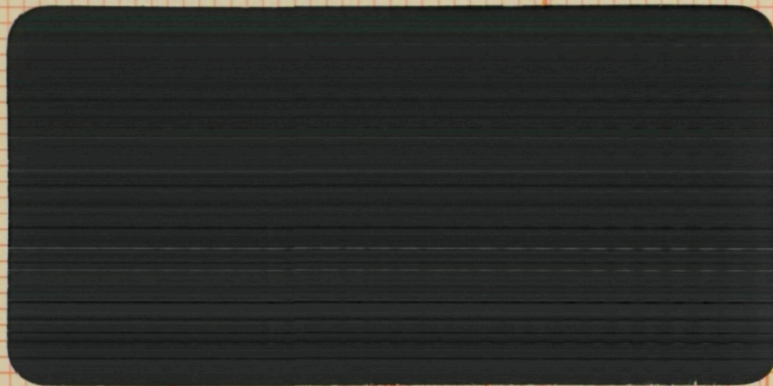


**WYLE**

LABORATORIES SCIENTIFIC SERVICES & SYSTEMS GROUP



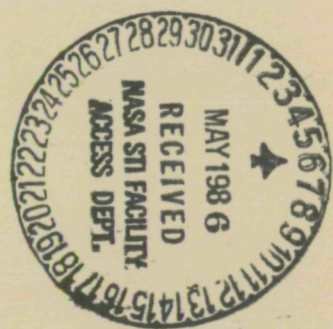
(NASA-CR-178811) A DATA BASE AND ANALYSIS PROGRAM FOR SHUTTLE MAIN ENGINE DYNAMIC PRESSURE MEASUREMENTS. APPENDIX D: DATA BASE PLOTS FOR SSME TESTS 750-047 THROUGH 750-111 Final Report (Wyle Labs., Inc.)

N86-23637

*HC#A 18/MF#A01*

Unclas

G3/20 06055



# research REPORT

WYLE LABORATORIES - RESEARCH STAFF  
TECHNICAL REPORT 66338-01

A DATA BASE AND ANALYSIS PROGRAM  
FOR SHUTTLE MAIN ENGINE  
DYNAMIC PRESSURE MEASUREMENTS  
APPENDIX D

DATA BASE PLOTS FOR SSME TESTS  
750-047 through 750-111

by

Thomas Coffin

A final report of  
work performed under contract NAS8-34343

for

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE FLIGHT CENTER  
MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812

January 1986

## FOREWORD

This report describes a dynamic pressure data base and data base management system developed to characterize the Space Shuttle Main Engine (SSME) dynamic pressure environment. The data base represents dynamic pressure measurements obtained during single engine hot firing tests of the SSME. Software is provided to permit statistical evaluation of selected measurements under specified operating conditions. An interpolation scheme is also included to estimate spectral trends with SSME power level. This report was prepared by Wyle Laboratories Scientific Services and Systems Group for the National Aeronautics and Space Administration, George C. Marshall Space Flight Center. The work was performed under NASA contract NAS 8-34343, entitled "Flow Dynamic Environments in High Performance Rocket Engines."

The author wishes to acknowledge the contribution to this study by Dr. G. Meares, Chief Architect of the data base management software described herein. Messrs. B. Dobbs and D. Duck contributed long hours over a digitizer pad to accomplish data base input. The singular value decomposition software for spectrum interpolation was developed by Dr. J. Jong. Mr. T. Nesman, MSFC technical contract monitor, provided continuing support through informal project reviews and served as a focal point for definition of SSME data requirements.

DATA PLOT LISTING FOR TEST STAND A3

<u>Test</u>	<u>Channel Descriptor</u> (Time History or PSD)	<u>Maximum</u> <u>Frequency</u> (Hz)	<u>Time</u> <u>Slice</u> (Sec)
047	THRUST		
048			
049			
050			
052			
053			
066			
067			
068			
069			
070			
071			
072			
073			
074			
075			
076			
077			
078			
079			
087			
088			
089			
090			
091			
092			
093			
094			
095			
096			
097			
098			
099			
100			
	LPFP IN PR		
	LPOP DS PR		
	HPOP BAL CAV PR2		
	HPOP BAL CAV PR1		
	LPFP IN PR		
		5,000	10
			40
			85
			95

DATA PLOT LISTING FOR TEST STAND A3 (Continued)

<u>Test</u>	<u>Channel Descriptor (Time History or PSD)</u>	<u>Maximum Frequency (Hz)</u>	<u>Time Slice (Sec)</u>
100	LFPF IN PR	20,000	10
	↓		40
	↓		85
	↓		95
	LPOP DS PR		10
	↓		40
	↓		85
	↓		95
	HPOP BAL CAV PR2		10
	↓		40
101	↓	85	
	↓	95	
	HPOP BAL CAV PR1	10	
	↓	40	
	↓	85	
	↓	95	
	THRUST	5,000	5
	LFPF IN PR		30
	LPOP DS PR		80
	HPOP BAL CAV PR2		95
LFPF IN PR	5		
↓	30		
↓	80		
↓	95		
LPOP DS PR	5		
↓	30		
102	↓	80	
	↓	95	
	HPOP BAL CAV PR2	5	
	↓	30	
	↓	80	
	↓	95	
	THRUST	20,000	15
	LFPF IN PR		35
	HPOP BAL CAV PR2		60
	HPOP DS PR		80
LFPF IN PR			
↓			
↓			
↓			
↓			
↓			

DATA PLOT LISTING FOR TEST STAND A3 (Continued)

<u>Test</u>	<u>Channel Descriptor (Time History or PSD)</u>	<u>Maximum Frequency (Hz)</u>	<u>Time Slice (Sec)</u>
102	LFPF IN PR	20,000	100
			200
			280
	HPOP BAL CAV PR2		15
			35
			60
			80
			100
			150
			200
			280
	HPOP DS PR		15
			35
			60
			80
	100		
	200		
	280		
	5,000		
	15		
	35		
	60		
	200		
	280		
	20,000		
	15		
	35		
	60		
	80		
	100		
	200		
	280		
103	THRUST	5,000	5
	LFPF IN PR		15
	LPOP DS PR		20
	HPOP BAL CAV PR2		26
	HPOP BAL CAV PR1		30
	HPOP DISC PR		5
	LFPF IN PR		15
			20
			20,000
			20,000

DATA PLOT LISTING FOR TEST STAND A3 (Continued)

<u>Test</u>	<u>Channel Descriptor (Time History or PSD)</u>	<u>Maximum Frequency (Hz)</u>	<u>Time Slice (Sec)</u>
103	LFPF IN PR	20,000	26
	↓		30
	LPOP DS PR		5
	↓		15
	↓		20
	↓		26
	↓		30
	HPOP BAL CAV PR2		5
	↓		15
	↓		20
	↓		26
	↓		30
	HPOP DISC PR		5
	↓		15
	↓		20
↓	26		
↓	30		
MCC HOT GAS IN PR	5		
↓	15		
↓	20		
↓	26		
↓	30		
↓	40,000		
↓	5		
↓	15		
↓	20		
↓	26		
↓	30		
↓	5		
104	MMC LONG ACCEL 1 THRUST		
	LFPF IN PR		
	LPOP DS PR		
	HPOP BAL CAV PR2		
	HPOP BAL CAV PR1		
	HPOP DISC PR		
	MMC HOT GAS IN PR		
	LFPF IN PR	20,000	6
	LPOP DS PR		
	HPOP BAL CAV PR2		
	HPOP DISC PR		
	MMC HOT GAS IN PR		
	↓		
	PBP DS PR	40,000	
	THRUST	20,000	
	LFPF IN PR		
105			





DATA PLOT LISTING FOR TEST STAND A3 (Continued)

Test	Channel Descriptor (Time History or PSD)	Maximum Frequency (Hz)	Time Slice (Sec)
108	THRUST		
	LFPF IN PR	5,000	6
		▼	12
		20,000	6
			12
	LPOP DS PR		6
		▼	12
	HPOP DS PR		6
		▼	12
	HPOP DISC PR		6
		▼	12
	MCC HOT GAS IN PR		6
	▼	12	
	40,000	6	
	▼	12	
	20,000	6	
	▼	12	
		6	
109	THRUST		
	LFPF IN PR		
	LPOP DS PR		
	HPOP BAL CAV PR2		
	HPOP BAL CAV PR1		
	HPOP DS PR		
	HPOP DISC PR		
	MCC HOT GAS IN PR		
	PBP DS PR		
	LFPF IN PR	20,000	6
		▼	14
	LPOP DS PR		6
	▼	14	
110	THRUST		
	LFPF DS PR		
	LPOP DS PR		
	HPOP BAL CAV PR2		
	HPOP BAL CAV PR1		
	CHAMBER PR		
	PBP FUEL SUP PR		
	FPB FUEL MAN PR		
	LFPF DS PR	20,000	10
		▼	30
			150
			300
		400	
		10	
HPOP BAL CAV PR2		30	
		150	

DATA PLOT LISTING FOR TEST STAND A3 (Continued)

<u>Test</u>	<u>Channel Descriptor (Time History or PSD)</u>	<u>Maximum Frequency (Hz)</u>	<u>Time Slice (Sec)</u>
110	HPOP BAL CAV PR2	20,000	300
	↓		400
	HPOP DS PR		10
	↓		30
	↓		150
	↓		300
	MCC HOT GAS IN PR		10
	↓		30
	↓		150
	↓		40,000
111	↓	20,000	15
	THRUST		40
	LPFP DS PR		50
	LPOP DS PR		60
	HPOP BAL CAV PR2		70
	HPOP BAL CAV PR1		80
	HPOP DS PR		90
	BPB DS PR		100
	CHAMBER PR		120
	PBP FUEL SUP PR		200
	FPB FUEL MAN PR		280
	LOX HX OUT PR		15
	LPFP DS PR		40
	↓		50
	↓		60
	↓		70
	↓		80
	↓		90
	↓		100
	↓		120
↓	200		
↓	280		
↓	15		
LPOP DS PR	40		
↓	50		
↓	60		
↓	70		
↓	80		
↓	90		
↓	100		
↓	120		
↓	200		
↓	280		

DATA PLOT LISTING FOR TEST STAND A3 (Continued)

<u>Test</u>	<u>Channel Descriptor (Time History or PSD)</u>	<u>Maximum Frequency (Hz)</u>	<u>Time Slice (Sec)</u>
111	HPOP BAL CAV PR2	20,000	15
			40
			50
			60
			70
			80
			90
			100
			120
			200
			280
			111
40			
50			
60			
70			
80			
90			
100			
120			
200			
280			
111	HPOP DS PR	20,000	
			40
			50
			60
			70
			80
			90
			100
			120
			200
			280
			111
40			
50			
60			
70			
80			
90			
100			
120			
200			
280			

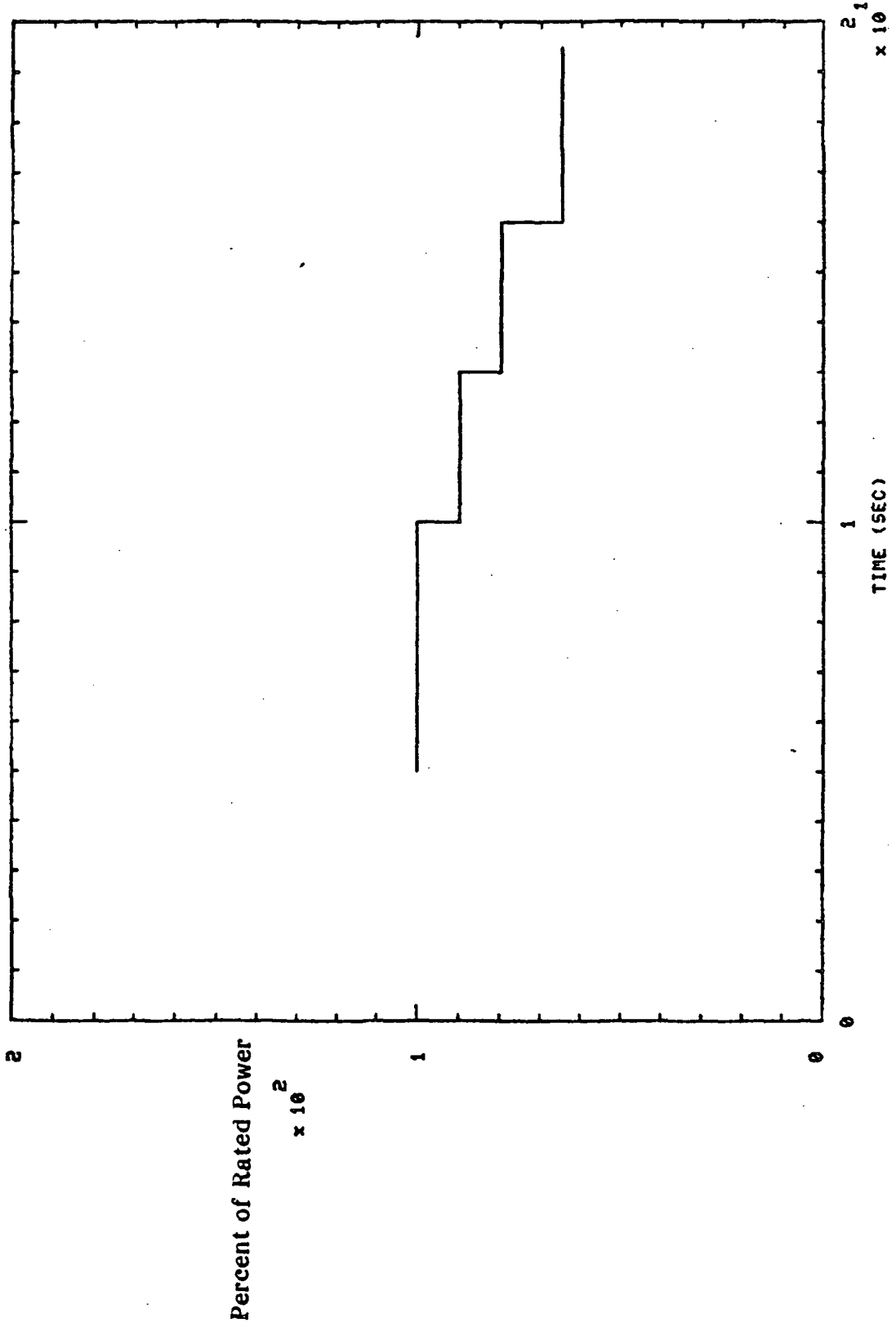
DATA PLOT LISTING FOR TEST STAND A3 (Continued)

<u>Test</u>	<u>Channel Descriptor (Time History or PSD)</u>	<u>Maximum Frequency (Hz)</u>	<u>Time Slice (Sec)</u>	
111	PBP FUEL SUP PR	20,000	15	
			40	
			50	
			60	
			70	
			80	
			90	
			100	
			120	
			200	
			280	
		LPOT TURB DR PR	5,000	15
				40
				80
				90
				100
				120
				200
			20,000	15
				40
				50
				60
				70
				80
				90
				100
				120
				200
				280
		LOX HX OUT PR	5,000	15
			40	
			50	
			60	
			70	
			80	
			90	
			100	
			120	
			200	
			280	
		20,000	40	
			50	
			60	
			70	

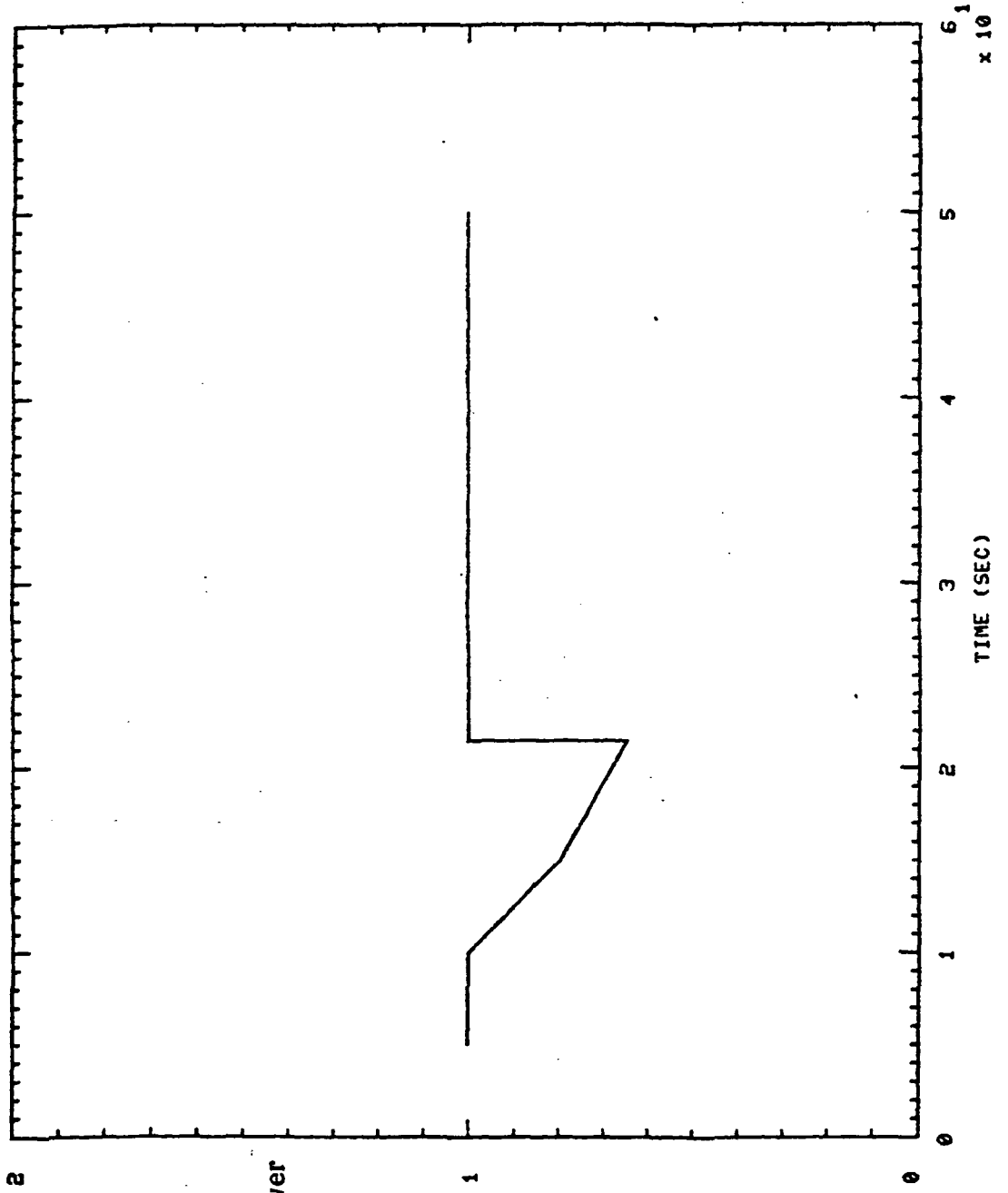
DATA PLOT LISTING FOR TEST STAND A3 (Continued)

<u>Test</u>	<u>Channel Descriptor</u> (Time History or PSD)	<u>Maximum</u> <u>Frequency</u> (Hz)	<u>Time</u> <u>Slice</u> (Sec)
111	LOX HX OUT PR	20,000	80
↓	↓	↓	90
			100
			120
			200
			280

750047 THRUST (UNFILTERED)

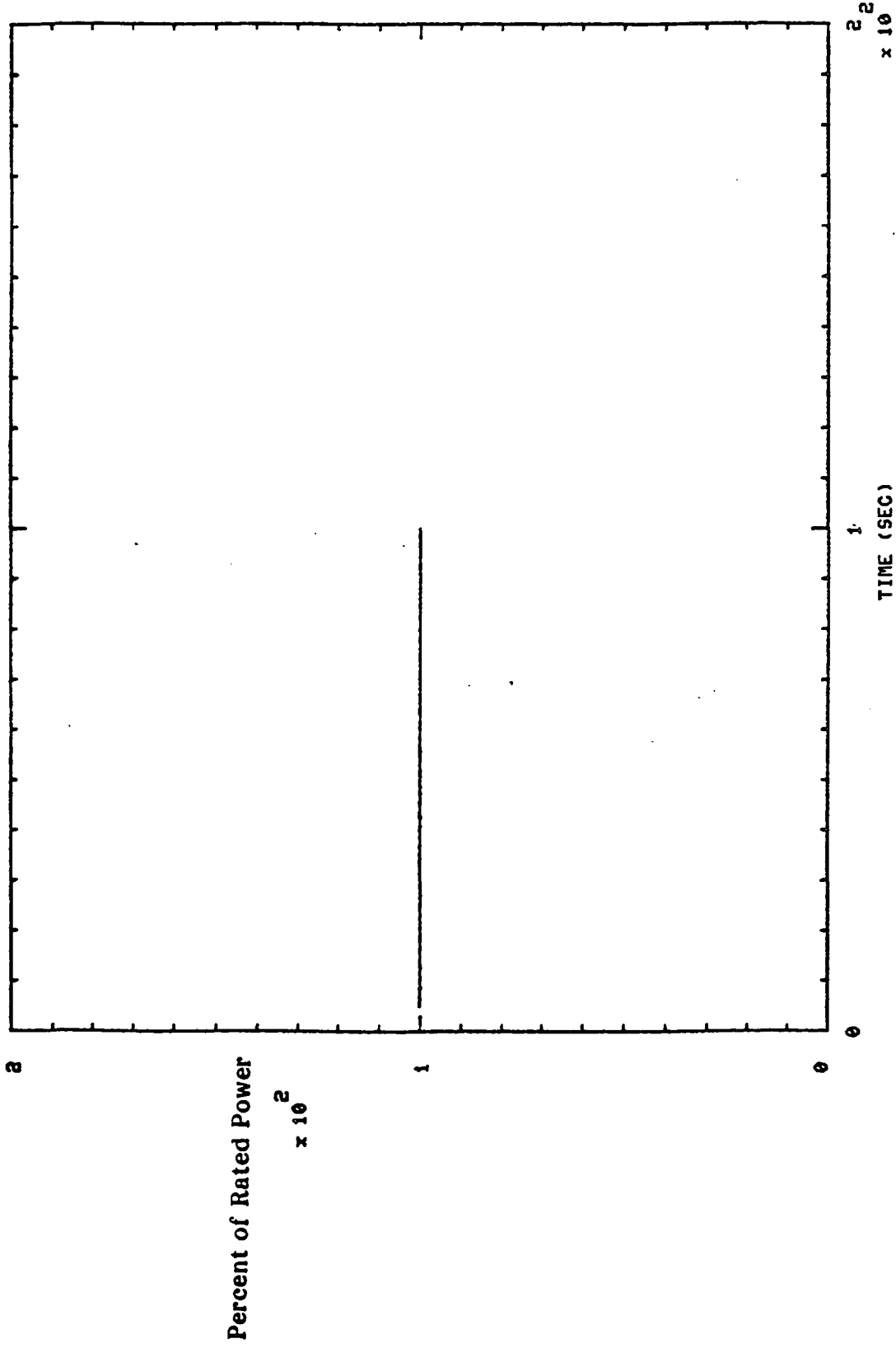


750048 THRUST (UNFILTERED )



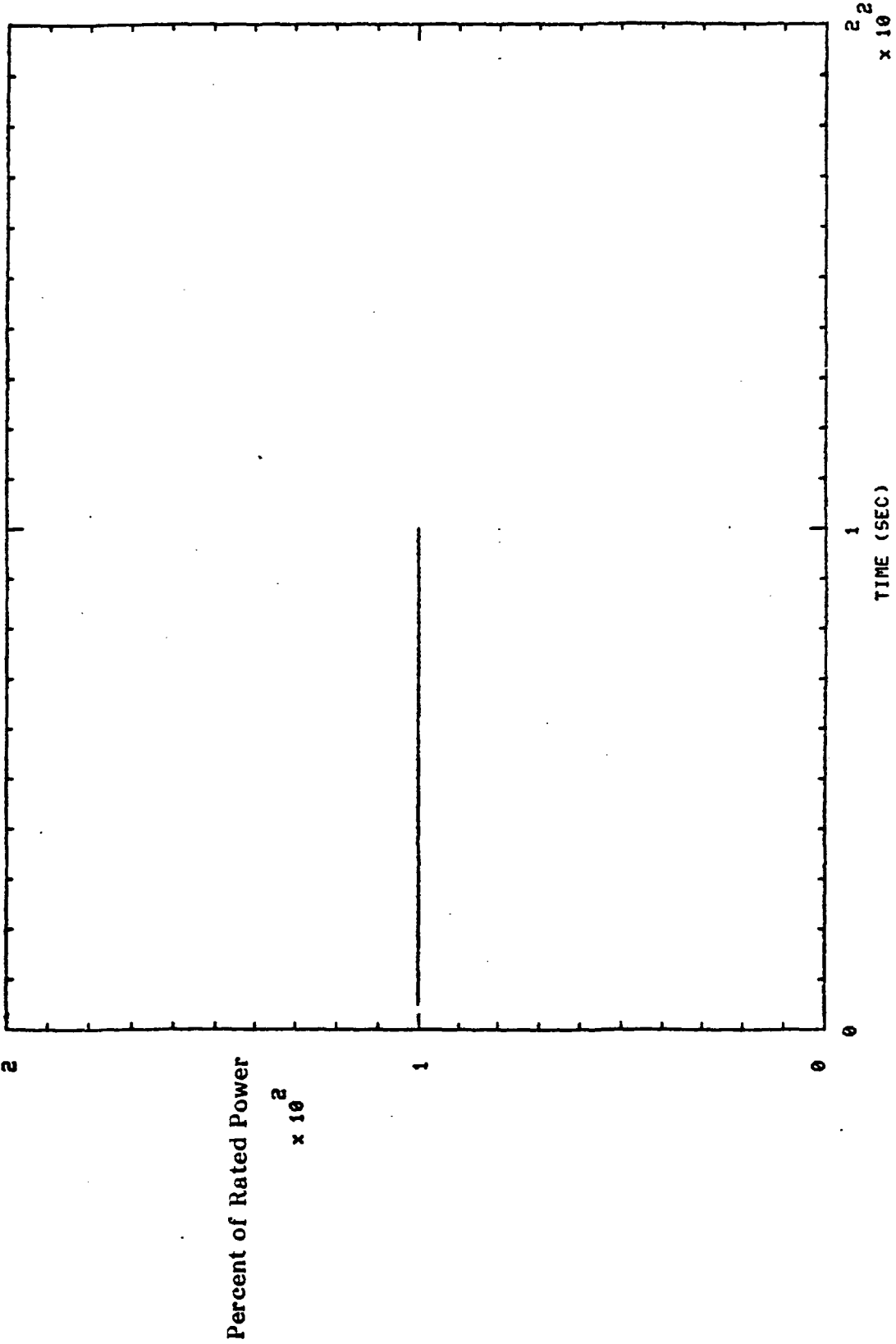
750049 THRUST (UNFILTERED )

750049 THRUST

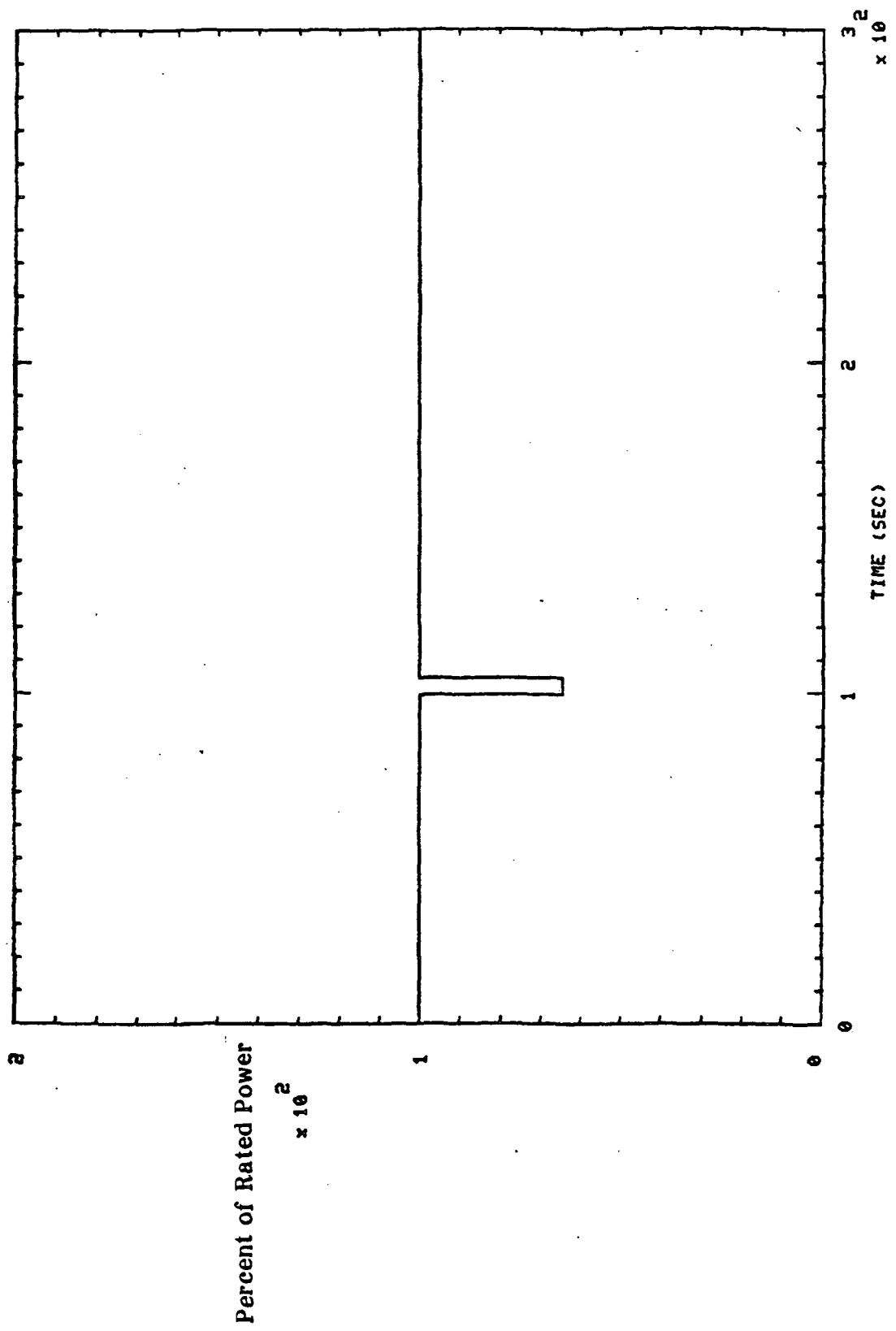




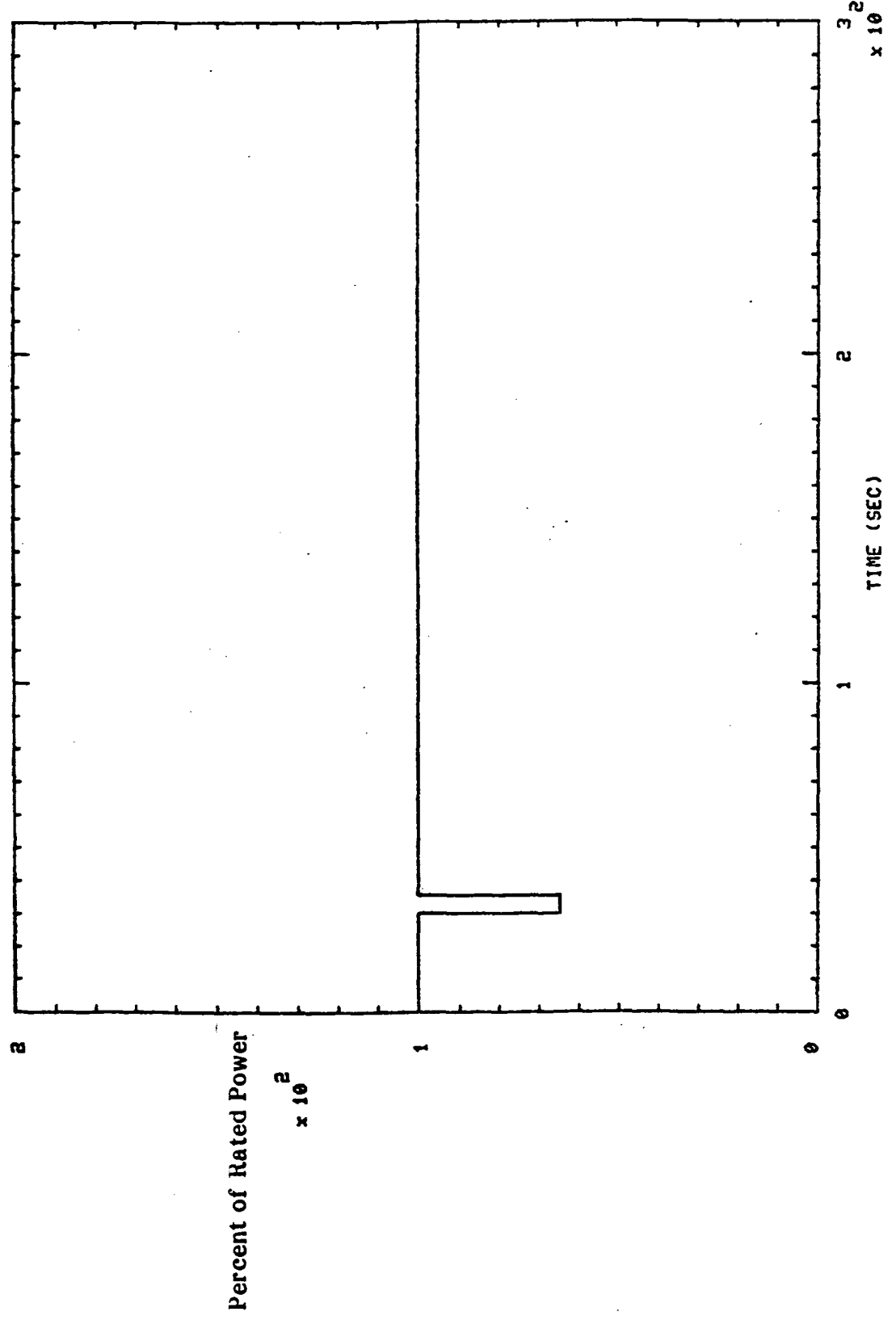
750050 THRUST (UNFILTERED)



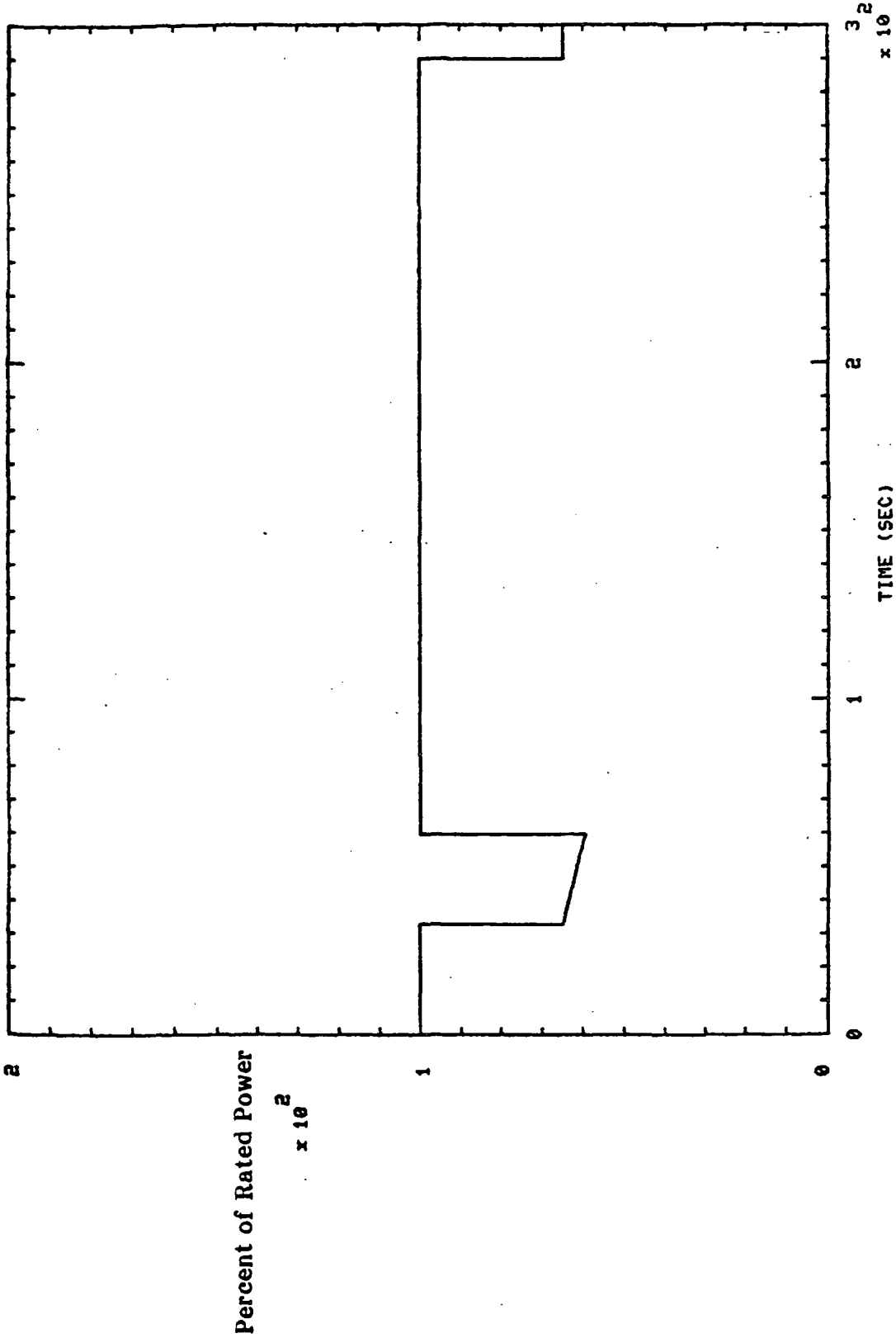
750052 THRUST (UNFILTERED )



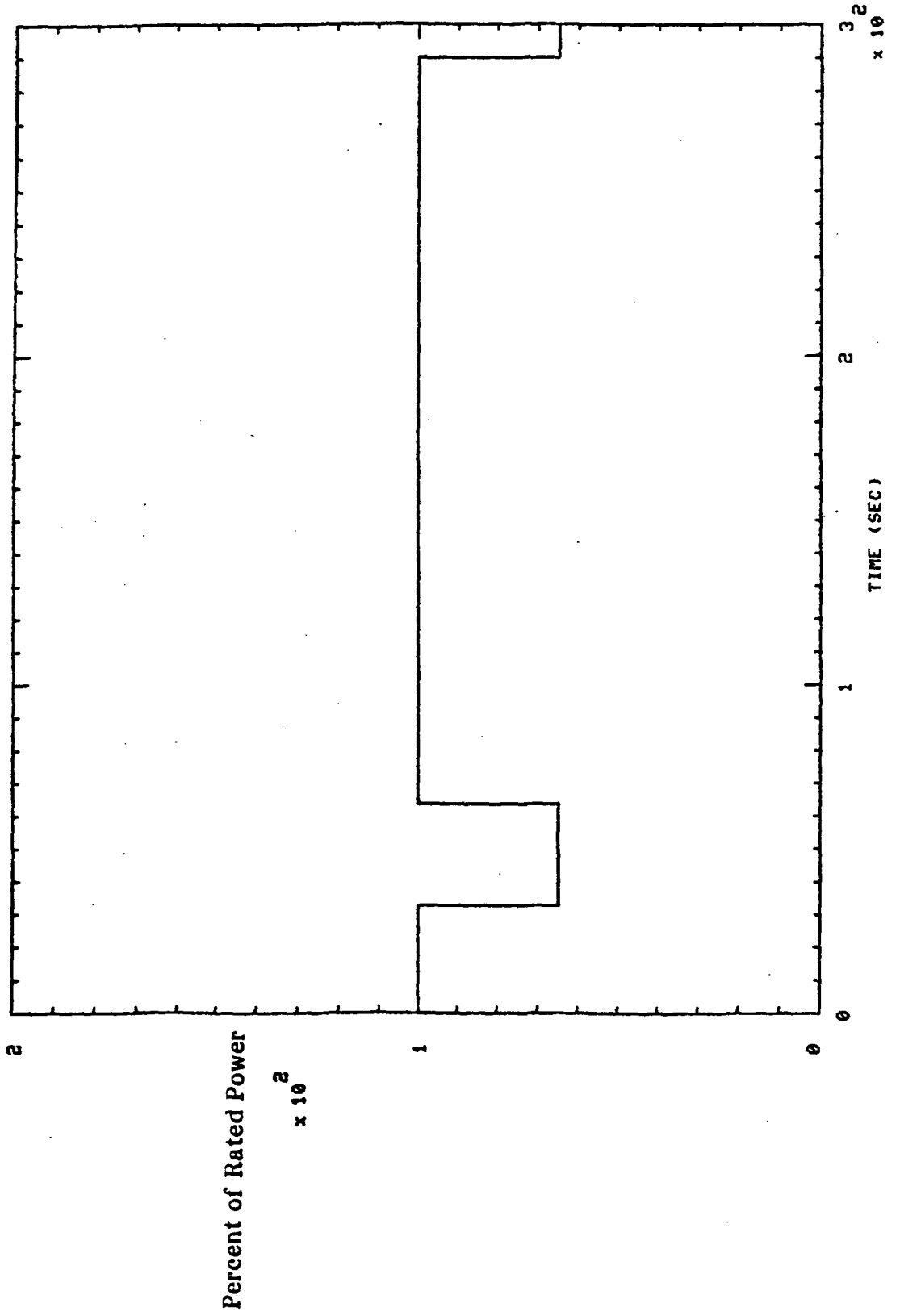
750053 THRUST (UNFILTERED)



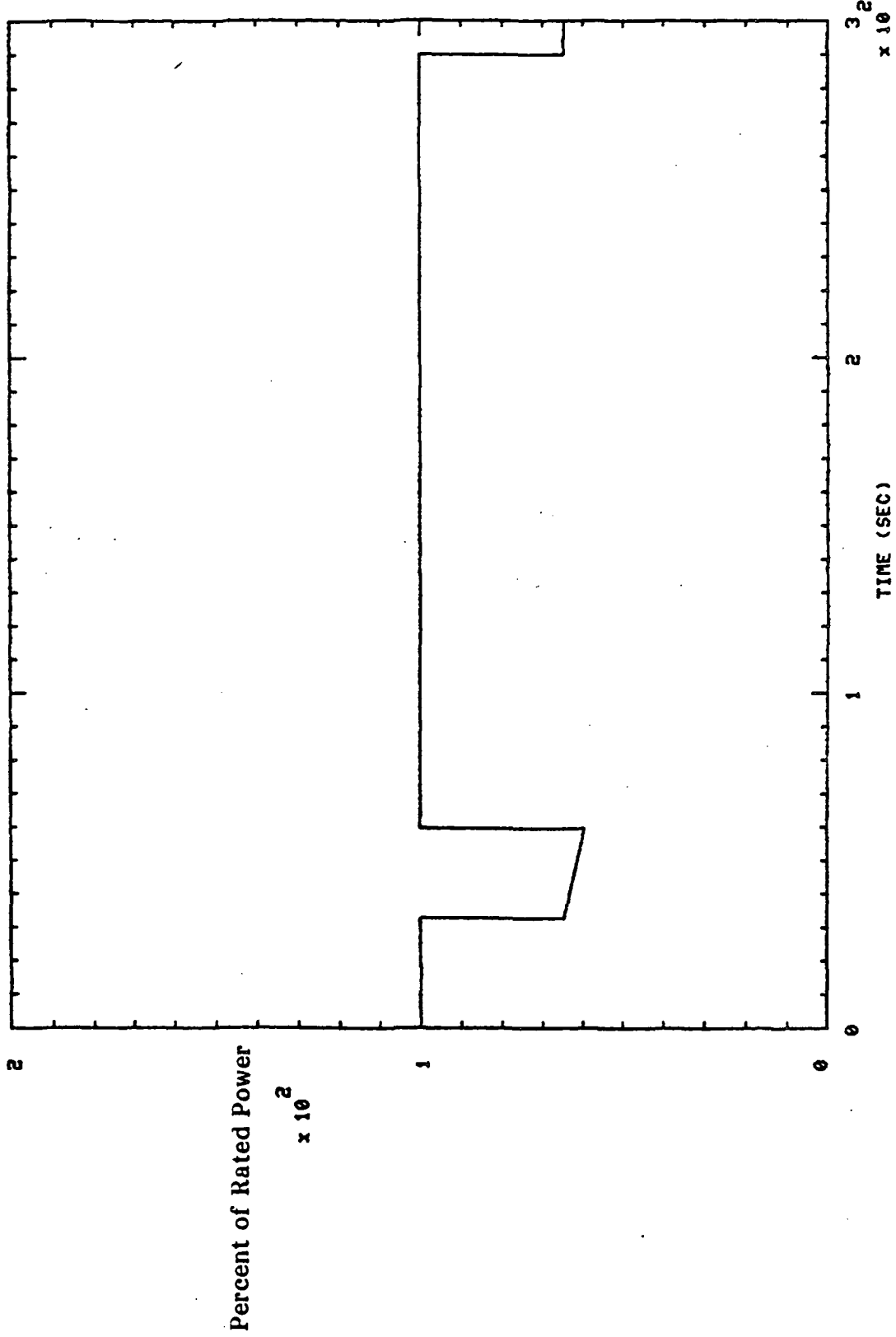
750066 THRUST (UNFILTERED )



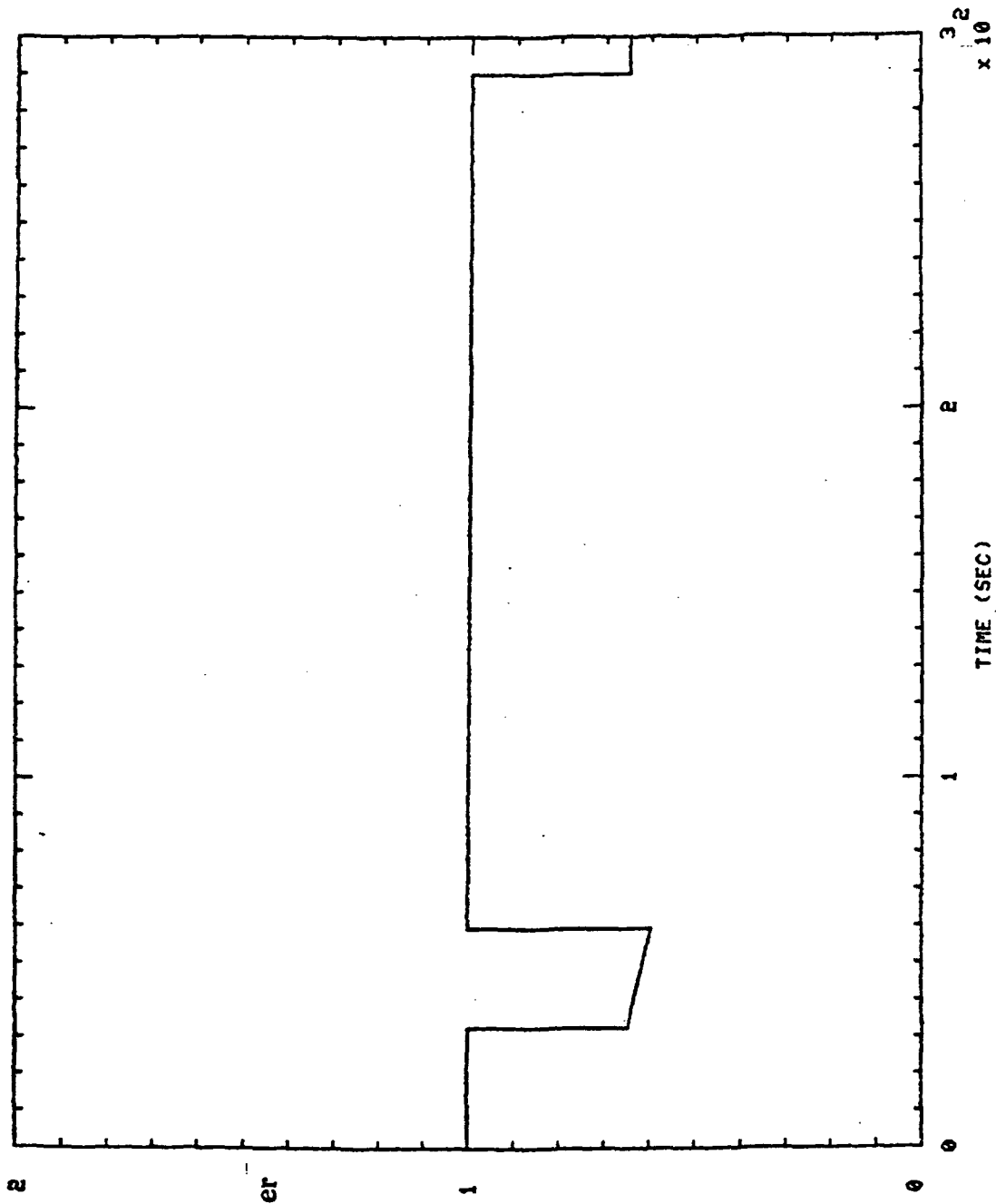
750067 THRUST (UNFILTERED )



750068 THRUST (UNFILTERED )

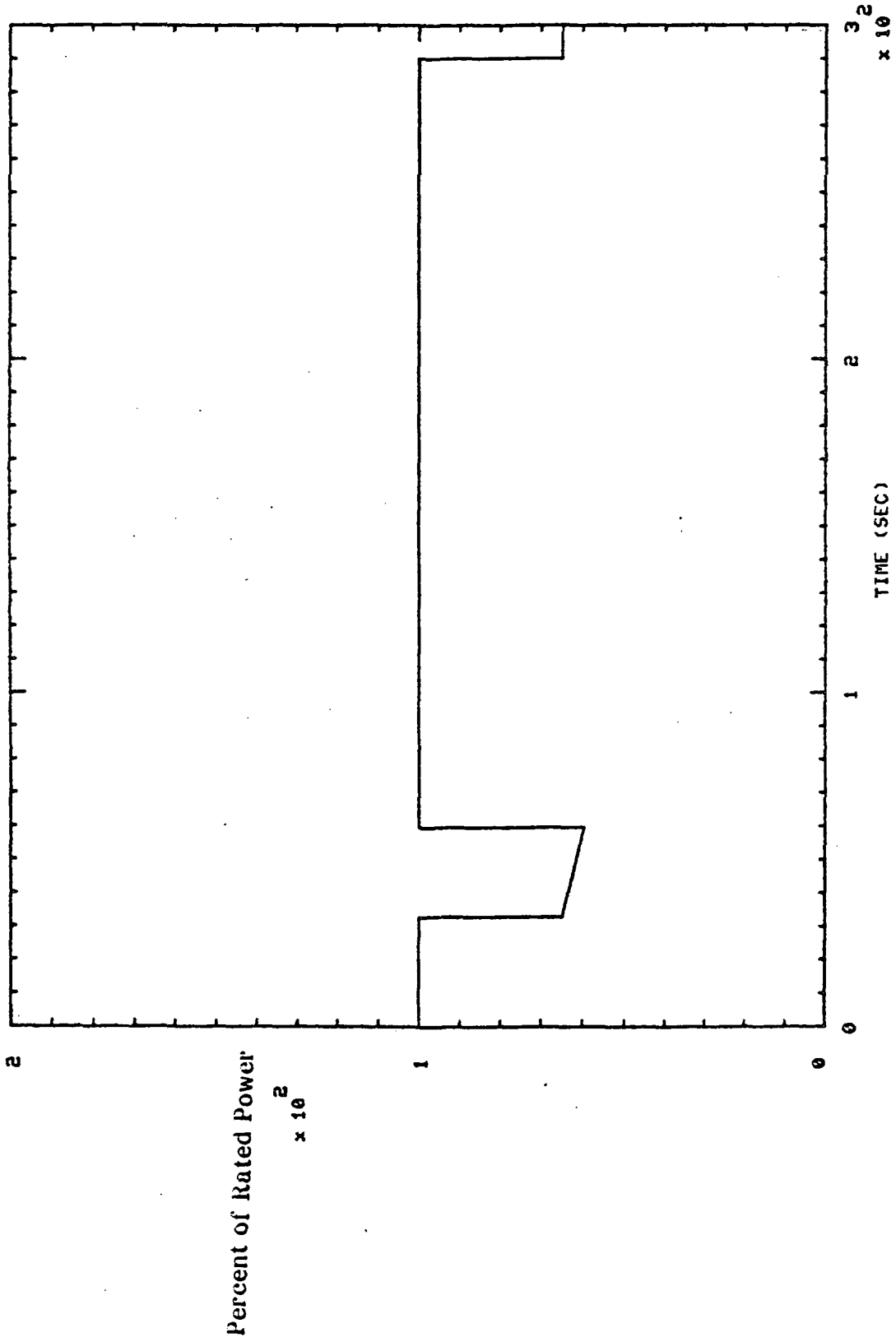


750059 THRUST (UNFILTERED)



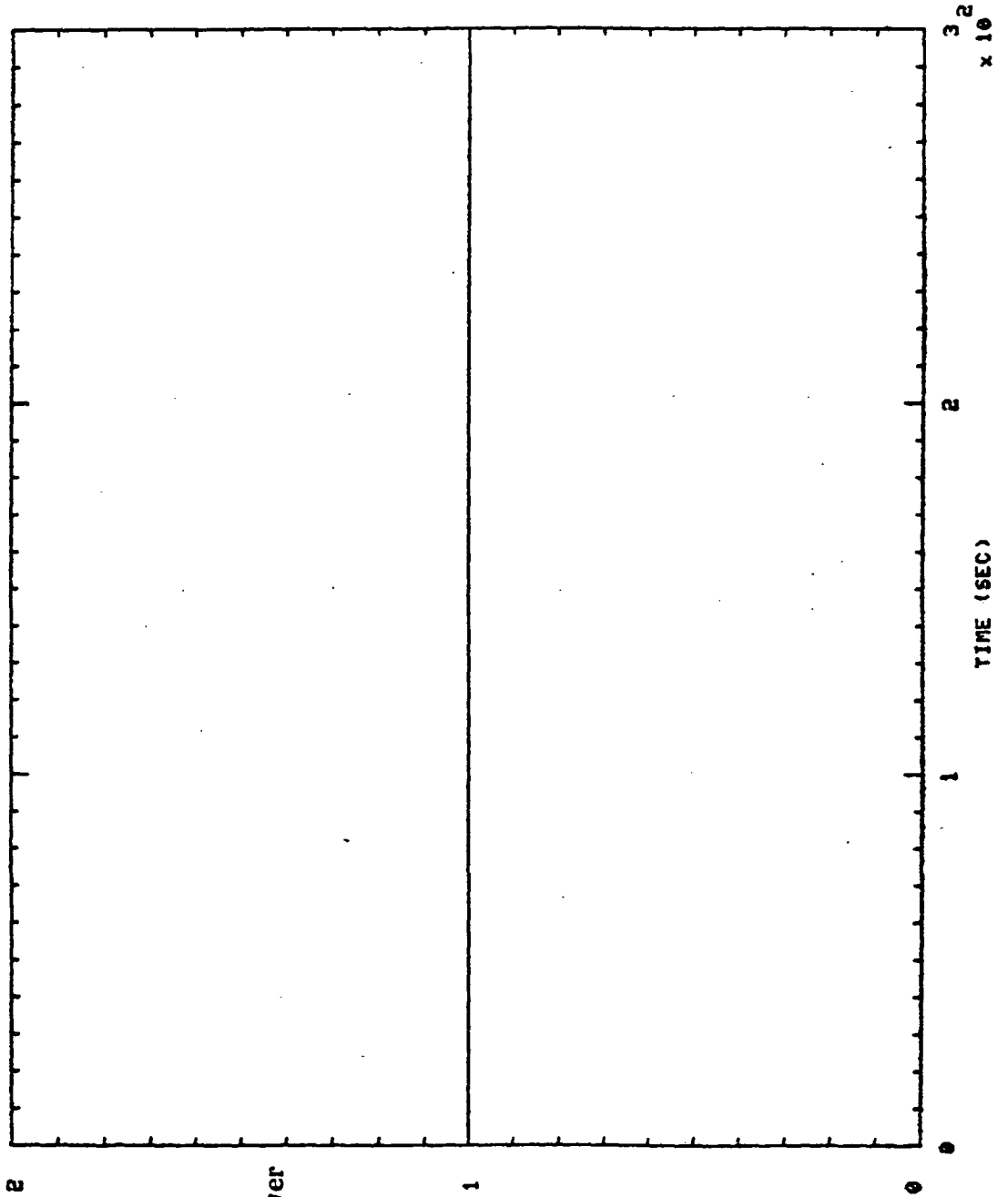
(UNFILTERED )

750070 THRUST

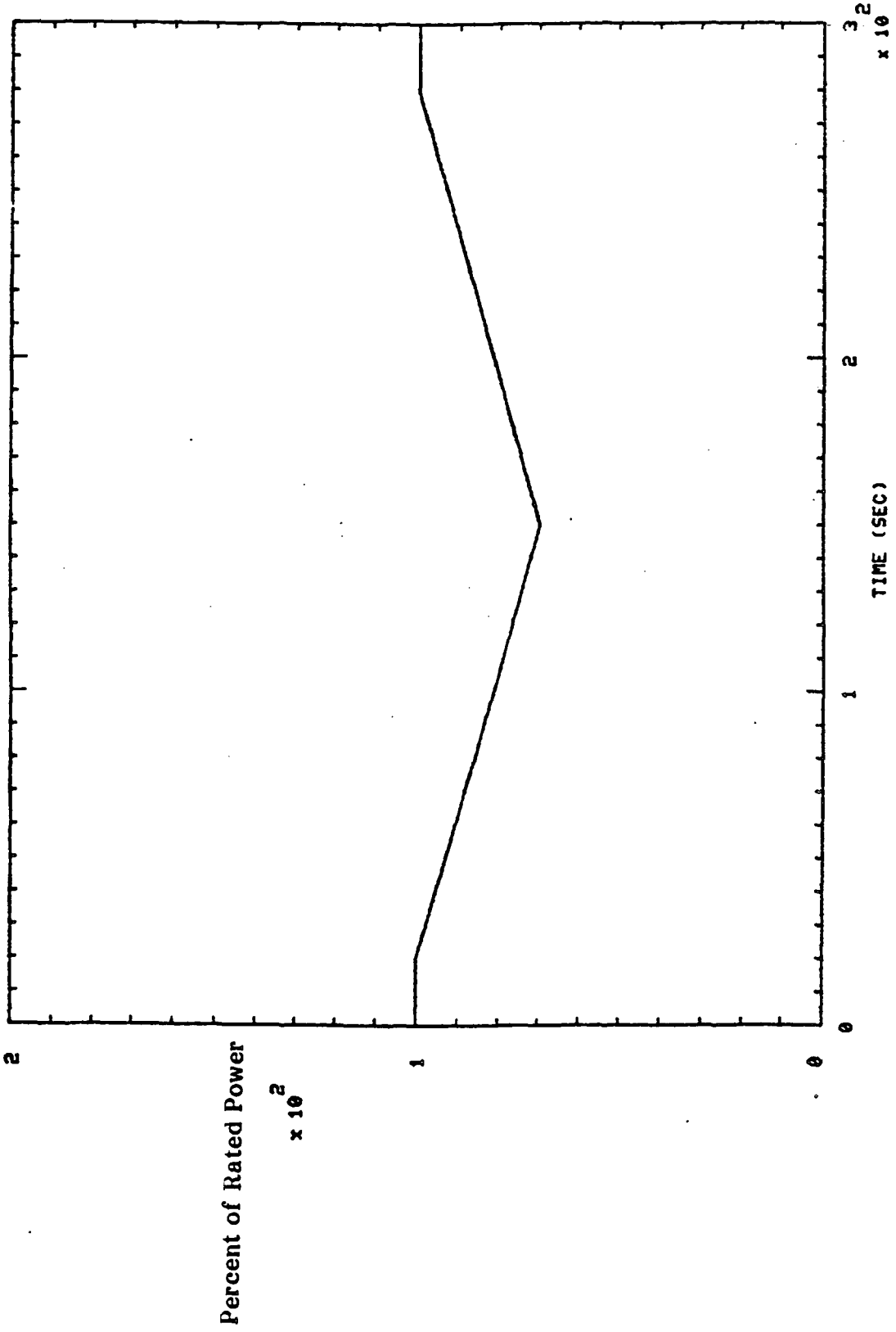




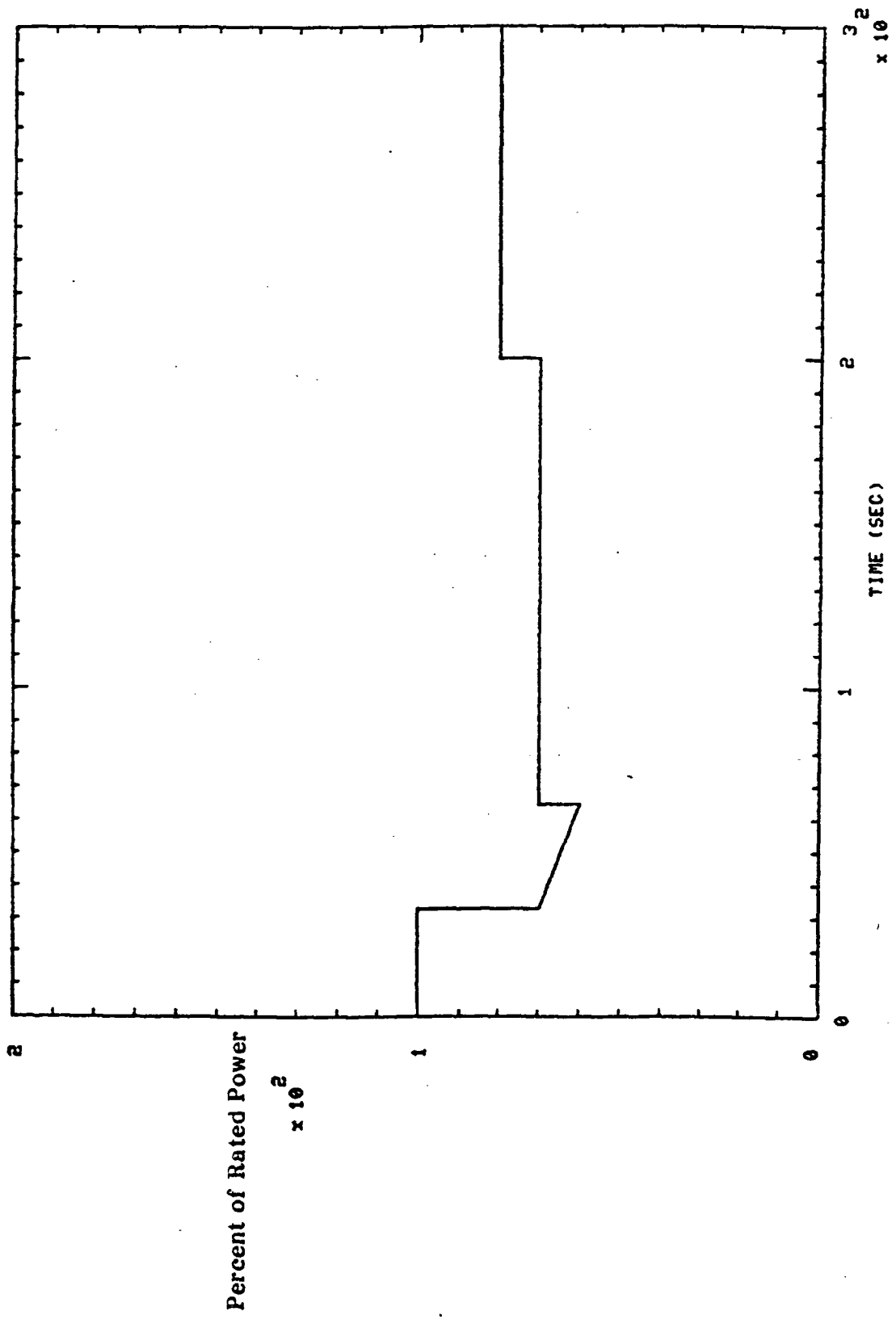
750071 THRUST (UNFILTERED )



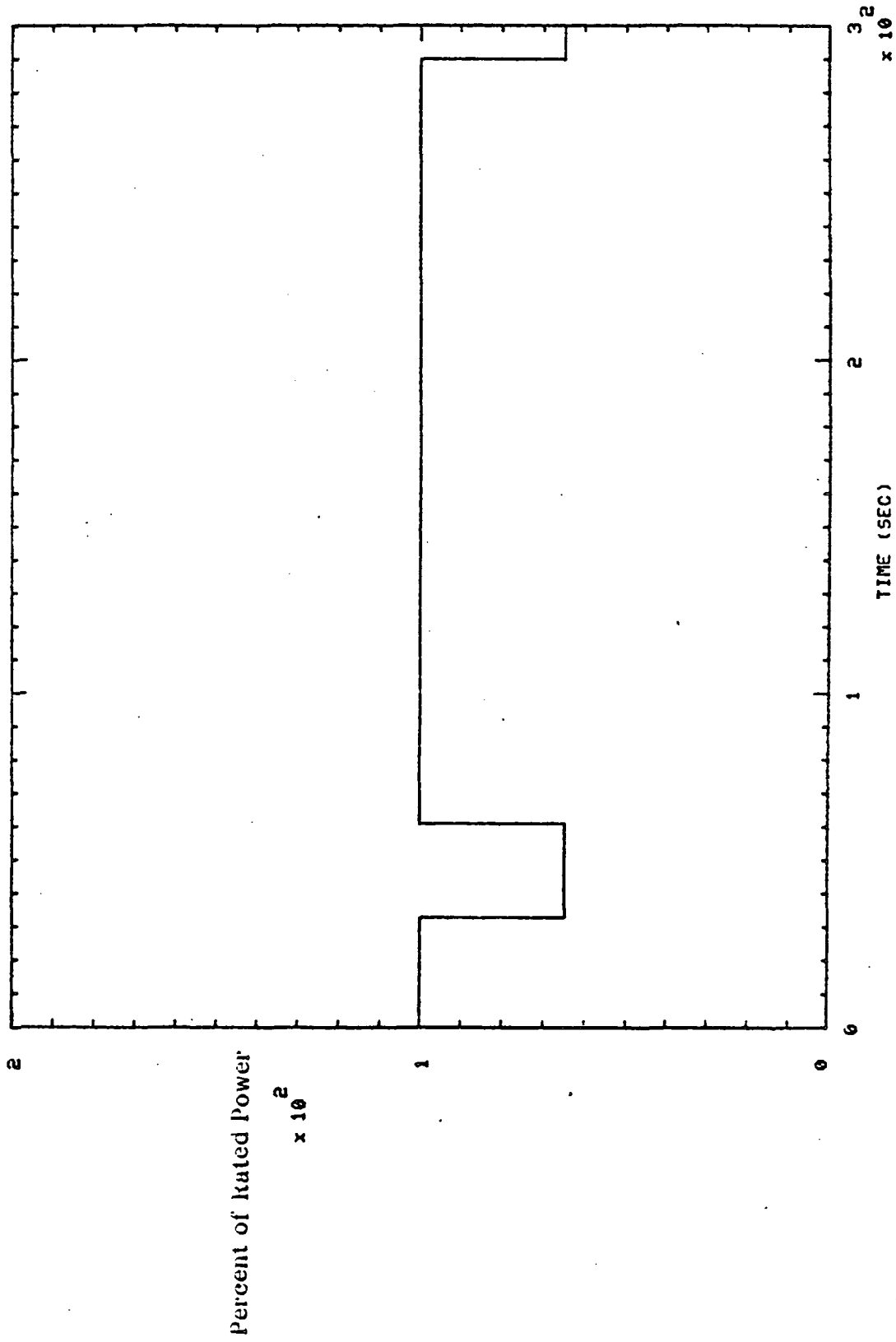
750072 THRUST (UNFILTERED )



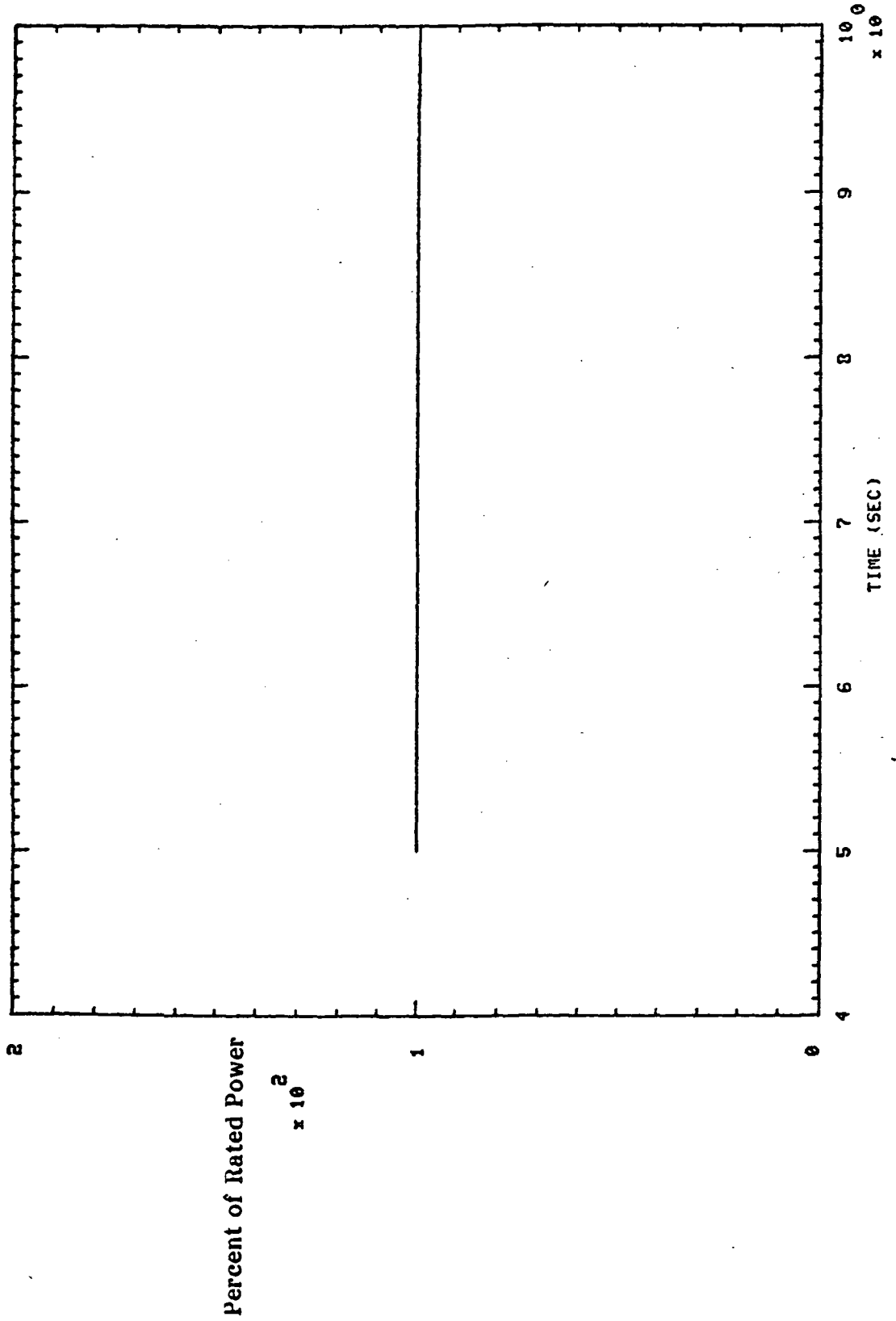
750073 THRUST (UNFILTERED )



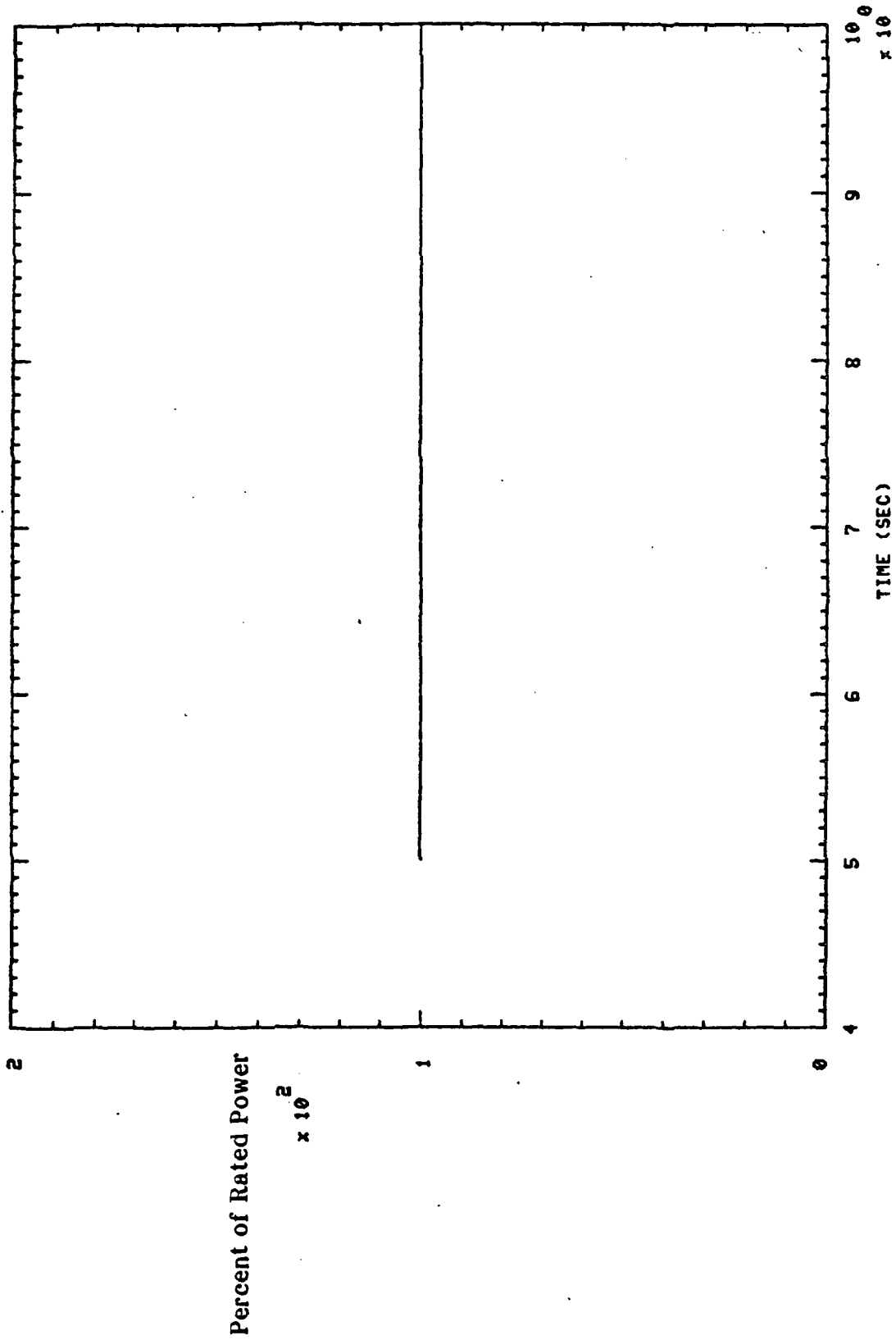
750074 THRUST (UNFILTERED )



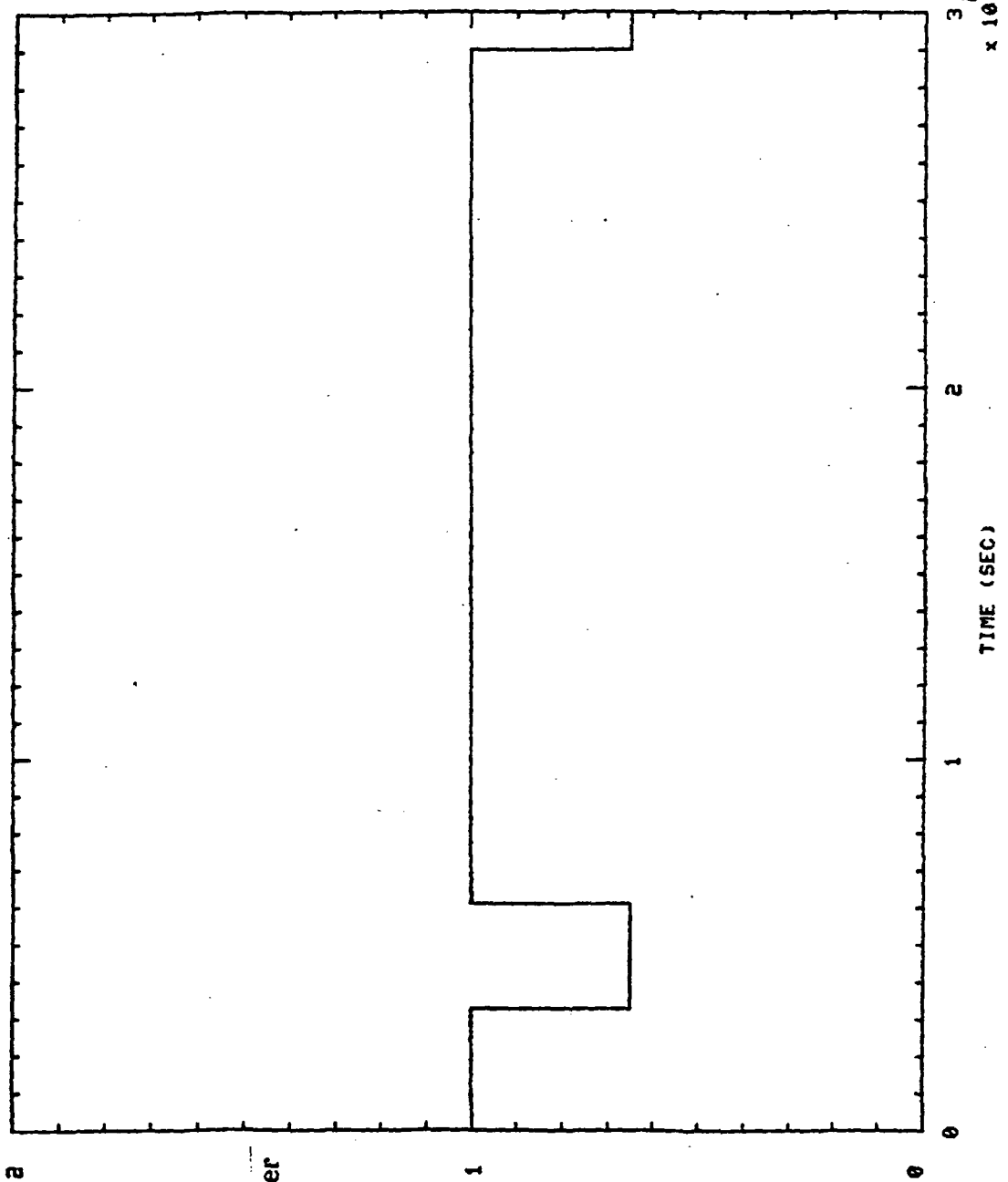
750075 THRUST (UNFILTERED )



750076 THRUST (UNFILTERED )



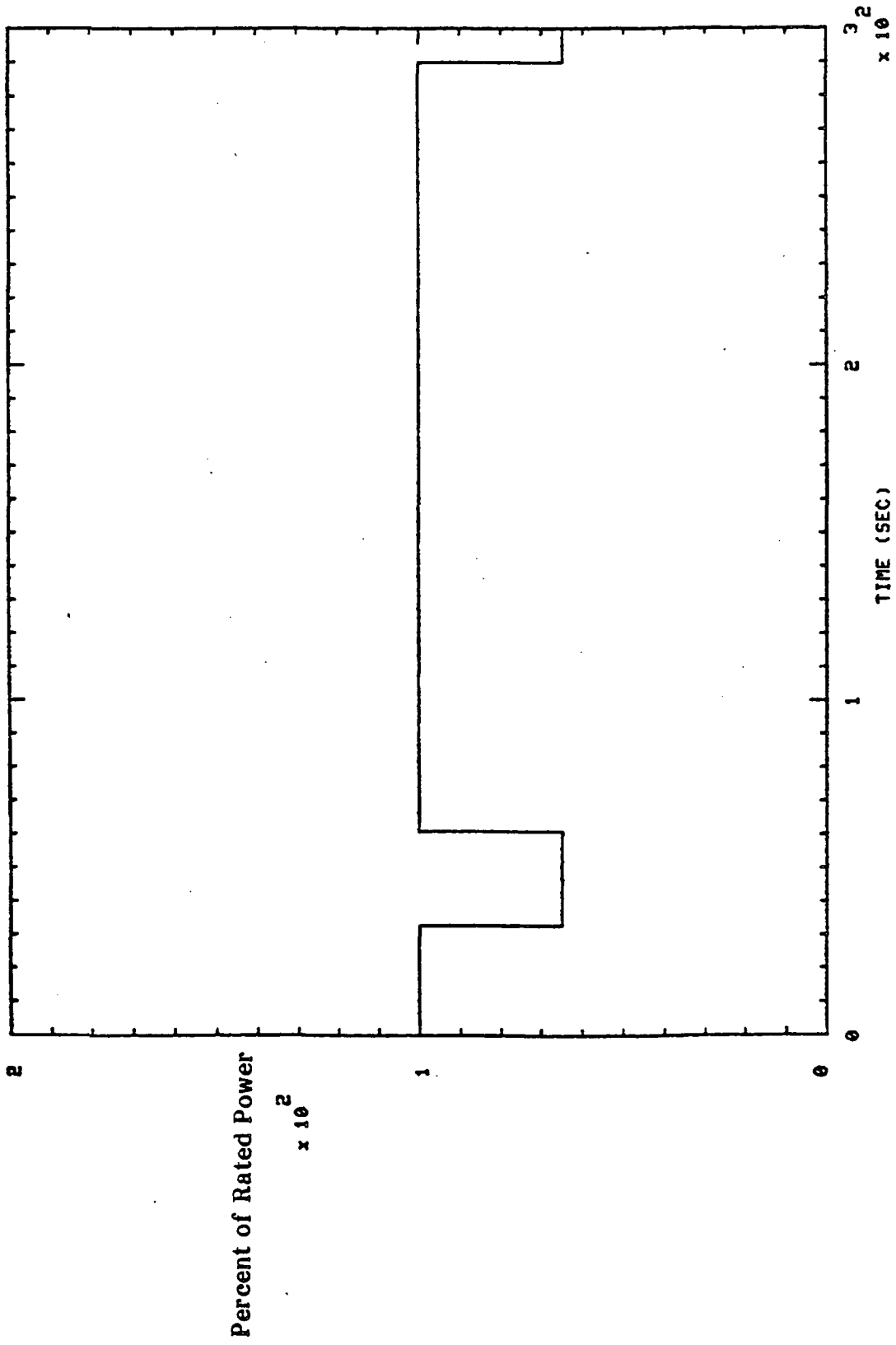
750077 THRUST (UNFILTERED )



( UNFILTERED )

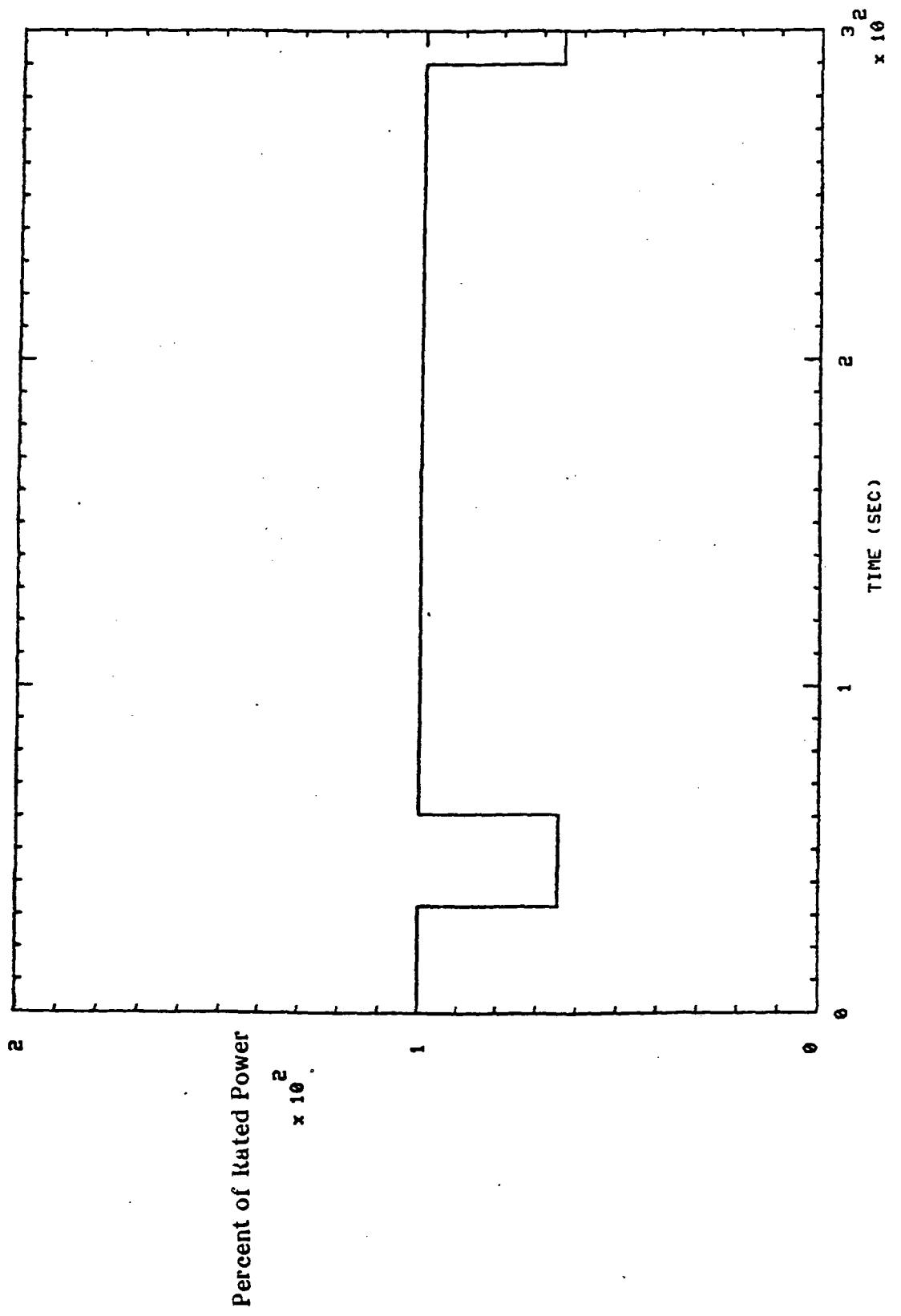
THRUST

750078



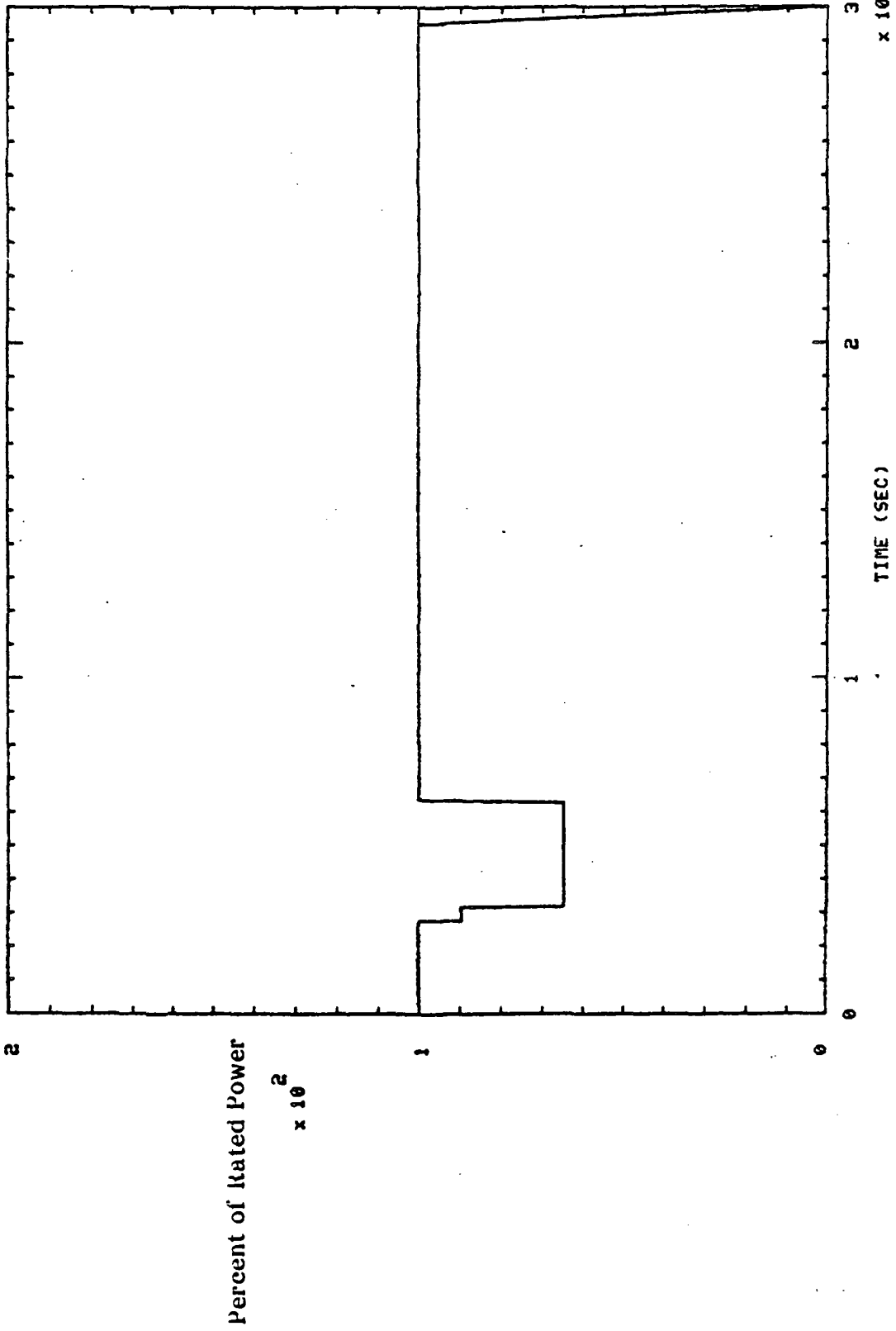


750079 THRUST (UNFILTERED )

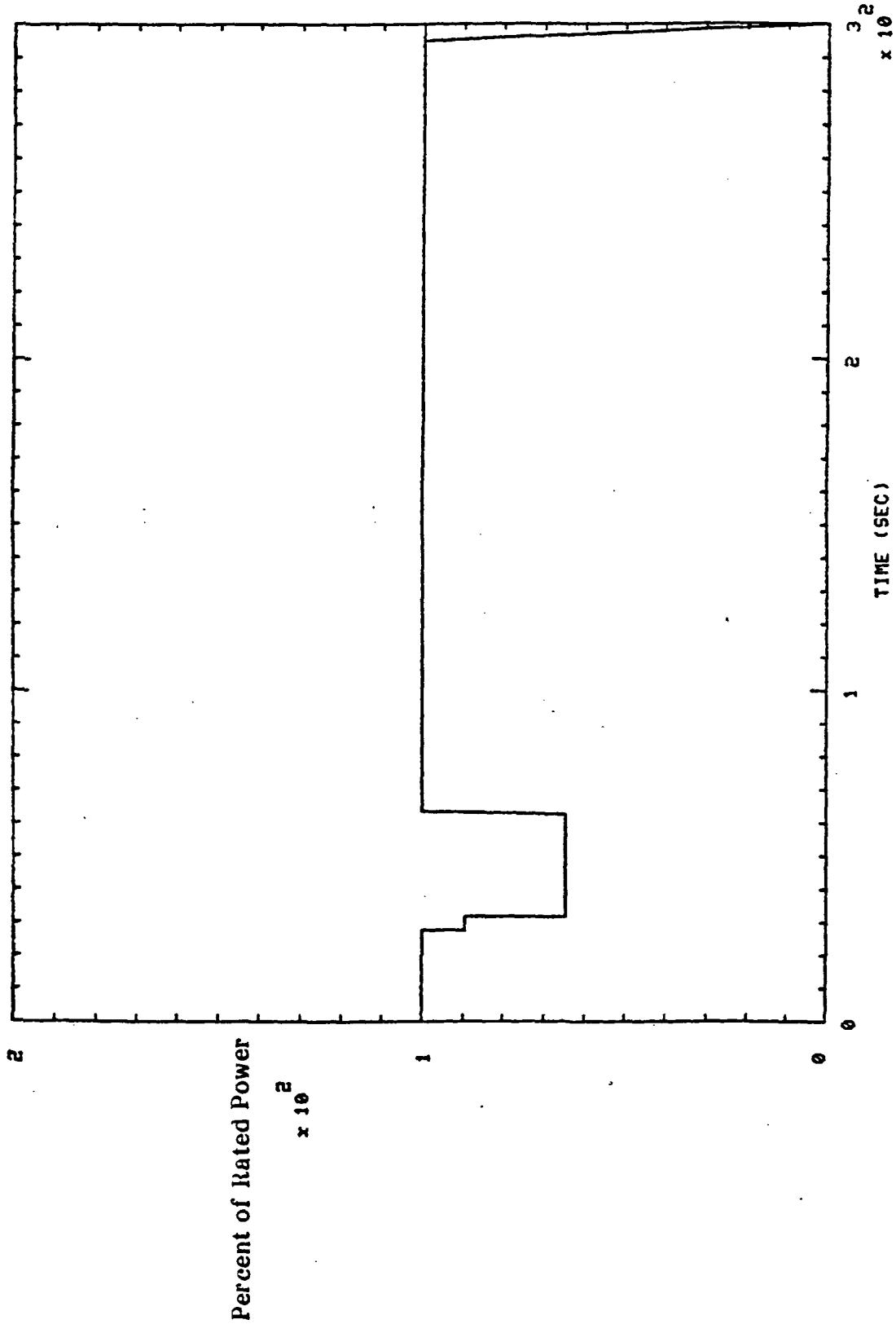


( UNFILTERED )

750087 THRUST

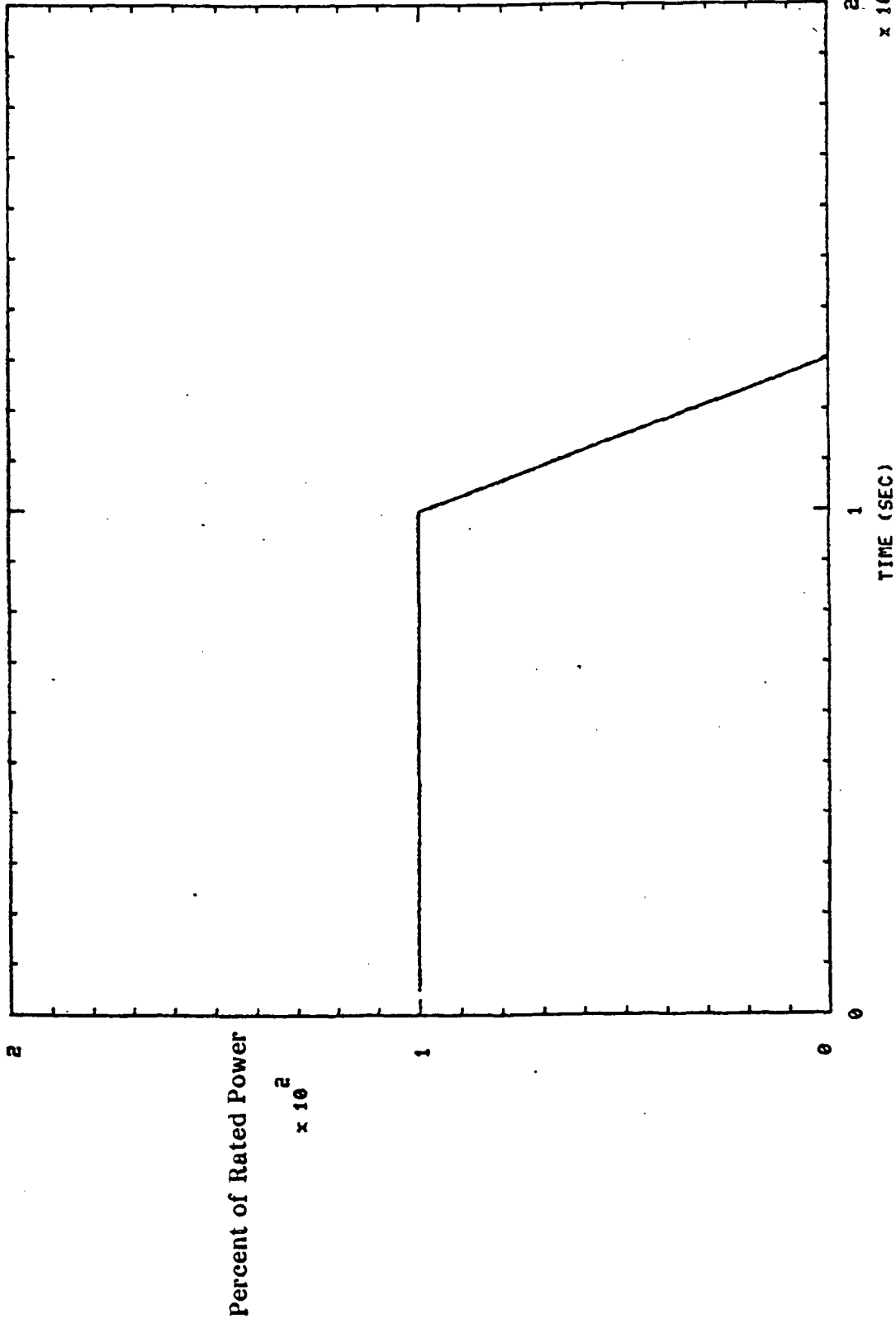


750088 THRUST (UNFILTERED )



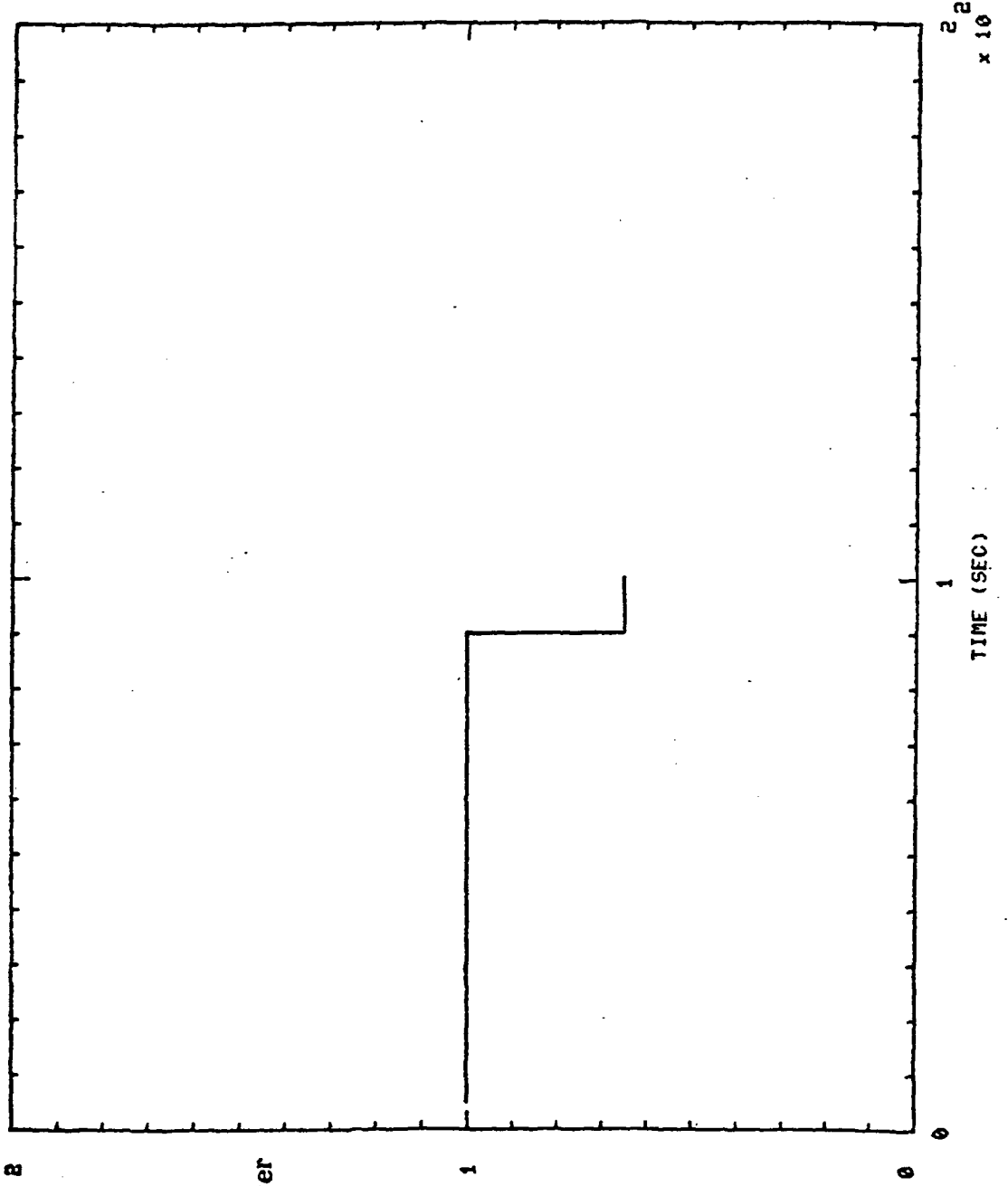
(UNFILTERED )

750089 THRUST



(UNFILTERED )

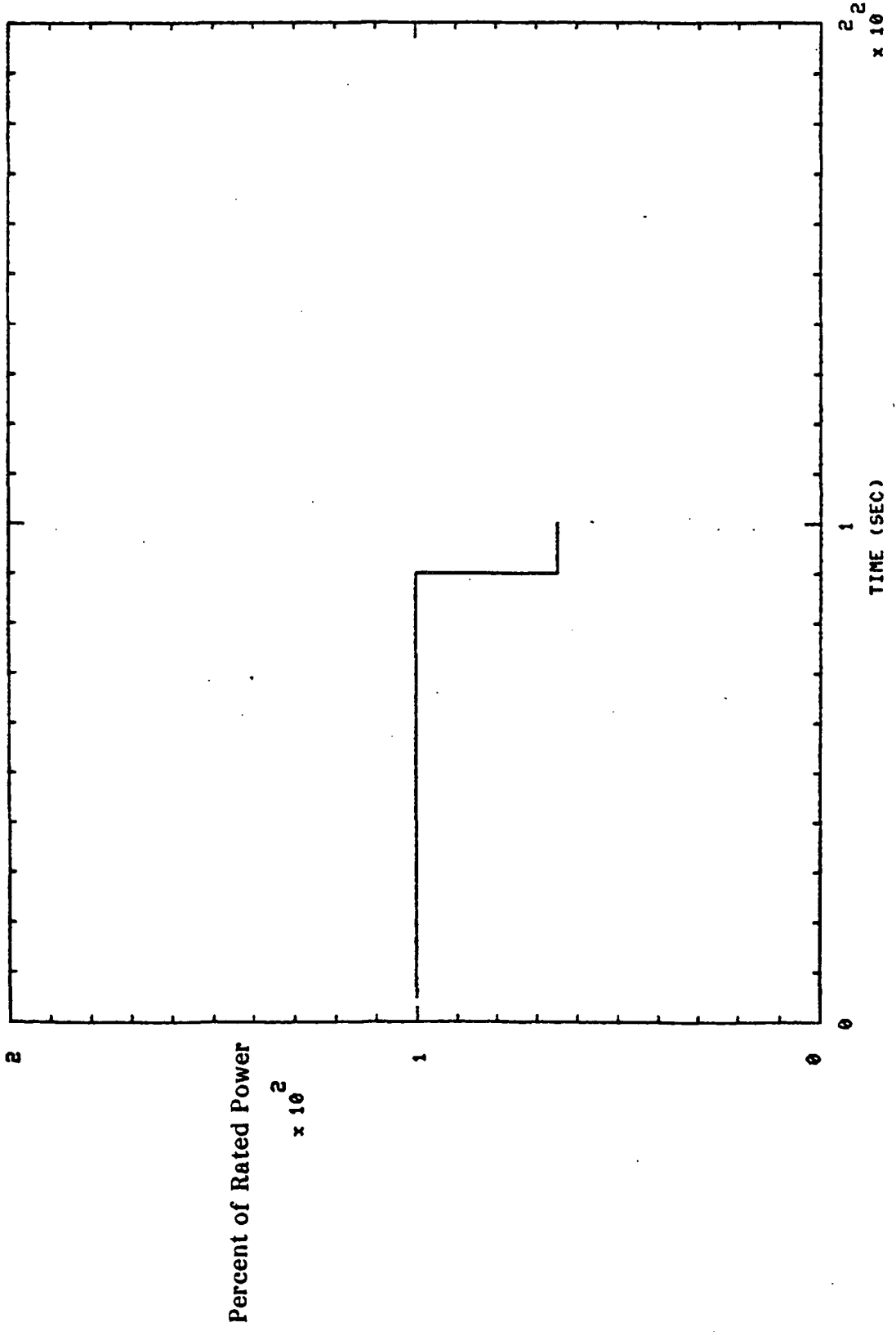
750090 THRUST



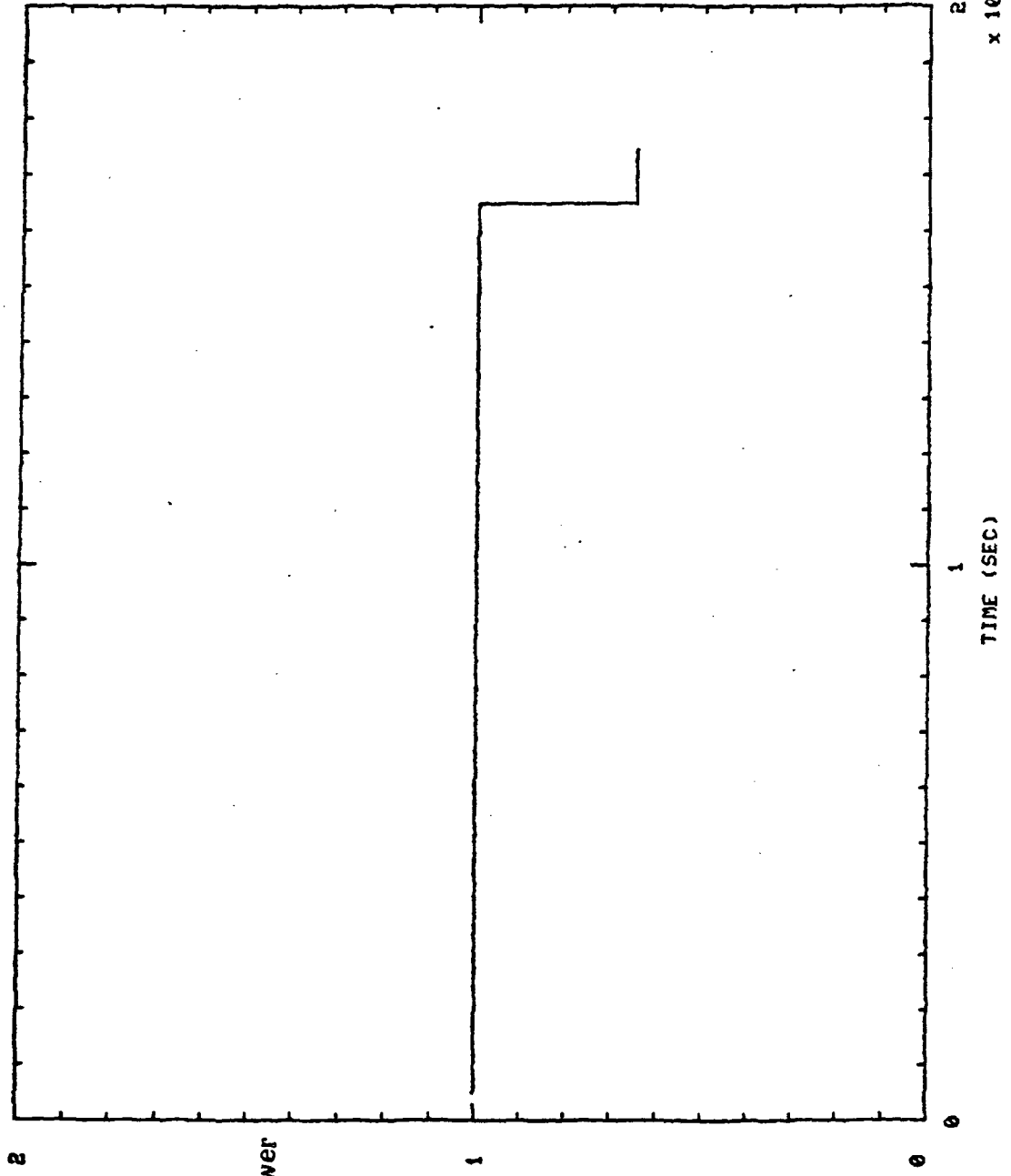
Percent of Rated Power  
x 10<sup>2</sup>

TIME (SEC)  
x 10<sup>2</sup>

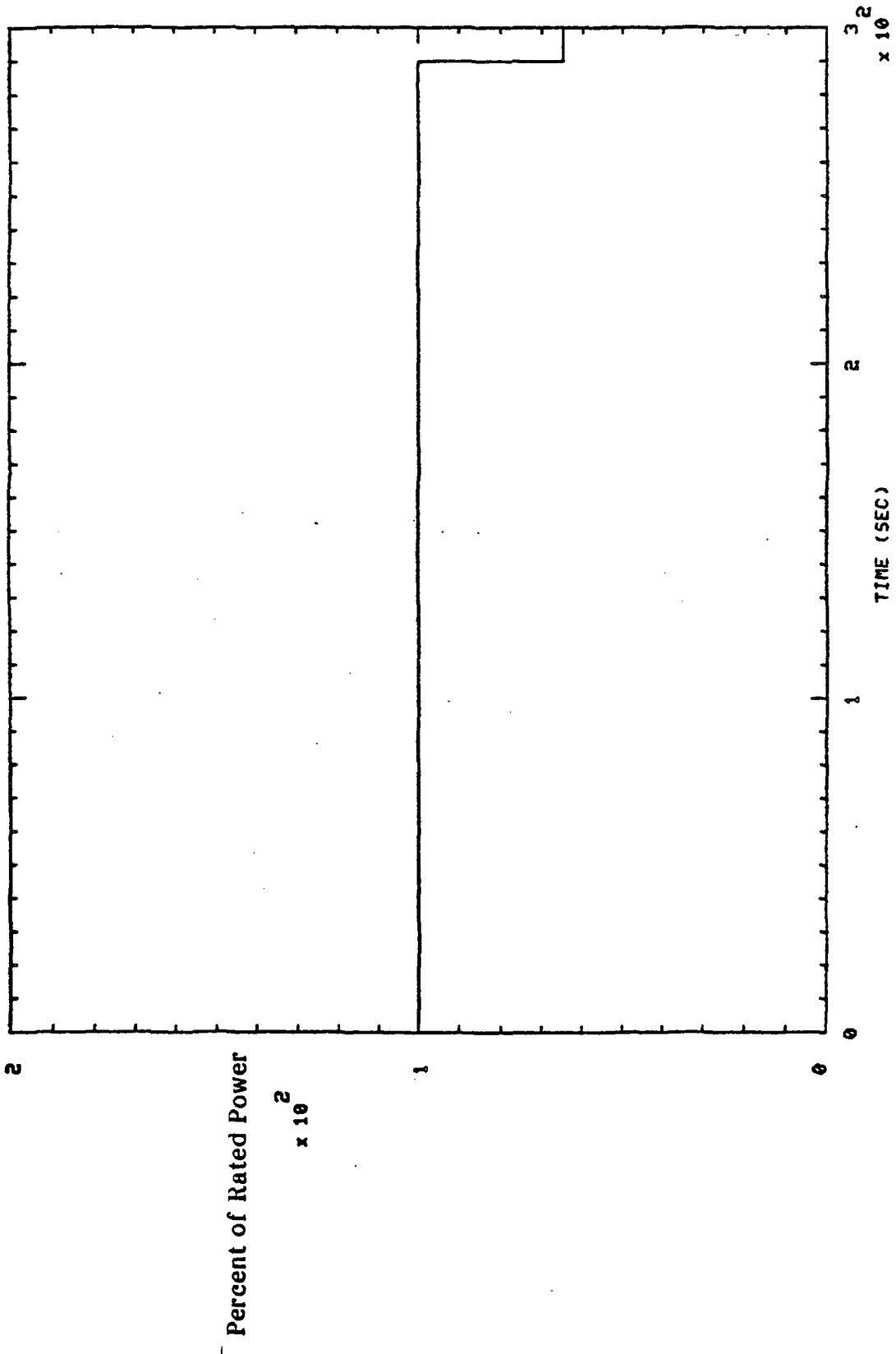
750091 THRUST (UNFILTERED )



750092 THRUST (UNFILTERED )

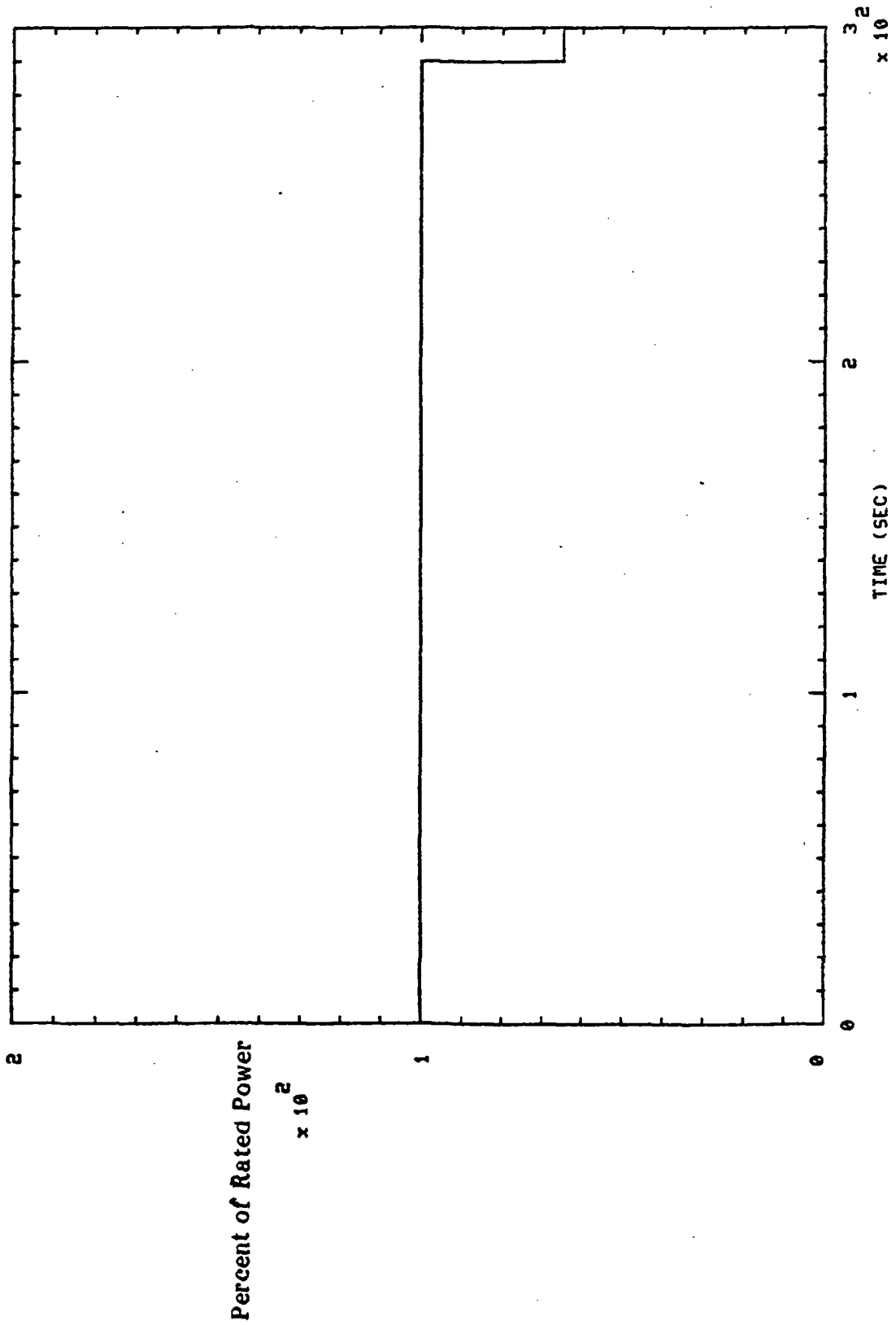


750093 THRUST (UNFILTERED)

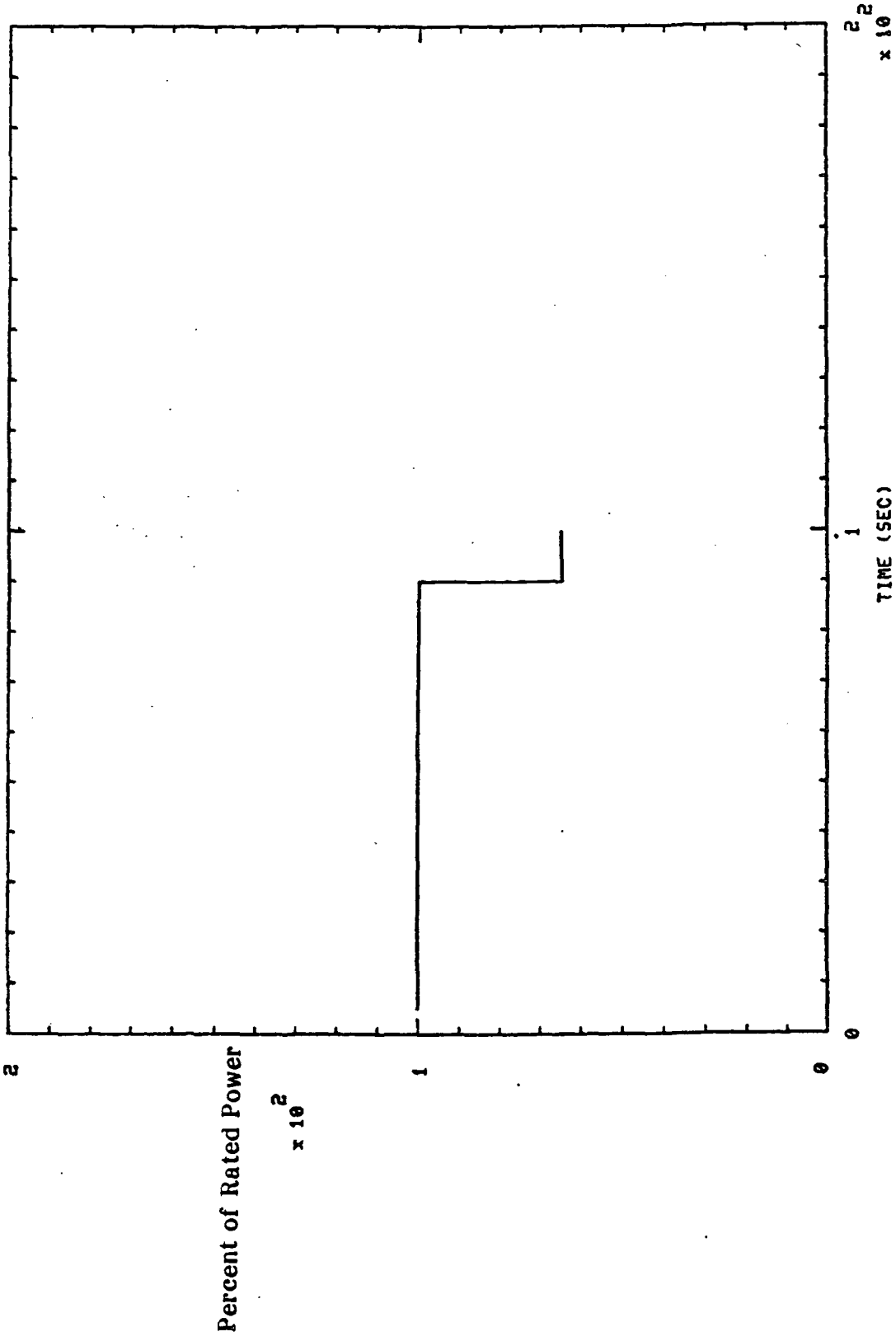




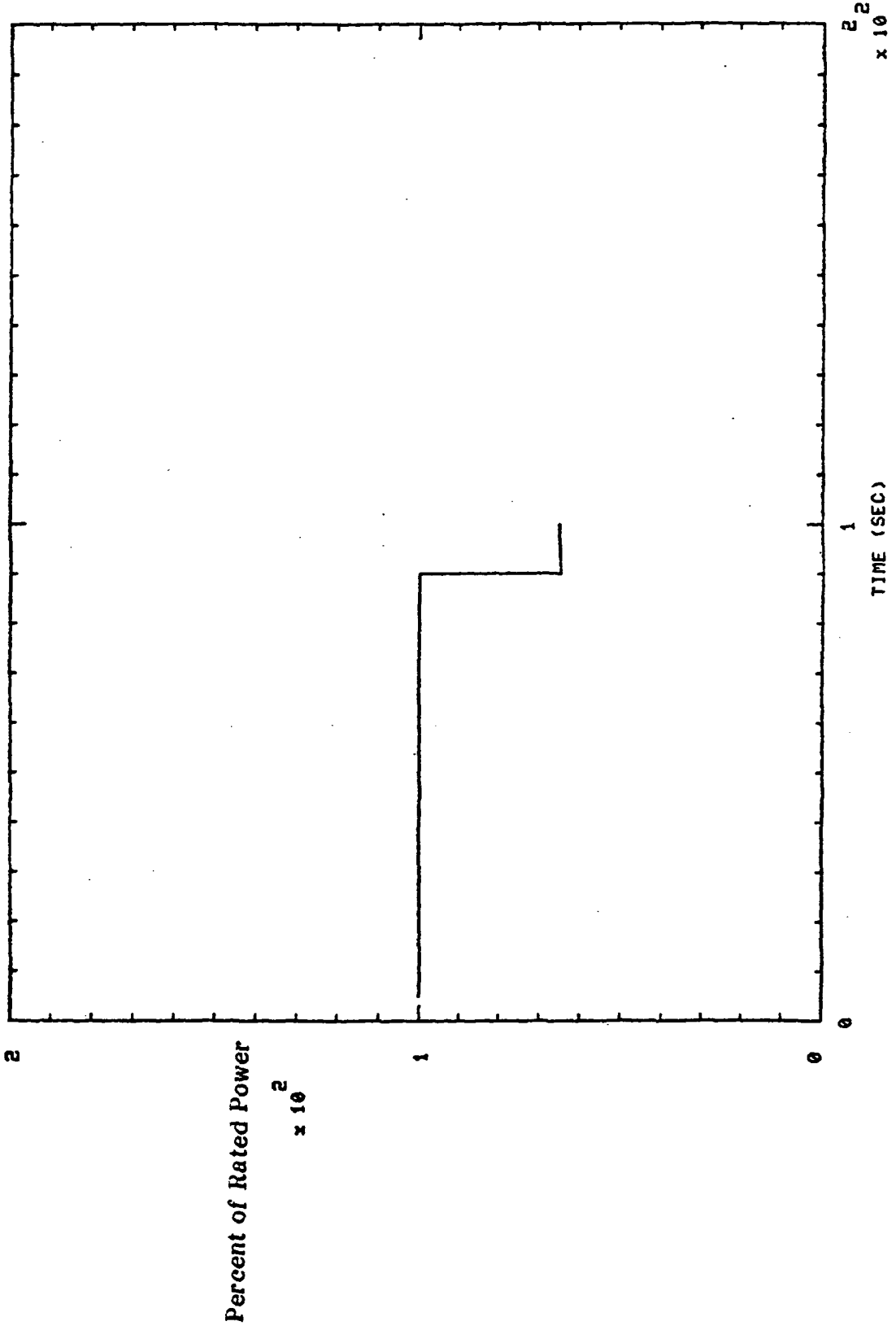
750094 THRUST (UNFILTERED )



750095 THRUST (UNFILTERED )



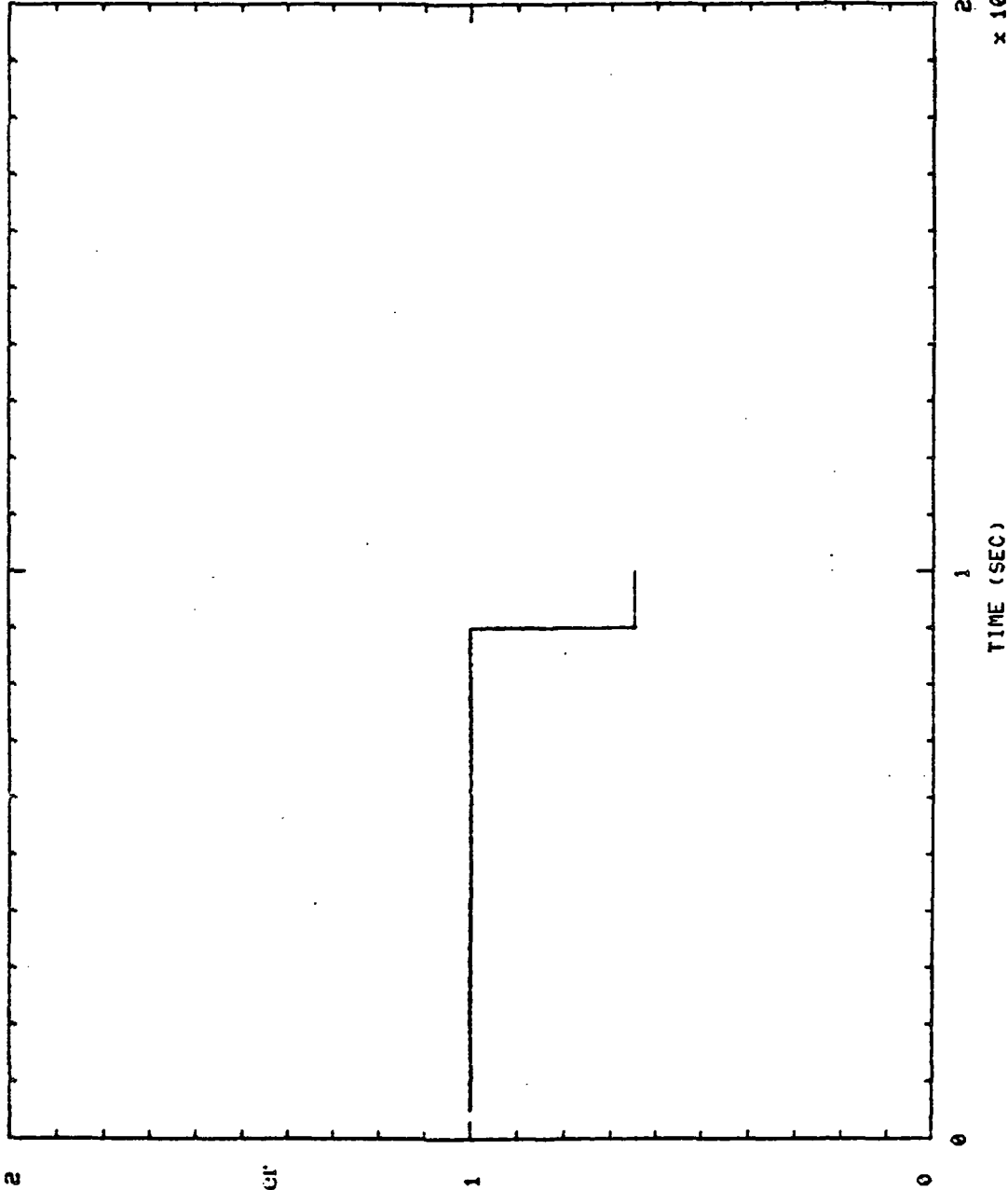
750096 THRUST (UNFILTERED )



(UNFILTERED )

THRUST

750097



Percent of Rated Power  
 $\times 10^2$

$\times 10^2$

TIME (SEC)

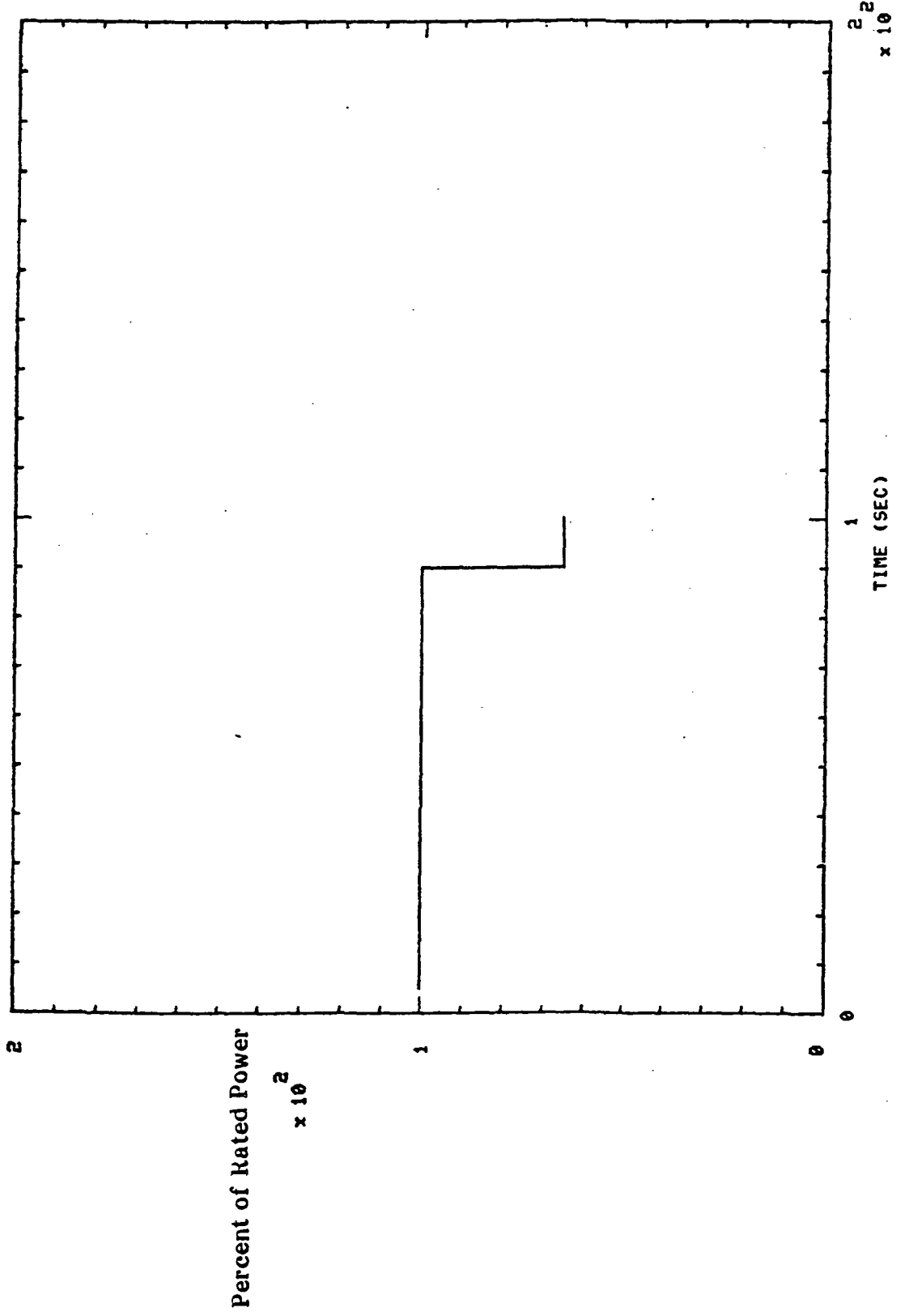
1

0

1

2

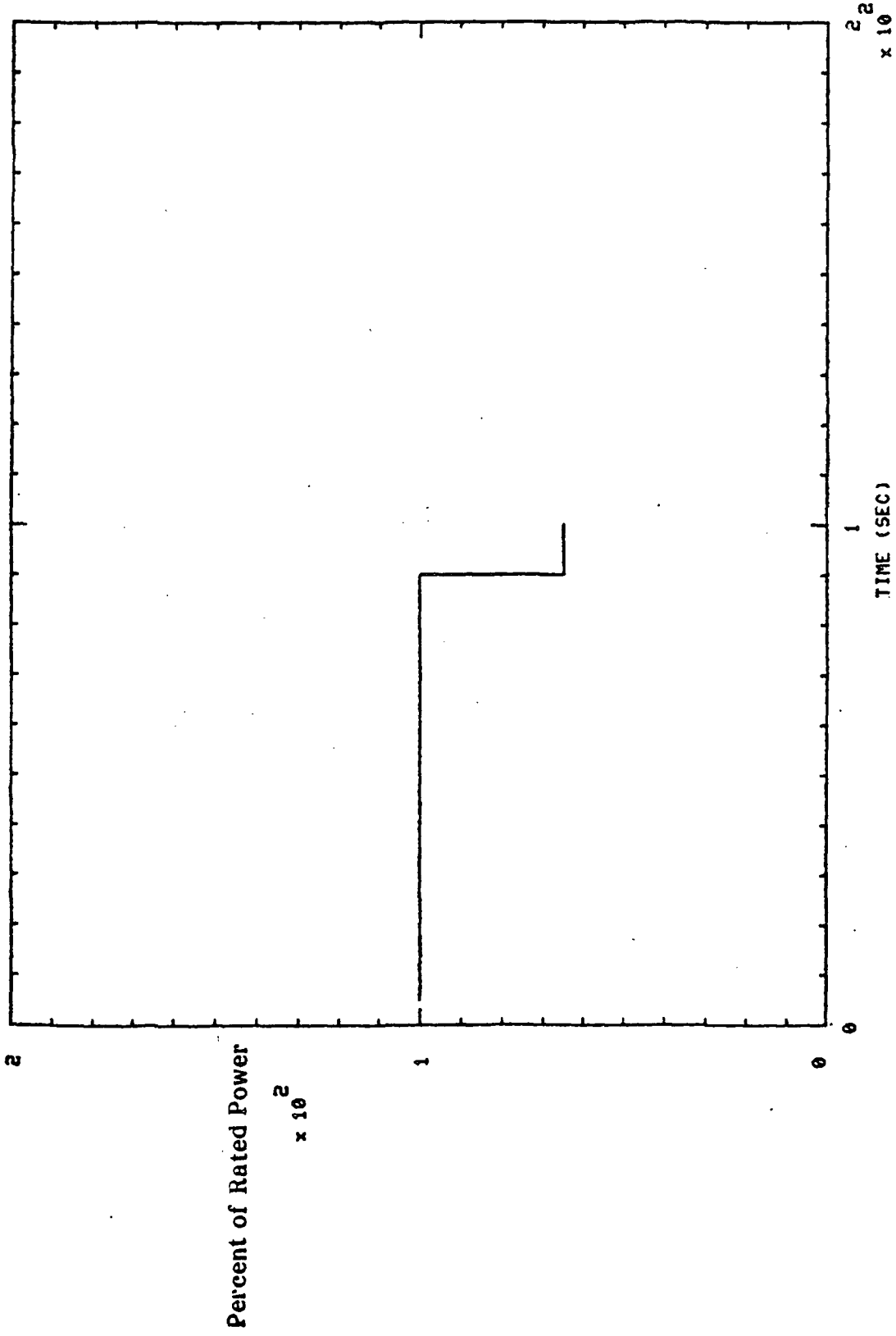
750098 THRUST (UNFILTERED )



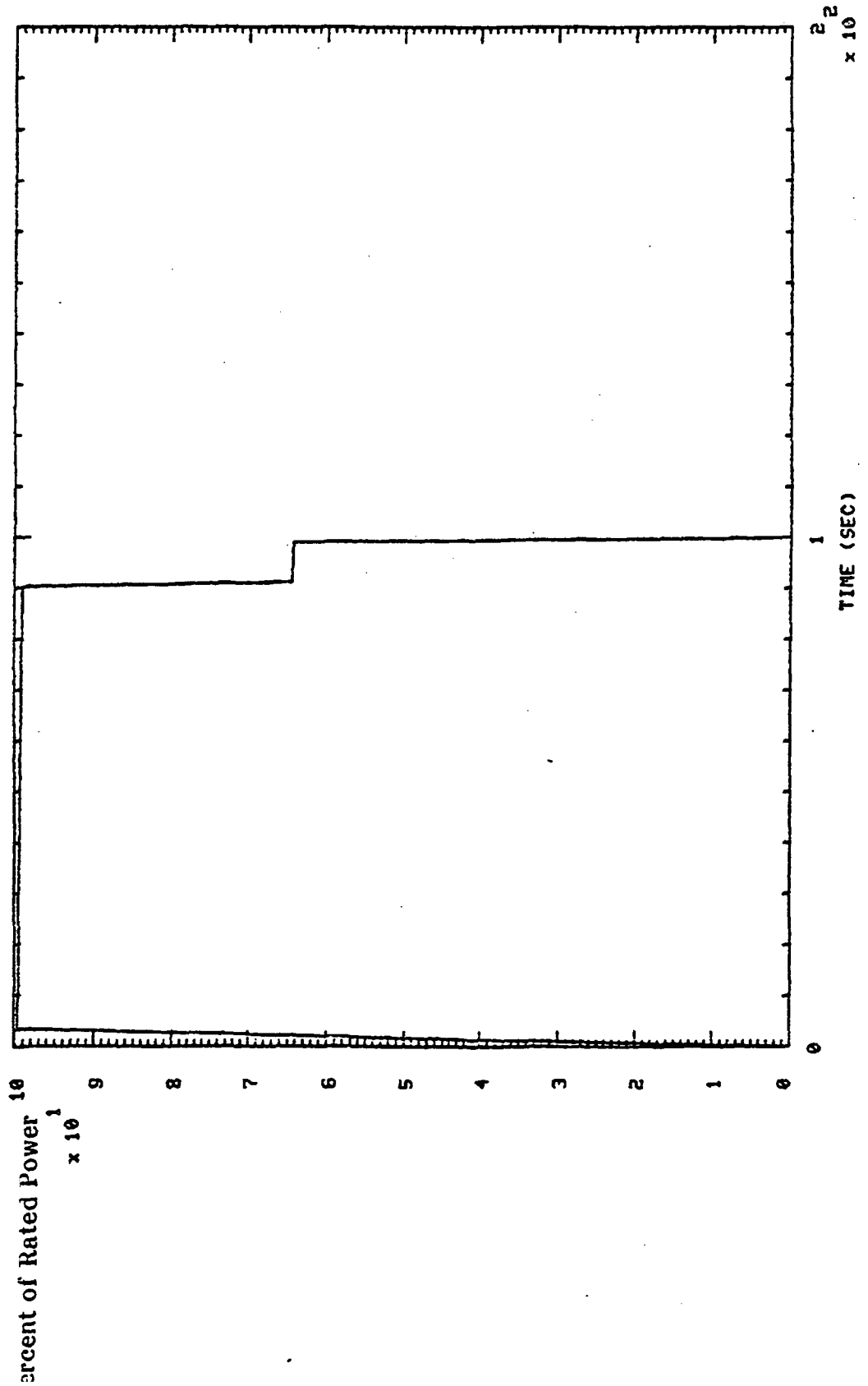
(UNFILTERED )

THRUST

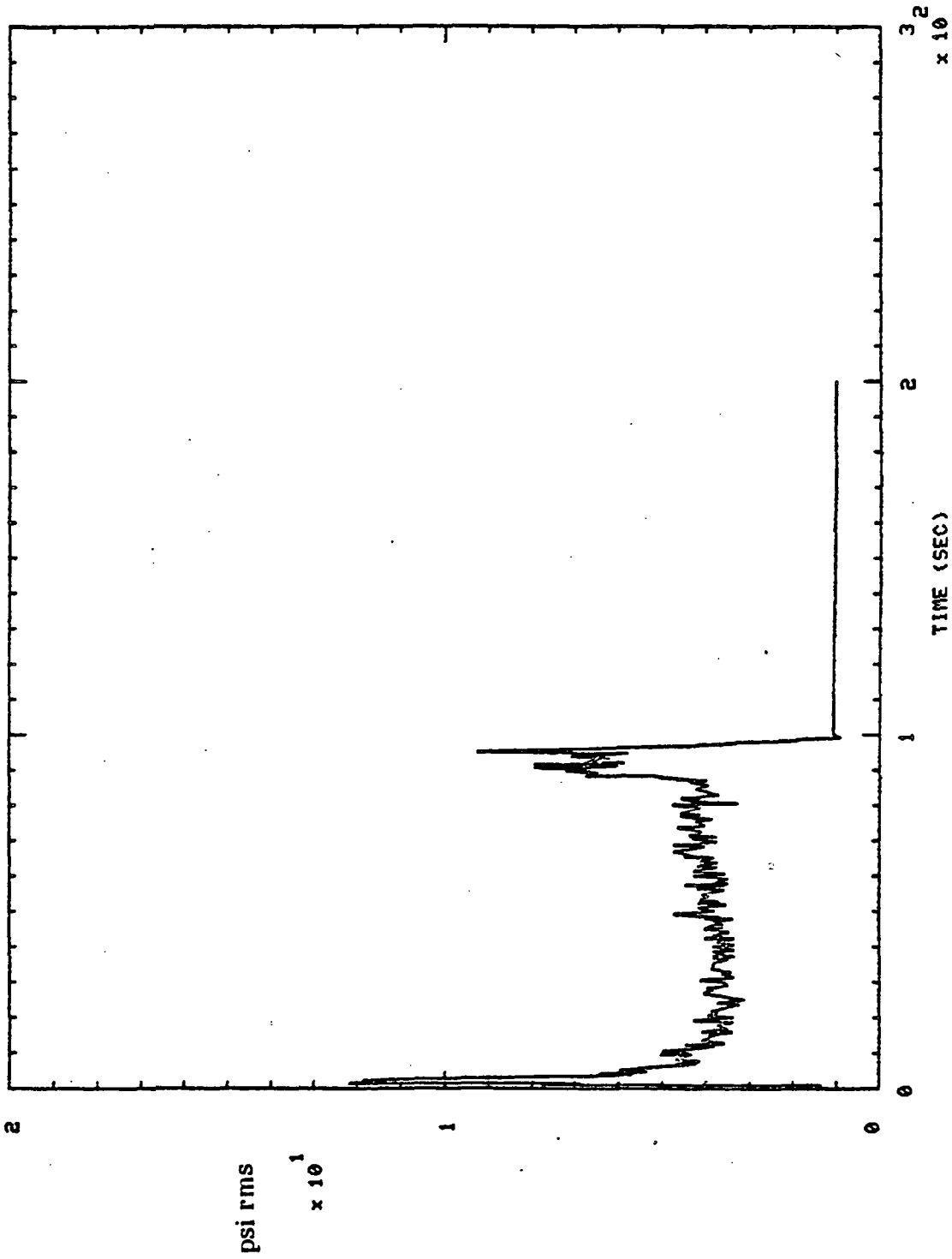
750099



750100 THRUST (UNFILTERED )

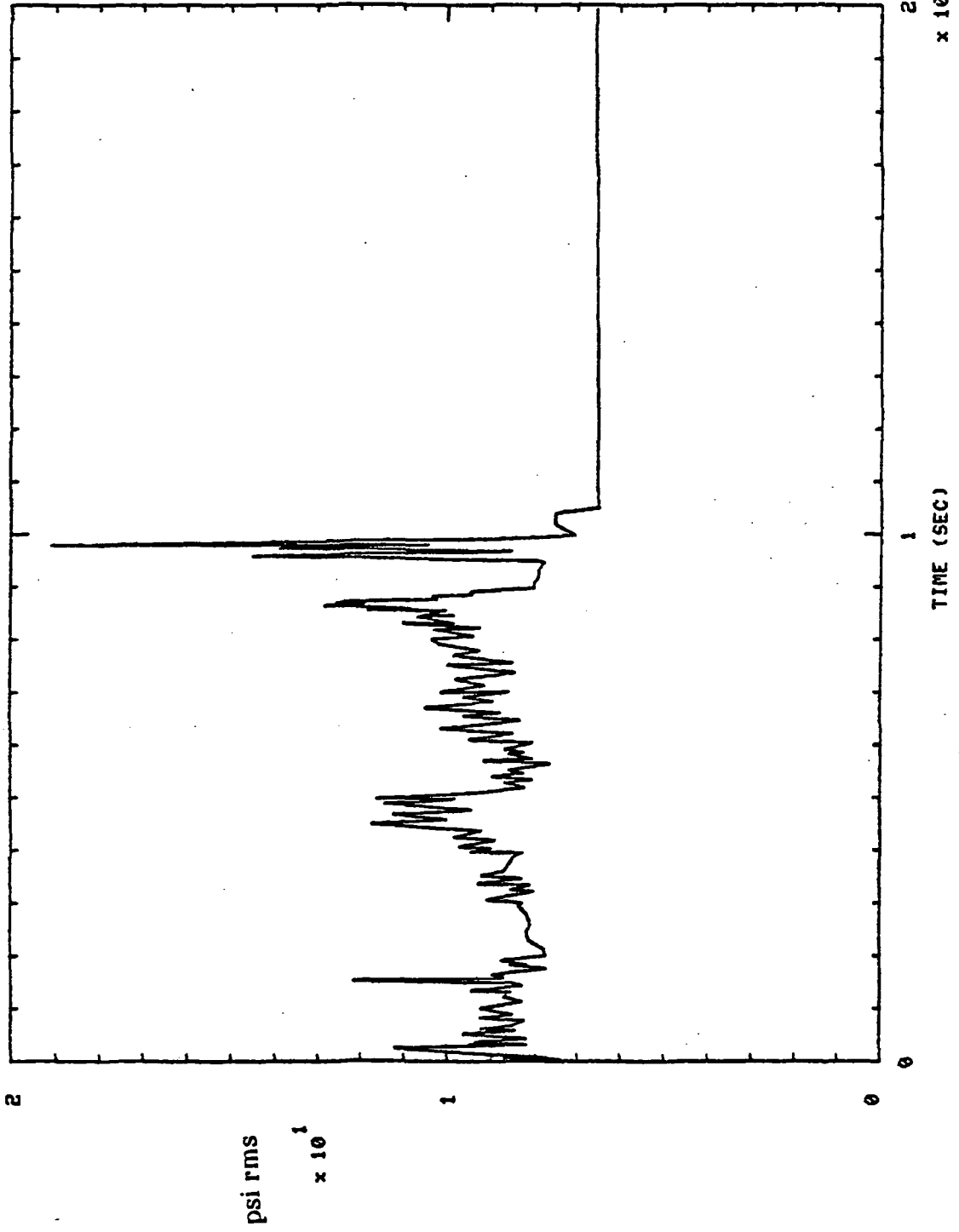


750100 LPPF IN PR (1 - 20K HZ )

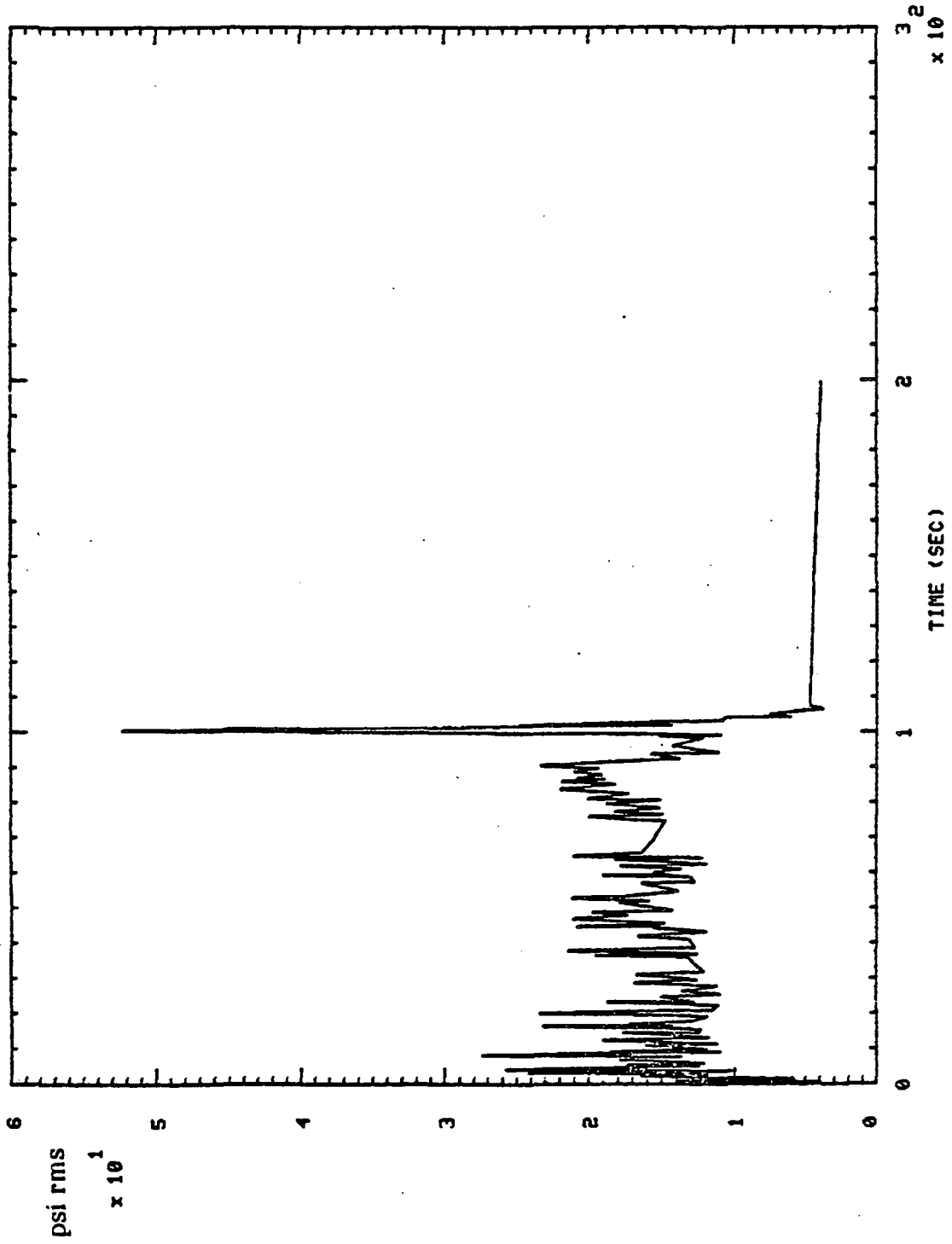




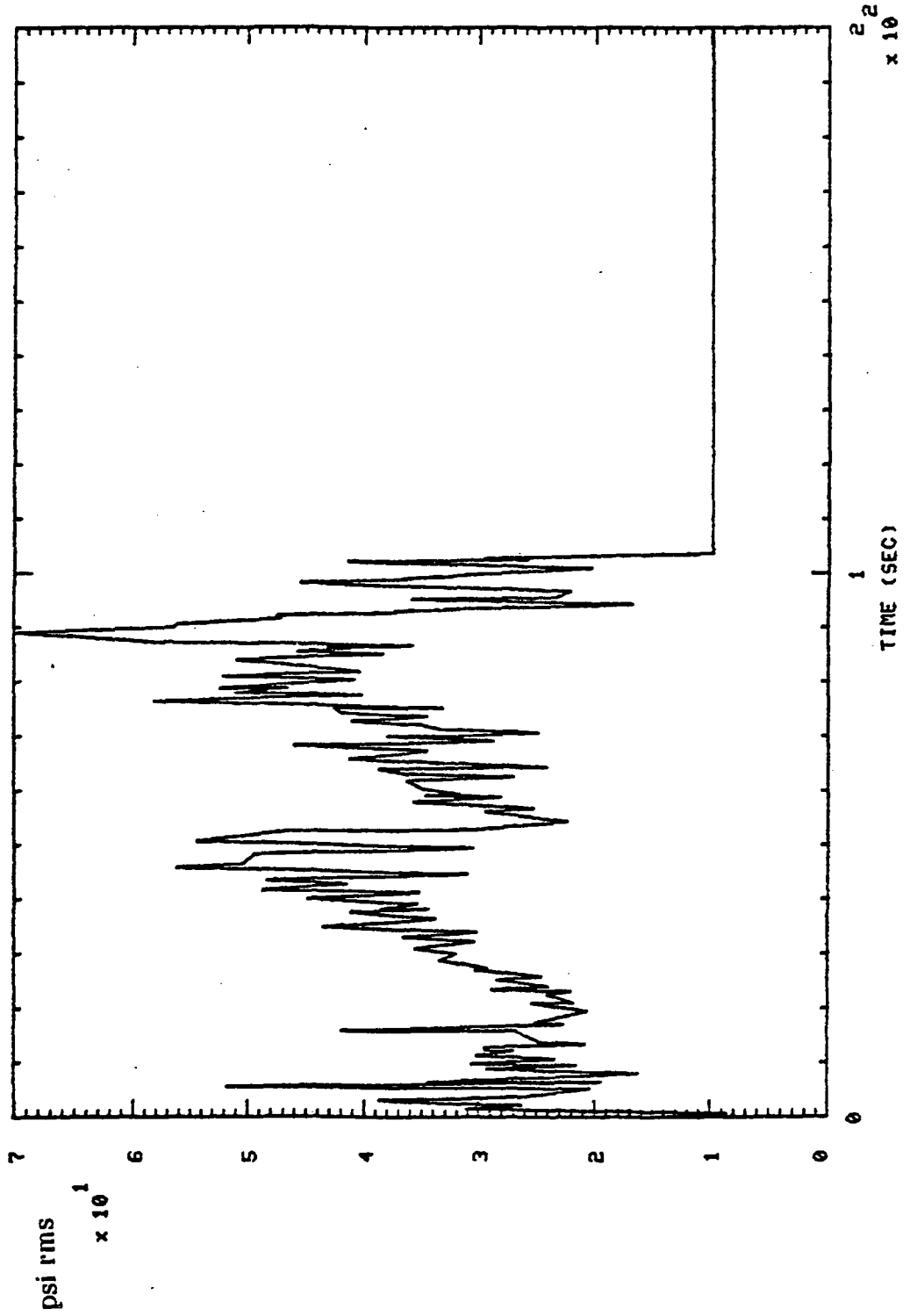
750100 LPOP DS PR (1 - 20K HZ )



