

Fig. S1.2.5 Results of X-ray Analysis (1~18)

X-RAY DIFFRACTOMETER RECORD FOR

S-90 5-9
 Arroyo Pivaya Cerro León

RADIATION: Cu FILTER: Ni 25KV 15 MA
 SCANSPEED: 2° 2θ / MIN CHART SPEED: 10 MIN
 SLITS: DIV 8 REC 1 MM SCAT
 SCALE: 10° MULT 1 TIME CONST: 1 SEC
 DATE: Aug 11 19 22 OPERATOR: K. Oca

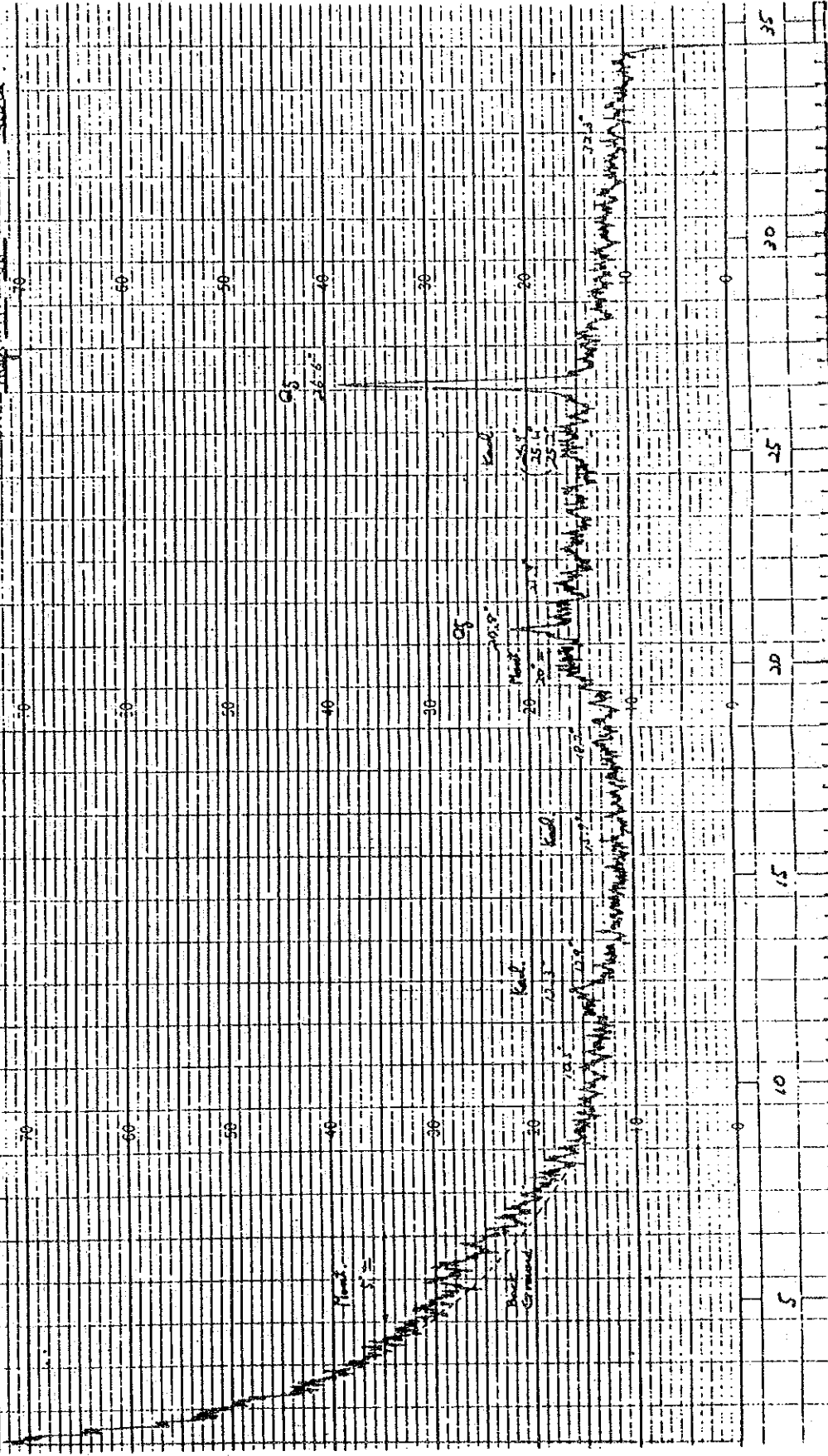
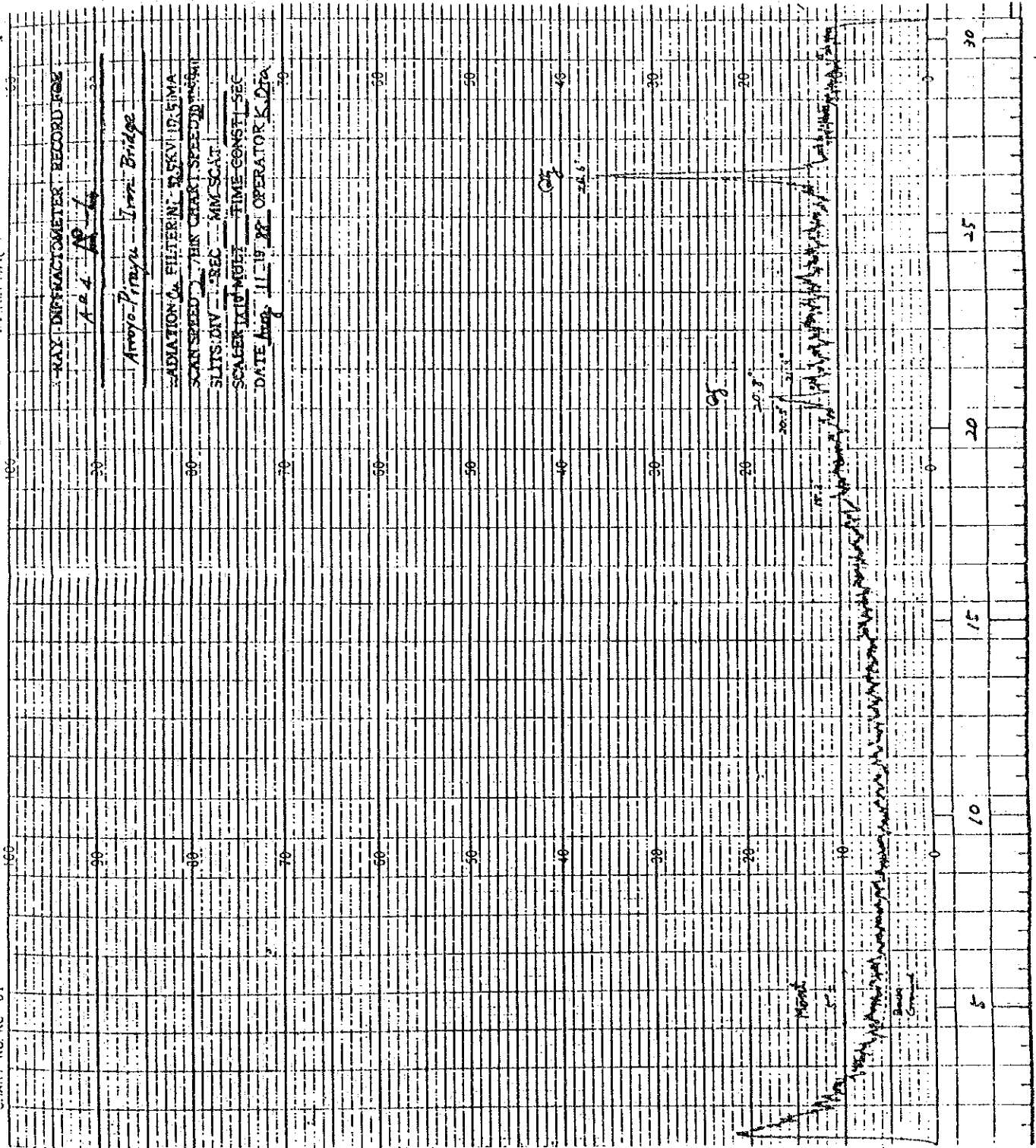


CHART NO. KC-01



XRAY DIFFRACTION METER RECORD PAGE

S-34 S 34

APPROX. Y-POSITION, Y-PACARA (Route 2)

