Cross Nicol

0 0.5mm

Hornblend andesite (Sample No. P160)

Locality ; 1 Km S pintuyan South-West Coast Panaon Is in Southern Leyte
Phenocryst ; Plagioclase, hornblend, biotite, magnetite, apatite
Groundmass ; Plagioclase, hornblend, magnetite, glass

ho ; hornblend
Pl ; plagioclase

Parallel Nicol

0 0.5mm

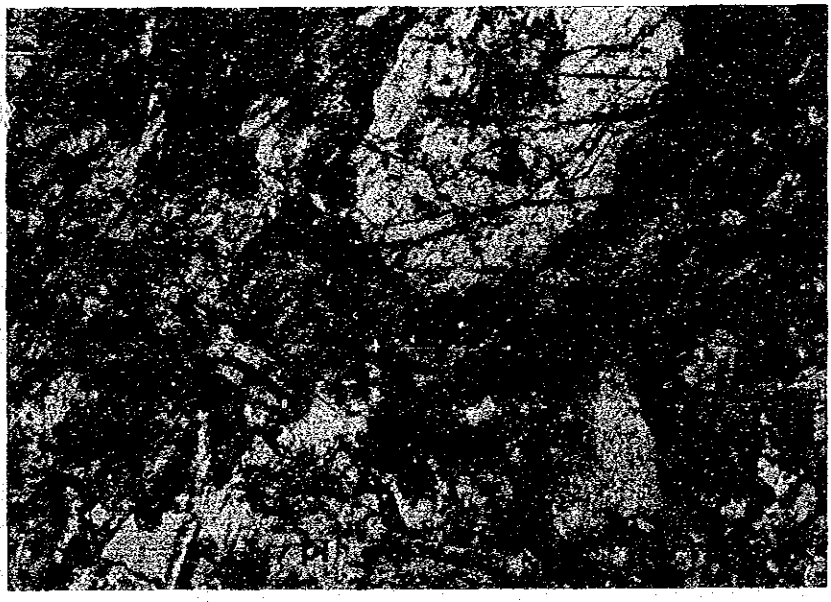
cpx; clinopyroxene
ho ; hornblend

Cross Nicol

0 0.5mm

Pyroxene hornblend gabbro (Sample No. Y-23-2)

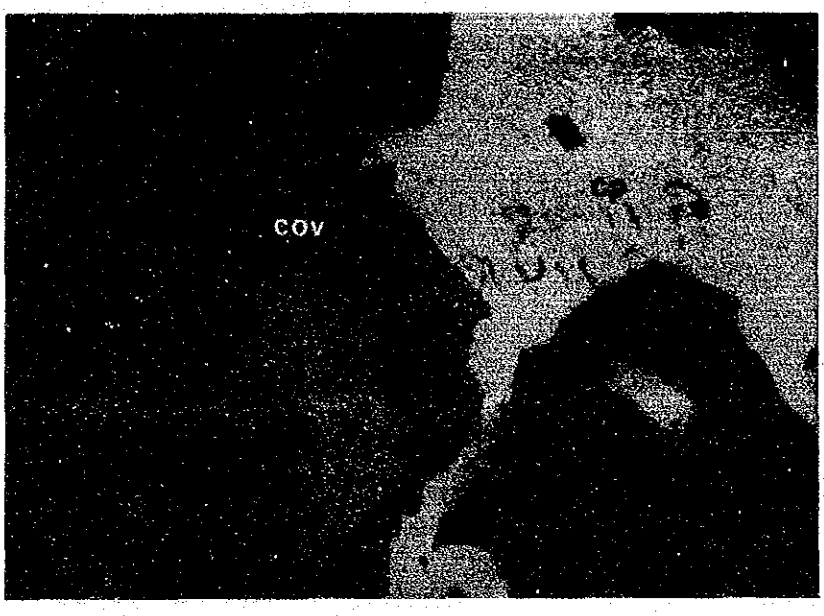
Locality ; Middle Bucas Is
Main mineral ; Plagioclase, hornblend, clinopyroxene
Accessary mineral ; Biotite, magnetite, ilmenite, sphene



Parallel Nicol

0 0.5mm

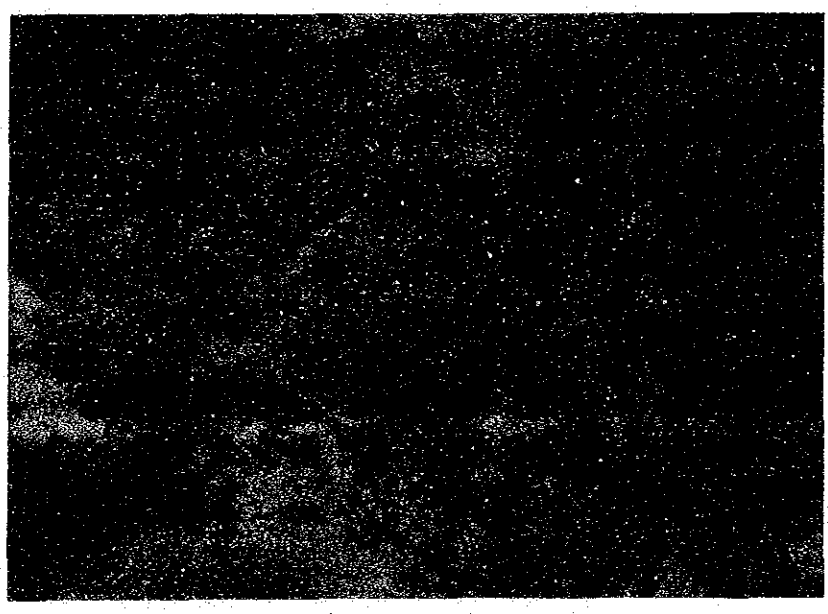
Masbate Area
(Polished section micro-photograph)



Sample of Dogosangan Showing
Disseminated Ore
Grain size under 0.7 mm
consisting of massive
chalcopyrite sphalerite and
granular pyrite.
Covelline occur margine of
chalcopyrite and sphalerite.

cp ; chalcopyrite
sp ; sphalerite
cov; covelline

0 0.1mm

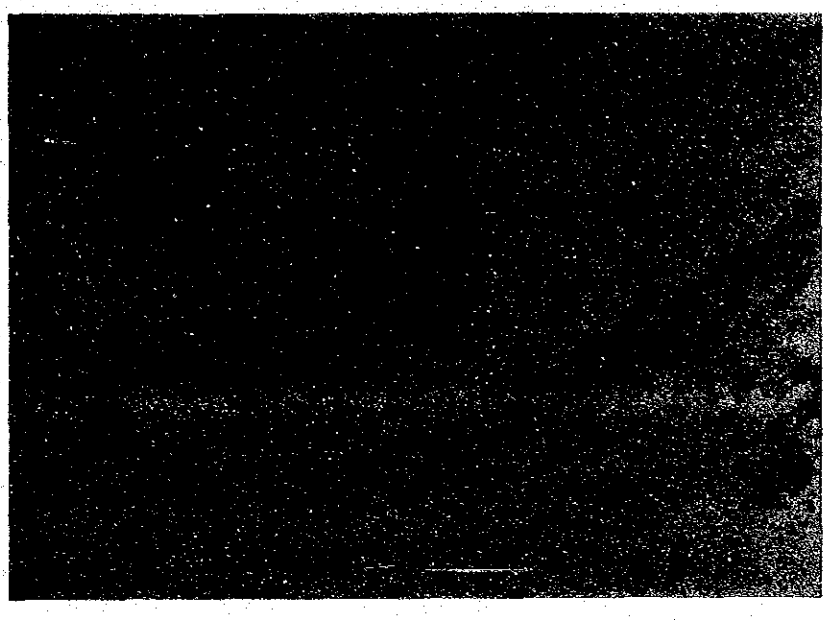


Sample of Matanglad Showing
Secondary Enriched Massive Ore
Brochantite > chalcocite
Covelline ≒ Bornite

cc ; chalcocite
cov; covelline

0 0.1mm

Northern Leyte Area
(Polished section micro-photograph)

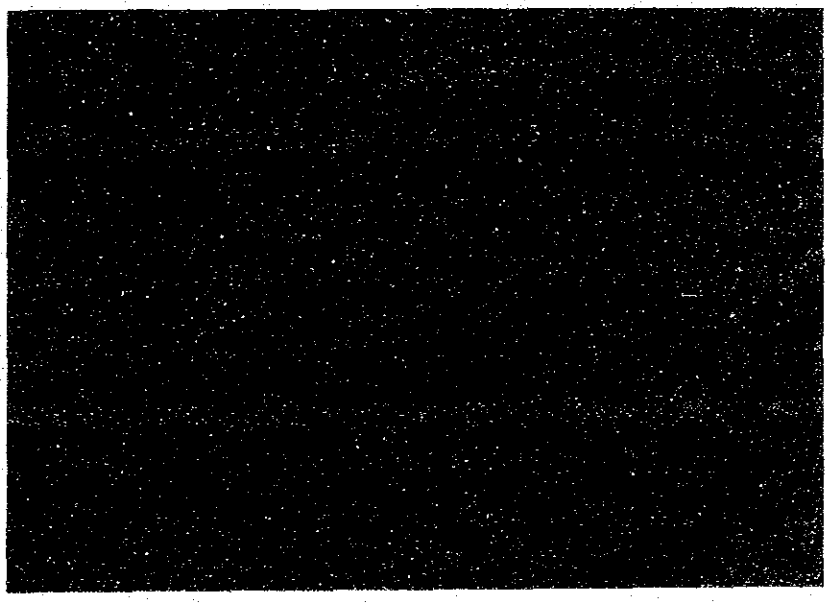


Sample of Antipolo Showing Disseminated Marcasite Pyrite Ore

Marcasite; 0.05 - 1 mm size Idiomorphic and Semi-Idiomorphic Form. Anisotropism strong.

mar; marcasite

0 0.5mm



Sample of Curajo Showing Pyrite-chalcopyrite massive ore

Pyrite; 0.1 - 0.3 mm Semi-idromorphic and xenomorphic Form Chalcopyrit; Cementing around Pyrite grain with sphalerite

py ; Pyrite
cp ; Chalcopyrite

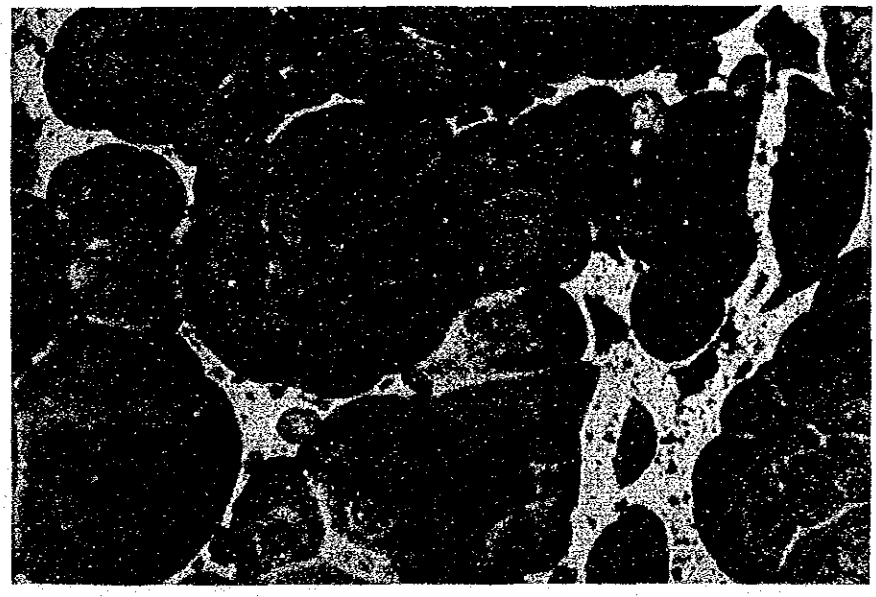
0 0.5mm

Southern Leyte Area
(Polished section microphotograph)