750100 HPOP BAL CAU PR2 (1 - 20K HZ )

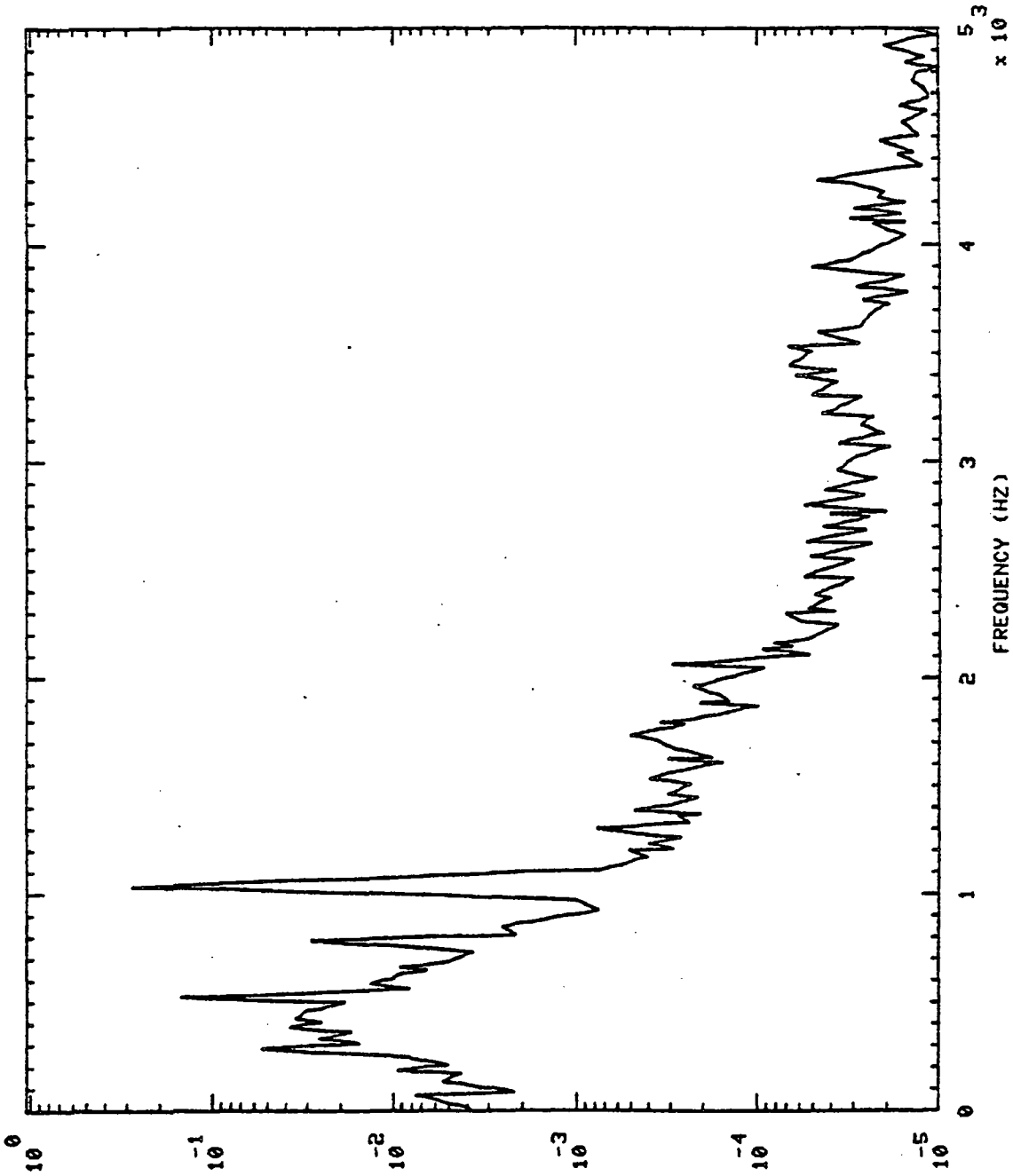


750100 HPOP BAL CAU PRI (1 - 20K HZ )



S+ 10.050/HZ

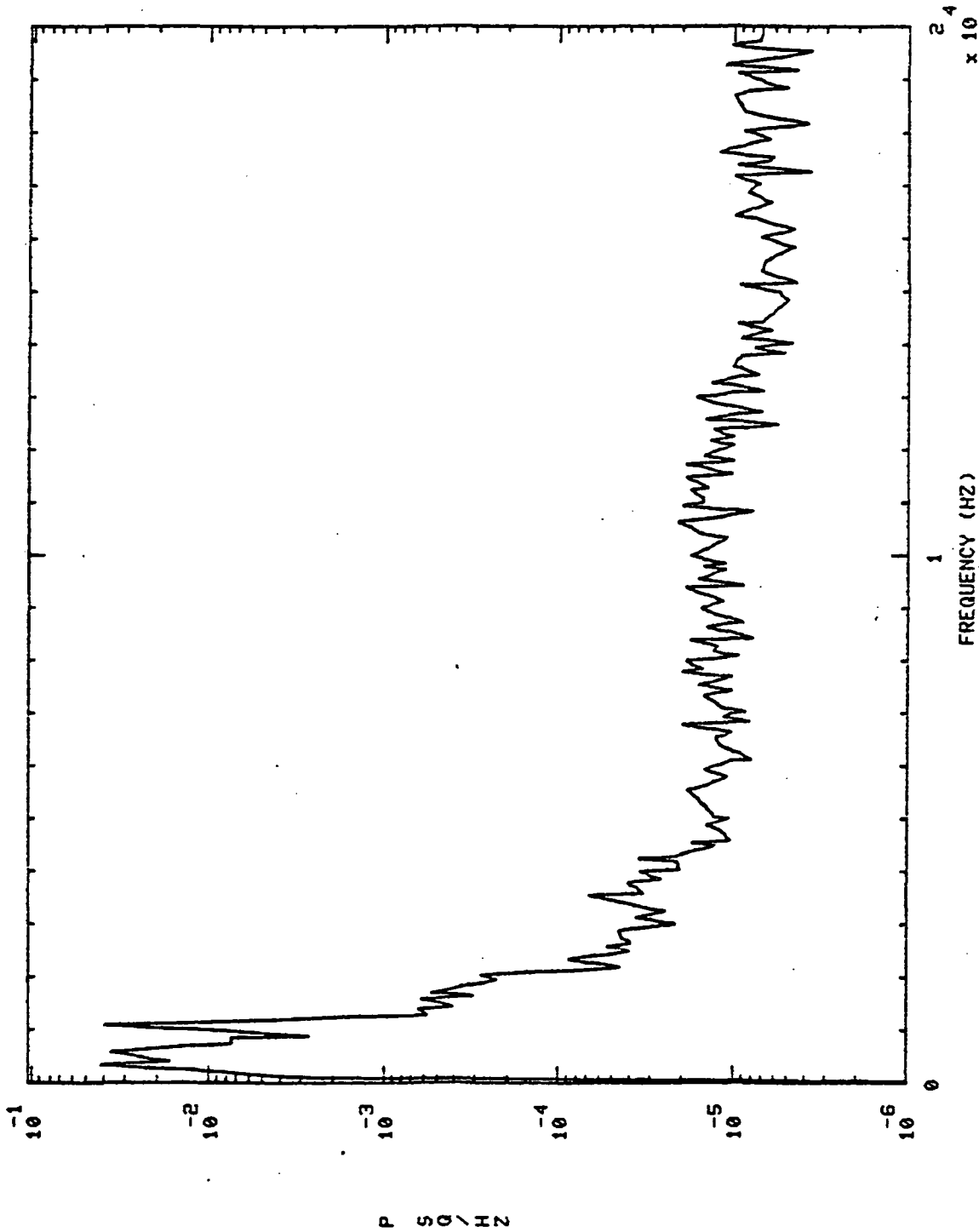
750100 LPFP IN PR



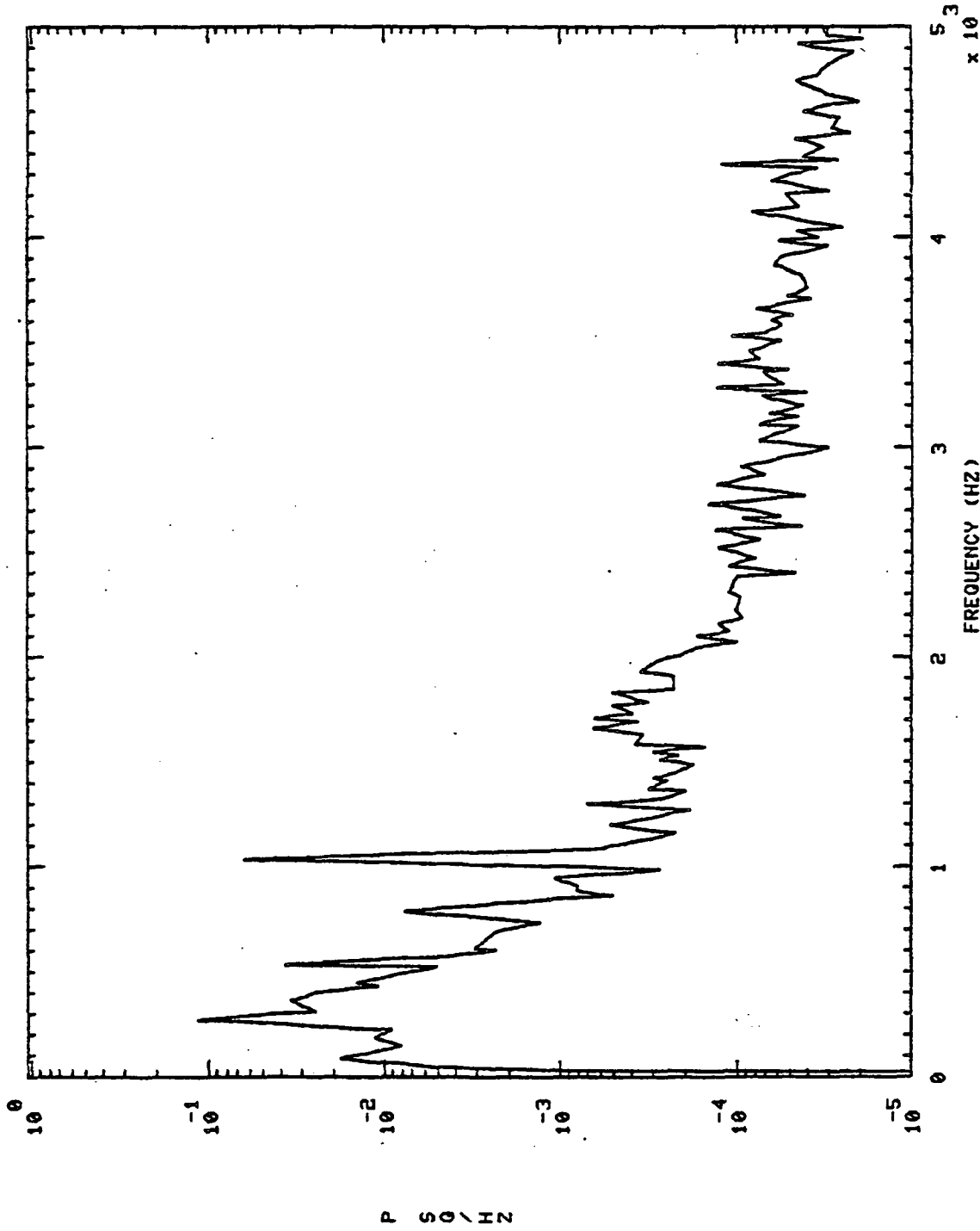
P 50 \ HZ

S+ 10.050/HZ

750100 LPFP IN PR

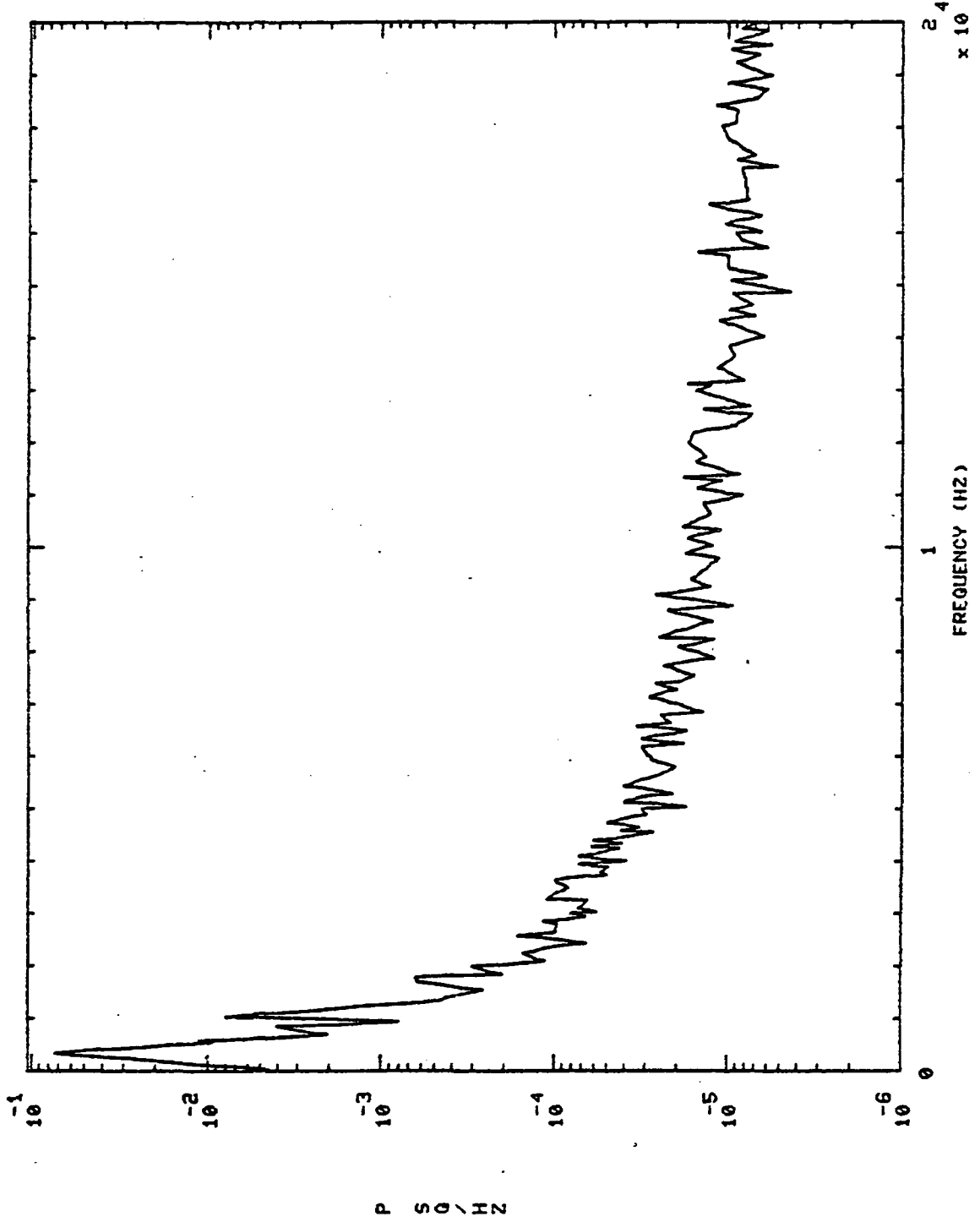


750100 LPFP IN PR S+ 40.050/HZ



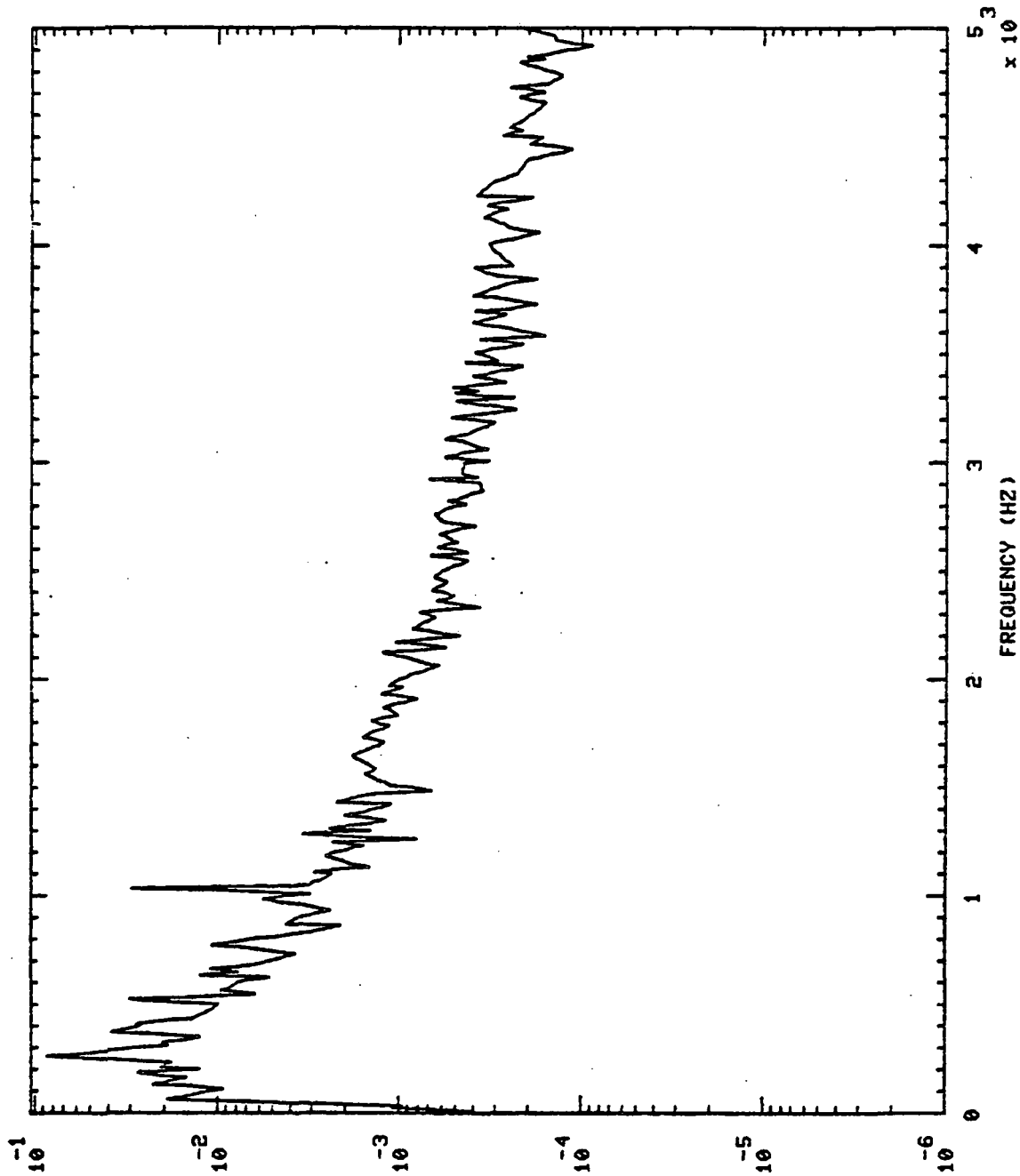
S+ 40.050/HZ

750100 LPFP IN PR



S+ 85.050/HZ

750100 LPFP IN PR

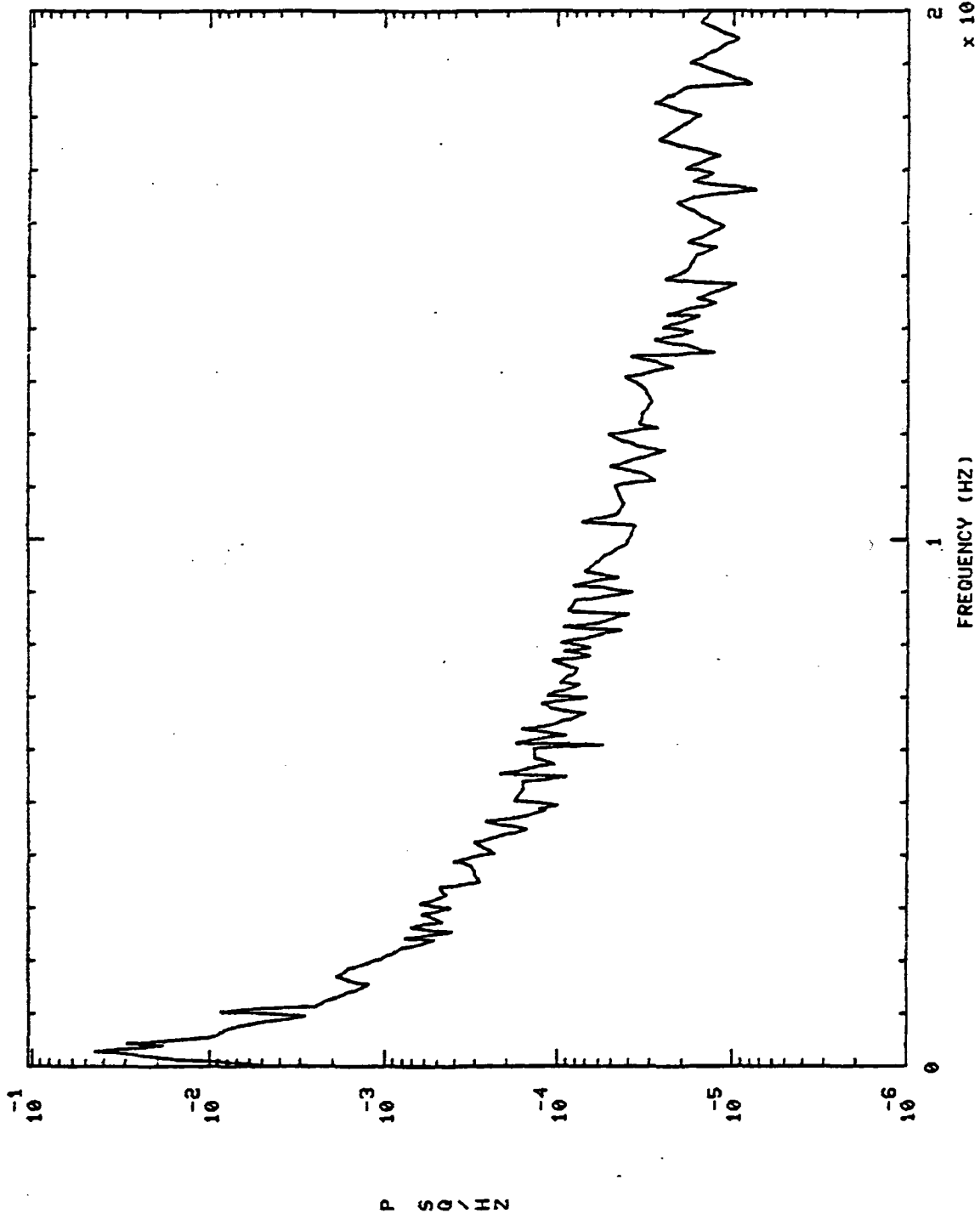


P S G \ H Z



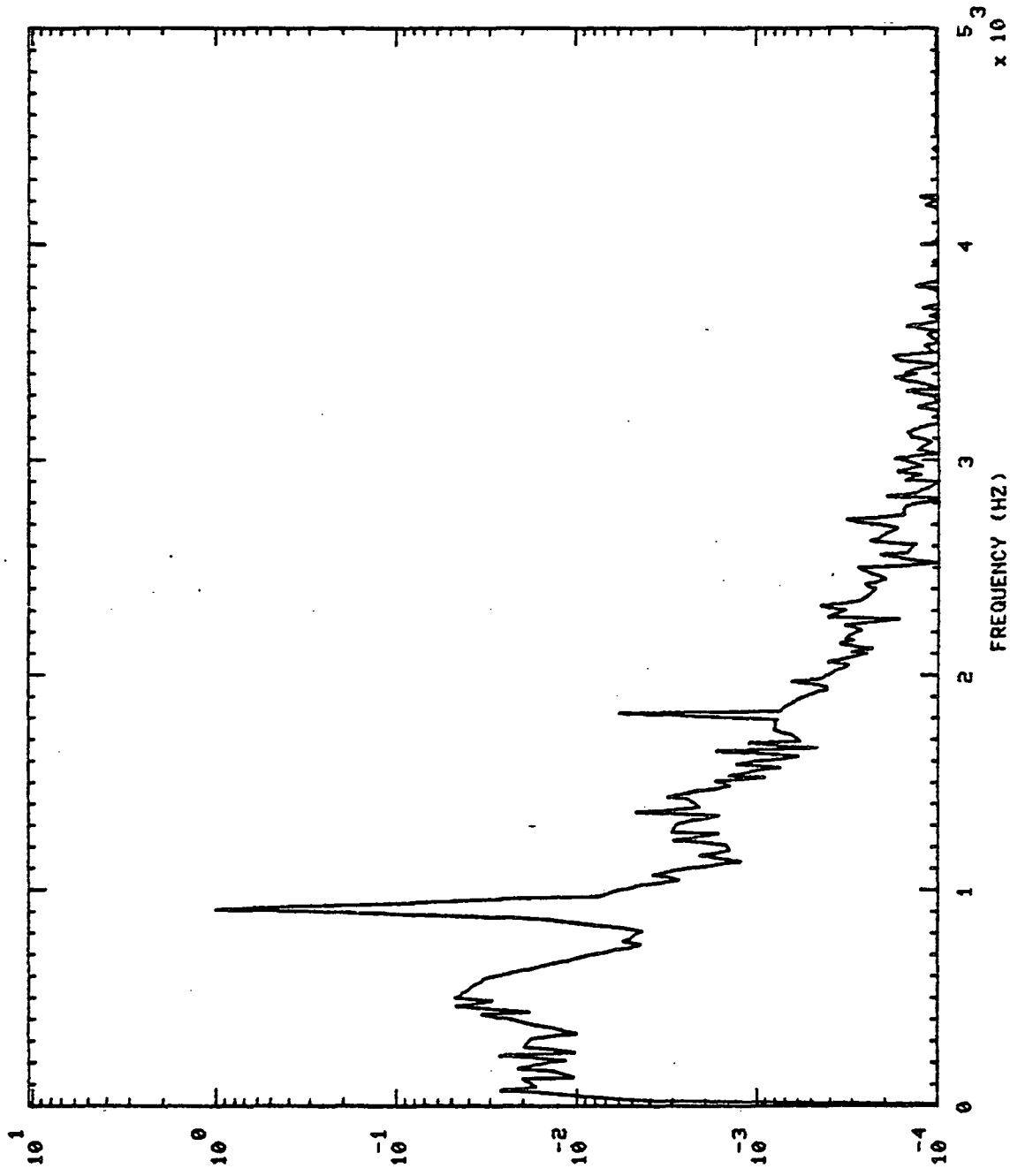
750100 LFPF IN PR S+ 85.050/HZ

750100 LFPF IN PR



S+ 95.050/HZ

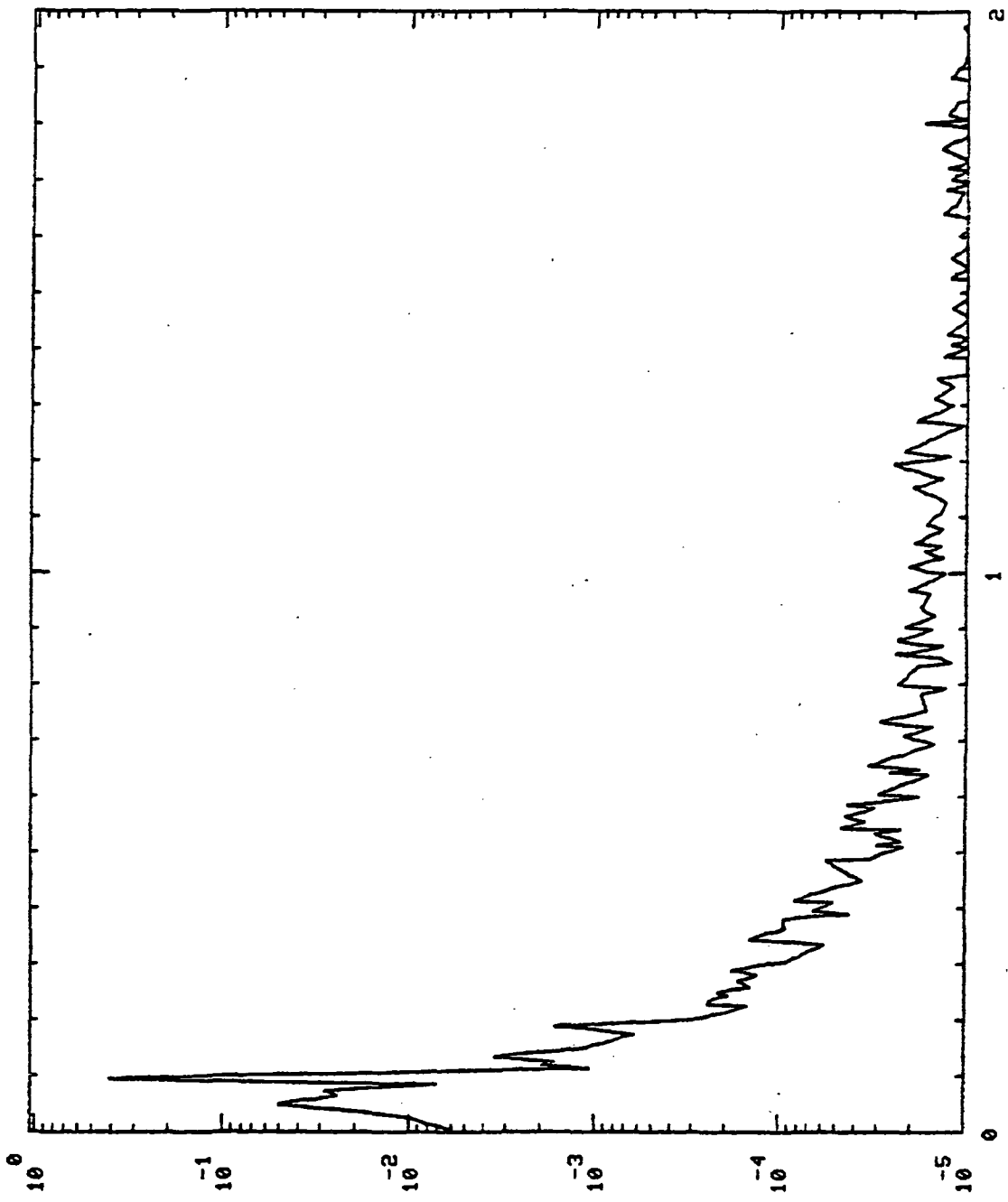
750100 LPFP IN PR



P S D / H Z

S+ 95.050/HZ

750100 LFPF IN PR



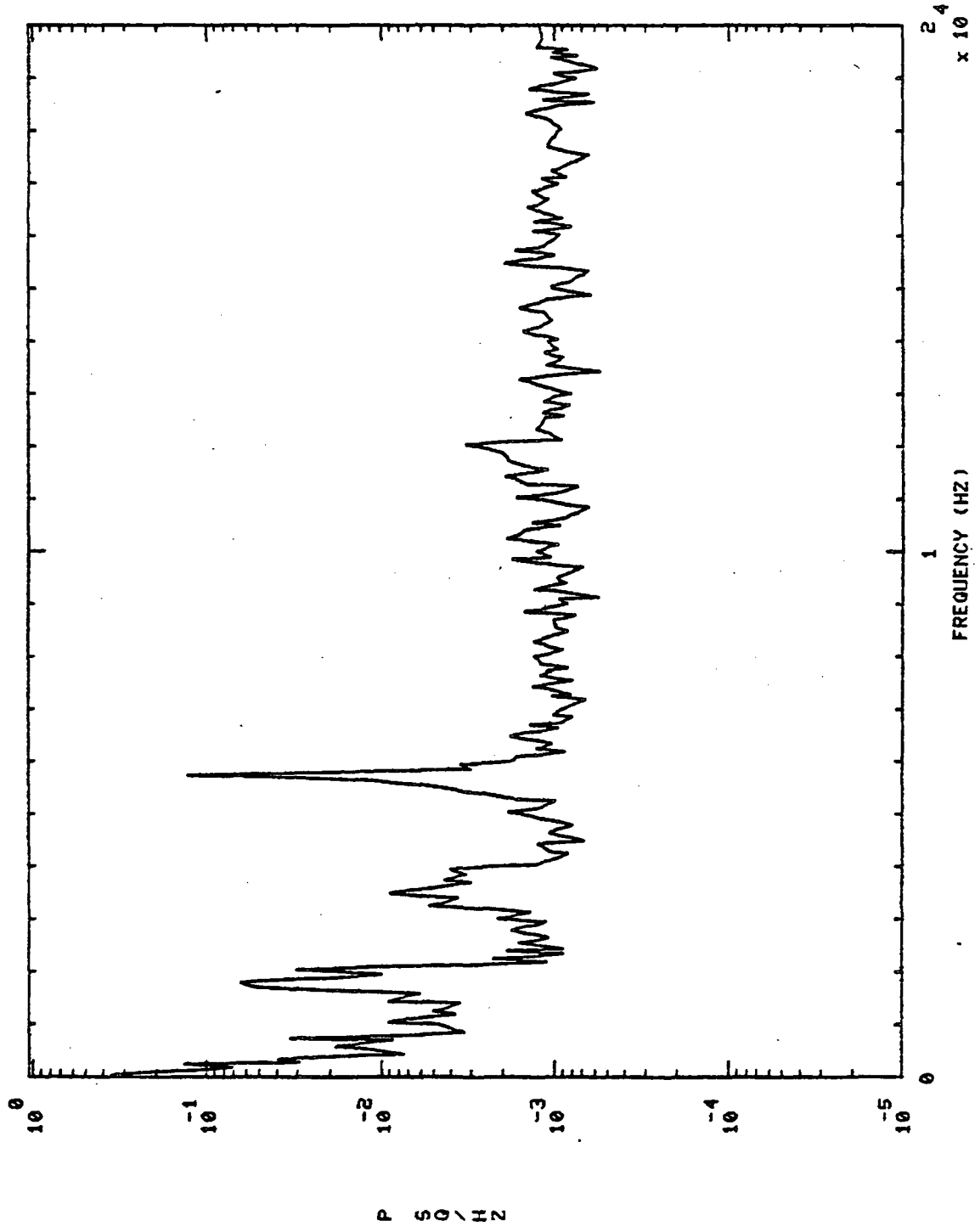
P S O \ HZ

FREQUENCY (HZ)

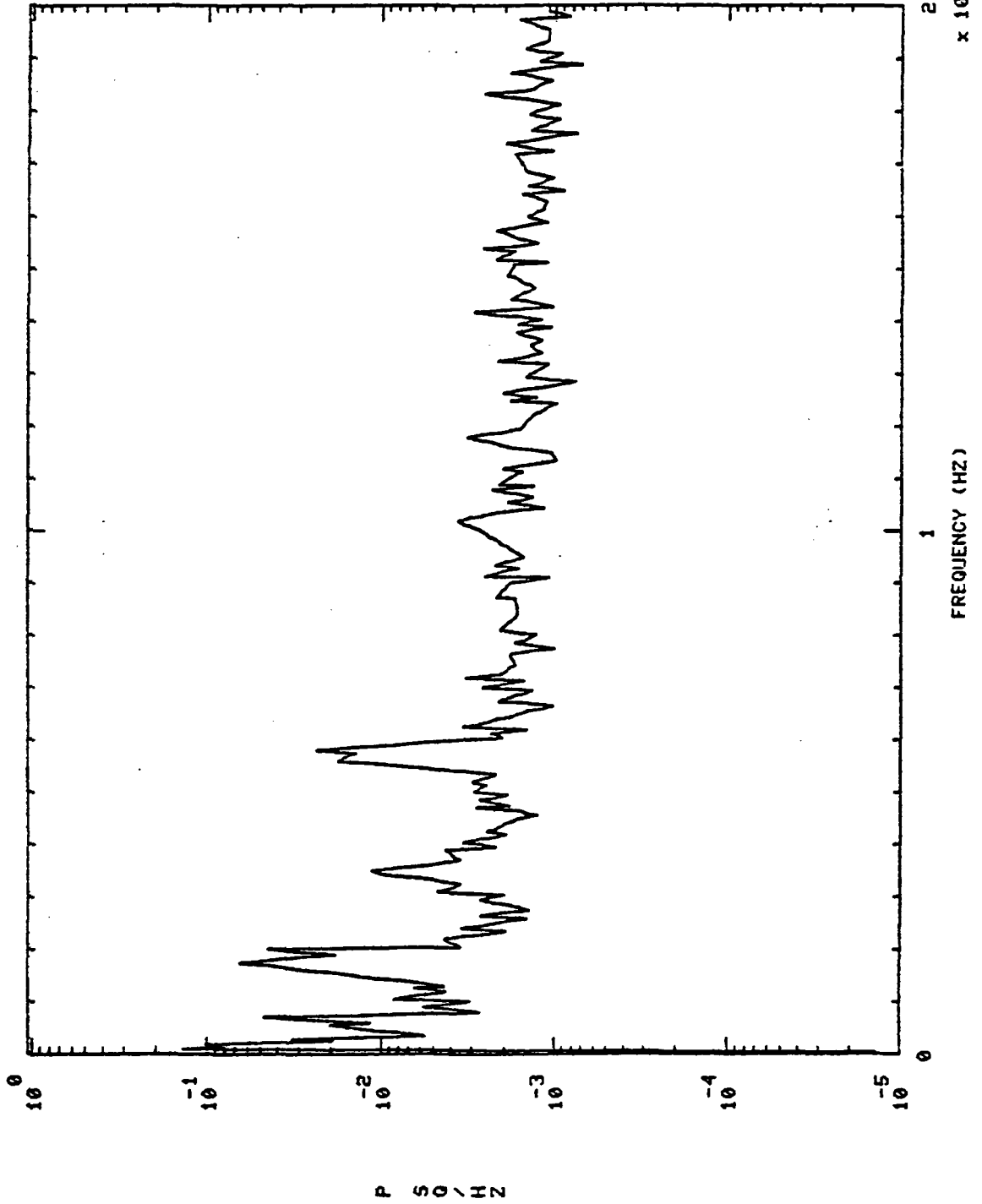
2.4  
 $\times 10^4$

S+ 10.050/HZ

750100 LPOP DS PR

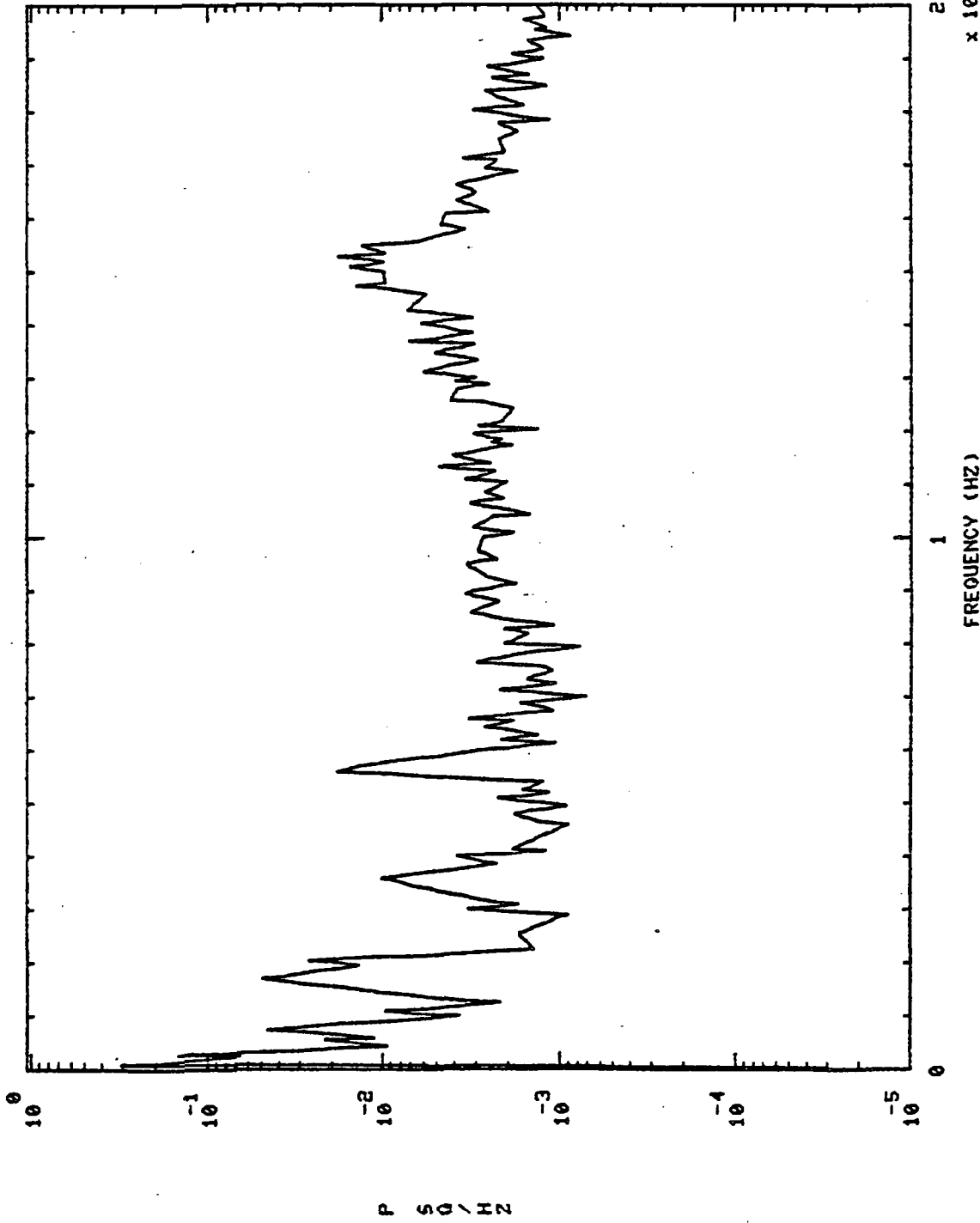


750100 LPOP DS PR S+ 40.050/HZ



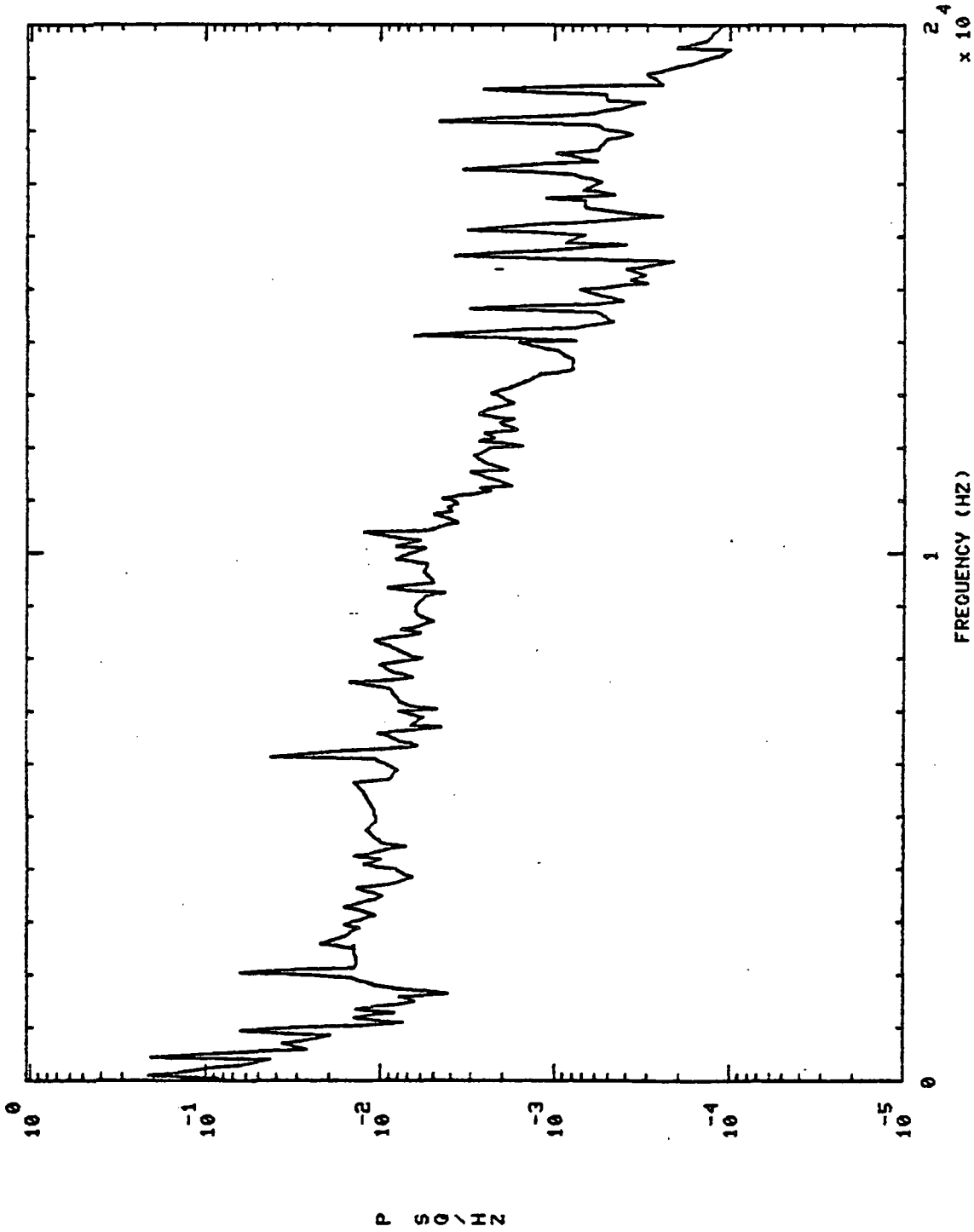
S+ 85.050/HZ

750100 LPOP DS PR



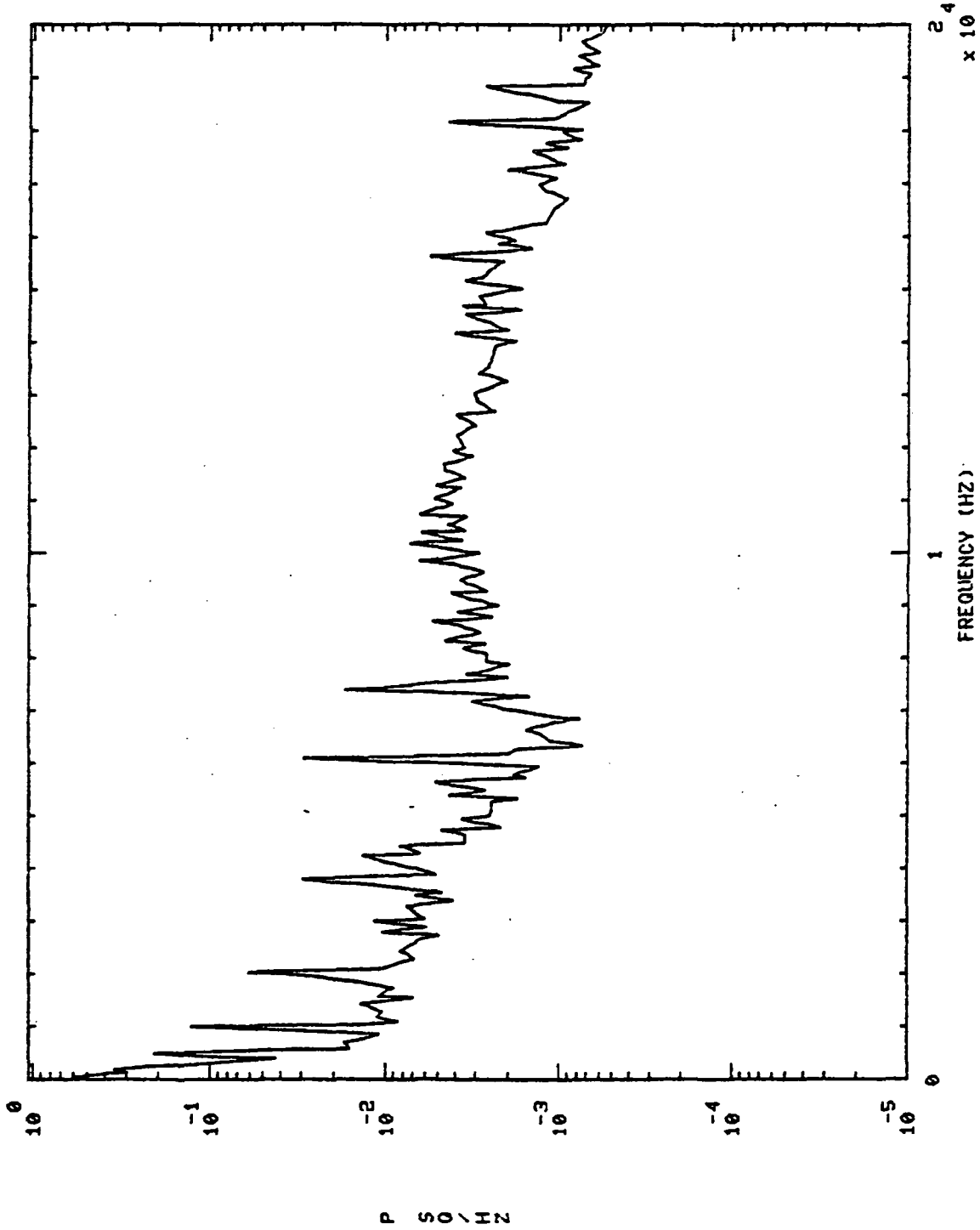


750100 HPOP BAL CAU PR2 S+ 10.050/HZ

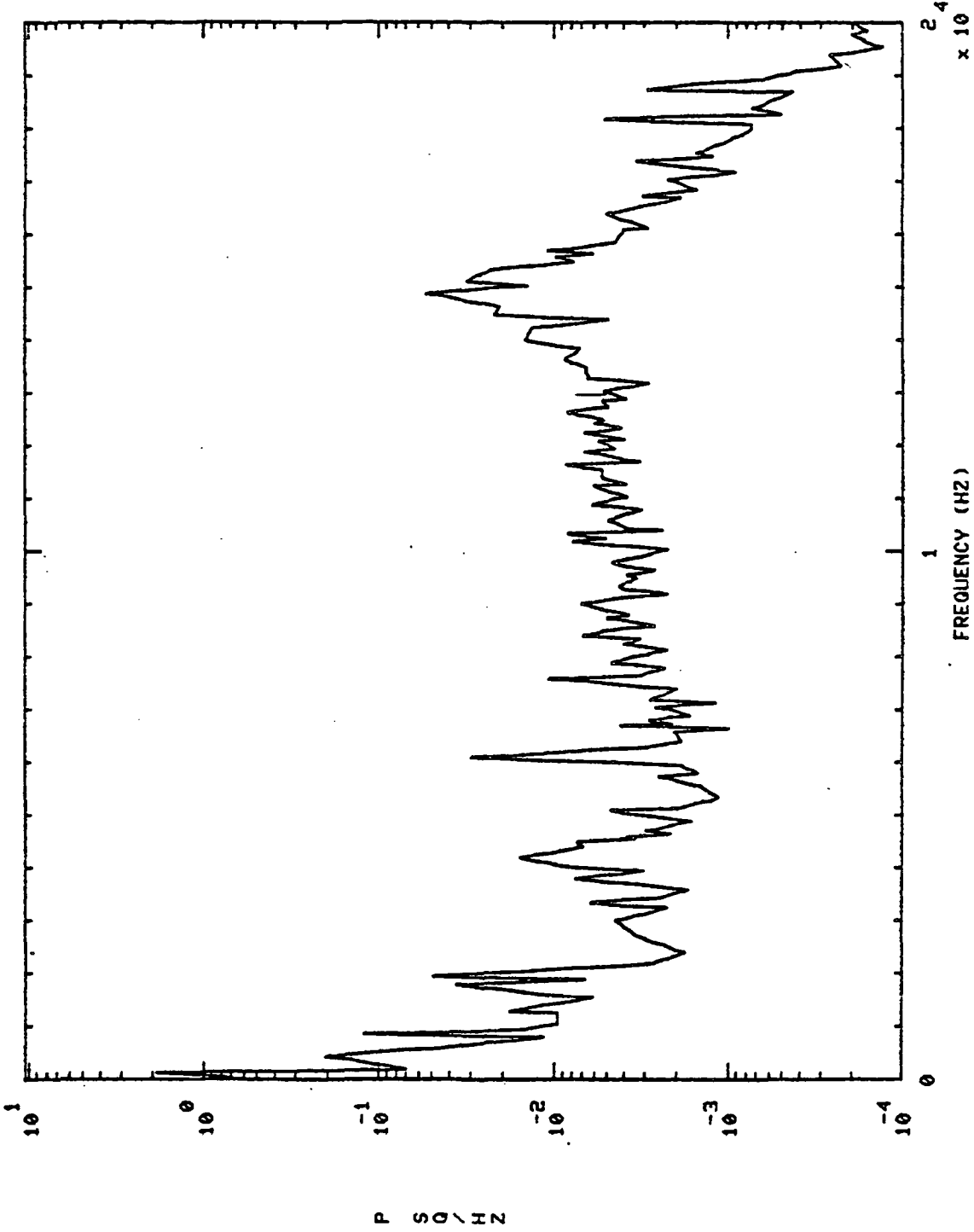




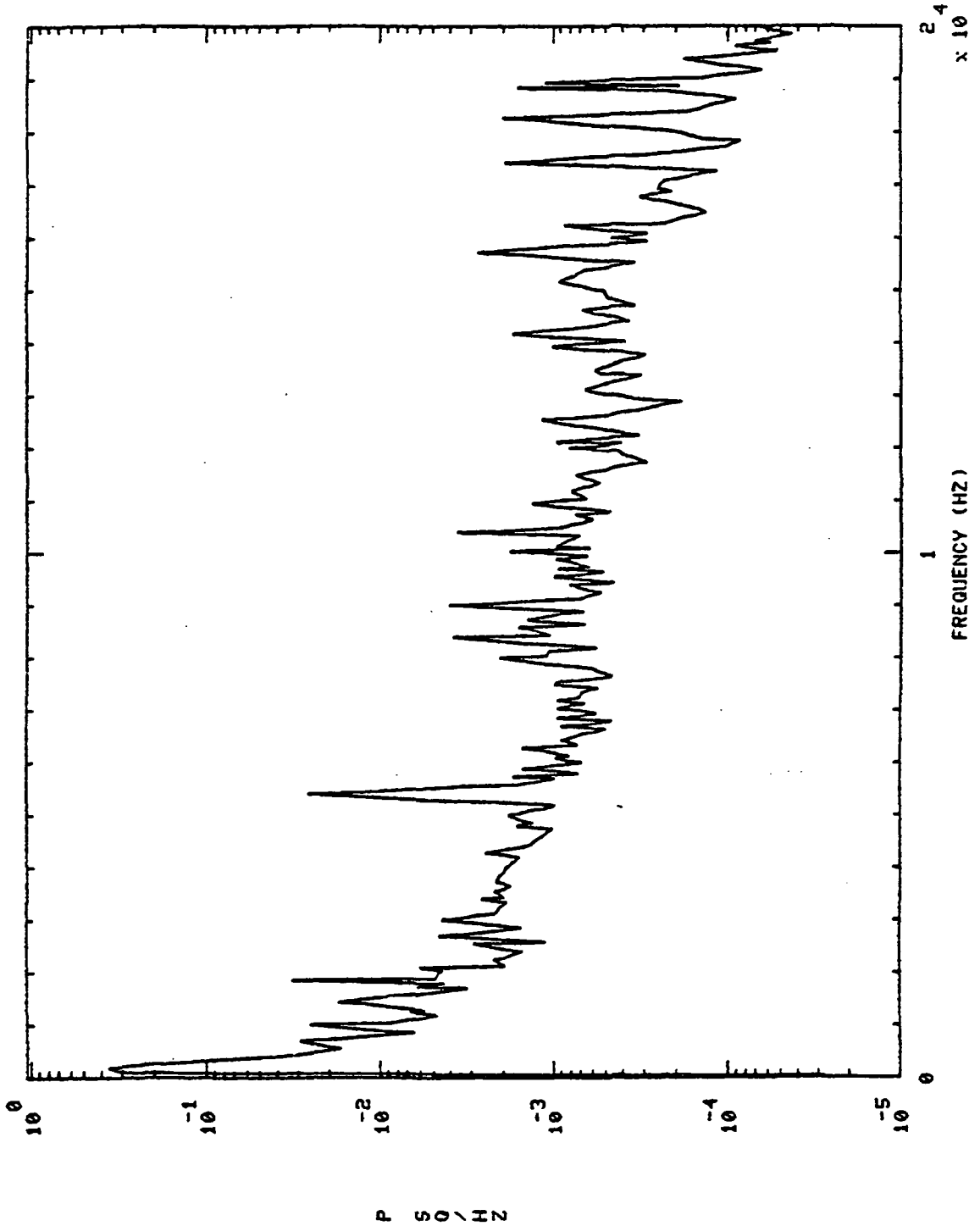
750100 HPOP DAL CAU PR2 S+ 40.050/HZ



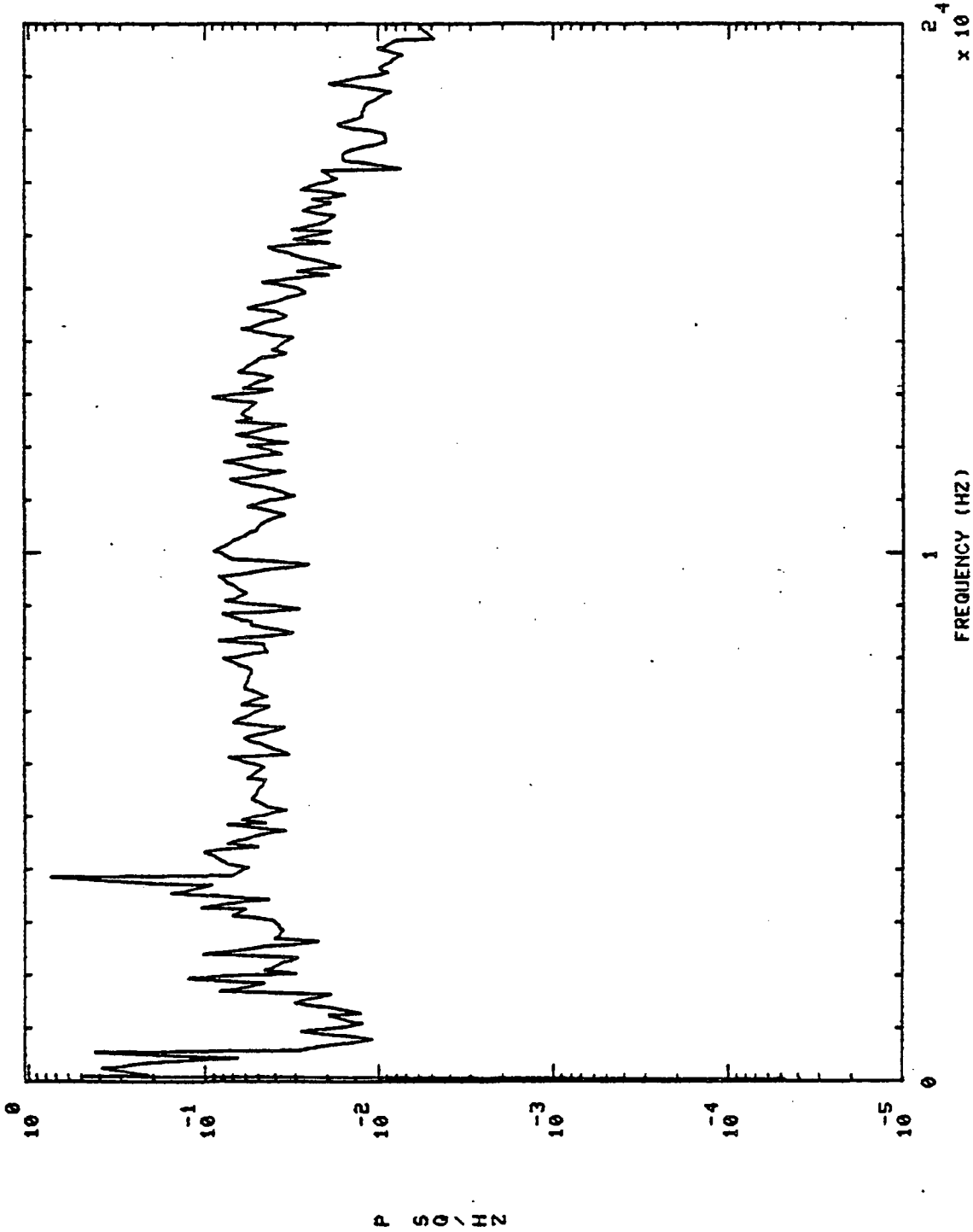
750100 HPOP BAL CAU PR2 S+ 85.050/HZ



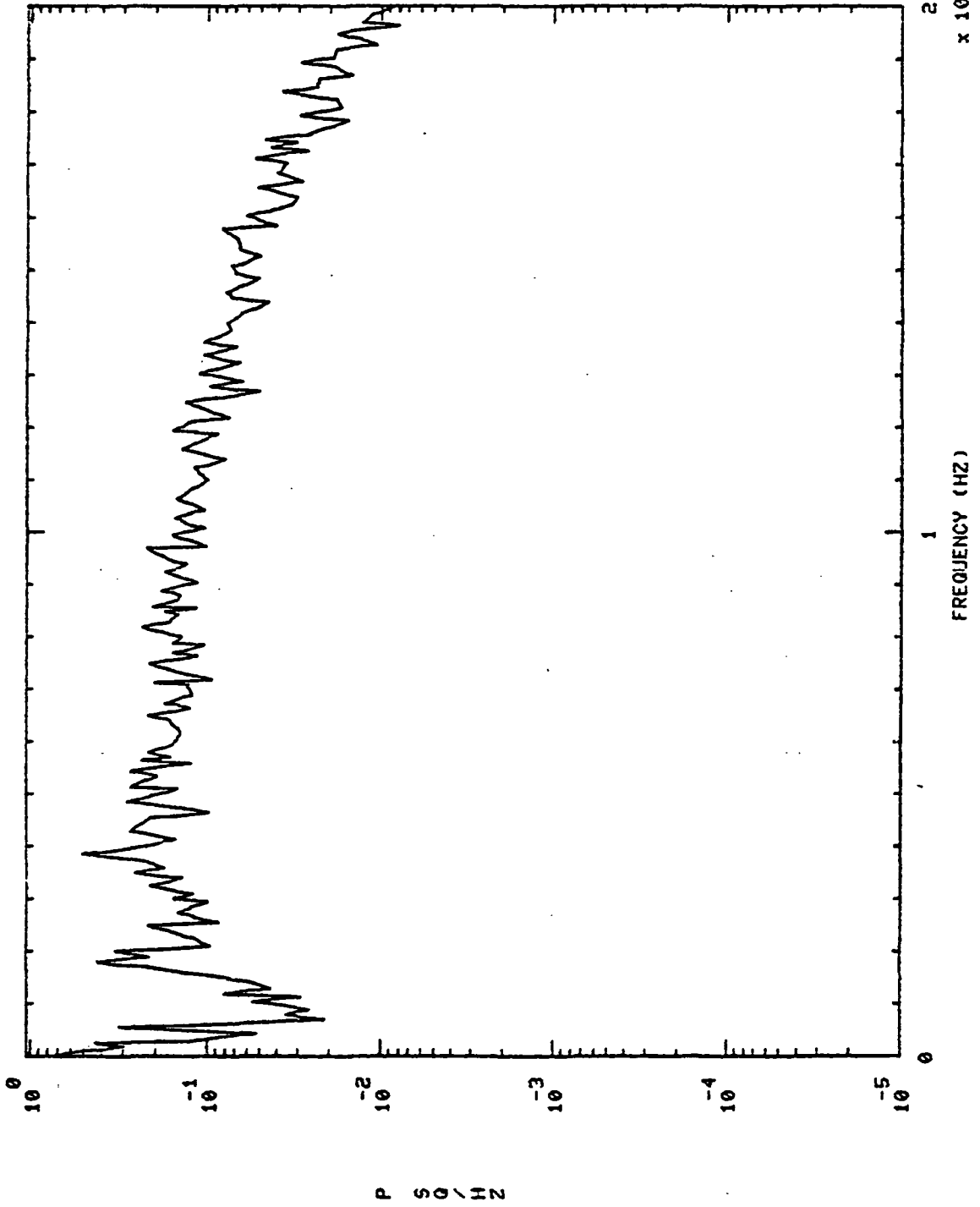
750100 HPOP BAL CAU PR2 S+ 95.050/HZ



750100 HPOP BAL CAU PRI S+ 10.0SQ/HZ



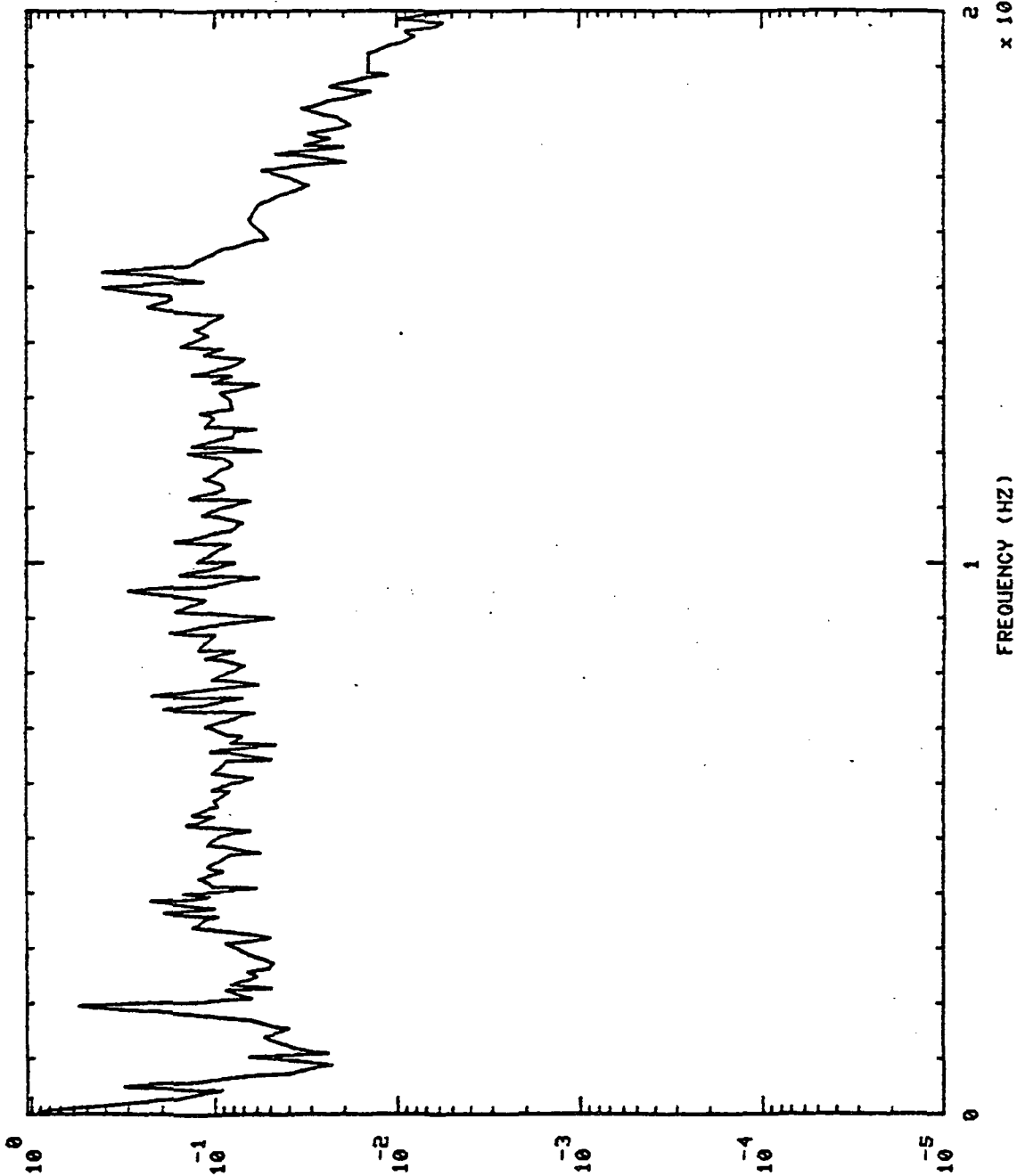
750100 HPOP BAL CAU PRI S+ 40.050/HZ



S+ 85.050/HZ

HPOP BAL CAU PR1

750100

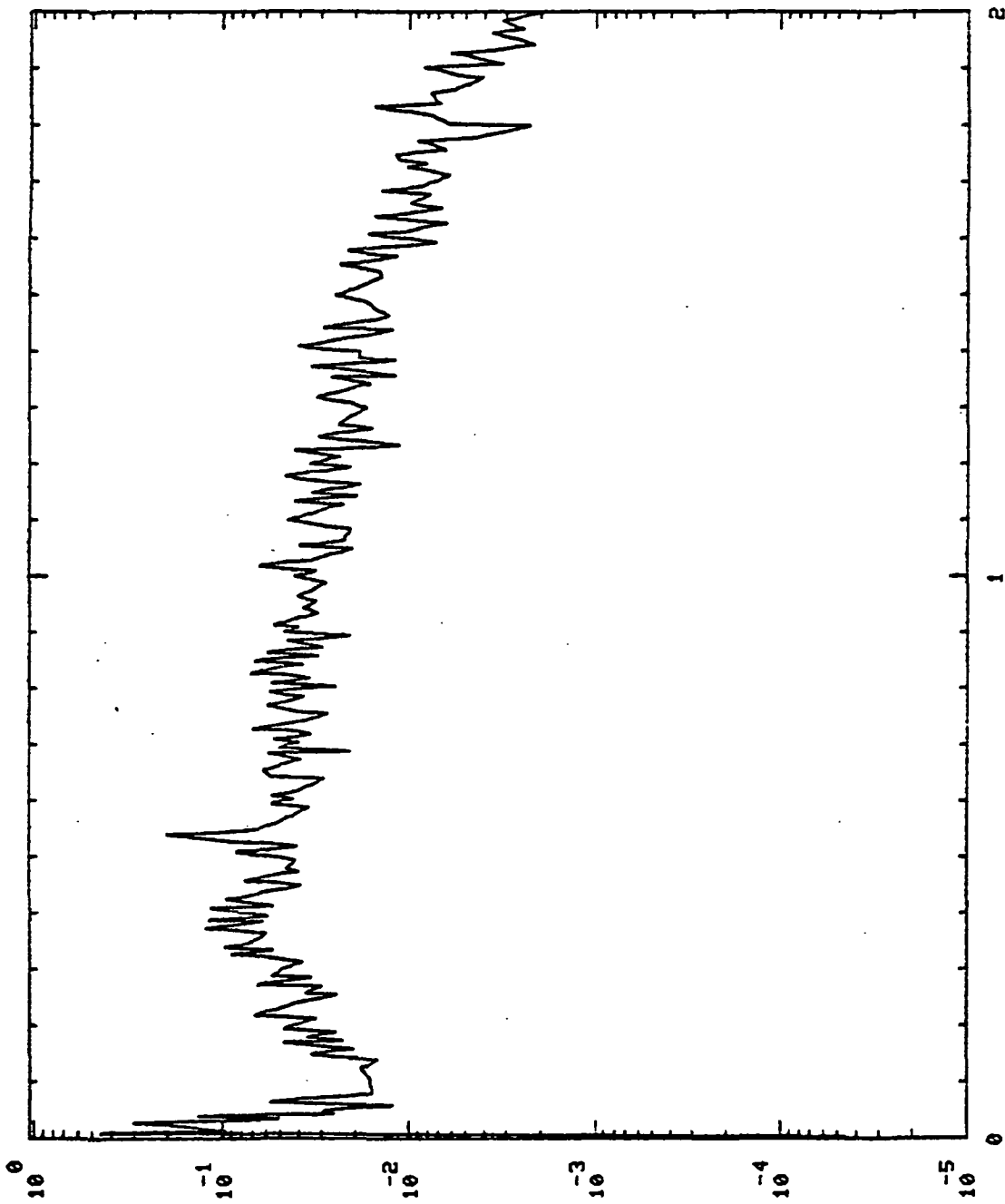


P SQ / HZ

FREQUENCY (HZ)

$\times 10^4$

750100 HPOP BAL CAU PR1 S+ 95.050/HZ



PSD / HZ

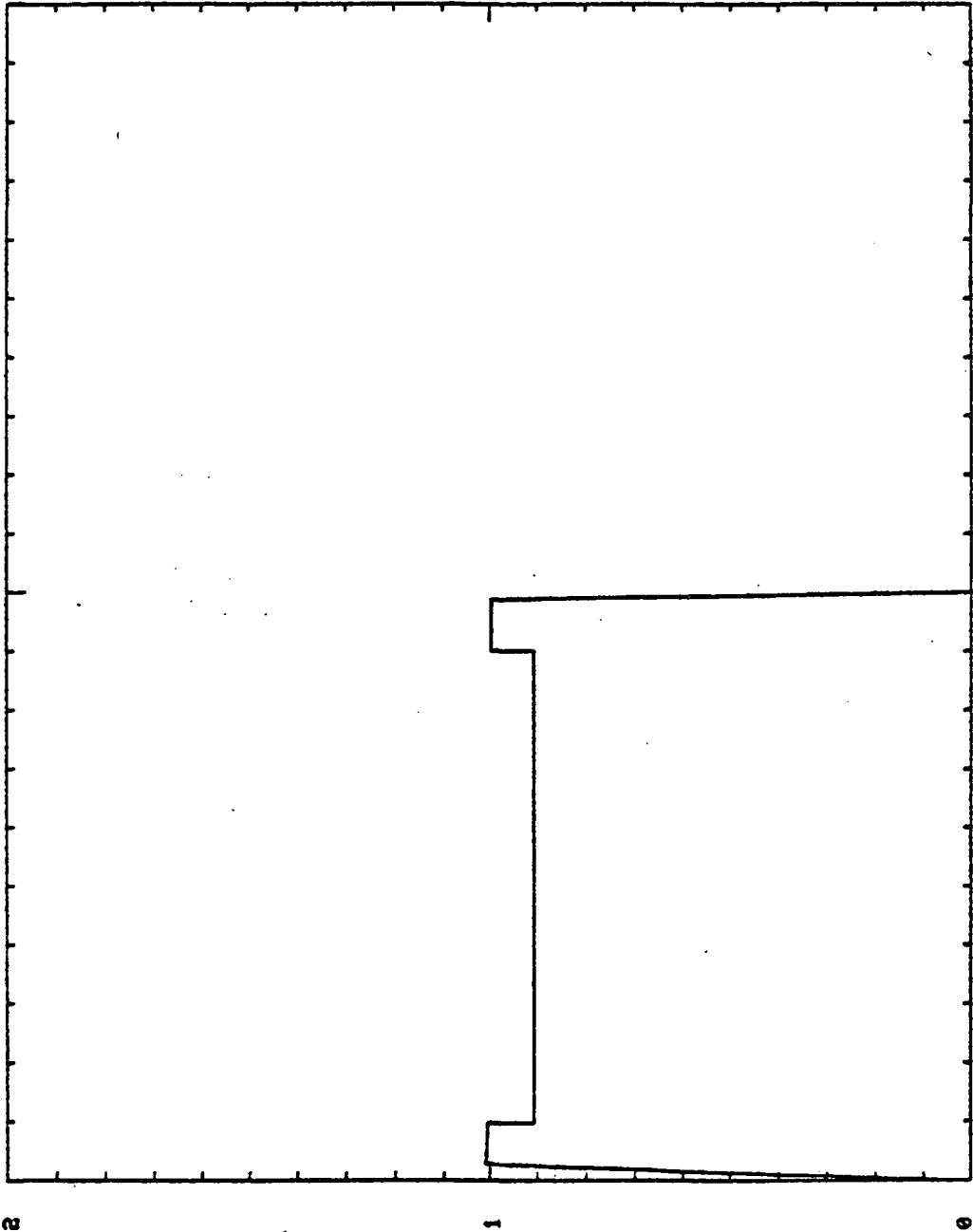
FREQUENCY (HZ)

$10^4$

750101 THRUST (UNFILTERED )

Percent of Rated Power

x 10<sup>2</sup>



x 10<sup>2</sup>

TIME (SEC)

0

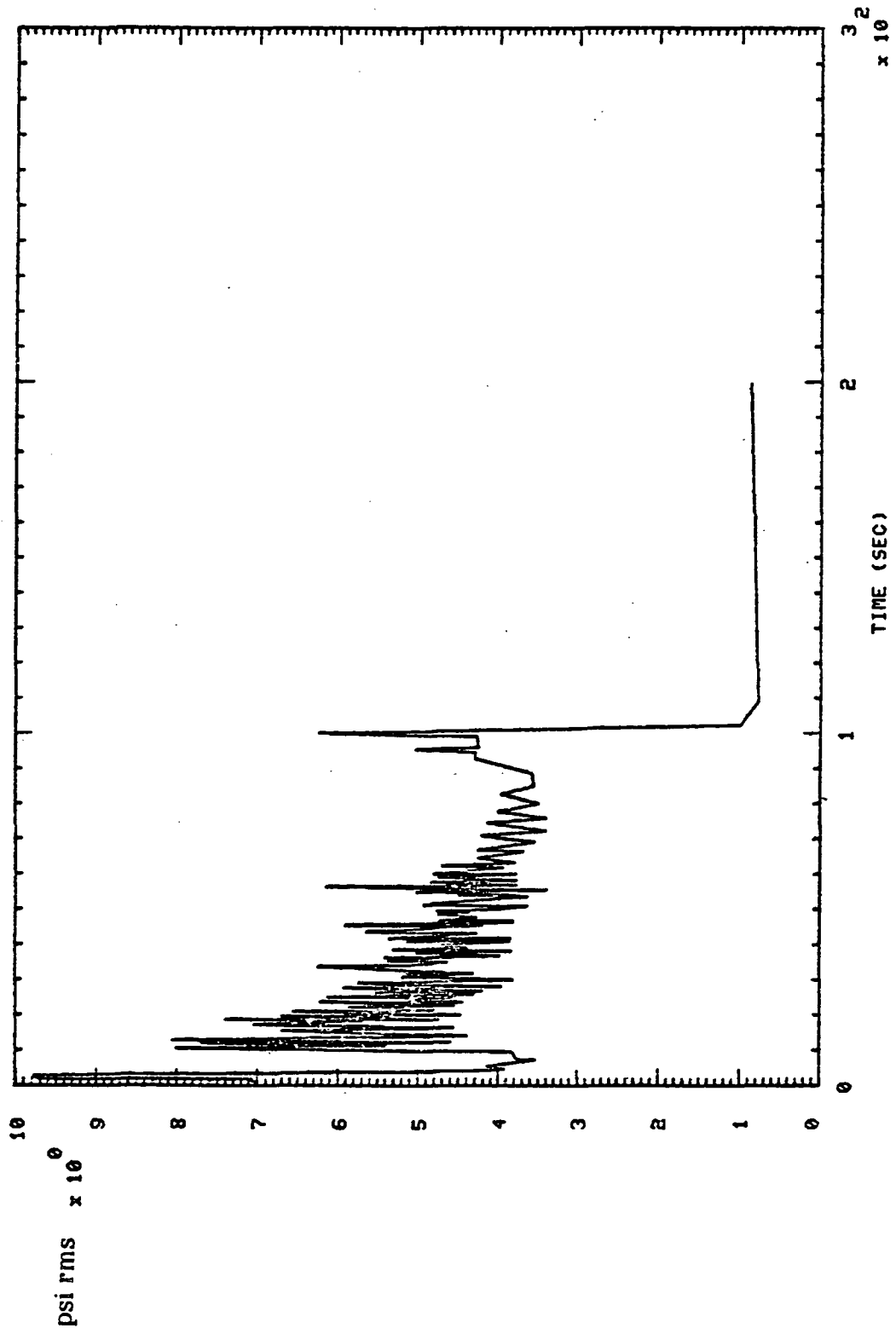
1

2



750101 LPFP IN PR

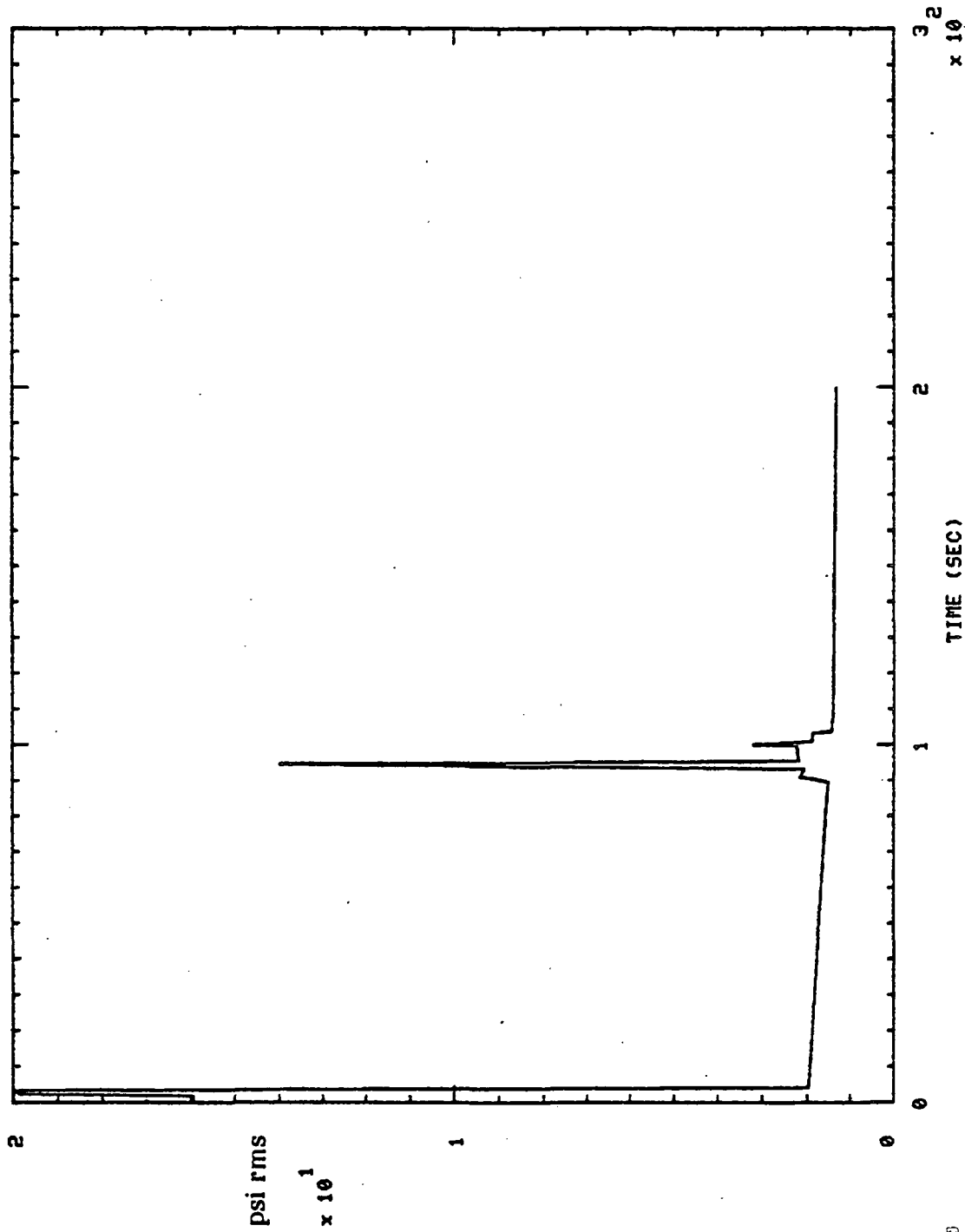
(1 - 20K HZ )



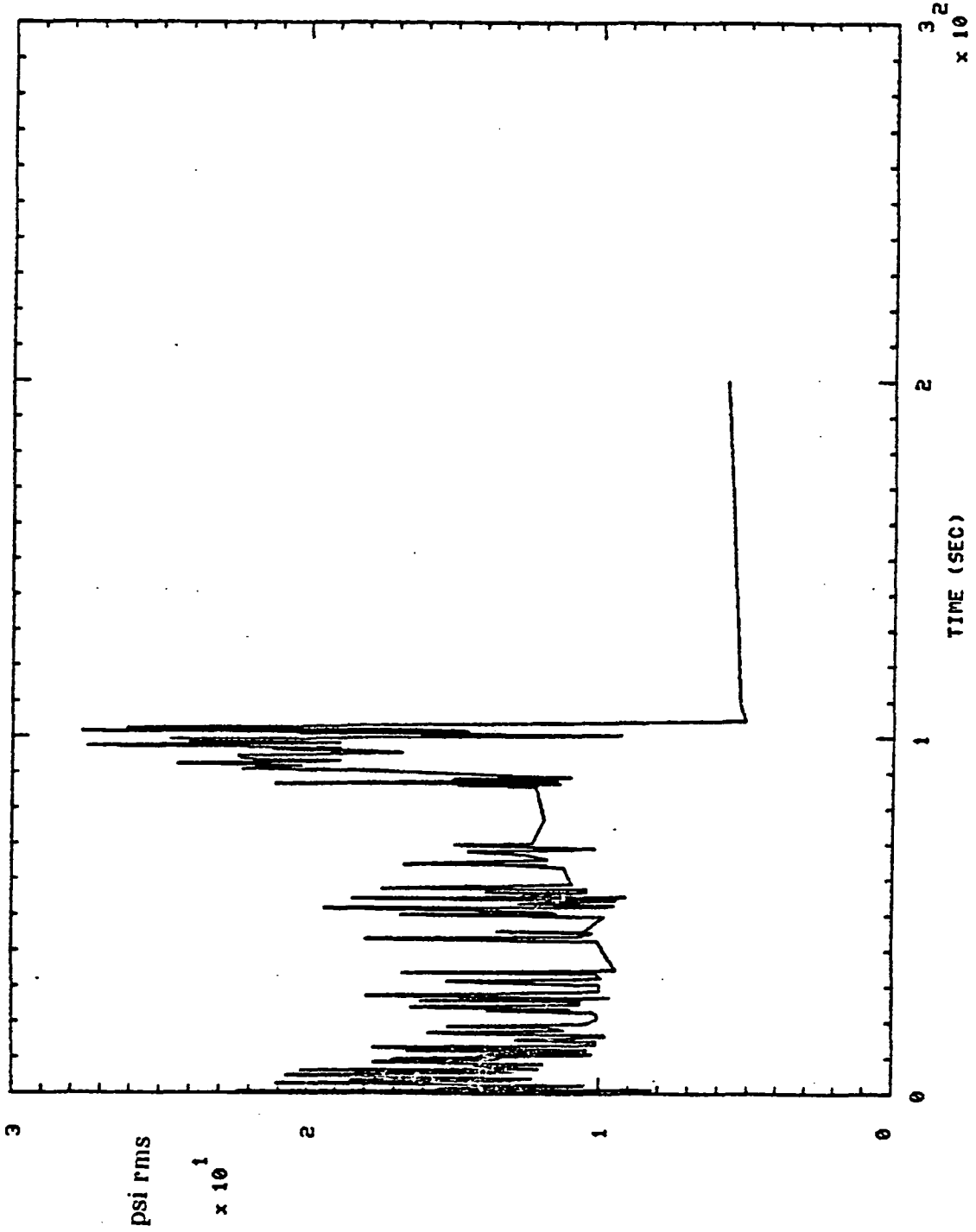
( 1 - 20K HZ )

LPOP DS PR

750101



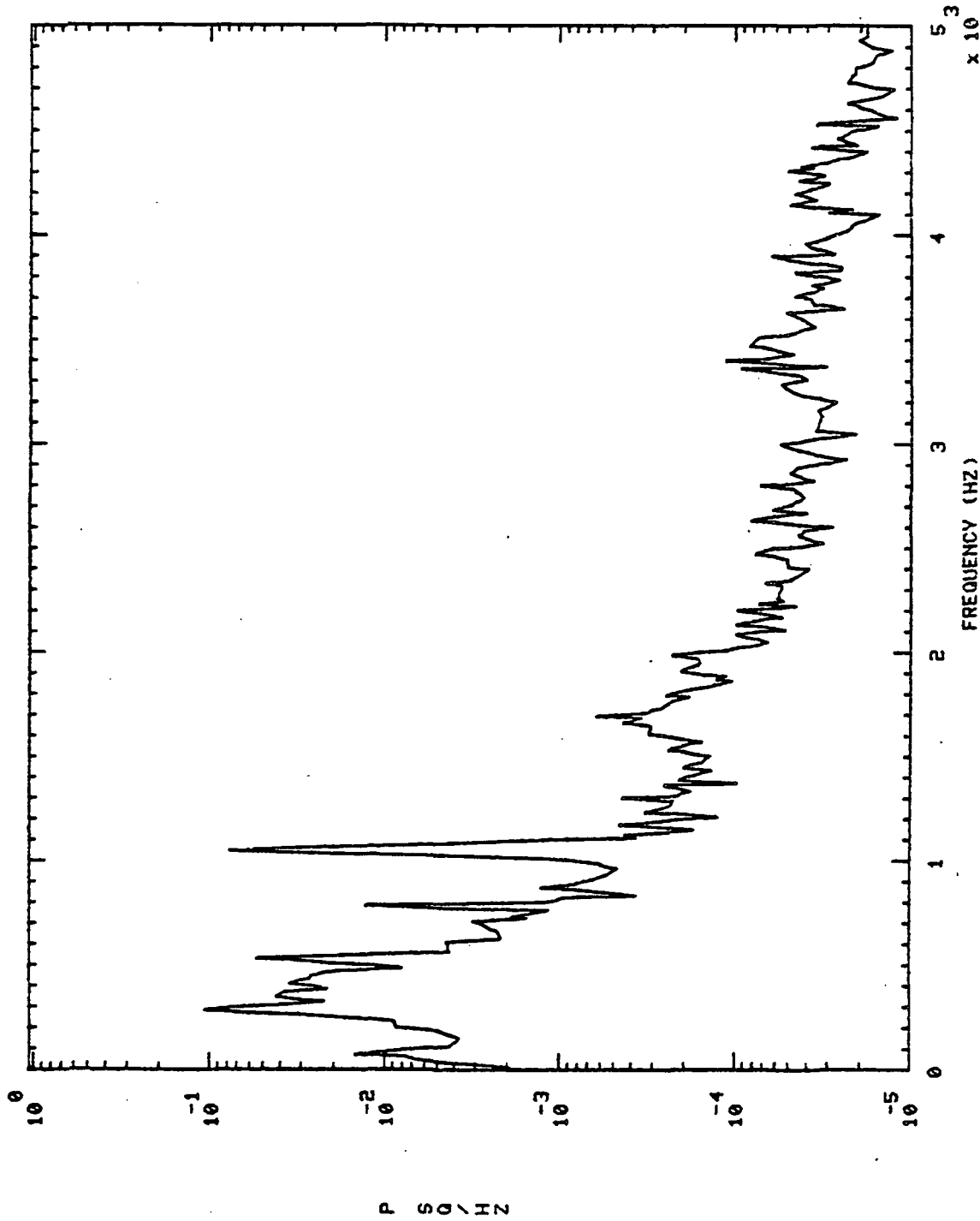
750101 HPOP BAL CAU PR2 (1 - 20K HZ )



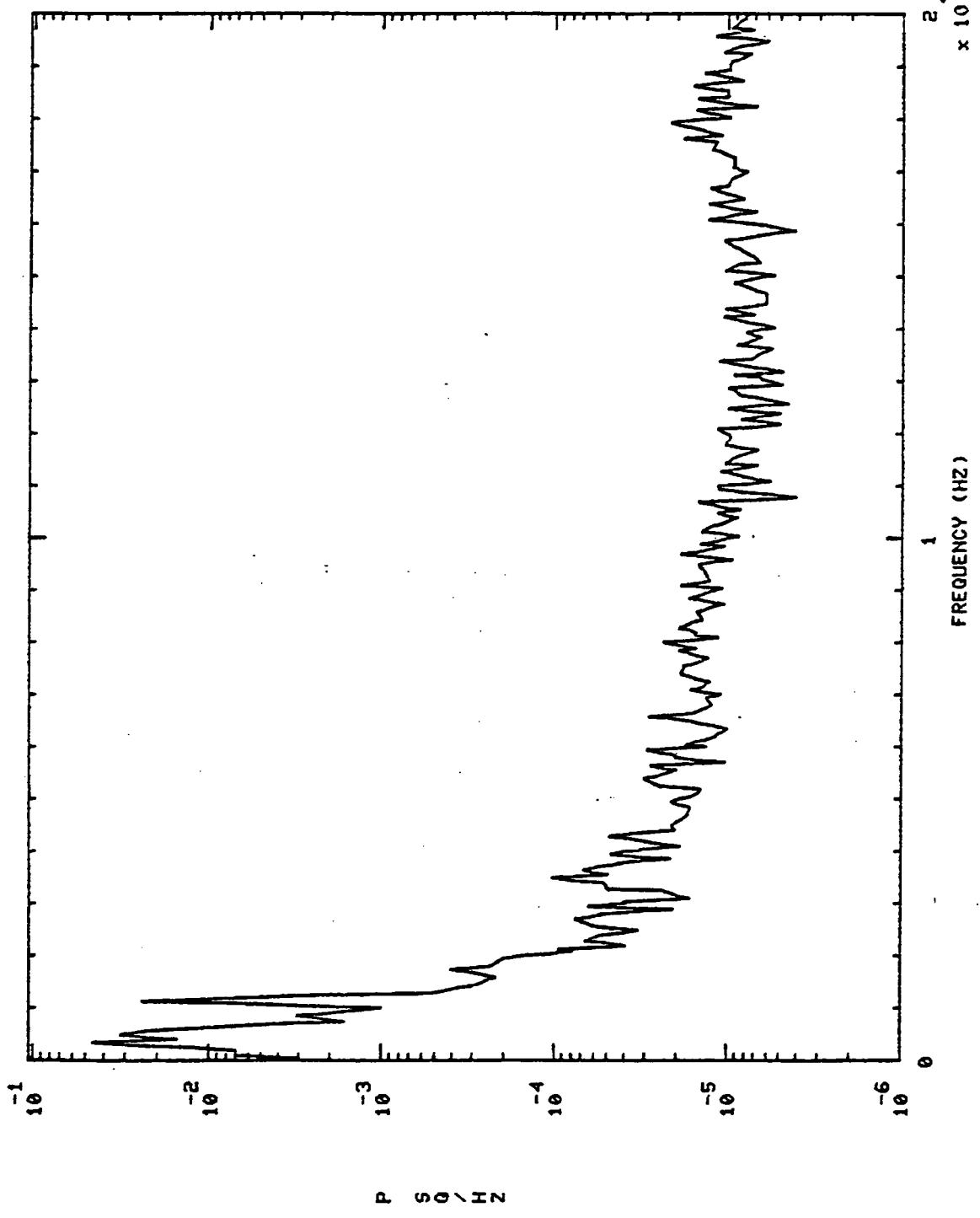
S+ 5.0SQ/HZ

LPFP IN PR

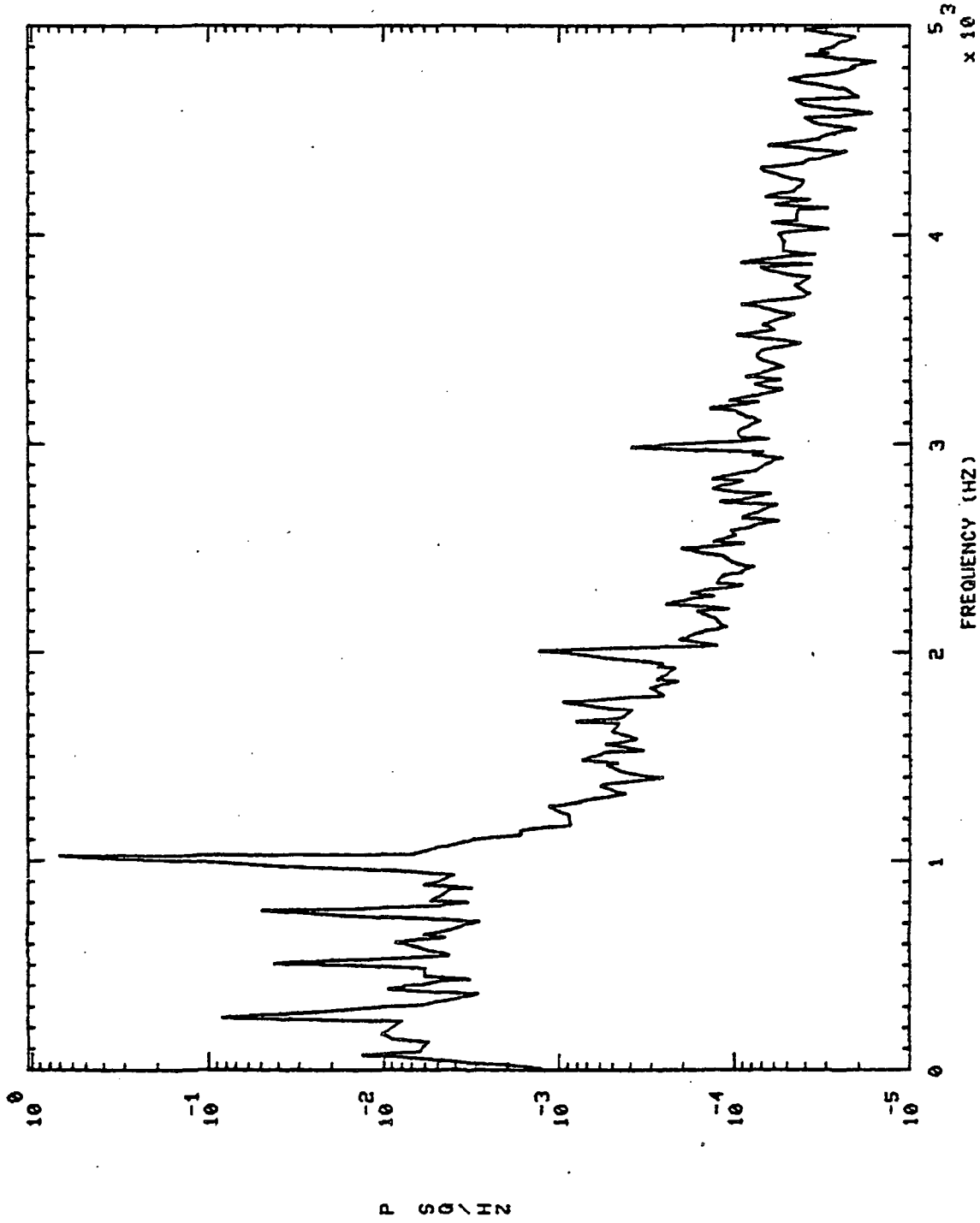
750101



750101 LPFP IN PR S+ 5.050/HZ

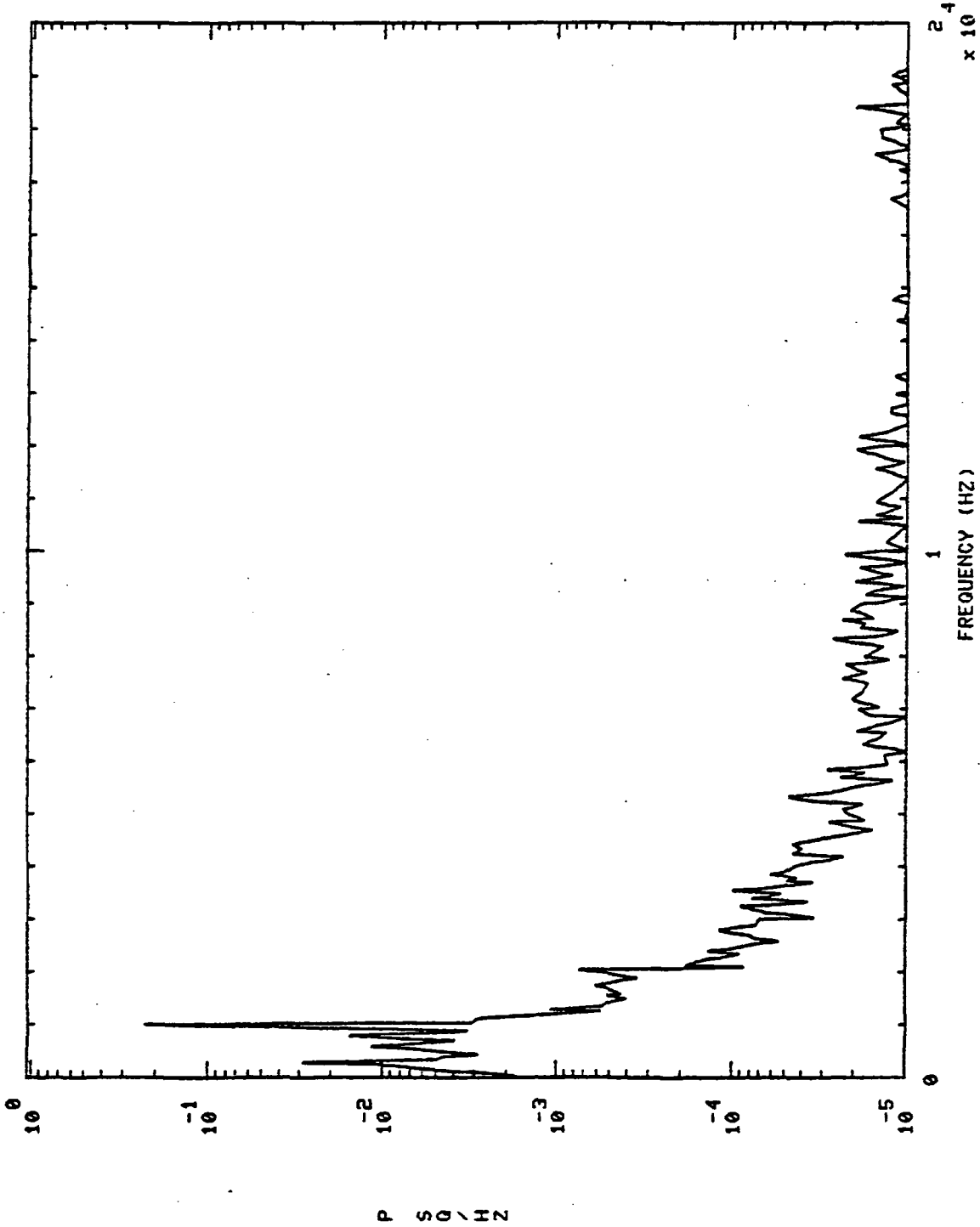


750101 LPFP IN PR S+ 30.050/HZ

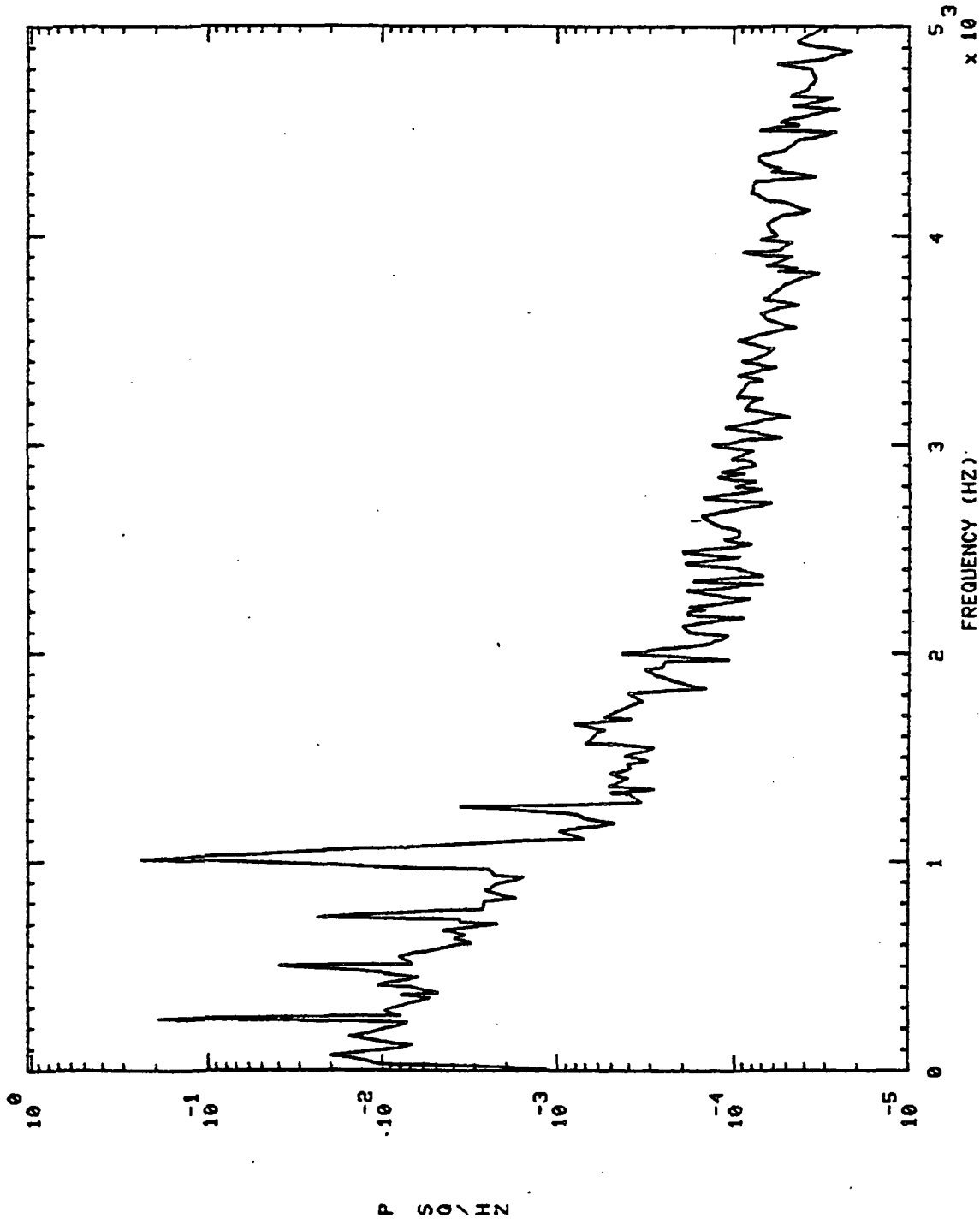


750101 LPFP IN PR S+ 30.050/HZ

750101 LPFP IN PR

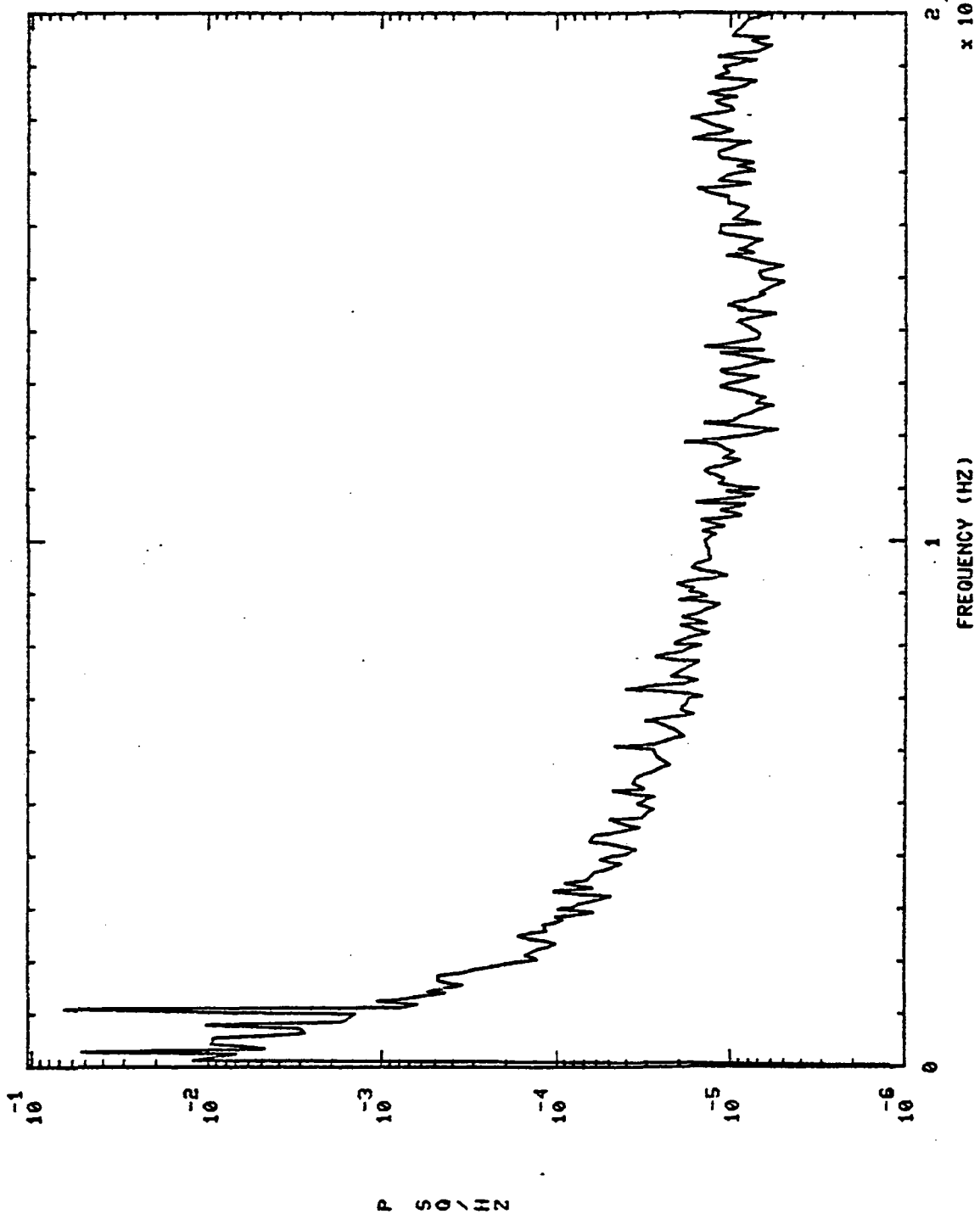


750101 LFPF IN PR 5+ 80.050/HZ

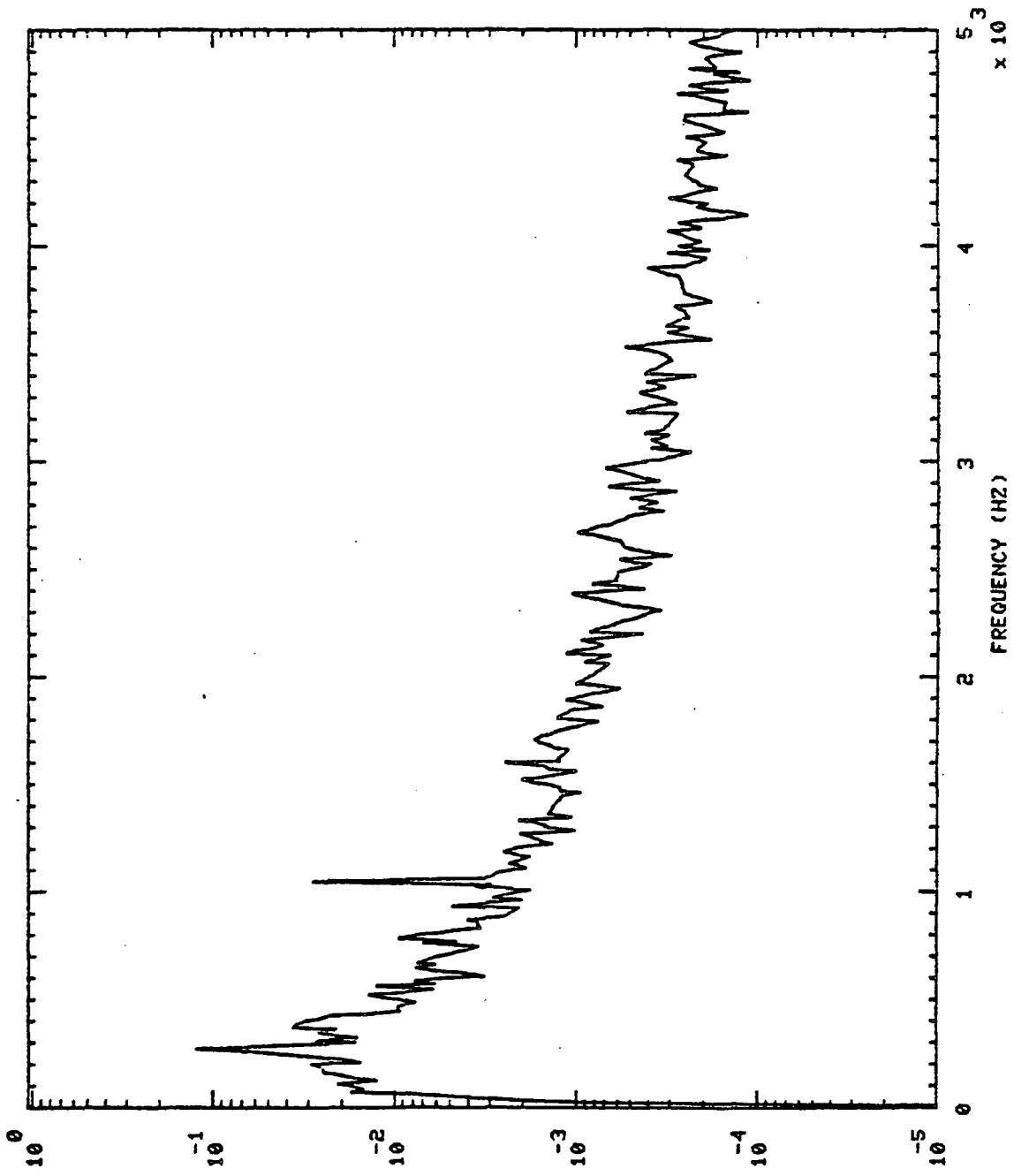




750101 LPFP IN PR S+ 80.050/HZ



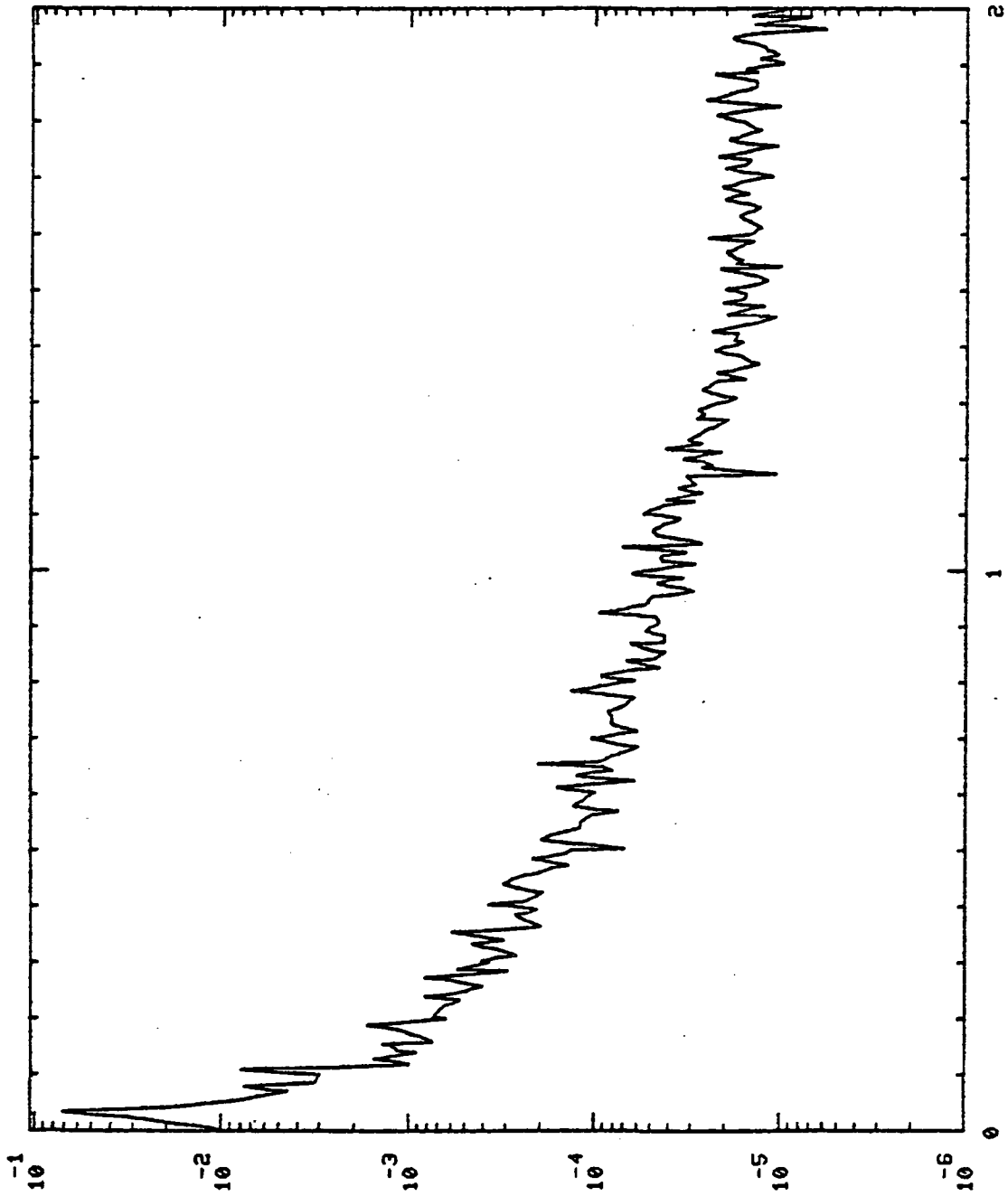
750101 LPFP IN PR 5+ 95.050/HZ



P S D \ HZ

S+ 95.050/HZ

750101 LPFP IN PR

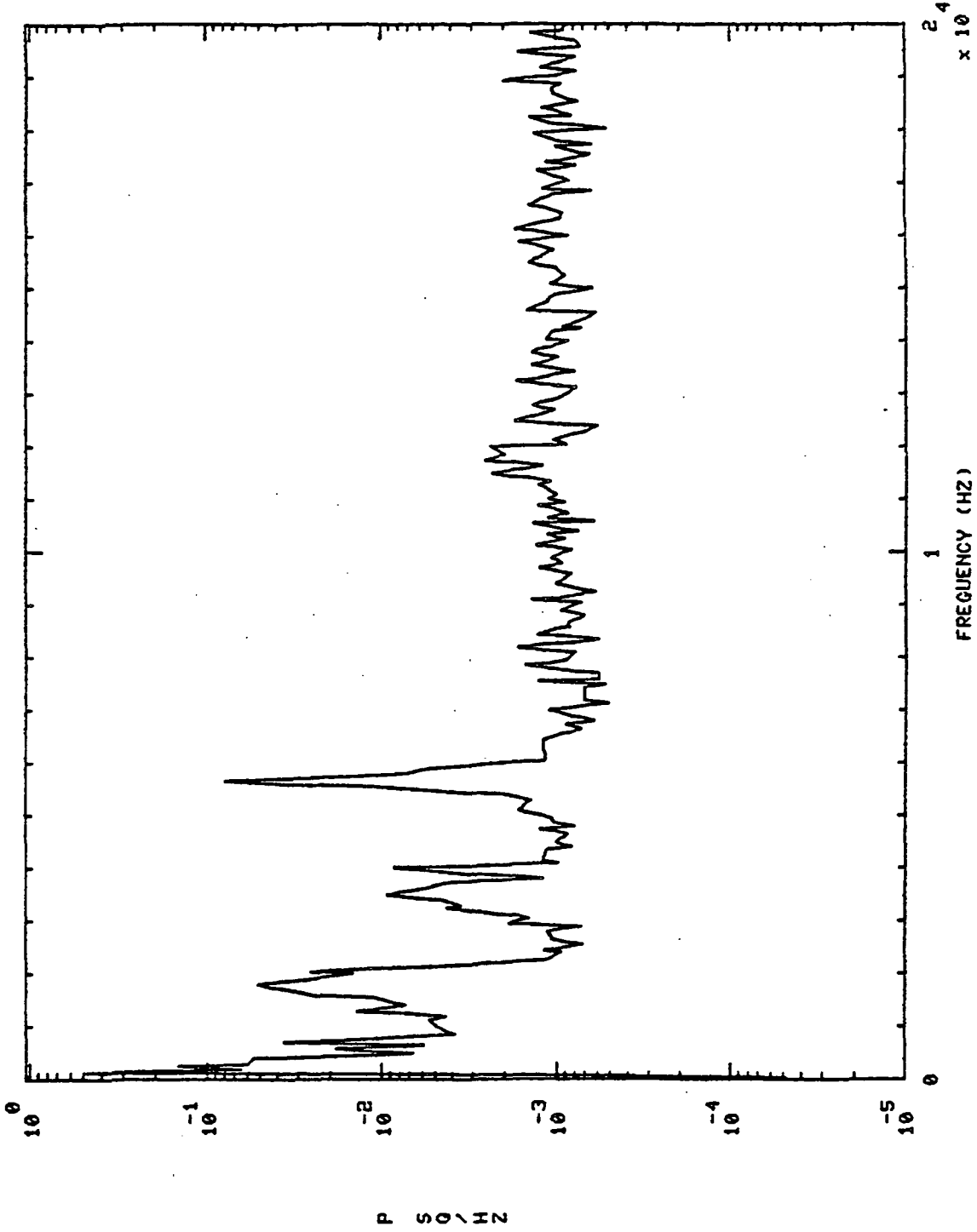


P SQ\HN

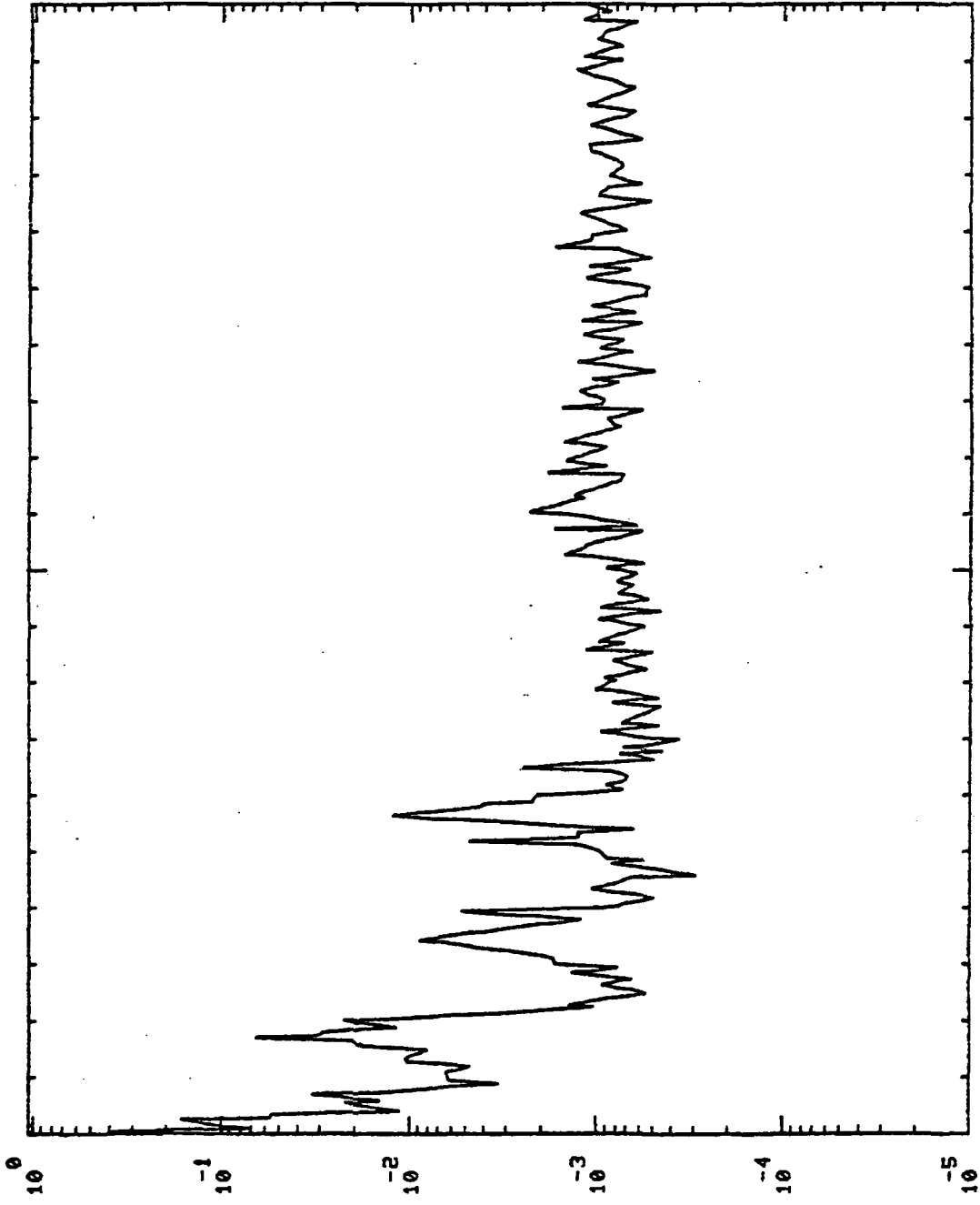
FREQUENCY (HZ)

$2.4 \times 10^4$

750101 LPOP DS PR S+ 5.050/HZ



750101 LPOP DS PR S+ 30.050/HZ



P S D \ H Z

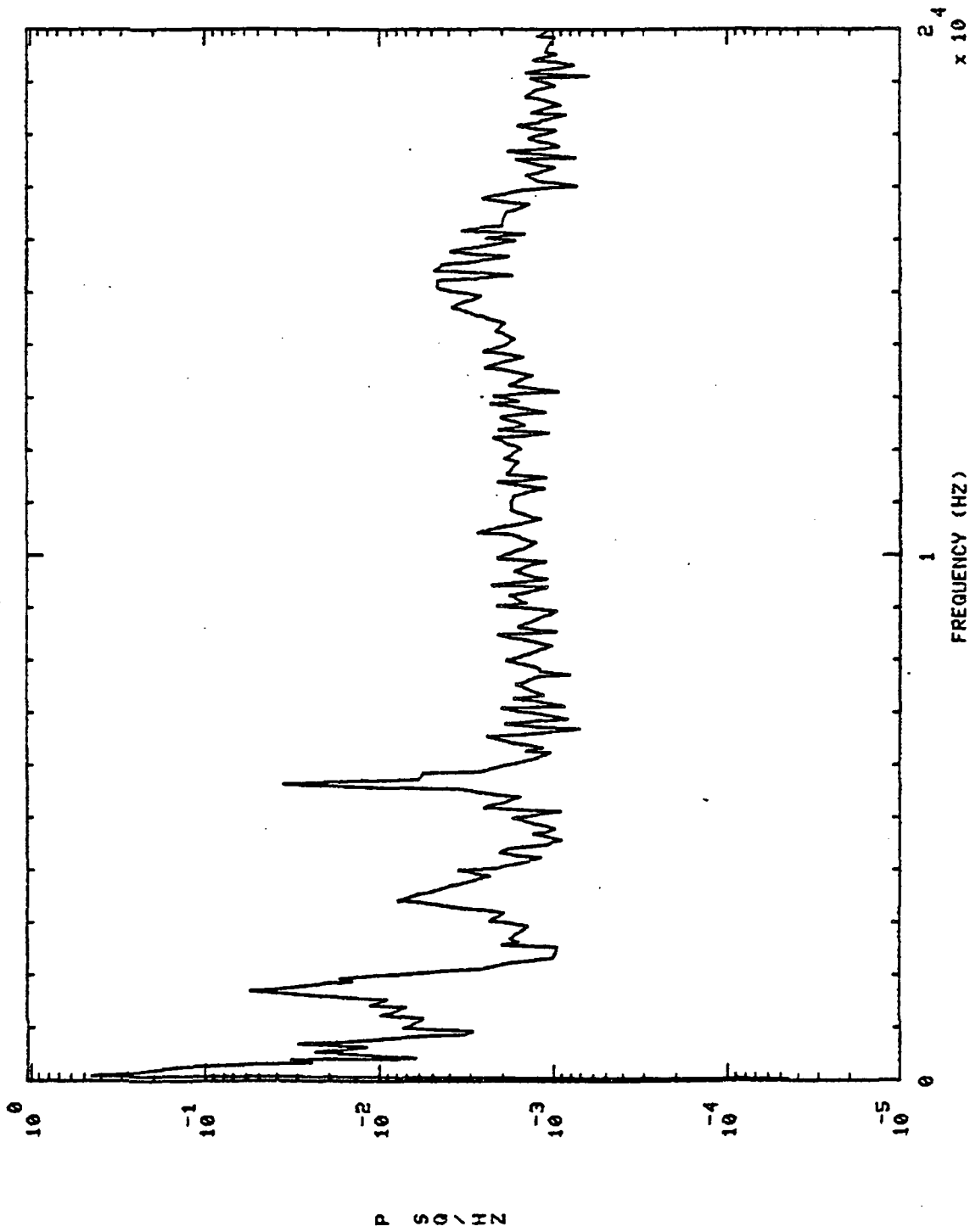
2.4  
x 10<sup>4</sup>

FREQUENCY (HZ)

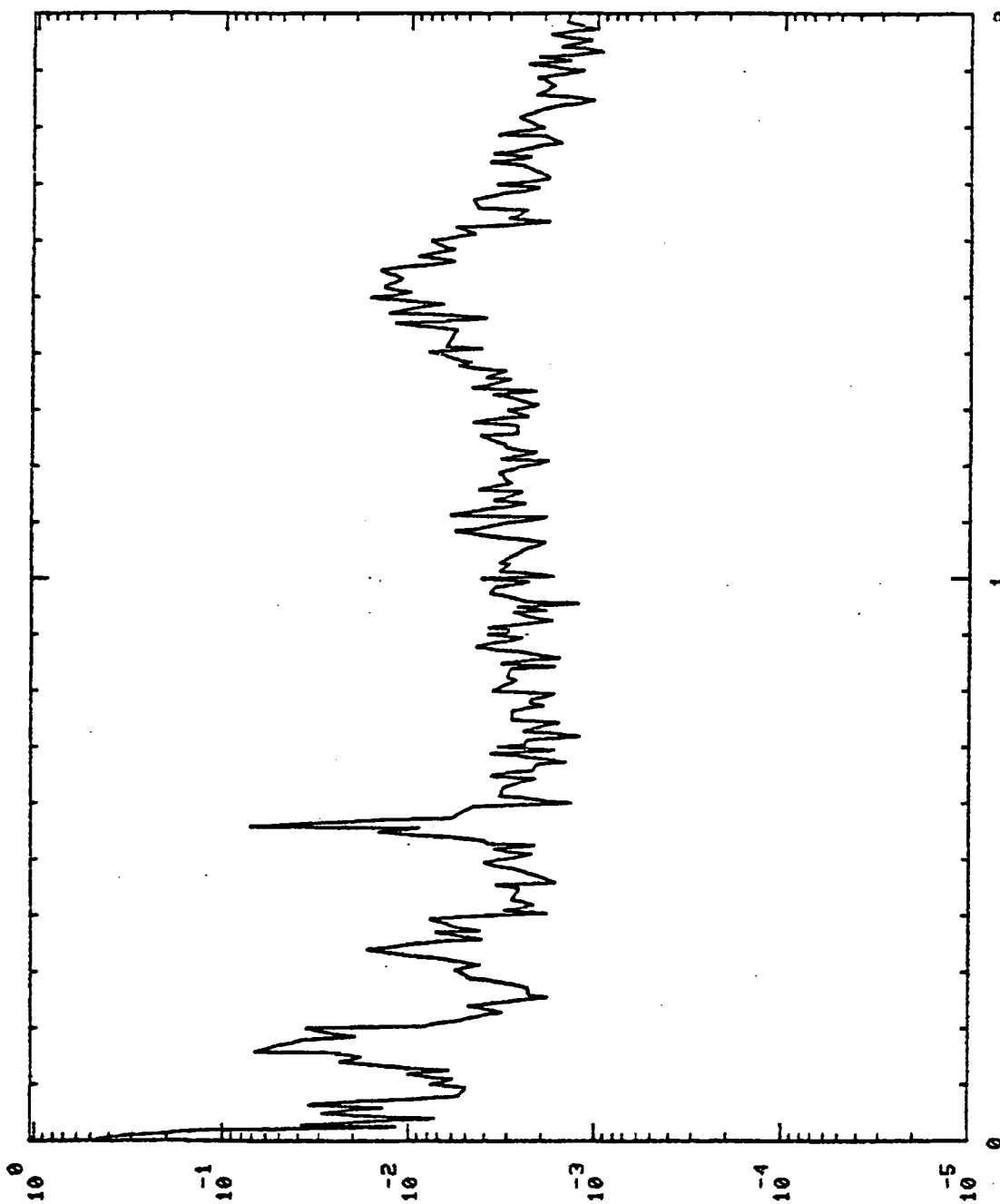
S+ 80.050/HZ

LPOP DS PR

750101



750101 LPOP DS PR S+ 95.050/HZ

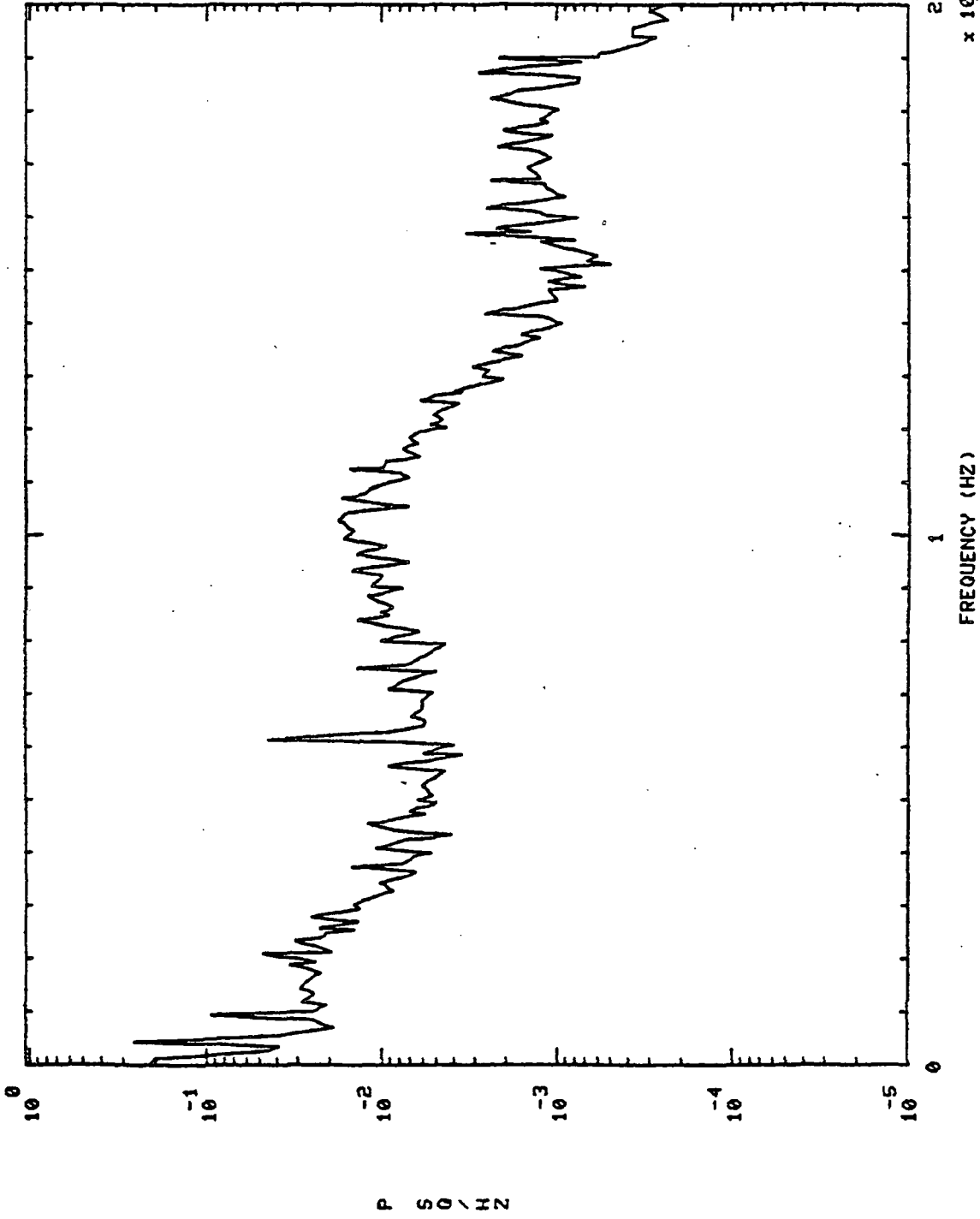


P S O \ H Z

$2.4 \times 10^4$

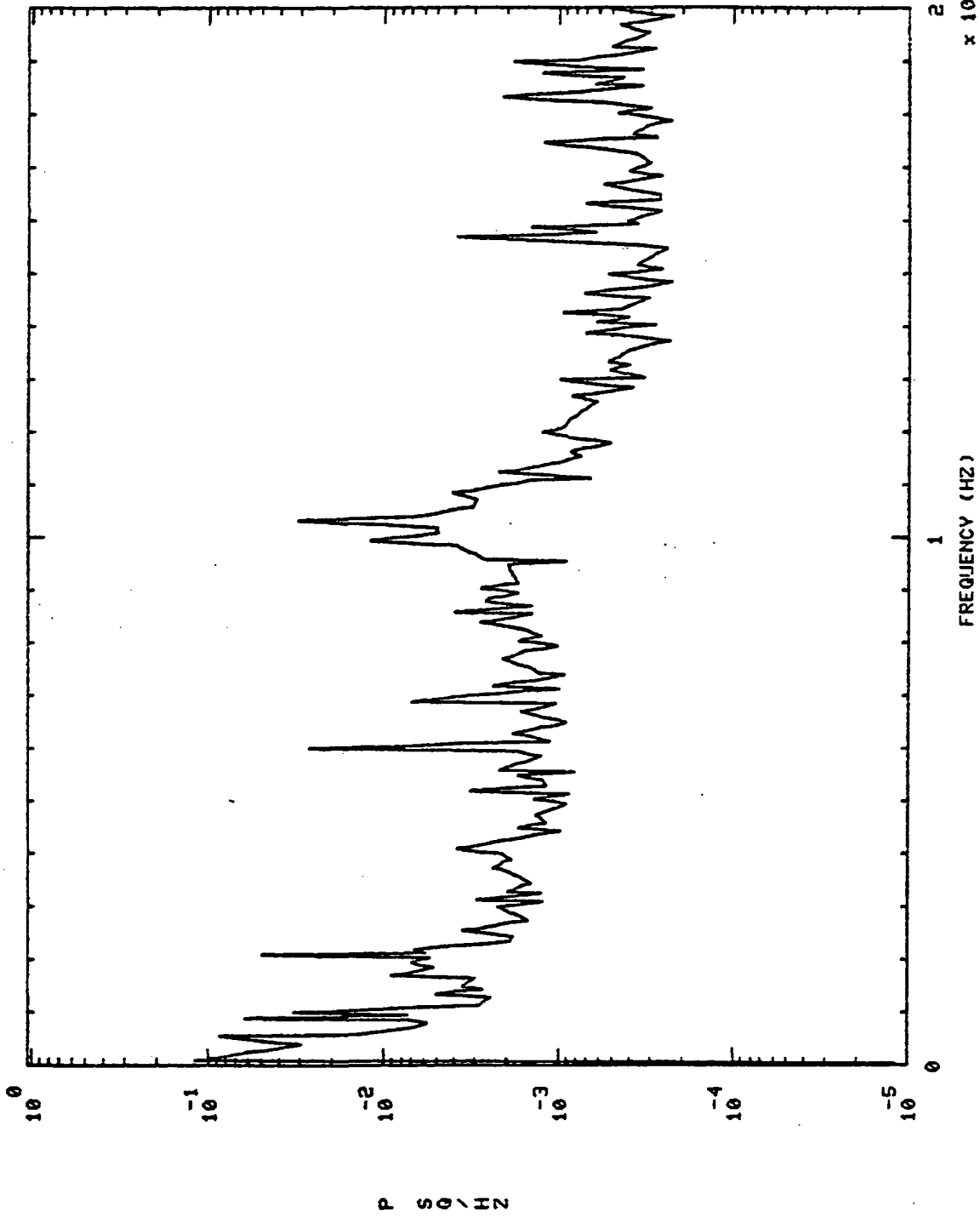
FREQUENCY (HZ)

750101 HPOP BAL CAU PR2 S+ 5.05Q/MZ

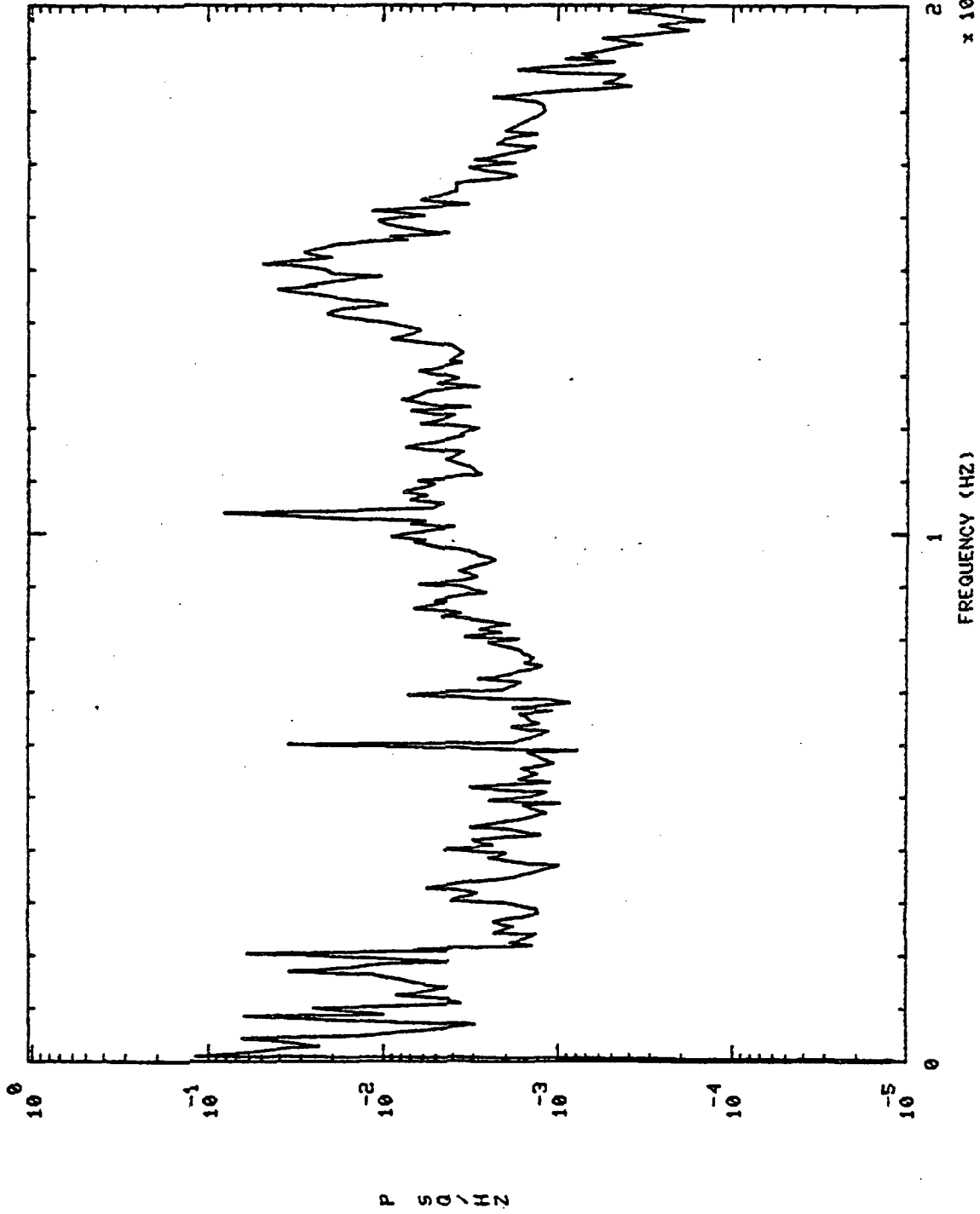




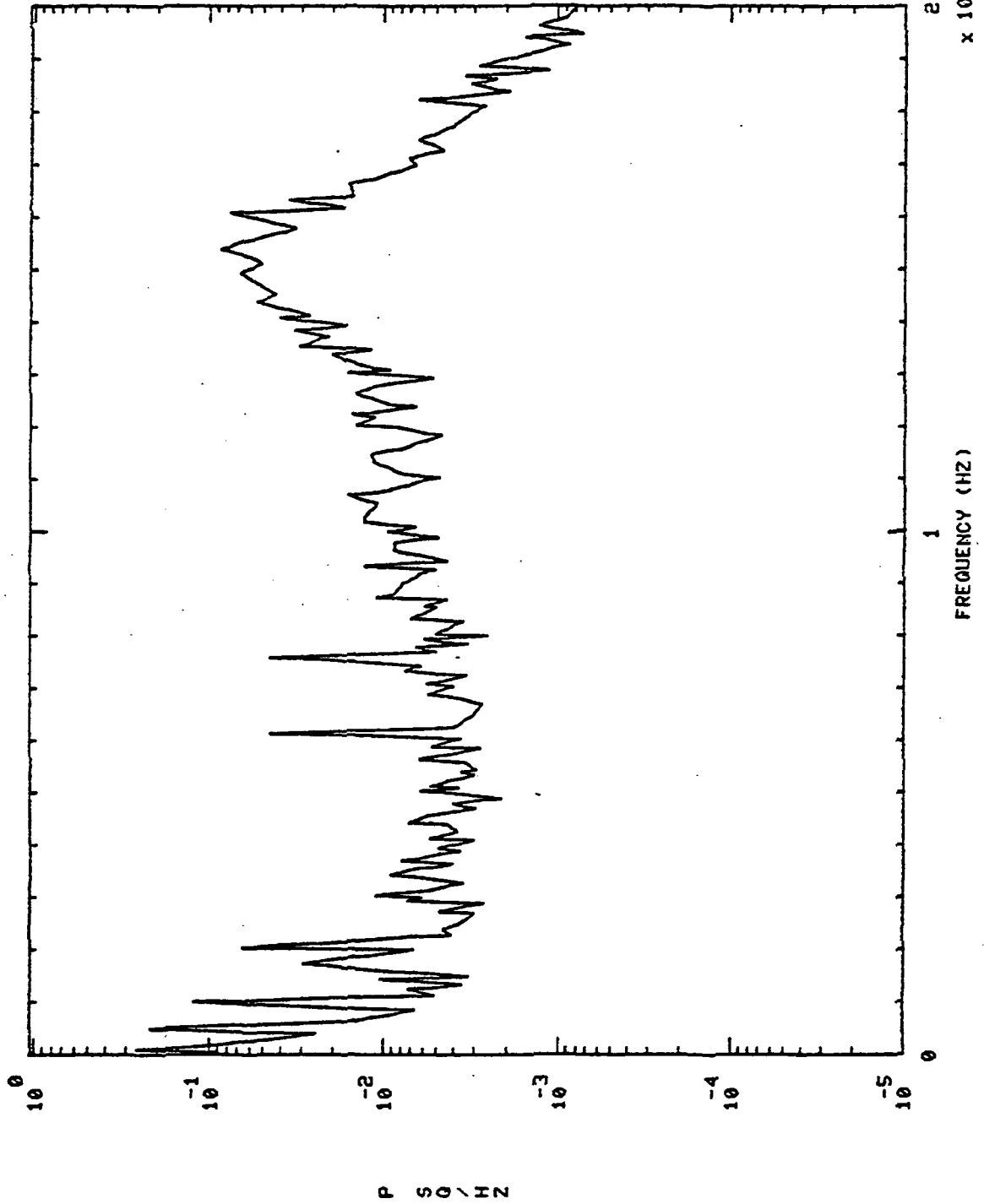
750101 HPOP BAL CAU PR2 S+ 30.050/HZ



750101 HPOP BAL CAU PR2 S+ 80.0SQ/HZ

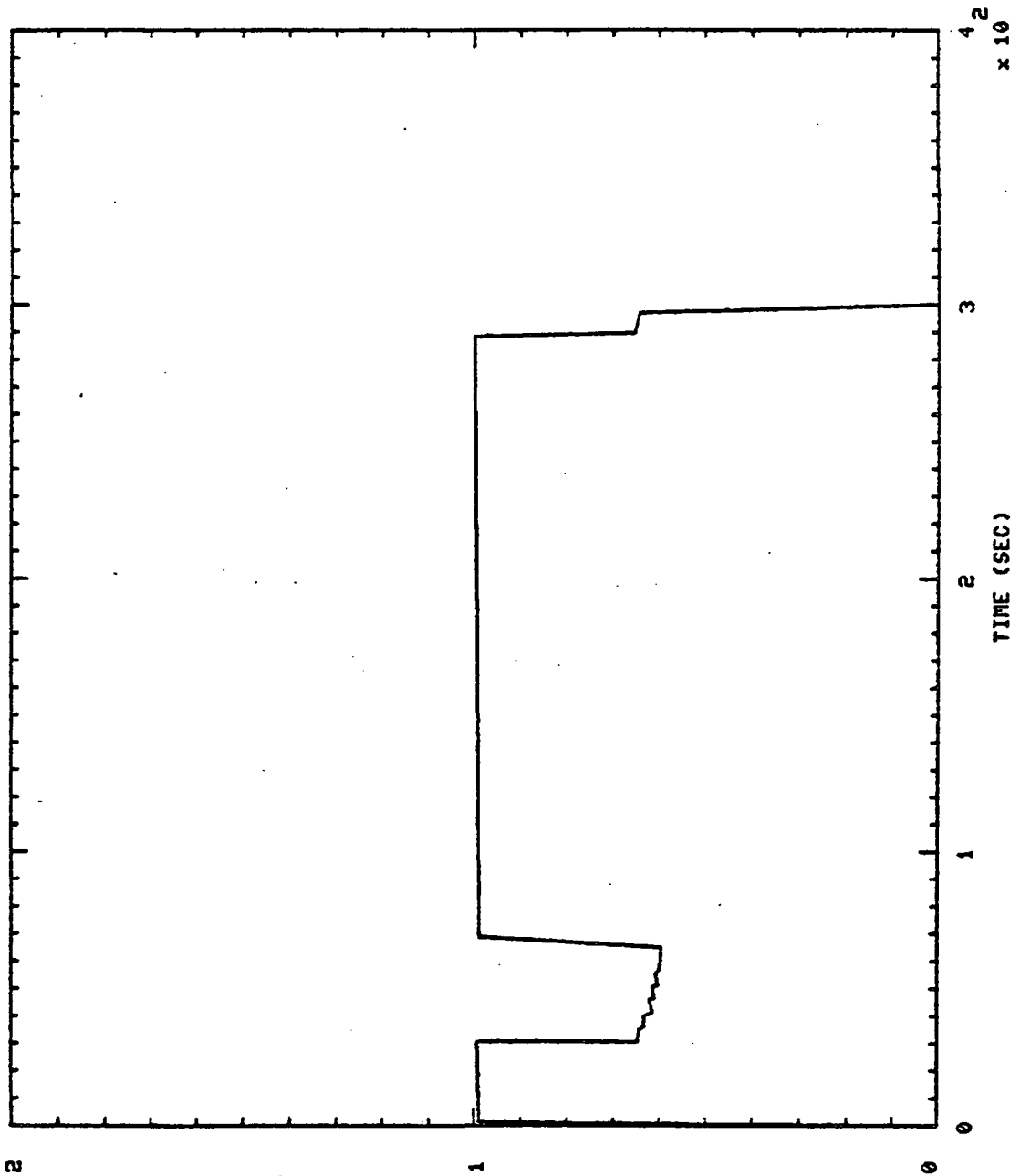


750101 HPOP BAL CAU PR2 S+ 95.050/HZ



(UNFILTERED )

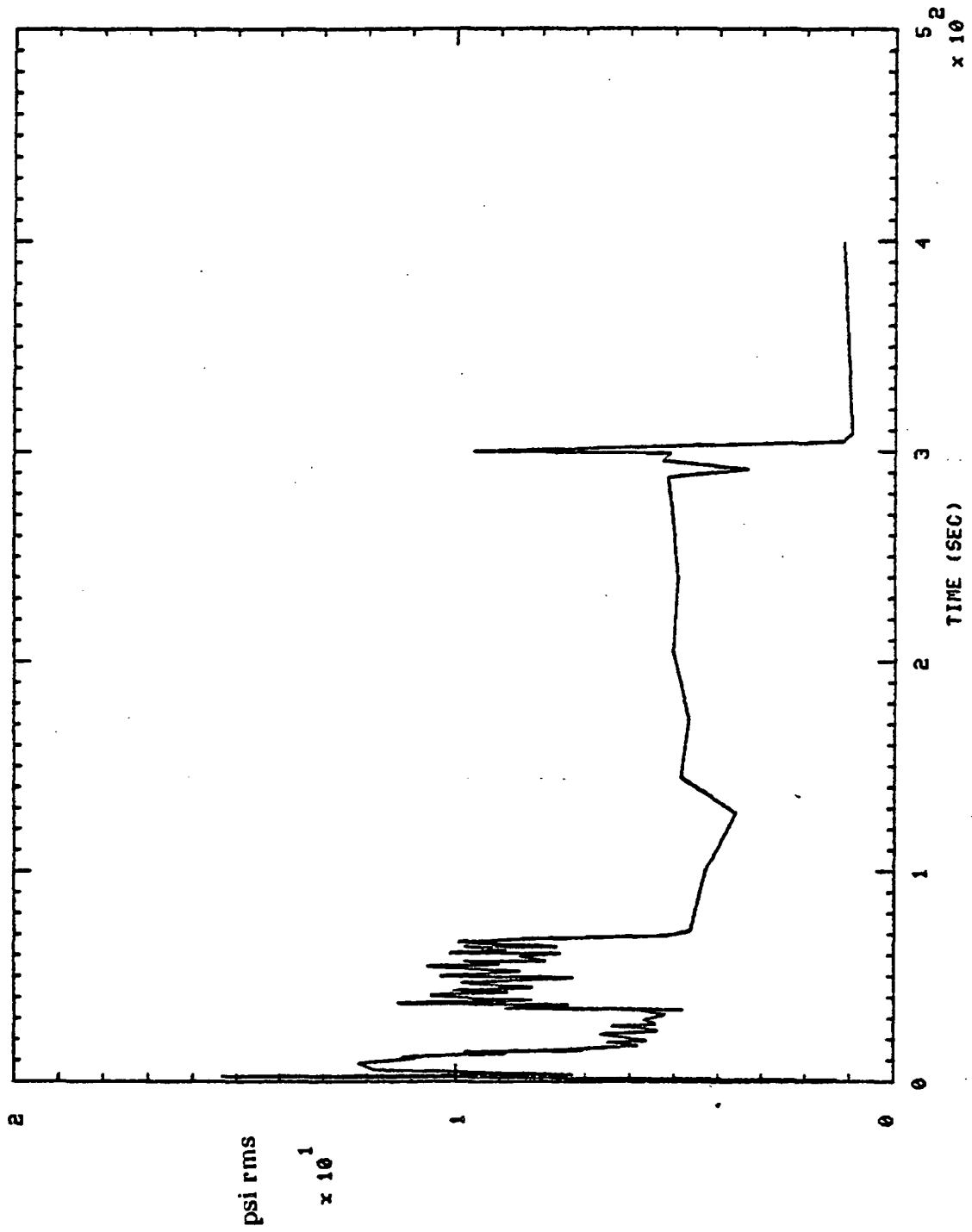
750102 THRUST

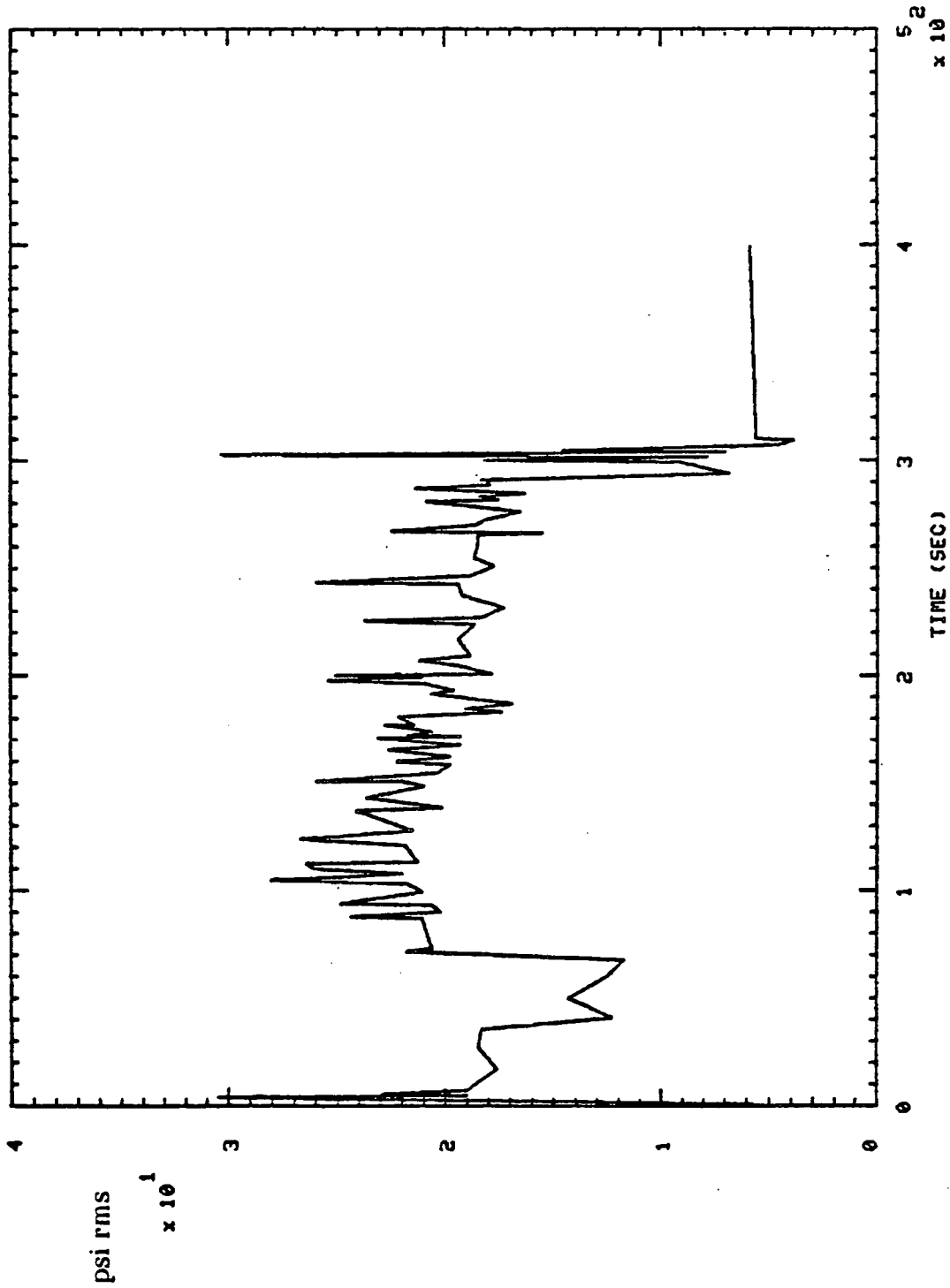


Percent of Rated Power  
 $\times 10^2$

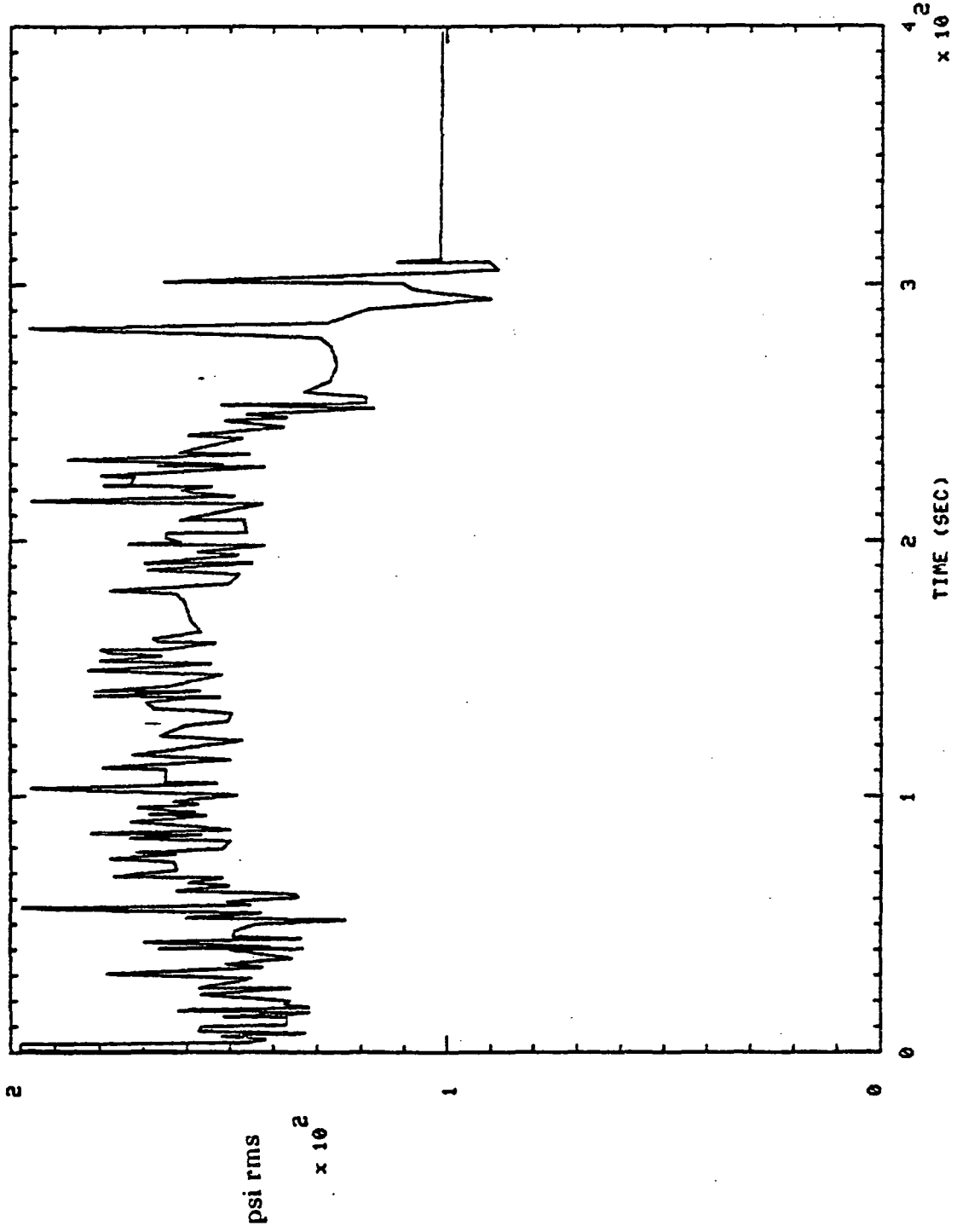
TIME (SEC)  
 $\times 10^2$

750102 LPFP IN PR (1 - 20K HZ )





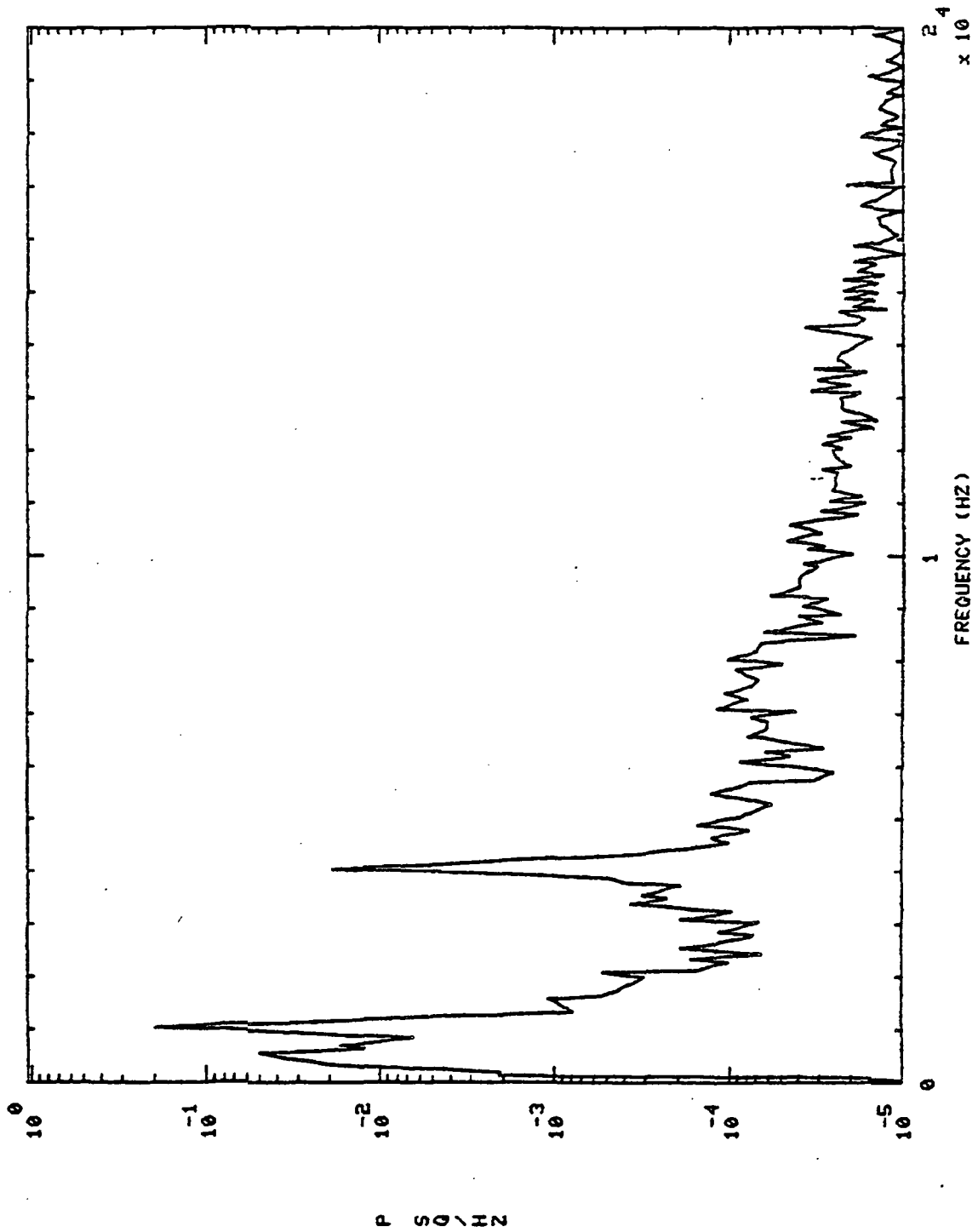
750102 HPOP DS PR (1 - 20K HZ )



