file Fish kill

MISSISSIPPI STATE UNIVERSITY

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6 April 1967

cc W.P. Papageorge
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G. ~~P. LETSY~~ G.O.
W.P. Dunlap
G.W. Miller
H. Simpson
W.C. Robinson G.O.

Mr. L. C. Fuhrmeister
Technical Services Superintendent
Monsanto Chemical Company
Anniston, Alabama

This Copy For

Dear Mr. Fuhrmeister:

The following report includes a summary of some of our recent findings:

Table 1. Water-quality data collected March 22, 1967.

Location	Time	pH	Temp. (°C)	D. O. (ppm) Surface	D. O. (ppm) Elbow Depth
Choccolocco Creek - 4 mi. E. Boiling Spring	7:00 AM	7.4	13	8.9	8.9
Choccolocco Creek - Flat Bridge	8:15 AM	7.2	13.5	8.0	7.8
Choccolocco Creek - Hiway #93 Bridge	10:15 AM	7.7	14.0	8.5	8.4
Choccolocco Creek - Hiway #77 Bridge	11:00 AM	8.0	15.0	9.0	8.8
Anniston Sewage Treatment Plant	7:30 AM	7.3	19.0	None Detectable	---
Monsanto Treatment Facility	9:15 AM	6.2	17.0	6.5	---
Snow Creek at Front Fence	9:30 AM	11.2	22.0	8.0	---

Everything in Table 1 seems in order except the pH in the front ditch. Previous readings have always been very low or near 7.0.

You will recall my brief report of March 10 in which we found normal ACh levels in bluegills collected at Jackson Shoals. On March 23 we obtained other specimens from Choccolocco Creek for cholinesterase tests. All fish were kept alive until tested and each fish was tested separately (we usually pool two brains to make a sample). The samples in Table 2 were as follows:

Samples 1, 2 Distressed bluegills collected at Eureka Bridge.
Samples 3, 4, 5, 6 Healthy bluegills collected at Jackson Shoals.
Samples 7, 8, 9, 10 Healthy green sunfish collected at Jackson Shoals.

Table 2.

Sample No.	Brain Wt.	Optical Density	μM ACh Hydrolyzed 20'	60'	Specific Activity	Average
1	108.1 mg	.130	2.06	6.18	1.76	1.52
2	35.3 mg	.093	1.48	4.44	1.27	
3	100.7 mg	.133	2.20	6.60	1.88	
4	41.2 mg	.094	1.62	4.86	1.39	1.69
5	38.2 mg	.111	1.76	5.28	1.51	
6	26.5 mg	.145	2.30	6.90	1.97	
7	35.4 mg	.145	2.29	6.87	1.96	
8	28.2 mg	.107	1.66	4.98	1.42	1.75
9	36.0 mg	.142	2.28	6.88	1.96	
10	26.7 mg	.114	1.89	5.57	1.65	

On March 25, Dr. L. L. Ellis and I collected 9 distressed bluegills and 3 distressed green sunfish at Eureka Bridge. These were quick frozen on dry ice and kept frozen until analyzed on April 1.

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These samples gave us peculiar results. Three of them failed to give a meaningful reading and the others showed great variation. We don't know whether this can be attributed to technique, equipment, or the samples. For what it is worth, the results are shown in Table 3.

Table 3.

Sample No.	Brain Wt.	Optical Density	μM ACh Hydrolyzed 20'	60'	Specific Activity	Average
1	77.8 mg	no data				
2	90.1 mg	no data				
3	100.0 mg	no data				
4	92.1 mg	.059	0.76	2.28	.65	
5	82.3 mg	.074	0.98	2.94	.84	
6	72.8 mg	.118	1.44	4.32	1.23	1.06
7	75.9 mg	.098	1.21	3.63	1.04	
8	85.8 mg	.141	1.79	5.37	1.53	
9	88.7 mg	.074	0.61	1.83	.52	
10	80.4 mg	.107	1.38	4.14	1.18	1.00
11	80.0 mg	.120	1.54	4.62	1.32	

This weekend we plan to collect additional specimens and freeze them. We will bring some of our control fish over and freeze them at the same time. This may indicate the source of our problems.

The following data refer to GLC analyses of samples collected March 5, 1967.

Location	Sample	Results
Dry Creek at Hiway 202 Bridge	700 ml water	2 small peaks - not pesticides or TCE.
Monsanto Treatment Facility	700 ml water	5 large peaks - unidentified

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Location	Sample	Results
Choccolocco Creek - 4 mi. E. Boiling Spring	700 ml water	2 peaks - one represents a trace of DDE.
Anniston Sewage Treatment Plant	700 ml water	3 peaks but * no pesticides
Choccolocco Creek - Hiway #93 Bridge	700 ml water	DDT - trace DDE - trace

(Note this water sample did not have the usual high interference that we have often attributed to Snow Creek.)

Choccolocco Creek - 4 mi. E. Boiling Spring	Golden Redhorse**	DDE - trace DDT - 0.05 ppm
Choccolocco Creek - Flat Bridge	Bluegill (Caged)** (12.14 g)	14 major peaks

(The sample produced high background that interfered with detection of DDE, DDT, DDD, heptachlor epoxide and methyl parathion. One peak corresponds to parathion, however, the compound causing the peak is less polar than parathion when tested in a partition-coefficient test.

Choccolocco Creek - Jackson Shoals	Spotted Bass ** (5.80 g)	17 major peaks Same background as mentioned above.

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* Two peaks resembled parathion and DDE but their partition coefficients (hexane - acetronitrile) proved otherwise.

** The GLC tracings for these 3 fish are included as a part of this report. Note the clean sample from the fish taken upstream. Many of the peaks in the downstream fish are those we have found in Snow Creek. Could this be the reason that the SE Lab did not do GLC analyses of fish tissues as a part of their report? Note that we indicate retention times for several pesticides on one tracing. The peaks do not match these times perfectly, indicating that they are not pesticides.