Sample of Anilao Showing
(Druse Ore)
Specularite Chalcopyrite
Magnetite Covelline
Sepecularite;
Idiomaphic columnar,
needle and platy habit.
3 - 0.3 mm

cp ; chalcopyrite
sp ; specularite

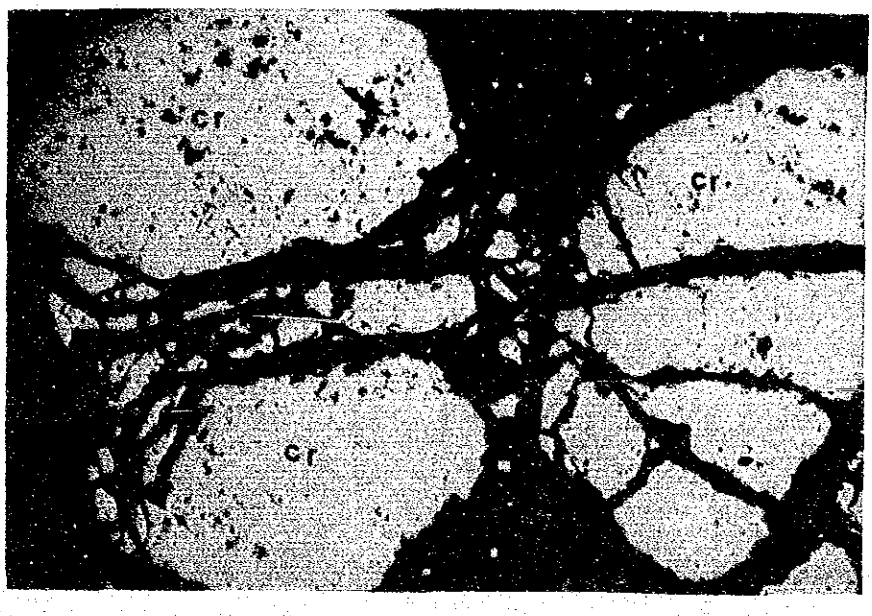
0 0.5mm



Sample of Punpunan Showing
Manganese Ore
(Manganese nodule like)
Pyrolusite and Todorokite are
identified by X-Ray
diffraction method.

0 0.5mm

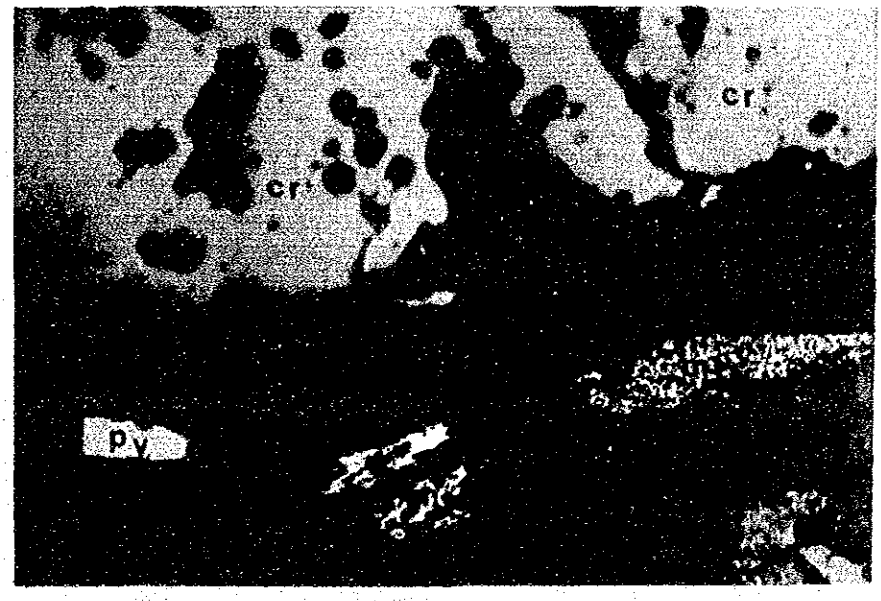
Dinagat area
(polished section micro-phtograph)



0 0.5mm

Sample of Velor Showing
(SF25)
Chromite ;
Idiomorphic crystal or
Granular texture.

ch ; chromite



0 0.5mm

Sample of Avelina Showing

Chromite ore
Combination of ore
mineral.

ch ; chromite
mg; magnetite
py ; pyrite

APPENDICS

Appendix-3-1

Masbate Area

Sample No.	Radiolaria	Foraminifera	Known age
1. 091904	Barren	Barren	Unknown
2. E25098502	Barren	Rare/Poor	Unknown
3. C090907	Barren	Rare/Poor	Unknown
4. 0912013	Barren	Barren	Unknown
5. C0922018	Barren	Rare/Poor	Unknown
6. G001R	Barren	Barren	Unknown
7. L003090385	Barren	Barren	Unknown
8. L091092985	Barren	Barren	Unknown
9. S0928010	Rare/Poor	Barren	Unknown
10. G124R	Barren	Barren	Unknown
11. H0269685	Barren	Barren	Unknown
12. A093001	Barren	Rare/Poor	Unknown
13. M169FD	Rare/Poor	Barren	Unknown
14. B20098502	Barren	Barren	Unknown
15. F165R	Rare/Poor	Barren	Unknown
16. F185R	Barren	Barren	Unknown
17. H08792085	Barren	Barren	Unknown
18. L086092285	Rare/Poor	Barren	Unknown
19. M094FD	Rare/Poor	Barren	Unknown
20. N163	Rare/Poor	Barren	Unknown

Northern Leyte Area

Sample No.	Radiolaria	Foraminifera	Known age
NF-225-1R	Barren	Globorotalia tumida (s.l.)	younger than Pliocene
NM-005R	Barren	Barren	Unknown
NJR-01	Barren	Barren	Unknown
NJR-02	Barren	Barren	Unknown
NJR-03	Barren	Barren	Unknown
NK-020R	Barren	Barren	Unknown
NK-018R	Barren	Barren	Unknown
NES-07R	Barren	Barren	Unknown
NES-09R	Barren	Barren	Unknown
NFS-07R	Barren	Barren	Unknown
NF-202R	Barren	Barren	Unknown
NF-204R	Barren	Barren	Unknown

Southern Leyte; Dinagat and Siargao Area

Sample No.	Radiolaria	Foraminifera	Known age
T-018	Barren	Globorotalia tumida tumida G. tumida flexuosa G. ungulata	Late Pliocene to Pleistocene
T-086	Barren	Globorotalia tosaensis G. crassaformis G. inflata Pulleniatina obliquiloculata Neogloboquadrina dutertri	Late Pliocene to Pleistocene
R-099	Barren	Globorotalia crassaformis G. tosaensis G. inflata Spheroidinella dehiscens	Late Pliocene to Pleistocene
N-020	Barren	Globorotalia tumida tumida G. tumida flexuosa G. ungulata Sphaeroidinella dehiscens Pulleniatina praecursor P. obliquiloculata	Late Pliocene to Pleistocene
W91225(No.1)	Barren	Abundant/Poor	Unknown
SF003	Barren	Barren	Unknown
N186	Barren, Sponge spicules	Common/Moderate	Unknown
V114	Barren	Rare/Poor	Unknown
P197	Barren	Barren	Unknown
V003	Barren	Abundant/Poor	Unknown
Q063	Barren	Rare/Poor	Unknown
N118	Barren	Barren	Unknown
S153	Barren	Rare/Poor	Unknown
U093	Barren	Rare/Poor	Unknown
R131	Barren	Rare/Poor	Unknown
T237	Barrn	Rare/Poor	Unknown
V035	Barren	Common/Poor	Unknown
Q245	Barren	Rare/Poor	Unknown
R048	Barren	Barren	Unknown

Appendix 3-2 Microfossil Correlation Table

Age Determination on Calcareous Nanno-Plankton Fossils
by Dr. N. Okada Geo-Science Fac. Yamagata Univ.

Sample No.	Nanno-Plankton Zone	Geological Age	Note
(Masbate Area)			
2. B25098502	CN 4	Middle Miocene	
5. C0922018	CN 9	Upper Miocene	
7. L003090385	CN 1a	Lower Miocene	
9. S0928010	?	Upper Eocene - Oligocene	Rare fossils
13. M169	CN8-11	Upper Miocene - Lower Pliocene	
20. N163	?	Probable Upper Oligocene	Rare fossils
(Northern Leyte Area)			
1. NM003R	CN 9	Upper Miocene	
6. NK008R	CN14b-15	Upper - Middle Pleistocene	Bearing many Resedimentation Fossils of Miocene and Plioce
9. NK004R	CN 14b	Upper - Middle Pleistocene	
13. NF143R	CN 9	Upper Miocene	
14. NF154R	CN 9	Upper Miocene	
15. NF159R	CN 9b	Upper Miocene	
16. NF182R	CN 9	Upper Miocene	
19. NF210-2R	CN 14b	Upper-Middle Pleistocene	Bearing many rese dimentation fossils of Miocene and Pliocene.
(Southern Leyte; Dinagat; Siargao Area)			
2. W91225(No.1)	CP 19b	Upper Oligocene	
3. SF003	CP 13-CN5a	Middle Eocene-Middle Miocene.	Rare fossils
4. T018	CN 11	Lower Pliocene	
5. N186	?CN13a	Upper Pliocene.	Bearing many resedimentation fossils of Miocene an Pliocene.
6. V114	CN 14a	Middle-Lower	Pleistocene.
7. T086	CN 14a	"	"
8. N020	CN 10-11	Lower Pliocene	
10. V003	CN 9-11	Upper Miocene-Lower Pliocene.	Small amount of Discoaster
11. Q063	CN 12a,b	Upper Pliocene	
12. N118	CN 12	Upper Pliocene.	Bearing many resedimentation fossils of Miocene and Pliocene.
13. S153	CN 14a	Upper-Middle Pleistocene.	
14. U093	CN 5b-11	Middle Miocene-Lower Pliocene	
15. R099	CN 12a	Upper Pliocene.	Bearing many resedimentation fossils of Miocene and Pliocene.

Southern Leyte; Dinagat and Siargao Area

Sample No.	Radiolaria	Foraminifera	Known age
T-018	Barren	Globorotalia tumida tumida G. tumida flexuosa G. ungulata	Late Pliocene to Pleistocene
T-086	Barren	Globorotalia tosaensis G. crassaformis G. inflata Pulleniatina obliquiloculata Neogloboquadrina dutertri	Late Pliocene to Pleistocene
R-099	Barren	Globorotalia crassaformis G. tosaensis G. inflata Spheroidinella dehiscens	Late Pliocene to Pleistocene
N-020	Barren	Globorotalia tumida tumida G. tumida flexuosa G. ungulata Sphaeroidinella dehiscens Pulleniatina praecursor P. obliquiloculata	Late Pliocene to Pleistocene
W91225(No.1)	Barren	Abundant/Poor	Unknown
SF003	Barren	Barren	Unknown
N186	Barren, Sponge spicules	Common/Moderate	Unknown
V114	Barren	Rare/Poor	Unknown
P197	Barren	Barren	Unknown
V003	Barren	Abundant/Poor	Unknown
Q063	Barren	Rare/Poor	Unknown
N118	Barren	Barren	Unknown
S153	Barren	Rare/Poor	Unknown
U093	Barren	Rare/Poor	Unknown
R131	Barren	Rare/Poor	Unknown
T237	Barrn	Rare/Poor	Unknown
V035	Barren	Common/Poor	Unknown
Q245	Barren	Rare/Poor	Unknown
R048	Barren	Barren	Unknown