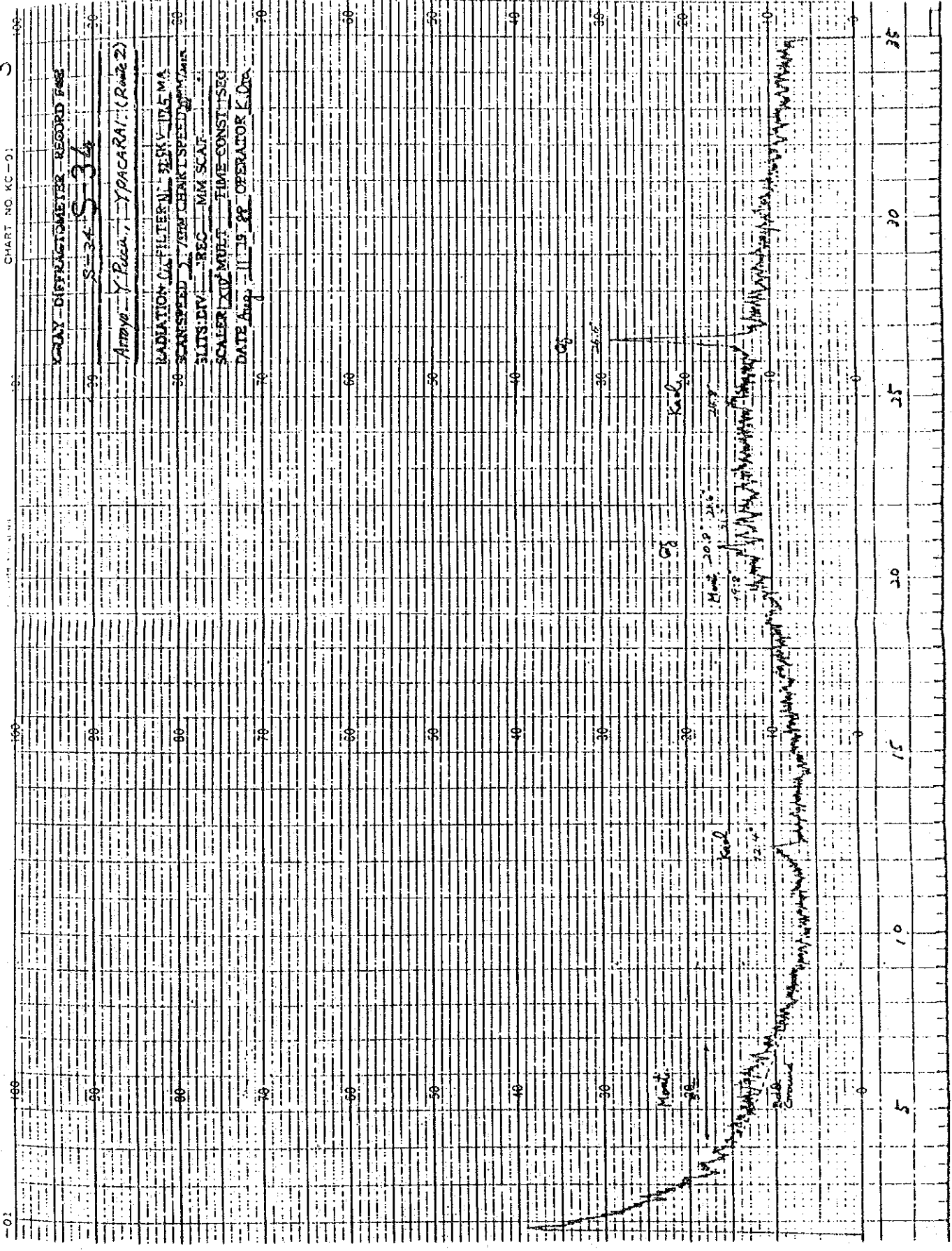
RADIATION FILTER AL_K 25KV 15MA

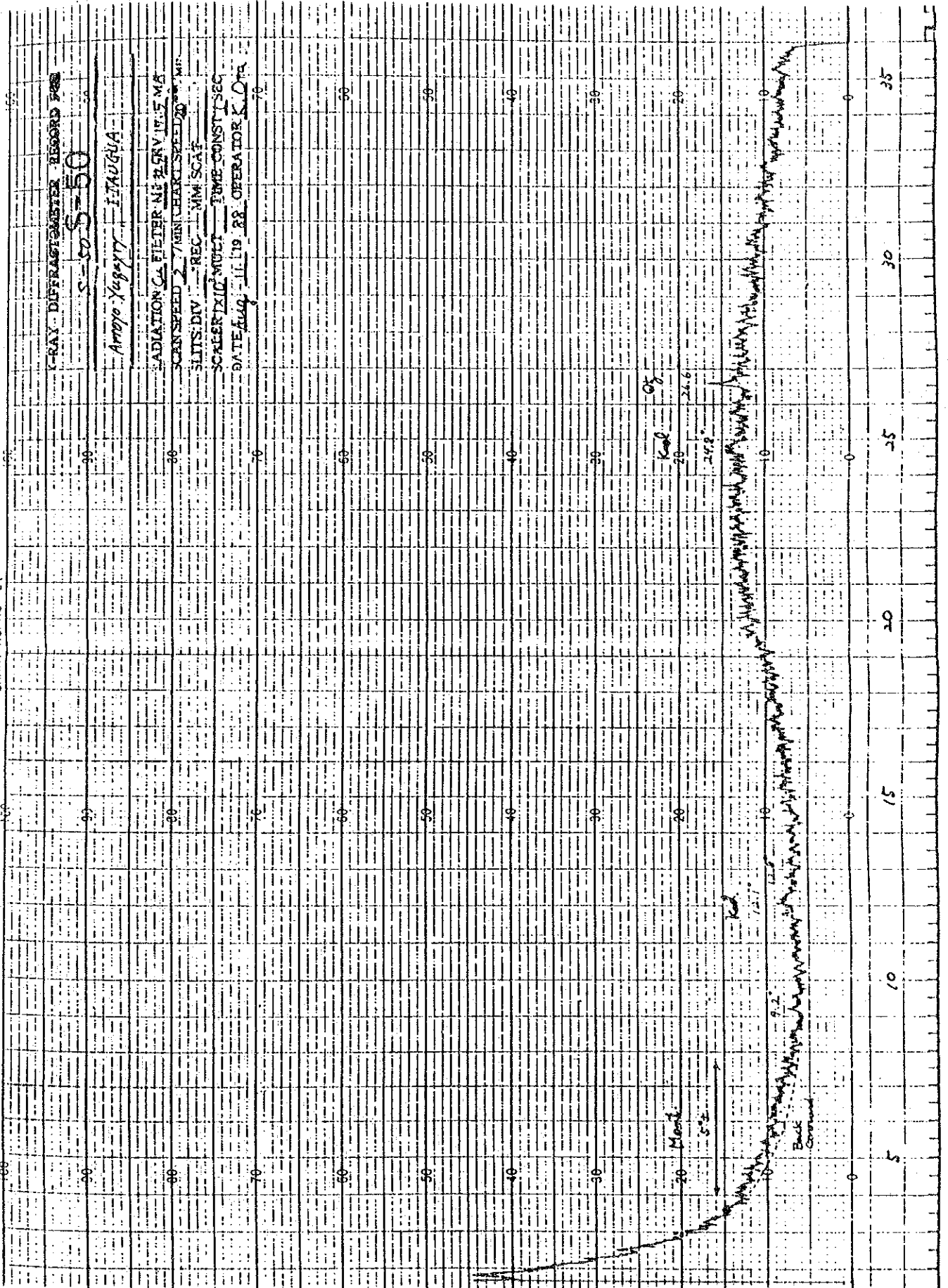
SCAN SPEED 2.5 CM CHART SPEED 2.5 CM/MIN

SLITS DIV. REC. MM SCAT. TIME-CONST. SEC

SCALER X10 MULT. TIME-CONST. SEC

DATE Aug 11 19 58 OPERATOR K.D.A.





X-RAY DIFFRACTION METER RECORD

5-57-57

Arroyo X-ray

RADIATION Ca FILTER Ni 35KV 19.5 MA
SCANSPEED 7.46 CHART SPEED 100 RPM
SLITS: DIV 2 REC 3 MM SCAT
SCALER 100 MULT TIME CONST 1 SEC
DATE Aug 11 19 58 OPERATOR K.D.

