

Report No. EPGs-DOM.8-86MPA

Vitrinite Reflectance (Ro)
of dispersed organics
from
Petro-Canada Shell
Wenonah J-75

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OTTAWA

Vitrinite Reflectance (Ro) of dispersed organics from Petro-Canada Shell
Wenonah J-75.G.S.C. Locality No: D164 Location: 43°34'34.44"N, 60°26'13.73"WR.T. Elevation: 98' Water Depth: 219' Total Depth: 12040'Sample Interval: 930 - 12040' Interval Studied: 2320 - 11870'Information Release: November 15, 1978 Depth Units: Feet referenced to R.T.

Vitrinite Reflectance has been determined on 21 samples (Table II) from Petro-Canada Shell Wenonah J-75, which was classified as a wildcat well and is located on the Scotian Shelf, approximately 48 km (30 mi) southwest of Sable Island (Petro-Canada, 1977).

Data acquisition and manipulation for this report utilized the Zeiss Photo-multiplier III Zonax microcomputer system with improvements in software to provide a dynamic histogram display as readings are acquired. Sample preparation followed the procedures listed in Appendix I. The analysis of the well revealed the thermal maturation intervals given in Table I. Specific maturation levels as set out in this report were based on those of Dow (1977) with modified terminology (Appendix II).

Table I
Inferred Thermal Maturation Levels*

Determined

Seaf1r-5103'	0.2 - 0.4	% Ro	immature
5103 - 6698'	0.4 - 0.5	% Ro	immature approaching maturity
6698 - 8001'	0.5 - 0.6	% Ro	marginally mature
8001'	0.6	% Ro	onset of significant oil generation
10057'	0.8	% Ro	peak of oil generation
11653'	1.0	% Ro	onset of significant wet gas generation
12040' (T.D.)	1.06	% Ro	within oil window

Projected (at 0.199 log Ro/km)

12956'	1.2	% Ro	onset of significant dry gas generation
13798'	1.35	% Ro	oil floor
16607'	2.0	% Ro	wet gas floor
19506'	3.0	% Ro	dry gas floor

* Maturation levels provided for all types of organic matter. Actual hydrocarbon products depend on type of organic matter present.

Remarks

The sample coverage of vitrinite reflectance data (Figure 1, Table II) was adequate over most of the well. A linear regression line was calculated by the least squares method and plotted on a semi-log scale (Figure 1). The slope of the line is 0.199 log Ro/km. The 'error bars' indicate one standard deviation on either side of the mean and may be deceptively small for samples with very few readings.

The slope of the maturation gradient in Wenonah J-75 is somewhat greater than the slope for Eagle D-21 which is the nearest well (78km northeast) which has been analyzed for vitrinite reflectance by this lab (Avery 1986).

The lithology strip plot (Figure 1) was produced in its final ink copy form directly from the EPG 'LithFile' database which extracts data from digitized 'CanStrat' logs. Depth intervals were based on visually recognized major changes in lithology as seen in the standard 'CanStrat' log.

These vitrinite reflectance maturation data provide evidence that the thermal regime at Wenonah J-75 was suitable for the generation and preservation of hydrocarbons within the drilled section.

References

- Avery, M.P., 1986. Vitrinite reflectance (Ro) on the dispersed organics from Shell Mobil-Tetco Eagle D-21. GSC Open file report no. 1348.
- Dow, W.G., 1977. Kerogen studies and geological interpretations. Journal of Geochemical Exploration, no. 7, p. 79-99.
- Petro-Canada, Ltd., 1977. Well history report Petro Canada Shell Wenonah J-75. Open file report, Department of Energy, Mines and Resources, Ottawa.

September 12, 1986

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Table II

Summary of vitrinite reflectance

Seq. #	Sample #	Depth in feet	Mean Ro (SD) non-rotated	Number of readings	
				Total	Edited
1	K0216A	2320-2350	.27(+.06)	56	54
2	K0216B	2620-2740	.29(+.07)	25	24
3	K0216C	3070-3100	.31(+.05)	56	54
4	K0217A	3520-3550	.35(+.04)	39	35
5	K0217B	3790-3820	.37(+.04)	43	42
6	K0217C	4150-4180	.39(+.05)	22	20
7	K0218A	4350-4380	.37(+.03)	20	19
8	K0218B	4850-4880	.33(+.04)	43	40
9	K0218C	5550-5580	.37(+.06)	27	10
10	K0219A	5850-5880	.42(+.02)	54	9
11	K0219B	6250-6280	.44(+.03)	48	8
12	K0219C	8040-8070	.66(+.07)	99	31
13	K0220A	8440-8470	.63(+.11)	82	47
14	K0220B	9240-9270	.70(+.09)	76	55
15	K0220C	9640-9670	.75(+.10)	86	54
16	K0221A	10240-10270	.78(+.05)	71	28
17	K0221B	10540-10570	.82(+.07)	86	57
18	K0221C	10840-10870	.85(+.06)	99	43
19	K0222A	11140-11170	1.01(+.05)	66	27
20	K0222B	11440-11470	1.07(+.08)	84	46
21	K0222C	11840-11870	1.08(+.10)	90	47

Note : All values are based on isolated kerogen mounts.

Table III

Formation Tops (Wade, pers. comm.)

Depth	Formation
in casing	Banquereau
5170'	Wyandot
5339'	Dawson Canyon
5428-5440'	Petrel Member
5813'	Logan Canyon
6612-6959'	Sable Member
9232'	Naskapi Member
9789'	Missisauga
11005'	Verril Canyon
11682'	Argo
12044'	T.D.

Table IV

Biostrat Tops (Gradstein, pers. comm.)

Depth	Top of
1000'	Pleistocenene
1360'	Middle Miocene
2620'	Early Miocene
2800'	Middle-Late Oligocene
3160'	Middle Oligocene
4450'	Early Eocene
4850'	?Paleocene-E. Eocene
5150'	Late Campanian
5250'	Coniacian-Early Santonian
5450'	Turonian
6150'	Cenomanian
6640'	Late Albian-E. Cenomanian
7230'	Middle-Late Albian
8440'	Albian p.p.
+11000'	Not dated

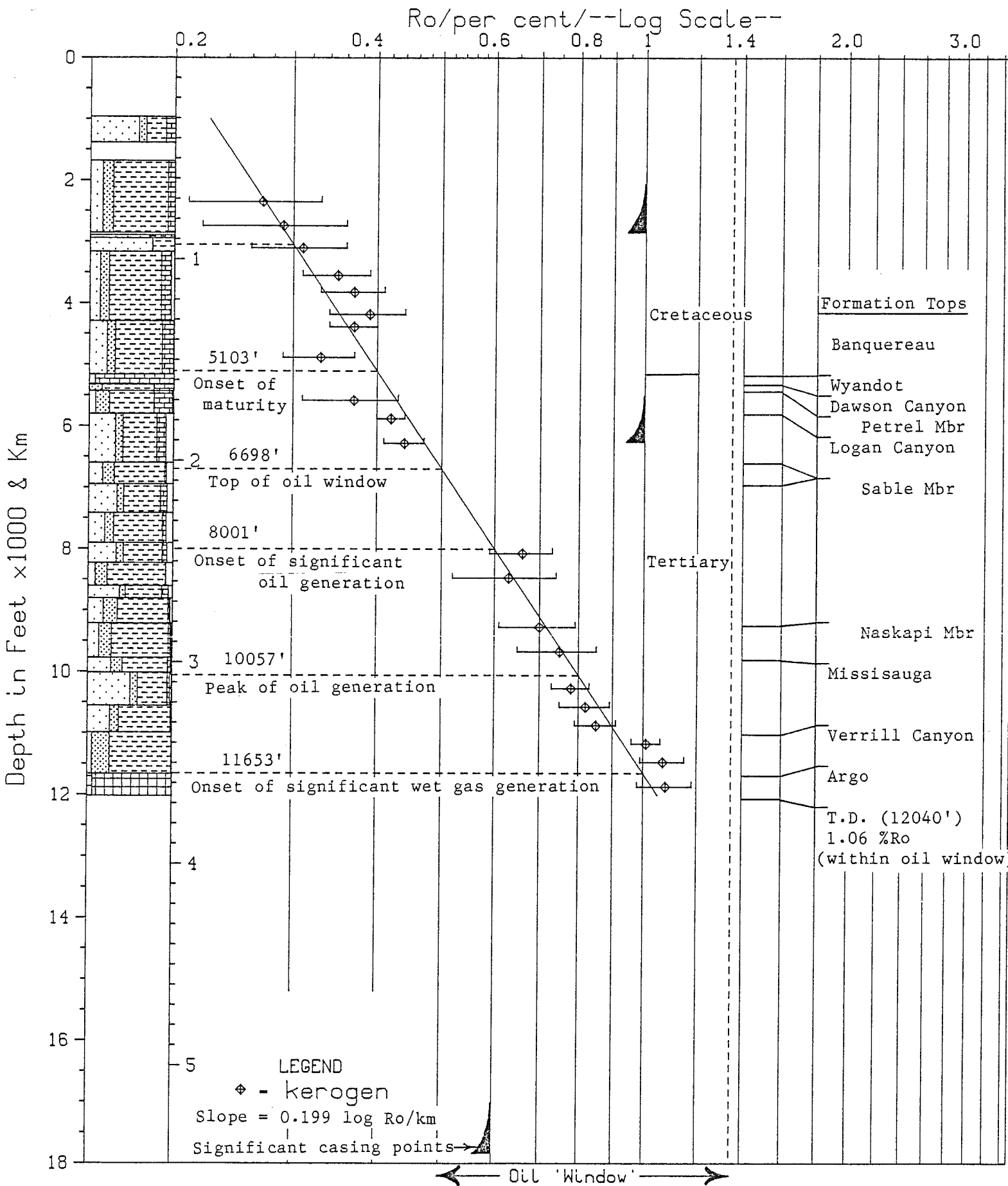


Fig. 1 Wenonah J-75

12-55-21 MED 6 HUG 1986 JOB-HUGH , BEDFORD INSTITUTE DISSPLA 9.0

APPENDIX I

Sample Preparation Method

COGLA Lab preparation

Preliminary Wash

Samples dried in oven

Split: a. all of coarse to Petrology Lab

b. $\frac{1}{2}$ medium to Palynology Lab

c. rest of medium and all of fine combined for Micropaleo Lab

Split "b" is delivered to Palynology Lab and treated as follows:

PALYNOLOGY Lab preparation

20-30 grams placed in 250ml plastic beaker.

Add 10% HCl till reaction ceases (removes carbonates).

Washed (rinsed) 3 times.

Conc. HF overnight (removes silicates).

Washed (rinsed) 3 times.

Heated (60-65°C) conc. HCl (remove fluorides caused by HF).

Washed 3 times.

Then put into 15ml test tube with 4-5ml 4% Alconox.

Differential centrifuge at 1500rpm for 90 sec.

Decant.

Wash 3 times with centrifuging.

Float off organic fraction using 2.0 S.G. Znbr solution.

Centrifuge 1000rpm, 8 min.

Float fraction into second test tube.

Wash 3 times with centrifuging.

Kerogen smear slide made.

Remaining kerogen material delivered to Vitrinite Reflectance Lab.

VITRINITE REFLECTANCE Lab preparation

Excess water pipetted off.

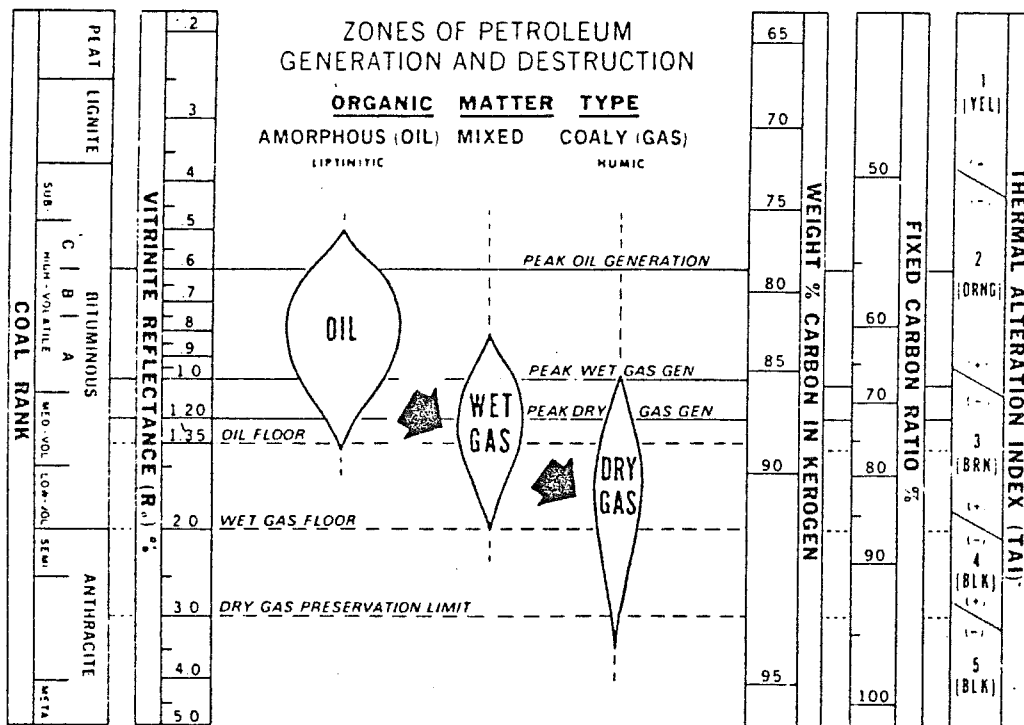
Freeze dried.

Mounted using epoxy resin (EPO-TEK 301) in predrilled plastic stubs.

Polished using modified coal petrology polishing methods.

Examined under oil lens at approximately 800x mag'n.

Appendix II (Dow,1977)



Note: For these reports, the terminology used to describe the various maturation levels has been modified. The 'peak' designation, as used in this figure, has been changed to 'onset of significant' and 0.8 R_v is now used as the 'peak of oil generation' (Table I, Figure 1).