Appendix- 4

Age Determination of Whole Rock Samples
by K-Ar Method

Sample No.	Isotopic Age (Ma)	^{40}Ar (scc/gm x 10^{-5})	% ^{40}Ar	% K
(Masbate Area)				
A091101	7.1 ± 0.5			
		0.041	29.5	1.48
		0.041	39.2	1.50
L061091385	22.6 ± 1.1			
		0.618	91.4	6.95
		0.621	86.0	6.98
				7.06
(Northern Leyte Area)				
NC249R	50.0 ± 3.9			
		0.035	29.0	0.18
		0.036	28.3	0.18
NLR4	20.9 ± 2.3	0.073	40.3	1.01
		0.084	49.8	1.01
		0.091	48.6	
(Southern Leyte Dinagat Siargao Area)				
P160	0.2 ± 0.1			
		0.001(1)	3.7	1.82
		0.001(2)	5.4	1.84
		0.001(8)	9.1	
R165	1.44 ± 0.7			
		0.008(5)	40.0	1.51
		0.008(5)	43.8	1.52
S110	2.48 ± 0.12			
		0.023	31.2	2.48
		0.025	50.5	2.49
Y23-2	84.8 ± 4.2			
		0.131	54.1	0.40
		0.139	49.4	0.40

(Studied by TELEDYNE JAPAN)

Appendix 5-1 X-Ray Diffraction Chart Masbate Area

Identified Minerals by X-Ray diffraction

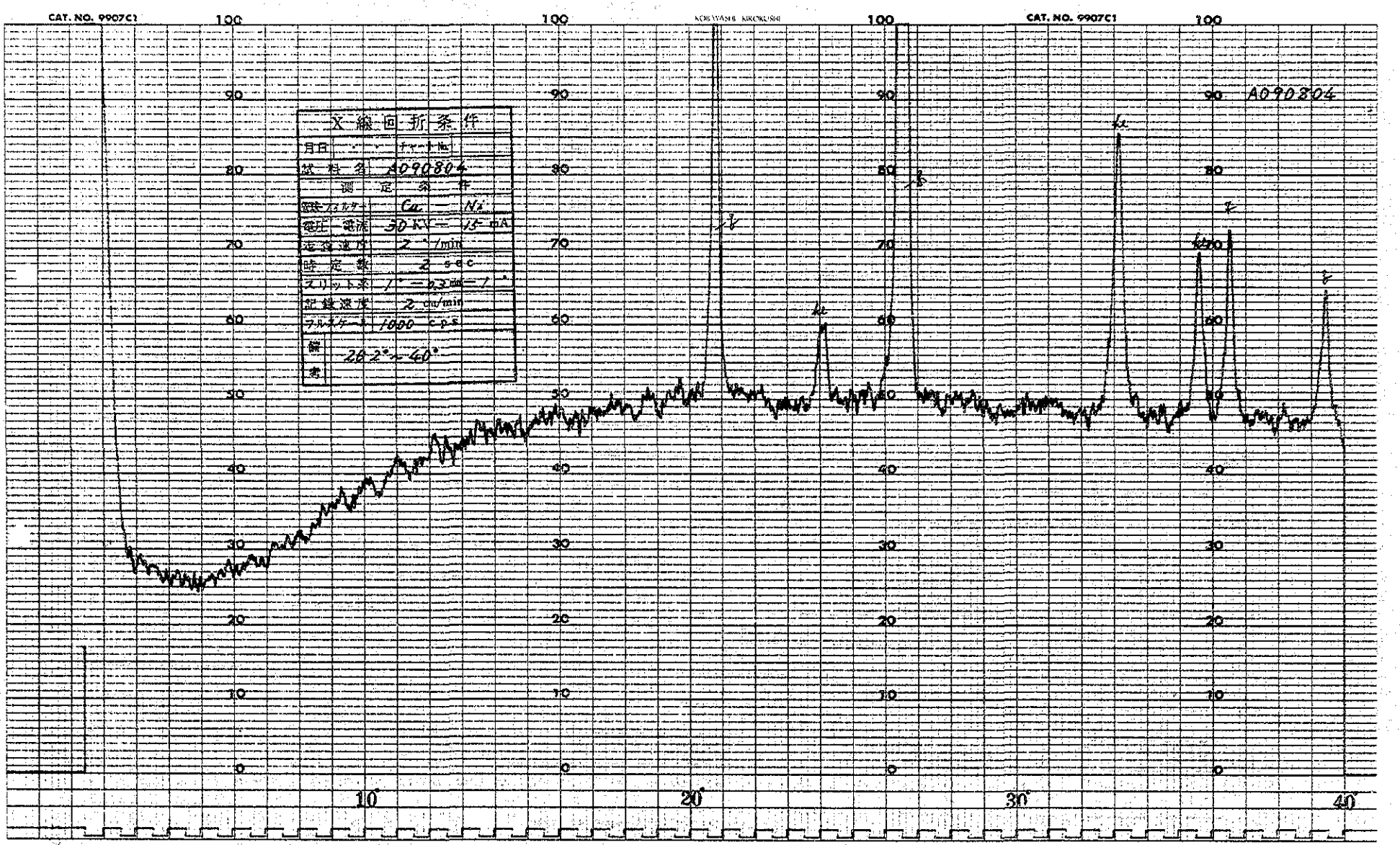
	Sample No.	Name	q	kf	pl	ho	m	mix	ch	se	k	p	di	la	Ze*	Ca	ep	cp	bro	cc	cov	bo	ga	sp	Mn	Py	mt	he	go	lep	rut	il
1	A090804		◎																									○				
2	A090908		◎						○	◦																◦						
3	A092209		◎	◦	○	○			•			◦?															◦?					◦
4	A092207		◎						•	◦																◦						
5	Martotoc River FLT		◦														◦?											○	○			
6	C0905005		◎		○				○	◦																◦						
7	F073R		◎								◦	○	◦																◦		•	
8	G114R										◦								◎	◦	◦	◦?								?		
9	J177		○		◦	◦			◦	◦								○			•?		○	○							
10	J175		◎						•?	◦								•?								•					
11	E004-5R		○		◦				◦	◦		◦?														•					
12	MAR-RC02		○		◎				○	•															○[1]						
13	B28098501		○		◎				◦						•?	◦										•					
14	11-4									◦?						○															
15	13-2		◎							•					◦													◦			
16	13-6		○		○		◦							○												◦					
17	A091301		◎					?	◦	◦[1]																					
18	A090905		◎						◦?	◦																					
19	A092208		◎						◦	◦																◦					
20	B28098504		◦		◎				•?	•?					◦											•					

q : quartz
kf : potash feldspar
pl : plagioclase
ho : hornblend
m : montmorillonite
mix : mixed layer mineral
ch : chlorite
se : sericite
k : kaoline minerals
p : pyrophyllite
di : diaspor
la : laumontite
Ze : zeolite

ca : calcite
ep : epidot
cp : chalcopyrite
bro : brochantite
cc : chalcocite
cv : covelline
bo : bornite
ga : galena
sp : sphalerite
Mn : Managanese mineral
py : pyrite
mt : magnetite
he : hematite

