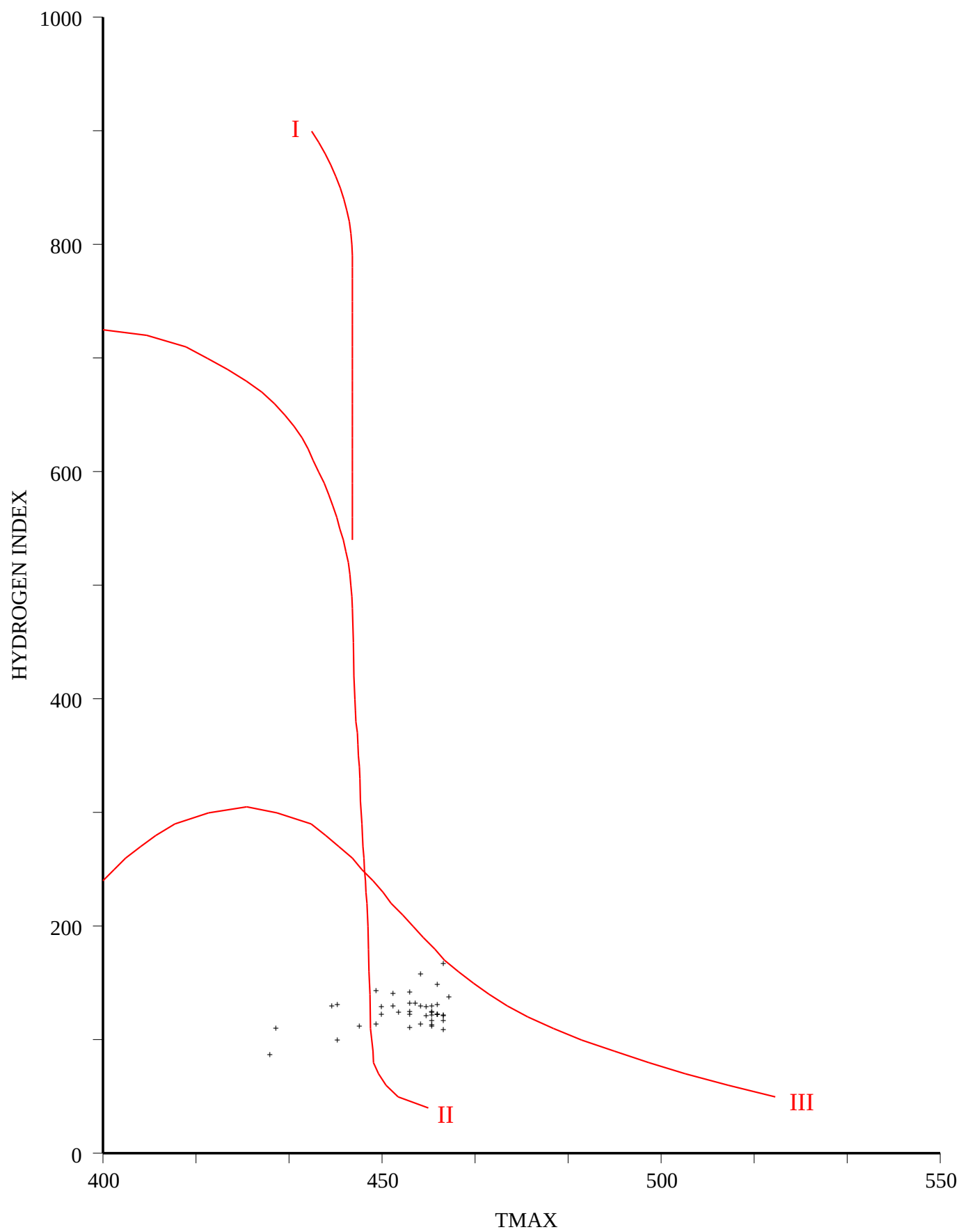
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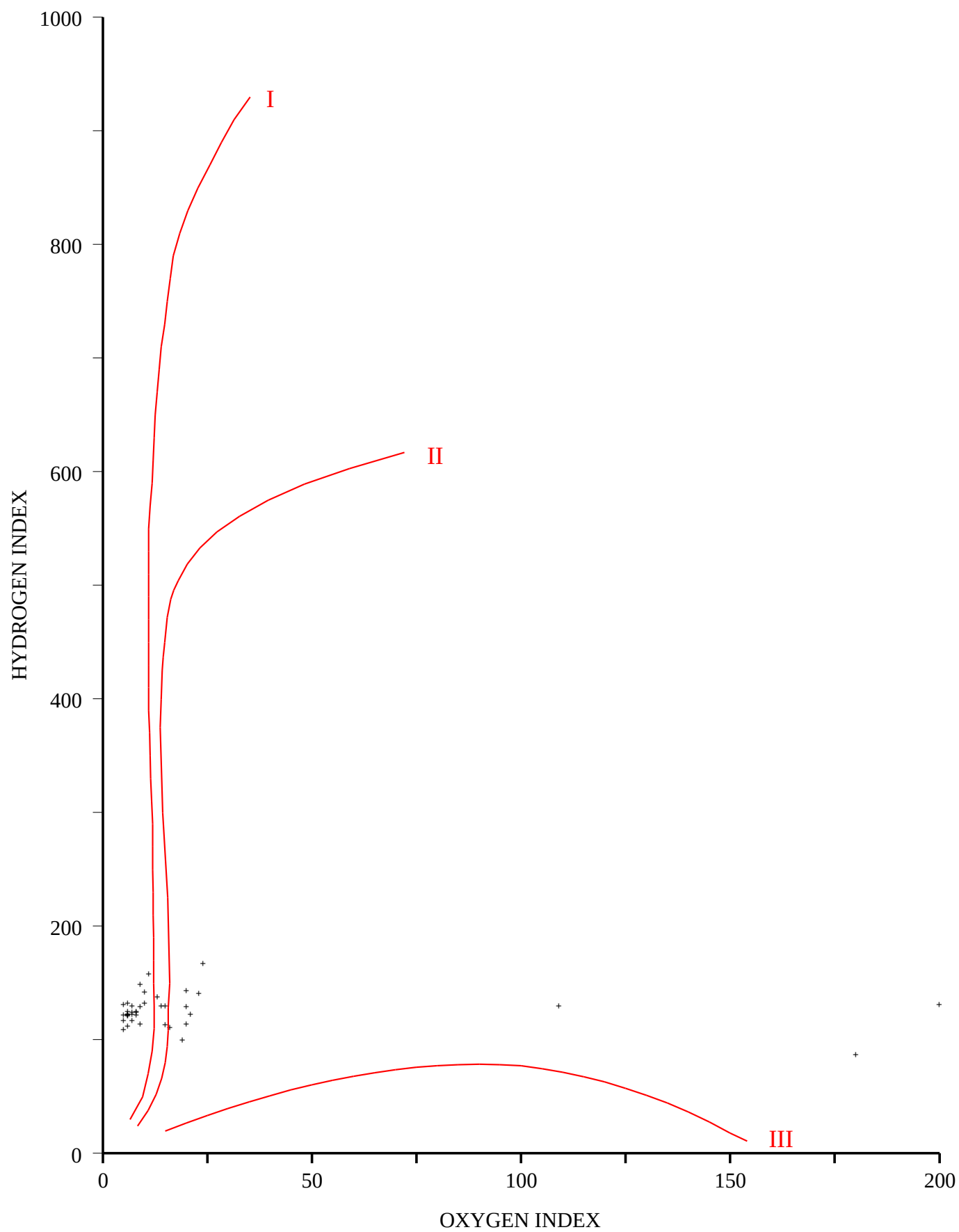
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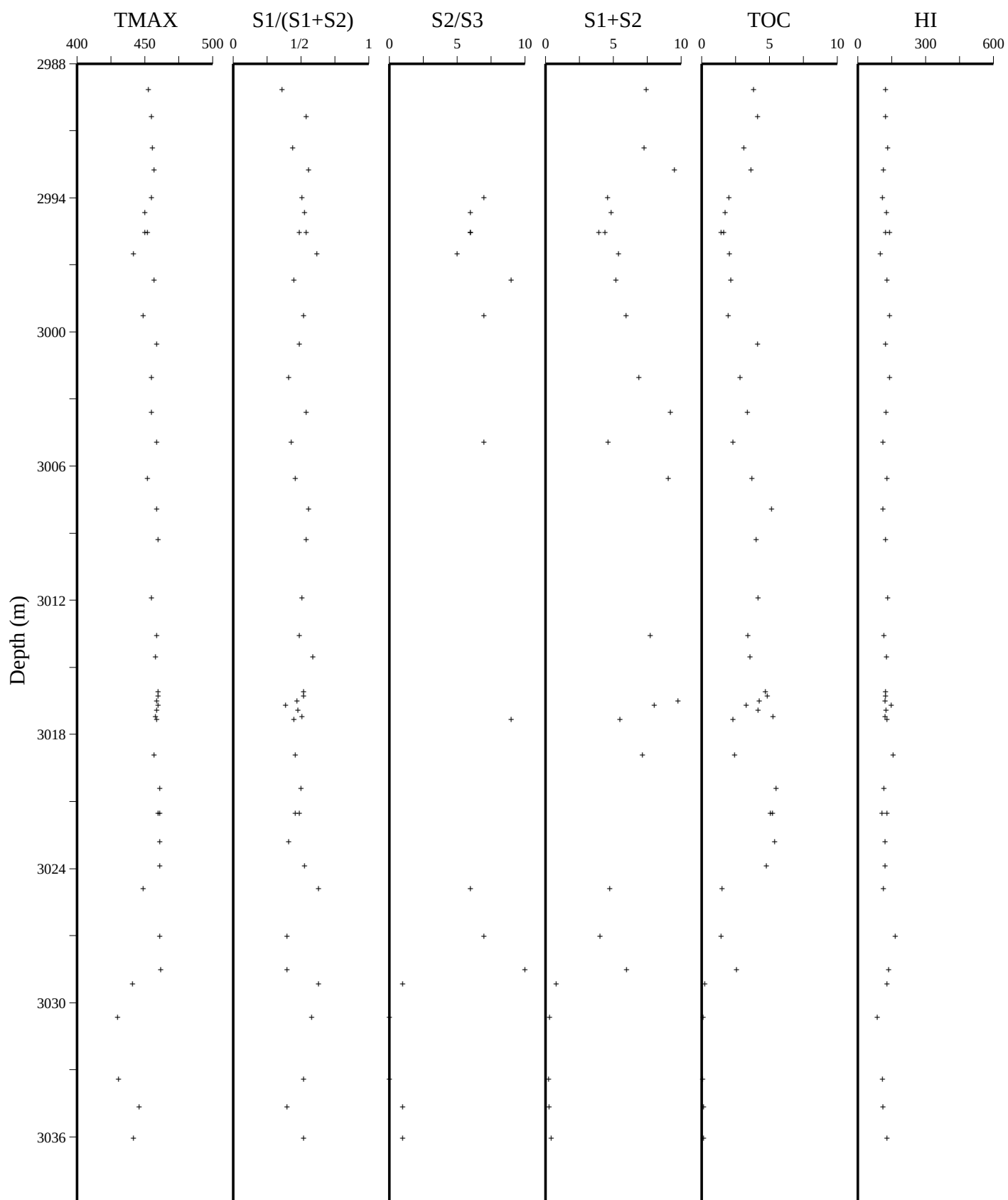
Chevron HZ Foxck 8-15-62-18



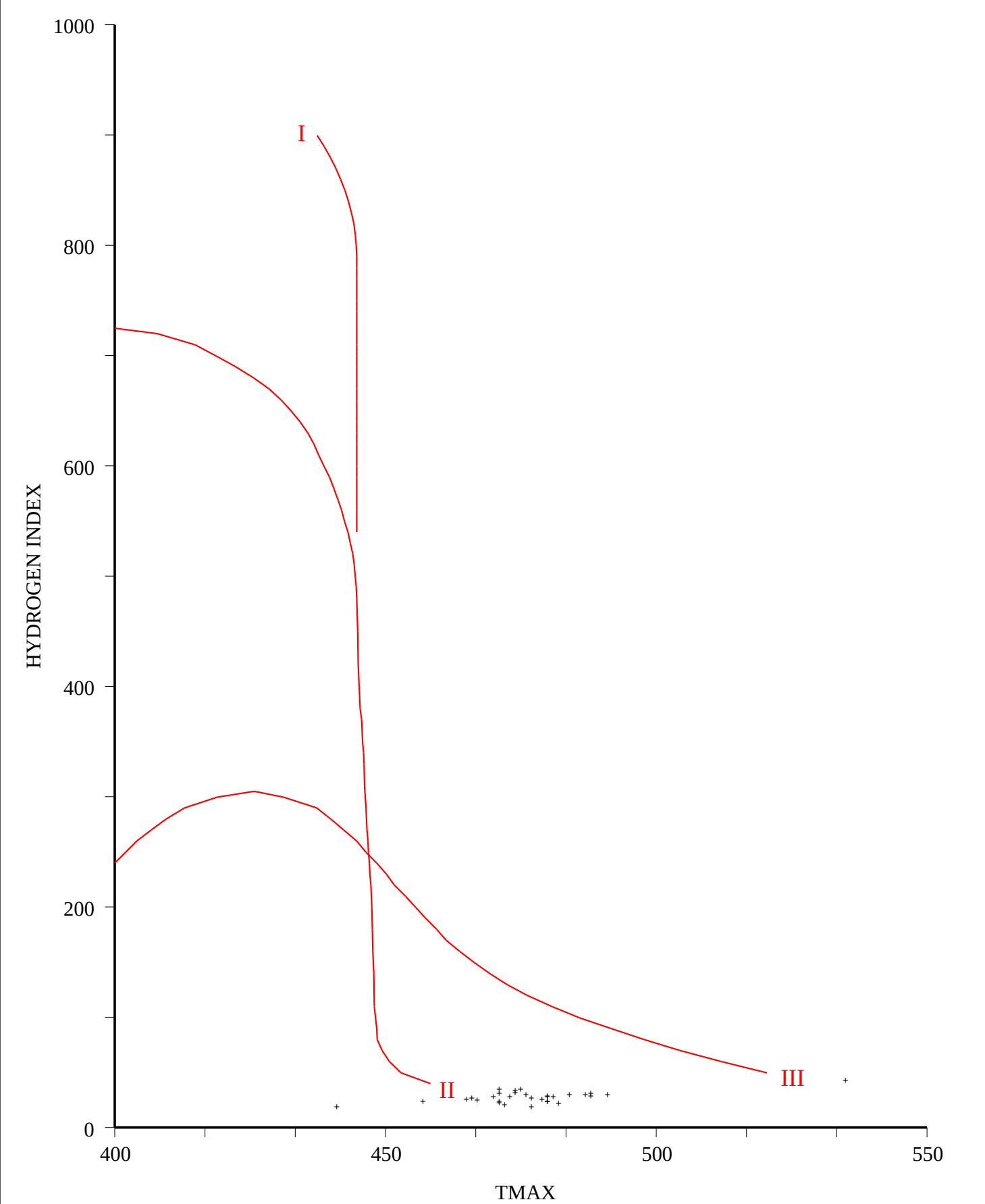
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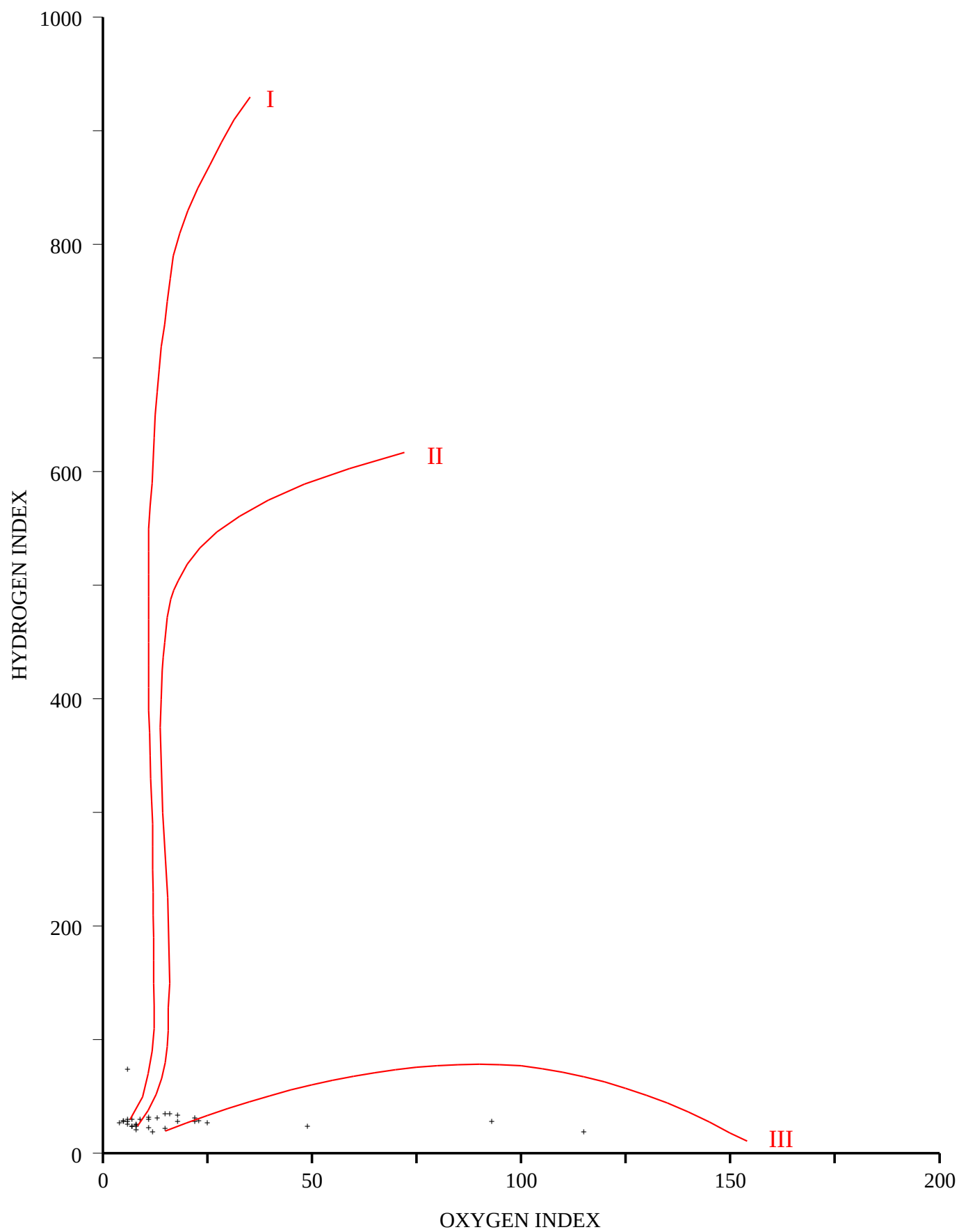
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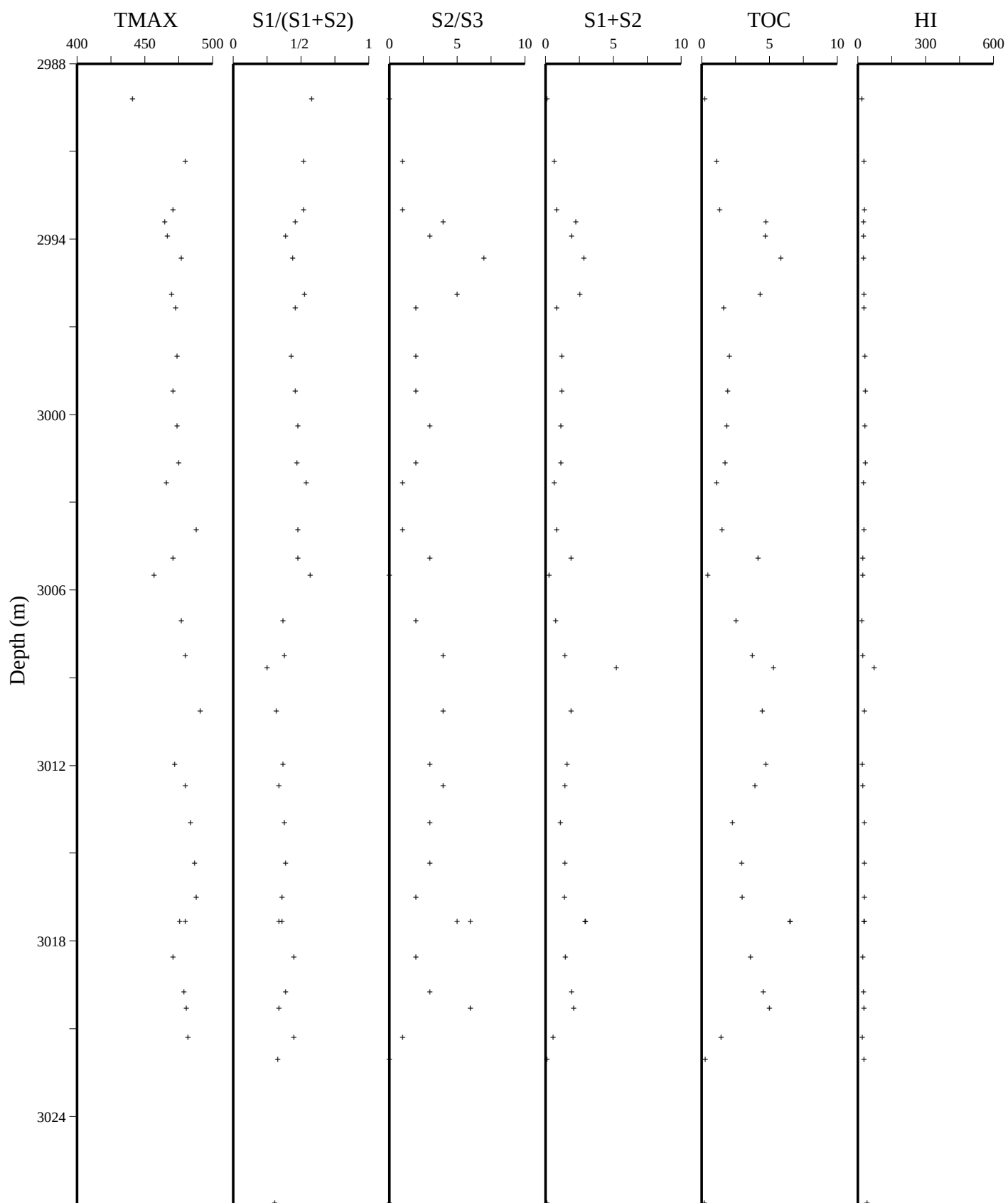
Penn West Pembina 10-17-45-6



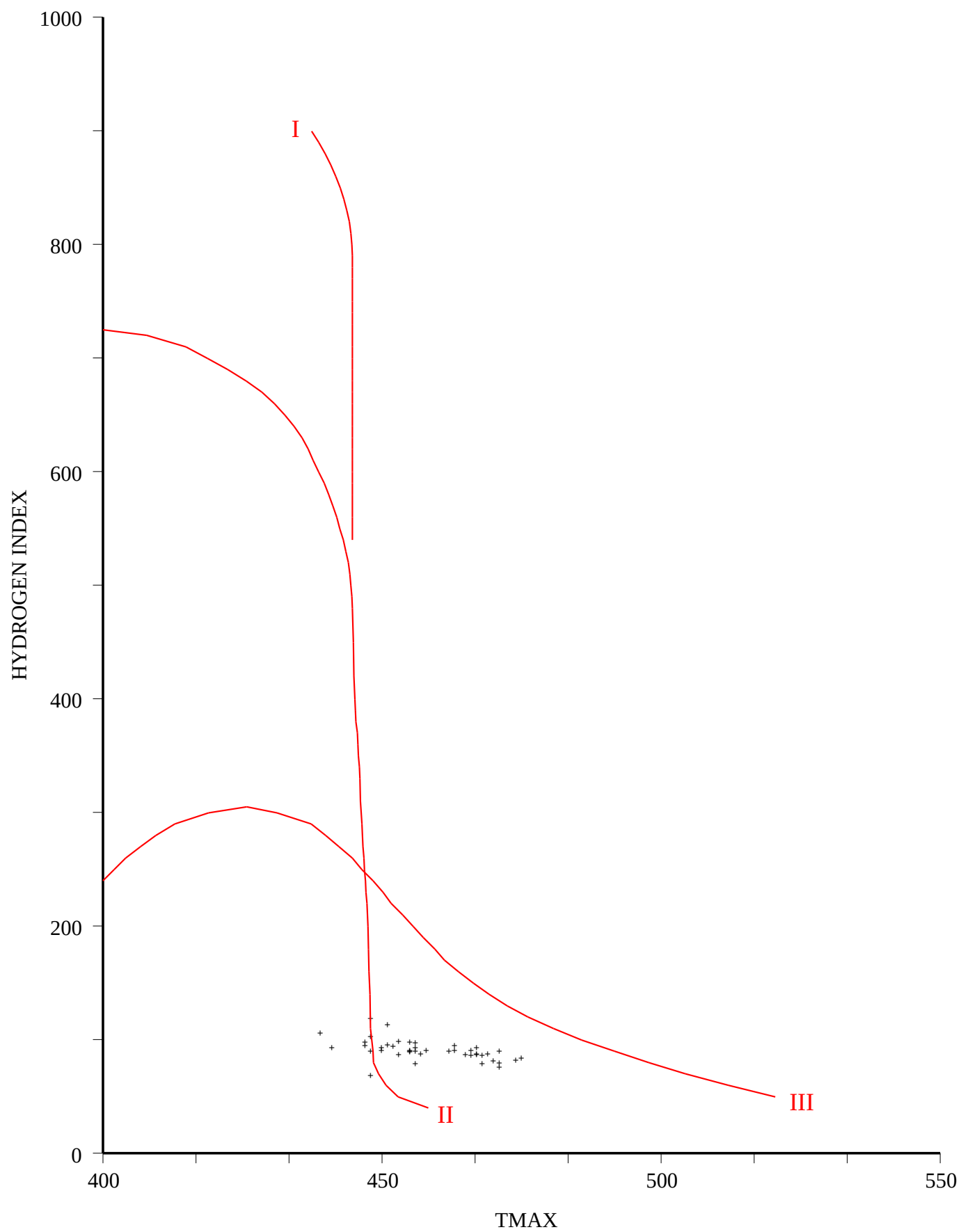
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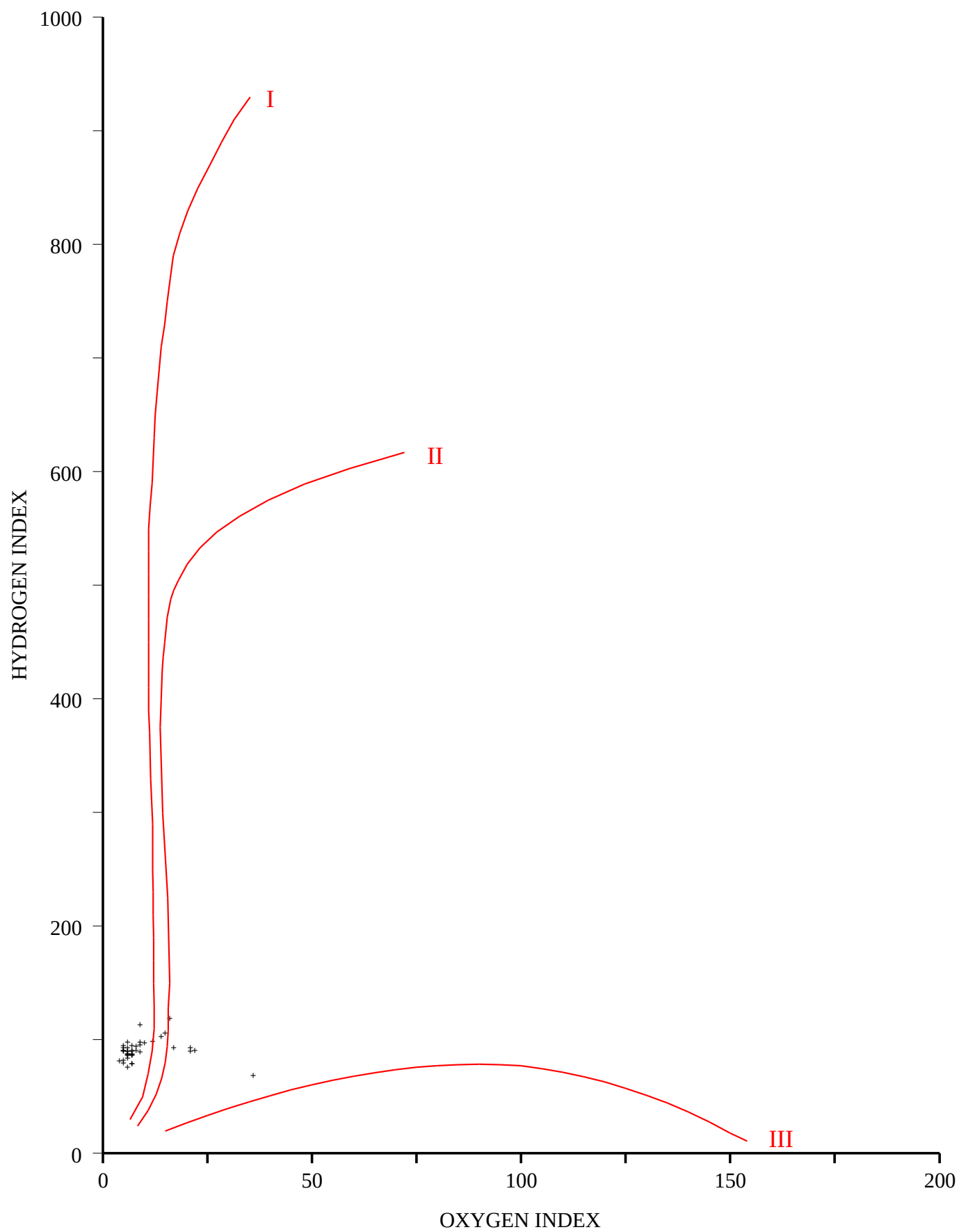
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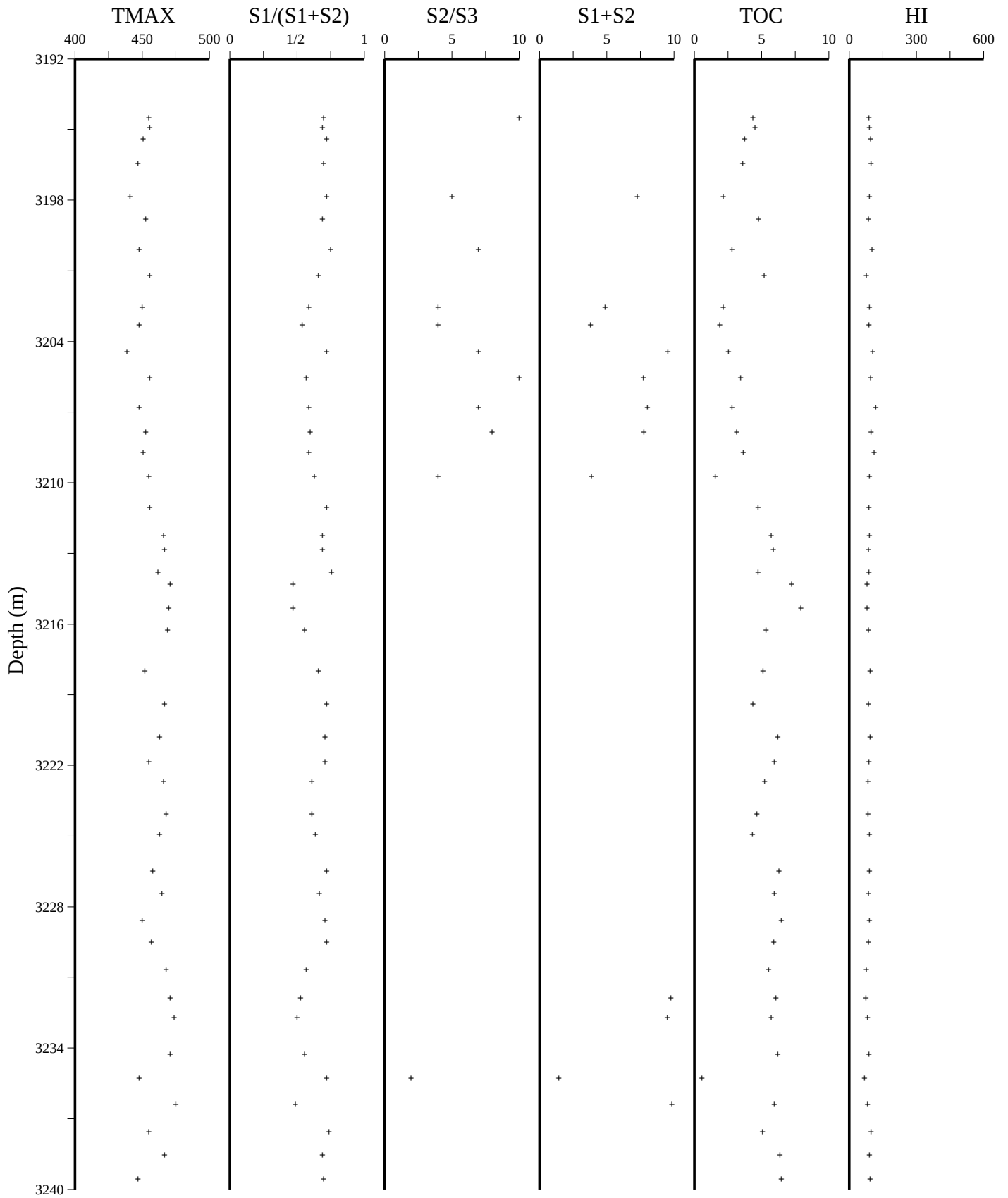
Celtic Kaybobs 13-25-59-19



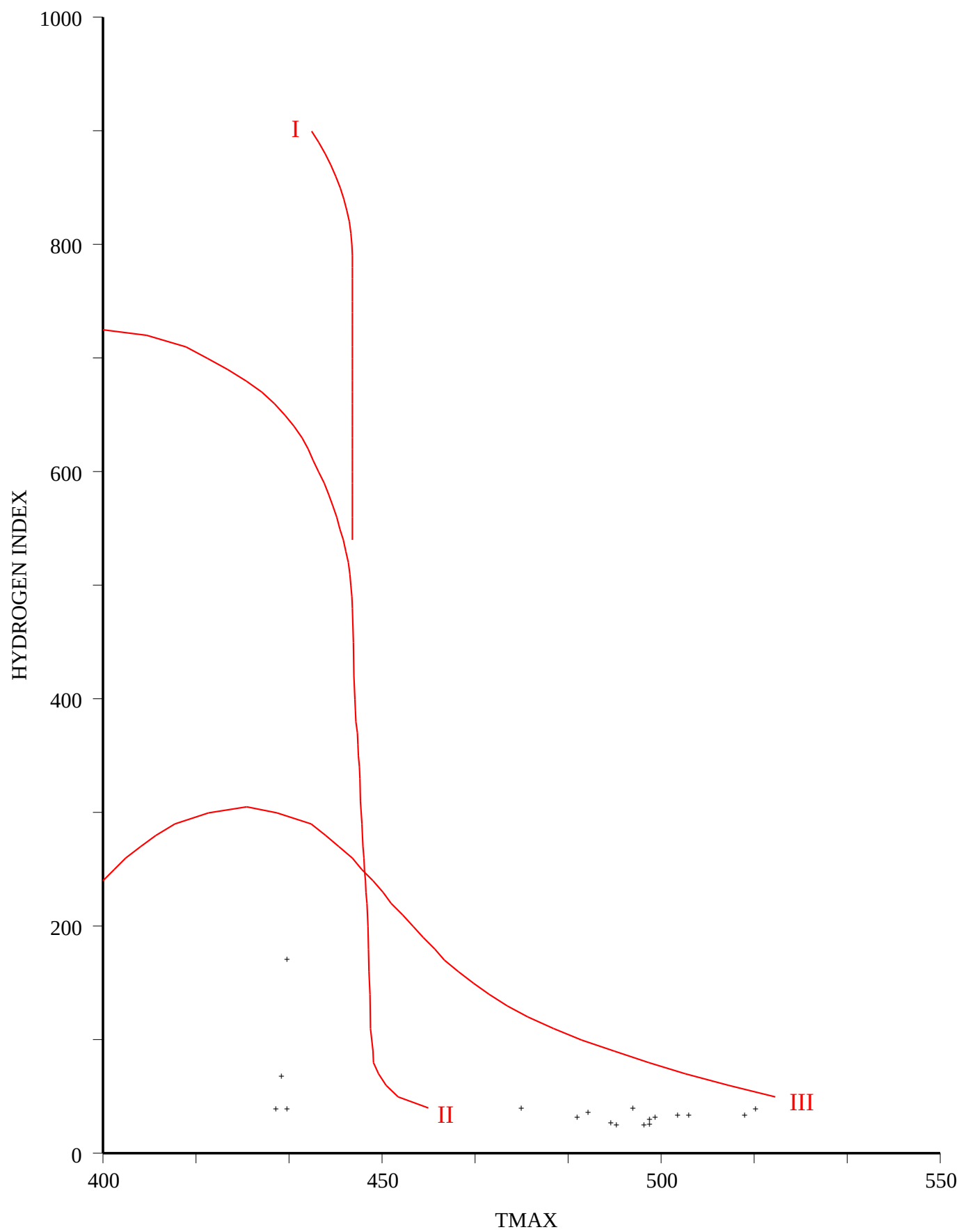
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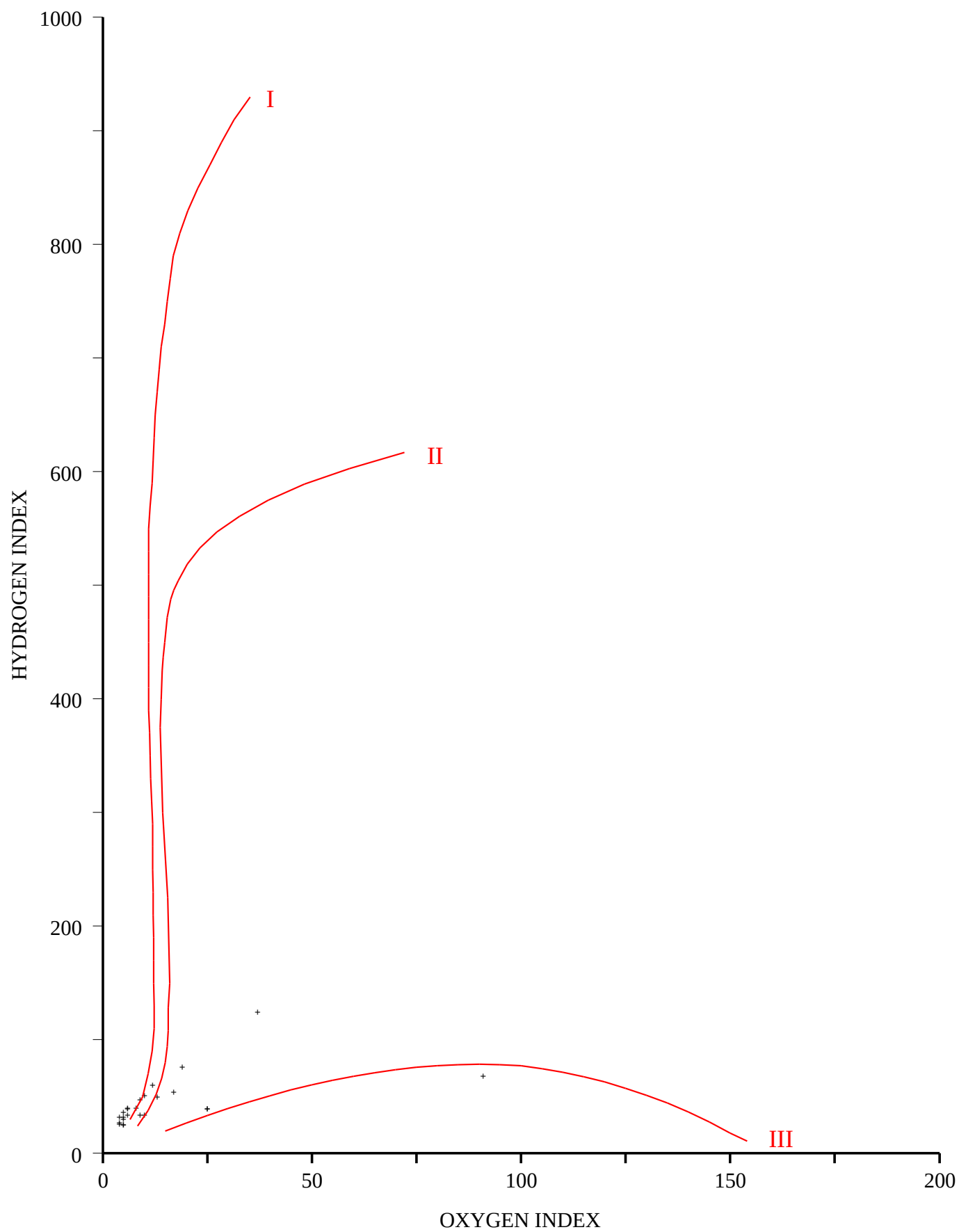
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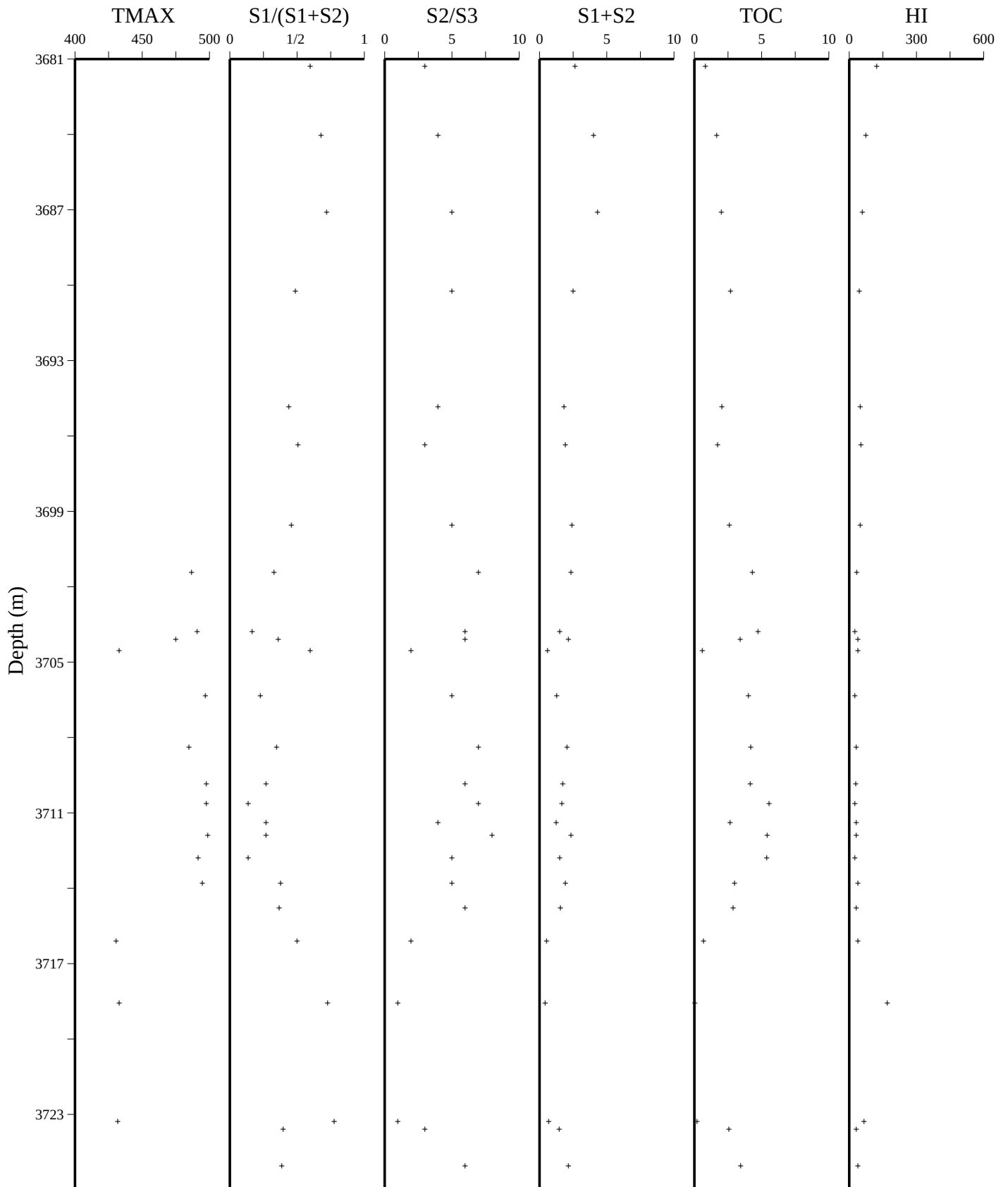
Aosc Grizzly 1-24-61-23



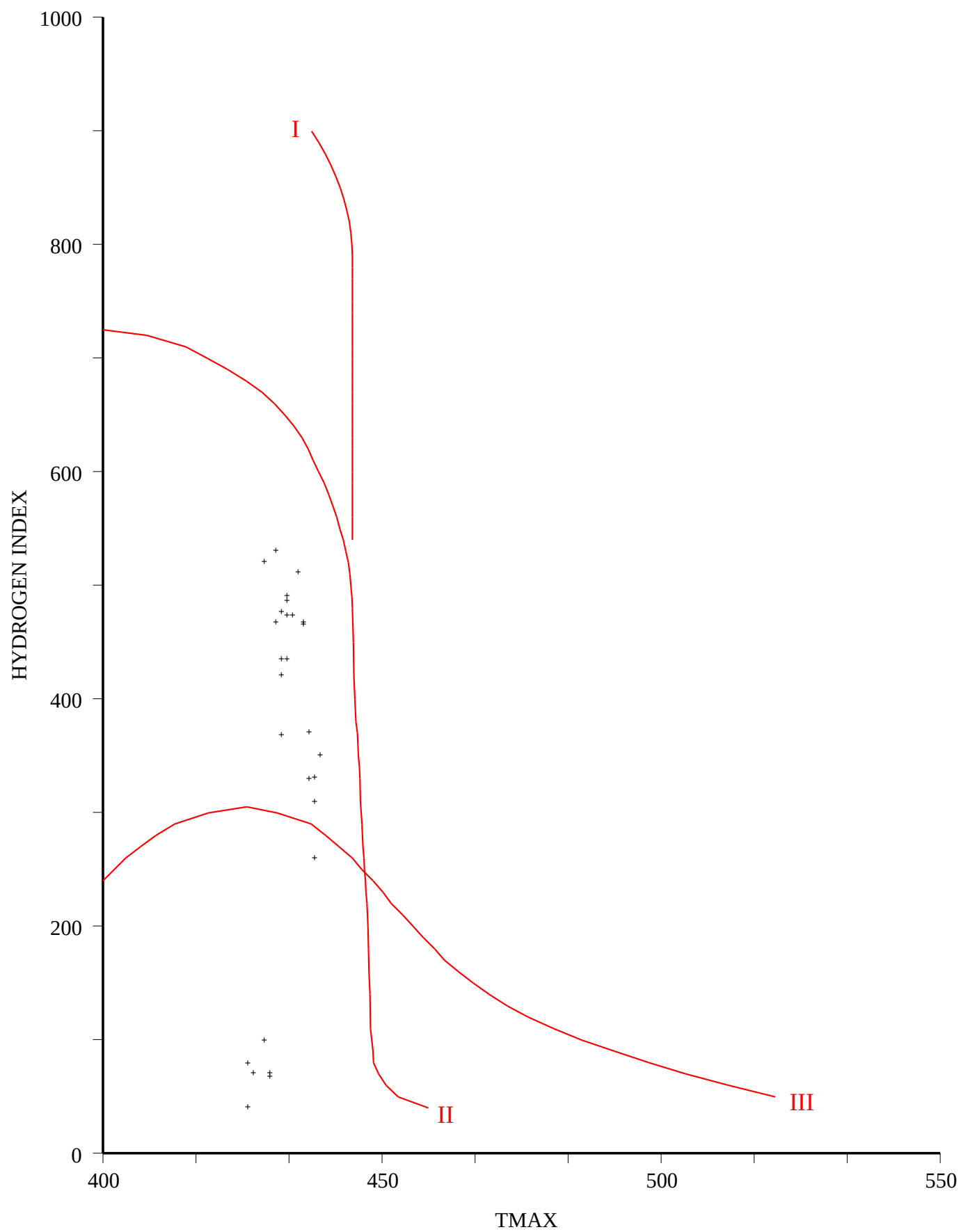
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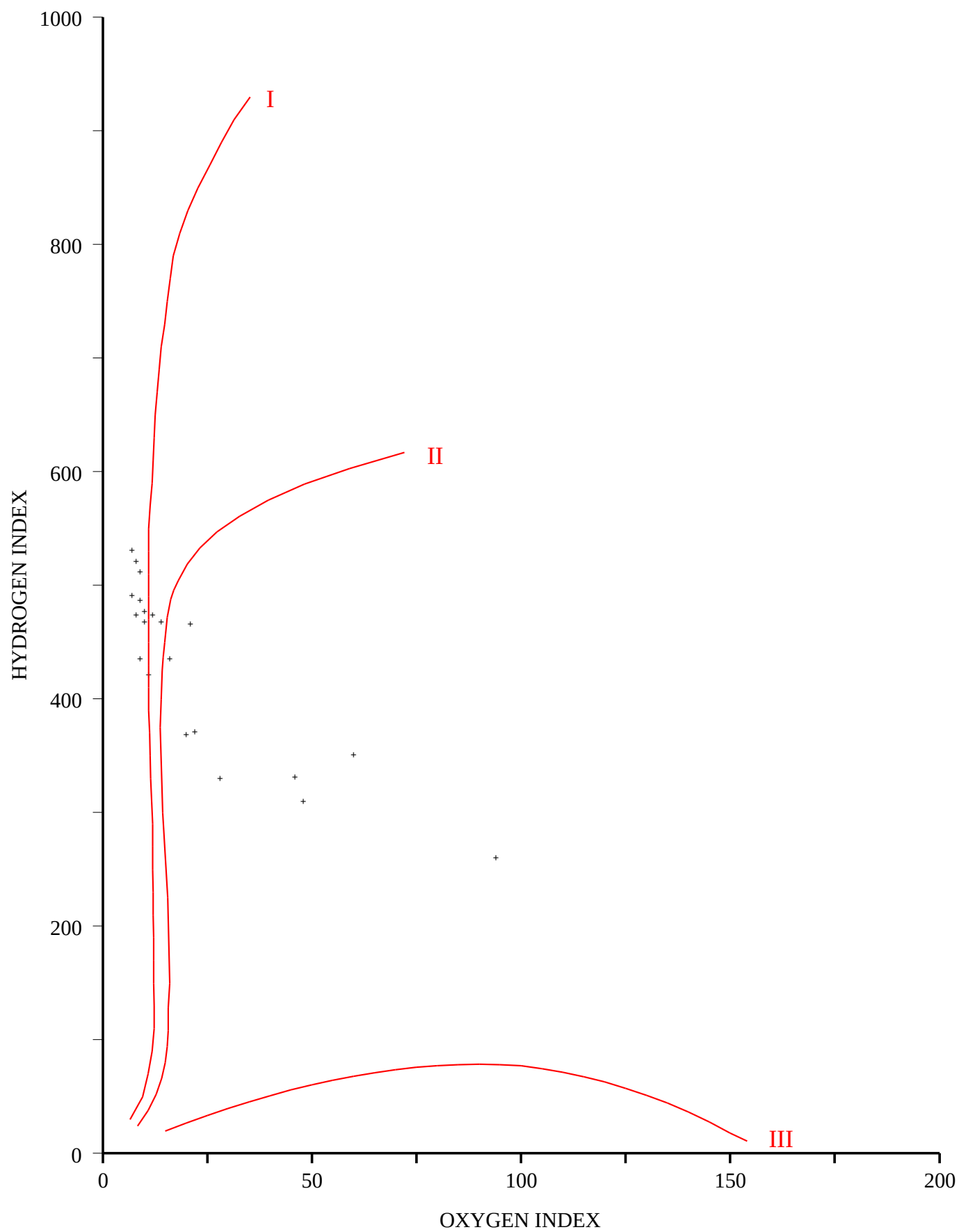
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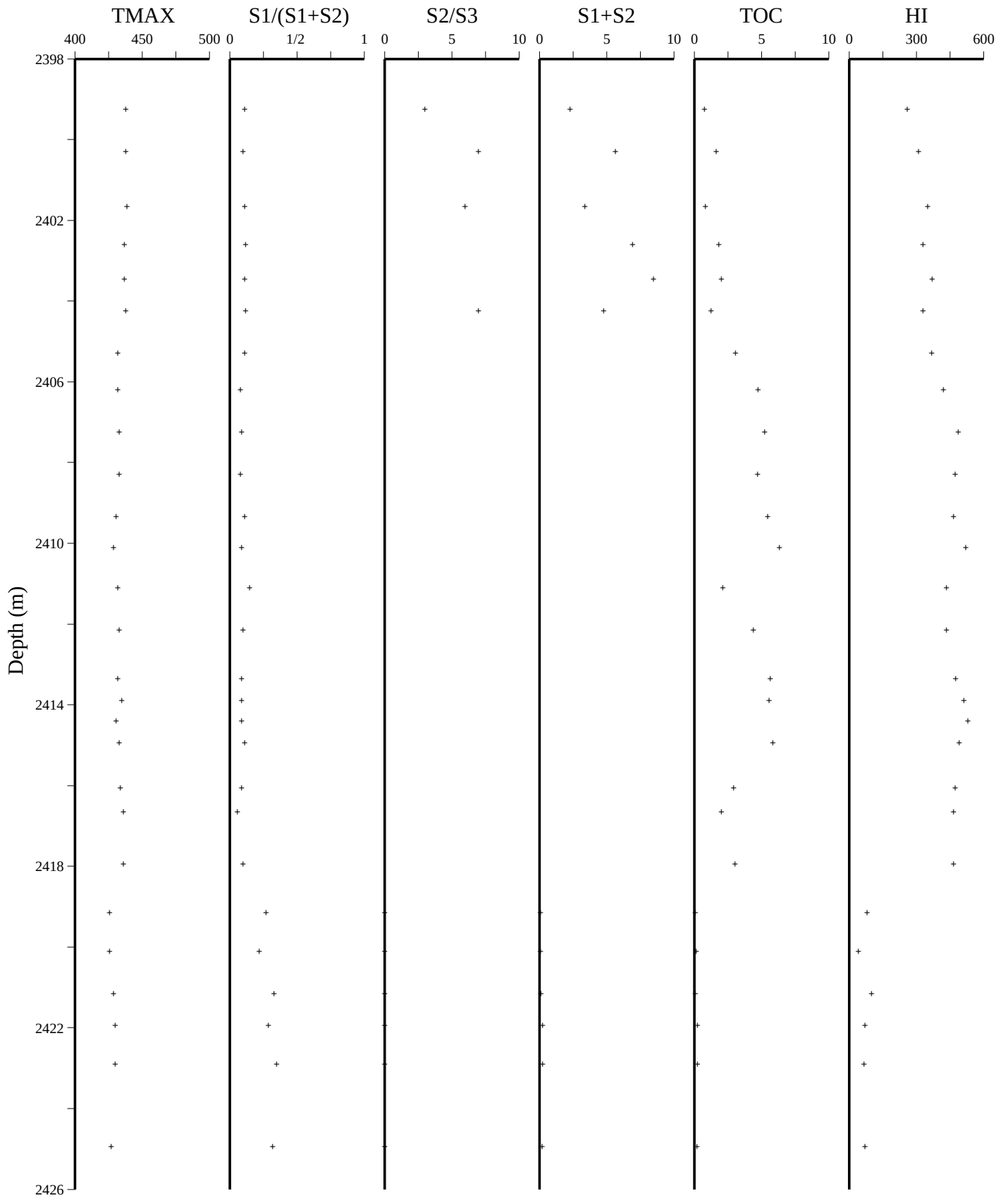
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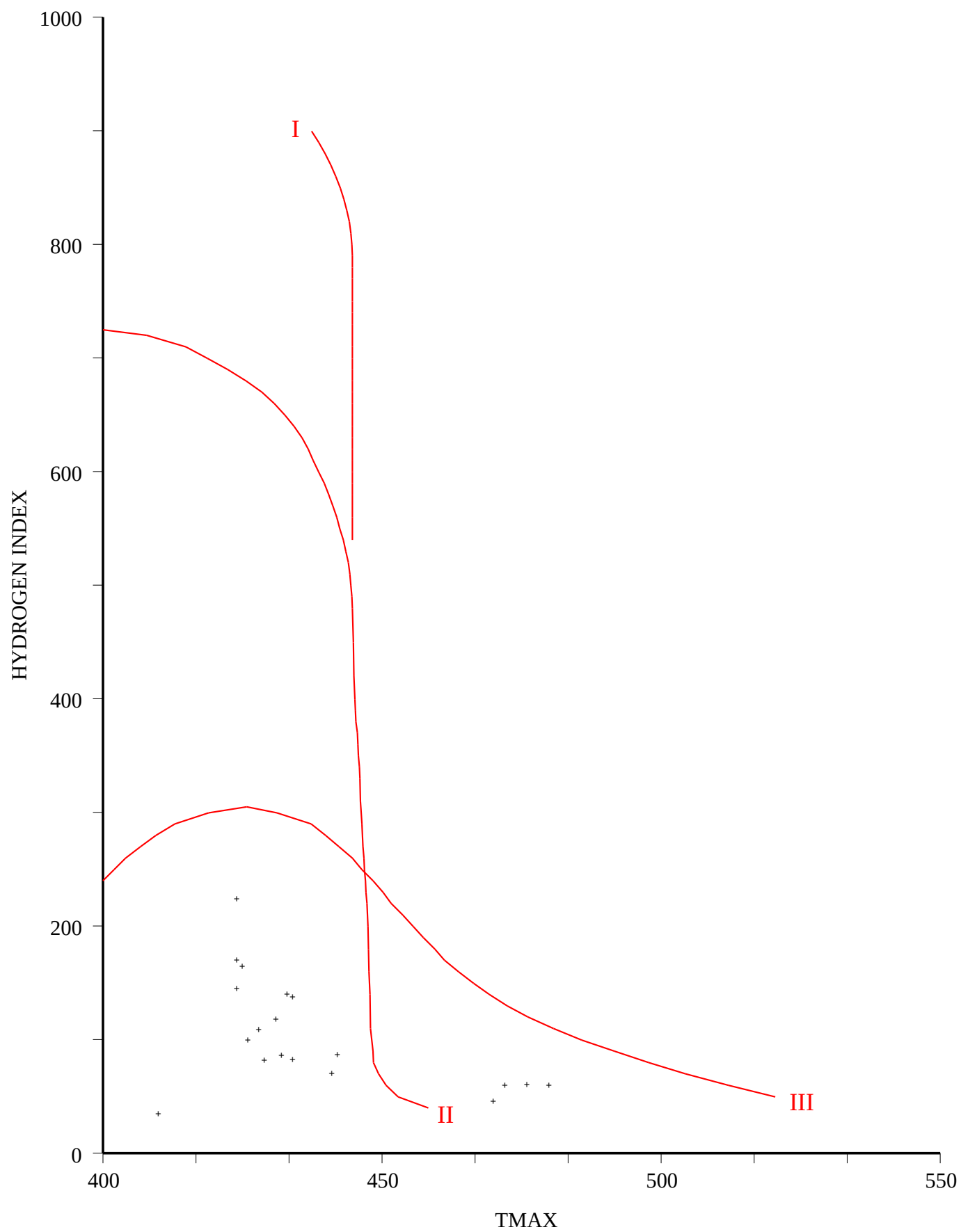
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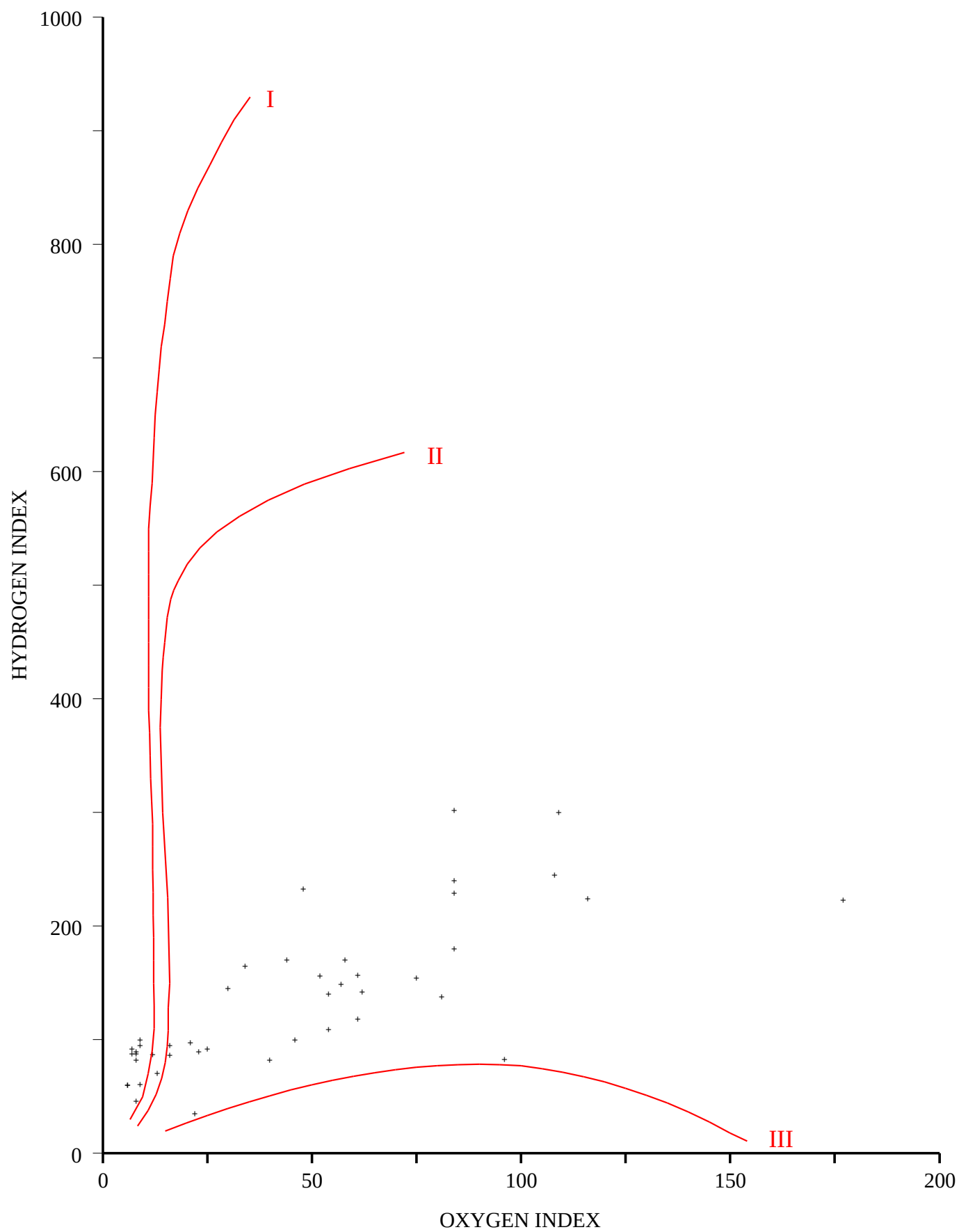
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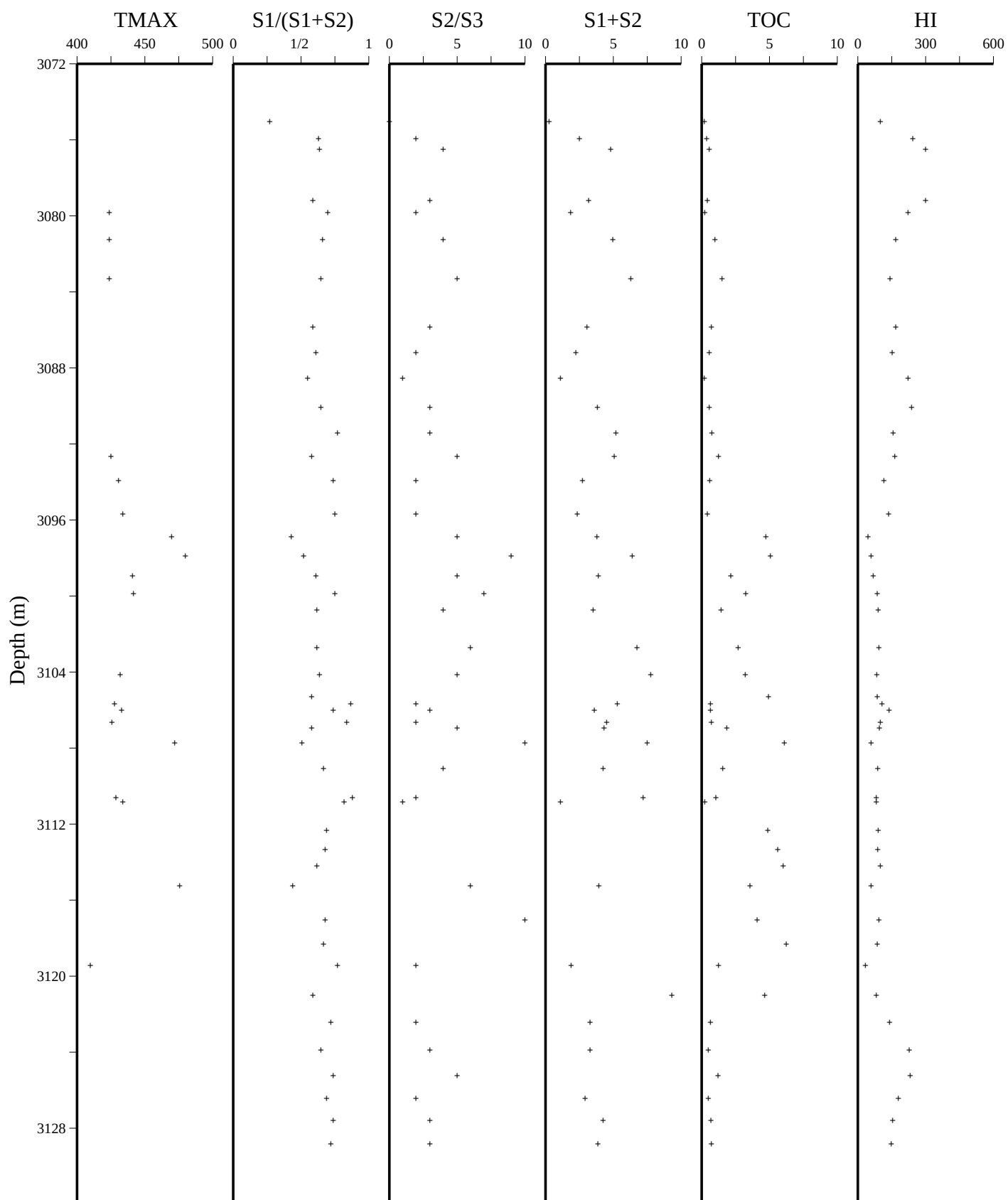
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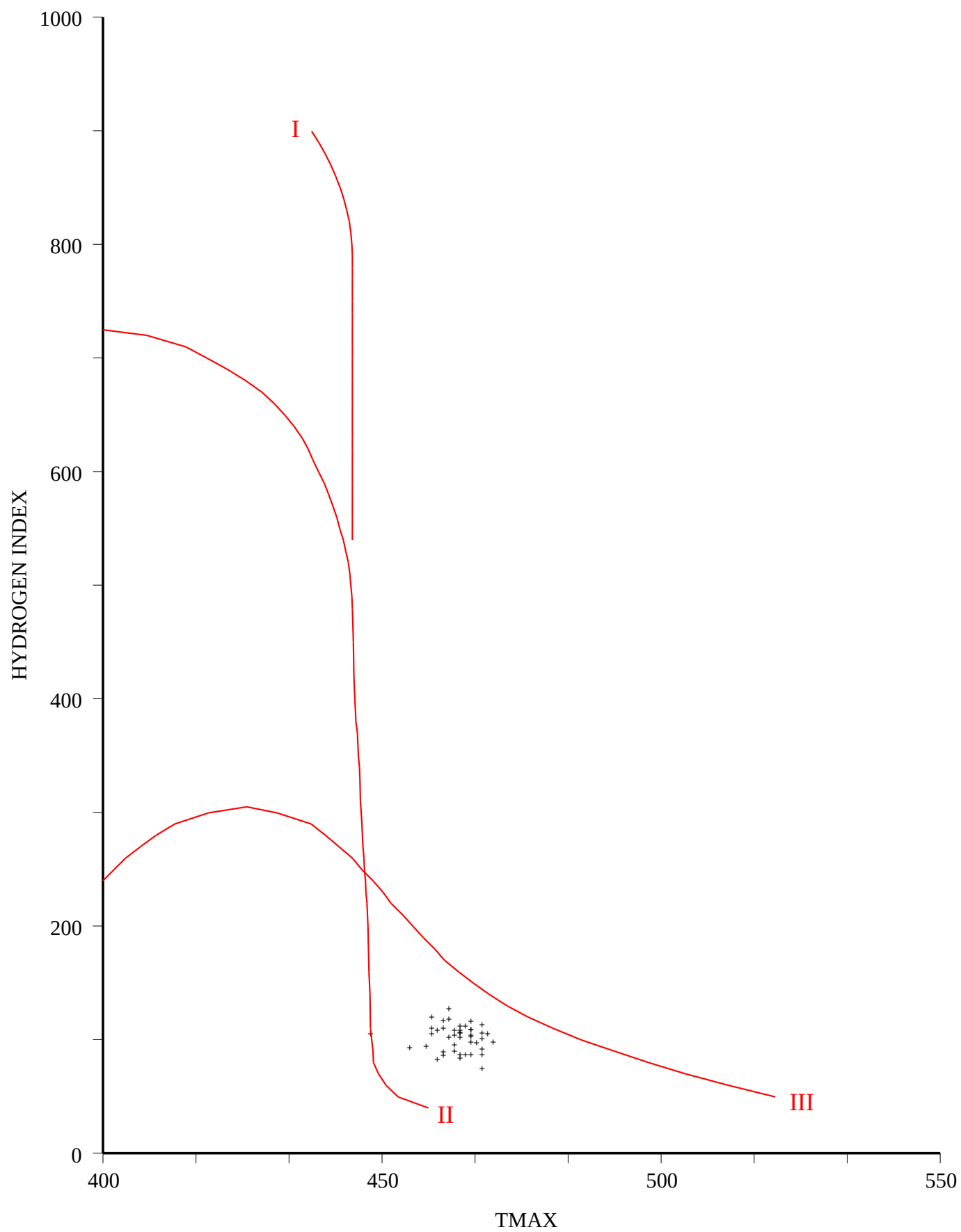
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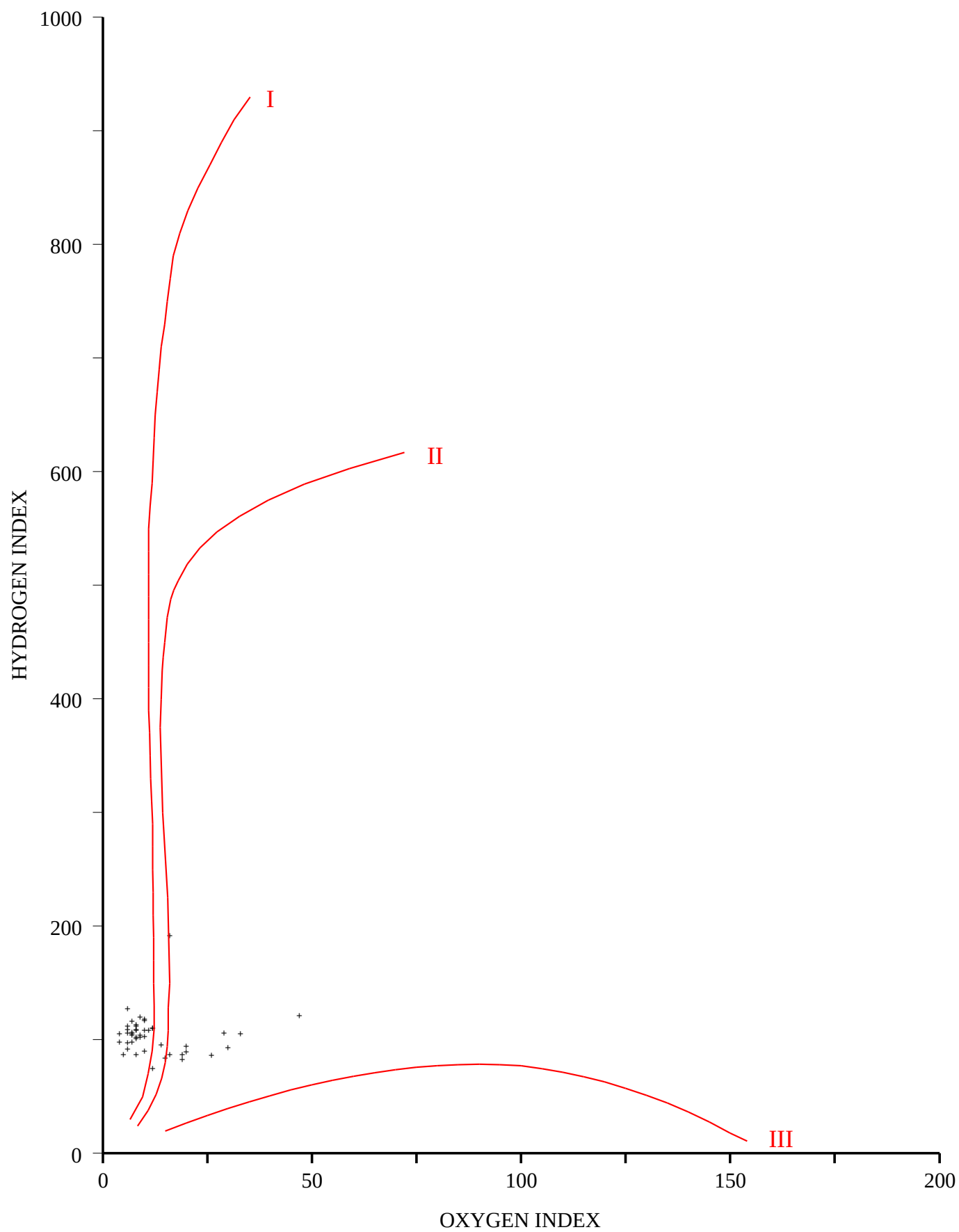
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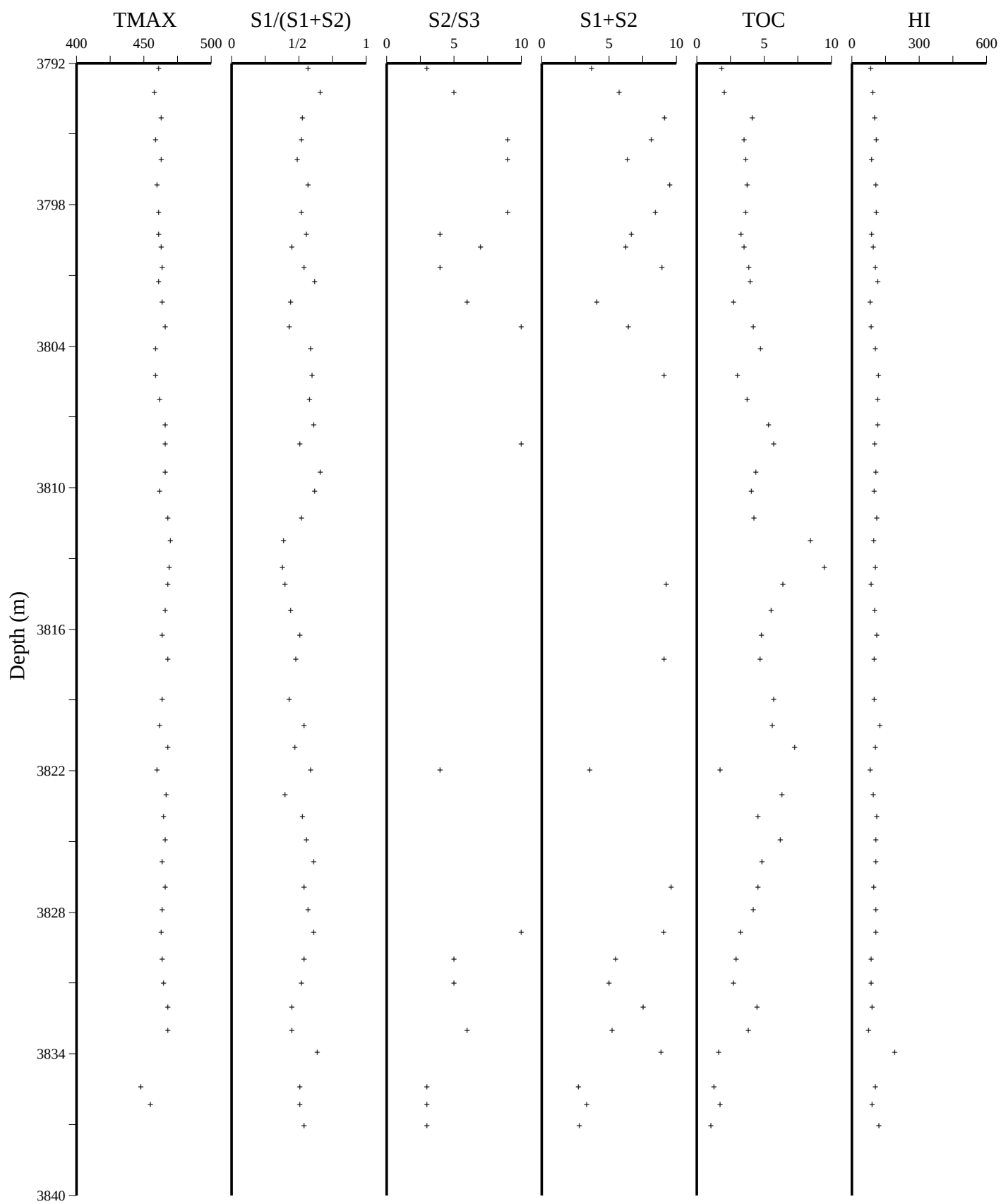
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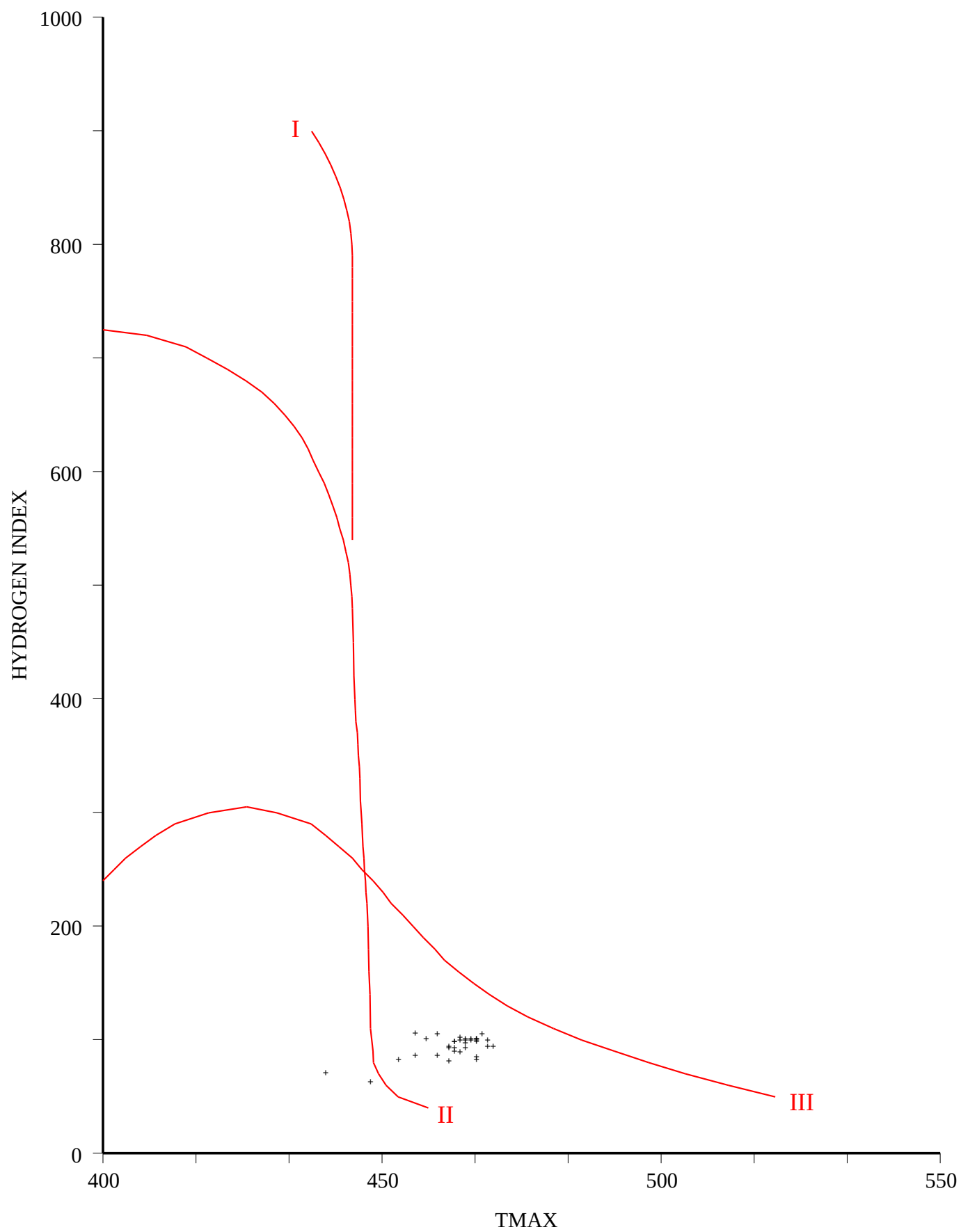
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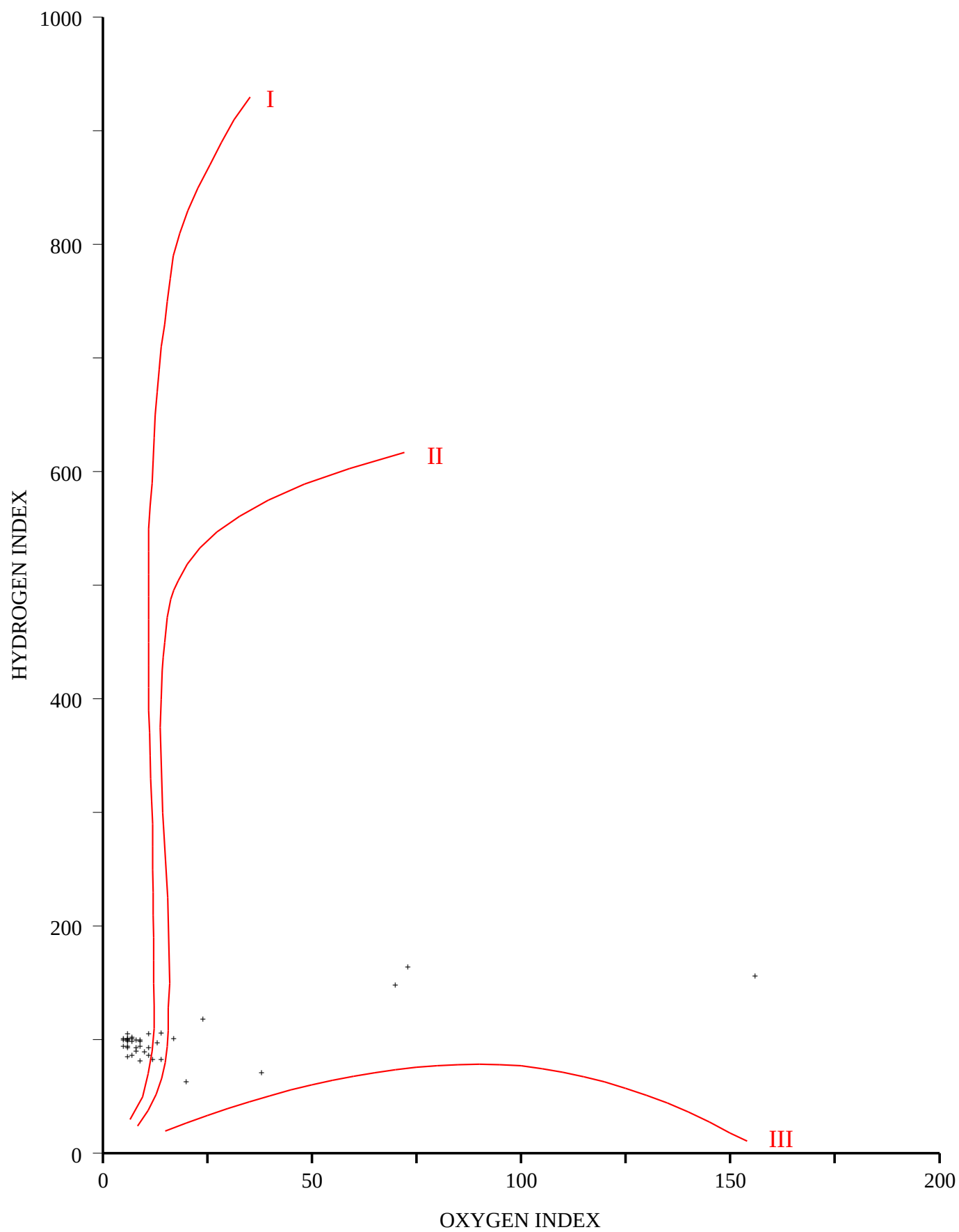
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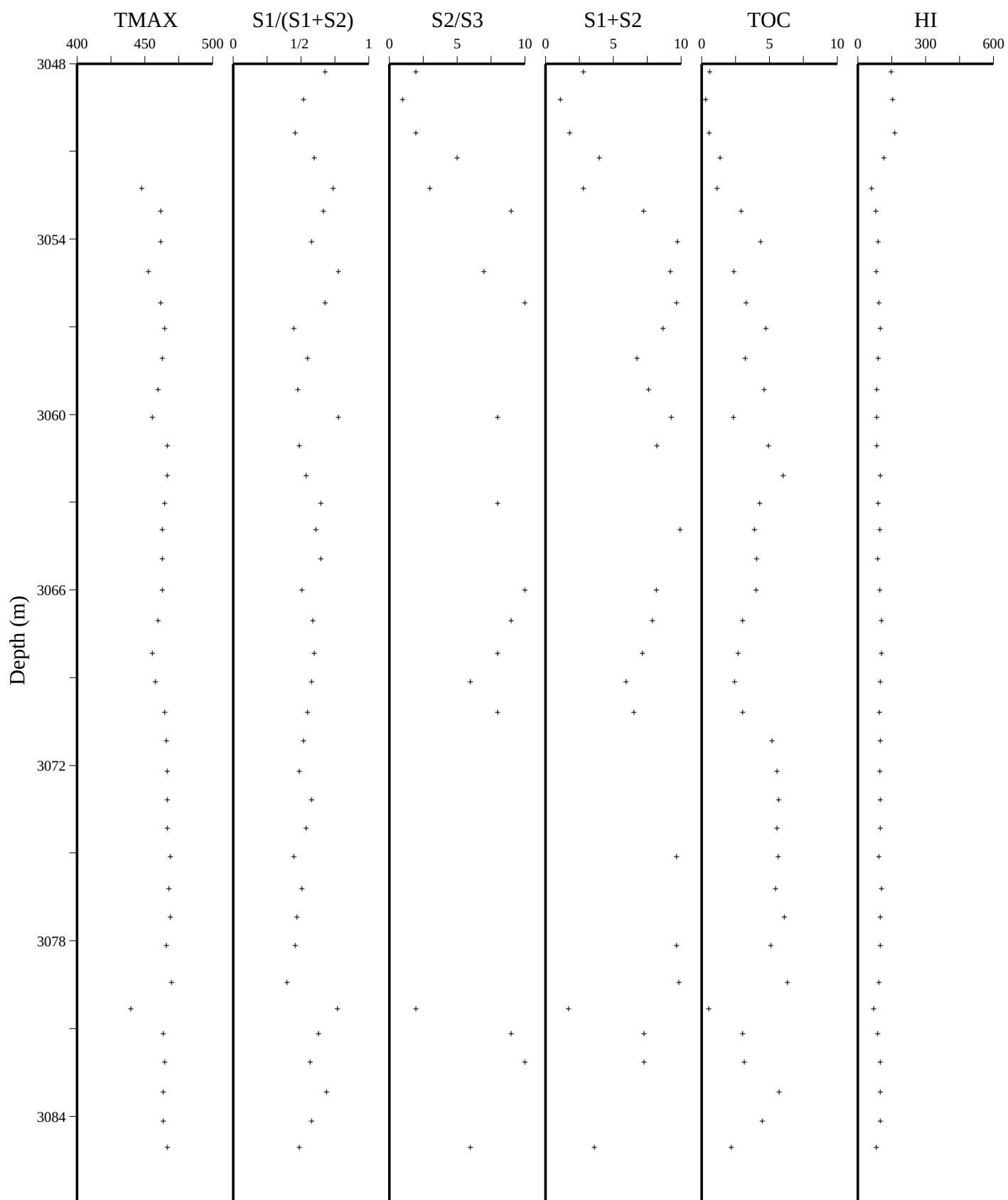
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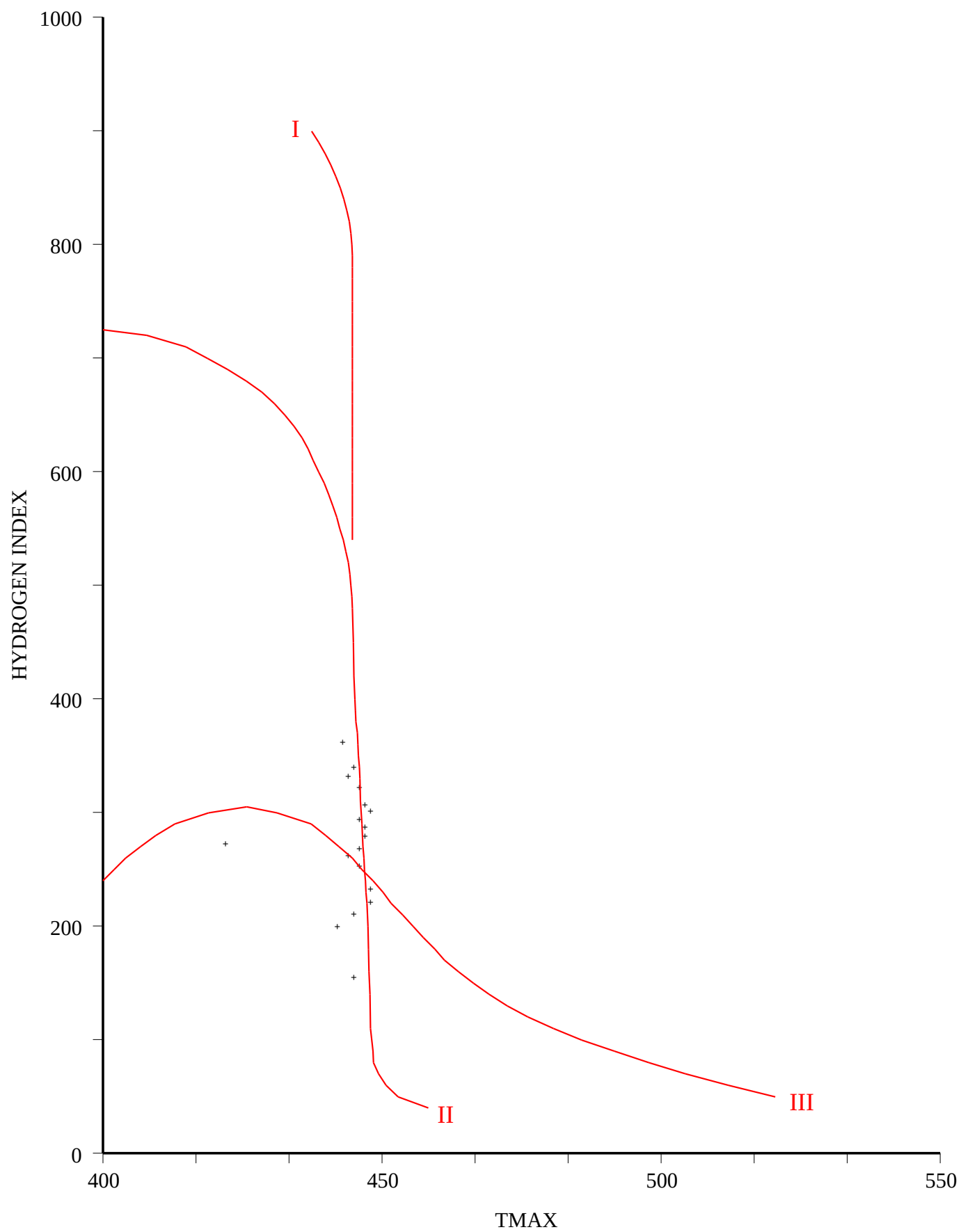
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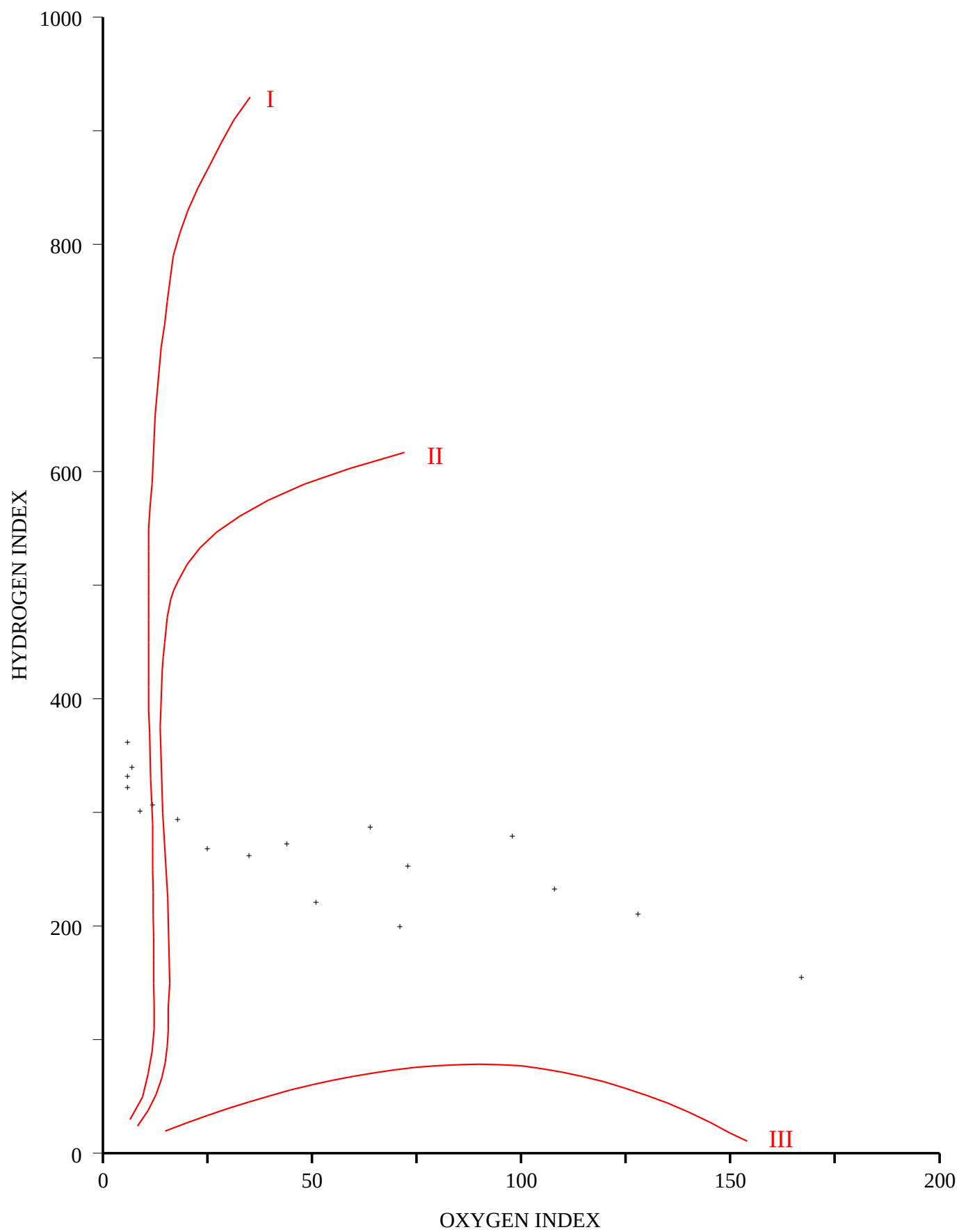
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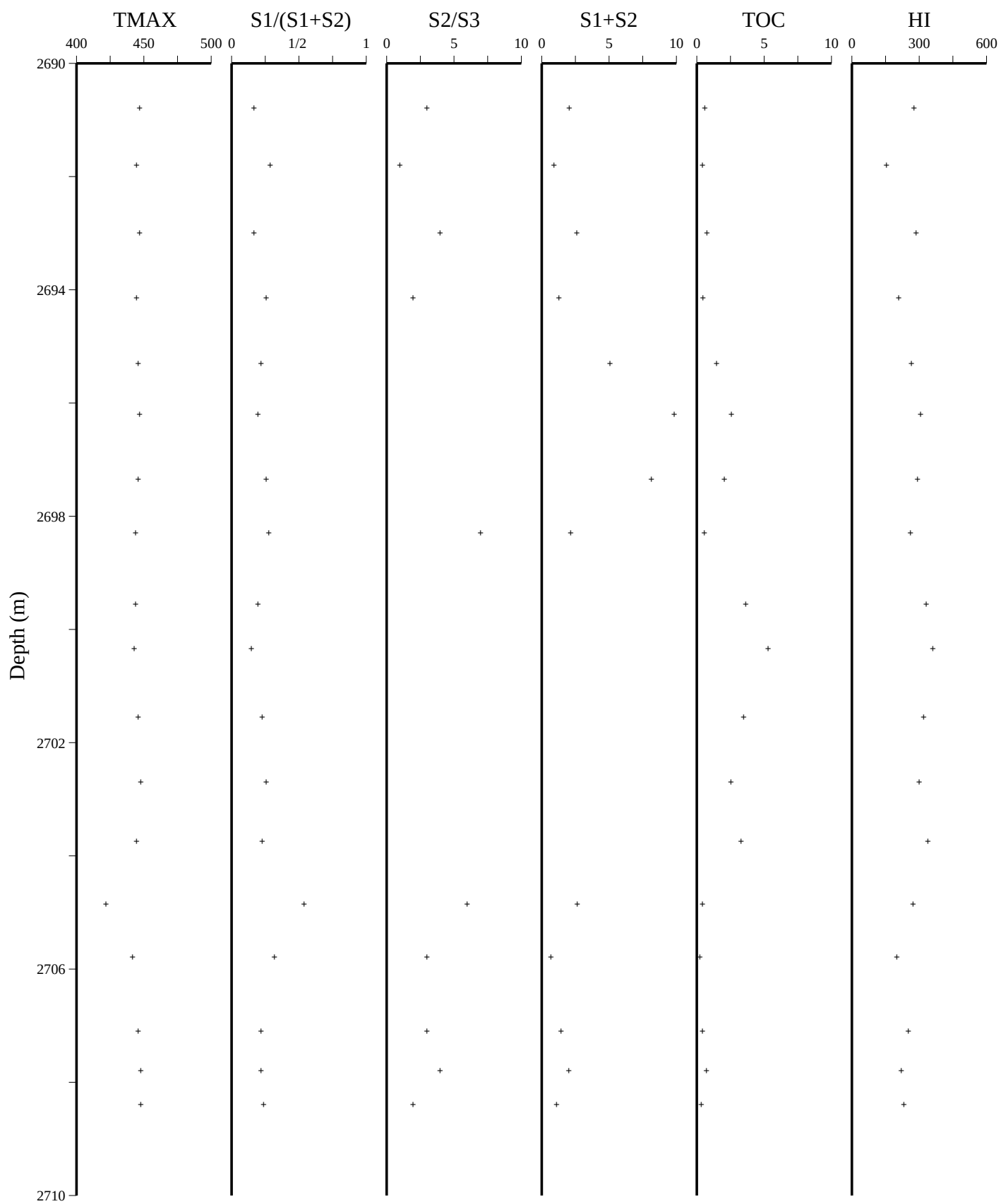
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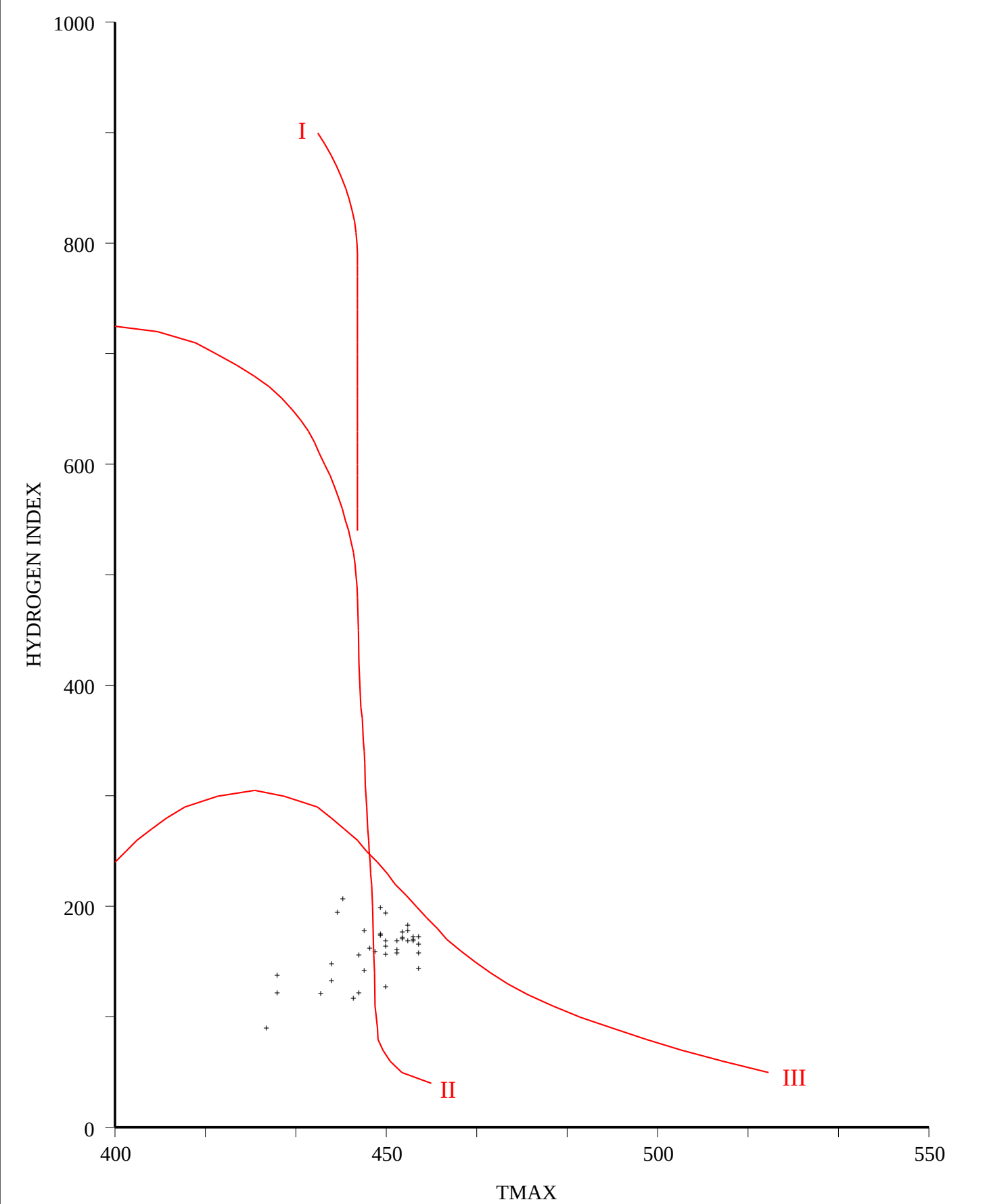
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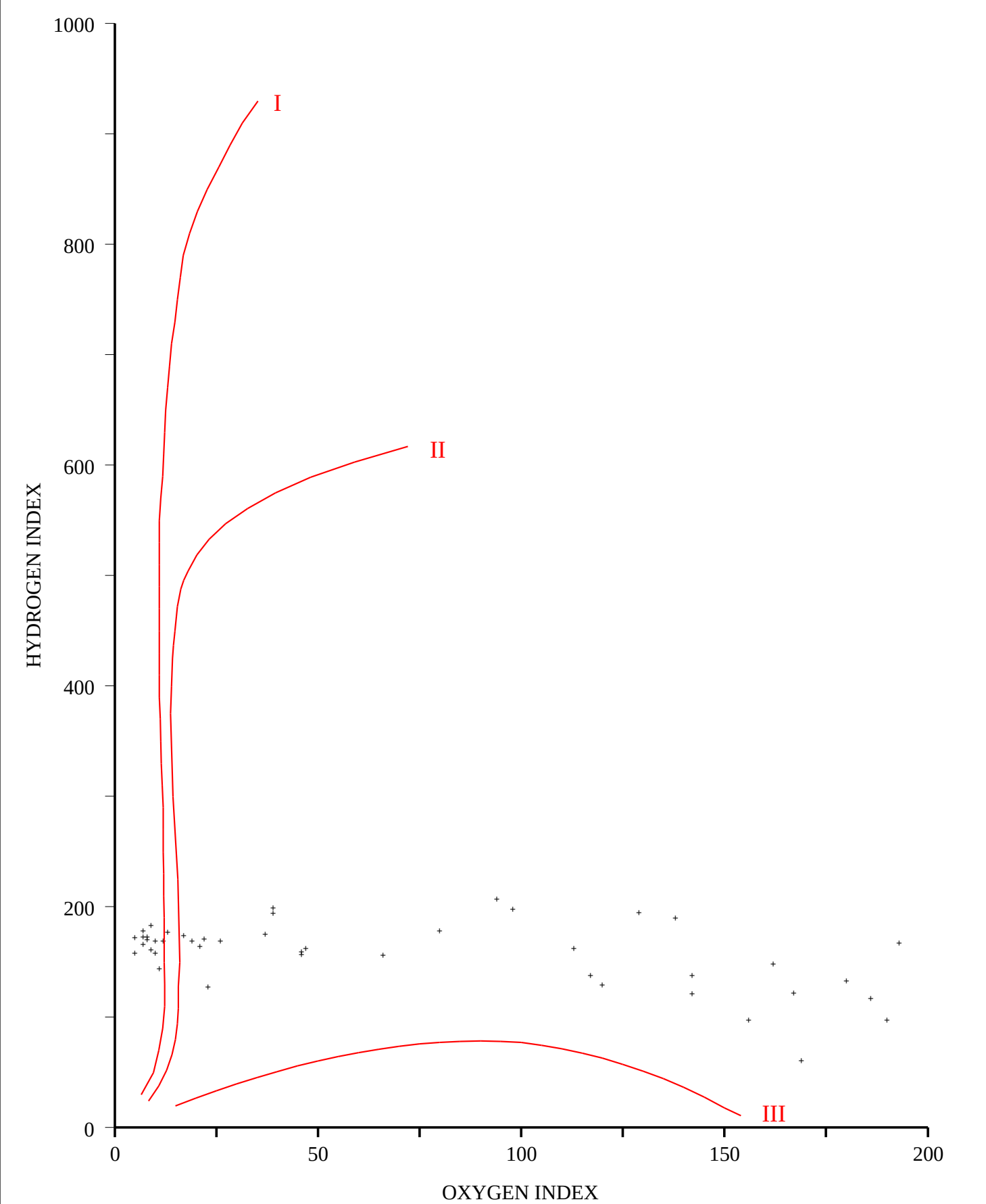
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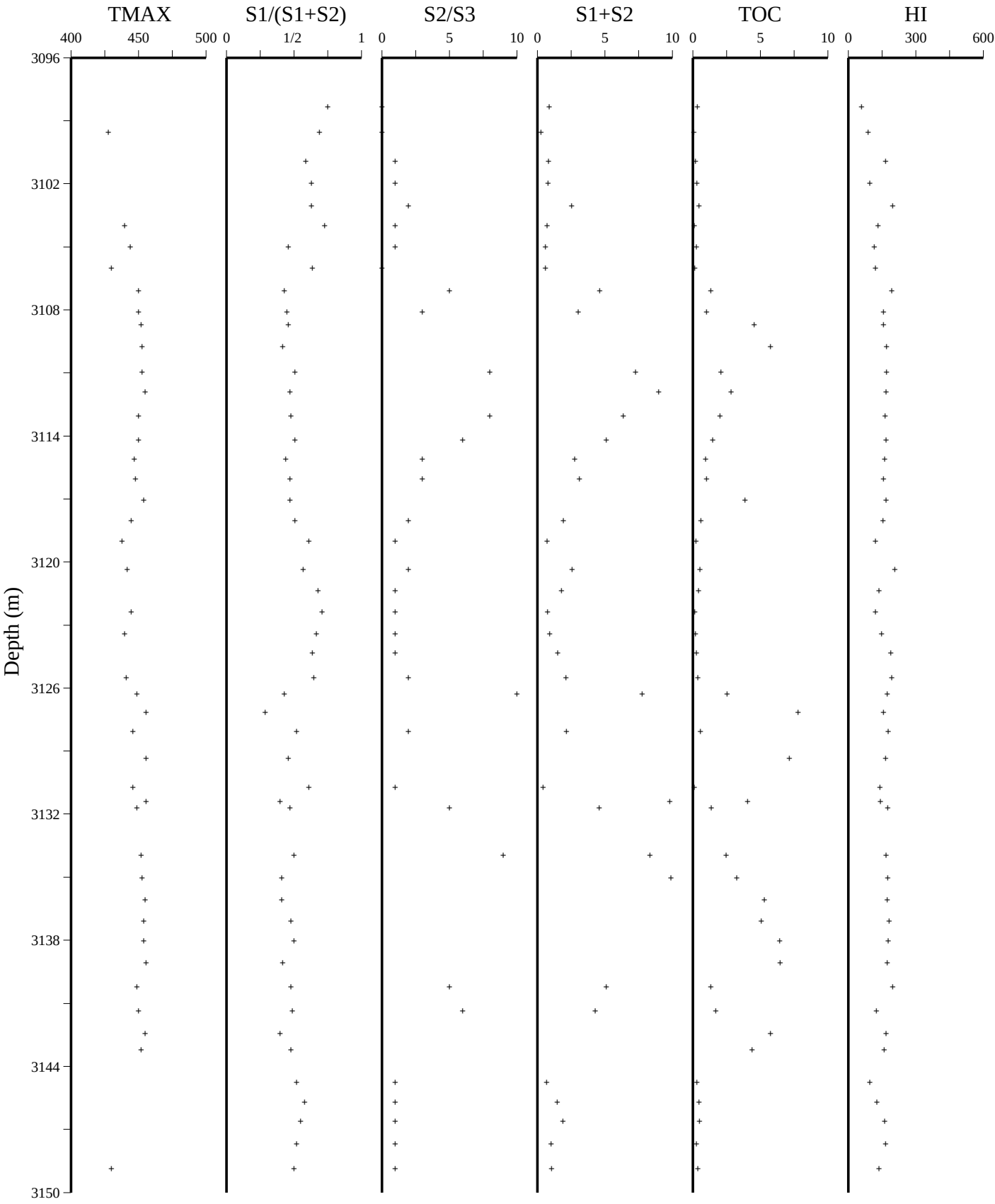
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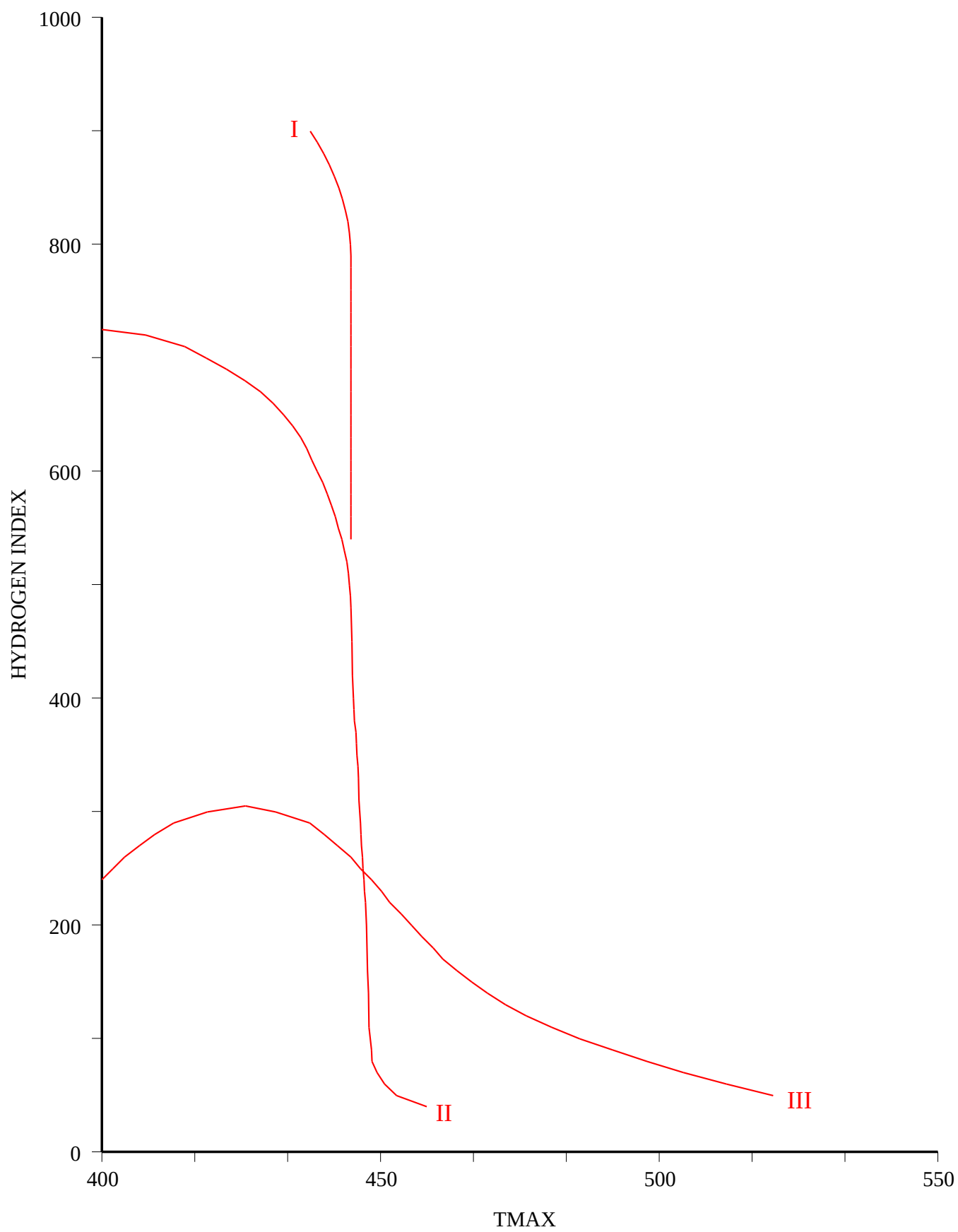
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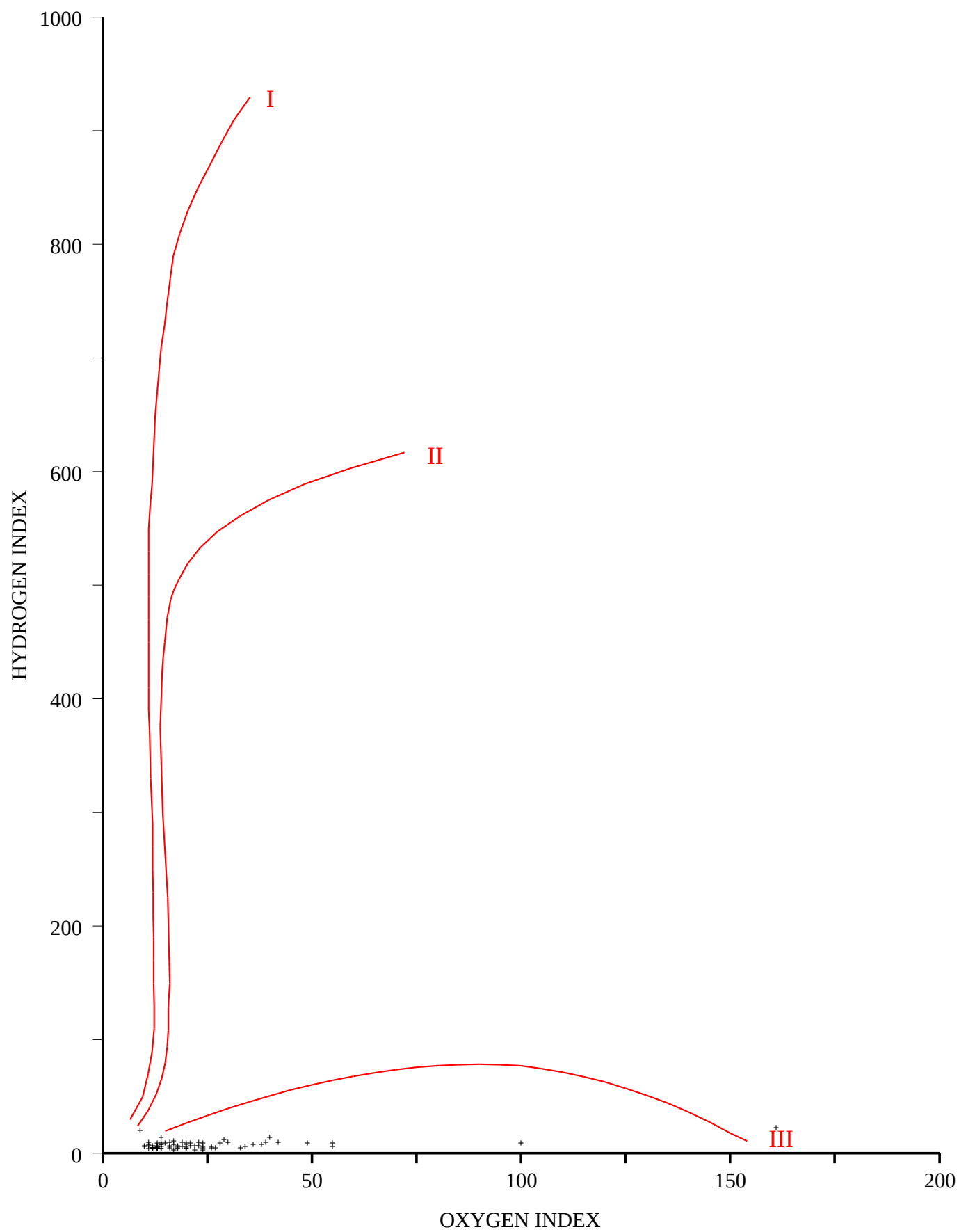
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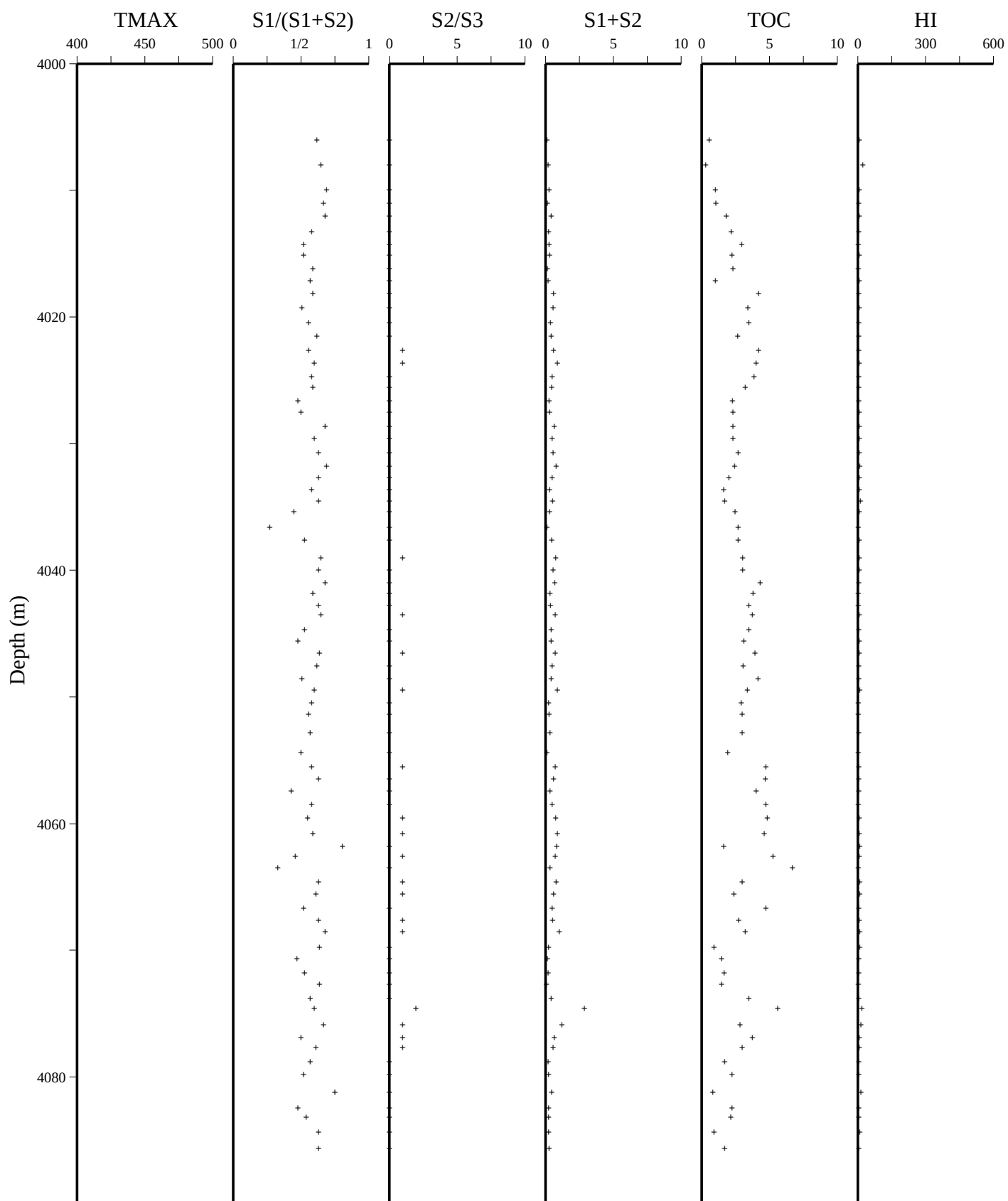
Husky Wild Riv 10-33-56-22



Husky Wild Riv 10-33-56-22



Husky Wild Riv 10-33-56-22



APPENDIX B:

Rock-Eval Analysis Hydrocarbon FID-pyrograms

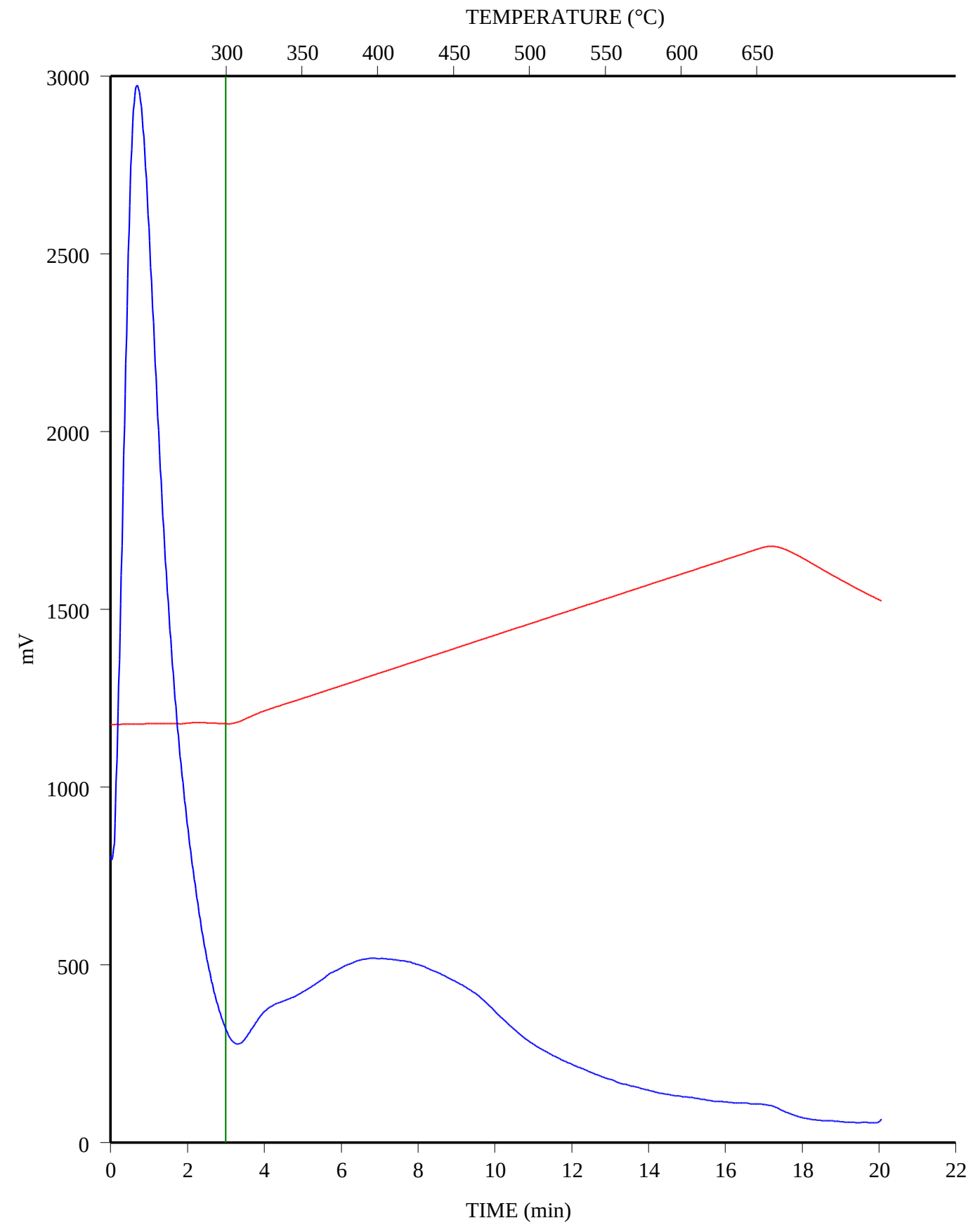
for

the Duvernay Formation Shale Core Samples

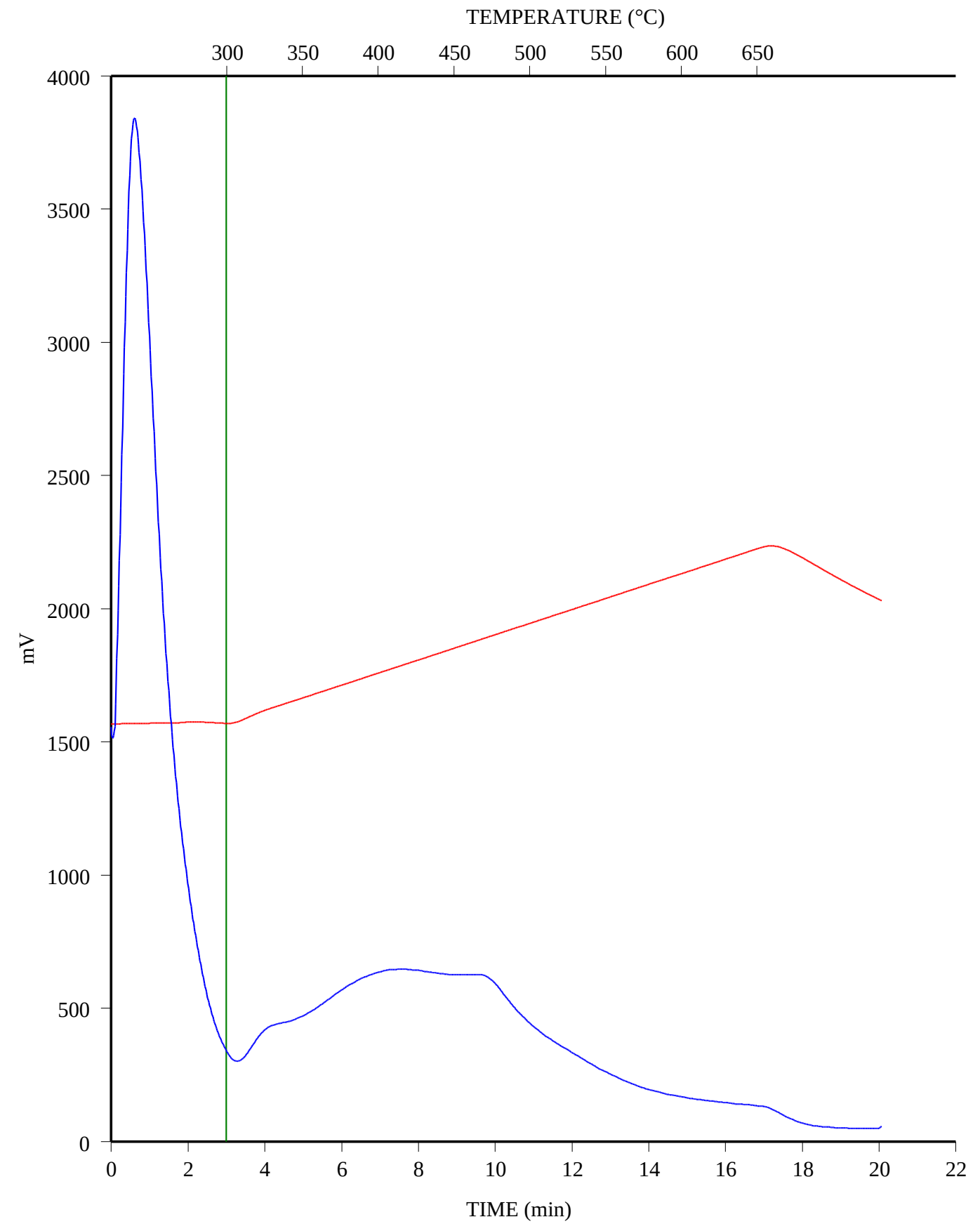
Western Canada Sedimentary Basin

(see Table 2 to 13 for sample ID C#)

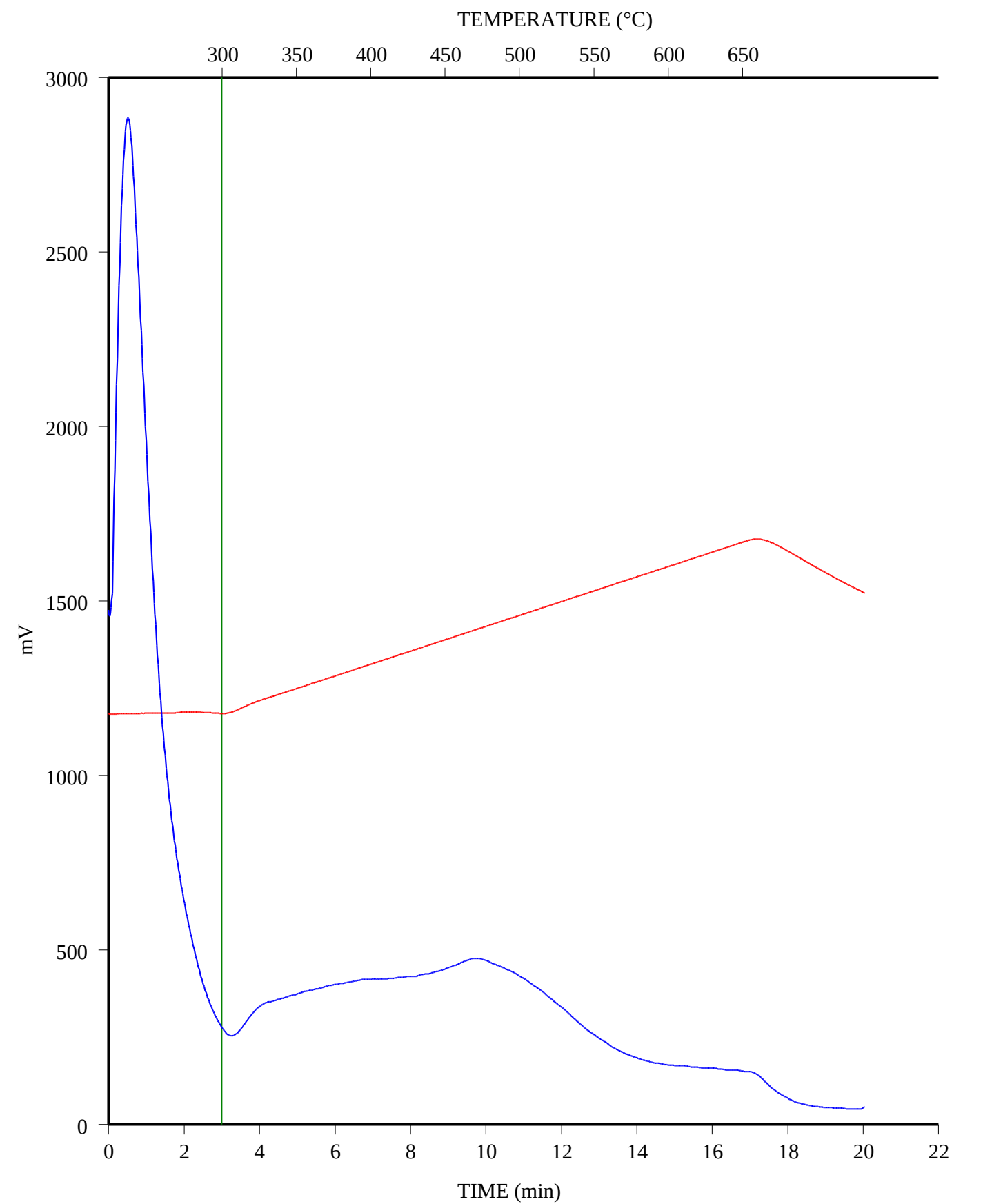
C-579761; ECA HZ FERRIER 15-33-41-8; 3432 - 3432.05 m
FID Hydrocarbons



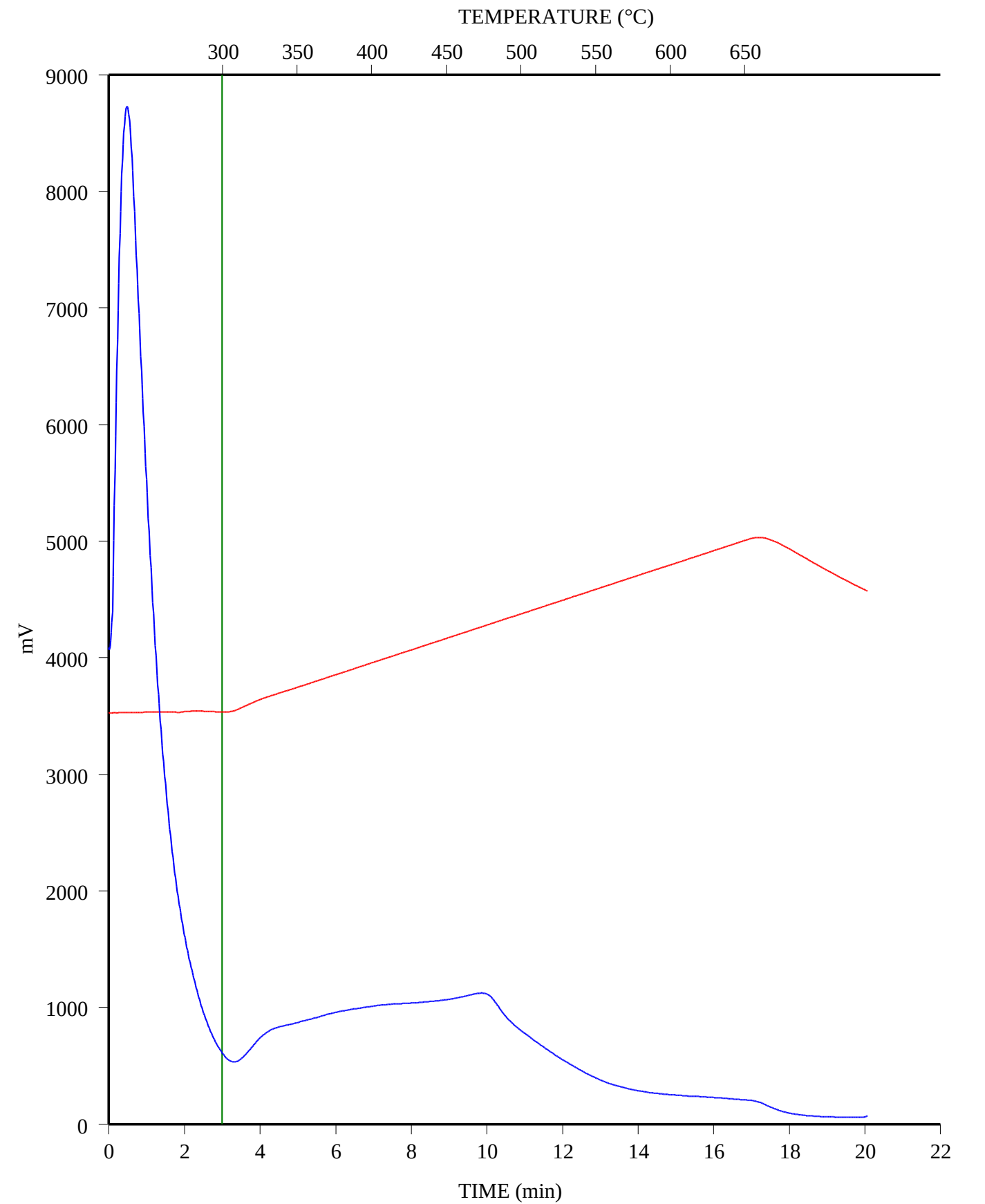
C-579762; ECA HZ FERRIER 15-33-41-8; 3433.33 - 3433.37 m
FID Hydrocarbons



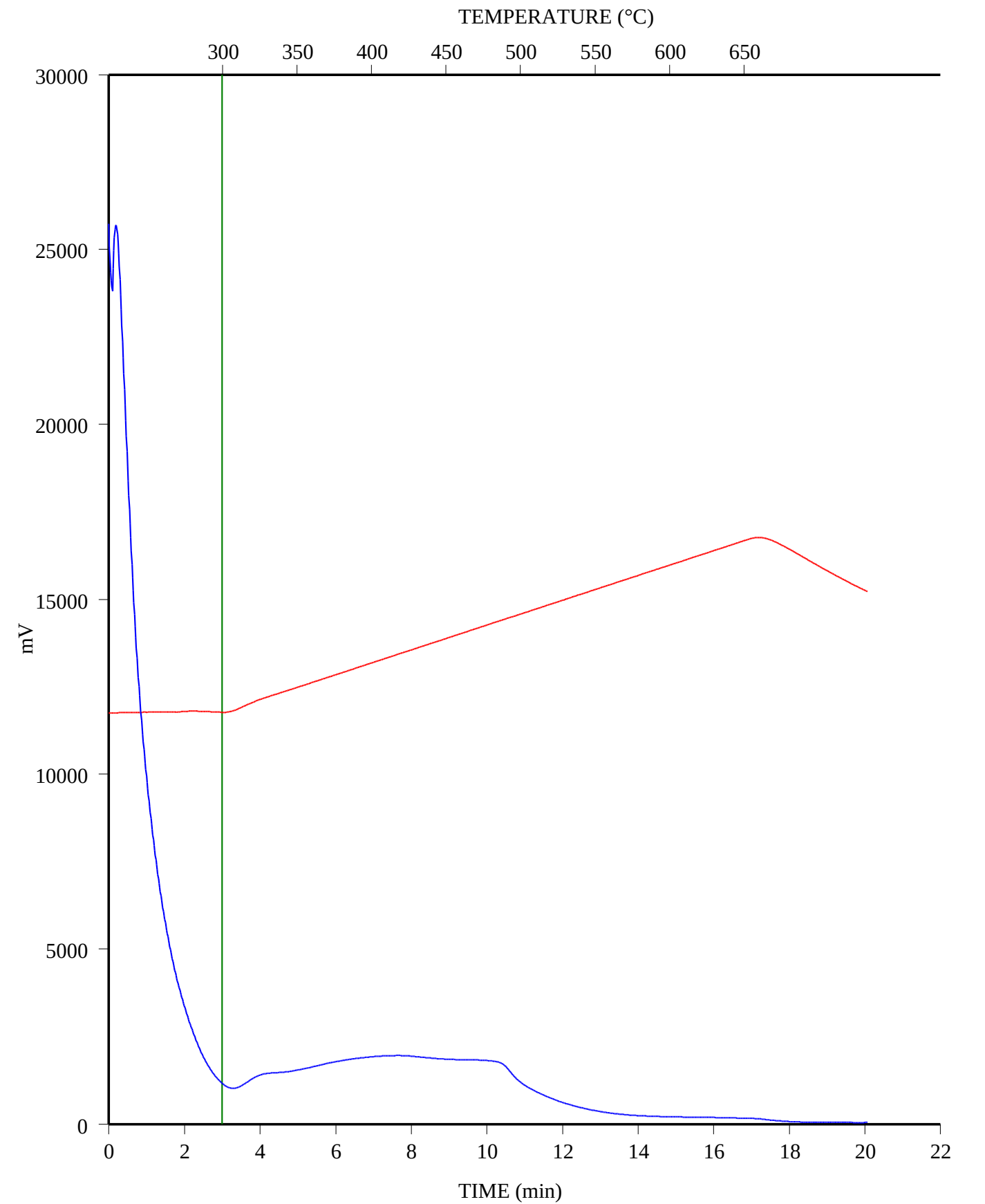
C-579763; ECA HZ FERRIER 15-33-41-8; 3434.91 - 3434.97 m
FID Hydrocarbons



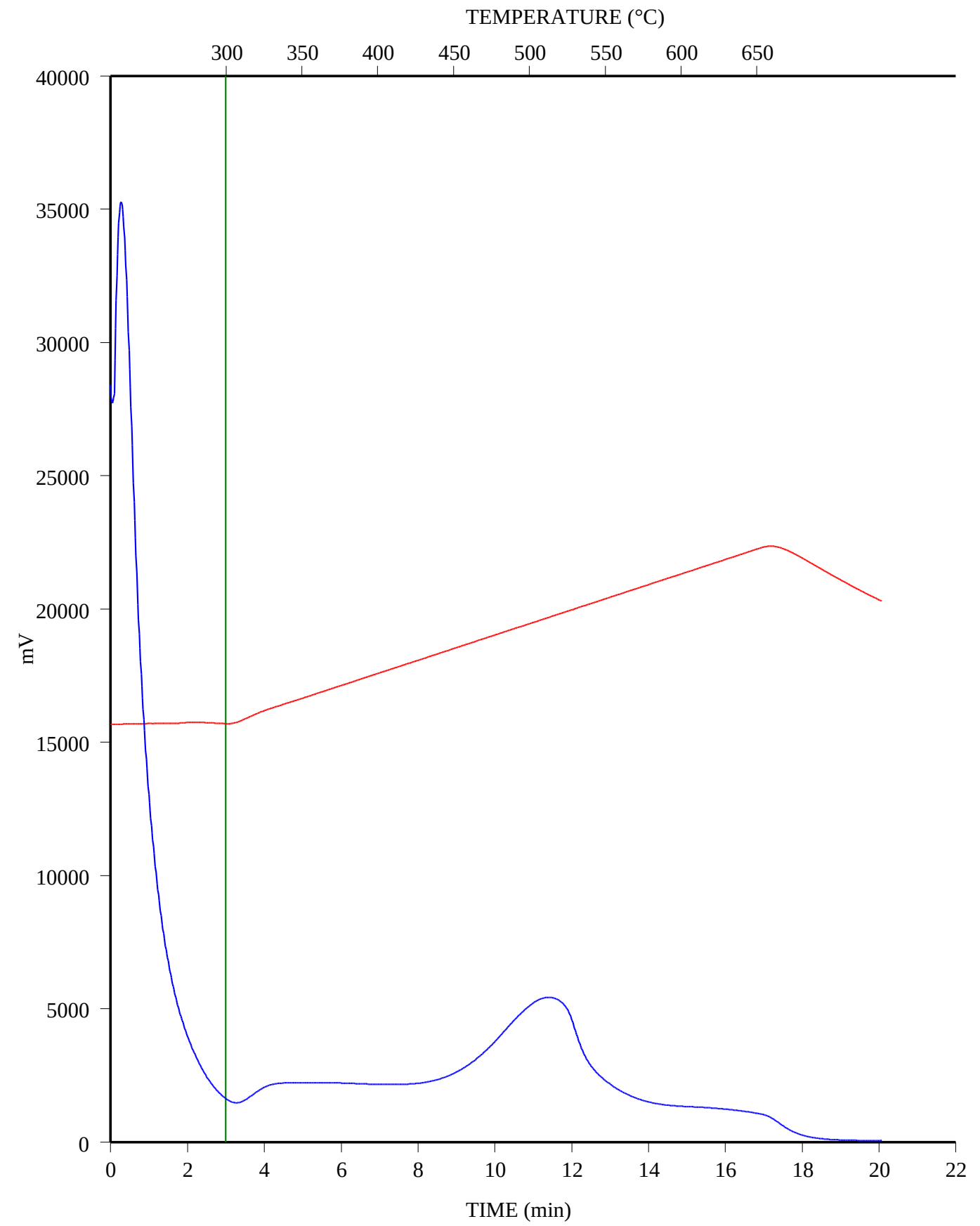
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FID Hydrocarbons



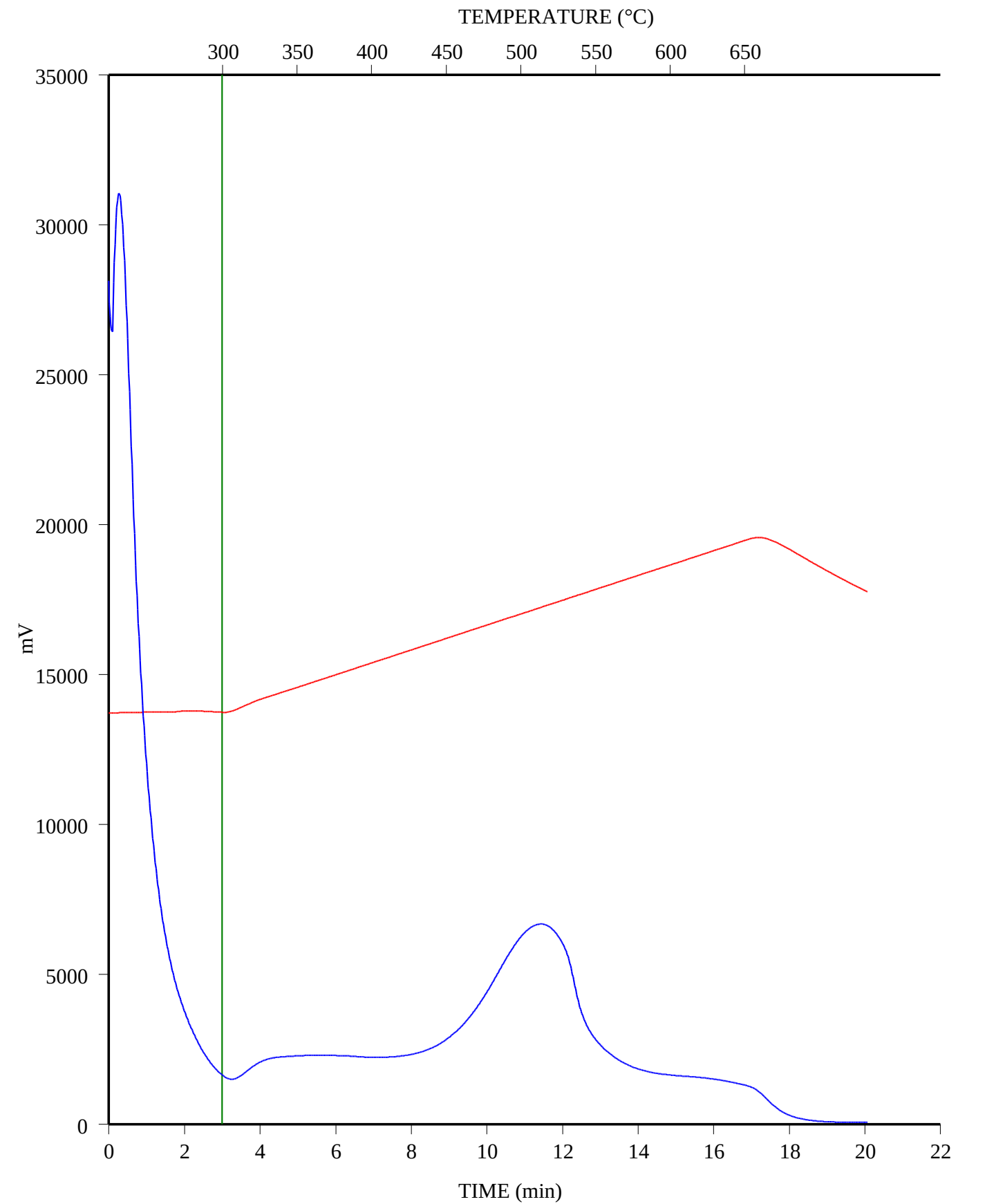
C-579765; ECA HZ FERRIER 15-33-41-8; 3438.6 - 3438.65 m
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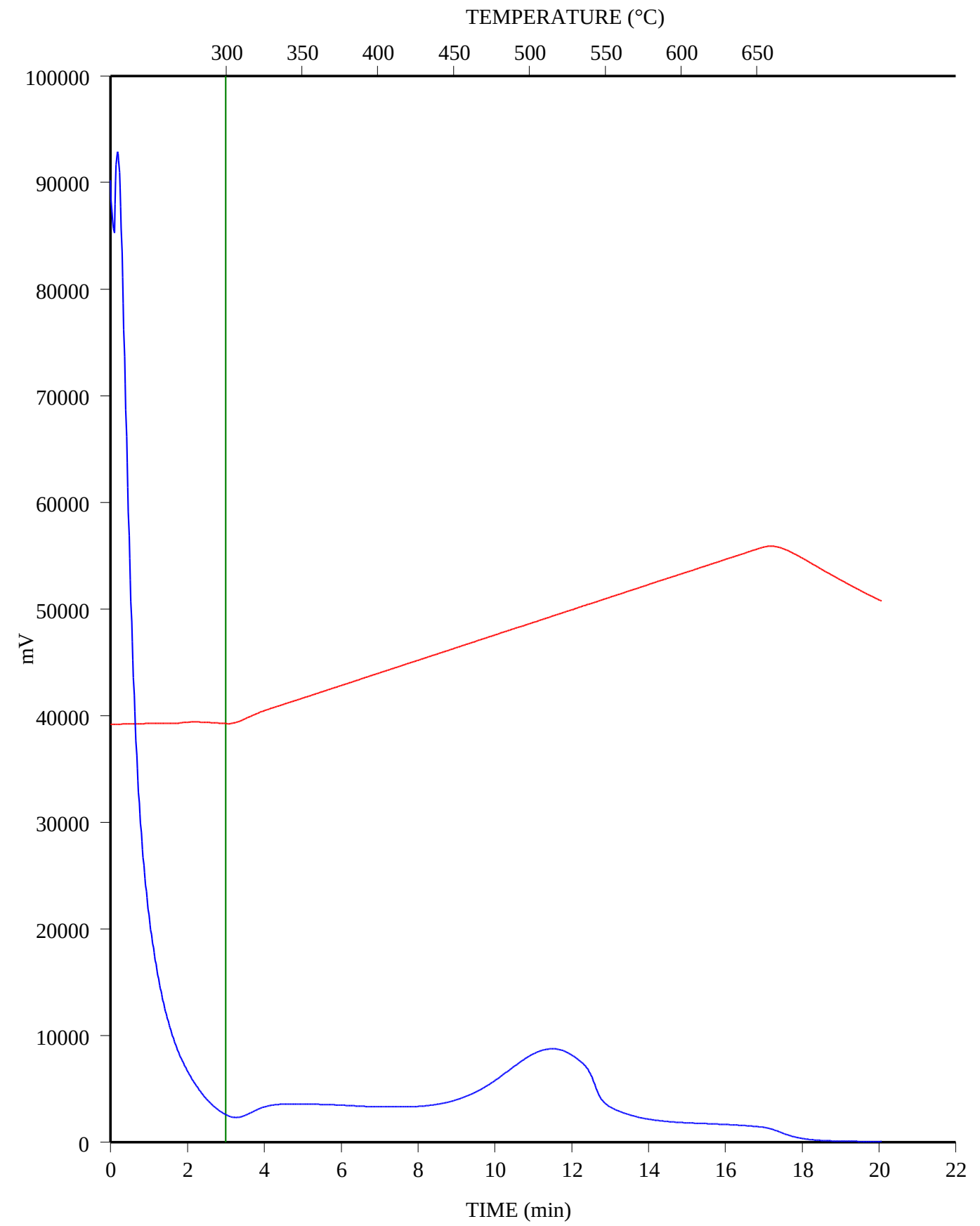
C-579904; ECA HZ FERRIER 15-33-41-8; 3439.15 - 3439.2 m
FID Hydrocarbons



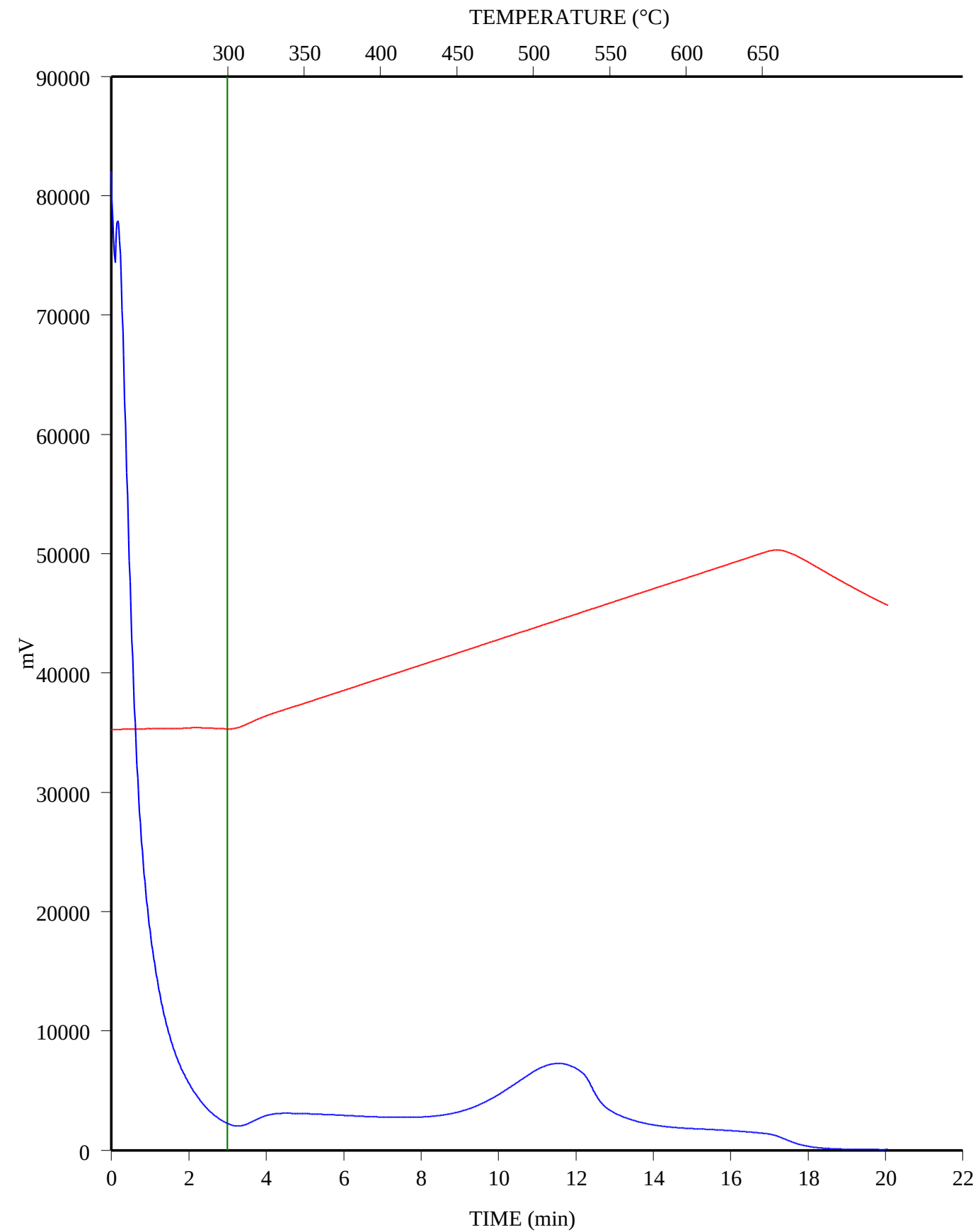
C-579933; ECA HZ FERRIER 15-33-41-8; 3440.4 - 3440.45 m
FID Hydrocarbons



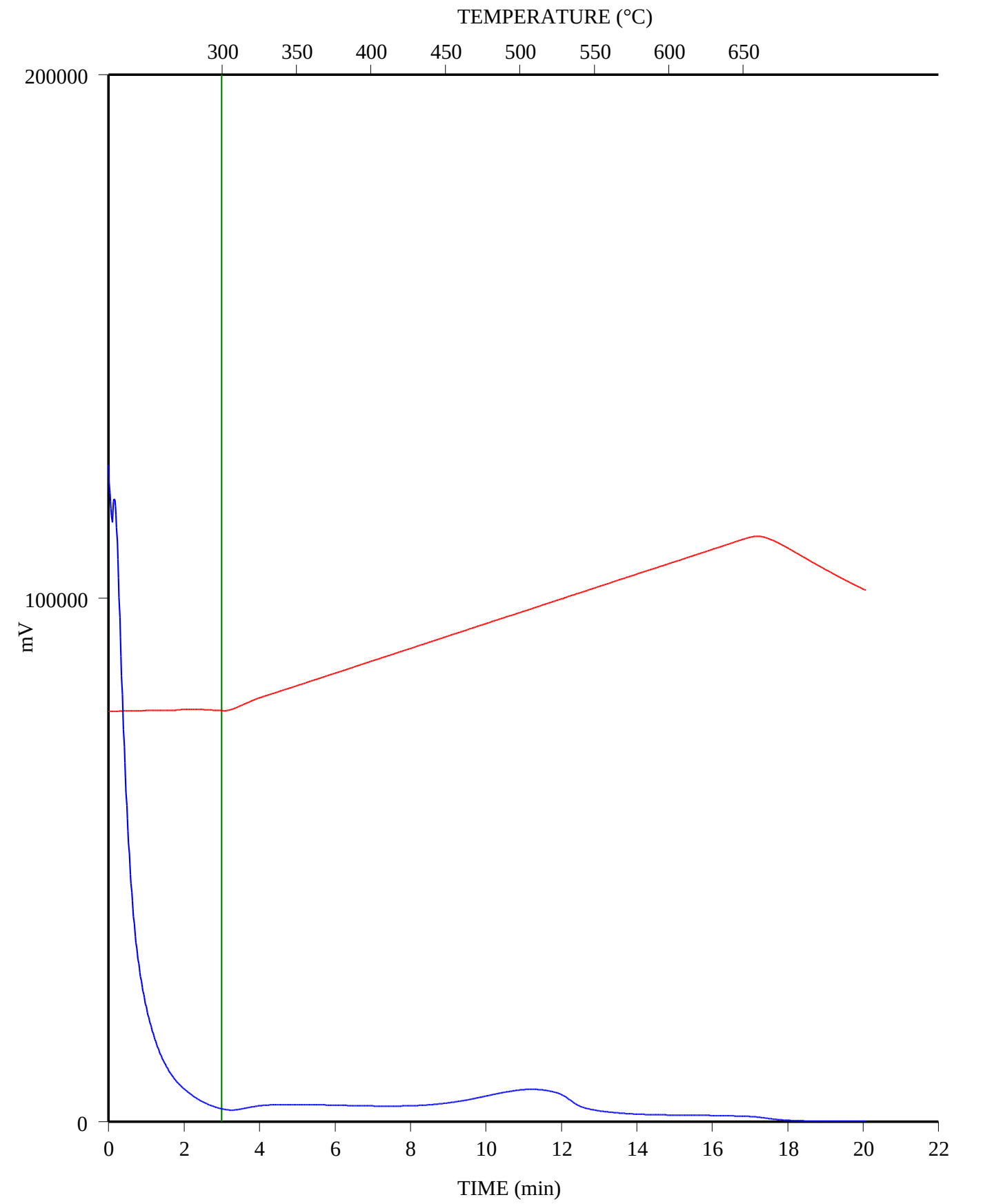
C-579934; ECA HZ FERRIER 15-33-41-8; 3441.9 - 3441.95 m
FID Hydrocarbons



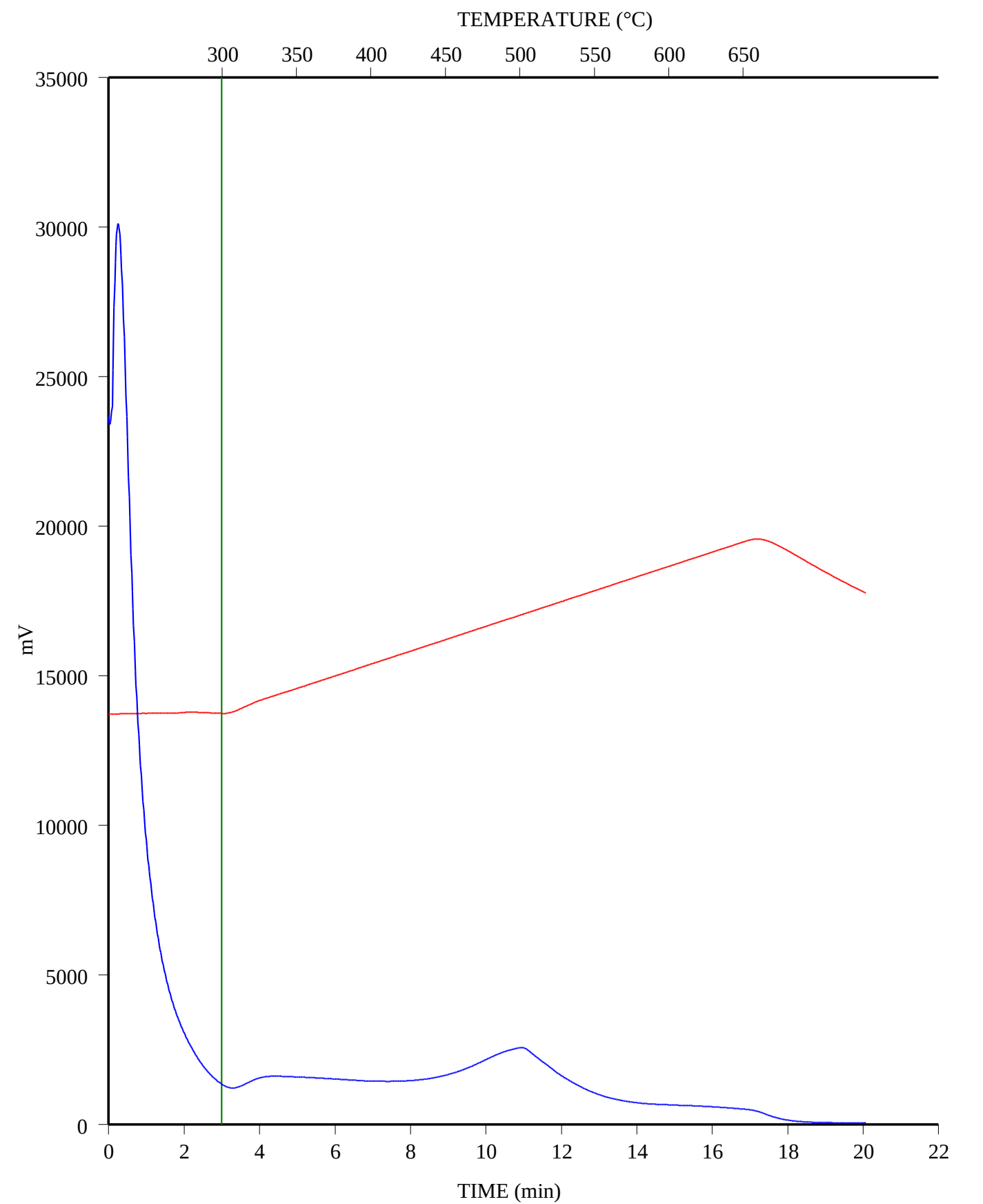
C-579935; ECA HZ FERRIER 15-33-41-8; 3443.4 - 3443.45 m
FID Hydrocarbons



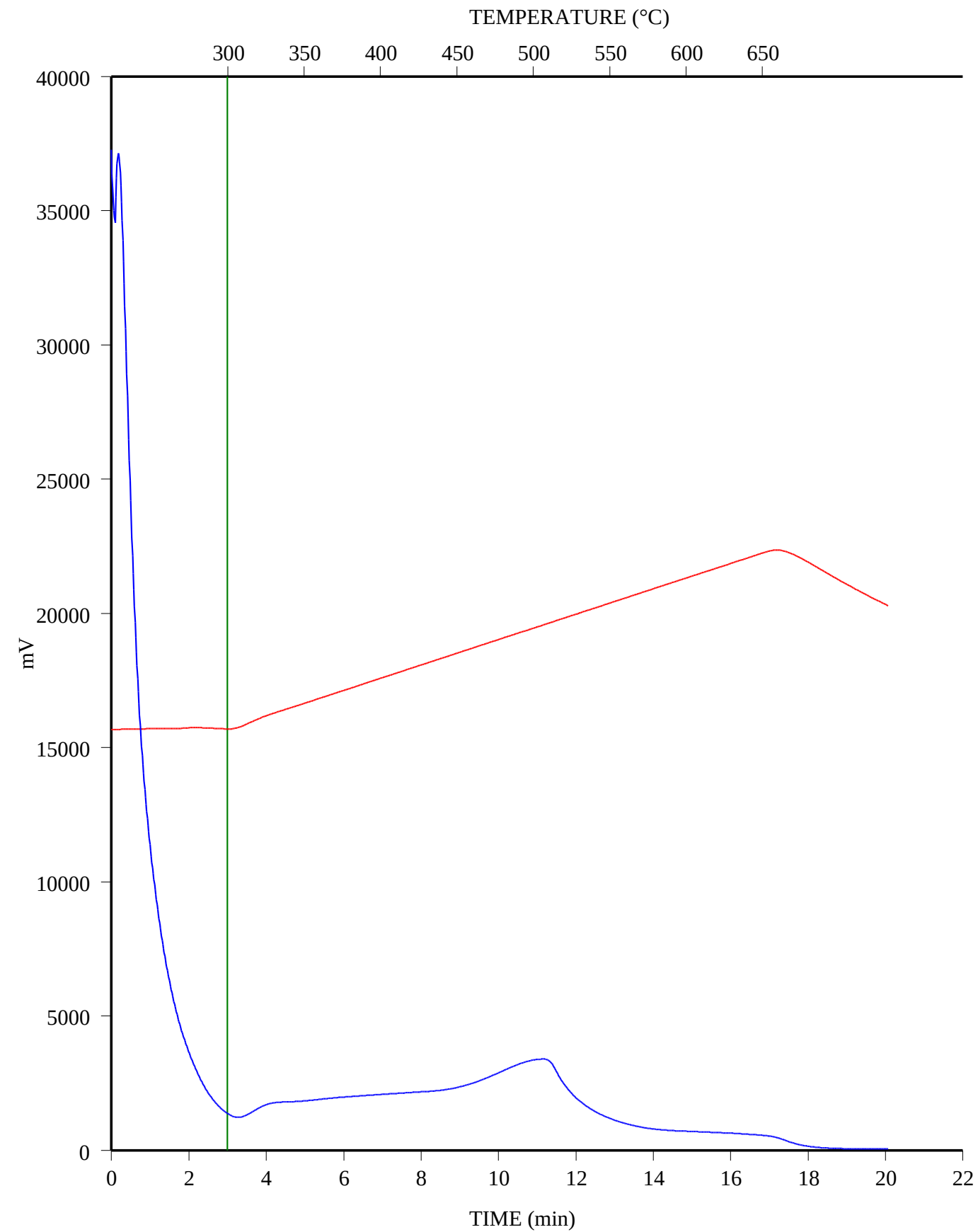
C-579936; ECA HZ FERRIER 15-33-41-8; 3445.25 - 3445.3 m
FID Hydrocarbons



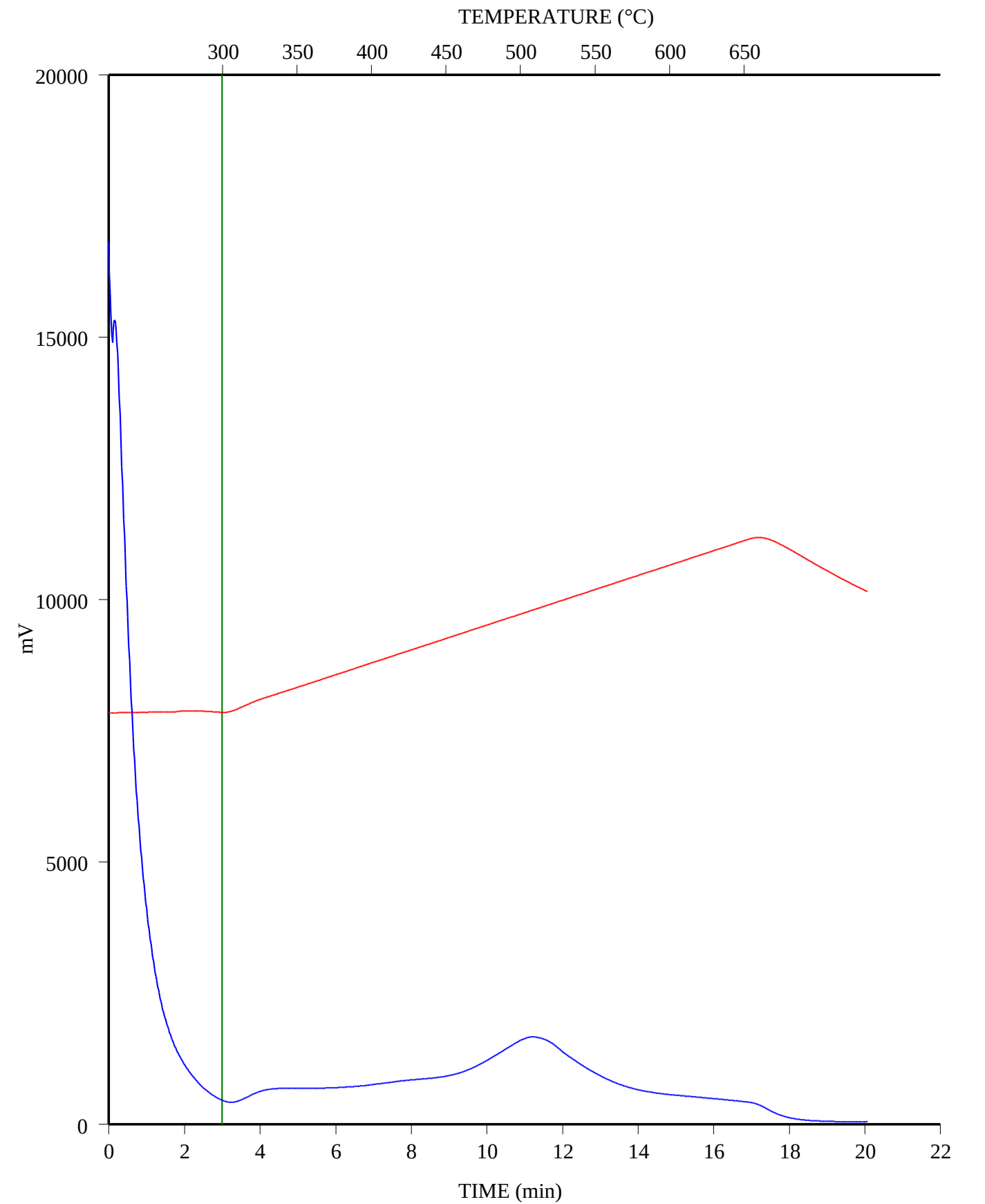
C-579937; ECA HZ FERRIER 15-33-41-8; 3446.35 - 3446.4 m
FID Hydrocarbons



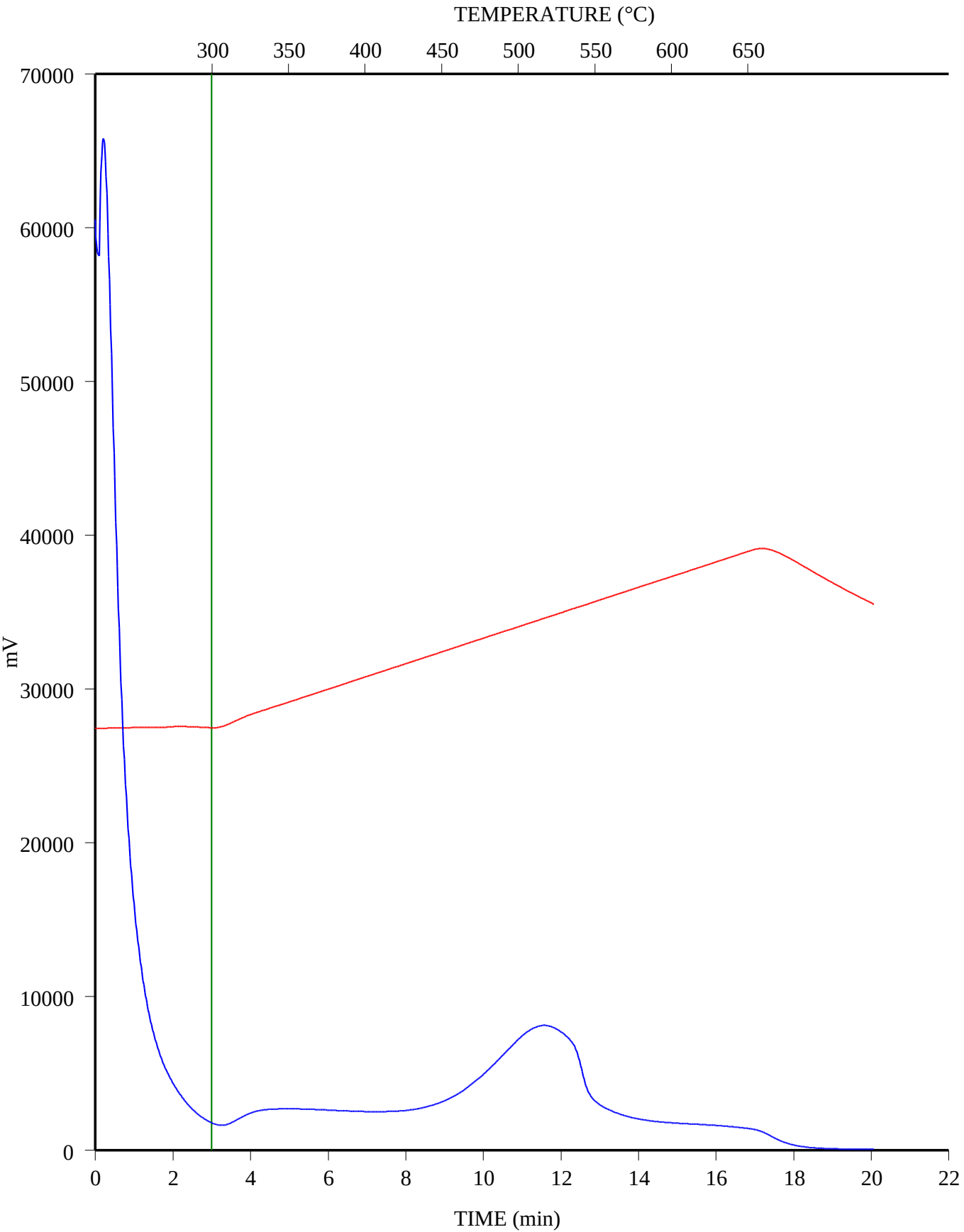
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FID Hydrocarbons



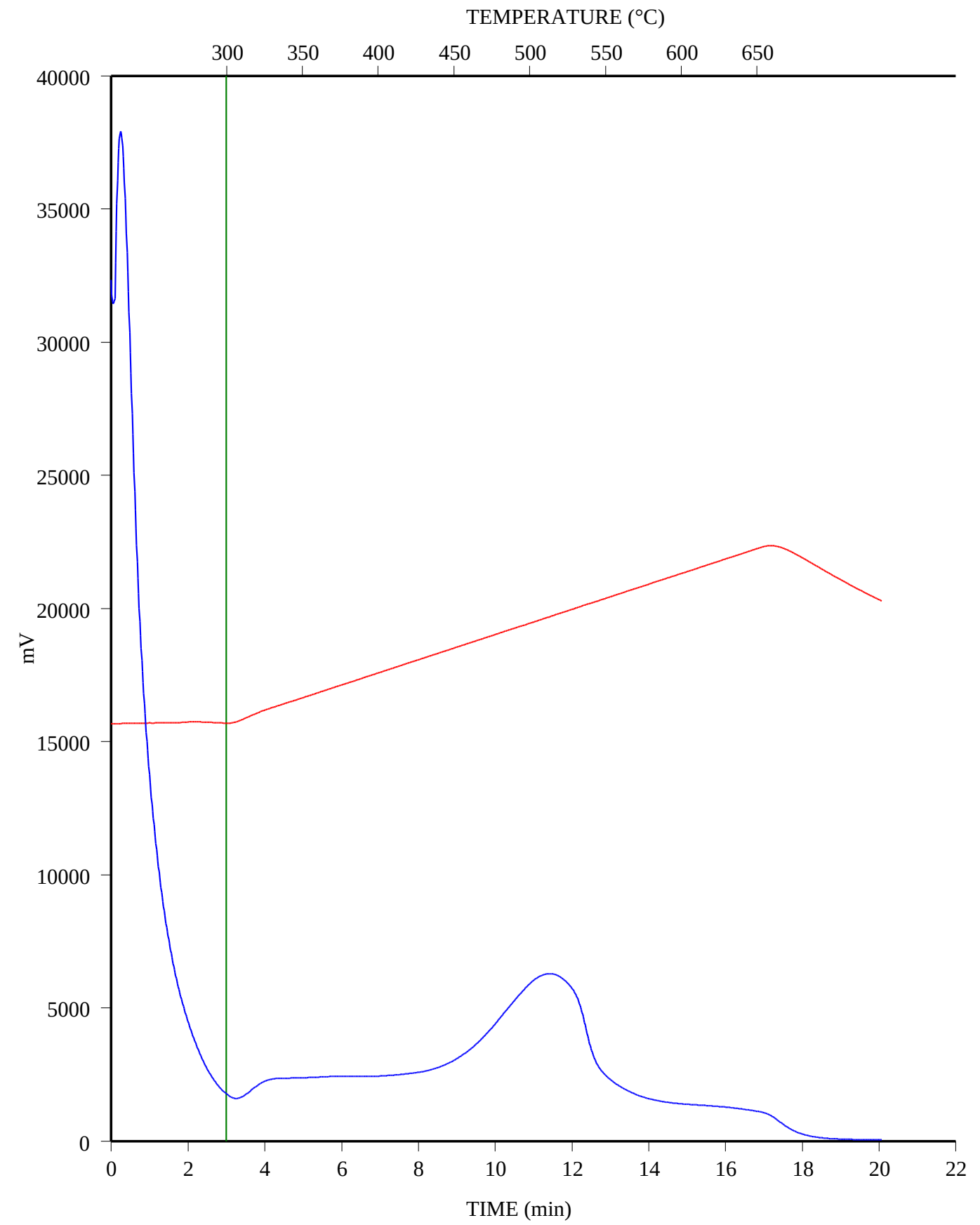
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FID Hydrocarbons



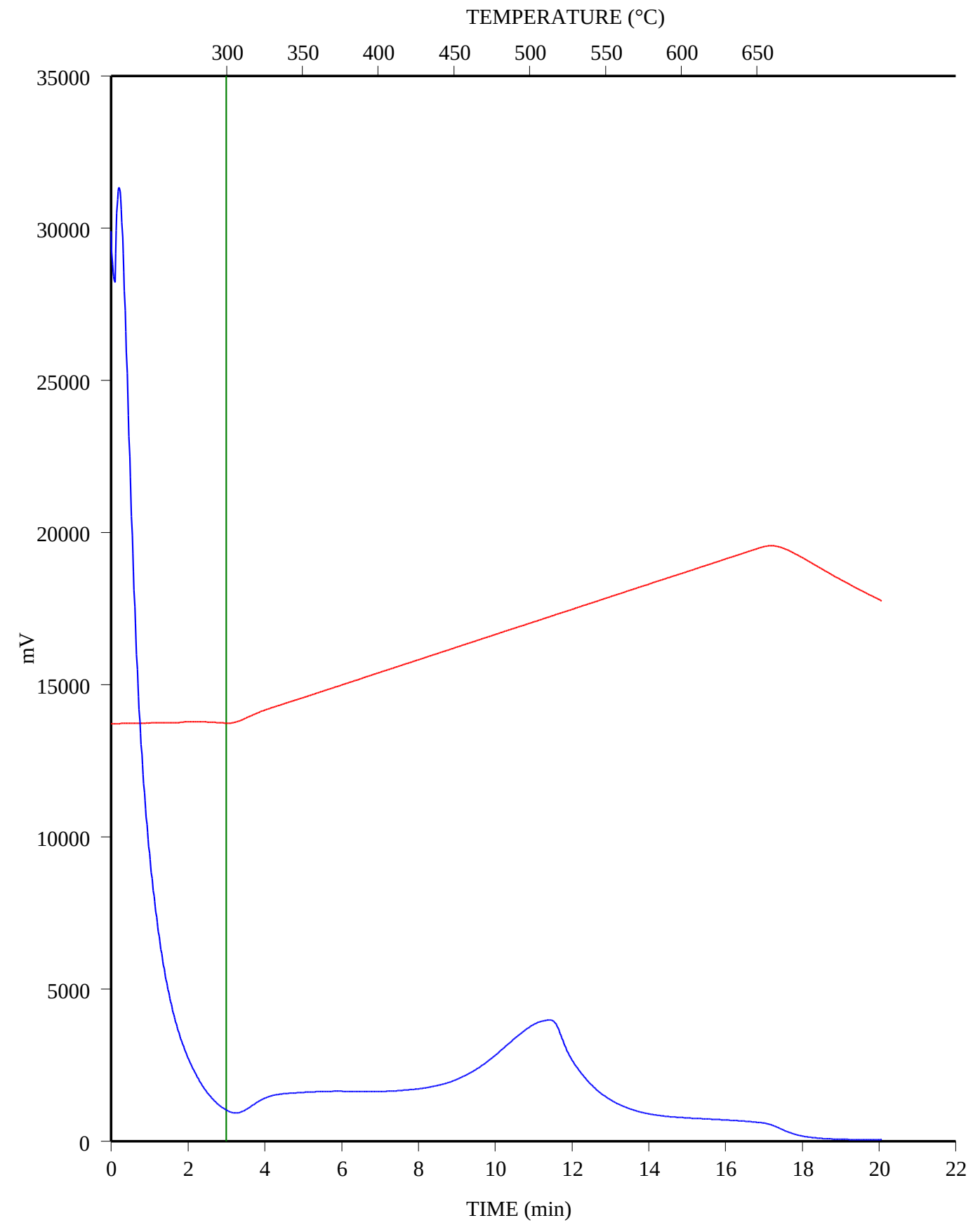
C-579940; ECA HZ FERRIER 15-33-41-8; 3450.05 - 3450.1 m
FID Hydrocarbons



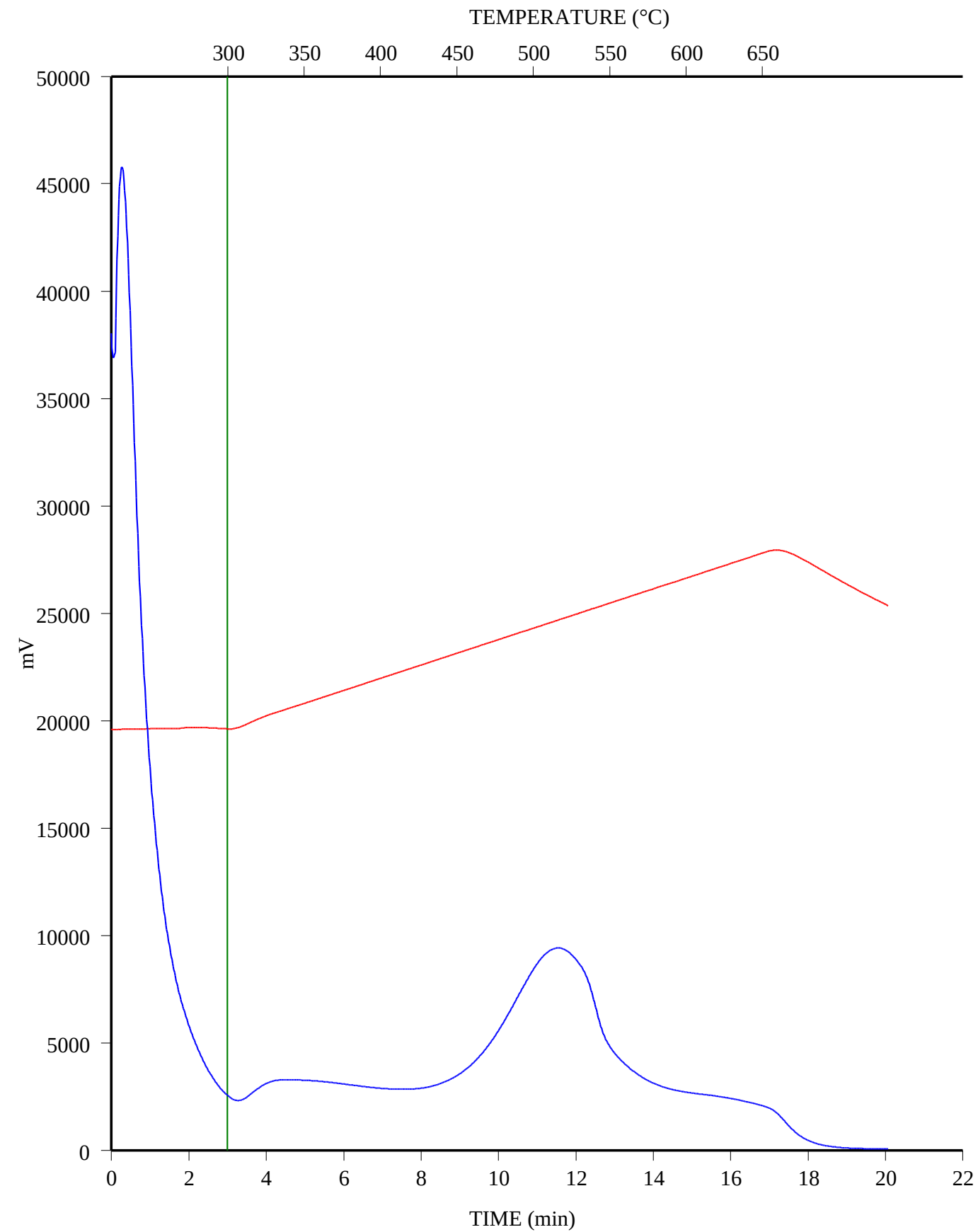
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FID Hydrocarbons



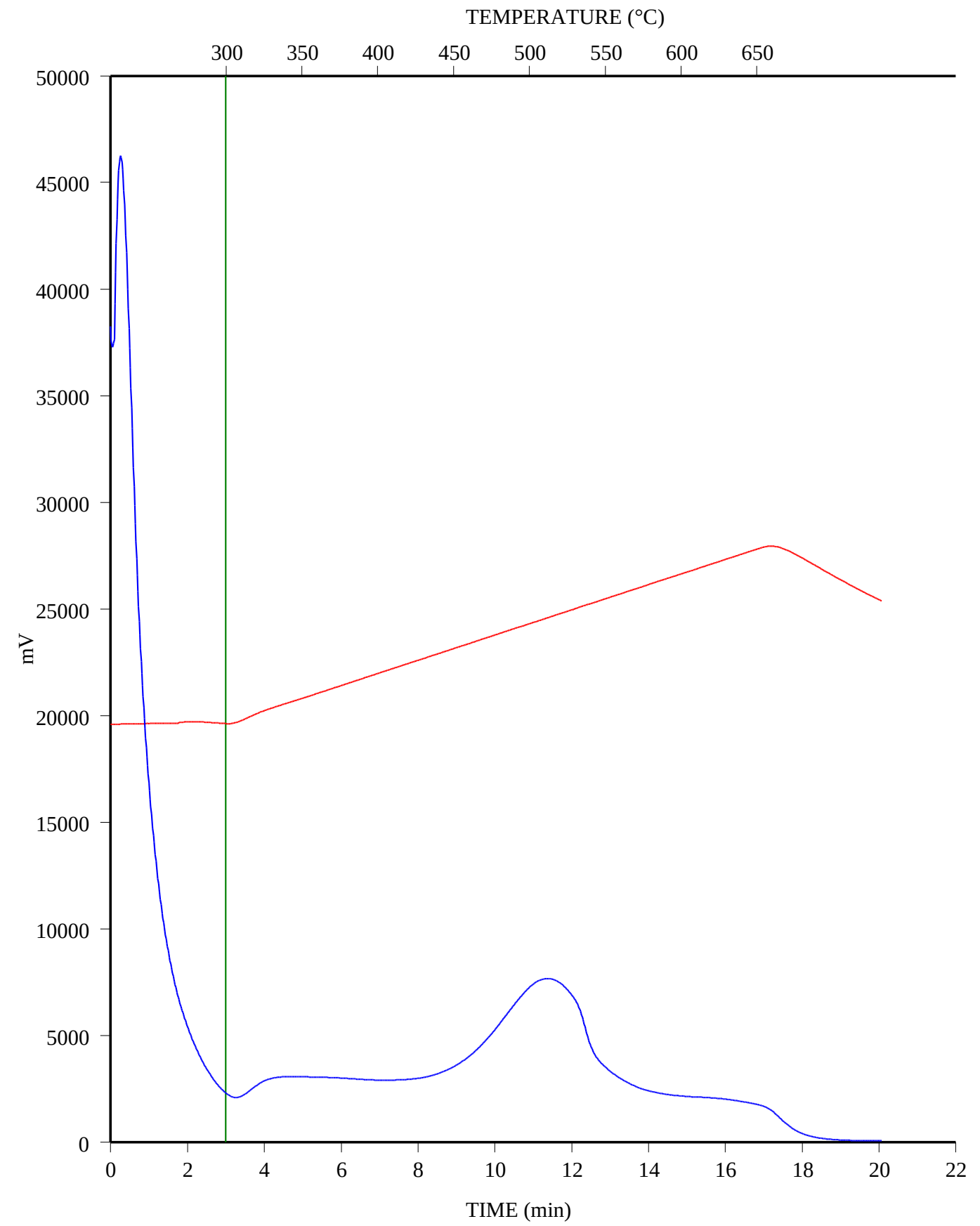
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FID Hydrocarbons



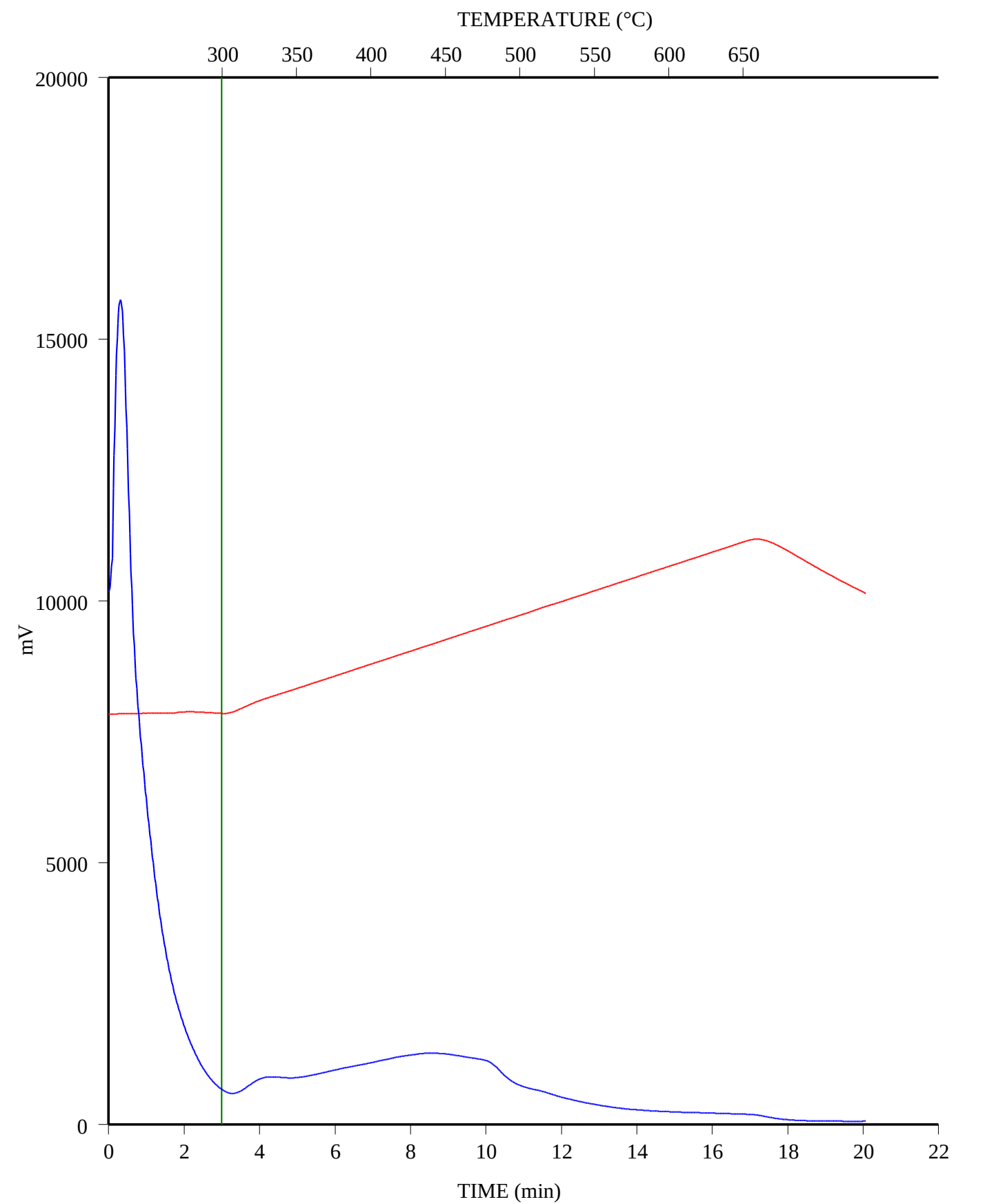
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FID Hydrocarbons



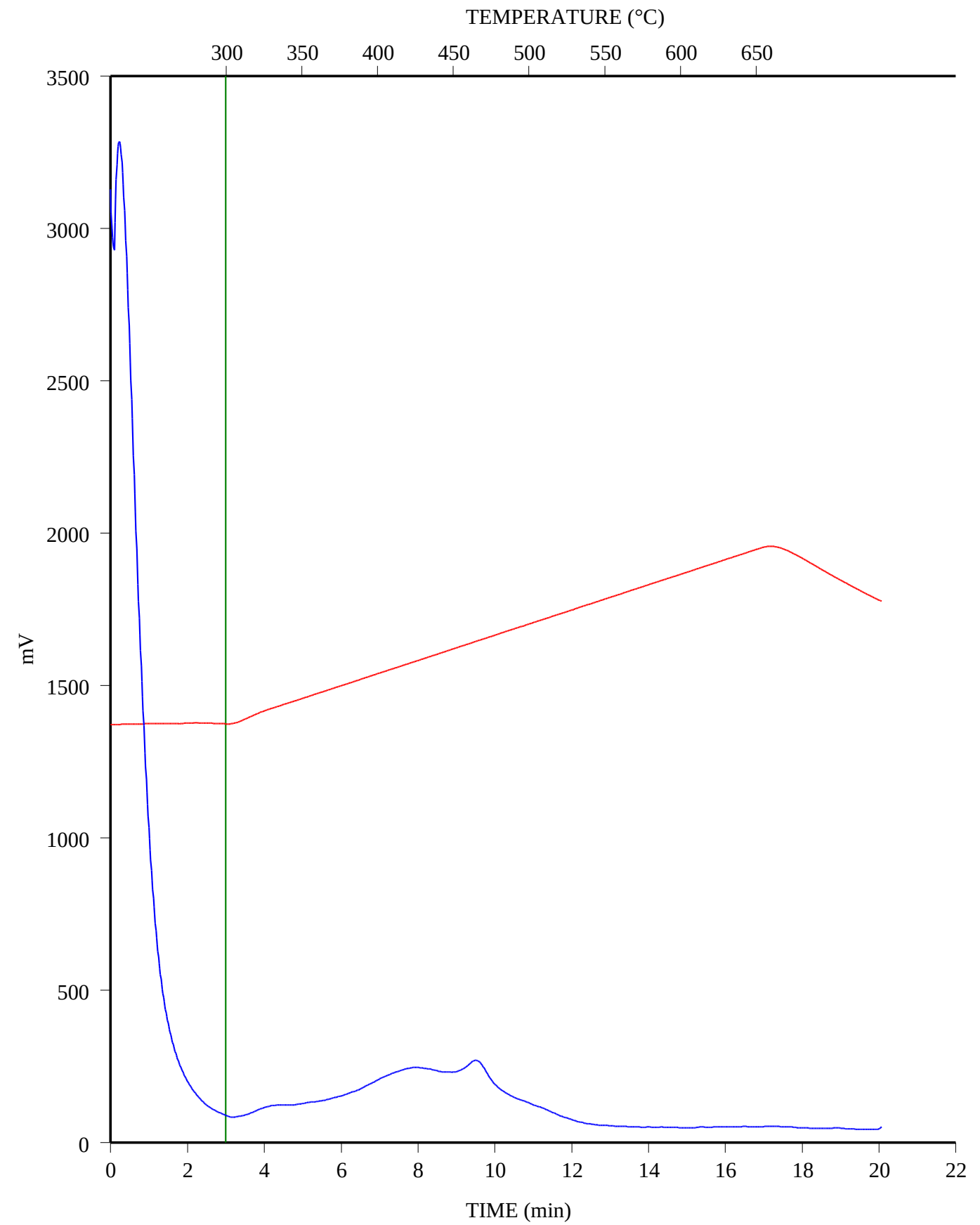
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FID Hydrocarbons



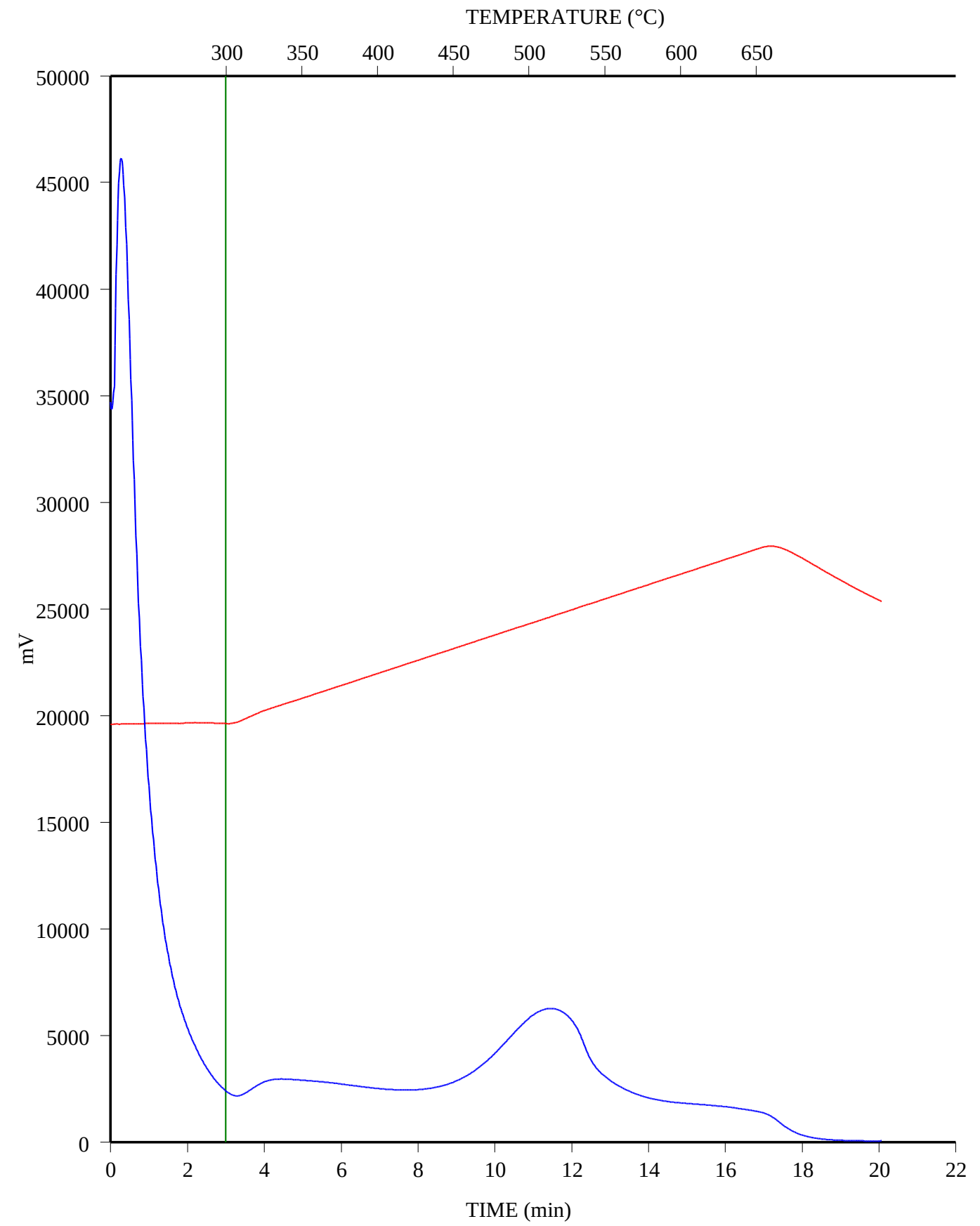
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FID Hydrocarbons



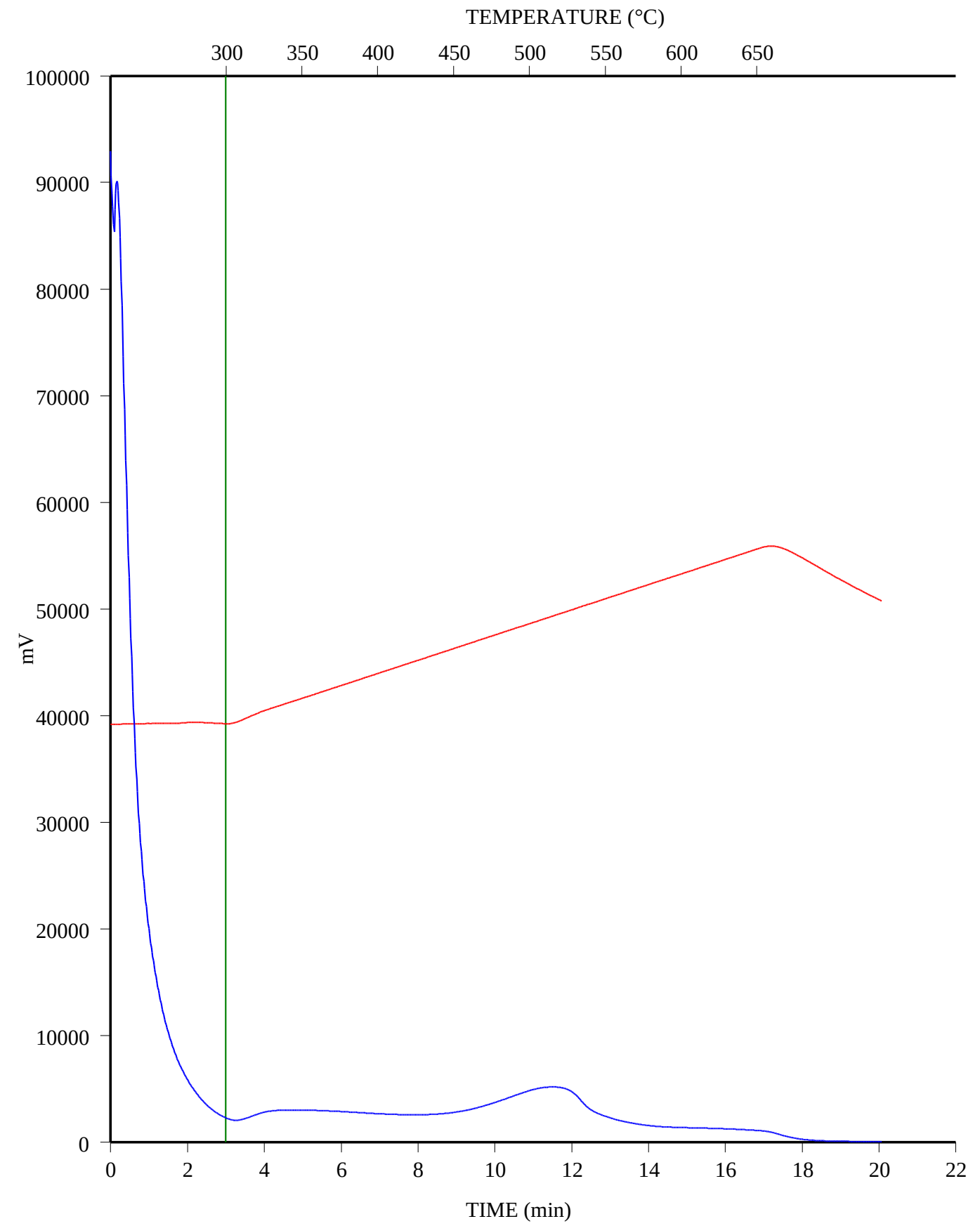
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FID Hydrocarbons



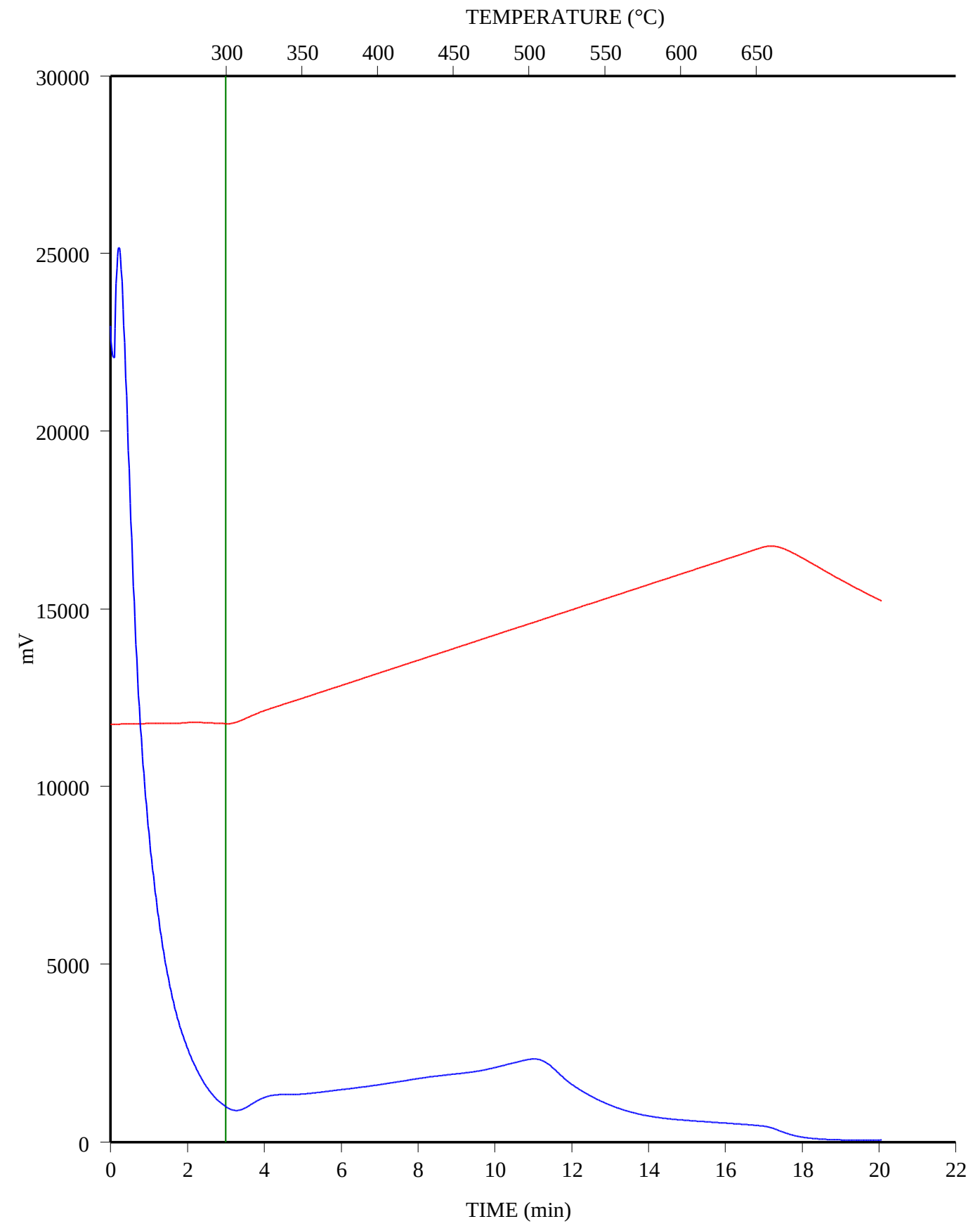
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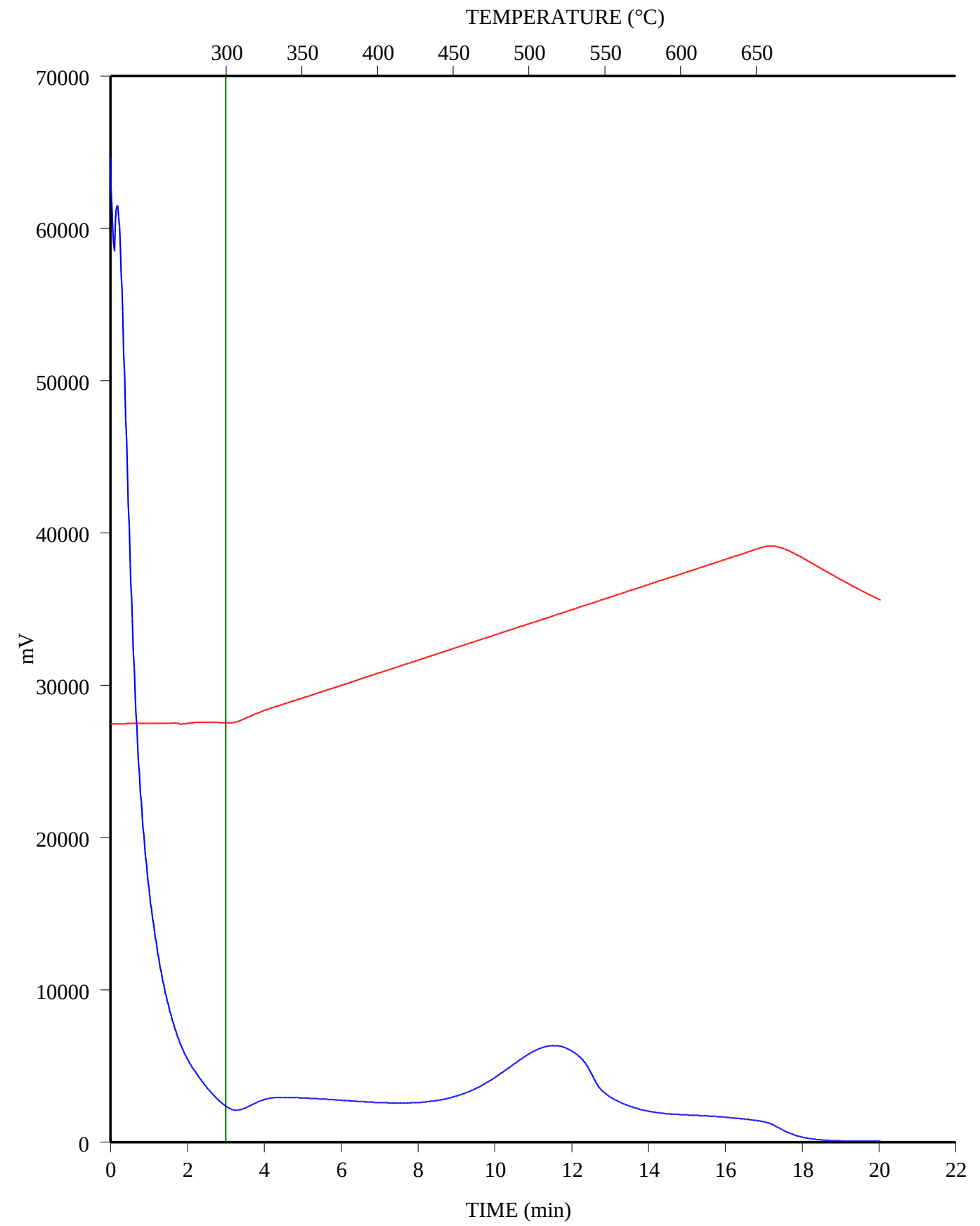
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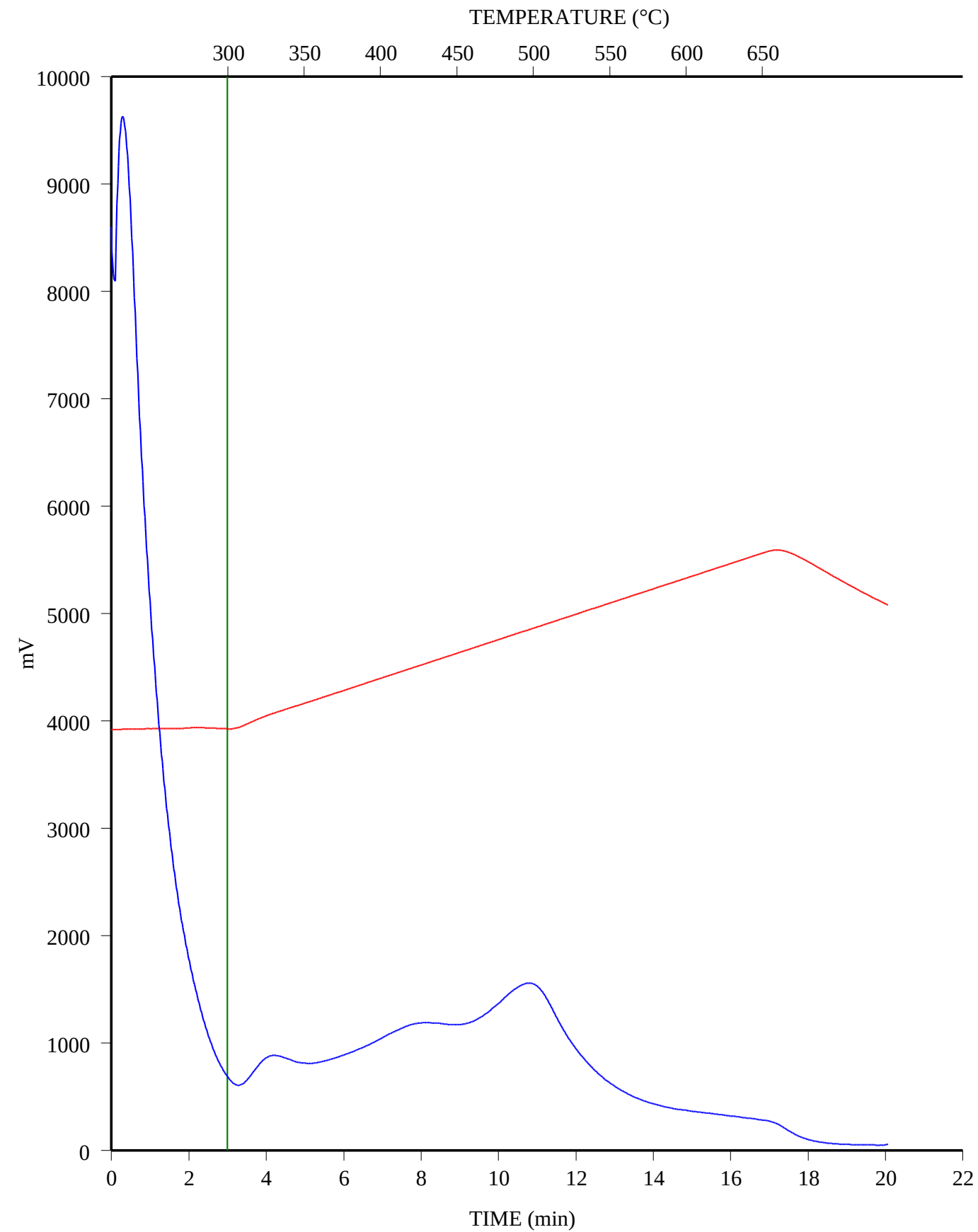
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FID Hydrocarbons



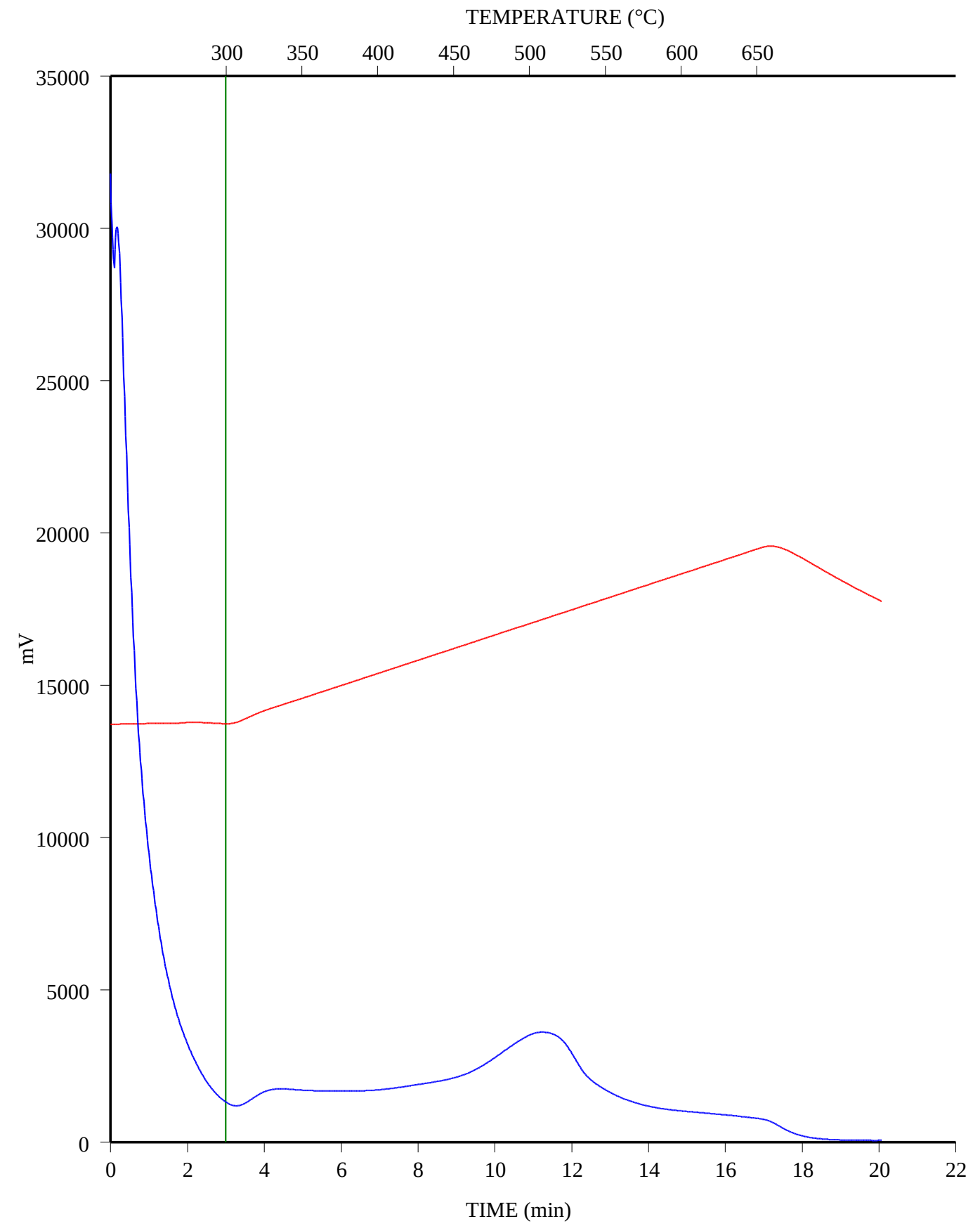
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FID Hydrocarbons



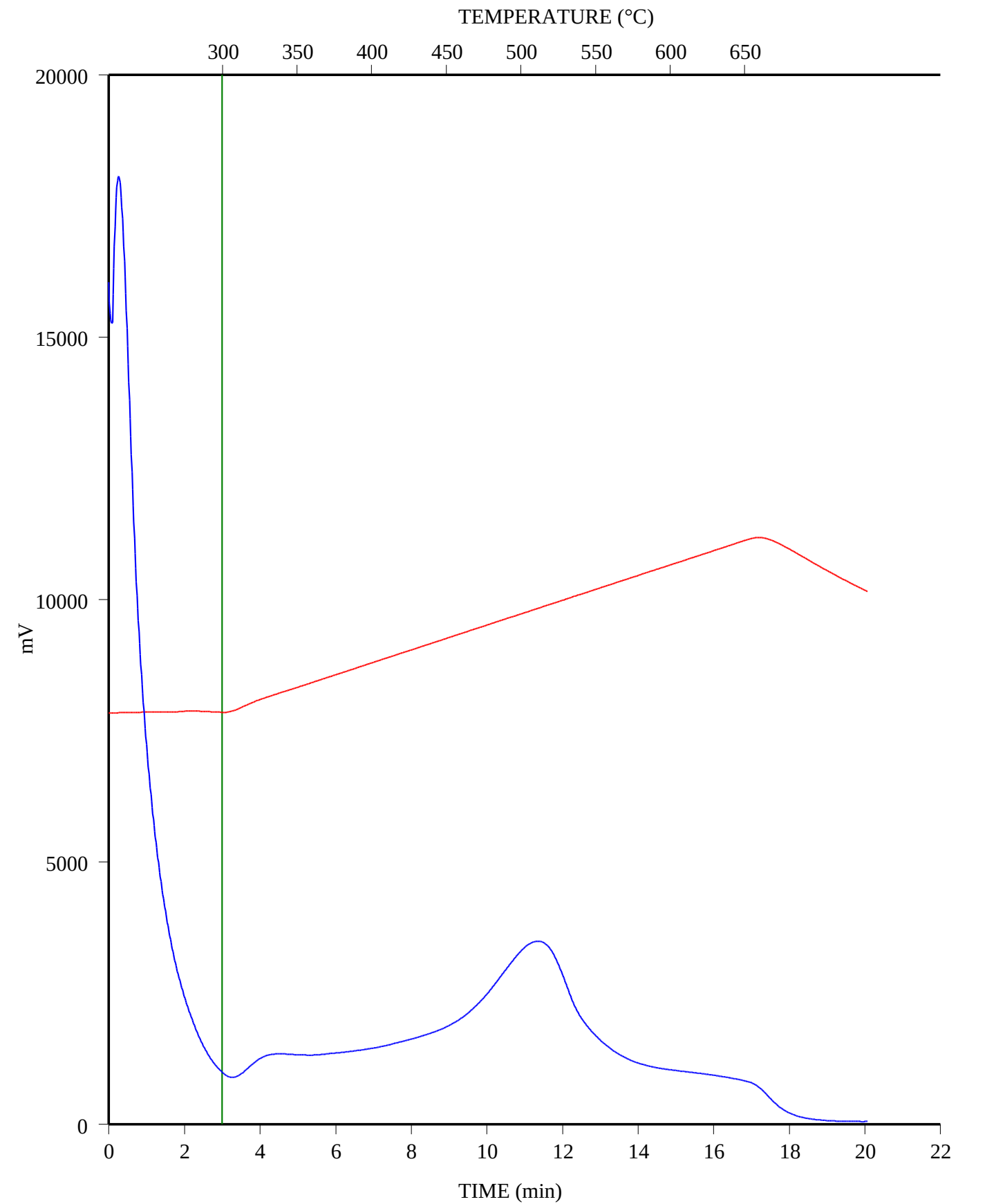
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FID Hydrocarbons



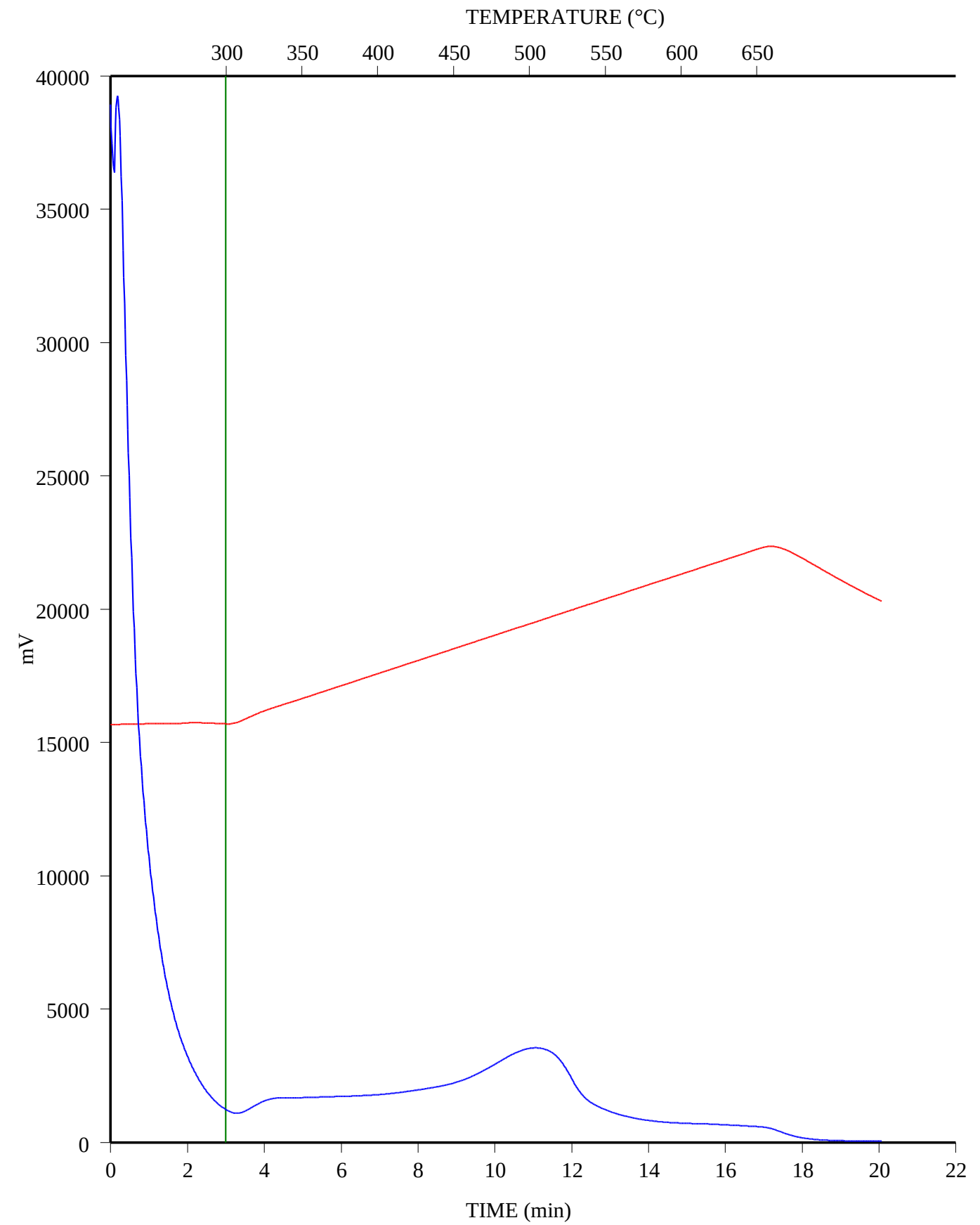
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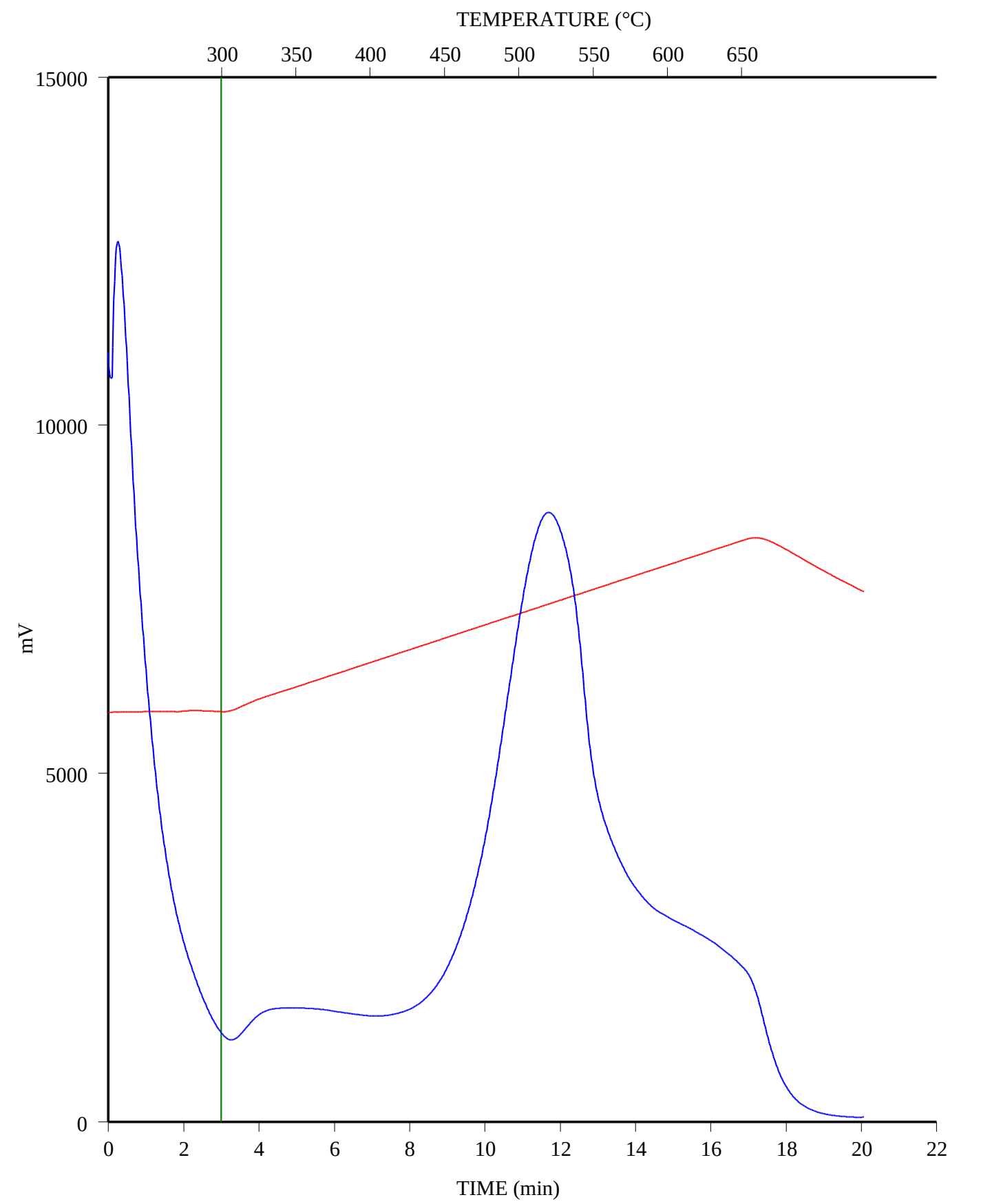
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FID Hydrocarbons



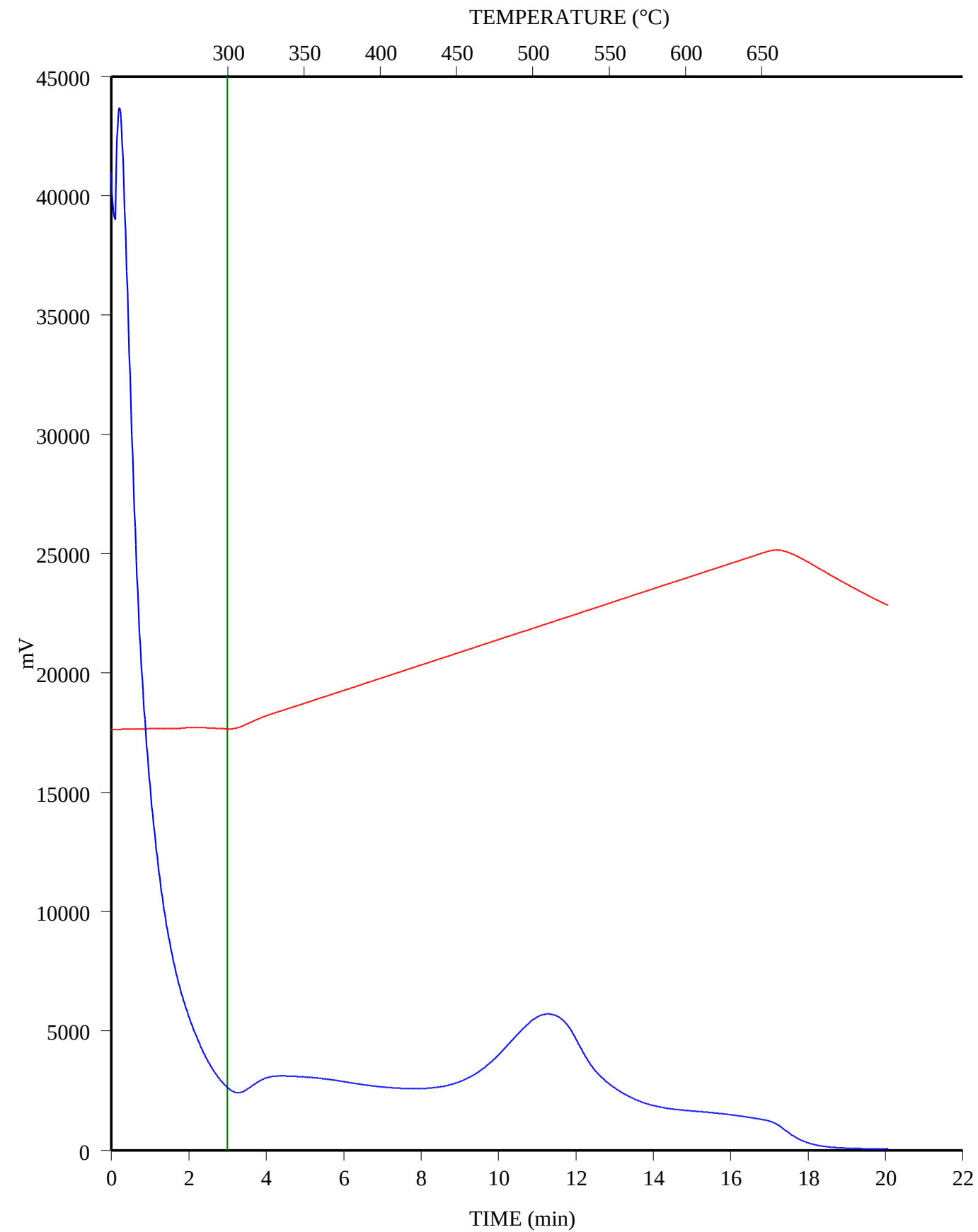
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FID Hydrocarbons



