

Report No. EPGs-DOM.32-84MPA

Vitrinite reflectance (Ro) on the  
dispersed organics in the Mobil  
Gulf Adolphus 2K-41.

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Vitrinite reflectance (Ro) on the dispersed organics in the Mobil Gulf Adolphus 2K-41.

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GSC Locality No.: D92

Location: 47°00'40.56"N; 48°22'06.47"W

R.T. Elevation: 103'

Sample Interval: 1300-12000'

Total Depth: 12000'

Water Depth: 375'

Release Date: September 26, 1975

Interval Studied: 4580-8480'

Vitrinite reflectance has been determined on 12 samples (Table II) from the Mobil Gulf Adolphus 2K-41, which was classified as a wildcat well on the Grand Banks located approximately 354km east of St. John's, Newfoundland. Data acquisition and manipulation for this report utilized the Zeiss Photo-multiplier III Zonax microcomputer system. Sample preparation was as given in Appendix 1. The analysis of the well revealed the thermal maturation intervals given in Table I. Specific maturation levels as set out were based on those by Dow (1977) (see also Report No. EPGS-DOM.9-83MPA).

TABLE I

Inferred Thermal Maturation LevelsDetermined:

Above 3812'	0.4	% Ro	immature
3812-6432'	0.4 - 0.5	% Ro	immature approaching maturity
6432-8573'	0.5 - 0.6	% Ro	marginally mature
8550'	0.6	% Ro	peak of oil generation

Projected:

12000' T.D.	0.80	% Ro	still in oil window
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Remarks

The sample coverage of vitrinite reflectance data for this well (Figure 1) was limited to the mid section (4580-8480') with an obvious gap over the lower section (8400-12000' T.D.). Sufficient kerogen material was unavailable over this lower section, which was largely due to the predominance of redbeds and salt below 9224' (well history). The coverage over the mid section was good with

evenly spaced sample depths and minimum scatter of the values about the best fit RMS line. This coverage allows a fairly confident determination of the thermal maturation levels over the mid section of the well. The important depth to the top of the 'oil window'  $\approx$  0.5% Ro was well defined by this data set.

Drill stem test #3 flowed oil over the interval 8560-8685'. It may be noteworthy that this level is essentially coincident with the peak oil generation depth of 8550'.

This maturation data provides evidence indicating that the thermal regime at Adolphus 2K-41 was suitable for the generation of oil and gas within the drilled section.

#### References

- Avery, M.P., 1983. Vitrinite reflectance (Ro) on the dispersed organics in Mobil-Texaco-Pex Venture B-43. Report No. EPGs-DOM.9-83MPA, 2 p., 3 figures.
- Avery, M.P., 1984. Vitrinite reflectance (Ro) on the dispersed organics in the Mobil-Texaco-Pex Olympia A-12. Report No. EPGs-DOM.17-84MPA, 5 p., 4 tables, 1 figure, 2 appendices.
- Canada Oil and Gas Lands Administration, 1983. Offshore schedule of wells. Department of Energy, Mines and Resources, Ottawa.
- Dow, W.G., 1977. Kerogen studies and geological interpretations. Journal of Geochemical Exploration, no. 7, p. 79-99.
- Mobil Oil Canada Ltd., 1973. Well history Report Mobil Gulf Adolphus 2K-41. Open File report, Department of Energy, Mines and Resources, Ottawa.

September 28, 1984



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Eastern Petroleum Geology

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E.P.G.S. Files, Dartmouth

TABLE II

Data Summary

Seq.	Sample #	Depth in feet	Ro max. (S.D.)	Number of readings		Type
				Total	Edited	
1	K0358 A	4580-4610	.44 (.04)	54	27	Kerogen
2	K0358 B	4940-4970	.44 (.04)	53	34	Kerogen
3	K0358 C	5300-5330	.42 (.05)	46	20	Kerogen
4	K0359 A	6140-6170	.5 (.06)	26	20	Kerogen
5	K0359 B	6500-6530	.52 (.05)	31	13	Kerogen
6	K0359 C	6840-6860	.52 (.04)	42	26	Kerogen
7	K0360 A	7190-7220	.54 (.04)	46	28	Kerogen
8	K0360 B	7550-7580	.59 (.06)	41	9	Kerogen
9	K0360 C	7820-7850	.55 (.05)	66	40	Kerogen
10	K0361 A	7970-8000	.56 (.04)	51	28	Kerogen
11	K0361 B	8210-8240	.57 (.07)	83	21	Kerogen
12	K0361 C	8450-8480	.59 (.09)	13	8	Kerogen

TABLE III

Geologic tops from schedule of wells, COGLA

Depth in feet	Top or interval
7813	Base Tertiary u/c Wyandot?
7978	Dawson Canyon
8281-8379	Petrel member
8379	Shortland Shale or equivalent
8572-8680	Oil zone
9224	Redbeds/cap rock
9360	Argo
10500	Massive salt