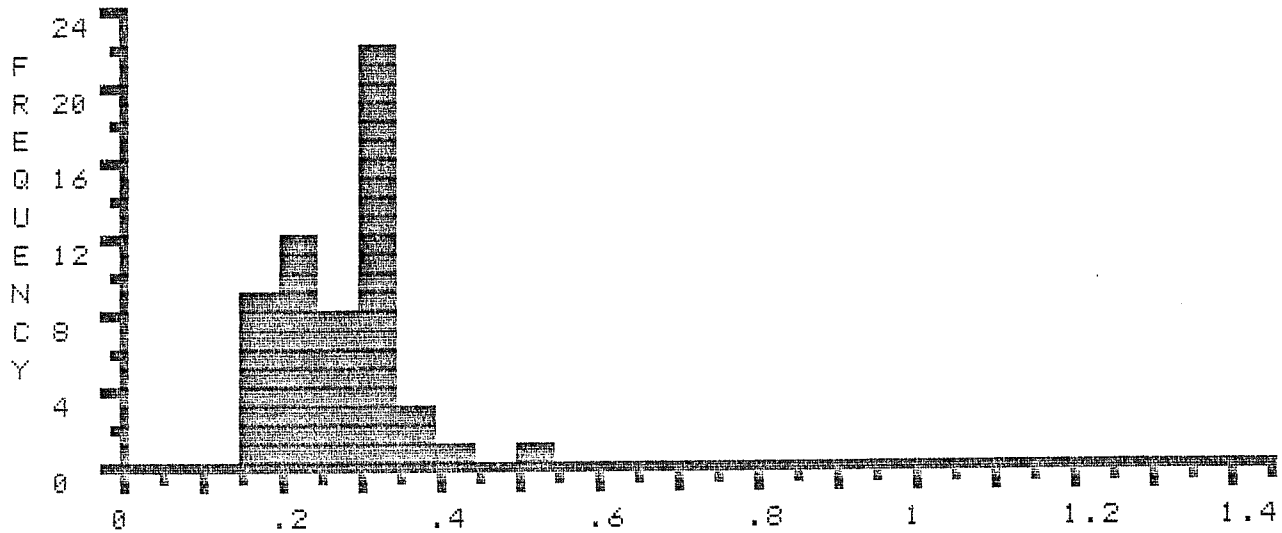
Vitrinite Reflectance Histograms

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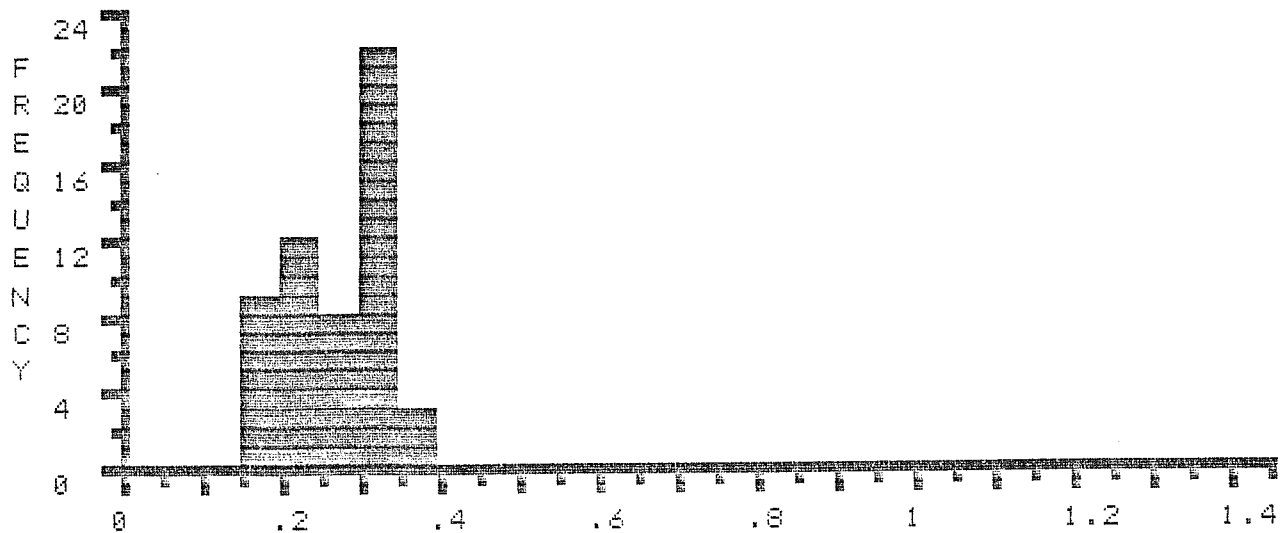
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2	*.24	*.24	*.25	*.25	*.26	*.26	*.27	*.29	*.29	*.29
3	*.30	*.30	*.30	*.30	*.30	*.31	*.31	*.31	*.31	*.31
4	*.32	*.32	*.32	*.32	*.32	*.32	*.33	*.33	*.34	*.34
5	*.34	*.34	*.36	*.37	*.37	.44	.53			

	MEAN	STAND. DEV.	PTS	MIN	MAX	SUM
TOTAL >	.28	.07	56	.15	.53	15.43
*EDIT >	.27	.06	54	.15	.37	14.46

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

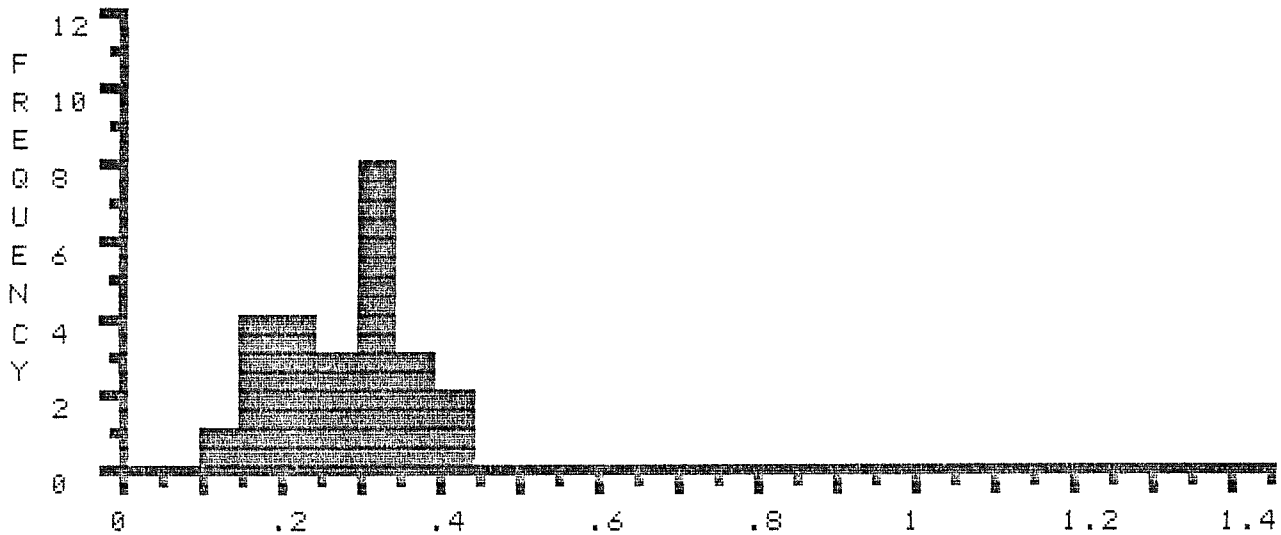


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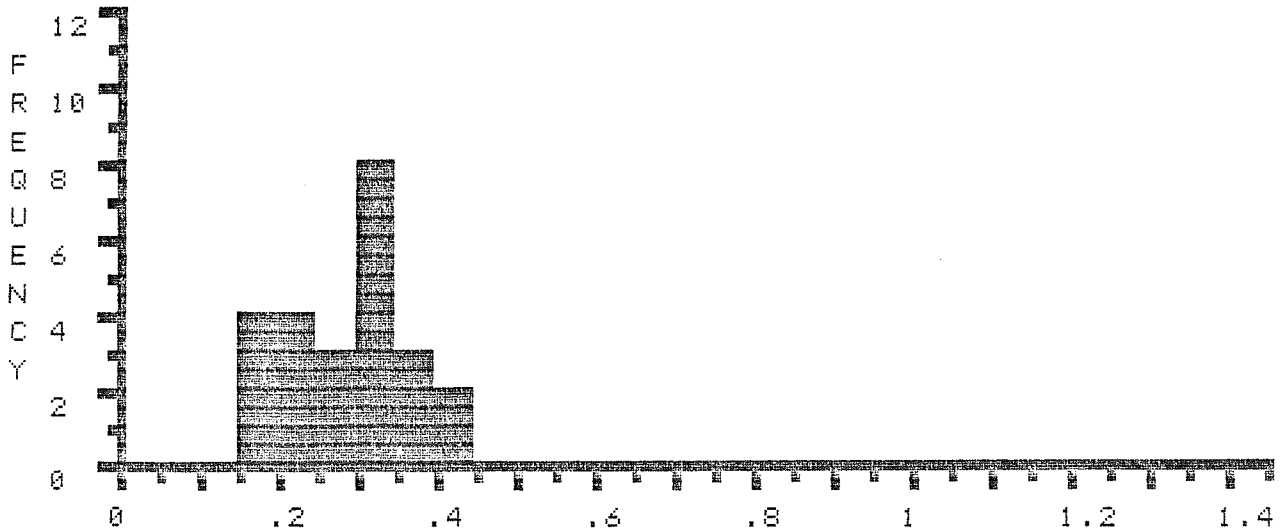
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2	*.34	*.35	*.35	*.37	*.40	*.43				

	MEAN	STAND. DEV.	PTS	MIN	MAX	SUM
TOTAL >	.28	.08	25	.14	.43	6.99
*EDIT >	.29	.07	24	.17	.43	6.85

% R E F L E C T A N C E



% R E F L E C T A N C E * * E D I T E D * *

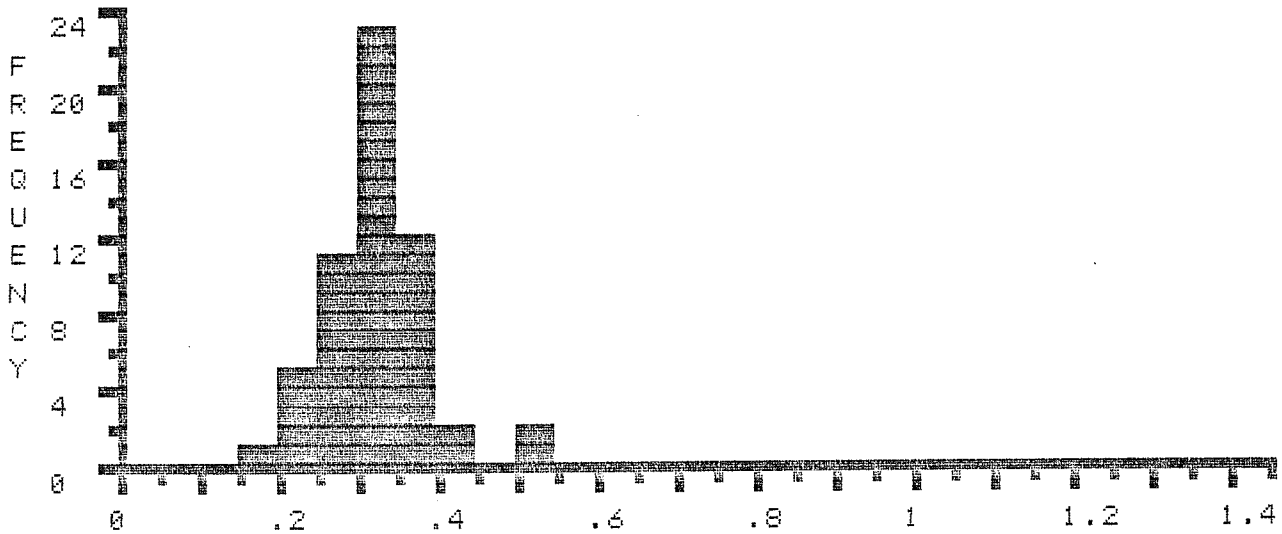


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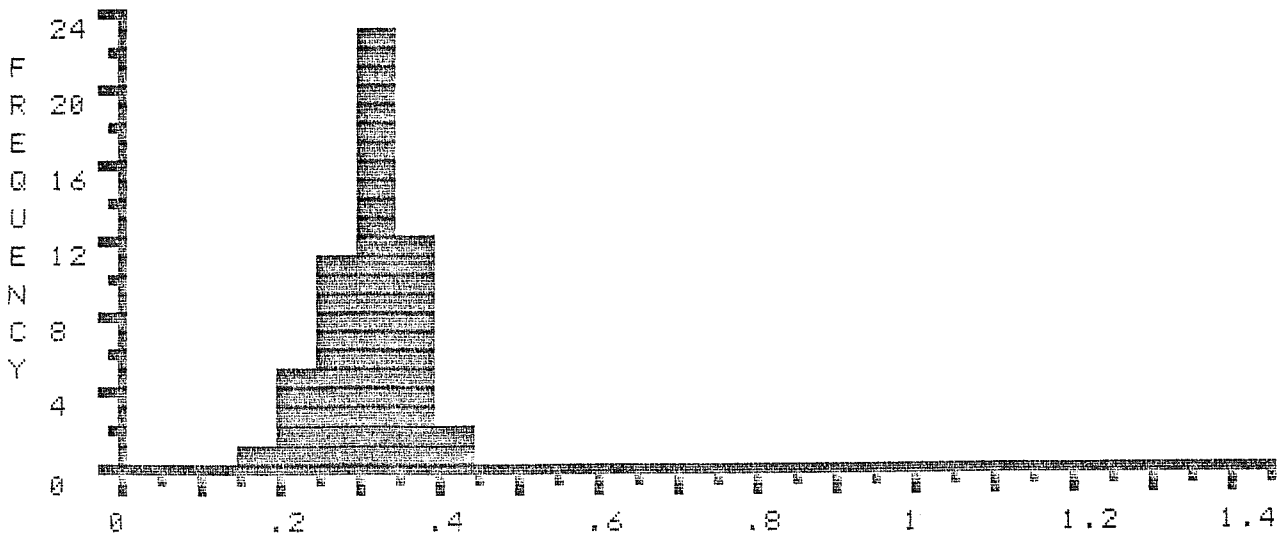
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2	*.30	*.30	*.31	*.31	*.31	*.31	*.31	*.32	*.32	*.32
3	*.32	*.32	*.32	*.33	*.33	*.33	*.34	*.34	*.34	*.34
4	*.34	*.35	*.35	*.35	*.35	*.35	*.35	*.35	*.36	*.36
5	*.36	*.39	*.39	*.40	*.41	.52	.53			

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.32	.06	56	.19	.53	17.81
*EDIT >	.31	.05	54	.19	.41	16.76