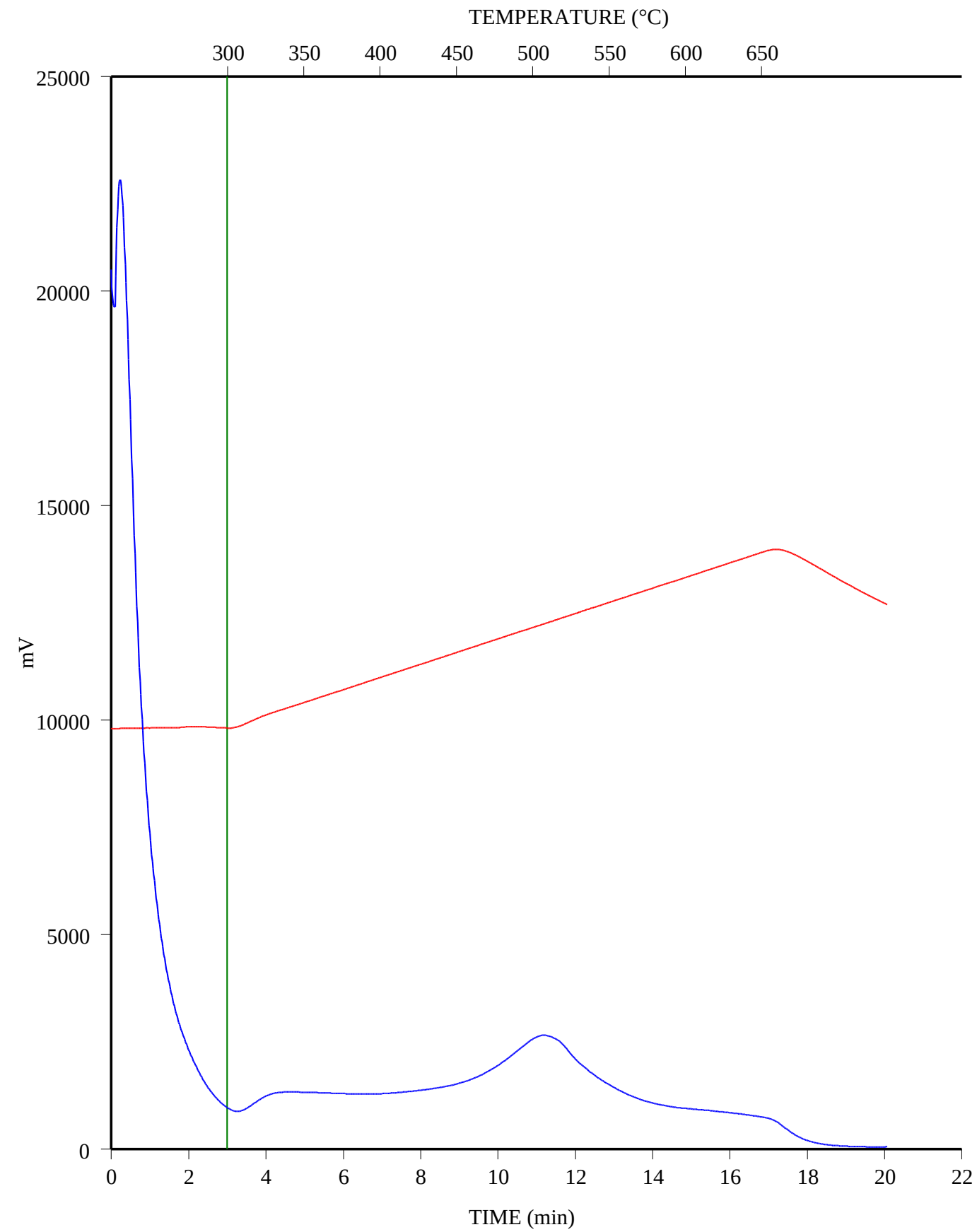
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FID Hydrocarbons



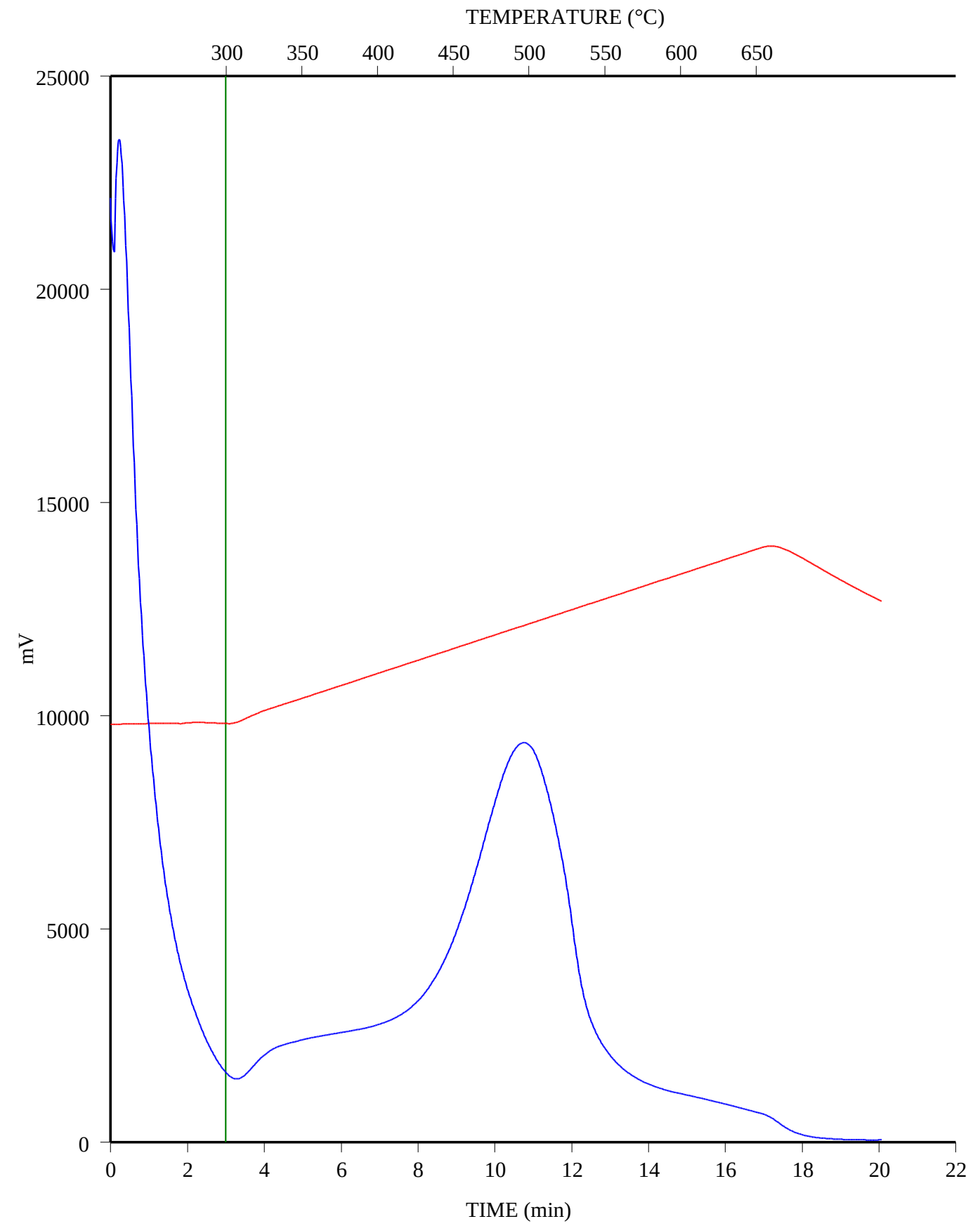
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FID Hydrocarbons



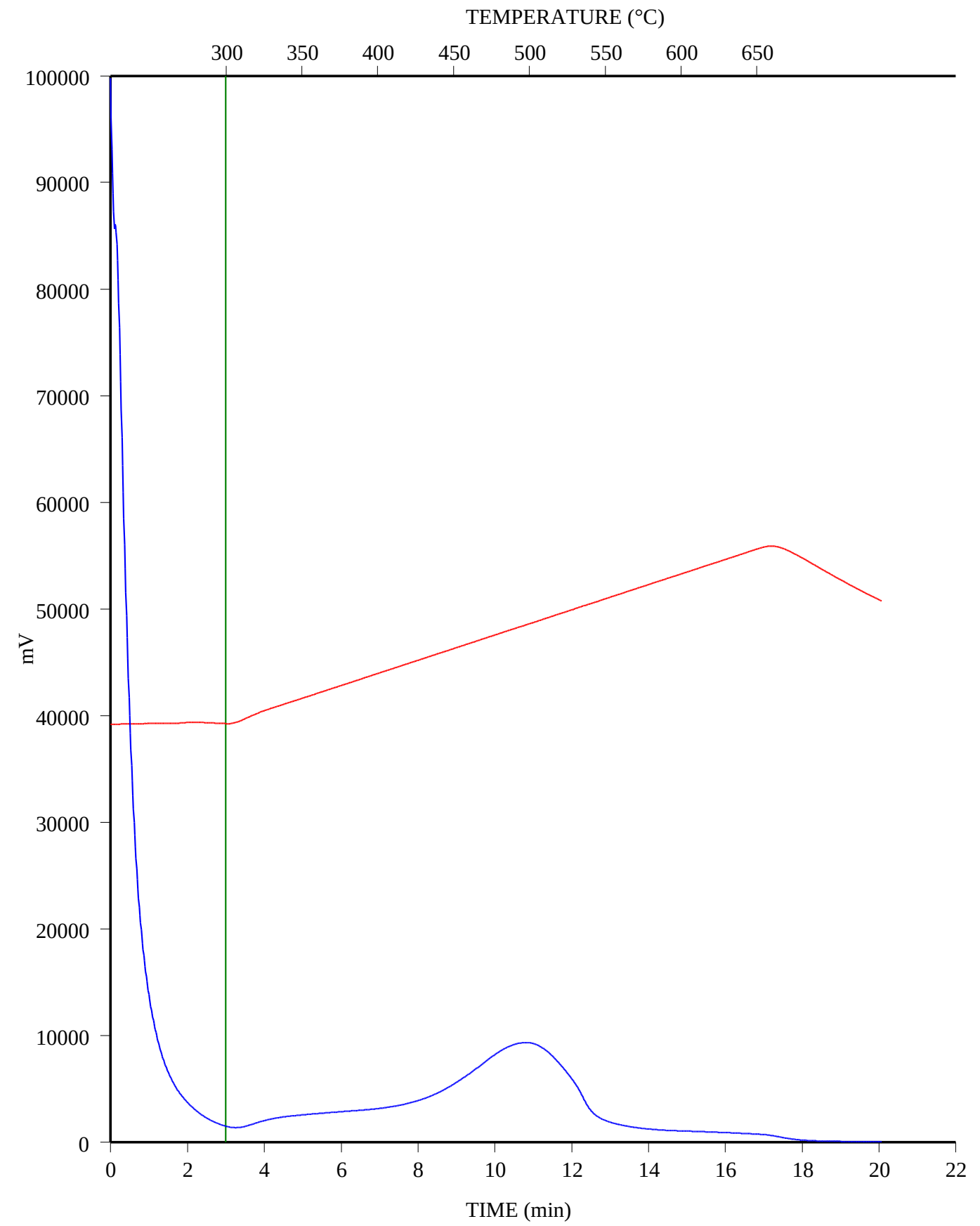
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FID Hydrocarbons



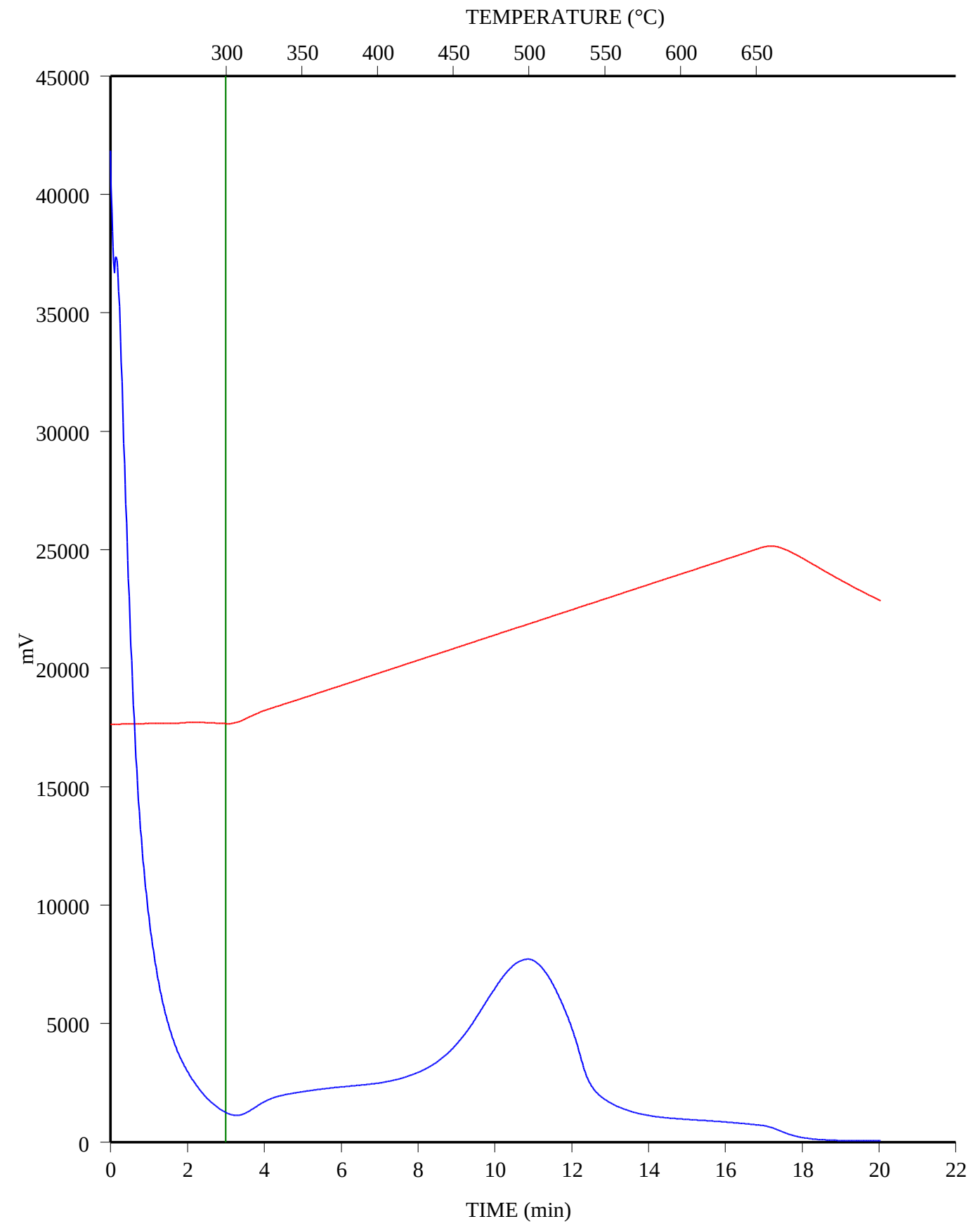
C-579958; CHEVRON HZ FOXCK 8-15-62-18; 2989.17 - 2989.22 m
FID Hydrocarbons



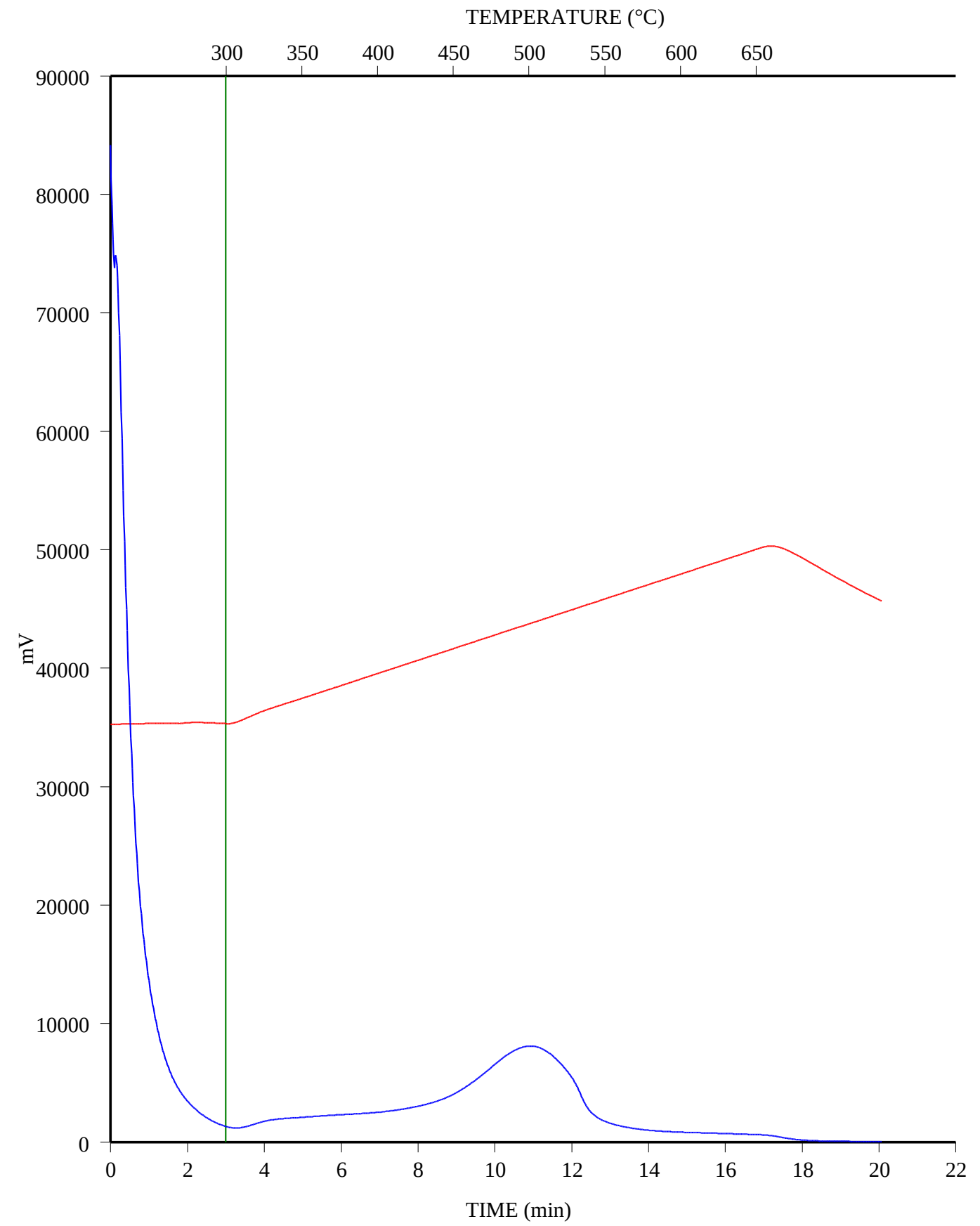
C-579959; CHEVRON HZ FOXCK 8-15-62-18; 2990.38 - 2990.42 m
FID Hydrocarbons



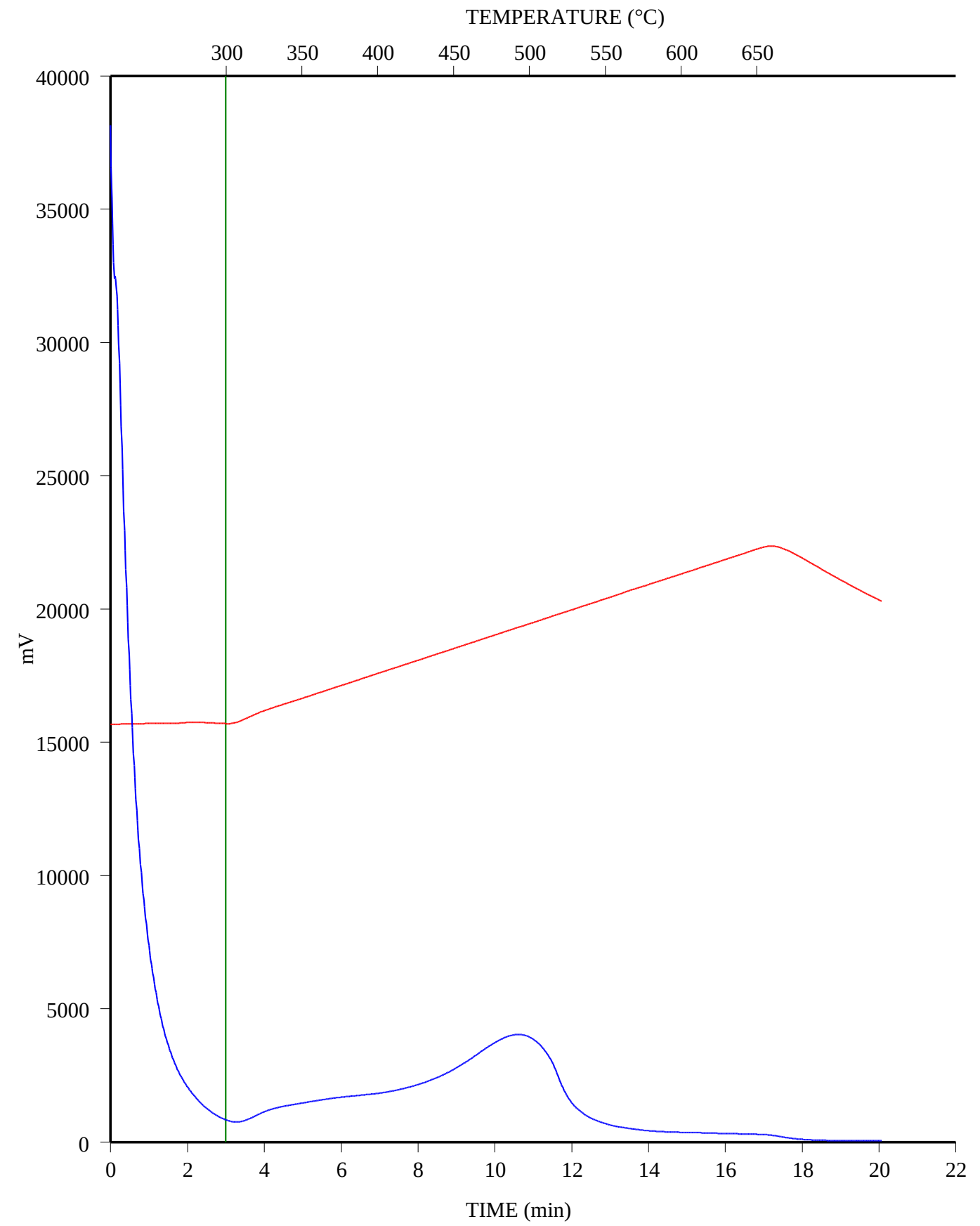
C-579960; CHEVRON HZ FOXCK 8-15-62-18; 2991.77 - 2991.82 m
FID Hydrocarbons



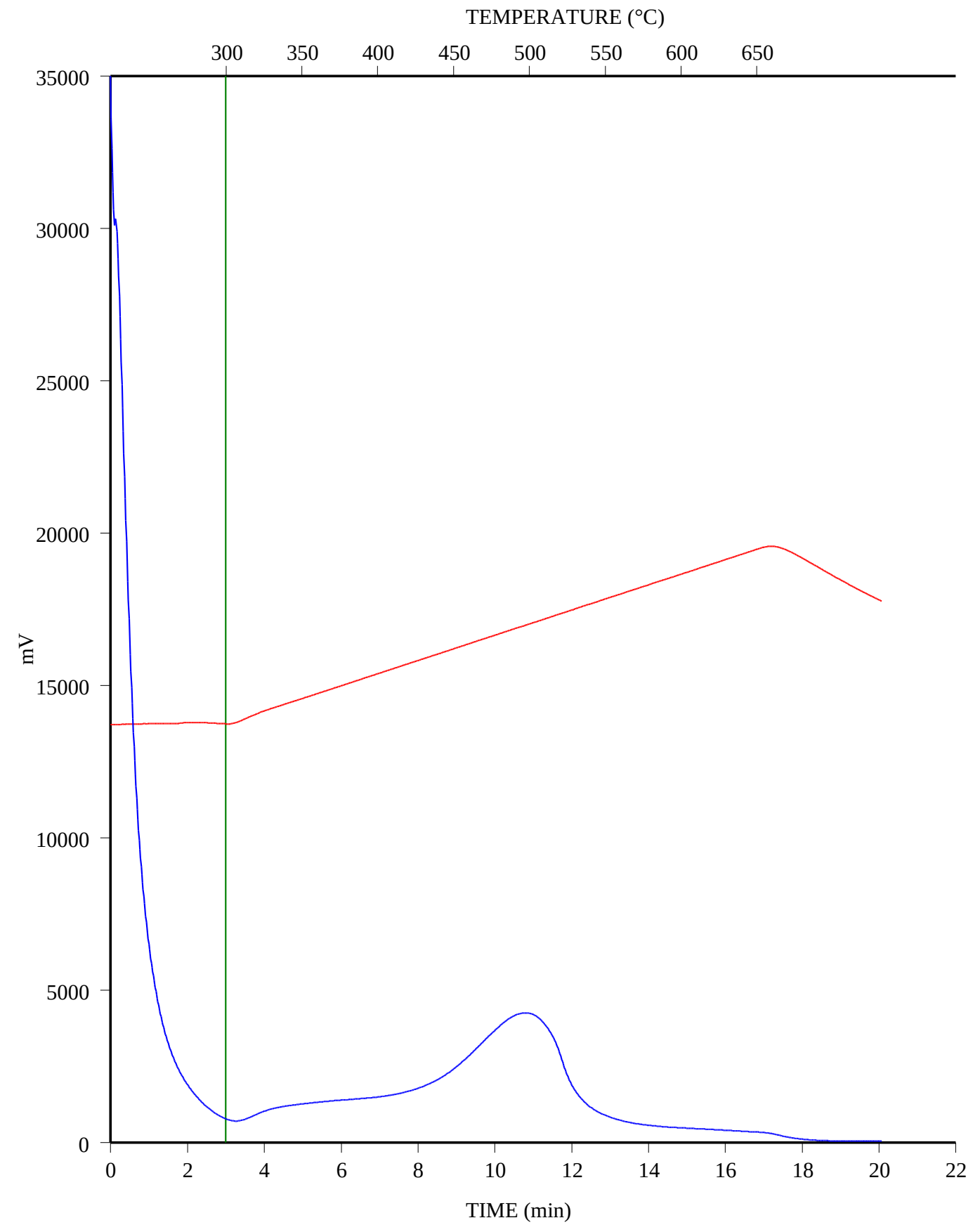
C-579961; CHEVRON HZ FOXCK 8-15-62-18; 2992.75 - 2992.83 m
FID Hydrocarbons



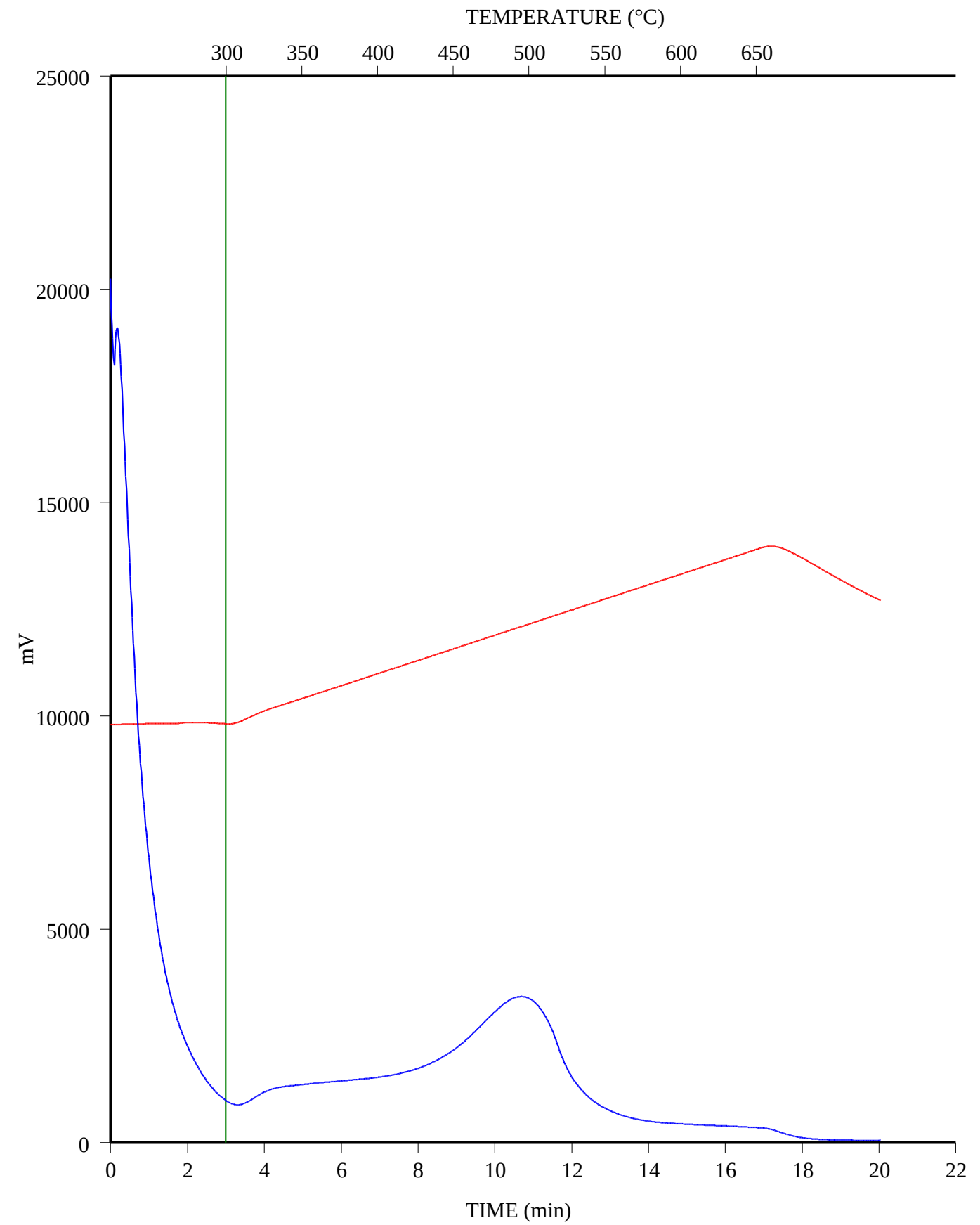
C-579962; CHEVRON HZ FOXCK 8-15-62-18; 2994.65 - 2994.7 m
FID Hydrocarbons



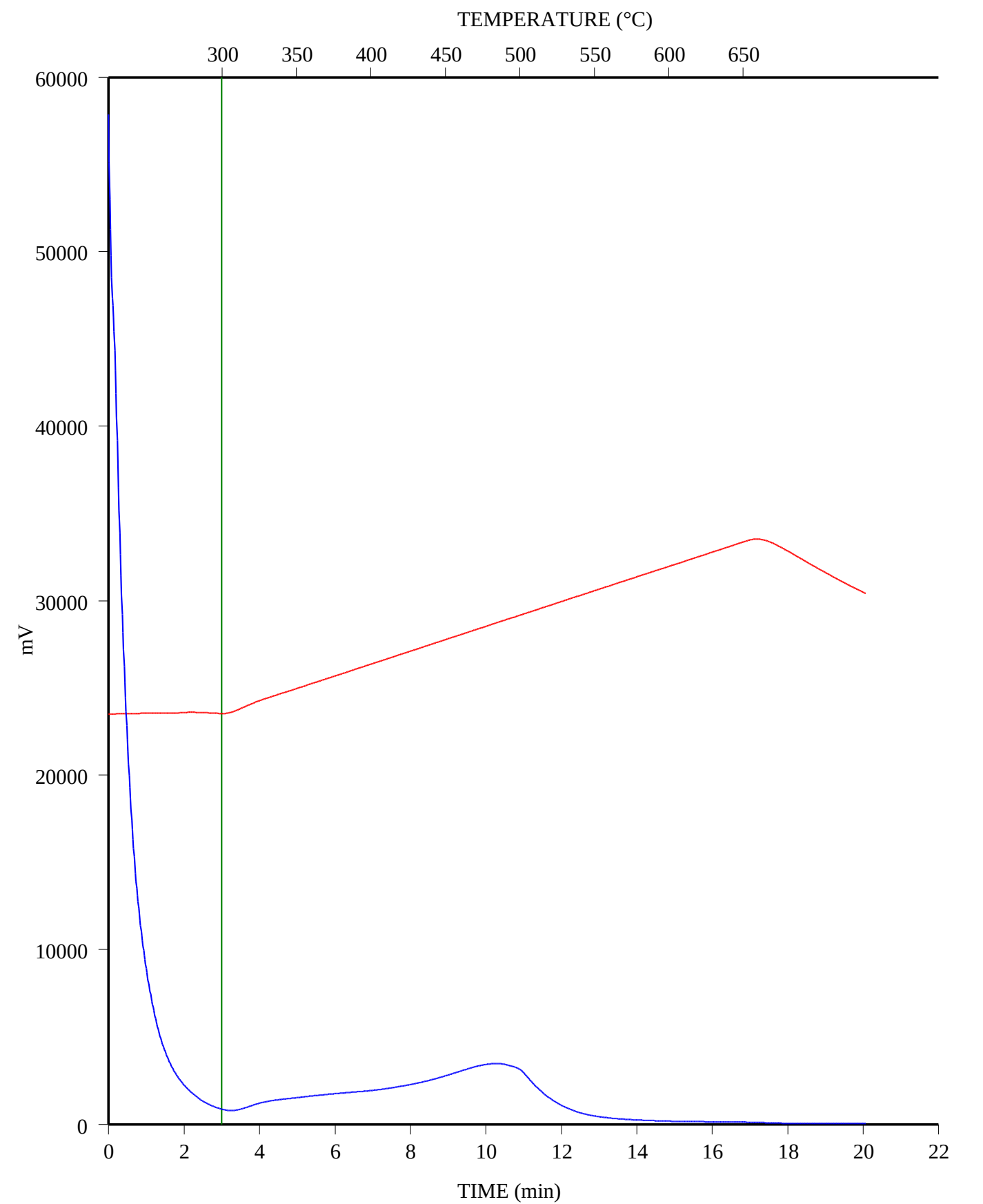
C-579963; CHEVRON HZ FOXCK 8-15-62-18; 2994 - 2994.06 m
FID Hydrocarbons



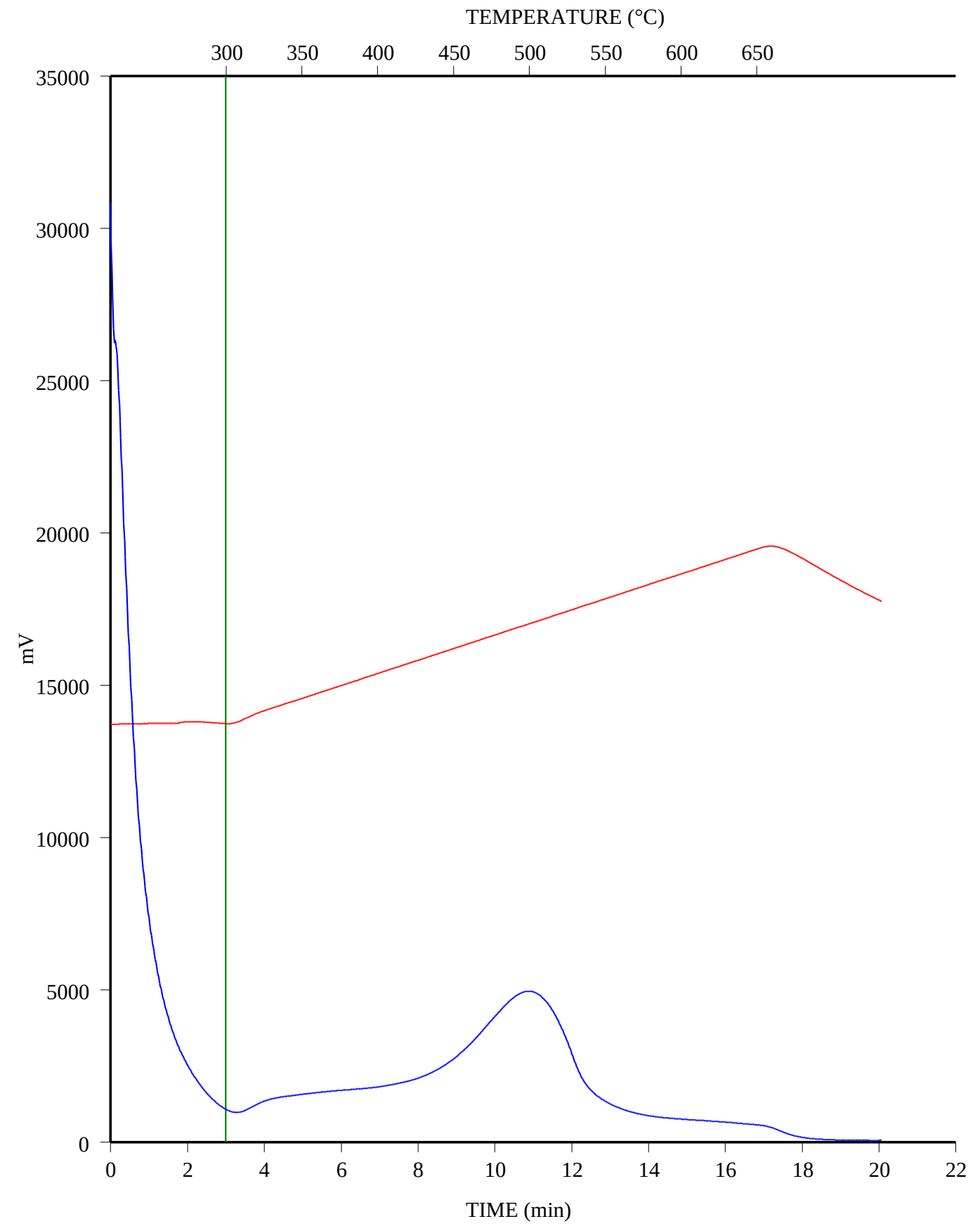
C-579964; CHEVRON HZ FOXCK 8-15-62-18; 2995.55 - 2995.61 m
FID Hydrocarbons



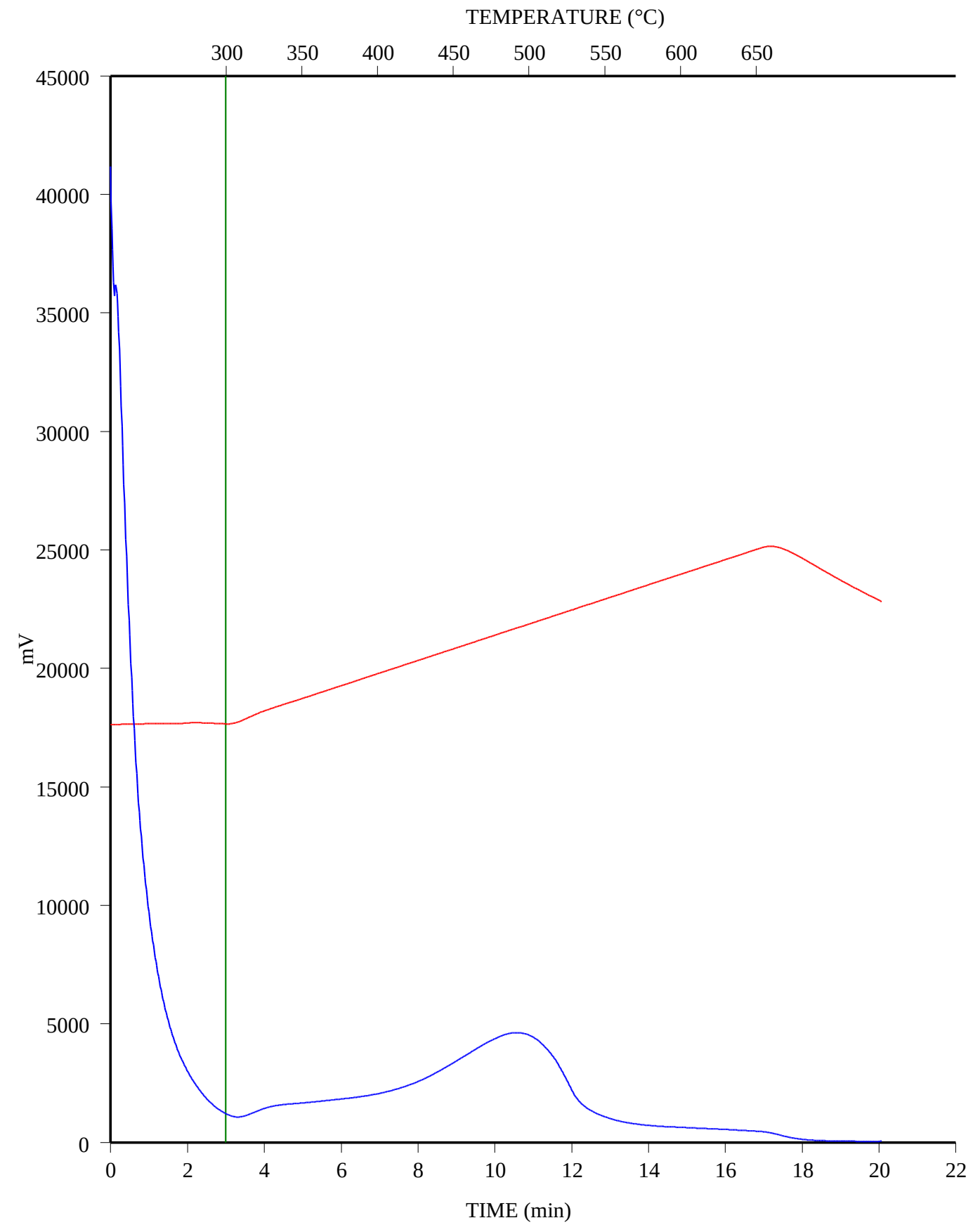
C-579965; CHEVRON HZ FOXCK 8-15-62-18; 2996.5 - 2996.55 m
FID Hydrocarbons



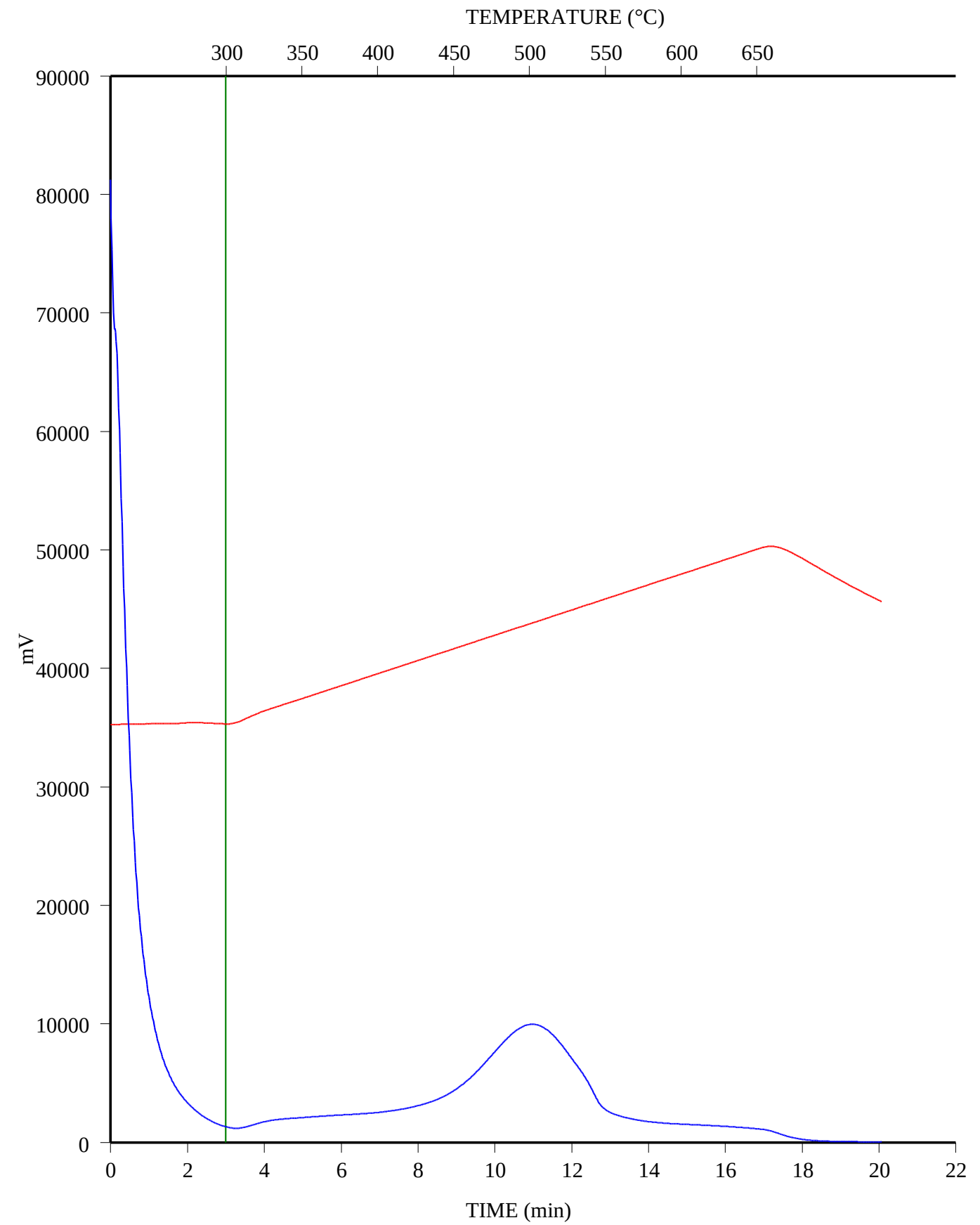
C-579966; CHEVRON HZ FOXCK 8-15-62-18; 2997.69 - 2997.73 m
FID Hydrocarbons



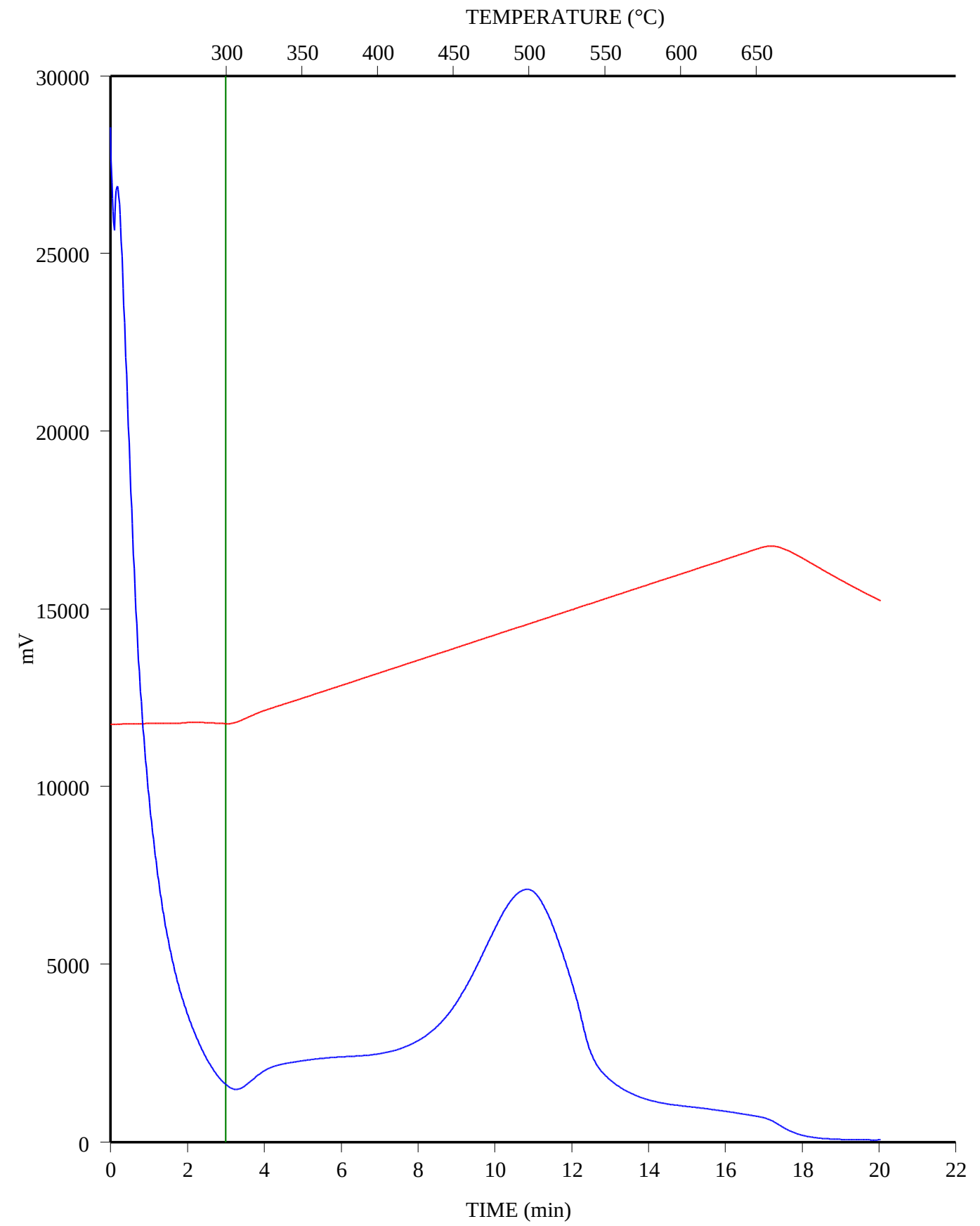
C-579967; CHEVRON HZ FOXCK 8-15-62-18; 2999.27 - 2999.33 m
FID Hydrocarbons



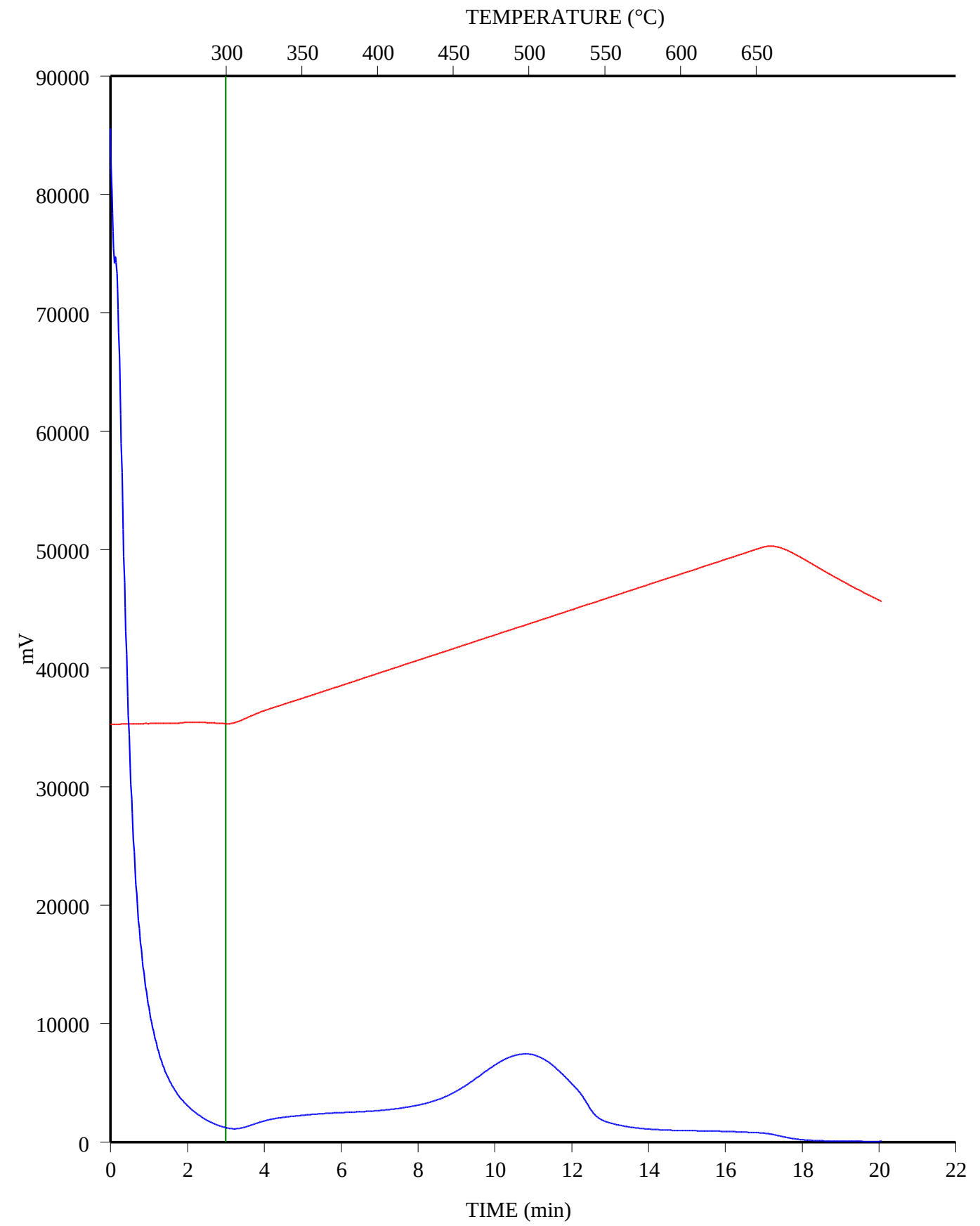
C-579968; CHEVRON HZ FOXCK 8-15-62-18; 3000.53 - 3000.58 m
FID Hydrocarbons



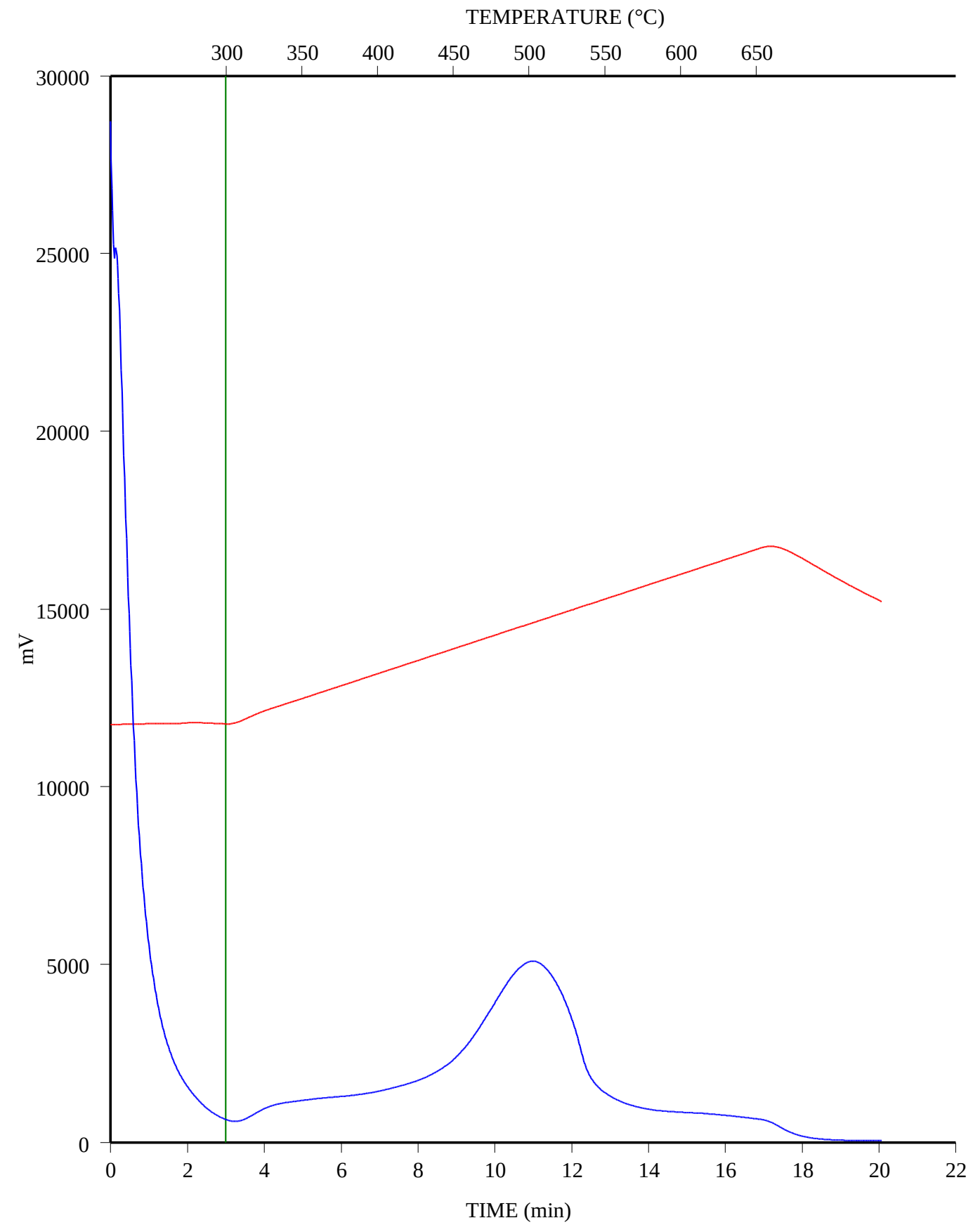
C-579969; CHEVRON HZ FOXCK 8-15-62-18; 3002.04 - 3002.1 m
FID Hydrocarbons



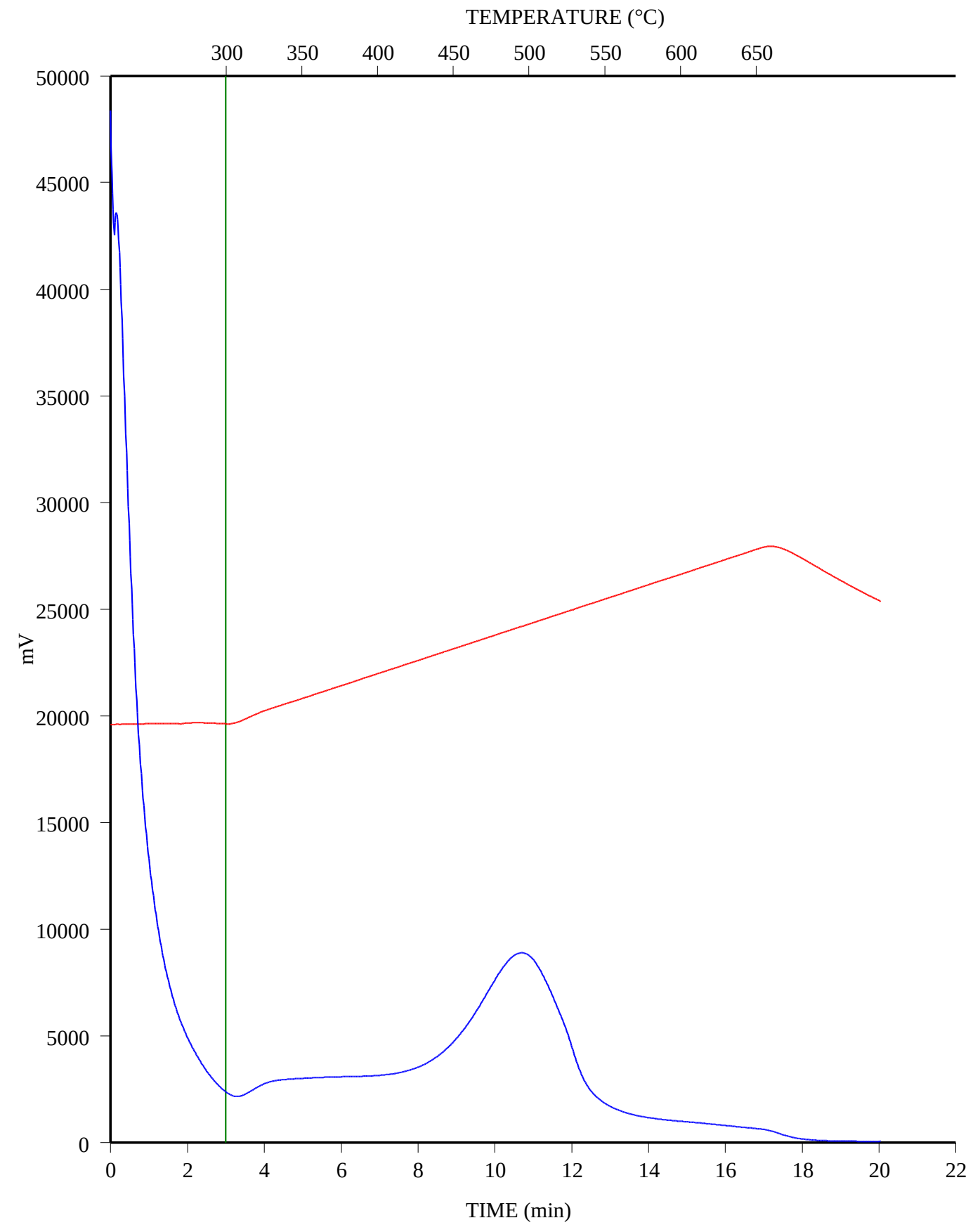
C-579970; CHEVRON HZ FOXCK 8-15-62-18; 3003.59 - 3003.65 m
FID Hydrocarbons



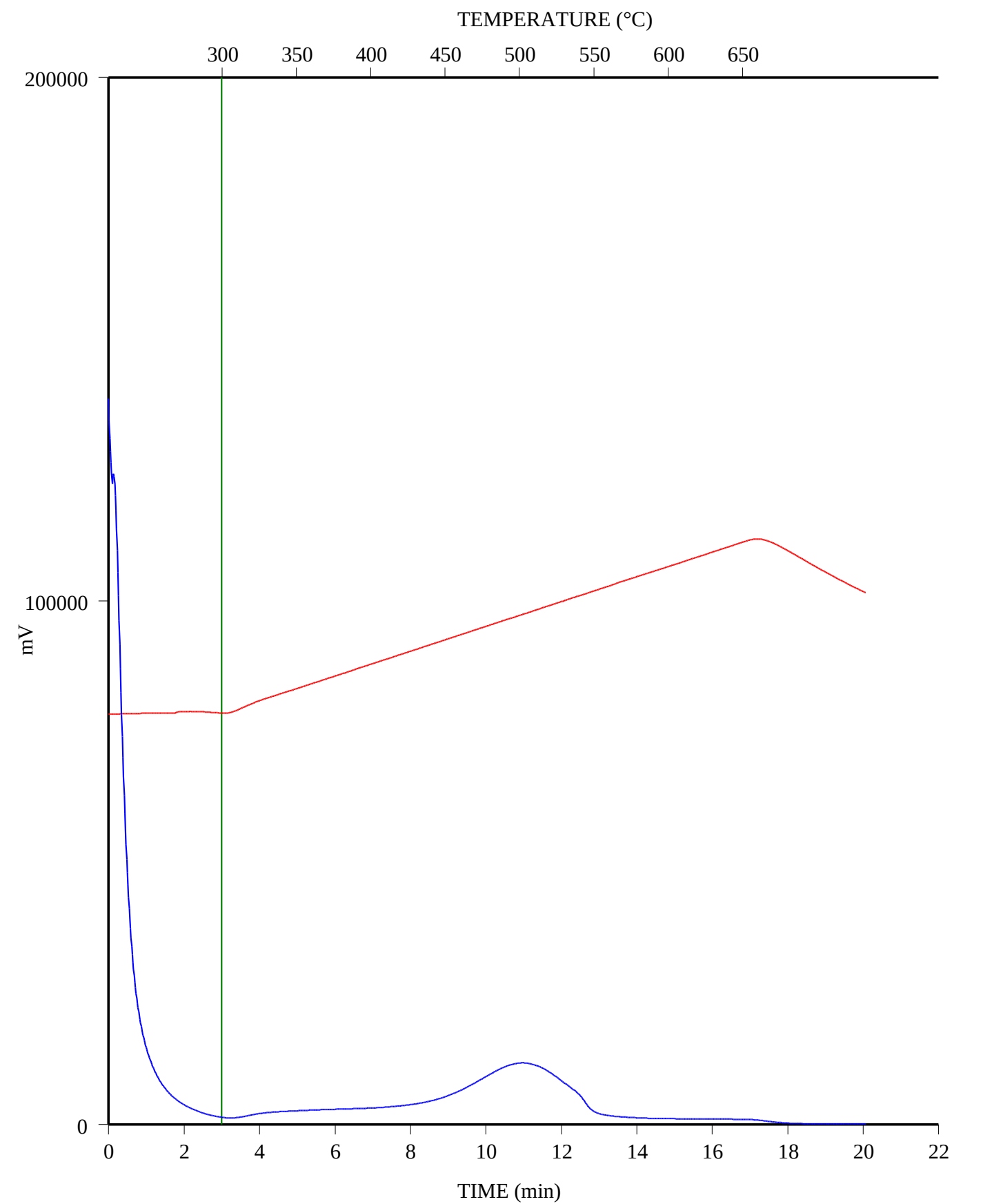
C-579971; CHEVRON HZ FOXCK 8-15-62-18; 3004.93 - 3004.98 m
FID Hydrocarbons



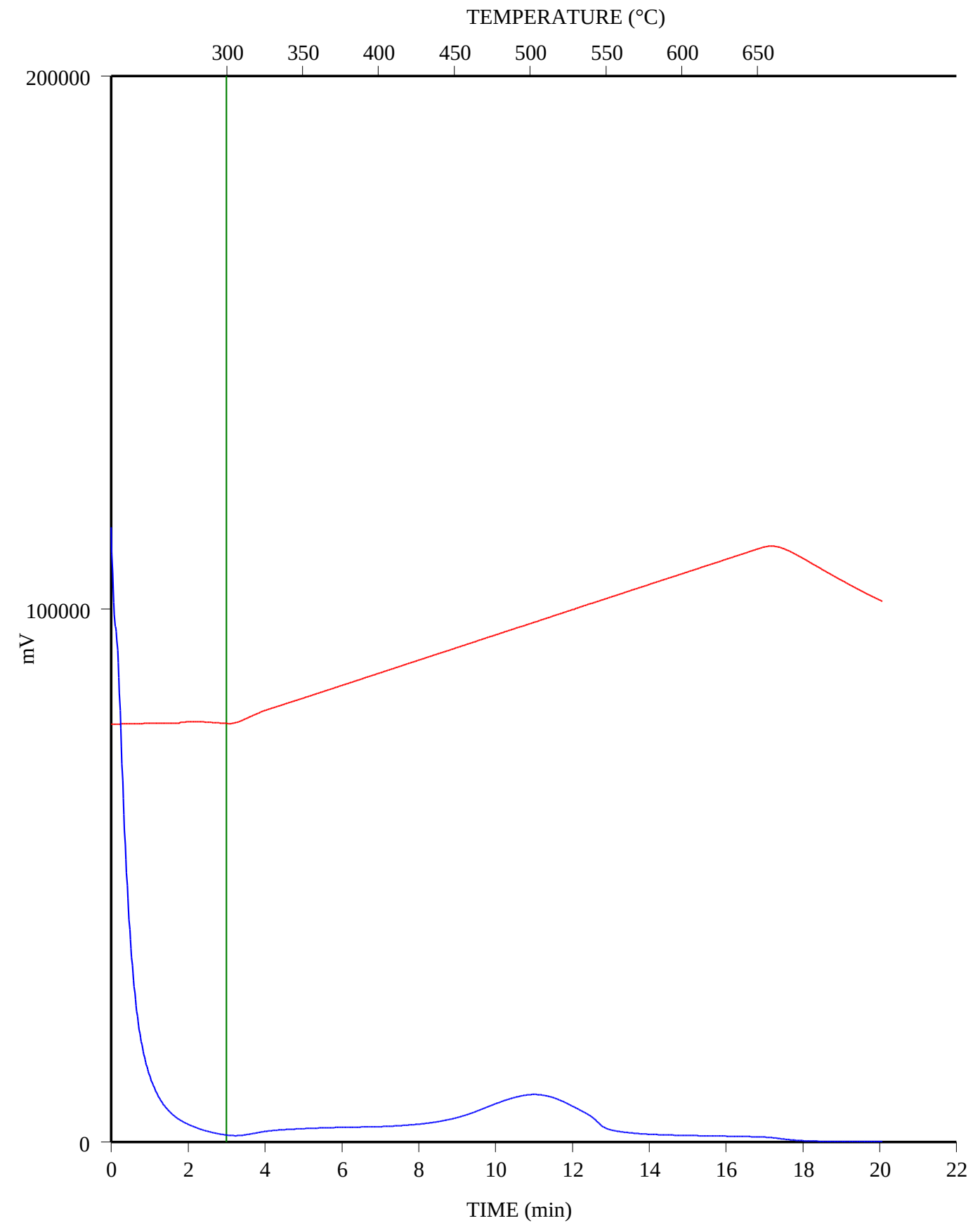
C-579972; CHEVRON HZ FOXCK 8-15-62-18; 3006.55 - 3006.59 m
FID Hydrocarbons



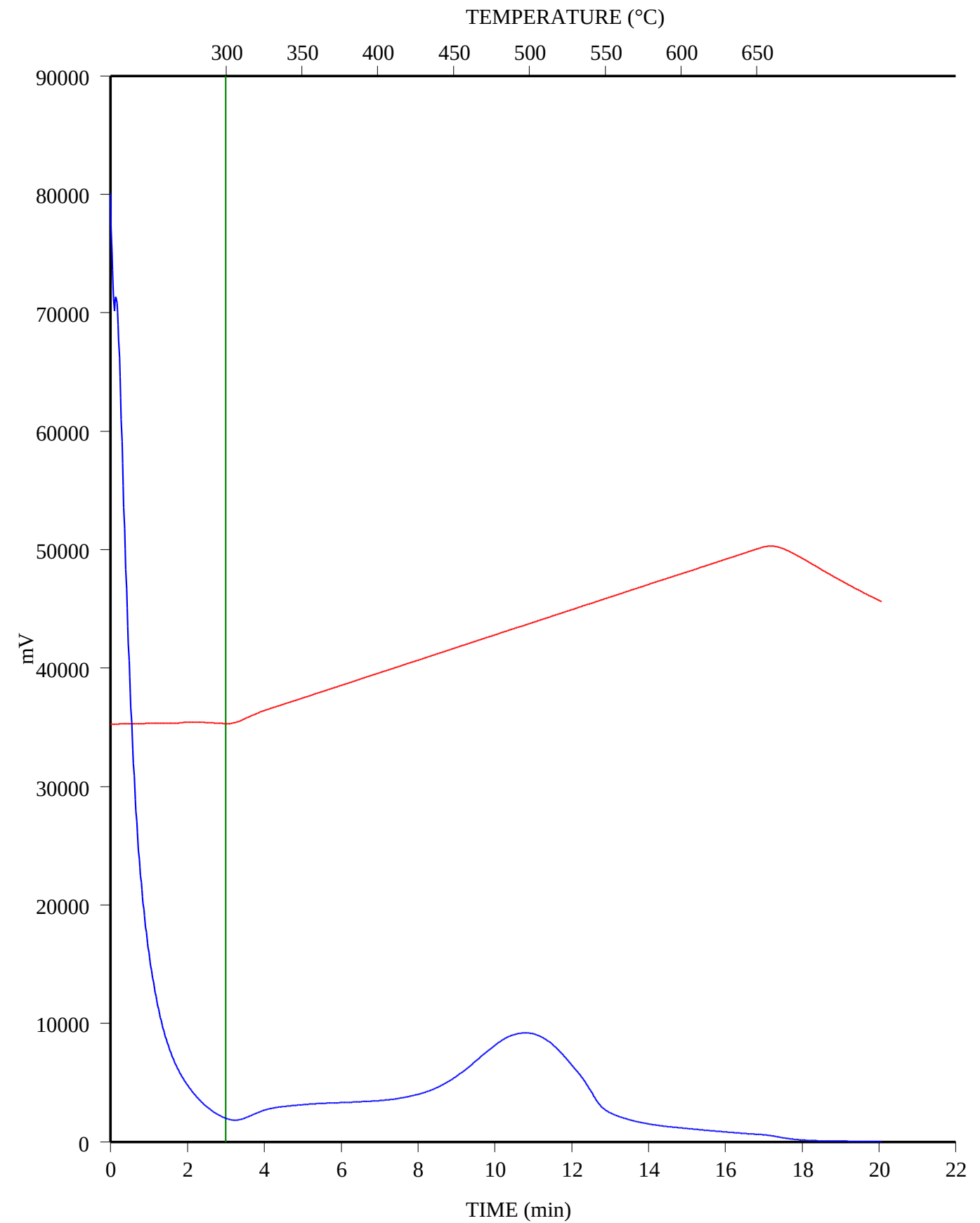
C-579973; CHEVRON HZ FOXCK 8-15-62-18; 3007.92 - 3007.97 m
FID Hydrocarbons



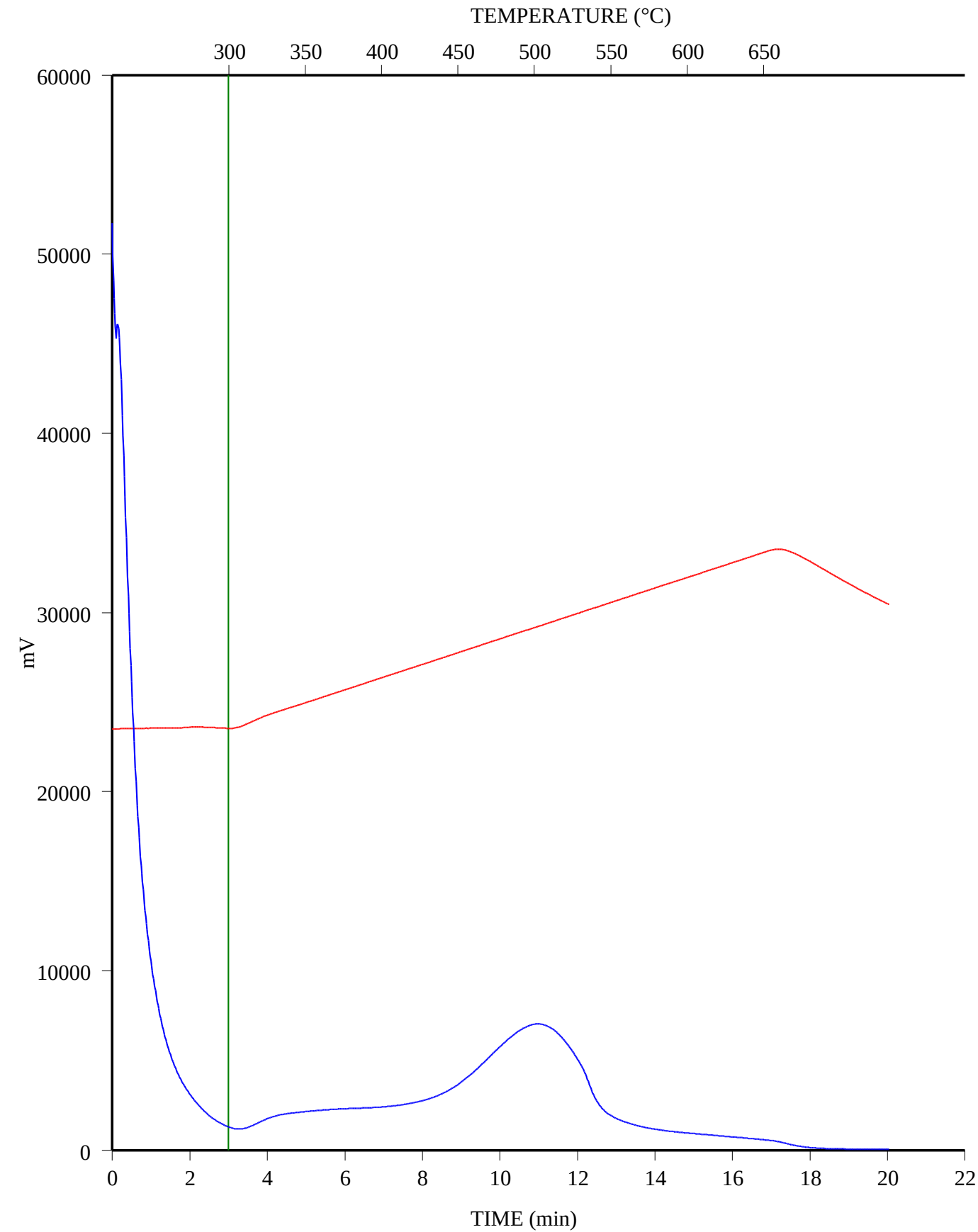
C-579974; CHEVRON HZ FOXCK 8-15-62-18; 3009.28 - 3009.33 m
FID Hydrocarbons



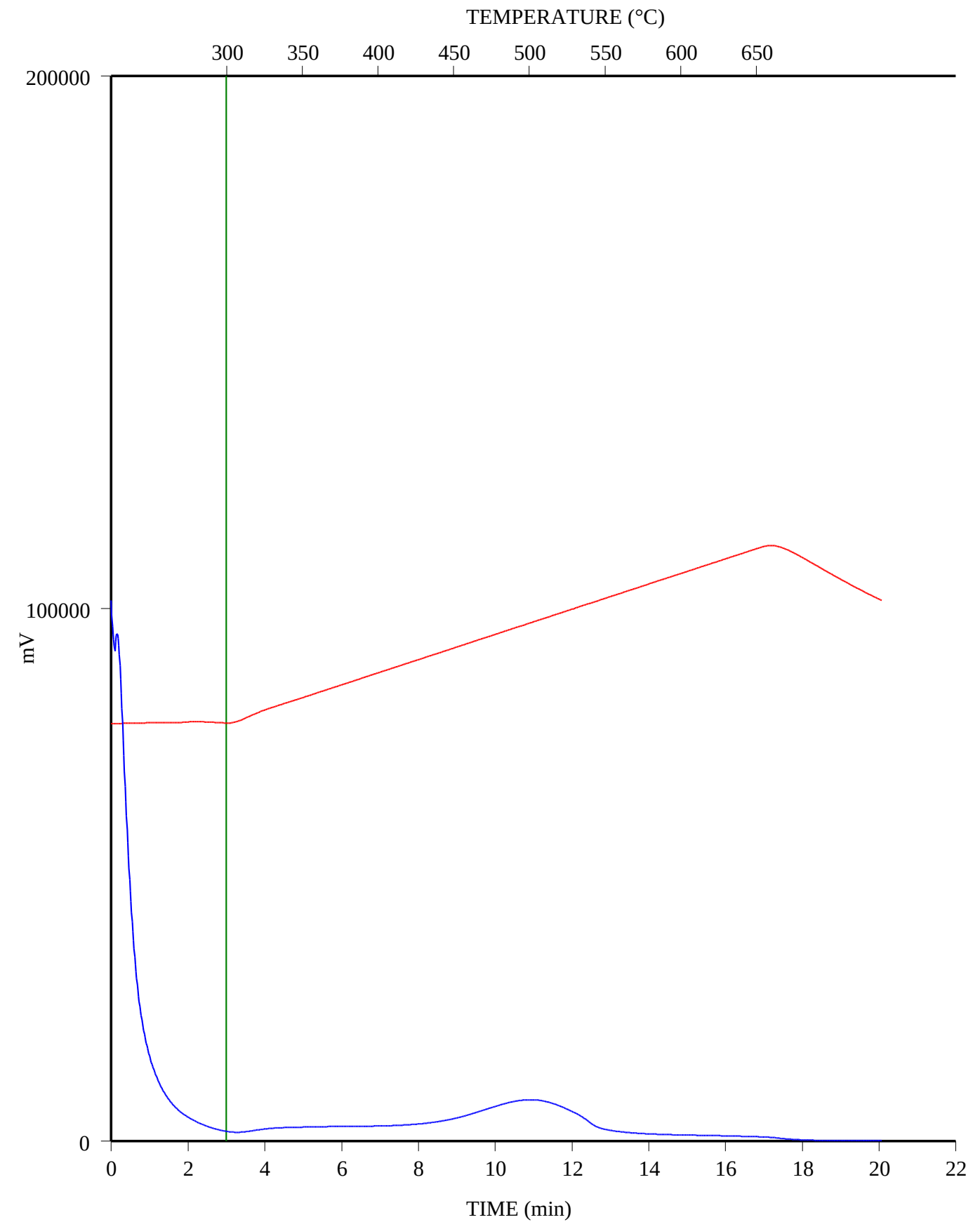
C-579976; CHEVRON HZ FOXCK 8-15-62-18; 3011.91 - 3011.96 m
FID Hydrocarbons



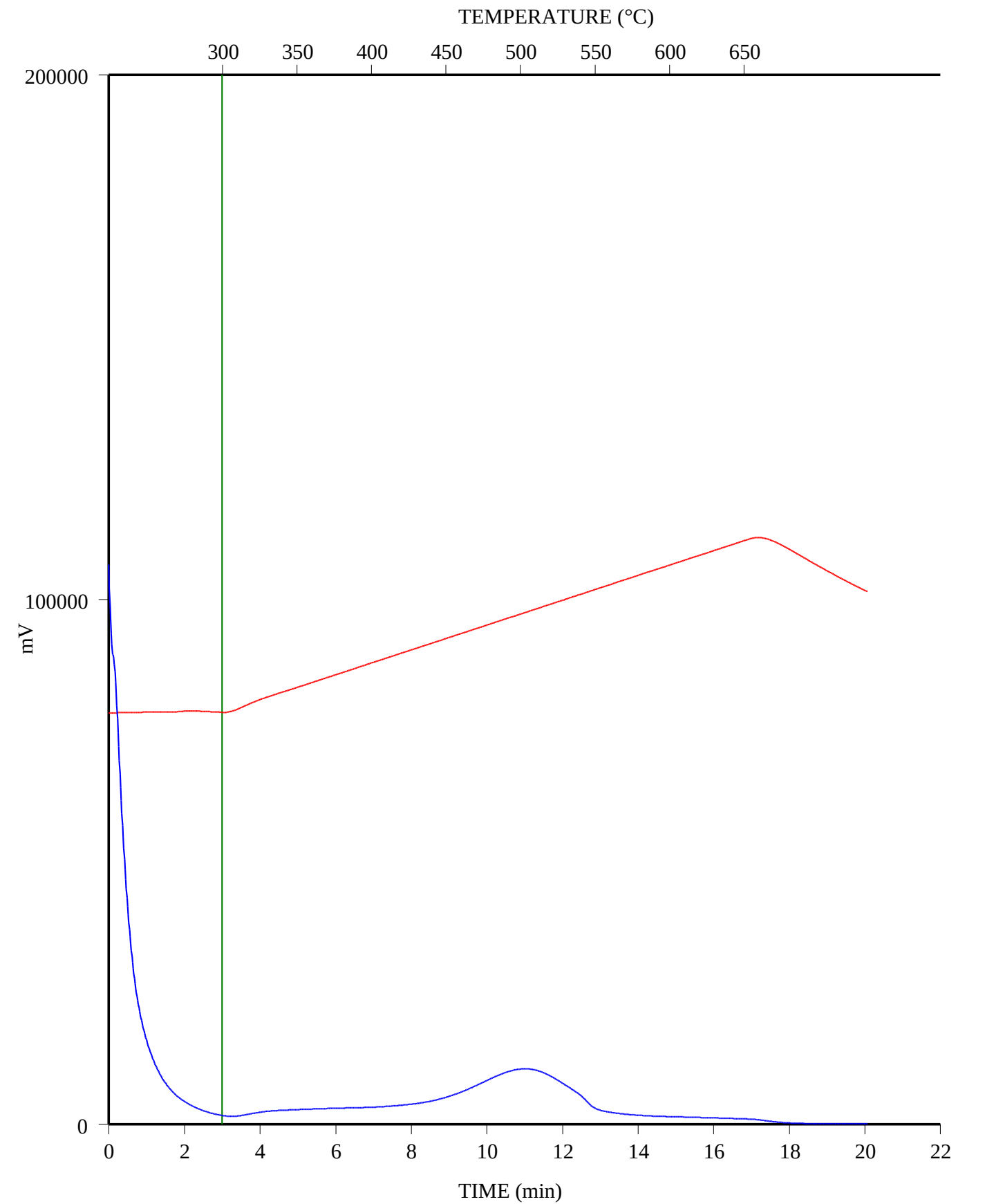
C-579977; CHEVRON HZ FOXCK 8-15-62-18; 3013.58 - 3013.63 m
FID Hydrocarbons



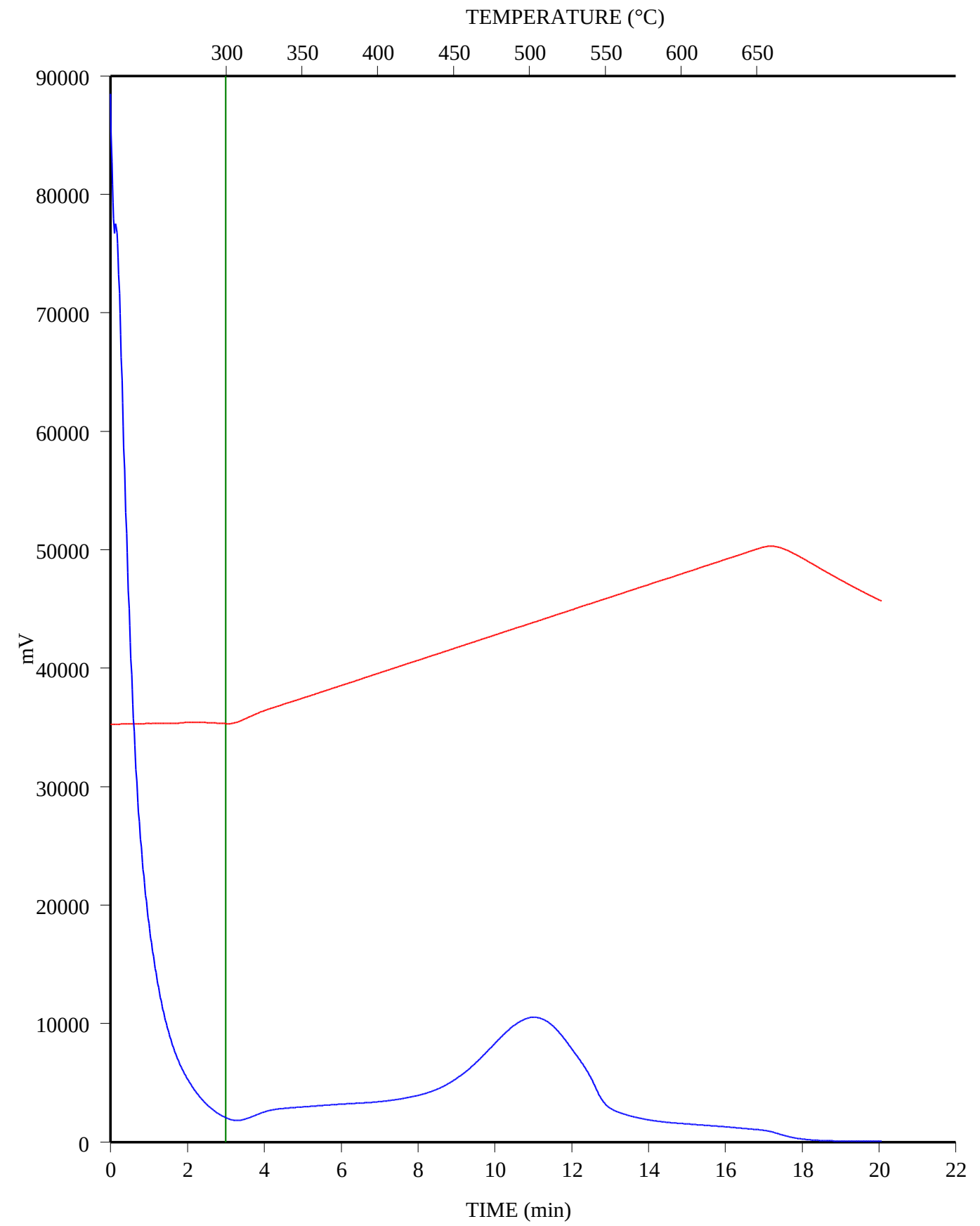
C-579978; CHEVRON HZ FOXCK 8-15-62-18; 3014.53 - 3014.61 m
FID Hydrocarbons



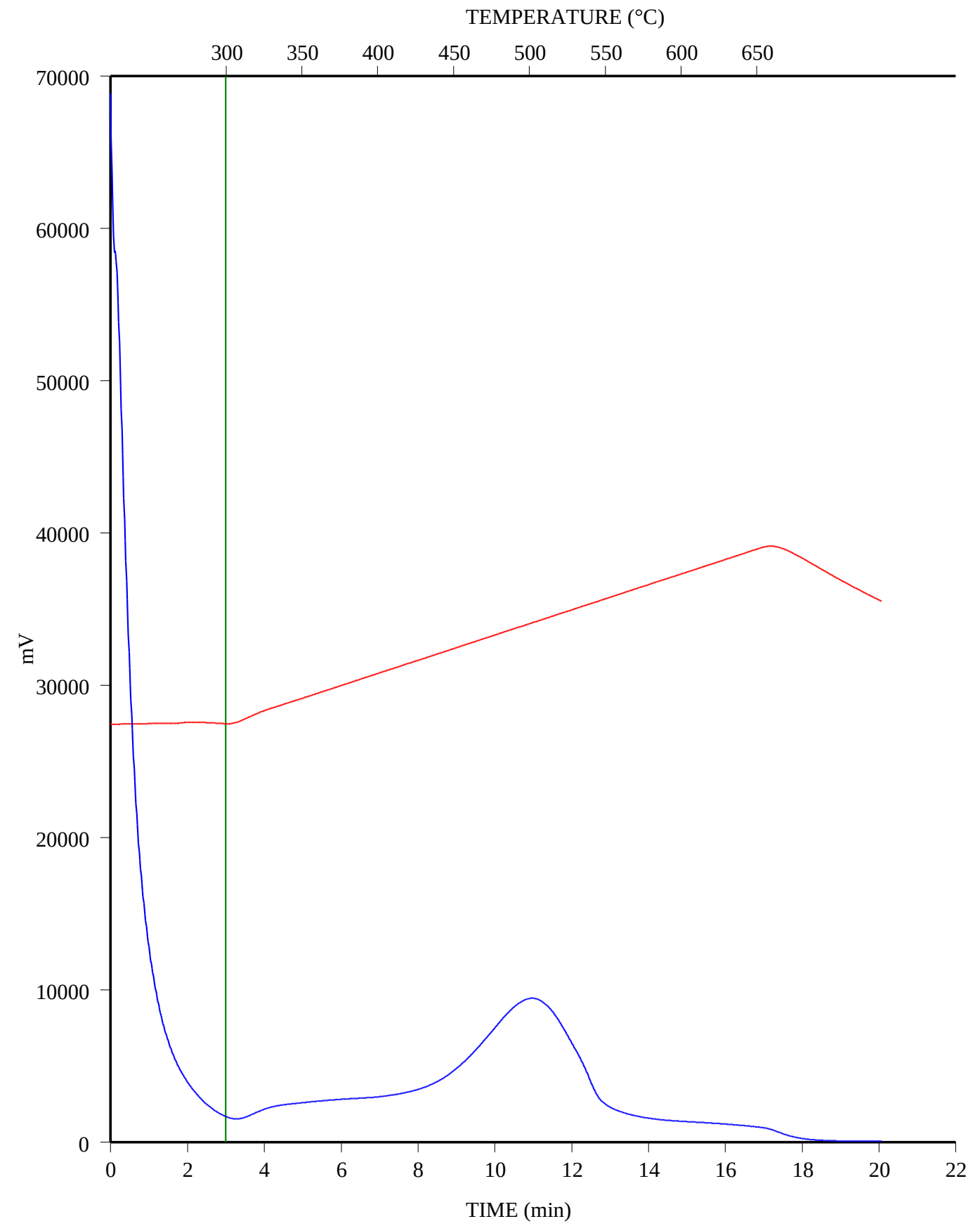
C-579979; CHEVRON HZ FOXCK 8-15-62-18; 3016.1 - 3016.2 m
FID Hydrocarbons



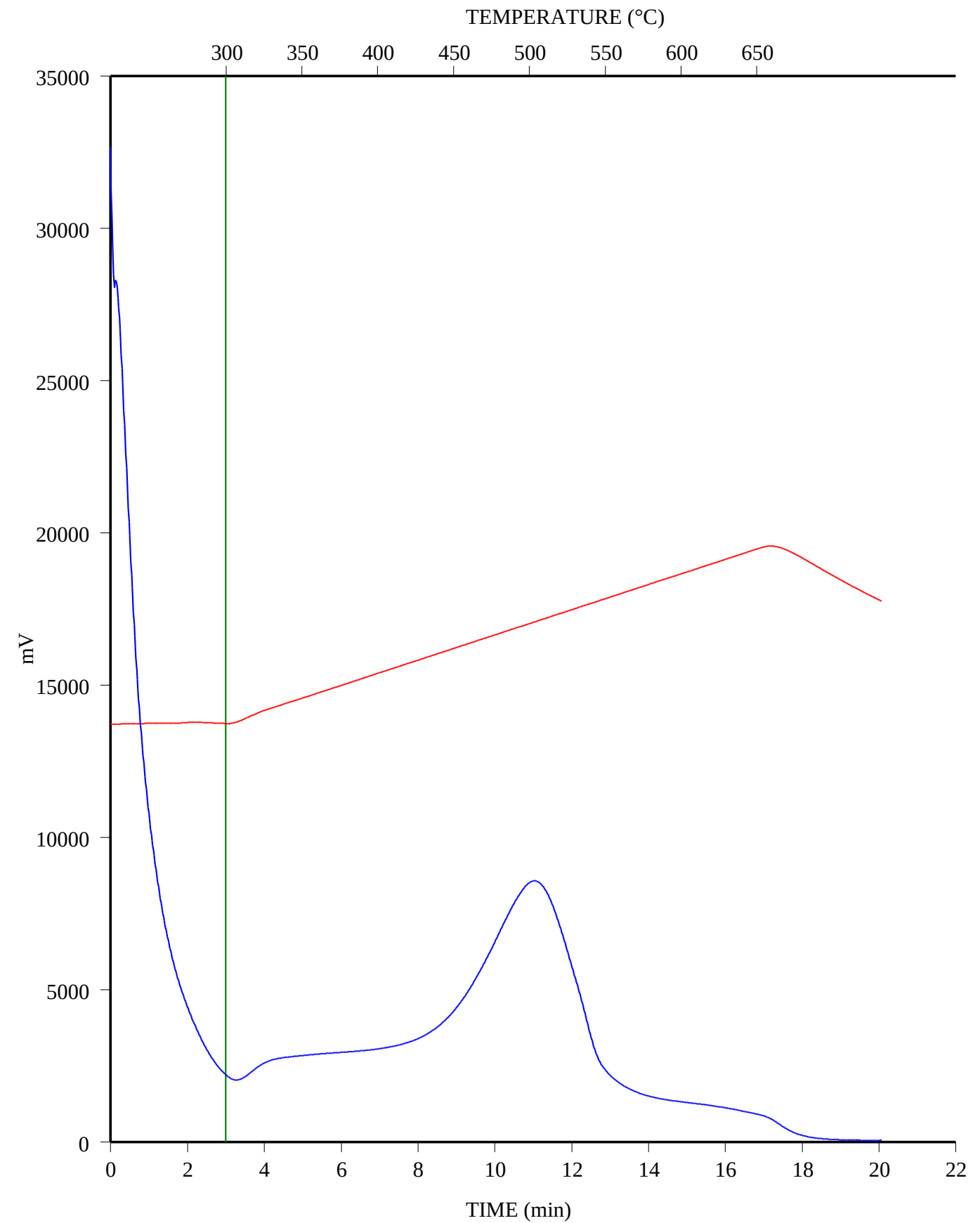
C-579980; CHEVRON HZ FOXCK 8-15-62-18; 3016.29 - 3016.34 m
FID Hydrocarbons



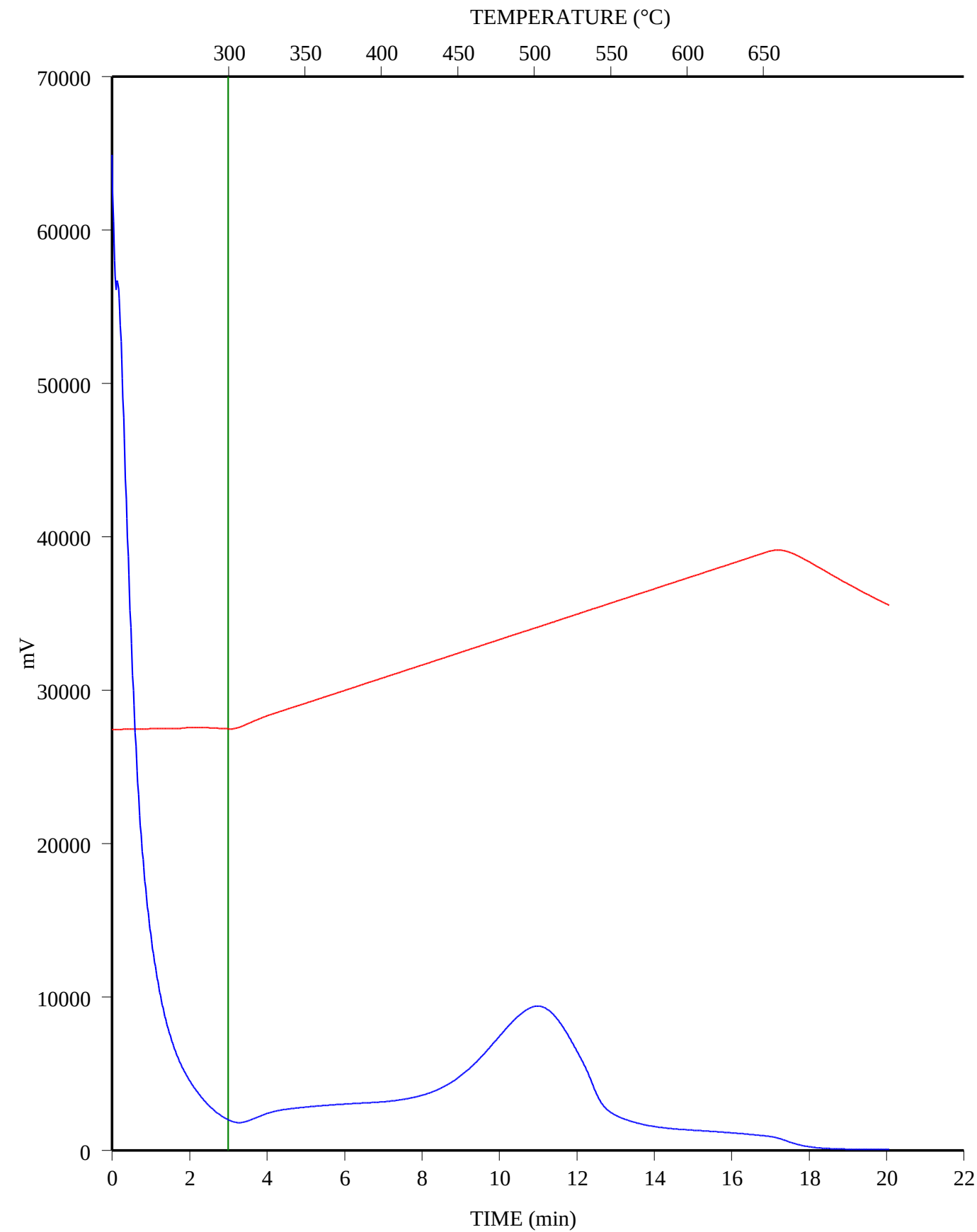
C-579981; CHEVRON HZ FOXCK 8-15-62-18; 3016.53 - 3016.58 m
FID Hydrocarbons



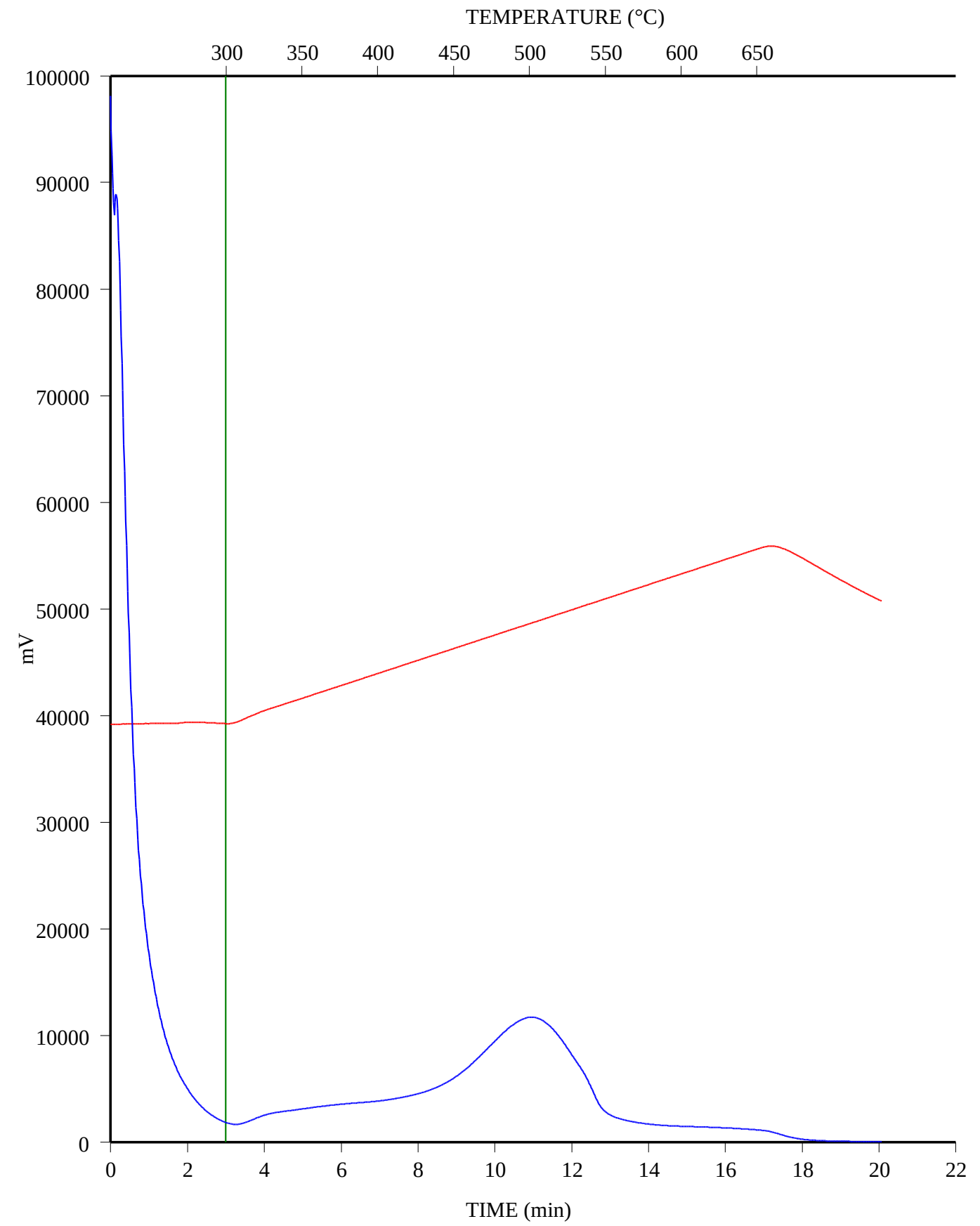
C-579982; CHEVRON HZ FOXCK 8-15-62-18; 3016.71 - 3016.74 m
FID Hydrocarbons



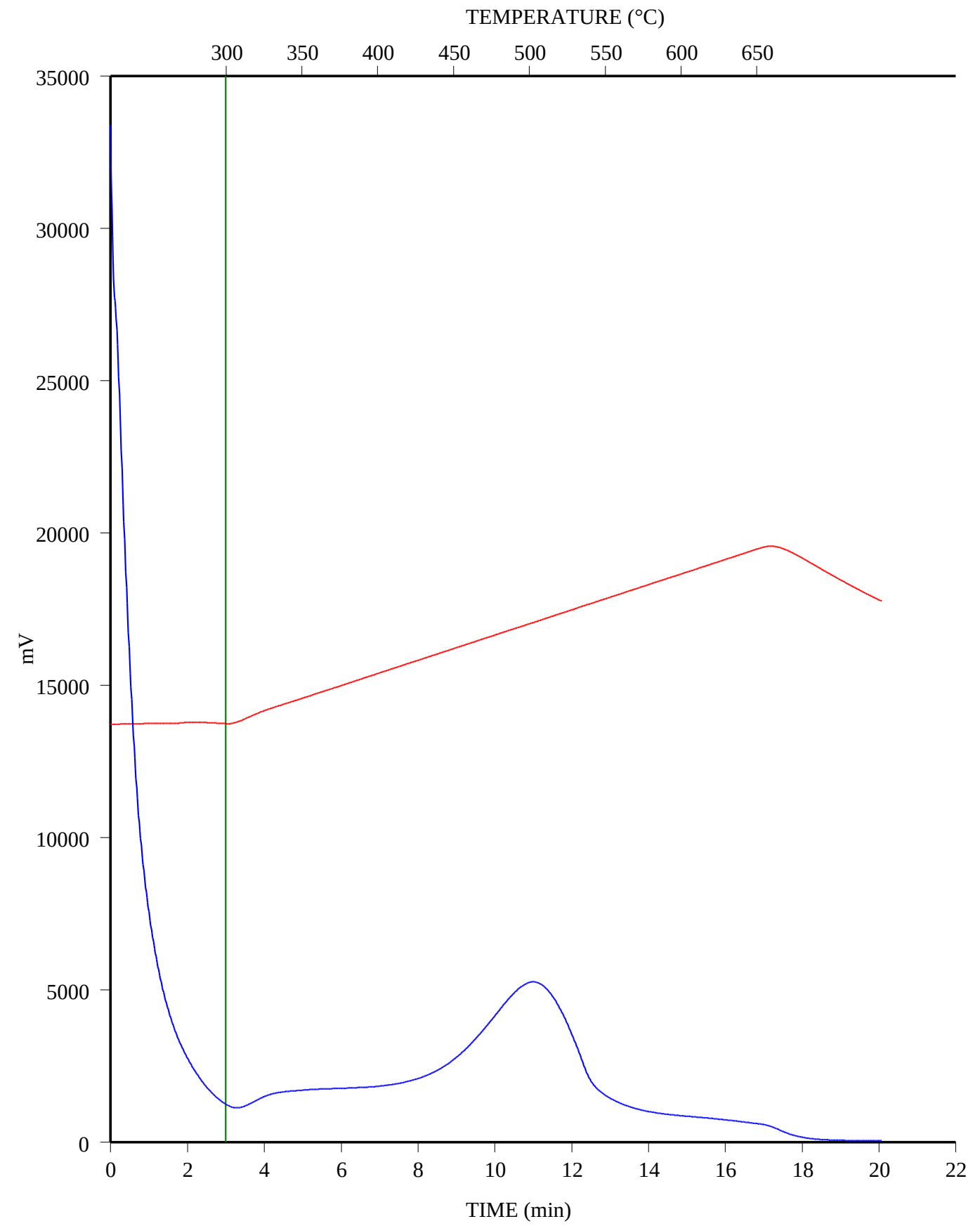
C-579983; CHEVRON HZ FOXCK 8-15-62-18; 3016.93 - 3016.98 m
FID Hydrocarbons



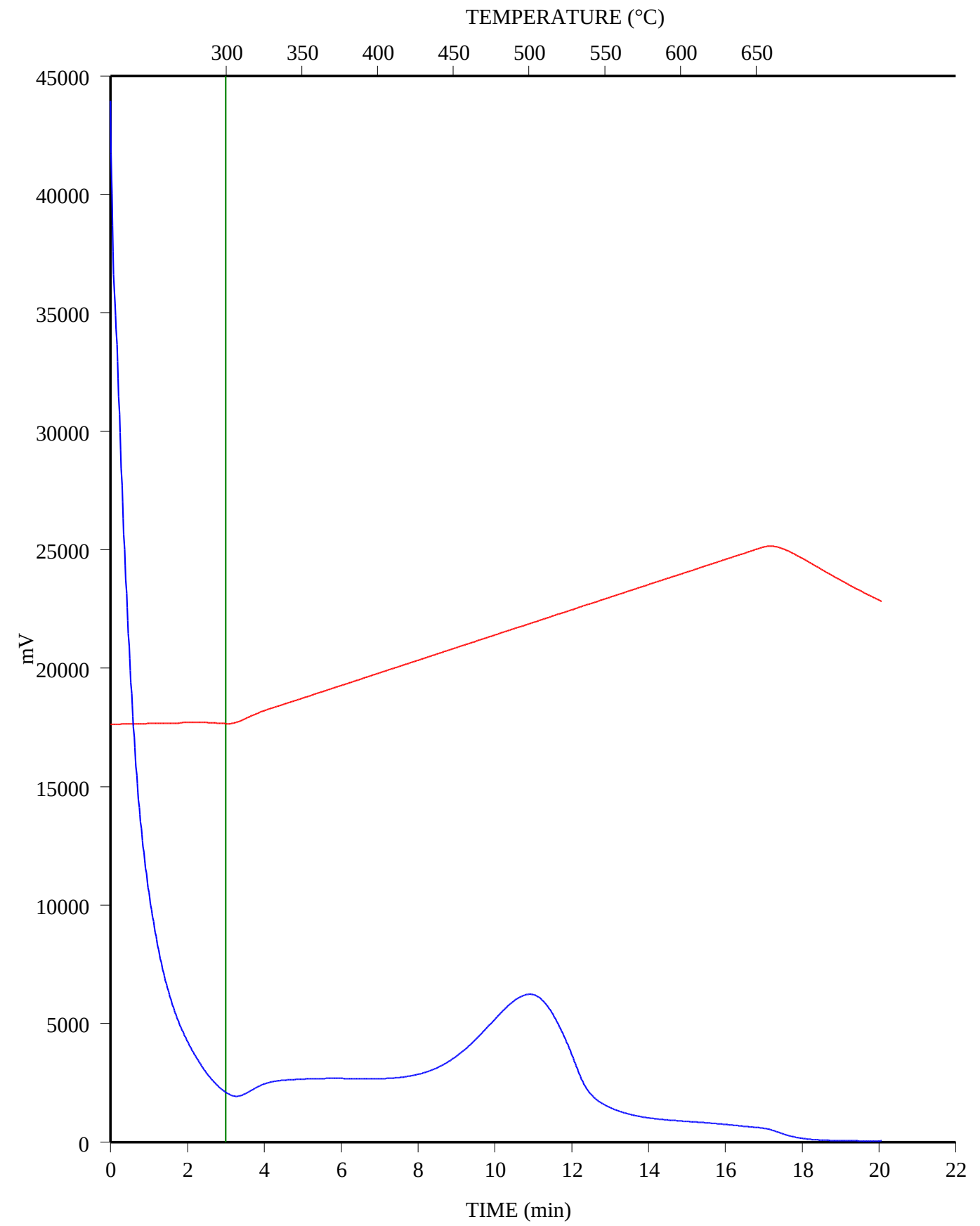
C-579984; CHEVRON HZ FOXCK 8-15-62-18; 3017.2 - 3017.25 m
FID Hydrocarbons



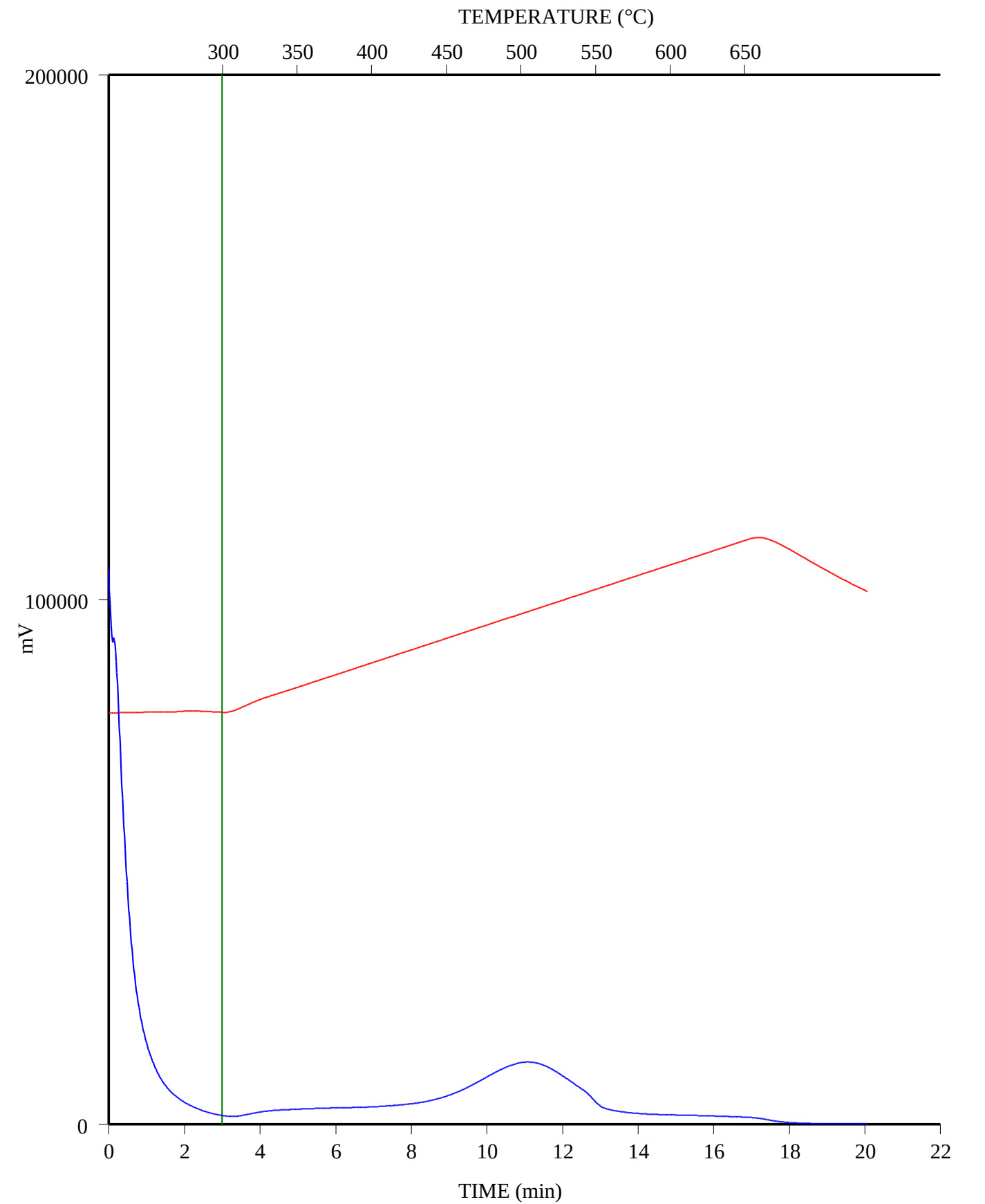
C-579985; CHEVRON HZ FOXCK 8-15-62-18; 3017.33 - 3017.4 m
FID Hydrocarbons



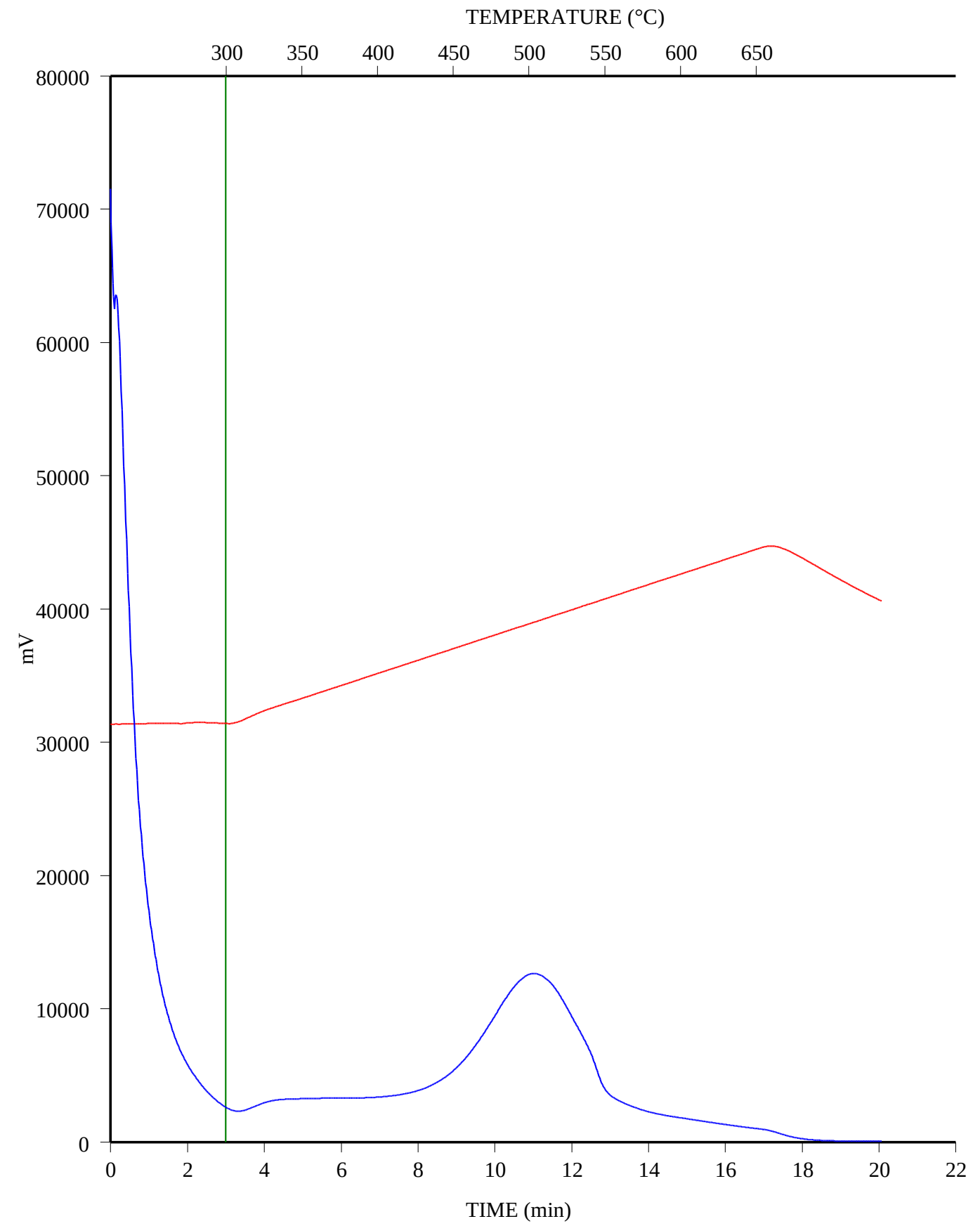
C-579986; CHEVRON HZ FOXCK 8-15-62-18; 3018.9 - 3018.95 m
FID Hydrocarbons



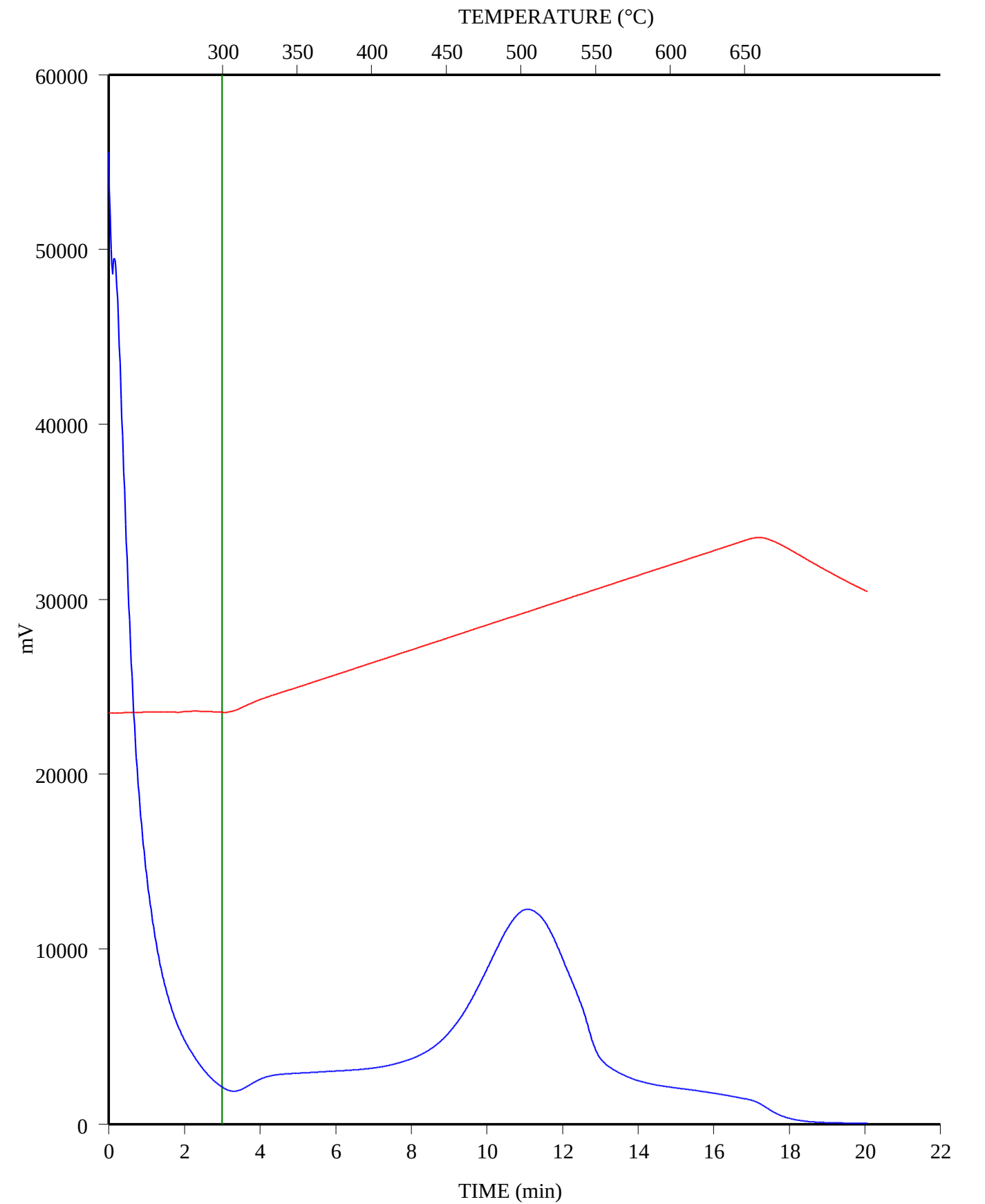
C-579987; CHEVRON HZ FOXCK 8-15-62-18; 3020.43 - 3020.5 m
FID Hydrocarbons



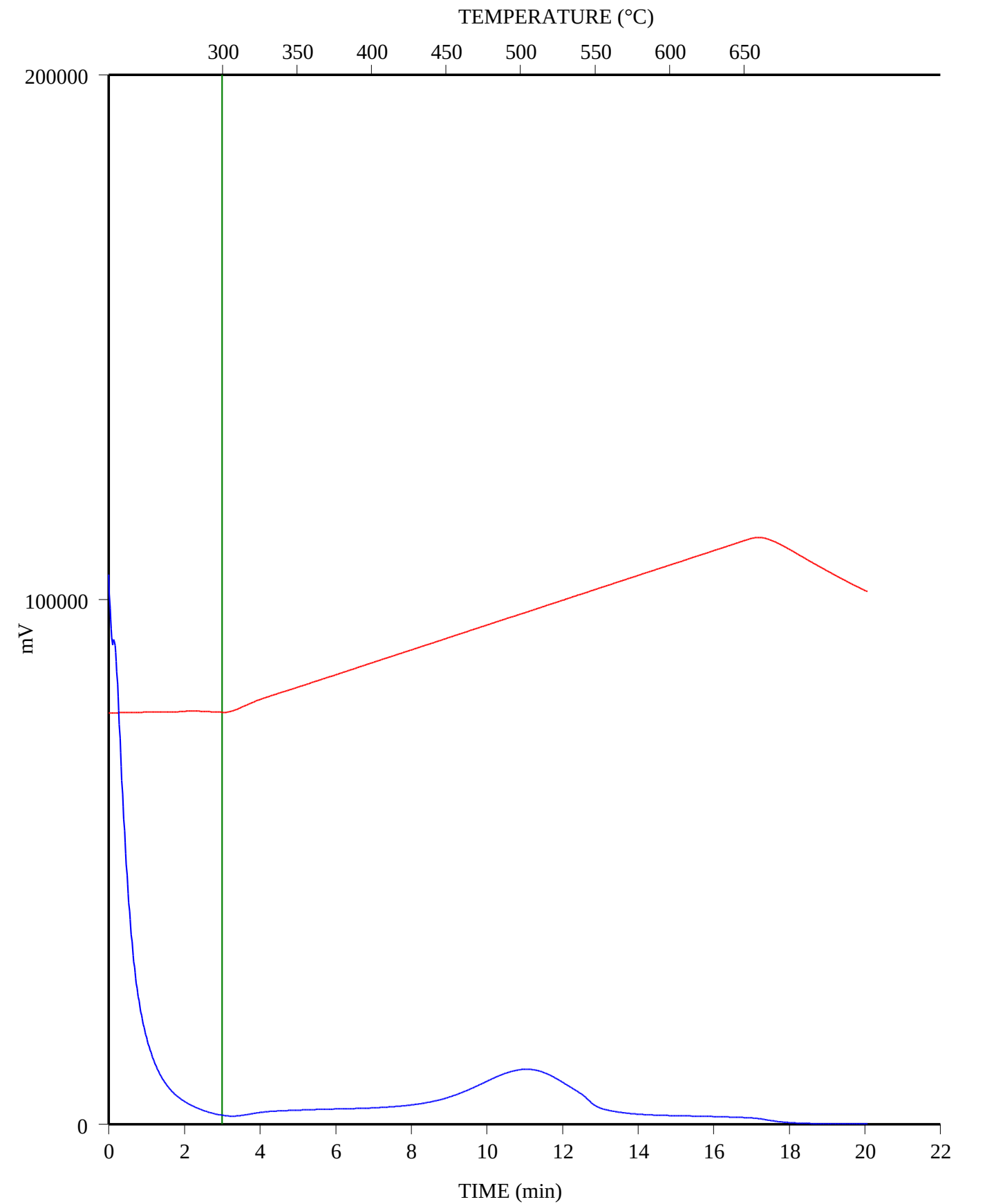
C-579988; CHEVRON HZ FOXCK 8-15-62-18; 3021.53 - 3021.6 m
FID Hydrocarbons



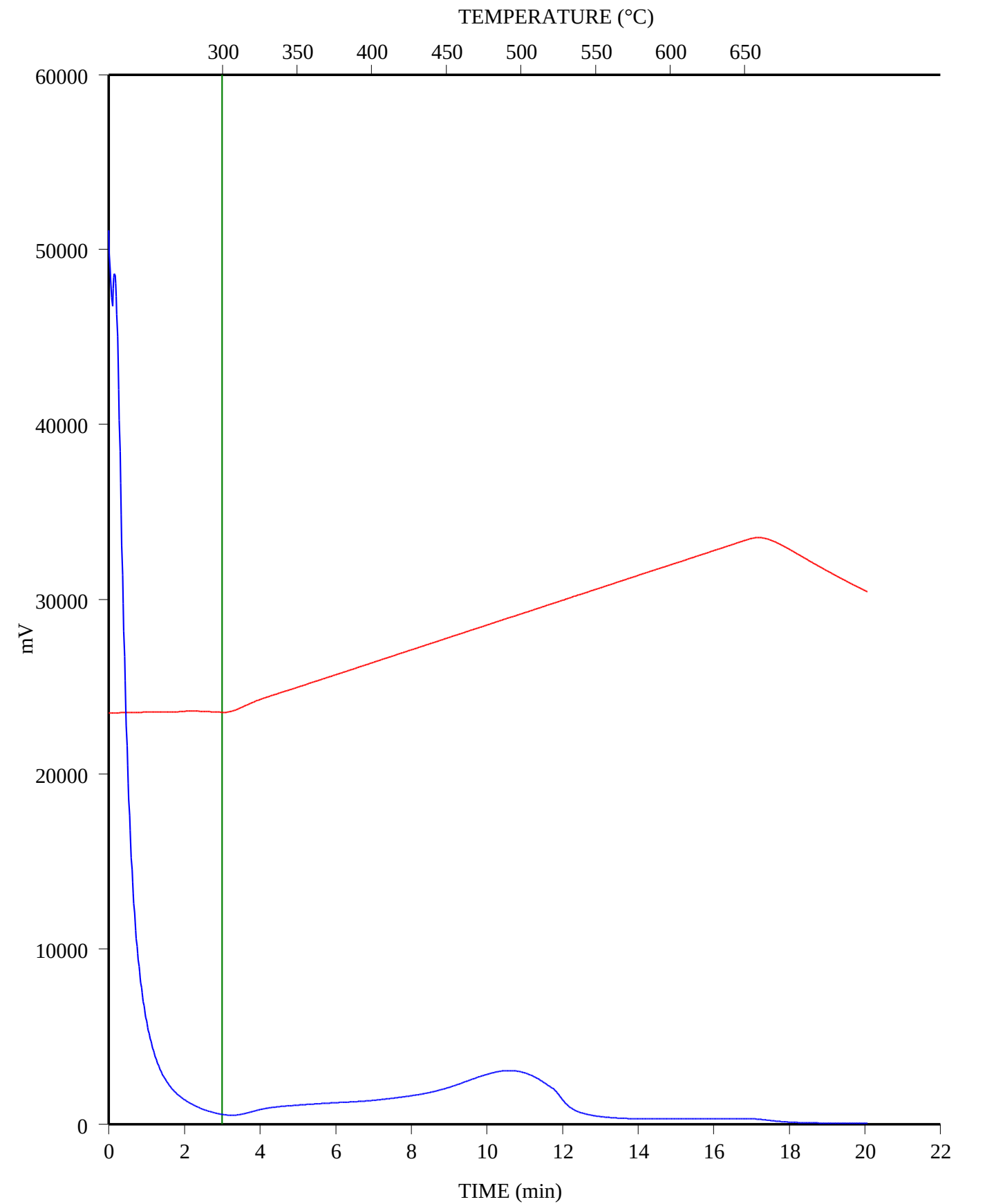
C-579989; CHEVRON HZ FOXCK 8-15-62-18; 3022.8 - 3022.95 m
FID Hydrocarbons



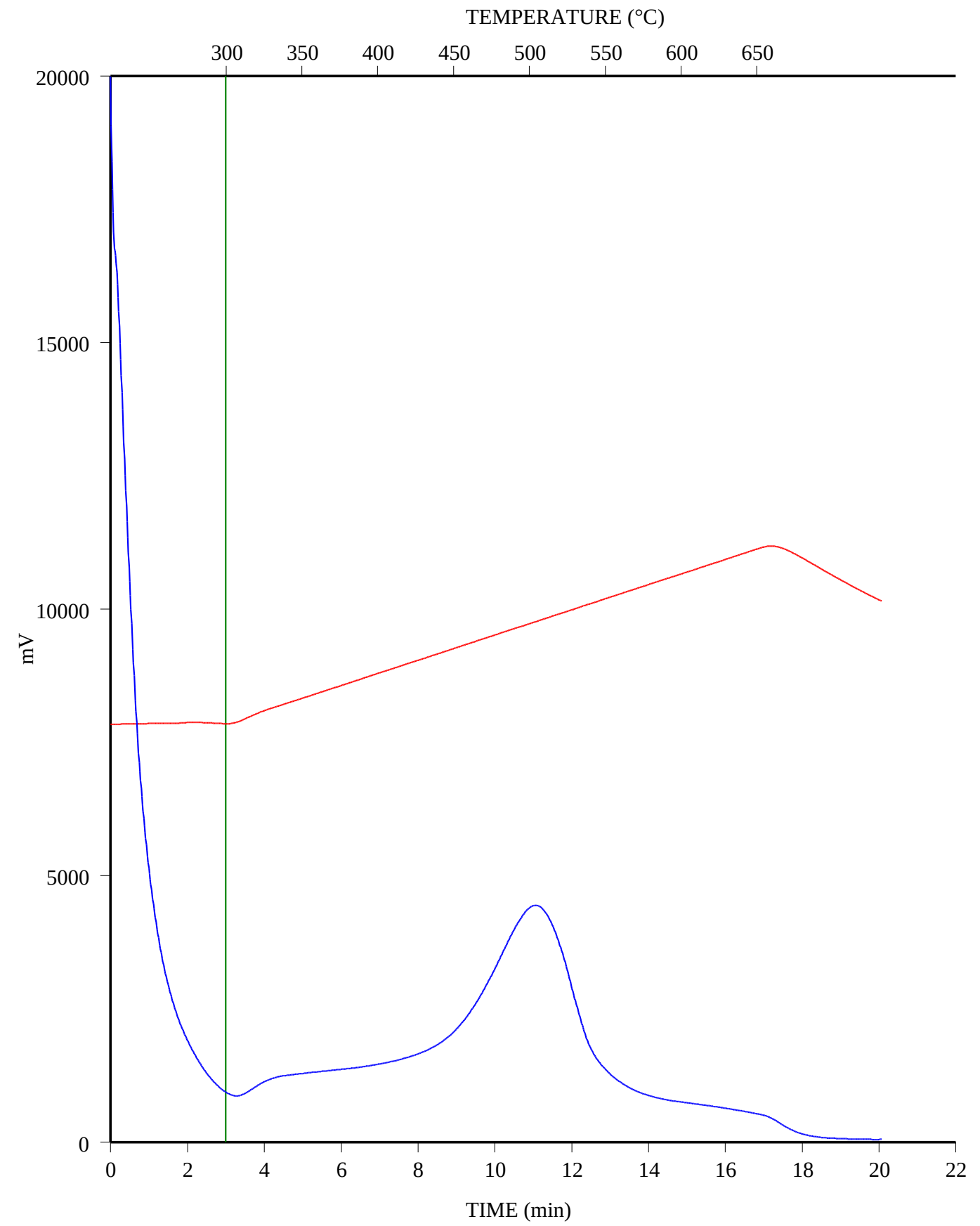
C-579990; CHEVRON HZ FOXCK 8-15-62-18; 3023.9 - 3024 m
FID Hydrocarbons



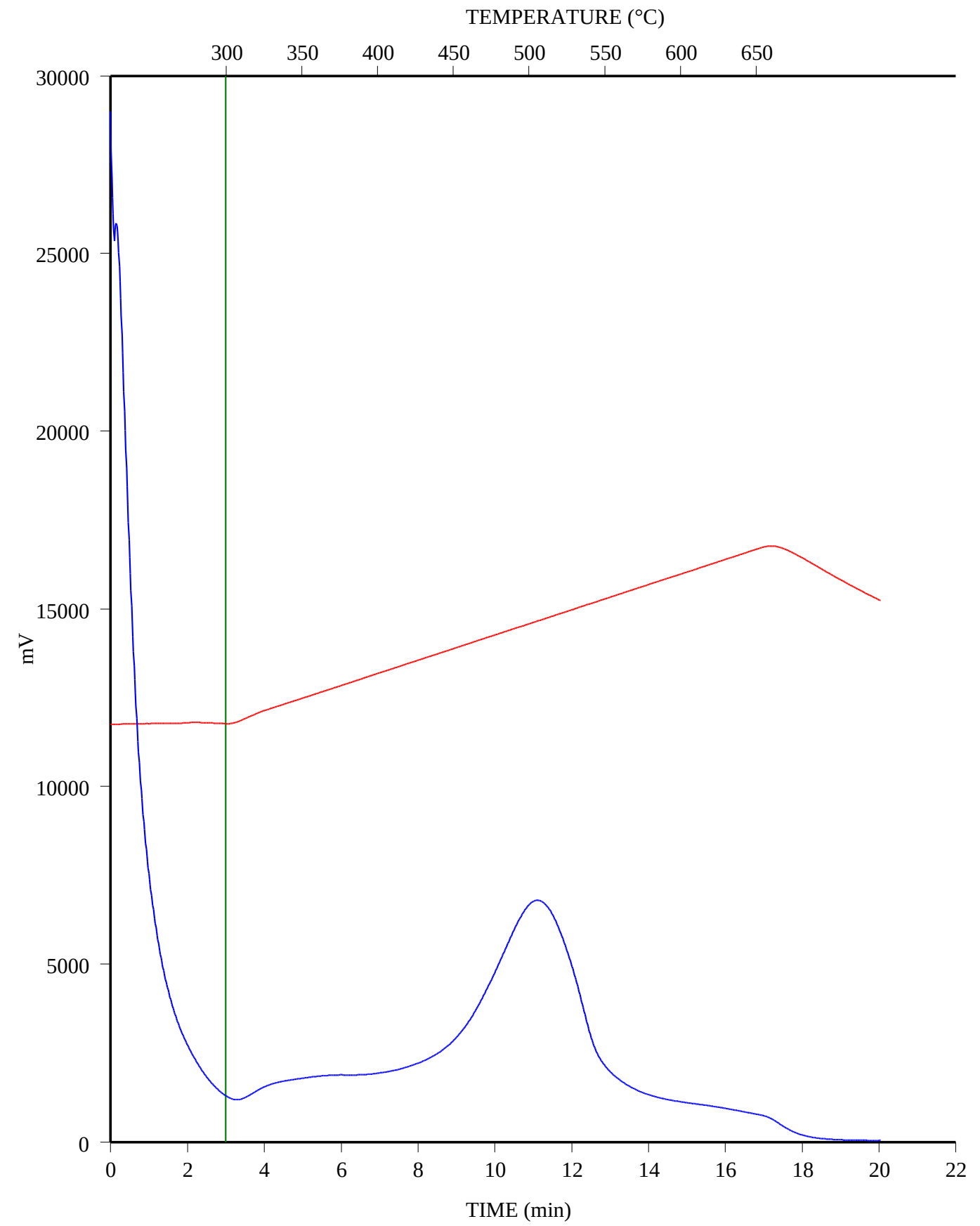
C-579991; CHEVRON HZ FOXCK 8-15-62-18; 3024.9 - 3024.98 m
FID Hydrocarbons



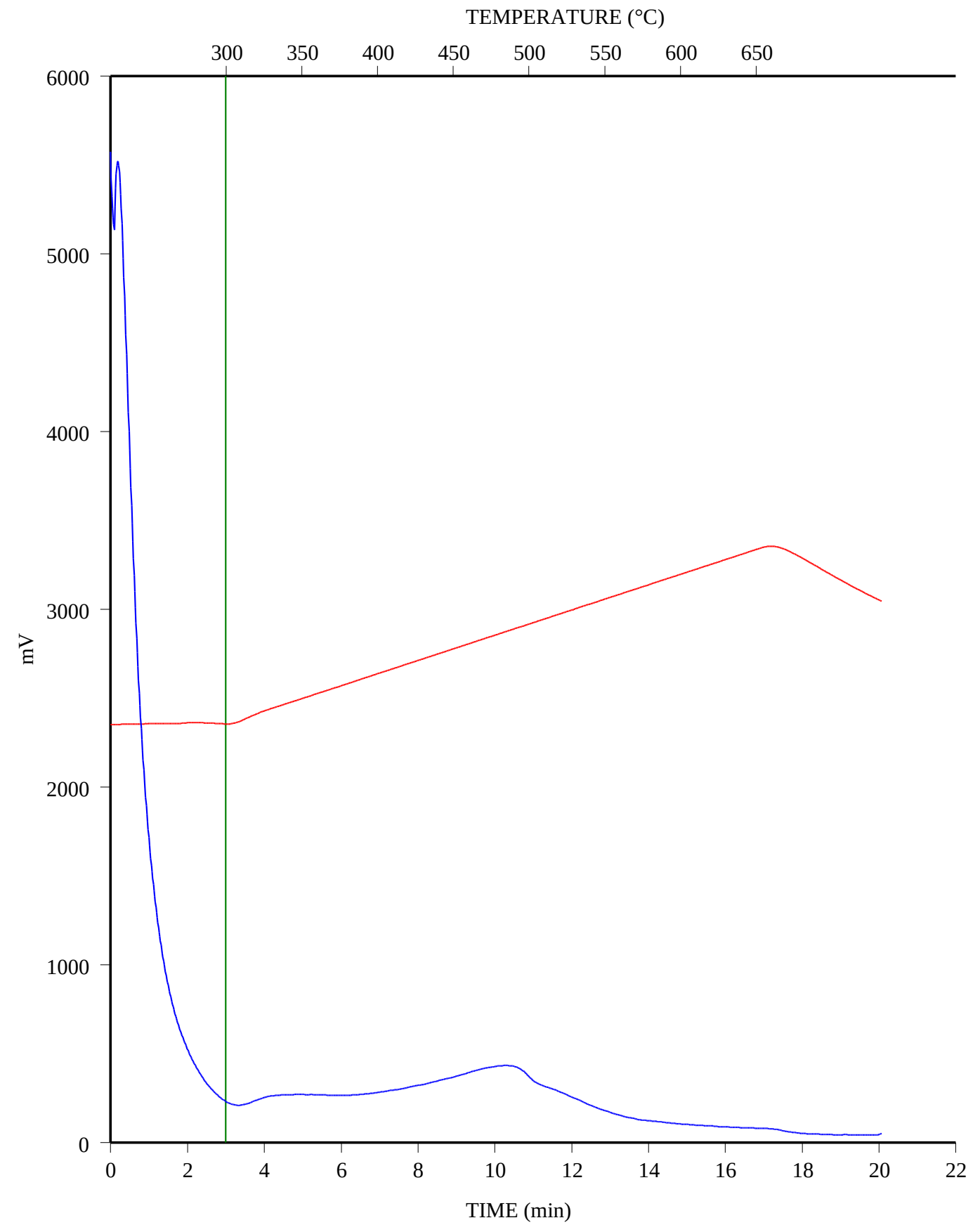
C-579992; CHEVRON HZ FOXCK 8-15-62-18; 3027.05 - 3027.15 m
FID Hydrocarbons



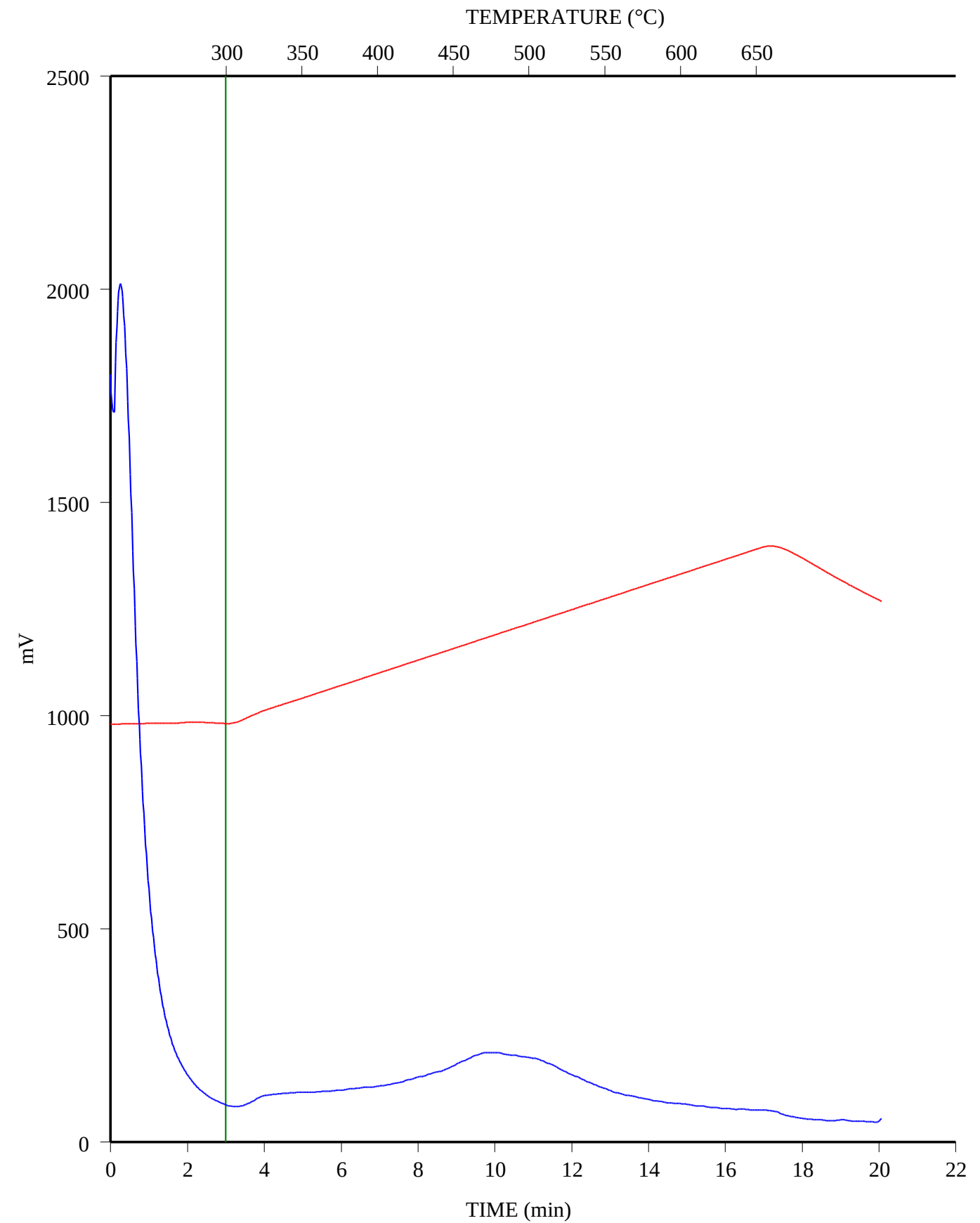
C-579993; CHEVRON HZ FOXCK 8-15-62-18; 3028.53 - 3028.58 m
FID Hydrocarbons



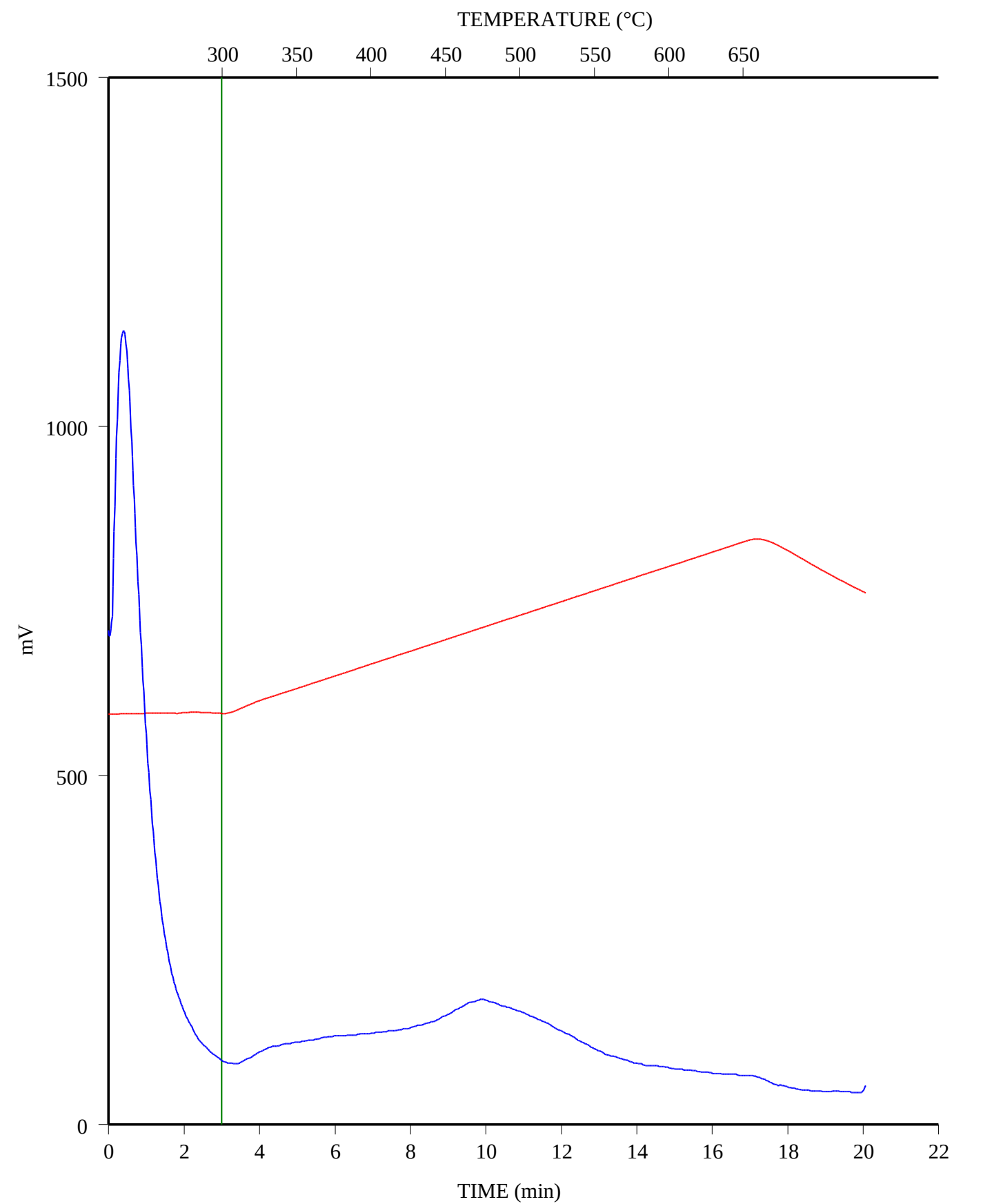
C-579994; CHEVRON HZ FOXCK 8-15-62-18; 3029.15 - 3029.33 m
FID Hydrocarbons



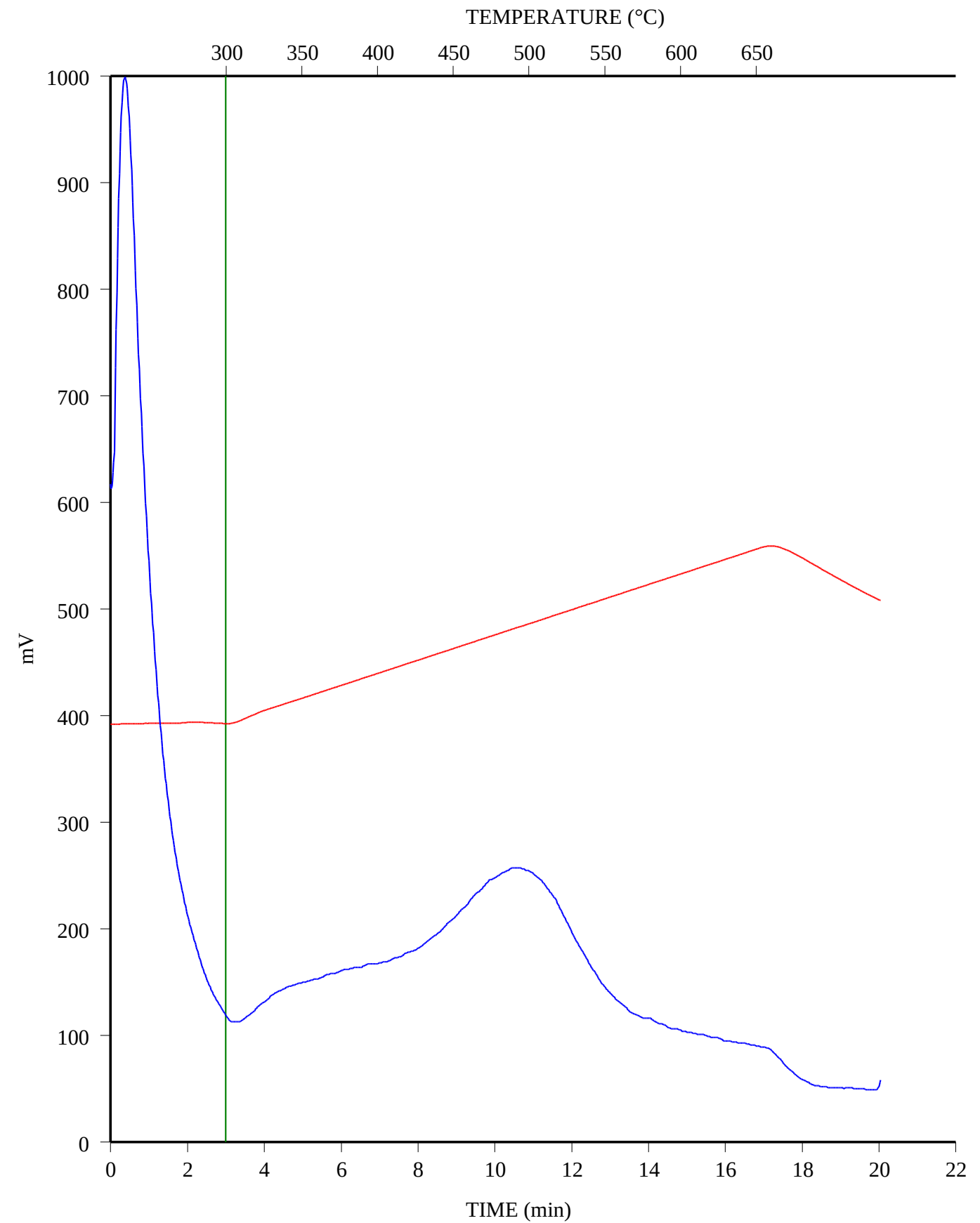
C-579995; CHEVRON HZ FOXCK 8-15-62-18; 3030.65 - 3030.72 m
FID Hydrocarbons



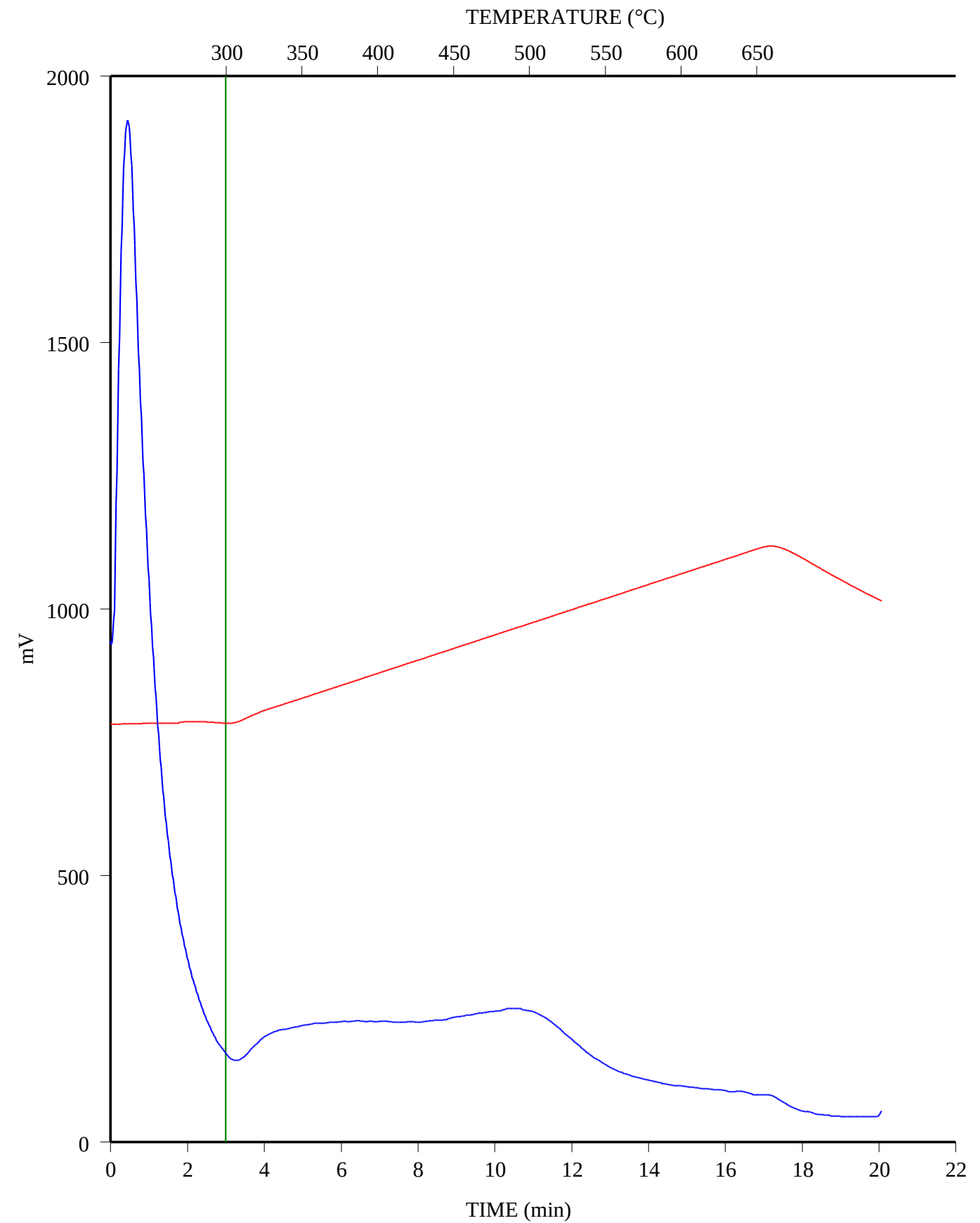
C-579996; CHEVRON HZ FOXCK 8-15-62-18; 3033.4 - 3033.45 m
FID Hydrocarbons



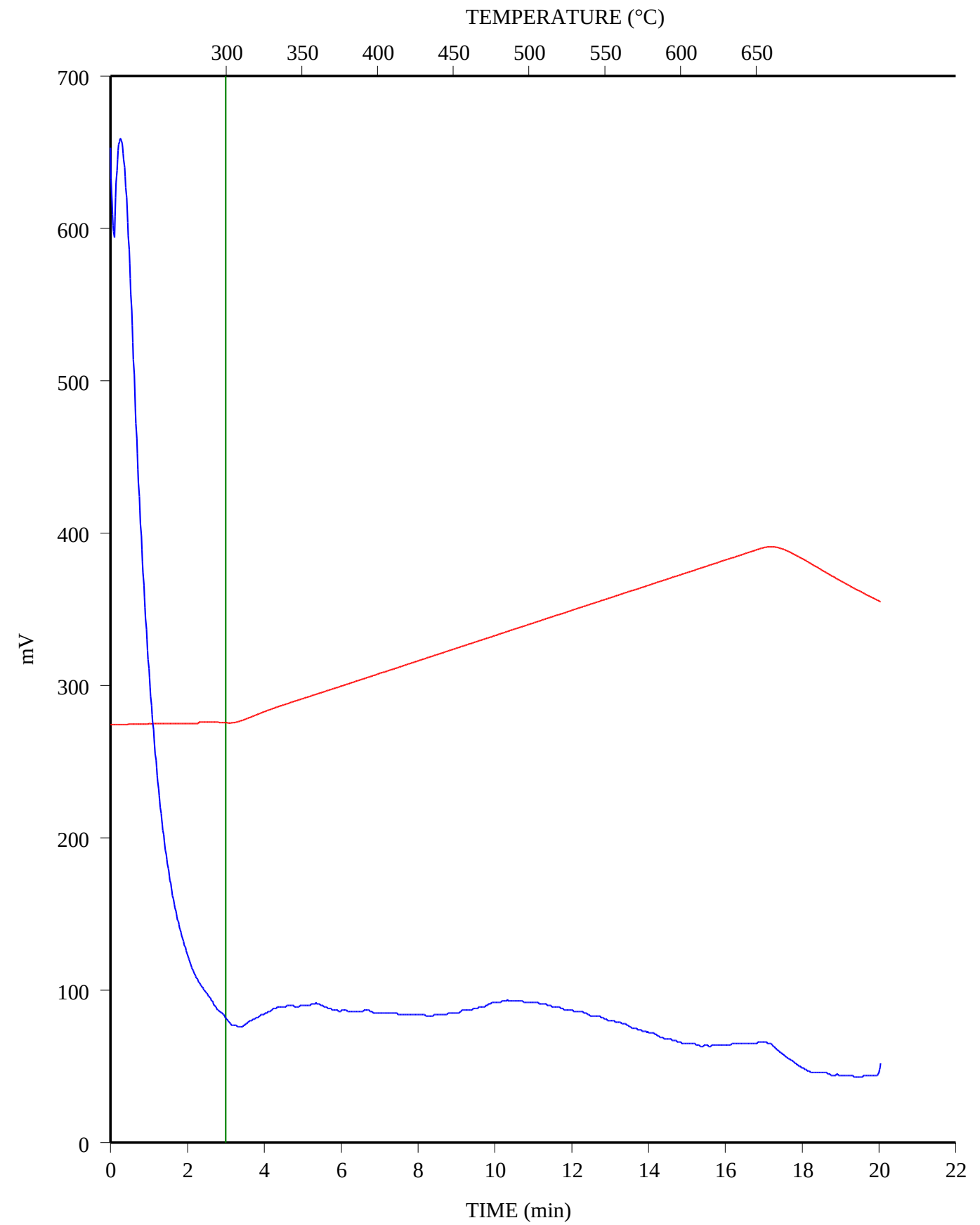
C-579997; CHEVRON HZ FOXCK 8-15-62-18; 3034.65 - 3034.7 m
FID Hydrocarbons



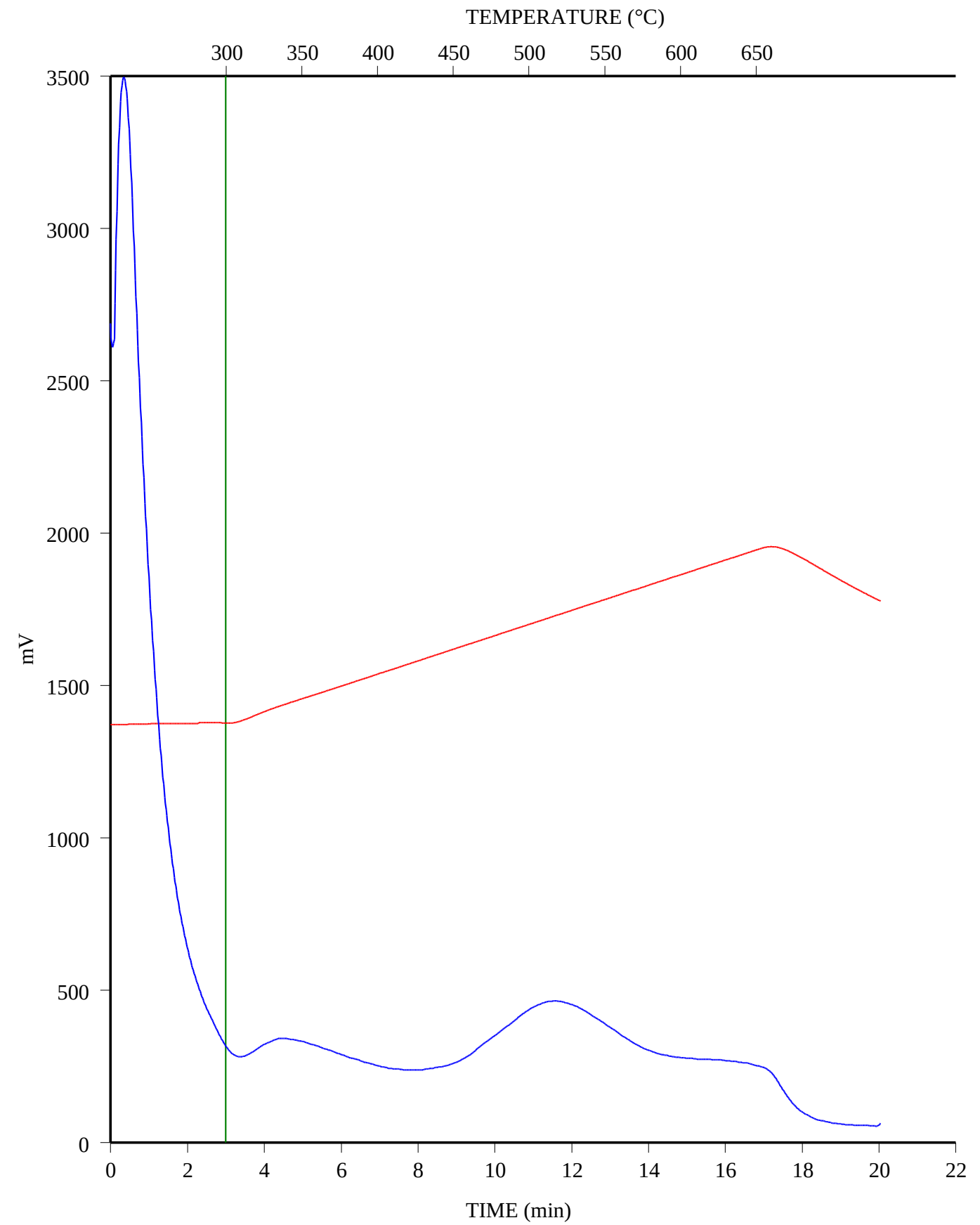
C-579998; CHEVRON HZ FOXCK 8-15-62-18; 3036.05 - 3036.1 m
FID Hydrocarbons



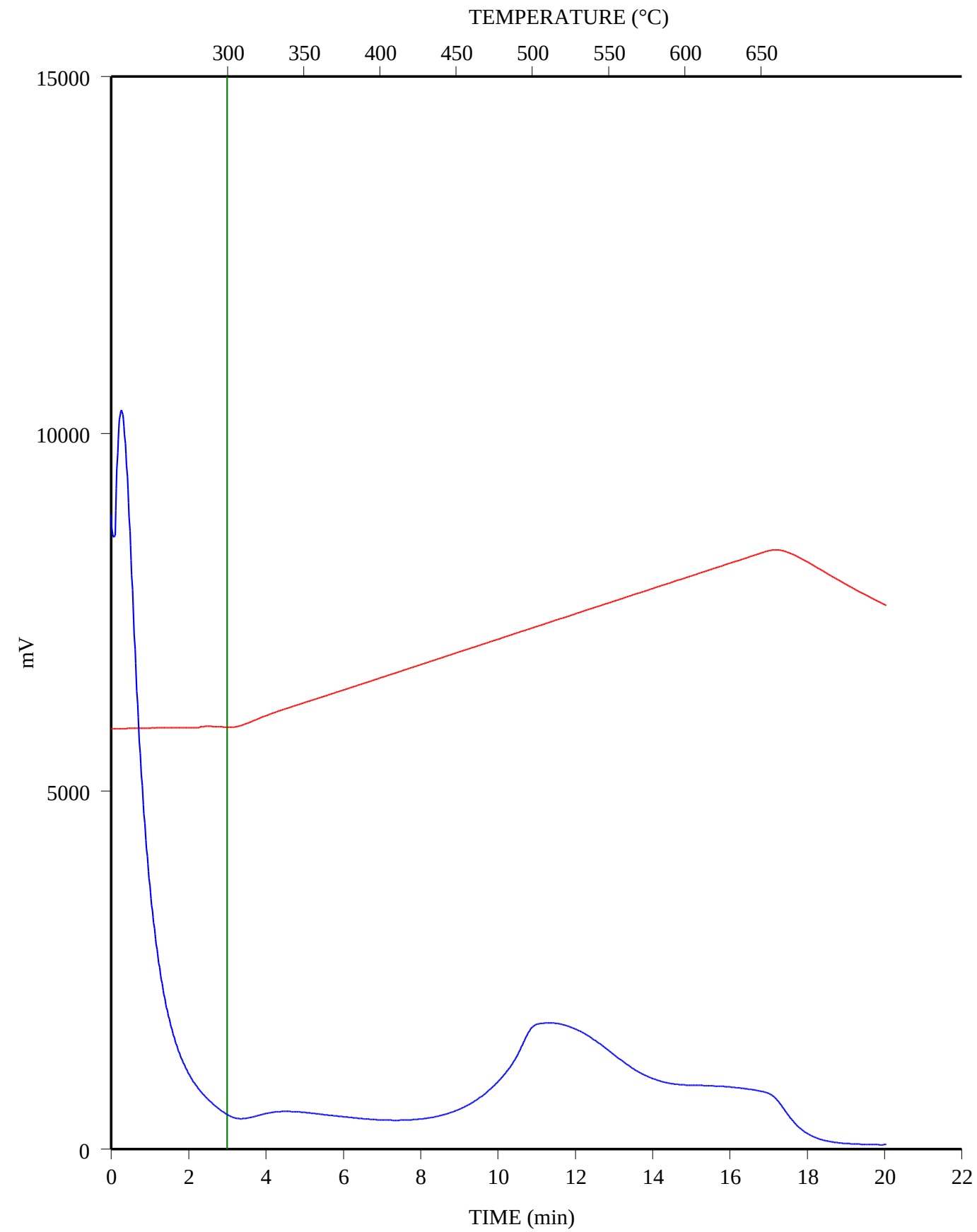
C-590279; PENN WEST PEMBINA 10-17-45-6; 2989.2 m
FID Hydrocarbons



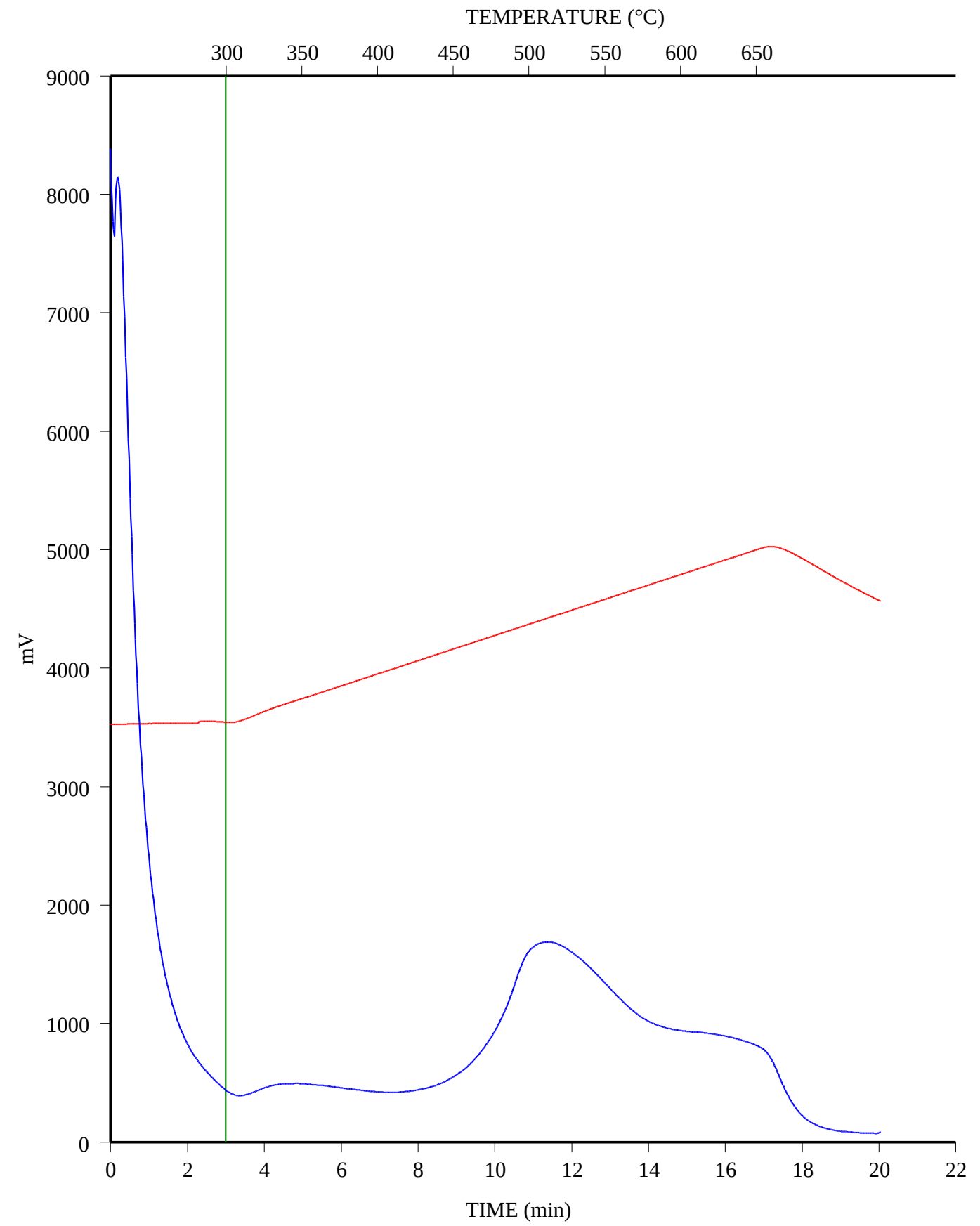
C-590280; PENN WEST PEMBINA 10-17-45-6; 2993 m
FID Hydrocarbons



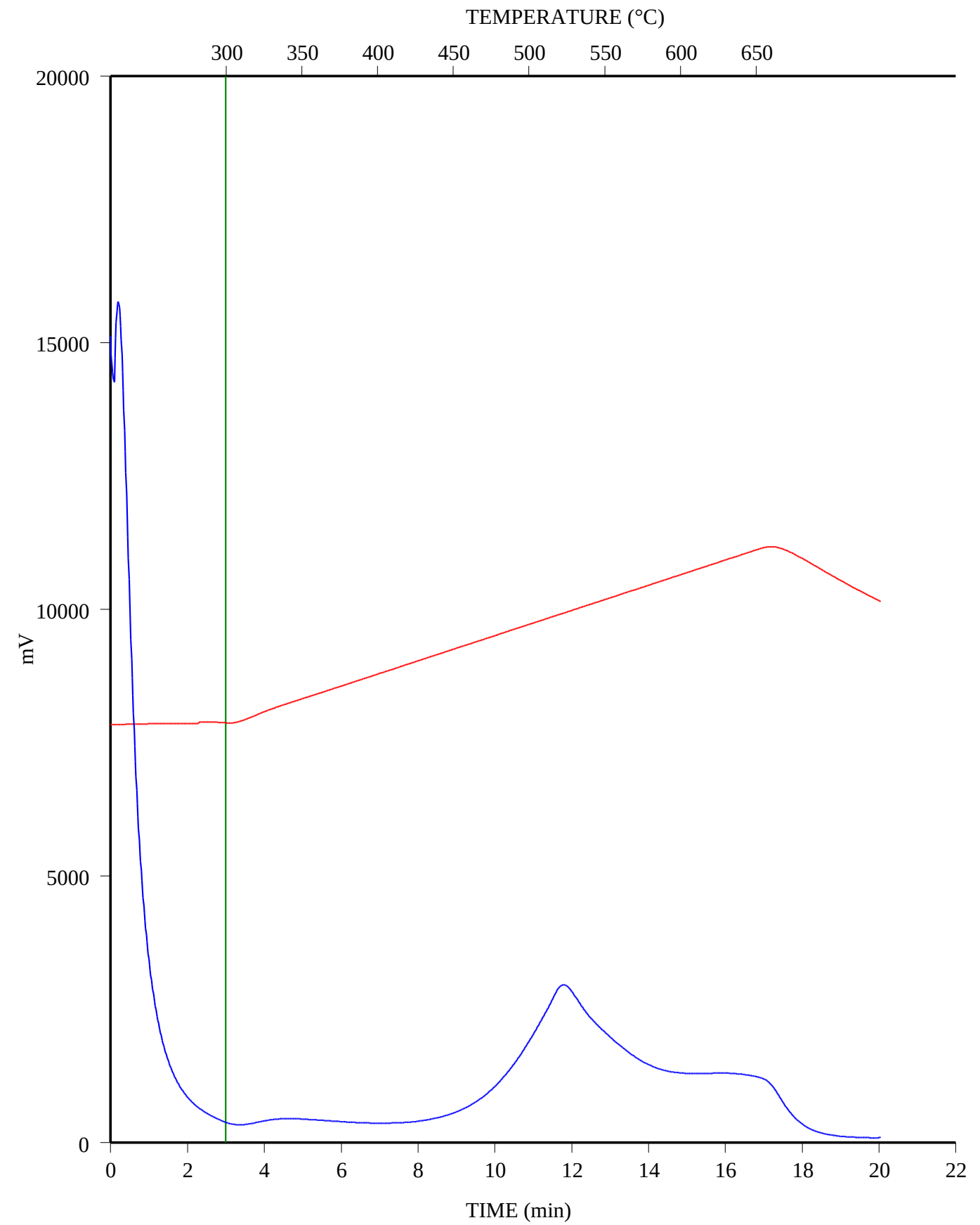
C-590281; PENN WEST PEMBINA 10-17-45-6; 2993.4 m
FID Hydrocarbons



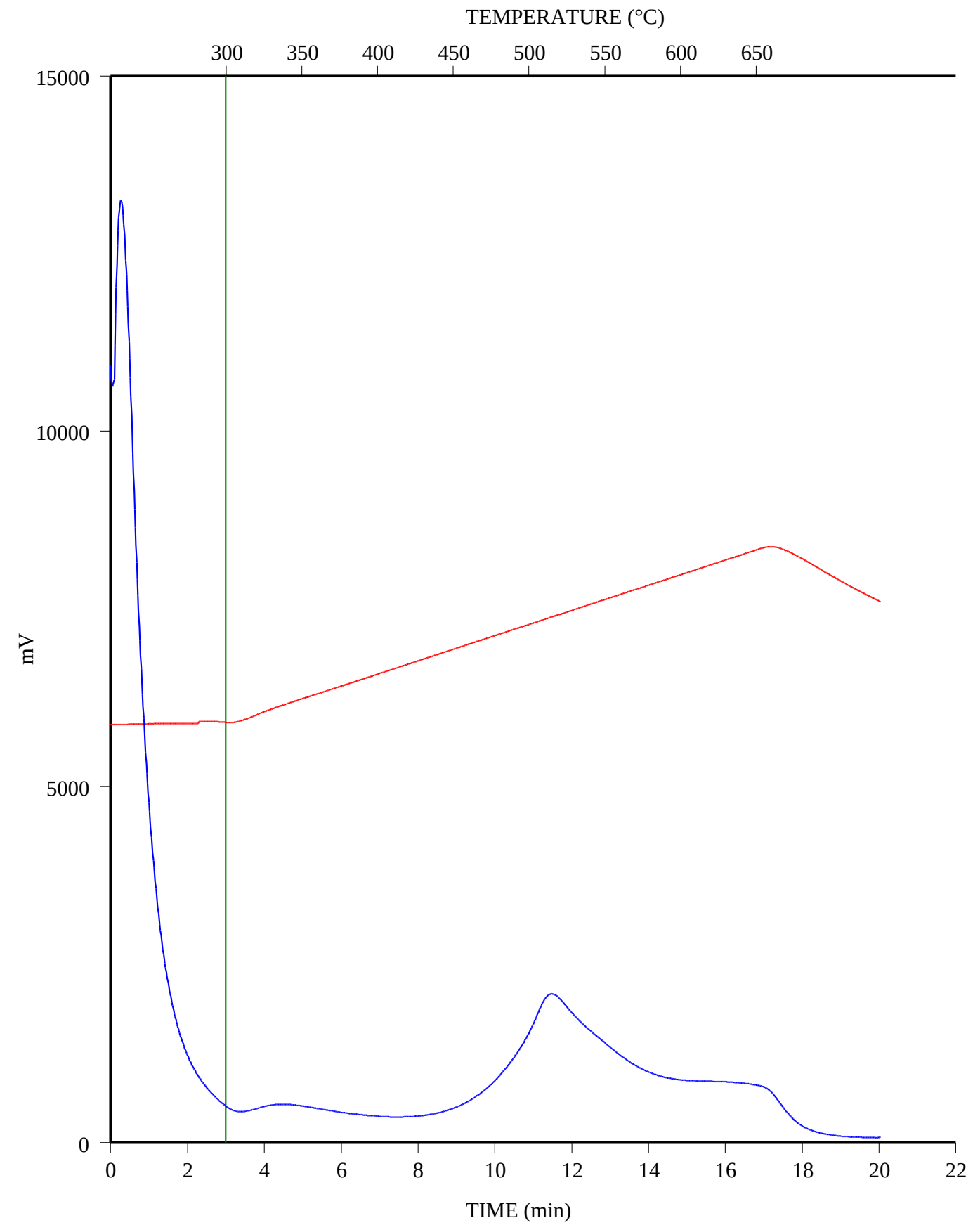
C-590282; PENN WEST PEMBINA 10-17-45-6; 2993.9 m
FID Hydrocarbons



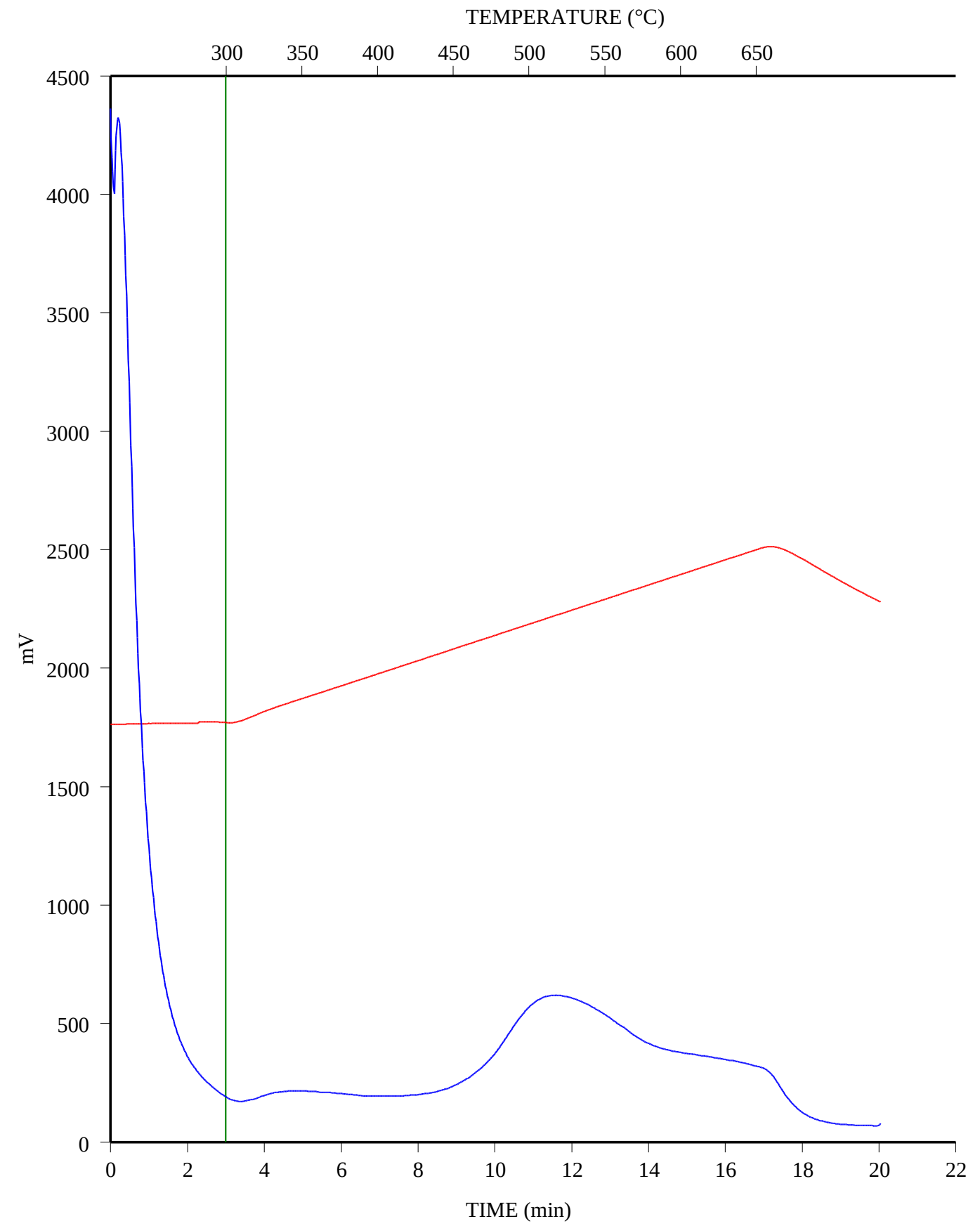
C-590283; PENN WEST PEMBINA 10-17-45-6; 2994.65 m
FID Hydrocarbons



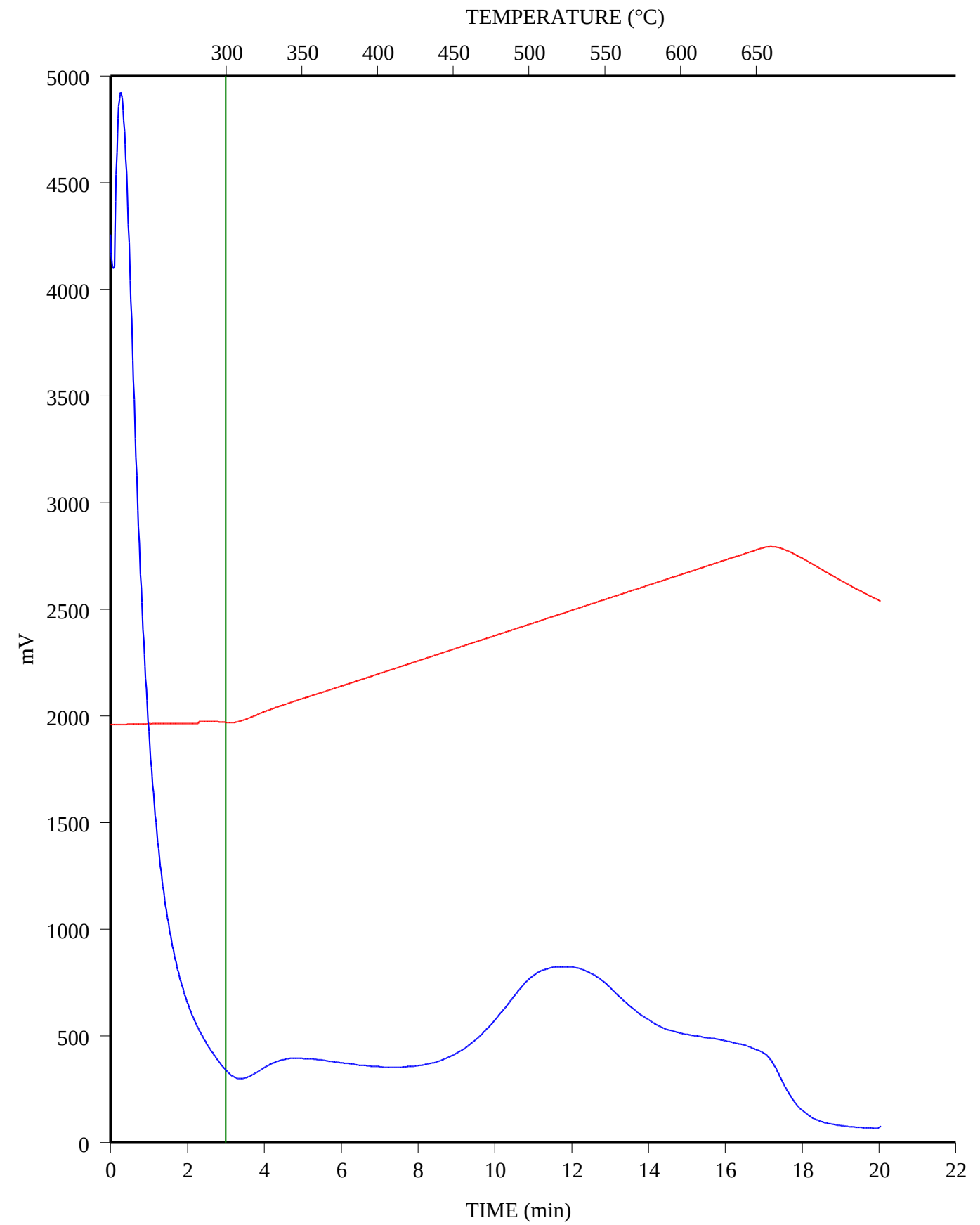
C-590284; PENN WEST PEMBINA 10-17-45-6; 2995.9 m
FID Hydrocarbons



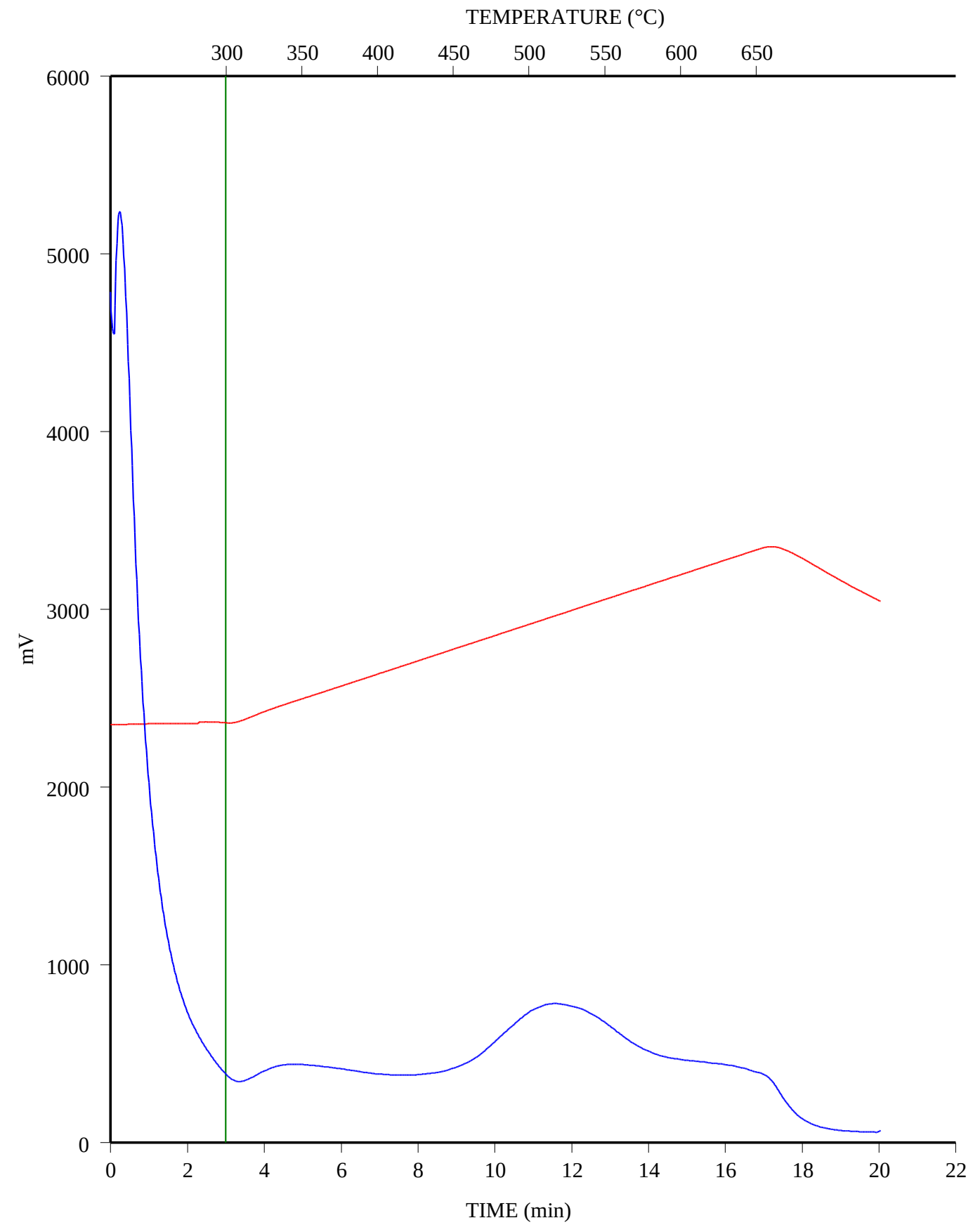
C-590285; PENN WEST PEMBINA 10-17-45-6; 2996.35 m
FID Hydrocarbons



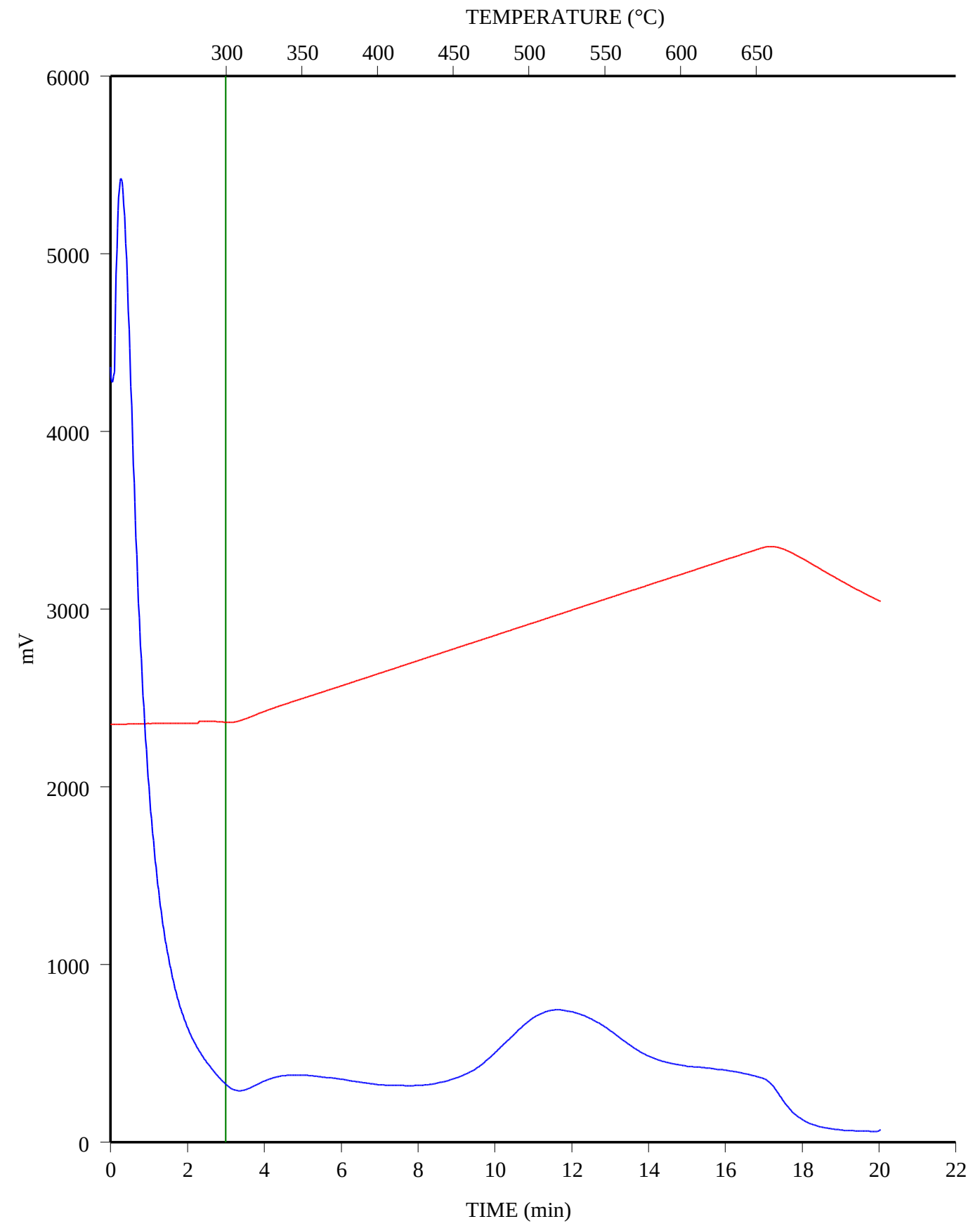
C-590286; PENN WEST PEMBINA 10-17-45-6; 2998 m
FID Hydrocarbons



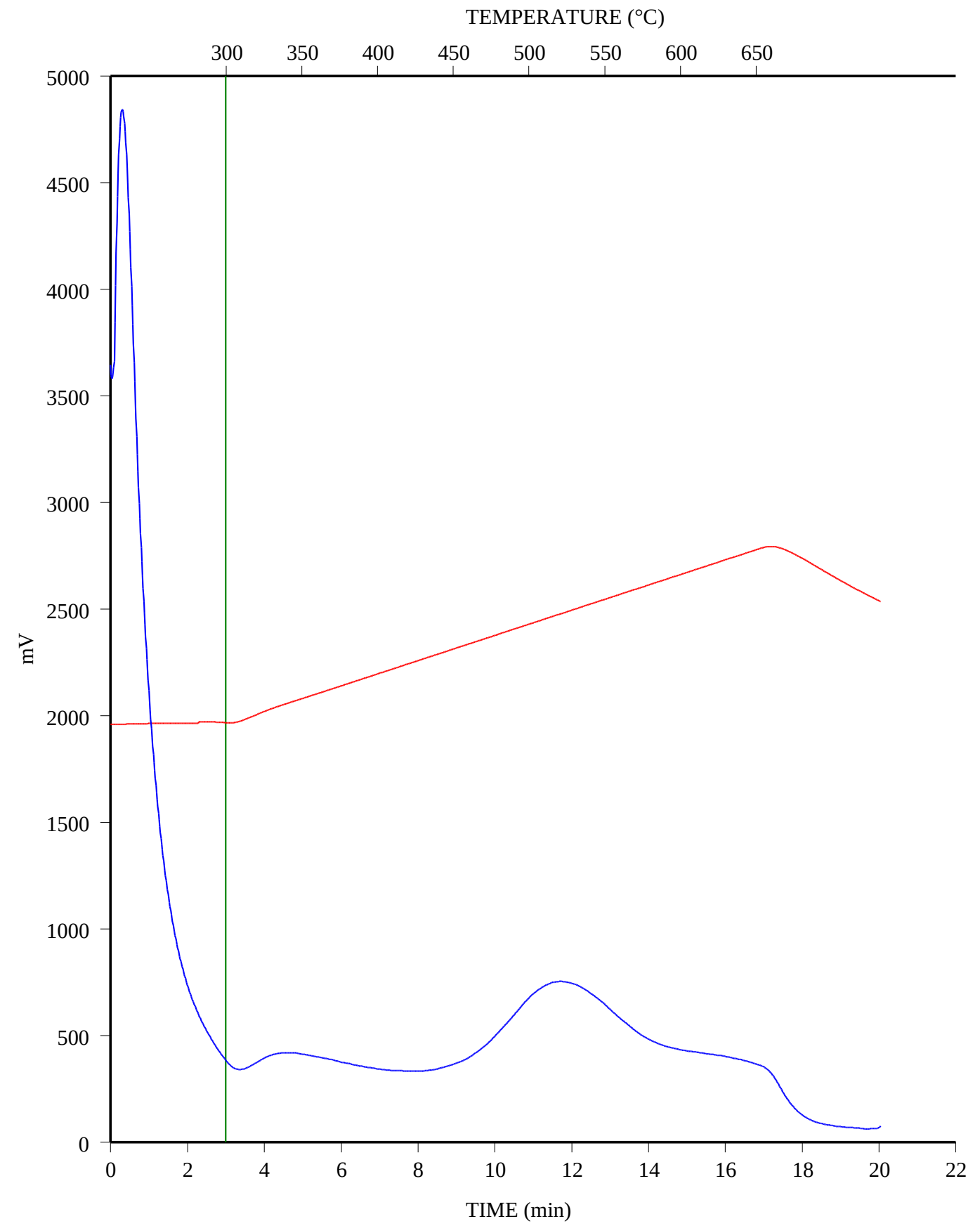
C-590287; PENN WEST PEMBINA 10-17-45-6; 2999.2 m
FID Hydrocarbons



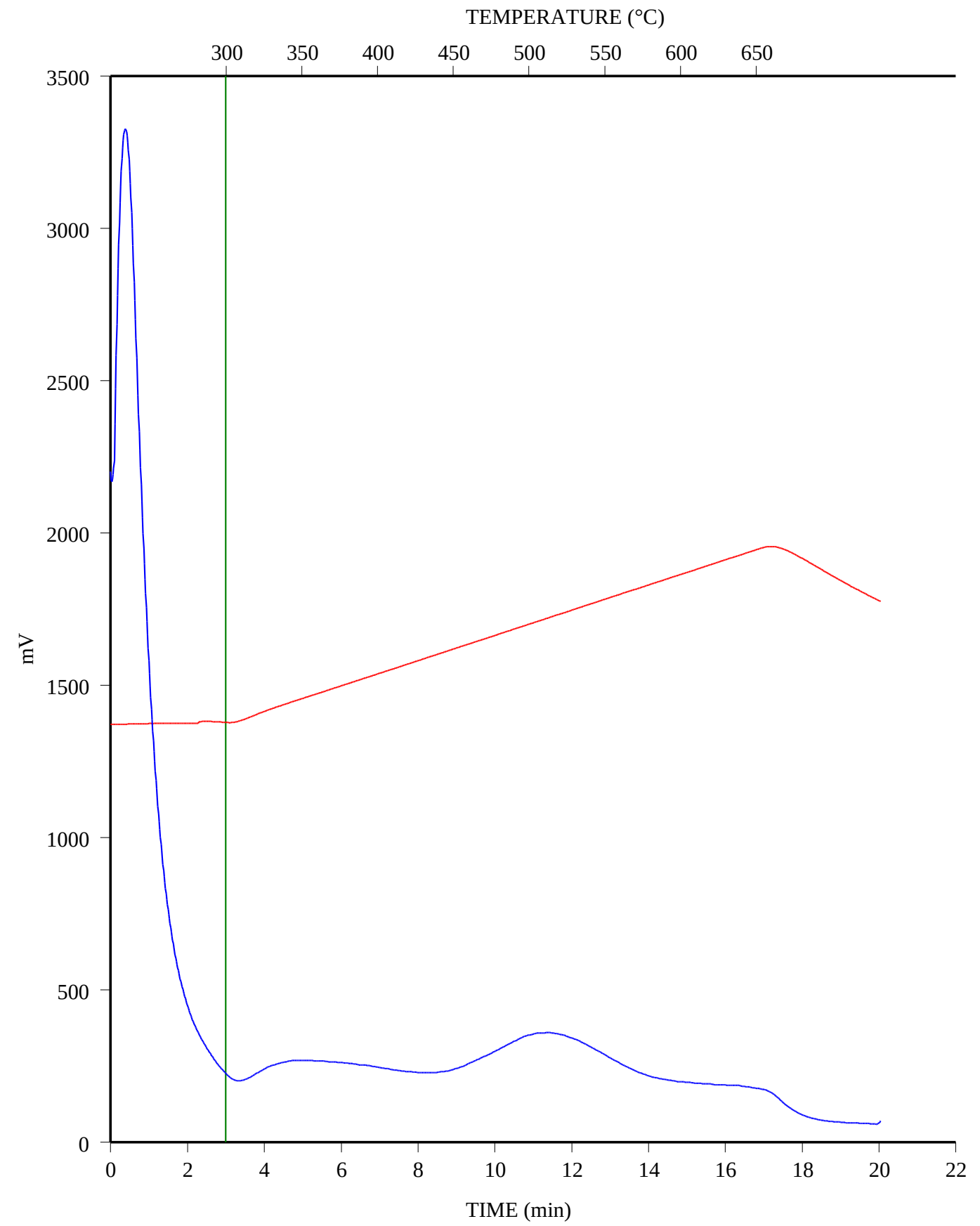
C-590288; PENN WEST PEMBINA 10-17-45-6; 3000.4 m
FID Hydrocarbons



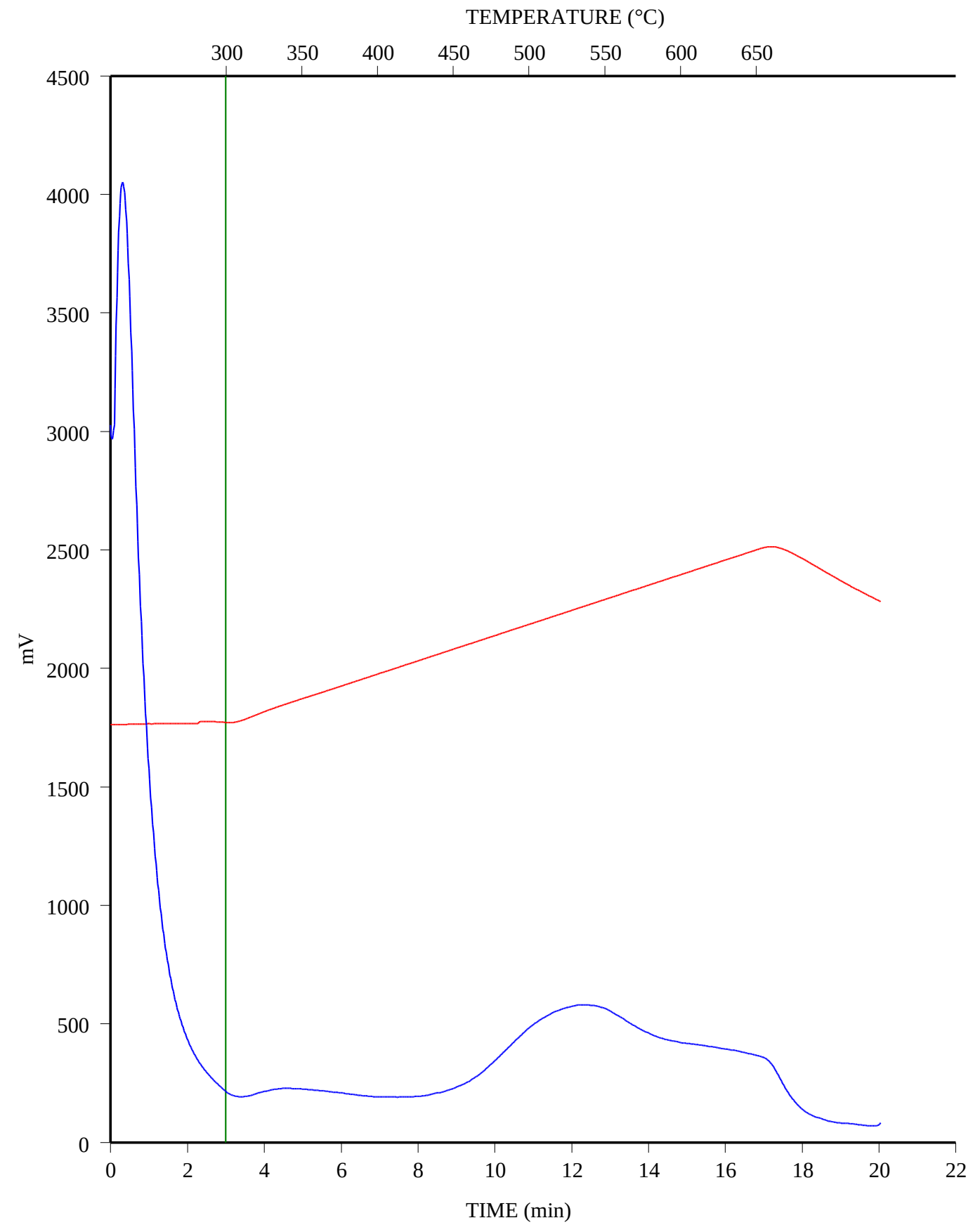
C-590289; PENN WEST PEMBINA 10-17-45-6; 3001.65 m
FID Hydrocarbons



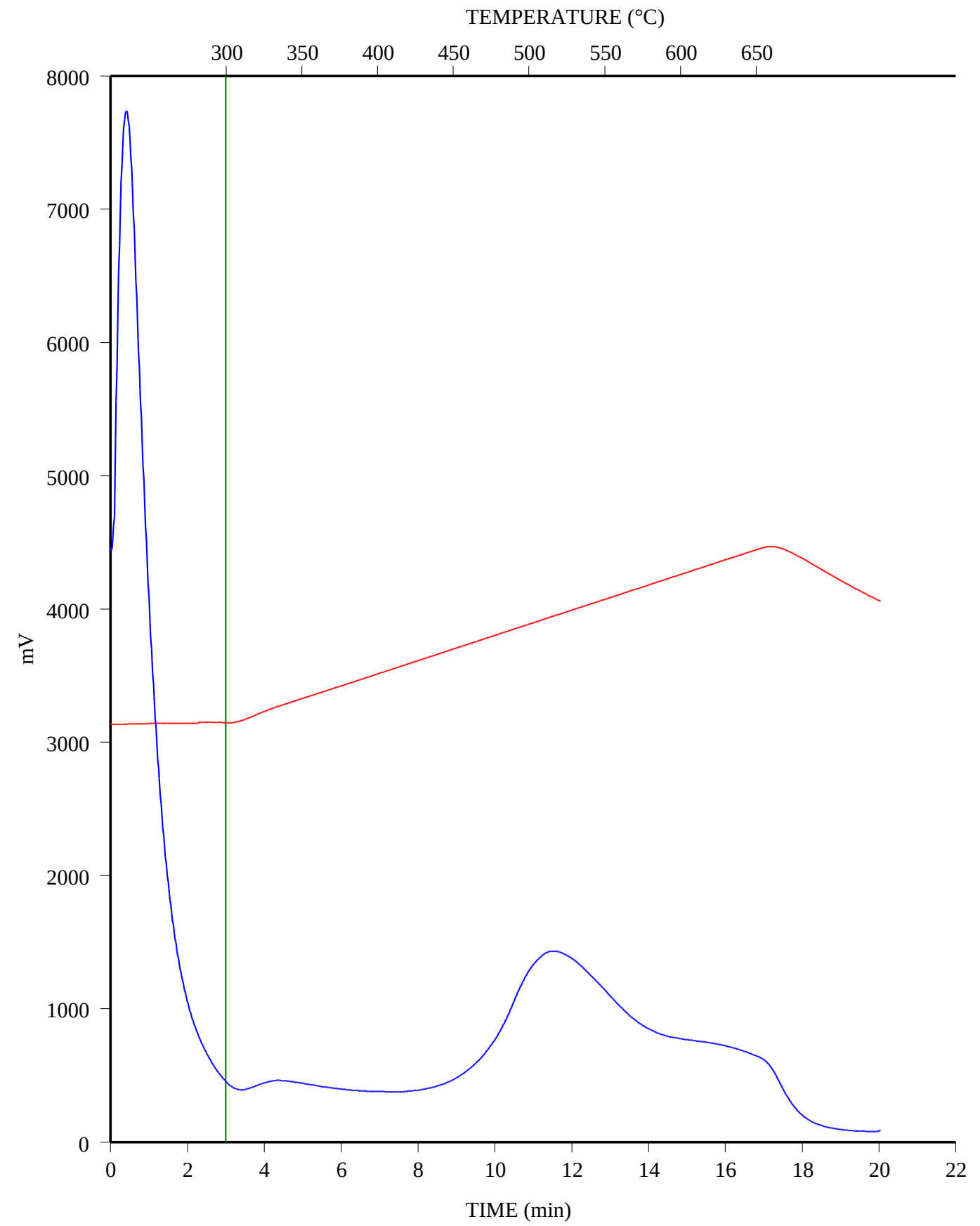
C-590290; PENN WEST PEMBINA 10-17-45-6; 3002.35 m
FID Hydrocarbons



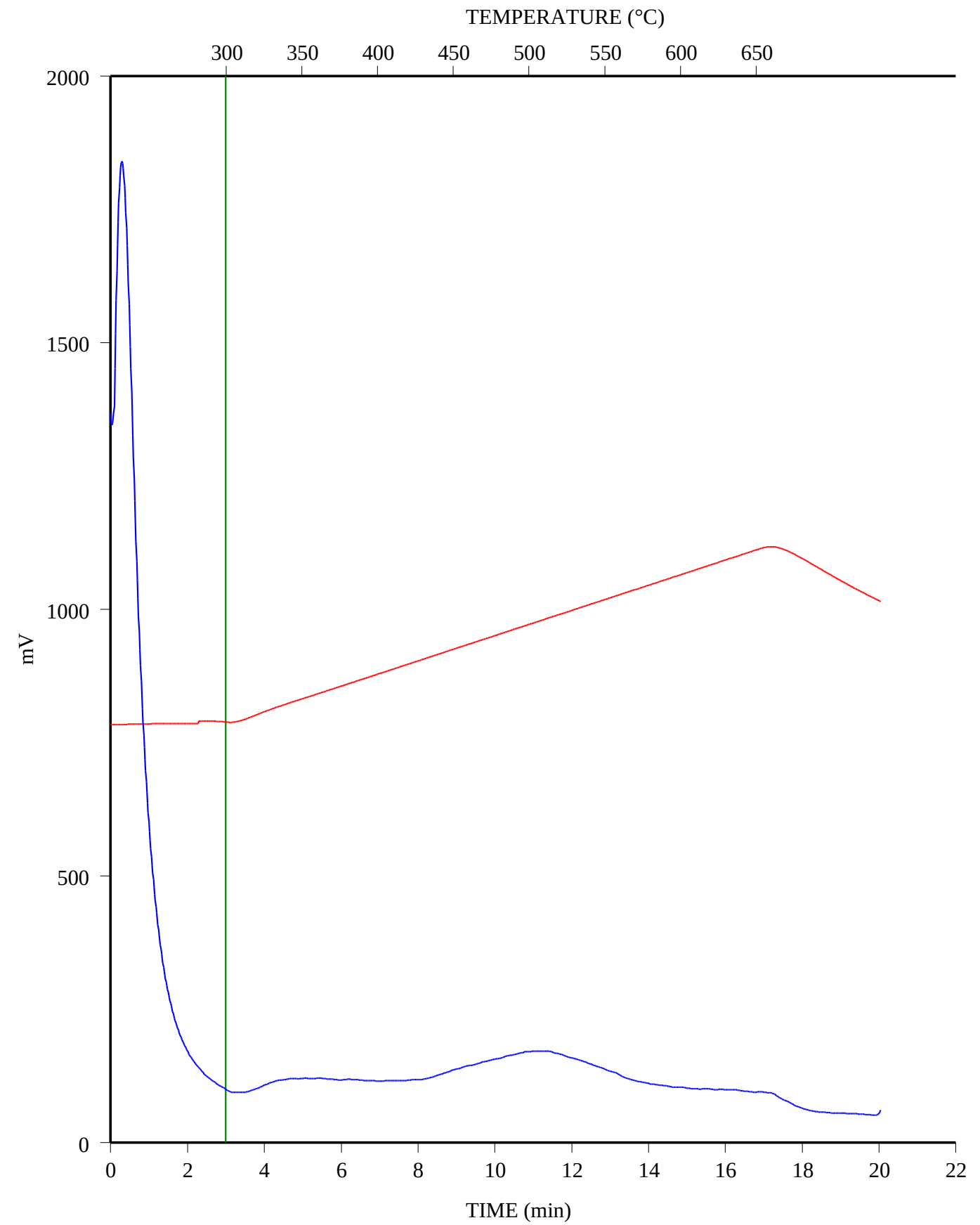
C-590291; PENN WEST PEMBINA 10-17-45-6; 3003.95 m
FID Hydrocarbons



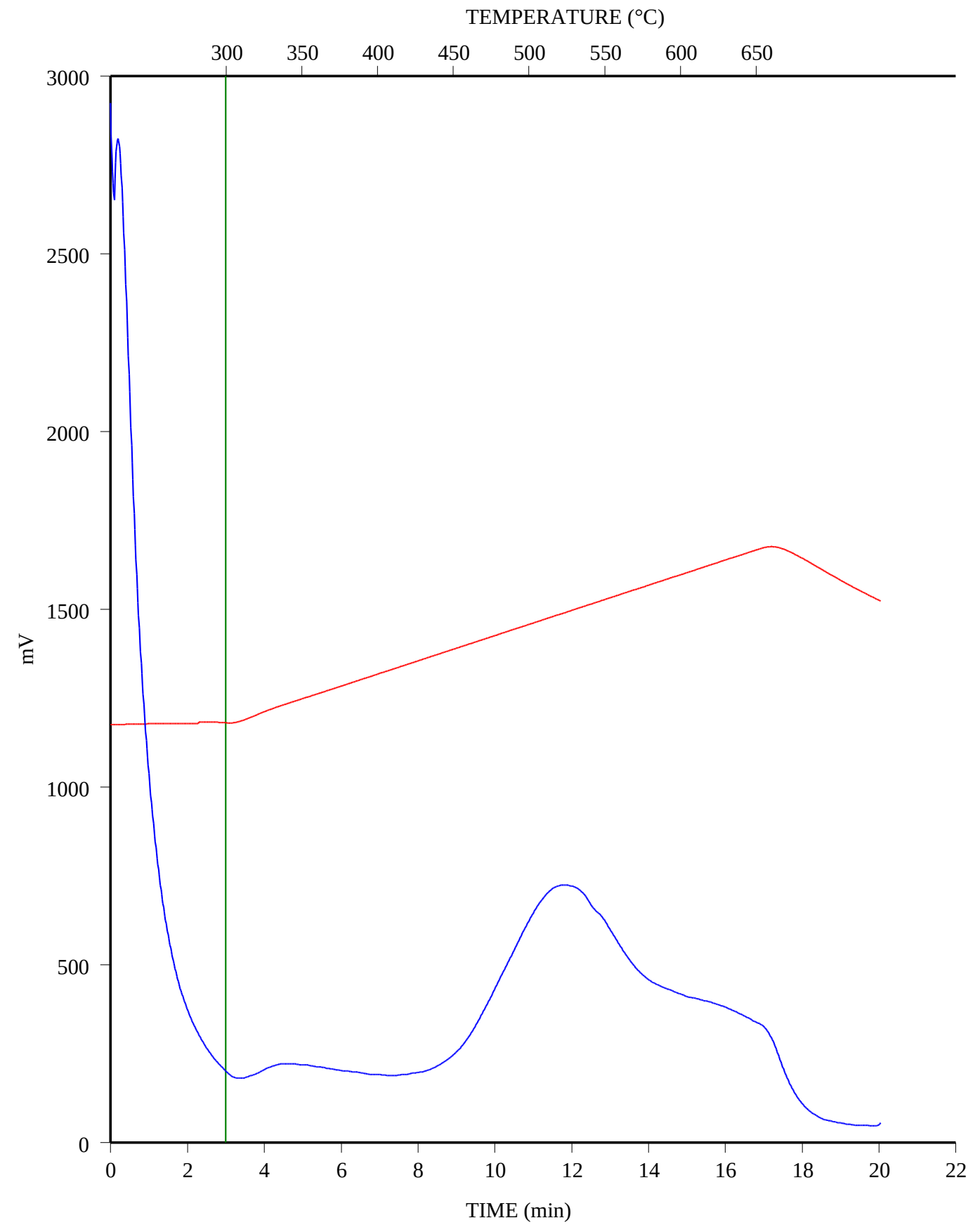
C-590292; PENN WEST PEMBINA 10-17-45-6; 3004.9 m
FID Hydrocarbons



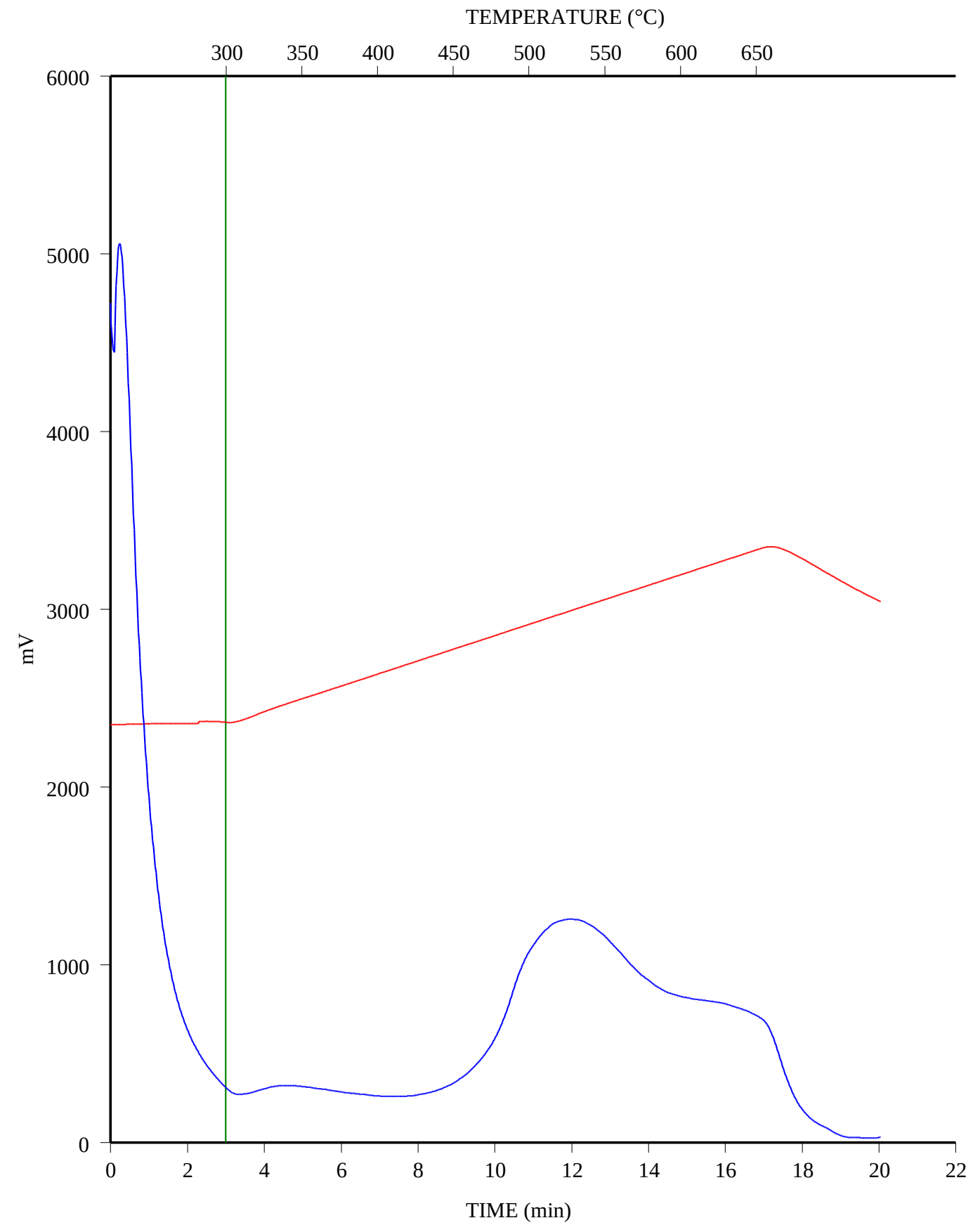
C-590293; PENN WEST PEMBINA 10-17-45-6; 3005.5 m
FID Hydrocarbons



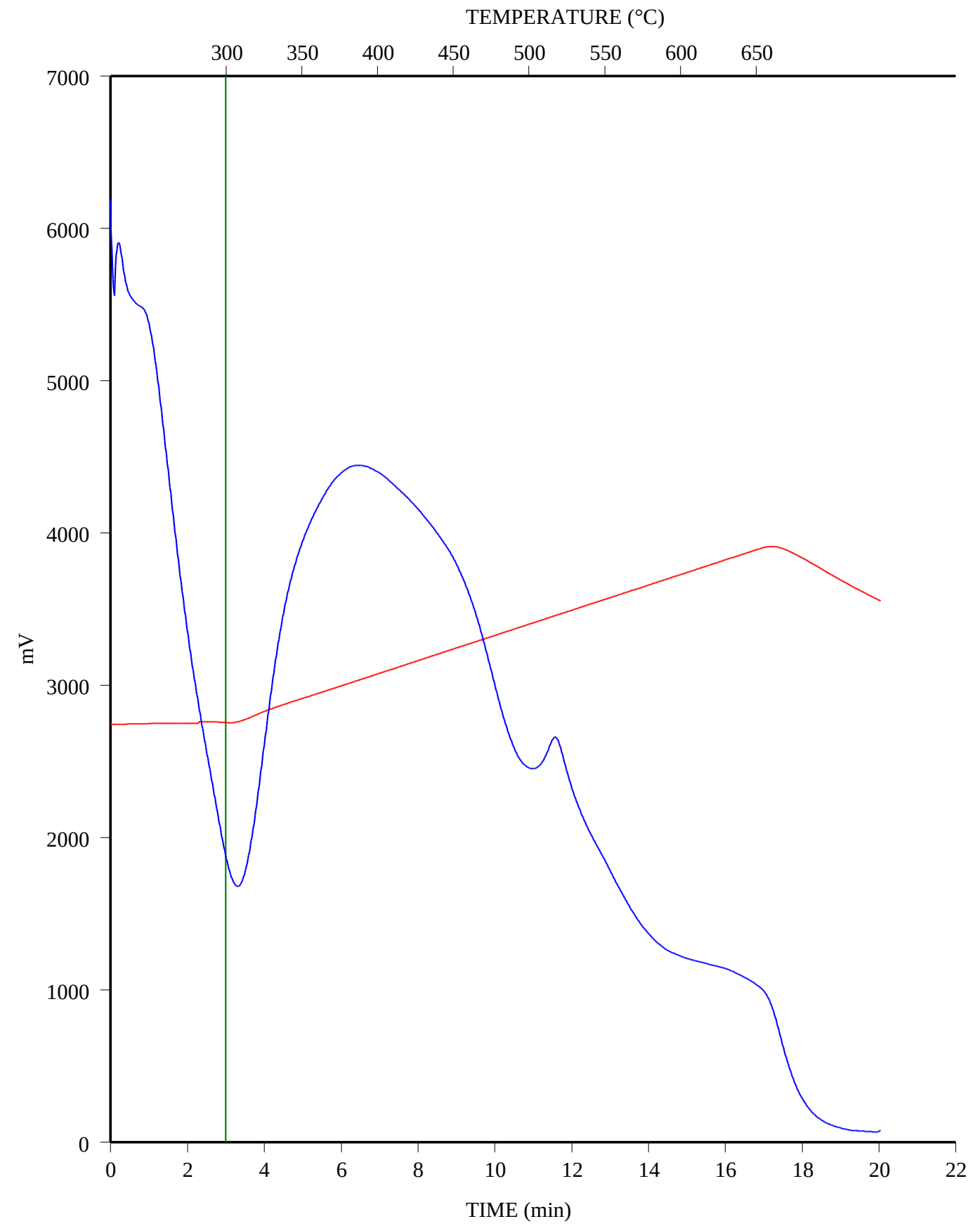
C-590294; PENN WEST PEMBINA 10-17-45-6; 3007.05 m
FID Hydrocarbons



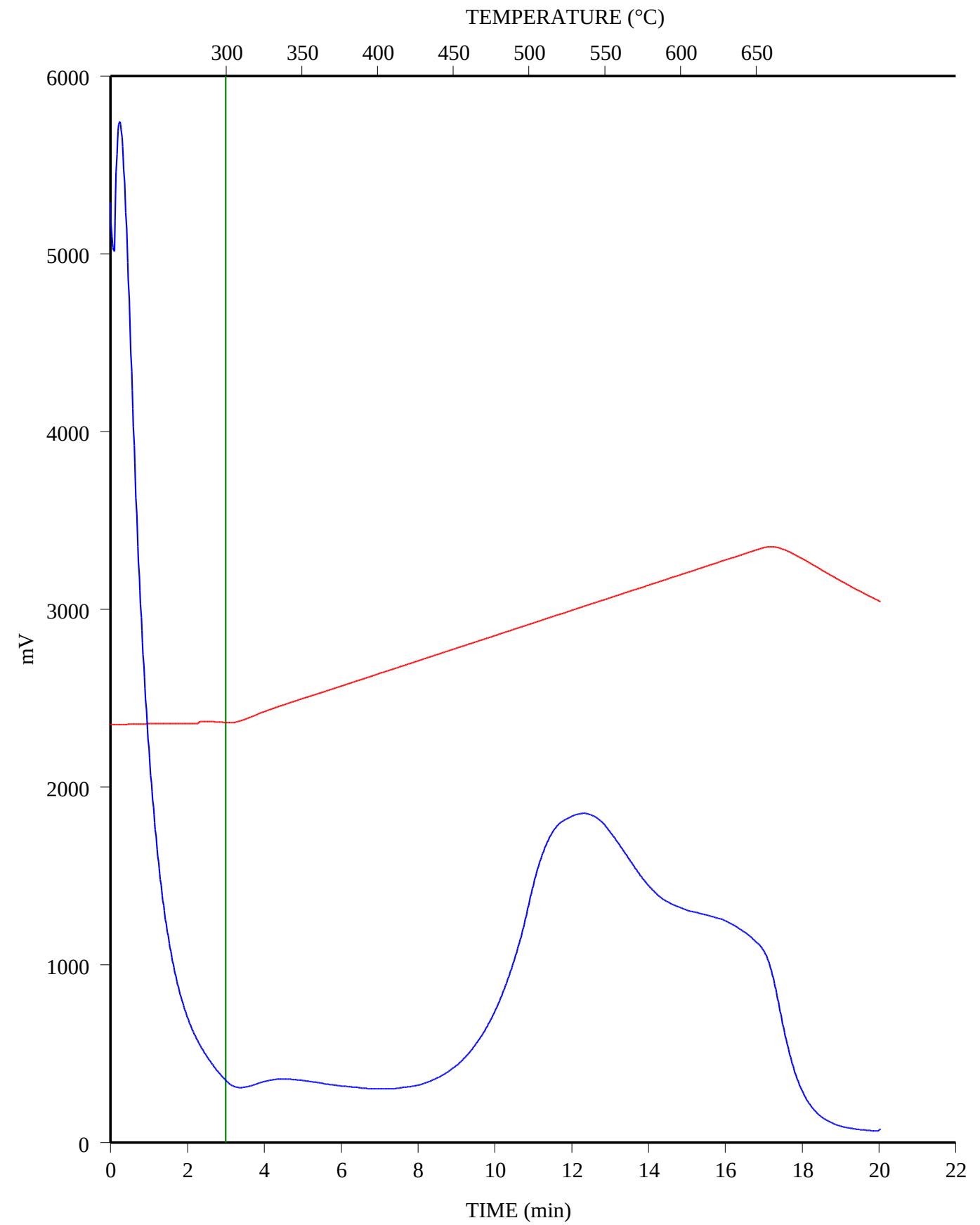
C-590295; PENN WEST PEMBINA 10-17-45-6; 3008.25 m
FID Hydrocarbons



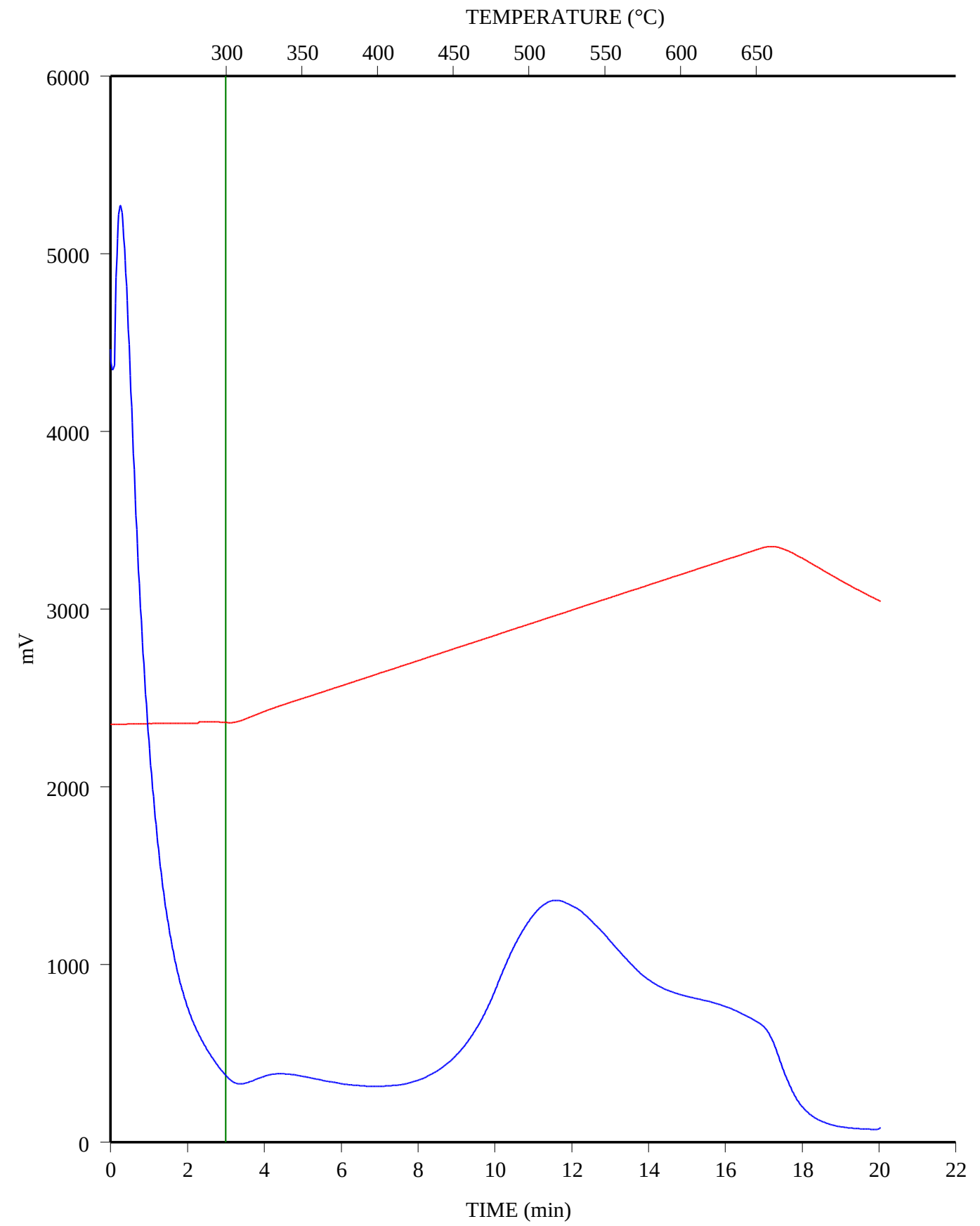
C-590296; PENN WEST PEMBINA 10-17-45-6; 3008.65 m
FID Hydrocarbons



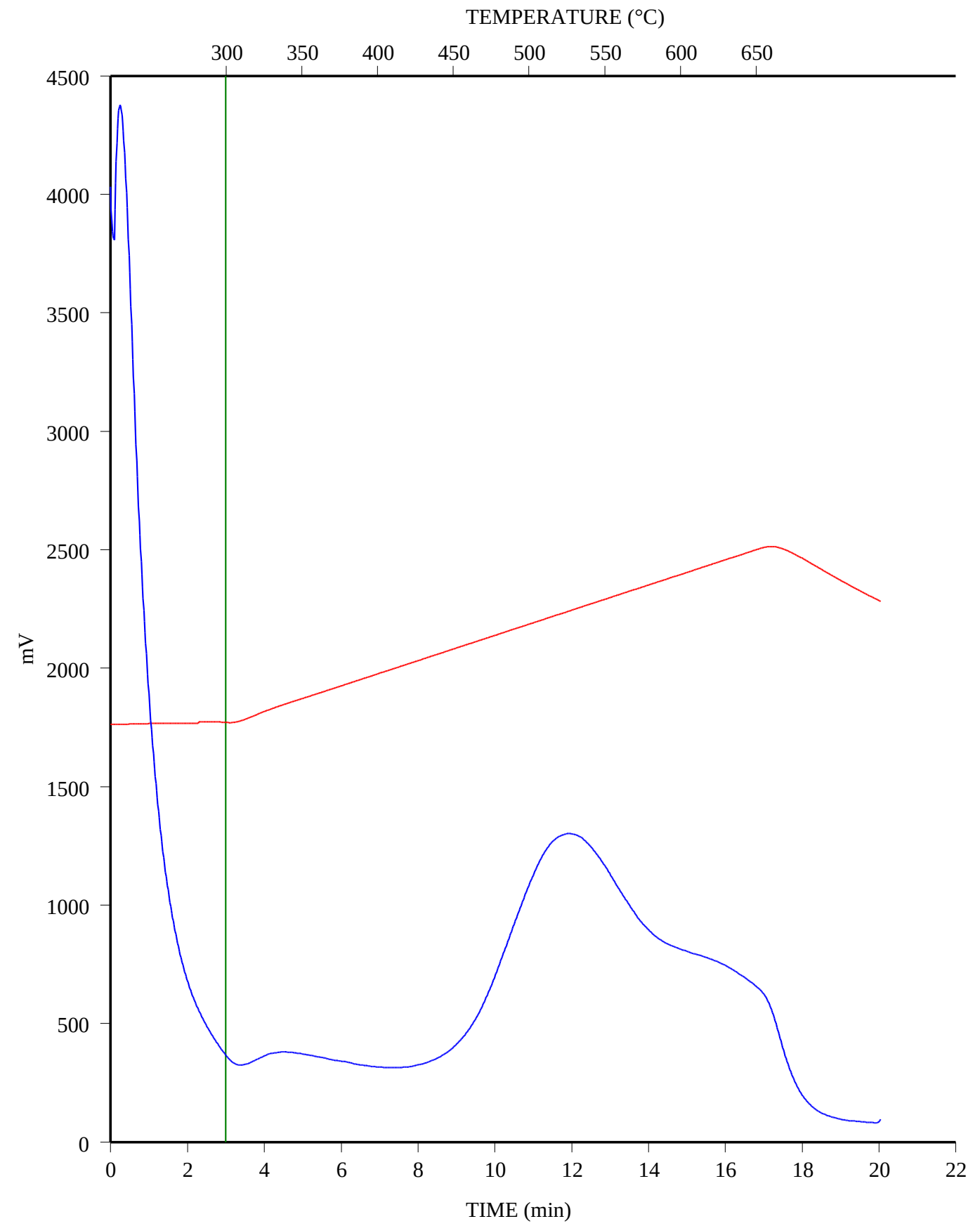
C-590297; PENN WEST PEMBINA 10-17-45-6; 3010.15 m
FID Hydrocarbons