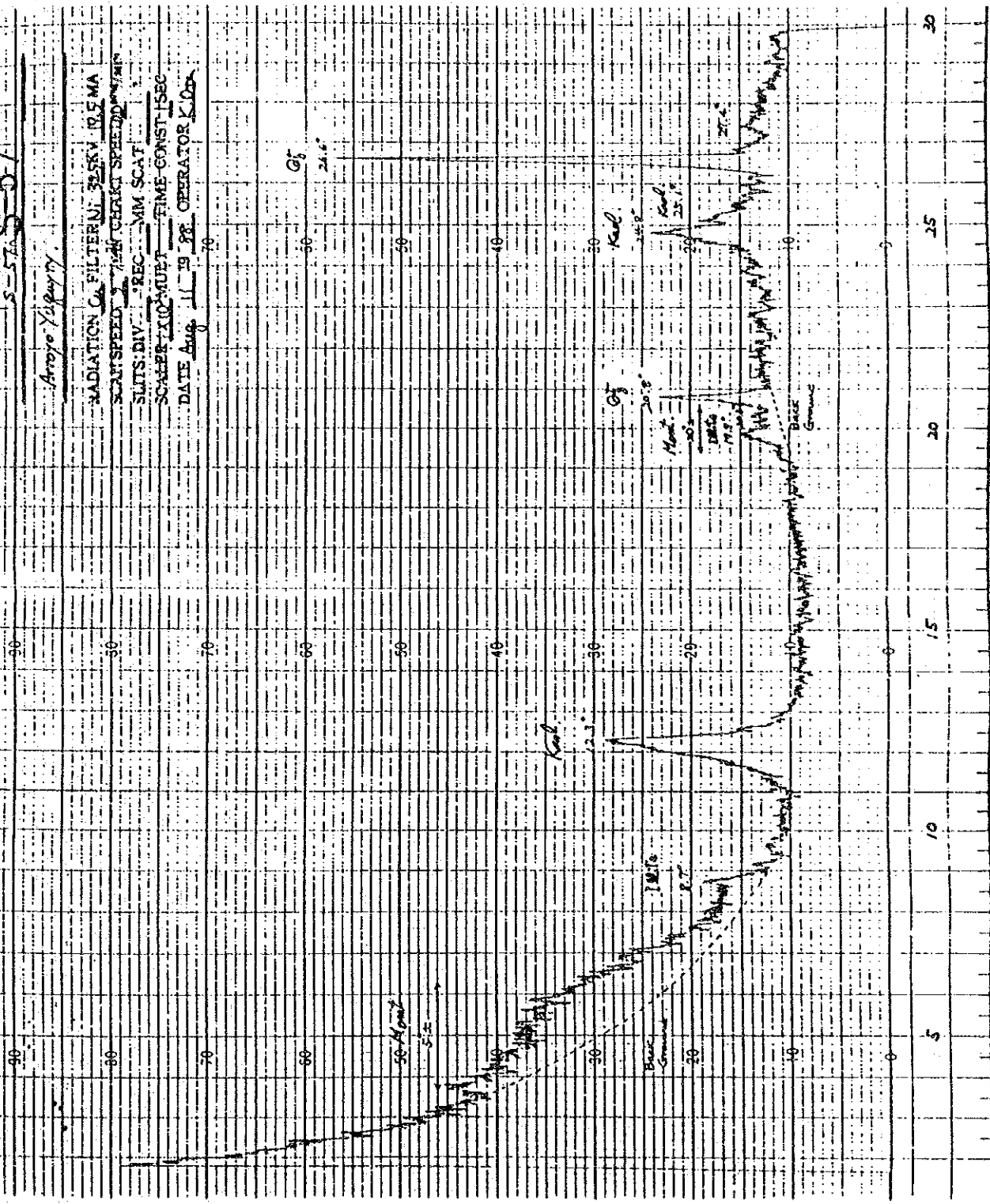
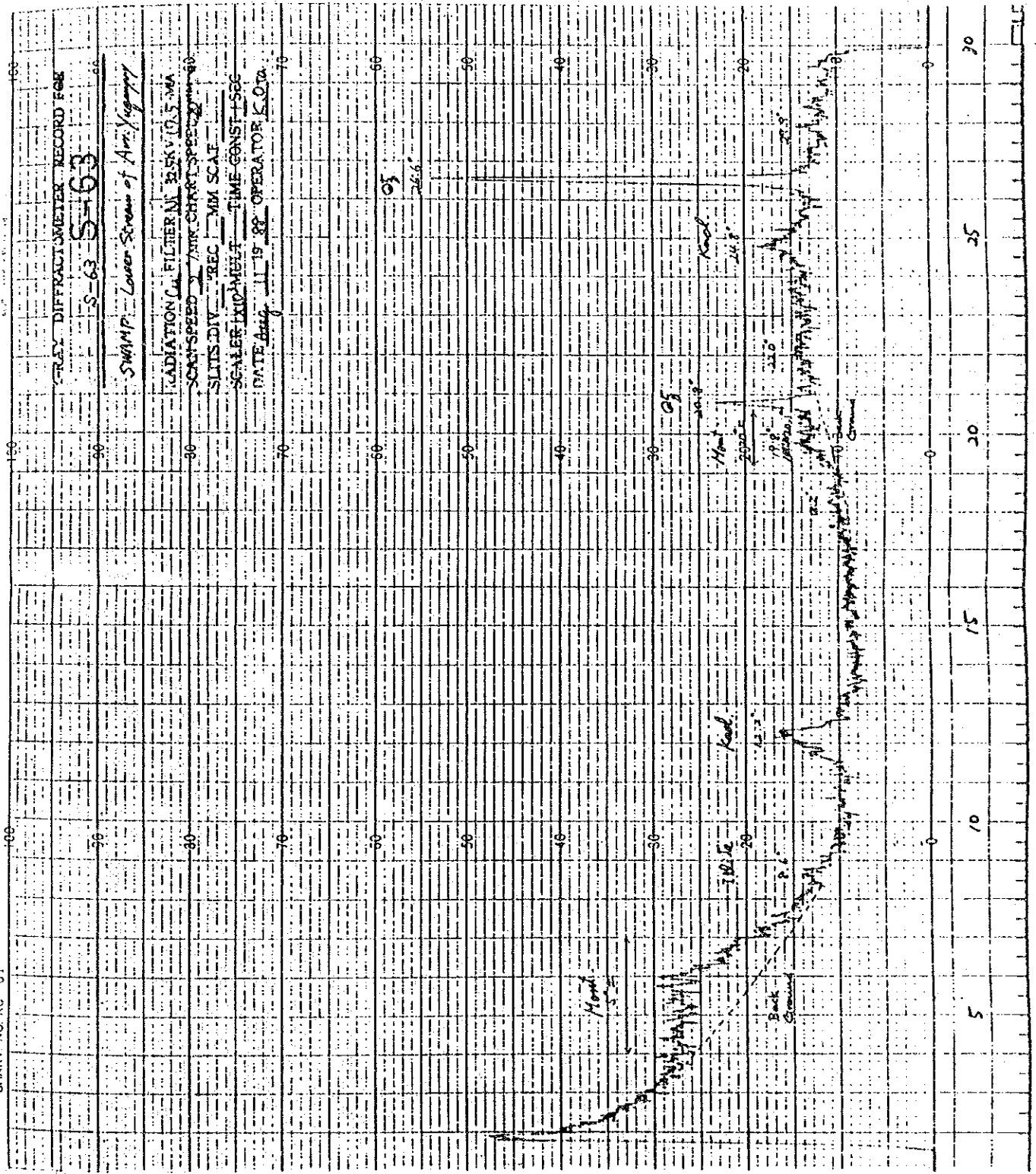