go : goethite
lep : lepidocrocite
rut : rutile
il : ilmenite

◎ : abundant
○ : medium amount
◦ : small amount
• : extra small amount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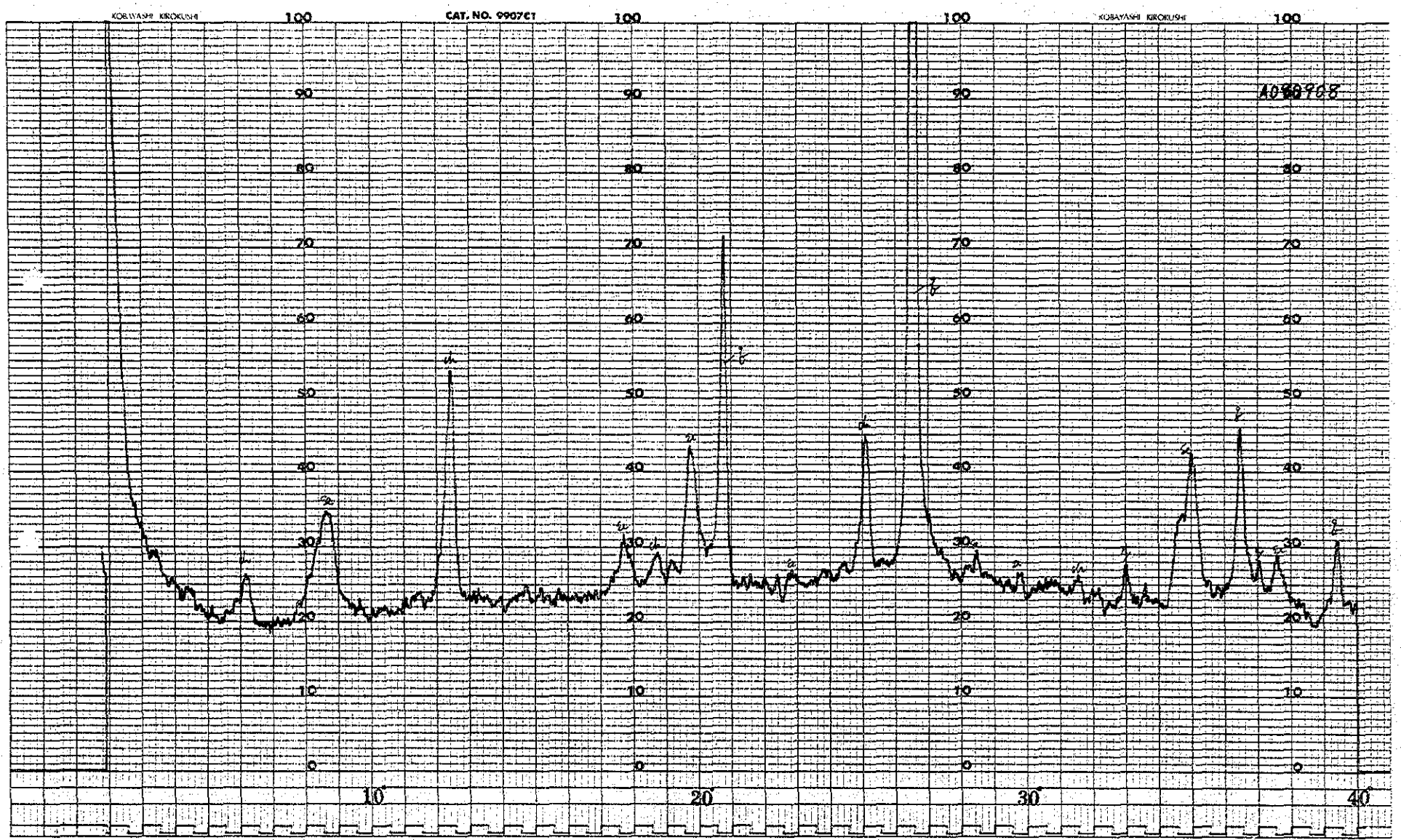
2 cm/min
1000 c.p.s
備考 28.2°~40°
10°
20°
30°
40°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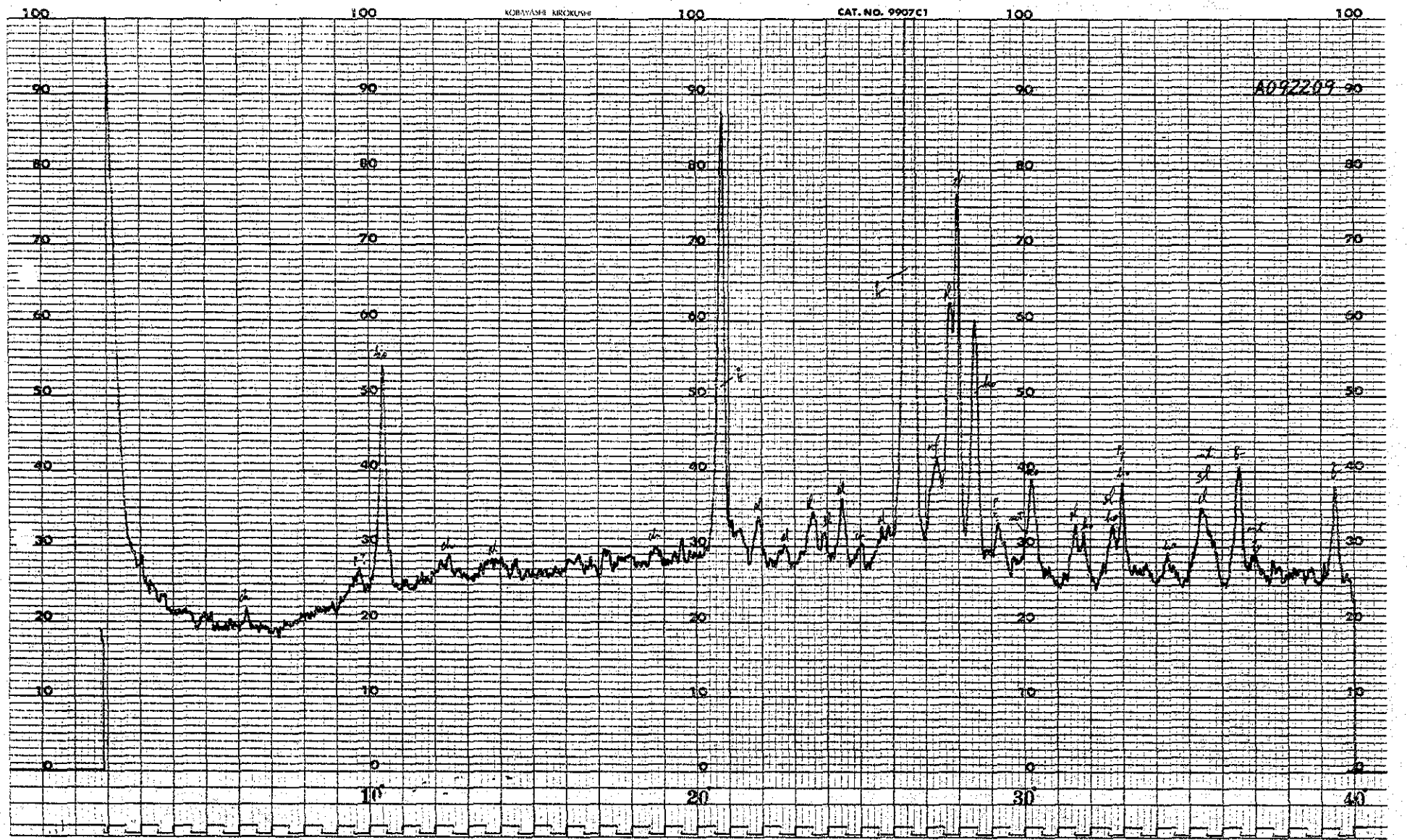