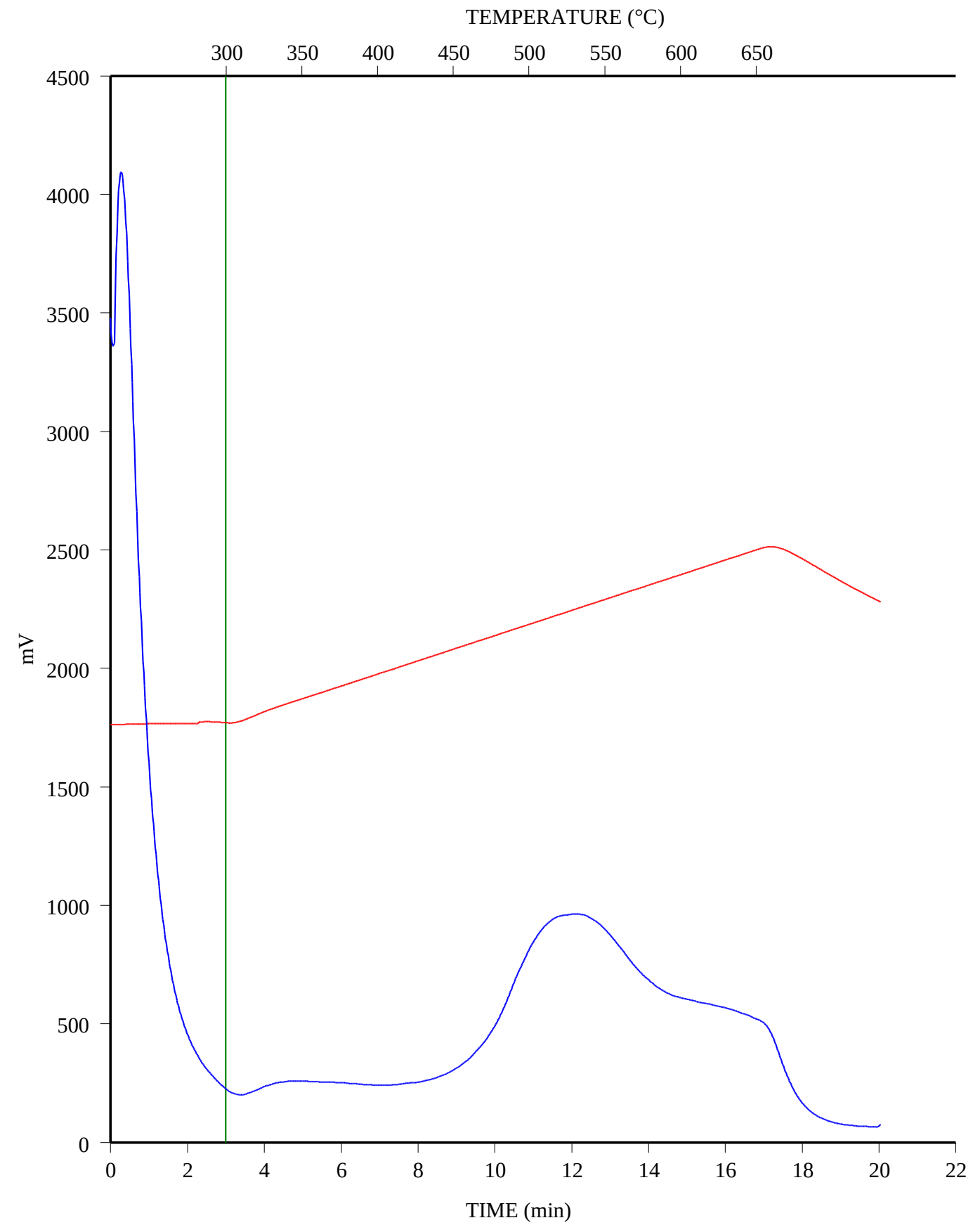
C-590298; PENN WEST PEMBINA 10-17-45-6; 3011.95 m
FID Hydrocarbons



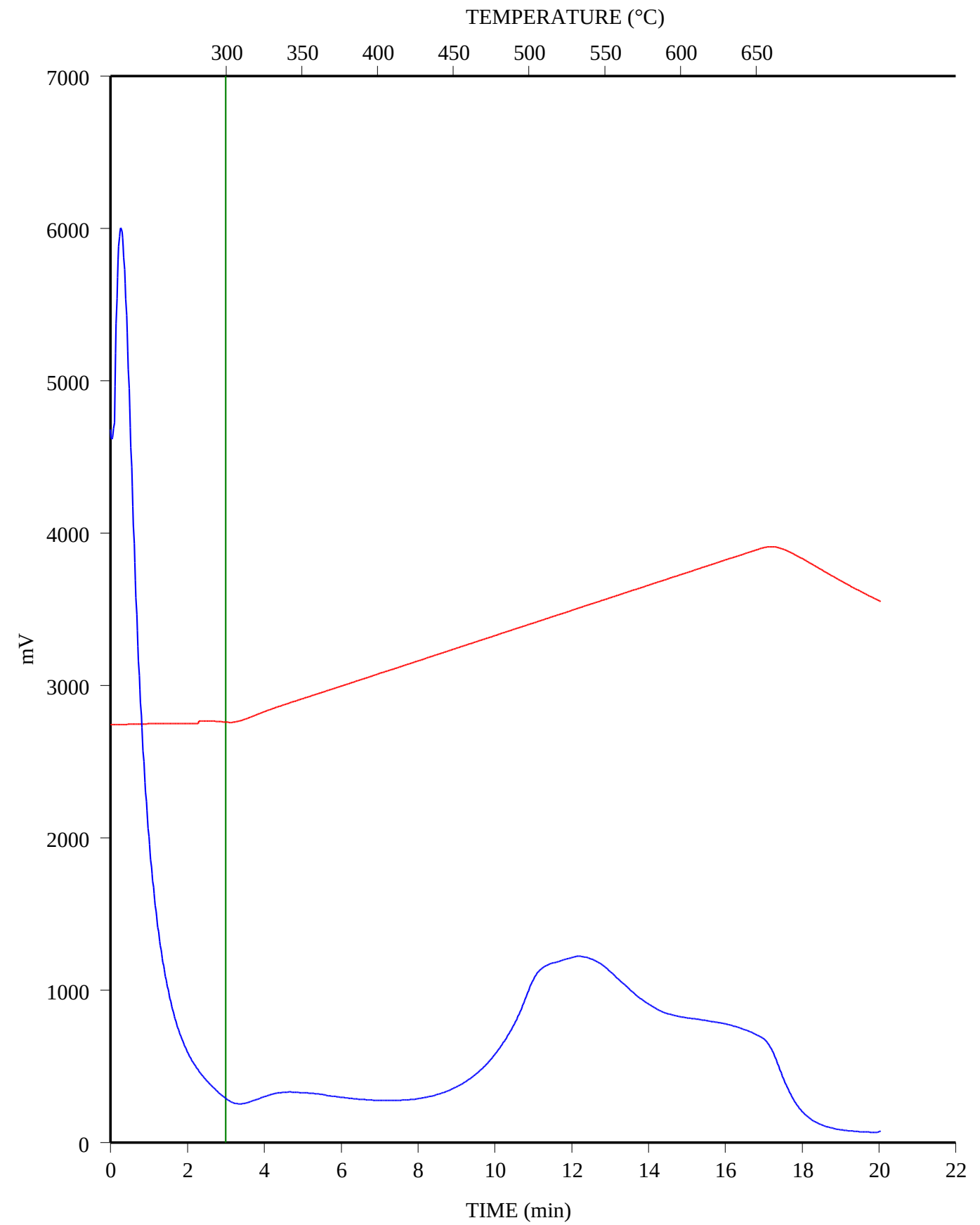
C-590299; PENN WEST PEMBINA 10-17-45-6; 3012.7 m
FID Hydrocarbons



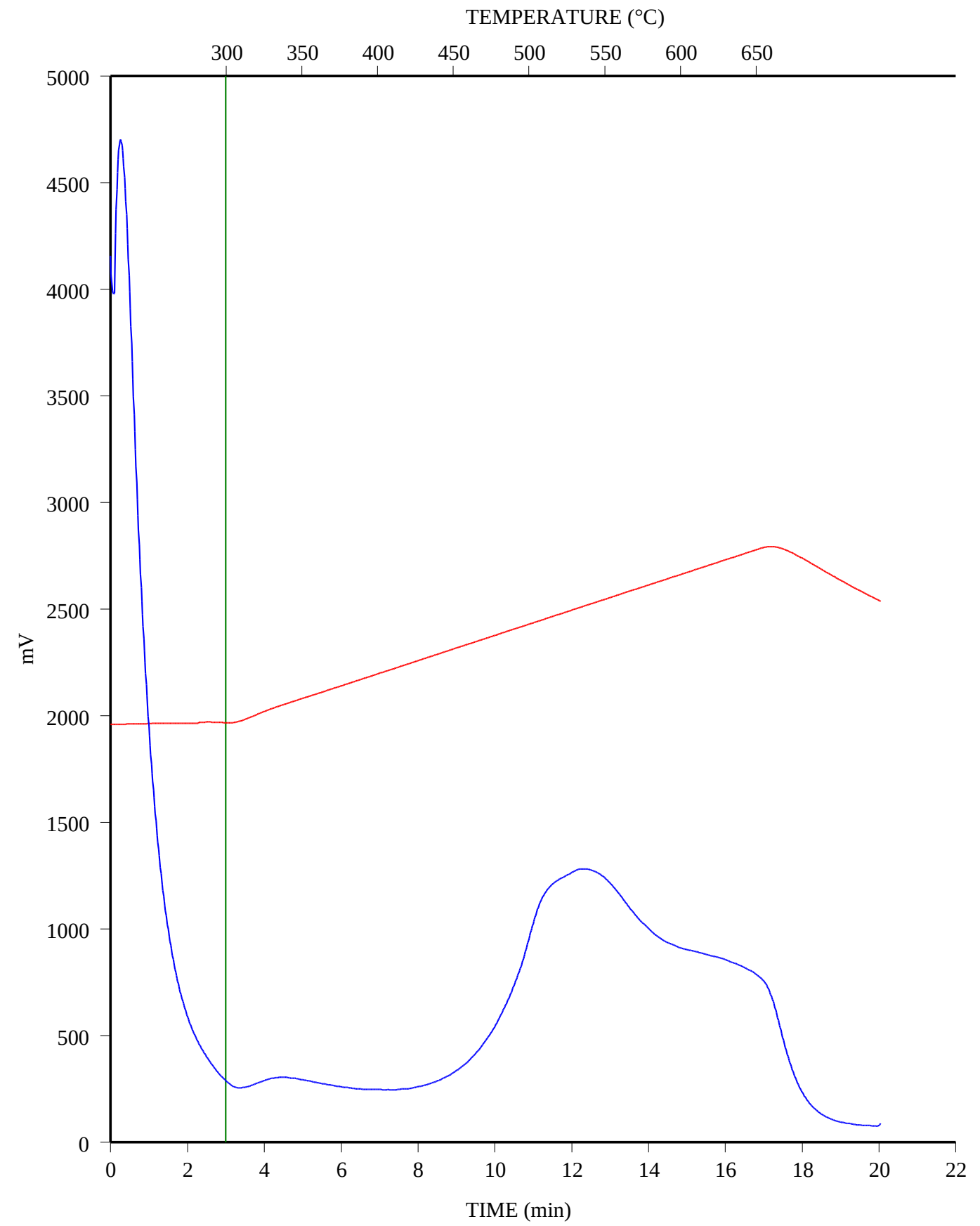
C-590300; PENN WEST PEMBINA 10-17-45-6; 3013.95 m
FID Hydrocarbons



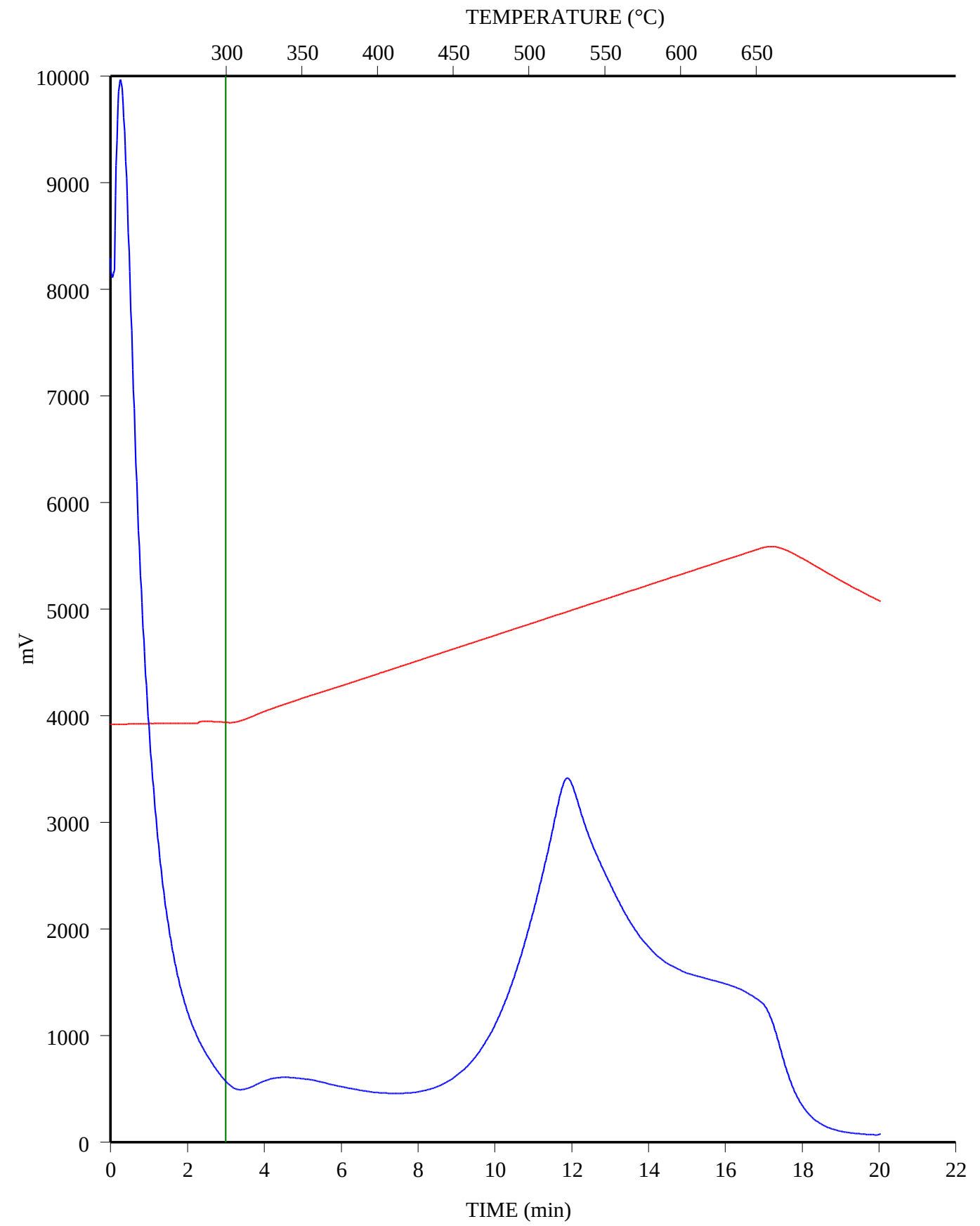
C-590301; PENN WEST PEMBINA 10-17-45-6; 3015.35 m
FID Hydrocarbons



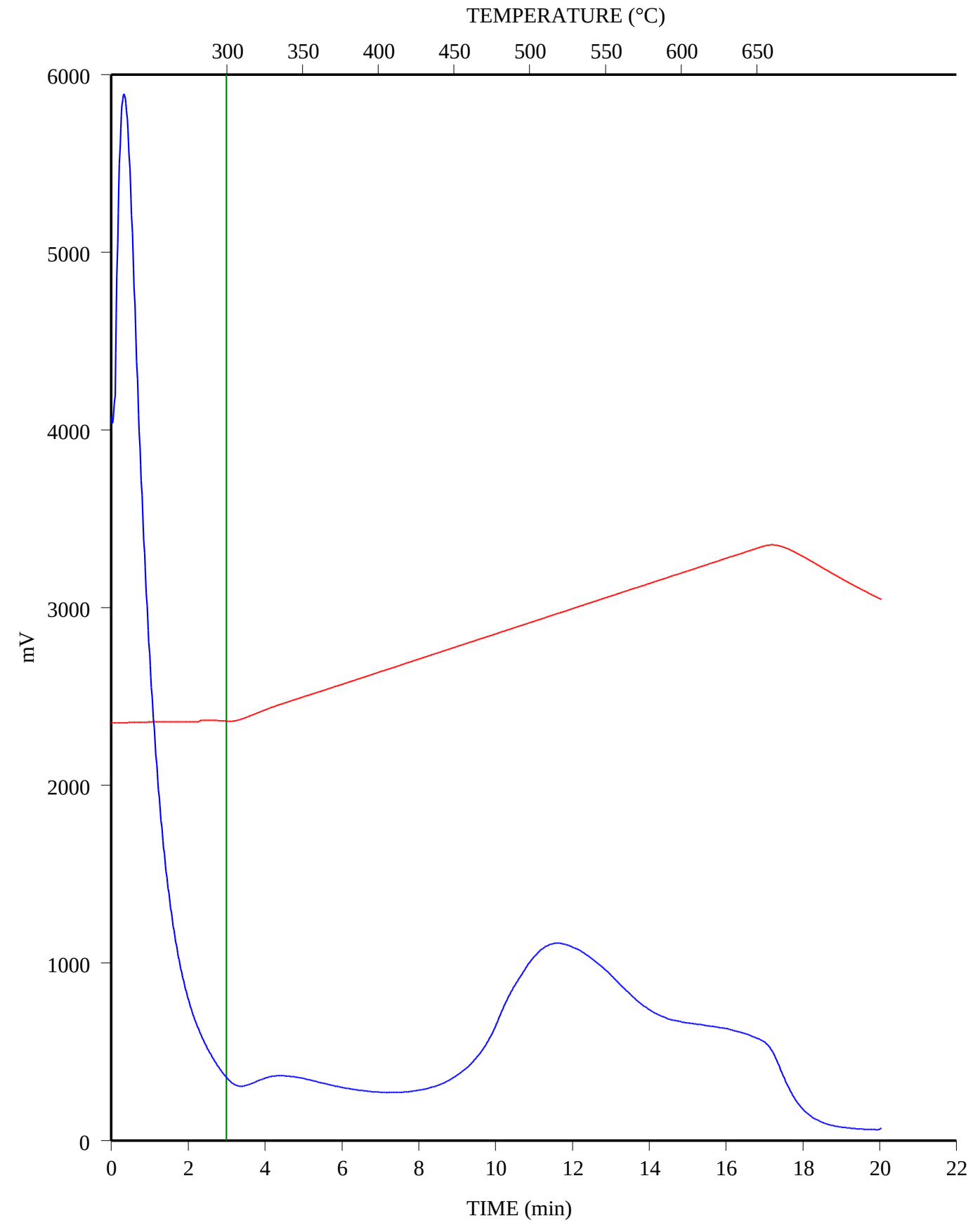
C-590302; PENN WEST PEMBINA 10-17-45-6; 3016.5 m
FID Hydrocarbons



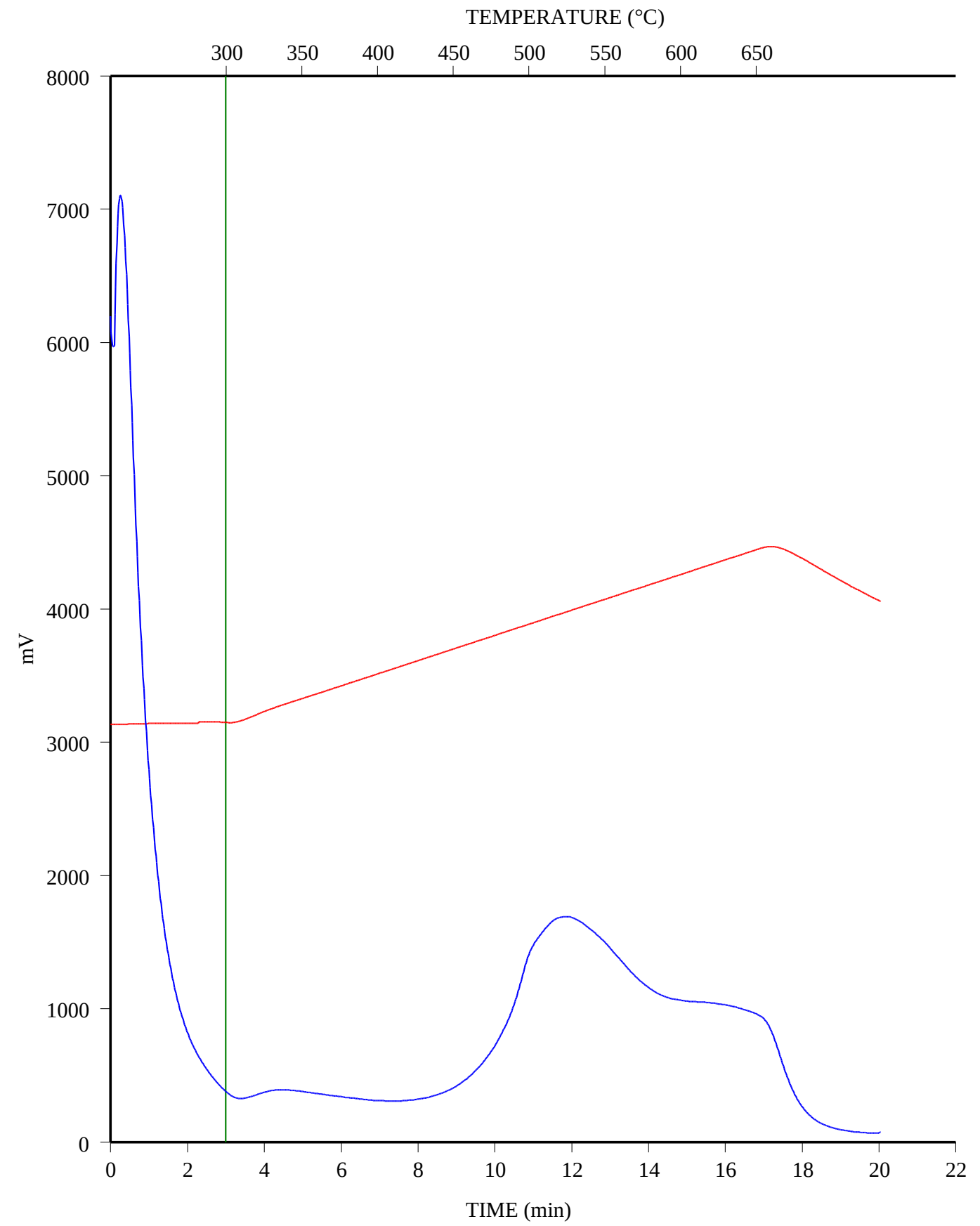
C-590303; PENN WEST PEMBINA 10-17-45-6; 3017.35 m
FID Hydrocarbons



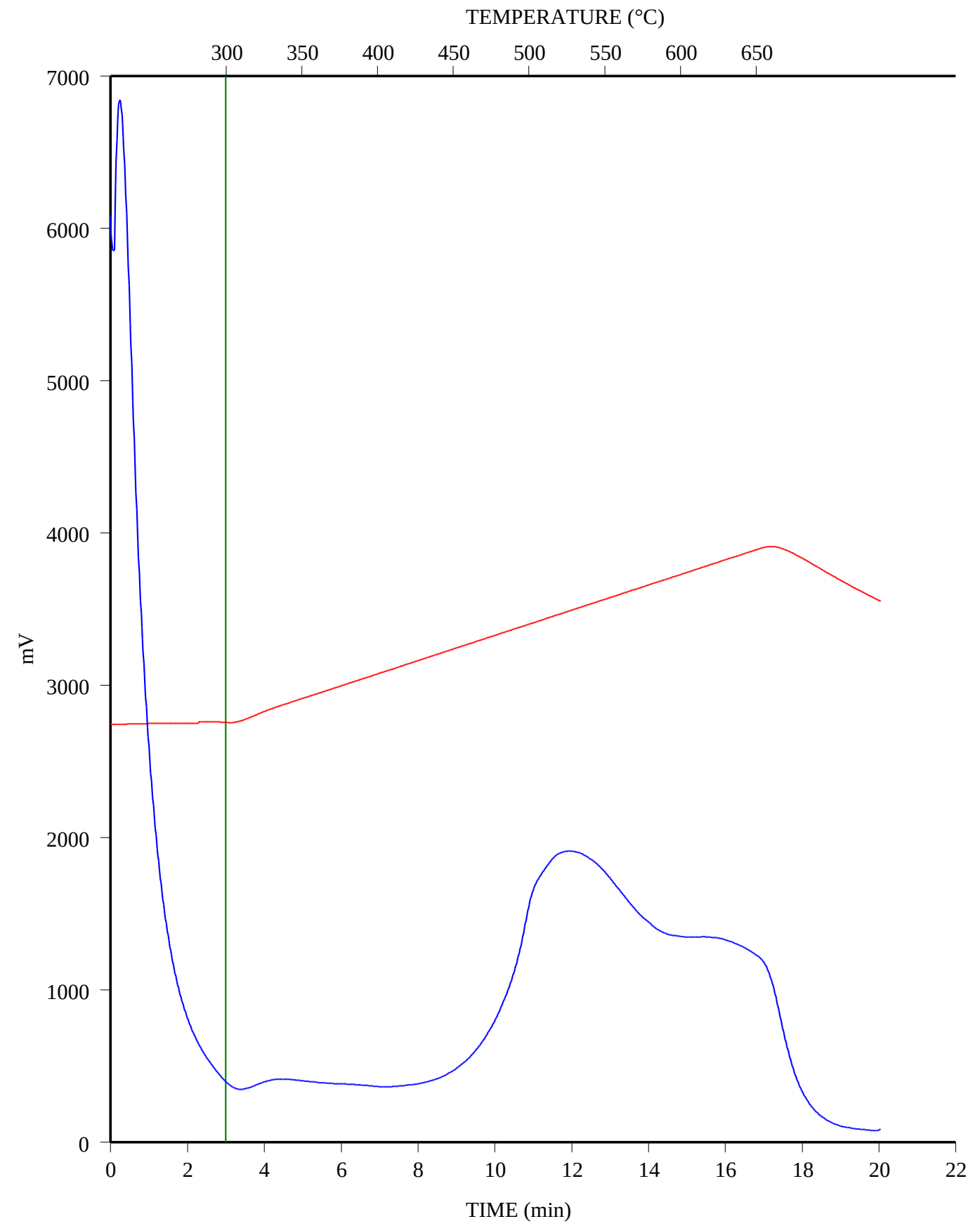
C-590304; PENN WEST PEMBINA 10-17-45-6; 3018.55 m
FID Hydrocarbons



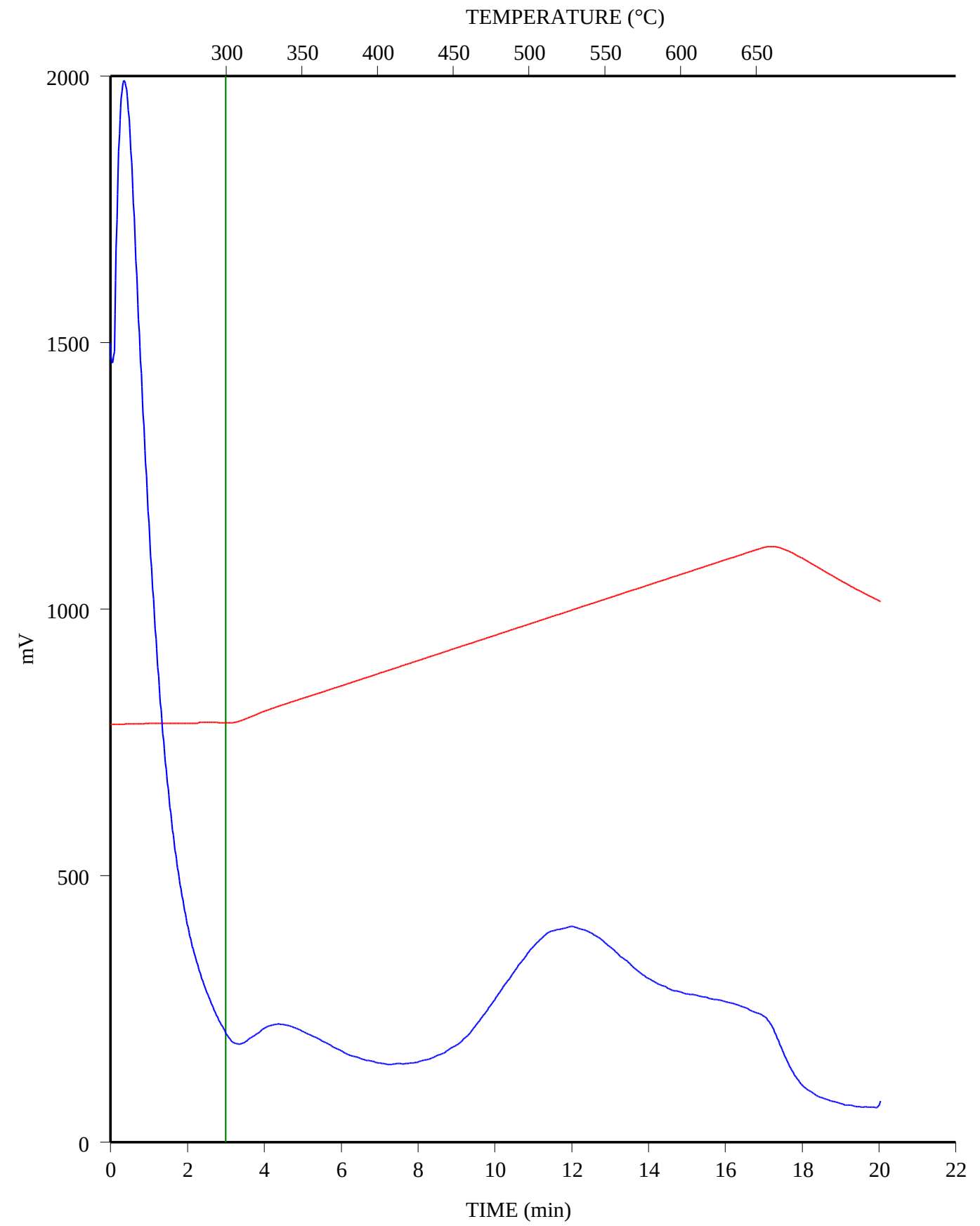
C-590305; PENN WEST PEMBINA 10-17-45-6; 3019.75 m
FID Hydrocarbons



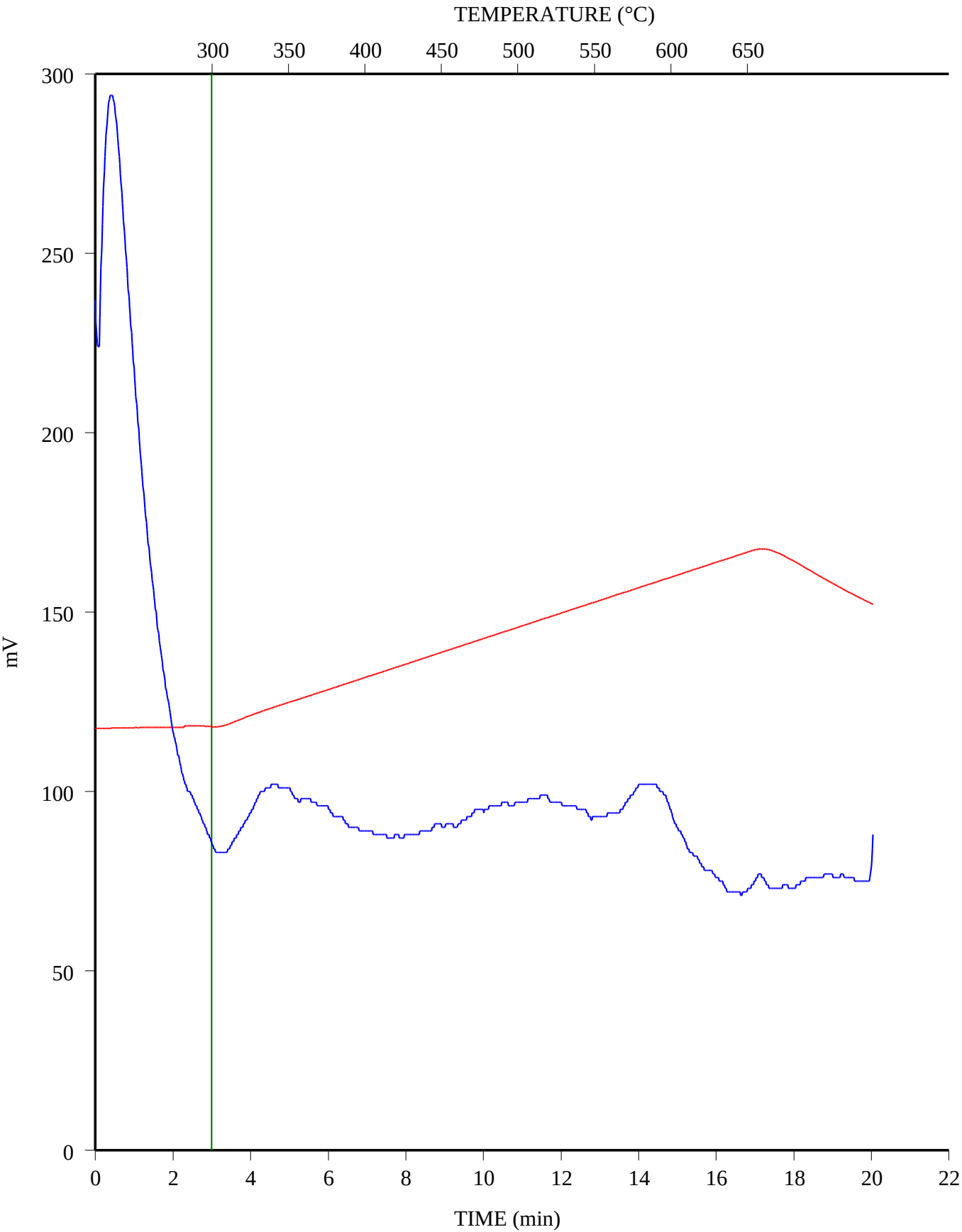
C-590306; PENN WEST PEMBINA 10-17-45-6; 3020.3 m
FID Hydrocarbons



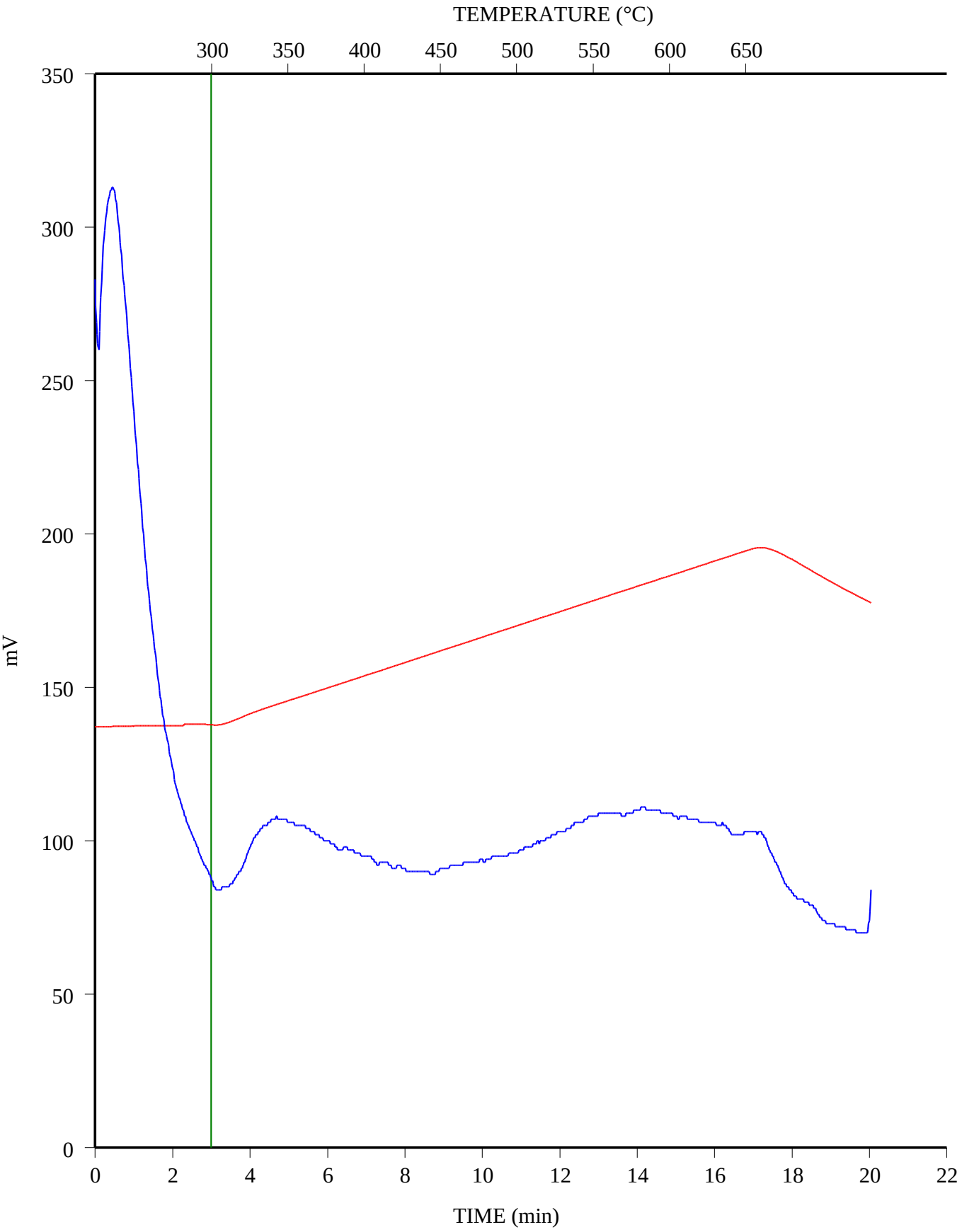
C-590307; PENN WEST PEMBINA 10-17-45-6; 3021.3 m
FID Hydrocarbons



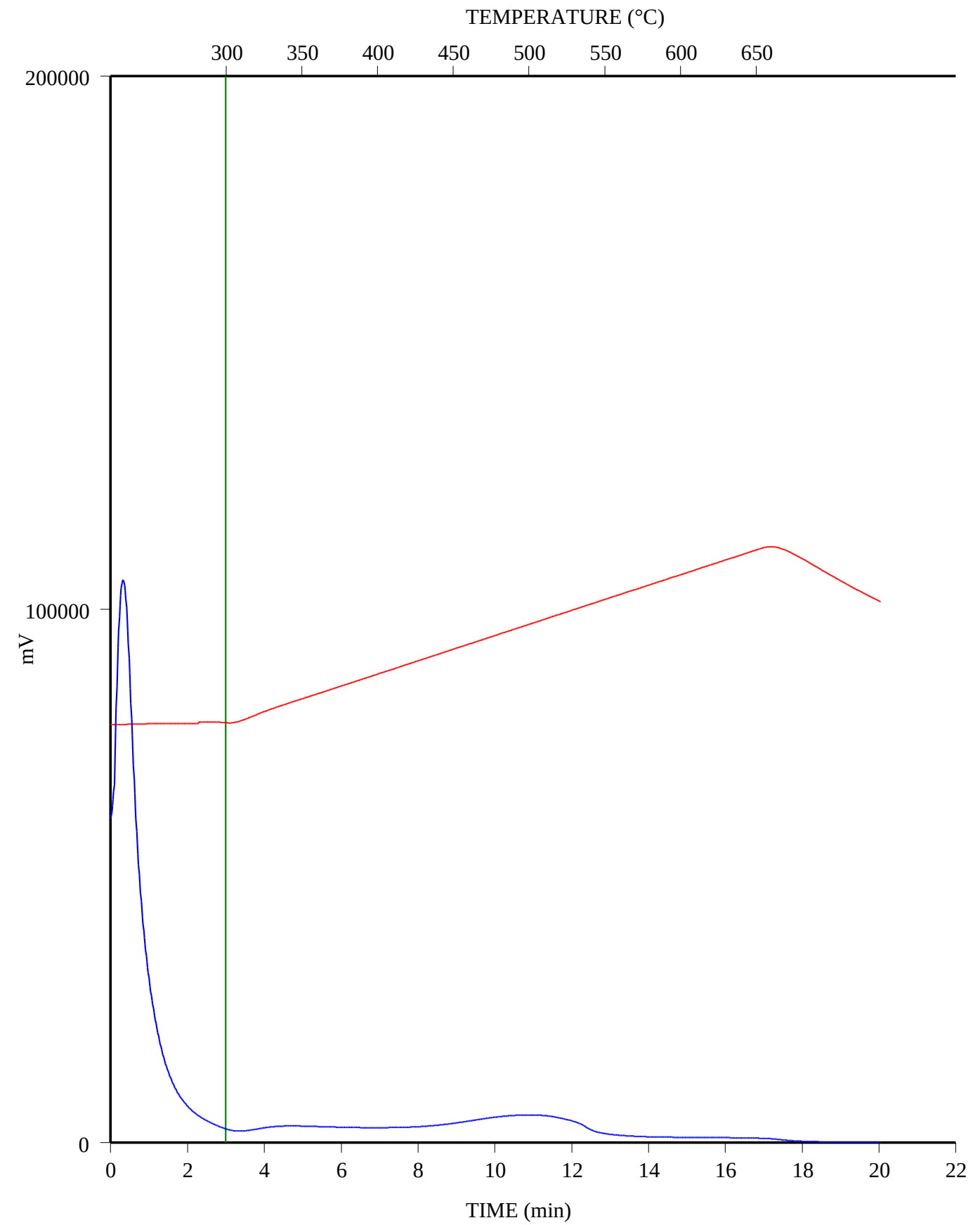
C-590308; PENN WEST PEMBINA 10-17-45-6; 3022.05 m
FID Hydrocarbons



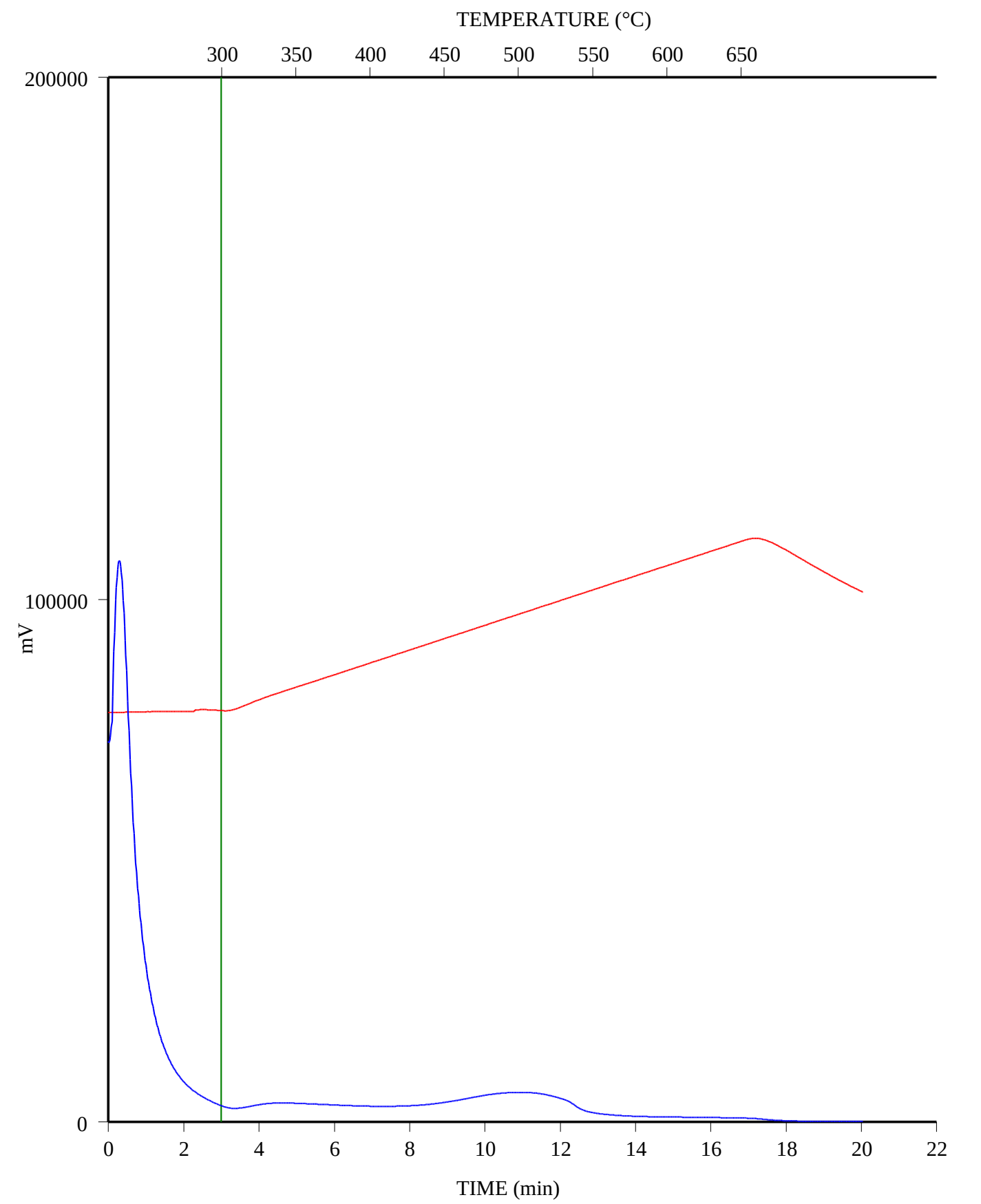
C-590309; PENN WEST PEMBINA 10-17-45-6; 3026.95 m
FID Hydrocarbons



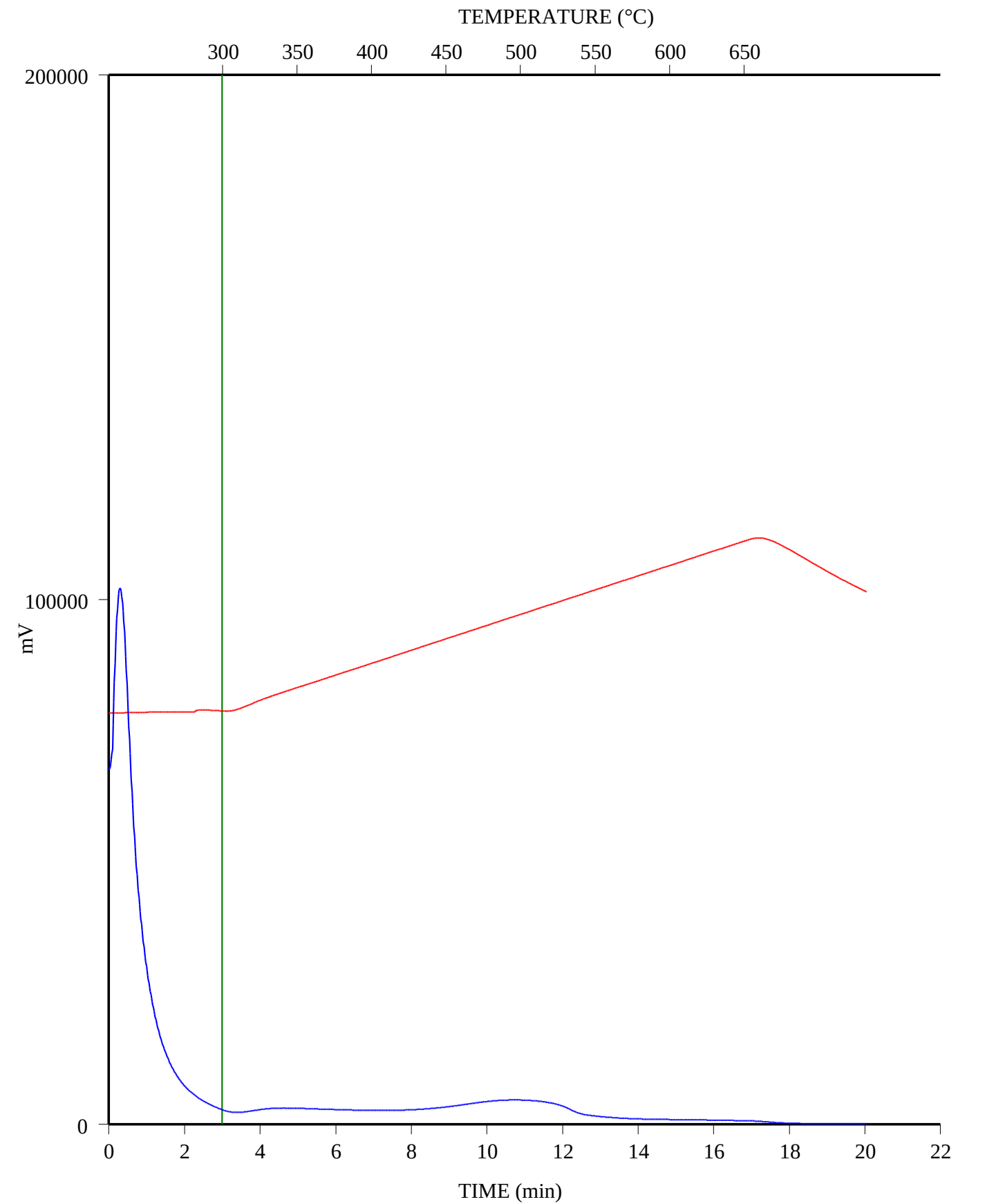
C-590310; CELTIC KAYBOBS 13-25-59-19; 3194.5 m
FID Hydrocarbons



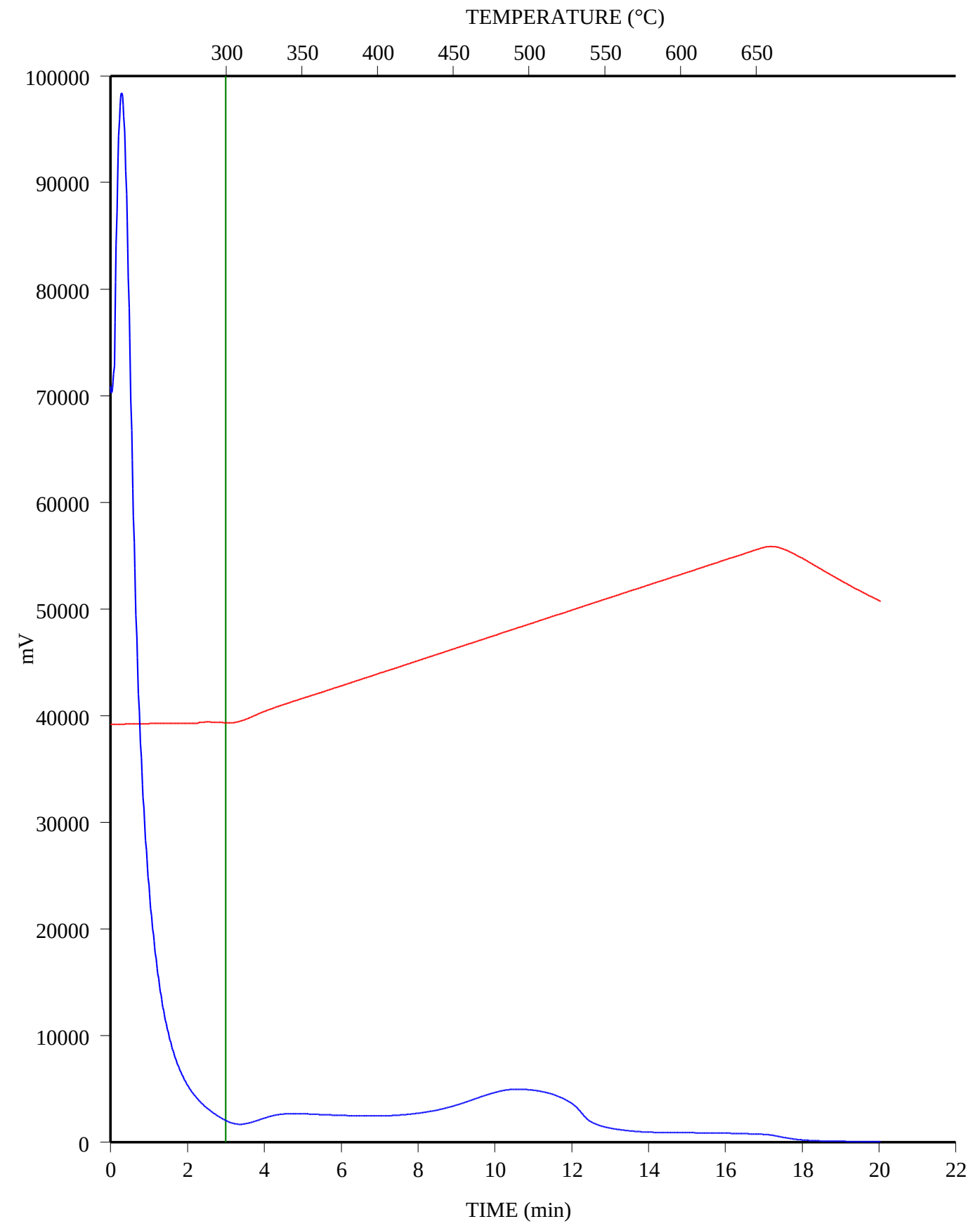
C-590311; CELTIC KAYBOBS 13-25-59-19; 3194.9 m
FID Hydrocarbons



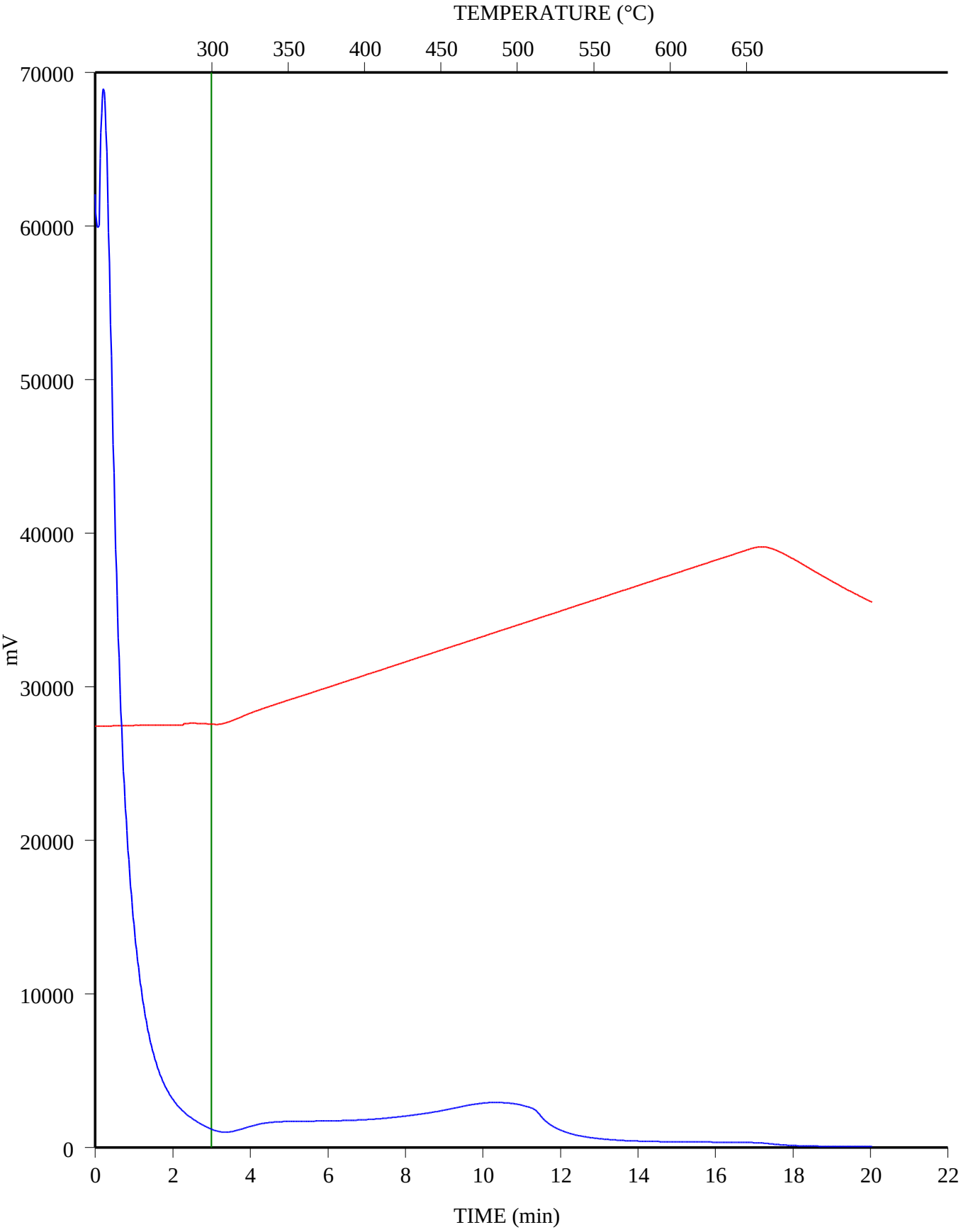
C-590312; CELTIC KAYBOBS 13-25-59-19; 3195.4 m
FID Hydrocarbons



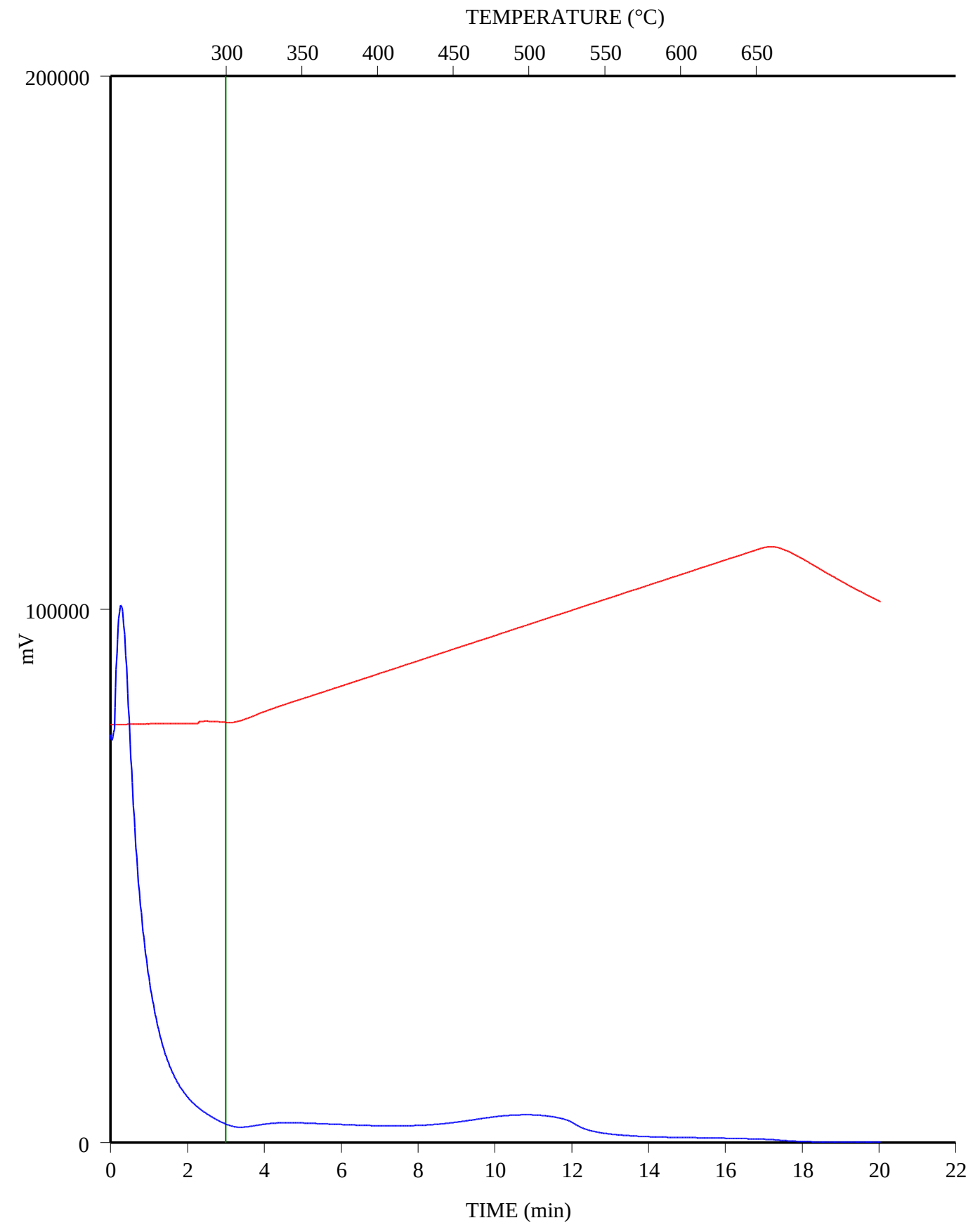
C-590313; CELTIC KAYBOBS 13-25-59-19; 3196.45 m
FID Hydrocarbons



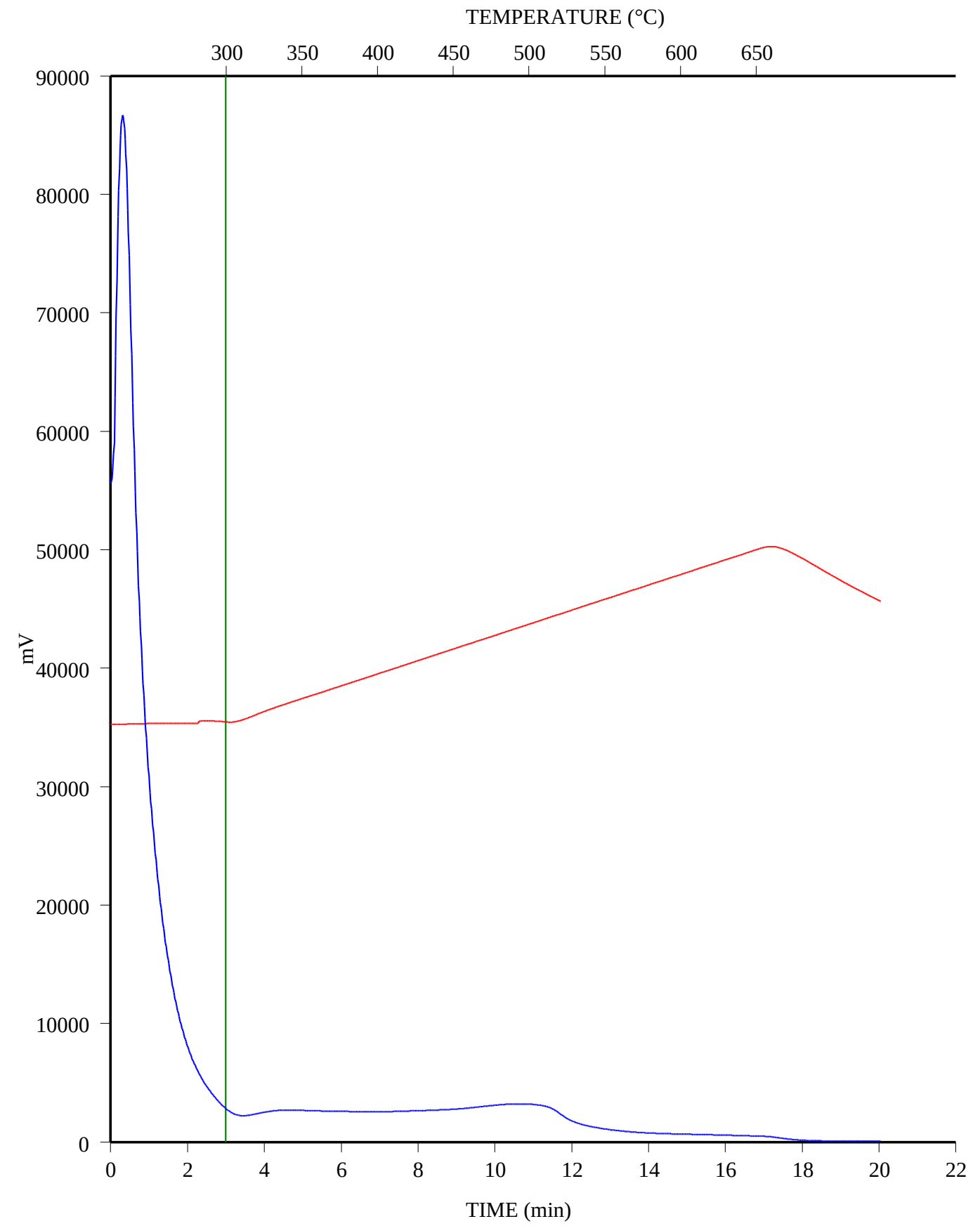
C-590314; CELTIC KAYBOBS 13-25-59-19; 3197.85 m
FID Hydrocarbons



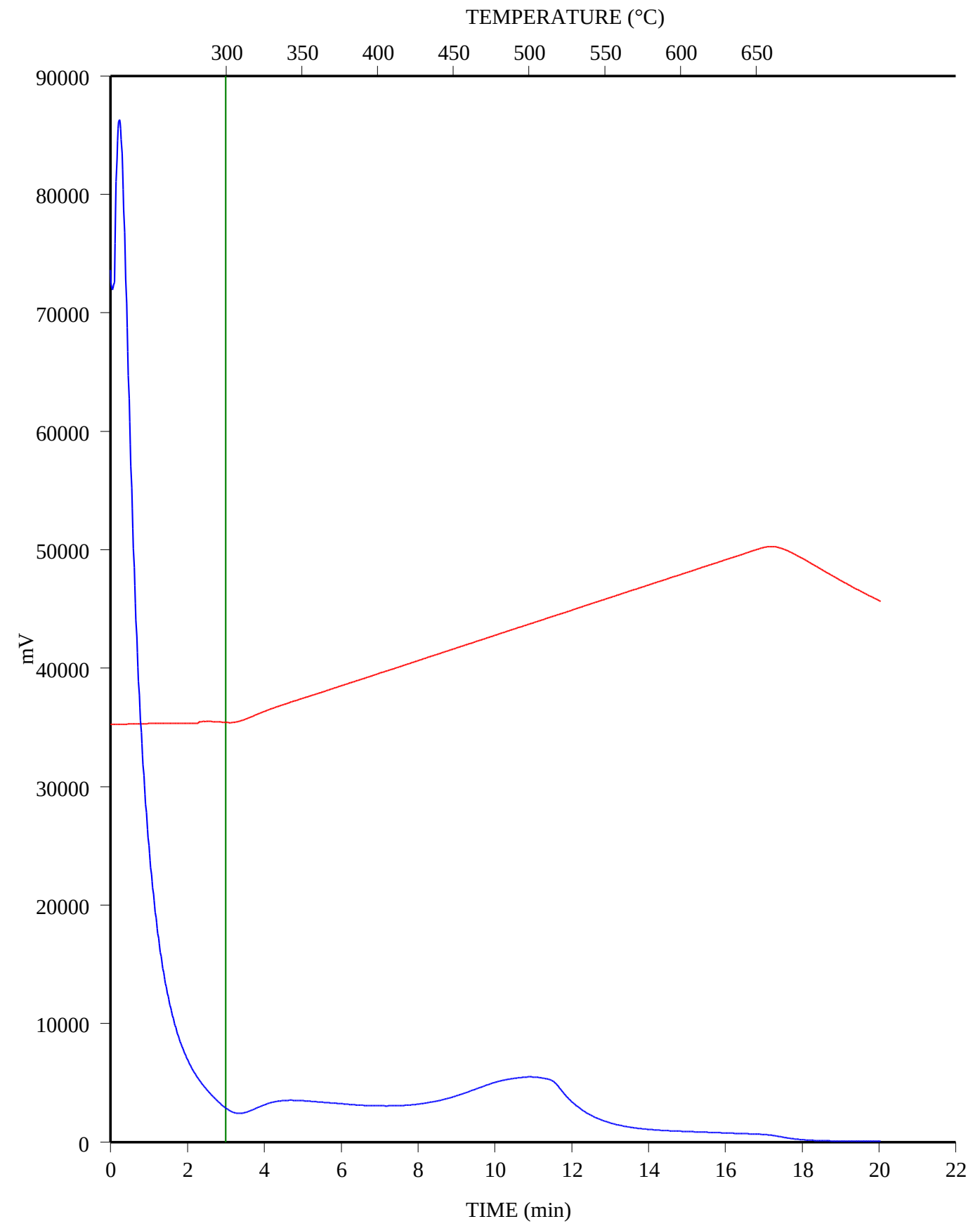
C-590315; CELTIC KAYBOBS 13-25-59-19; 3198.8 m
FID Hydrocarbons



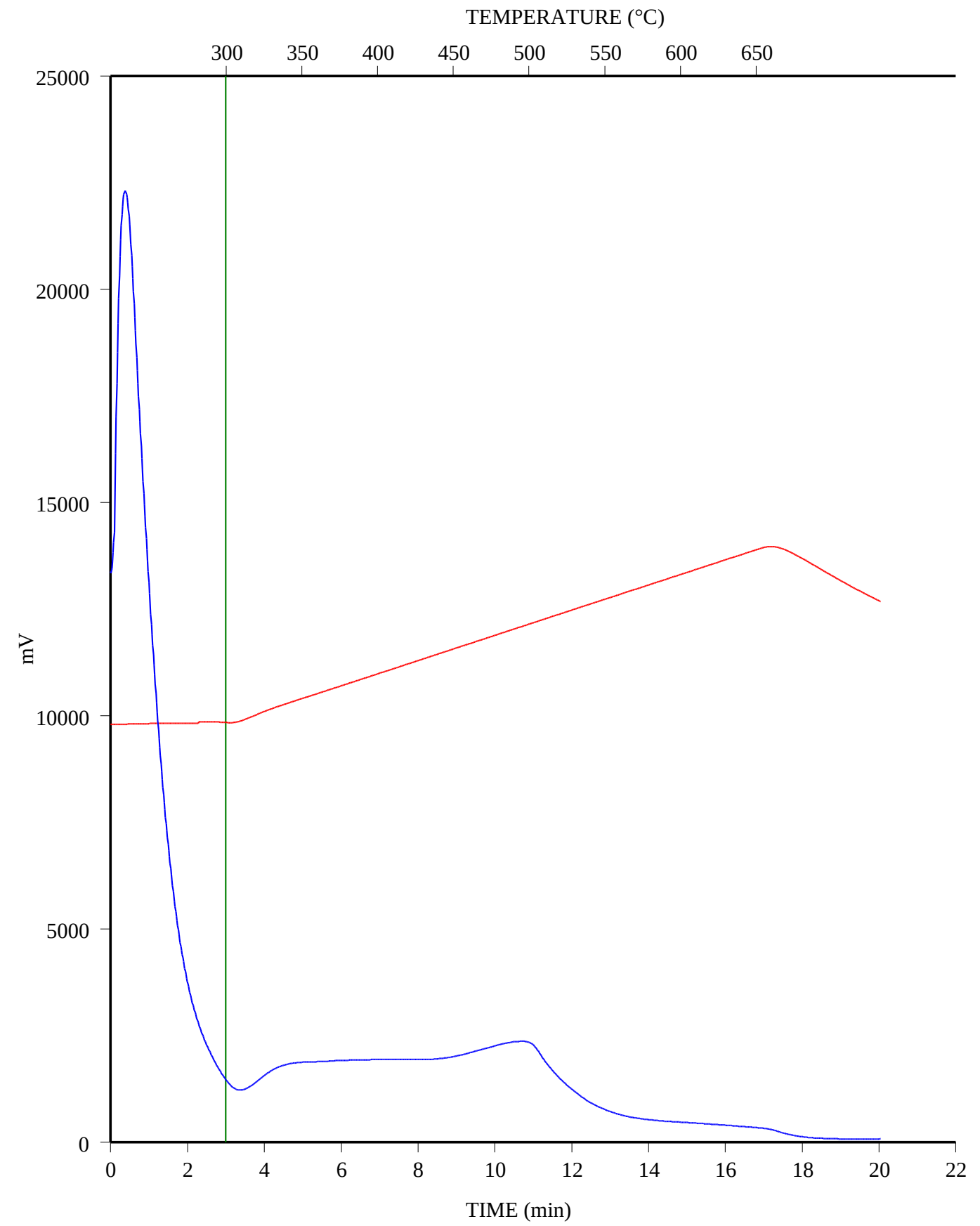
C-590316; CELTIC KAYBOBS 13-25-59-19; 3200.1 m
FID Hydrocarbons



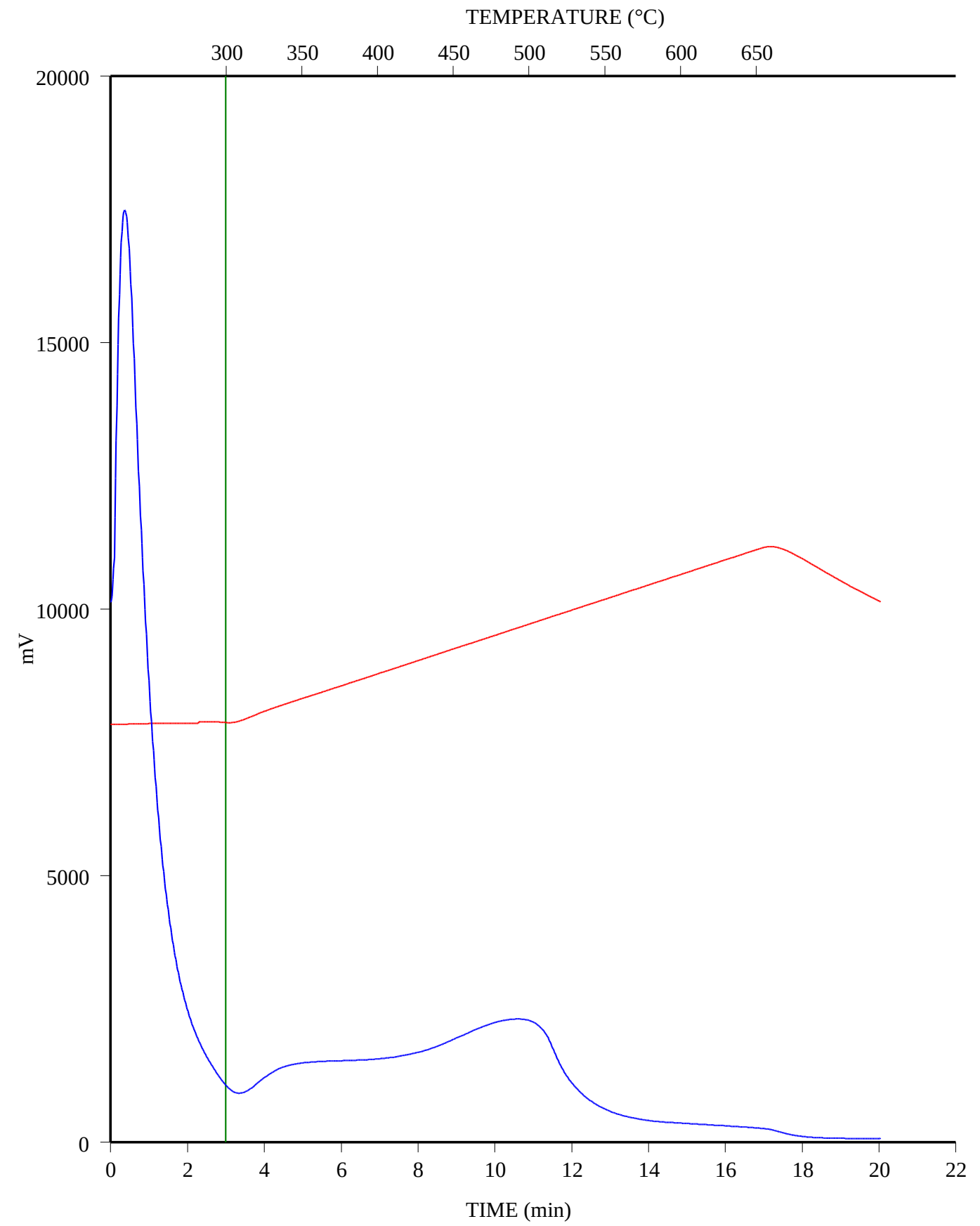
C-590317; CELTIC KAYBOBS 13-25-59-19; 3201.2 m
FID Hydrocarbons



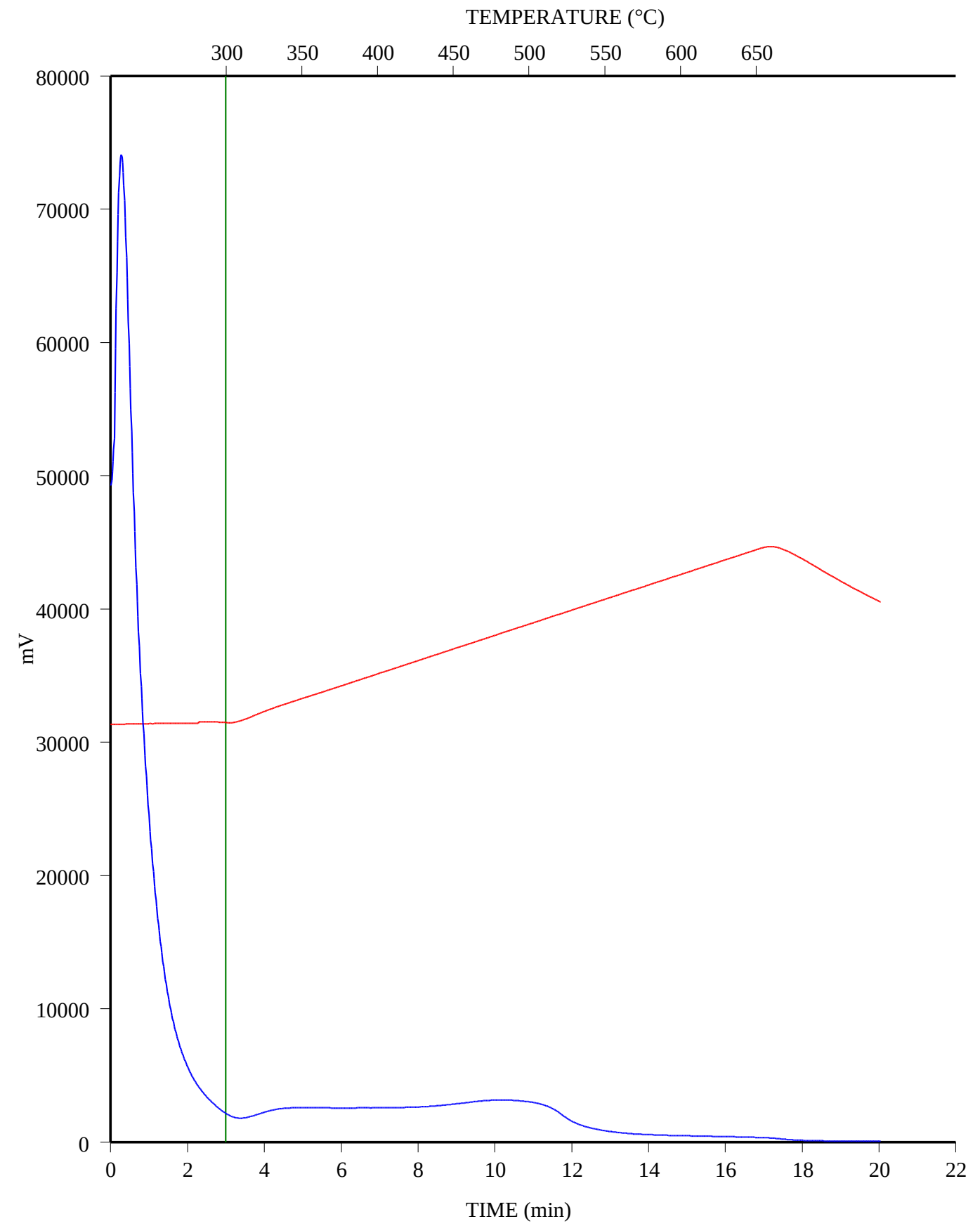
C-590318; CELTIC KAYBOBS 13-25-59-19; 3202.55 m
FID Hydrocarbons



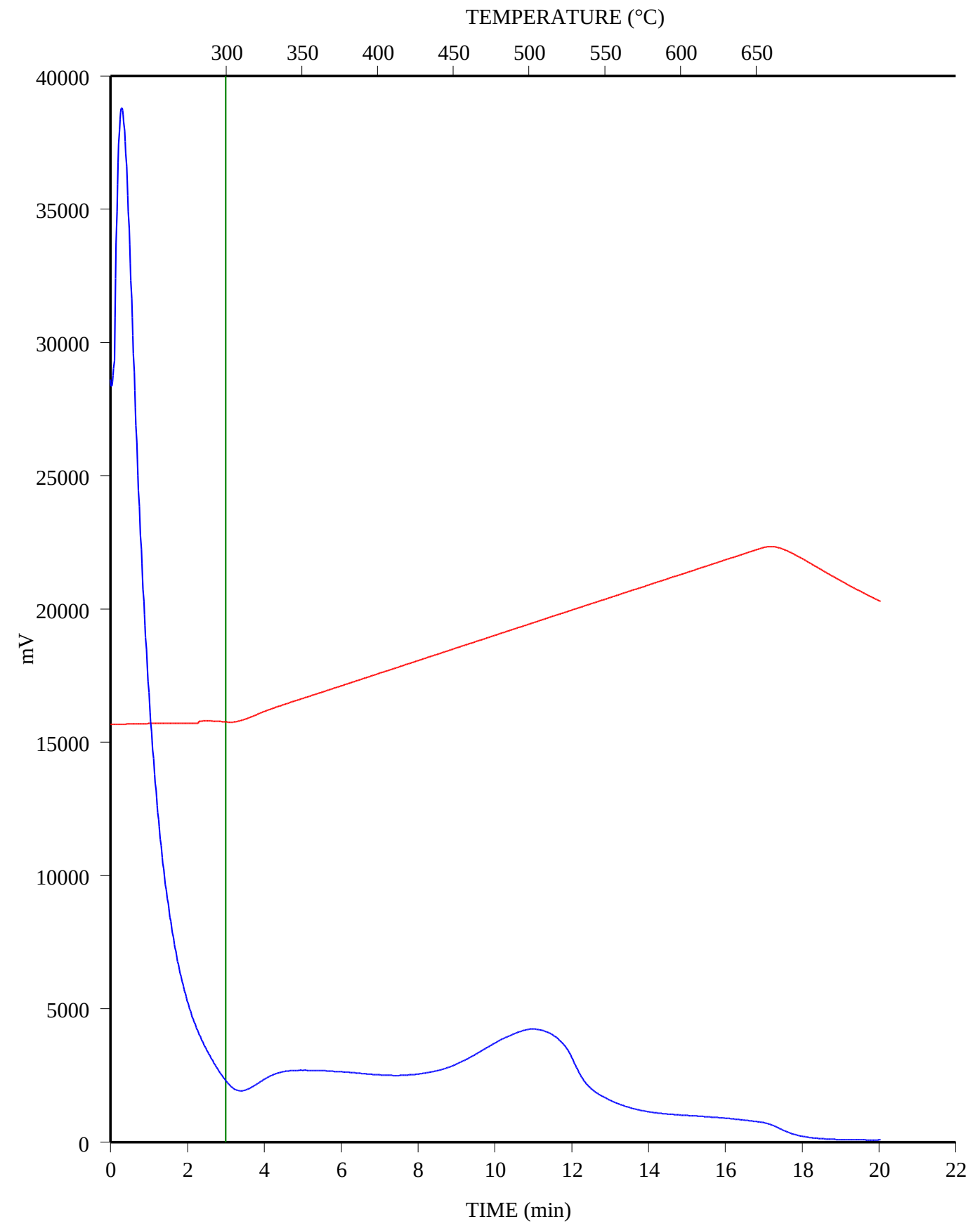
C-590319; CELTIC KAYBOBS 13-25-59-19; 3203.3 m
FID Hydrocarbons



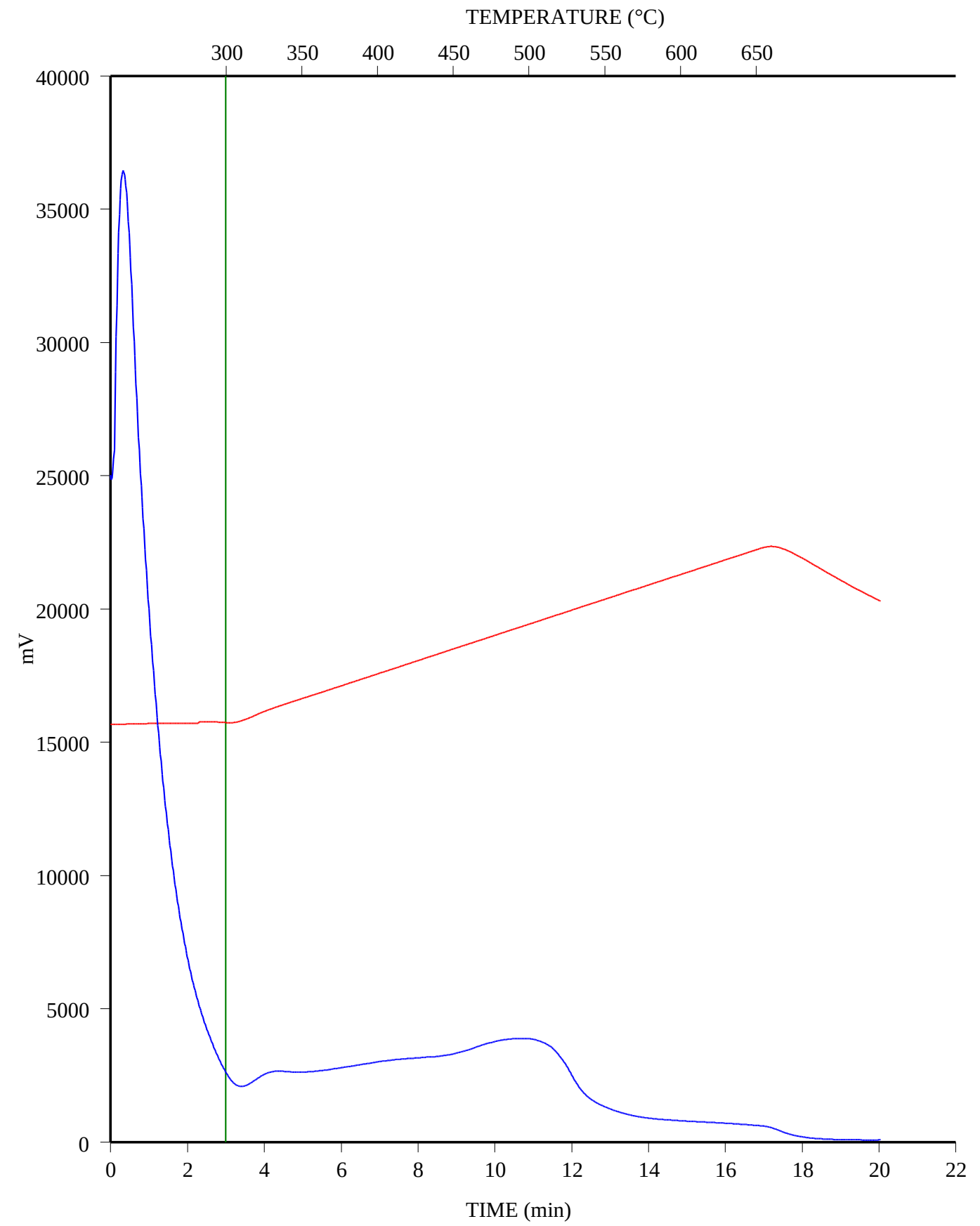
C-590320; CELTIC KAYBOBS 13-25-59-19; 3204.45 m
FID Hydrocarbons



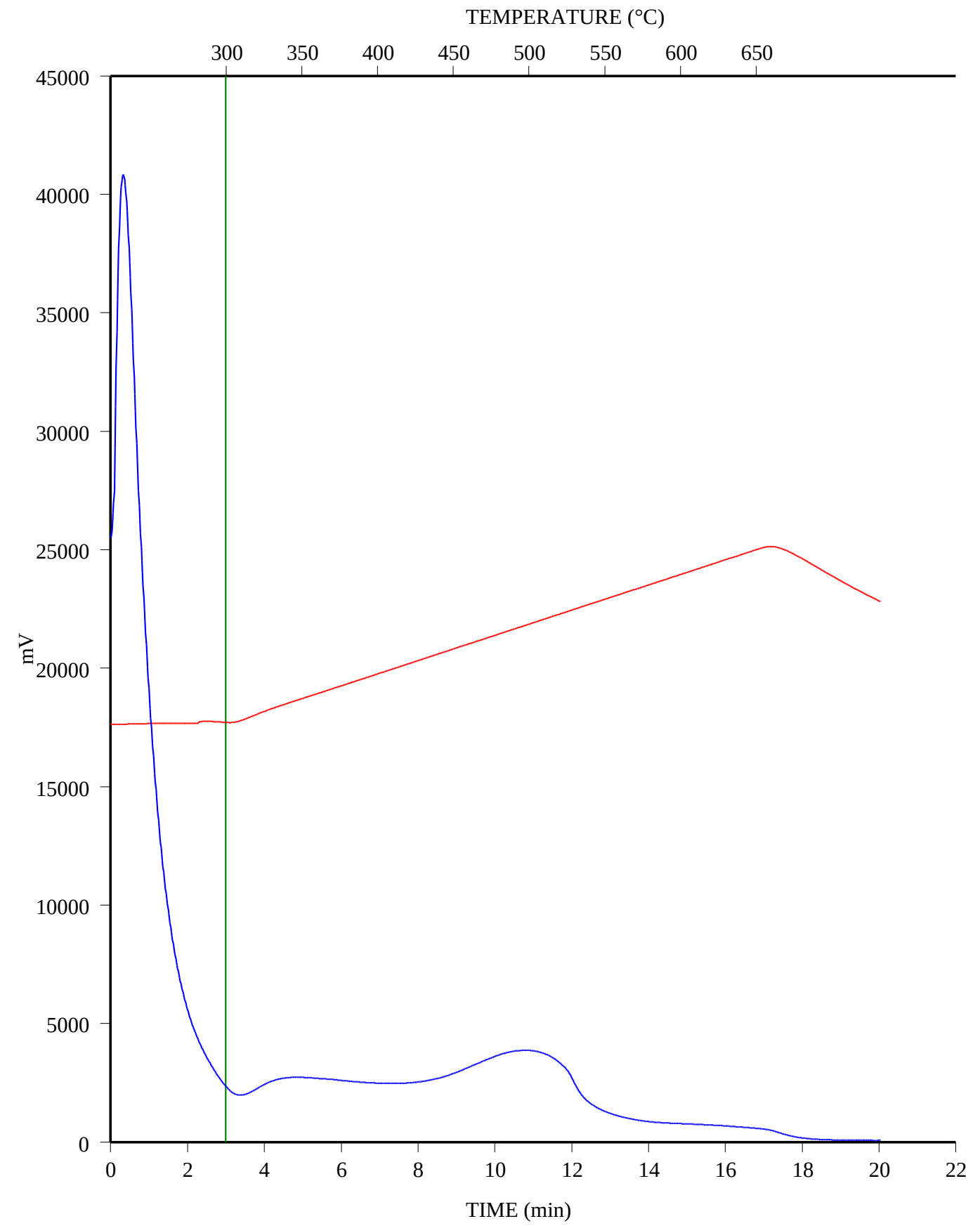
C-590321; CELTIC KAYBOBS 13-25-59-19; 3205.55 m
FID Hydrocarbons



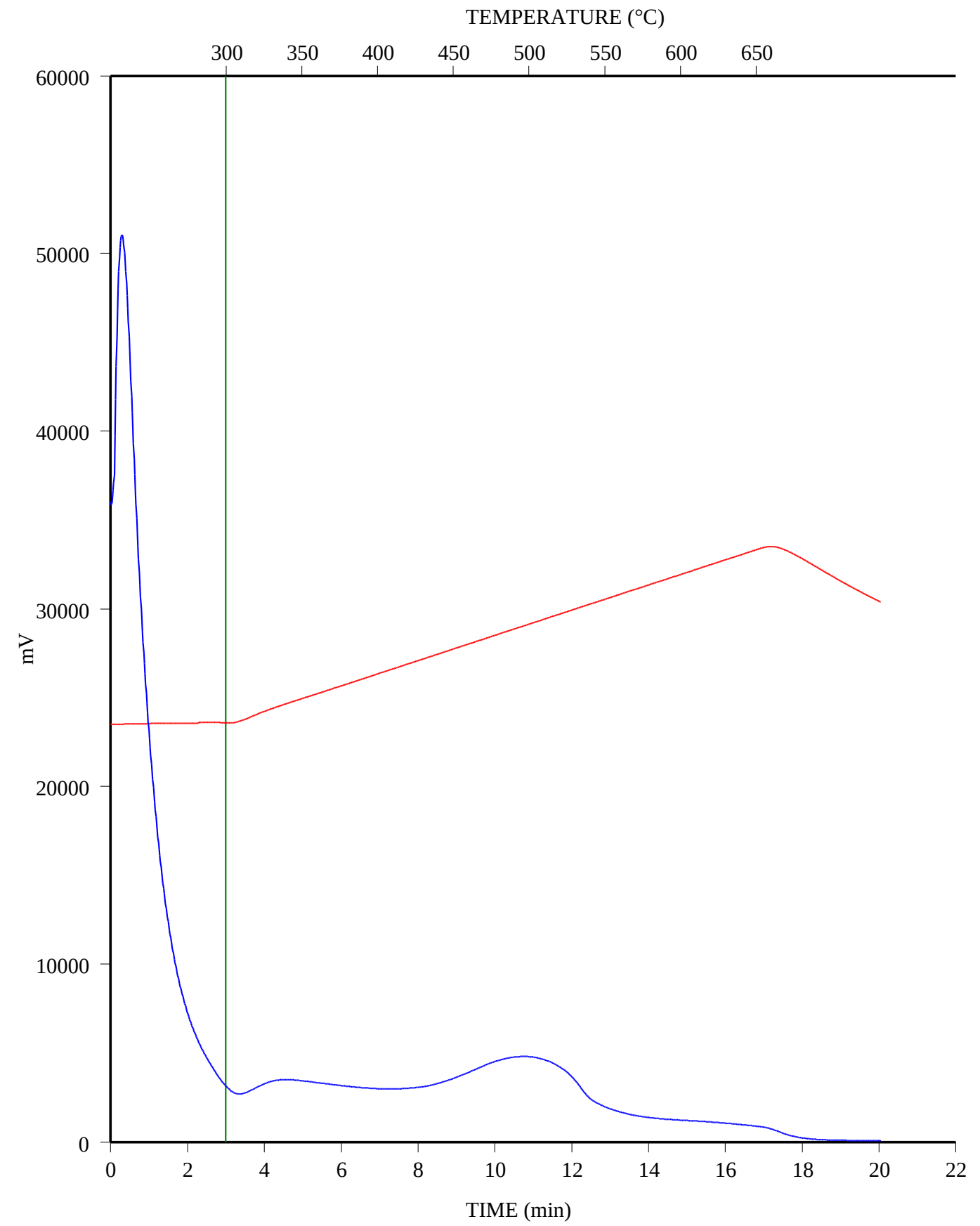
C-590322; CELTIC KAYBOBS 13-25-59-19; 3206.8 m
FID Hydrocarbons



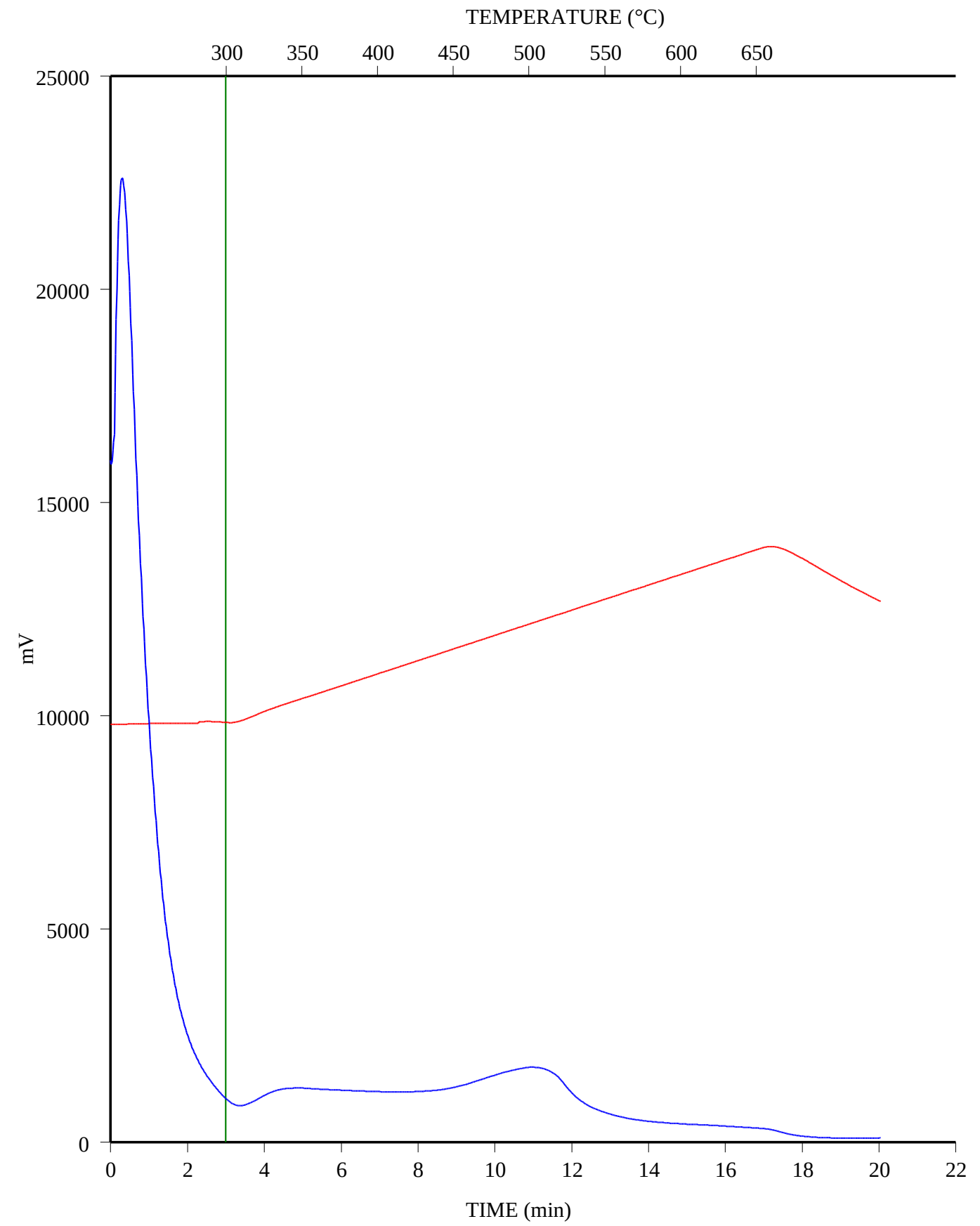
C-590323; CELTIC KAYBOBS 13-25-59-19; 3207.85 m
FID Hydrocarbons



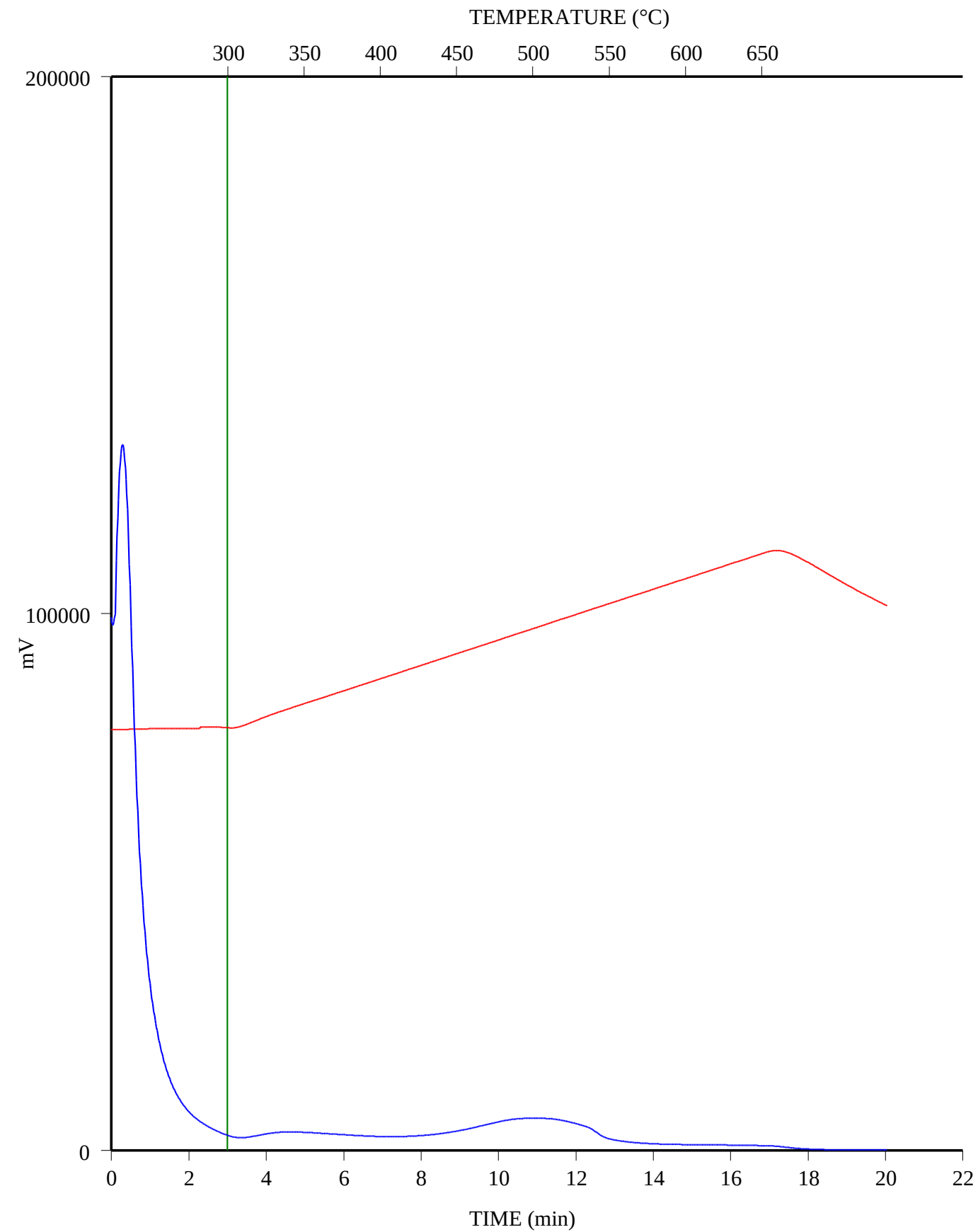
C-590324; CELTIC KAYBOBS 13-25-59-19; 3208.7 m
FID Hydrocarbons



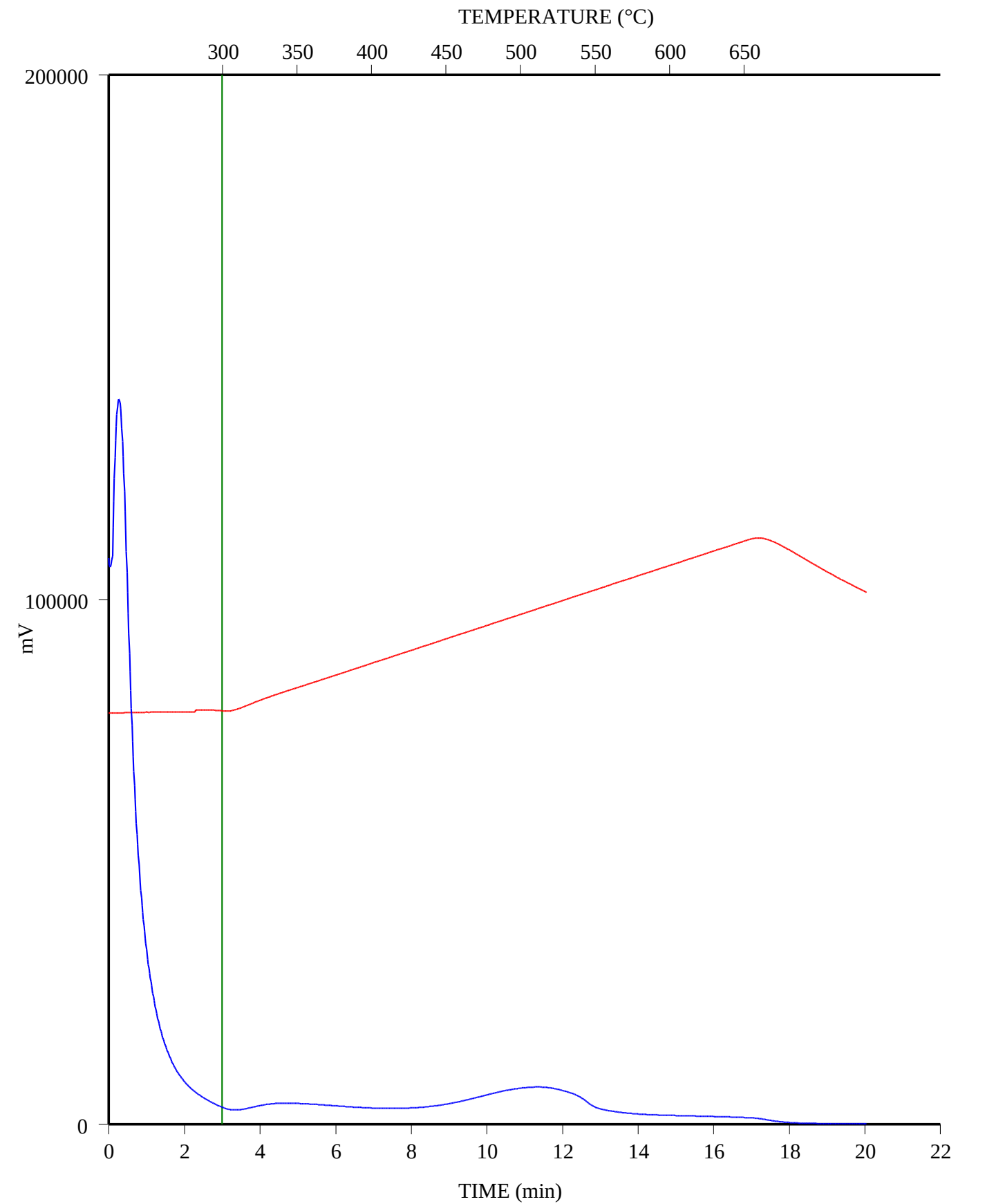
C-590325; CELTIC KAYBOBS 13-25-59-19; 3209.75 m
FID Hydrocarbons



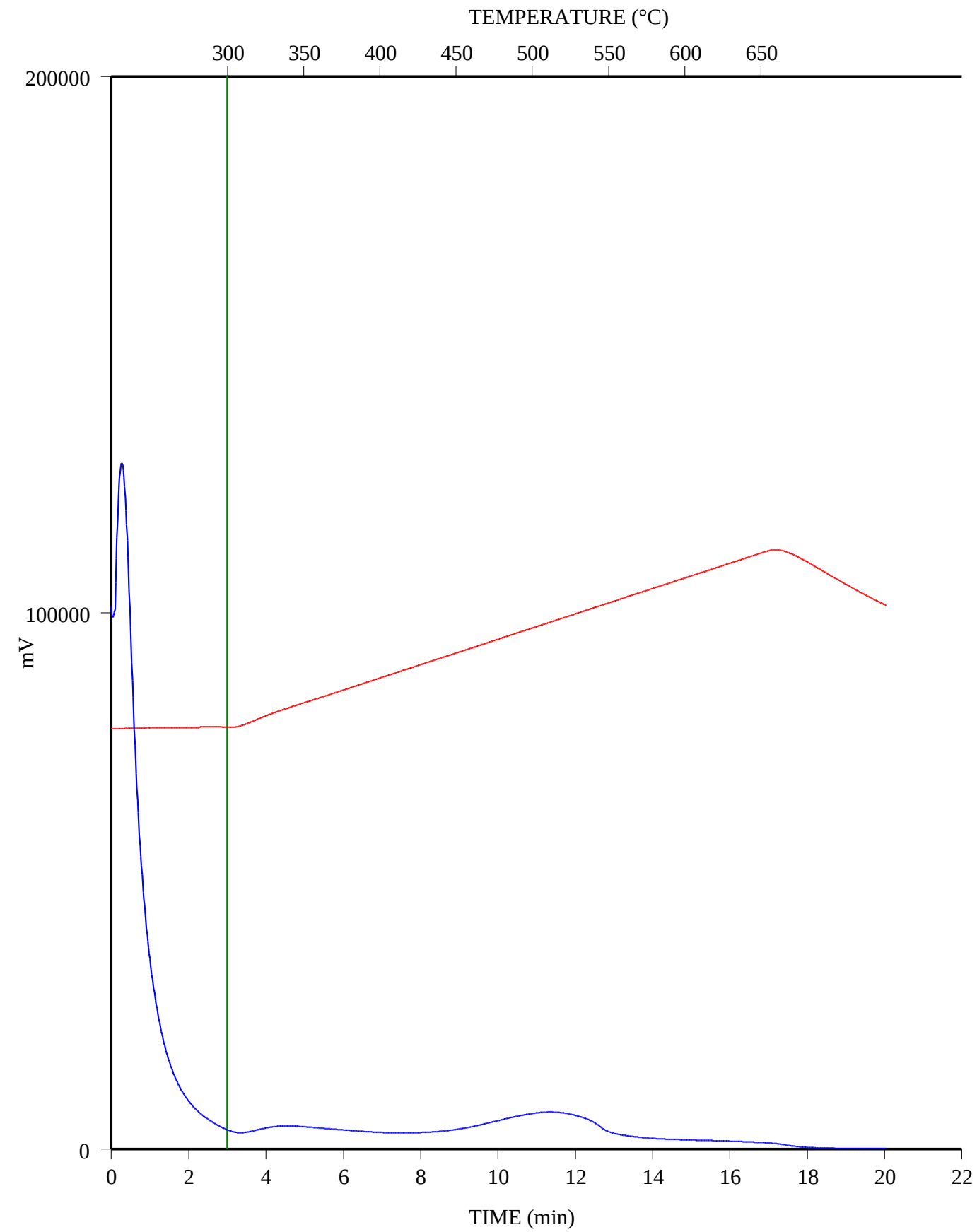
C-590326; CELTIC KAYBOBS 13-25-59-19; 3211.05 m
FID Hydrocarbons



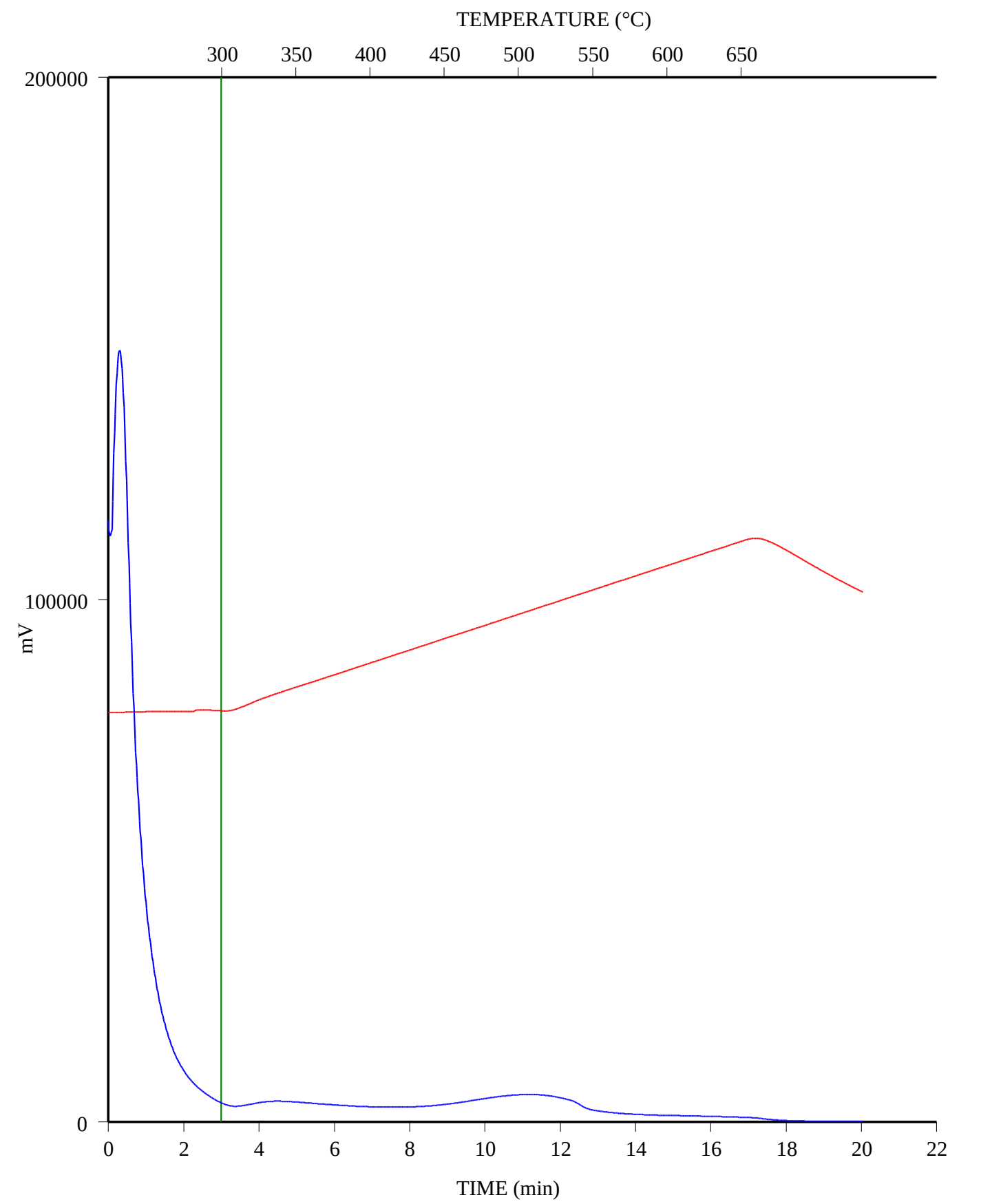
C-590327; CELTIC KAYBOBS 13-25-59-19; 3212.25 m
FID Hydrocarbons



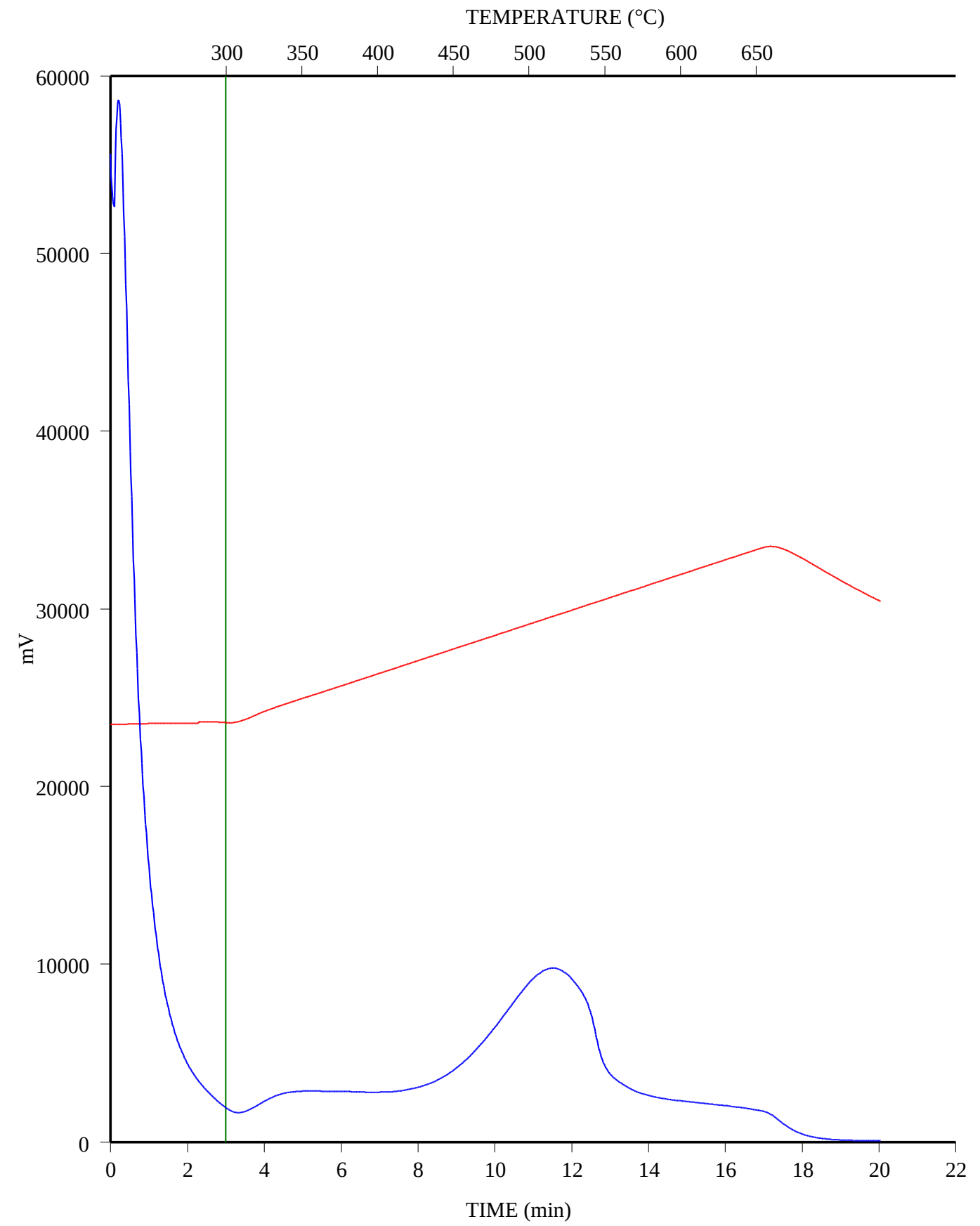
C-590328; CELTIC KAYBOBS 13-25-59-19; 3212.85 m
FID Hydrocarbons



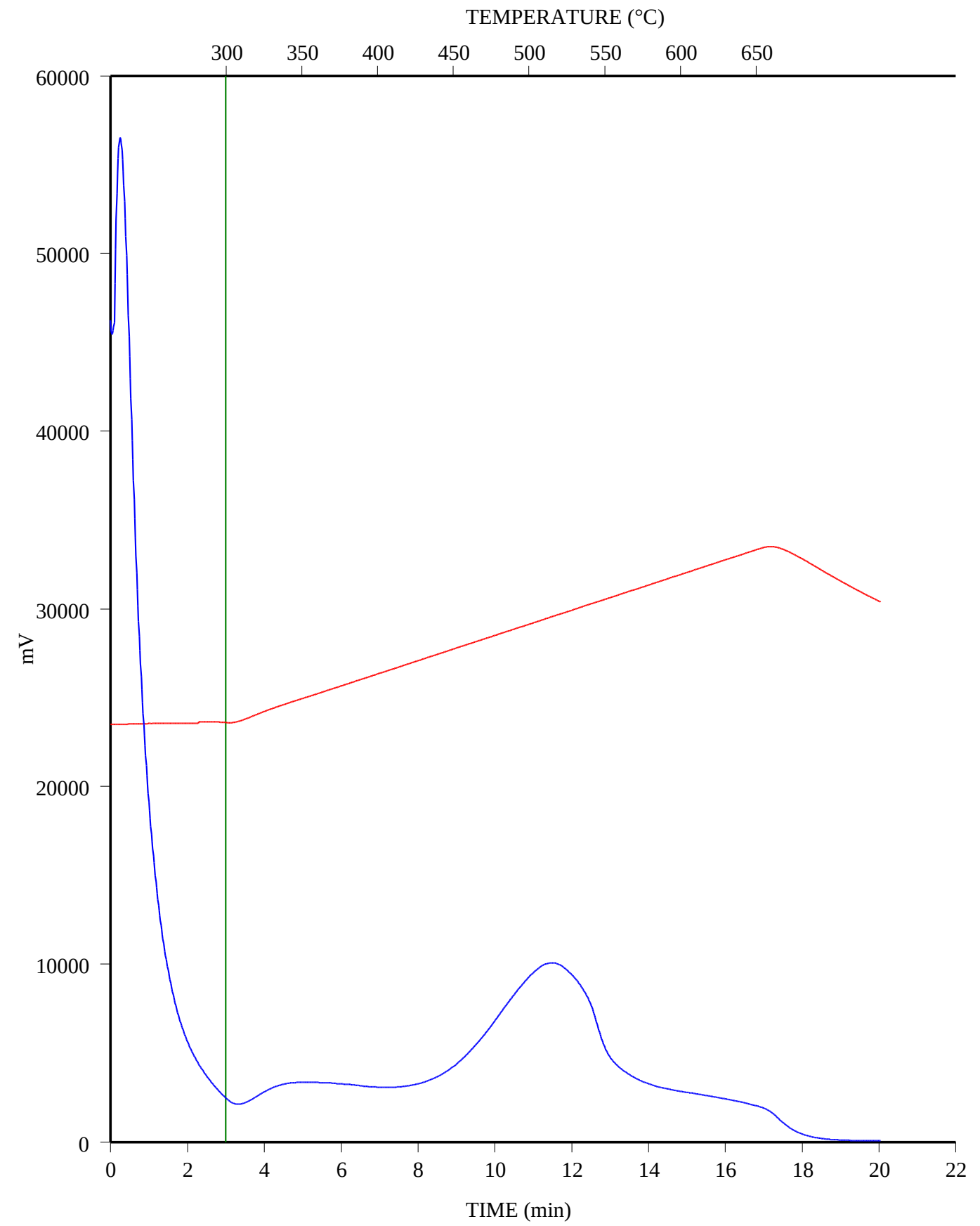
C-590329; CELTIC KAYBOBS 13-25-59-19; 3213.8 m
FID Hydrocarbons



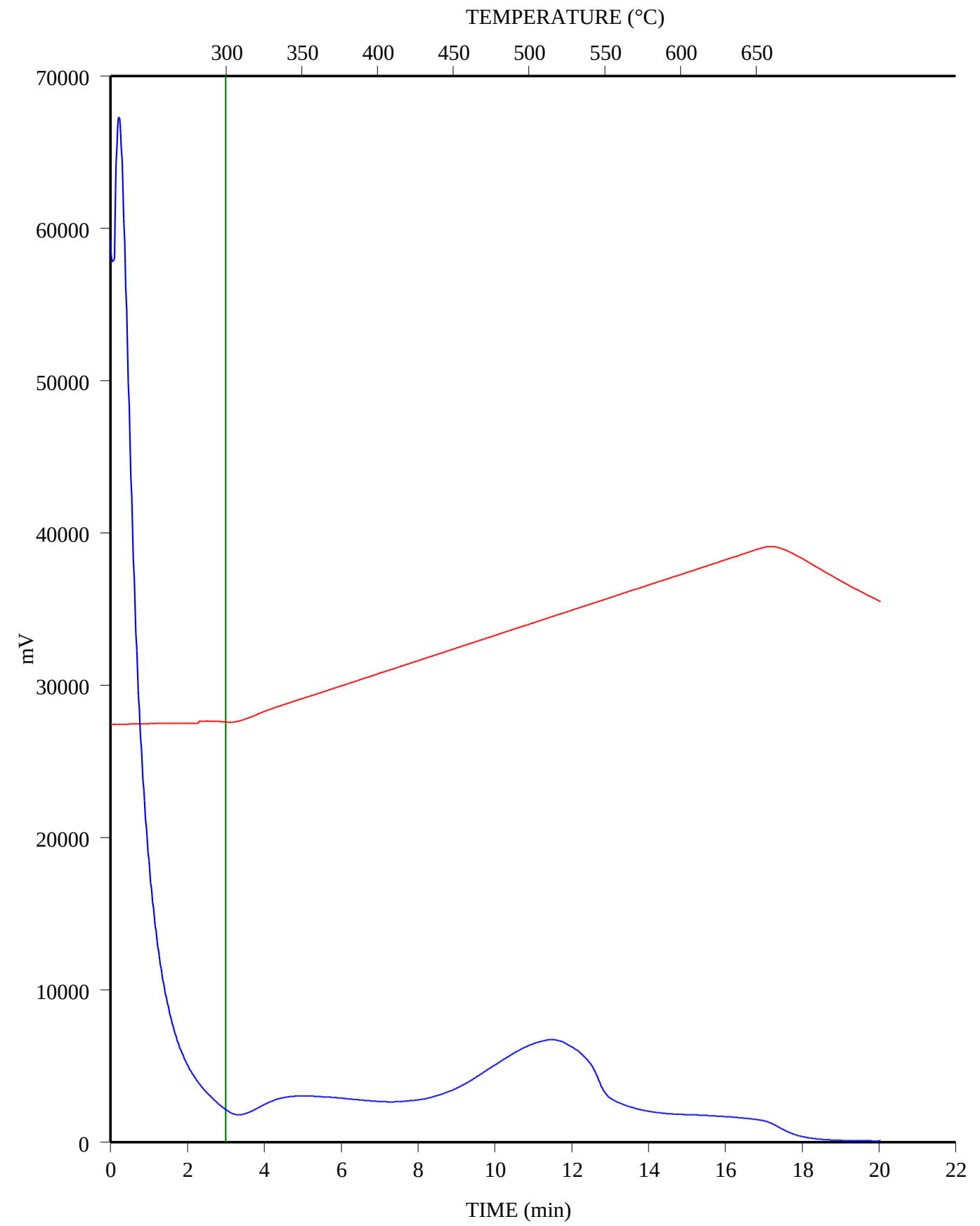
C-590330; CELTIC KAYBOBS 13-25-59-19; 3214.3 m
FID Hydrocarbons



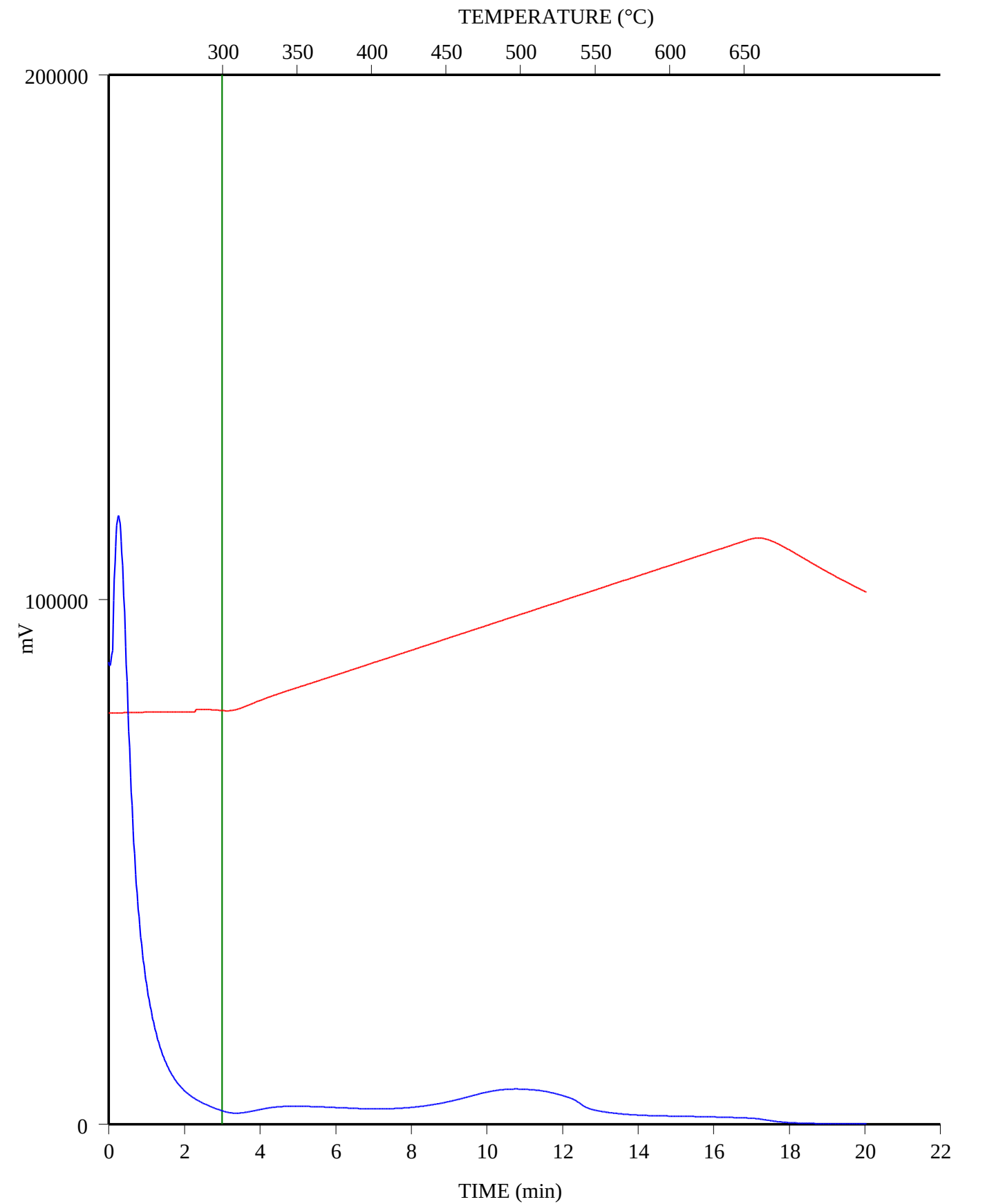
C-590331; CELTIC KAYBOBS 13-25-59-19; 3215.35 m
FID Hydrocarbons



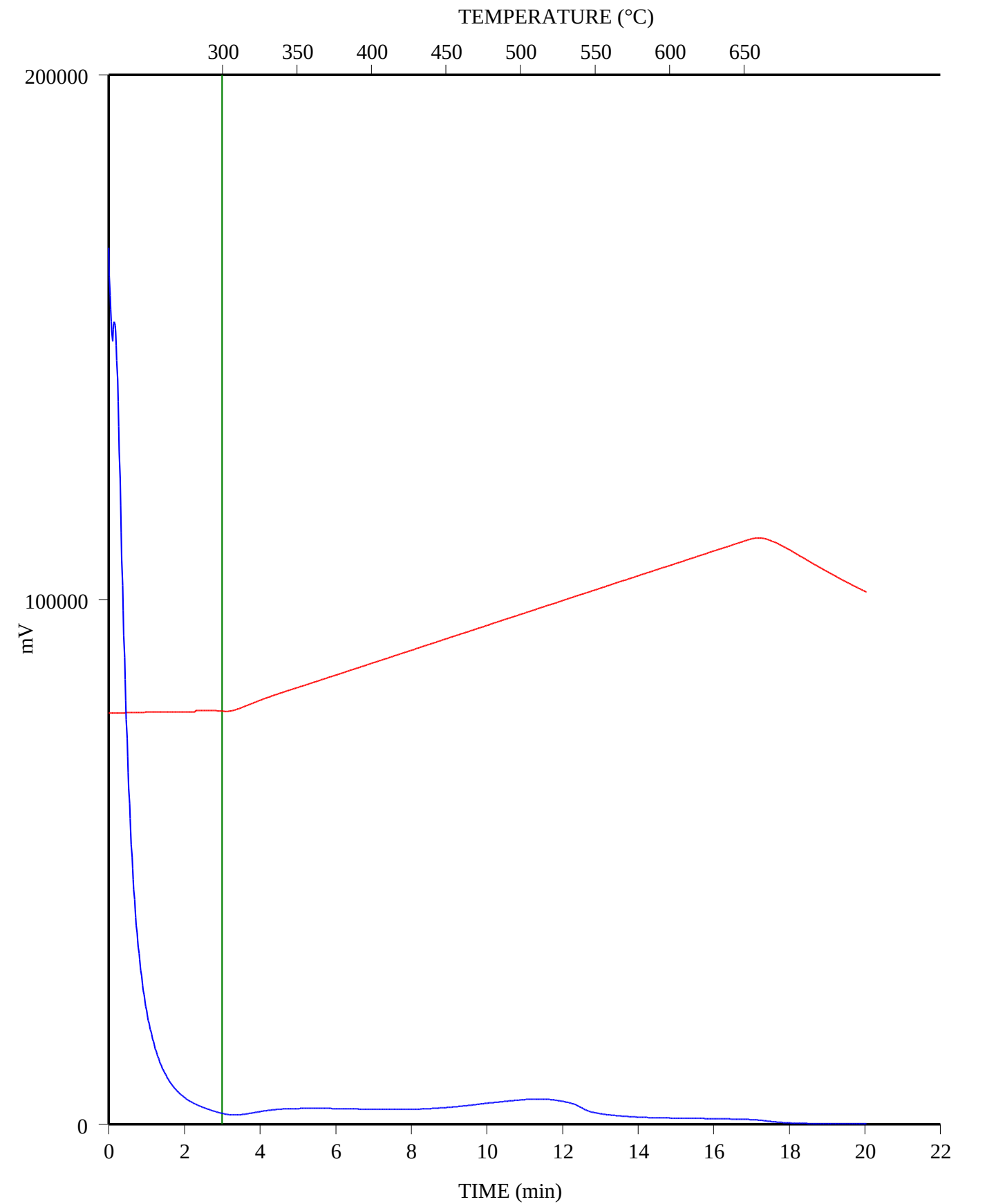
C-590332; CELTIC KAYBOBS 13-25-59-19; 3216.25 m
FID Hydrocarbons



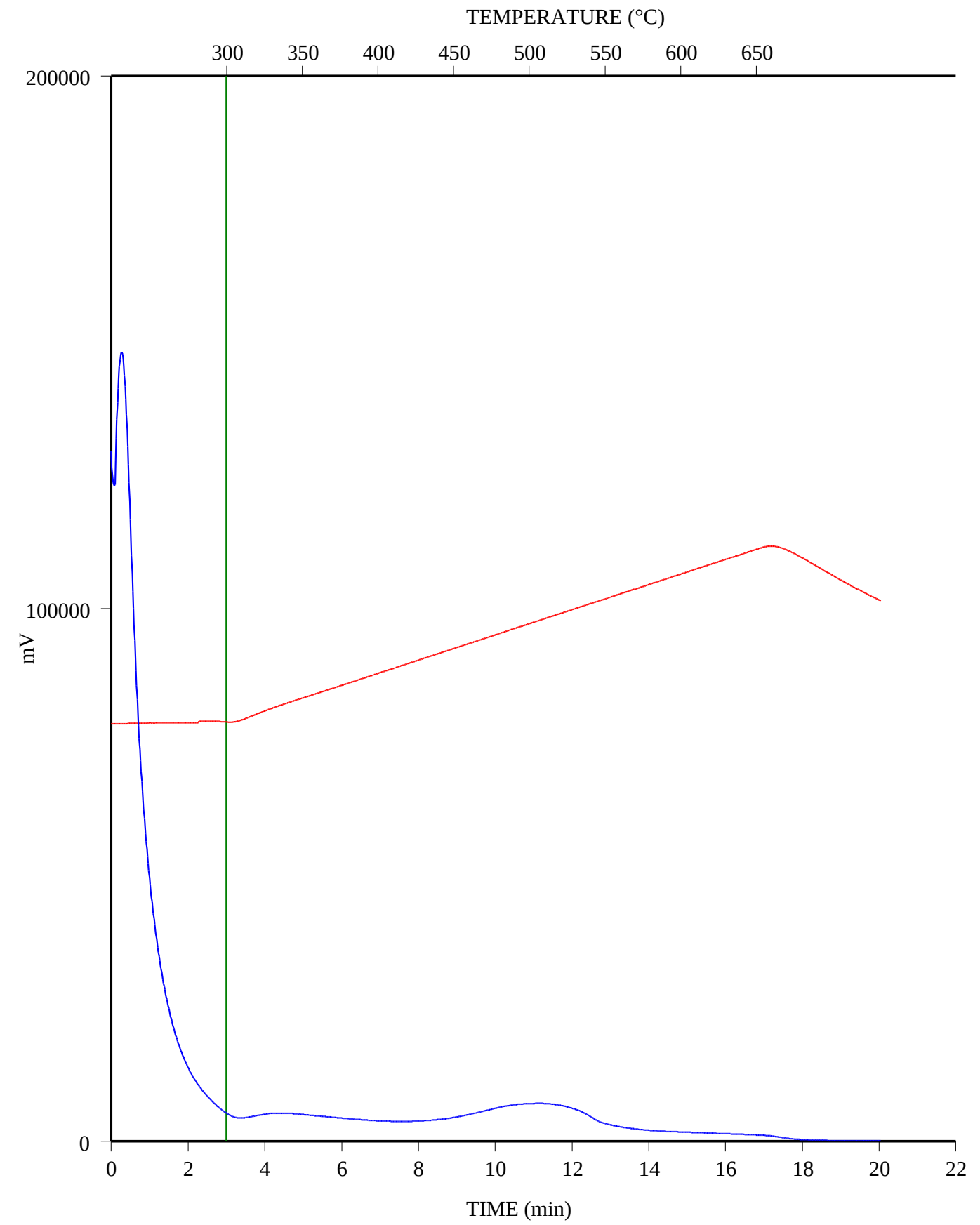
C-590333; CELTIC KAYBOBS 13-25-59-19; 3218 m
FID Hydrocarbons



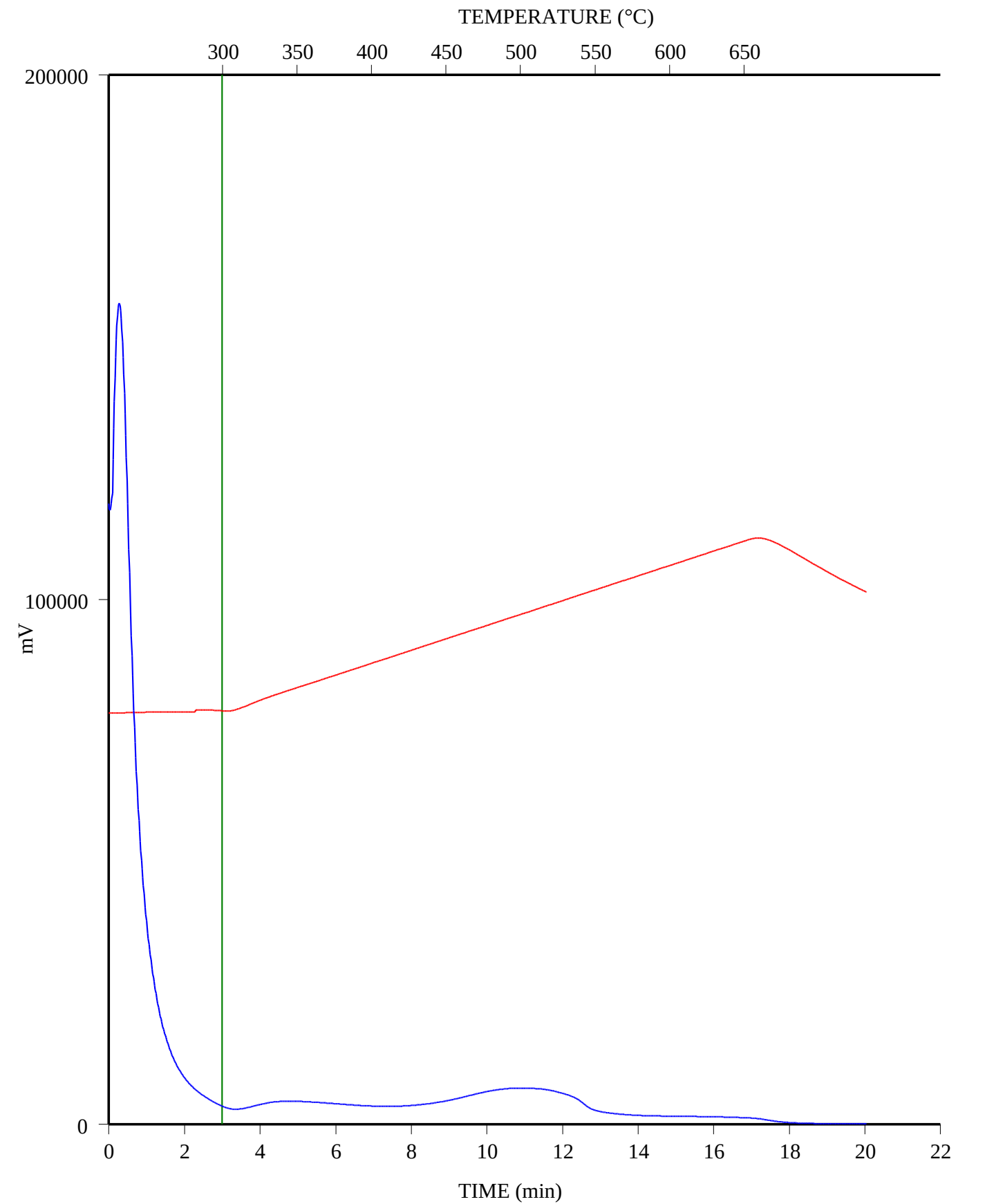
C-590334; CELTIC KAYBOBS 13-25-59-19; 3219.4 m
FID Hydrocarbons



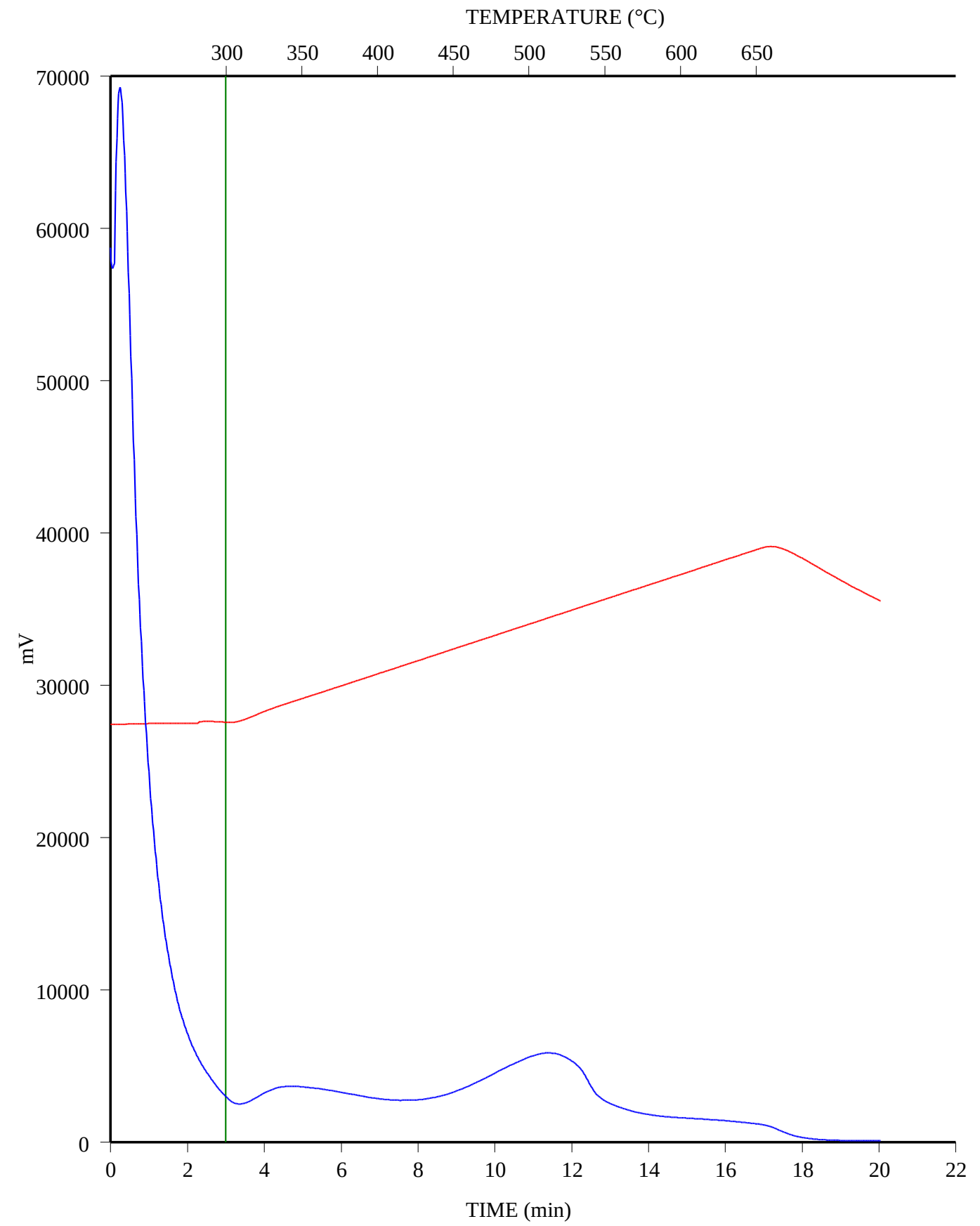
C-590335; CELTIC KAYBOBS 13-25-59-19; 3220.8 m
FID Hydrocarbons



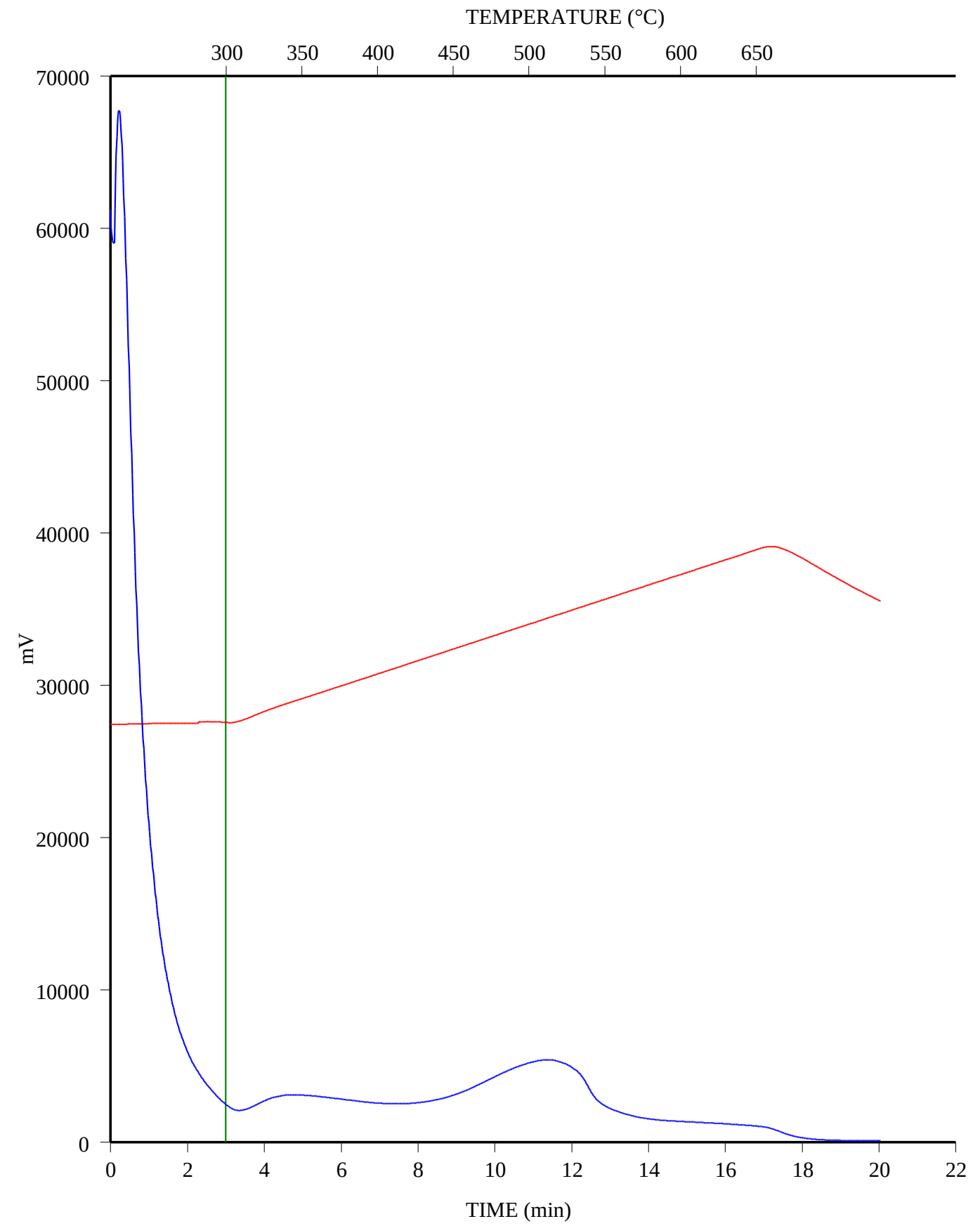
C-590336; CELTIC KAYBOBS 13-25-59-19; 3221.85 m
FID Hydrocarbons



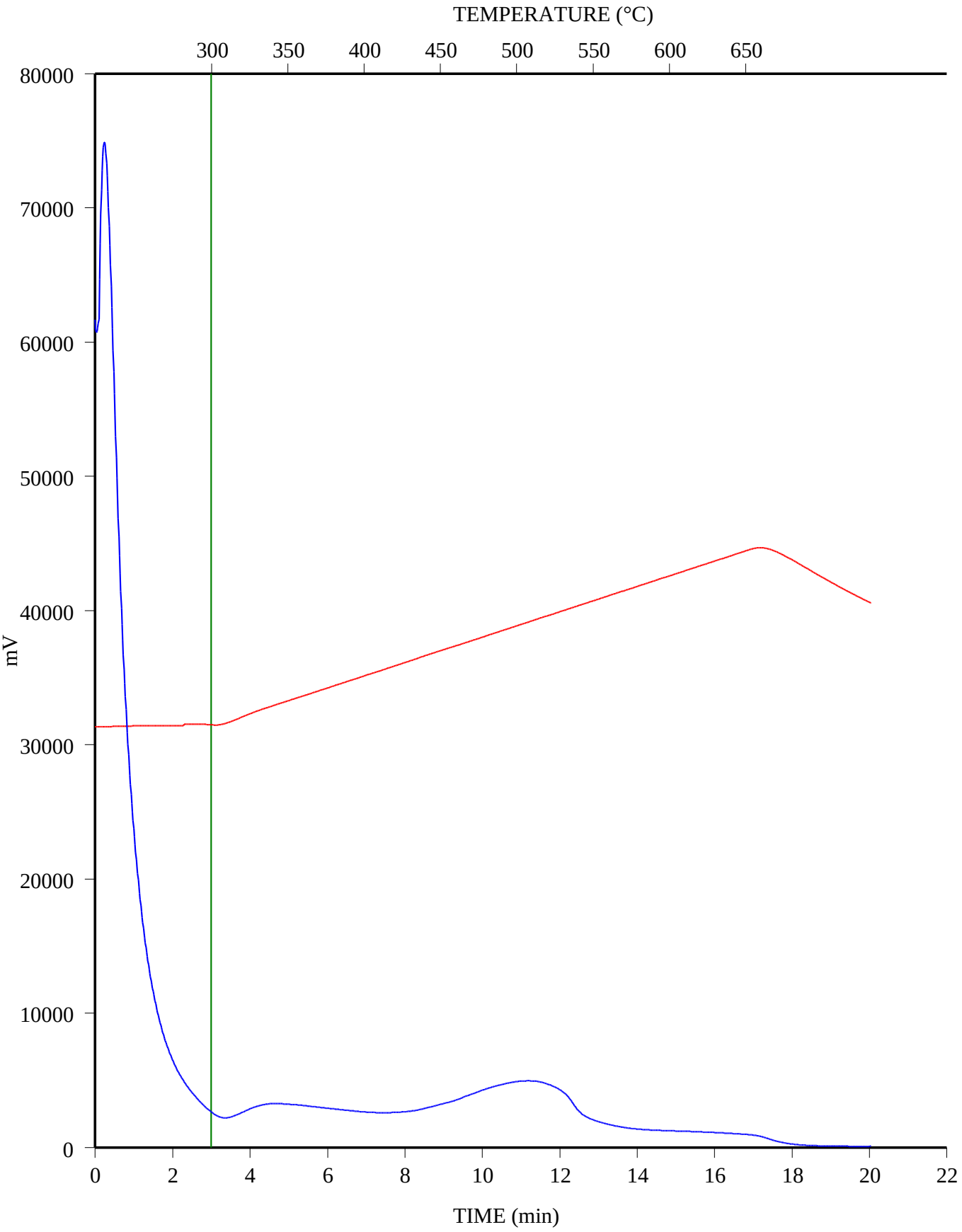
C-590337; CELTIC KAYBOBS 13-25-59-19; 3222.7 m
FID Hydrocarbons



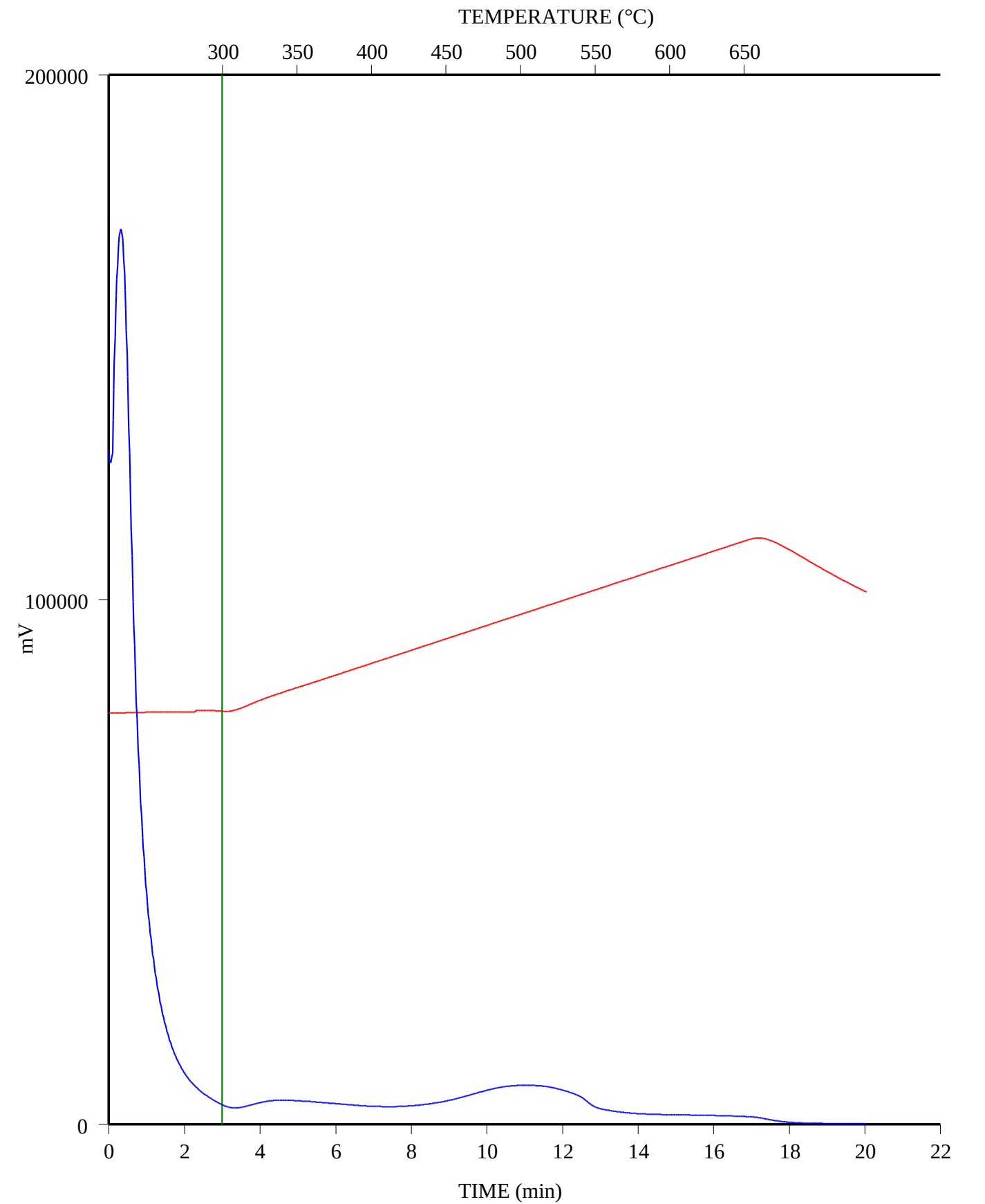
C-590338; CELTIC KAYBOBS 13-25-59-19; 3224.05 m
FID Hydrocarbons



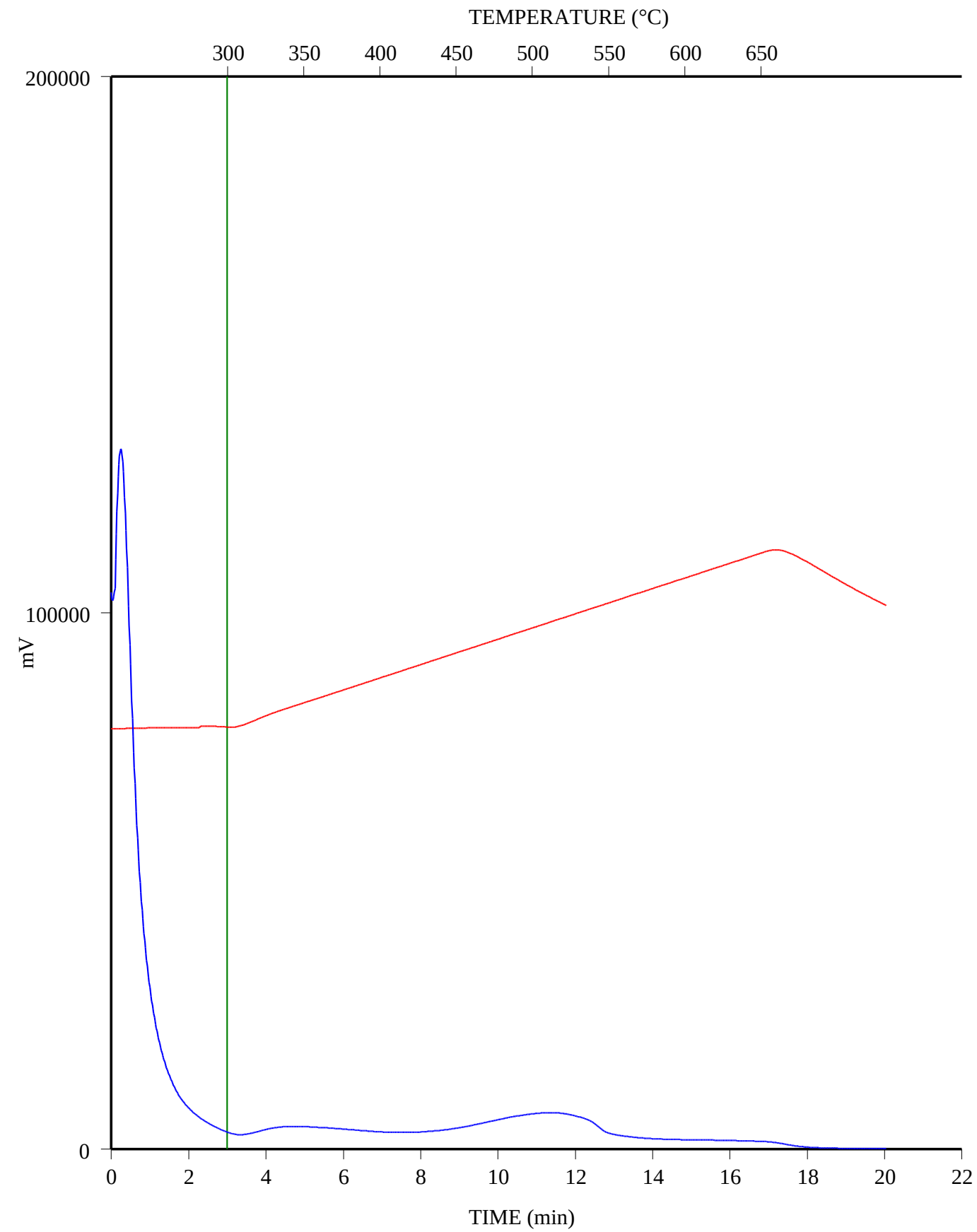
C-590339; CELTIC KAYBOBS 13-25-59-19; 3224.95 m
FID Hydrocarbons



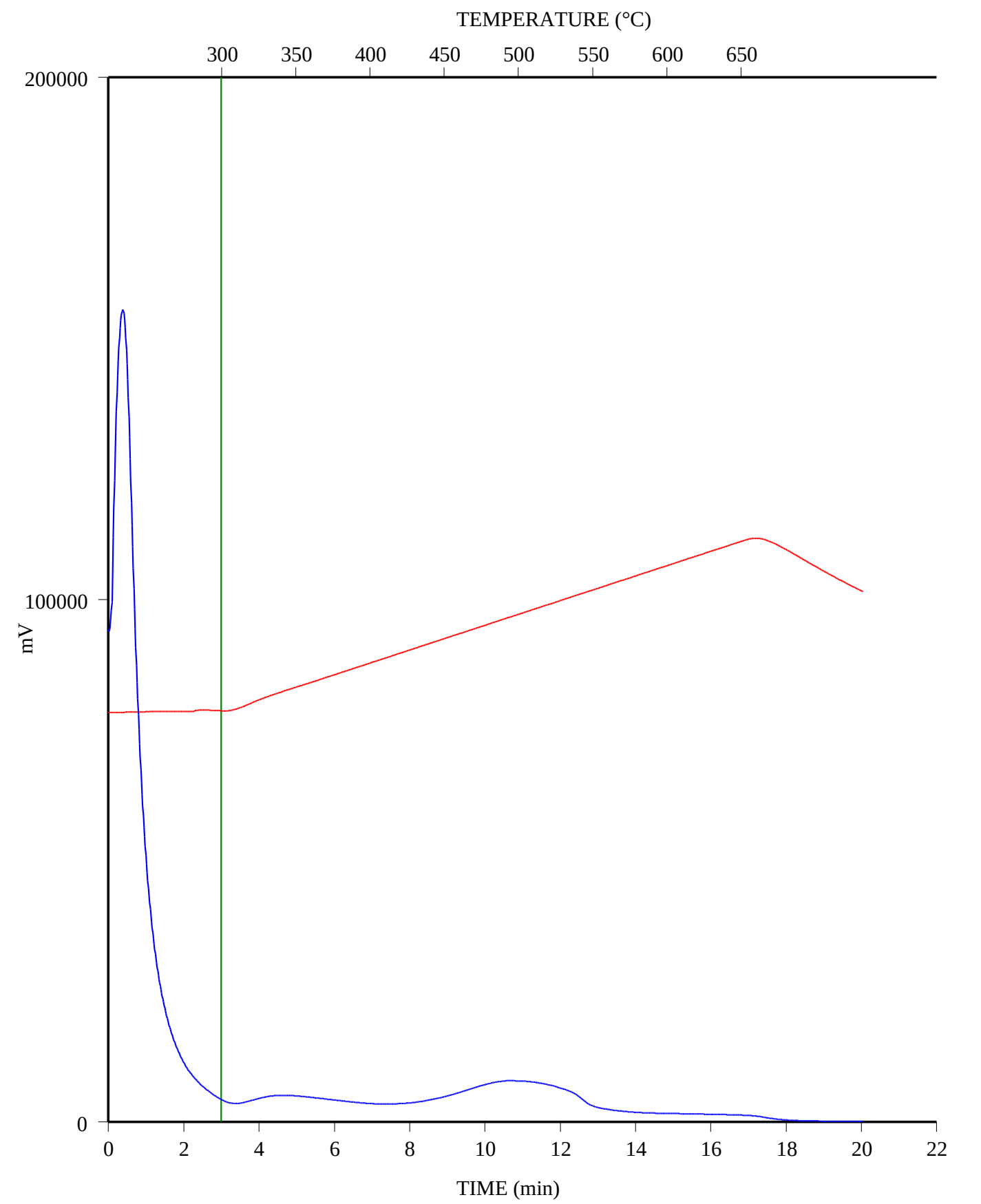
C-590340; CELTIC KAYBOBS 13-25-59-19; 3226.5 m
FID Hydrocarbons



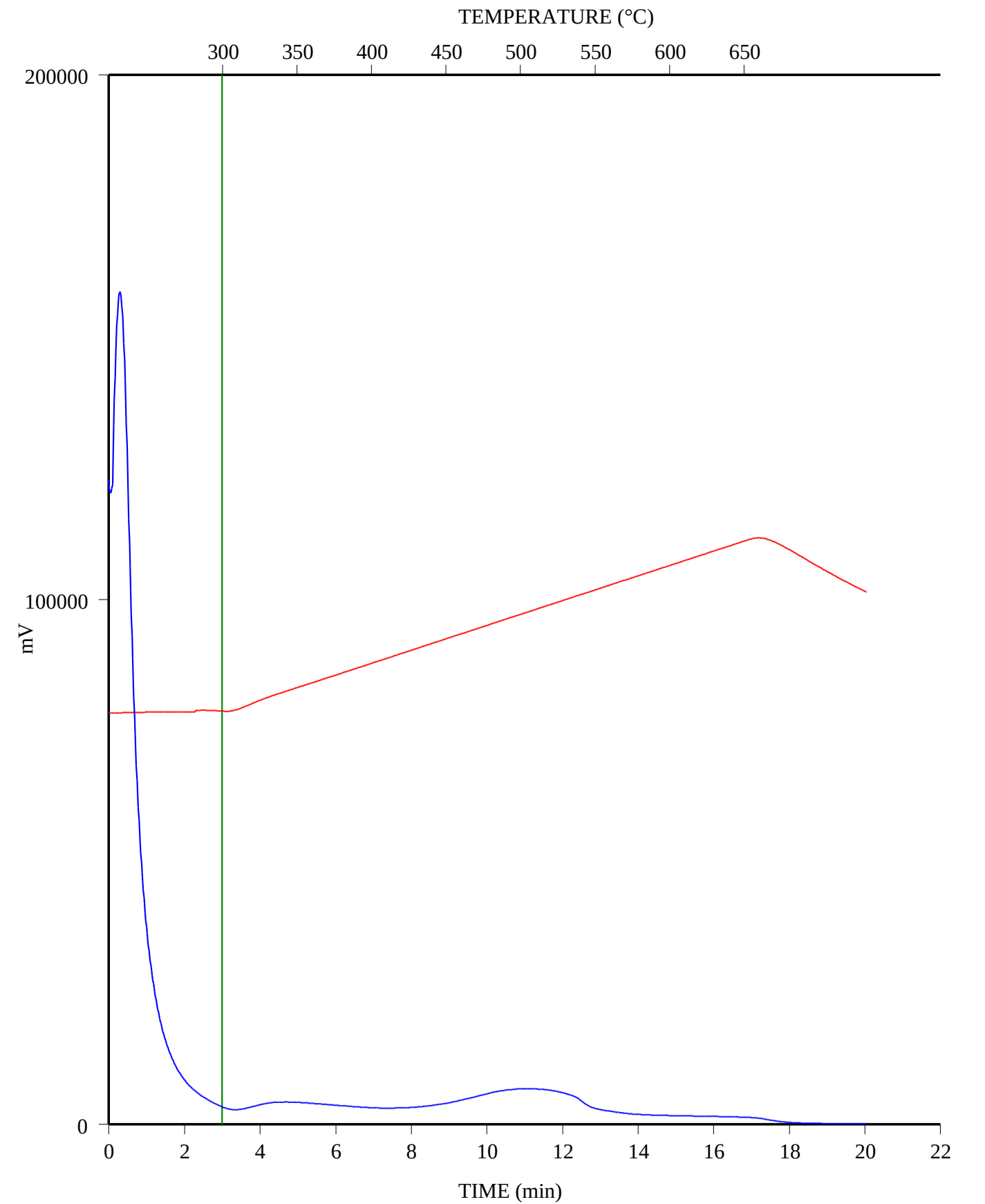
C-590341; CELTIC KAYBOBS 13-25-59-19; 3227.45 m
FID Hydrocarbons



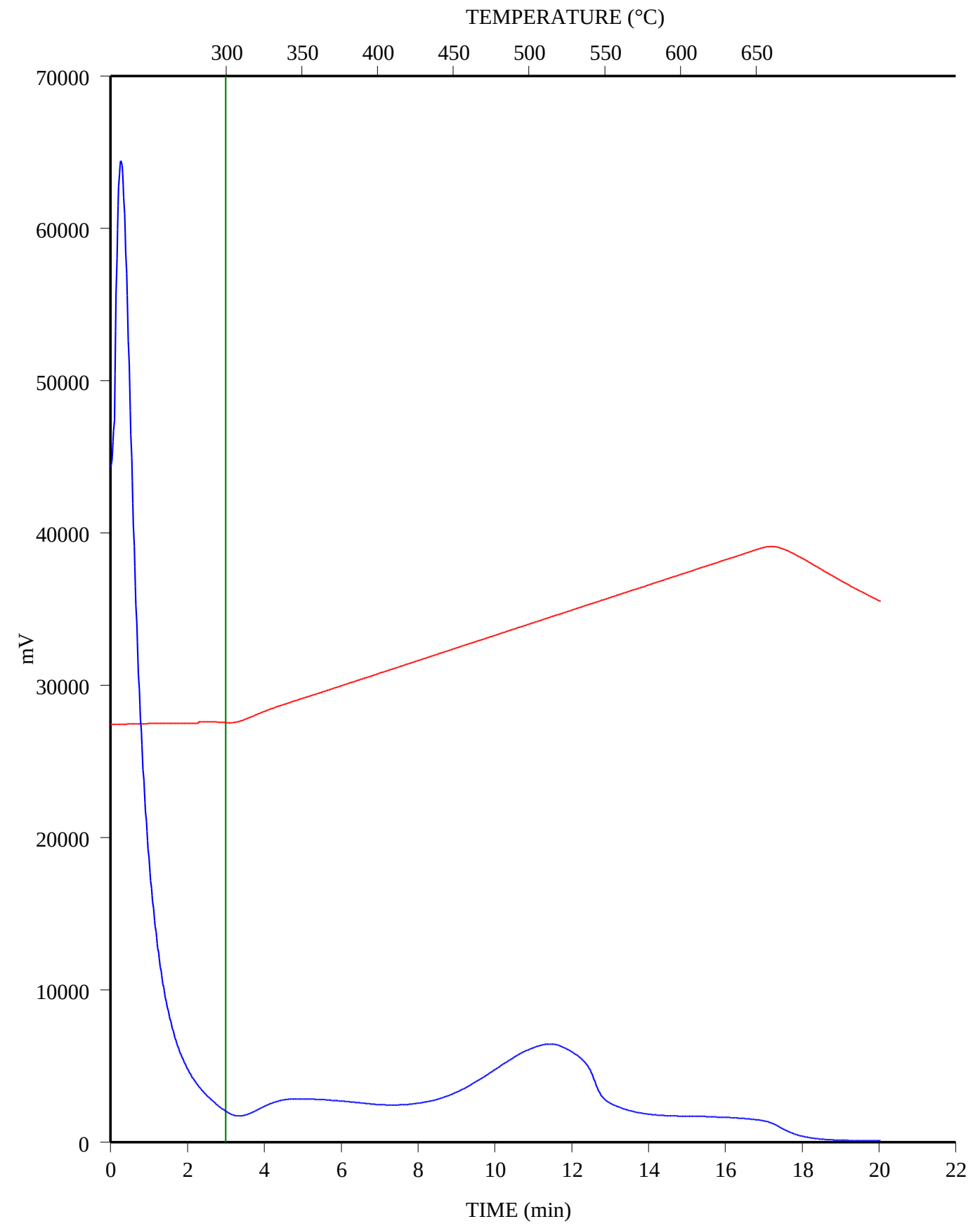
C-590342; CELTIC KAYBOBS 13-25-59-19; 3228.6 m
FID Hydrocarbons



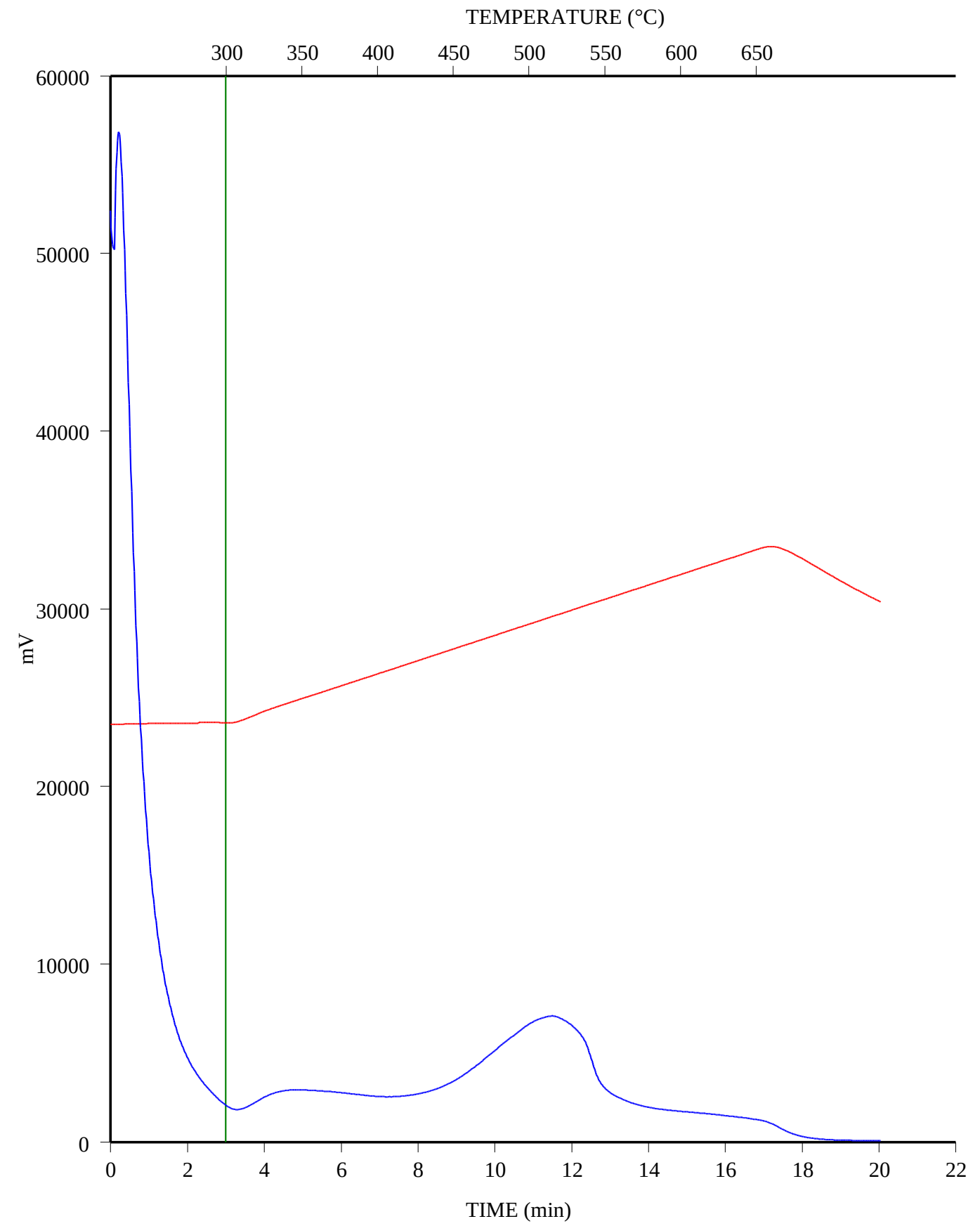
C-590343; CELTIC KAYBOBS 13-25-59-19; 3229.5 m
FID Hydrocarbons



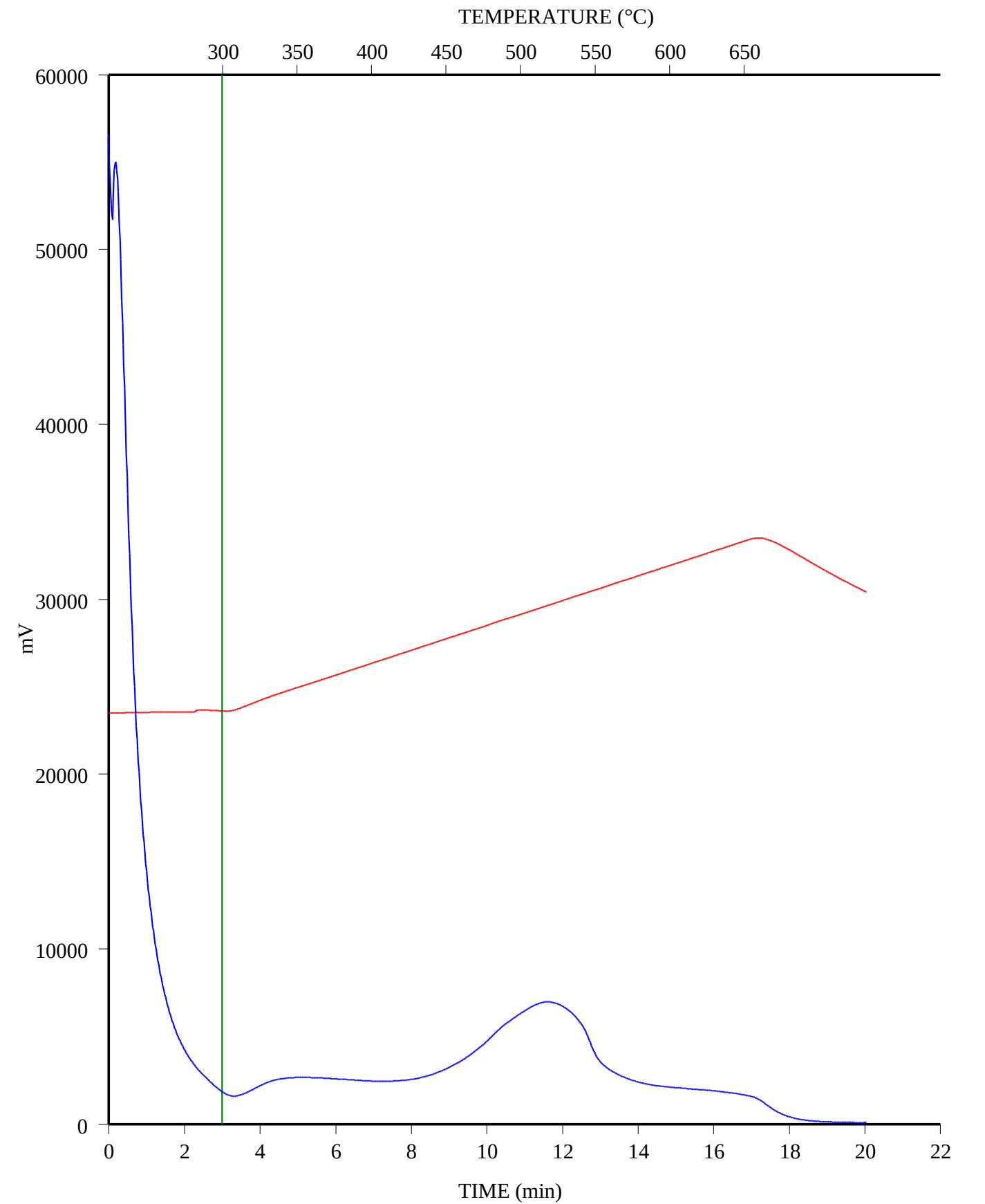
C-590344; CELTIC KAYBOBS 13-25-59-19; 3230.7 m
FID Hydrocarbons



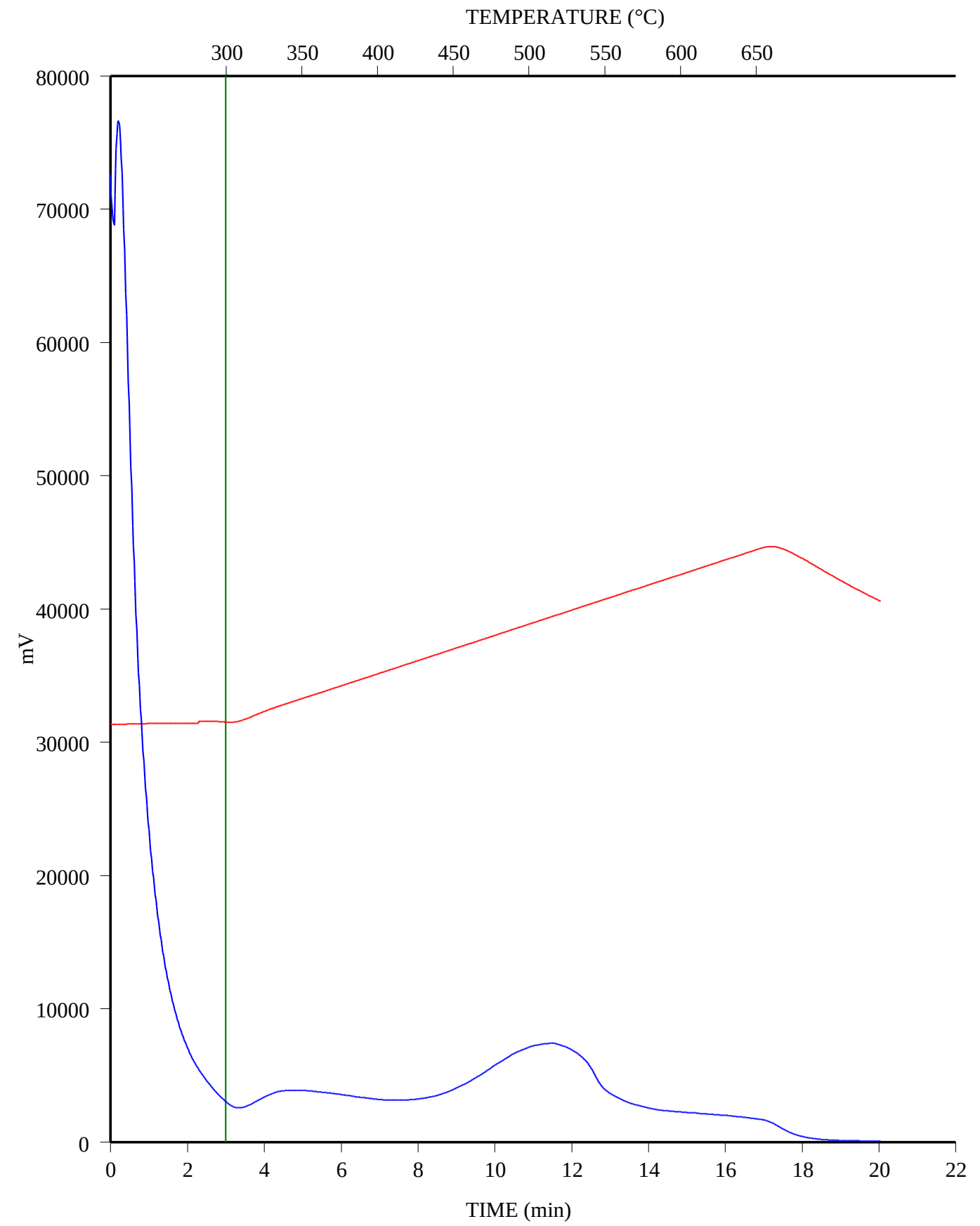
C-590345; CELTIC KAYBOBS 13-25-59-19; 3231.85 m
FID Hydrocarbons



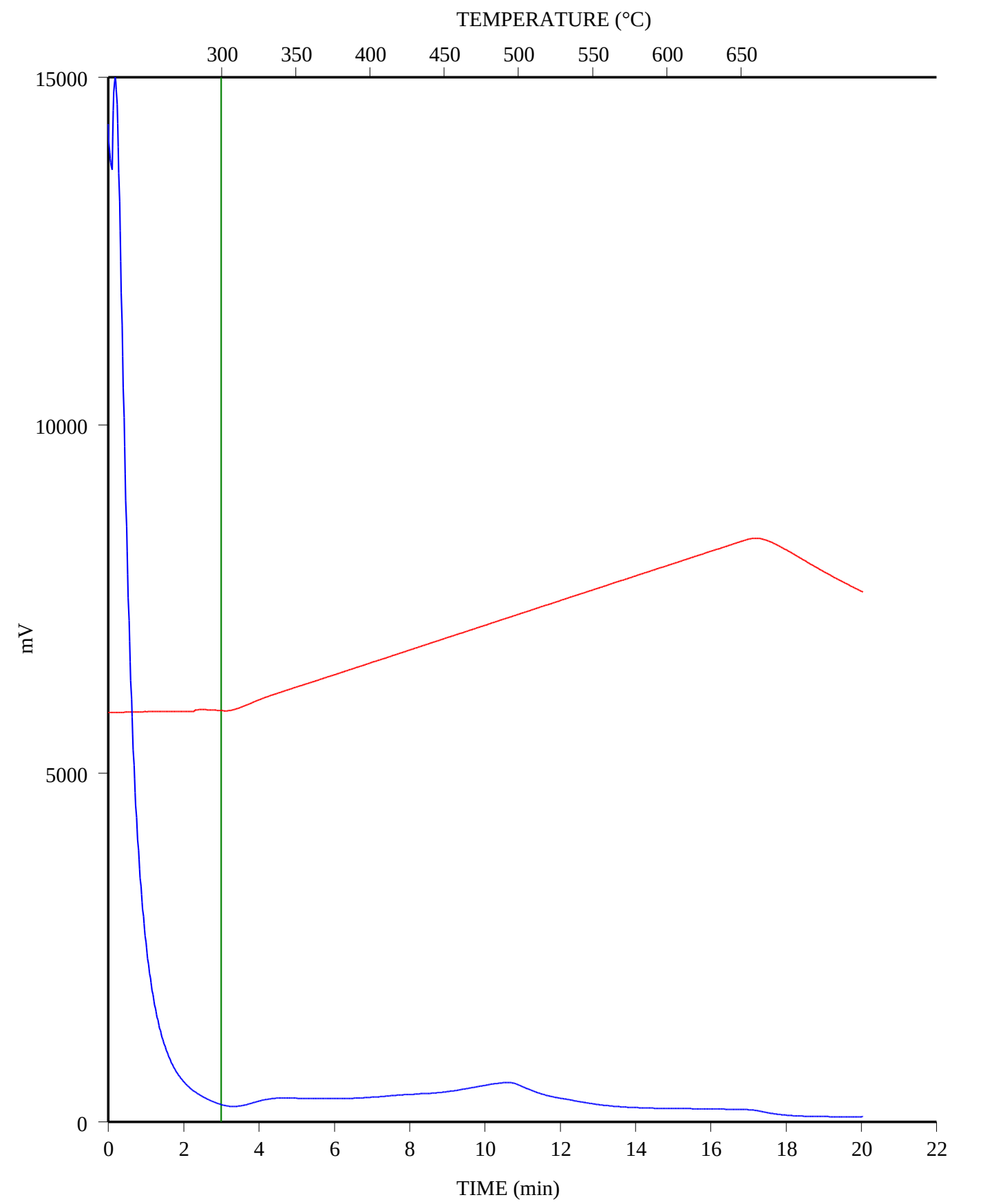
C-590346; CELTIC KAYBOBS 13-25-59-19; 3232.7 m
FID Hydrocarbons



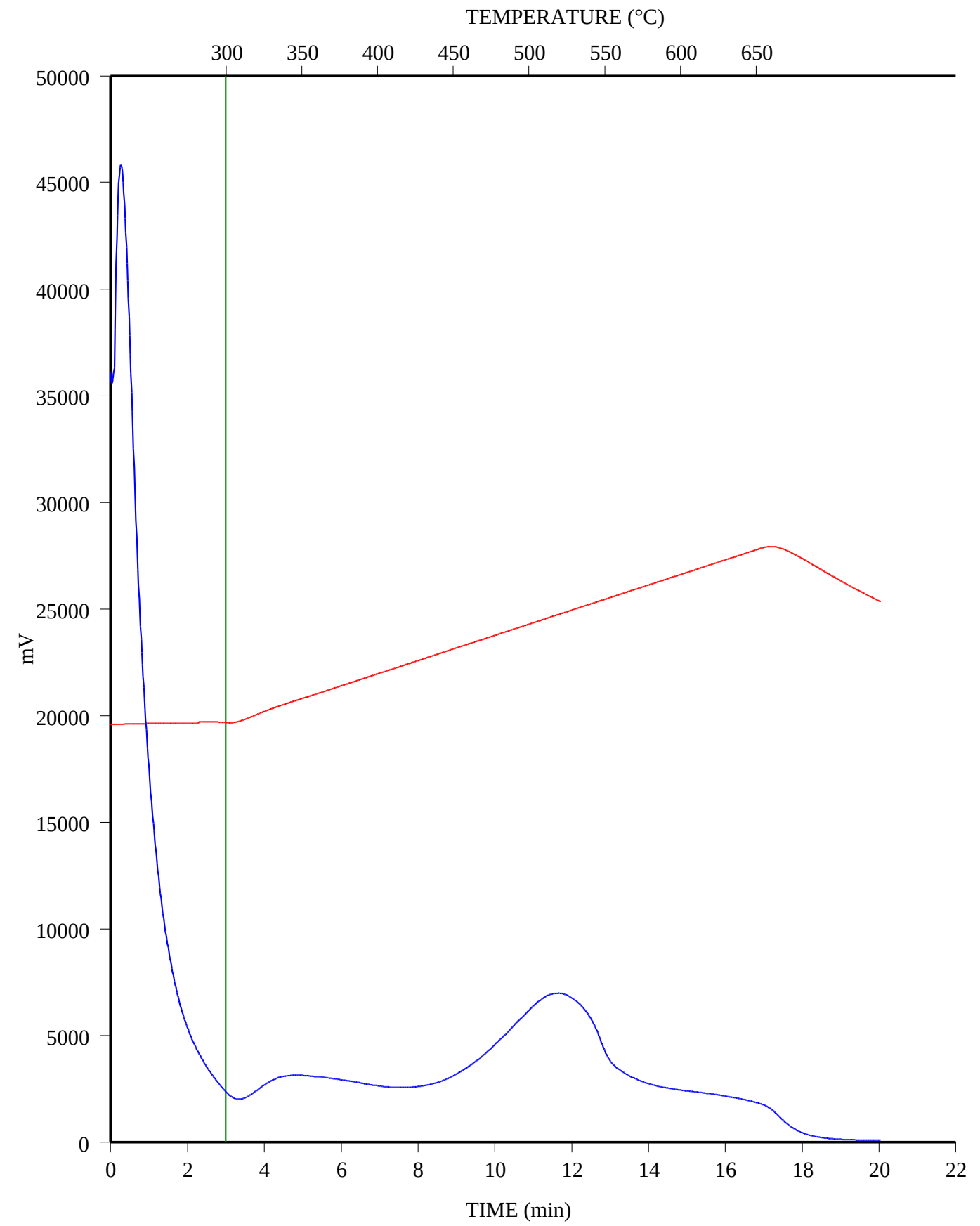
C-590347; CELTIC KAYBOBS 13-25-59-19; 3234.25 m
FID Hydrocarbons



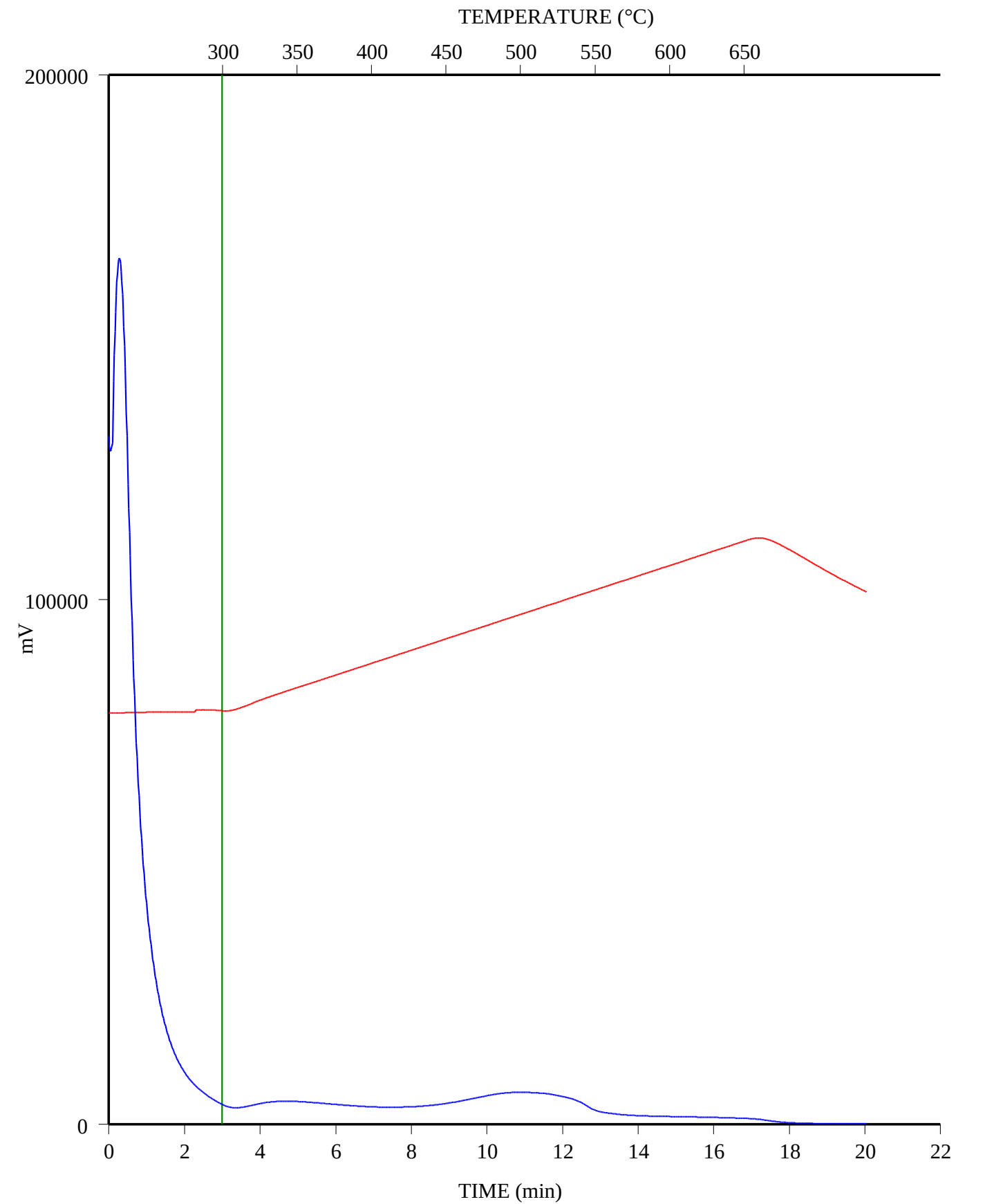
C-590348; CELTIC KAYBOBS 13-25-59-19; 3235.3 m
FID Hydrocarbons



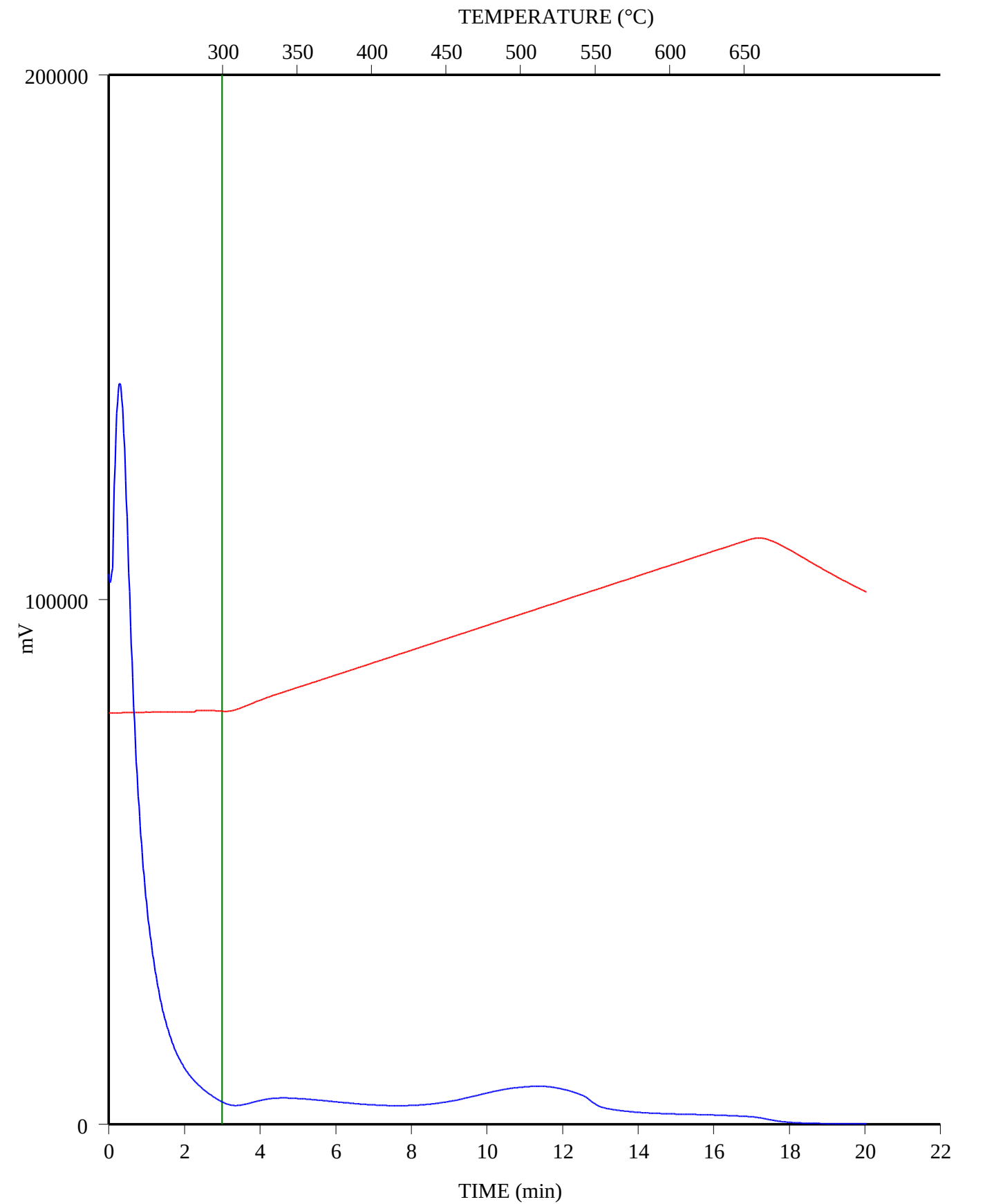
C-590349; CELTIC KAYBOBS 13-25-59-19; 3236.4 m
FID Hydrocarbons



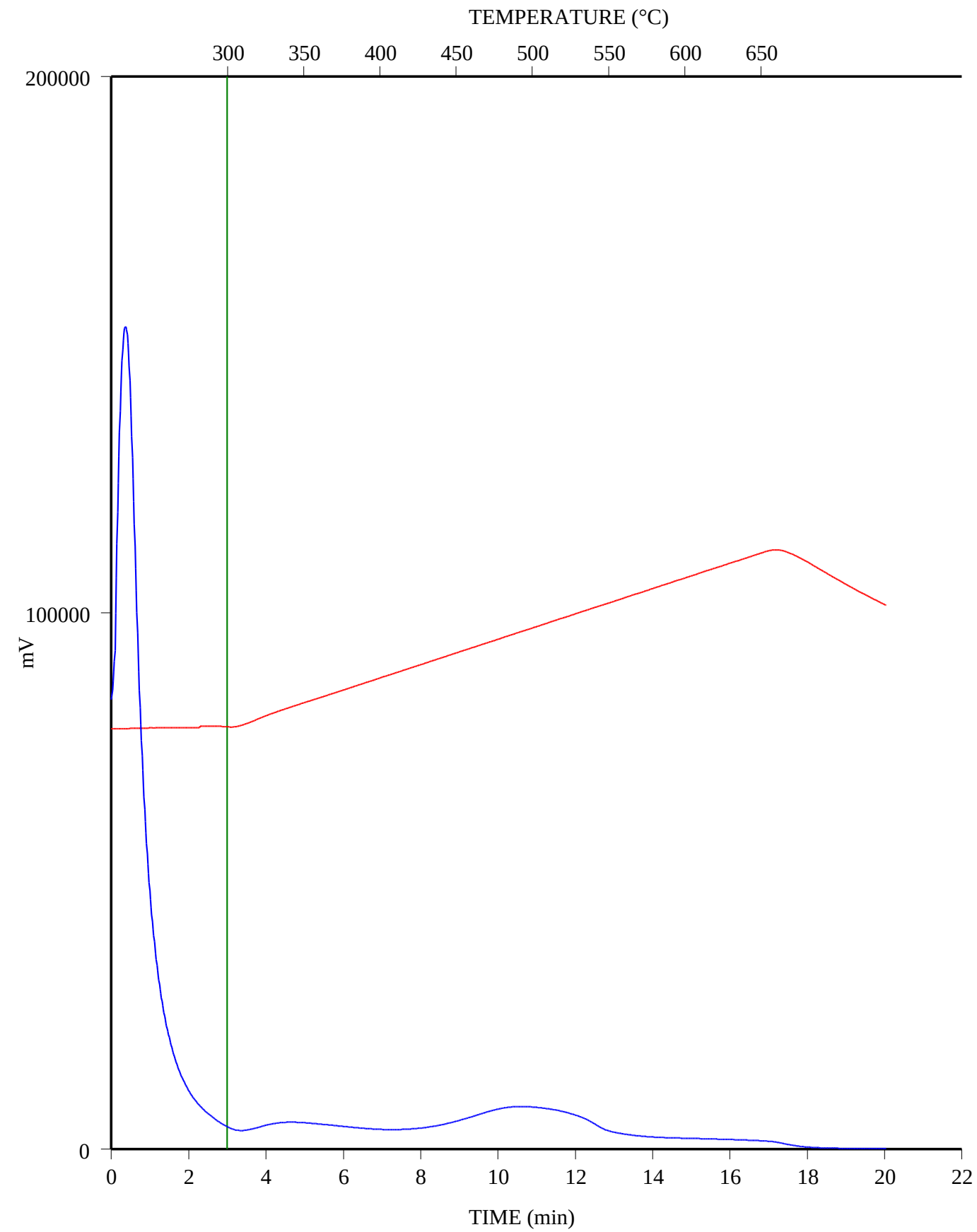
C-590350; CELTIC KAYBOBS 13-25-59-19; 3237.55 m
FID Hydrocarbons



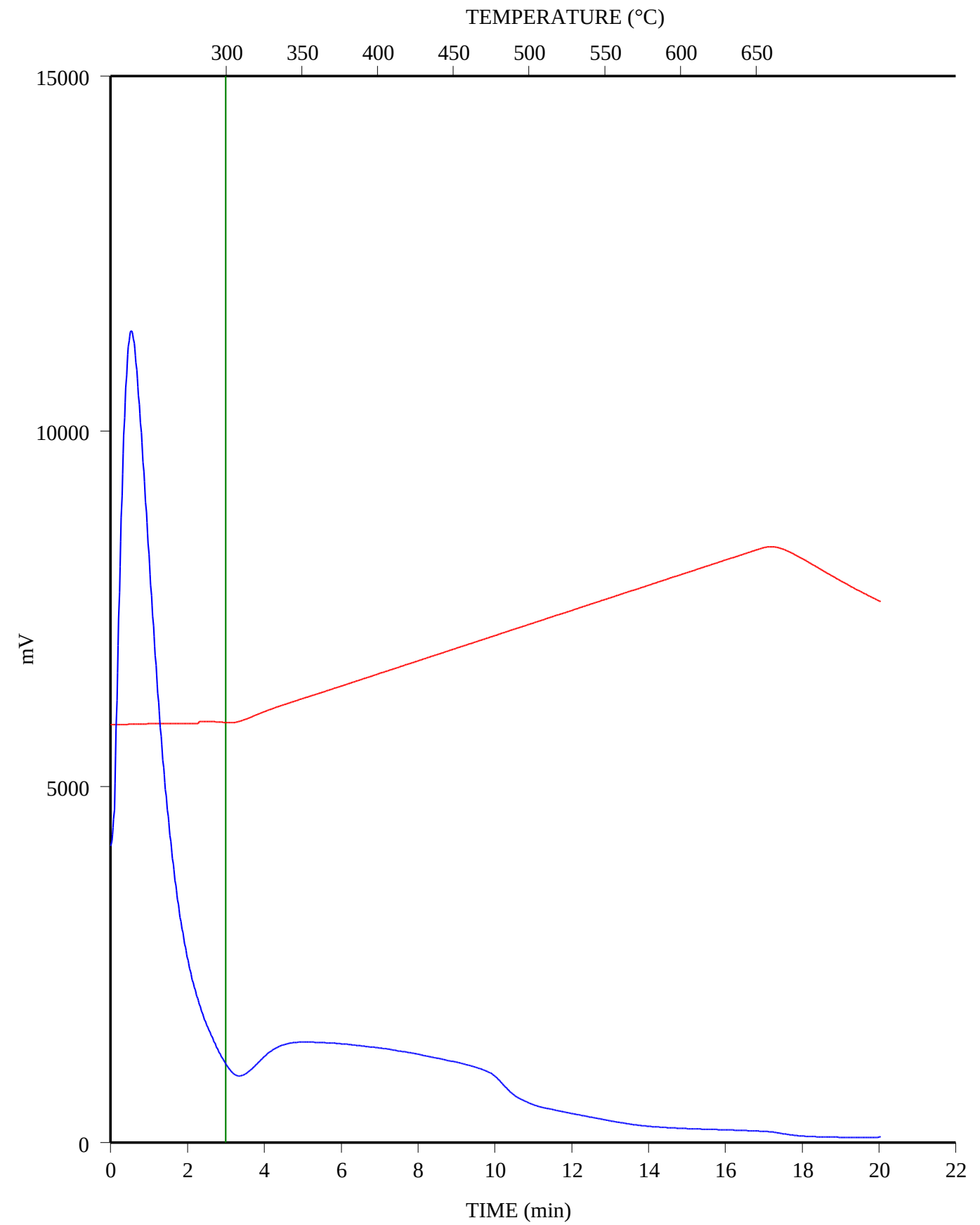
C-590351; CELTIC KAYBOBS 13-25-59-19; 3238.55 m
FID Hydrocarbons



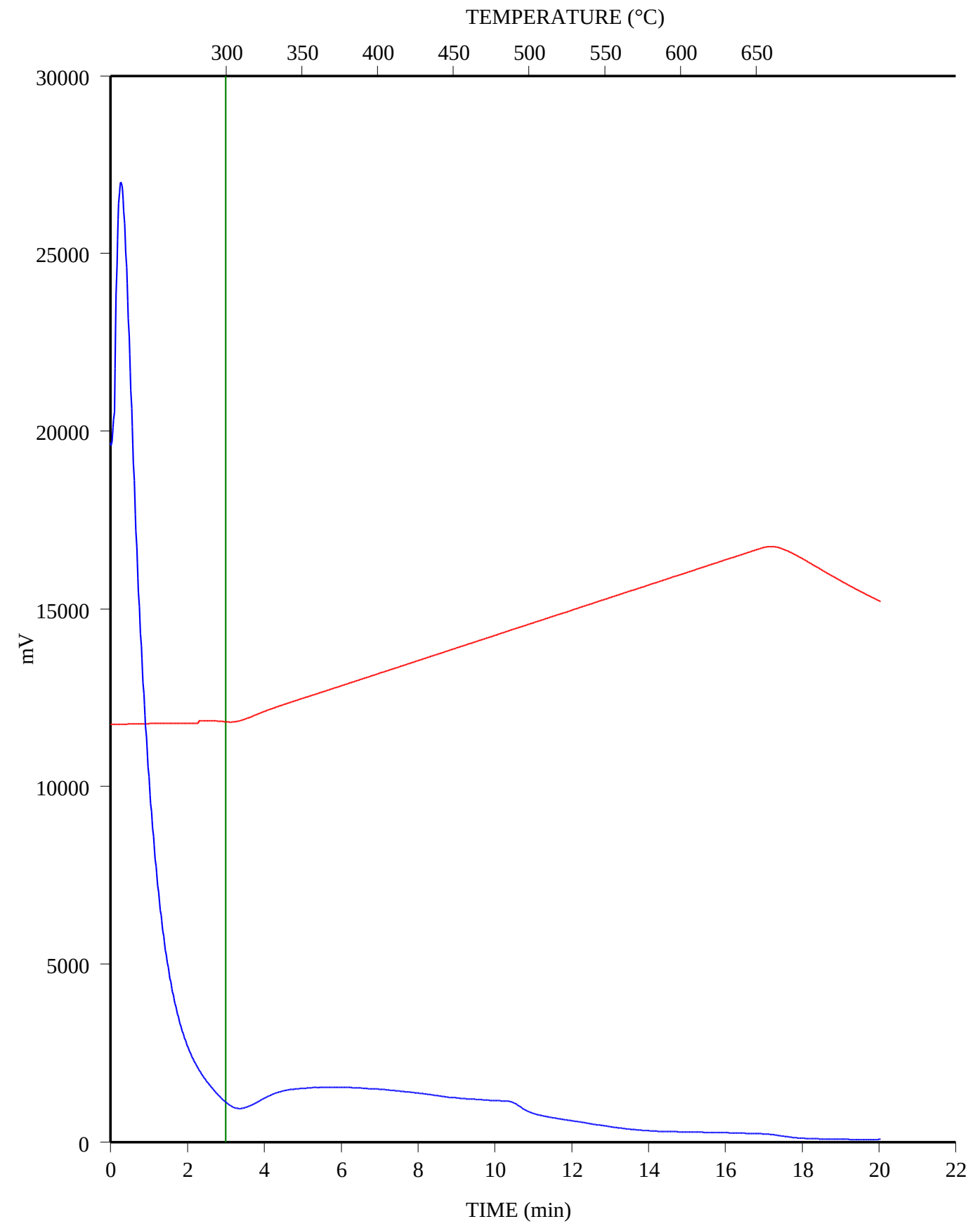
C-590352; CELTIC KAYBOBS 13-25-59-19; 3239.55 m
FID Hydrocarbons



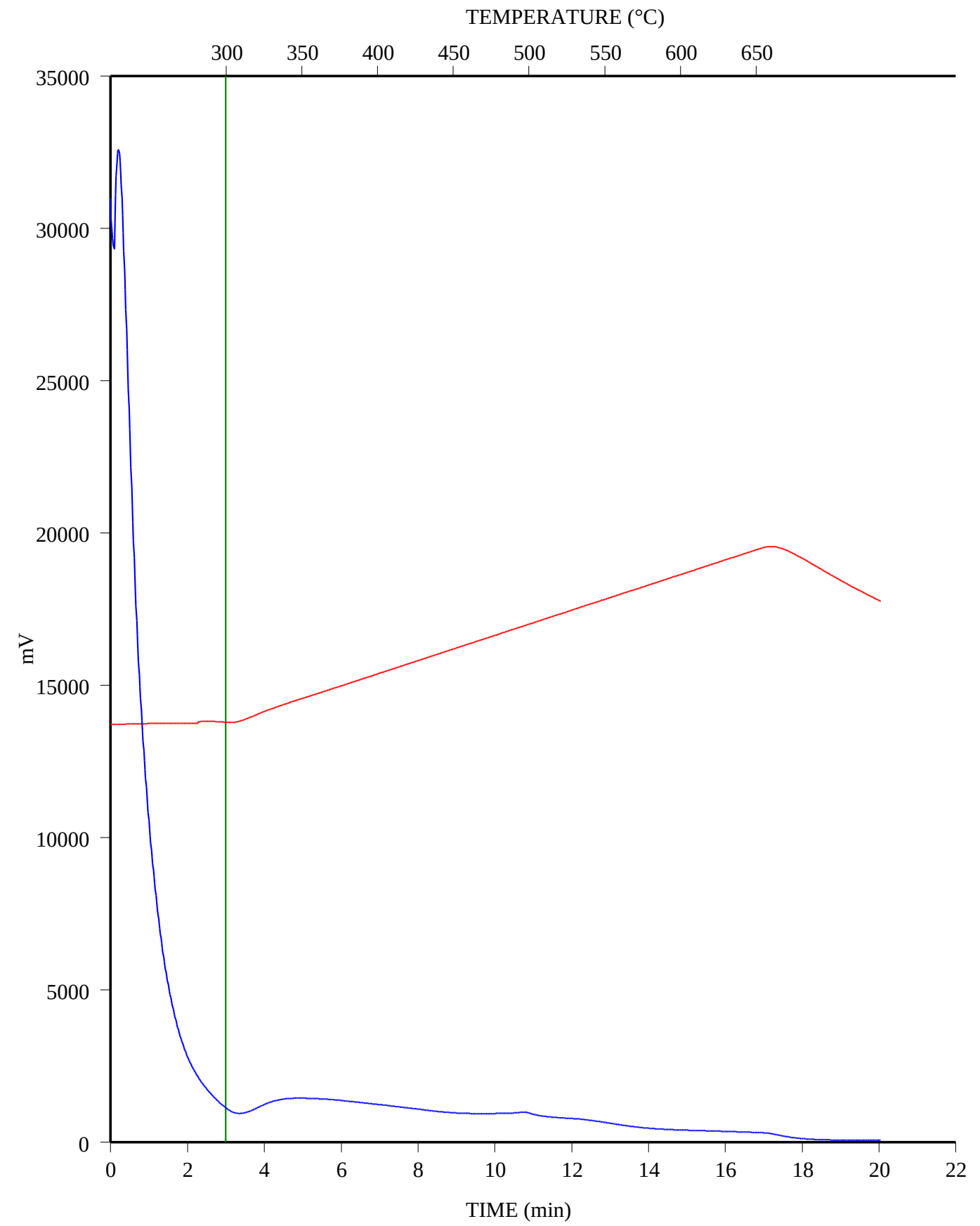
C-590353; AOSC GRIZZLY 1-24-61-23; 3681.3 m
FID Hydrocarbons



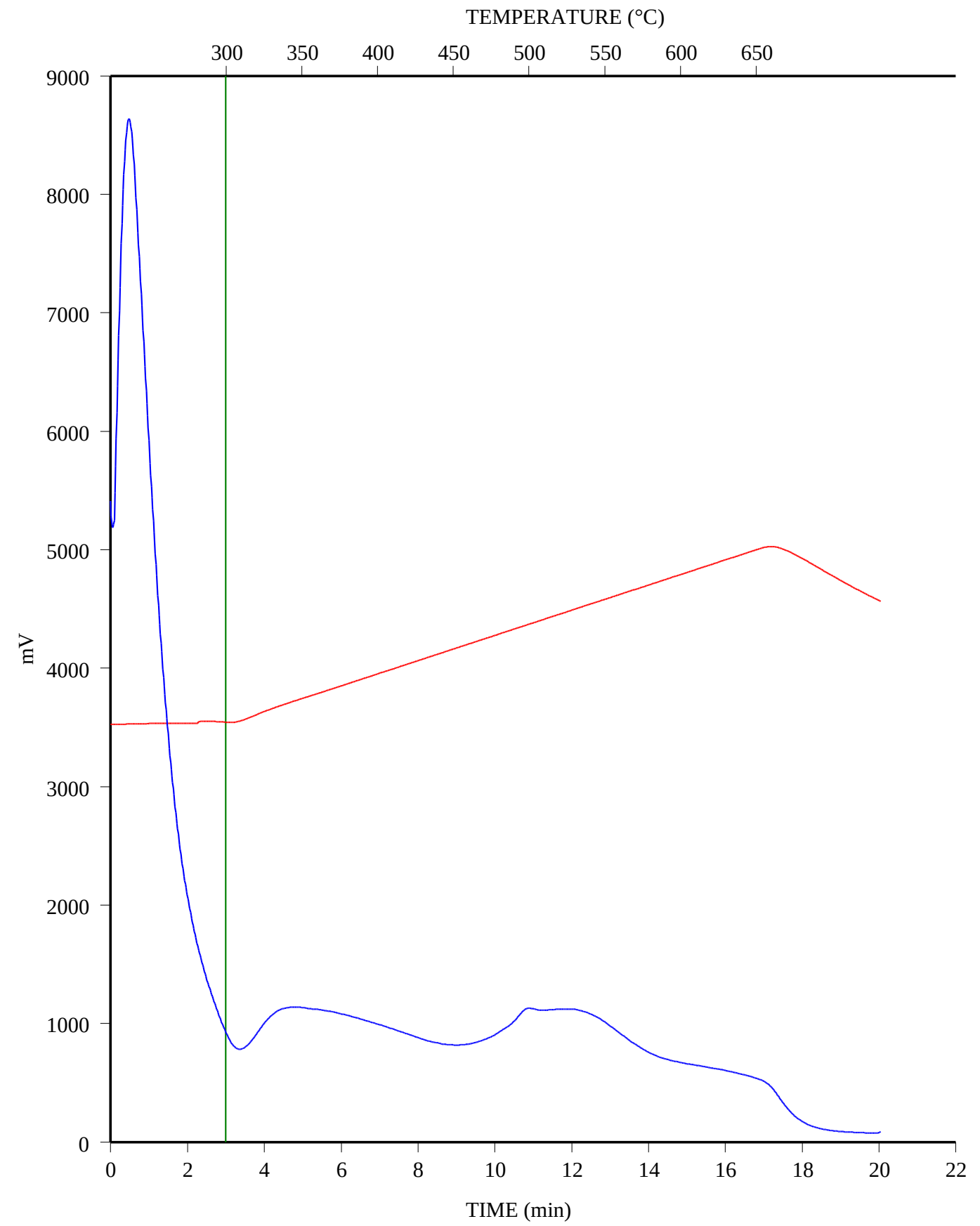
C-590354; AOSC GRIZZLY 1-24-61-23; 3684.05 m
FID Hydrocarbons



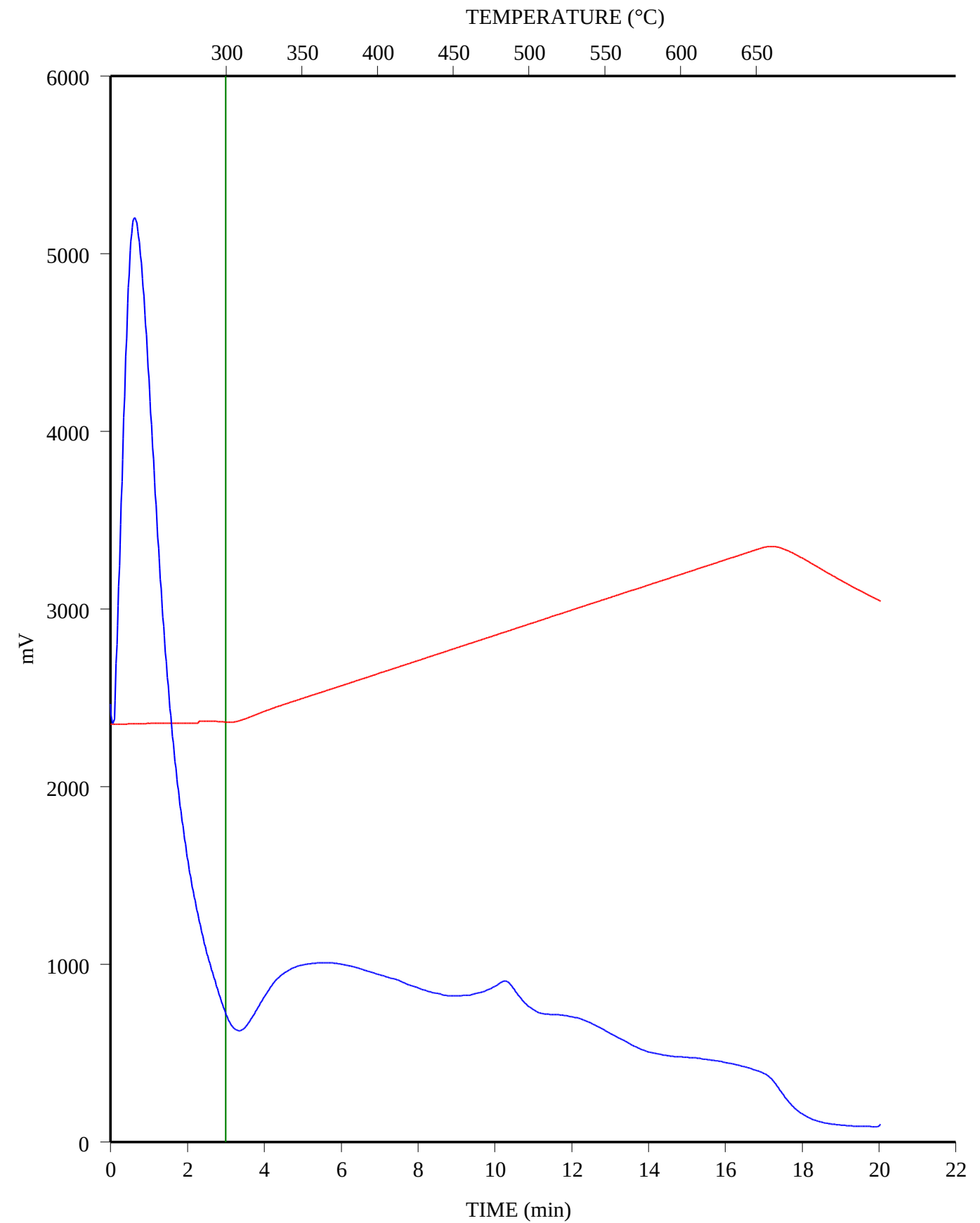
C-590355; AOSC GRIZZLY 1-24-61-23; 3687.1 m
FID Hydrocarbons



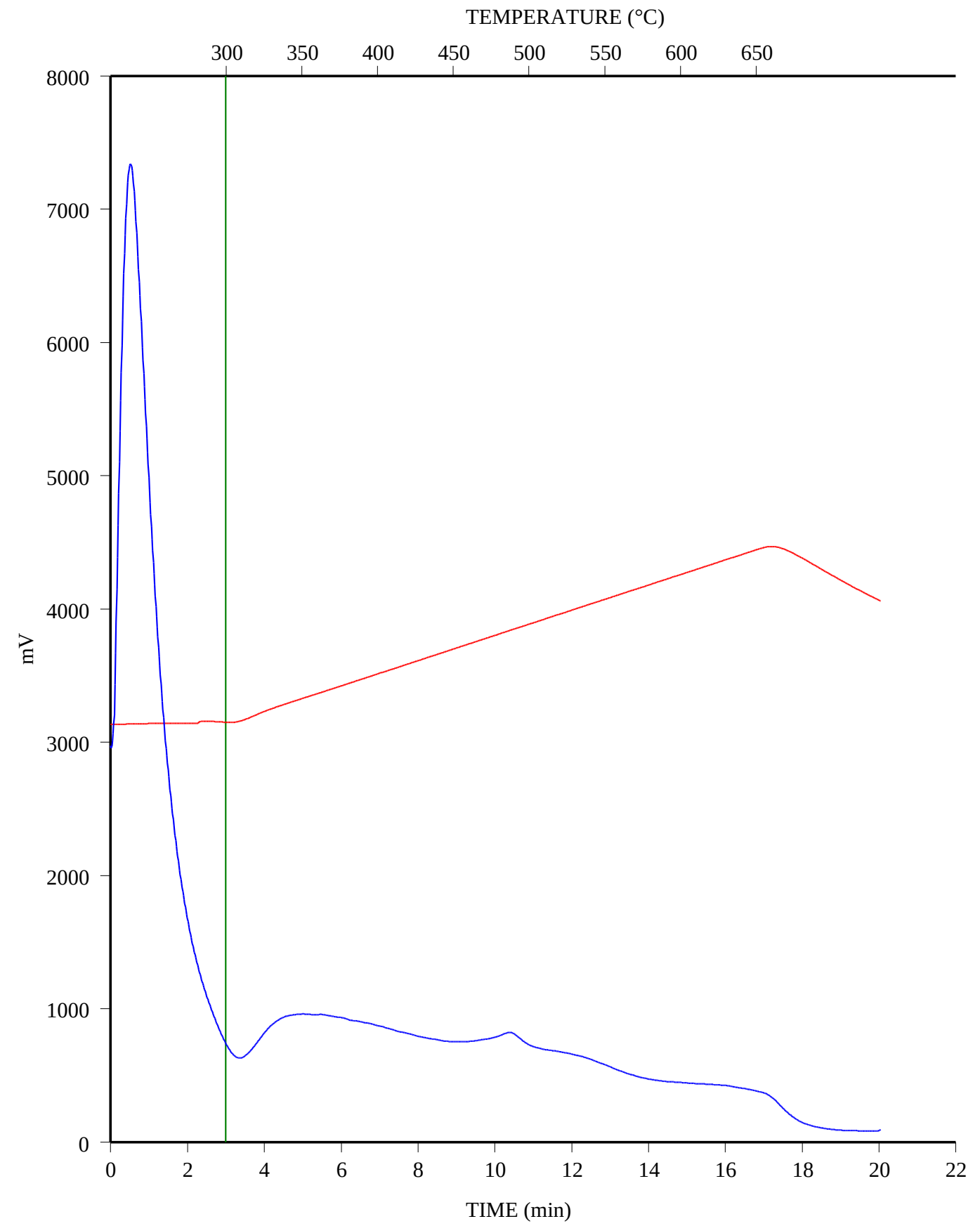
C-590356; AOSC GRIZZLY 1-24-61-23; 3690.25 m
FID Hydrocarbons



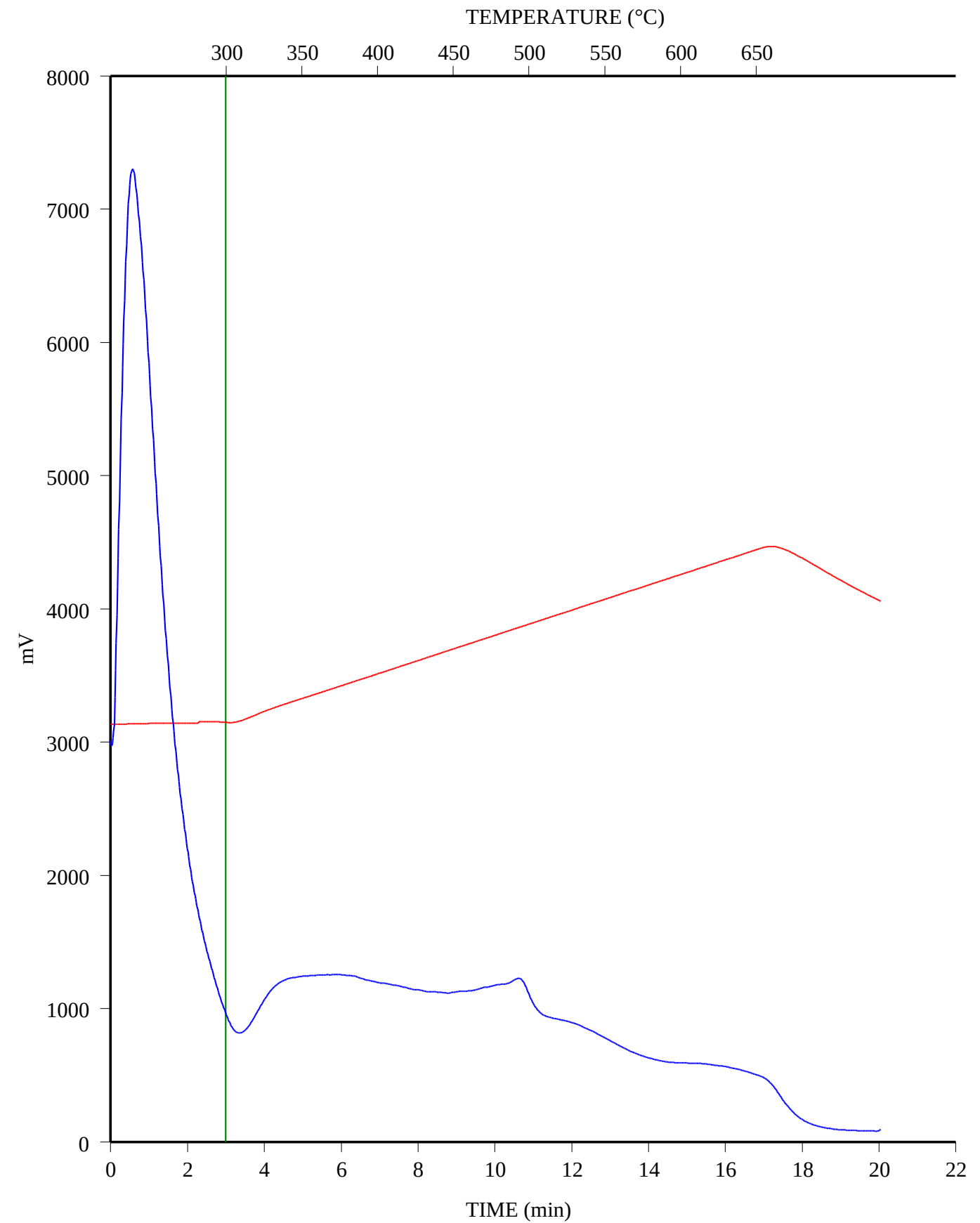
C-590357; AOSC GRIZZLY 1-24-61-23; 3694.85 m
FID Hydrocarbons



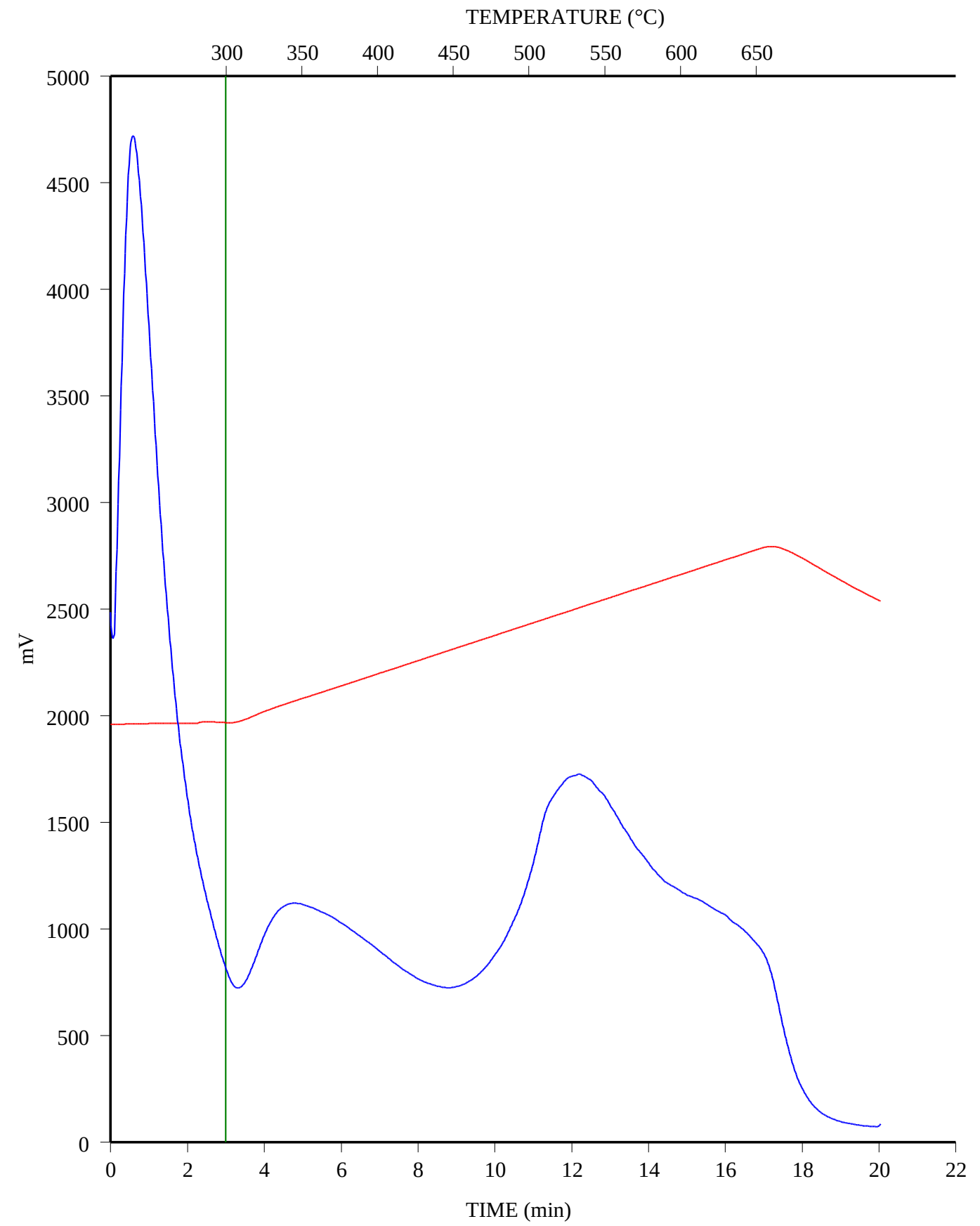
C-590358; AOSC GRIZZLY 1-24-61-23; 3696.35 m
FID Hydrocarbons



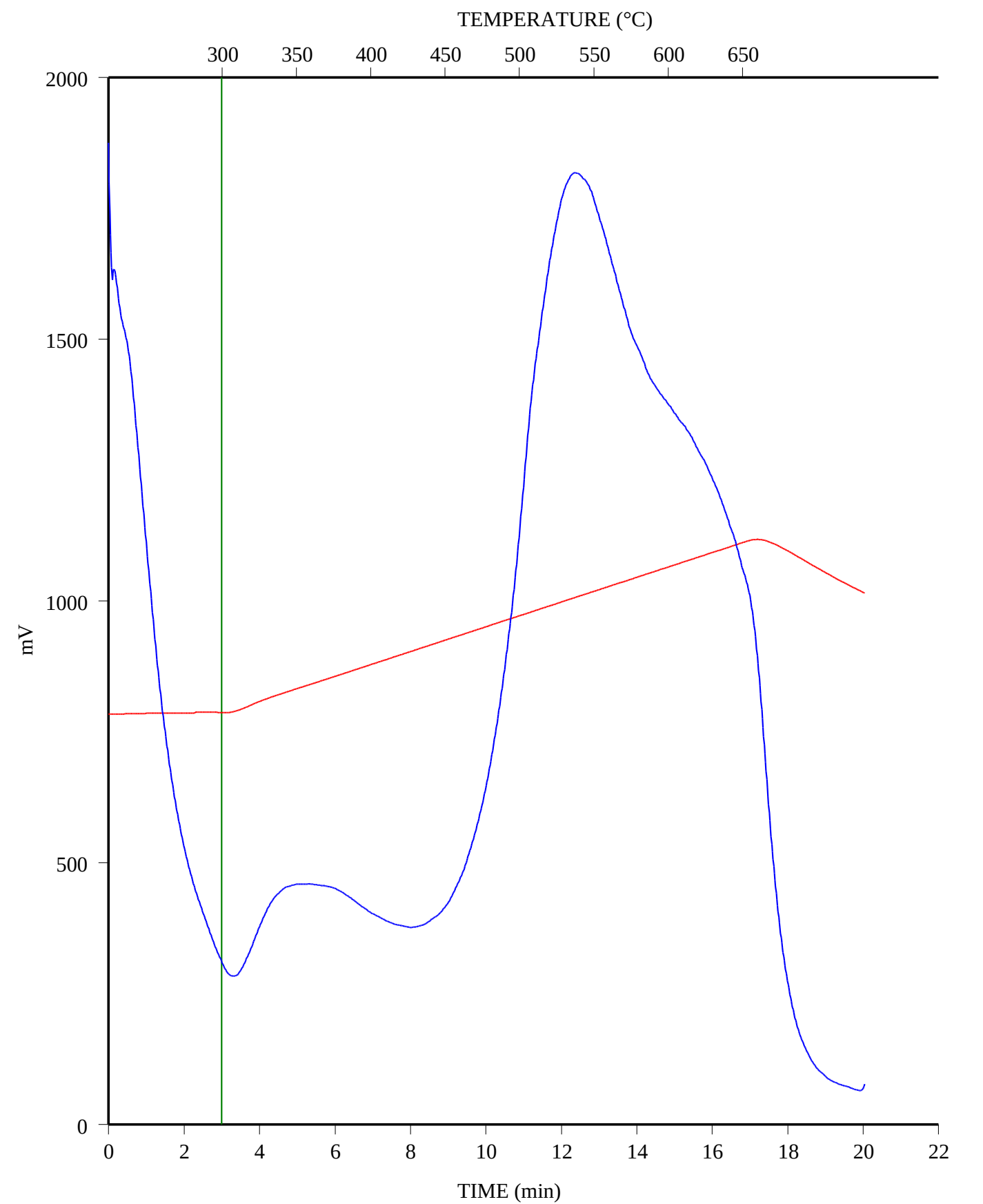
C-590359; AOSC GRIZZLY 1-24-61-23; 3699.55 m
FID Hydrocarbons