S+ 15.050/HZ

LPFP IN PR

750102



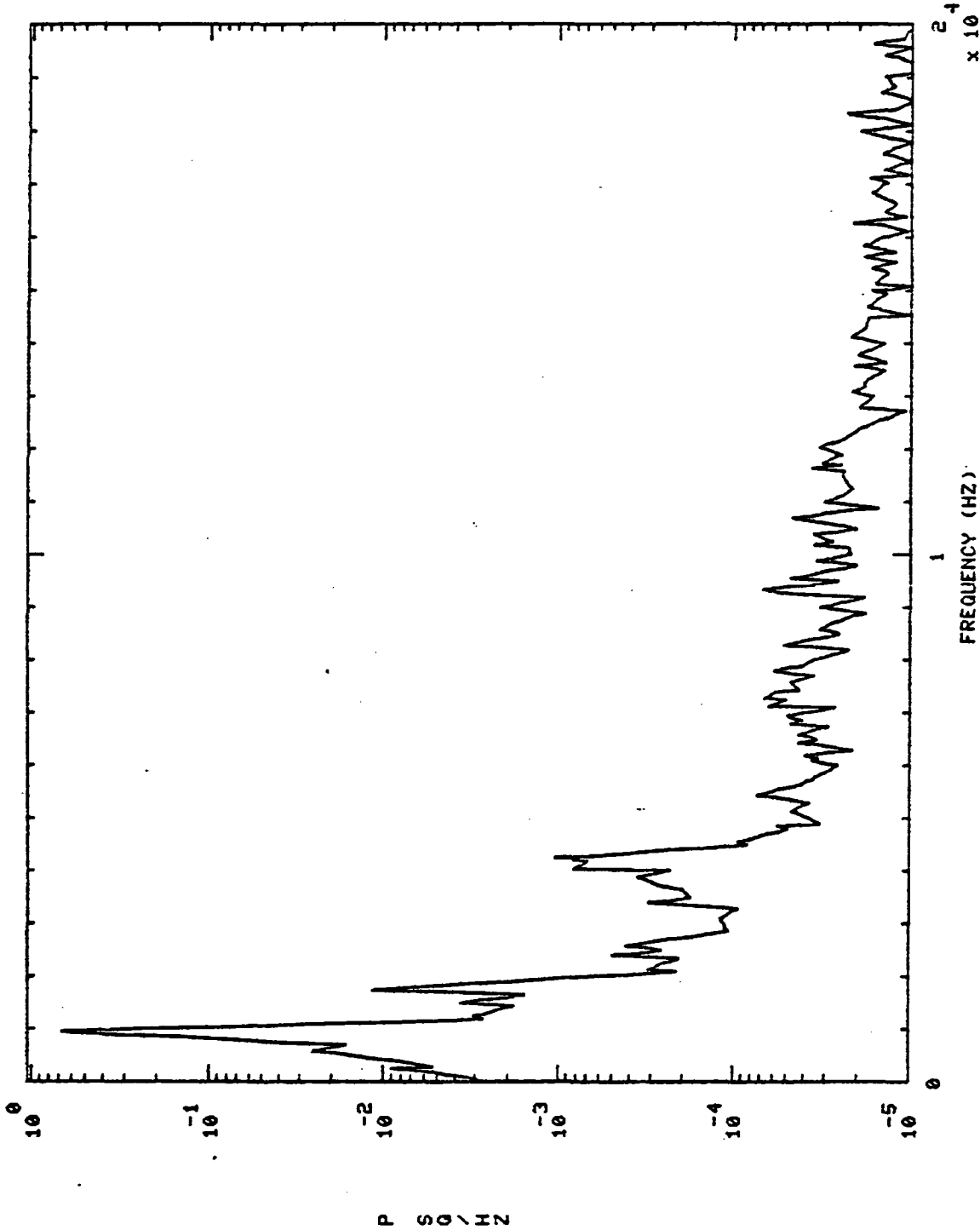
$10^2$   
 $\times 10^4$

1  
FREQUENCY (HZ)

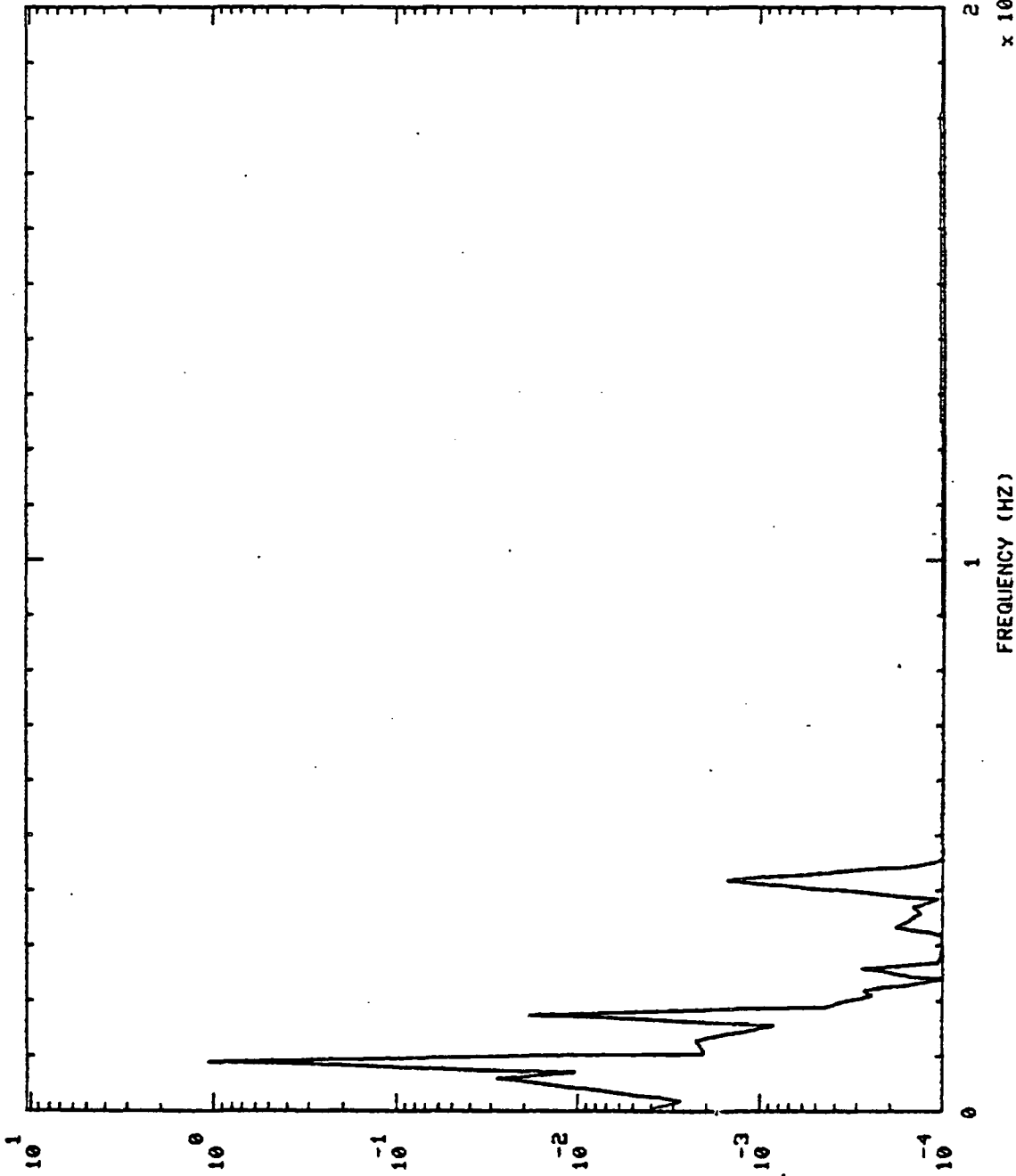


750102 LPFP IN PR S+ 35.050/HZ

750102 LPFP IN PR



750102 LPFP IN PR S+ 60.050/HZ

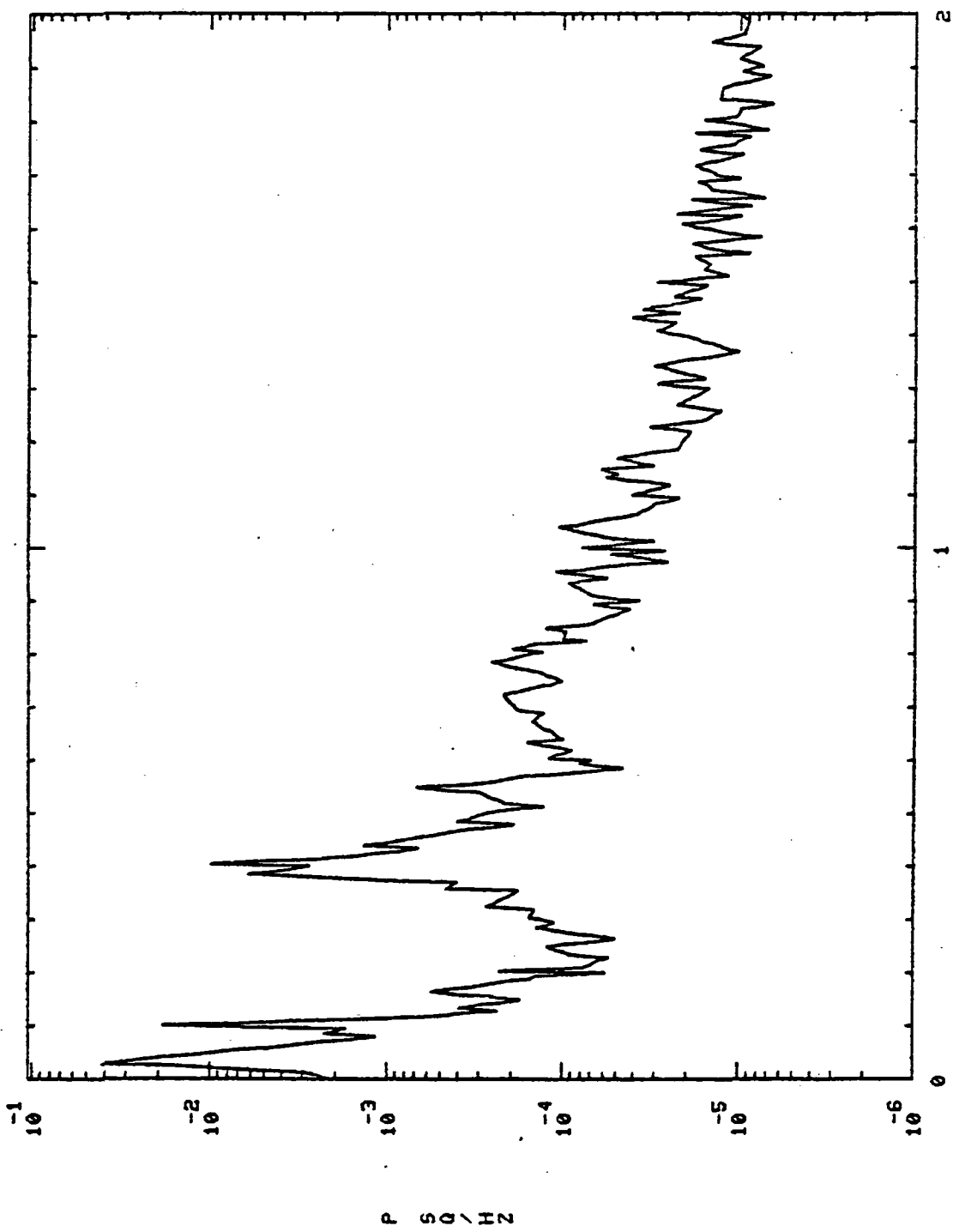


P SQ/HZ

C-2

S+ 80.0SQ/HZ

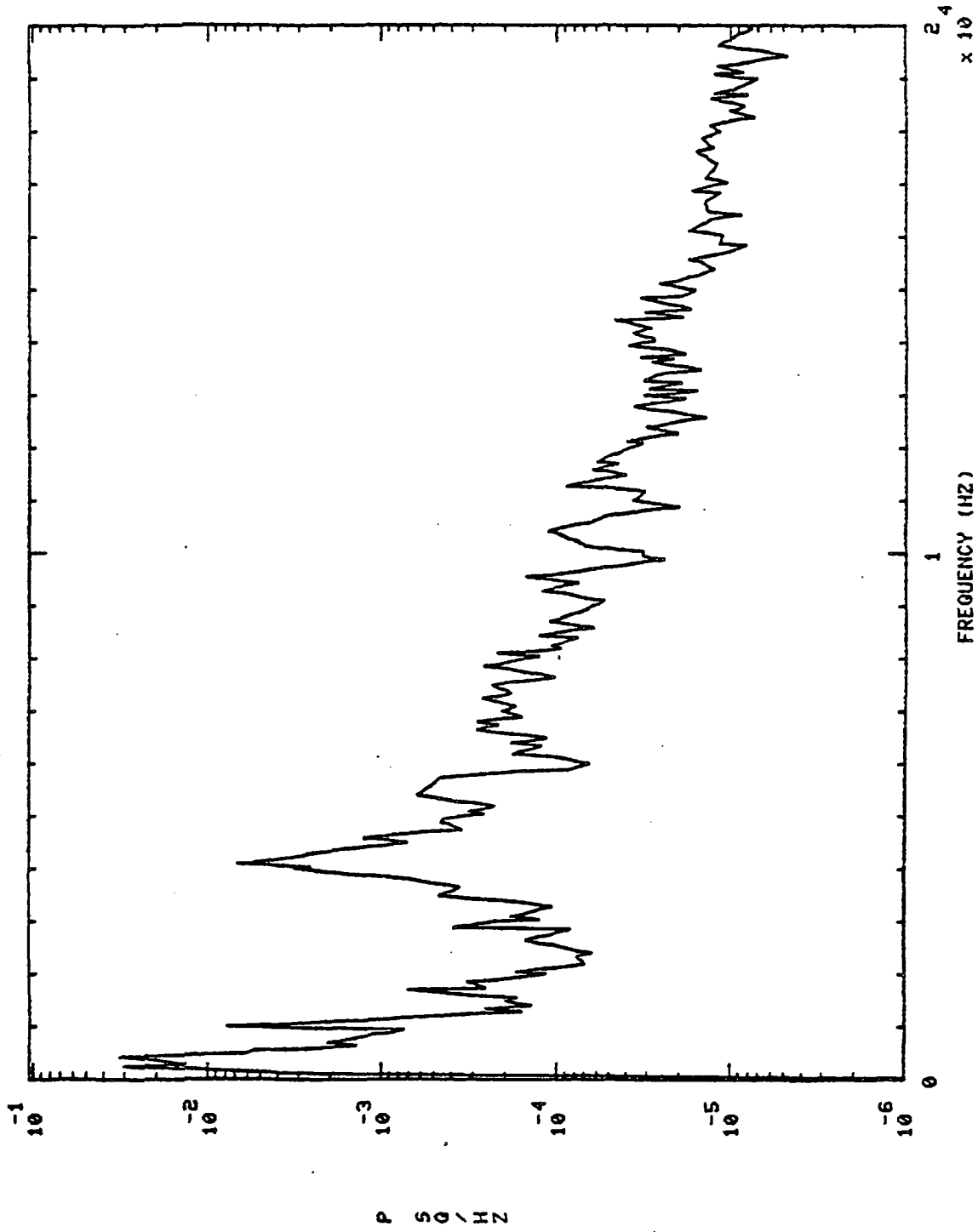
750102 LPFP IN PR



S+ 100.05Q/HZ

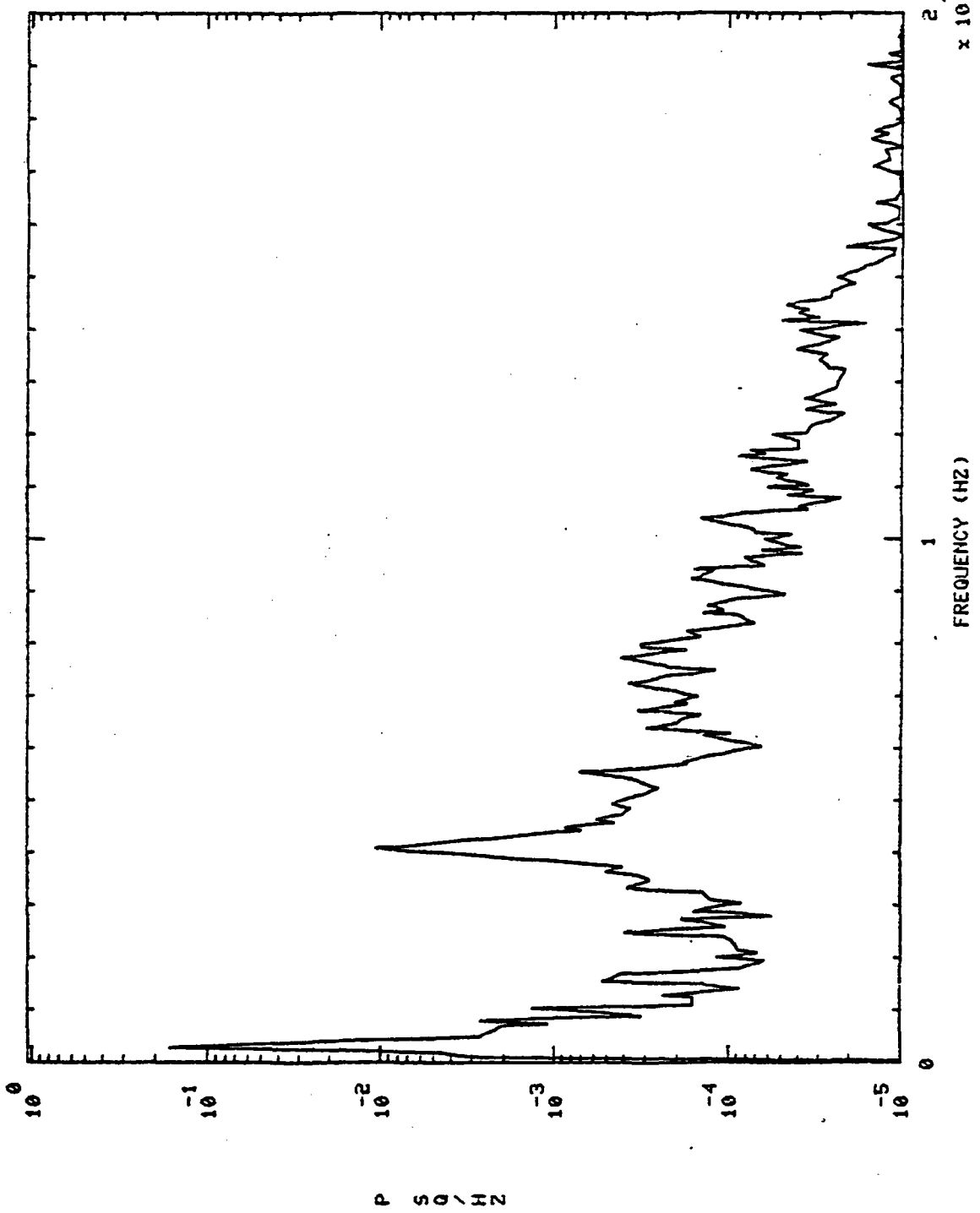
LFPF IN PR

750102



S+ 200.050/HZ

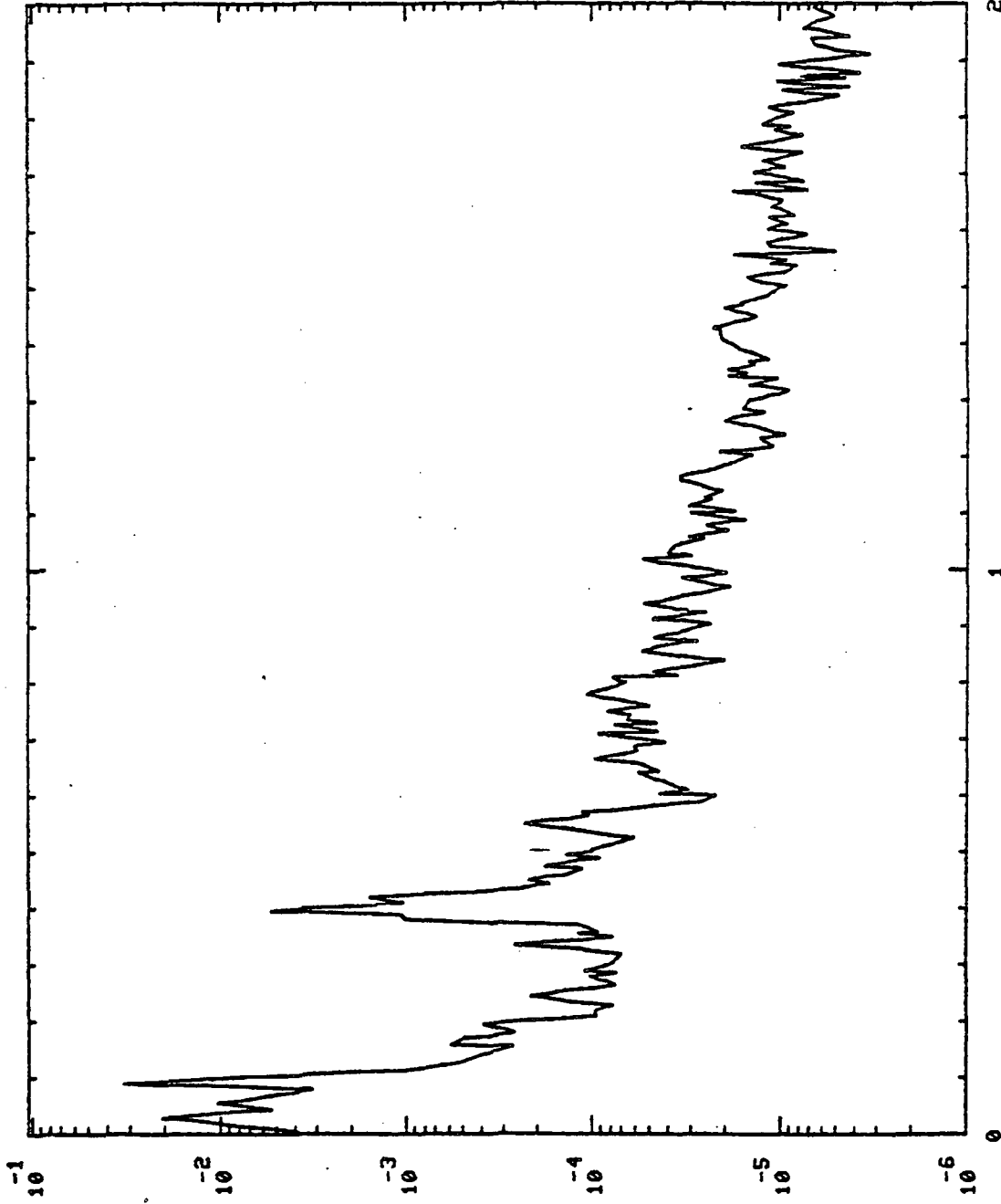
750102 LPFP IN PR



S+ 280.050/HZ

LPFP IN PR

750102



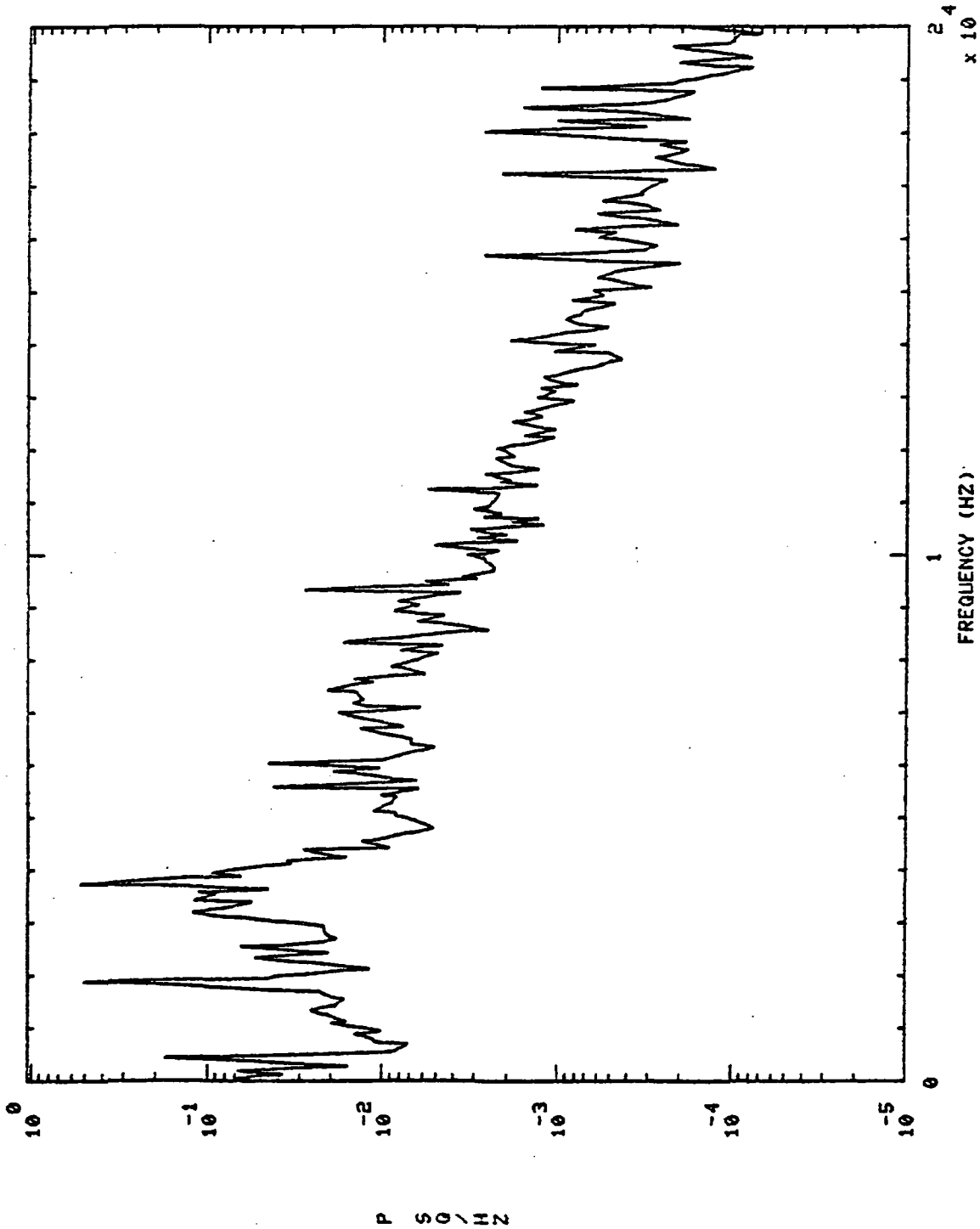
P S D / HZ

2.4  
 $\times 10^4$

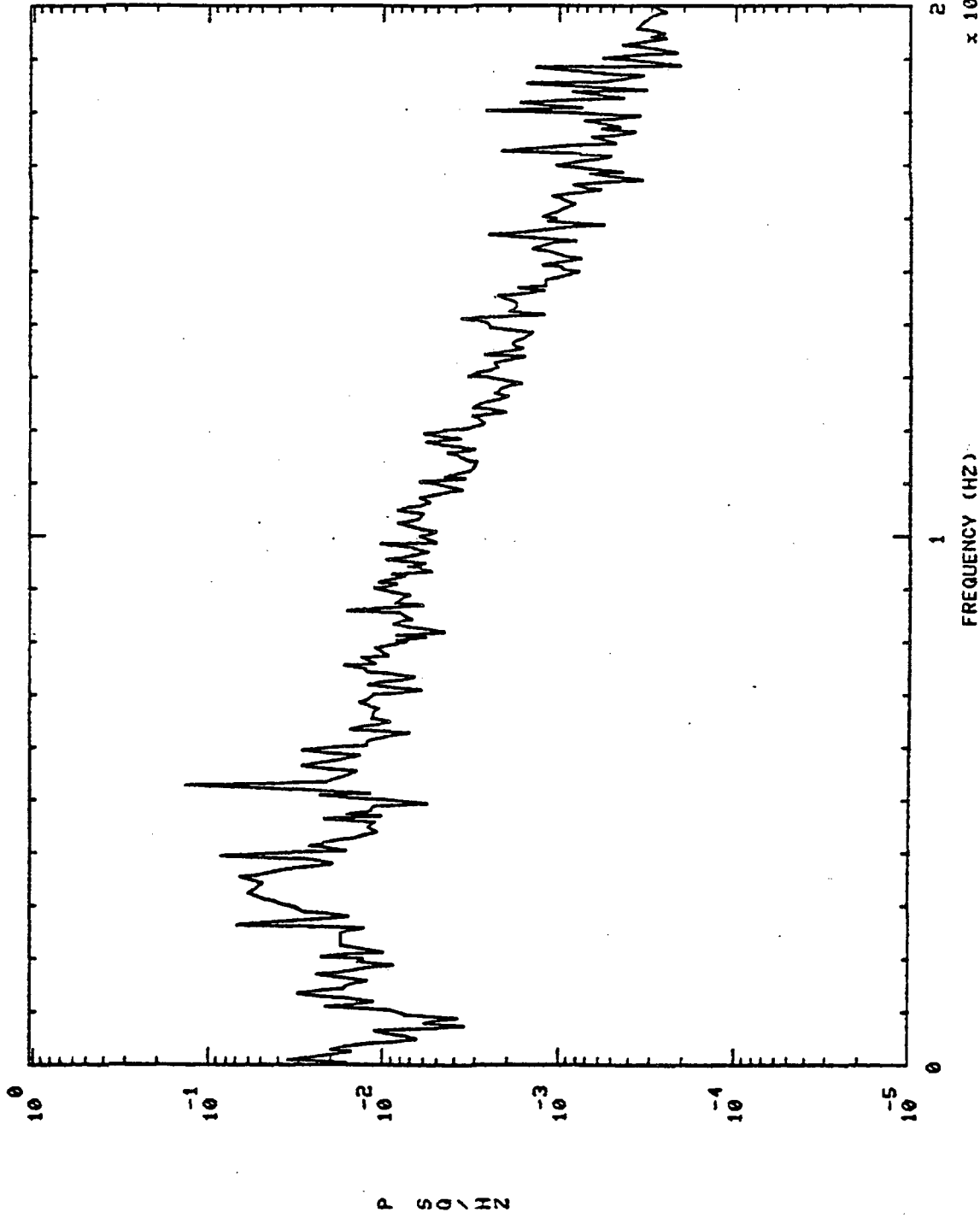
FREQUENCY (HZ)

0

750102 MPOP BAL CRU PR2 S+ 15.050/HZ

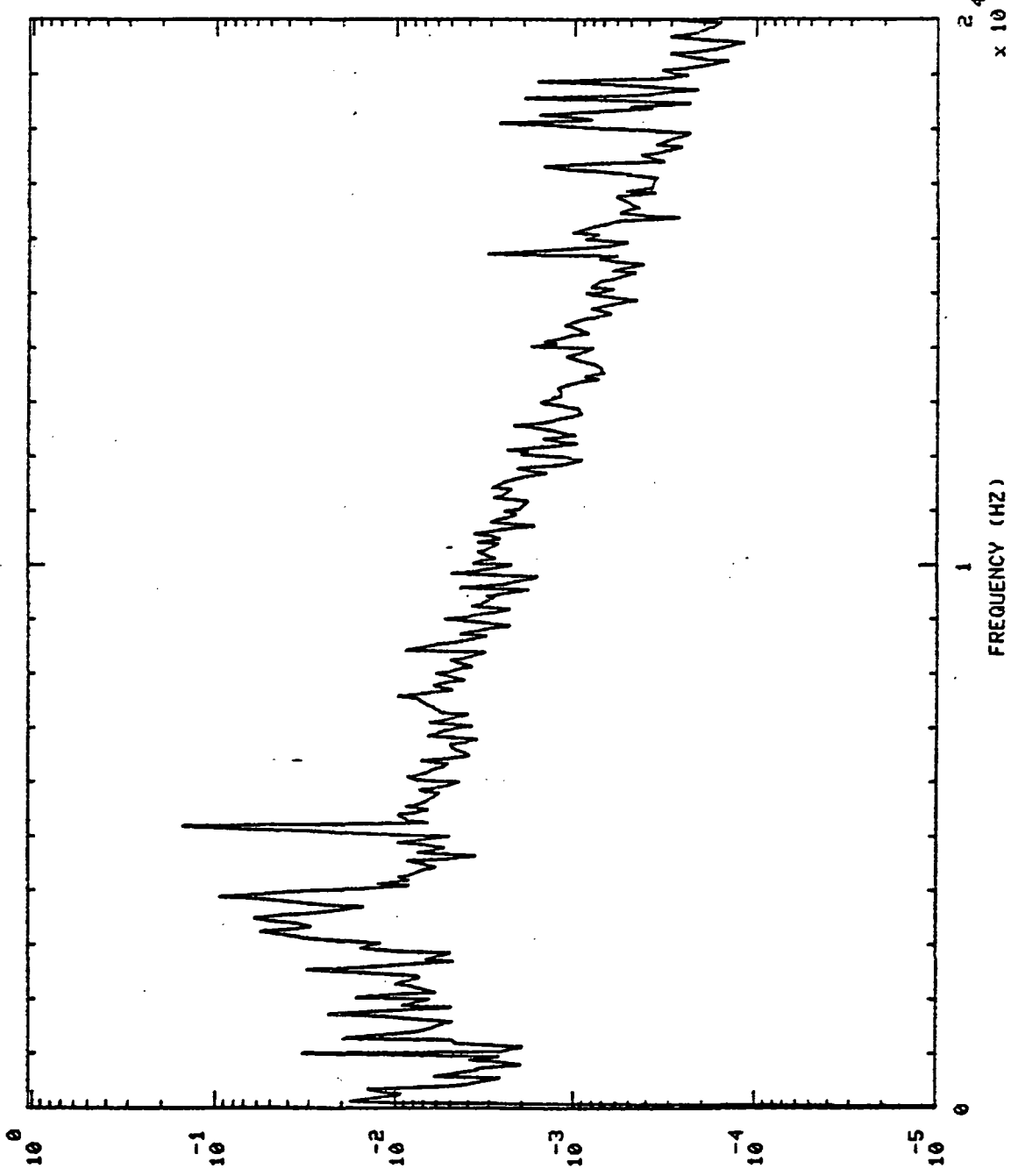


750102 HPOP BAL CAU PR2 S+ 35.050/HZ



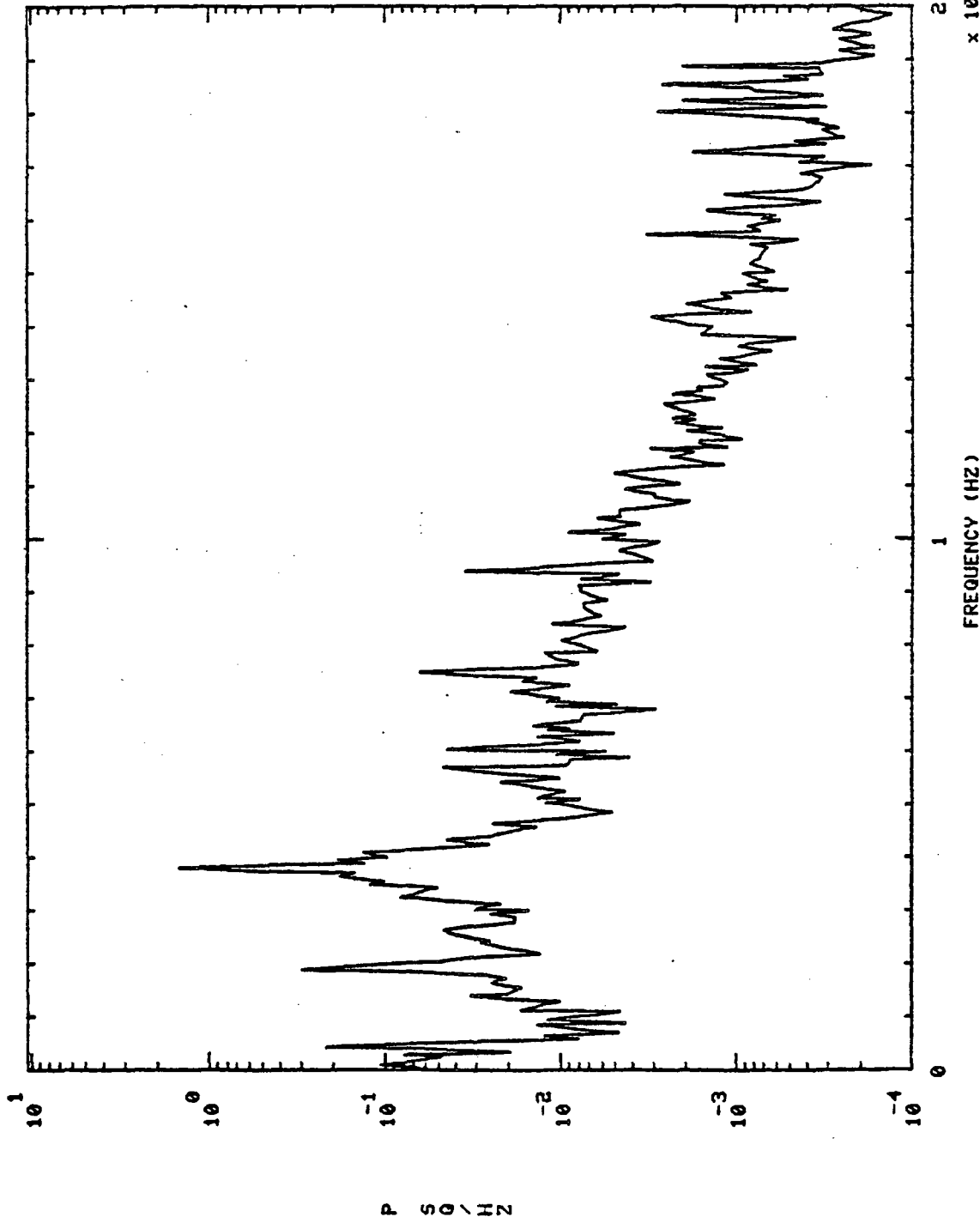


750102 HPOP BAL CAU PR2 S+ 60.050/HZ

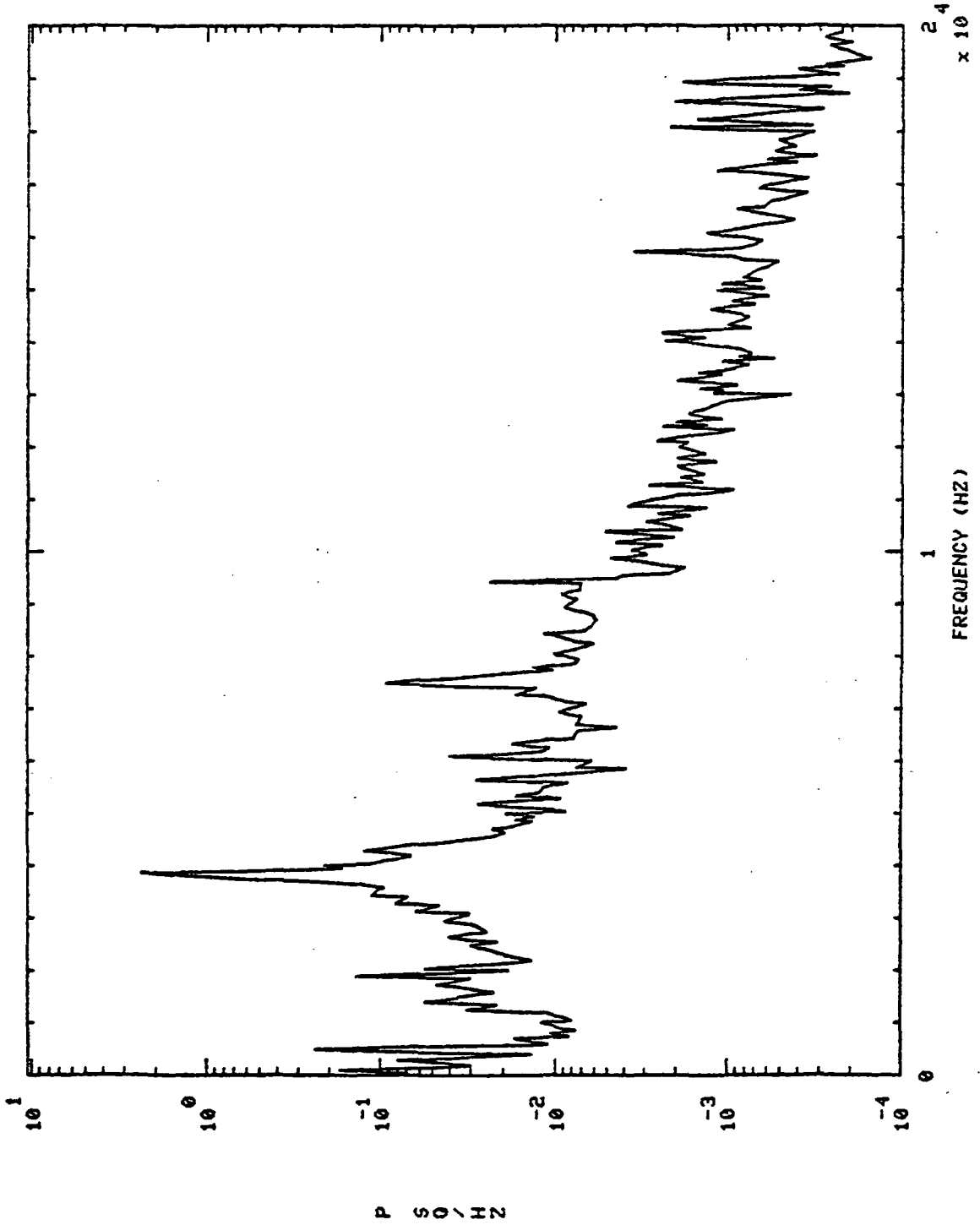


P S D / H Z

750102 HPOF BAL CAU PR2 S+ 80.050/HZ

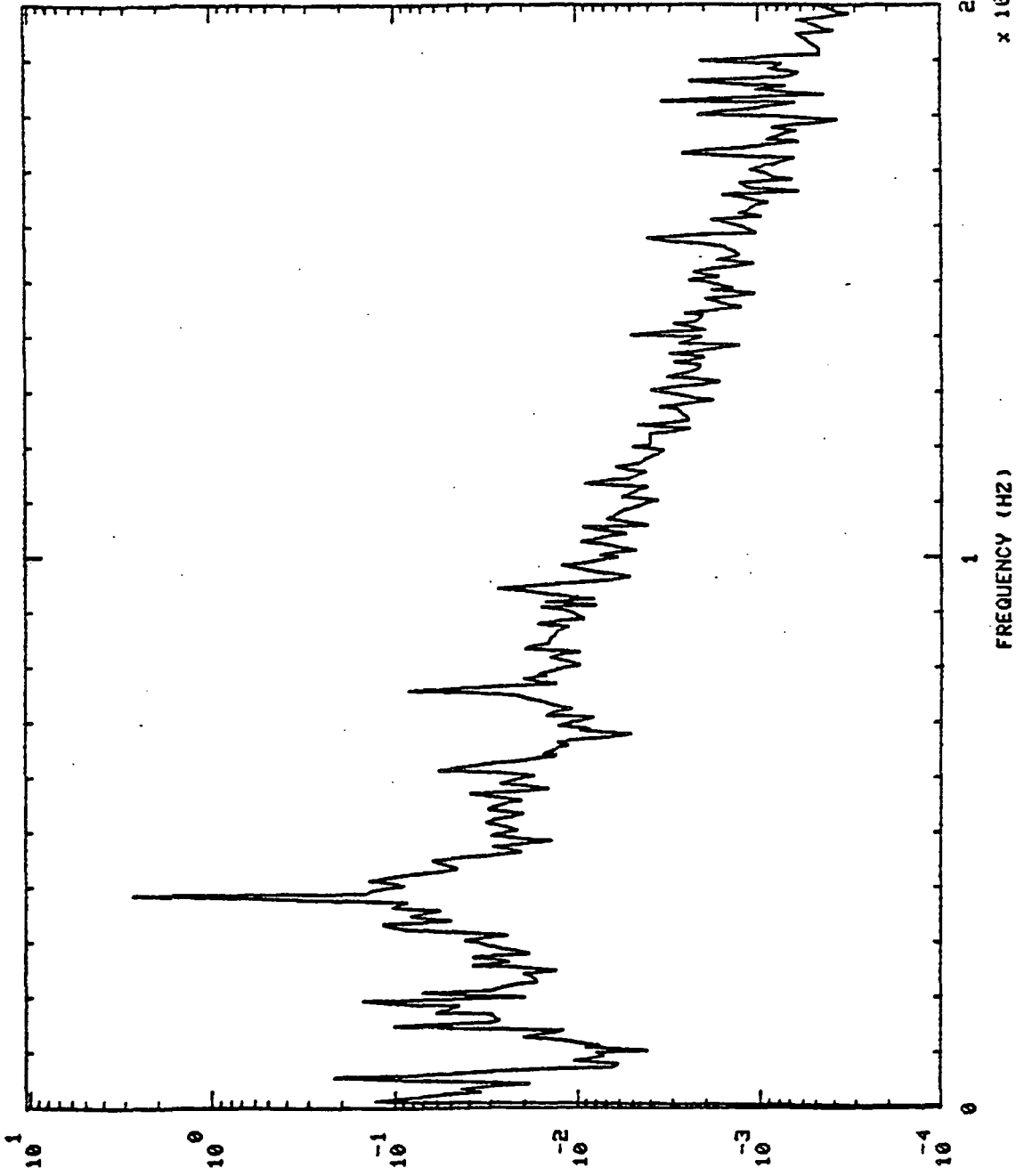


750102 HPOP BAL CAU PR2 S+ 100.05Q/HZ



S+ 150.050/HZ

750102 HPOP BAL CAU PR2

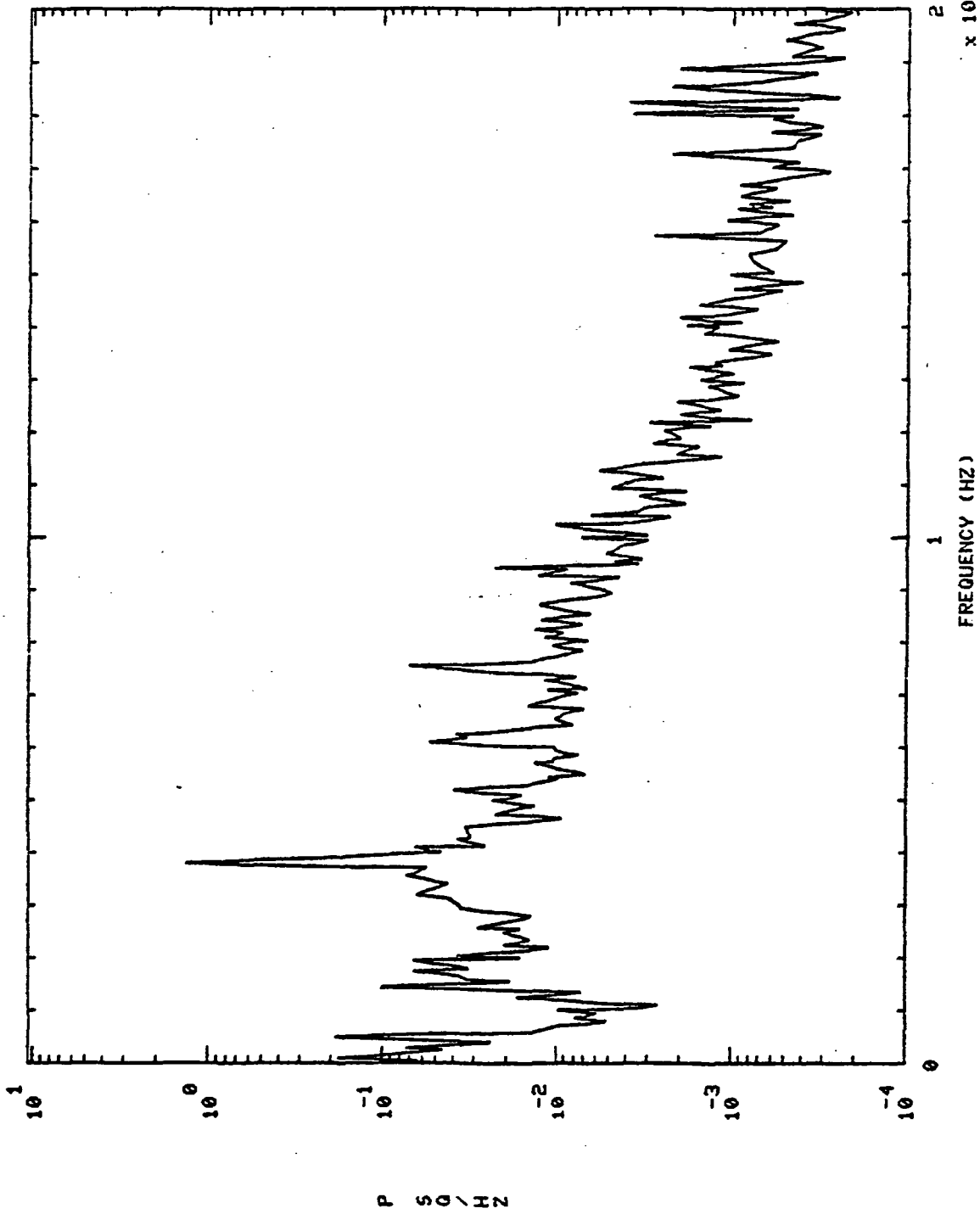


P SQ\HZ

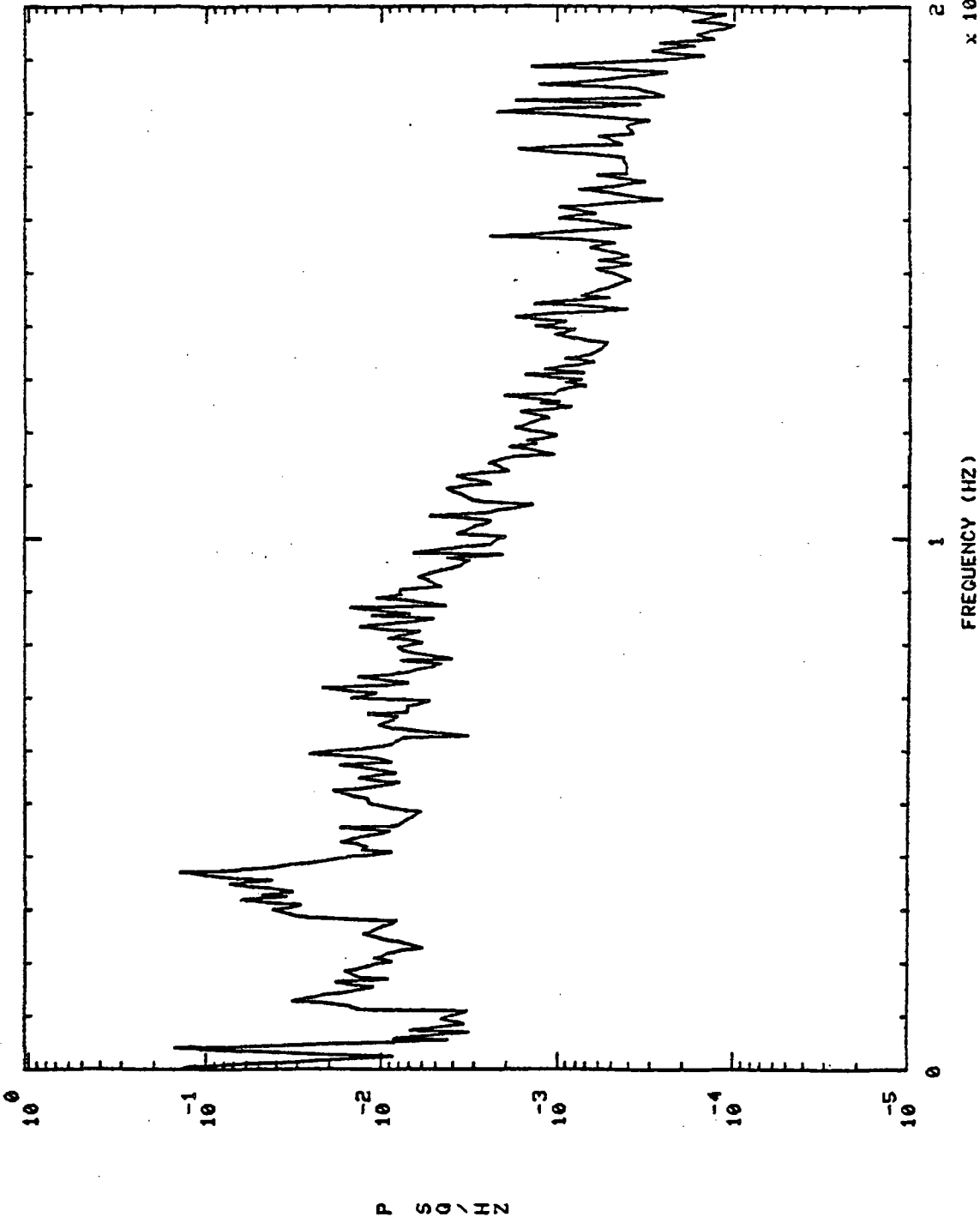
S+ 230.050/HZ

HPOP BAL CAU PRE

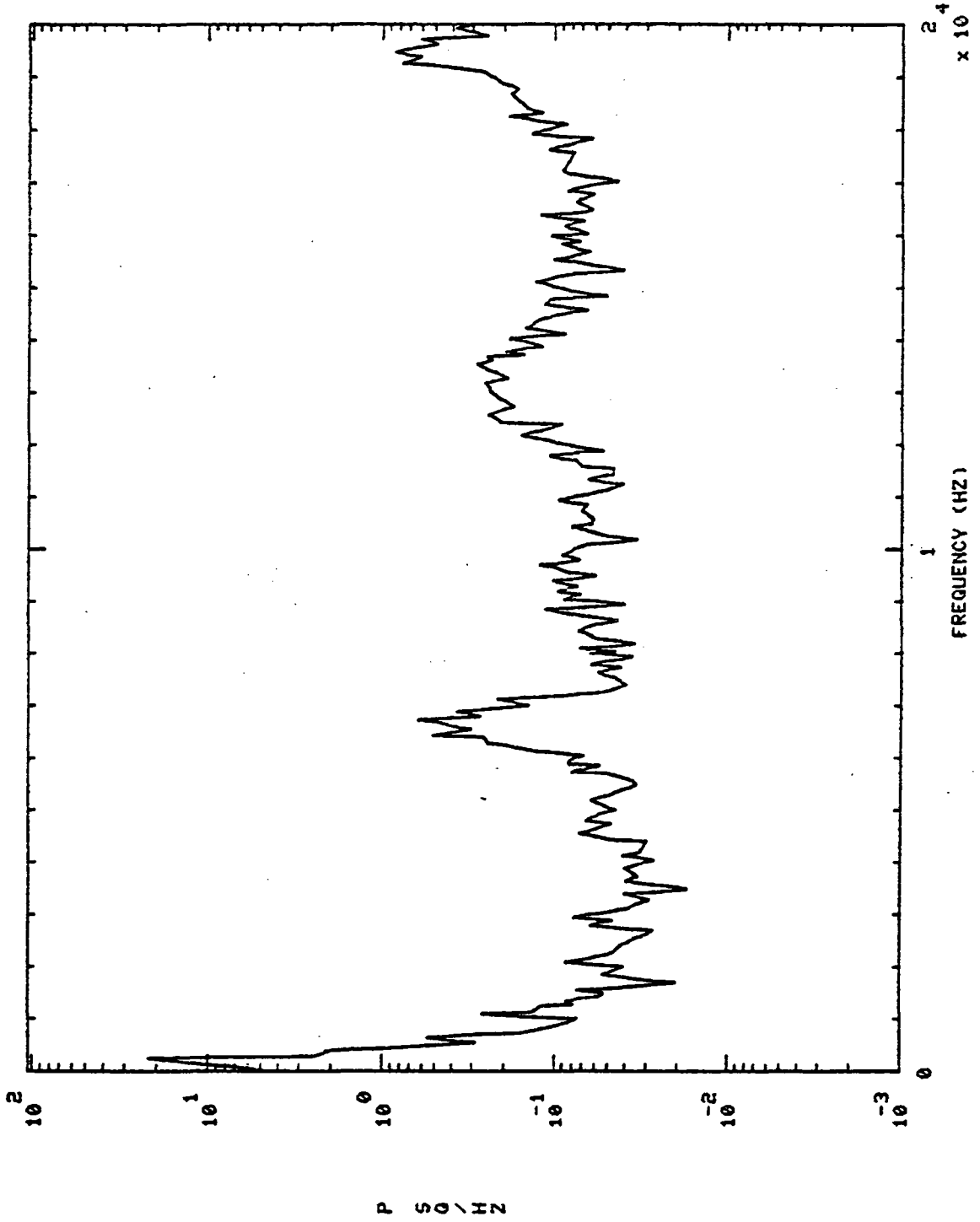
750102



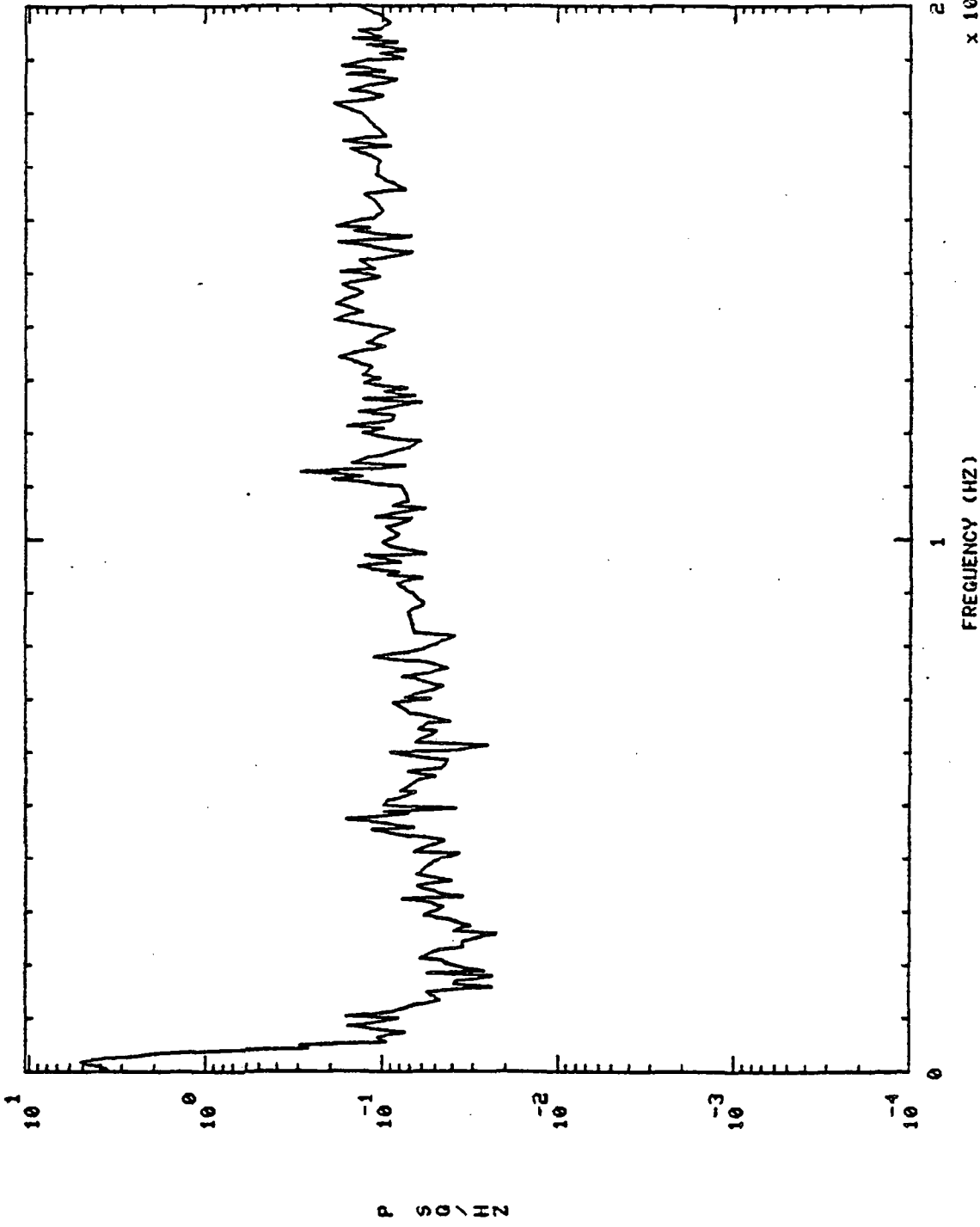
750102 HPOP BAL CAU PR2 S+ 280.050/HZ



750102 HPOP DS PR S+ 15.050/HZ

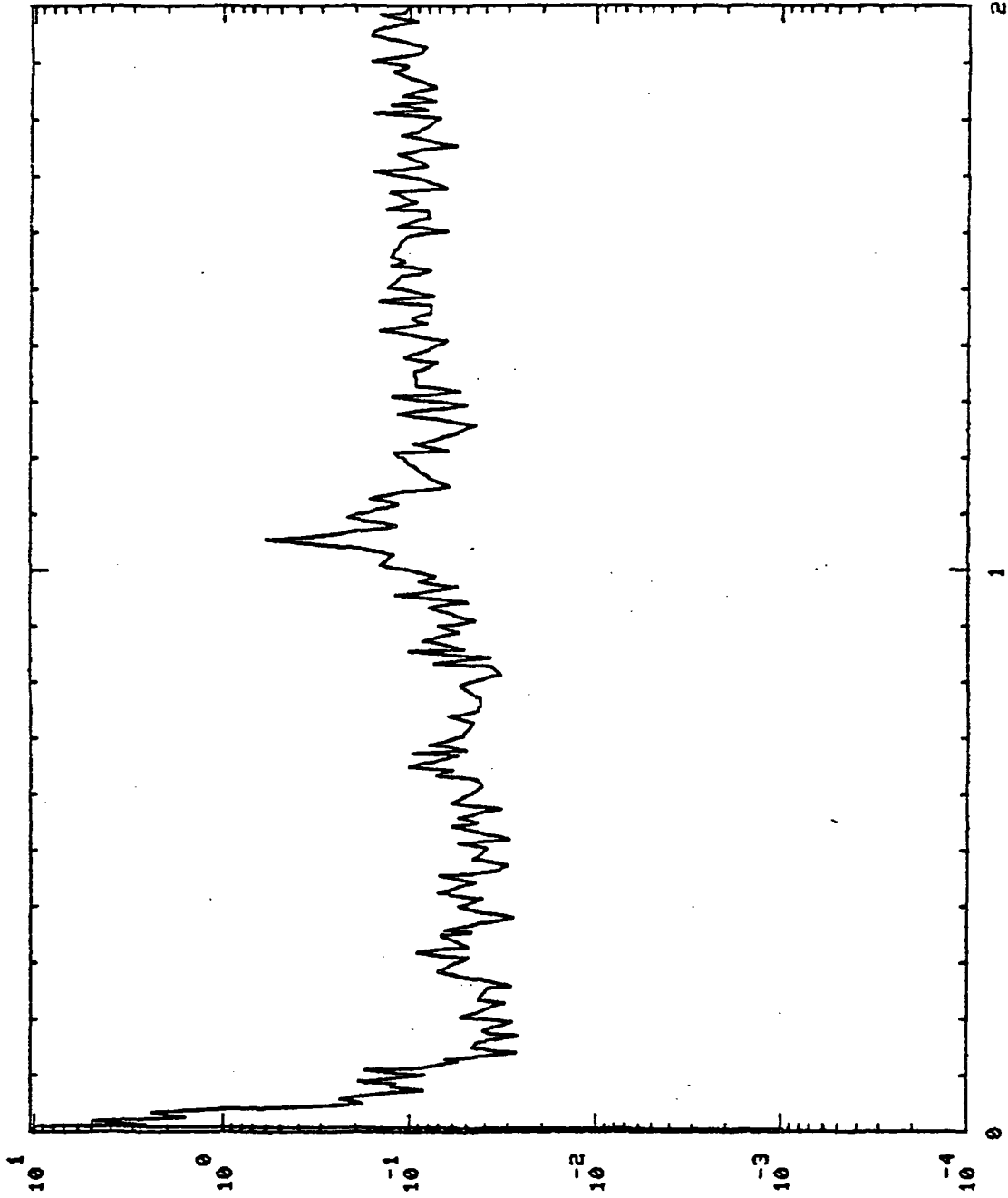


750102 HPOP DS PR S+ 35.05Q/HZ





750102 MFOP DS PR S+ 60.050/HZ



P SQ / HZ

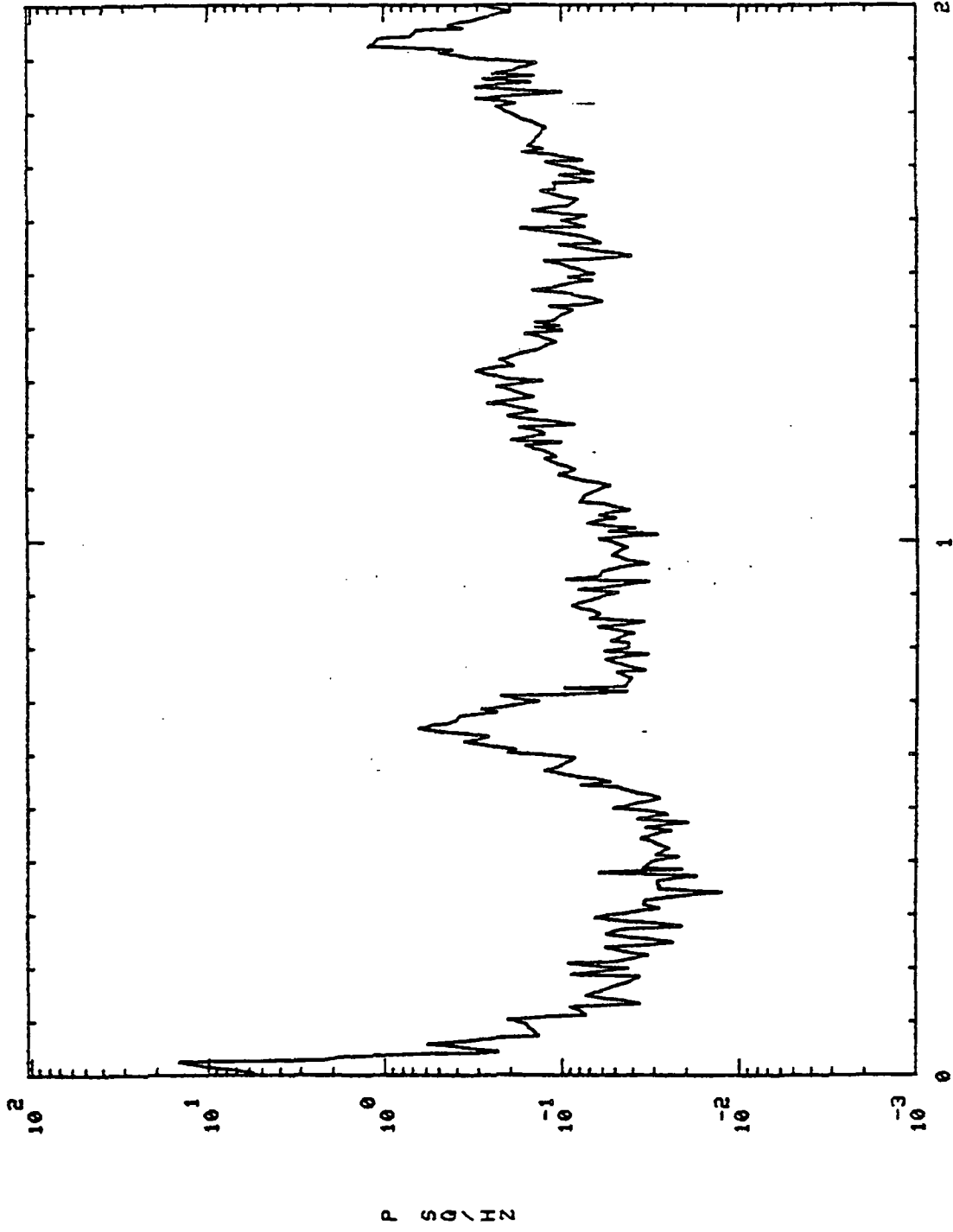
FREQUENCY (HZ)

2.4  
x 10<sup>4</sup>

S+ 80.050/HZ

HP0P DS PR

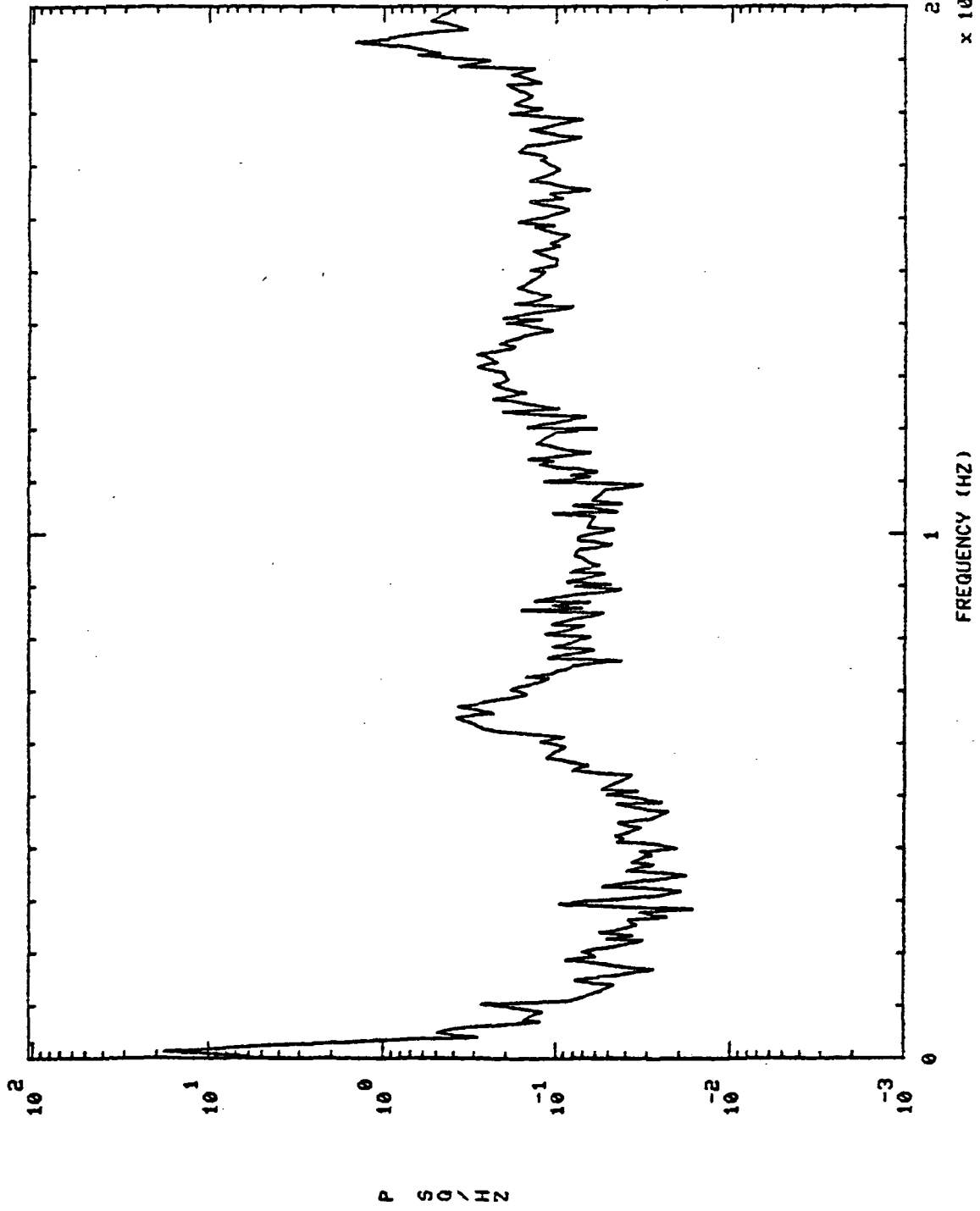
750102



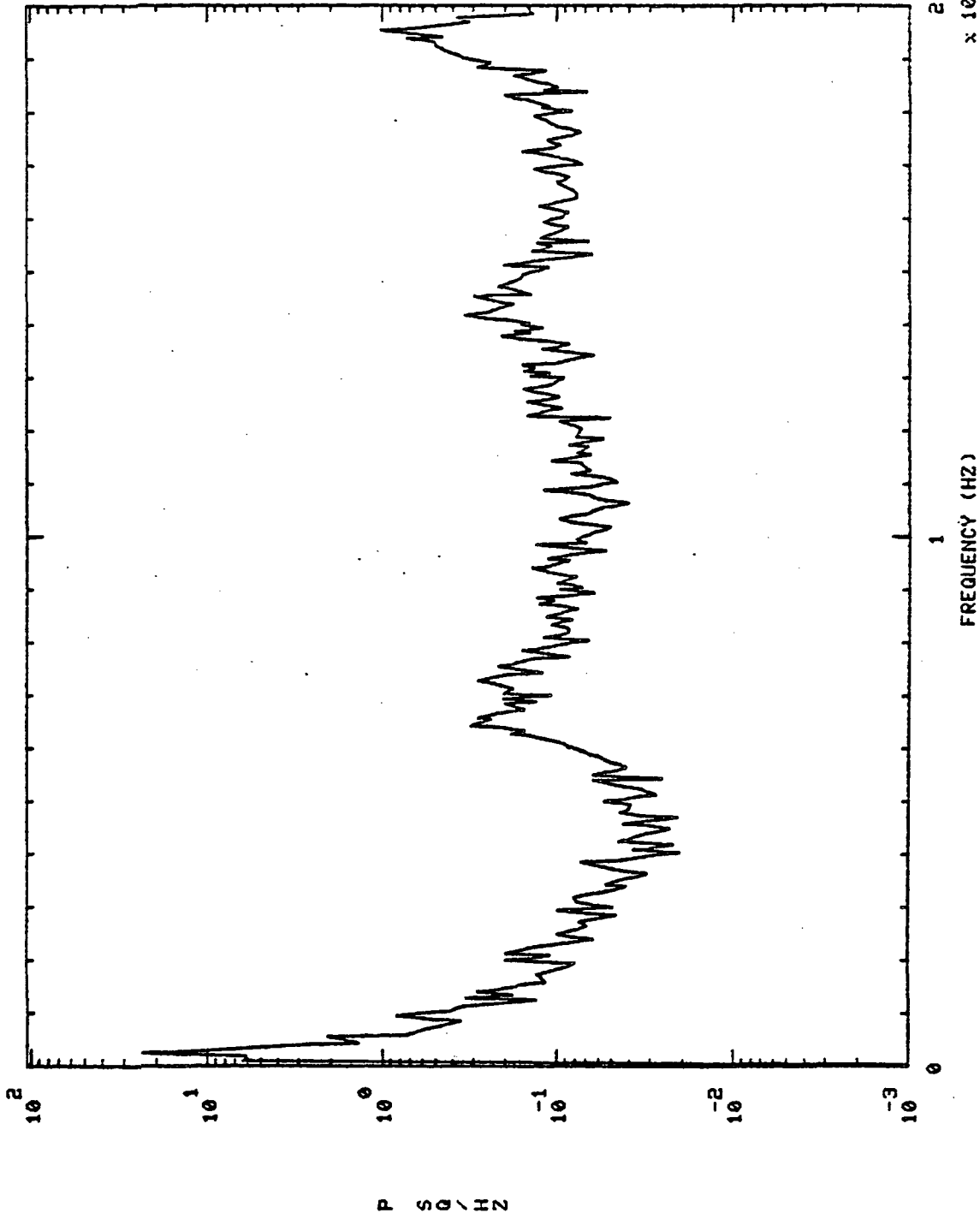
$10^4$   
 $\times 10$

1  
FREQUENCY (HZ)

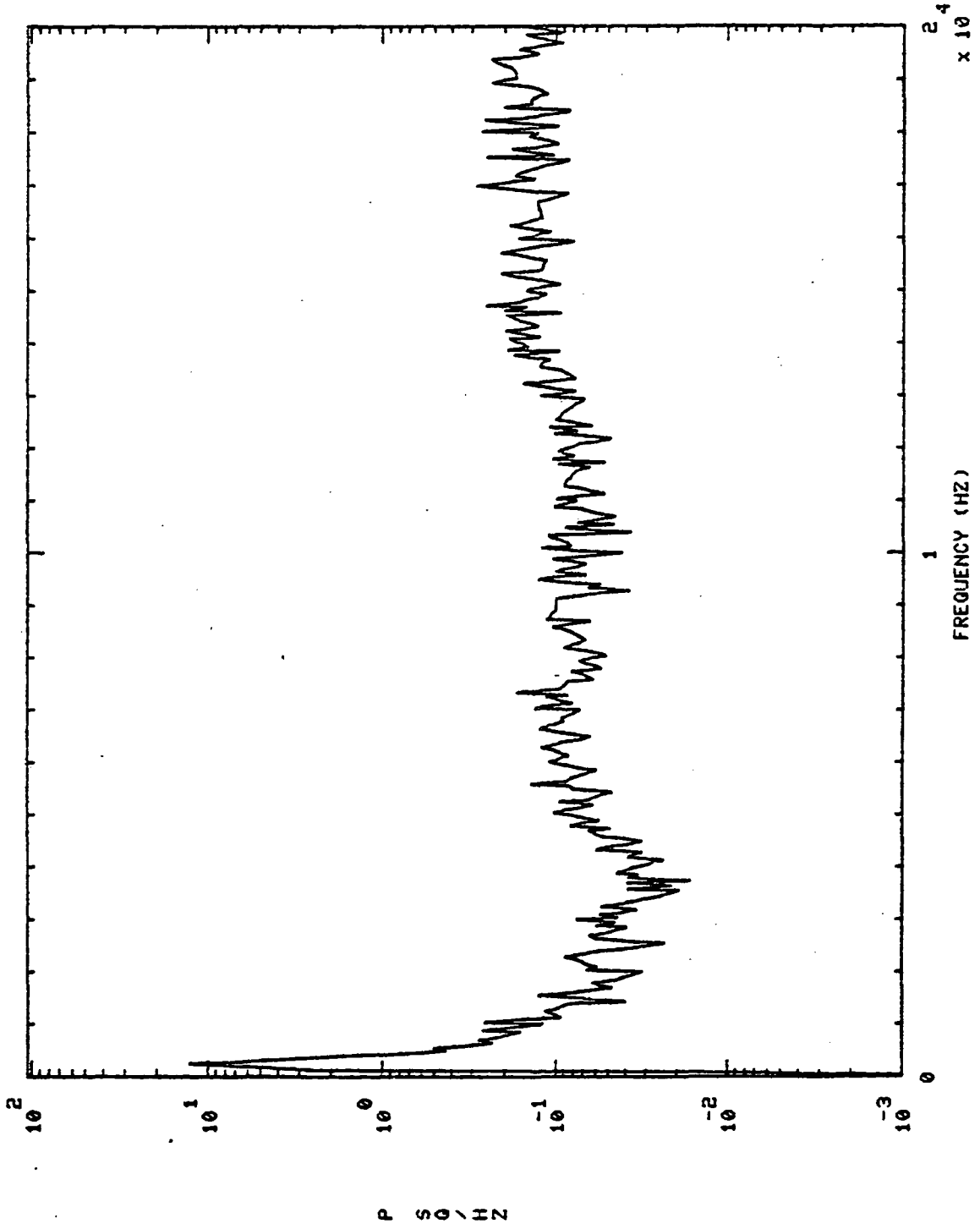
750102 HPOP DS PR S+ 100.050/HZ



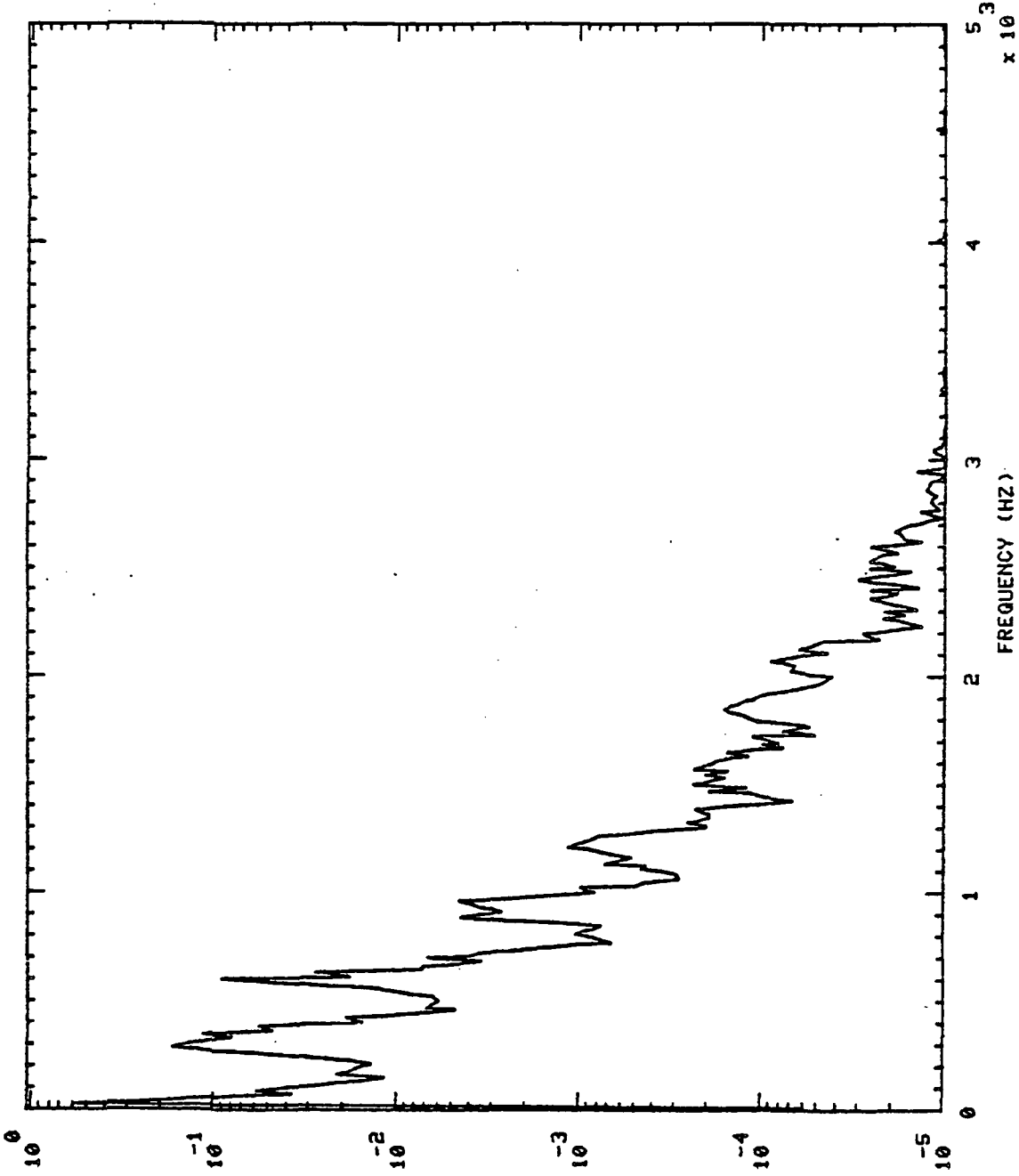
750102 HPOP DS PR S+ 200.050/HZ



750102 HPOP DS PR S+ 280.050/HZ

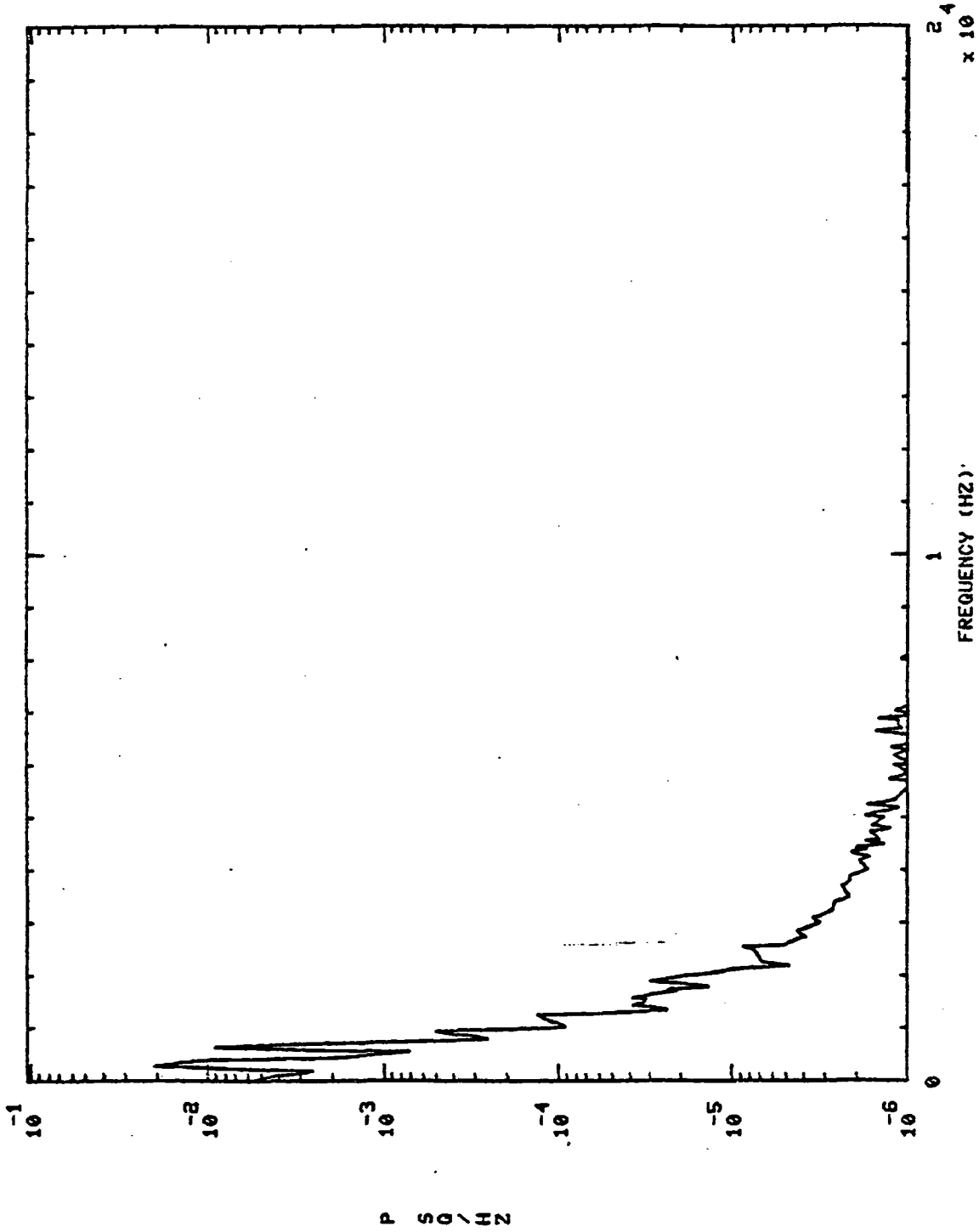


750102 LOX IN DUCT PR2 S+ 15.05Q/HZ

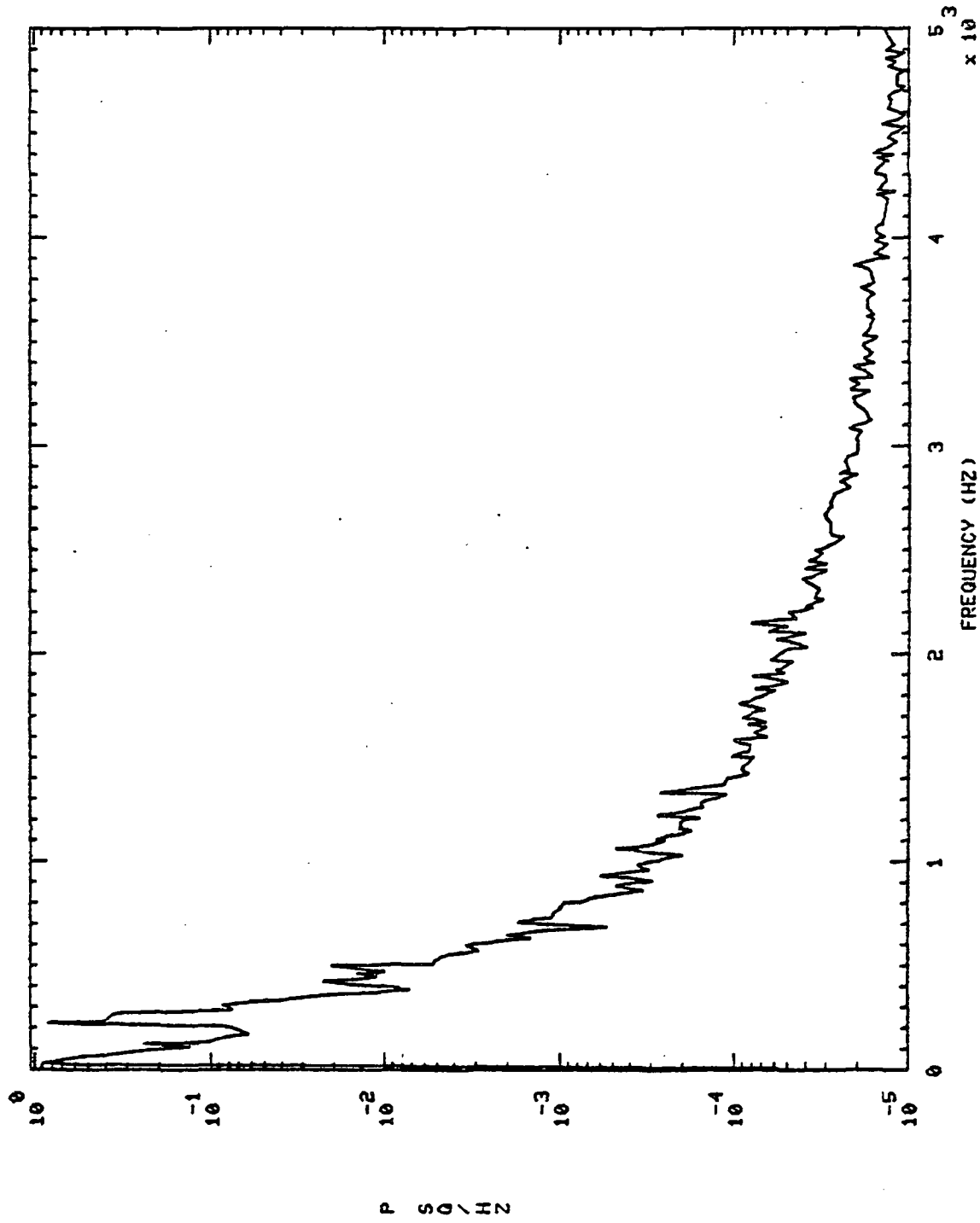


P SQ / HZ

750102 LOX IN DUCT PR2 S+ 15.0140,'S

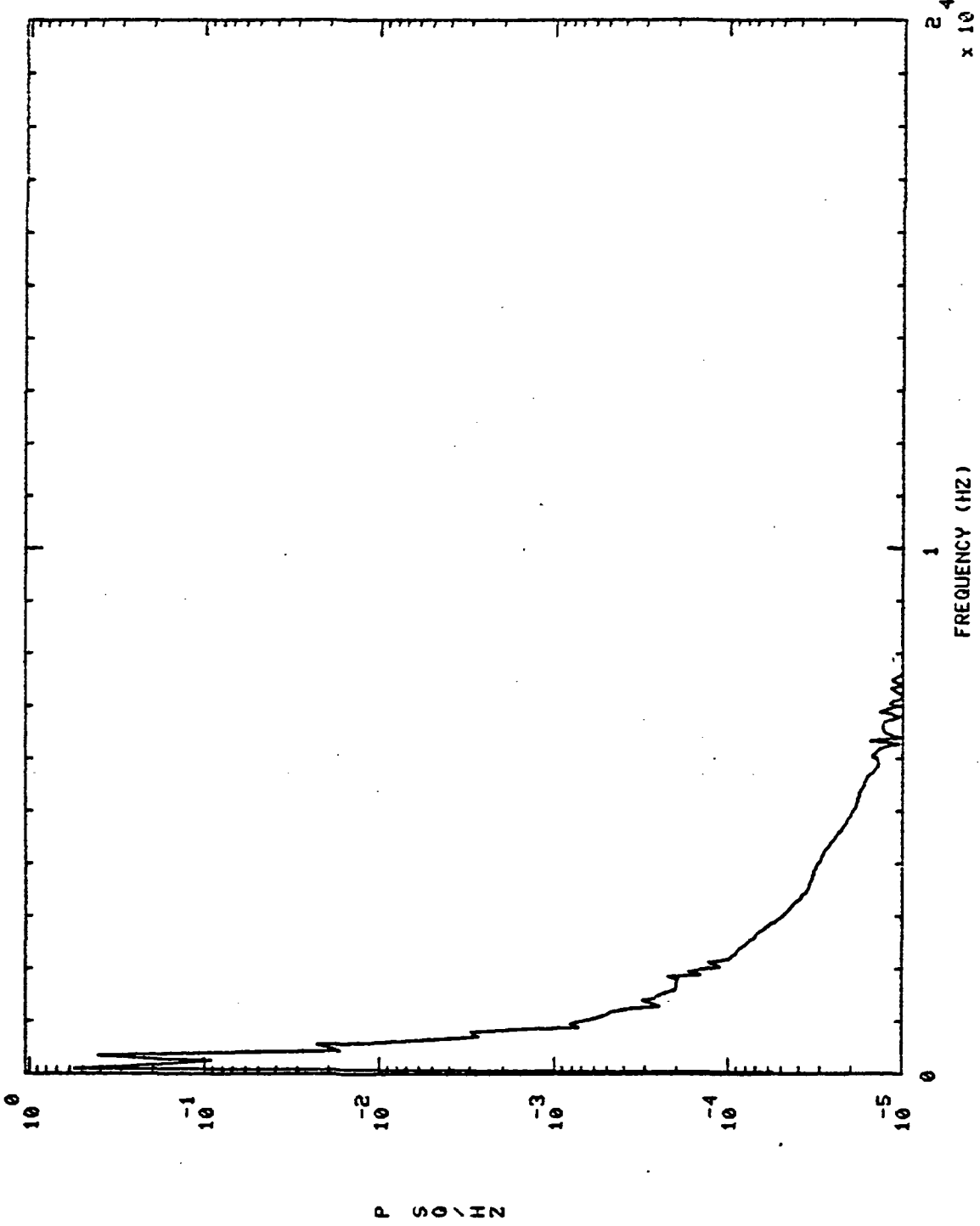


750102 LOX IN DUCT PR2 S+ 35.050/HZ

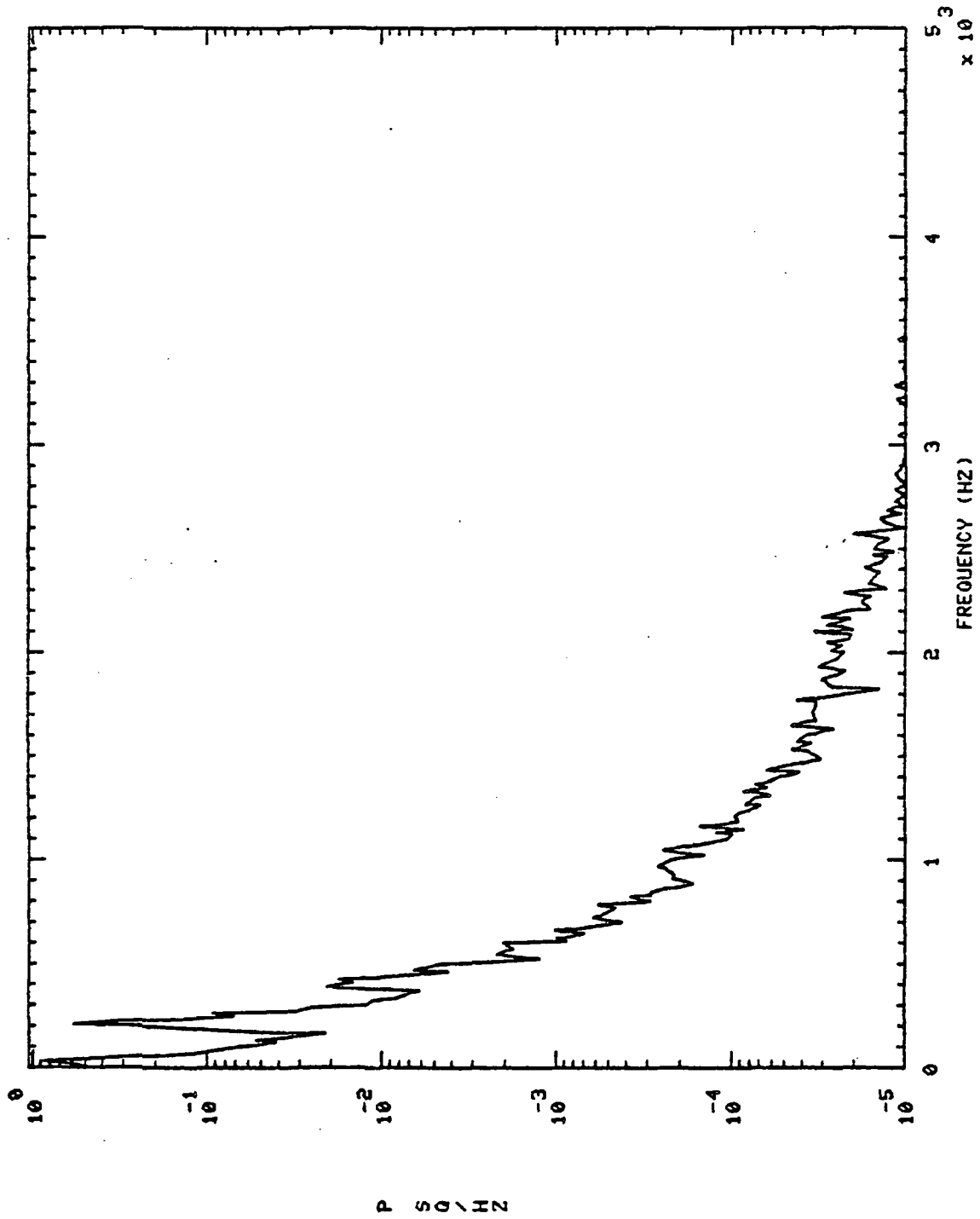




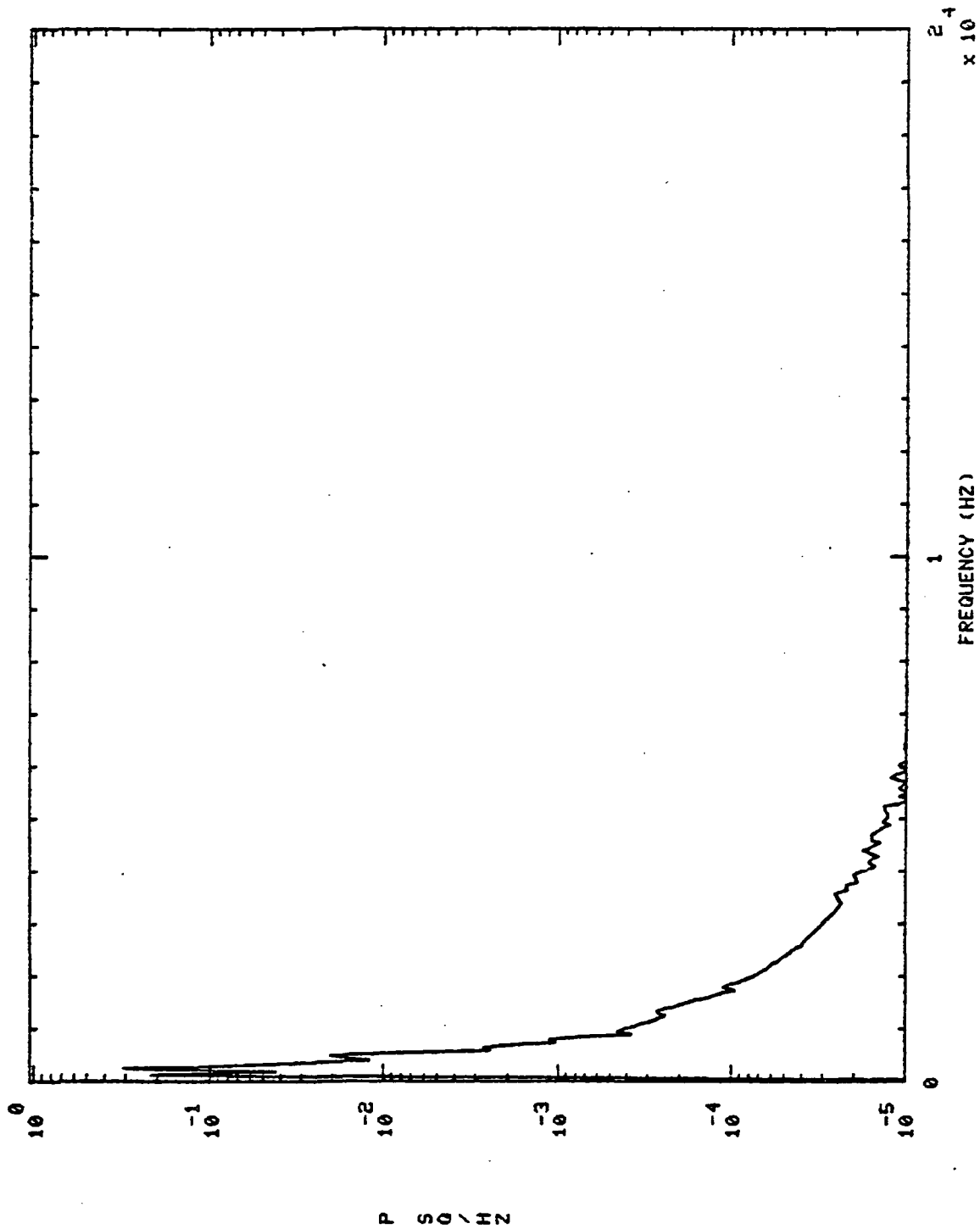
750102 LOX IN DUCT PR2 S+ 35.050/HZ



750102 LOX IN DUCT PR2 S+ 60.050/HZ



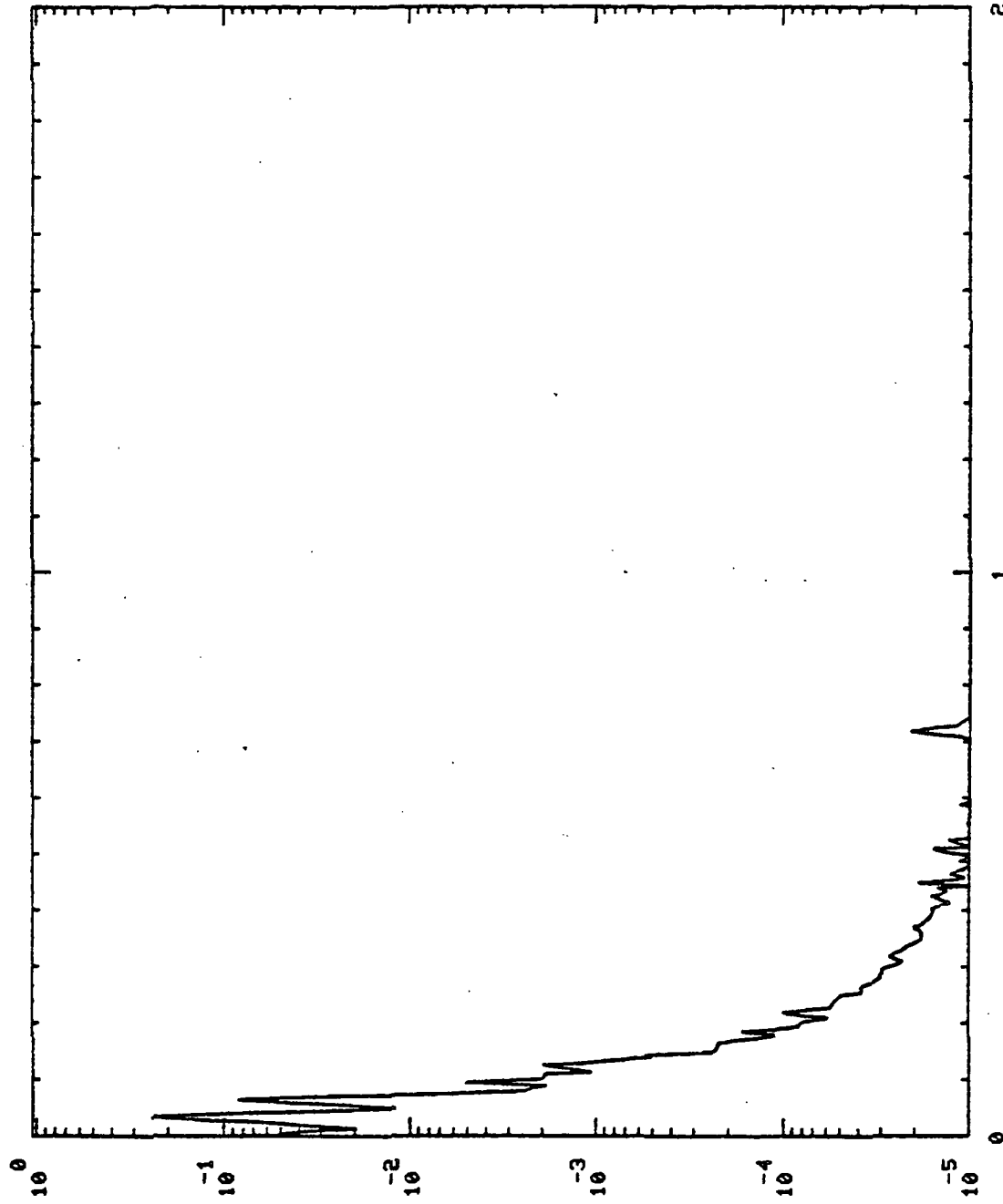
750102 LOX IN DUCT PR2 S+ 60.050/HZ



S+ 80.050/HZ

LOX IN DUCT PR2

750102

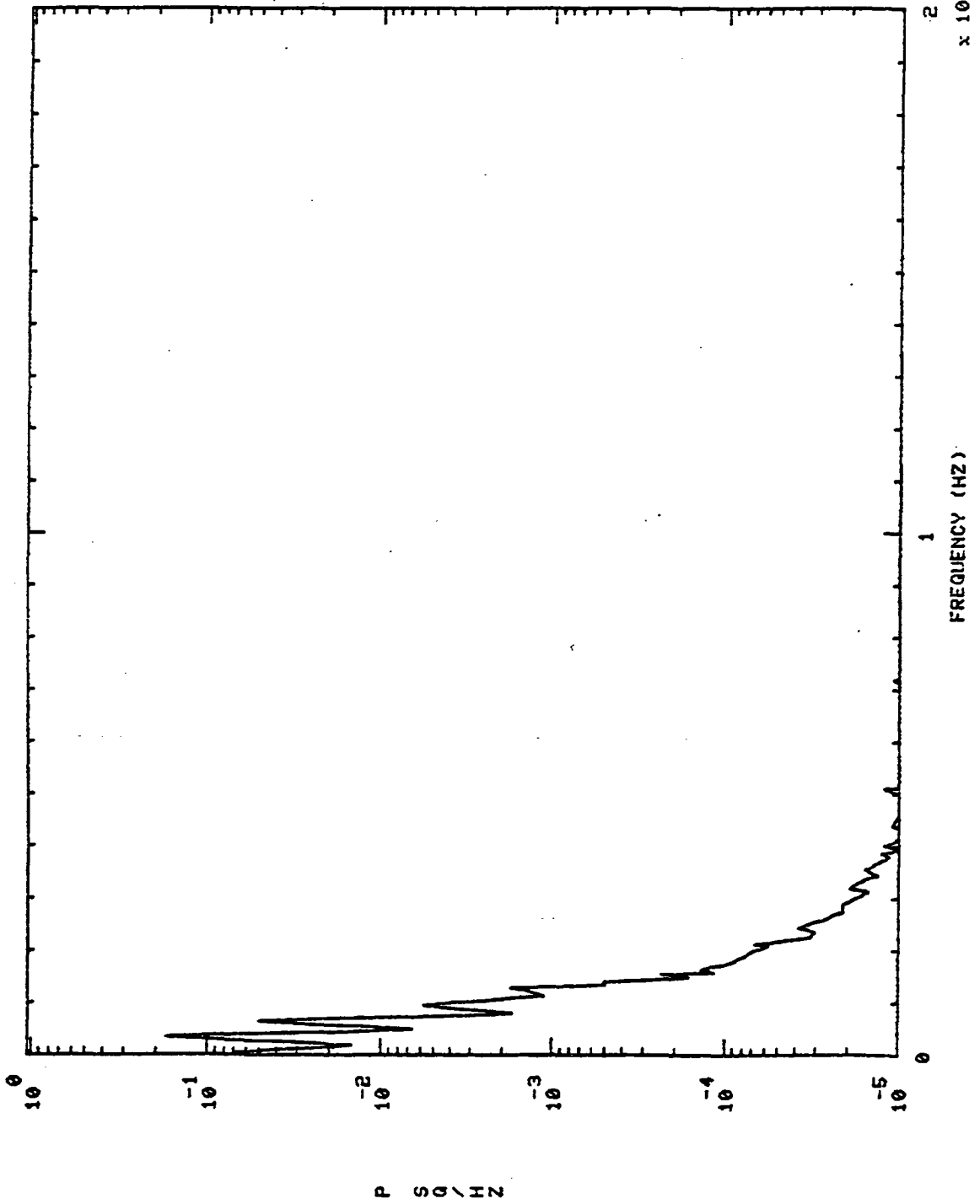


P S G ^ 2 / H Z

FREQUENCY (HZ)

2.4  
x 10<sup>4</sup>

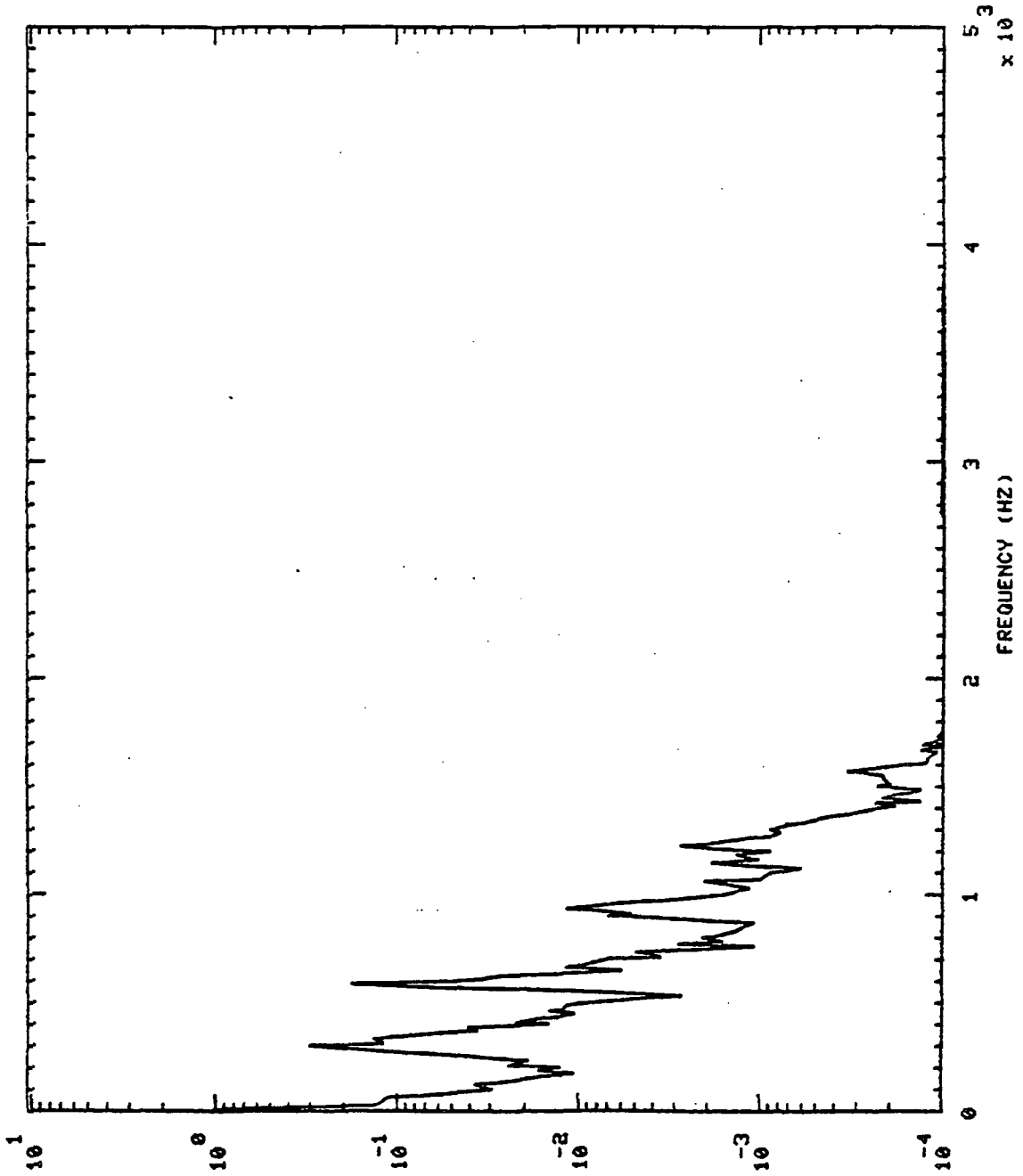
750102 LOX IN DUCT PR2 S+ 100.05Q/HZ



S+ 200.050/HZ

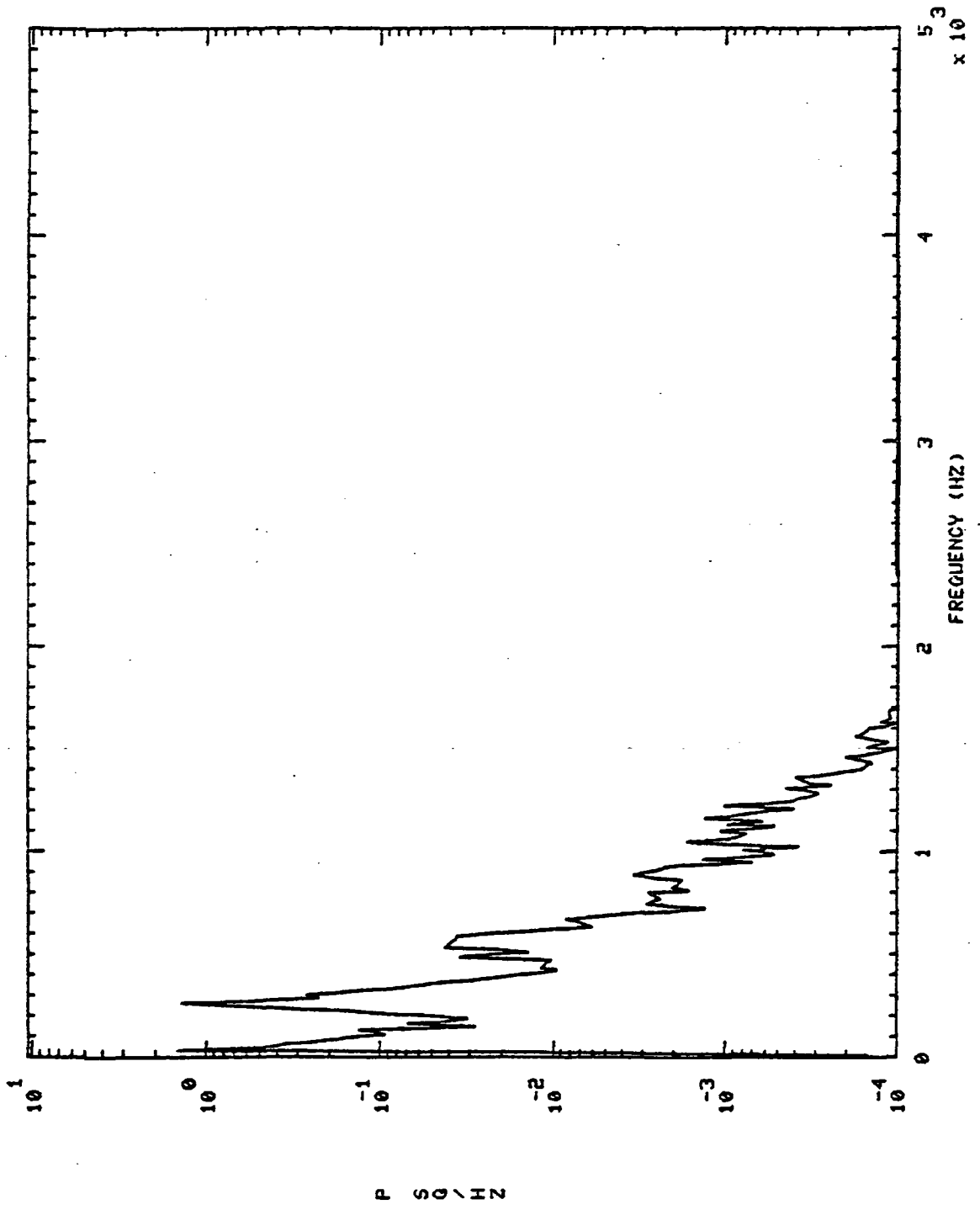
LOX IN DUCT PR2

750102



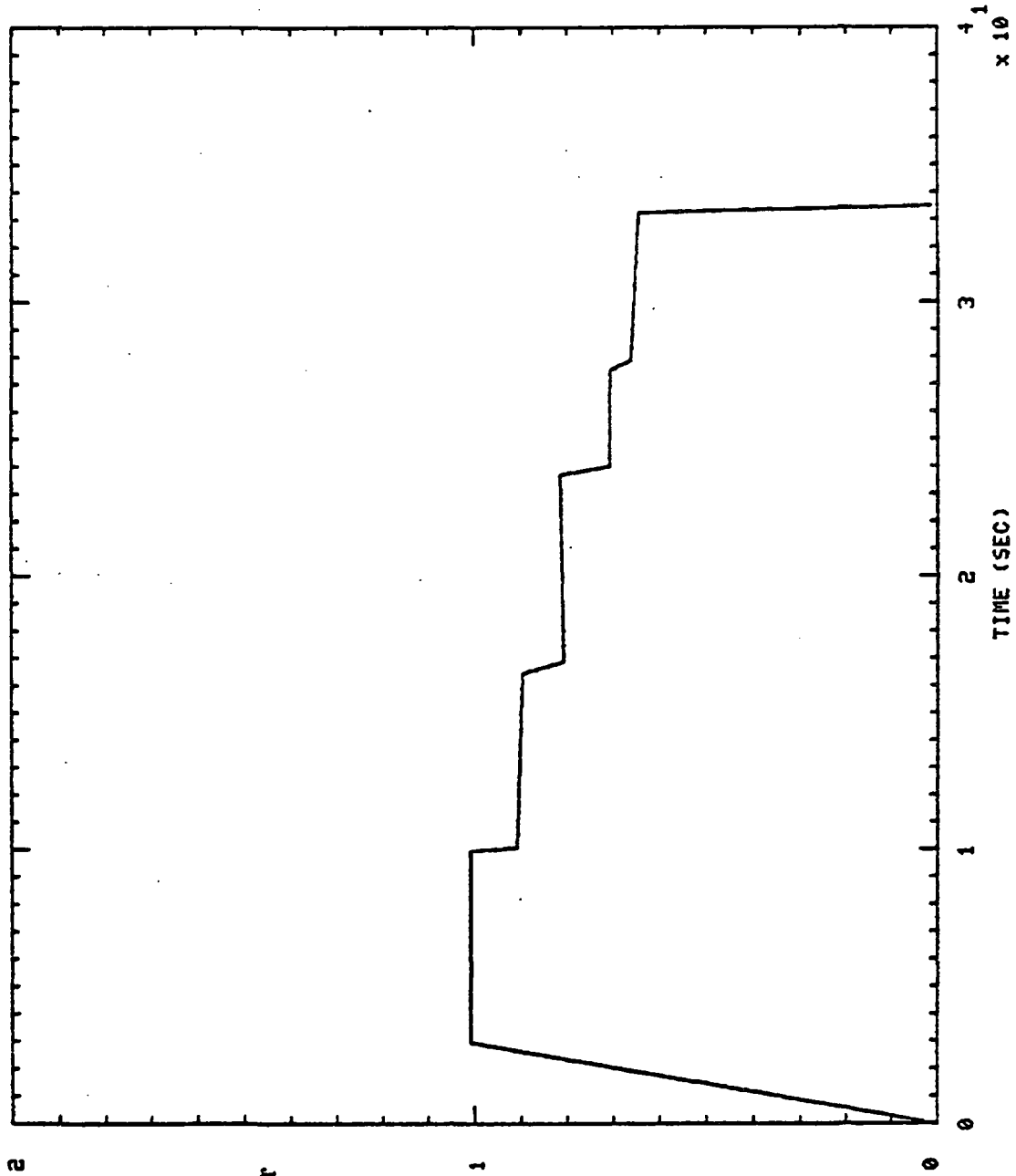
P S D / H Z

750102 LOX IN DUCT PR2 S+ 280.050/HZ



( UNFILTERED )

750103 THRUST



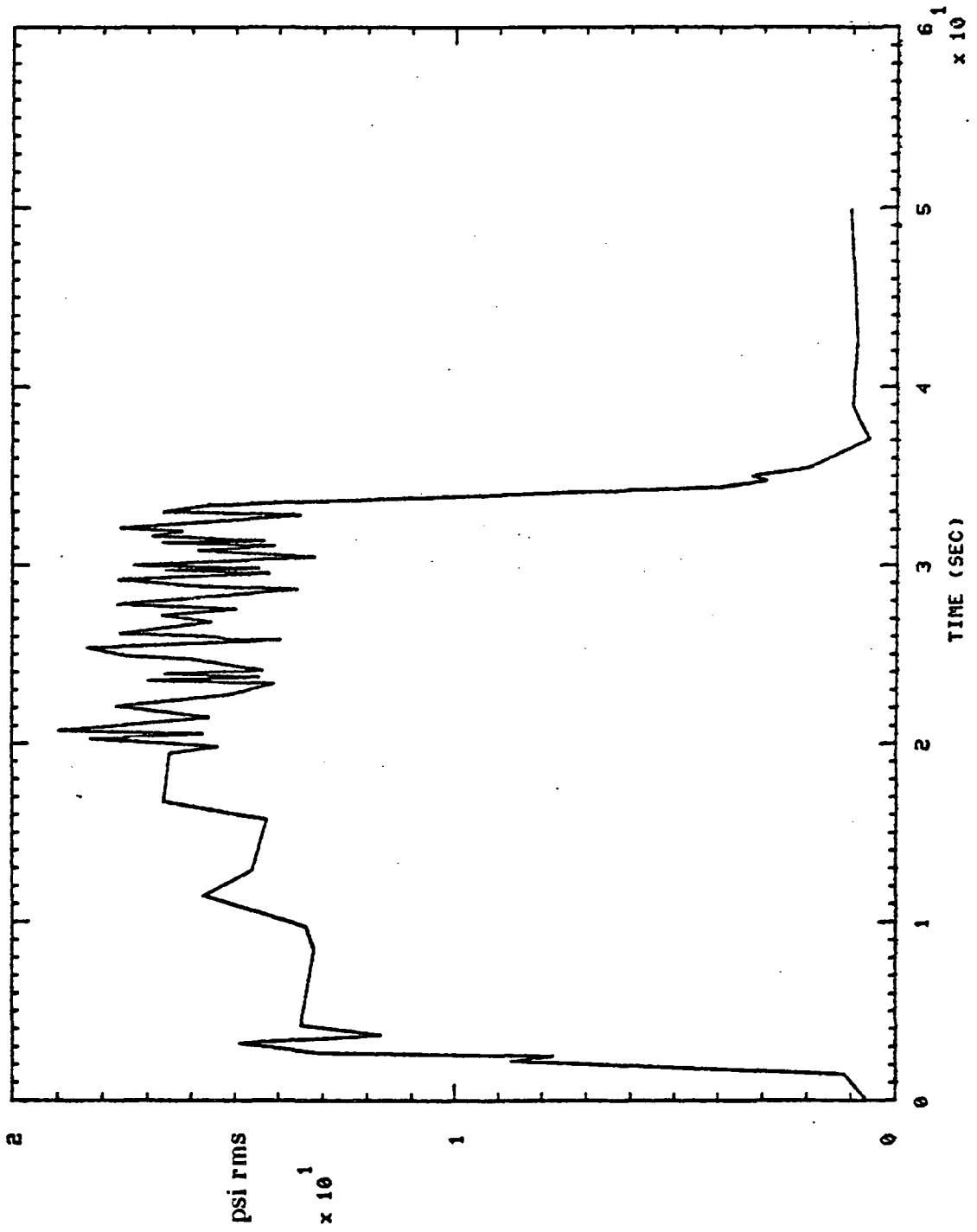
Percent of Rated Power  
 $\times 10^2$

TIME (SEC)

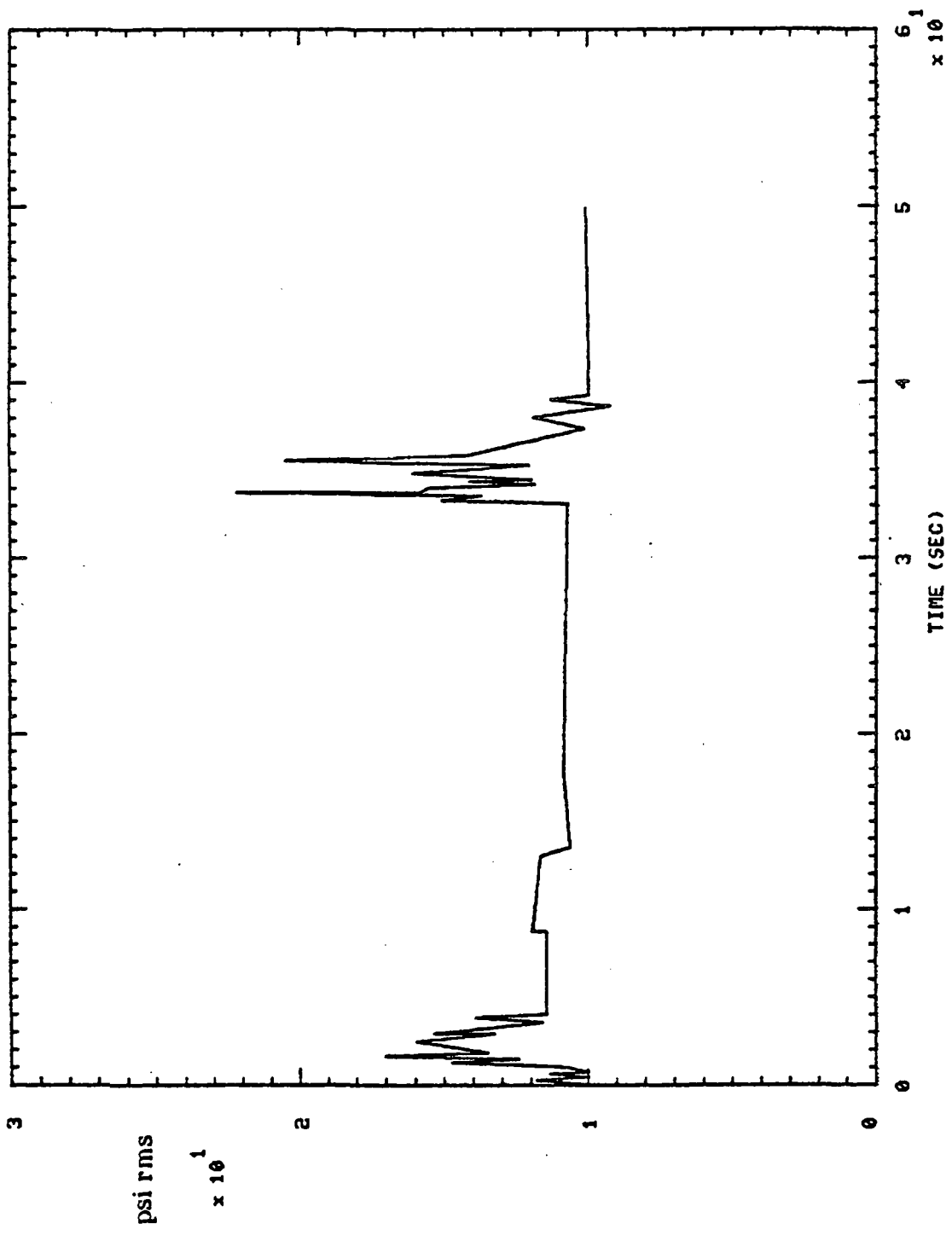
$\times 10^1$



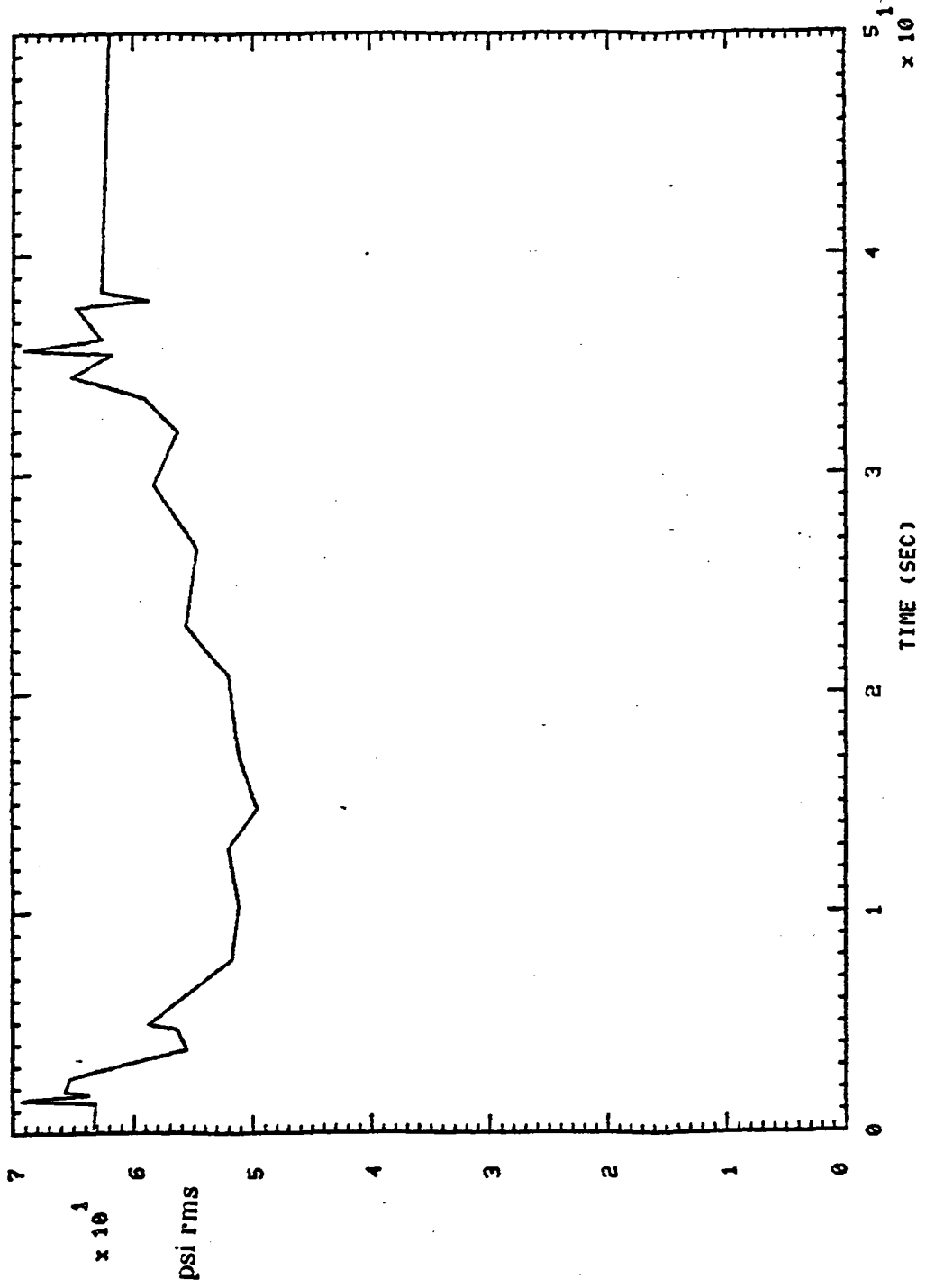
750103 LPFP IN PR (1 - 20K HZ )



750103 LPOP DS PR (1 - 20K HZ )



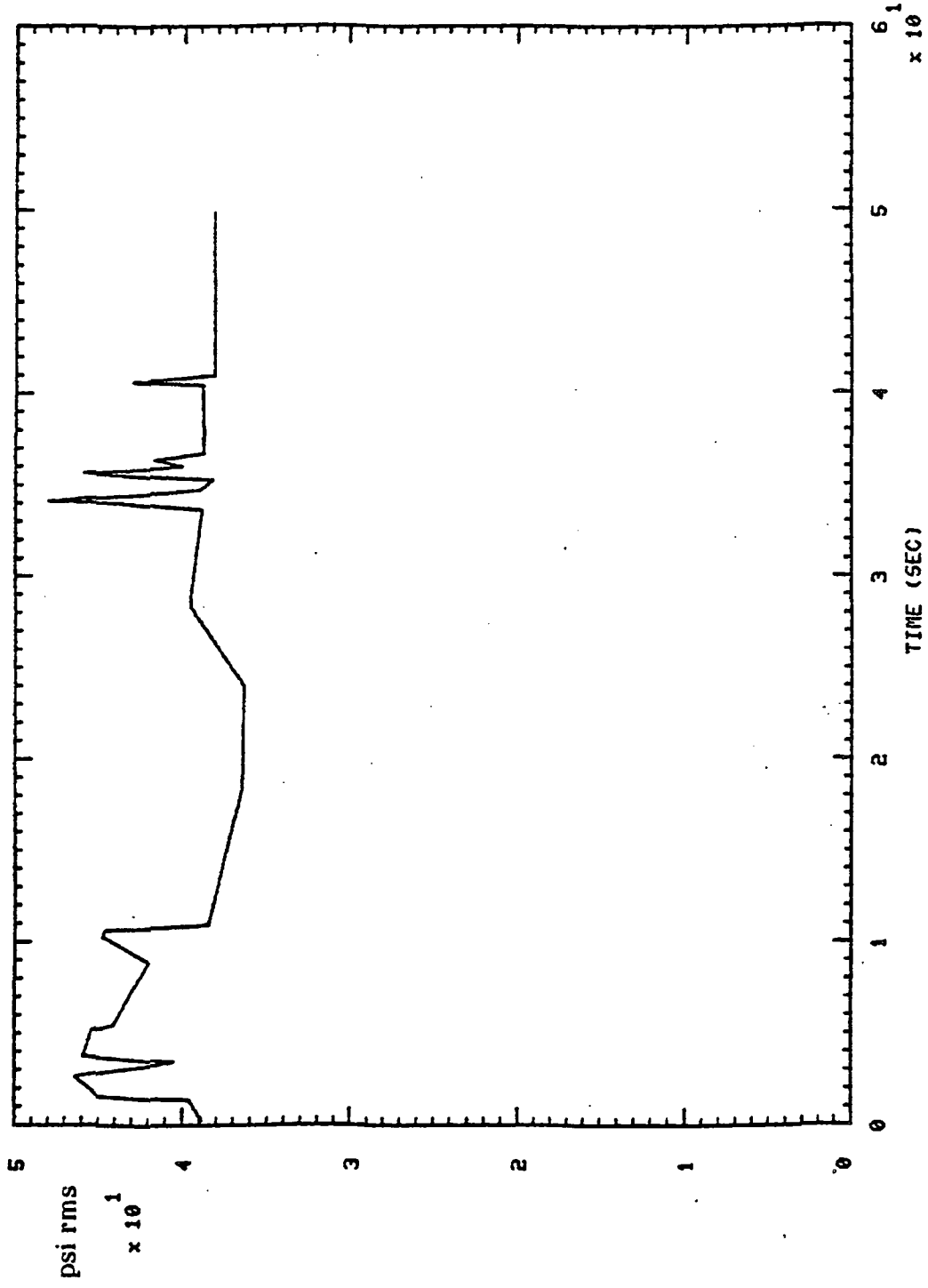
750103 HPOP BAL CAU PR2 (1 - 20K HZ )



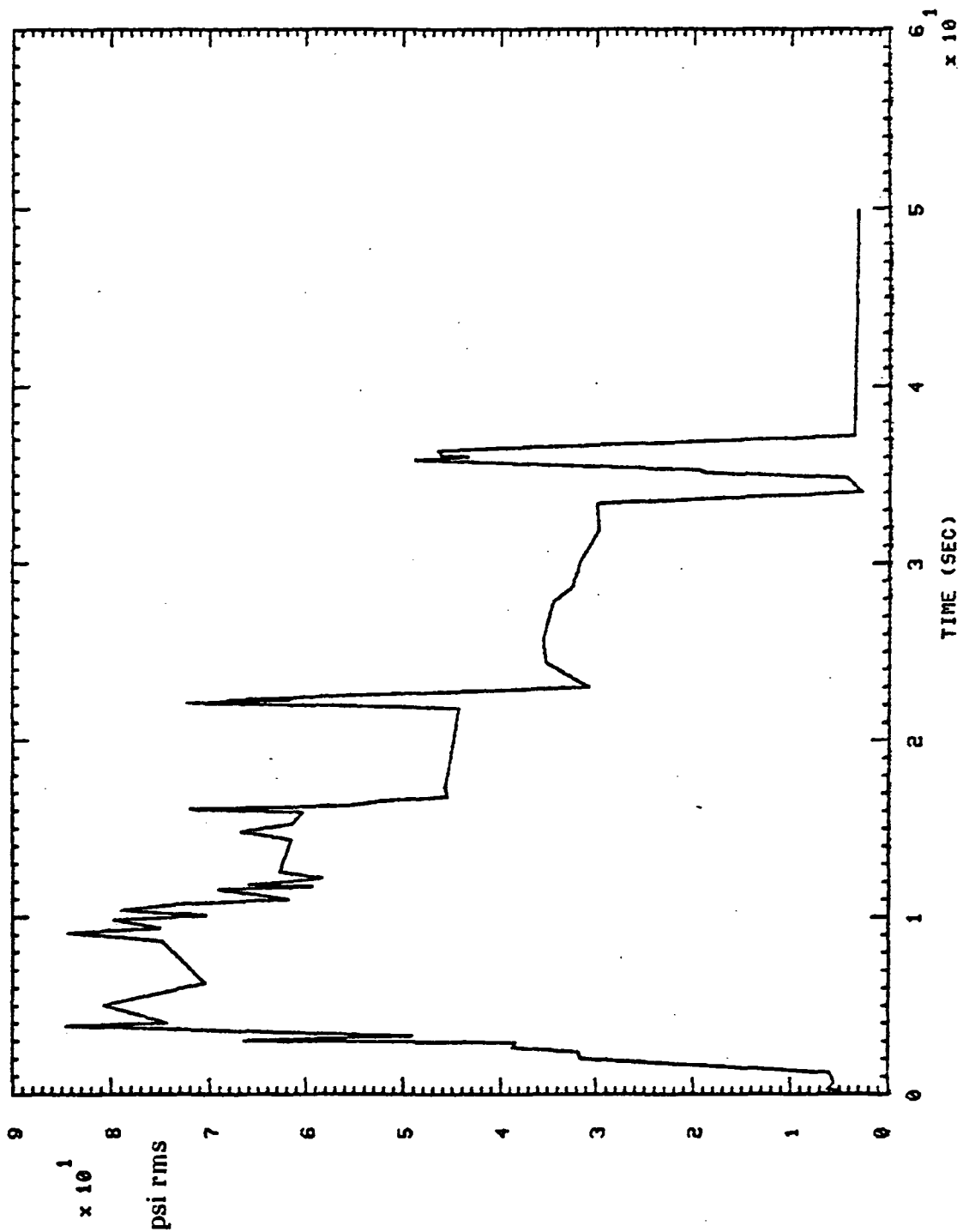
750103

HPOP BAL CAU PR1

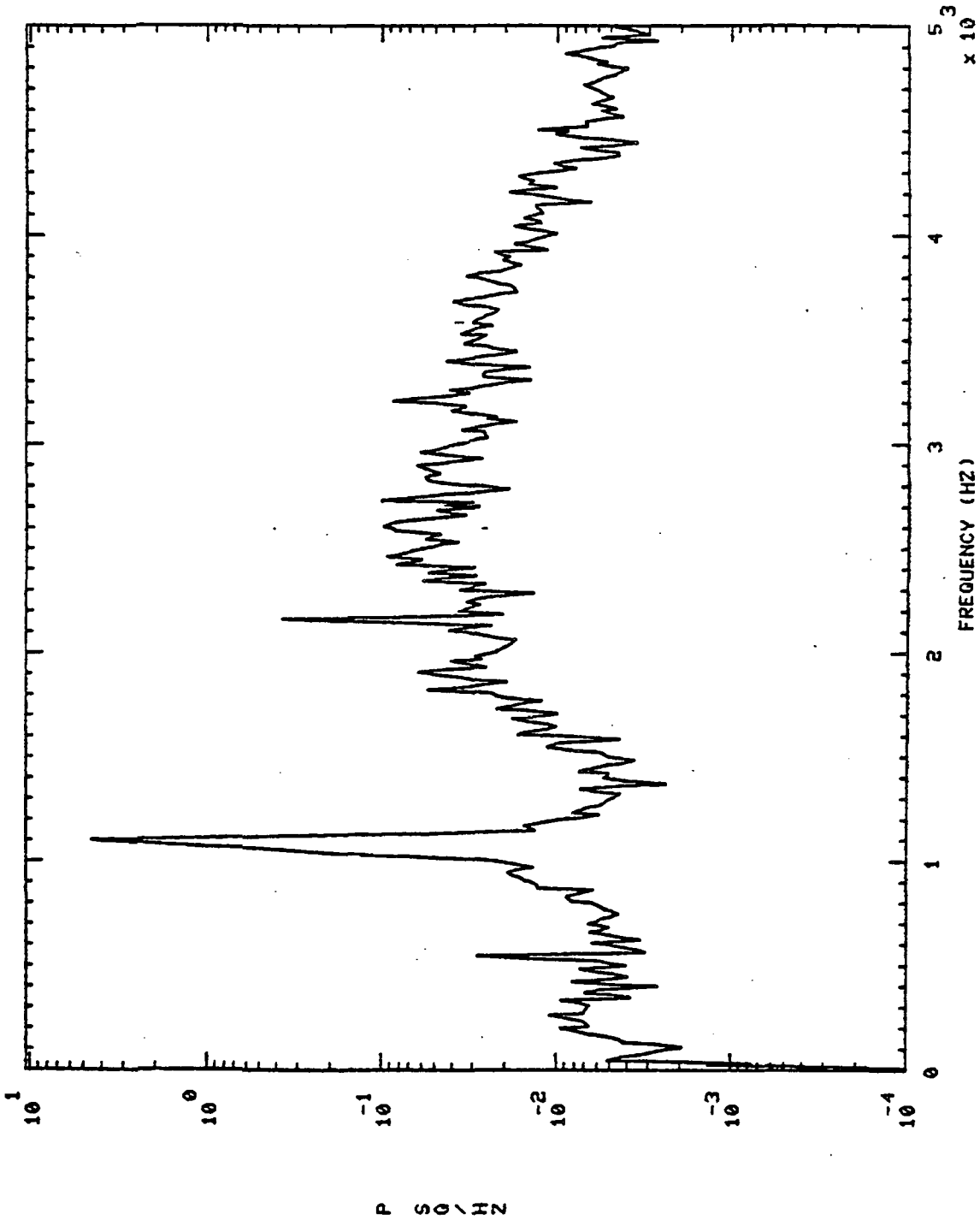
( 1 - 20K HZ )



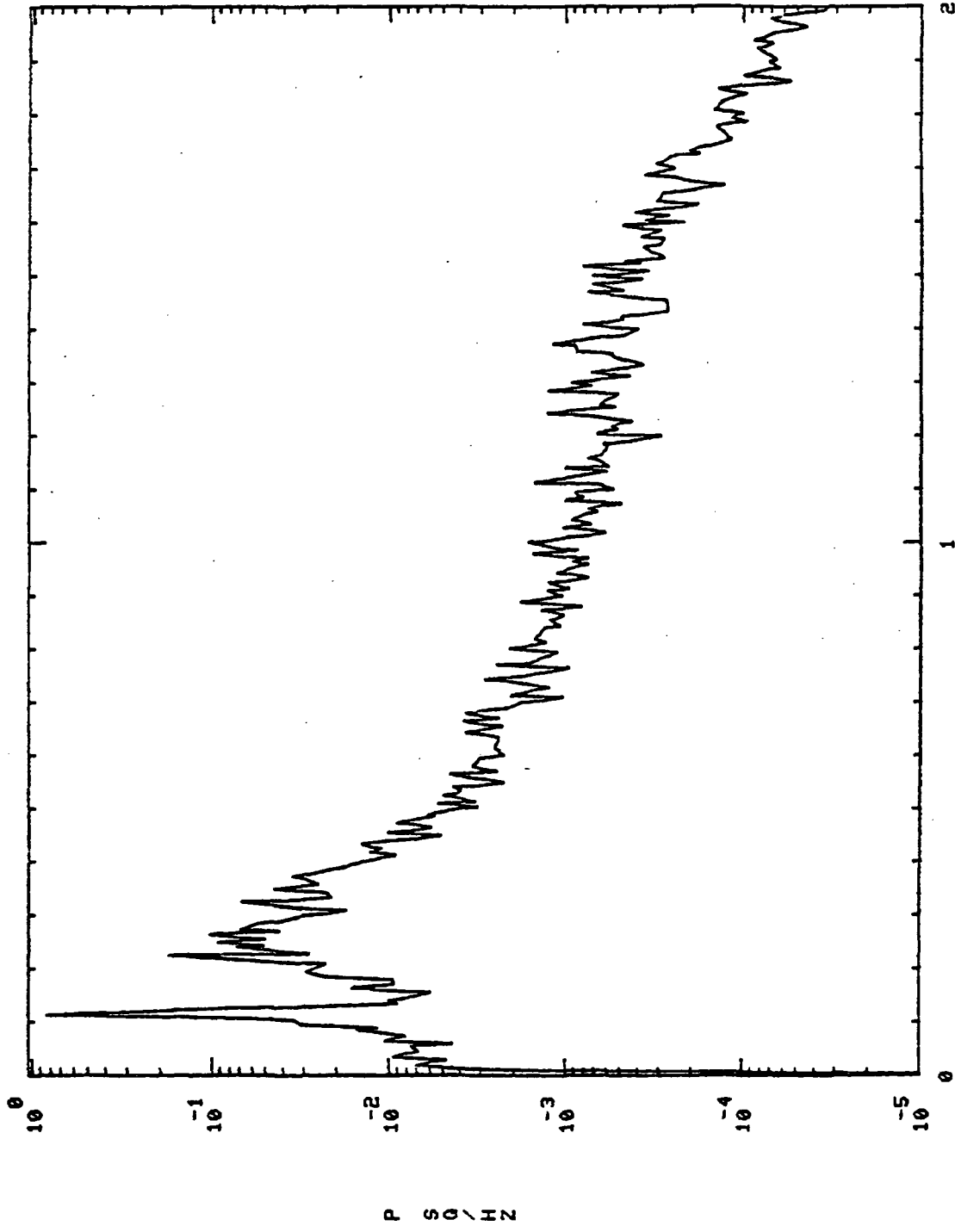
750103 HPOP DISC PR (1 - 20K HZ )



750103 LPPF IN PR St 5.050/HZ

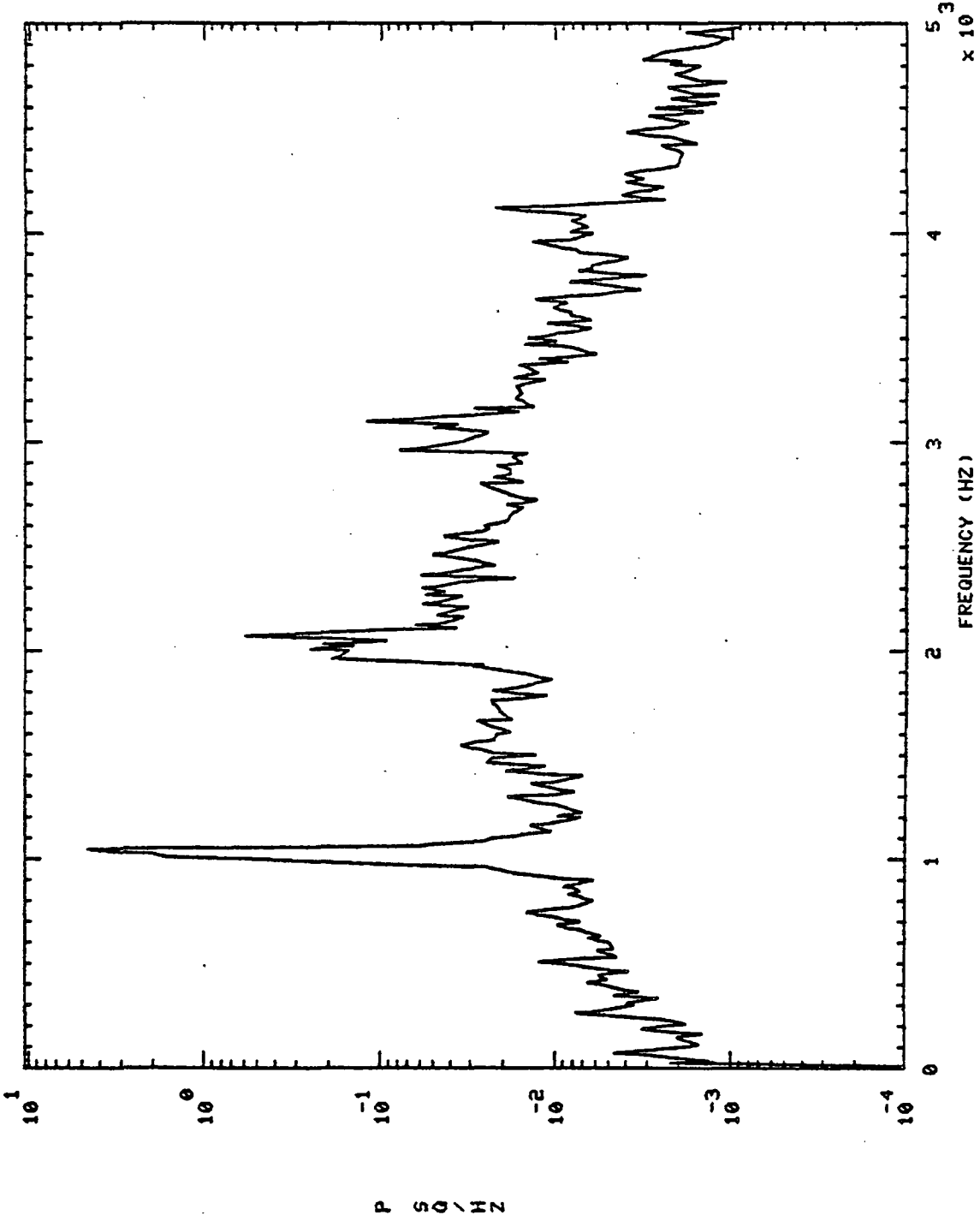


750103 LPFP IN PR S+ 5.0SQ/HZ



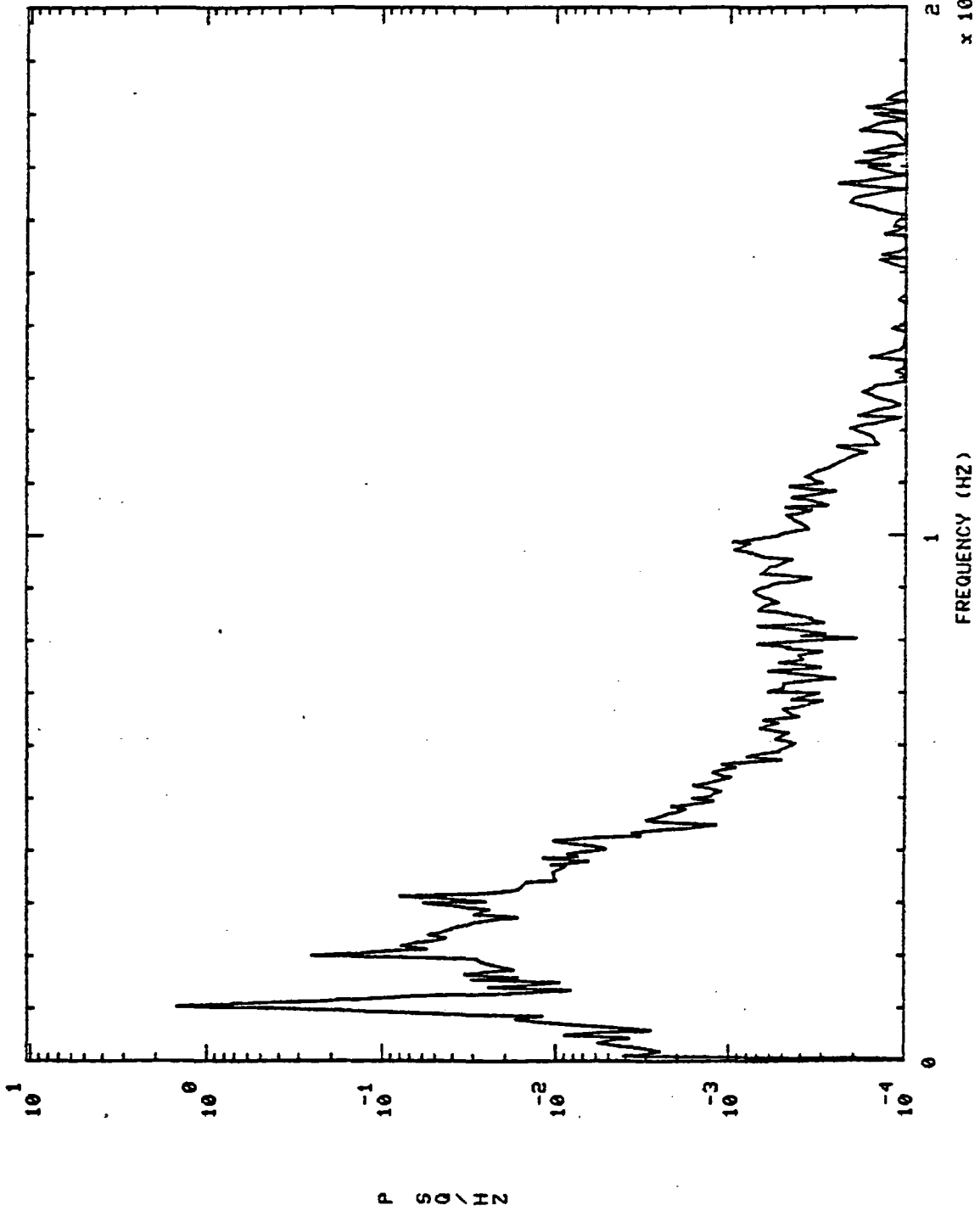
S+ 15.050/HZ

750103 LPFP IN PR

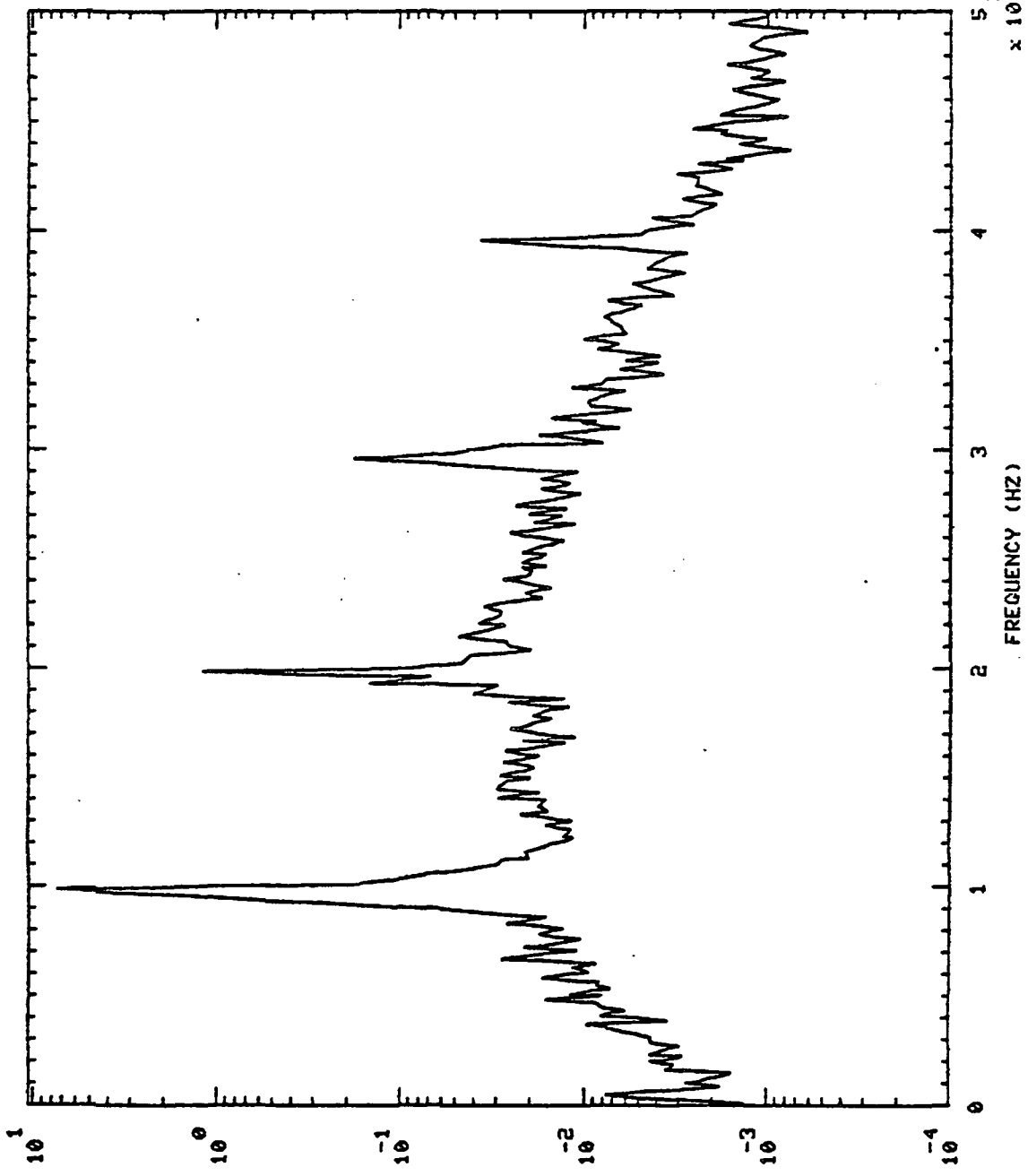




750103 LPFP IN PR S+ 15.050/HZ

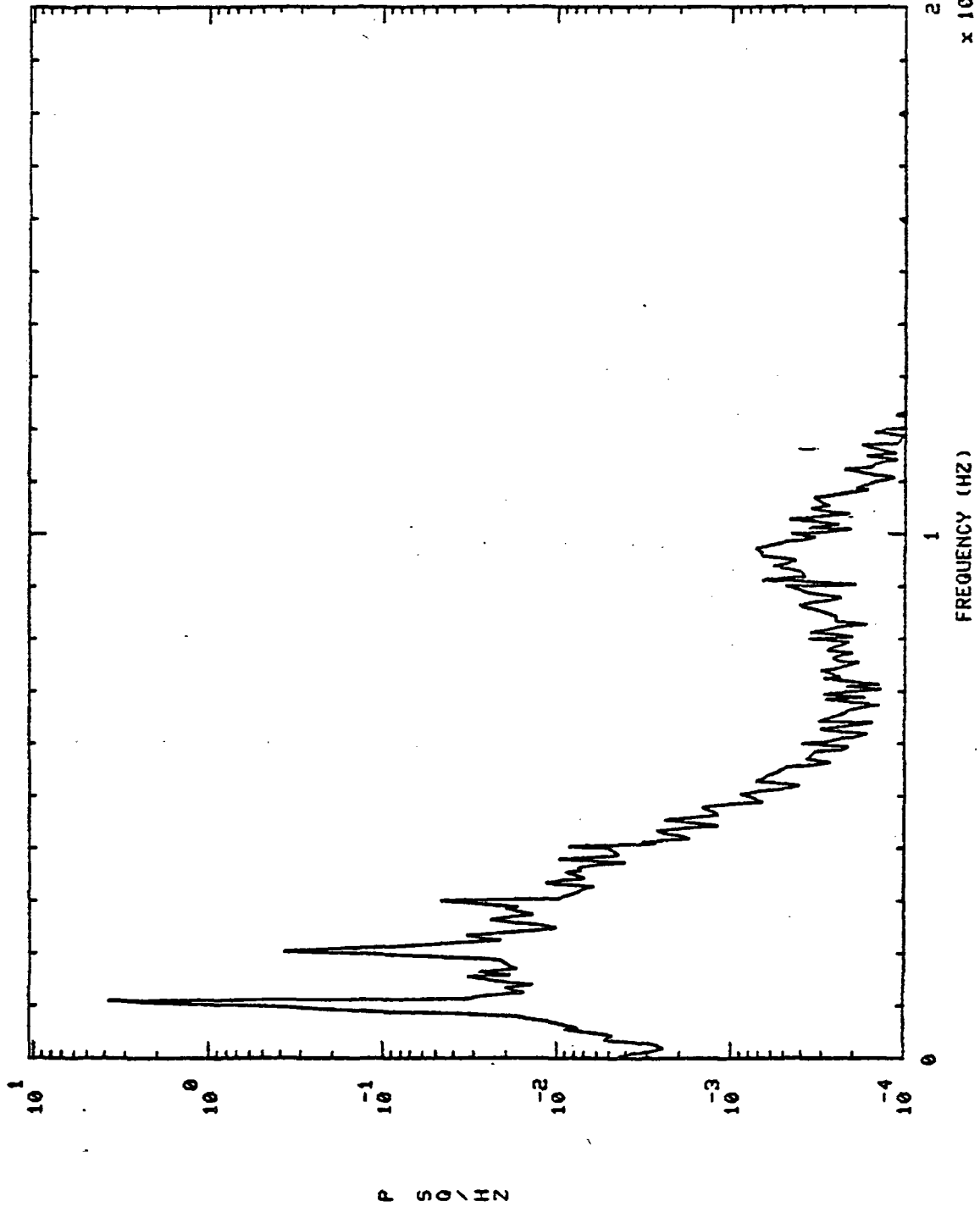


750103 LPFP IN PR S+ 20.050/HZ

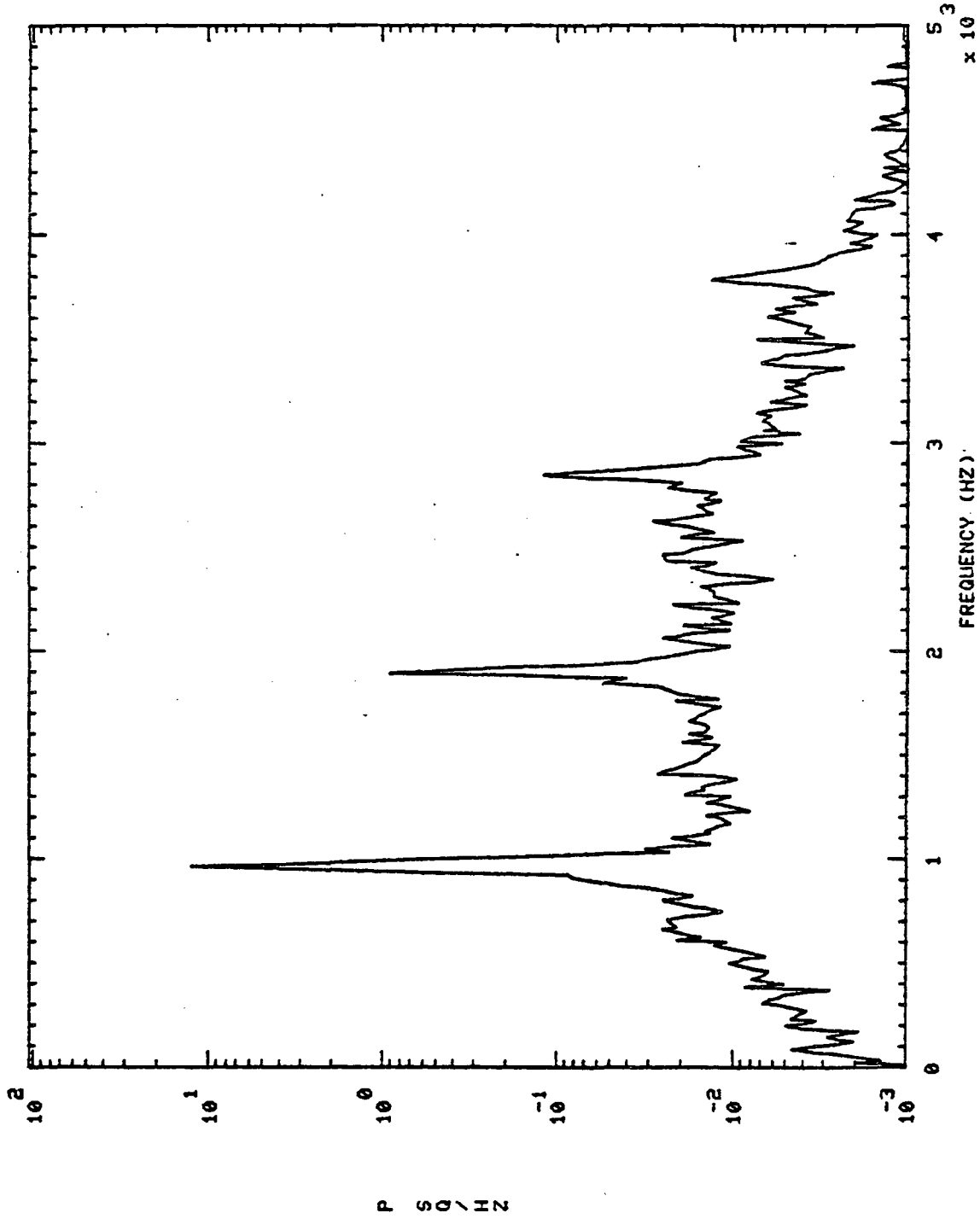


P S D / H Z

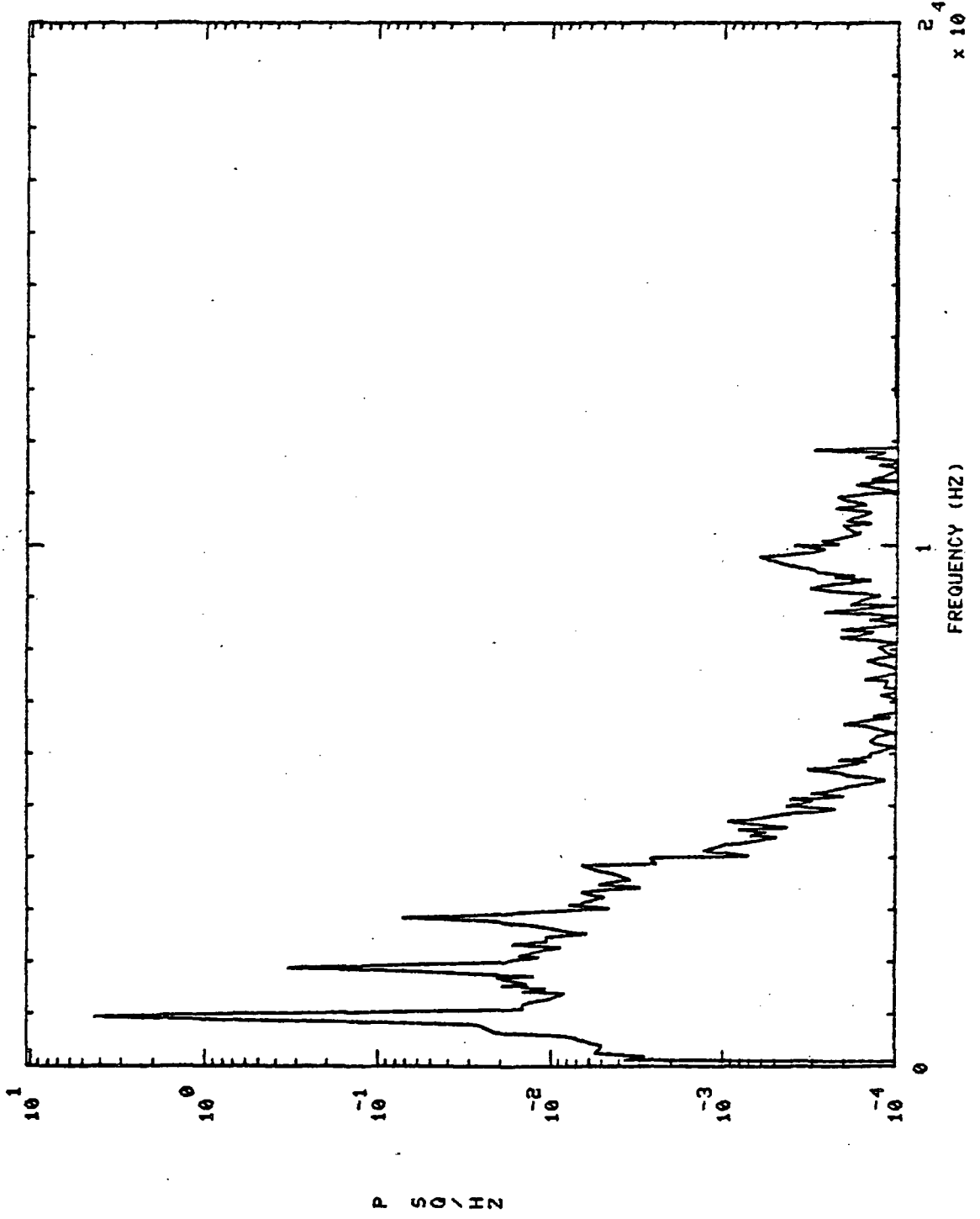
750103 LPFP IN PR S+ 20.050/HZ



750103 LPFP IN PR S+ 26.050/HZ

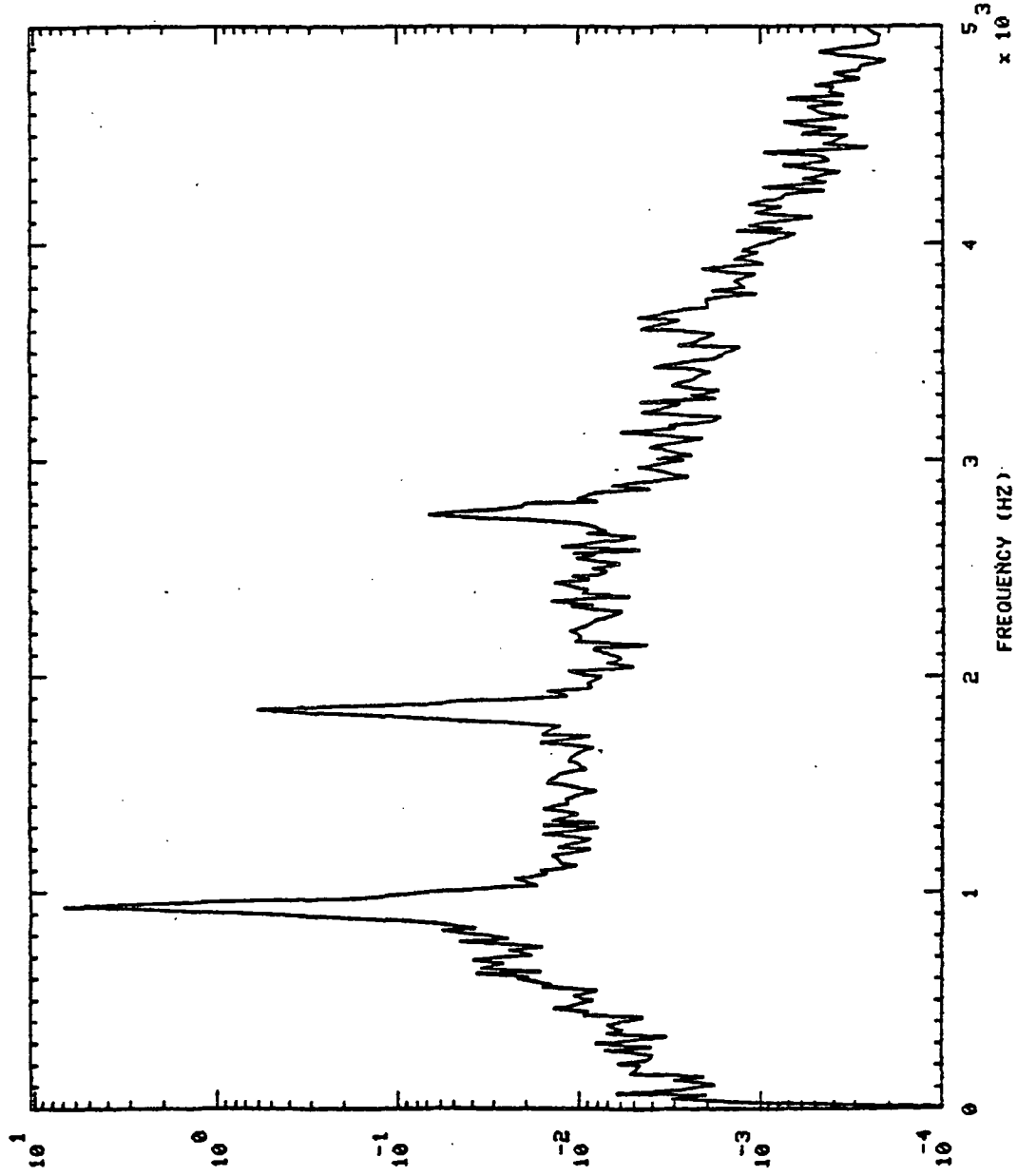


750103 LPFP IN PR S+ 26.0SQ/HZ



S+ 30.050/HZ

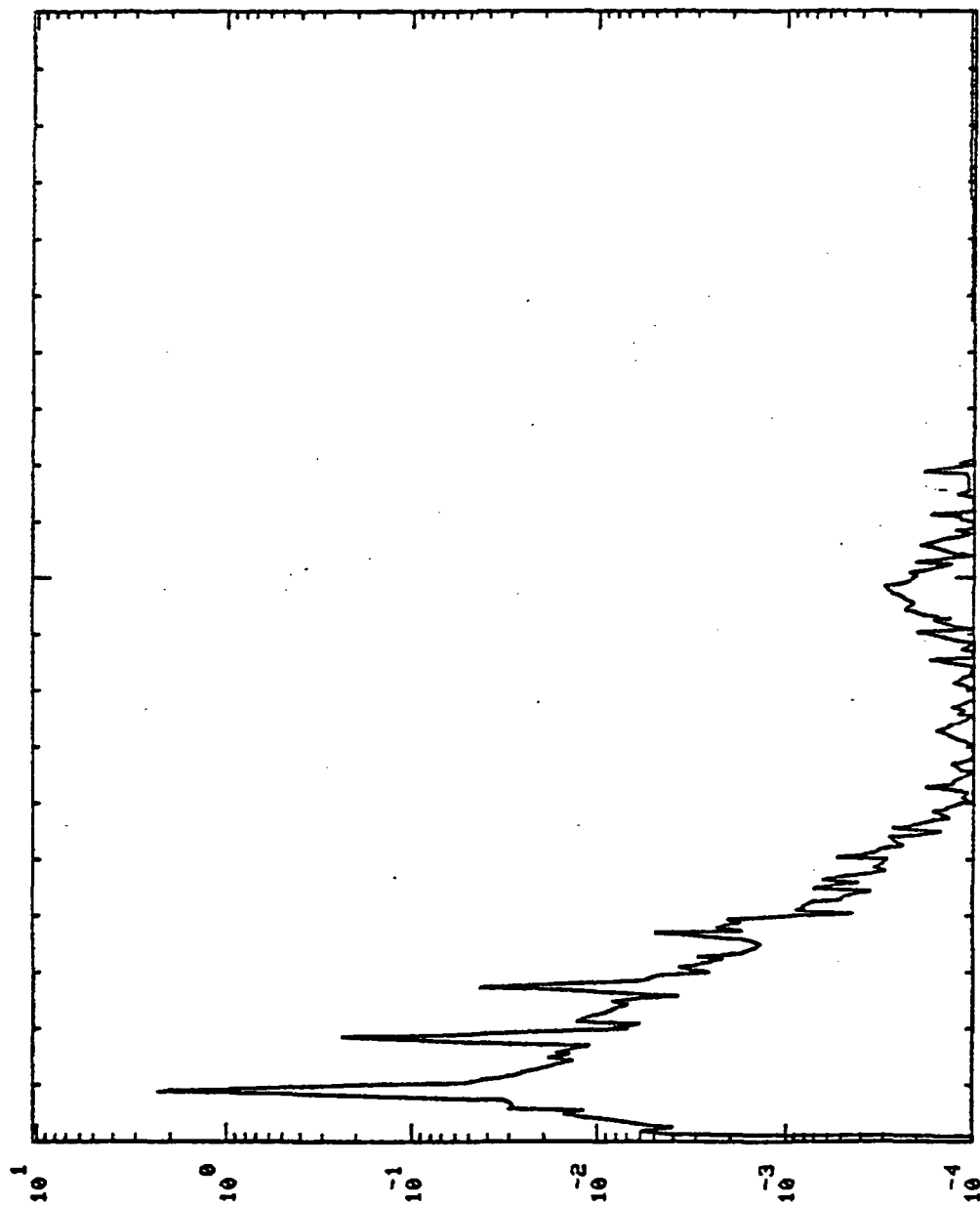
750103 LFPF IN PR



P SQ/HZ

S+ 30.950/HZ

750103 LPFP IN PR

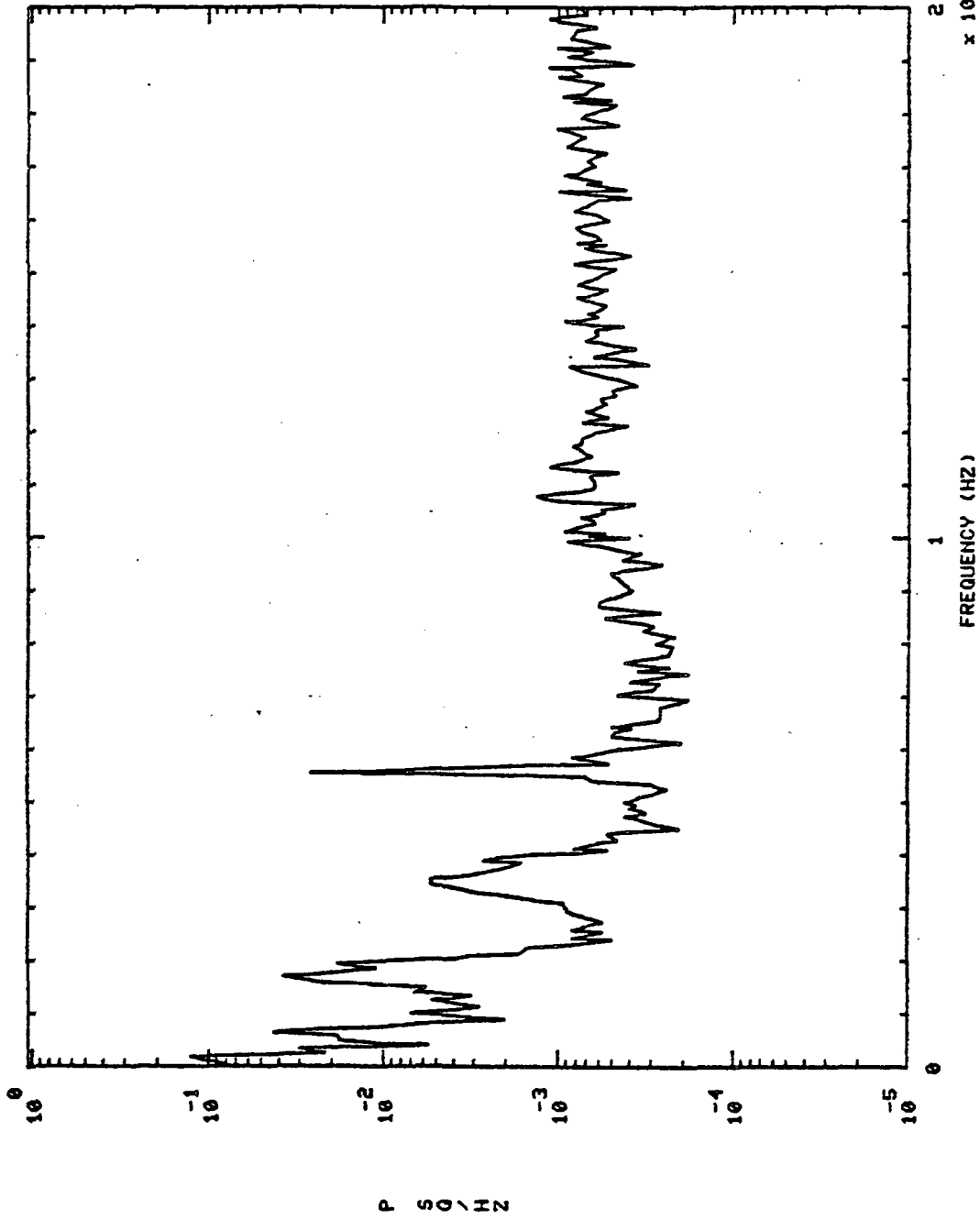


10<sup>4</sup>  
x 10

FREQUENCY (HZ)