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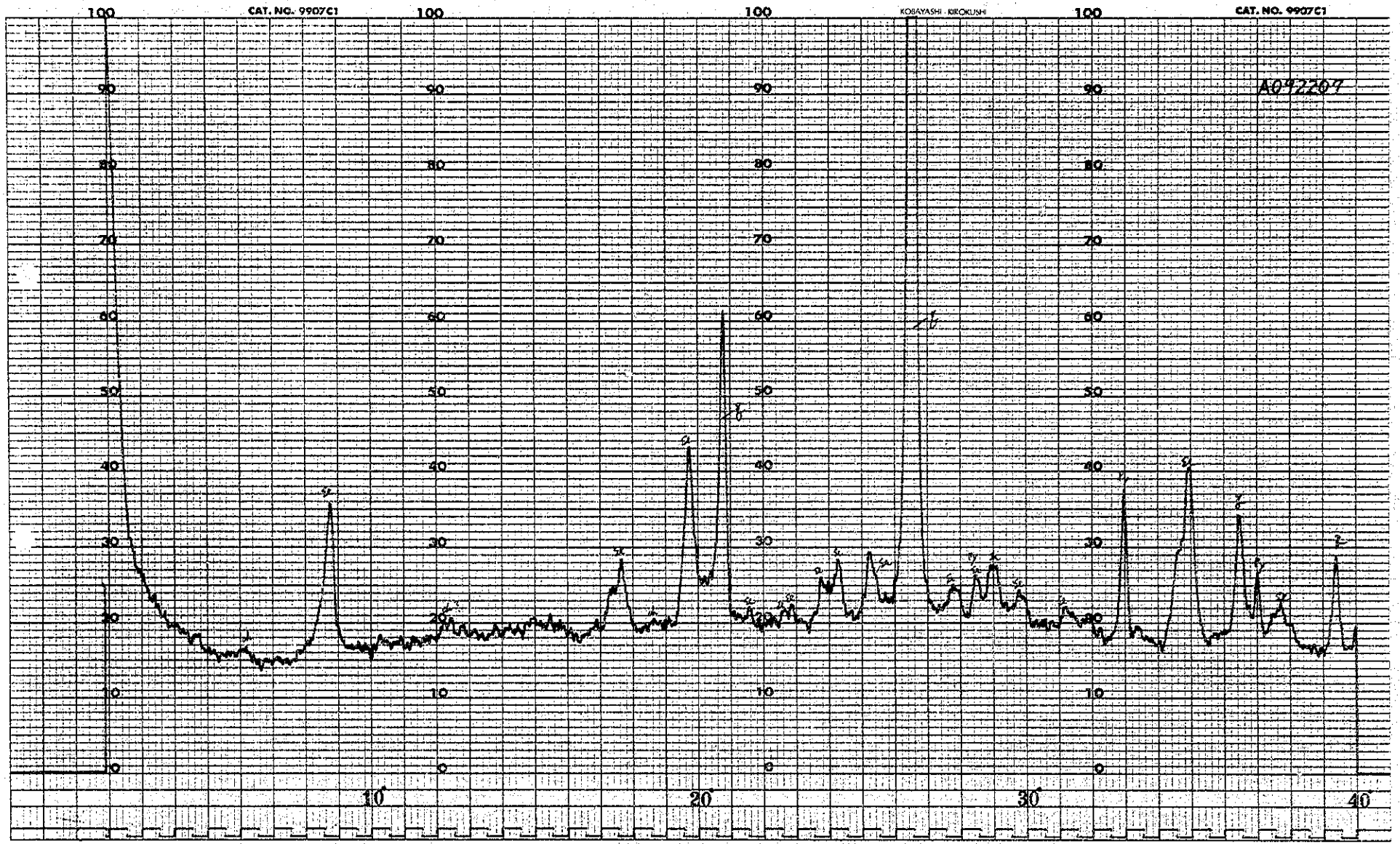
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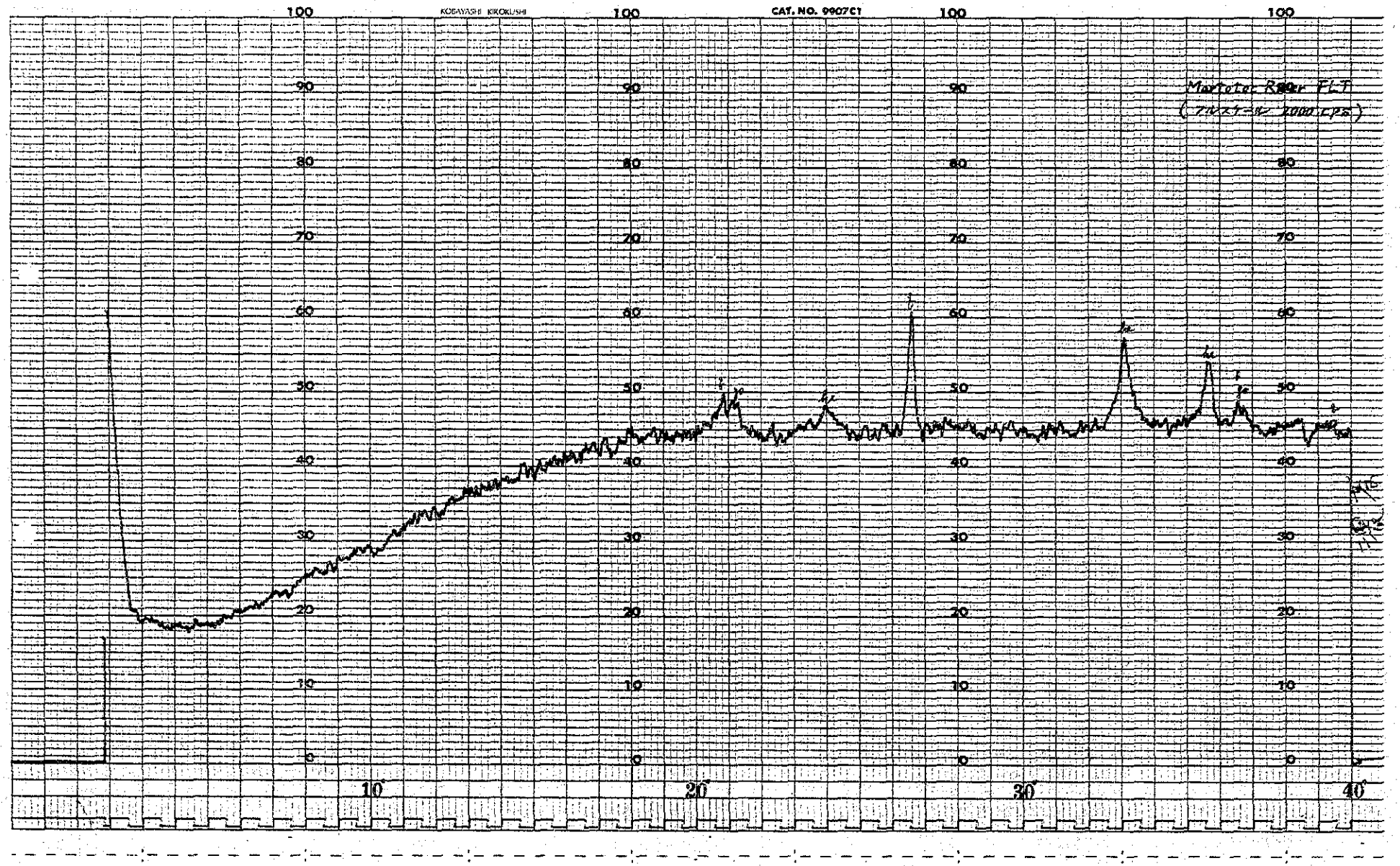
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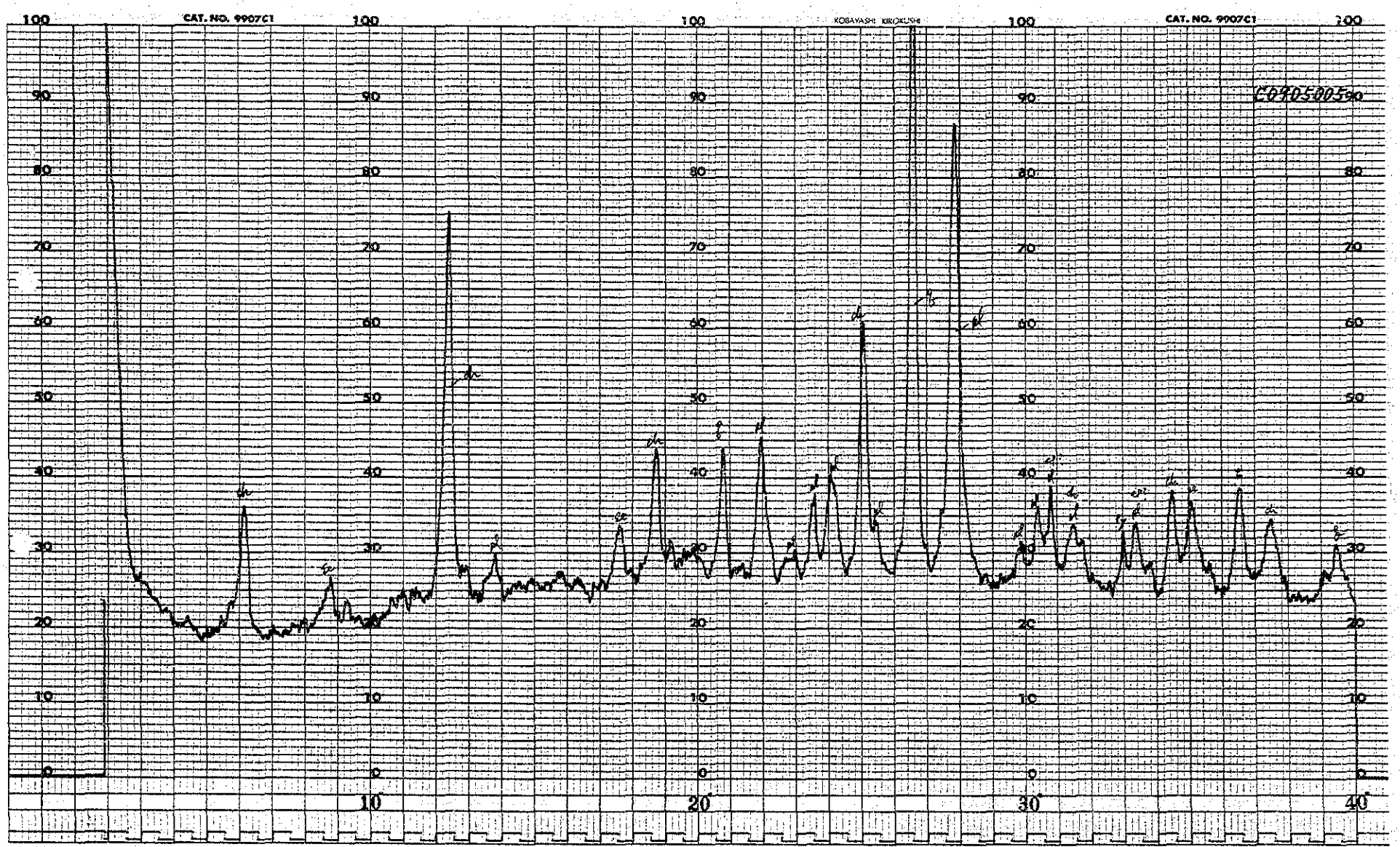
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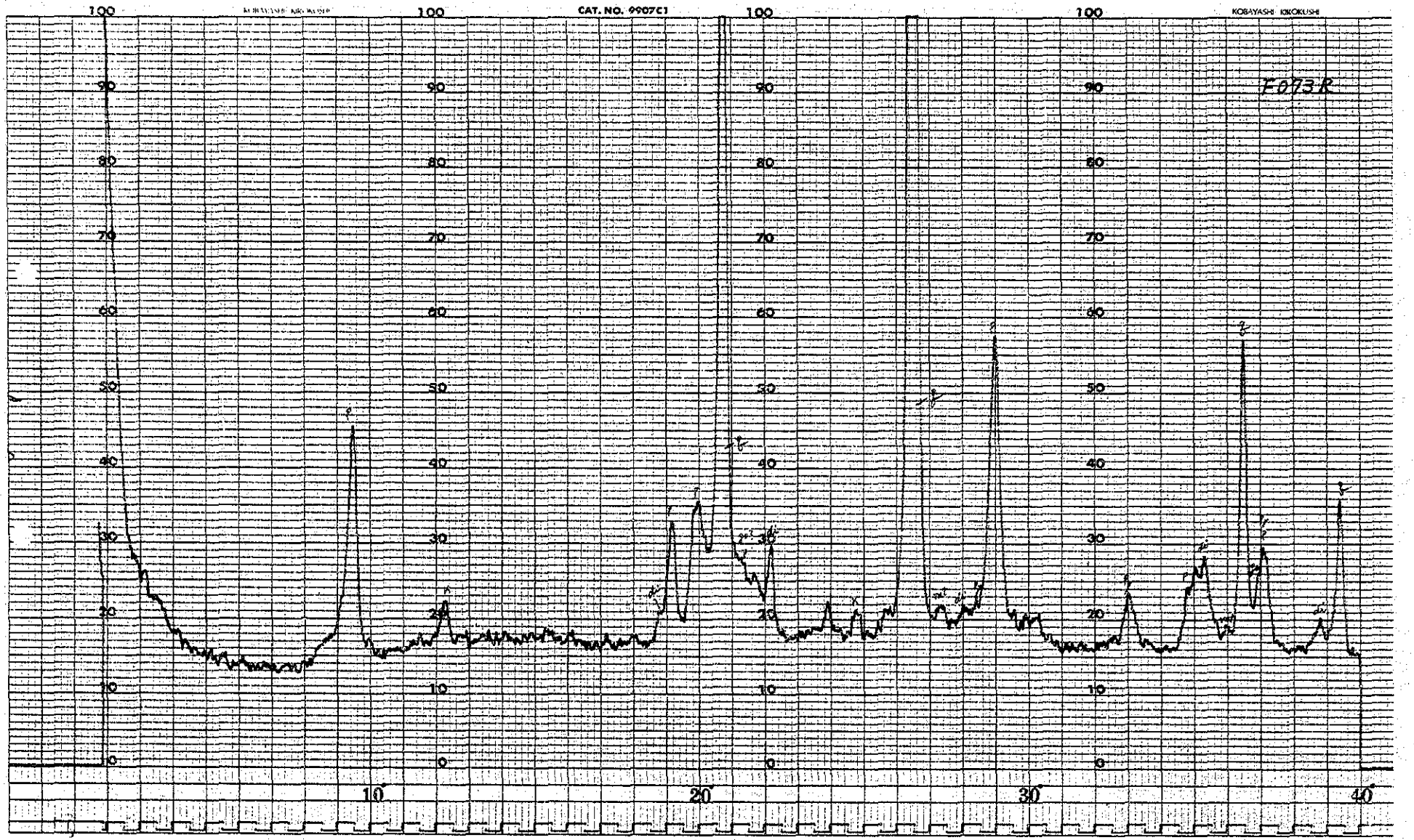