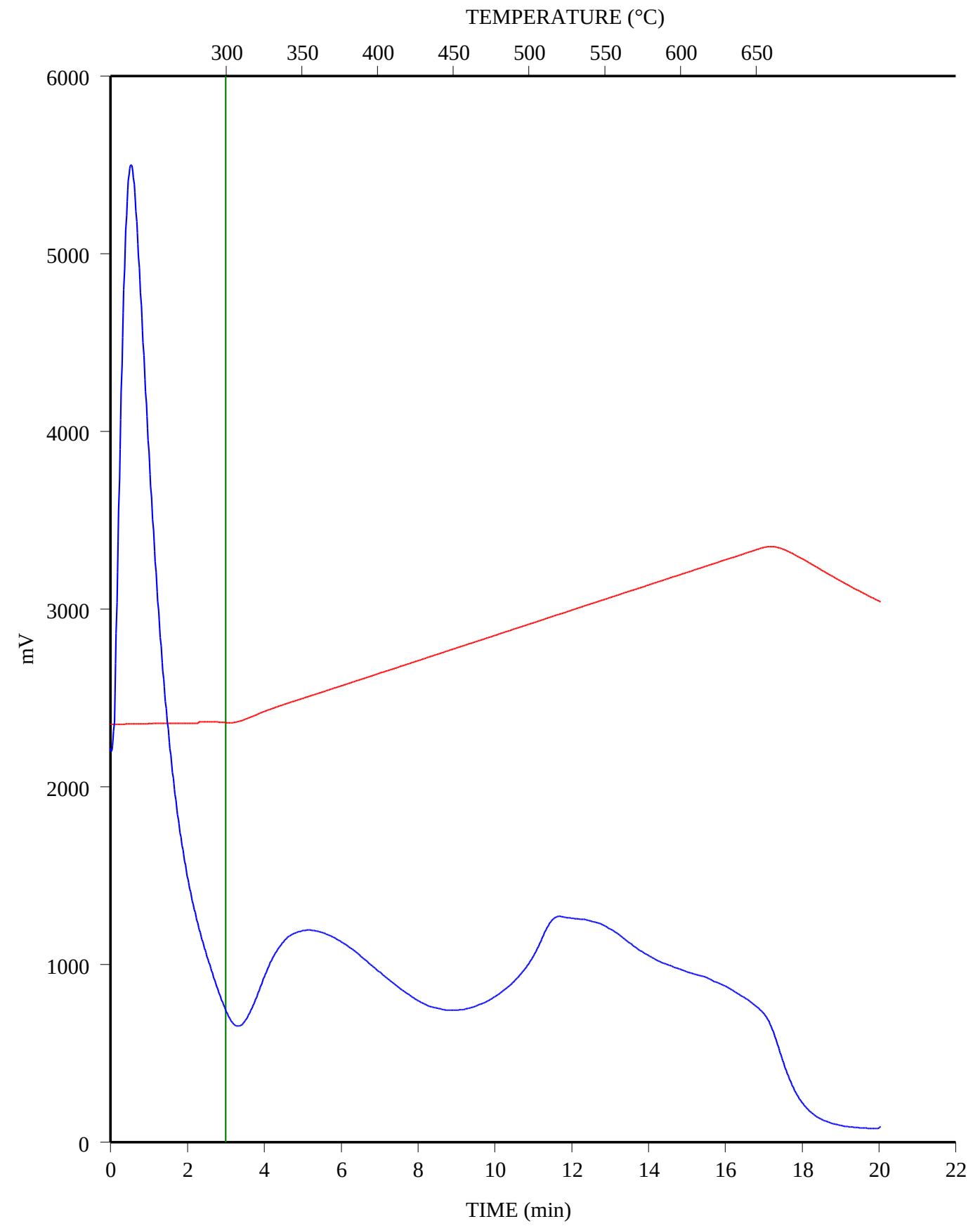
C-590360; AOSC GRIZZLY 1-24-61-23; 3701.45 m
FID Hydrocarbons



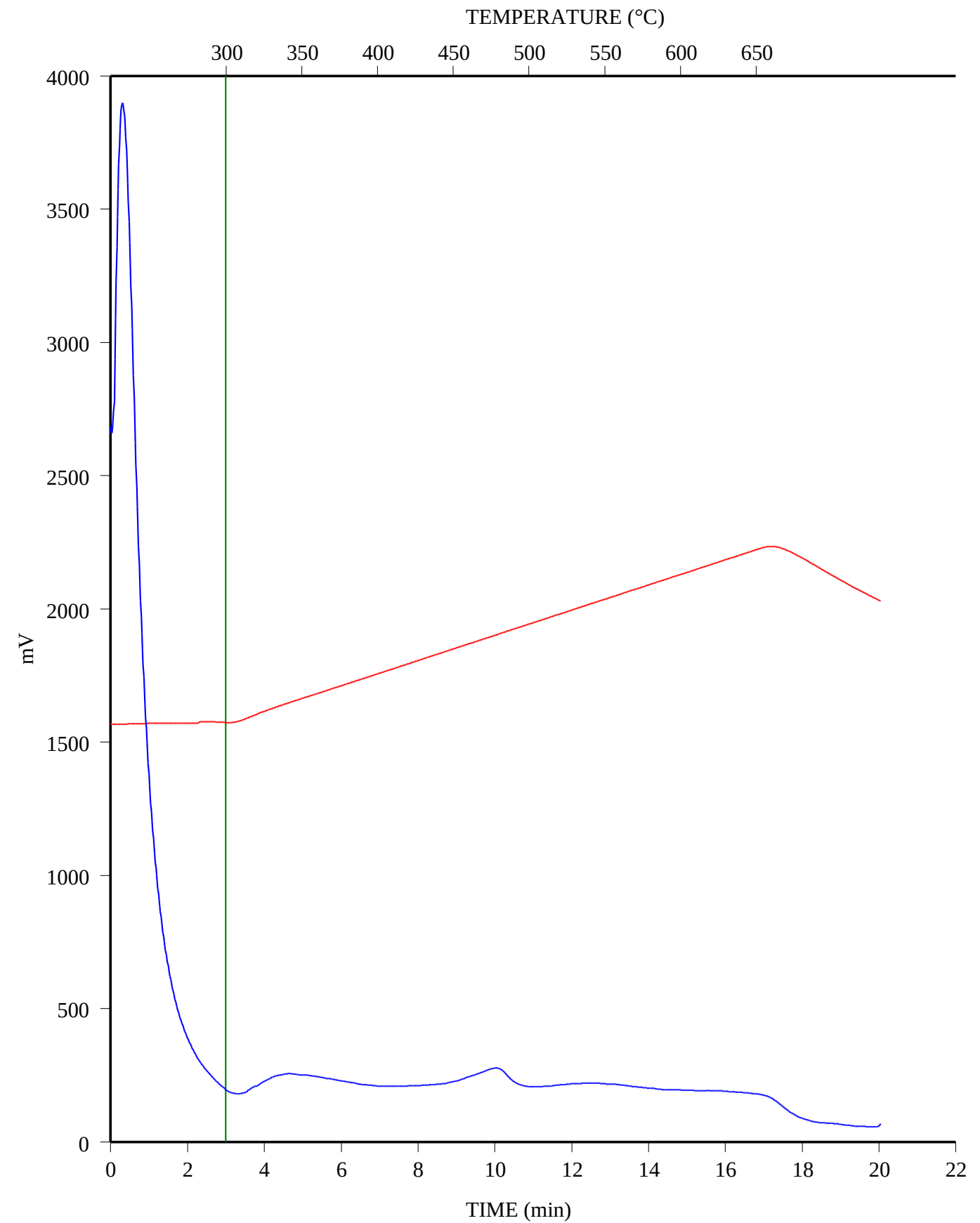
C-590361; AOSC GRIZZLY 1-24-61-23; 3703.8 m
FID Hydrocarbons



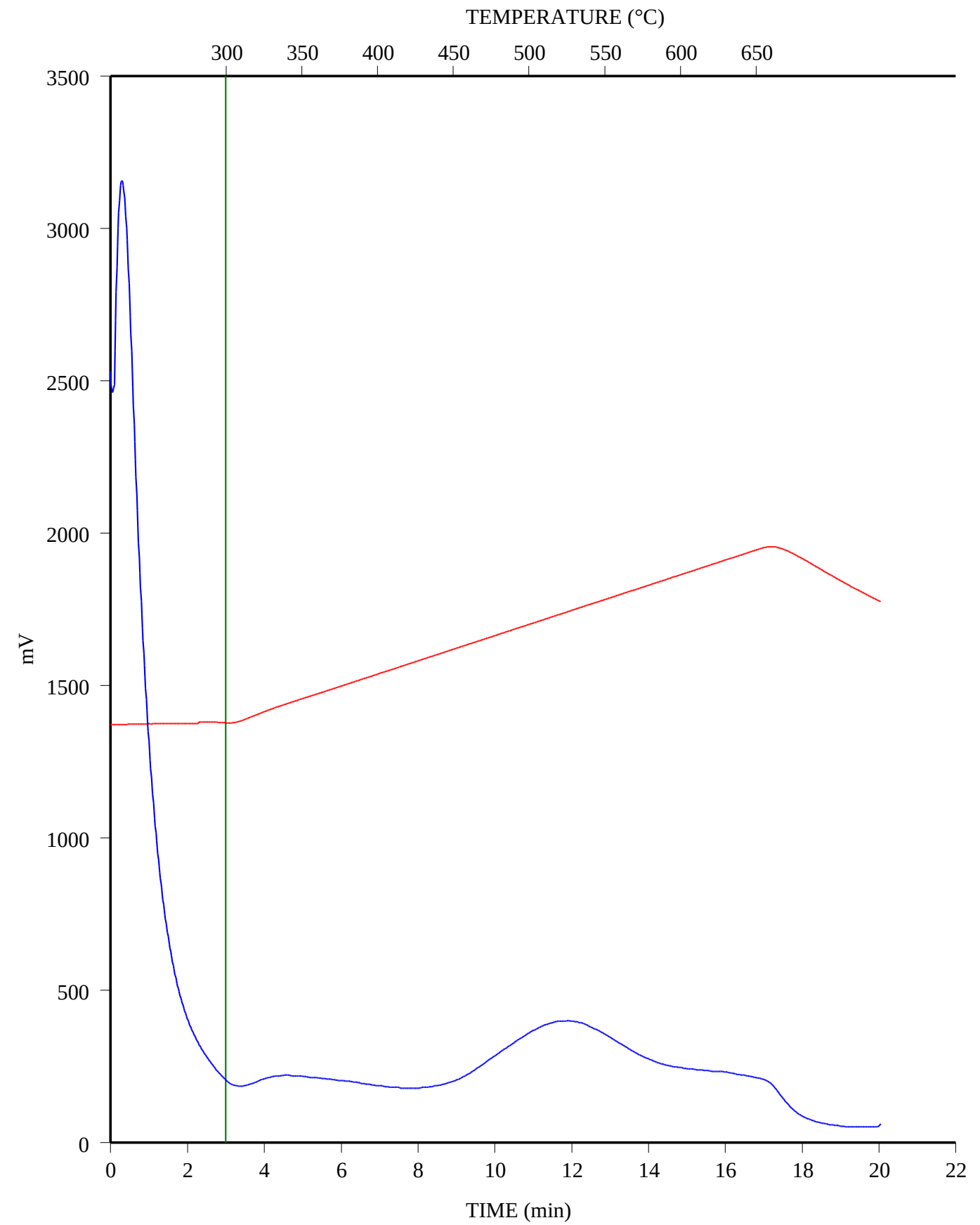
C-590362; AOSC GRIZZLY 1-24-61-23; 3704.1 m
FID Hydrocarbons



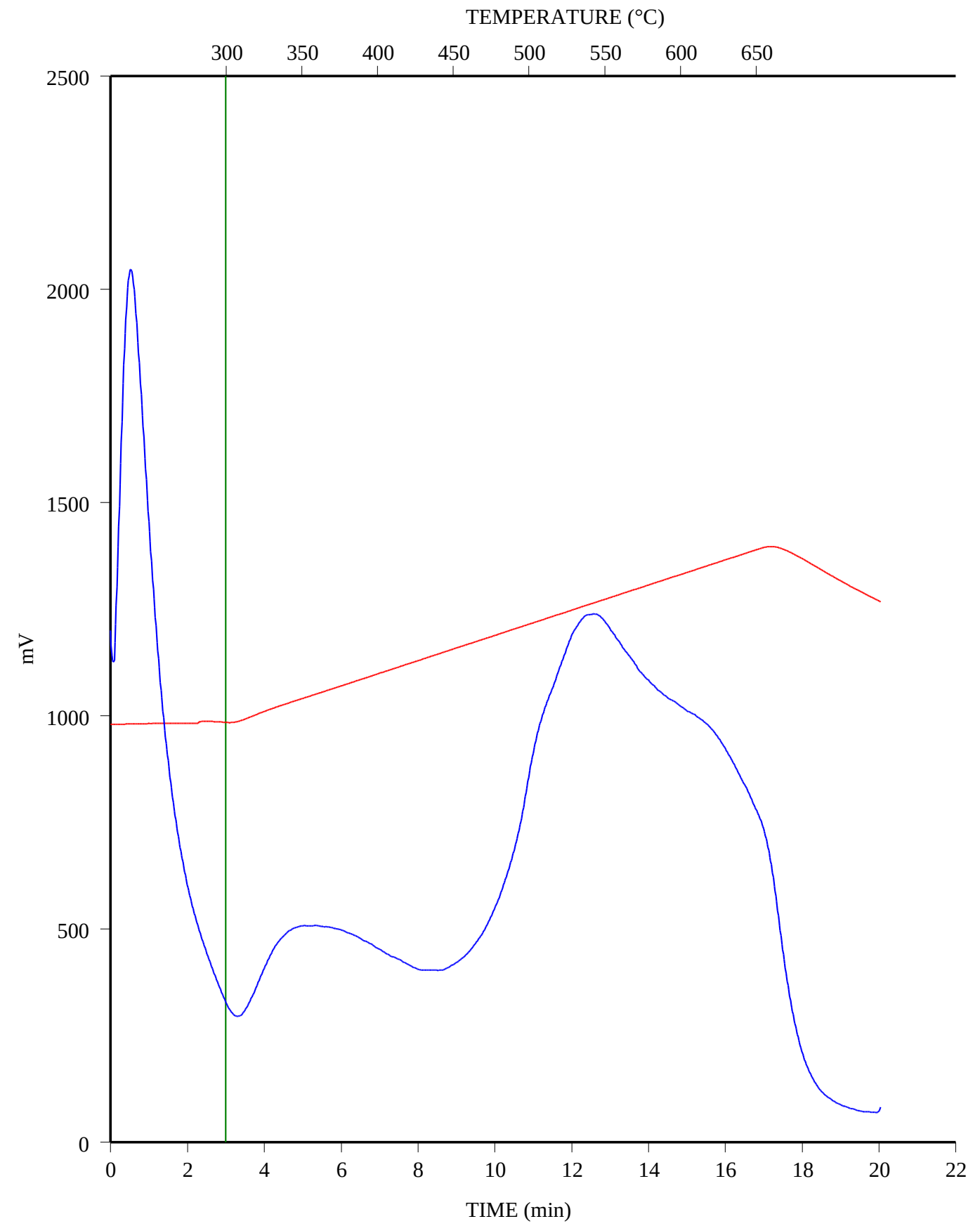
C-590363; AOSC GRIZZLY 1-24-61-23; 3704.55 m
FID Hydrocarbons



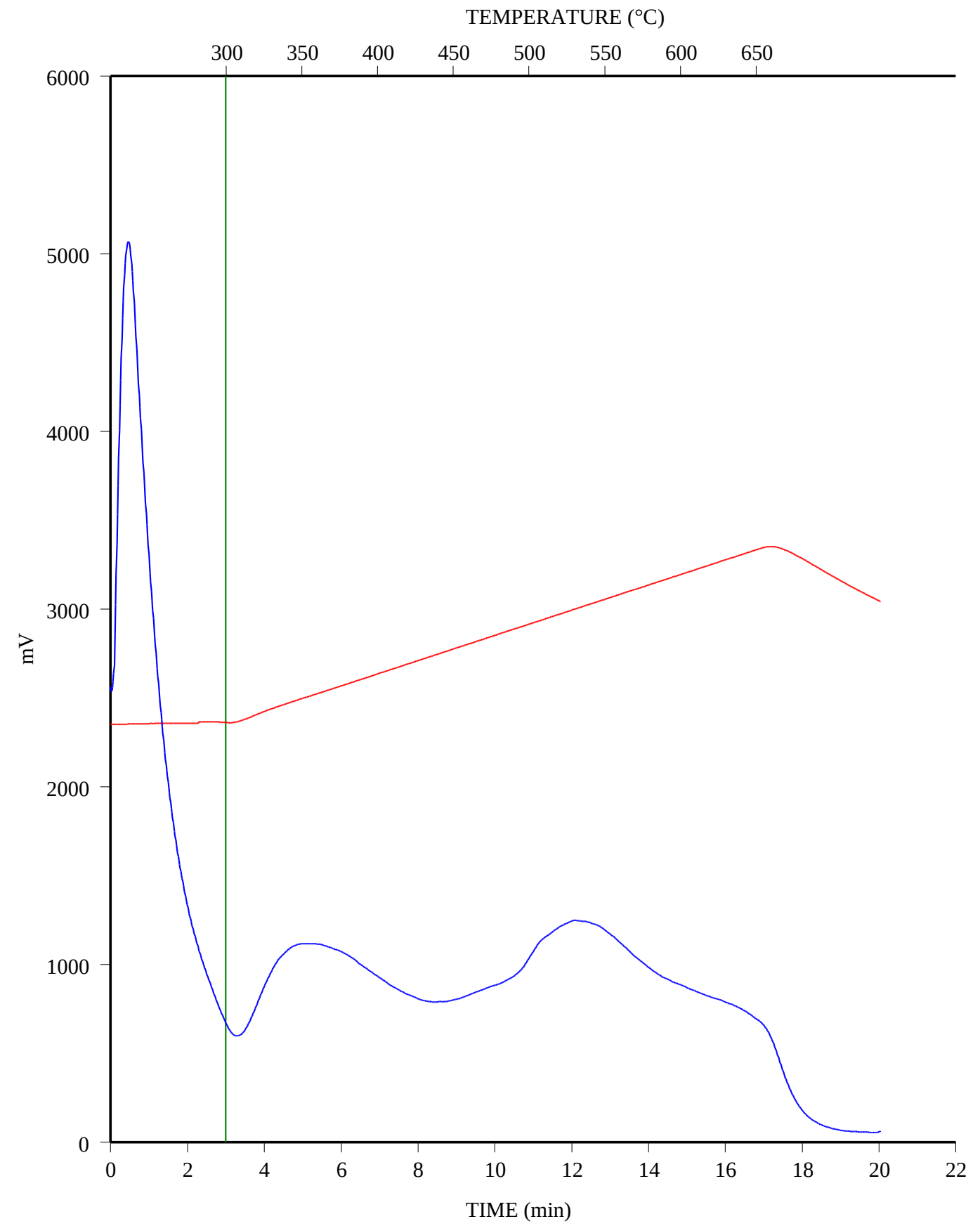
C-590364; PENN WEST PEMBINA 10-17-45-6; 2991.35 m
FID Hydrocarbons



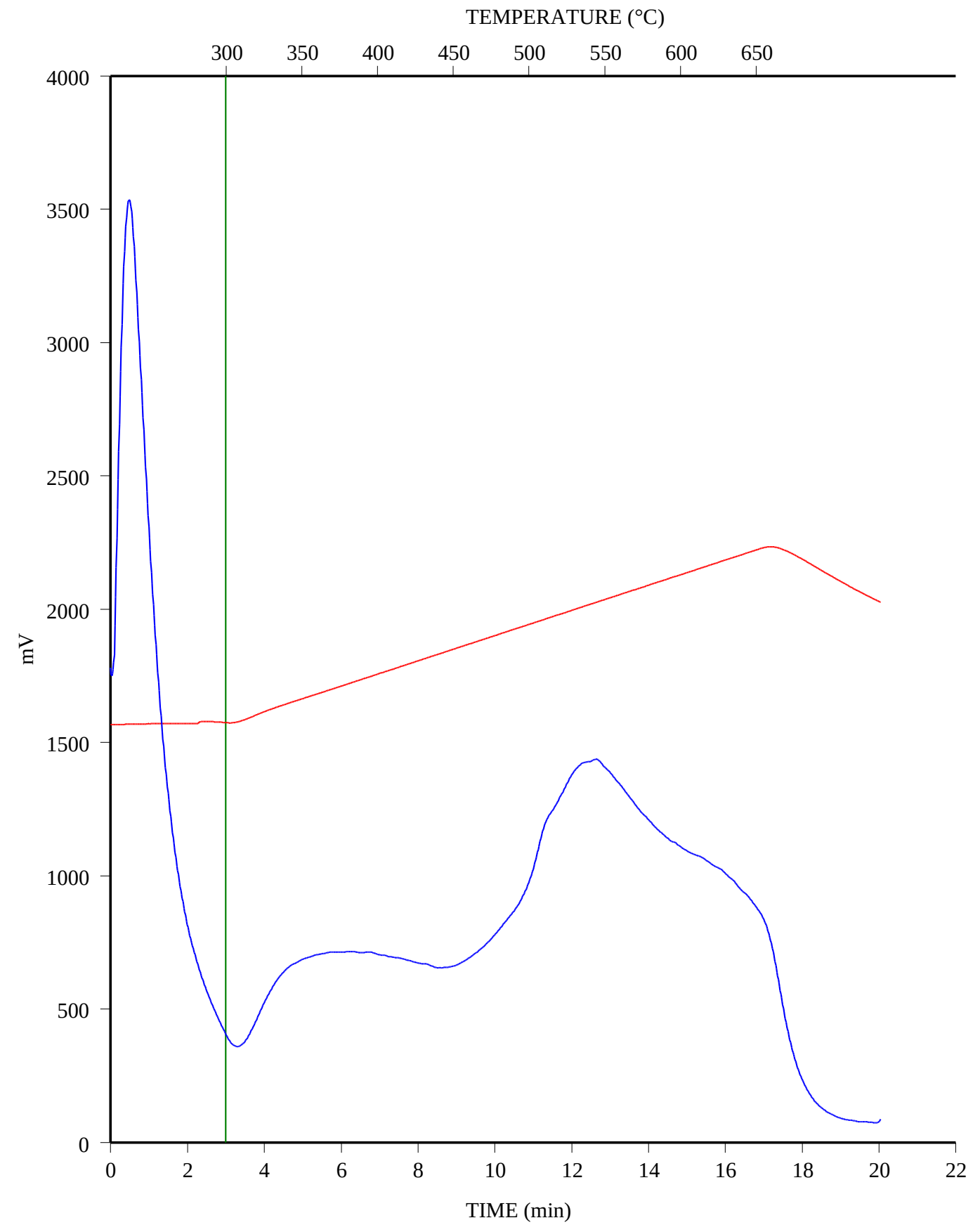
C-590365; AOSC GRIZZLY 1-24-61-23; 3706.35 m
FID Hydrocarbons



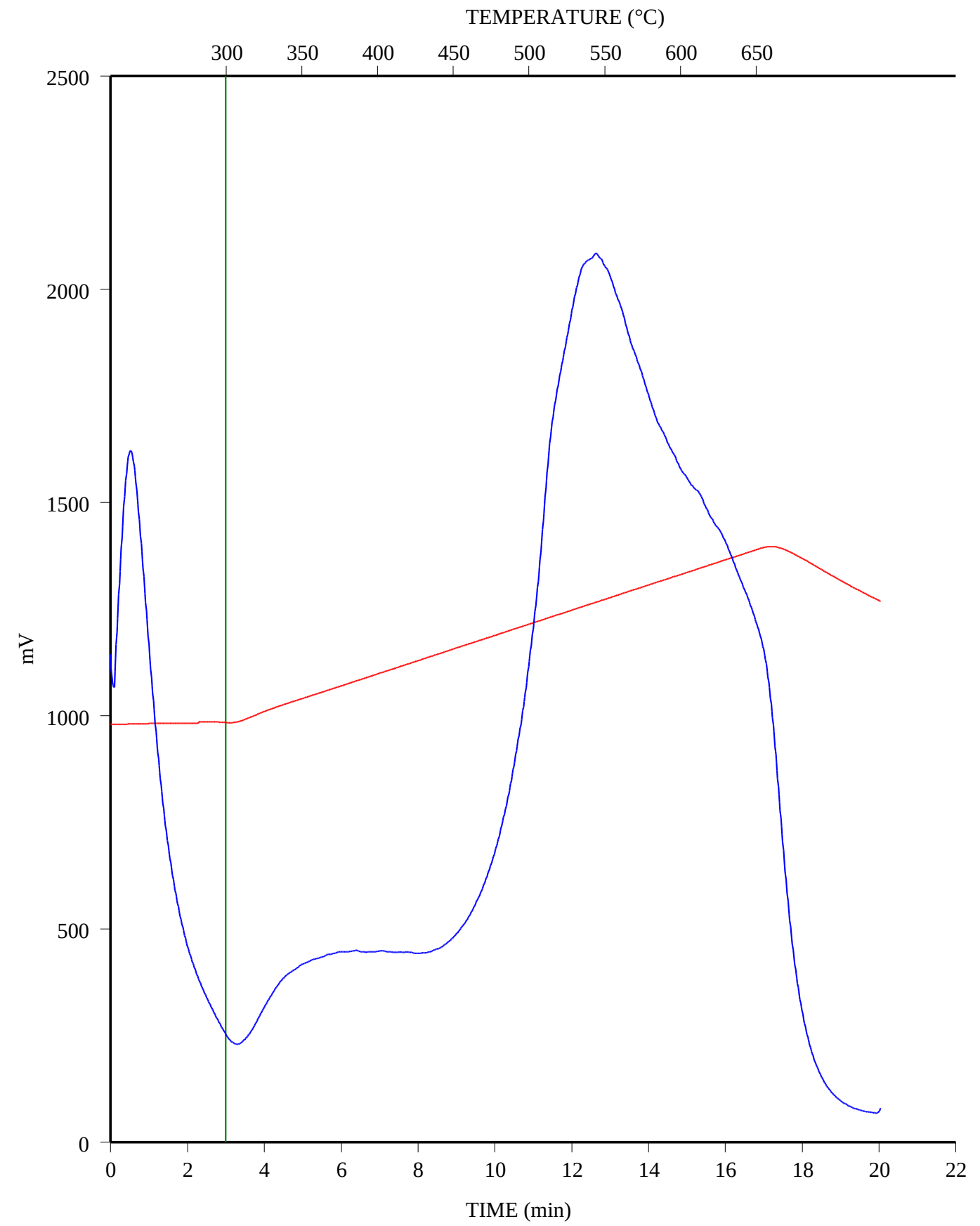
C-590366; AOSC GRIZZLY 1-24-61-23; 3708.4 m
FID Hydrocarbons



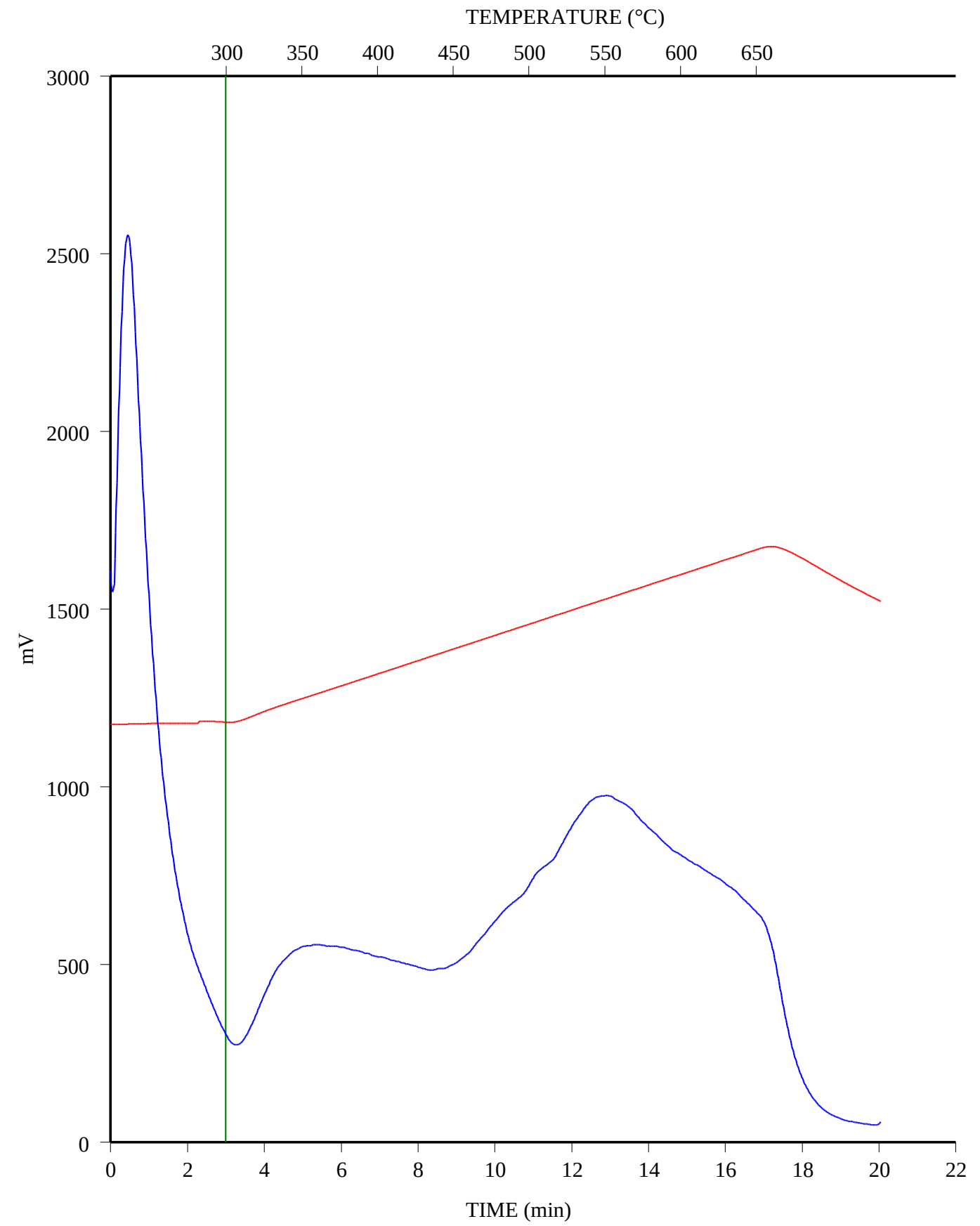
C-590367; AOSC GRIZZLY 1-24-61-23; 3709.85 m
FID Hydrocarbons



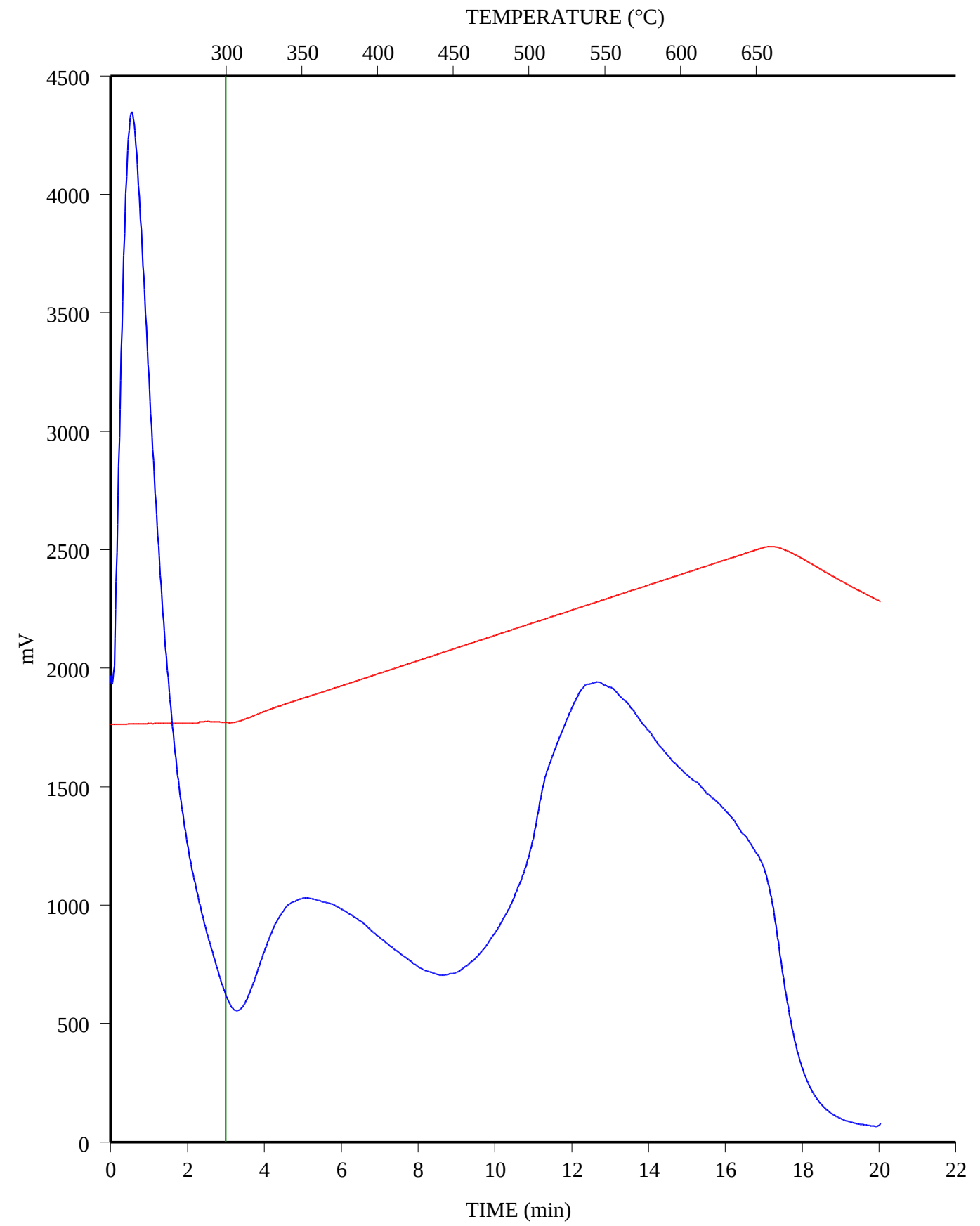
C-590368; AOSC GRIZZLY 1-24-61-23; 3710.65 m
FID Hydrocarbons



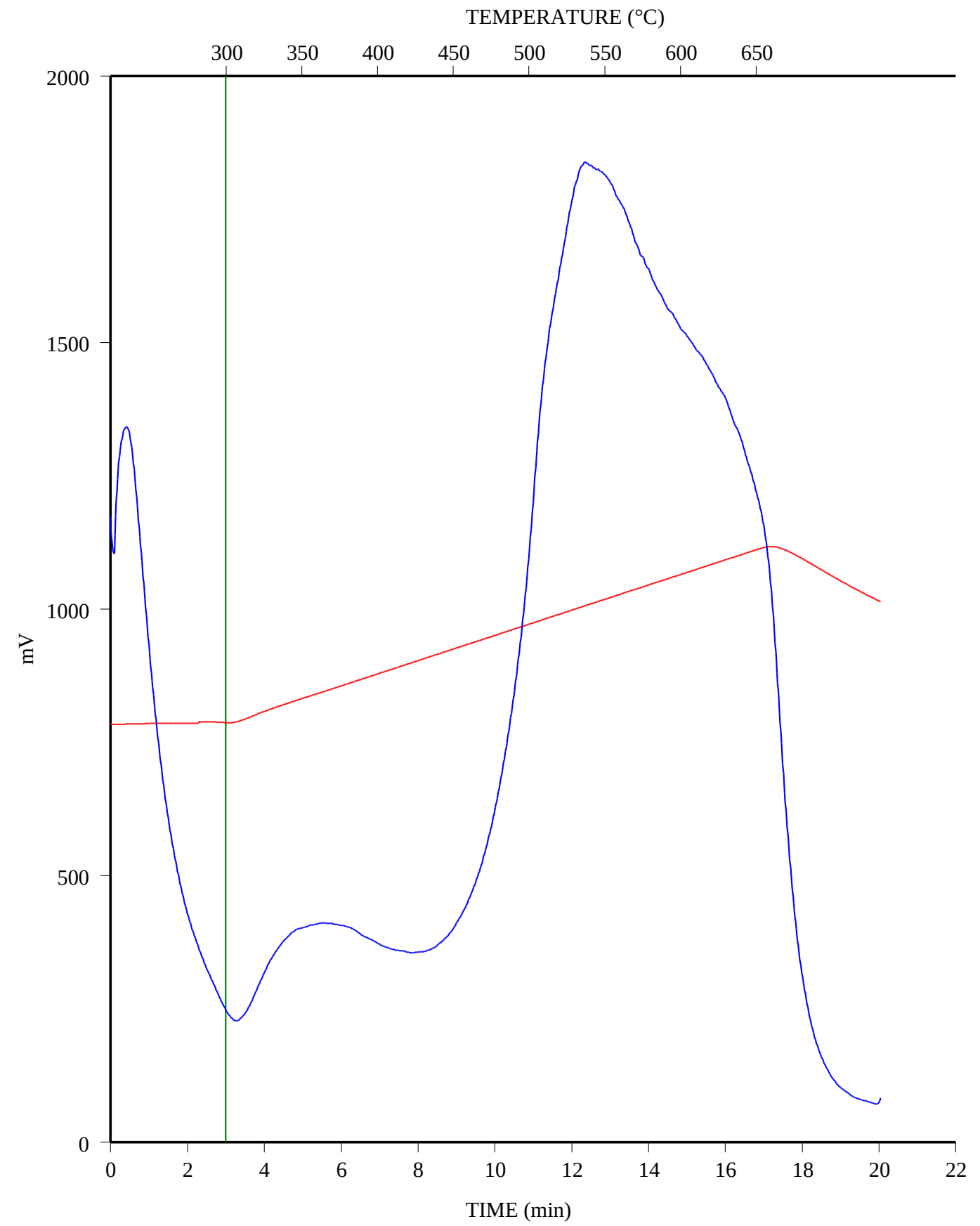
C-590369; AOSC GRIZZLY 1-24-61-23; 3711.4 m
FID Hydrocarbons



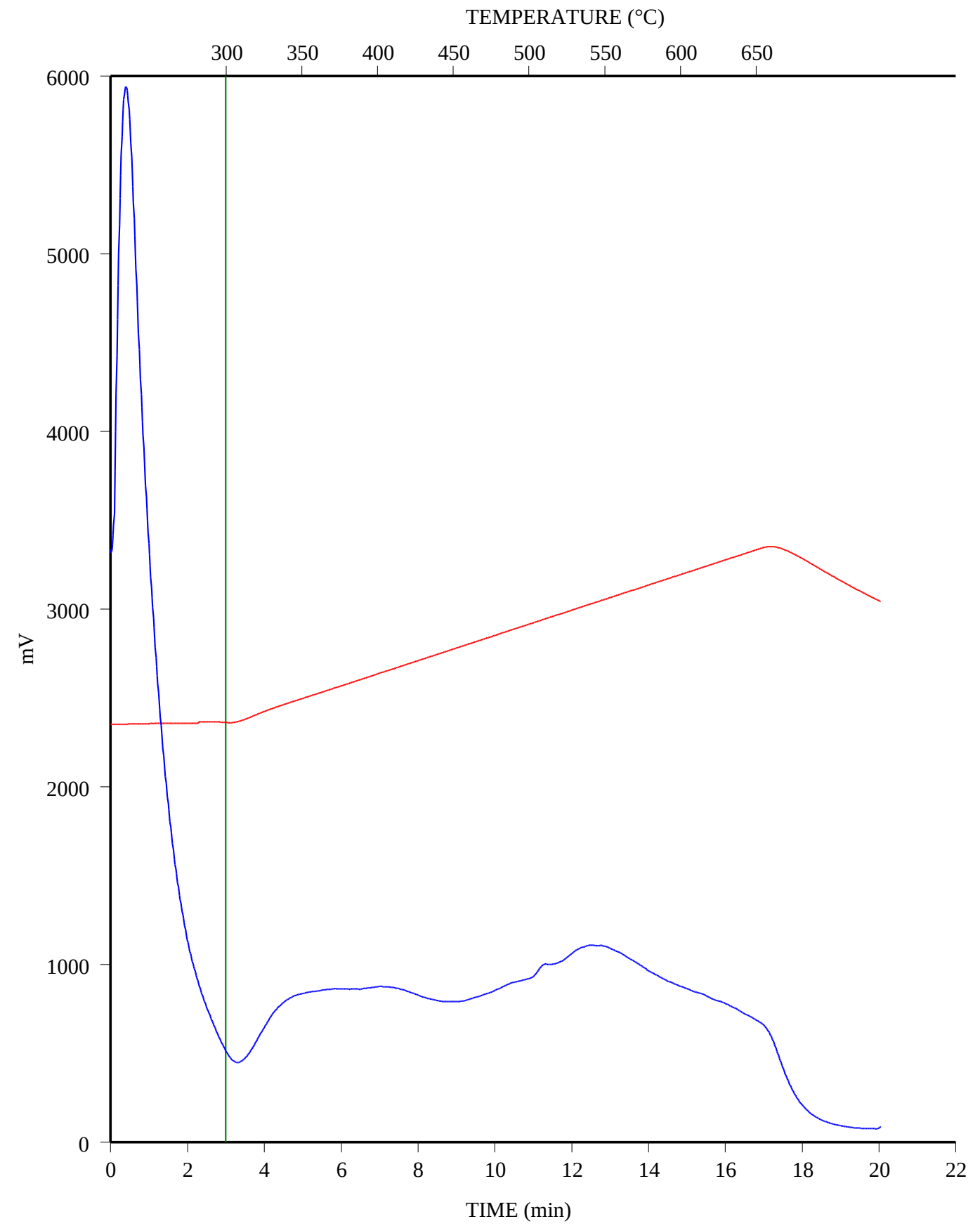
C-590370; AOSC GRIZZLY 1-24-61-23; 3711.9 m
FID Hydrocarbons



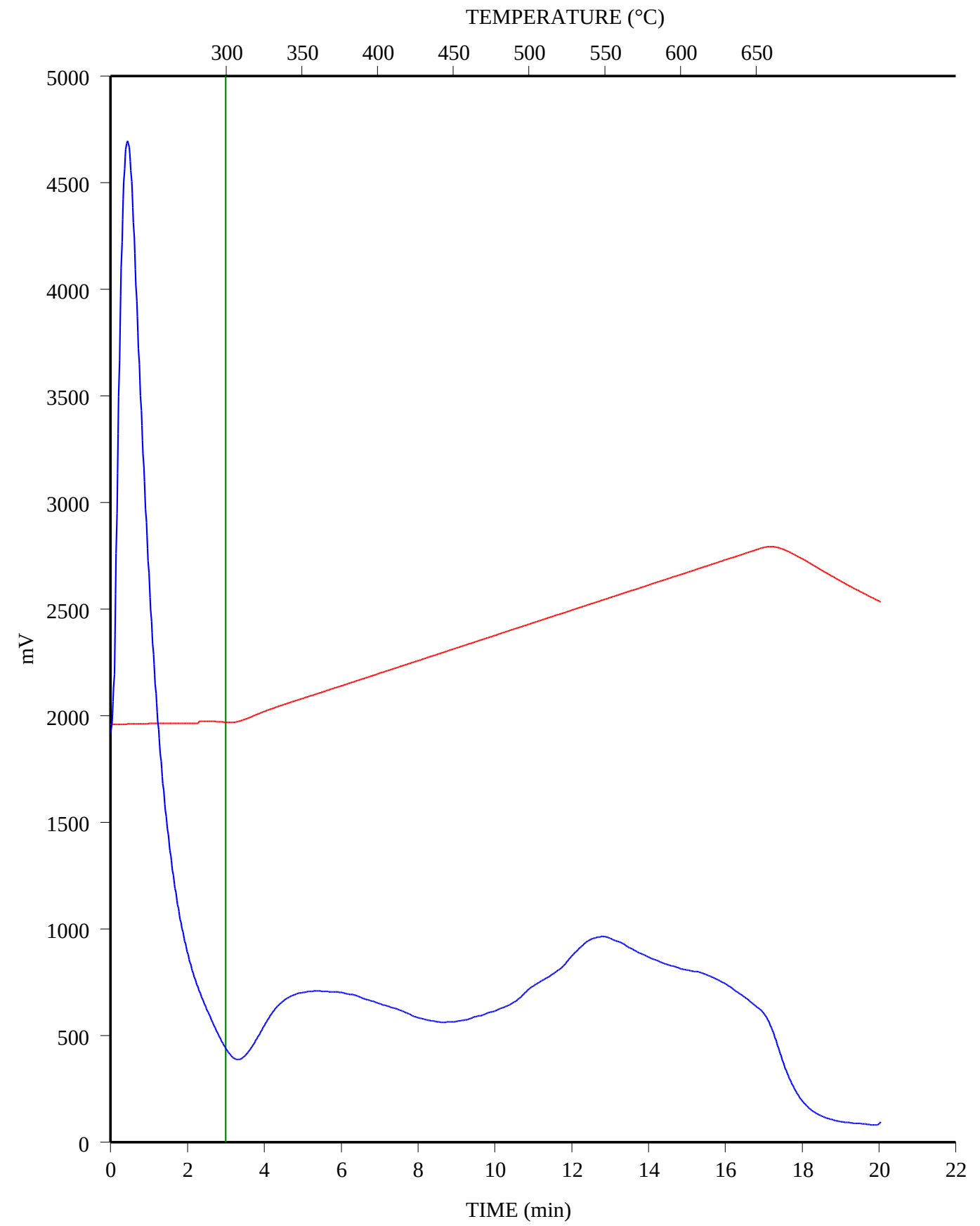
C-590371; AOSC GRIZZLY 1-24-61-23; 3712.8 m
FID Hydrocarbons



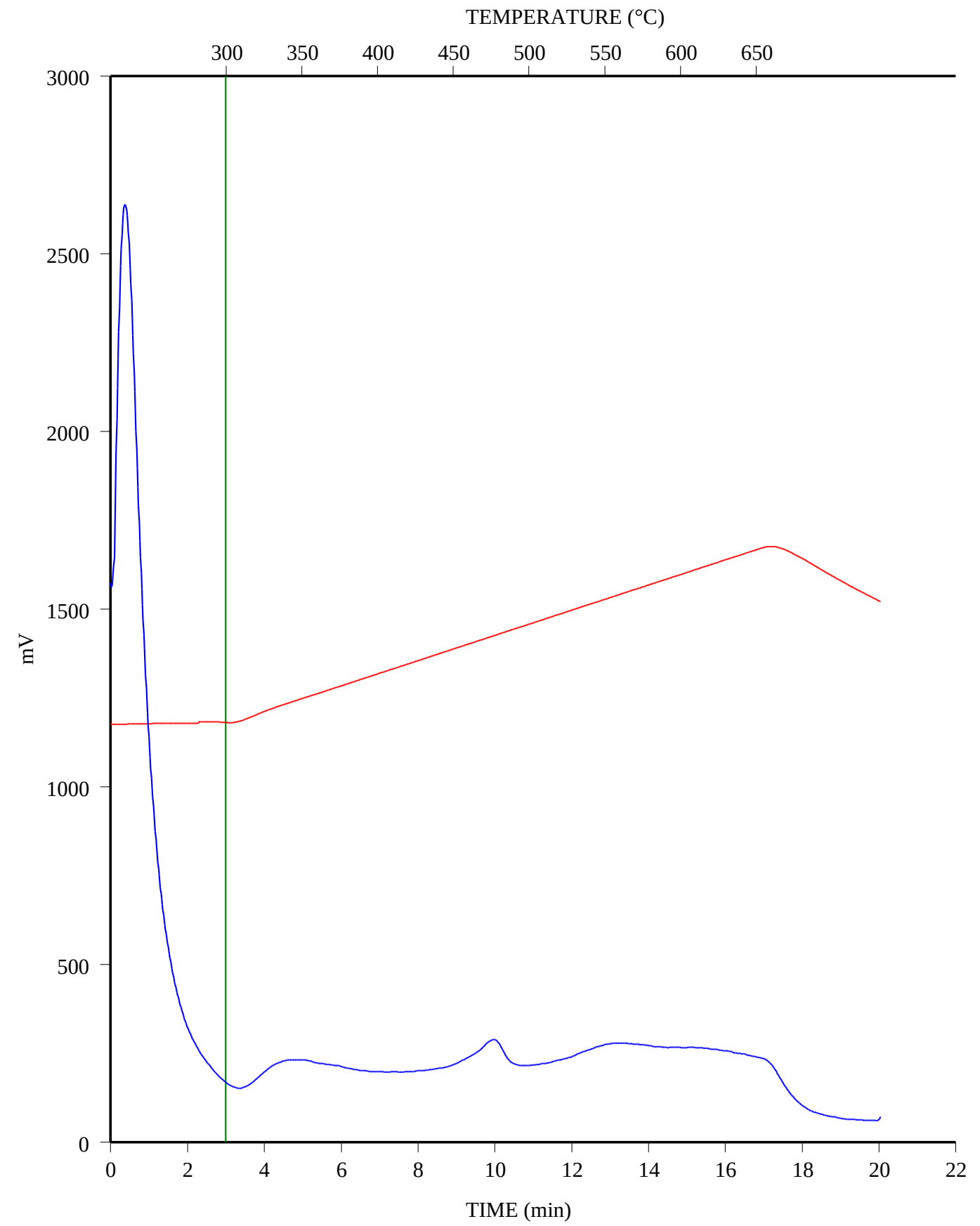
C-590372; AOSC GRIZZLY 1-24-61-23; 3713.8 m
FID Hydrocarbons



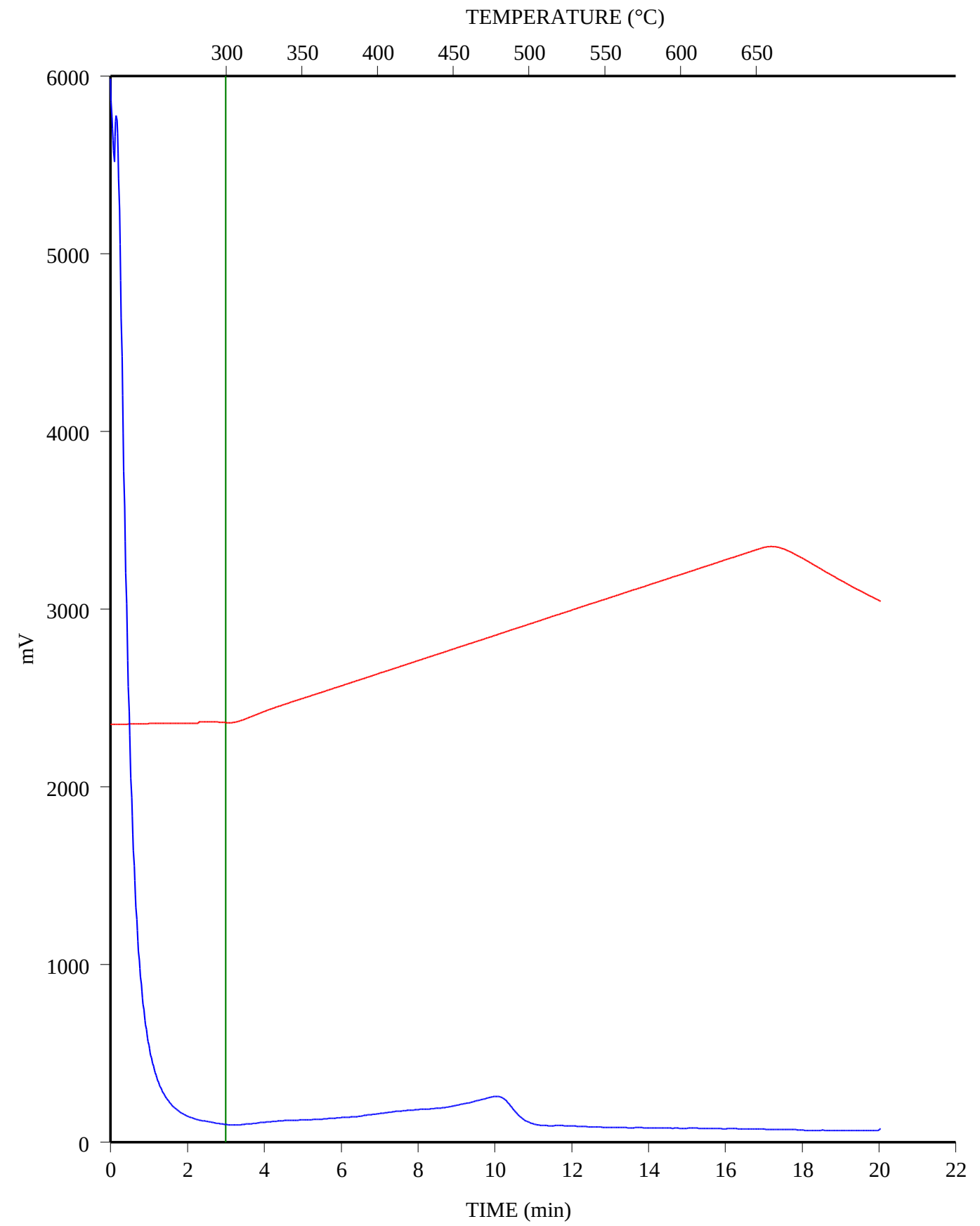
C-590373; AOSC GRIZZLY 1-24-61-23; 3714.8 m
FID Hydrocarbons



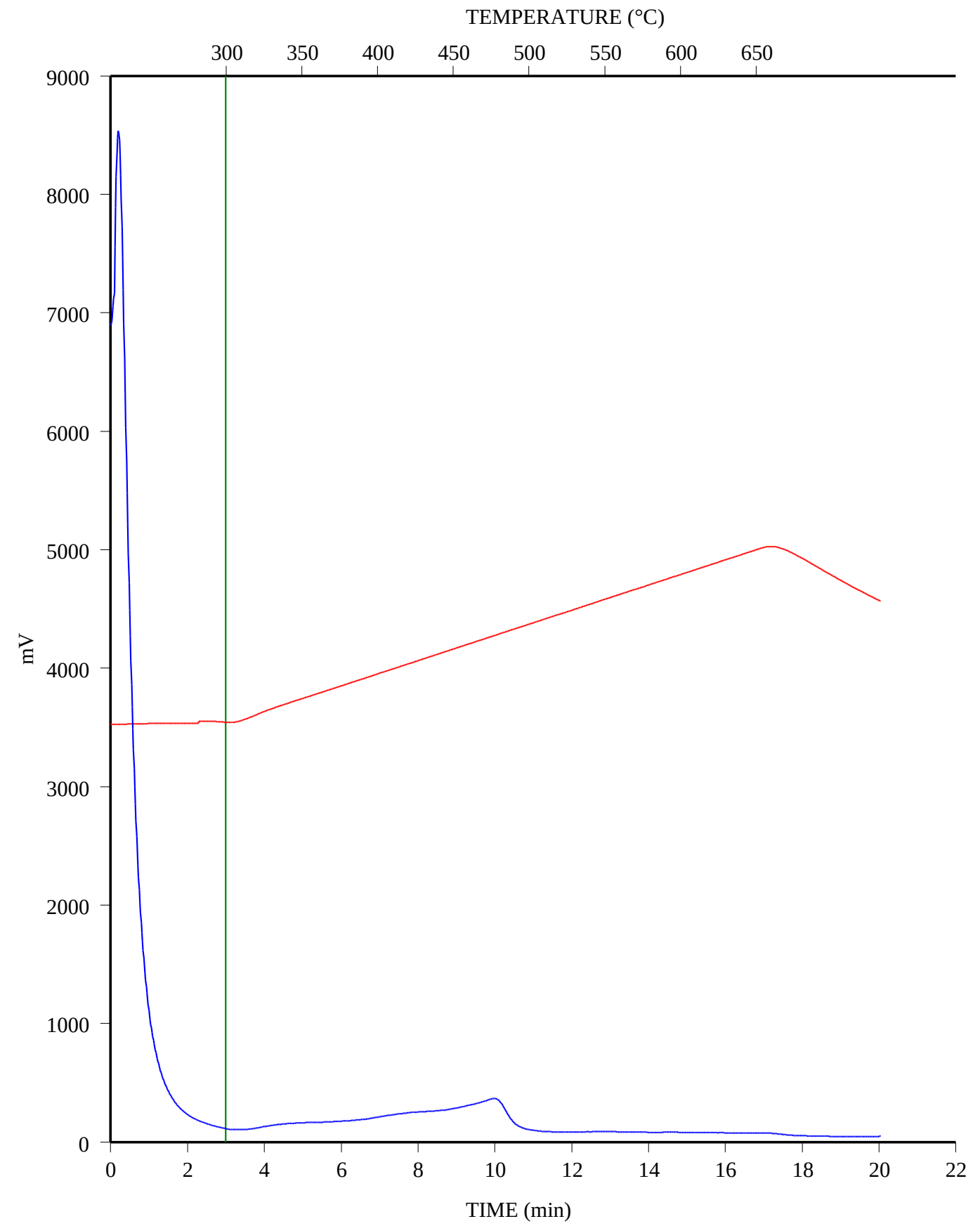
C-590374; AOSC GRIZZLY 1-24-61-23; 3716.1 m
FID Hydrocarbons



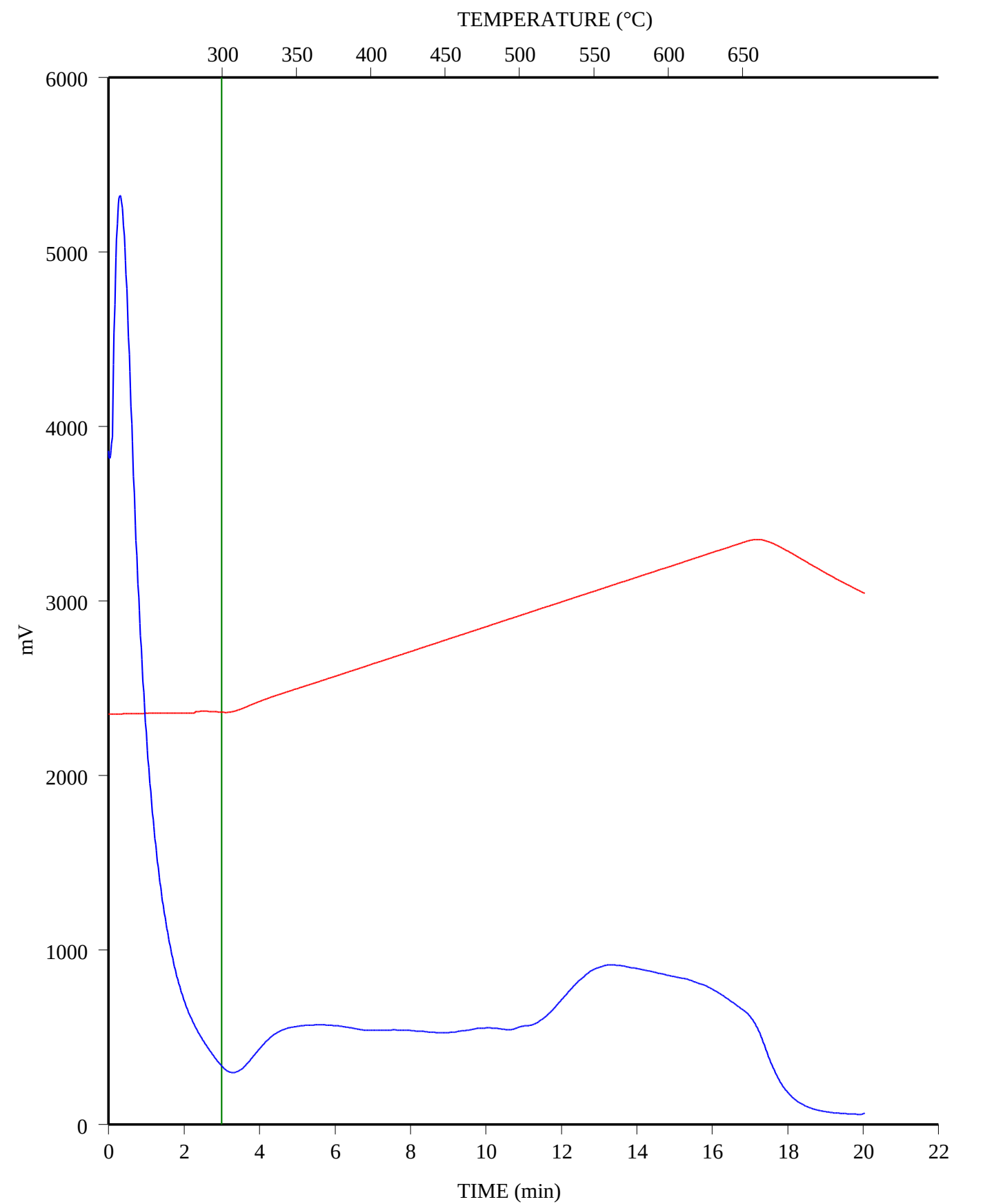
C-590375; AOSC GRIZZLY 1-24-61-23; 3718.6 m
FID Hydrocarbons



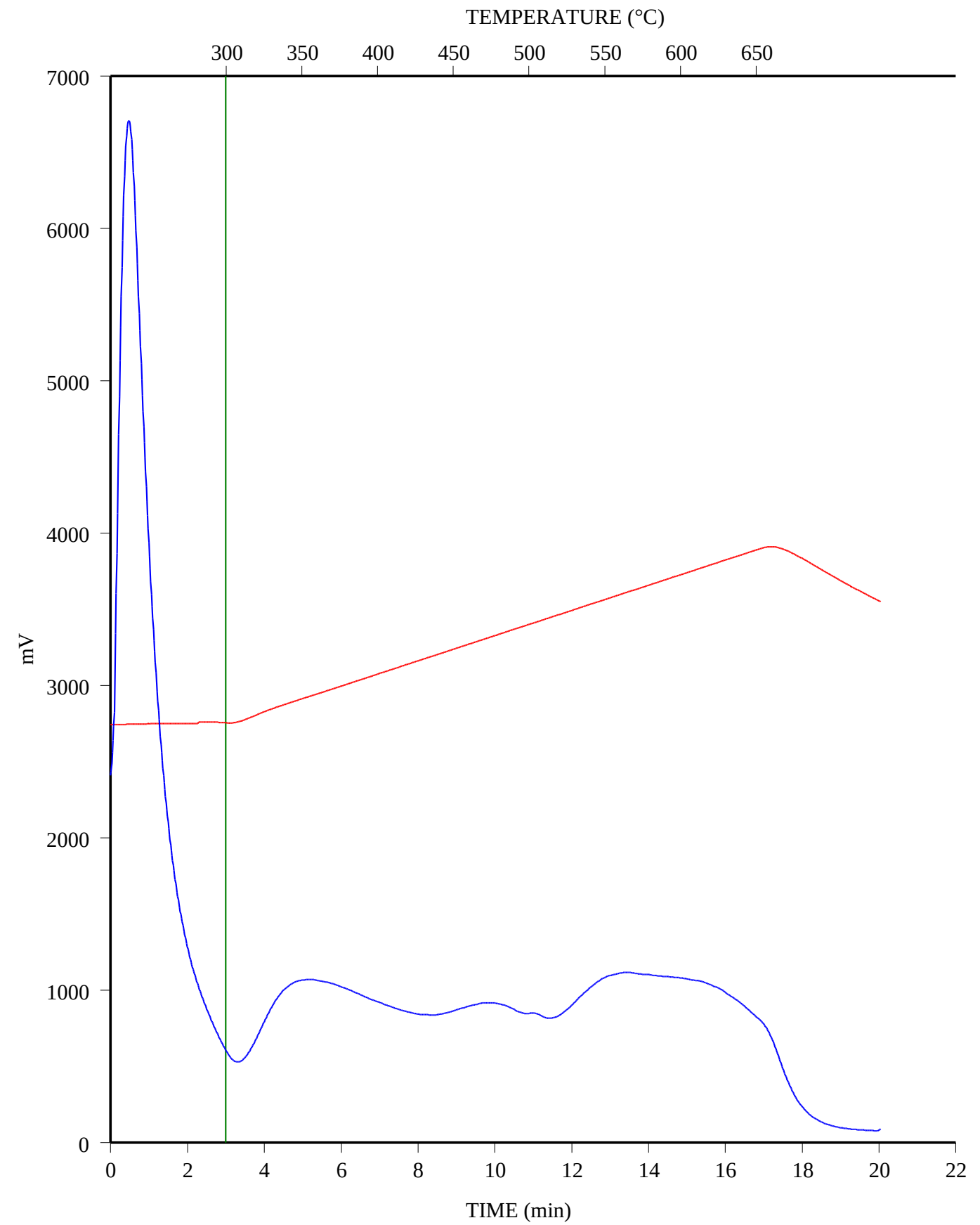
C-590376; AOSC GRIZZLY 1-24-61-23; 3723.3 m
FID Hydrocarbons



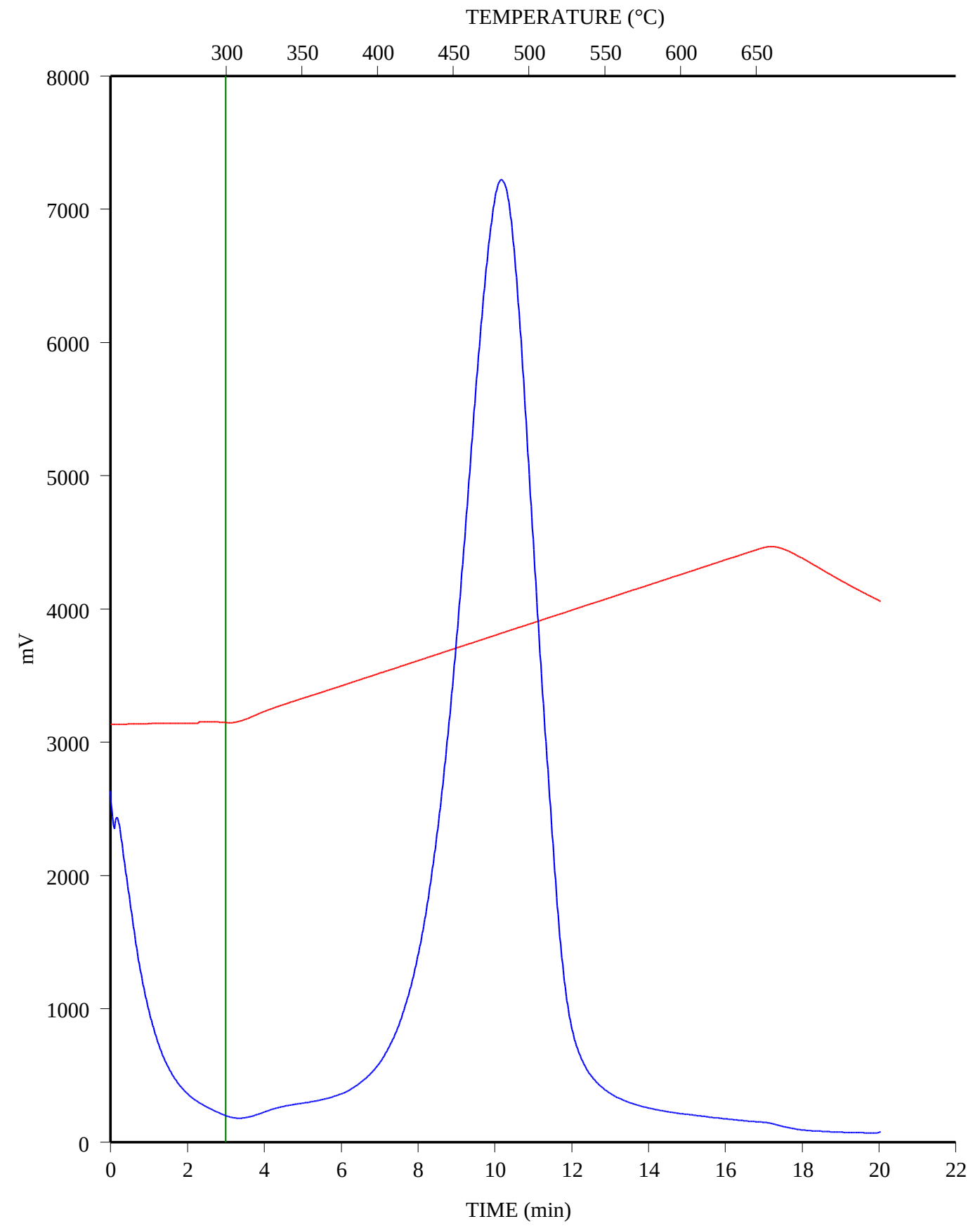
C-590377; AOSC GRIZZLY 1-24-61-23; 3723.6 m
FID Hydrocarbons



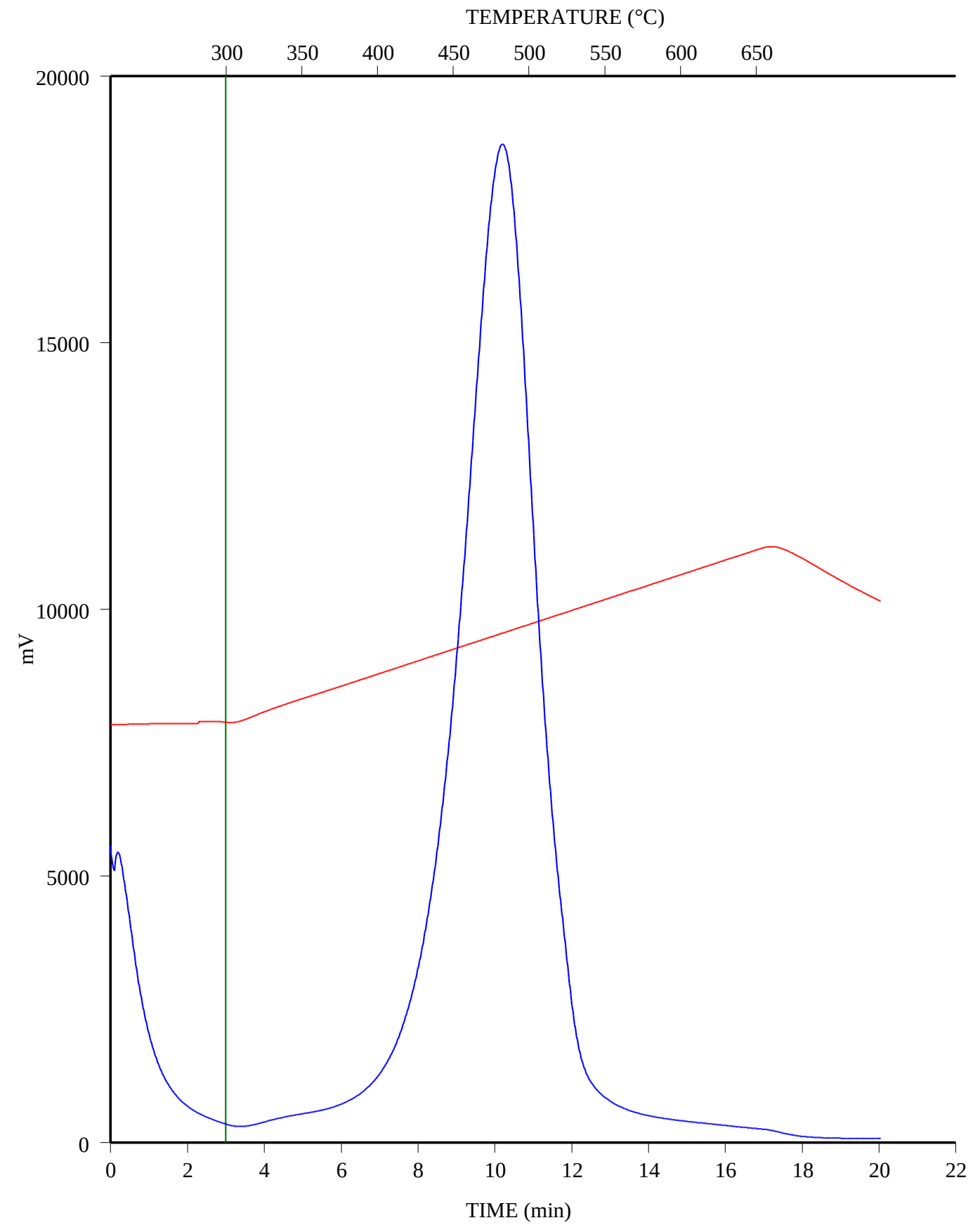
C-590378; AOSC GRIZZLY 1-24-61-23; 3725.05 m
FID Hydrocarbons



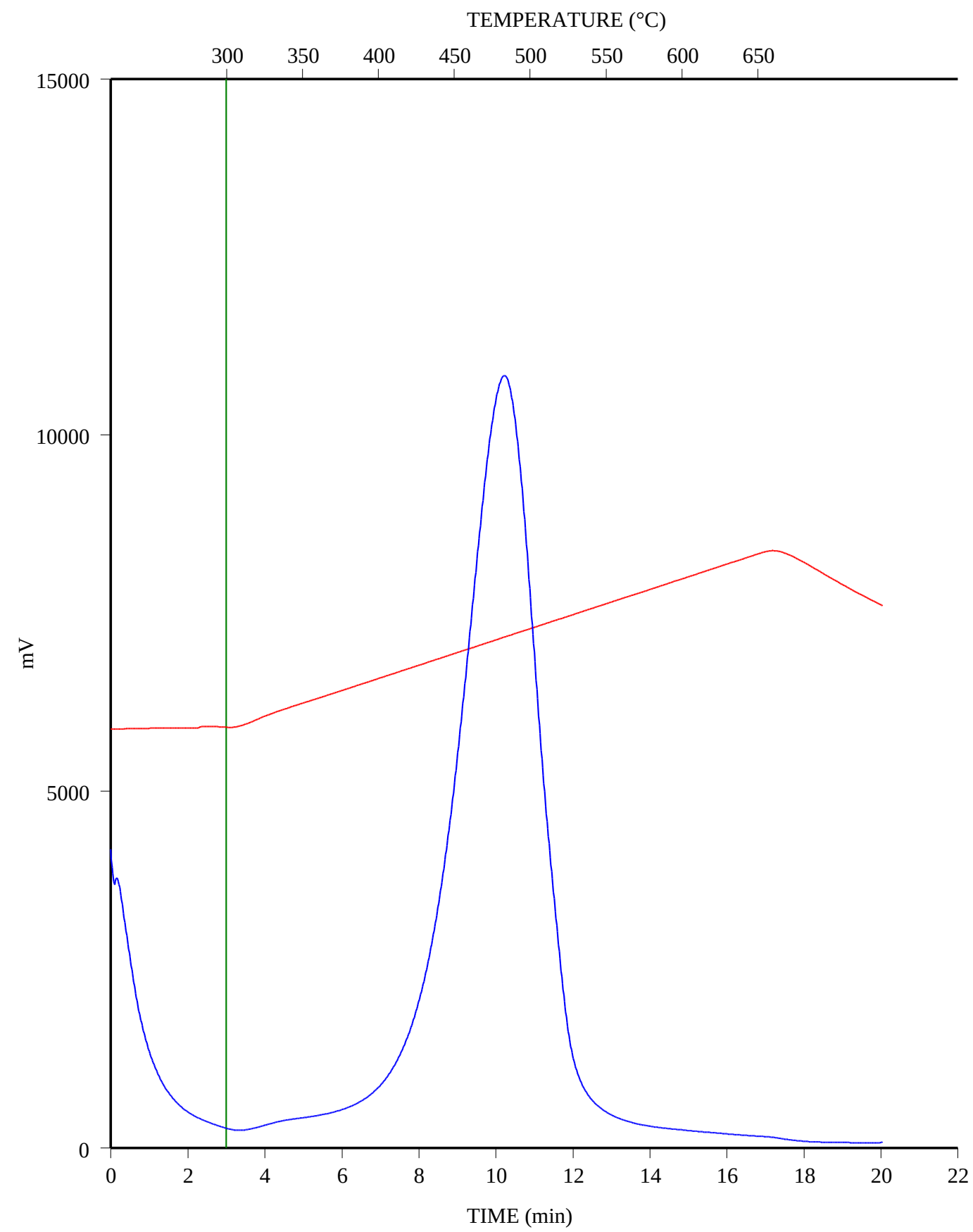
C-590379; LONG RUN DD GVILLEE 4-34-77-23; 2399.25 m
FID Hydrocarbons



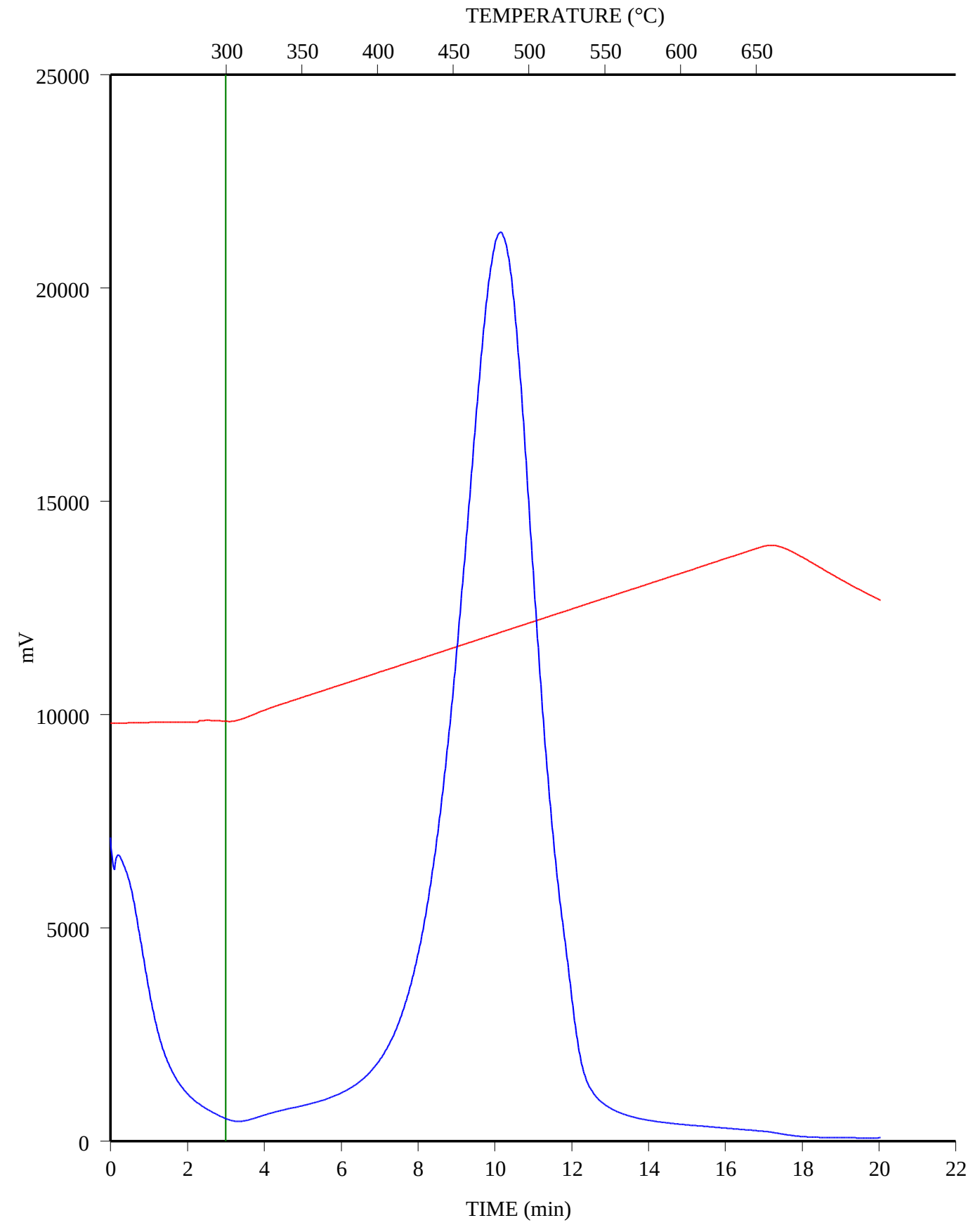
C-590380; LONG RUN DD GVILLEE 4-34-77-23; 2400.3 m
FID Hydrocarbons



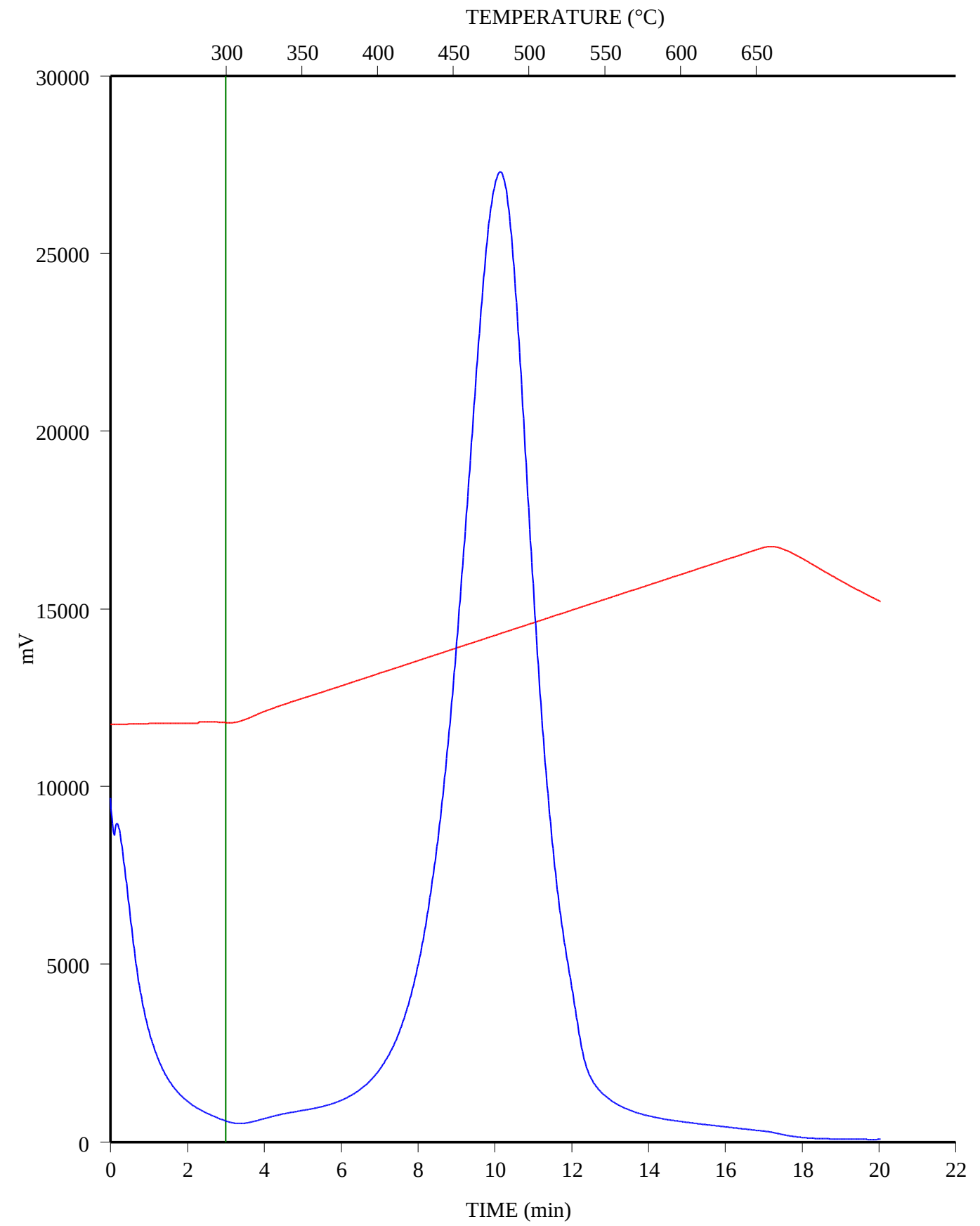
C-590381; LONG RUN DD GVILLEE 4-34-77-23; 2401.65 m
FID Hydrocarbons



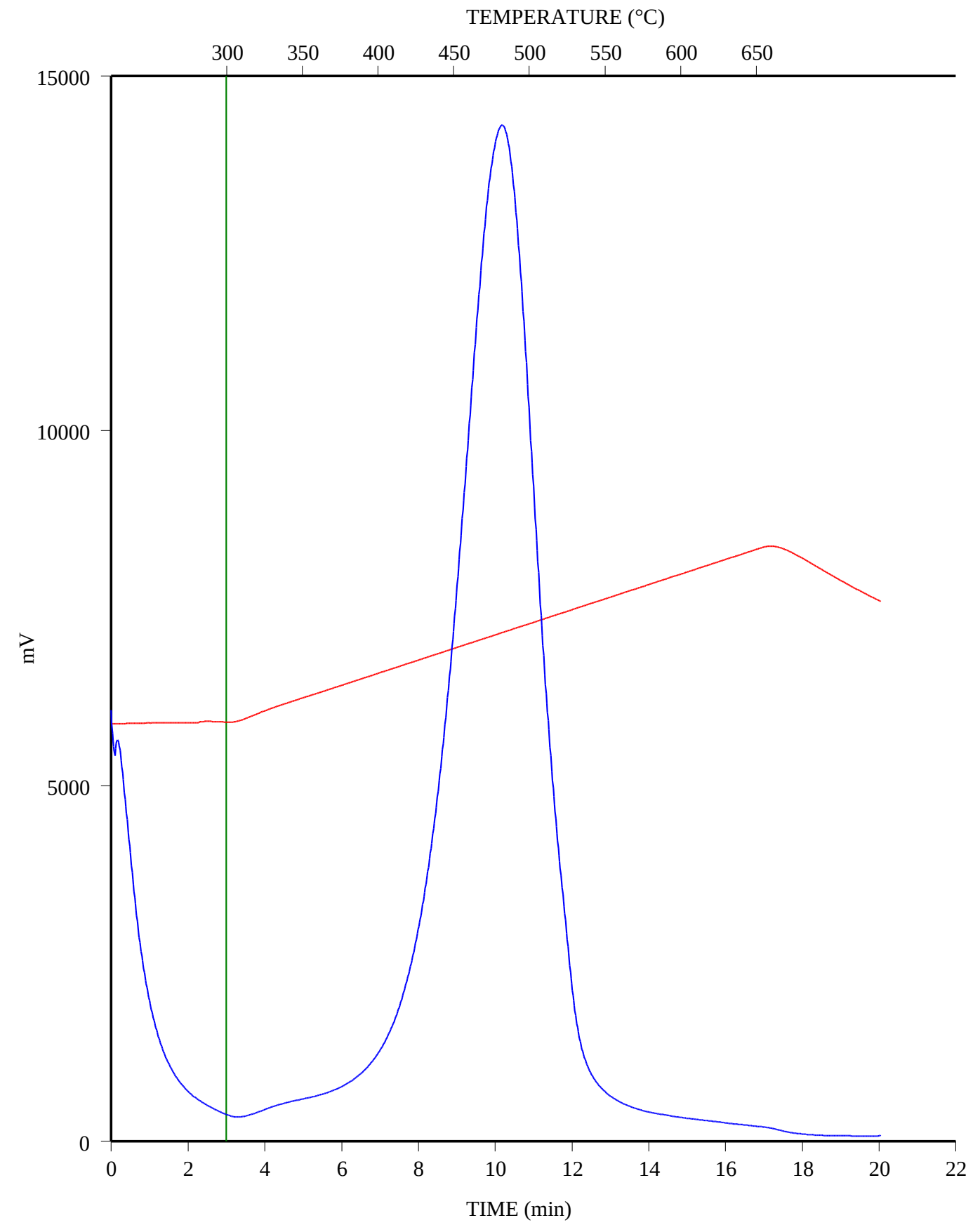
C-590382; LONG RUN DD GVILLEE 4-34-77-23; 2402.6 m
FID Hydrocarbons



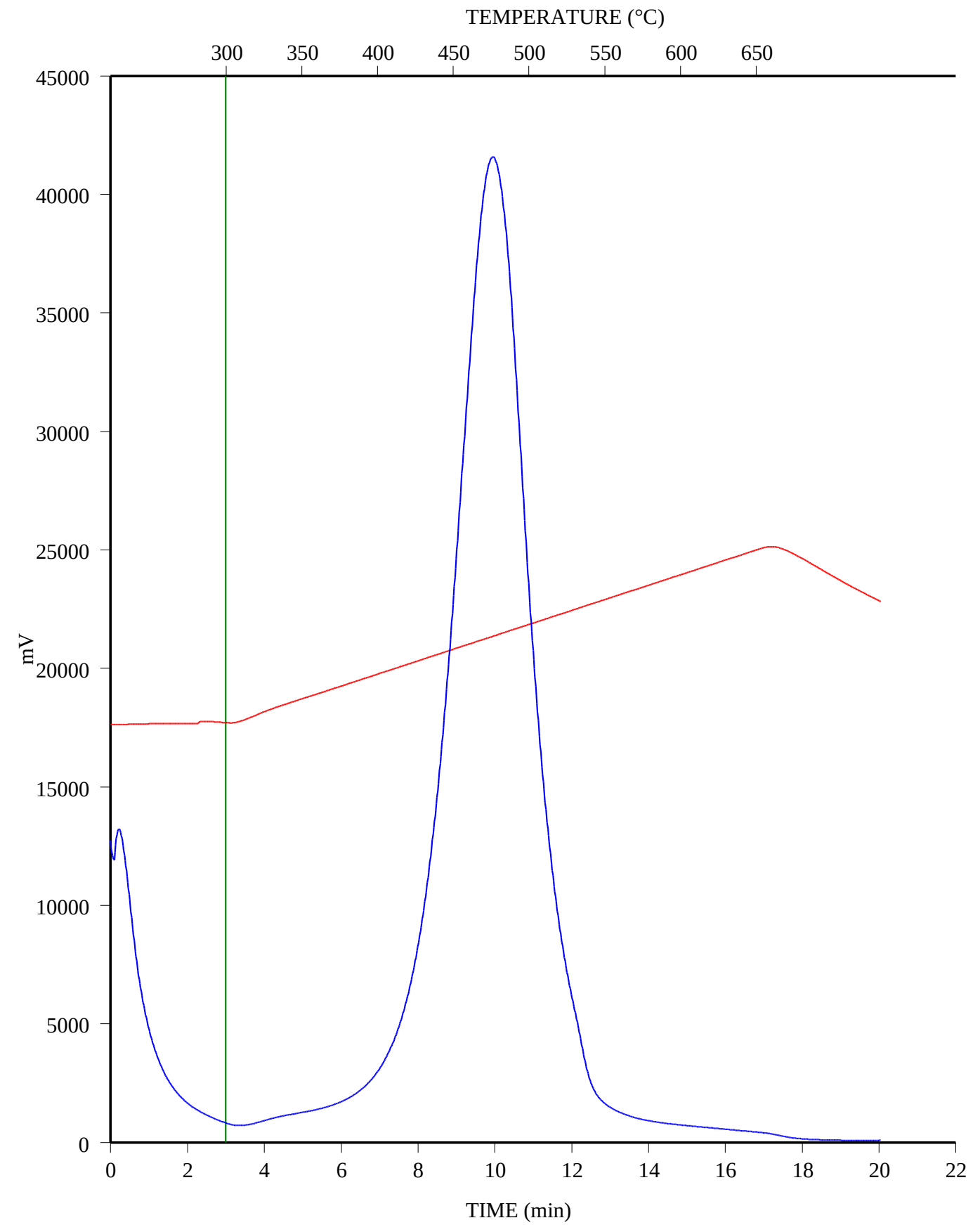
C-590383; LONG RUN DD GVILLEE 4-34-77-23; 2403.45 m
FID Hydrocarbons



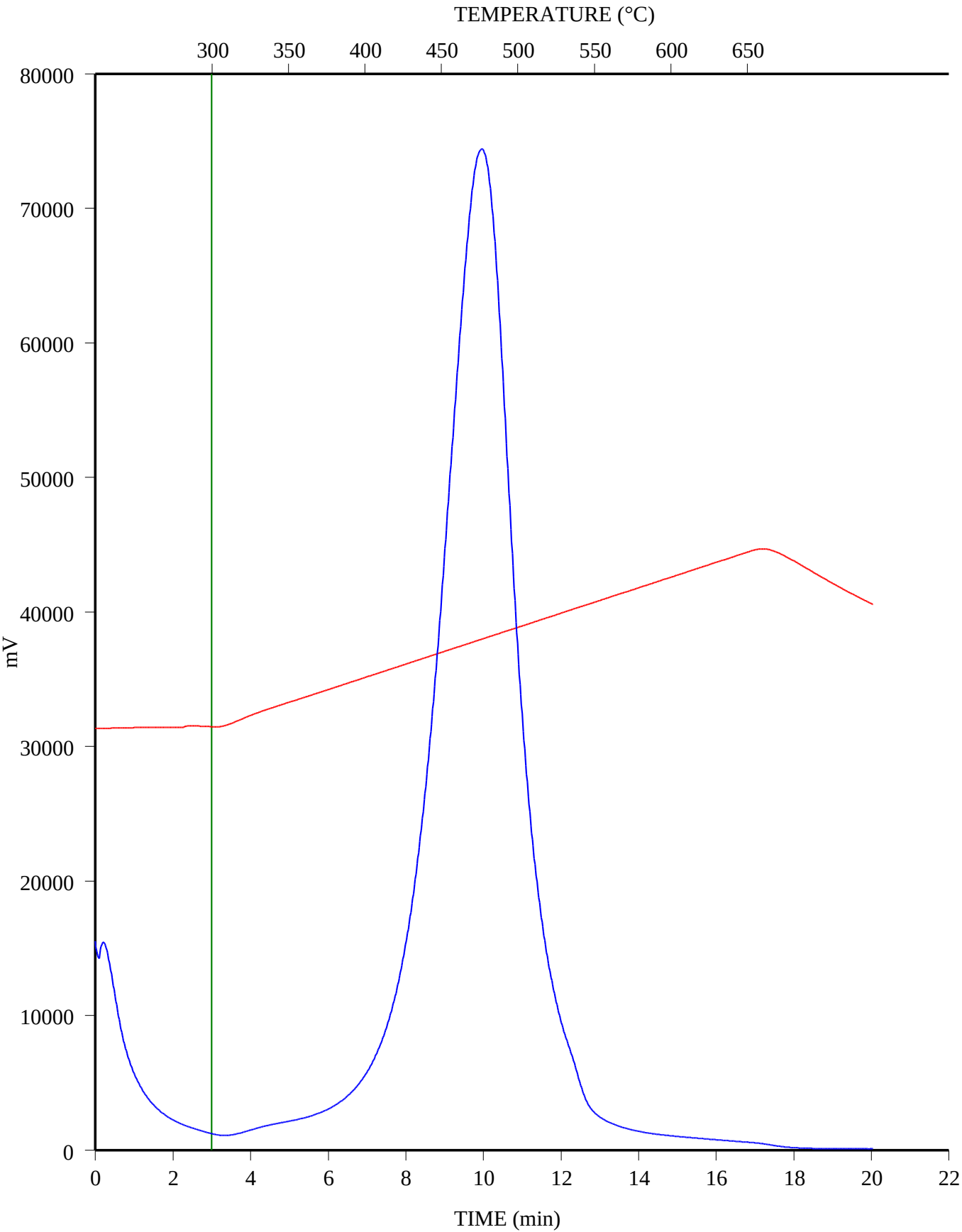
C-590384; LONG RUN DD GVILLEE 4-34-77-23; 2404.25 m
FID Hydrocarbons



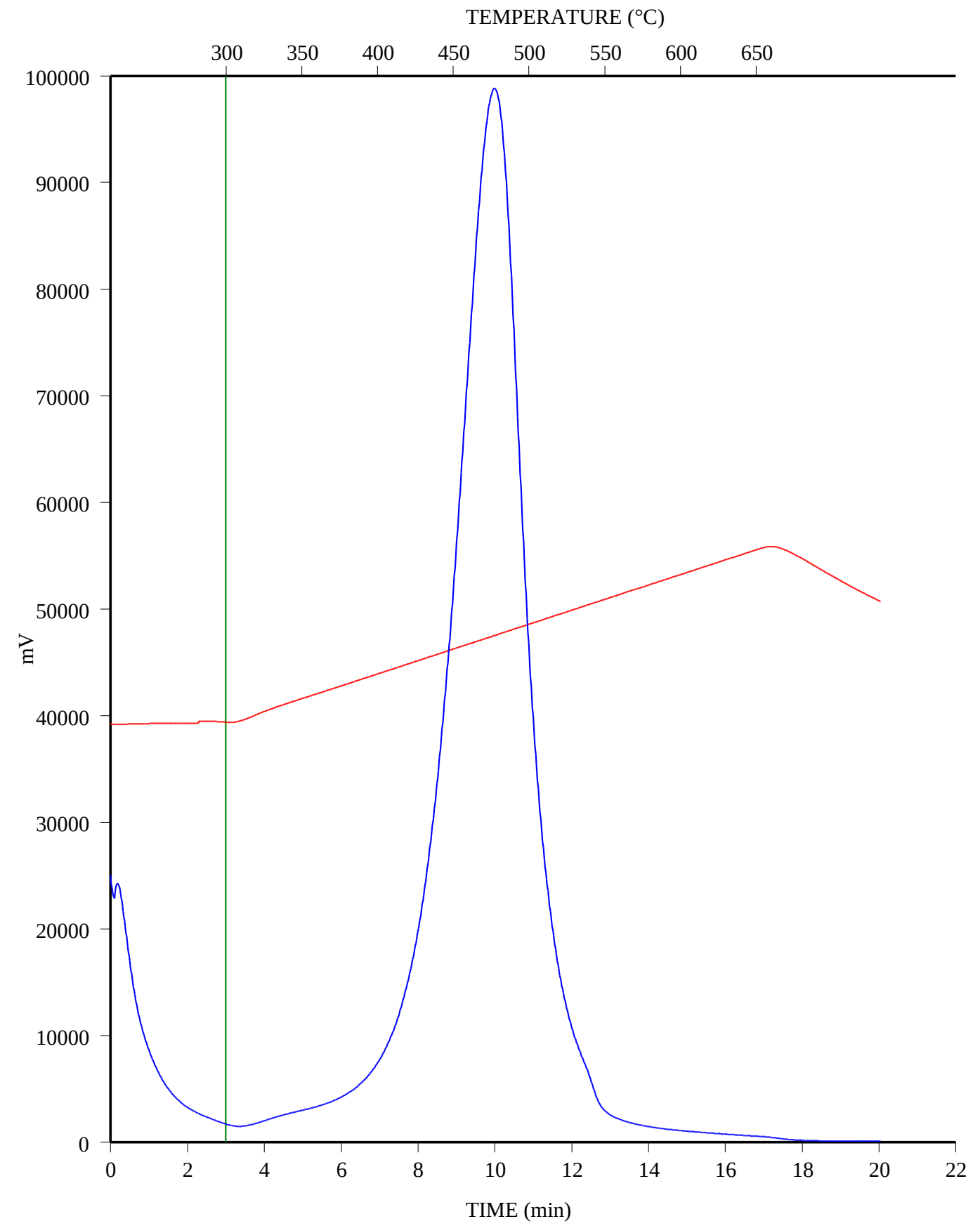
C-590385; LONG RUN DD GVILLEE 4-34-77-23; 2405.3 m
FID Hydrocarbons



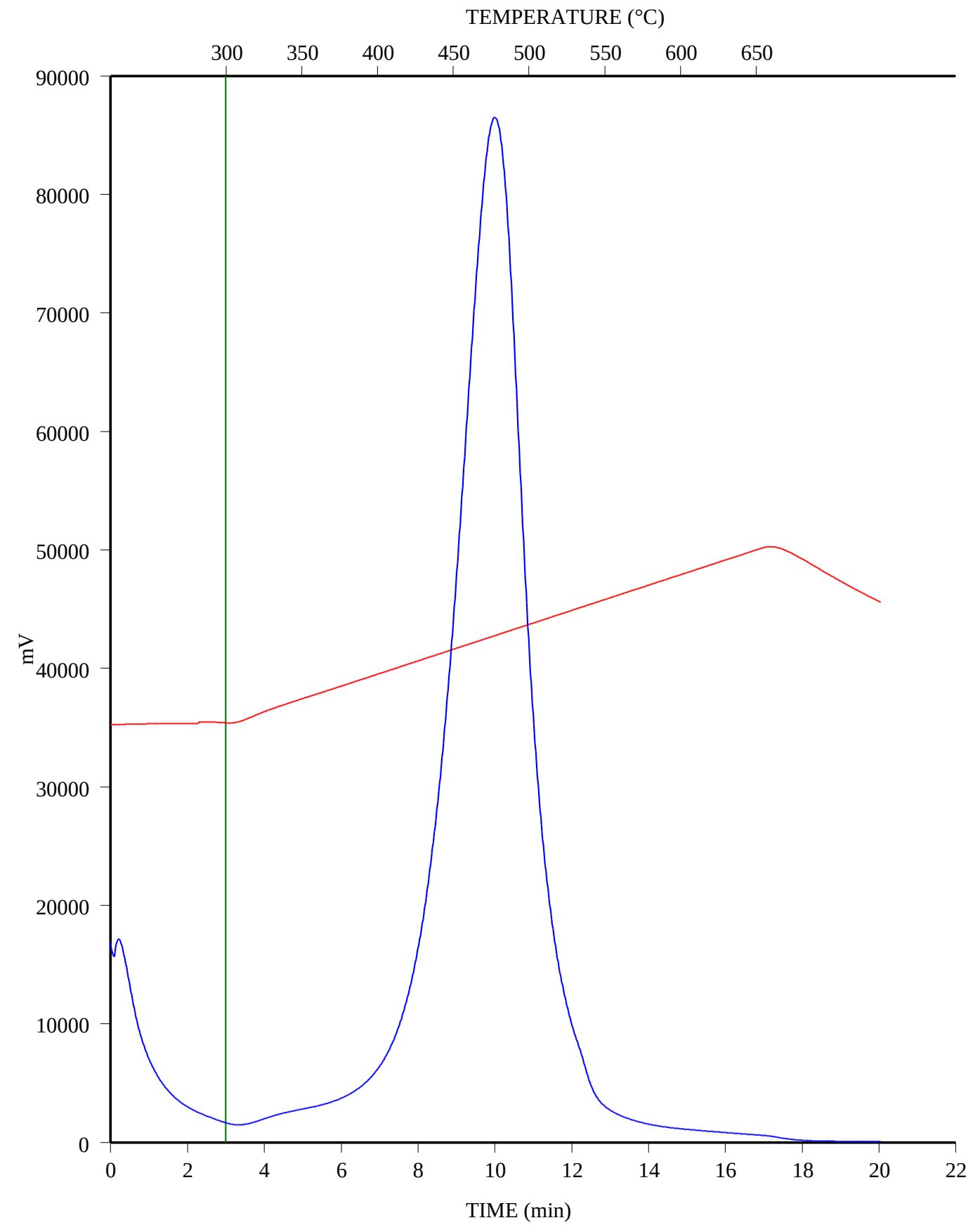
C-590386; LONG RUN DD GVILLEE 4-34-77-23; 2406.2 m
FID Hydrocarbons



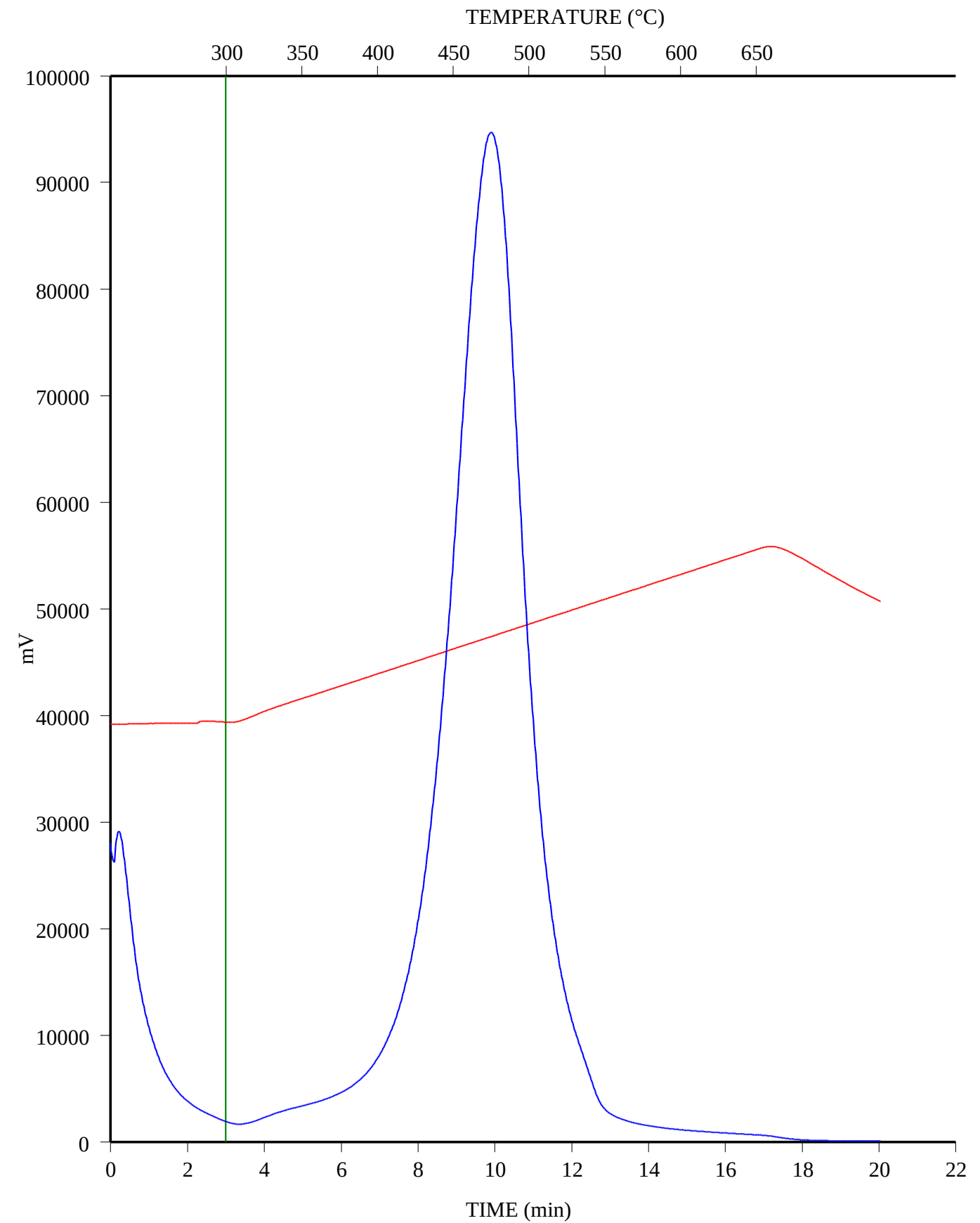
C-590387; LONG RUN DD GVILLEE 4-34-77-23; 2407.25 m
FID Hydrocarbons



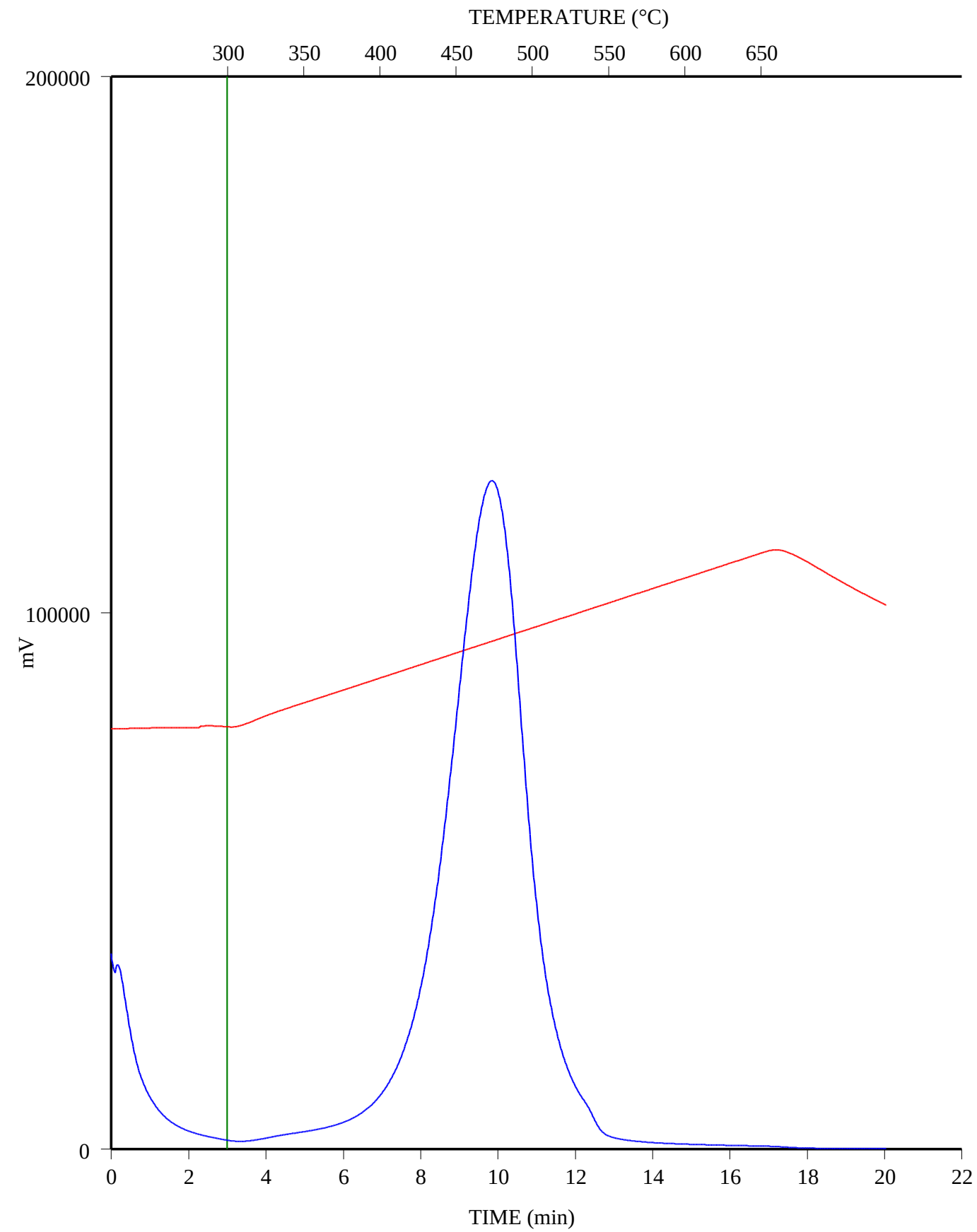
C-590388; LONG RUN DD GVILLEE 4-34-77-23; 2408.3 m
FID Hydrocarbons



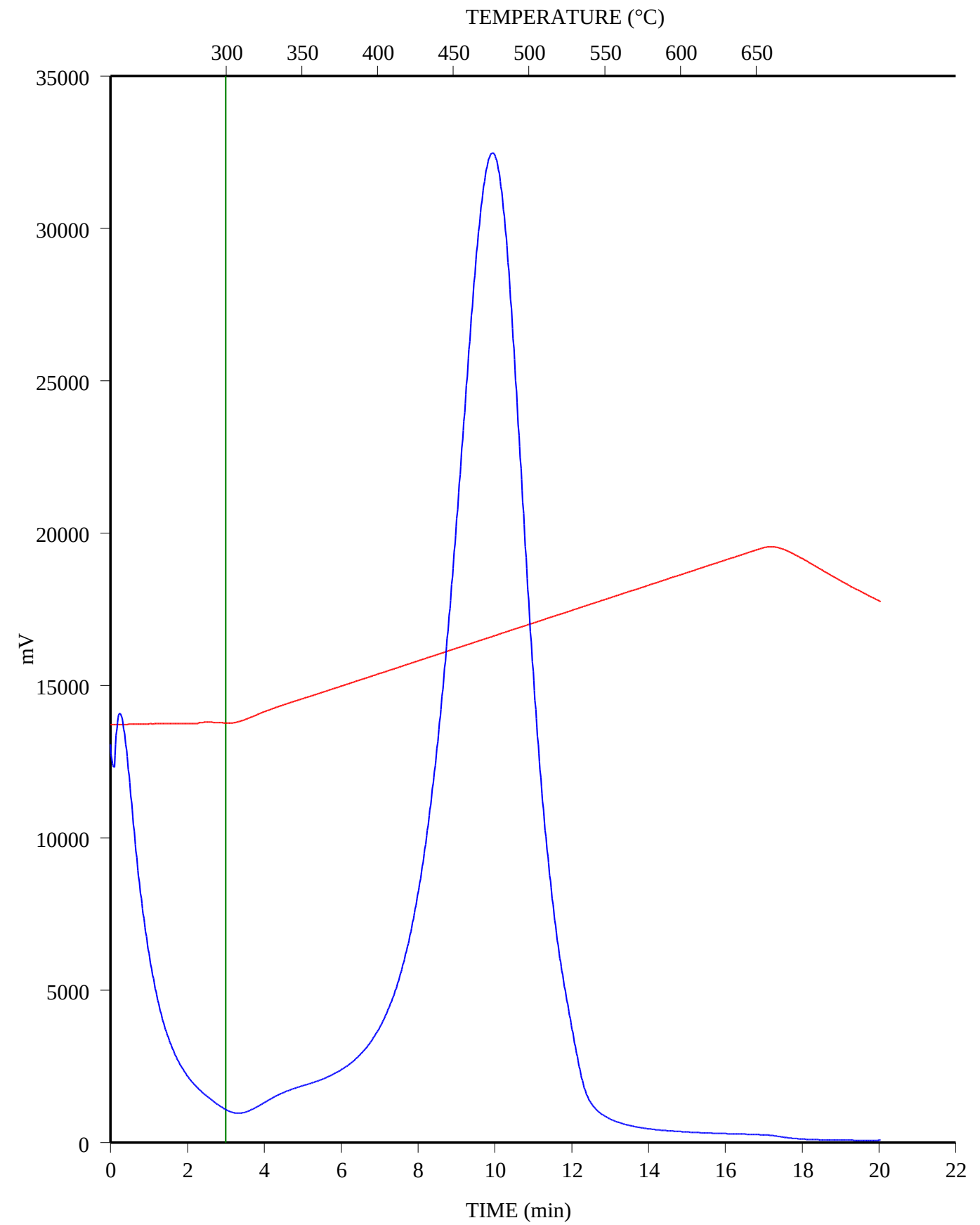
C-590389; LONG RUN DD GVILLEE 4-34-77-23; 2409.35 m
FID Hydrocarbons



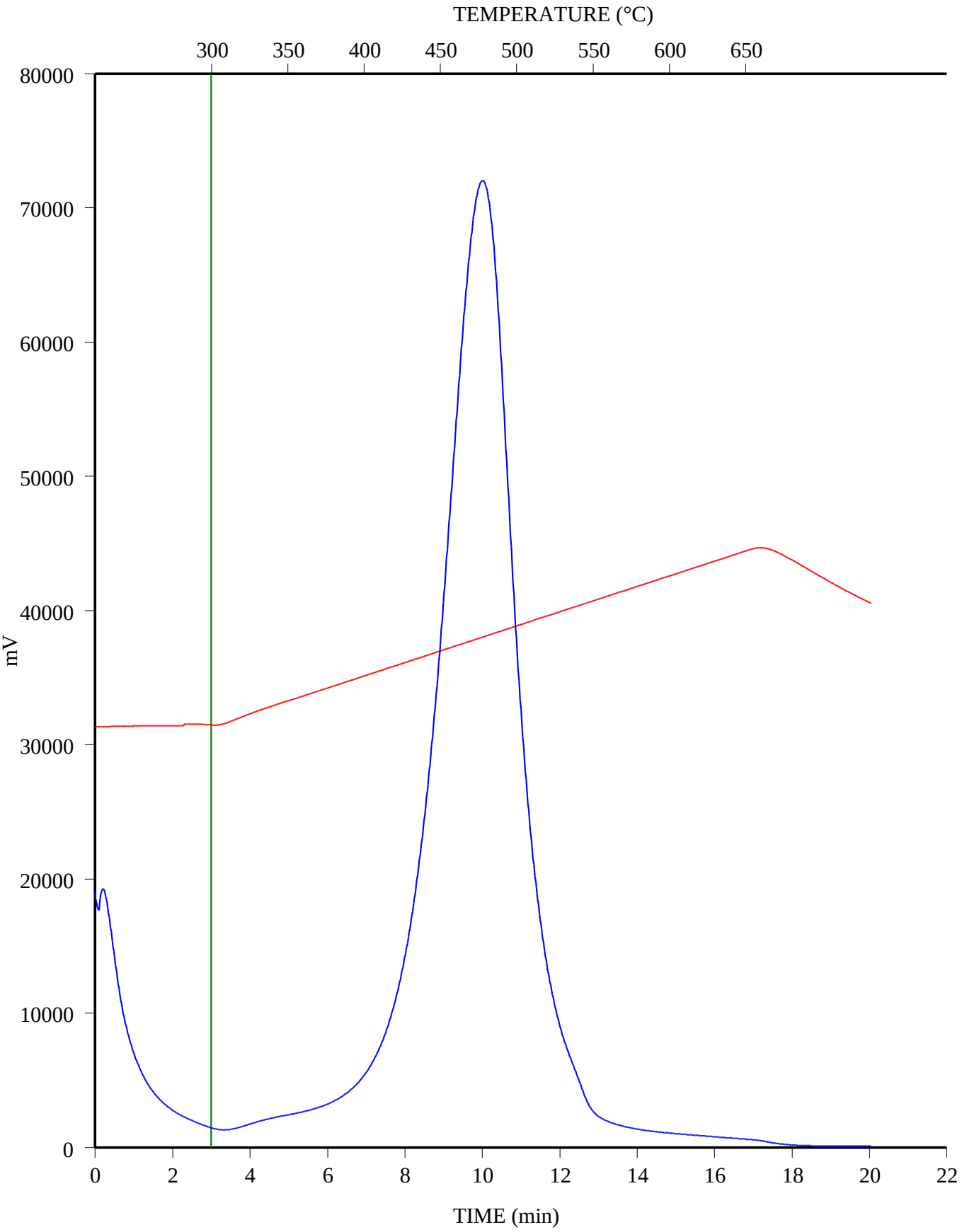
C-590390; LONG RUN DD GVILLEE 4-34-77-23; 2410.1 m
FID Hydrocarbons



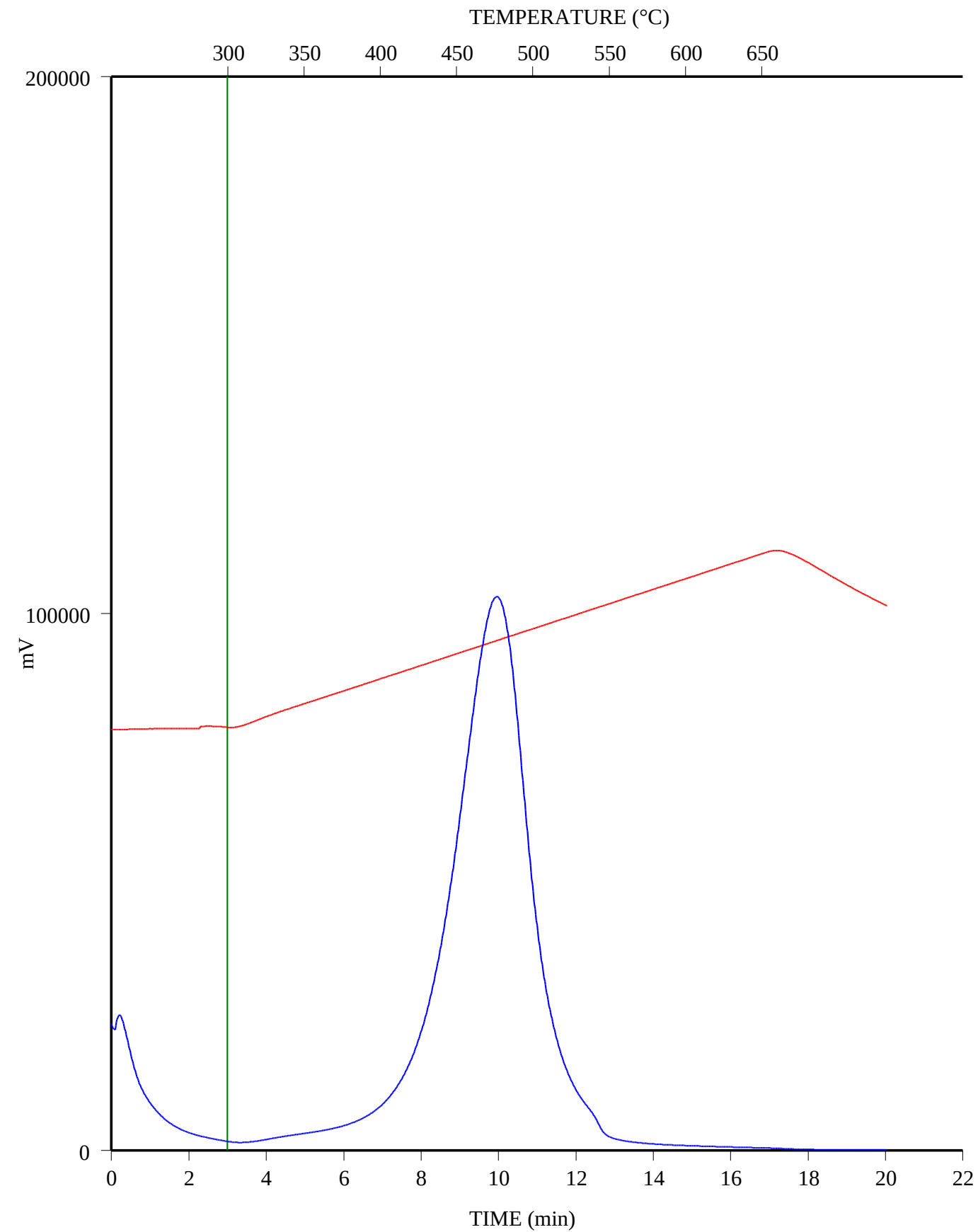
C-590391; LONG RUN DD GVILLEE 4-34-77-23; 2411.1 m
FID Hydrocarbons



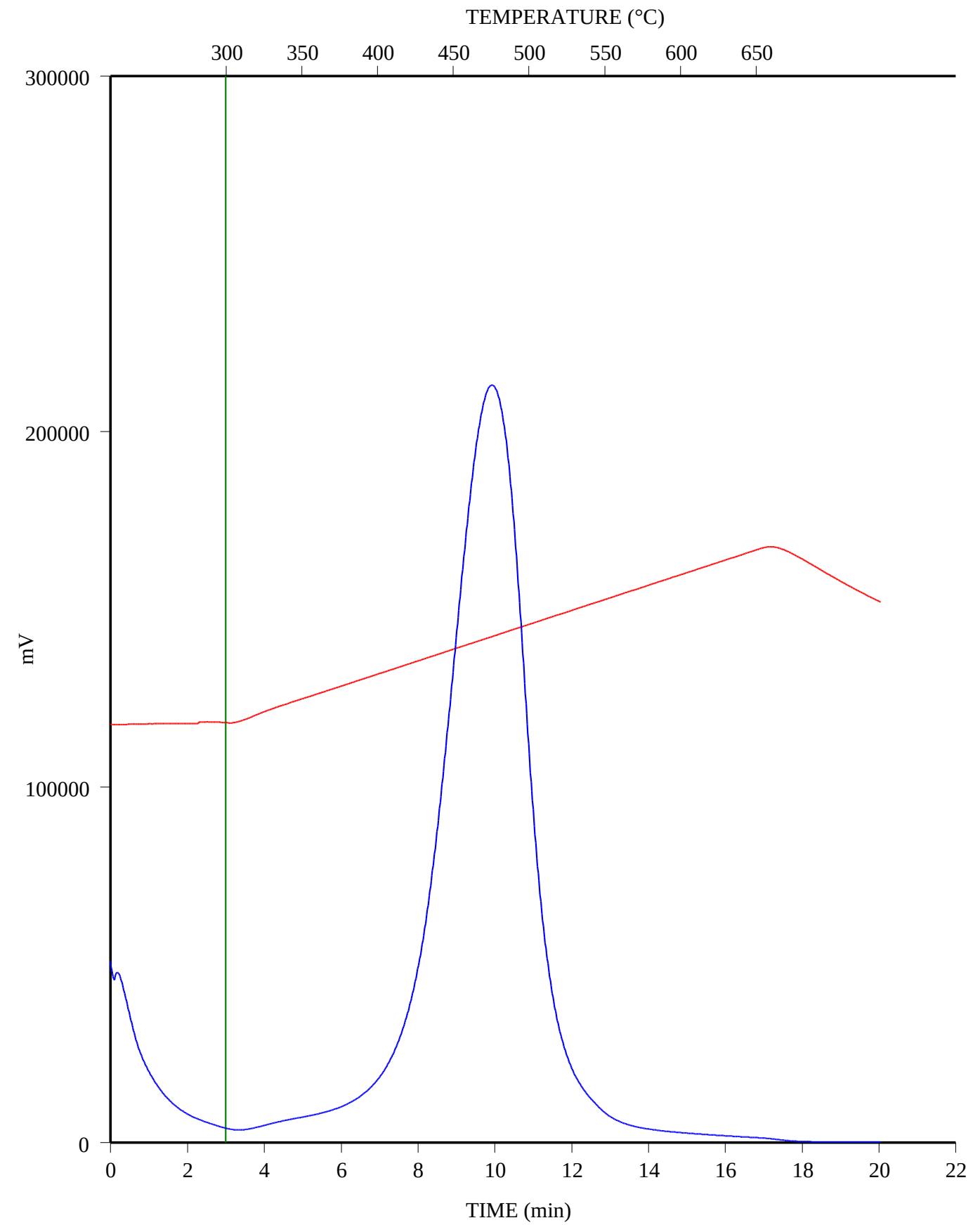
C-590392; LONG RUN DD GVILLEE 4-34-77-23; 2412.15 m
FID Hydrocarbons



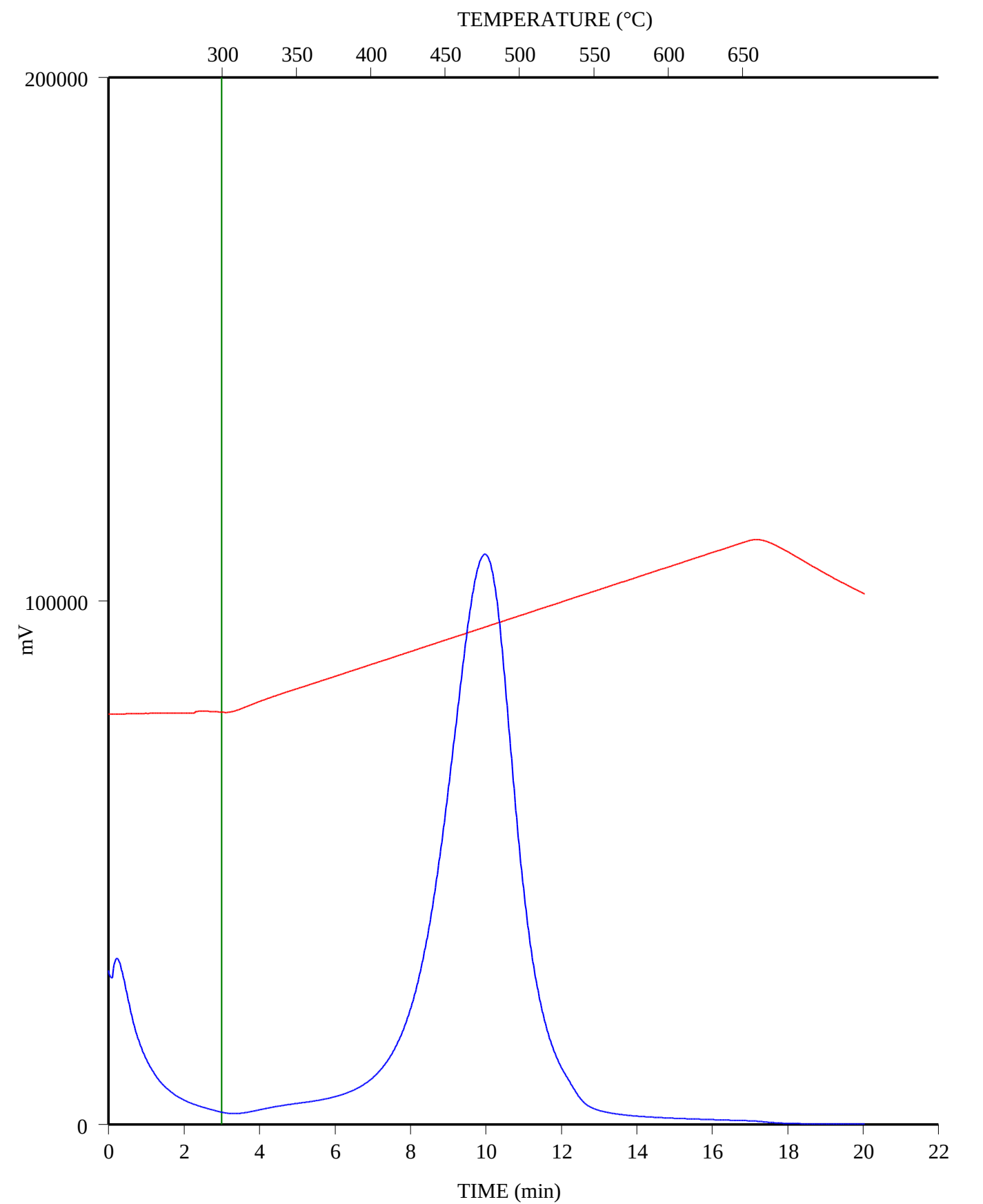
C-590393; LONG RUN DD GVILLEE 4-34-77-23; 2413.35 m
FID Hydrocarbons



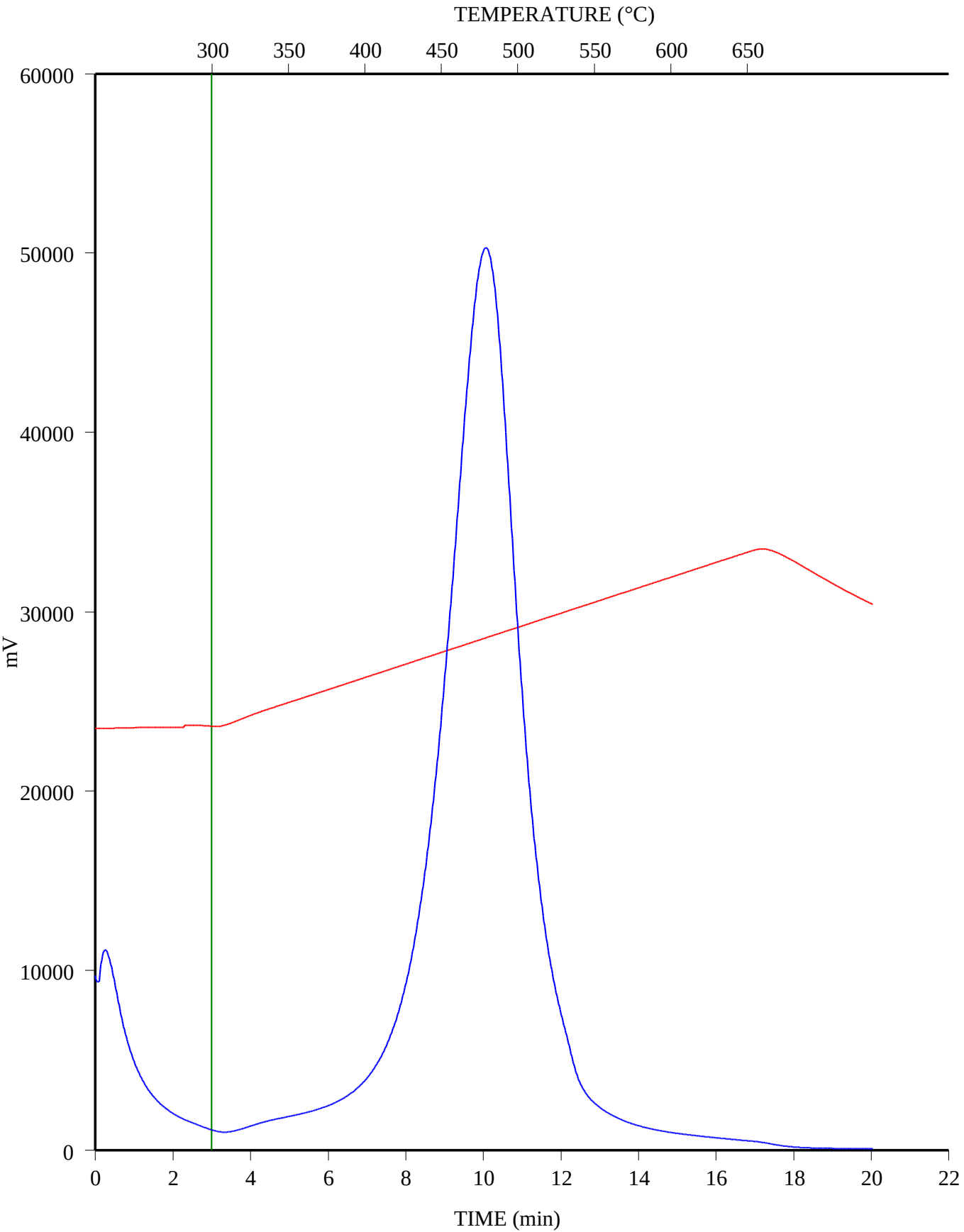
C-590394; LONG RUN DD GVILLEE 4-34-77-23; 2414.4 m
FID Hydrocarbons



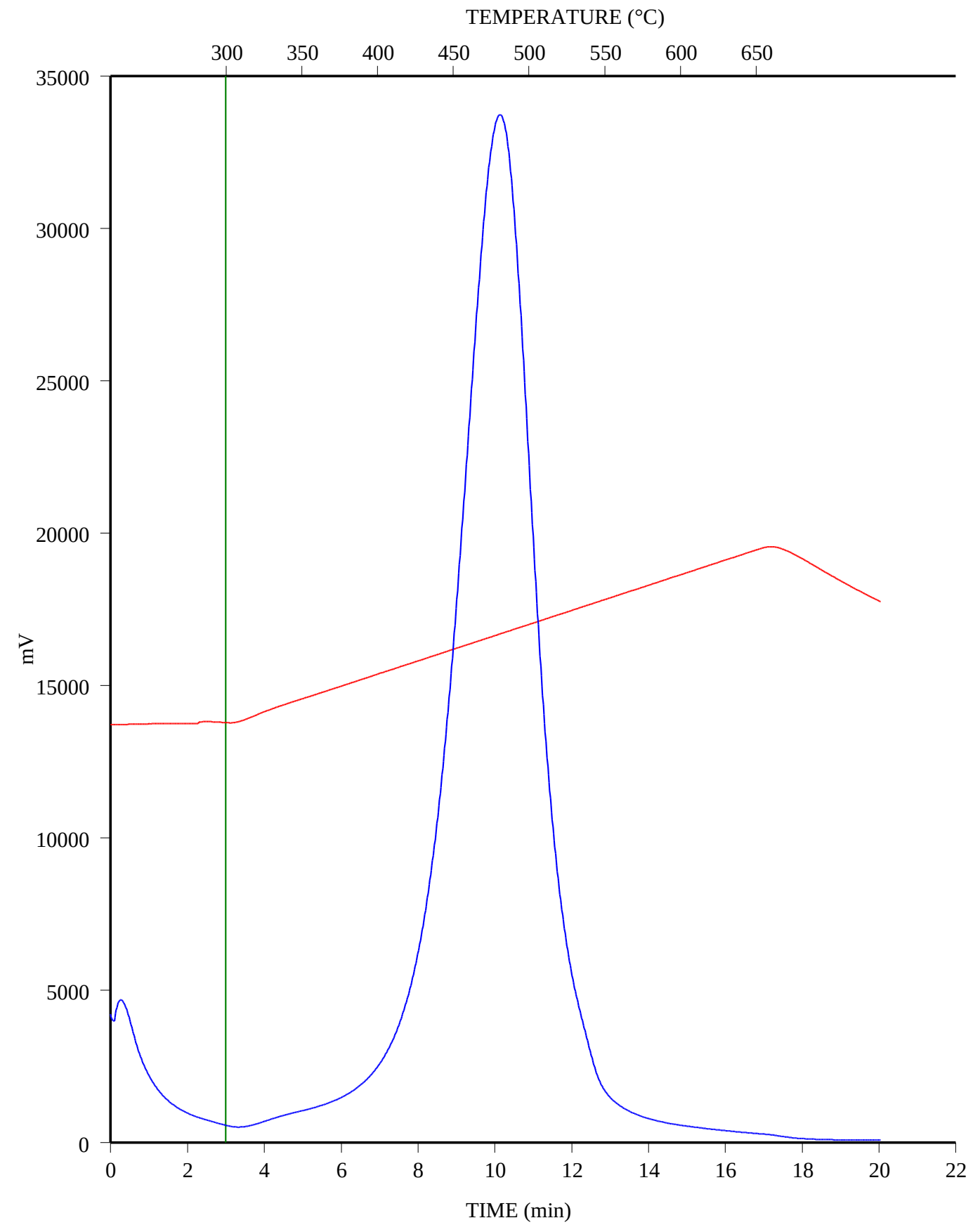
C-590395; LONG RUN DD GVILLEE 4-34-77-23; 2414.95 m
FID Hydrocarbons



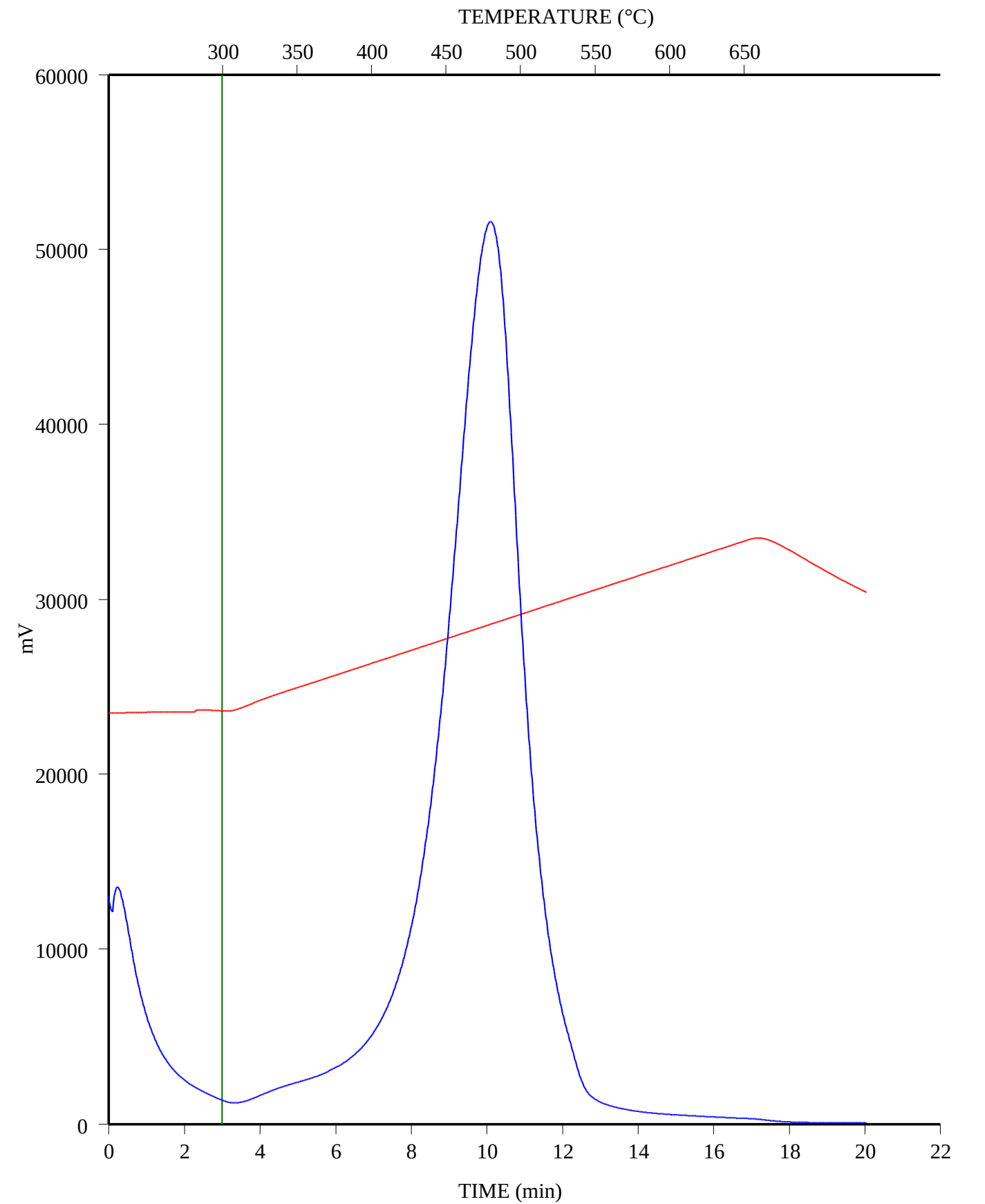
C-590396; LONG RUN DD GVILLEE 4-34-77-23; 2416.05 m
FID Hydrocarbons



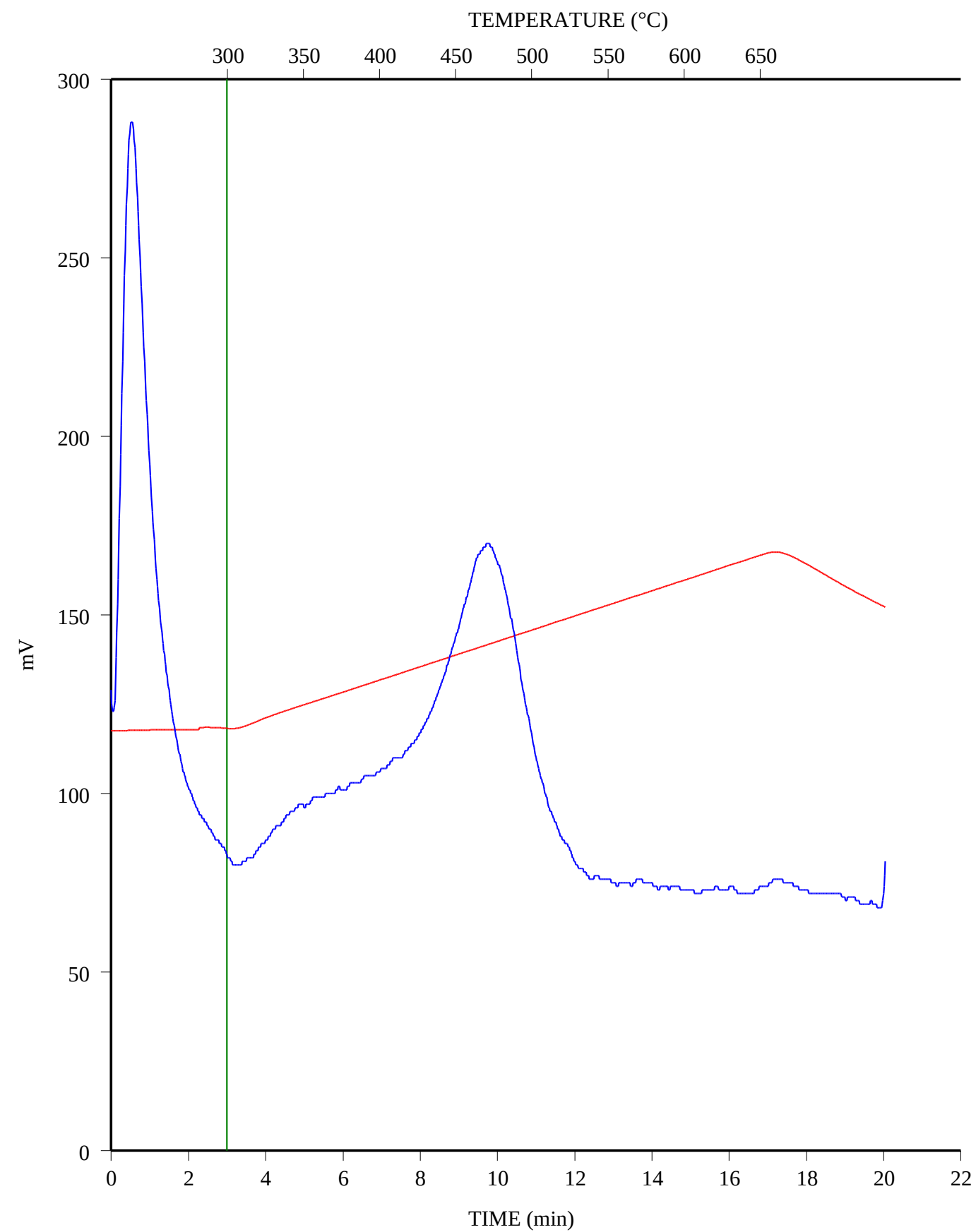
C-590397; LONG RUN DD GVILLEE 4-34-77-23; 2416.65 m
FID Hydrocarbons



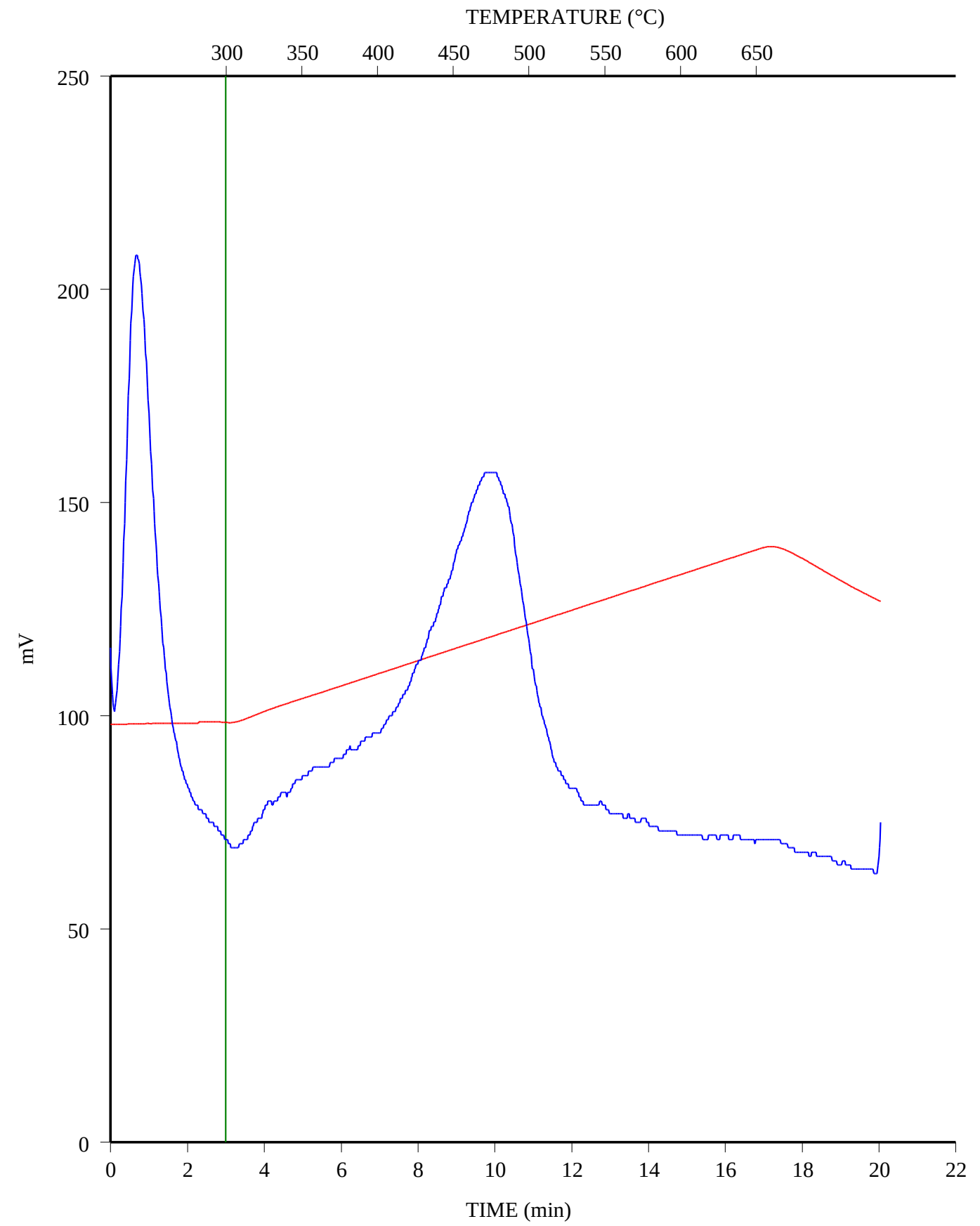
C-590398; LONG RUN DD GVILLEE 4-34-77-23; 2417.95 m
FID Hydrocarbons



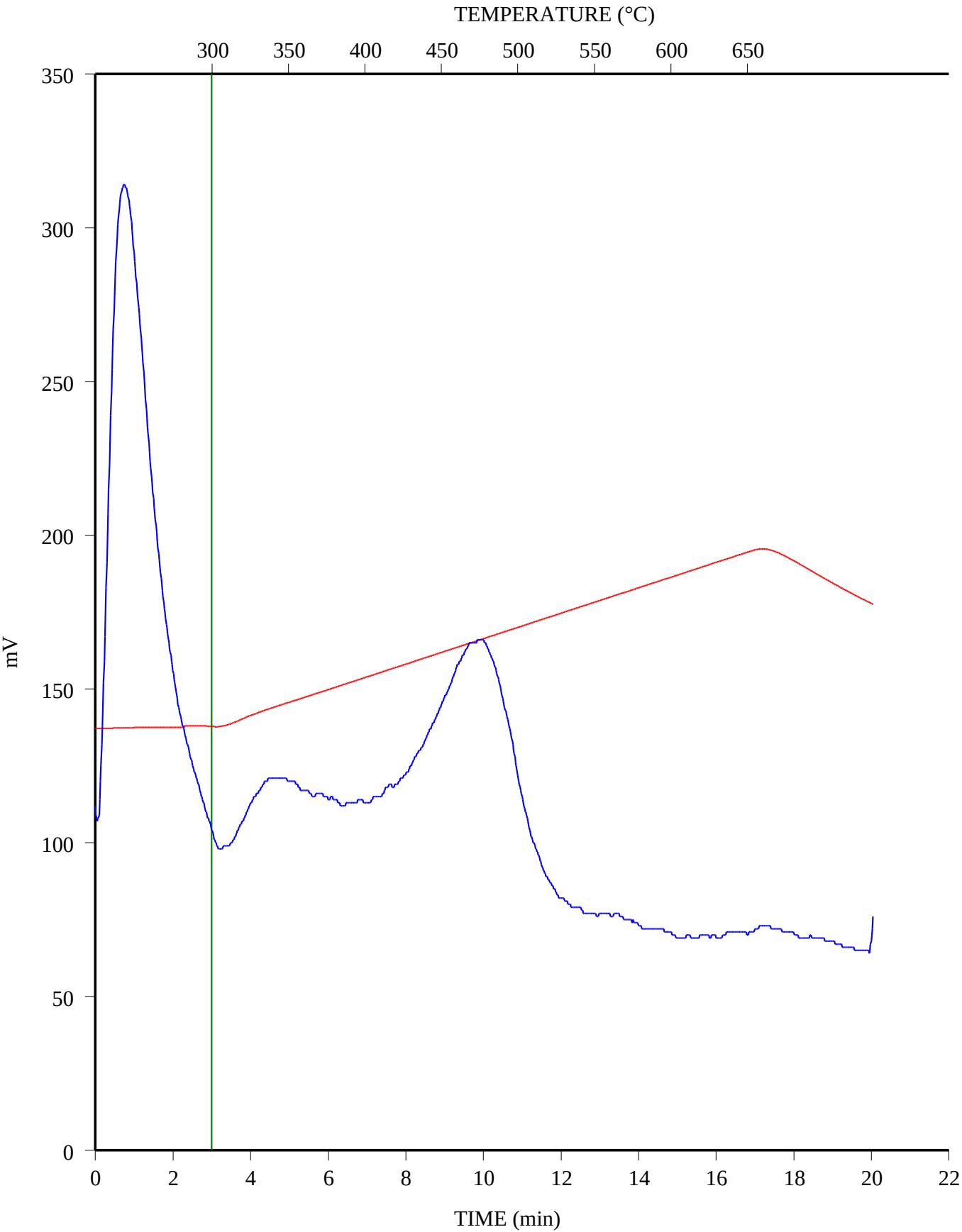
C-590399; LONG RUN DD GVILLEE 4-34-77-23; 2419.15 m
FID Hydrocarbons



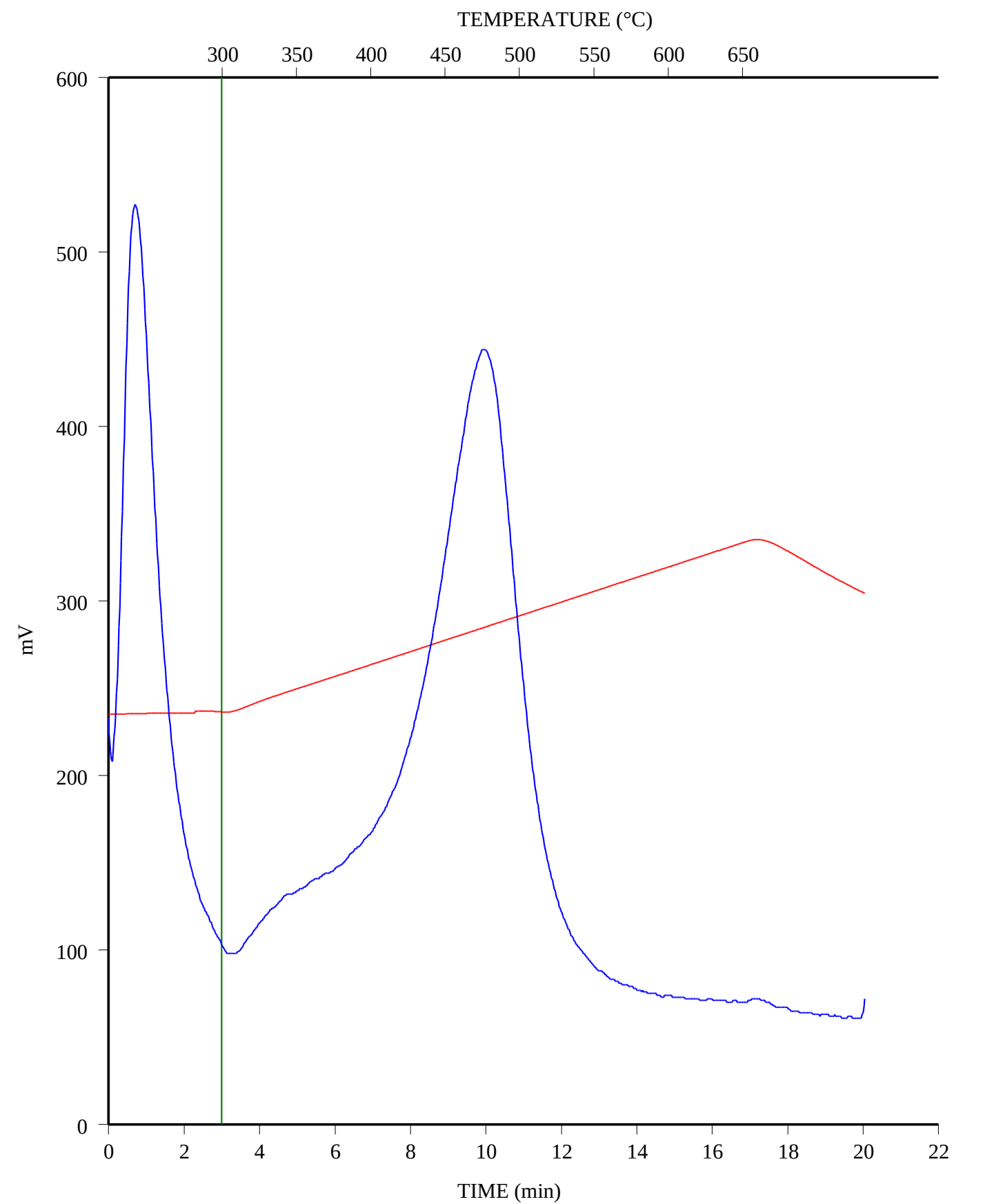
C-590400; LONG RUN DD GVILLEE 4-34-77-23; 2420.1 m
FID Hydrocarbons



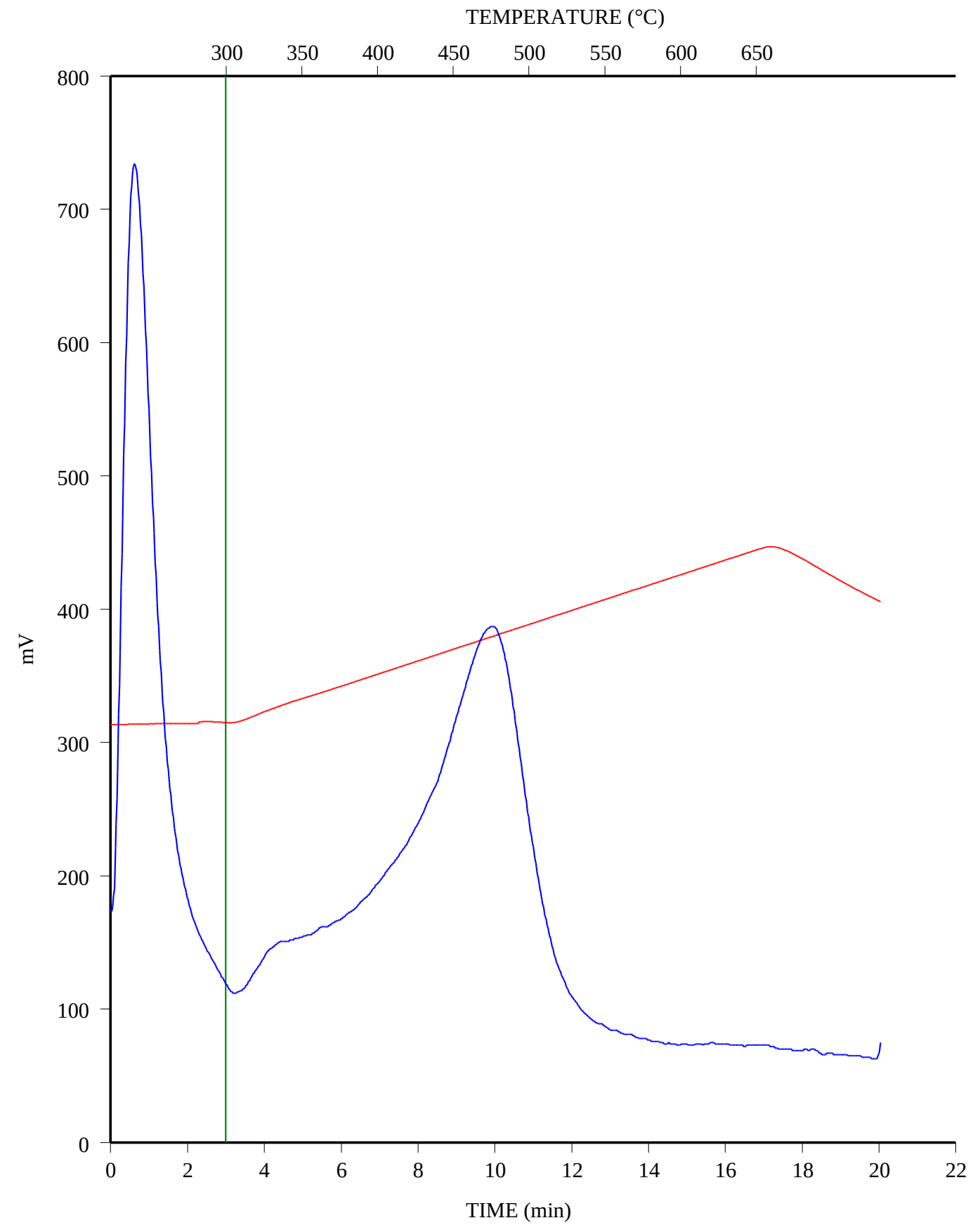
C-590401; LONG RUN DD GVILLEE 4-34-77-23; 2421.15 m
FID Hydrocarbons



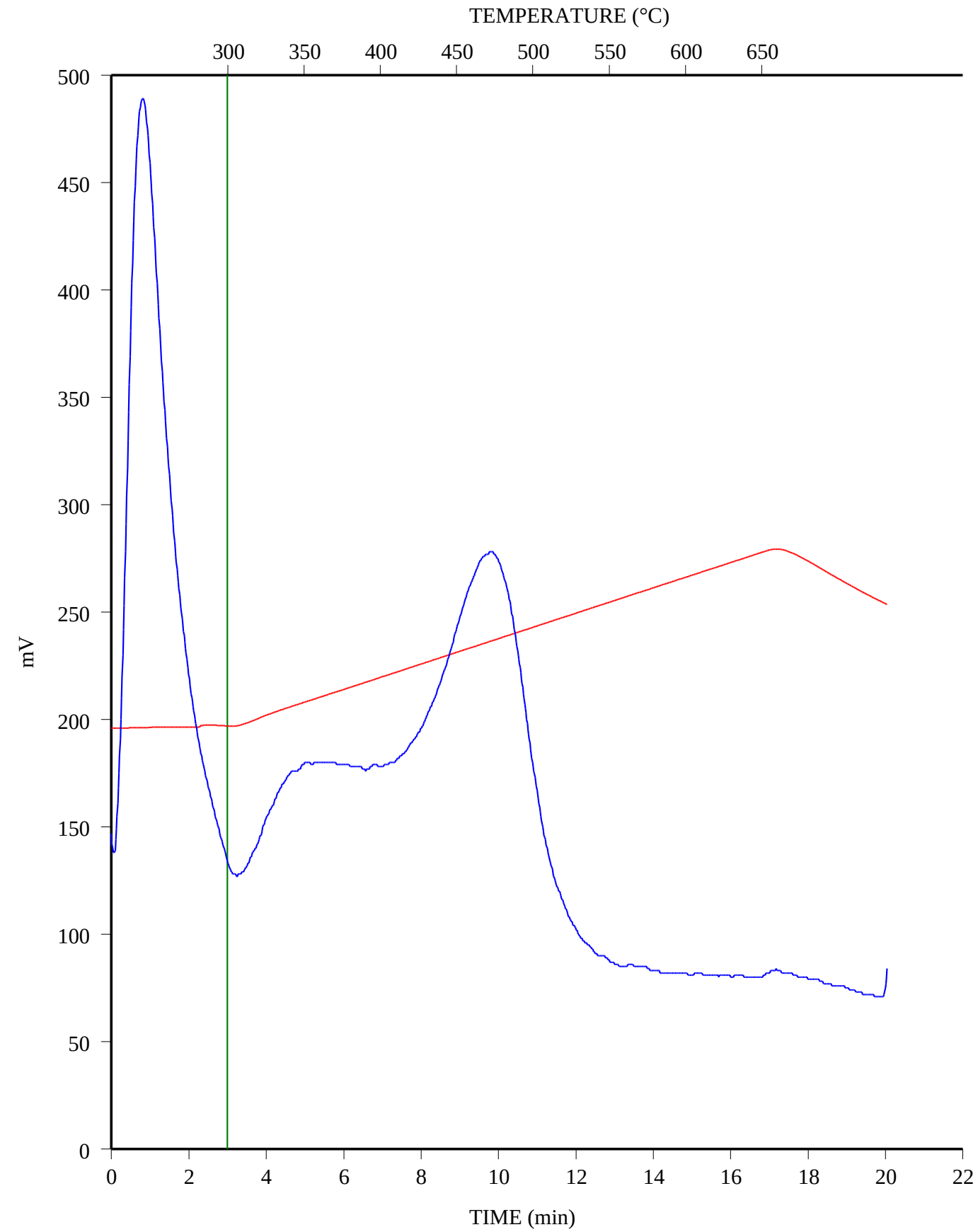
C-590402; LONG RUN DD GVILLEE 4-34-77-23; 2421.95 m
FID Hydrocarbons



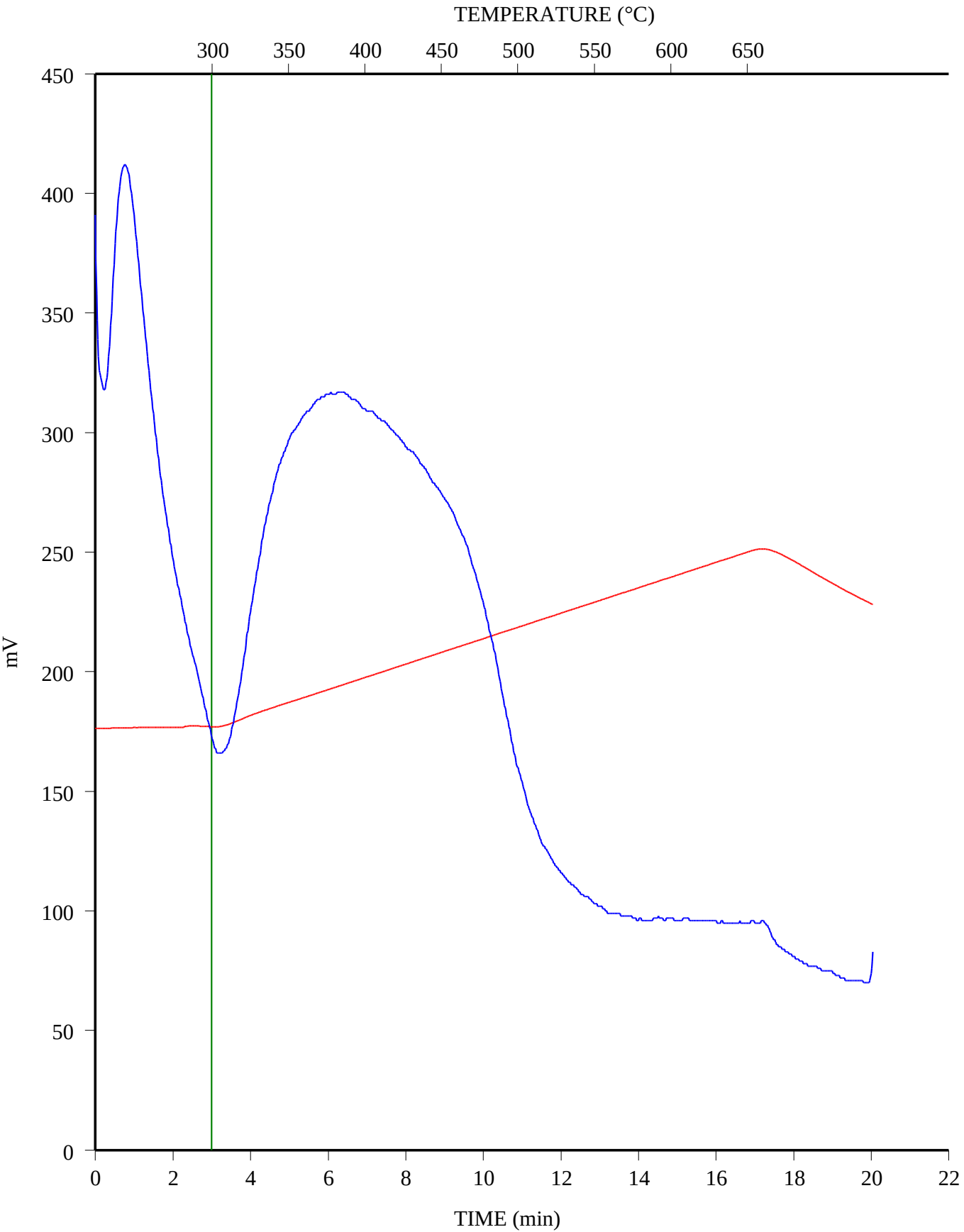
C-590403; LONG RUN DD GVILLEE 4-34-77-23; 2422.9 m
FID Hydrocarbons



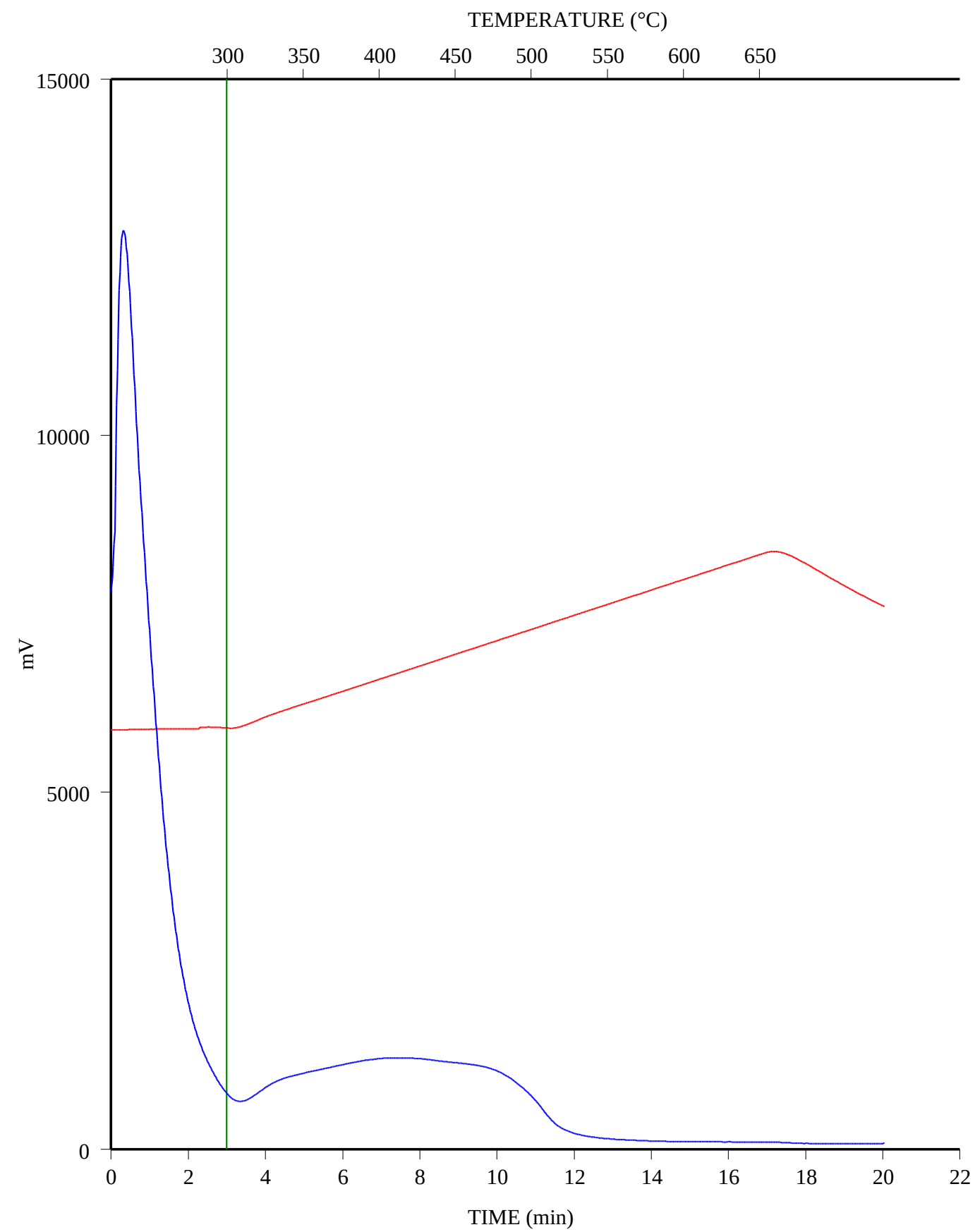
C-590404; LONG RUN DD GVILLEE 4-34-77-23; 2424.95 m
FID Hydrocarbons



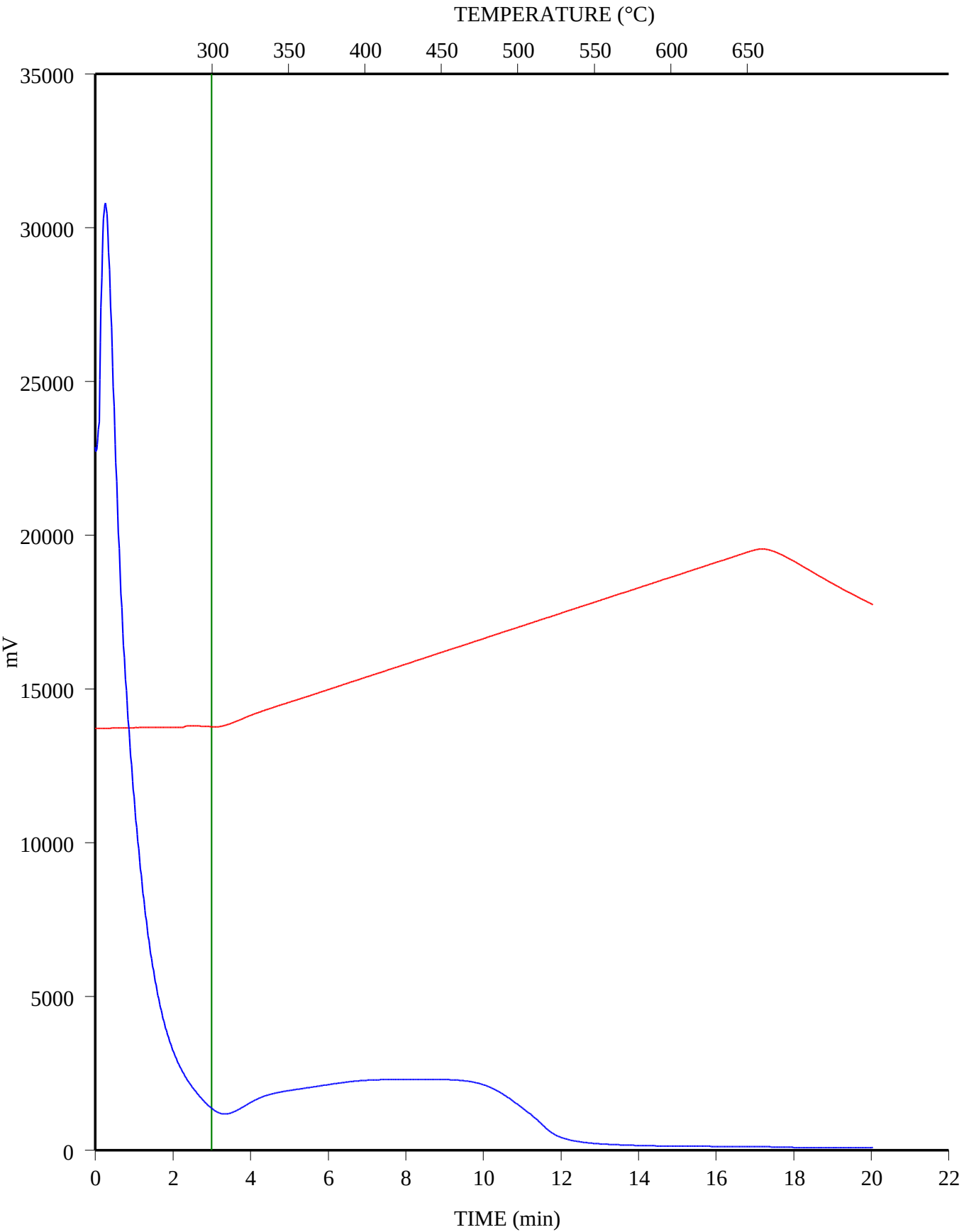
C-590405; COPRC 102 HZ WILLGR 14-10-44-7; 3075.05 m
FID Hydrocarbons



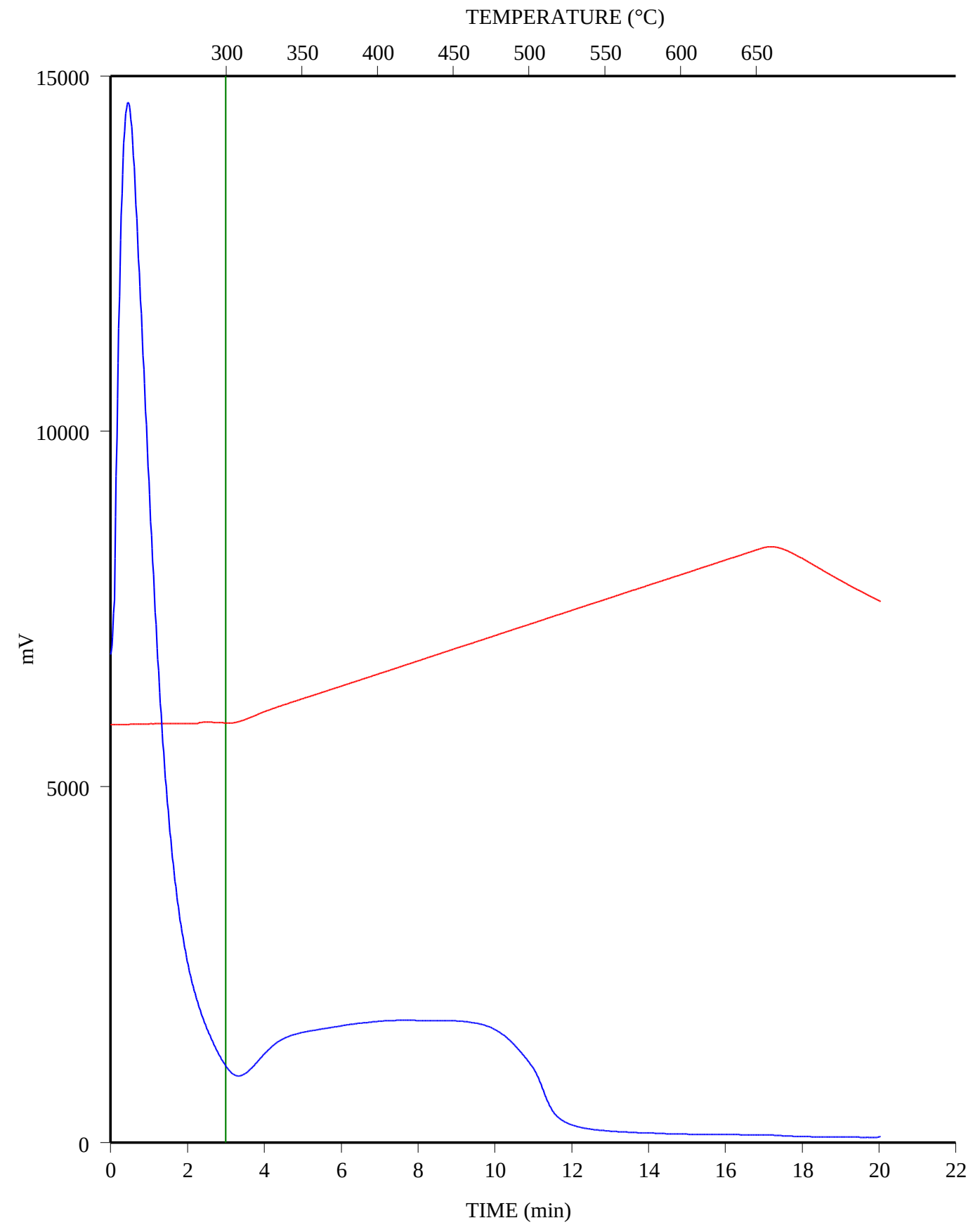
C-590406; COPRC 102 HZ WILLGR 14-10-44-7; 3075.96 m
FID Hydrocarbons



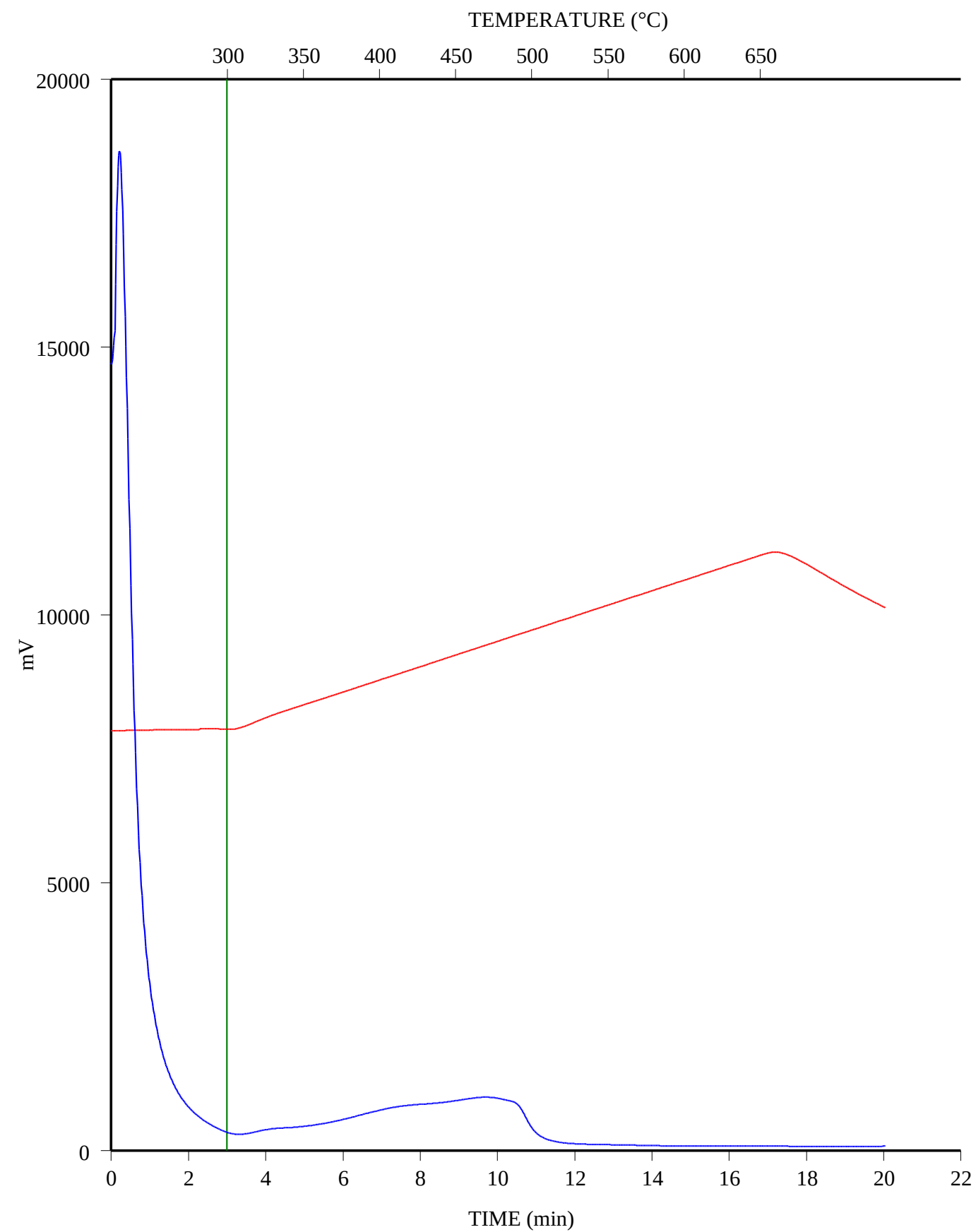
C-590407; COPRC 102 HZ WILLGR 14-10-44-7; 3076.5 m
FID Hydrocarbons



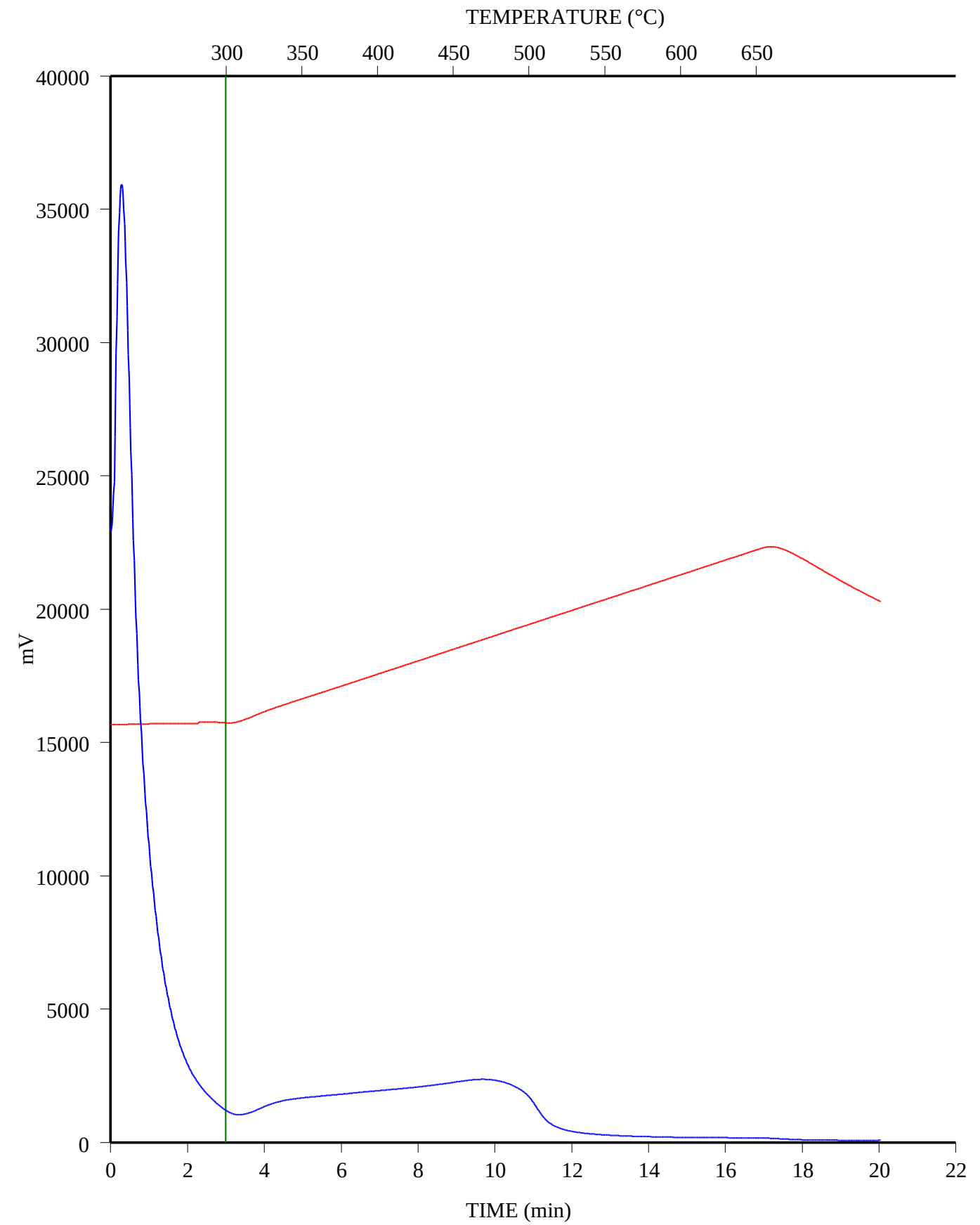
C-590408; COPRC 102 HZ WILLGR 14-10-44-7; 3079.2 m
FID Hydrocarbons



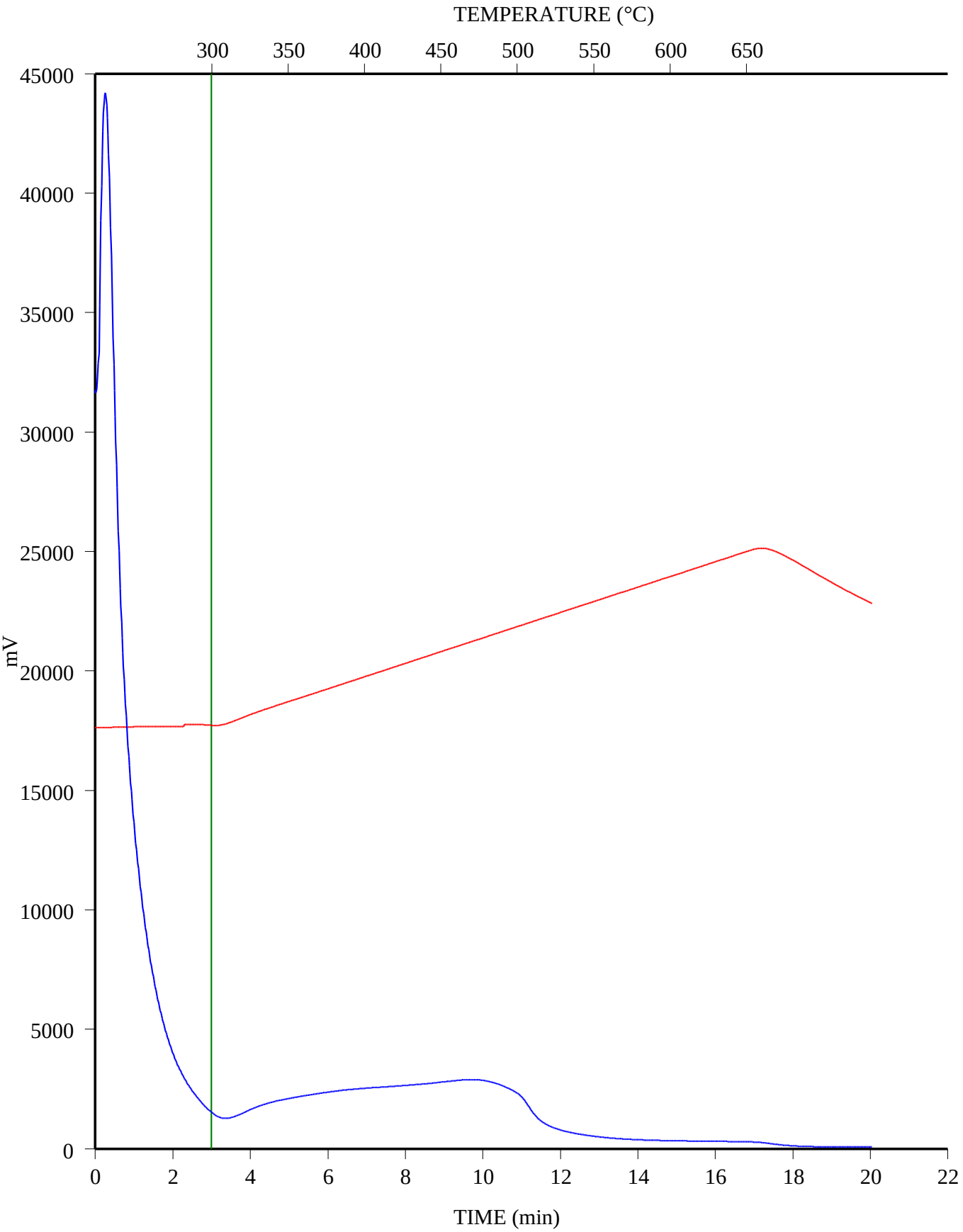
C-590409; COPRC 102 HZ WILLGR 14-10-44-7; 3079.85 m
FID Hydrocarbons



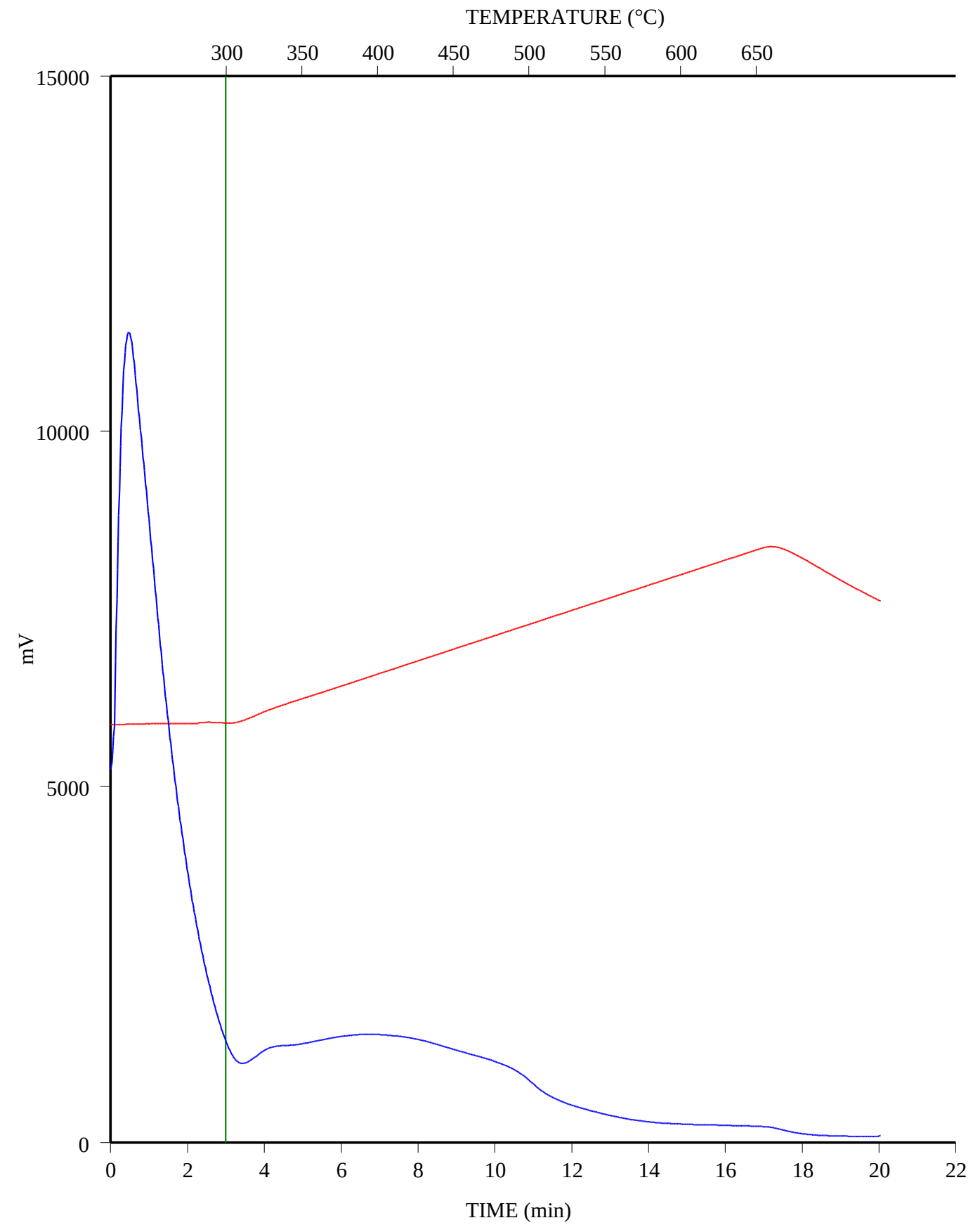
C-590410; COPRC 102 HZ WILLGR 14-10-44-7; 3081.25 m
FID Hydrocarbons



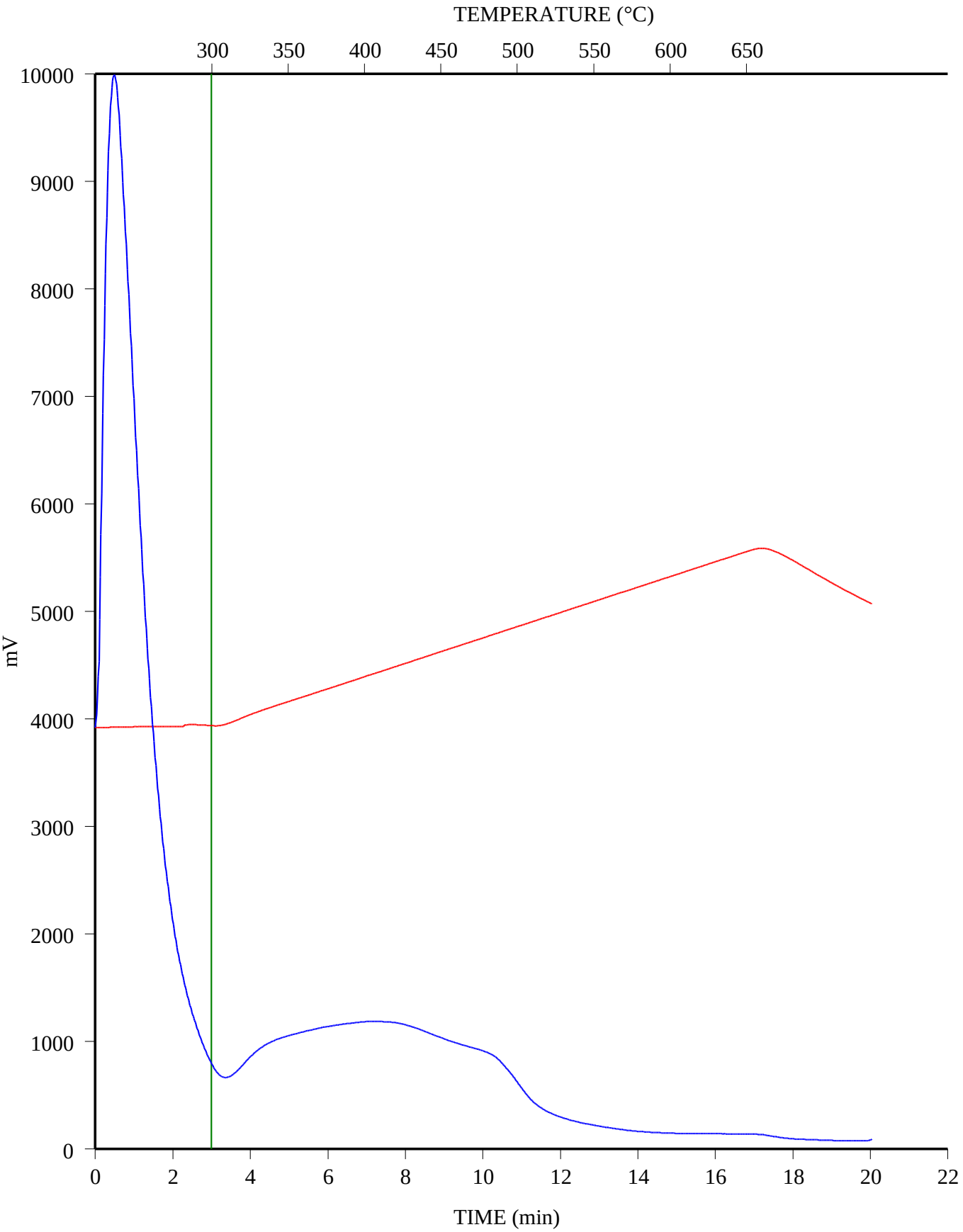
C-590411; COPRC 102 HZ WILLGR 14-10-44-7; 3083.3 m
FID Hydrocarbons



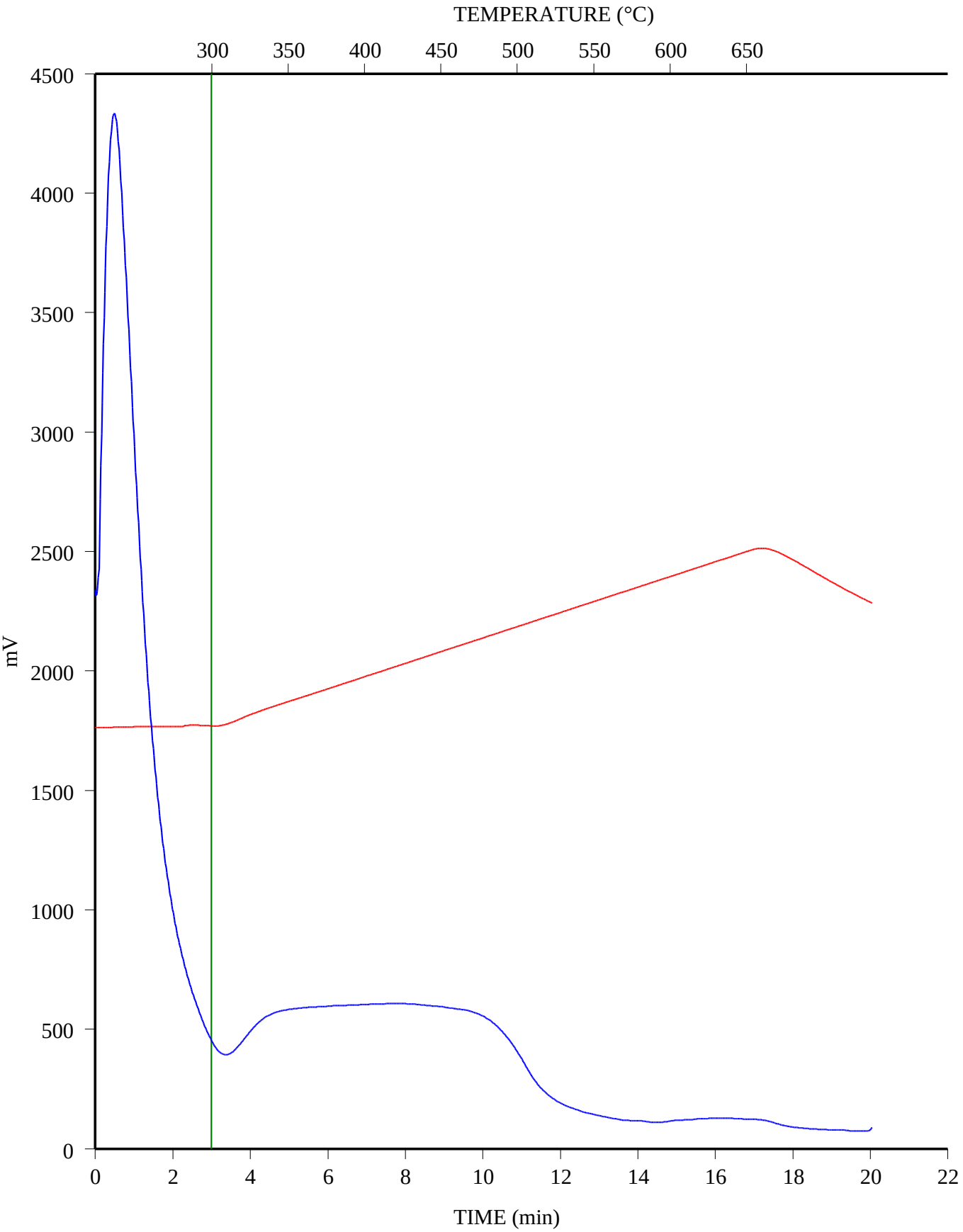
C-590412; COPRC 102 HZ WILLGR 14-10-44-7; 3085.85 m
FID Hydrocarbons



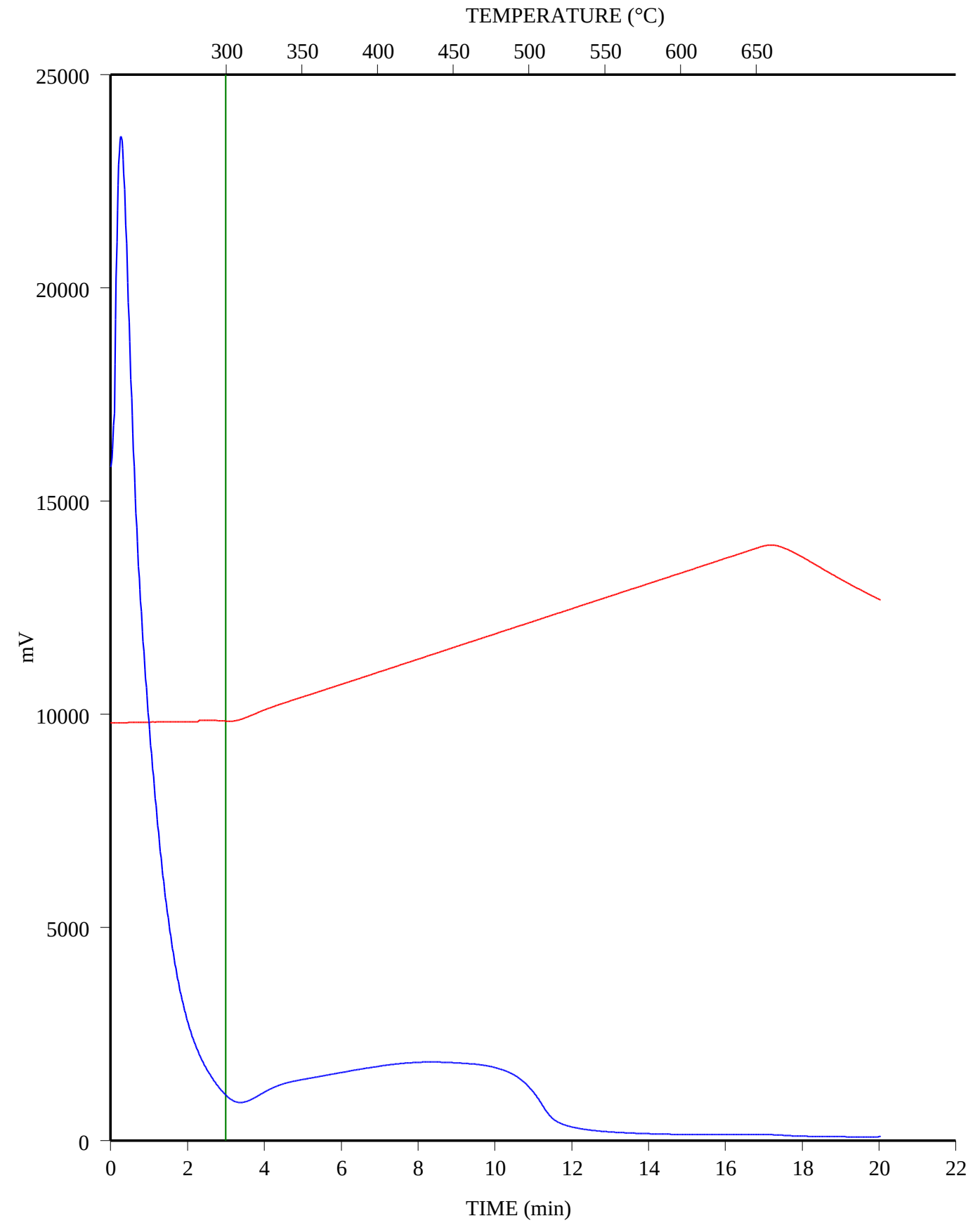
C-590413; COPRC 102 HZ WILLGR 14-10-44-7; 3087.2 m
FID Hydrocarbons



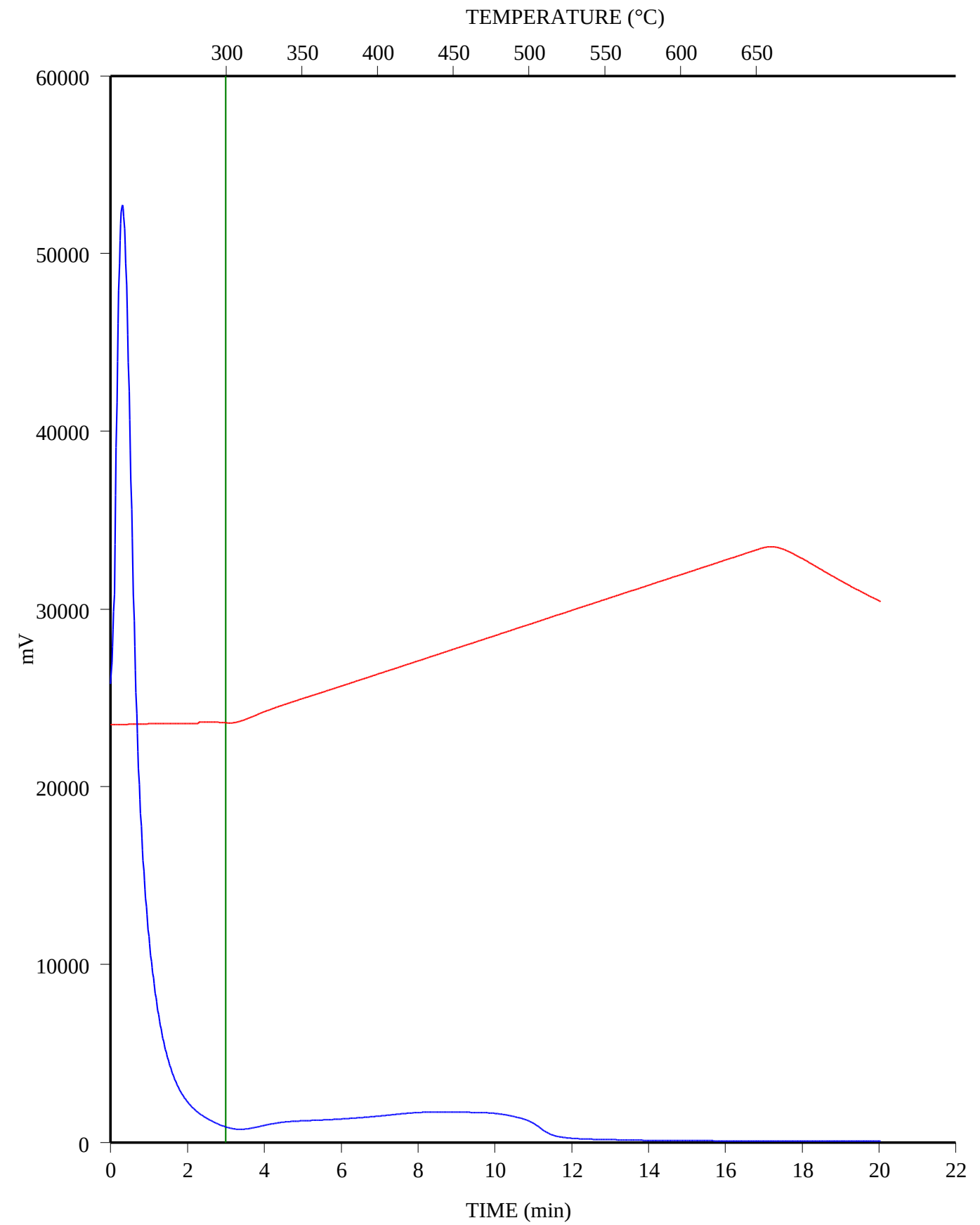
C-590414; COPRC 102 HZ WILLGR 14-10-44-7; 3088.55 m
FID Hydrocarbons



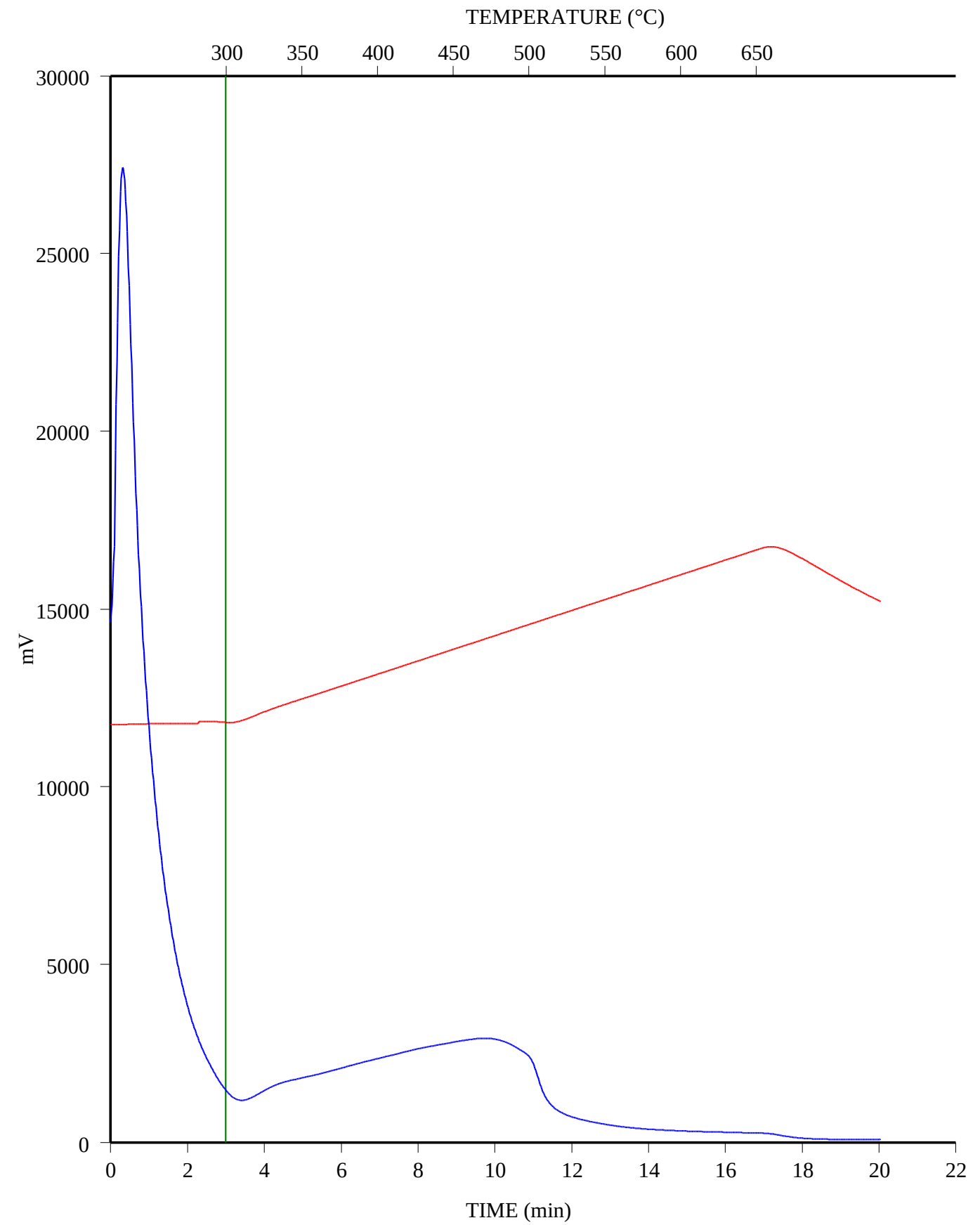
C-590415; COPRC 102 HZ WILLGR 14-10-44-7; 3090.1 m
FID Hydrocarbons



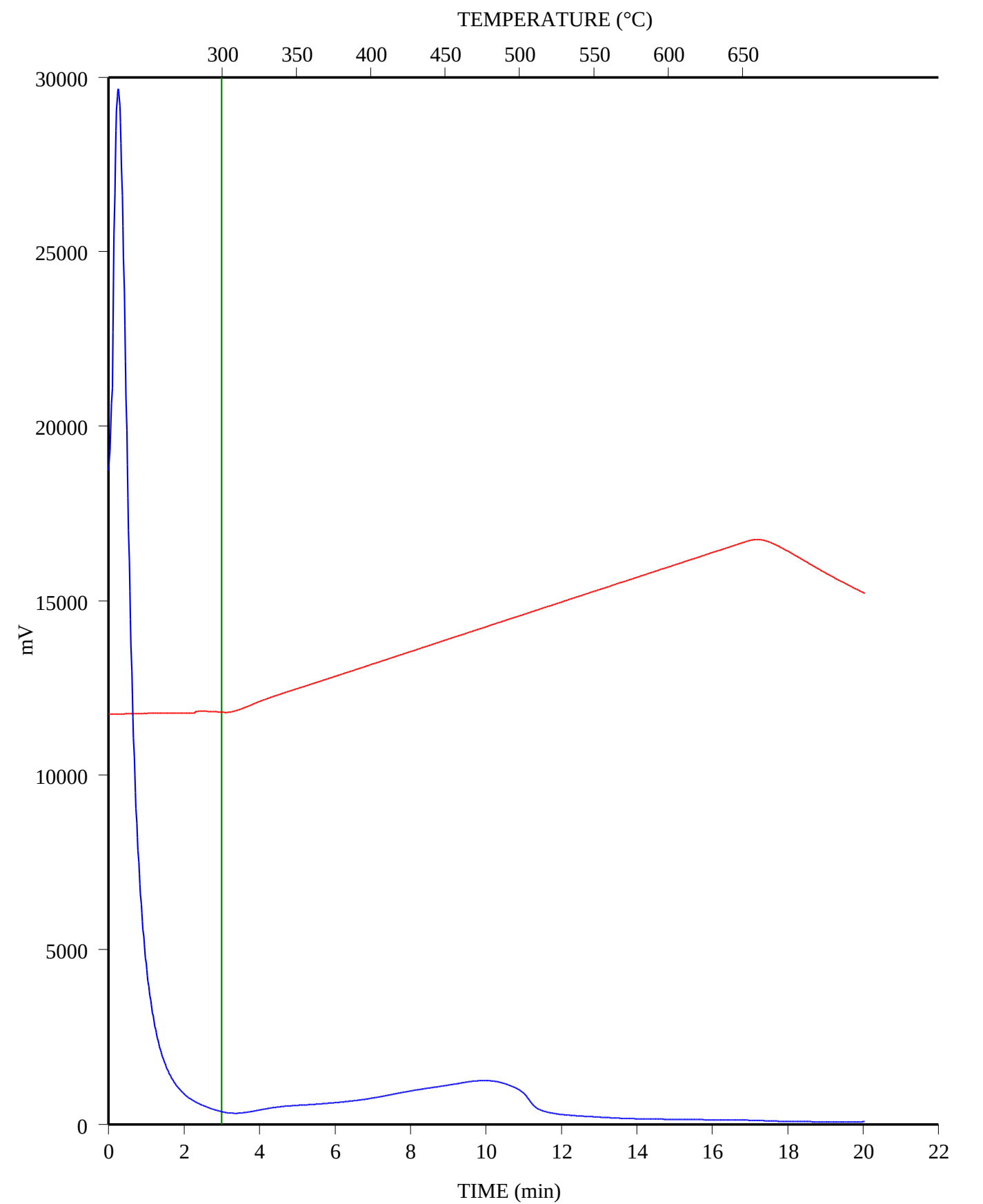
C-590416; COPRC 102 HZ WILLGR 14-10-44-7; 3091.45 m
FID Hydrocarbons



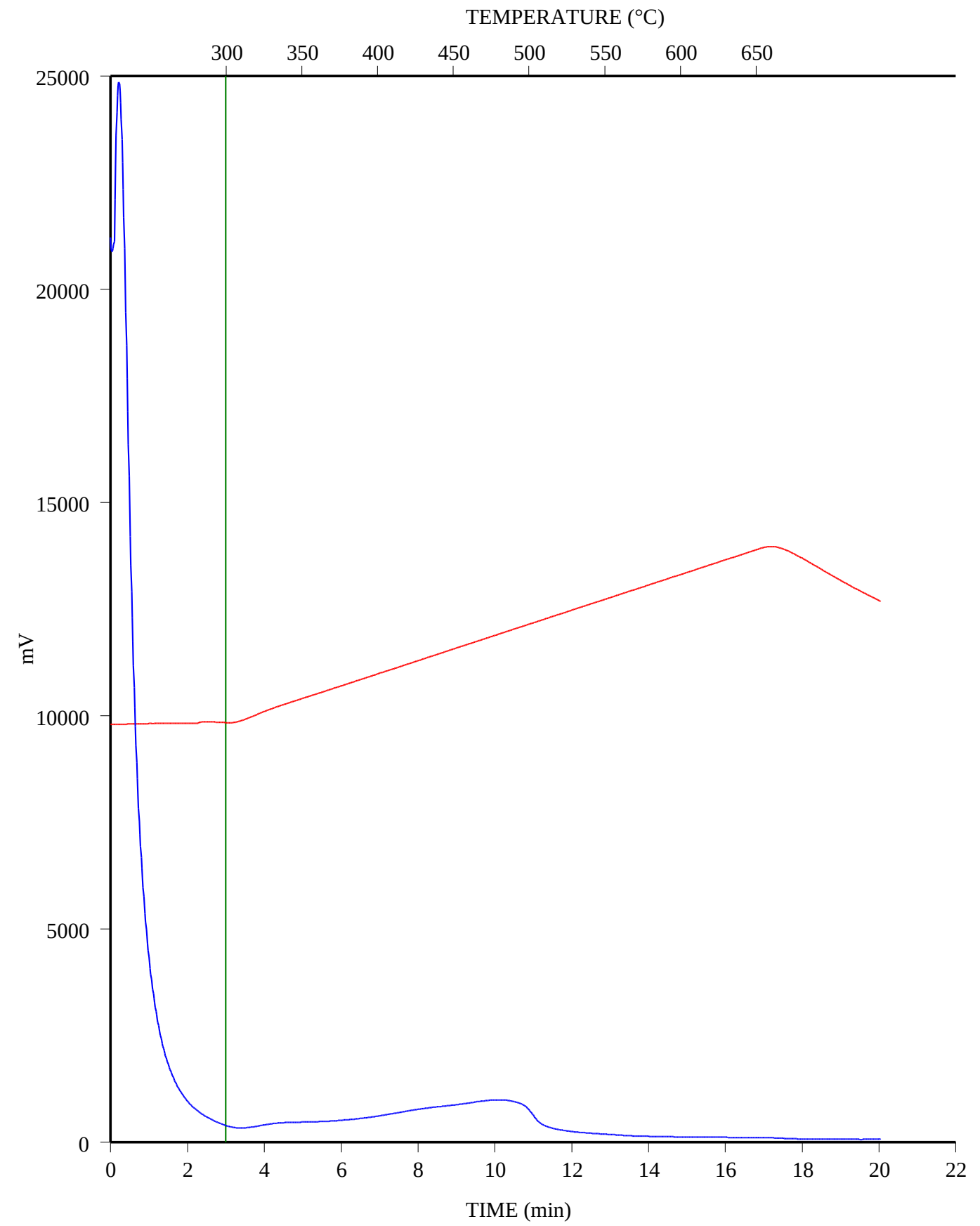
C-590417; COPRC 102 HZ WILLGR 14-10-44-7; 3092.65 m
FID Hydrocarbons



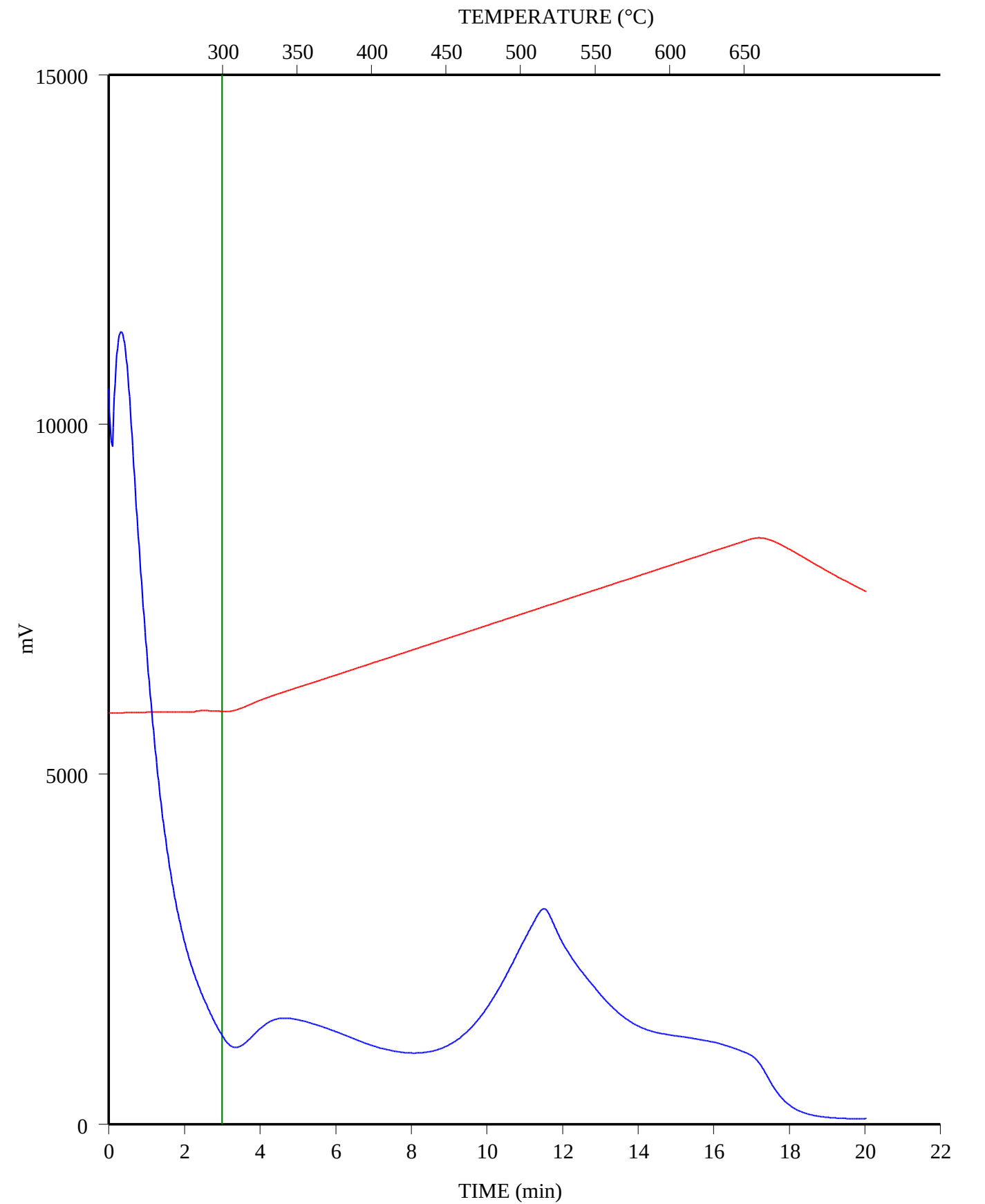
C-590418; COPRC 102 HZ WILLGR 14-10-44-7; 3093.95 m
FID Hydrocarbons



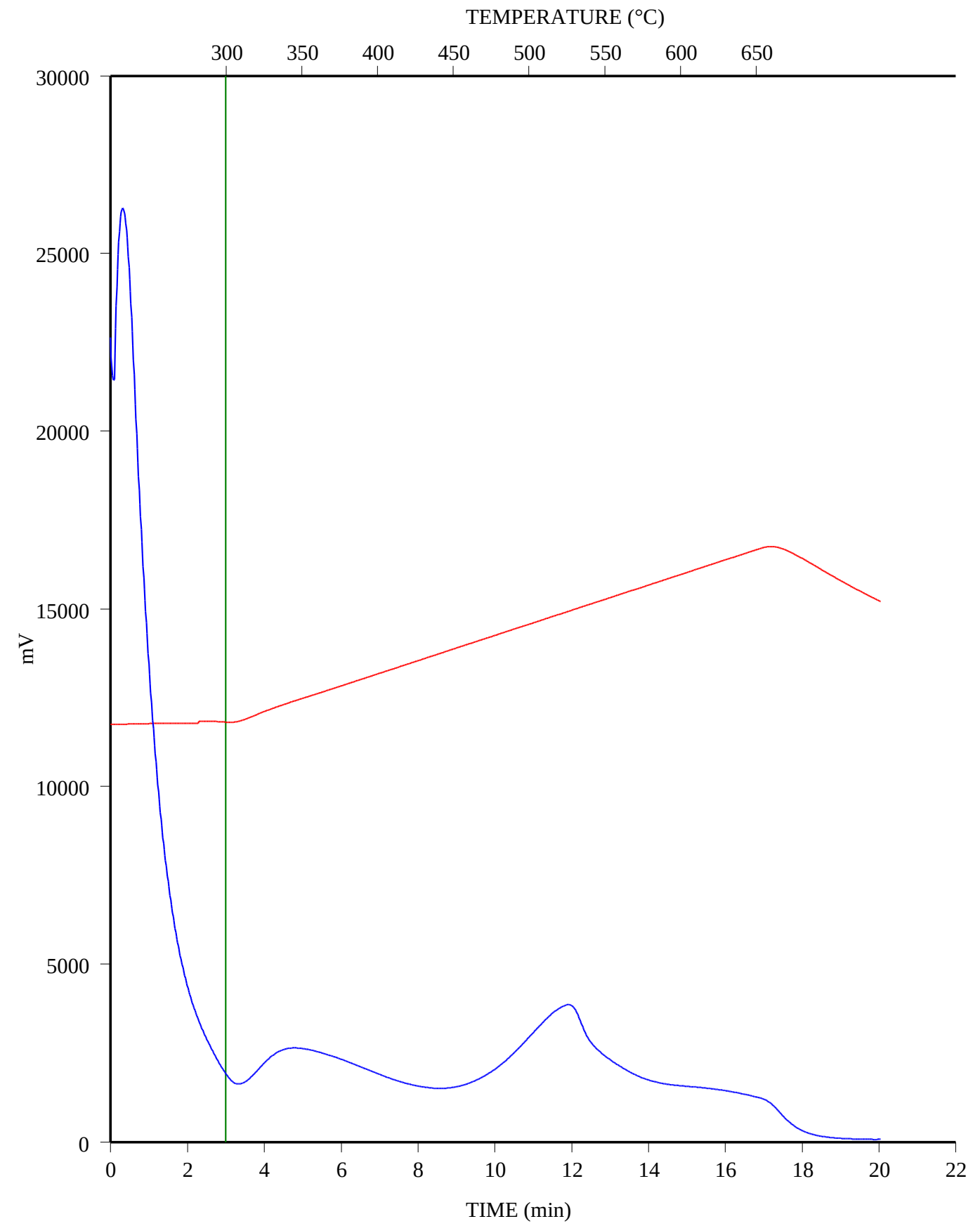
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FID Hydrocarbons



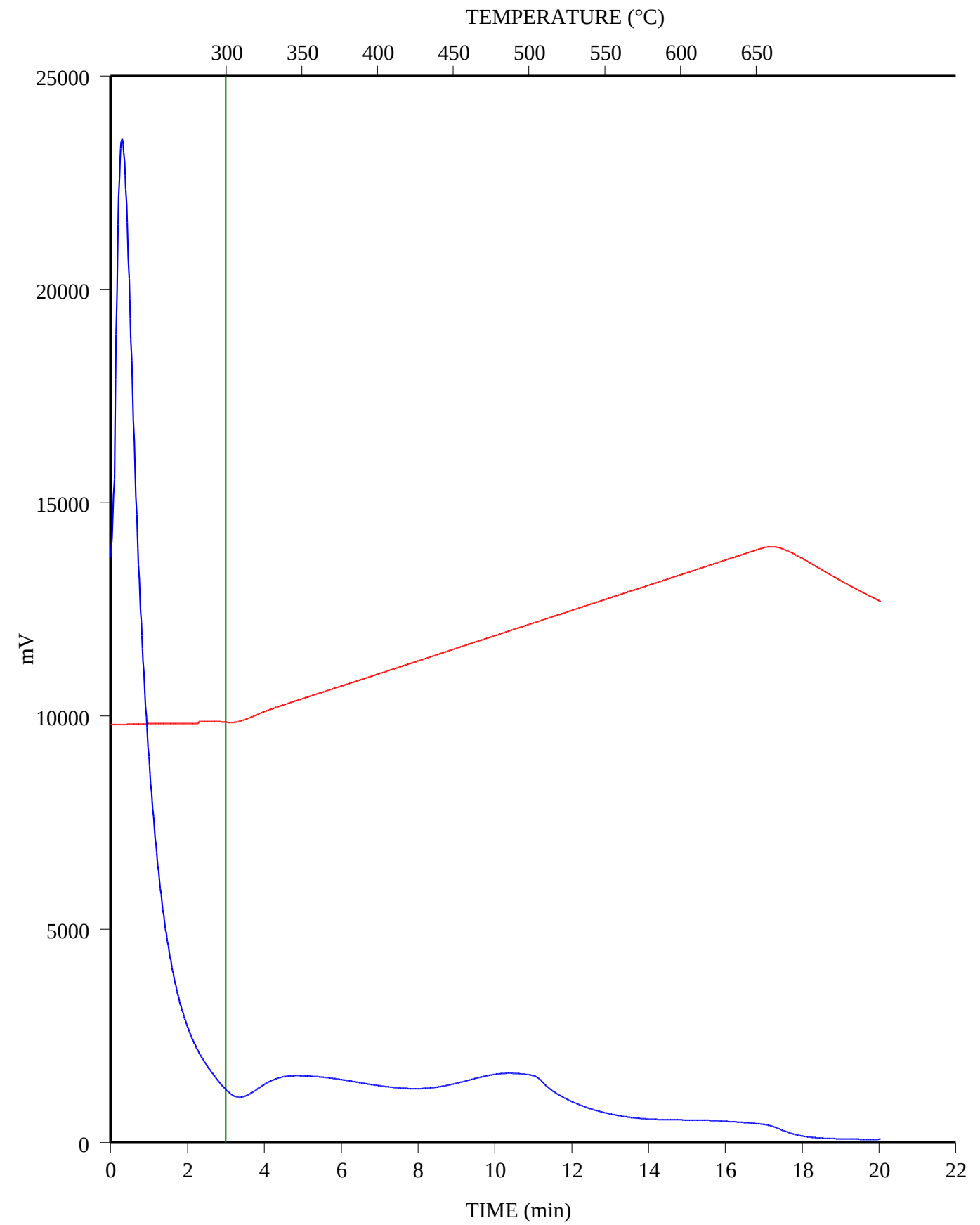
C-590420; COPRC 102 HZ WILLGR 14-10-44-7; 3096.9 m
FID Hydrocarbons



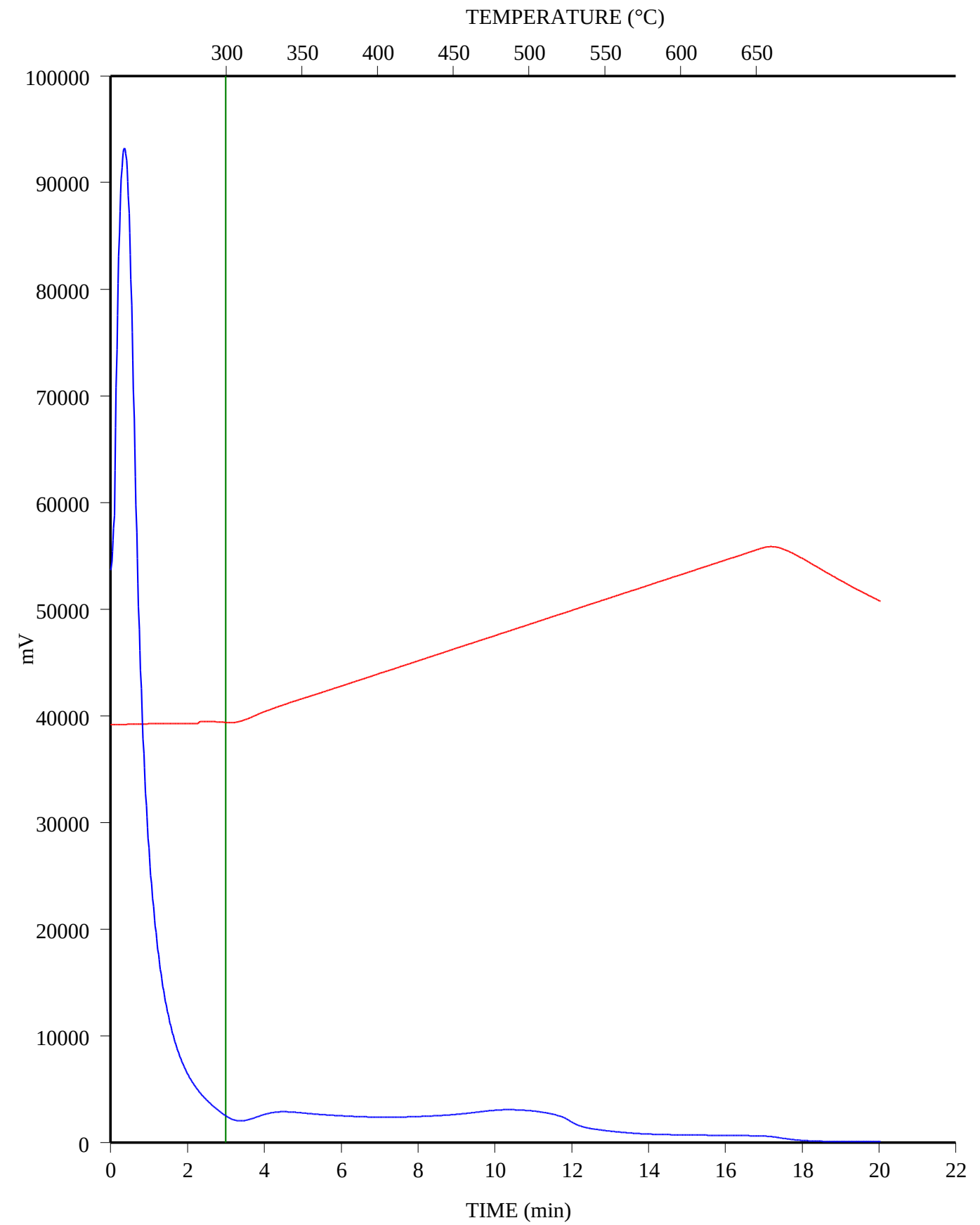
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FID Hydrocarbons



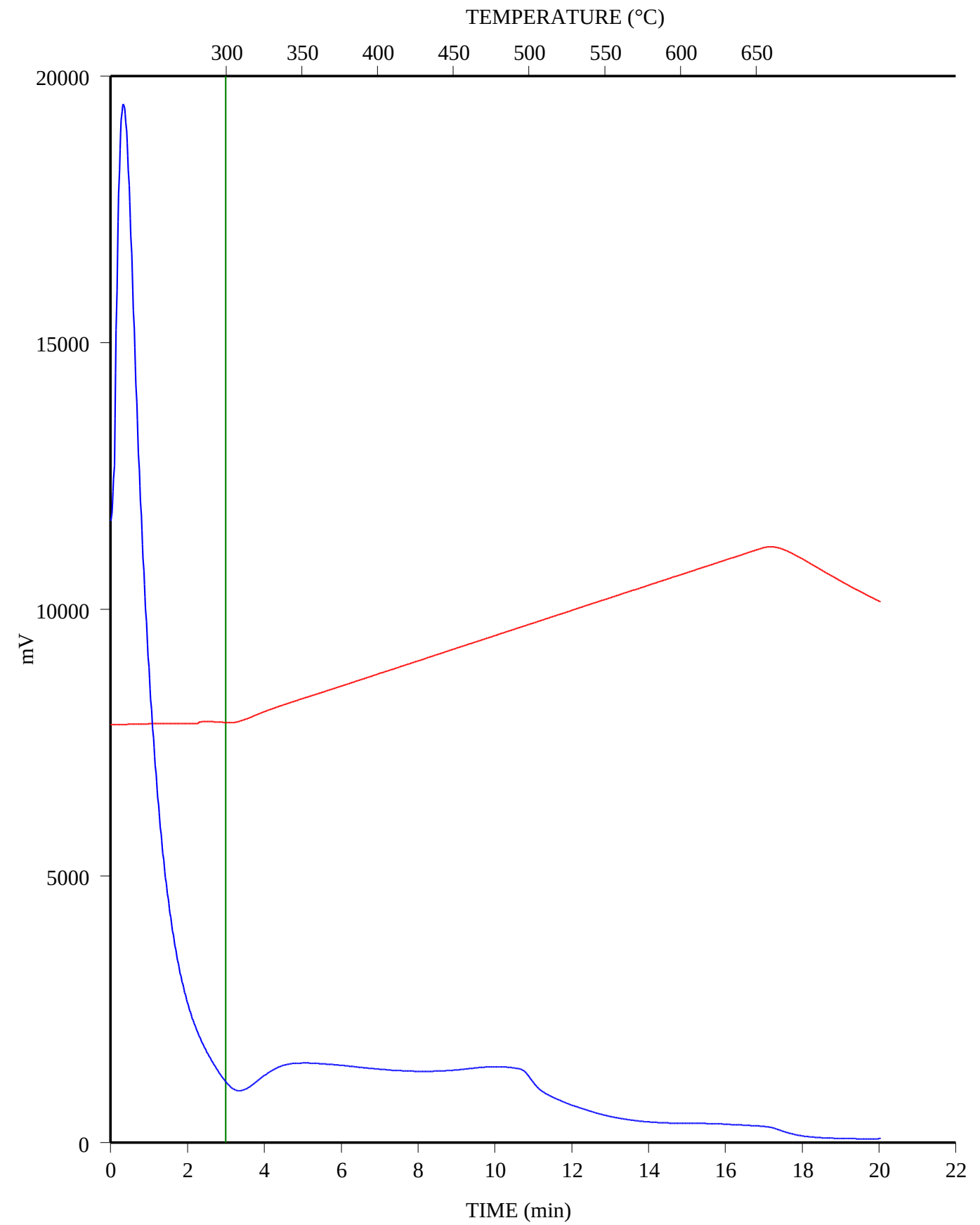
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FID Hydrocarbons