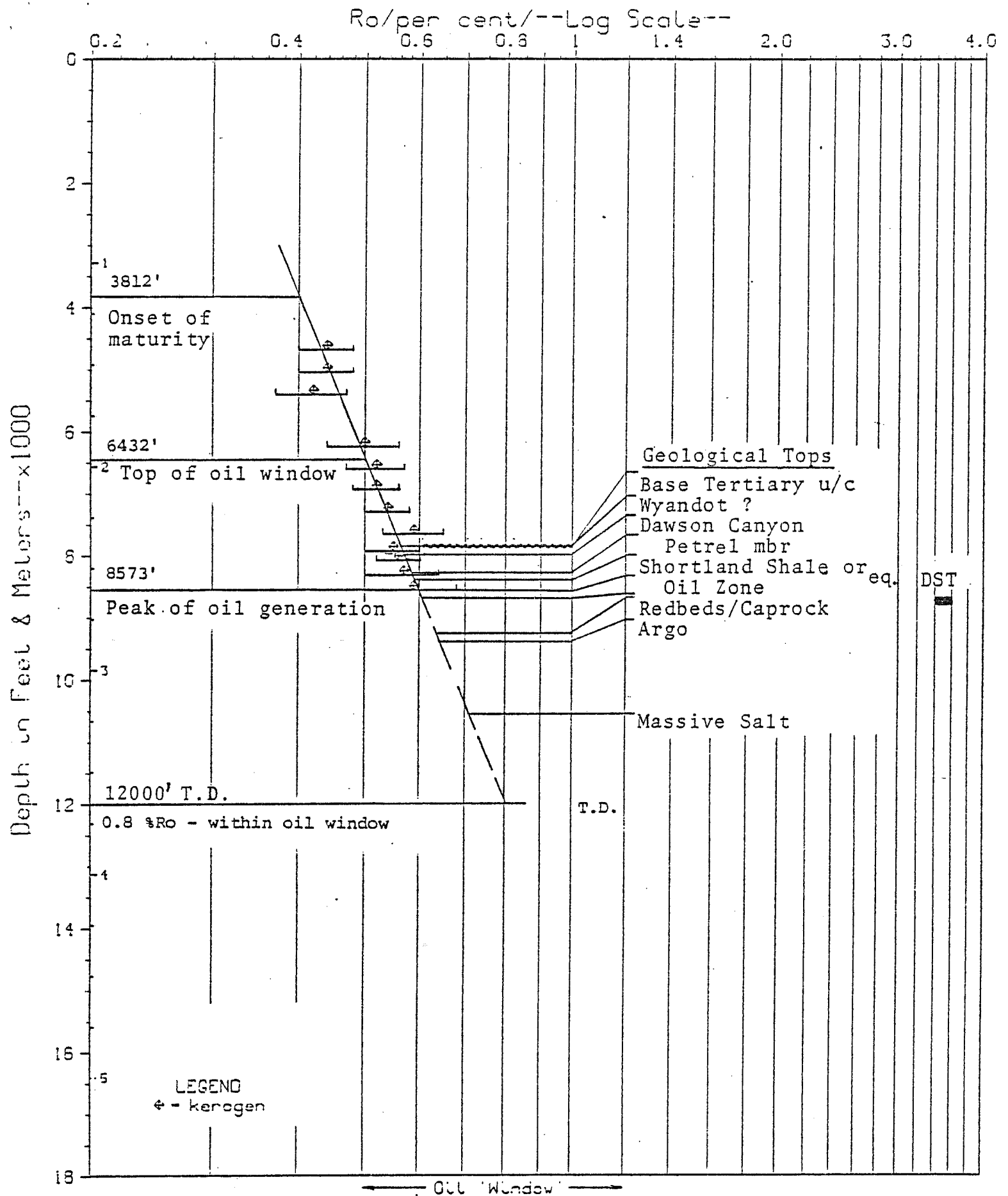


Fig. 1 Adolphus 2K-41

## 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.

Vitrinite Reflectance Histograms

FILE >> K0358A DESCRIPTION FOLLOWS :  
 DEPTH 4599-4610', ADOLPHUS 2K-41, MIKE AVERY, SEPT-13-84

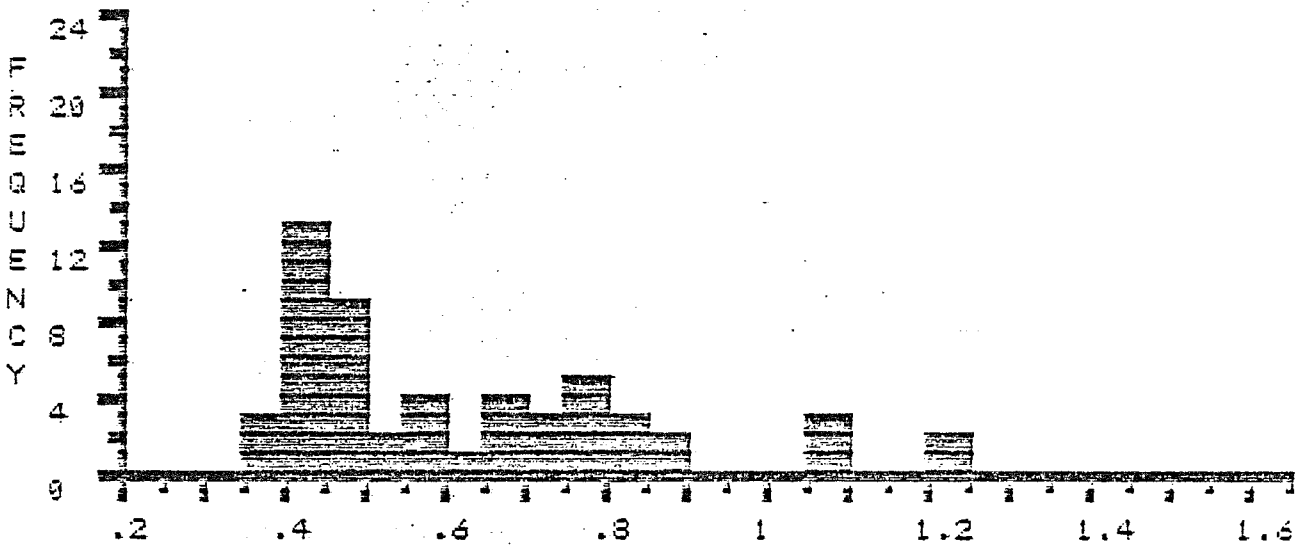
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3	.57	.59	.6	.65	.68	.68	.69	.7	.72	.74
4	.77	.77	.78	.78	.79	.84	.84	.84	.88	.89
5	1.05	1.05	1.07	1.21	1.21					

SUM : 33.33 NUMBER : 54 MIN : .36 MAX : 1.21 MEAN : .62 STAN.DEV.: .22

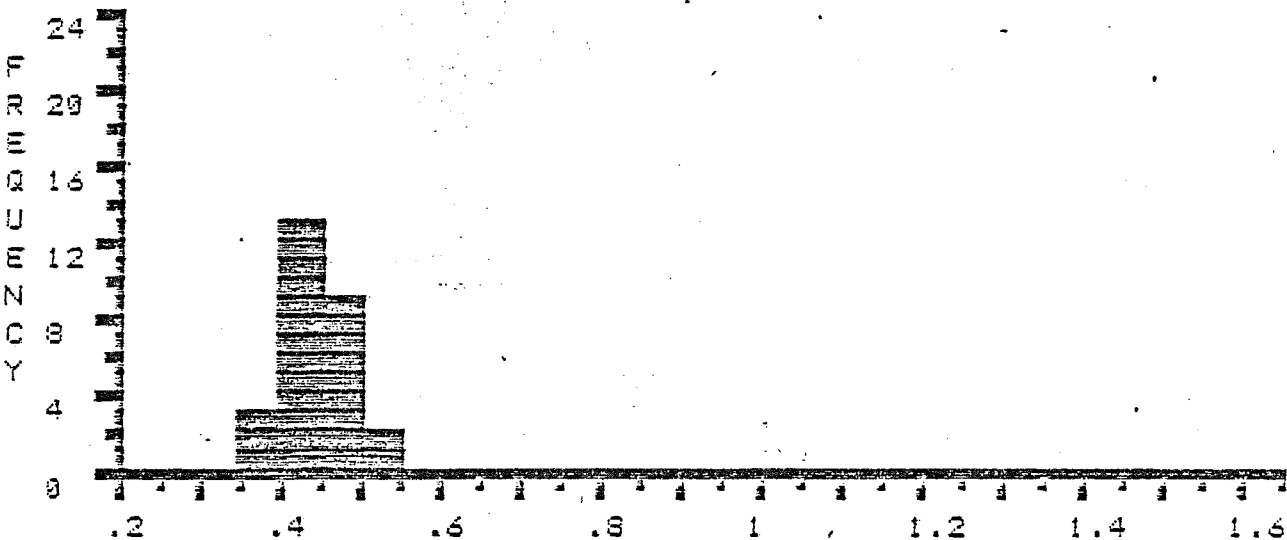
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SUM : 11.83 NUMBER : 27 MIN : .36 MAX : .54 MEAN : .44 STAN.DEV.: .04

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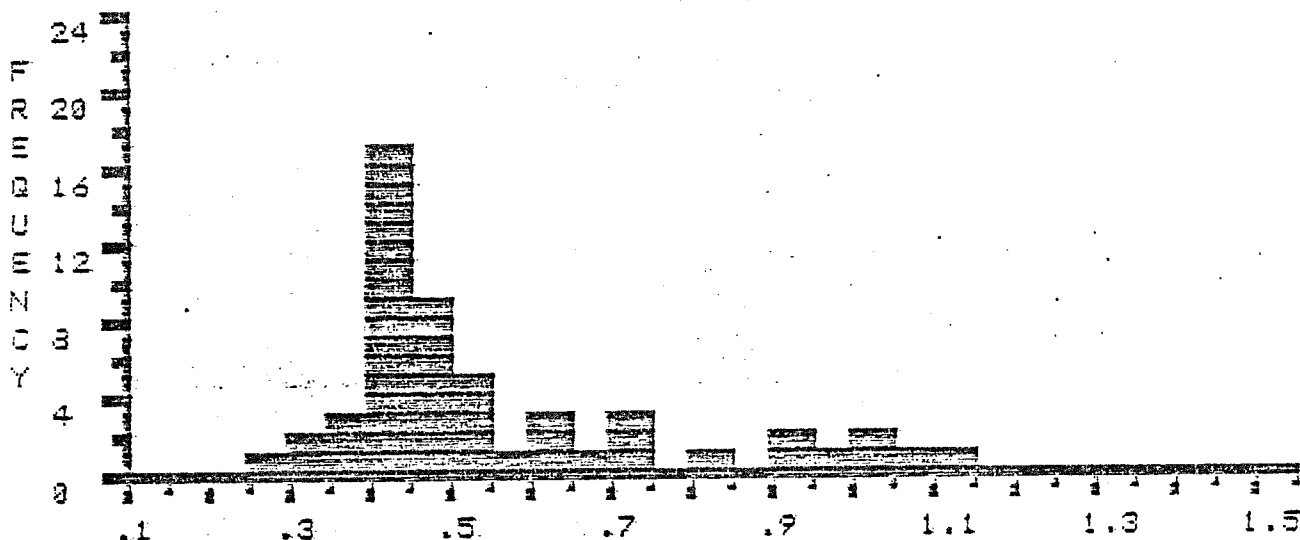
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3	*.47	*.48	*.49	*.5	*.51	*.51	*.51	*.51	.56	.61
4	.62	.63	.67	.7	.72	.74	.83	.91	.93	.95
5	1.02	1.04	1.06	1.11						