Sincerely yours,

Denzel E. Ferguson
Professor of Zoology

DEF:wb

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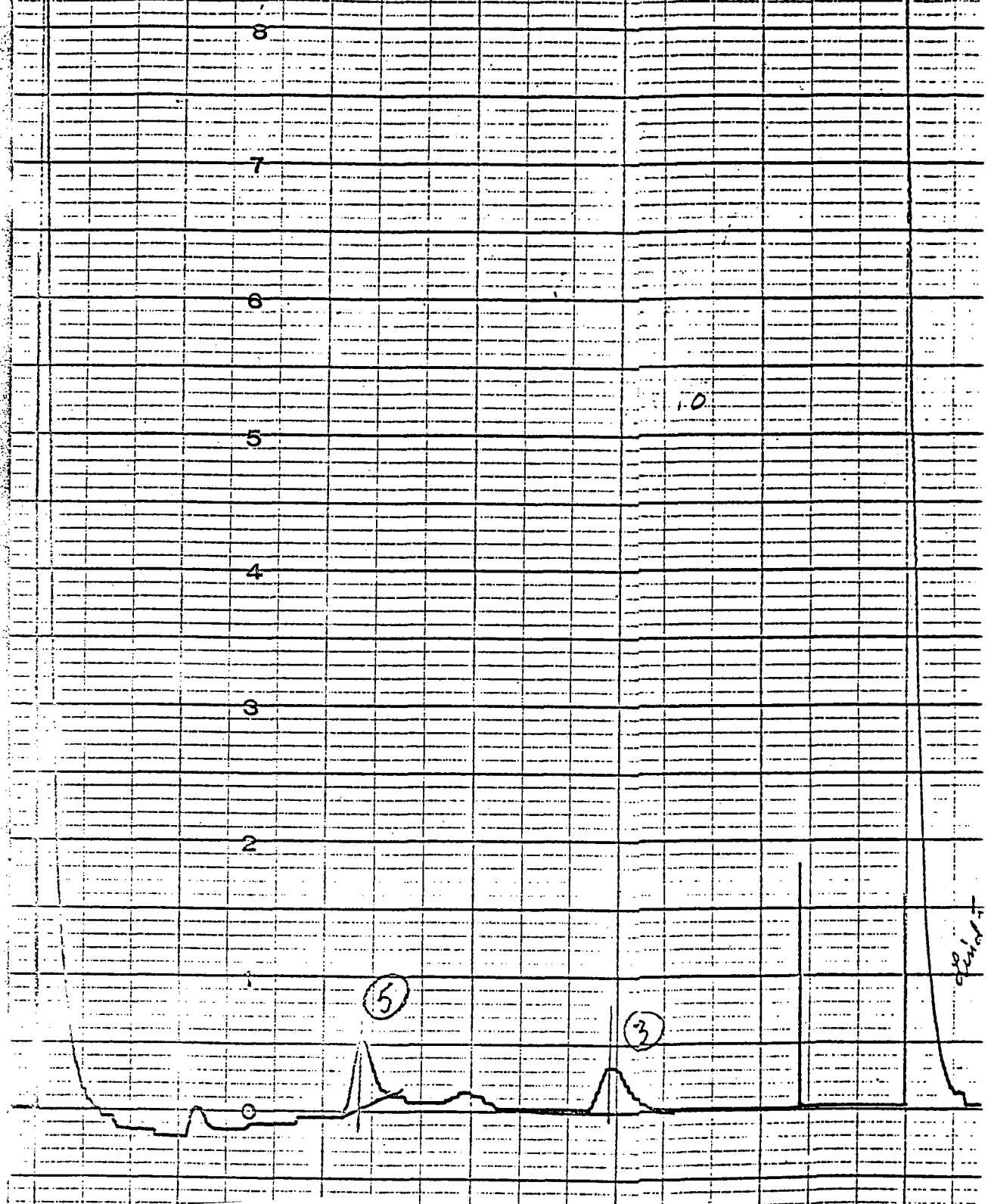
MB-185a - Golden Redhorse -

5 ul @ 4X - (10 ml. dilution in Hexane)

20 psi - ≈ 40 ml/min 188°C column = DC-200



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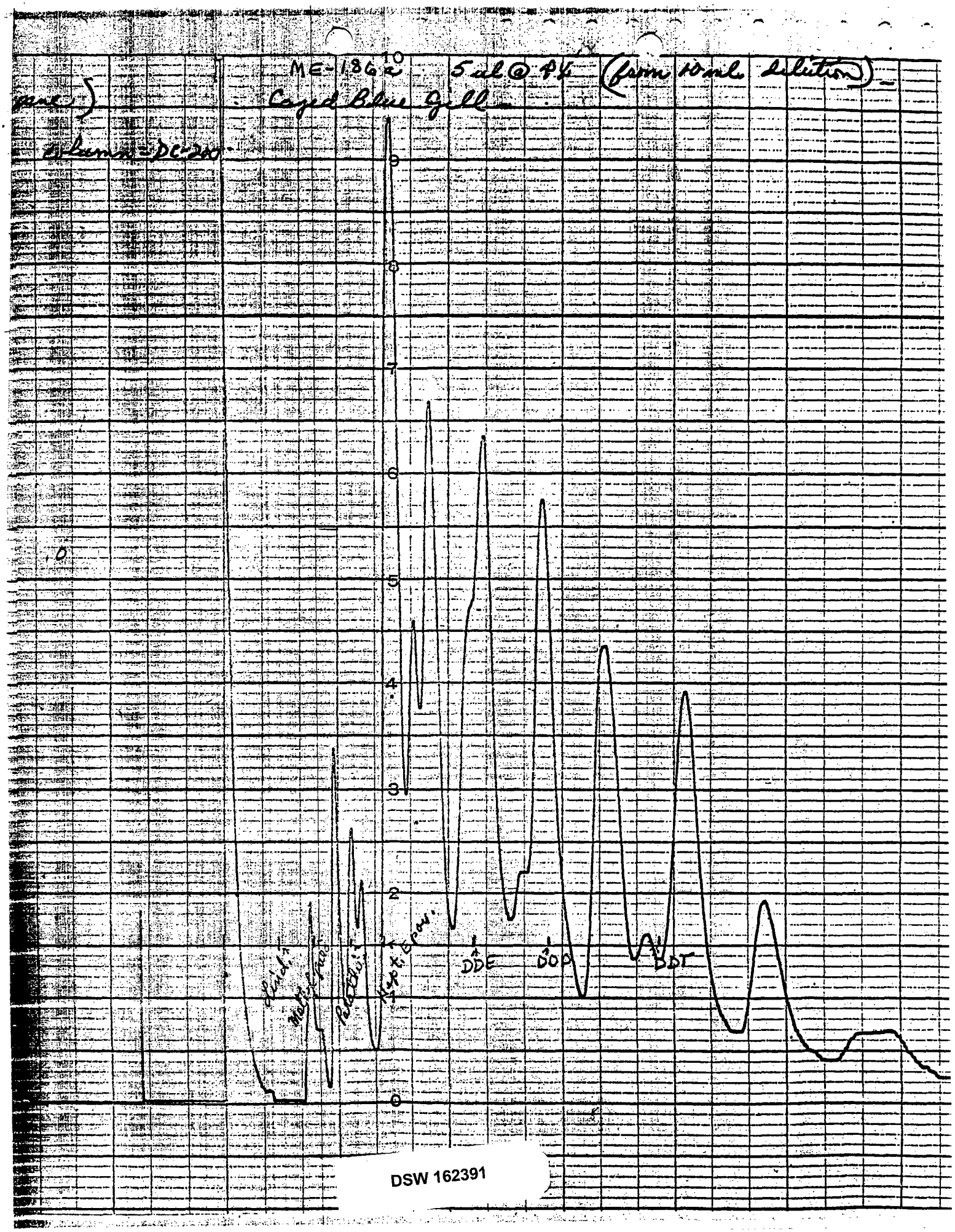

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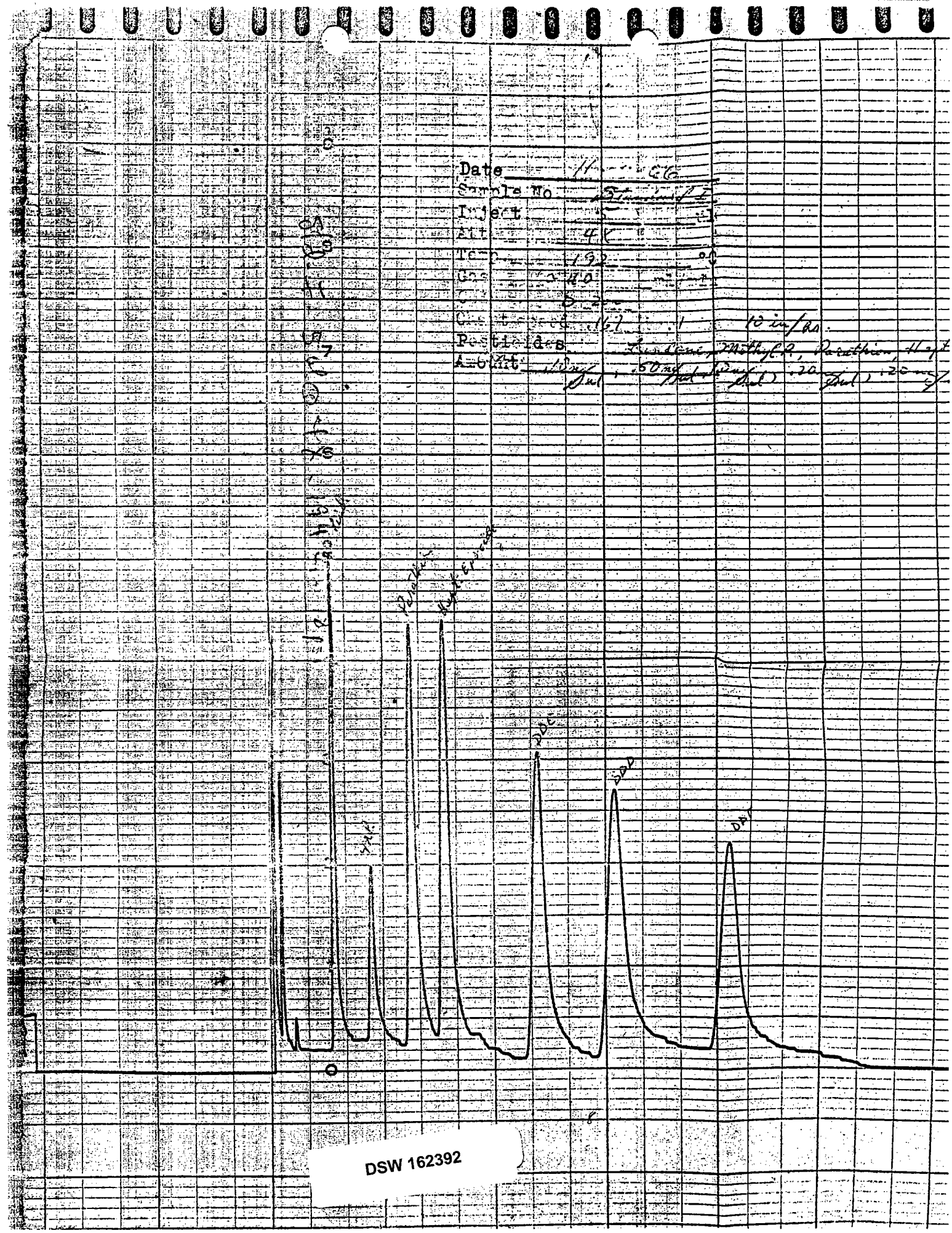