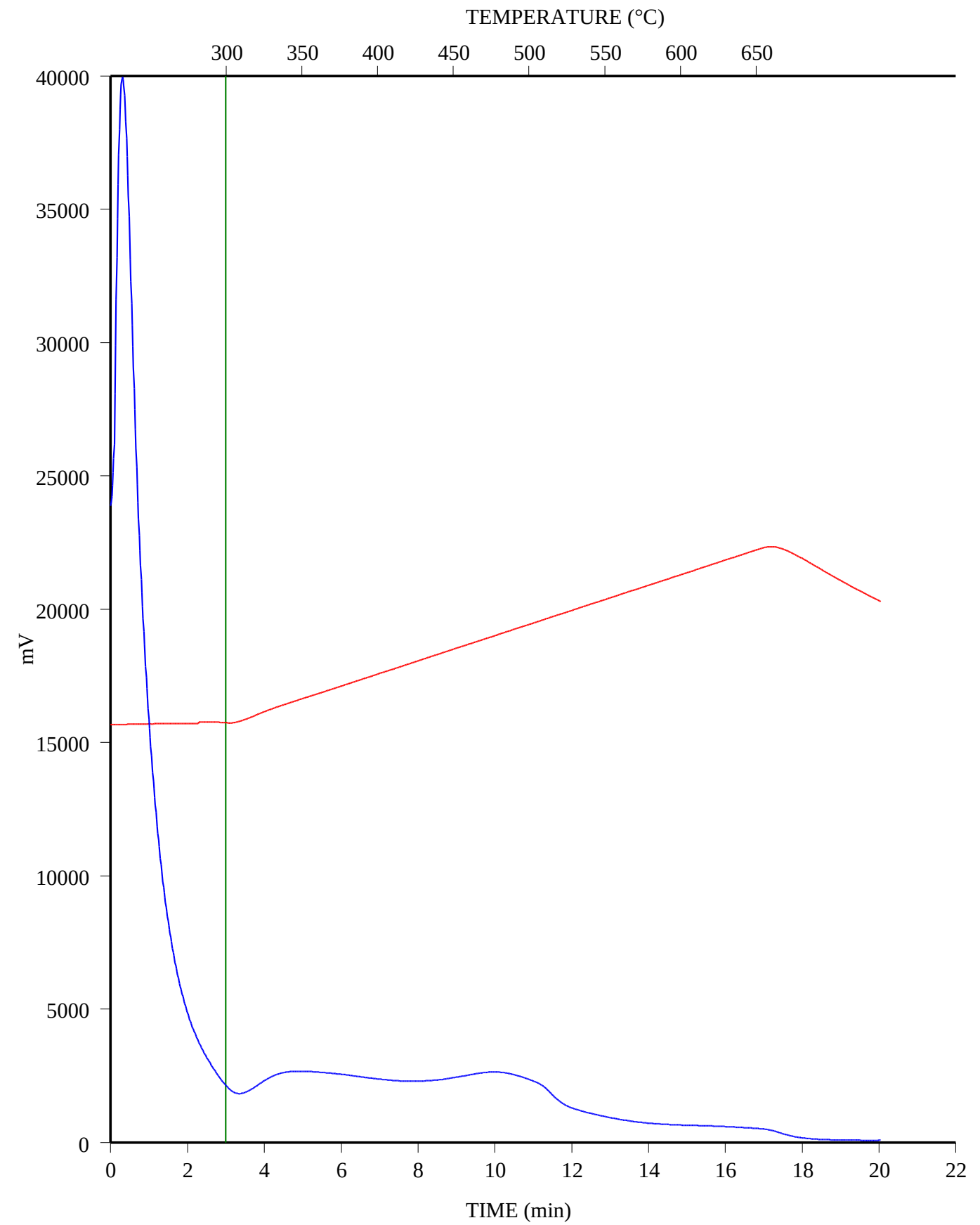
C-590423; COPRC 102 HZ WILLGR 14-10-44-7; 3099.9 m
FID Hydrocarbons



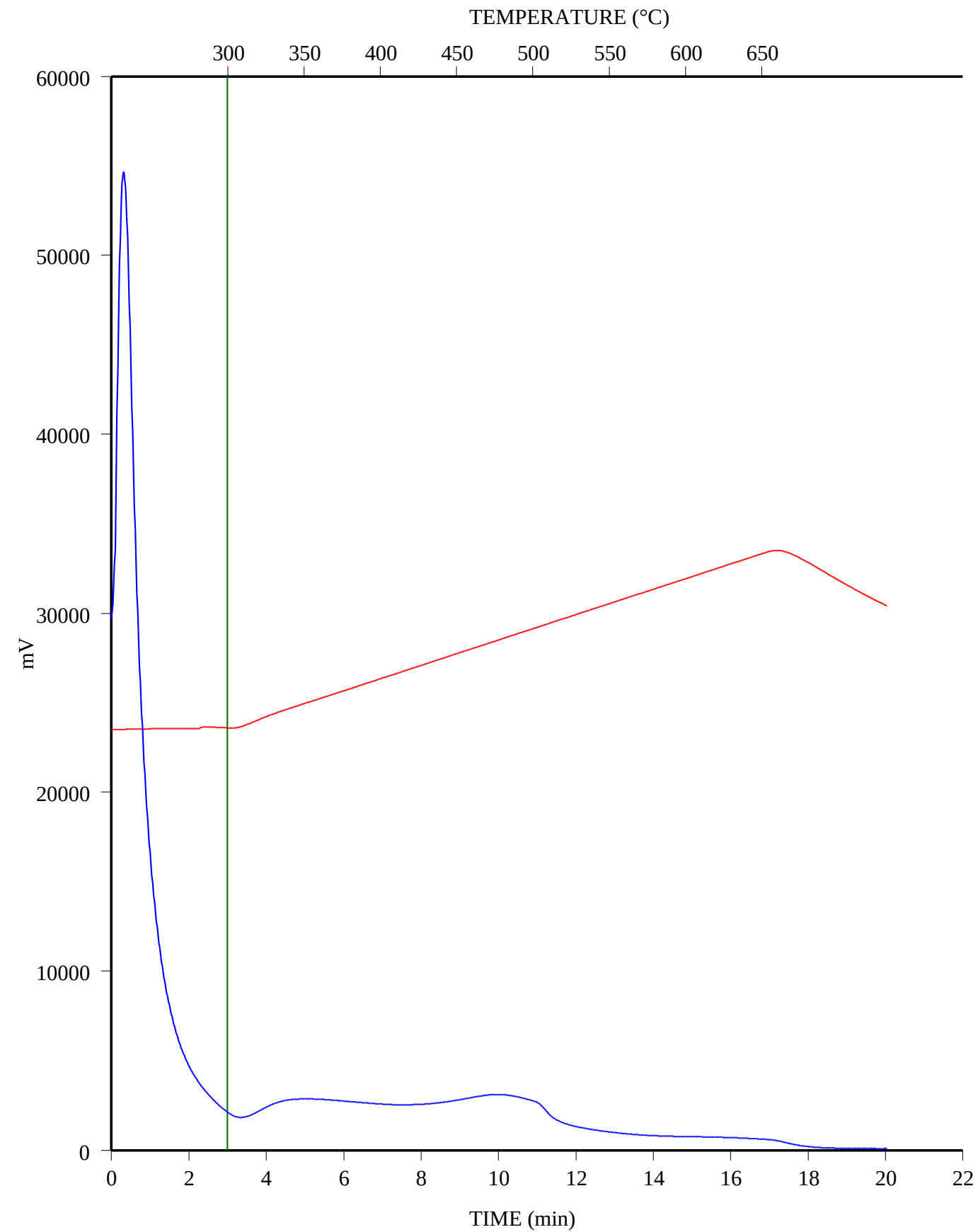
C-590424; COPRC 102 HZ WILLGR 14-10-44-7; 3100.75 m
FID Hydrocarbons



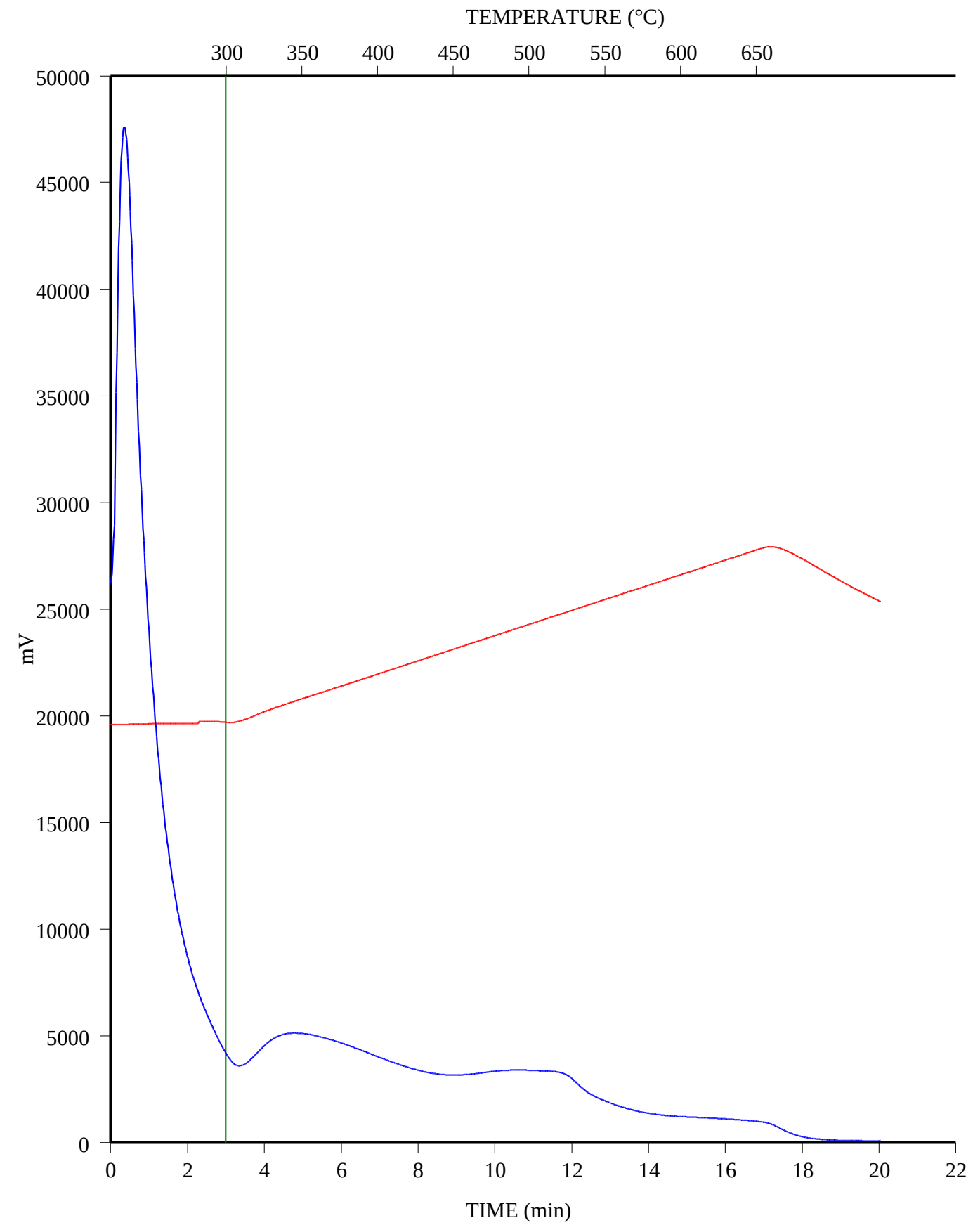
C-590425; COPRC 102 HZ WILLGR 14-10-44-7; 3102.75 m
FID Hydrocarbons



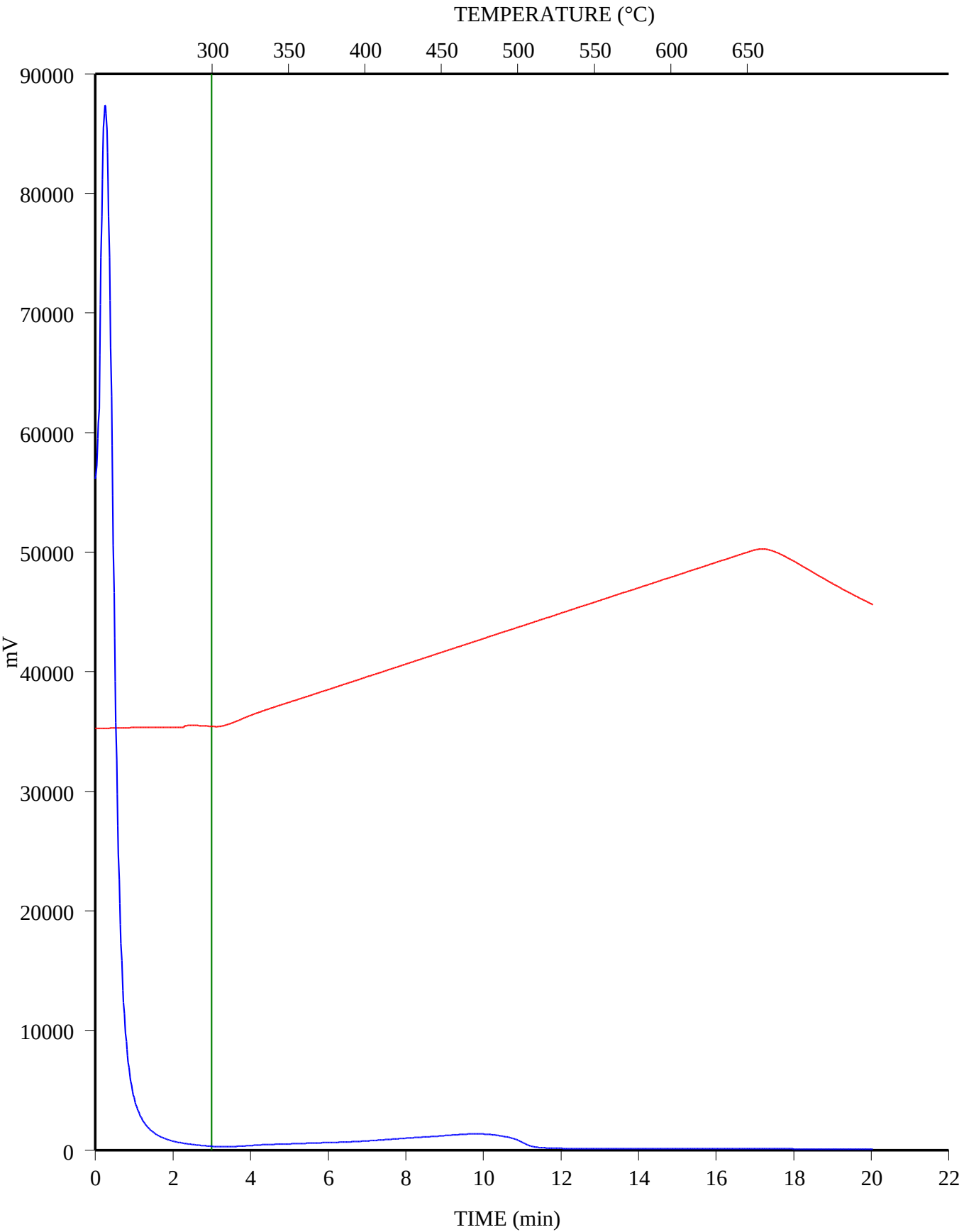
C-590426; COPRC 102 HZ WILLGR 14-10-44-7; 3104.15 m
FID Hydrocarbons



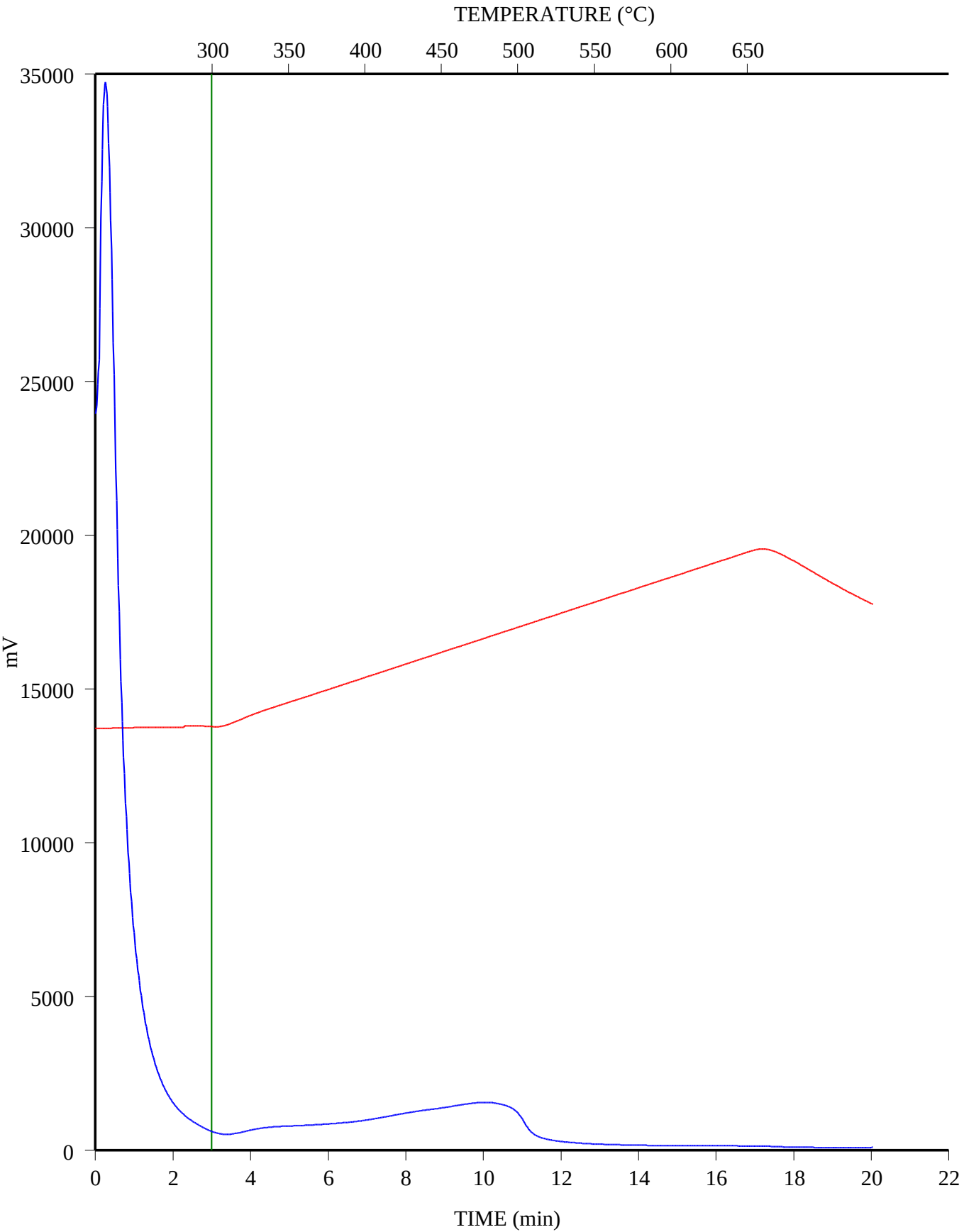
C-590427; COPRC 102 HZ WILLGR 14-10-44-7; 3105.3 m
FID Hydrocarbons



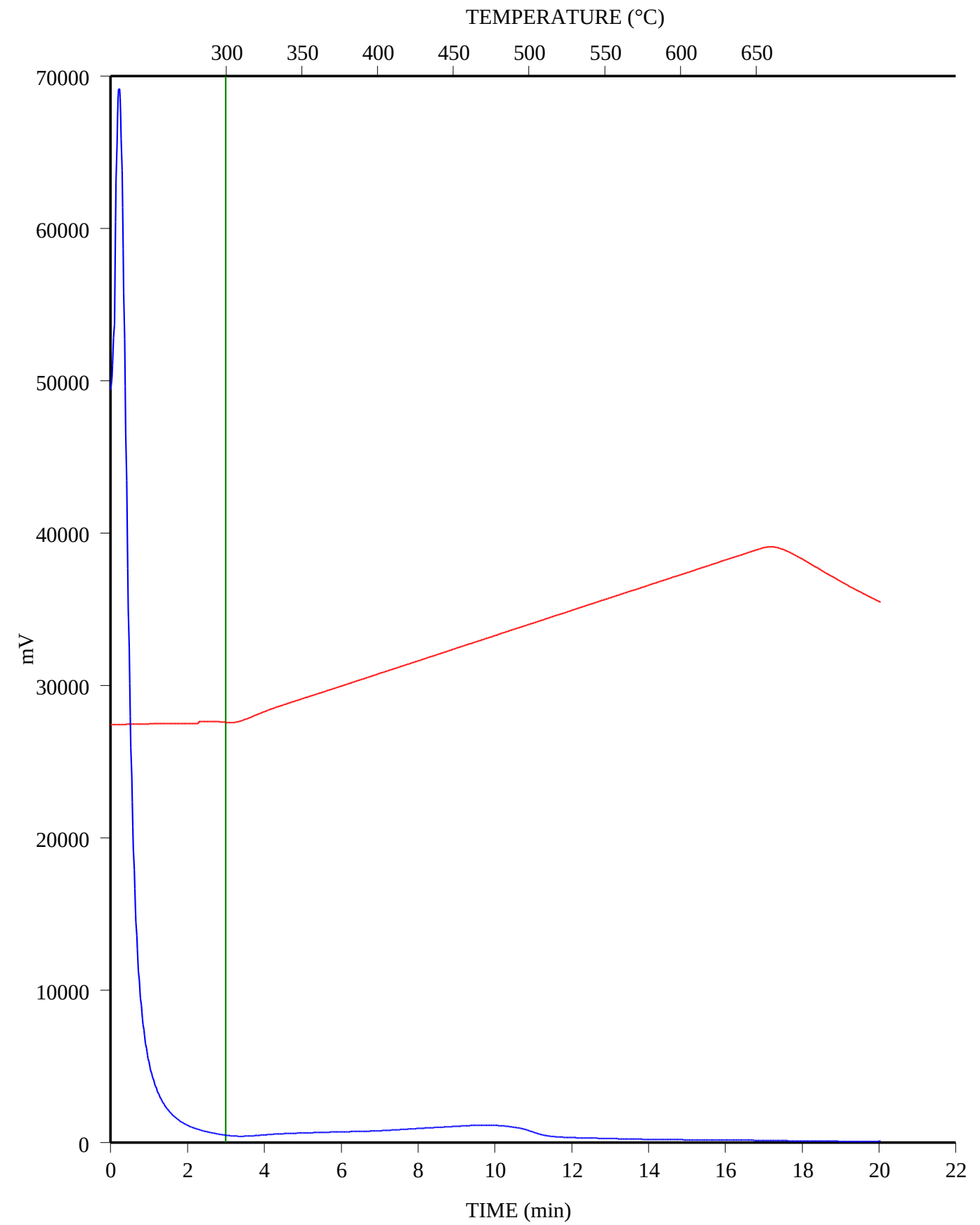
C-590428; COPRC 102 HZ WILLGR 14-10-44-7; 3105.7 m
FID Hydrocarbons



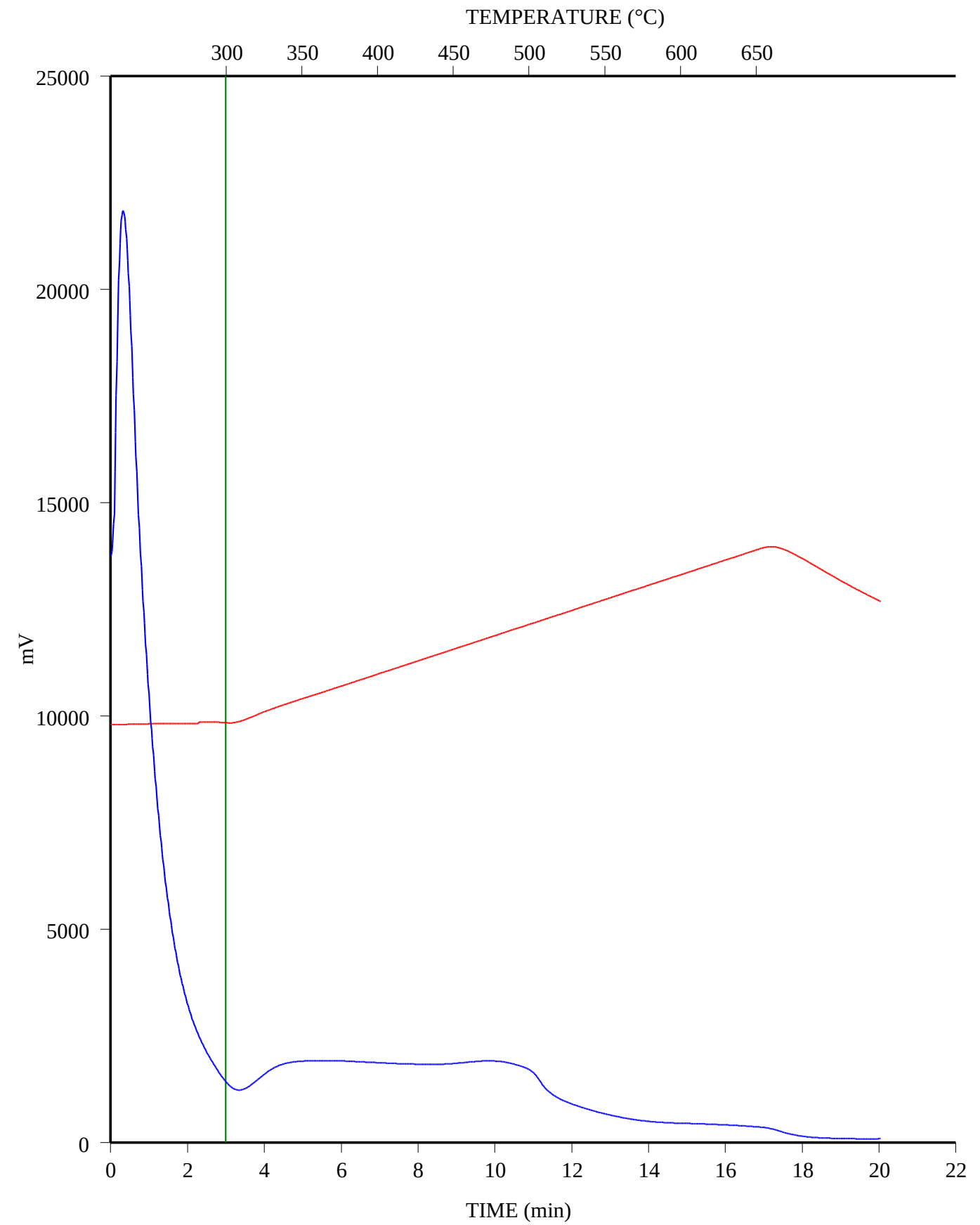
C-590429; COPRC 102 HZ WILLGR 14-10-44-7; 3106.05 m
FID Hydrocarbons



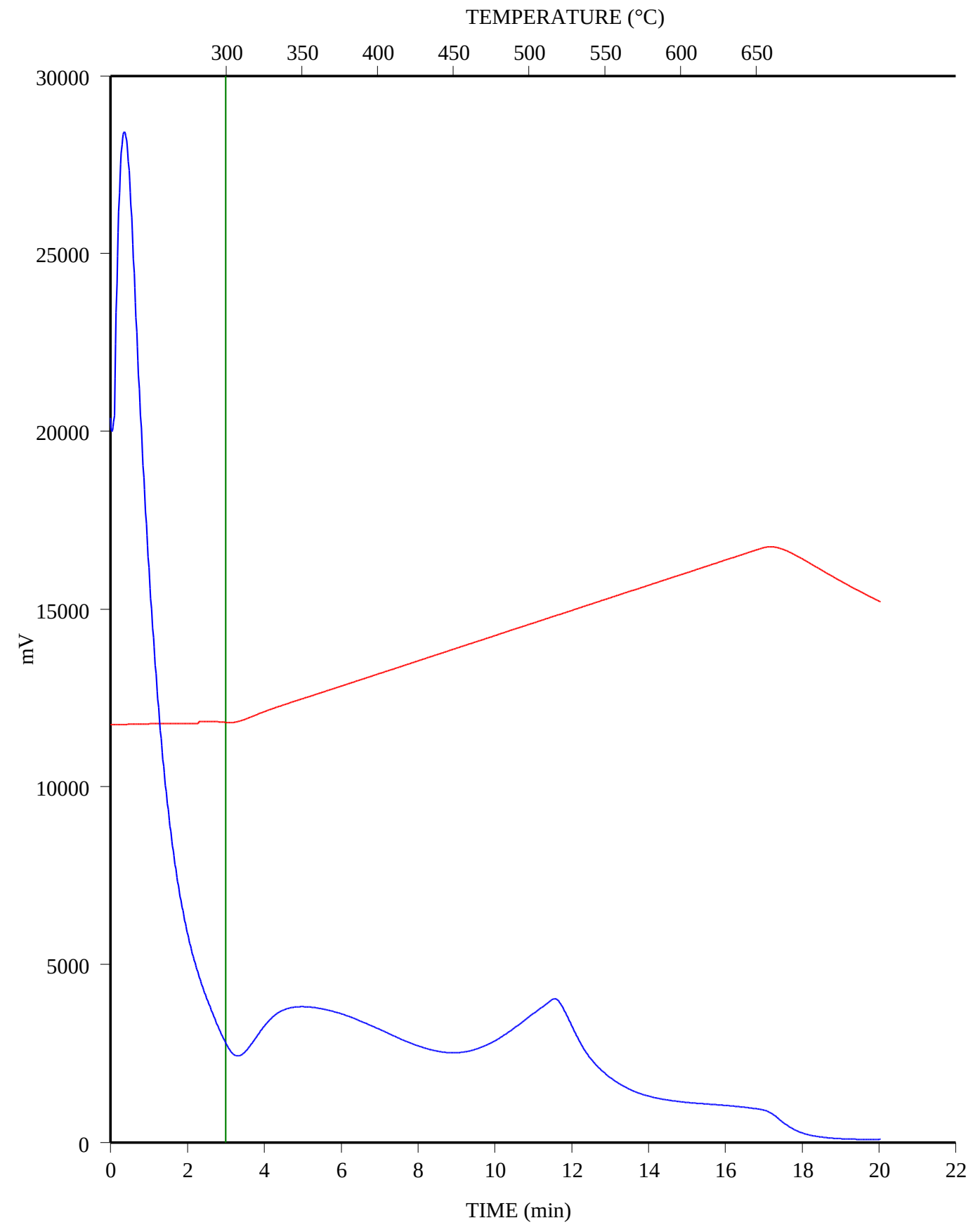
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FID Hydrocarbons



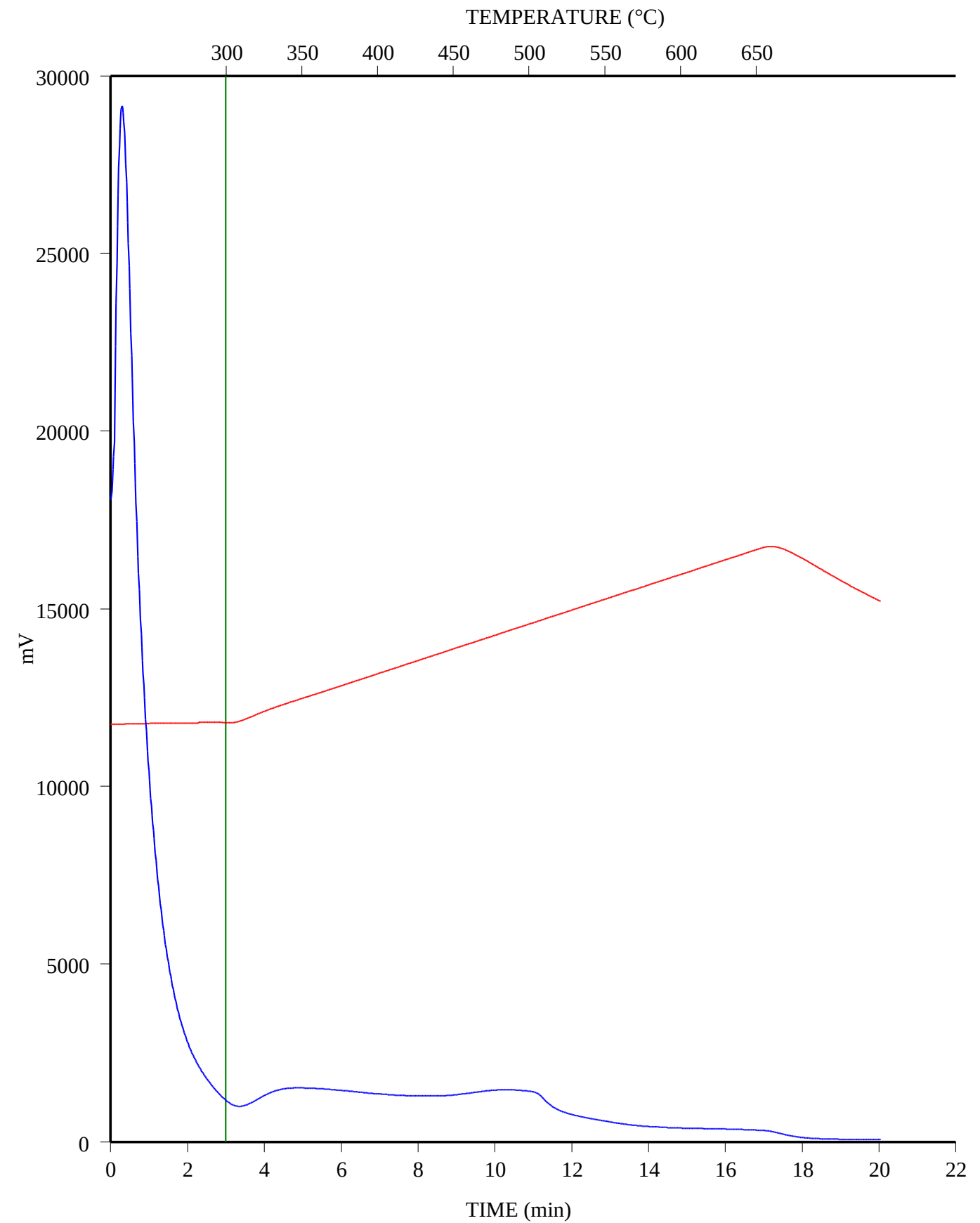
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FID Hydrocarbons



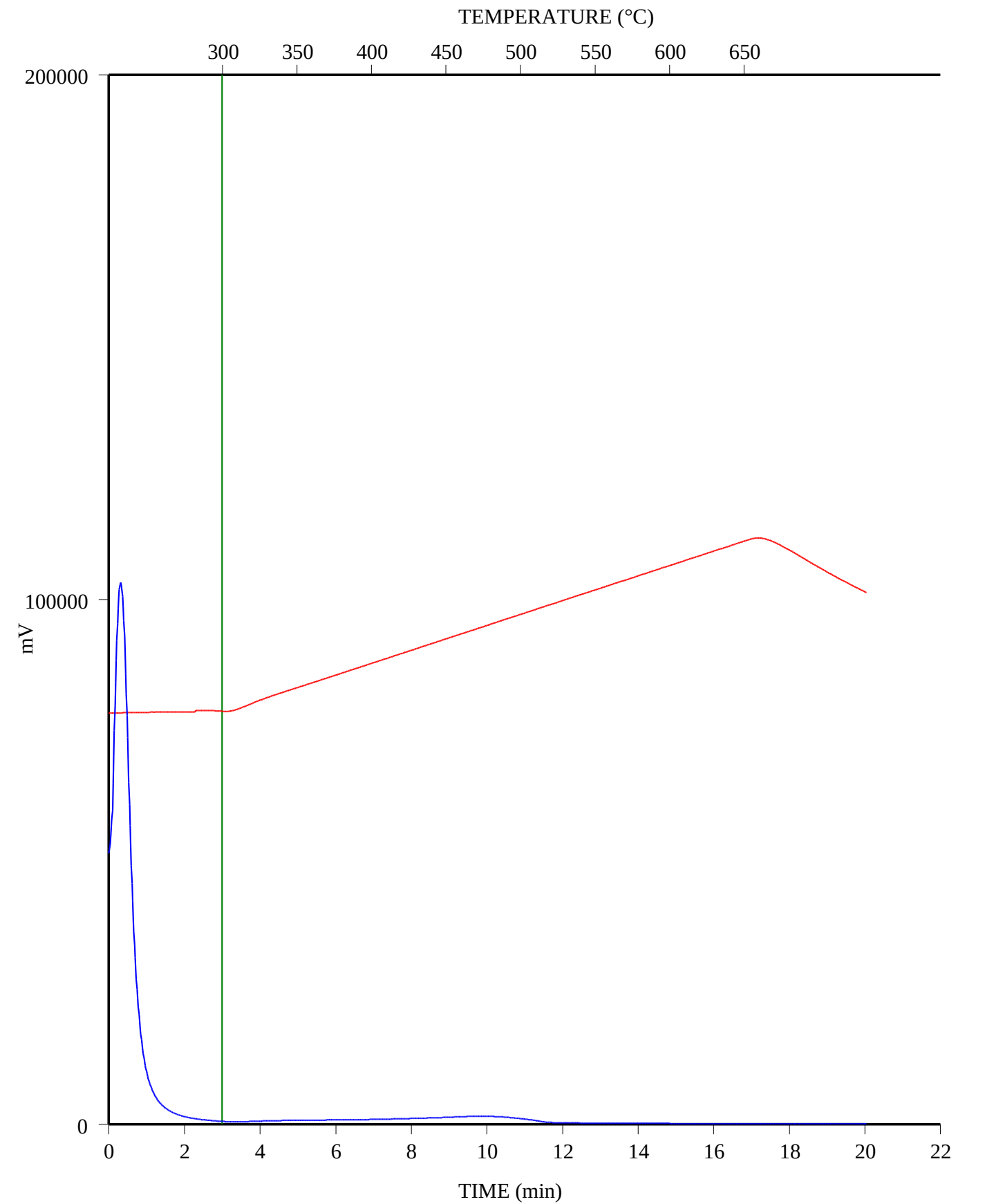
C-590432; COPRC 102 HZ WILLGR 14-10-44-7; 3107.75 m
FID Hydrocarbons



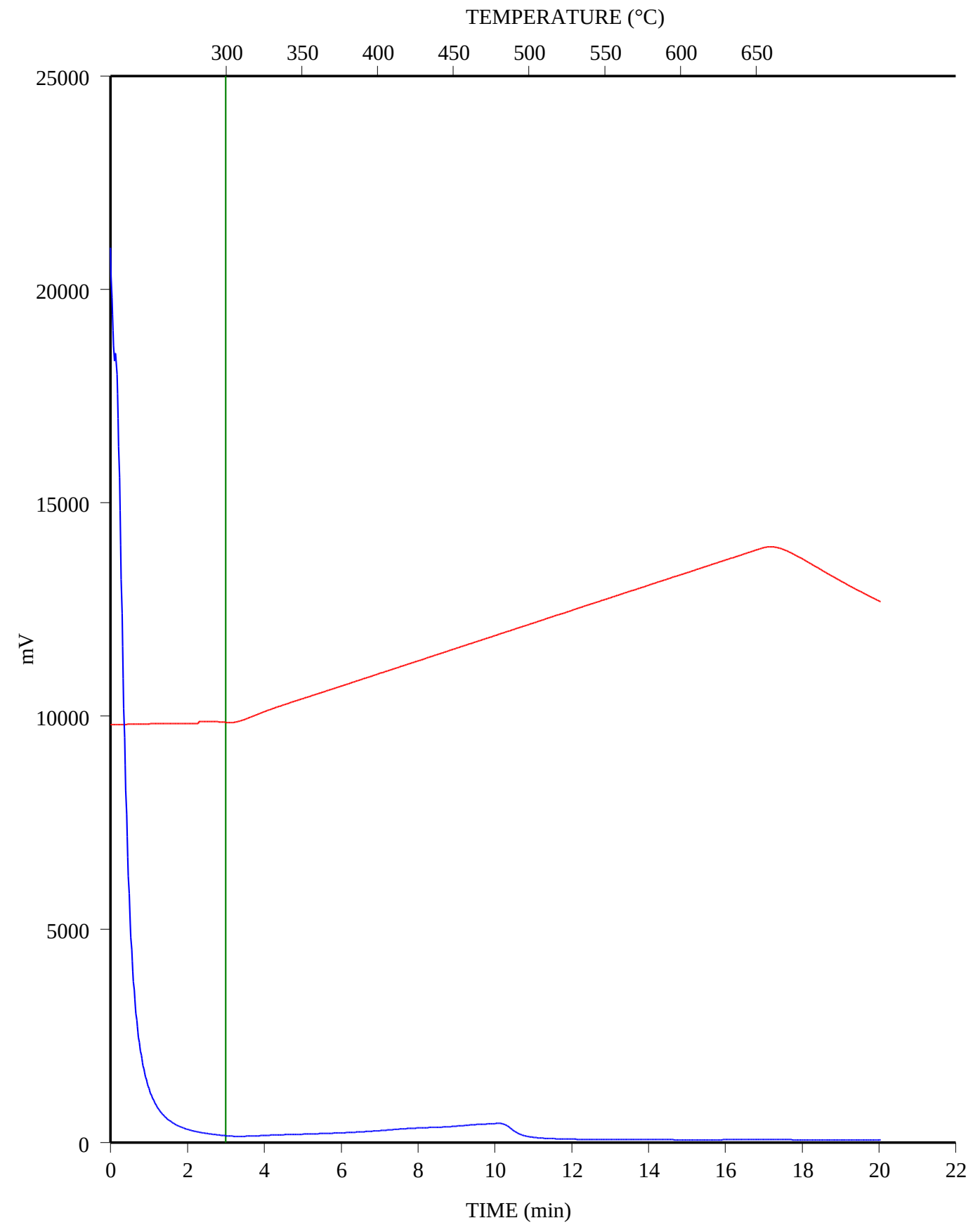
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FID Hydrocarbons



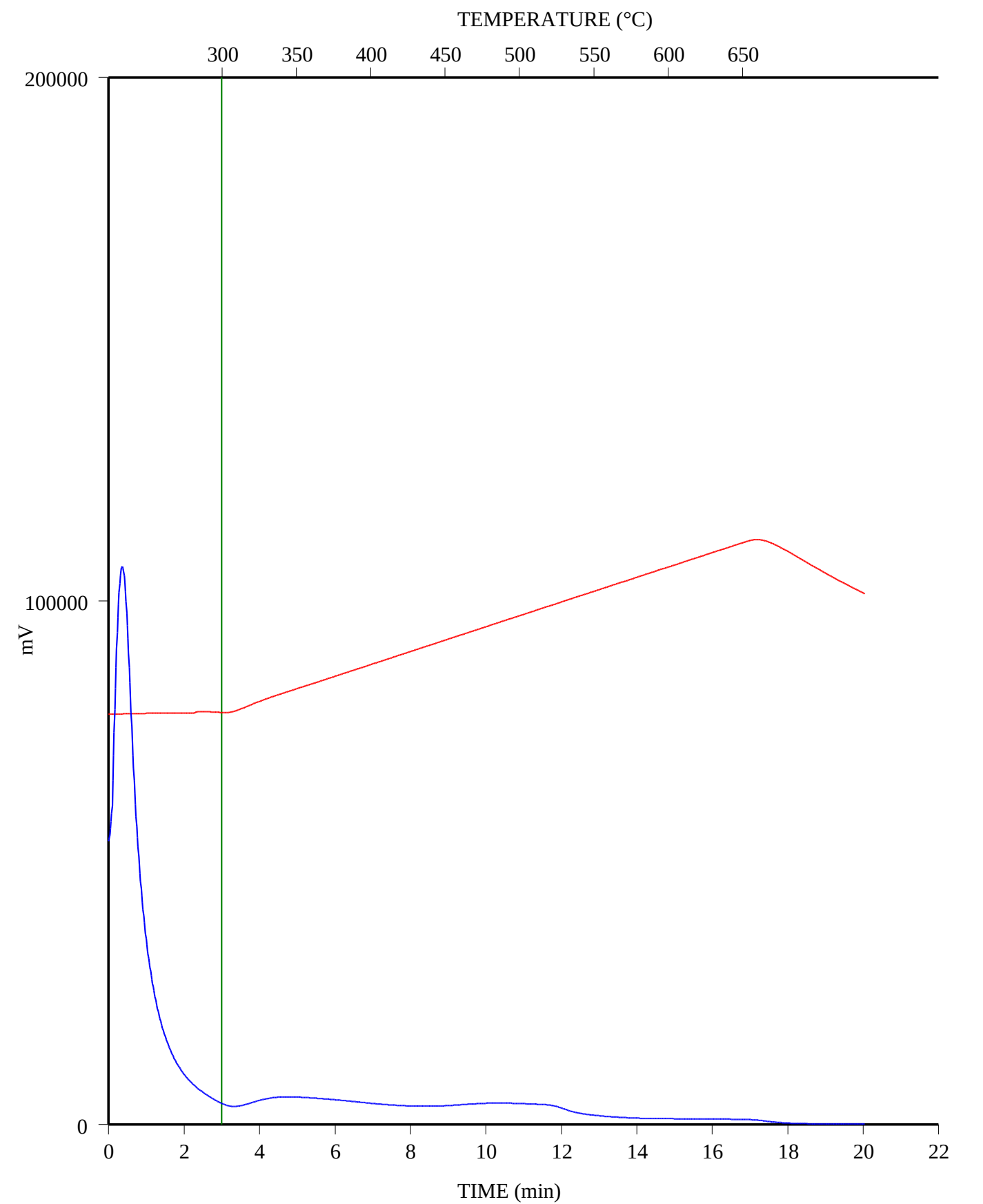
C-590434; COPRC 102 HZ WILLGR 14-10-44-7; 3110.6 m
FID Hydrocarbons



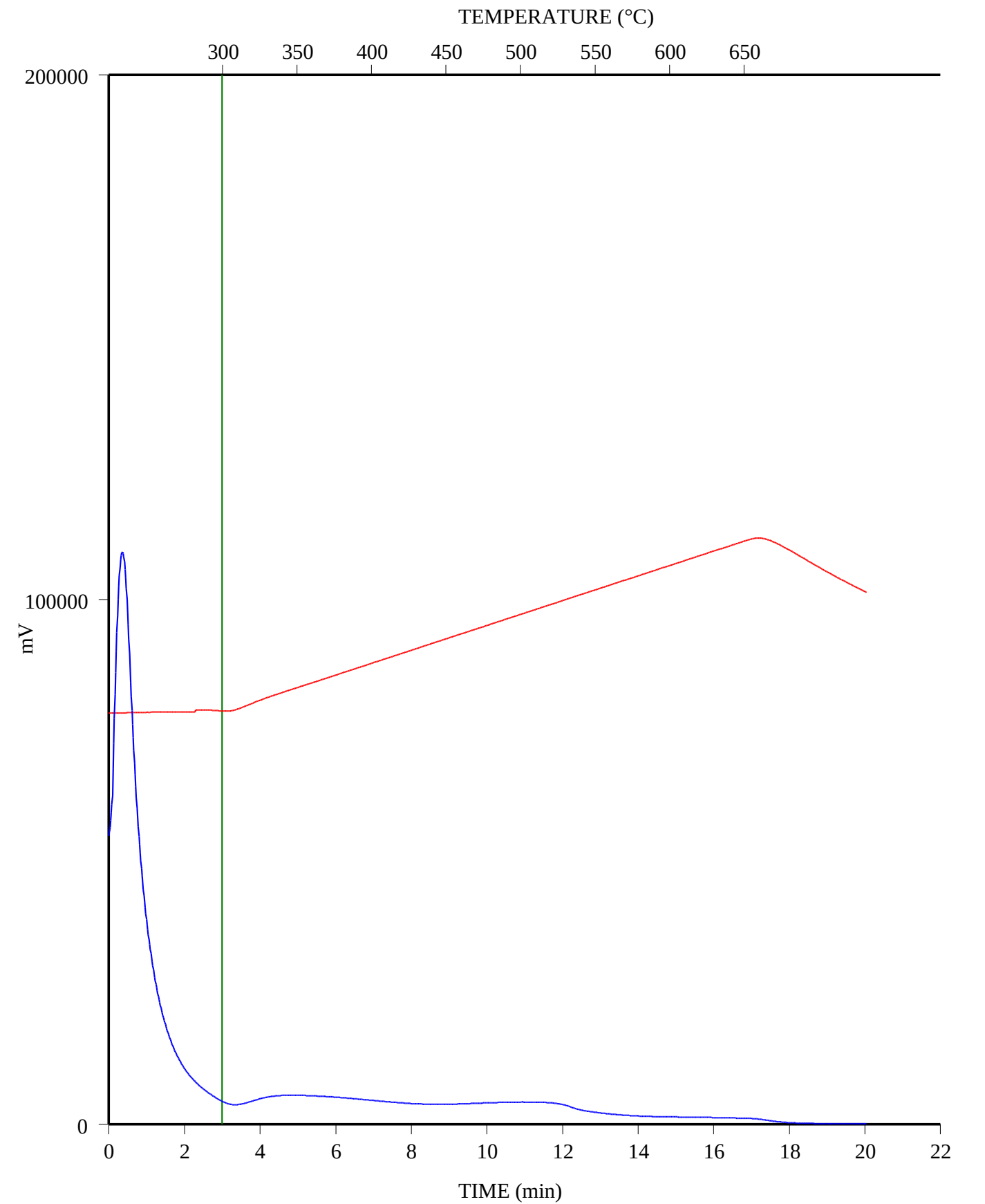
C-590435; COPRC 102 HZ WILLGR 14-10-44-7; 3110.85 m
FID Hydrocarbons



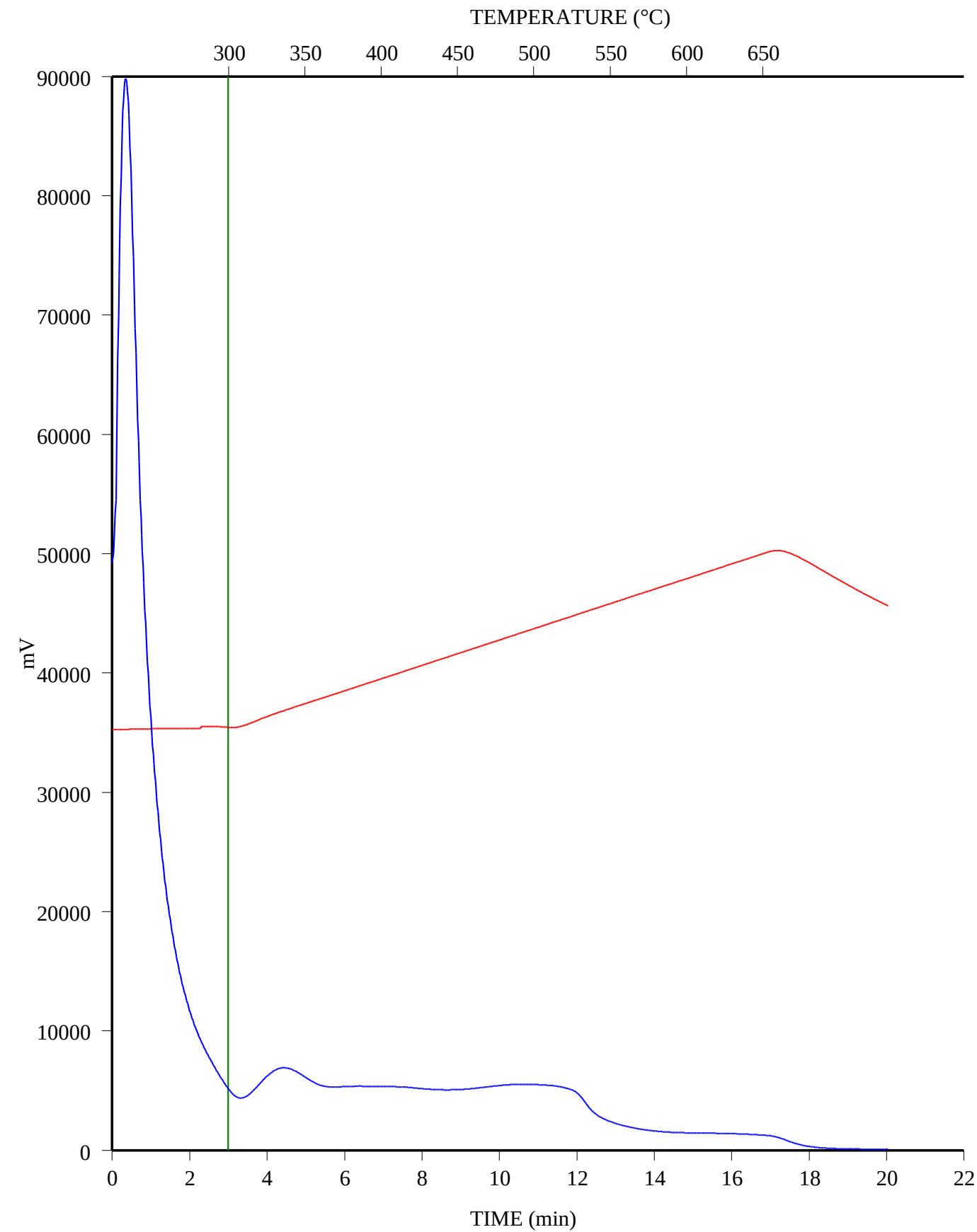
C-590436; COPRC 102 HZ WILLGR 14-10-44-7; 3112.35 m
FID Hydrocarbons



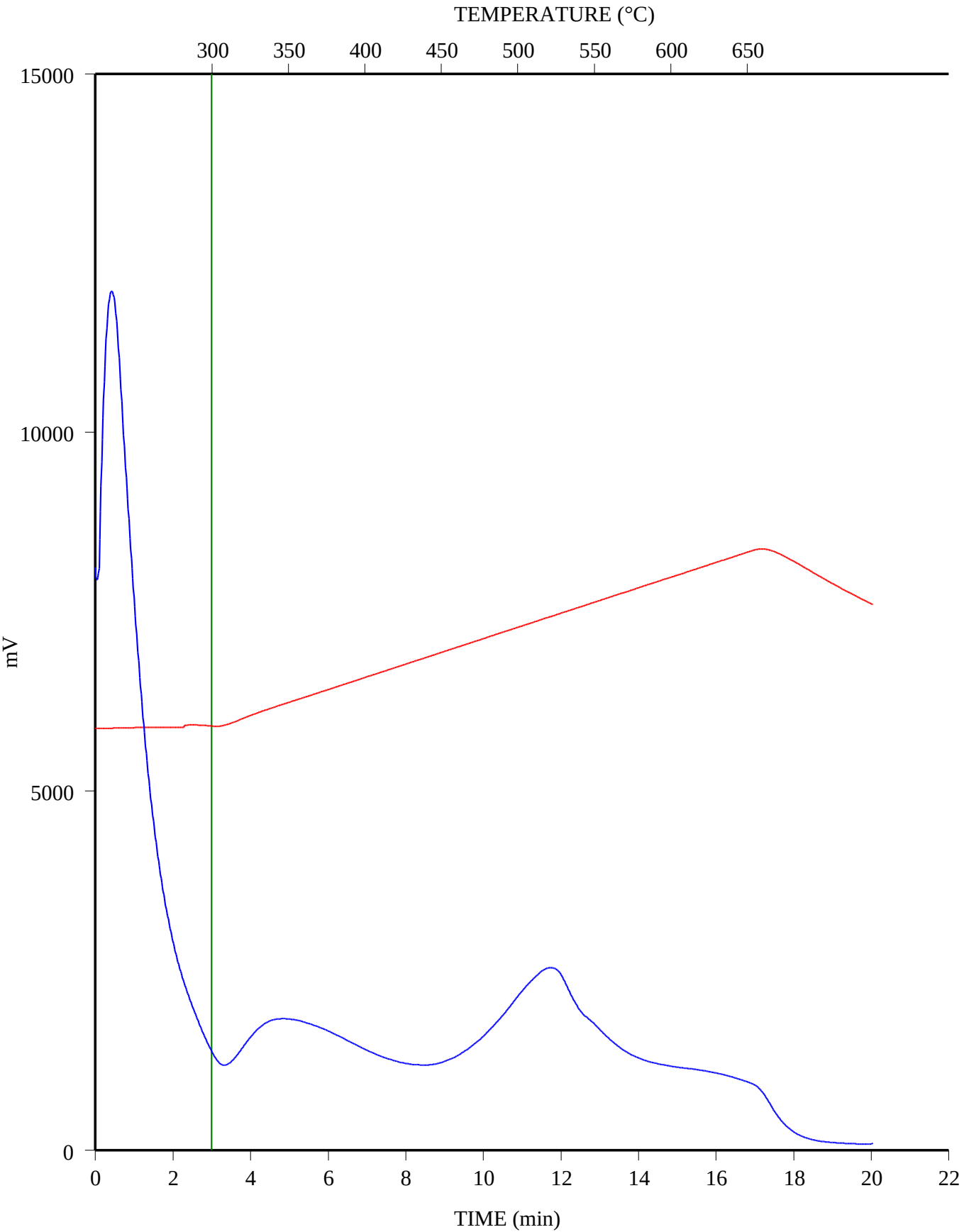
C-590437; COPRC 102 HZ WILLGR 14-10-44-7; 3113.35 m
FID Hydrocarbons



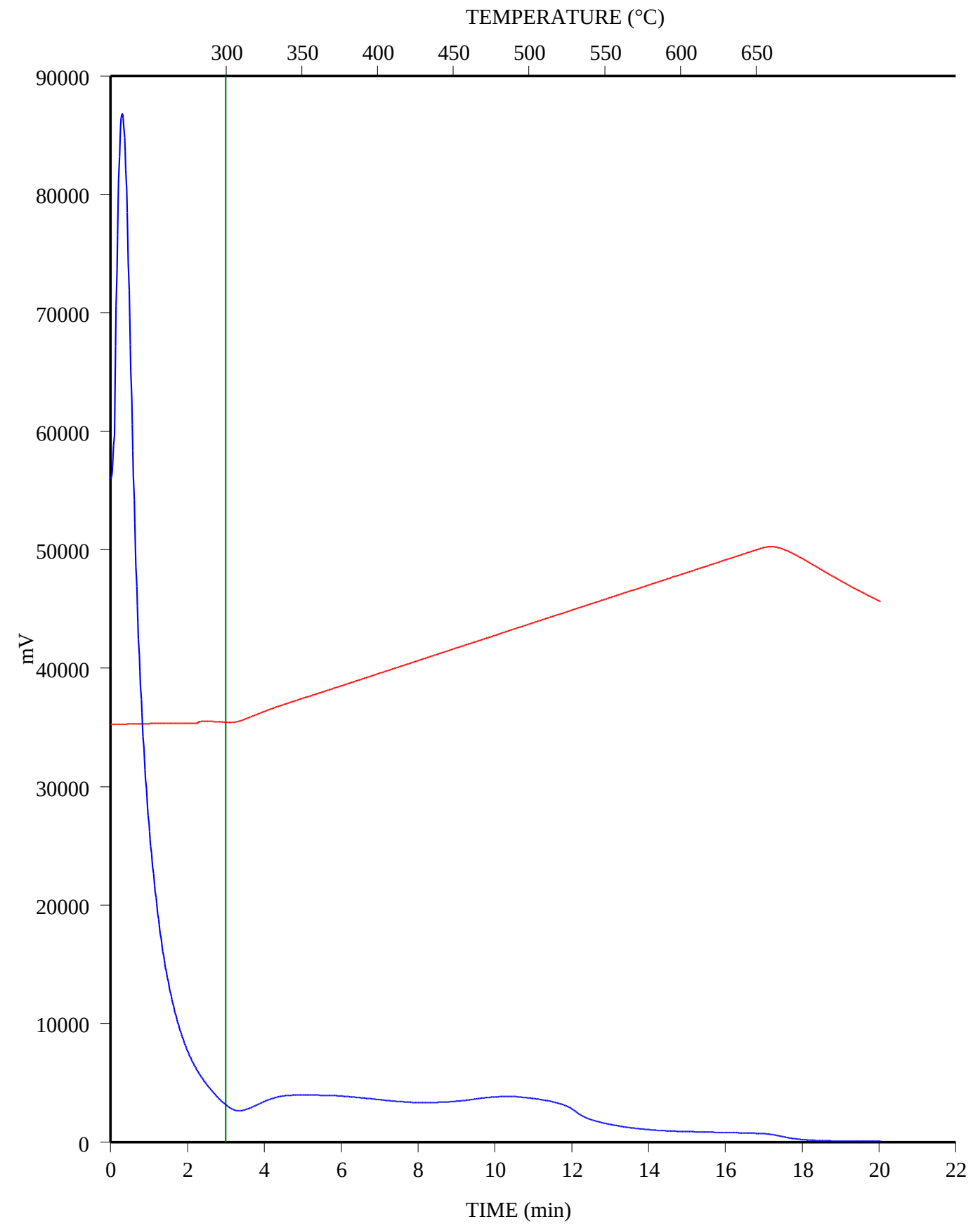
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FID Hydrocarbons



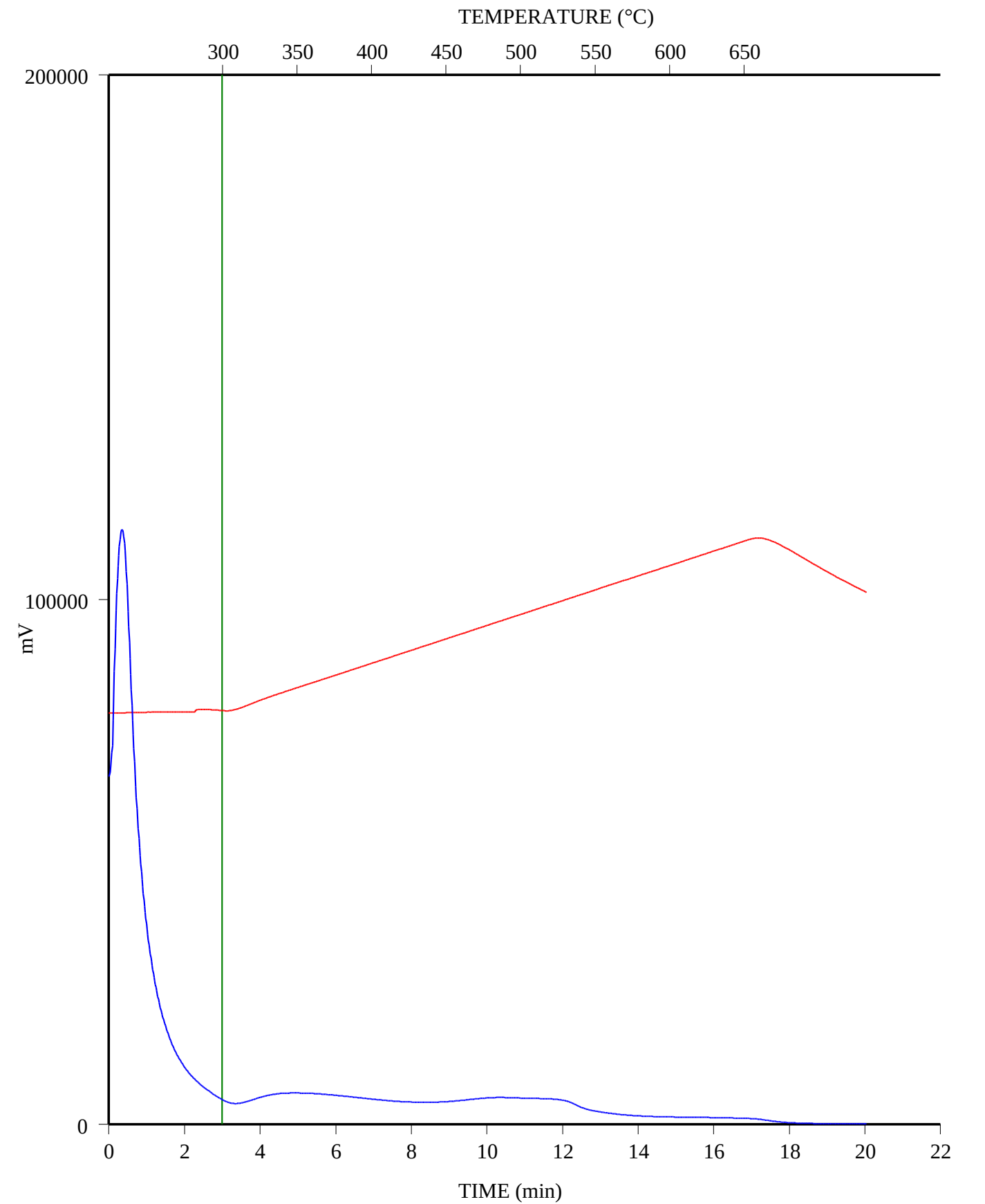
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FID Hydrocarbons



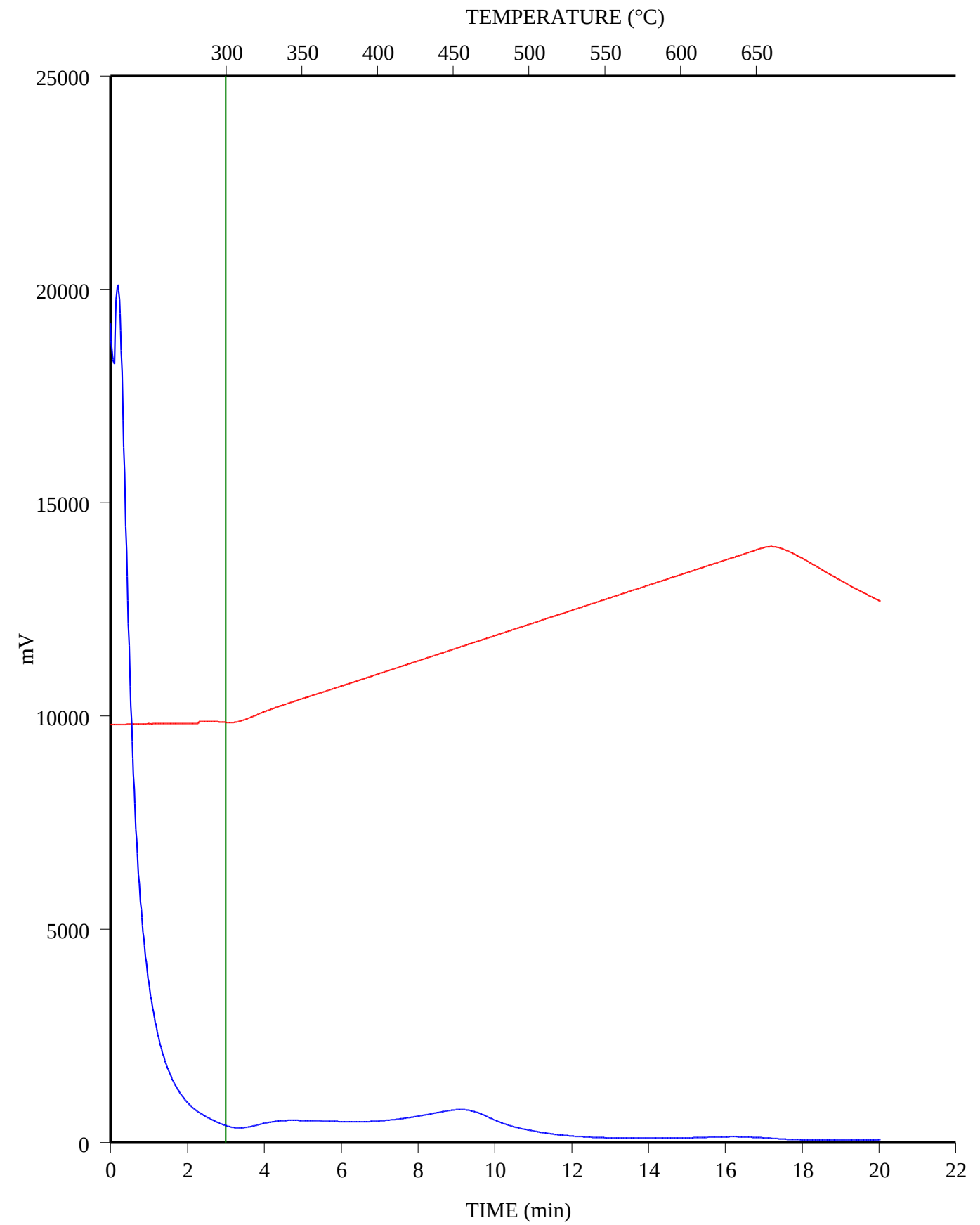
C-590440; COPRC 102 HZ WILLGR 14-10-44-7; 3117.05 m
FID Hydrocarbons



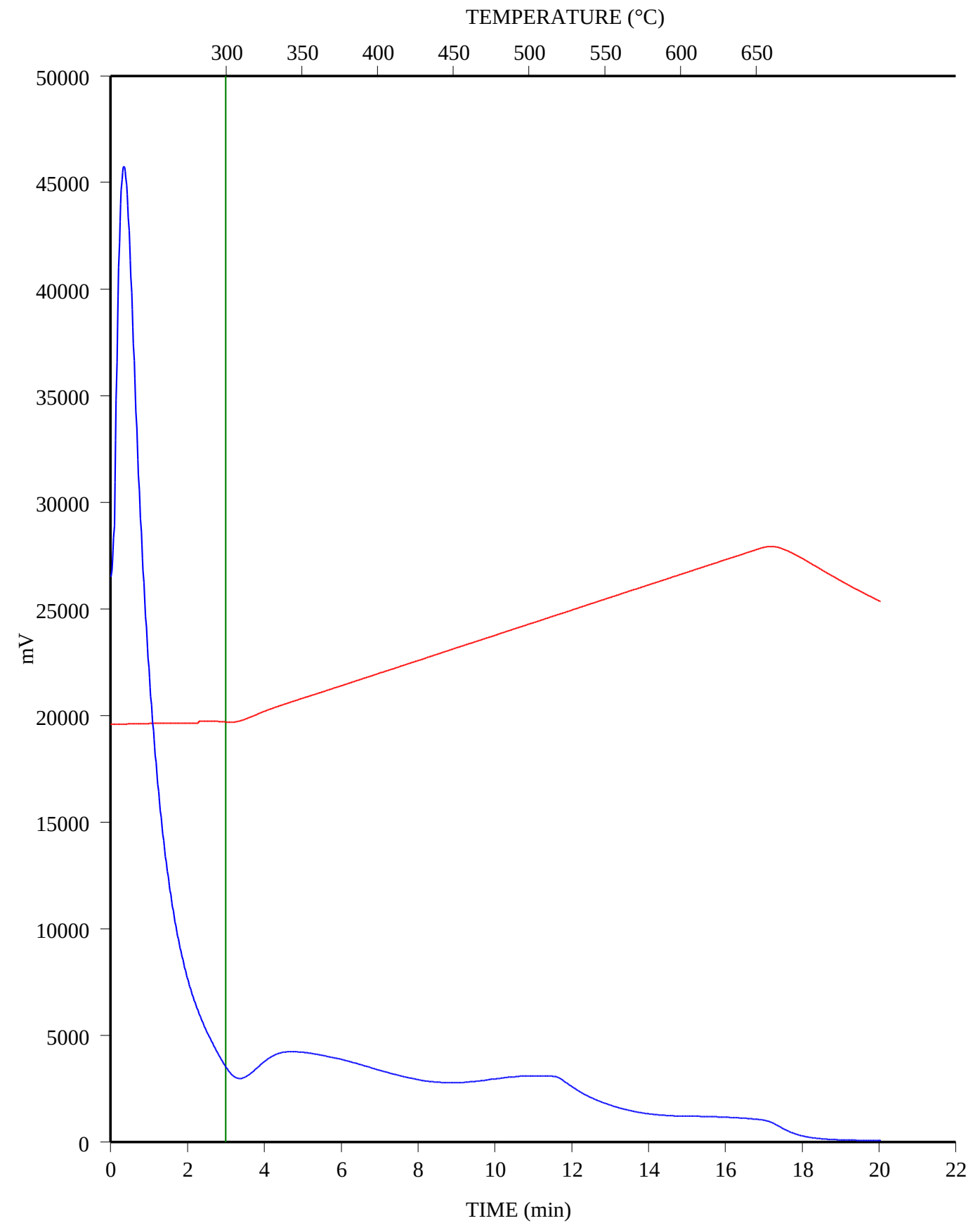
C-590441; COPRC 102 HZ WILLGR 14-10-44-7; 3118.35 m
FID Hydrocarbons



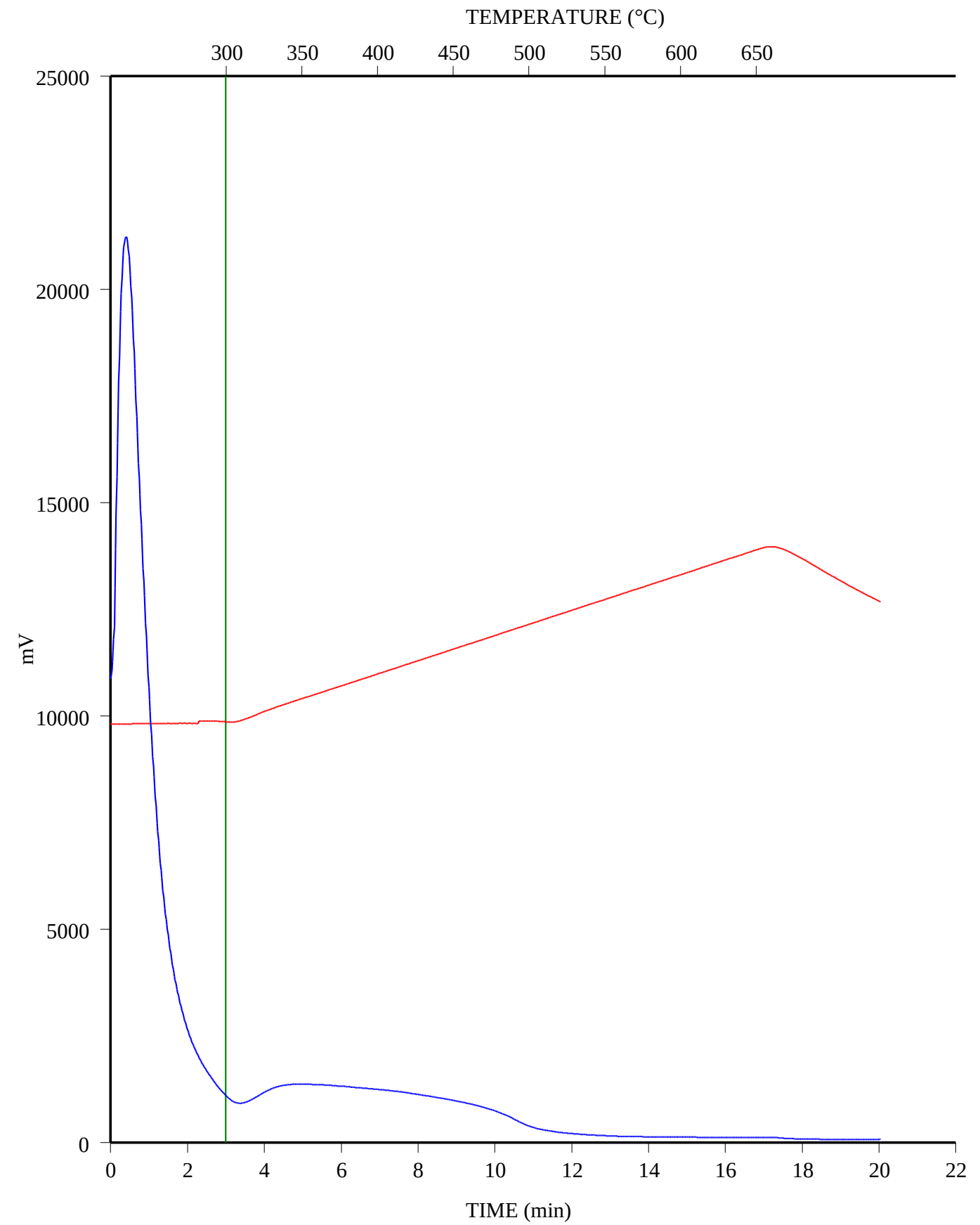
C-590442; COPRC 102 HZ WILLGR 14-10-44-7; 3119.45 m
FID Hydrocarbons



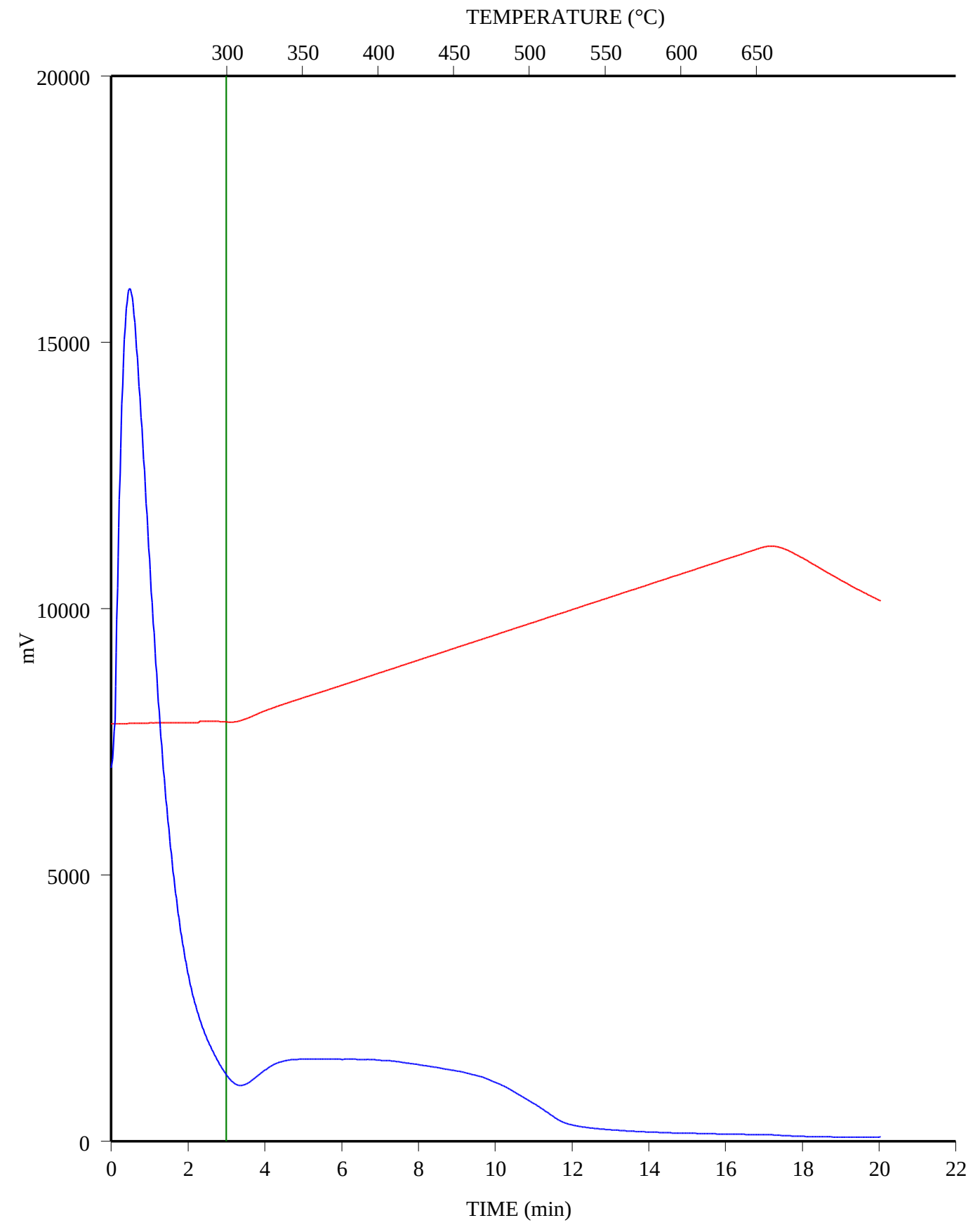
C-590443; COPRC 102 HZ WILLGR 14-10-44-7; 3121 m
FID Hydrocarbons



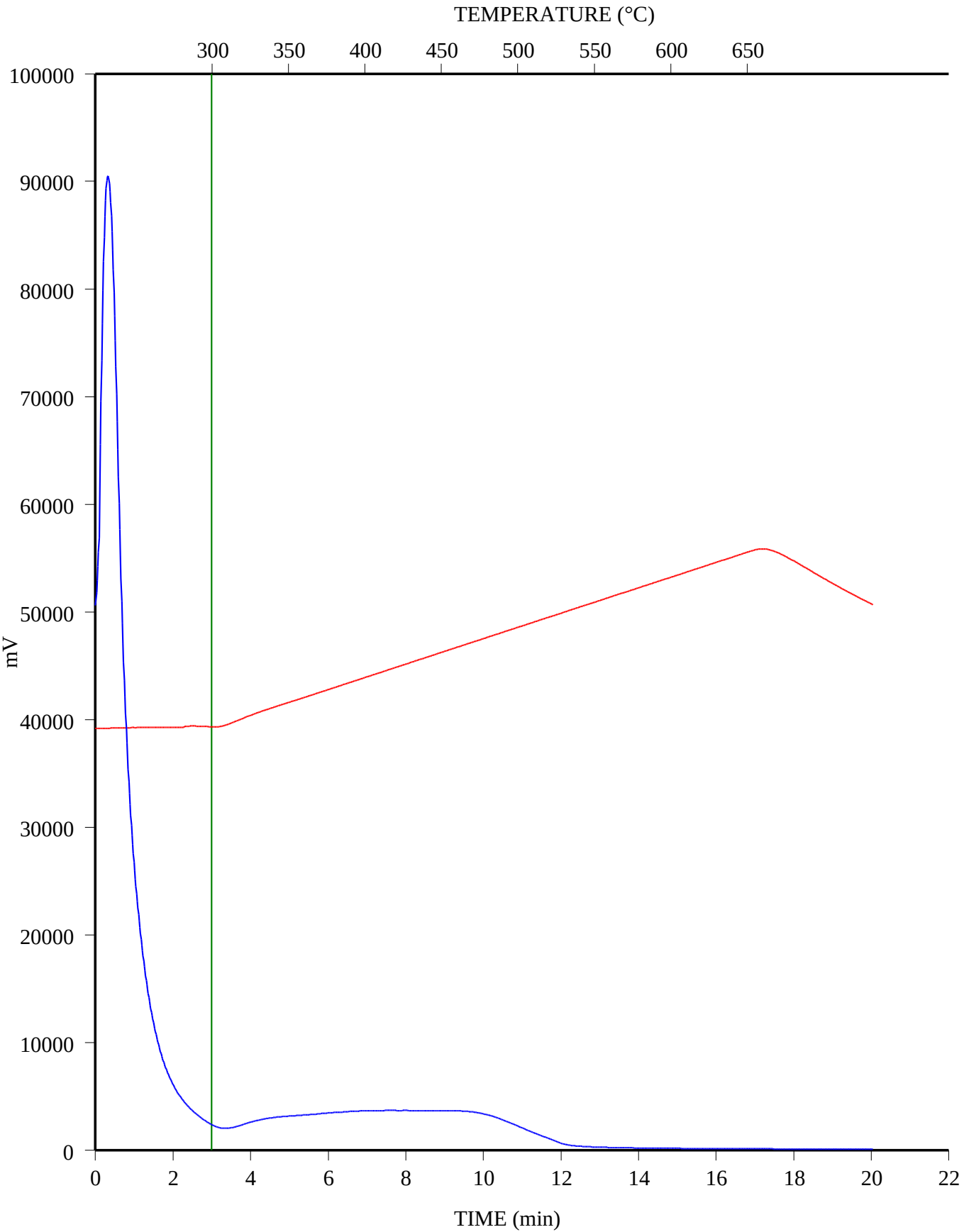
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FID Hydrocarbons



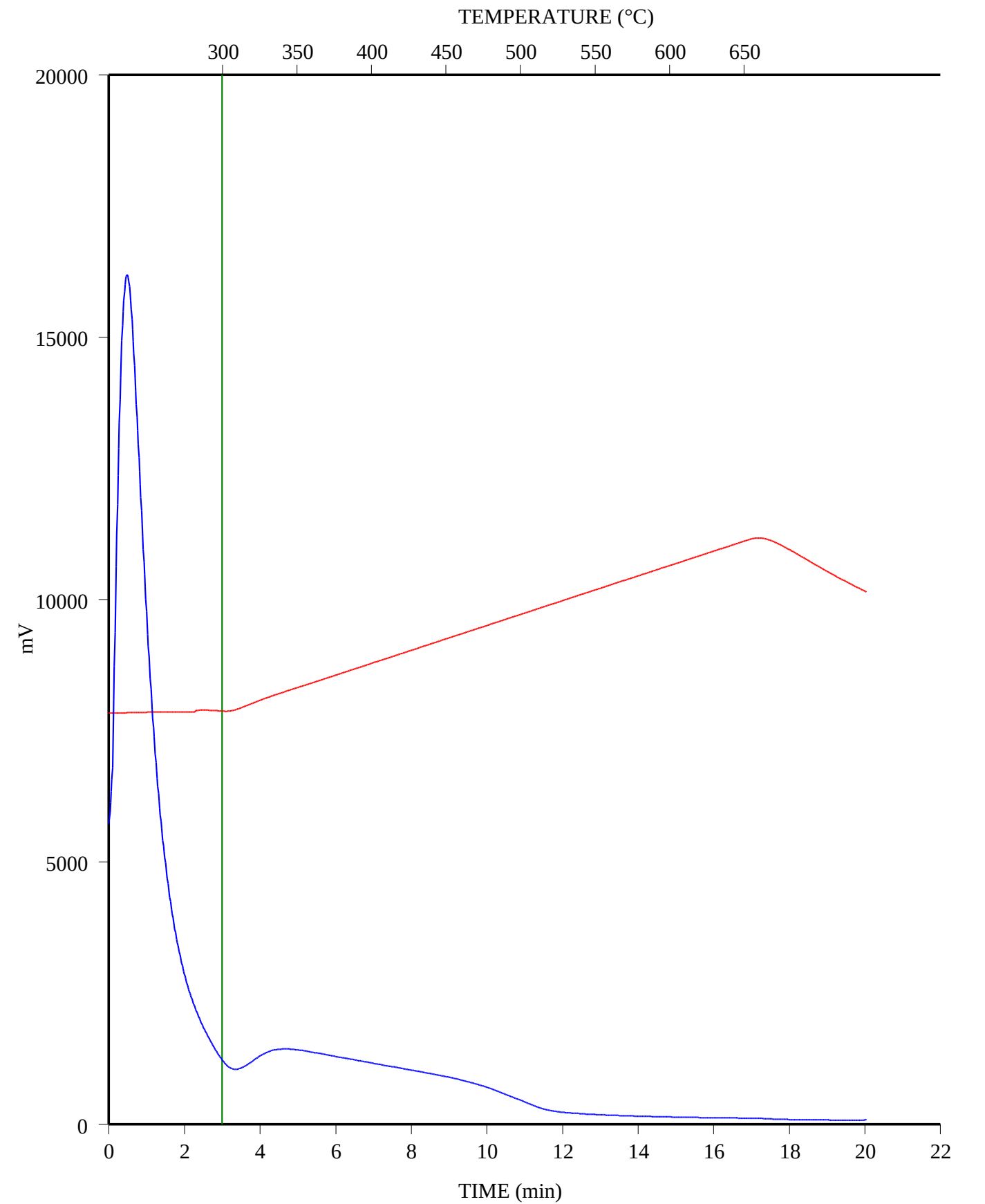
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FID Hydrocarbons



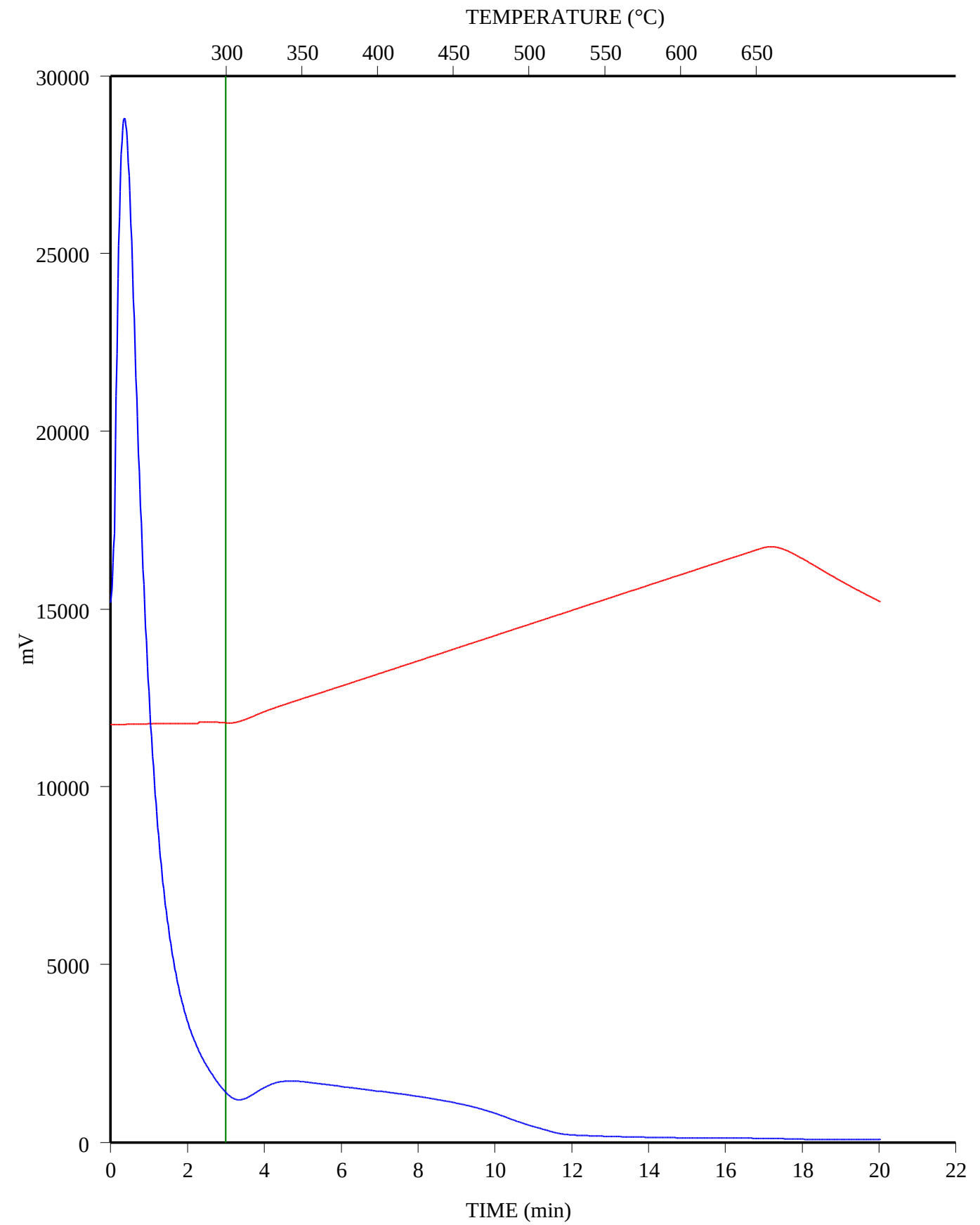
C-590446; COPRC 102 HZ WILLGR 14-10-44-7; 3125.25 m
FID Hydrocarbons



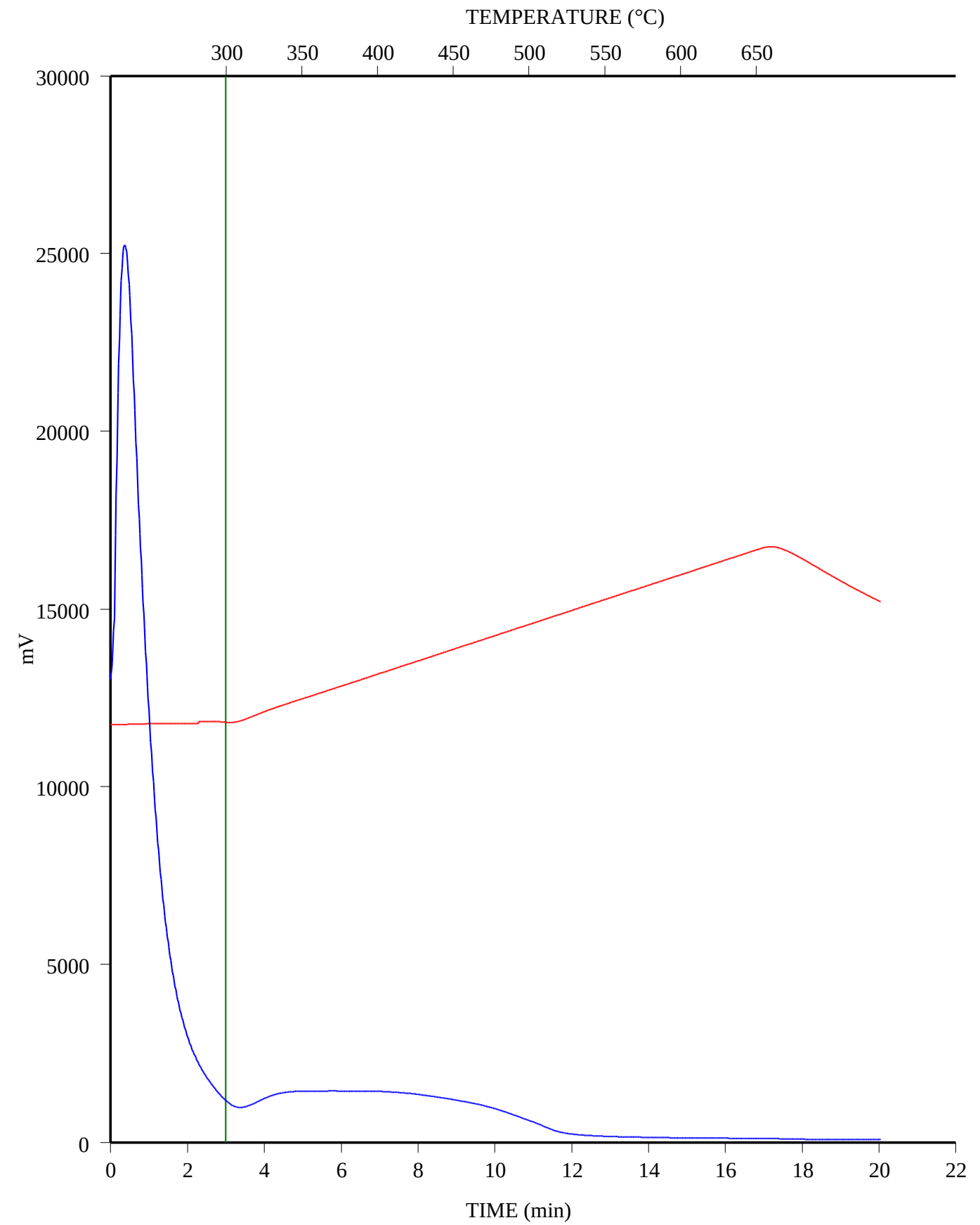
C-590447; COPRC 102 HZ WILLGR 14-10-44-7; 3126.45 m
FID Hydrocarbons



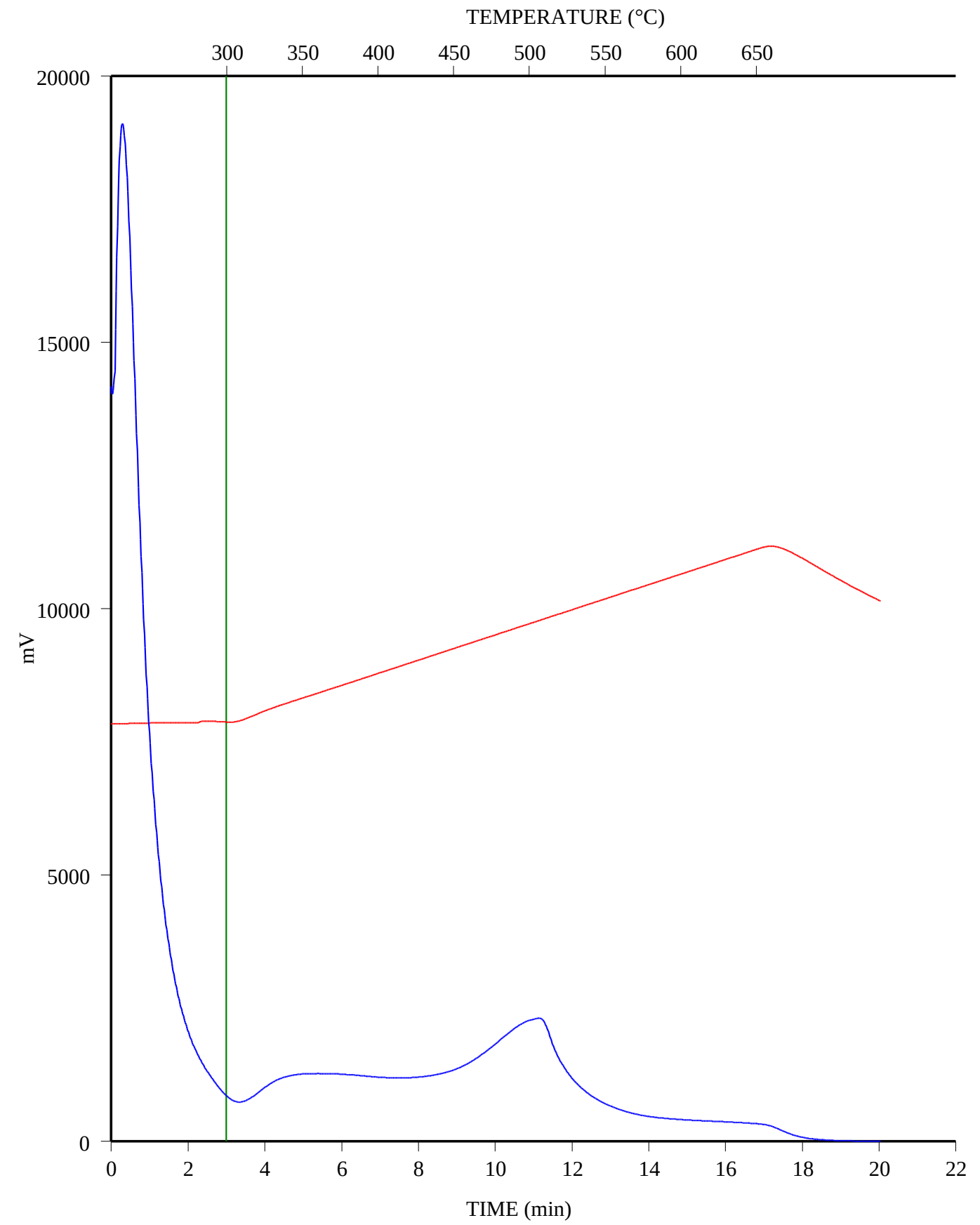
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FID Hydrocarbons



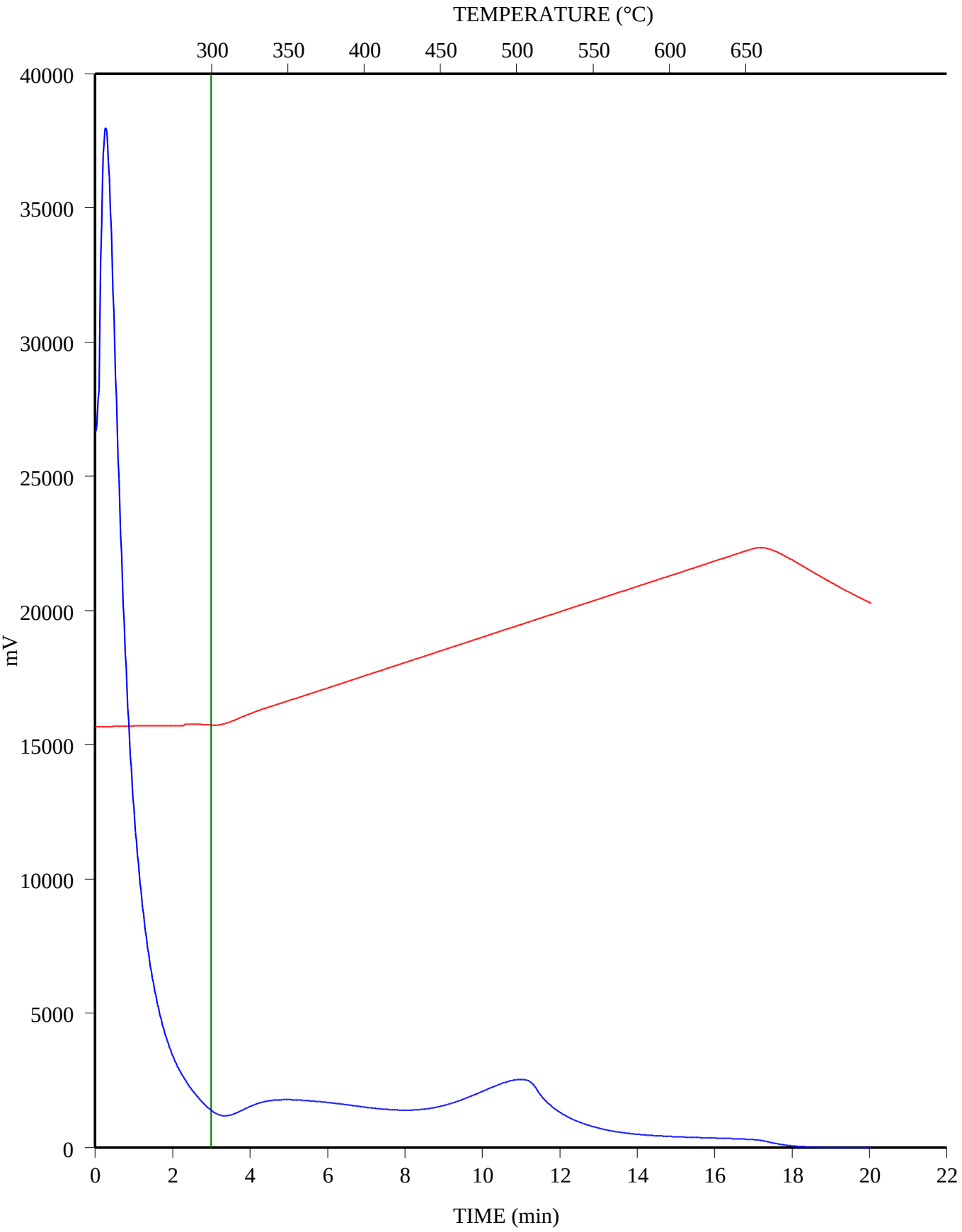
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FID Hydrocarbons



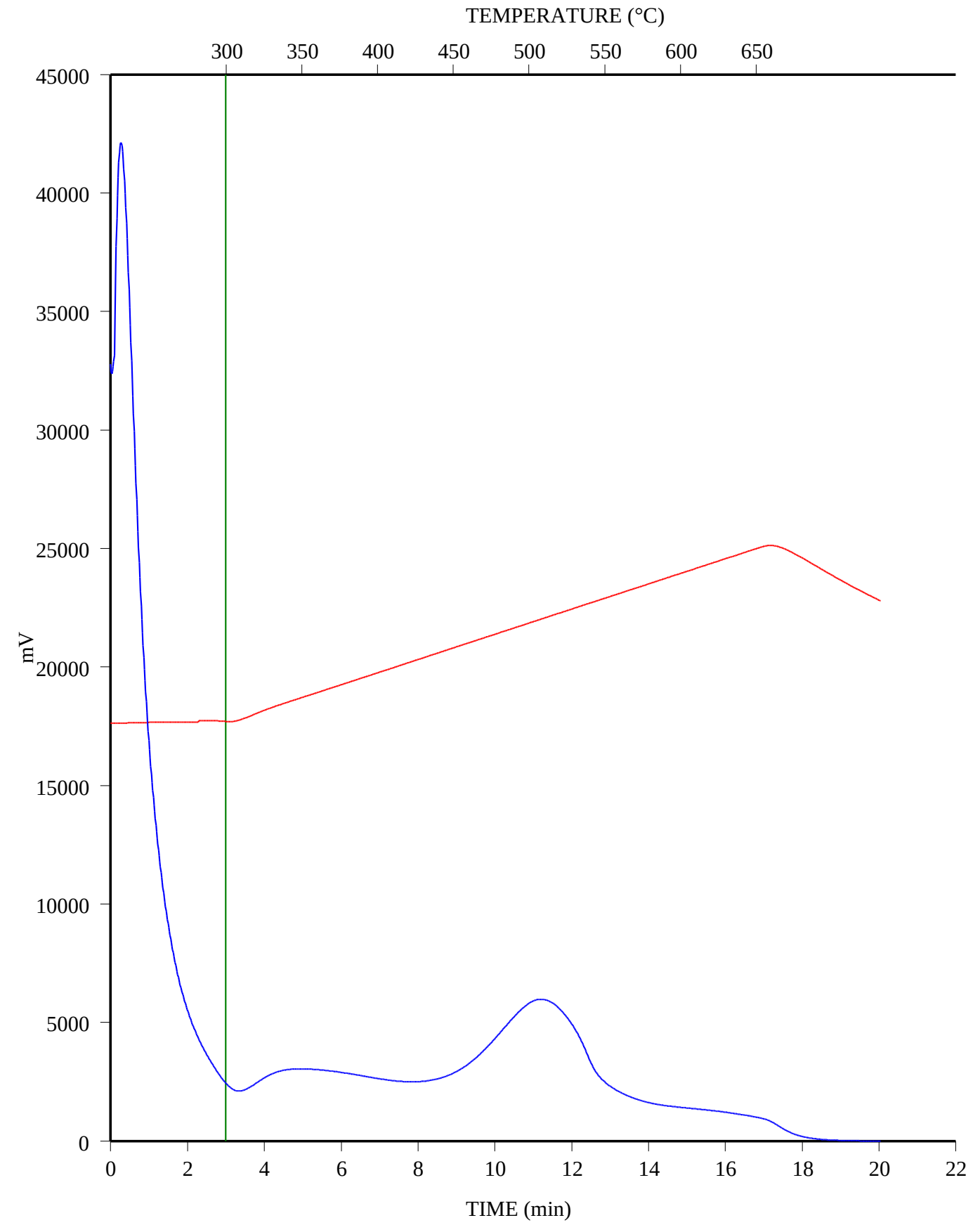
C-594212; ECA 102 SAXON 11-8-62-24; 3792.23 m
FID Hydrocarbons



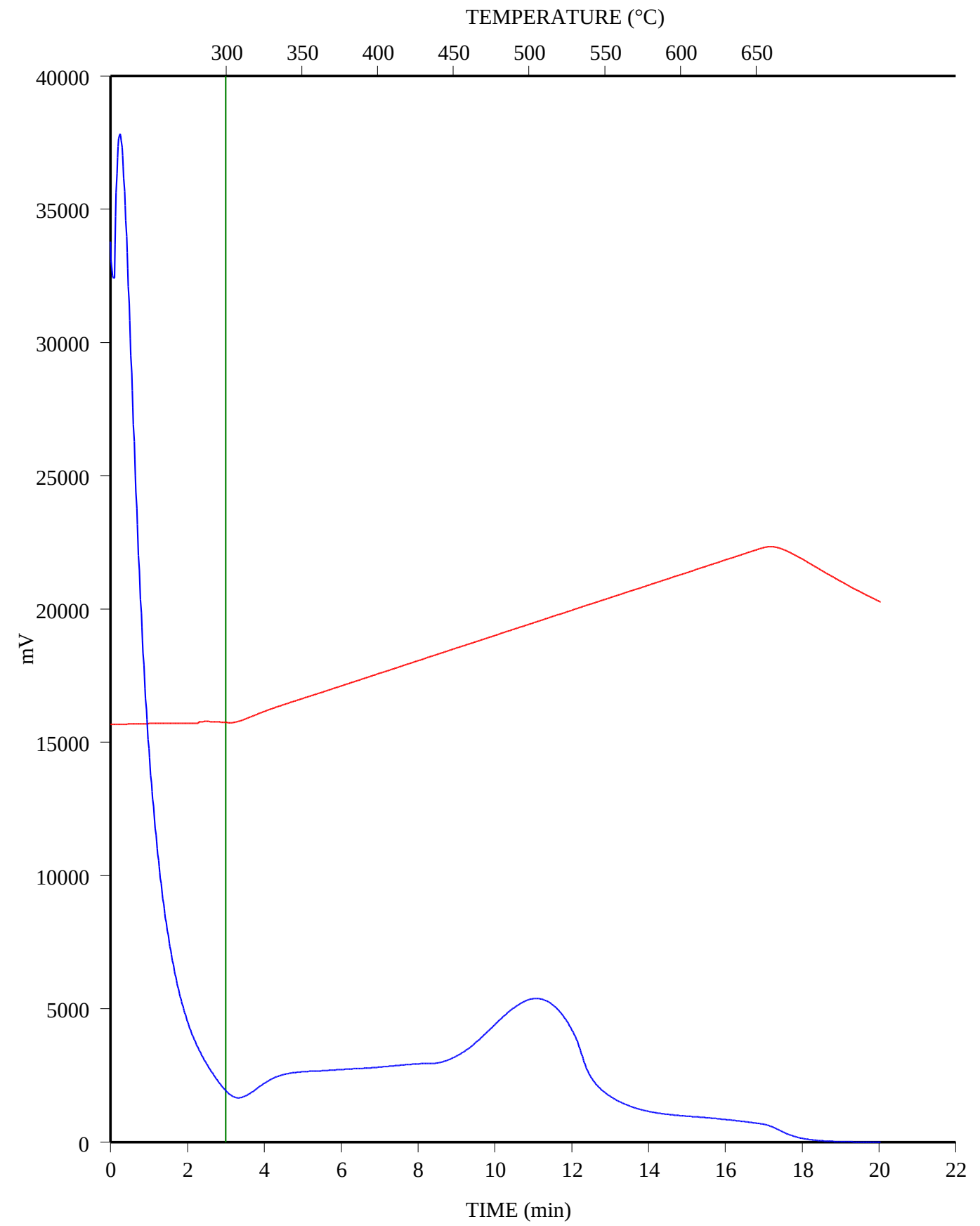
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FID Hydrocarbons



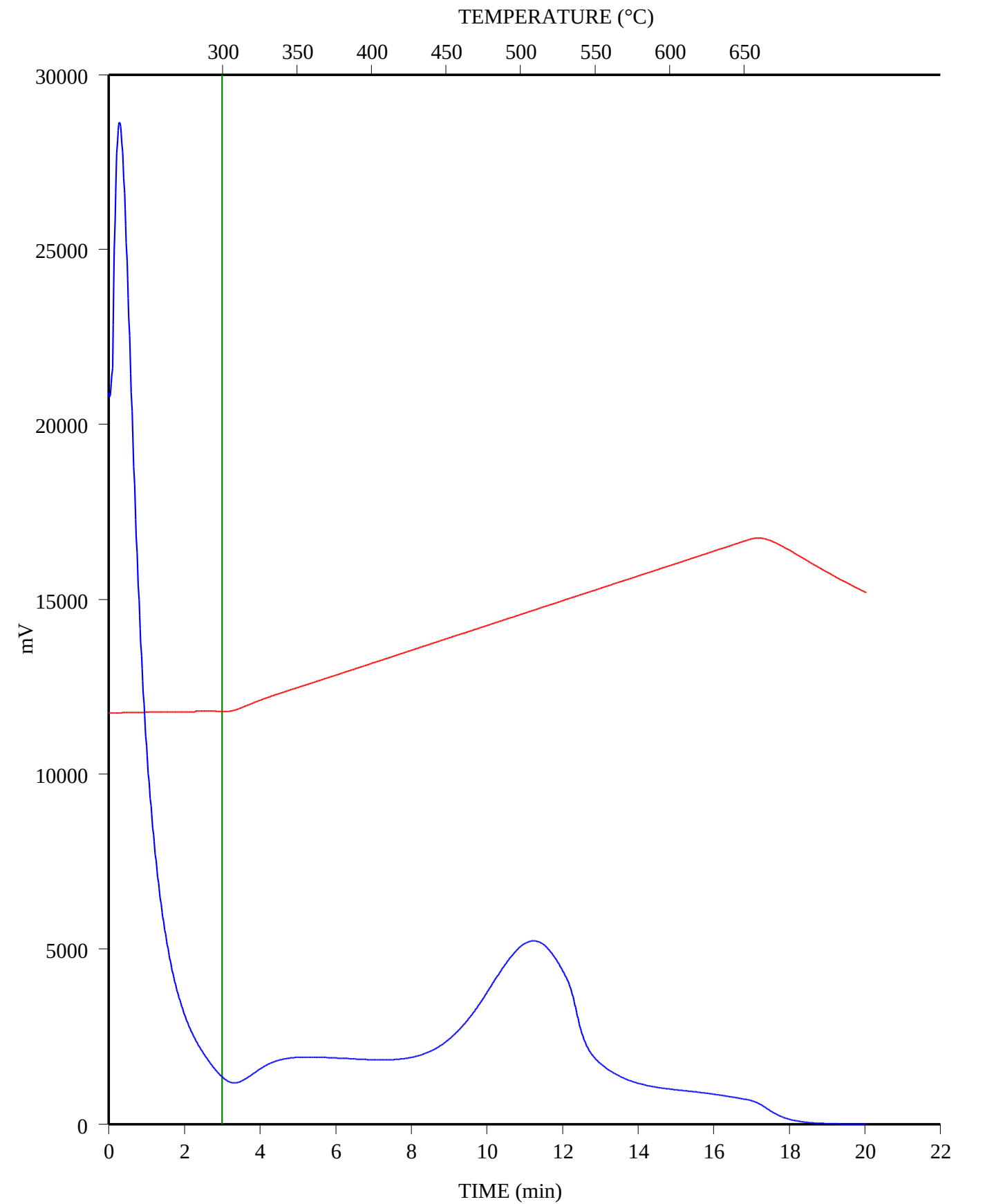
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FID Hydrocarbons



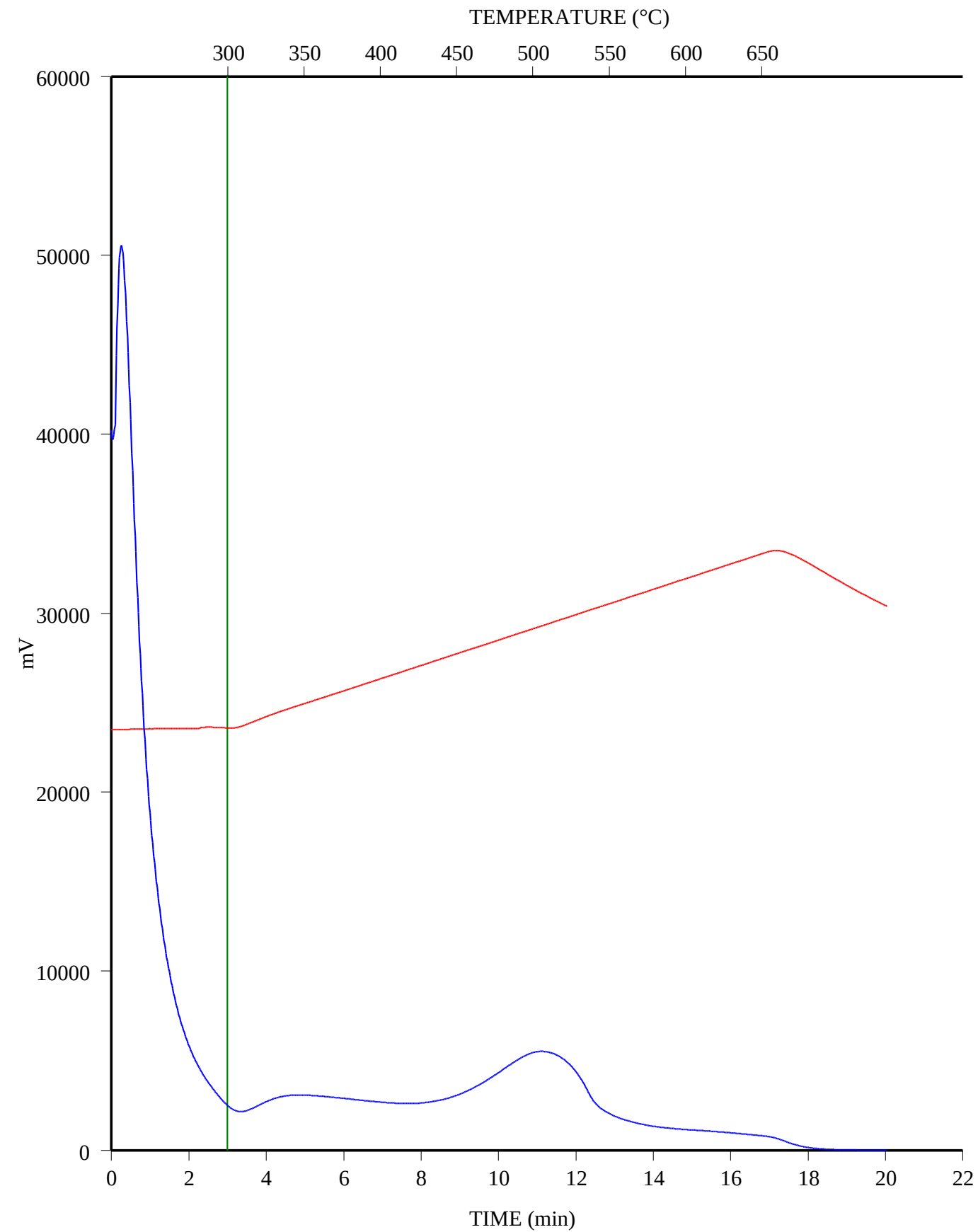
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FID Hydrocarbons



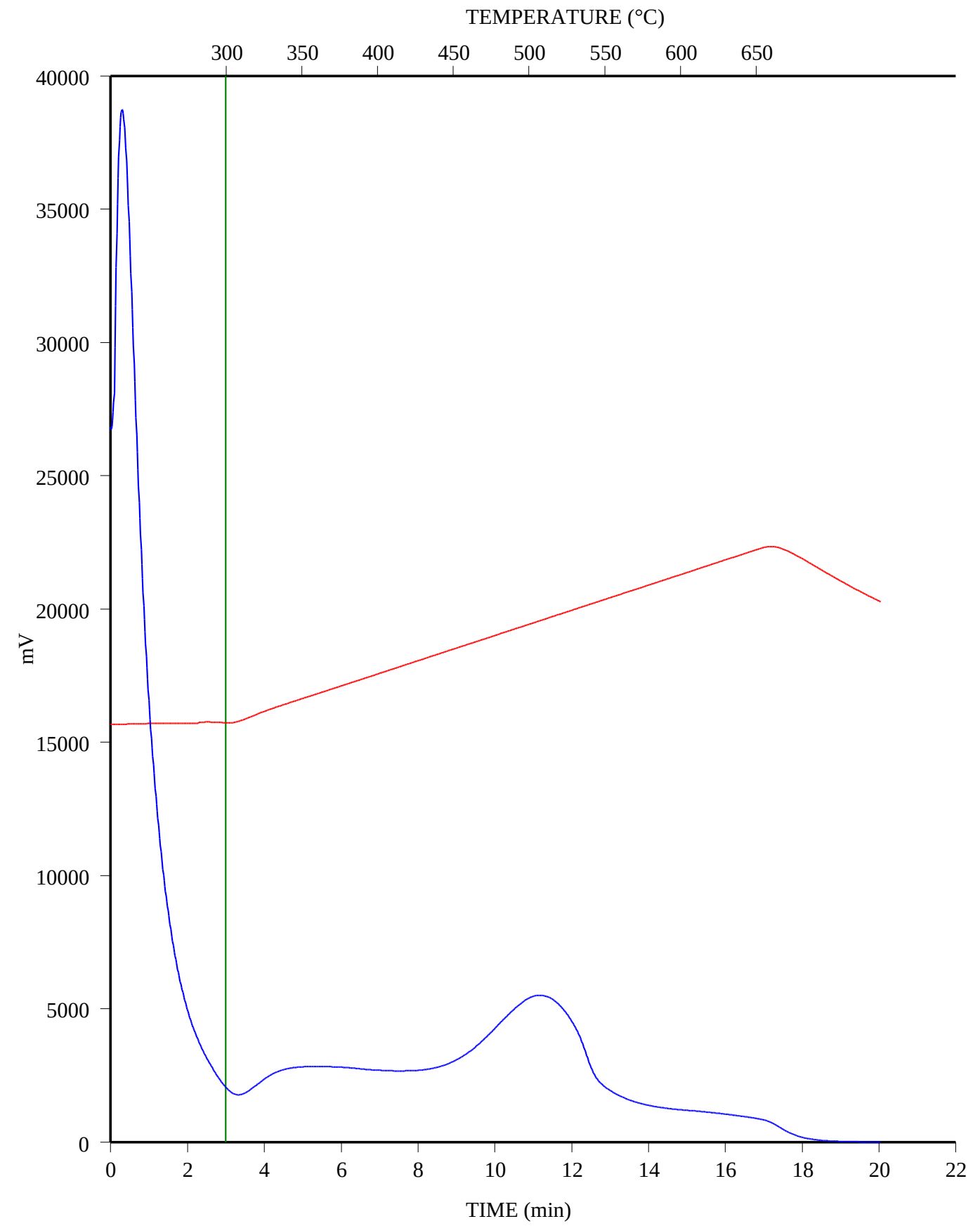
C-594216; ECA 102 SAXON 11-8-62-24; 3796.1 m
FID Hydrocarbons



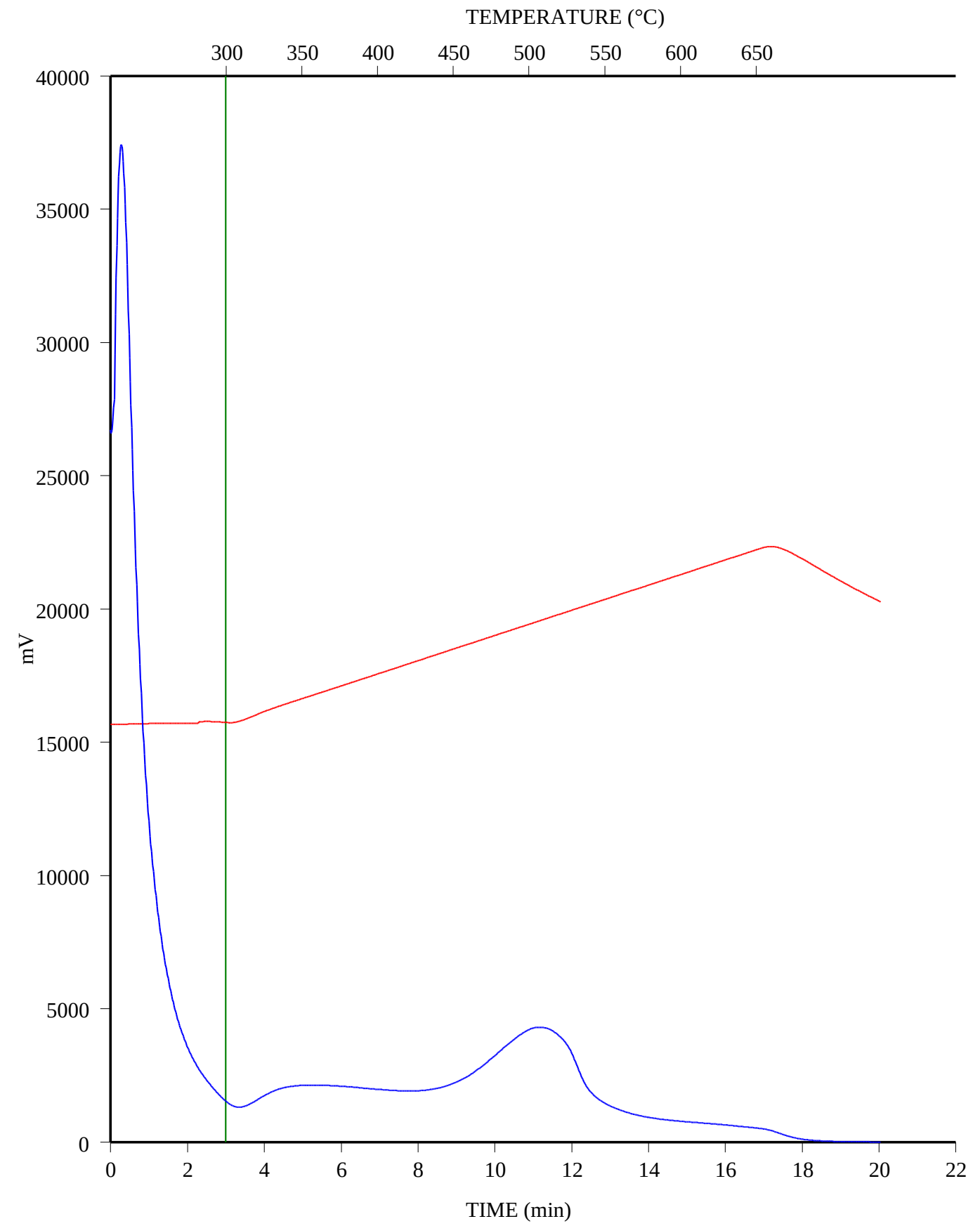
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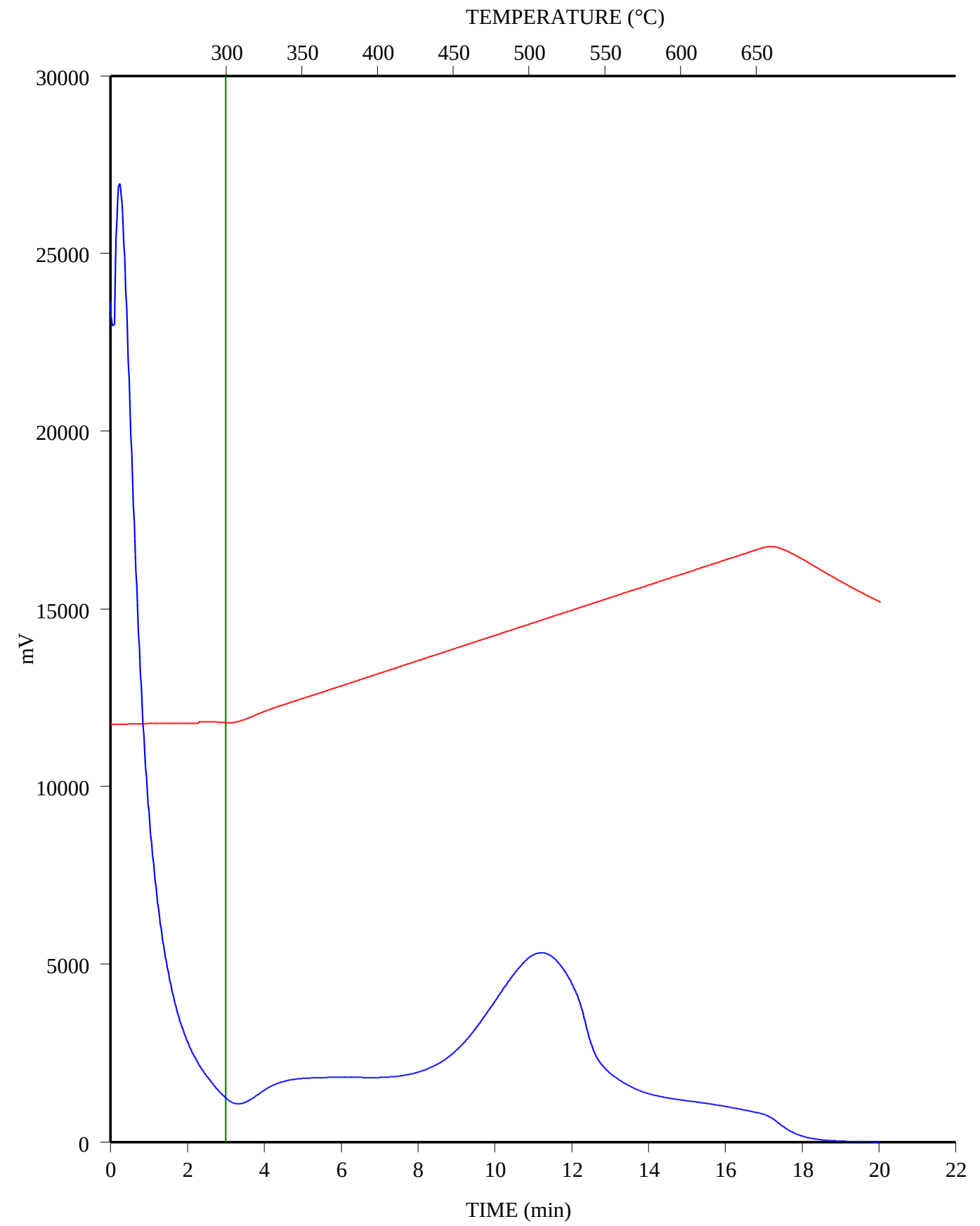
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FID Hydrocarbons



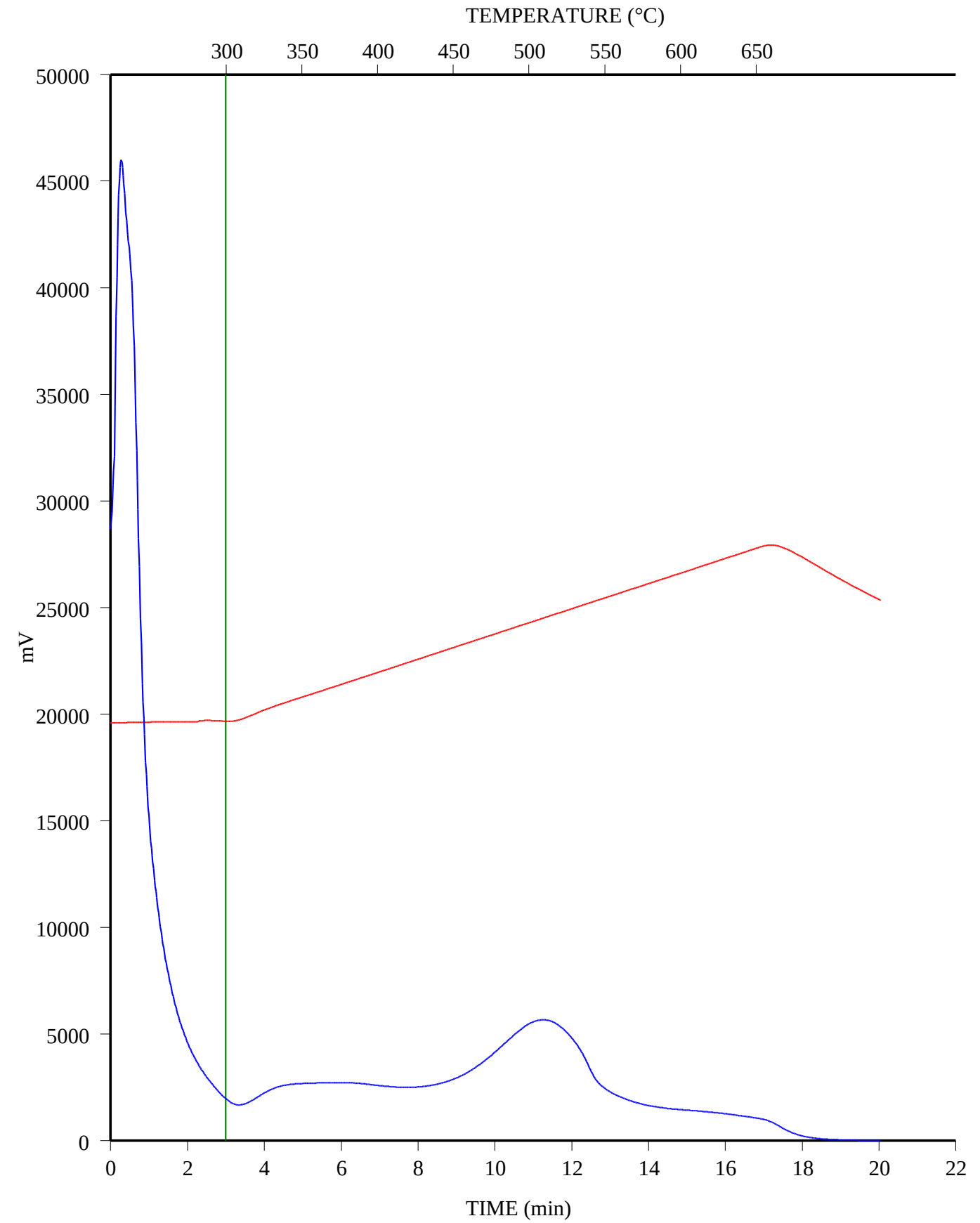
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FID Hydrocarbons



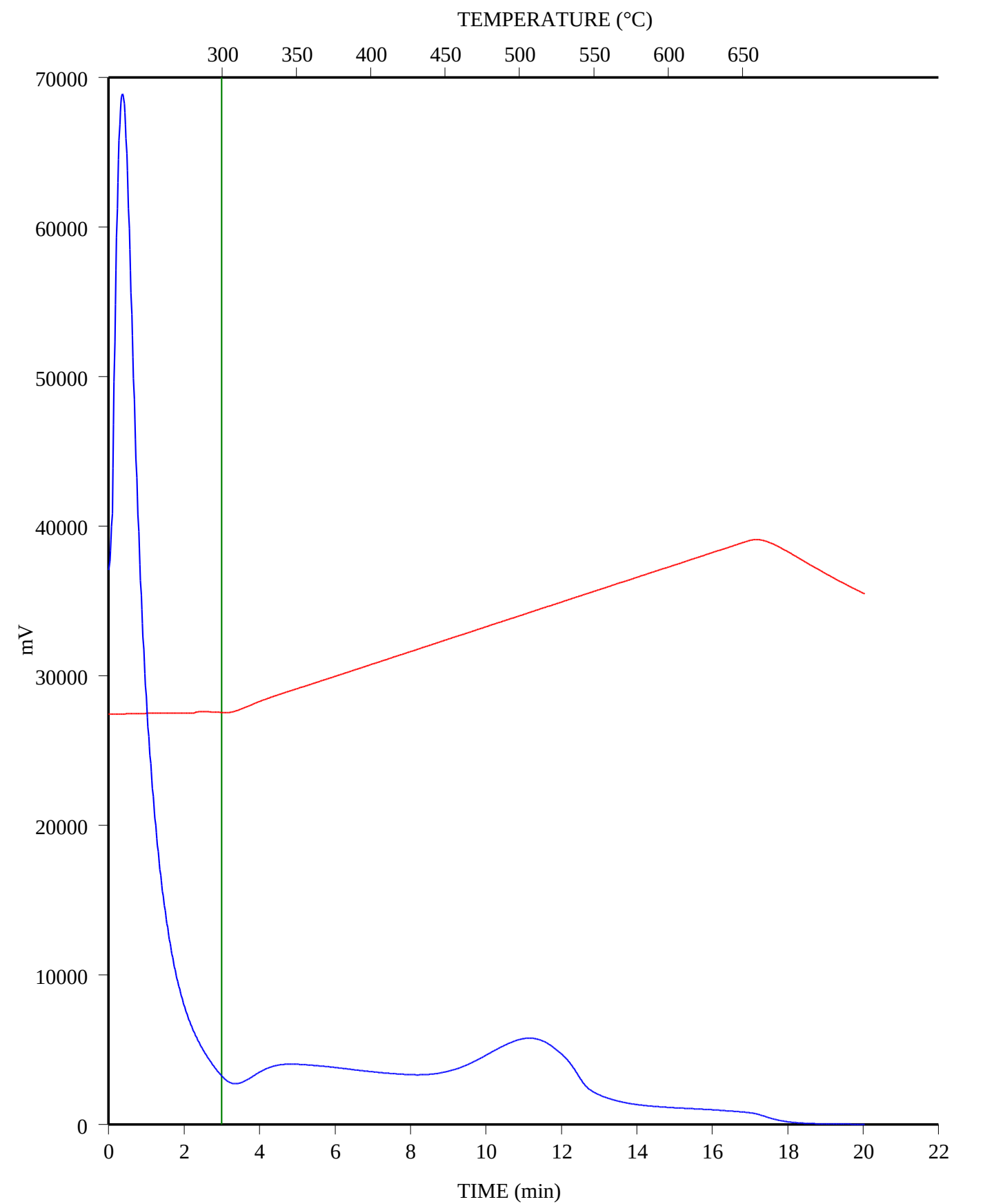
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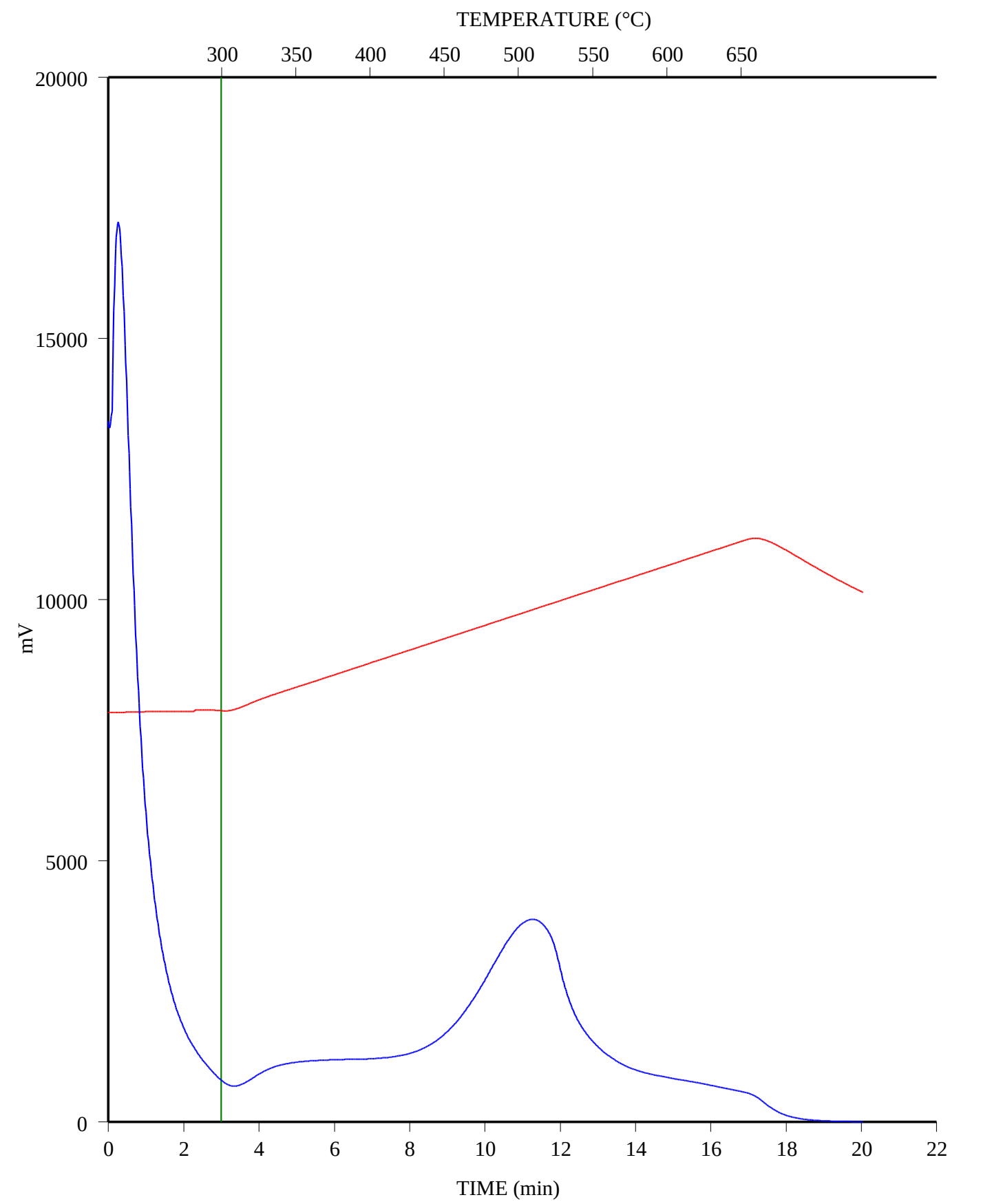
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FID Hydrocarbons



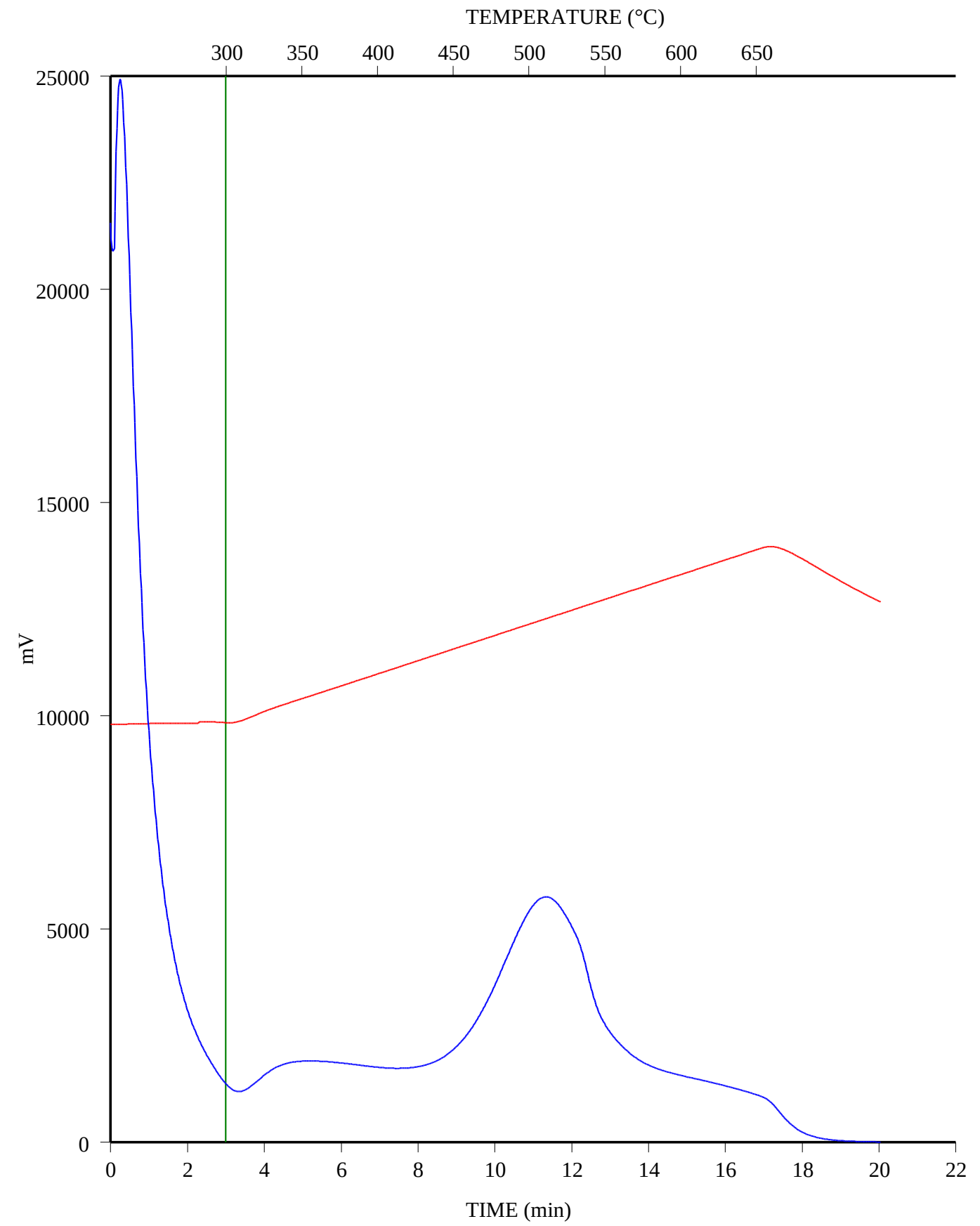
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FID Hydrocarbons



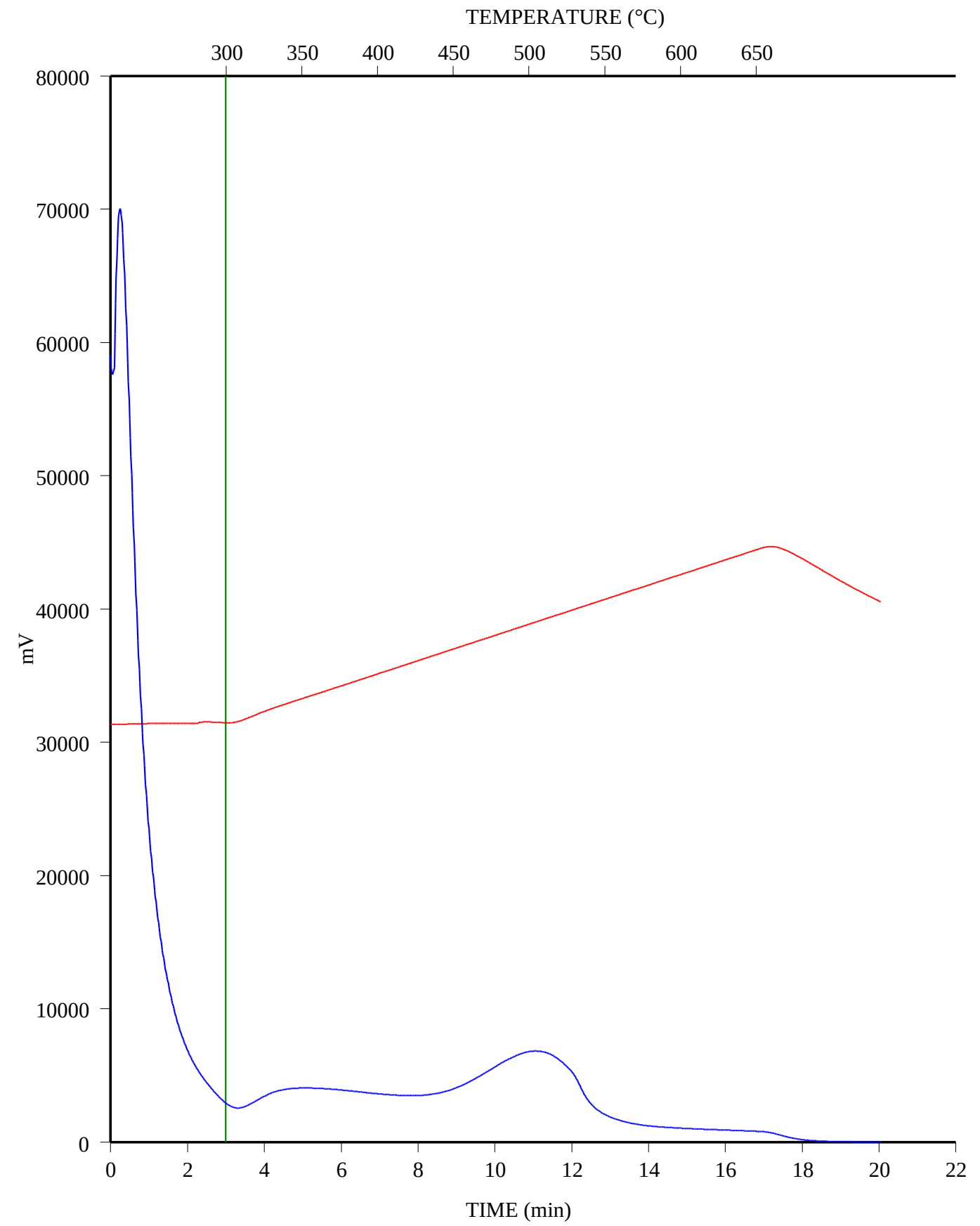
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FID Hydrocarbons



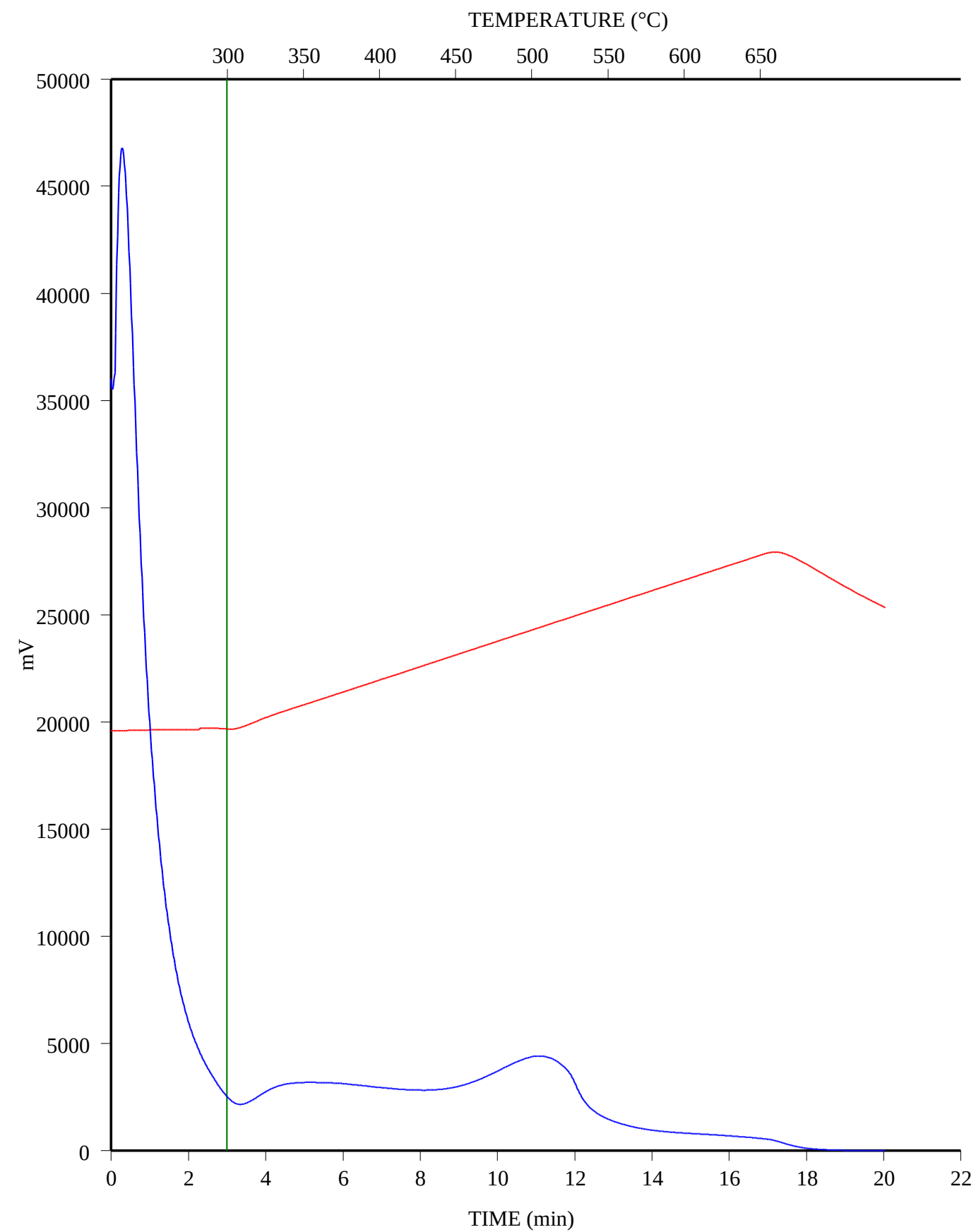
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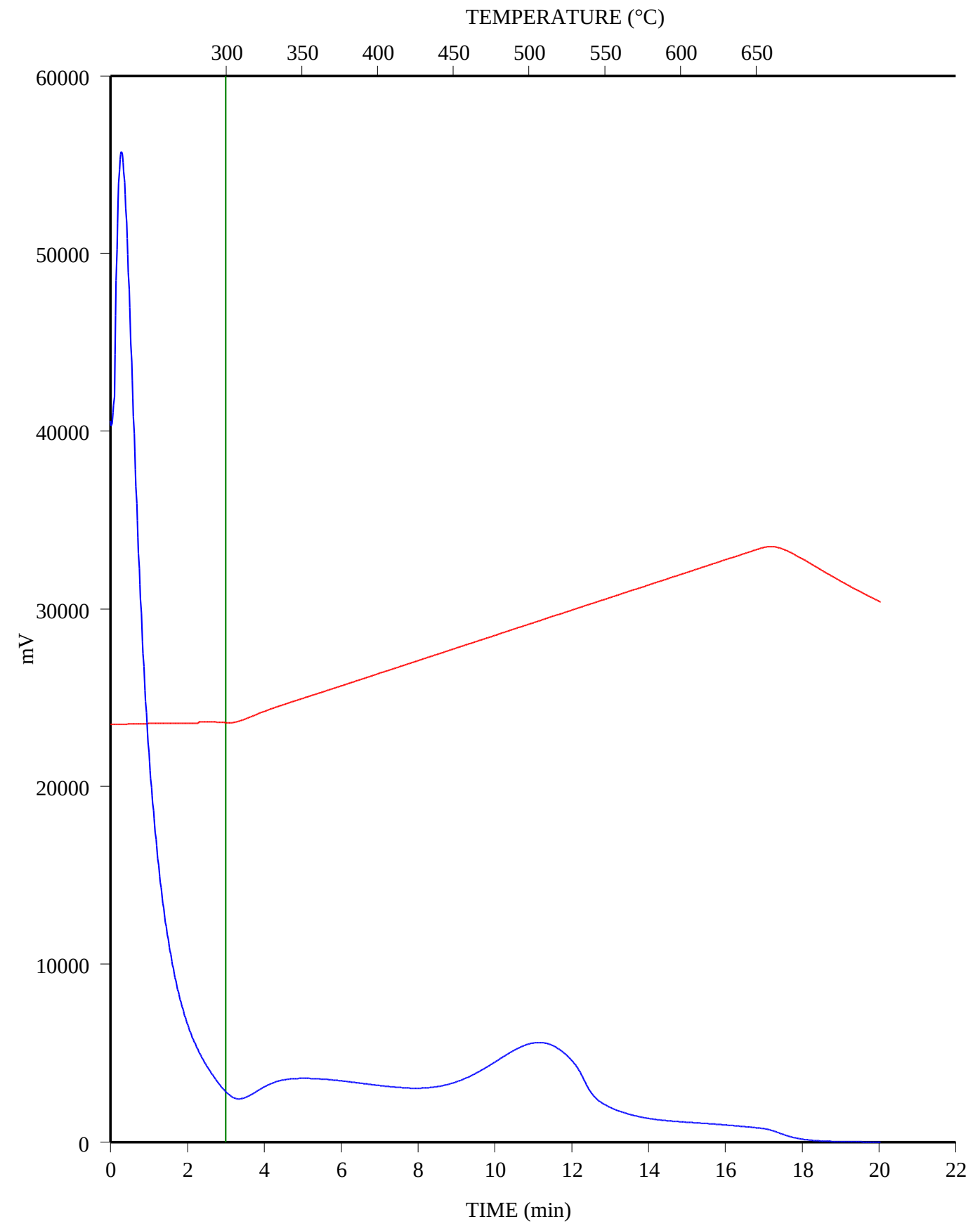
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FID Hydrocarbons



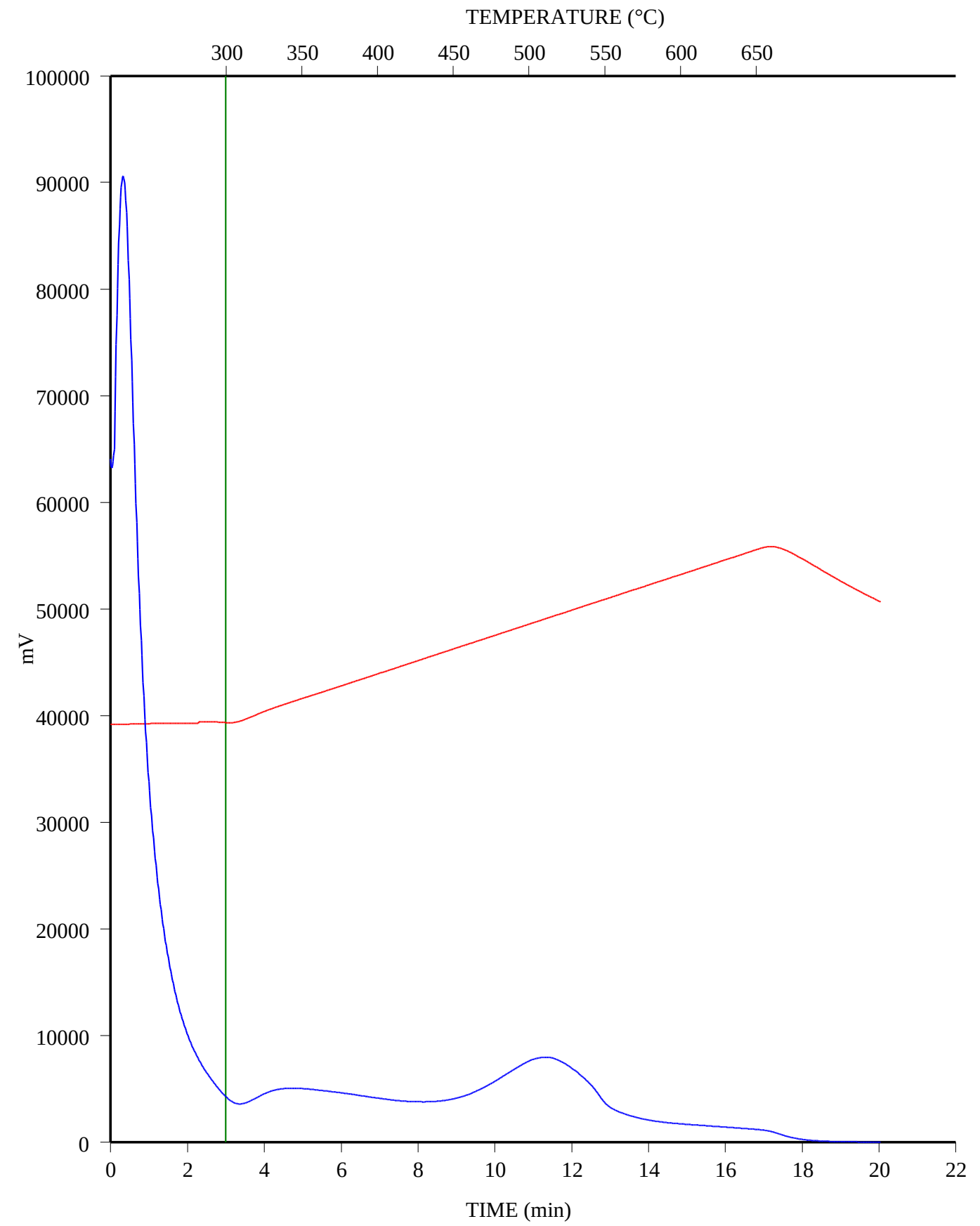
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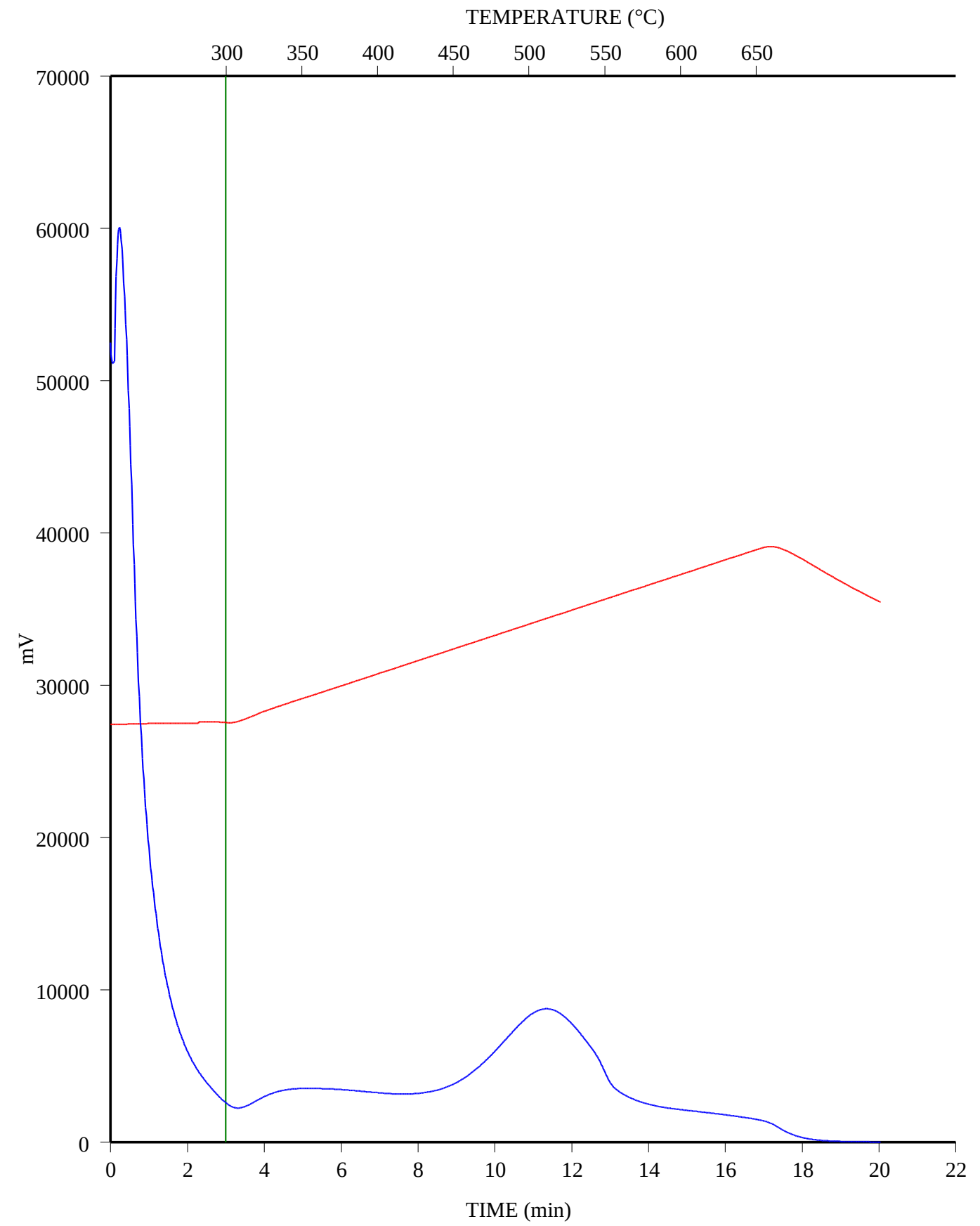
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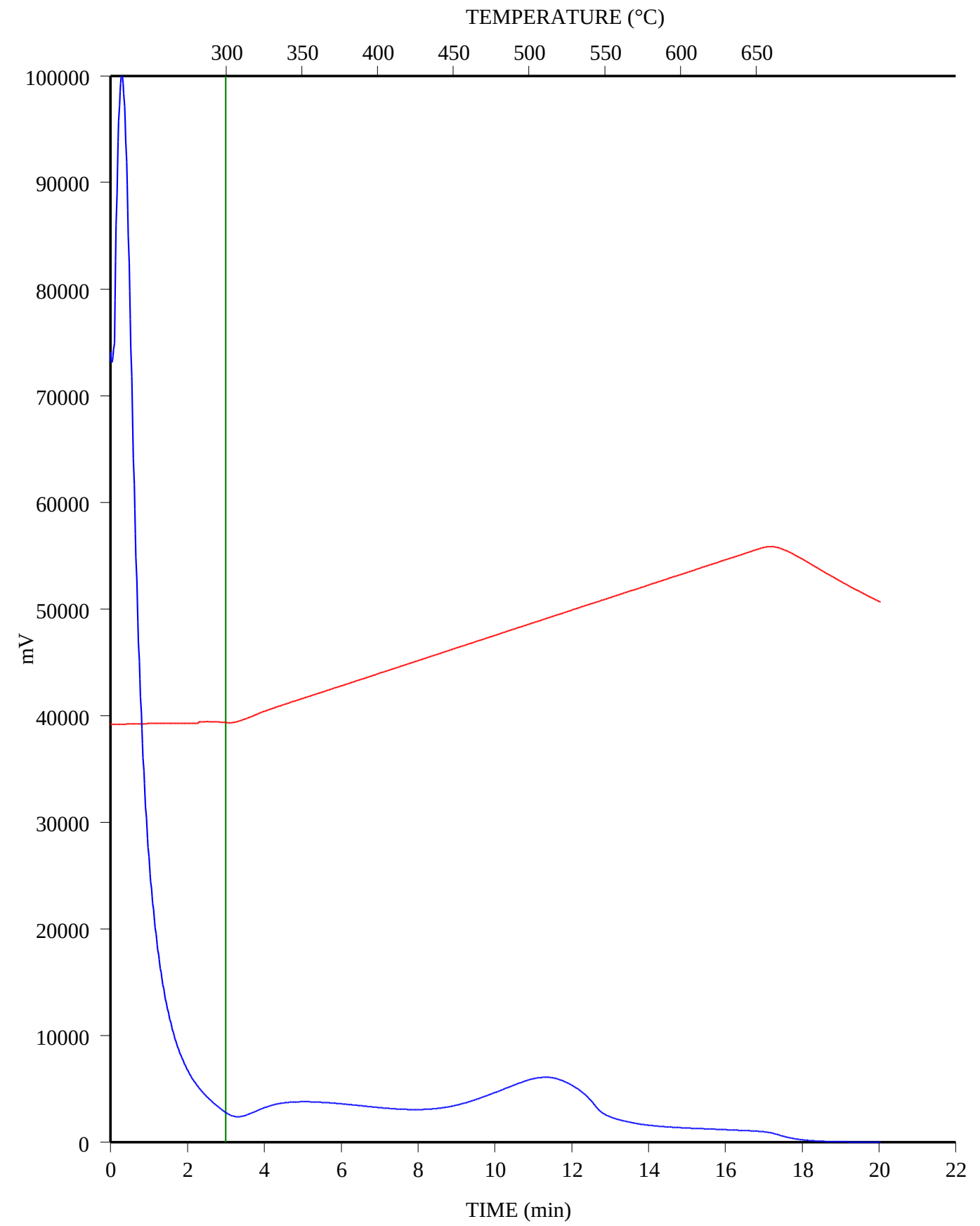
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FID Hydrocarbons



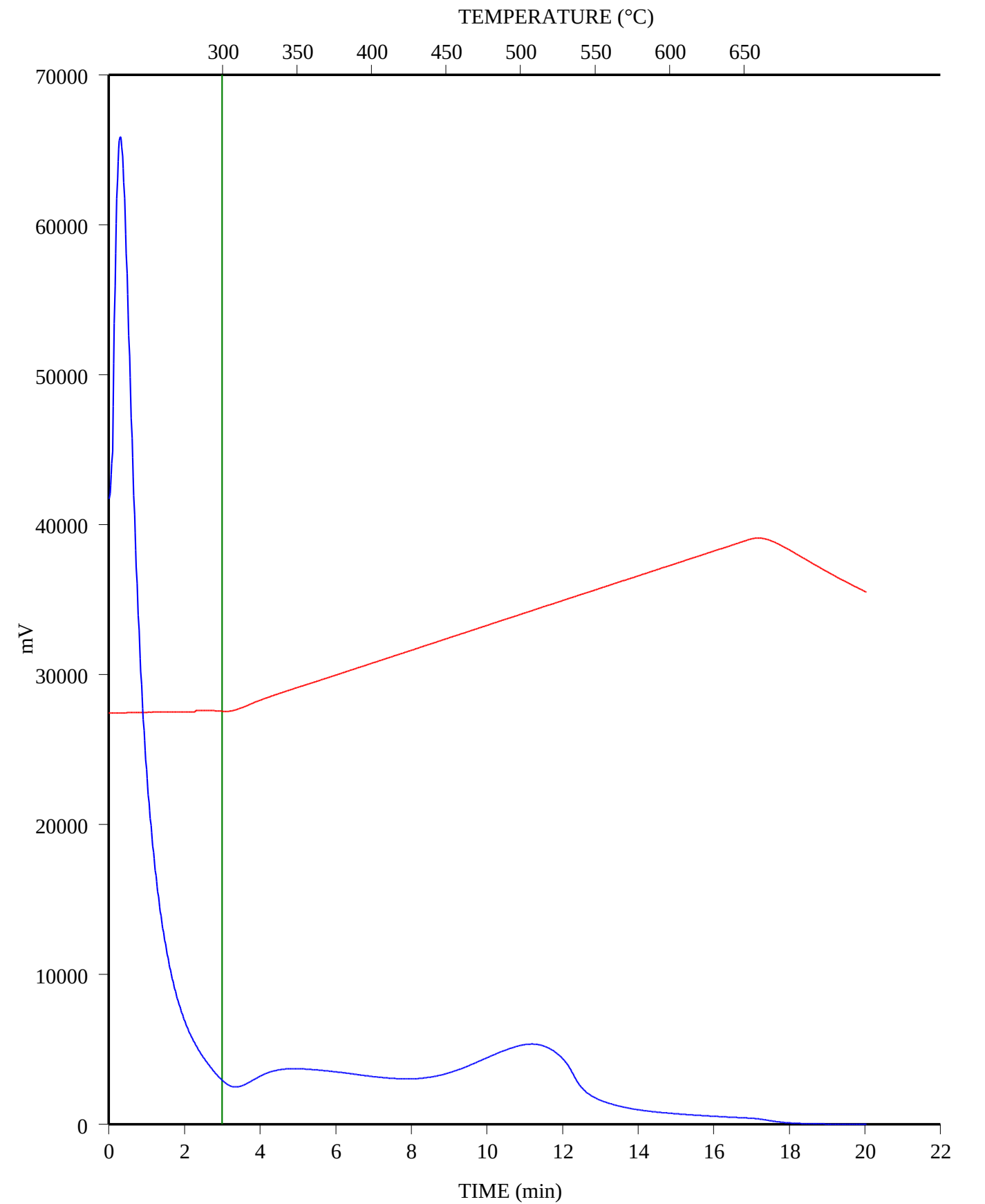
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FID Hydrocarbons



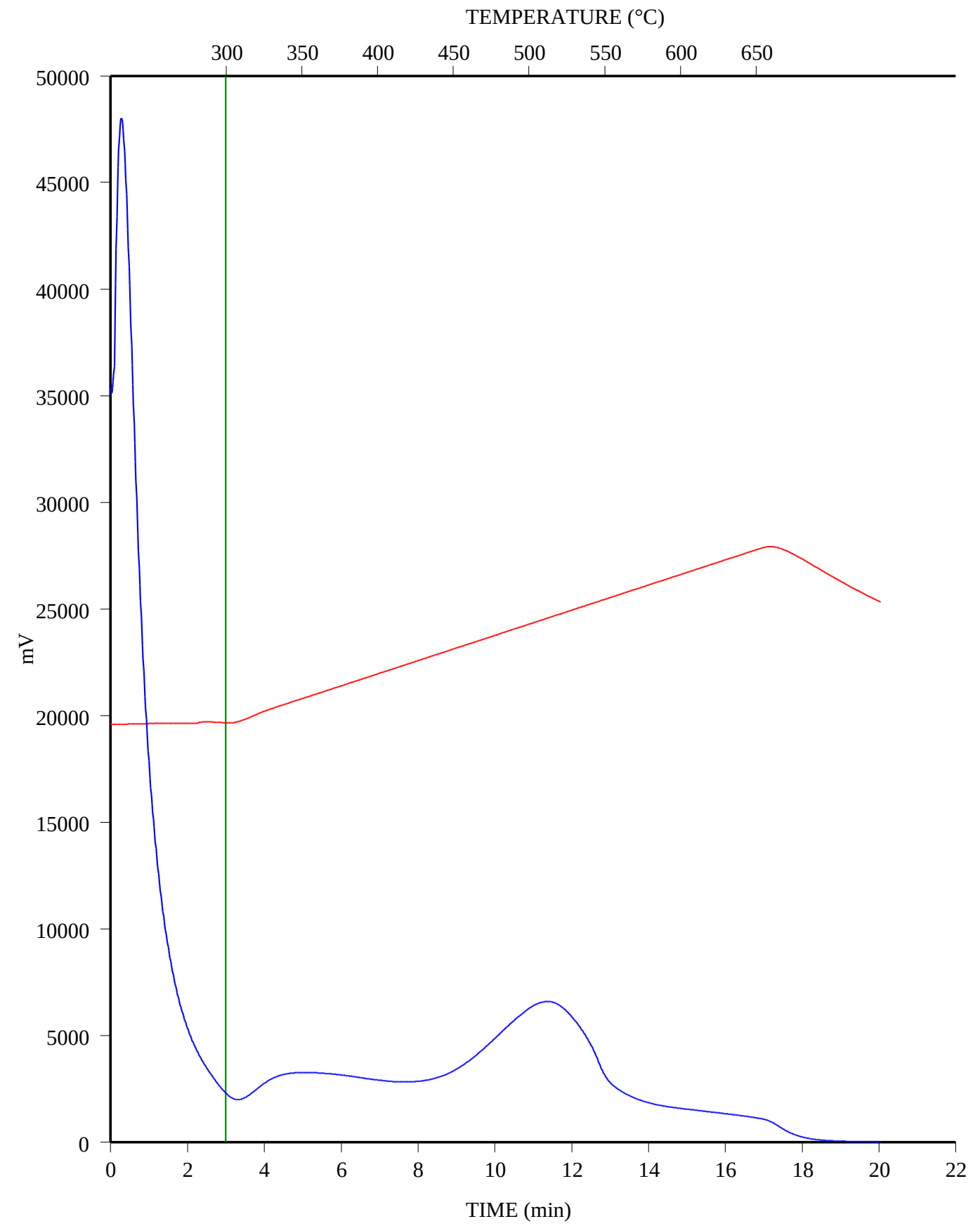
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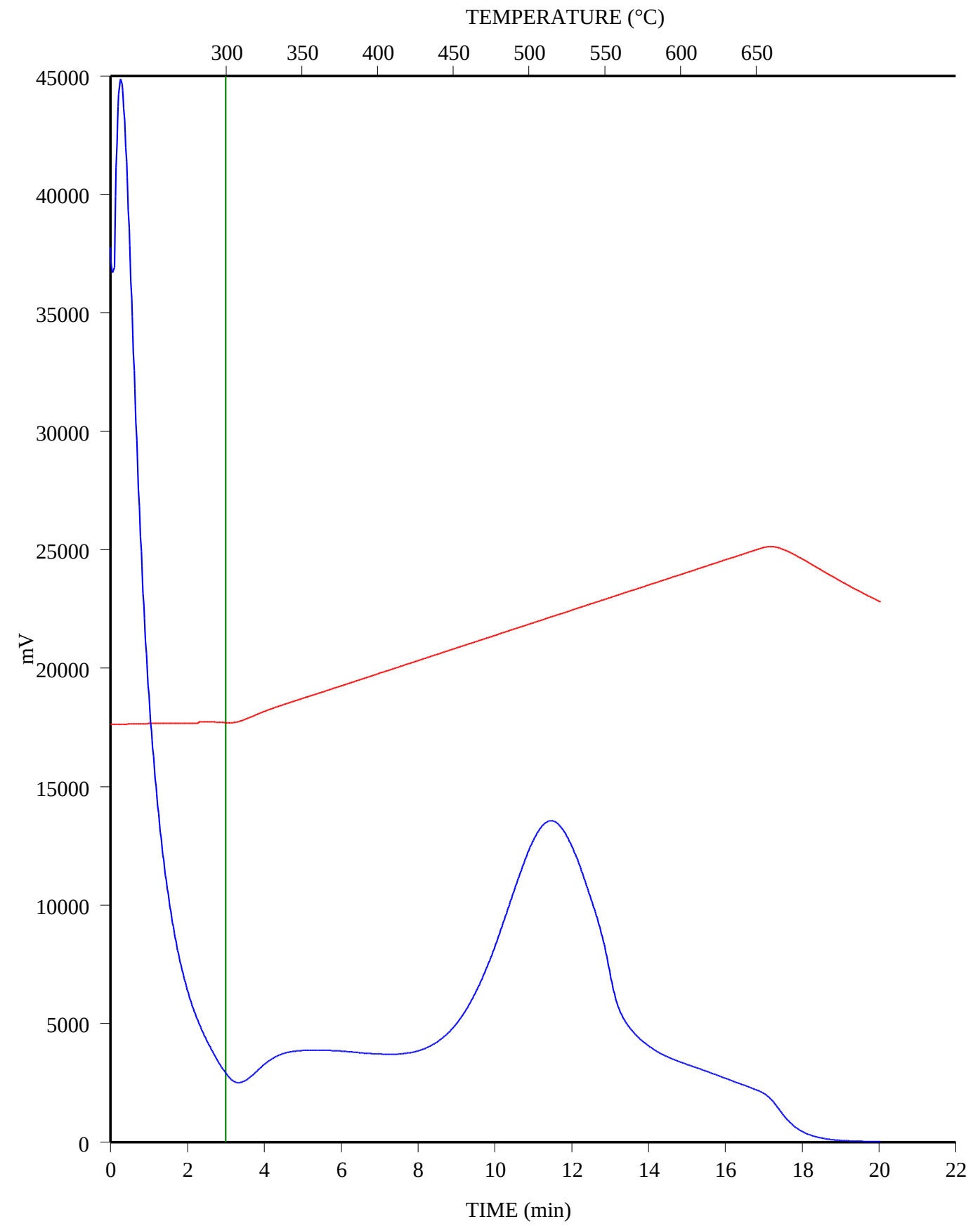
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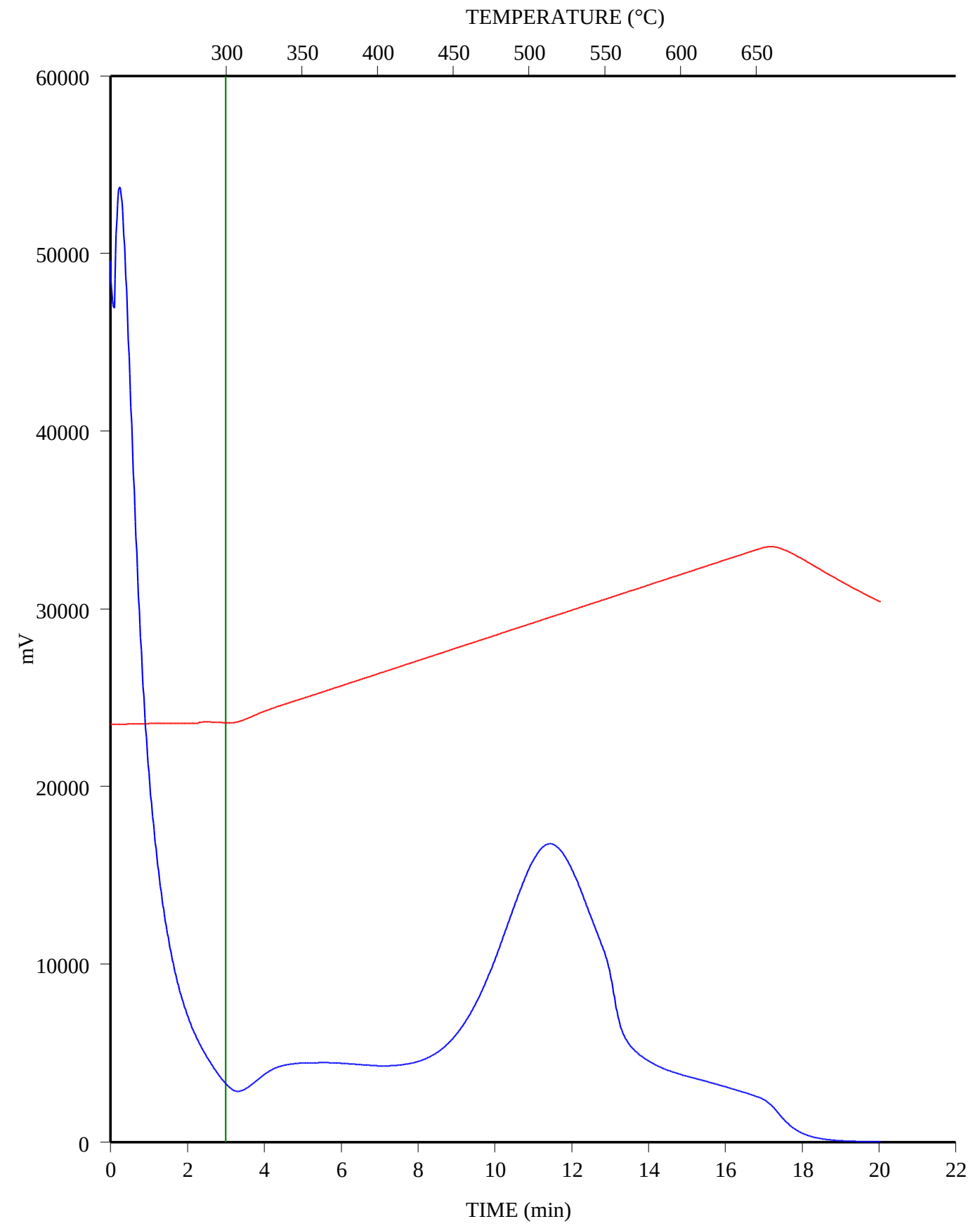
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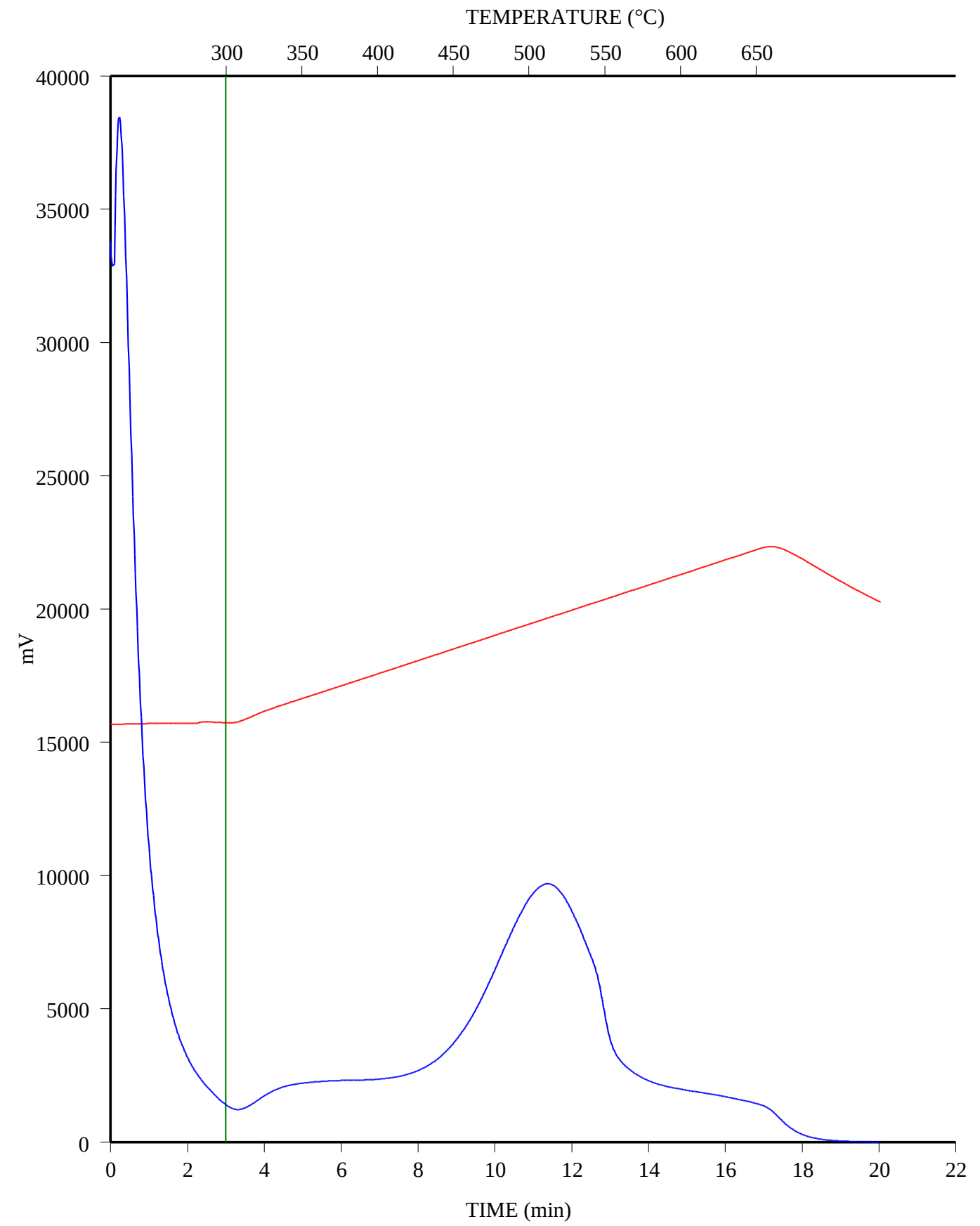
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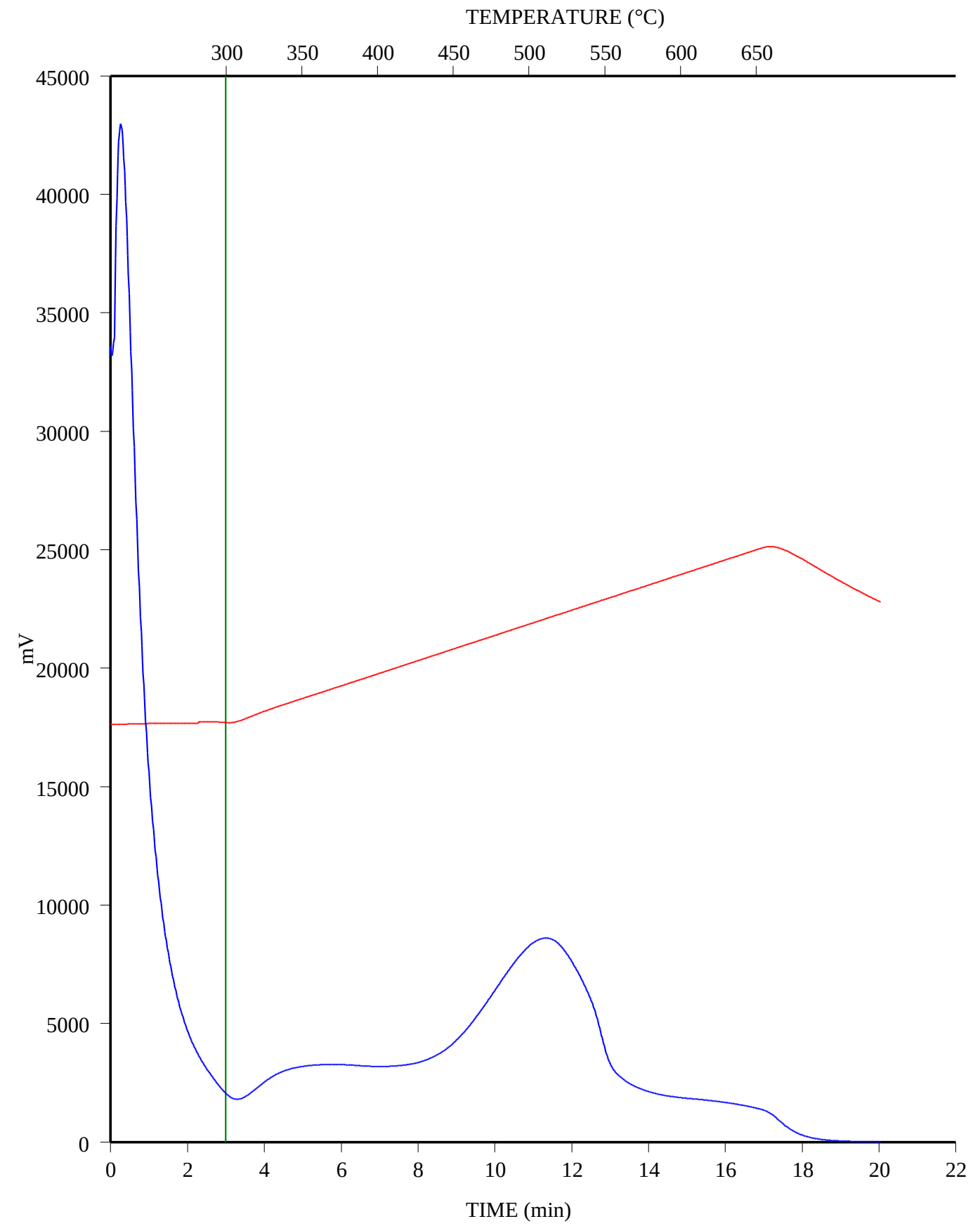
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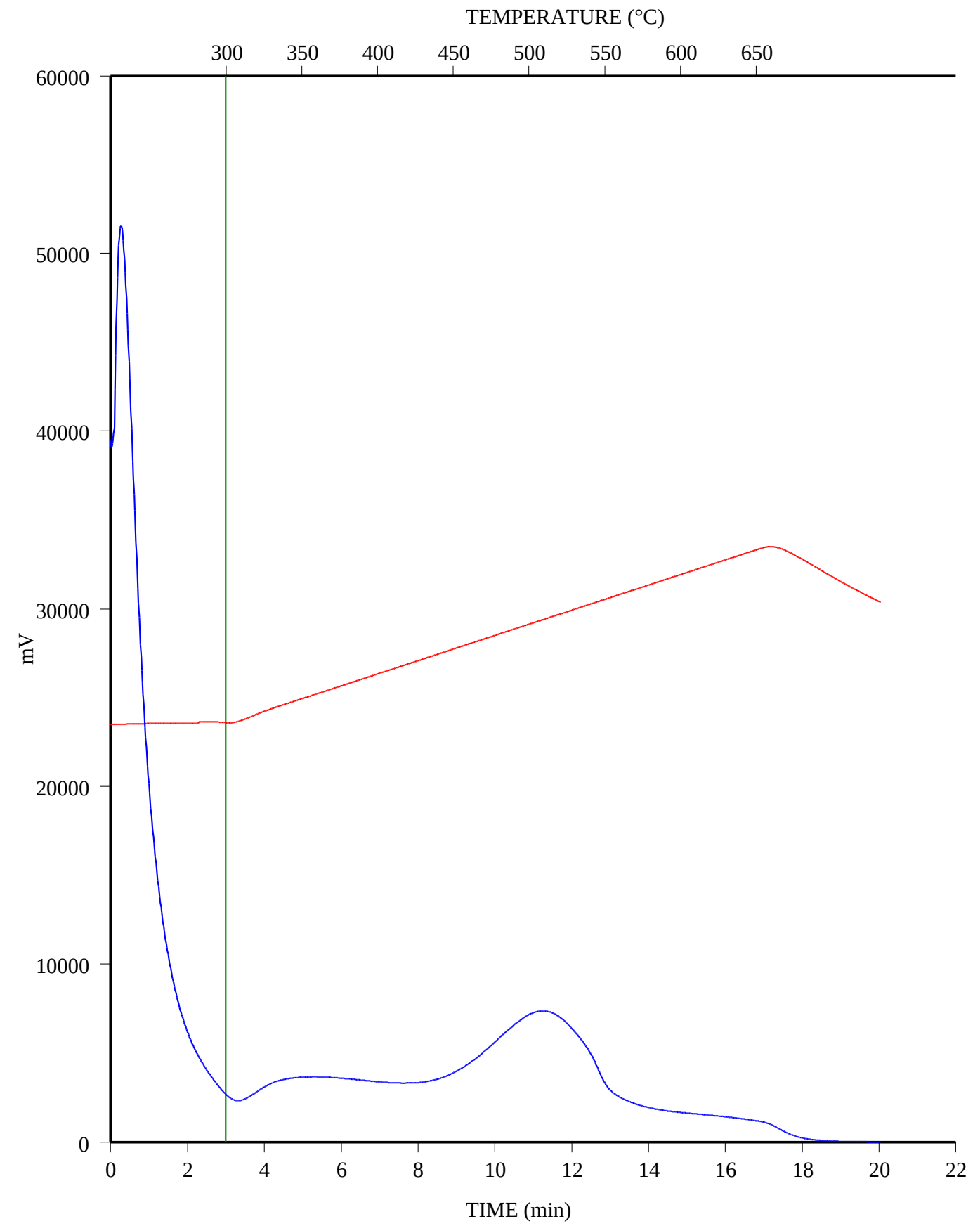
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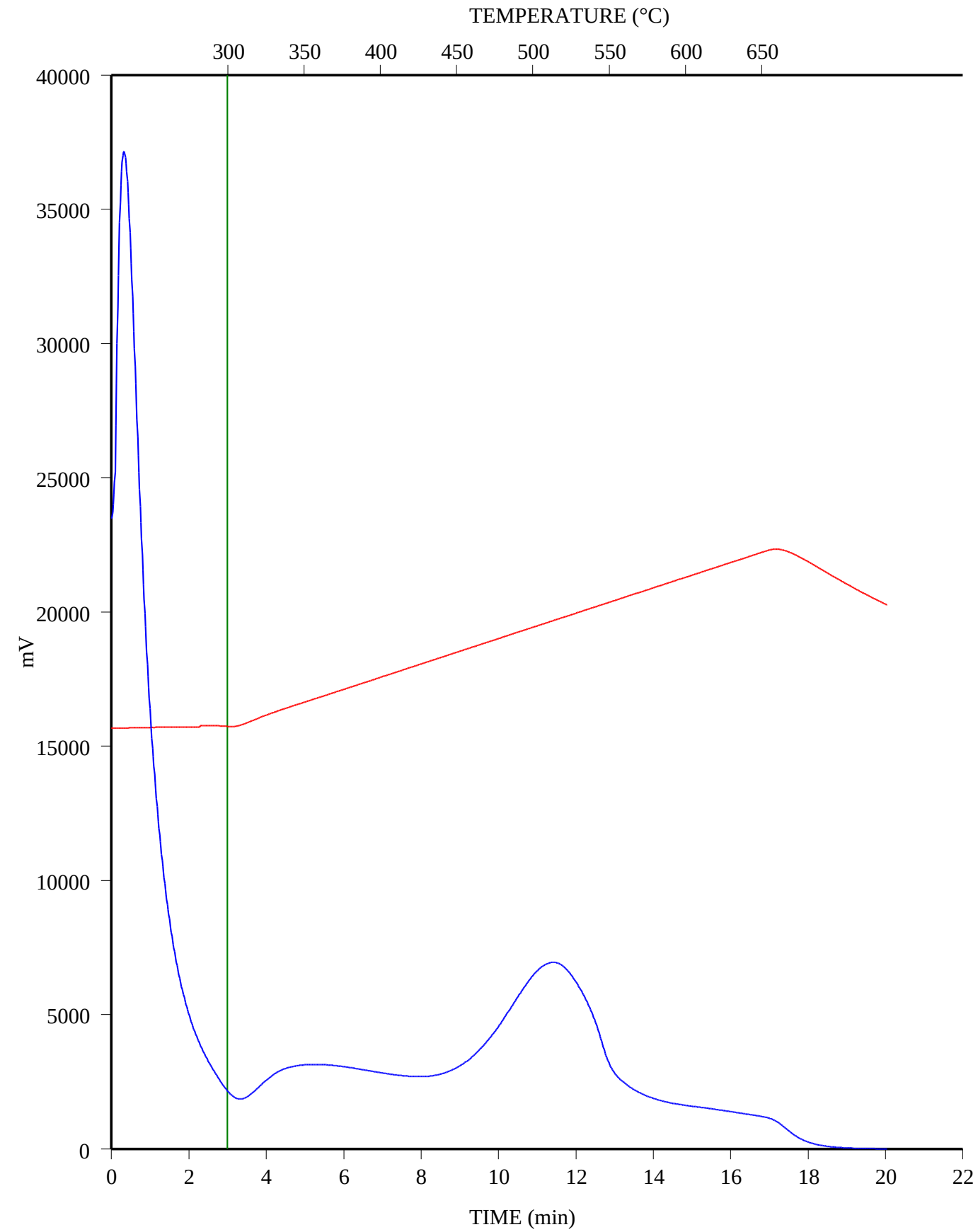
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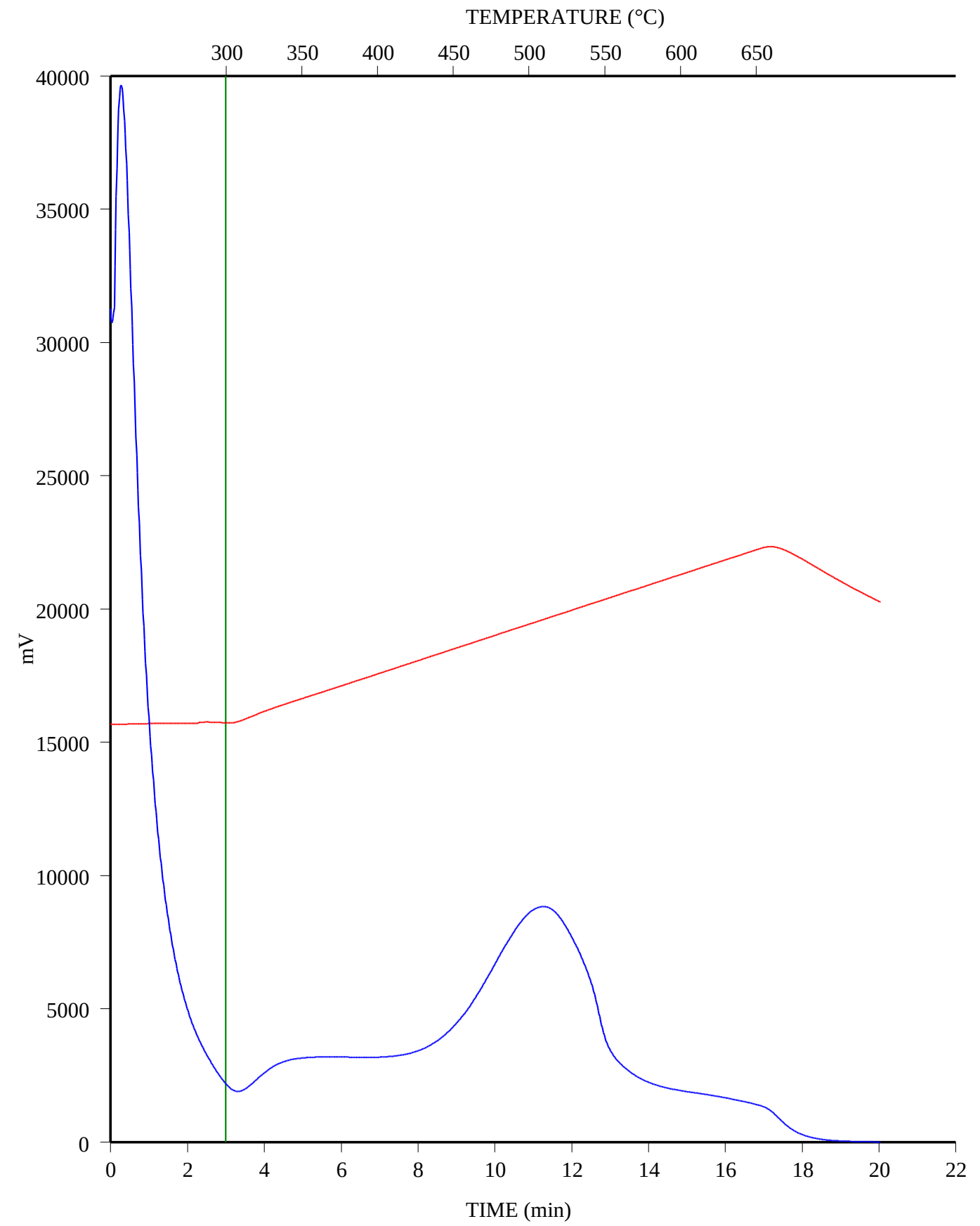
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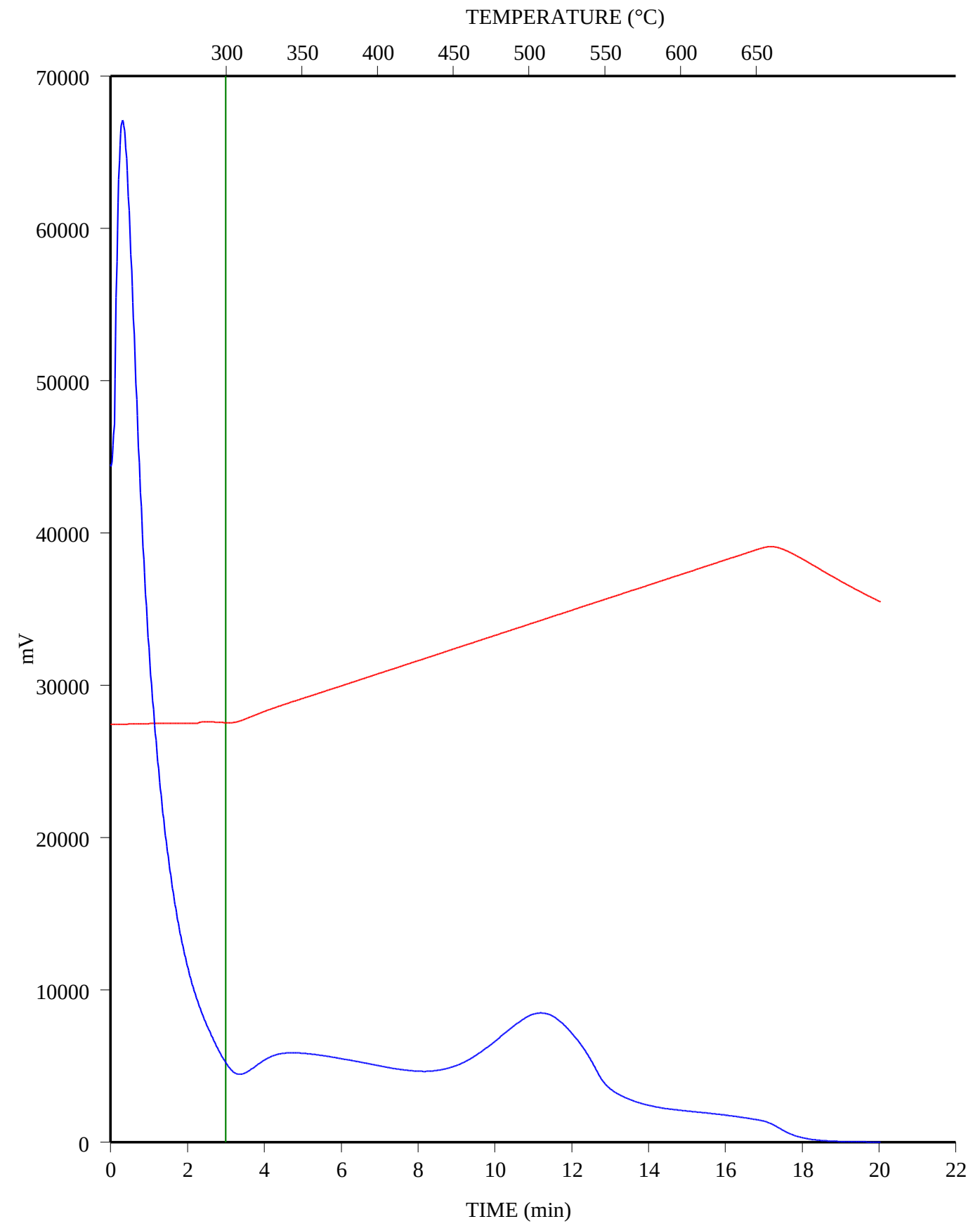
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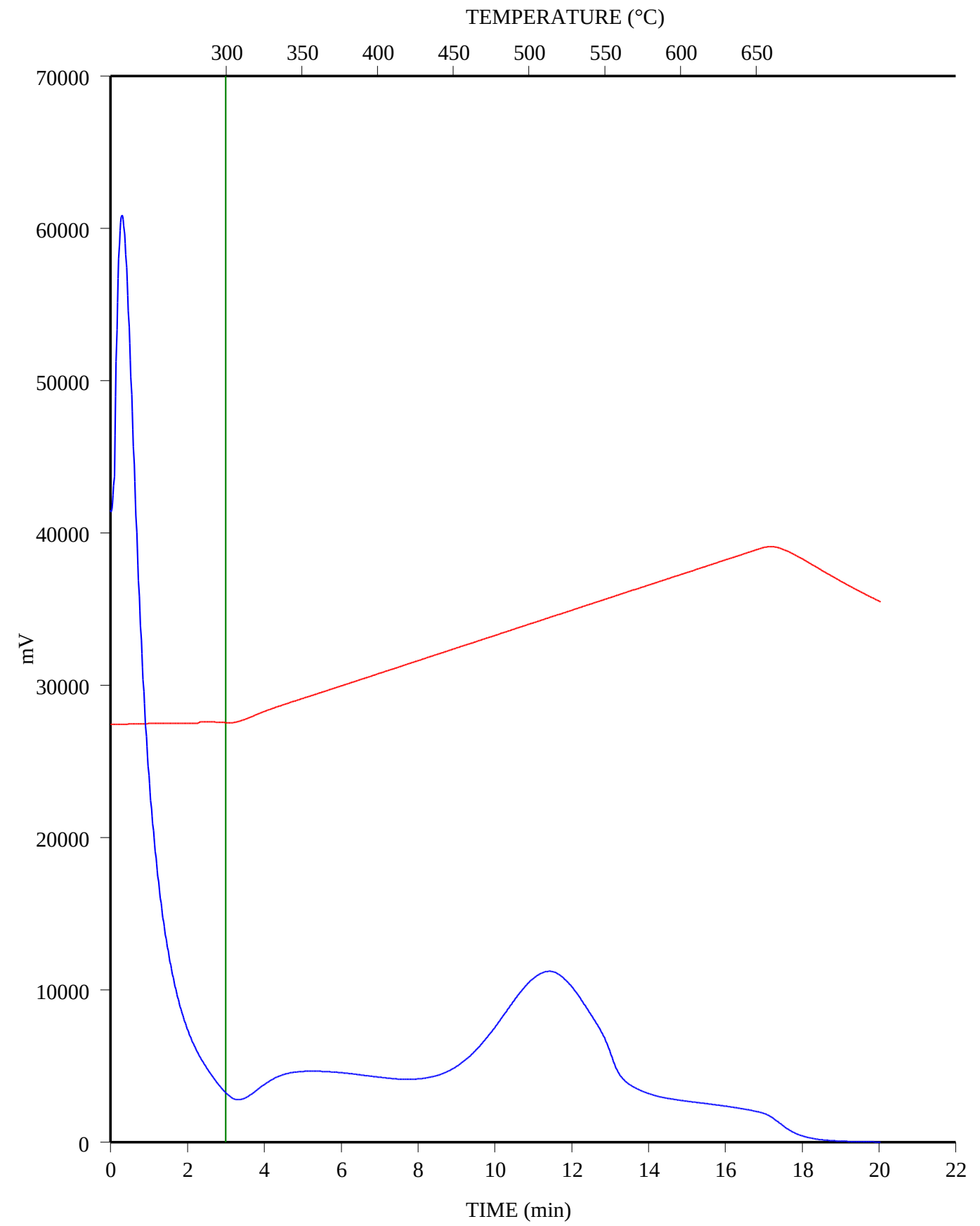
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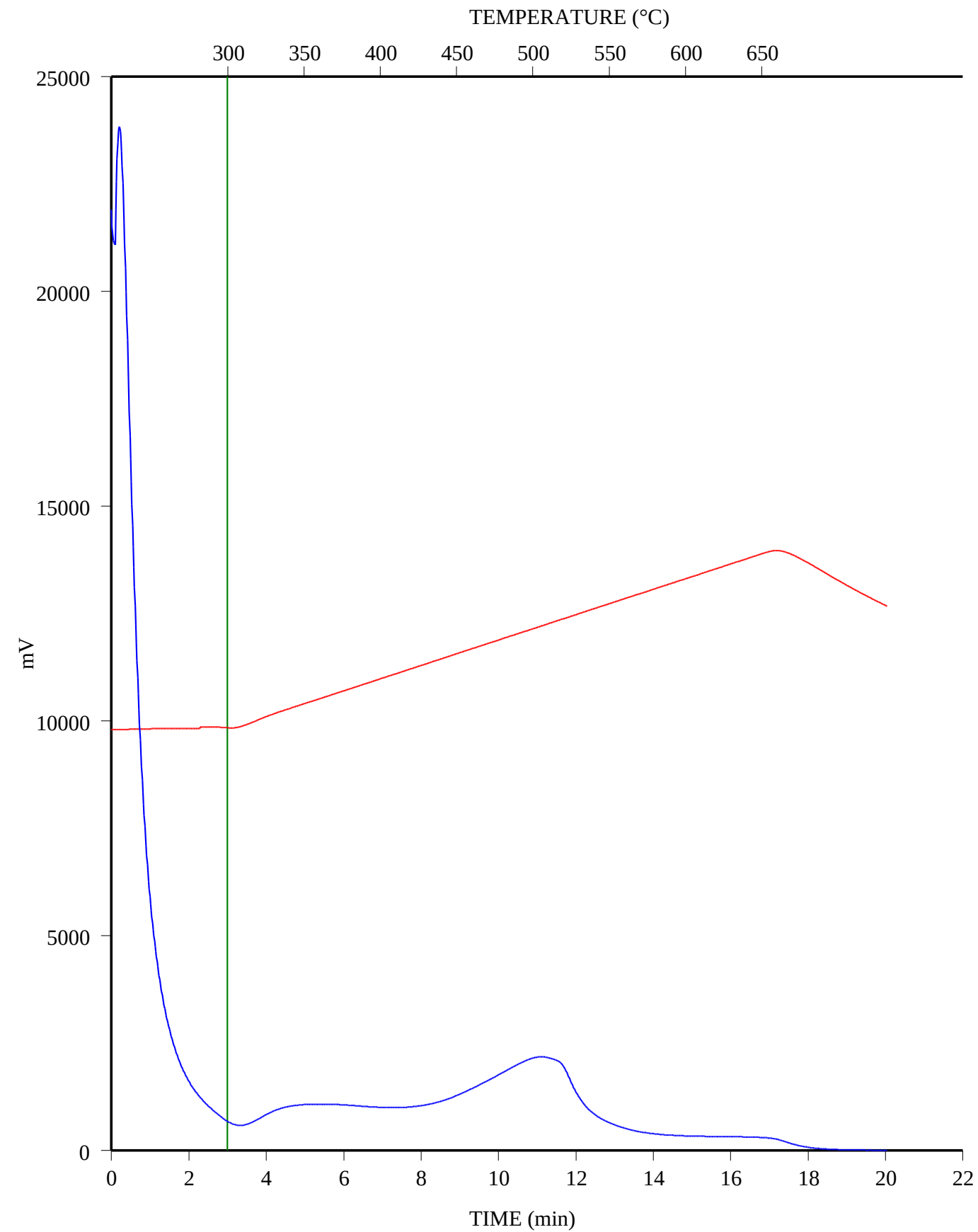
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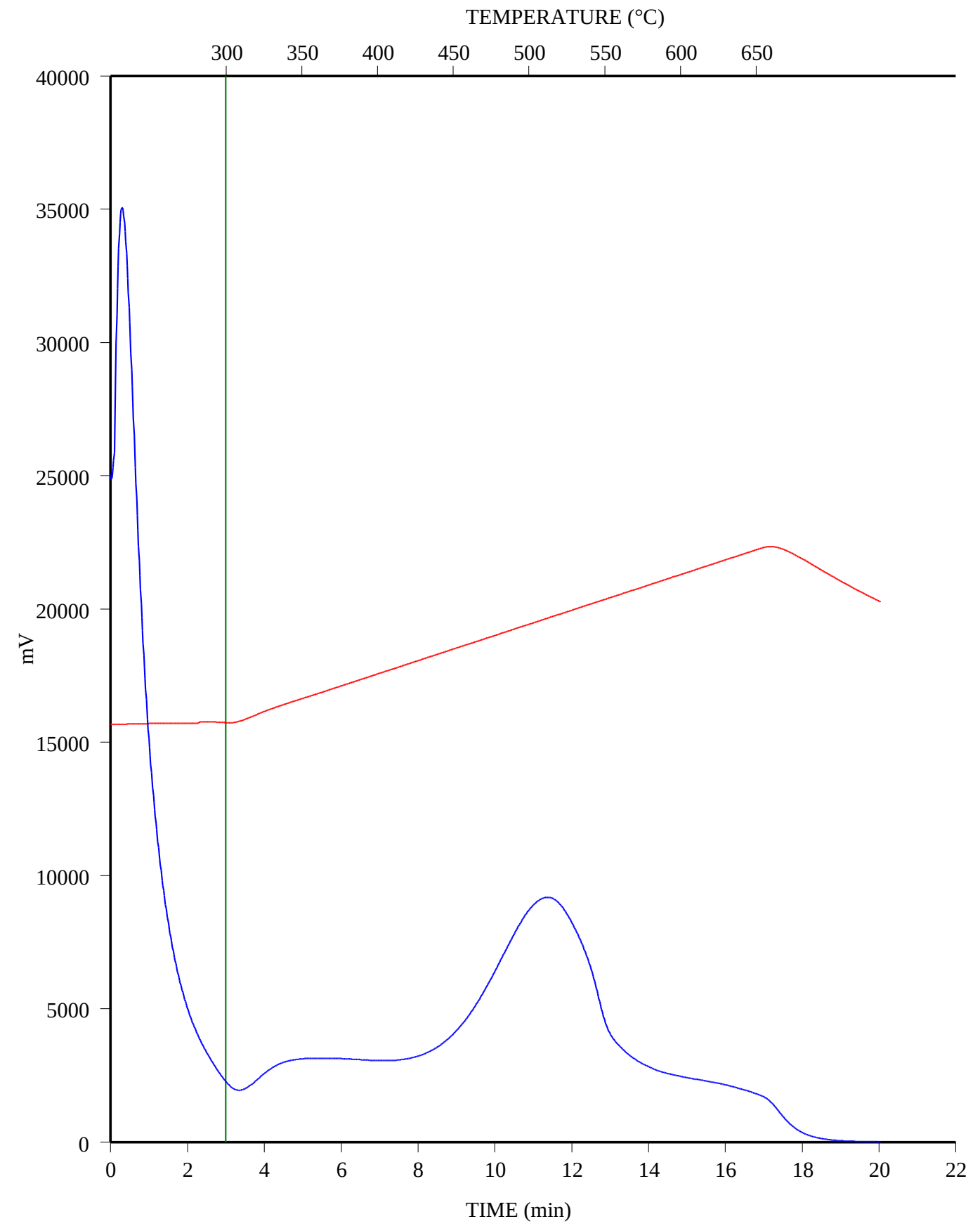
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FID Hydrocarbons



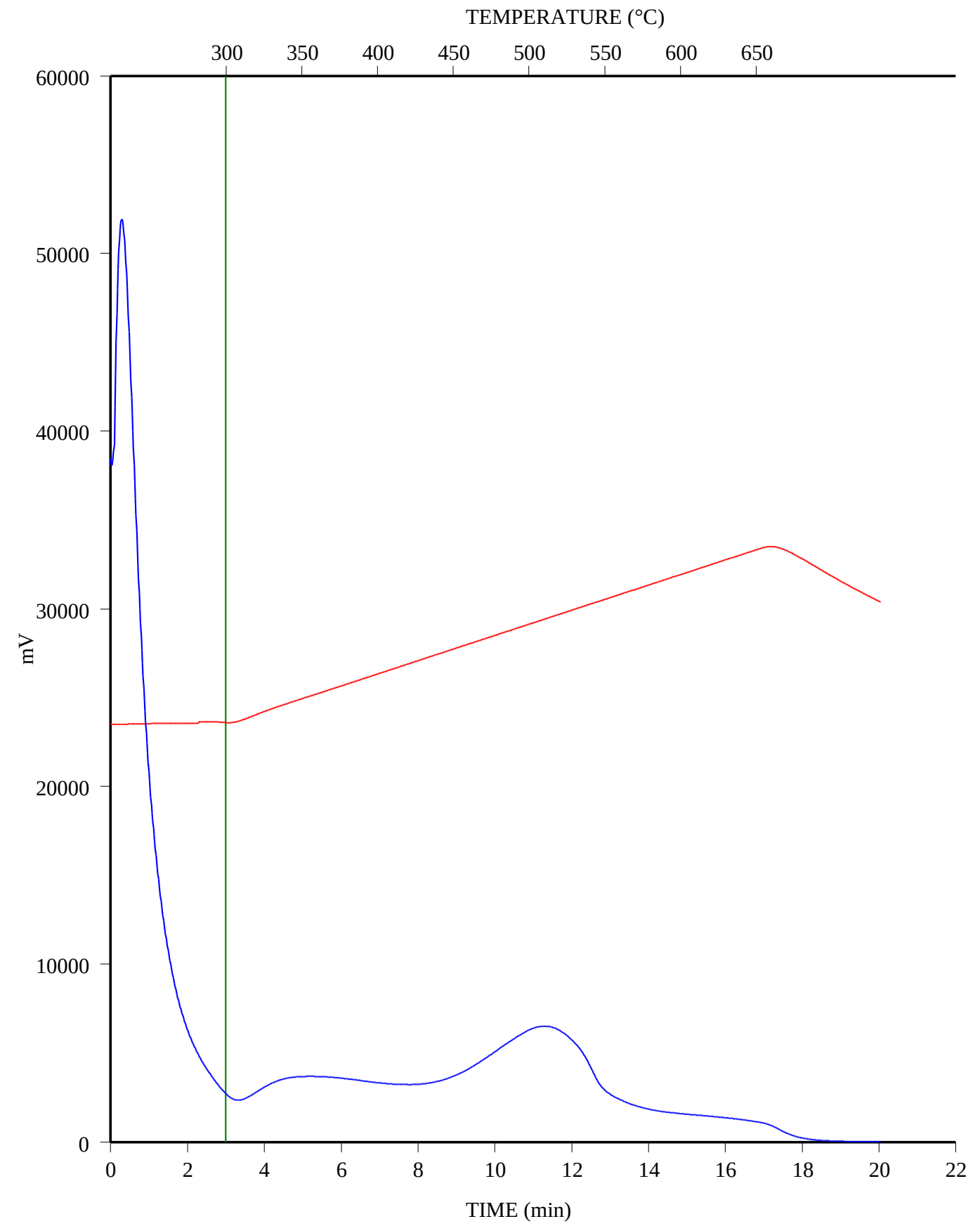
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FID Hydrocarbons



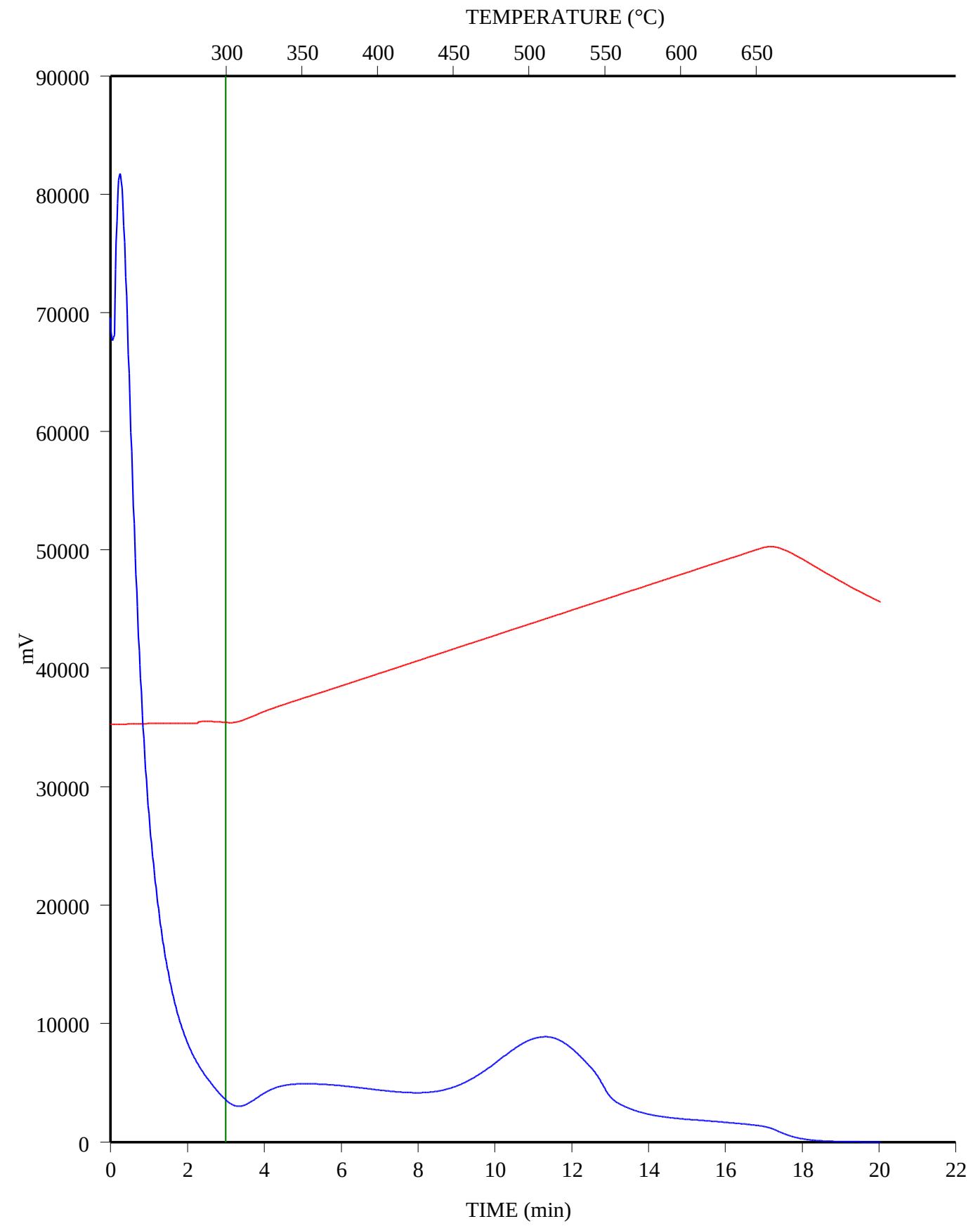
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FID Hydrocarbons