% R E F L E C T A N C E



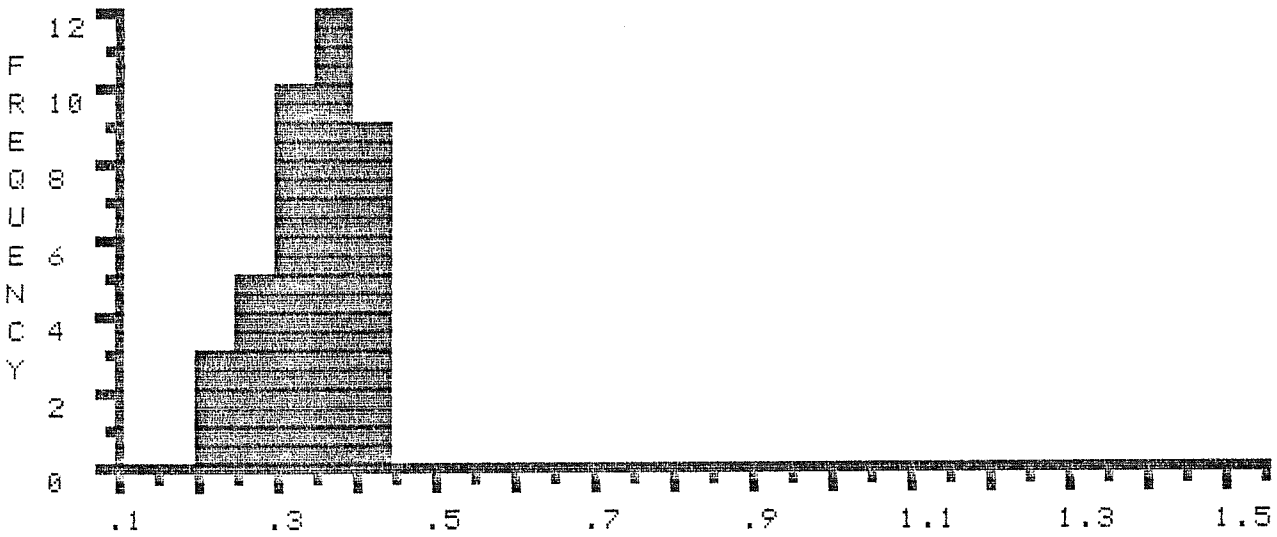
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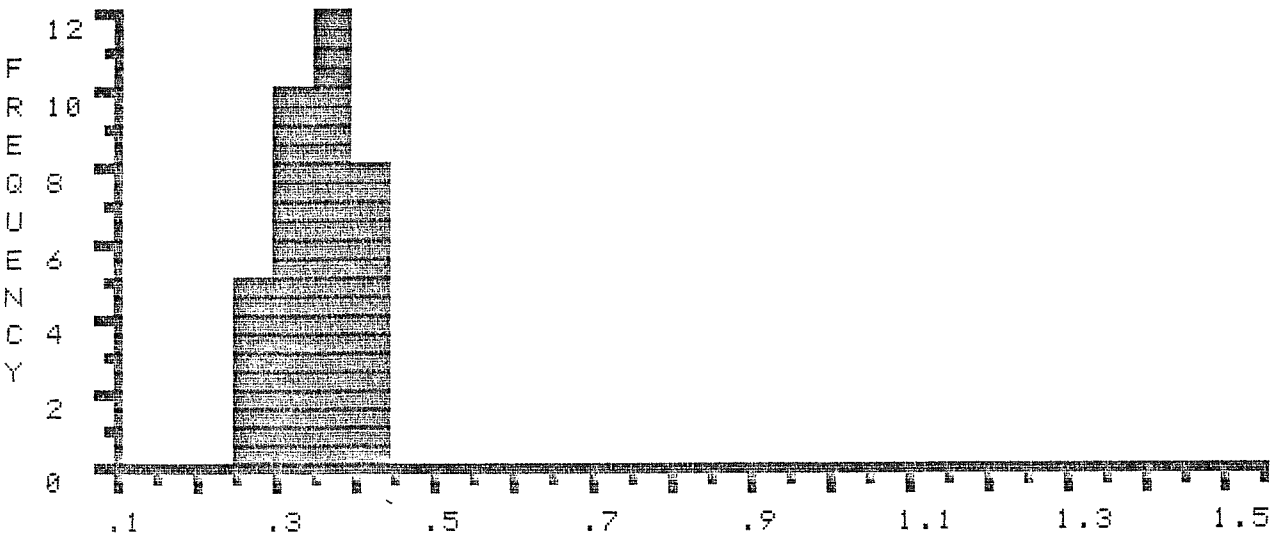
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1	*.31	*.31	*.33	*.33	*.33	*.34	*.34	*.34	*.34	*.35
2	*.35	*.35	*.35	*.35	*.36	*.36	*.36	*.38	*.39	*.39
3	*.39	*.40	*.40	*.41	*.41	*.41	*.42	*.42	*.42	.44
TOTAL >	LAN	STAND. DEV.	PTS	MIN	MAX	SUM				
*EDIT >	.35	.06	39	.20	.44	13.46				
	.35	.04	35	.28	.42	12.36				

% R E F L E C T A N C E



% R E F L E C T A N C E * * E D I T E D * *

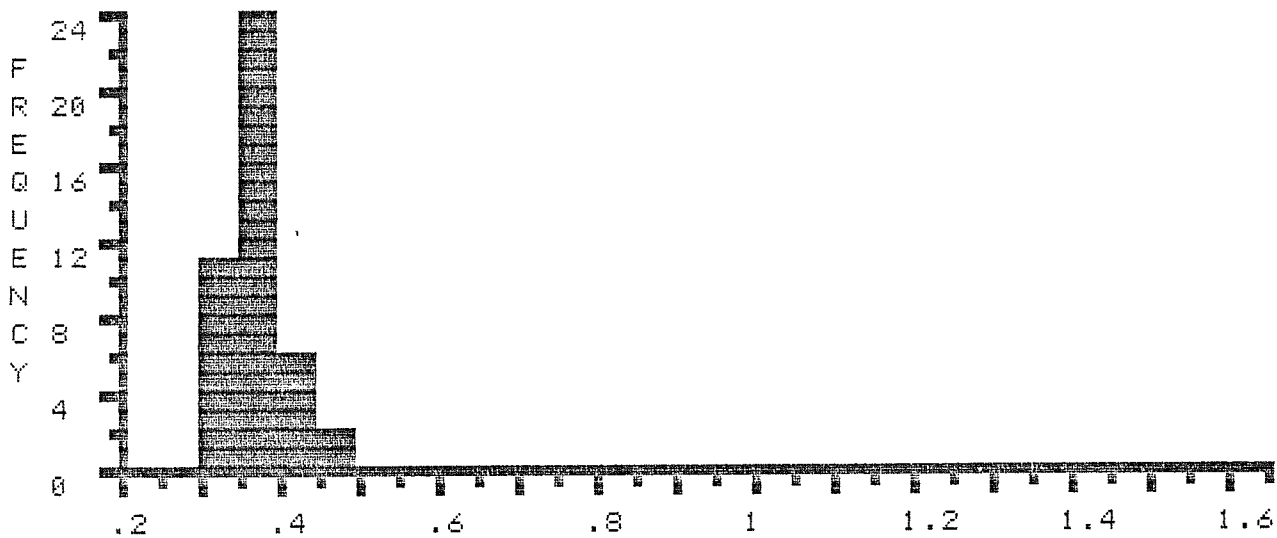


FILE >> K02178 DESCRIPTION FOLLOWS :
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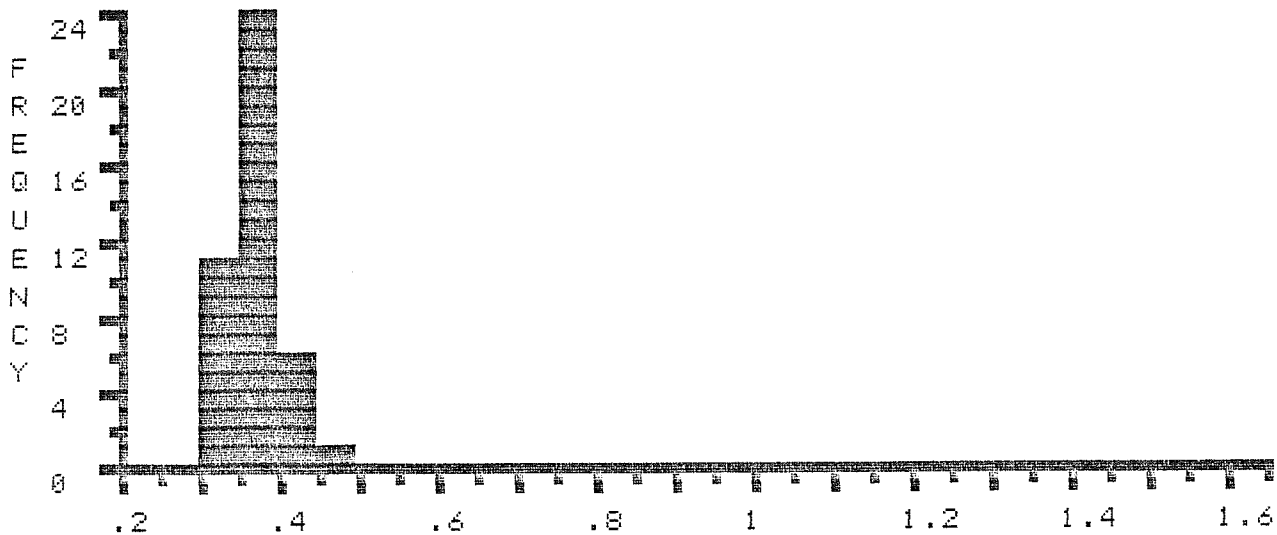
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2	*.37	*.37	*.37	*.37	*.37	*.38	*.38	*.38	*.38	*.38
3	*.38	*.38	*.38	*.38	*.39	*.39	*.40	*.41	*.41	*.42
4	*.43	*.44	*.45	.49						

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.37	.04	43	.30	.49	15.89
*EDIT >	.37	.04	42	.30	.45	15.4

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

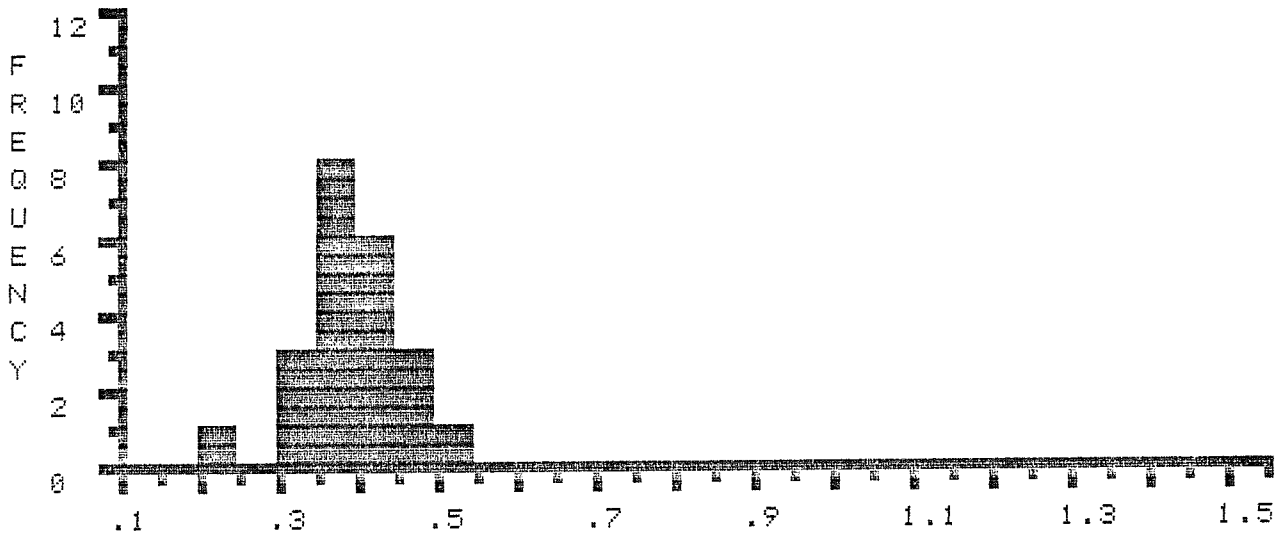


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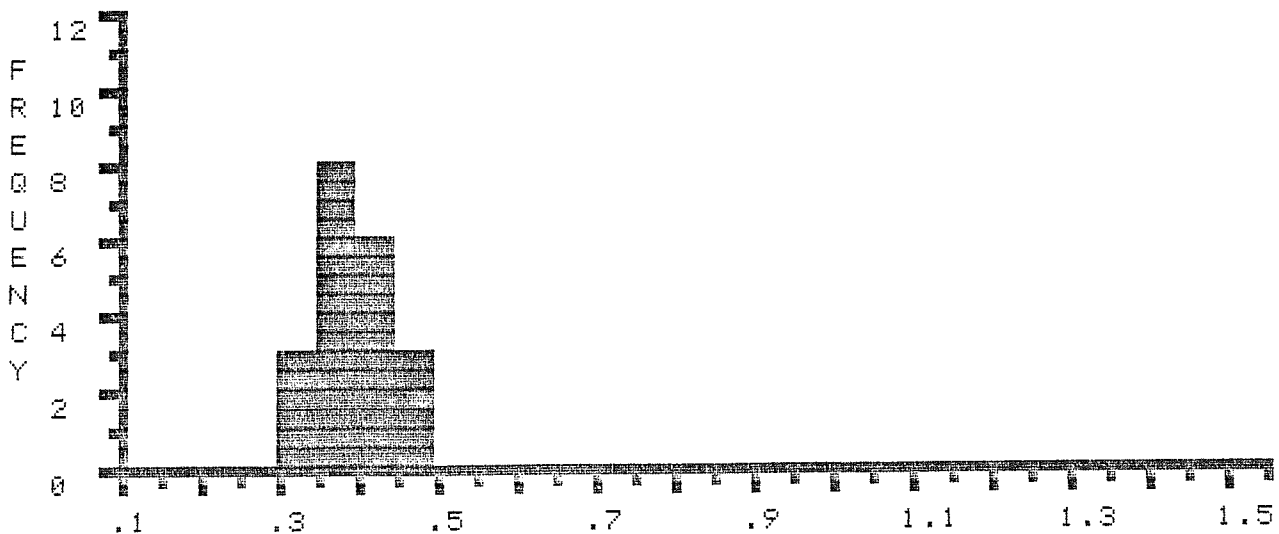
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ROW		.22	*.00	*.33	*.33	*.35	*.36	*.36	*.37	*.37
1	*.38	*.39	*.39	*.40	*.40	*.41	*.44	*.44	*.44	*.45
2	*.45	*.48	.53							

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.39	.06	22	.22	.53	8.61
*EDIT >	.39	.05	20	.32	.48	7.86

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

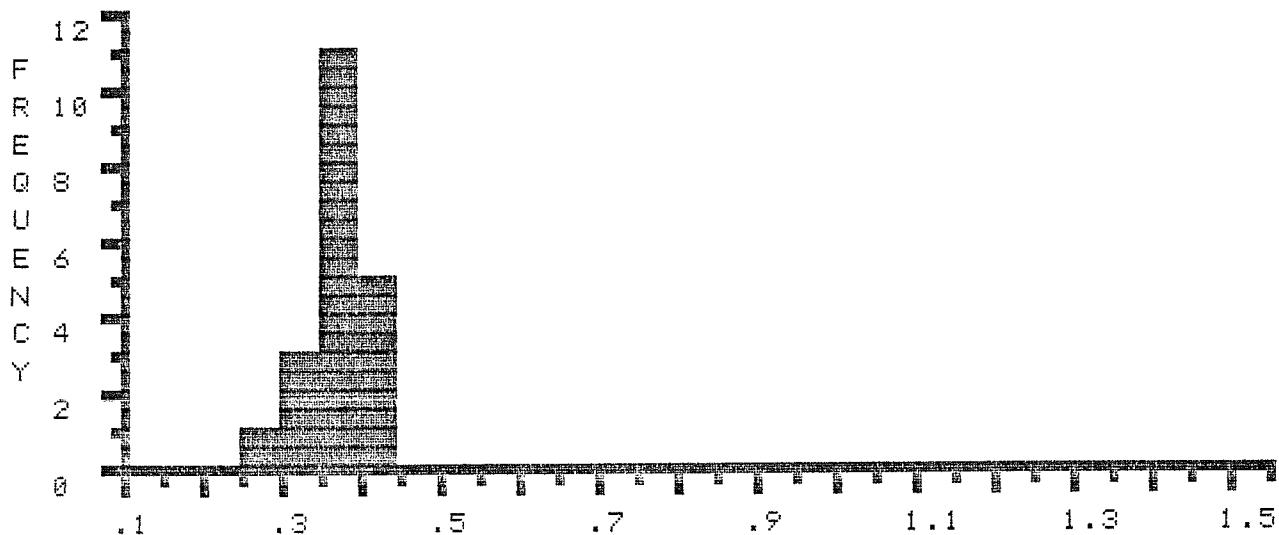


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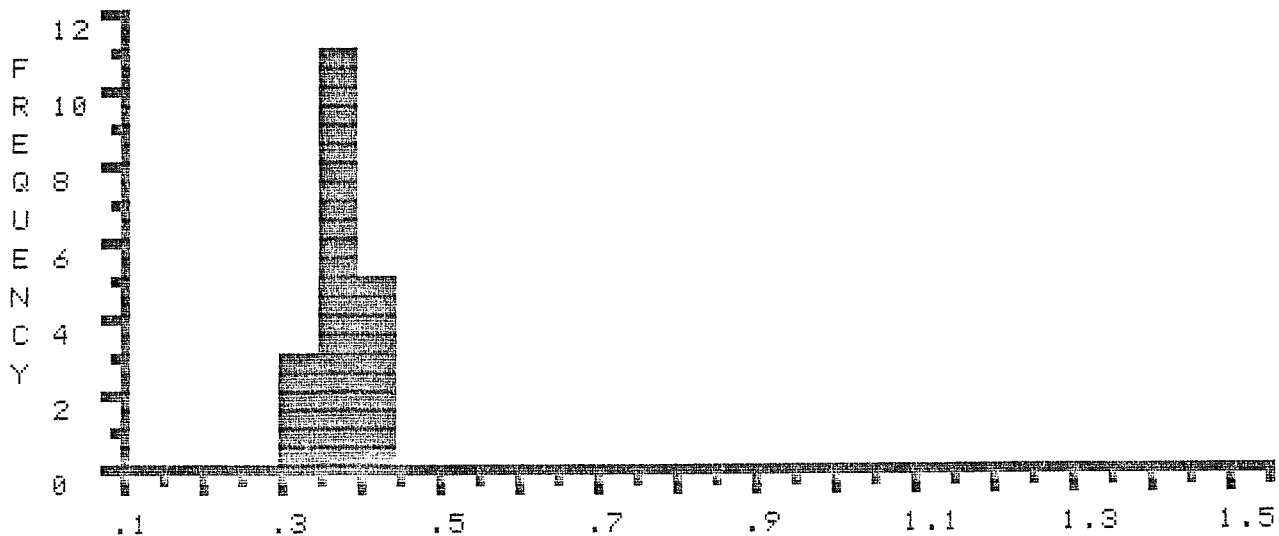
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1	*.37	*.38	*.38	*.38	*.39	*.39	*.40	*.40	*.41	*.41
2	*.42									