SUM : 28.98 NUMBER : 53 MIN : .26 MAX : 1.11 MEAN : .55 STAN.DEV.: .21

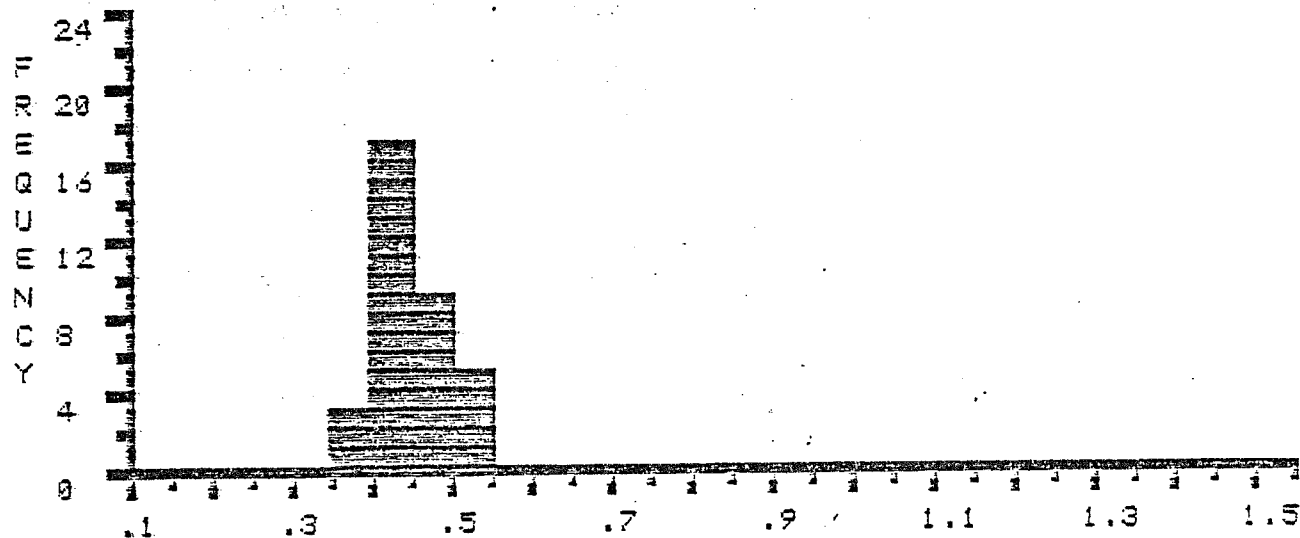
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SUM : 15 NUMBER : 34 MIN : .38 MAX : .51 MEAN : .44 STAN.DEV.: .04

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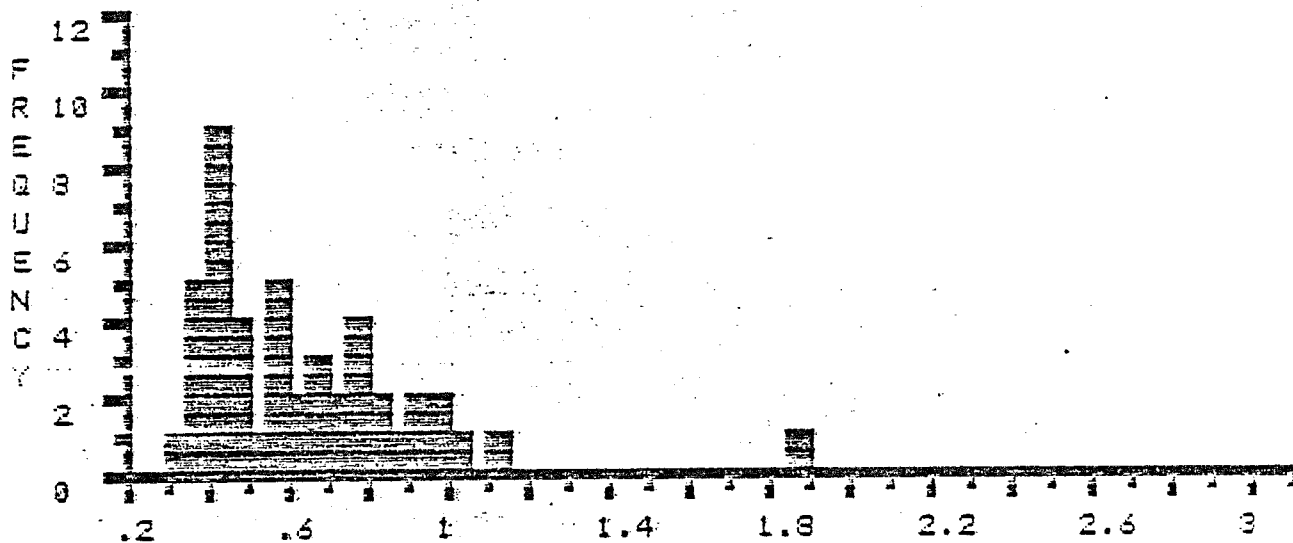
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2	*.51	.55	.55	.56	.57	.59	.6	.63	.66	.66
3	.68	.73	.74	.75	.78	.78	.79	.83	.84	.89
4	.9	.92	.95	.96	1.02	1.12	1.38			

SUM : 29.41 NUMBER : 46 MIN : .34 MAX : 1.88 MEAN : .64 STAN.DEV.: .28

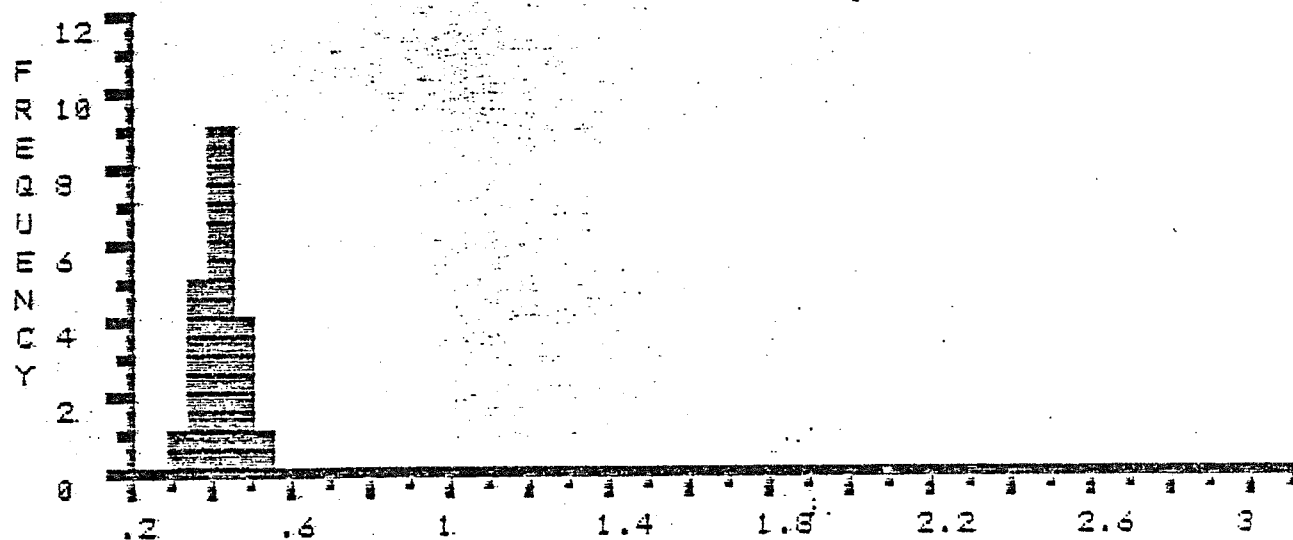
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% REFLECTANCE