CHART NO. KC-01



CHART

NO. KC-01

X-RAY DIFFRACTOMETER RECORD FOR

SC-25 SL-25

Logo Ypacarai

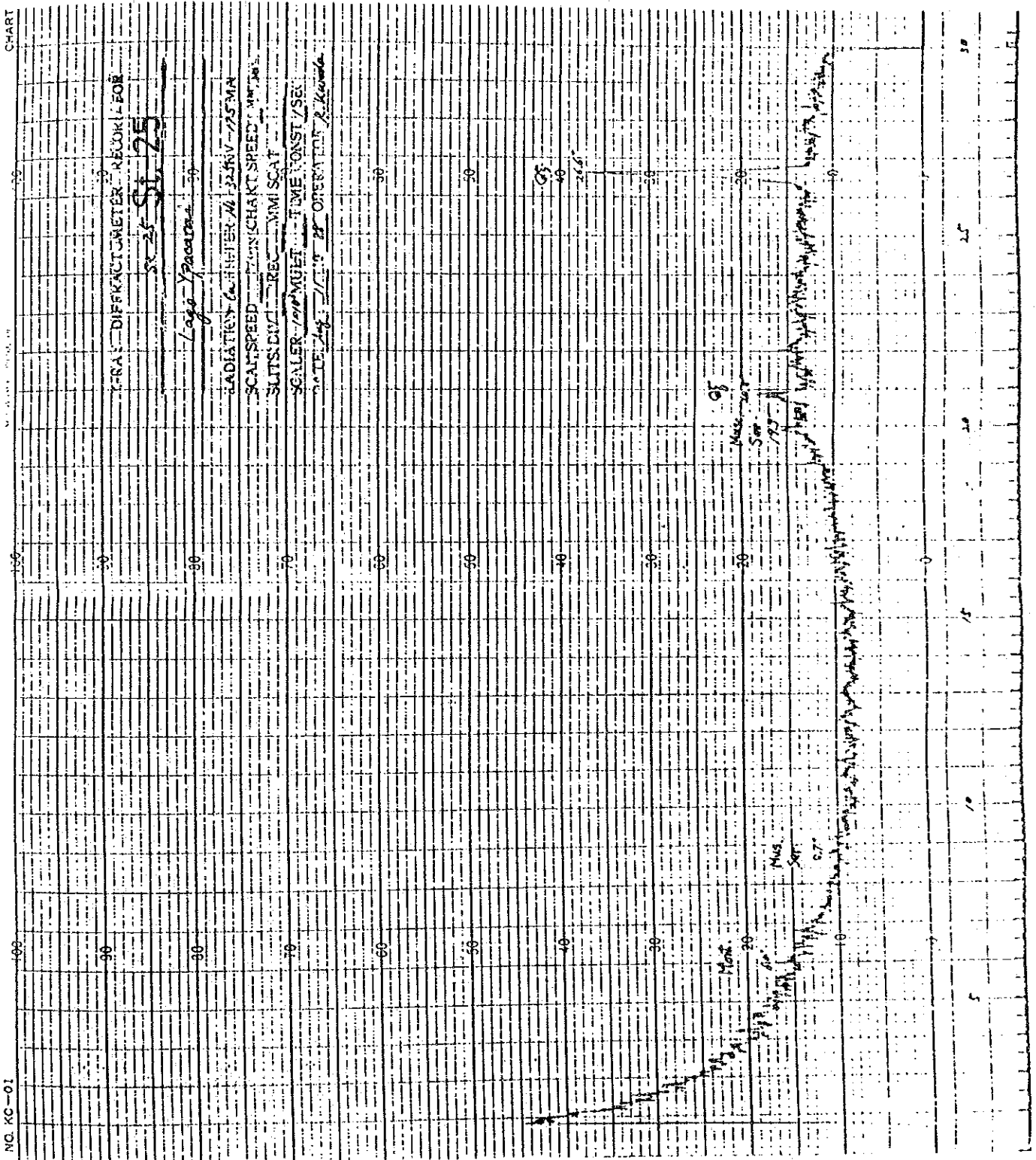
RADIATION CALIBRATION No. 2256V-255MA

SCANSPEED 1 MIN/CHART SPEED 1 MM/SEC

SLOTS DIV 1 REC 1 MM SCAT

SCALER 10⁶ MULTI TIME CONST/SEC

DATE Aug 21 1958 OPERATOR K. Kowalski



25-3 St-25-3

Logo Paper Cellulose Sample

Cellulose

Cu

2

2

25-3 St-25-3

Cu

2

2

25-3 St-25-3

Cu

2

2

25-3 St-25-3

Cu

2

2

25-3 St-25-3

Cu

2

2

25-3 St-25-3

Cu

2

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25-3 St-25-3

Cu

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25-3 St-25-3

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25-3 St-25-3

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25-3 St-25-3

Cu

2

2