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.37	.04	20	.26	.42	7.36
*EDIT >	.37	.03	19	.32	.42	7.1

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

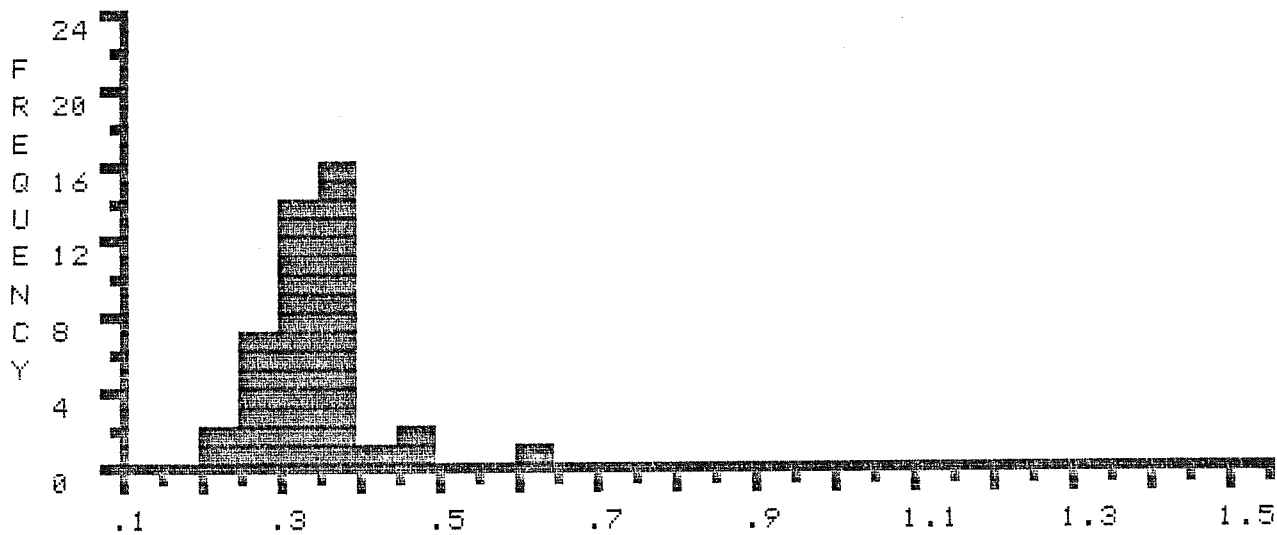


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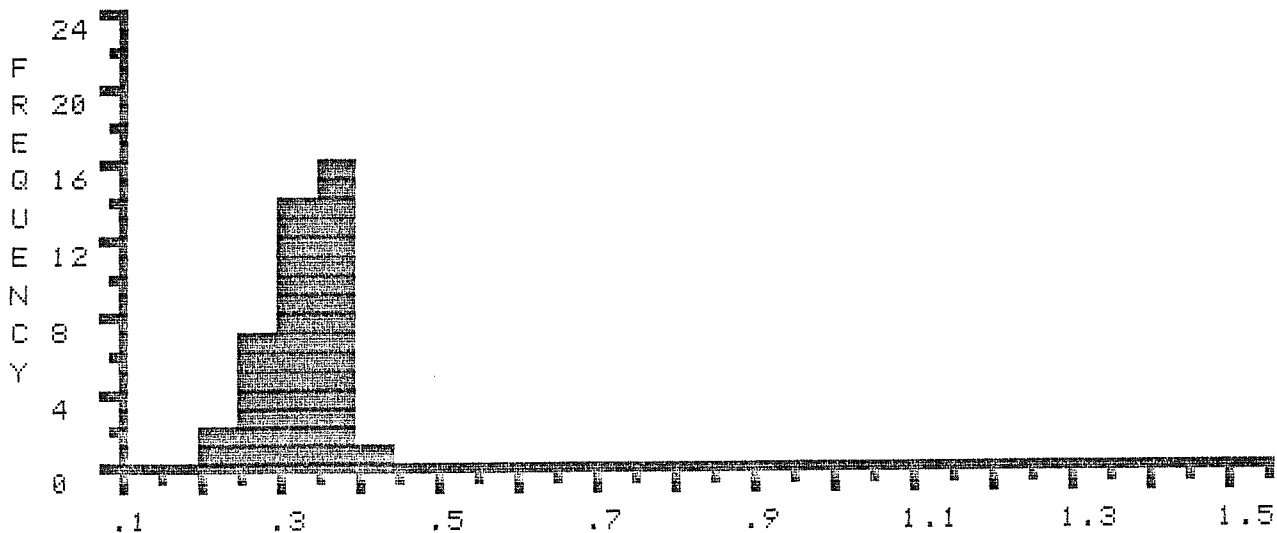
COL>	0	1	2	3	4	5	6	7	8	9
ROW		*.23	*.24	*.25	*.26	*.26	*.28	*.29	*.29	*.29
1	*.30	*.31	*.32	*.32	*.32	*.32	*.33	*.34	*.34	*.34
2	*.34	*.34	*.34	*.34	*.35	*.35	*.35	*.35	*.35	*.36
3	*.36	*.36	*.37	*.37	*.37	*.37	*.37	*.38	*.39	*.39
4	*.41	.45	.47	.62						

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.34	.07	43	.23	.62	14.78
*EDIT >	.33	.04	40	.23	.41	13.24

% R E F L E C T A N C E



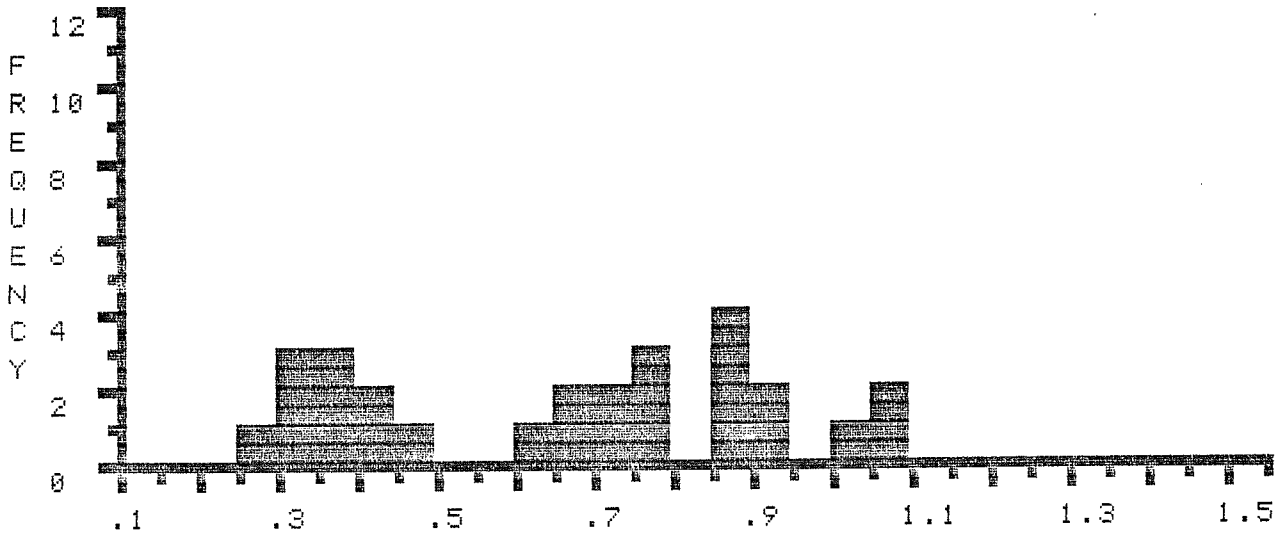
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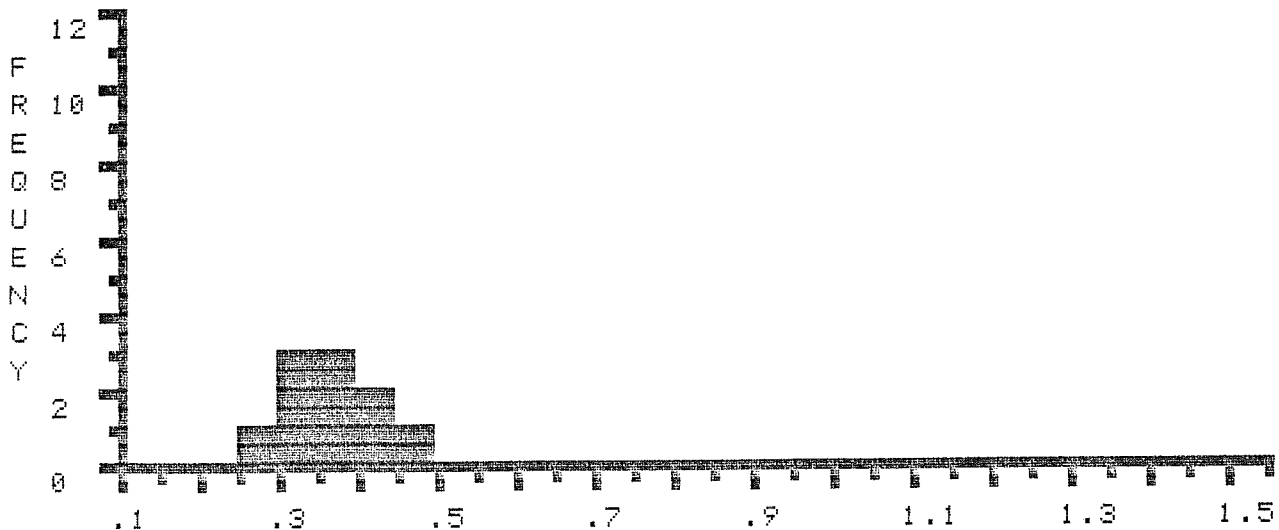
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COL>	0	1	2	3	4	5	6	7	8	9
ROW		*.29	*.30	*.32	*.32	*.38	*.38	*.38	*.40	*.43
1	*.46	.62	.66	.67	.72	.74	.75	.76	.76	.85
2	.85	.87	.88	.90	.91	1.02	1.06	1.07		
	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM				
TOTAL >	.66	.25	27	.29	1.07	17.75				
*EDIT >	.37	.06	10	.29	.46	3.66				

% R E F L E C T A N C E



% R E F L E C T A N C E * * E D I T E D * *

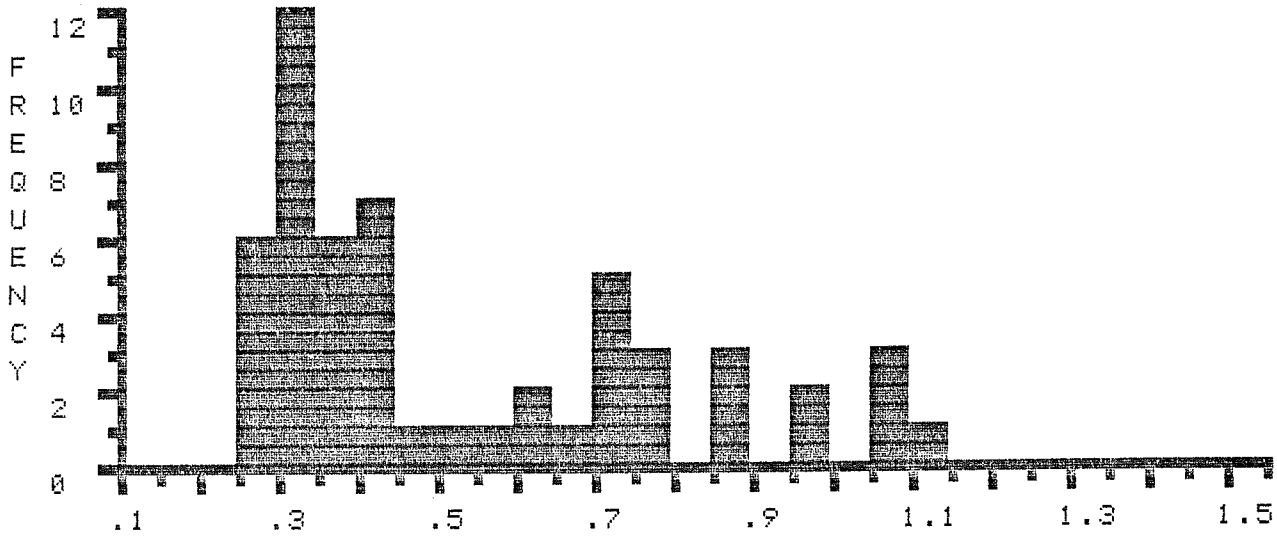


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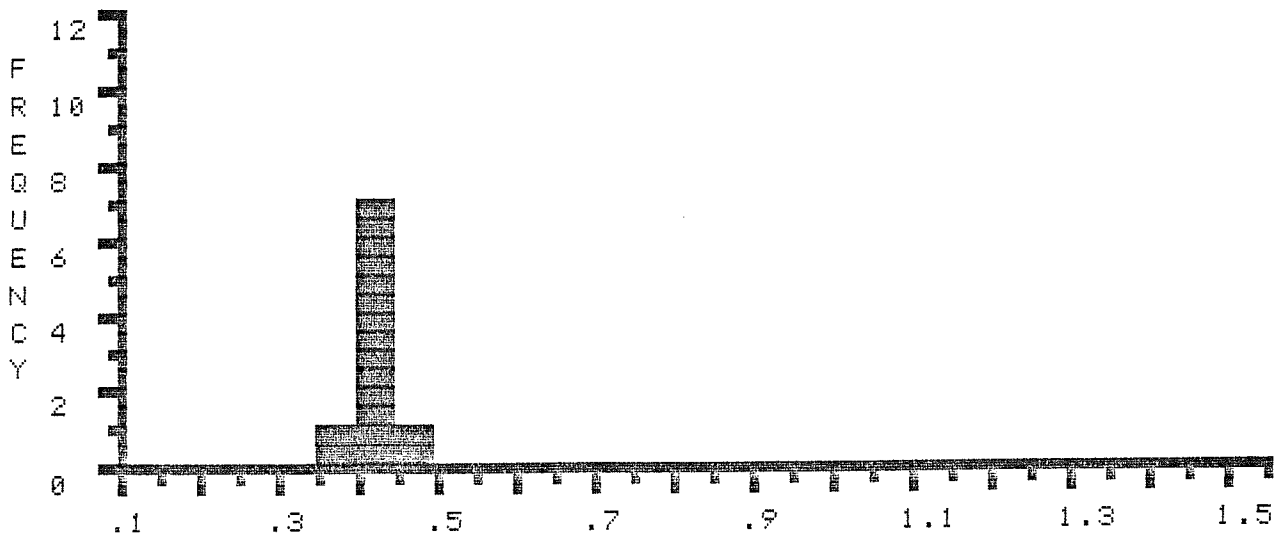
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.25	.27	.27	.28	.29	.29	.31	.31	.32
1	.32	.32	.33	.34	.34	.34	.34	.34	.34	.35
2	.35	.36	.36	.36	*.38	*.40	*.41	*.41	*.42	*.43
3	*.43	*.44	*.45	.52	.56	.62	.62	.68	.70	.71
4	.72	.73	.74	.75	.76	.77	.85	.86	.89	.96
5	.98	1.07	1.07	1.08	1.12					