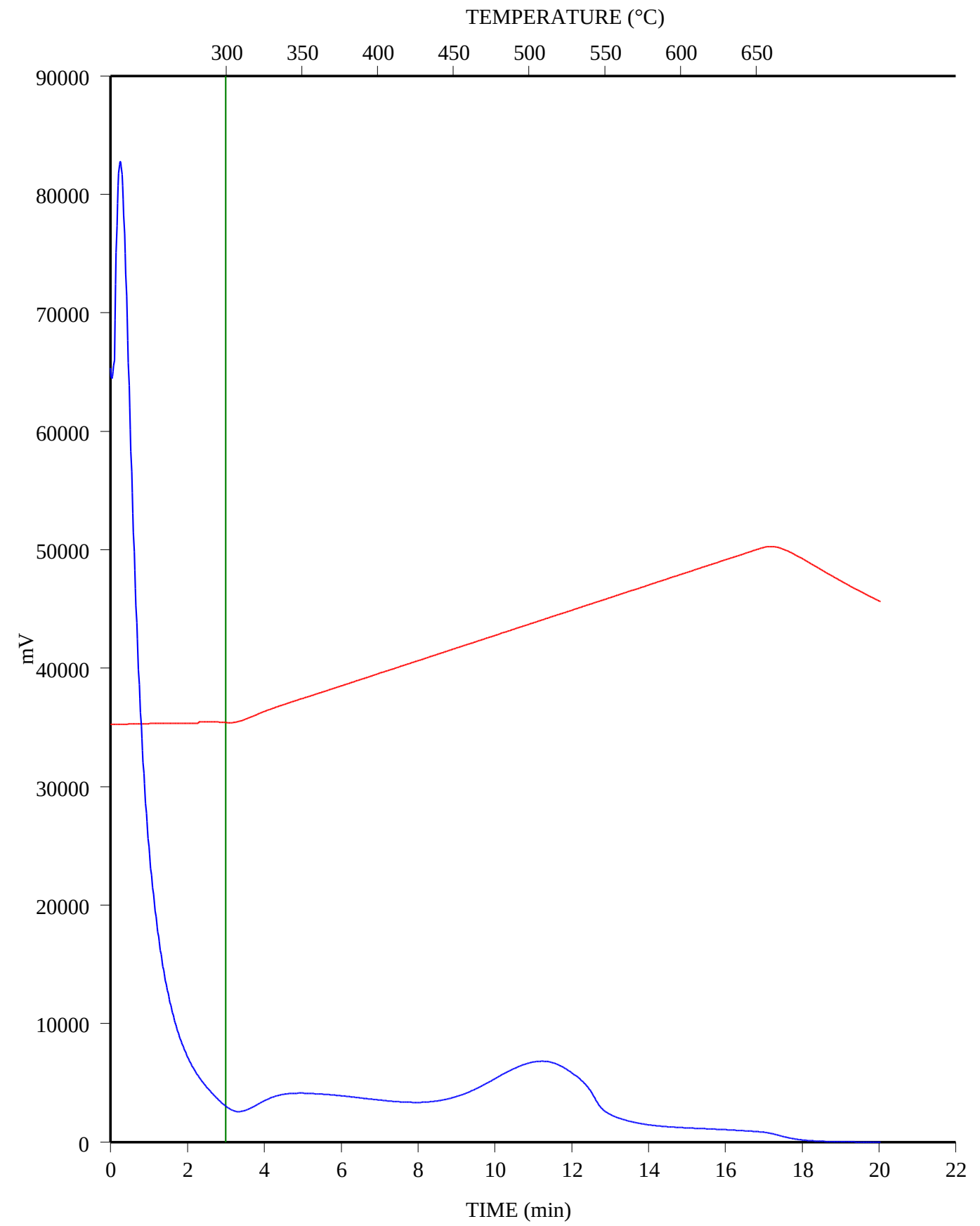
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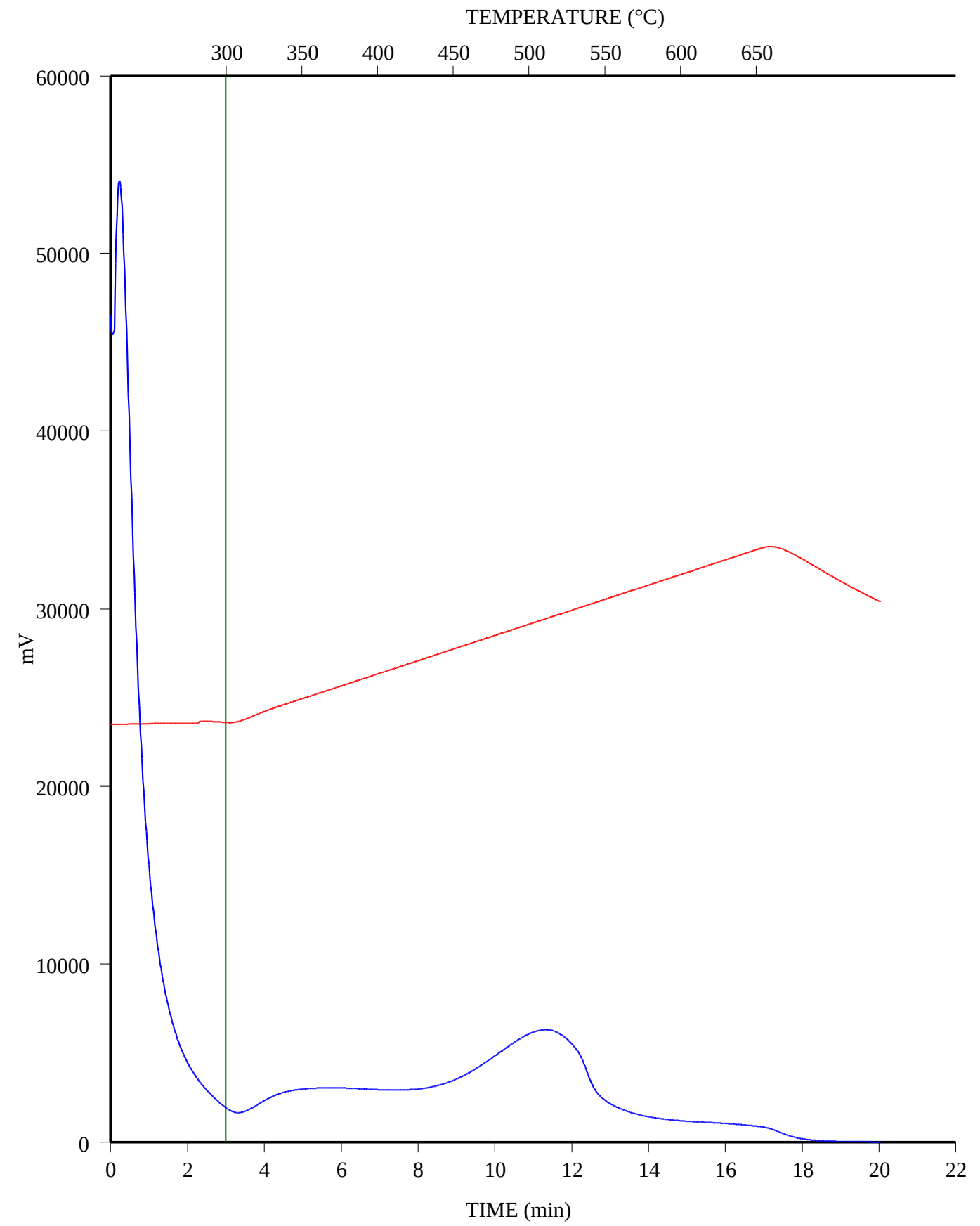
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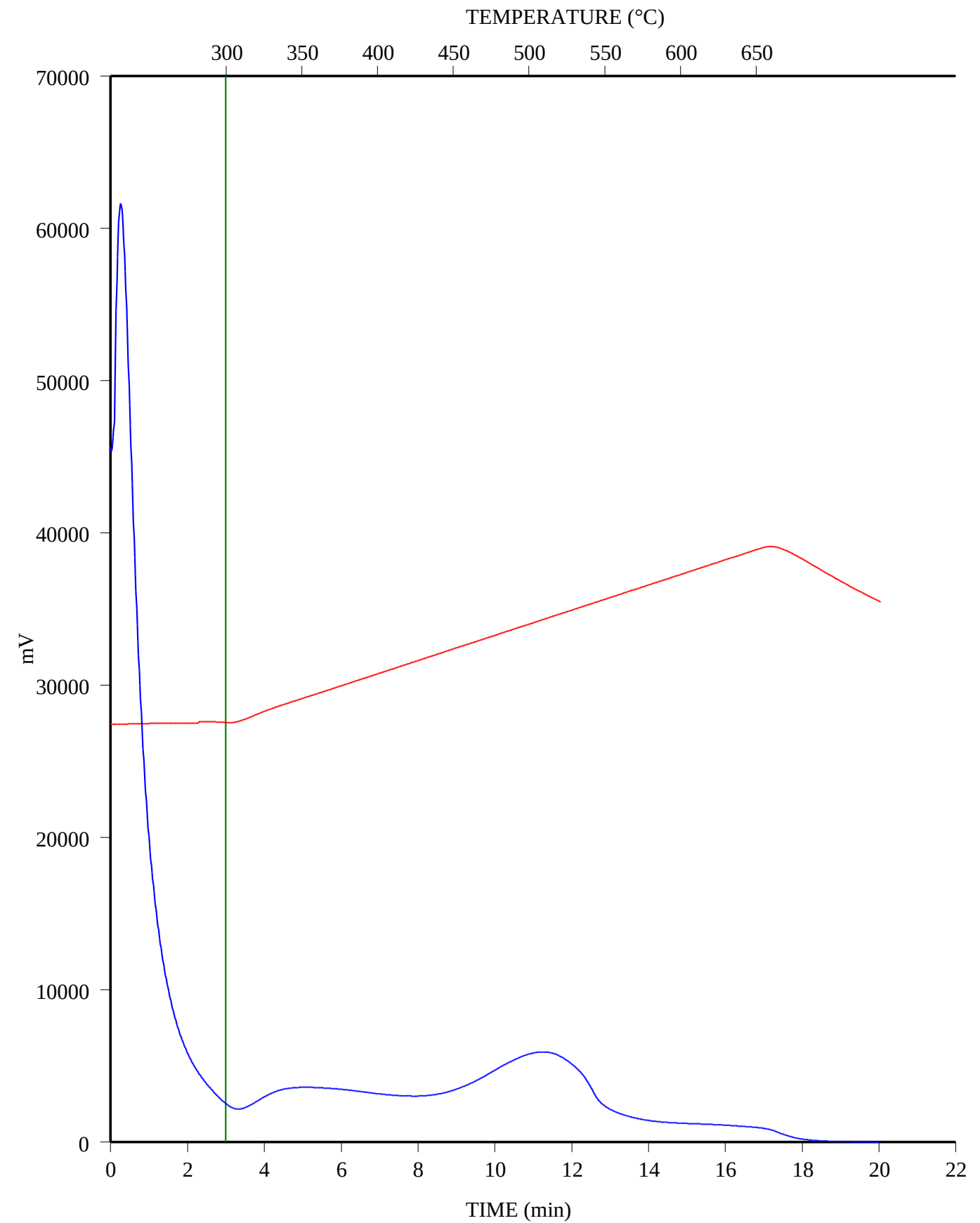
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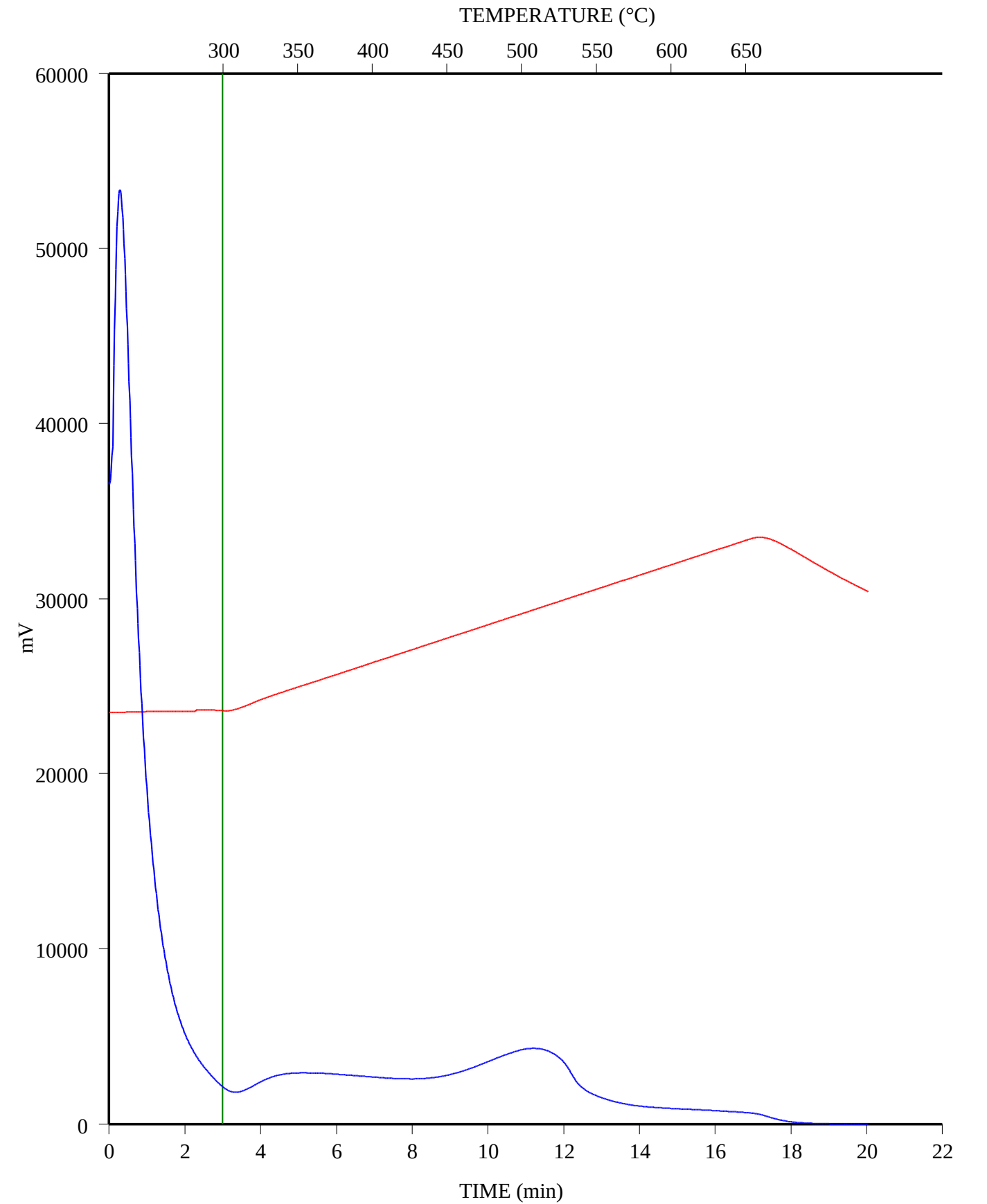
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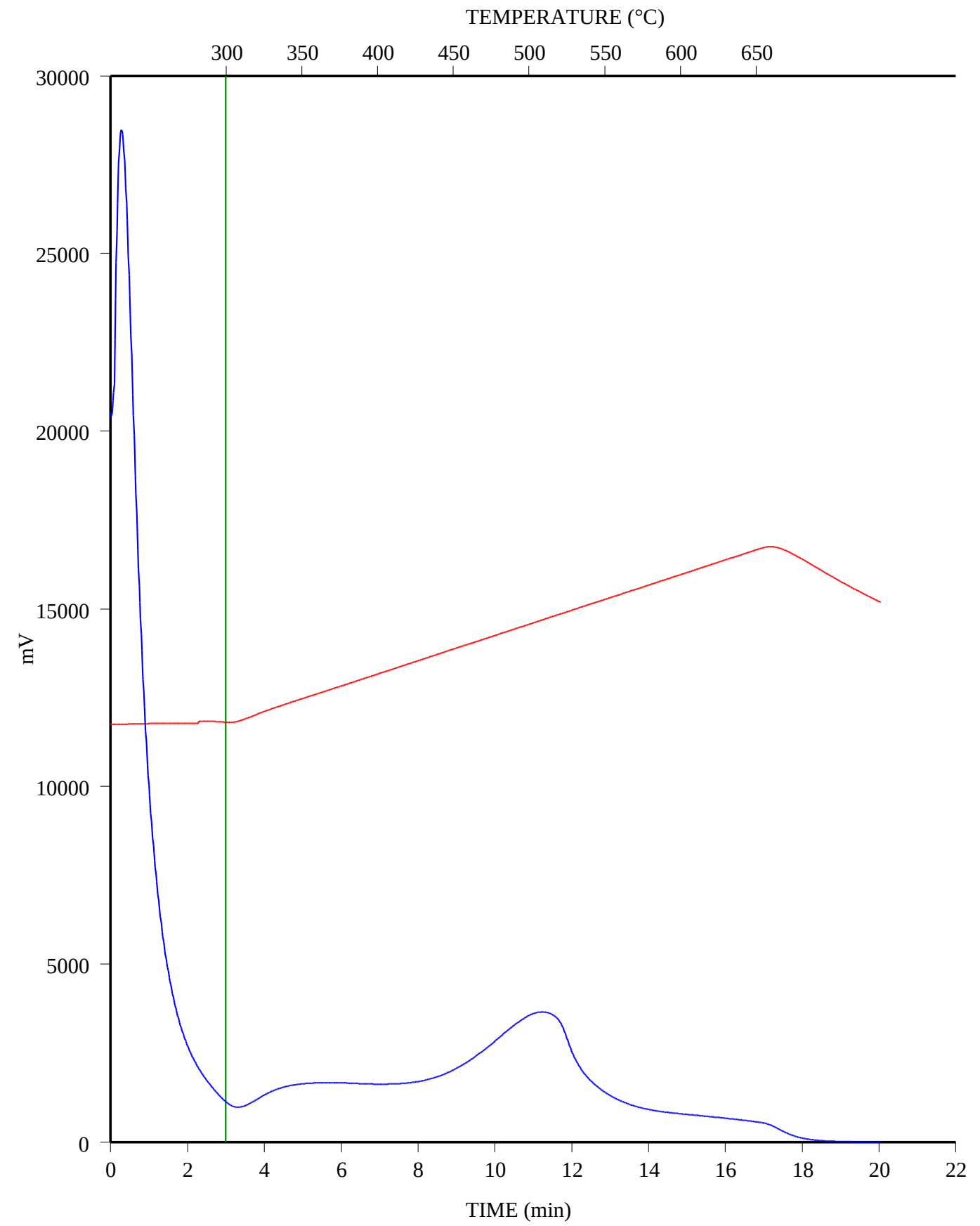
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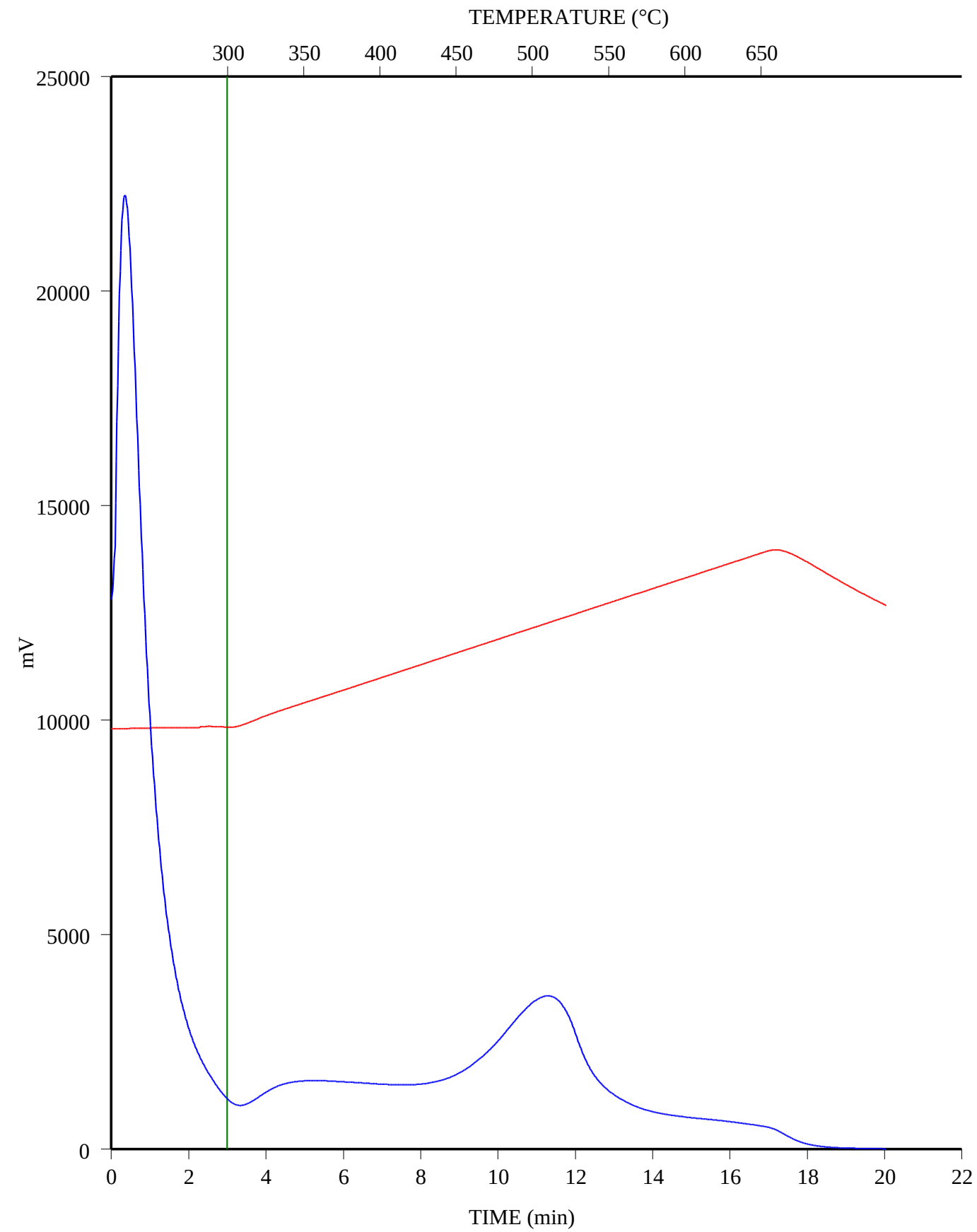
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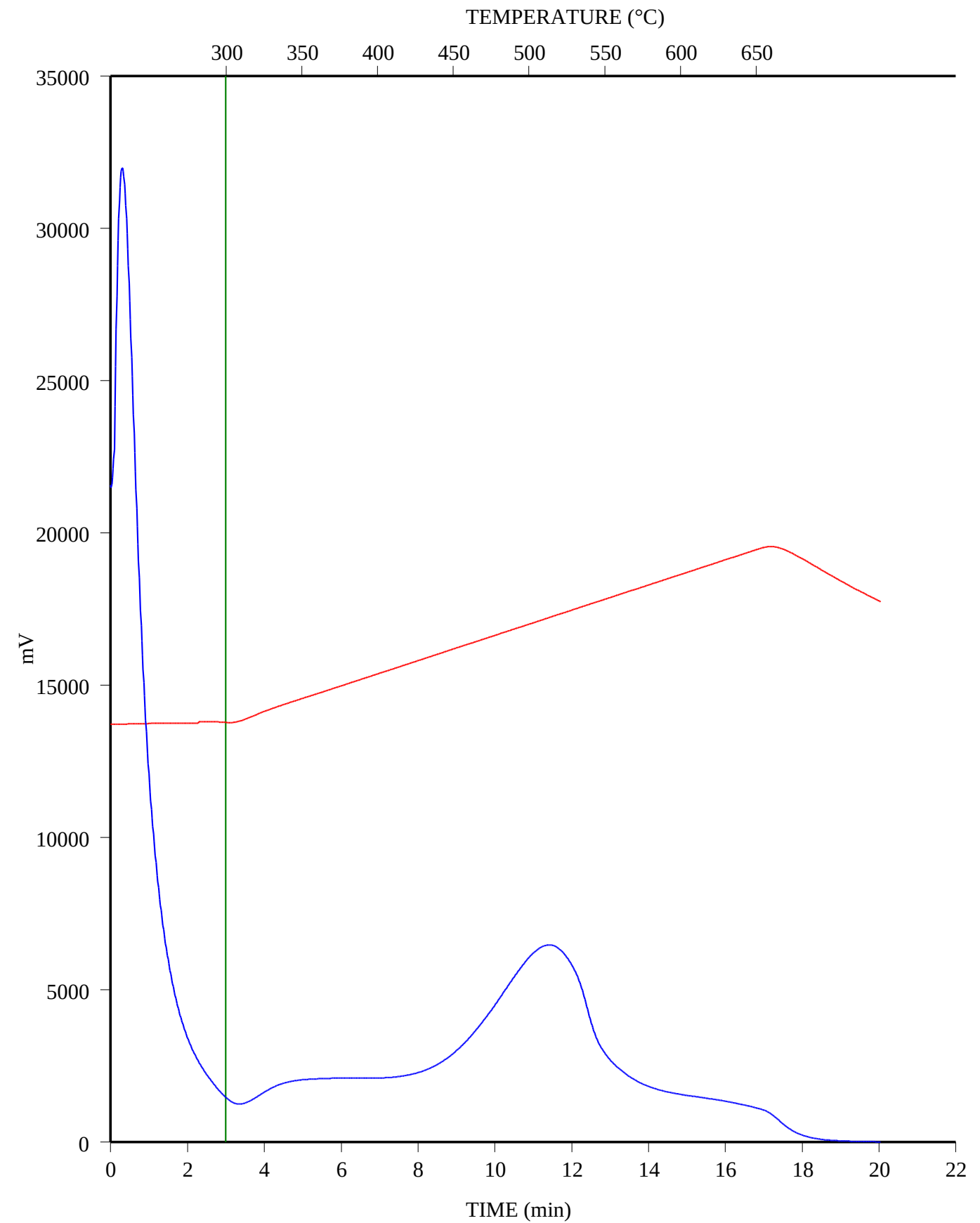
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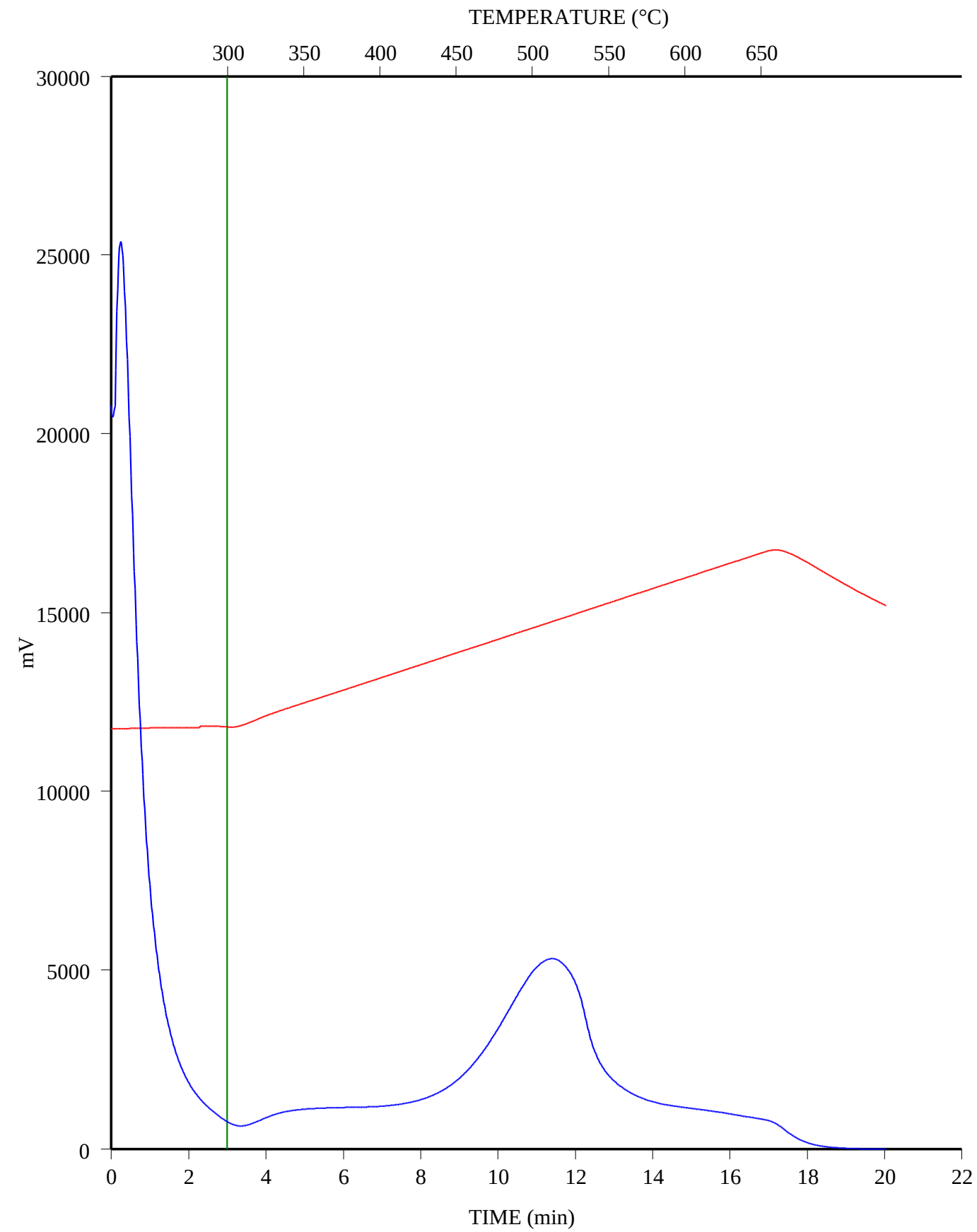
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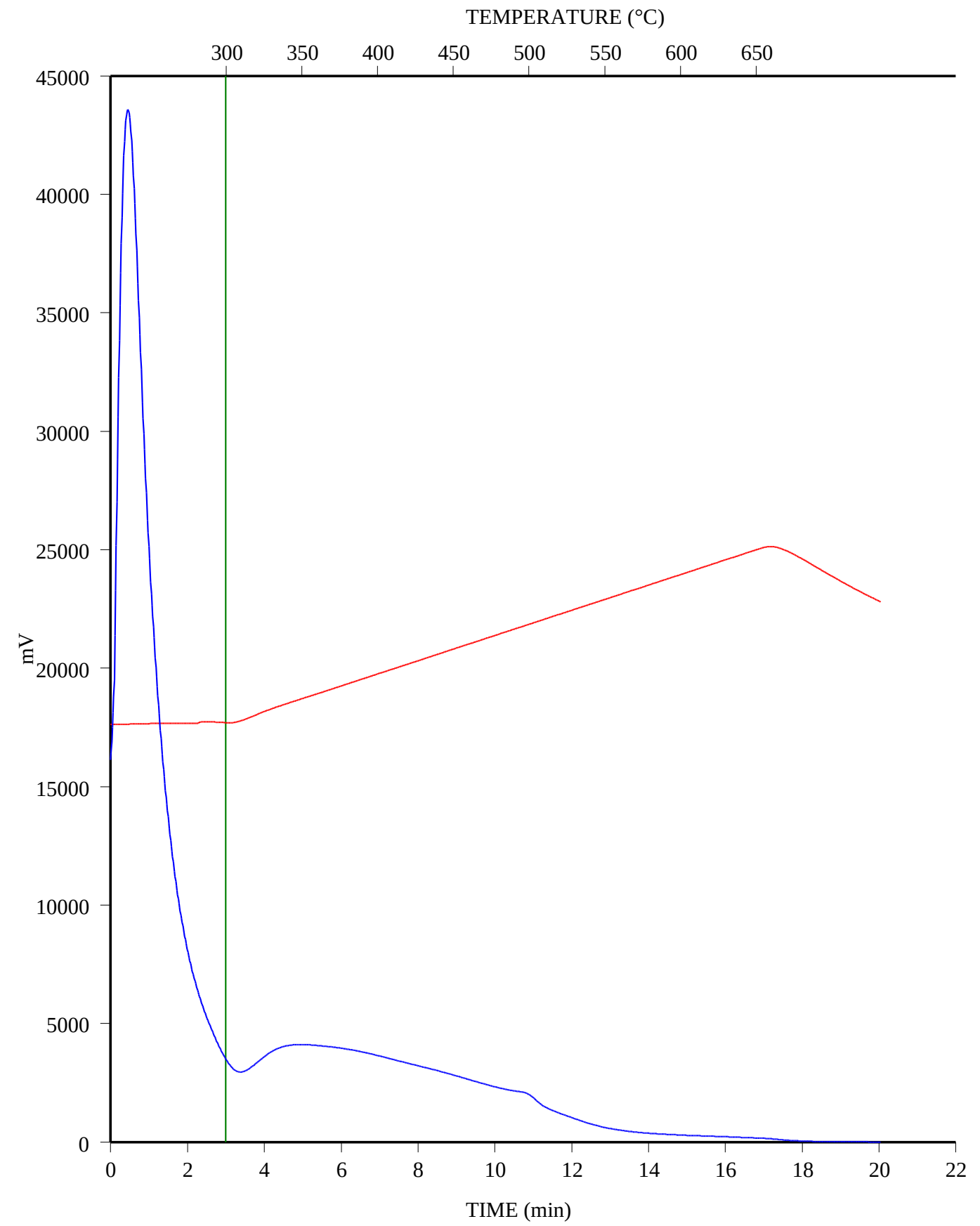
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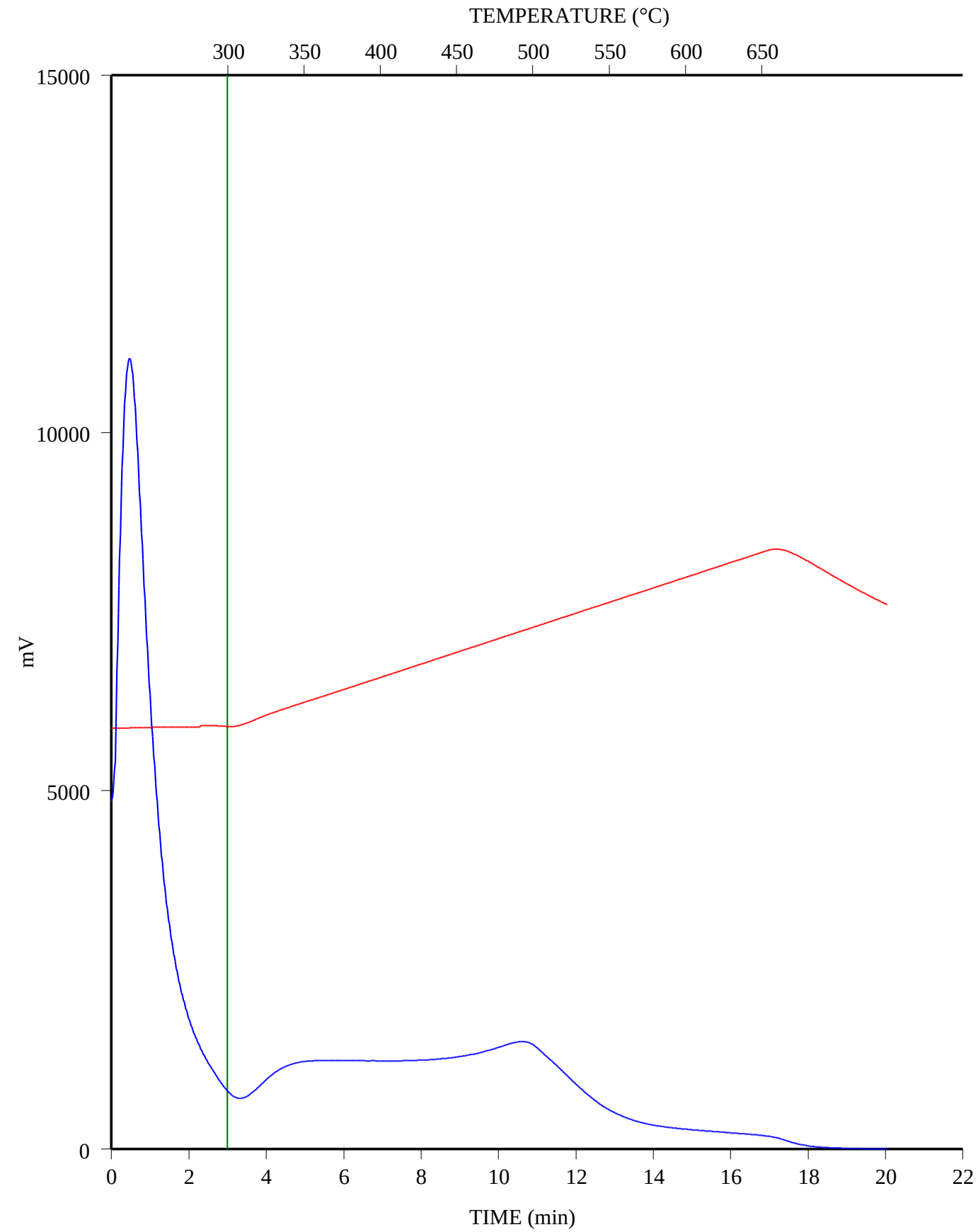


C-594253; ECA 102 SAXON 11-8-62-24; 3833 m
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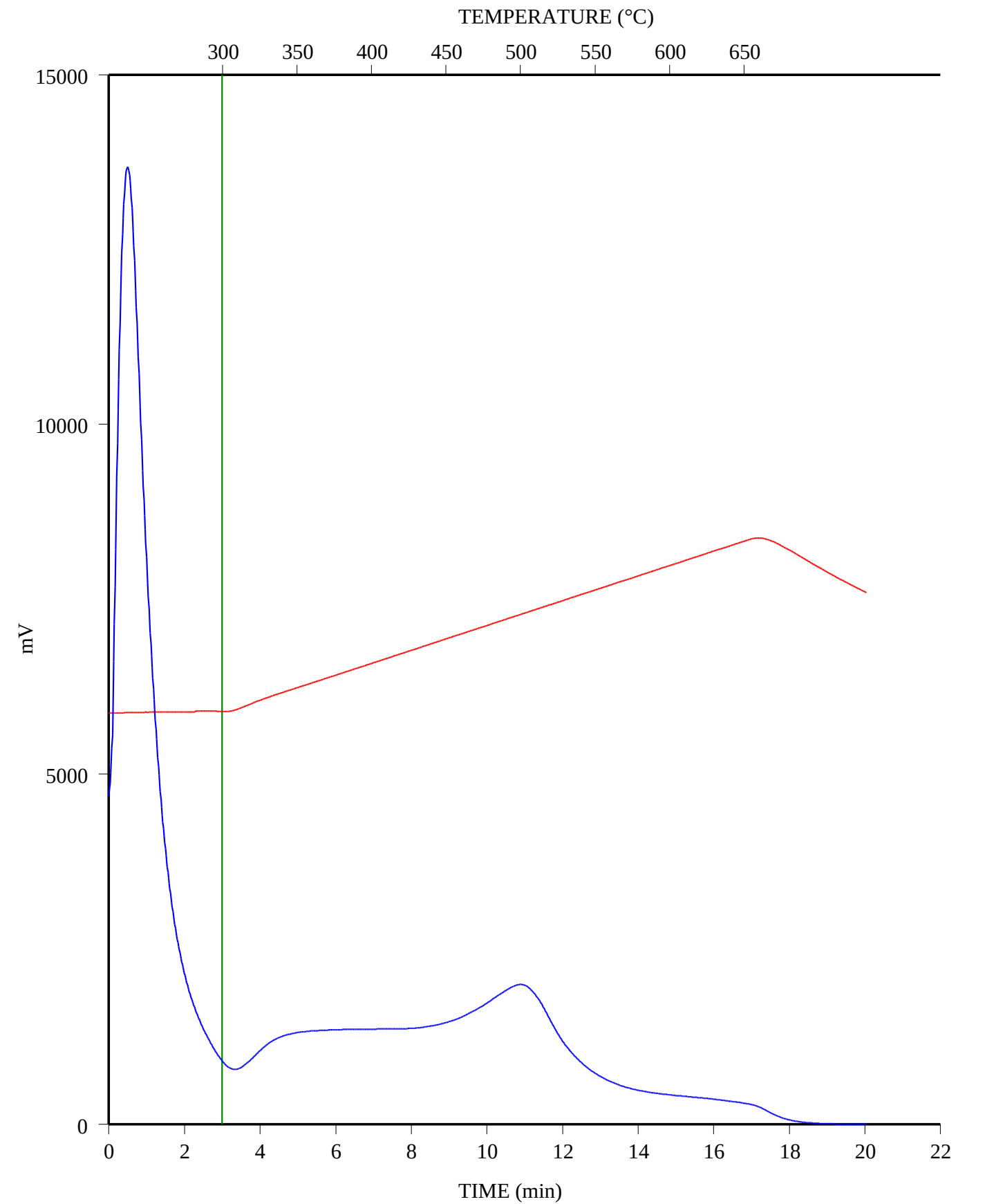


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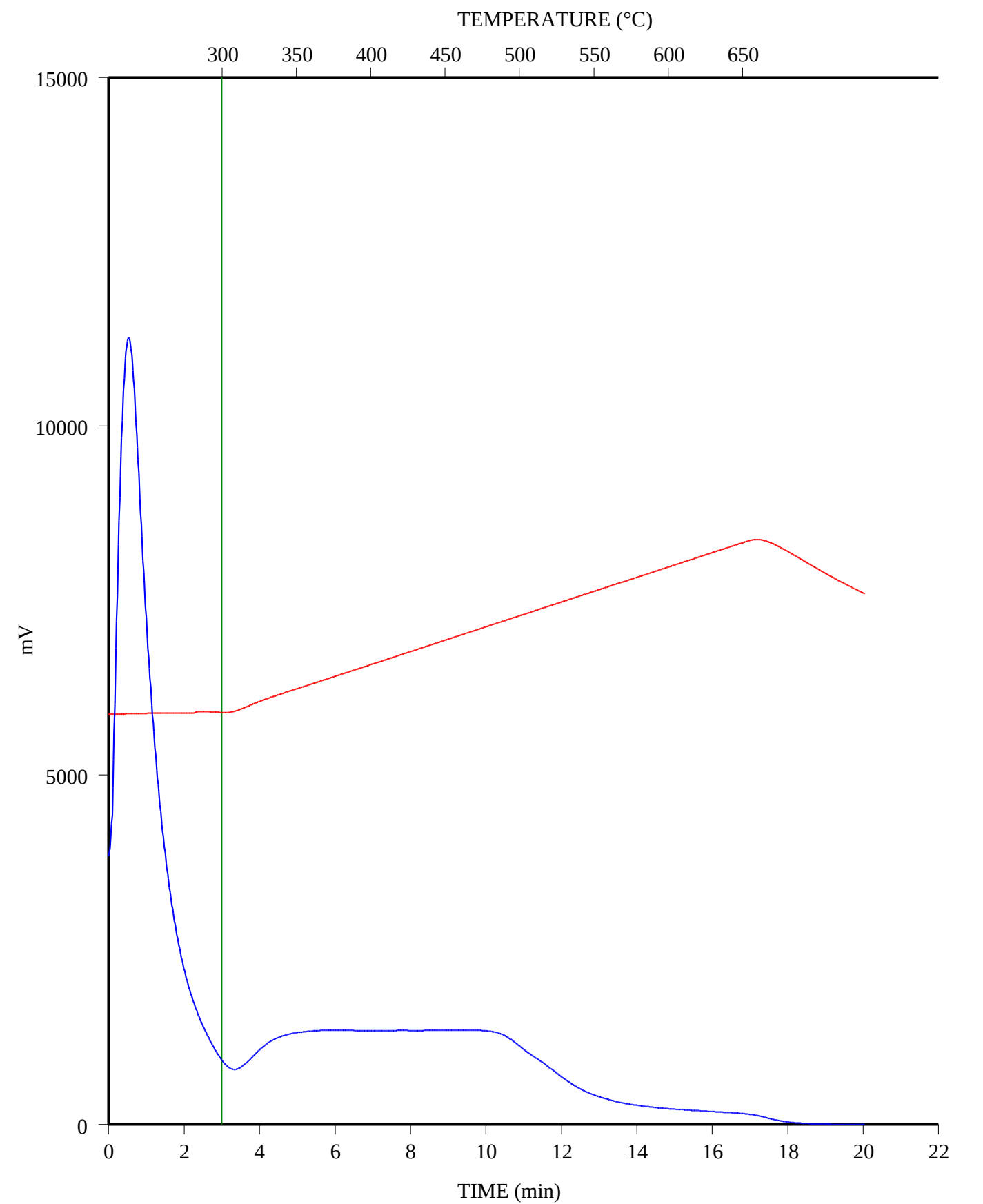




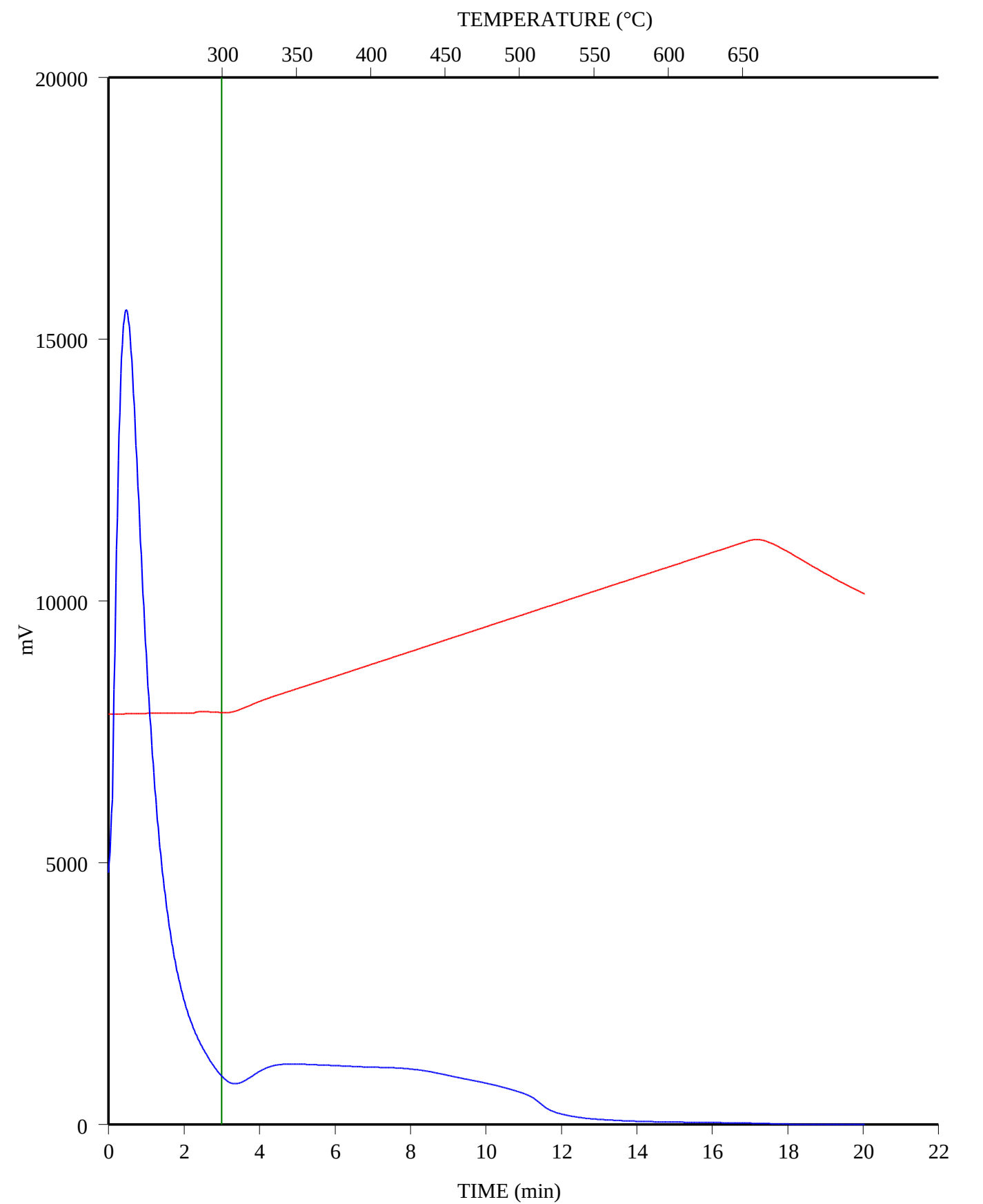
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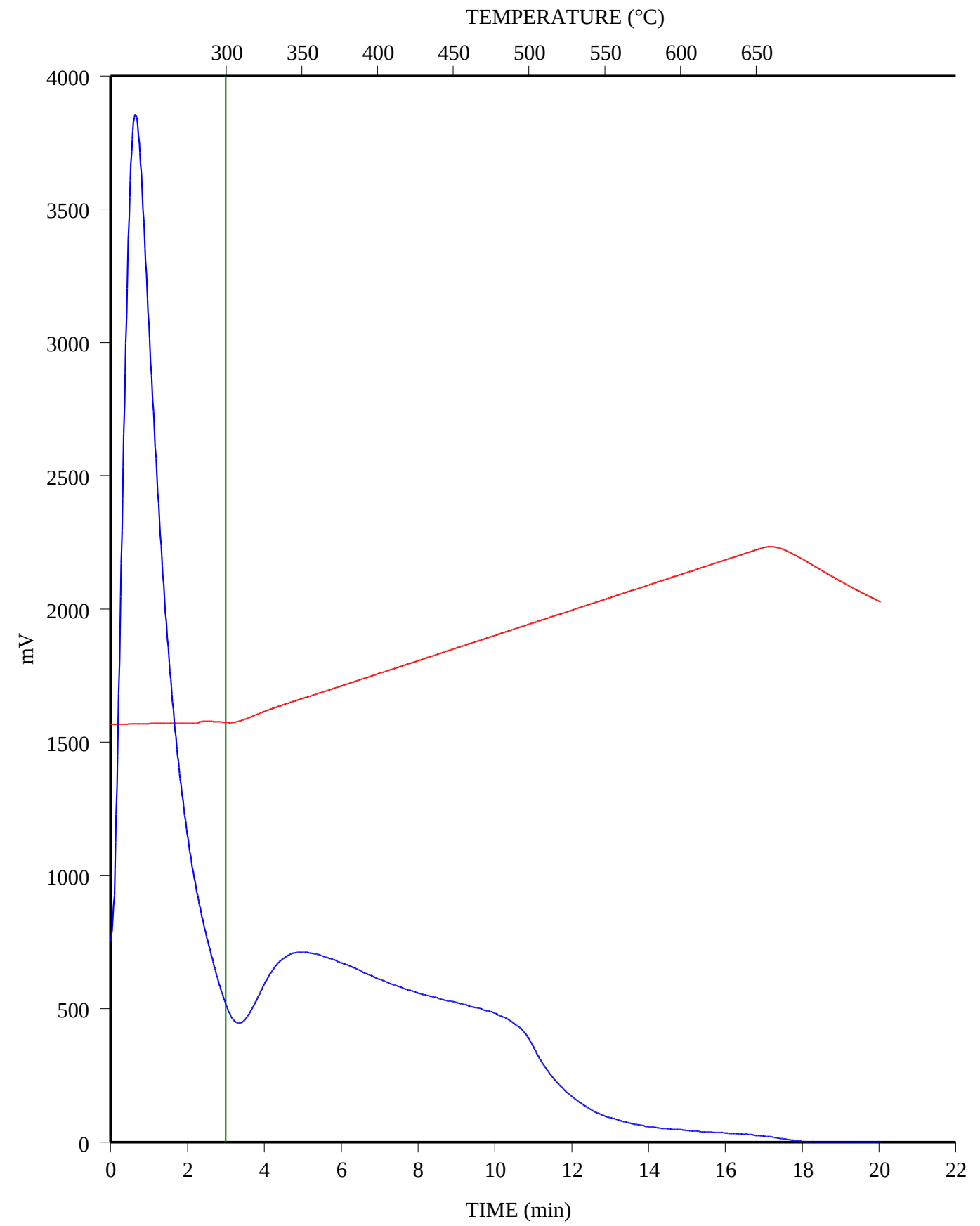
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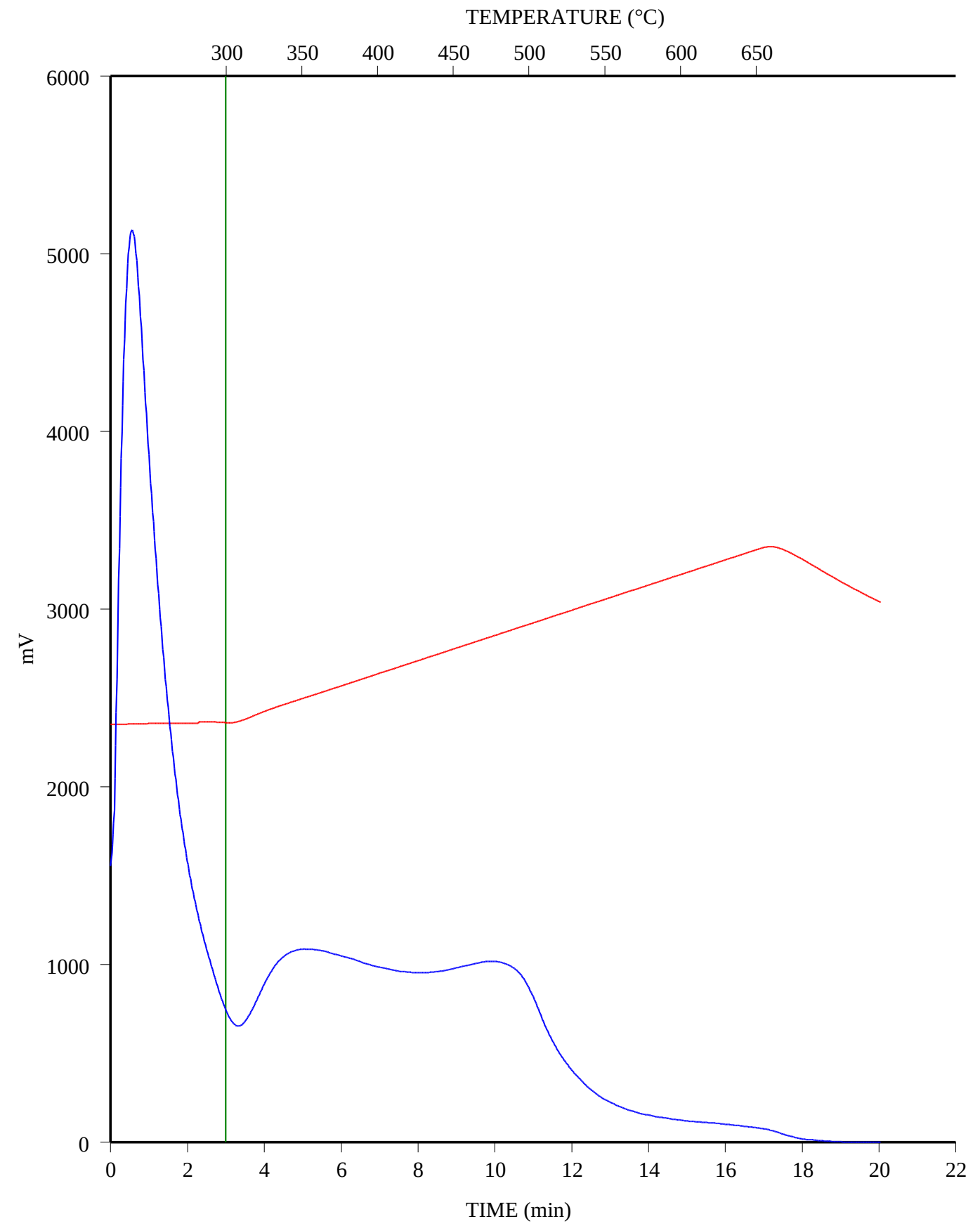
C-594258; HUSKY KAYBOBS 5-11-60-18; 3048.27 m
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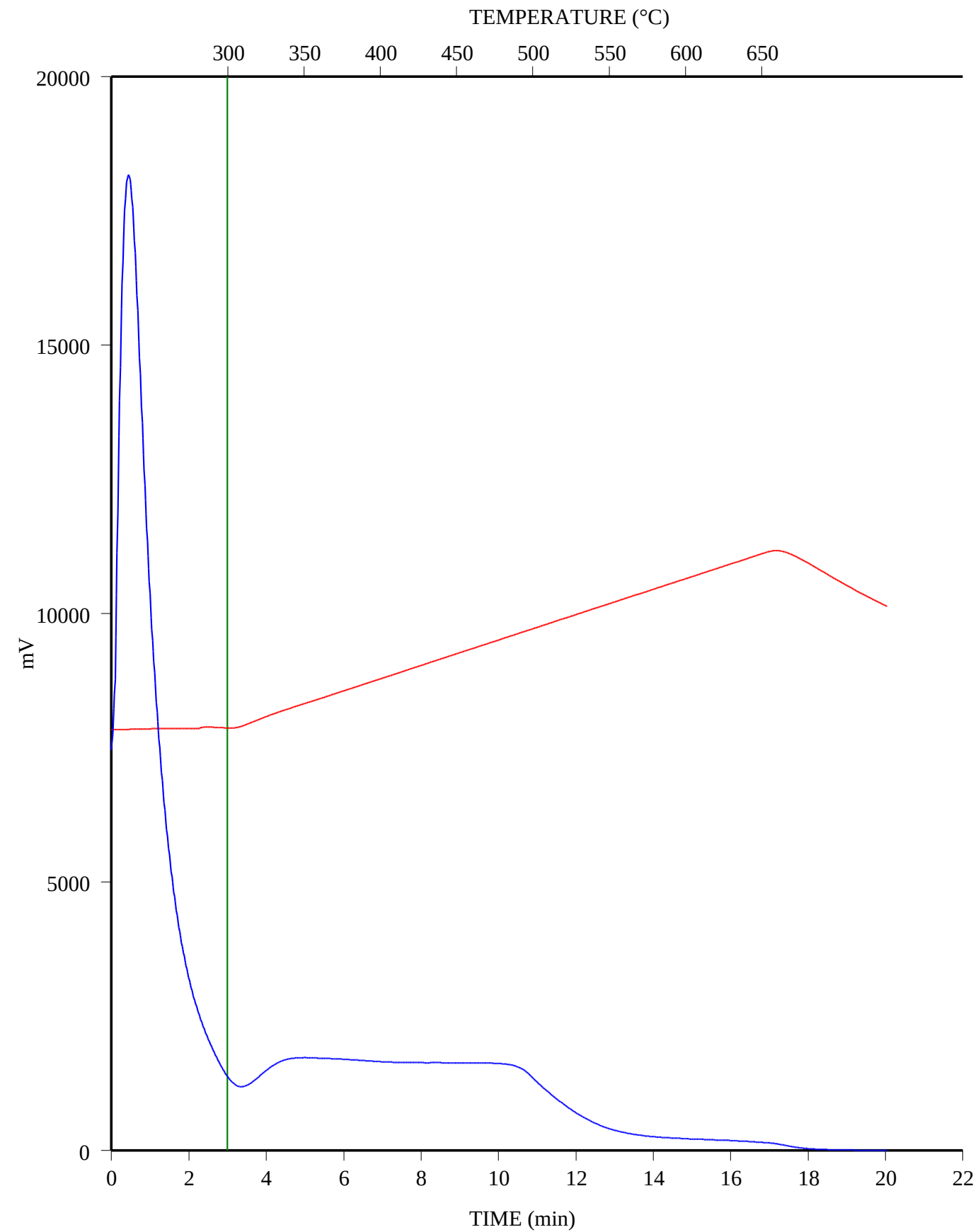
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FID Hydrocarbons



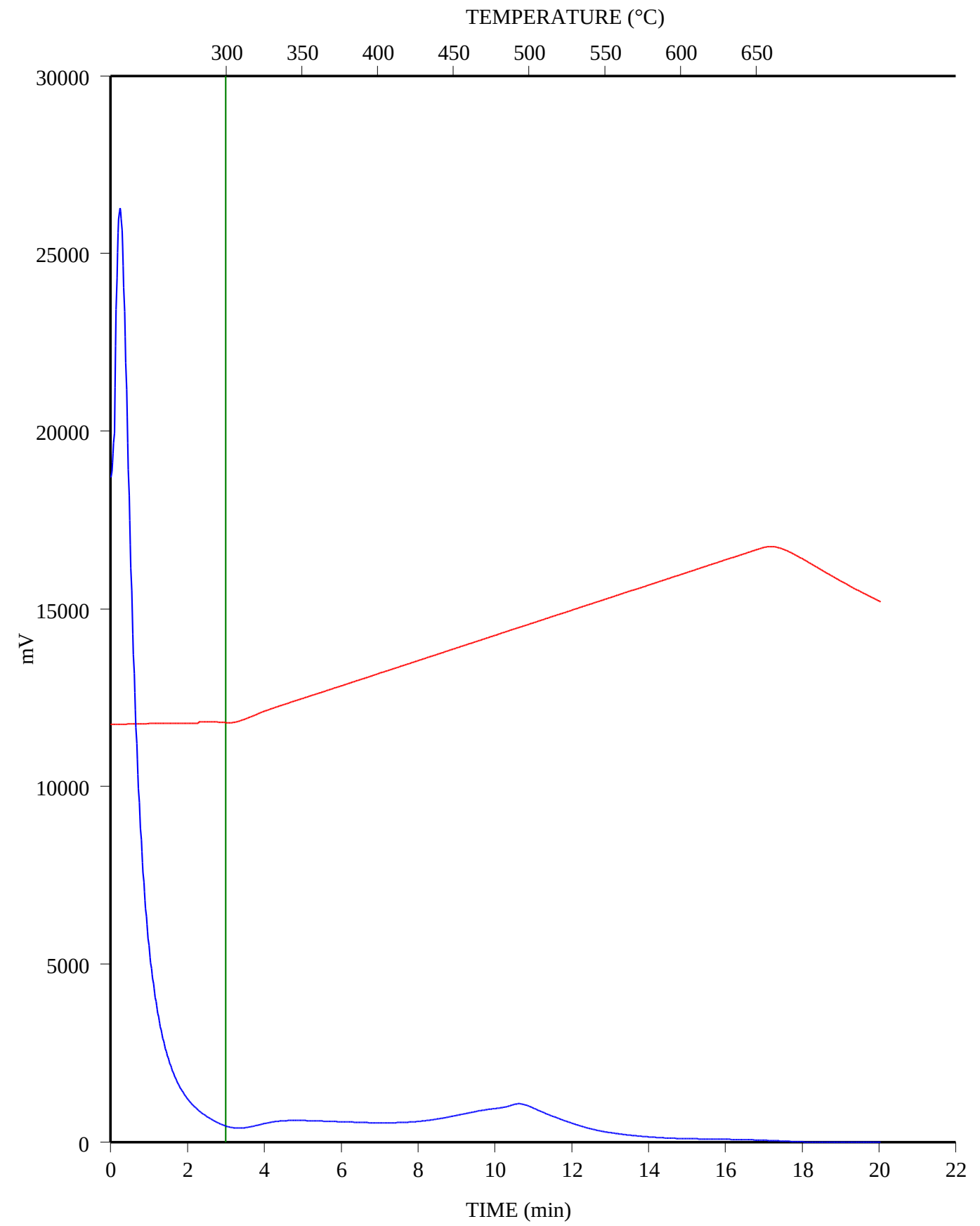
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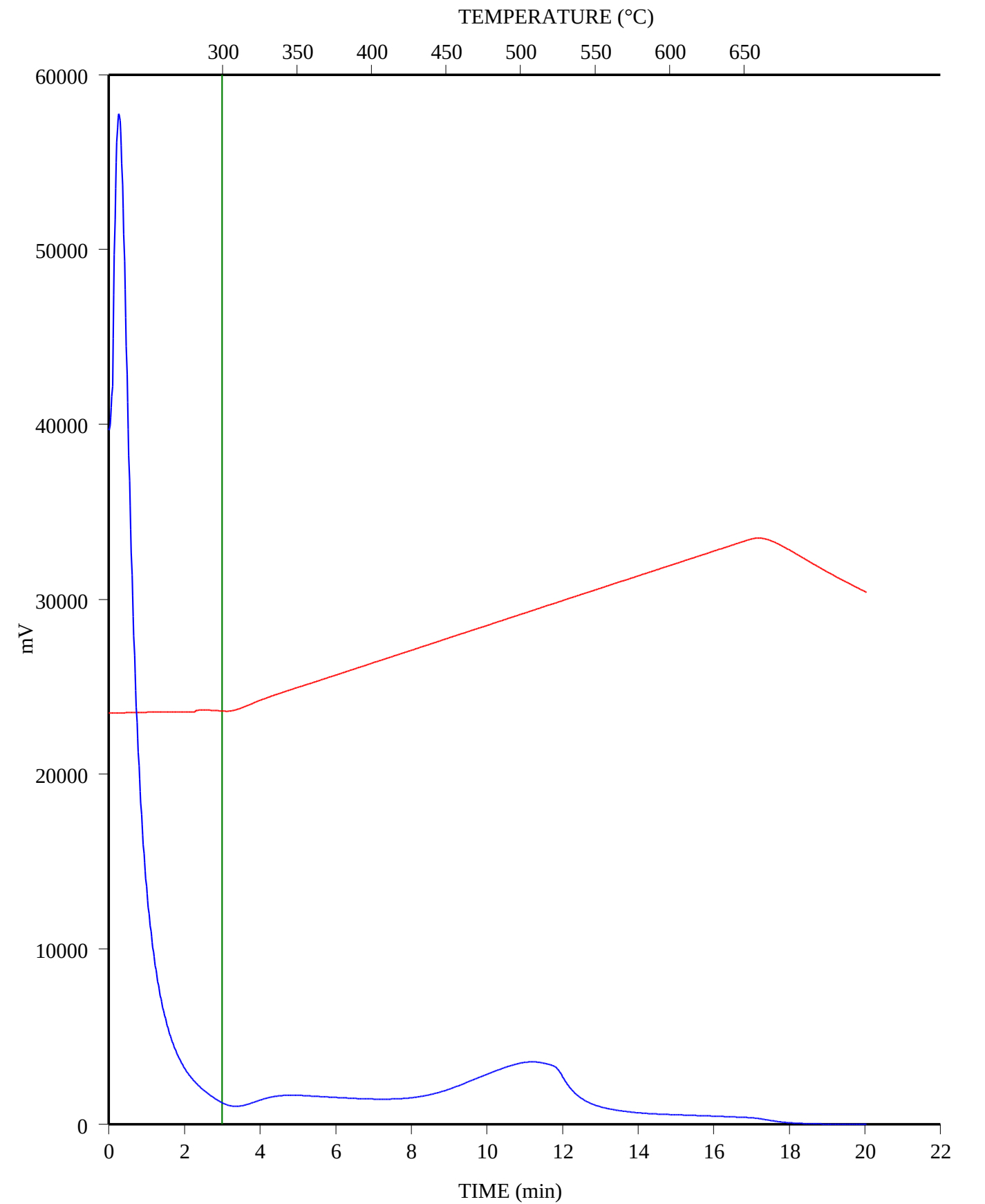
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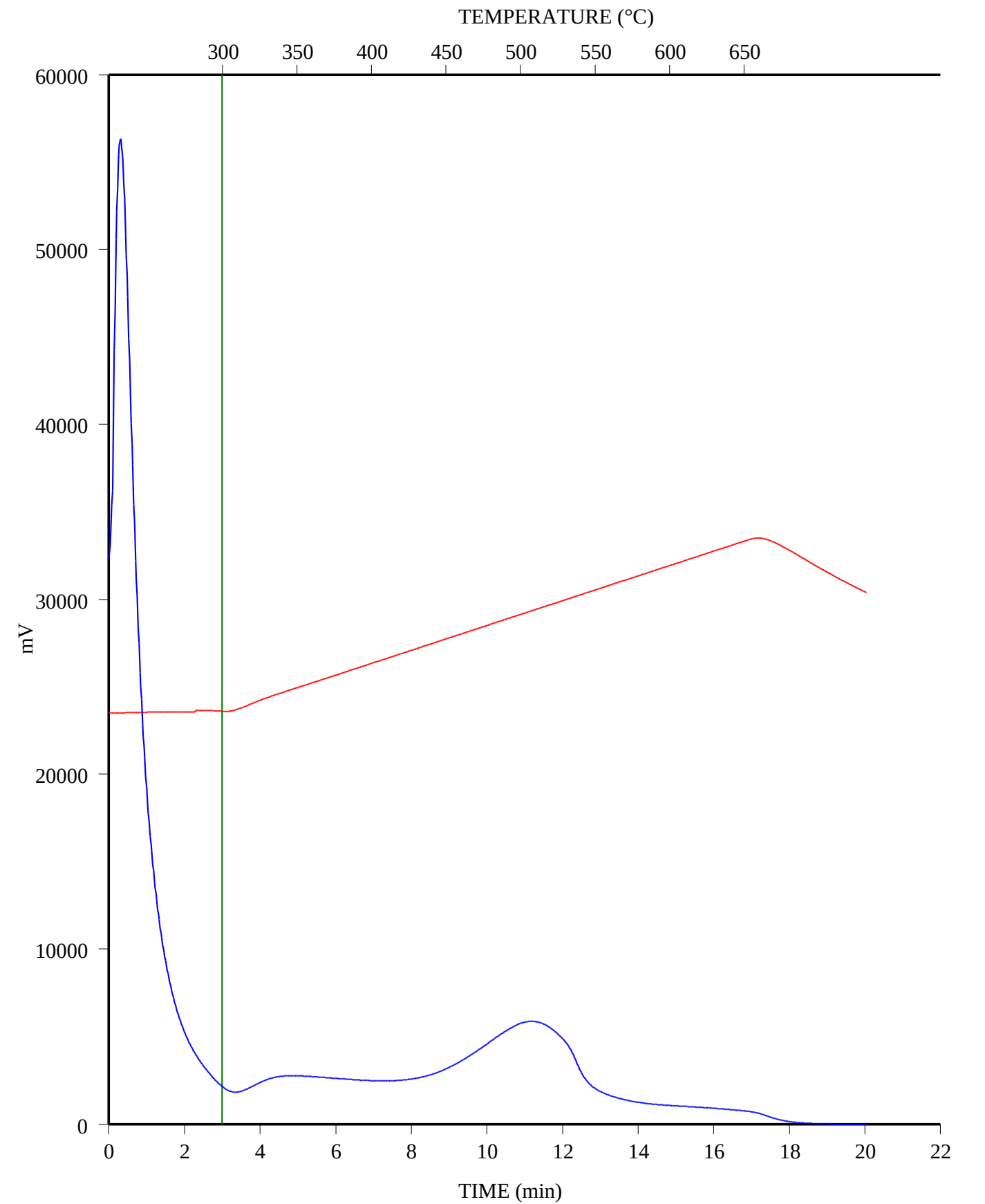
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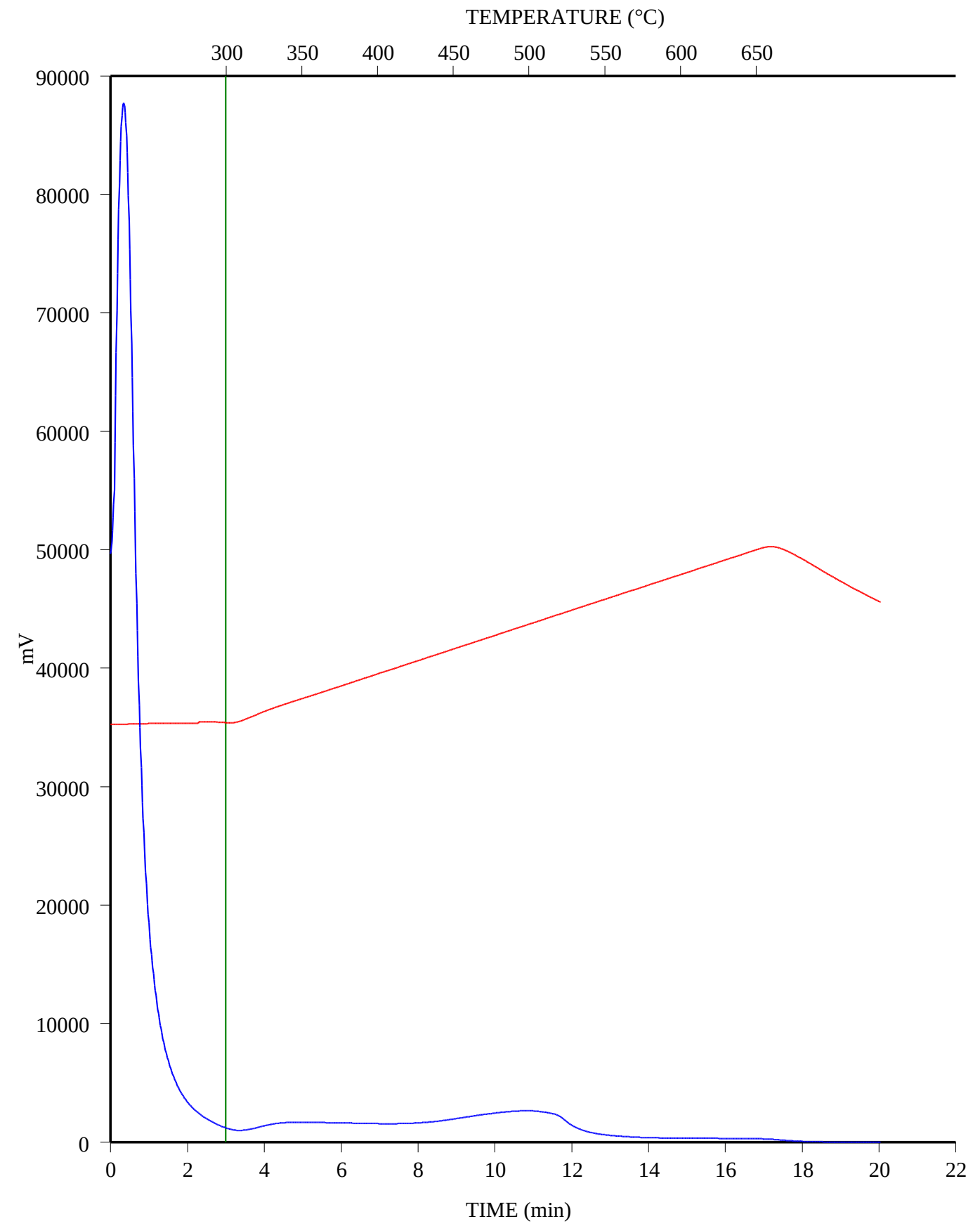
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FID Hydrocarbons



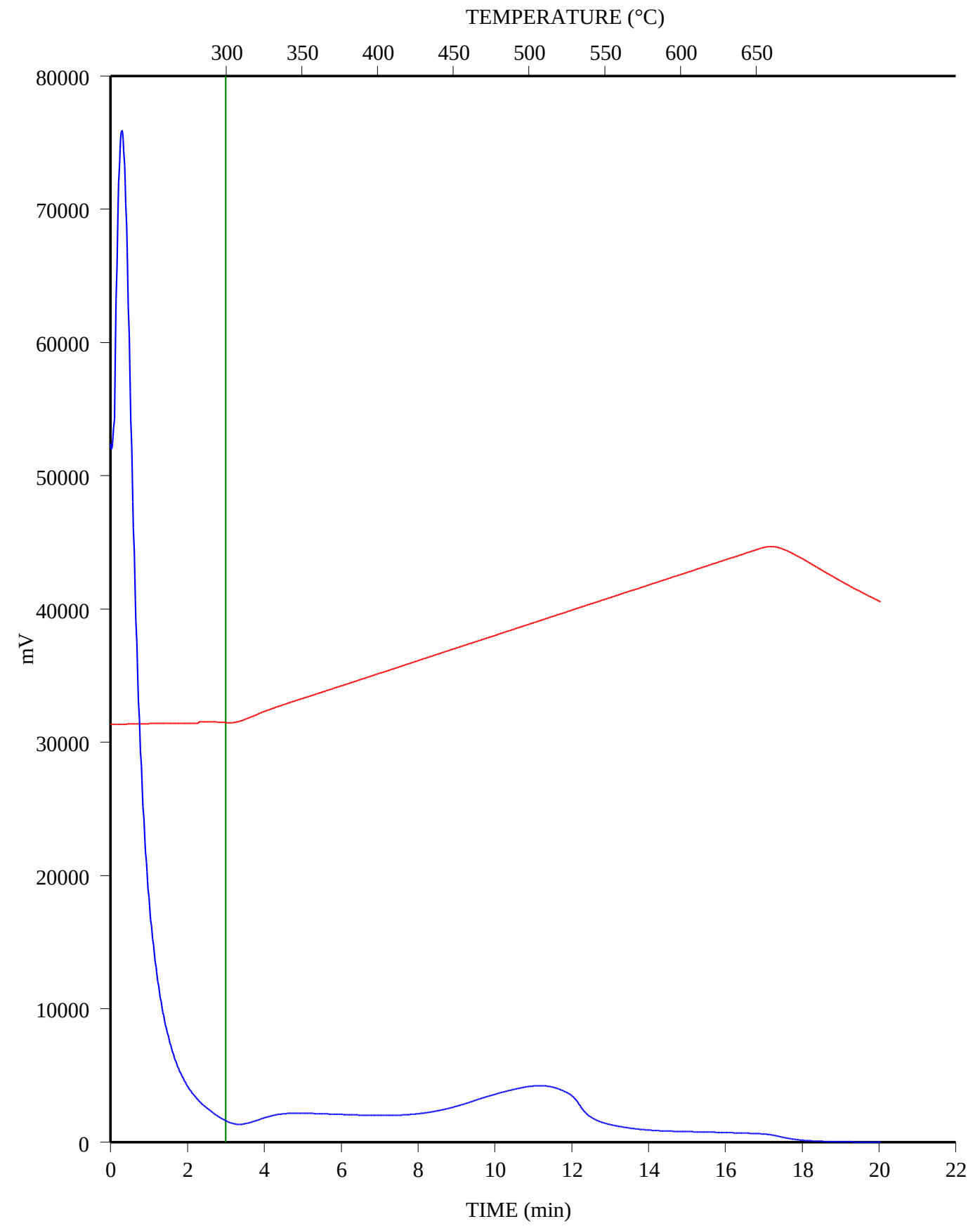
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FID Hydrocarbons



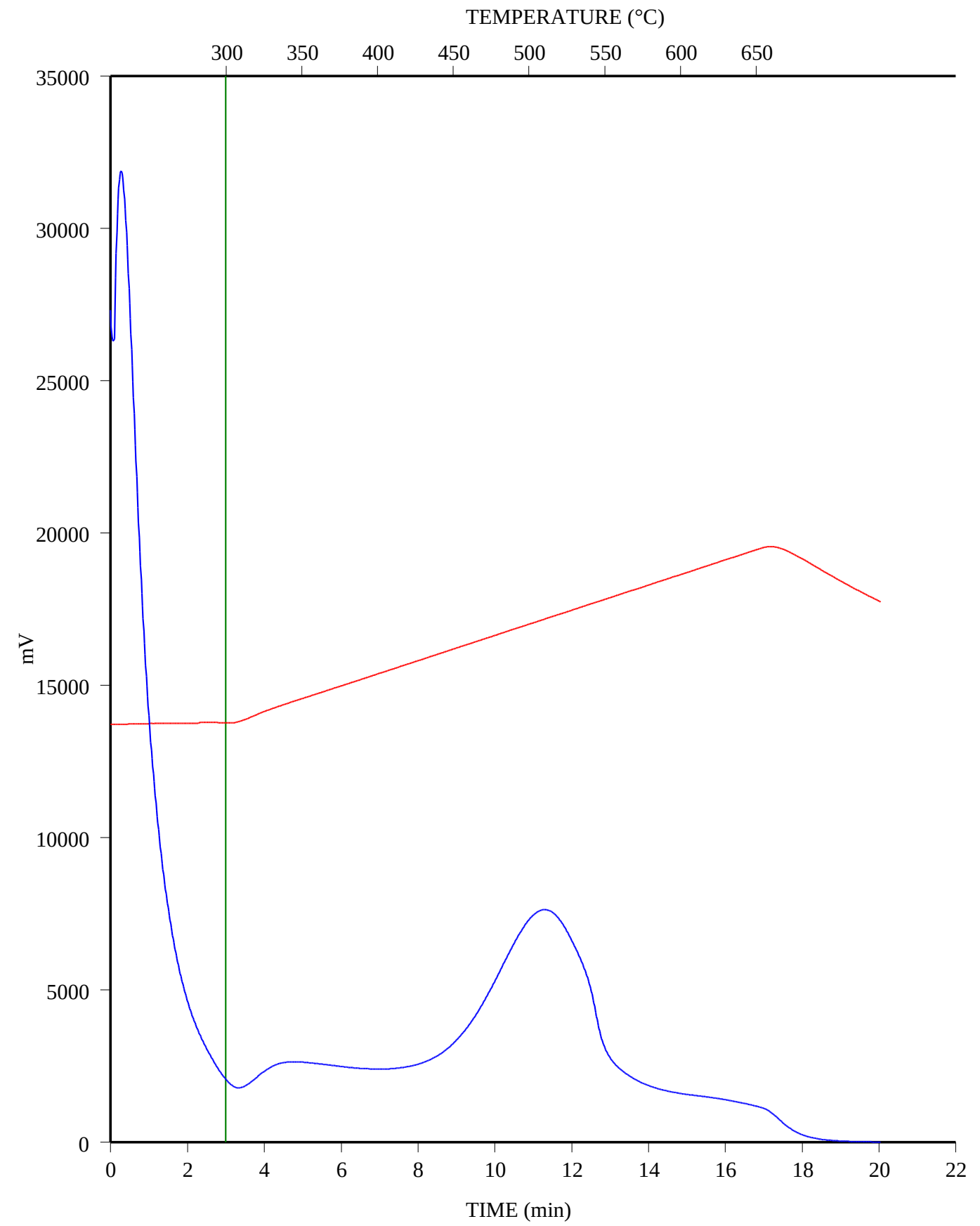
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FID Hydrocarbons



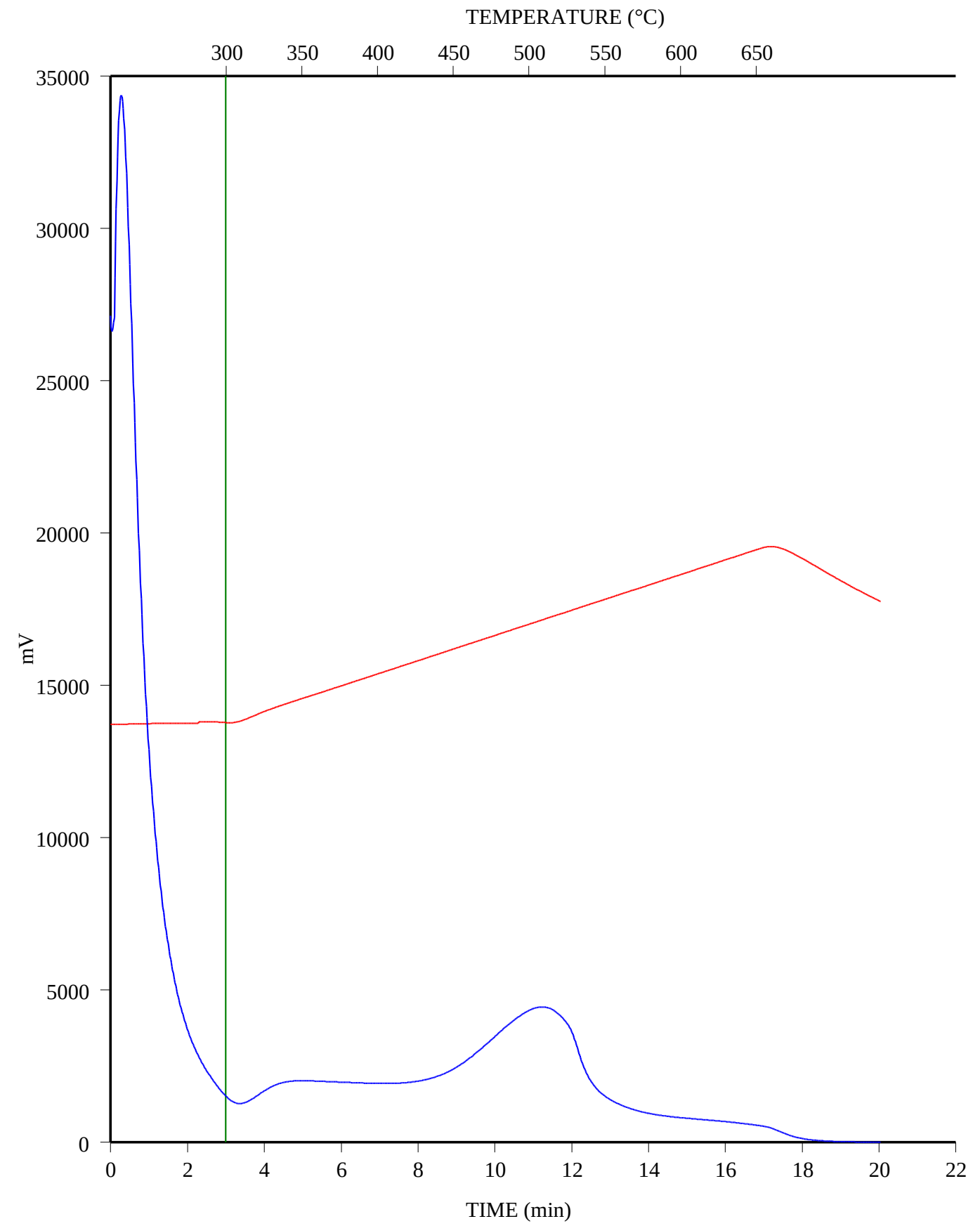
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FID Hydrocarbons



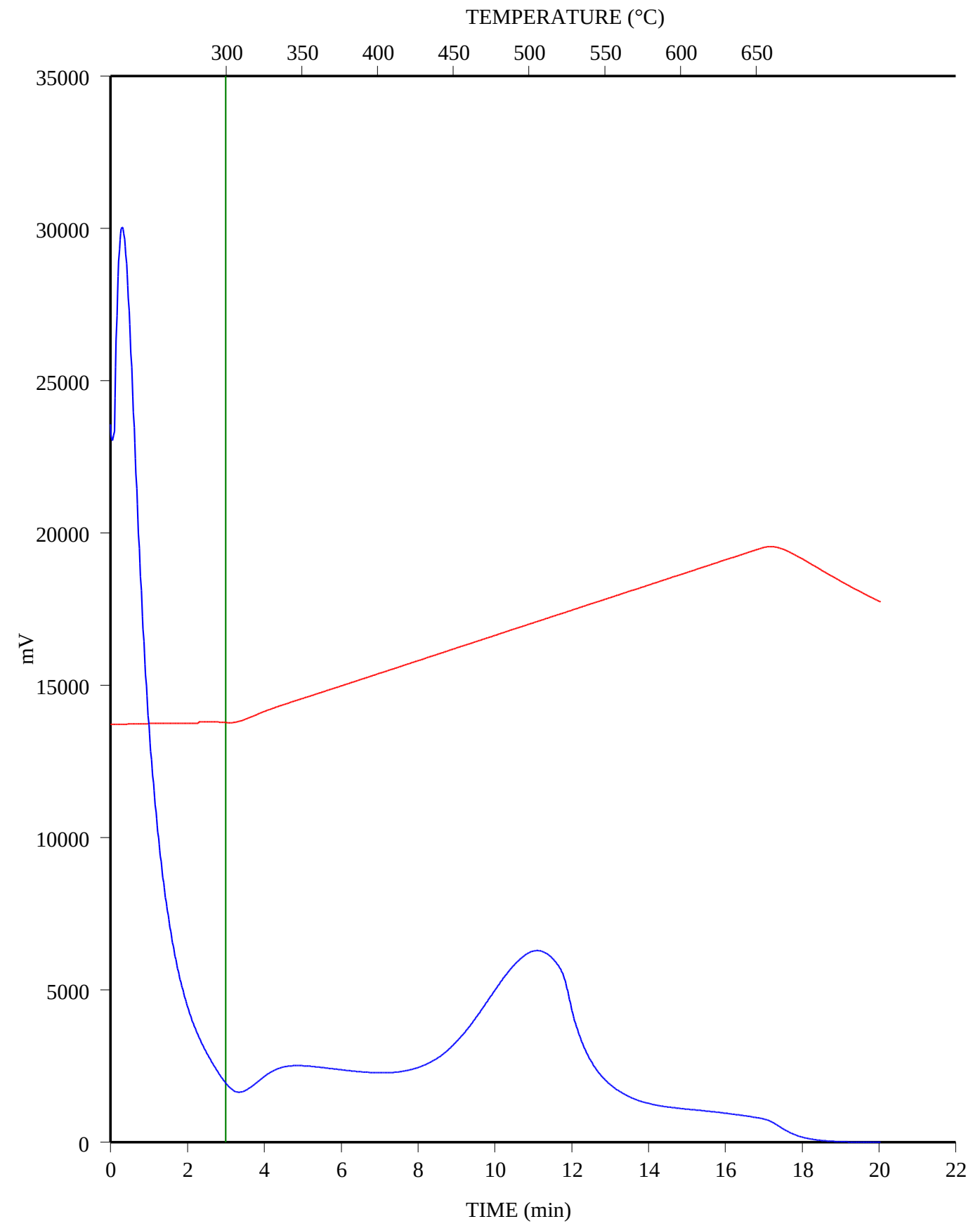
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FID Hydrocarbons



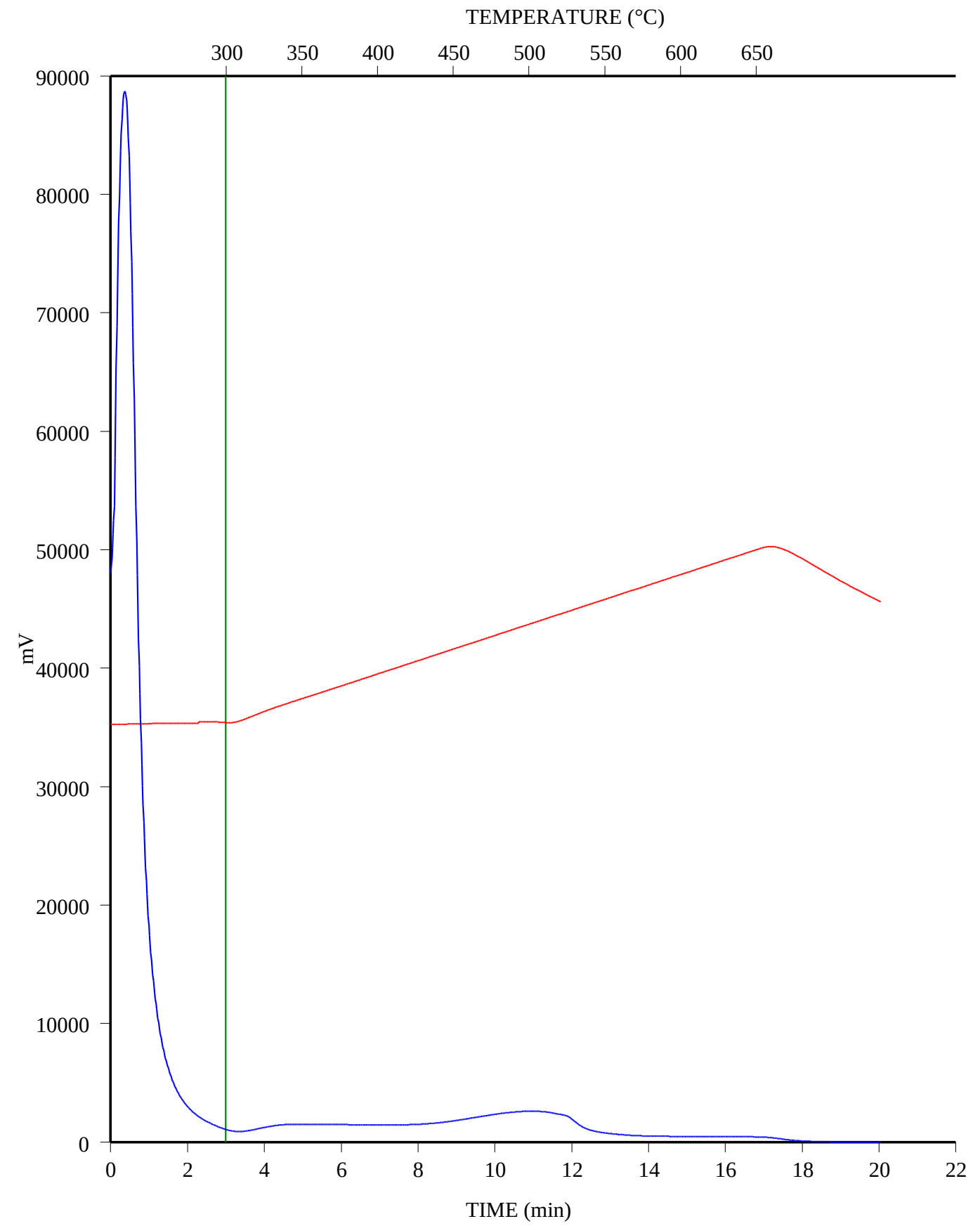
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FID Hydrocarbons



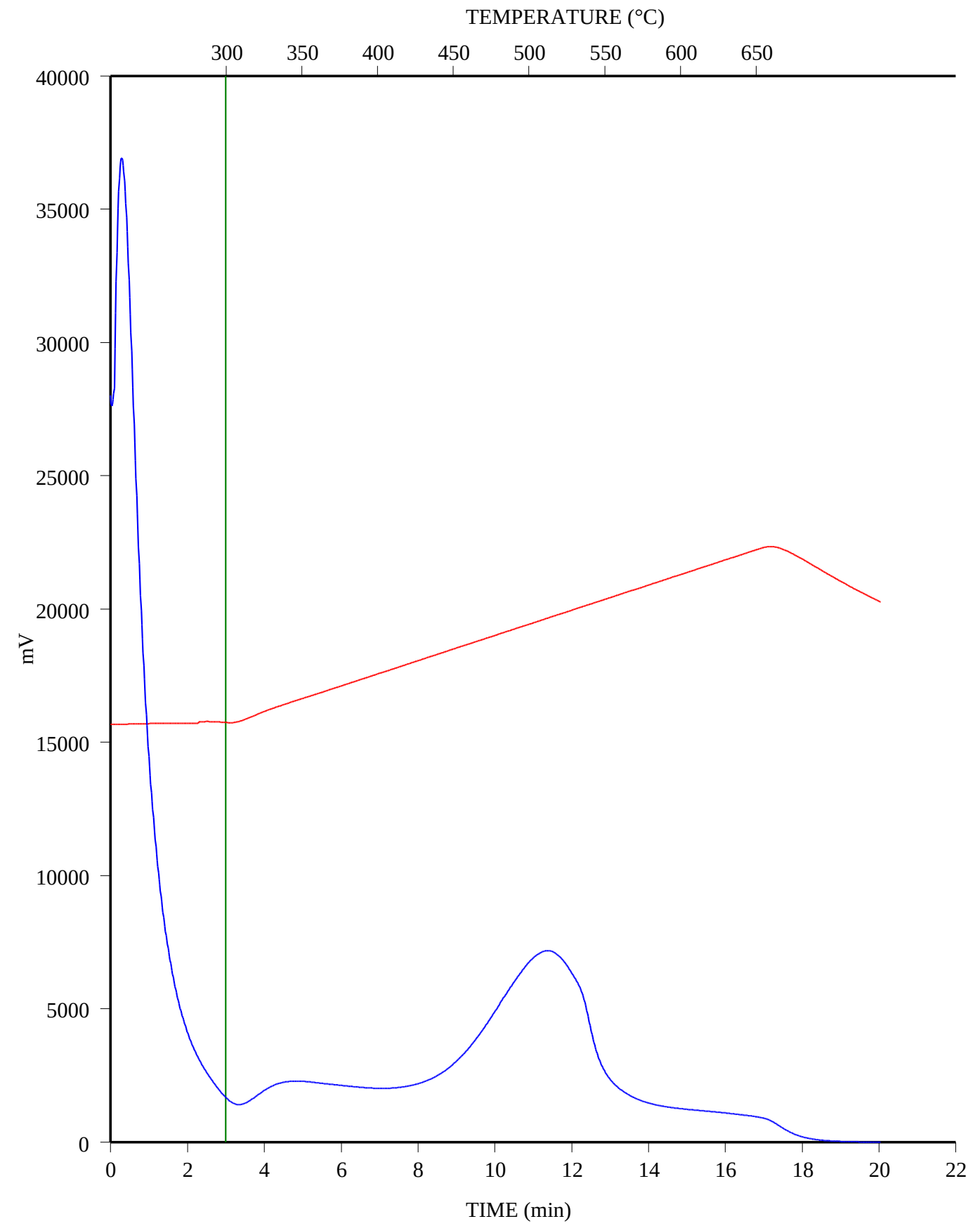
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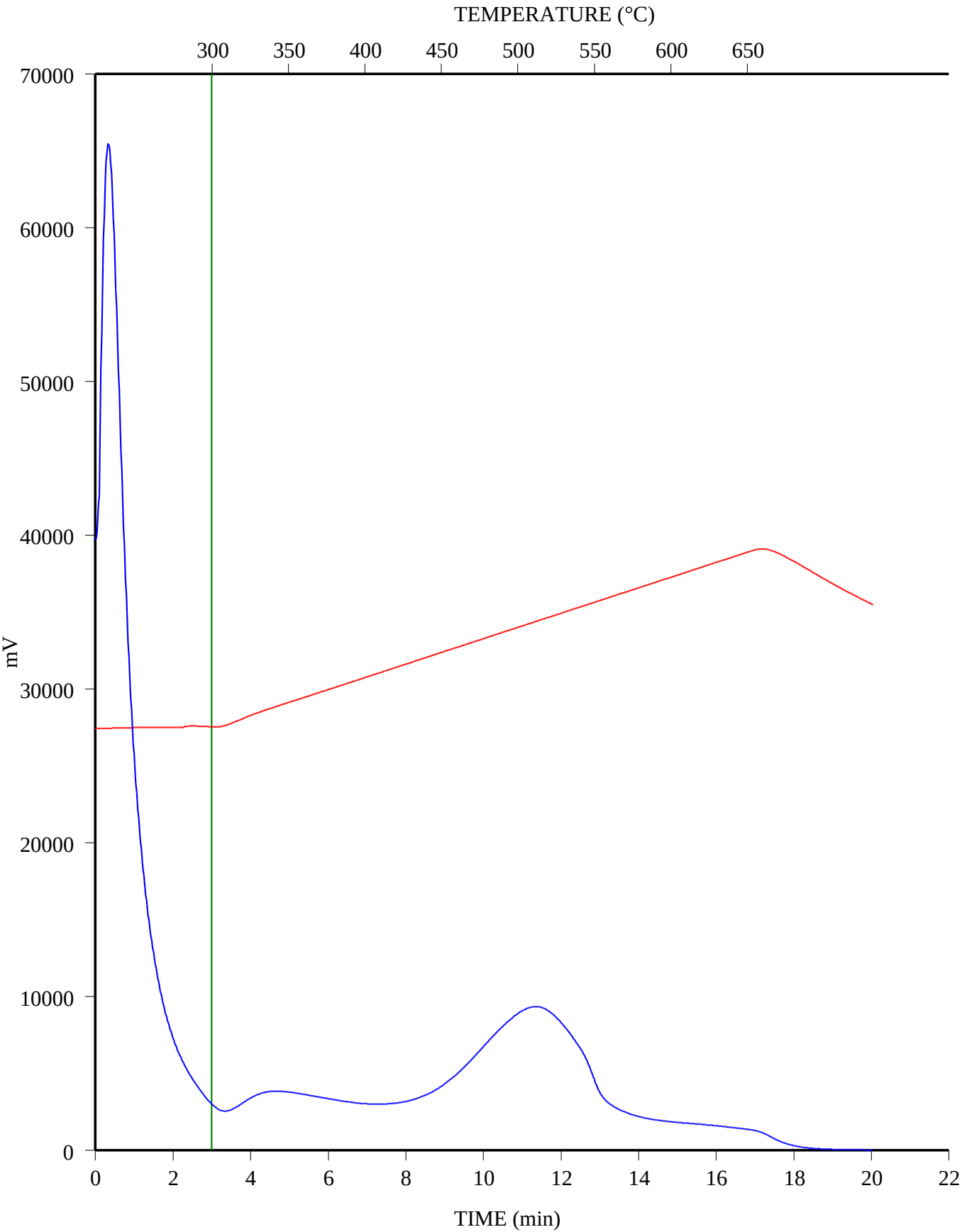
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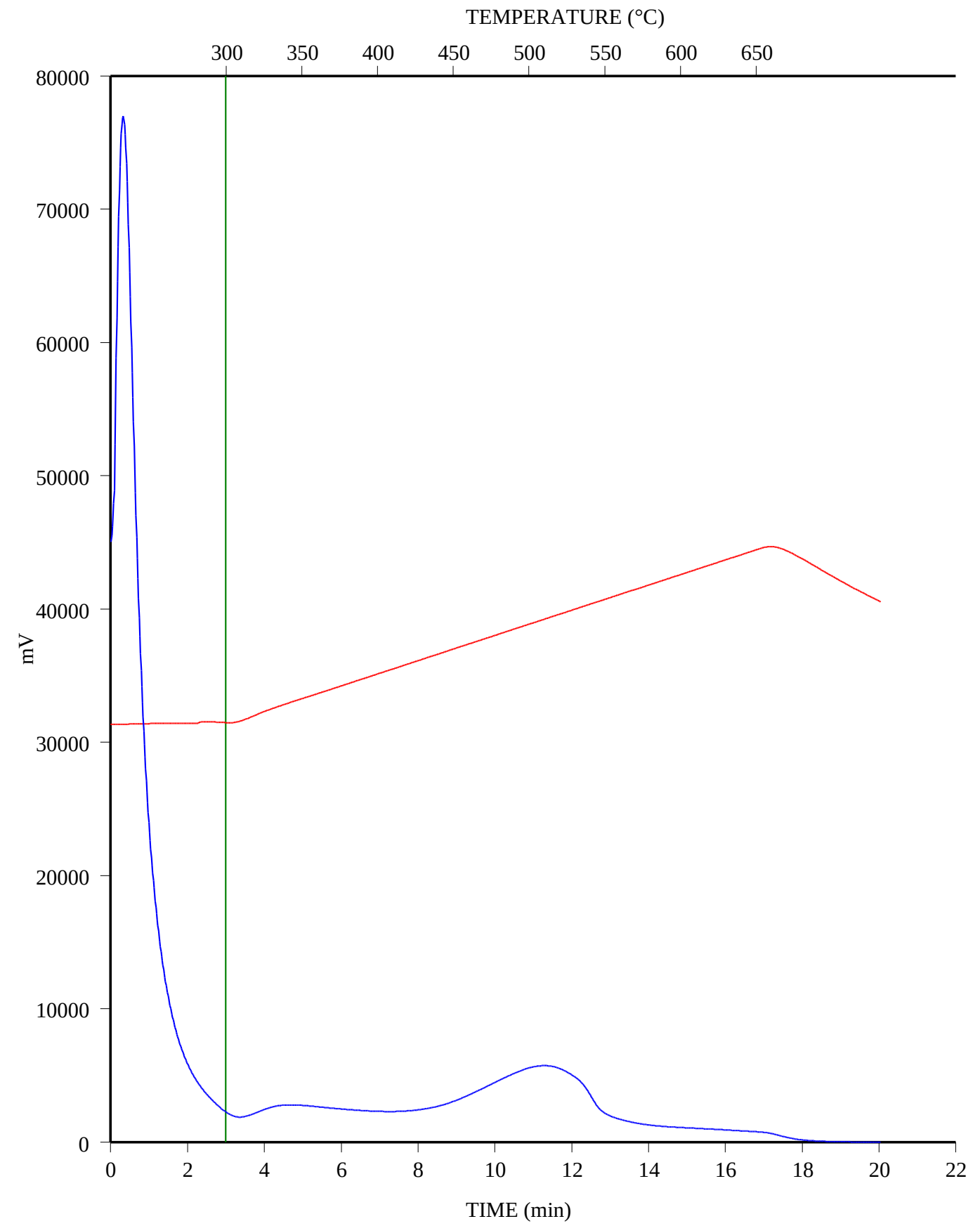
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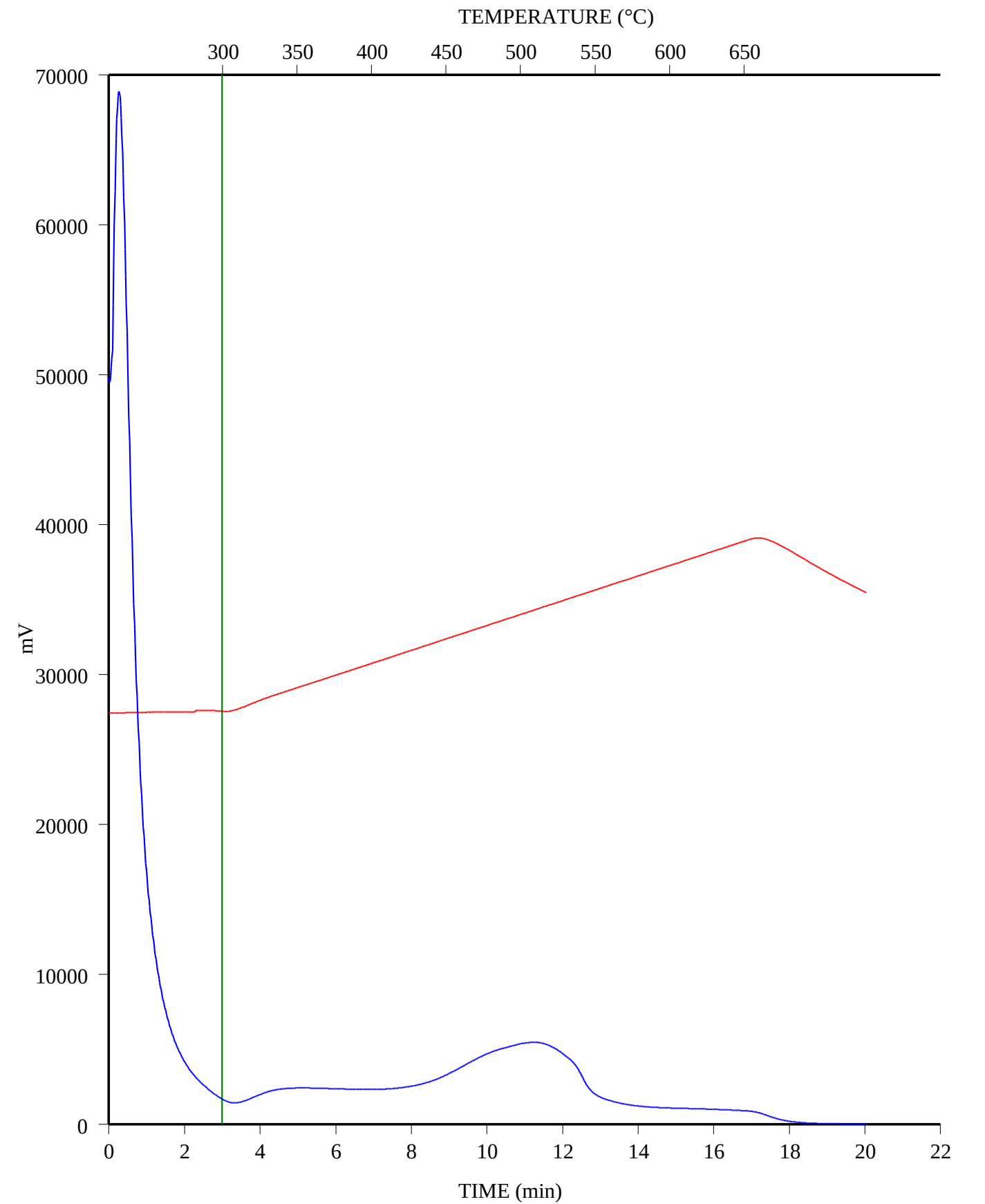
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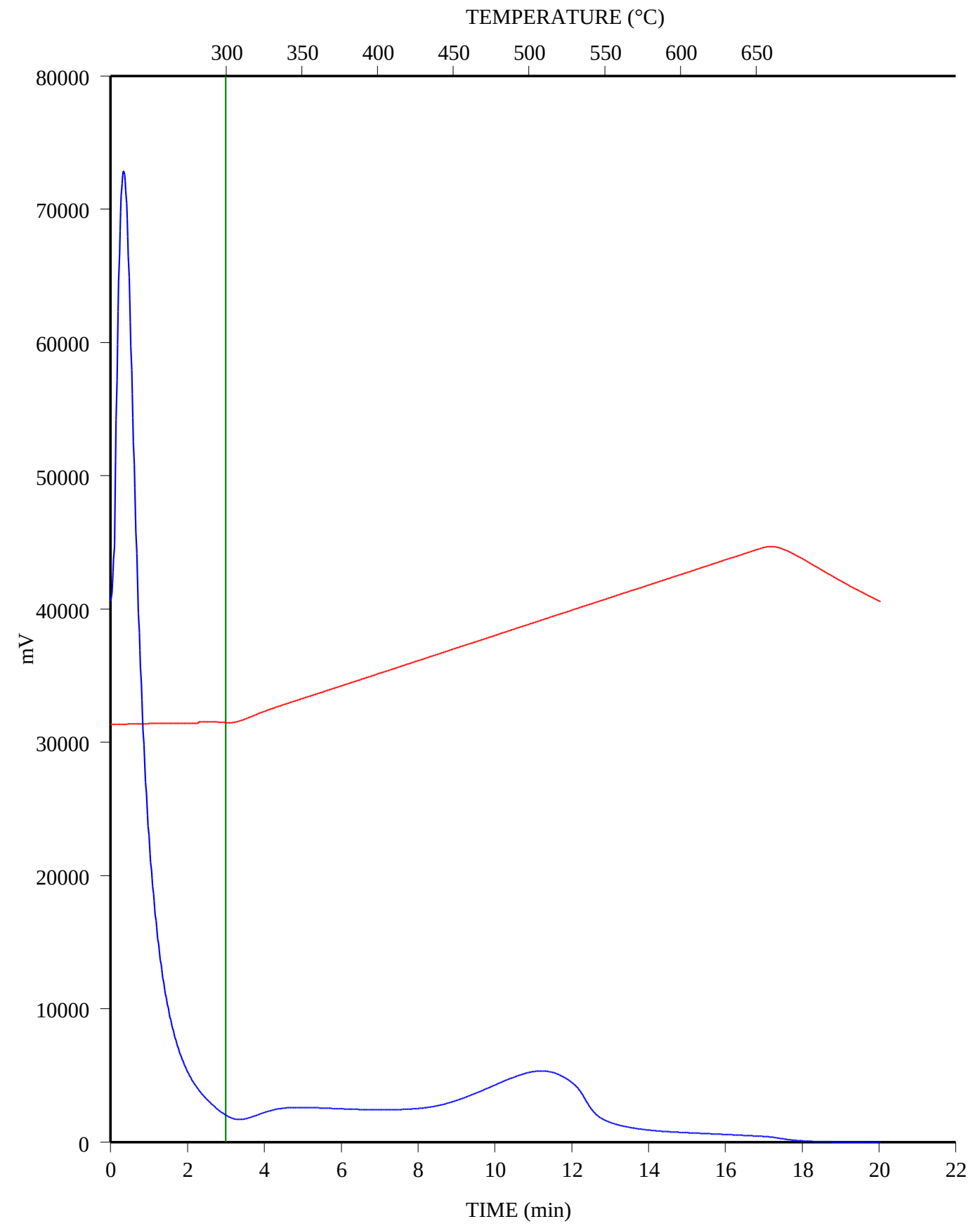
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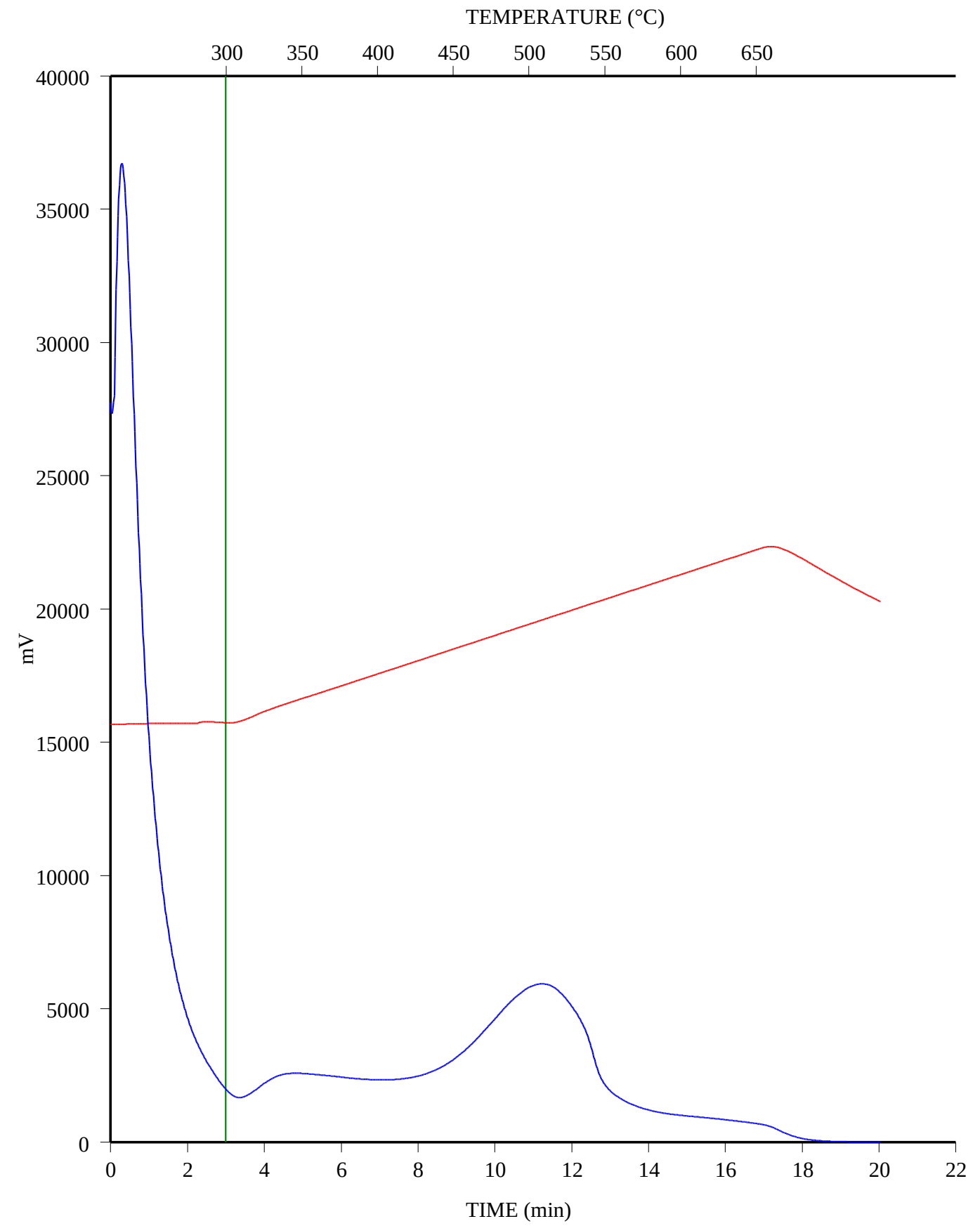
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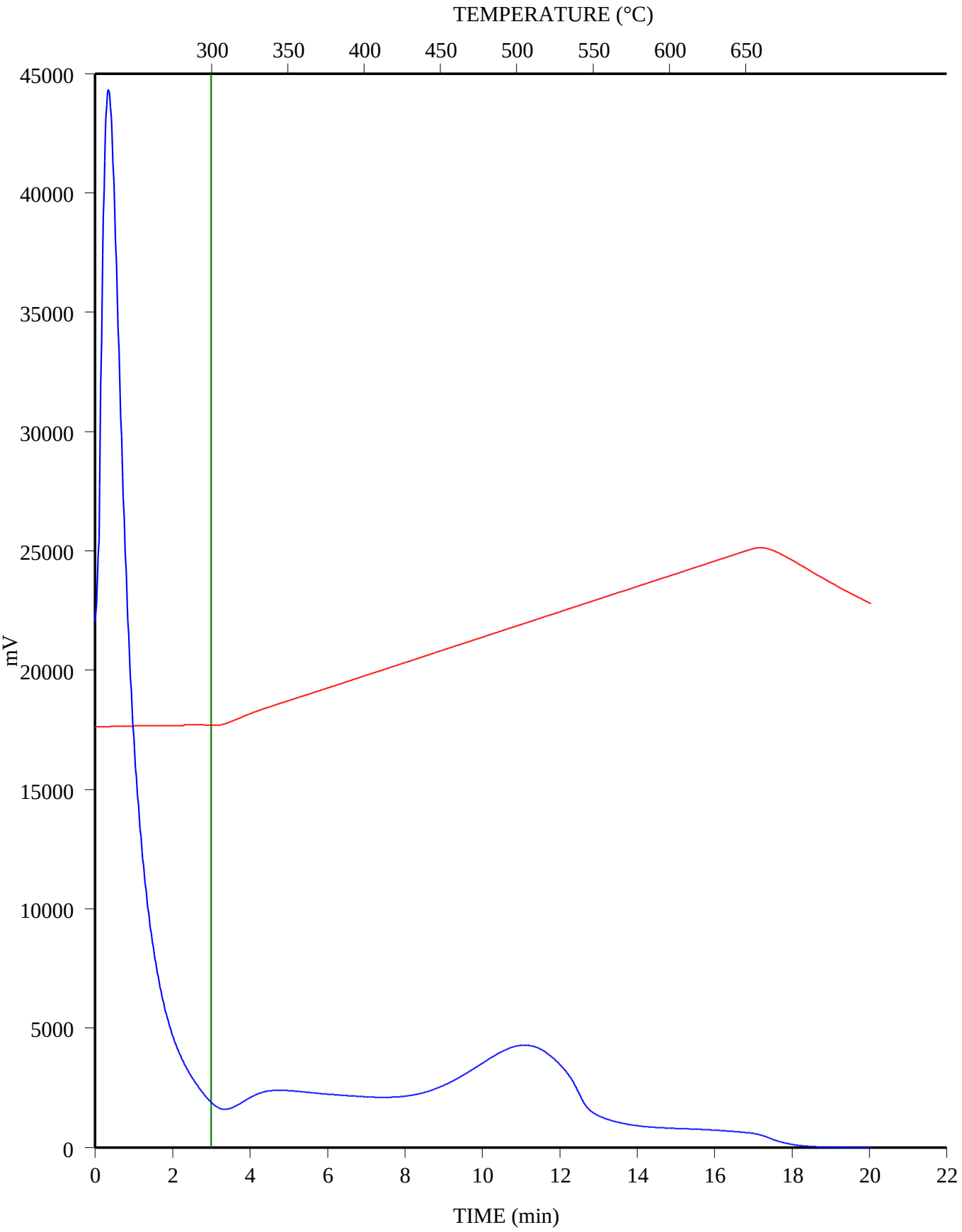
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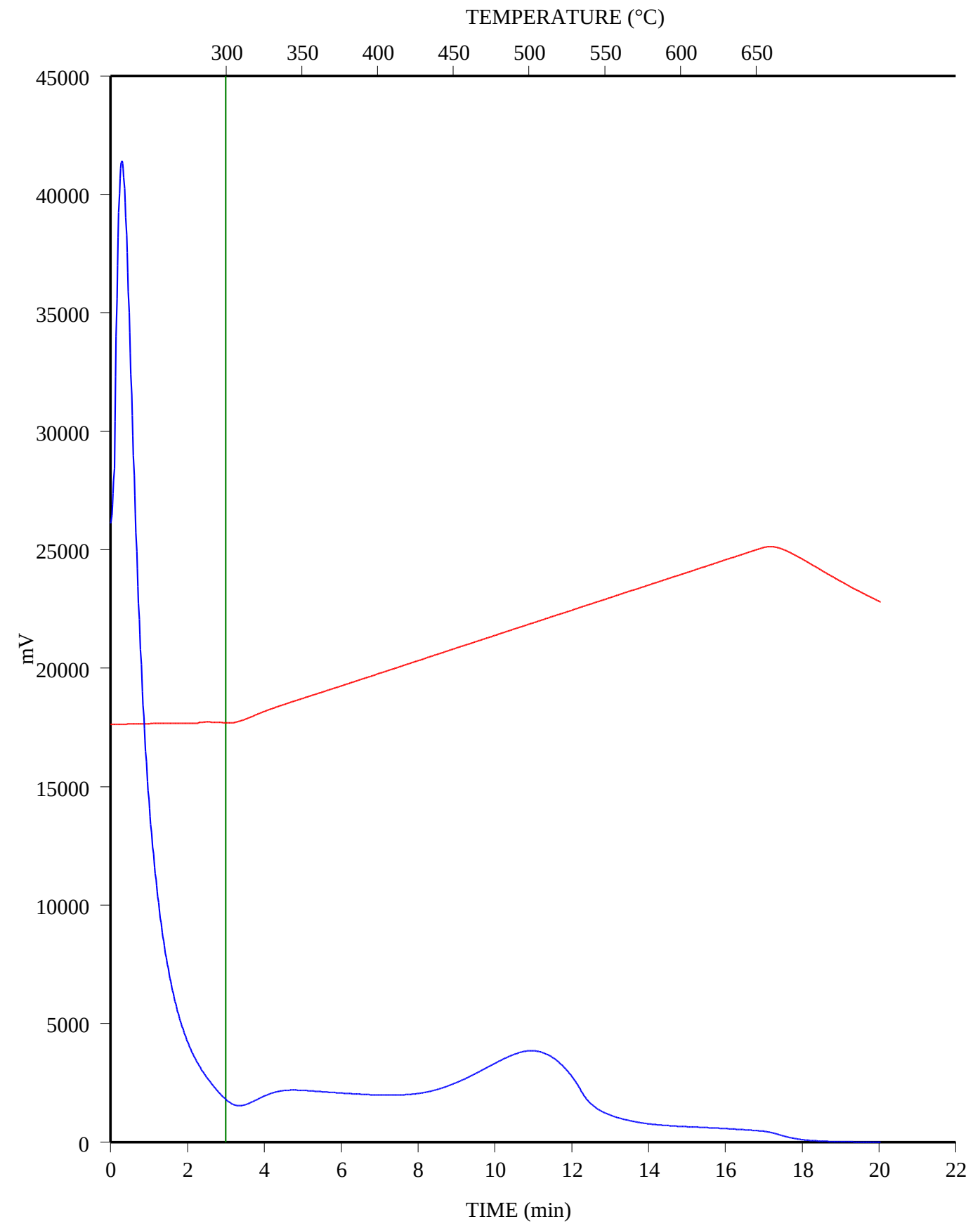
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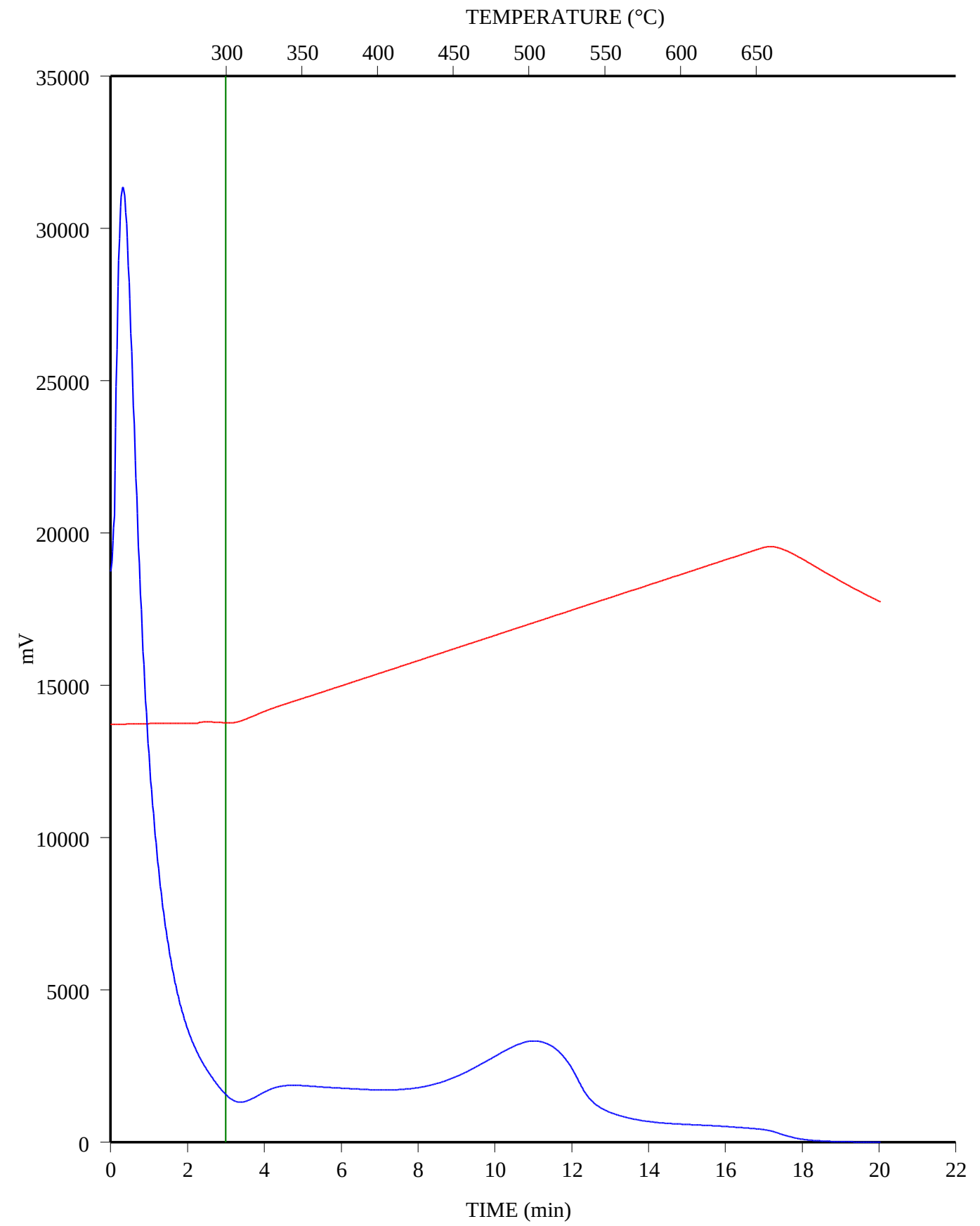
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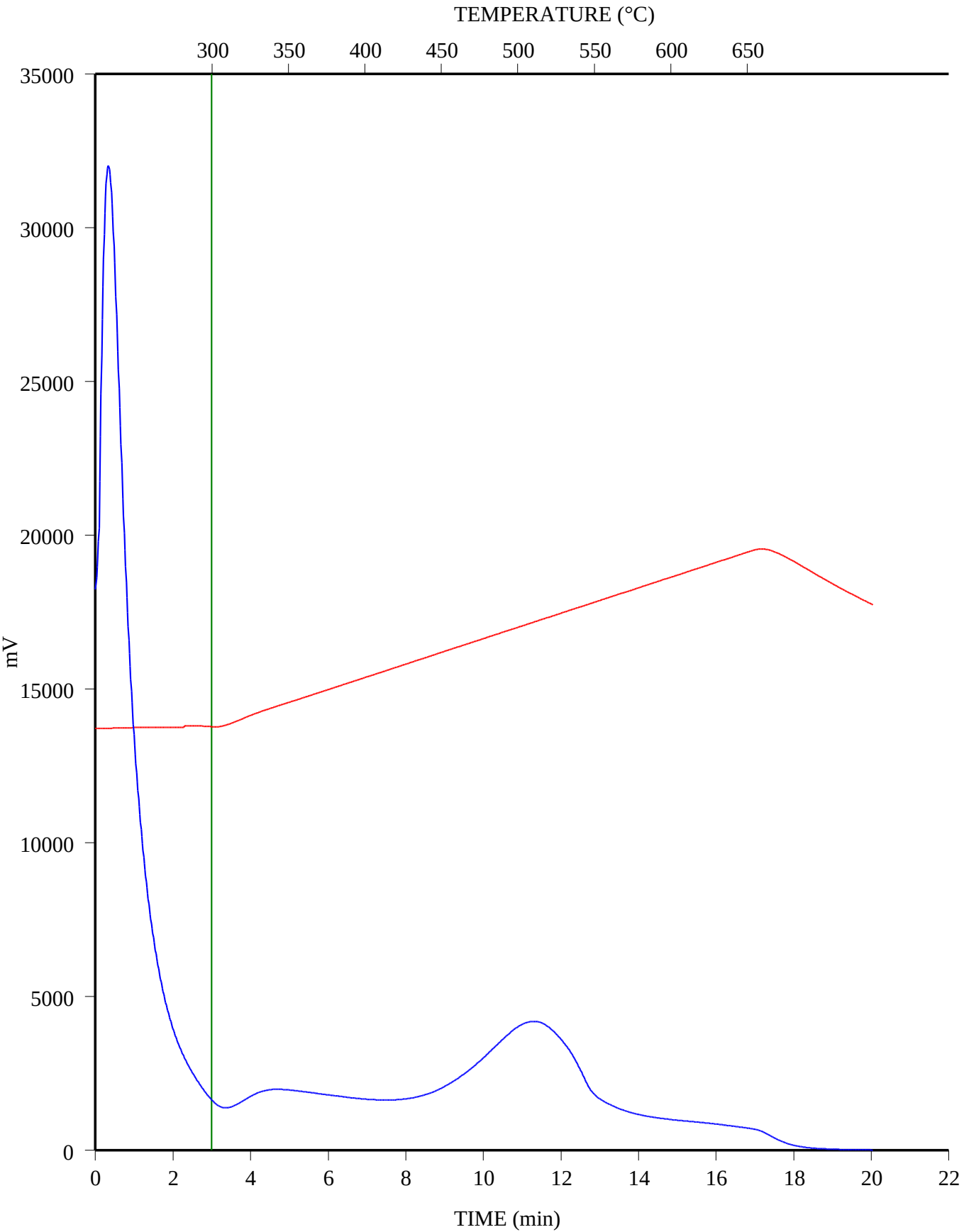
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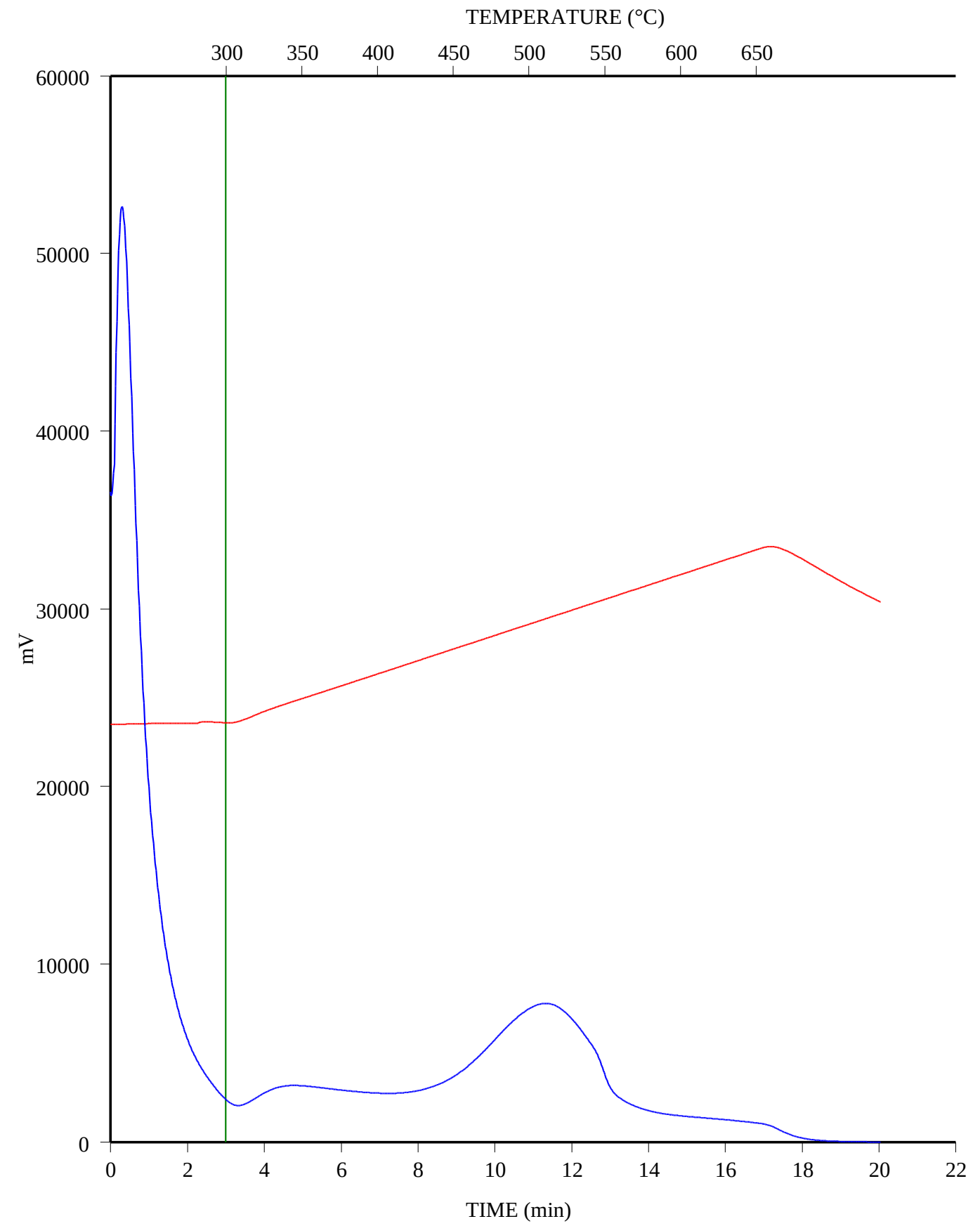
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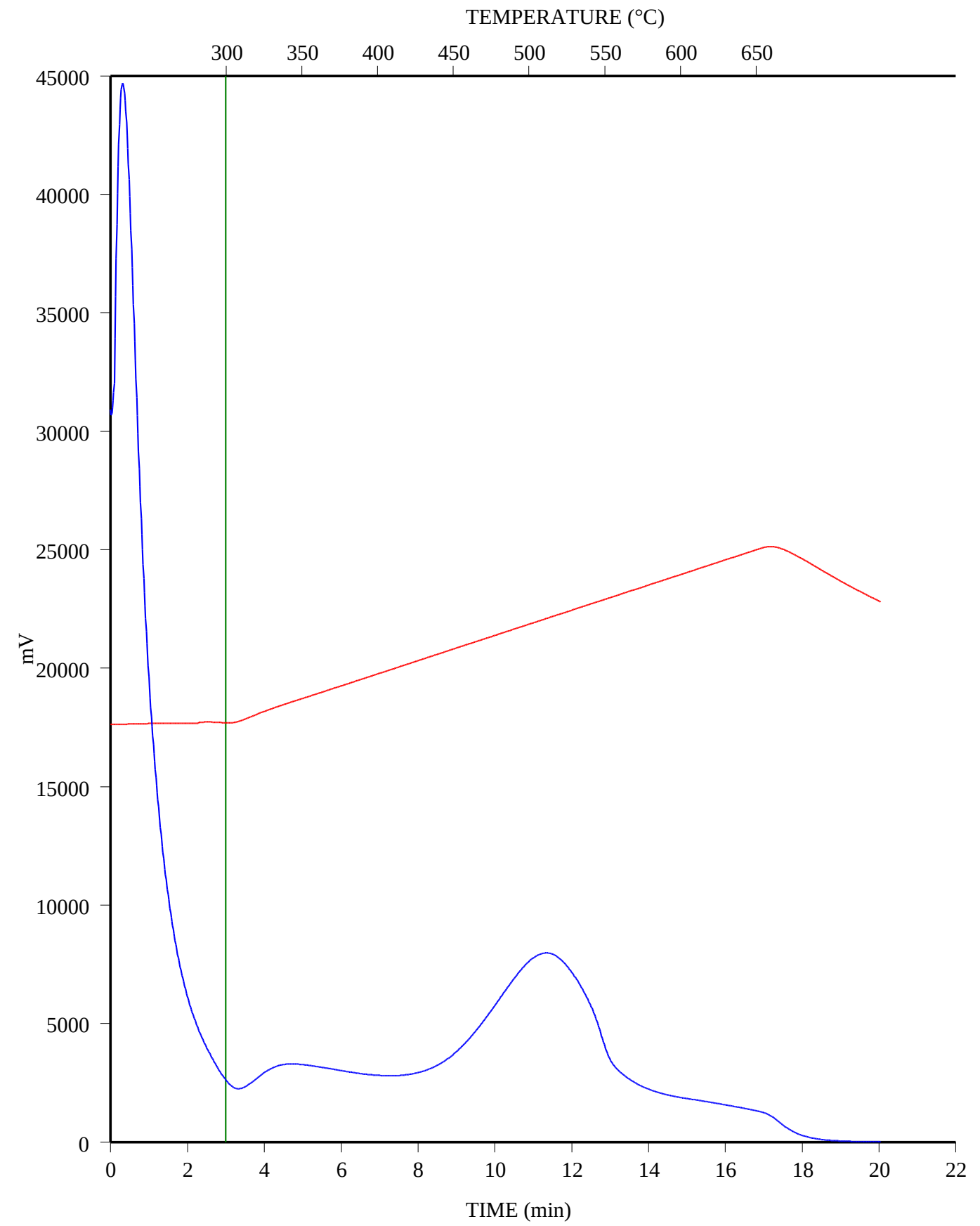
C-594280; HUSKY KAYBOBS 5-11-60-18; 3070.19 m
FID Hydrocarbons



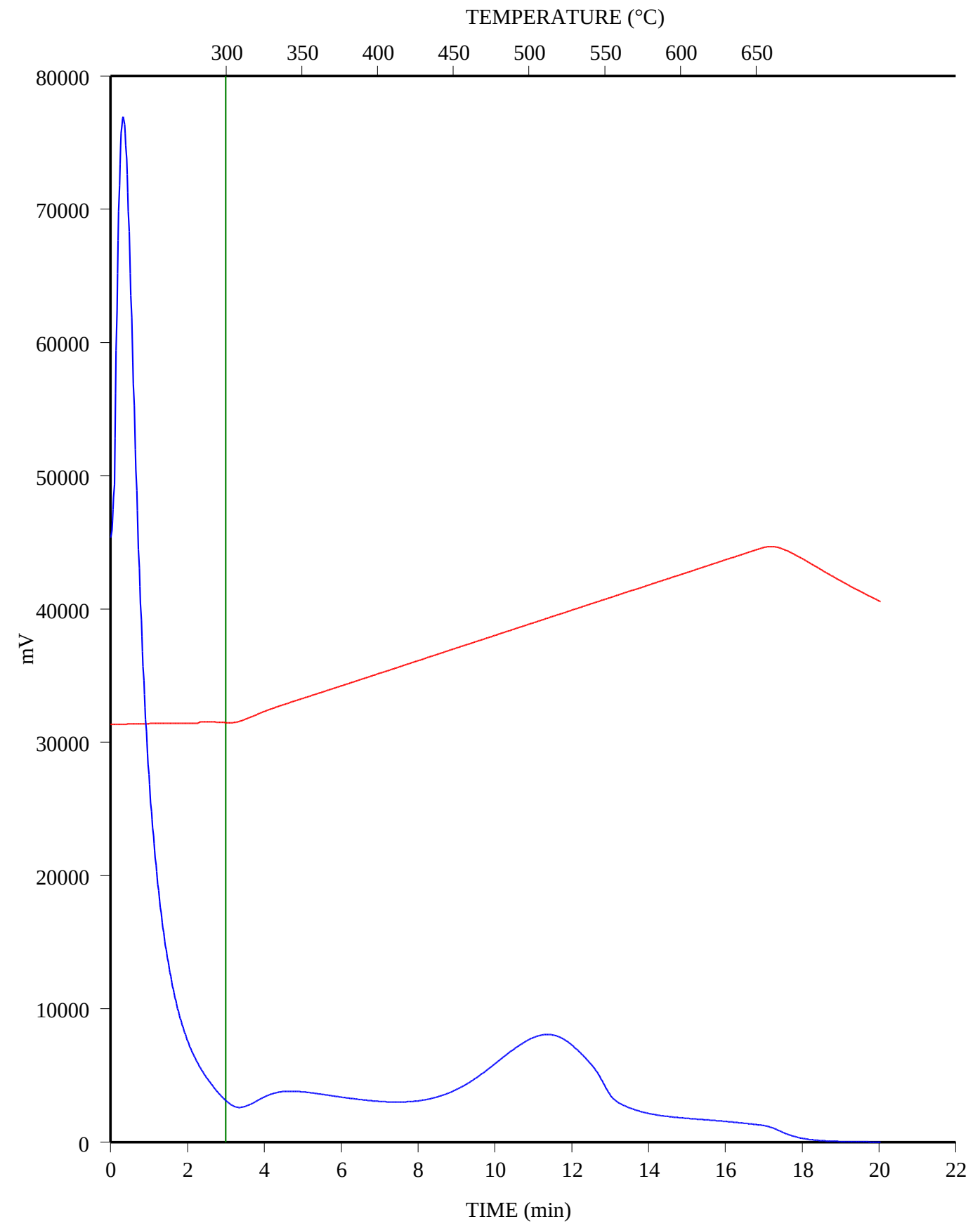
C-594281; HUSKY KAYBOBS 5-11-60-18; 3071.17 m
FID Hydrocarbons



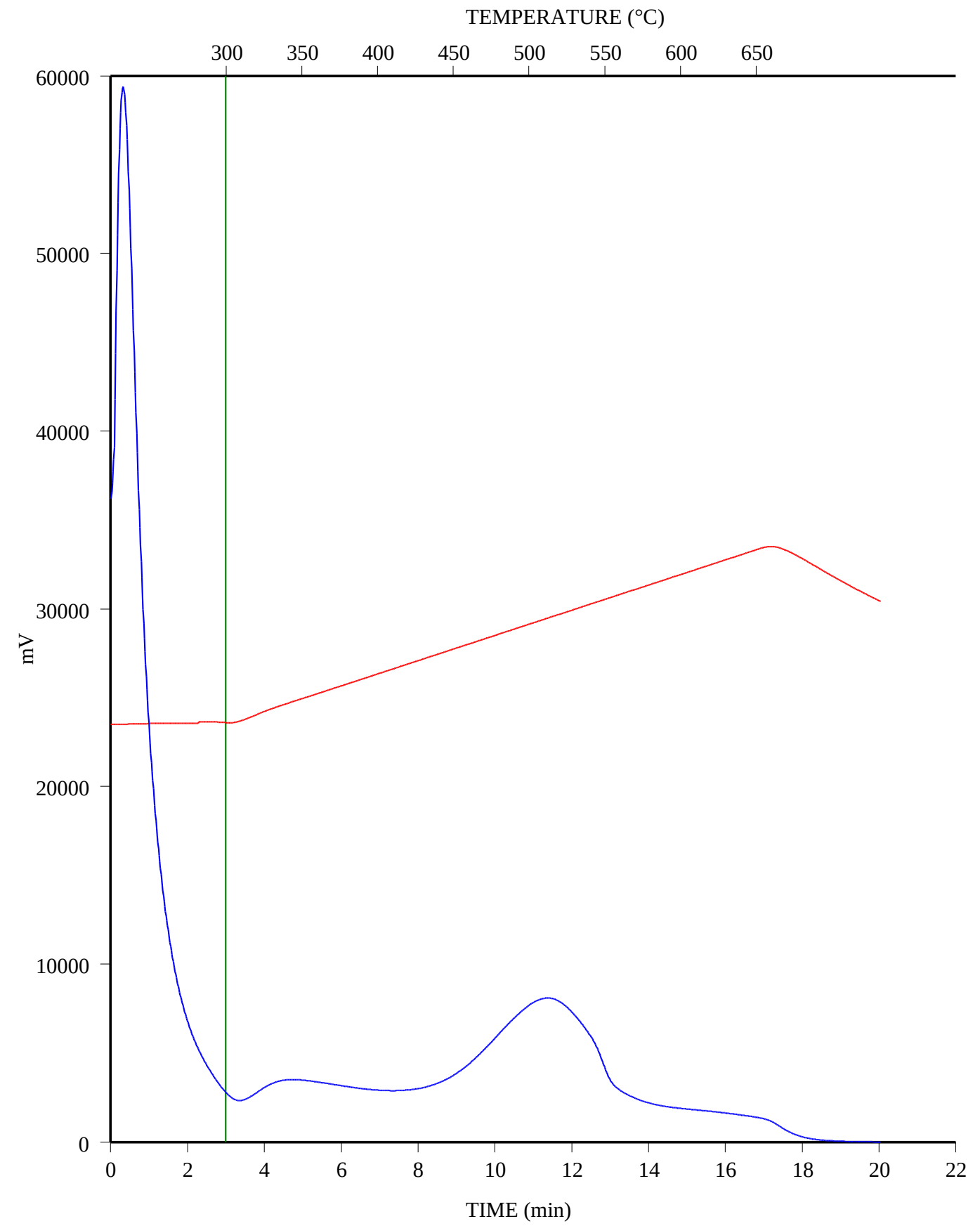
C-594282; HUSKY KAYBOBS 5-11-60-18; 3072.2 m
FID Hydrocarbons



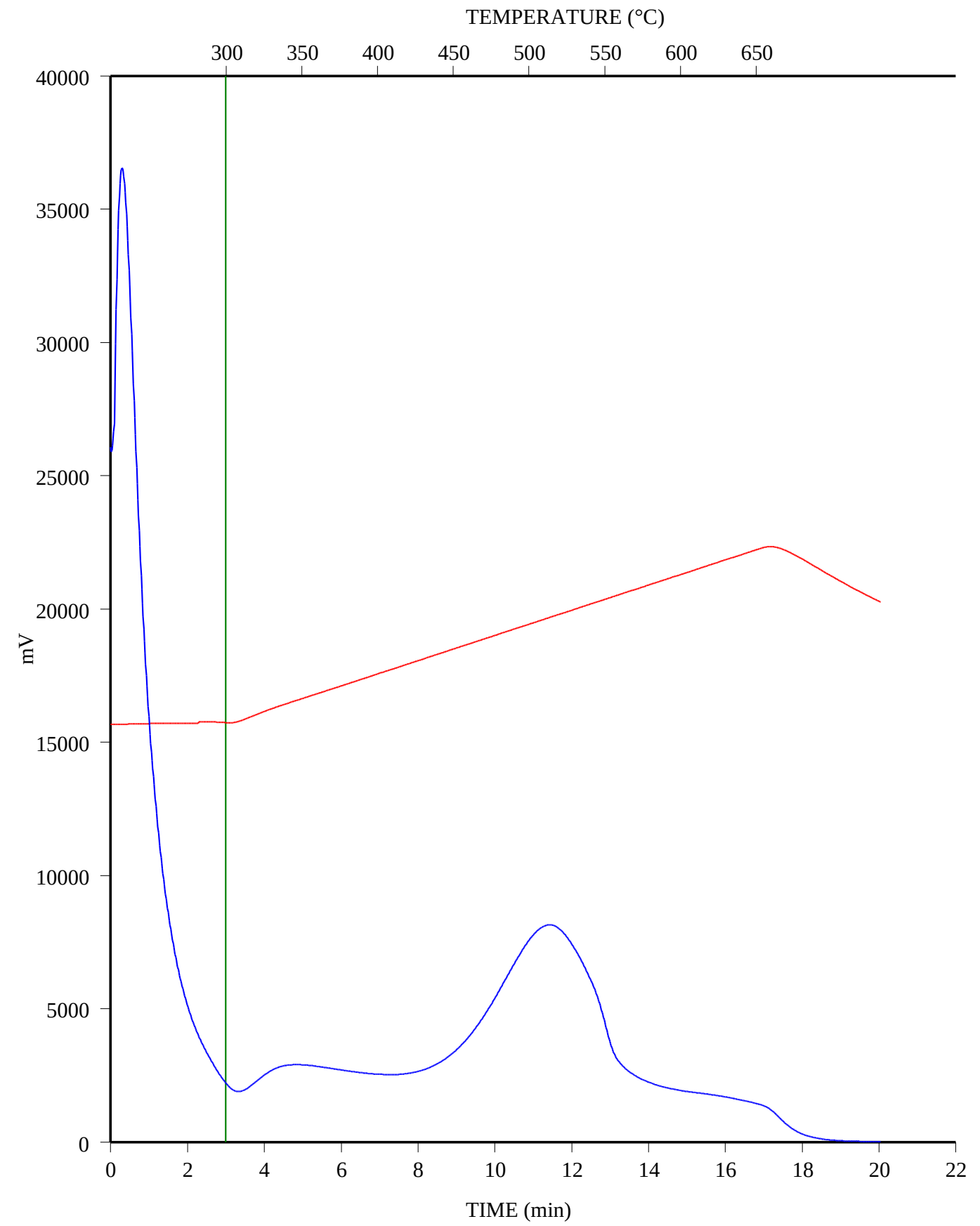
C-594283; HUSKY KAYBOBS 5-11-60-18; 3073.18 m
FID Hydrocarbons



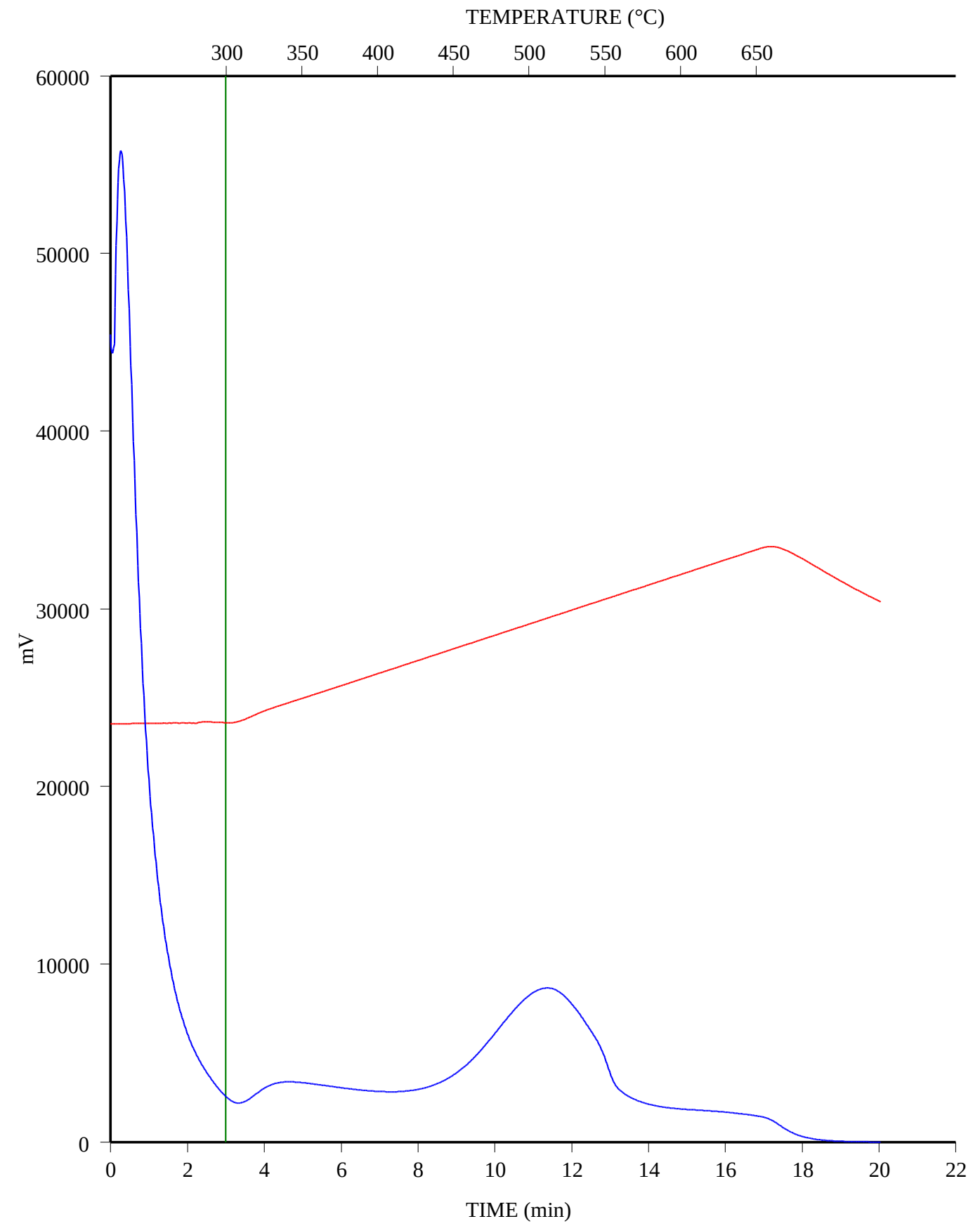
C-594284; HUSKY KAYBOBS 5-11-60-18; 3074.15 m
FID Hydrocarbons



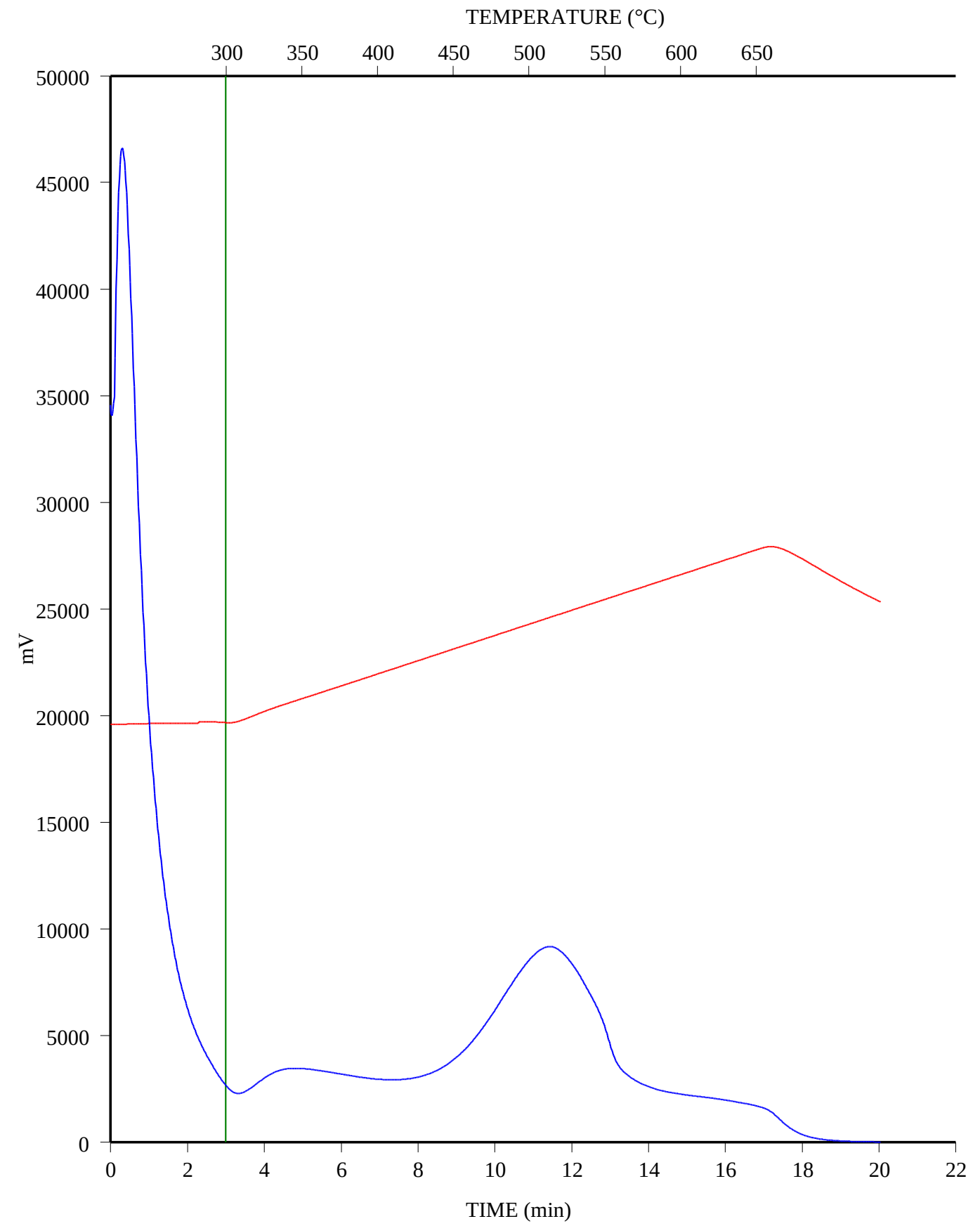
C-594285; HUSKY KAYBOBS 5-11-60-18; 3075.12 m
FID Hydrocarbons



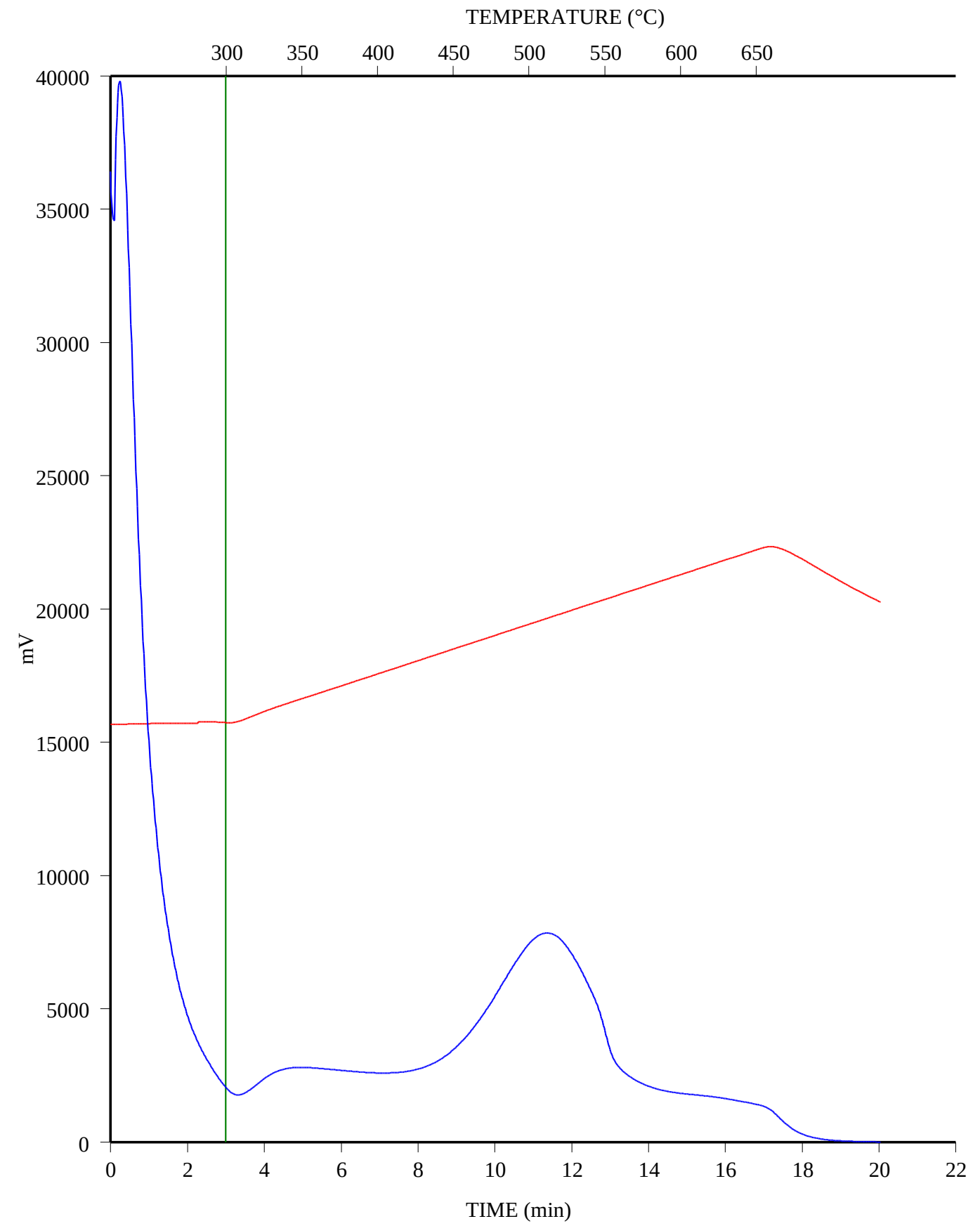
C-594286; HUSKY KAYBOBS 5-11-60-18; 3076.2 m
FID Hydrocarbons



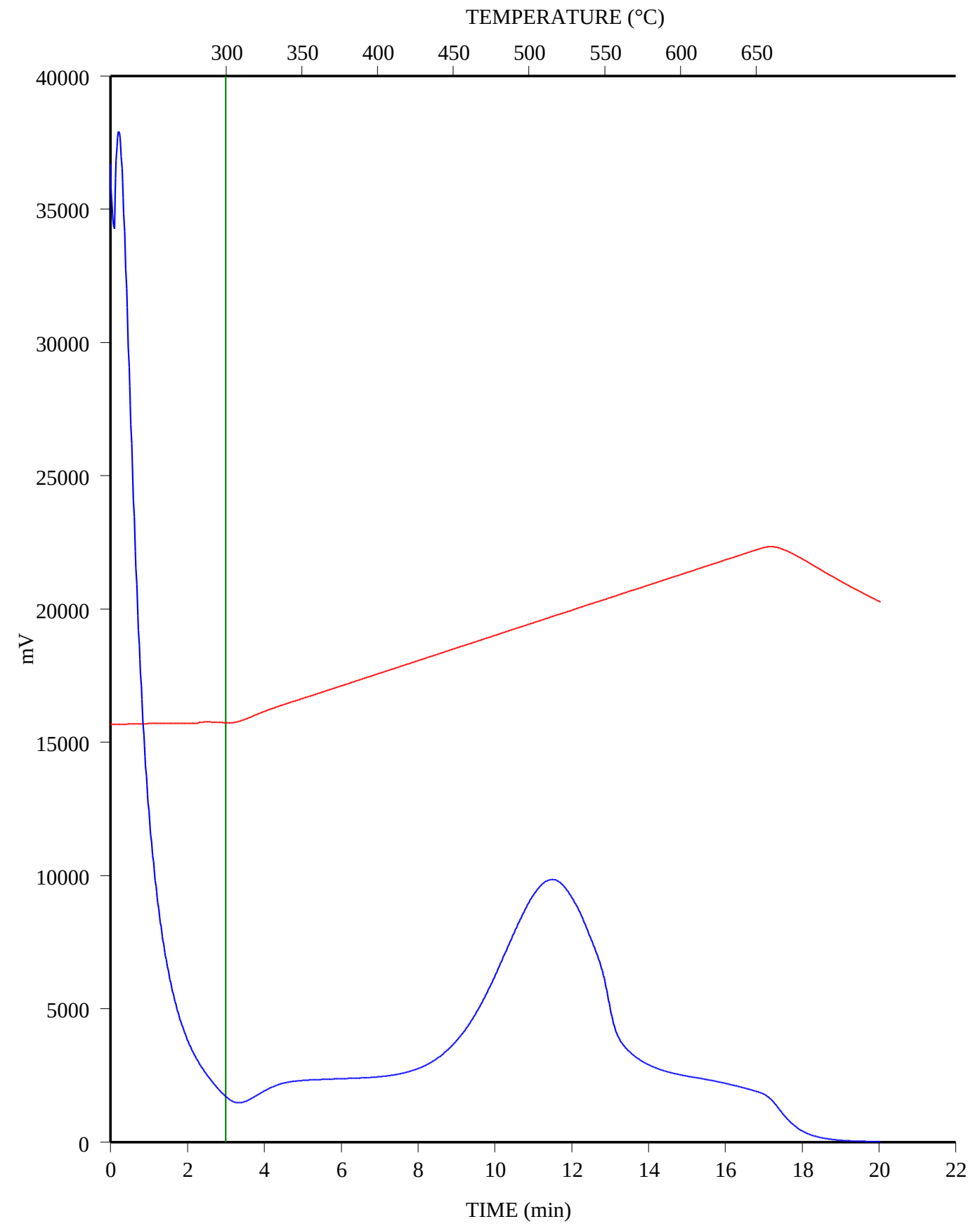
C-594287; HUSKY KAYBOBS 5-11-60-18; 3077.18 m
FID Hydrocarbons



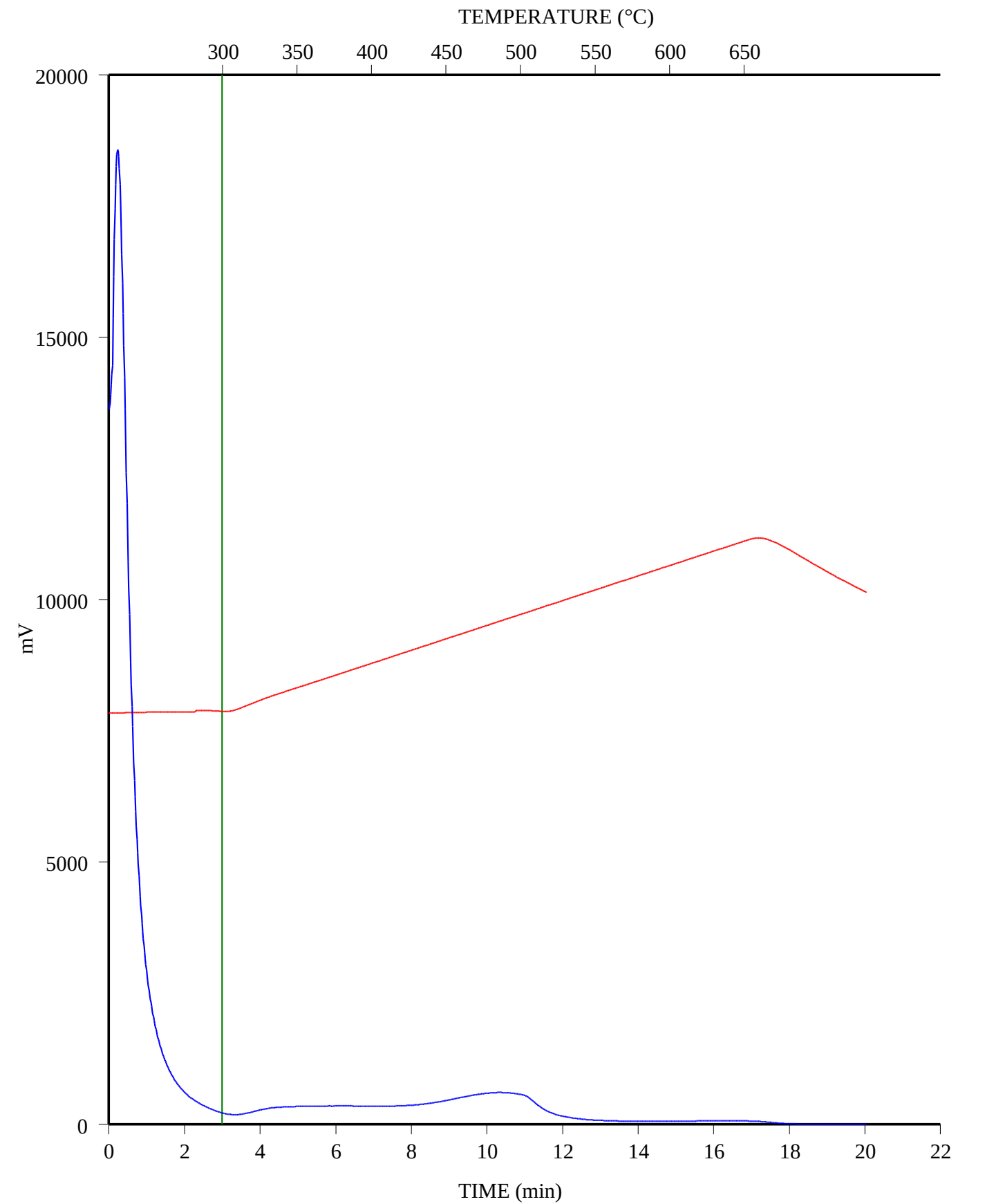
C-594288; HUSKY KAYBOBS 5-11-60-18; 3078.17 m
FID Hydrocarbons



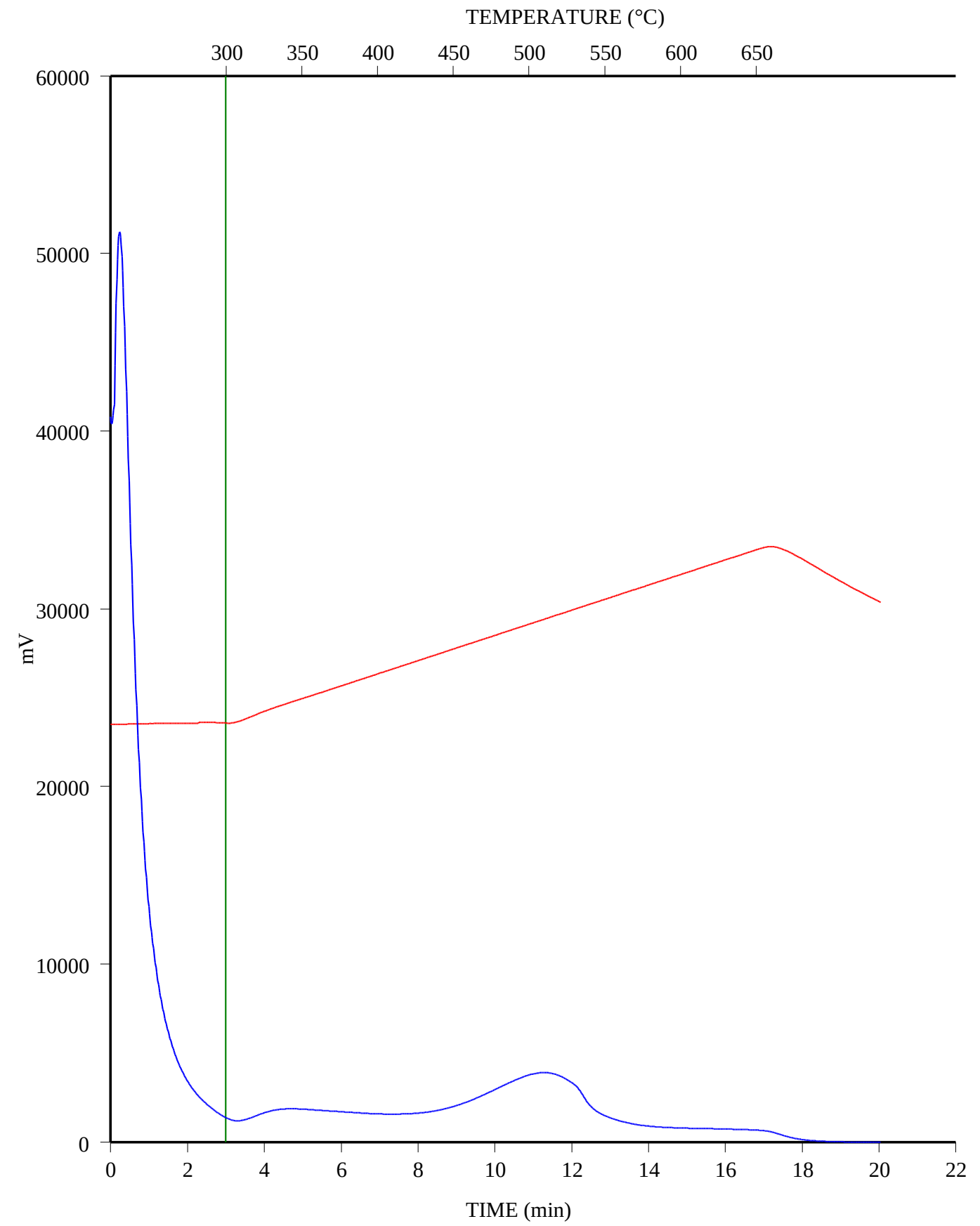
C-594289; HUSKY KAYBOBS 5-11-60-18; 3079.42 m
FID Hydrocarbons



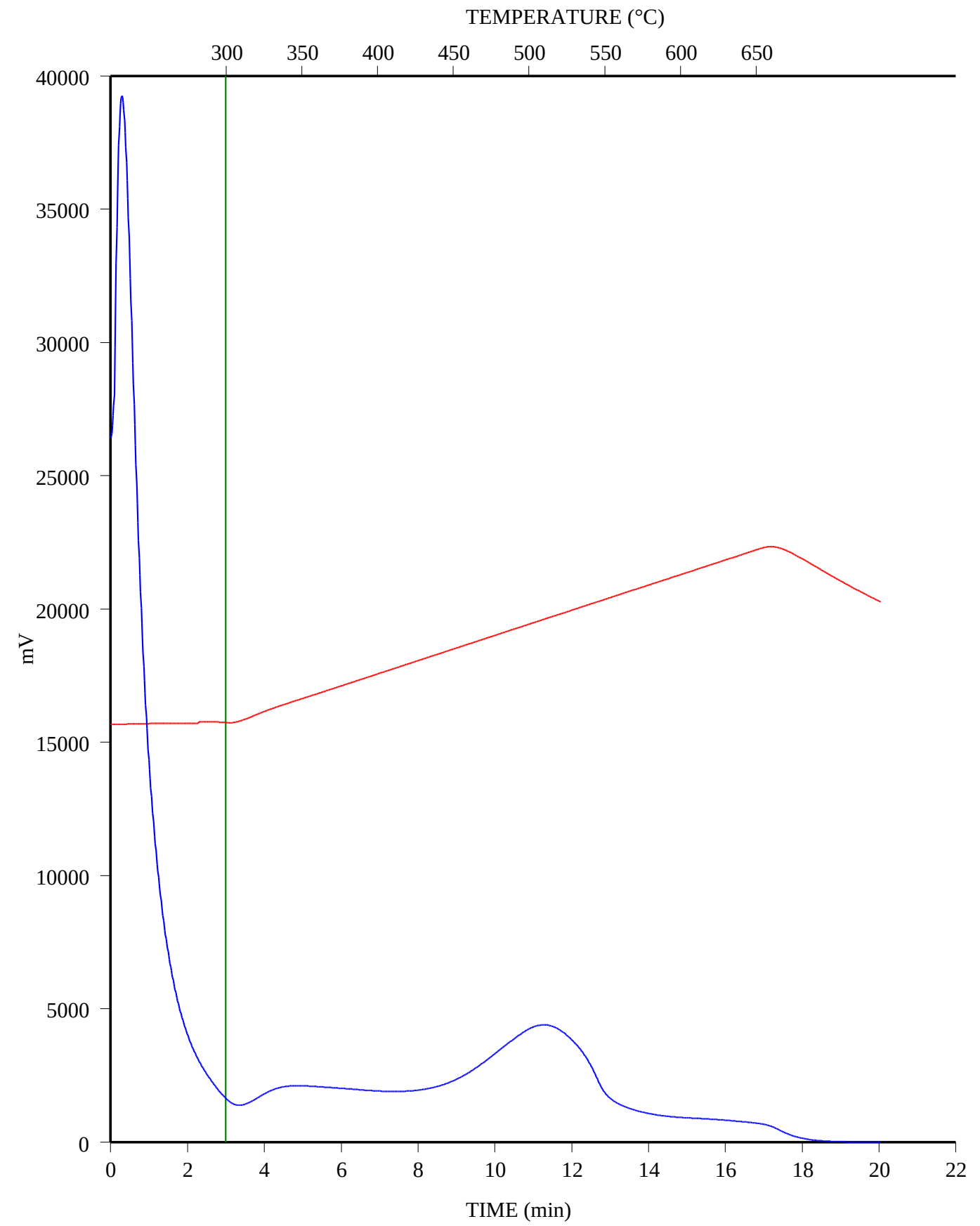
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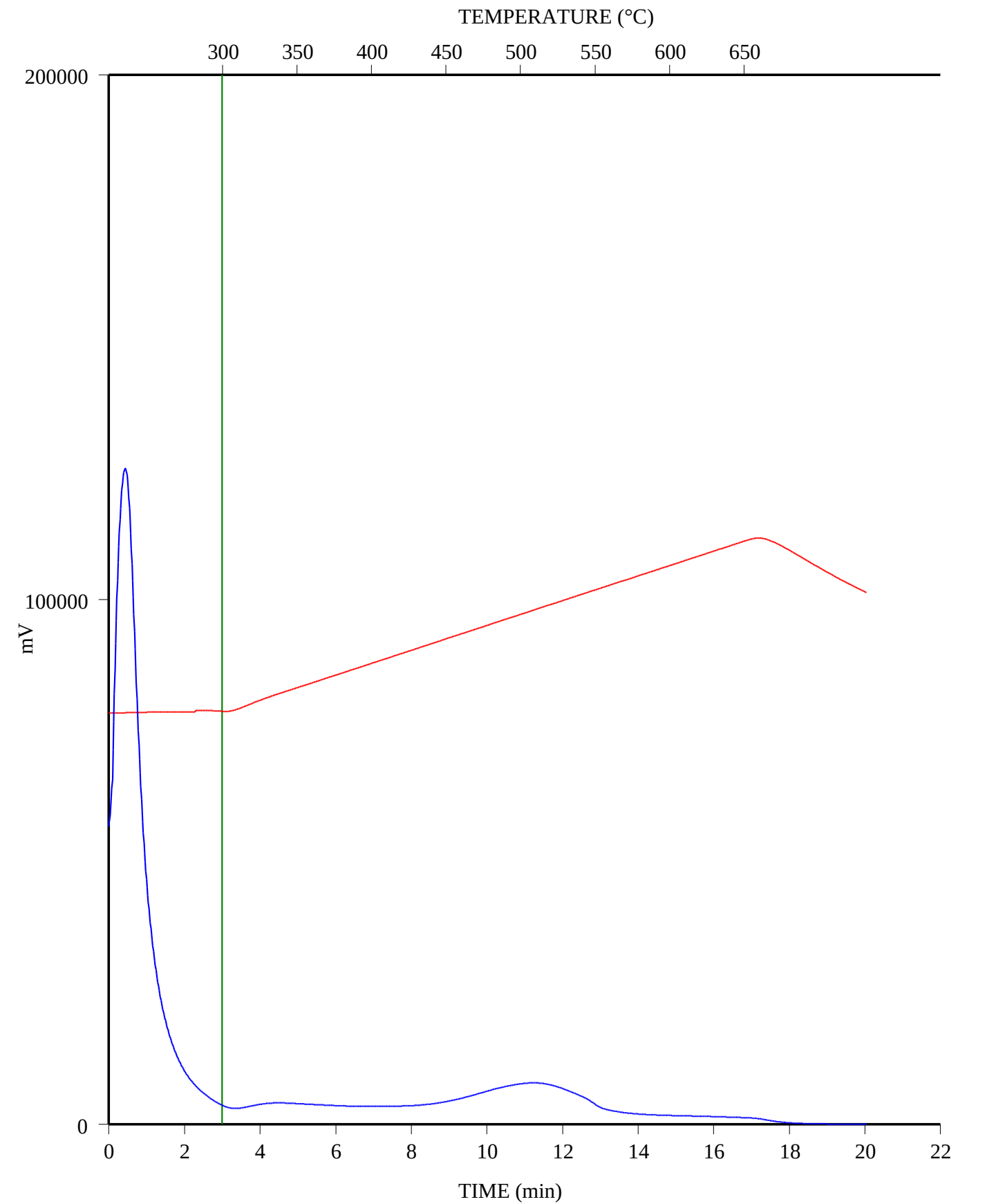
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FID Hydrocarbons



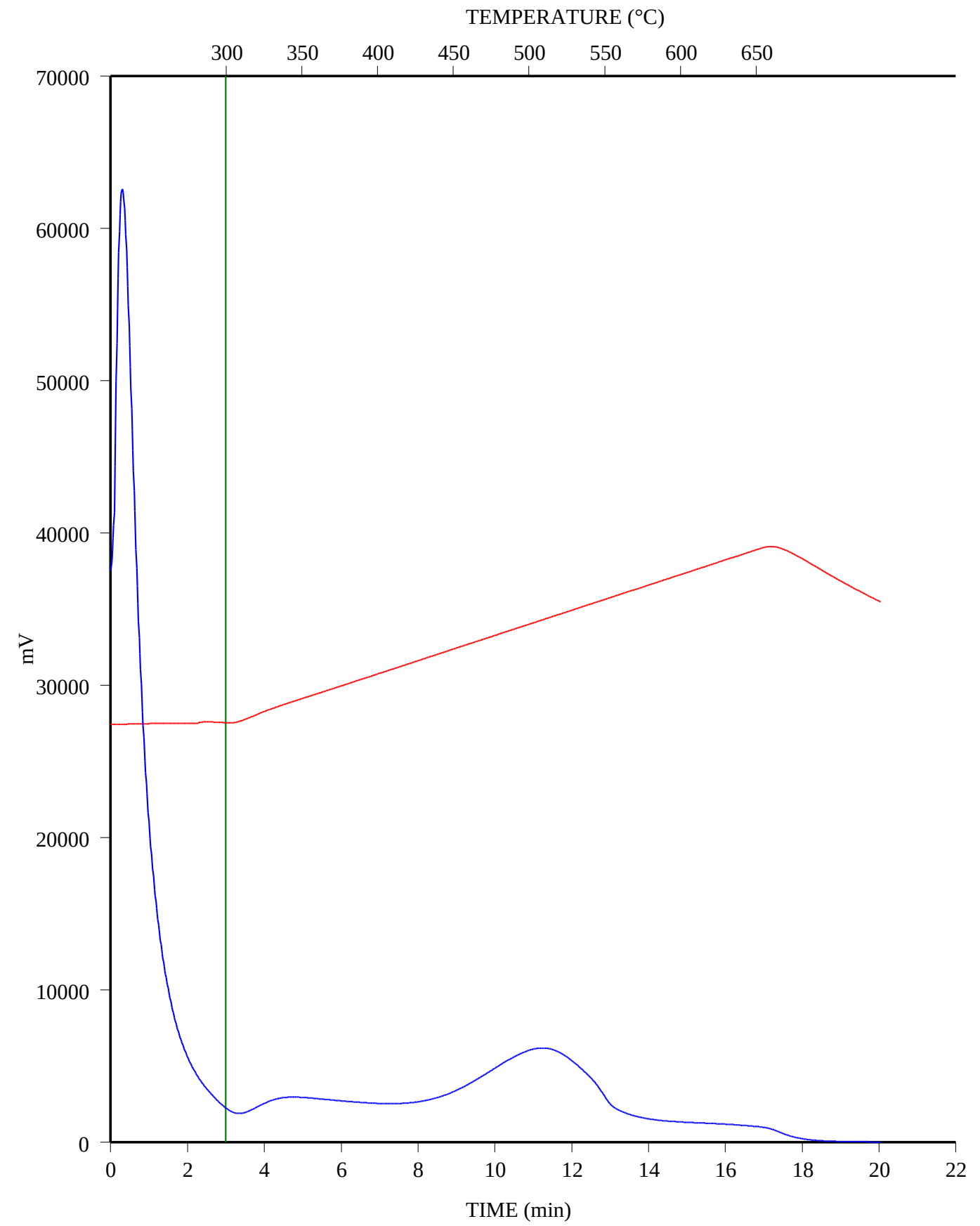
C-594292; HUSKY KAYBOBS 5-11-60-18; 3082.15 m
FID Hydrocarbons



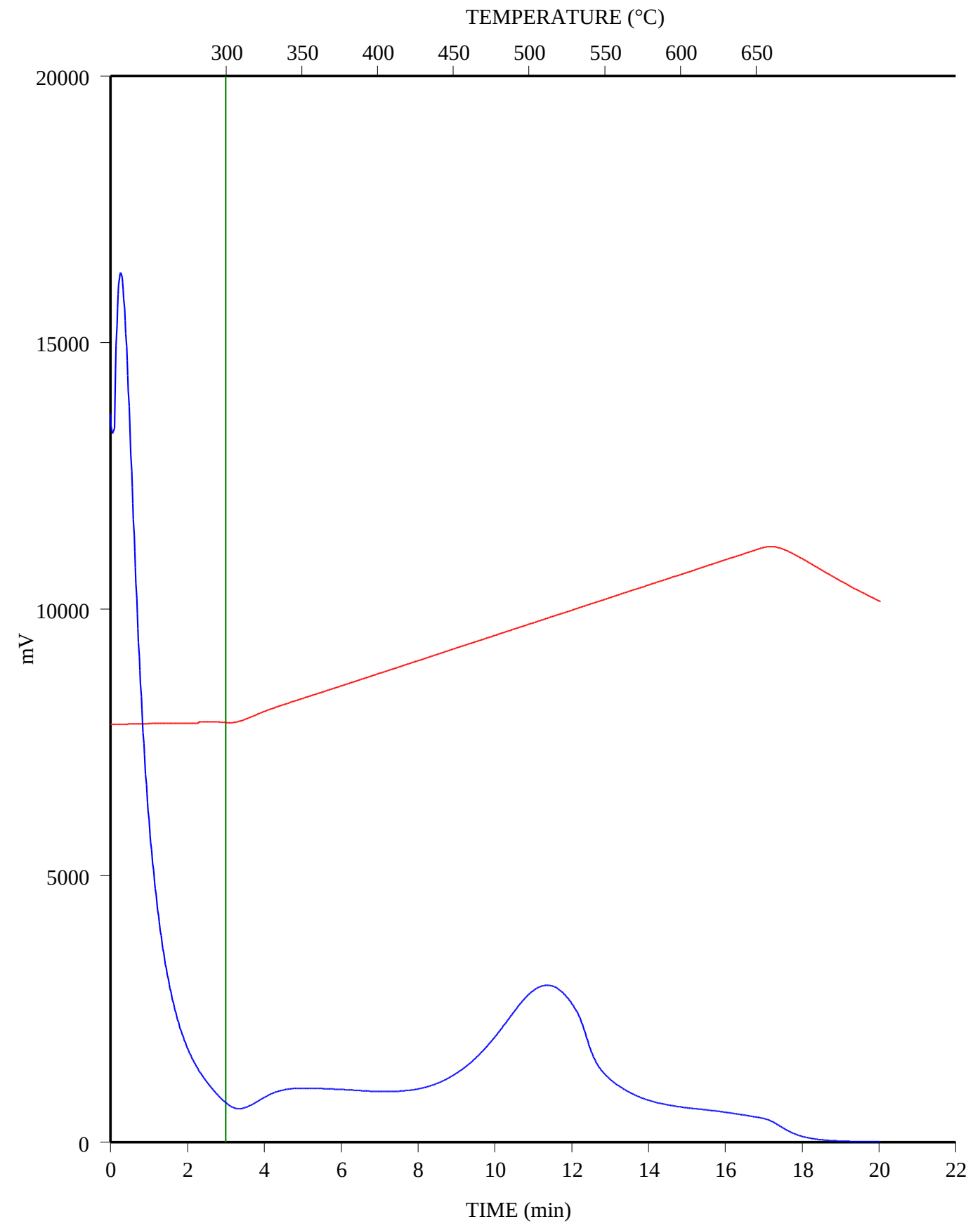
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FID Hydrocarbons



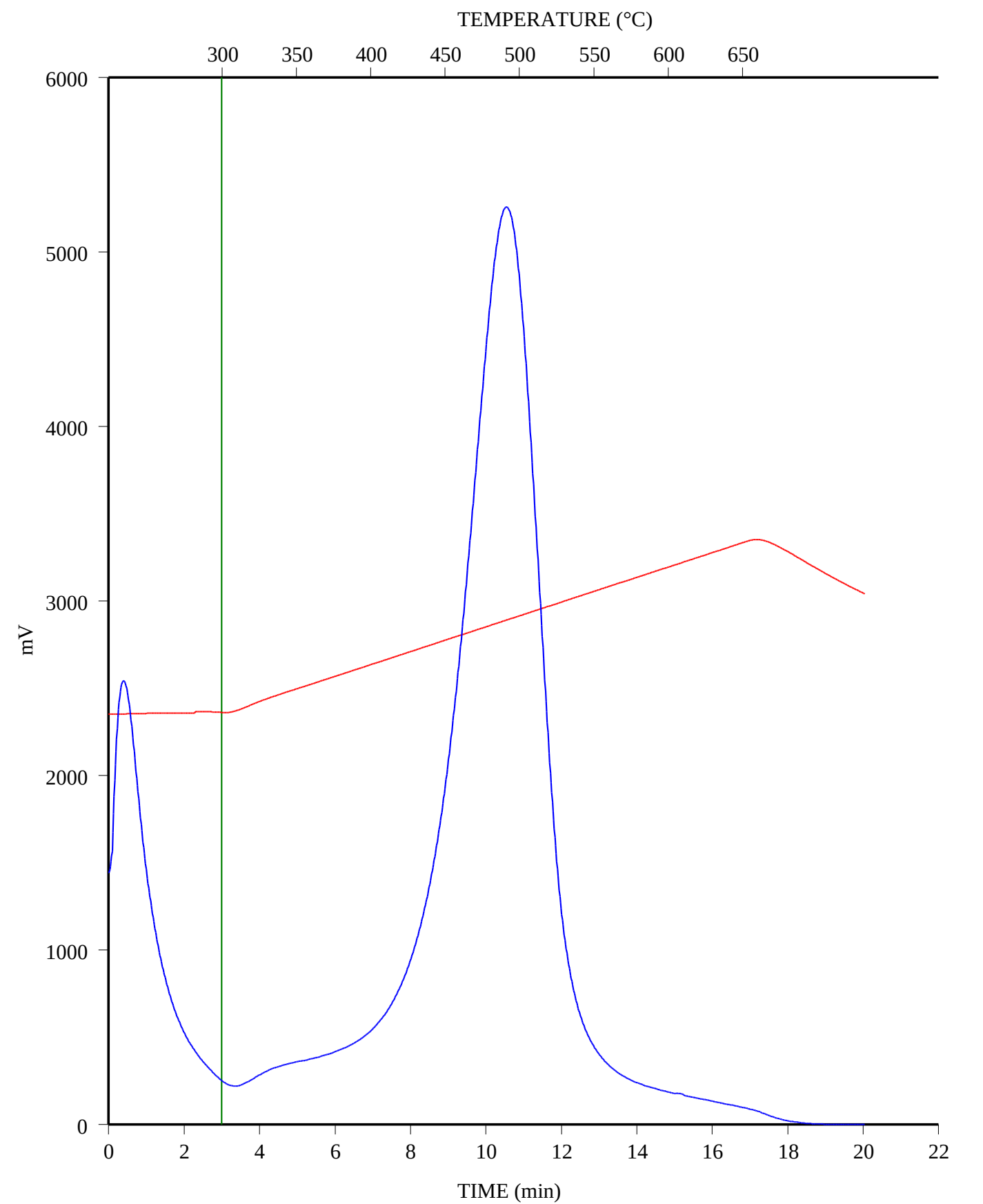
C-594294; HUSKY KAYBOBS 5-11-60-18; 3084.17 m
FID Hydrocarbons



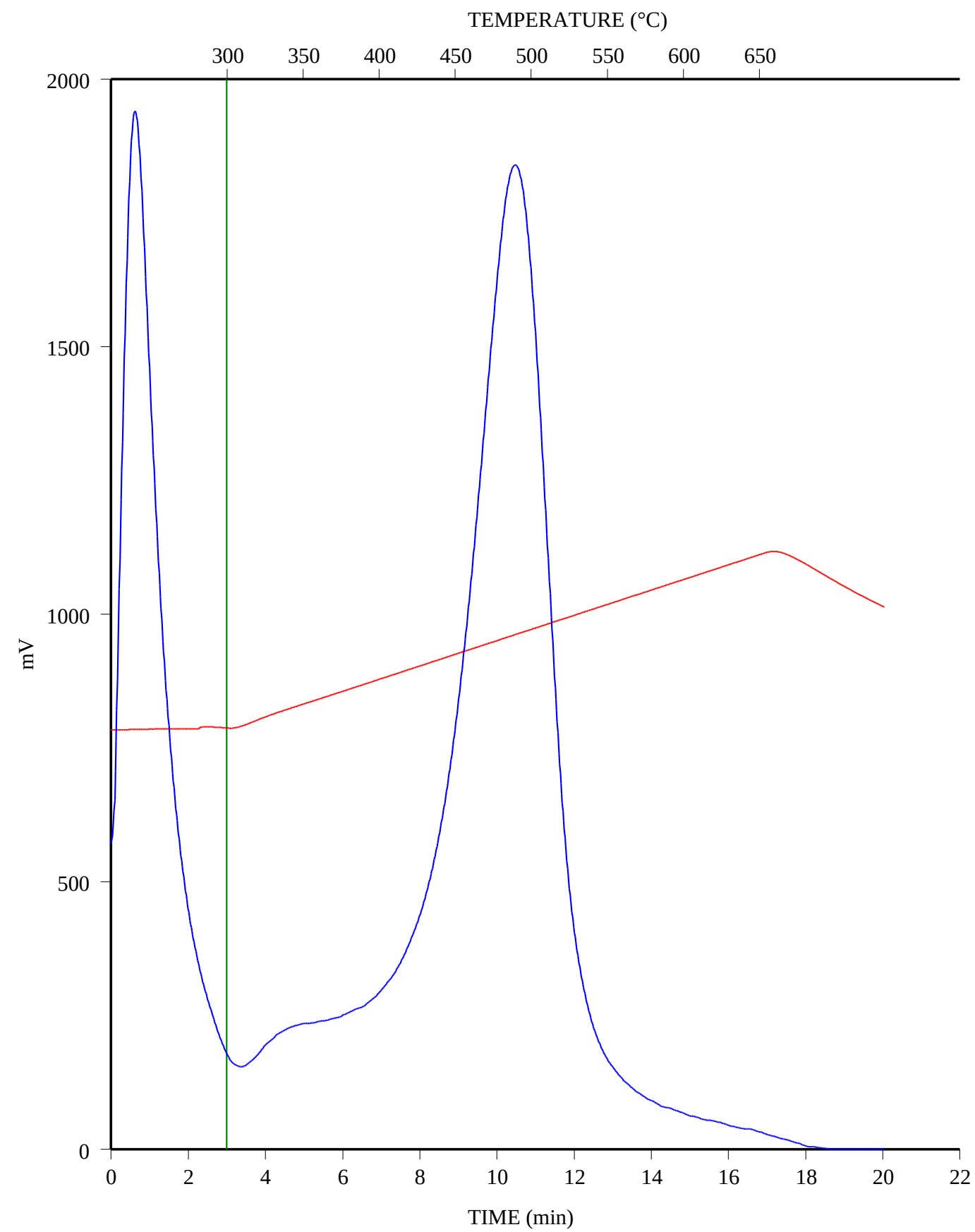
C-594295; HUSKY KAYBOBS 5-11-60-18; 3085.05 m
FID Hydrocarbons



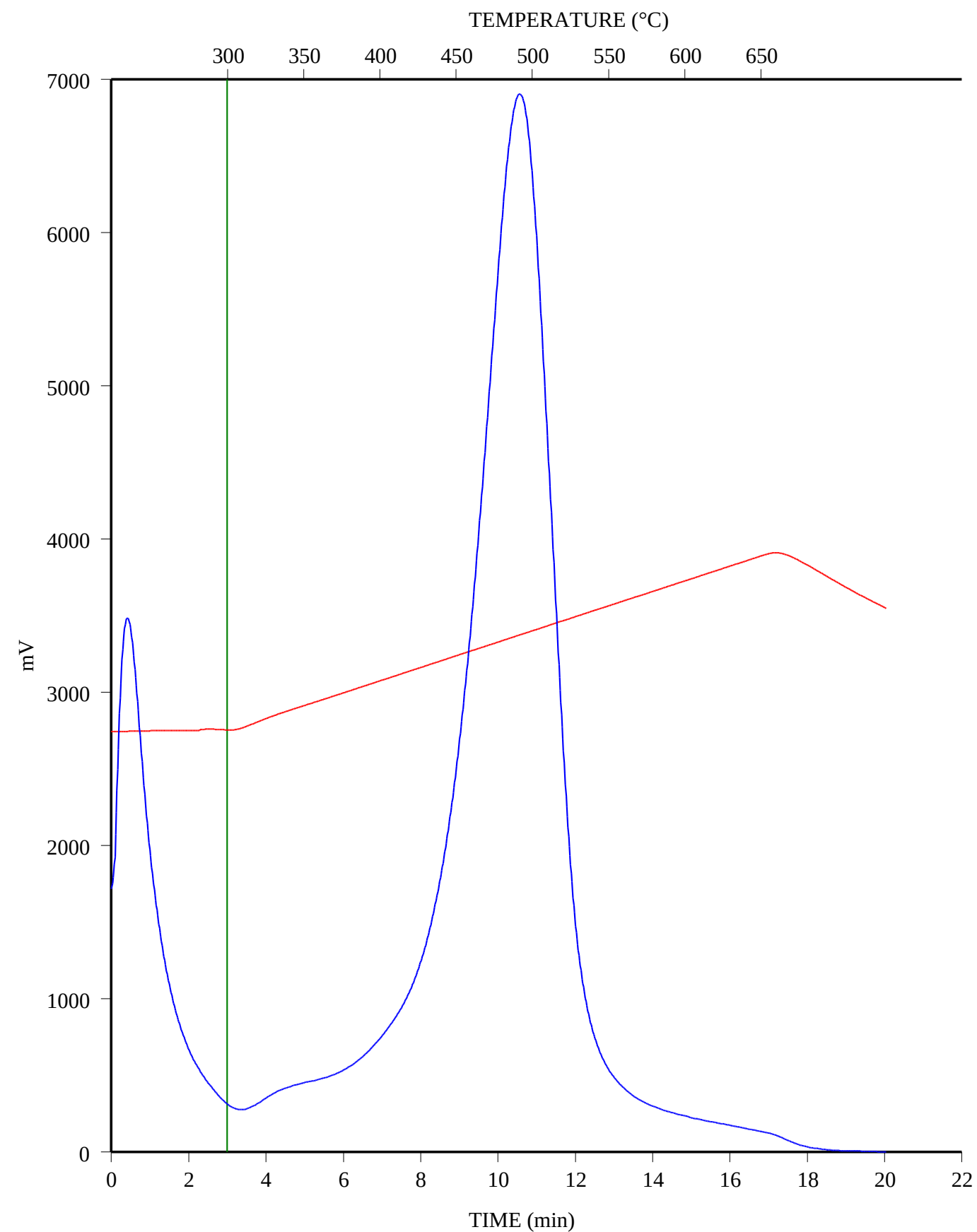
C-594296; XEREX STURLKS 7-22-69-21; 2690.8 m
FID Hydrocarbons



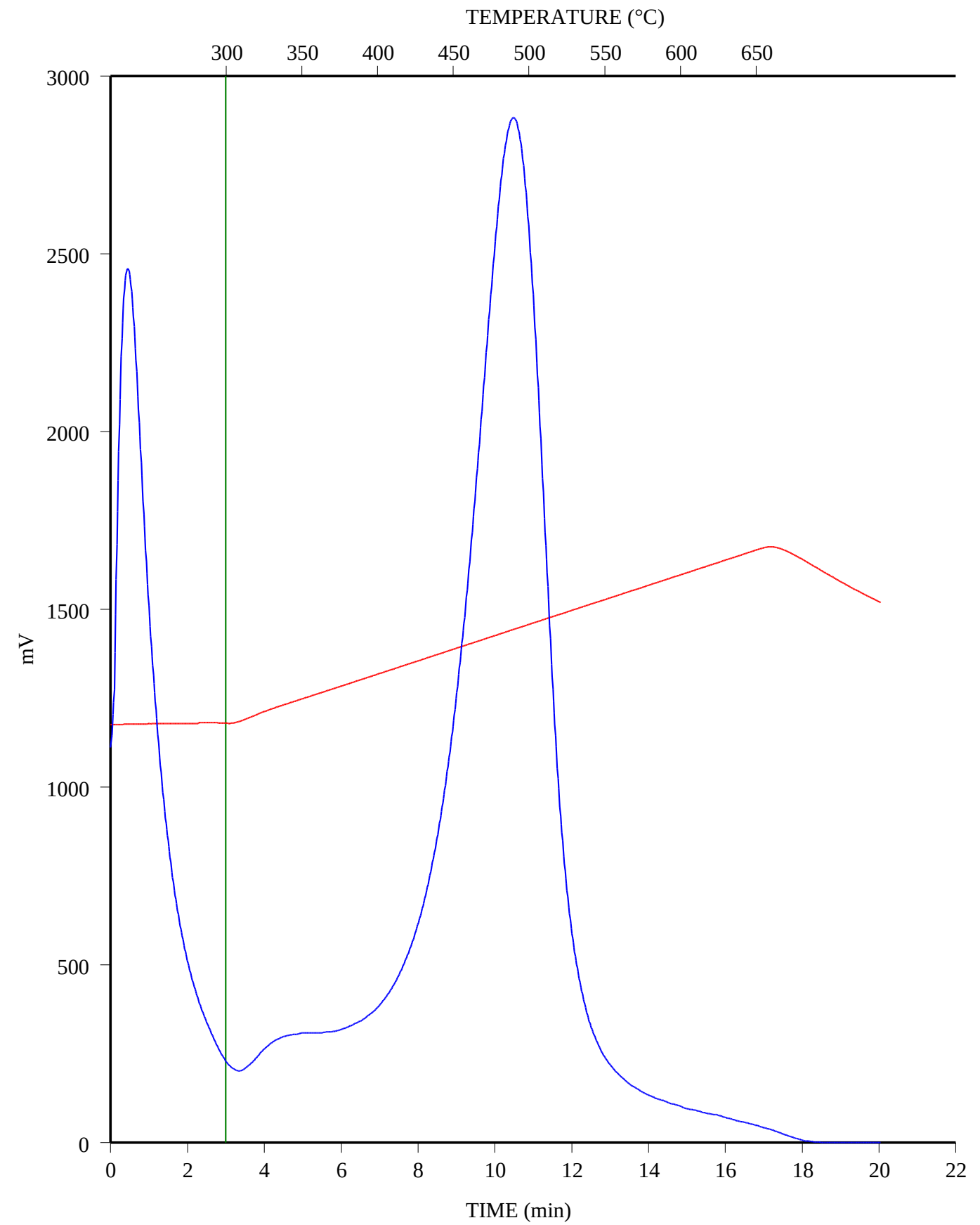
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FID Hydrocarbons



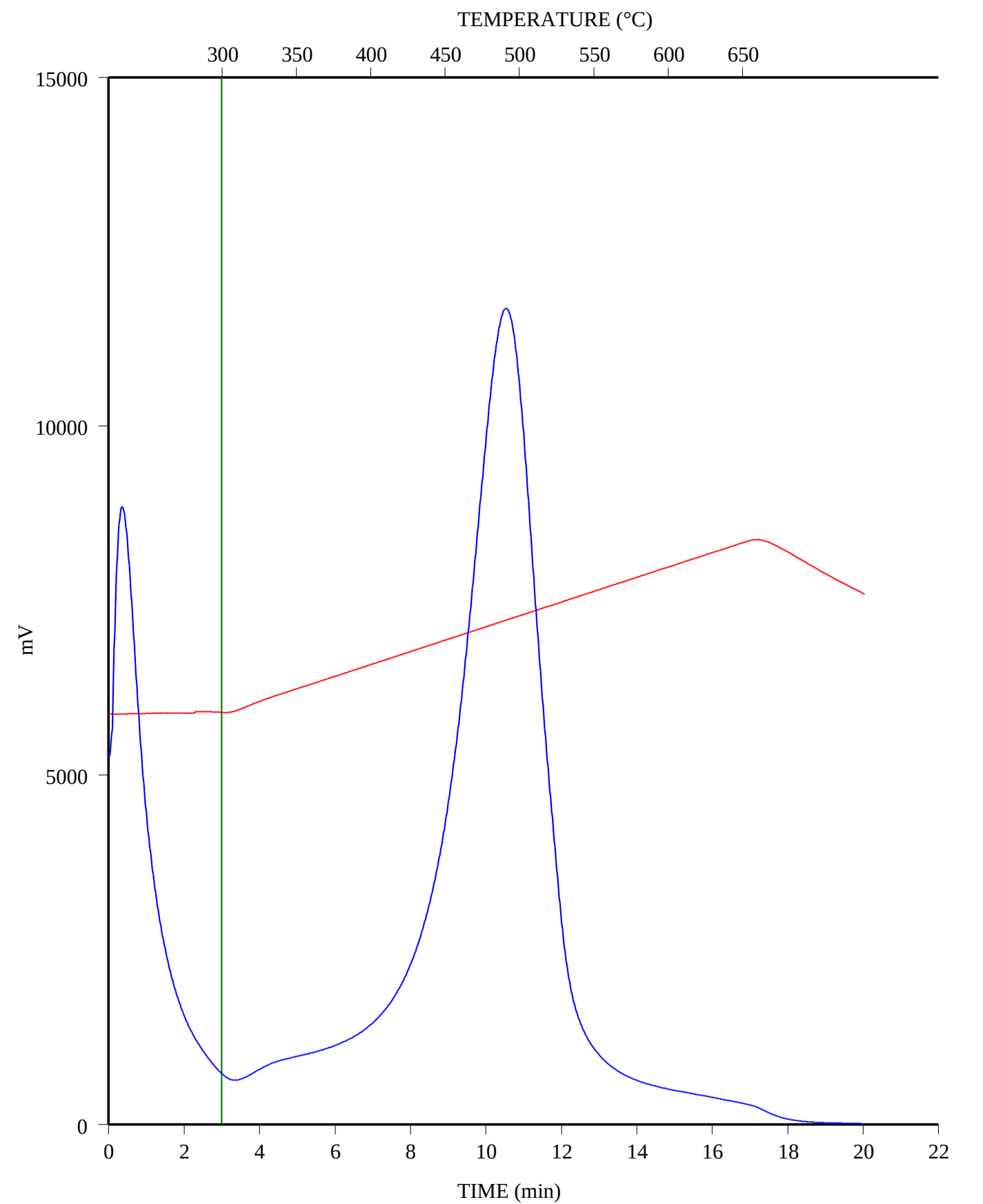
C-594298; XEREX STURLKS 7-22-69-21; 2693 m
FID Hydrocarbons



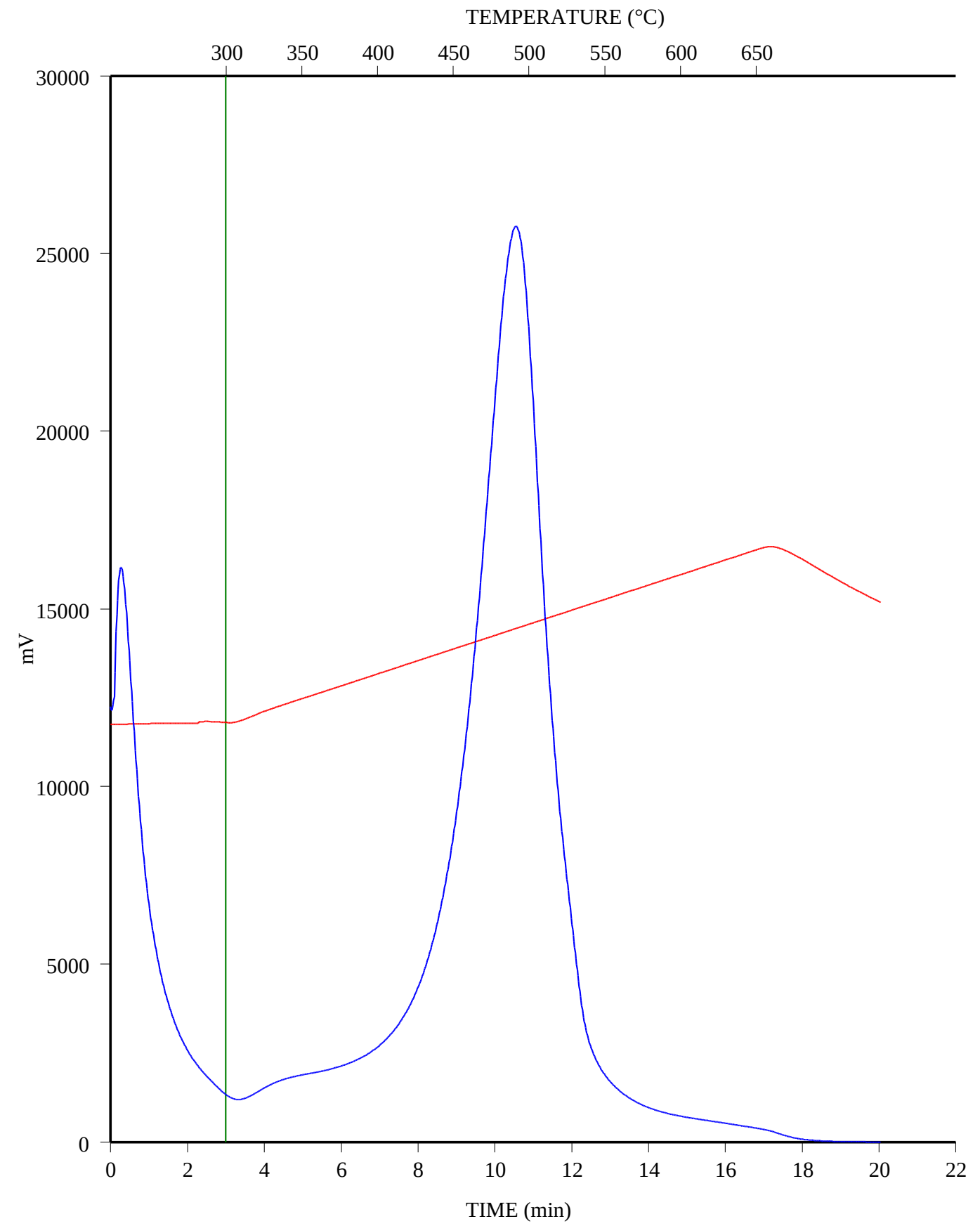
C-594299; XEREX STURLKS 7-22-69-21; 2694.15 m
FID Hydrocarbons



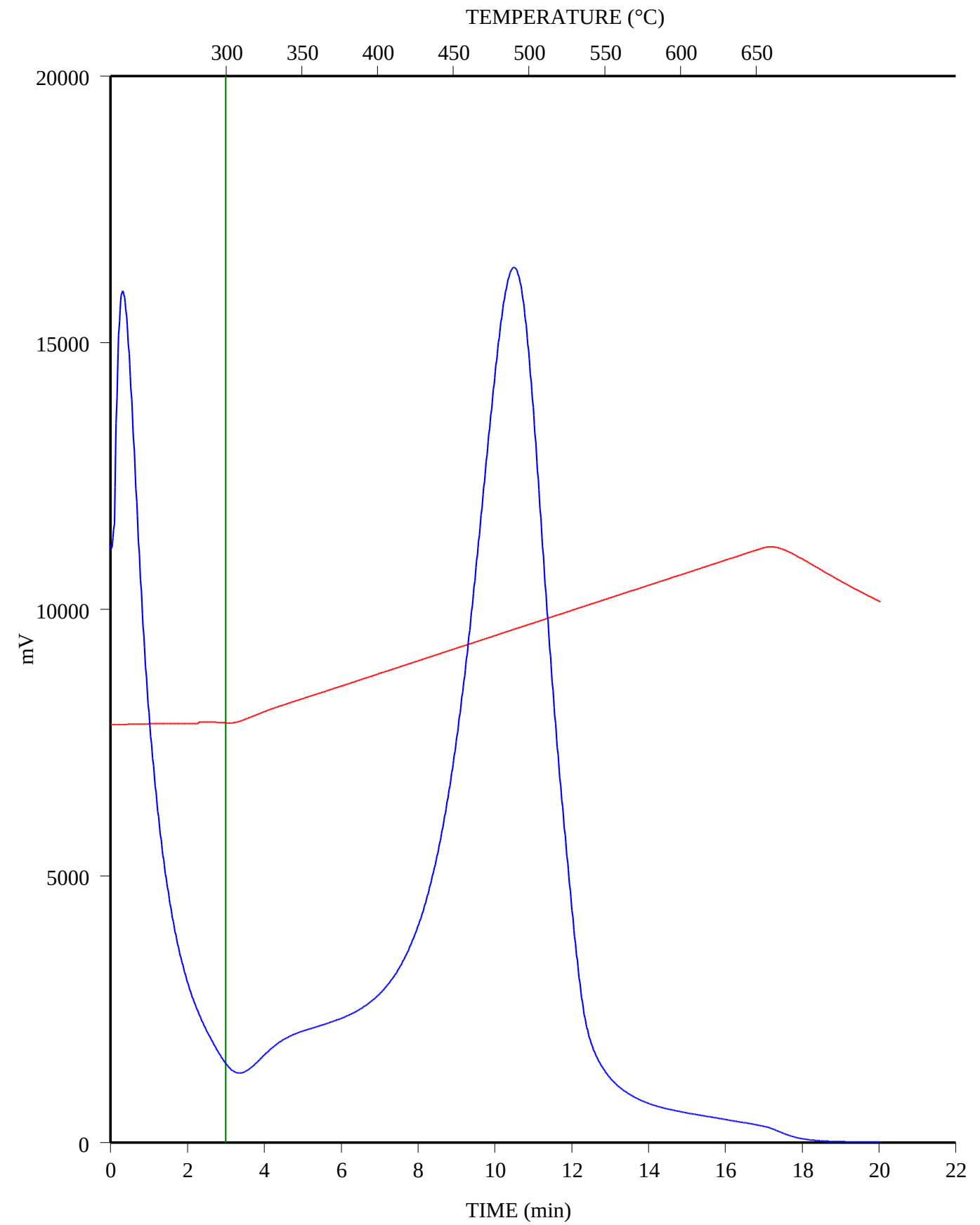
C-594300; XEREX STURLKS 7-22-69-21; 2695.3 m
FID Hydrocarbons



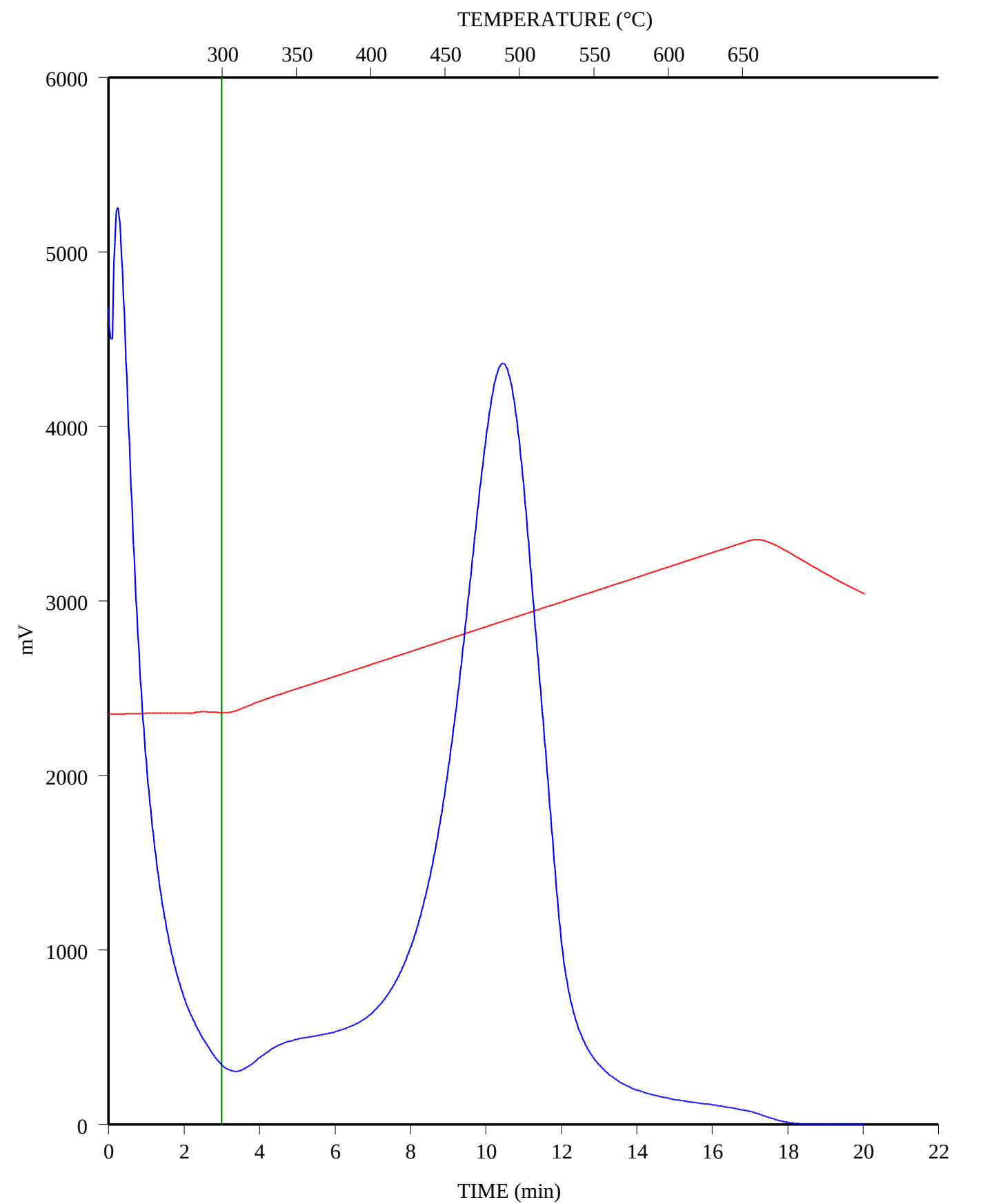
C-594301; XEREX STURLKS 7-22-69-21; 2696.2 m
FID Hydrocarbons



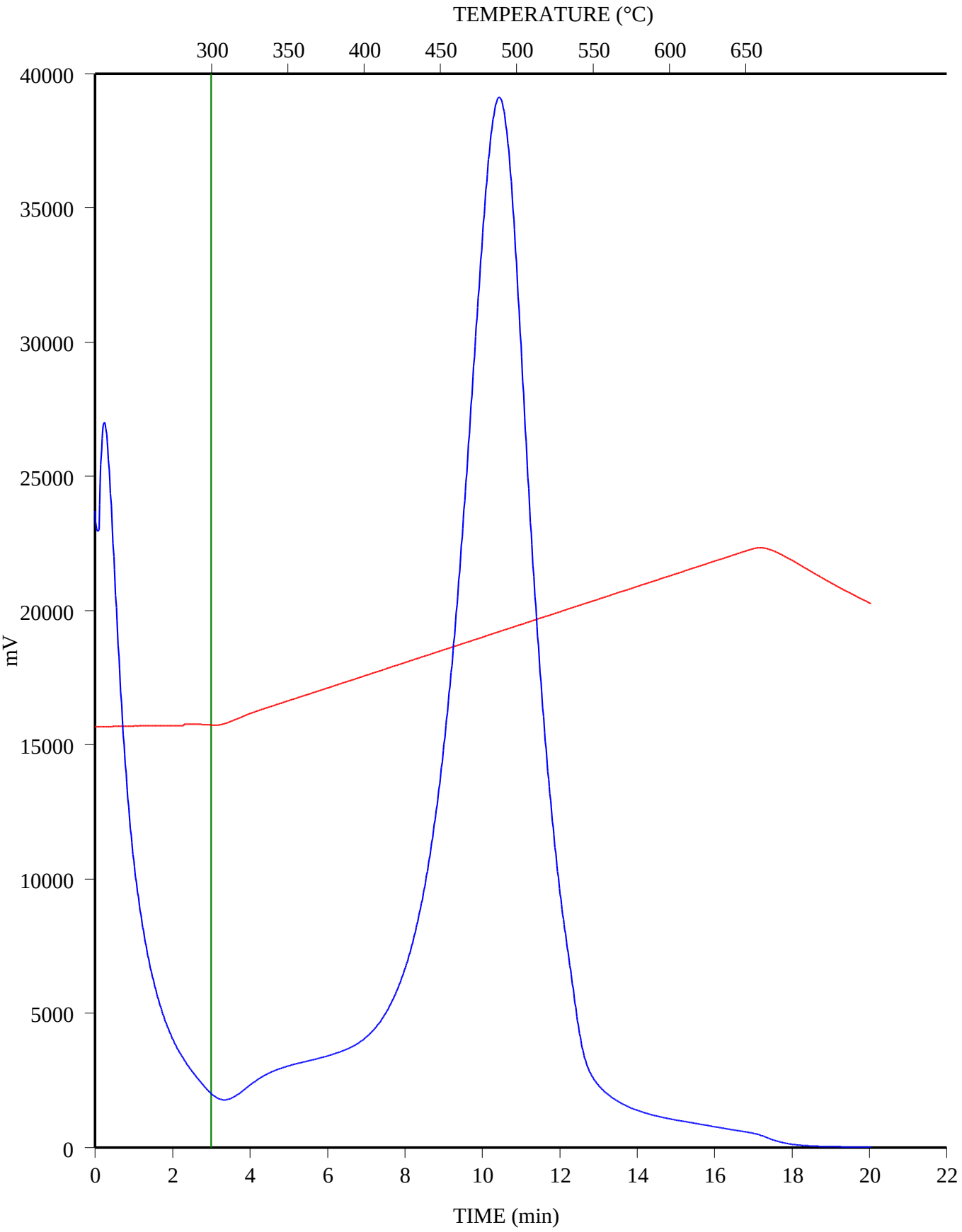
C-594302; XEREX STURLKS 7-22-69-21; 2697.35 m
FID Hydrocarbons



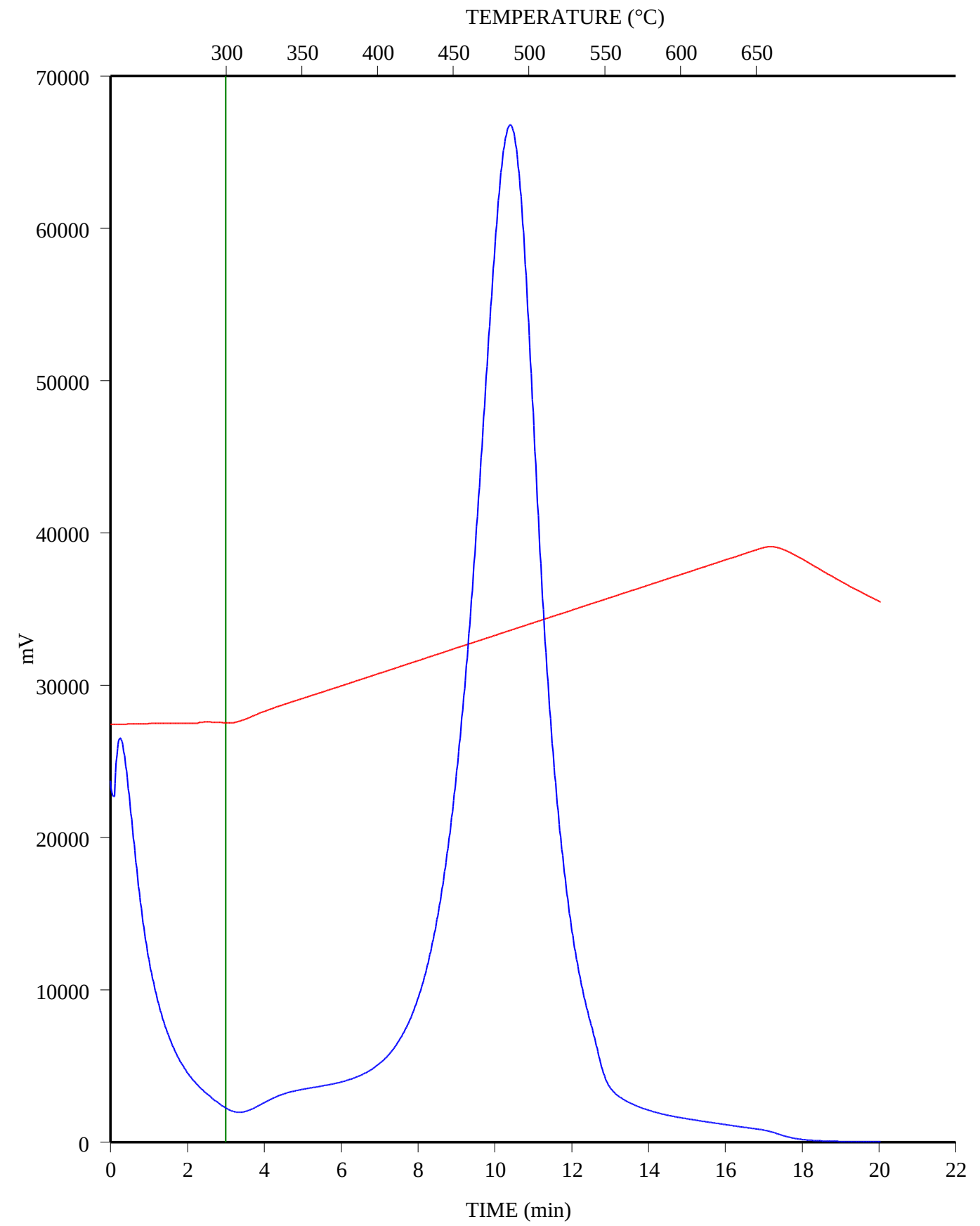
C-594303; XEREX STURLKS 7-22-69-21; 2698.3 m
FID Hydrocarbons



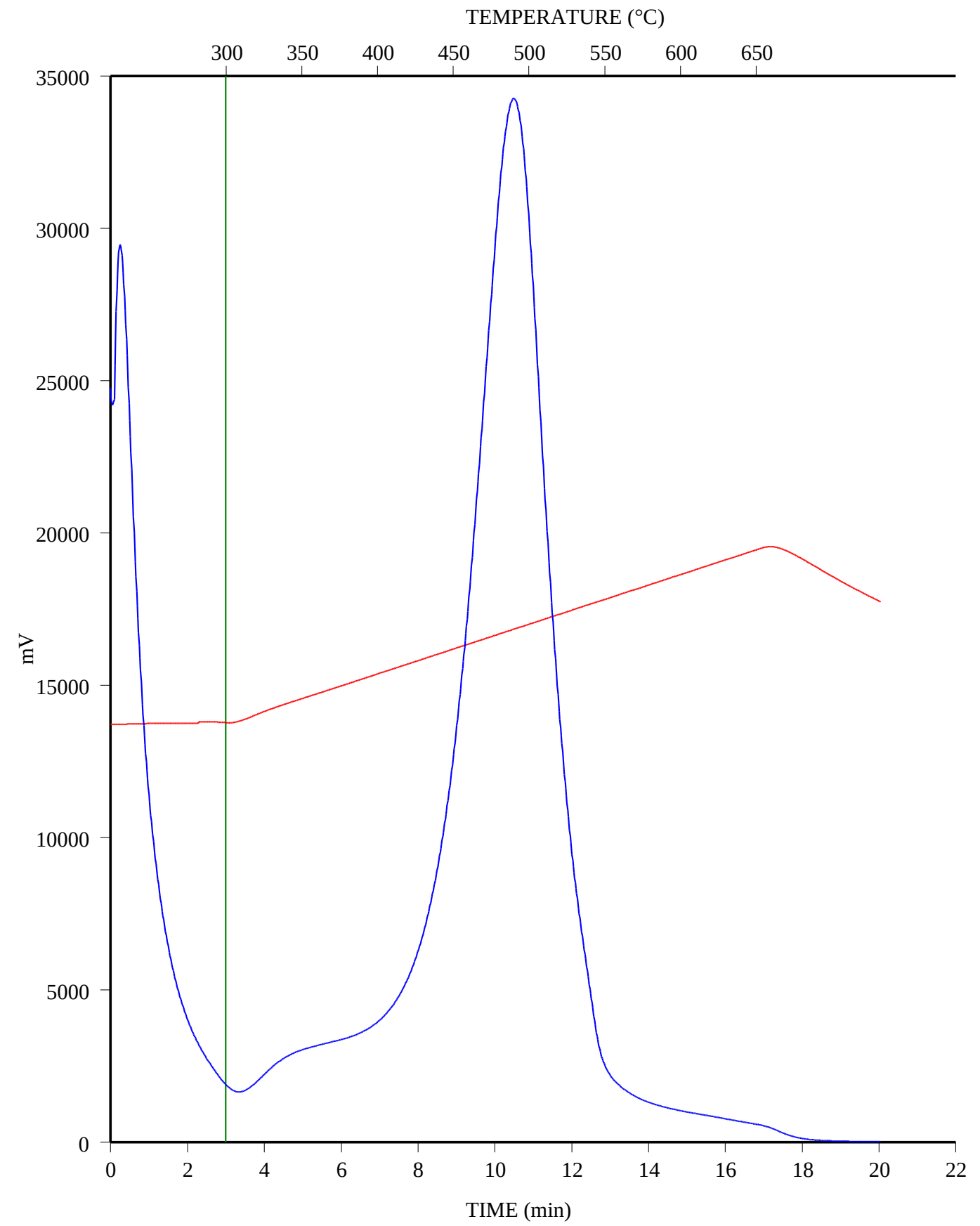
C-594304; XEREX STURLKS 7-22-69-21; 2699.55 m
FID Hydrocarbons



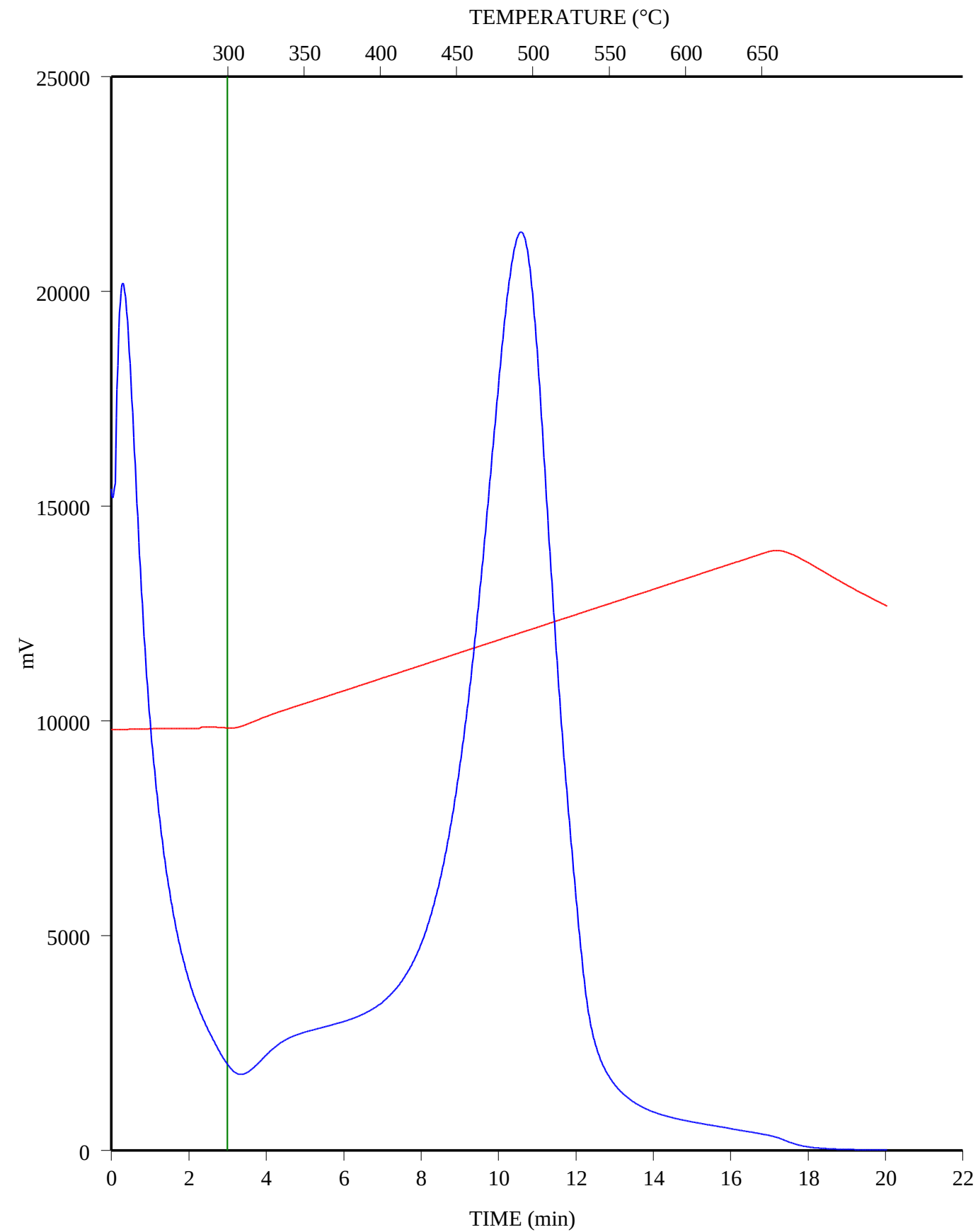
C-594305; XEREX STURLKS 7-22-69-21; 2700.35 m
FID Hydrocarbons



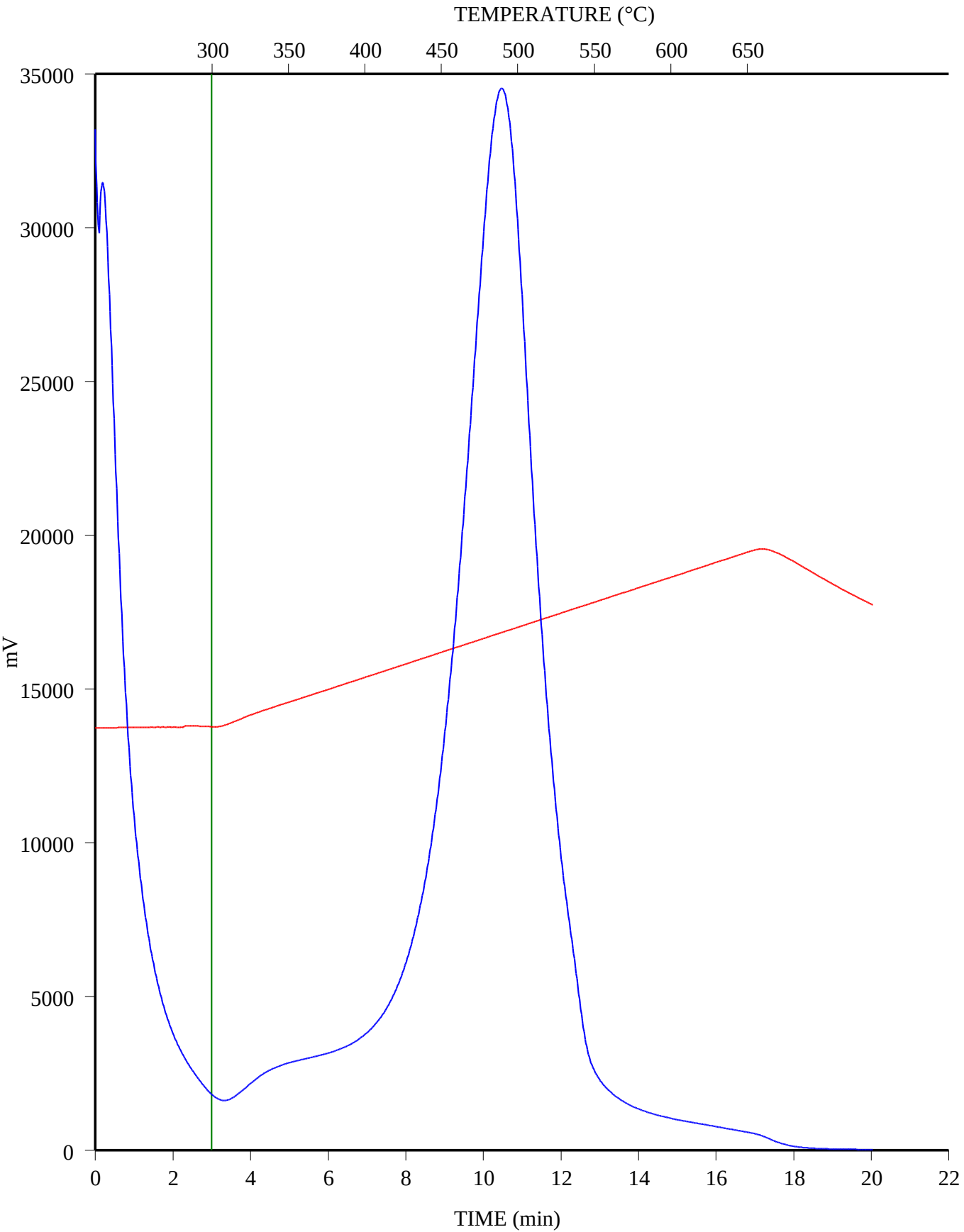
C-594306; XEREX STURLKS 7-22-69-21; 2701.55 m
FID Hydrocarbons



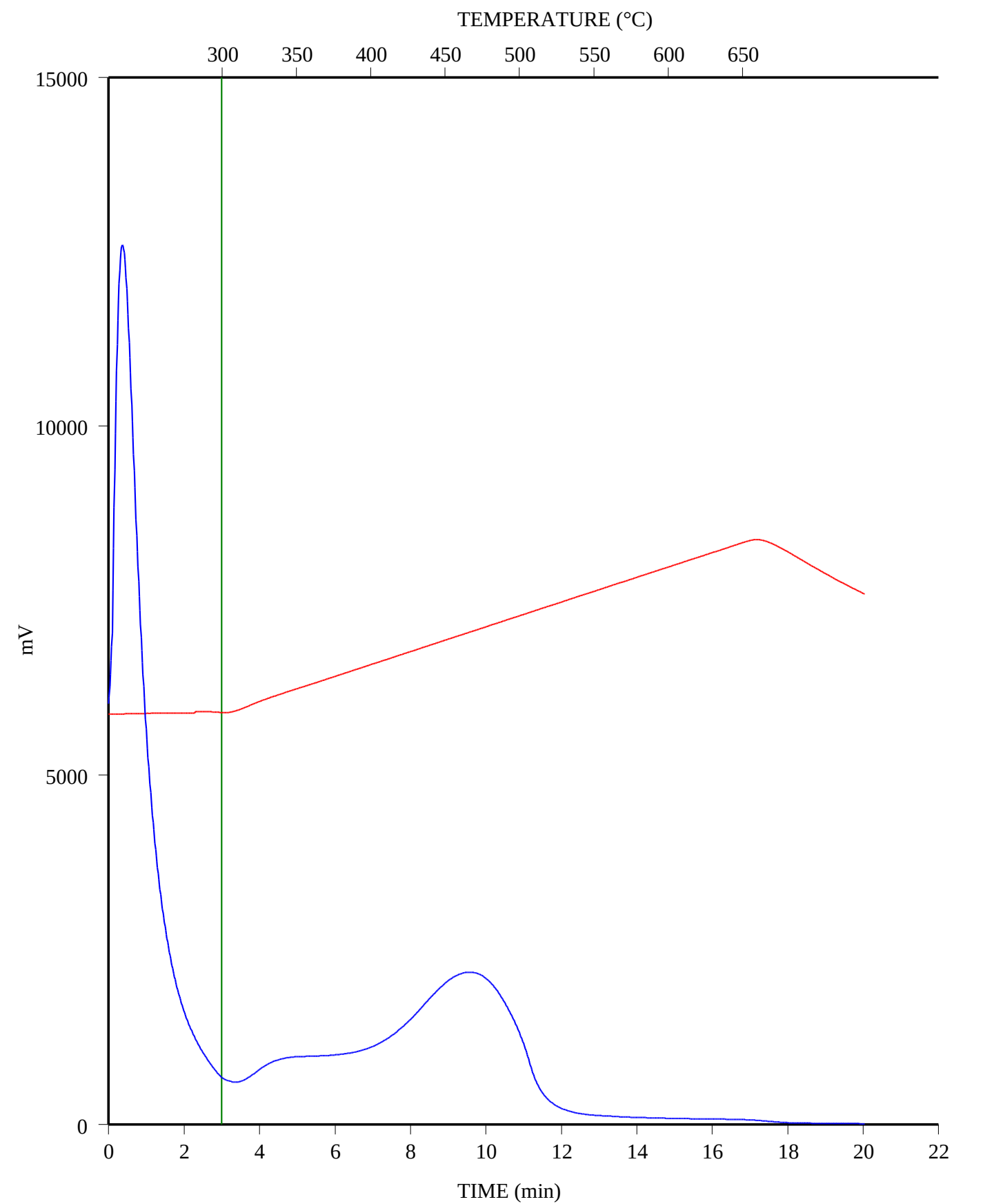
C-594307; XEREX STURLKS 7-22-69-21; 2702.7 m
FID Hydrocarbons



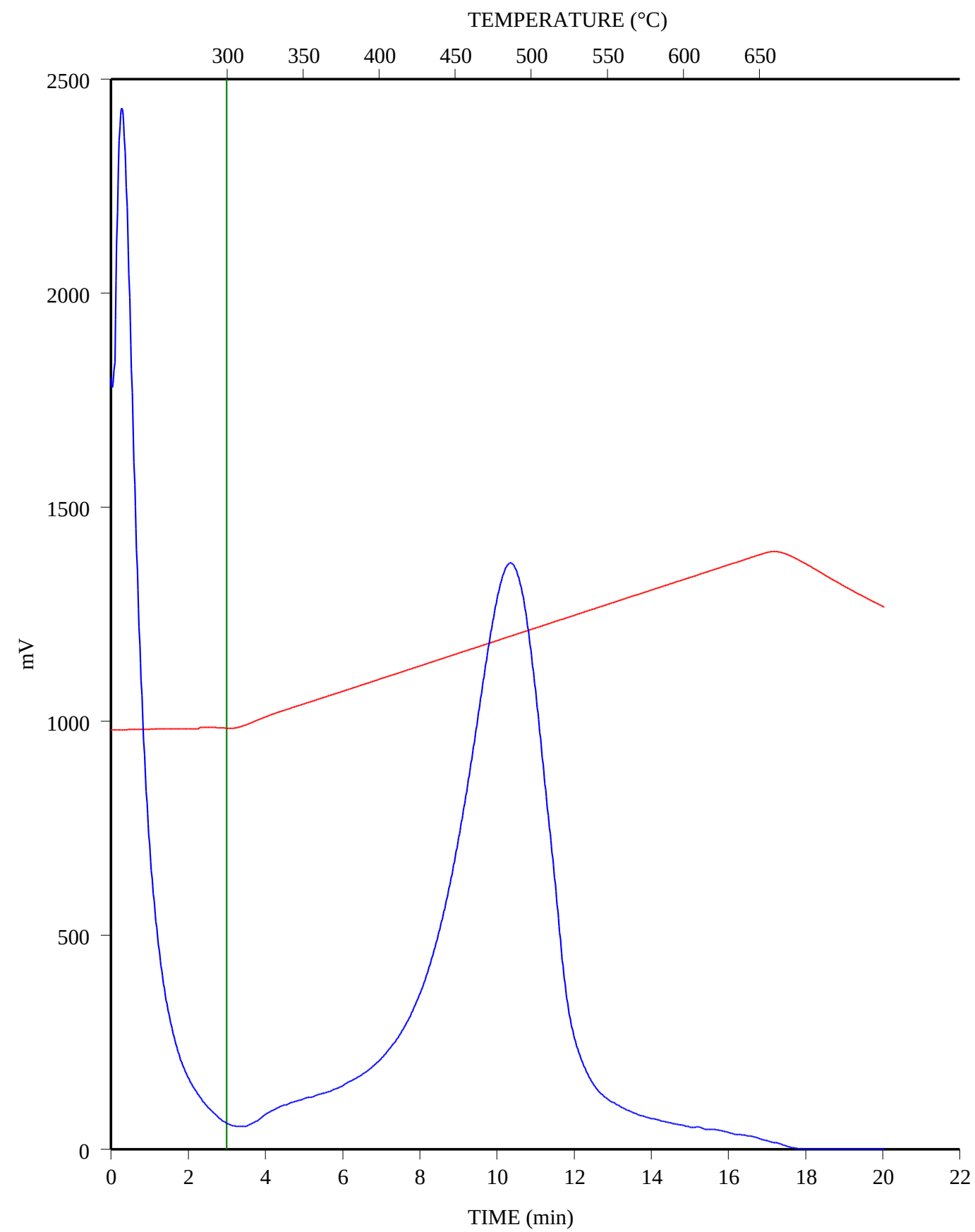
C-594308; XEREX STURLKS 7-22-69-21; 2703.75 m
FID Hydrocarbons



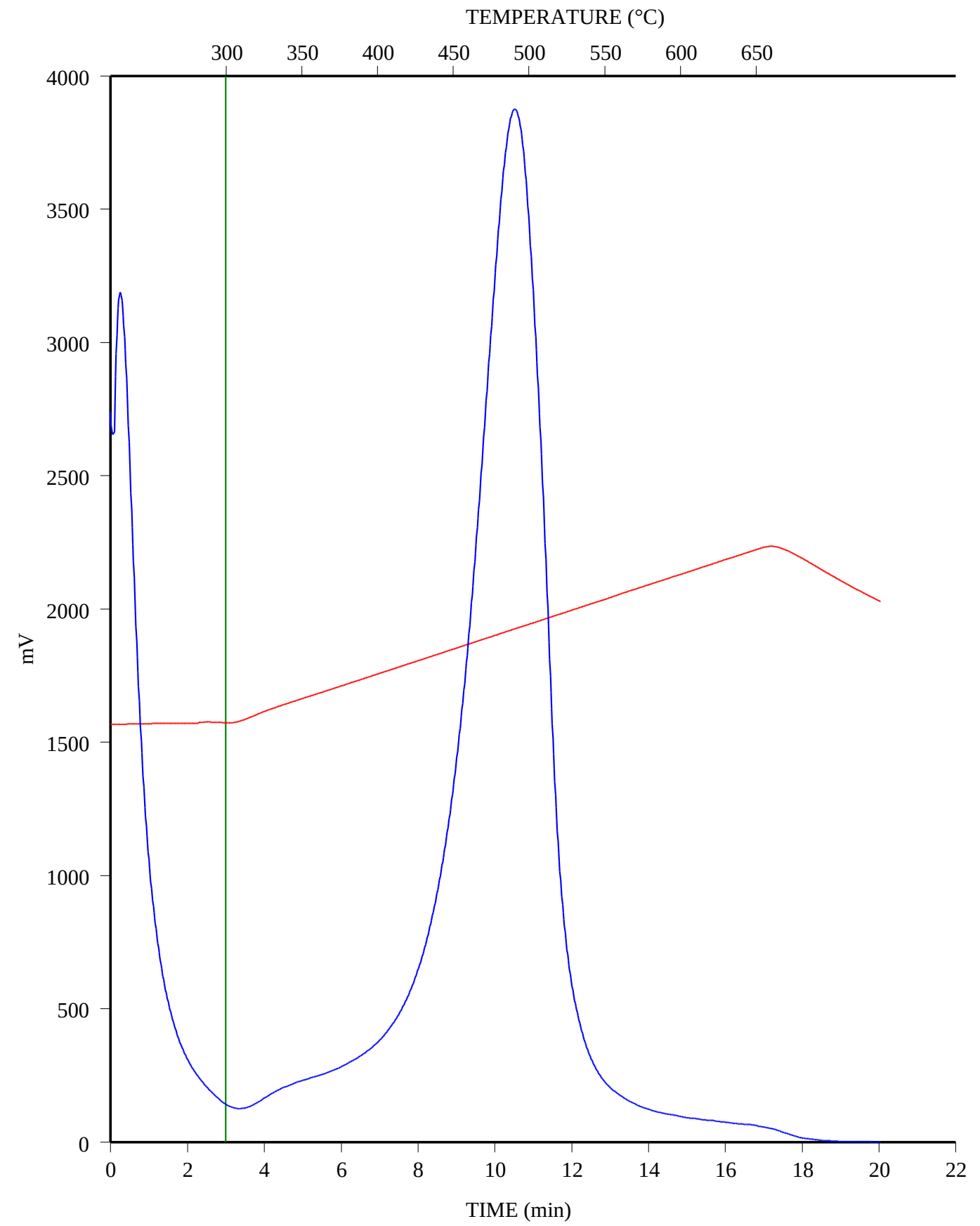
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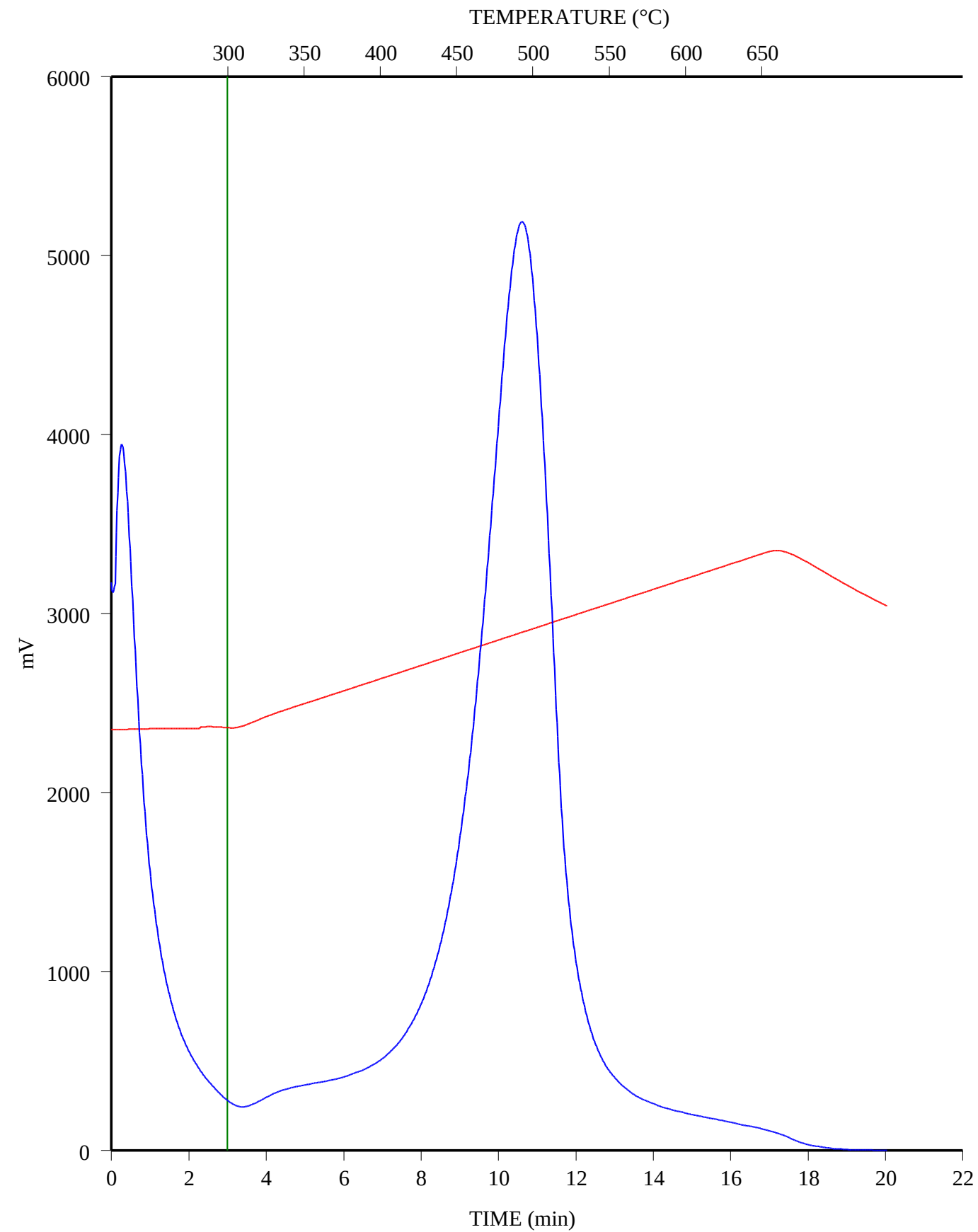
C-594310; XEREX STURLKS 7-22-69-21; 2705.8 m
FID Hydrocarbons