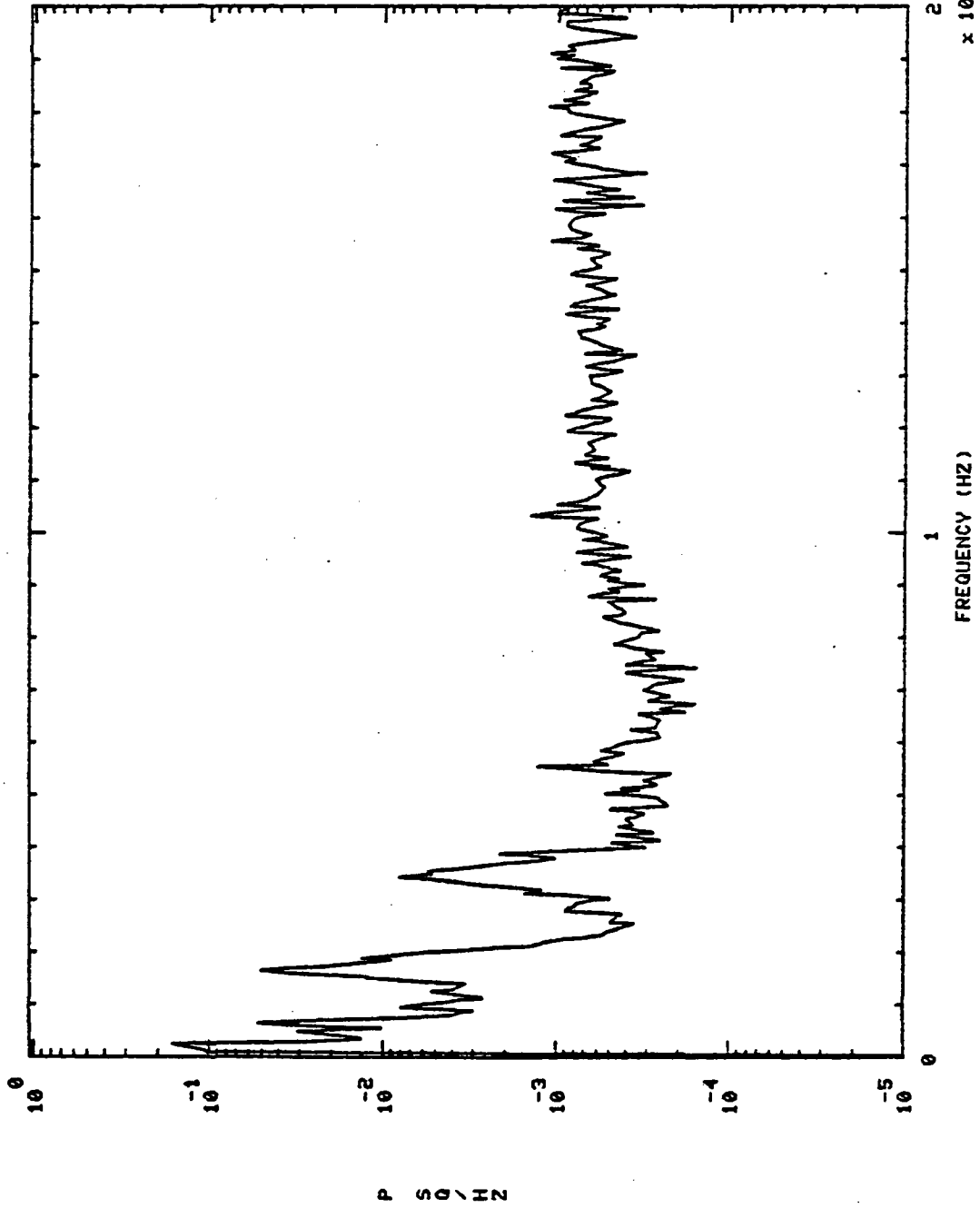
P 50 / HZ

750103 LPOP DS PR S+ 5.050/HZ

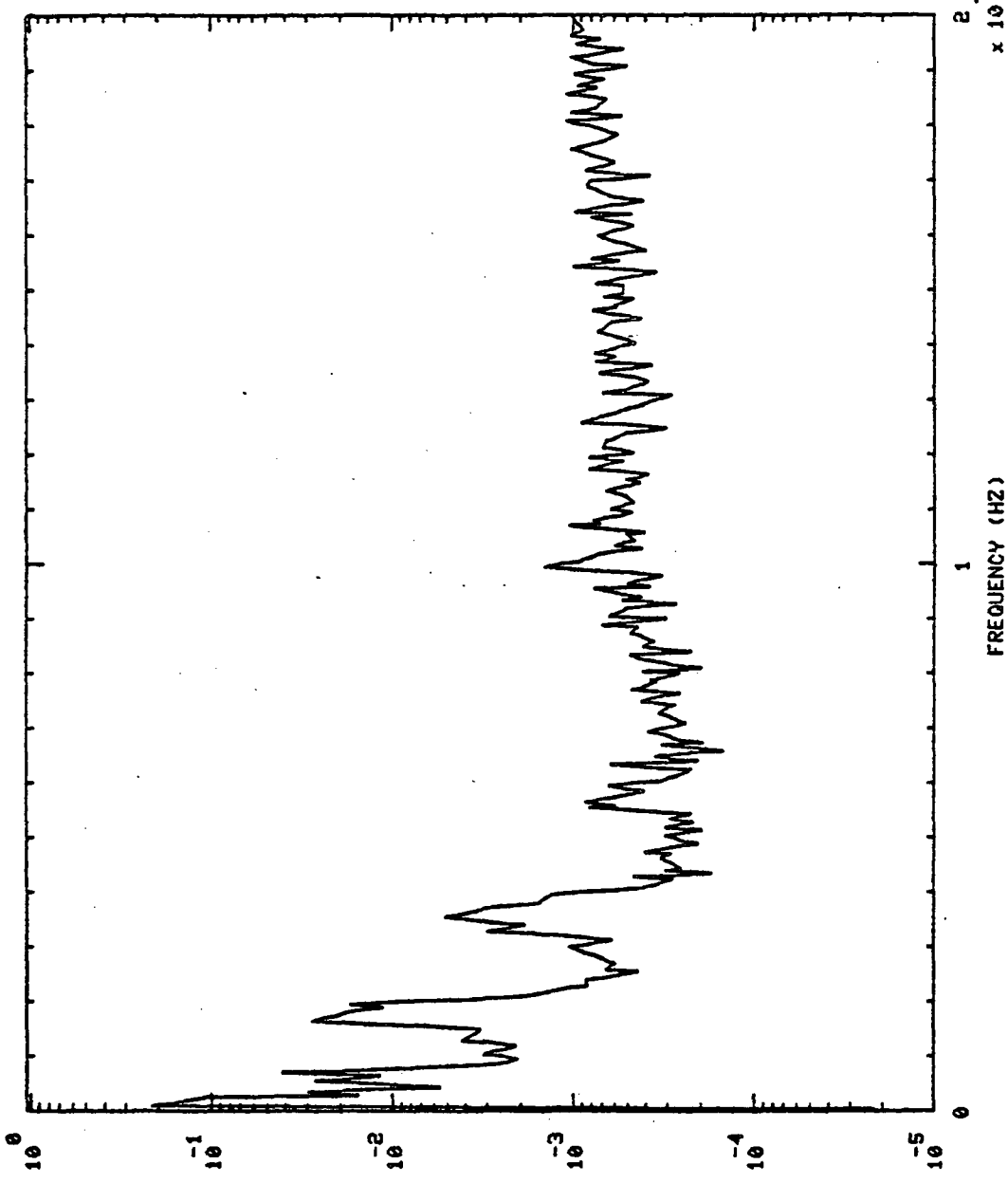




750103 LPOP DS PR S+ 15.050/HZ



750103 LPOP D5 PR S+ 20.050/HZ



P S D / HZ

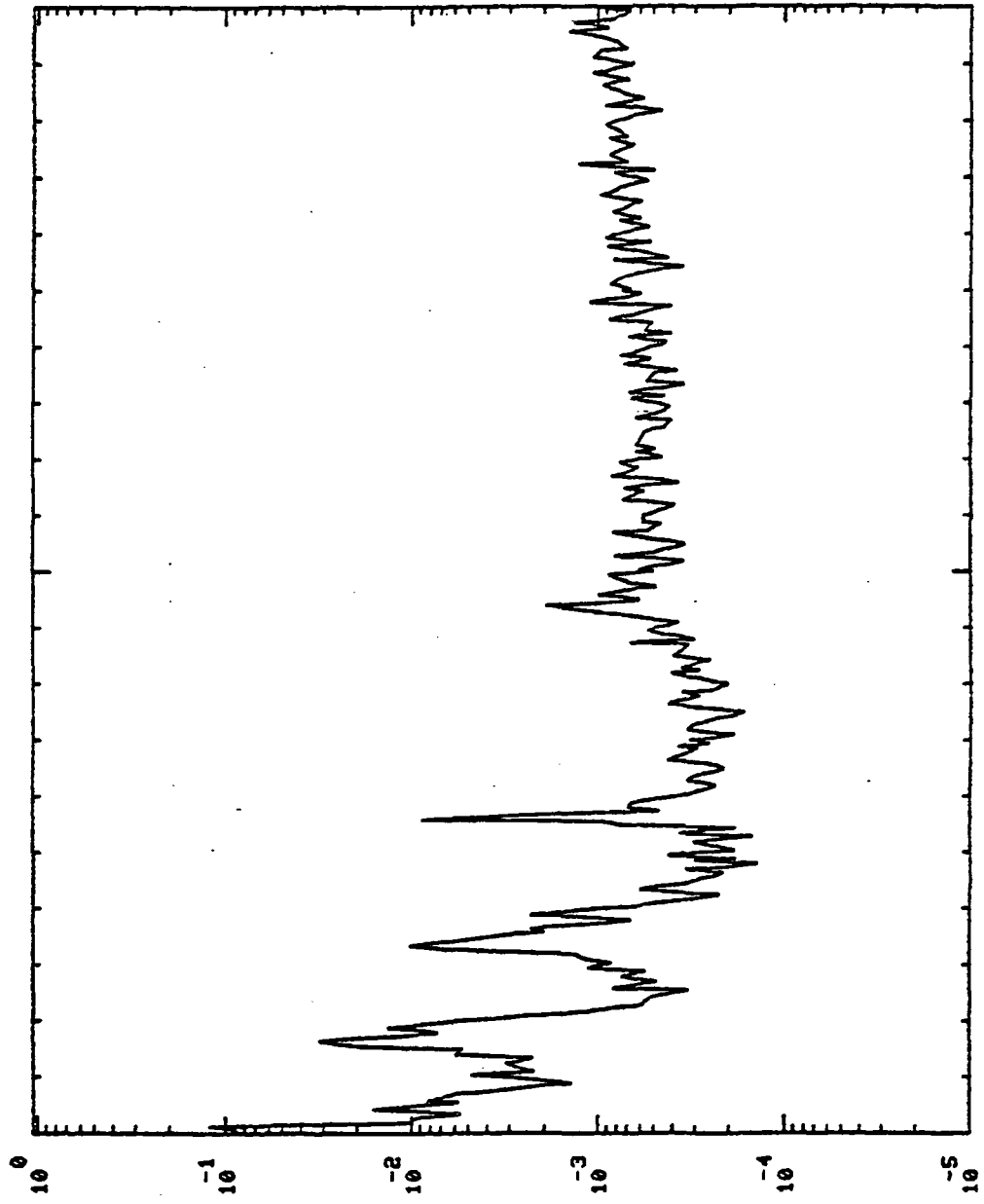
FREQUENCY (HZ) x 10<sup>4</sup>

750103 LP0P D5 PR S+ 26.050/HZ

750103 LP0P D5 PR

750103 LP0P D5 PR

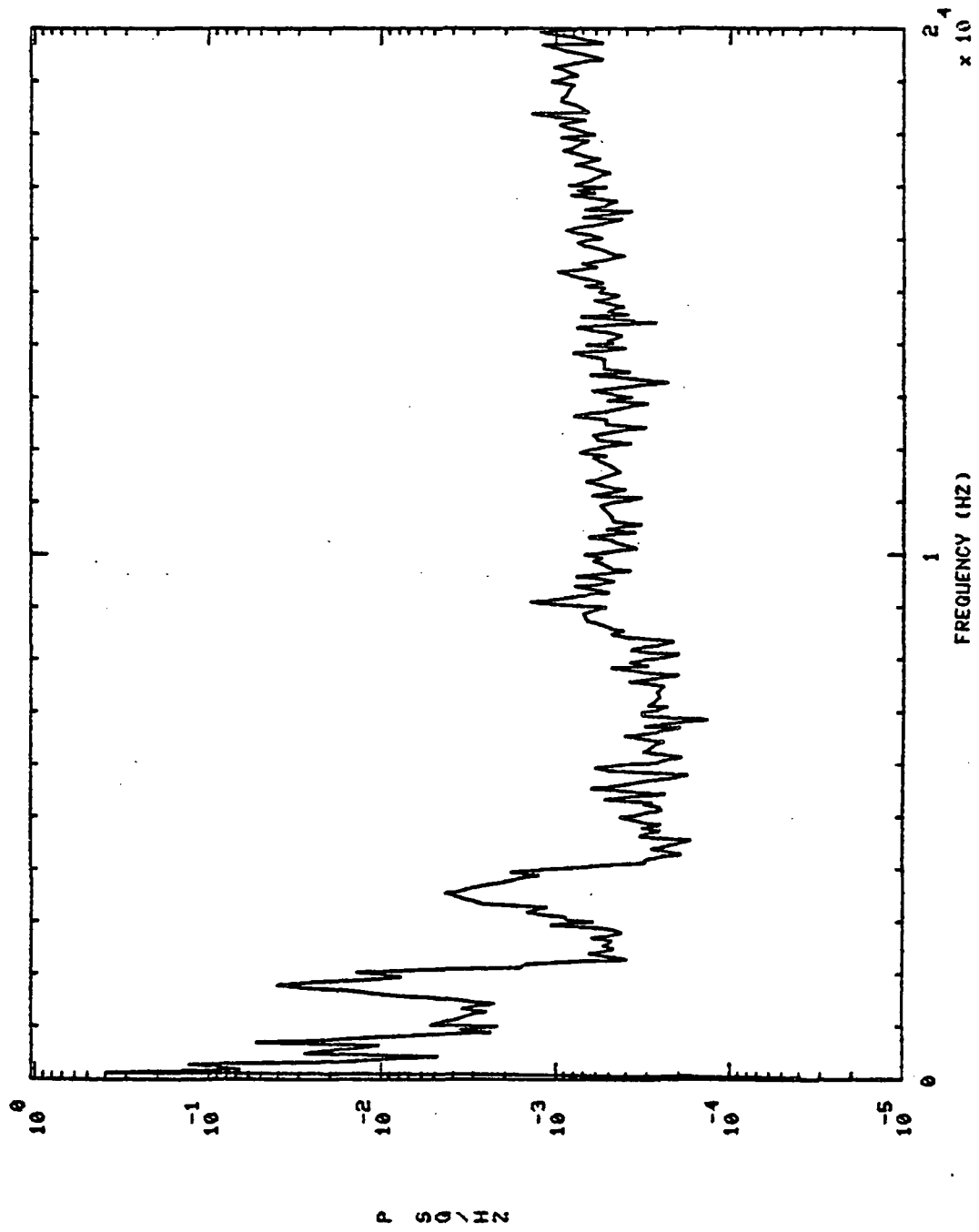
750103 LP0P D5 PR



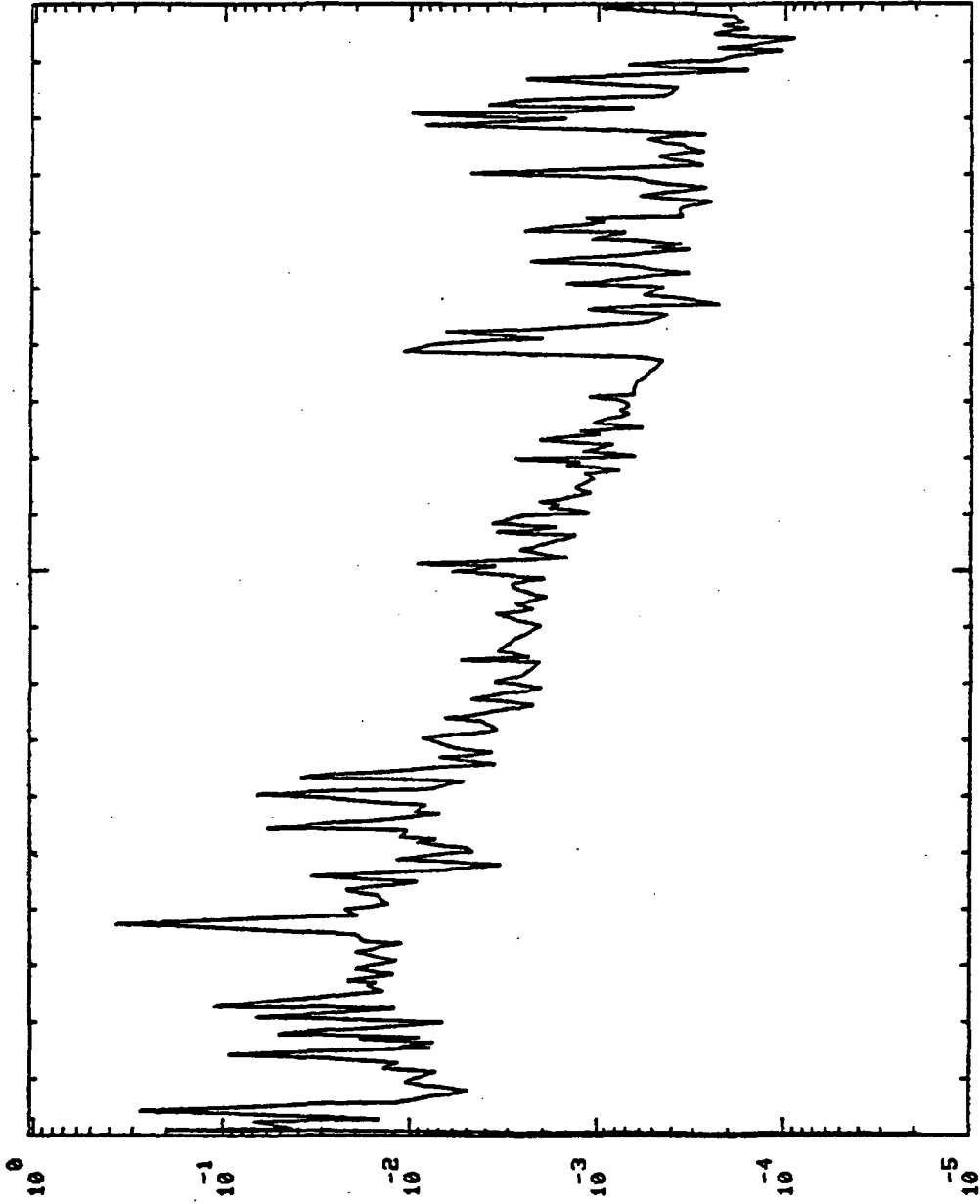
P SQ/HZ

FREQUENCY (HZ) x 10<sup>4</sup>

750103 LPOP DS PR S+ 30.050/HZ



750103 HPOP BAL CAU PR2 S+ 5.050/HZ

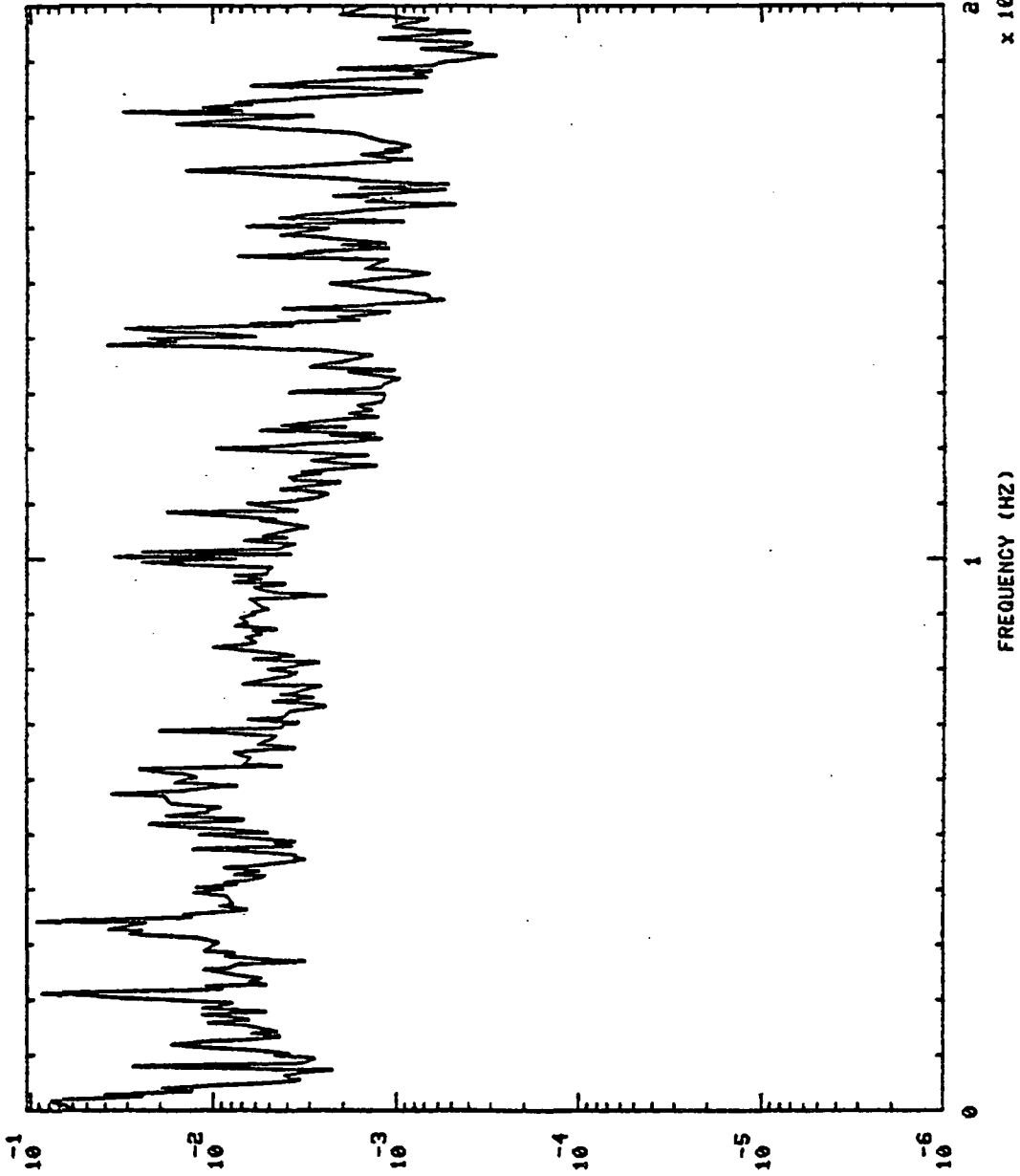


P S D / H Z

FREQUENCY (HZ)

x 10<sup>4</sup>

750103 MPOP BAL CAU PR2 S+ 15.01H0,'S

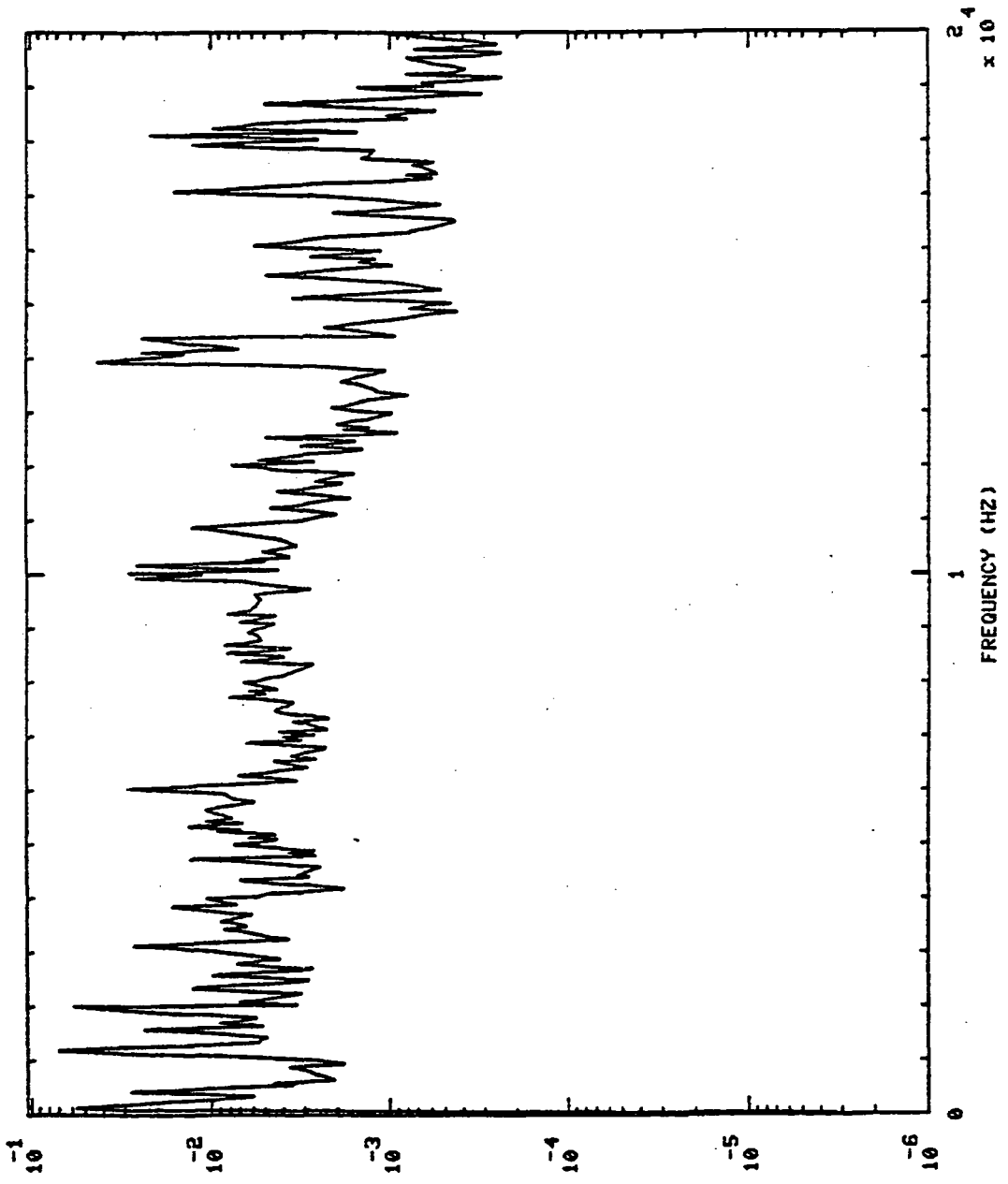


P S / HZ

24  
 $\times 10^4$

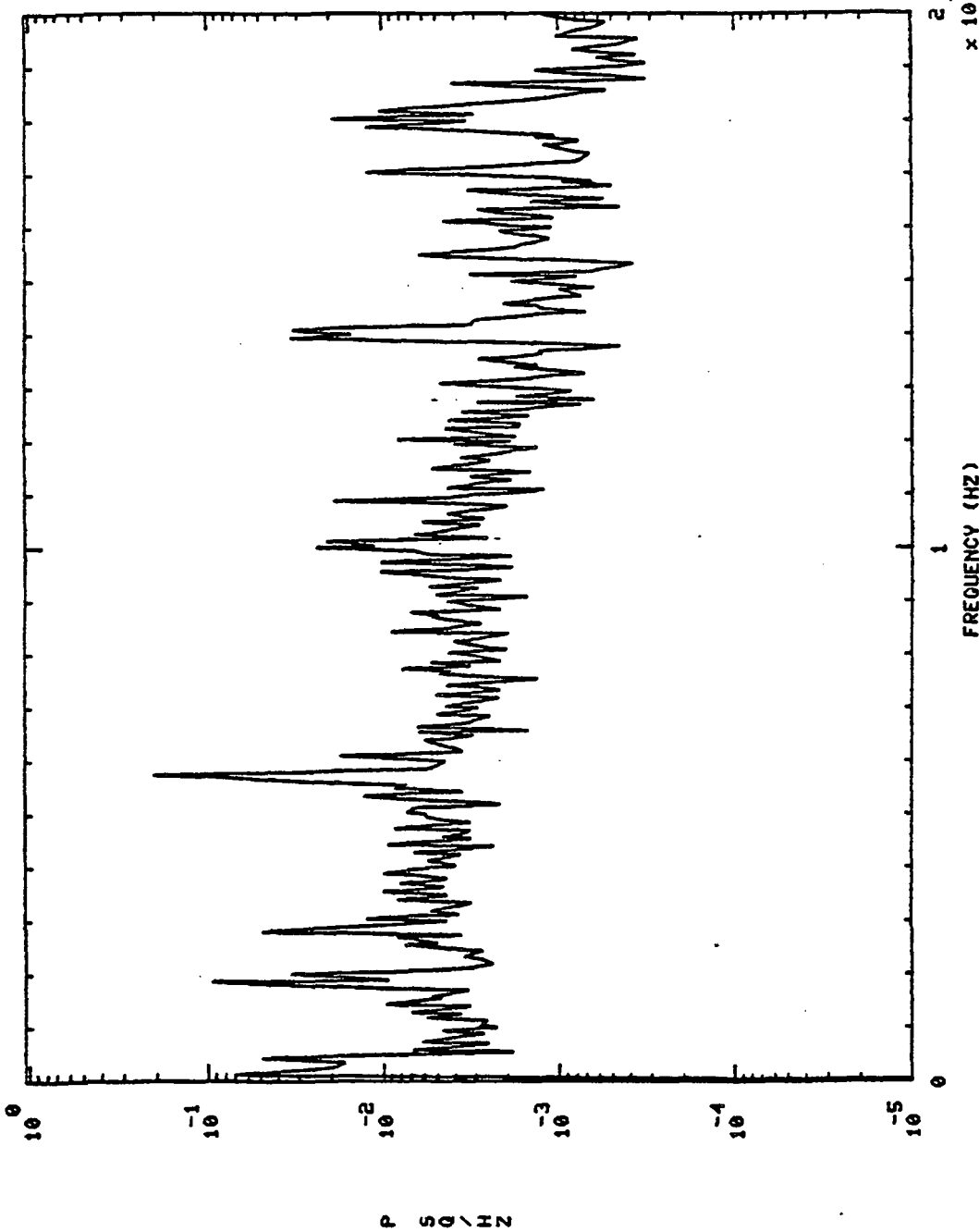
1  
FREQUENCY (HZ)

750103 HPOP BAL CAU PRE S+ 20.050/HZ



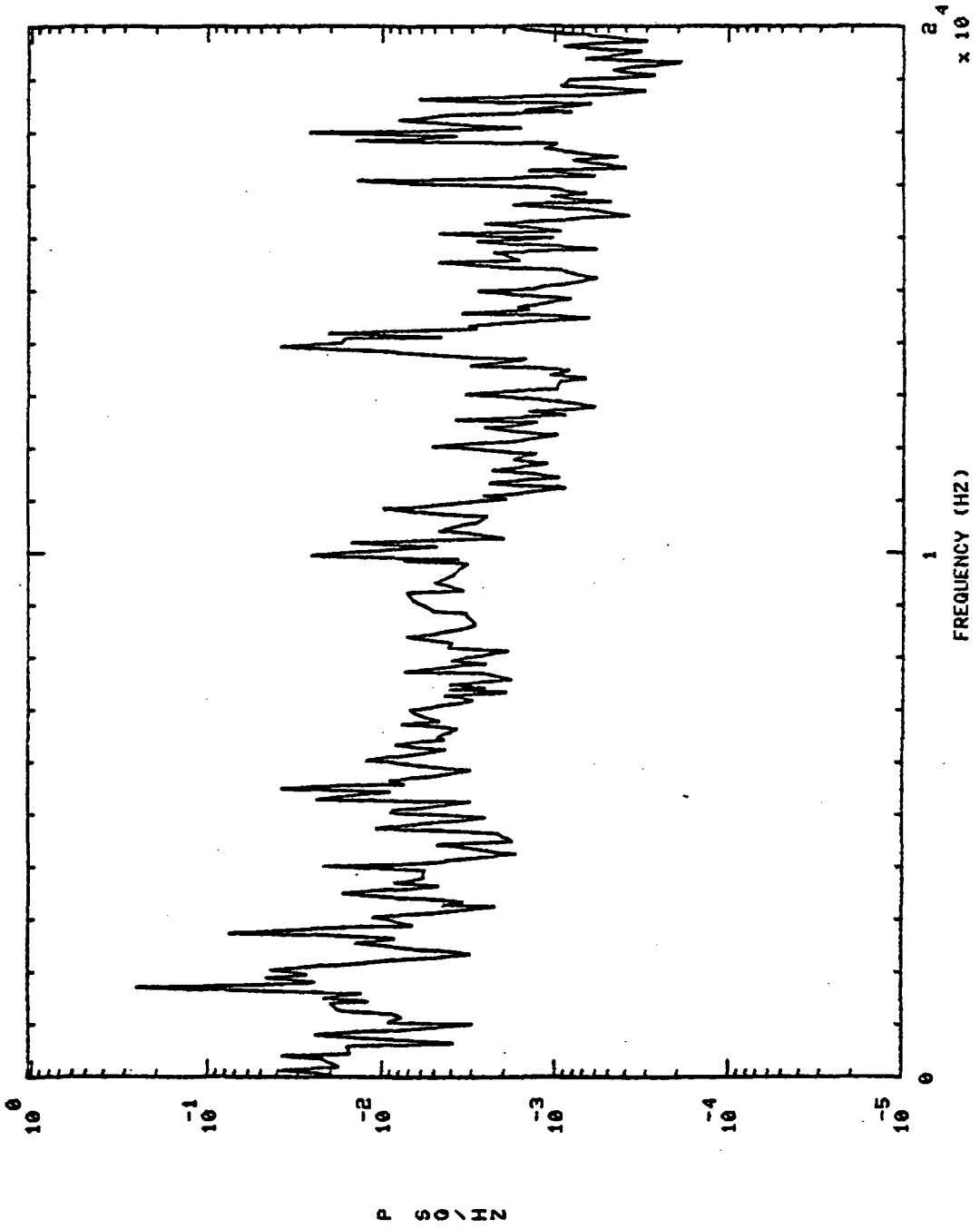
P S Q \ H Z

750103 HPOP BAL CAU PR2 S+ 26.050/HZ

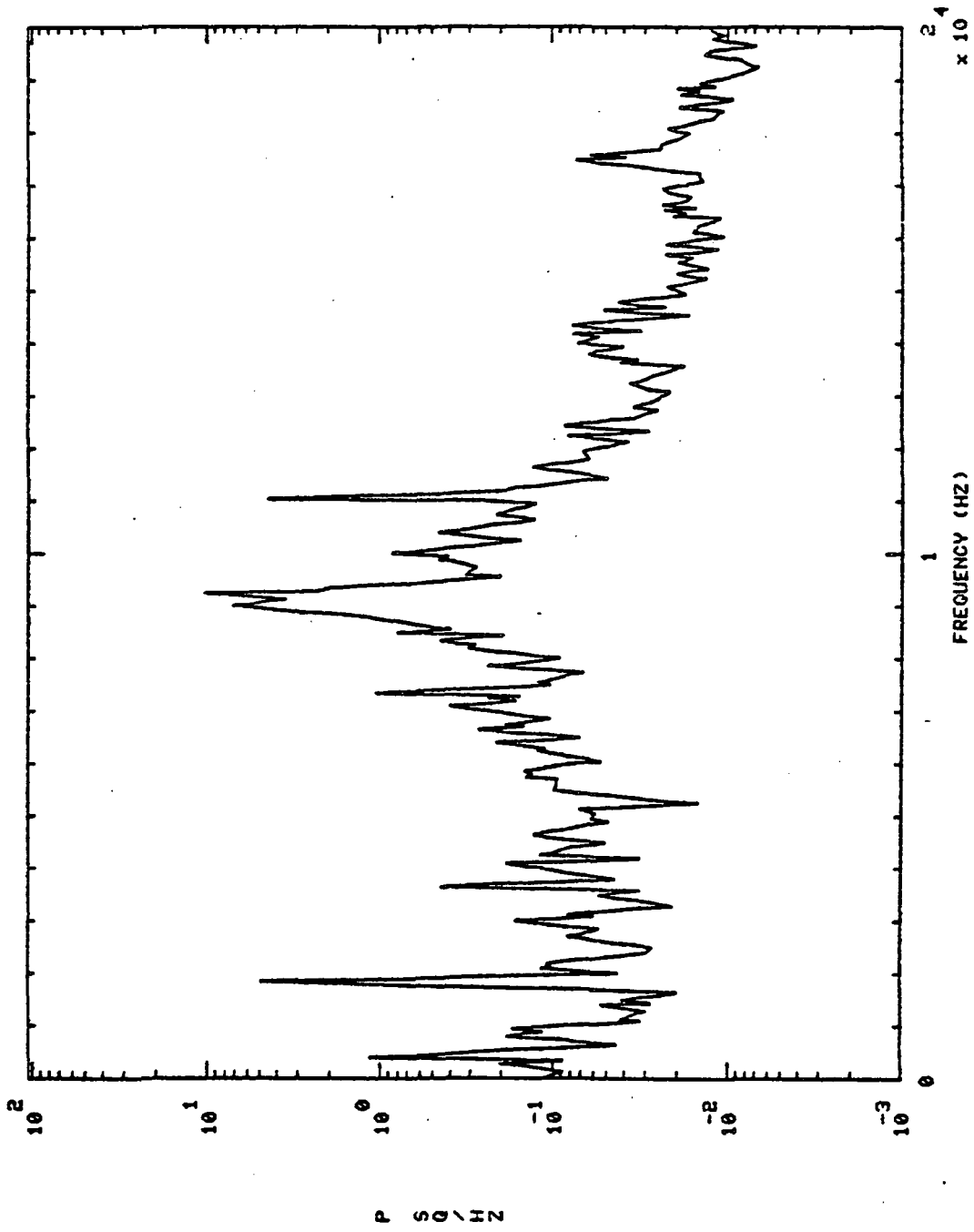




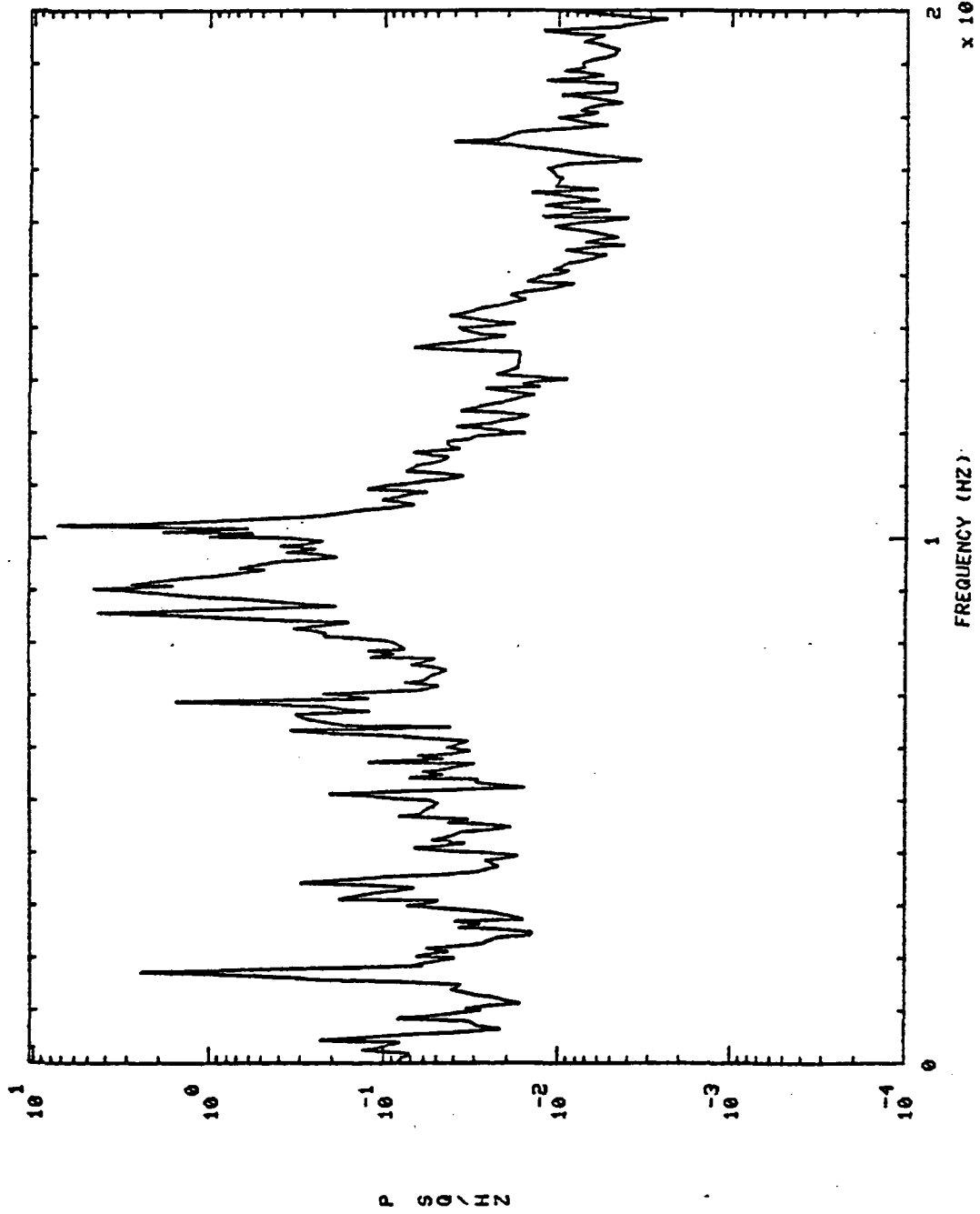
750103 HPOP BAL CAU PR2 S+ 30.050/HZ



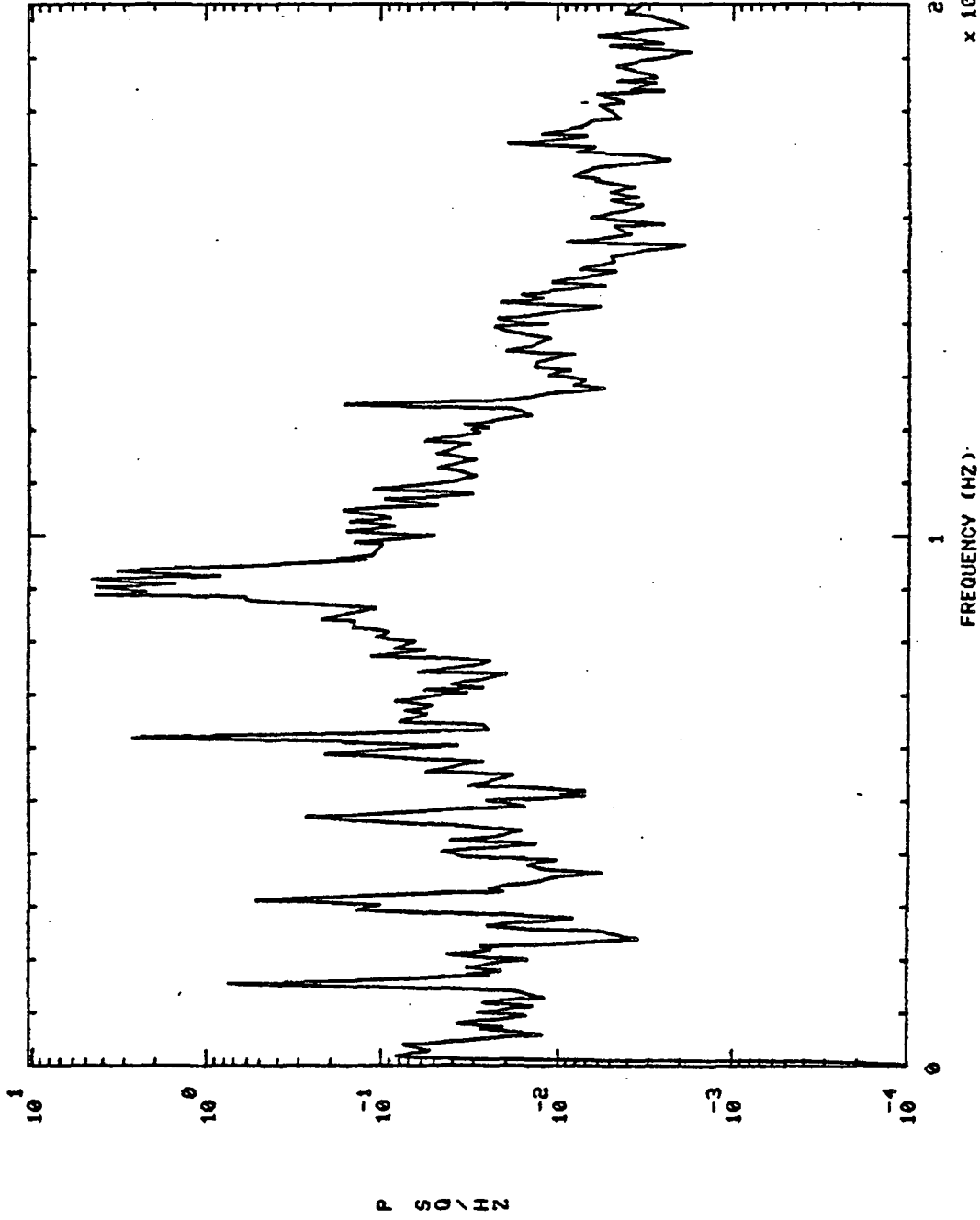
750103 HPOP DISC PR : S+ 5.050/HZ



750103 HPOP DISC PR S+ 15.0SQ/HZ

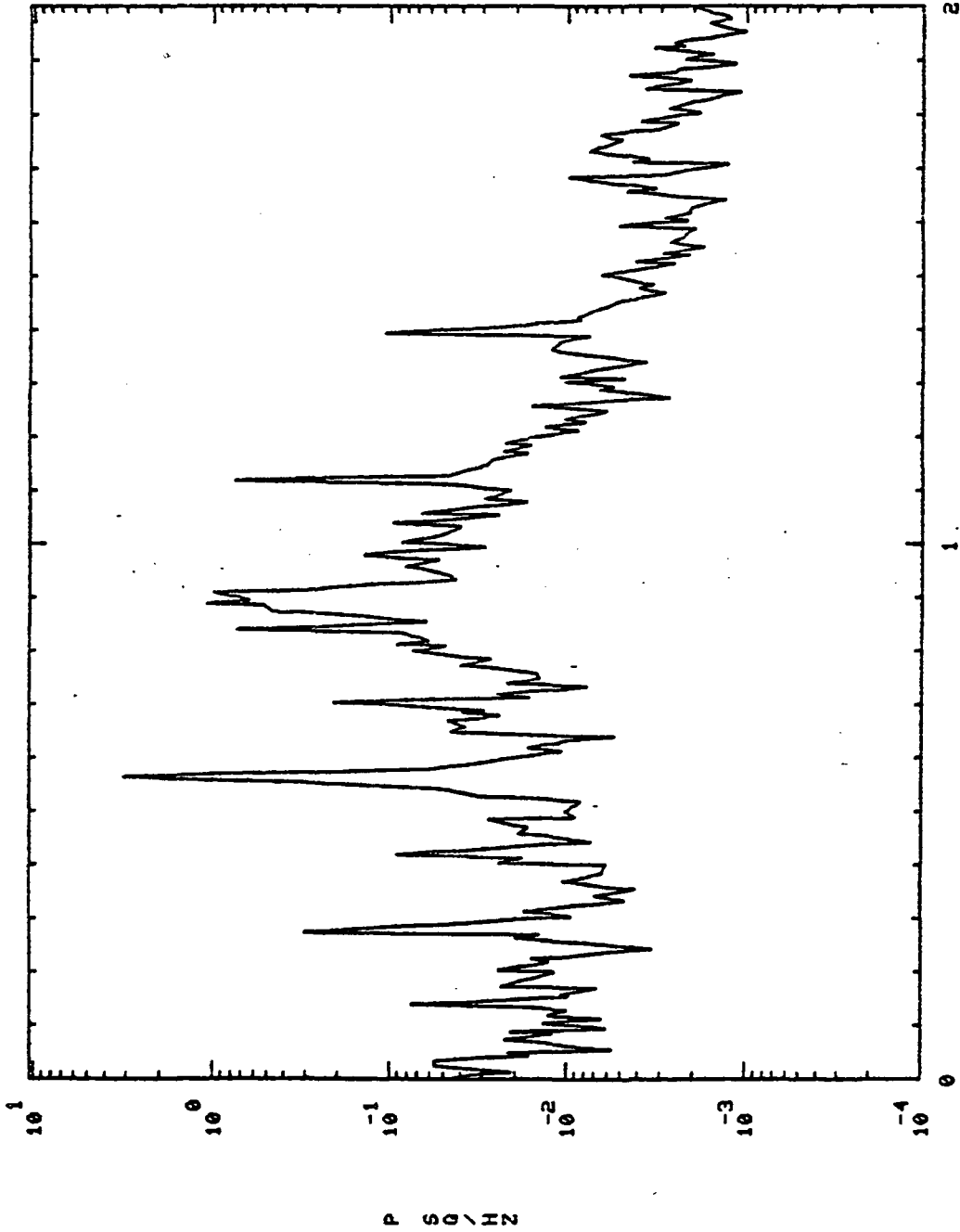


750103 HPOP DISC PR S+ 20.050/HZ



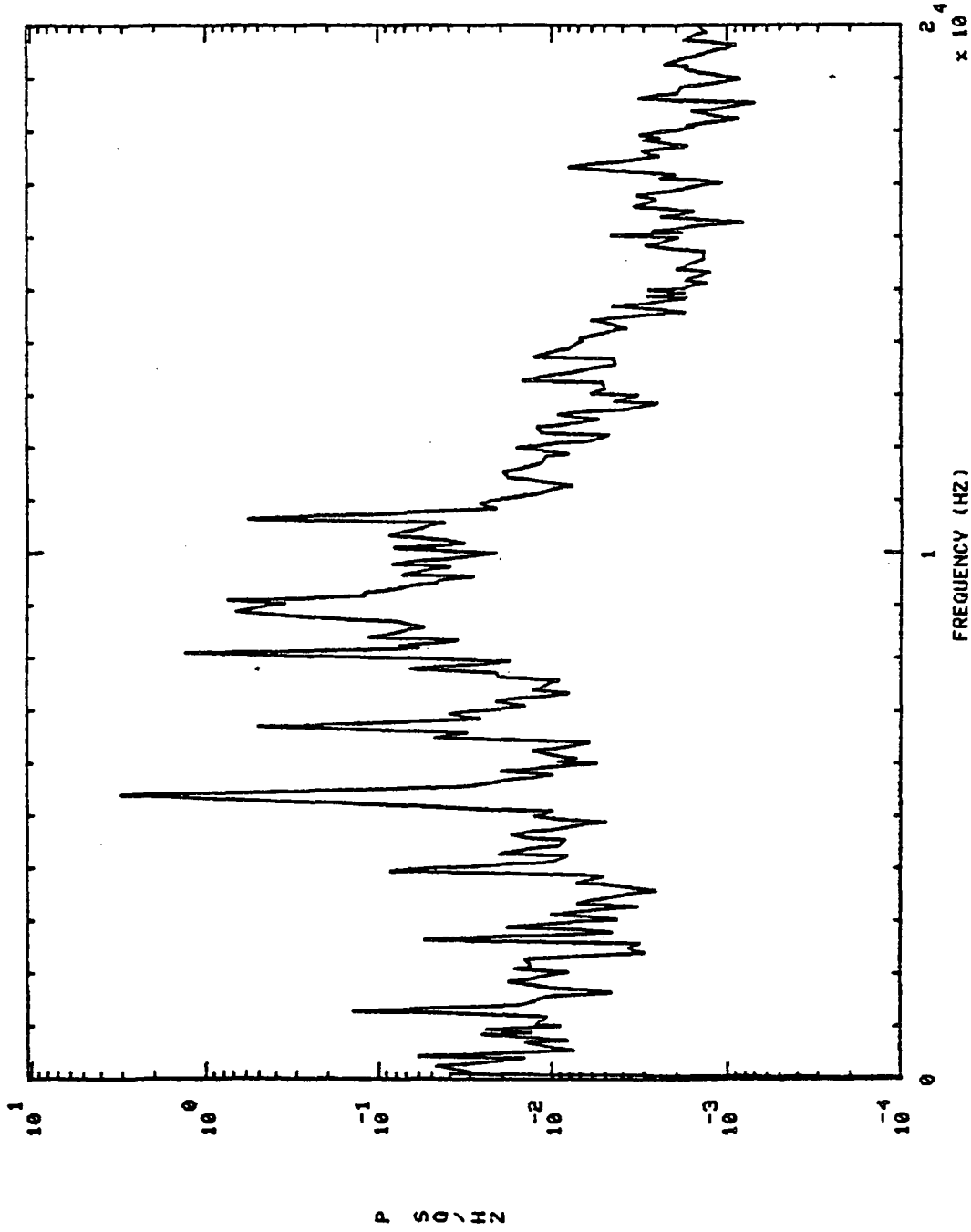
2 4  
x 10

750103 HPOP DISC PR S+ 26.050/HZ

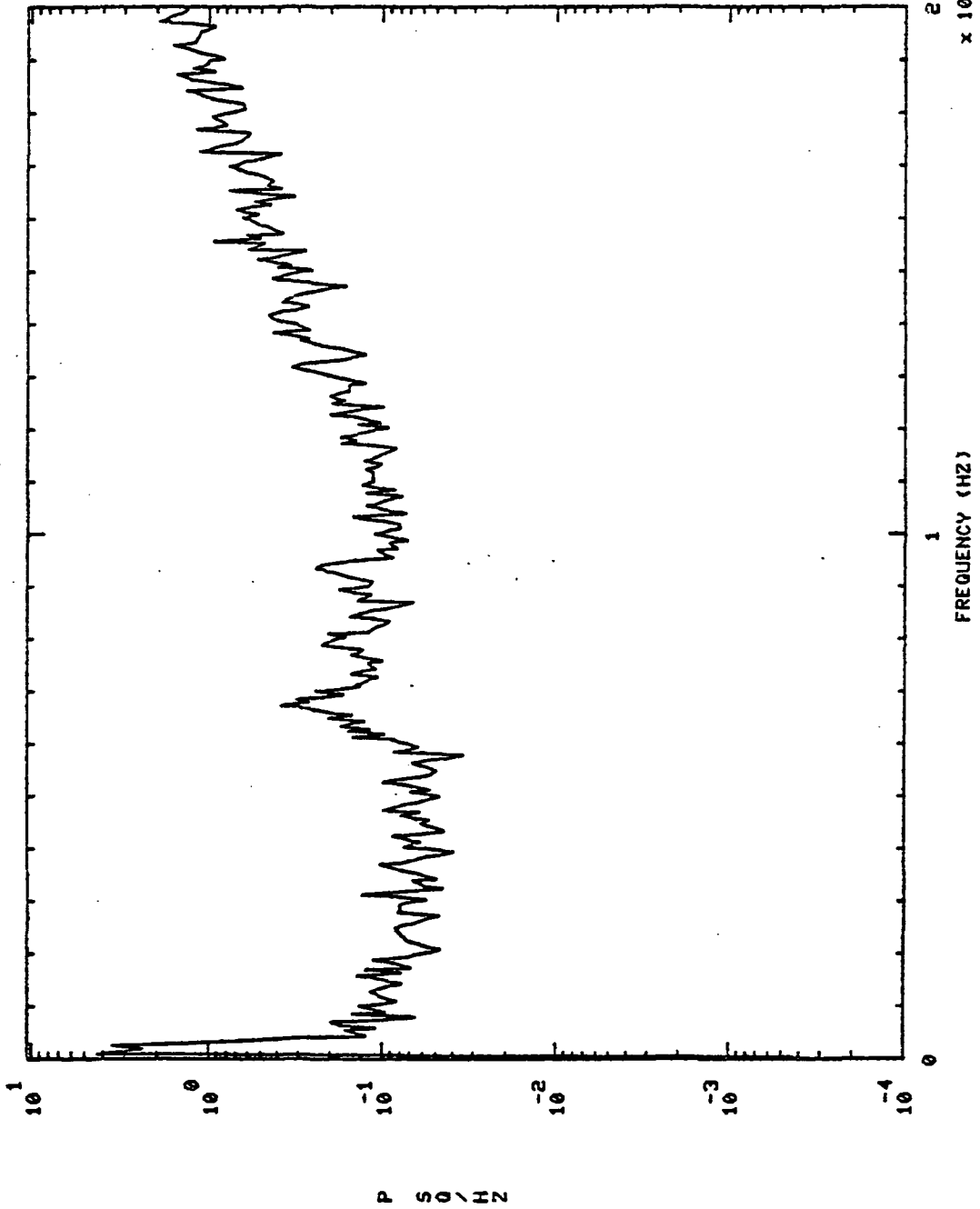


S+ 30.050/HZ

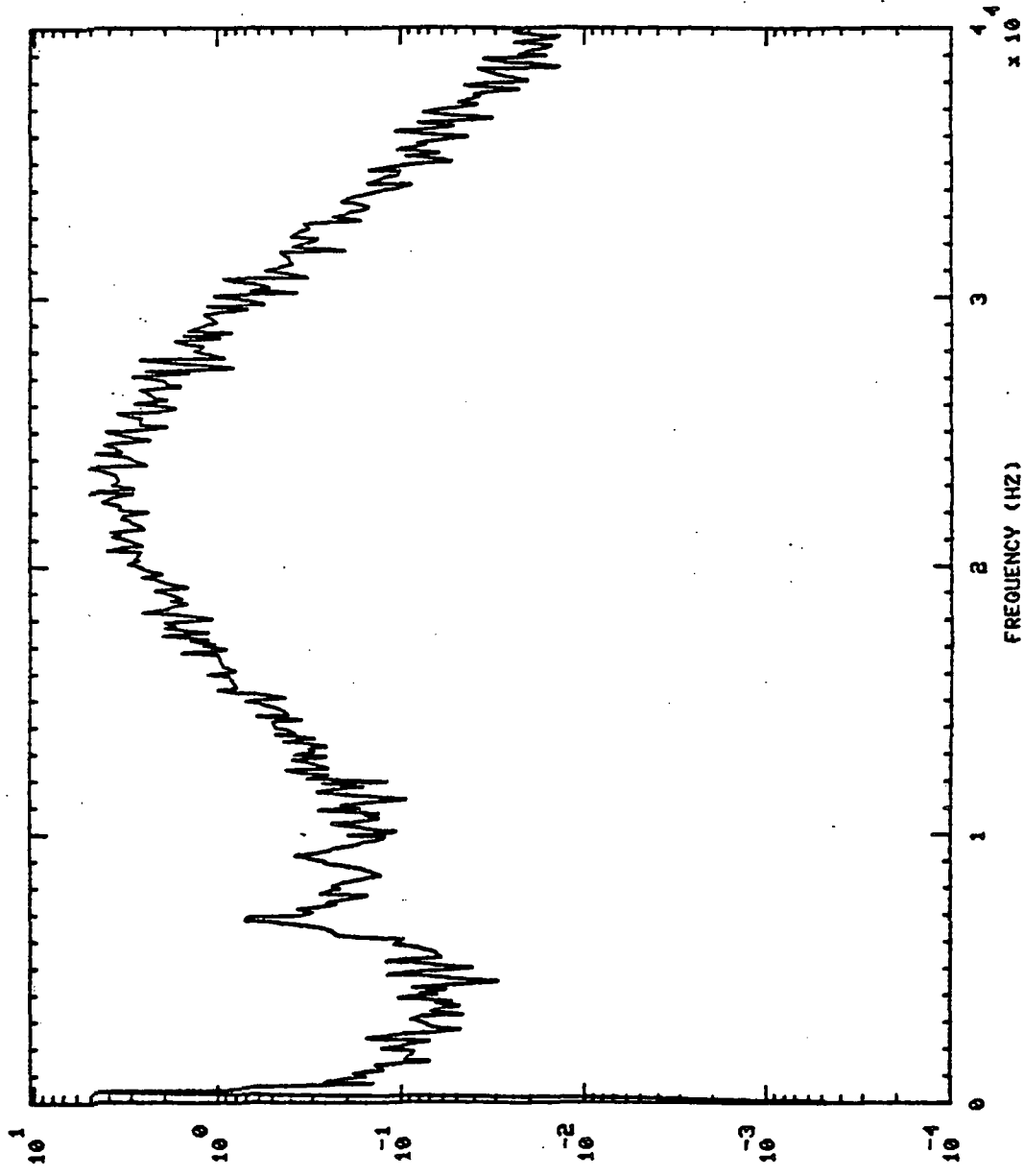
750103 HPOP DISC PR



750103 MCC HOT GAS IN PR S+ 5.050/HZ



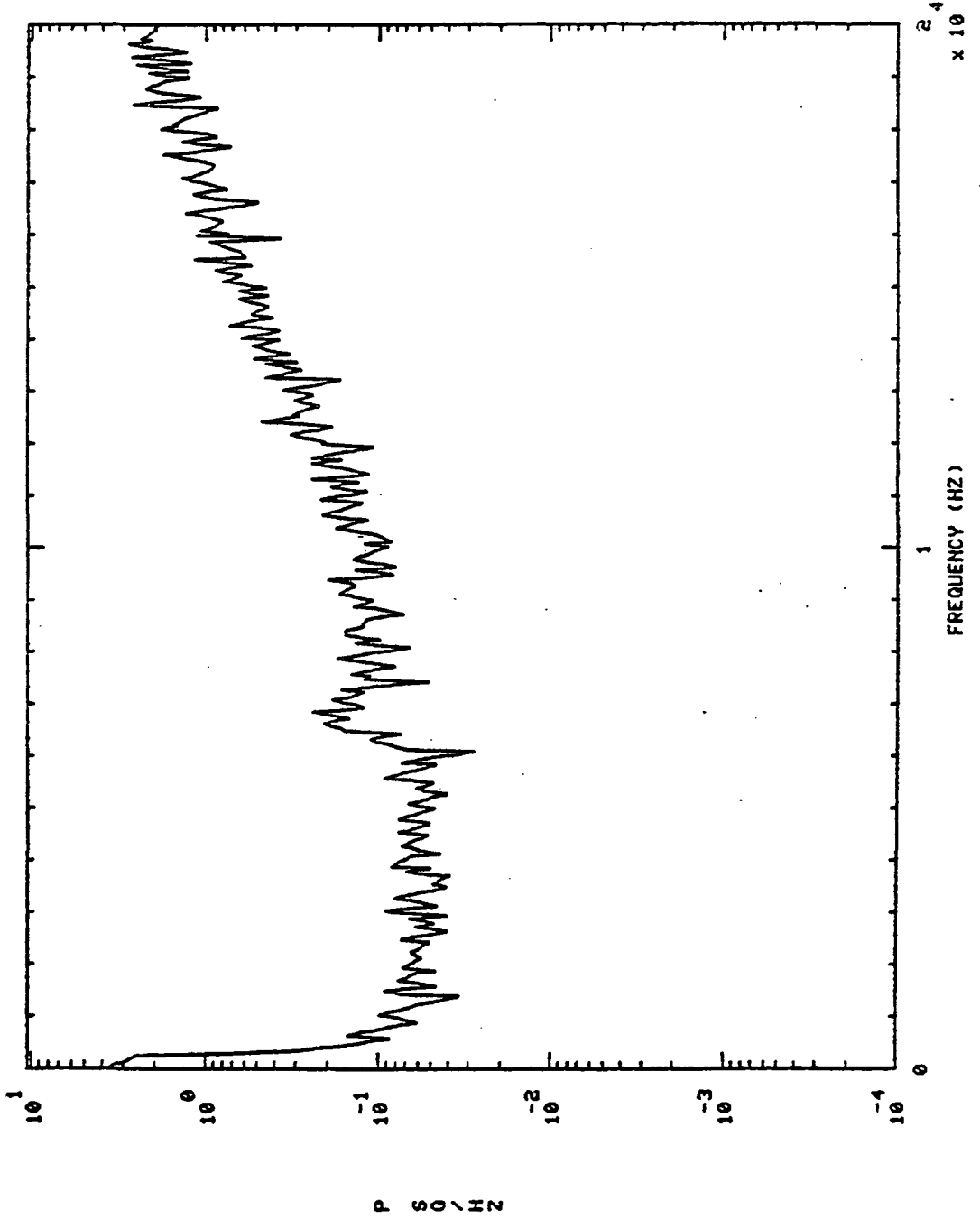
750103 MCC HOT GAS IN PR S+ 5.01H0.1S



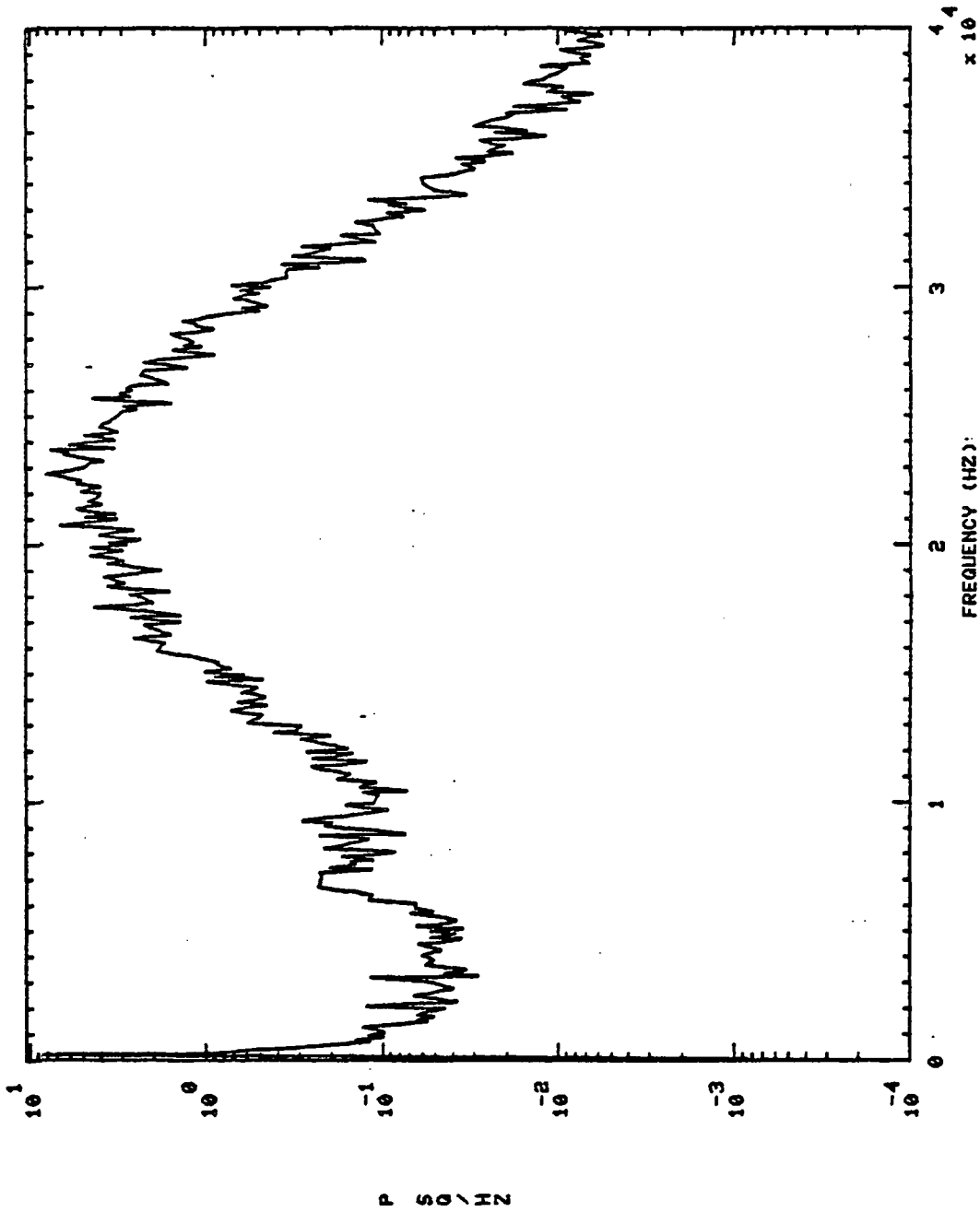
P SQ/IN



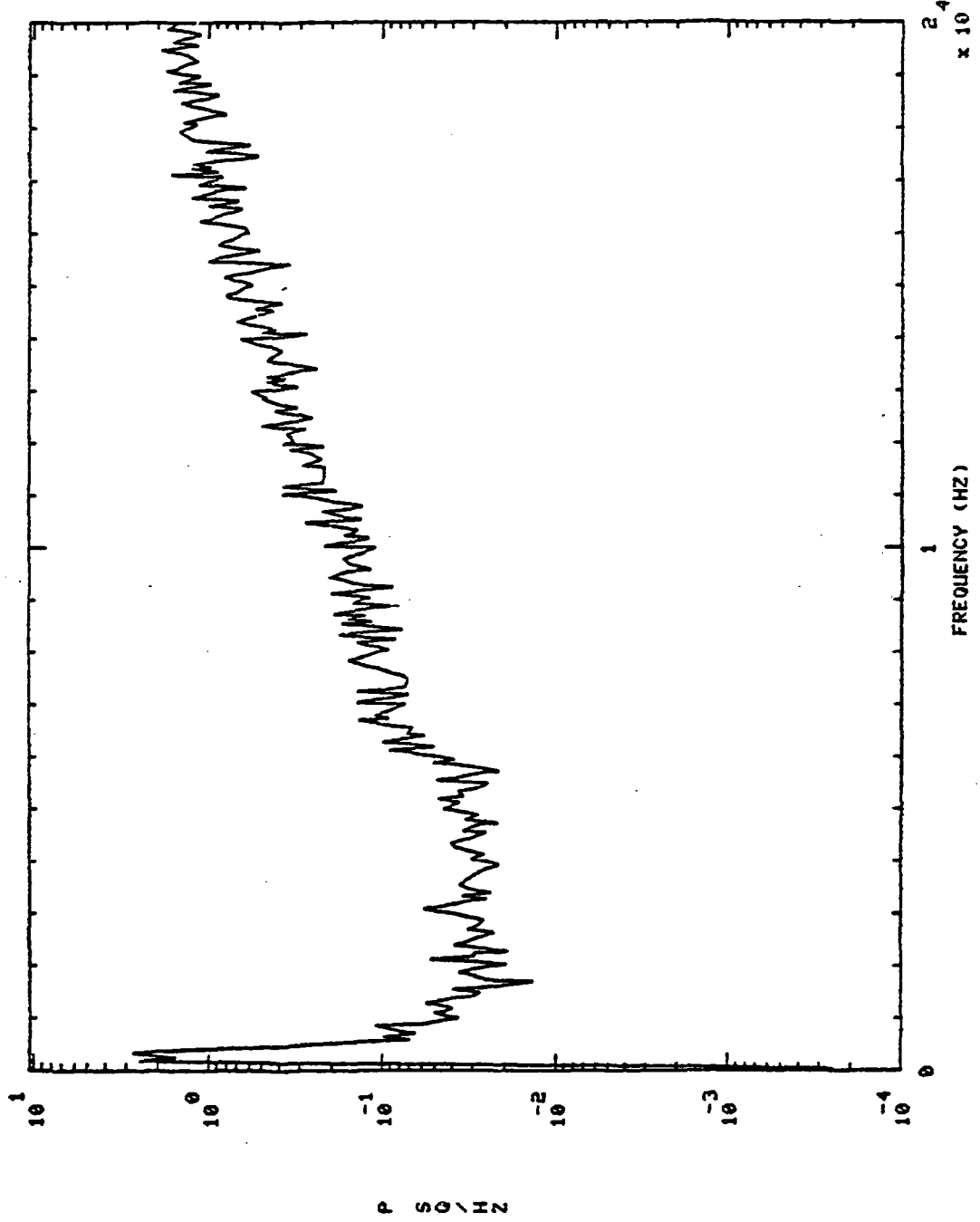
750103 MCC HOT GAS IN PR S+ 15.050/HZ



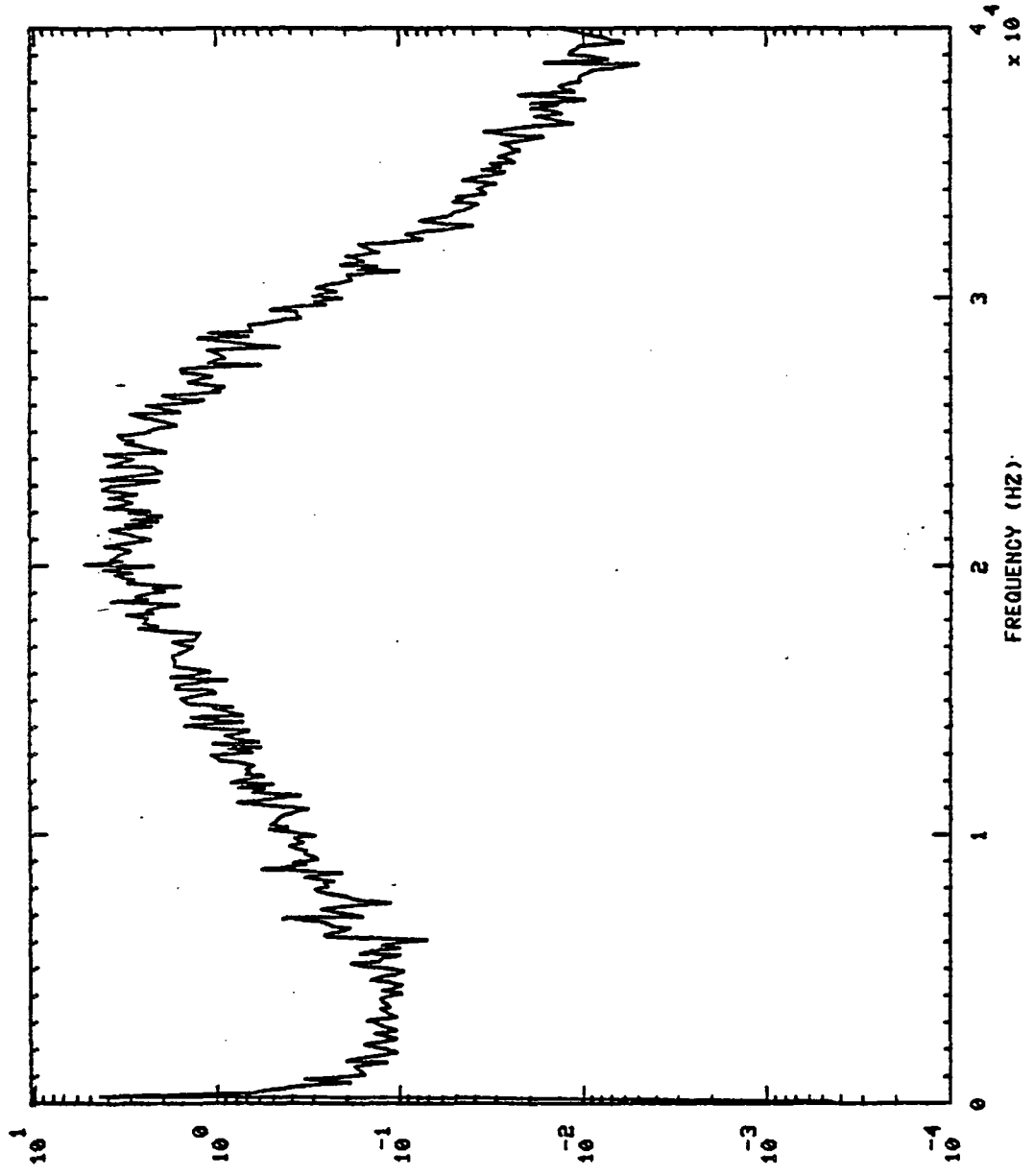
750103 MCC HOT GAS IN PR S+ 15.01H0,'S



750103 MCC HOT GAS IN PR S+ 20.050/HZ

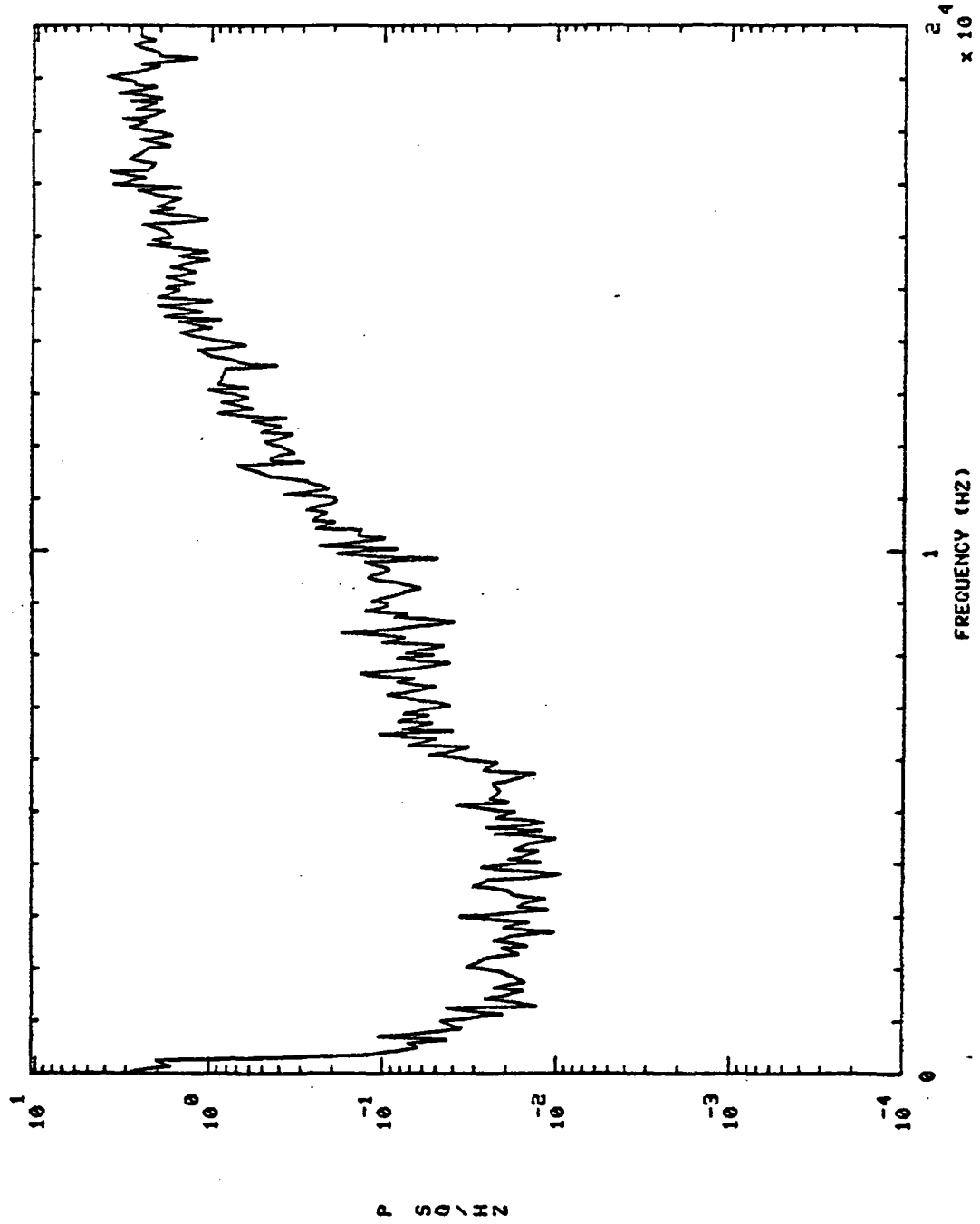


750103 MCC HOT GAS IN PR S+ 20.01H0,'S

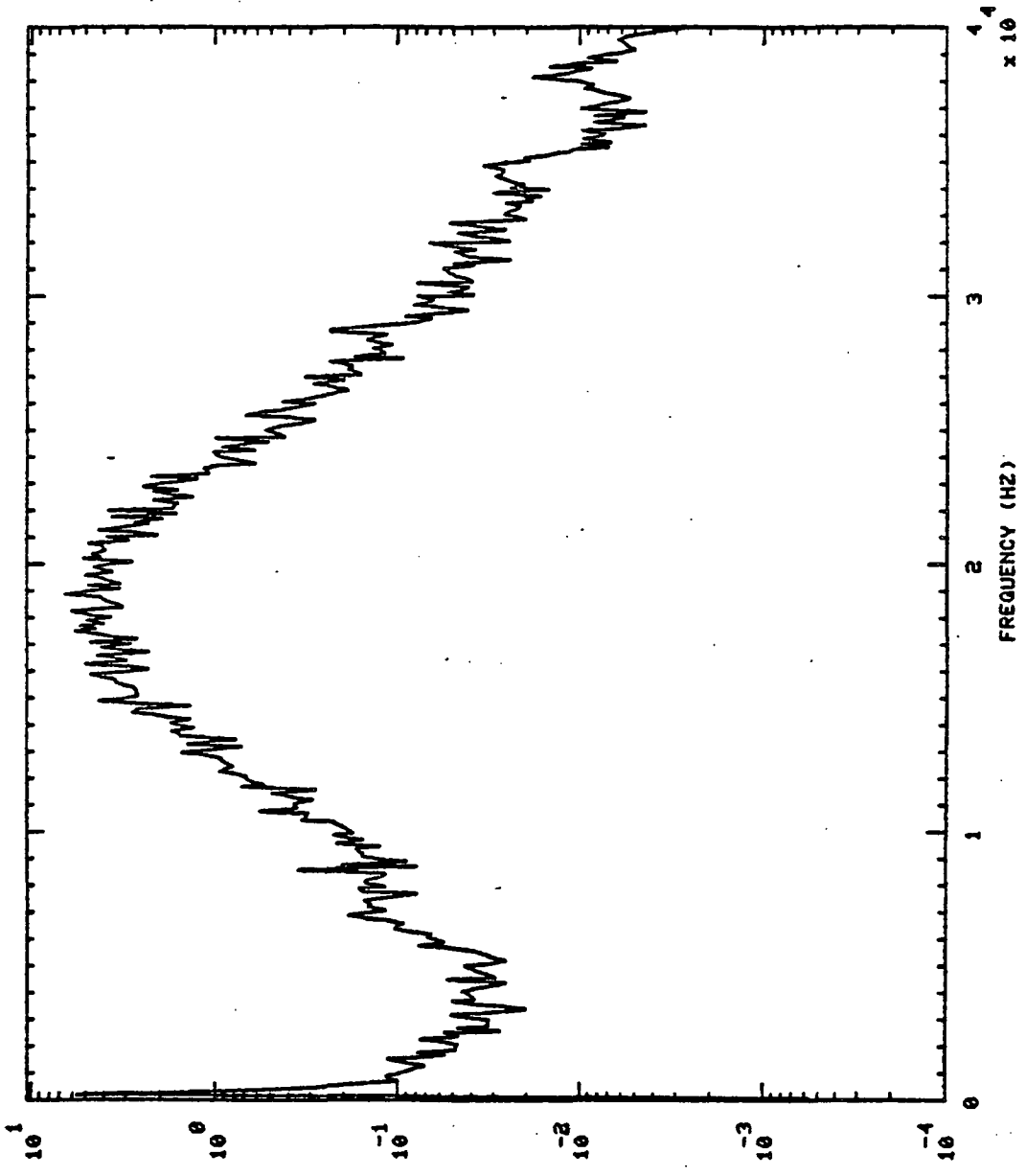


P SQ / HZ

750103 MCC HOT GAS IN PR S+ 26.050/HZ

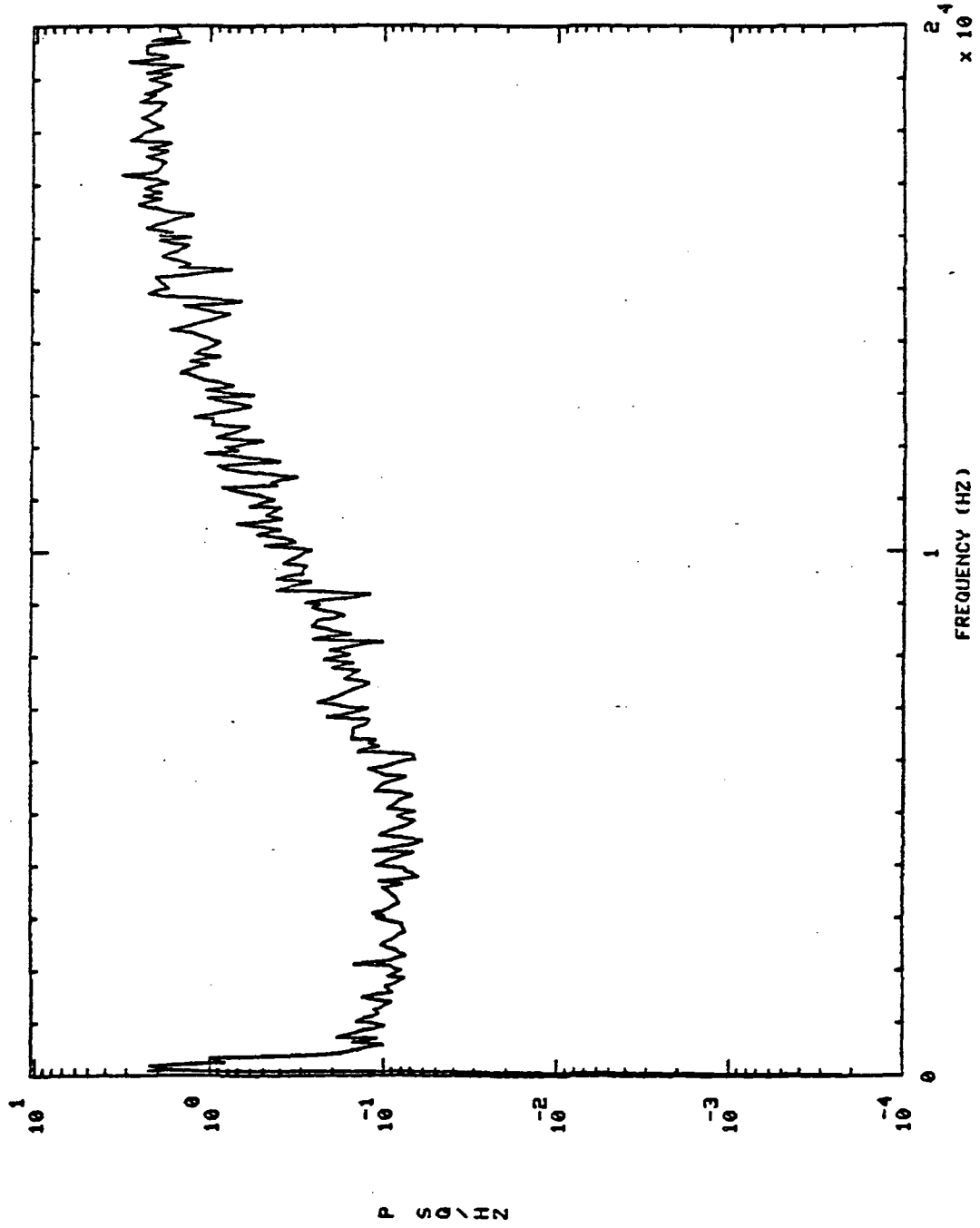


750103 MCC HOT GAS IN PR S+ 26.01H0,'S

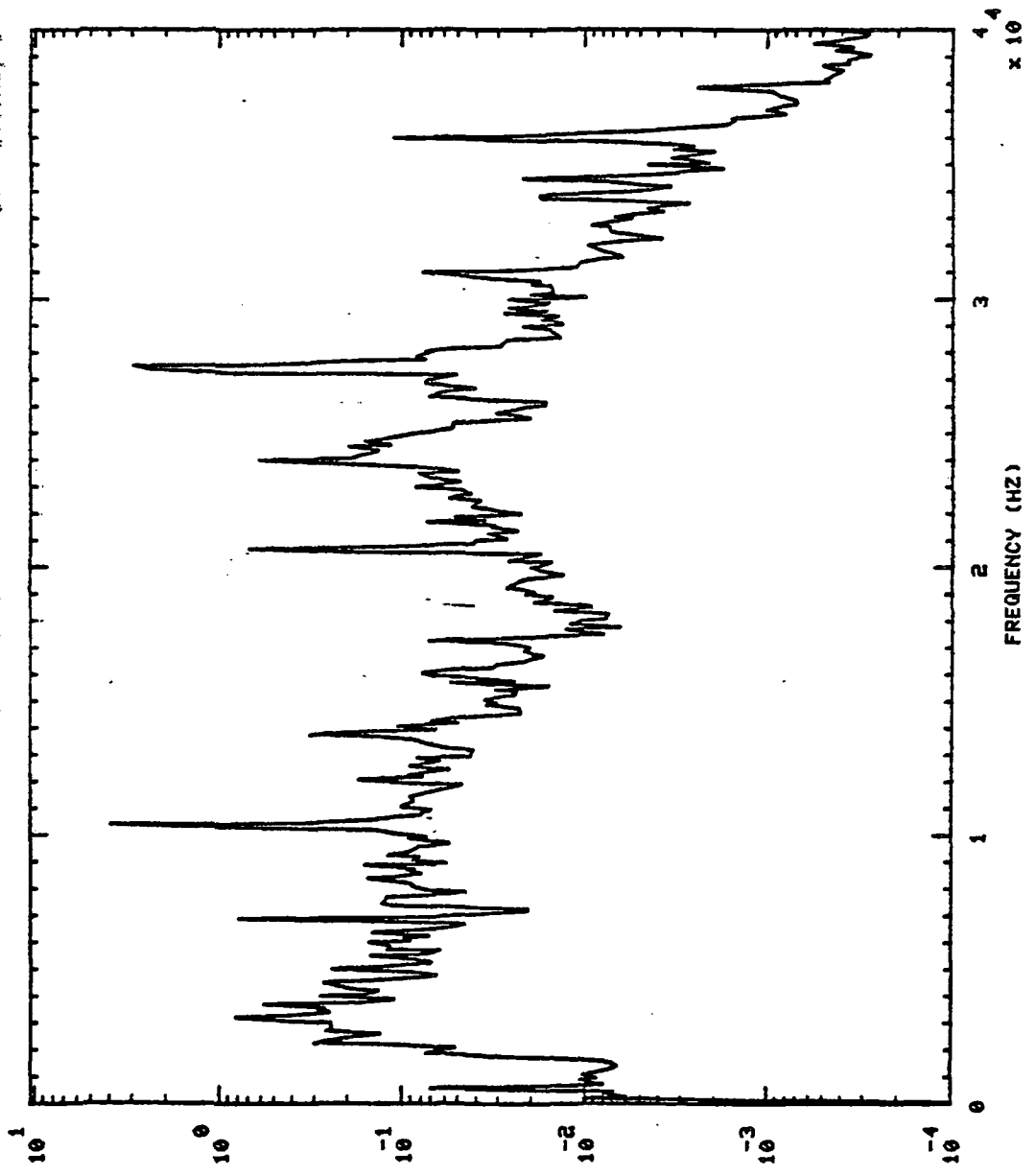


P S Q \ H Z

750103 MCC HOT GAS IN PR S+ 30.050/HZ



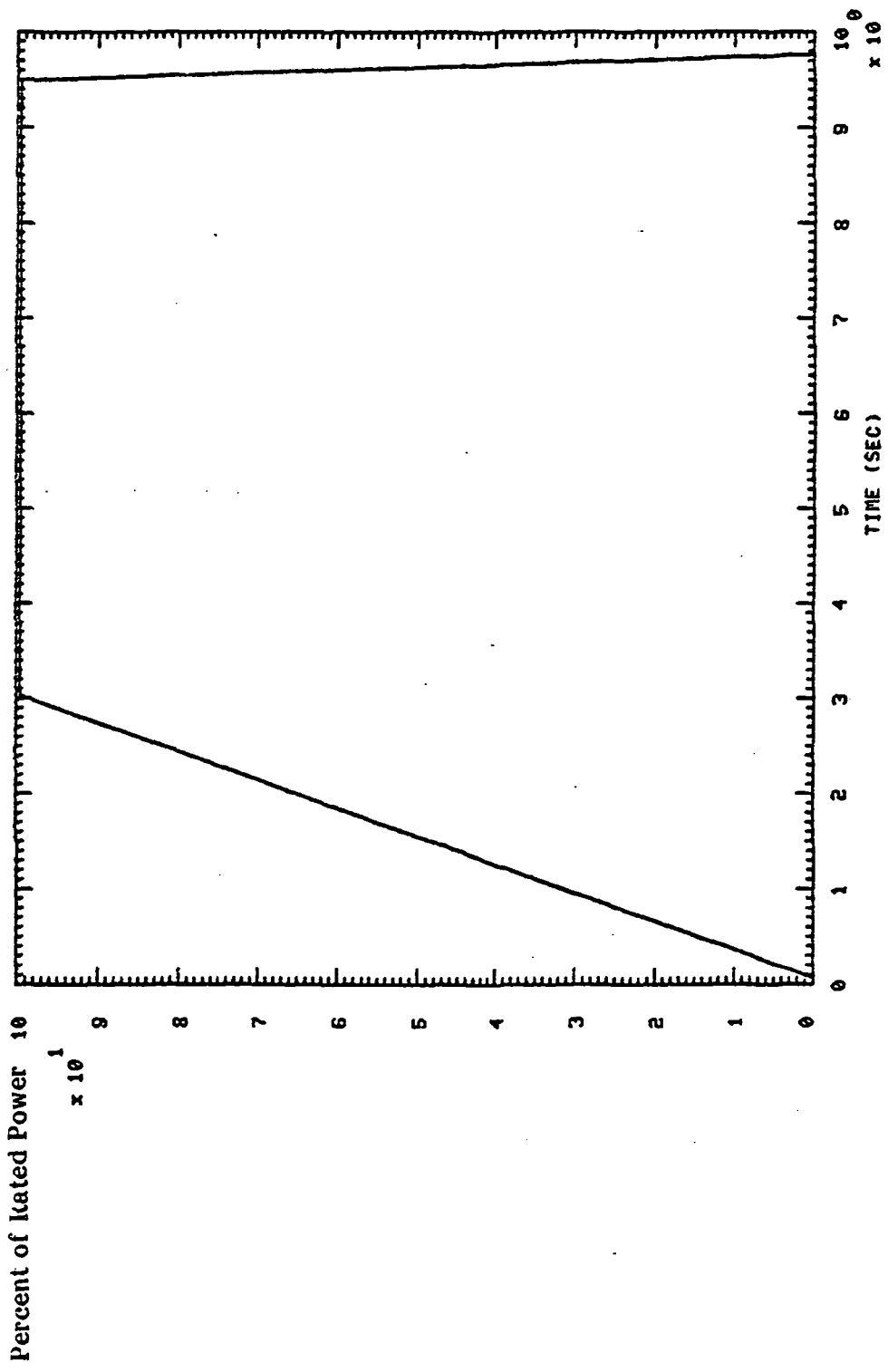
750100 MCC LONG ACCEL 1 ST 5:01H0.75



P S D / HZ

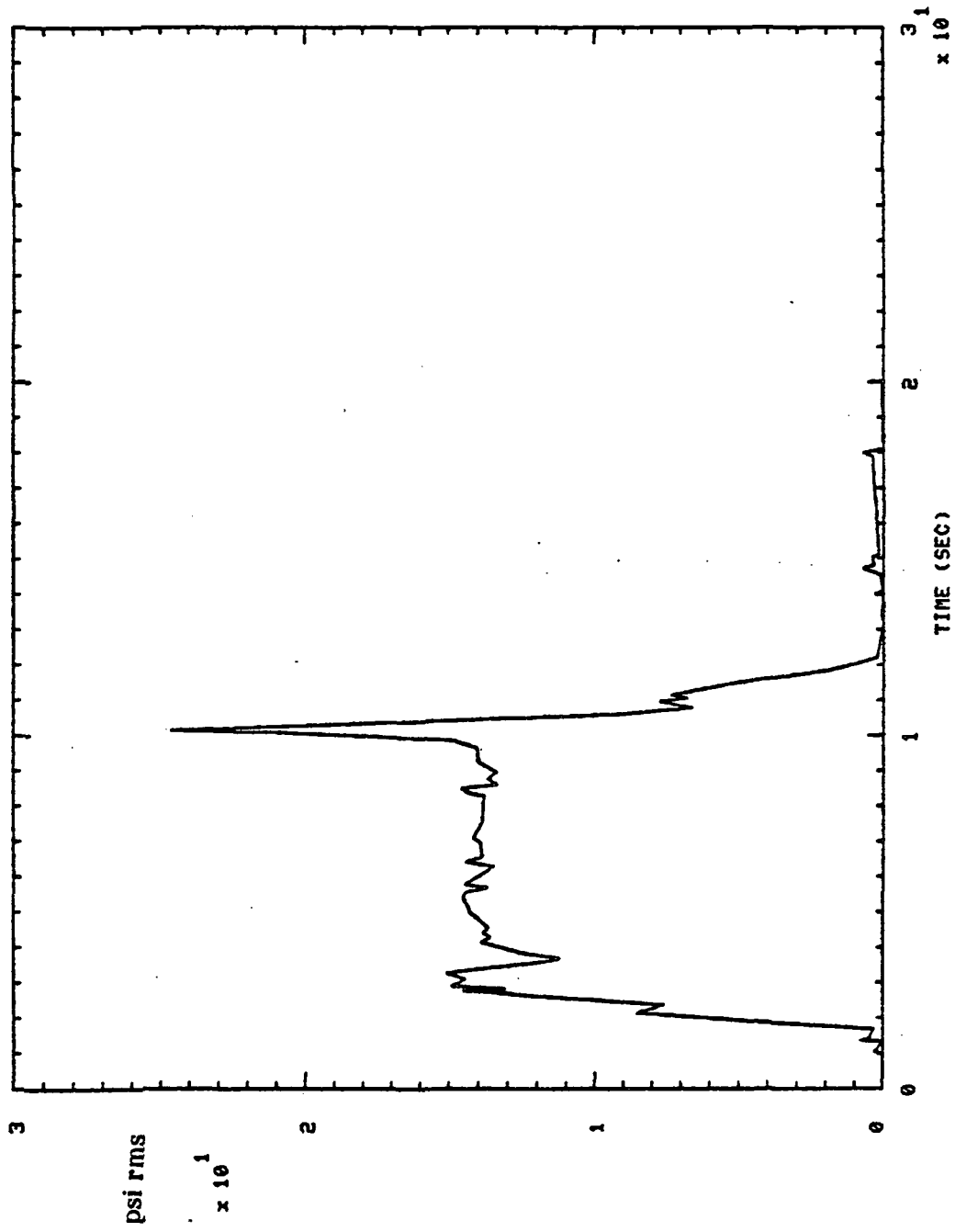


750104 THRUST (UNFILTERED )

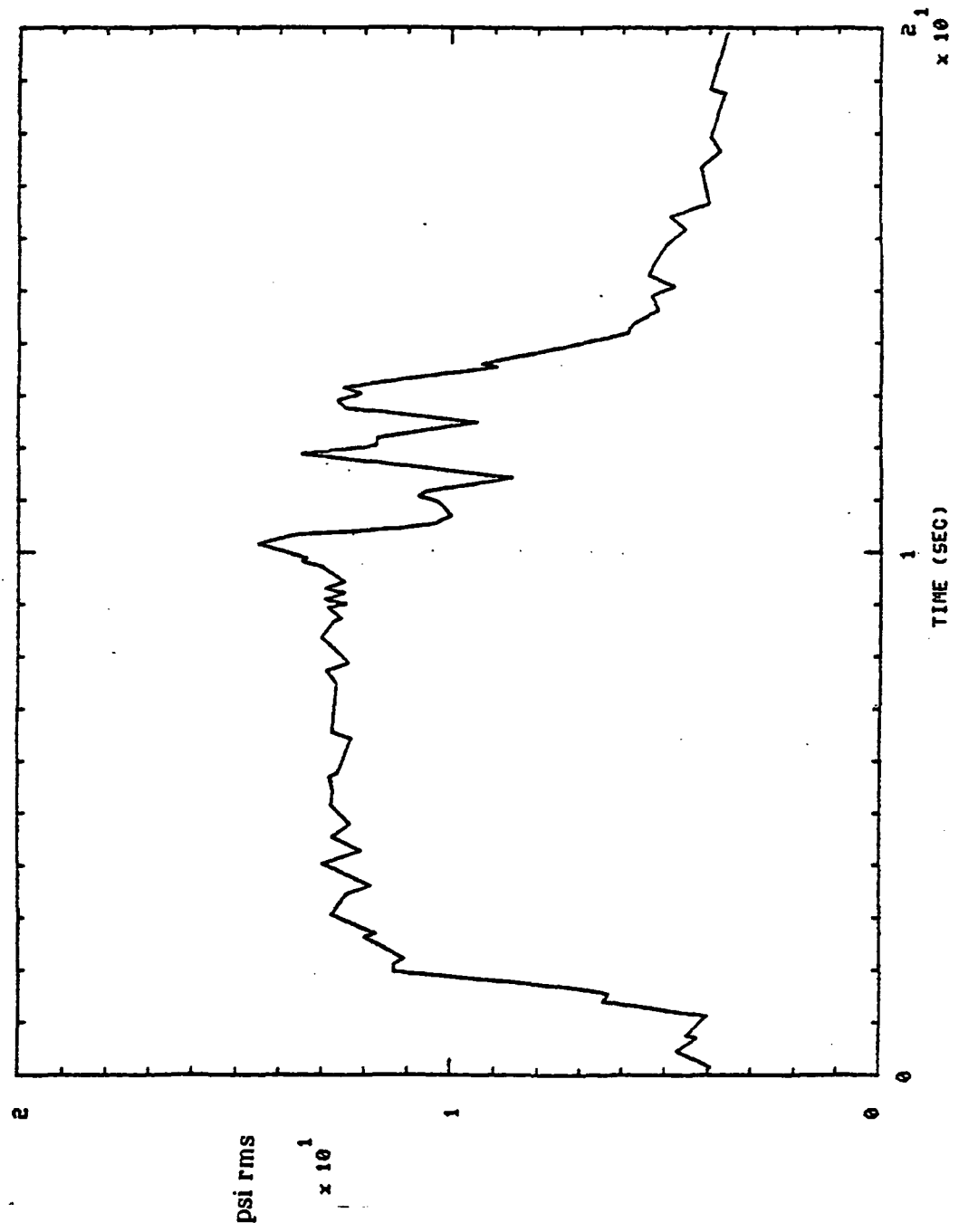


( 1 - 20K HZ )

750104 LFPF IN PR



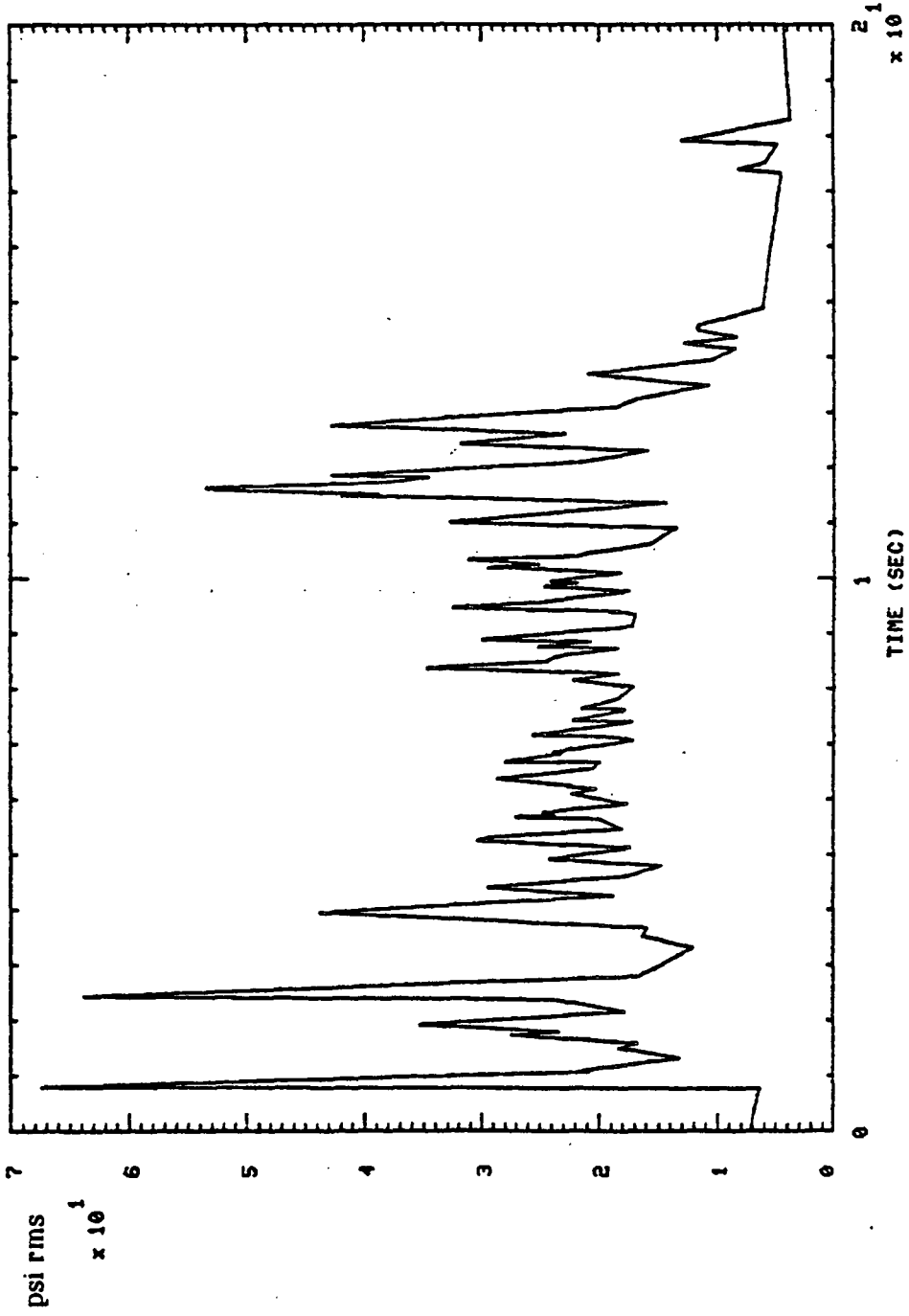
750104 LPOP DS PR (1 - 20K HZ )



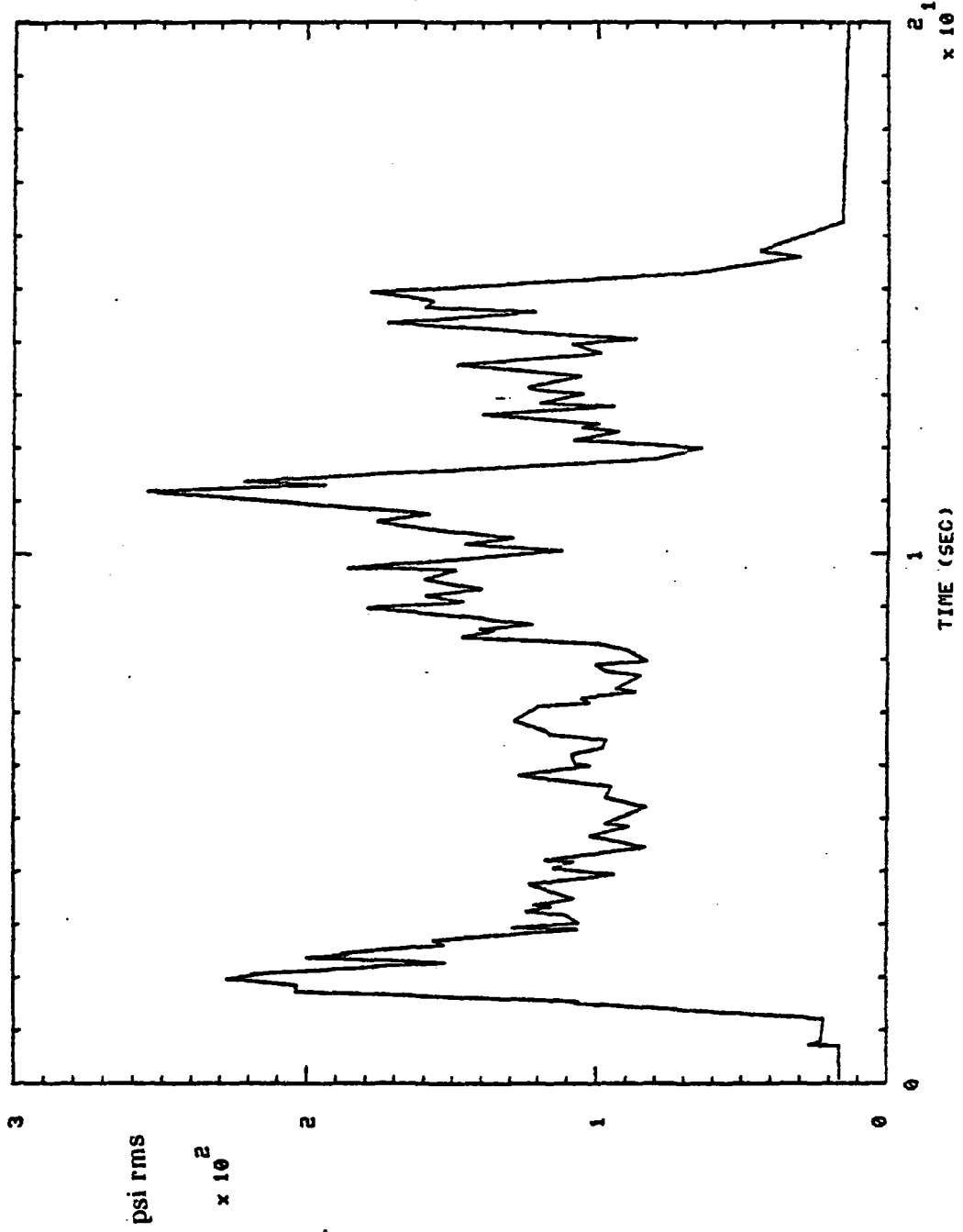
( 1 - 20K HZ )

HPOP BAL CAU PR2

750104

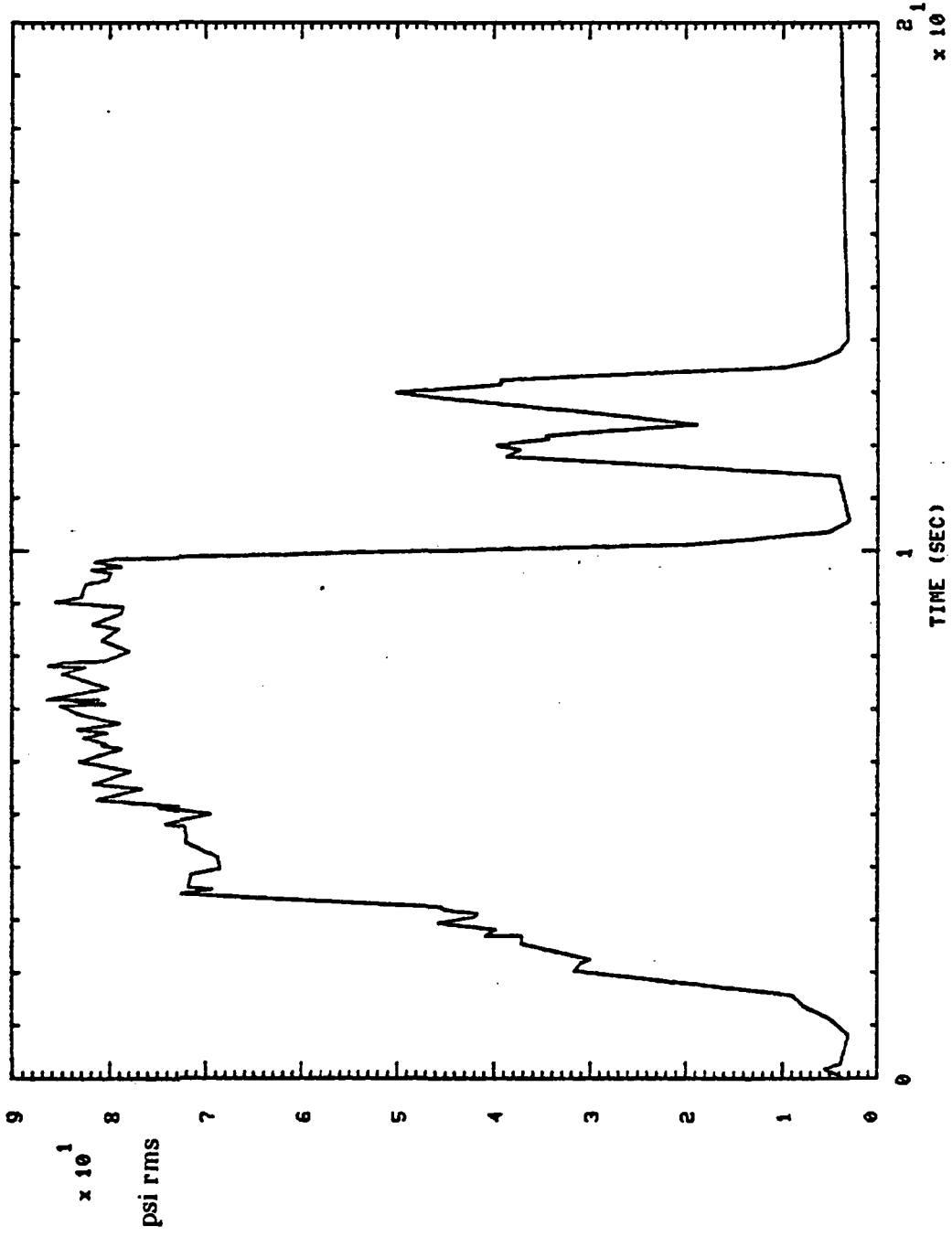


750104 HPOP BAL CAU PRI (1 - 20K HZ )

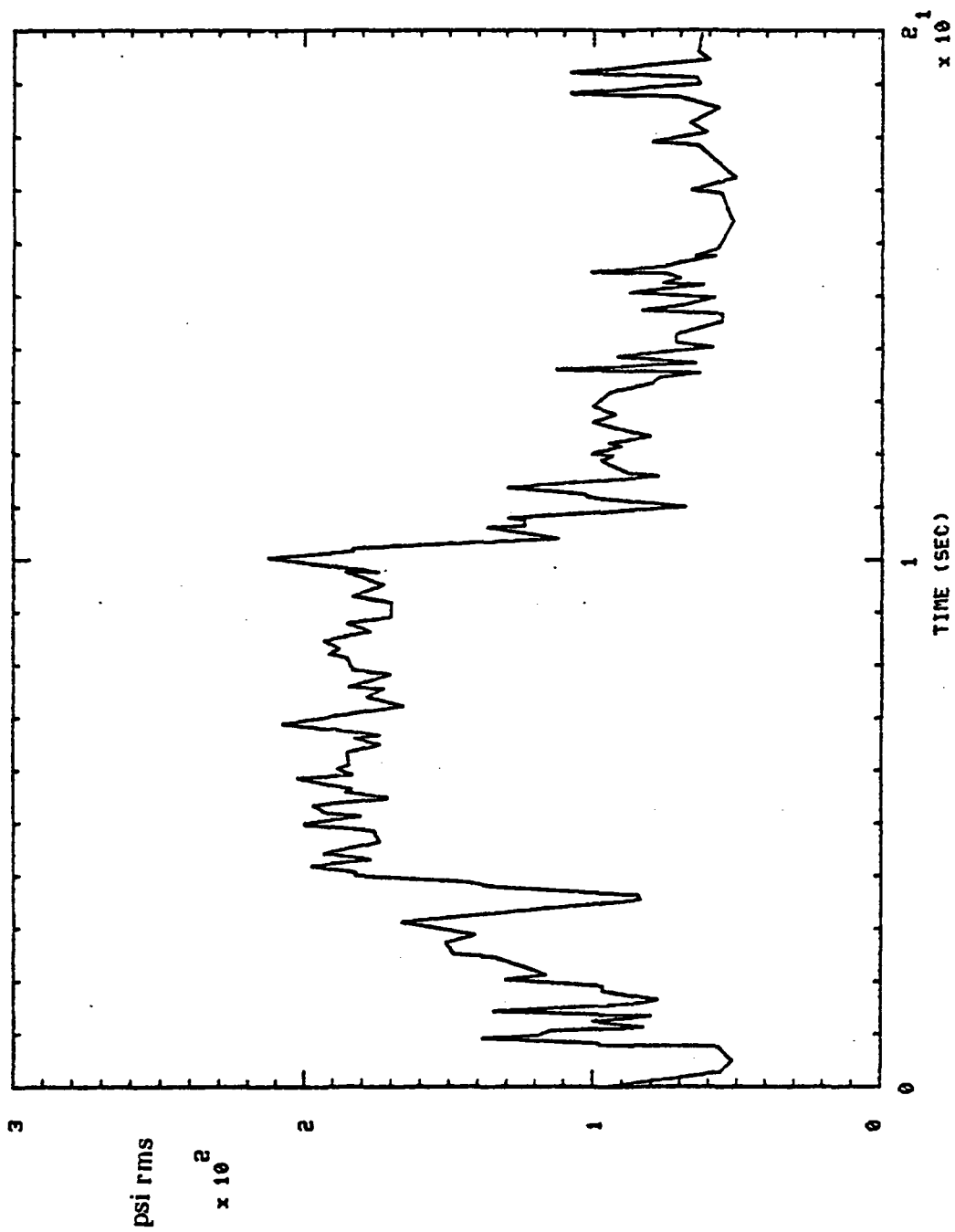


( 1 - 20K HZ )

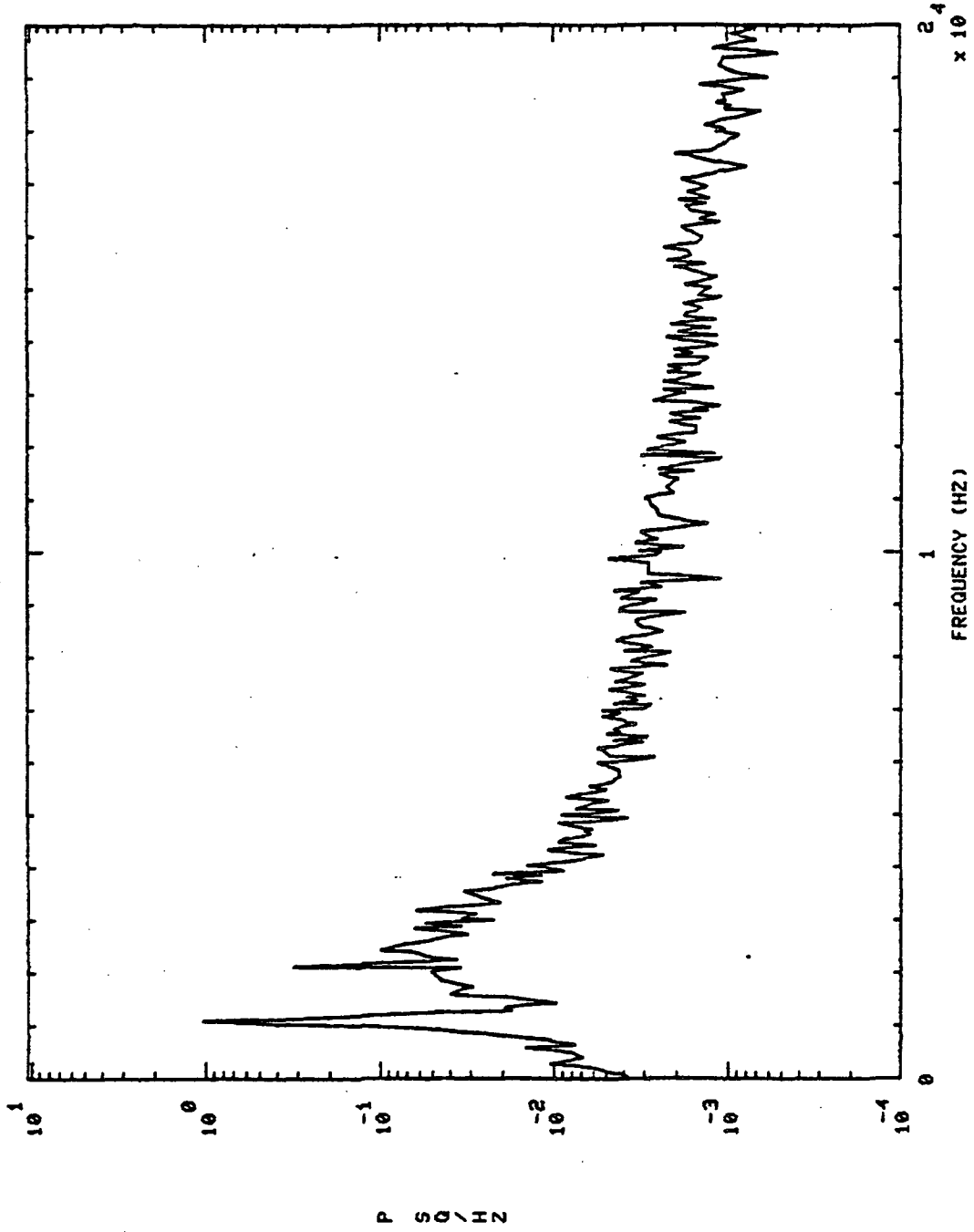
750104 HPOP DISC PR



750104 MCC HOT GAS IN PR (1 - 20K HZ )



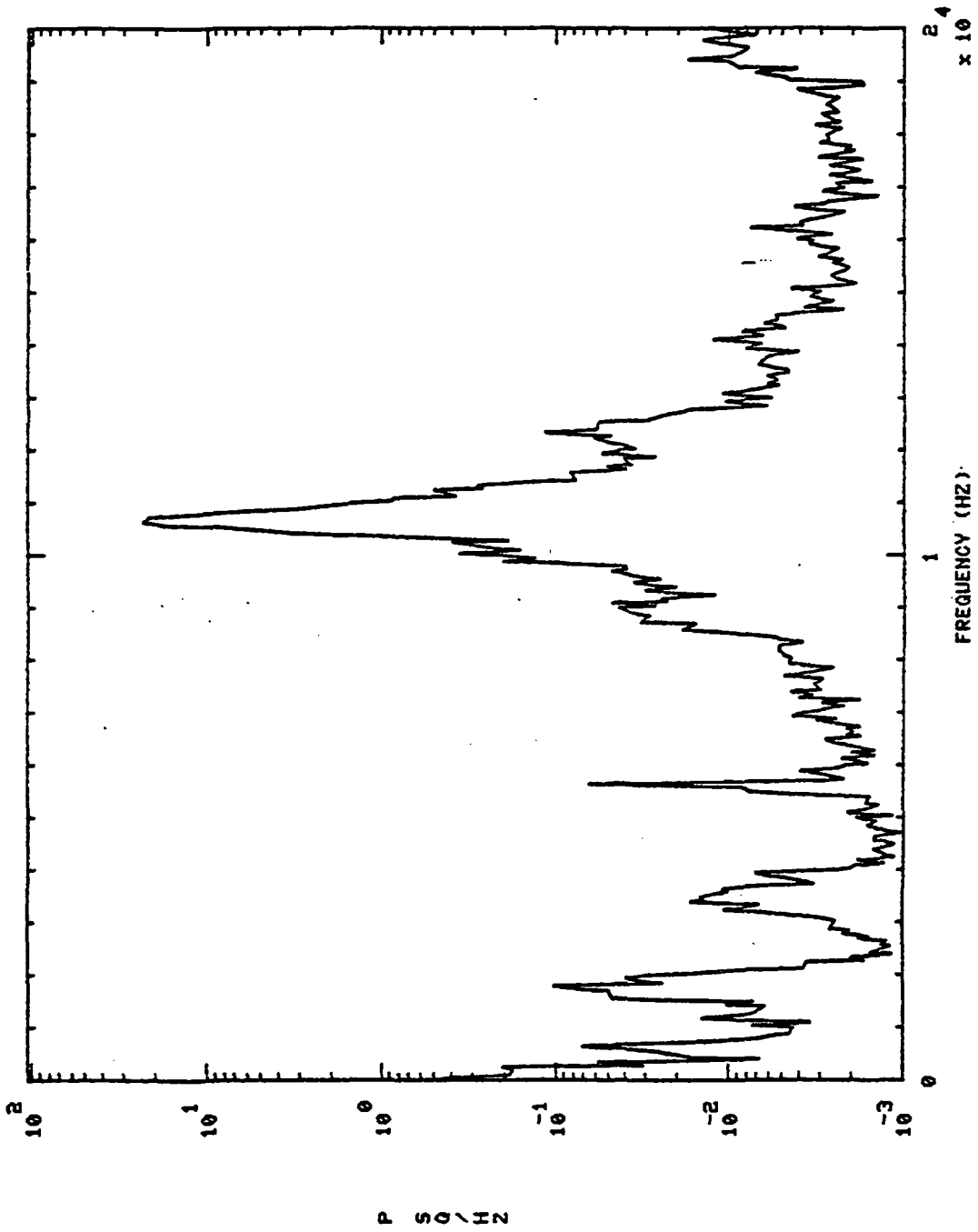
750104 LPFP IN PR S+ 6.050/HZ



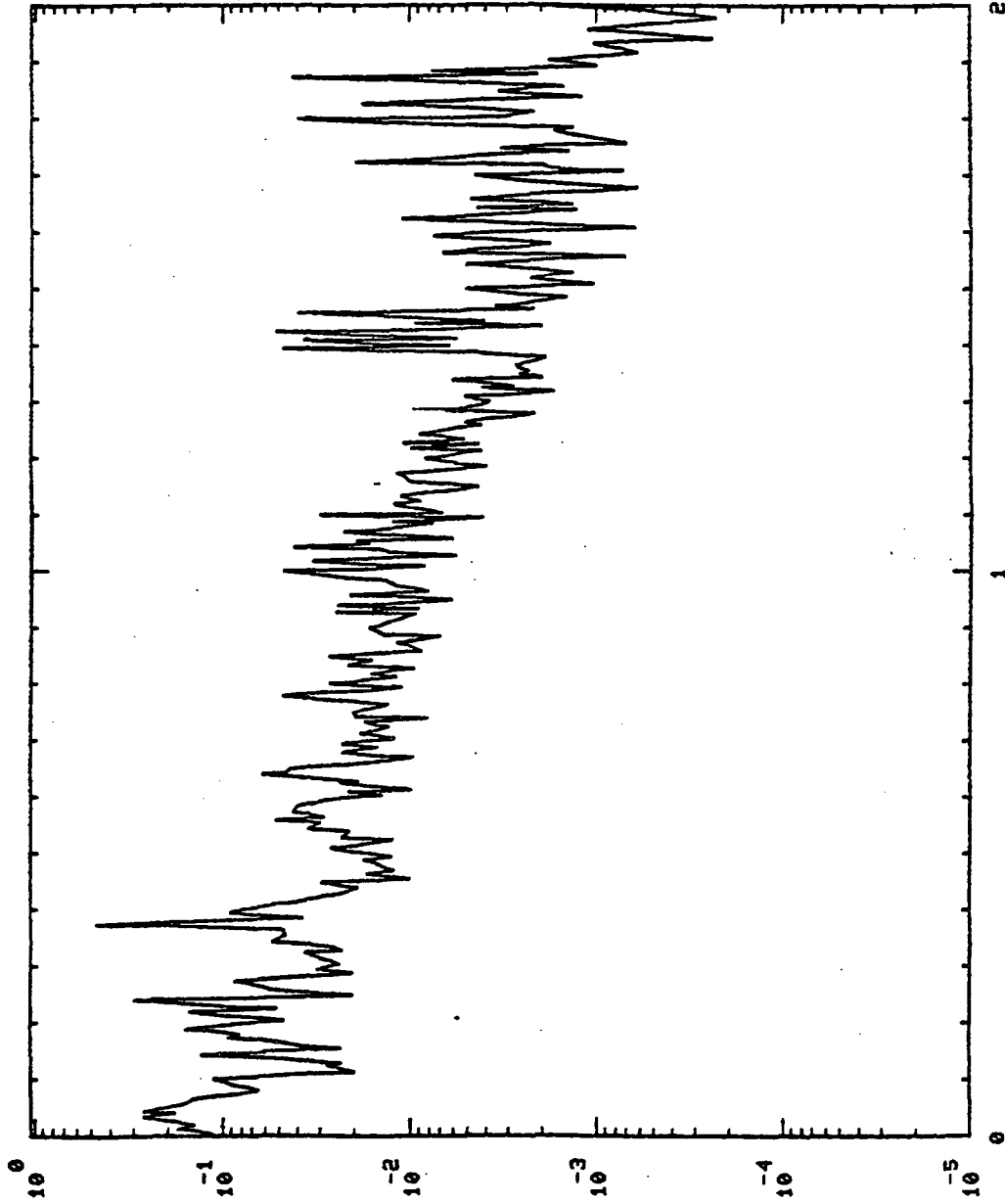


6+ 6.01H0,'S

750104 LPOP DS PR



750104 HPOP BAL CAU PR2 S+ 6.050/HZ

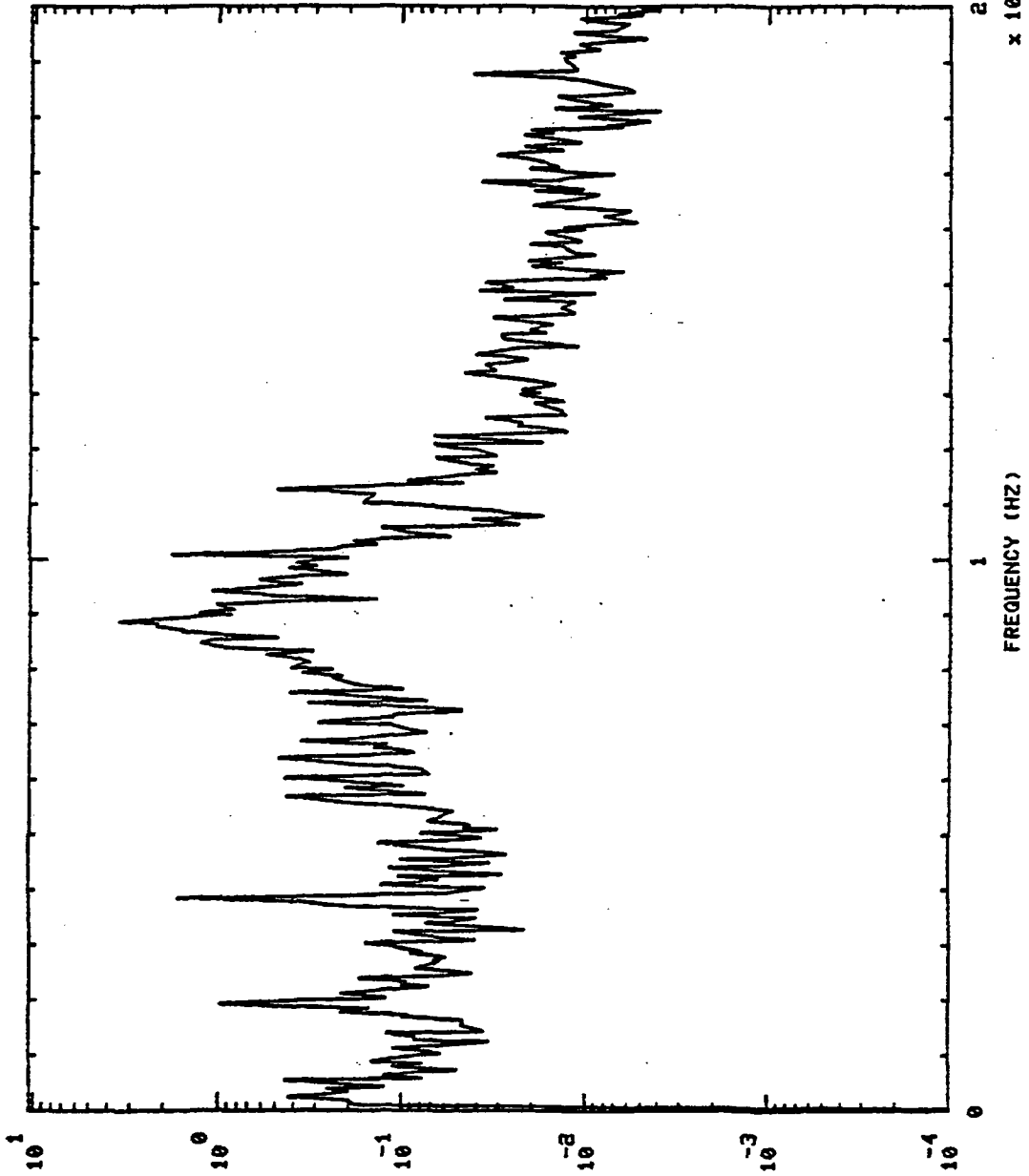


P S D \ HZ

FREQUENCY (HZ)

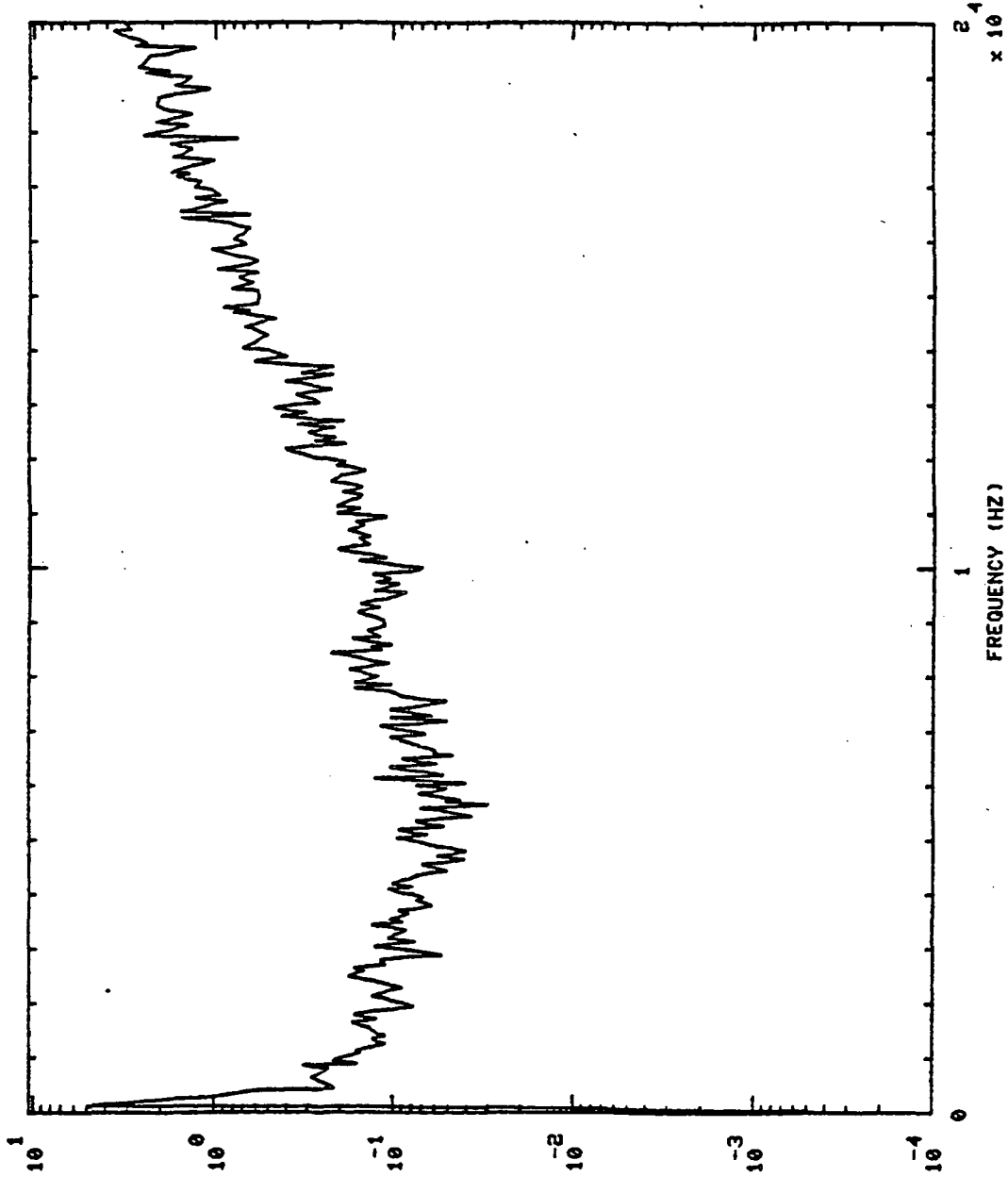
$2.4 \times 10^4$

750104 NPOP DISC PR S+ 6.01H0.'S



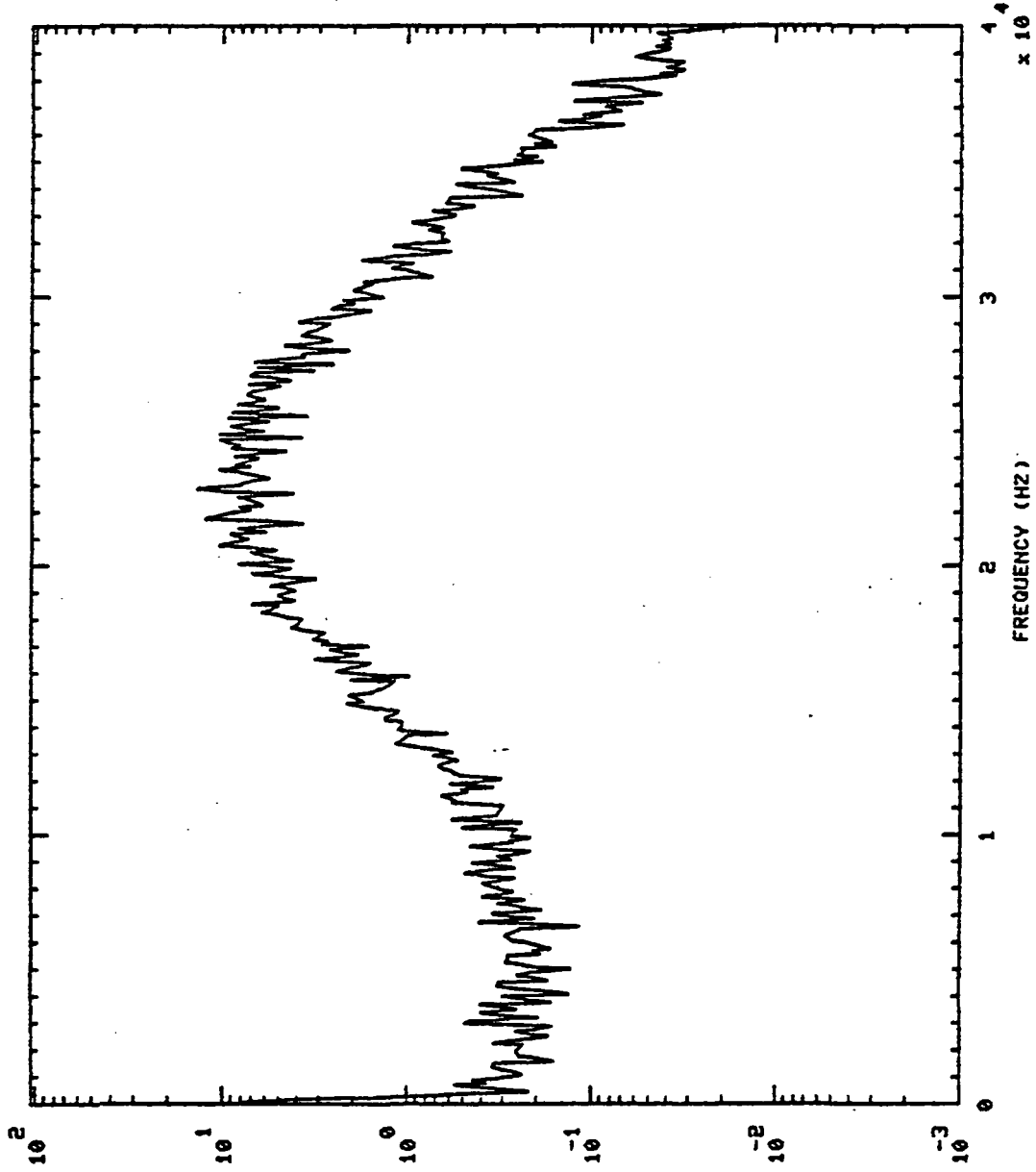
P S G / H Z

750104 MCC HOT GAS IN PR S+ 6.050/HZ



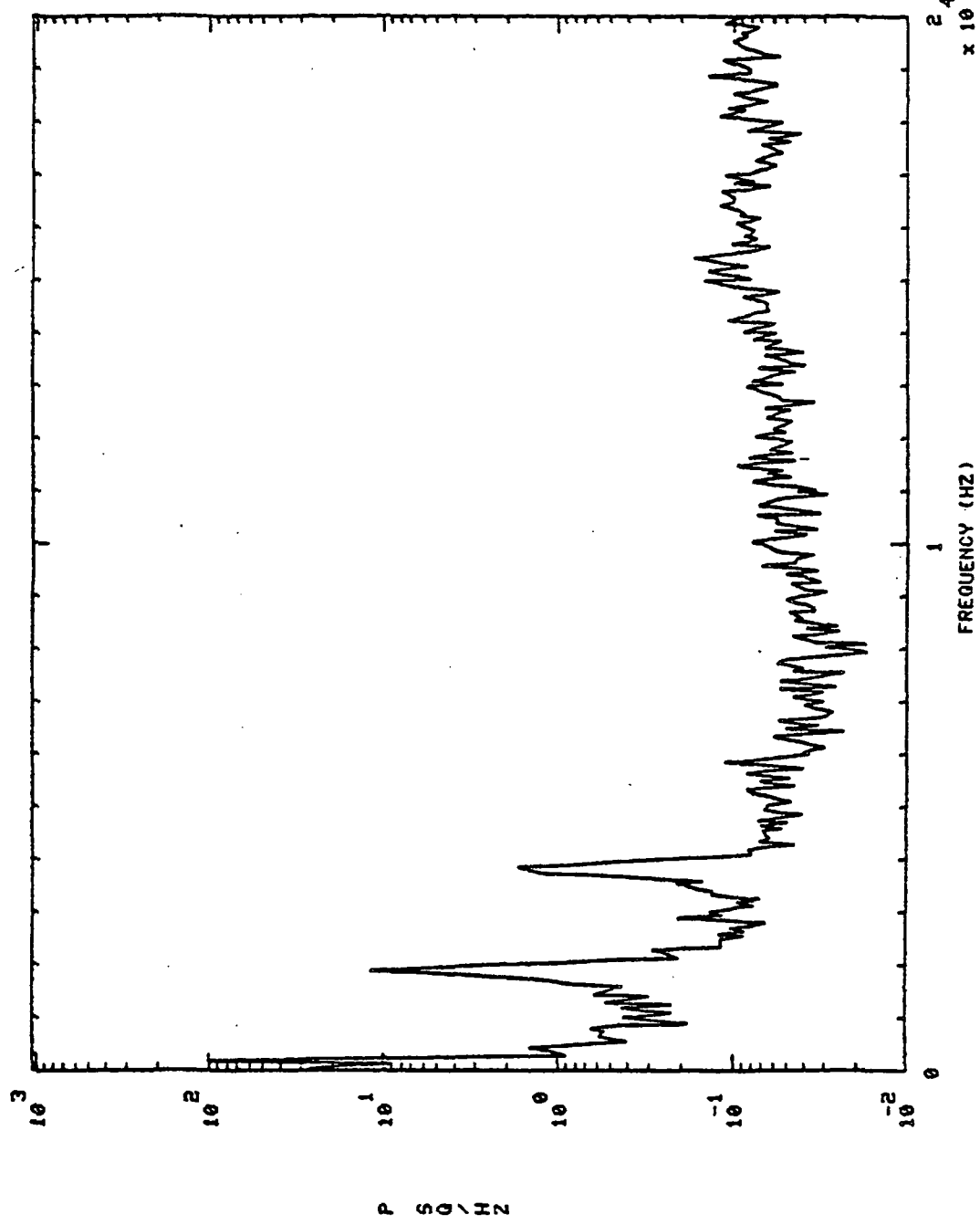
P S D / H Z

750104 MCC HOT GAS IN PR S+ 6.01H0,'S



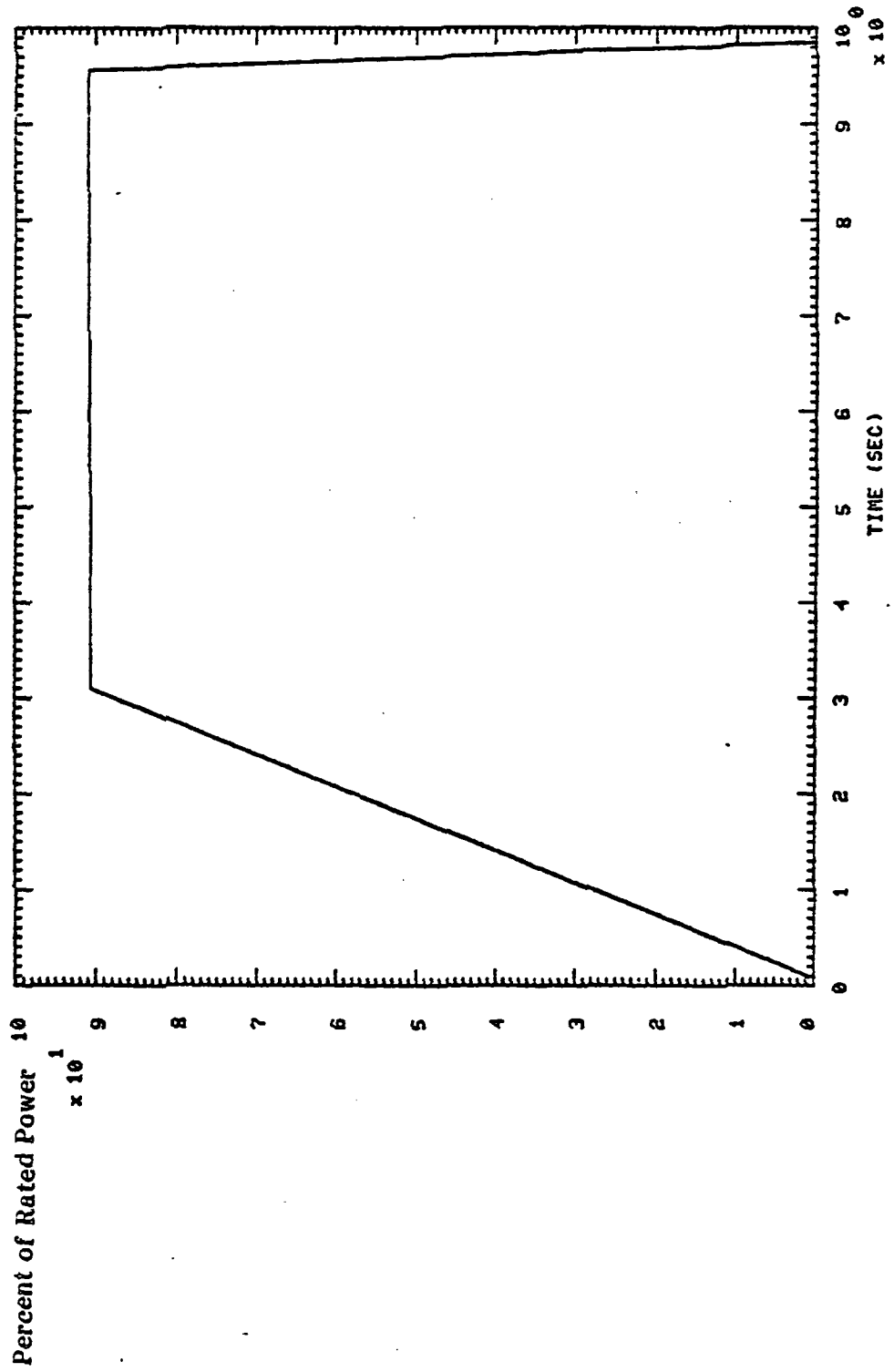
P S D \ H Z

750104 PBP DS PR S+ 6.050/HZ



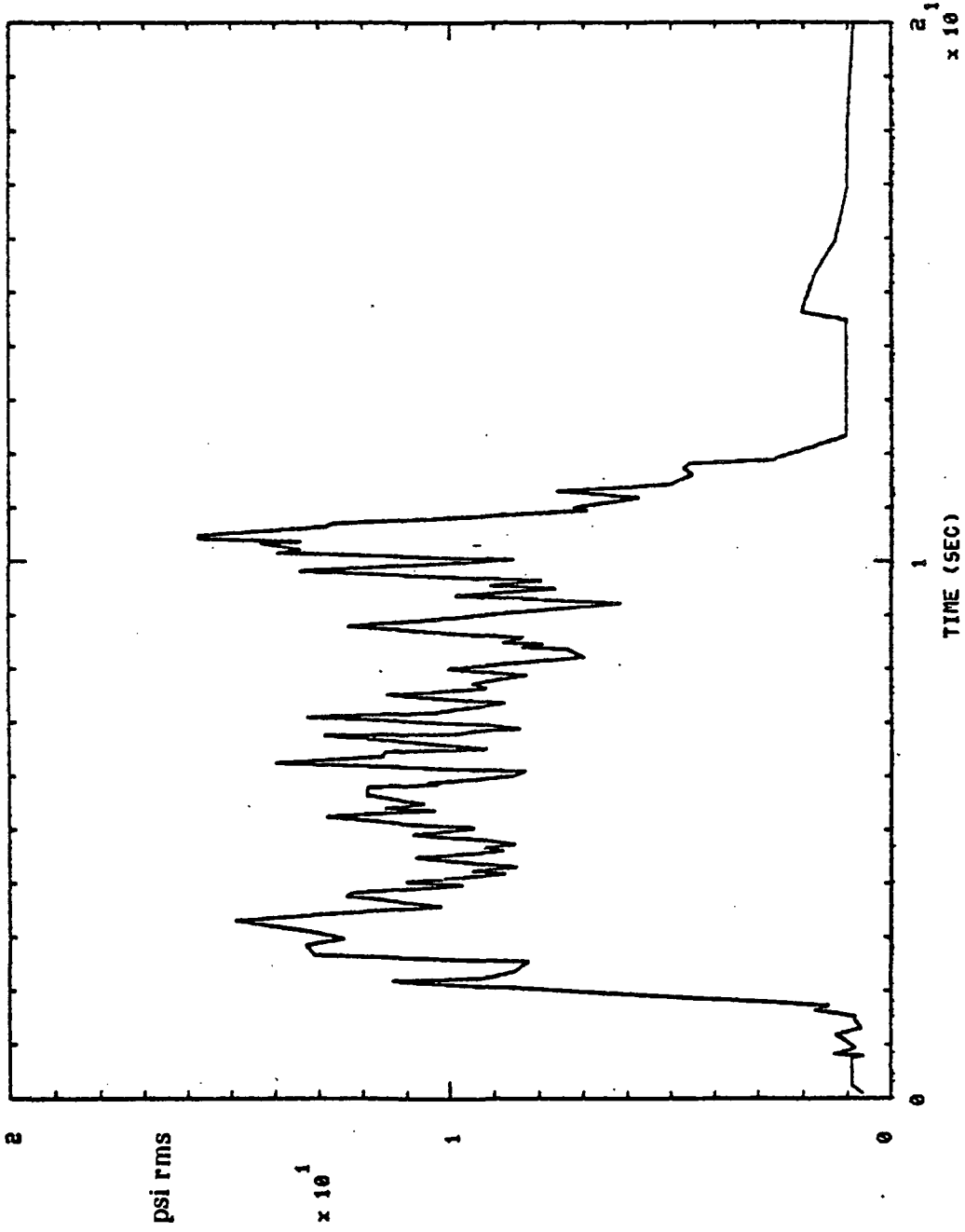
(UNFILTERED )