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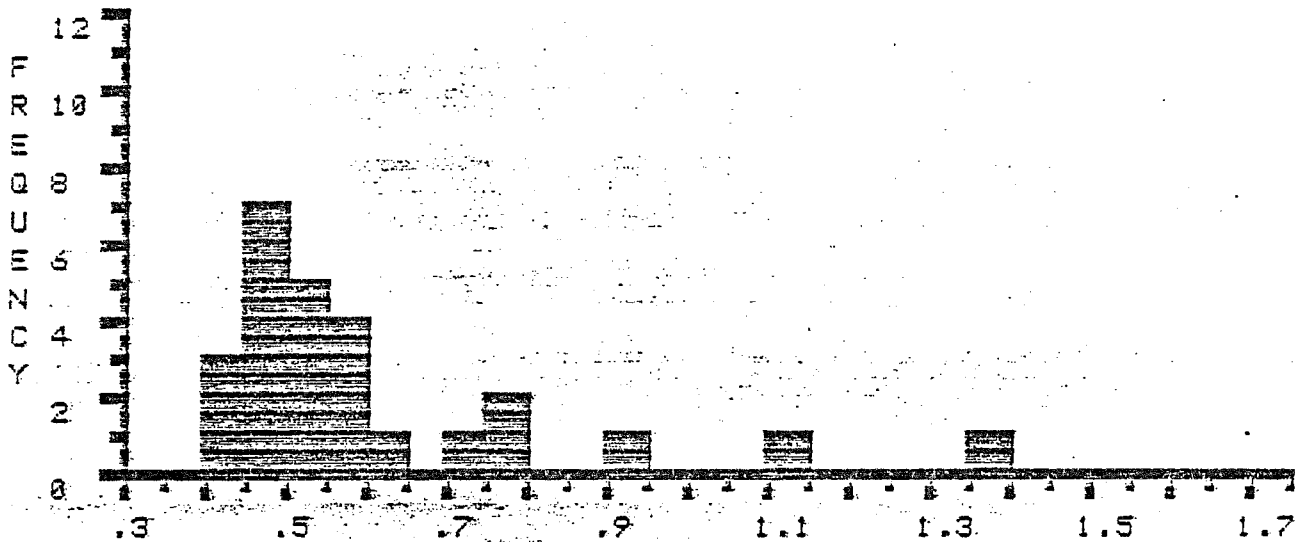
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SUM : 15.66 NUMBER : 26 MIN : .41 MAX : 1.36 MEAN : .6 STAN.DEV.: .23

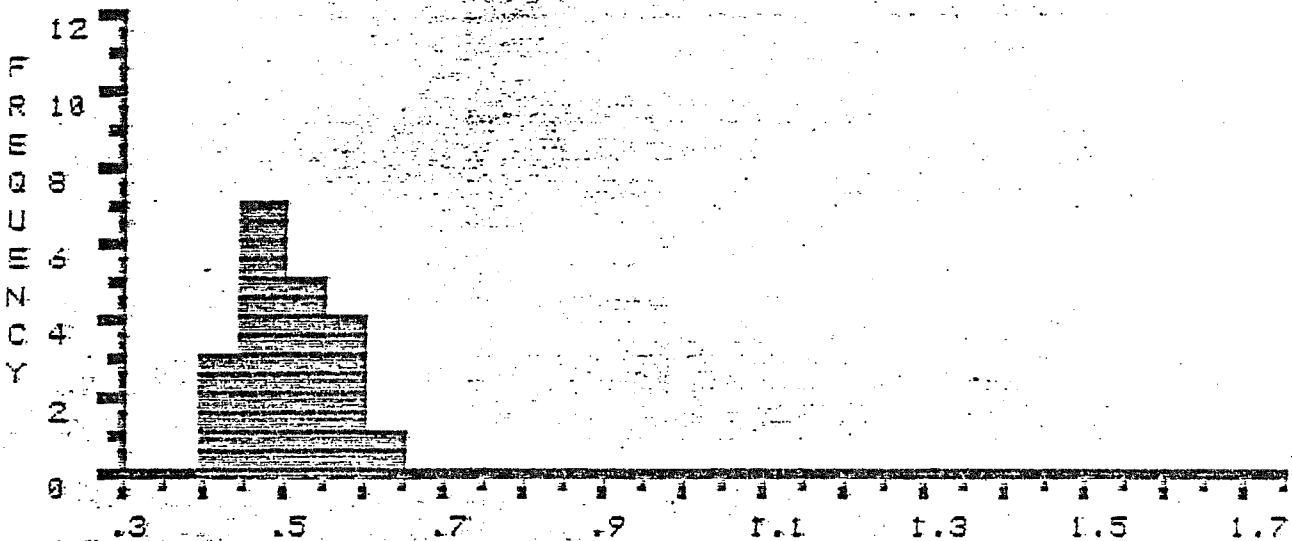
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SUM : 9.96 NUMBER : 20 MIN : .41 MAX : .61 MEAN : .5 STAN.DEV.: .06

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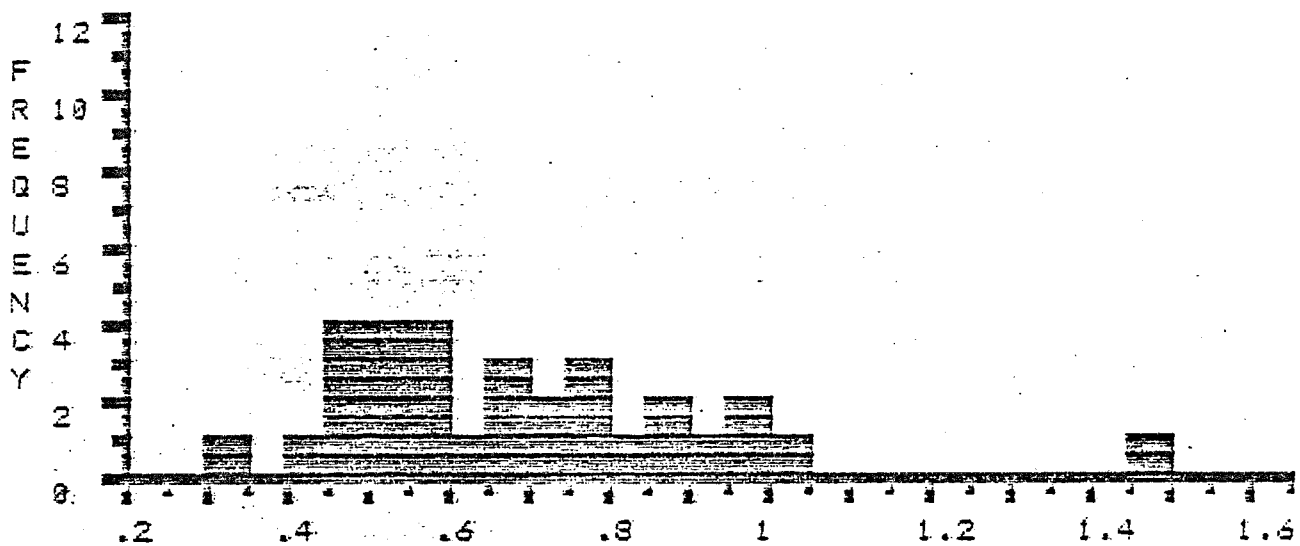
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2	.74	.75	.76	.79	.82	.86	.87	.92	.97	.99
3	1.02	1.45								