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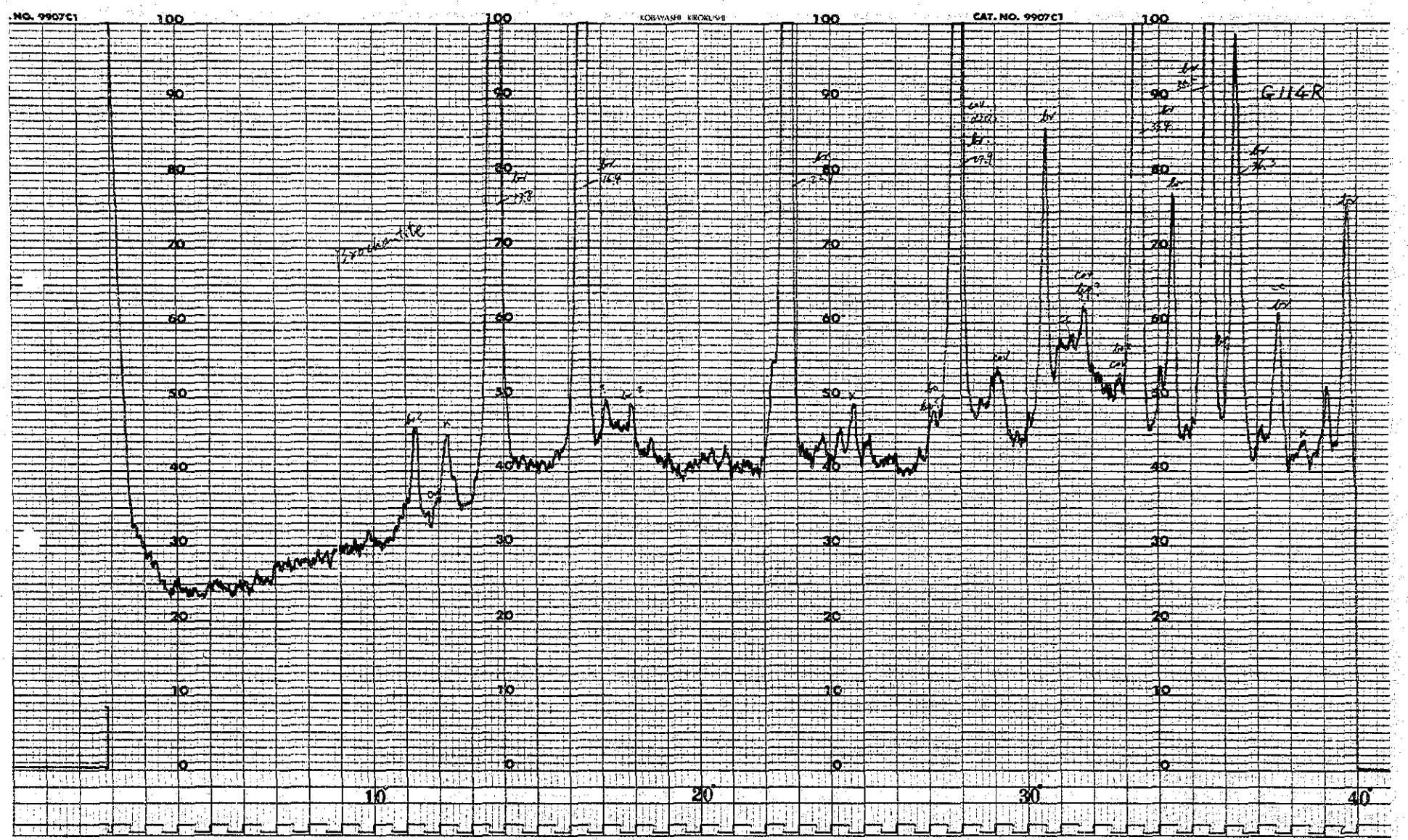
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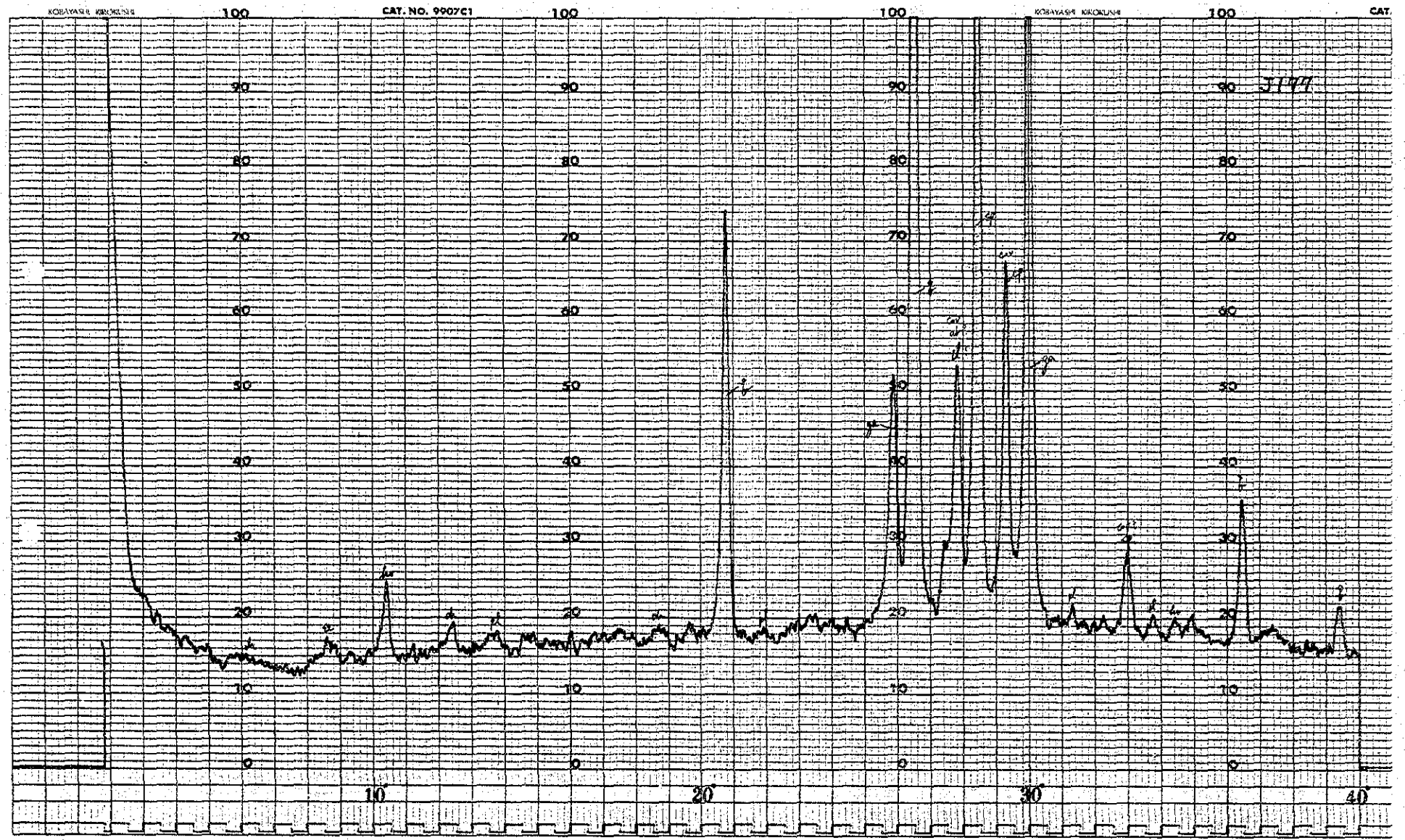
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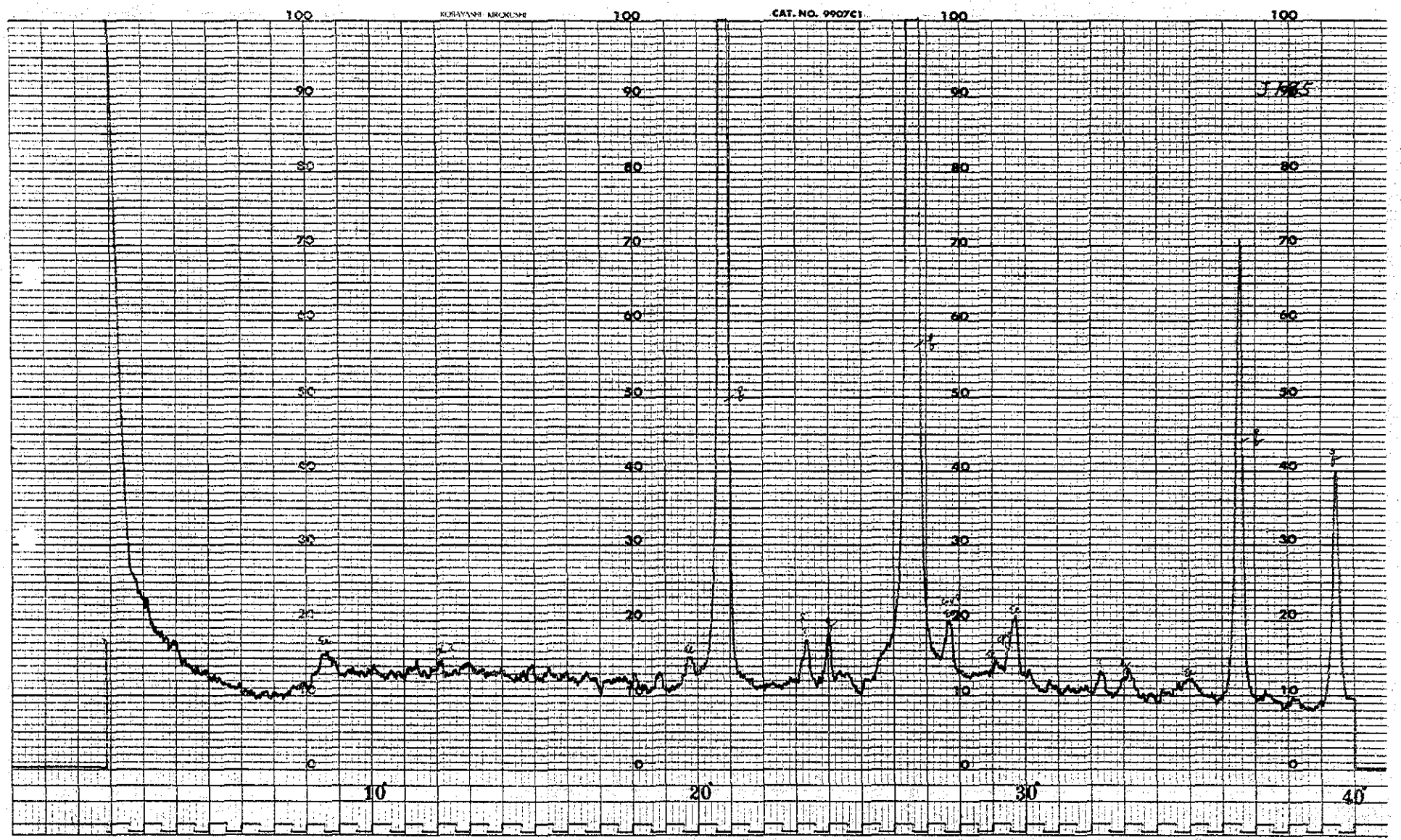
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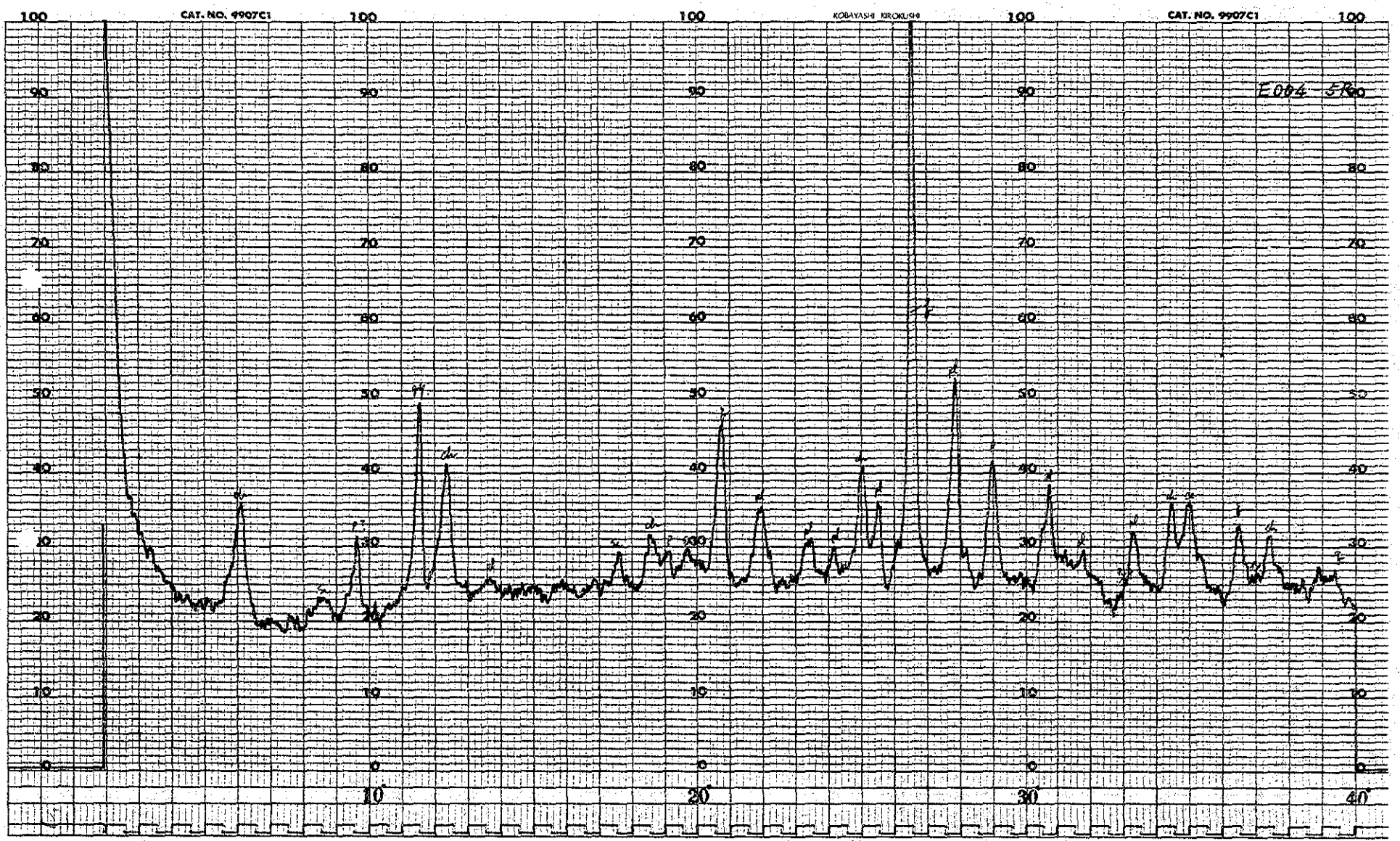