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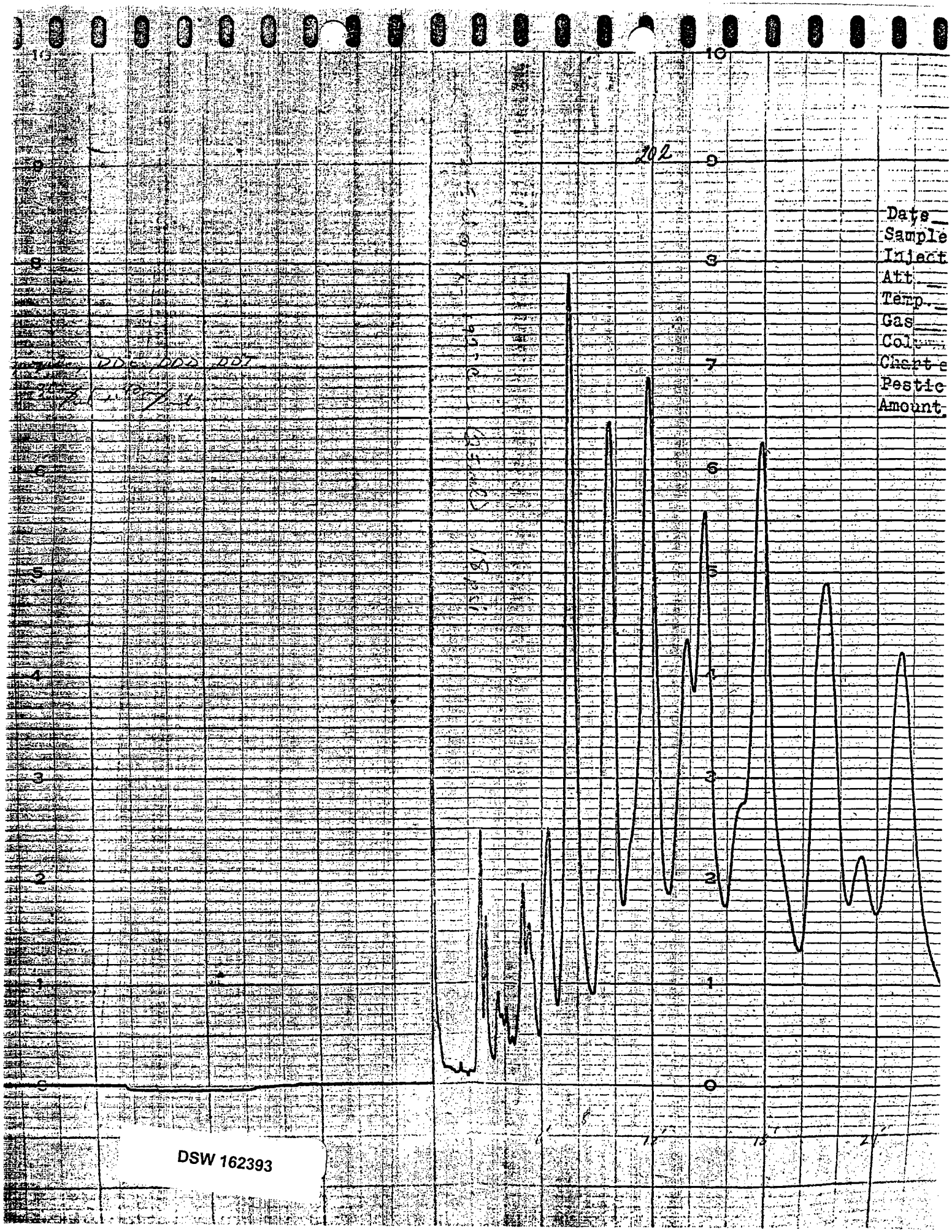

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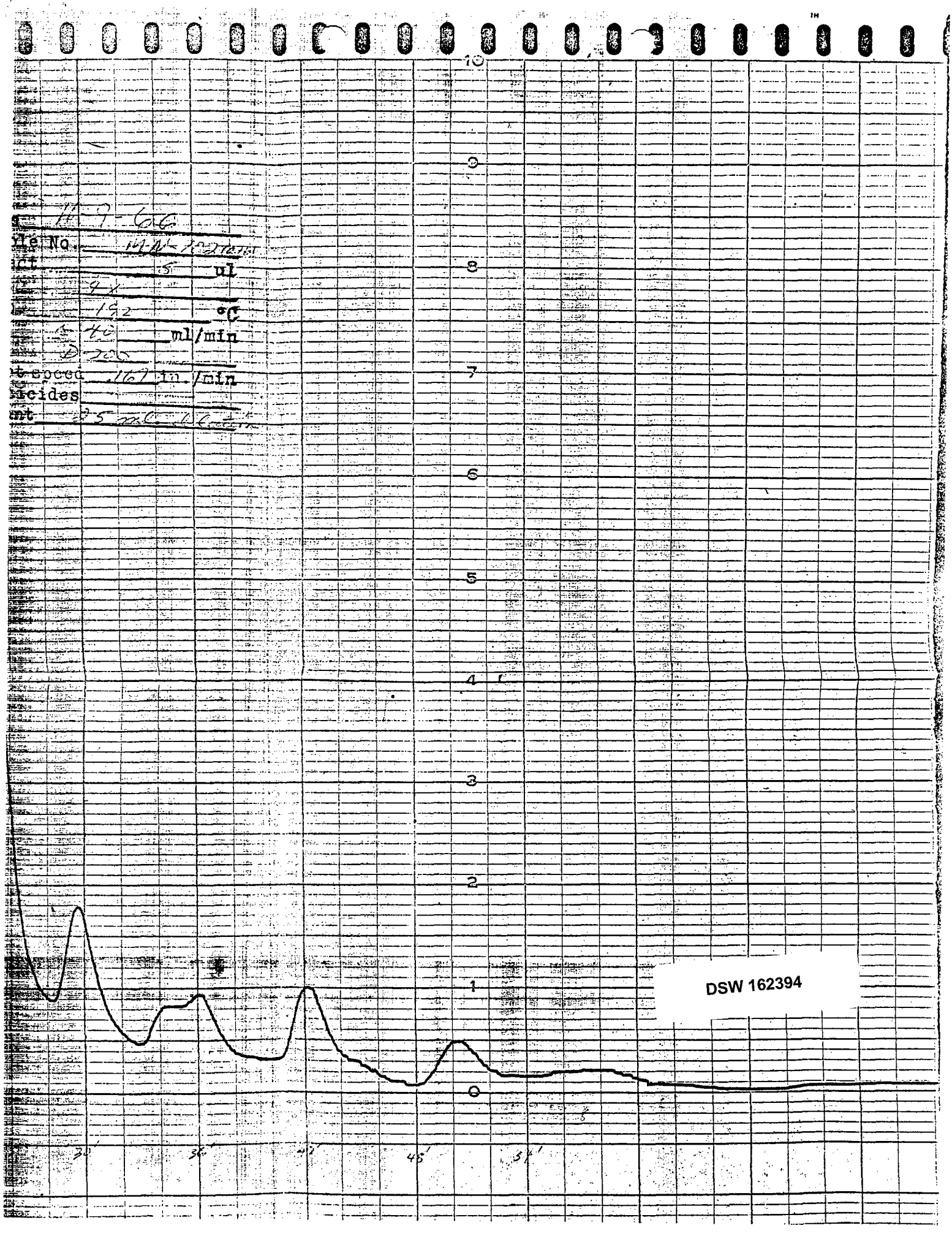