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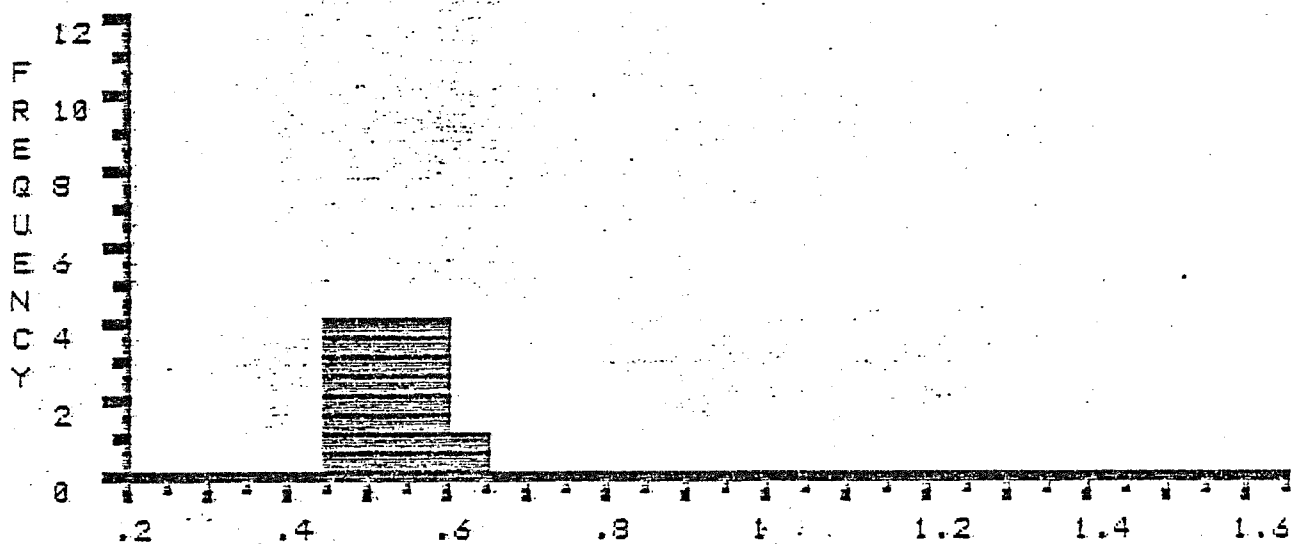
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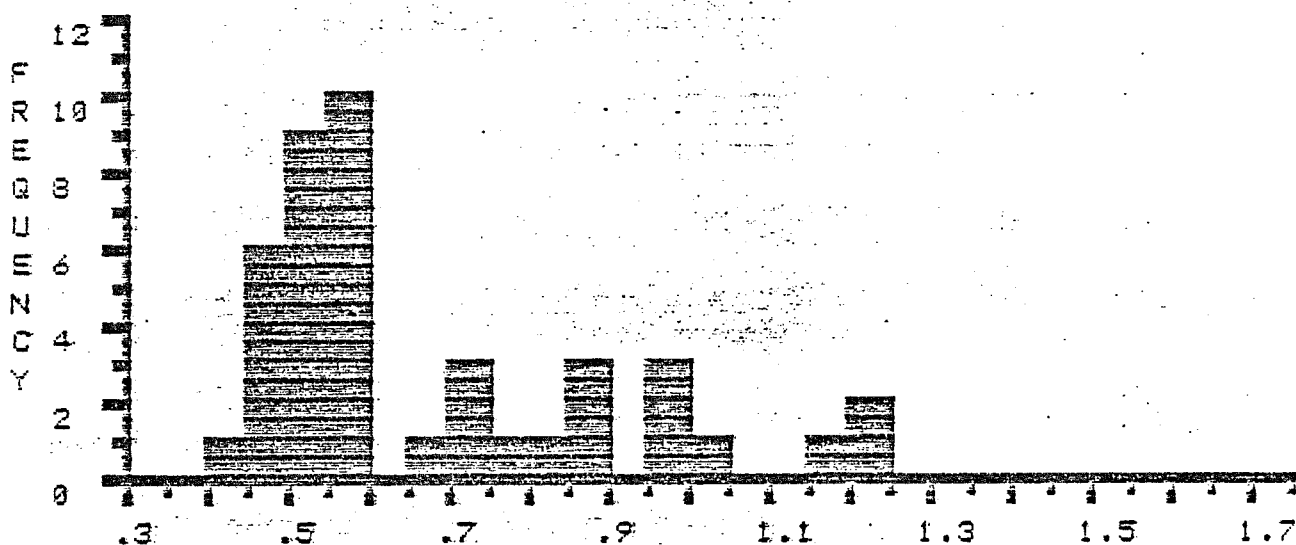
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3	.74	.75	.81	.85	.85	.89	.96	.96	.99	1
4	1.19	1.21	1.22							

SUM : 28.05 NUMBER : 42 MIN : .43 MAX : 1.22 MEAN : .67 STAN.DEV.: .22

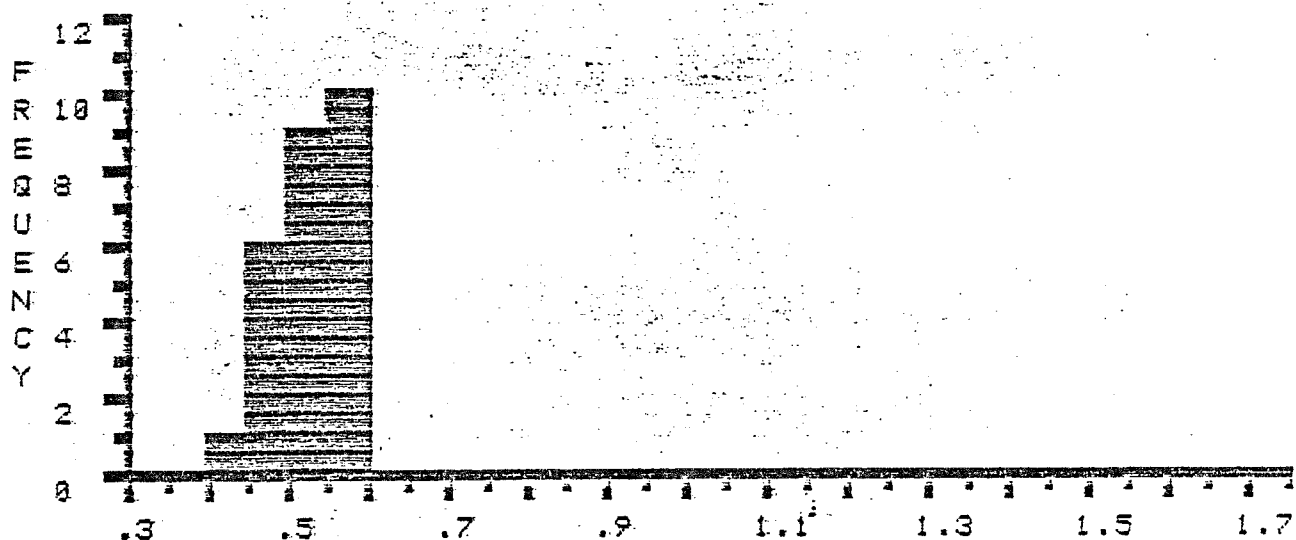
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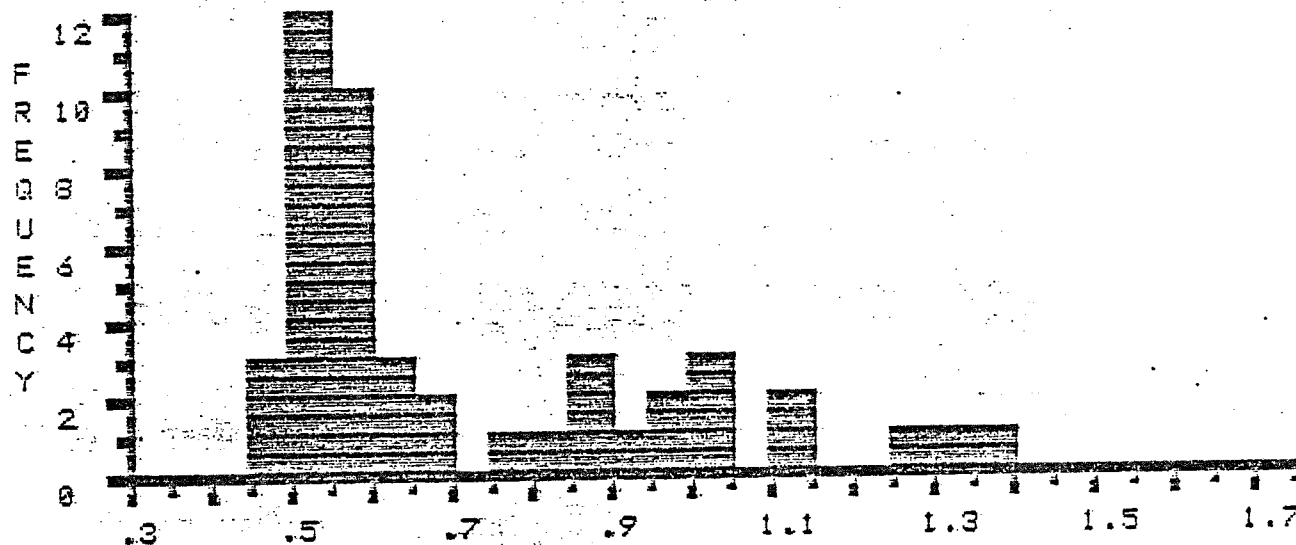
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2	*.56	*.56	*.56	*.56	*.57	*.58	*.6	*.61	*.61	.67
3	.68	.77	.83	.86	.87	.89	.94	.97	.99	1
4	1.01	1.02	1.13	1.13	1.25	1.3	1.36			