25-3 St-25-3

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25-3 St-25-3

Cu

2

2

25-3 St-25-3

Cu

2

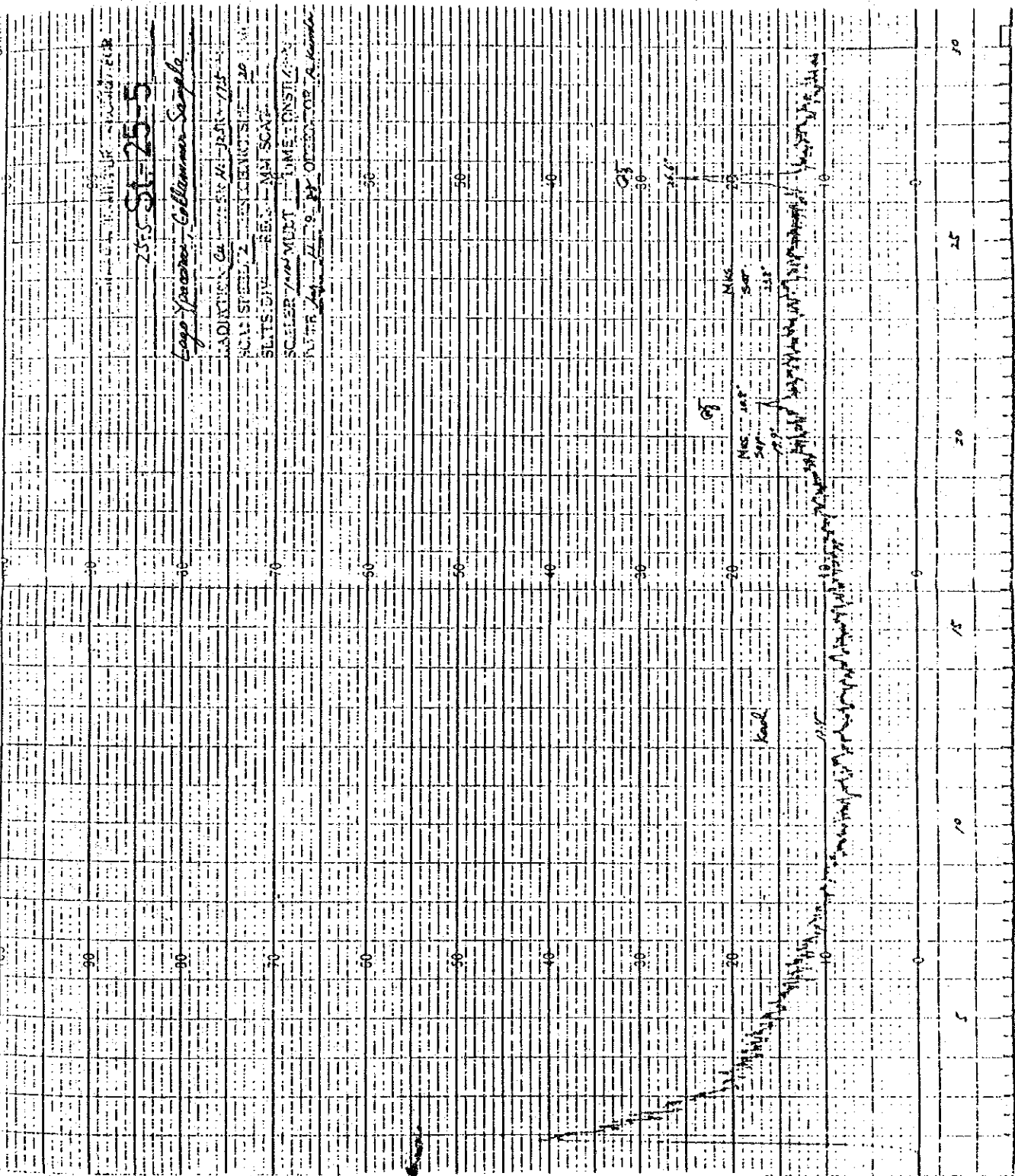
2

25-3 St-25-3

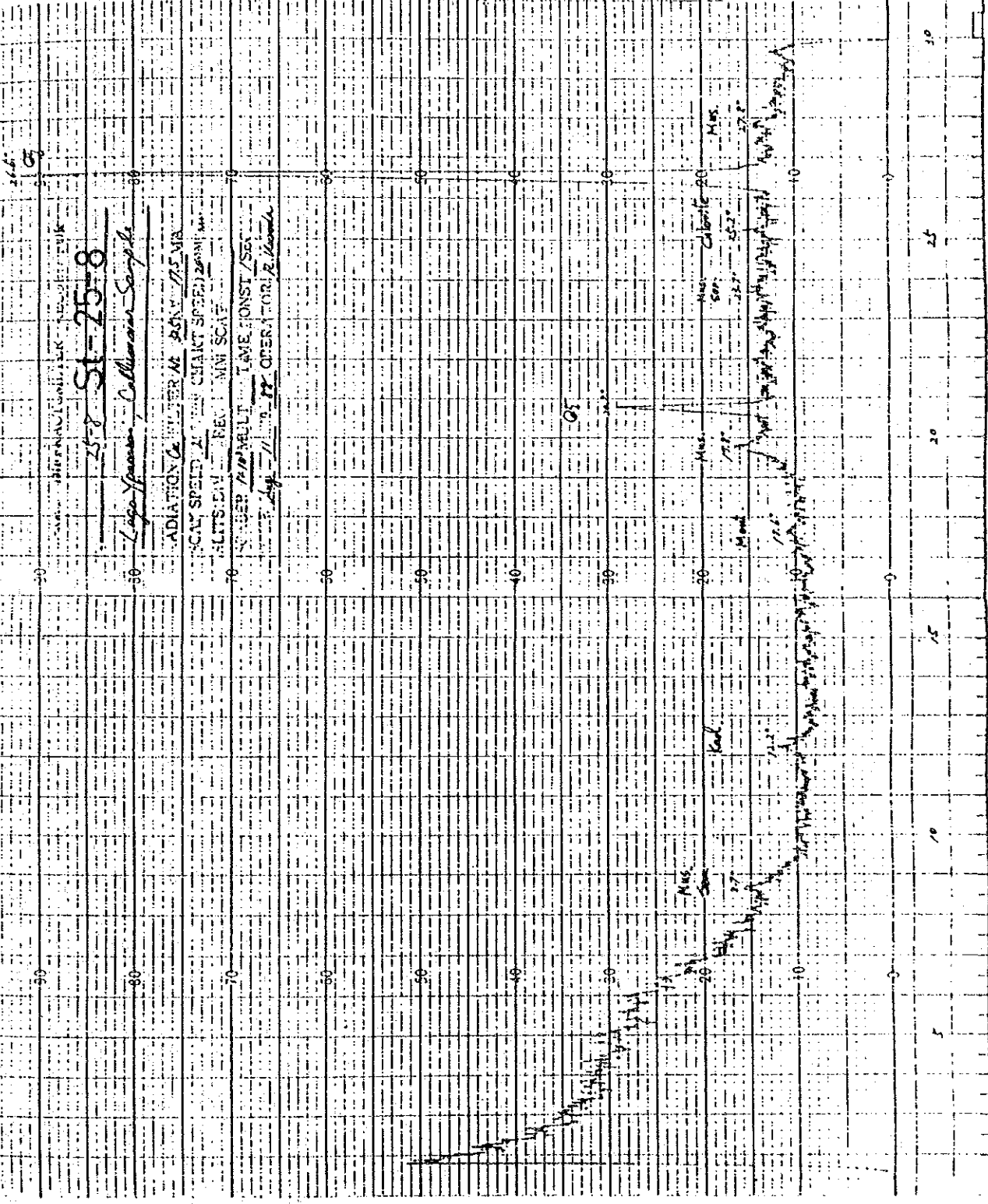
Cu

2

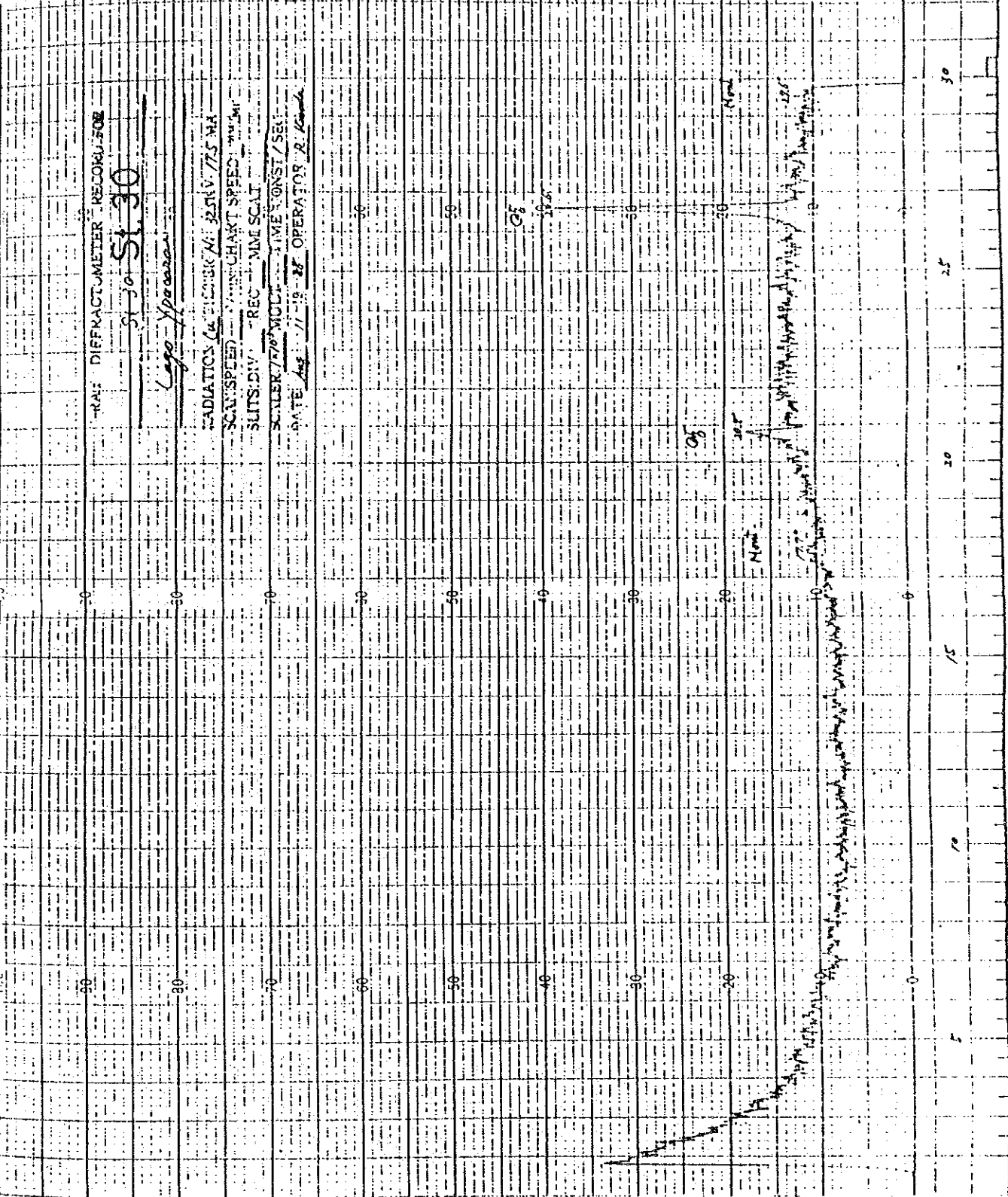
2



NO. KC-01



X-RAY DIFFRACTOMETER RECORD FOR
 ST 30 SL 30
 Cogo Sparrow
 RADIATIONS (WAVELENGTH) Ni 35 kV 7.5 mA
 SCAN SPEED 1.00 CHART SPEED 1.00
 SLITS: DIV. REC. MME SCAL.
 SCALER 720 MULT. TIME CONST / SET
 DATE Aug 11 19 88 OPERATOR R. Kanda

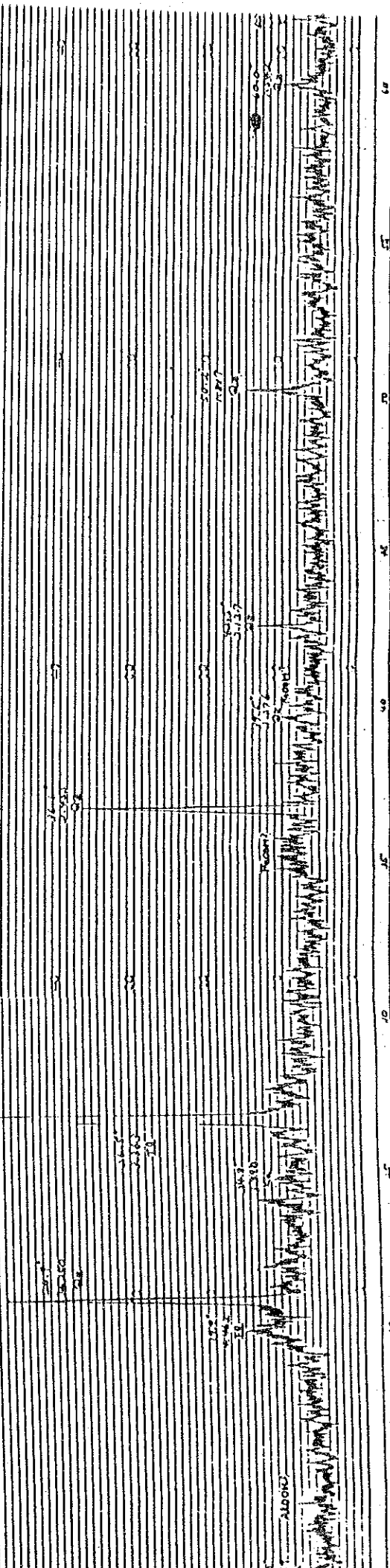


RAY DIFFRACTIONER SECOND-
RAY SECOND SPERM BIL. OF NORTH OF LEAN YPASE BAI

Sample No. C-101

INITIAL TEST

ALPHA 1.0 RAYON 1.57 15.74
LAWSON L. W. CHAPMAN
SHEETS 211 REV. 11-1-57
SCALE 1/16" = 1" DATE 11-1-57 OPERATOR D. O. R.