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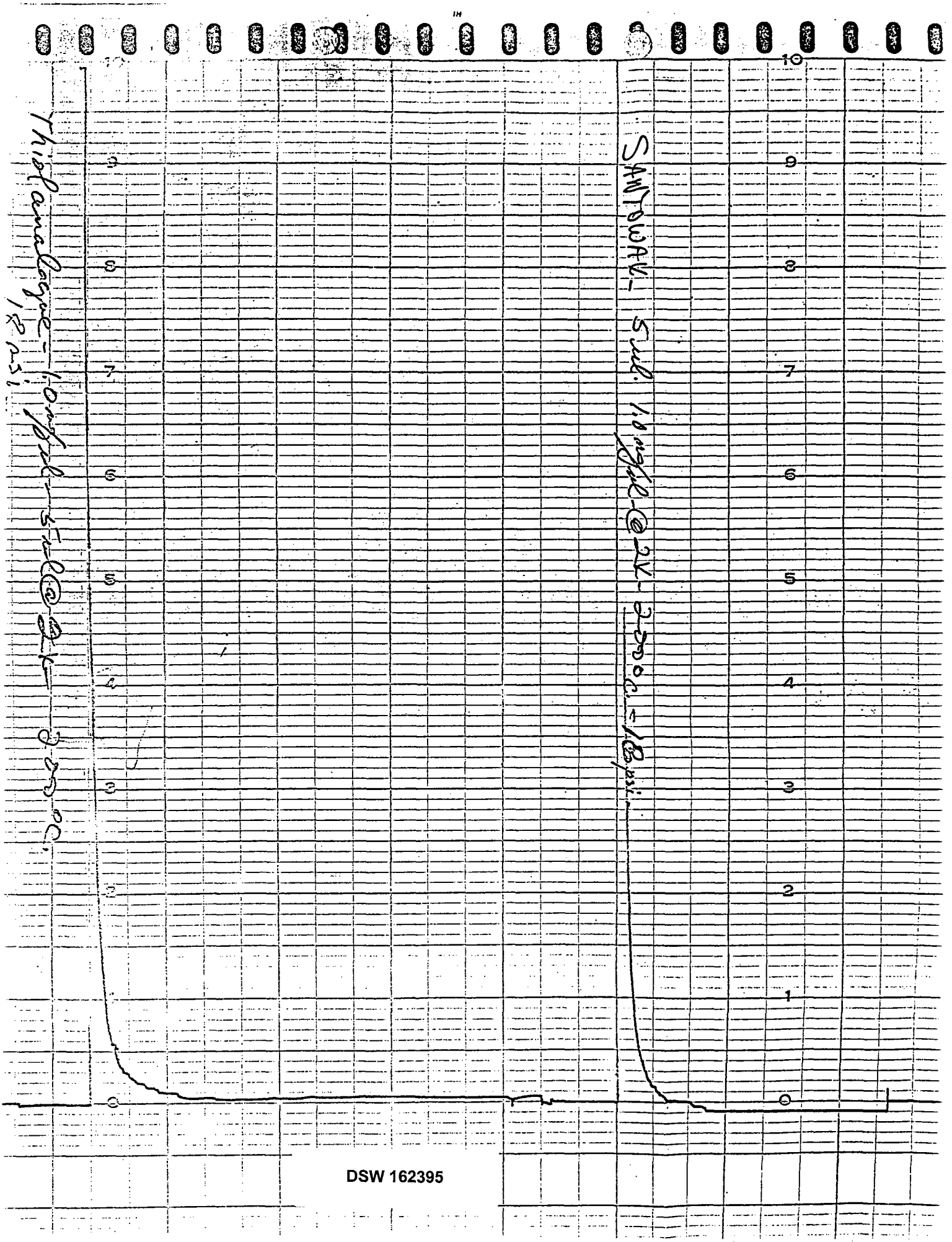