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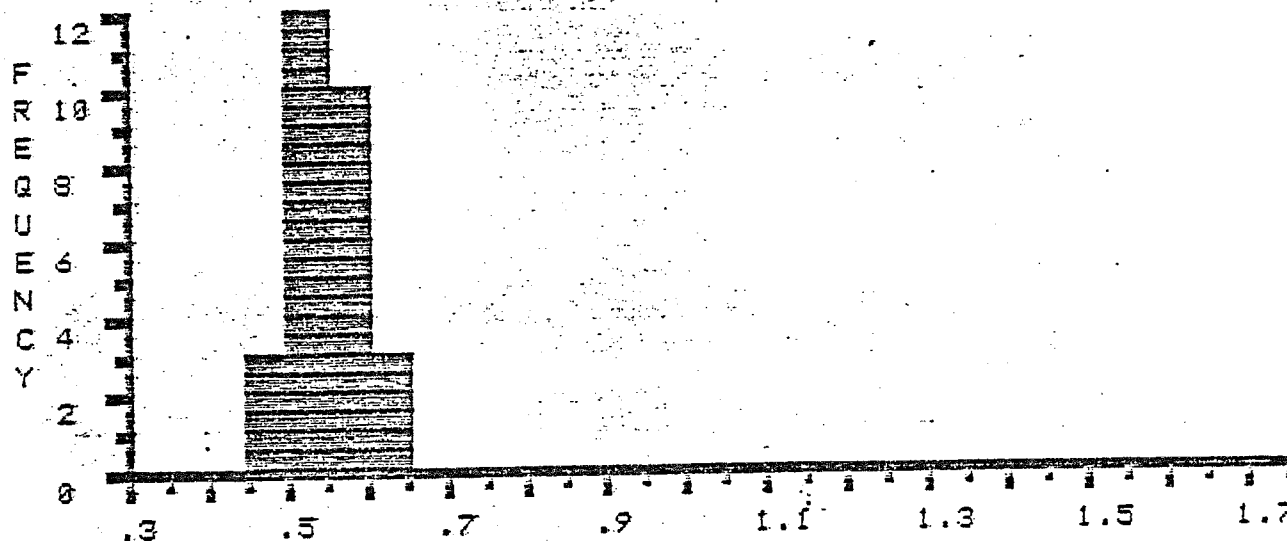
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SUM : 15.09 NUMBER : 28 MIN : .45 MAX : .61 MEAN : .54 STAN.DEV.: .04

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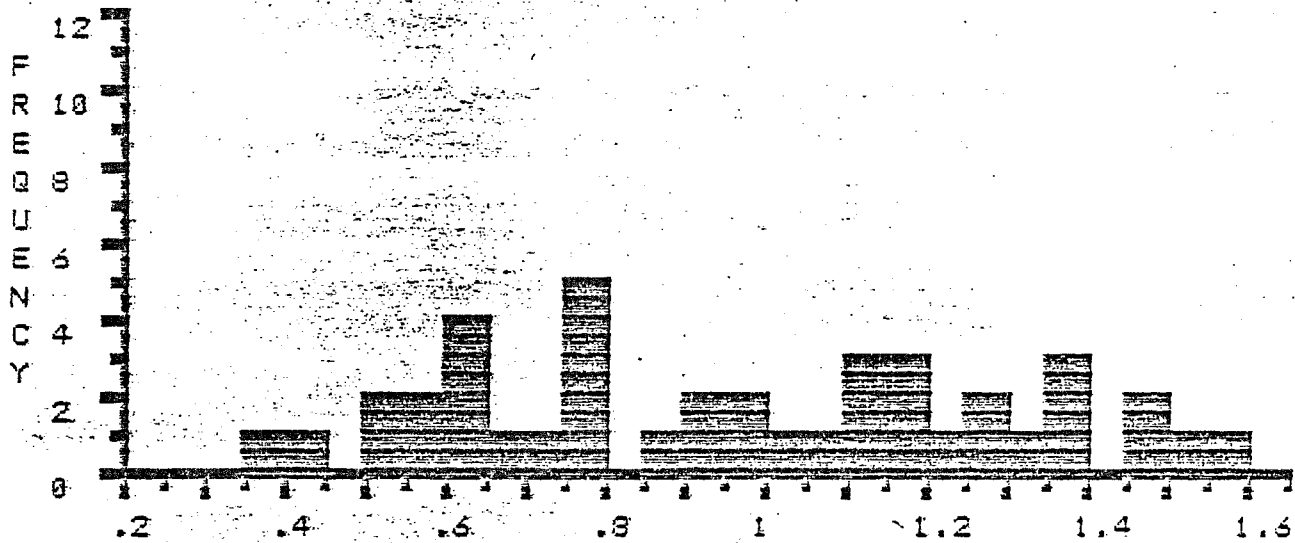
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2	.9	.97	.98	1.02	1.08	1.13	1.14	1.14	1.16	1.16
3	1.18	1.22	1.26	1.28	1.31	1.38	1.38	1.39	1.46	1.49
4	1.52	1.56								

SUM : 39.63 NUMBER : 41 MIN : .37 MAX : 1.56 MEAN : .97 STAN.DEV.: .33

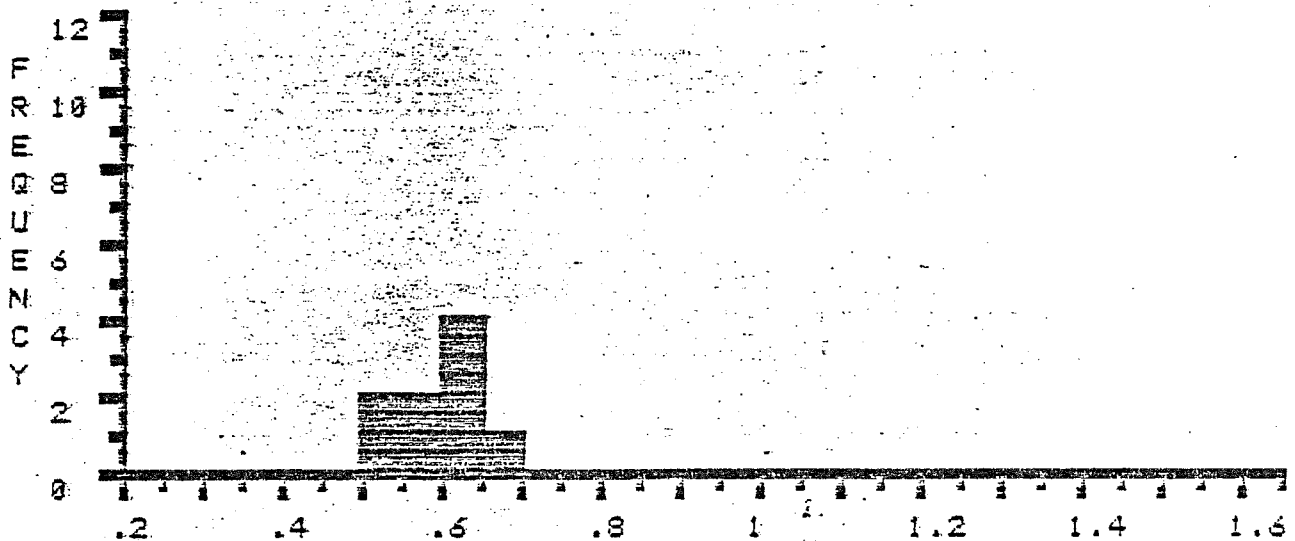
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SUM : 5.3 NUMBER : 9 MIN : .5 MAX : .65 MEAN : .59 STAN.DEV.: .06

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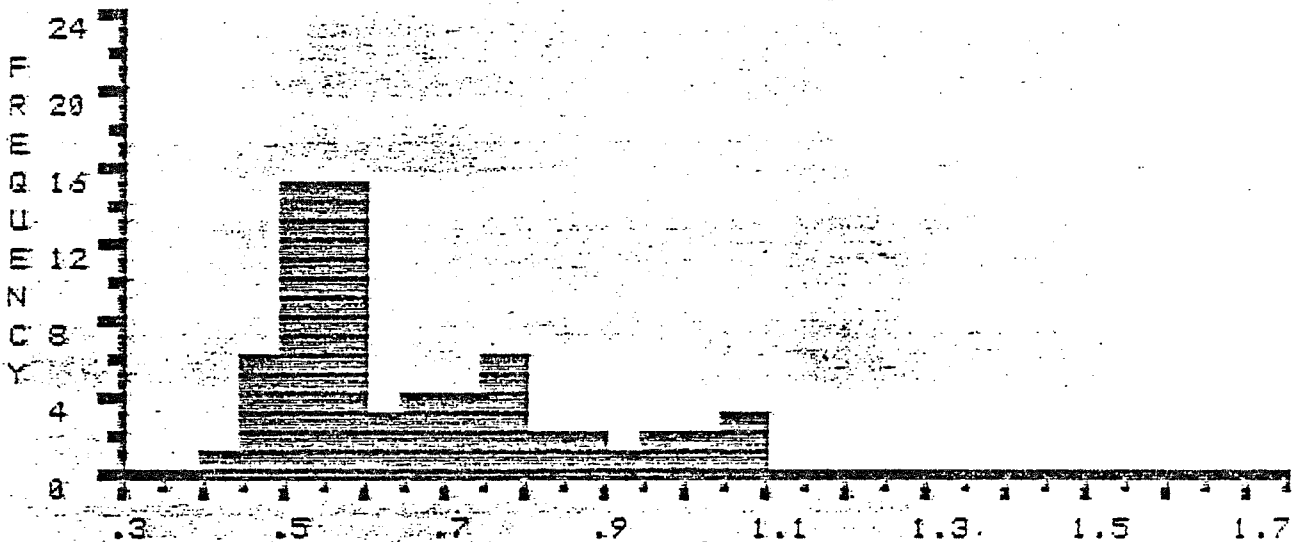
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3	*.56	*.56	*.56	*.58	*.58	*.58	*.59	*.59	*.6	*.64
4	*.64	*.65	*.65	*.66	.68	.7	.72	.74	.74	.75
5	.75	.76	.78	.78	.79	.81	.82	.89	.89	.92
6	.97	.98	1	1.01	1.05	1.06	1.07			