18000 DISPERGEMENT RECORD FOR

Sample No. C No. 1

ZND TEST

SCANNING SPEED 1500 RPM

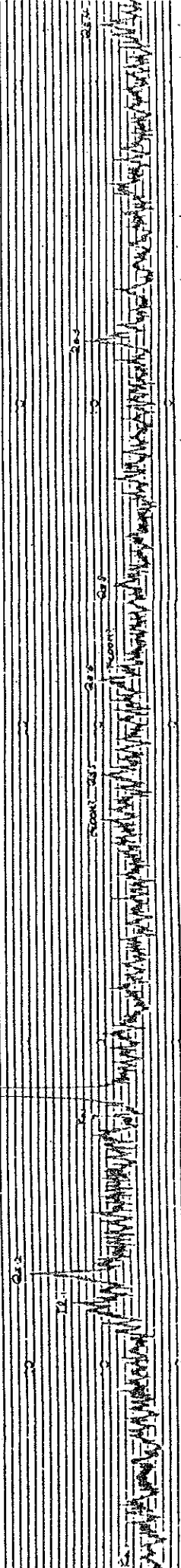
SCANSPEED 1500 RPM

SLIP IN 100%

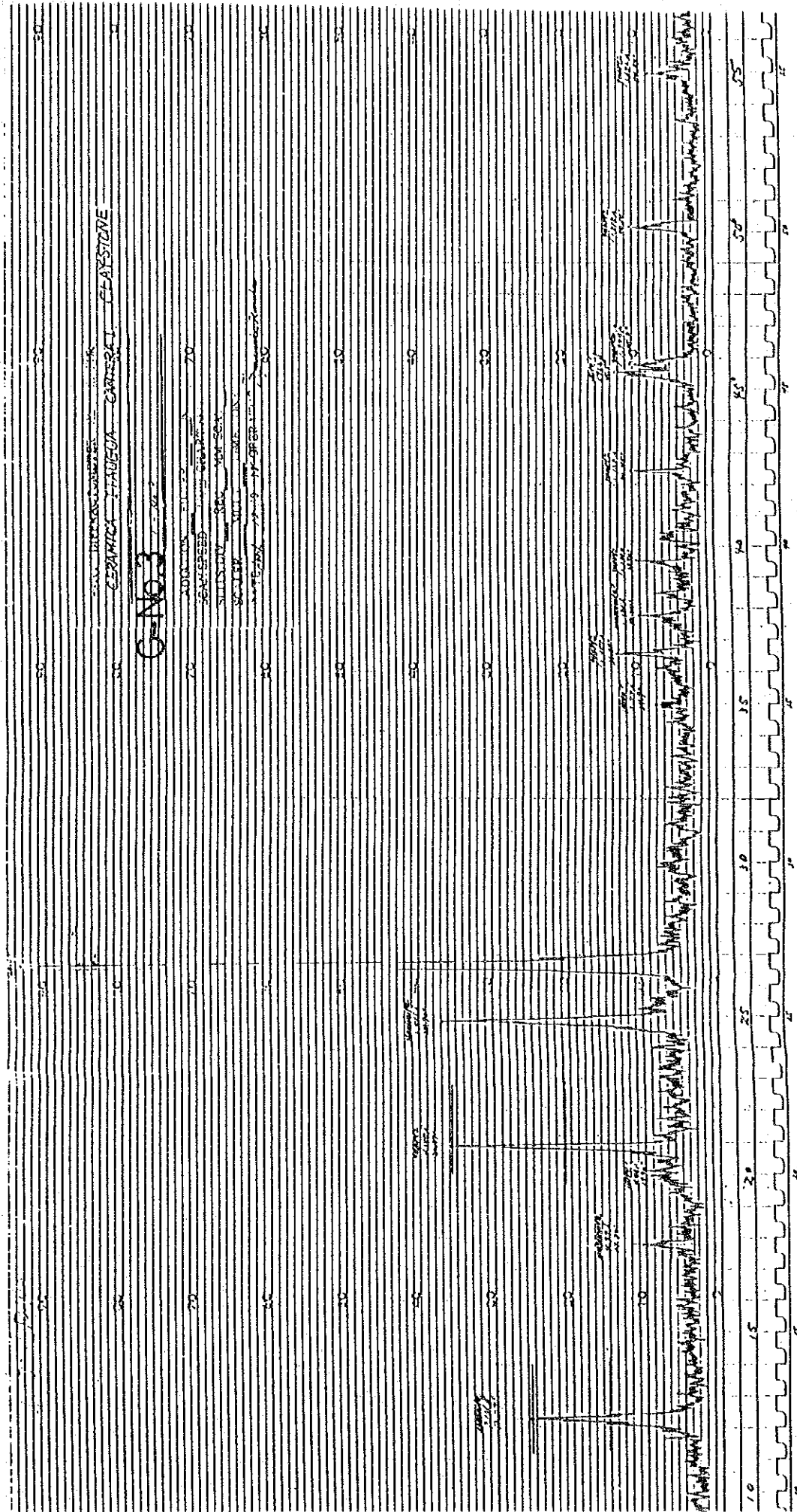
SCALE 100% TAKE UNSURED

DATE 4/18/58 OPERATOR DMB

41

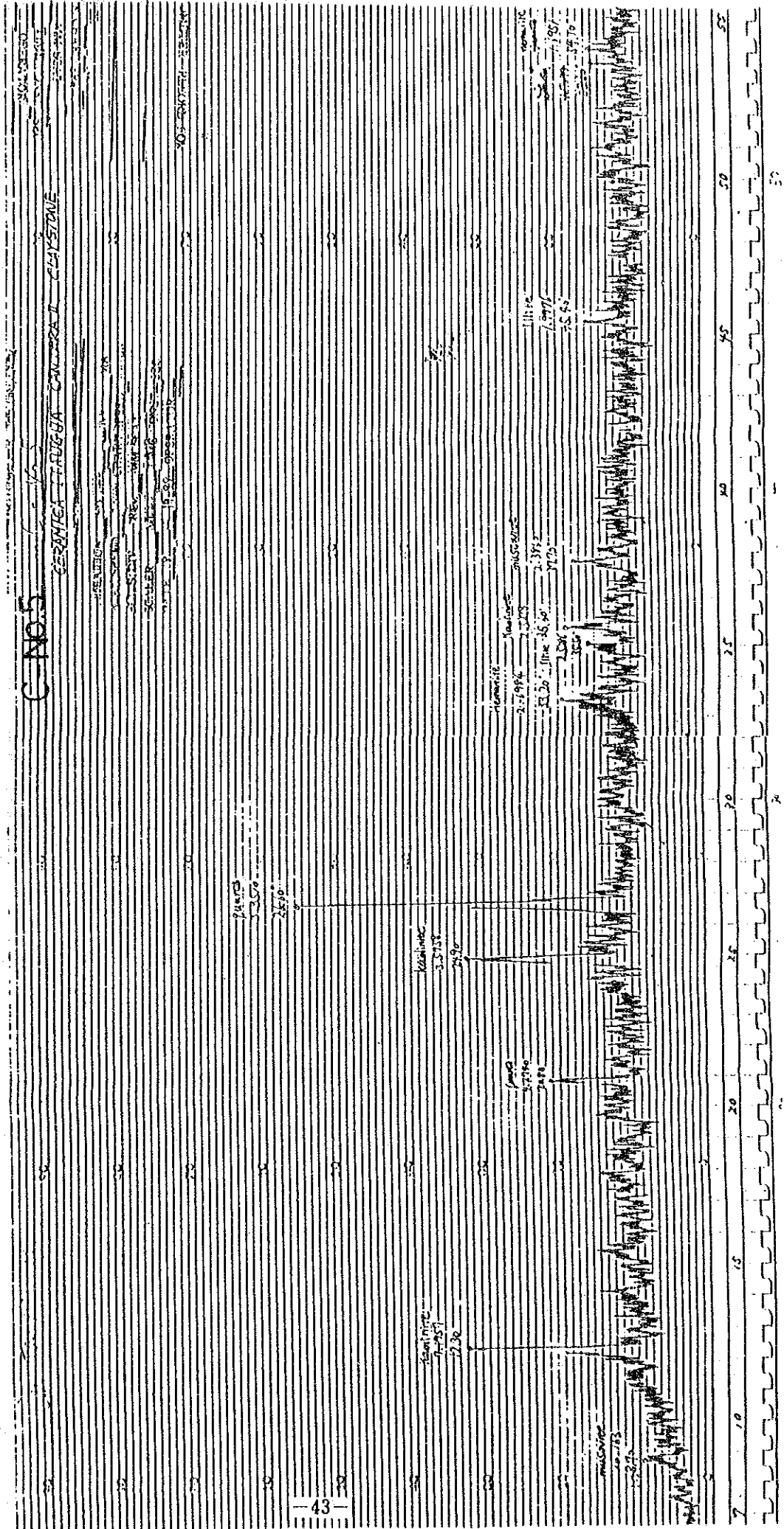


15 20 25 30 35 40 45 50 55 60 65 70



C No. 5

GERMIA-FRUGUA-CARRA I-CLAYSTONE



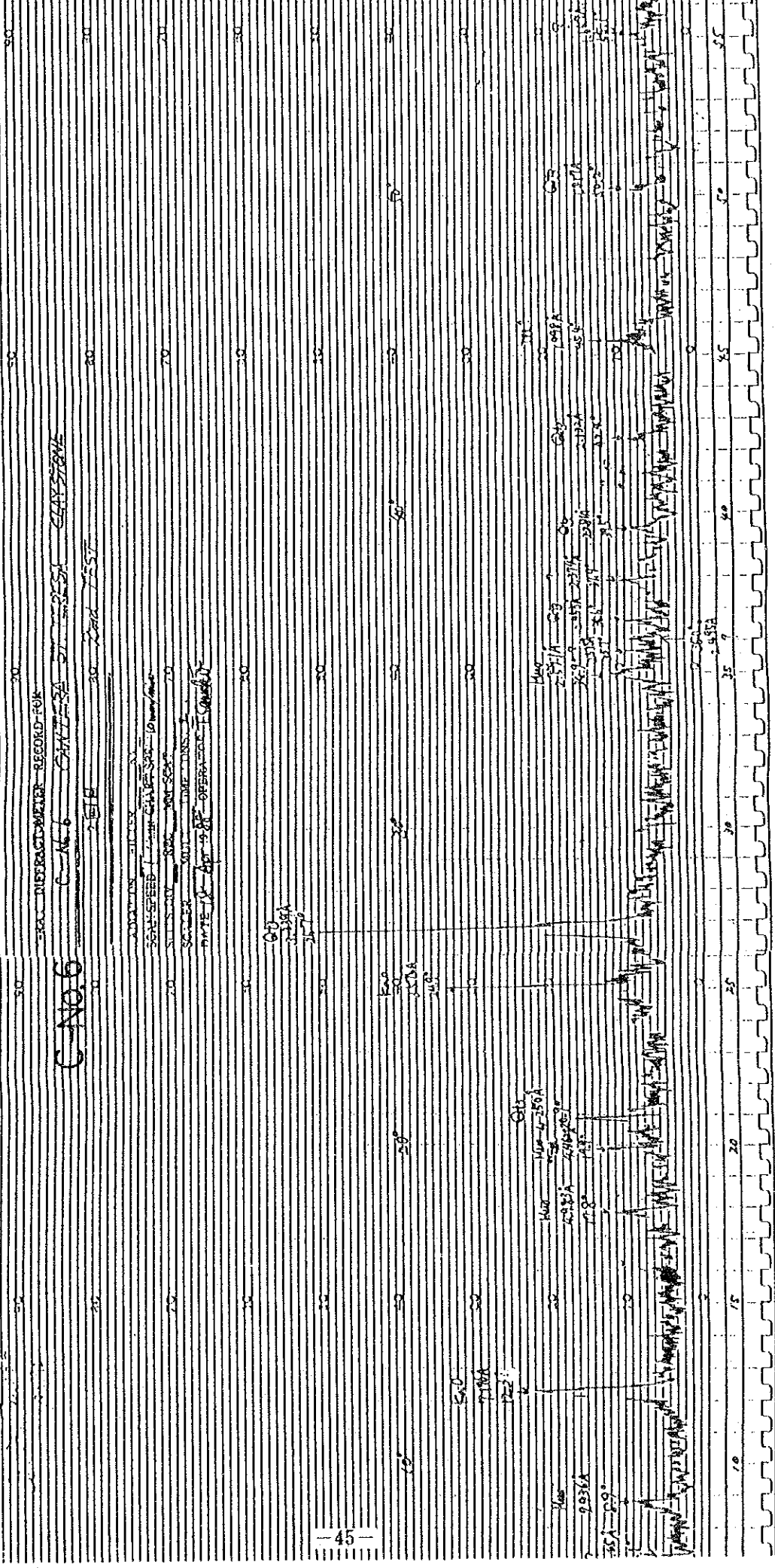


Table S1.3.3

(1 - 4)

Summaries of Profile Pits Survey and Stick-Boring Survey of Soils

LEGEND

Texture	:	C	:	Clay
		SC	:	Sandy Clay
		SIC	:	Silty Clay
		SCL	:	Silty Clay Loam
		CL	:	Clay Loam
		SICL	:	Silty Clay Loam
		S	:	Sand
		LS	:	Loamy Sand
		SL	:	Sandy Loam
		L	:	Loam
		SIL	:	Silt Loam
		Si	:	Silt
Mottles	:	N	:	None
		C	:	Common
		F	:	Few
Gleyzation	:	N	:	None
		W	:	Weak
Humus	:	F	:	Few
		C	:	Common
		N	:	None
Moisture	:	M	:	Moist
		W	:	Wet
		D	:	Dry
Stickness	:	M	:	Moderate
		H	:	High
		W	:	Weak
Soil Classification				
		Ac	:	Acrisols
		Re	:	Regosols
		Pl	:	Planosols
		Lt	:	Lithosols
Remarks	:	G.W.L.	:	Ground Water Level

Table S1.3.3 Summaries of Profile Pits Survey and Stick-Boring Survey of Soils

(1)

Location No.	Horizon	Depth cm	Texture	Color	Munsell's Name	Mottles	Gleyzation	Humus	Moisture	Stickness	Compactness	pH	Soil Classification	Remarks
S 1	1	0~30	SIL	2.5YR4/4	Dull reddish brown	None	None	Fes	Moist	Moderate	6~7	5.32	Acrisols	
	2	30~90		2.5YR5/1	reddish gray									
S 2	1	0~30	S	5YR5/6	bright reddish brown	N	N	F	M	None	2	5.30	Regosols	
	2	70~90		7.5YR4/2	grayish brown	N	Weak	F	M	N	13~15			