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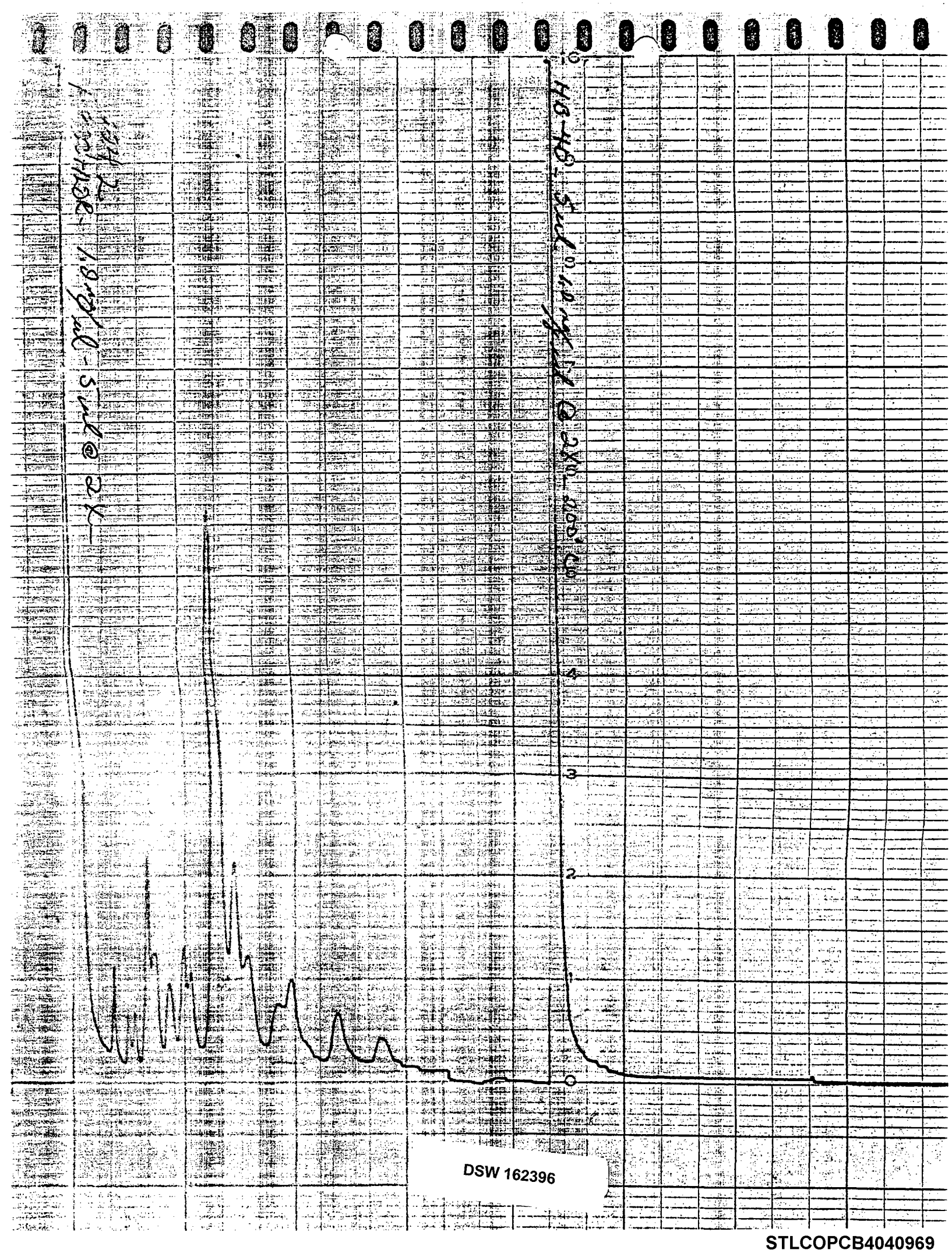
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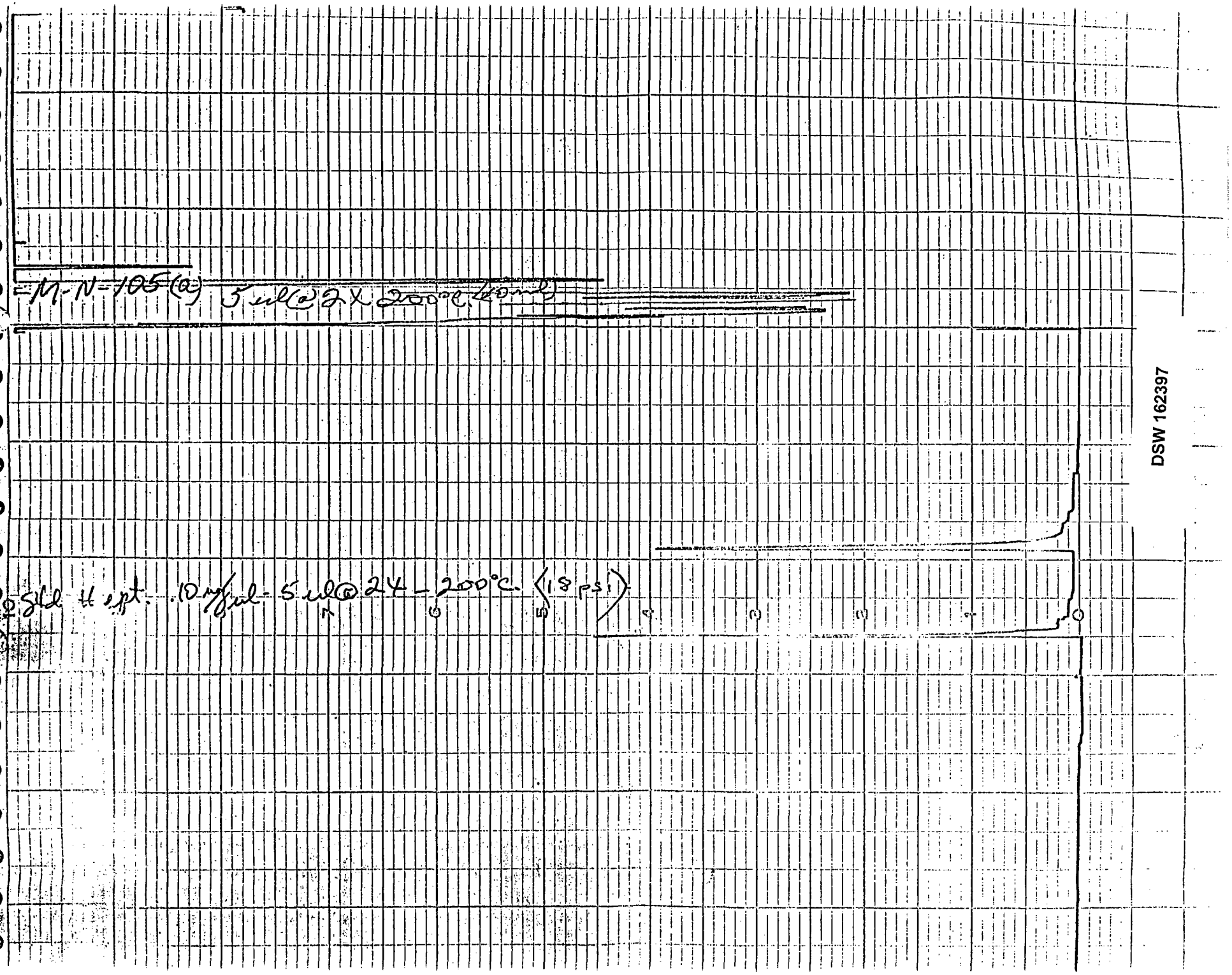

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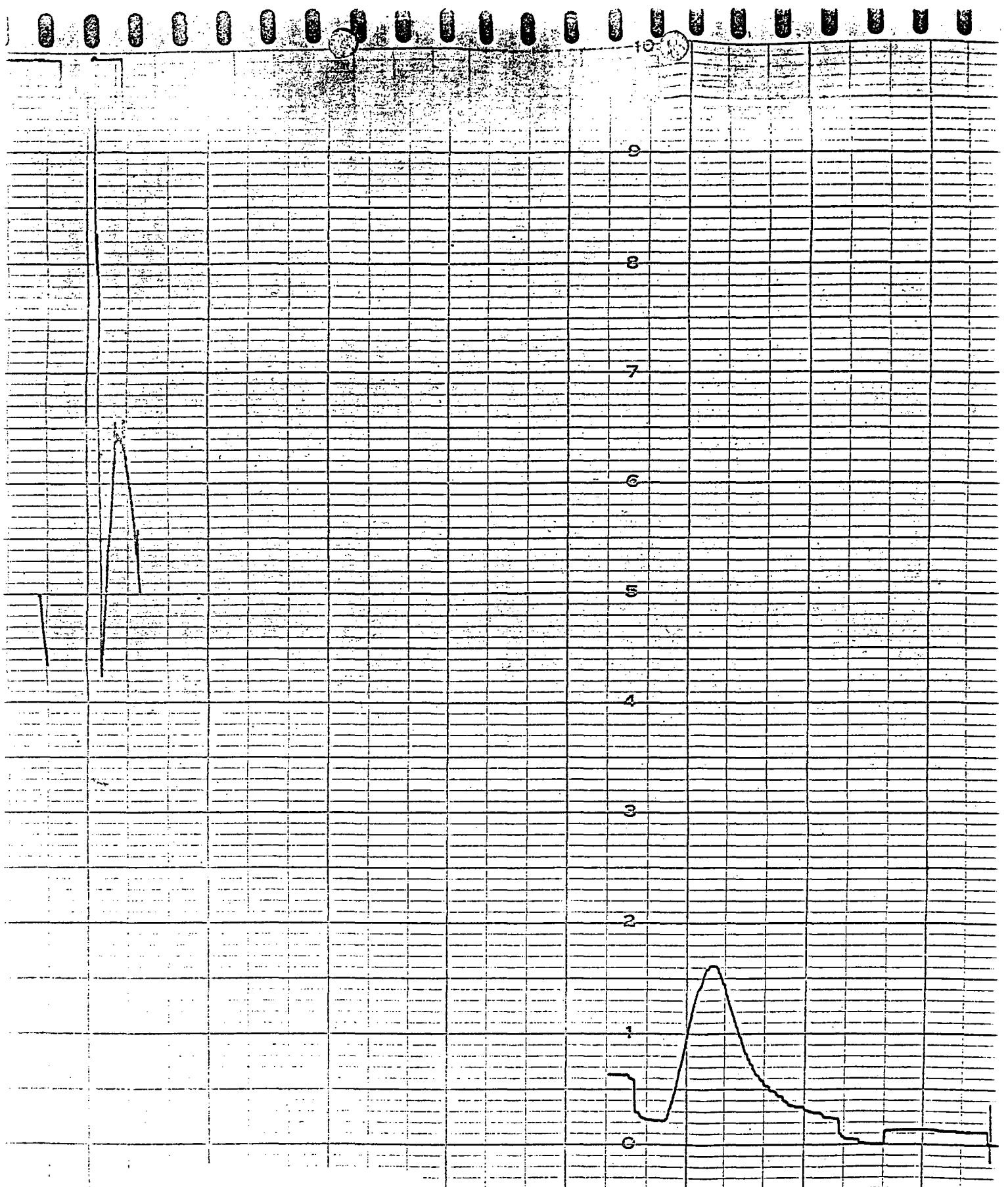