	MEAN	STAND. DEV.	PTS	MIN	MAX	SUM
TOTAL >	.54	.26	54	.25	1.12	28.91
*EDIT >	.42	.02	9	.38	.45	3.77

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

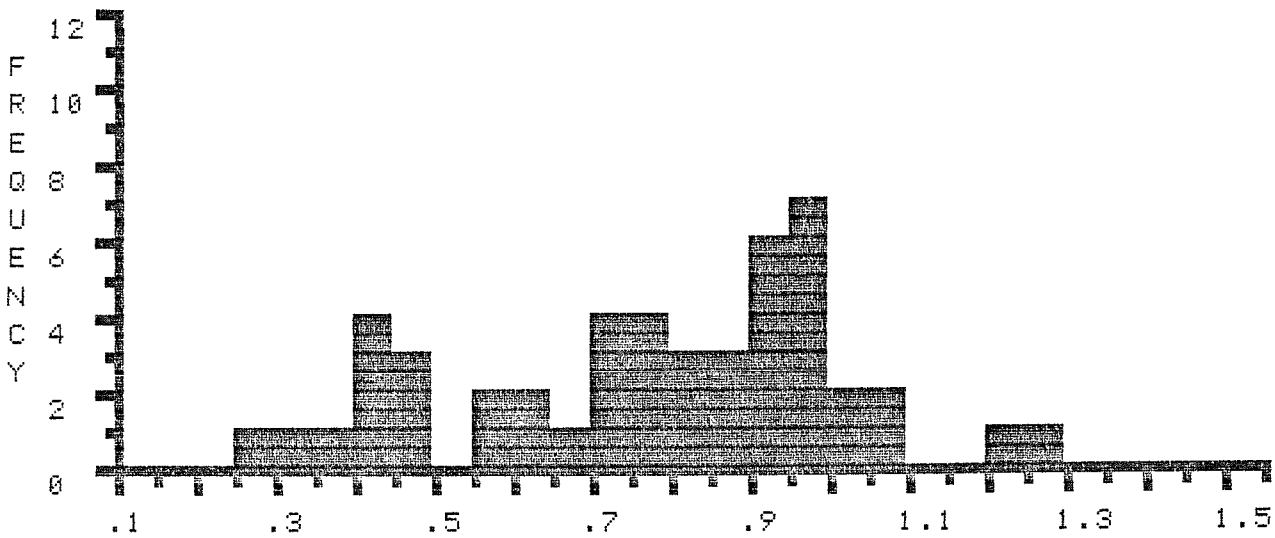


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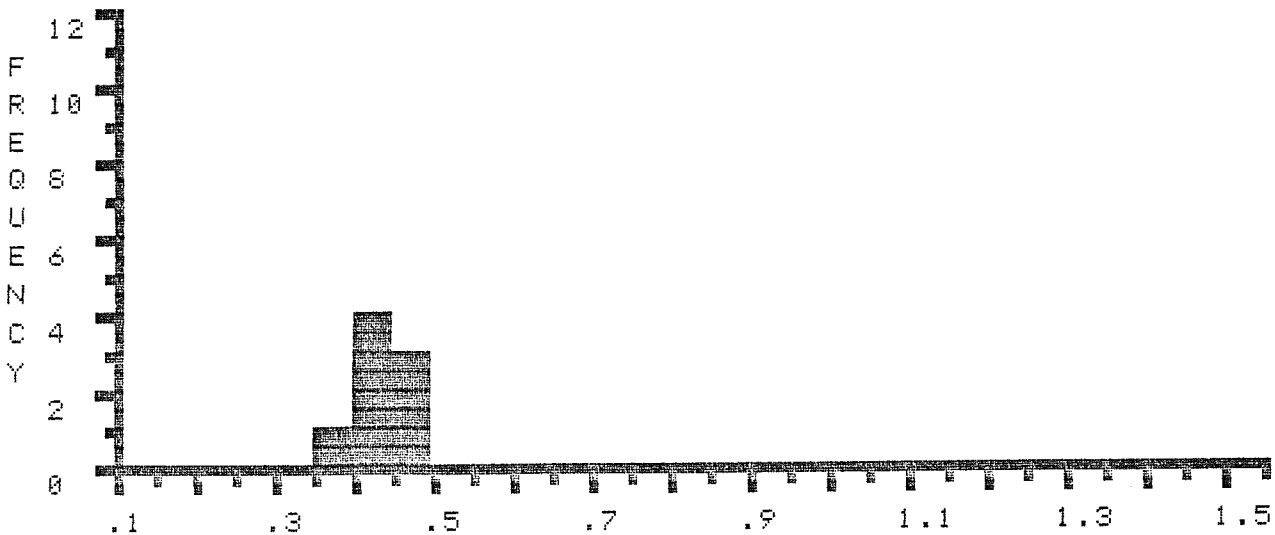
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.25	.34	*.38	*.42	*.43	*.44	*.44	*.45	*.48
1	*.49	.57	.59	.61	.64	.67	.70	.73	.73	.74
2	.76	.78	.78	.79	.80	.80	.84	.87	.87	.89
3	.90	.90	.91	.92	.92	.93	.95	.95	.97	.97
4	.97	.97	.99	1.00	1.03	1.06	1.08	1.23	1.29	

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.78	.24	48	.25	1.29	37.22
*EDIT >	.44	.03	8	.38	.49	3.53

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

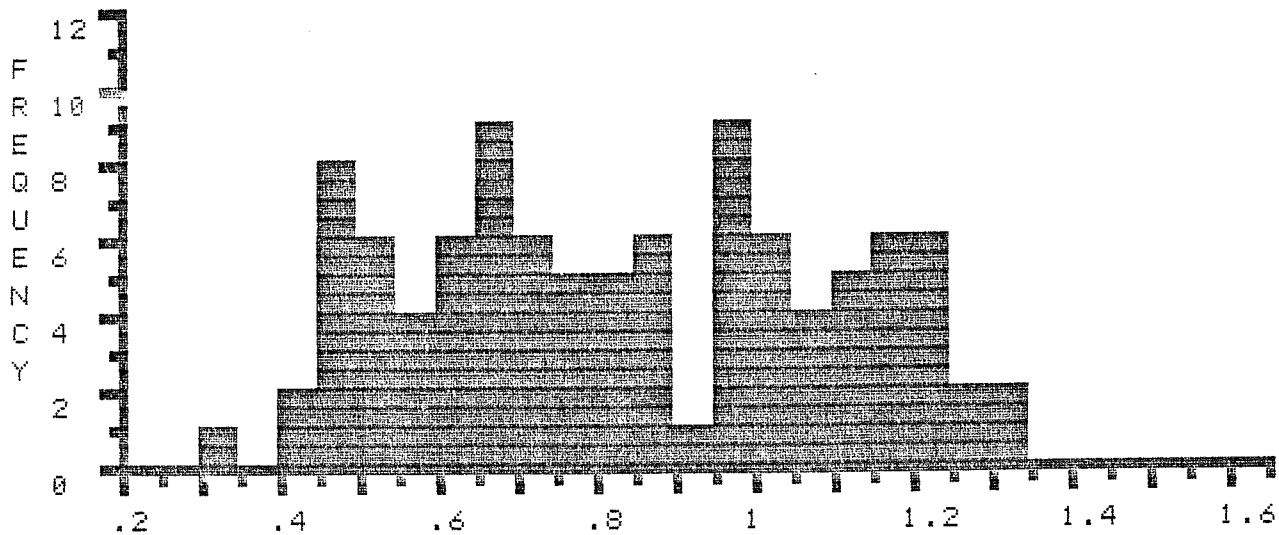


FILE >> K0219C DESCRIPTION FOLLOWS :
 DEPTH 8040-8070', WENONAH J-75, MPA, JUL-31-86

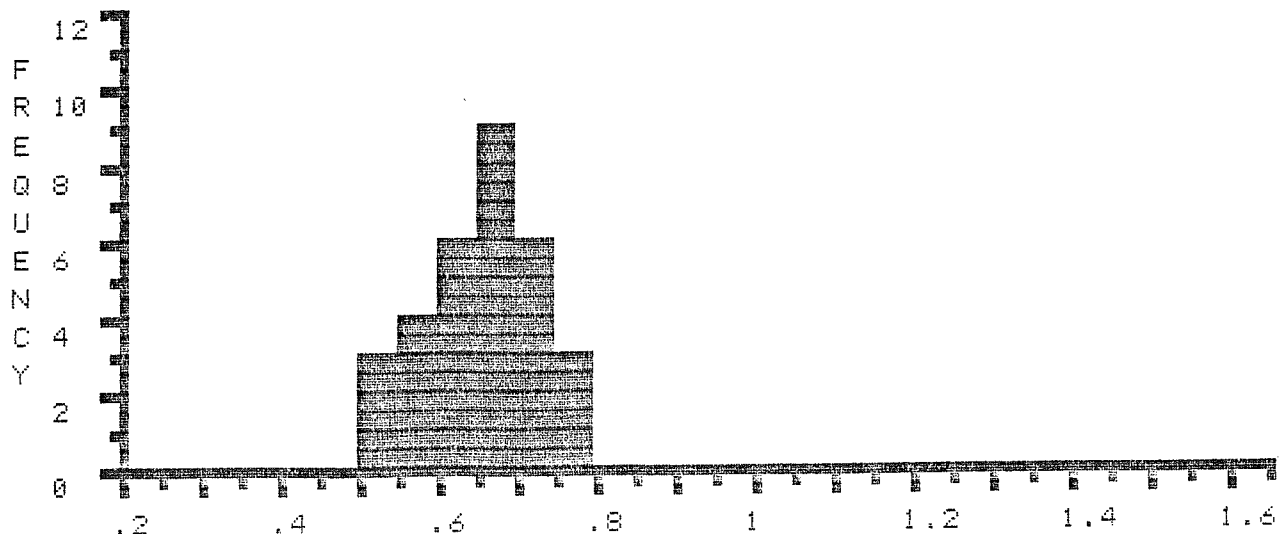
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.34	.40	.42	.45	.47	.47	.48	.48	.48
1	.49	.49	.50	.50	.51	*.53	*.54	*.54	*.55	*.55
2	*.59	*.59	*.60	*.61	*.62	*.62	*.64	*.64	*.67	*.68
3	*.68	*.68	*.68	*.68	*.69	*.69	*.69	*.71	*.71	*.71
4	*.72	*.74	*.74	*.76	*.76	*.76	.77	.78	.80	.80
5	.80	.82	.83	.85	.86	.86	.86	.88	.88	.90
6	.95	.96	.96	.96	.96	.97	.97	.98	.99	1.00
7	1.02	1.02	1.03	1.04	1.04	1.05	1.06	1.07	1.09	1.11
8	1.11	1.11	1.12	1.13	1.15	1.15	1.15	1.18	1.18	1.19
9	1.20	1.20	1.21	1.21	1.22	1.24	1.28	1.28	1.31	1.33

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.84	.26	99	.34	1.33	82.72
*EDIT >	.66	.07	31	.53	.76	20.37