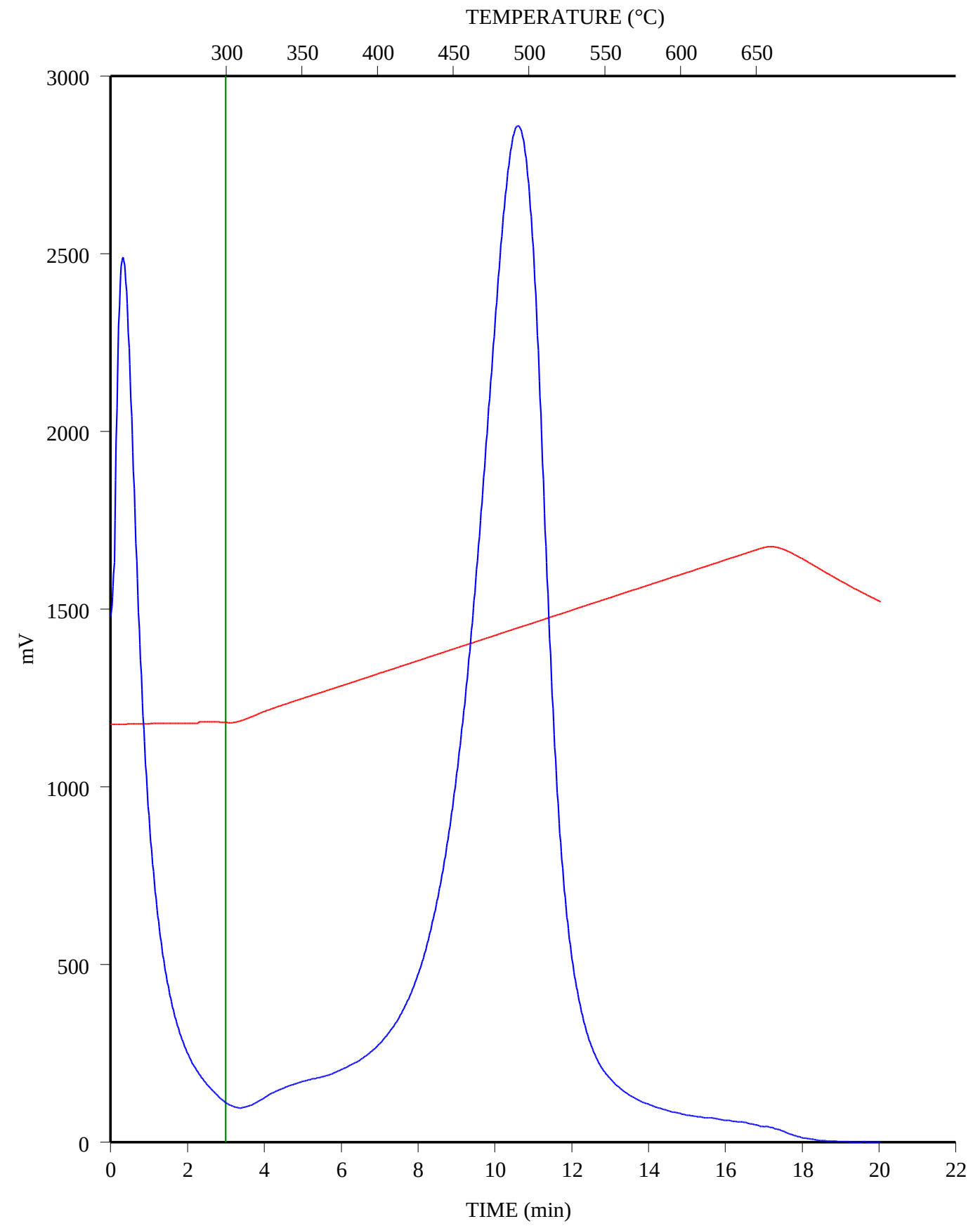
C-594311; XEREX STURLKS 7-22-69-21; 2707.1 m
FID Hydrocarbons



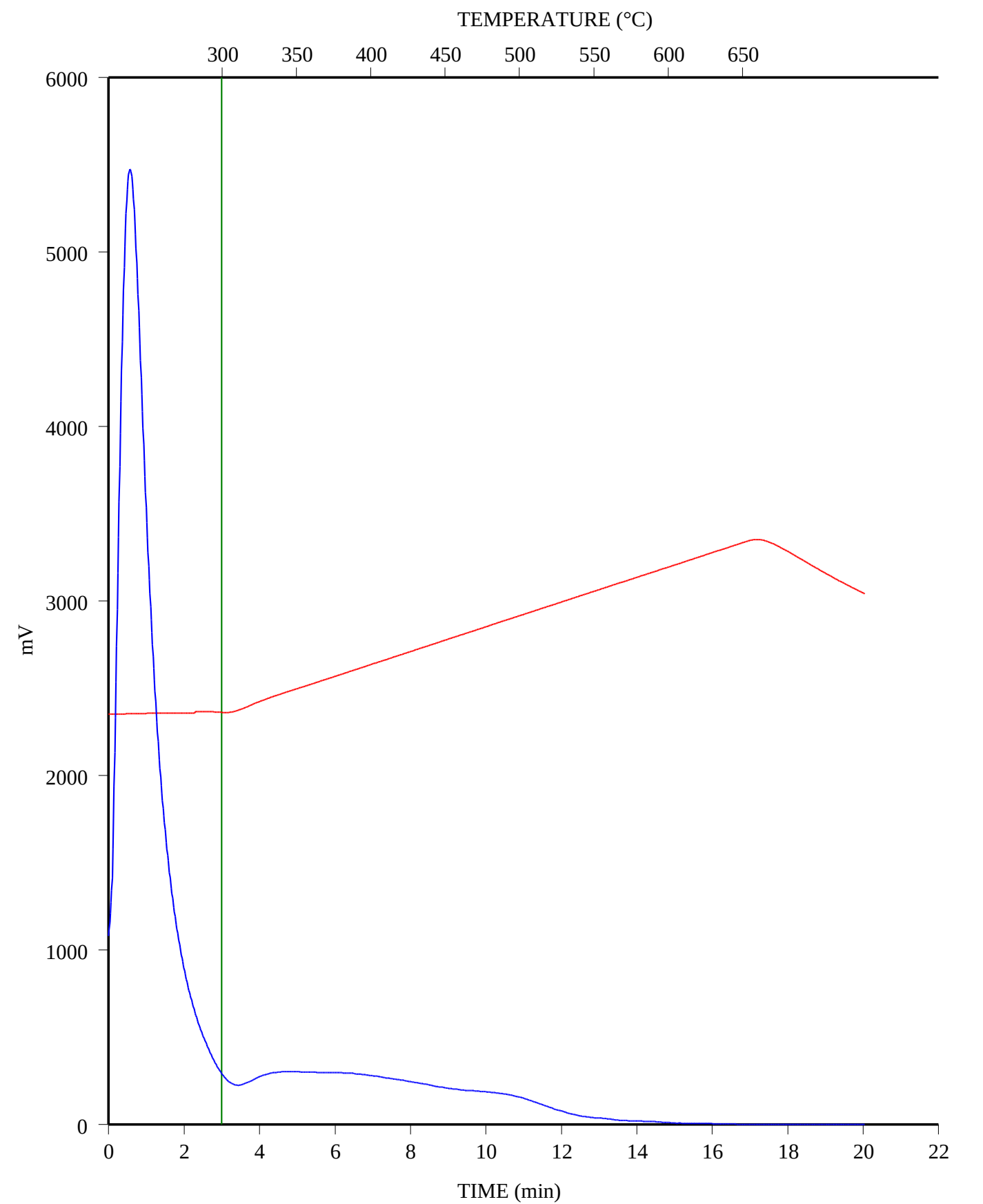
C-594312; XEREX STURLKS 7-22-69-21; 2707.8 m
FID Hydrocarbons



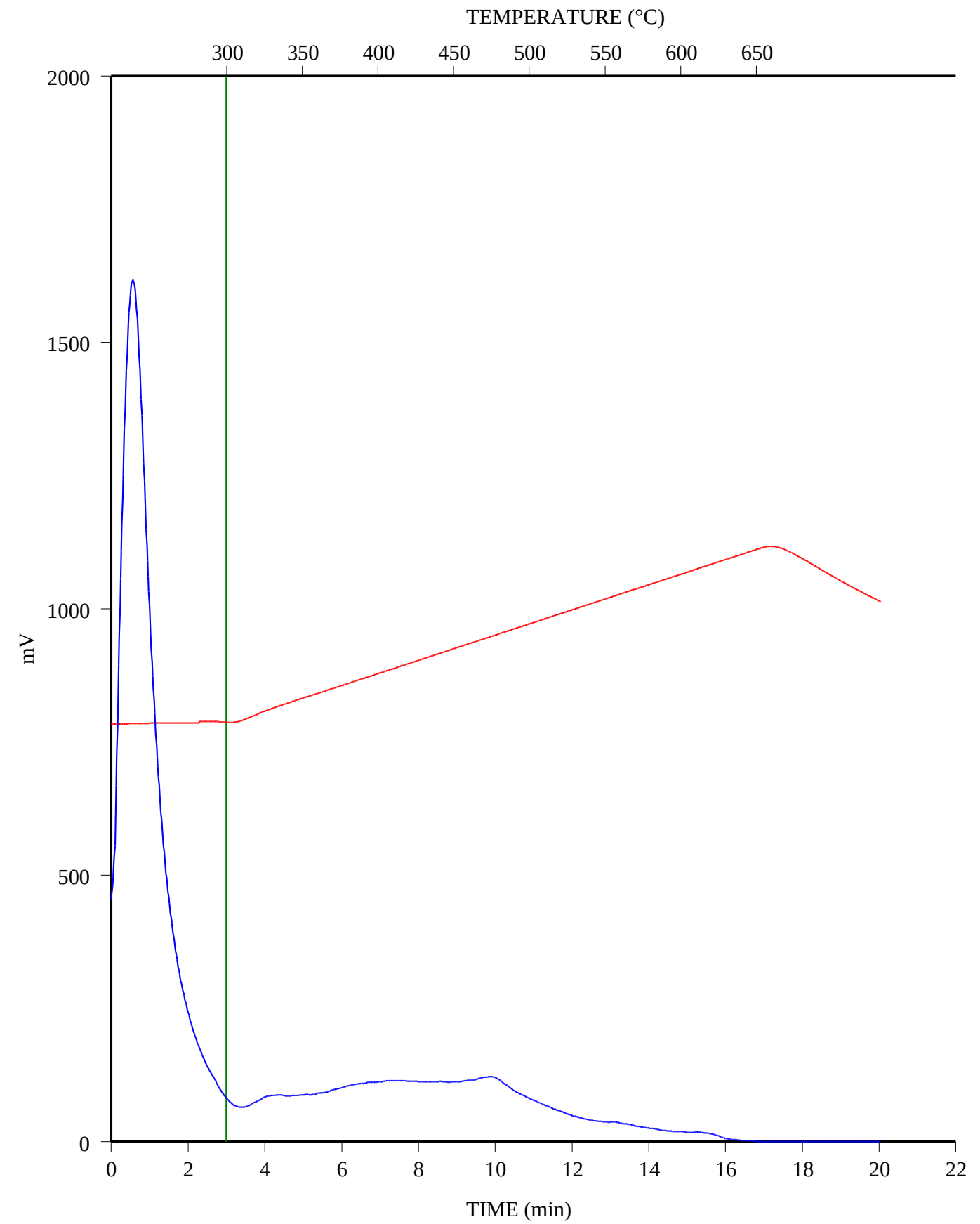
C-594313; XEREX STURLKS 7-22-69-21; 2708.4 m
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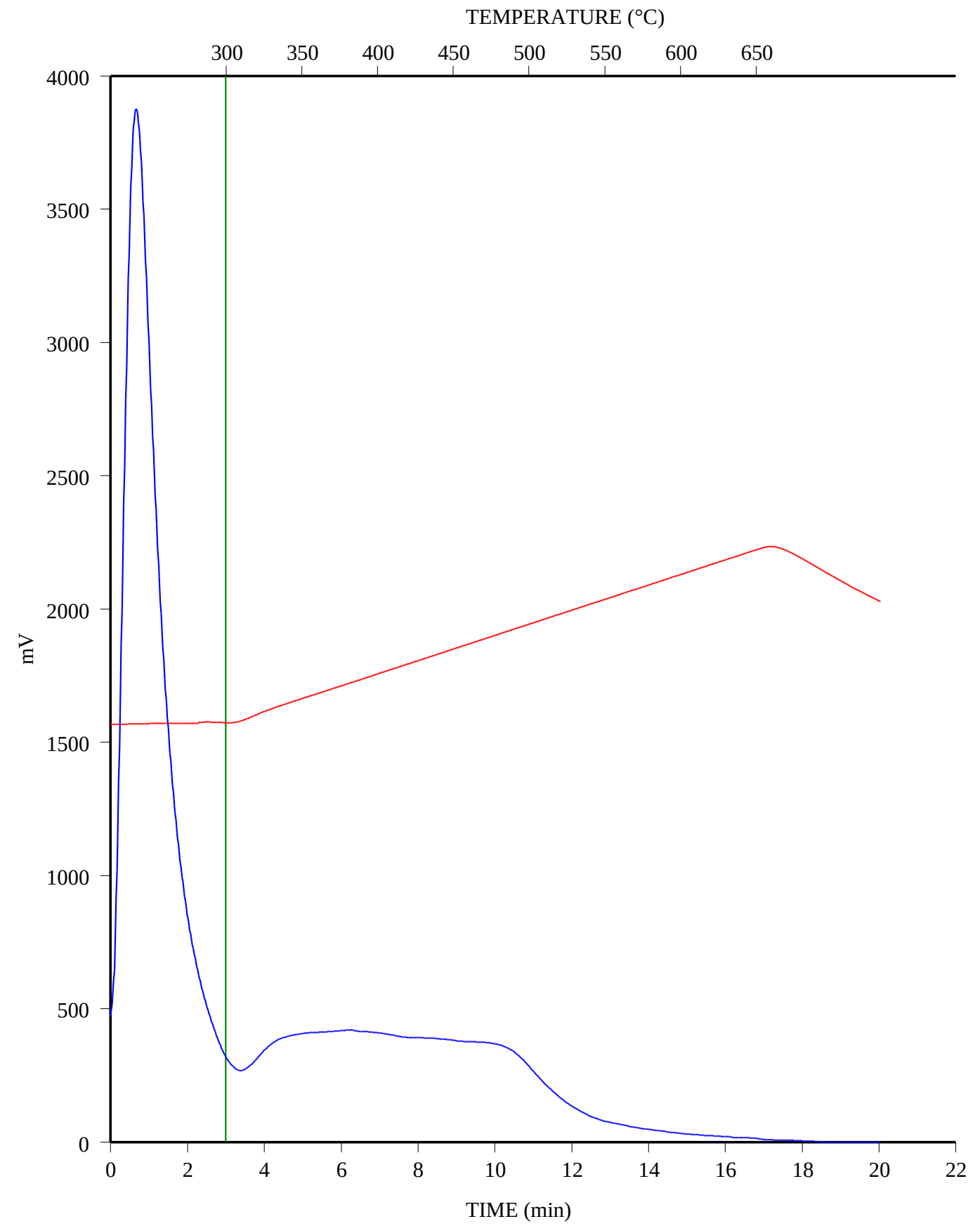
C-594314; SDEL PEMBINA 8-32-46-9; 3098.35 m
FID Hydrocarbons



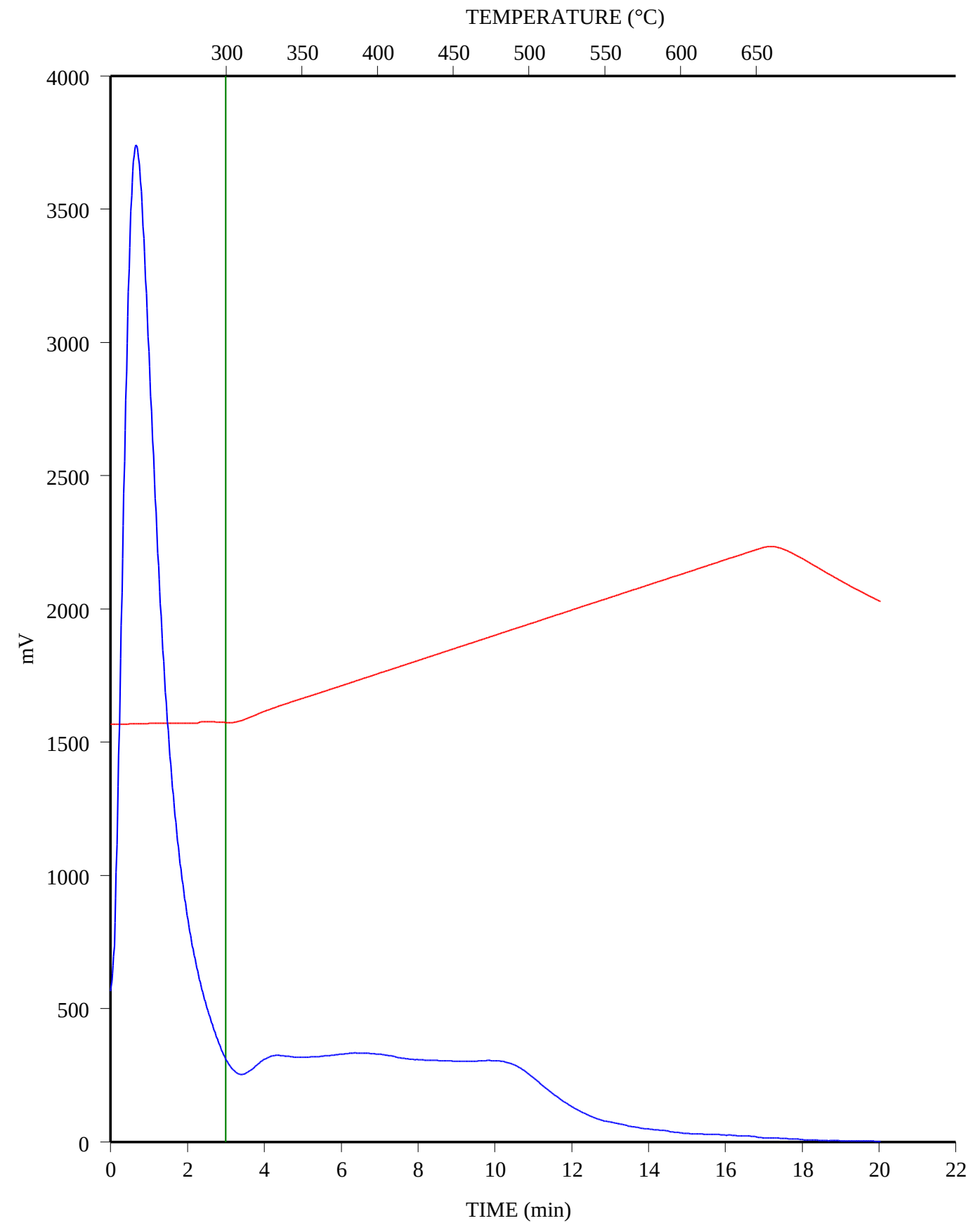
C-594315; SDEL PEMBINA 8-32-46-9; 3099.55 m
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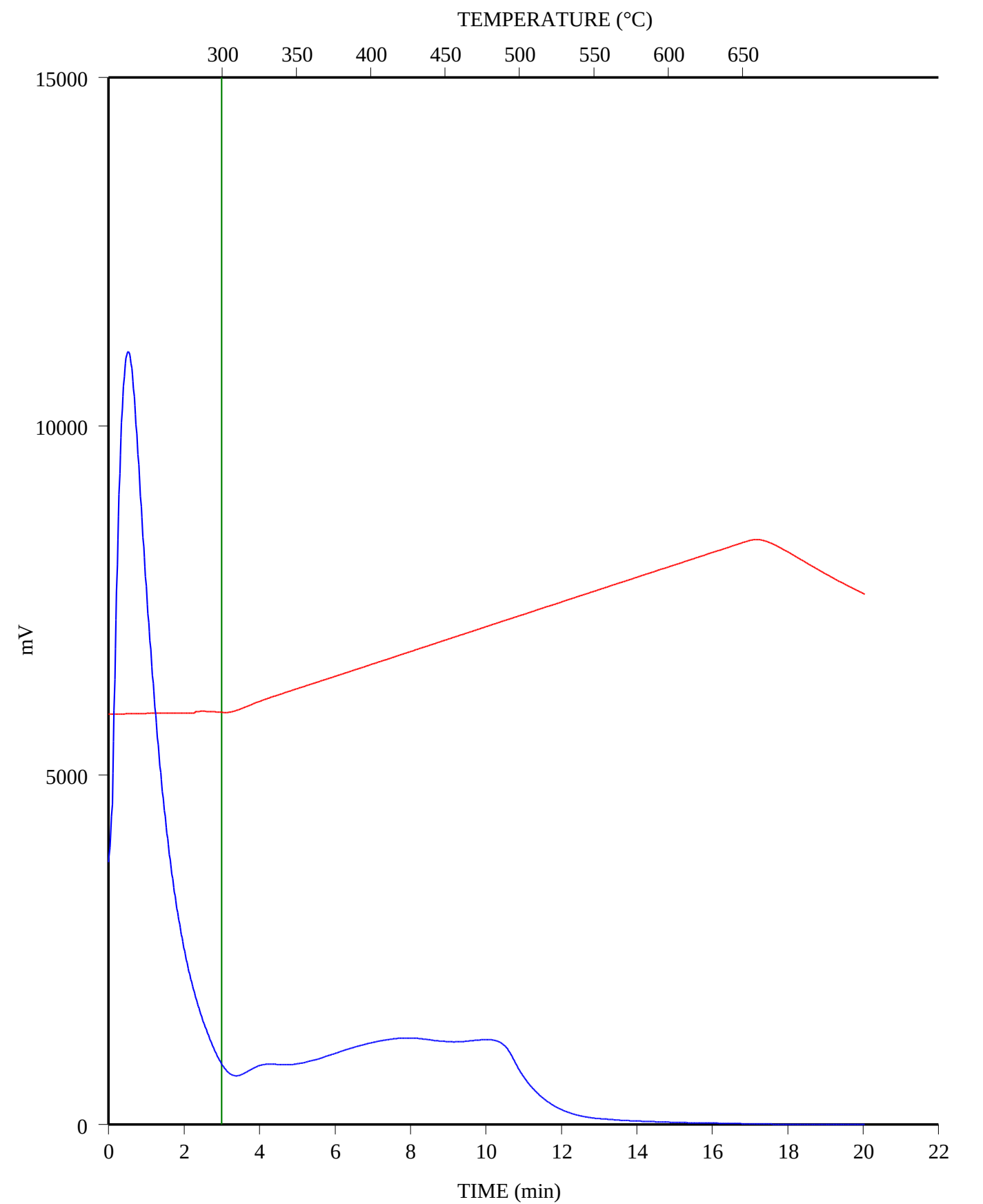
C-594316; SDEL PEMBINA 8-32-46-9; 3100.95 m
FID Hydrocarbons



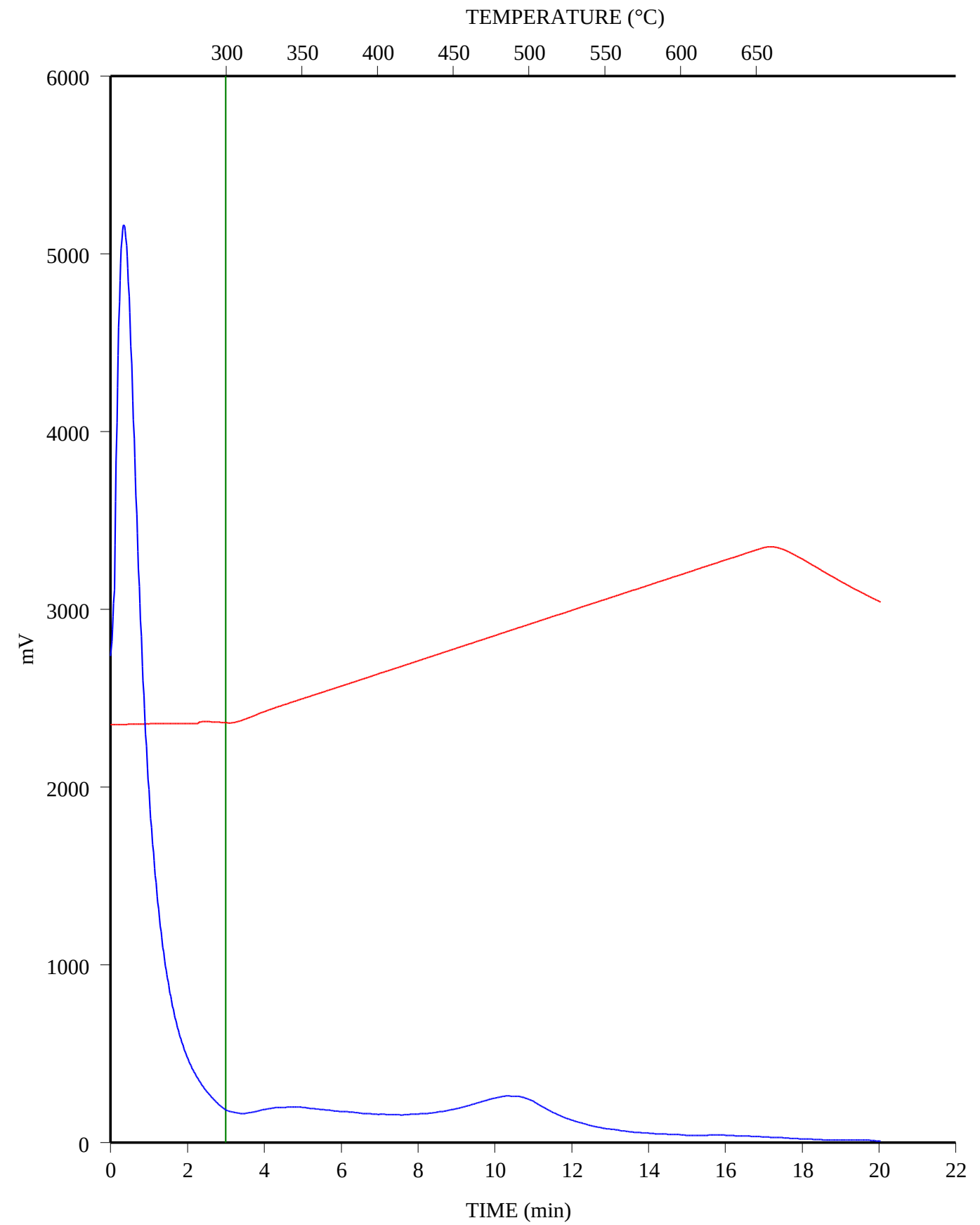
C-594317; SDEL PEMBINA 8-32-46-9; 3102 m
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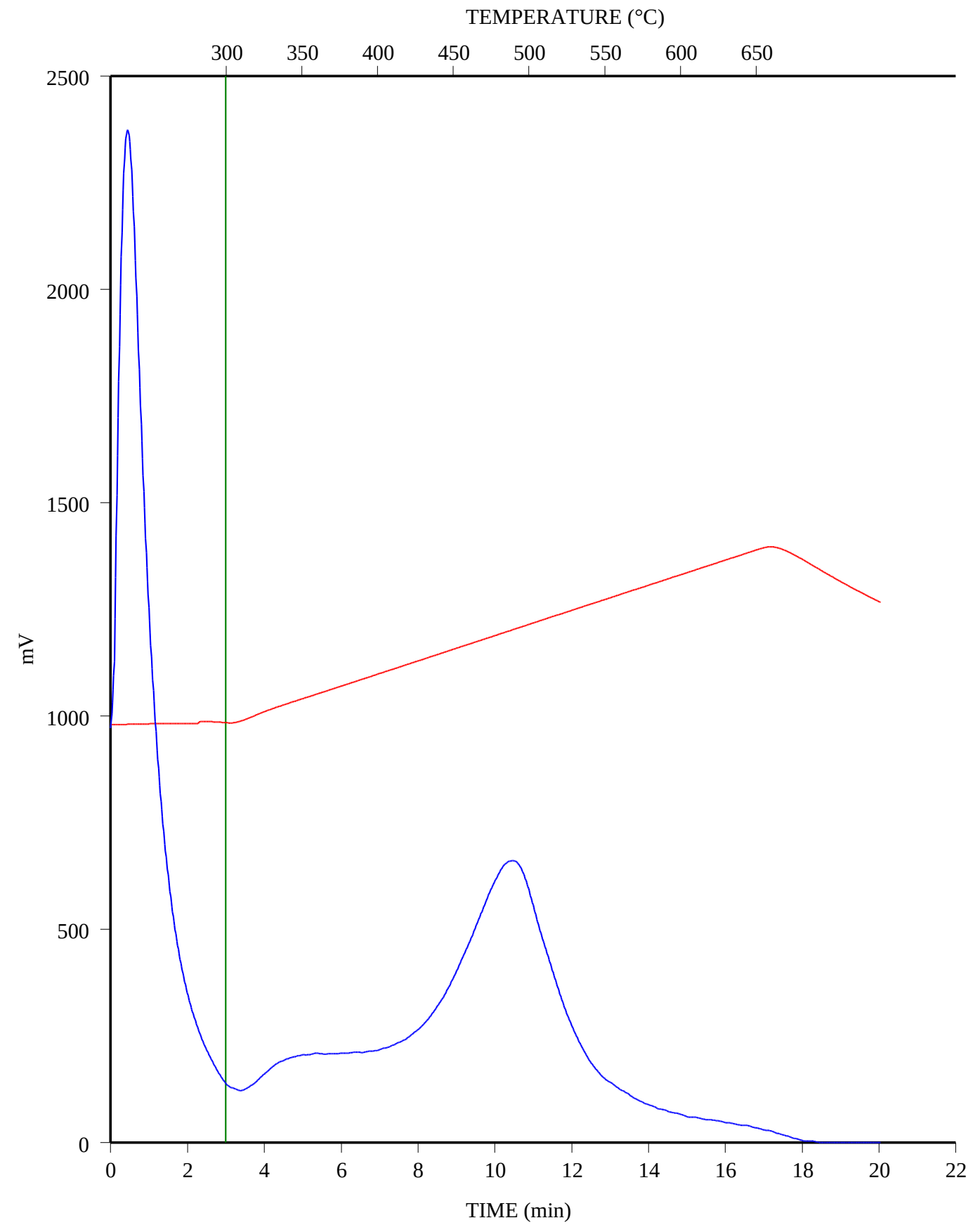
C-594318; SDEL PEMBINA 8-32-46-9; 3103.03 m
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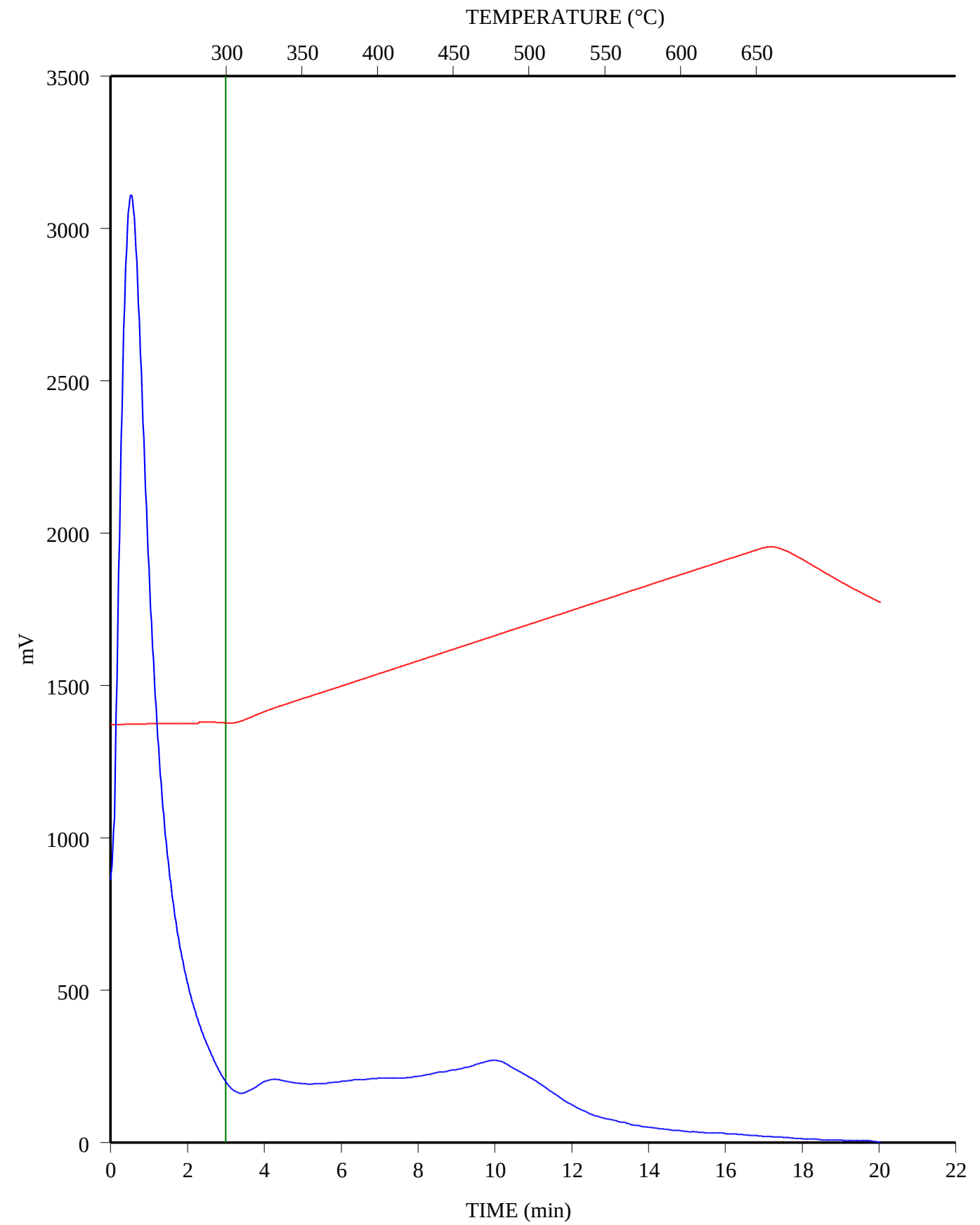
C-594319; SDEL PEMBINA 8-32-46-9; 3104 m
FID Hydrocarbons



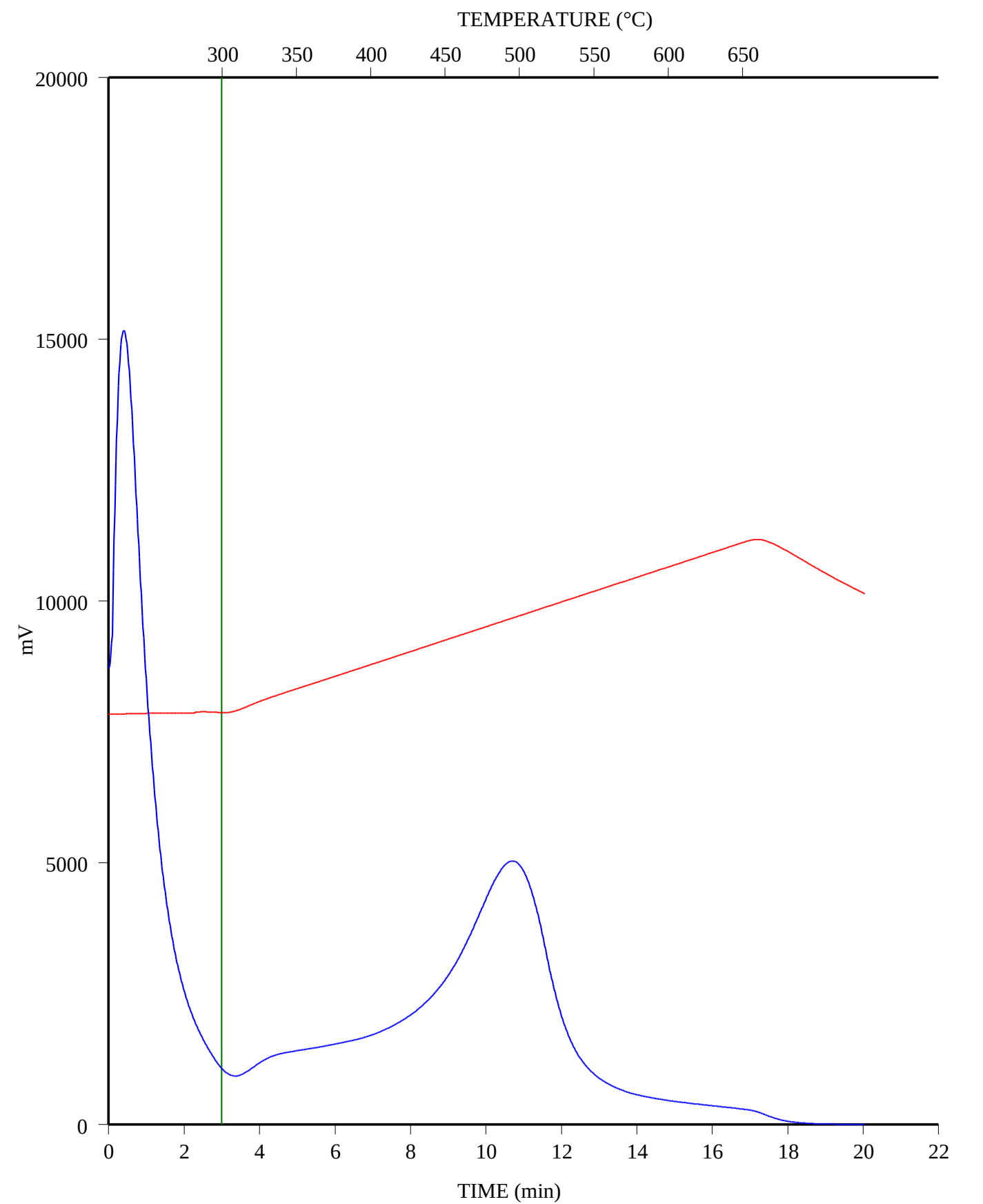
C-594320; SDEL PEMBINA 8-32-46-9; 3105 m
FID Hydrocarbons



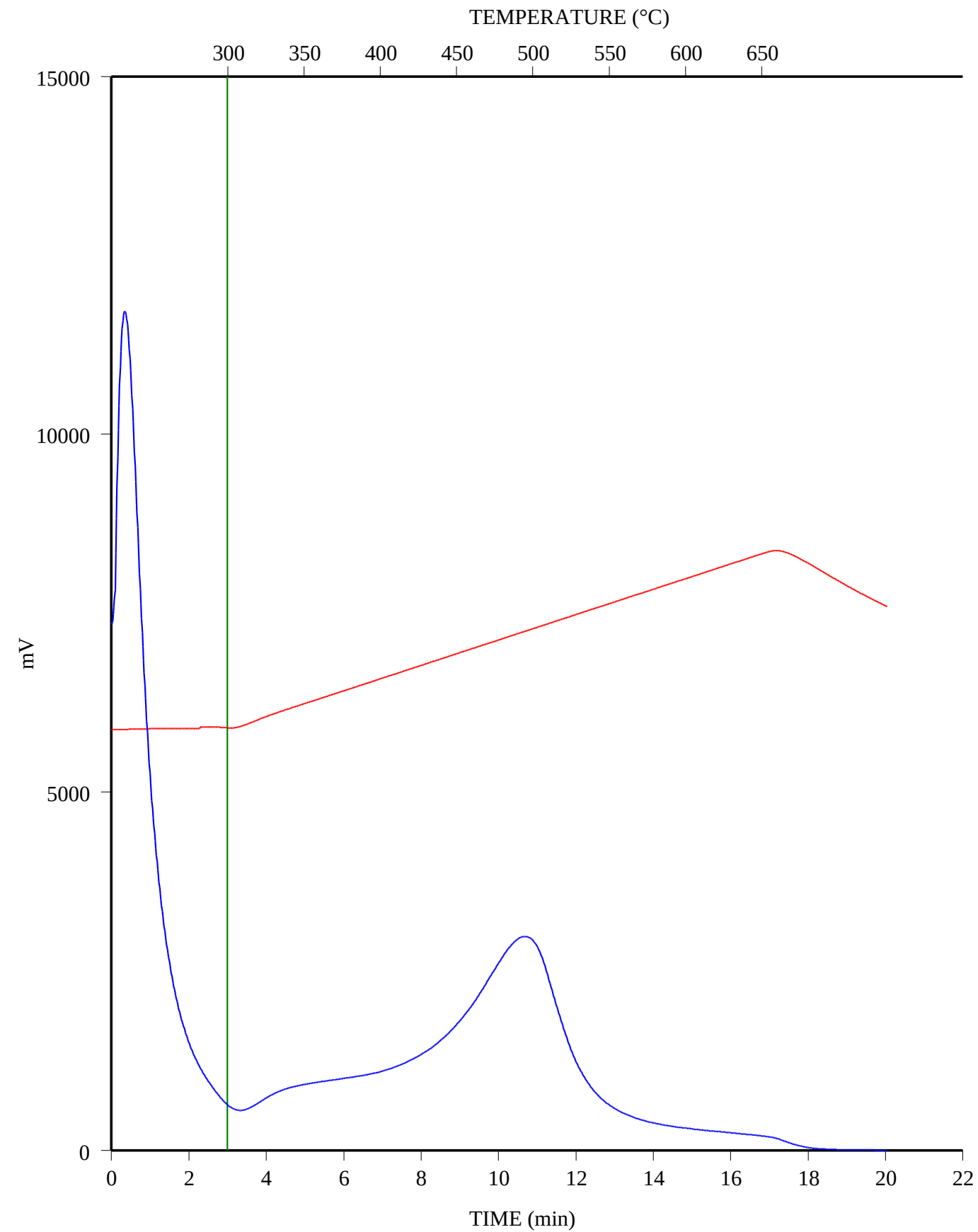
C-594321; SDEL PEMBINA 8-32-46-9; 3106 m
FID Hydrocarbons



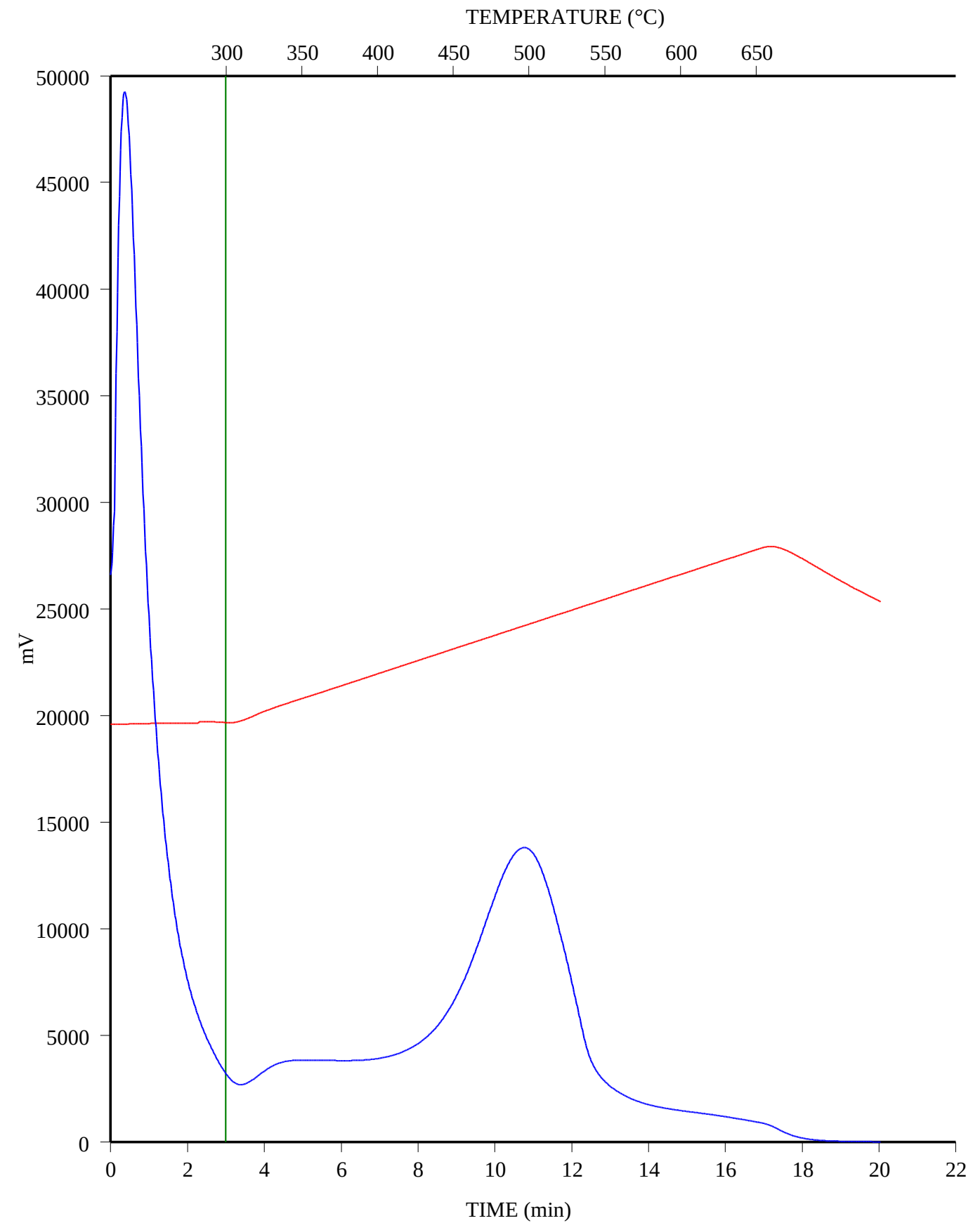
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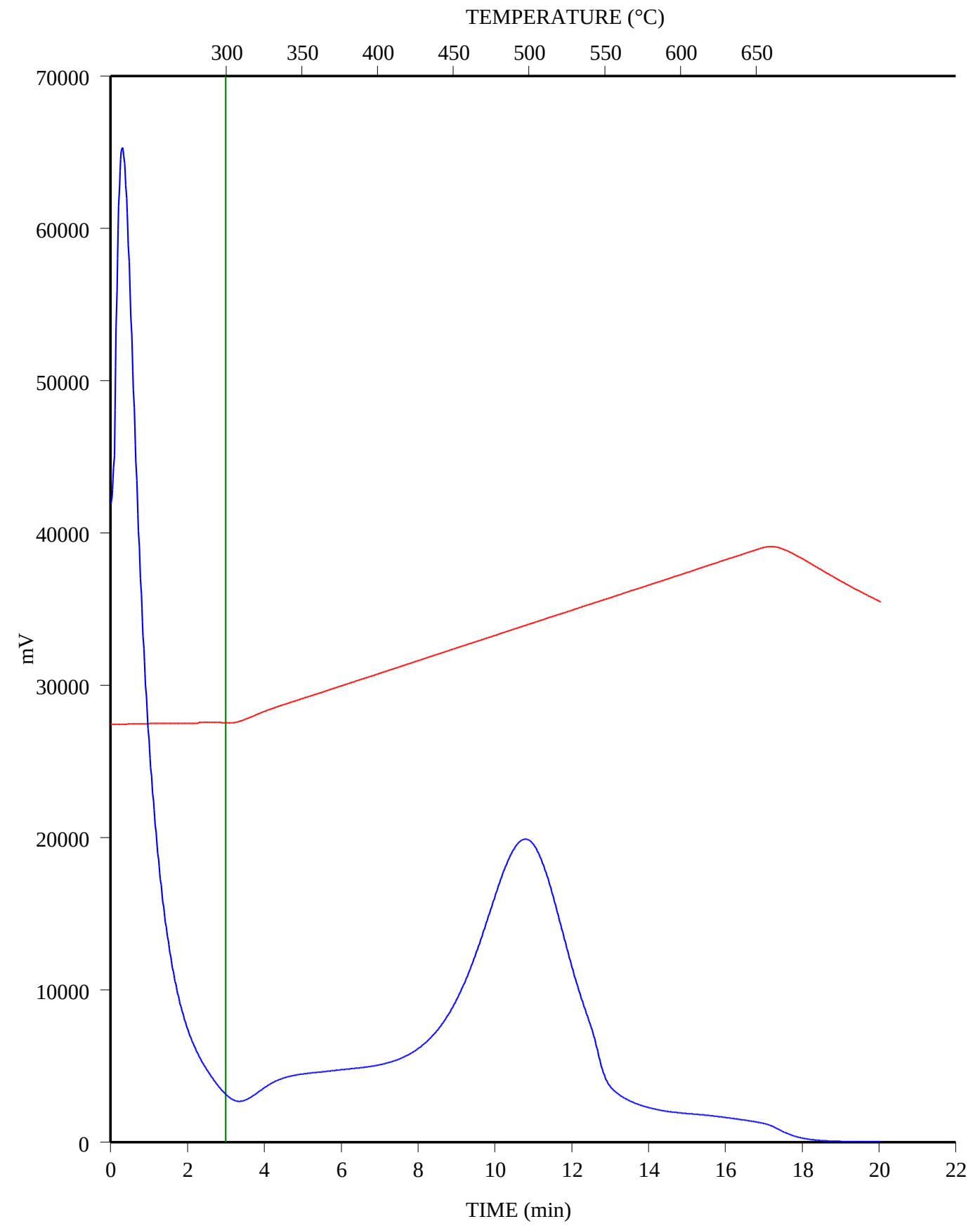
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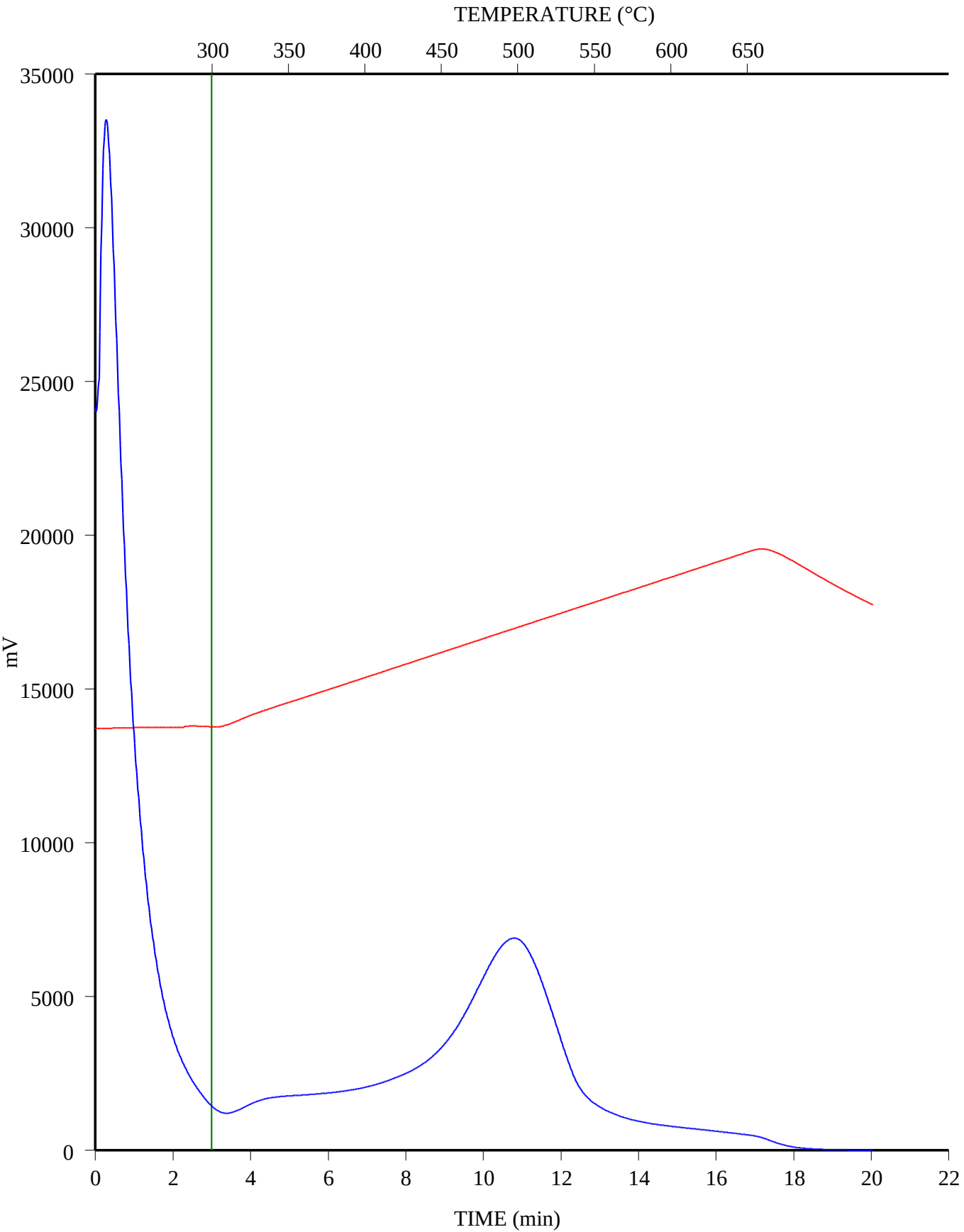
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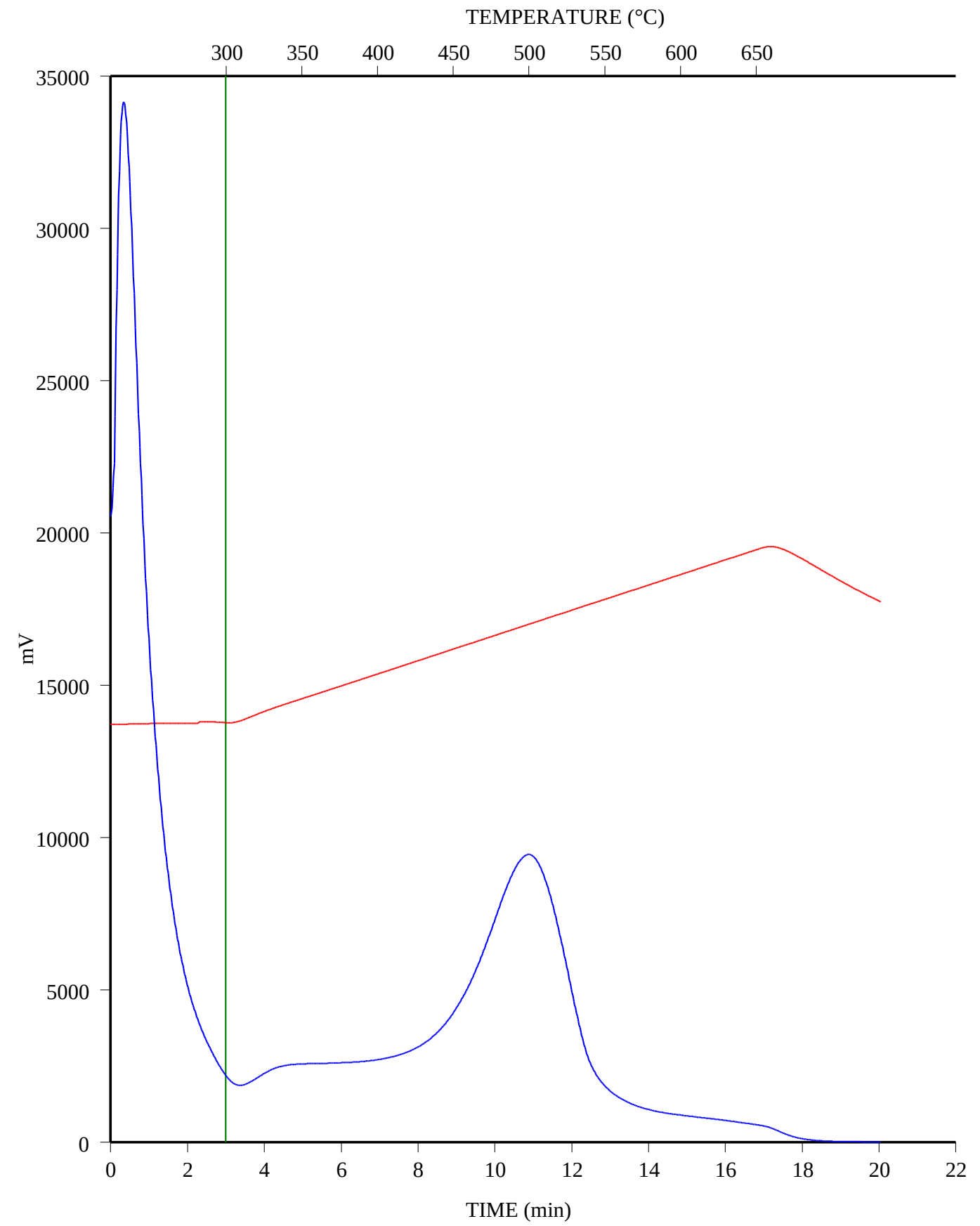
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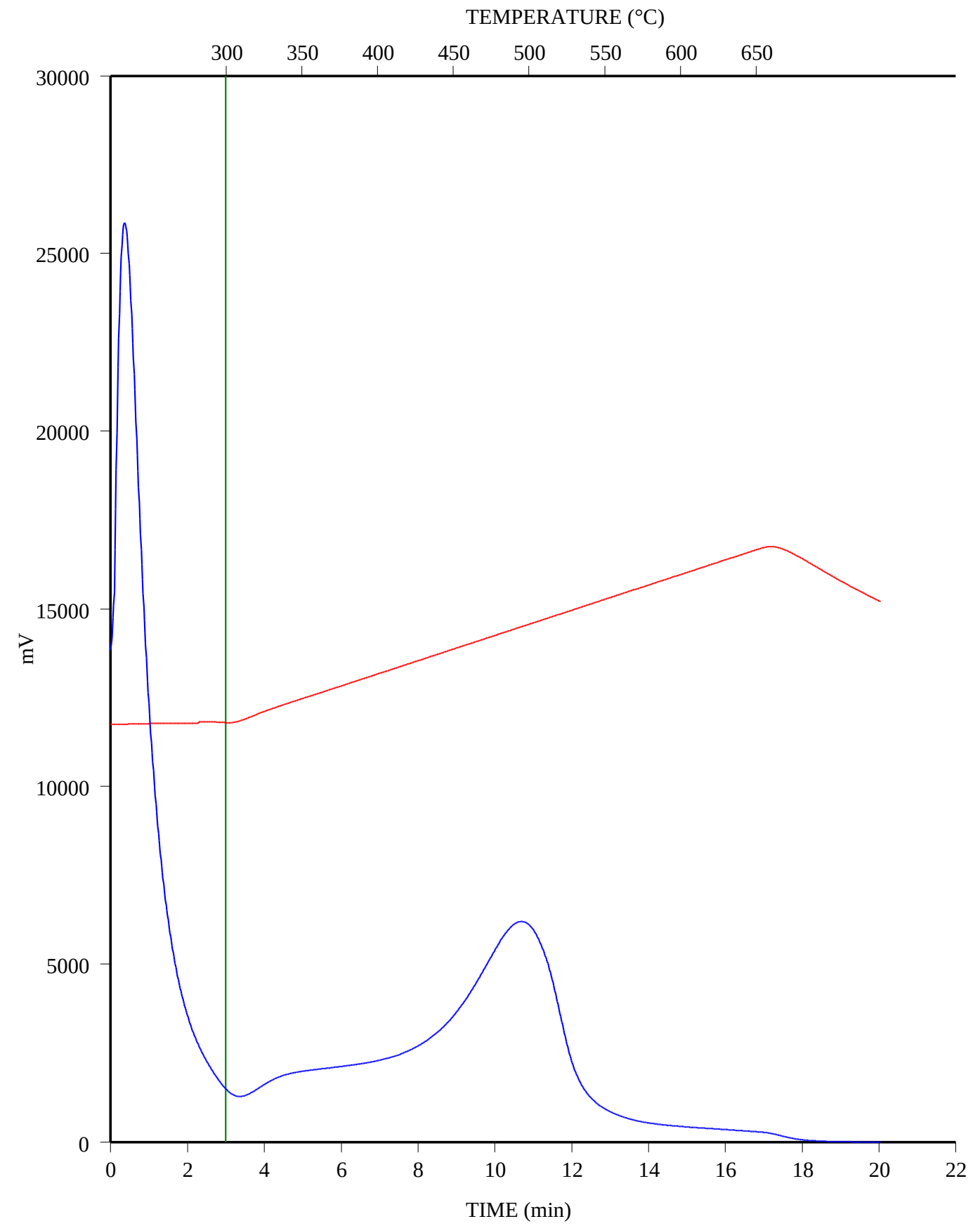
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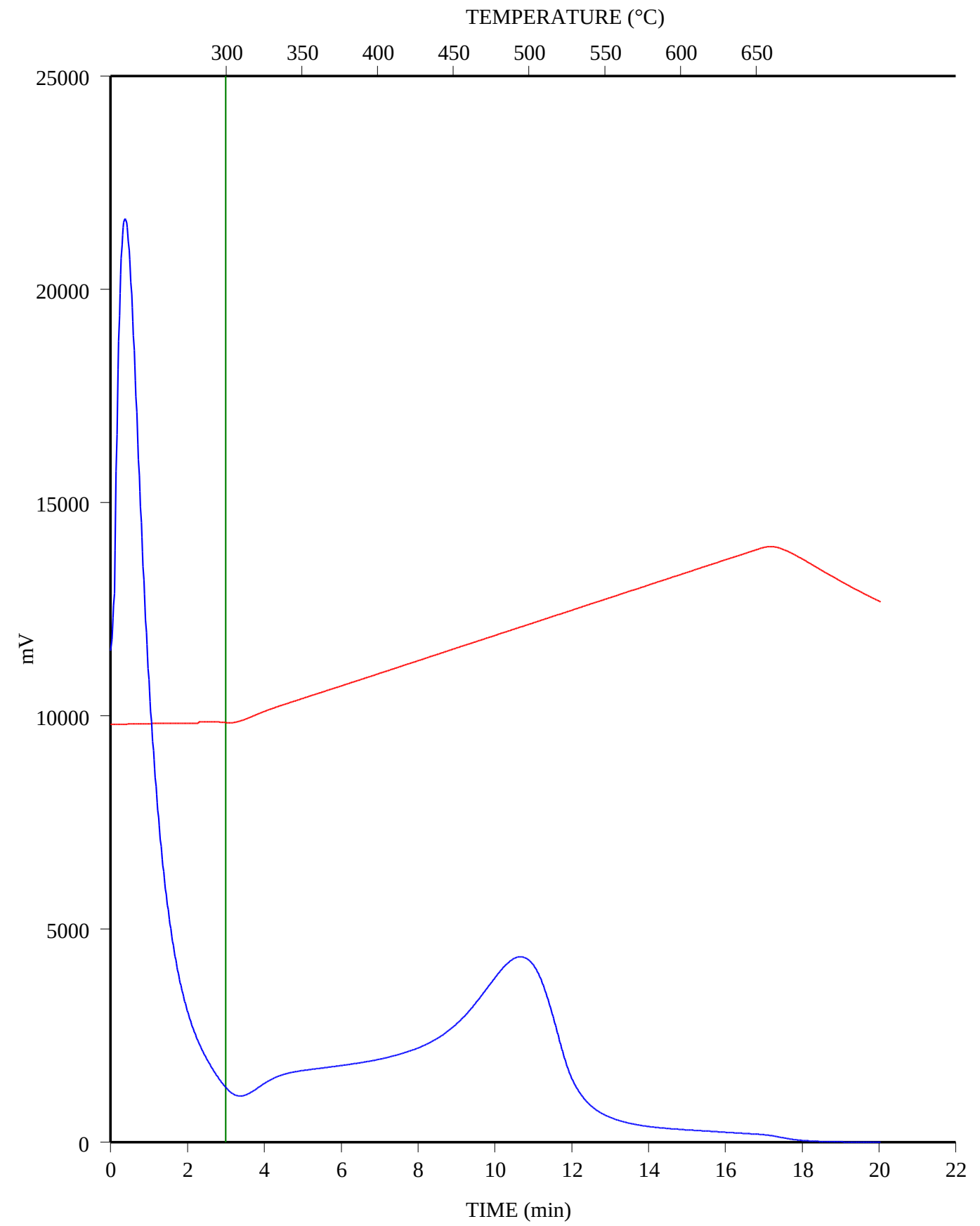
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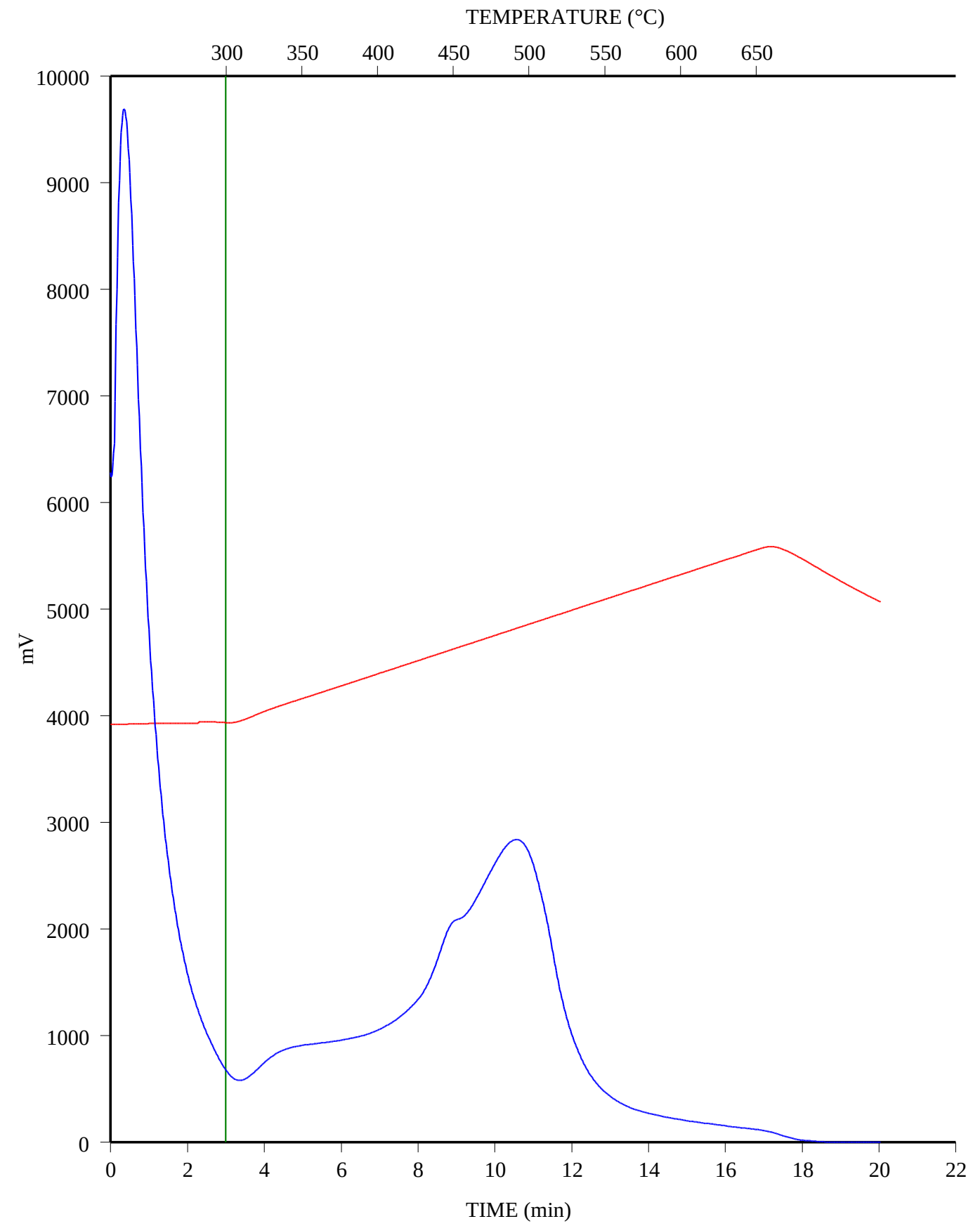
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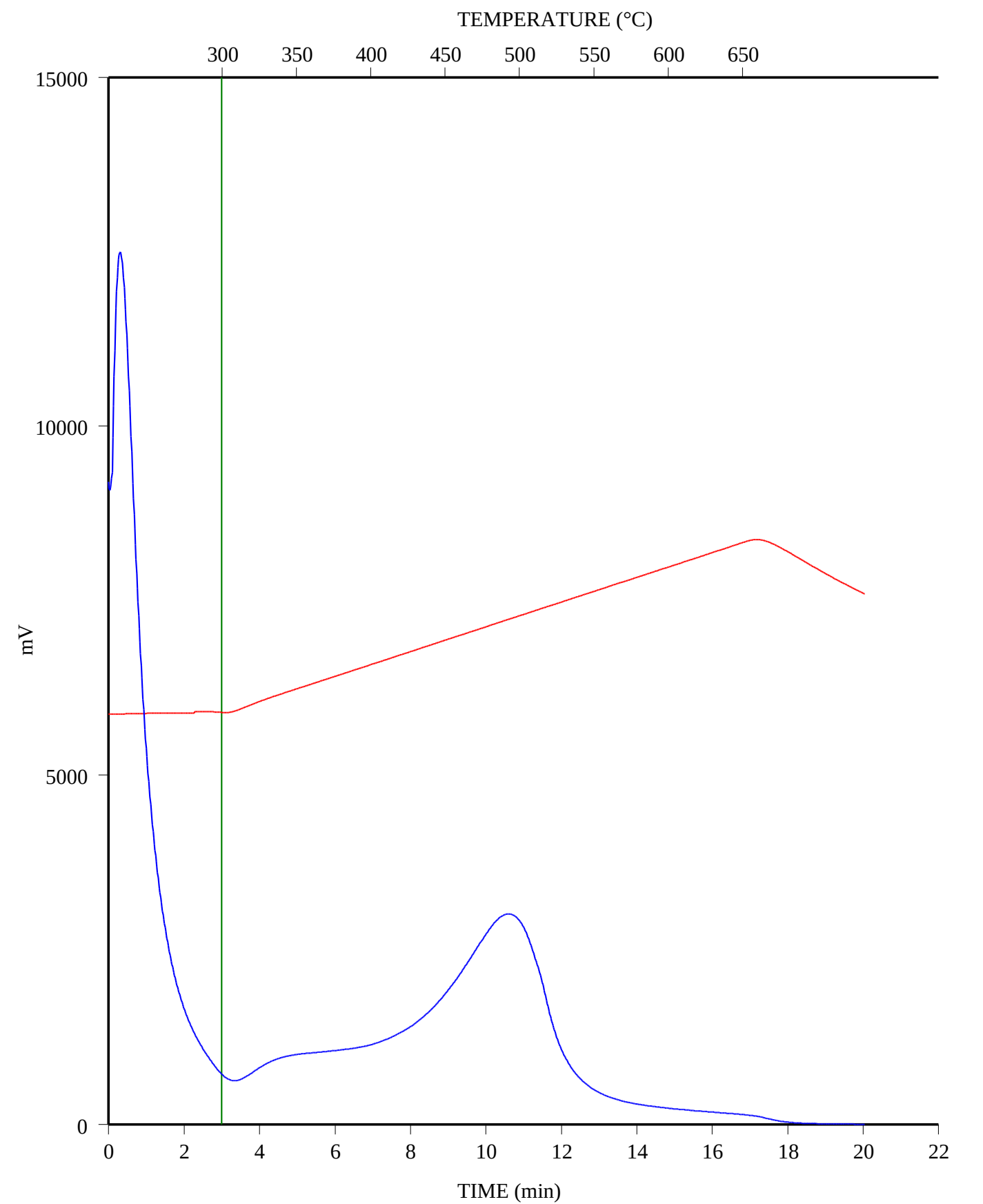
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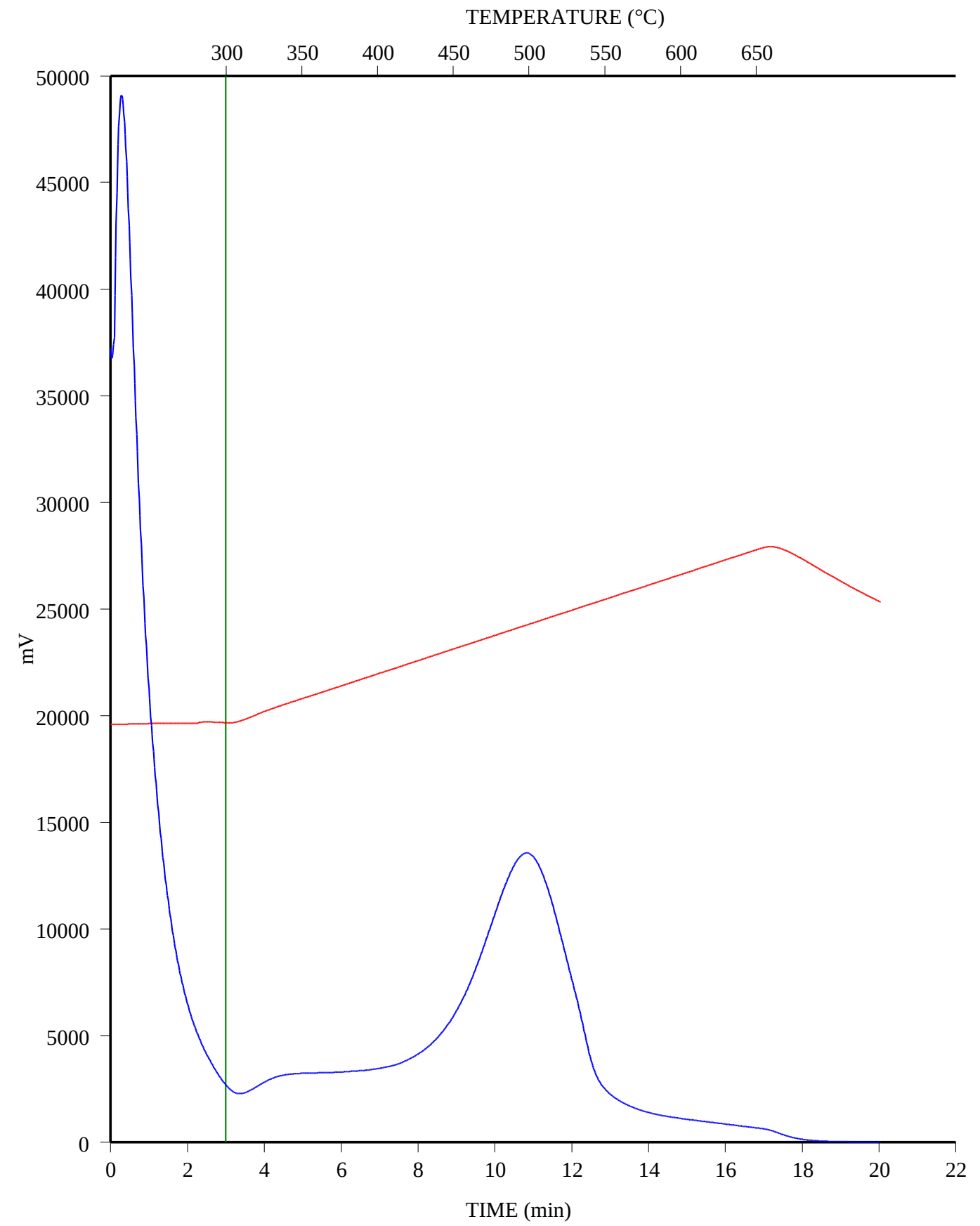
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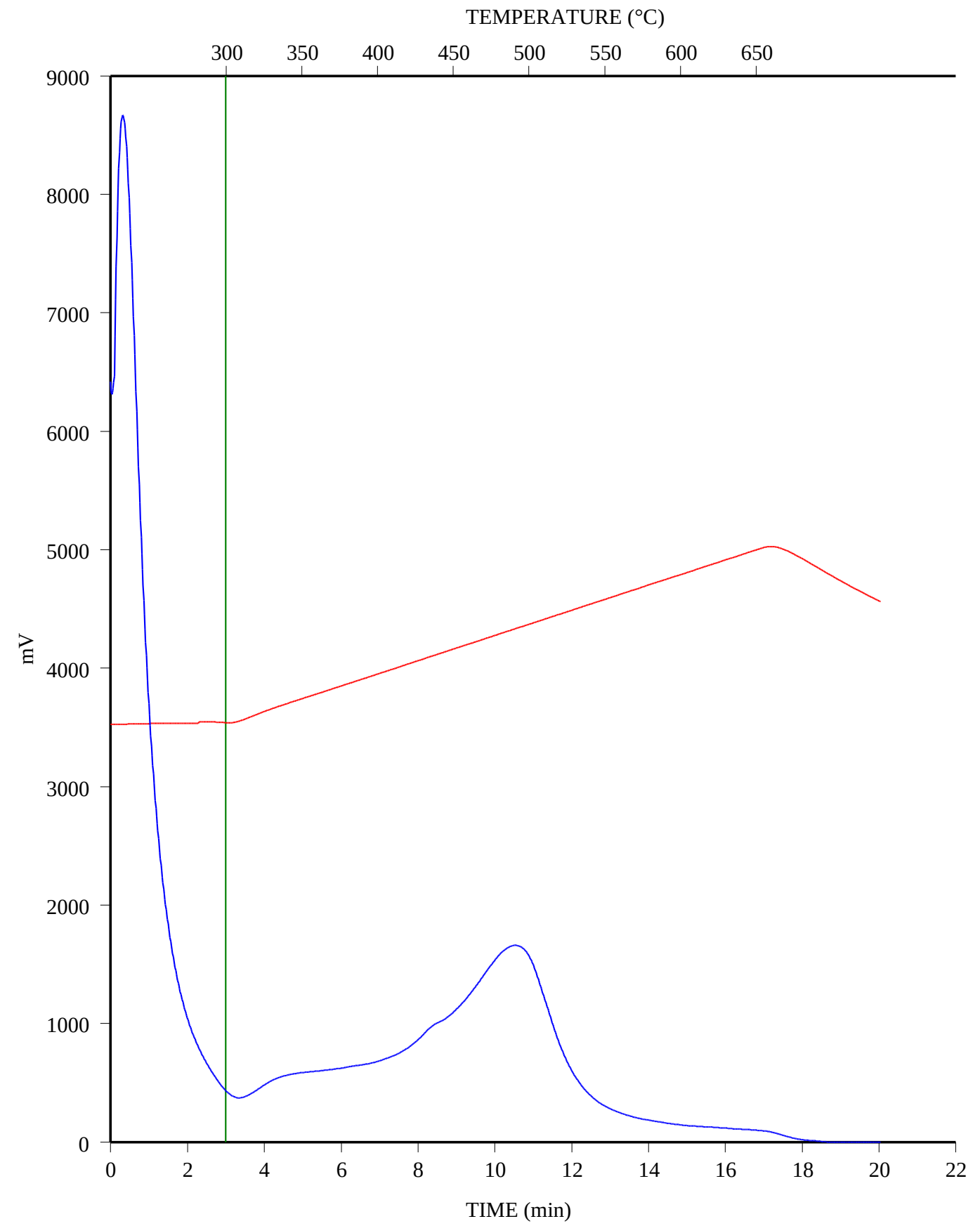
C-594331; SDEL PEMBINA 8-32-46-9; 3116.05 m
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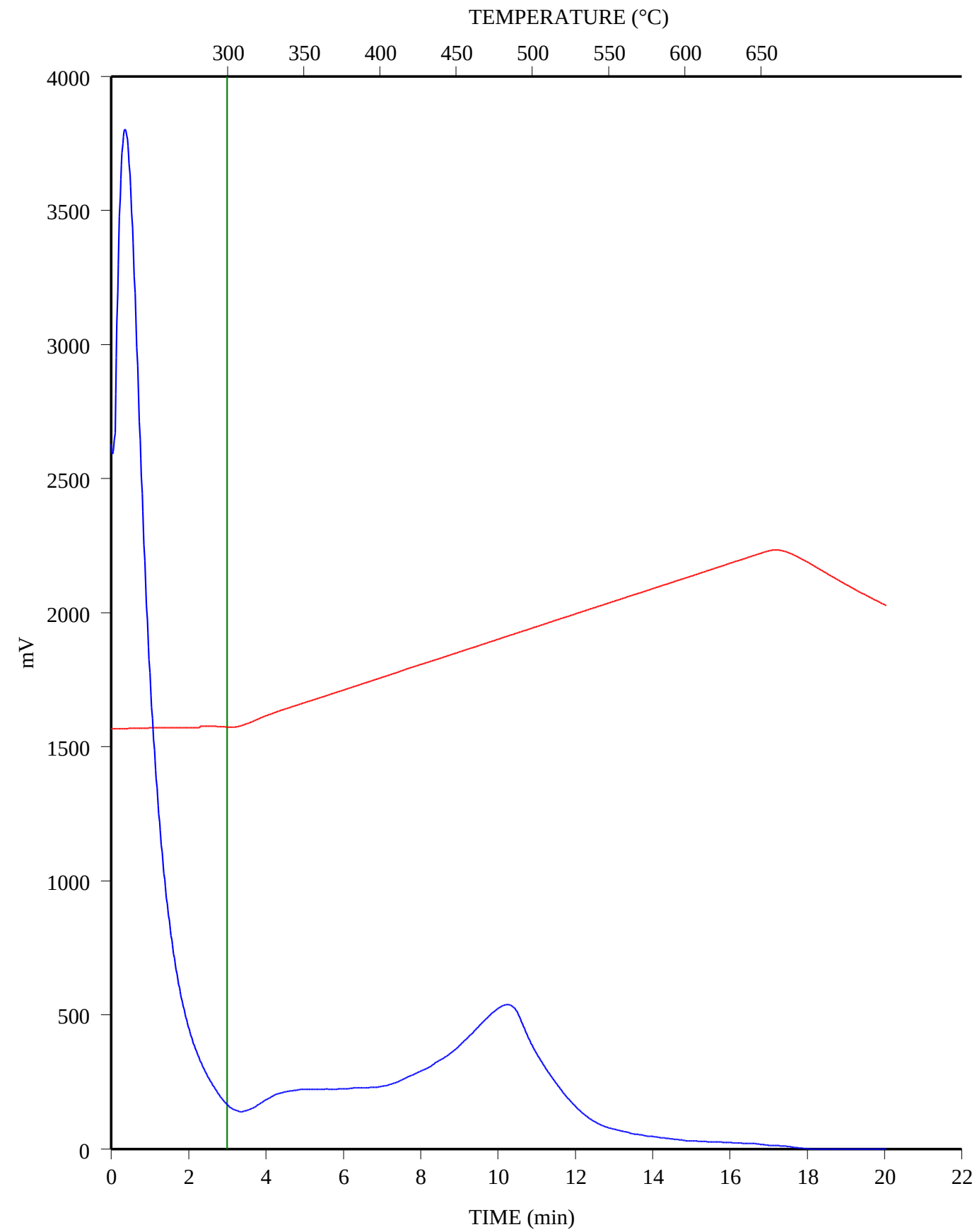
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FID Hydrocarbons



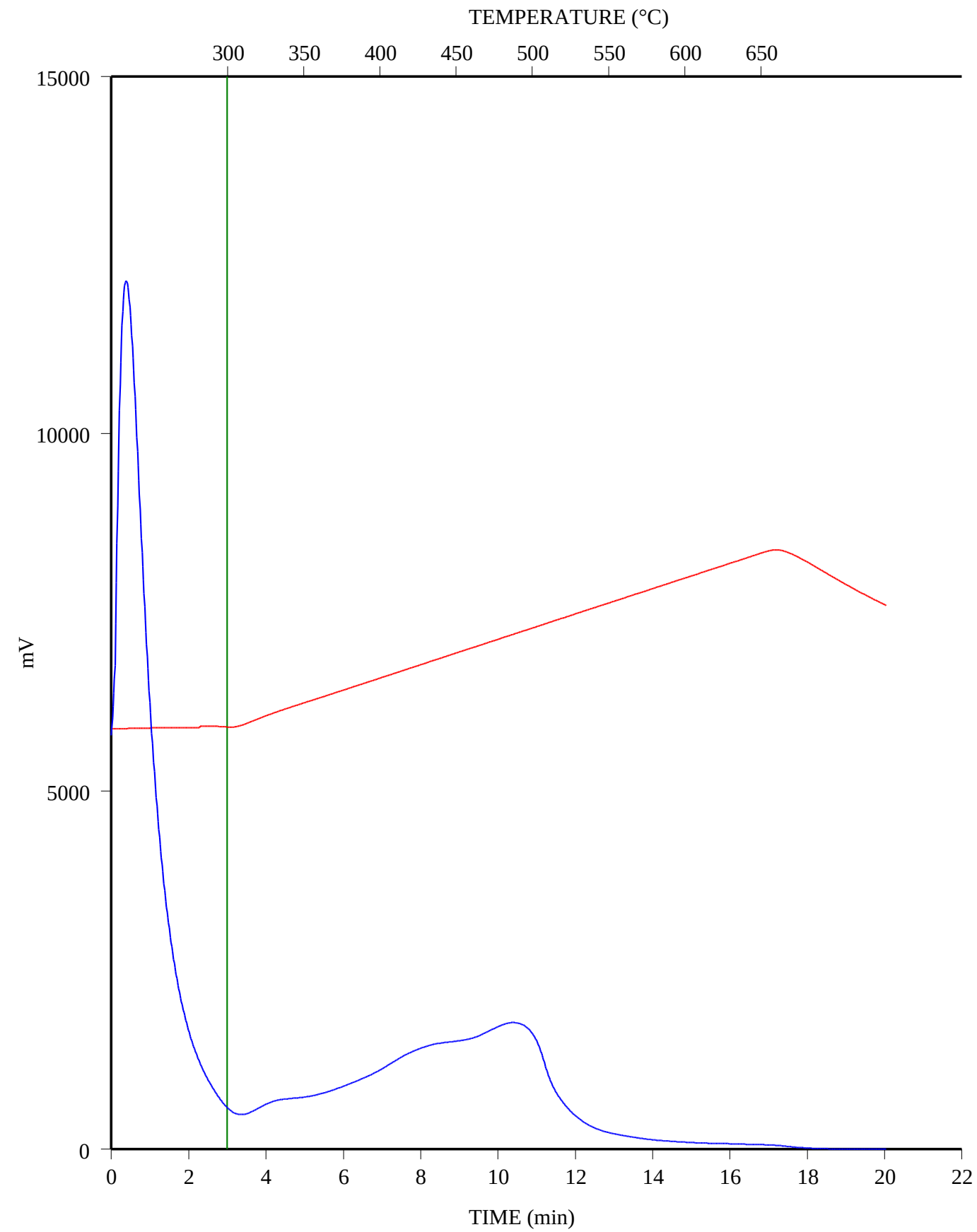
C-594333; SDEL PEMBINA 8-32-46-9; 3118.04 m
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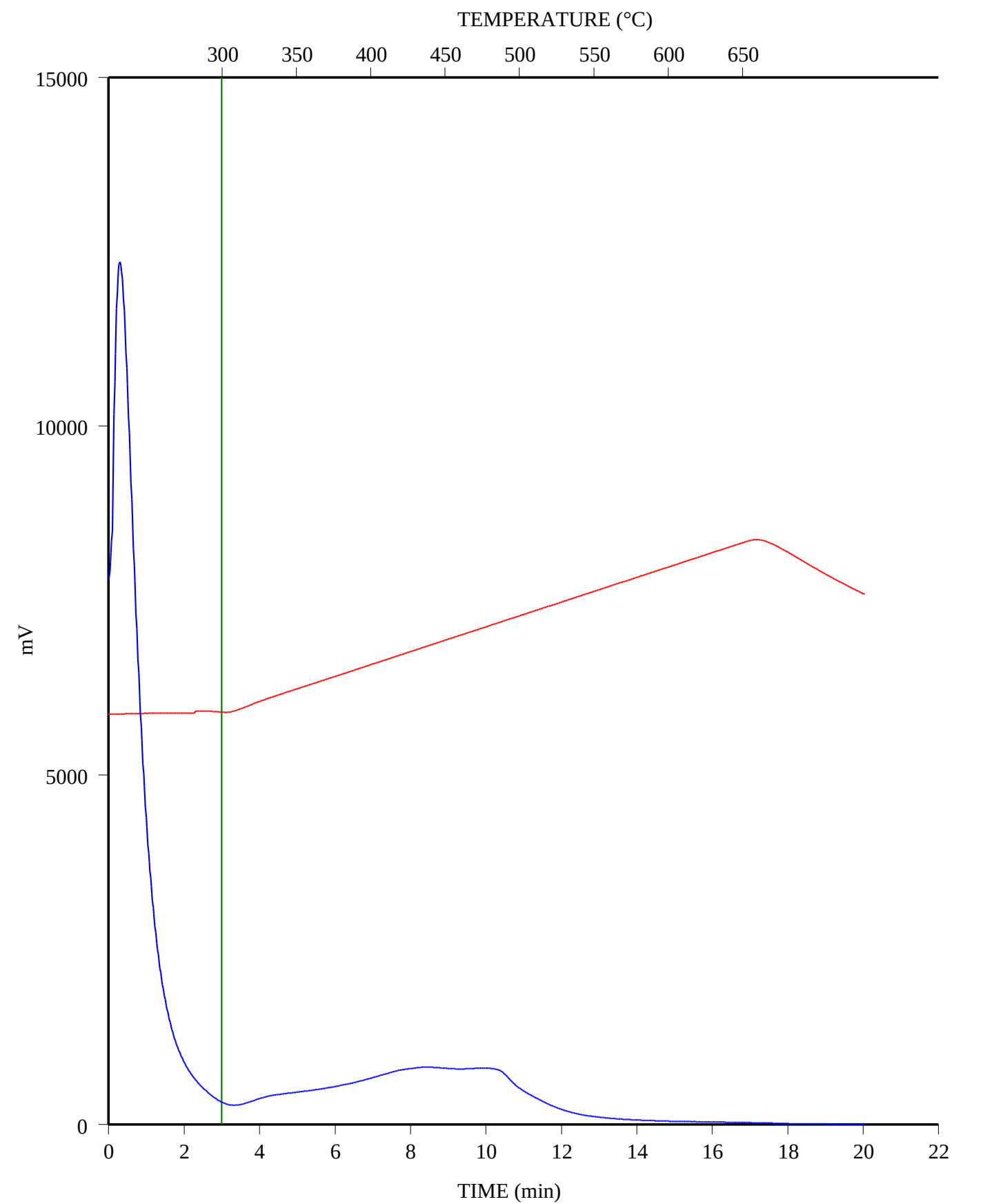
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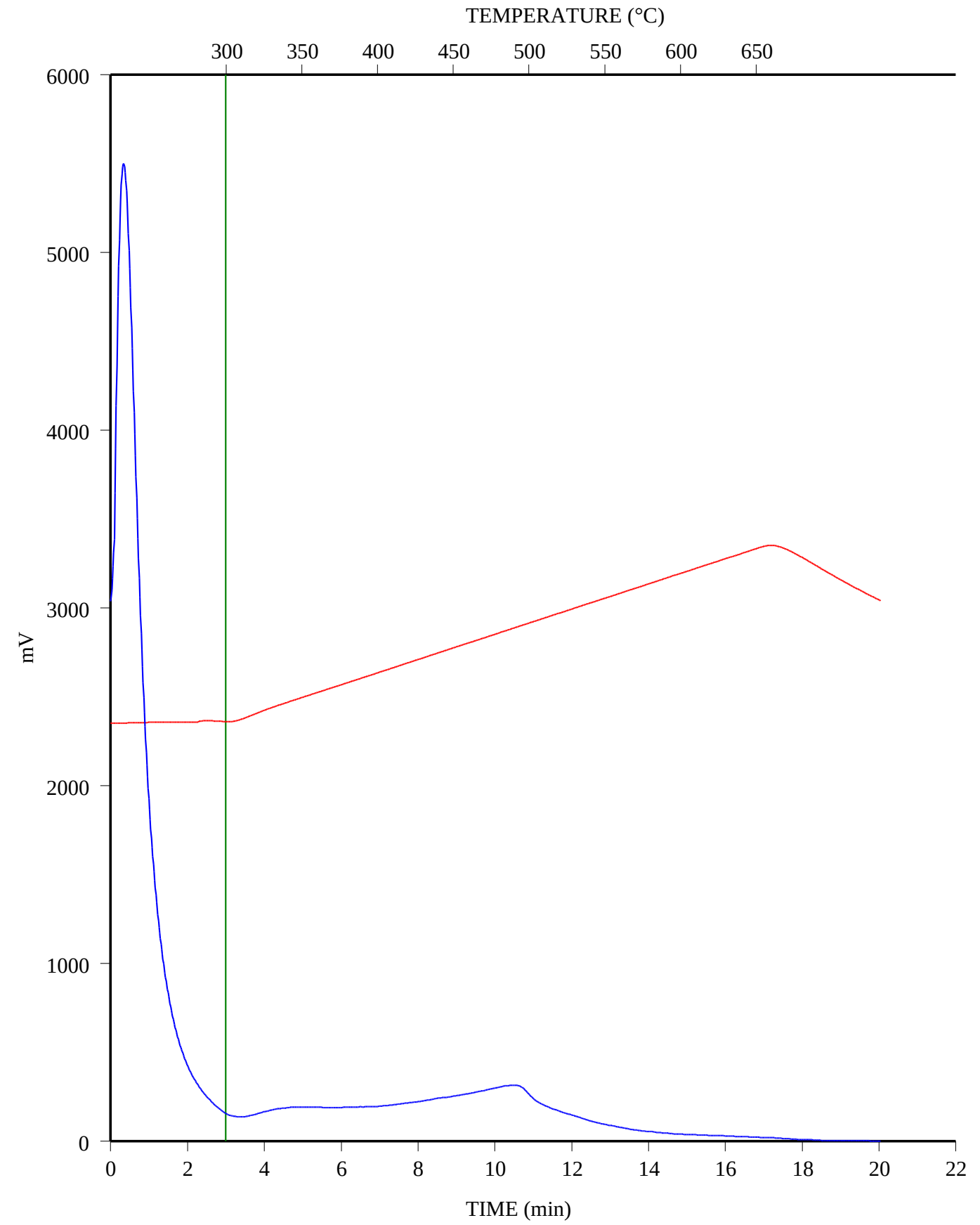
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FID Hydrocarbons



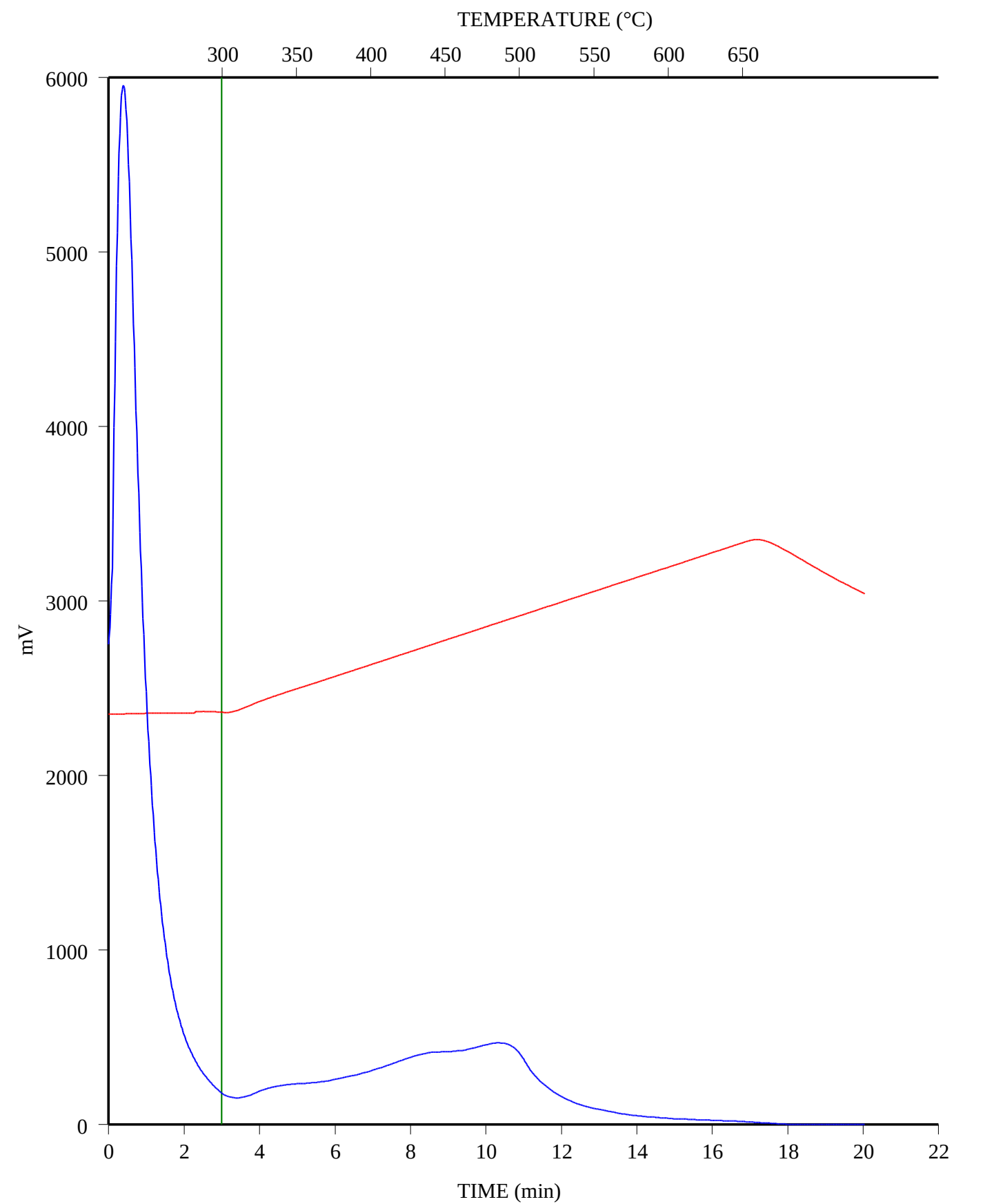
C-594336; SDEL PEMBINA 8-32-46-9; 3121.37 m
FID Hydrocarbons



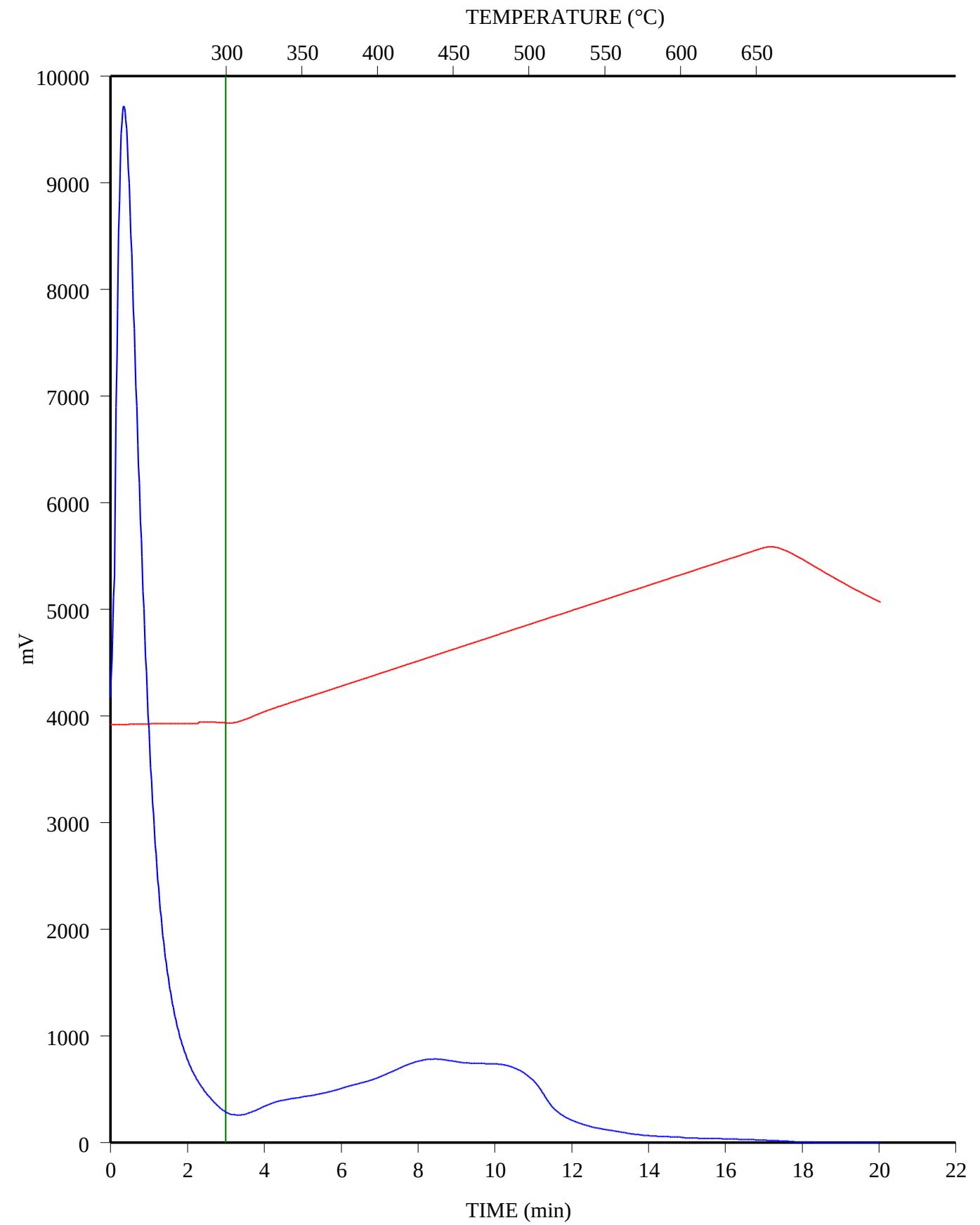
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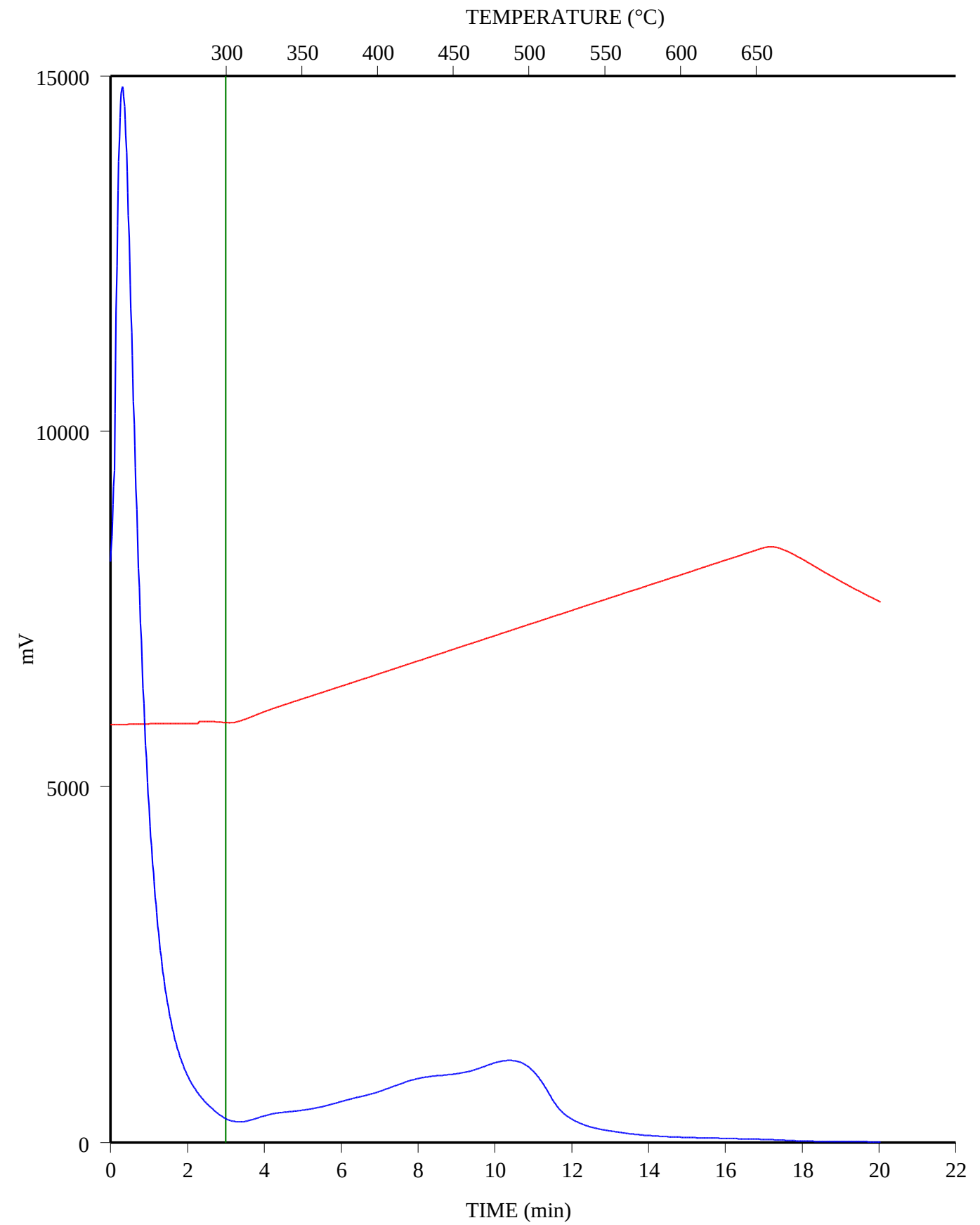
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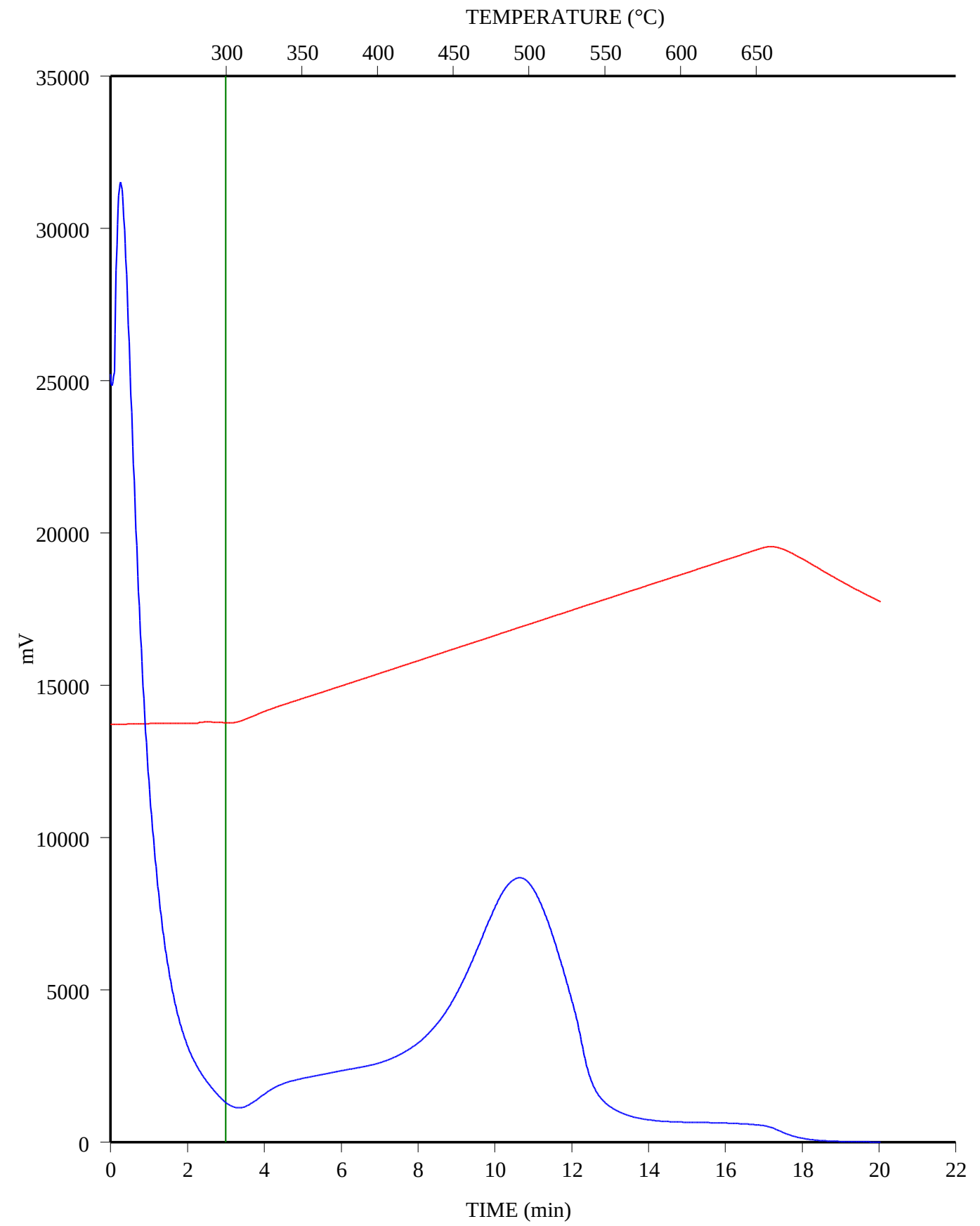
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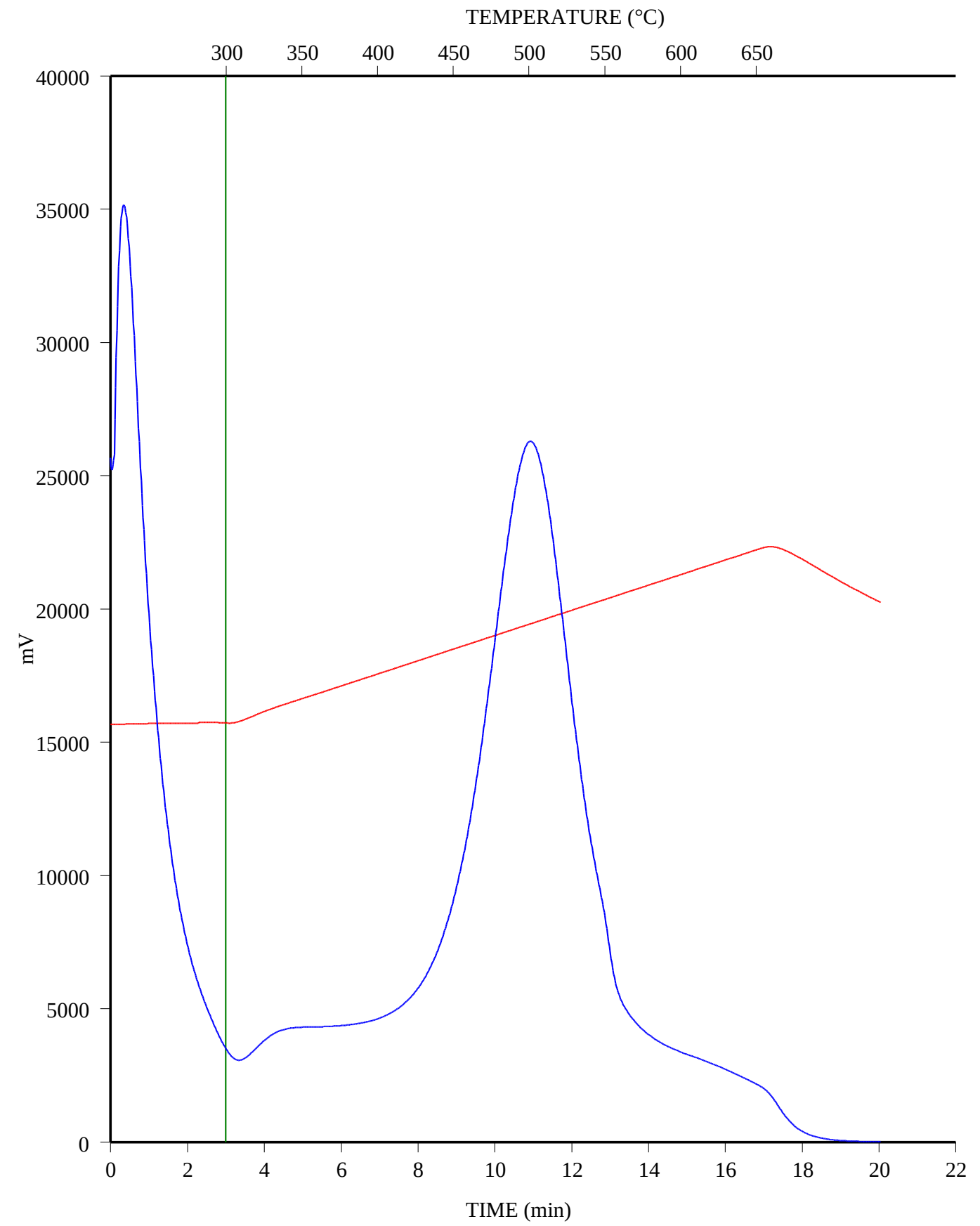
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FID Hydrocarbons



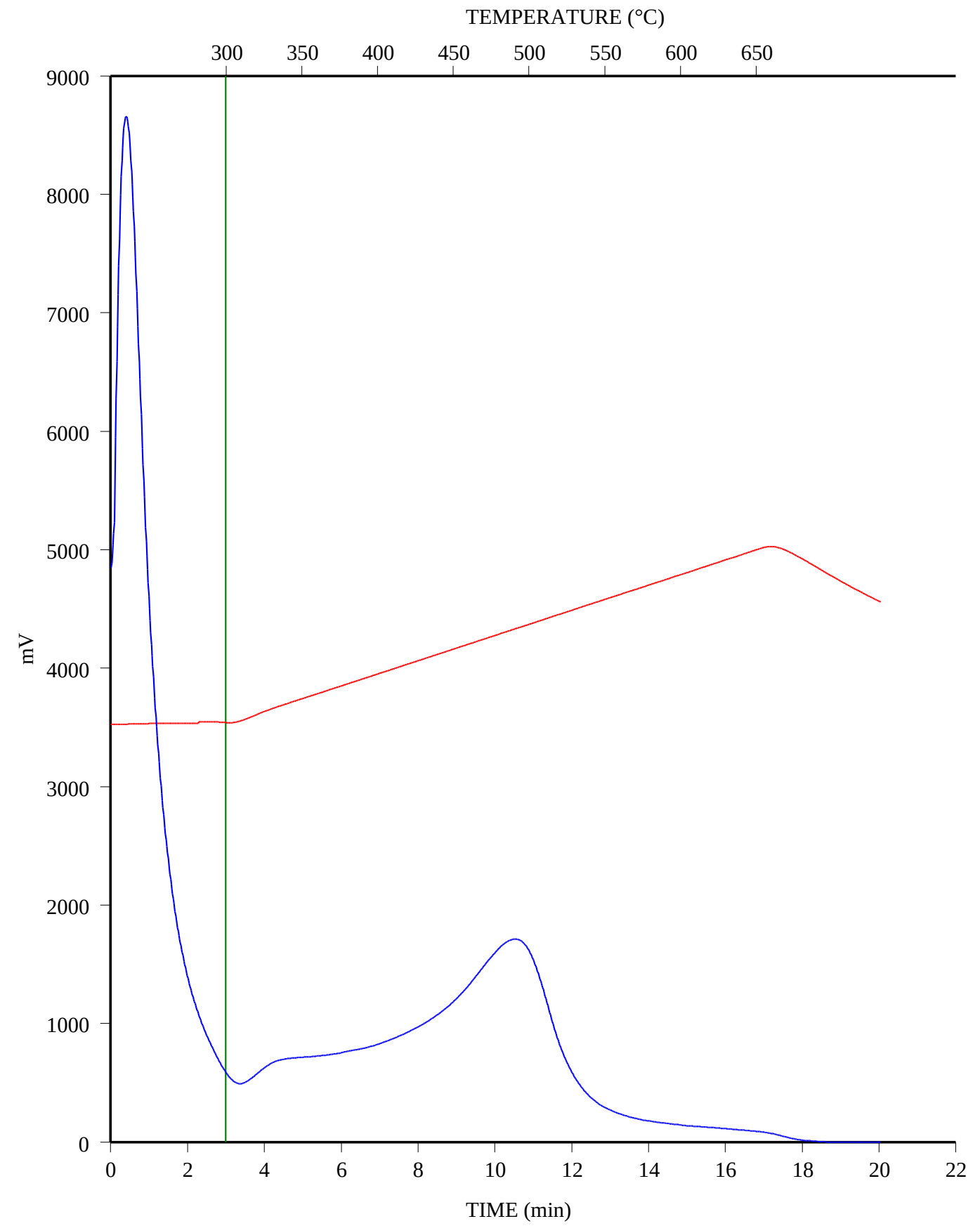
C-594341; SDEL PEMBINA 8-32-46-9; 3126.3 m
FID Hydrocarbons



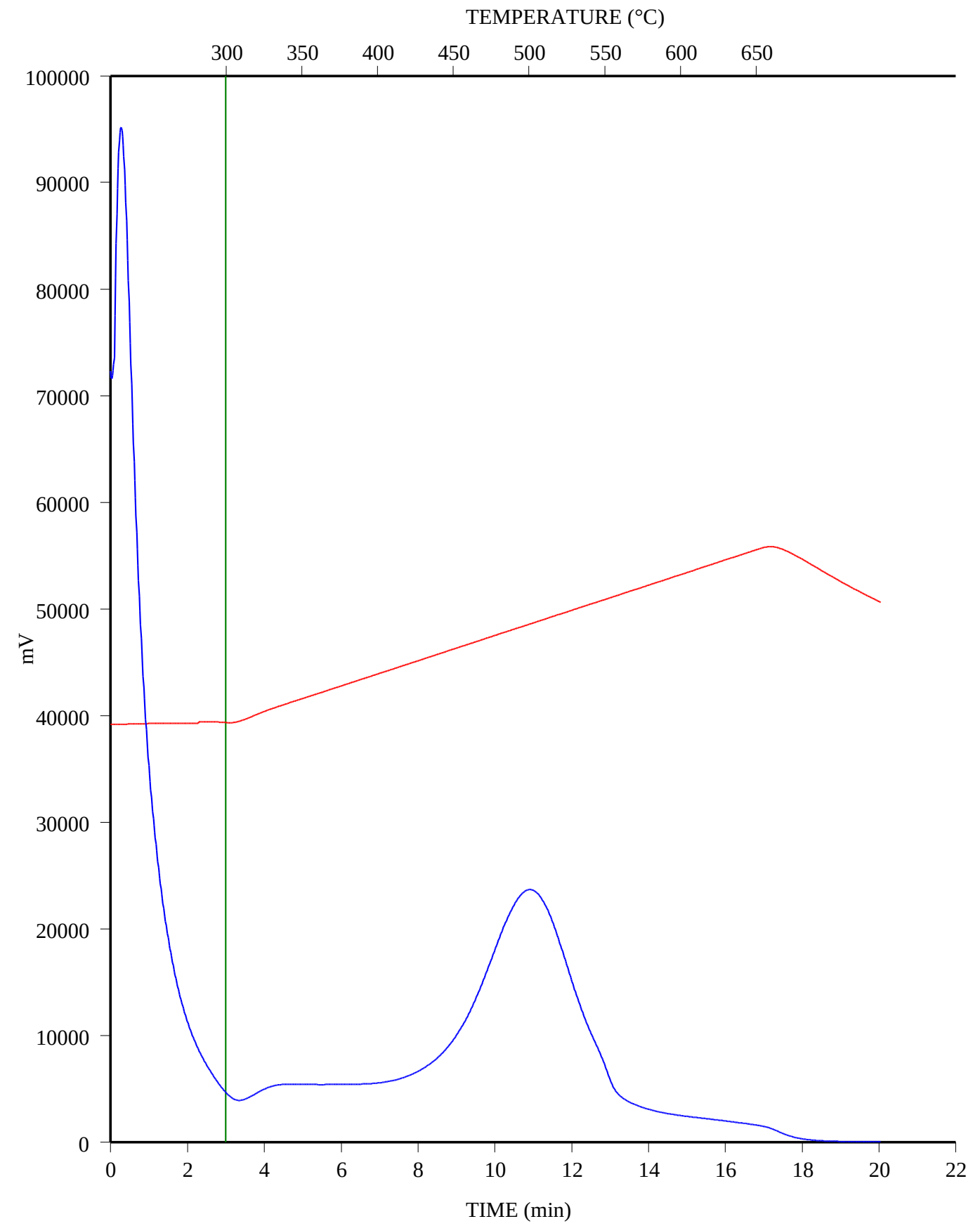
C-594342; SDEL PEMBINA 8-32-46-9; 3127.15 m
FID Hydrocarbons



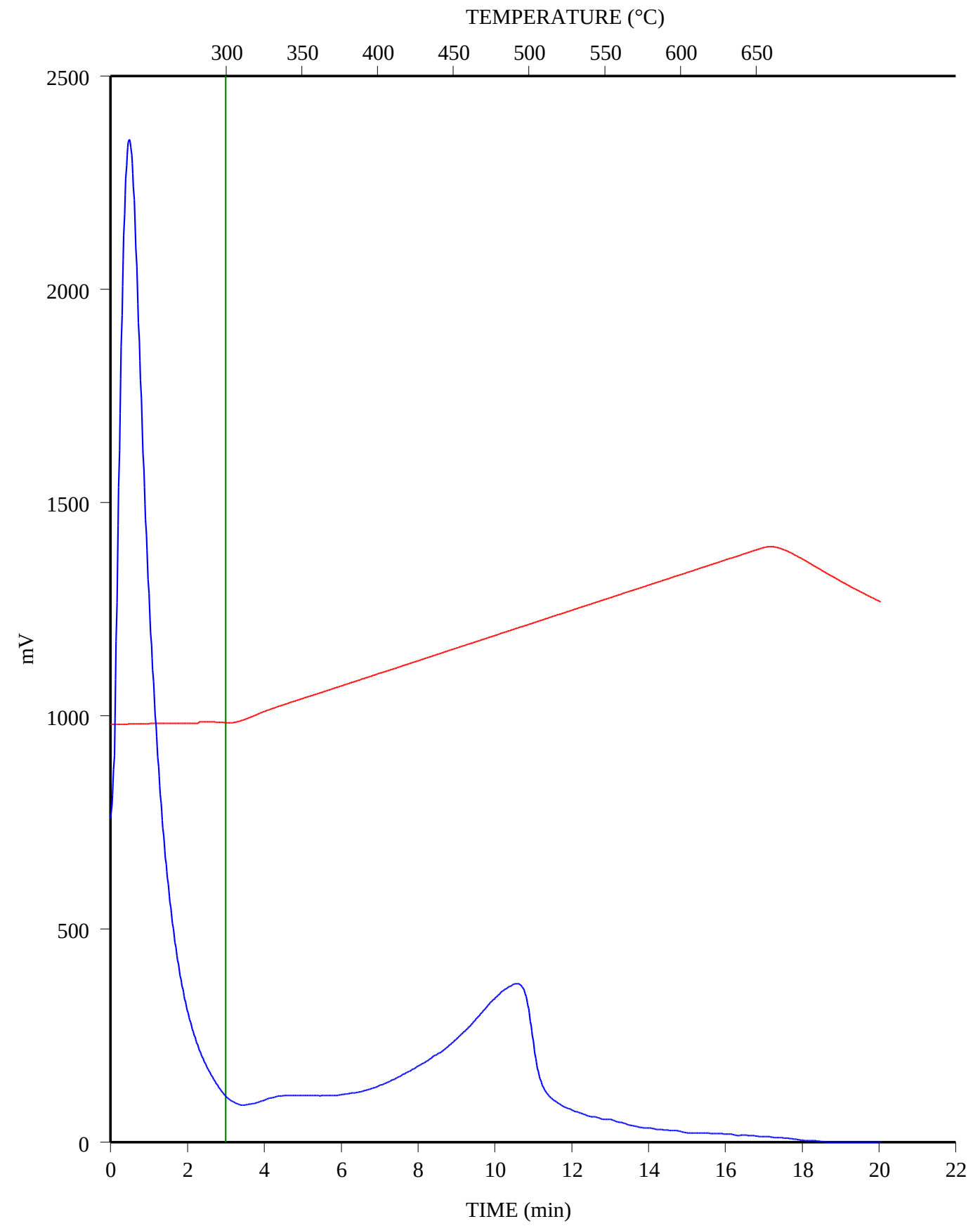
C-594343; SDEL PEMBINA 8-32-46-9; 3128.08 m
FID Hydrocarbons



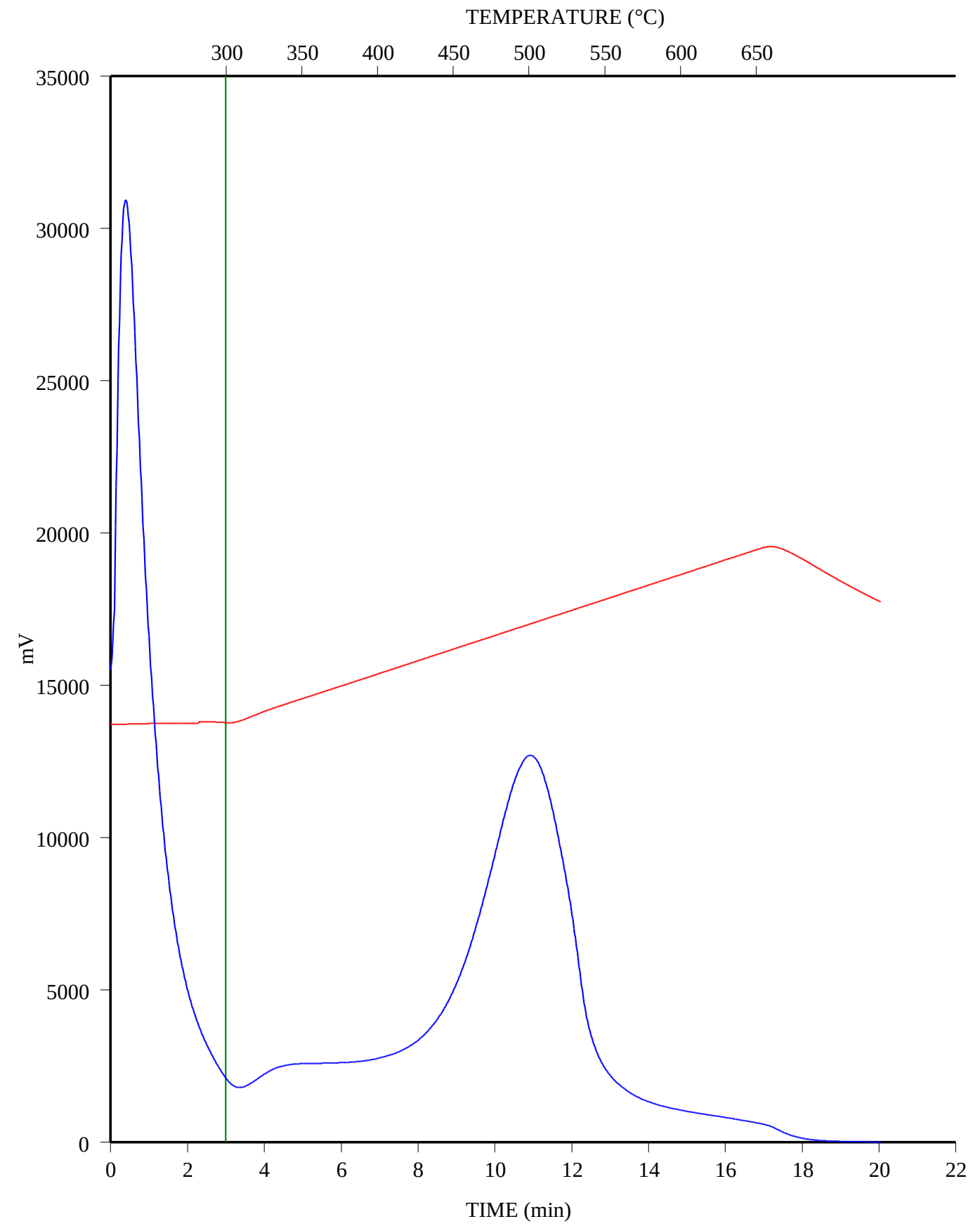
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FID Hydrocarbons



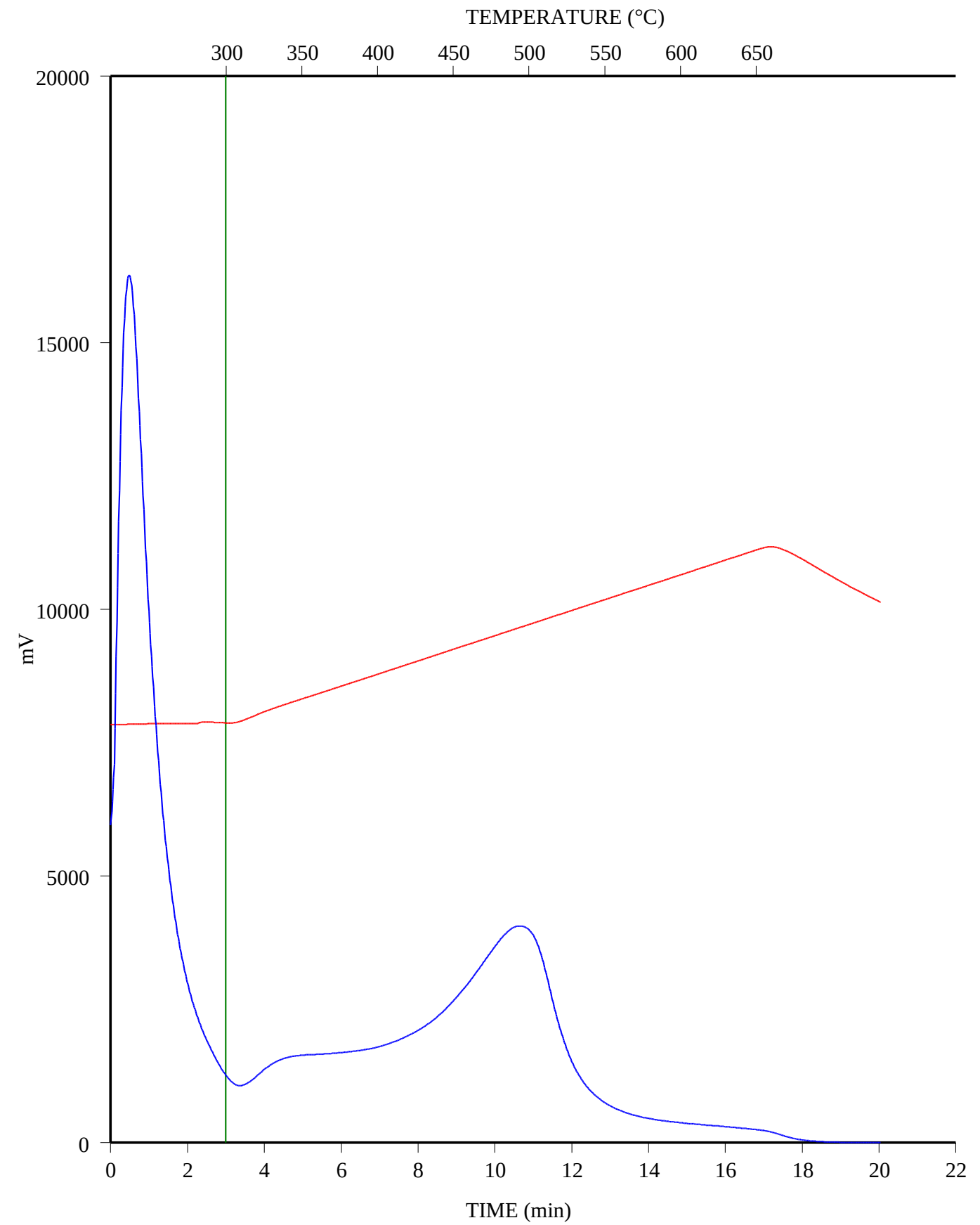
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FID Hydrocarbons



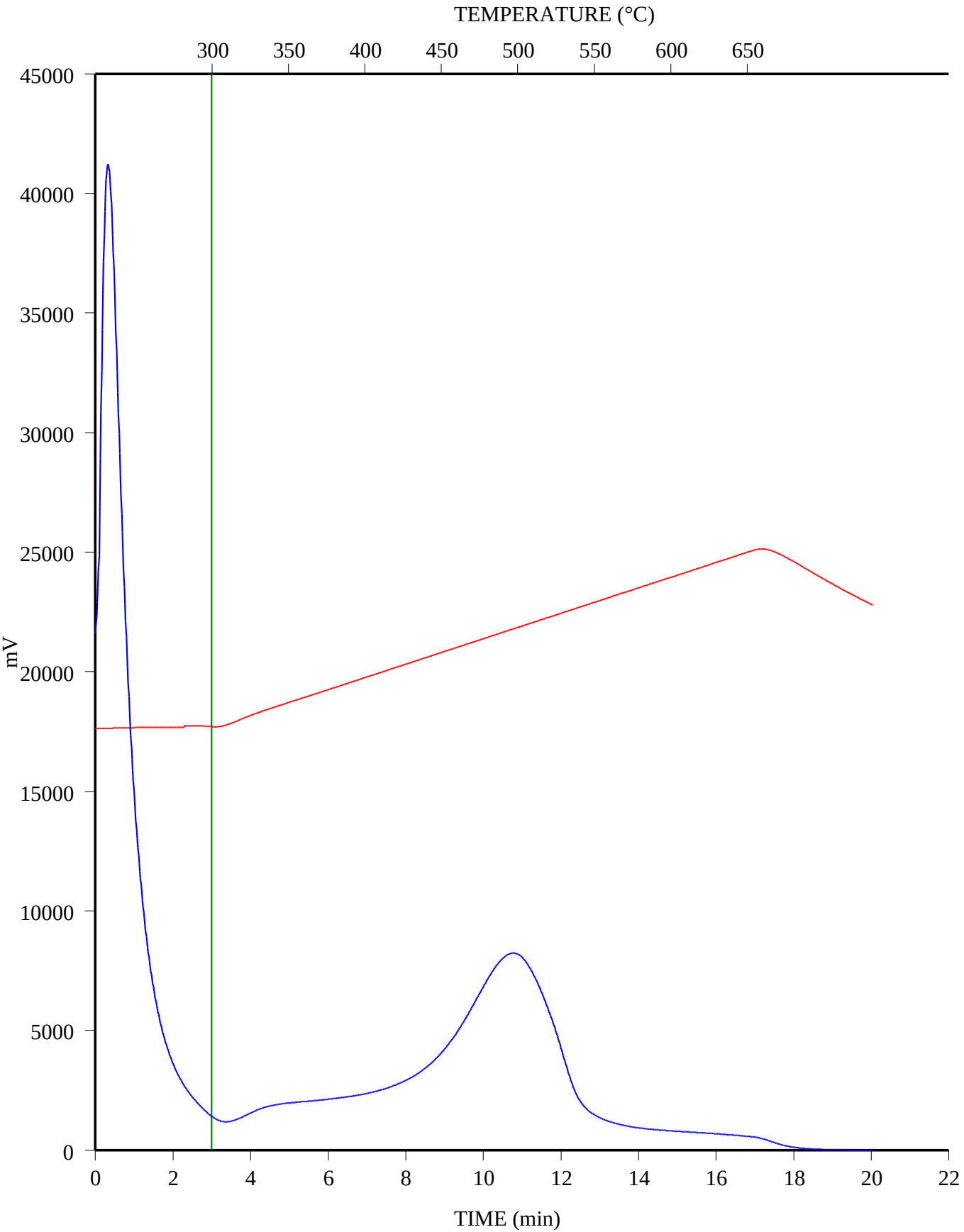
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FID Hydrocarbons



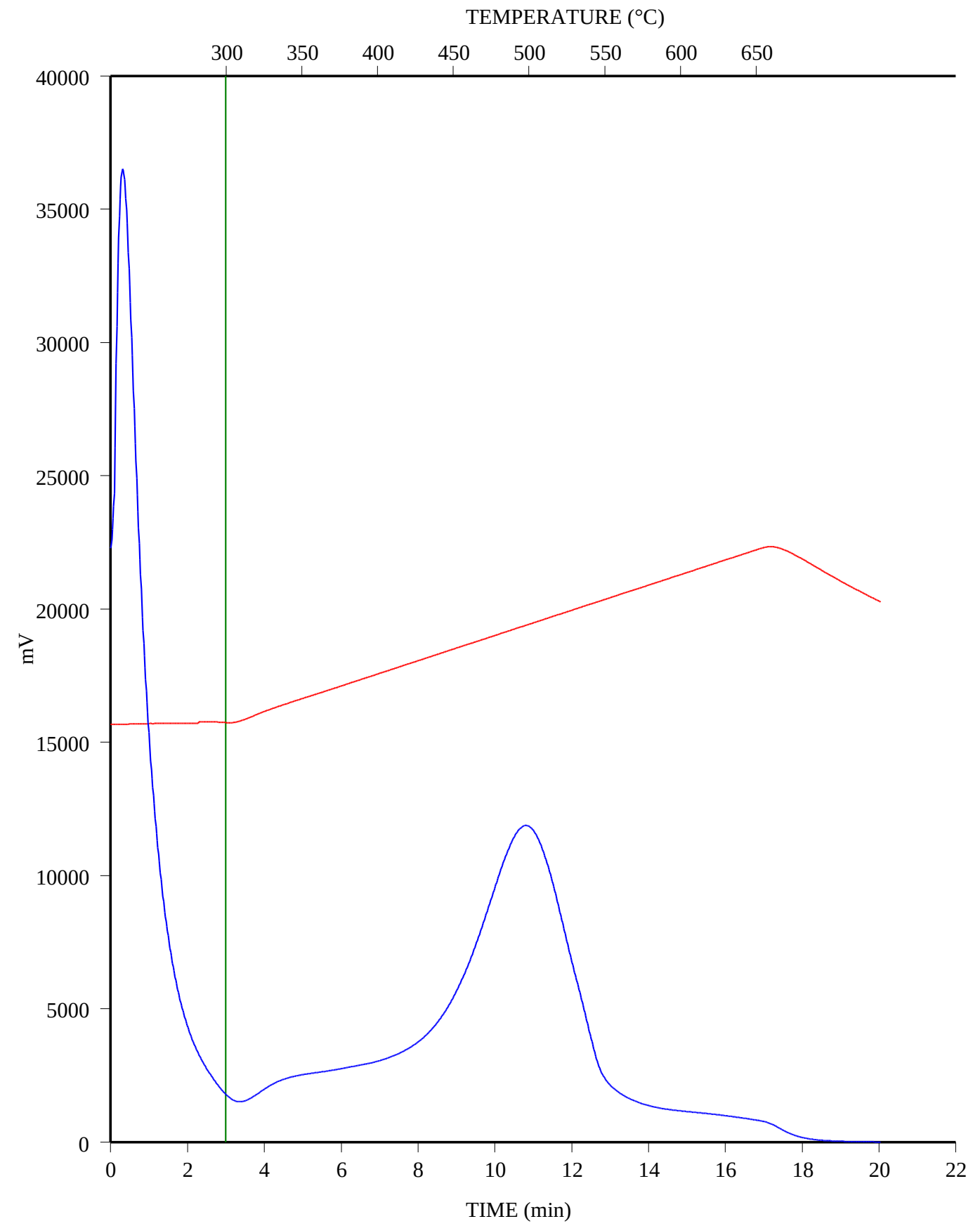
C-594347; SDEL PEMBINA 8-32-46-9; 3131.7 m
FID Hydrocarbons



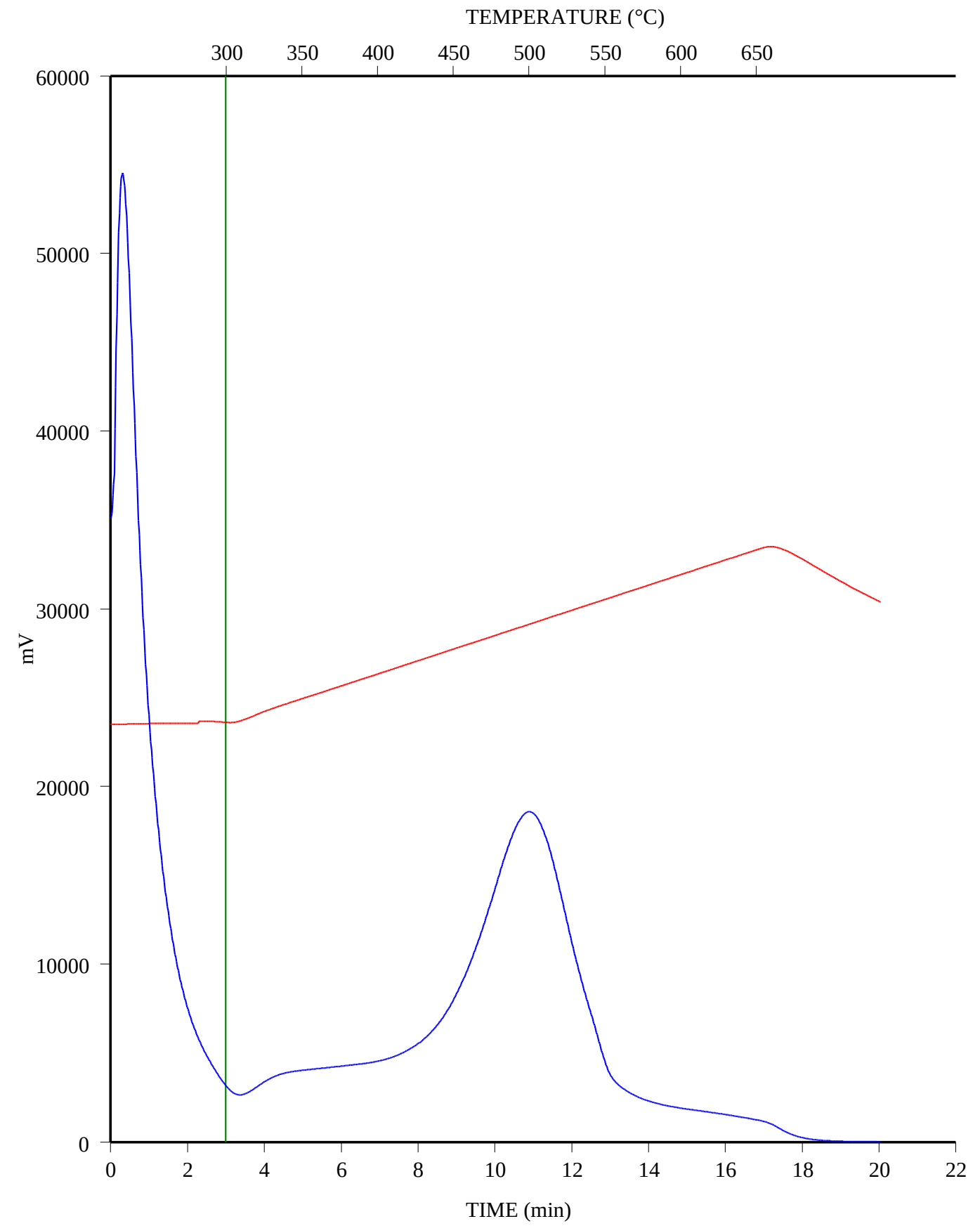
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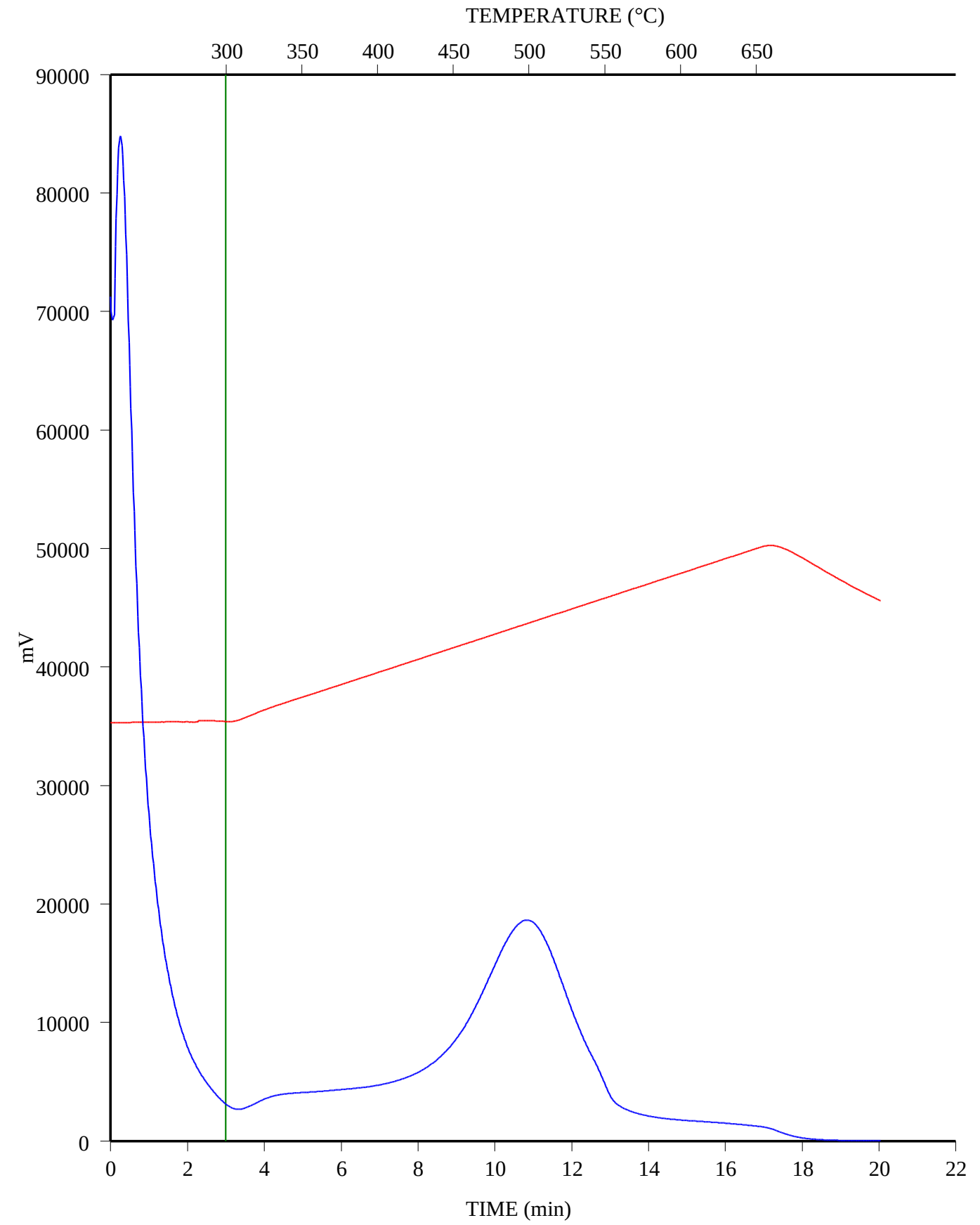
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FID Hydrocarbons



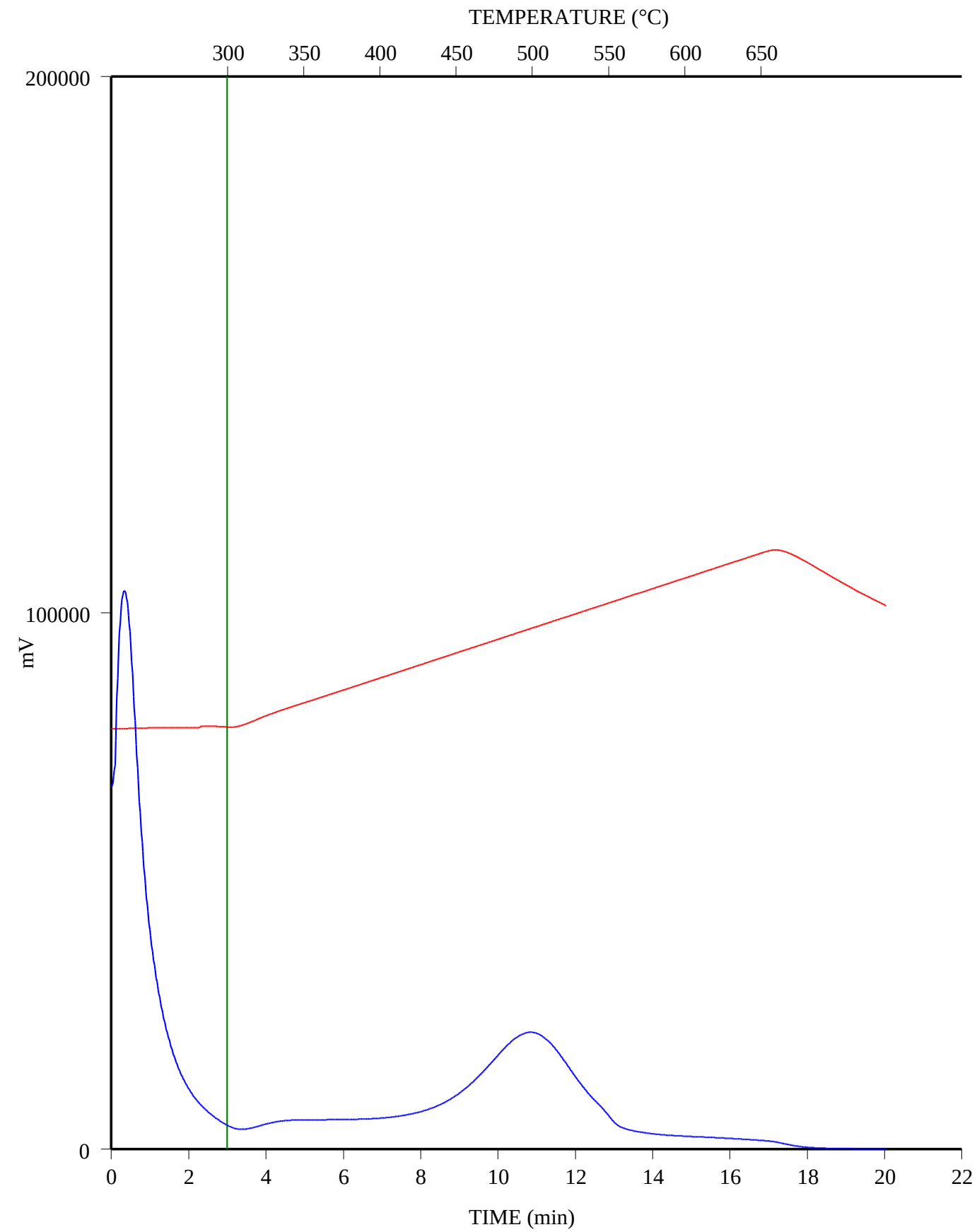
C-594350; SDEL PEMBINA 8-32-46-9; 3136.07 m
FID Hydrocarbons



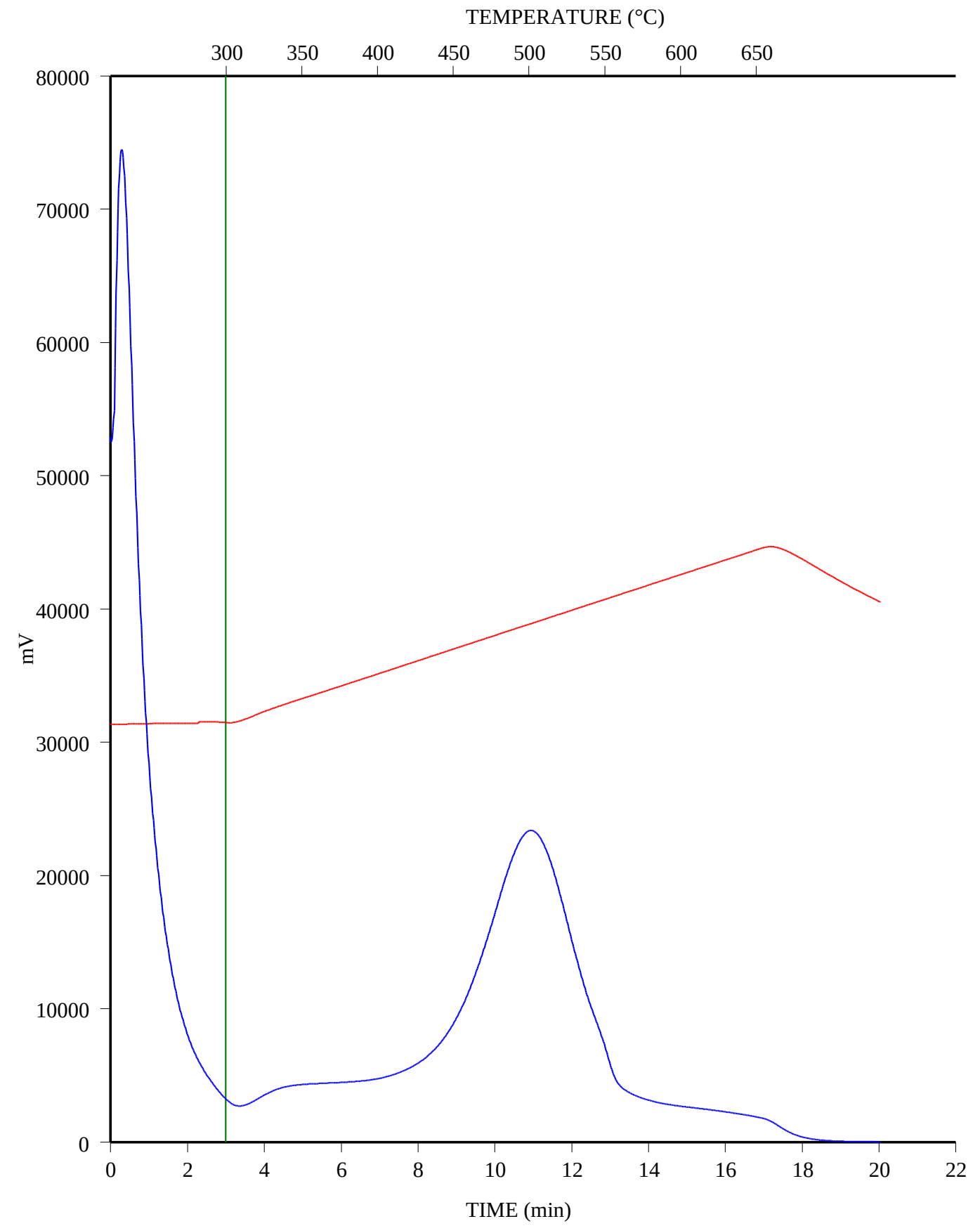
C-594351; SDEL PEMBINA 8-32-46-9; 3137.1 m
FID Hydrocarbons



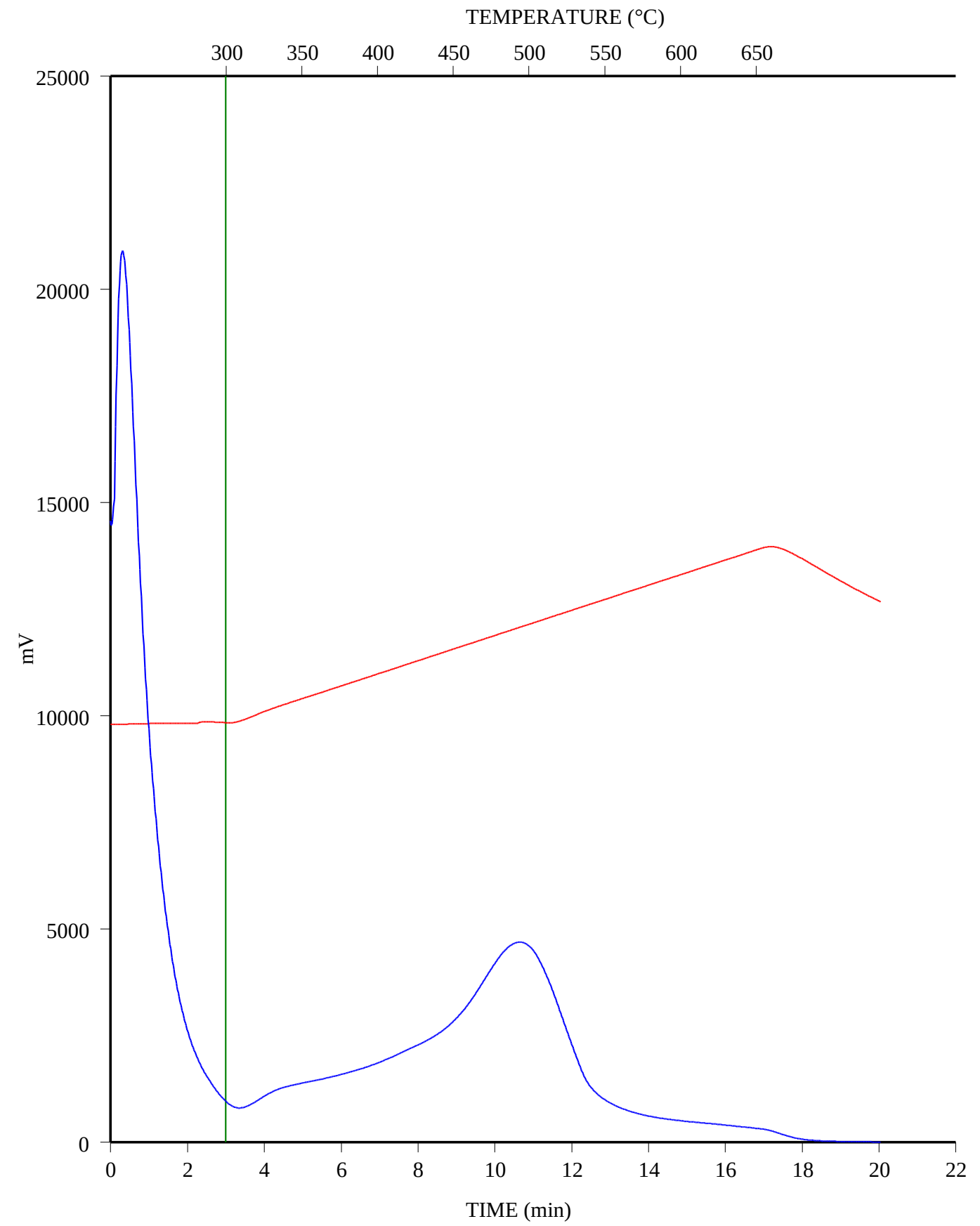
C-594352; SDEL PEMBINA 8-32-46-9; 3138.03 m
FID Hydrocarbons



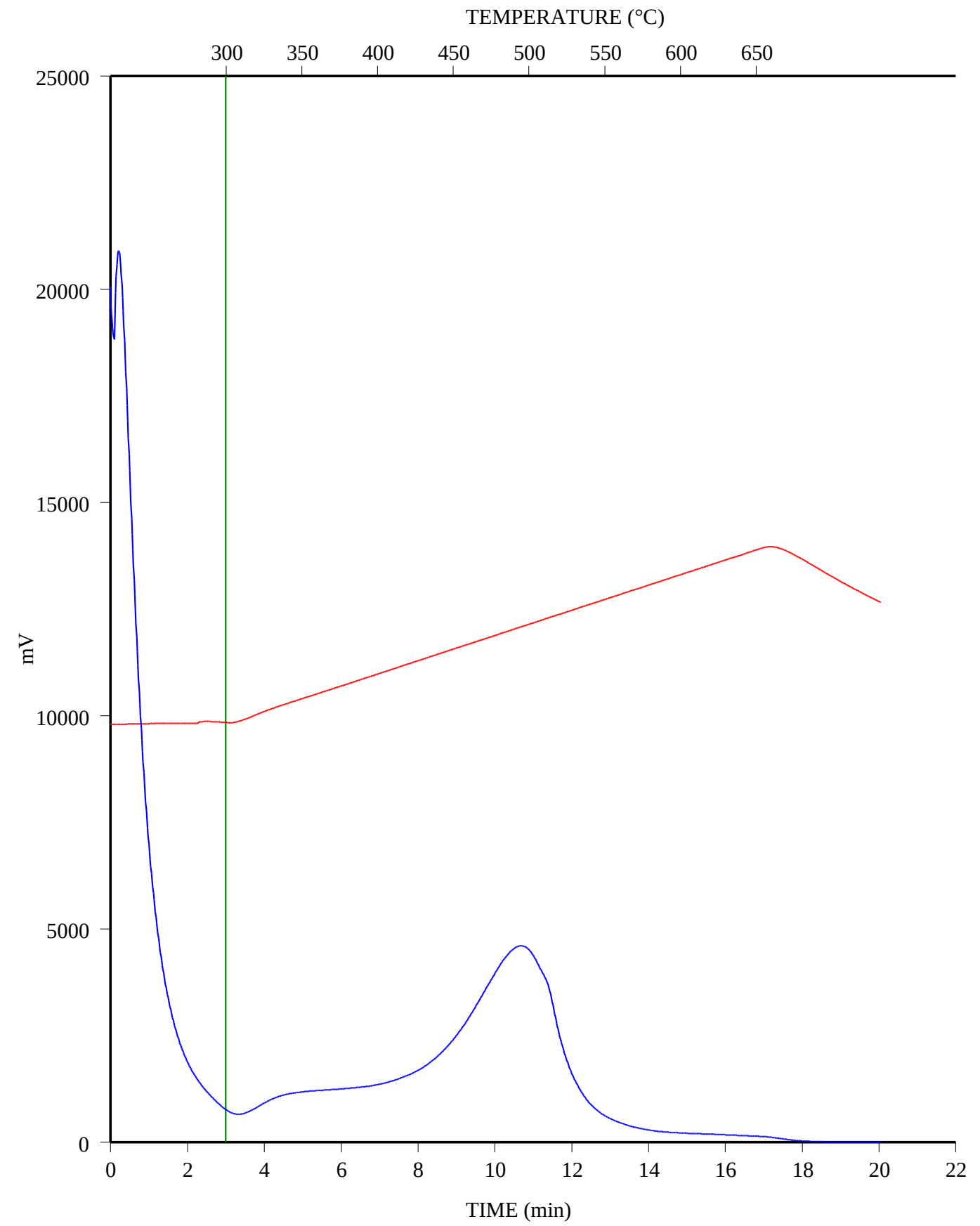
C-594353; SDEL PEMBINA 8-32-46-9; 3139.1 m
FID Hydrocarbons



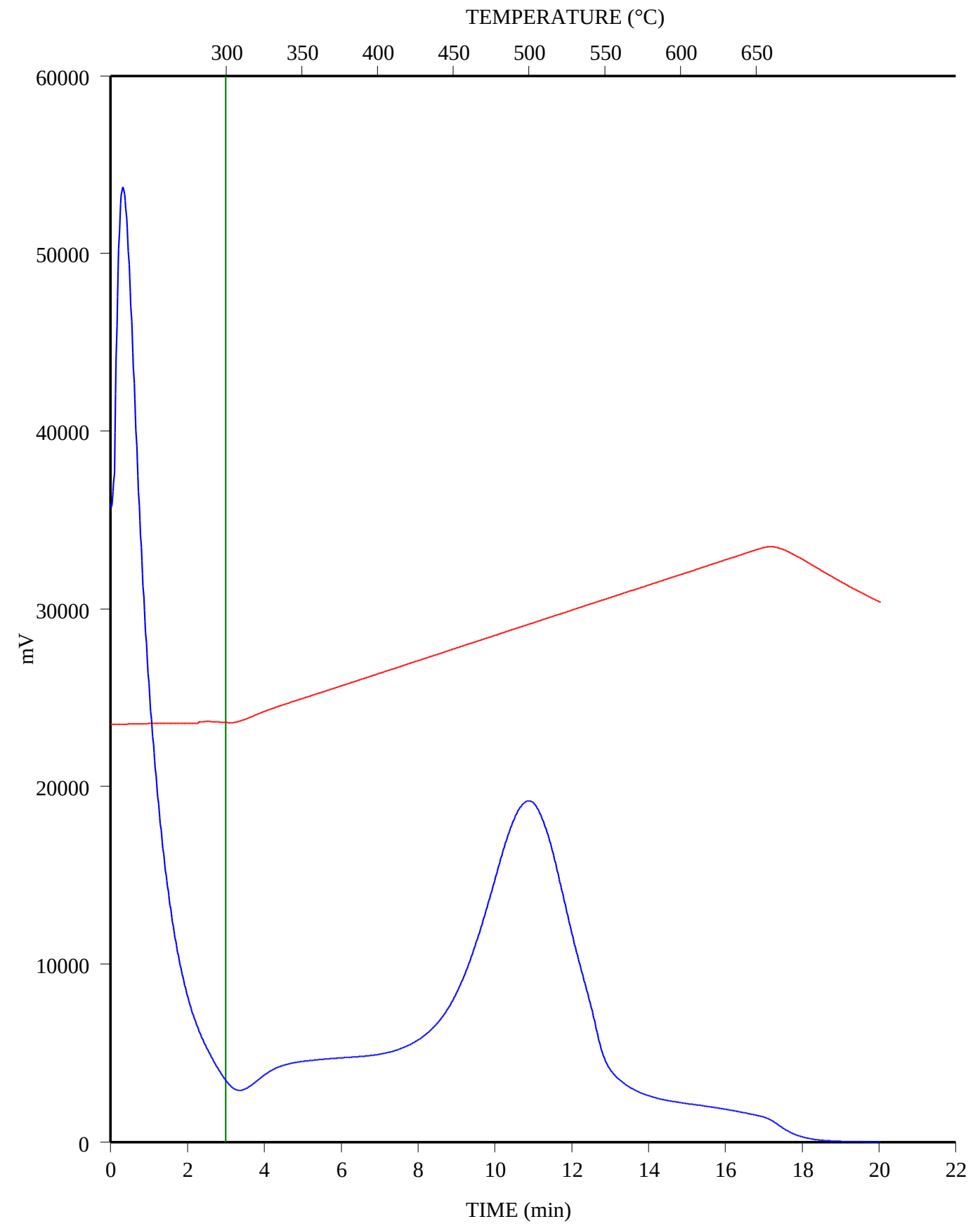
C-594354; SDEL PEMBINA 8-32-46-9; 3140.23 m
FID Hydrocarbons



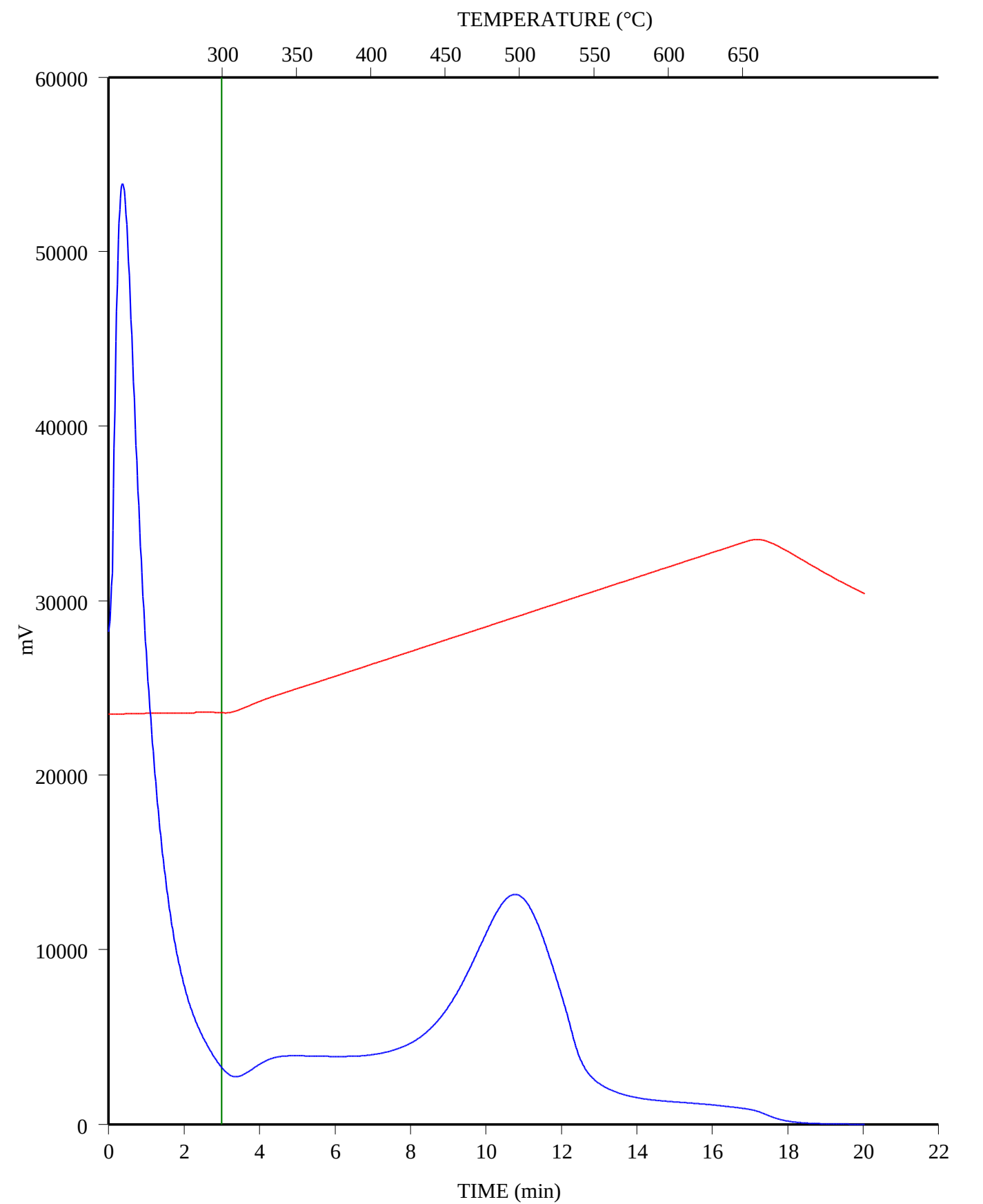
C-594355; SDEL PEMBINA 8-32-46-9; 3141.38 m
FID Hydrocarbons



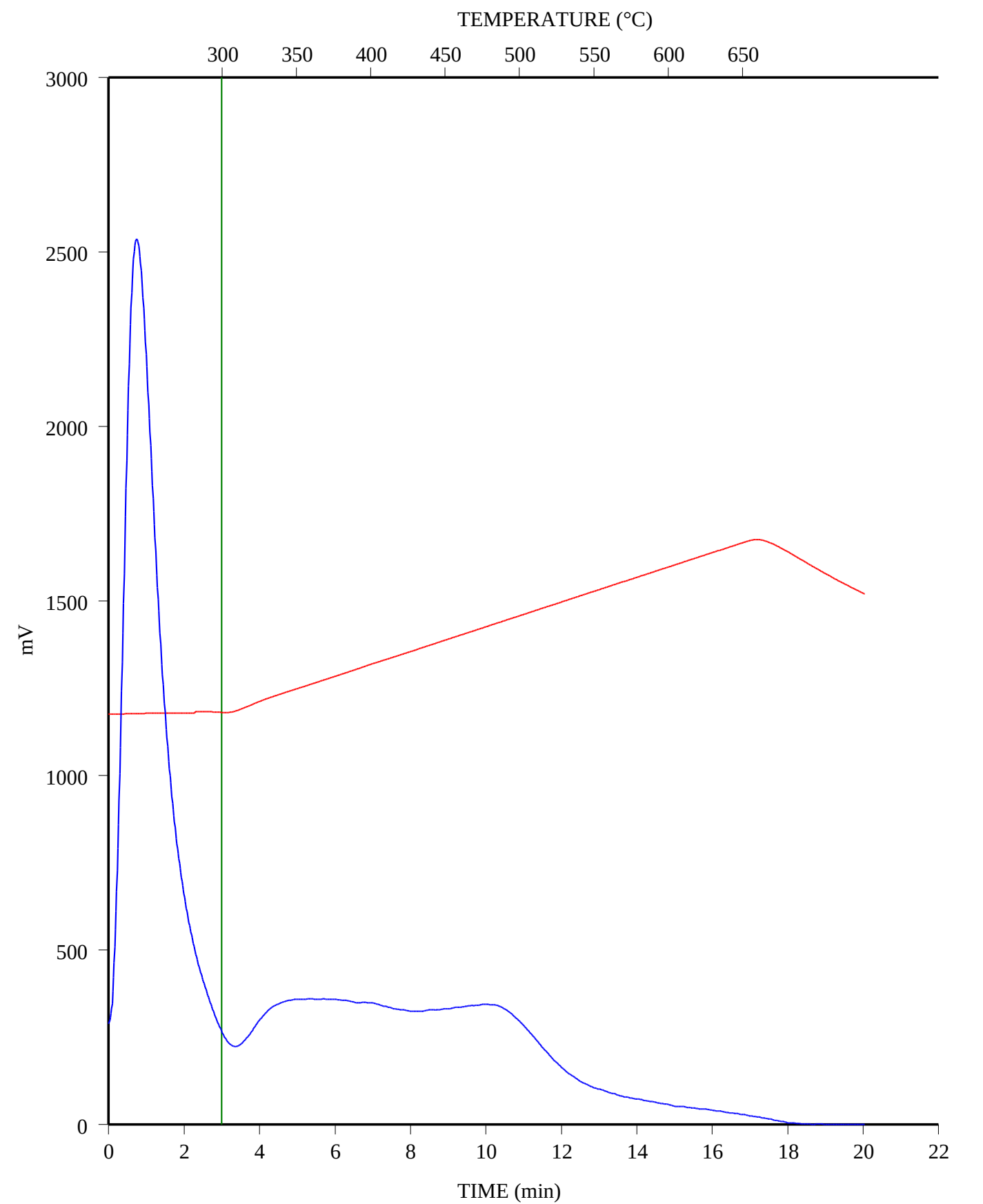
C-594356; SDEL PEMBINA 8-32-46-9; 3142.45 m
FID Hydrocarbons



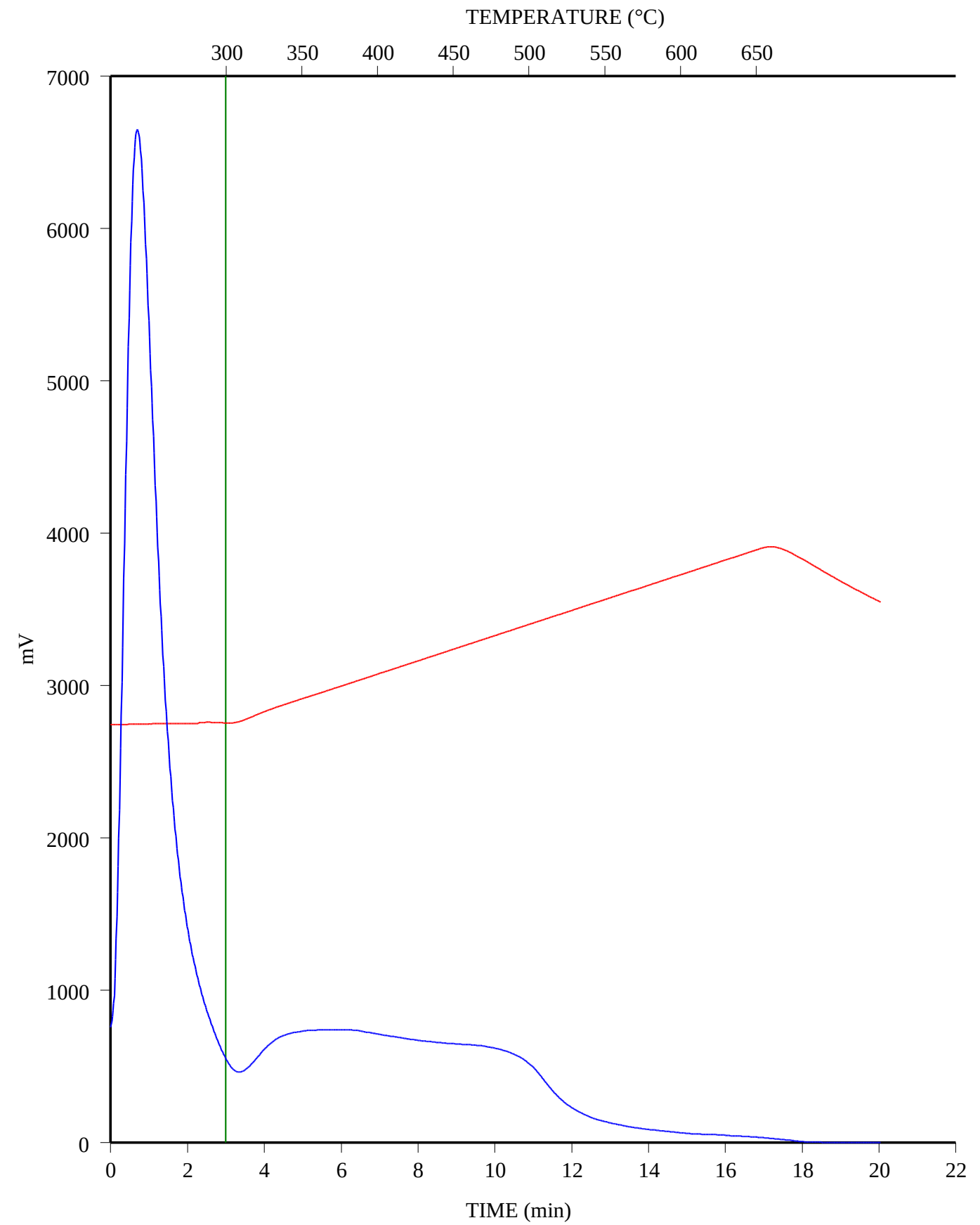
C-594357; SDEL PEMBINA 8-32-46-9; 3143.2 m
FID Hydrocarbons



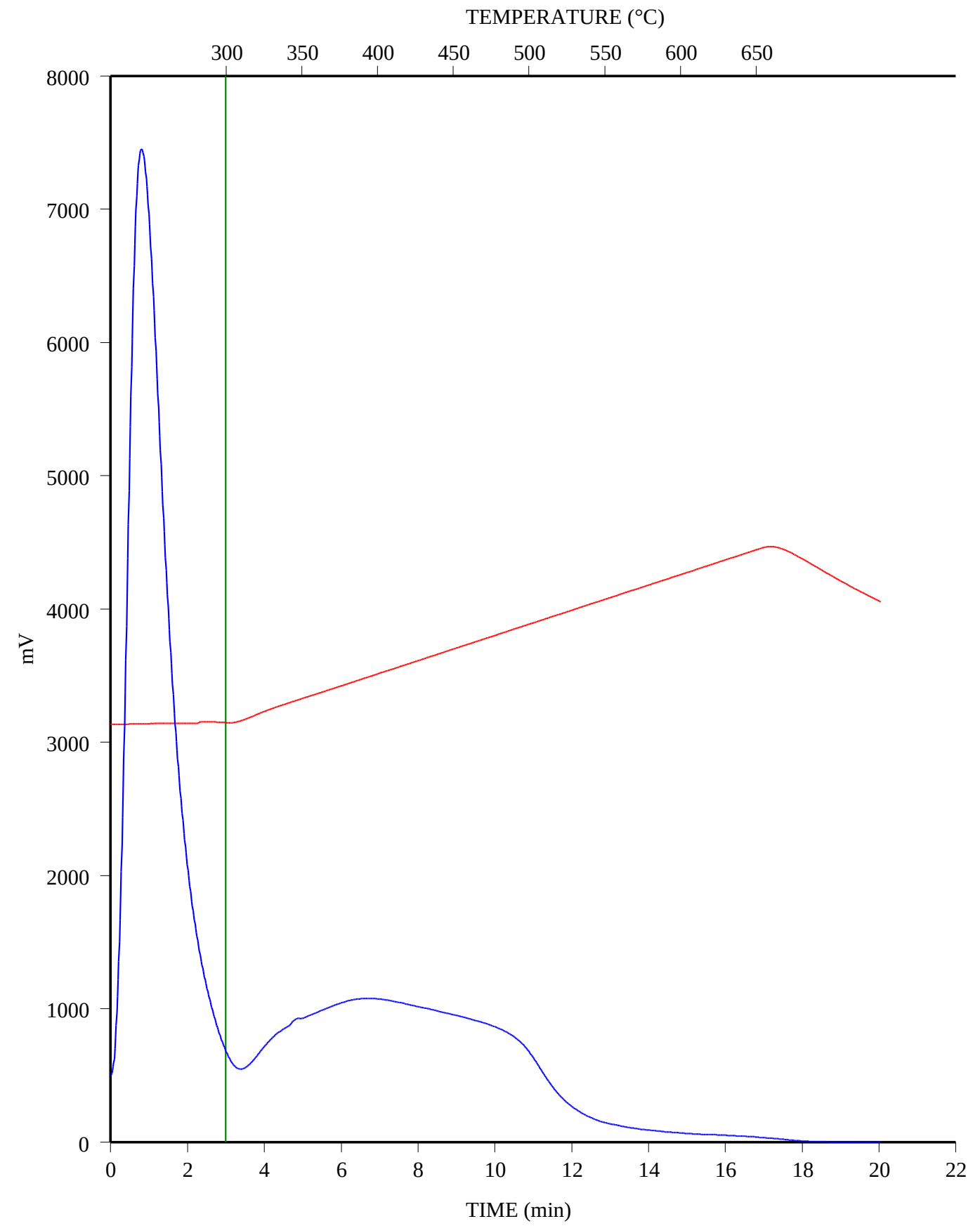
C-594358; SDEL PEMBINA 8-32-46-9; 3144.77 m
FID Hydrocarbons



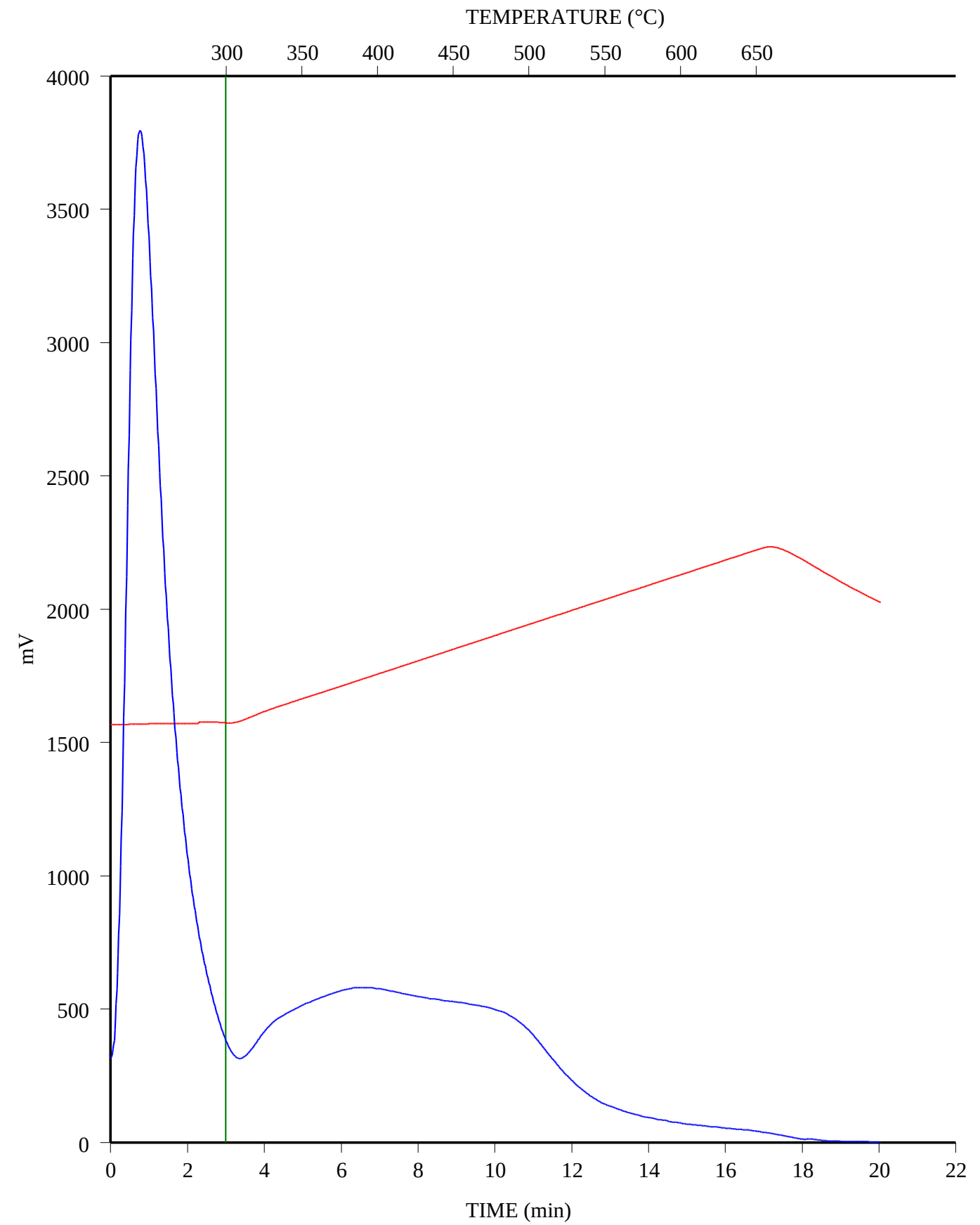
C-594359; SDEL PEMBINA 8-32-46-9; 3145.7 m
FID Hydrocarbons



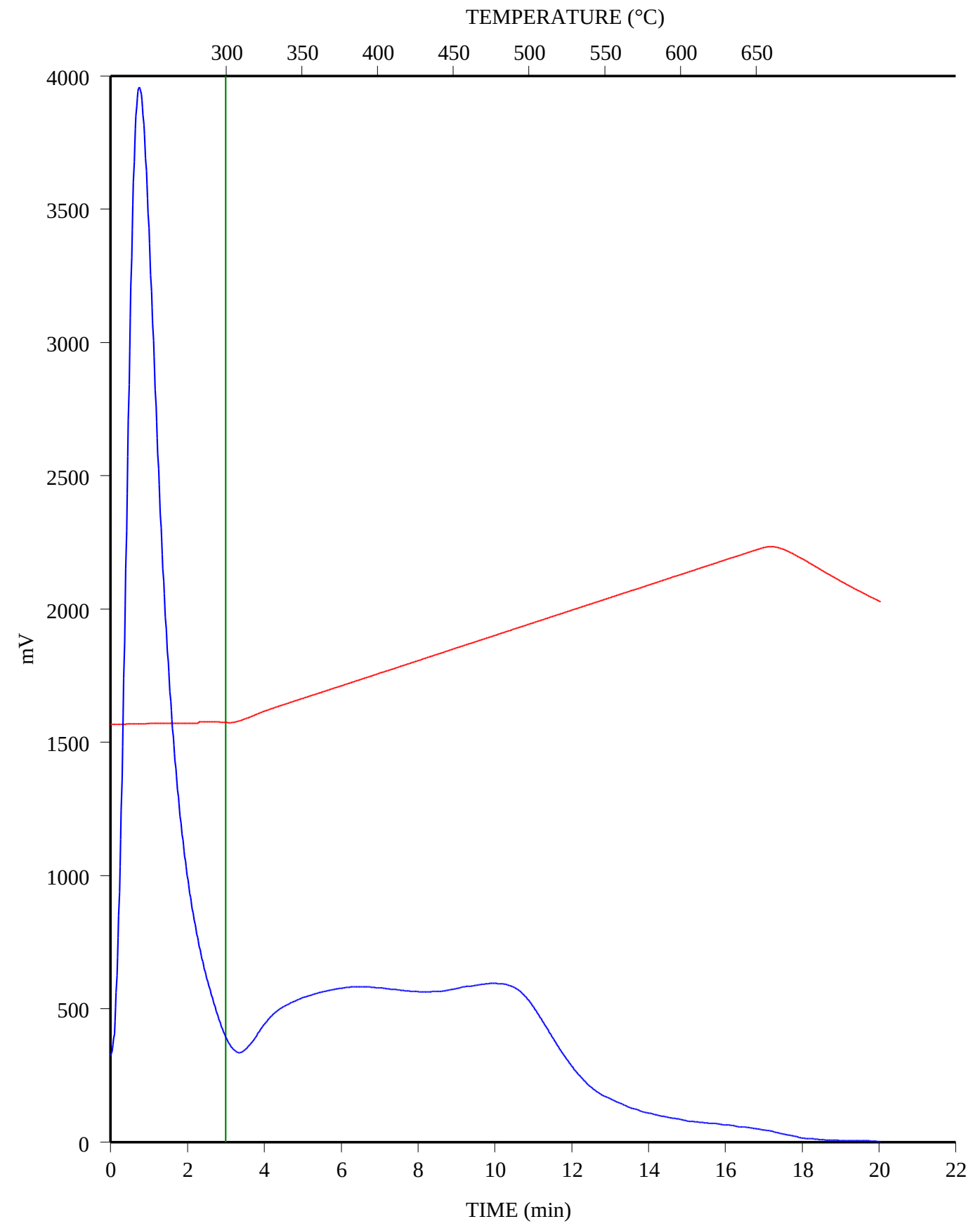
C-594360; SDEL PEMBINA 8-32-46-9; 3146.6 m
FID Hydrocarbons



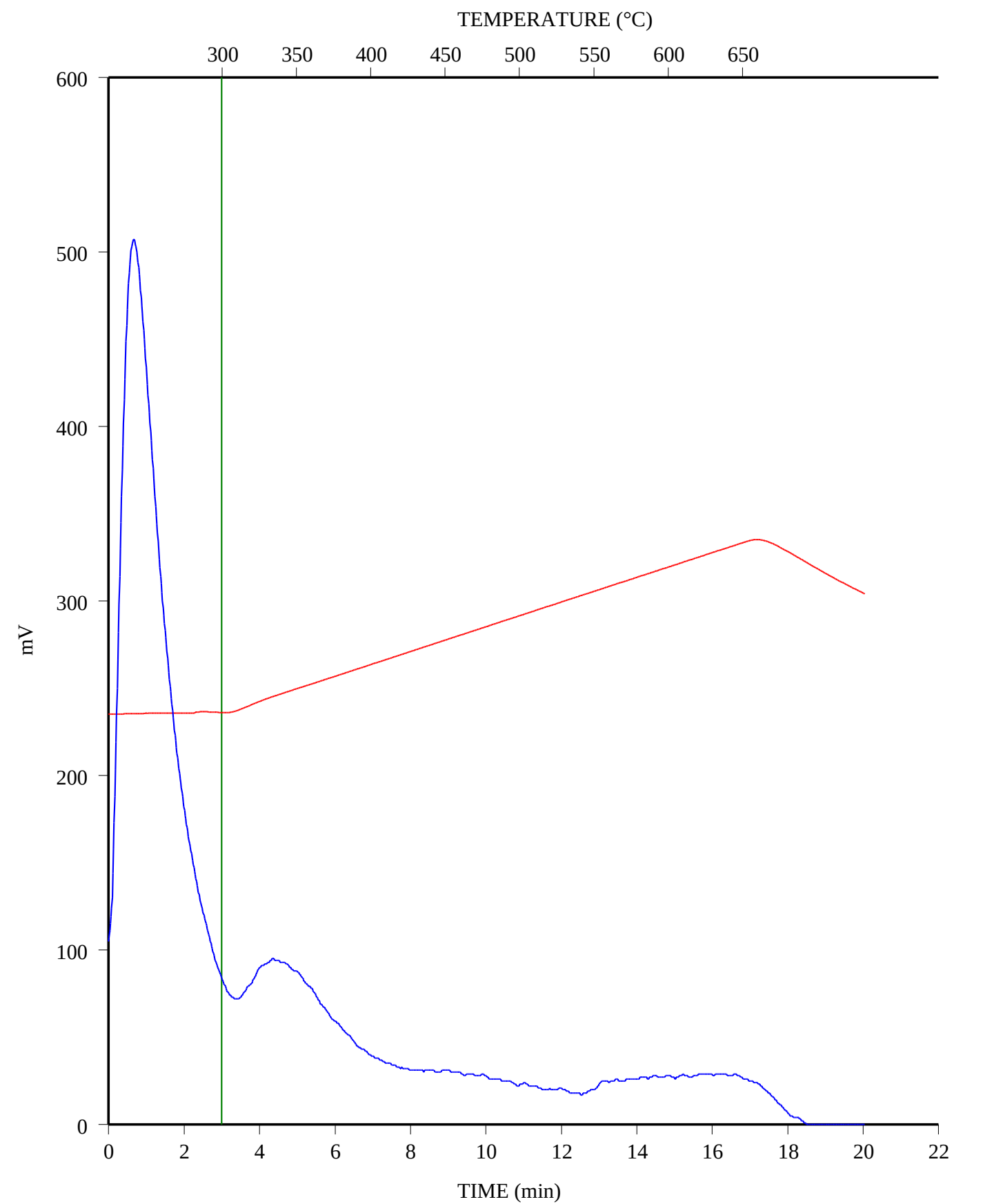
C-594361; SDEL PEMBINA 8-32-46-9; 3147.7 m
FID Hydrocarbons



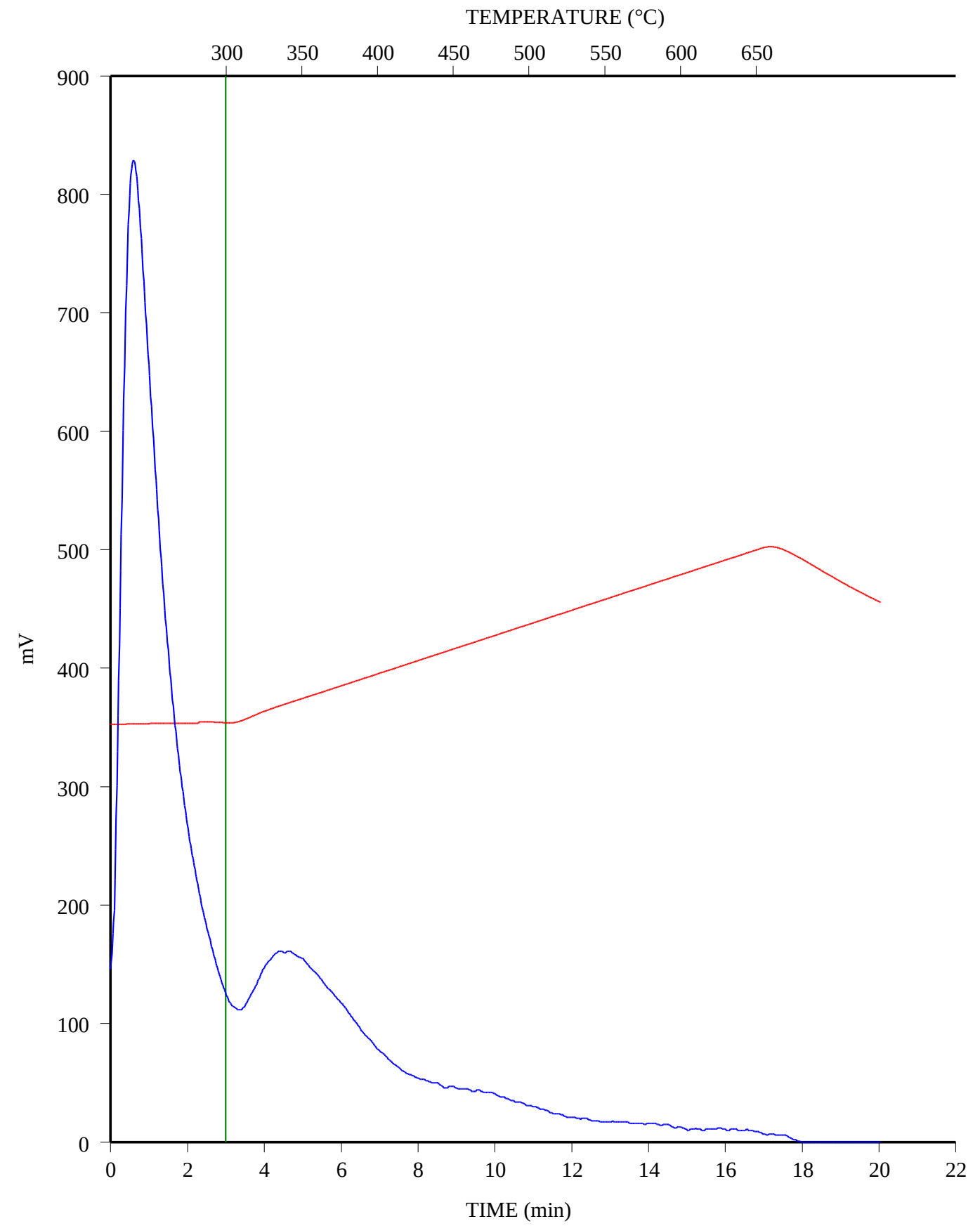
C-594362; SDEL PEMBINA 8-32-46-9; 3148.86 m
FID Hydrocarbons



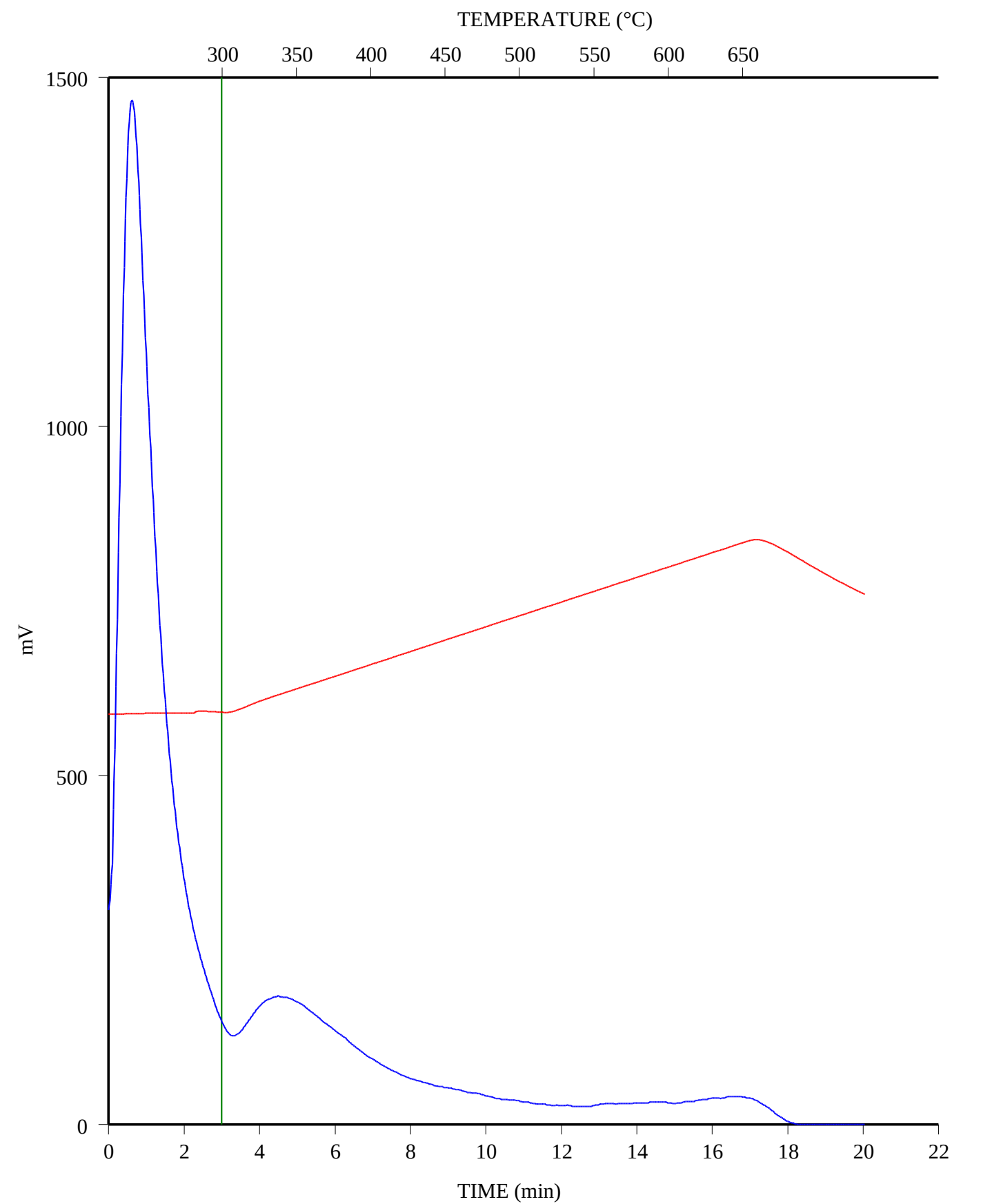
C-594363; HUSKY WILD RIV 10-33-56-22; 4006 m
FID Hydrocarbons



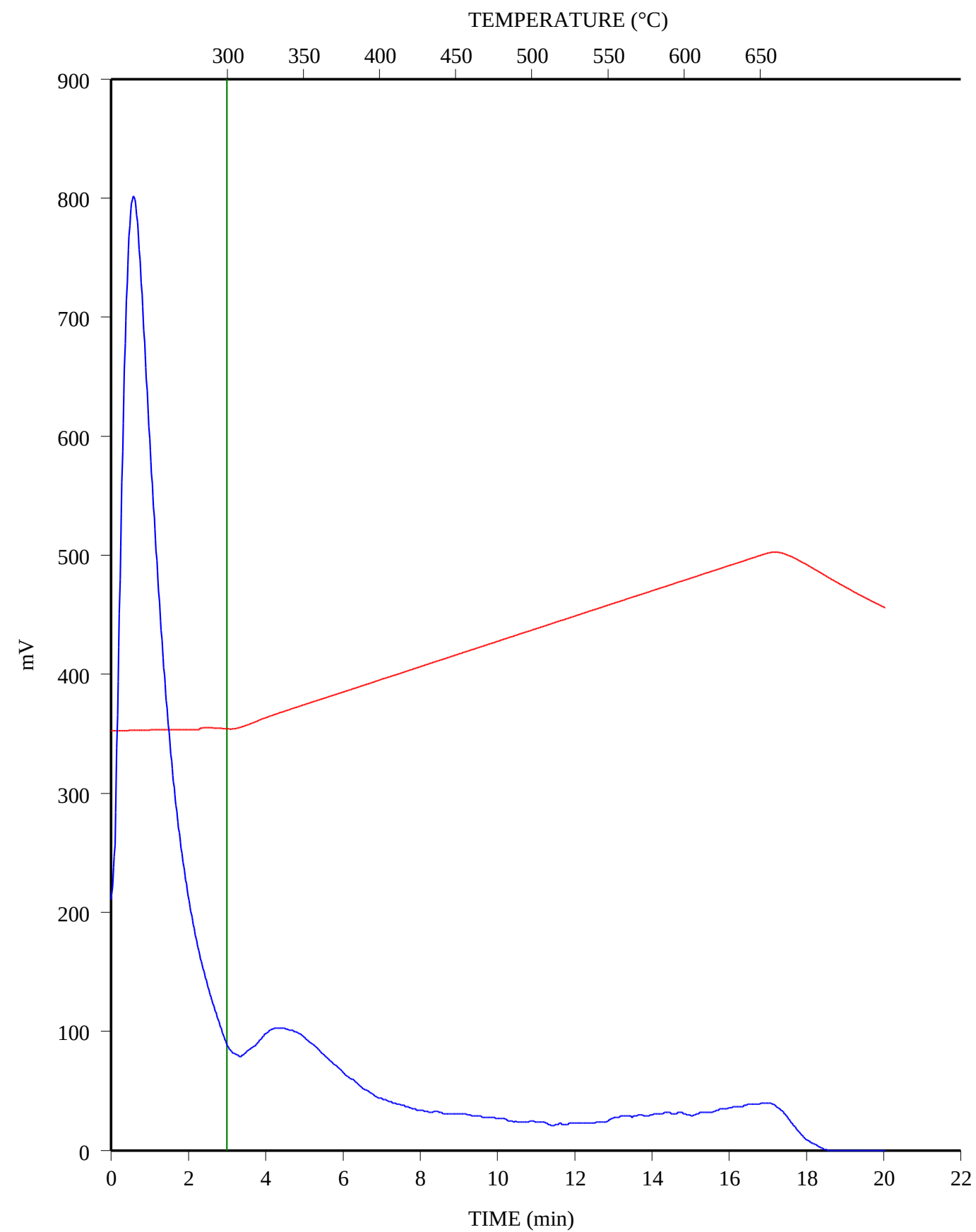
C-594364; HUSKY WILD RIV 10-33-56-22; 4008 m
FID Hydrocarbons



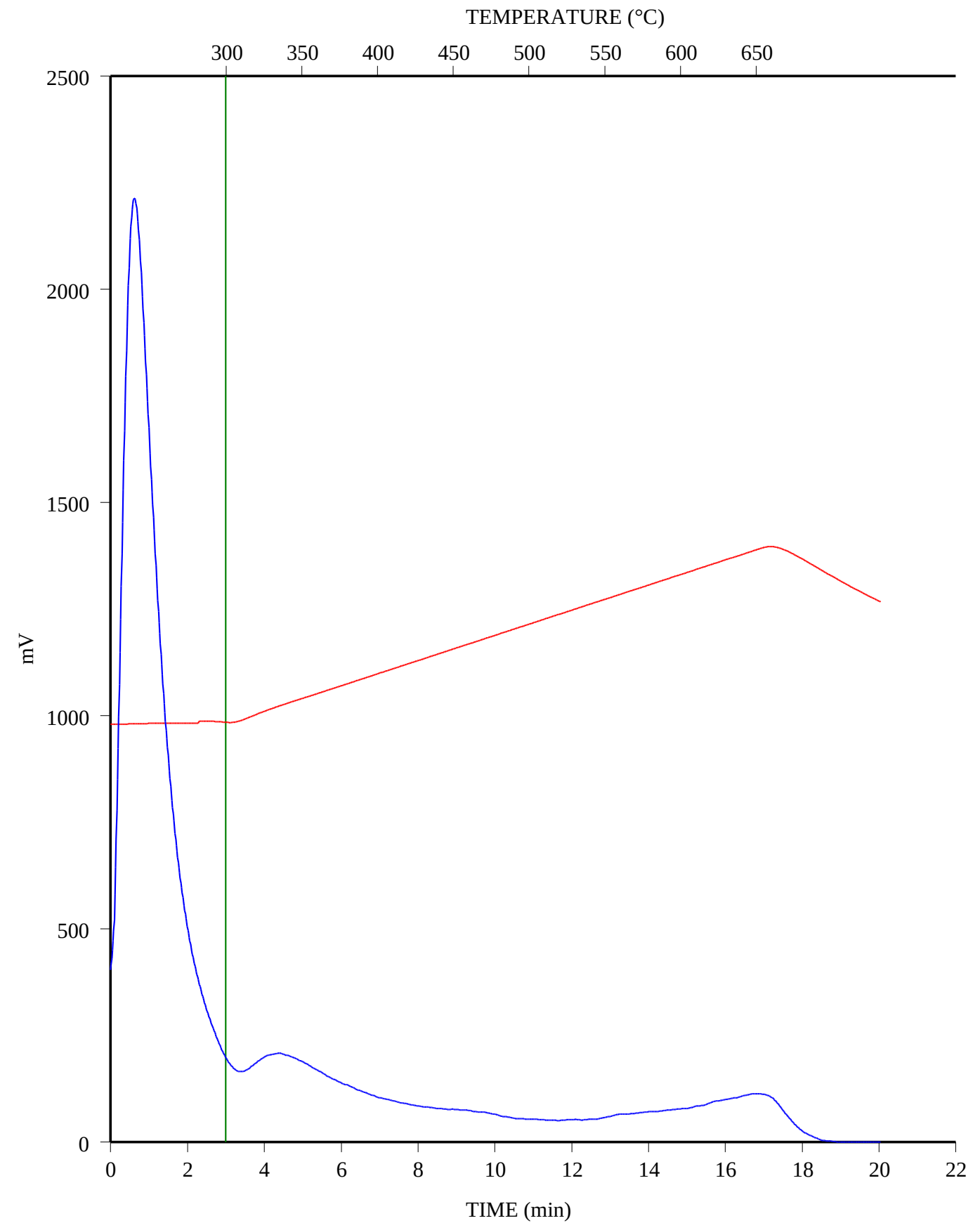
C-594365; HUSKY WILD RIV 10-33-56-22; 4010 m
FID Hydrocarbons



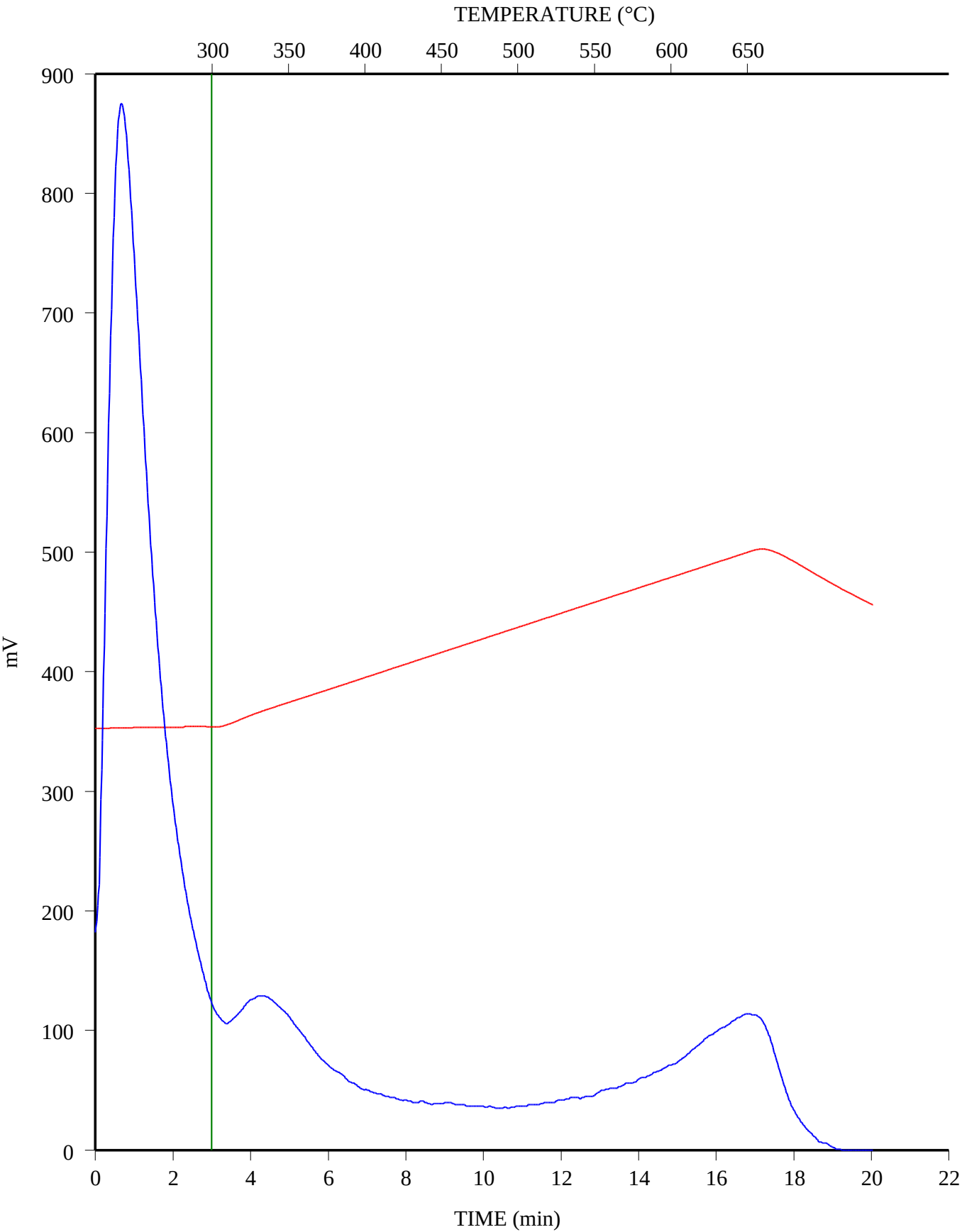
C-594366; HUSKY WILD RIV 10-33-56-22; 4011 m
FID Hydrocarbons



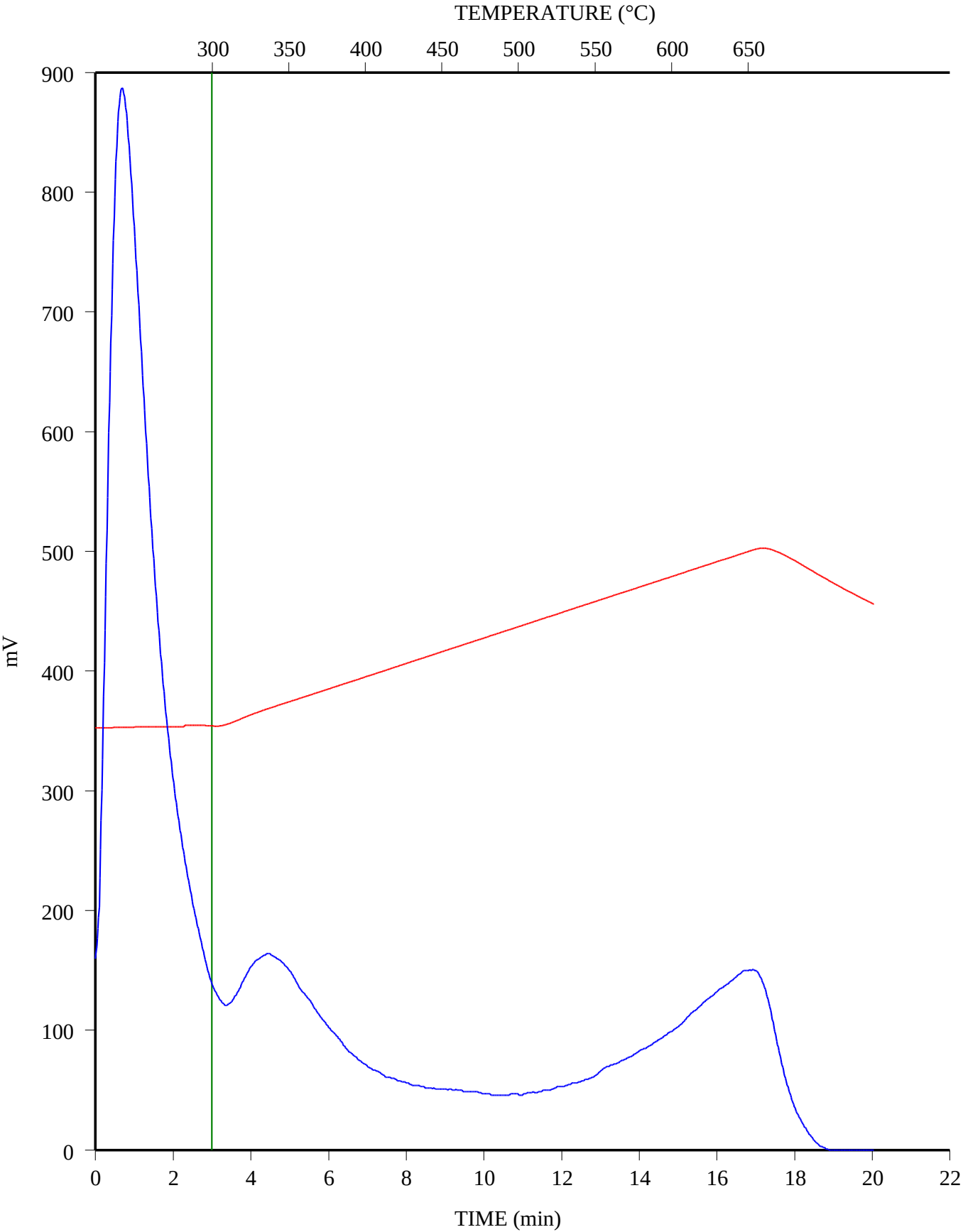
C-594367; HUSKY WILD RIV 10-33-56-22; 4012.06 m
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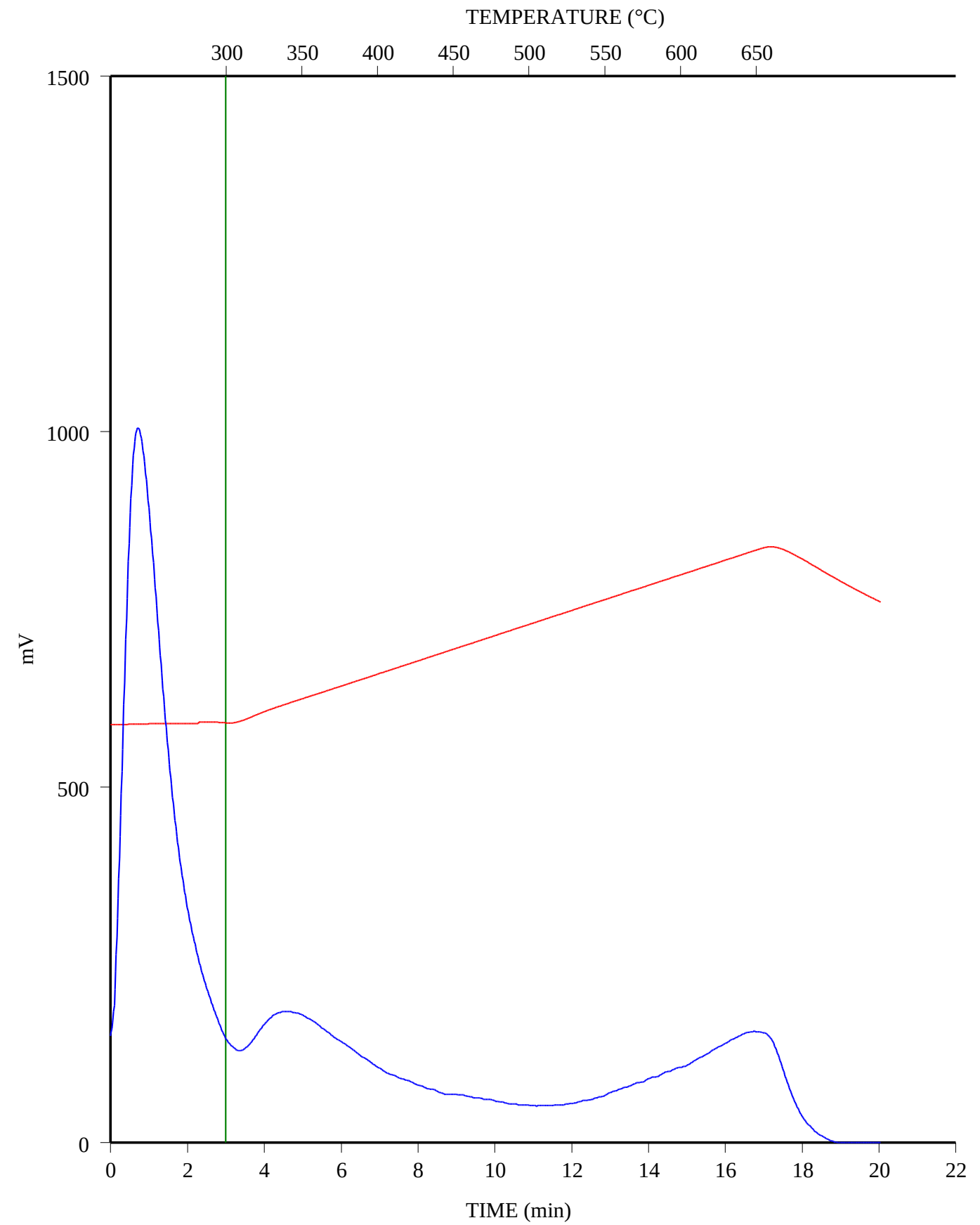
C-594368; HUSKY WILD RIV 10-33-56-22; 4013.26 m
FID Hydrocarbons



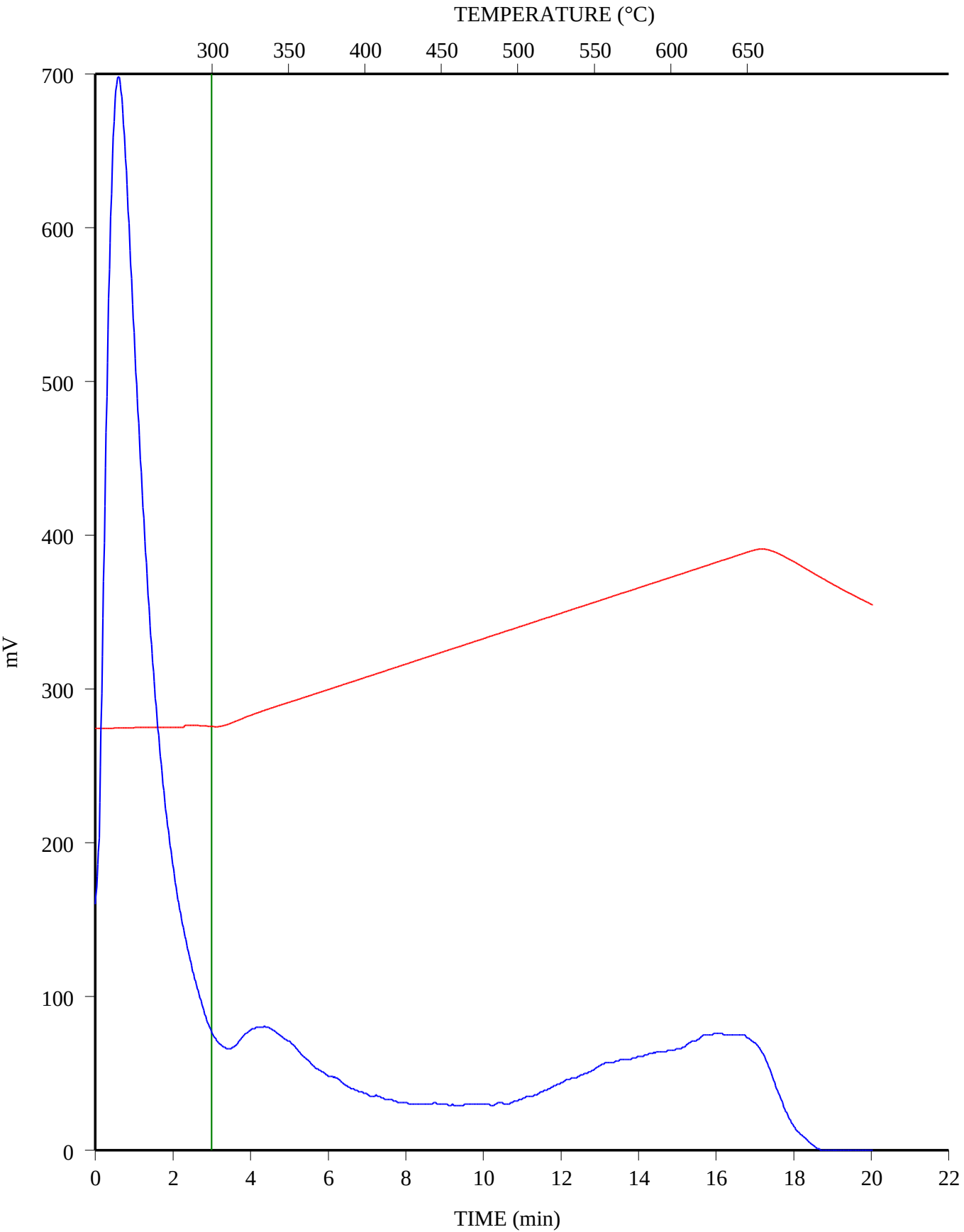
C-594369; HUSKY WILD RIV 10-33-56-22; 4014.28 m
FID Hydrocarbons



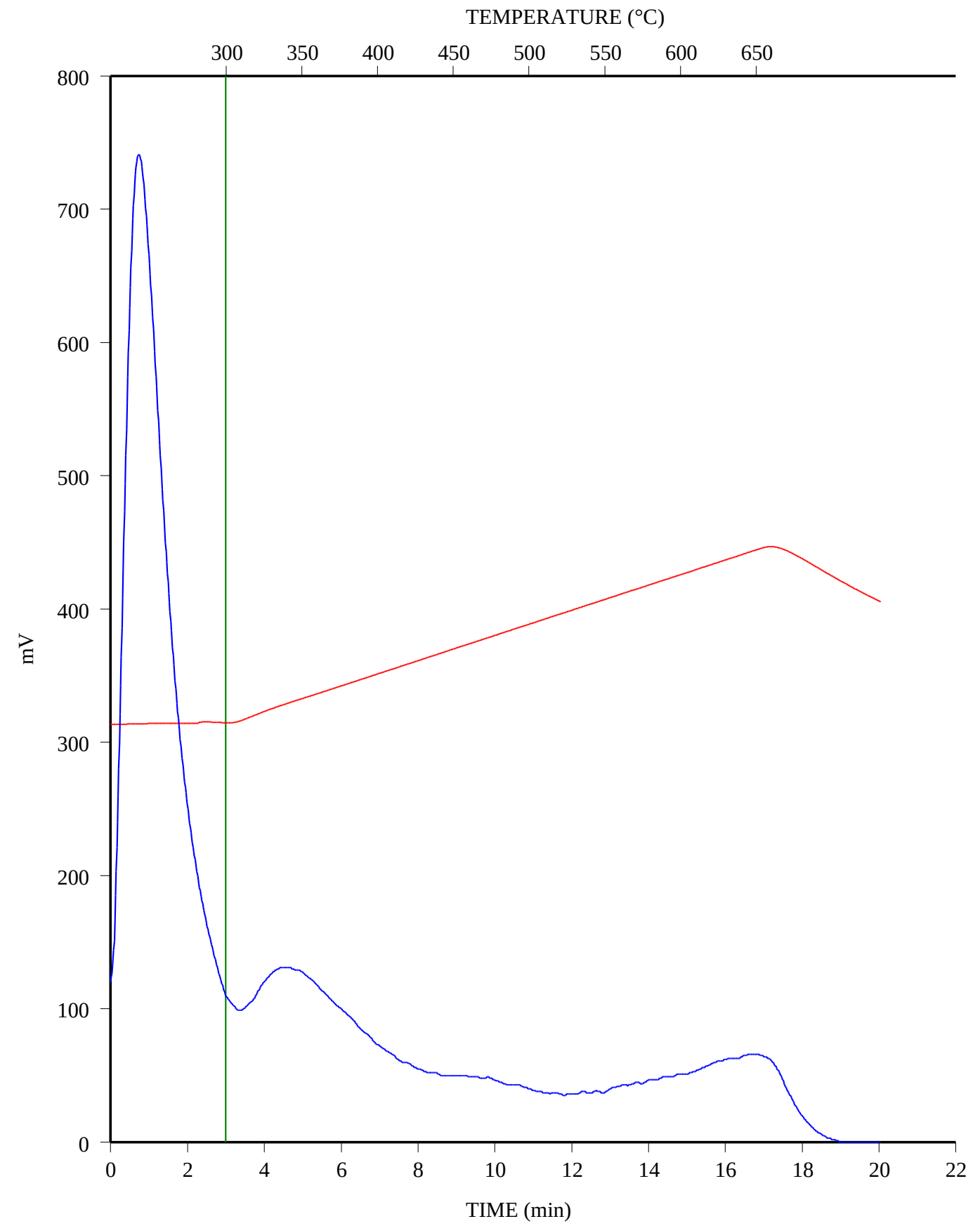
C-594370; HUSKY WILD RIV 10-33-56-22; 4015.15 m
FID Hydrocarbons



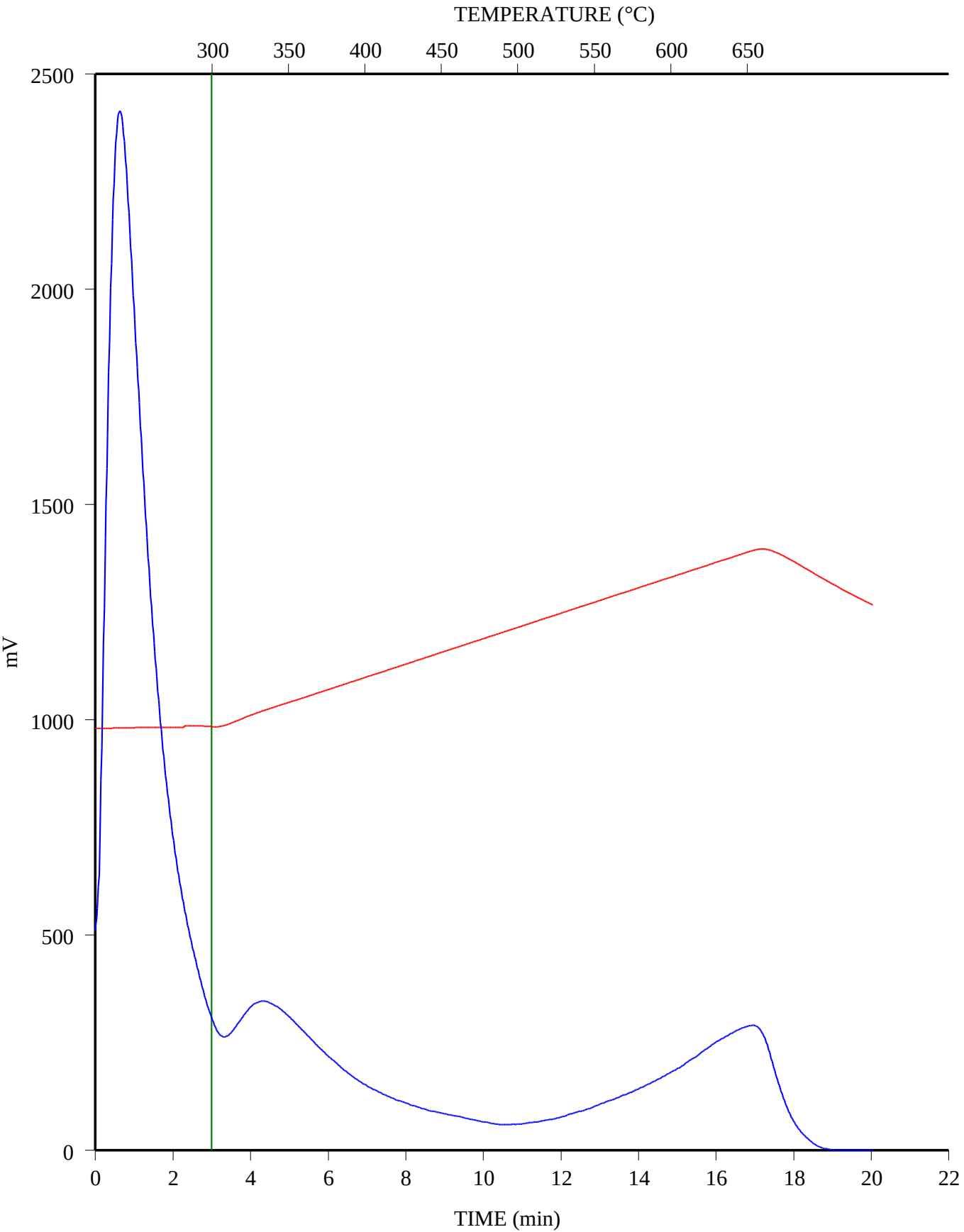
C-594371; HUSKY WILD RIV 10-33-56-22; 4016.2 m
FID Hydrocarbons



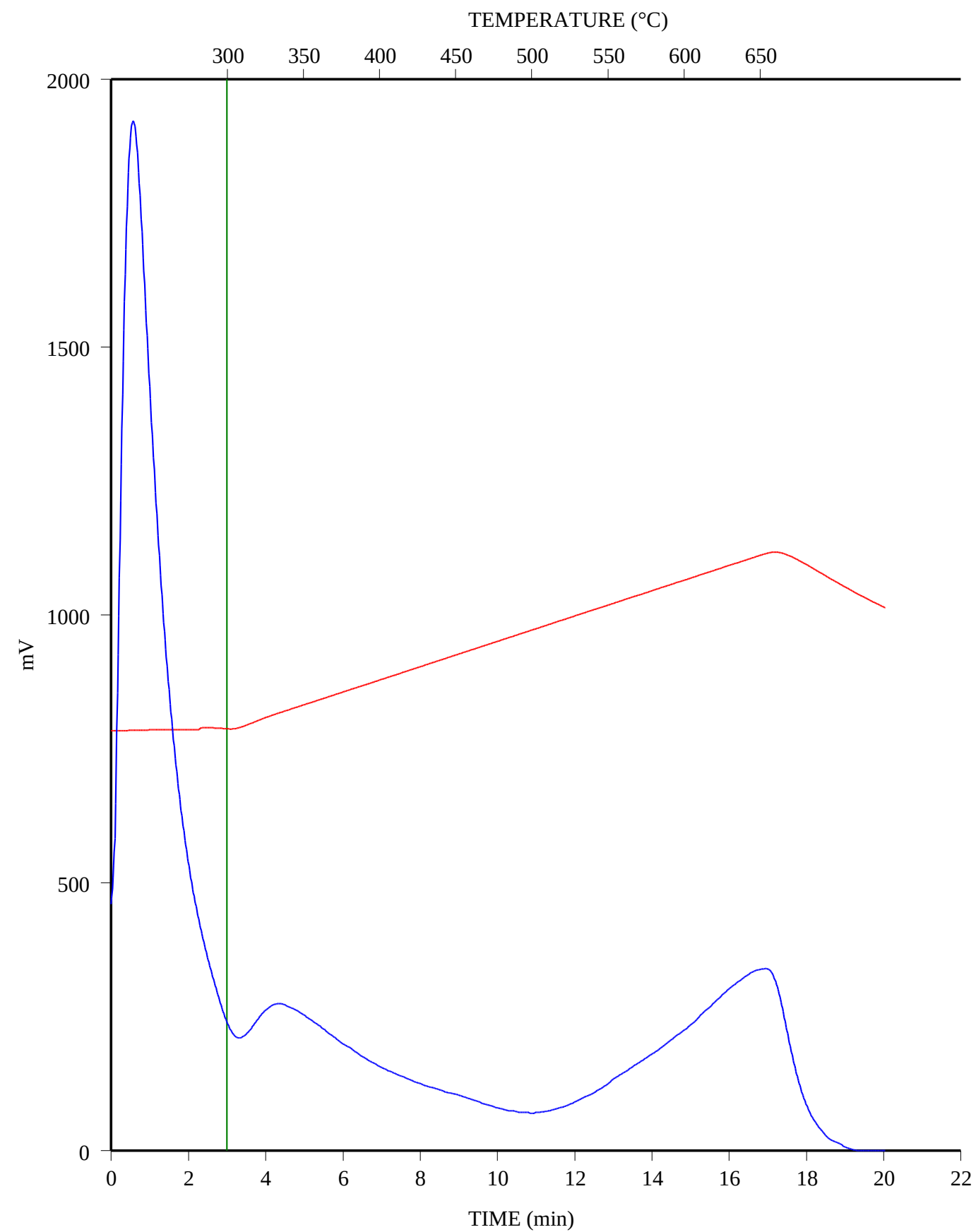
C-594372; HUSKY WILD RIV 10-33-56-22; 4017.15 m
FID Hydrocarbons



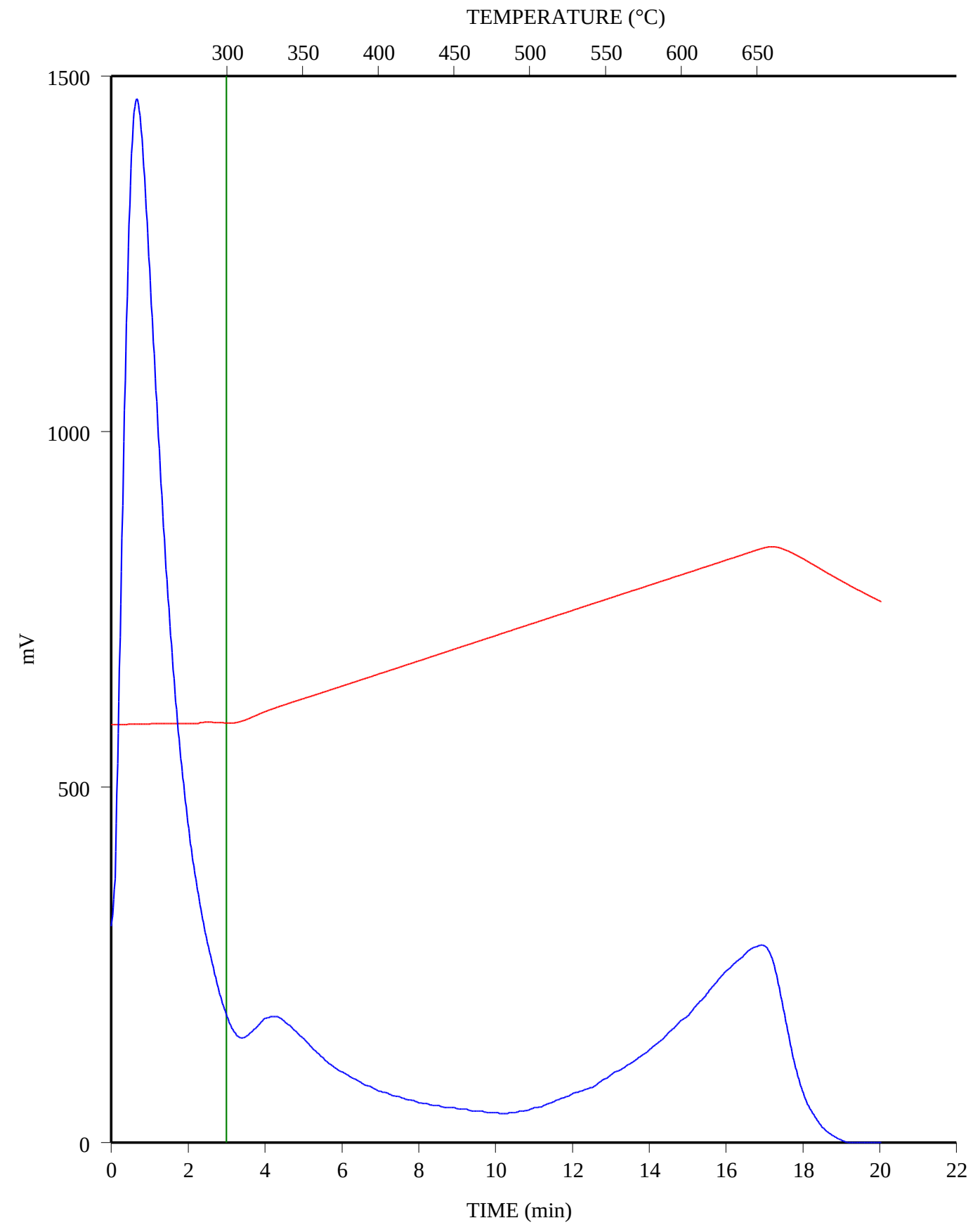
C-594373; HUSKY WILD RIV 10-33-56-22; 4018.2 m
FID Hydrocarbons