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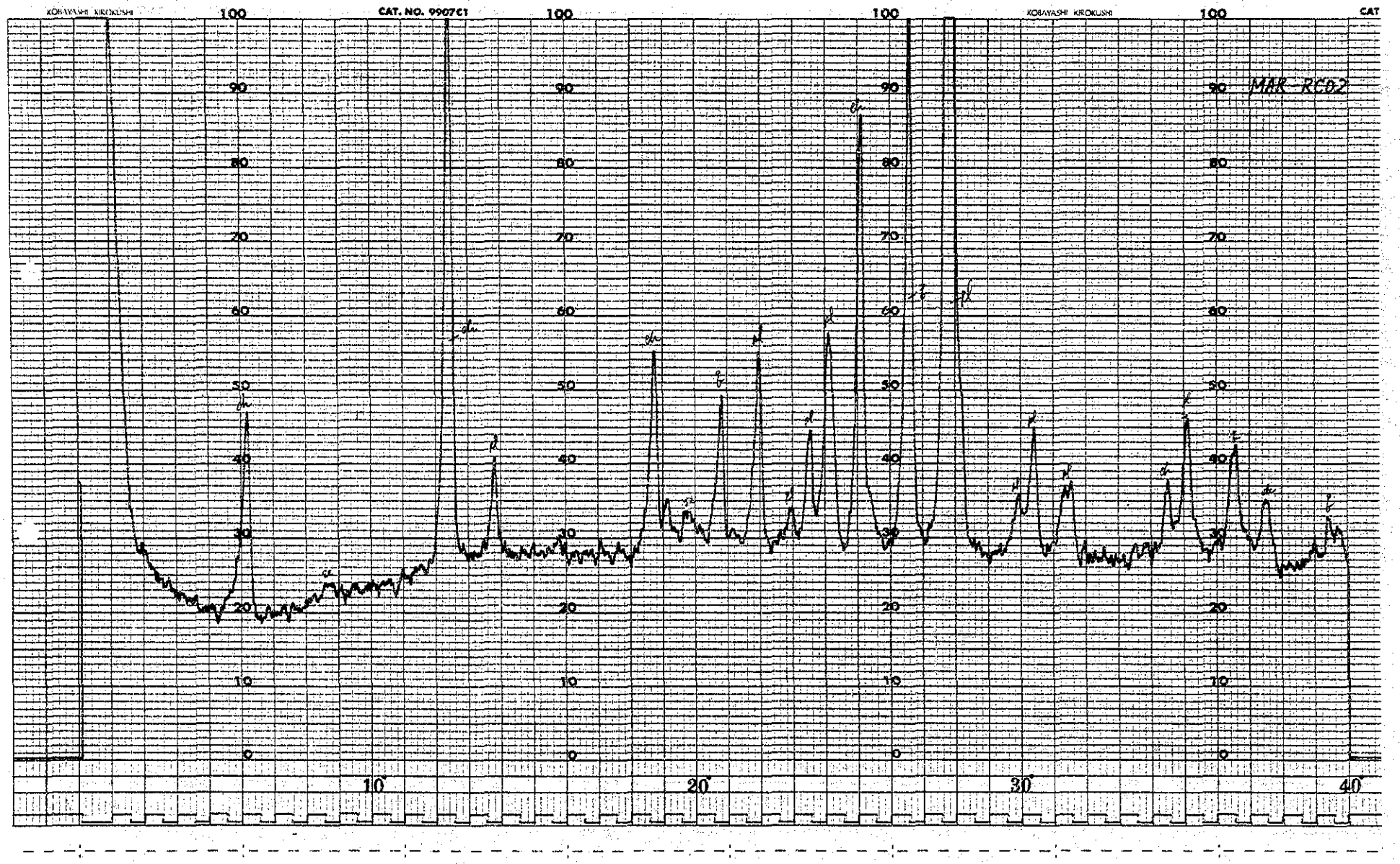
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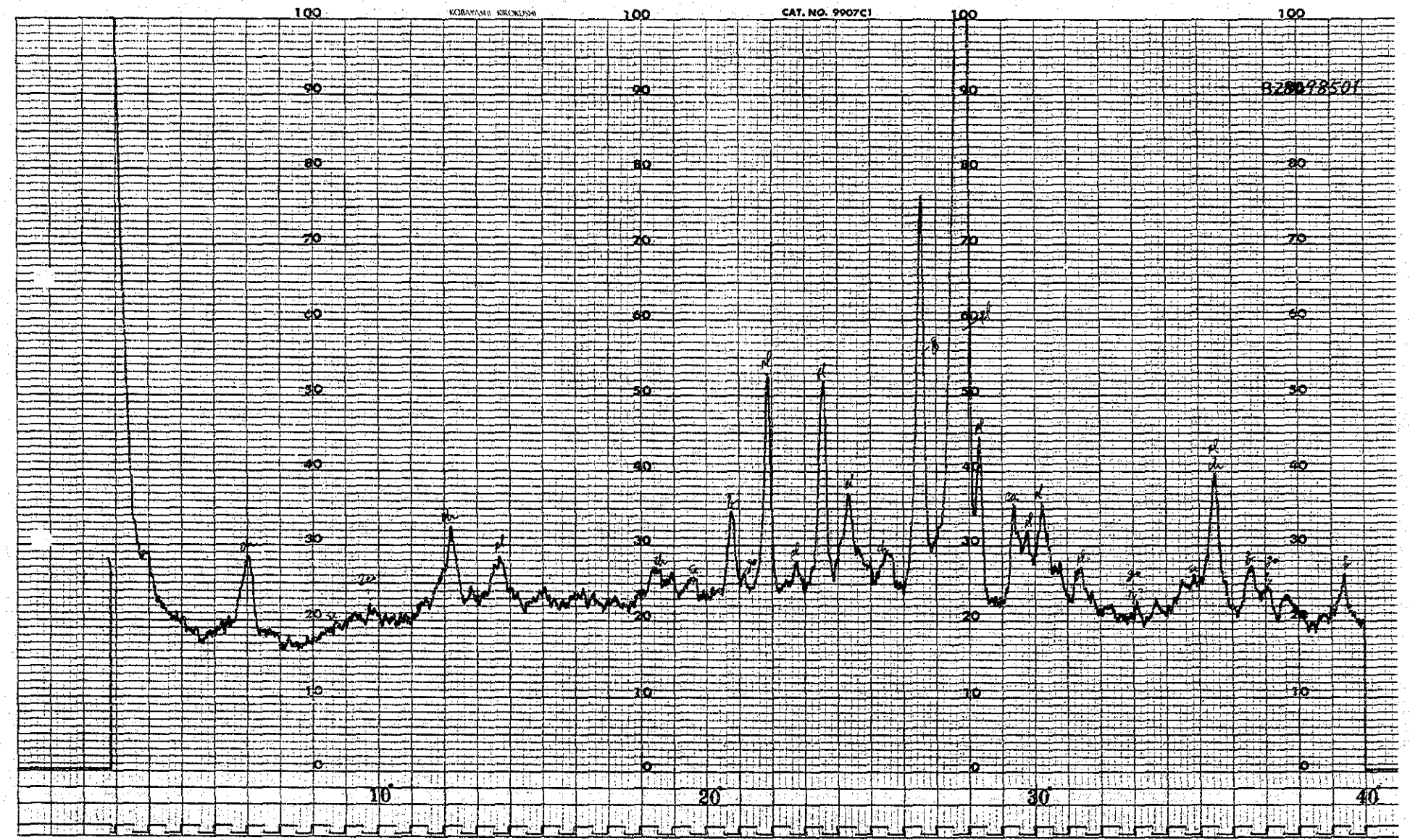
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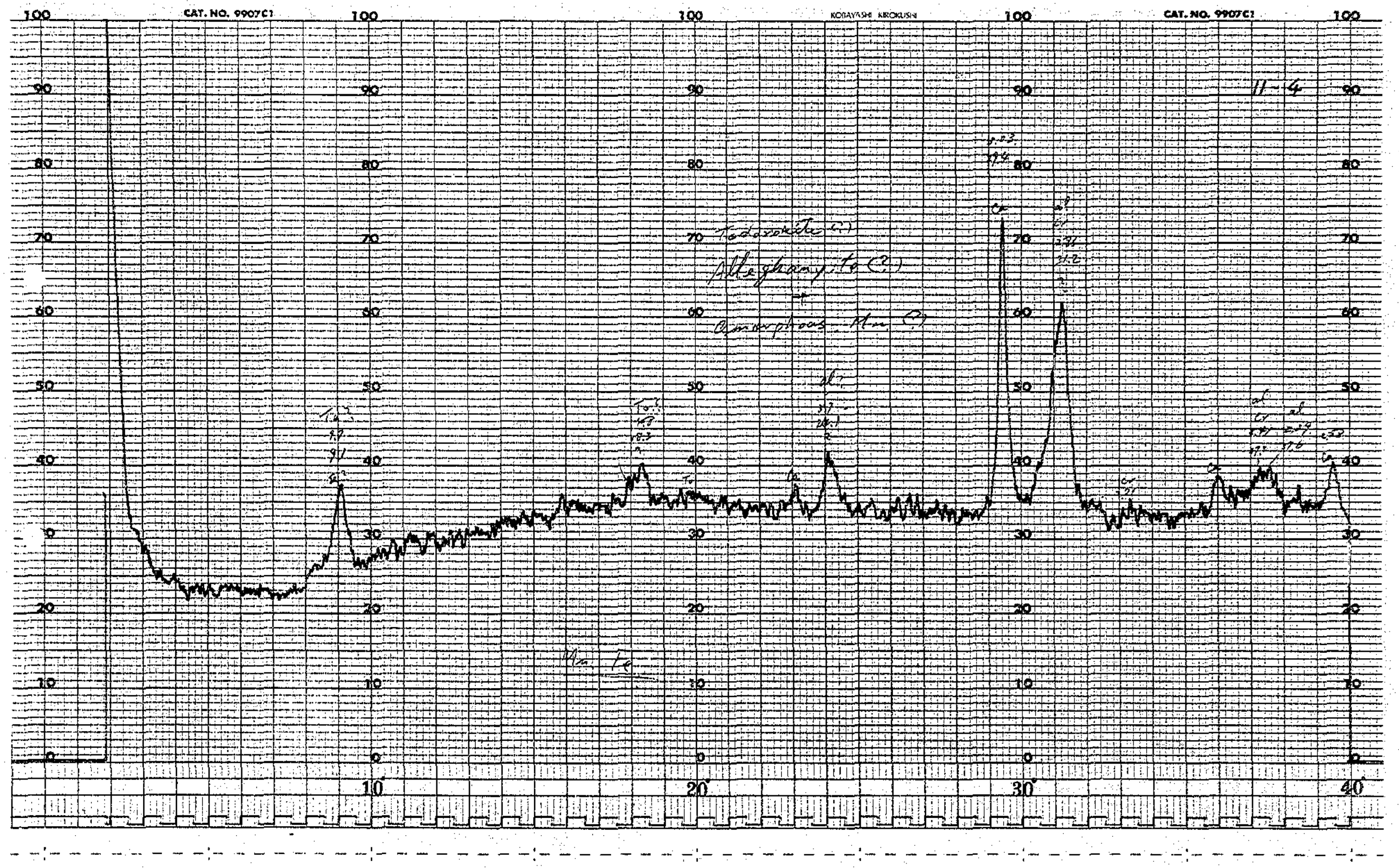
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Amorphous Mn (?)
Mn Fe
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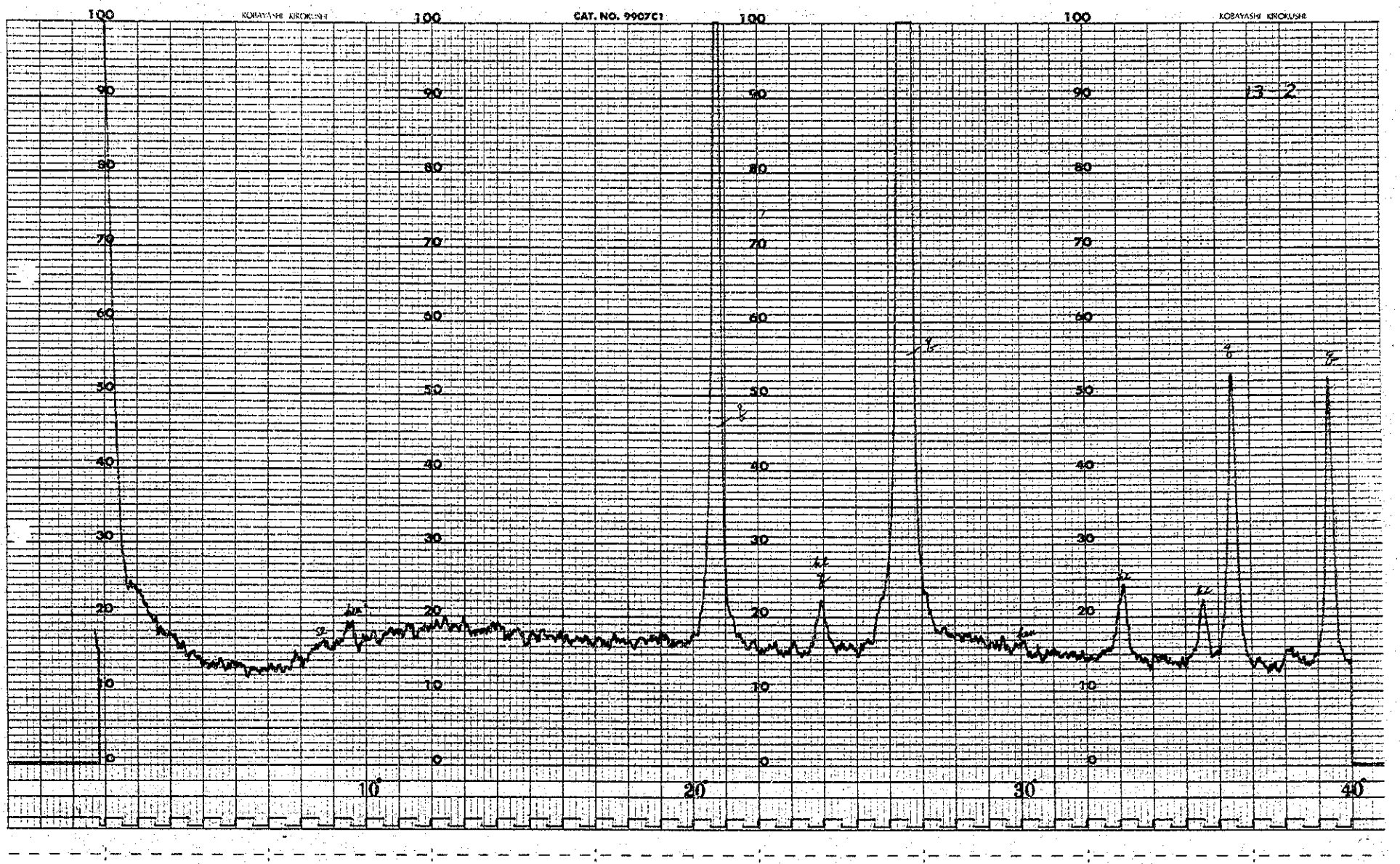