S 3	1	0~100	L	2.5Y7/3	light yellow	Common	V	Common	Wet	High	7	4.81	Planosols	
S 4	1	0~50		2.5YR4/8	reddish brown	N	N	F	M	M	5		Ac	
	2	50~90	SL	2.5YR3/4	dark reddish brown	N	N	None	M	H	15	4.41		
S 5	1	0~60	L	2.5YR4/4	dull reddish brown	N	N	F	M	W	2~5	5.35	Ac	
S 6	1	0~50	SL	5YR4/4	dull reddish brown	N	N	F	M	W	5~15	5.72	Ac	
S 7	1	0~50	LS	7.5YR4/4	brown	N	N	F	M	N	5.5	6.31	Re	
S 9	1	0~30	SL	10YR4/3	dull yellowish brown	N		C	M	M	3	4.30		
	2	30~60	SIL	10YR2/2	brownish black	N	?	C	V	H	11	4.31	Pl	
	3	60~90	L	10YR4/1.5	brownish gray	C			V	H	7	5.81		
S 11	1	0~80	LS	10YR5/4	dull yellowish brown	N	N	F	M	N	5	5.90	Re	
	2	80~				N	N	N	V	W	8			
S 12	1	0~40	S	7.5YR5/3	dull brown	N	N	F	M		5	4.50	Re	G.W.L.=90cm
	2	40~90	LS	10YR6/4	dull yellow orange	N	N	N	Very Wet	N	0	4.40		
S 13	1	0~40	S	10YR5/6	yellowish brown	N	N	F	V.V	N	3	5.76	Re~Pl	G.W.L.=35cm
	2	40~70	SL	10YR5/3	dull yellowish brown	N	N	F	V.V	W	4.5	7.03		
S 14	1	0~15	LS	7.5YR3/3	dark brown	N	N	C	M	V	12~15	5.72	Ac~Re	
	2	15~55				N	N	K	M	V	7~12			
S 15	1	0~35	LS	7.5YR5/4	dull brown	N	N	N	V	N	2~3	4.62	Re	
	2	35~	LS	2.5Y6/4	dull yellow	N	N	F	V	N	15+	5.59		
S 16	1	0~30	LS	5YR5/6	bright reddish brown	N	N	F	M	N	2~6	-	Re	
	2	30~60		7.5YR6/4	dull orange	N	N	K	M	N	15			
S 17	1	0~20		7.5YR6/4	dull orange	N	N	N	M	N	2~14		Re	G.W.L.=80cm
	2	20~30		7.5YR4/2	grayish brown	C	Gleyed	F	V	M	15			
	3	30~50	LS	7.5YR6/4	dull yellow orange	C	G	F	V.V	N	3~4	4.48		
S 18	1	0~30	LS	10YR6/4	dull yellow orange	N	N	N	V	N	0~2	-	Re	G.W.L.=90cm
	2	30~90		10YR5/4	dull yellowish brown	N	N	F	V	N	2~5			