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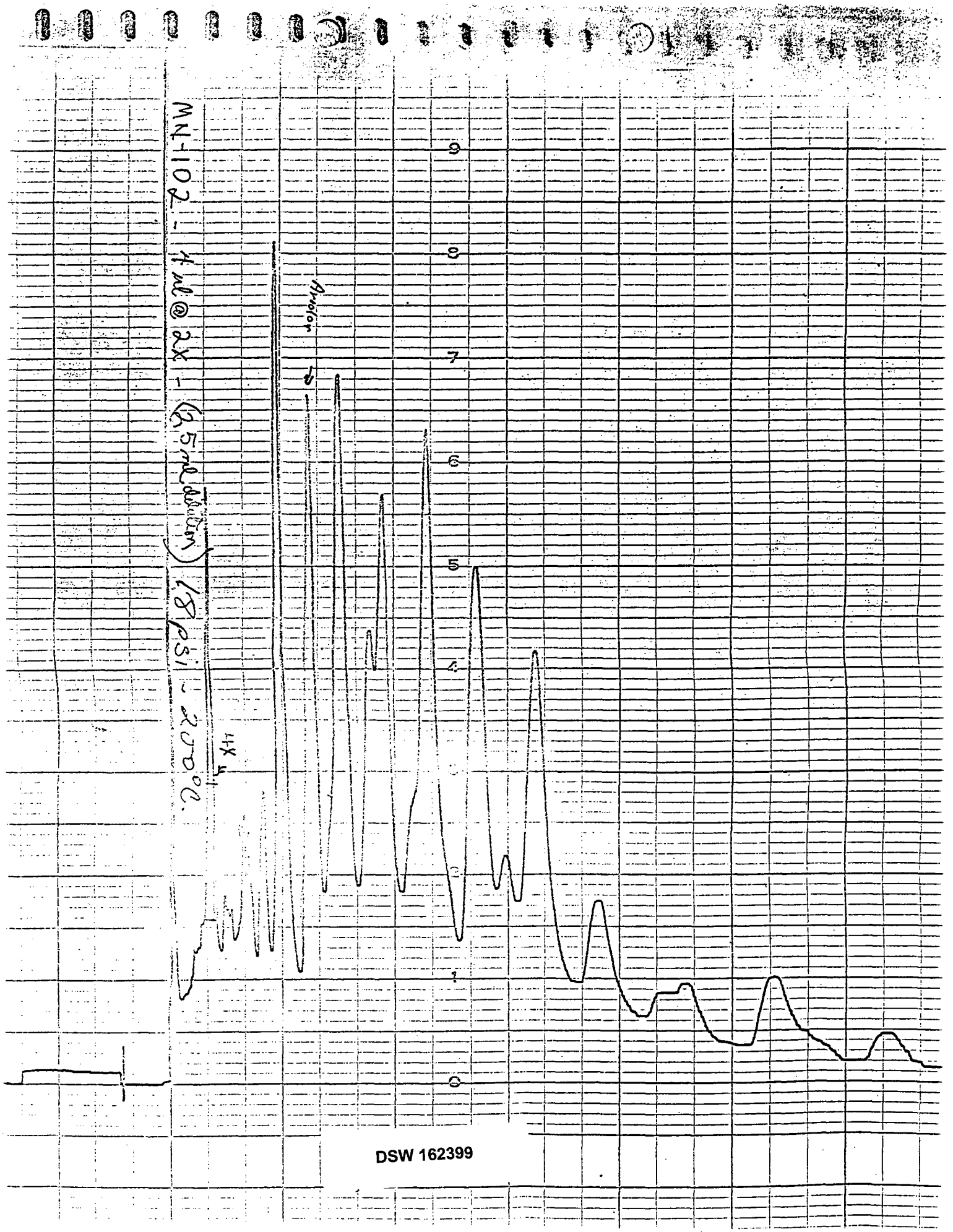

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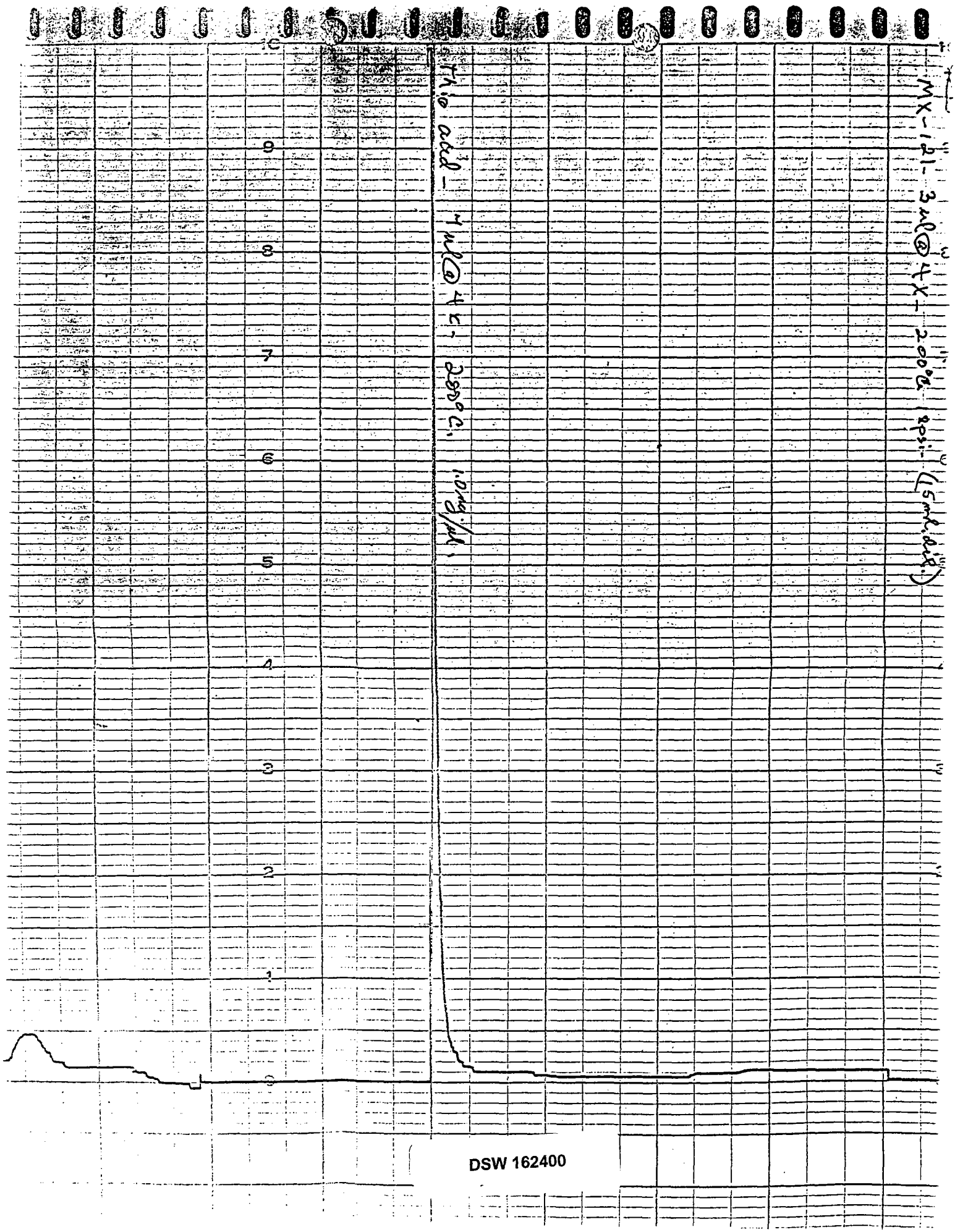