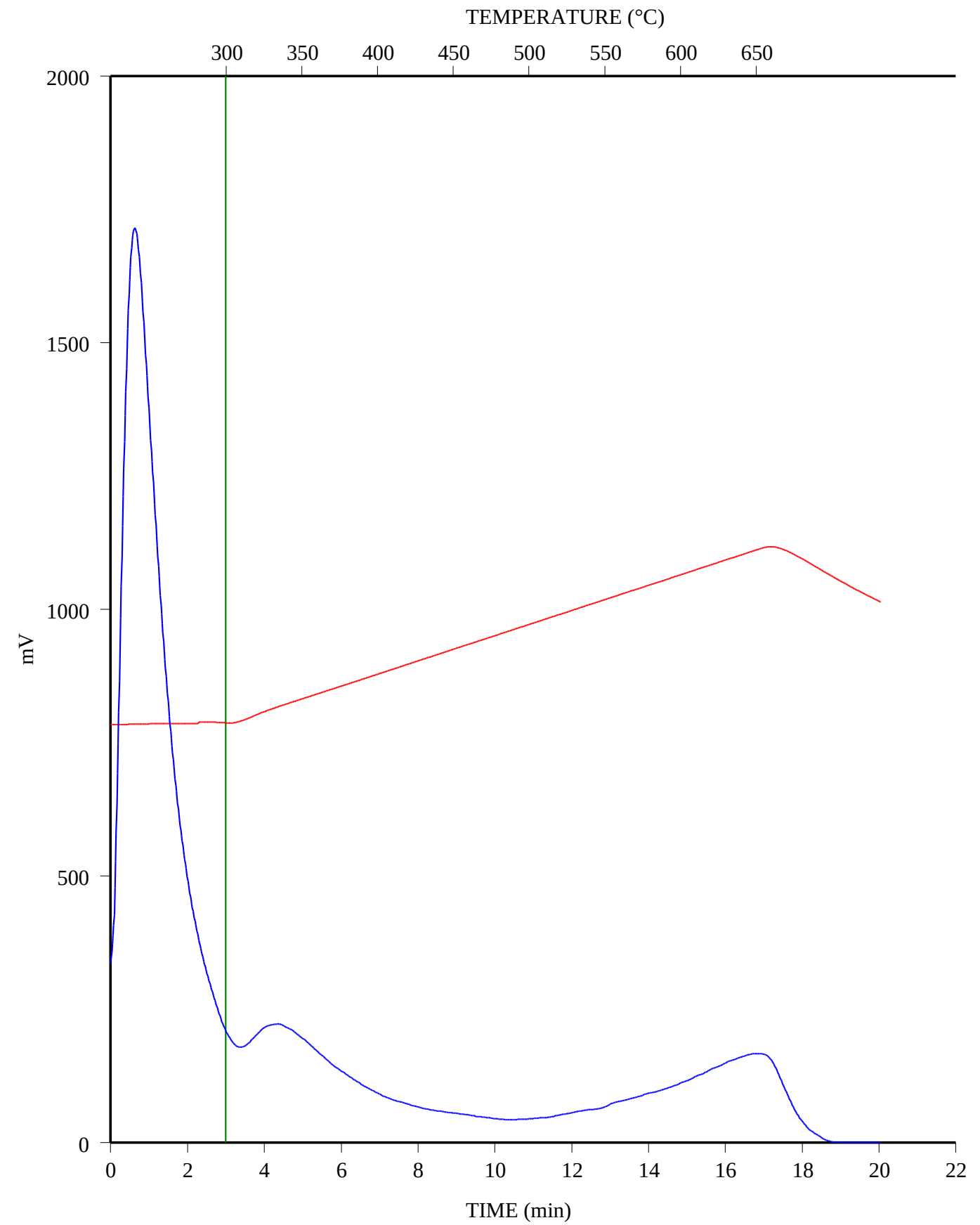
C-594374; HUSKY WILD RIV 10-33-56-22; 4019.26 m
FID Hydrocarbons



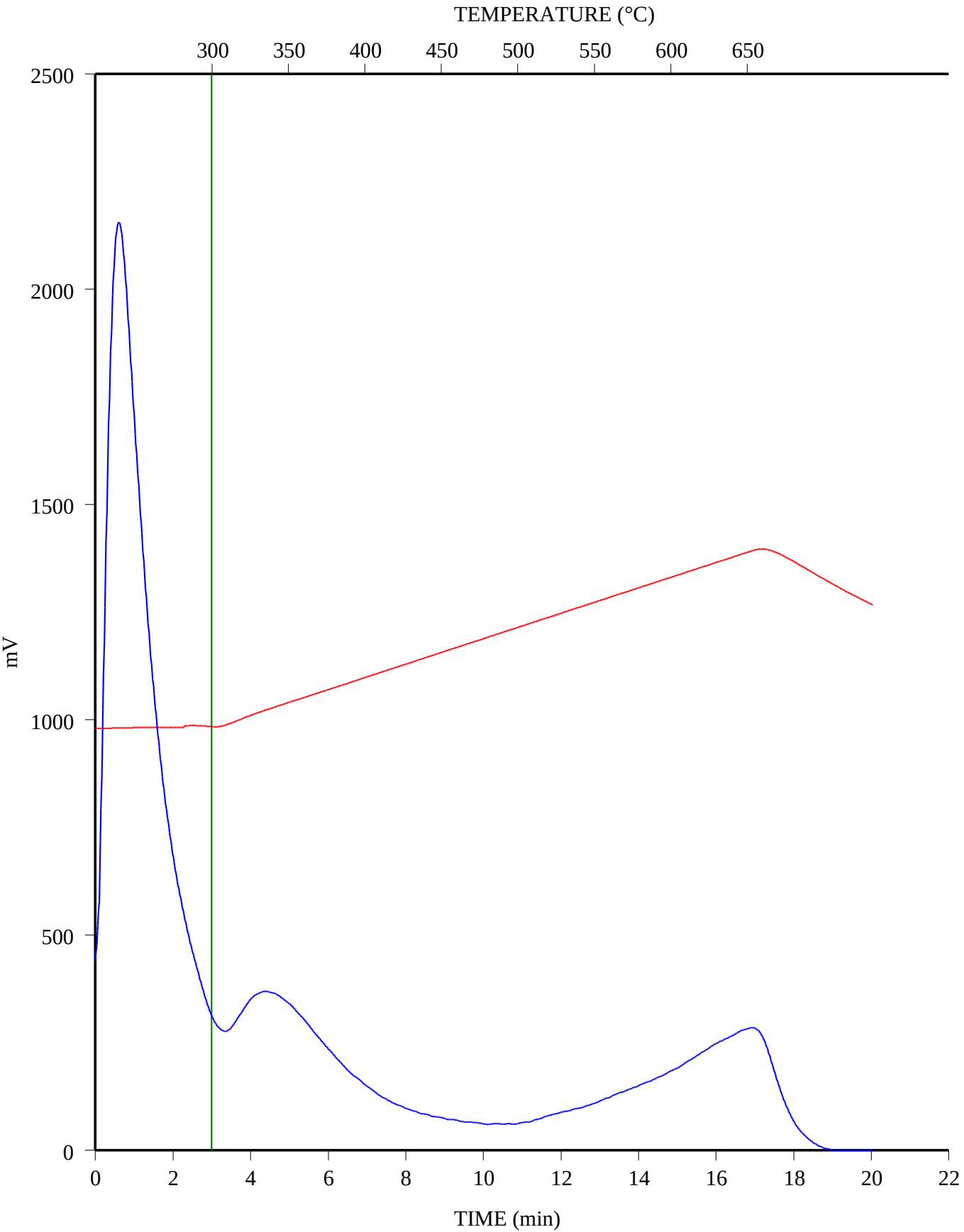
C-594375; HUSKY WILD RIV 10-33-56-22; 4020.45 m
FID Hydrocarbons



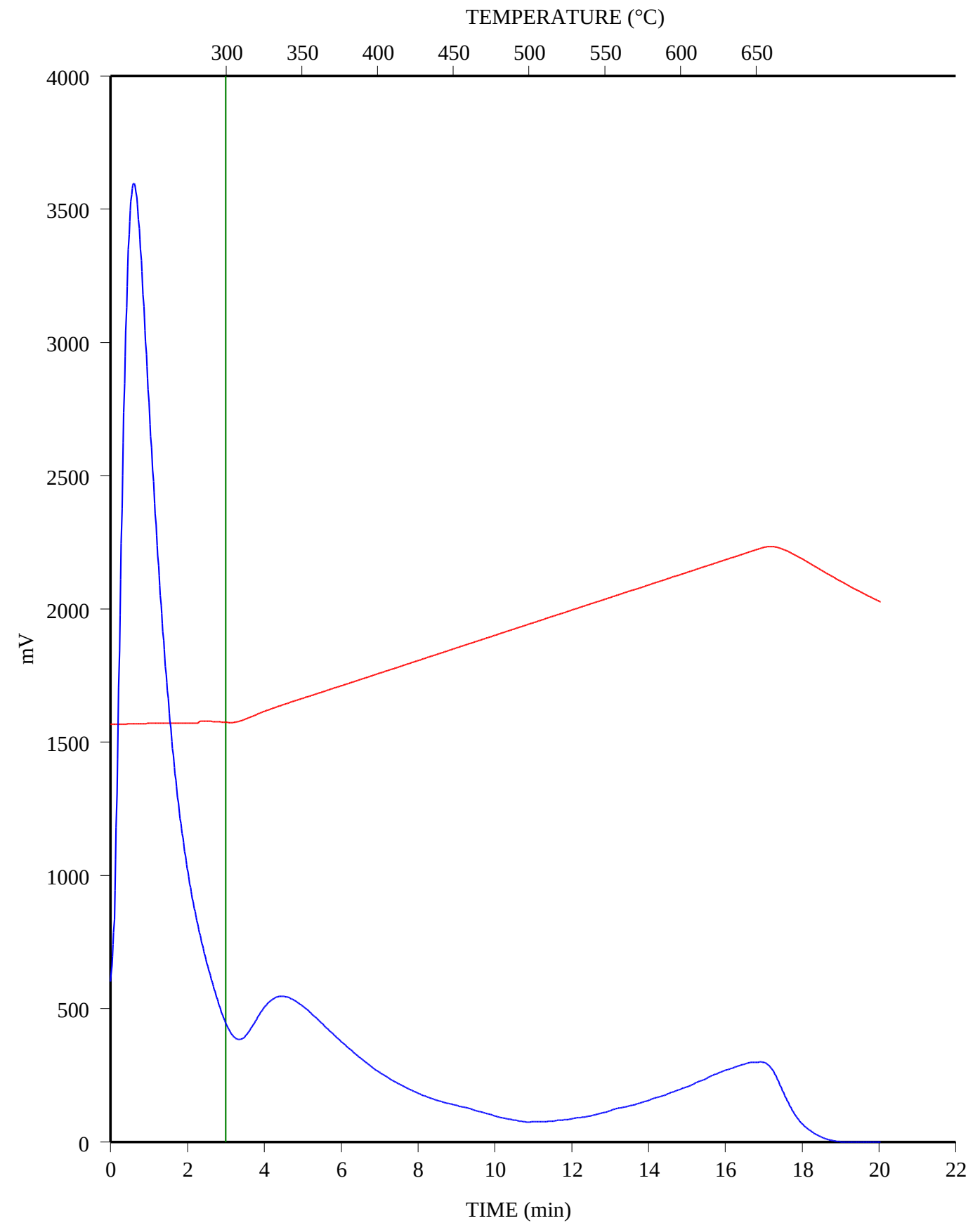
C-594376; HUSKY WILD RIV 10-33-56-22; 4021.55 m
FID Hydrocarbons



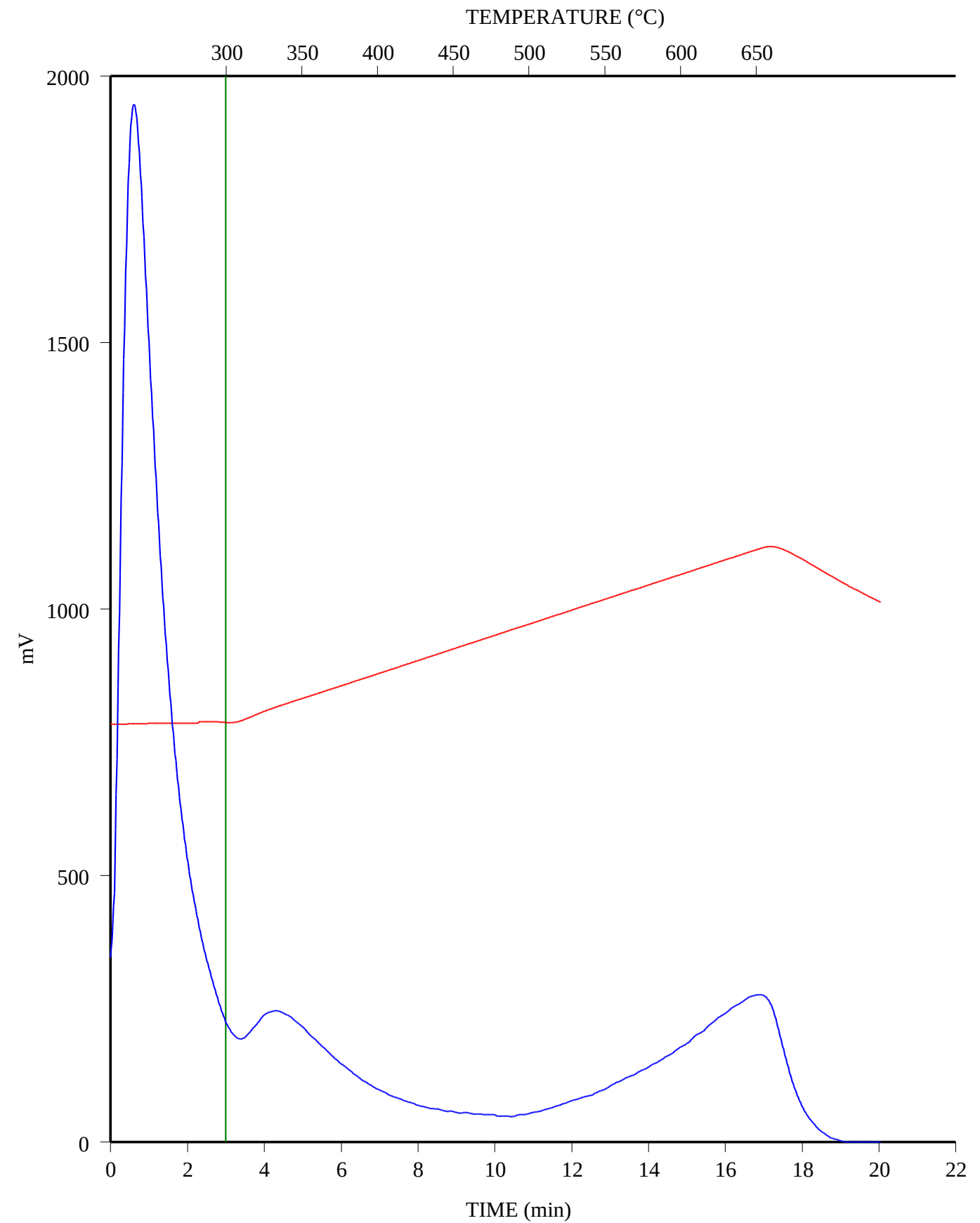
C-594377; HUSKY WILD RIV 10-33-56-22; 4022.65 m
FID Hydrocarbons



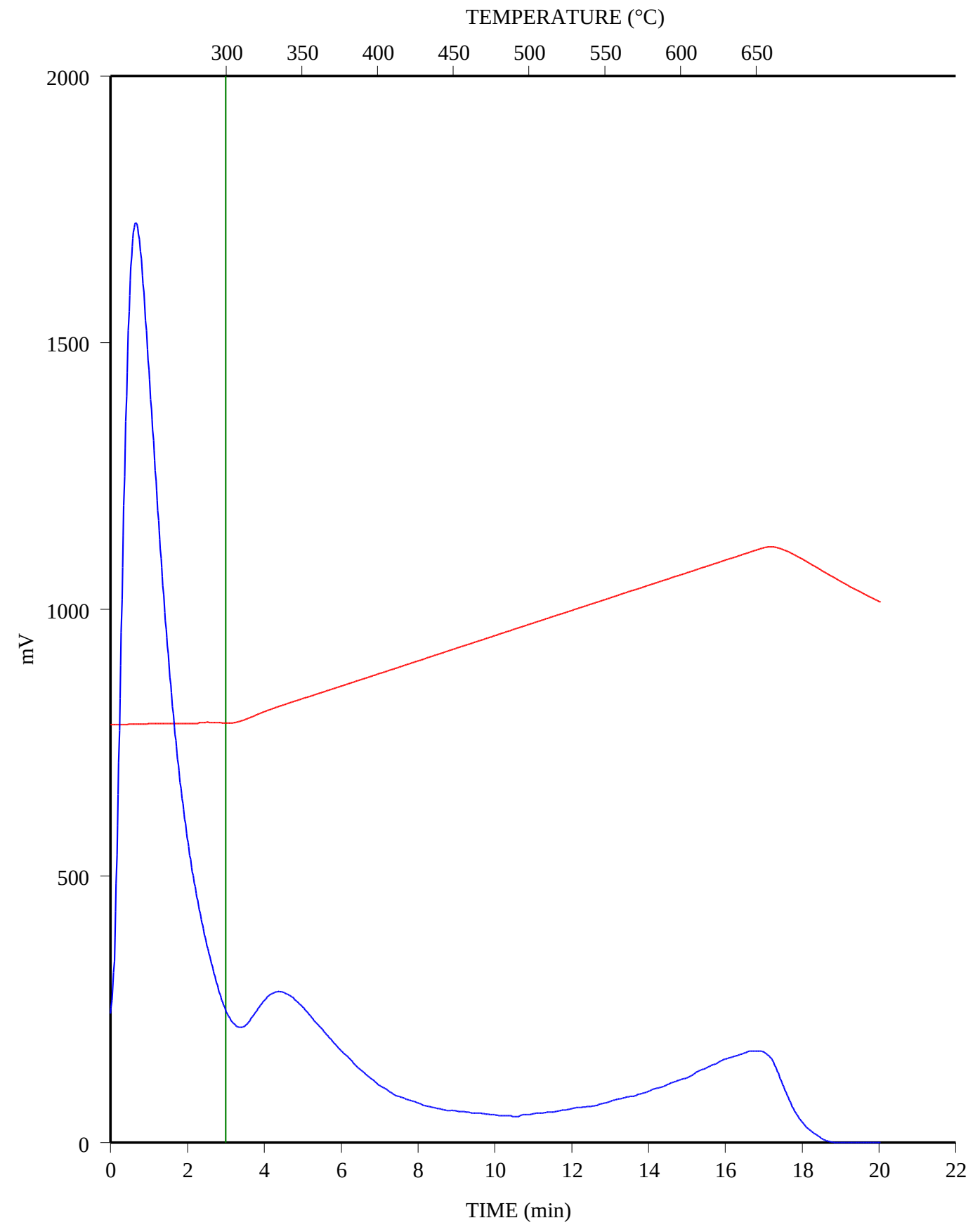
C-594378; HUSKY WILD RIV 10-33-56-22; 4023.65 m
FID Hydrocarbons



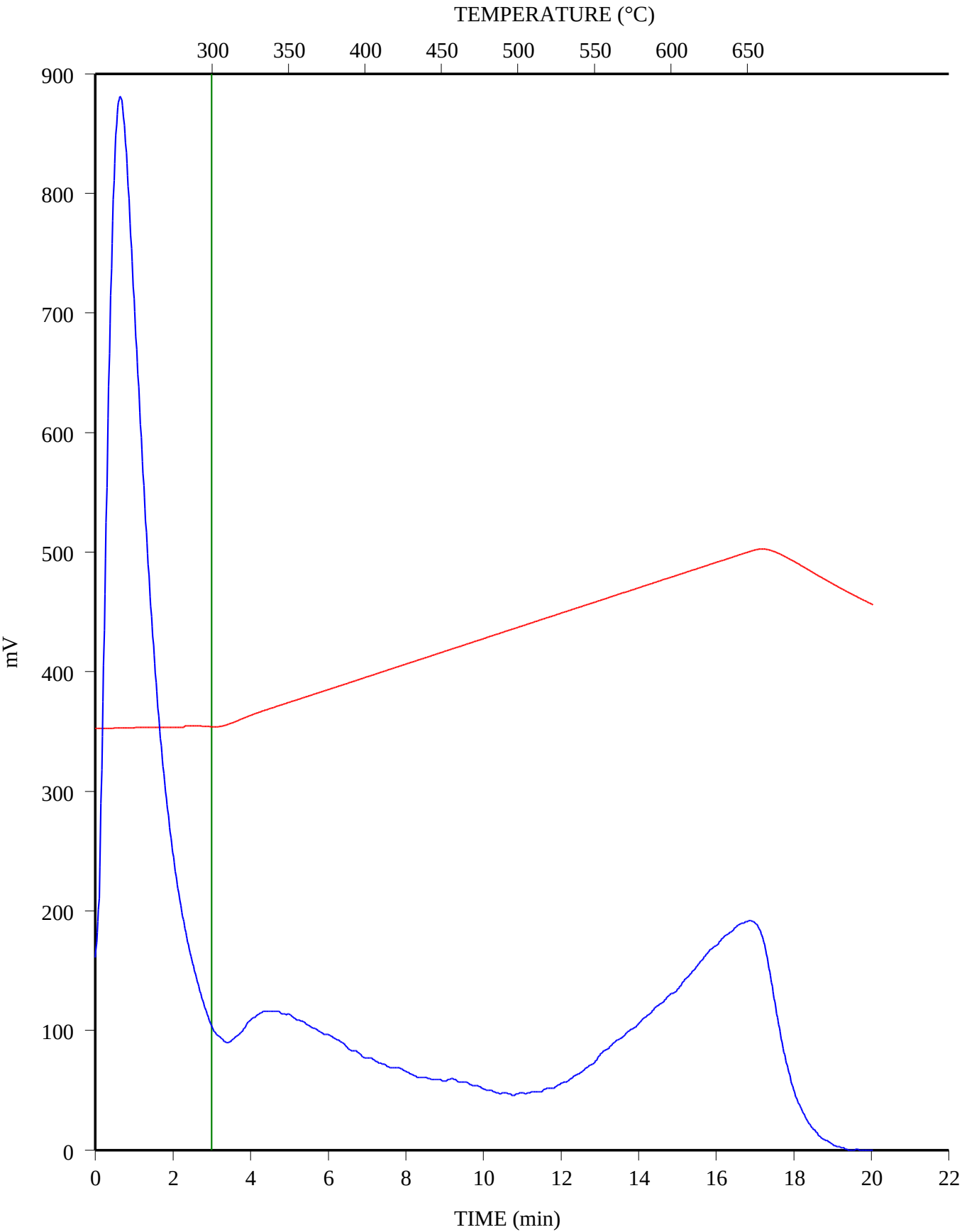
C-594379; HUSKY WILD RIV 10-33-56-22; 4024.7 m
FID Hydrocarbons



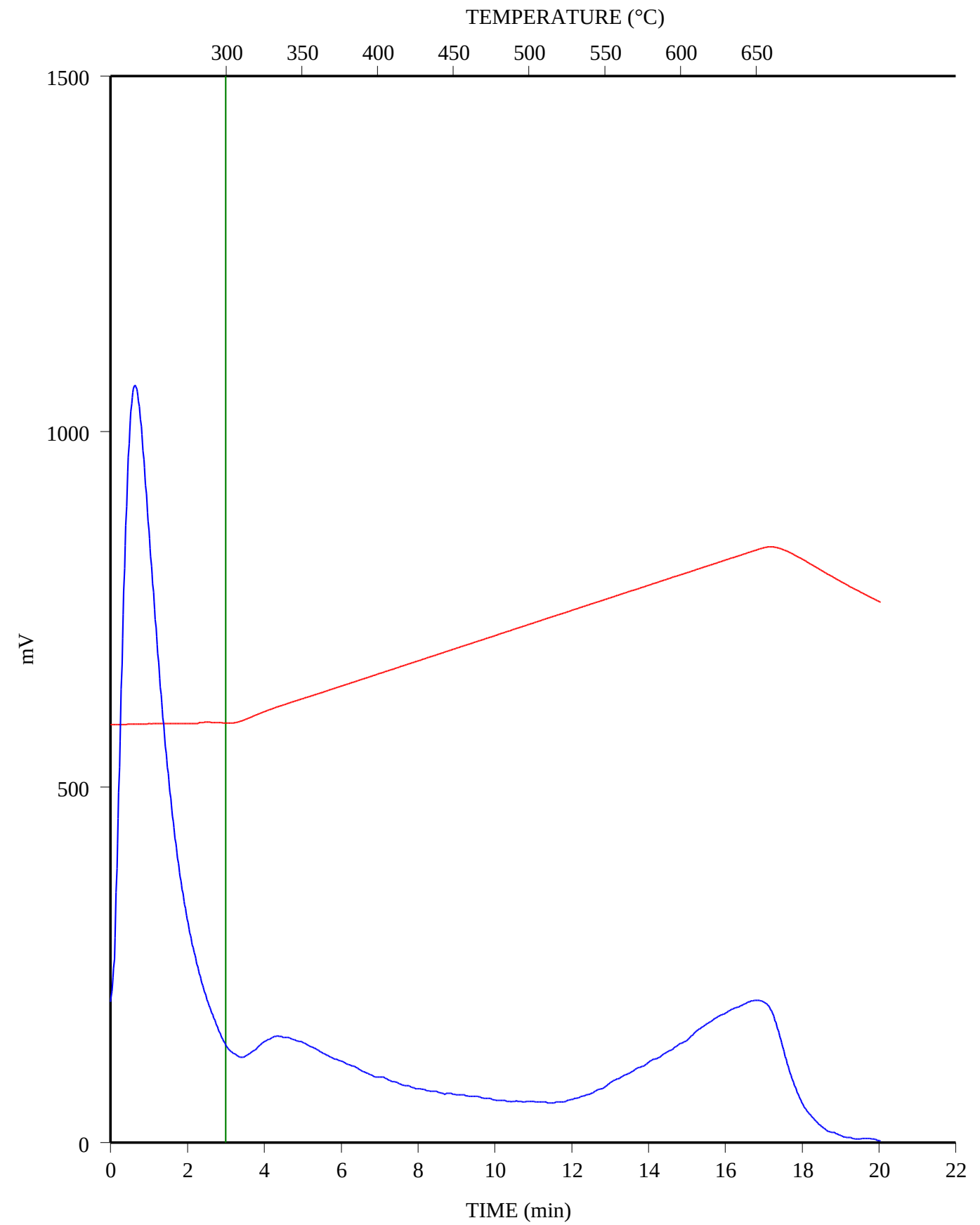
C-594380; HUSKY WILD RIV 10-33-56-22; 4025.55 m
FID Hydrocarbons



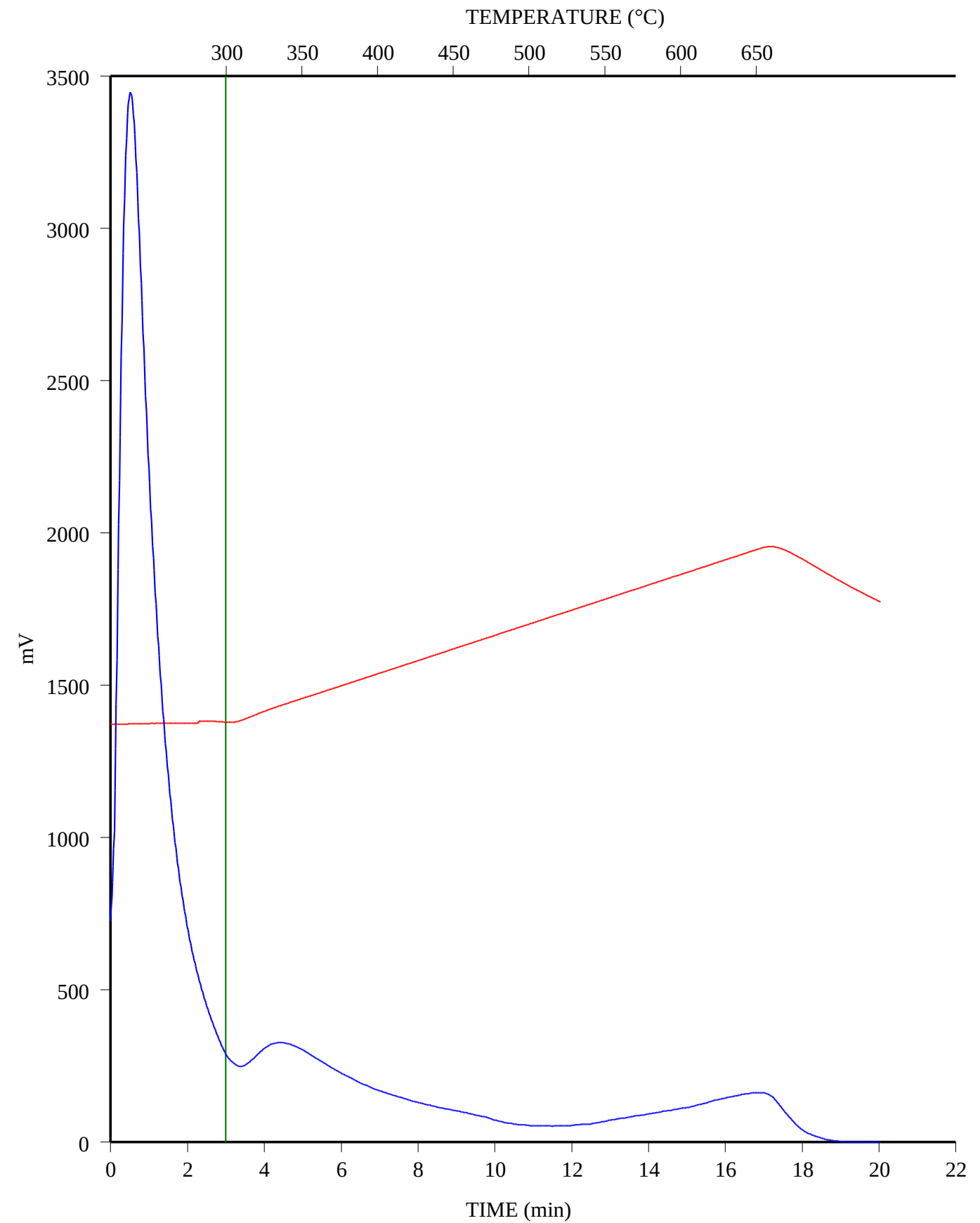
C-594381; HUSKY WILD RIV 10-33-56-22; 4026.6 m
FID Hydrocarbons



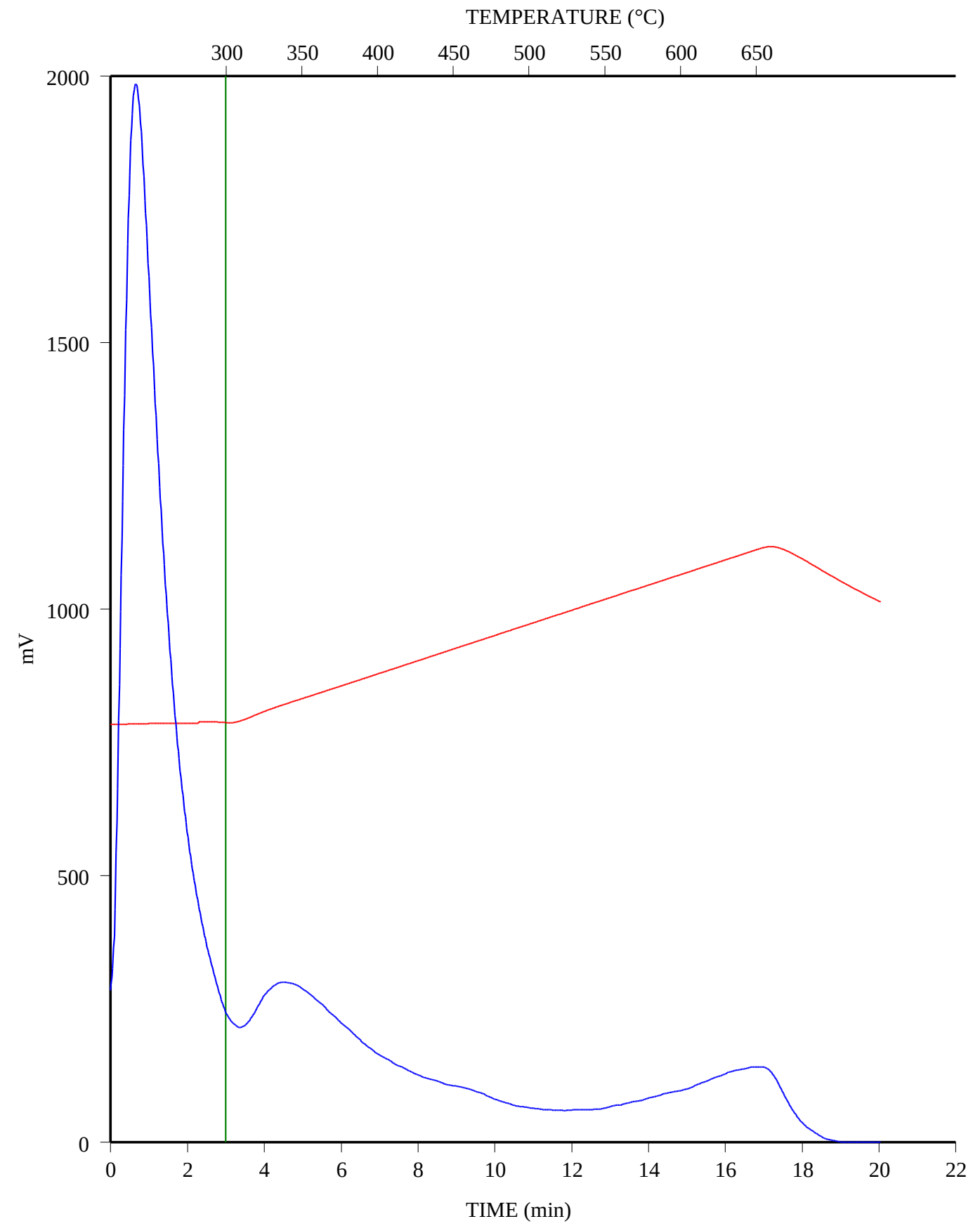
C-594382; HUSKY WILD RIV 10-33-56-22; 4027.55 m
FID Hydrocarbons



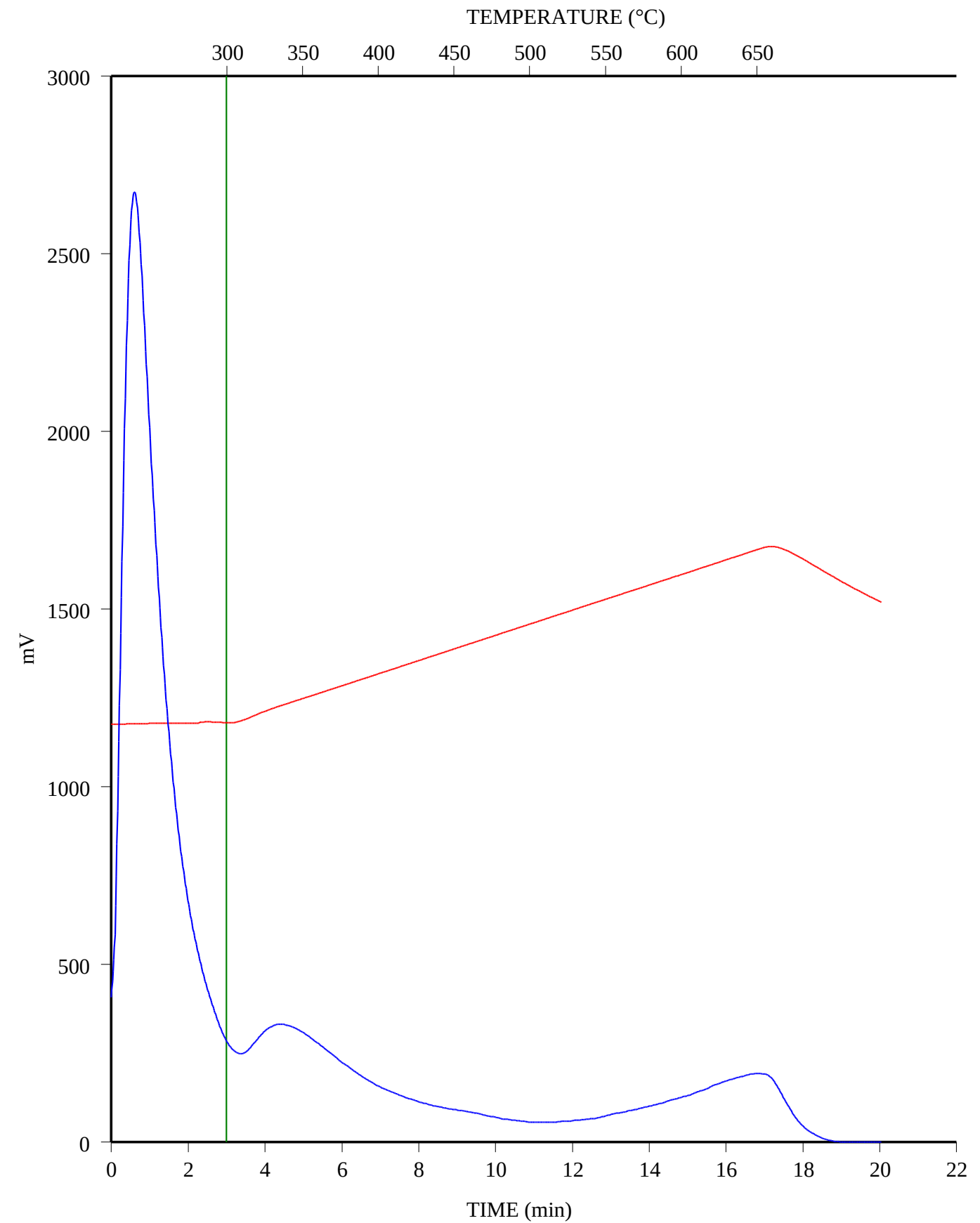
C-594383; HUSKY WILD RIV 10-33-56-22; 4028.64 m
FID Hydrocarbons



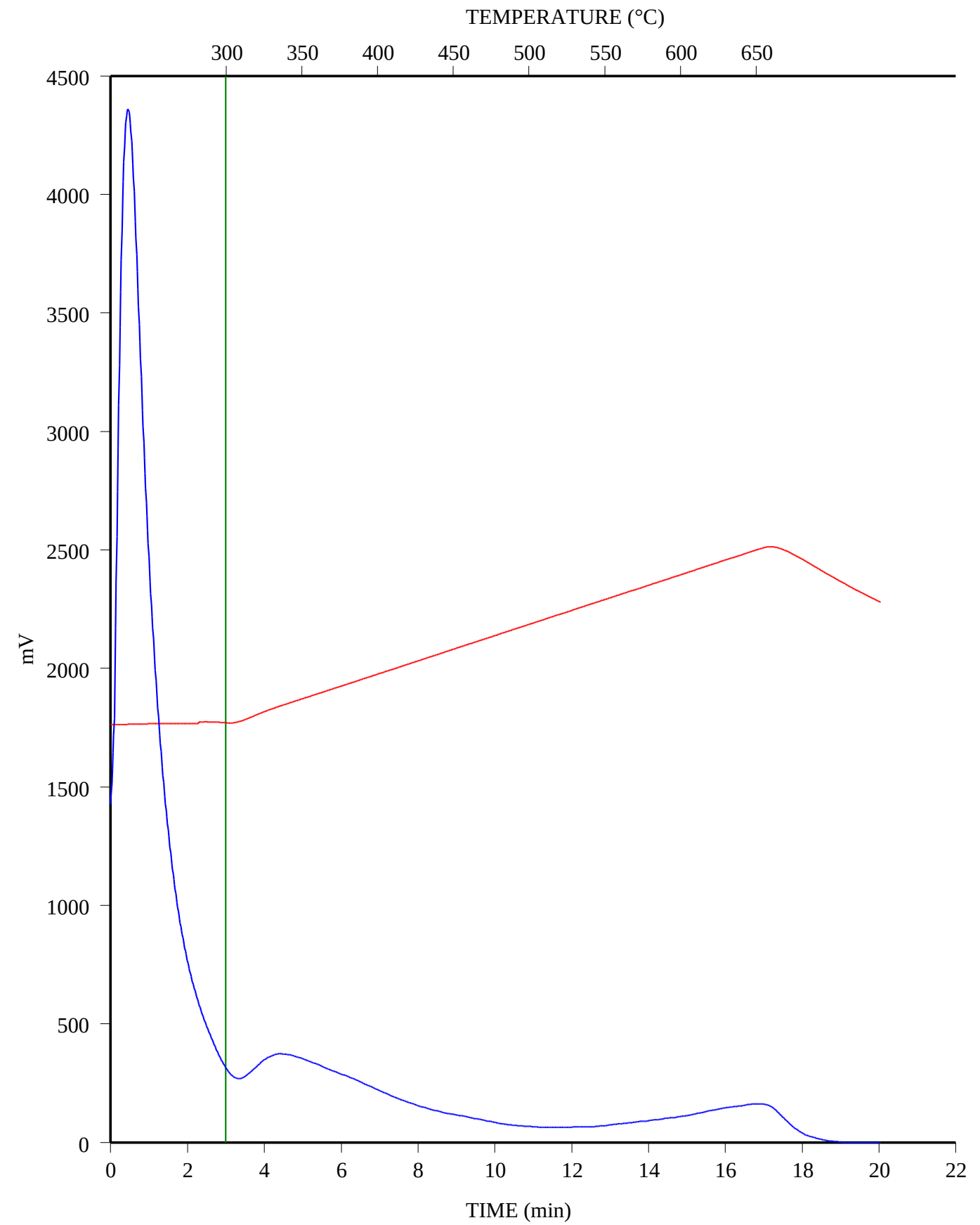
C-594384; HUSKY WILD RIV 10-33-56-22; 4029.6 m
FID Hydrocarbons



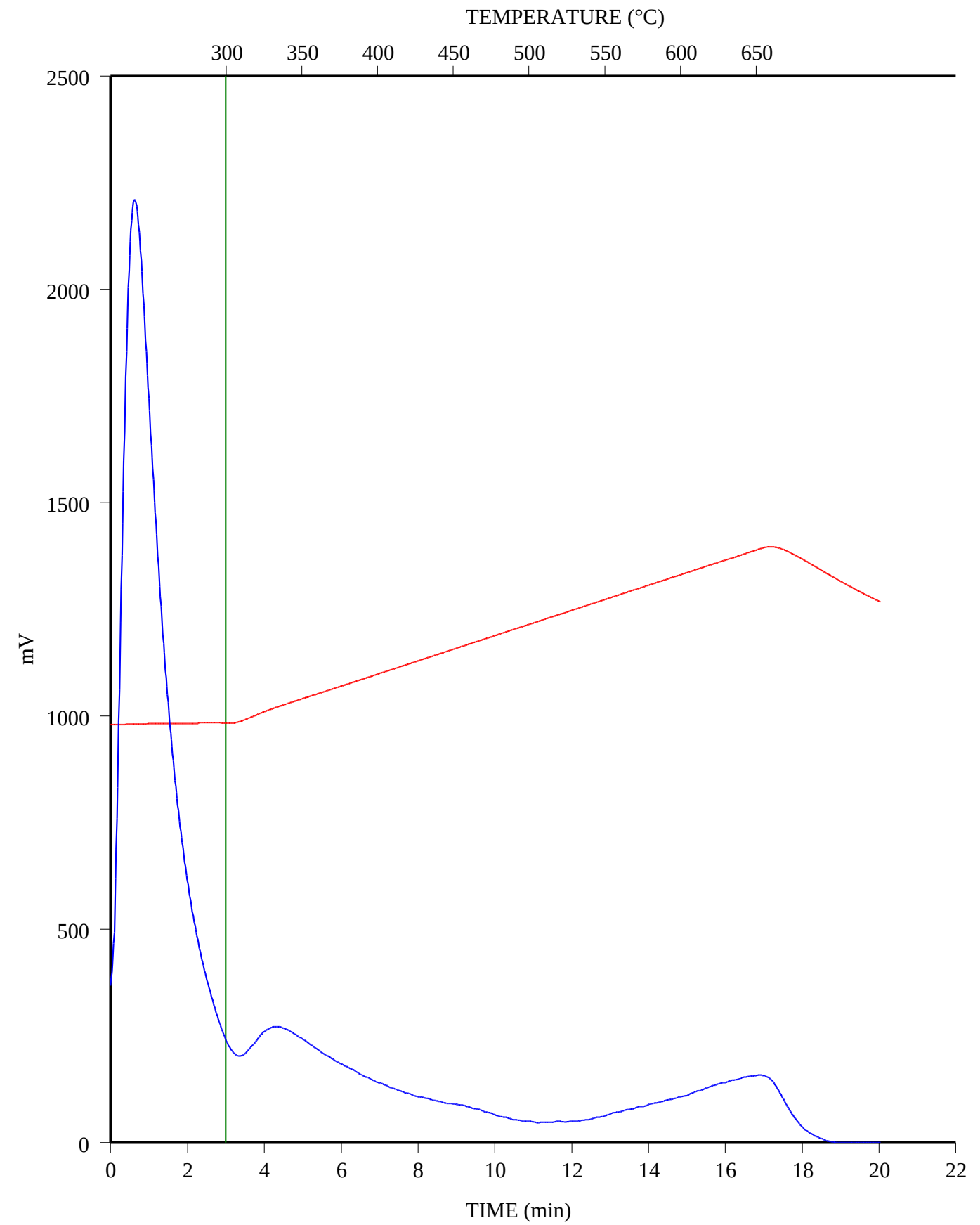
C-594385; HUSKY WILD RIV 10-33-56-22; 4030.71 m
FID Hydrocarbons



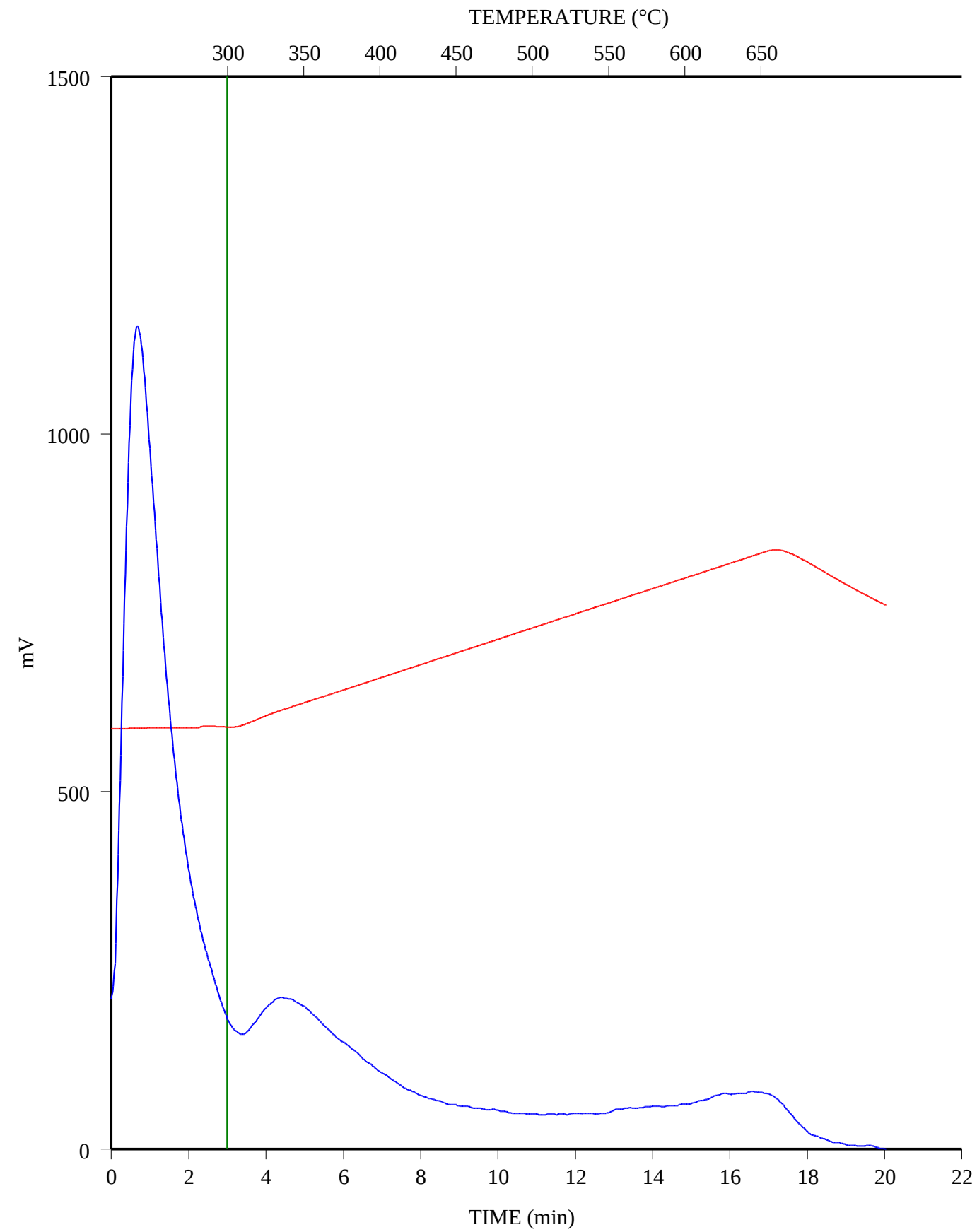
C-594386; HUSKY WILD RIV 10-33-56-22; 4031.82 m
FID Hydrocarbons



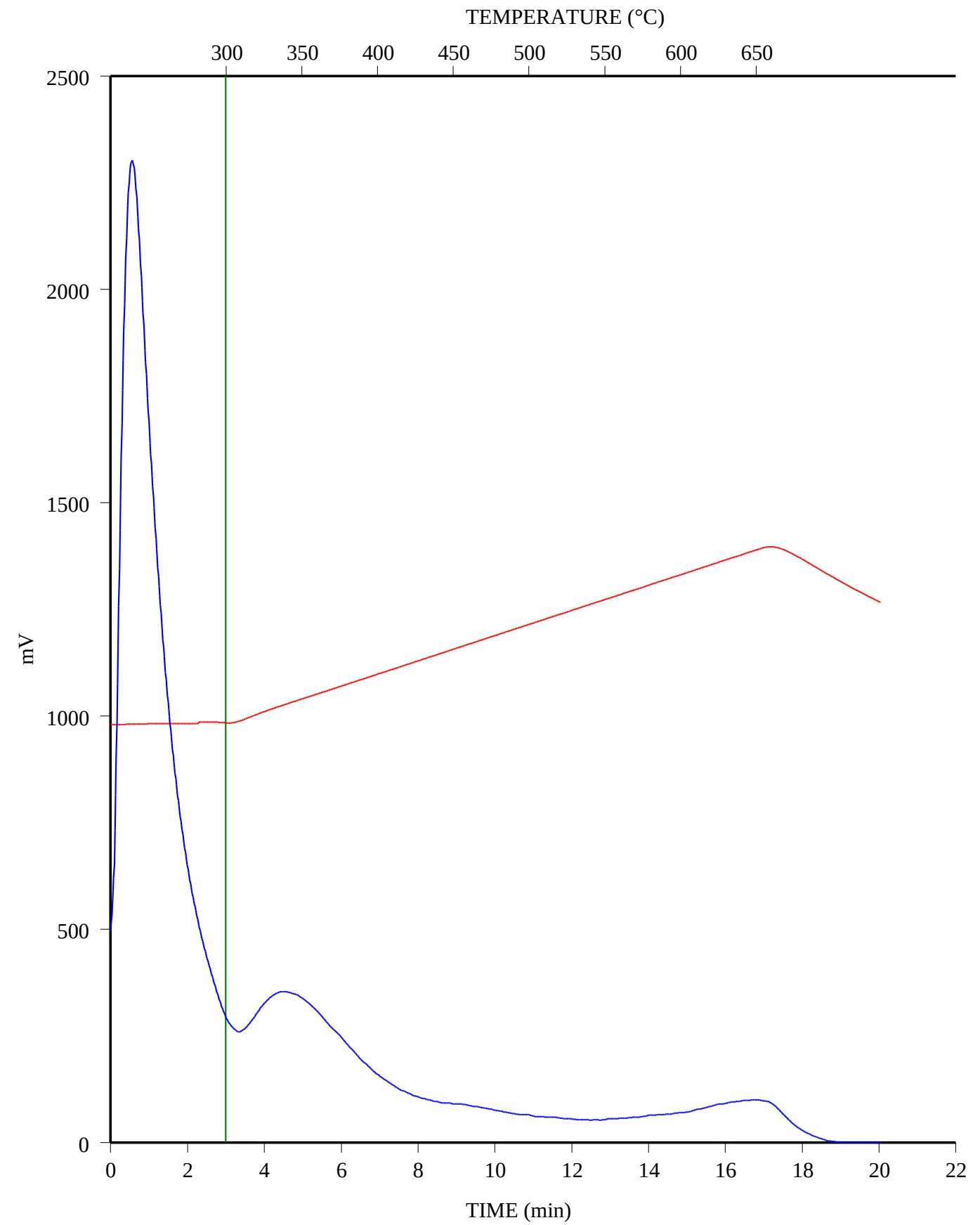
C-594387; HUSKY WILD RIV 10-33-56-22; 4032.68 m
FID Hydrocarbons



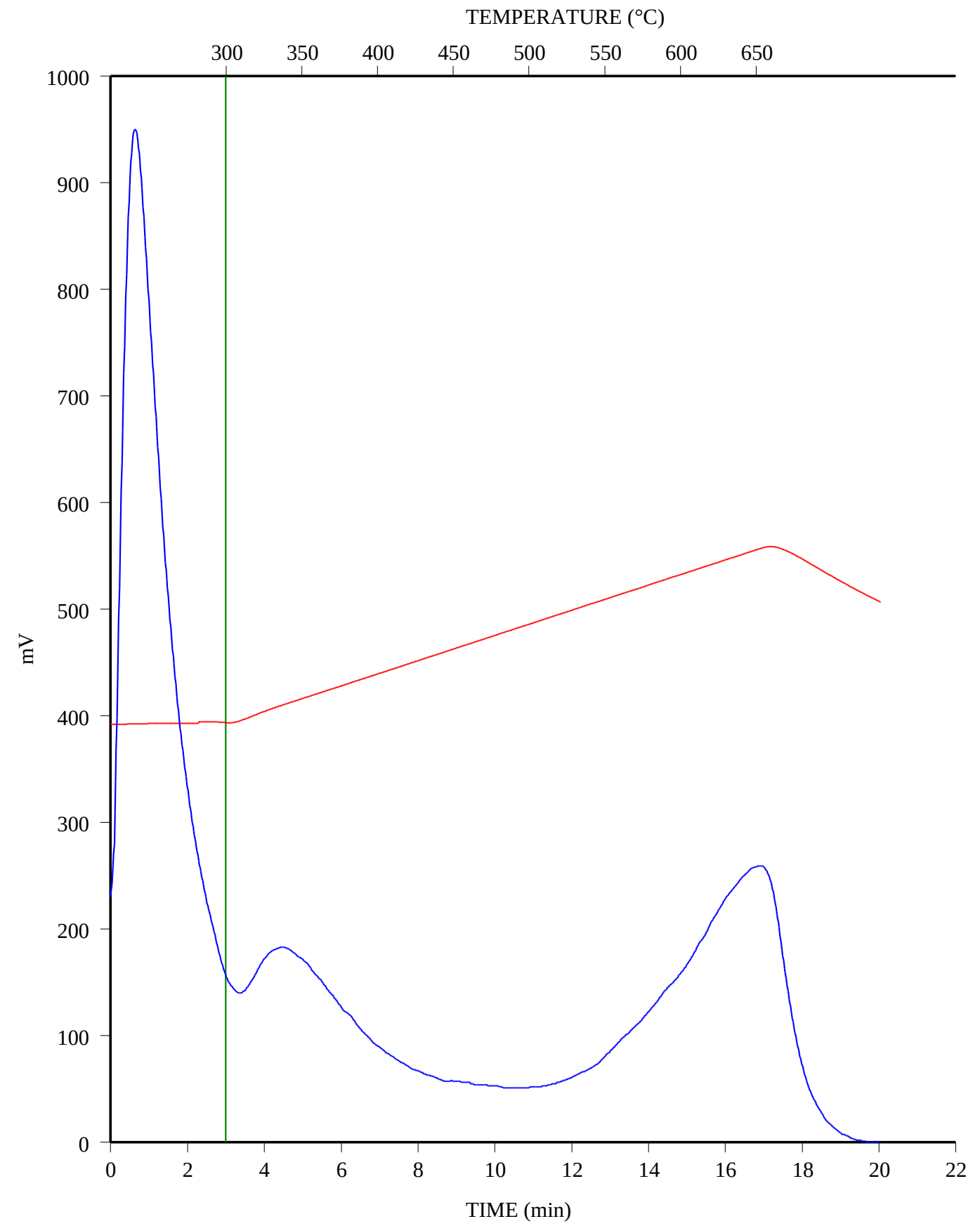
C-594388; HUSKY WILD RIV 10-33-56-22; 4033.65 m
FID Hydrocarbons



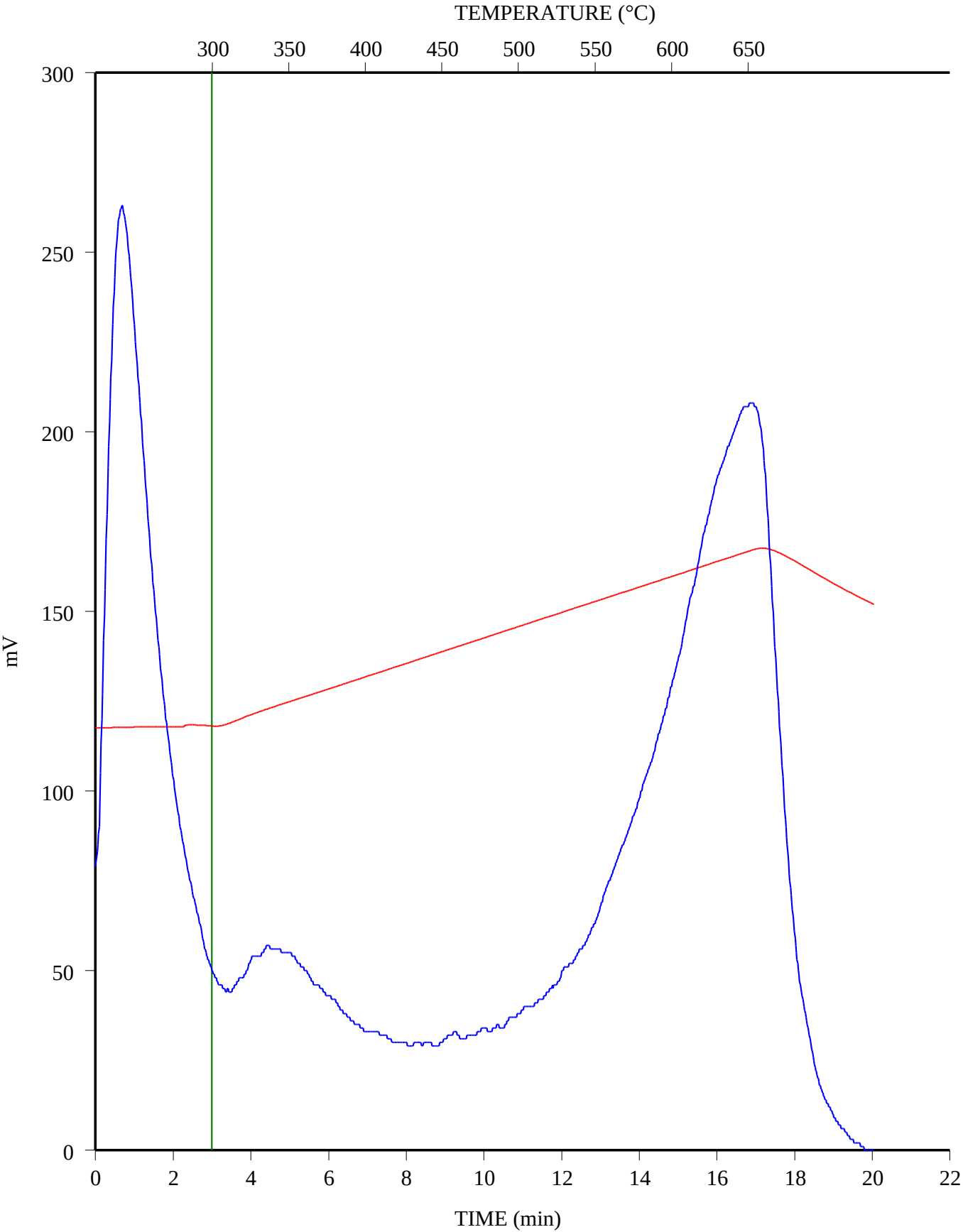
C-594389; HUSKY WILD RIV 10-33-56-22; 4034.58 m
FID Hydrocarbons



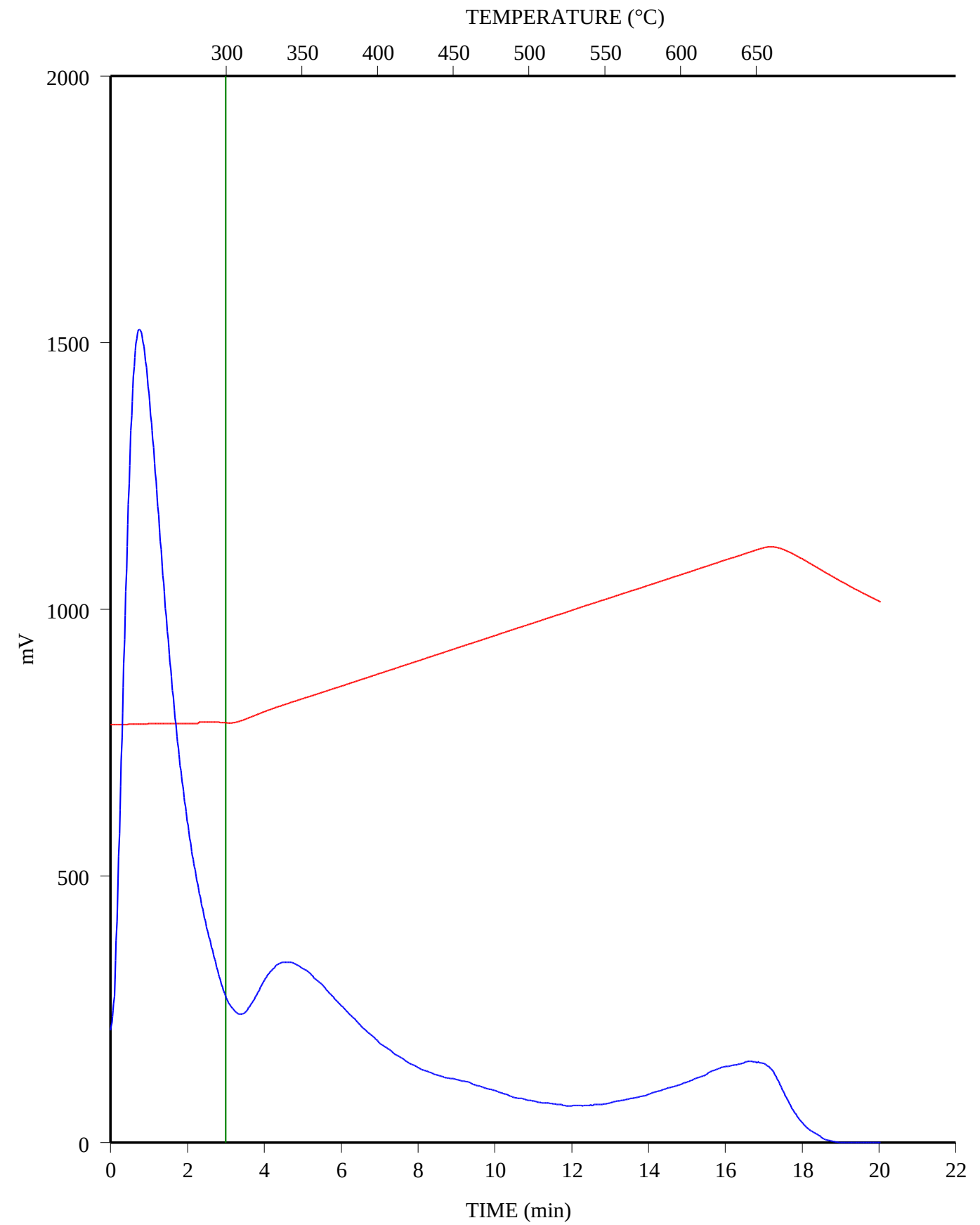
C-594390; HUSKY WILD RIV 10-33-56-22; 4035.39 m
FID Hydrocarbons



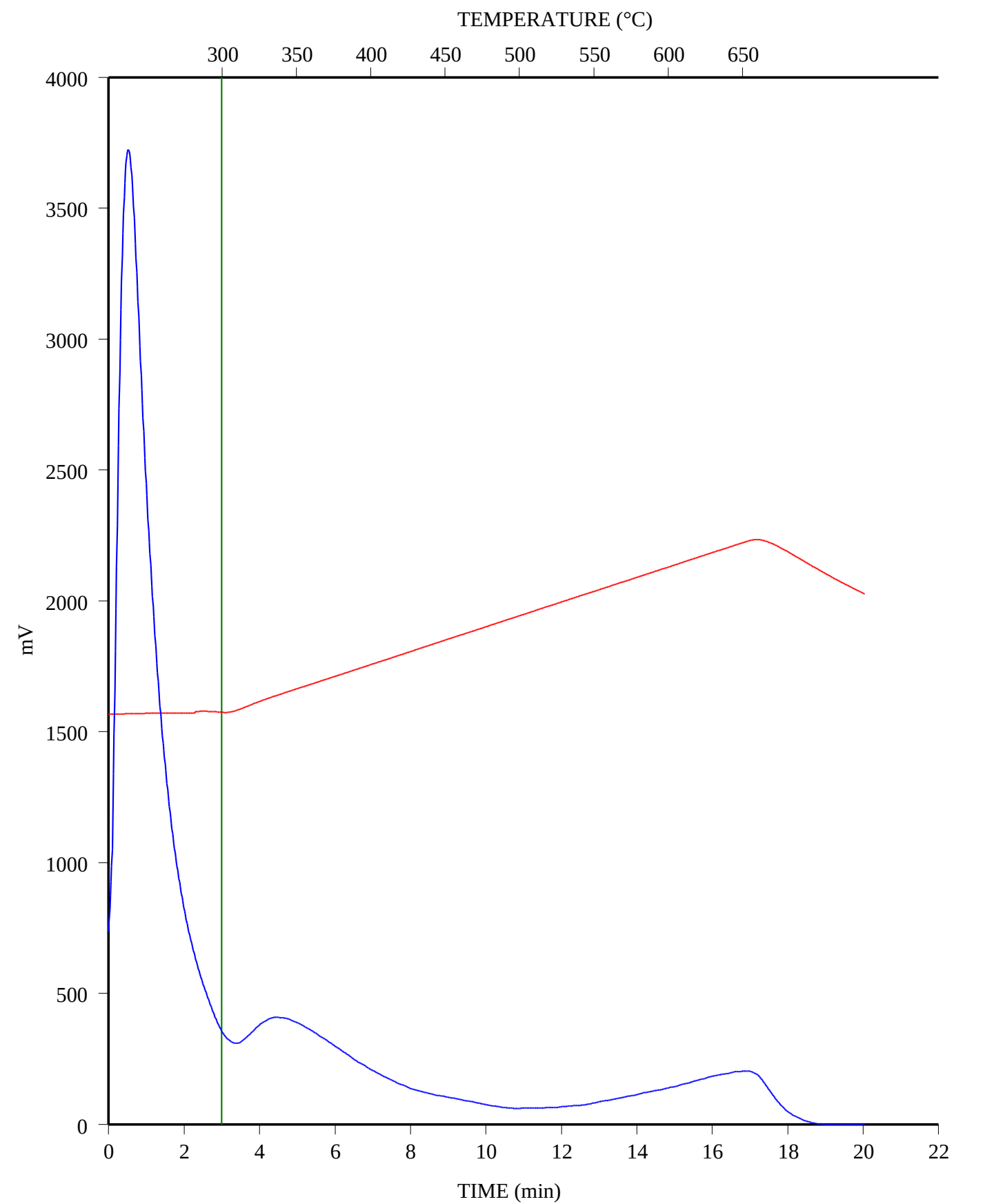
C-594391; HUSKY WILD RIV 10-33-56-22; 4036.61 m
FID Hydrocarbons



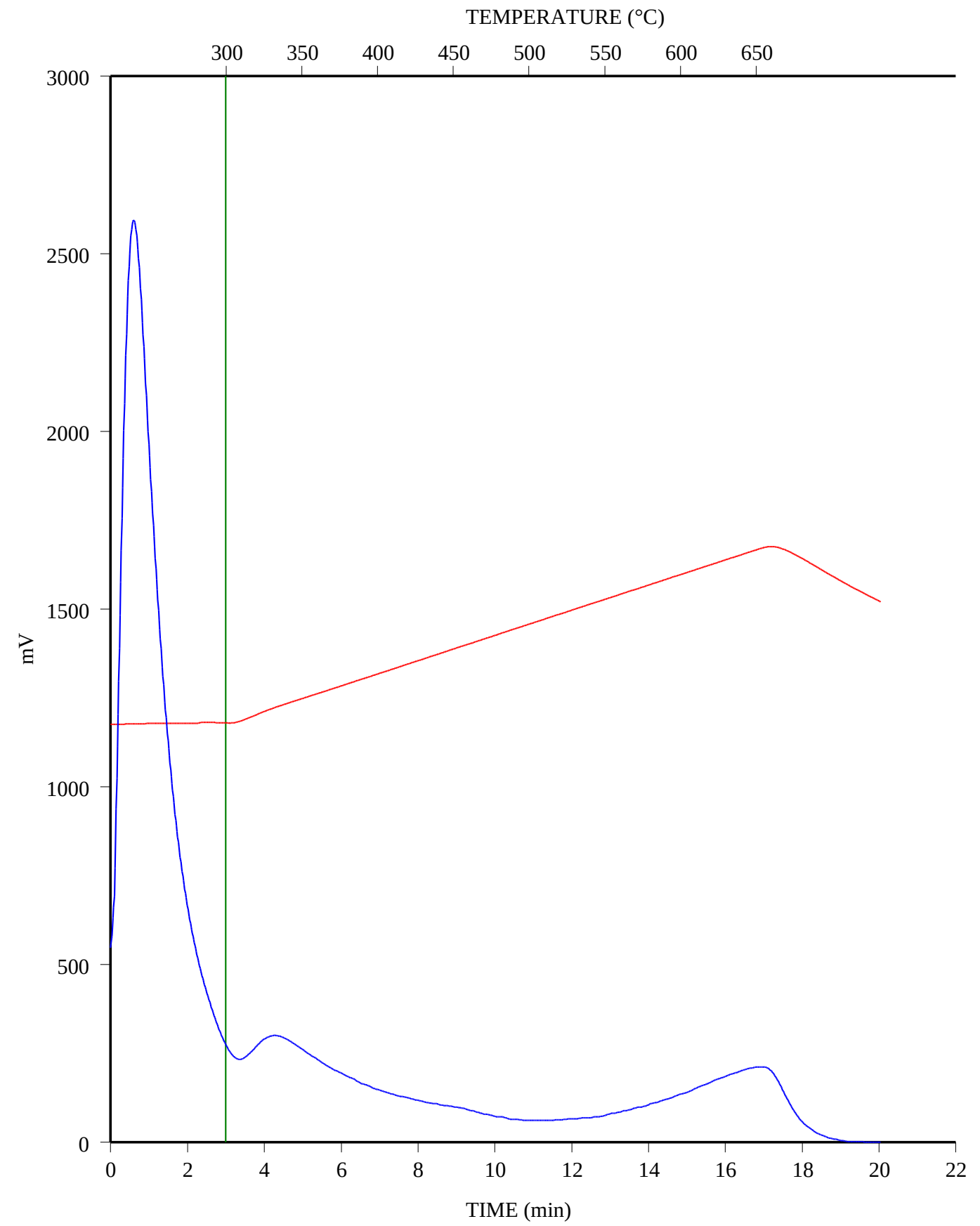
C-594392; HUSKY WILD RIV 10-33-56-22; 4037.65 m
FID Hydrocarbons



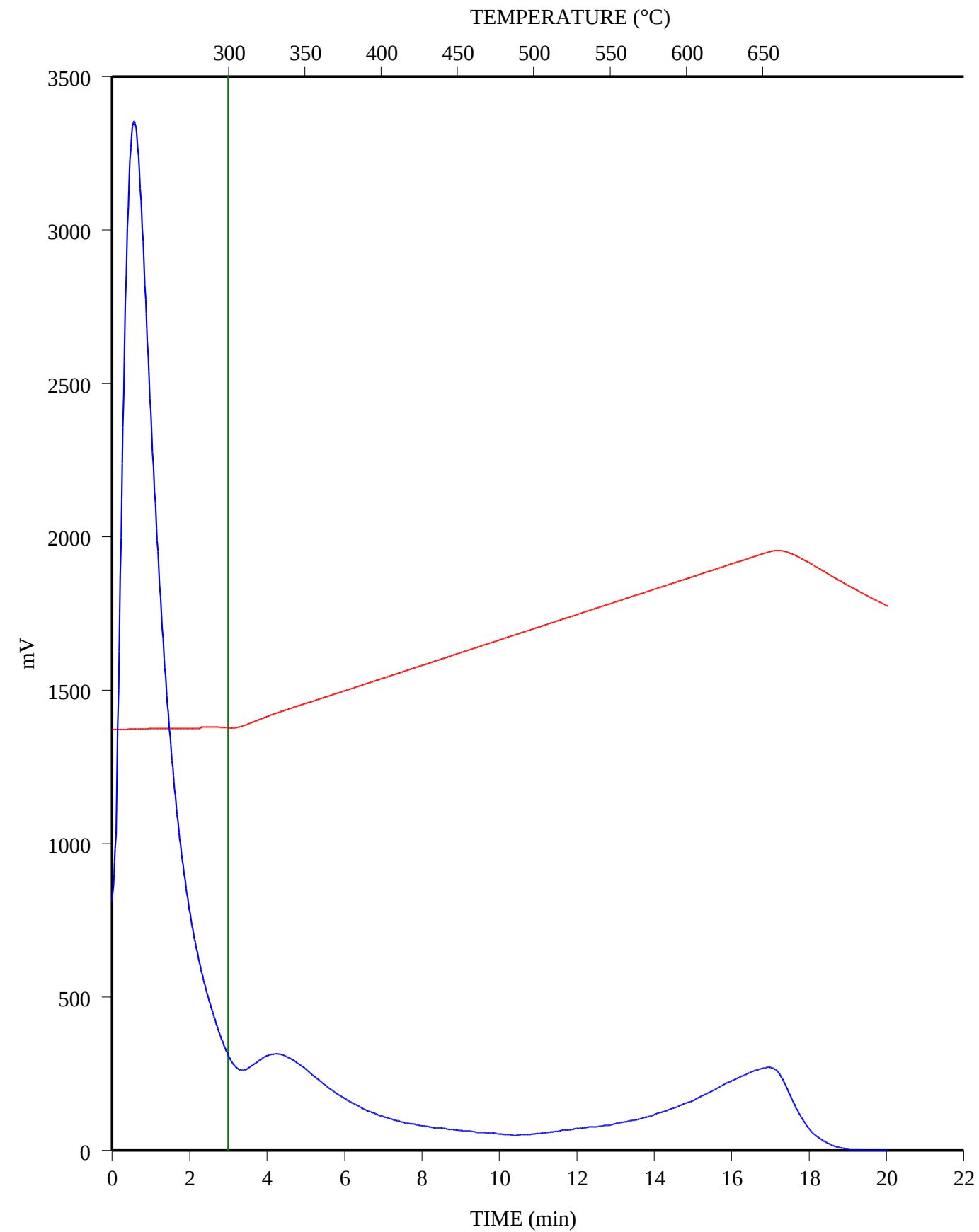
C-594393; HUSKY WILD RIV 10-33-56-22; 4039 m
FID Hydrocarbons



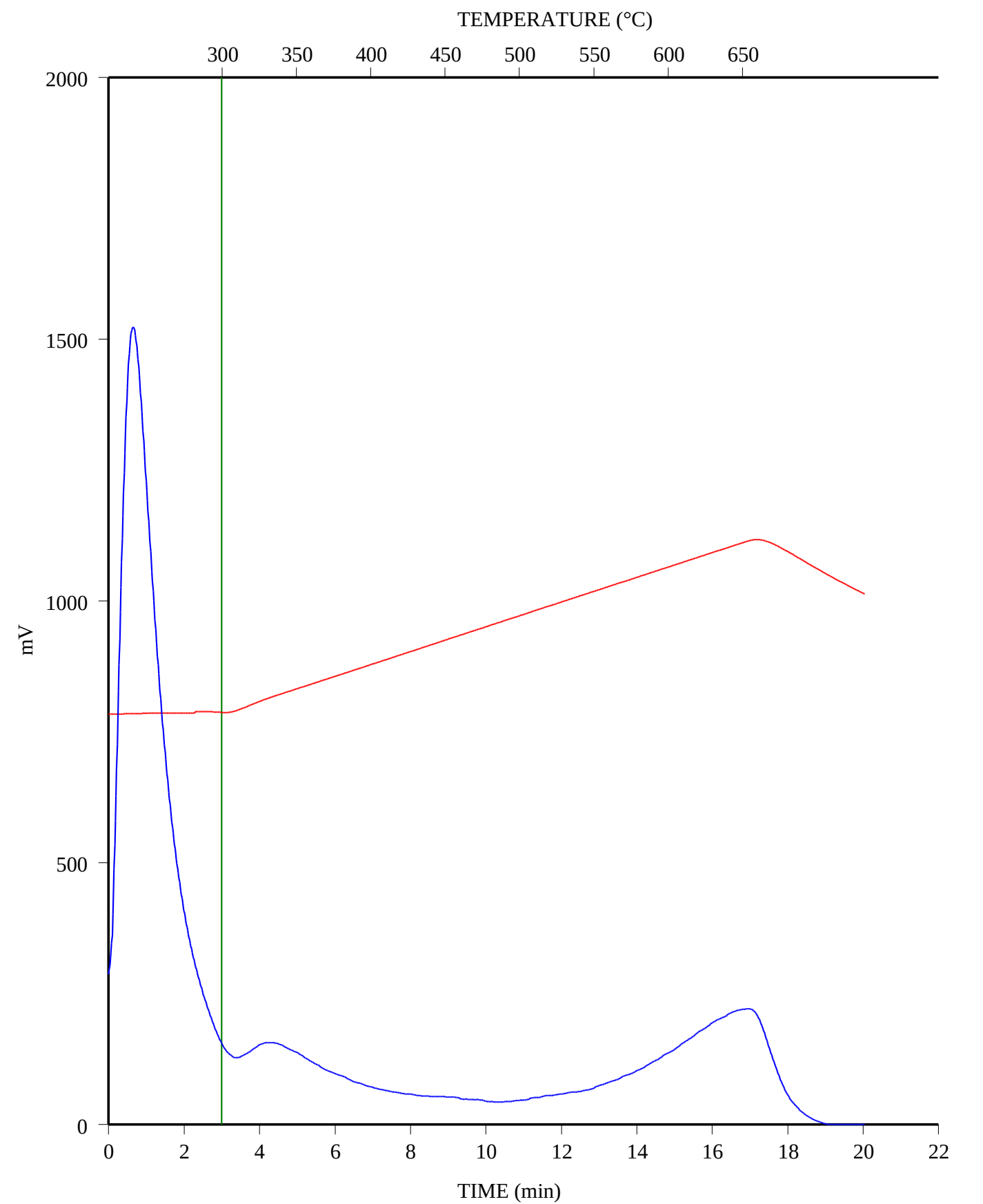
C-594394; HUSKY WILD RIV 10-33-56-22; 4040 m
FID Hydrocarbons



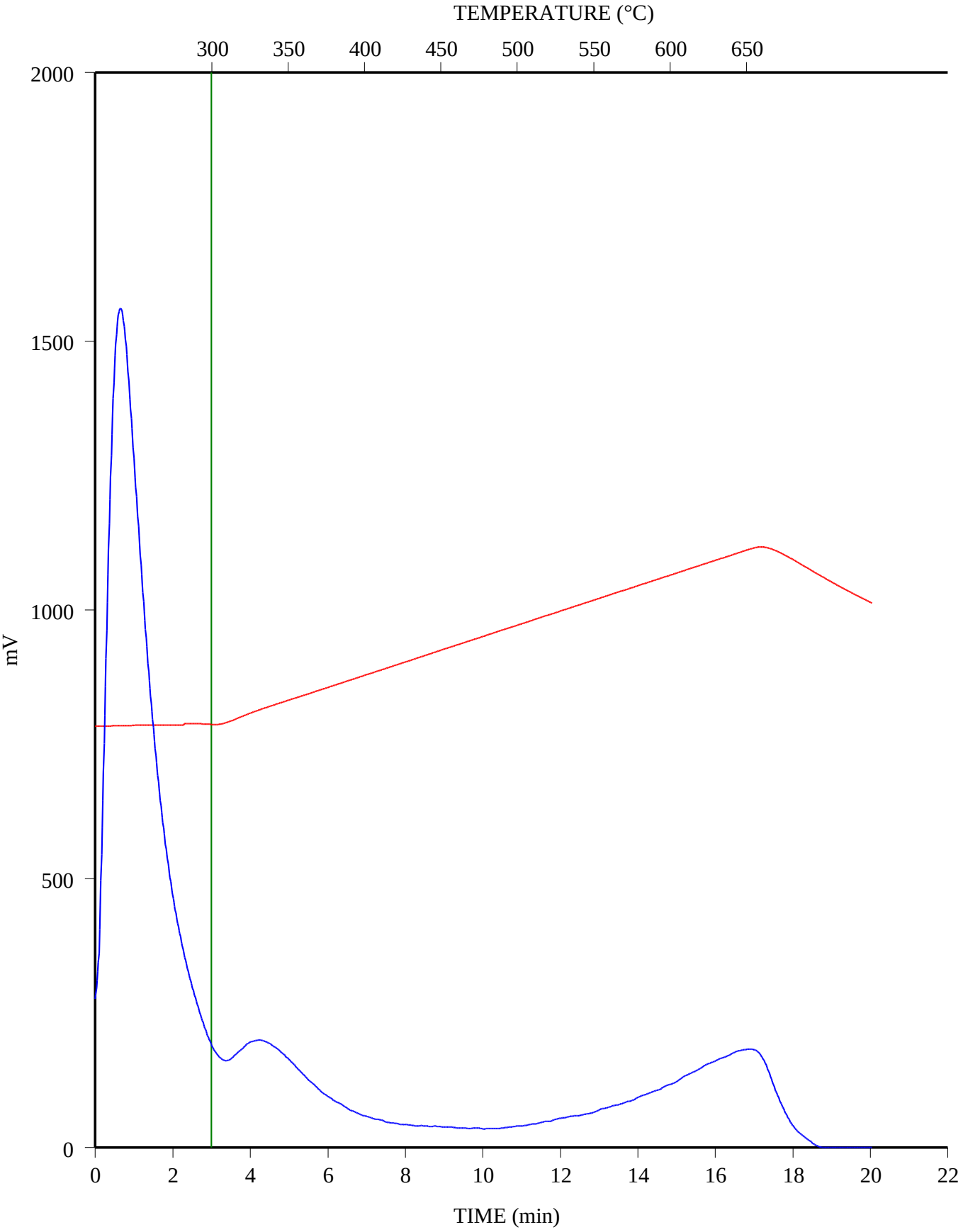
C-594395; HUSKY WILD RIV 10-33-56-22; 4040.95 m
FID Hydrocarbons



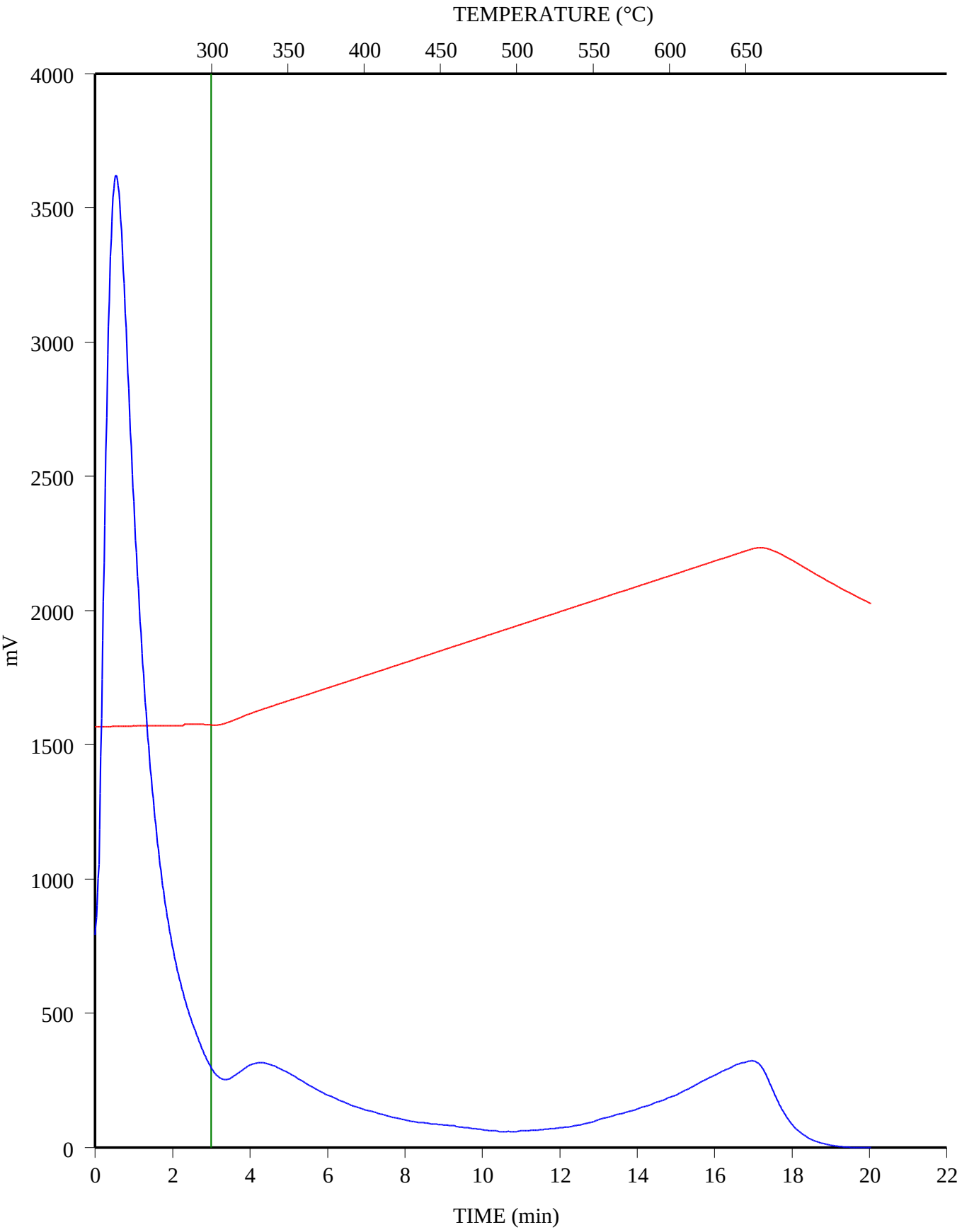
C-594396; HUSKY WILD RIV 10-33-56-22; 4041.81 m
FID Hydrocarbons



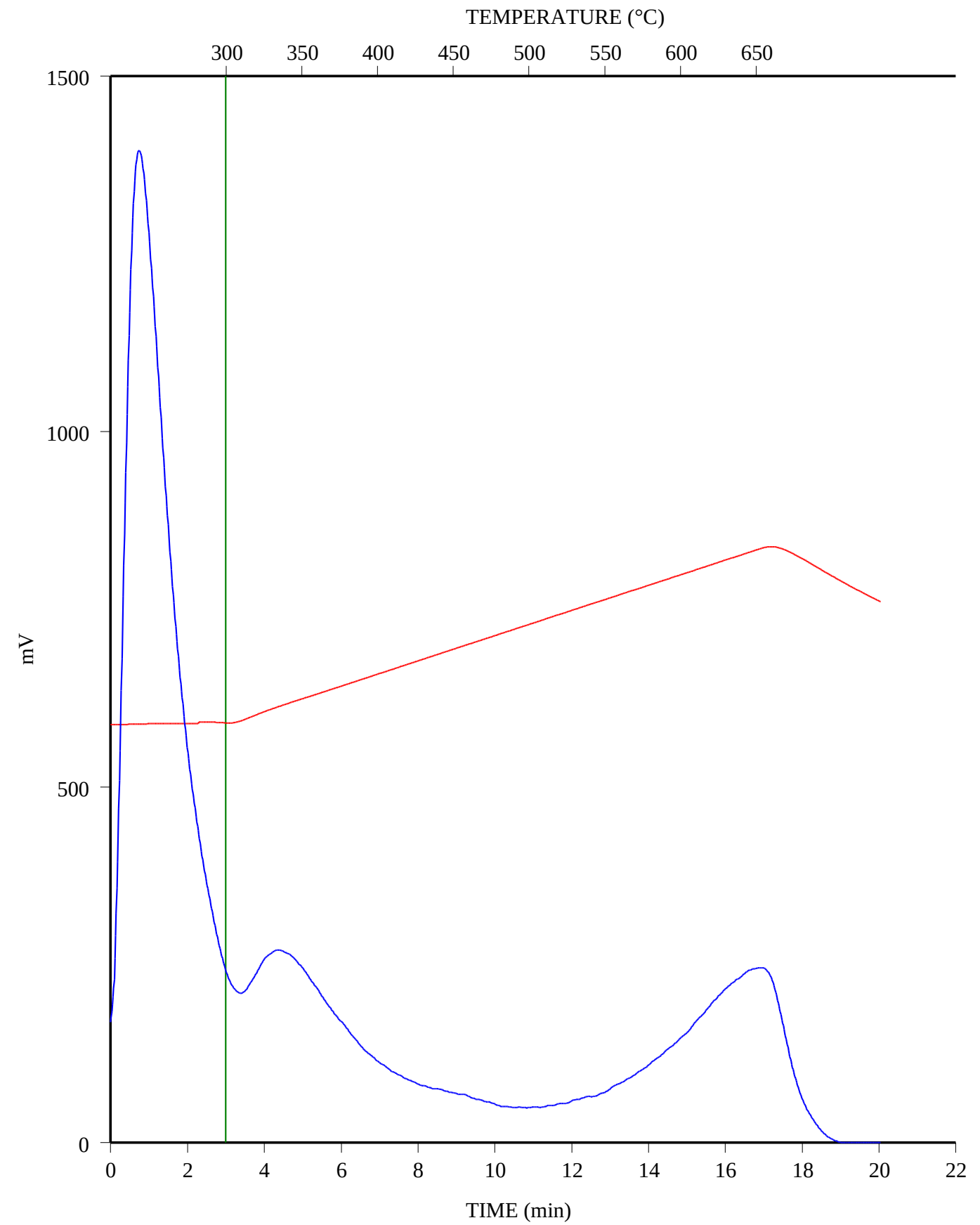
C-594397; HUSKY WILD RIV 10-33-56-22; 4042.79 m
FID Hydrocarbons



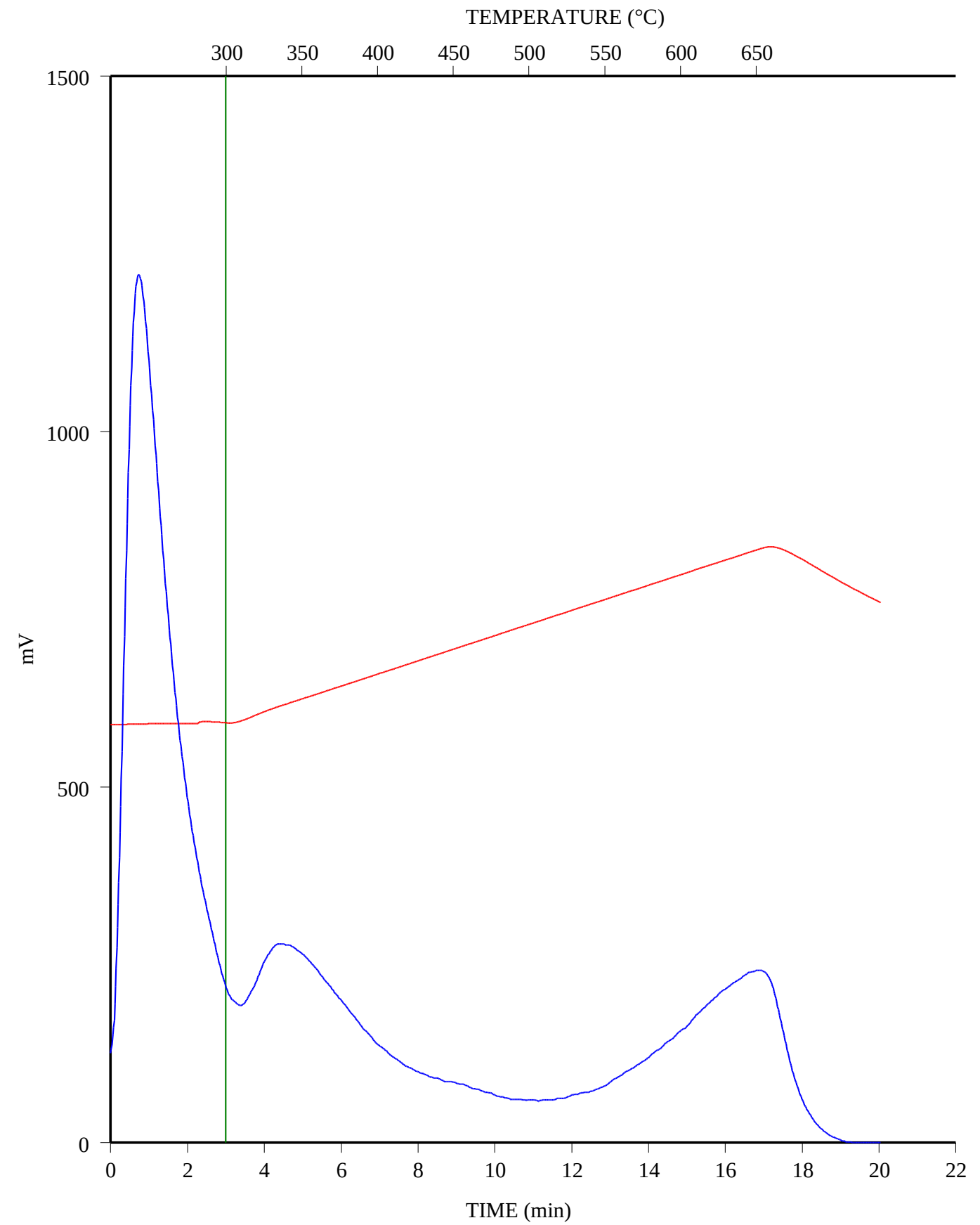
C-594398; HUSKY WILD RIV 10-33-56-22; 4043.5 m
FID Hydrocarbons



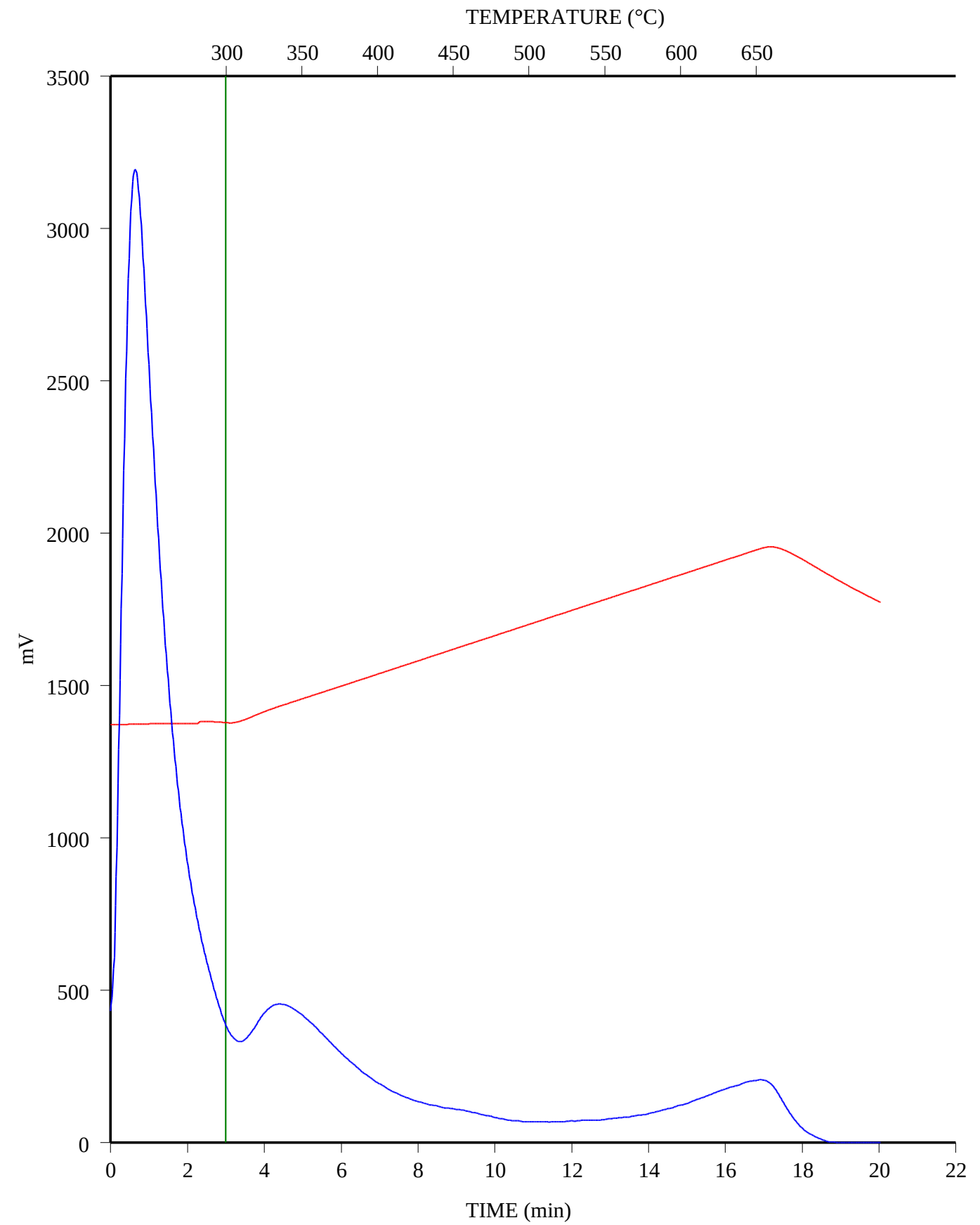
C-594399; HUSKY WILD RIV 10-33-56-22; 4044.71 m
FID Hydrocarbons



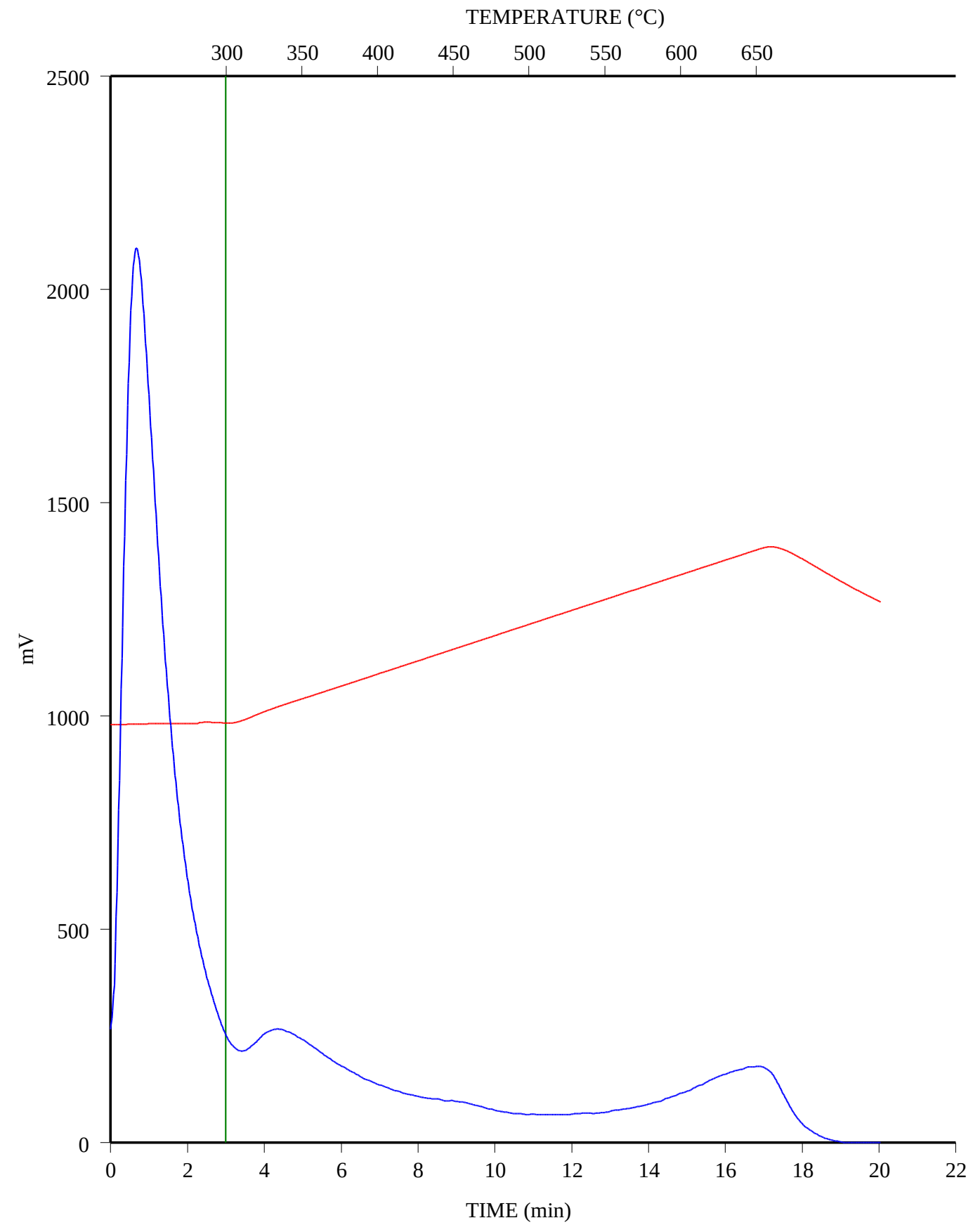
C-594400; HUSKY WILD RIV 10-33-56-22; 4045.6 m
FID Hydrocarbons



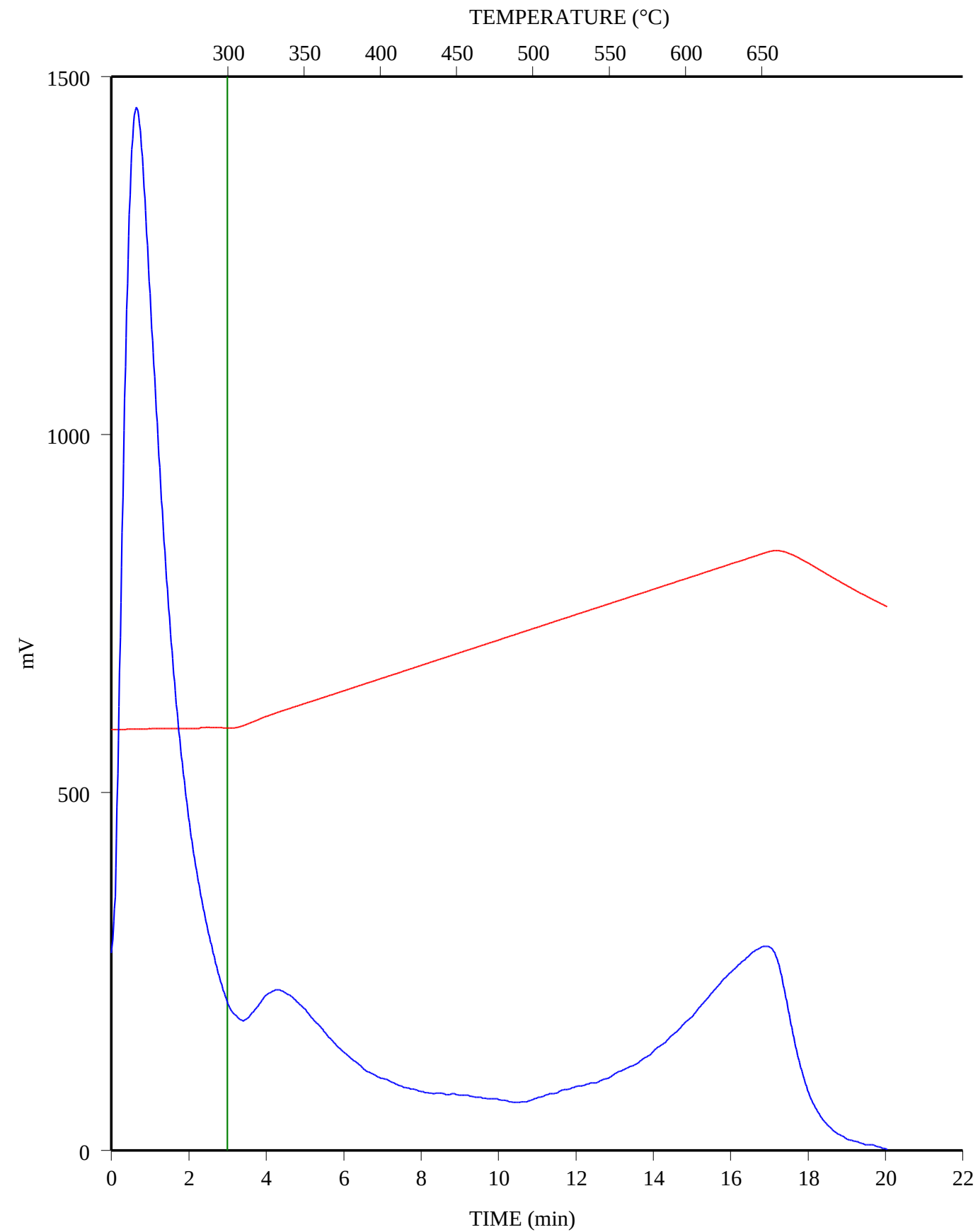
C-594401; HUSKY WILD RIV 10-33-56-22; 4046.5 m
FID Hydrocarbons



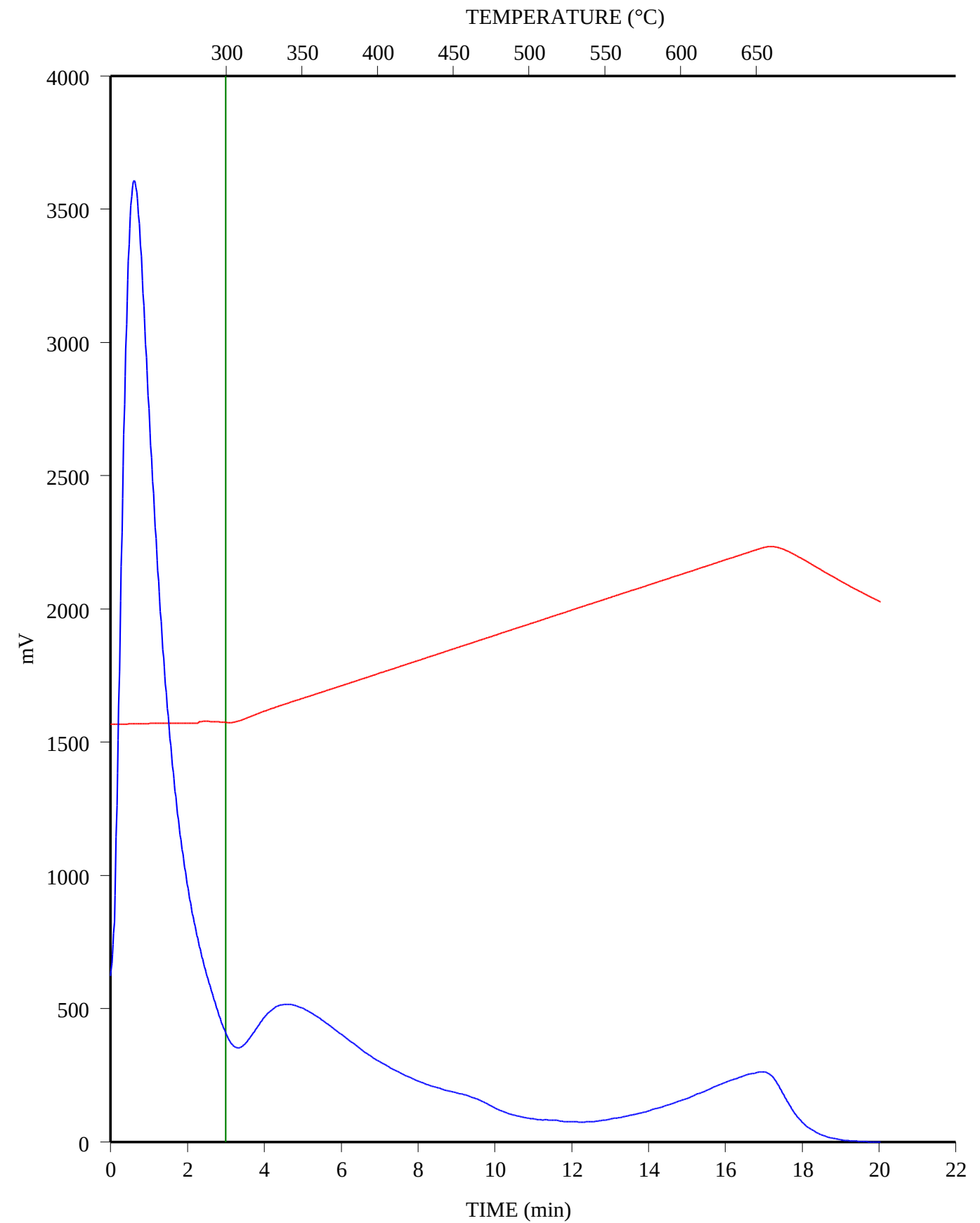
C-594402; HUSKY WILD RIV 10-33-56-22; 4047.52 m
FID Hydrocarbons



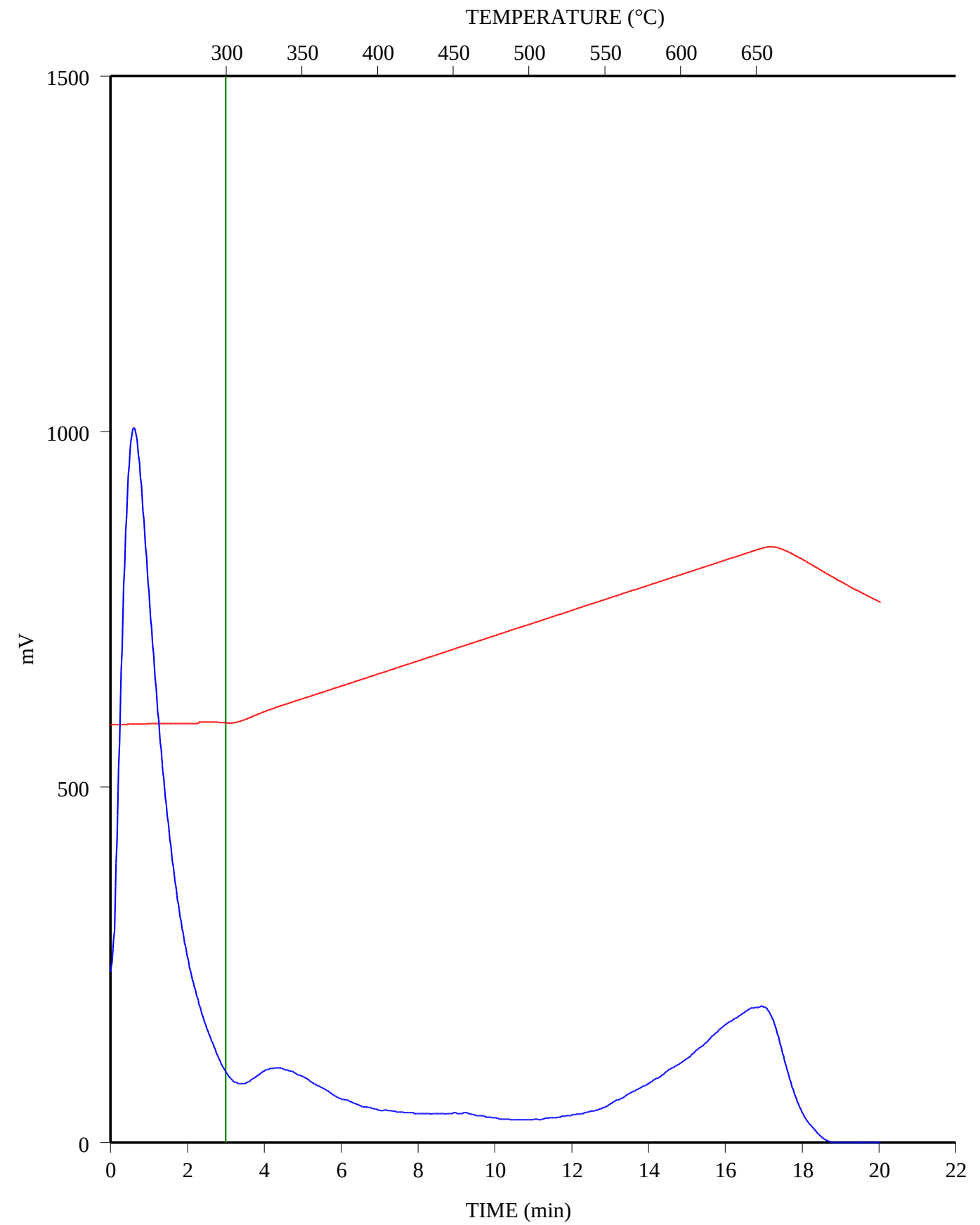
C-594403; HUSKY WILD RIV 10-33-56-22; 4048.55 m
FID Hydrocarbons



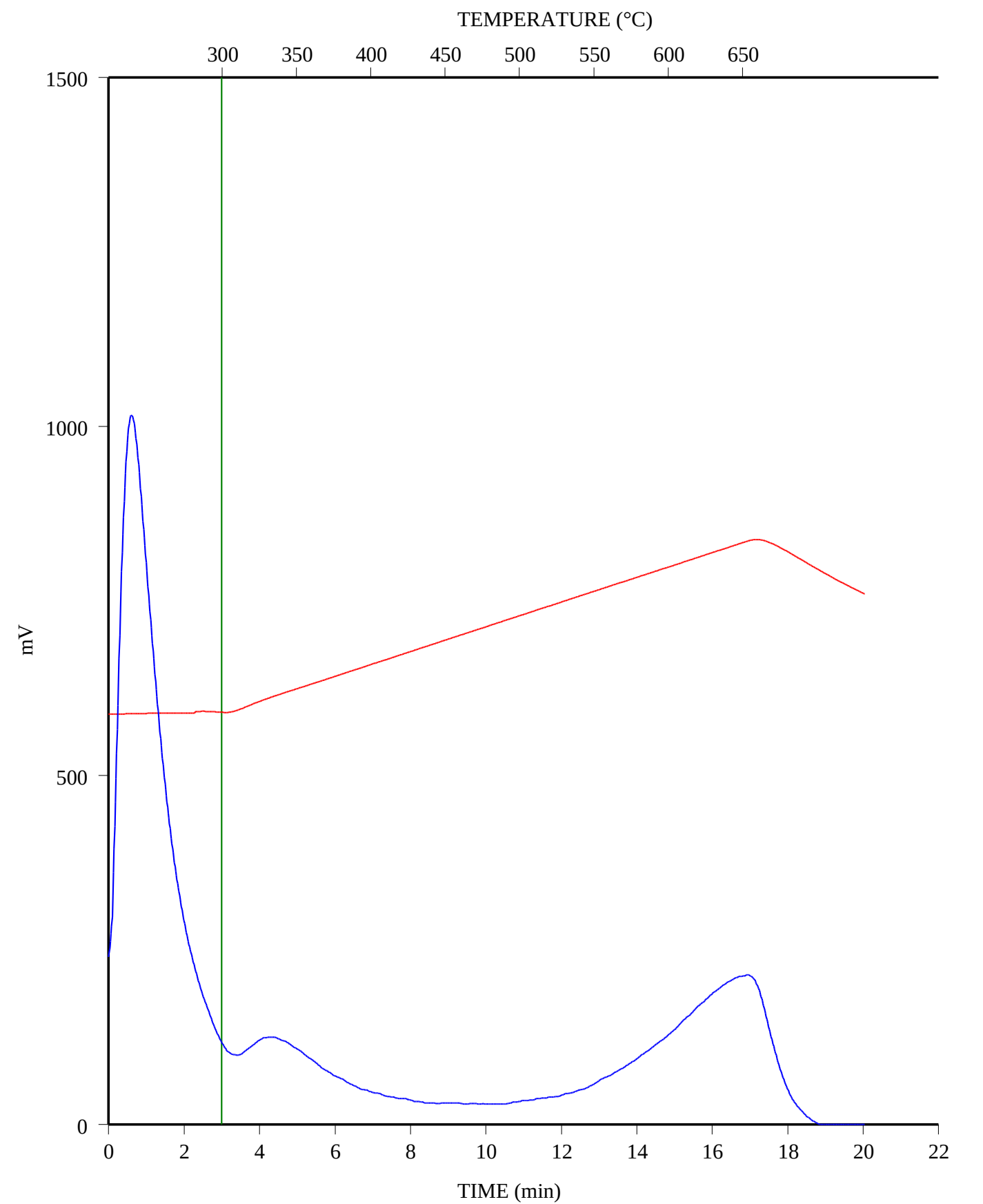
C-594404; HUSKY WILD RIV 10-33-56-22; 4049.47 m
FID Hydrocarbons



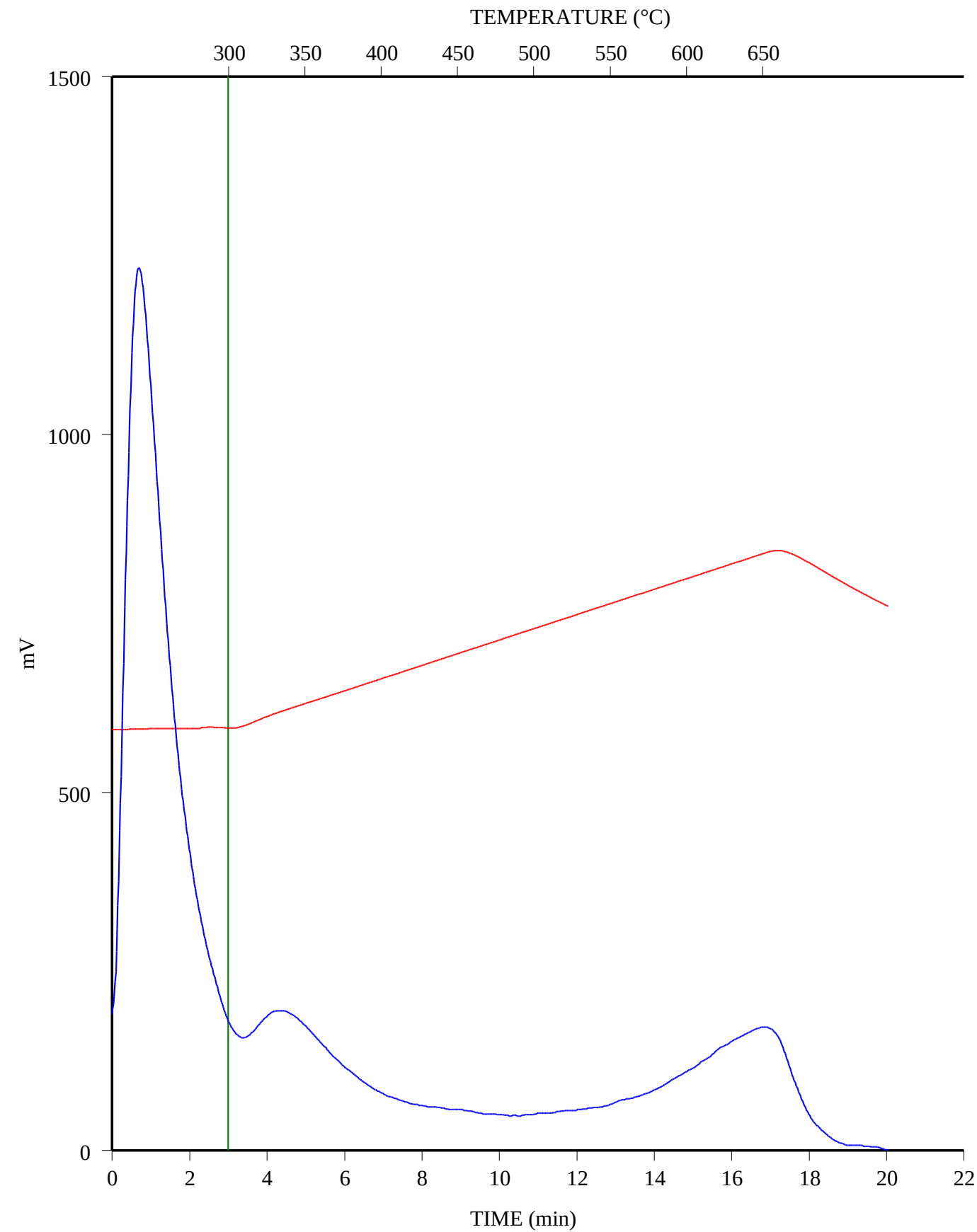
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FID Hydrocarbons



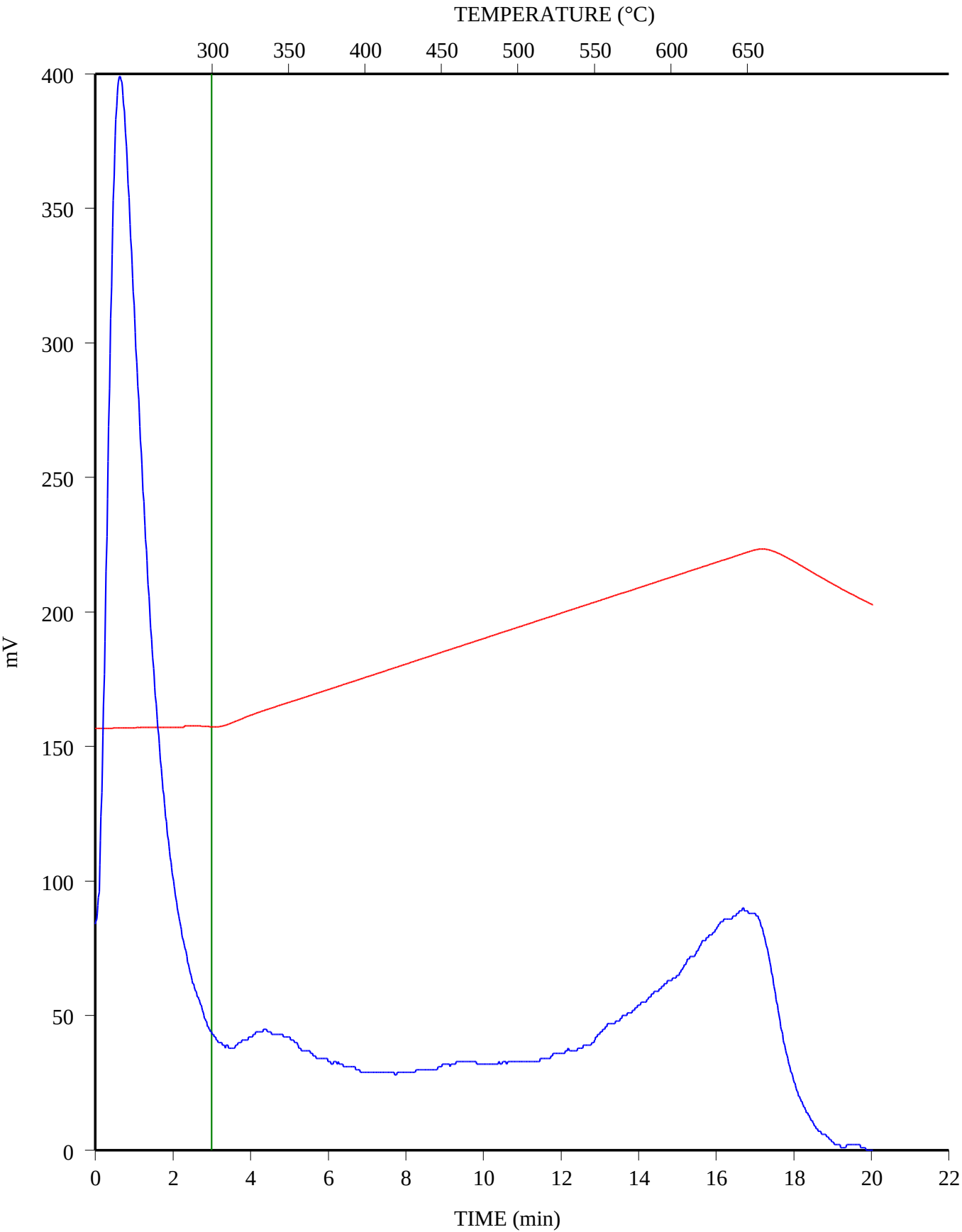
C-594406; HUSKY WILD RIV 10-33-56-22; 4051.4 m
FID Hydrocarbons



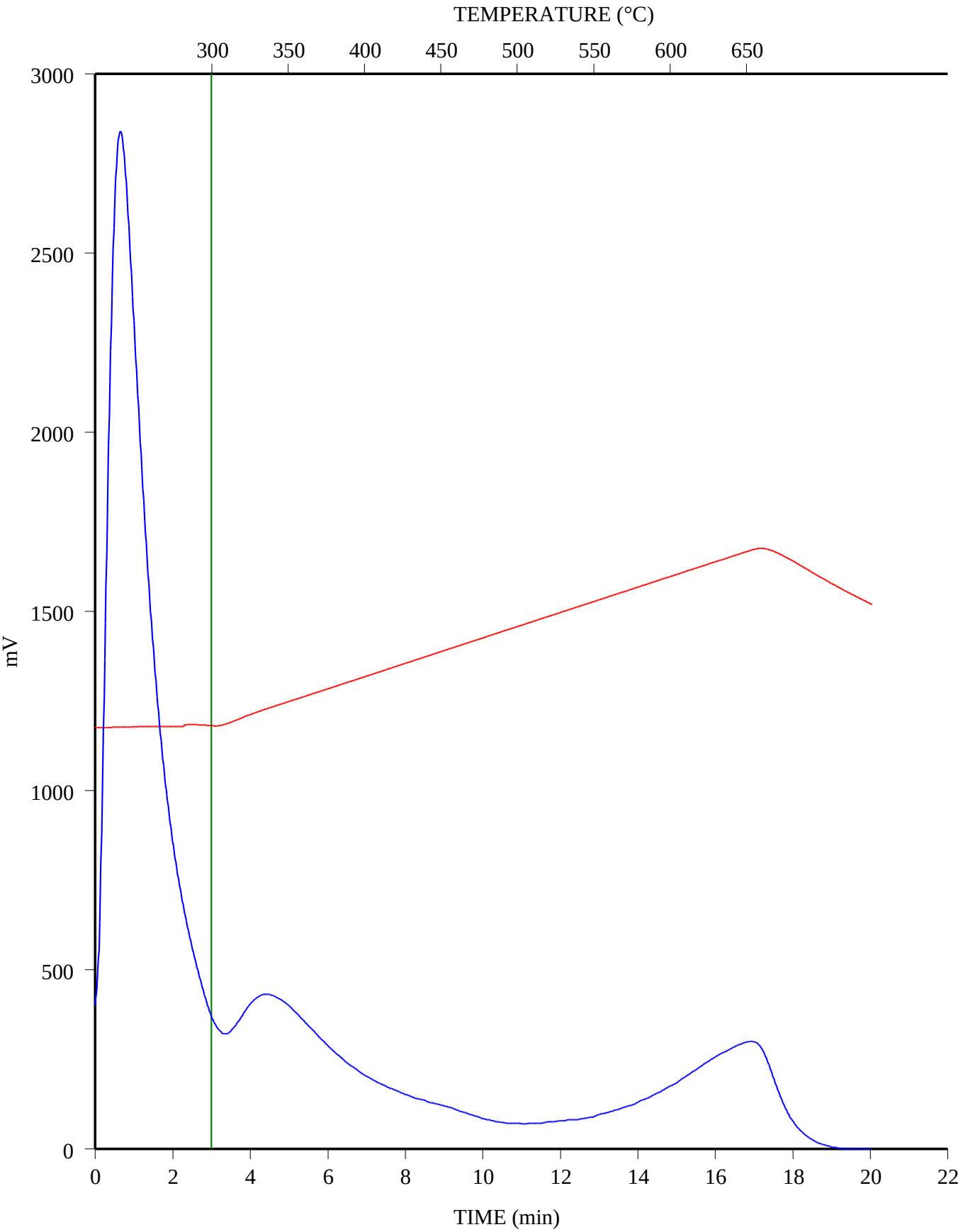
C-594407; HUSKY WILD RIV 10-33-56-22; 4052.79 m
FID Hydrocarbons



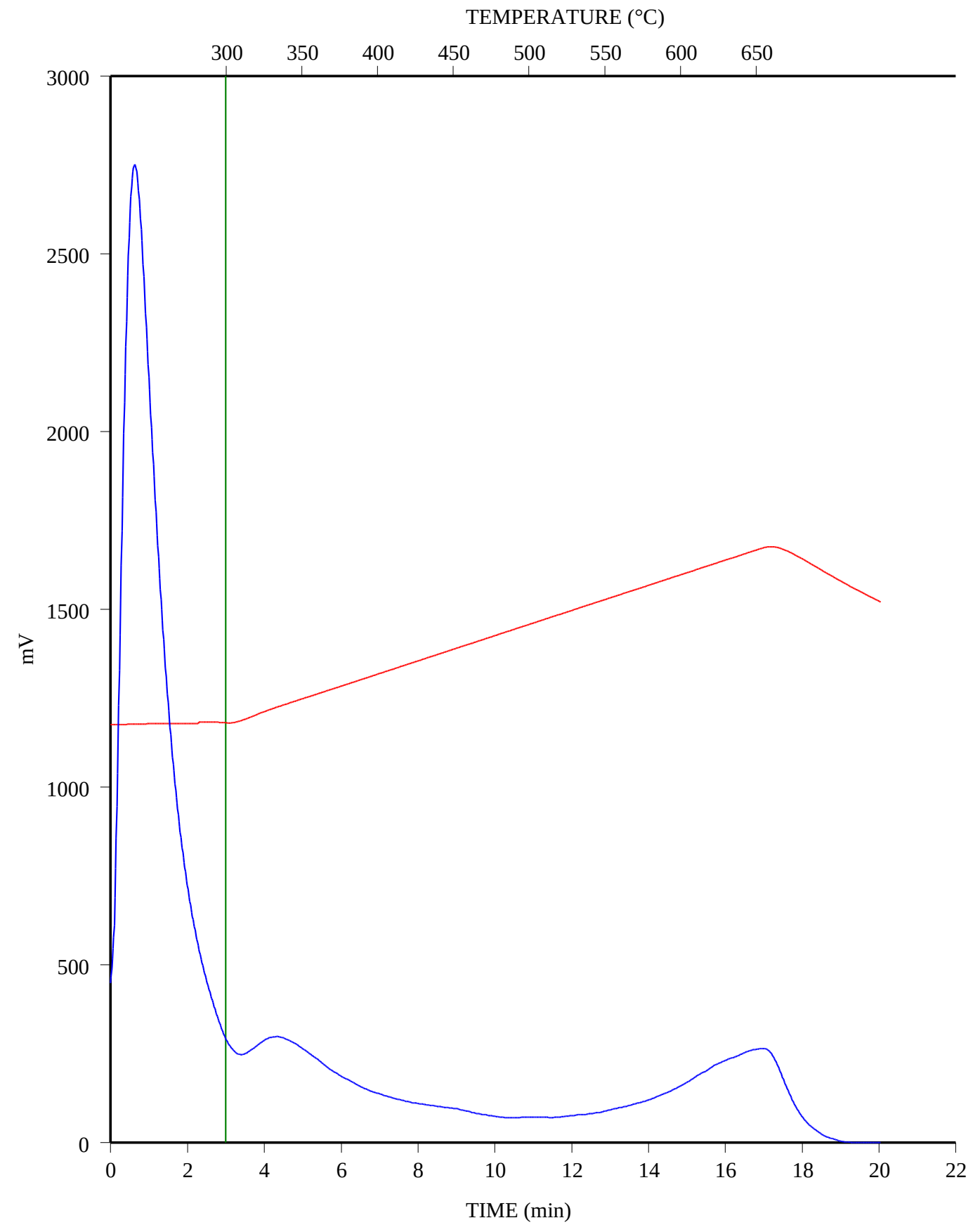
C-594408; HUSKY WILD RIV 10-33-56-22; 4054.4 m
FID Hydrocarbons



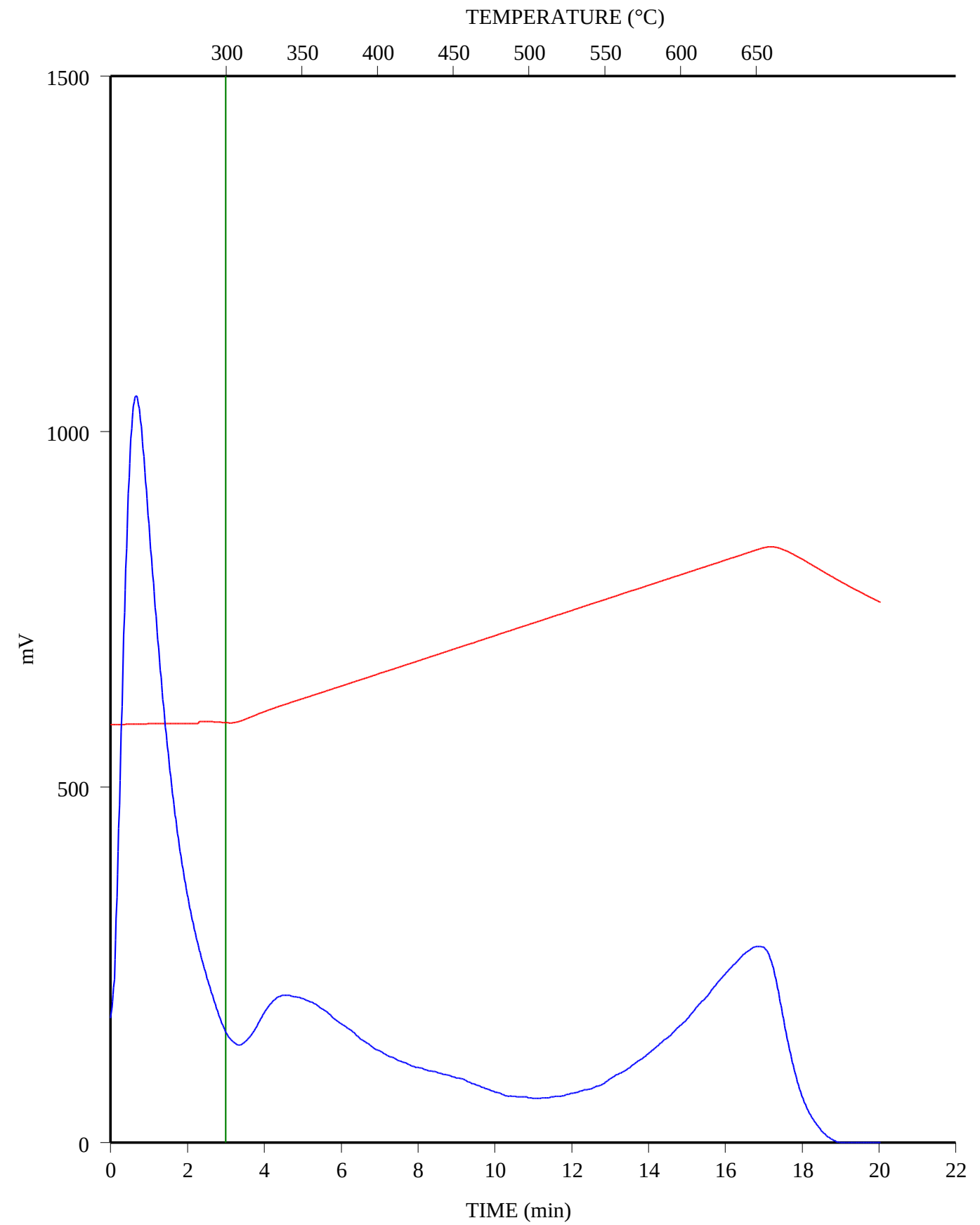
C-594409; HUSKY WILD RIV 10-33-56-22; 4055.5 m
FID Hydrocarbons



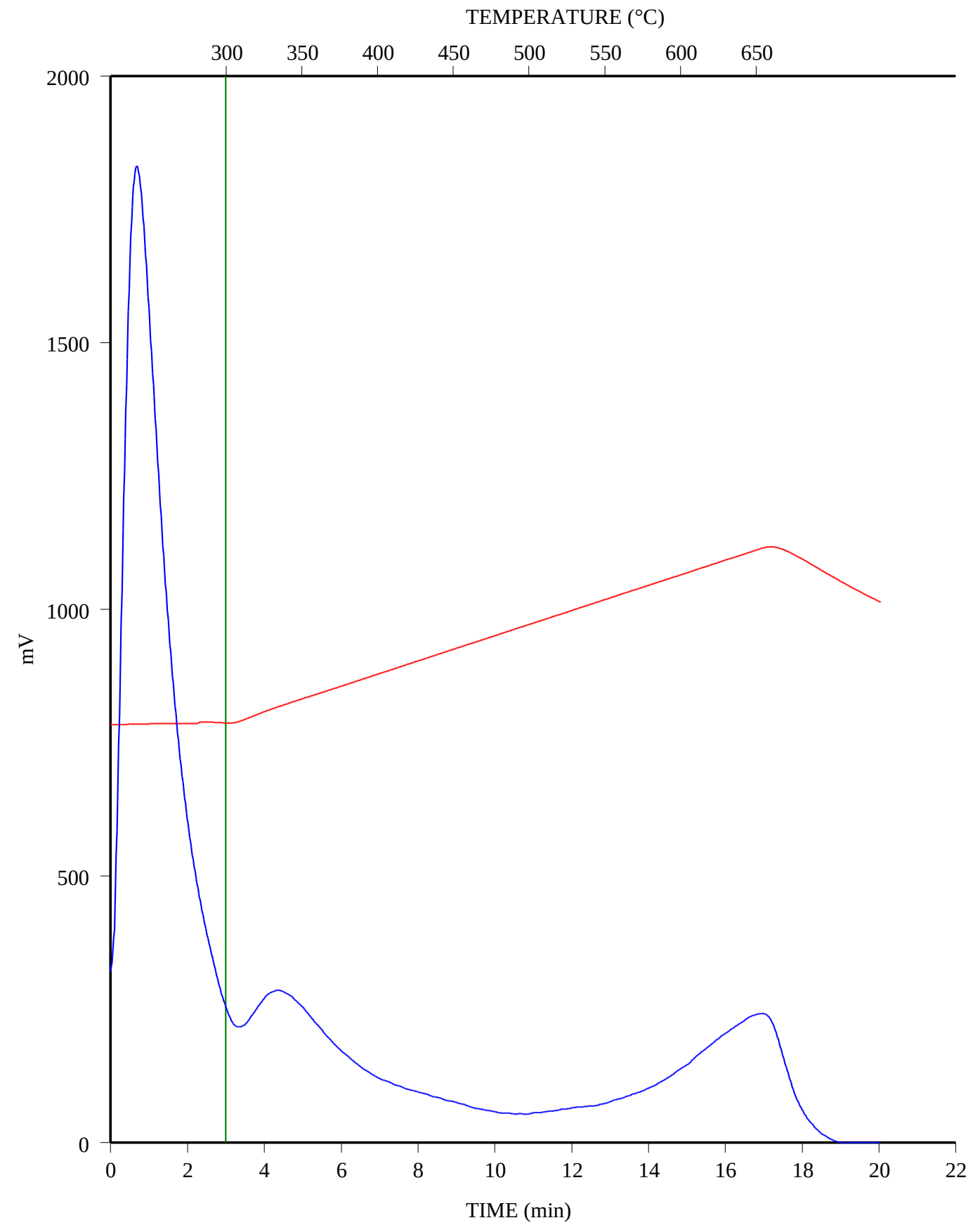
C-594410; HUSKY WILD RIV 10-33-56-22; 4056.47 m
FID Hydrocarbons



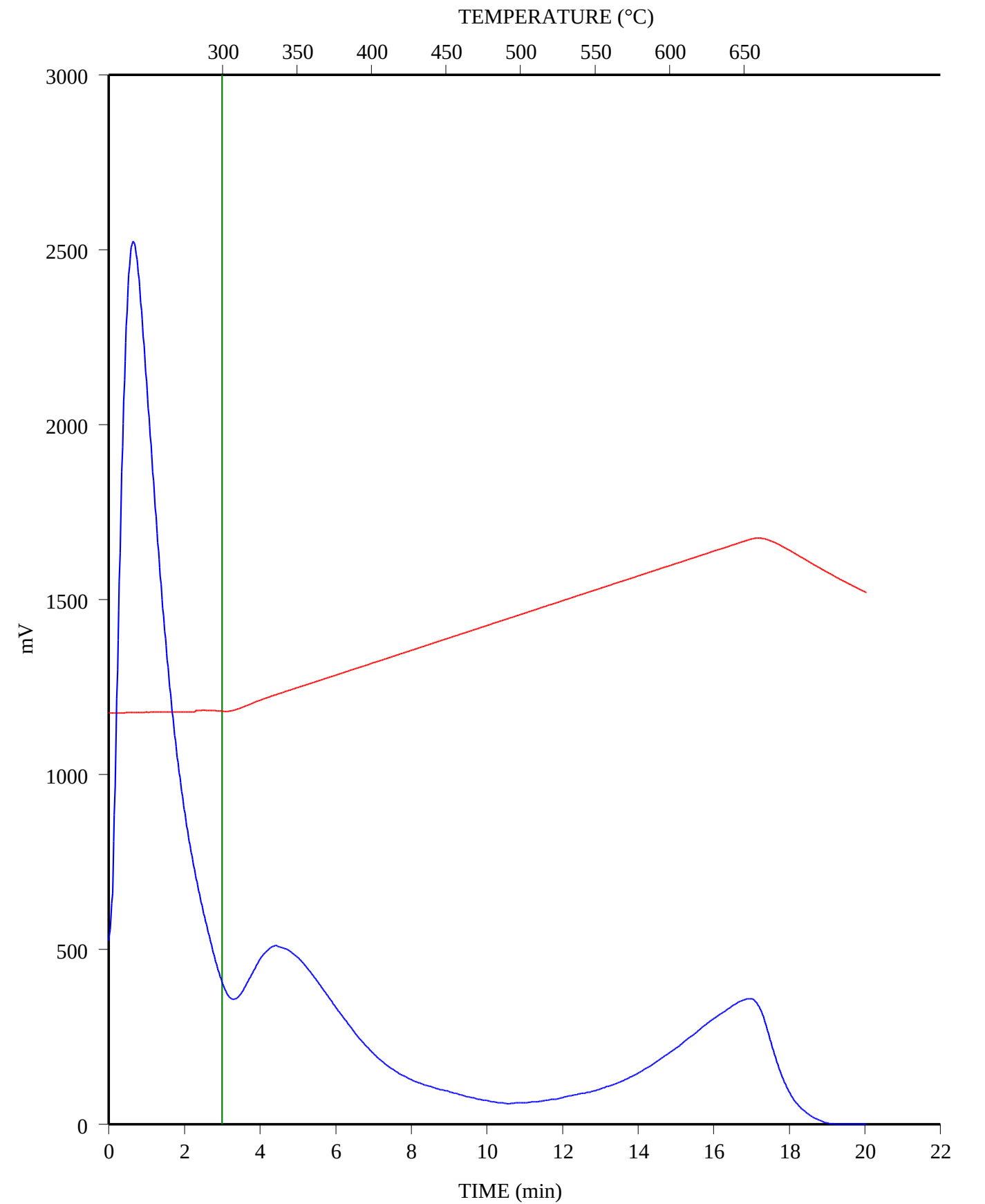
C-594411; HUSKY WILD RIV 10-33-56-22; 4057.43 m
FID Hydrocarbons



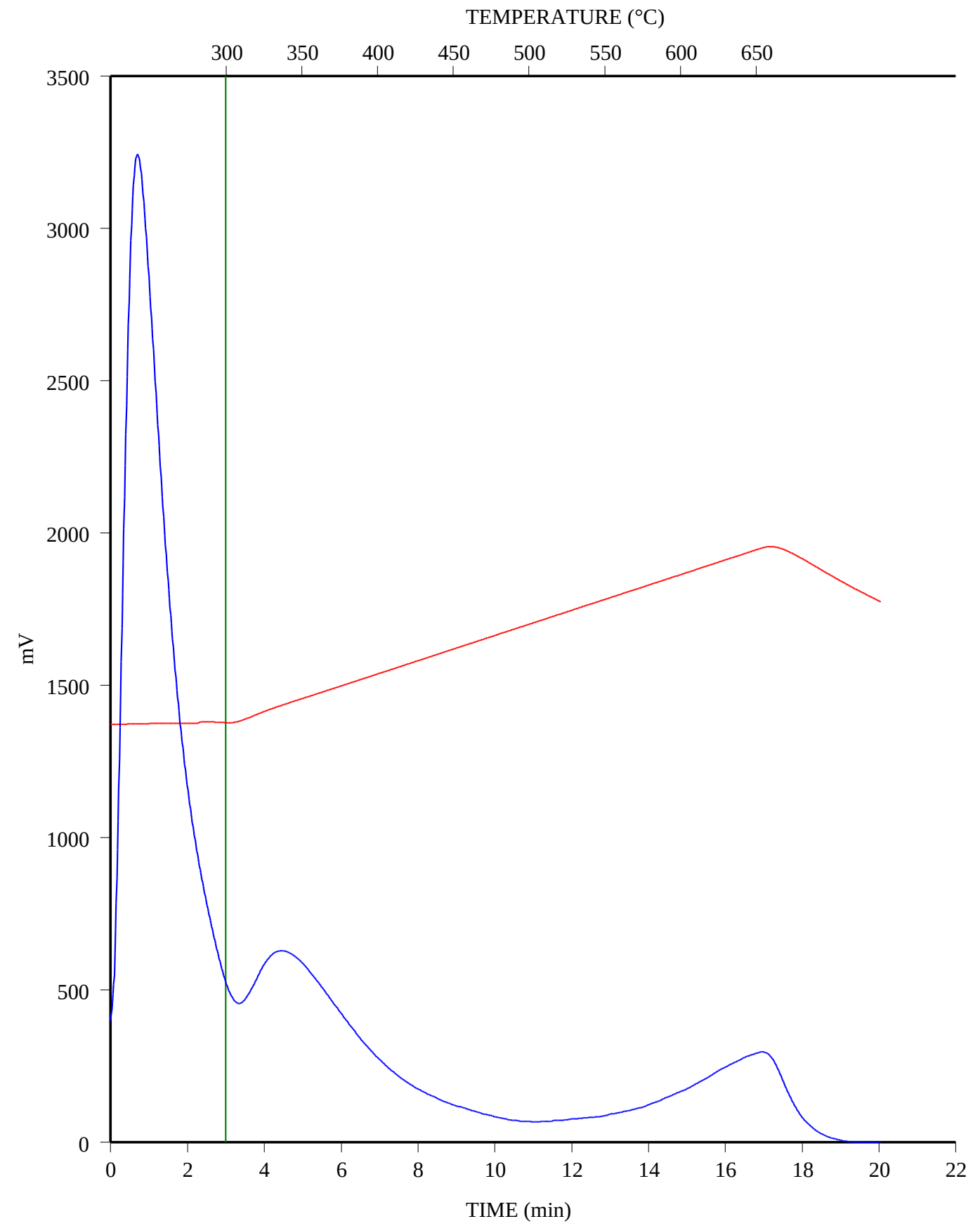
C-594412; HUSKY WILD RIV 10-33-56-22; 4058.47 m
FID Hydrocarbons



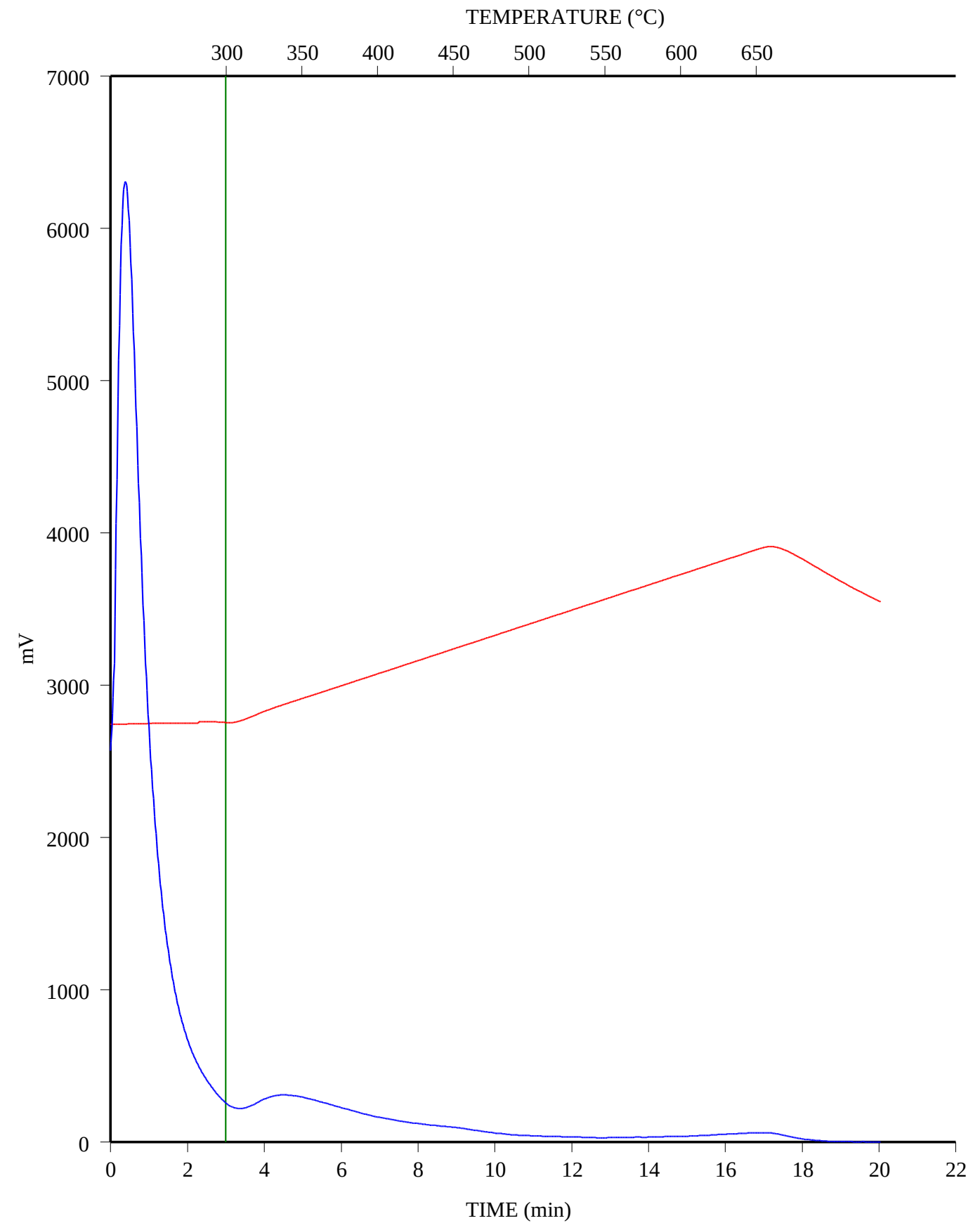
C-594413; HUSKY WILD RIV 10-33-56-22; 4059.58 m
FID Hydrocarbons



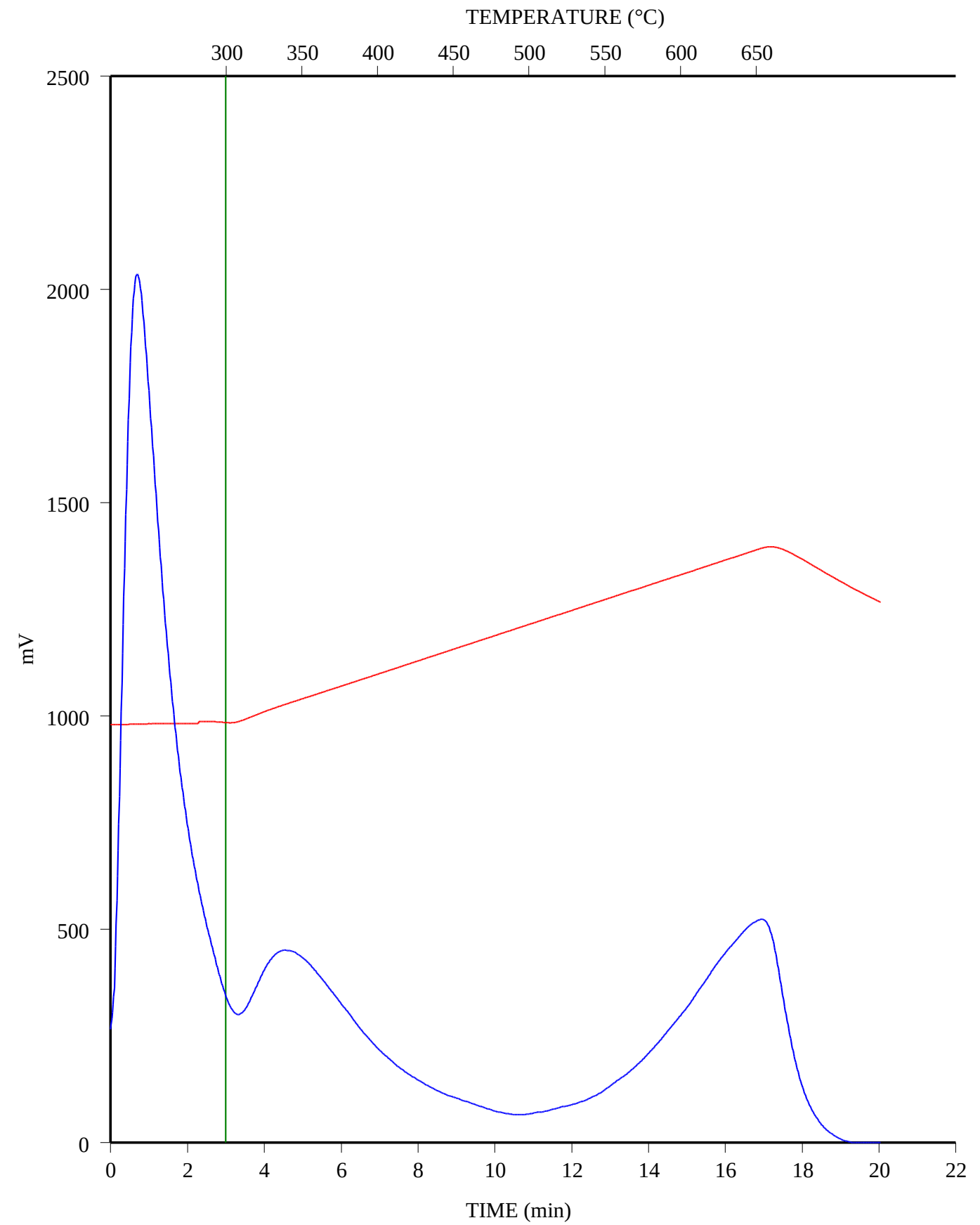
C-594414; HUSKY WILD RIV 10-33-56-22; 4060.79 m
FID Hydrocarbons



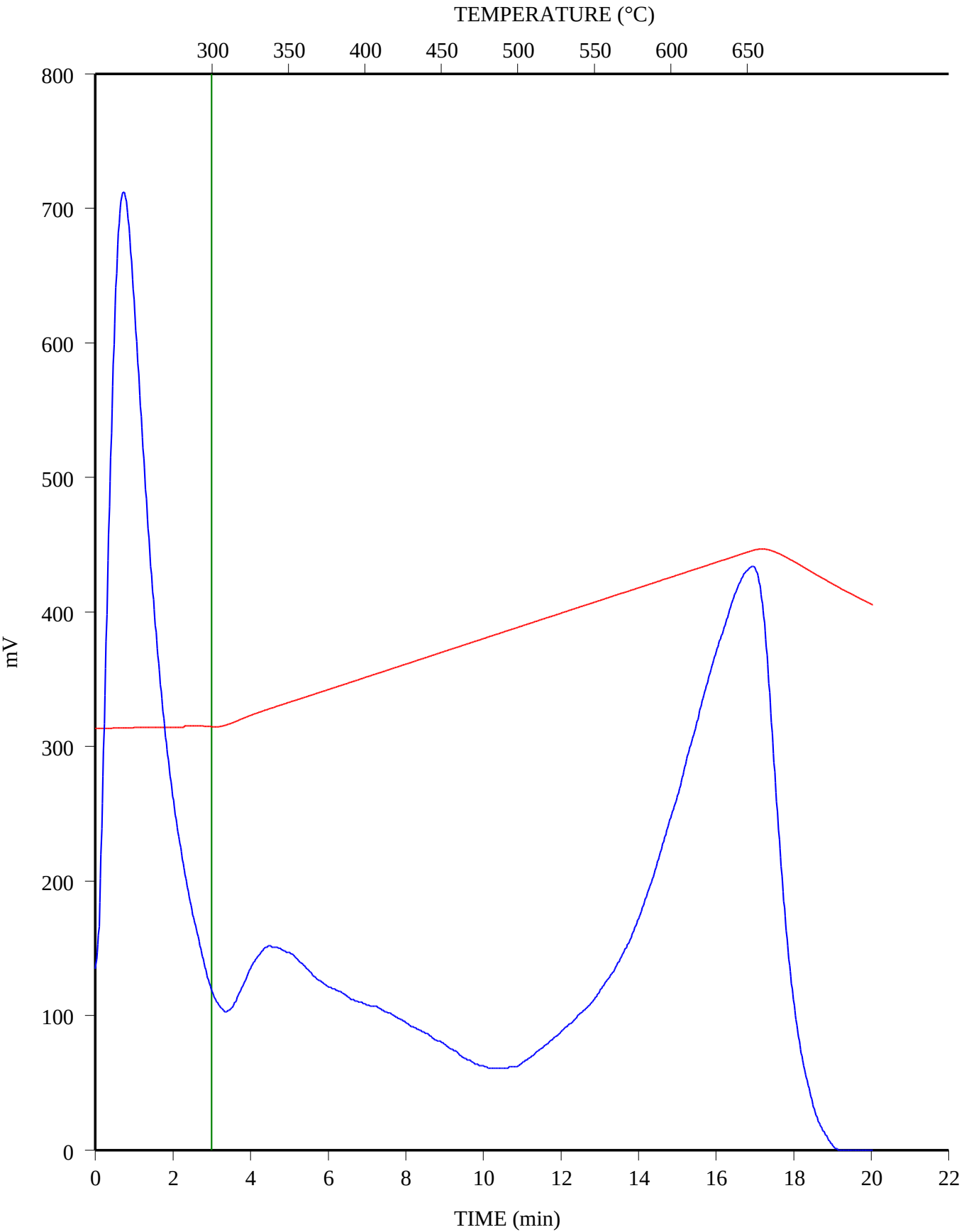
C-594415; HUSKY WILD RIV 10-33-56-22; 4061.81 m
FID Hydrocarbons



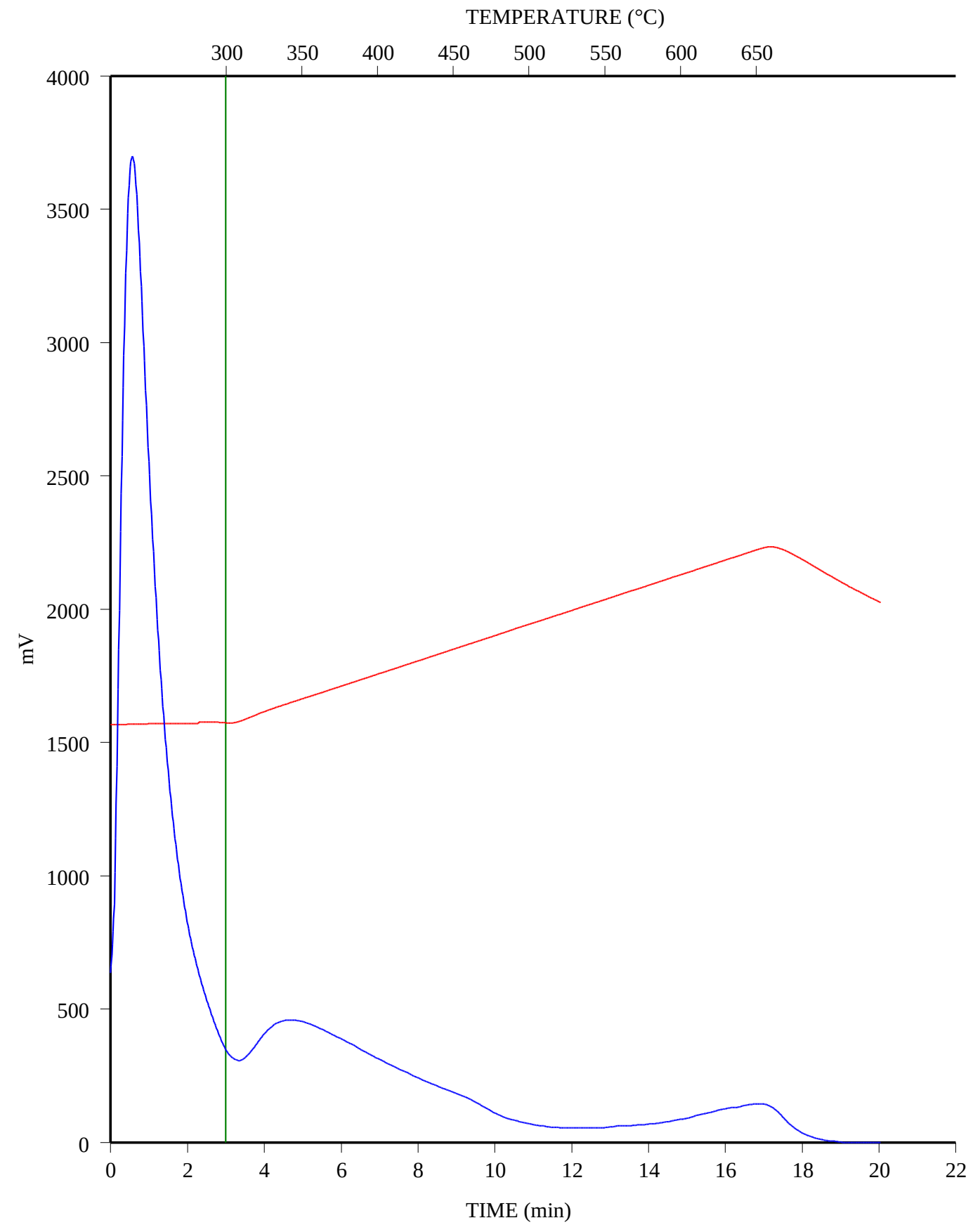
C-594416; HUSKY WILD RIV 10-33-56-22; 4062.6 m
FID Hydrocarbons



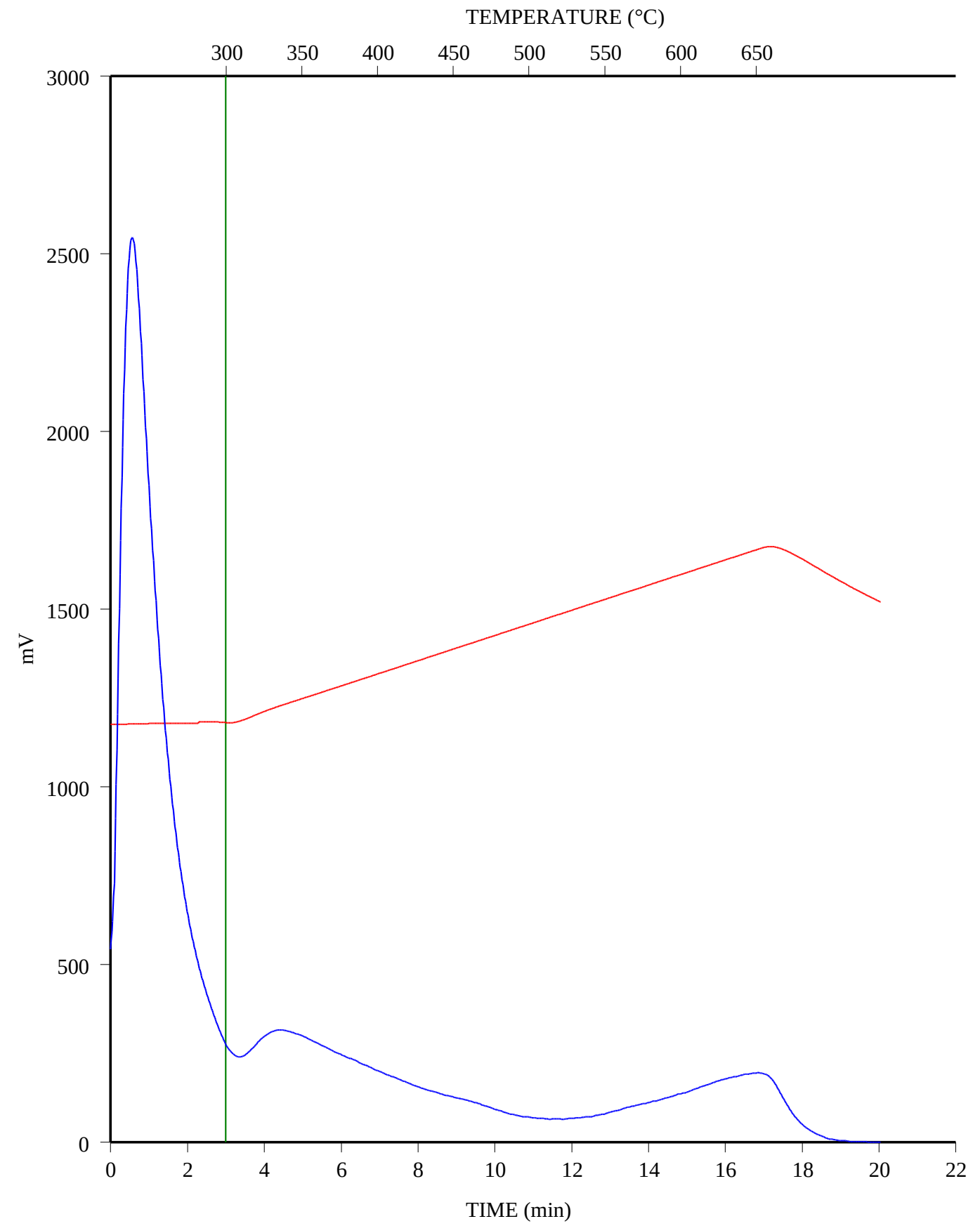
C-594417; HUSKY WILD RIV 10-33-56-22; 4063.51 m
FID Hydrocarbons



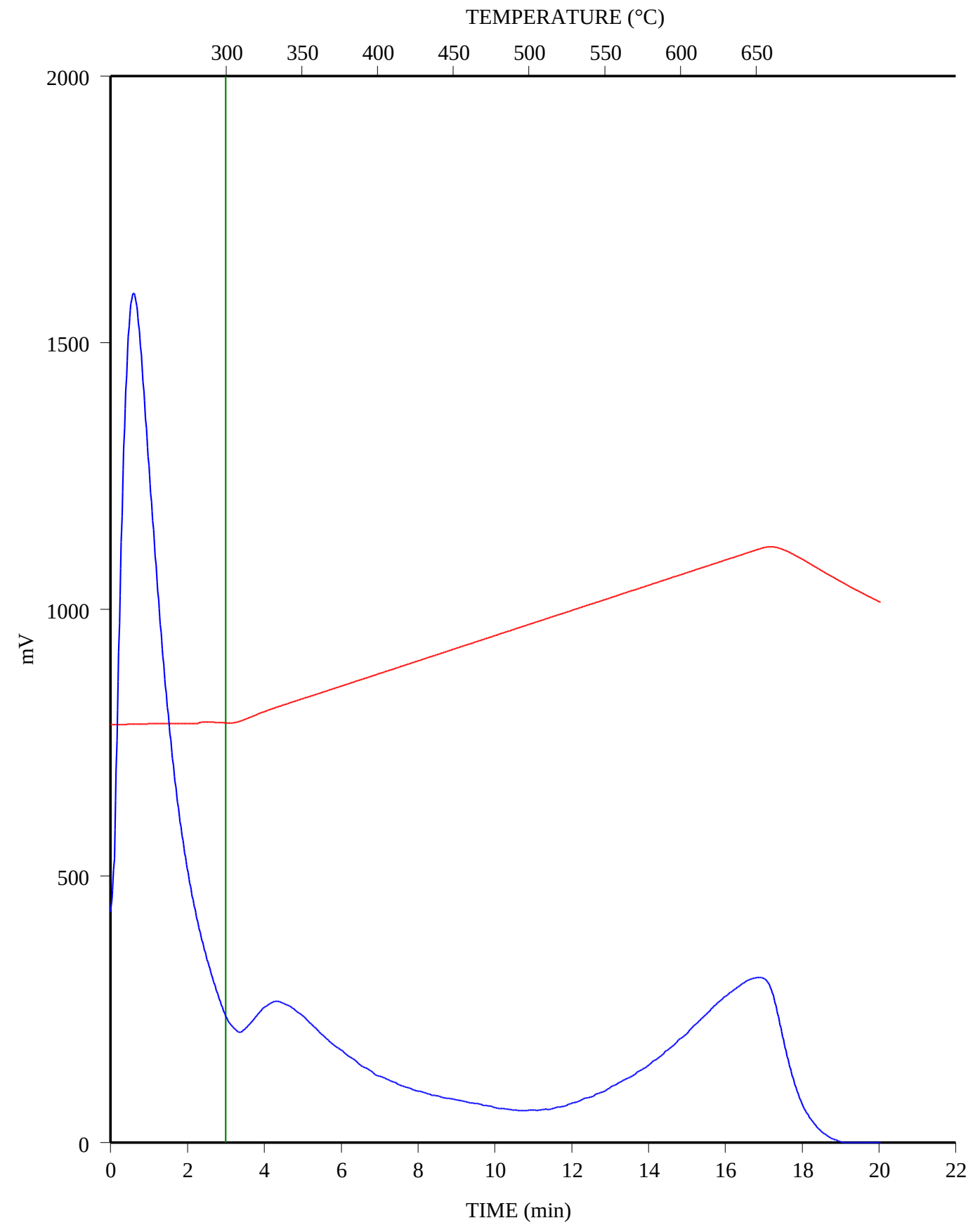
C-594418; HUSKY WILD RIV 10-33-56-22; 4064.61 m
FID Hydrocarbons



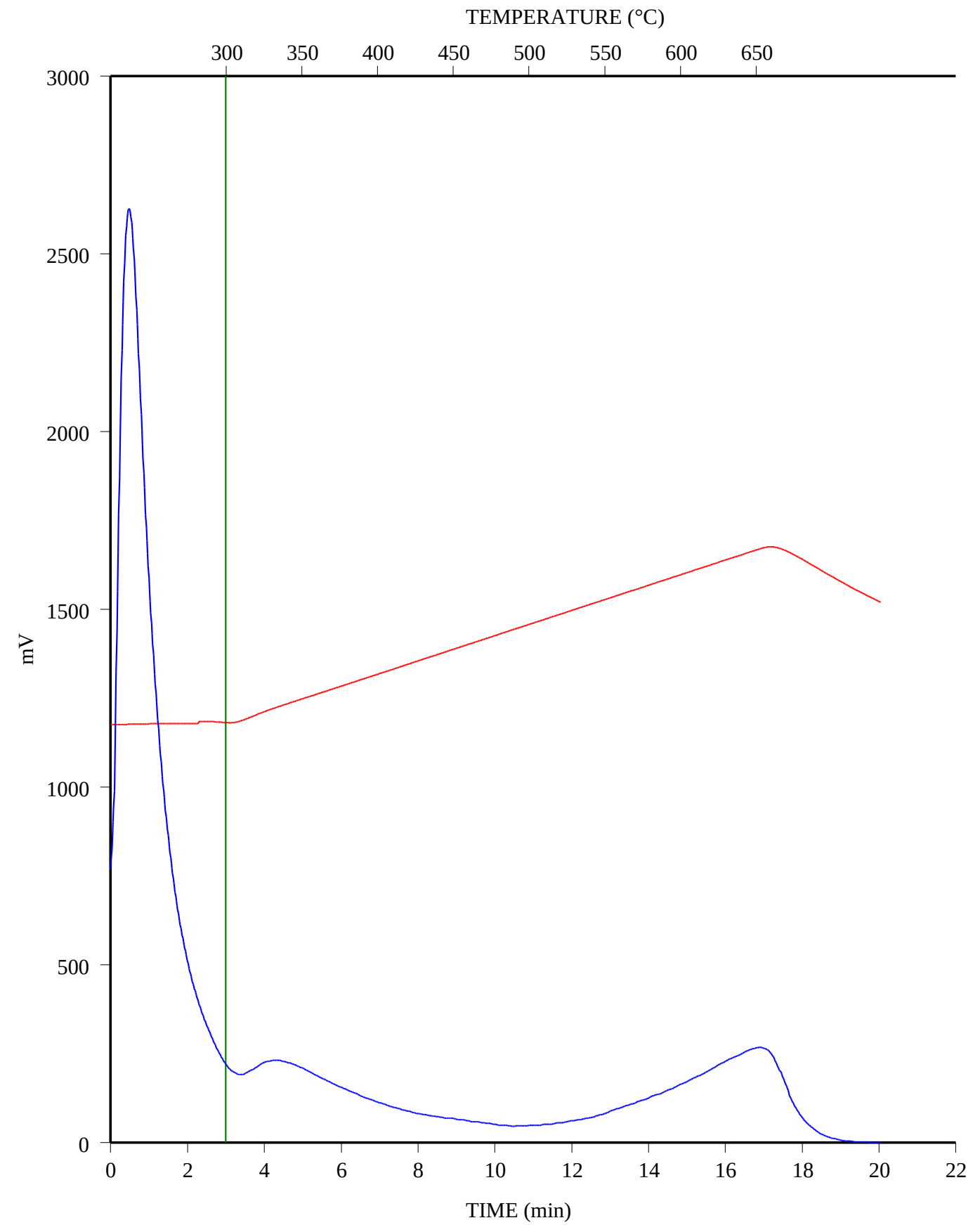
C-594419; HUSKY WILD RIV 10-33-56-22; 4065.57 m
FID Hydrocarbons



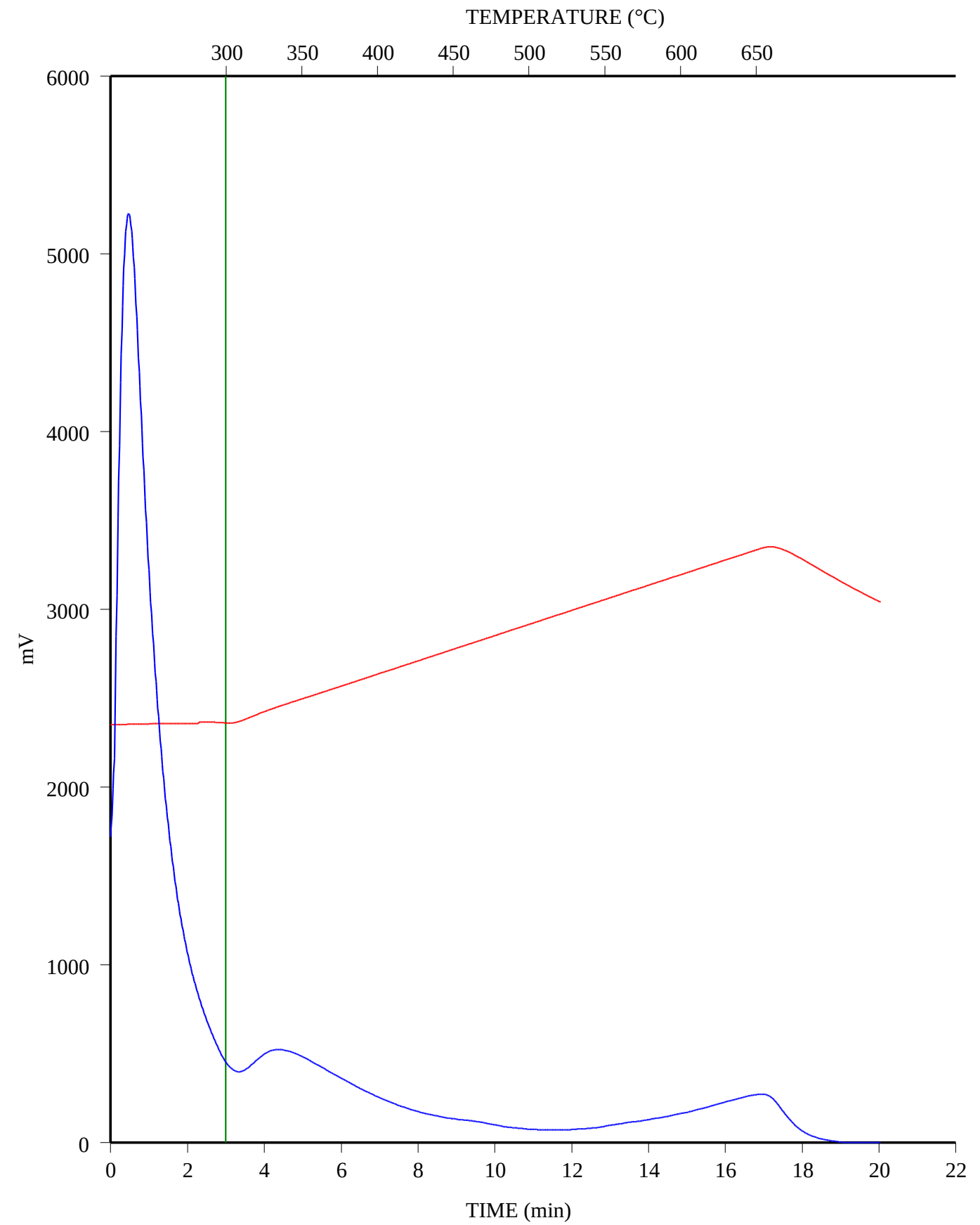
C-594420; HUSKY WILD RIV 10-33-56-22; 4066.68 m
FID Hydrocarbons



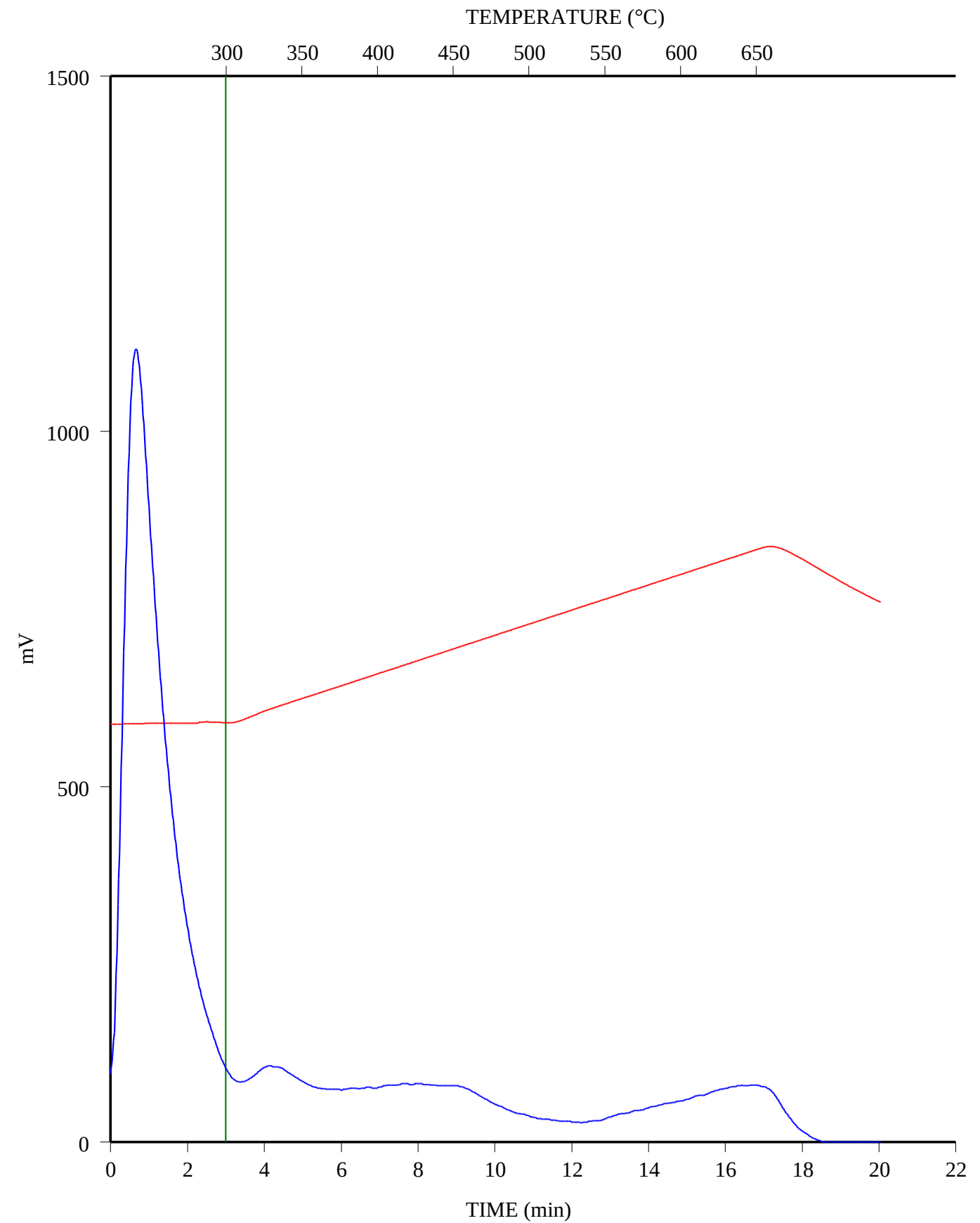
C-594421; HUSKY WILD RIV 10-33-56-22; 4067.64 m
FID Hydrocarbons



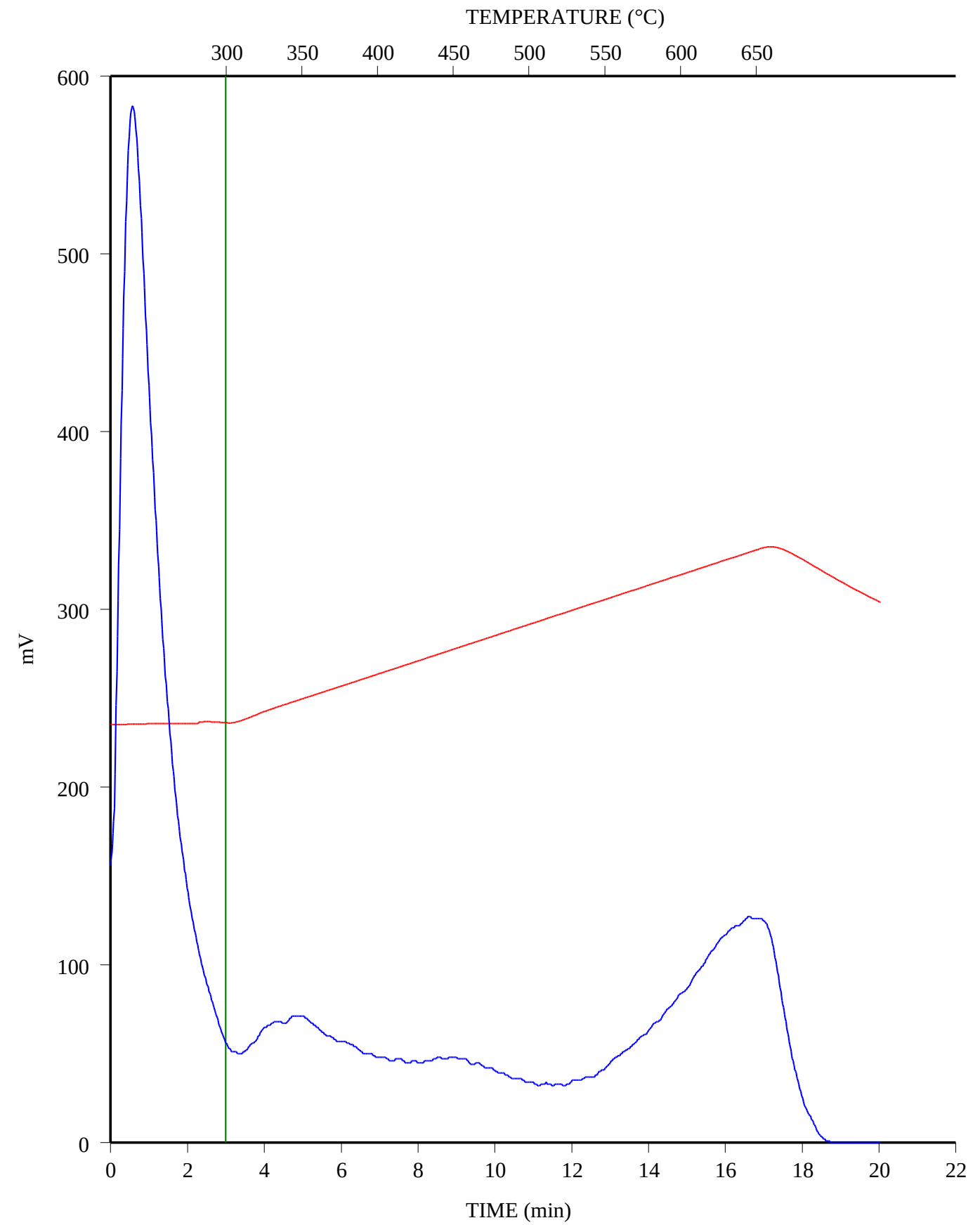
C-594422; HUSKY WILD RIV 10-33-56-22; 4068.54 m
FID Hydrocarbons



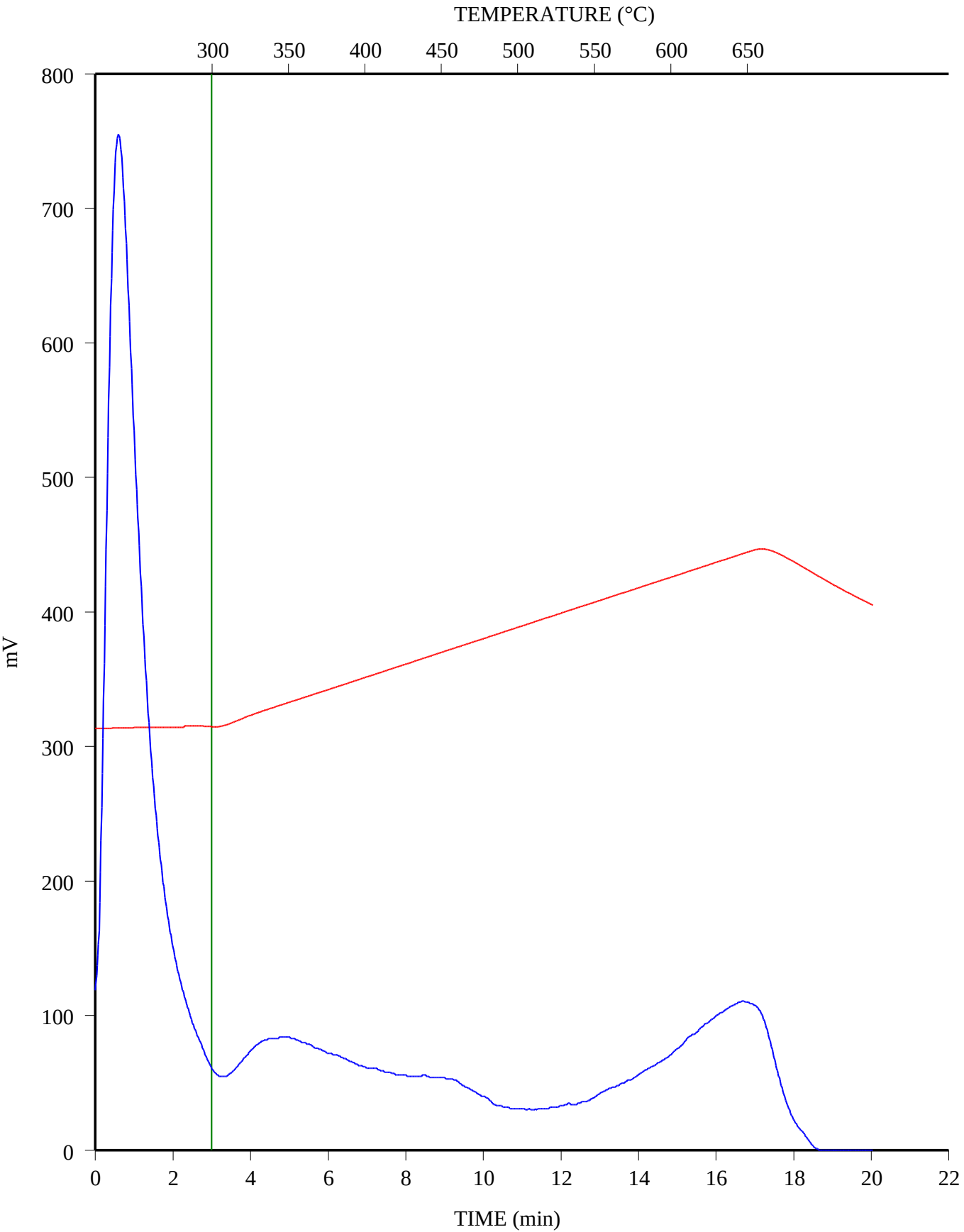
C-594423; HUSKY WILD RIV 10-33-56-22; 4069.74 m
FID Hydrocarbons



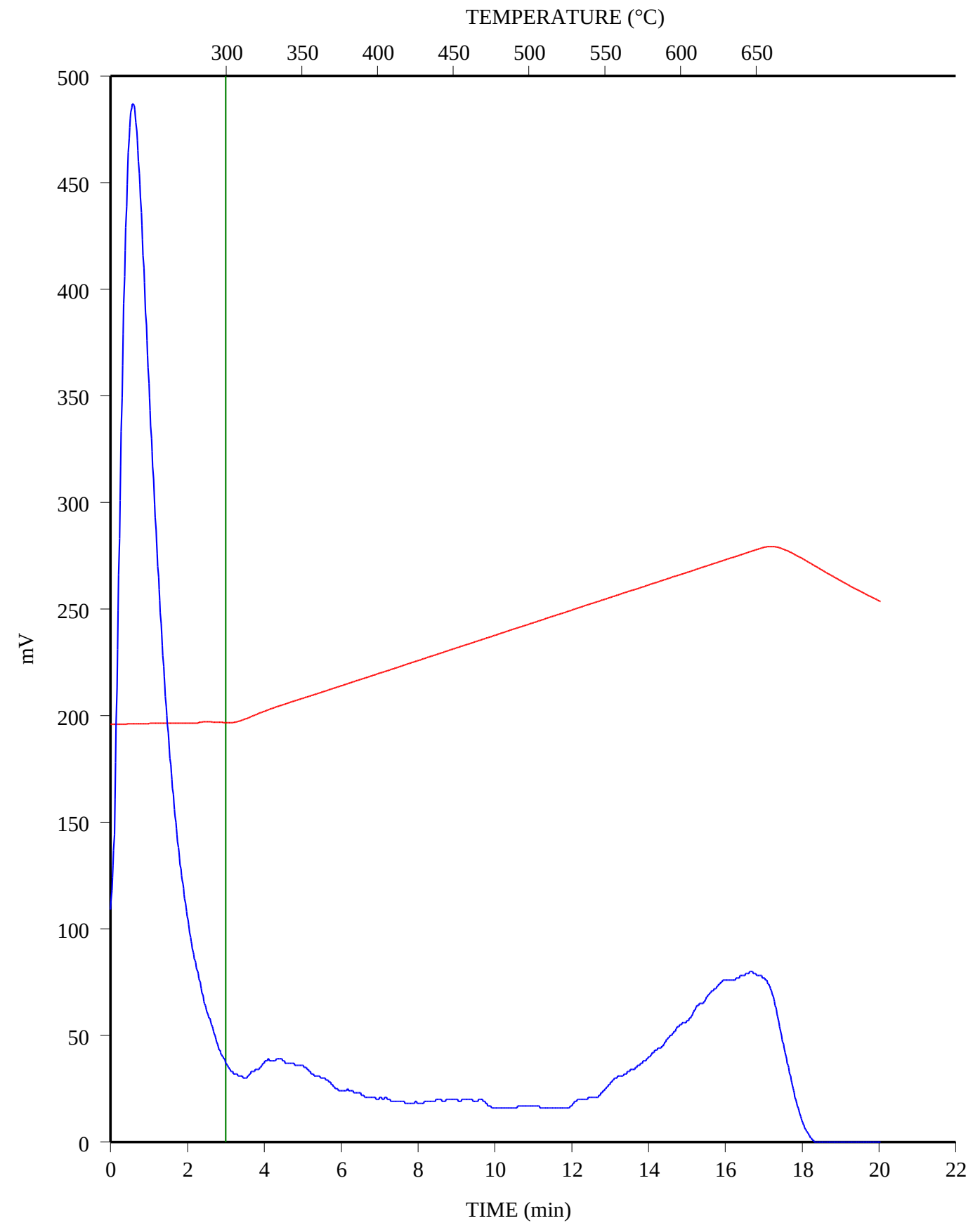
C-594424; HUSKY WILD RIV 10-33-56-22; 4070.65 m
FID Hydrocarbons



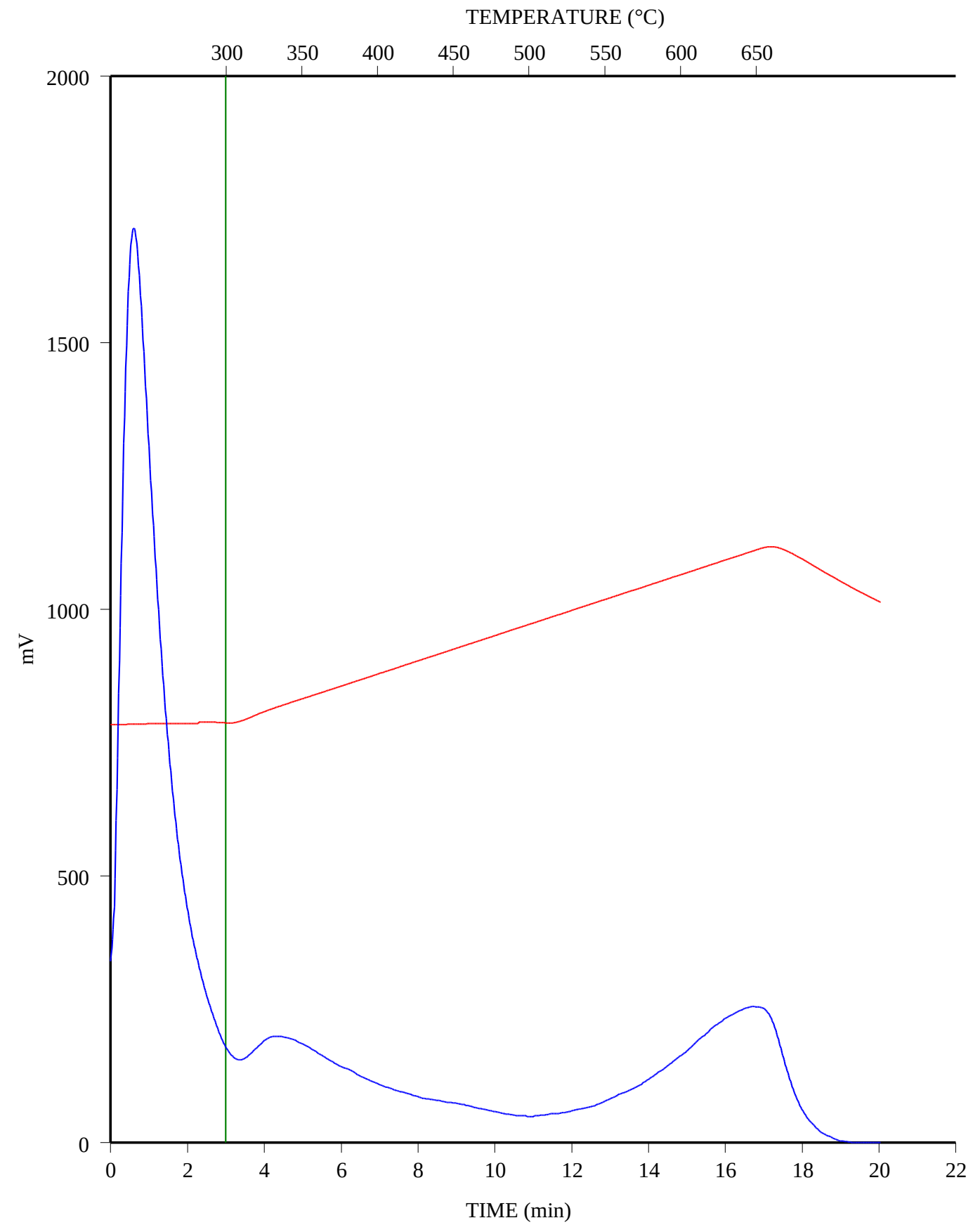
C-594425; HUSKY WILD RIV 10-33-56-22; 4071.78 m
FID Hydrocarbons



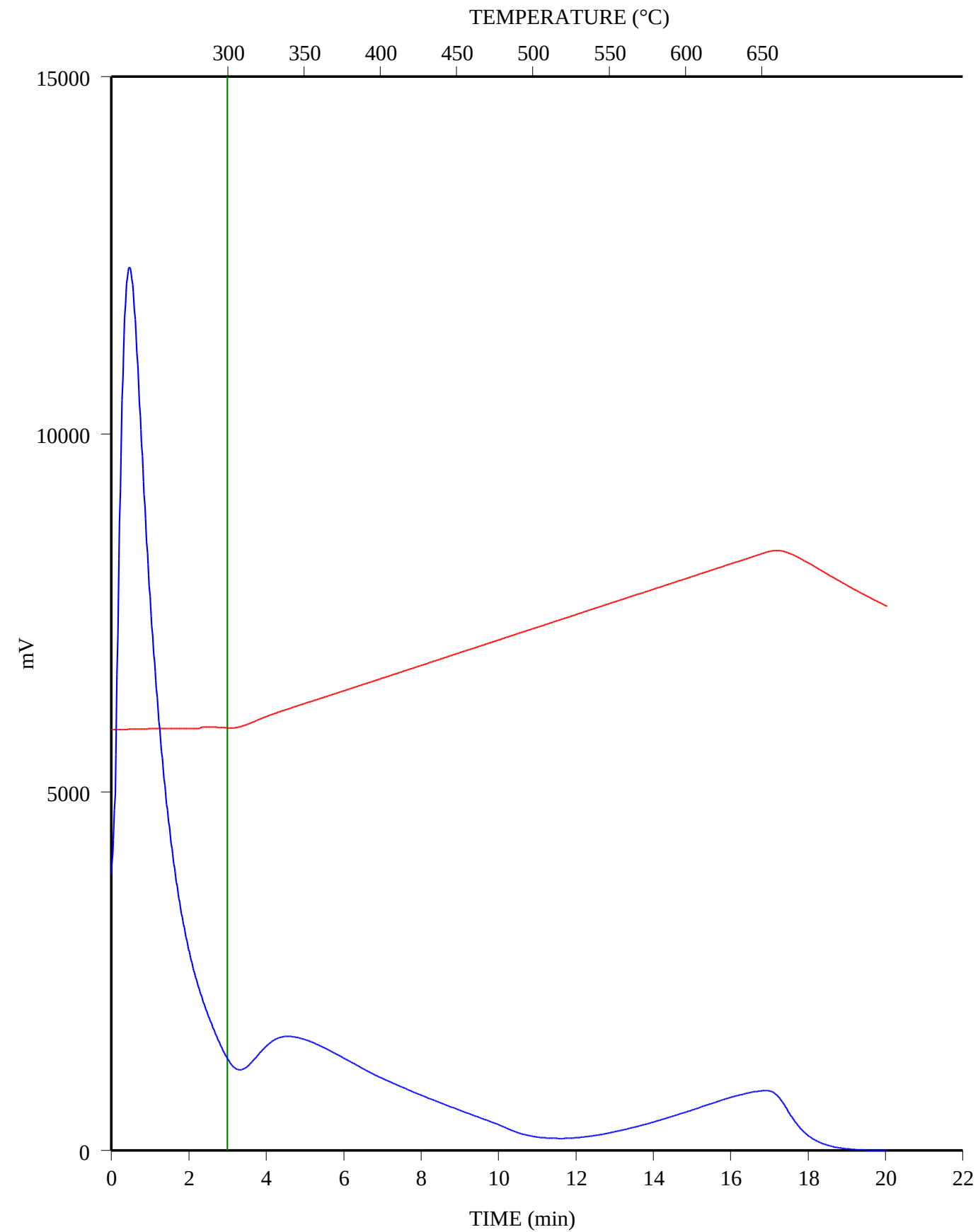
C-594426; HUSKY WILD RIV 10-33-56-22; 4072.65 m
FID Hydrocarbons



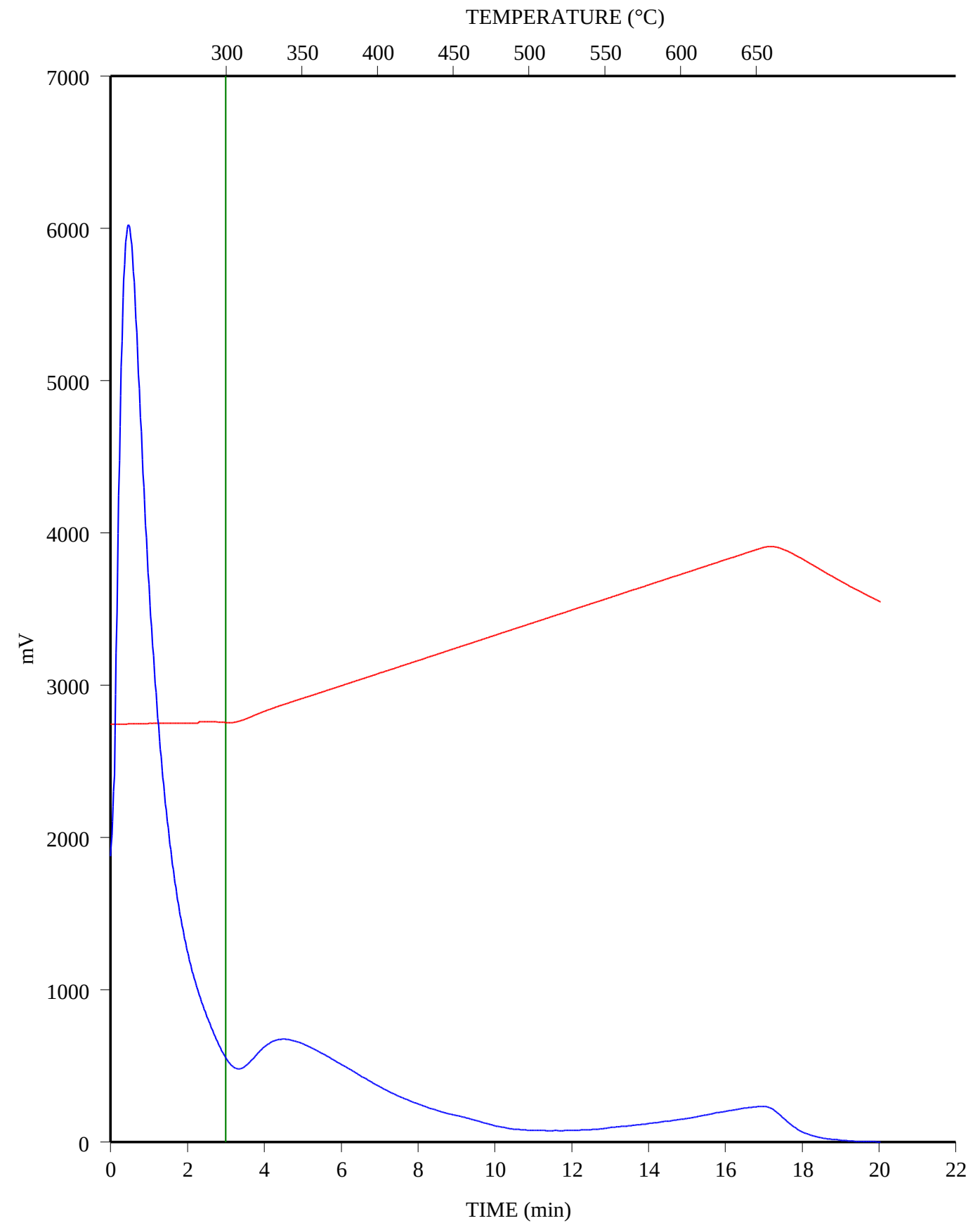
C-594427; HUSKY WILD RIV 10-33-56-22; 4073.8 m
FID Hydrocarbons



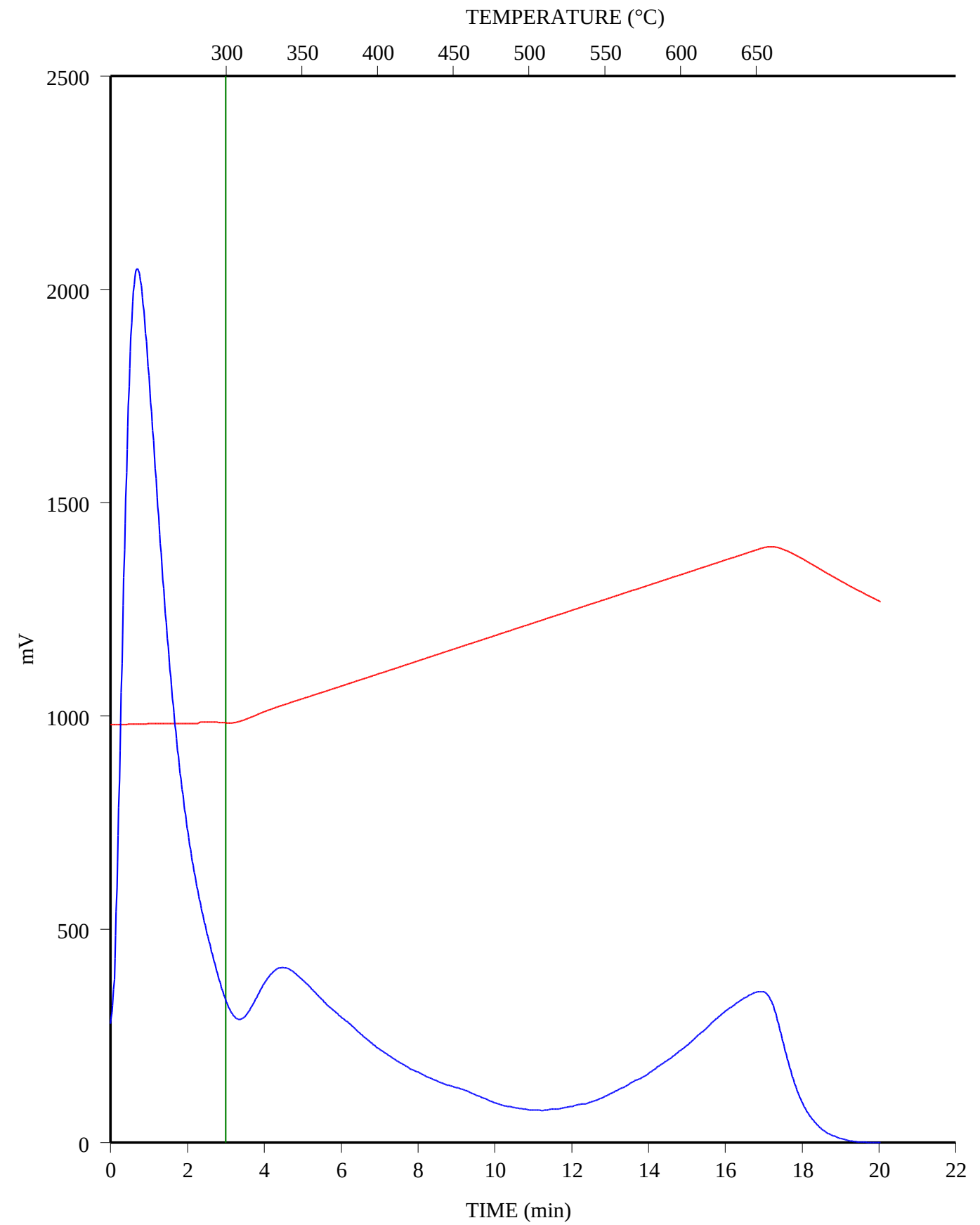
C-594428; HUSKY WILD RIV 10-33-56-22; 4074.56 m
FID Hydrocarbons



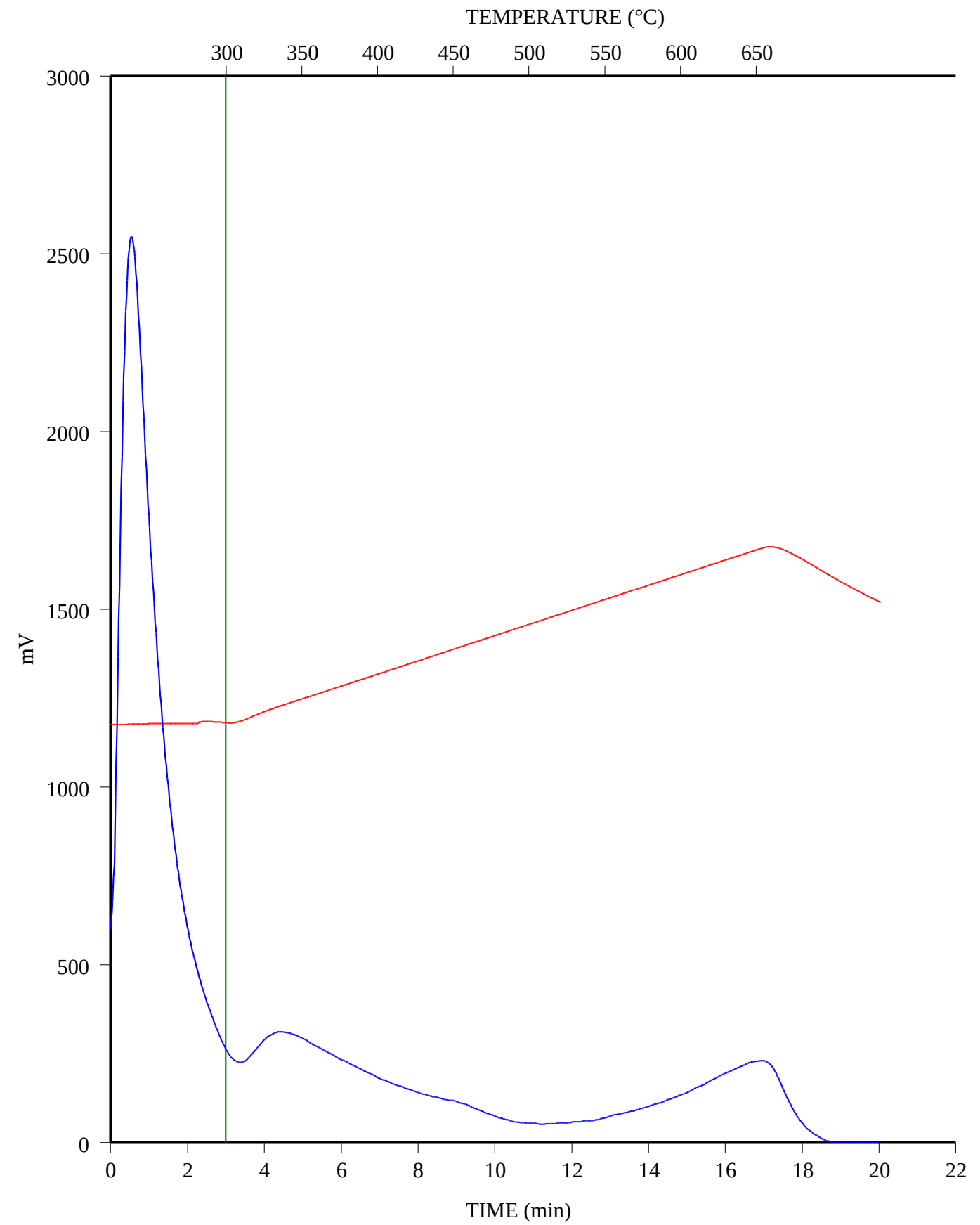
C-594429; HUSKY WILD RIV 10-33-56-22; 4075.88 m
FID Hydrocarbons



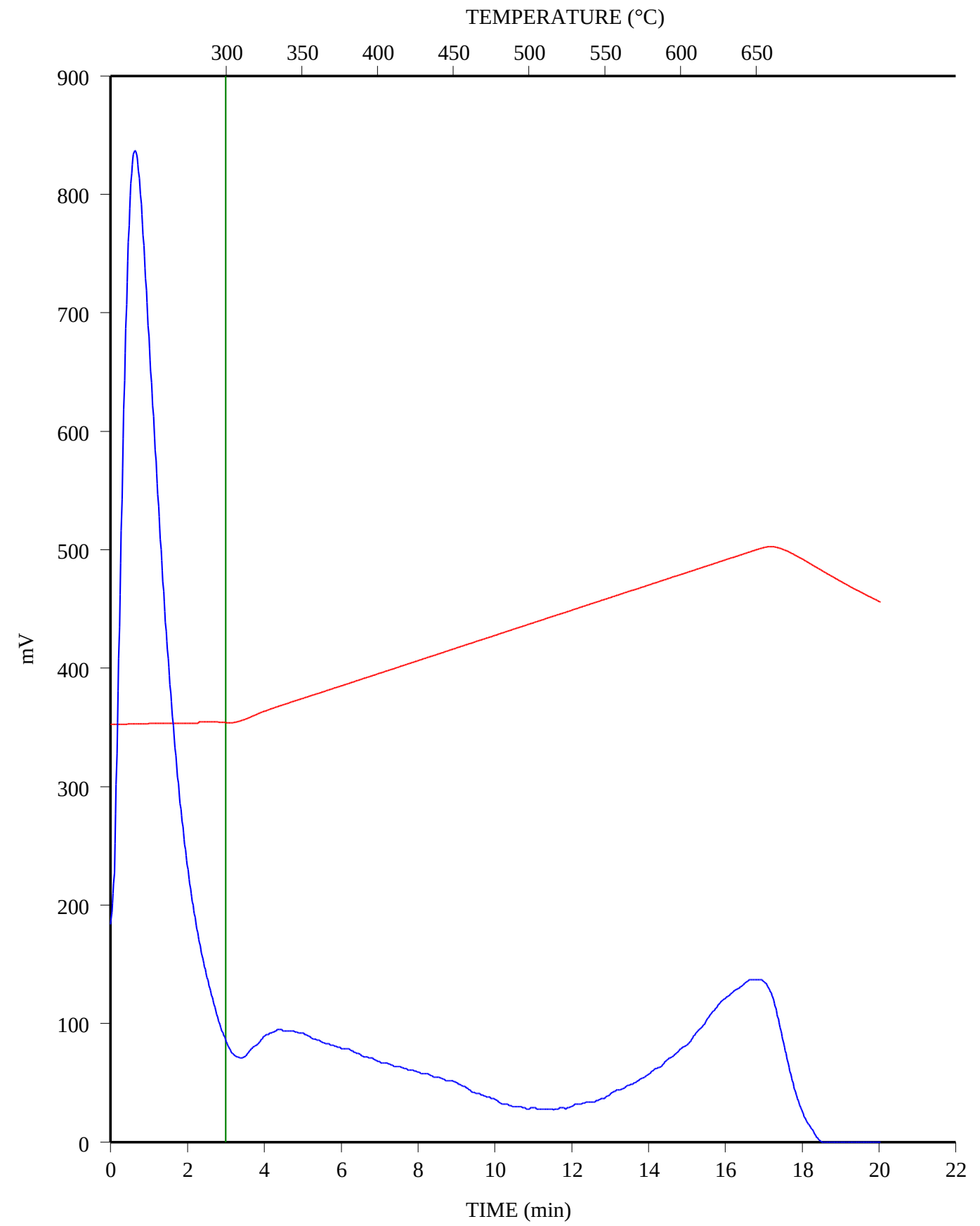
C-594430; HUSKY WILD RIV 10-33-56-22; 4076.9 m
FID Hydrocarbons



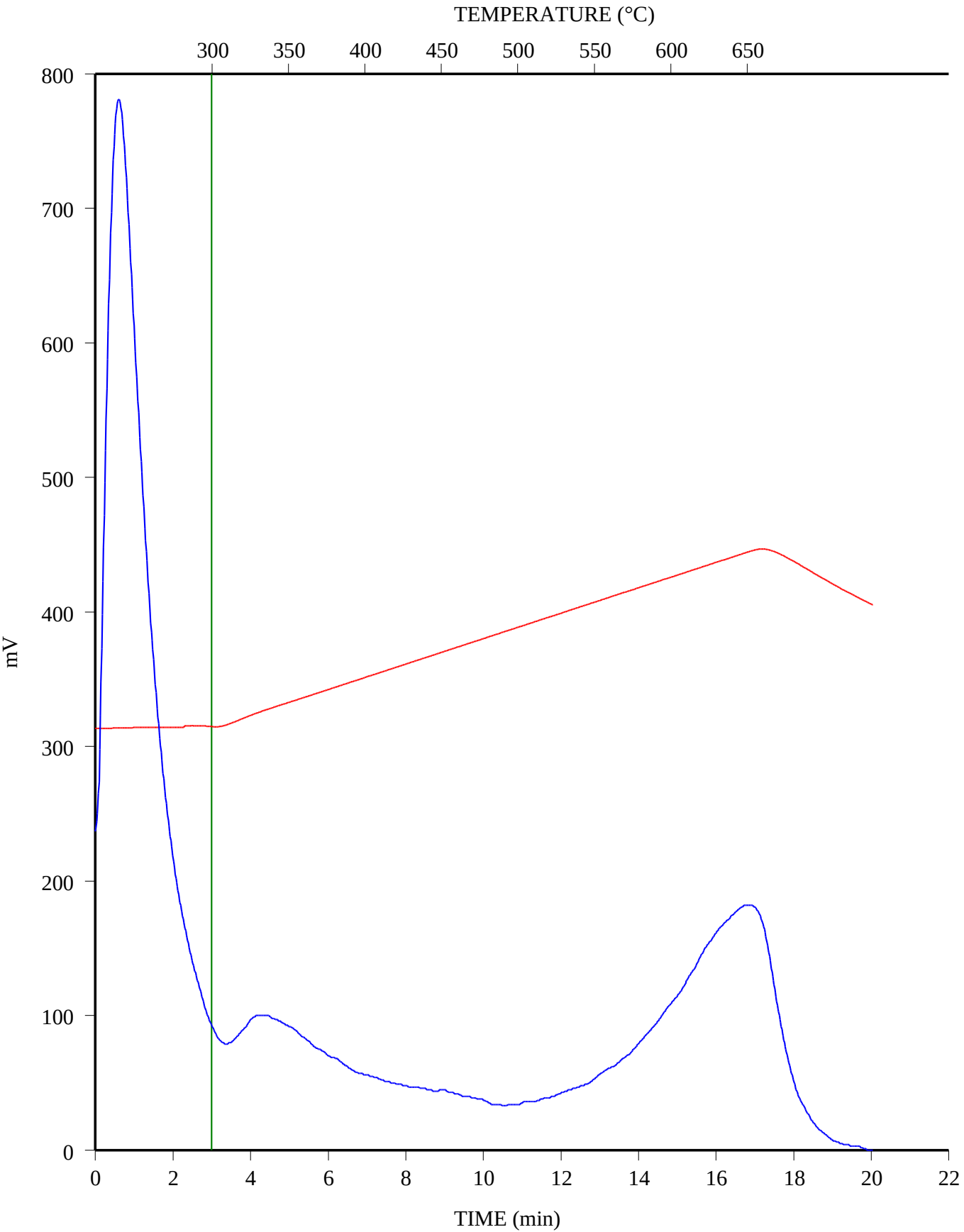
C-594431; HUSKY WILD RIV 10-33-56-22; 4077.68 m
FID Hydrocarbons



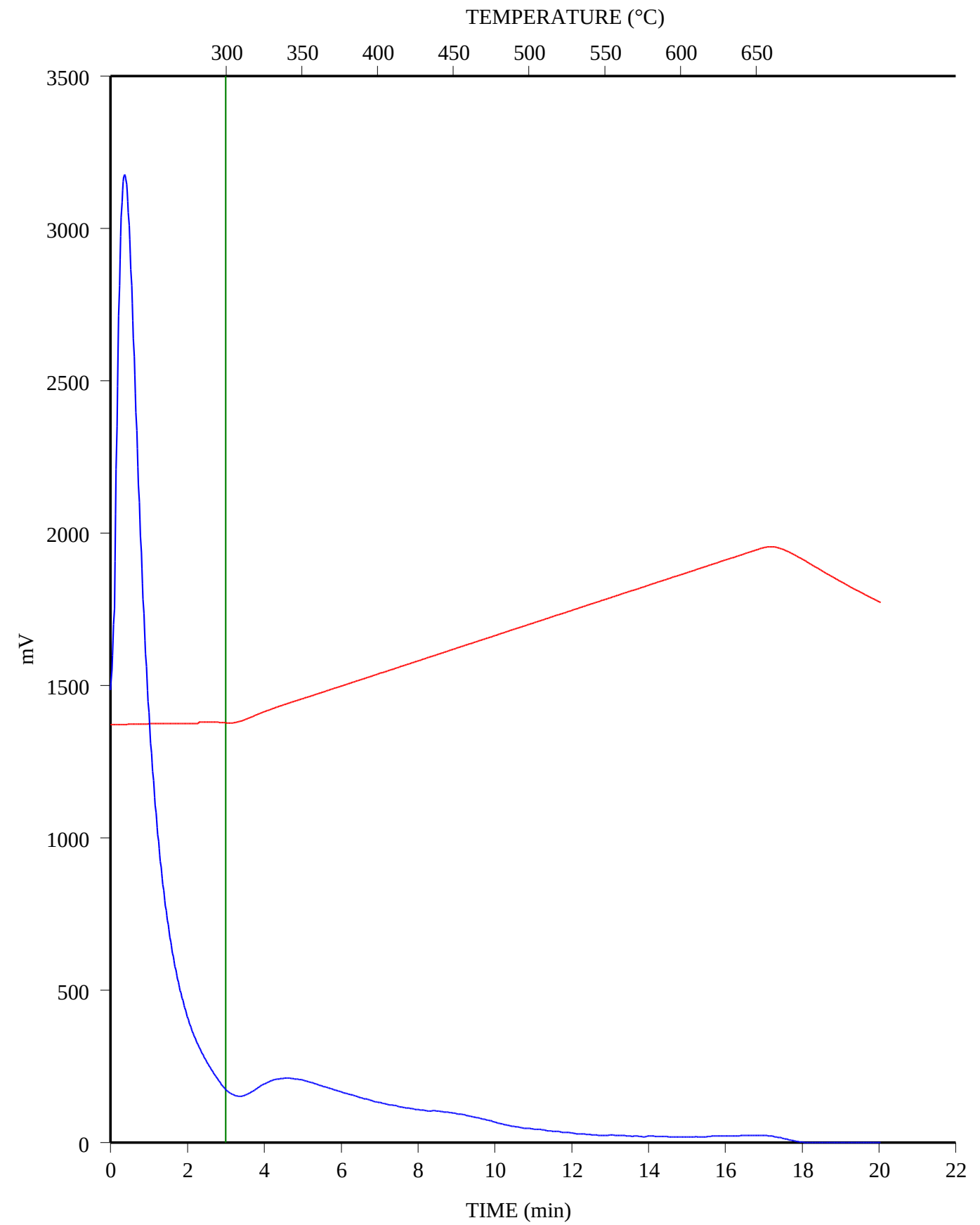
C-594432; HUSKY WILD RIV 10-33-56-22; 4078.85 m
FID Hydrocarbons



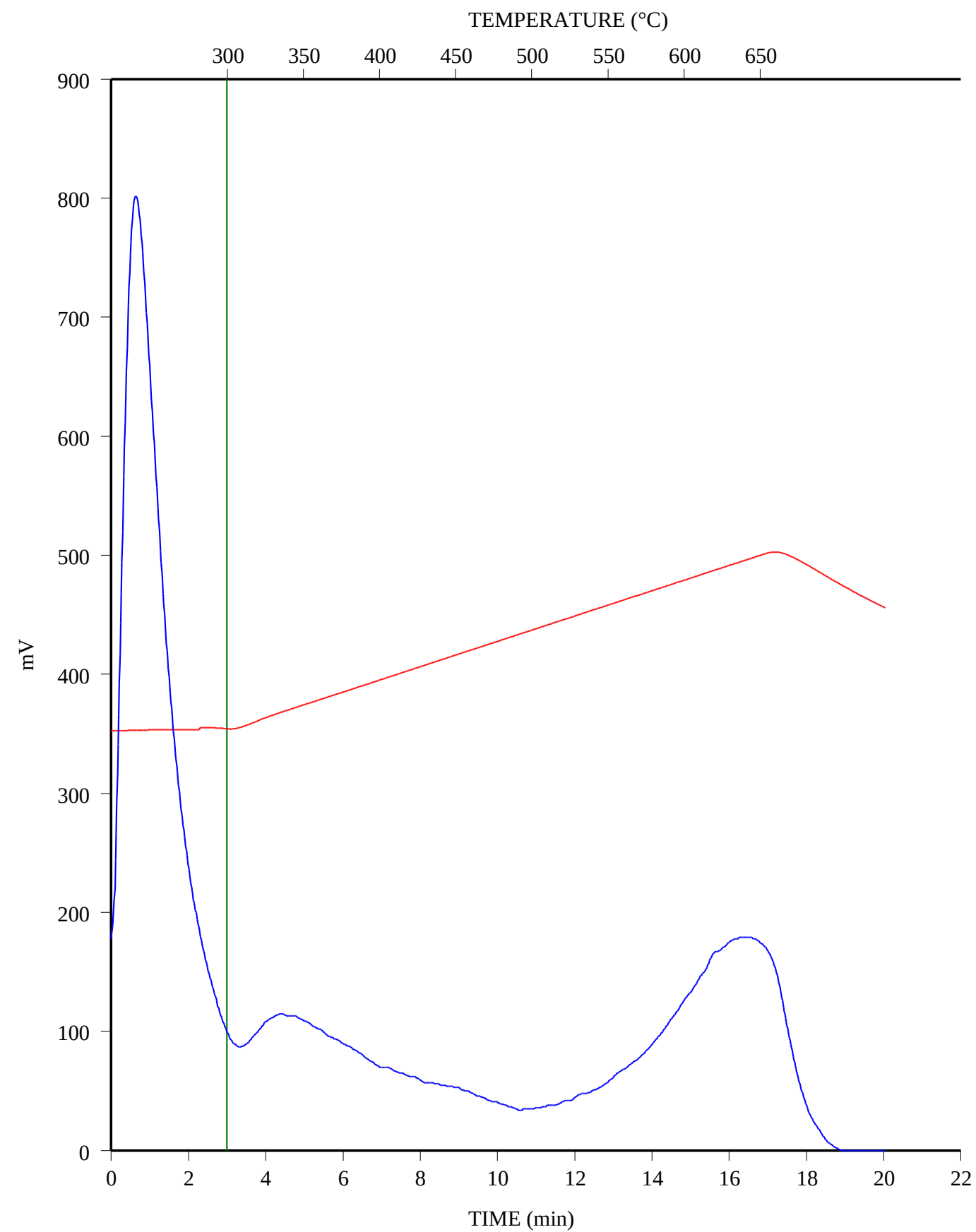
C-594433; HUSKY WILD RIV 10-33-56-22; 4079.8 m
FID Hydrocarbons



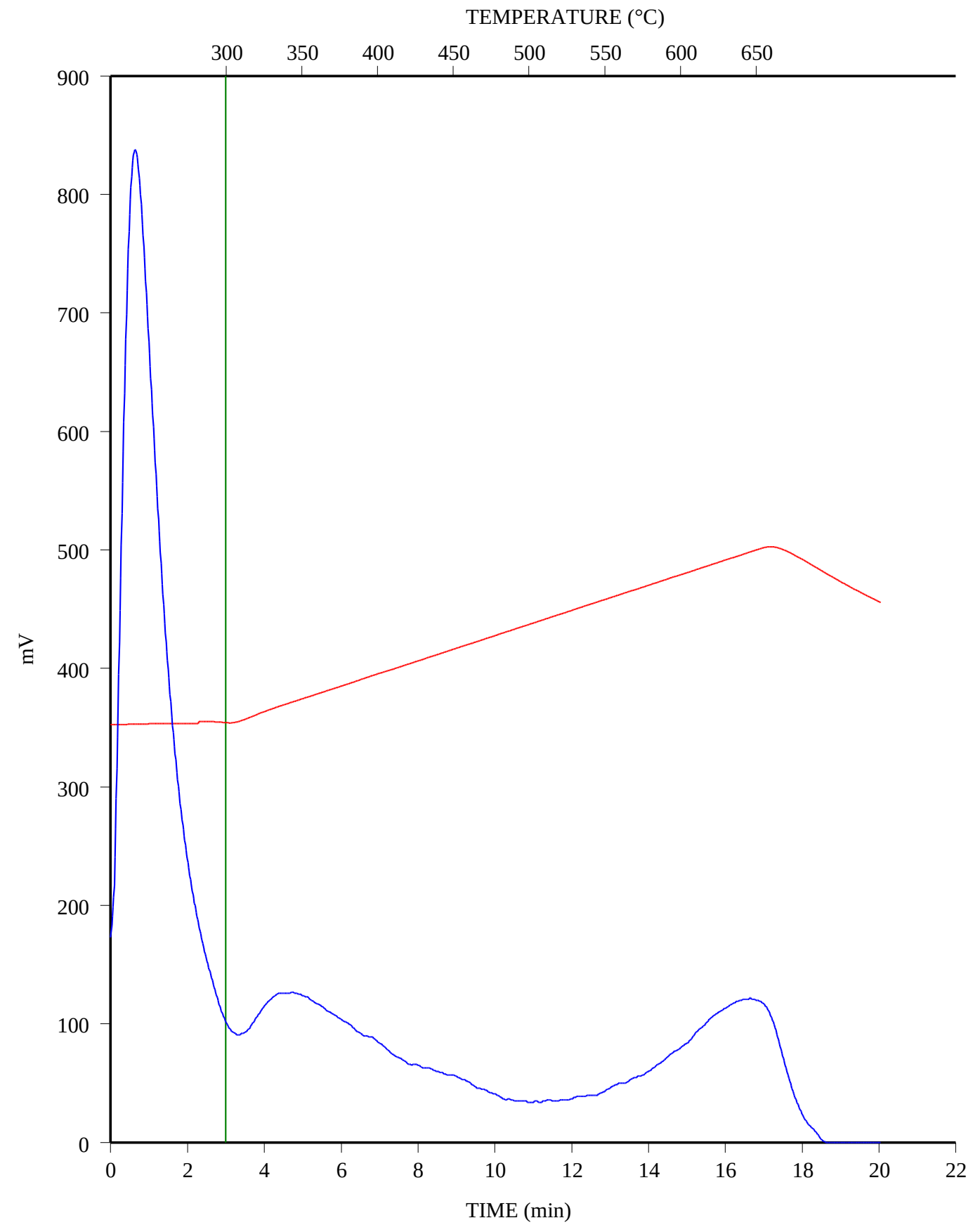
C-594434; HUSKY WILD RIV 10-33-56-22; 4081.21 m
FID Hydrocarbons



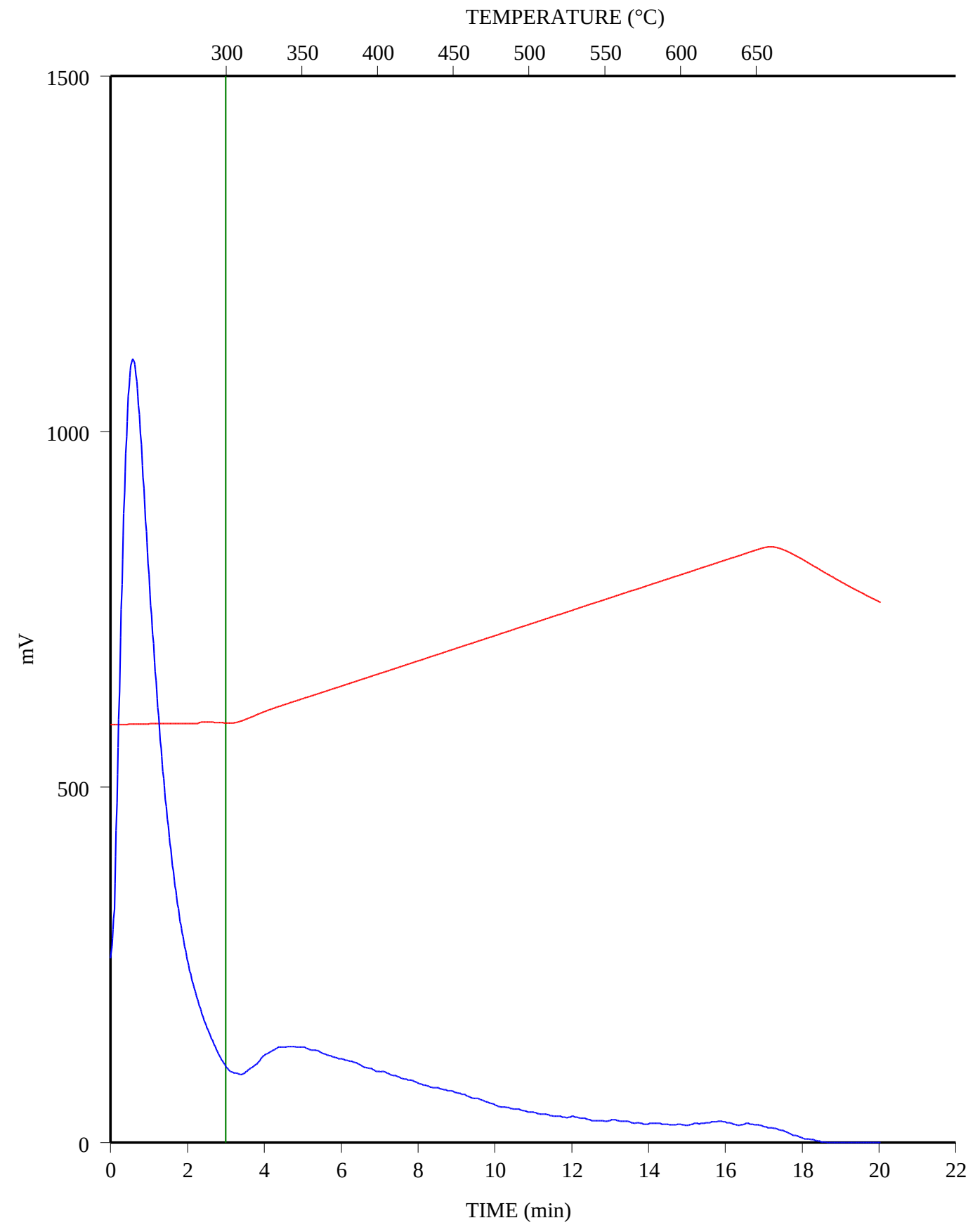
C-594435; HUSKY WILD RIV 10-33-56-22; 4082.42 m
FID Hydrocarbons



C-594436; HUSKY WILD RIV 10-33-56-22; 4083.16 m
FID Hydrocarbons



C-594437; HUSKY WILD RIV 10-33-56-22; 4084.36 m
FID Hydrocarbons



C-594438; HUSKY WILD RIV 10-33-56-22; 4085.66 m
FID Hydrocarbons