750105 THRUST



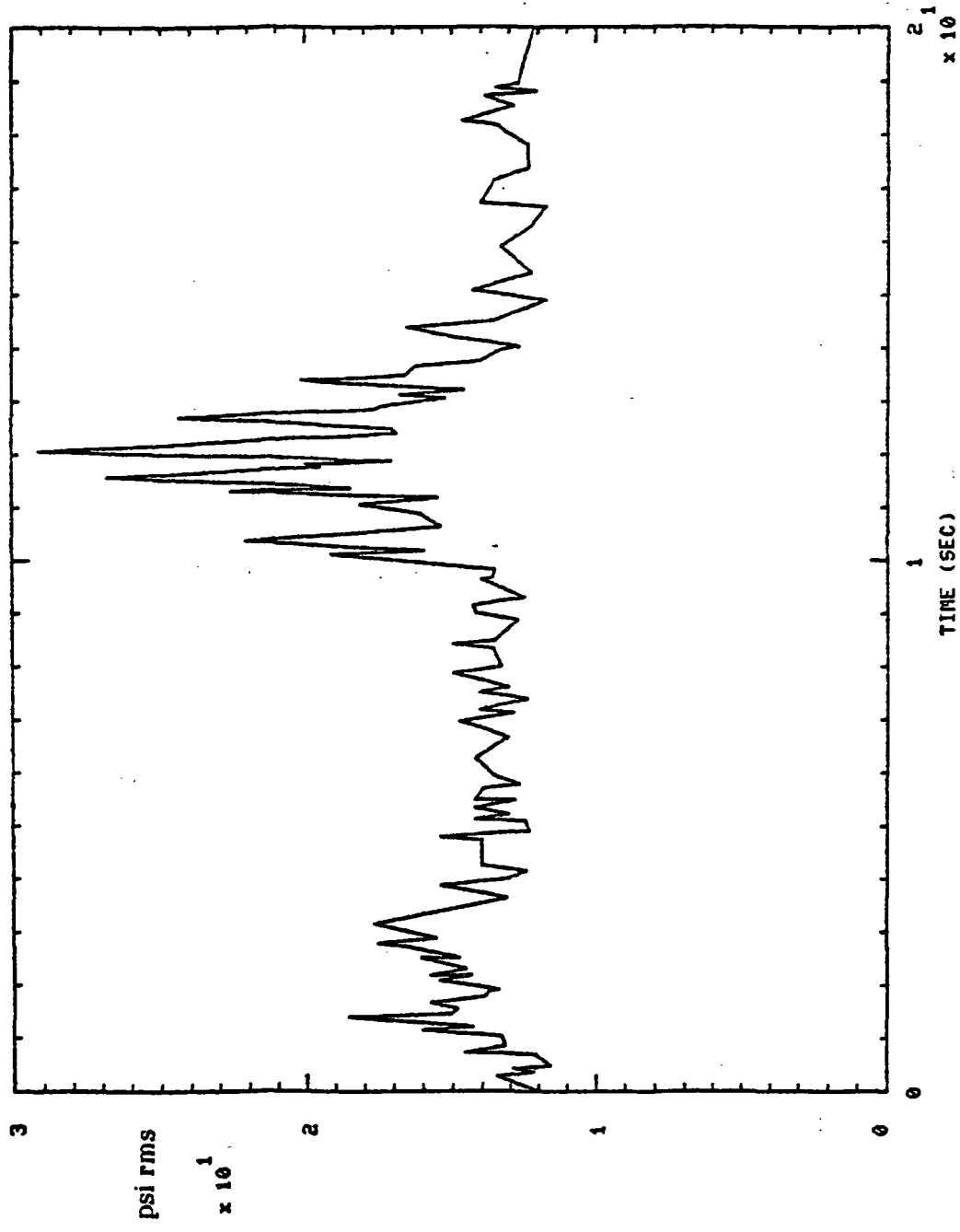
( 1 - 20K HZ )

750105 LFPF IN PR

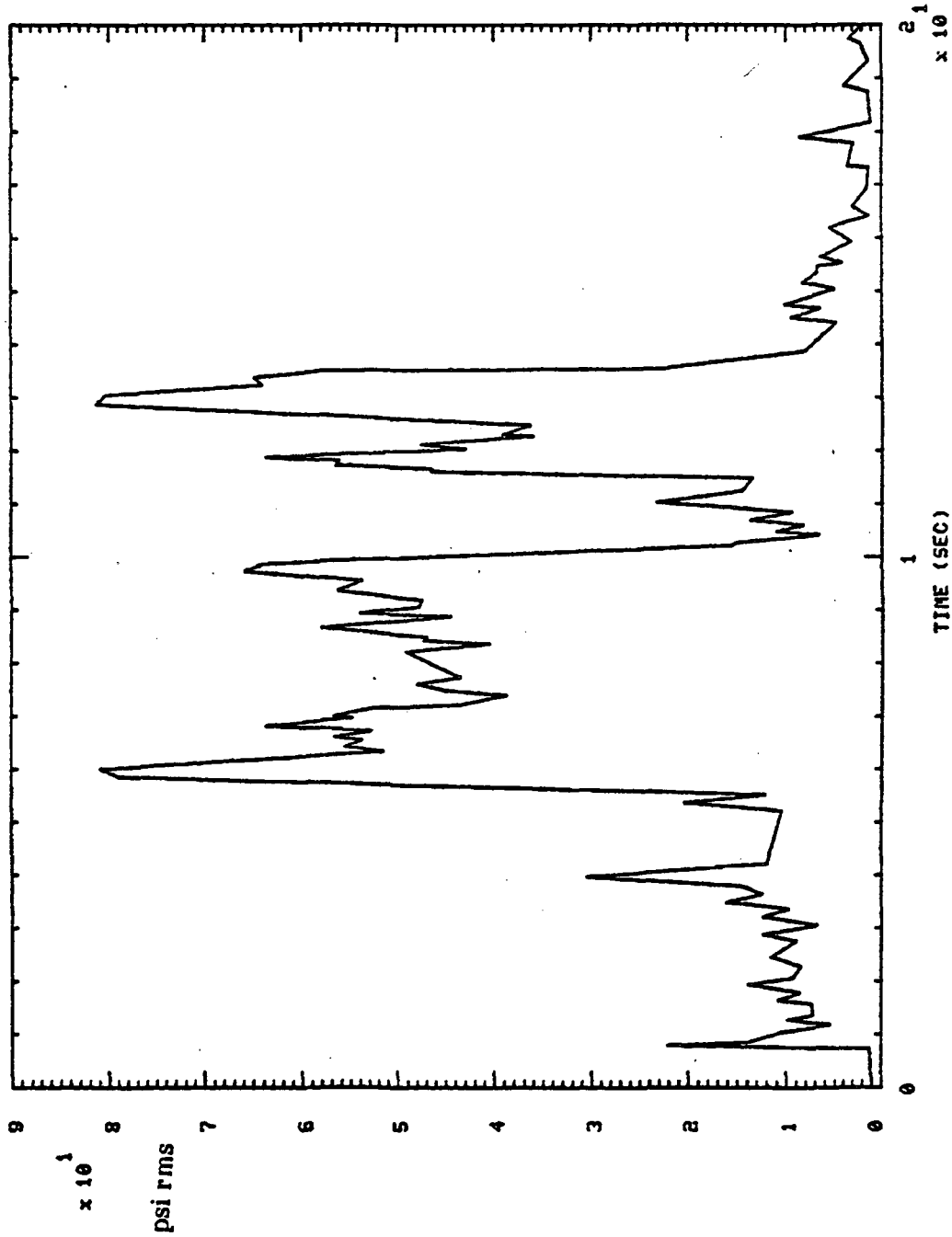




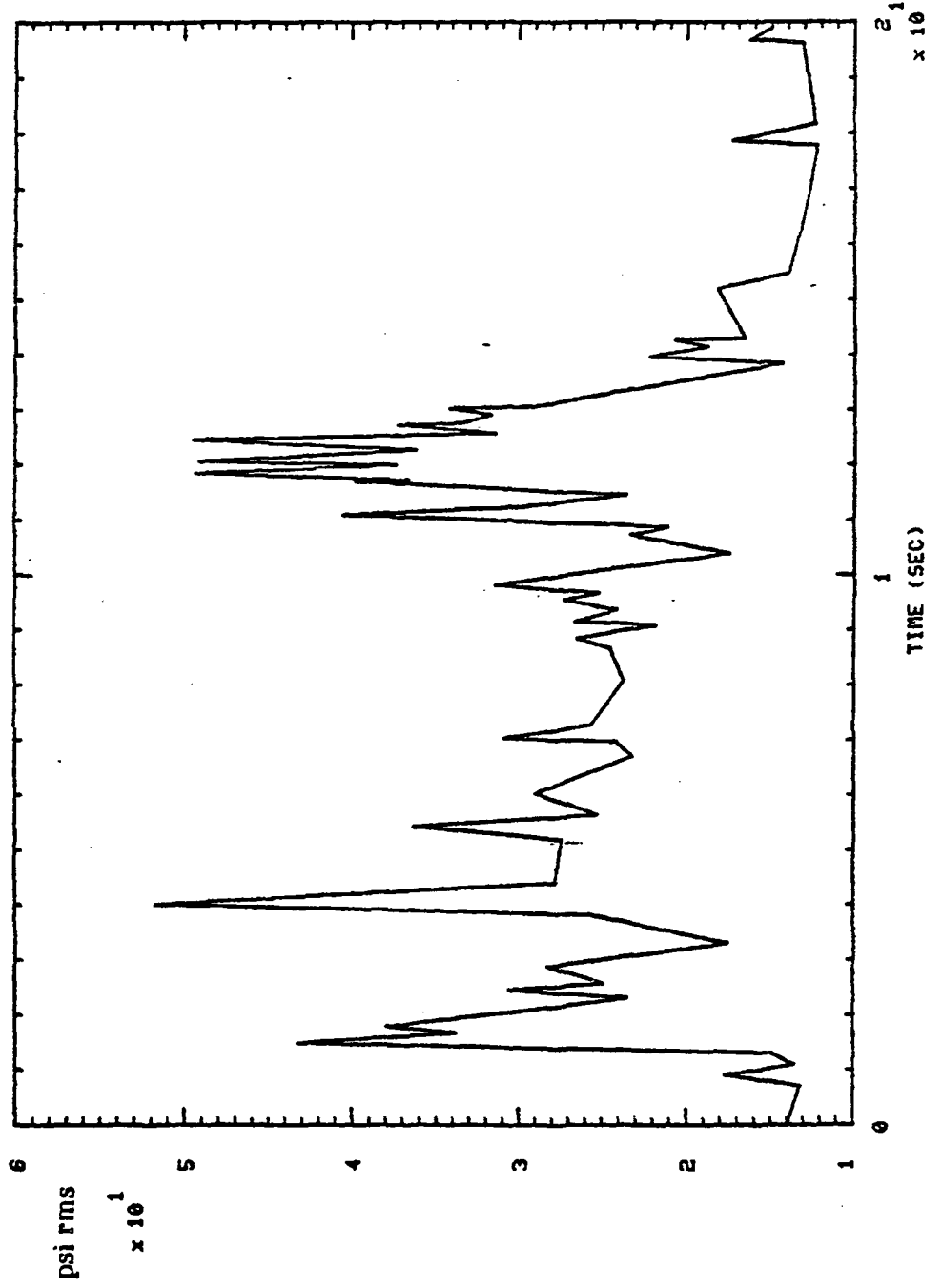
750105 LPOP DS PR (1 - 20K HZ )



750105 HPOP BAL CAU PR2 (1 - 20K HZ )

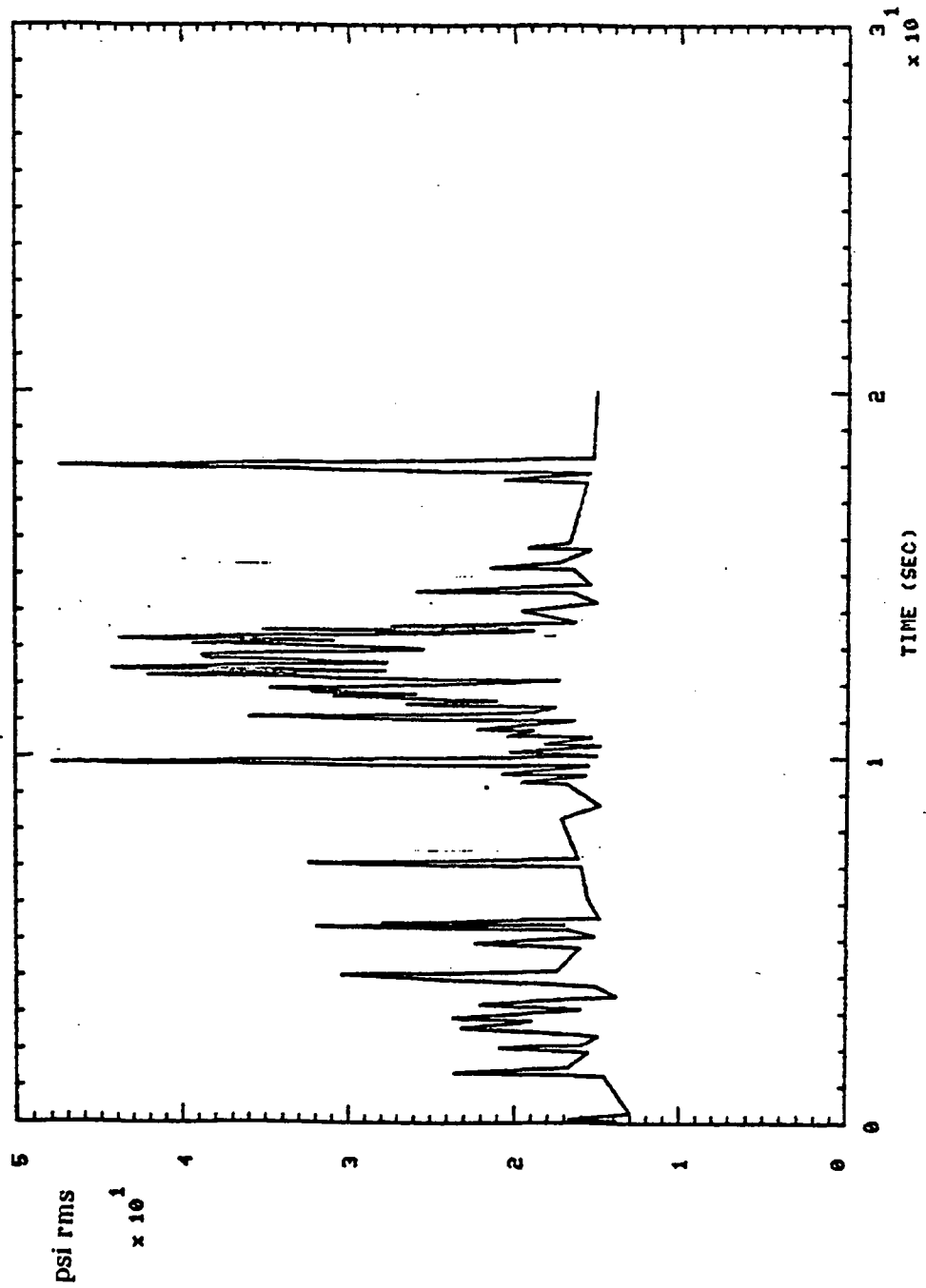


750105 HPOP BAL CAU PR1 (1 - 20K HZ )



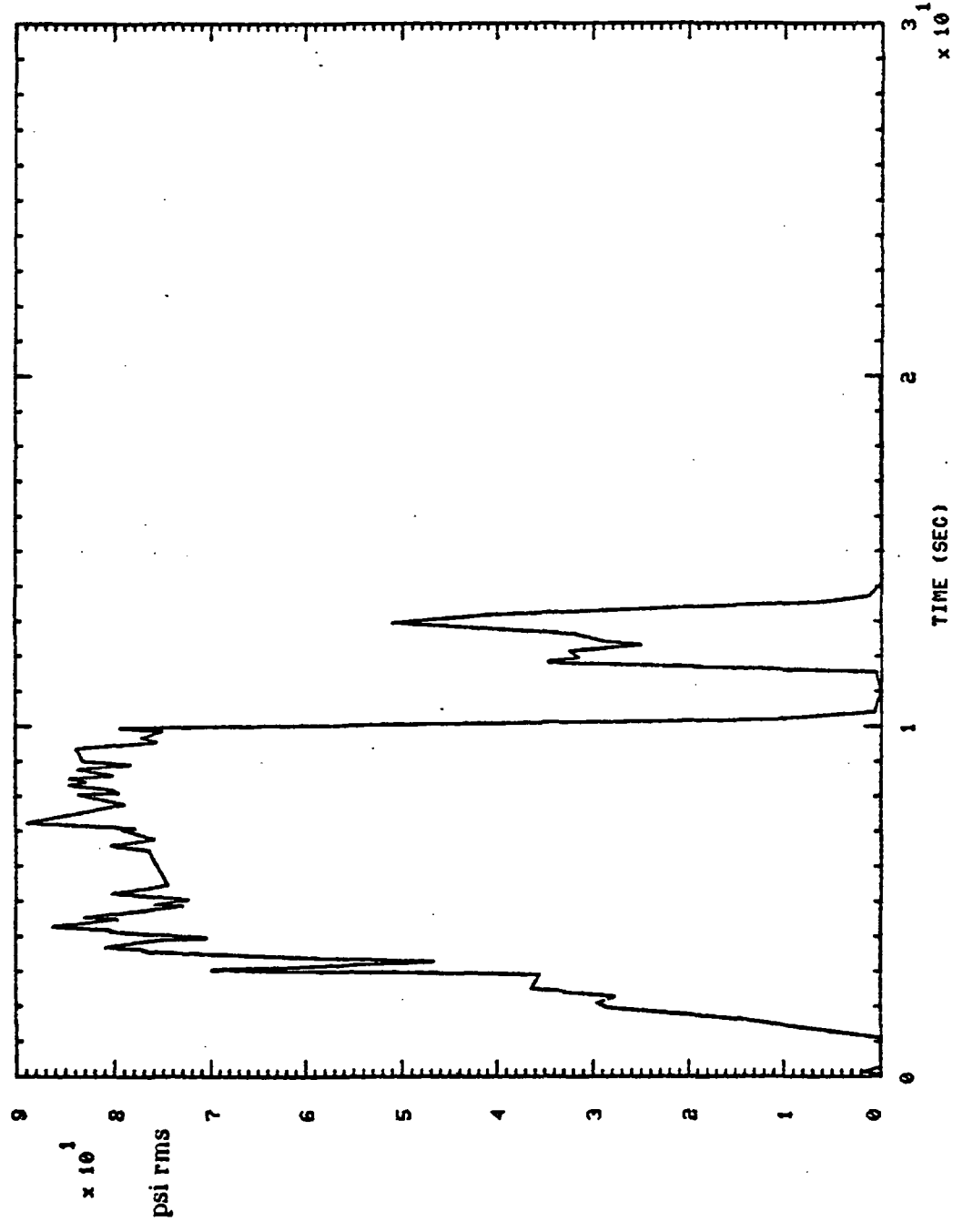
( 1 - 20K HZ )

750105 HPOP DS PR

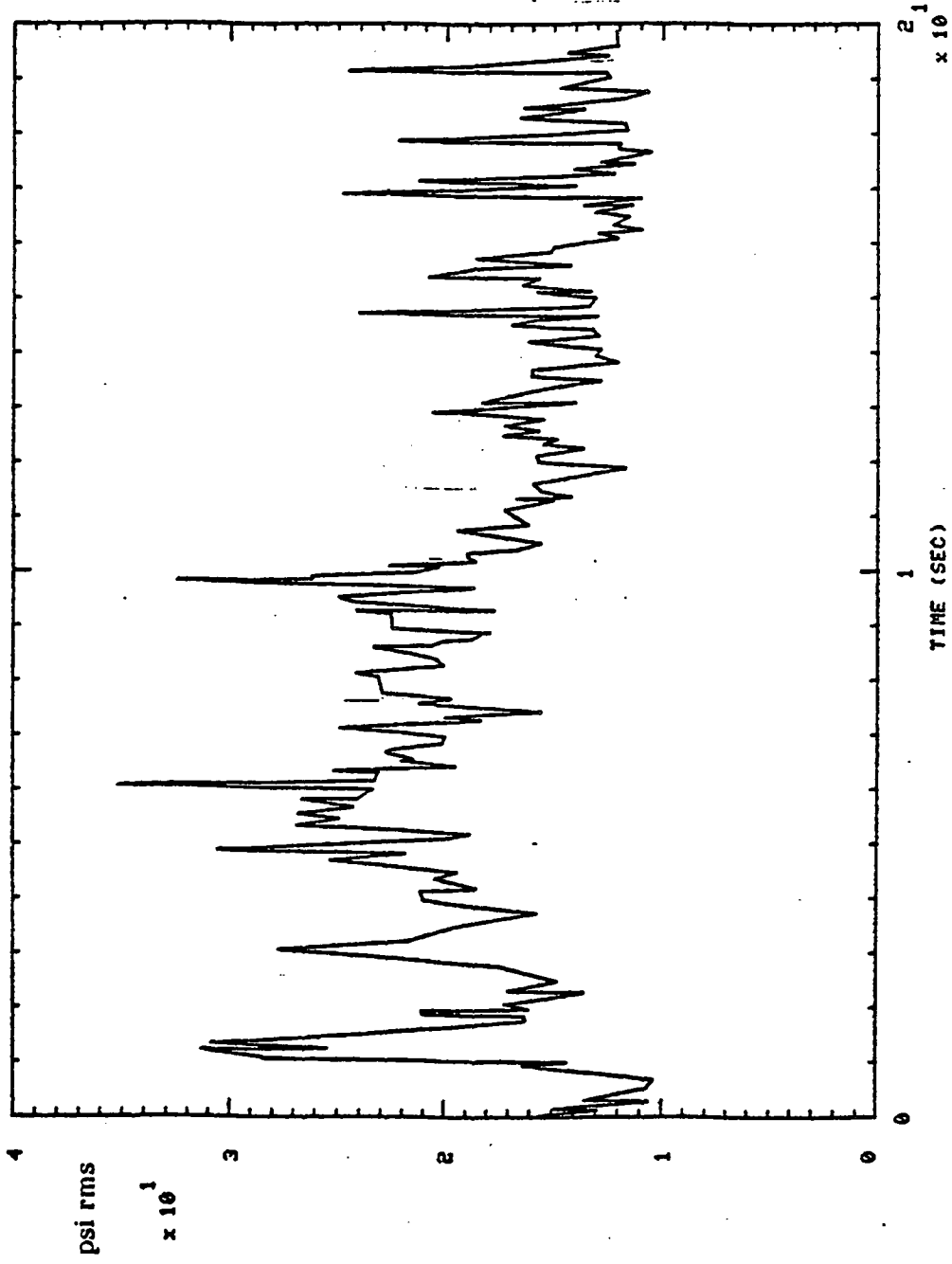


(1 - 20K HZ )

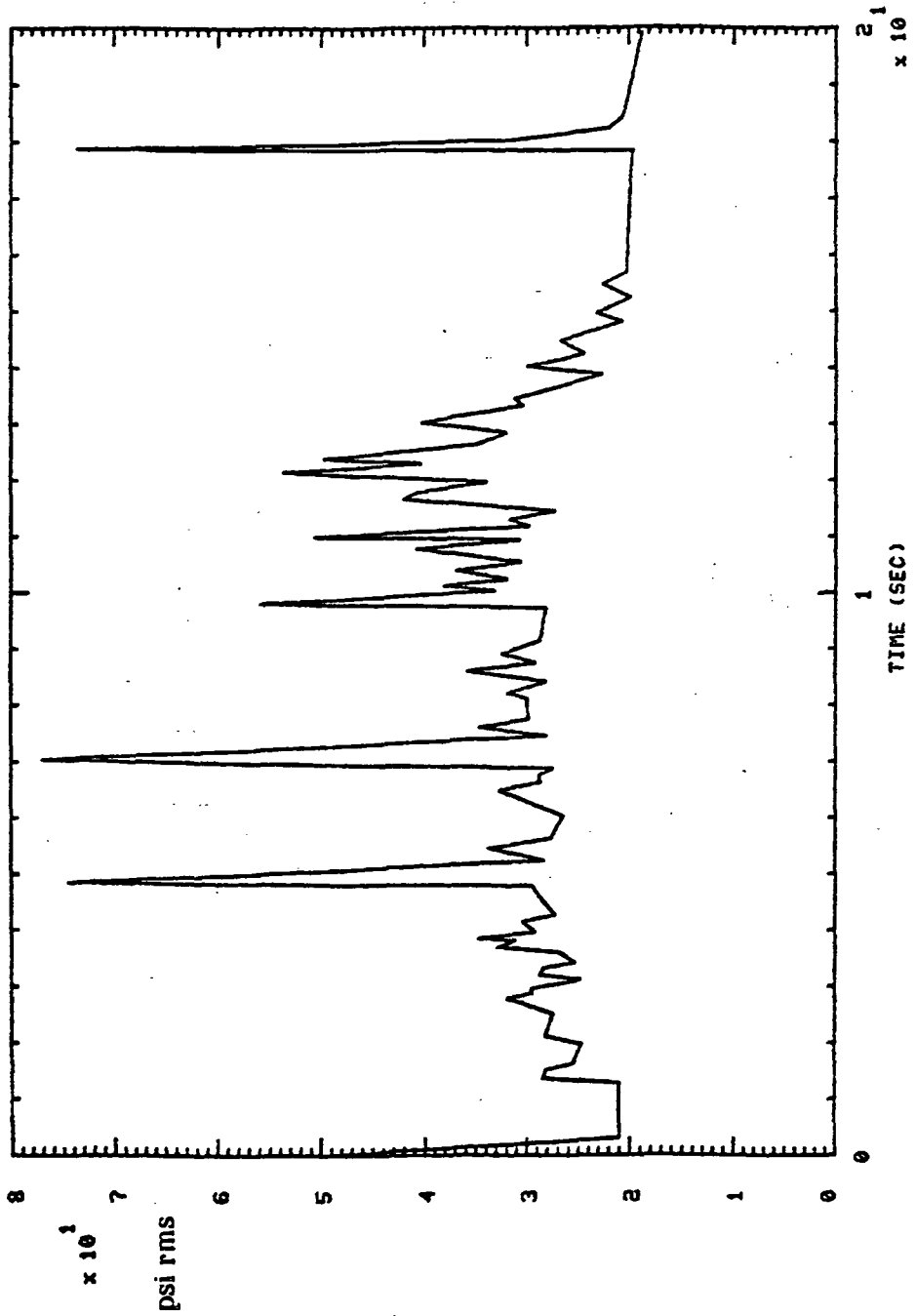
750105 HPOP DISC PR



750105 MCC HOT GAS IN PR (1 - 20K HZ )

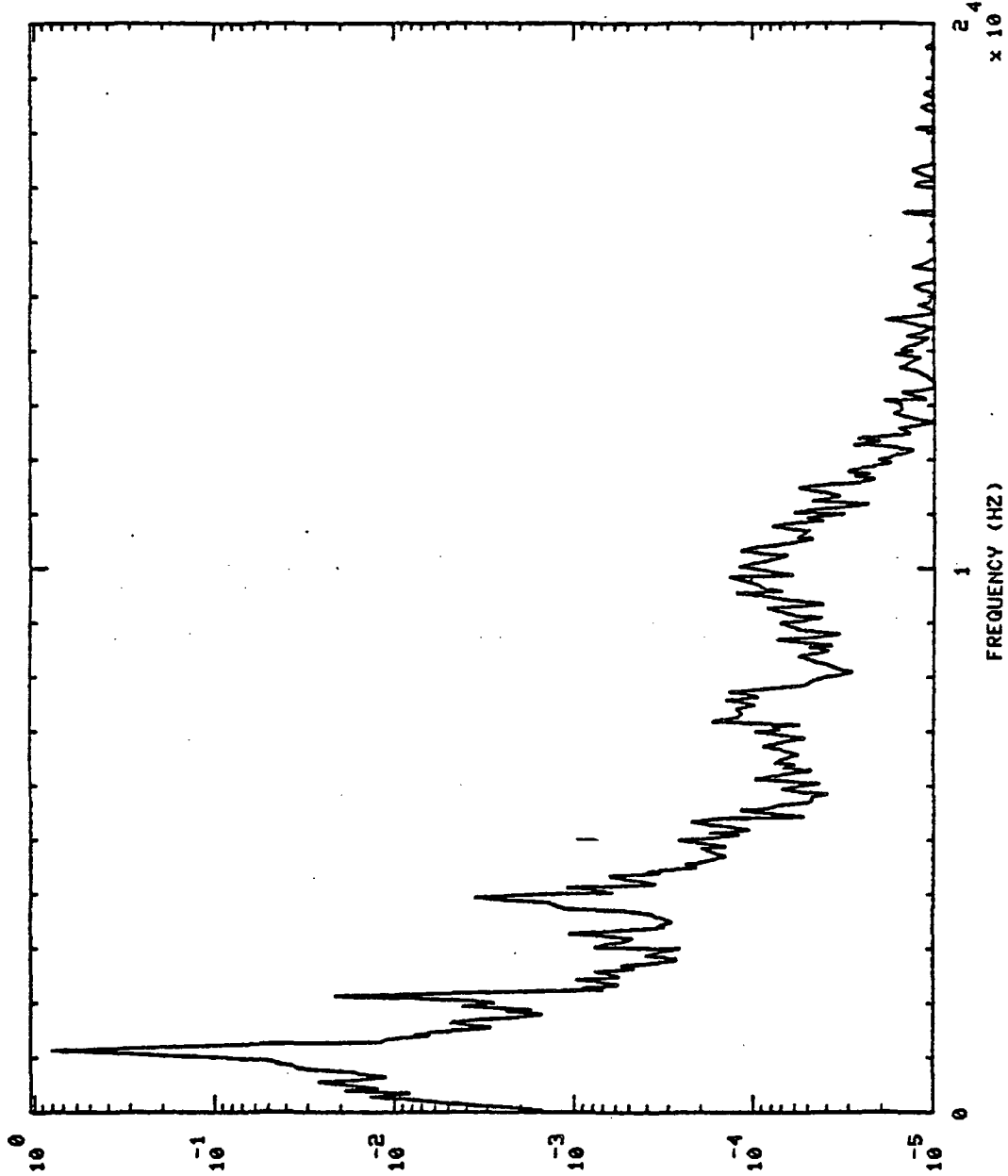


750105 PBP DS PR (1 - 20K HZ )



S+ 6.050/HZ

750105 LPFP IN PR



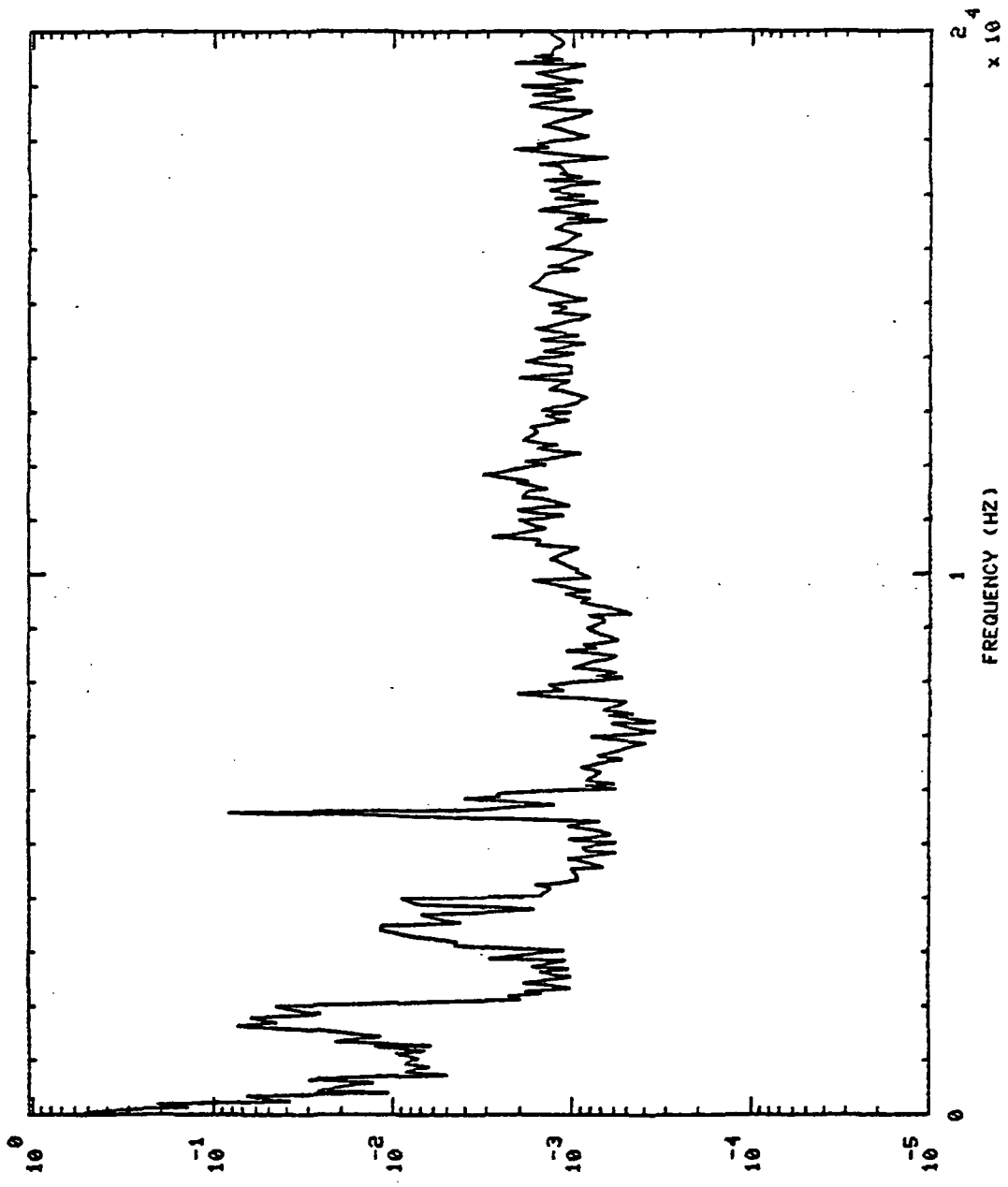
P SQ/HZ

FREQUENCY (HZ)

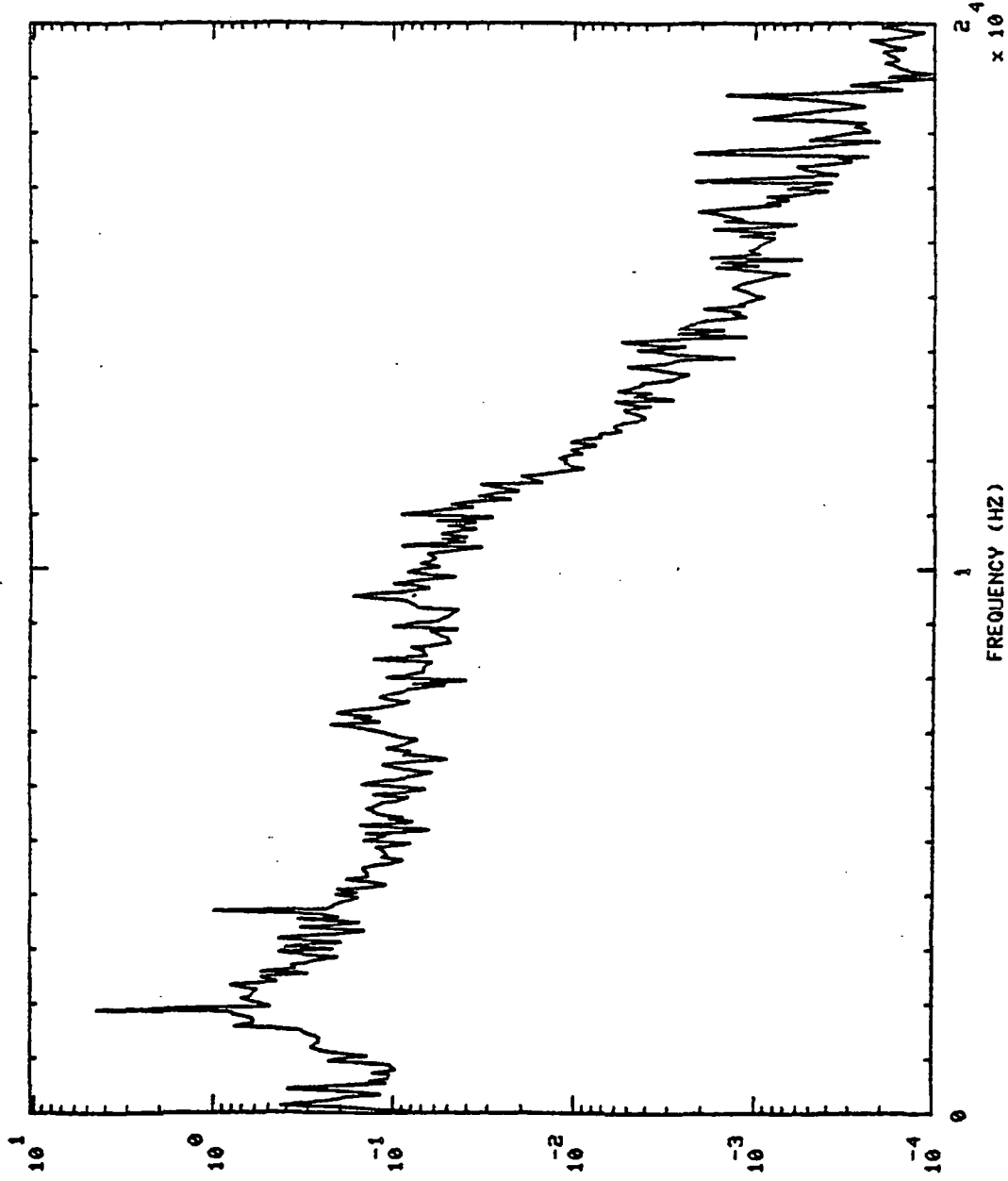
2.4  
x 10<sup>4</sup>



750105 LF0P DS PR S+ 6.050/HZ

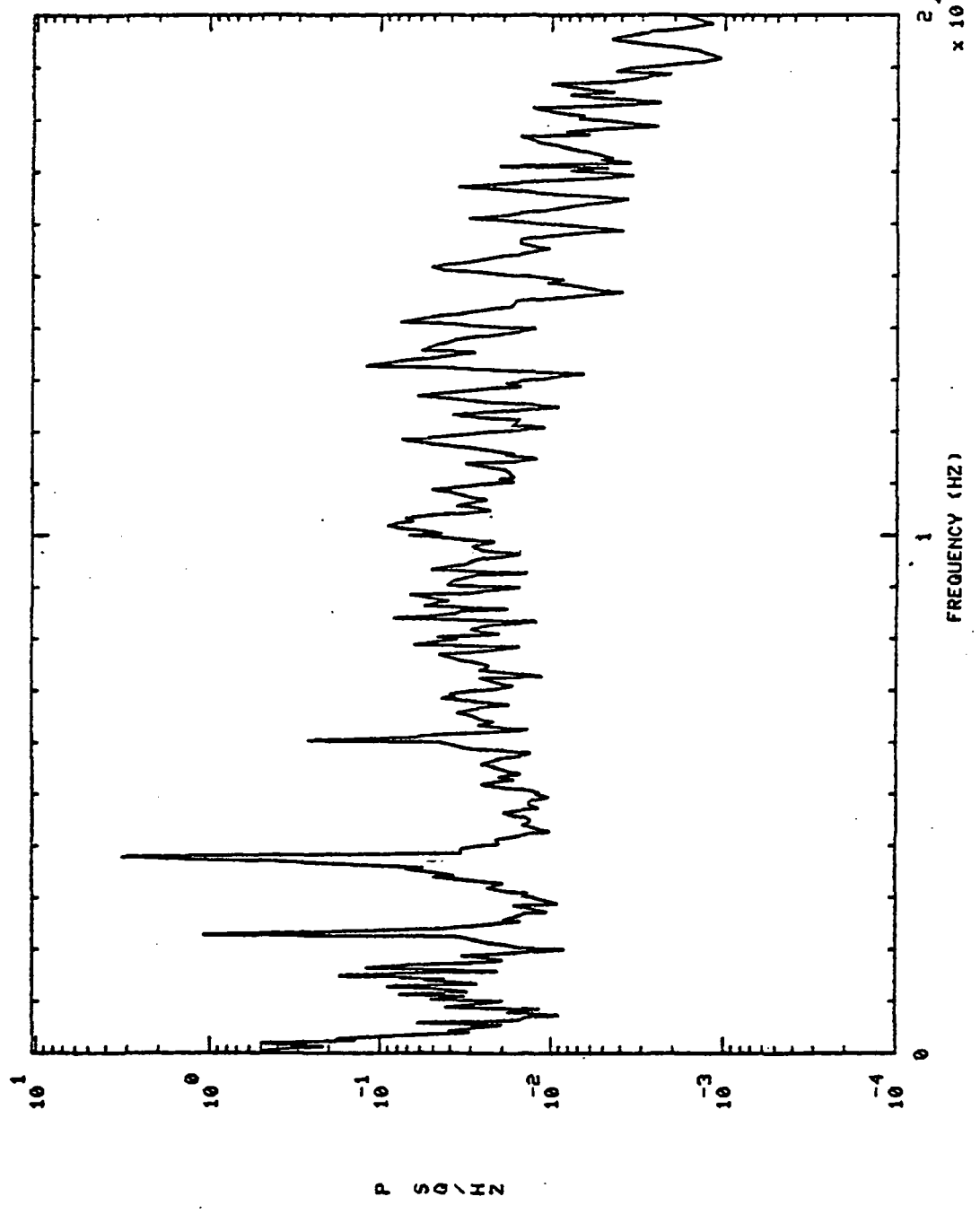


750105 HPOP BAL CAU PR2 S+ 6.050/HZ



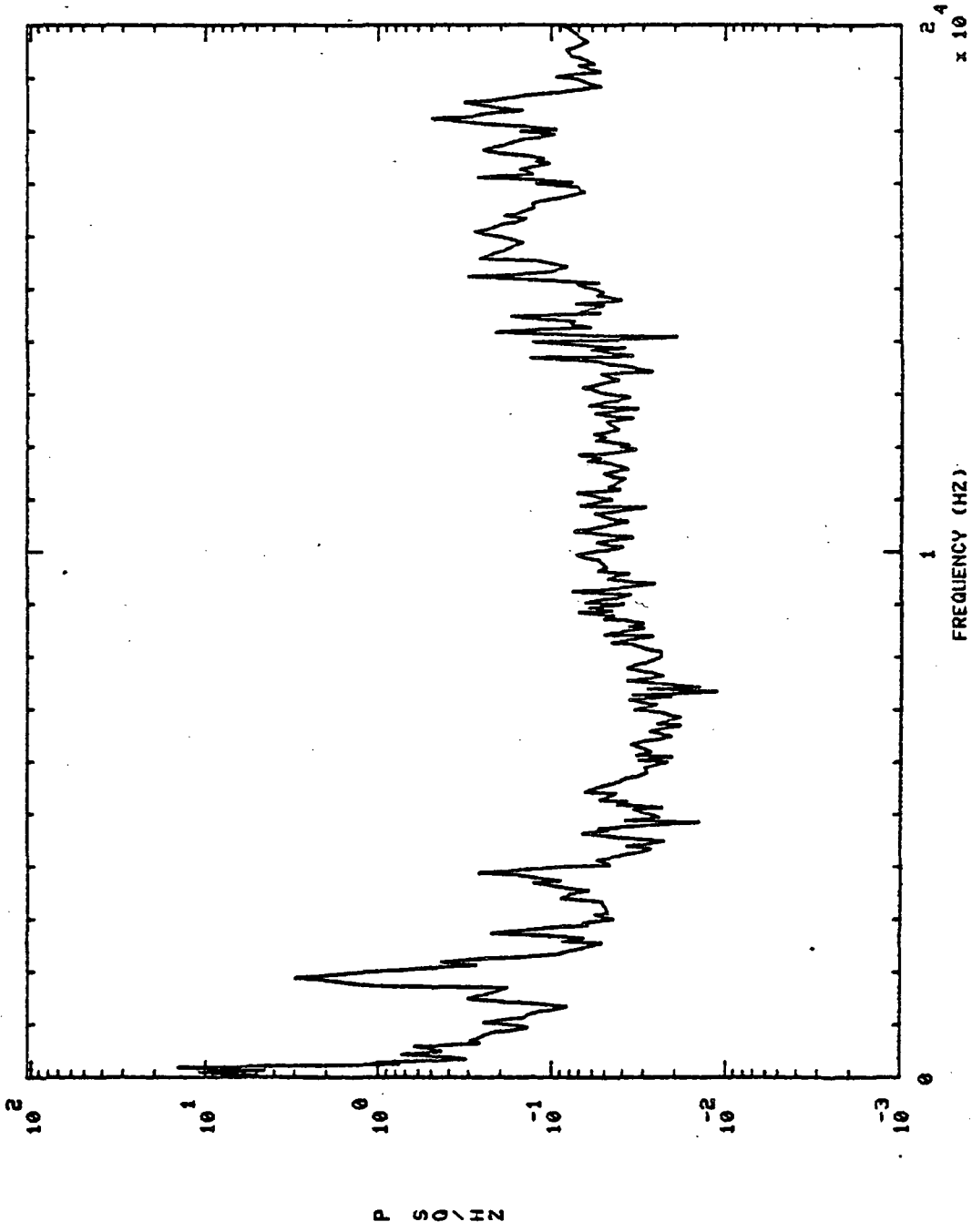
P 50 / HZ

750105 HPOP BAL CAU FRI S+ 6.050/HZ



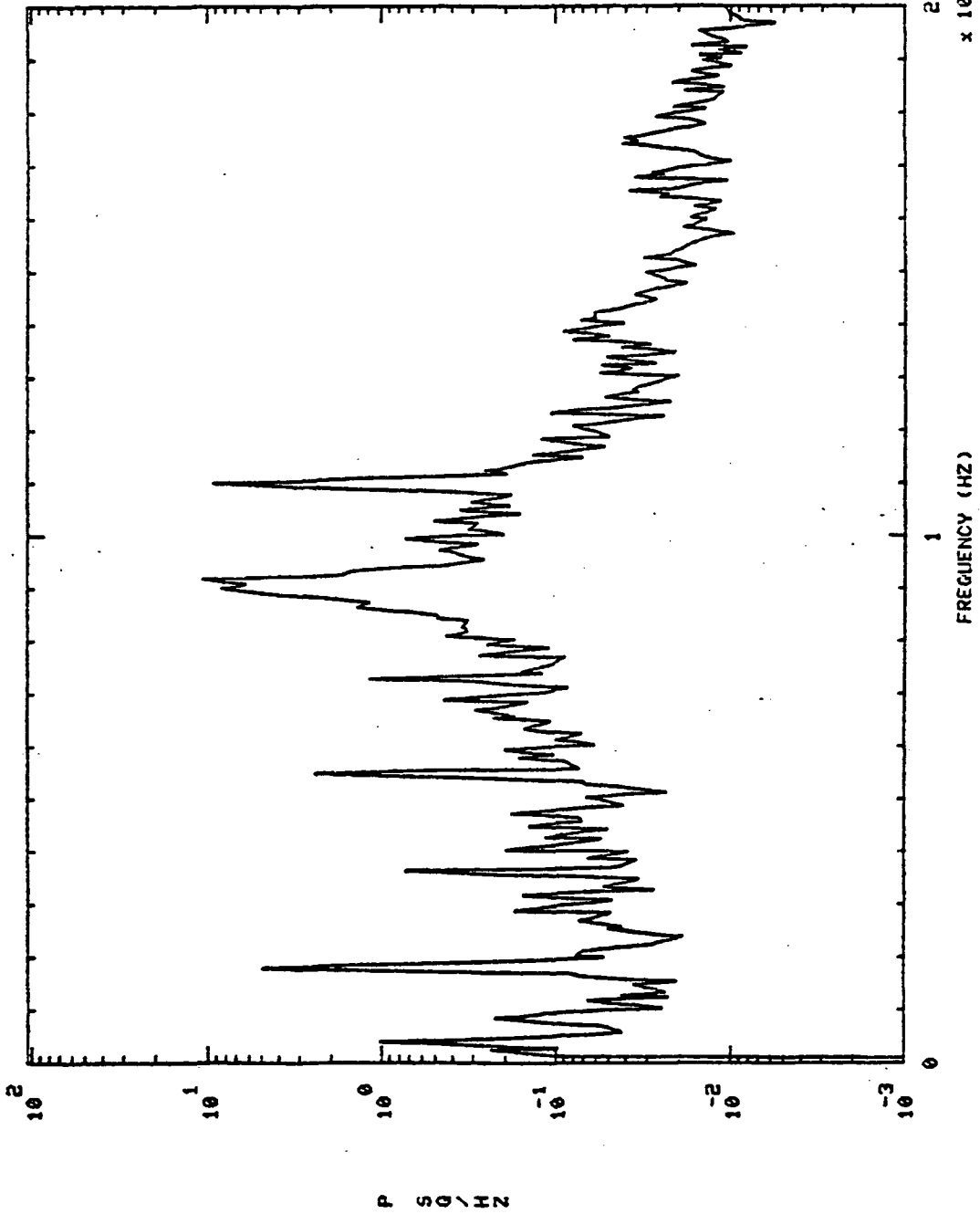
C-3

750105 HPOP DS PR S+ 6.050/HZ

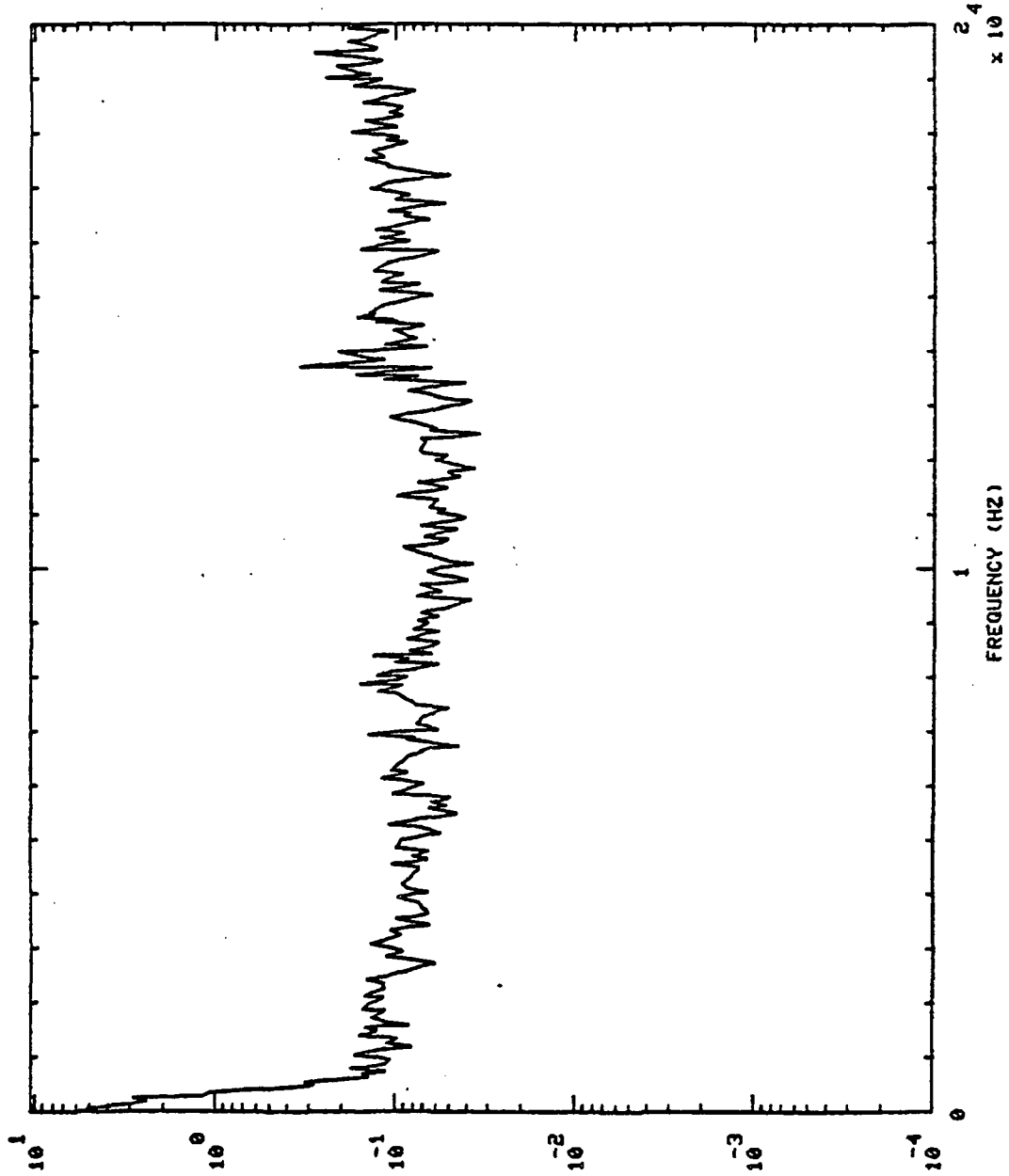


S+ 6.050/HZ

750105 HPOP DISC PR

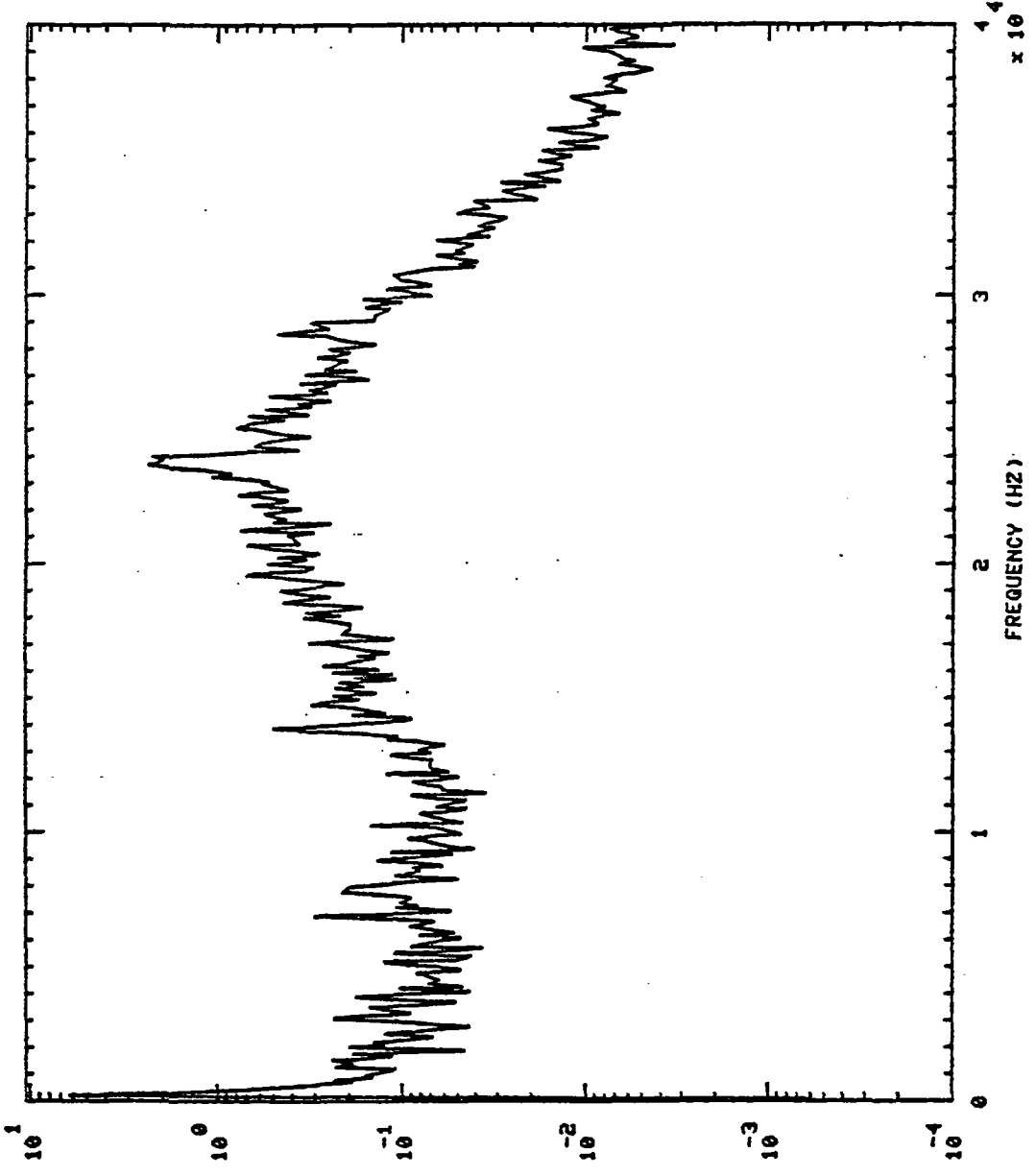


750105 MCC HOT GAS IN PR S+ 6.050/HZ



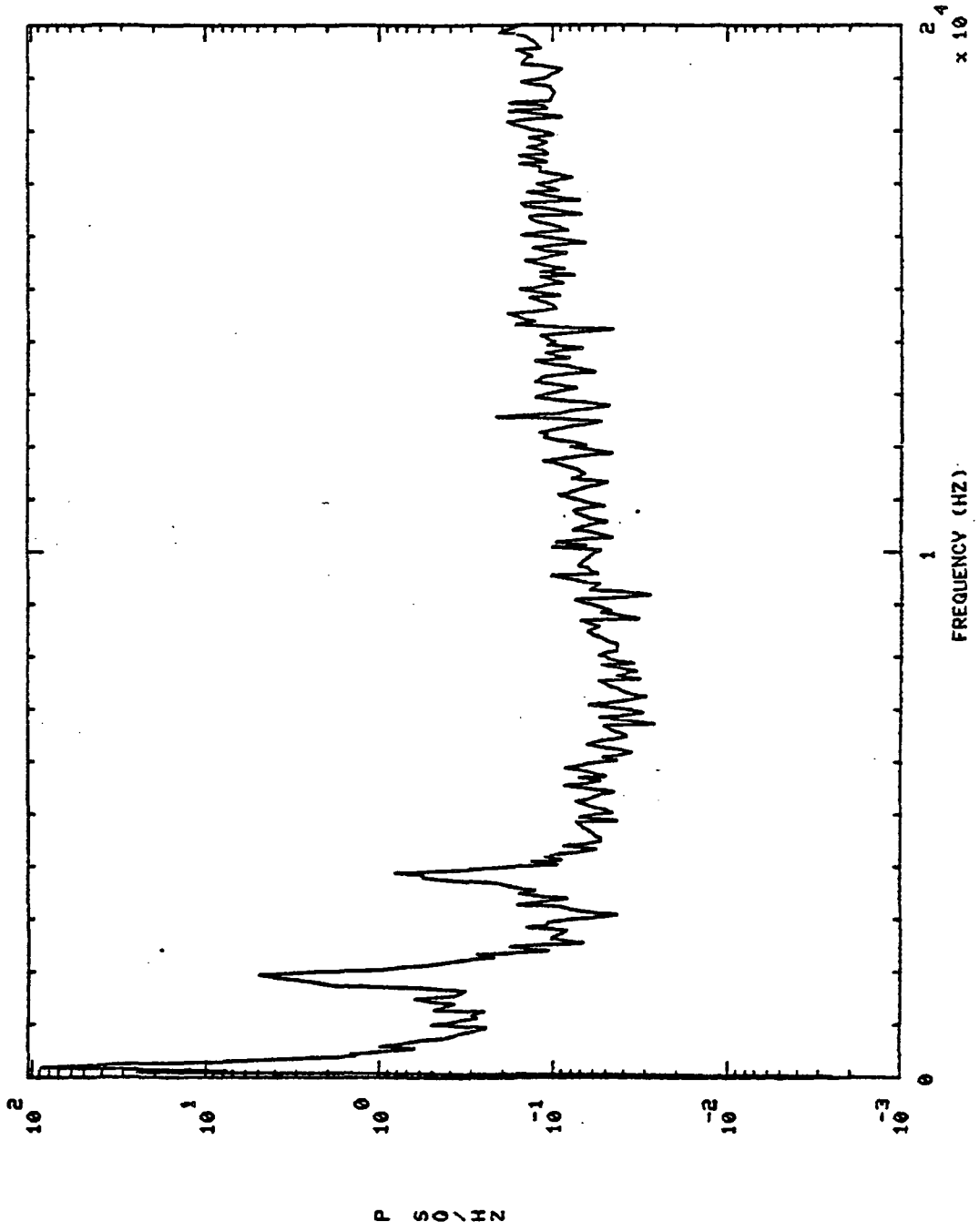
P S D / HZ

750105 MCC HOT GAS IN PR S+ 6.01H0,'S



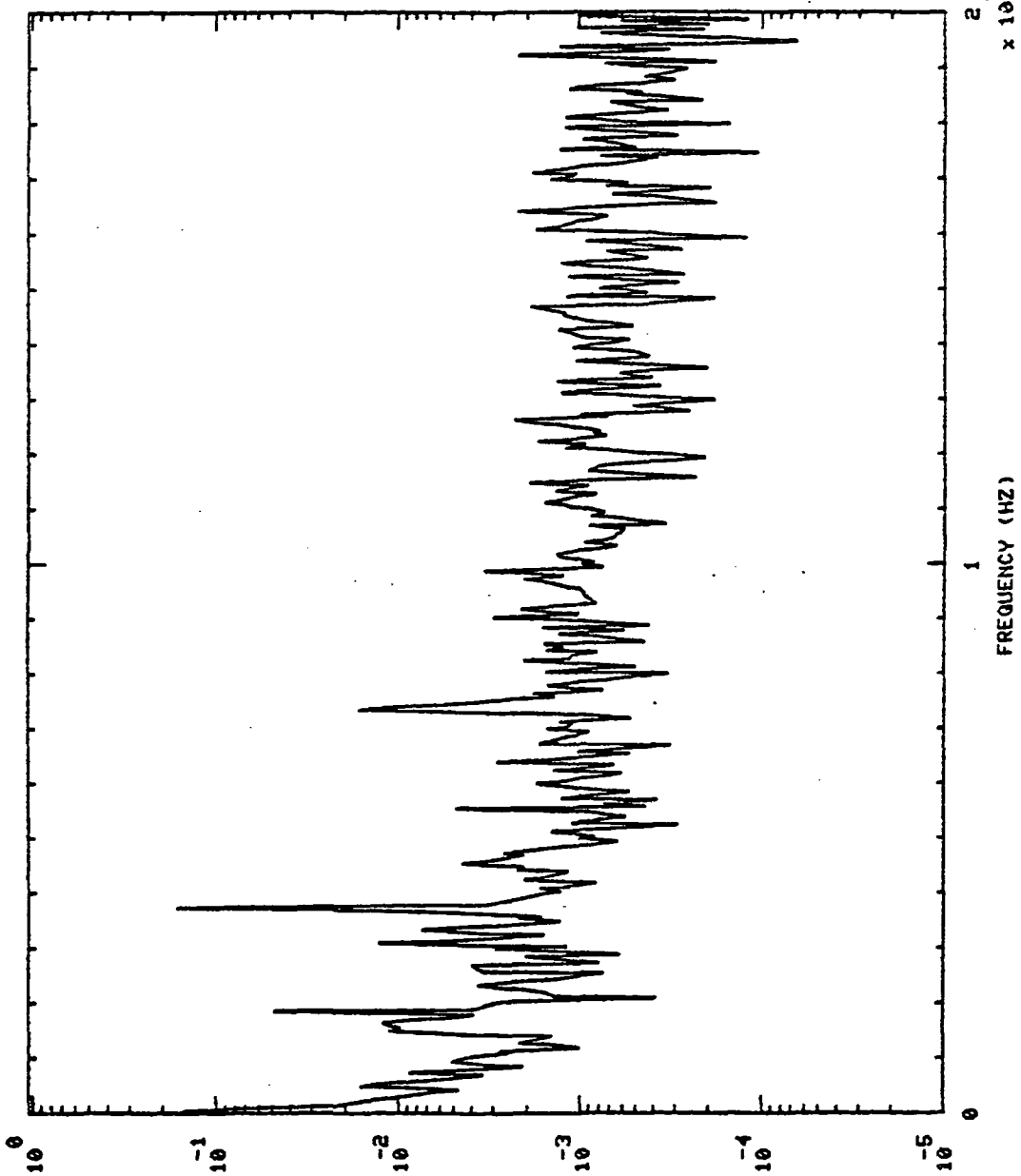
P S D / HZ

750105 PBP DS PR S+ 6.0SQ/HZ





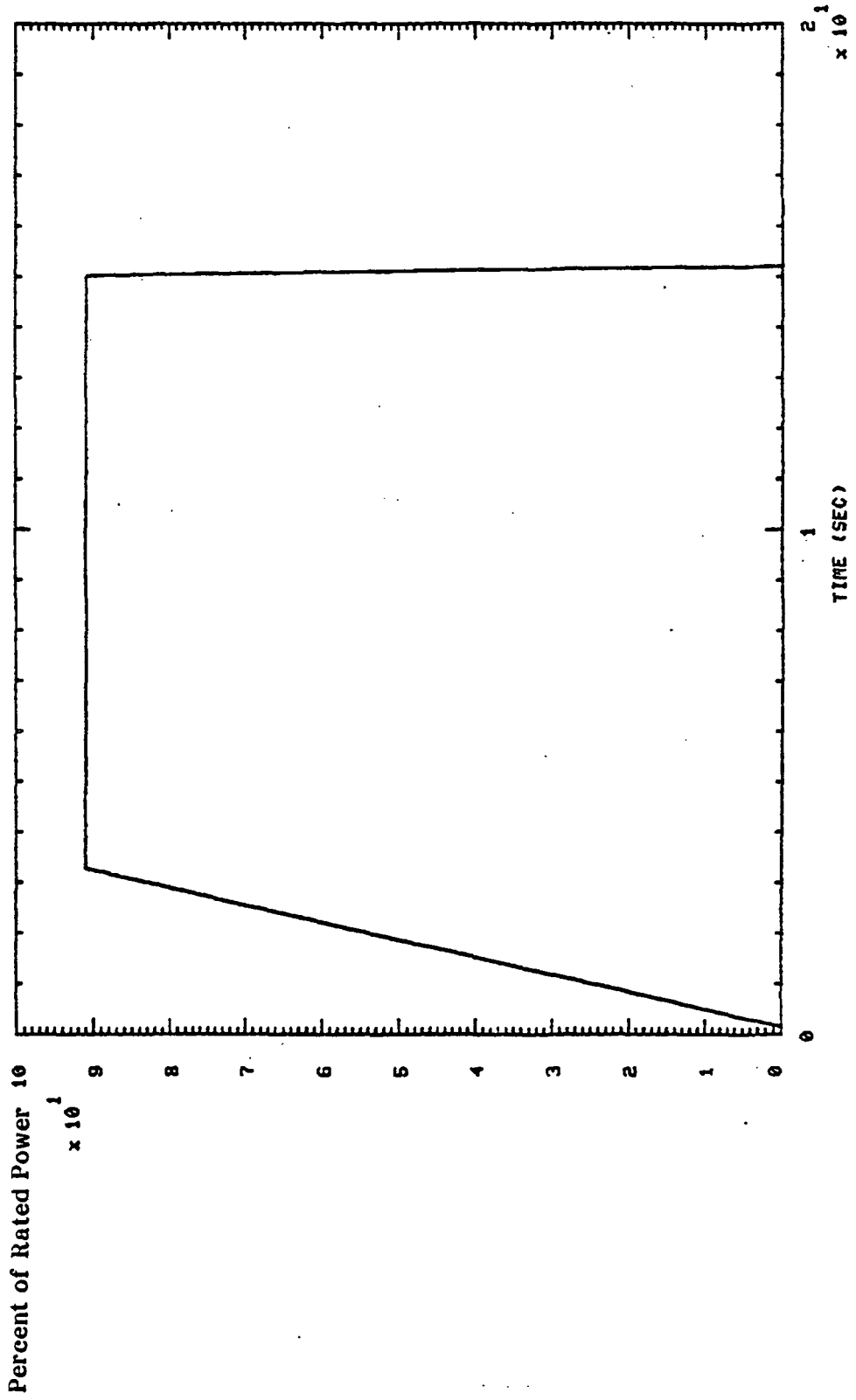
750105 CHAMBER PR S+ 6.050/HZ



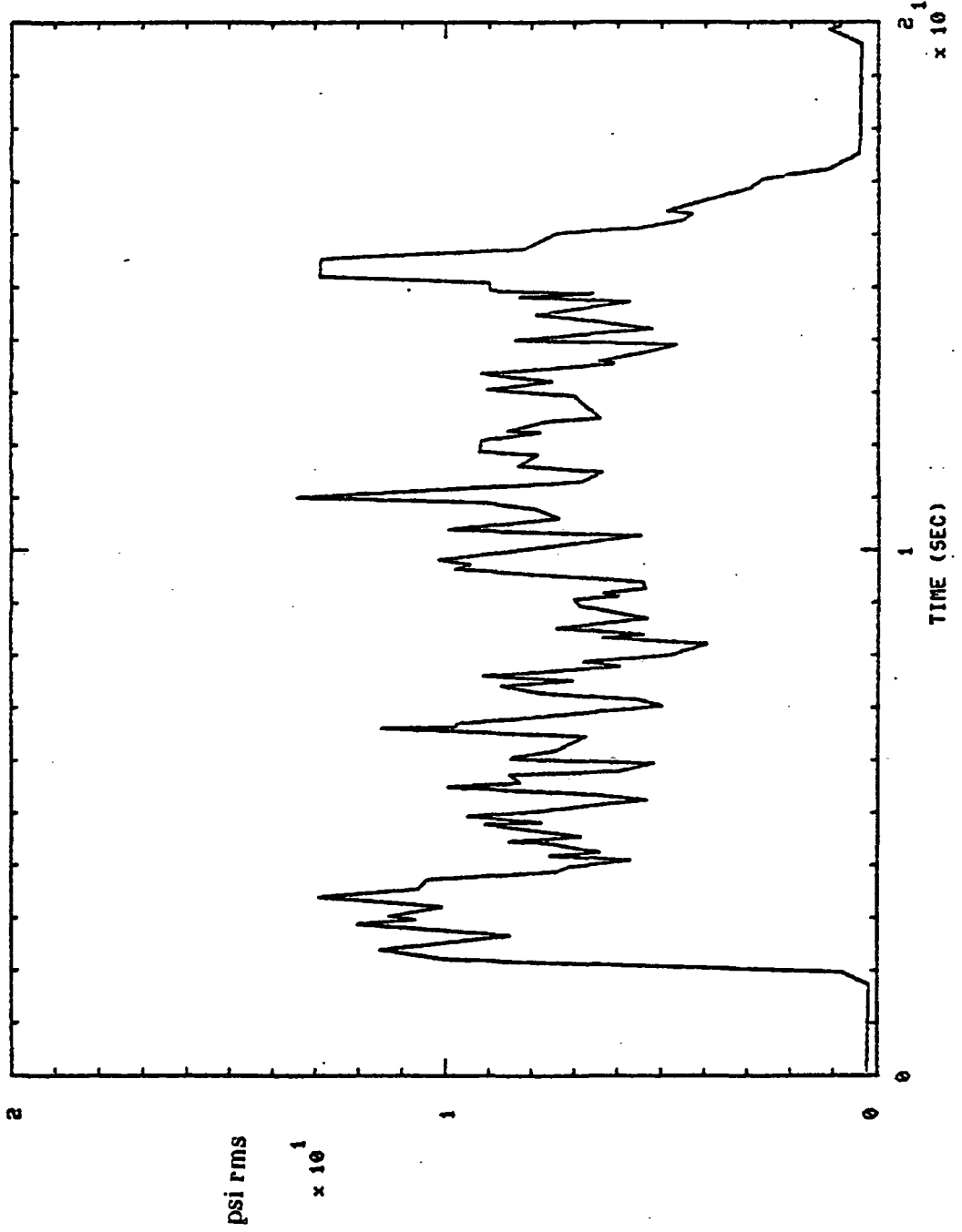
P SQ/HZ

(UNFILTERED )

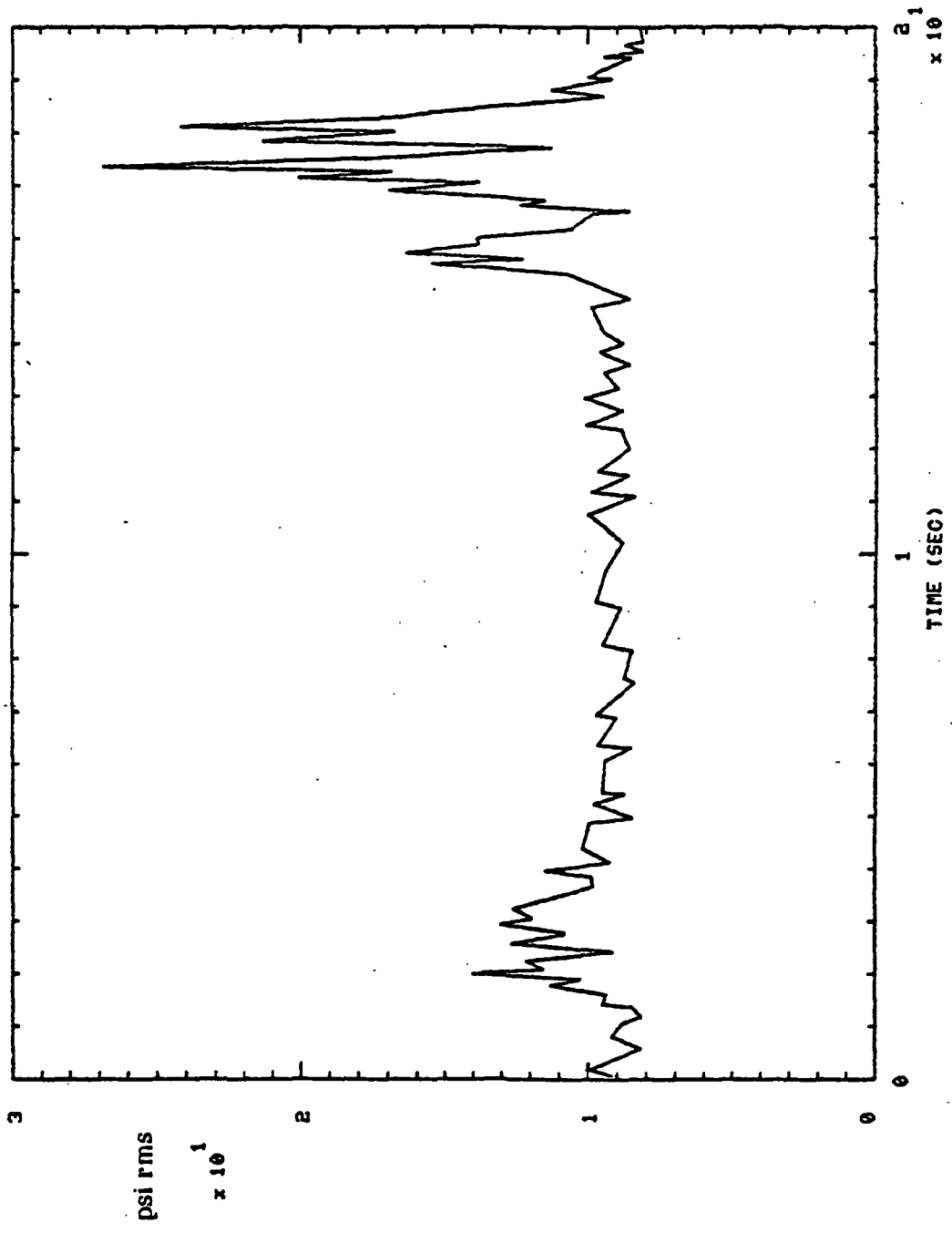
750106 THRUST



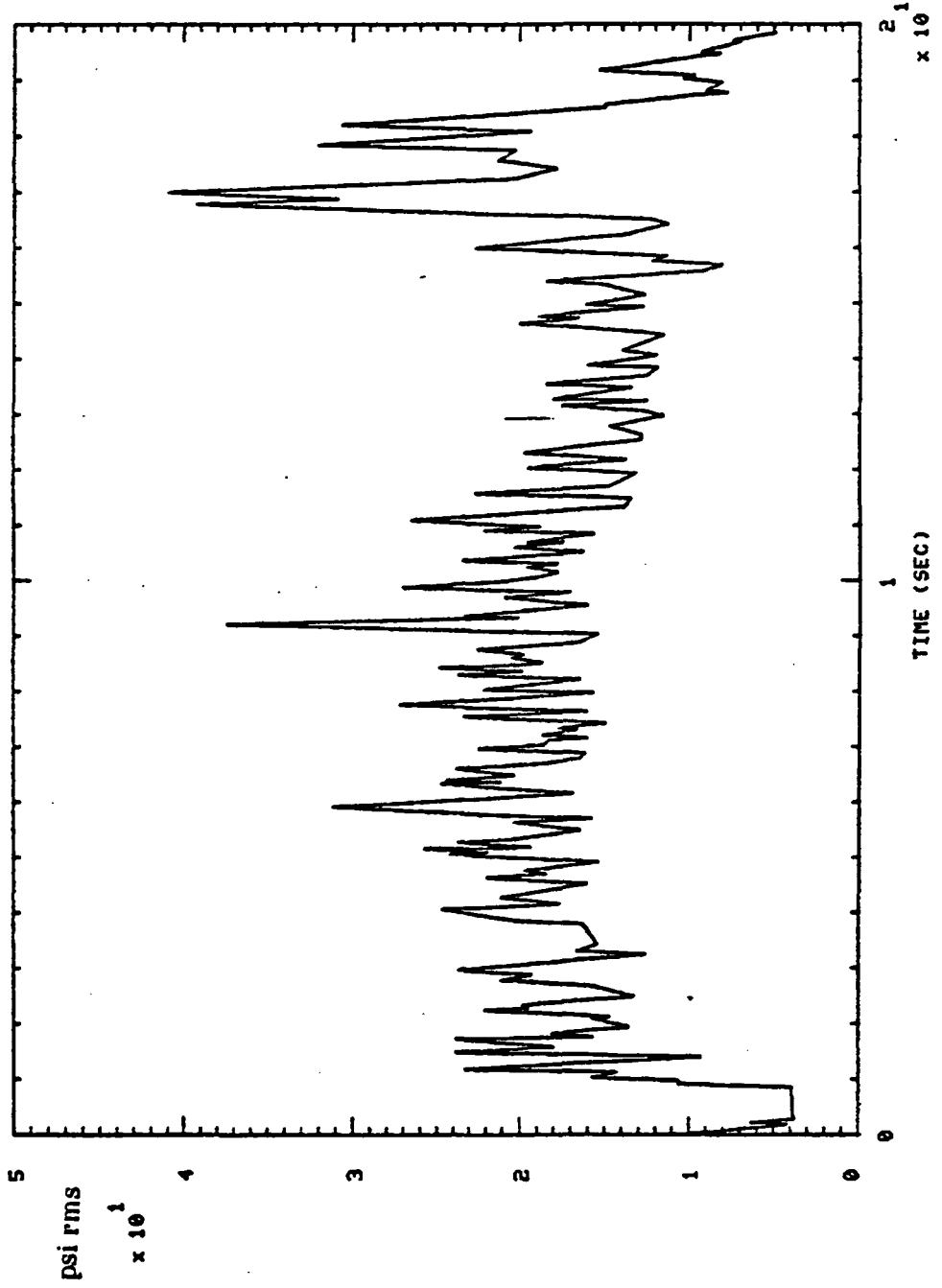
750106 LPFP IN PR (1 - 20K HZ )



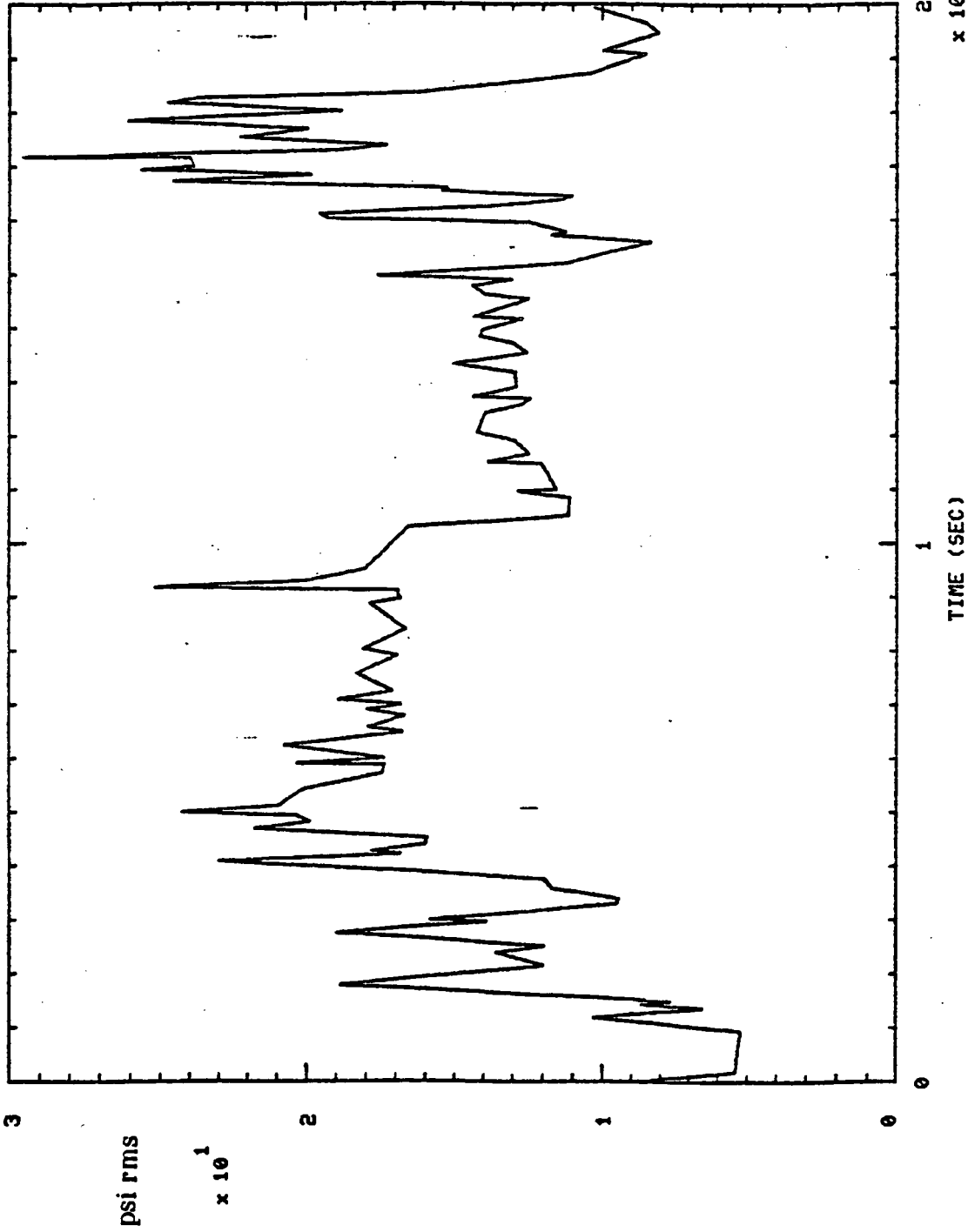
750106 LPOP DS PR (1 - 20K HZ )



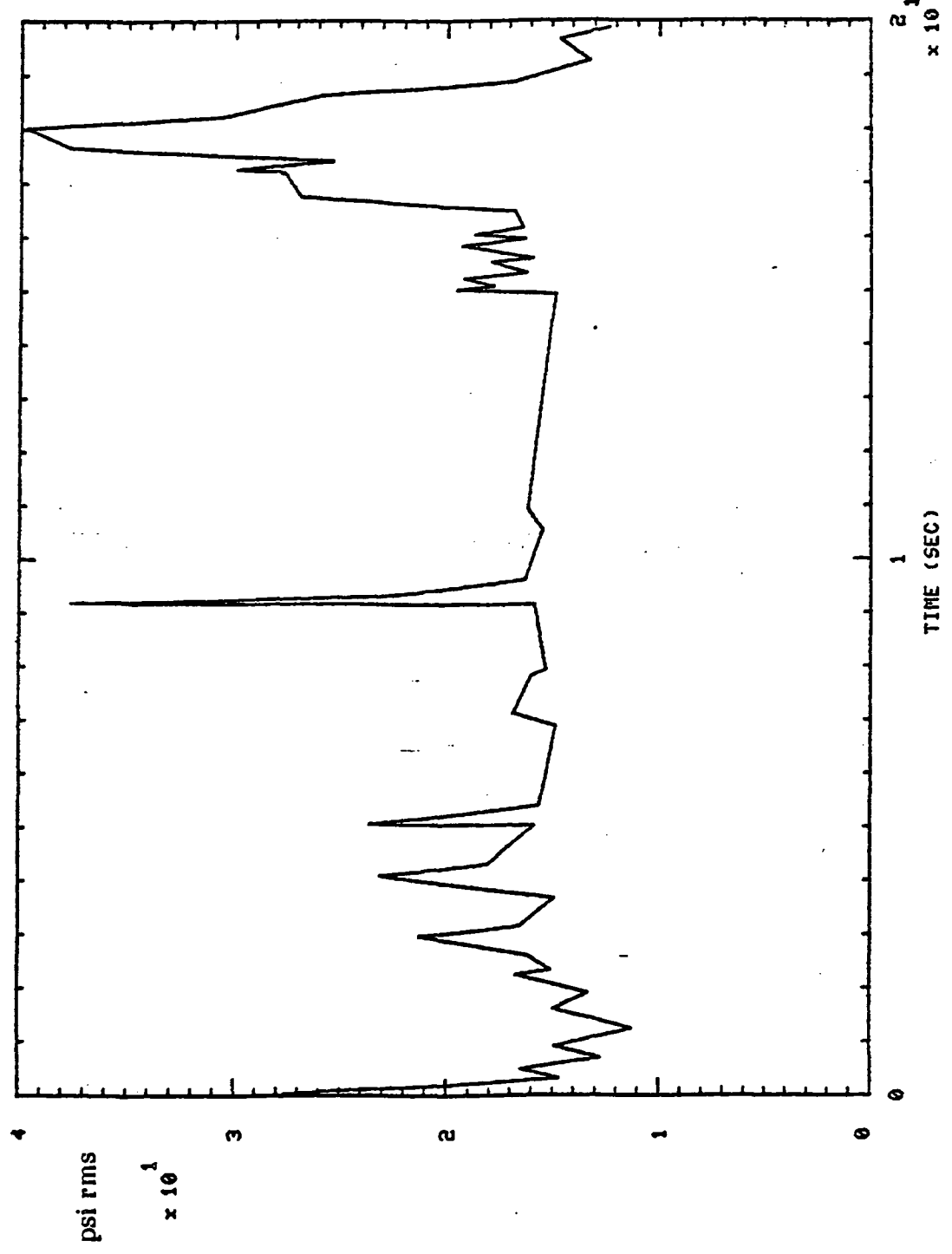
750106 HPOP BAL CAU PR2 (1 - 20K HZ )



750106 HPOP BAL CAU PR1 (1 - 20K HZ )



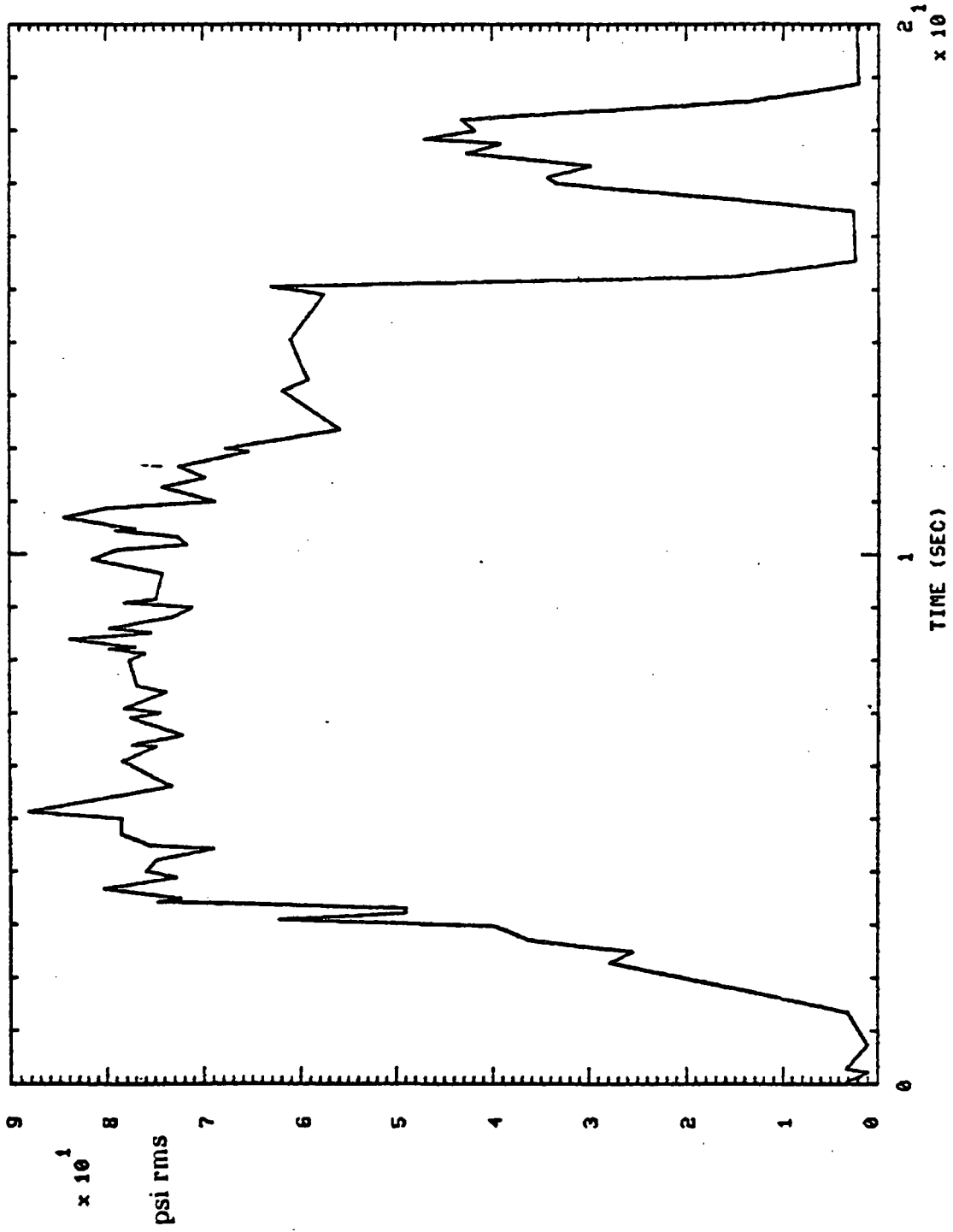
750106 HPOP DS PR (1 - 20K HZ )



( 1 - 20K HZ )

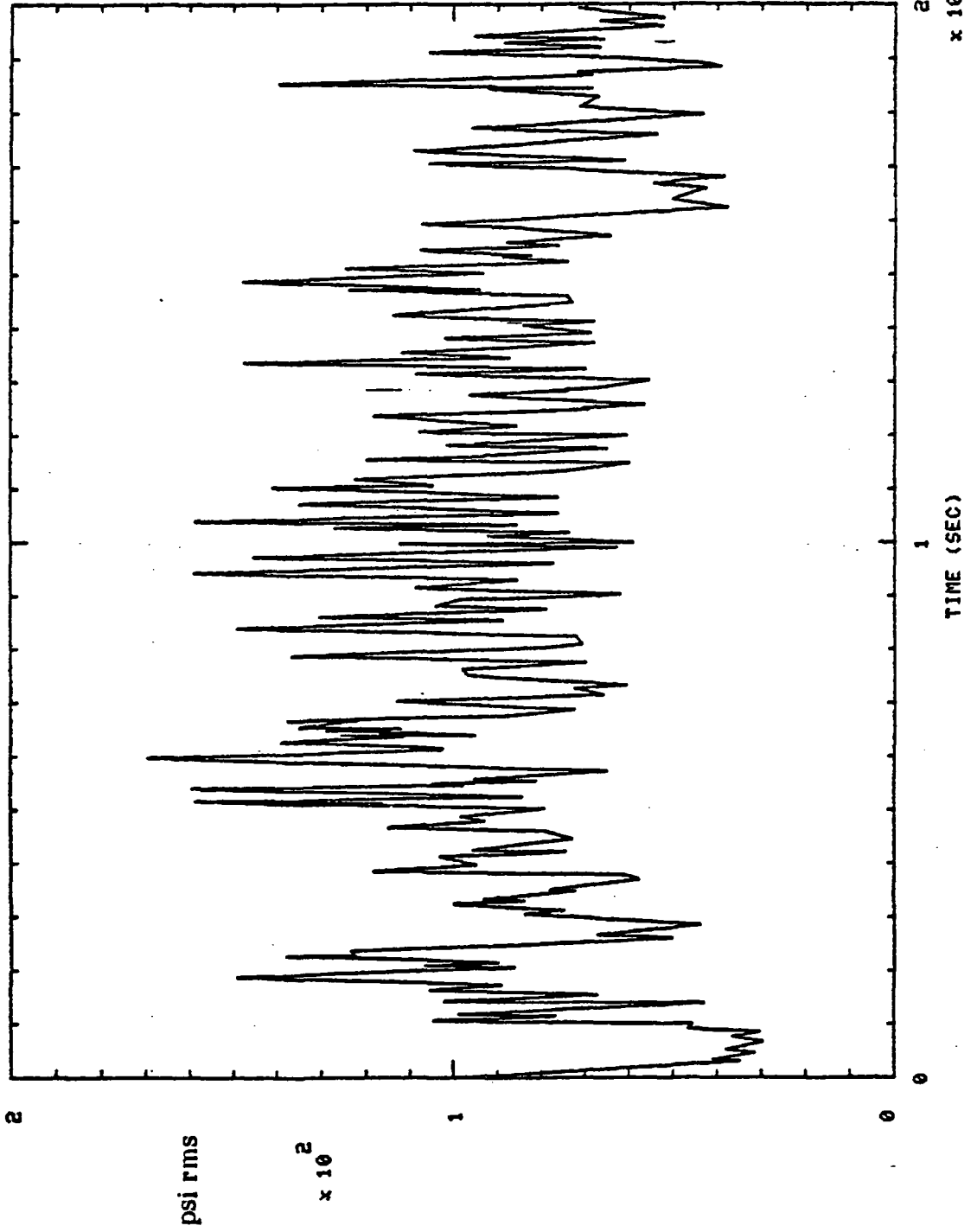
HPOP DISC PR

750106





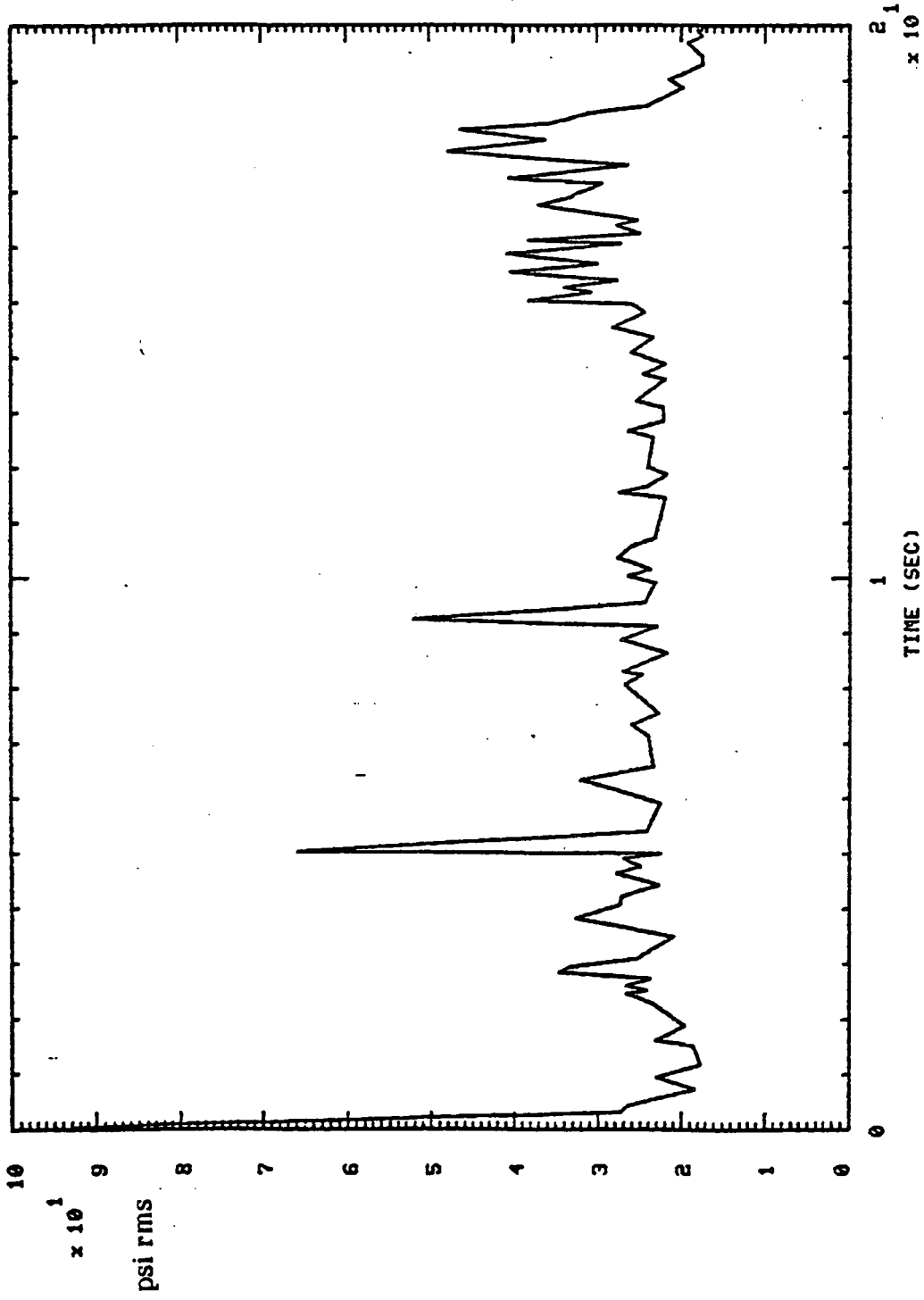
750106 MCC HOT GAS IN PR (1 - 20K HZ )



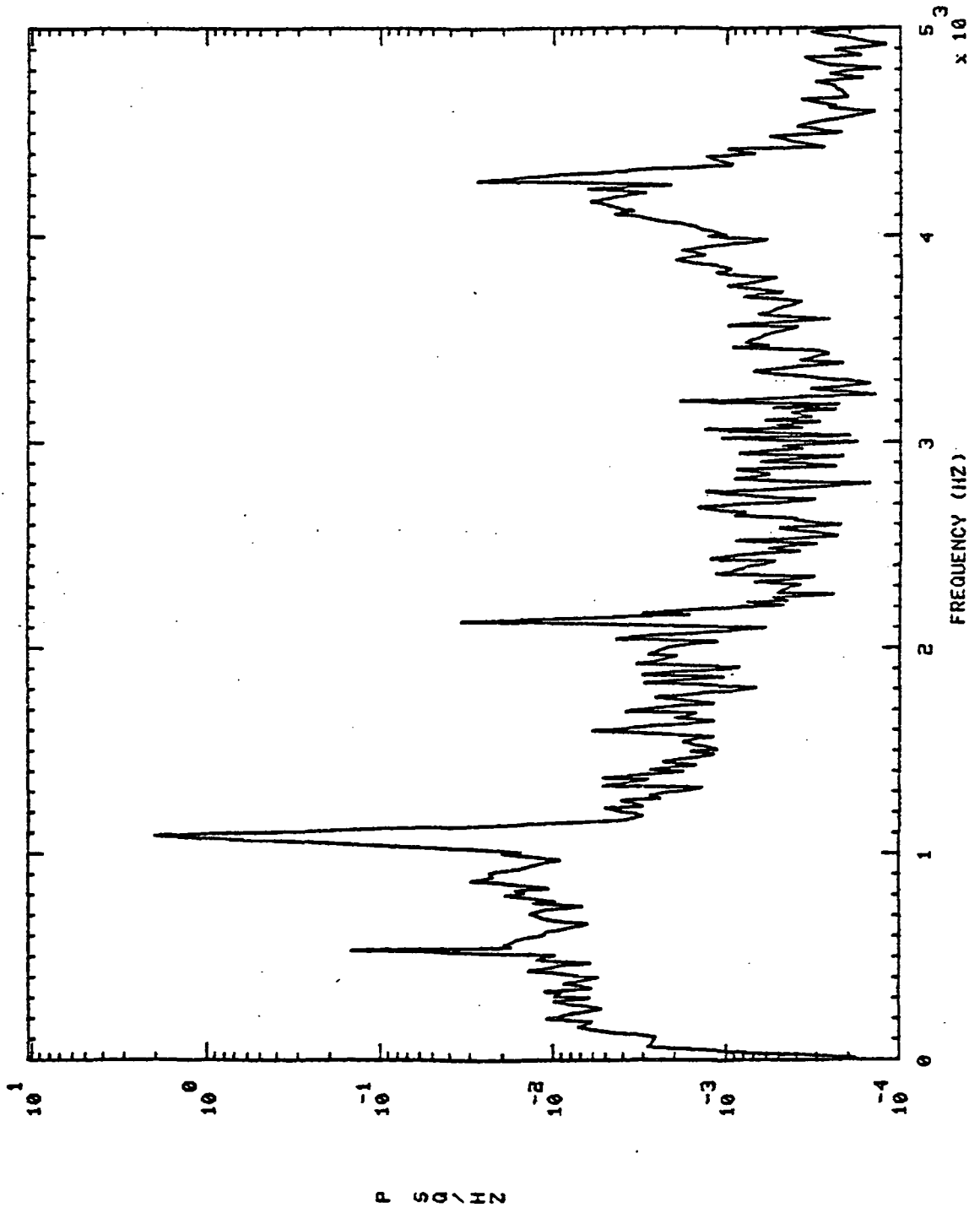
( 1 - 20K HZ )

PBP DS PR

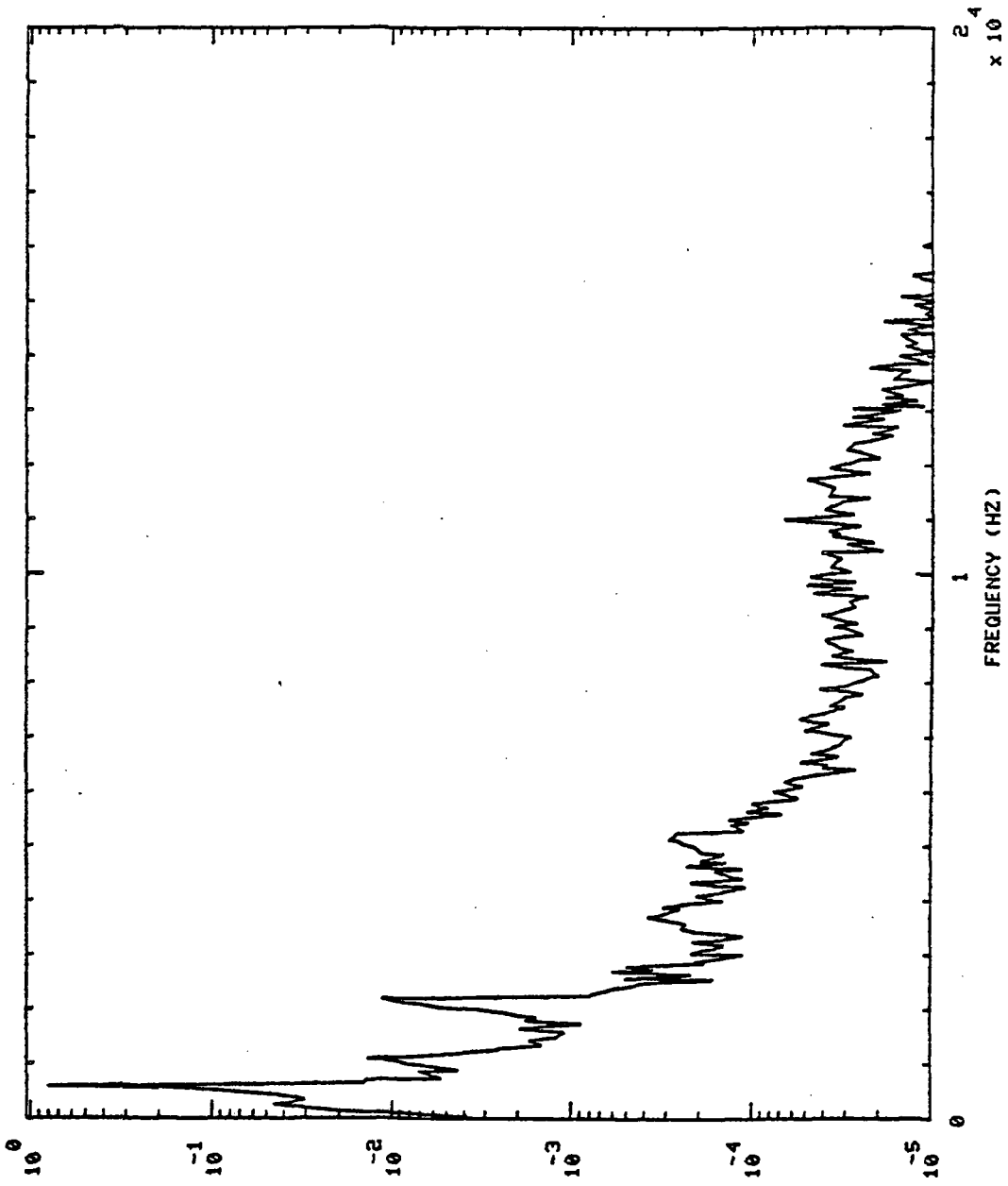
750106



750106 LPFP IN PR S+ 6.050/HZ

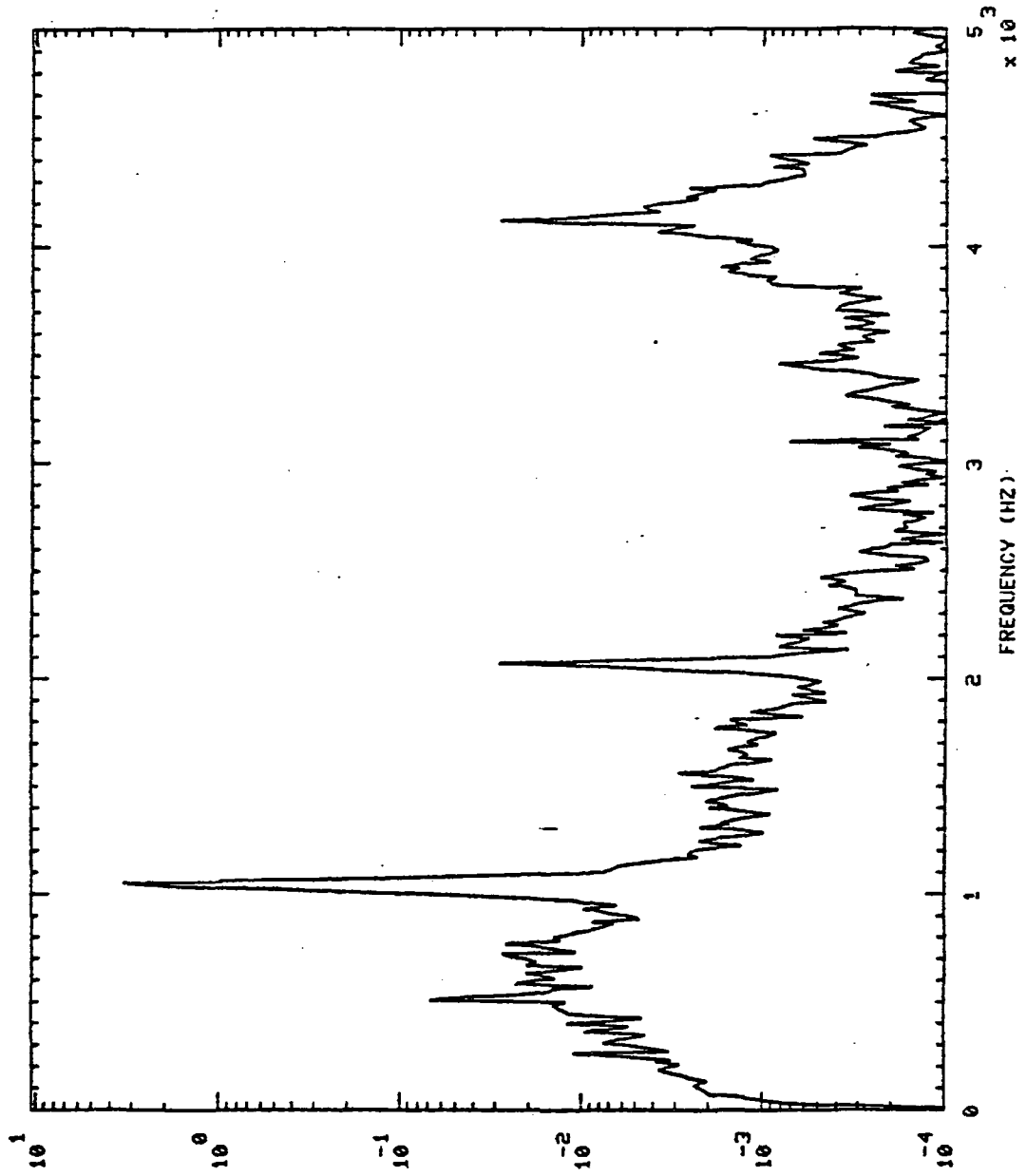


750106 LPFP IN PR S+ 6.050/HZ



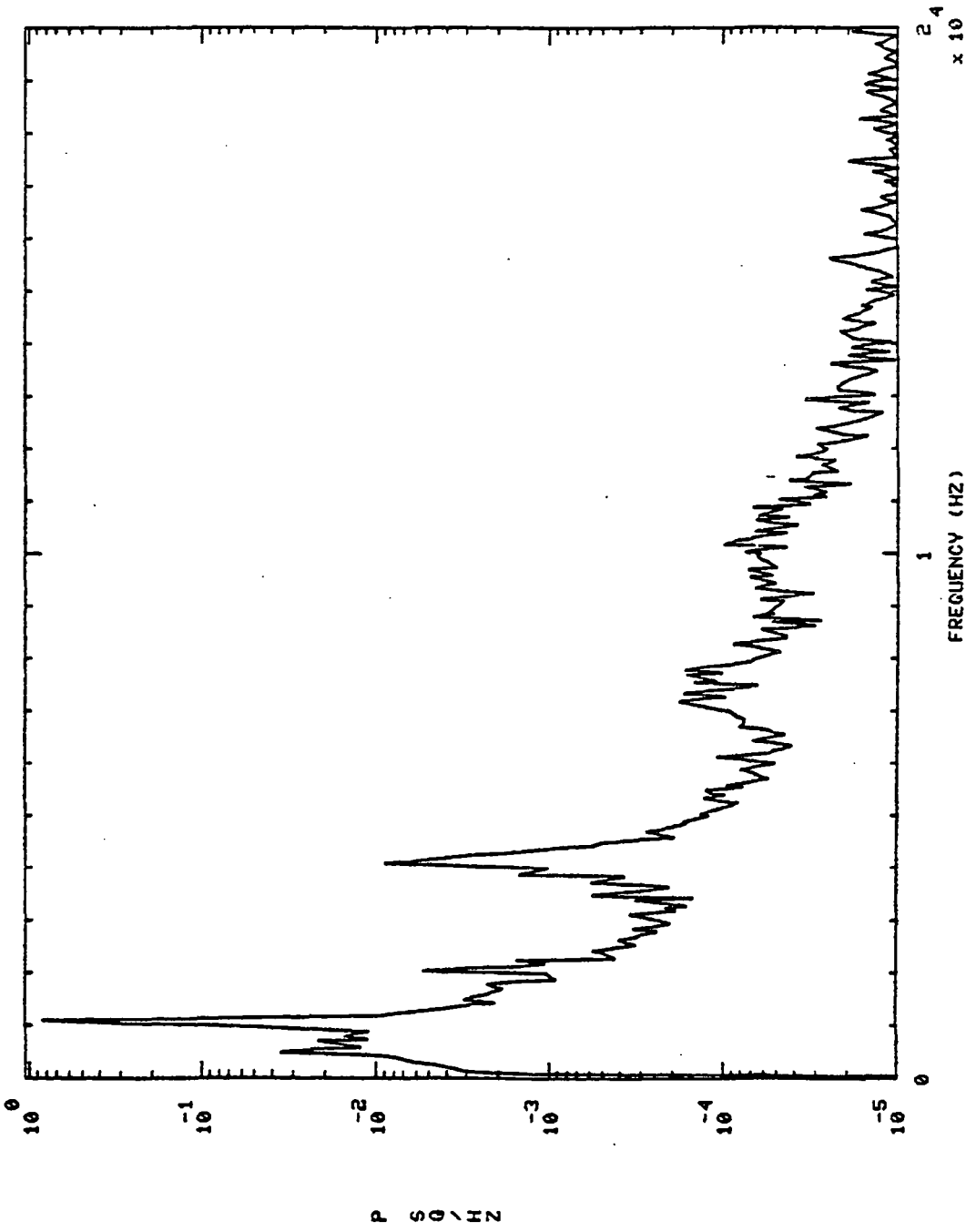
P S D / HZ

750106 LFPF IN PR S+ 11.050/HZ

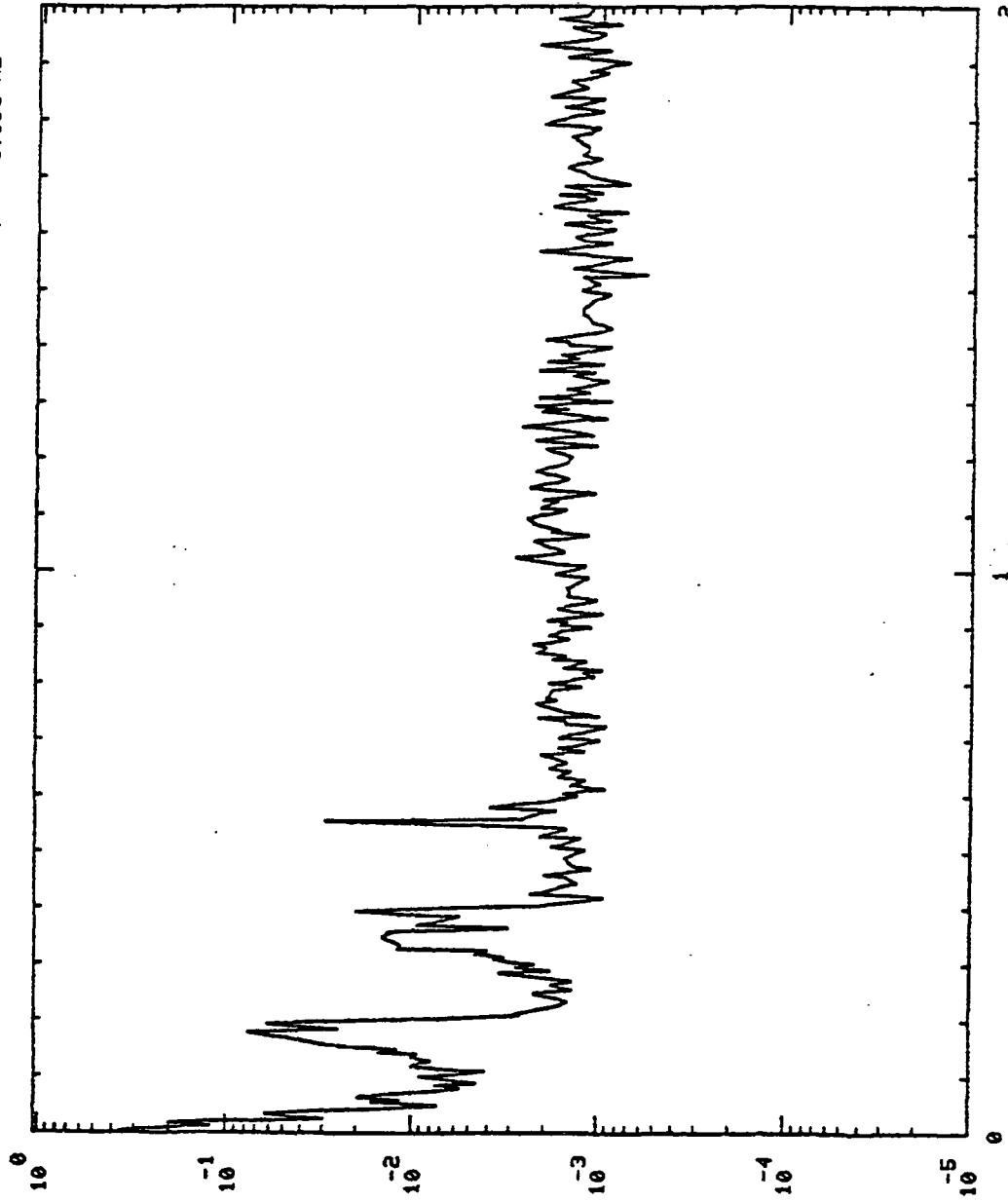


P S D / H Z

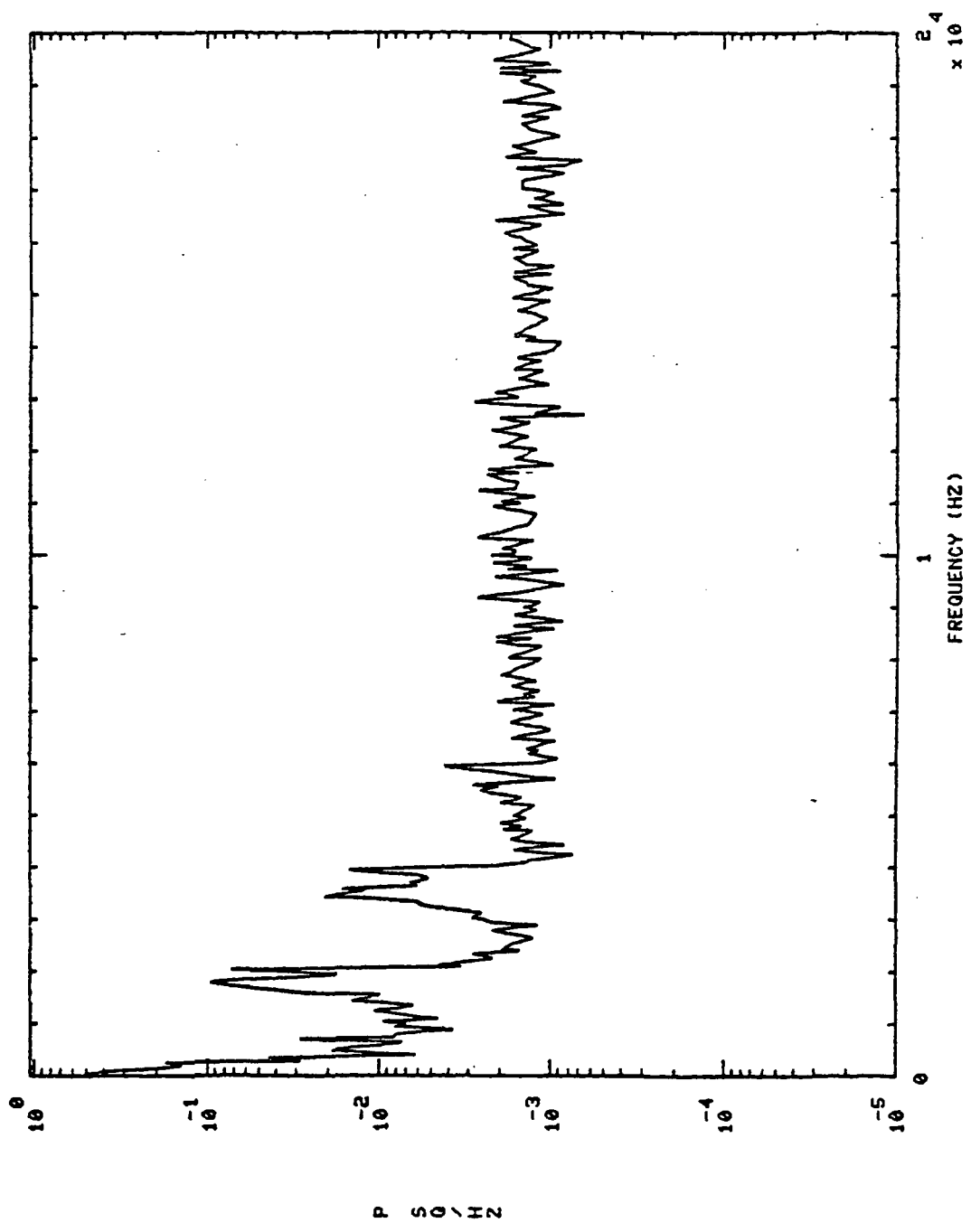
750106 LPFP IN PR S+ 11.050/HZ



750106 LPOP DS PR S+ 6.050/HZ

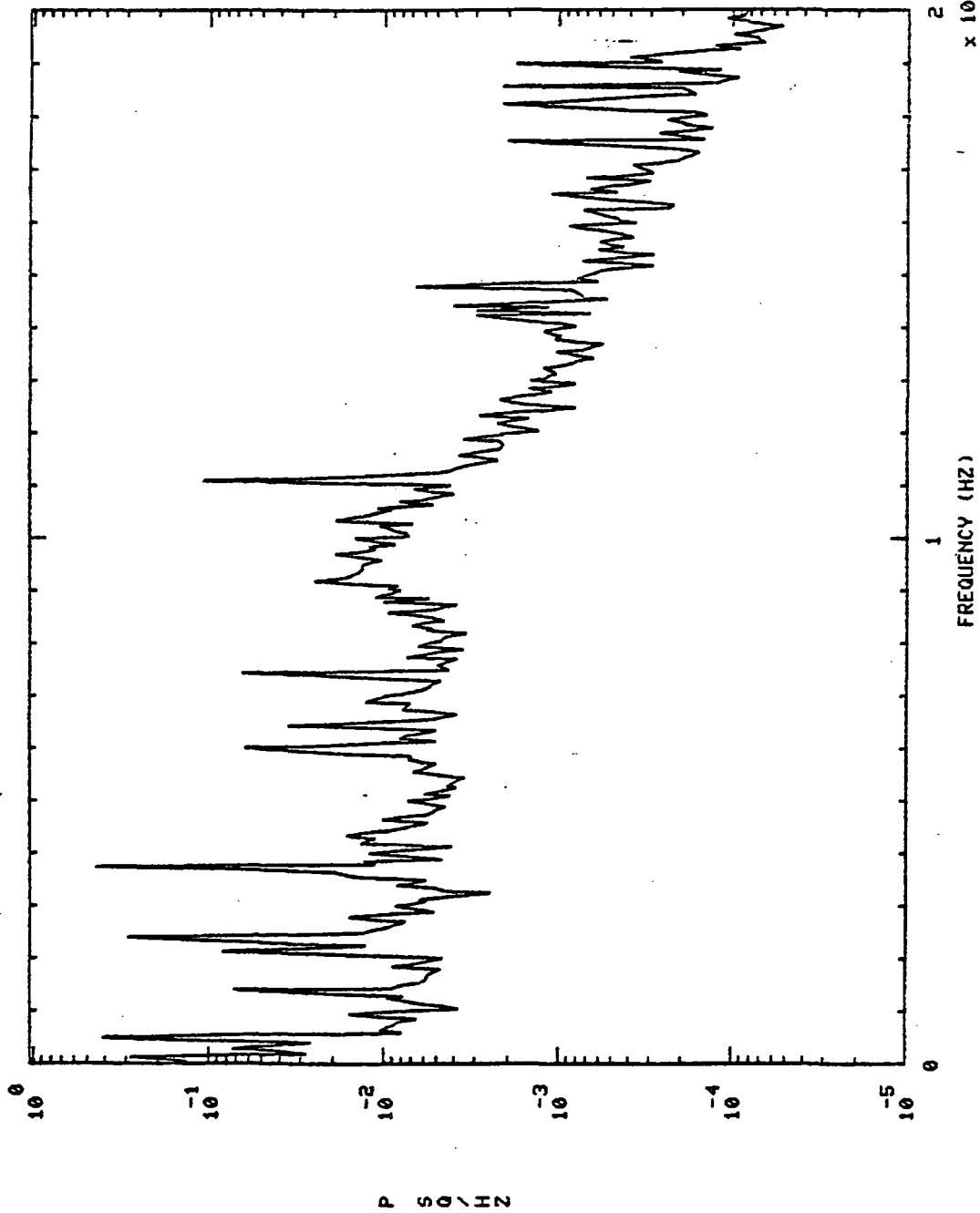


750106 LPOP DS PR S+ 11.050/HZ

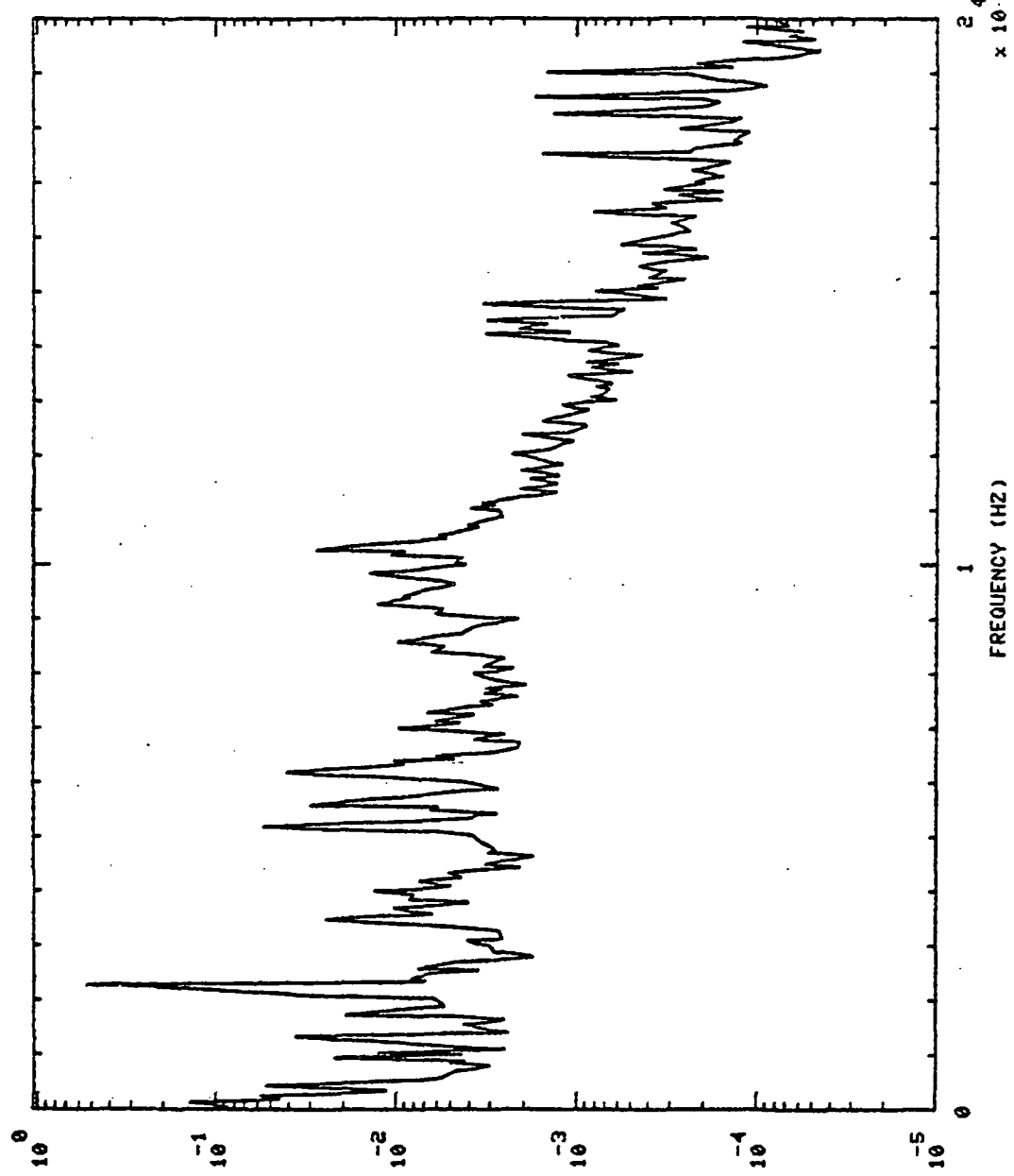




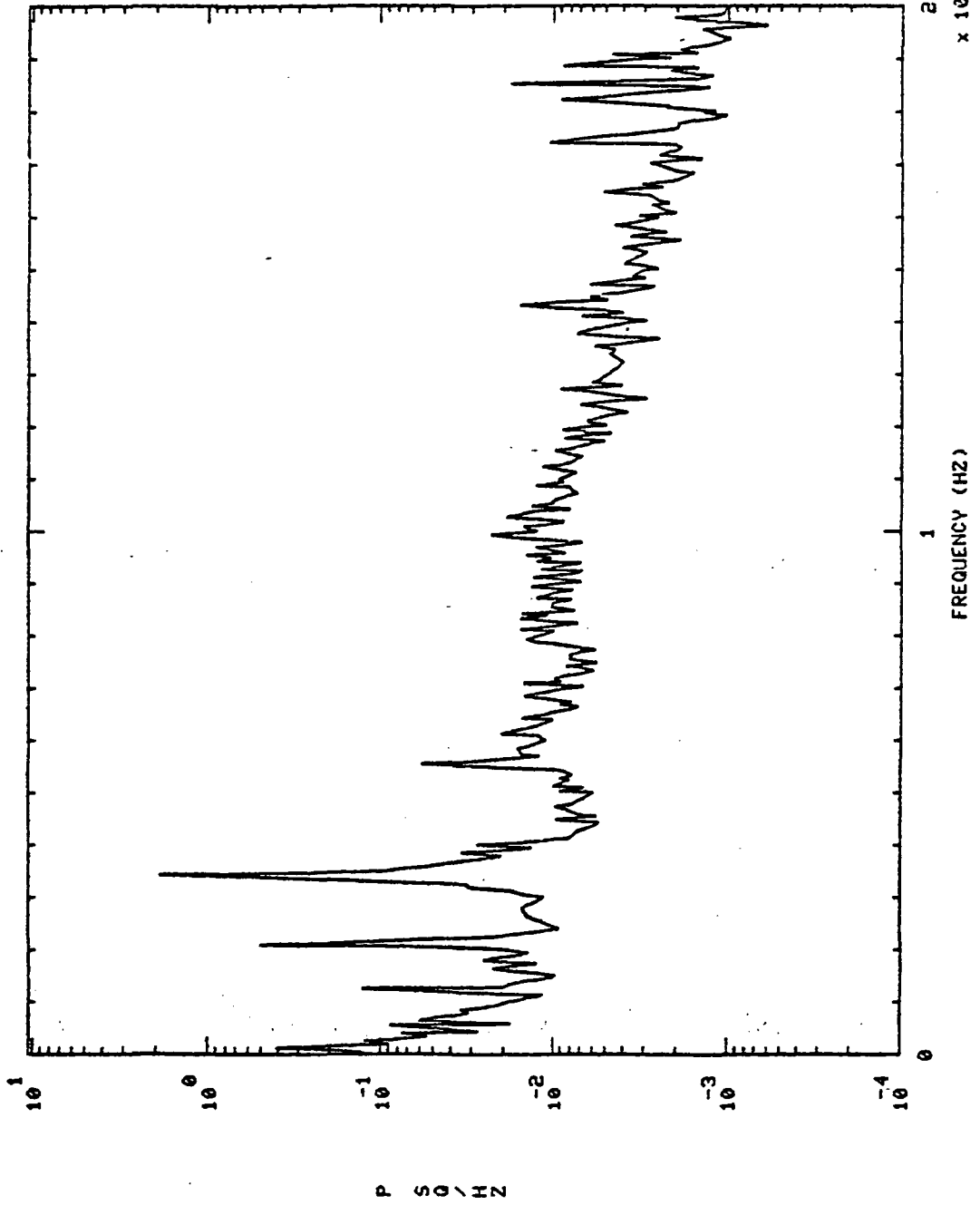
750106 HPOP BAL CAU PR2 S+ 6.05Q/HZ



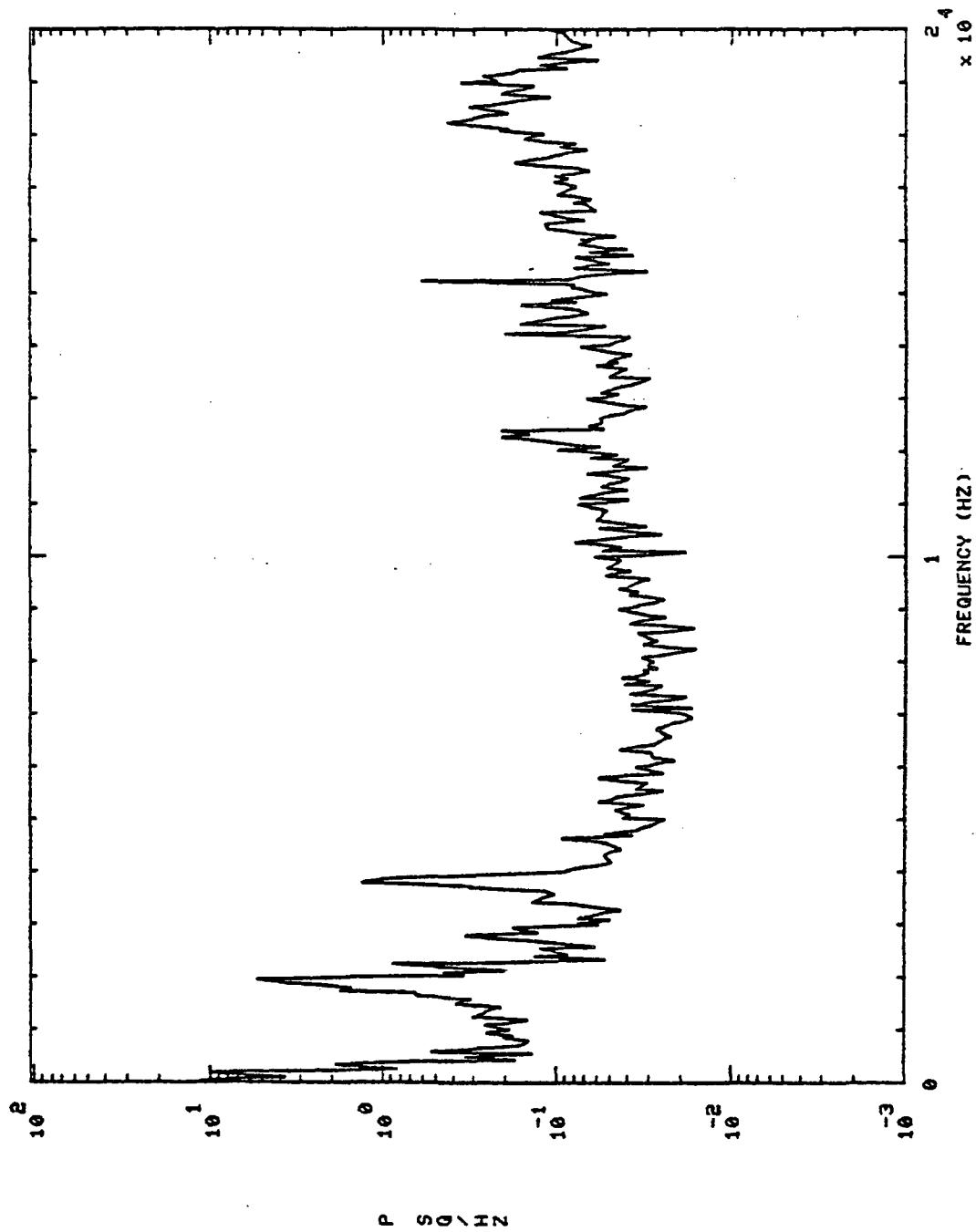
750106 MPOP BAL CAU PR2 S+ 11.050/HZ



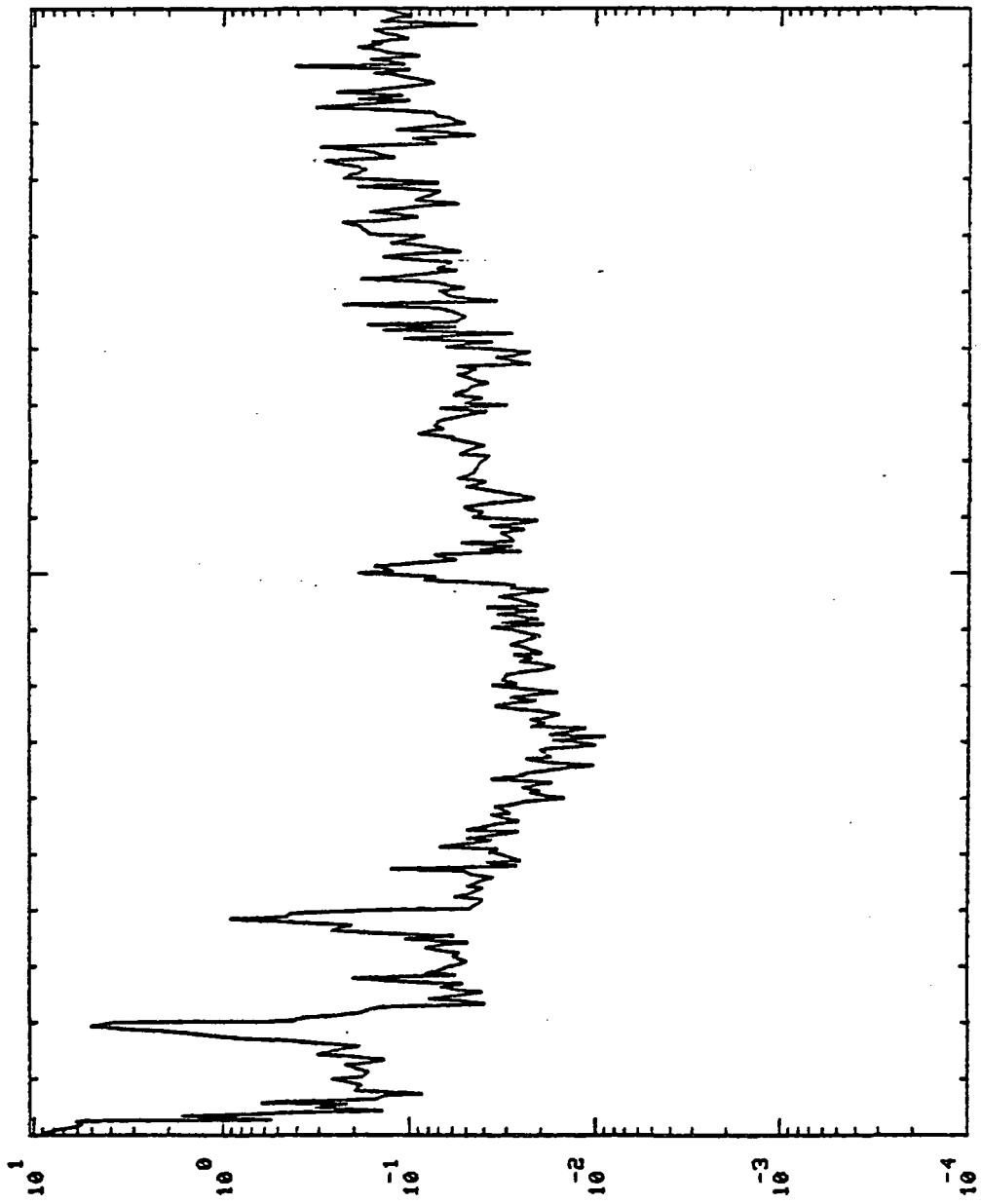
750106 HPOP BAL CAU PR1 S+ 11.050/HZ



750106 HPOP DS PR S+ 6.050/HZ



750106 HPOP DS PR S+ 11.05Q/HZ

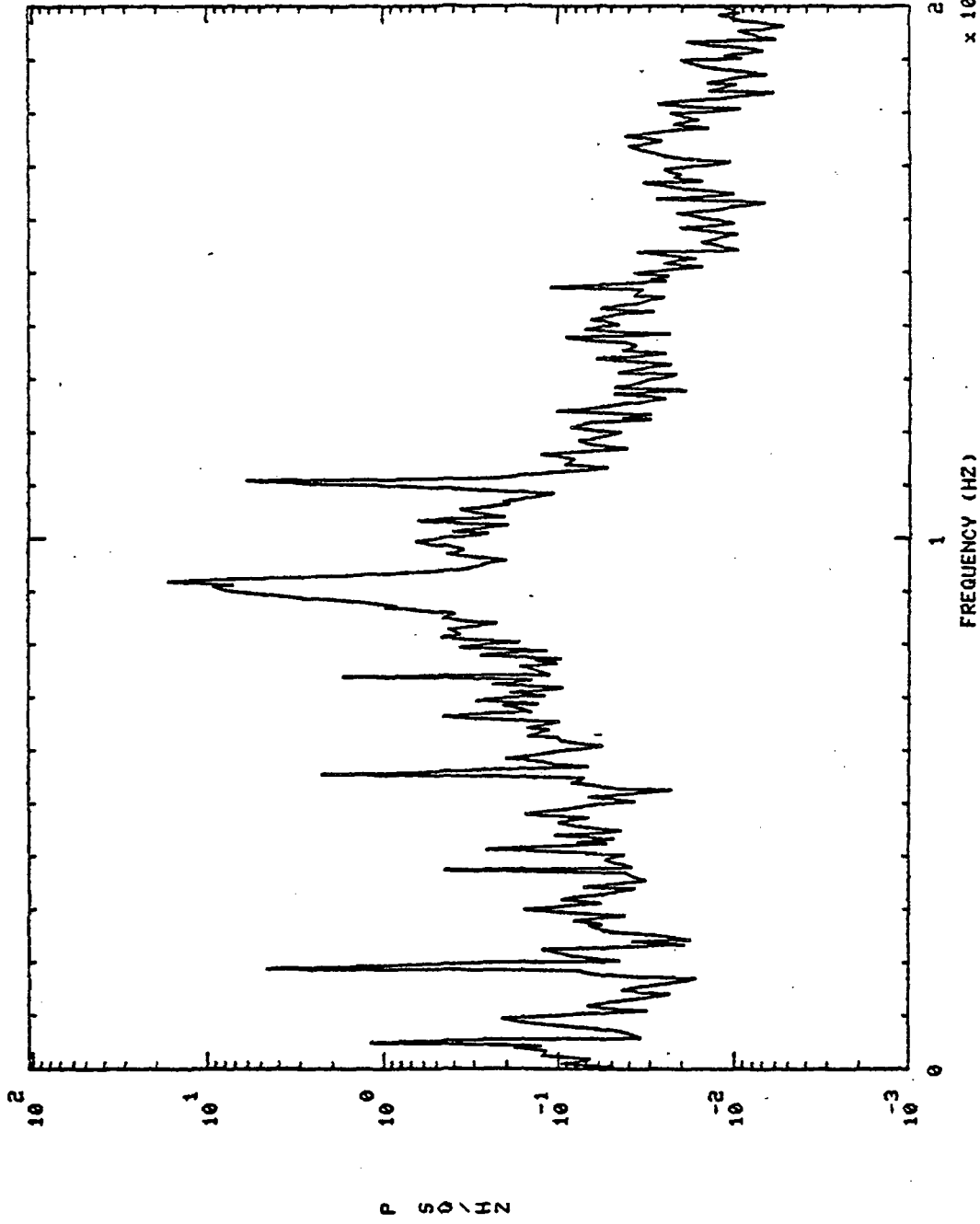


P SQ/HZ

FREQUENCY (HZ)

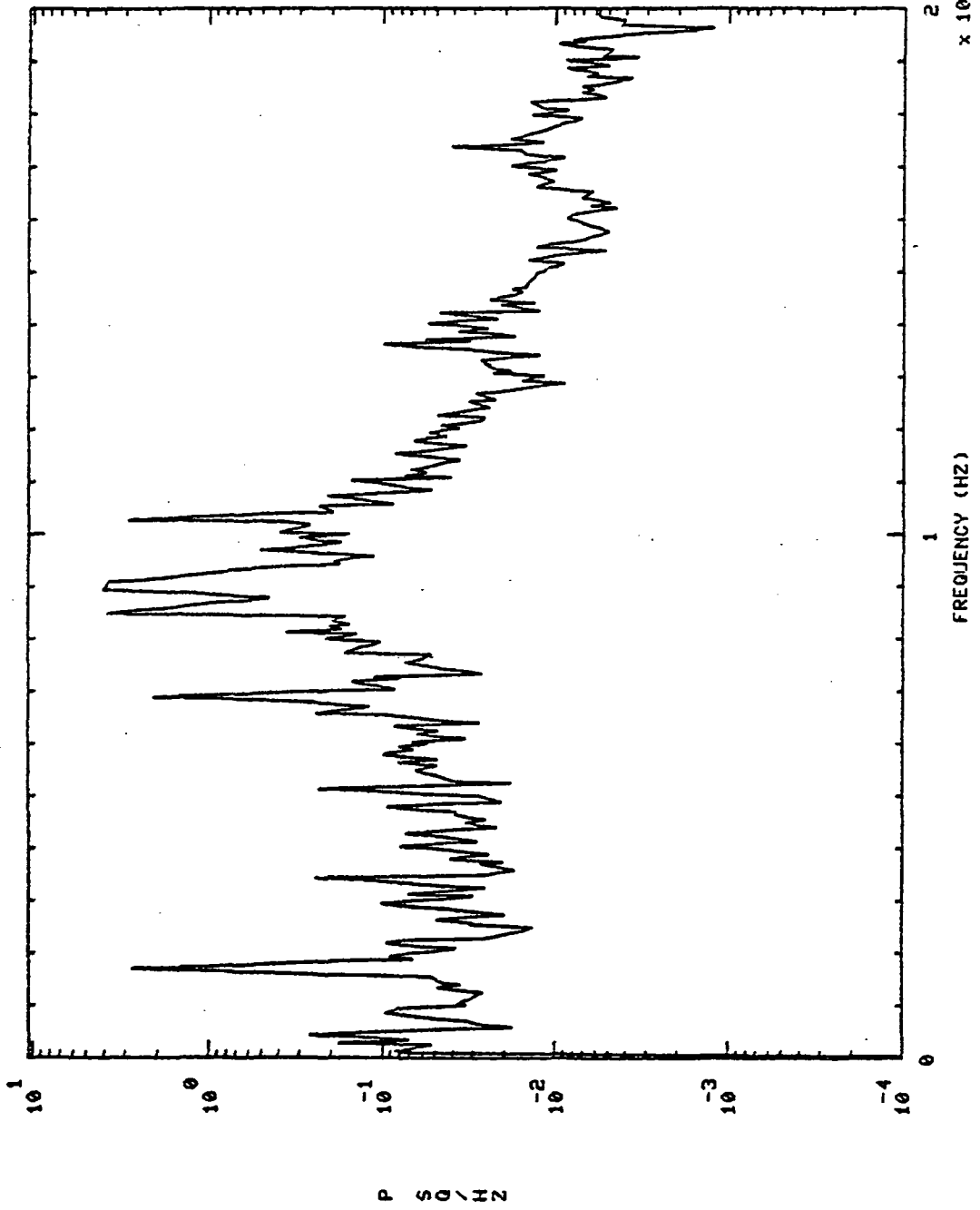
2.4  
x 10

750106 HPOP DISC PR S+ 6.050/HZ

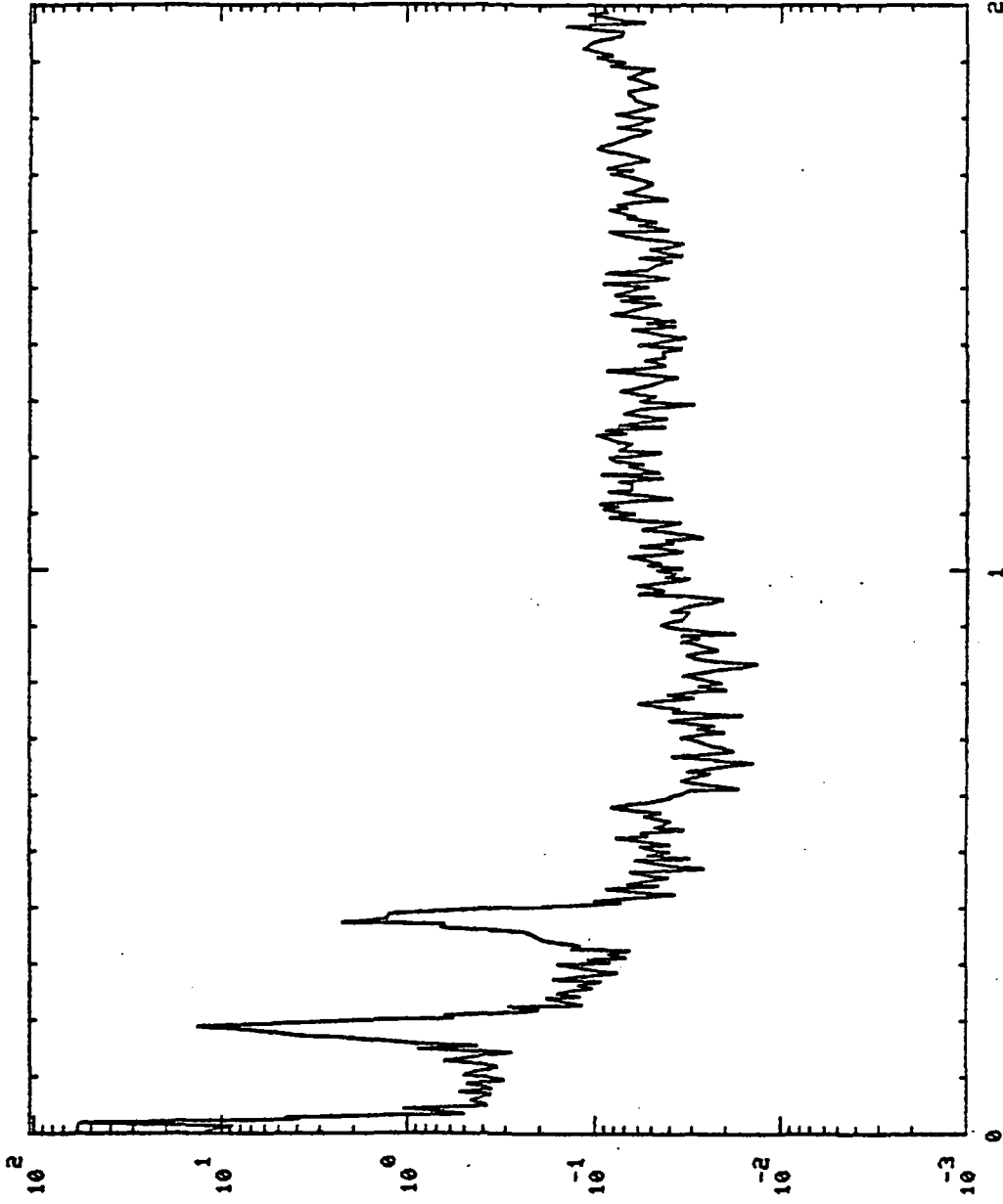


S+ 11.050/HZ

750106 HPOP DISC PR



750106 PBP D5 PR S+ 6.050/HZ



P SQ / HN

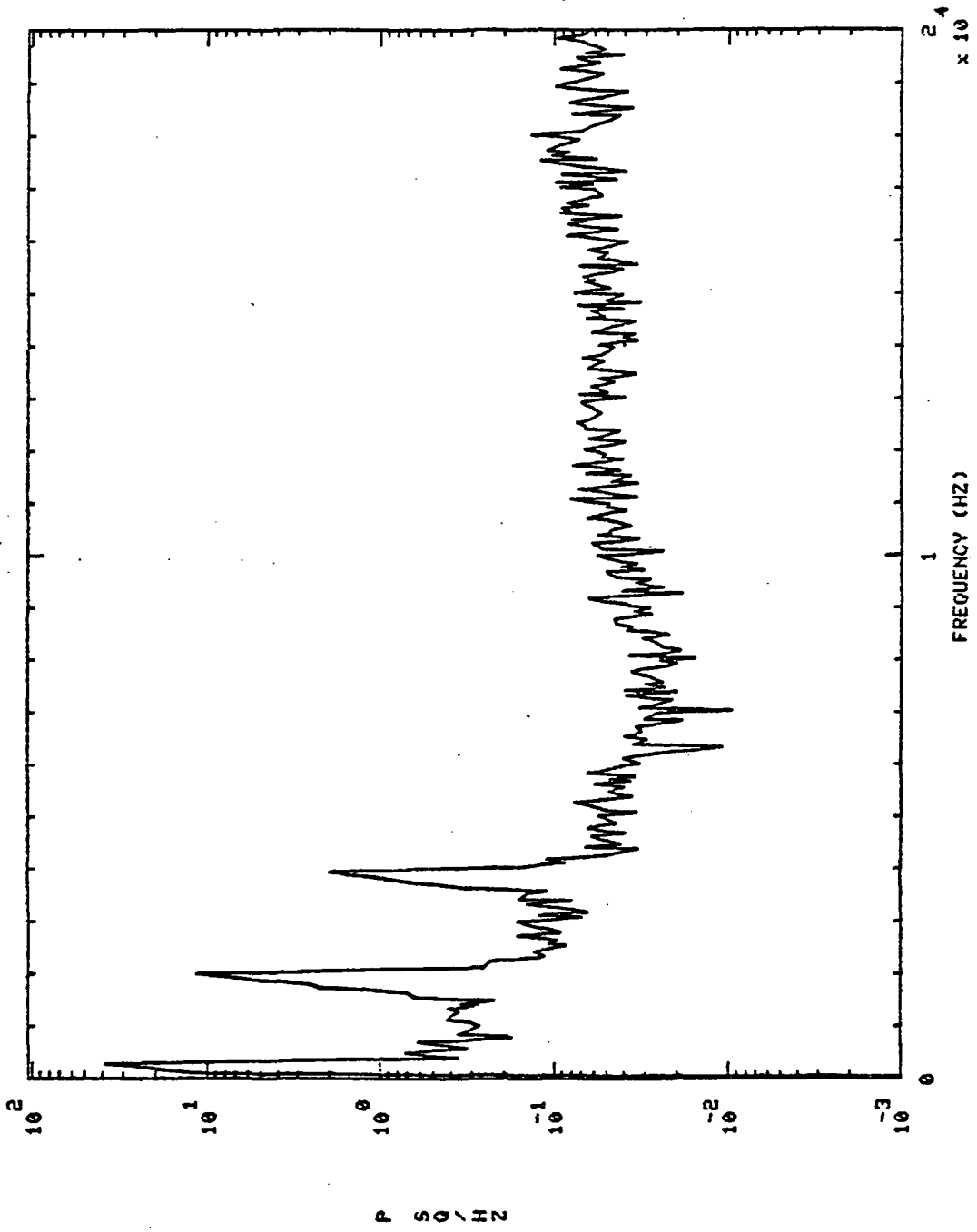
FREQUENCY (HZ)