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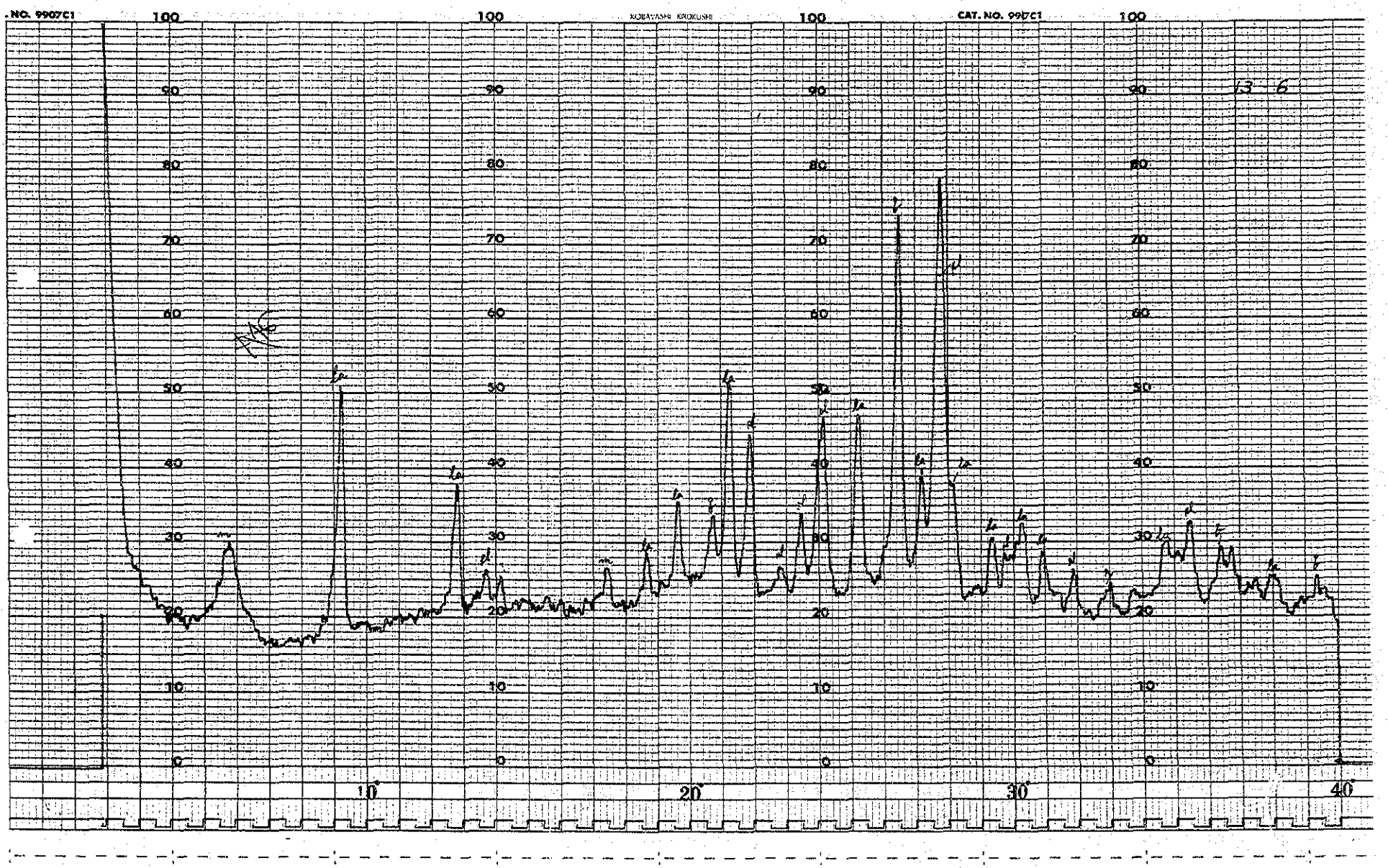
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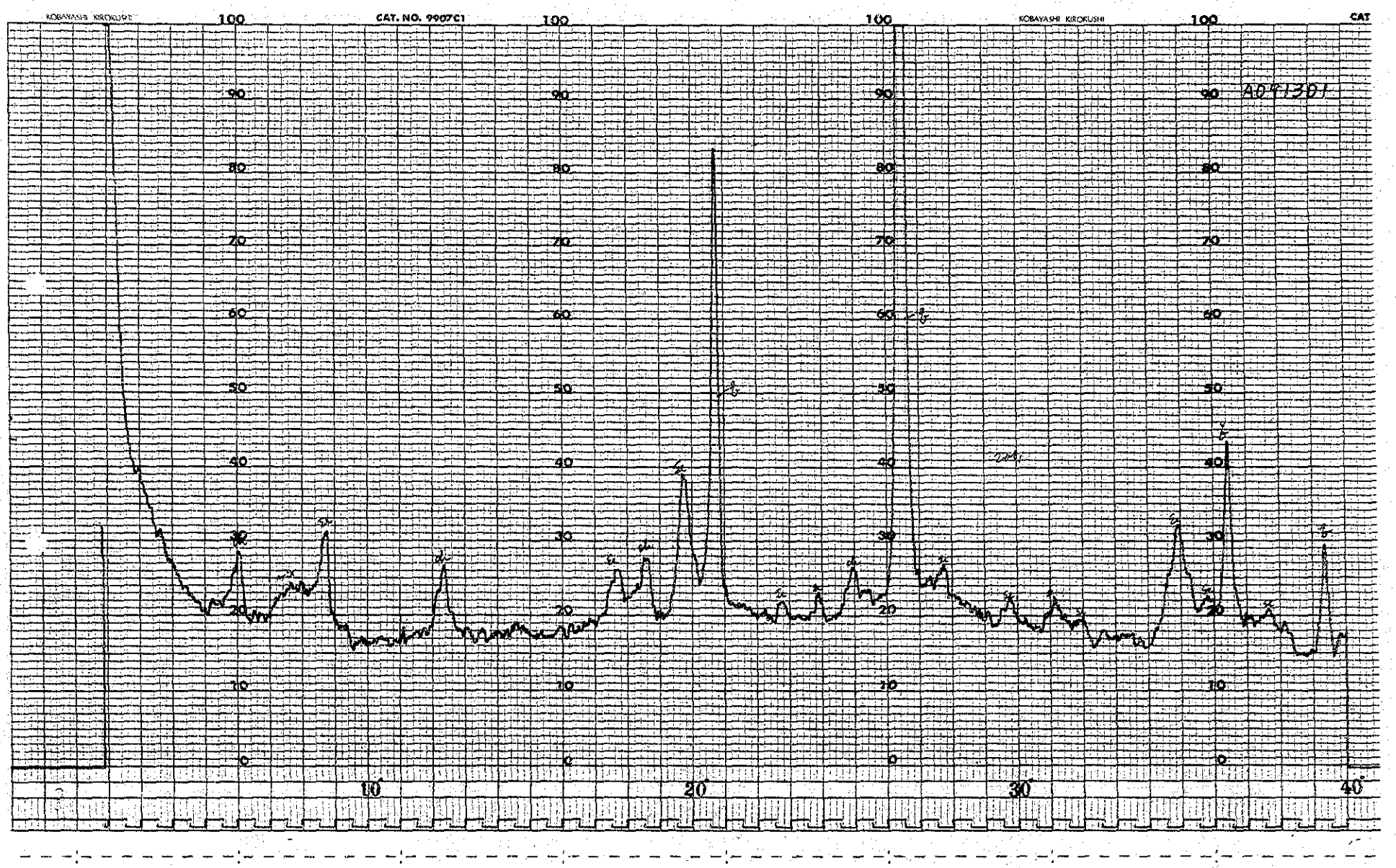
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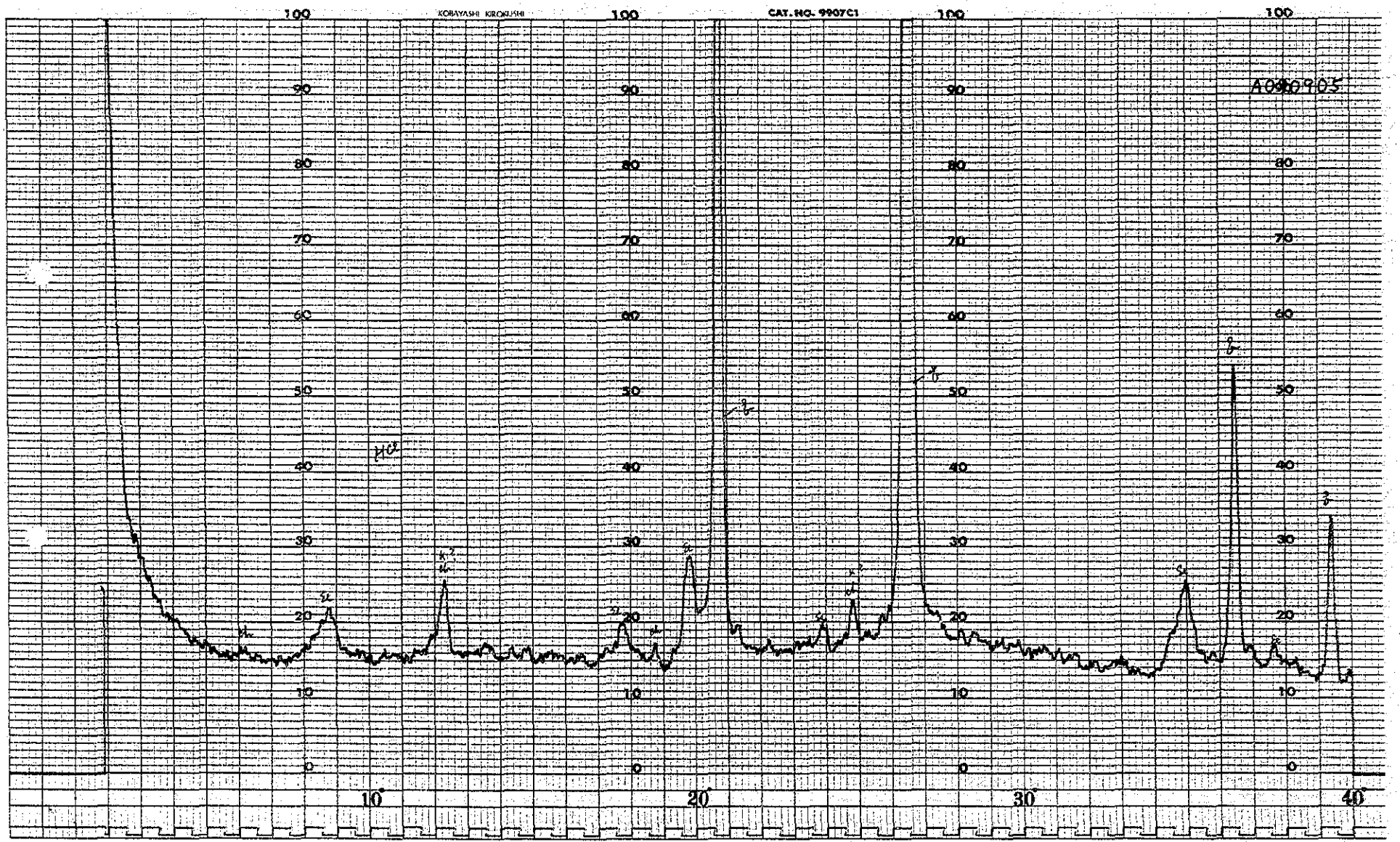
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