SUM : 43.03 NUMBER : 66 MIN : .41 MAX : 1.07 MEAN : .65 STAN.DEV.: .17

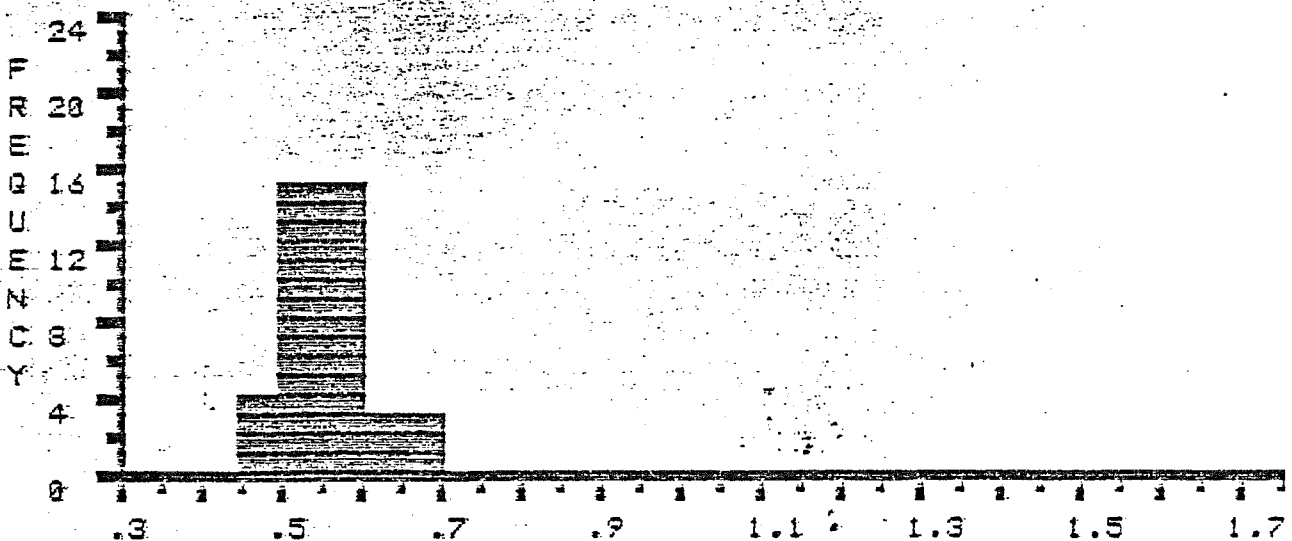
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SUM : 22.05 NUMBER : 40 MIN : .48 MAX : .66 MEAN : .53 STAN.DEV.: .05

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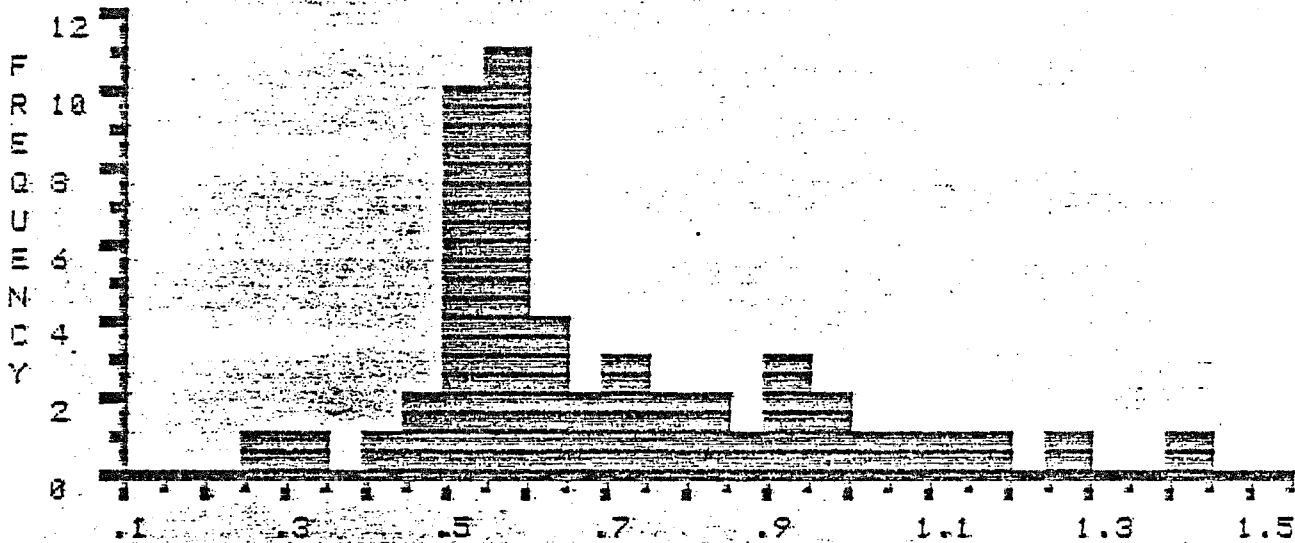
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2	*.57	*.57	*.57	*.57	*.57	*.59	*.59	*.6	*.61	*.62
3	*.64	*.65	.69	.71	.73	.74	.79	.79	.8	.84
4	.86	.9	.9	.94	.97	.98	1.01	1.07	1.13	1.17
5	1.25	1.4								

SUM : 35.2 NUMBER : 51 MIN : .29 MAX : 1.4 MEAN : .69 STAN.DEV.: .24

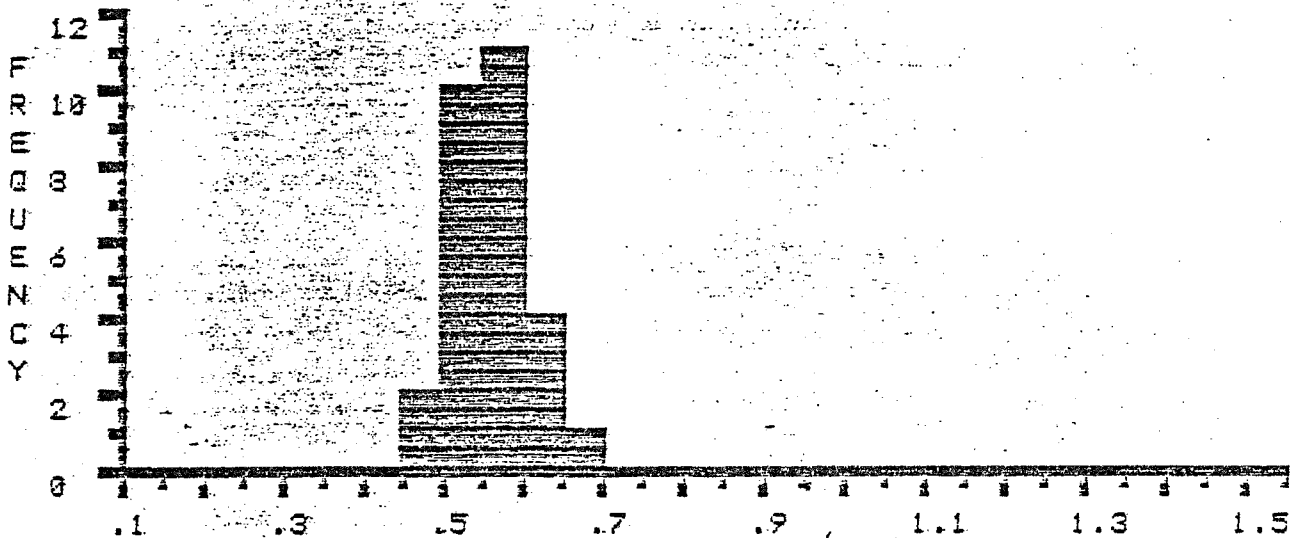
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SUM : 15.53 NUMBER : 29 MIN : .48 MAX : .65 MEAN : .55 STAN.DEV.: .04