% R E F L E C T A N C E



% R E F L E C T A N C E * * E D I T E D * *

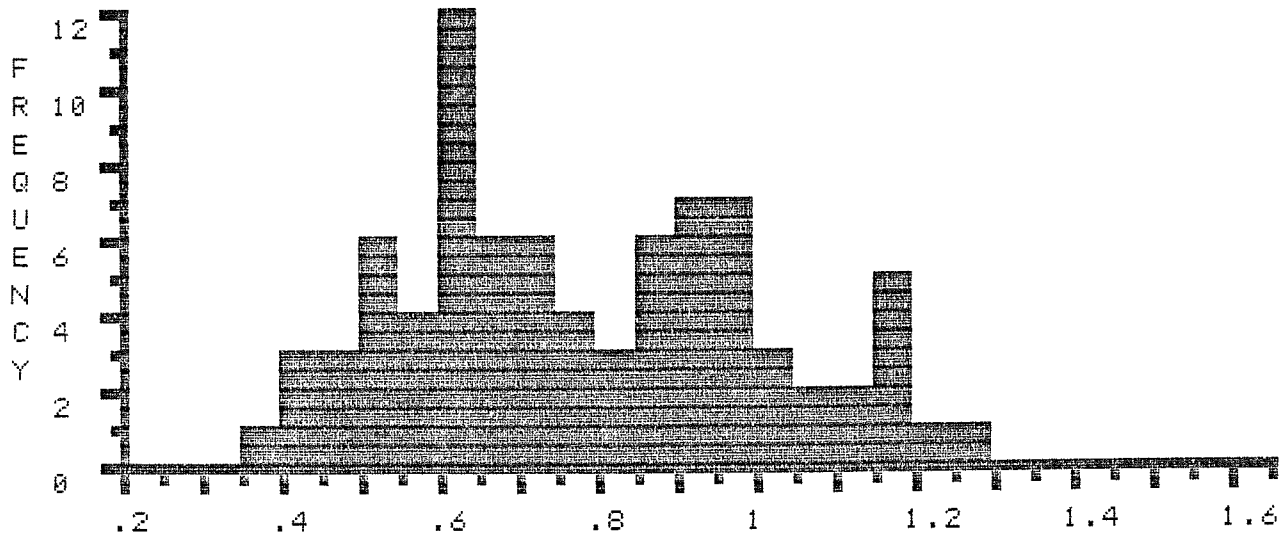


FILE >> K0220A DESCRIPTION FOLLOWS :
 DEPTH 8440-8470', WENONAH J-75, MPA, JUL-18-86

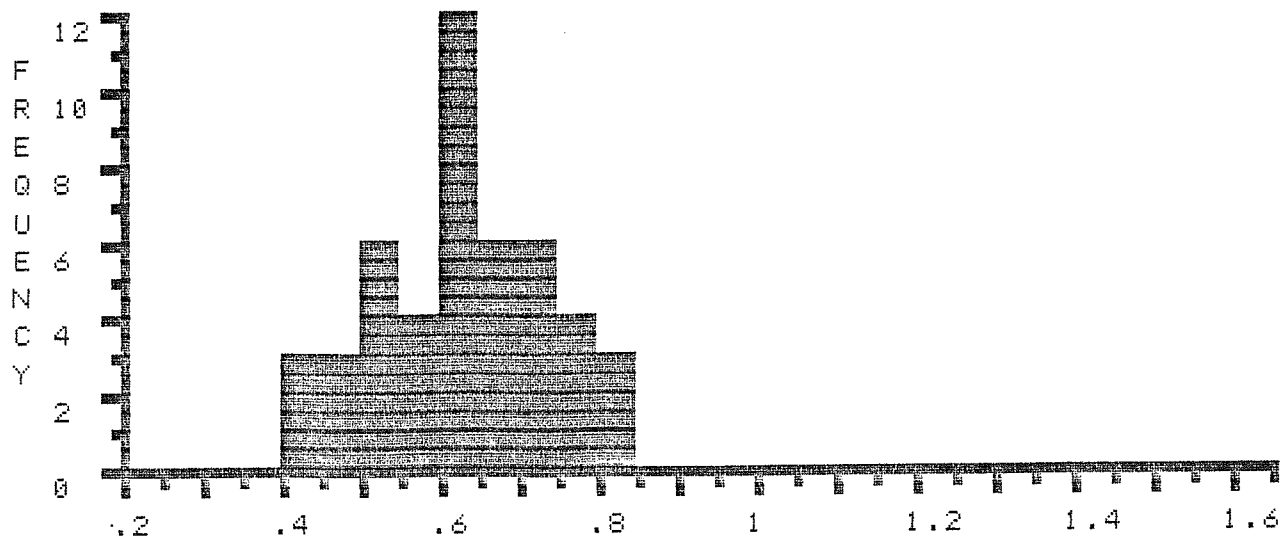
COL>	0	1	2	3	4	5	6	7	8	9
RDW		.37	*.43	*.43	*.43	*.45	*.45	*.46	*.50	*.50
1	*.51	*.53	*.54	*.54	*.55	*.58	*.59	*.59	*.60	*.60
2	*.61	*.61	*.61	*.62	*.62	*.63	*.64	*.64	*.64	*.64
3	*.65	*.67	*.67	*.67	*.67	*.69	*.70	*.71	*.72	*.72
4	*.72	*.74	*.76	*.77	*.78	*.79	*.80	*.81	*.83	.86
5	.86	.86	.88	.89	.89	.91	.93	.93	.93	.93
6	.94	.94	.95	.95	.96	.97	.97	.98	.98	1.01
7	1.01	1.03	1.05	1.09	1.12	1.13	1.15	1.16	1.16	1.17
8	1.19	1.21	1.26							

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.78	.22	82	.37	1.26	64.03
*EDIT >	.63	.11	47	.43	.83	29.41

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

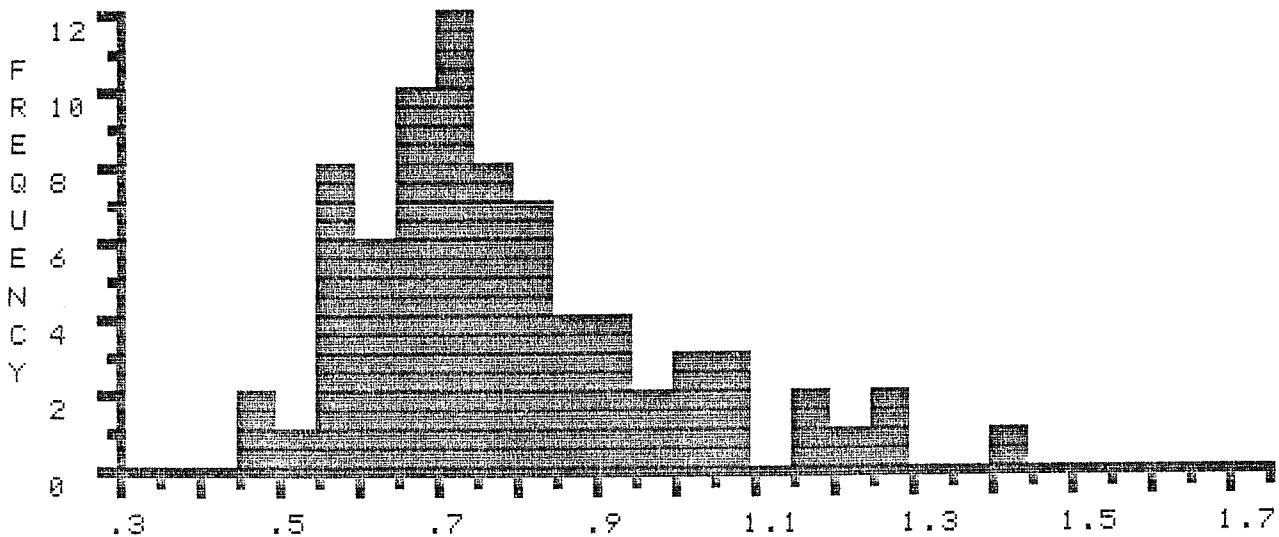


FILE >> K0220B DESCRIPTION FOLLOWS :
 DEPTH 9240-9270', WENONAH J-75, MPA, JUL-18-86

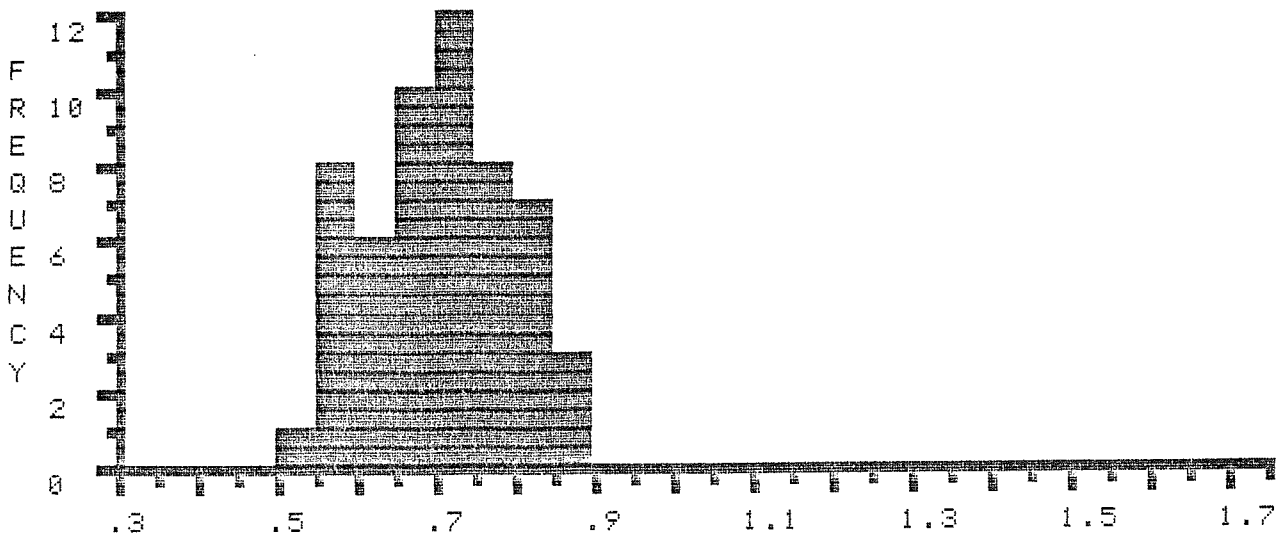
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.47	.47	*.53	*.55	*.56	*.57	*.57	*.58	*.59
1	*.59	*.59	*.60	*.60	*.62	*.63	*.63	*.64	*.65	*.65
2	*.67	*.67	*.68	*.68	*.68	*.69	*.69	*.69	*.70	*.70
3	*.70	*.70	*.71	*.72	*.72	*.72	*.74	*.74	*.74	*.74
4	*.75	*.75	*.75	*.76	*.76	*.77	*.77	*.78	*.80	*.81
5	*.82	*.82	*.83	*.84	*.84	*.85	*.85	*.86	.89	.91
6	.92	.92	.92	.98	.99	1.00	1.01	1.02	1.05	1.05
7	1.06	1.16	1.17	1.21	1.25	1.27	1.40			

	MEAN	STAND. DEV.	PTS	MIN	MAX	SUM
TOTAL >	.79	.19	76	.47	1.40	59.76
*EDIT >	.70	.09	55	.53	.86	38.64

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

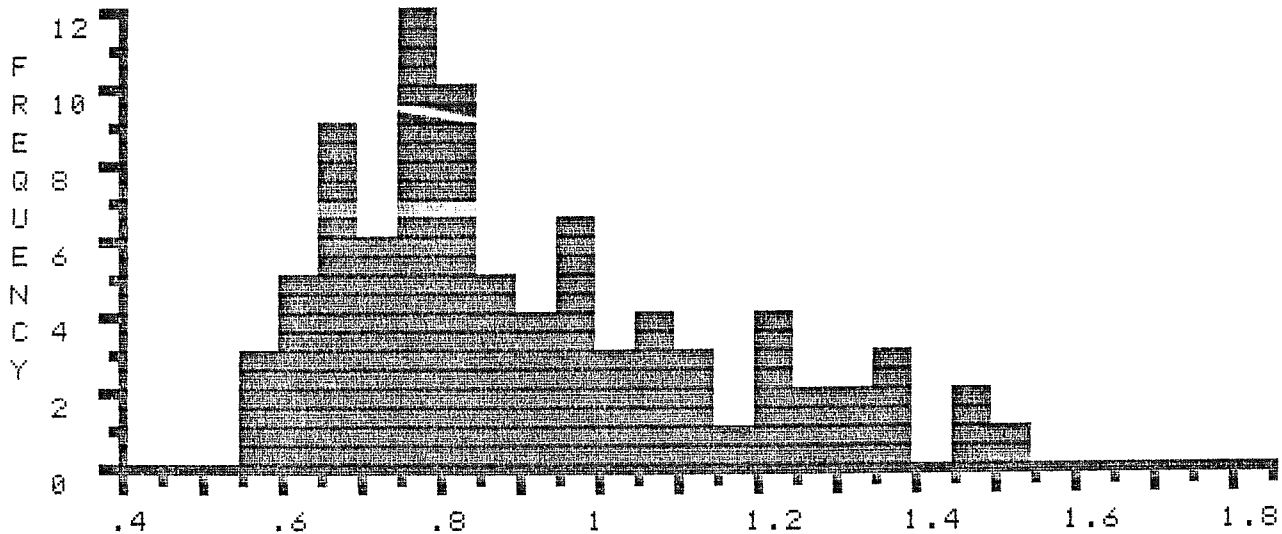


FILE >> K0220C DESCRIPTION FOLLOWS :
 DEPTH 9640-9670', WENONAH J-75, MPA, JUL-18-86

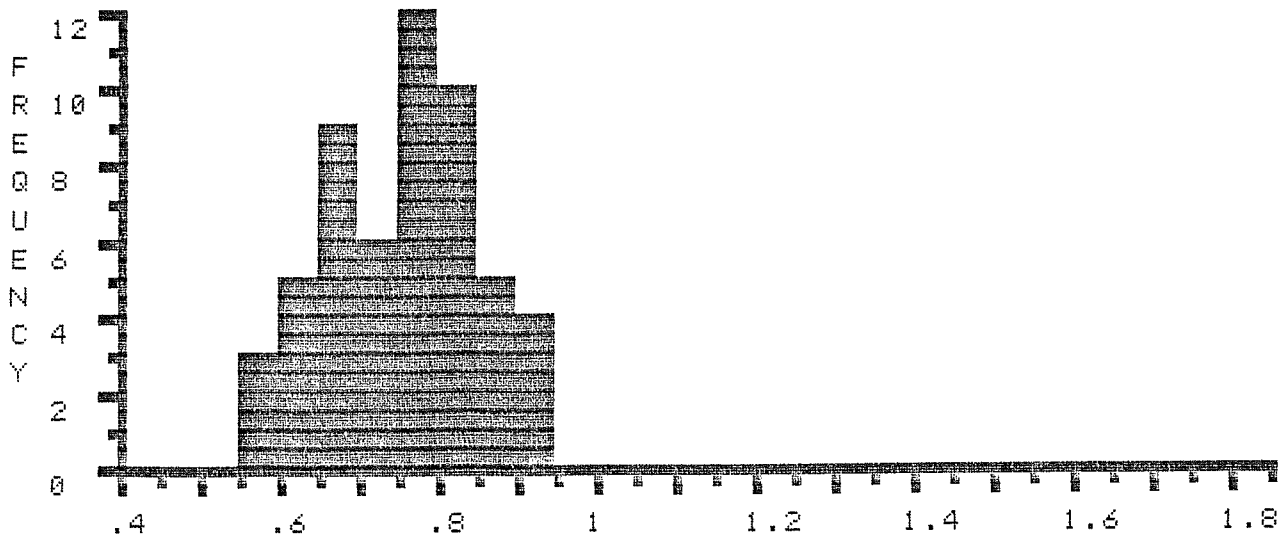
COL>	0	1	2	3	4	5	6	7	8	9
ROW		*.55	*.55	*.58	*.61	*.61	*.61	*.63	*.64	*.65
1	*.66	*.66	*.66	*.67	*.68	*.69	*.69	*.69	*.70	*.71
2	*.71	*.73	*.73	*.74	*.75	*.75	*.76	*.76	*.77	*.77
3	*.78	*.78	*.78	*.78	*.79	*.79	*.80	*.80	*.80	*.80
4	*.80	*.80	*.80	*.82	*.82	*.83	*.85	*.85	*.85	*.87
5	*.89	*.90	*.91	*.93	*.94	.96	.97	.97	.98	.98
6	.99	.99	1.01	1.02	1.04	1.07	1.07	1.07	1.08	1.11
7	1.12	1.13	1.19	1.20	1.21	1.21	1.24	1.26	1.28	1.33
8	1.34	1.35	1.35	1.35	1.45	1.47	1.52			

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.90	.23	86	.55	1.52	77.78
*EDIT >	.75	.10	54	.55	.94	40.47