$\times 10^4$

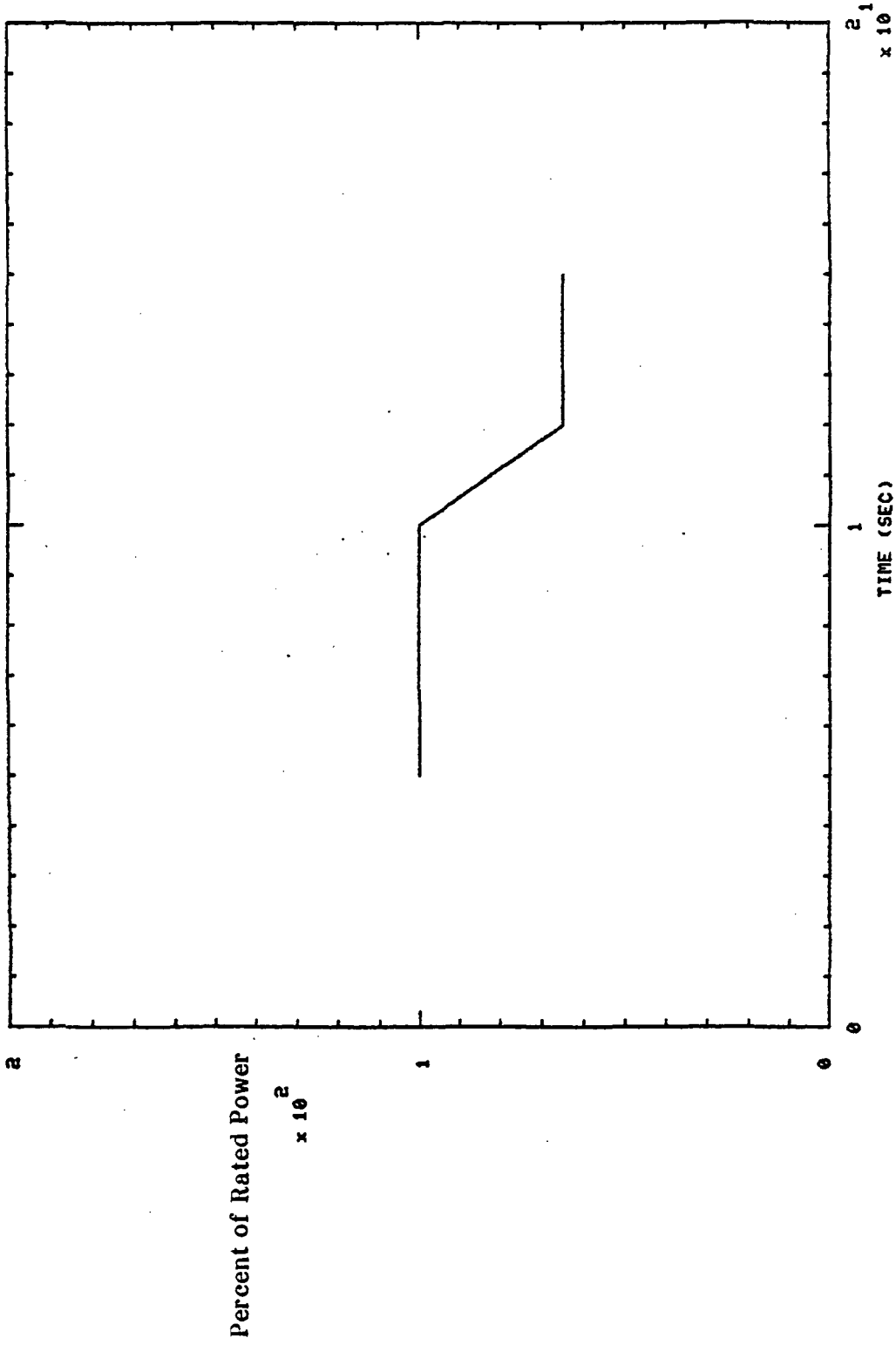


5+ 11.050/HZ

750106 PBP DS PR

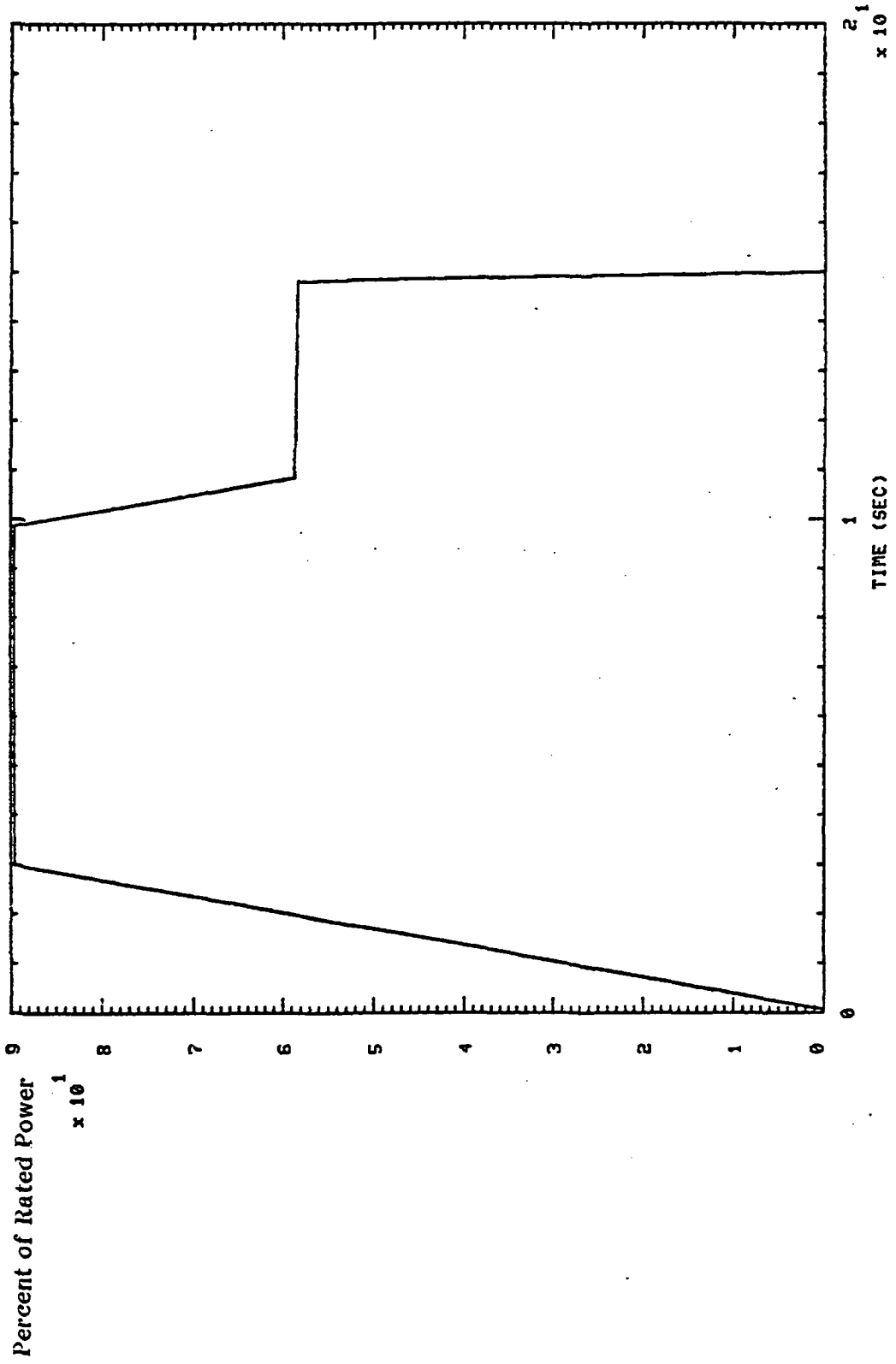


750107 THRUST (UNFILTERED )



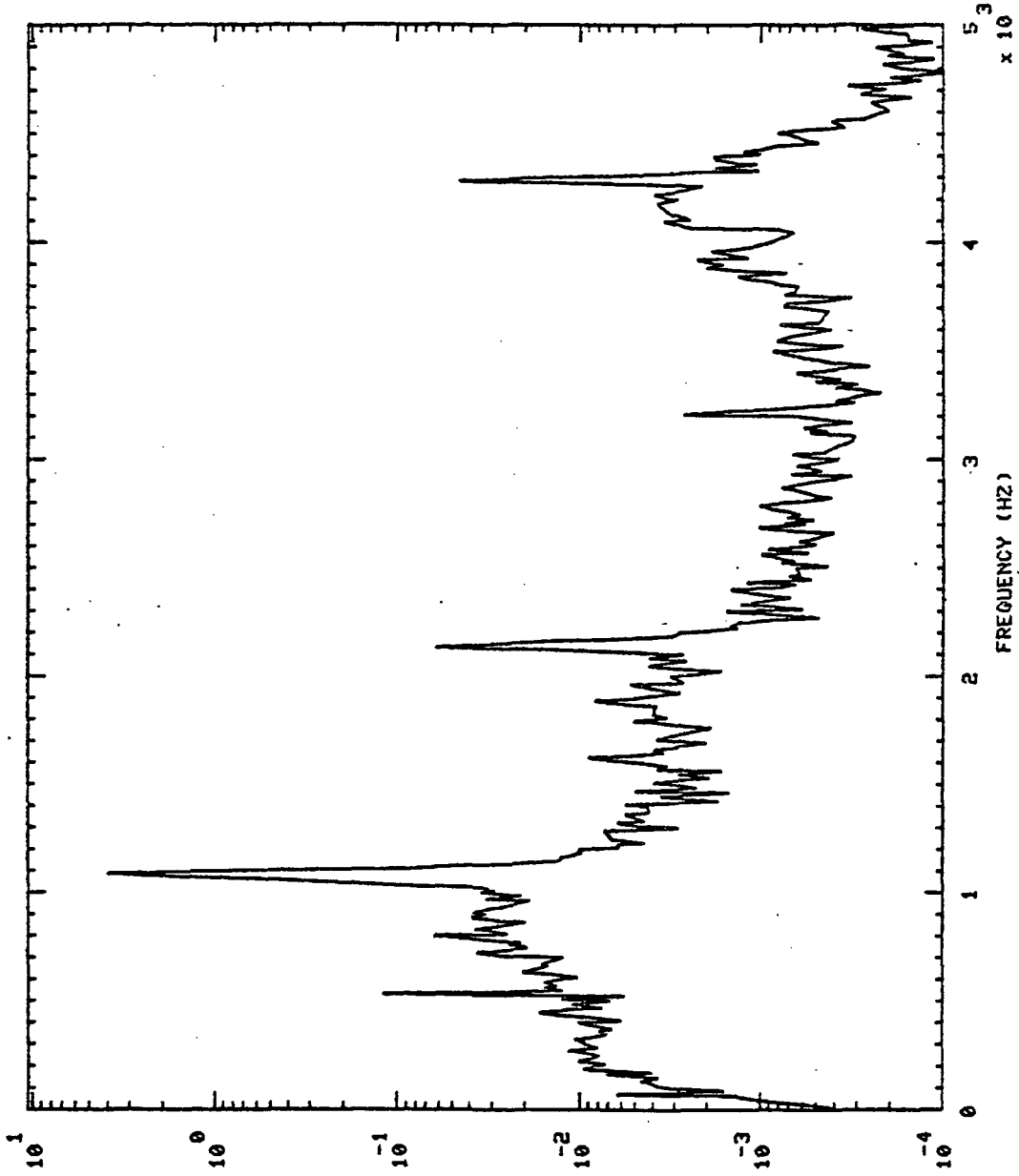
(UNFILTERED )

750108 THRUST



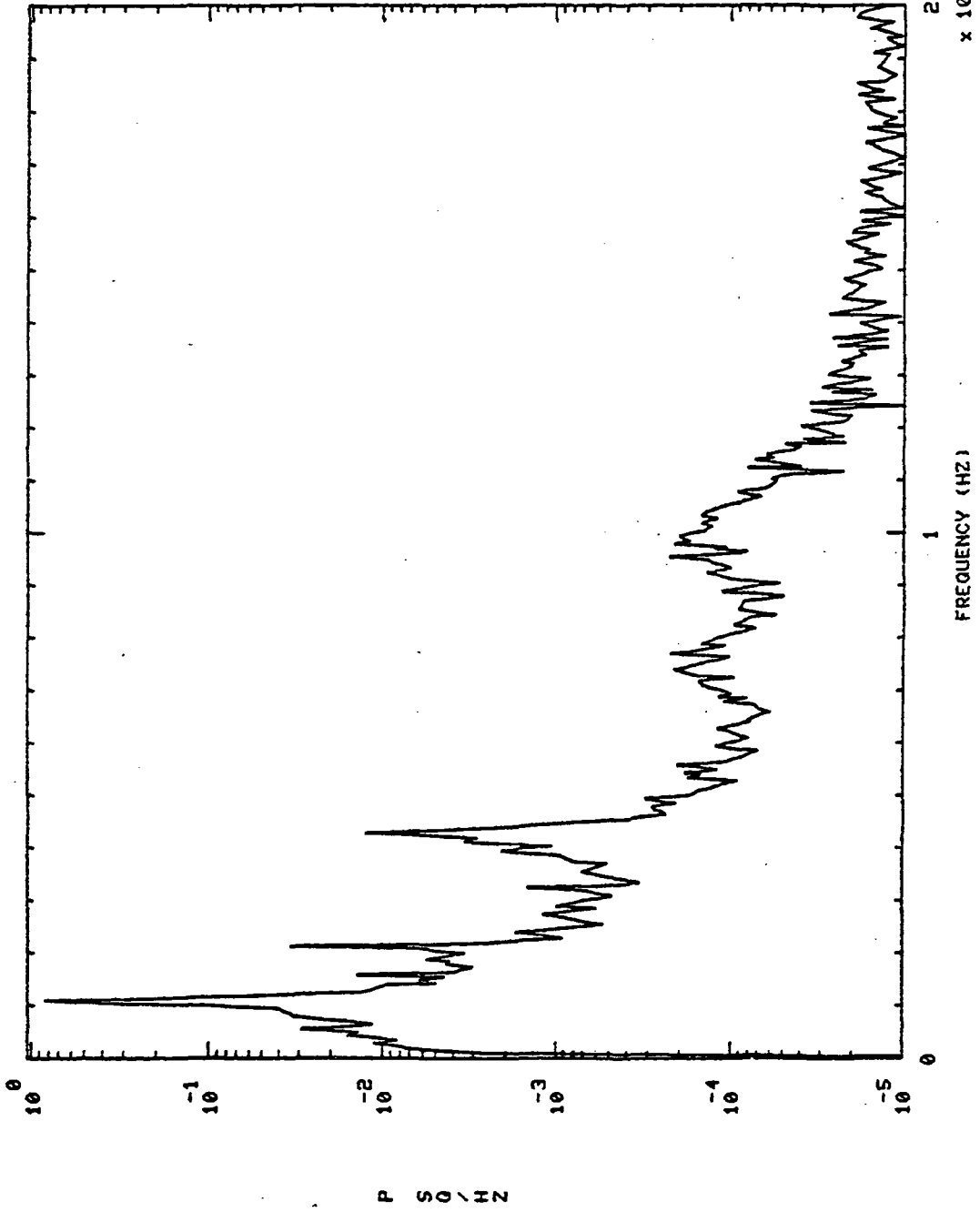
S+ 6.050/HZ

750108 LPFP IN PR



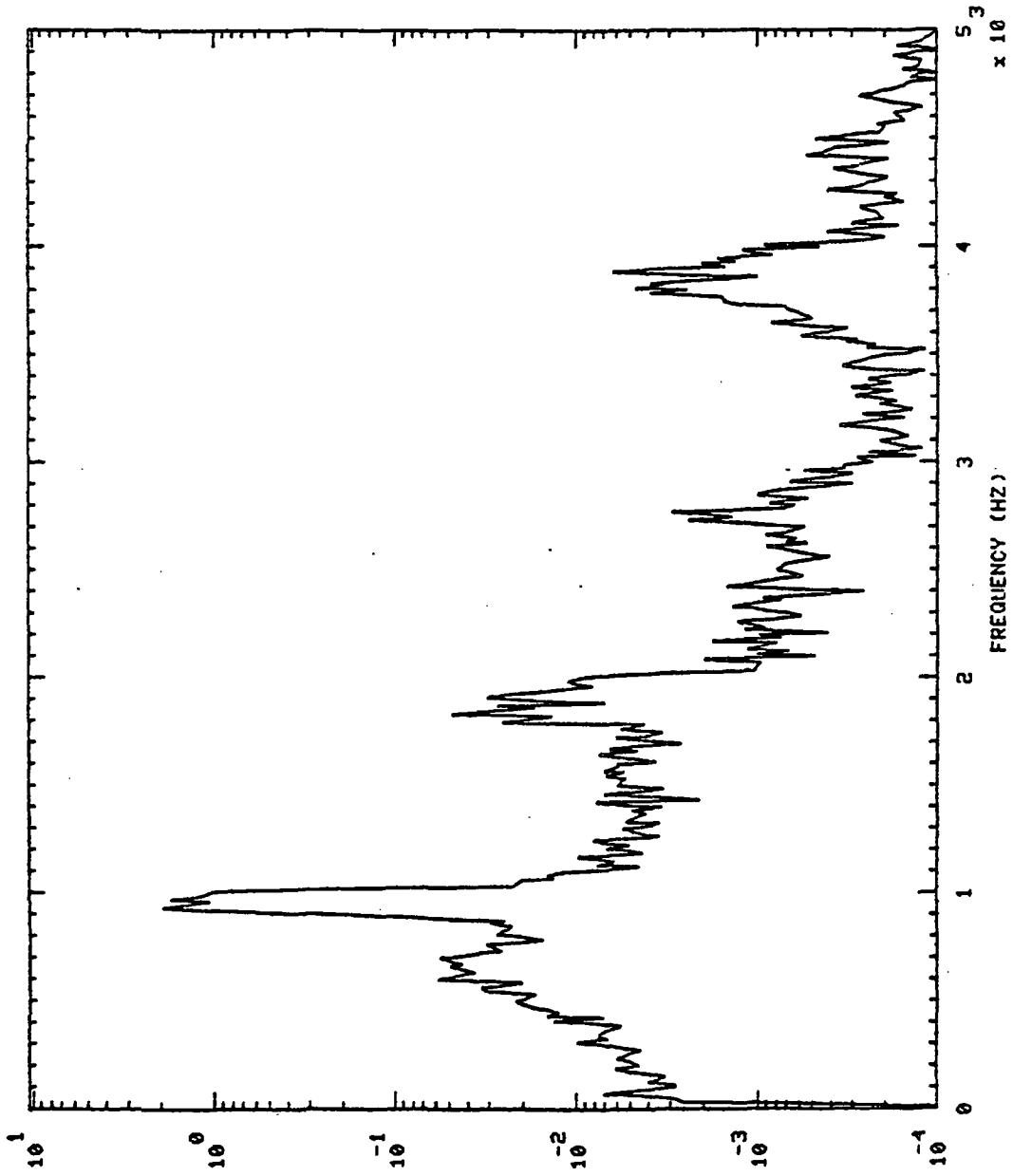
P S D \ HZ

750108 LPFP IN PR S+ 6.050/HZ



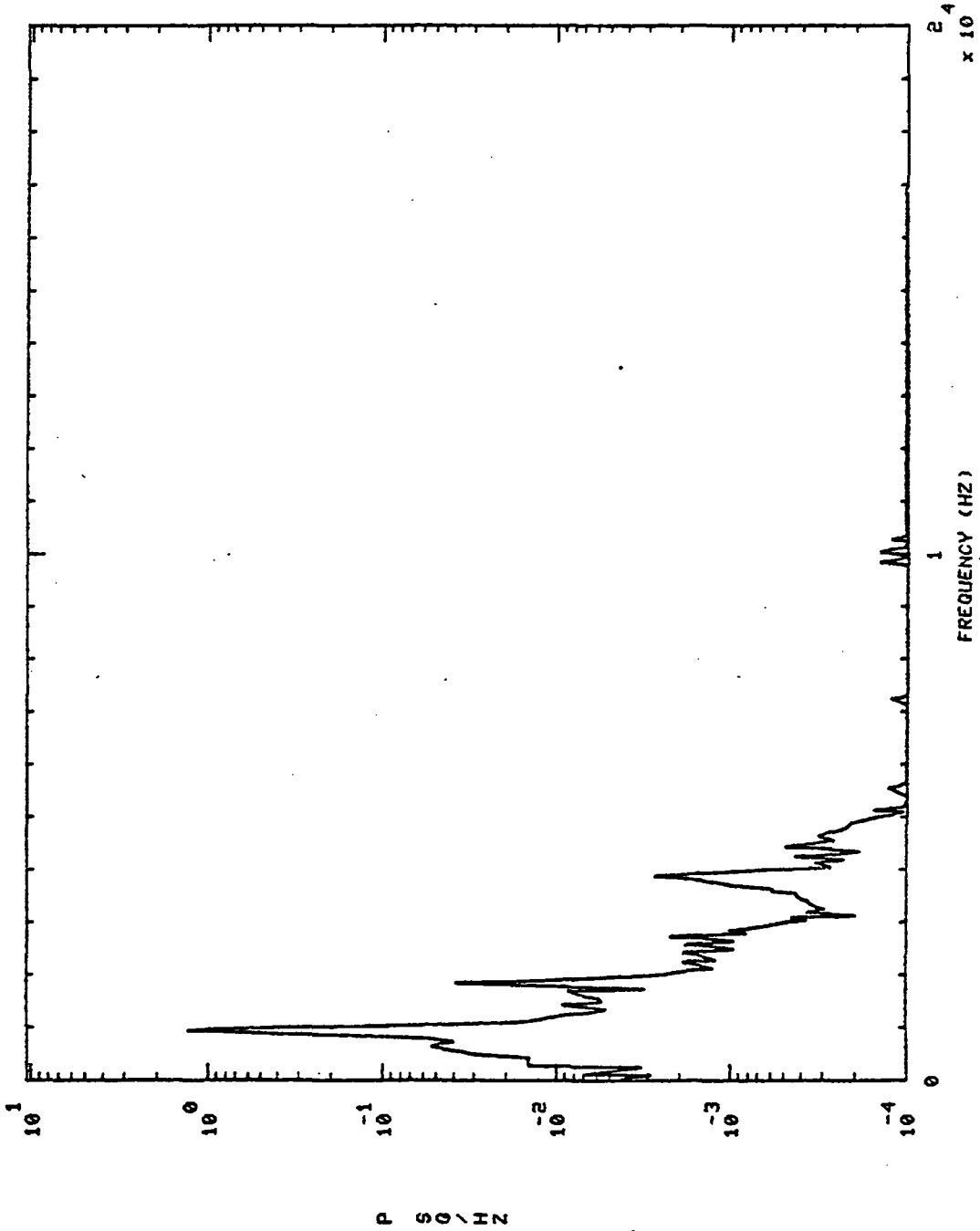
S+ 12.050/HZ

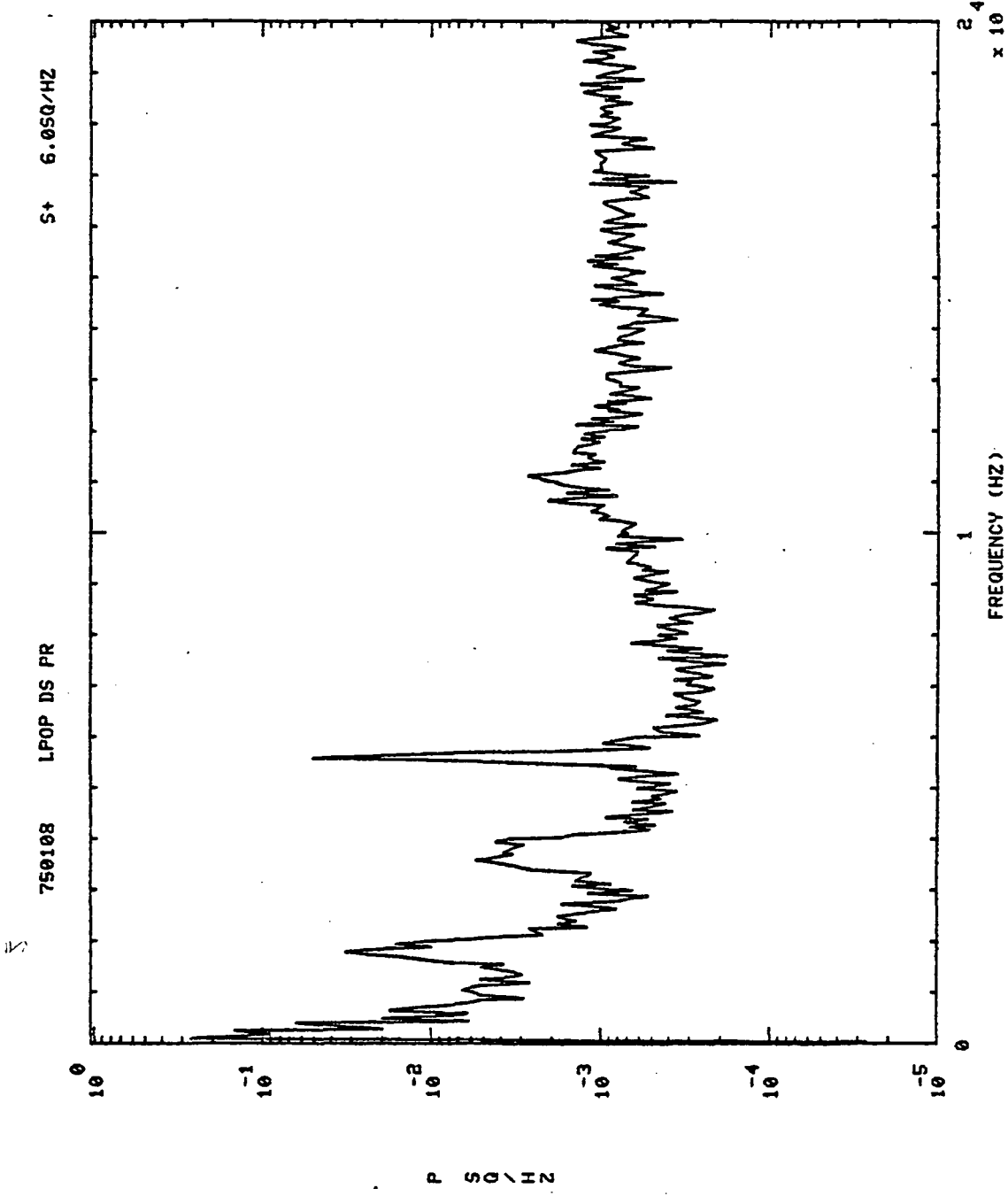
750108 LPFP IN PR



PSD / HZ

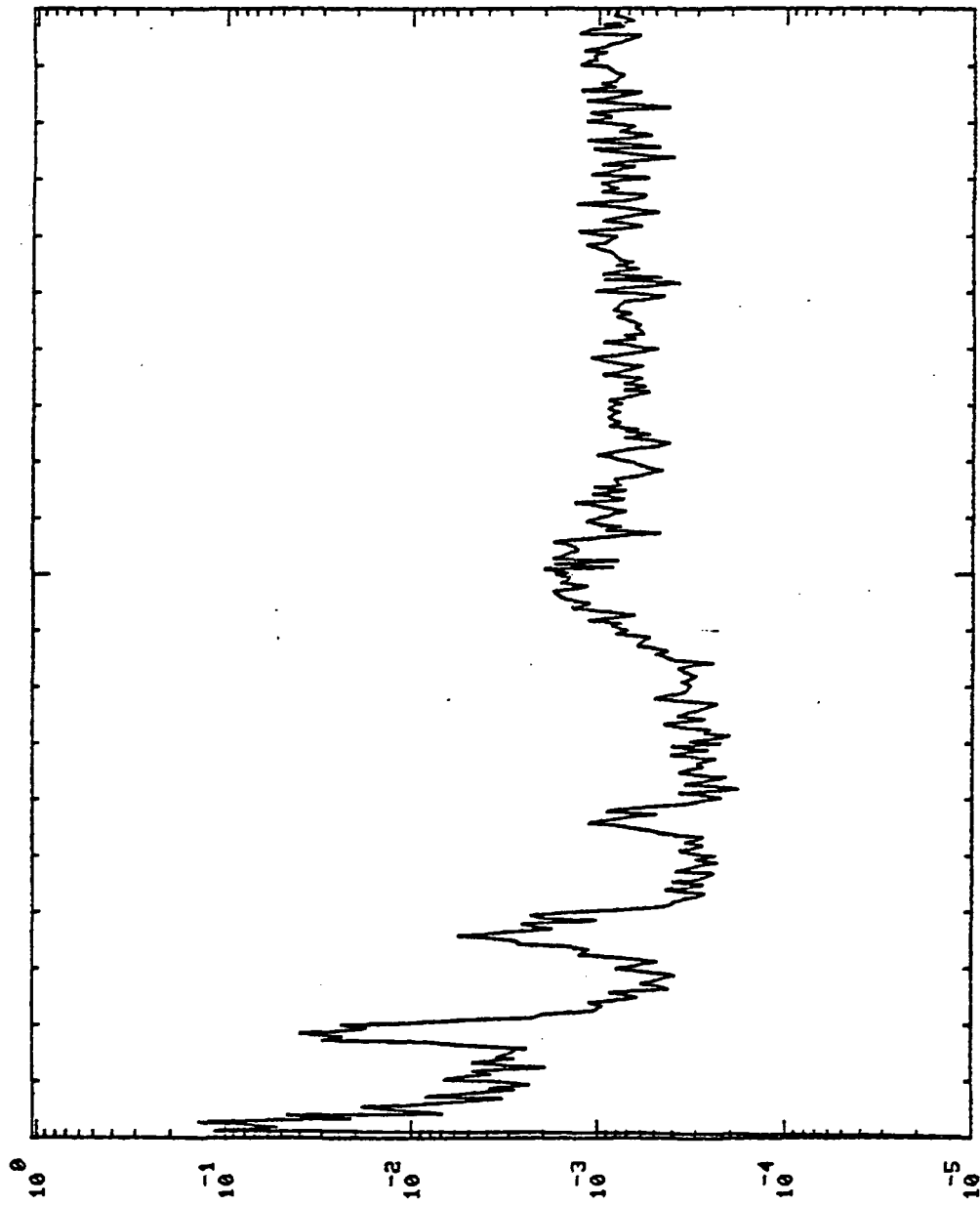
750108 LPFP IN PR S+ 12.050/HZ







750108 LPOP D5 PR 5+ 12.050/HZ

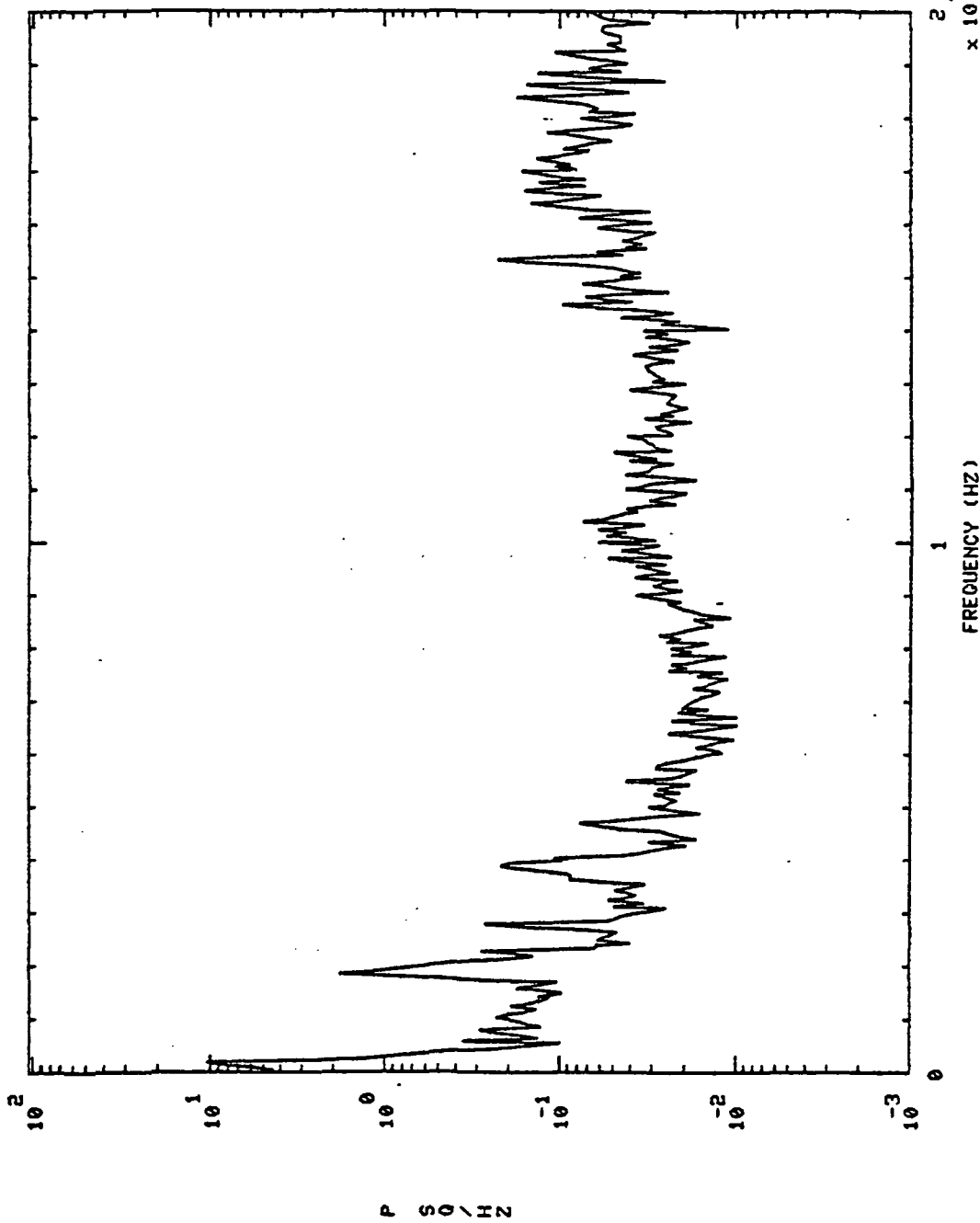


PSD / HZ

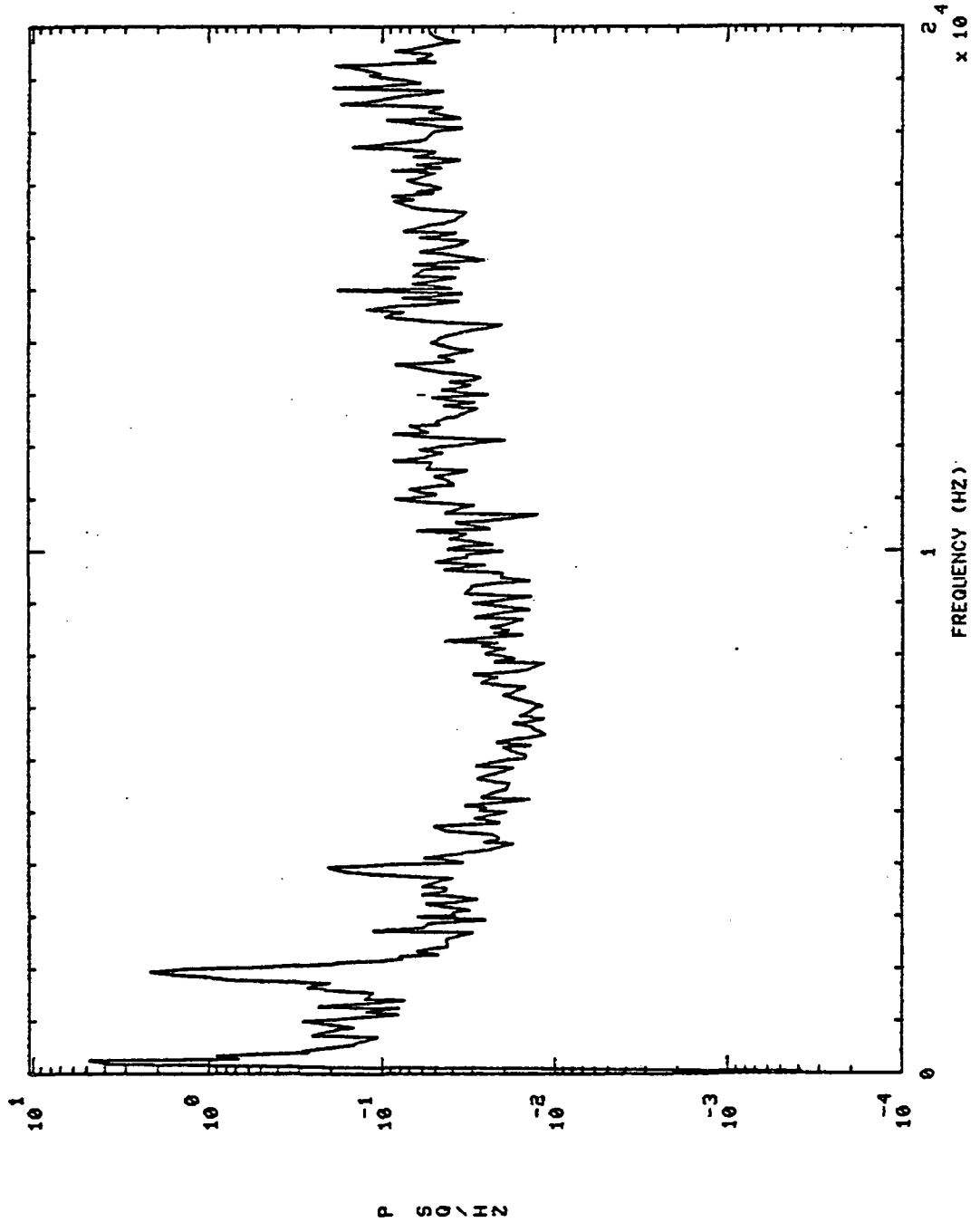
$2.4 \times 10^4$

FREQUENCY (HZ)

750108 HPOP DS PR S+ 6.050/HZ

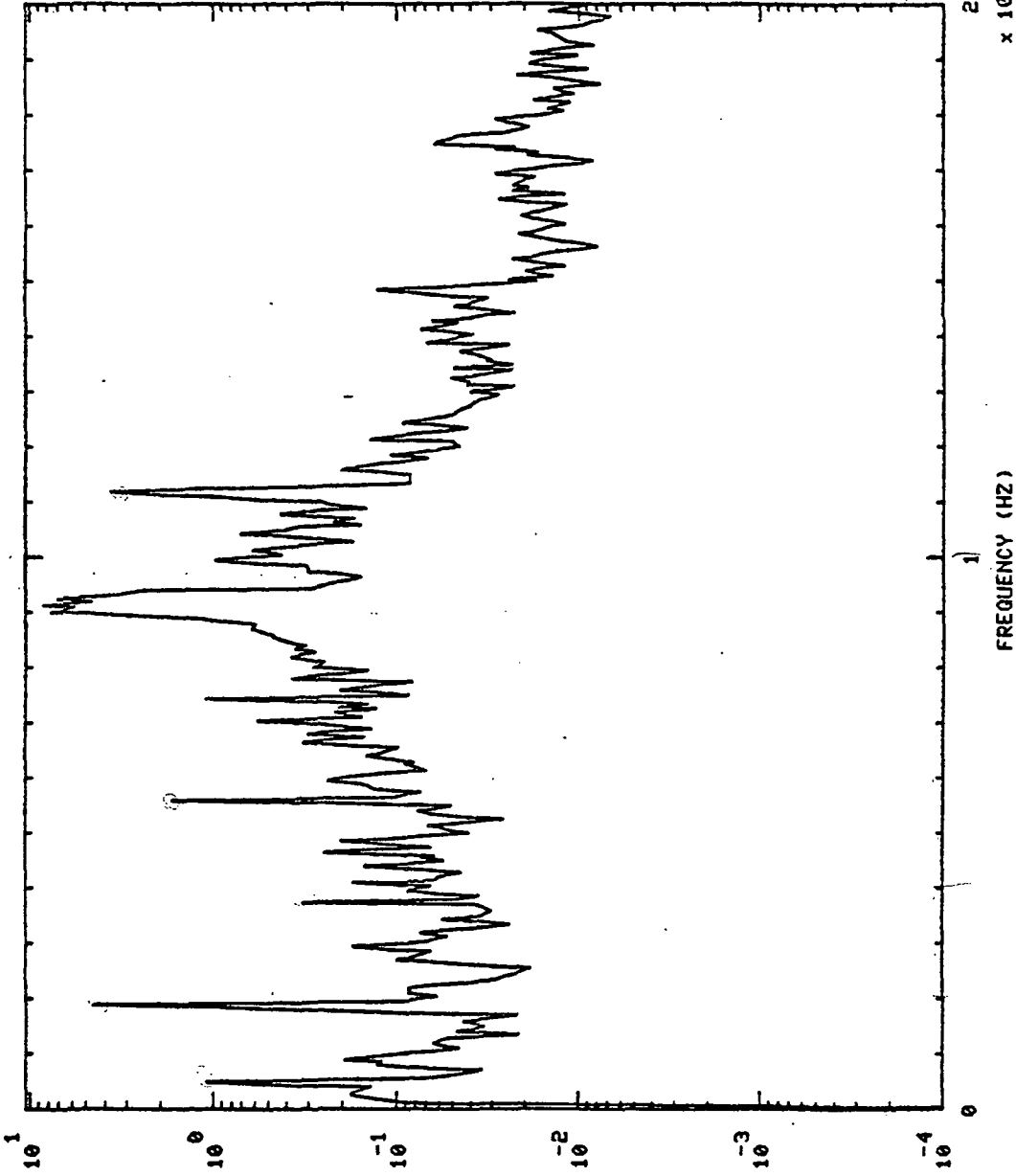


750108 HPOP DS PR S+ 12.050/HZ



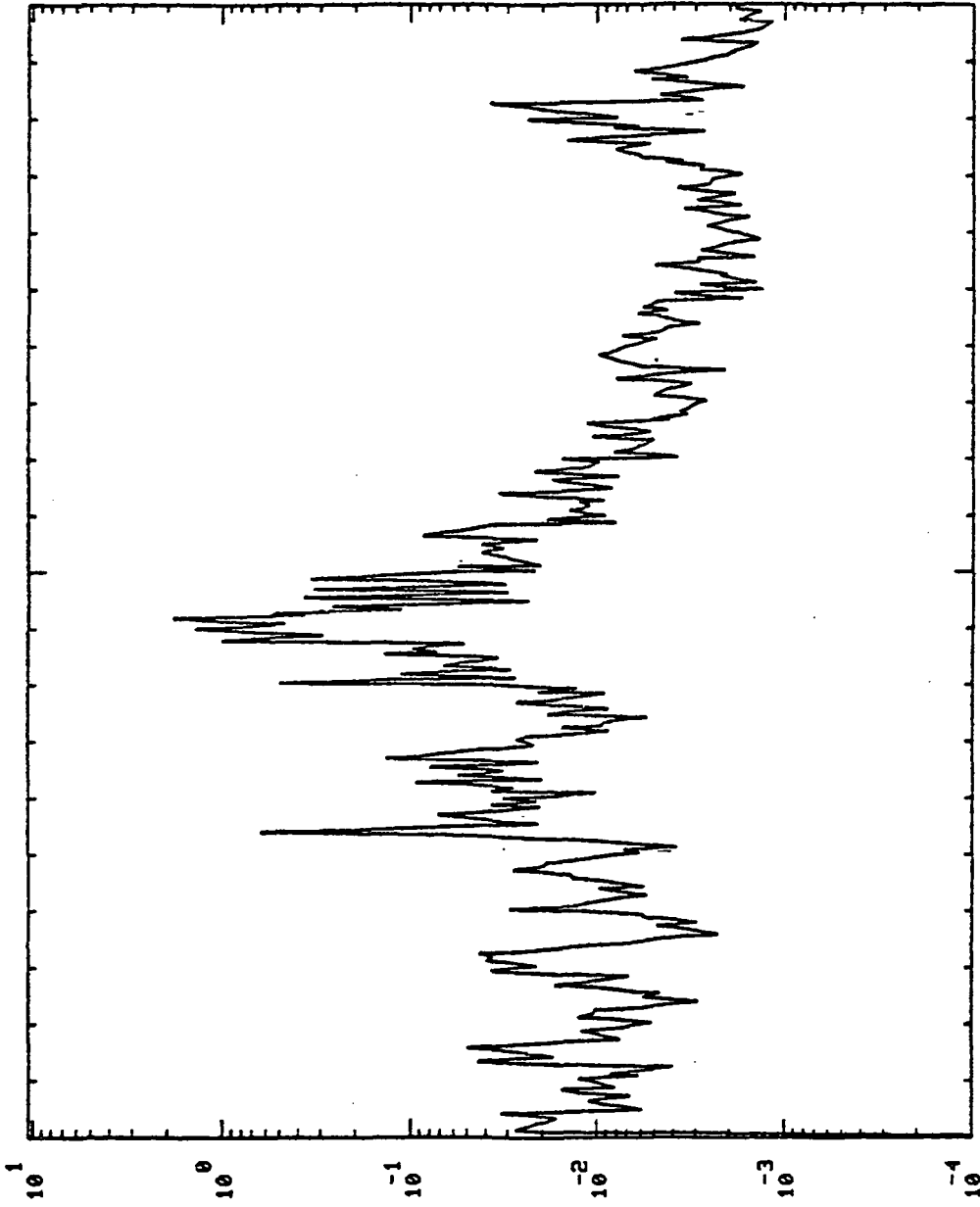
S+ 6.050/HZ

750108 HPOP DISC PR



PSG / HZ

750108 HPOP DISC PR S+ 12.050/HZ

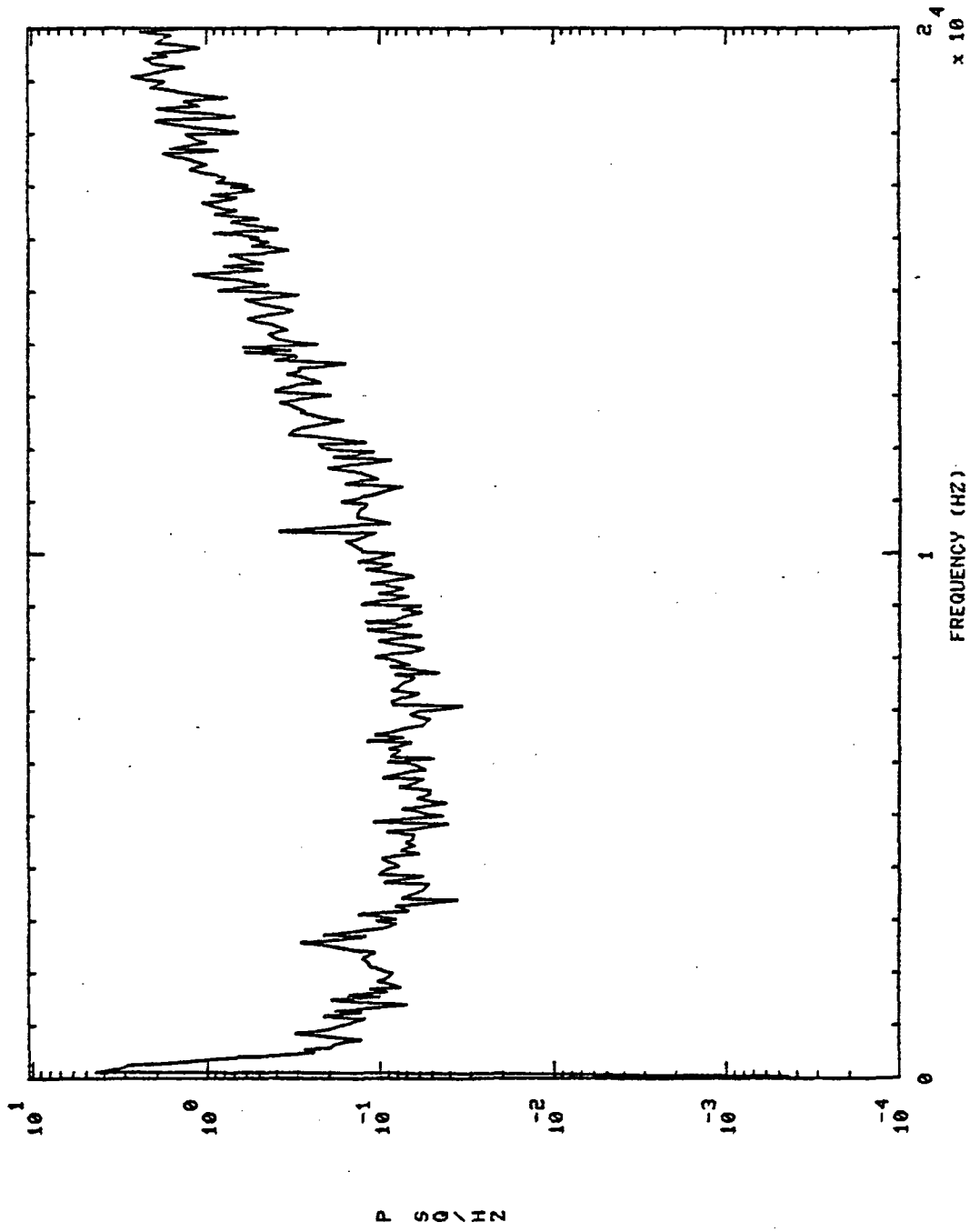


P S D / H Z

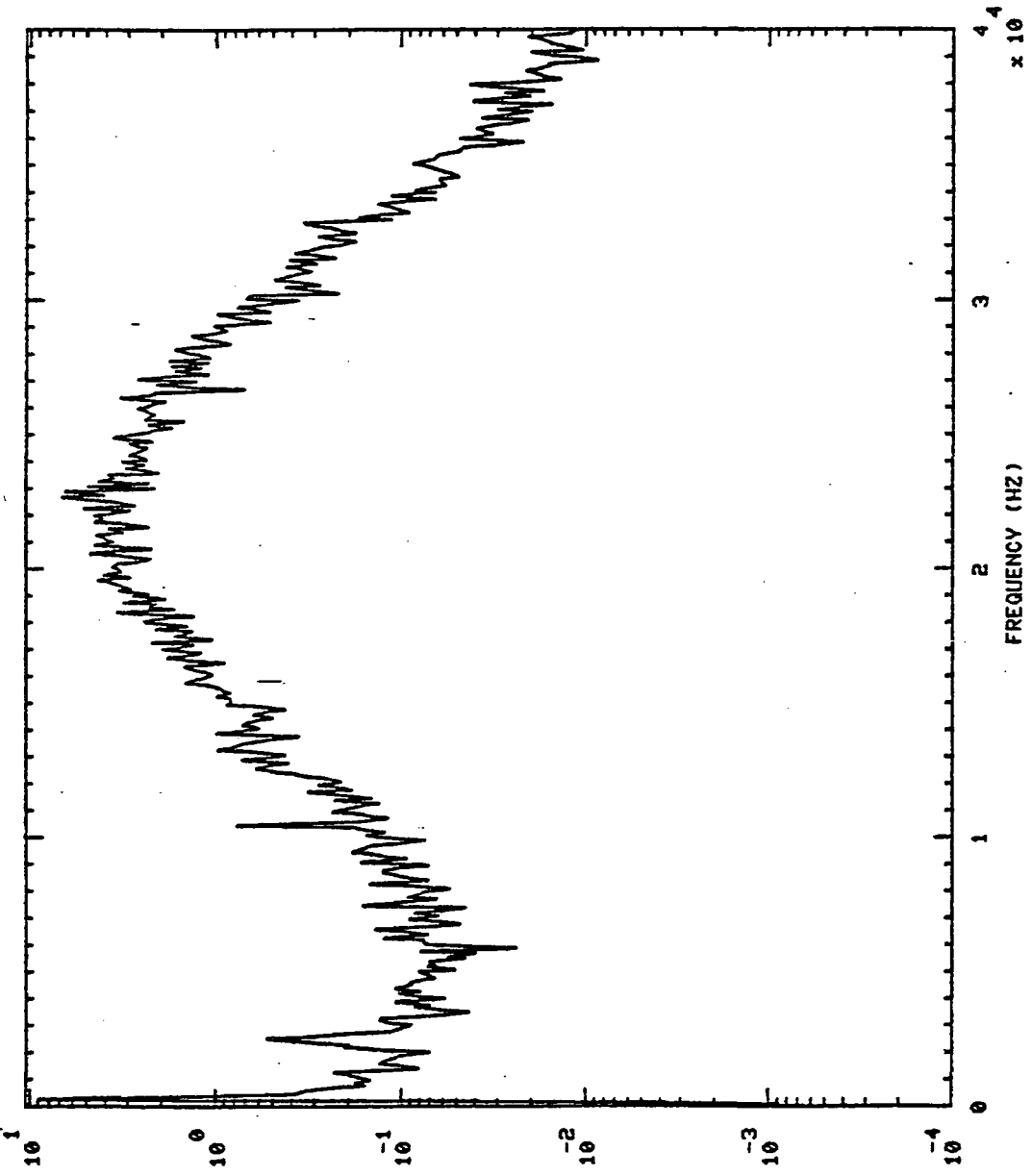
FREQUENCY (HZ)

2.4  
x 10<sup>4</sup>

750108 MCC HOT GAS IN PR S+ 6.050/HZ



750108 MCC HOT GAS IN PR S+ 6.01H0,'S



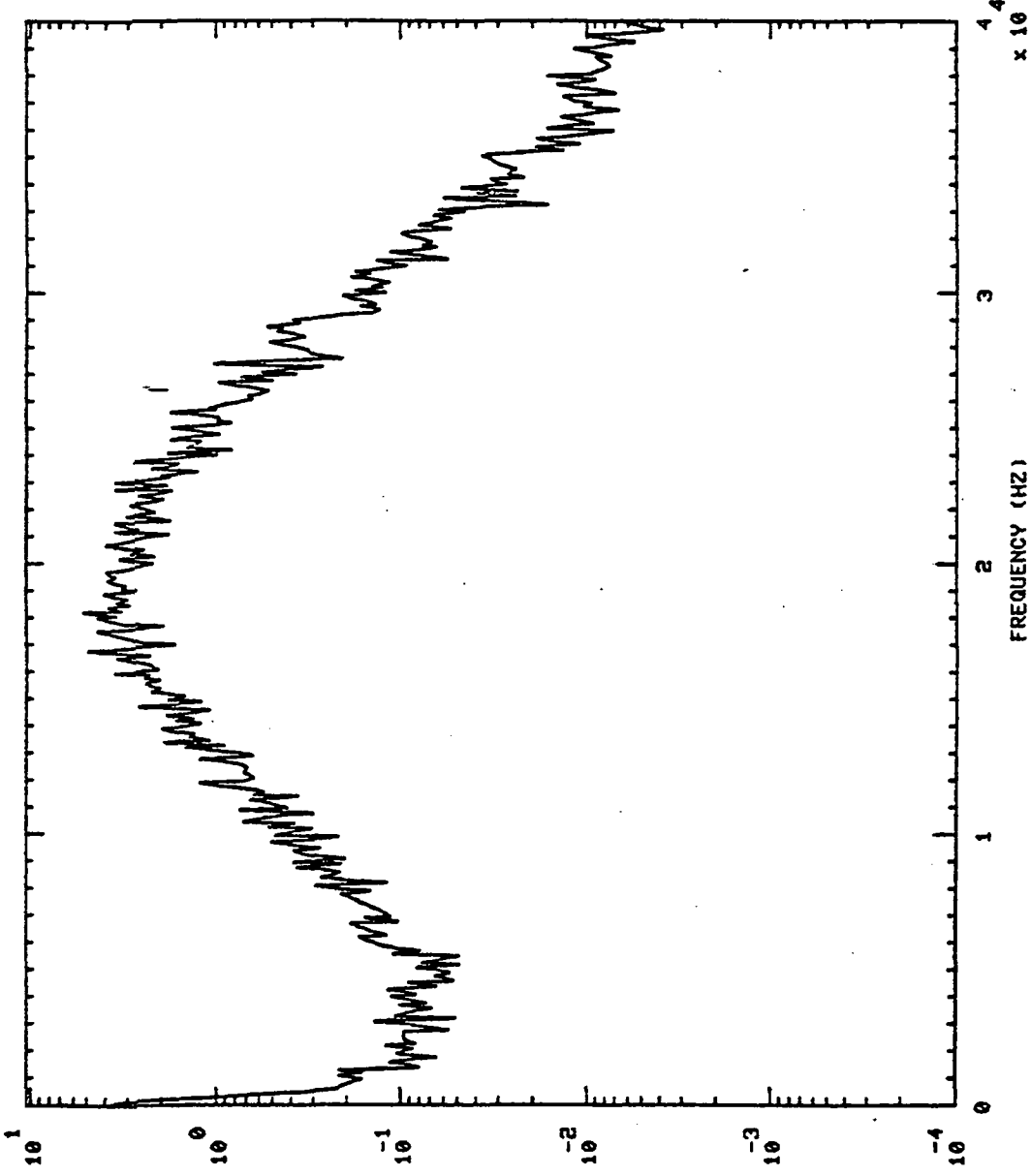
P SQ \ HN

ST 12.01H0,5

PLC 101 GNS IN PK

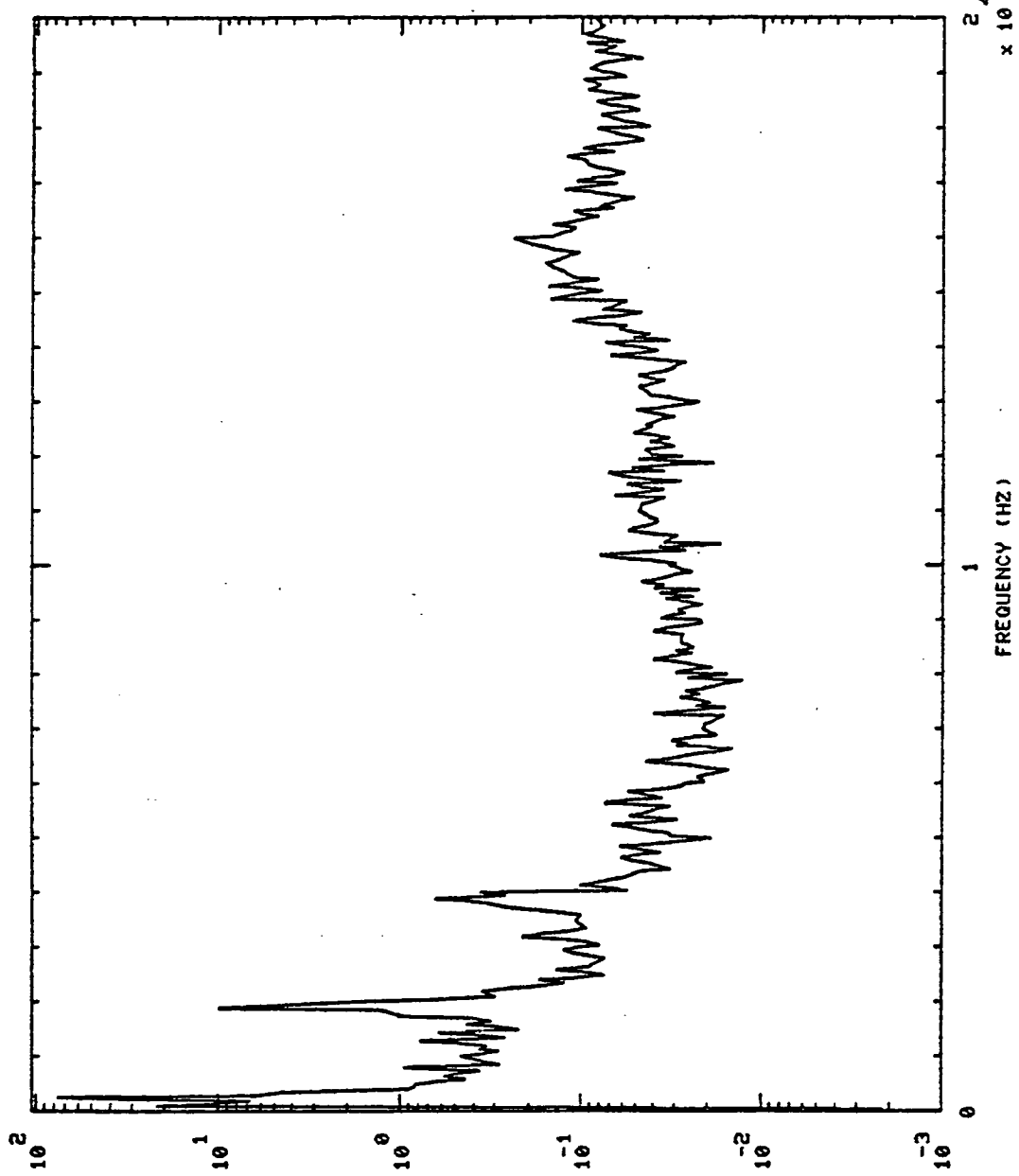
10/1/60

P S Q \ H Z





750108 PBP DS PR S+ 6.050/HZ

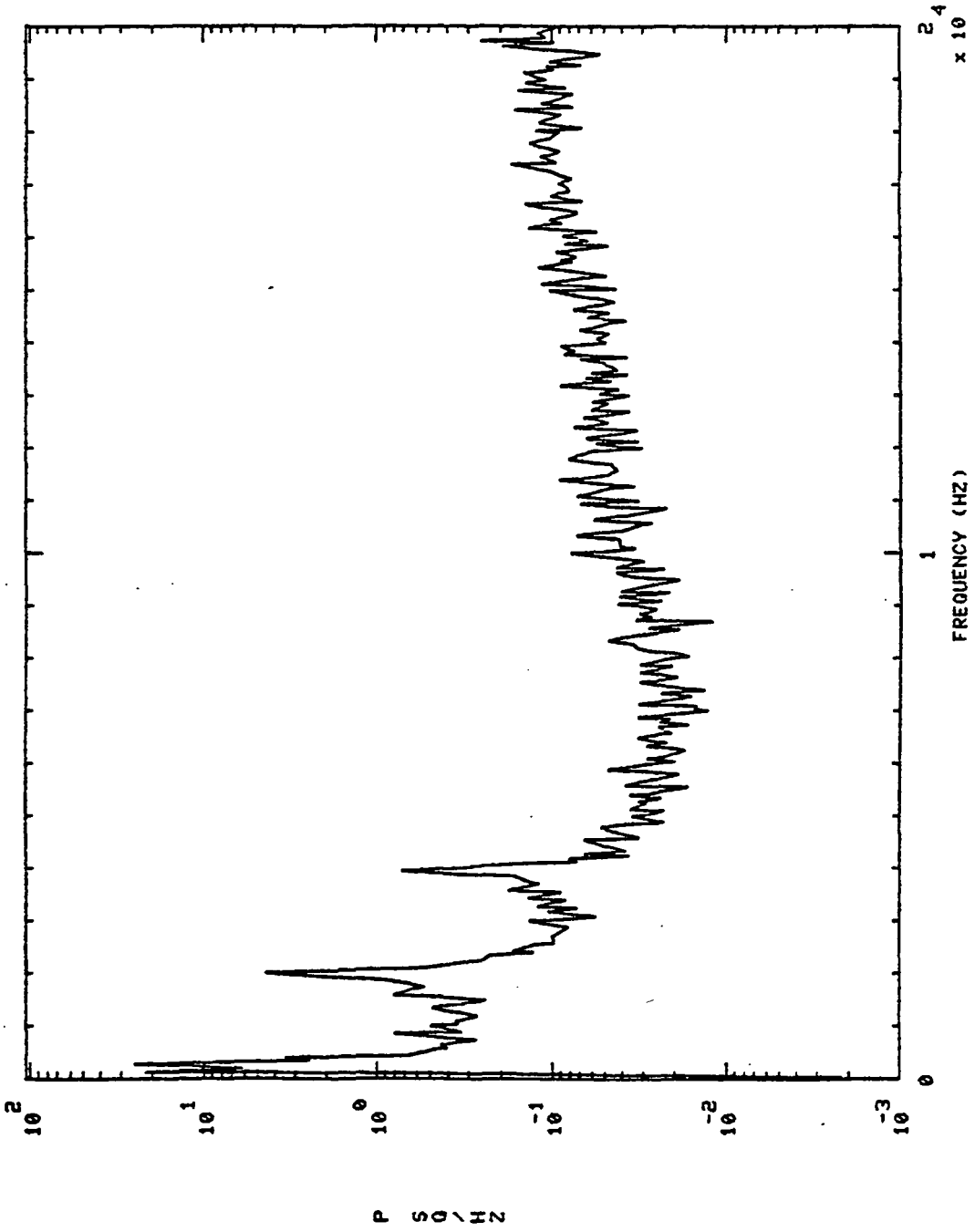


PSD / HZ

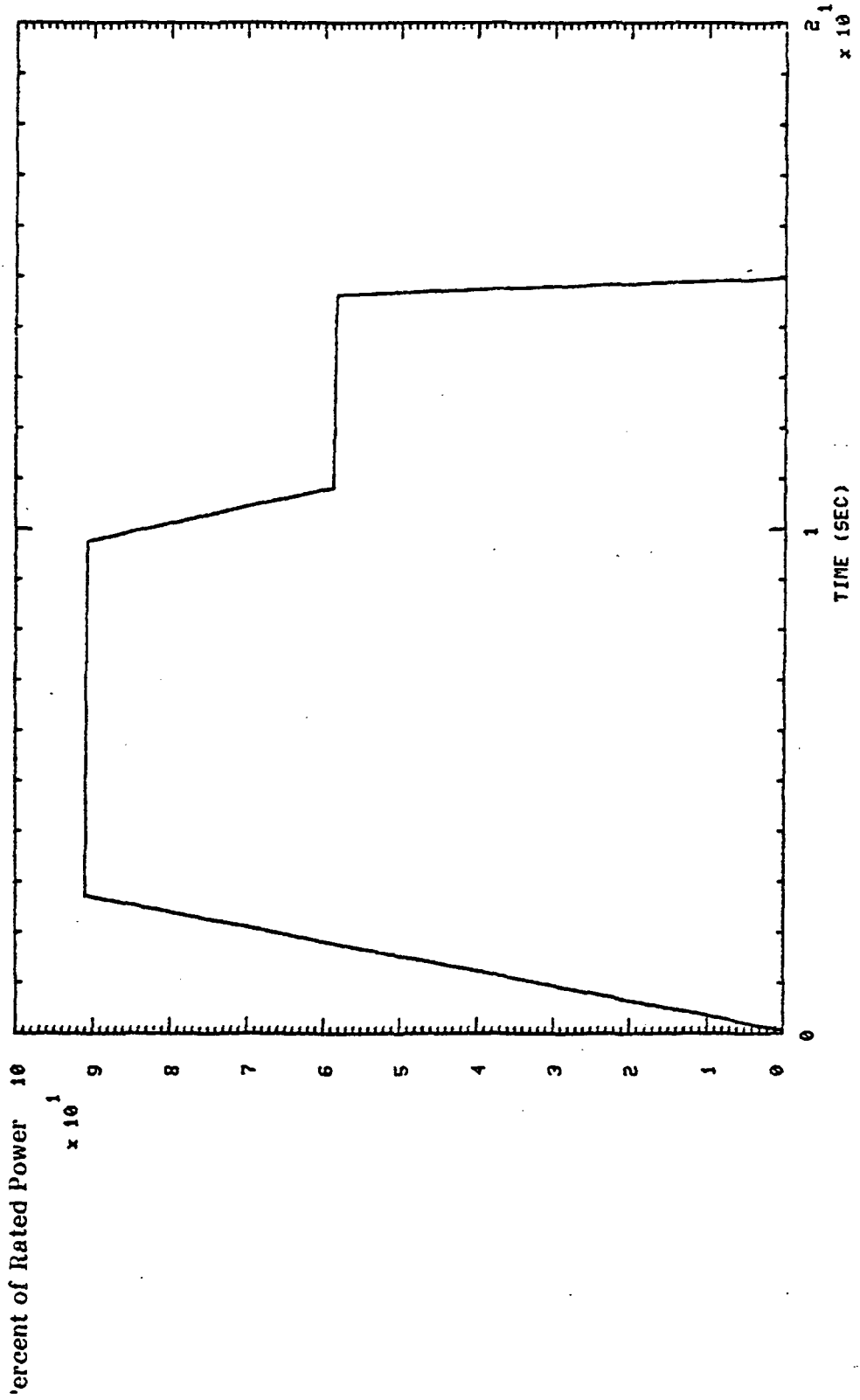
FREQUENCY (HZ)

$\times 10^4$

750108 PBP DS PR S+ 12.050/HZ

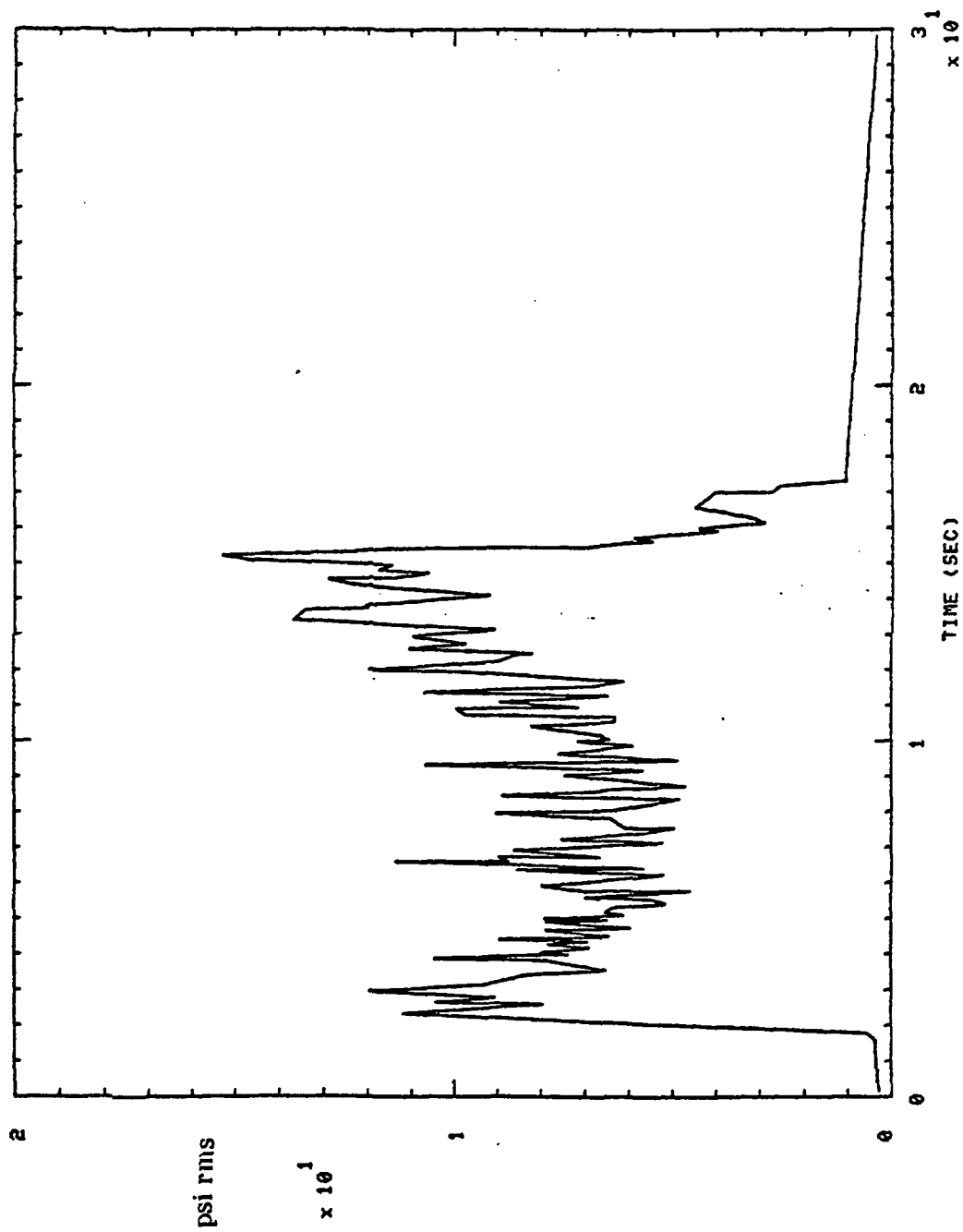


750109 THRUST (UNFILTERED )

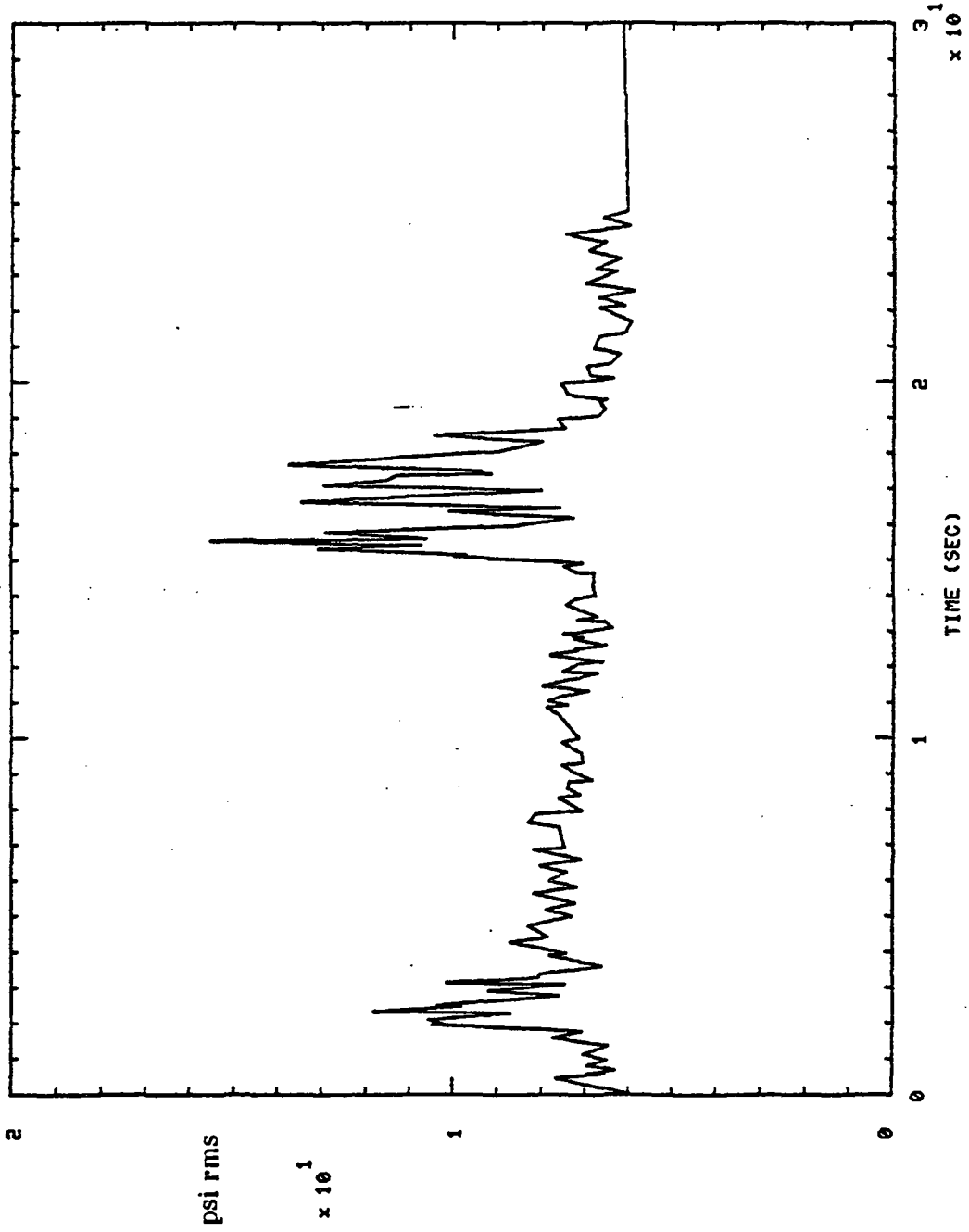


( 1 - 20K HZ )

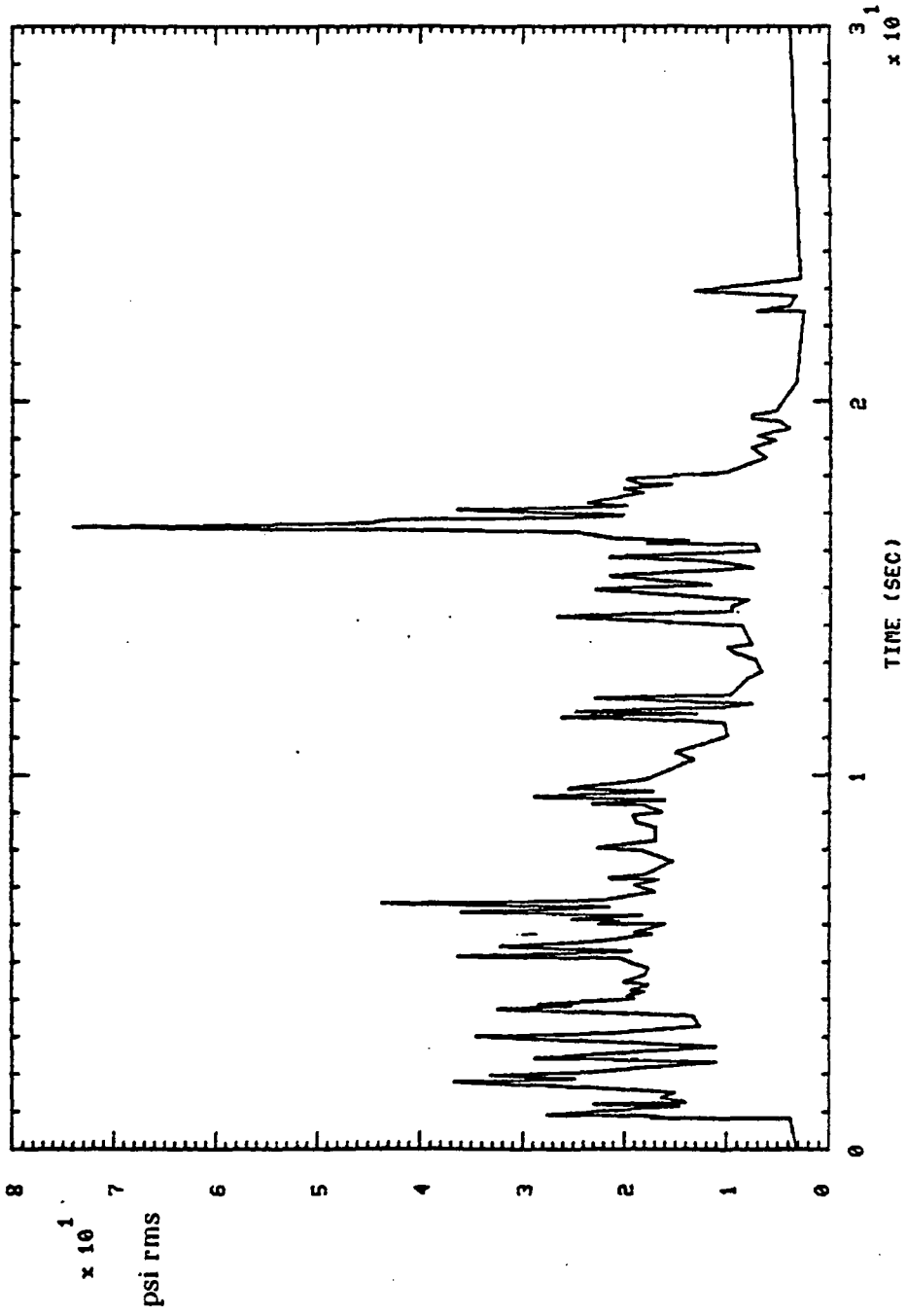
750109 LPFP IN PR



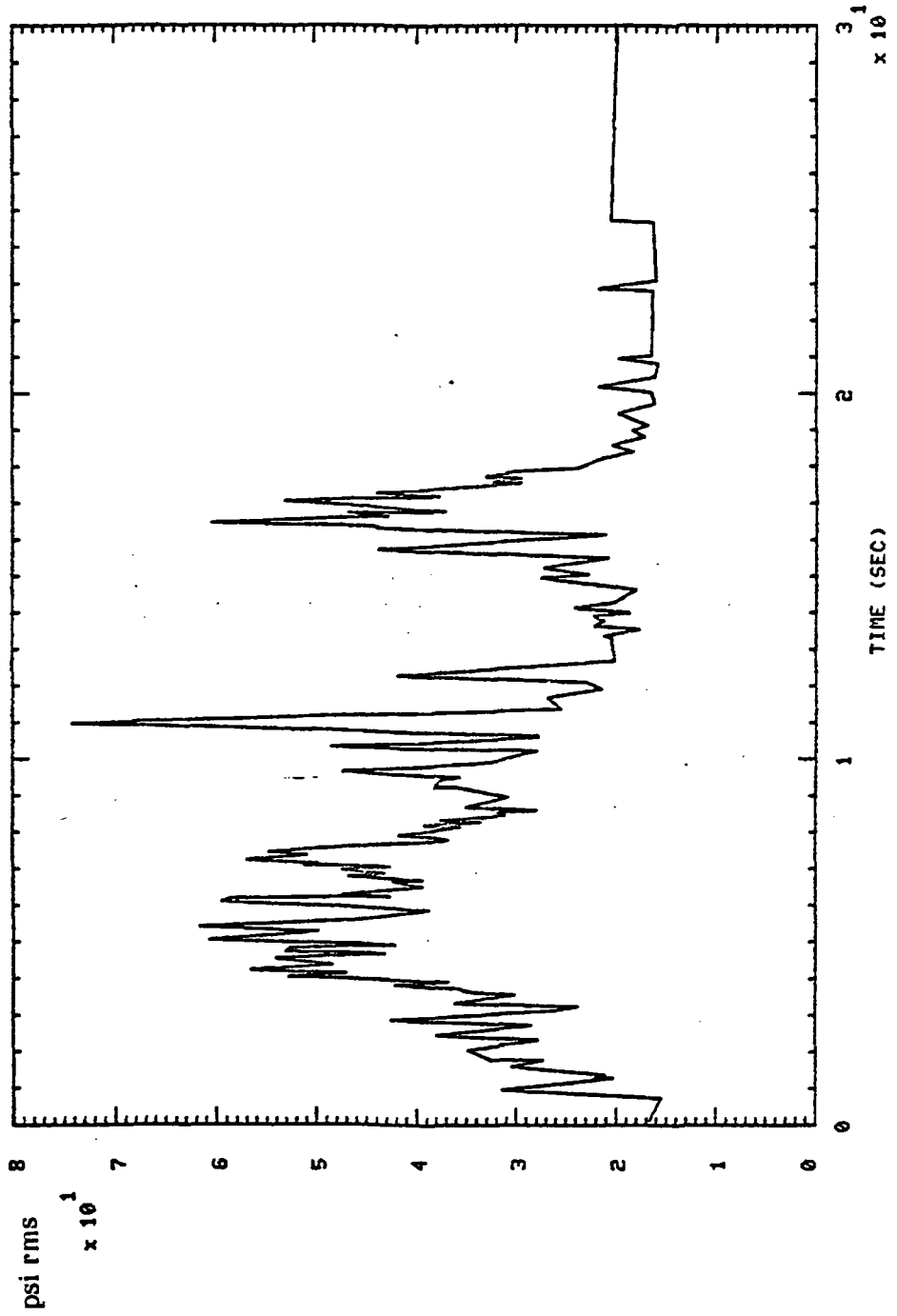
750109 LPOP D5 PR (1 - 20K HZ )



750109 HPOP BAL CAV PR2 (1 - 20K HZ )

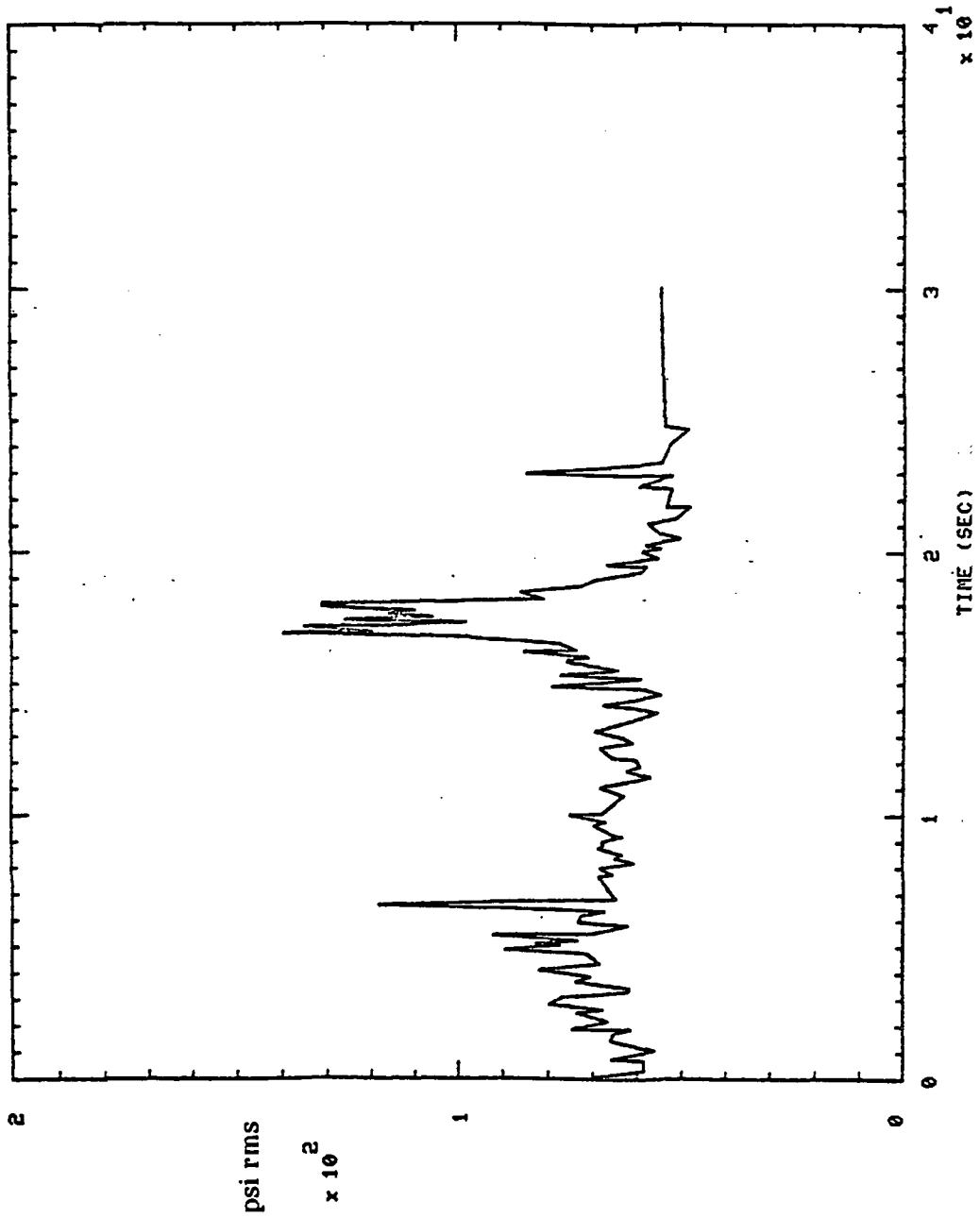


750109 HPOP BAL CAU PRI (1 - 20K HZ )



( 1 - 20K HZ )

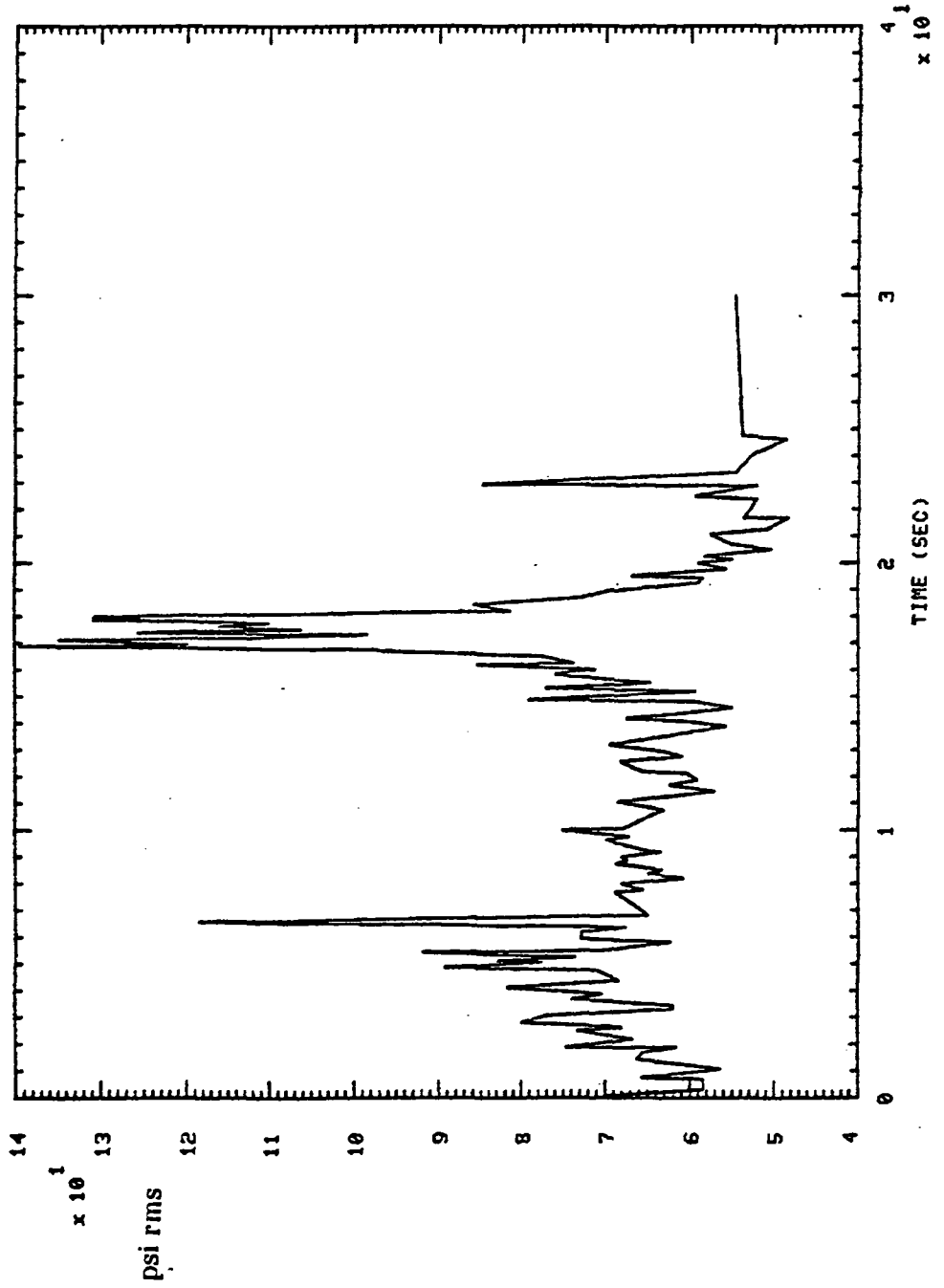
750109 HPOP DS PR



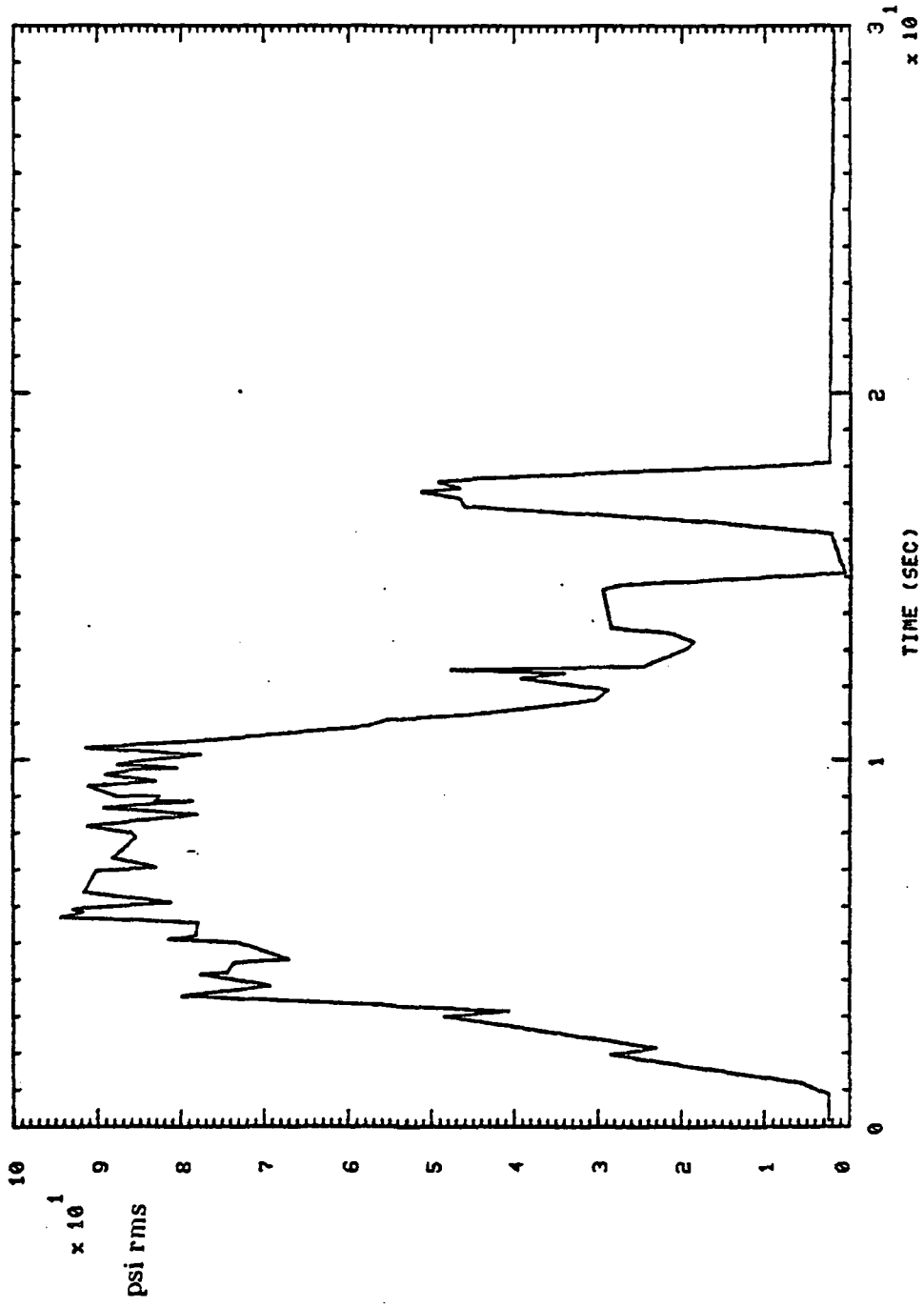


( 1 - 20K HZ )

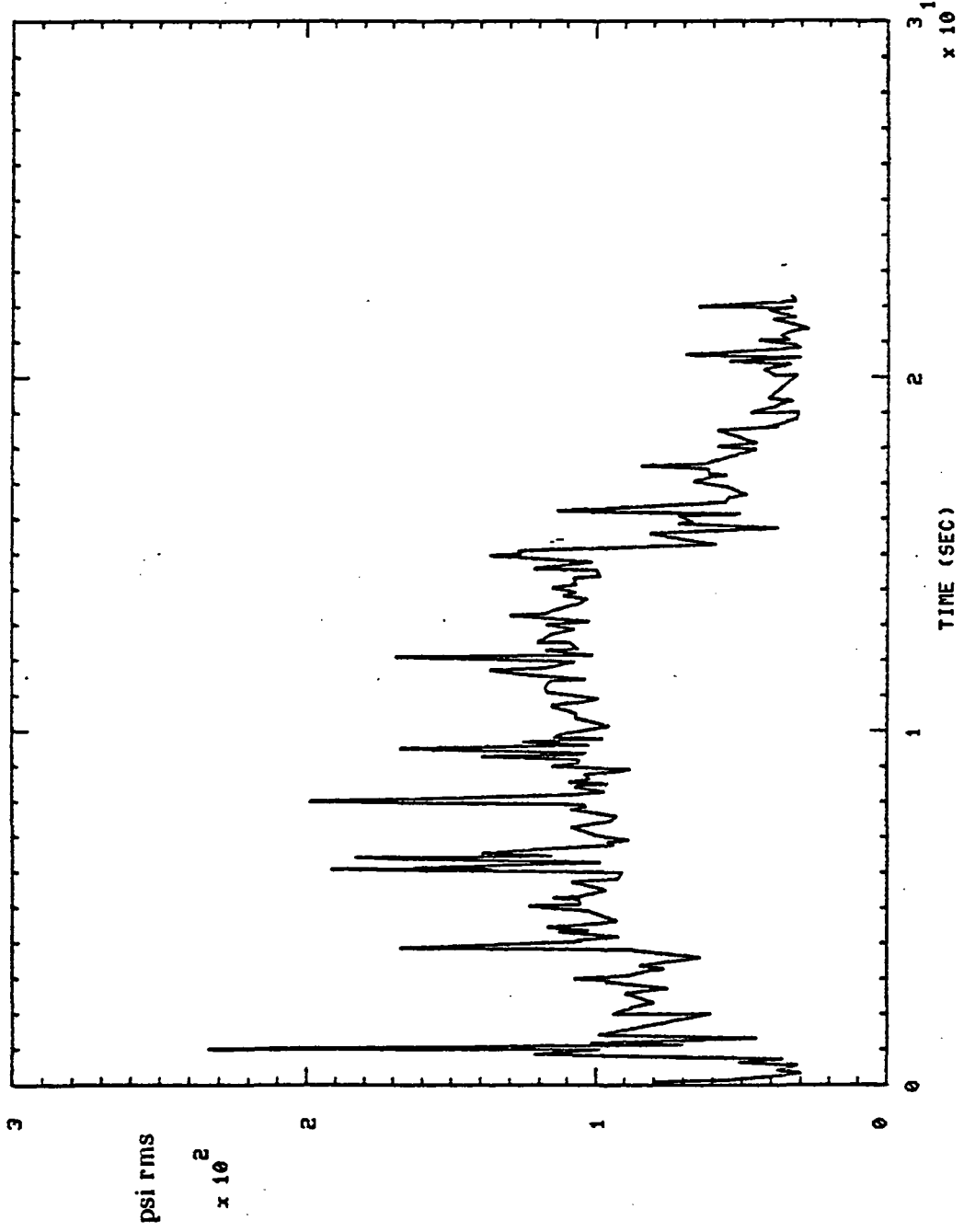
750109 HPOP DS PR



750109 HPOP DISC PR (1 - 20K HZ )

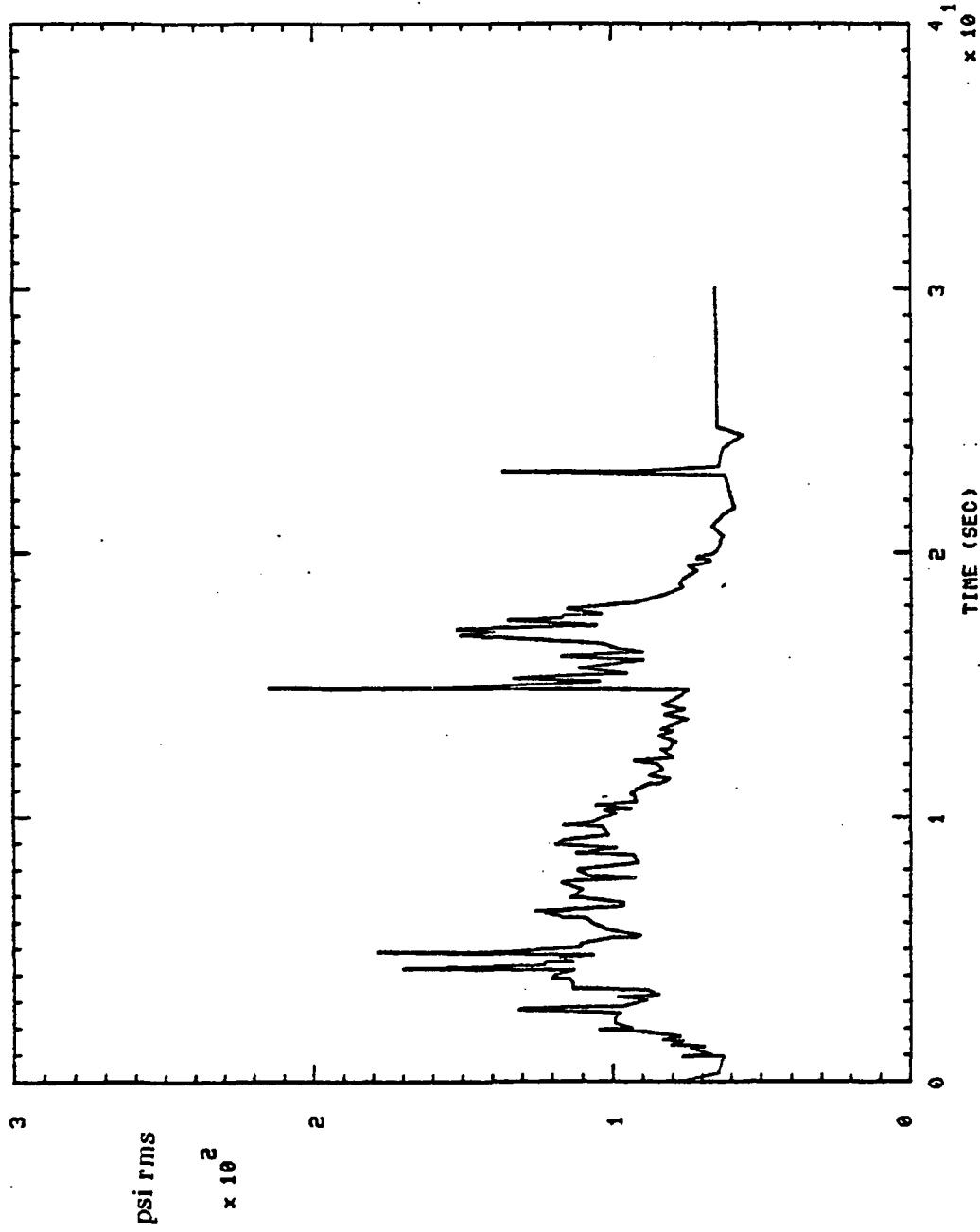


750109 MCC HOT GAS IN PR (1 - 20K HZ )

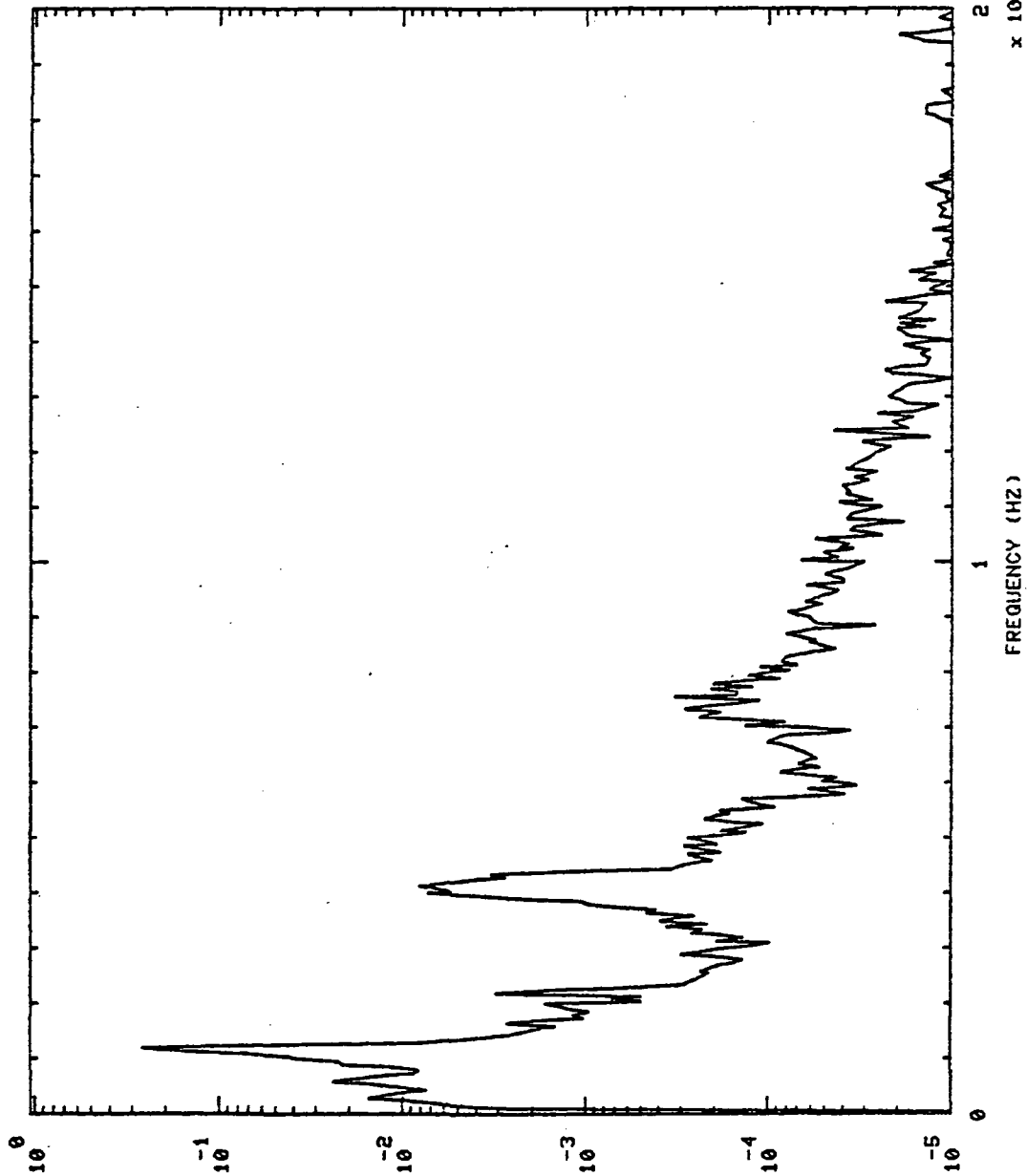


( 1 - 20K HZ )

750109 PBP DS FR



750109 LPFP IN PR S+ 6.050/HZ



P SQ/HZ

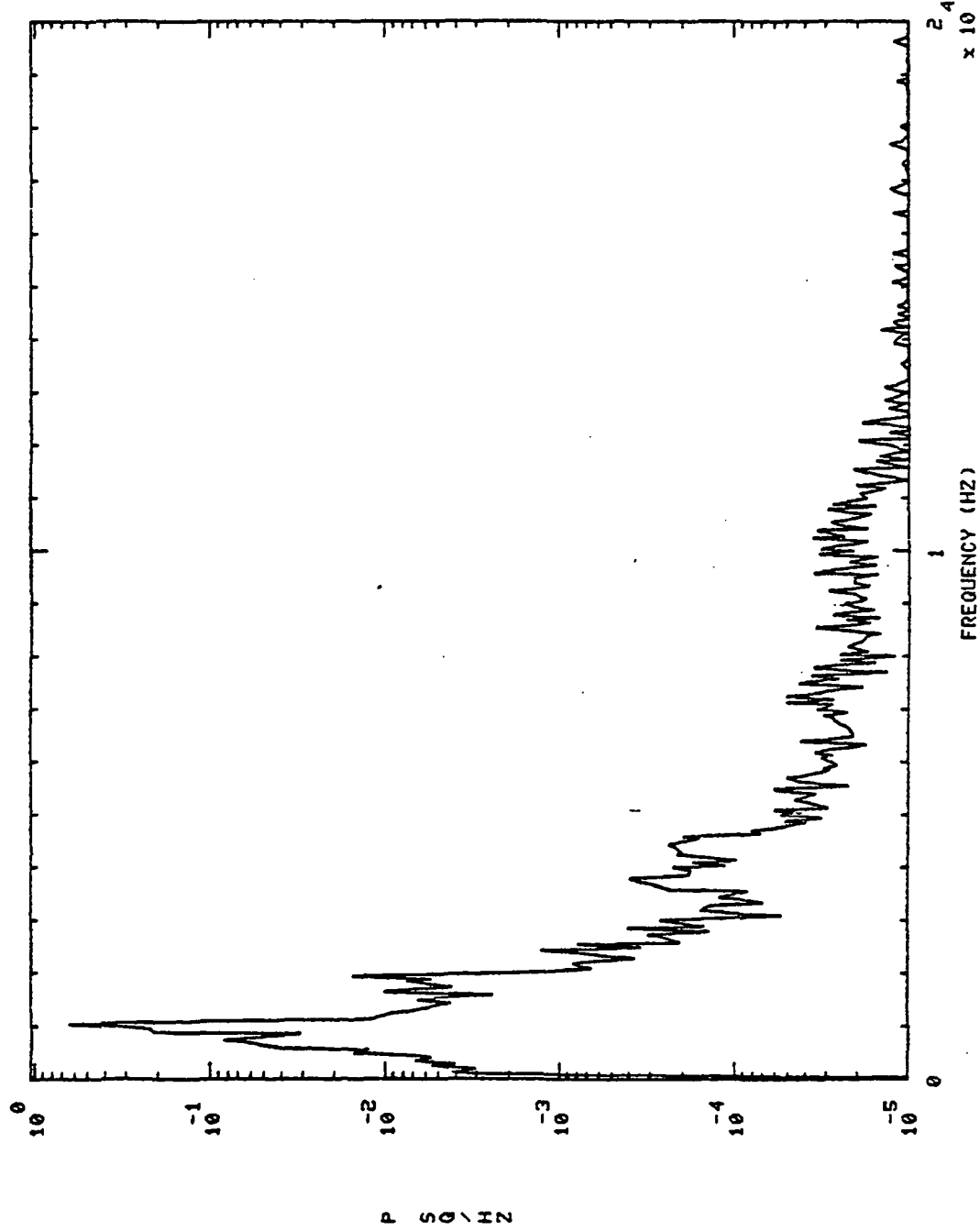
$10^4$

FREQUENCY (HZ)

0

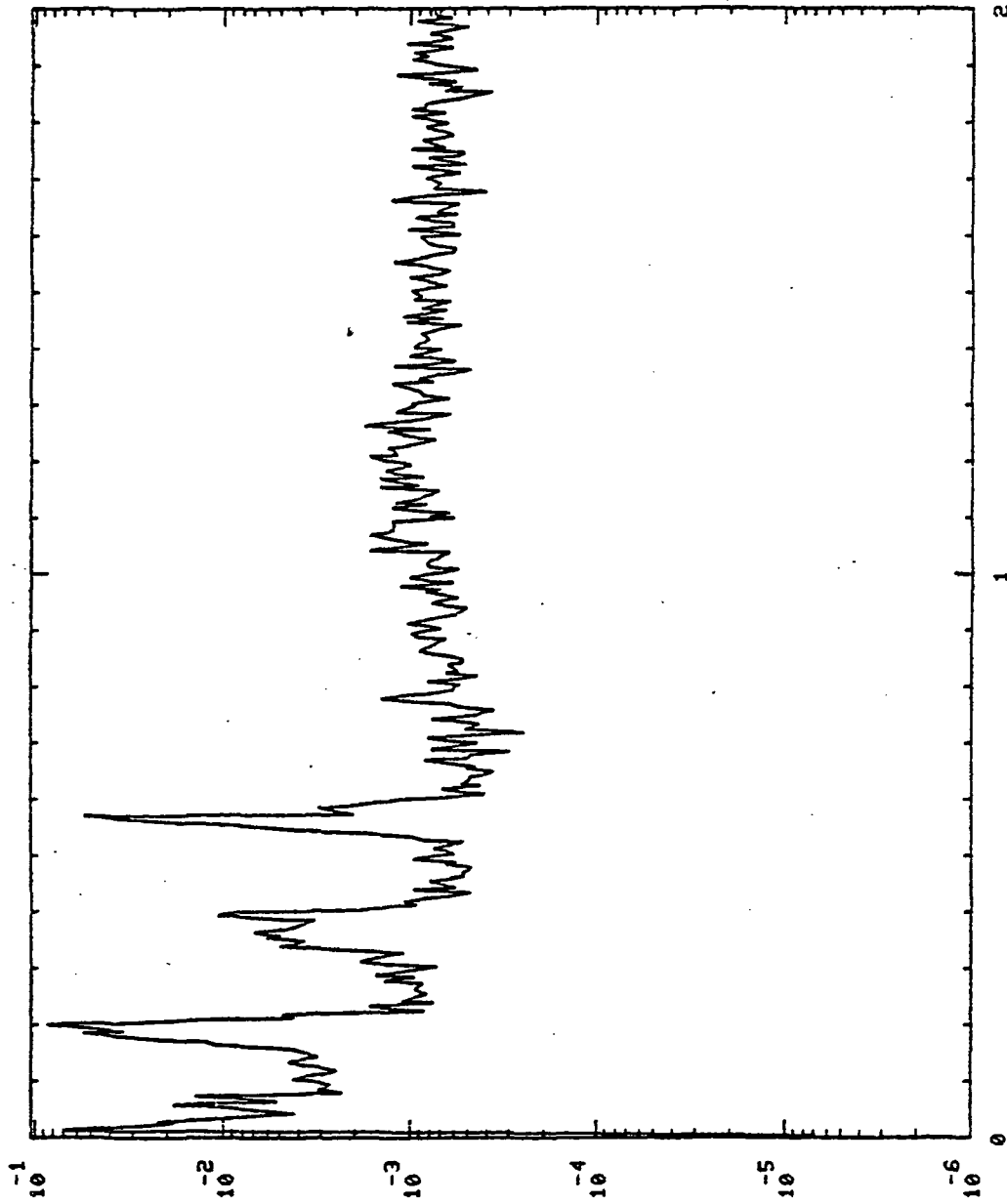
S+ 14.050/HZ

750109 LPFP IN PR



S+ 6.050/HZ

750109 LPOP D5 PR

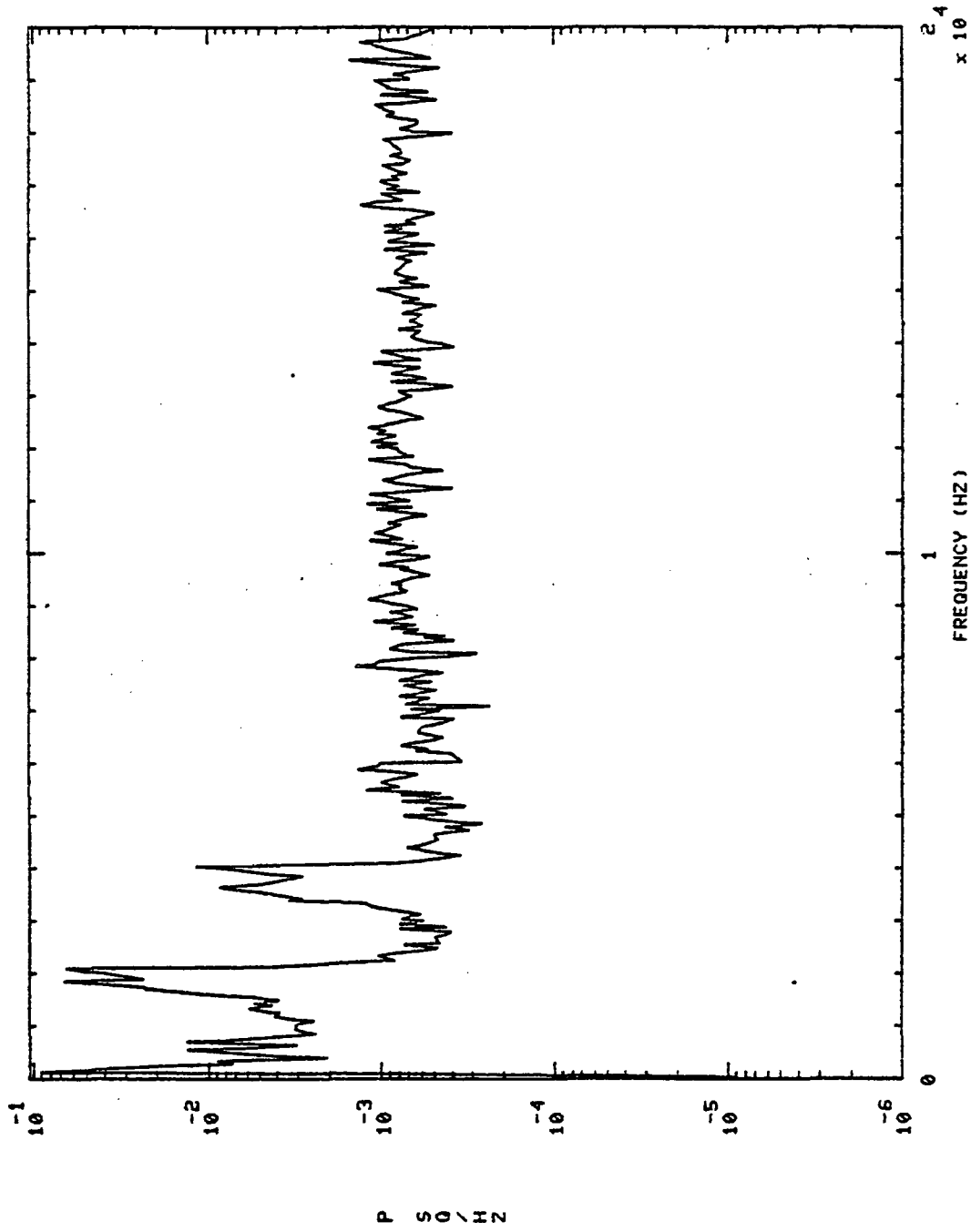


P S O / H Z

FREQUENCY (HZ)

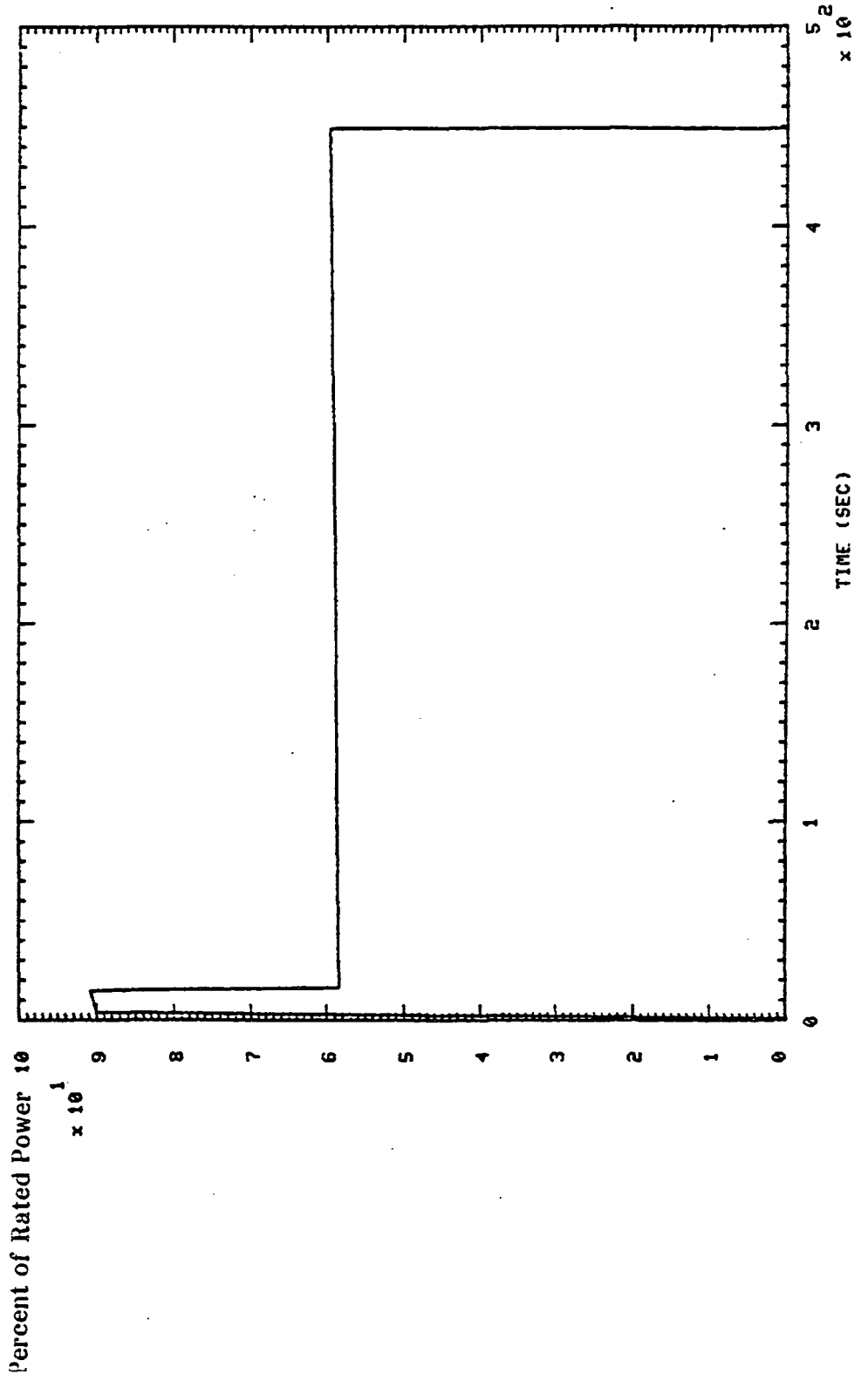
2.4  
x 10<sup>4</sup>

750109 LPOP DS PR St 14.050/HZ



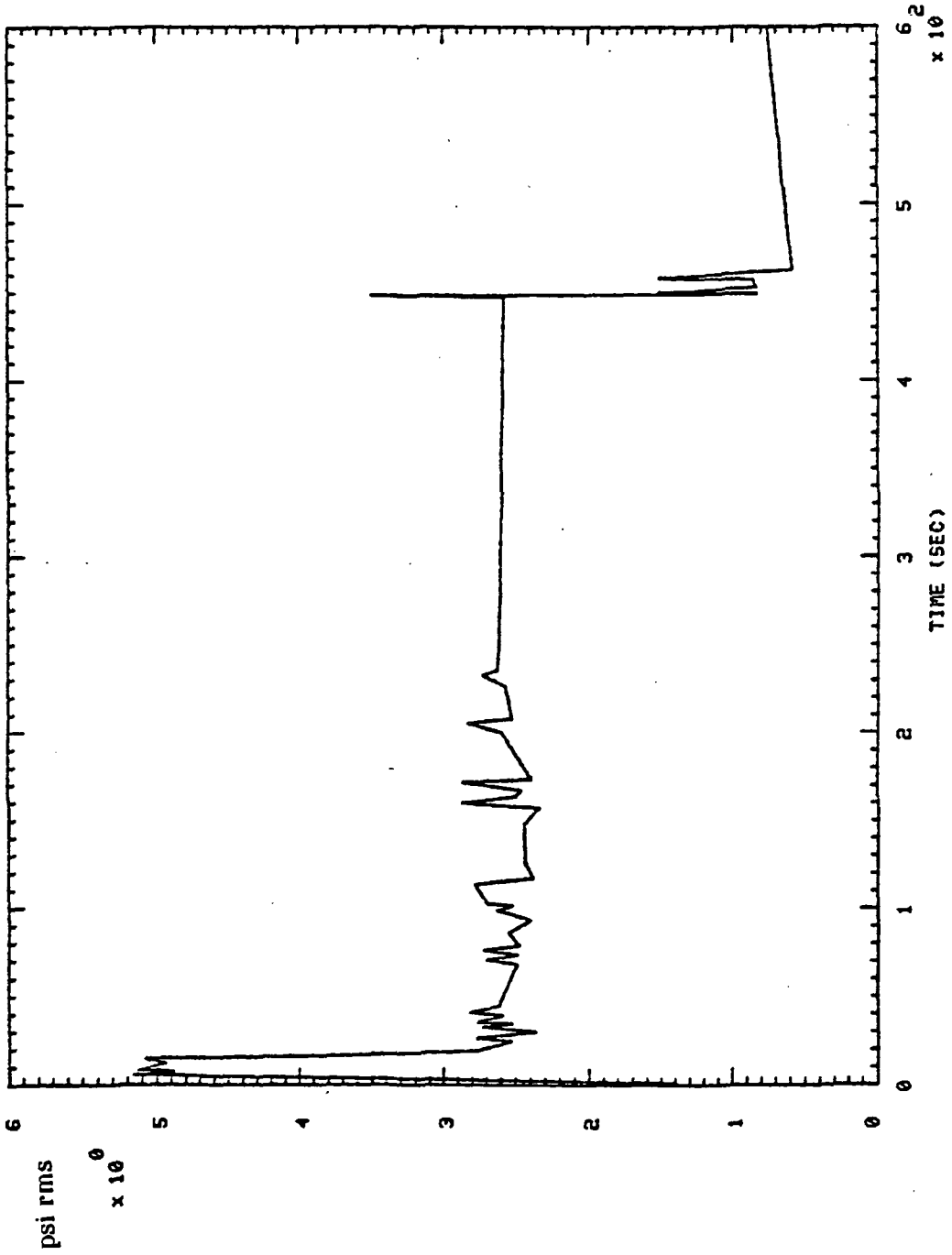


750110 THRUST (UNFILTERED )



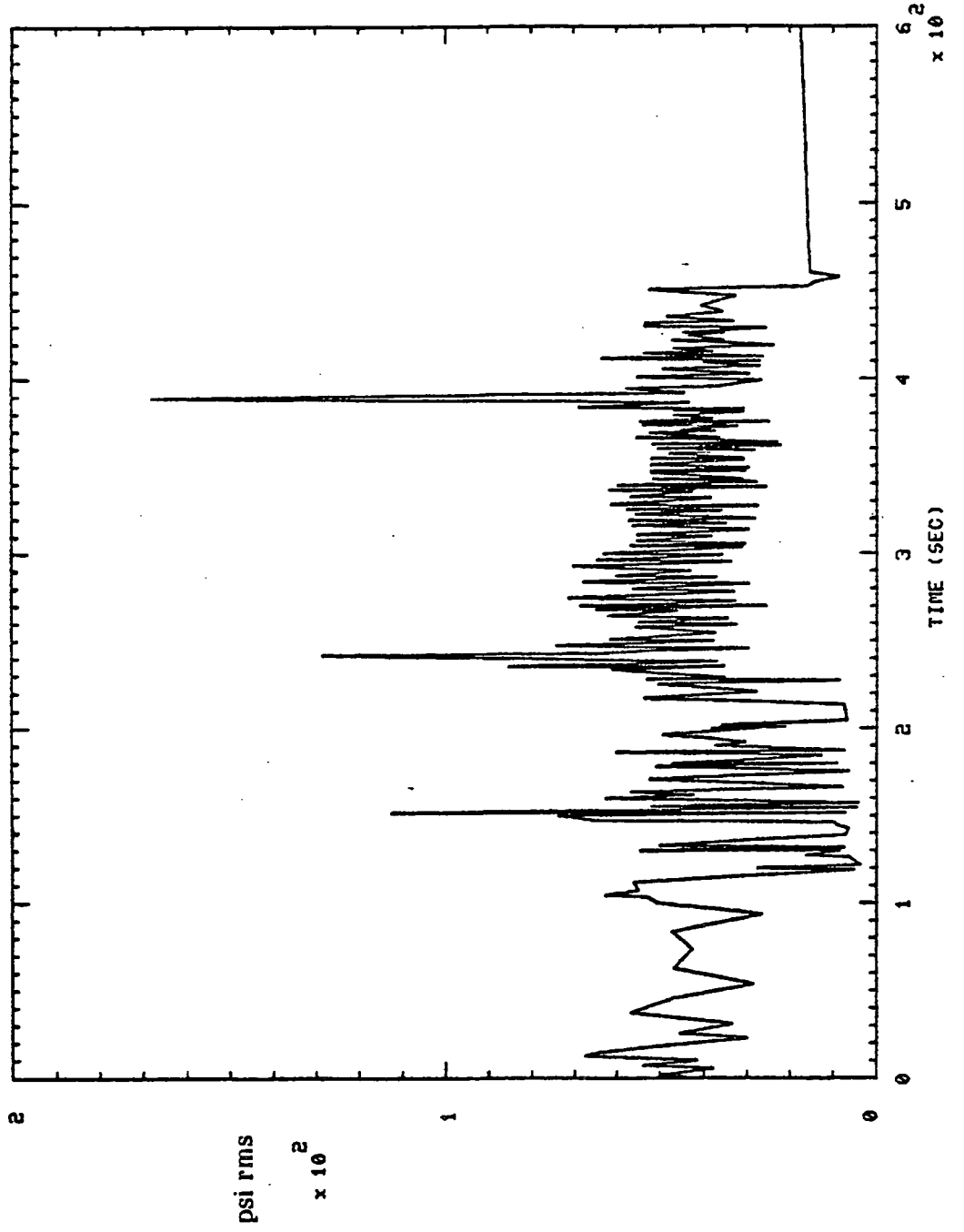
( 1 - 20K HZ )

750110 LPFP DS PR

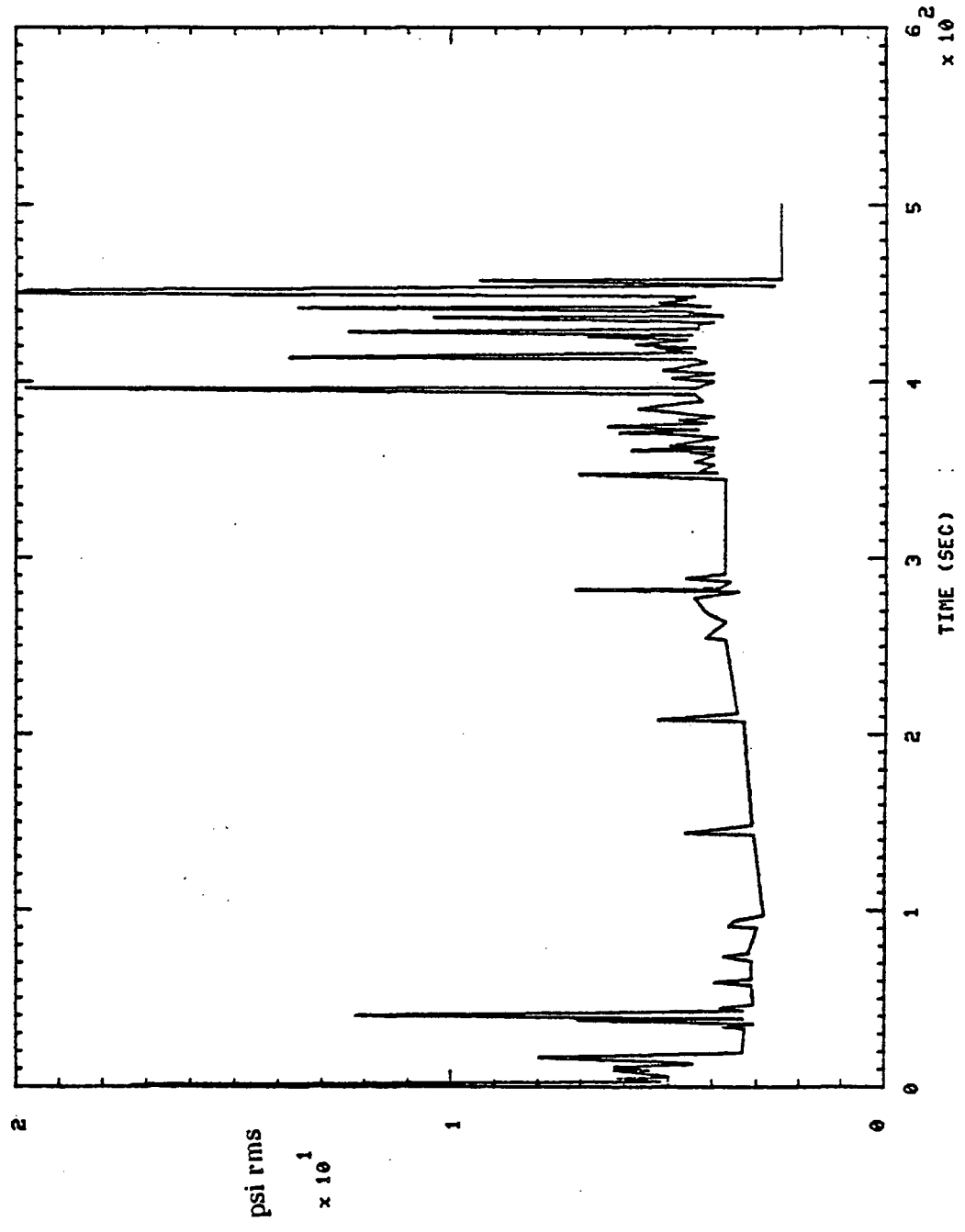


( 1 - 20K HZ )

750110 LPOP DS PR



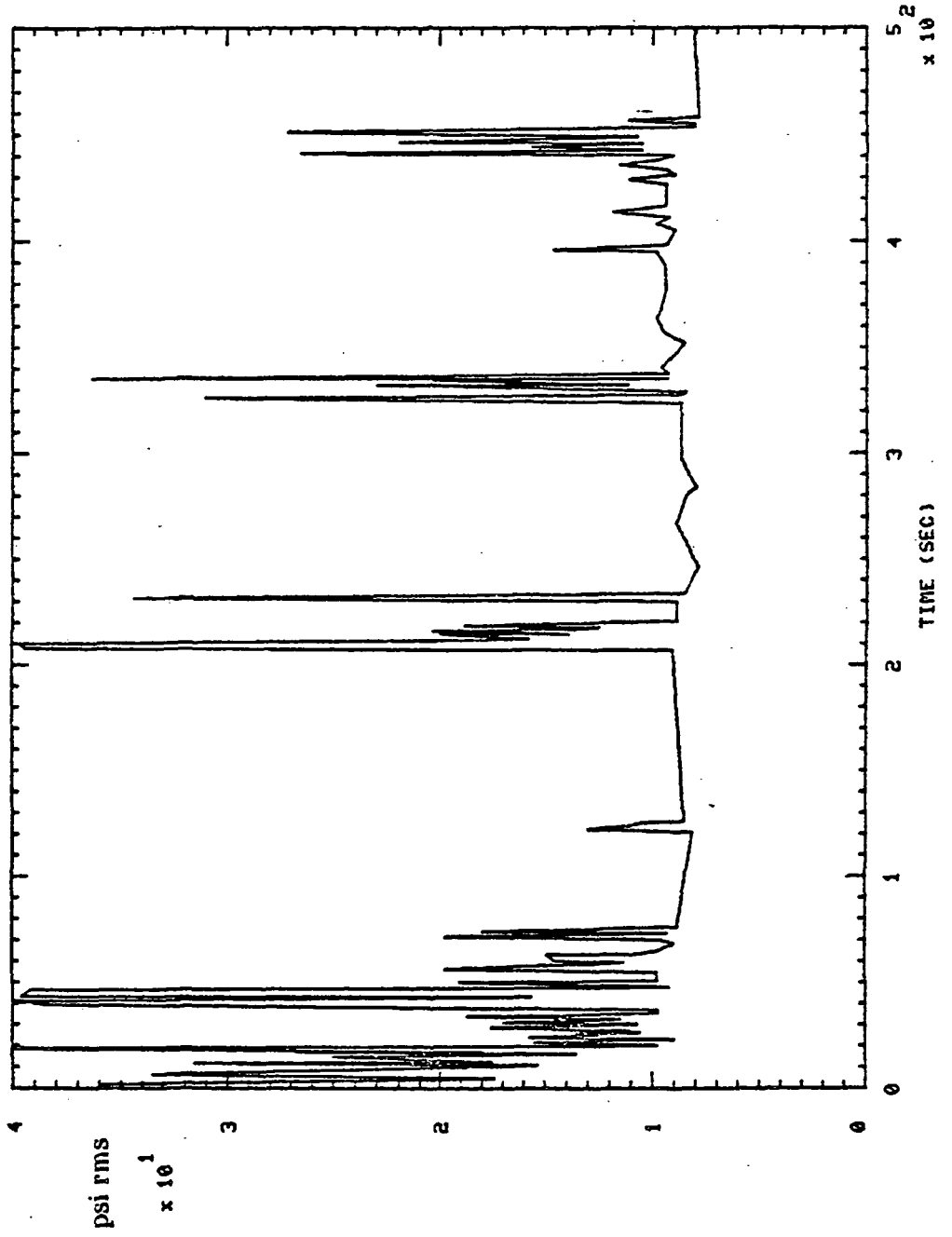
750110 HPOP BAL CAU PRE (1 - 20K HZ )



( 1 - 20K HZ )

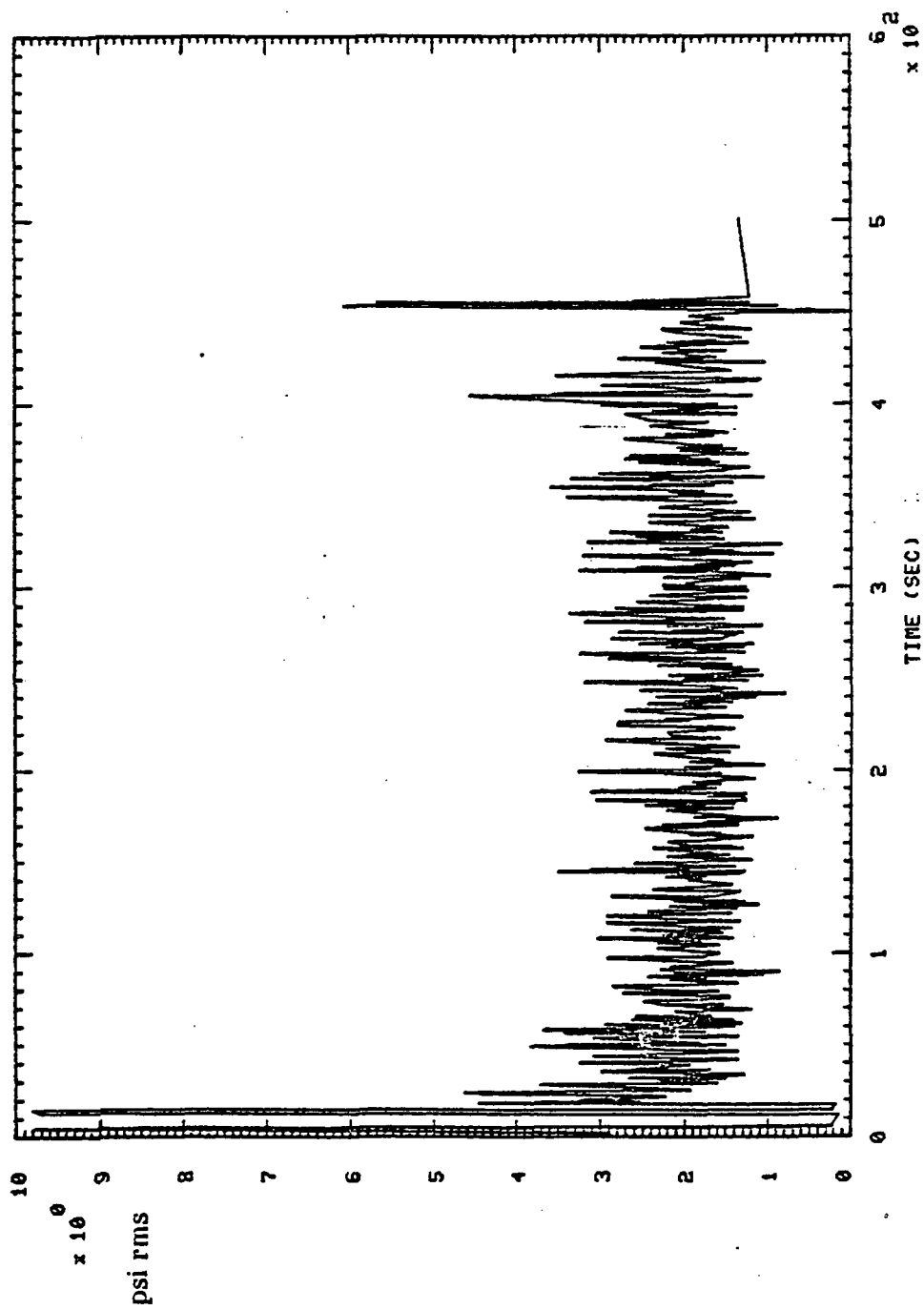
NPOP BAL CAU PRI

750110

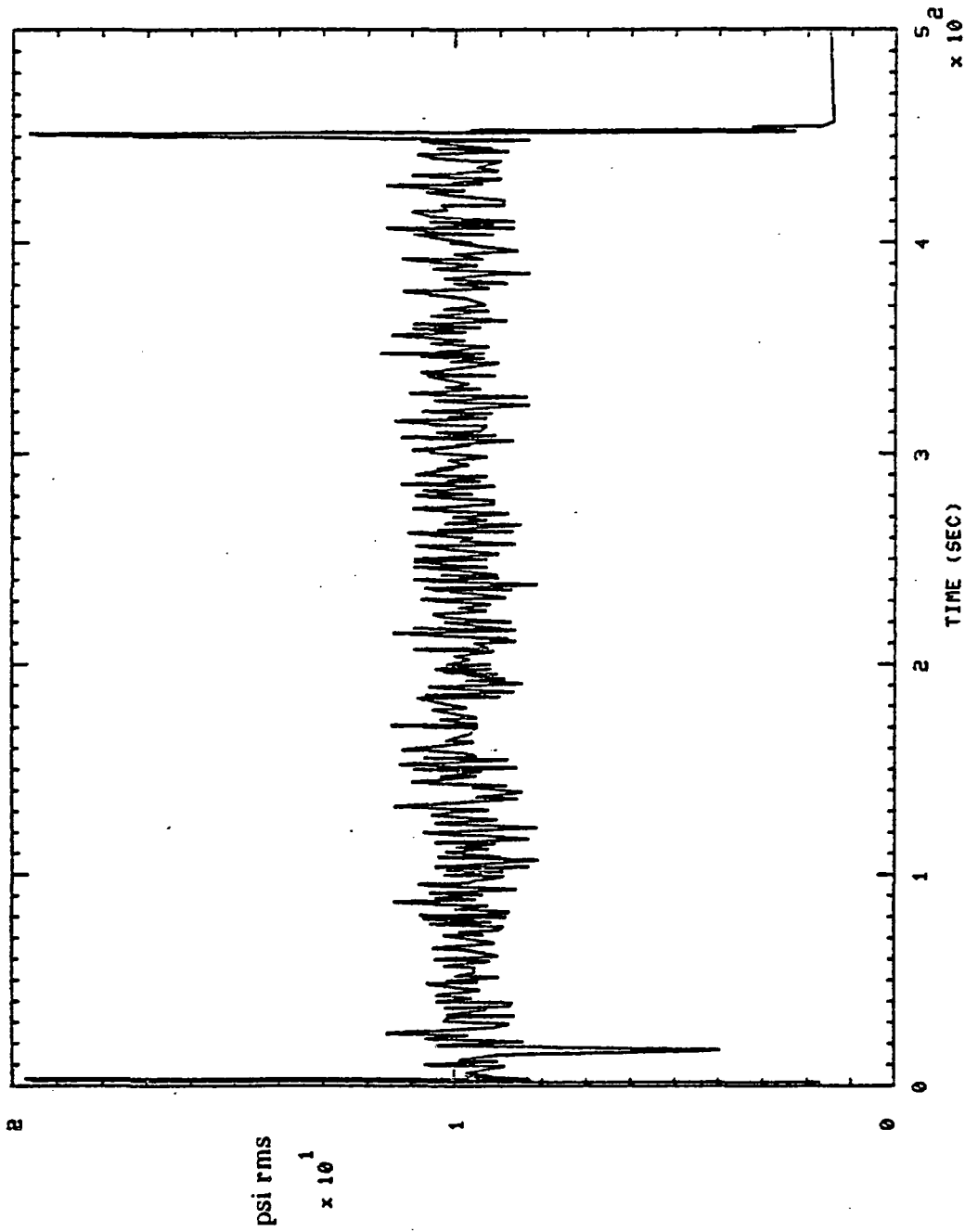


( 1 - 20K HZ )

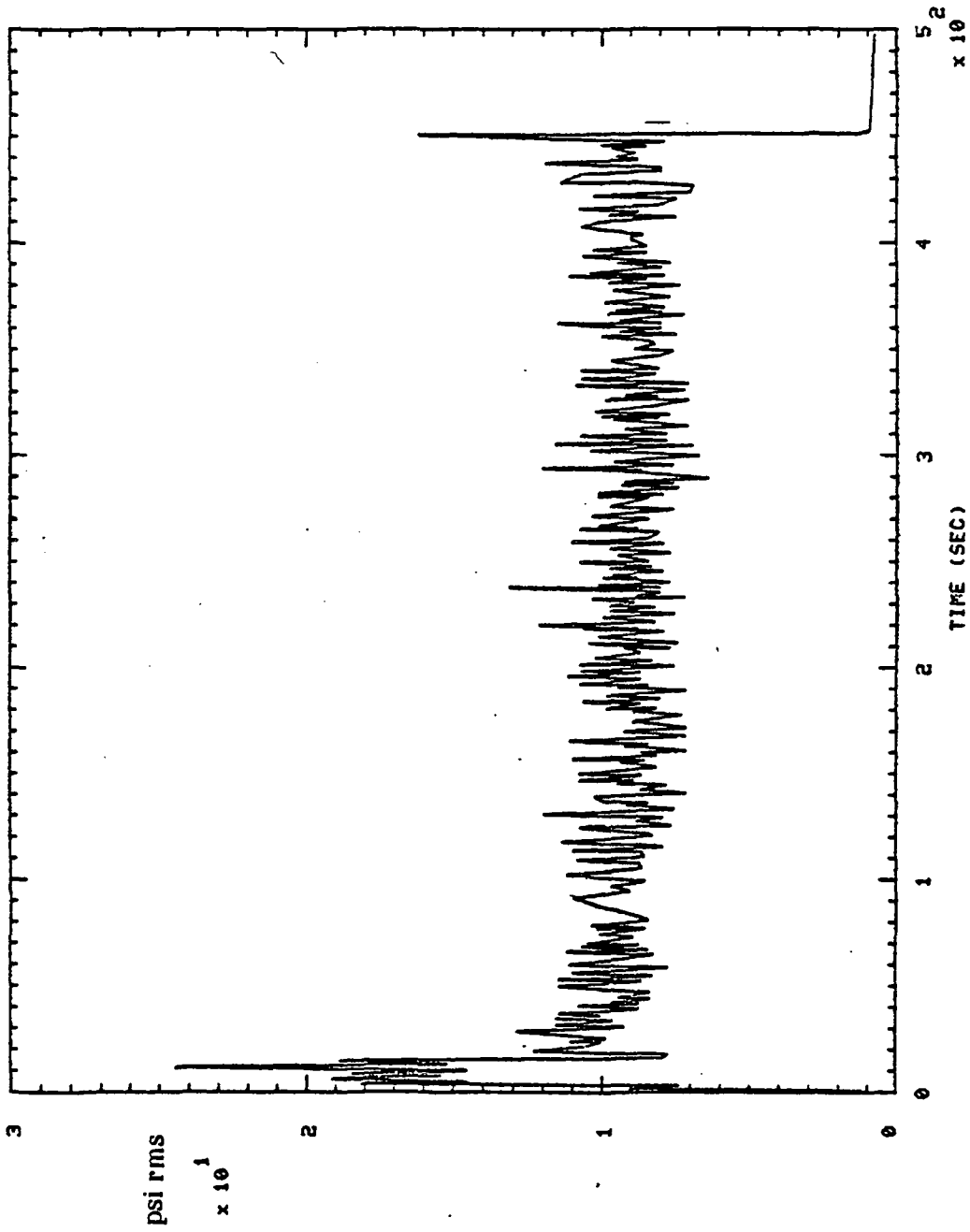
750110 CHAMBER PR



750110 PBP FUEL SUP PR (1 - 20K HZ)

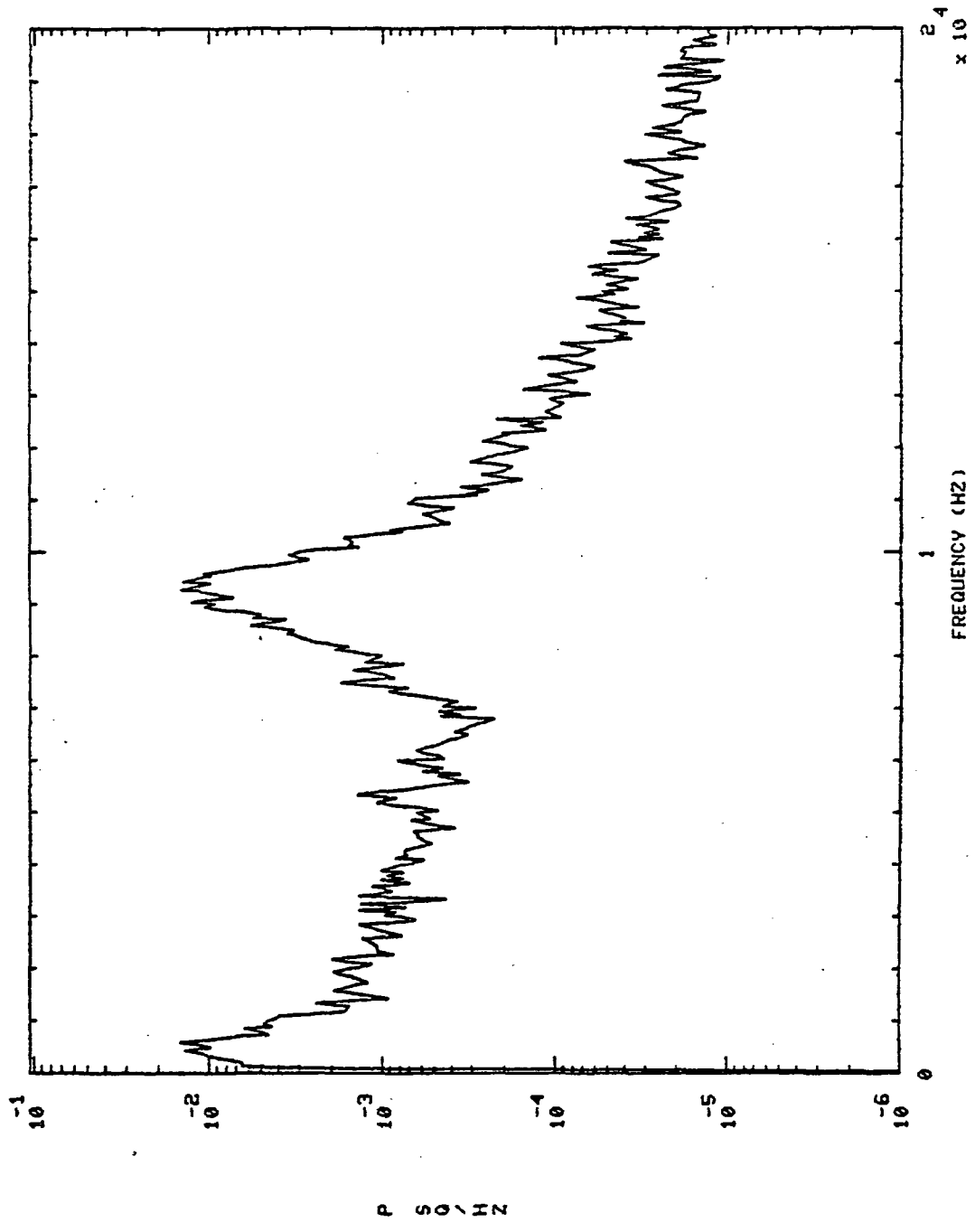


750110 FPB FUEL MAN PR (1 - 20K HZ )



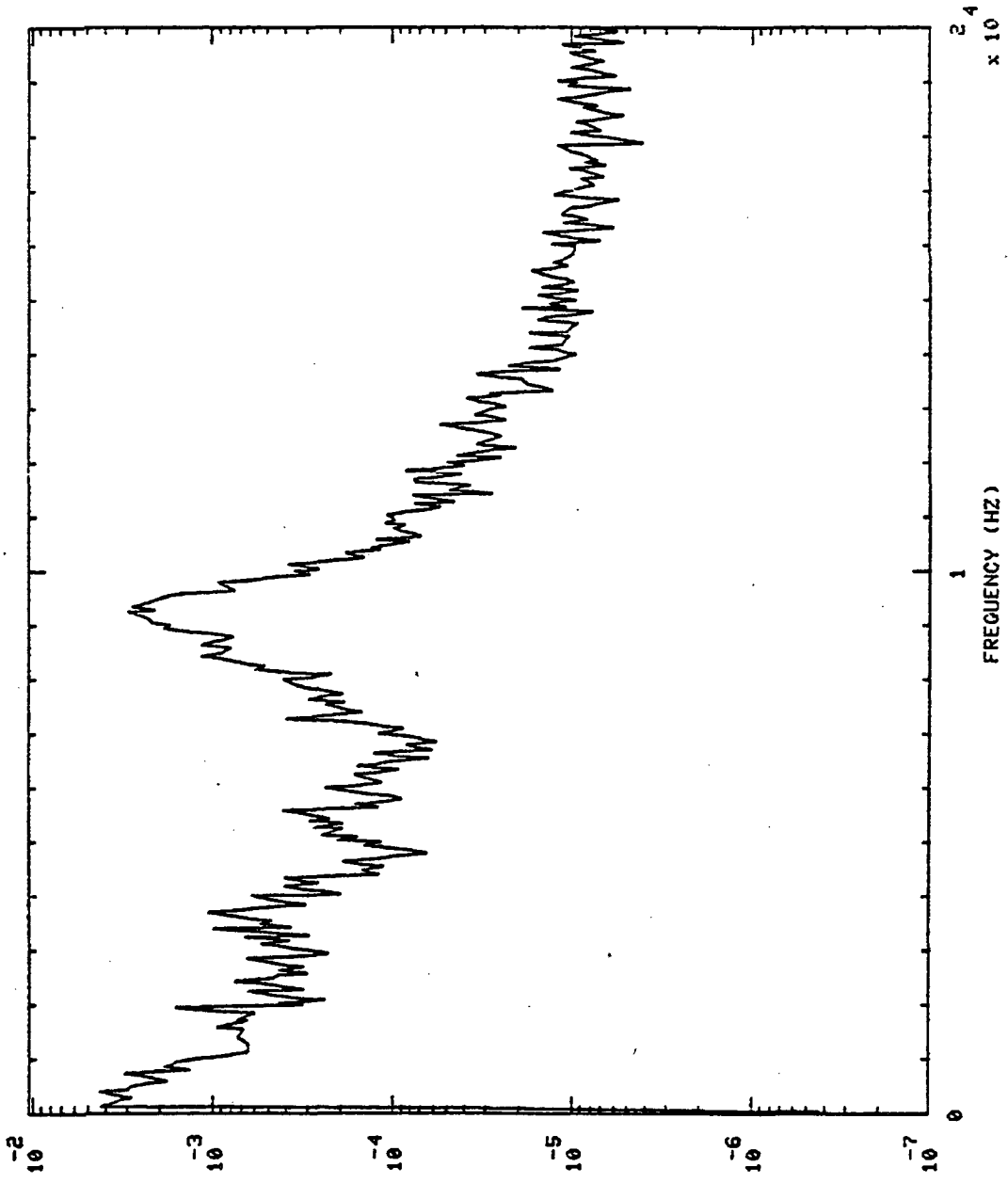


750110 LPPF DS PR S+ 10.050/HZ



S+ 30.050/HZ

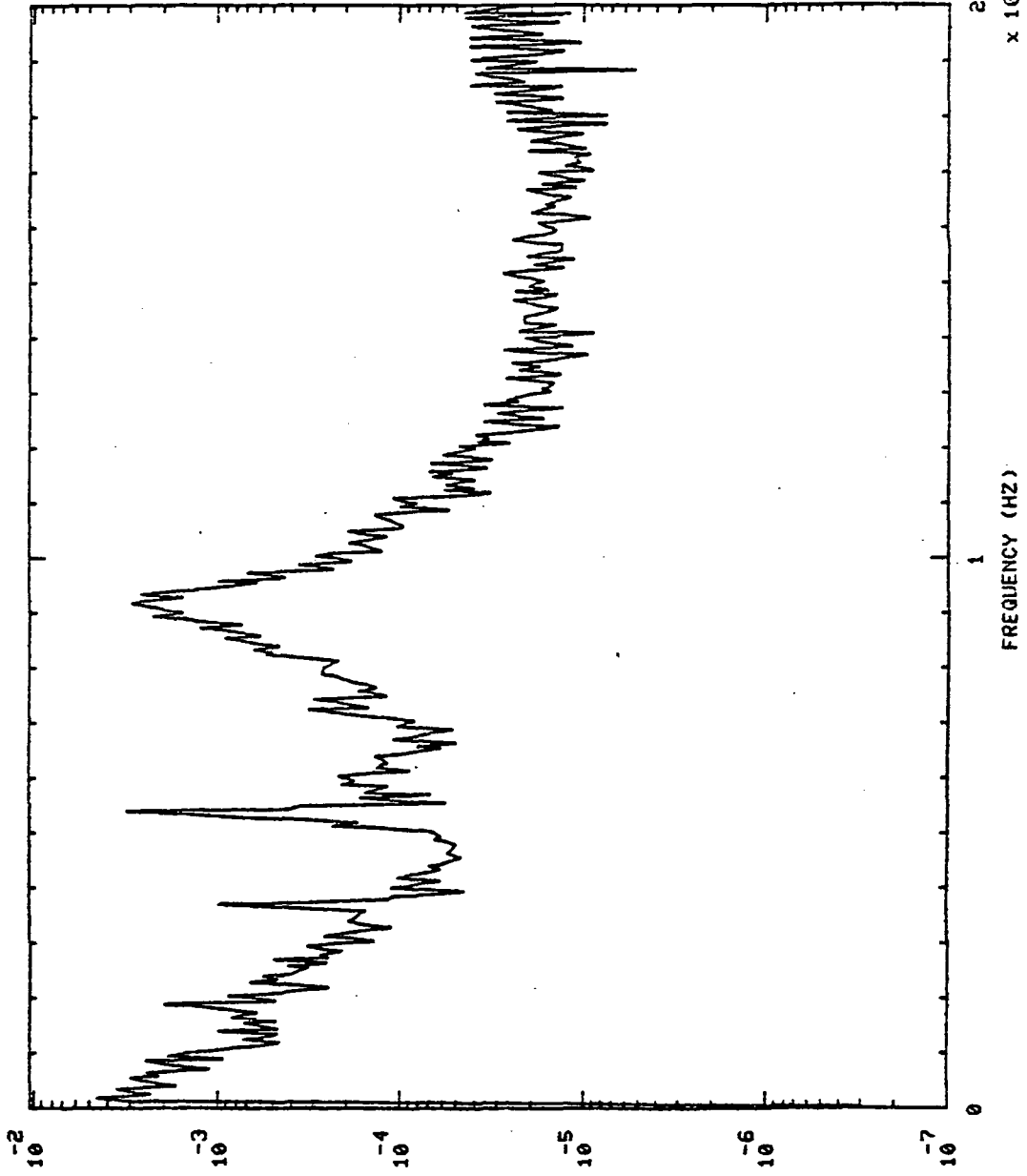
750110 LPFP DS PR



P S D \ / H Z

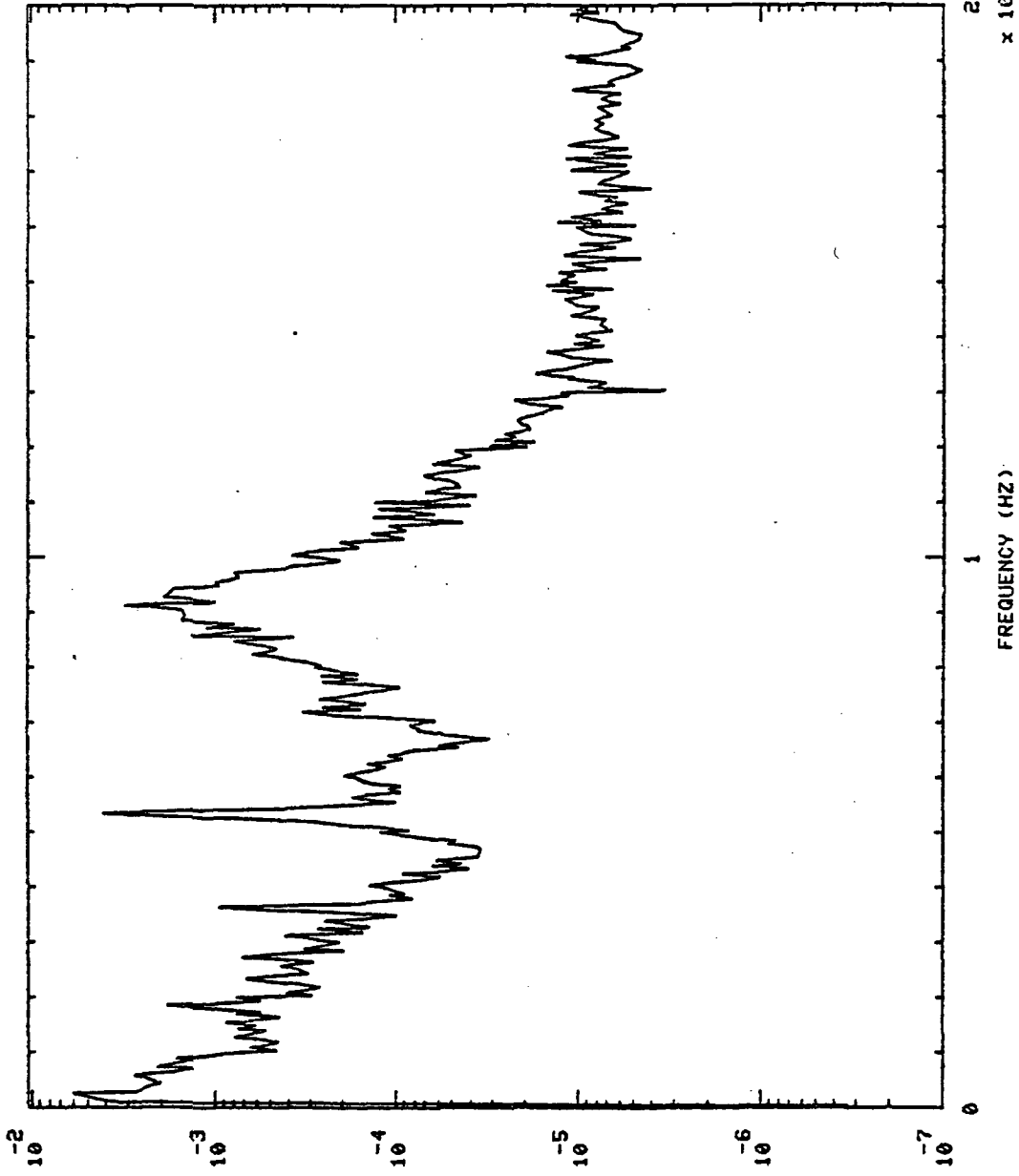
FREQUENCY (HZ)  $2.4 \times 10^4$

750110 LPFP D5 PR S+ 150.050/HZ



S+ 300.050/HZ

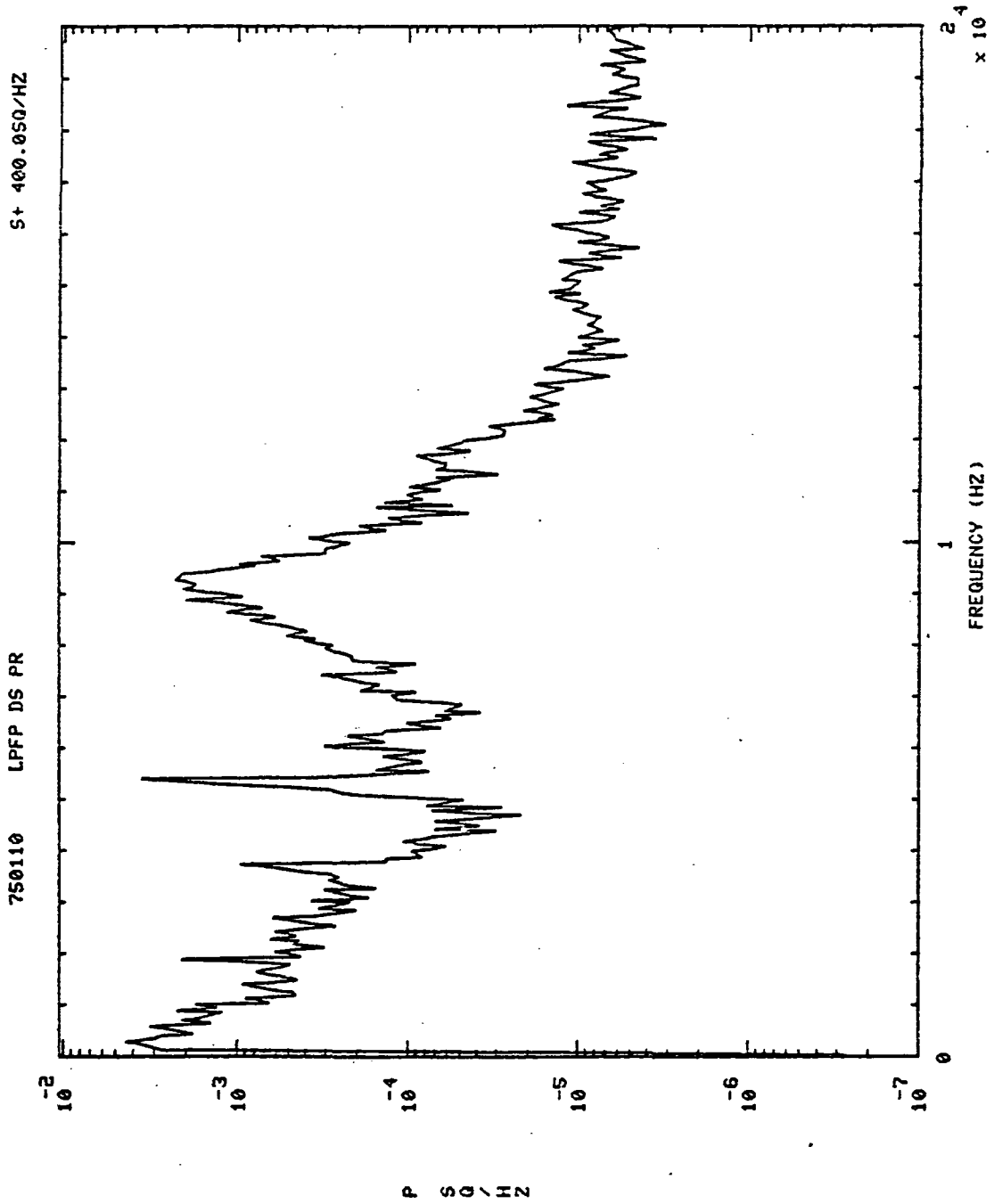
750110 LPFP DS PR



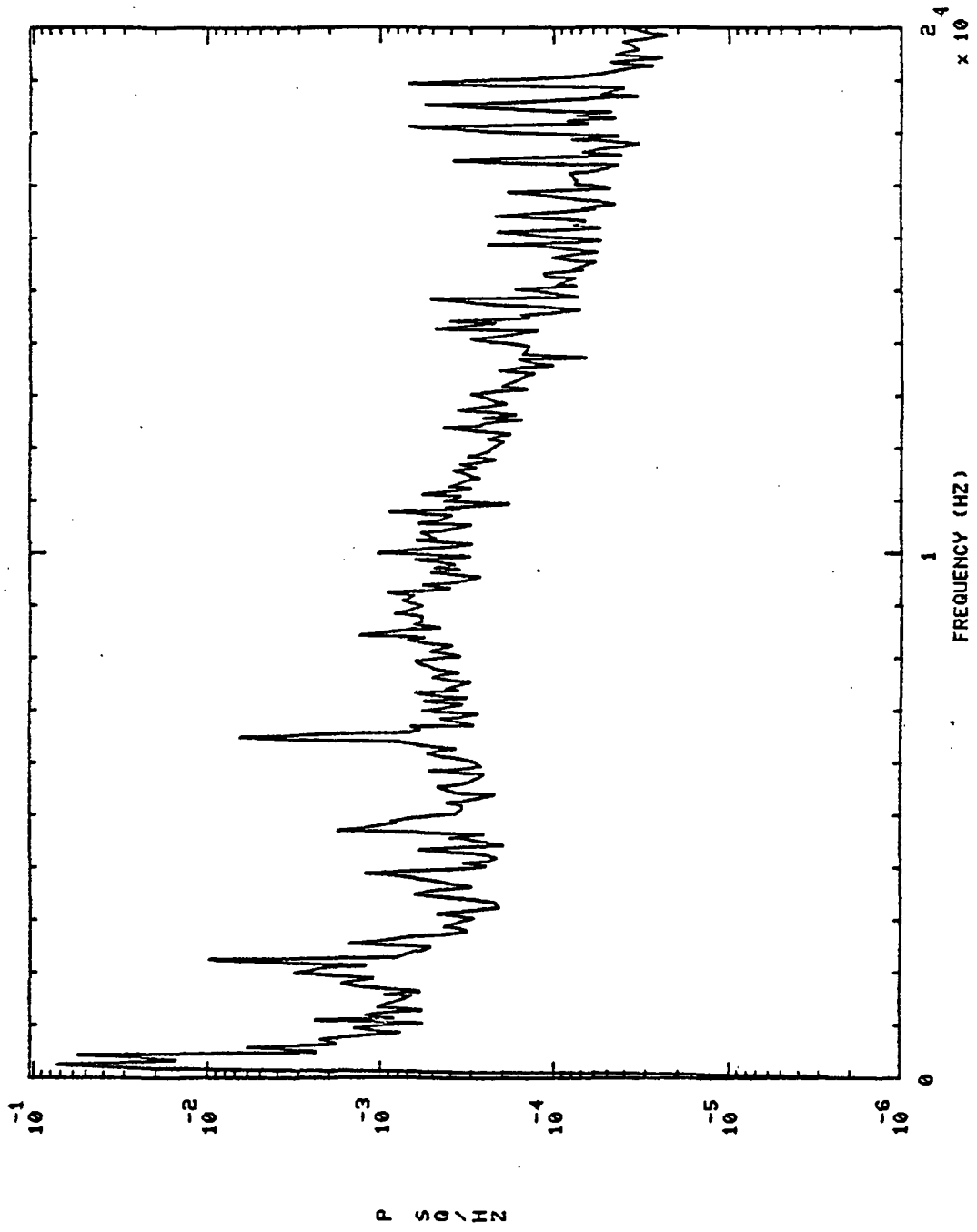
P SQ/HZ

$10^4$   
x 10

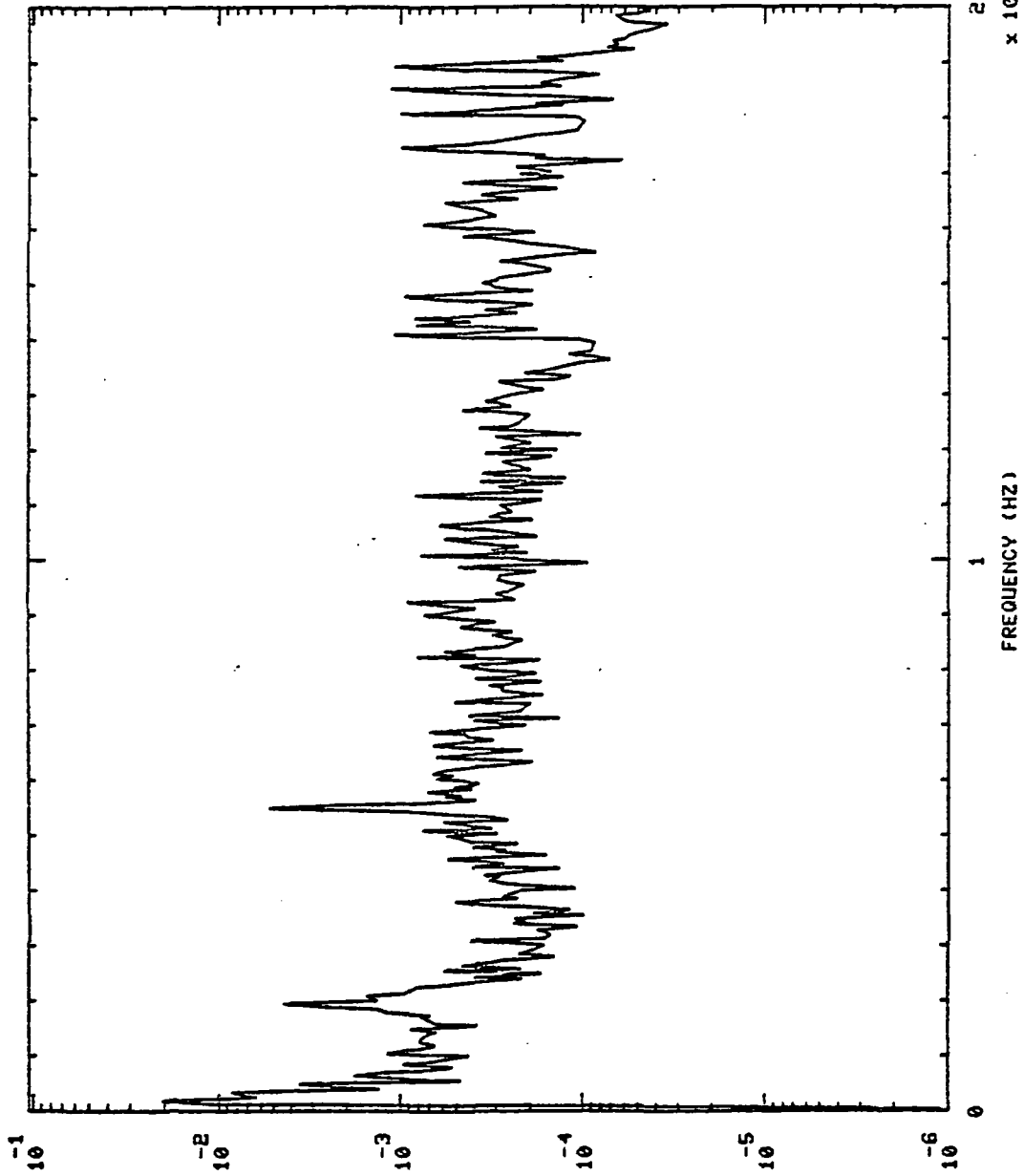
FREQUENCY (HZ)