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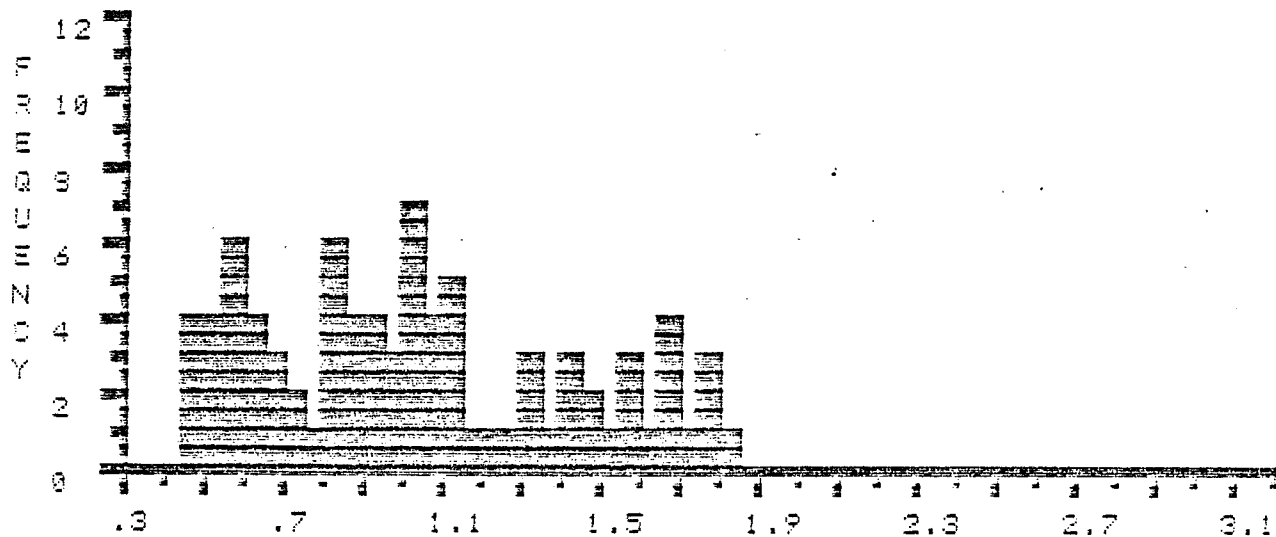
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ROW		*.45	*.47	*.48	*.49	*.5	*.51	*.52	*.53	*.55
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2	*.66	*.69	.73	.74	.79	.81	.82	.82	.82	.83
3	.84	.85	.88	.88	.89	.9	.91	.93	.94	.95
4	.96	.98	1	1.01	1.03	1.03	1.04	1.04	1.04	1.07
5	1.07	1.08	1.09	1.1	1.1	1.12	1.12	1.12	1.19	1.21
6	1.27	1.32	1.34	1.34	1.36	1.4	1.42	1.44	1.46	1.47
7	1.52	1.58	1.59	1.59	1.6	1.65	1.65	1.67	1.68	1.73
8	1.76	1.76	1.79	1.8						

SUM : 95.83 NUMBER : 93 MIN : .45 MAX : 1.8 MEAN : 1.23 STAN.DEV.: .39

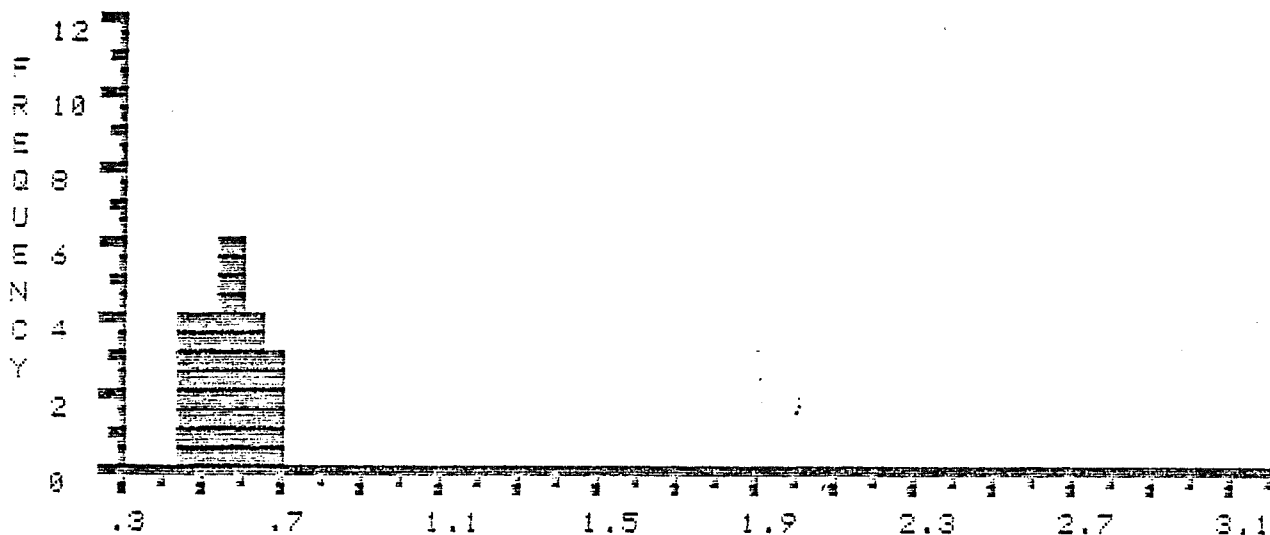
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SUM : 11.89 NUMBER : 21 MIN : .45 MAX : .69 MEAN : .57 STAN.DEV.: .07

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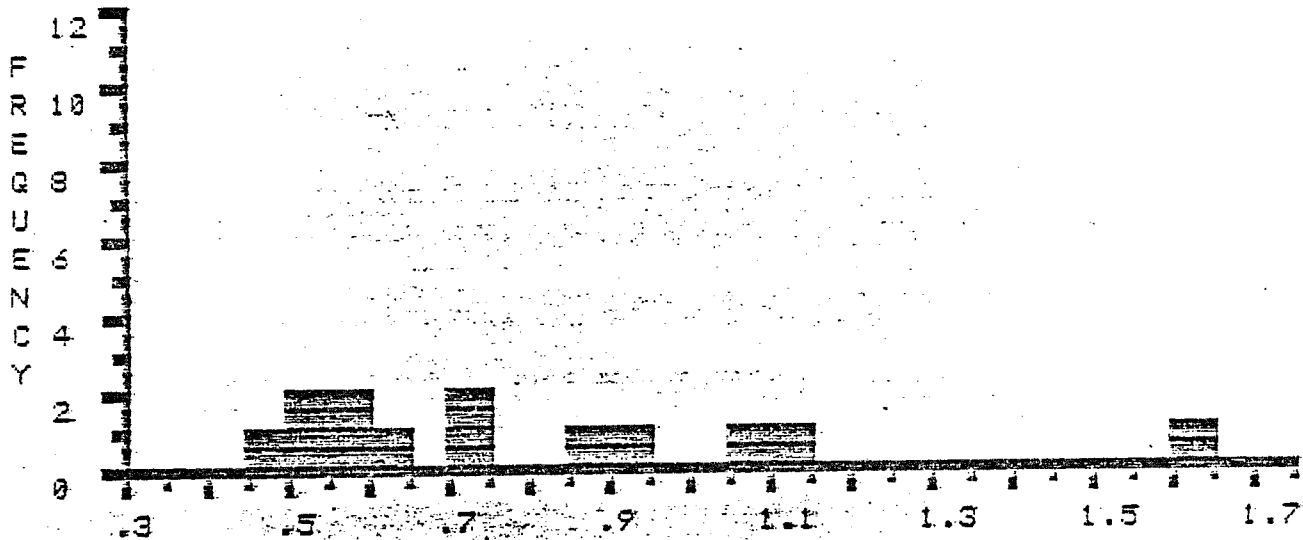
COL>	0	1	2	3	4	5	6	7	8	9
ROW		*.49	*.52	*.53	*.56	*.58	*.6	*.7	*.74	.88
1	.93	1.05	1.12	1.61						

SUM : 10.31 NUMBER : 13 MIN : .49 MAX : 1.61 MEAN : .79 STAN.DEV.: .32

EDITED STATISTICS \* \* \* \* \*

SUM : 4.72 NUMBER : 8 MIN : .49 MAX : .74 MEAN : .59 STAN.DEV.: .09

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