% R E F L E C T A N C E



% R E F L E C T A N C E * * E D I T E D * *

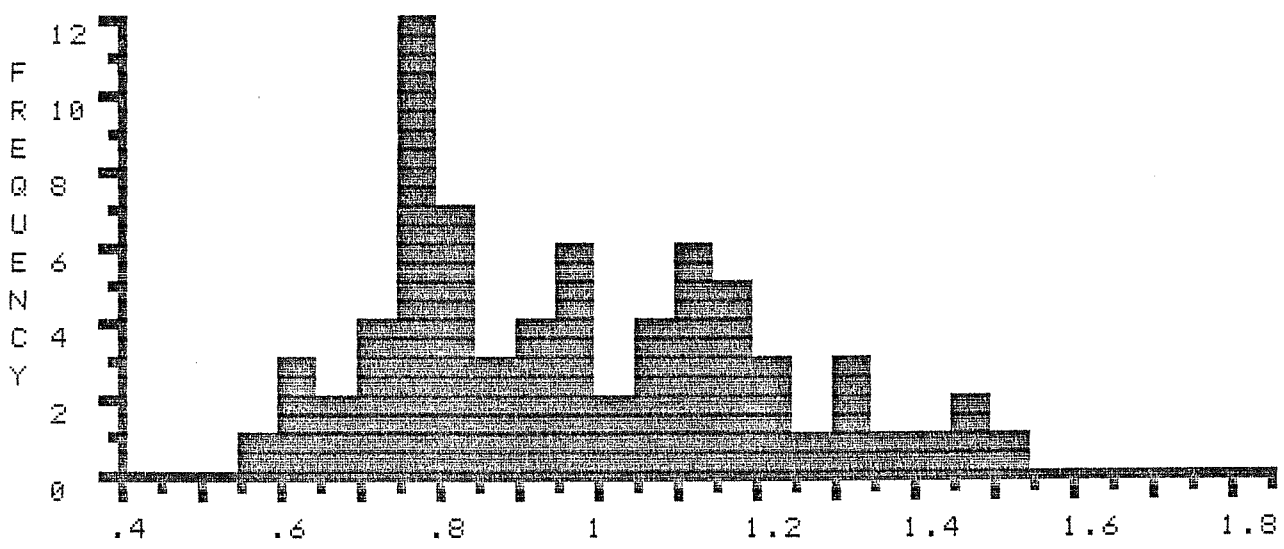


FILE >> K0221A DESCRIPTION FOLLOWS :
 DEPTH 10240-10270', WENONAH J-75, MPA, JUL-18-86

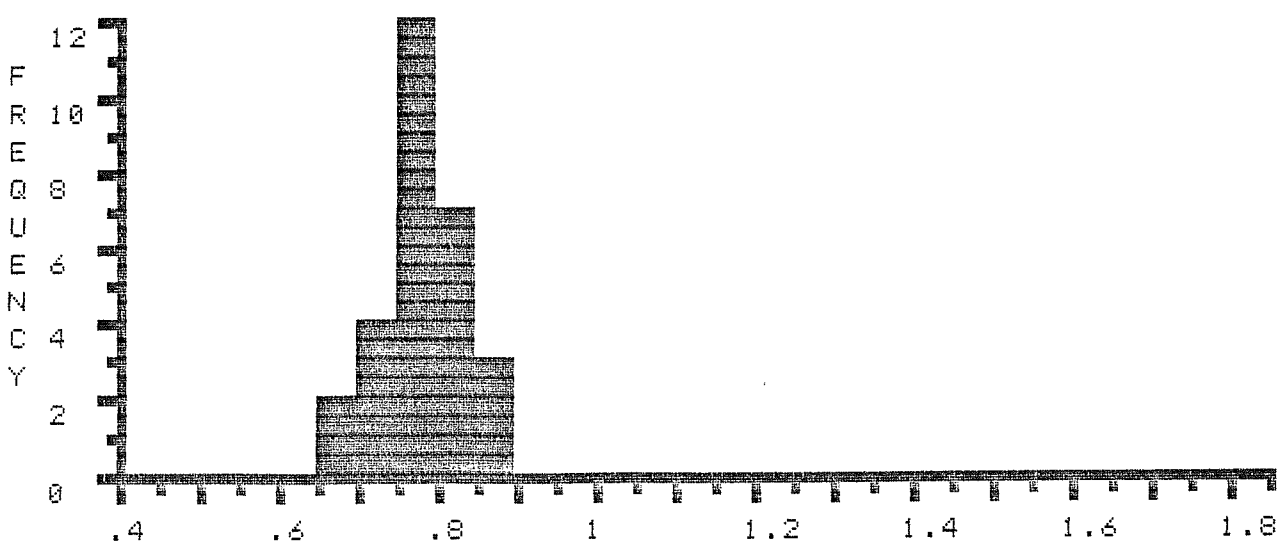
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.59	.60	.62	.64	*.69	*.69	*.72	*.73	*.73
1	*.74	*.75	*.75	*.75	*.75	*.76	*.76	*.77	*.78	*.78
2	*.78	*.79	*.79	*.80	*.82	*.82	*.82	*.83	*.83	*.83
3	*.85	*.86	*.87	.90	.91	.91	.92	.96	.97	.97
4	.98	.98	.99	1.00	1.03	1.05	1.05	1.07	1.09	1.11
5	1.11	1.11	1.12	1.14	1.14	1.15	1.16	1.17	1.18	1.19
6	1.20	1.21	1.23	1.28	1.31	1.31	1.32	1.39	1.41	1.46
7	1.49	1.51								

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.97	.23	71	.59	1.51	68.77
*EDIT >	.78	.05	28	.69	.87	21.84

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

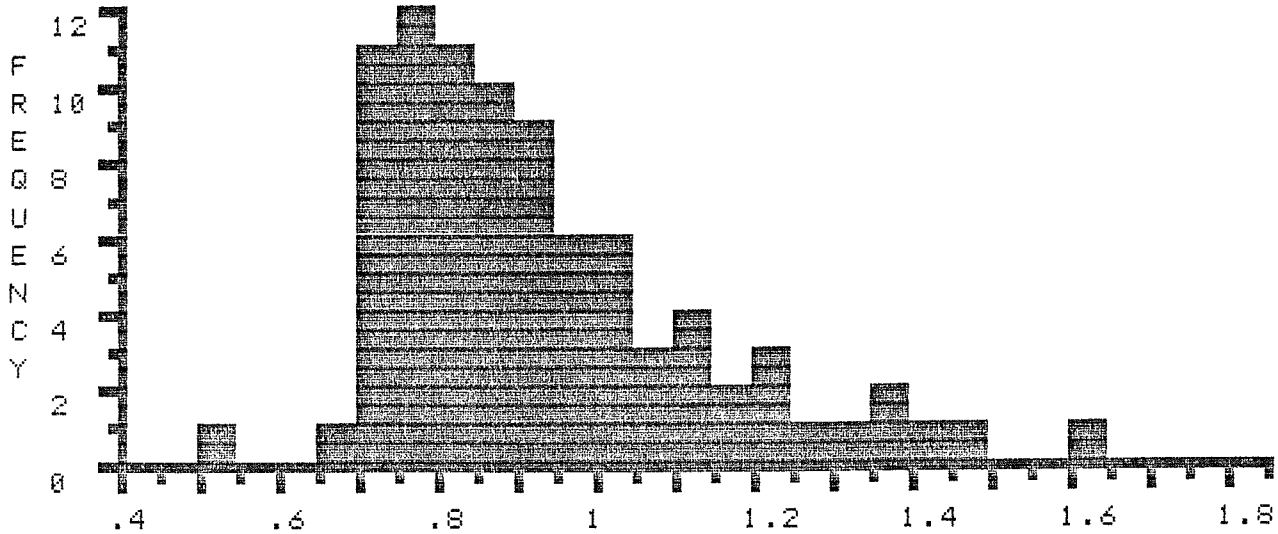


FILE >> K0221B DESCRIPTION FOLLOWS :
 DEPTH 10540-10570', WENONAH J-75, MPA, JUL-30-86

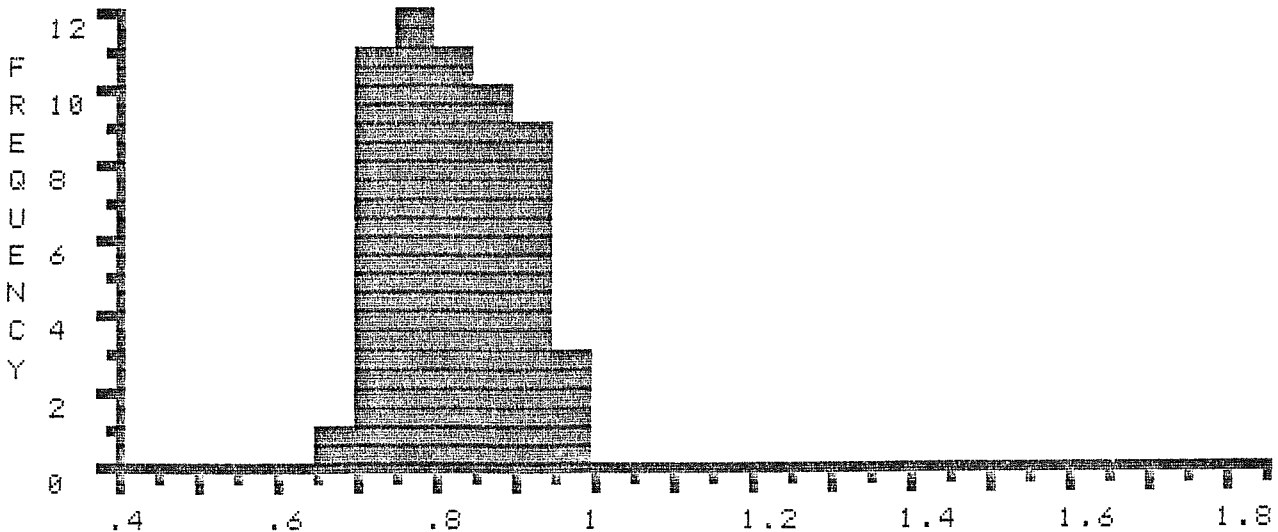
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.51	*.68	*.72	*.72	*.73	*.73	*.73	*.73	*.73
1	*.74	*.74	*.74	*.74	*.76	*.76	*.76	*.76	*.77	*.78
2	*.78	*.78	*.79	*.79	*.79	*.79	*.80	*.80	*.80	*.81
3	*.81	*.81	*.81	*.84	*.84	*.84	*.84	*.85	*.85	*.85
4	*.85	*.87	*.87	*.87	*.88	*.89	*.89	*.90	*.90	*.91
5	*.91	*.92	*.93	*.93	*.94	*.94	*.95	*.96	*.96	.98
6	.98	.98	1.00	1.01	1.02	1.02	1.03	1.03	1.06	1.06
7	1.07	1.11	1.11	1.12	1.13	1.17	1.17	1.20	1.20	1.24
8	1.27	1.32	1.36	1.38	1.42	1.49	1.62			

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	.93	.20	86	.51	1.62	79.92
*EDIT >	.82	.07	57	.68	.96	46.86

% R E F L E C T A N C E



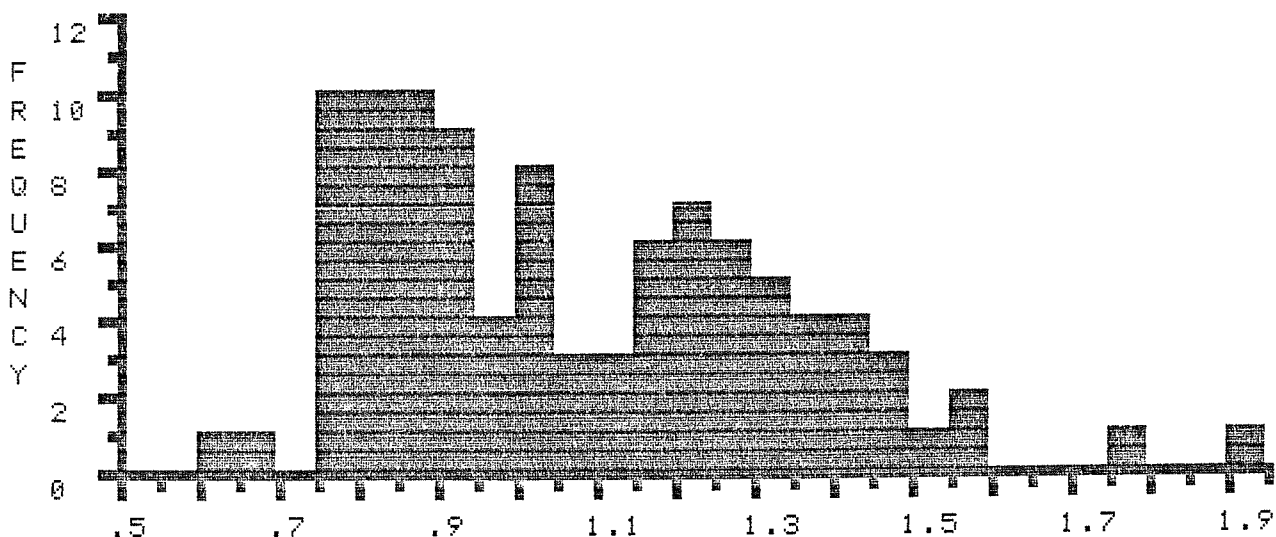
% R E F L E C T A N C E * * EDITED * *



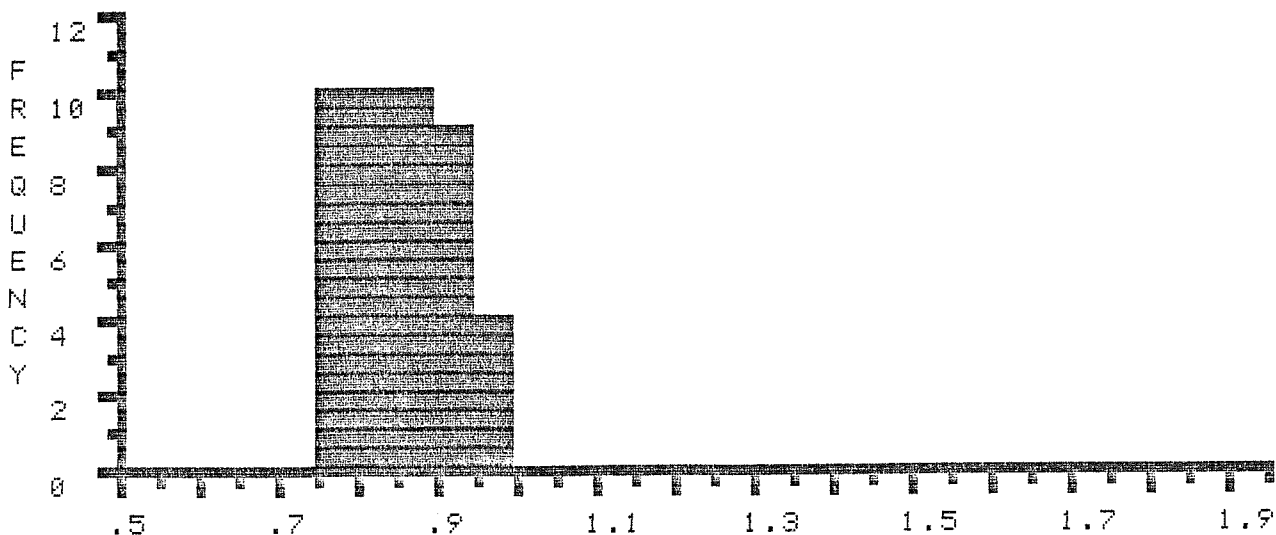
FILE >> K0221C DESCRIPTION FOLLOWS :
 DEPTH 10840-10870', WENONAH J-75, MPA, JUL-30-86

COL>	0	1	2	3	4	5	6	7	8	9
ROW		.64	.67	*.75	*.75	*.76	*.76	*.77	*.78	*.78
1	*.78	*.79	*.79	*.80	*.81	*.82	*.82	*.82	*.83	*.83
2	*.83	*.83	*.83	*.85	*.85	*.86	*.86	*.86	*.86	*.88
3	*.88	*.88	*.89	*.90	*.90	*.91	*.92	*.92	*.92	*.93
4	*.94	*.94	*.95	*.95	*.96	*.98	1.01	1.03	1.03	1.03
5	1.04	1.04	1.04	1.04	1.05	1.07	1.09	1.10	1.13	1.13
6	1.15	1.15	1.16	1.17	1.18	1.19	1.20	1.20	1.21	1.22
7	1.22	1.23	1.23	1.27	1.27	1.28	1.28	1.28	1.29	1.30
8	1.31	1.33	1.34	1.34	1.35	1.35	1.35	1.38	1.40	1.41
9	1.42	1.44	1.46	1.47	1.49	1.50	1.58	1.59	1.76	1.91
	MEAN	STAND. DEV.		PTS	MIN	MAX	SUM			
TOTAL >	1.08	.26		99	.64	1.91	106.52			
*EDIT >	.85	.06		43	.75	.98	36.72			