750110 HPOP BAL CAU PR2 S+ 10.050/HZ



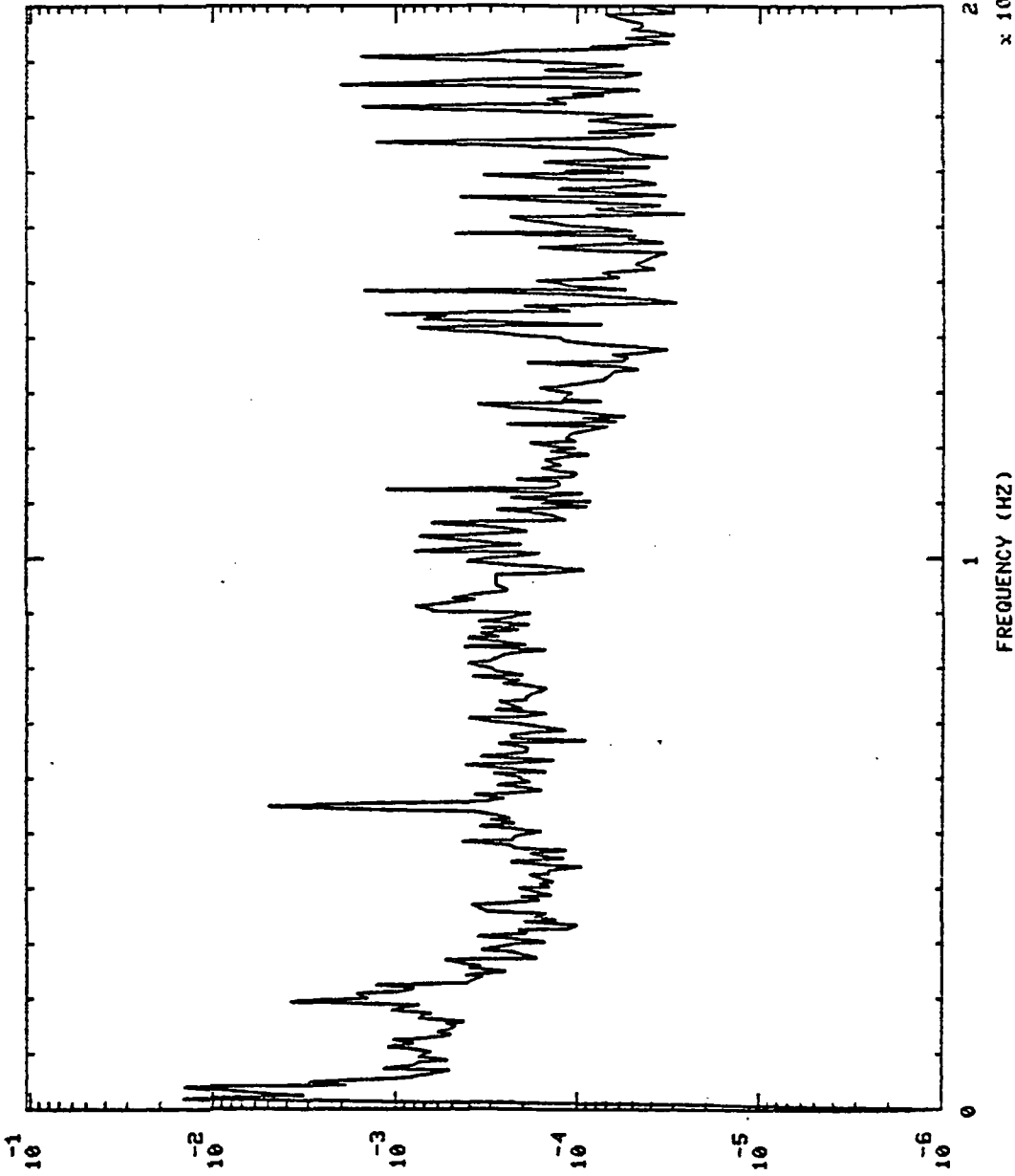
750110 HPOP BAL CAU PR2 S+ 30.050/HZ



P S D \ HZ

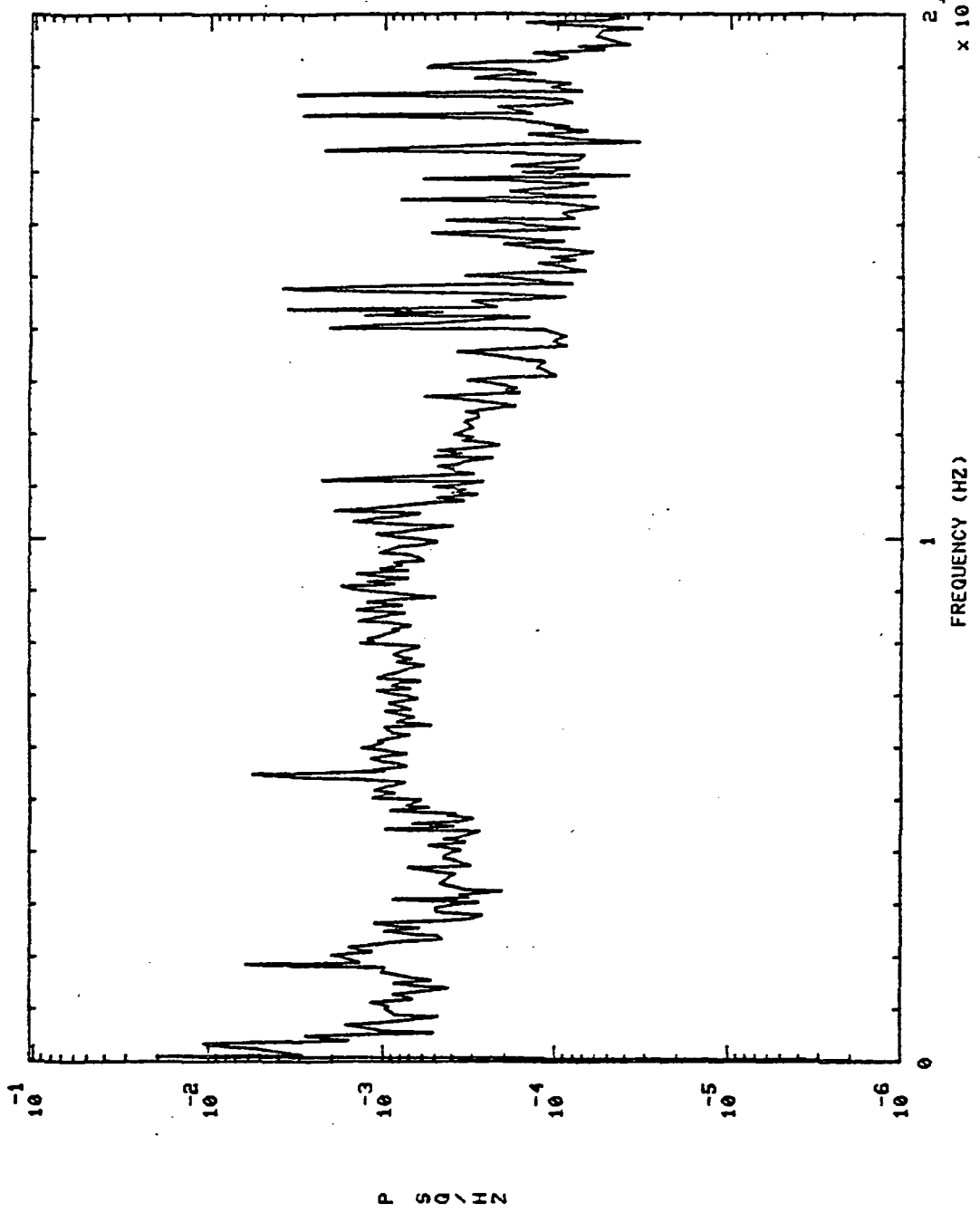
750110 HPOP BAL CAU PRE

S+ 150.050/HZ

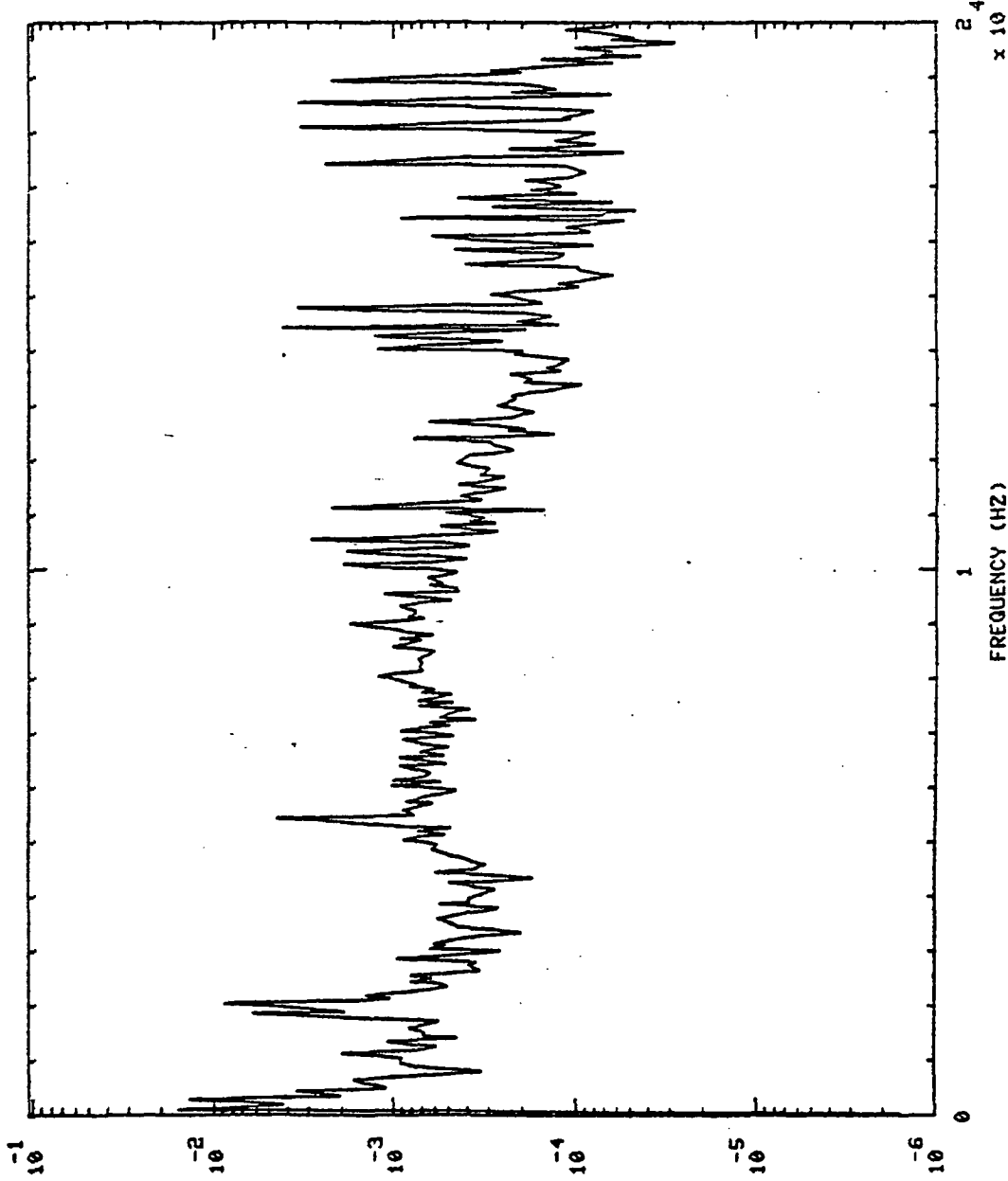




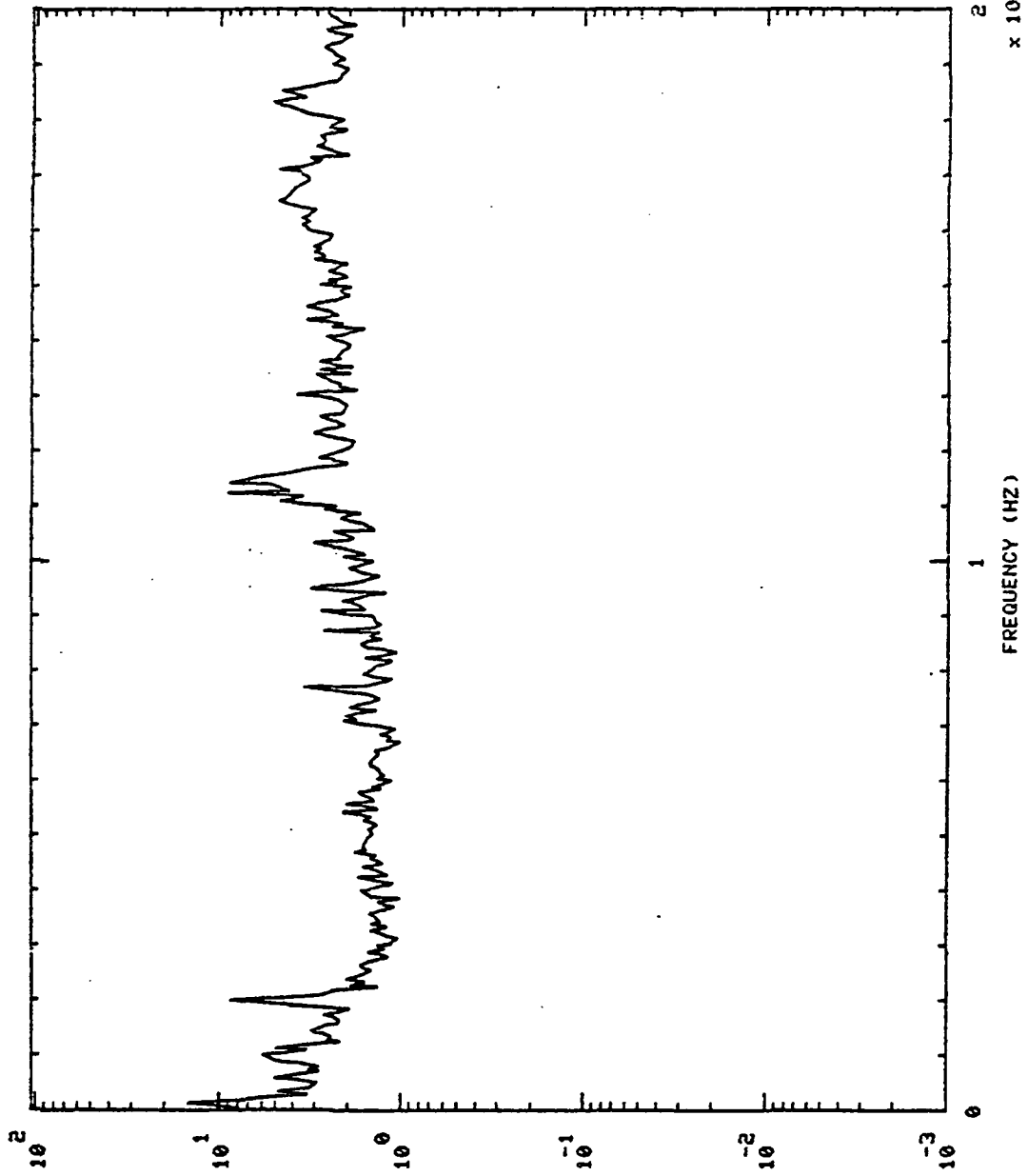
750110 HPOP BAL CAU PR2 S+ 300.050/HZ



750110 HPOP BAL CAU PR2 S+ 400.050/HZ

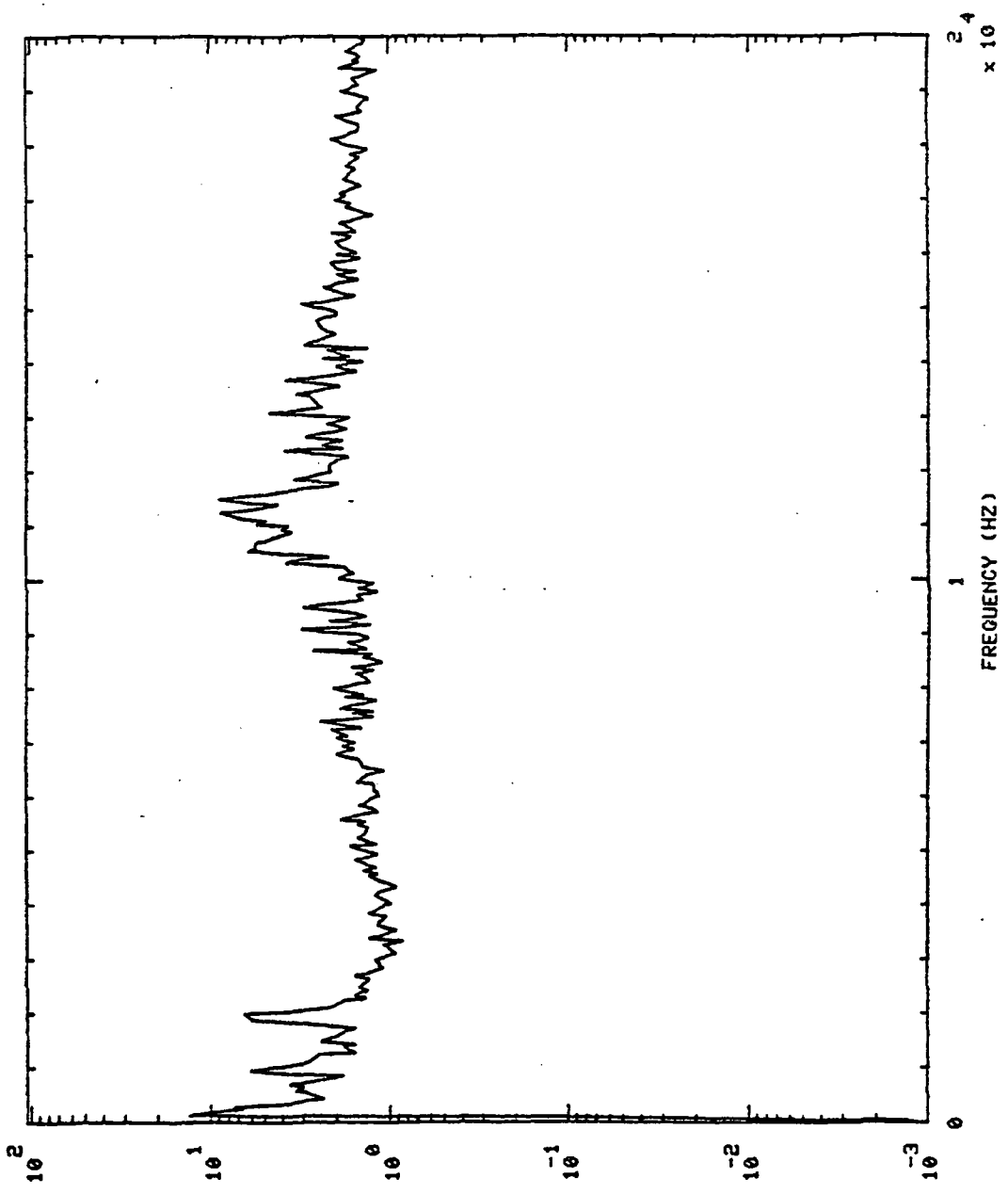


750110 HPOP DS PR S+ 10.050/HZ



P S D / HZ

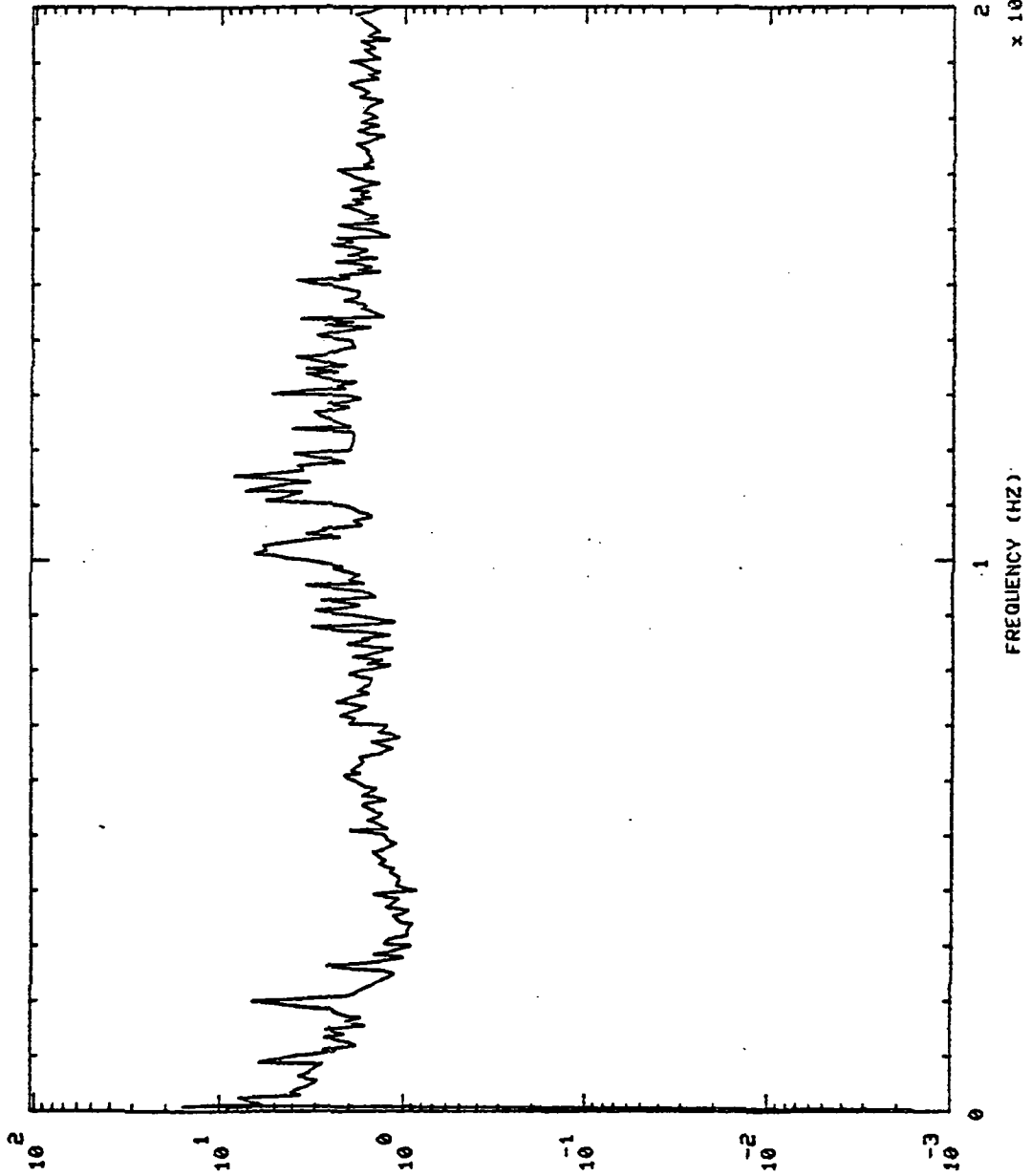
750110 HPOP DS PR S+ 30.050/HZ



P S D / H Z

FREQUENCY (HZ) x 10^4

750110 HPOP DS PR S+ 150.050/HZ

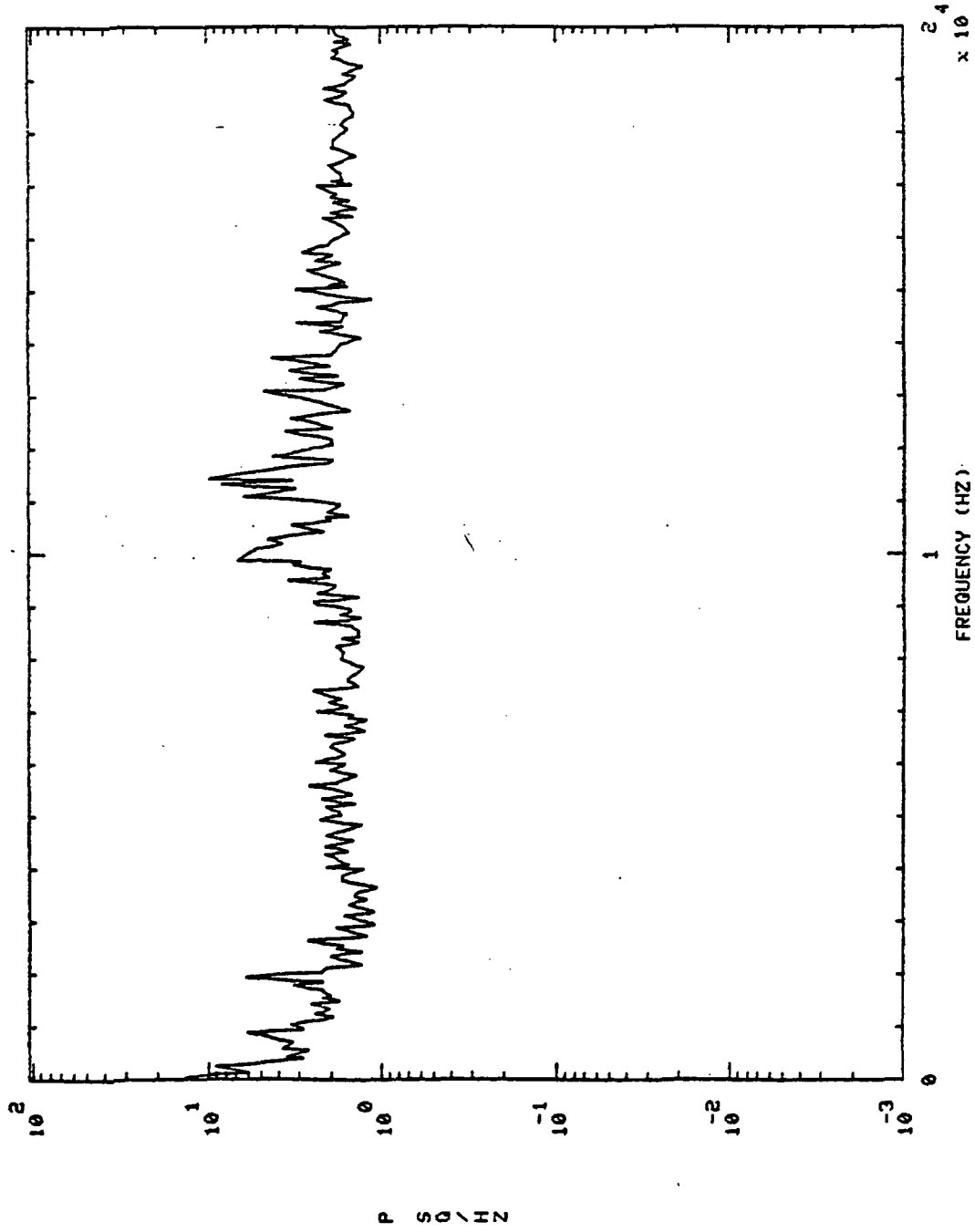


P S D / H Z

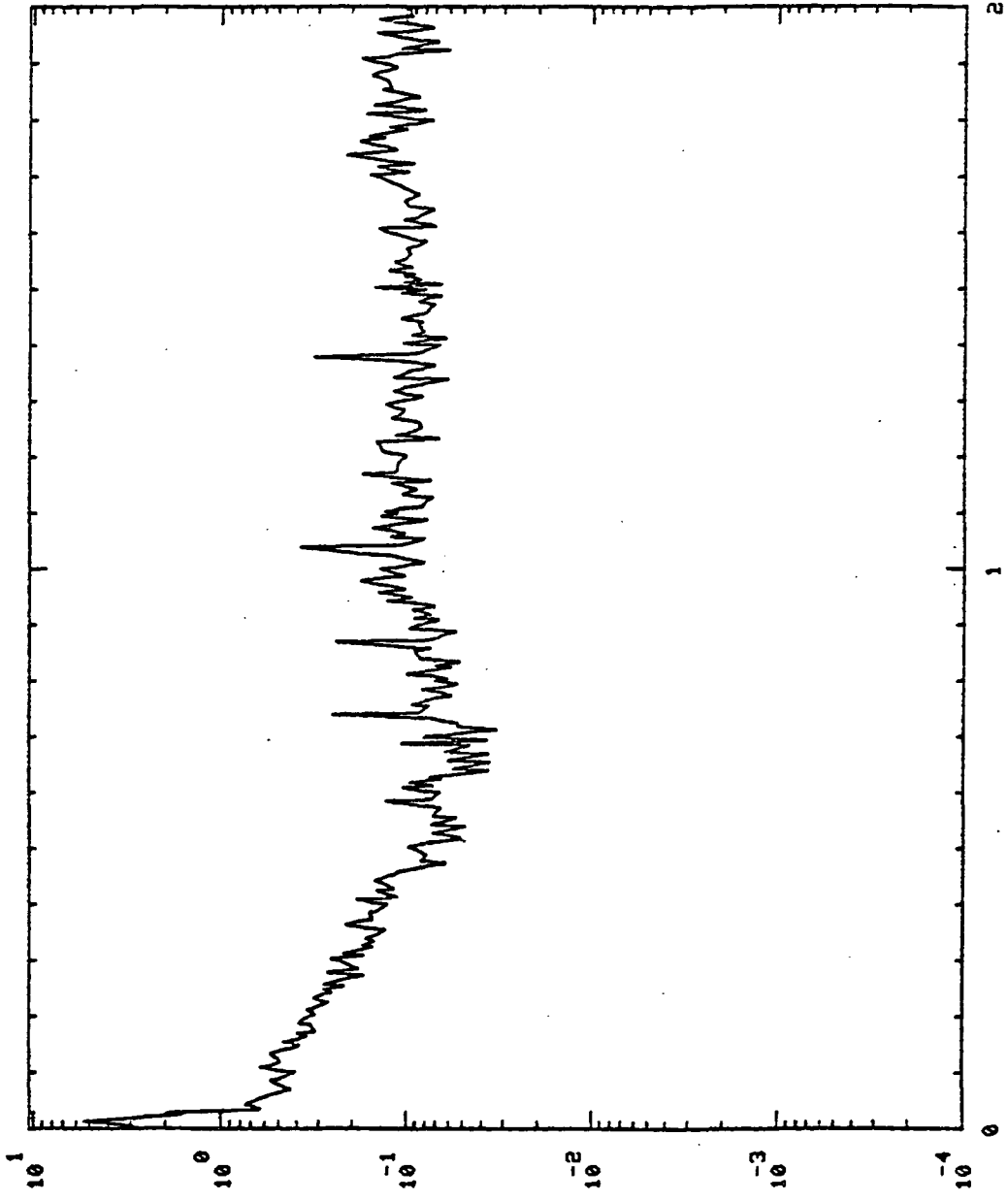
$10^4$   
x  $10^0$

FREQUENCY (HZ)

750110 HPOP DS PR S+ 300.050/HZ



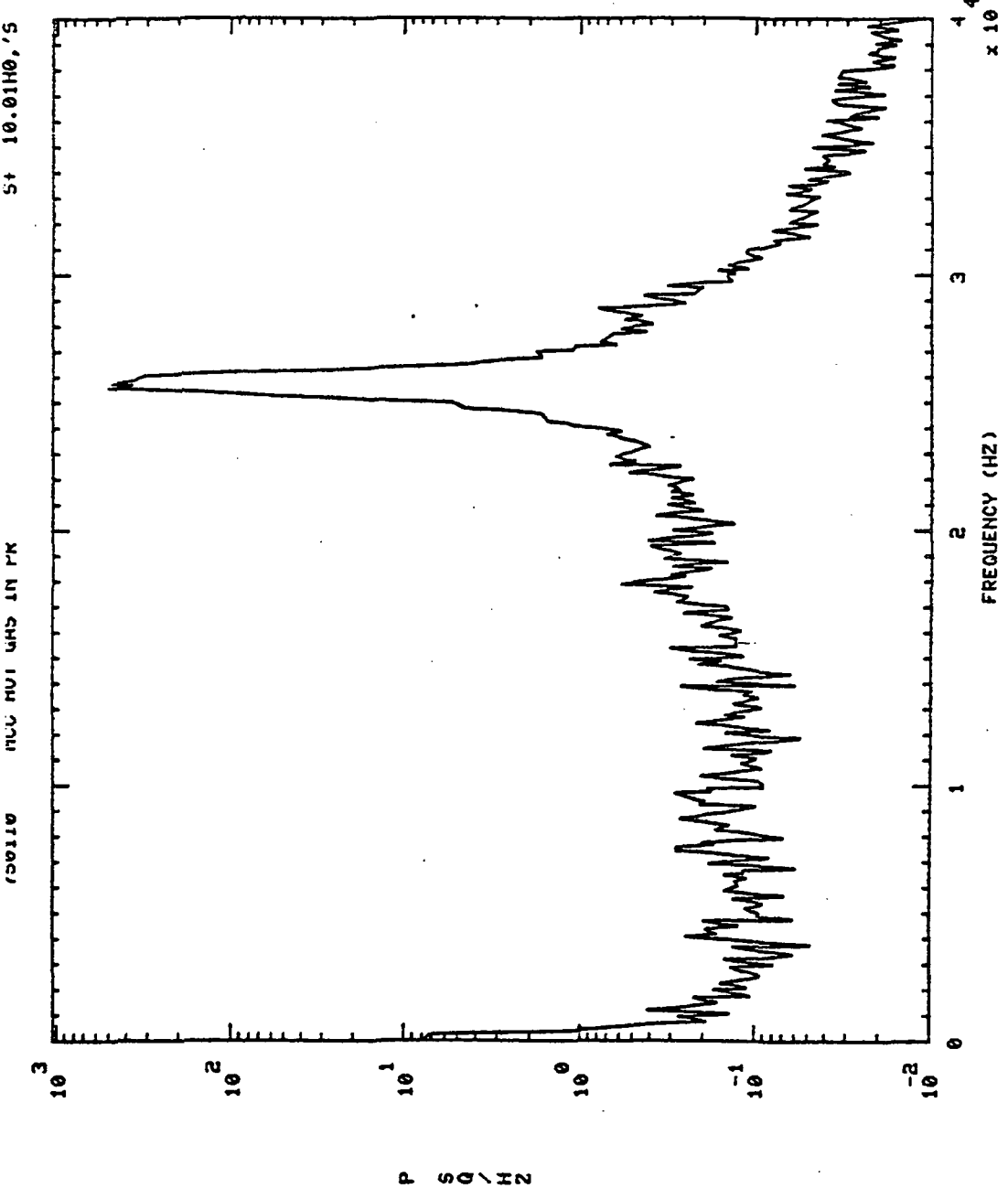
750110 MCC HOT GAS IN PR S+ 10.050/HZ



PSD / HZ

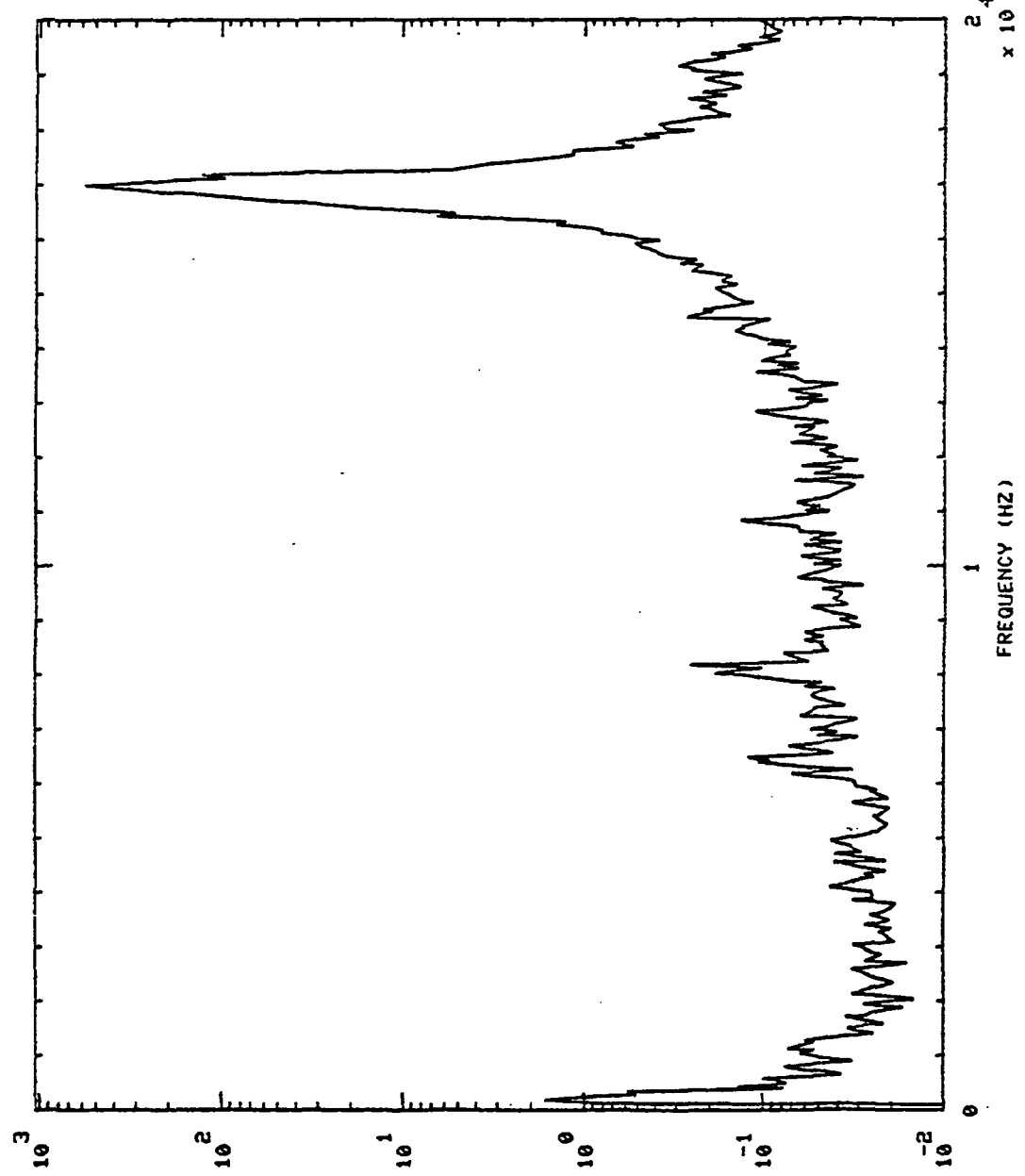
FREQUENCY (HZ)

x 10<sup>4</sup>



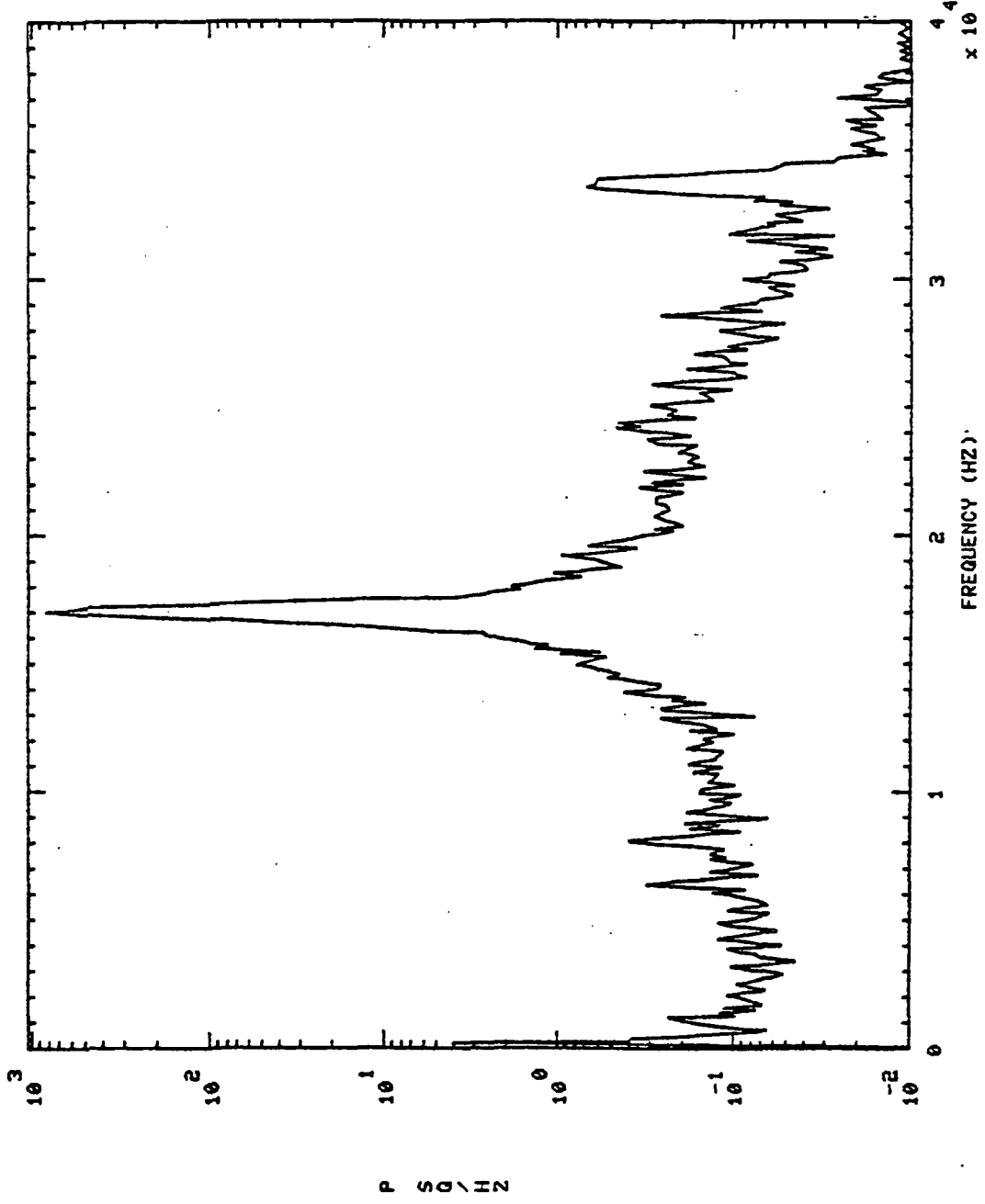


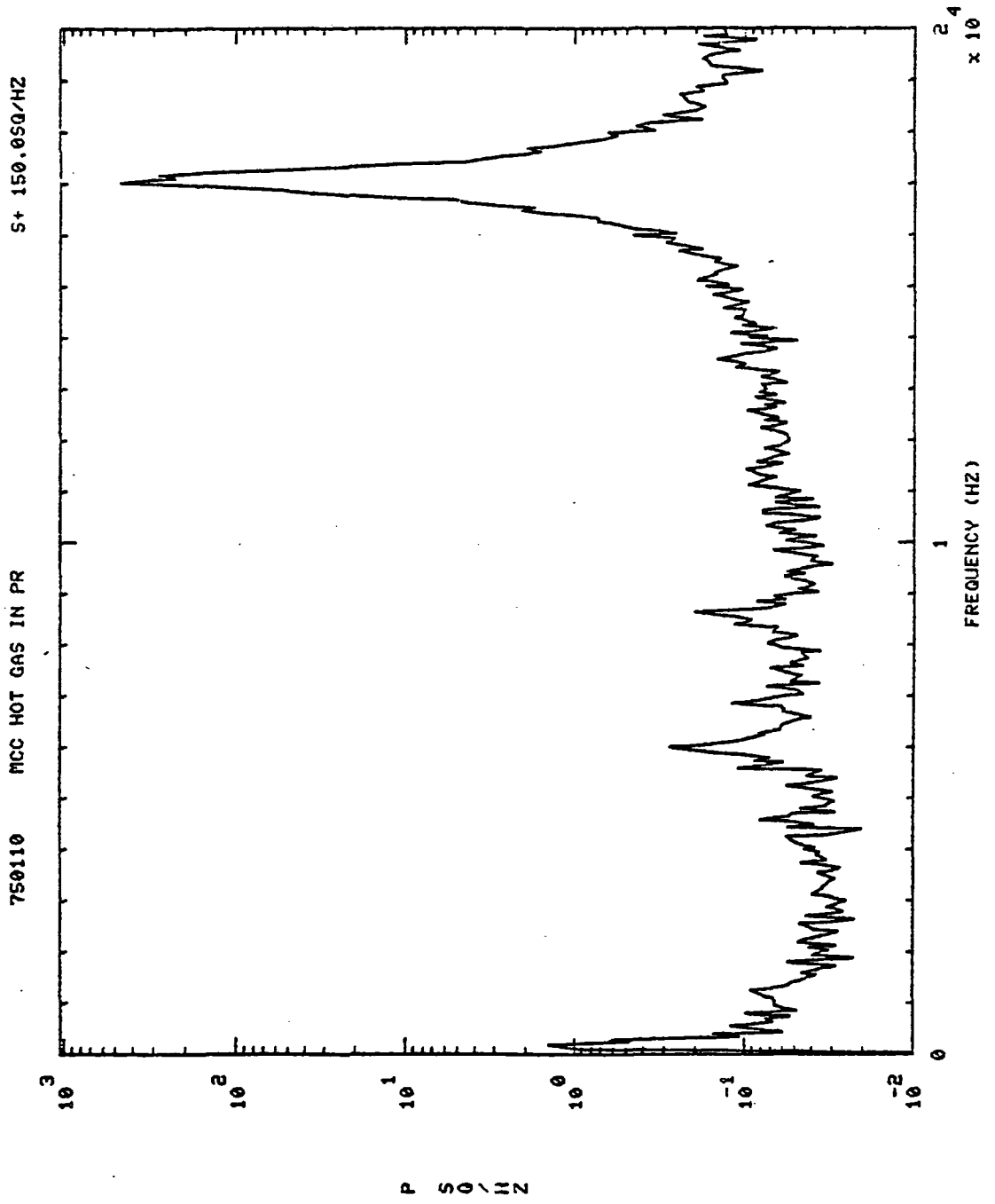
750110 MCC HOT GAS IN PR S+ 30.050/HZ



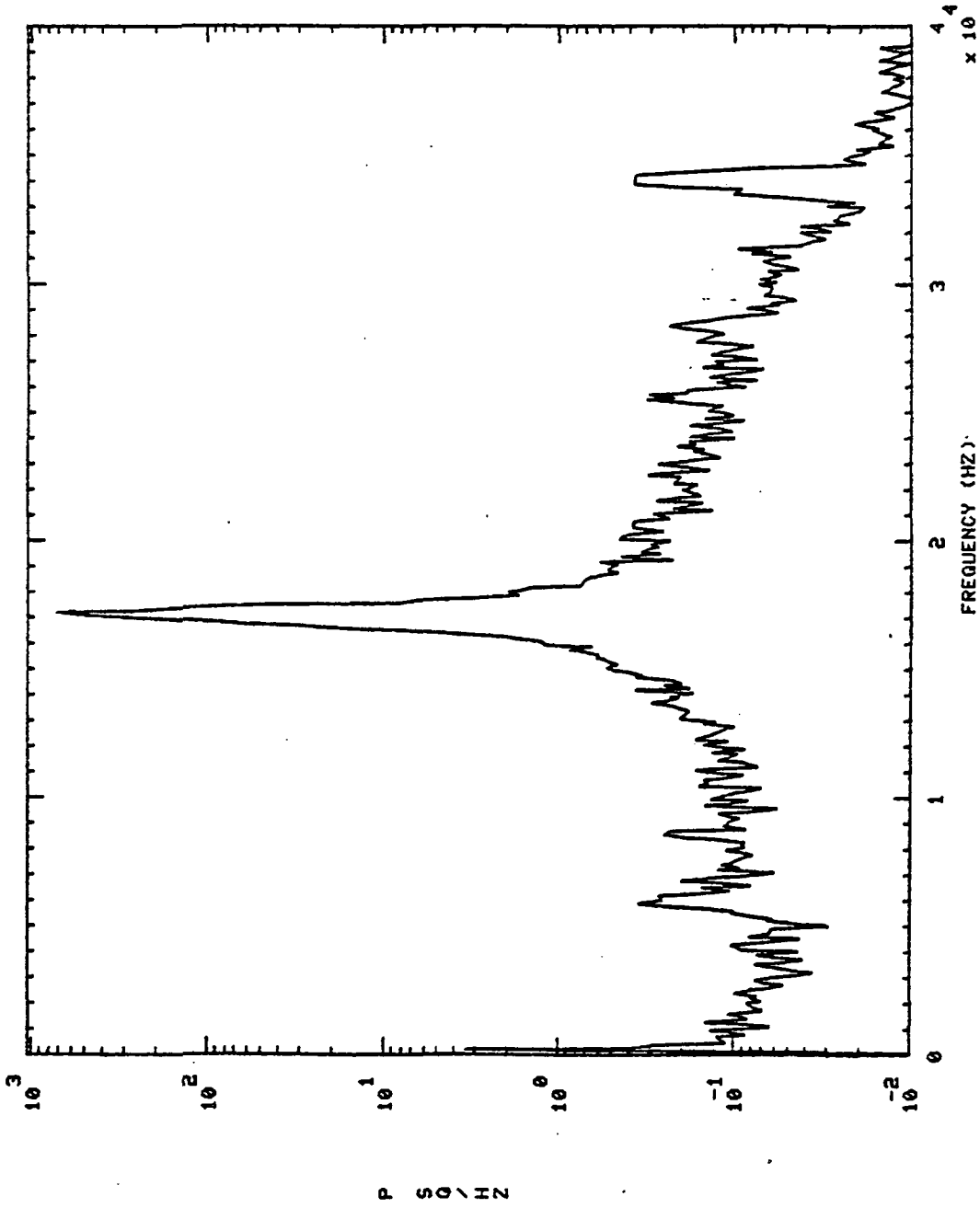
P S D / H Z

750110 MCC HOT GAS IN PR S+ 30.01H0,'S



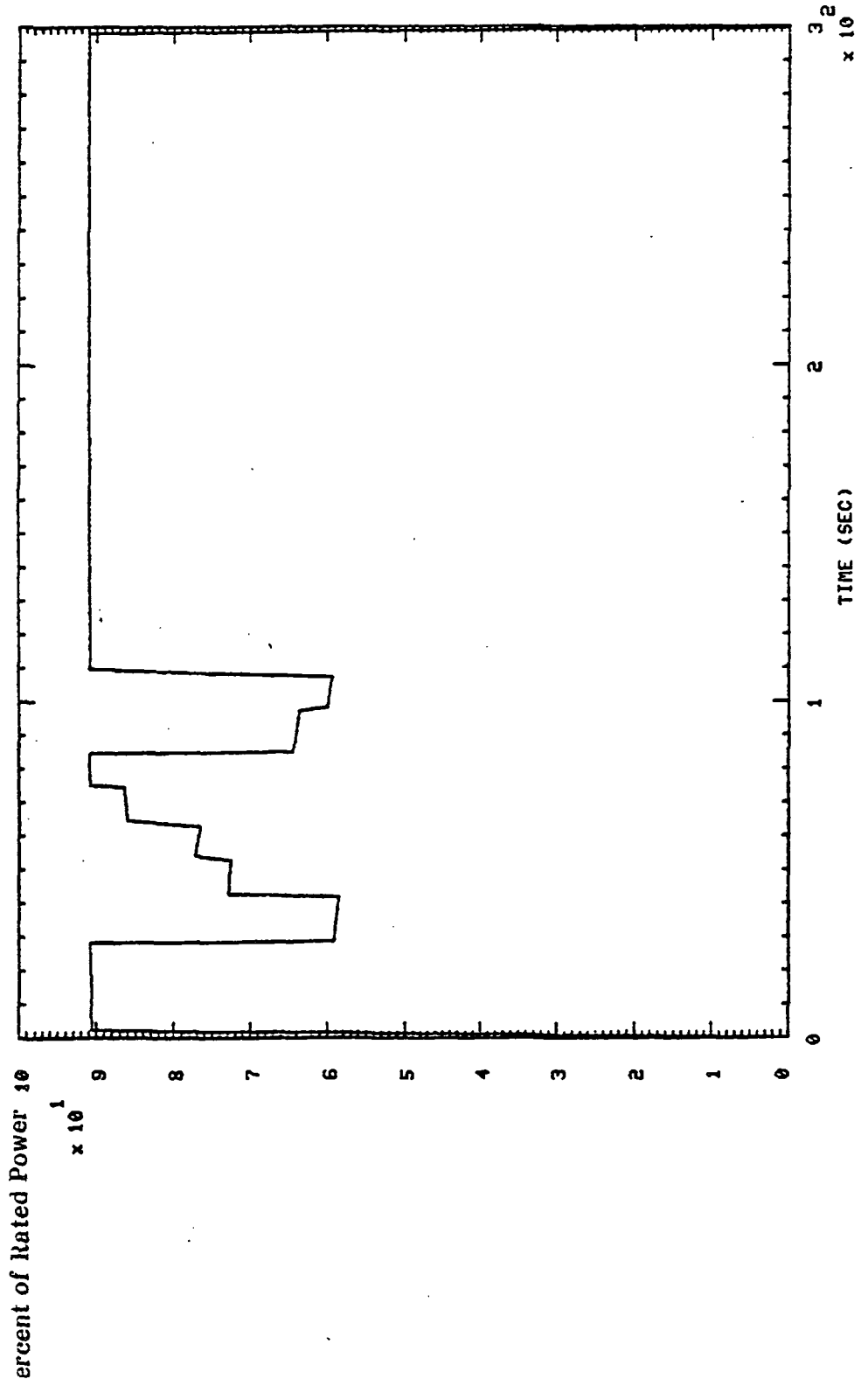


750110 MCC HOT GAS IN PR S+ 150.01H0,'S



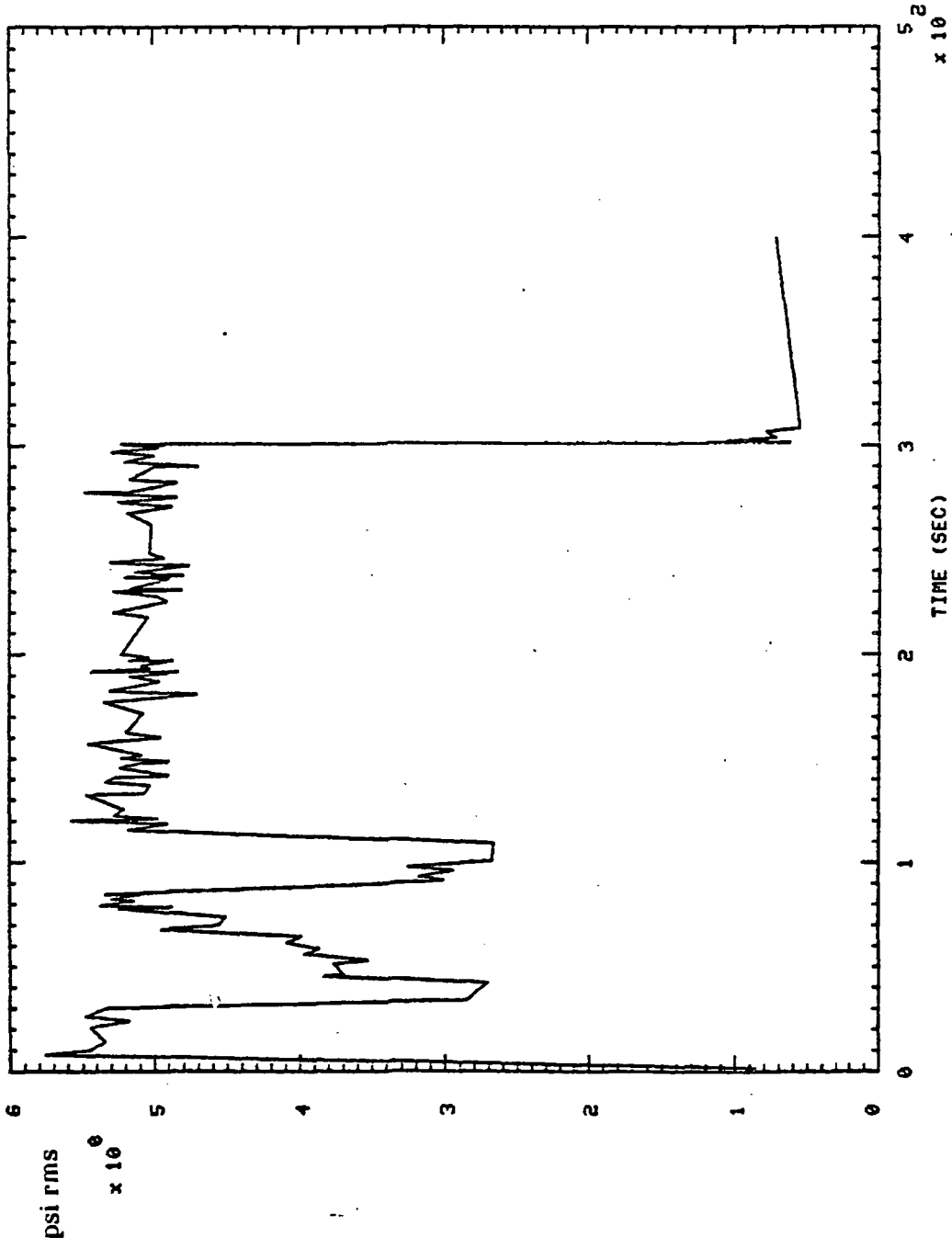
750111 THRUST (UNFILTERED )

percent of Rated Power  $\times 10^1$

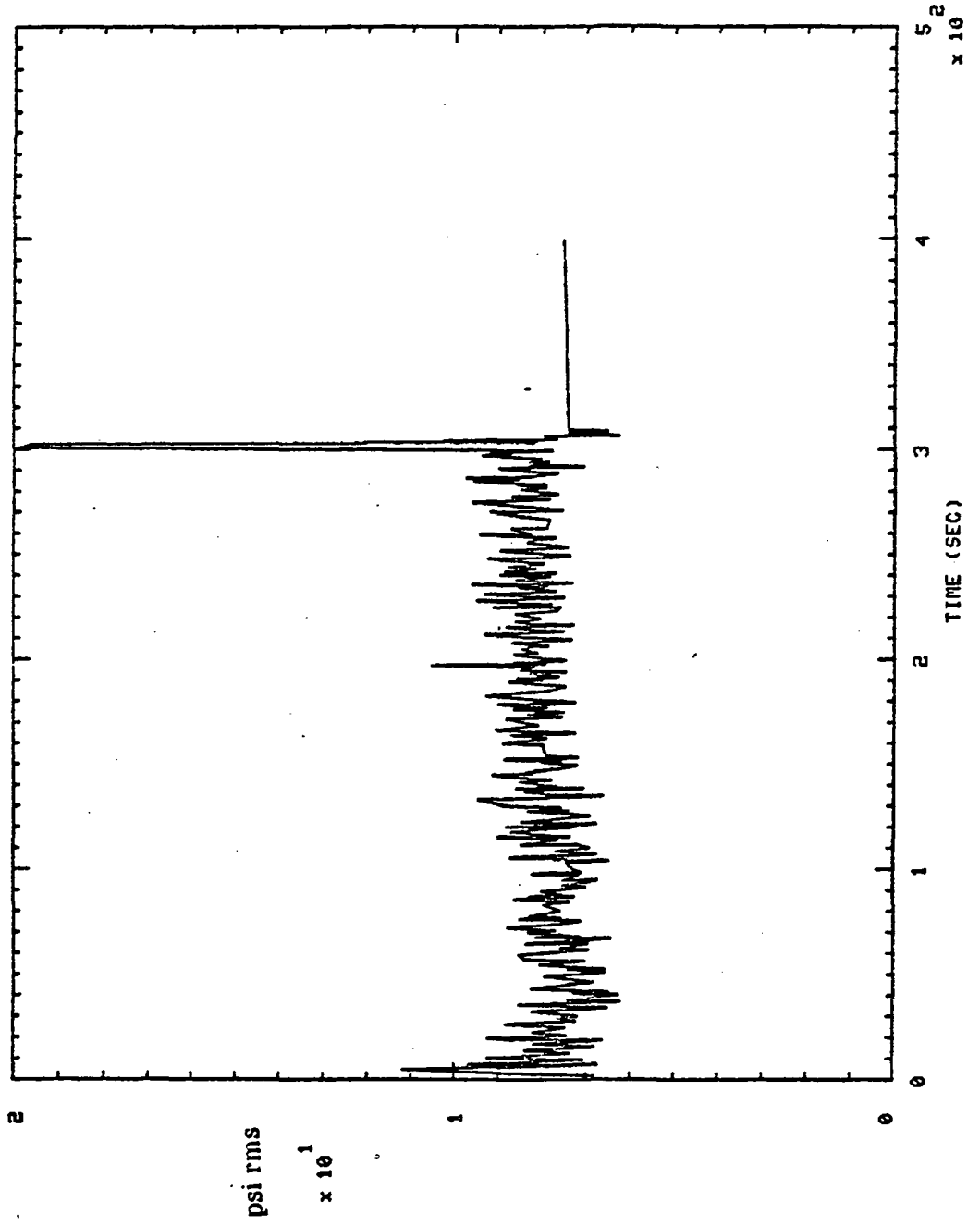


(1 - 20K HZ )

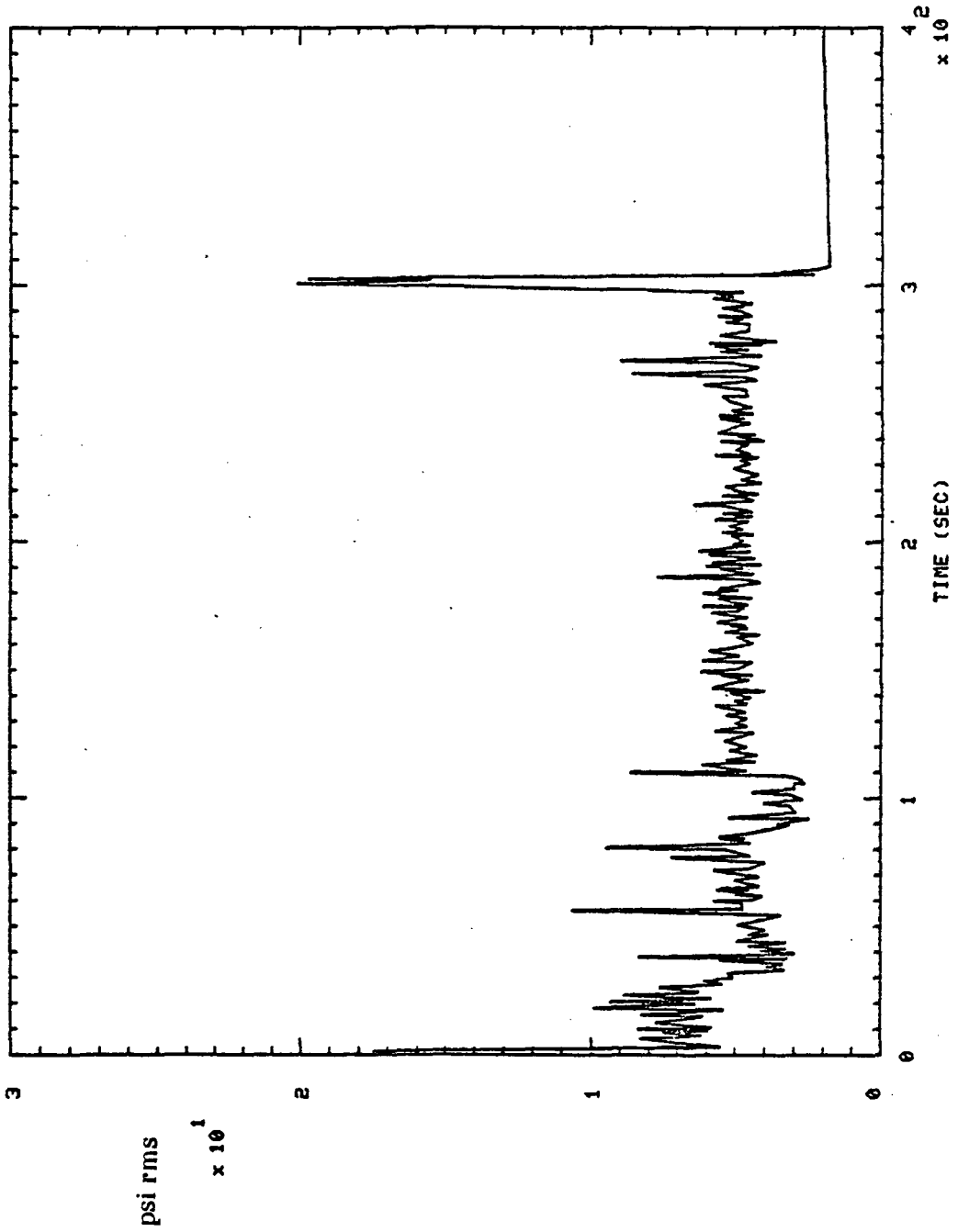
750111 LPFP DS PR



750111 LPOP DS PR (1 - 20K HZ )

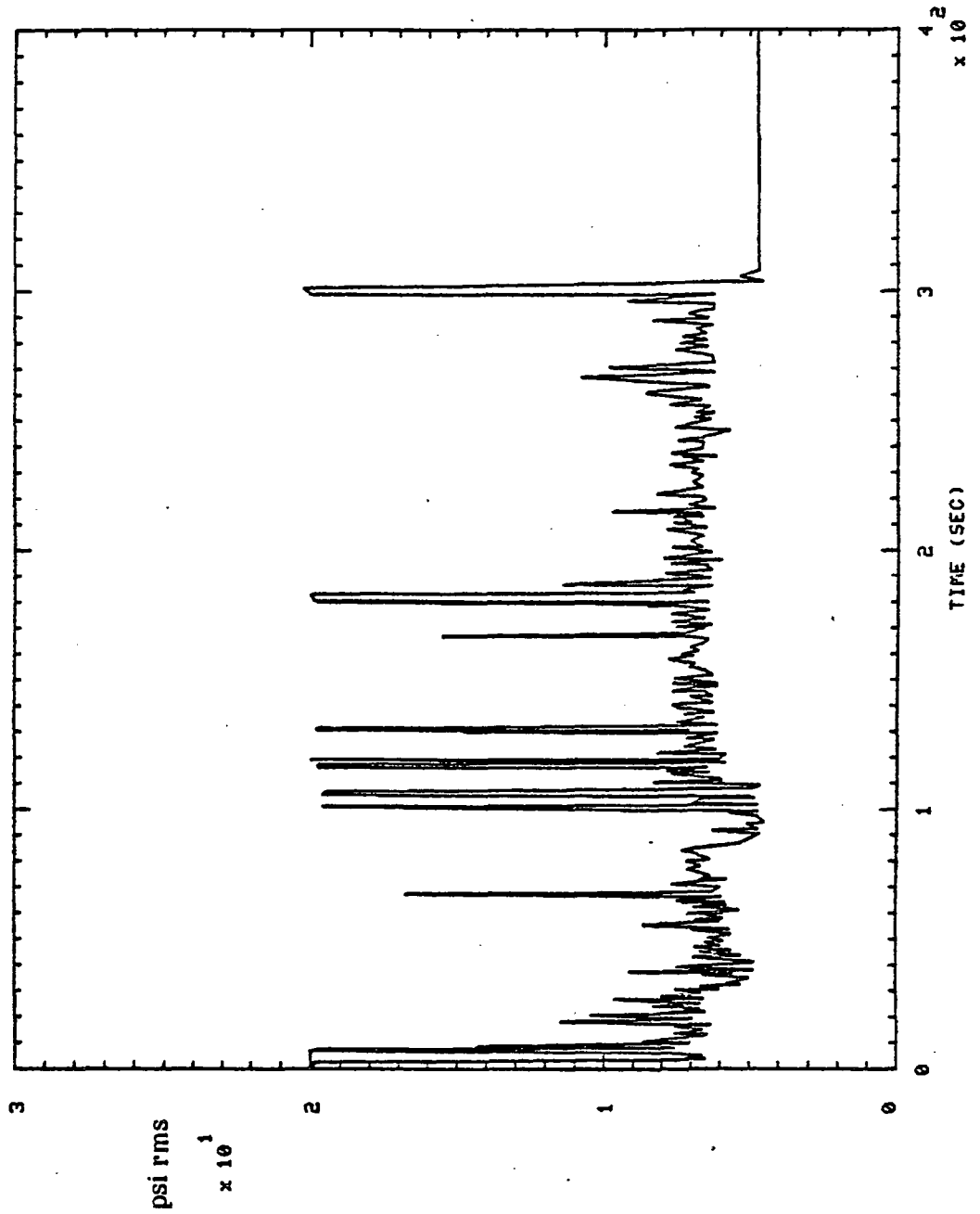


750111 HPOP BAL CAU PR2 (1 - 20K HZ )



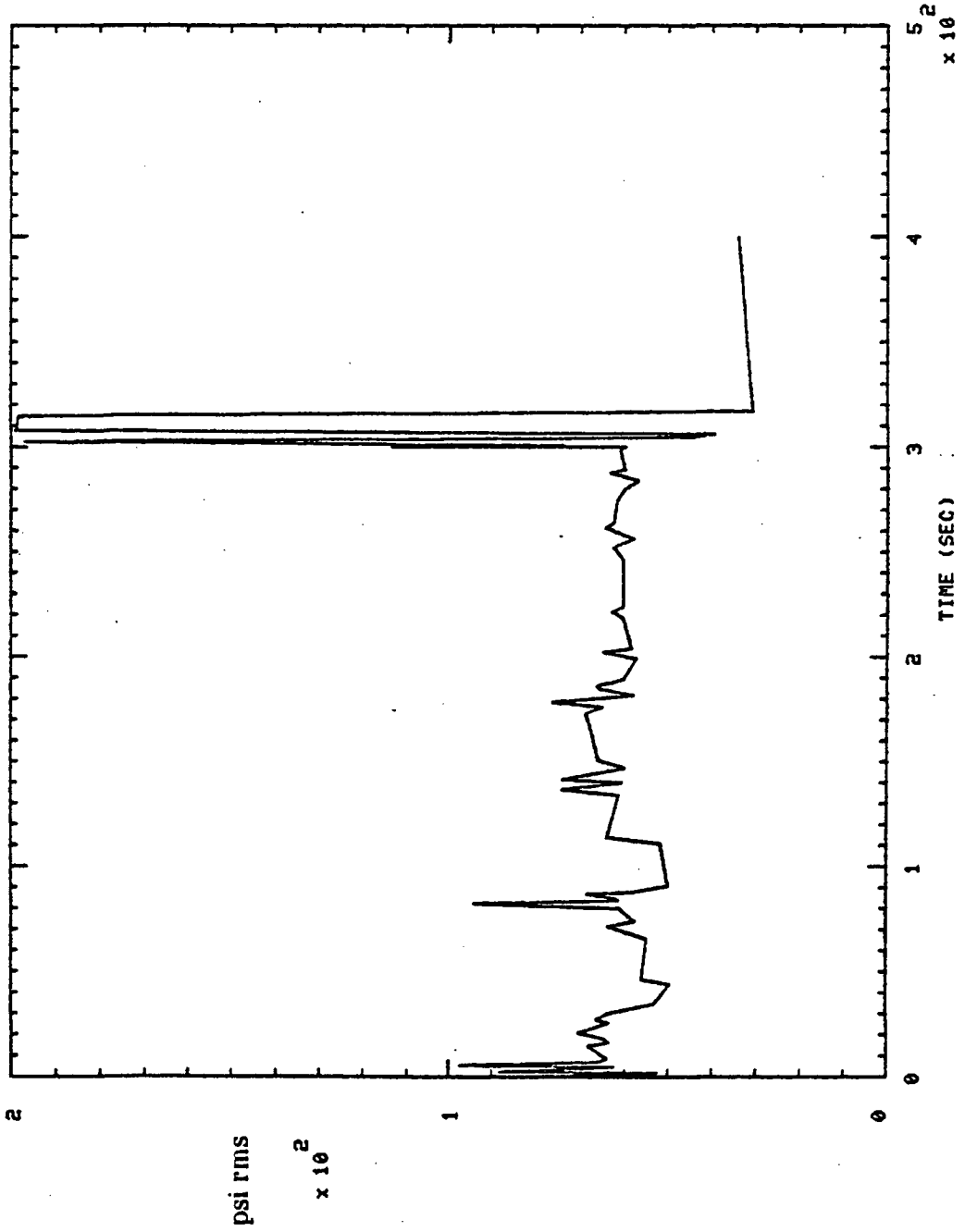


750111 HPOP BAL CAU PRI (1 - 20K HZ )

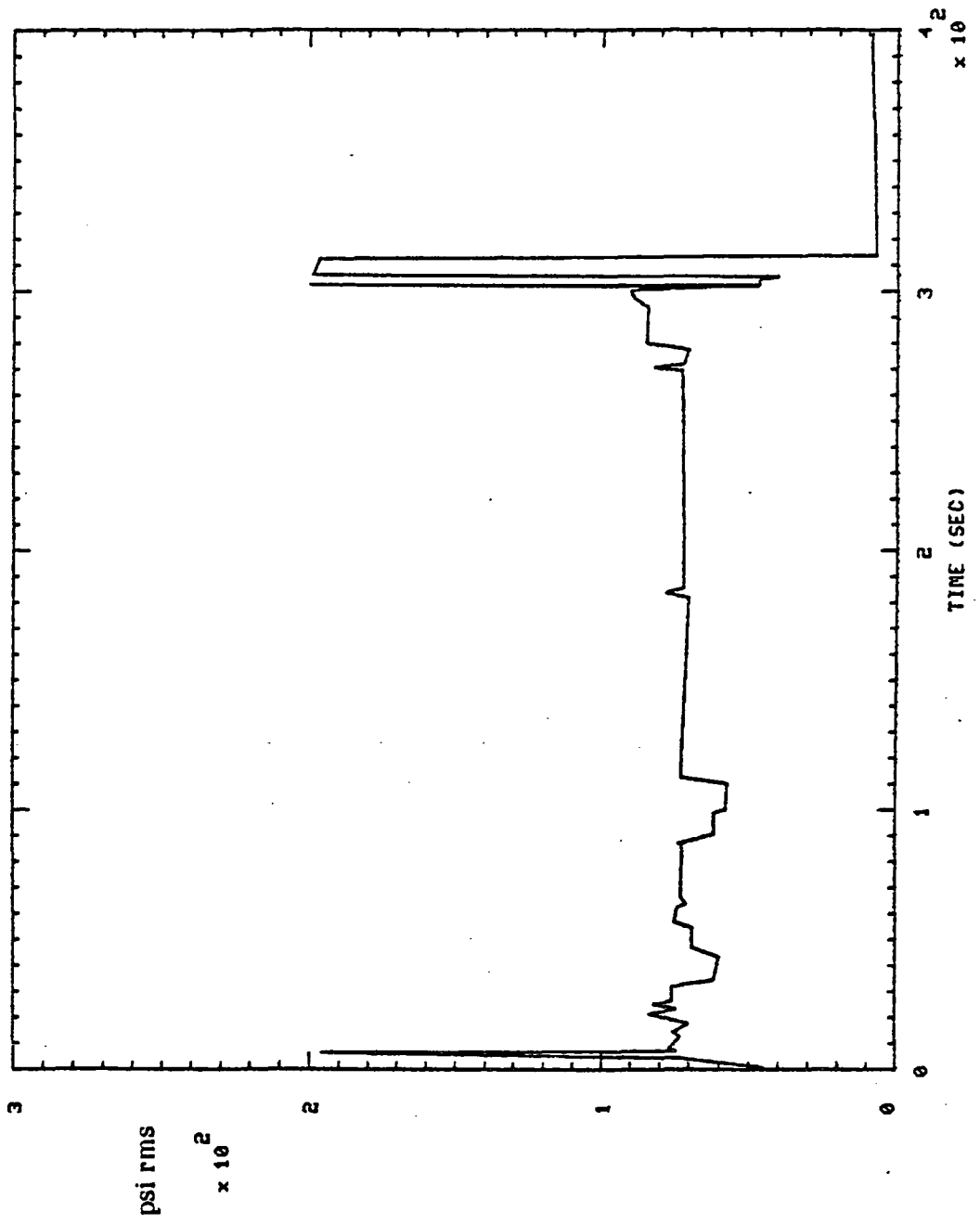


( 1 - 20K HZ )

750111 HPOP DS PR

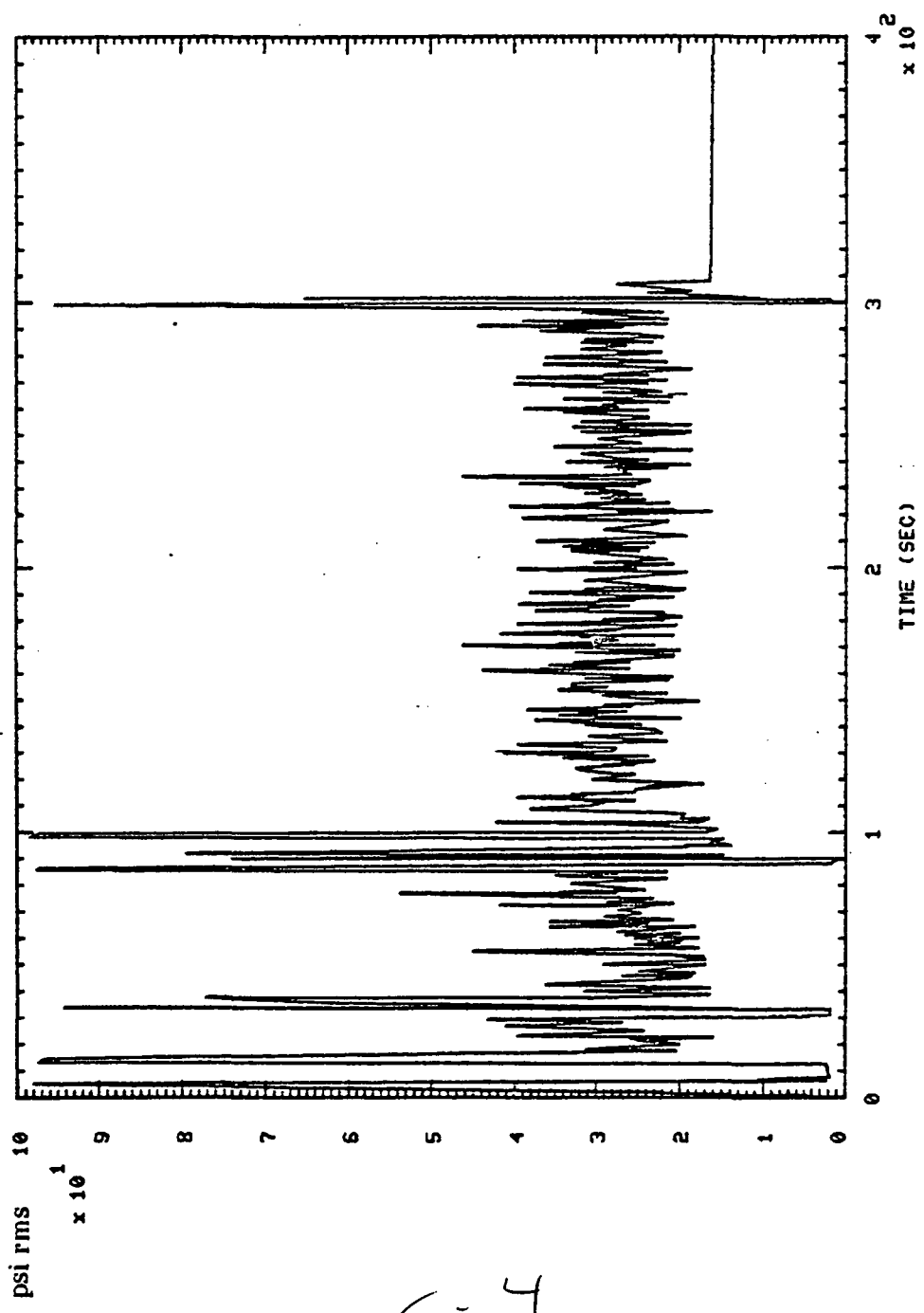


750111 PBP DS PR (1 - 20K HZ )



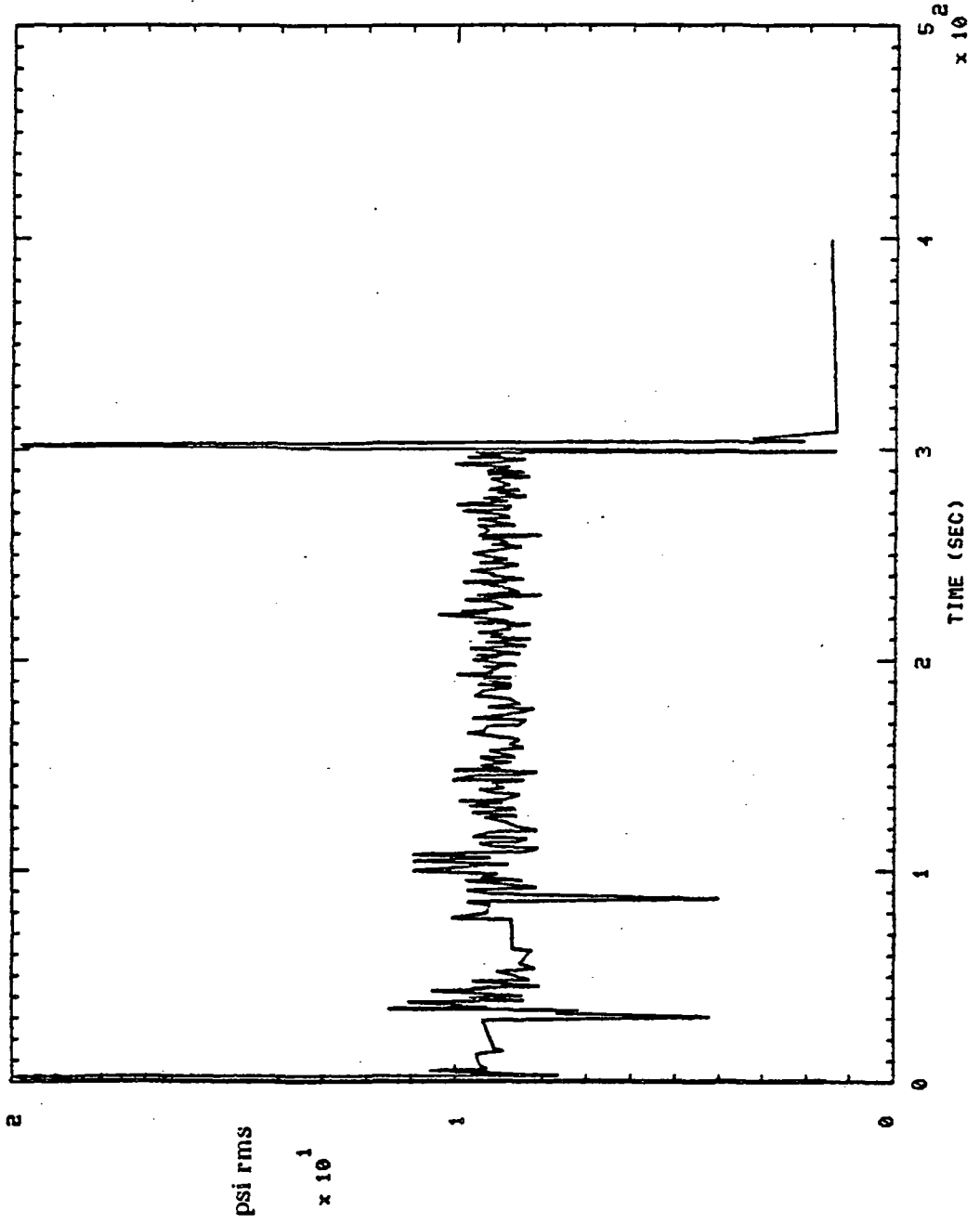
( 1 - 20K HZ )

750111 CHAMBER PR



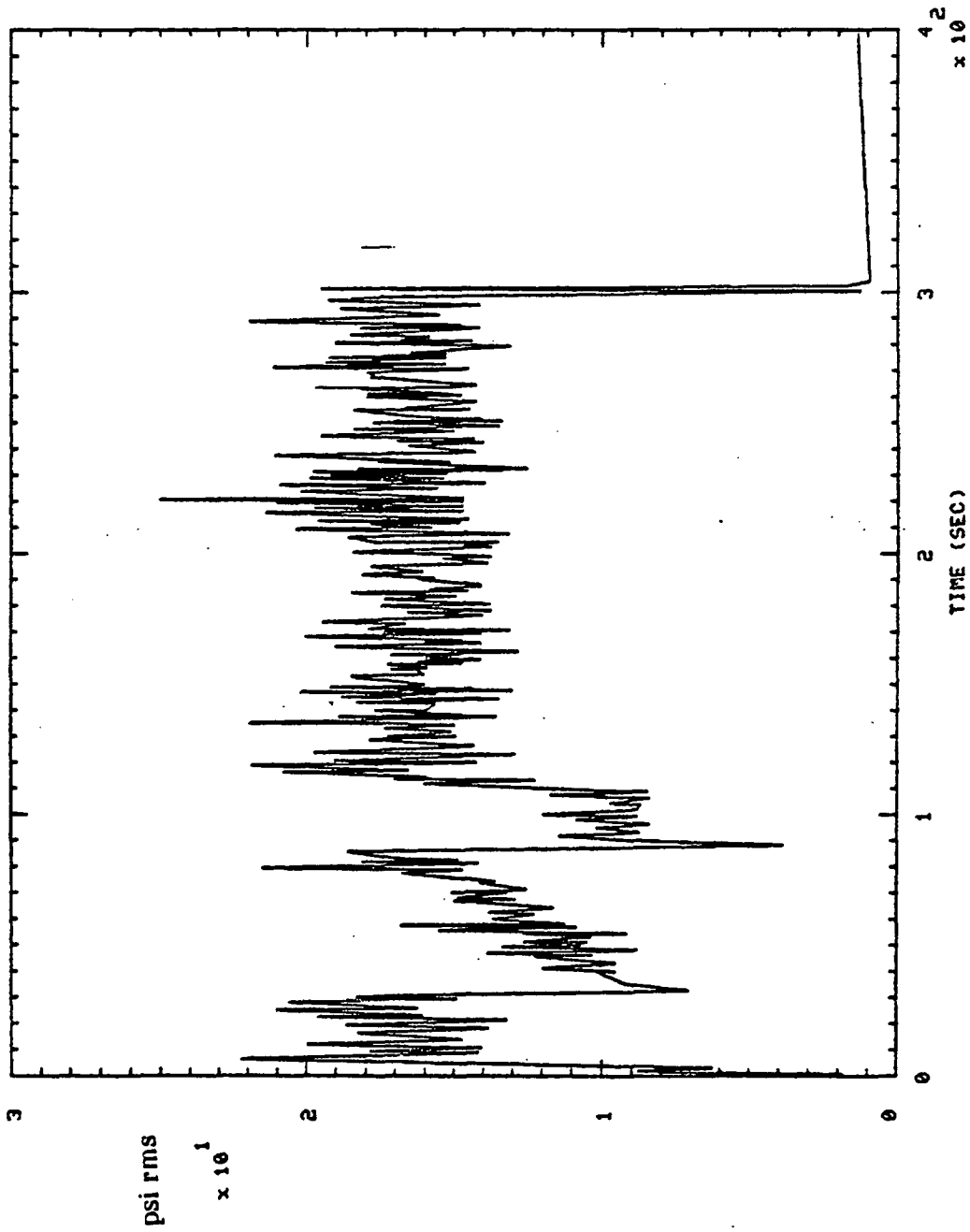
C-4

750111 PBP FUEL SUP PR (1 - 20K HZ )

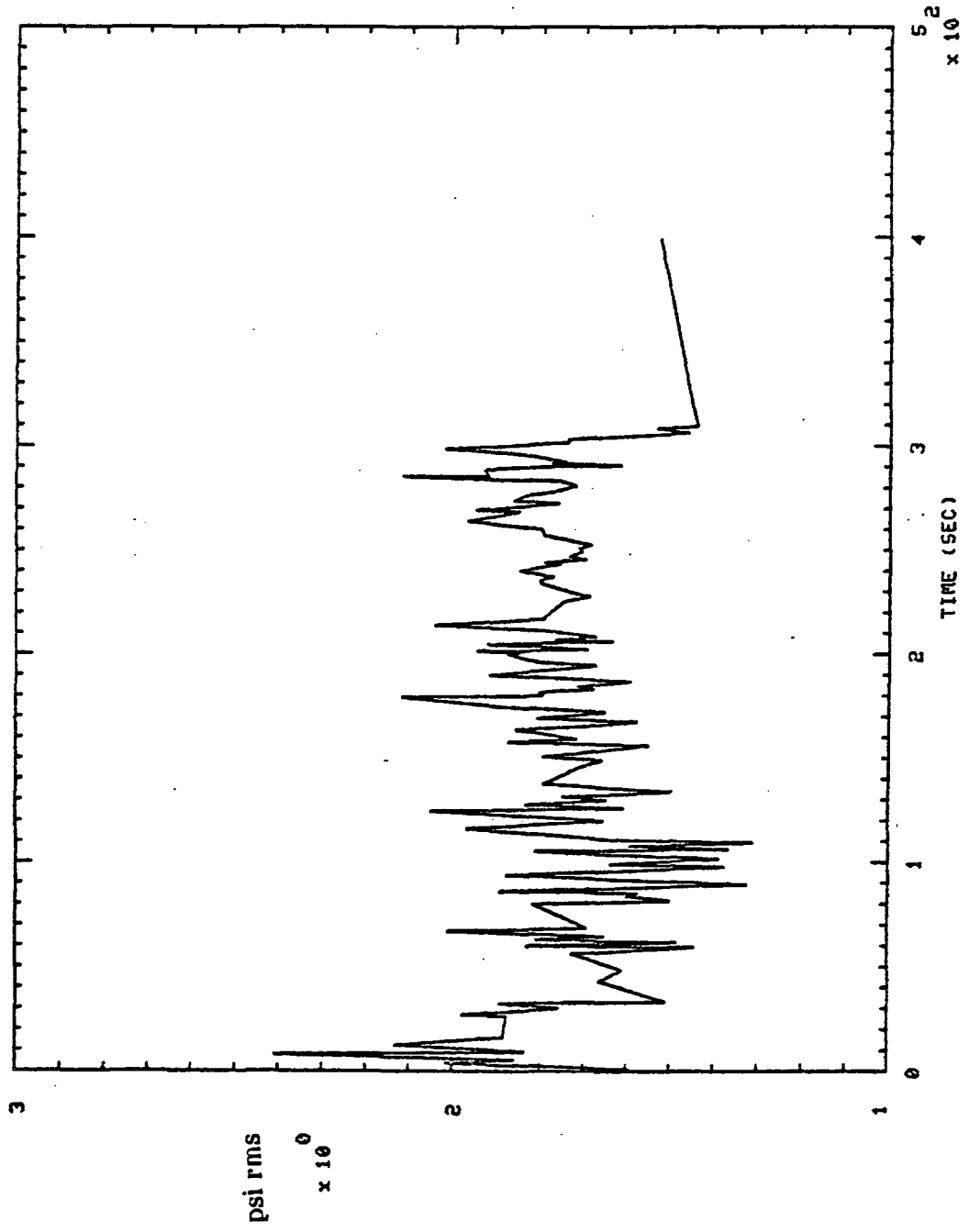


750111 (1 - 20K HZ )

FPB FUEL MAN PR

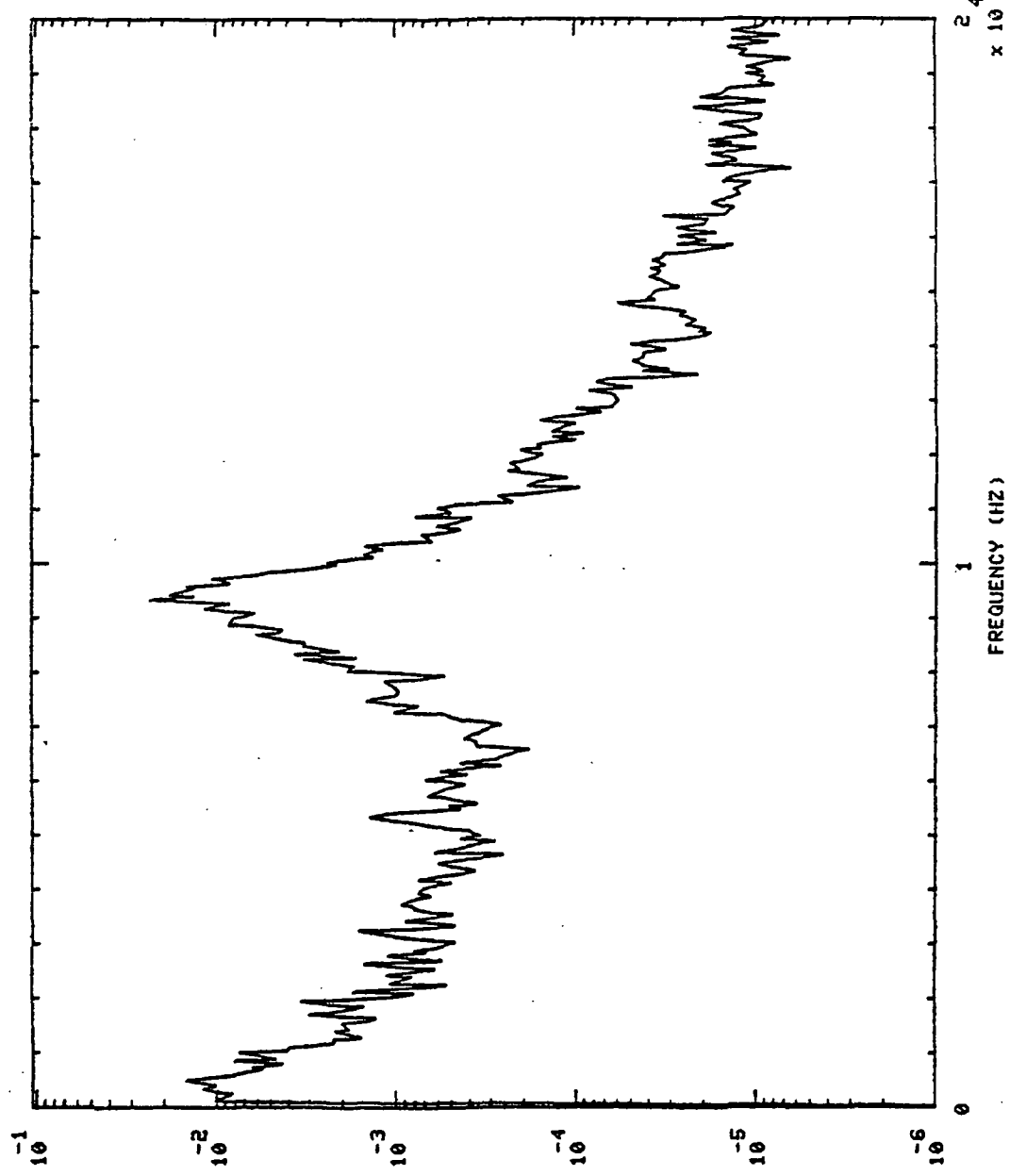


750111 LOX HX OUT PR (1 - 20K HZ )



S+ 15.050/HZ

750111 LFPF DS PR



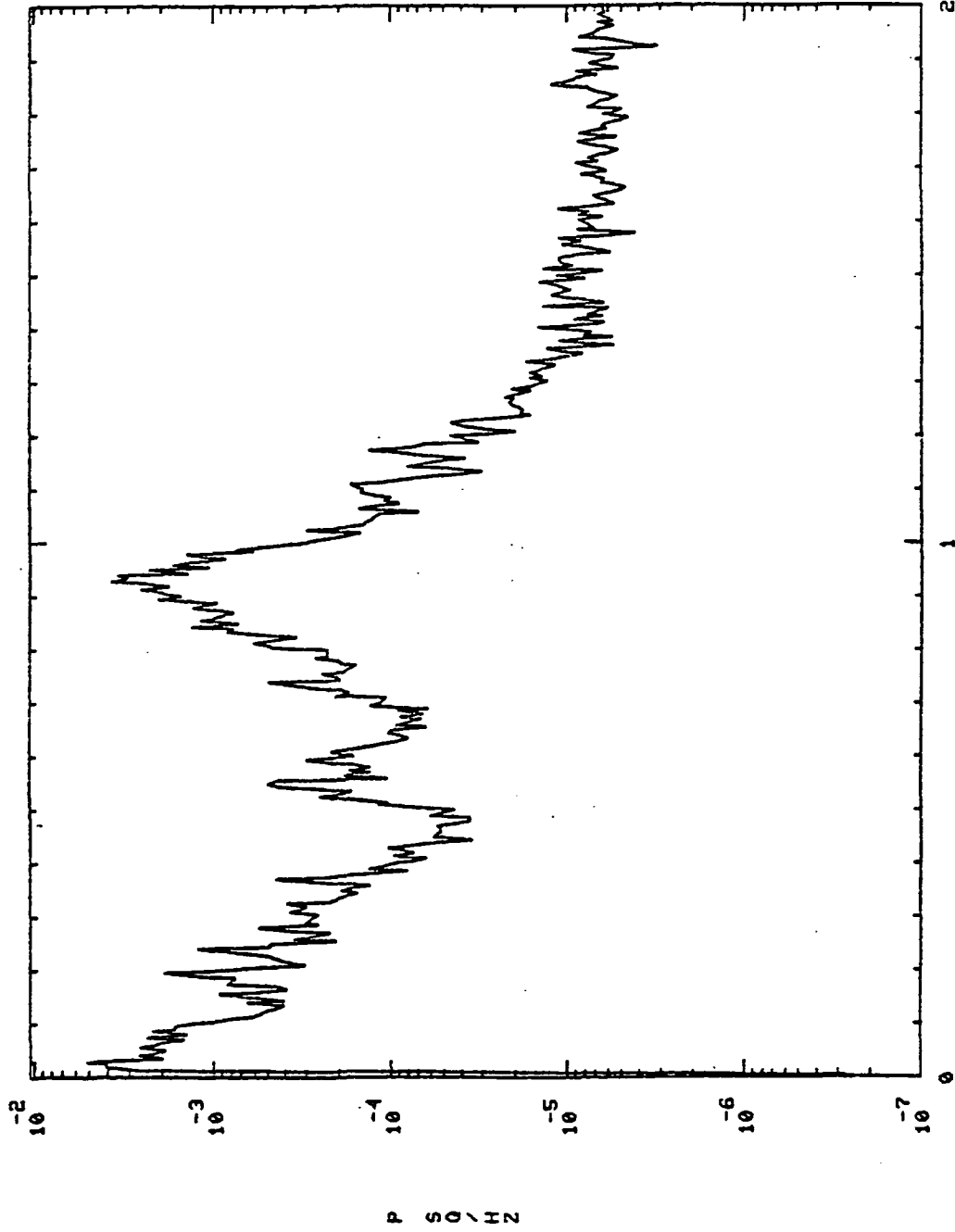
P S D / H Z

2.4  
x 10<sup>4</sup>

FREQUENCY (HZ)

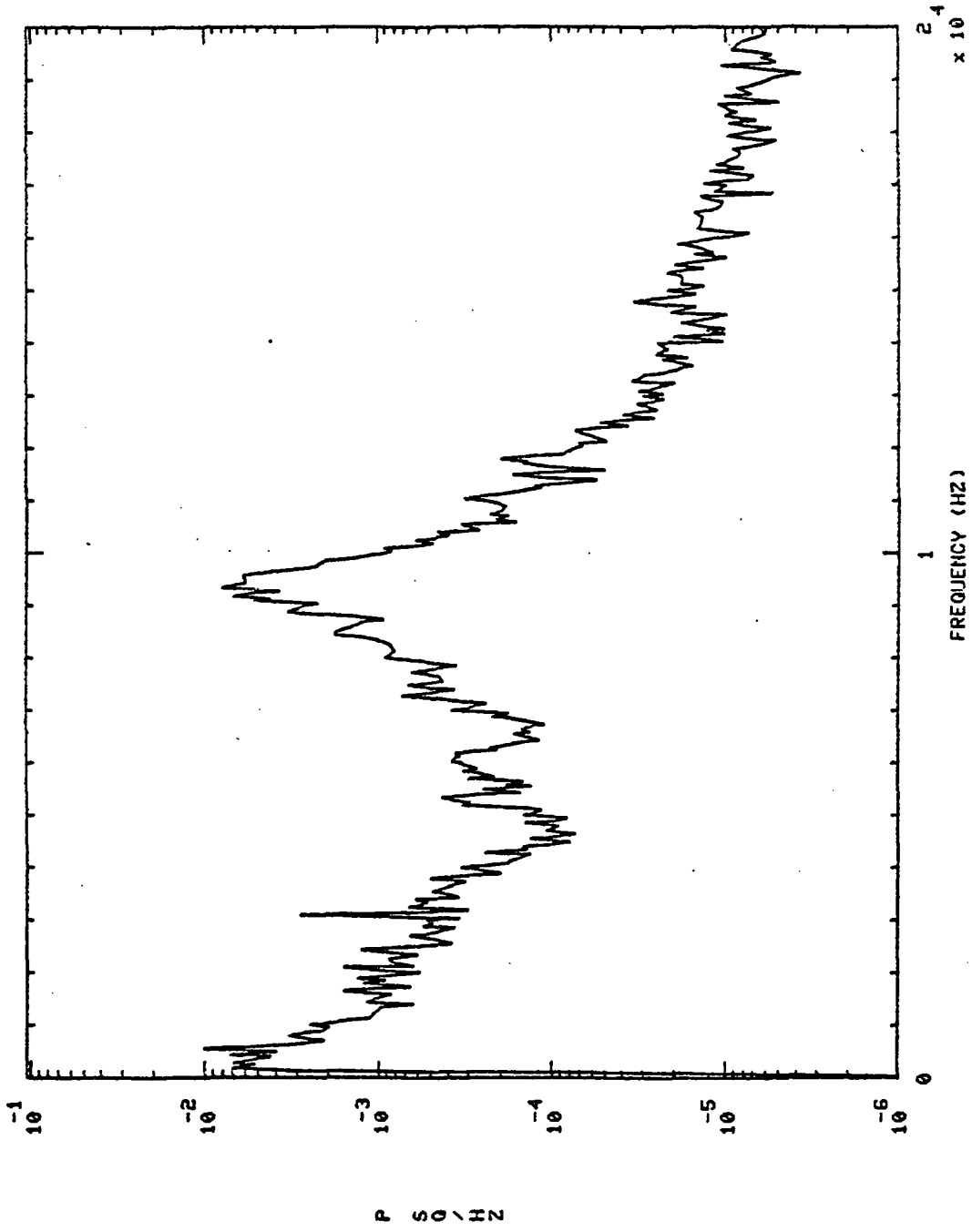


750111 LPFP DS PR S+ 40.050/HZ

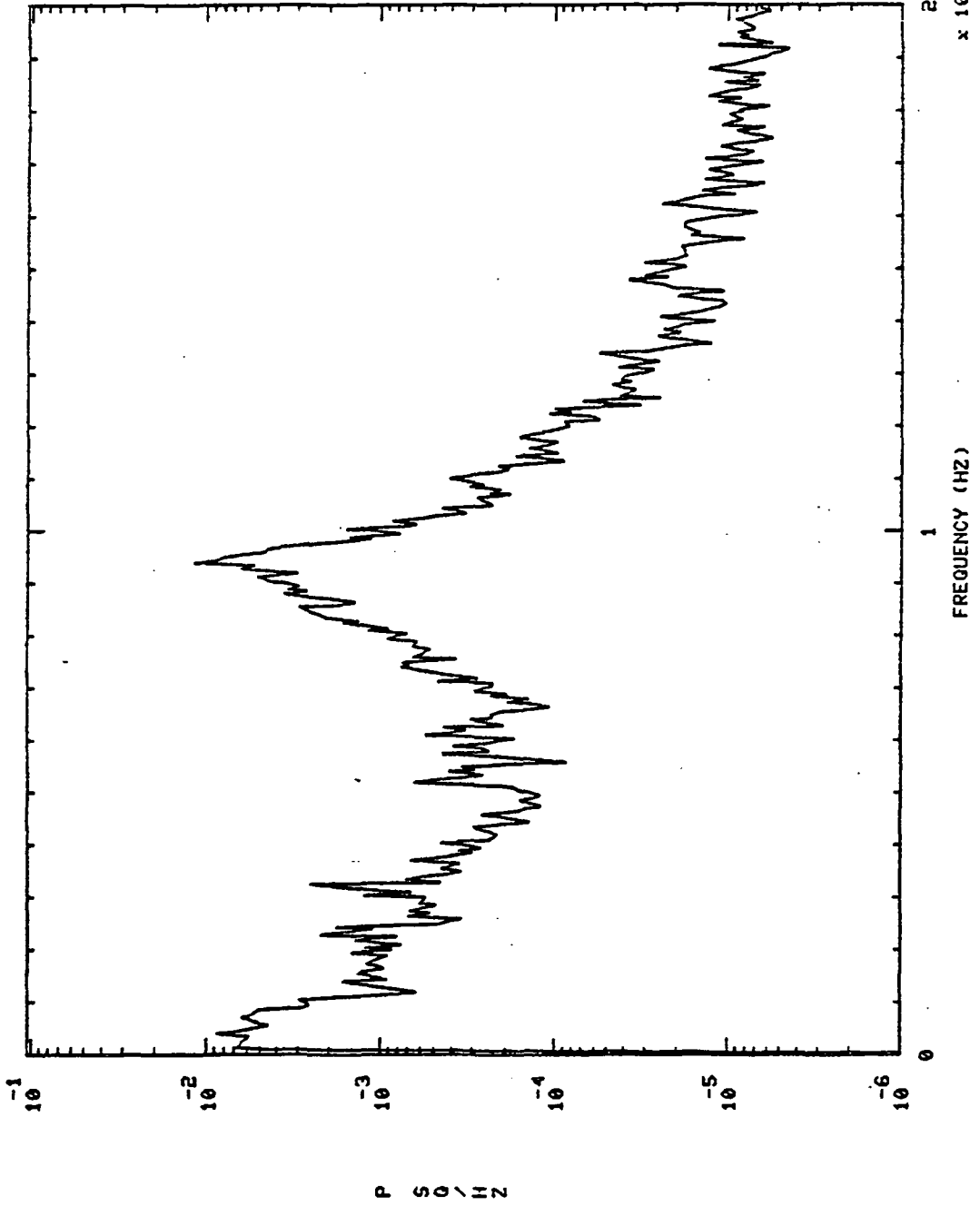


S+ 50.050/HZ

750111 LPFP DS PR

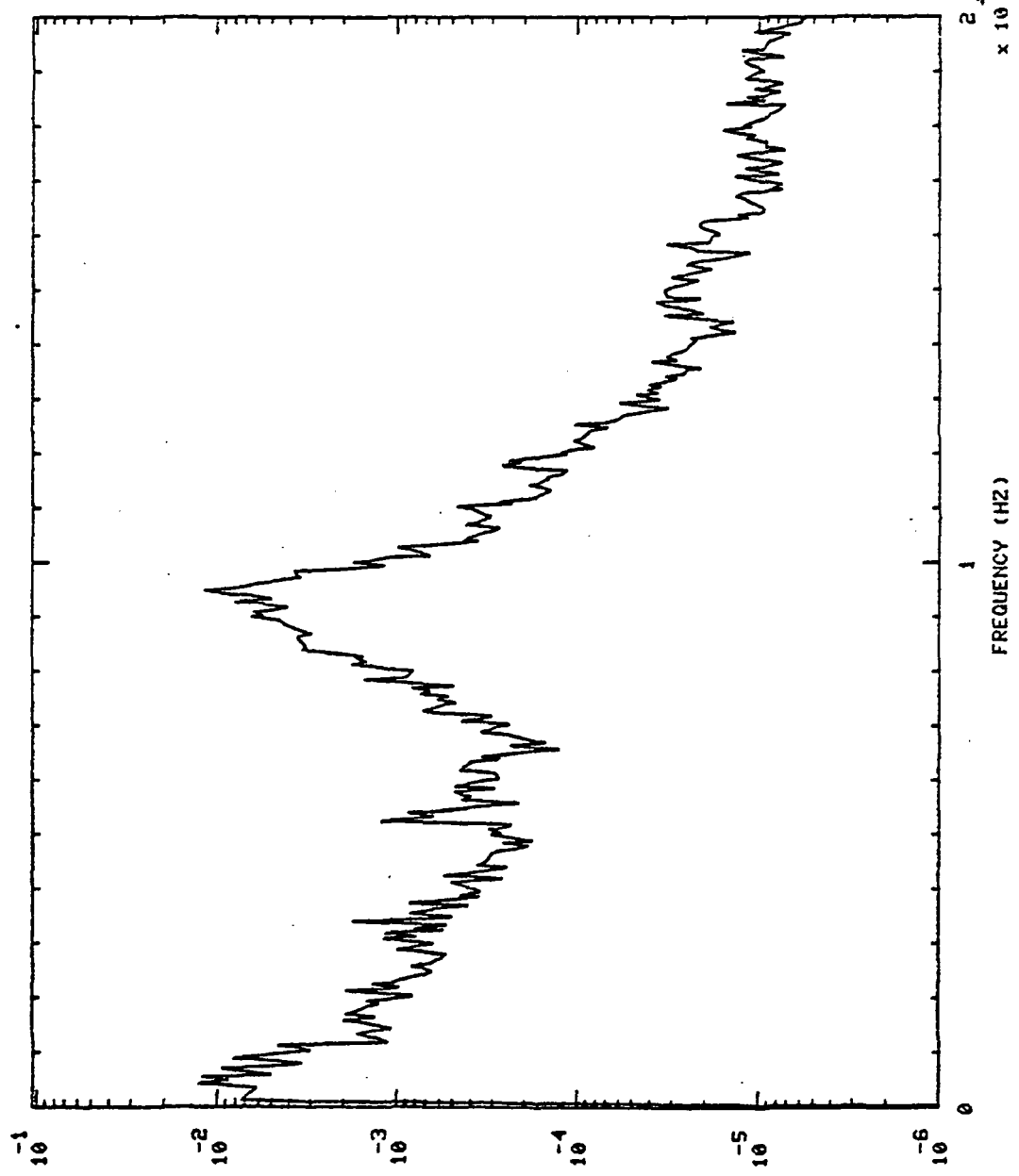


750111 LFPF DS PR S+ 60.050/HZ



S+ 70.050/HZ

750111 LPFP DS PR

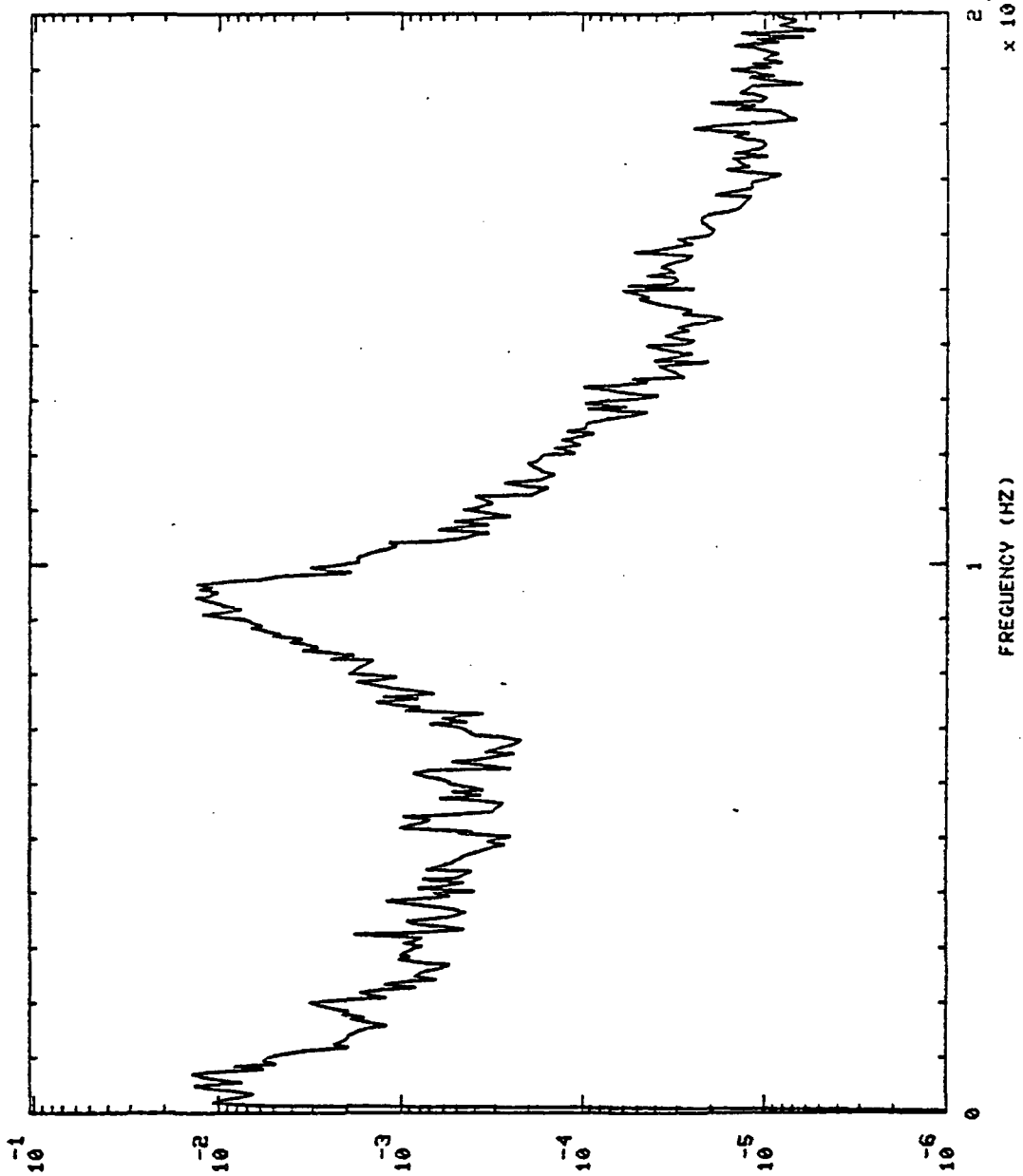


P S D / HZ

2.4  
x 10<sup>4</sup>

FREQUENCY (HZ)

750111 LPFP DS PR S+ 80.050/HZ



P SQ/HZ

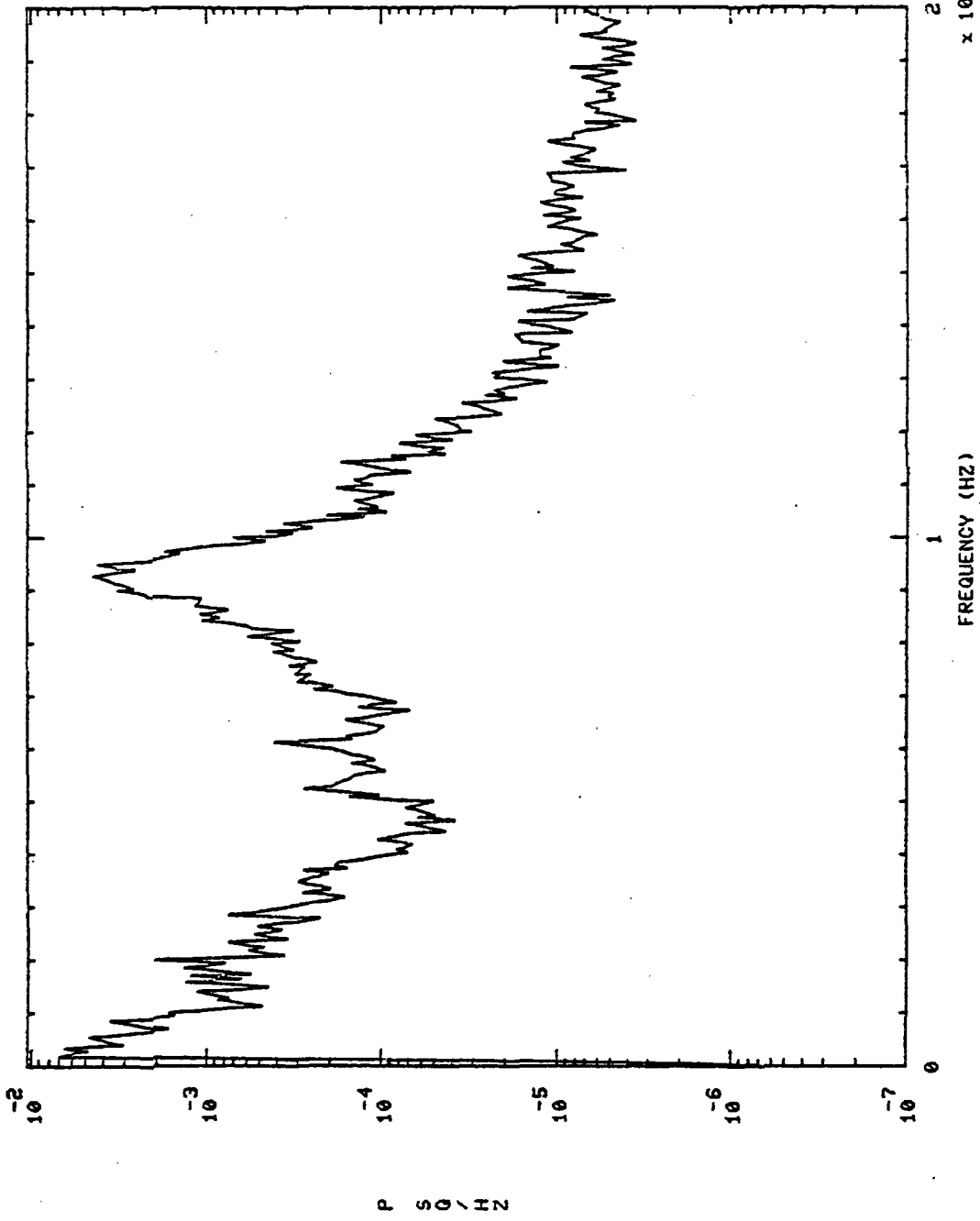
$\times 10^4$

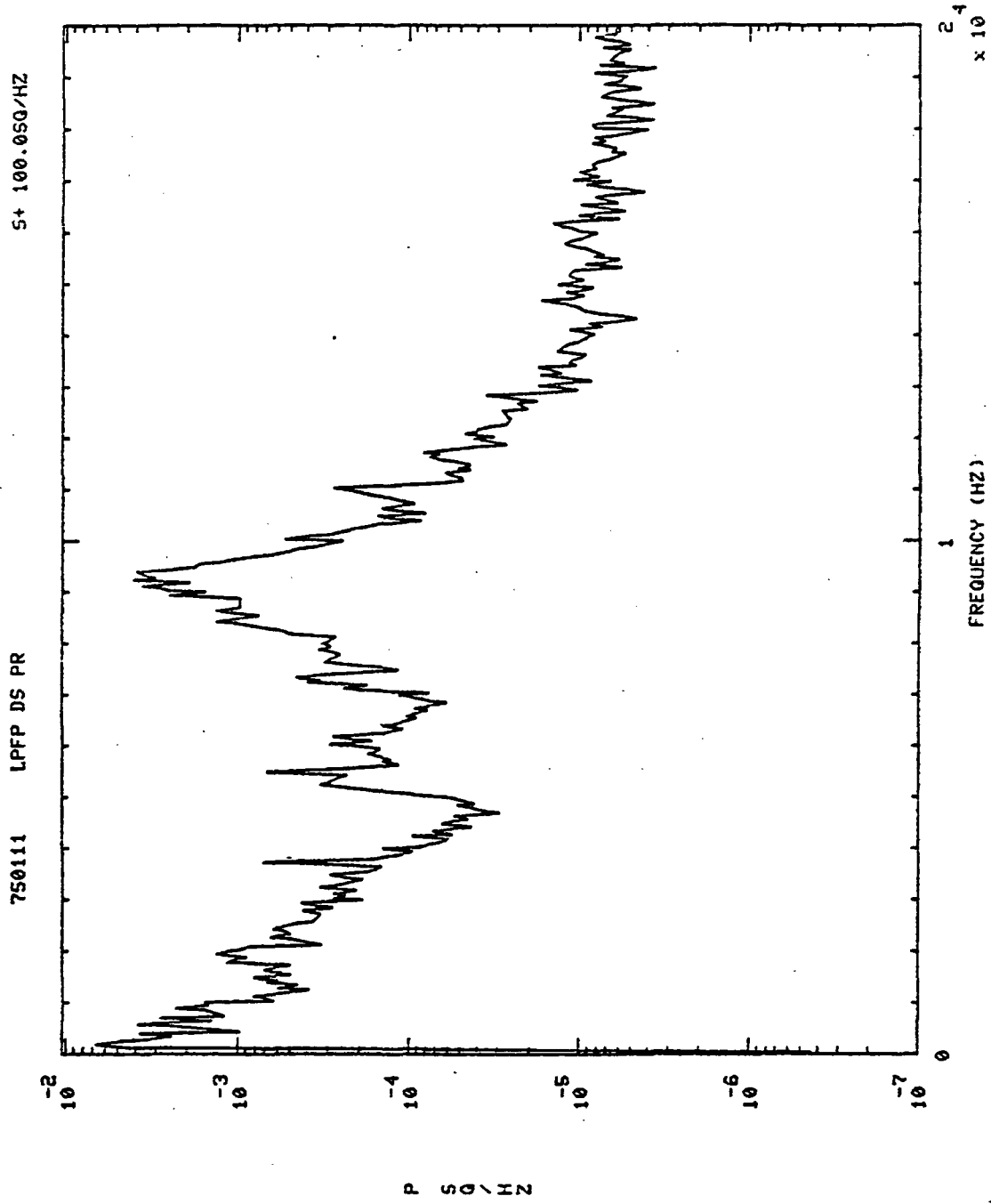
FREQUENCY (HZ)

S+ 90.050/HZ

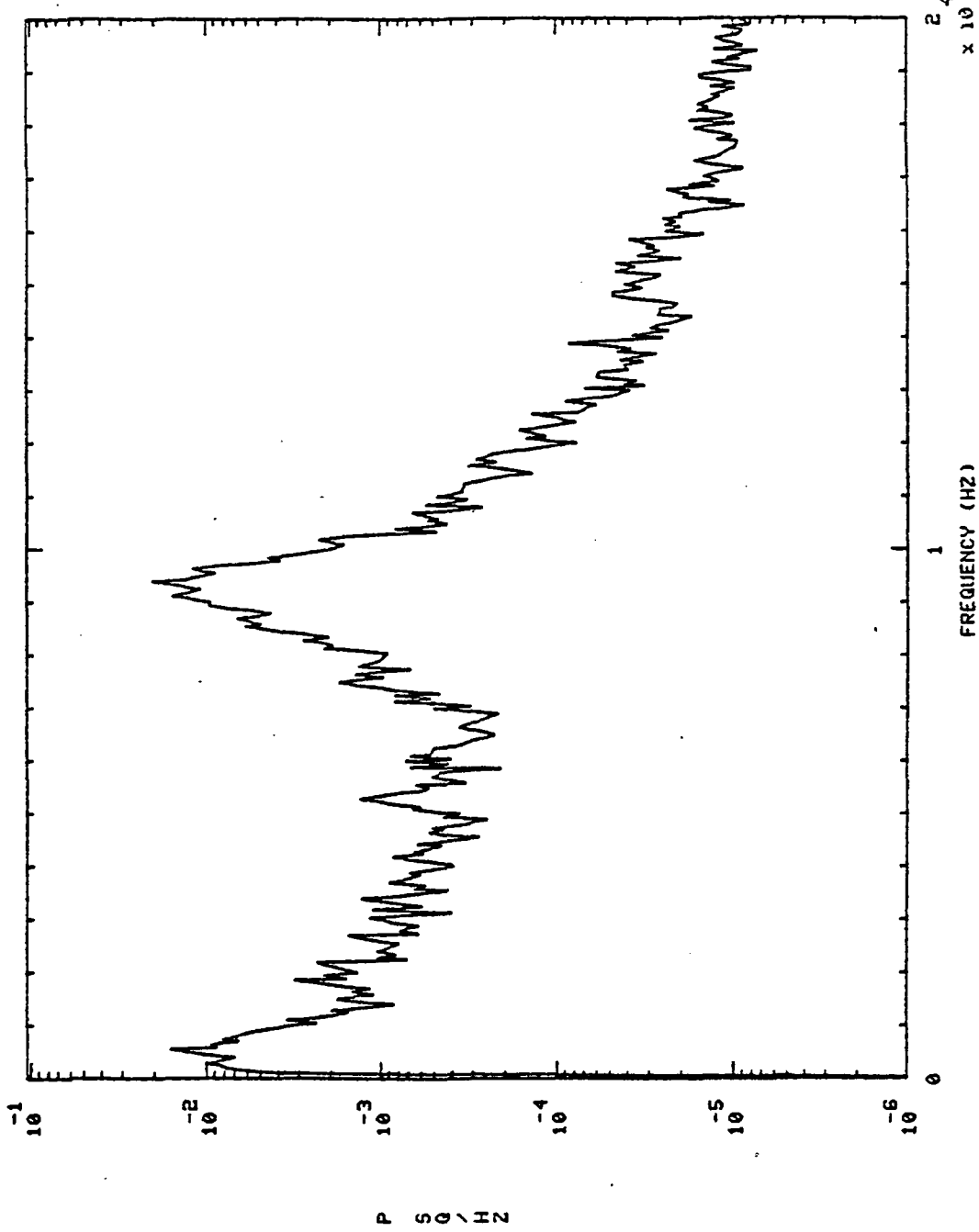
LPFP DS PR

750111



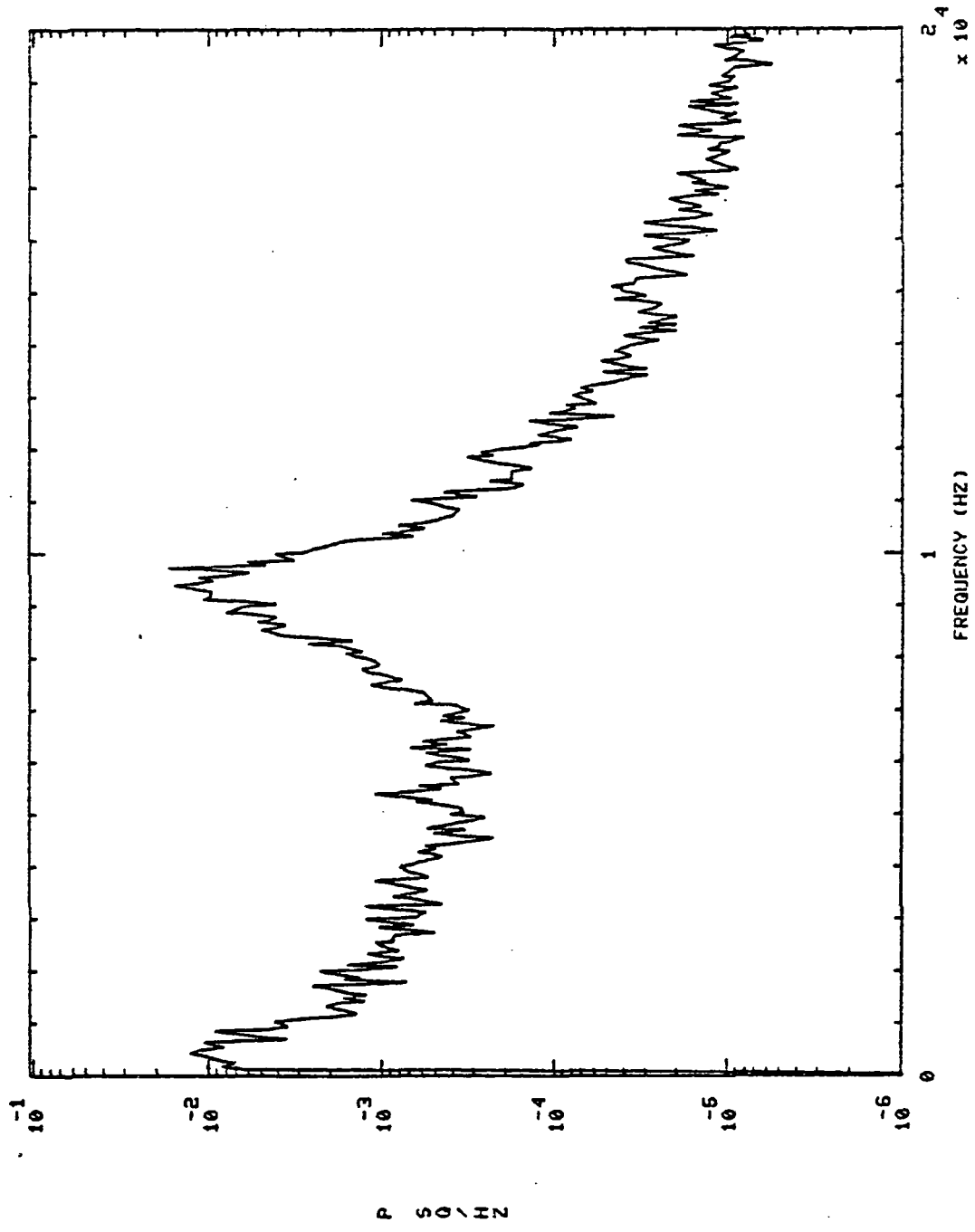


750111 LFPF DS PR S+ 120.050/HZ





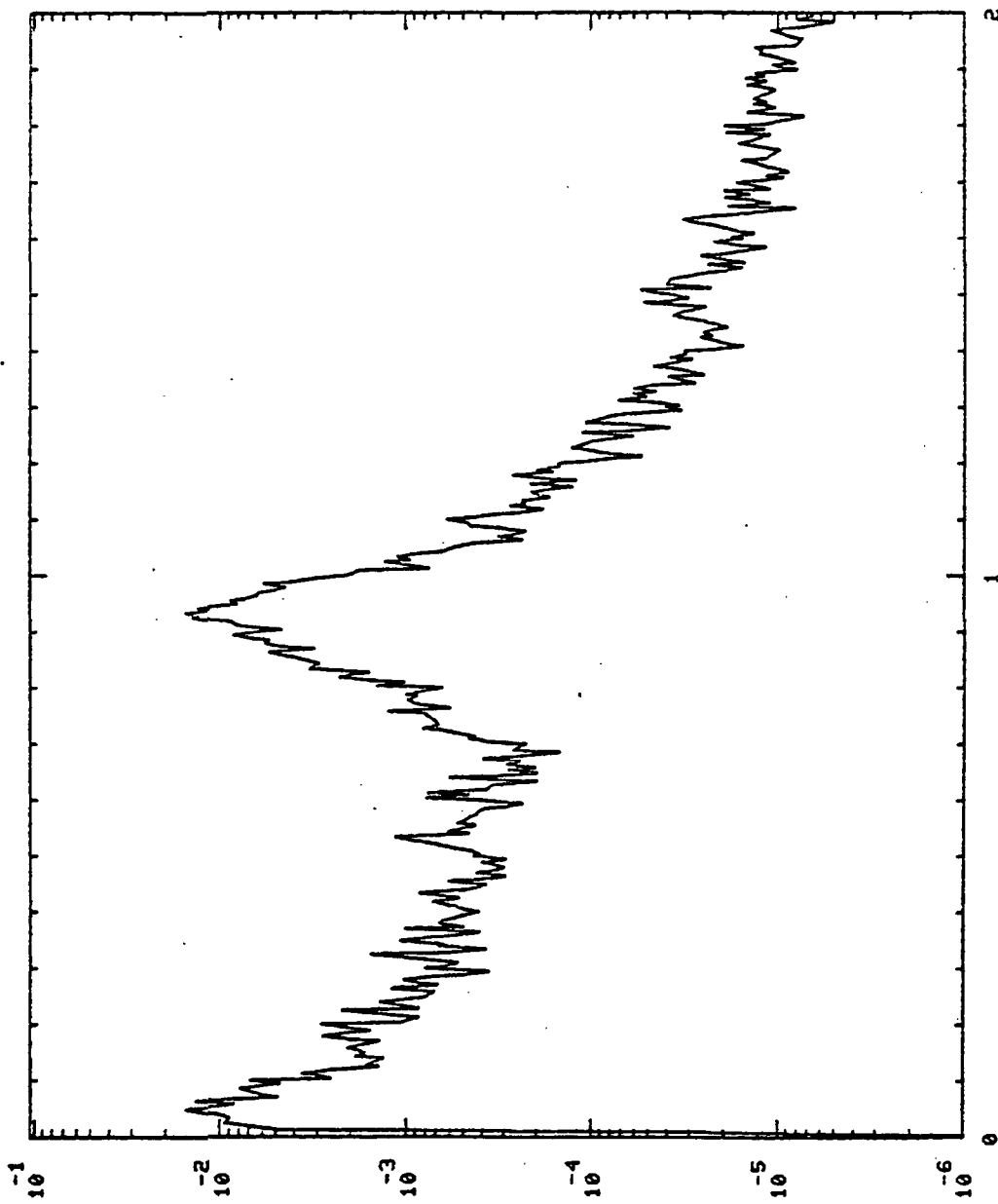
750111 LPP DS PR S+ 200.050/HZ



S+ 280.050/HZ

LPFP DS PR

750111

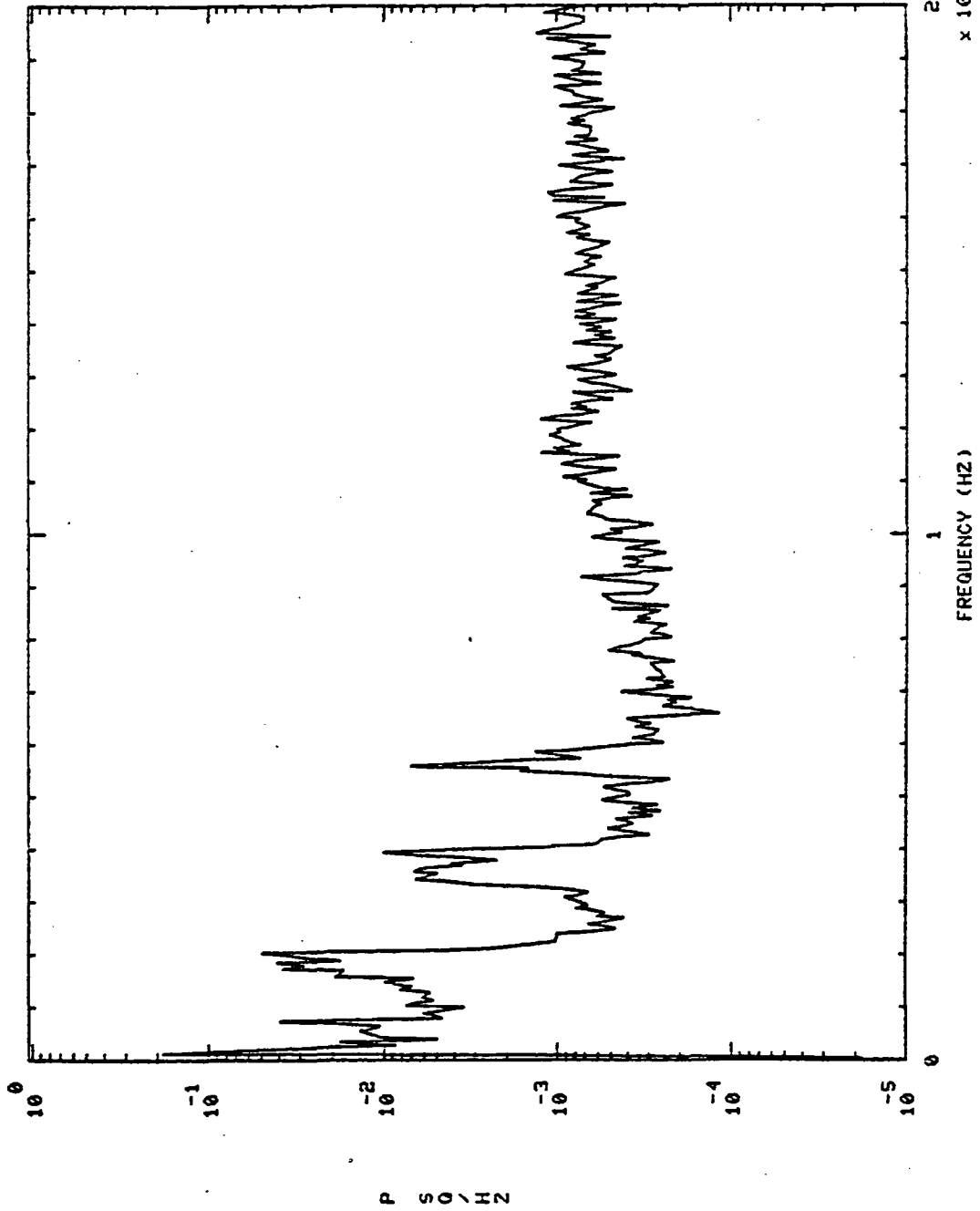


P S D / H Z

FREQUENCY (HZ)