Table S1-3.3 Summaries of Profile Pit Survey and Stick Boring Survey of Soils

(2)

Location No	Horizon	Depth cm	Texture	Color	Munsell's Name	Moisture	Humus	Gleyzation	Stickness	Compactness	pH	Soil Classification	Remarks
S 19	1	0~50	S	7.5YR5/4	dull brown	V	F	N	N	2~3	4.89	Re	
	2	50~		10YR6/3	dull yellow orange	V	F	G	N	15+			
S 20	1	0~50	LS	7.5YR4/4	brown	M	F	N	N	2~9	4.22	Re	Lithosols
	2	50~	Base Rock										
S 21	1	0~30	LS	5YR4/3	dull reddish brown	M	F	N	Y	5~9	4.48	Lit~Re	
	2	30~	Base Rock										
S 22	1	0~20	SL	7.5YR3/2	brownish black	X	C	N	W	3~8	6.82	Lit	
	2	20~	Base Rock										
S 23	1	0~150+	L	7.5YR4/3	brown	V	C	N	N	3~5	4.75	Re	
S 24	1	0~80	S	7.5YR5/3	dull brown	V	F	N	N	1~4	4.75	Re	G.V.L.=80cm
	2	80~100	SL	2.5YR3/4	dark reddish brown	M	N	N	Y	15+	5.58	Ac	weathered base rock
S 25	1	0~20	S	7.5YR4/4	brown	M	F	N	N	5~8	5.51	Ac	
	2	20~		7.5YR5/3	dull brown								
S 27	1	0~60	LS	2.5YR3/4	dark reddish brown	Dry	N	N	N	12.5	5.33	Re~Ac	
S 28	1	0~80	S	7.5YR4/4	brown	D	F	N	N	2	6.88	Rc	
S 29	1	0~50	LS	7.5YR3/4	dark brown	M	N	N	W	6	5.95	Re	
S 30	1	0~160		2.5YR3/4	dark reddish brown	D	N	N	H	~15	4.71	Ac	
	2	160~	SL	2.5YR4/4	dull reddish brown		N	N	H	15+			
S 31	1	0~40	LS	10YR5/6	bright yellowish brown	N	N	N	V	5			
	2	40~70		7.5YR6/4	dull orange	V	N	V	V	6	4.70	Re	G.V.E.=70cm
	3	70~		10YR6/4	dull yellow orange	V	N	V	V	10~			
S 32	1	0~10	SL	10YR4/3	dull yellowish brown	M	C	W	V	10	5.10		
	2	10~20	S	10YR5/3	"	M	C	V	W	7.5	5.16	P1	
	3	20~	L	10YR5/3	"	M	C	V	N	15+	5.59		
S 33	1	0~50	L	10YR3/2	brownish black	M	C	V	H	15+		P1	

Table S 1-33 Summaries of Profile Pit Survey and Stick Boring Survey of Soils

(3)

Location No.	Horizon	Depth cm	Texture	Color	Munsell's Name	Mottles	Gleyzation	Humus	Moisture	Stickness	Compactness	pH	Soil Classification	Remarks
S34	1	0~50	L	10YR3/3	dark brown	F	V	C	M	H	9~12	4.08	Pl	
S35	1	0~40	S	10YR5/4	dull yellowish brown	N	N	F	V	N	3	4.19	Re	G.V.L.=40cm
	2	40~70	S	10YR7/3	dull yellow orange	F	H	N	V.H	R	1	4.60		
S36	1	0~150	LS	7.5YR4/3	Brown	N	N	C	M	N	8	6.10	Re	
	2													
S37	1	0~45	S	10YR5/4	dull yellowish brown	N	N	F	V	N	13	5.32	Re	G.V.L.=45cm
	2	45~	S	10YR6/4	dull yellow orange	N	N	N	V.V	V	4			
S38	1	0~40	LS	7.5YR5/4	dull yellowish brown	N	N	N	M	V	5	5.21	Lit	
S39	1	0~20	SL	5YR4/4	dull yellowish brown	N	N	C	M	H	5	4.04	Lit	
S40	1	0~30	S	7.5YR4/4	brown	N	N	C		V	10	4.81	Lit	
S41	1	0~50	S	7.5YR4/4	brown	N	N	F	M	N	0~1	-	Lit	
S42	1	0~20	SL	7.5YR4/3	brown	N	N	F	V	N	0	4.27	Ac	G.V.L.=70cm
	2	20~70	SL	10YR3/2	brownish black	N	V	C	V.V	V	2~3			
S43	1	0~30	SL	7.5YR5/4	dull brown	N	N	F	M	N	12	-	Ac	
S44	1	0~50	SL	5YR4/6	reddish brown	N	N	F	M	N	15	-	Ac	
S45	1	0~60	SL	2.5YR5/4	dull reddish brown	N	N	N	M	H	15+	-	Ac	
S46	1	0~60	SL	2.5YR4/6	reddish brown	N	N	N	M	H	15+	-	Ac	
	2	60~90	SL	7.5R3/6	dark red	N	N	N	M	X	9			
S47	1	0~60	SL	10YR4/2	grayish yellow brown	N	N	C	V	N	6~12	4.27	Pl~Re	G.V.L.=40cm
S48	1	0~40	S	10YR4/3	dull yellowish brown	N	N	C	N	N	3	5.05	Pl~Re	G.V.L.=40cm
S49	1	0~100	SL	2.5YR3/4	dark reddish brown	N	N	N	M	H	5~10	4.11	Ac	
S50	1	0~80	SiCL	10YR1.7/1	black	C	G	C	M	H	4~5	4.29	Pl	

Table S 1-53 Summaries of Profile Pit Survey and Stack Boring Survey of Soils

(4)

Location No	Horizon	Depth cm	Texture	Color	Munsell's Name	Mottles	Gleyzation	Humus	Moisture	Stickness	Compactness	pH	Soil Classification	Remarks
S 51	1	0~40	SL	5YR3/4	dark reddish brown	N	N	C	M	V	6~8	4.50	Re	
		40~		7.5YR3/2	brownish black	N	N	N	M	M	4~6			
S 52	1	0~120	SL	2.5YR4/4	dull reddish brown	N	N	N	M	H	15+	4.17	Ac	
S 53	1	0~80	SL	10YR6/2	grayish yellow brown	F	G?	F	M	H	15+	-	Lit~Pl	
S 54	1	0~	SL~LS	10YR4/3	dull yellowish brown	F?	G?	F	M	H	15+	5.11	Ac	
S 55	1	0~40		2.5YR4/4	dull reddish brown	N	N	F	M	V	6	-	Pl	G.V.L.=70cm
	2	40~70	L	10YR2/3	brownish black	N	N	F	V	V	3			
S 56	1	0~60	L	10YR3/1	brownish black	F	G	C	M	H	15+	5.36	Pl	
S 57	1	0~30	SL	10Y4/1	gray	F	G	N	V	M		6.28	Pl	
	2	30~100	SL	10YR4/1	brownish gray	C	G	N	V	H	15+			
S 58	1	0~70	L	10YR3/4	dark brown	C	N	C	M	H	5	3.65	Pl	
S 59	1	0~70	SL	10YR4/2	grayish yellow brown	N?	N?	C	M	H	10	7.48	Pl	
S 60	1	0~40	SL	10YR5/4	dull yellowish brown	N	N	F	M	N	10	-	Pl	
S 61	1	40~80	SL	10YR5/3	dull yellowish brown	N	G?	F	V.W	N	2	-	Pl	
S 62	1	0~50	L	10YR4/2	grayish yellow brown	F	G?	C	V	H	3~7	4.10	Pl	
S 63	1	0~35	SL	10YR3/2	brownish black	N	N	C	M	H	15	-	Pl	
S 64	2	35~70	SL	7.5YR2/1	black	N	N	N	M	M	10	-	Pl	