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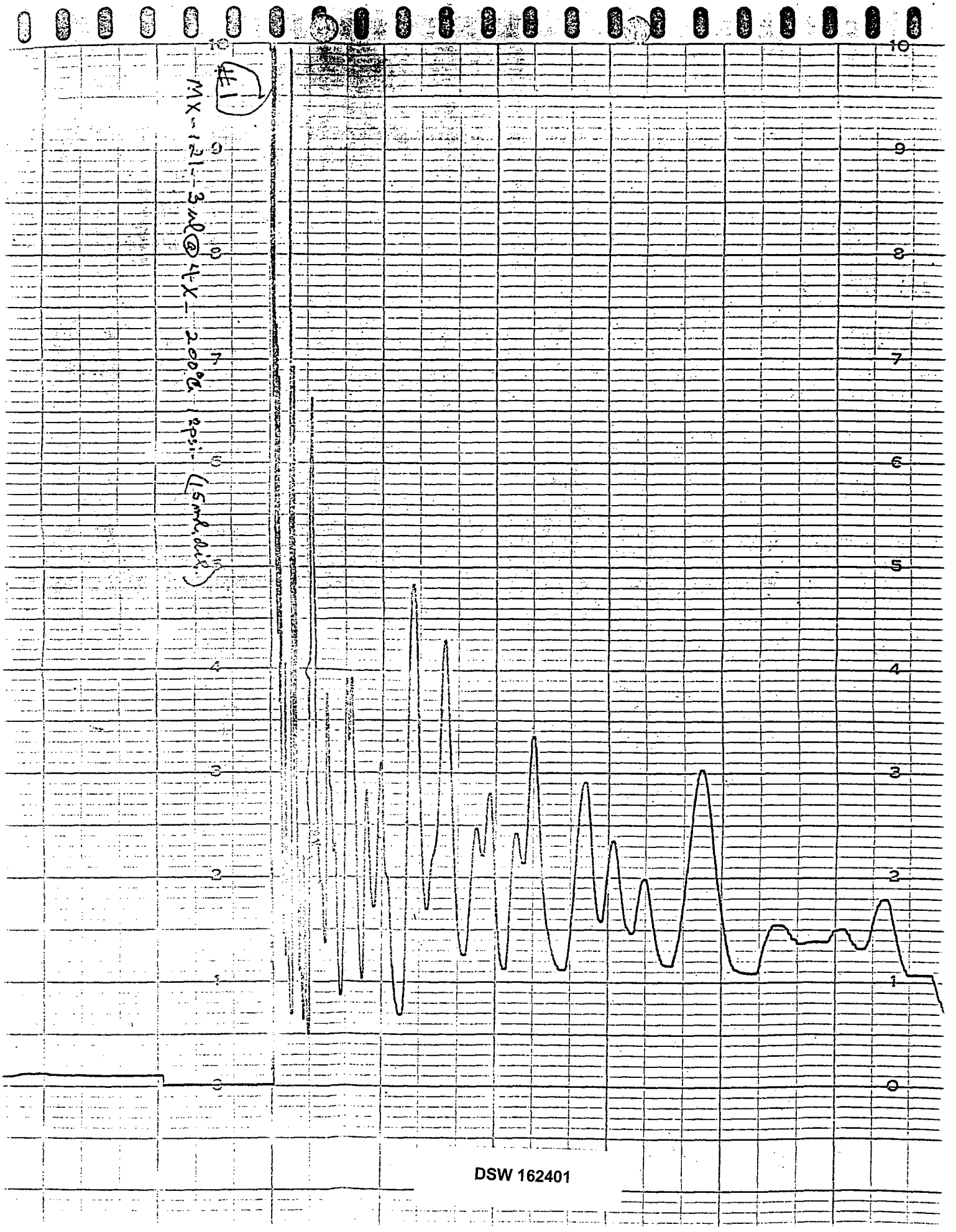

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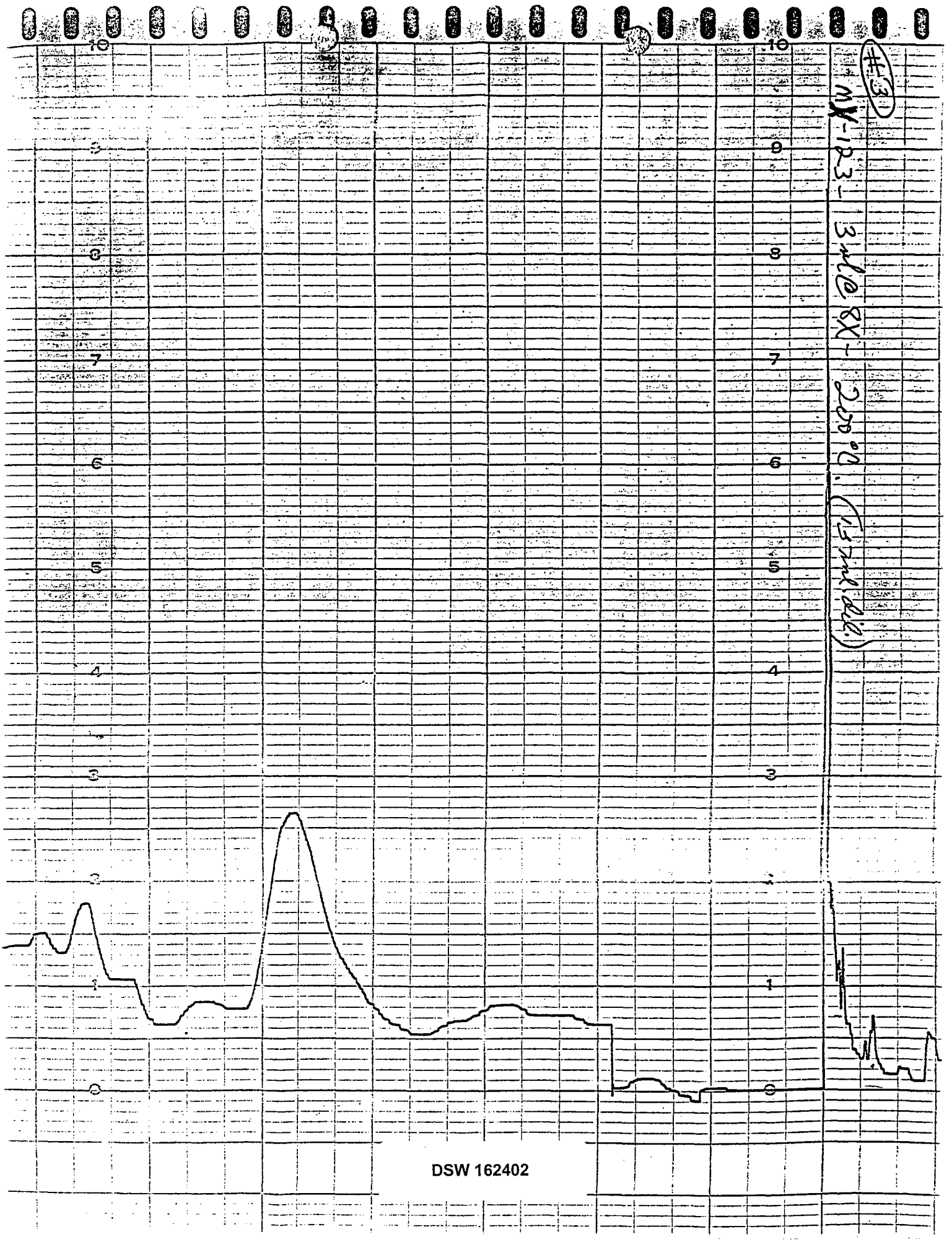