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

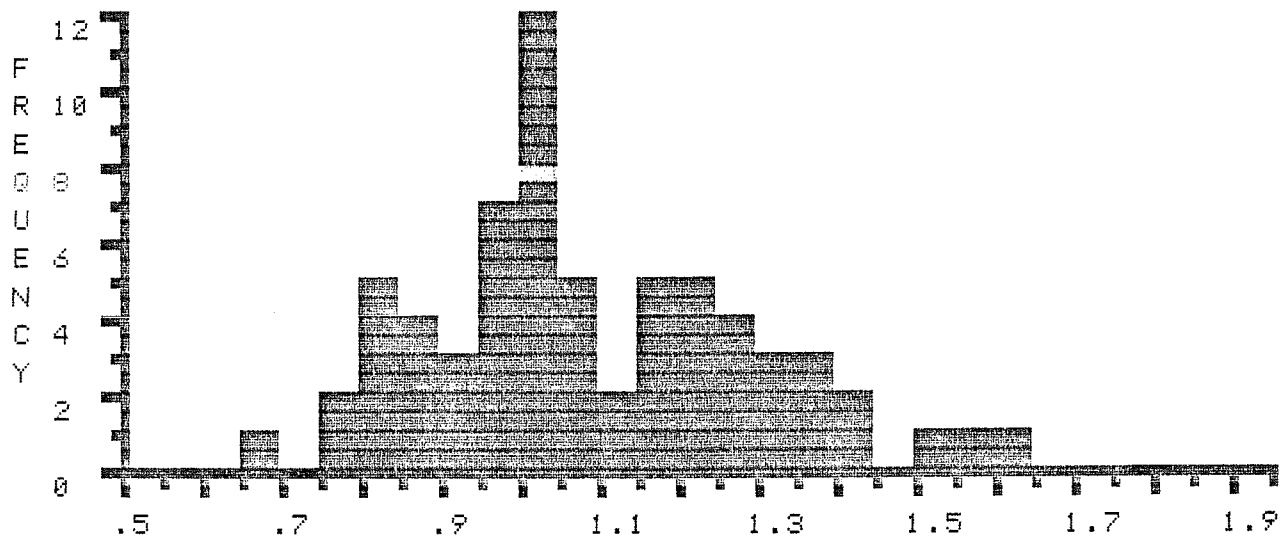


FILE >> K0222A DESCRIPTION FOLLOWS :
 DEPTH 11140-11170', WENONAH J-75, MPA, JUL-30-86

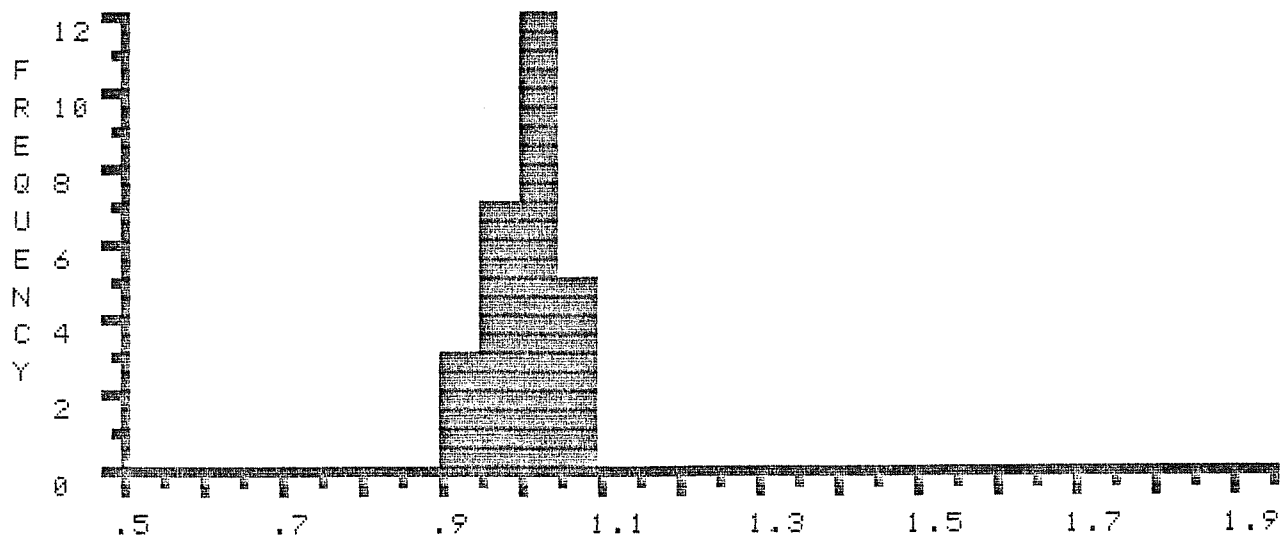
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.67	.77	.77	.80	.82	.82	.83	.84	.85
1	.86	.86	.87	*.91	*.92	*.94	*.95	*.97	*.98	*.98
2	*.99	*.99	*.99	*1.00	*1.00	*1.01	*1.02	*1.02	*1.03	*1.03
3	*1.03	*1.03	*1.03	*1.04	*1.04	*1.05	*1.05	*1.08	*1.09	*1.09
4	1.13	1.13	1.15	1.15	1.15	1.16	1.17	1.20	1.20	1.21
5	1.23	1.24	1.25	1.26	1.27	1.28	1.32	1.32	1.33	1.37
6	1.39	1.39	1.41	1.43	1.52	1.57	1.63			

TOTAL >	MEAN	STAND. DEV.	PTS	MIN	MAX	SUM
>	1.09	.20	66	.67	1.63	71.88
*EDIT >	1.01	.05	27	.91	1.09	27.26

% R E F L E C T A N C E



% R E F L E C T A N C E * * E D I T E D * *

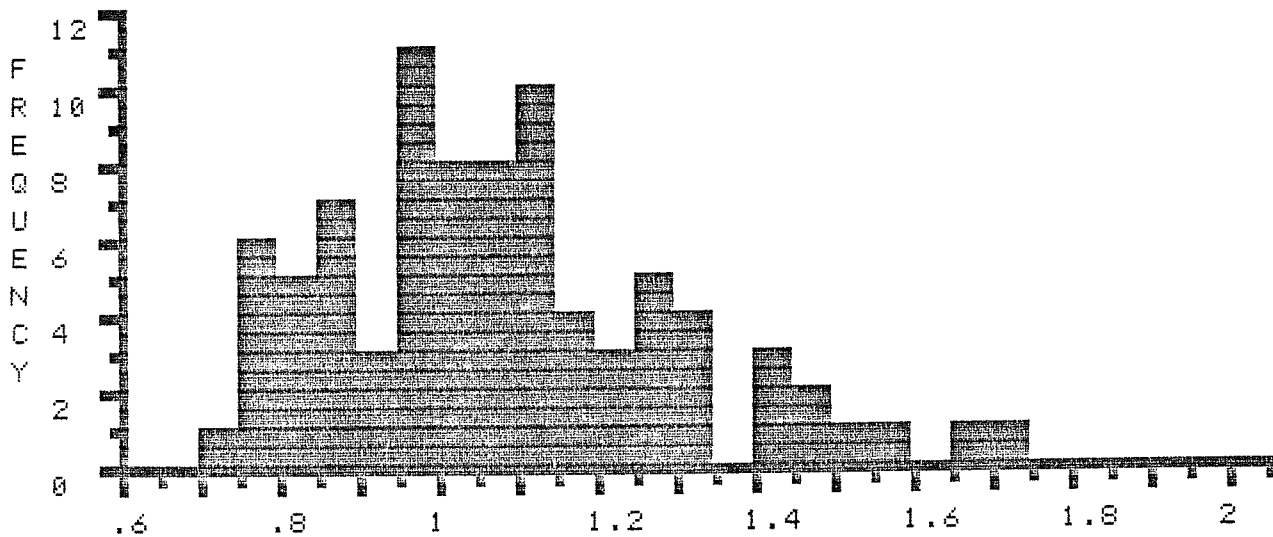


FILE >> K0222B DESCRIPTION FOLLOWS :
 DEPTH 11440-11470', WENONAH J-75, MPA, JUL-30-86

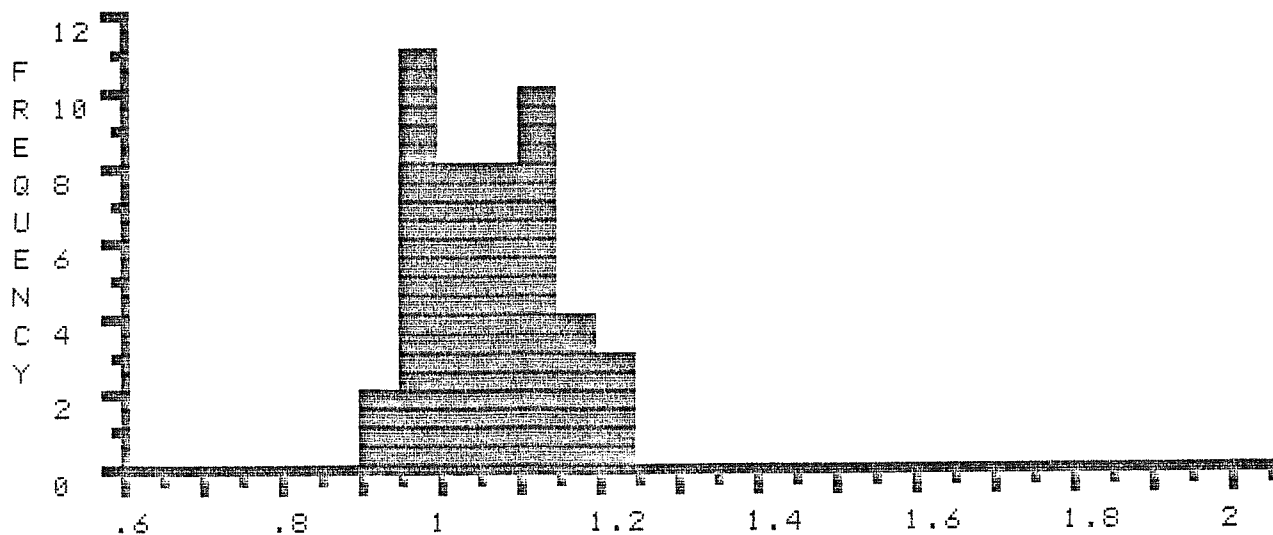
COL>	0	1	2	3	4	5	6	7	8	9
ROW		.72	.76	.77	.77	.77	.77	.77	.80	.81
1	.81	.82	.84	.85	.85	.86	.87	.87	.87	.88
2	.90	*.93	*.94	*.95	*.96	*.96	*.97	*.97	*.97	*.97
3	*.97	*.98	*.99	*.99	*1.01	*1.02	*1.03	*1.03	*1.03	*1.03
4	*1.04	*1.04	*1.06	*1.06	*1.08	*1.09	*1.09	*1.09	*1.09	*1.09
5	*1.10	*1.10	*1.11	*1.11	*1.13	*1.13	*1.13	*1.13	*1.14	*1.14
6	*1.16	*1.18	*1.18	*1.19	*1.20	*1.22	*1.24	1.28	1.28	1.28
7	1.29	1.29	1.31	1.32	1.32	1.34	1.41	1.43	1.44	1.47
8	1.49	1.53	1.55	1.66	1.71					

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	1.08	.22	84	.72	1.71	90.78
*EDIT >	1.07	.08	46	.93	1.24	49.02

% R E F L E C T A N C E



% R E F L E C T A N C E * * E D I T E D * *

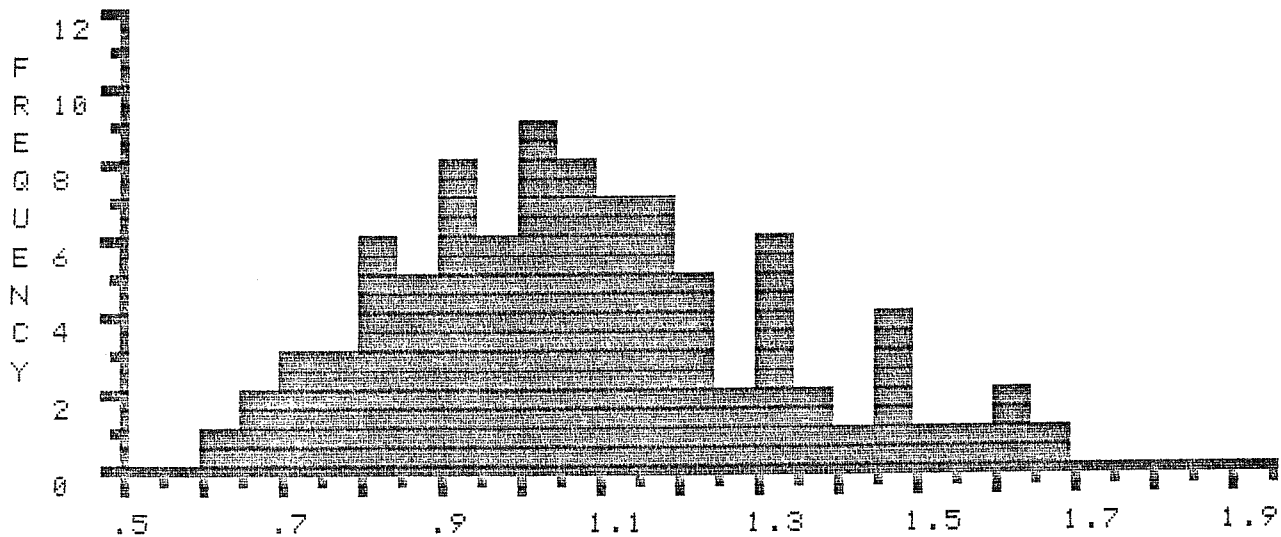


FILE >> K0222C DESCRIPTION FOLLOWS :
 DEPTH 11840-11870', WENONAH J-75, MPA, JUL-3-86

COL>	0	1	2	3	4	5	6	7	8	9
ROW		.63	.67	.68	.70	.70	.73	.75	.77	.78
1	.81	.81	.83	.84	.84	.84	.85	.87	.88	.88
2	.88	.91	.93	.93	.93	.93	*.94	*.94	*.94	*.95
3	*.95	*.97	*.97	*.99	*.99	*1.00	*1.00	*1.00	*1.01	*1.01
4	*1.02	*1.03	*1.03	*1.03	*1.05	*1.05	*1.05	*1.05	*1.05	*1.07
5	*1.07	*1.09	*1.10	*1.10	*1.11	*1.12	*1.12	*1.13	*1.14	*1.16
6	*1.16	*1.16	*1.18	*1.18	*1.19	*1.19	*1.20	*1.21	*1.22	*1.23
7	*1.24	*1.25	*1.27	1.30	1.30	1.31	1.31	1.33	1.34	1.37
8	1.38	1.43	1.46	1.47	1.47	1.48	1.53	1.55	1.61	1.62
9	1.68									

	MEAN	STAND.DEV.	PTS	MIN	MAX	SUM
TOTAL >	1.08	.24	90	.63	1.68	97.22
*EDIT >	1.08	.10	47	.94	1.27	50.91

% R E F L E C T A N C E



% R E F L E C T A N C E * * EDITED * *