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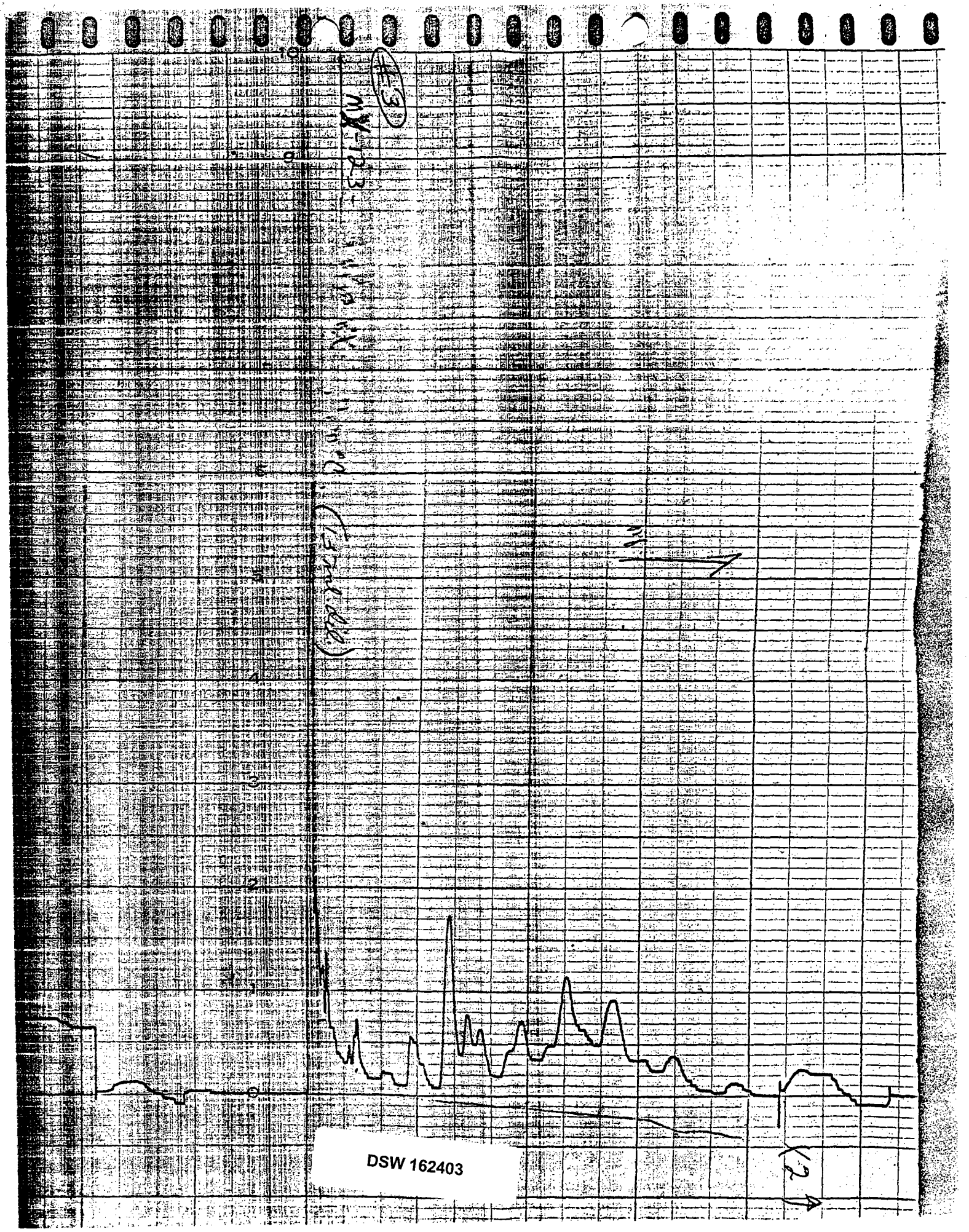
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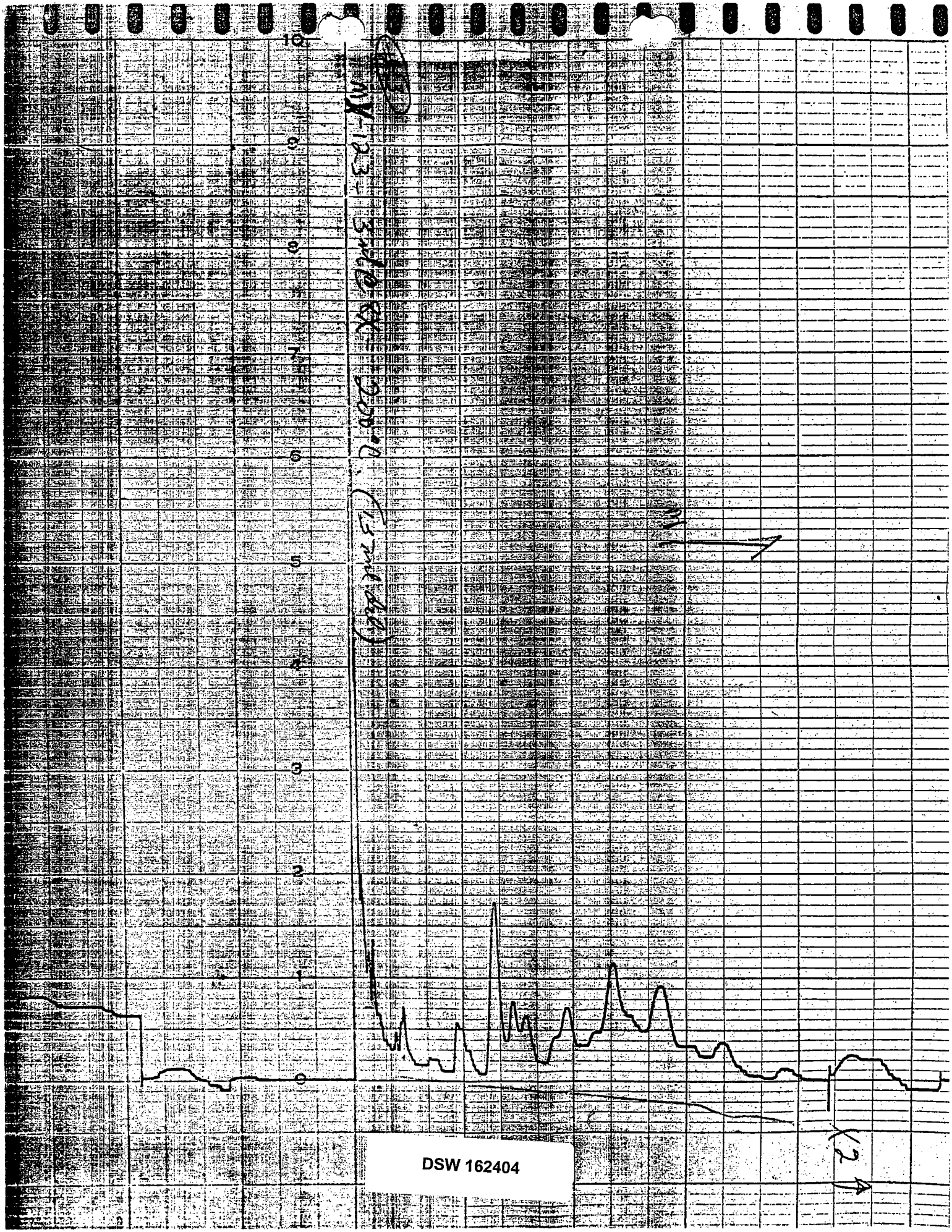

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