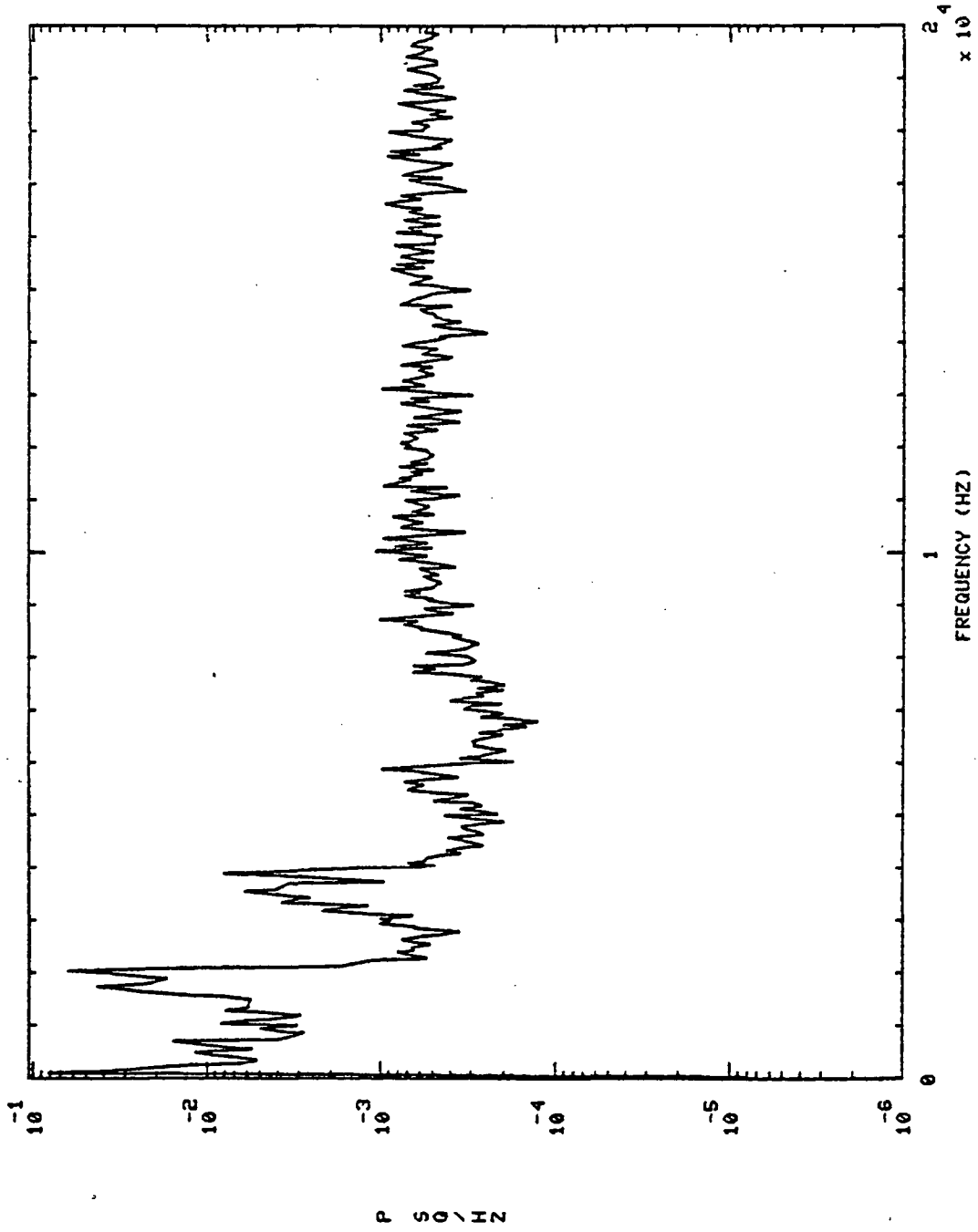
$\times 10^4$

750111 LPOP DS PR S+ 15.050/HZ

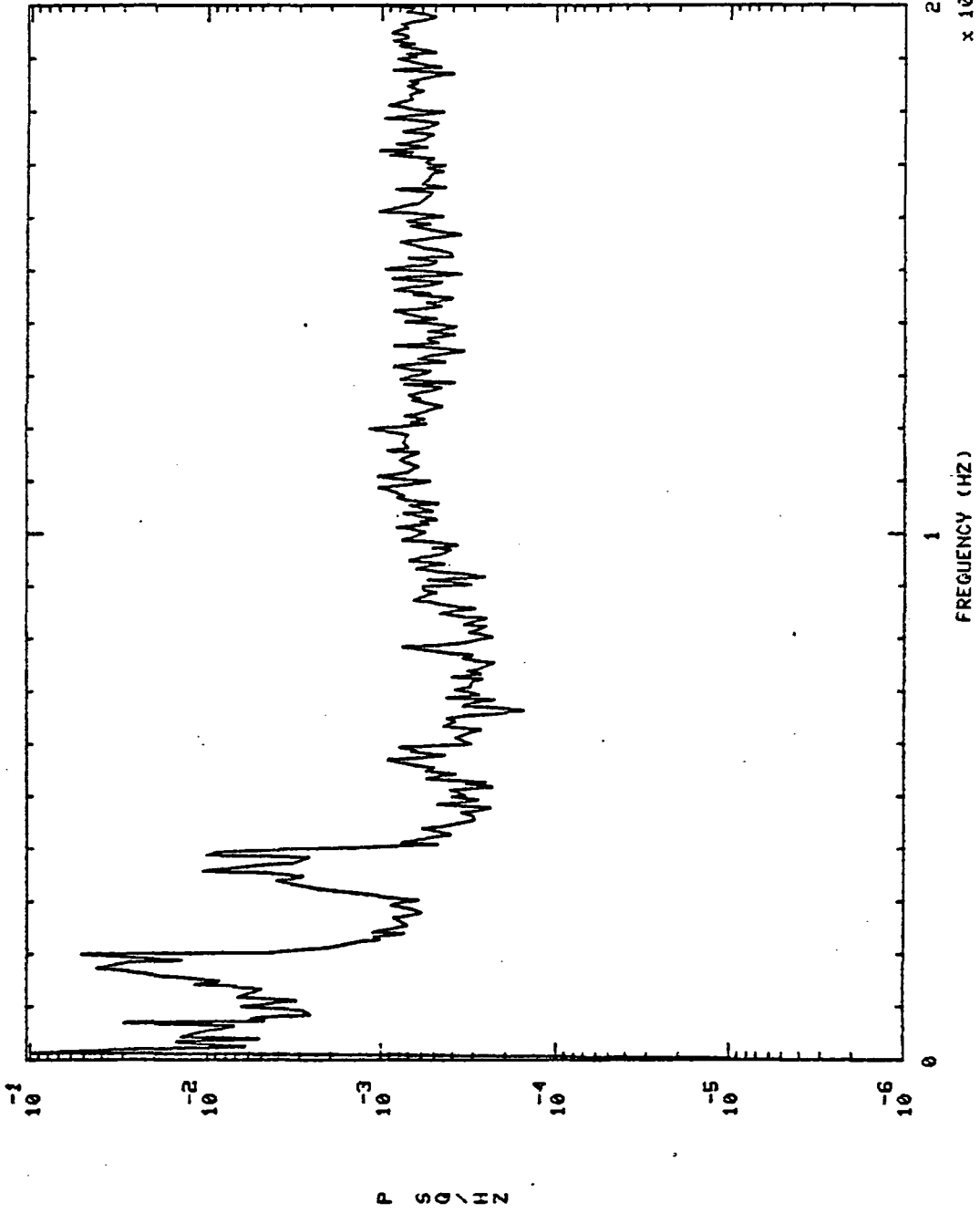


S+ 40.050/HZ

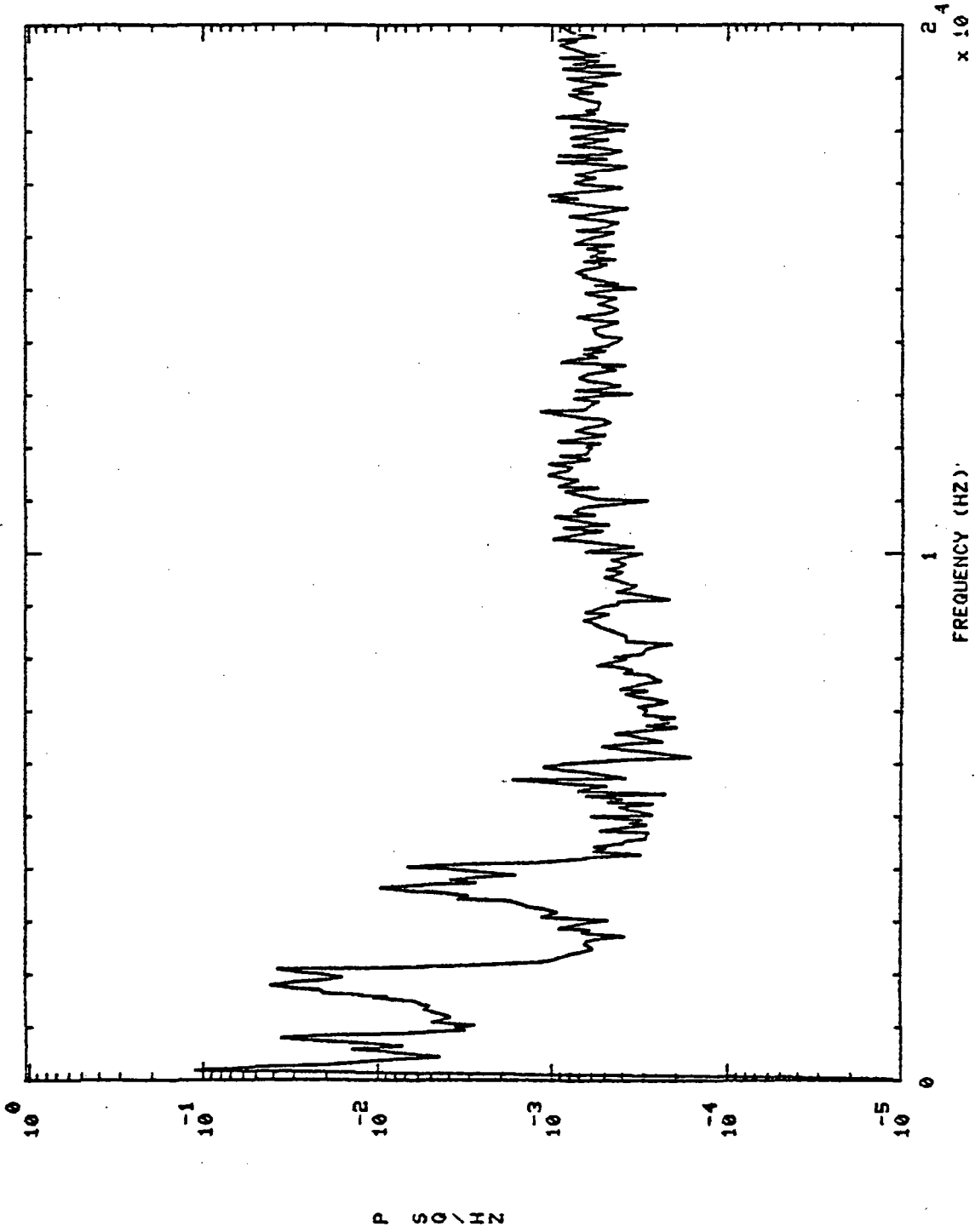
750111 LPOP DS PR



750111 LPOP DS PR S+ 50.050/HZ

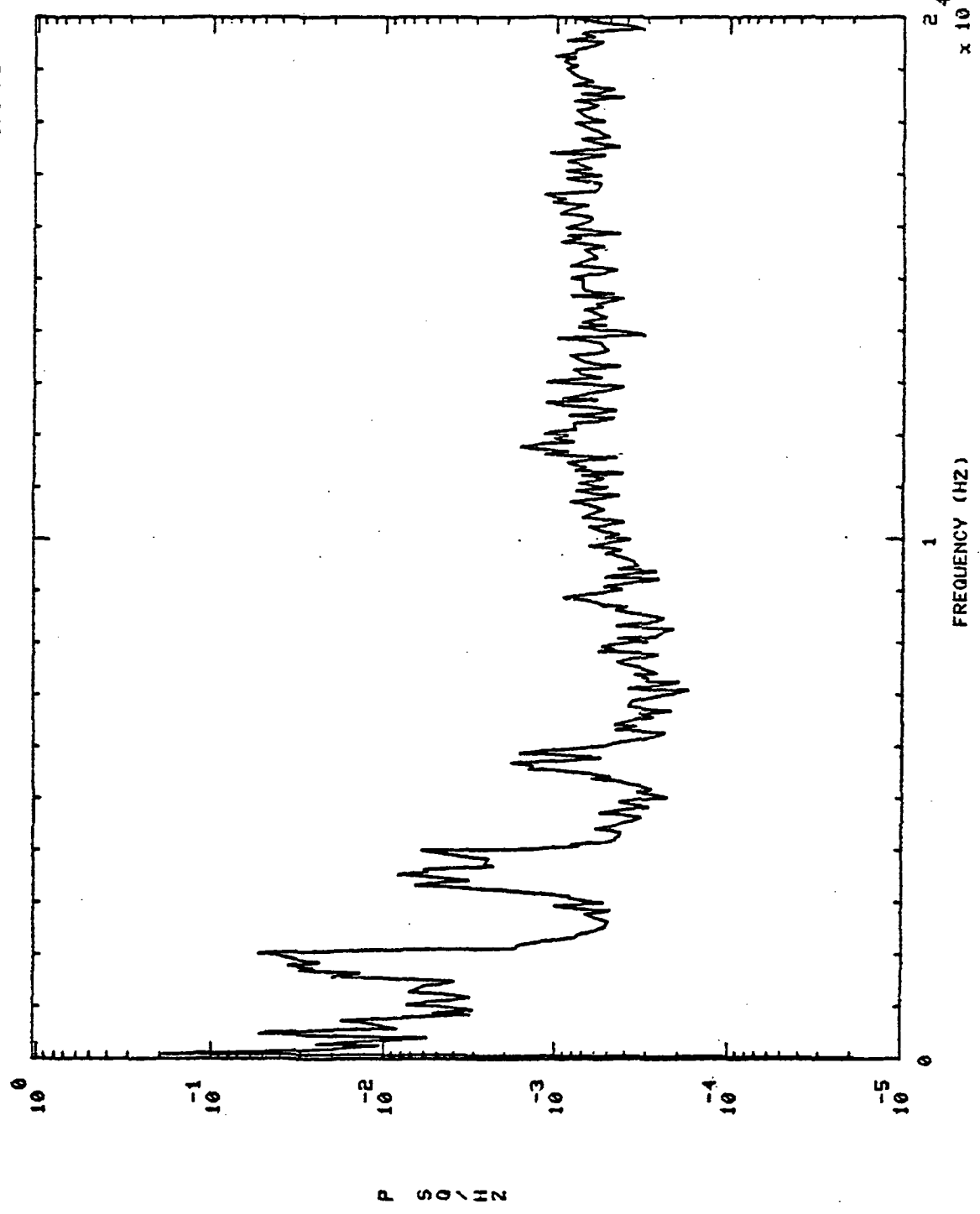


750111 LPOP DS PR S+ 60.050/HZ



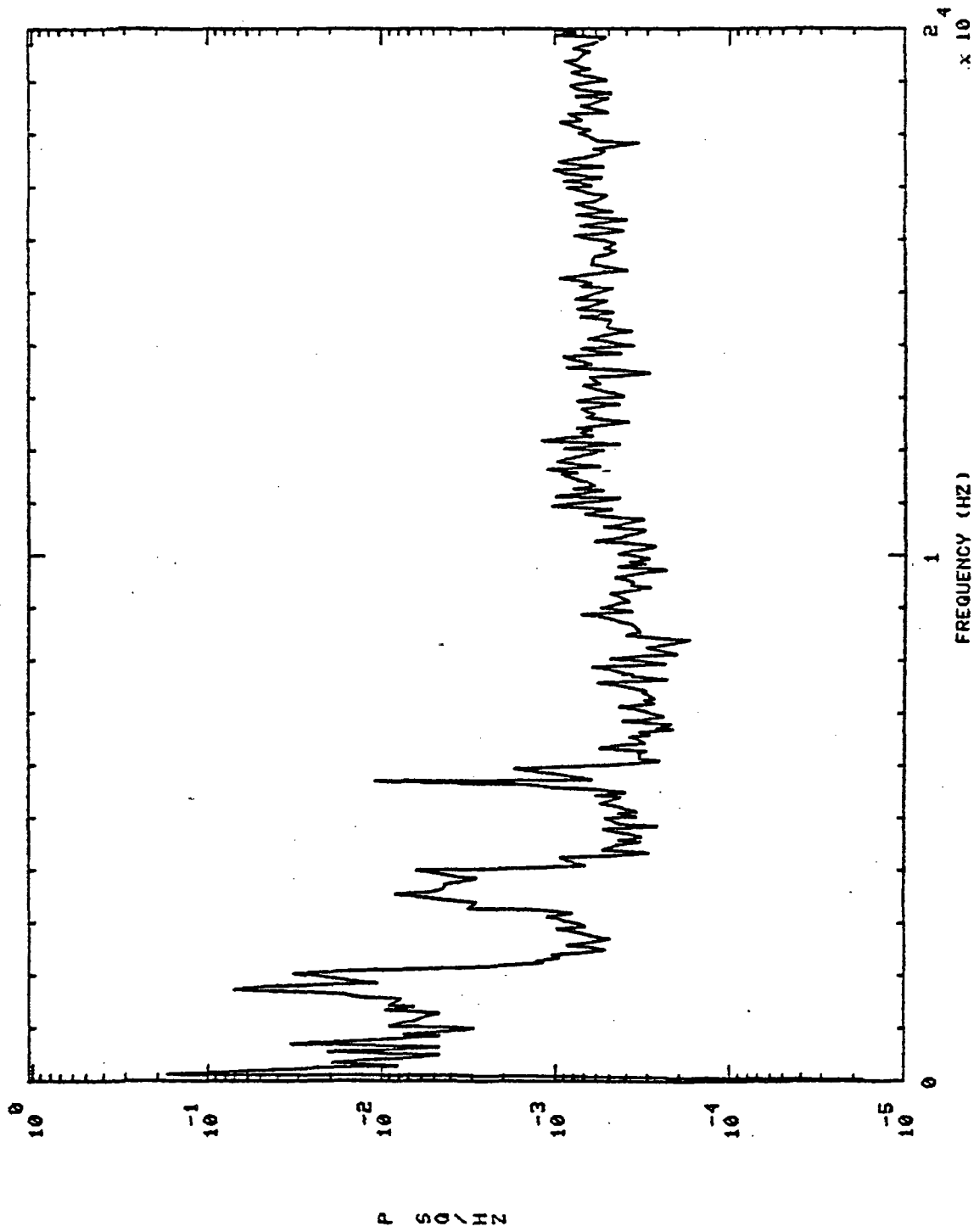
S+ 70.050/HZ

750111 LPOP DS PR



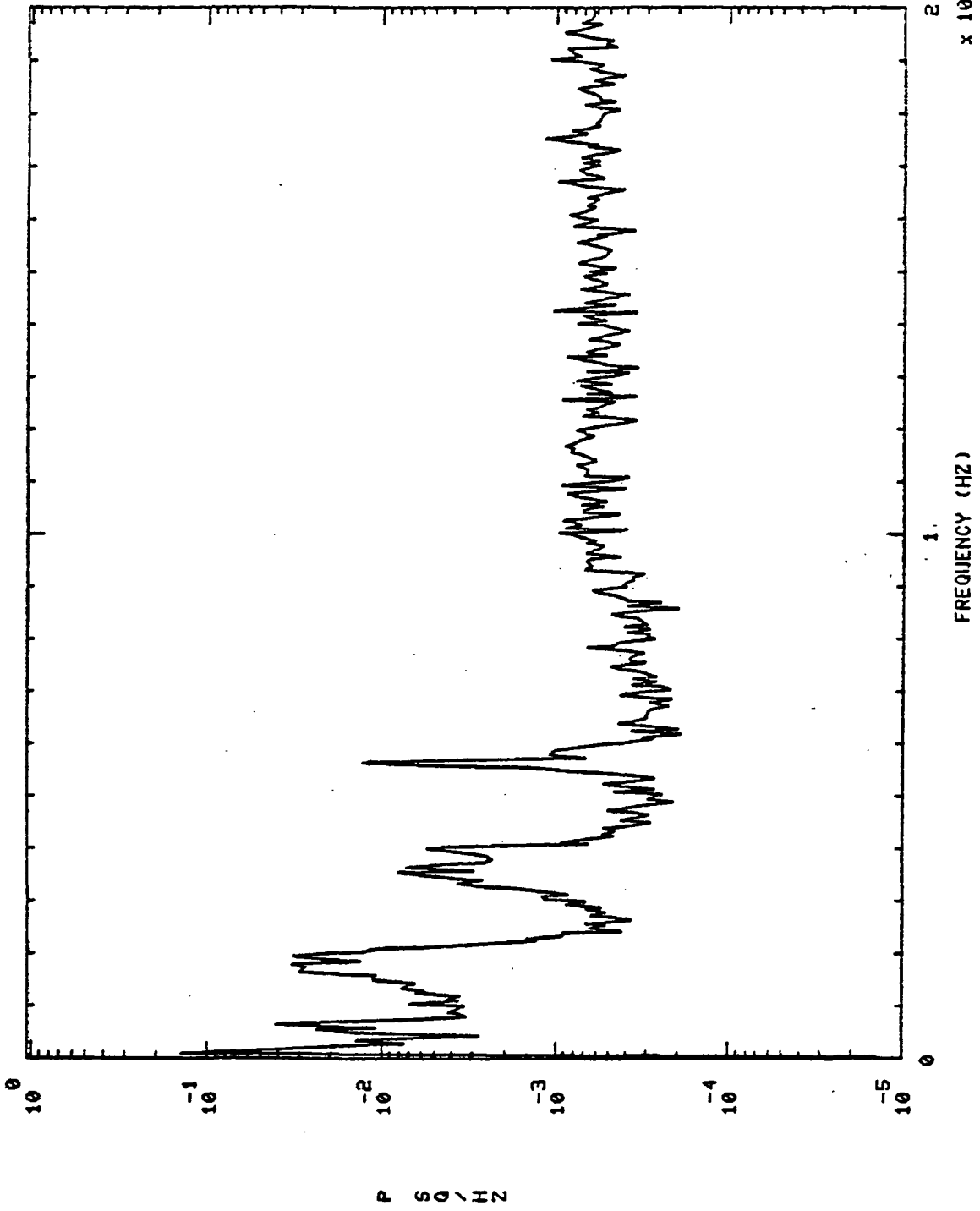
S+ 80.050/HZ

750111 LPOP DS PR

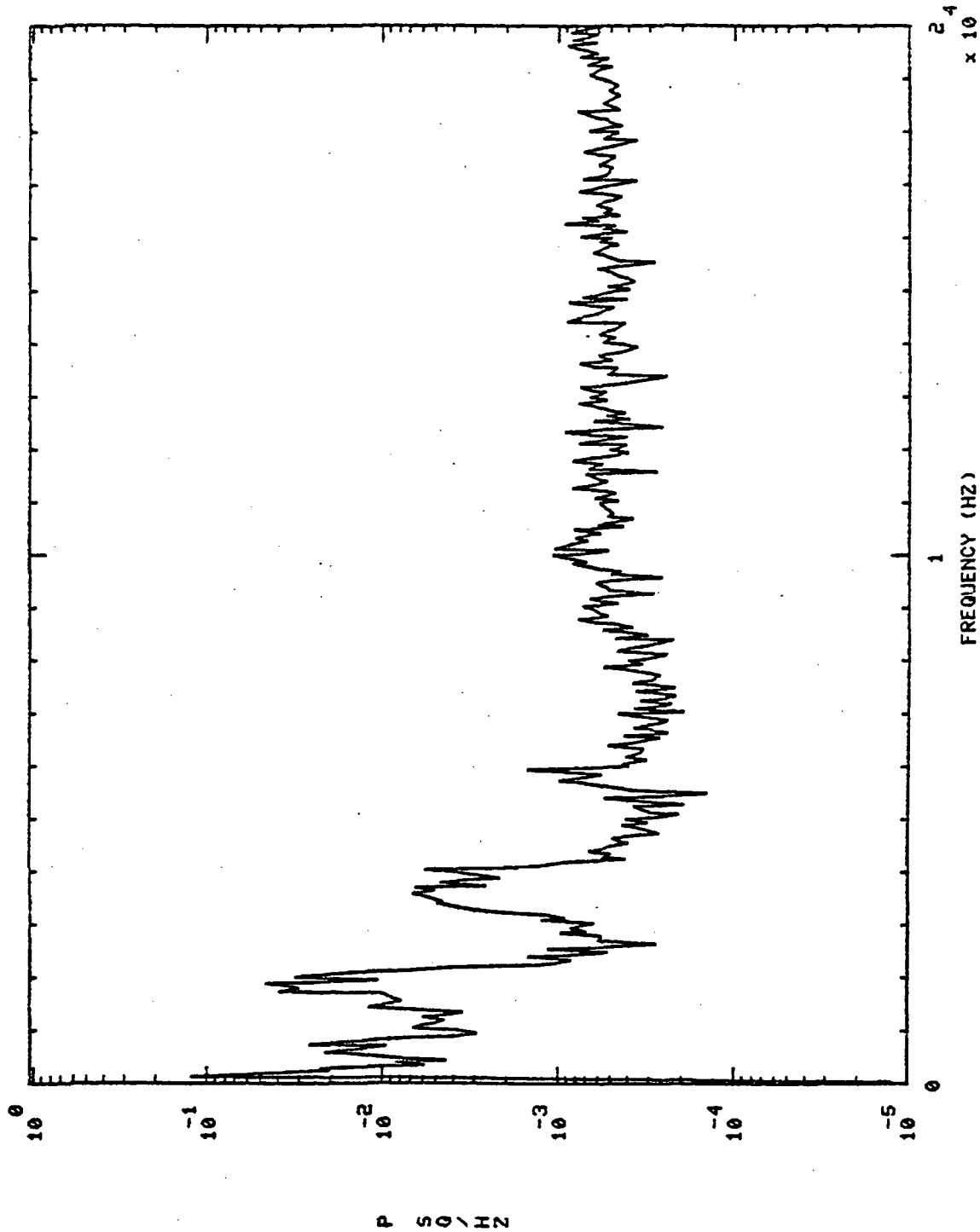




750111 LPOP DS PR S+ 90.050/HZ

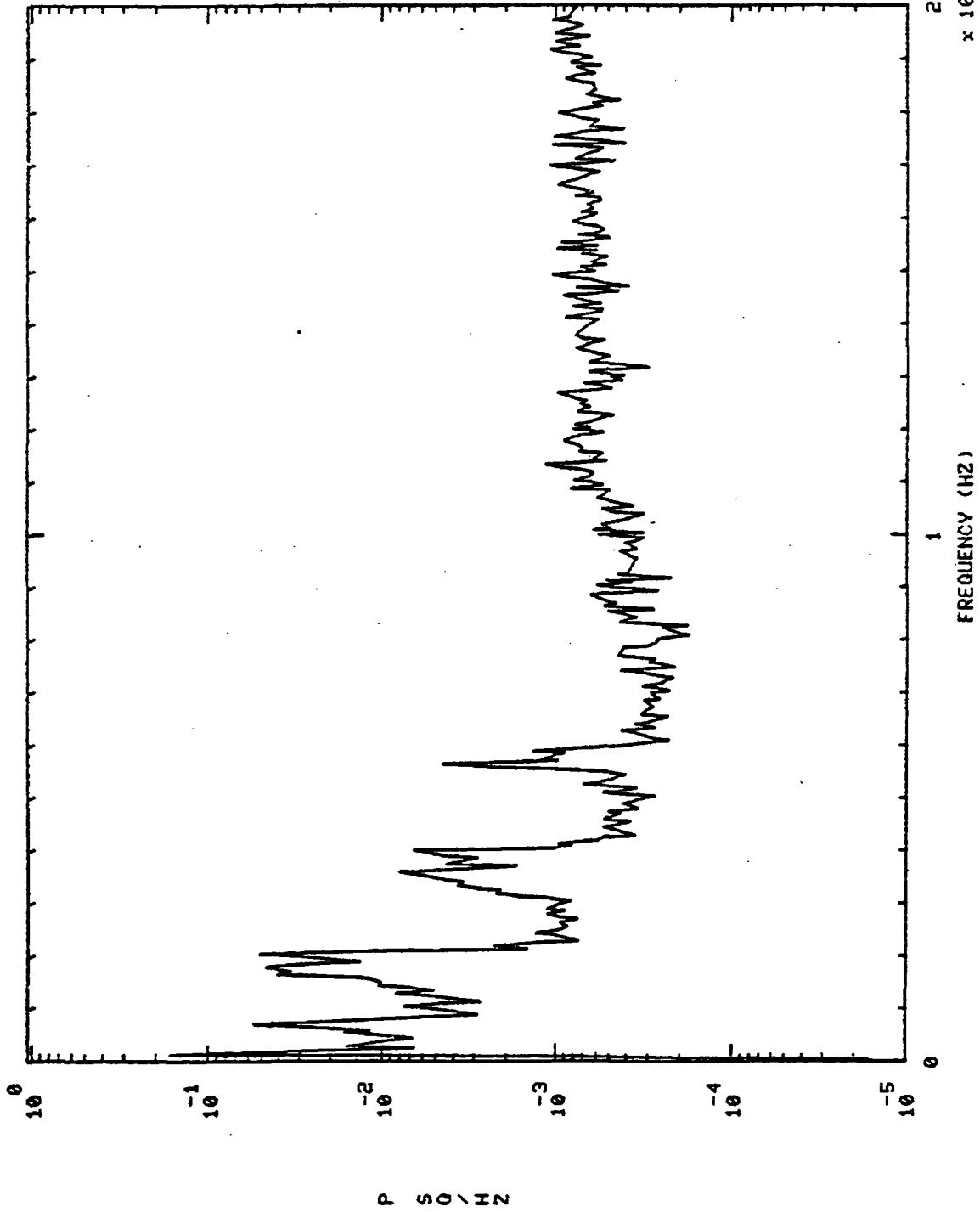


750111 LPOP DS PR S+ 100.050/HZ



S+ 120.050/HZ

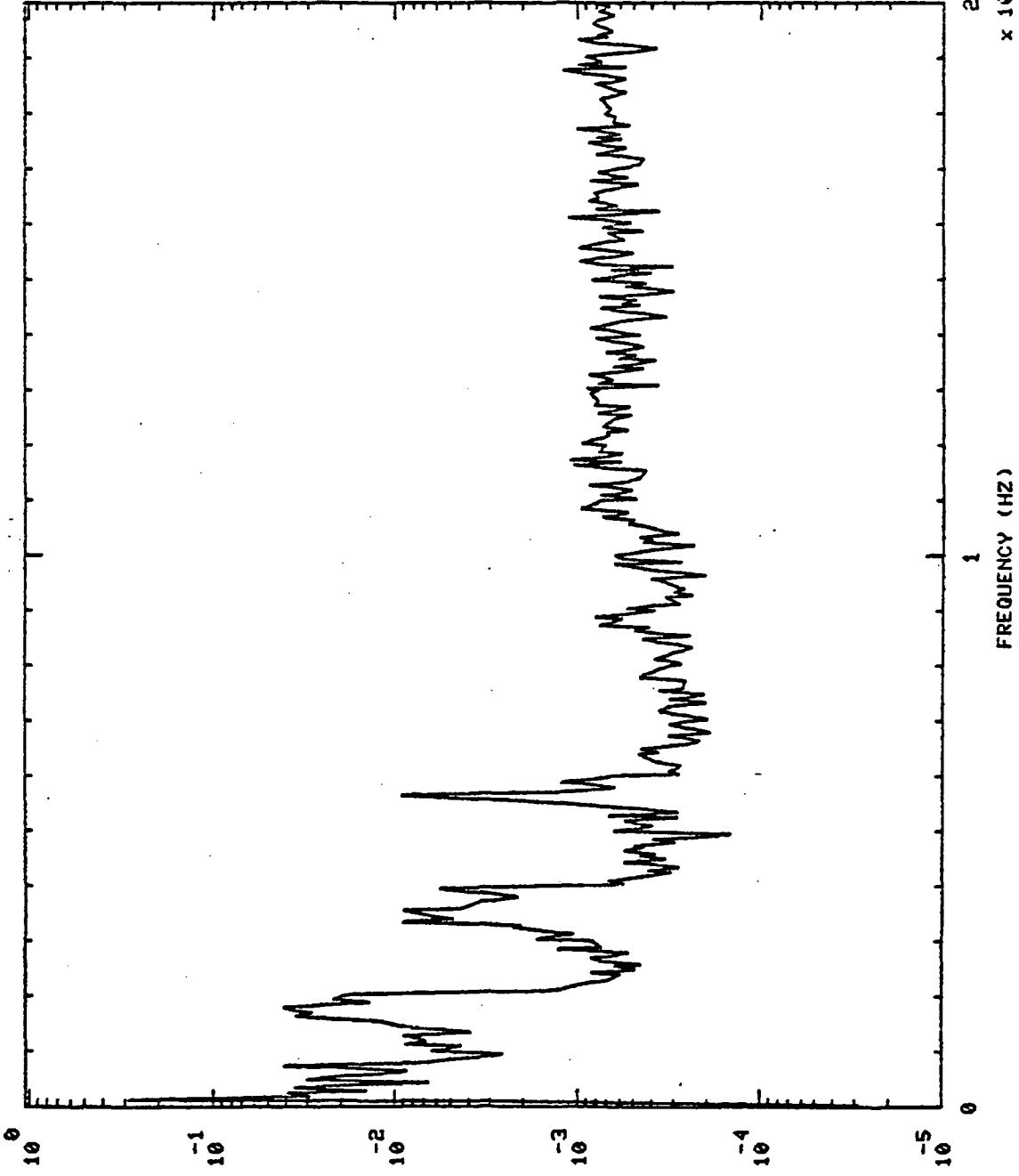
750111 LPOP DS PR



S+ 200.050/HZ

LPOP DS PR

750111



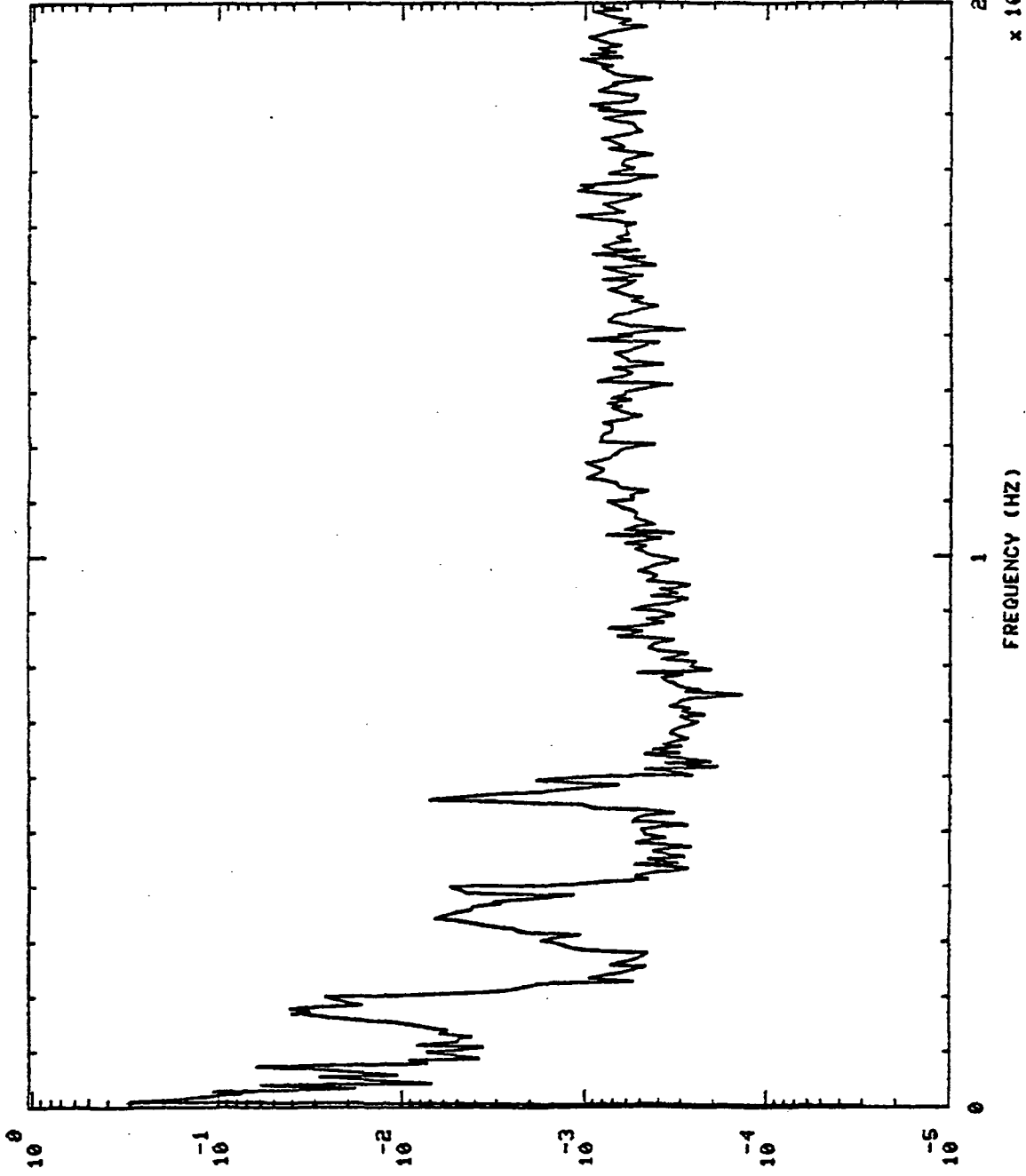
P S O \ H Z

FREQUENCY (HZ)

$2.4 \times 10^4$

S+ 280.050/HZ

750111 LPDP DS PR

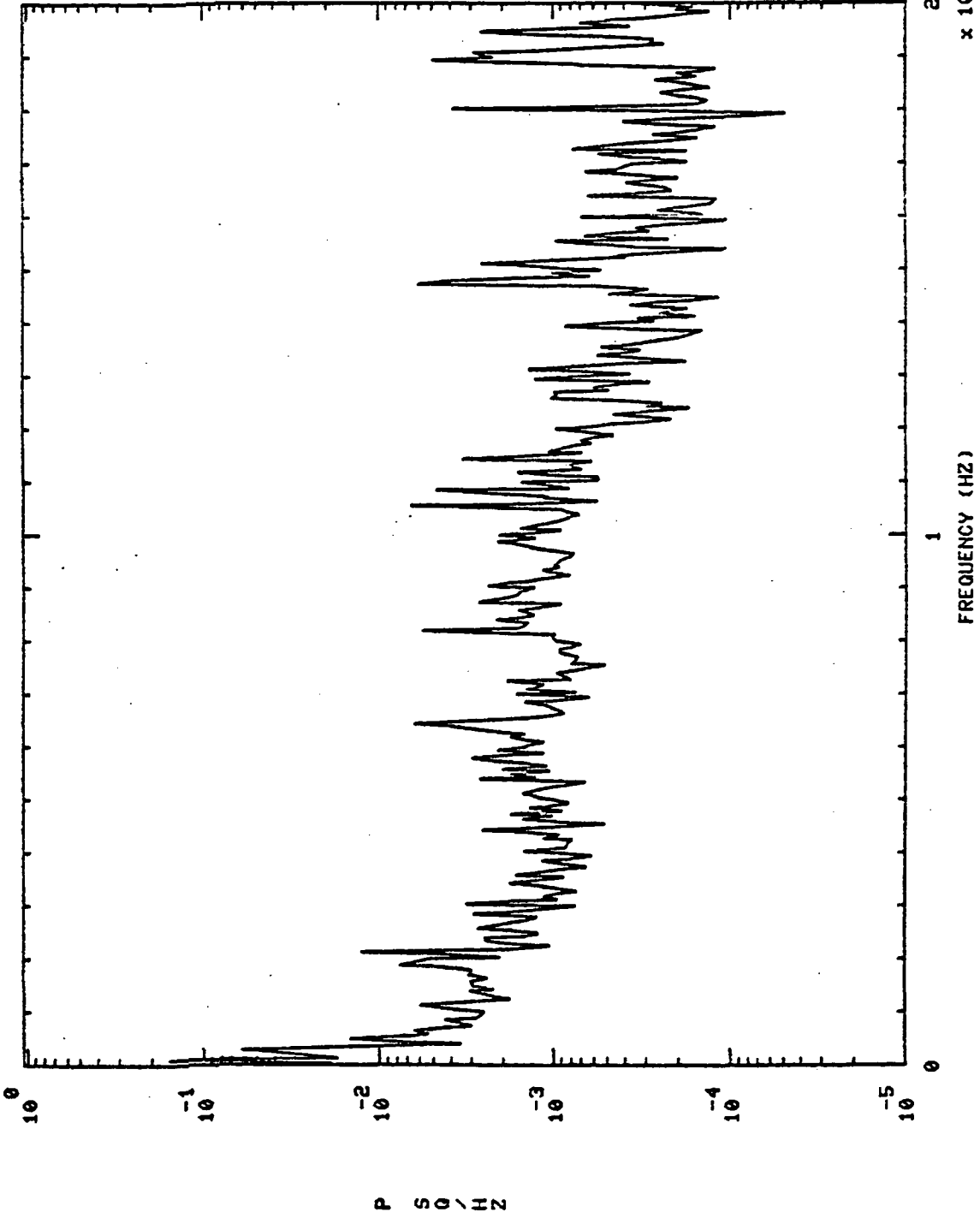


P 50/HZ

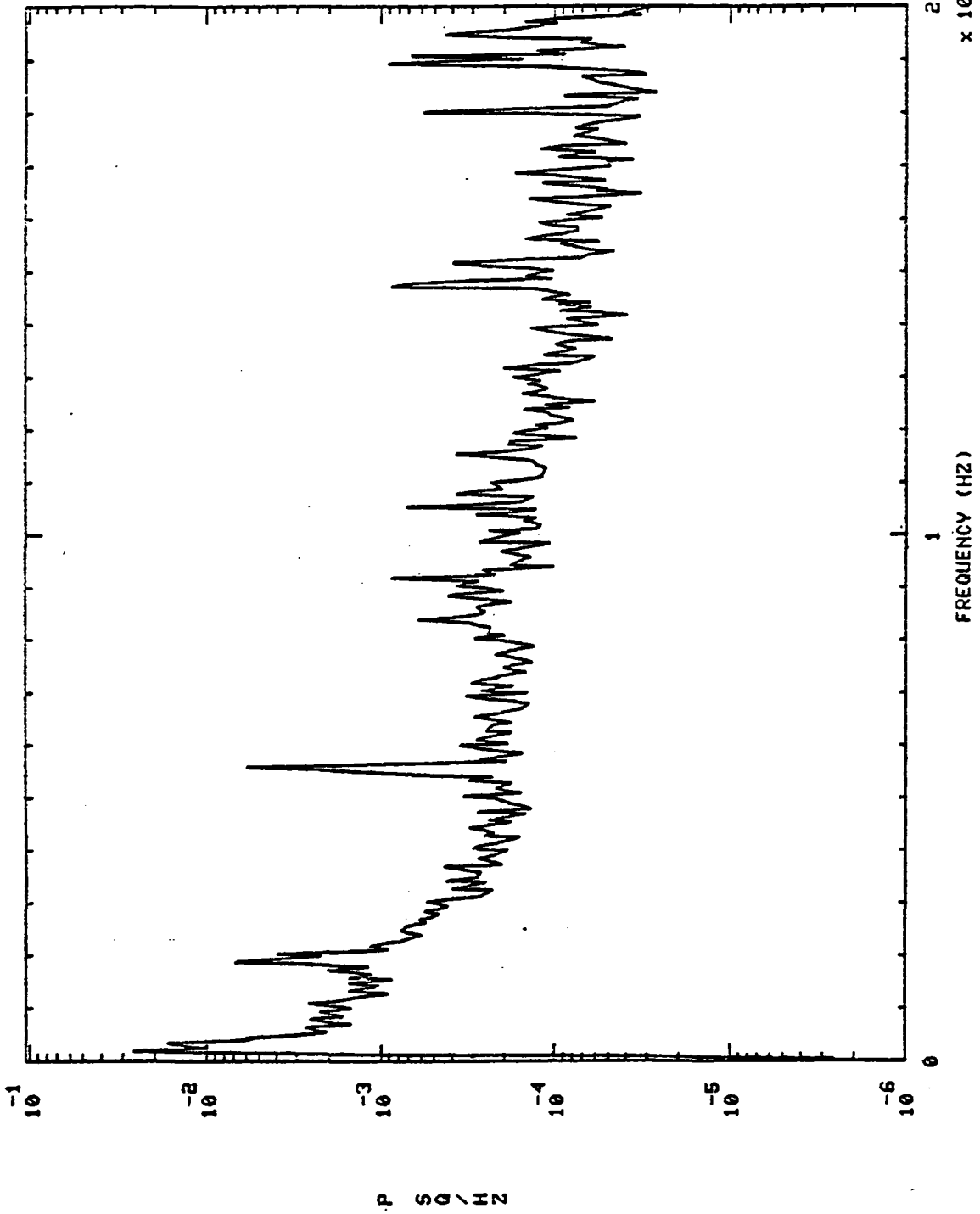
2 4  
x 10

FREQUENCY (HZ)

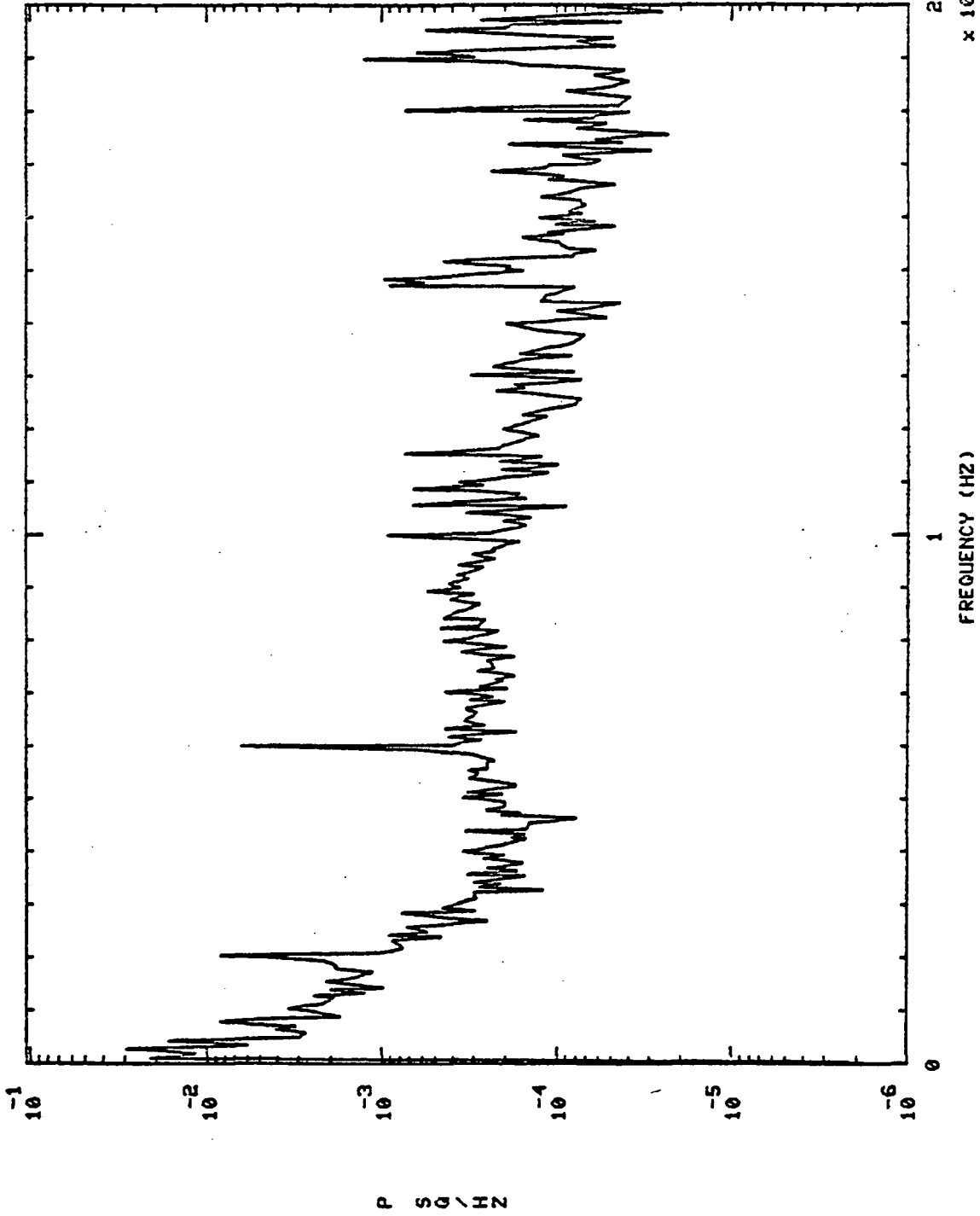
750111 HPOP BAL CAU PR2 S+ 15.01H0.'S



750111 HPOP BAL CAU PR2 S+ 40.01H0, 'S



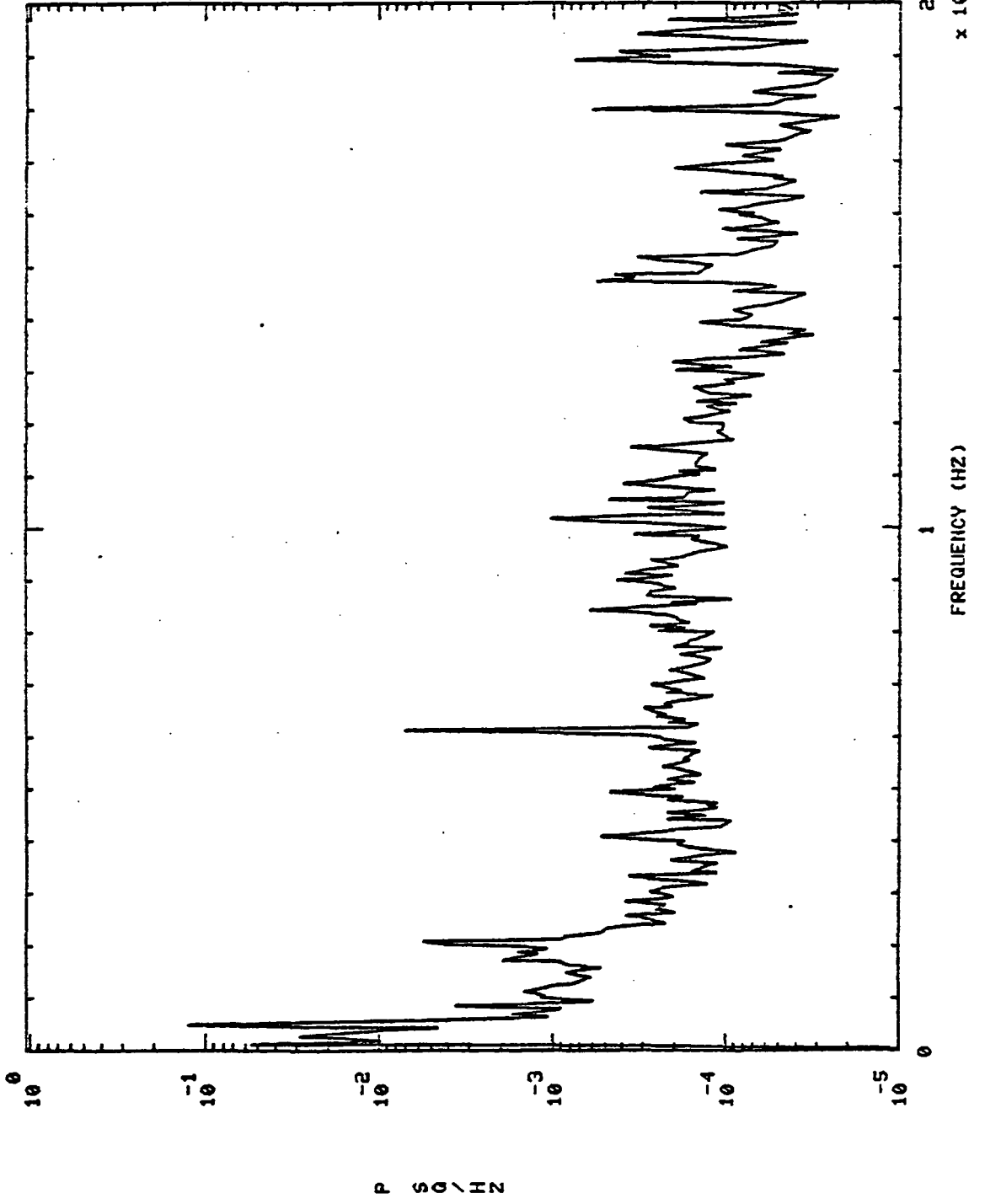
750111 HPOP BAL CAU PRE ST 50.01H0,'S





750111 HPOP BAL CAV PR2 S+ 60.01H0,'S

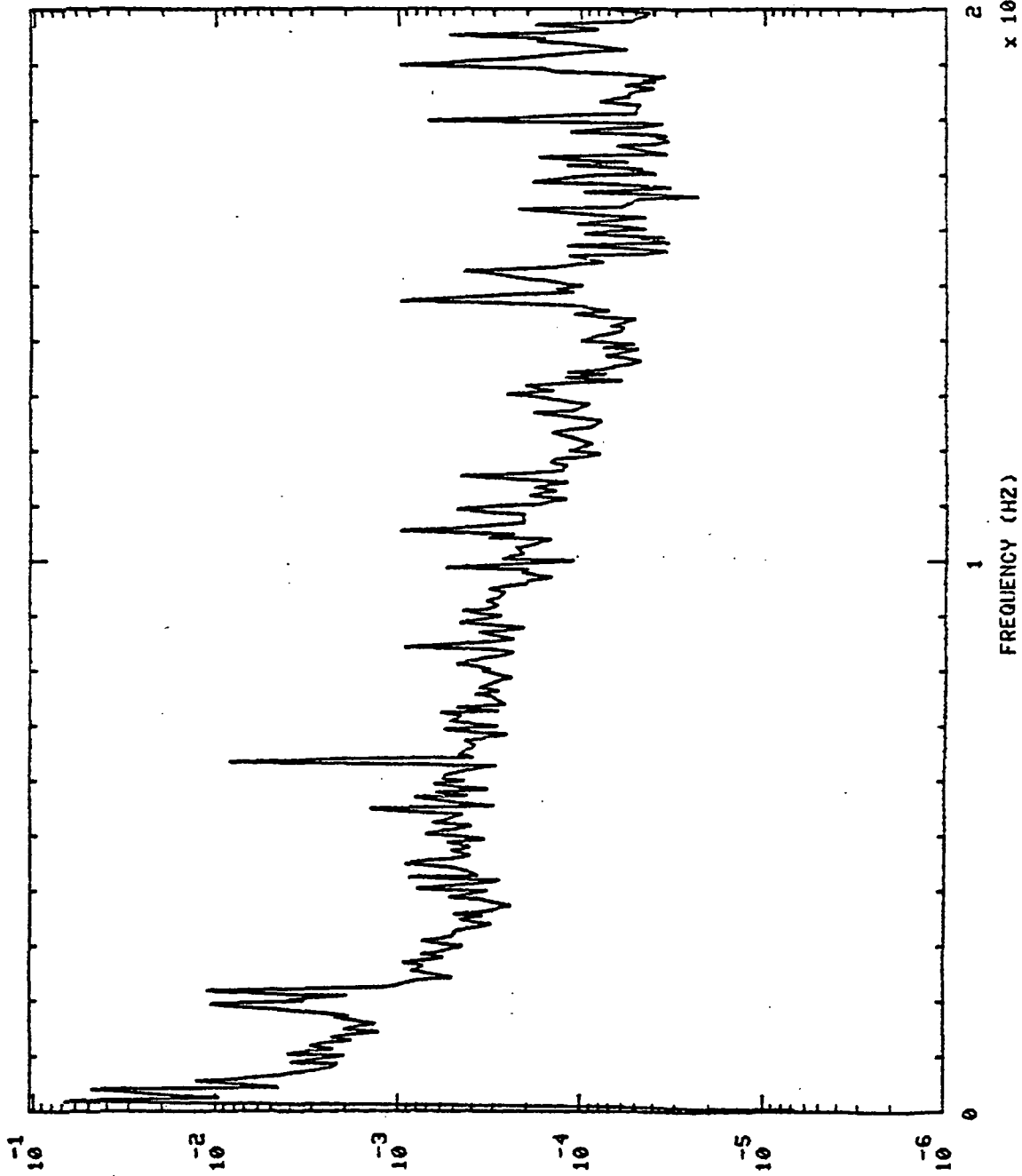
750111 HPOP BAL CAV PR2



750111

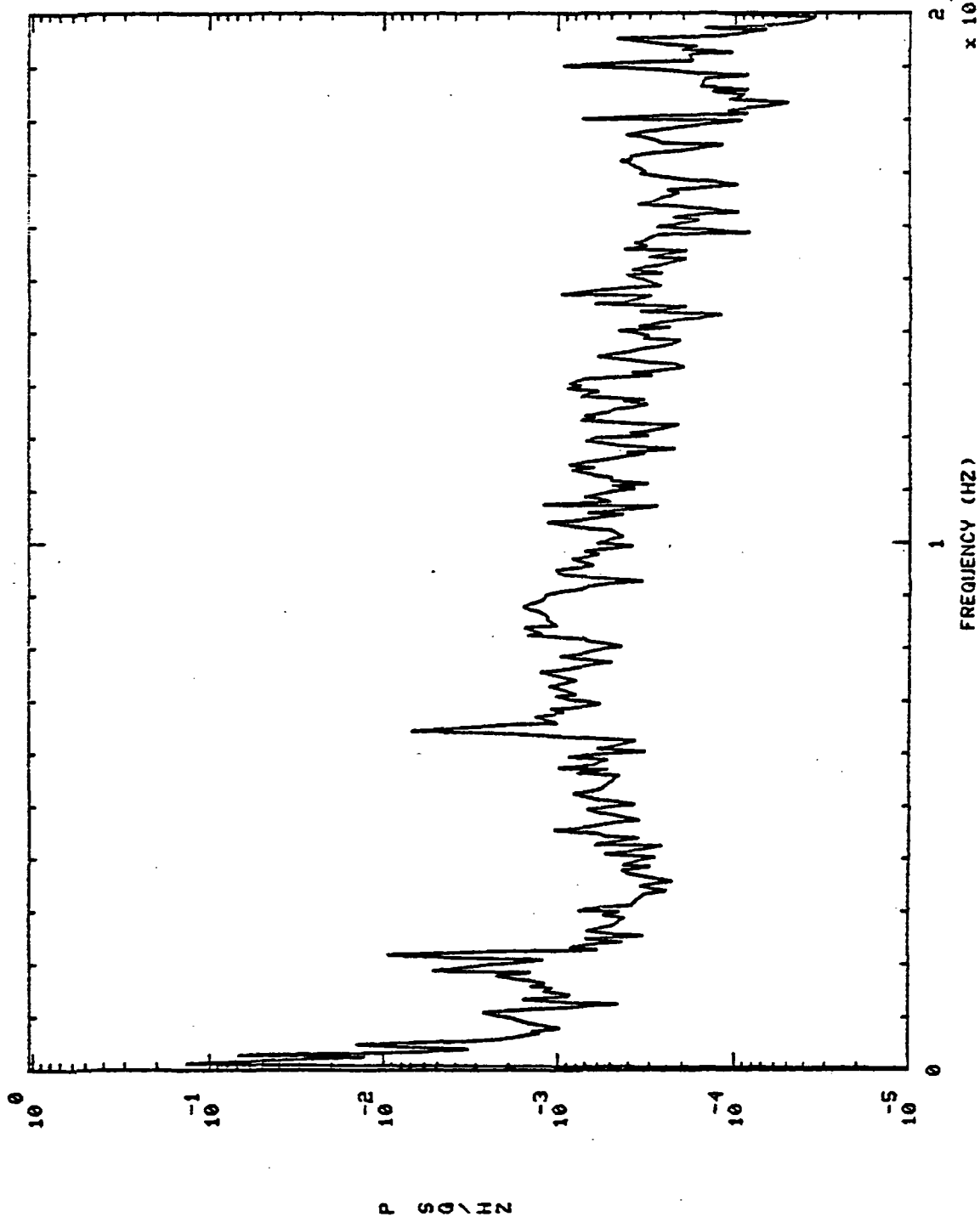
HPOP BAL CAU PR2

S+ 70.01H0,'S

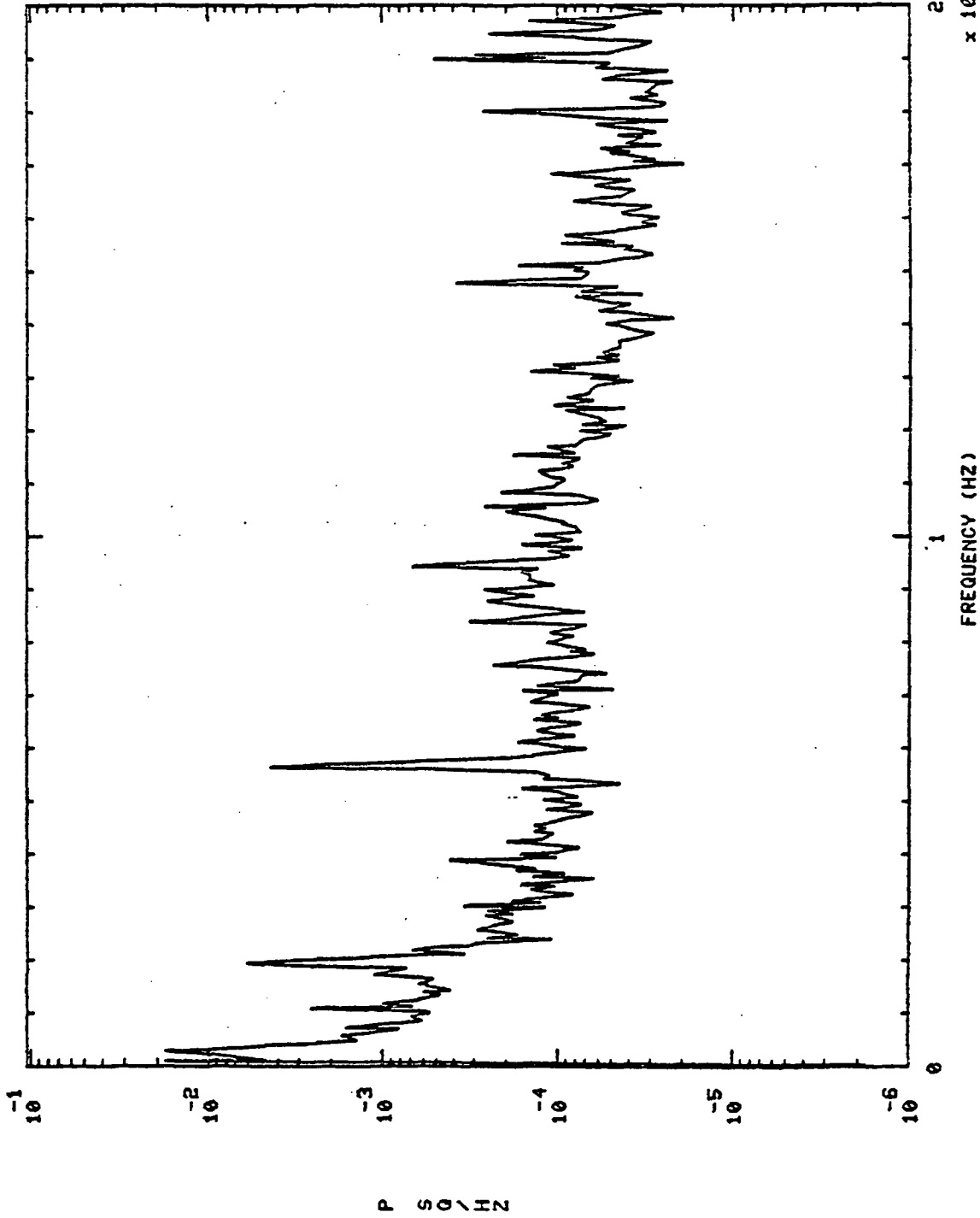


P S D IN

750111 HPOP BAL CAU PR2 S+ 80.01H0,'S

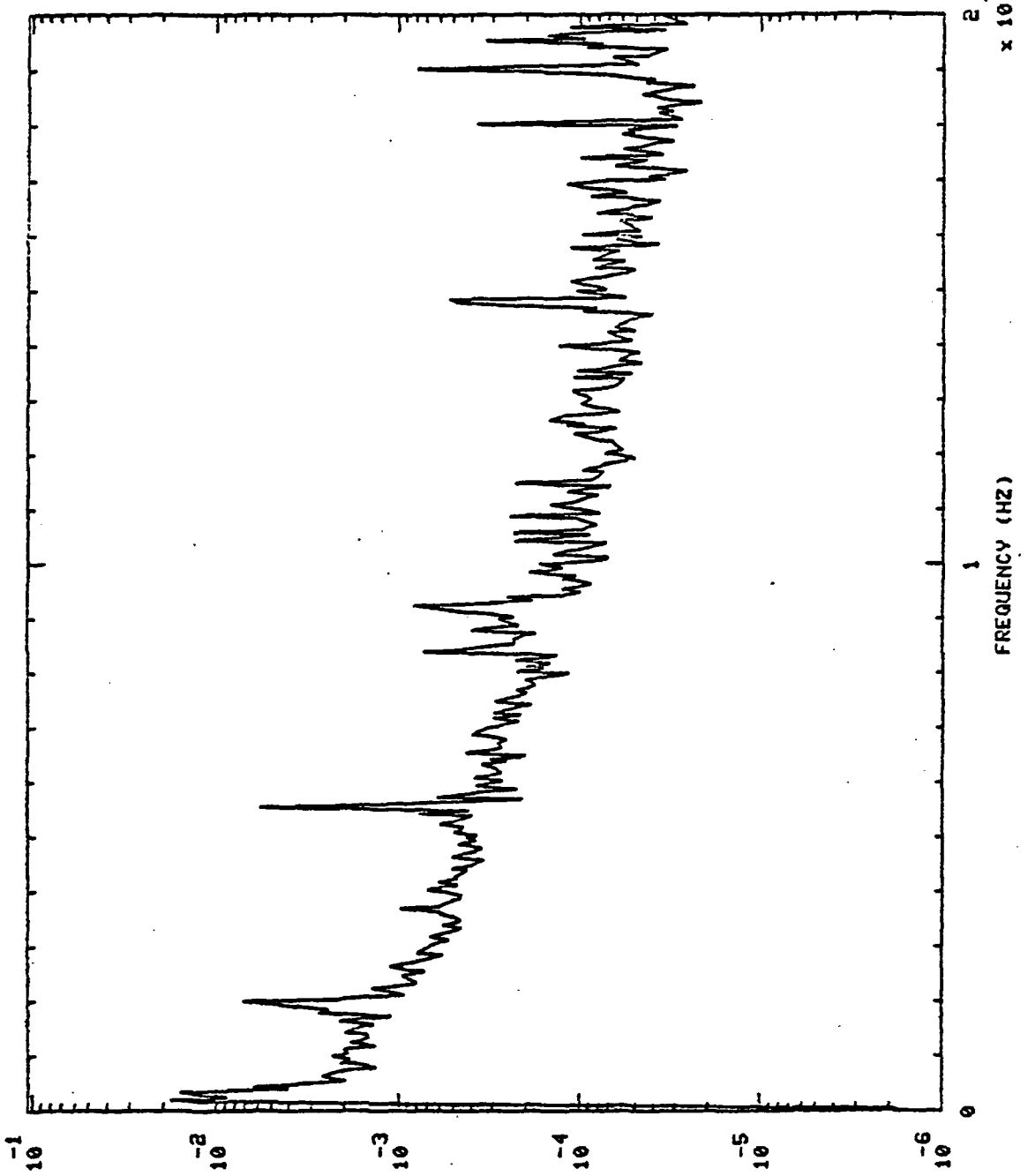


750111 HPOP BAL CAU PR2 S+ 90.01H0,'S



750111 HPOP BAL CAU PR2 S+ 100.0110,'S

750111 HPOP BAL CAU PR2

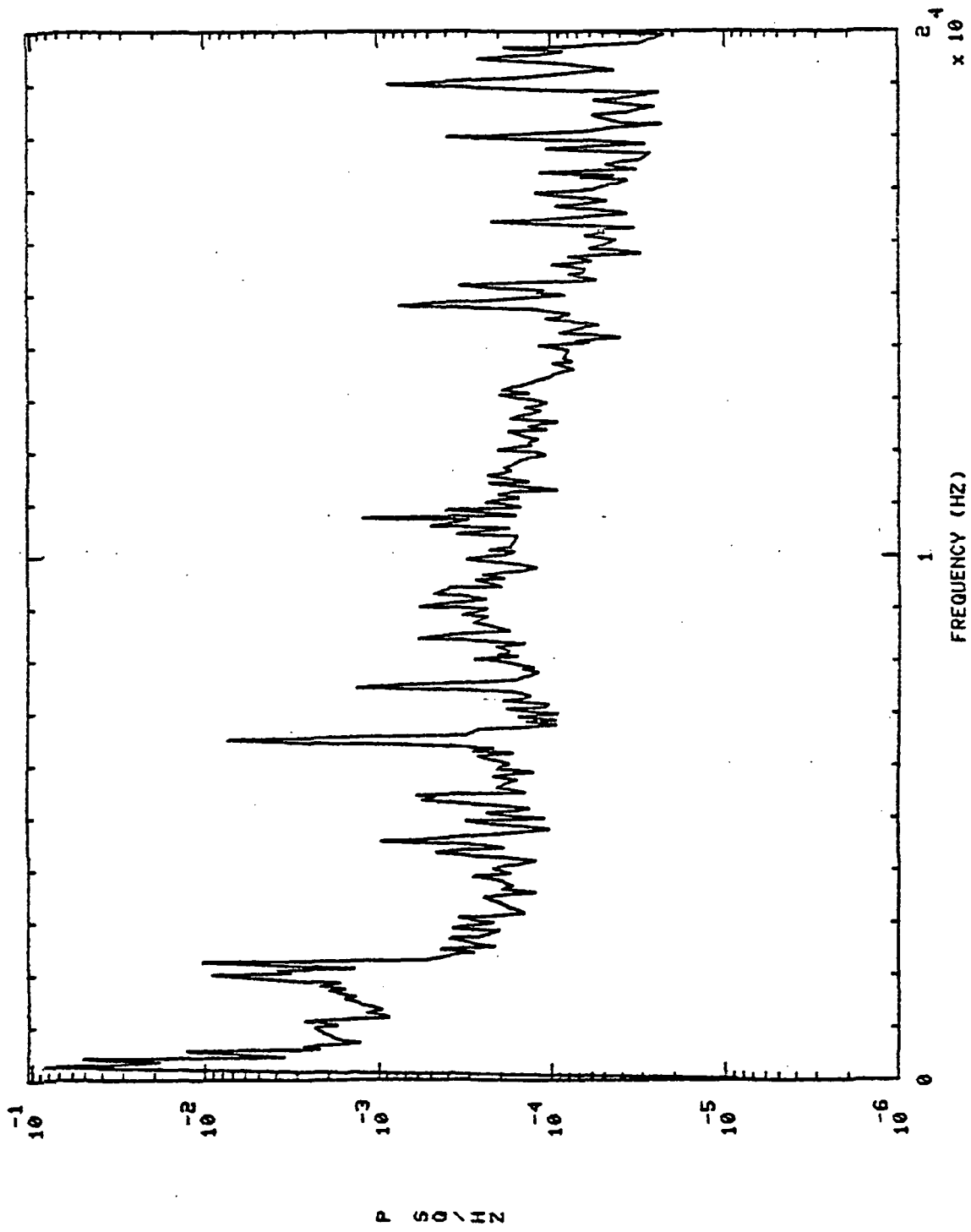


P S D / H Z

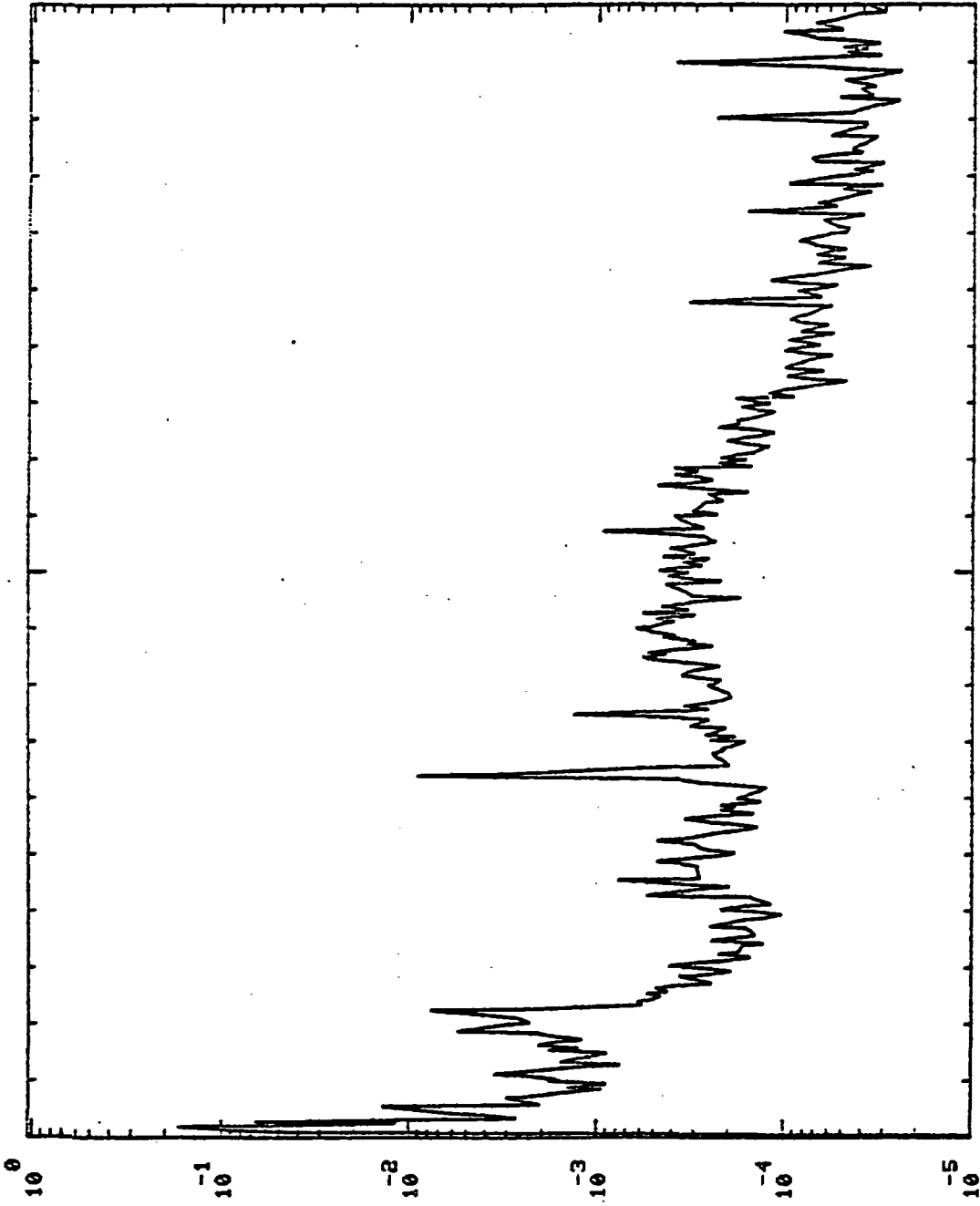
FREQUENCY (HZ)

x 10<sup>4</sup>

750111 HPOP BAL CAU PR2 S+ 120.01H0.'S



750111 HPOP BAL CAU PR2 S+ 200.01H0,'S



P S D \ HZ

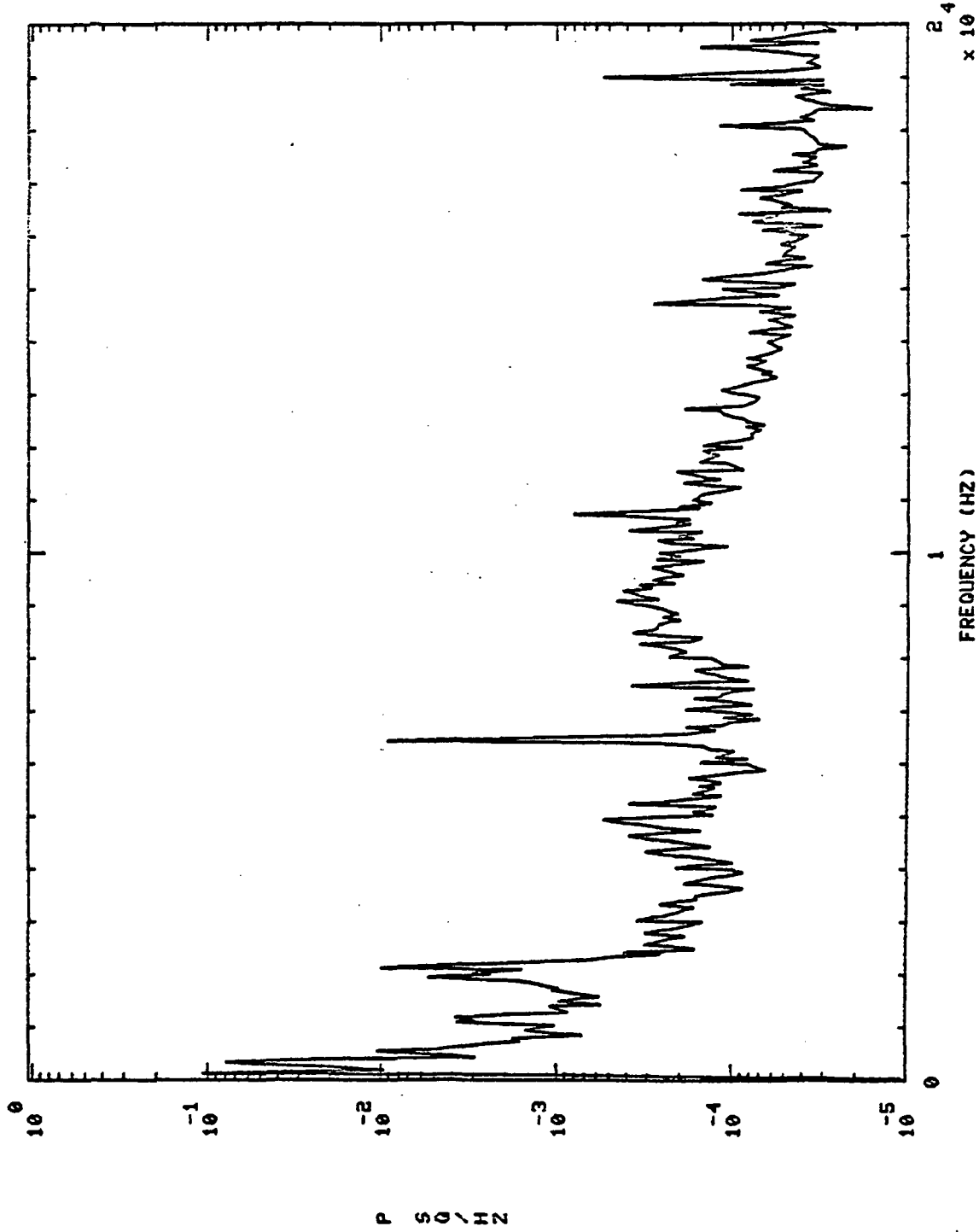
2<sup>4</sup>  
x 10

FREQUENCY (HZ)

750111

HPOP BAL CAU PR2

S+ 280.0140,'S

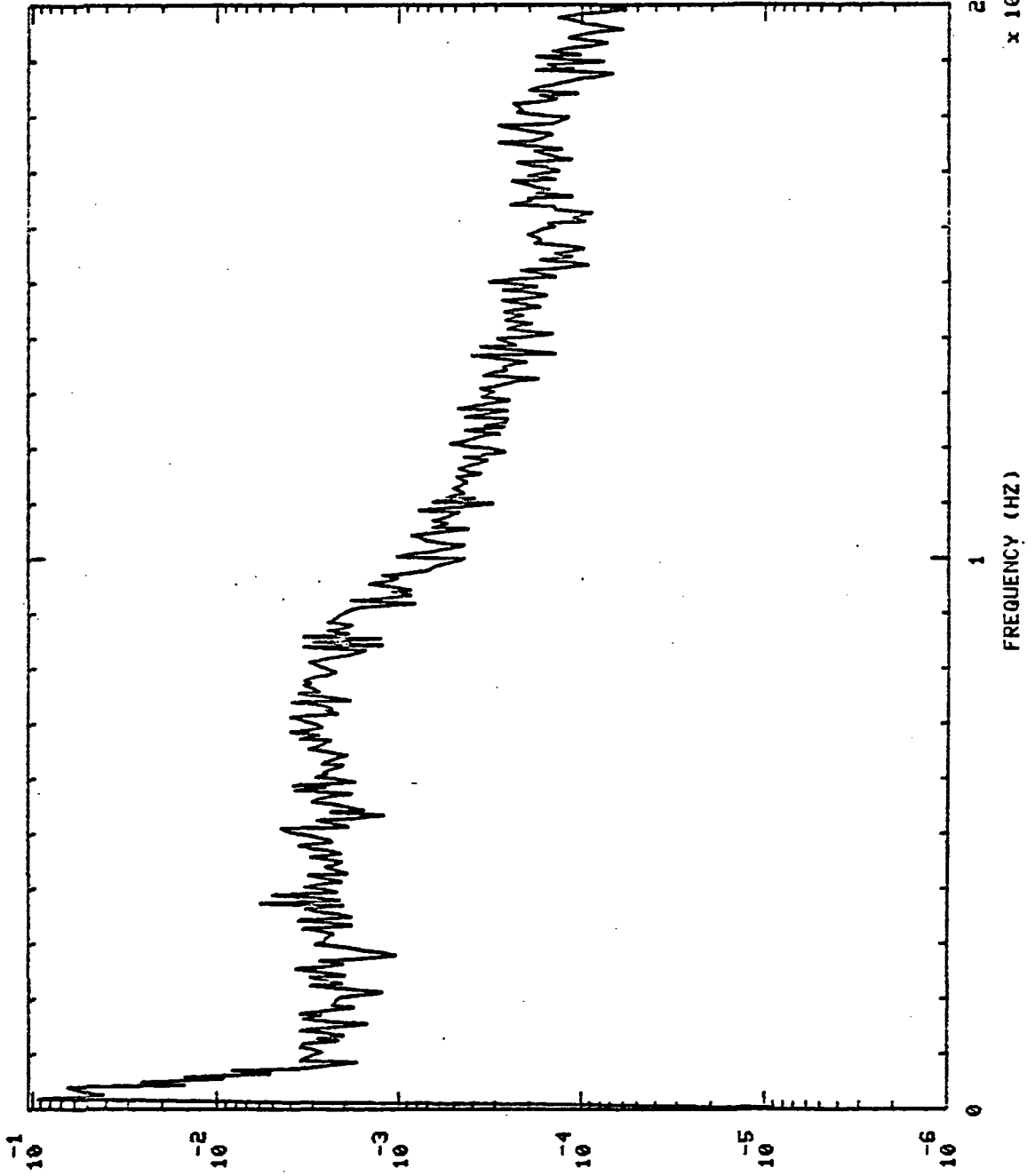




S+ 15.01H0,'S

HPOP BAL CAU PR1

750111

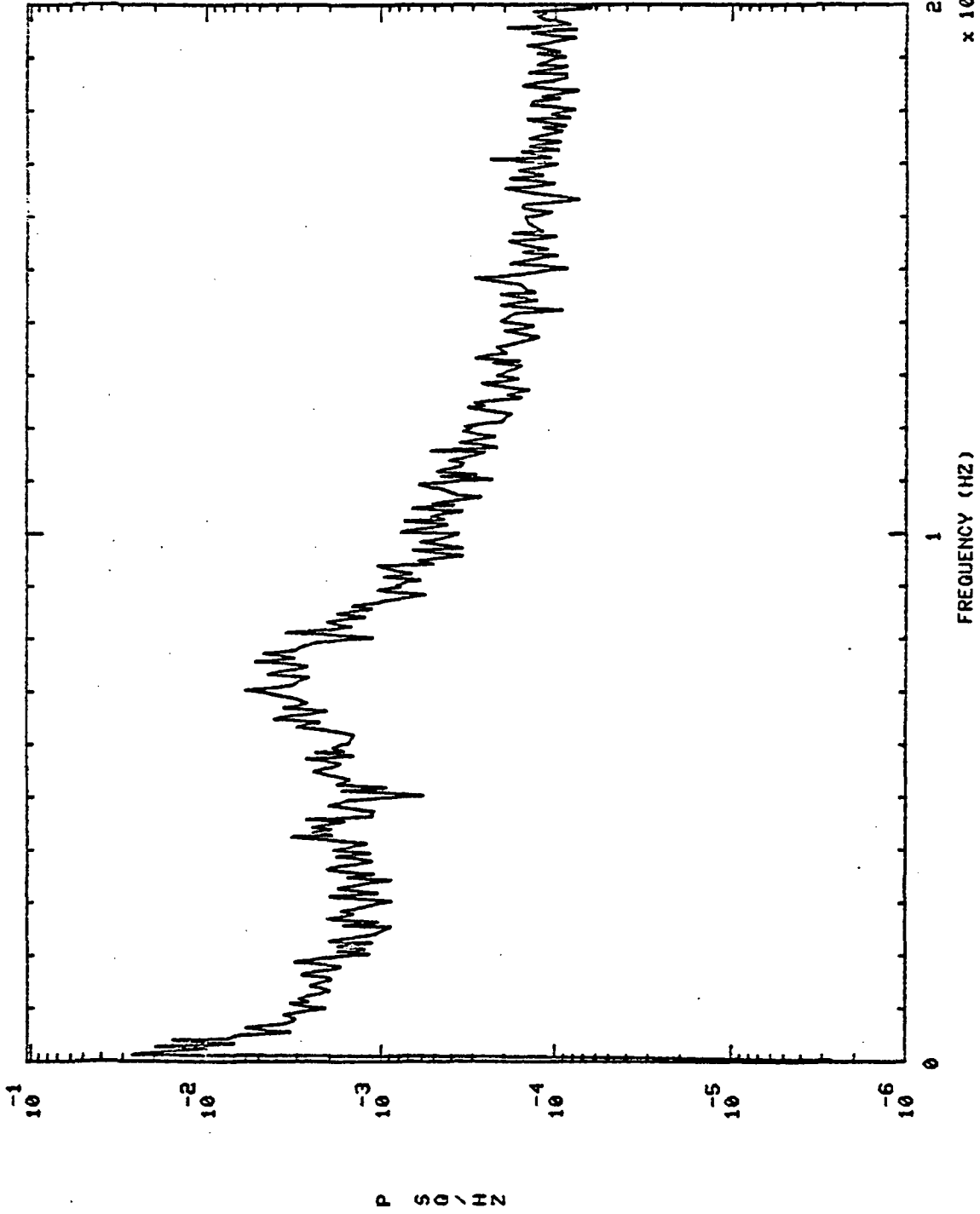


P S D / H Z

FREQUENCY (HZ)

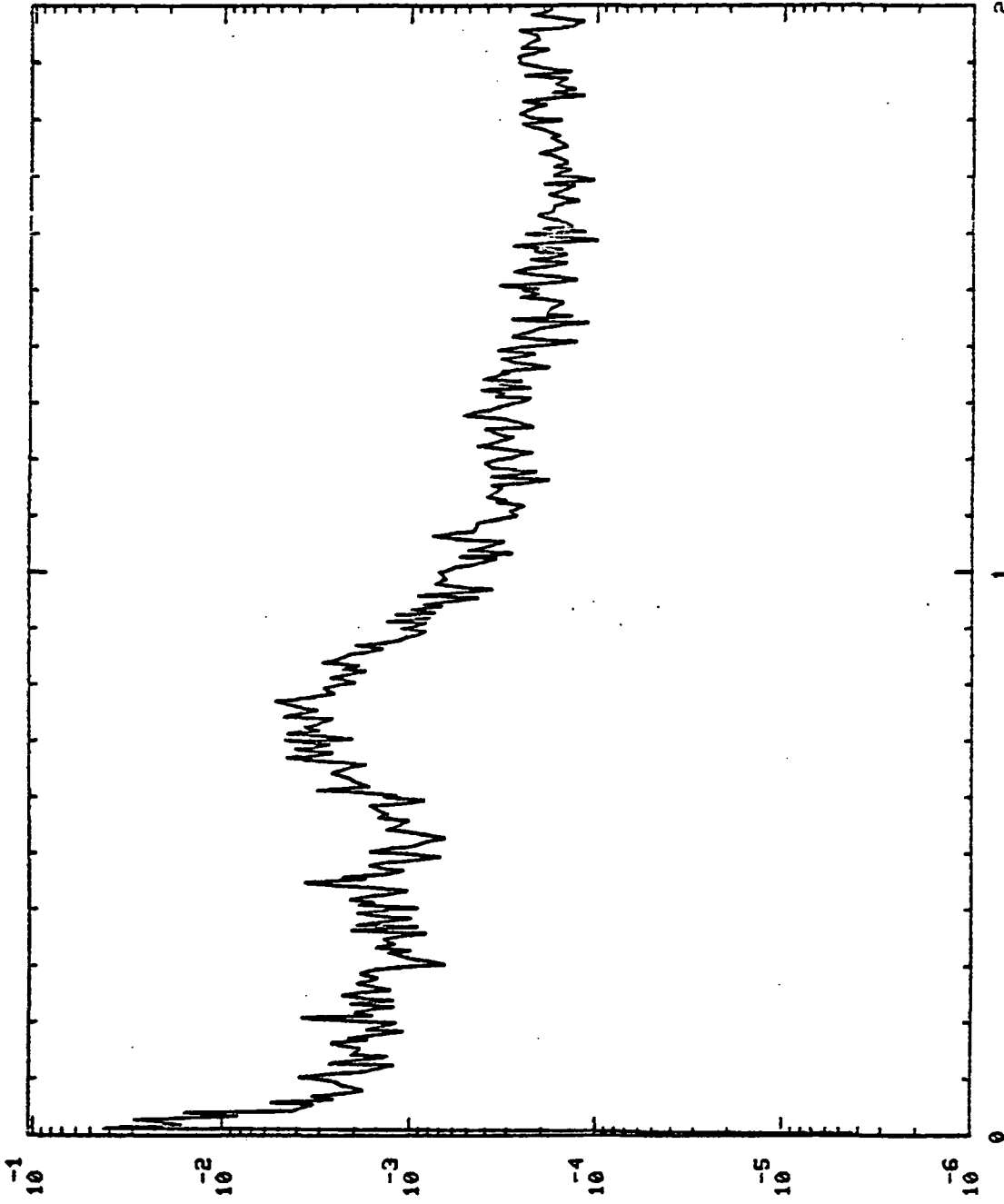
x 10<sup>4</sup>

750111 HPOP BAL CAU PRI S: 40.01H0,'S



750111 HPOP BAL CAU PRI S+ 50.01H0,'S

750111 HPOP BAL CAU PRI

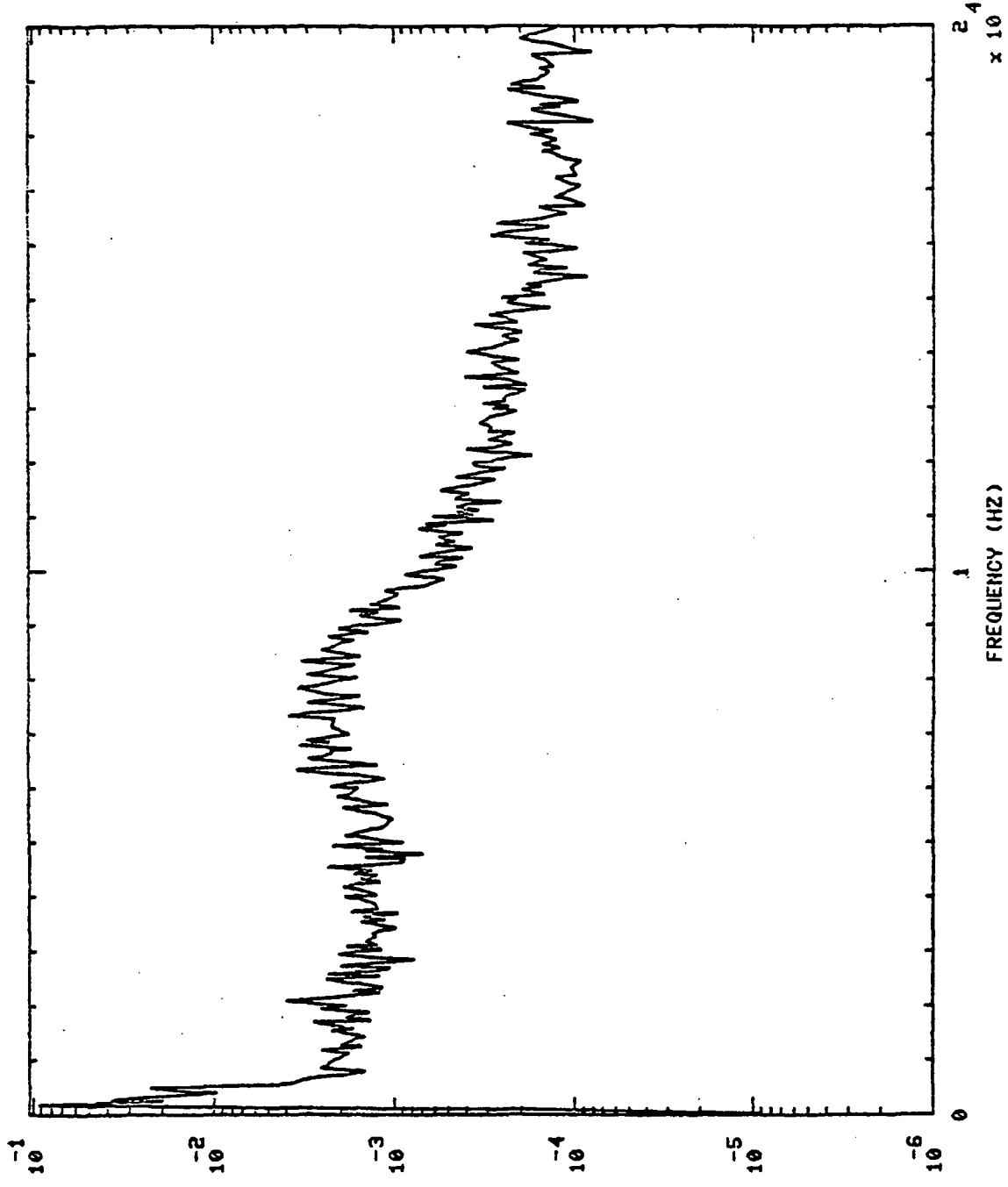


PSD / HZ

FREQUENCY (HZ)

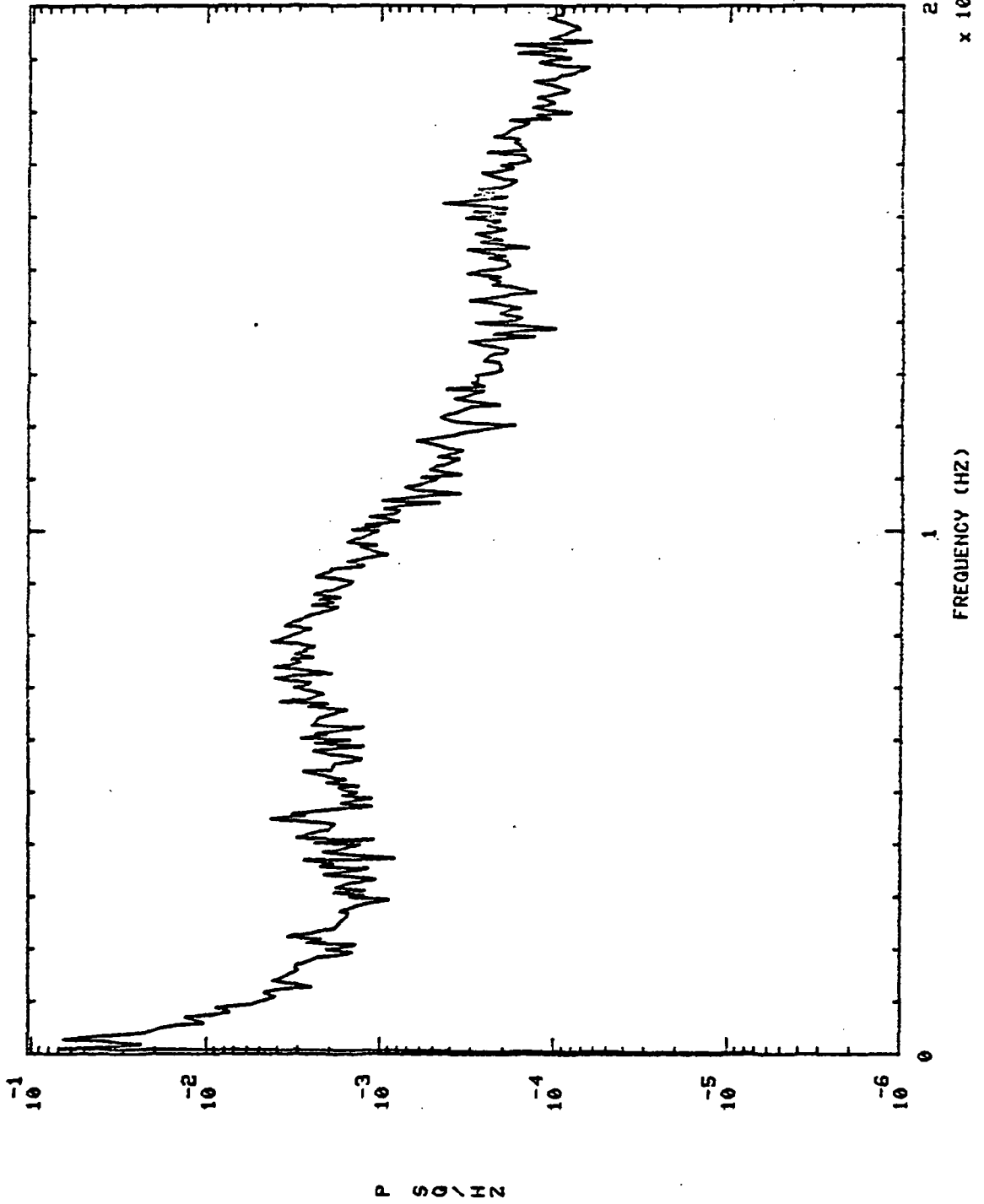
2.4  
x 10<sup>4</sup>

750111 HPOP BAL CAU PR1 S+ 60.01H0,'S

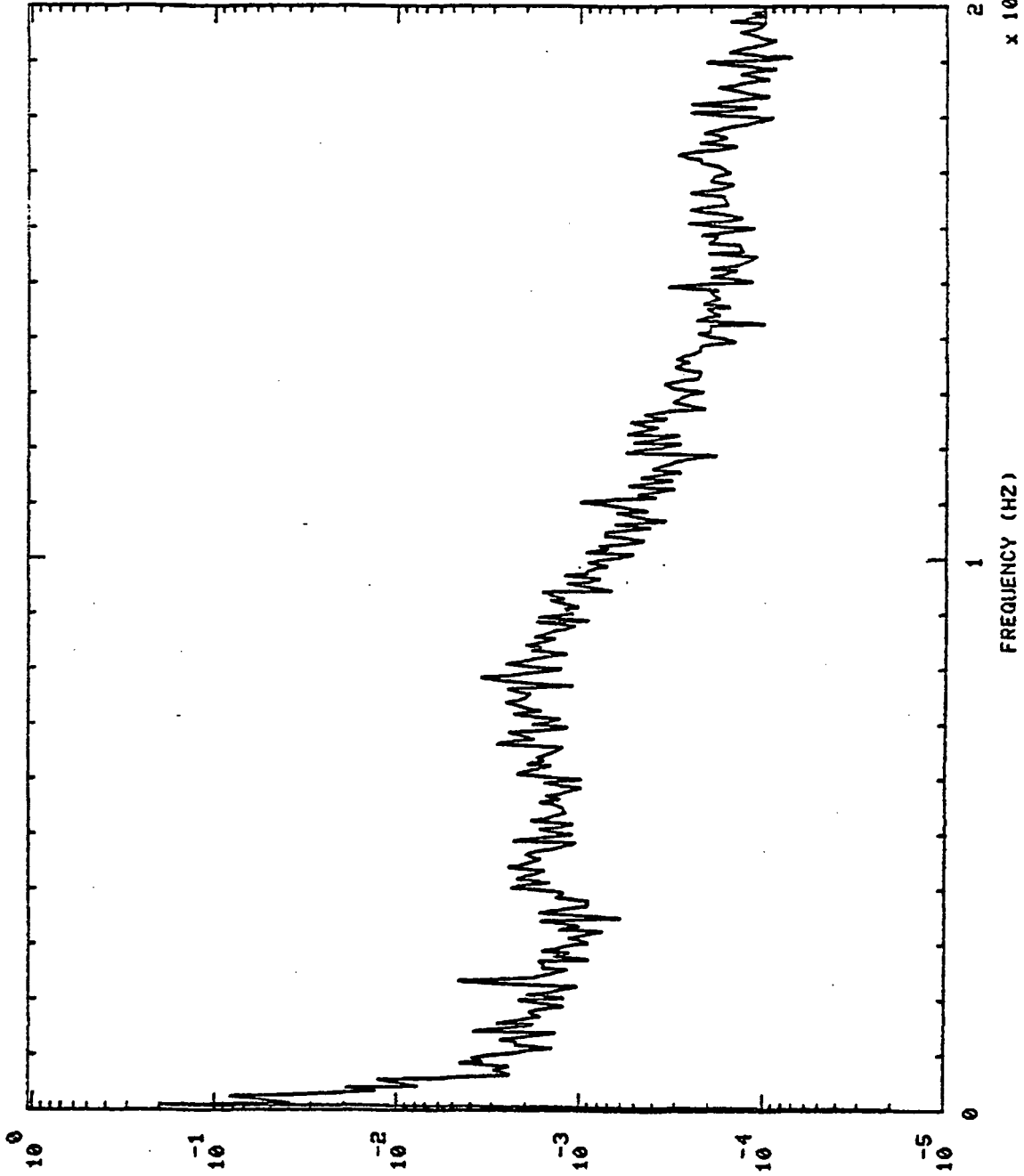


P S D / H Z

750111 HPOP BAL CAU PRI ST 70.01H0,'S

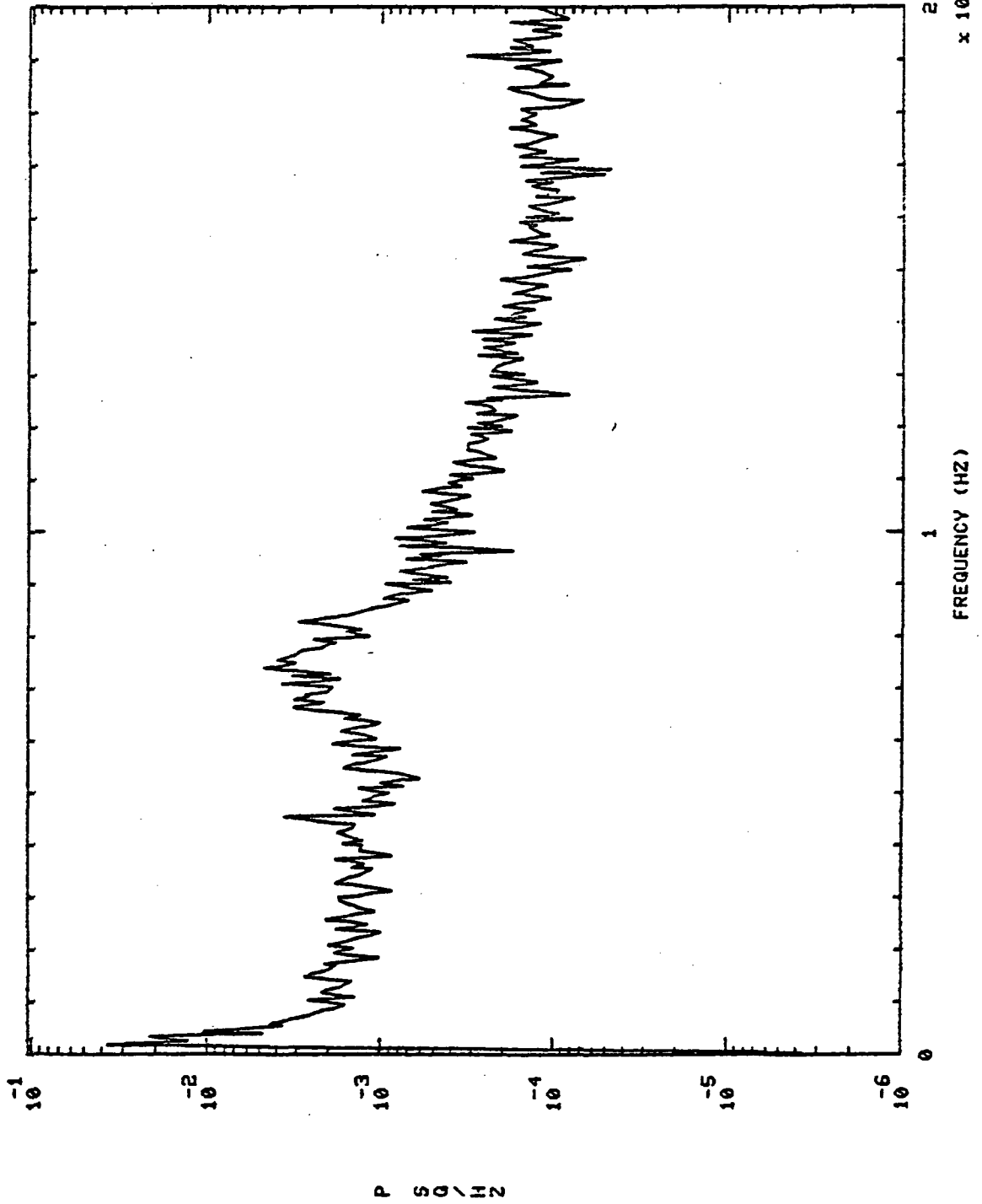


750111 HPOP BAL CAU PRI S+ 80.01H0,'S



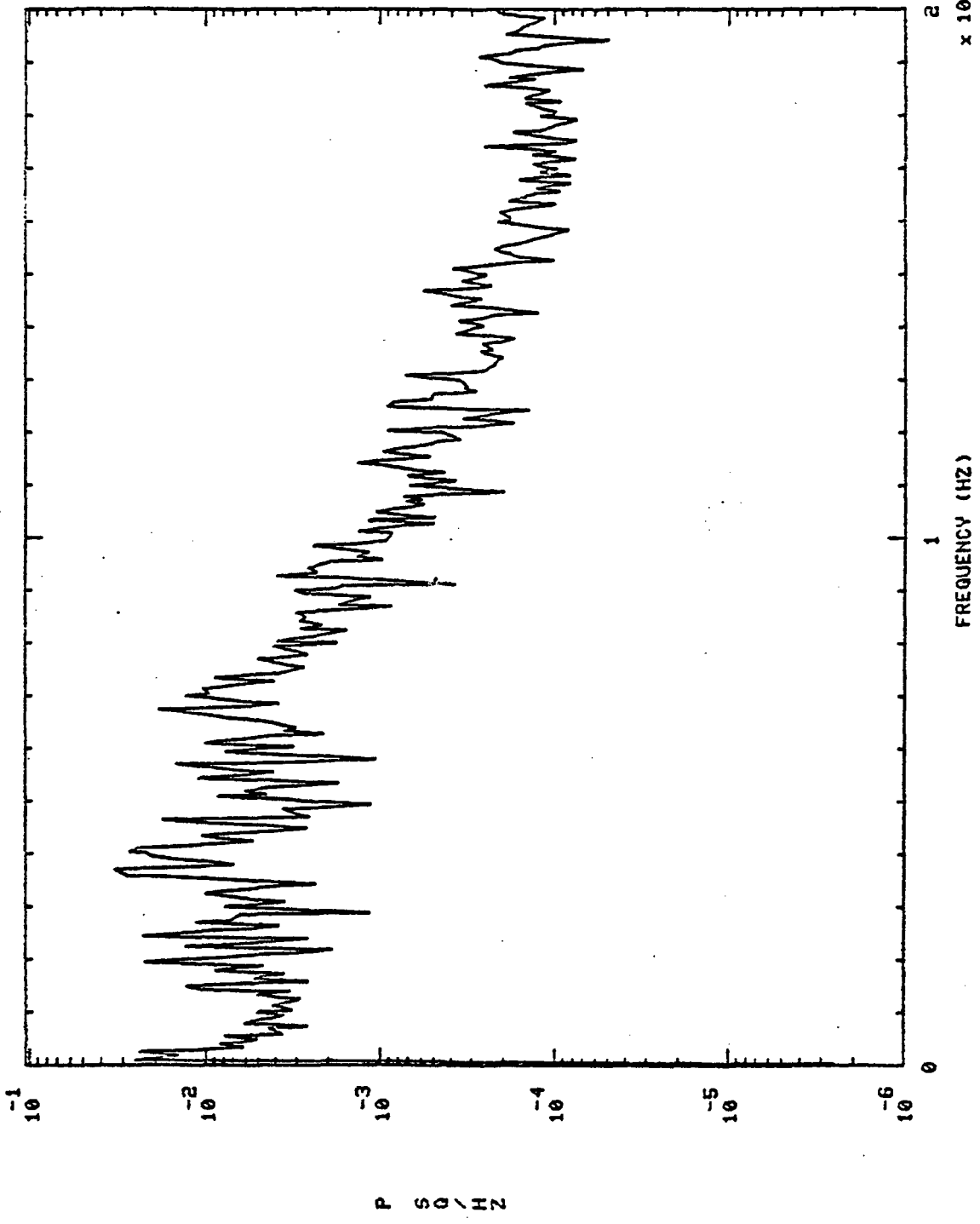
P S O \ H N

750111 HPOP BAL CAU PR1 S+ 90.01H0,'S



750111 NPOP BAL CAU PRI

St 100.01H0,'S

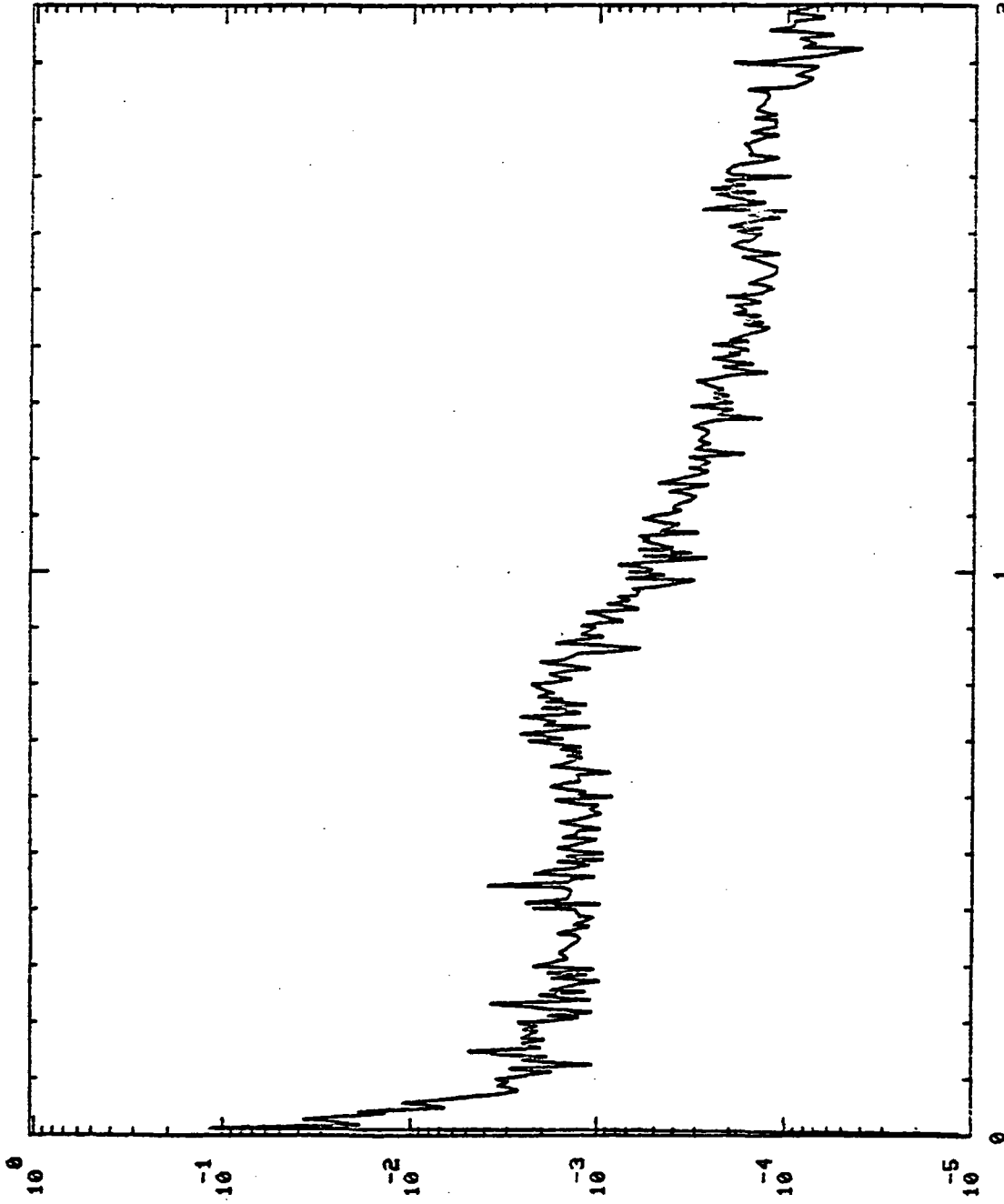




S+ 120.01H0,'S

HPOP BAL CAU PR1

750111

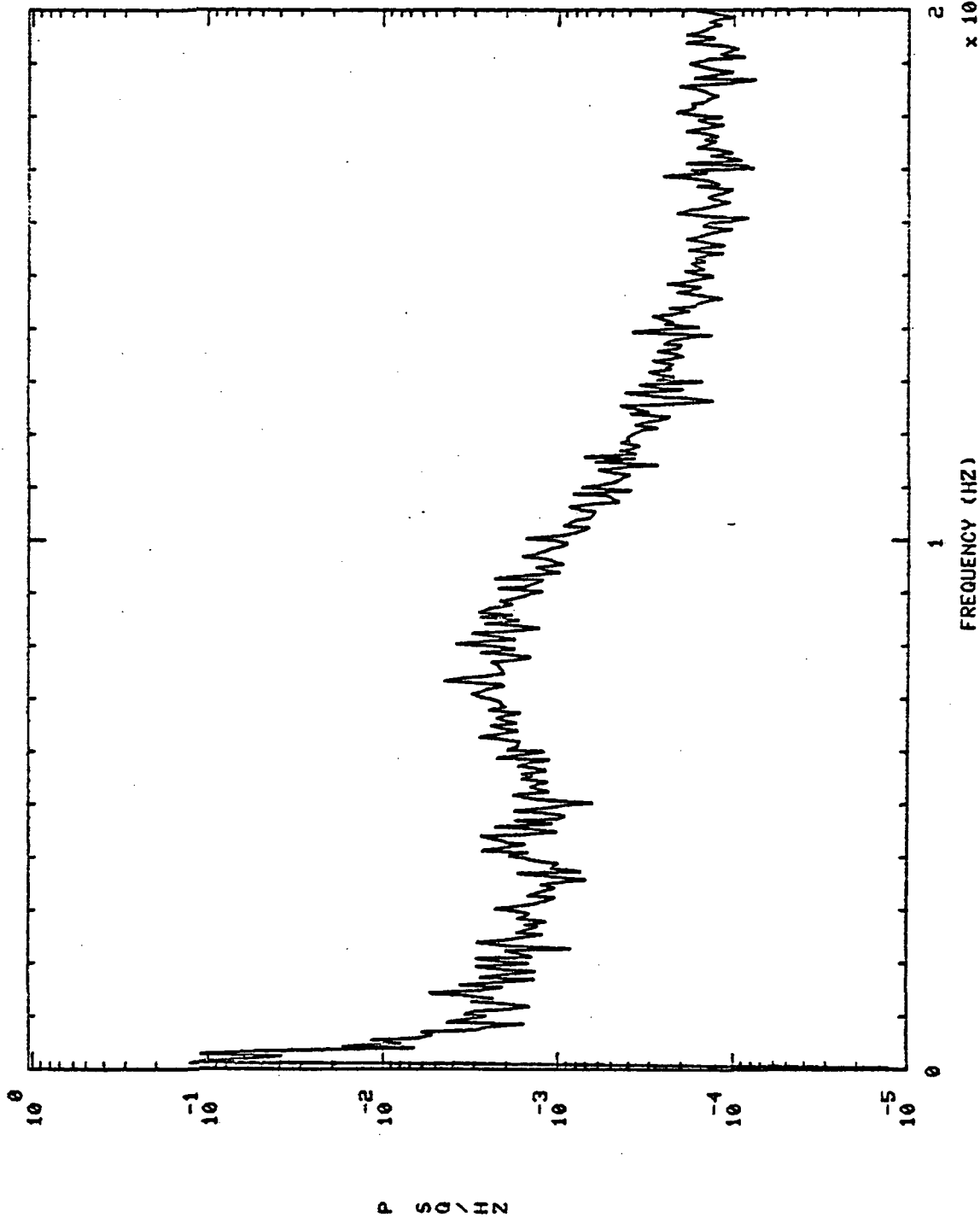


P S Q \ H Z

2.4  
 $\times 10^4$

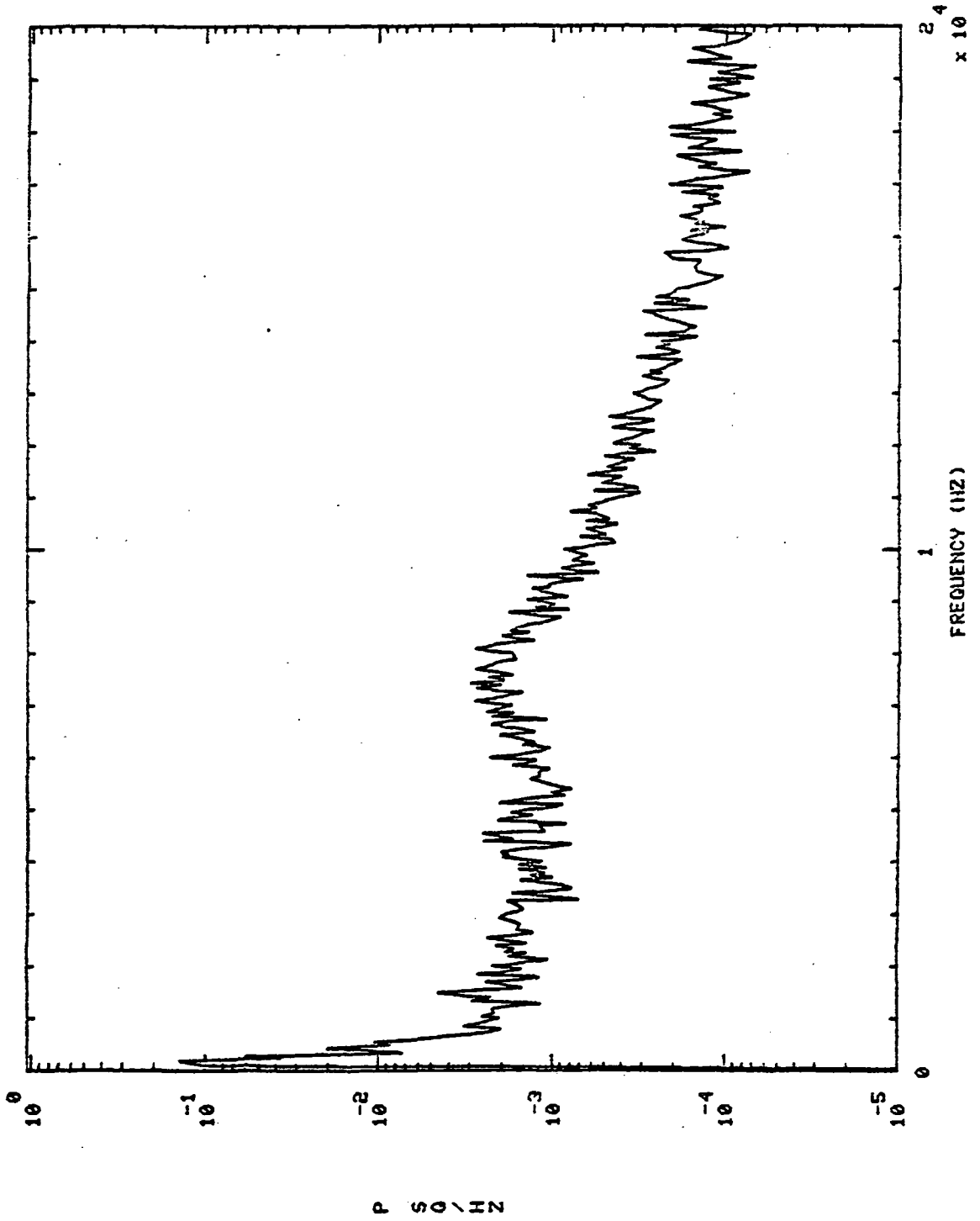
1  
FREQUENCY (HZ)

750111 HPOP BAL CAU PR1 S+ 200.01H0,'S

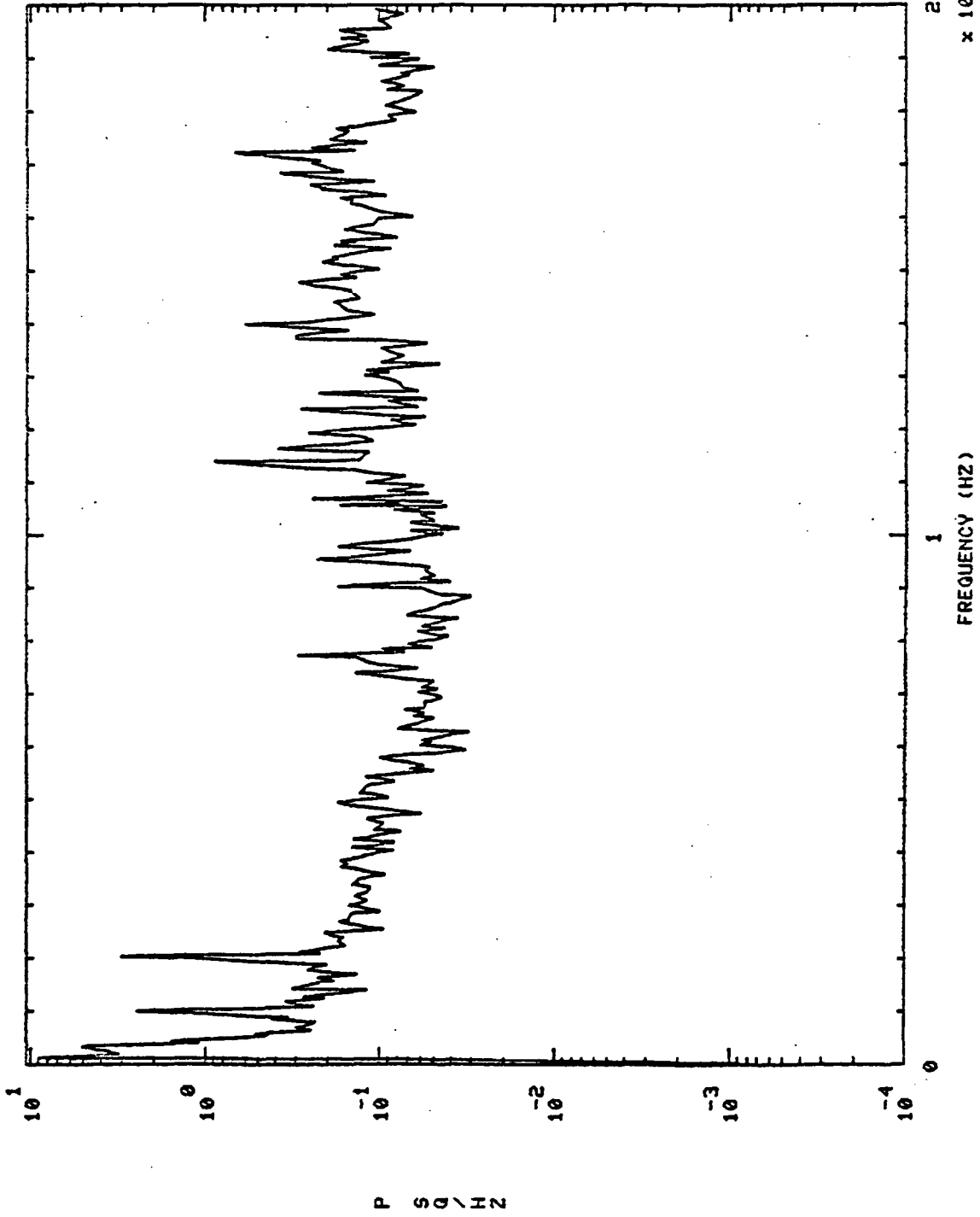


750111 HPOP BAL CAU PRI

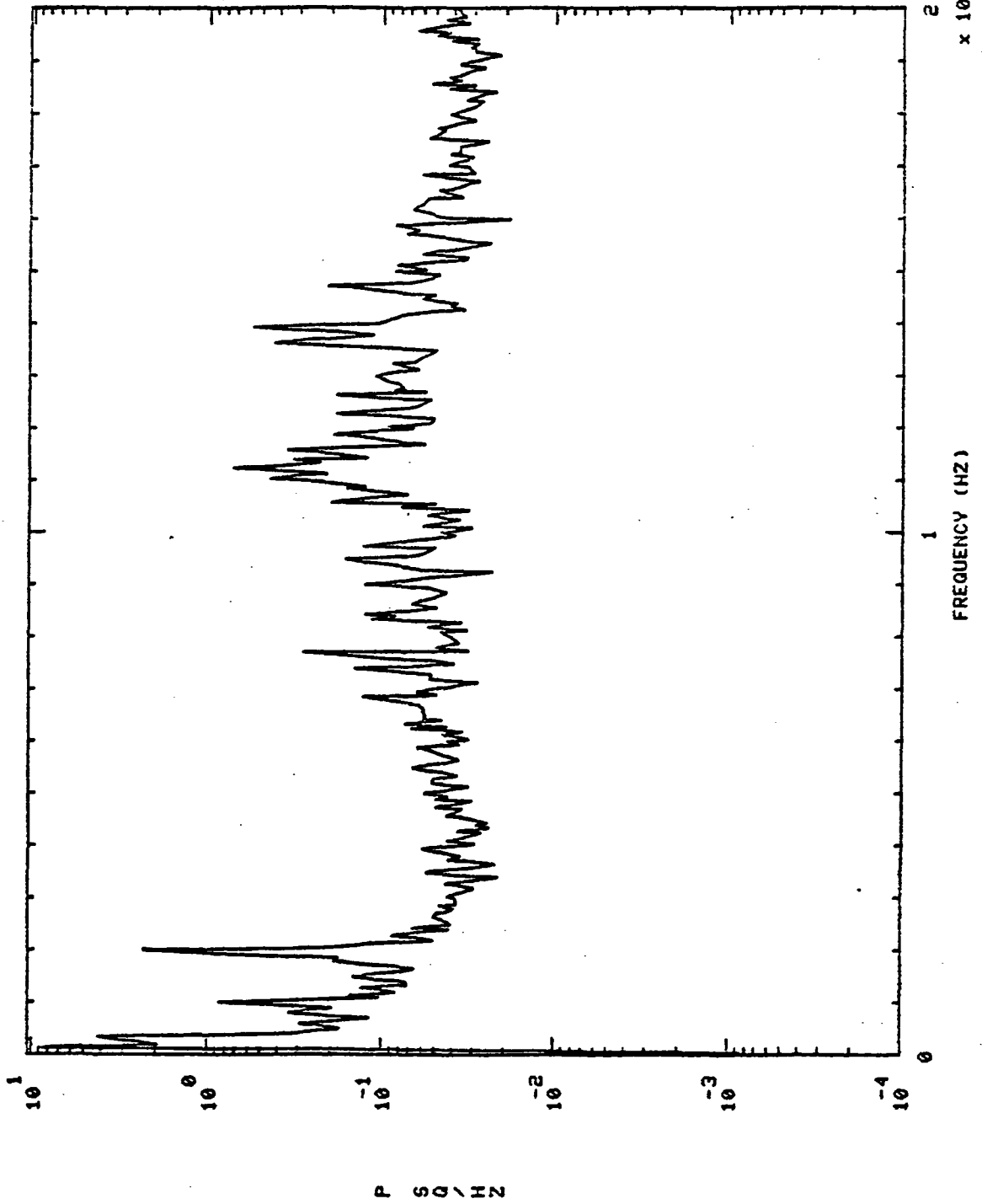
ST 280.01H0,'S



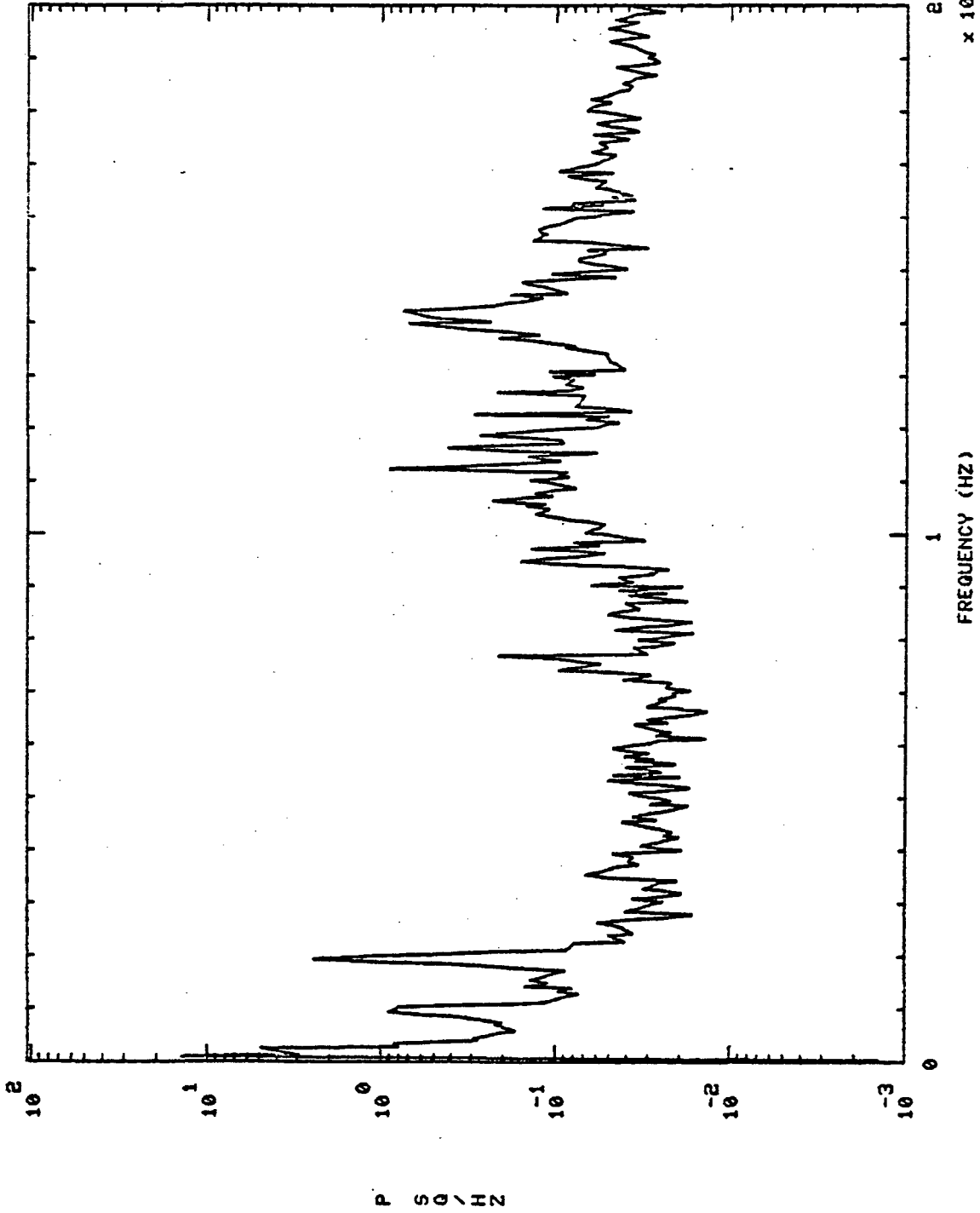
750111 HPOP DS PR S+ 15.01H0,'S



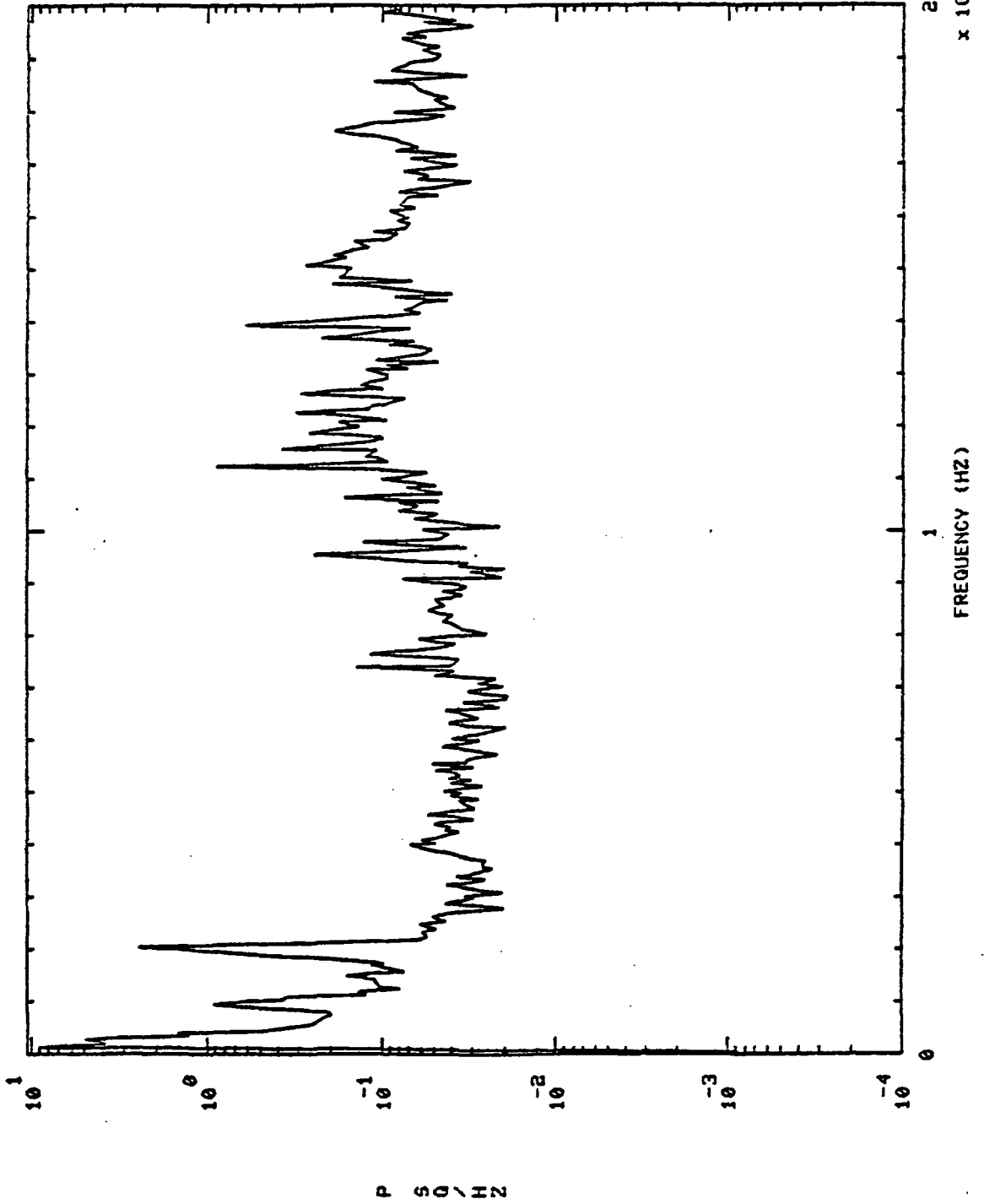
750111 HPOP DS PR S+ 40.01H0,'S



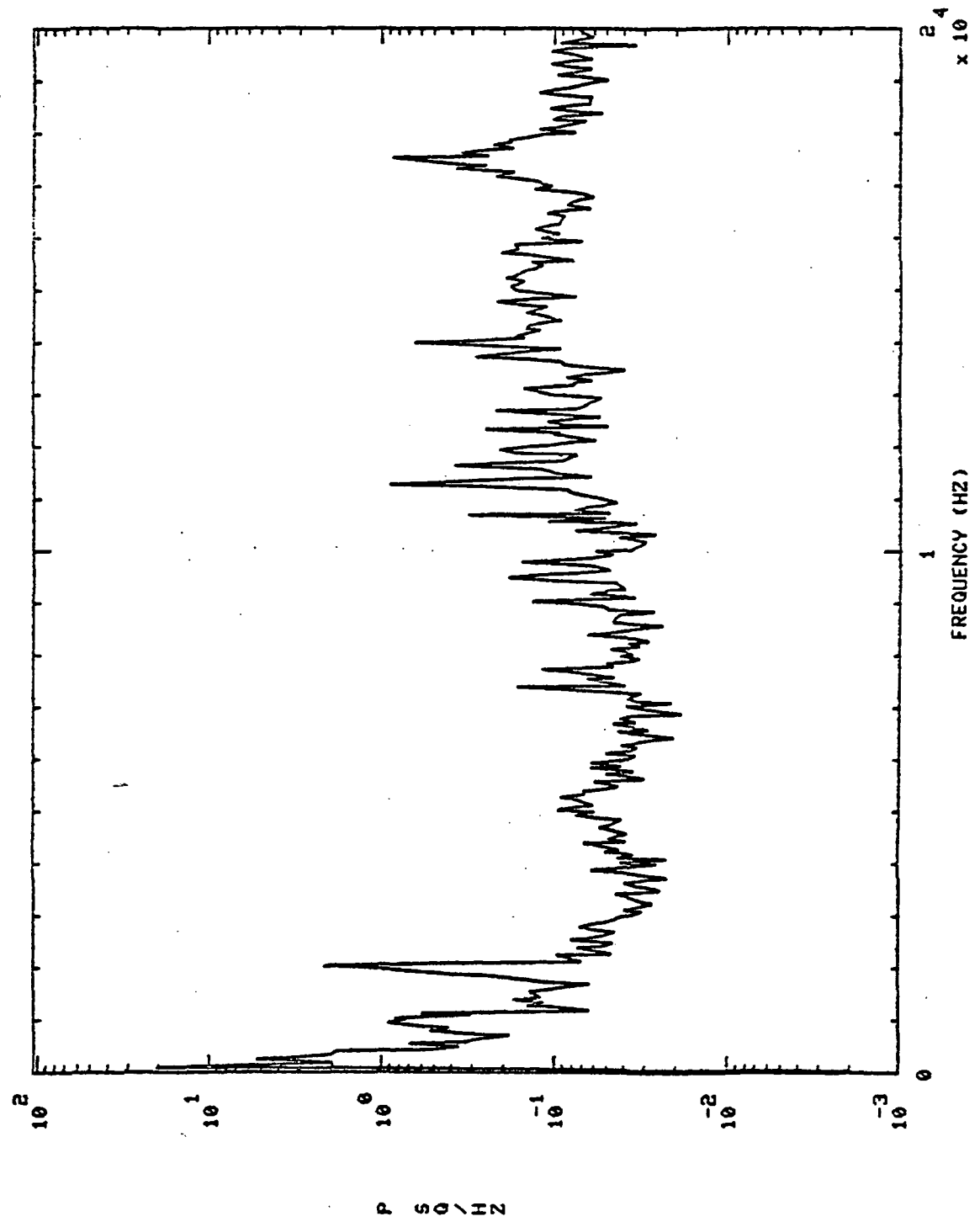
750111 HPOP D5 PR S+ 50.01H0,'S



750111 HPOP DS PR S+ 60.01H0,'S

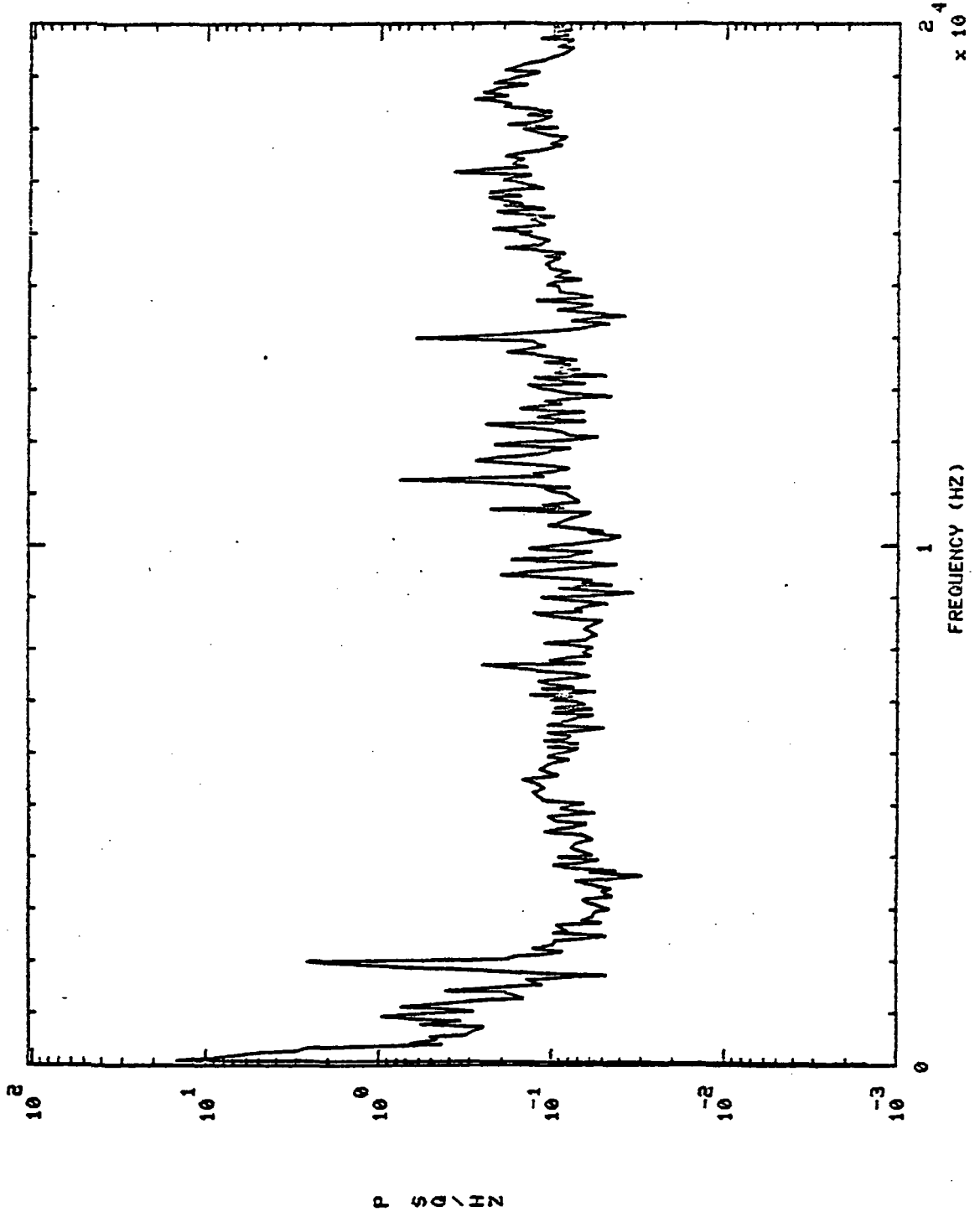


750111 HPOP DS PR S+ 70.01H0,'S

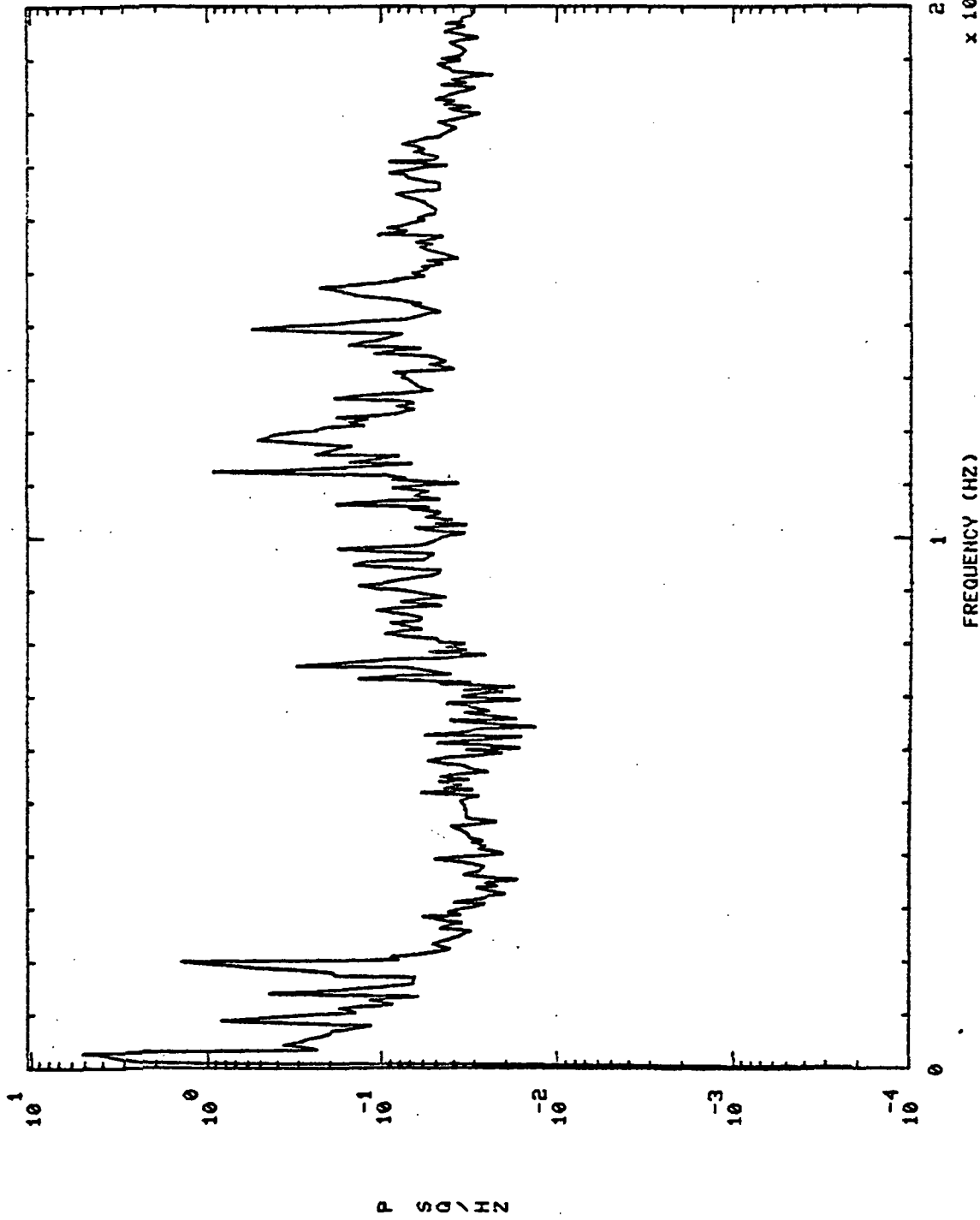




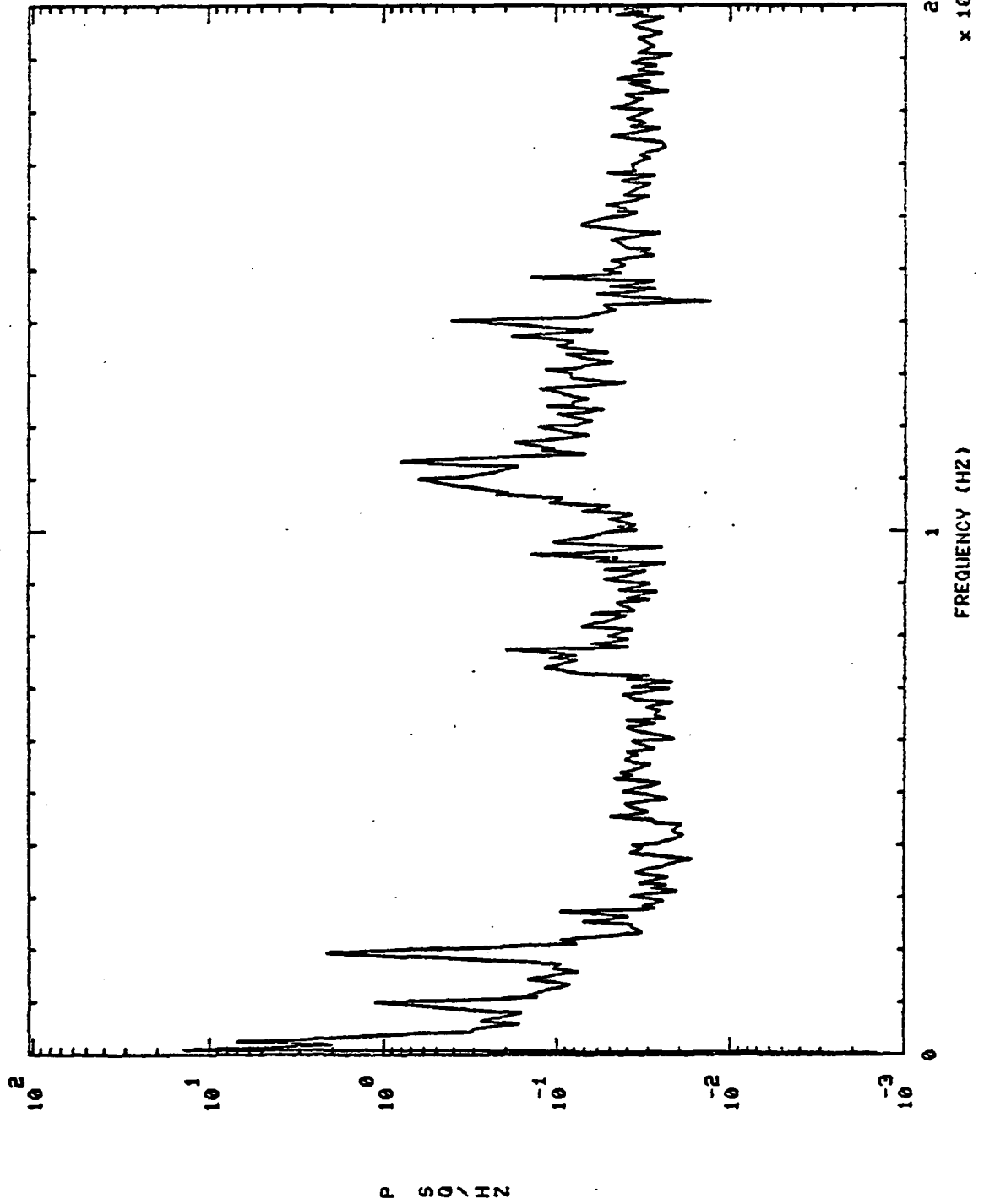
750111 HPOP DS PR S+ 80.01H0,'S



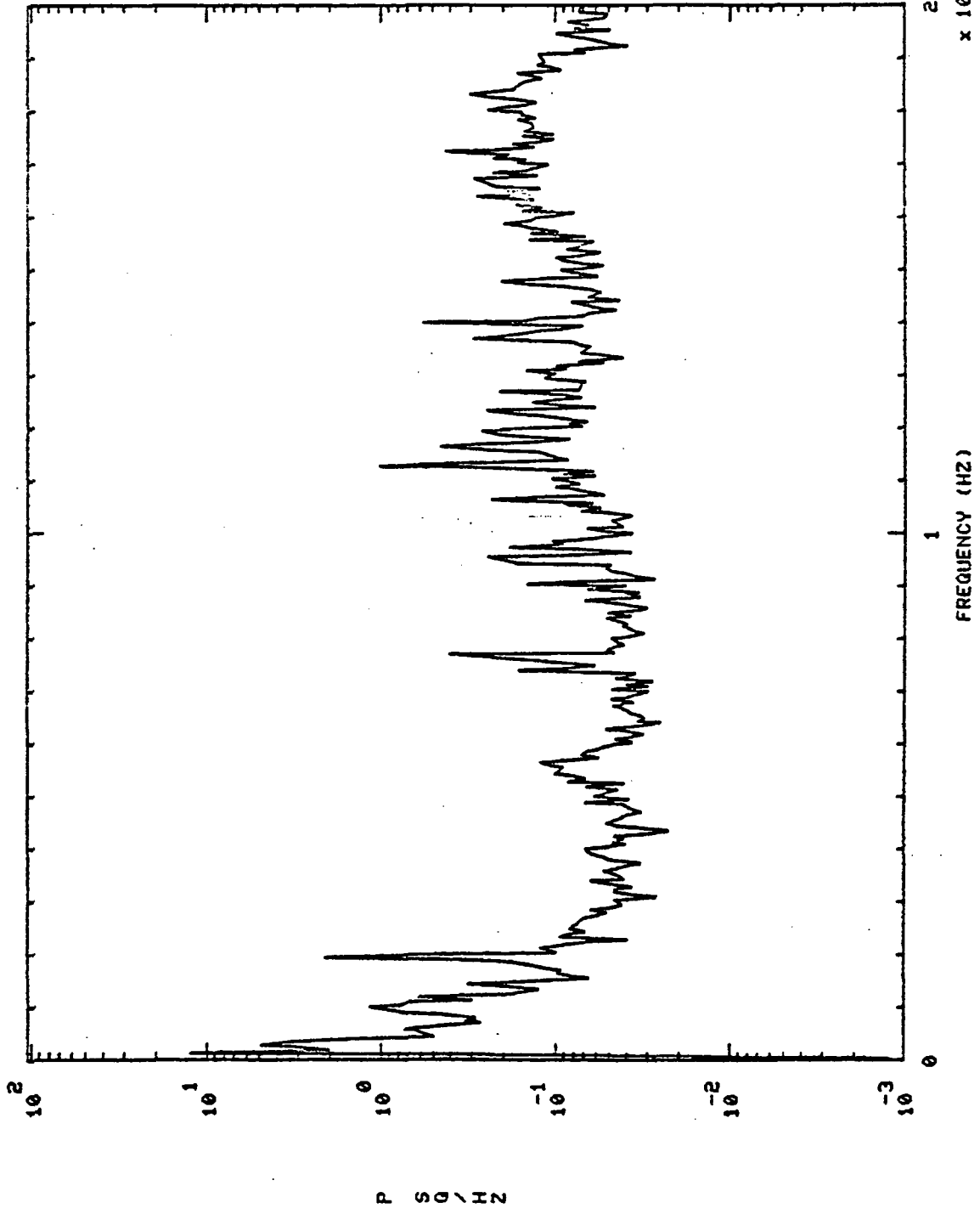
750111 HPOP DS PR S+ 90.01H0,'S



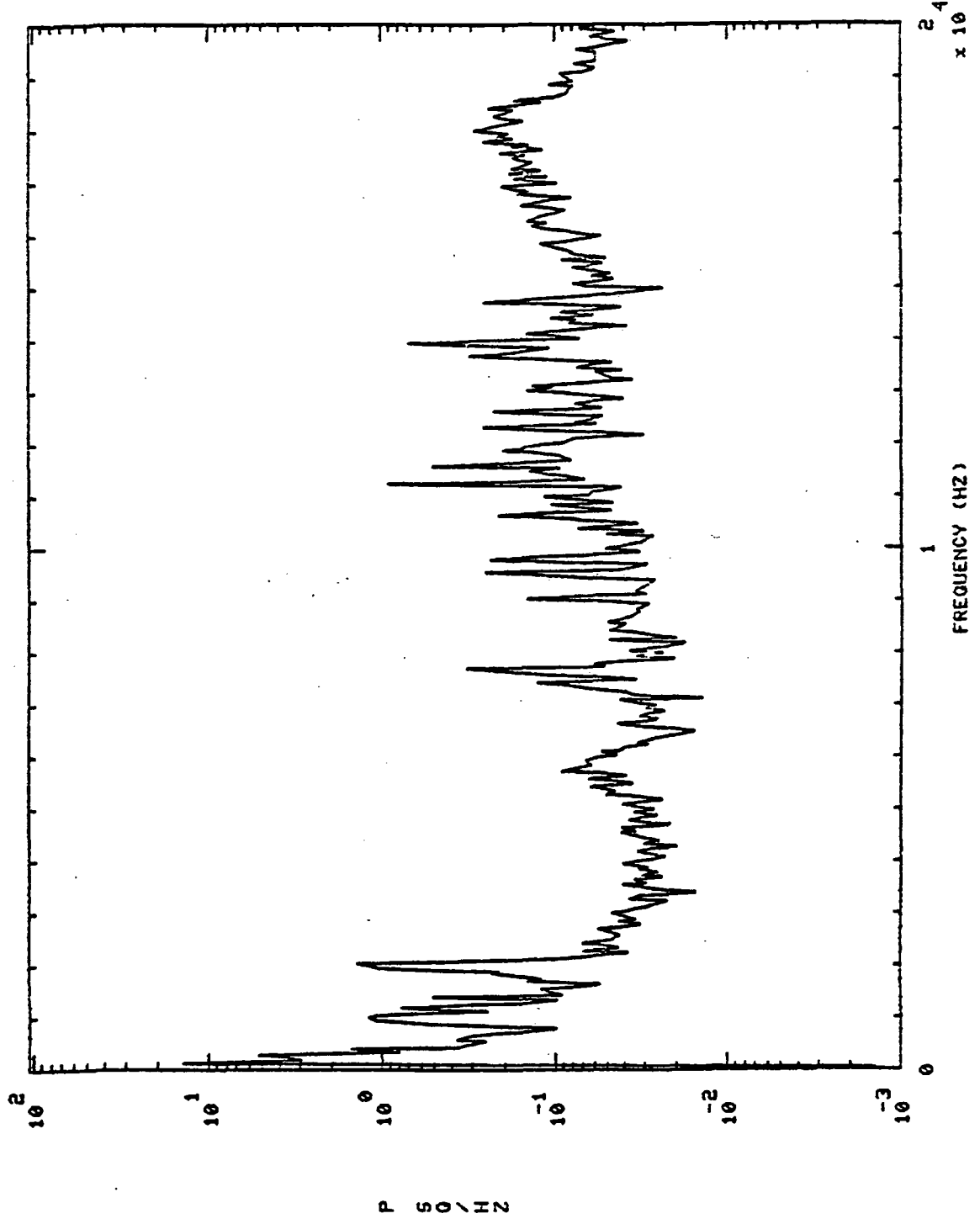
750111 HPOP DS PR S+ 100.01H0,'S



750111 HPOP DS PR S+ 120.01H0,'S



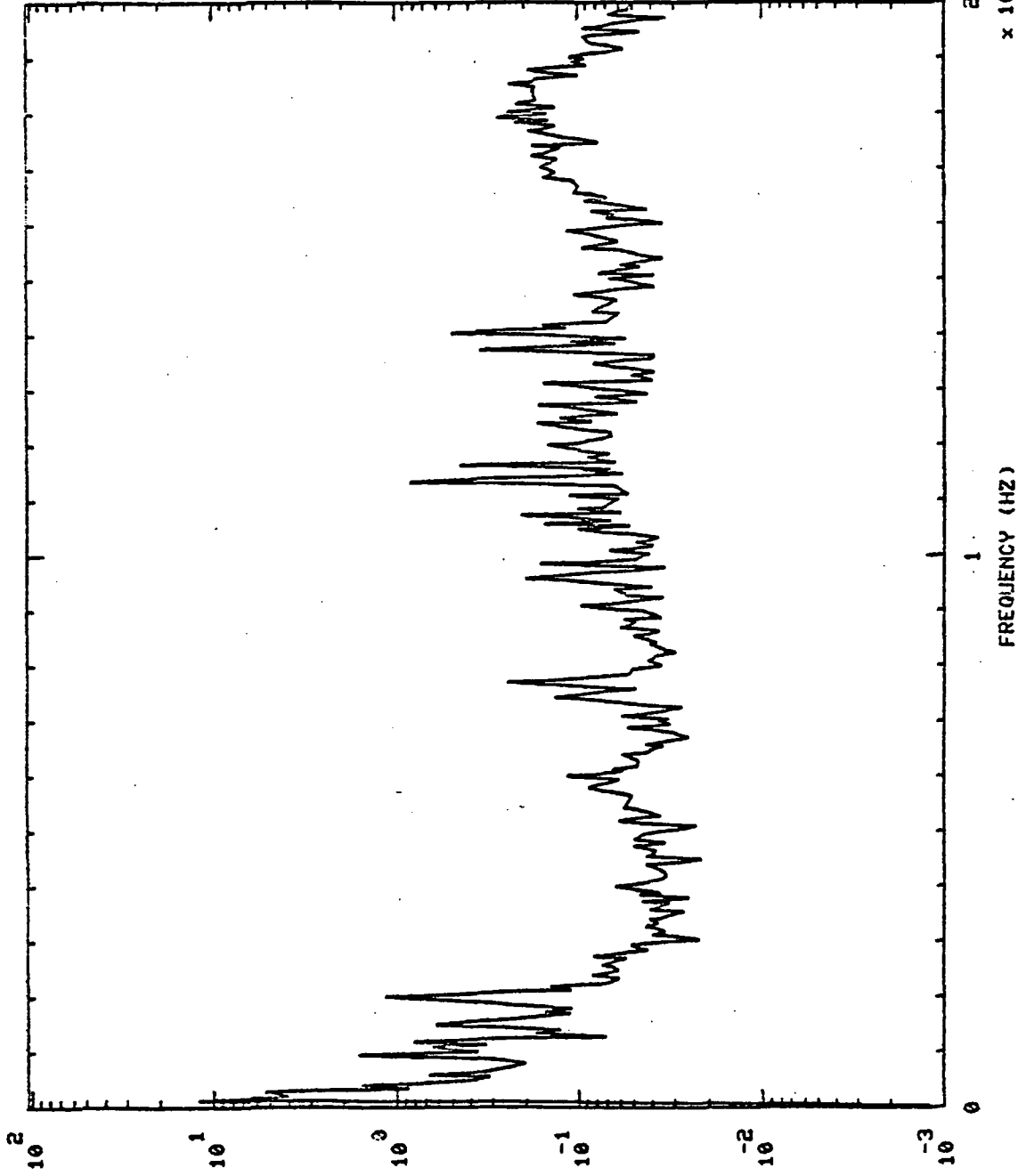
750111 HPOP DS PR S+ 200.01H0.'S



S+ 280.01H0.'S

HPOP DS PR

750111

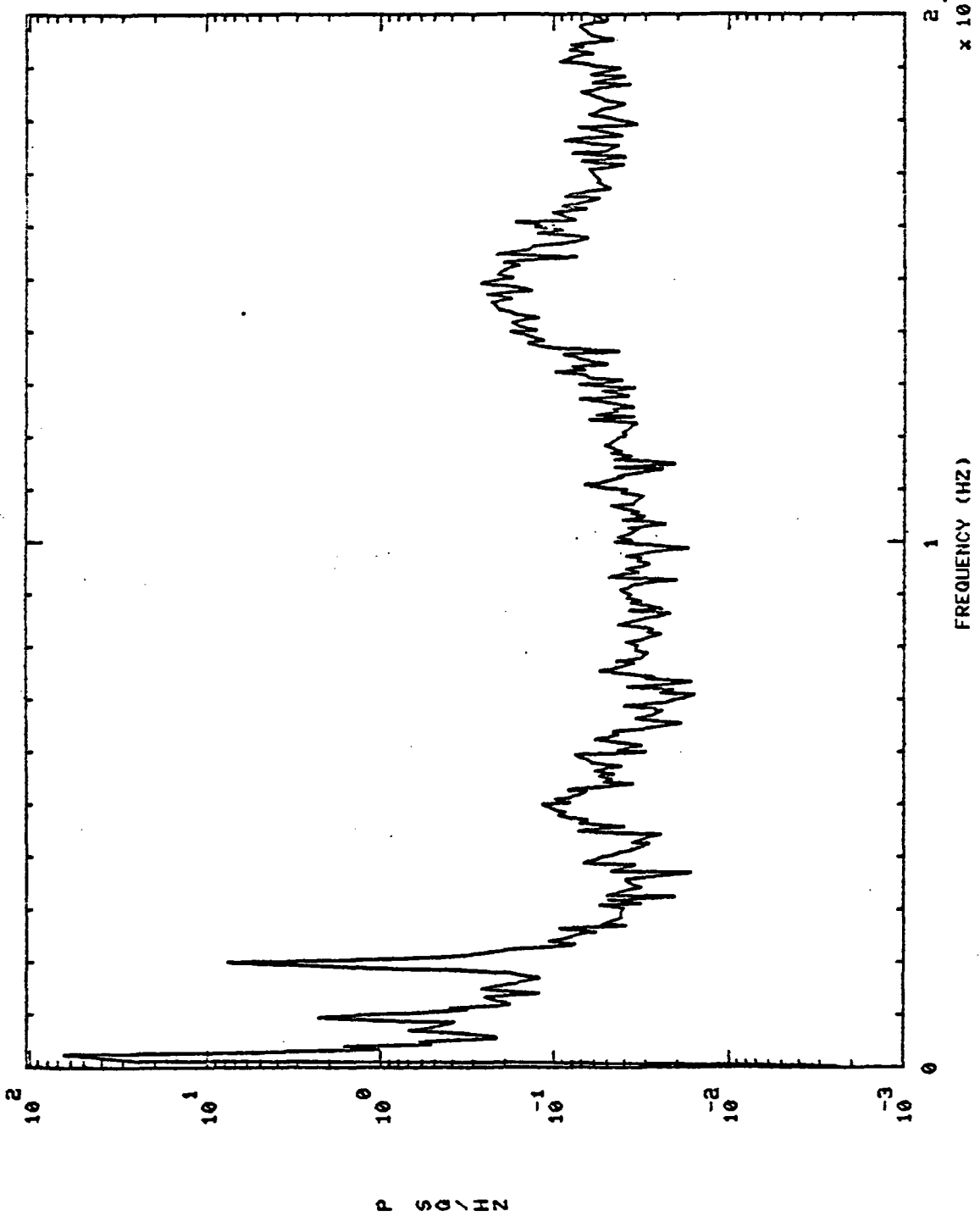


P SQ/HZ

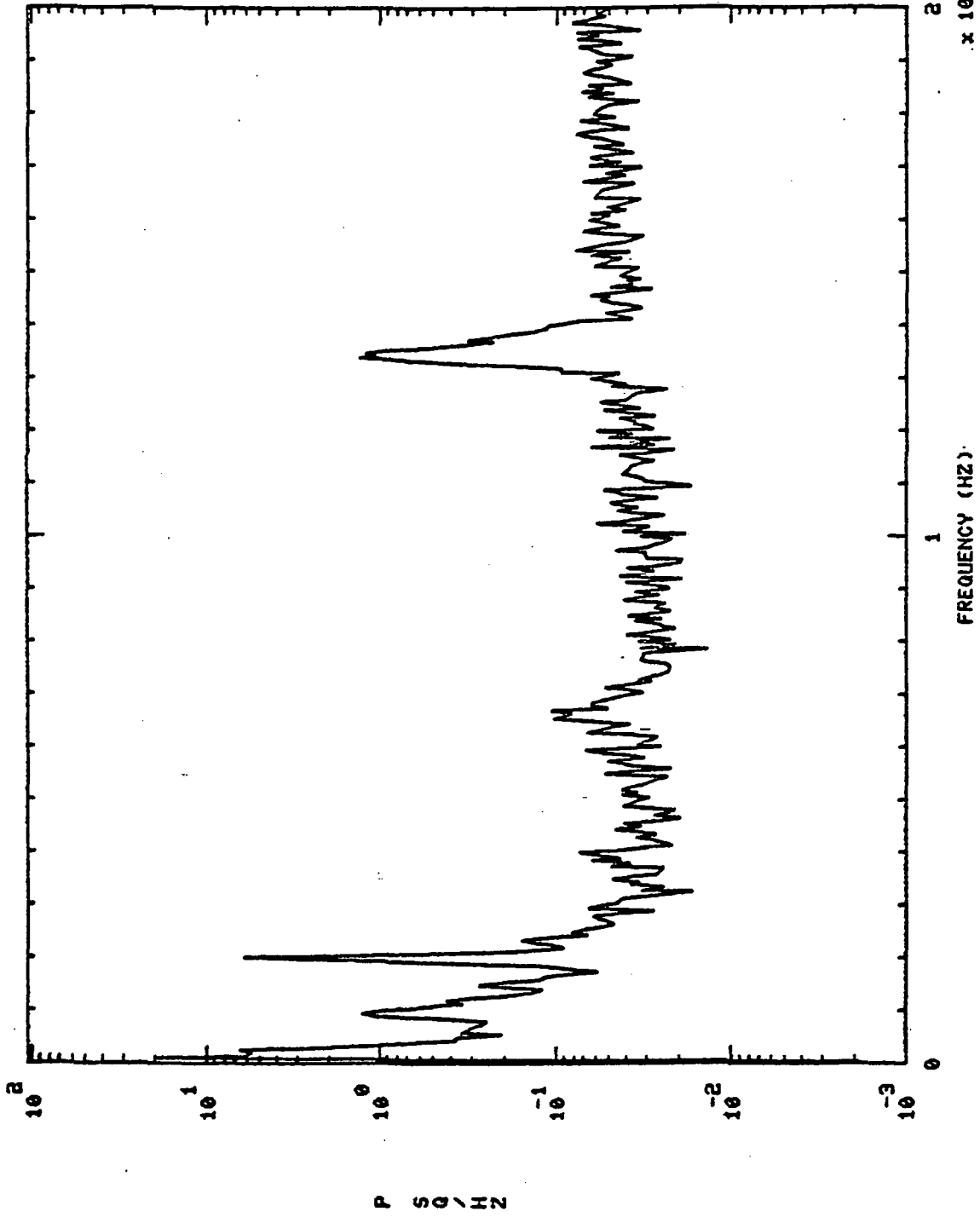
FREQUENCY (HZ)

$2^4$   
 $\times 10^4$

750111 PBP DS PR S+ 15.01H0,'S

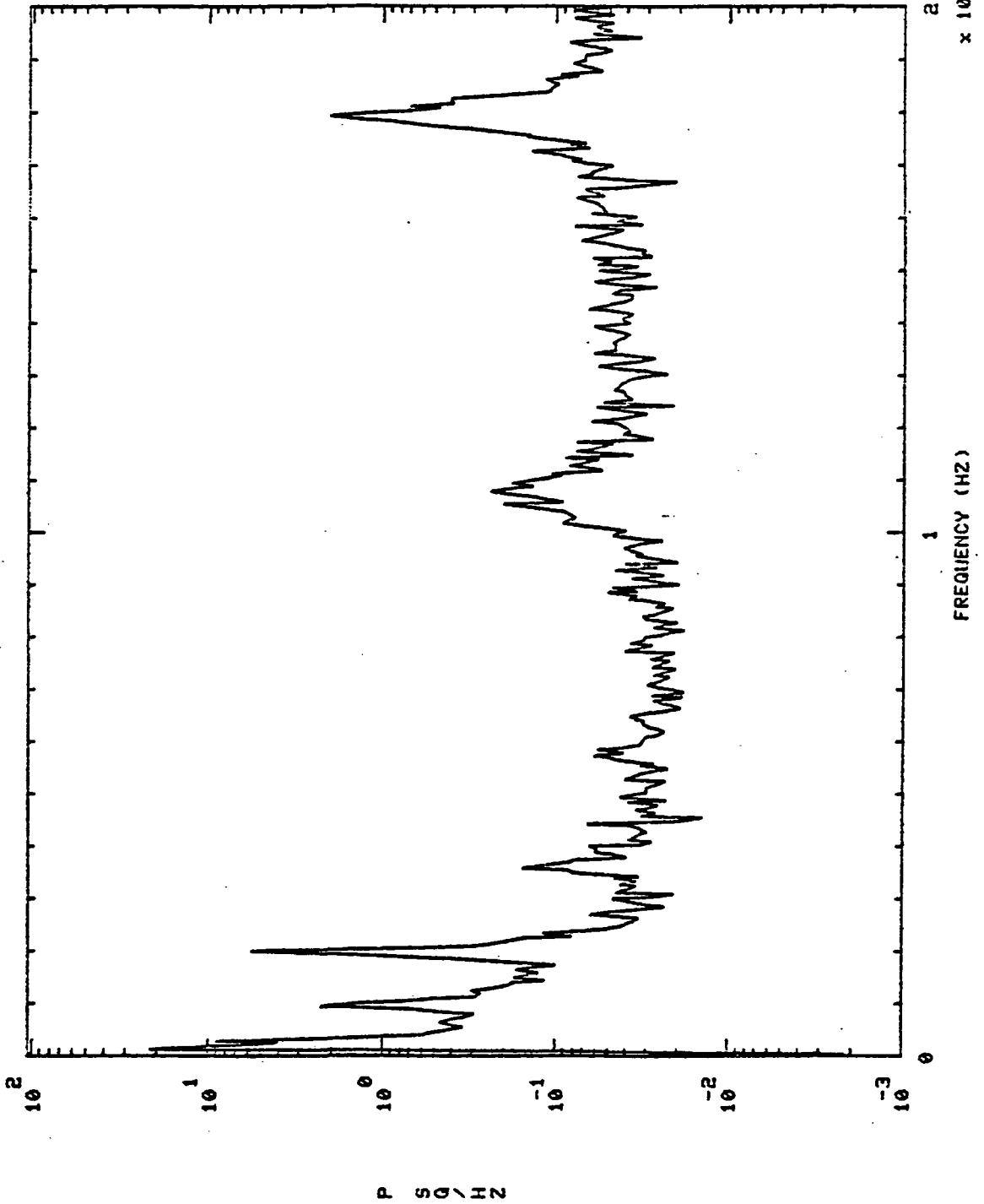


750111 PBP DS PR S+ 40.01H0,'S

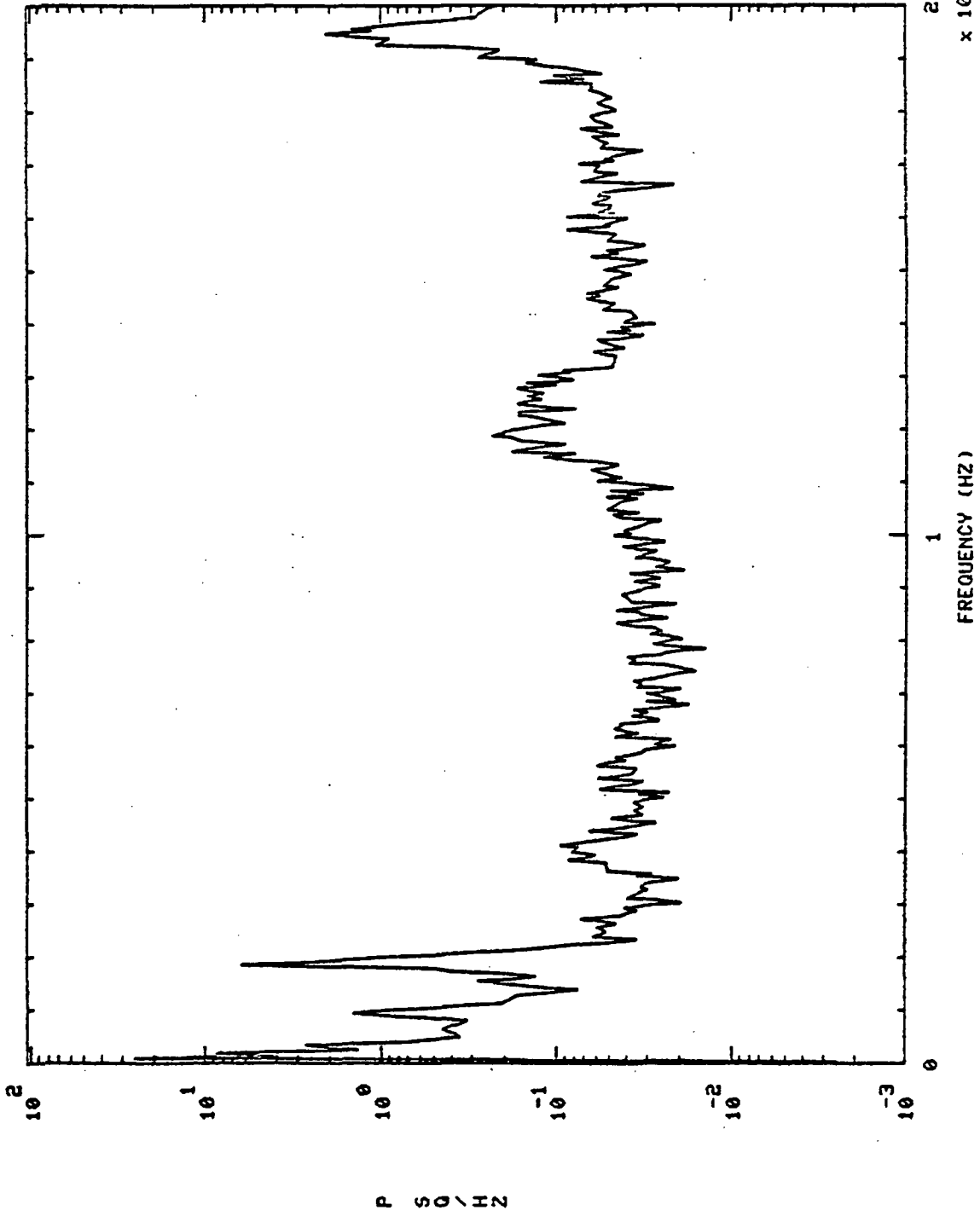




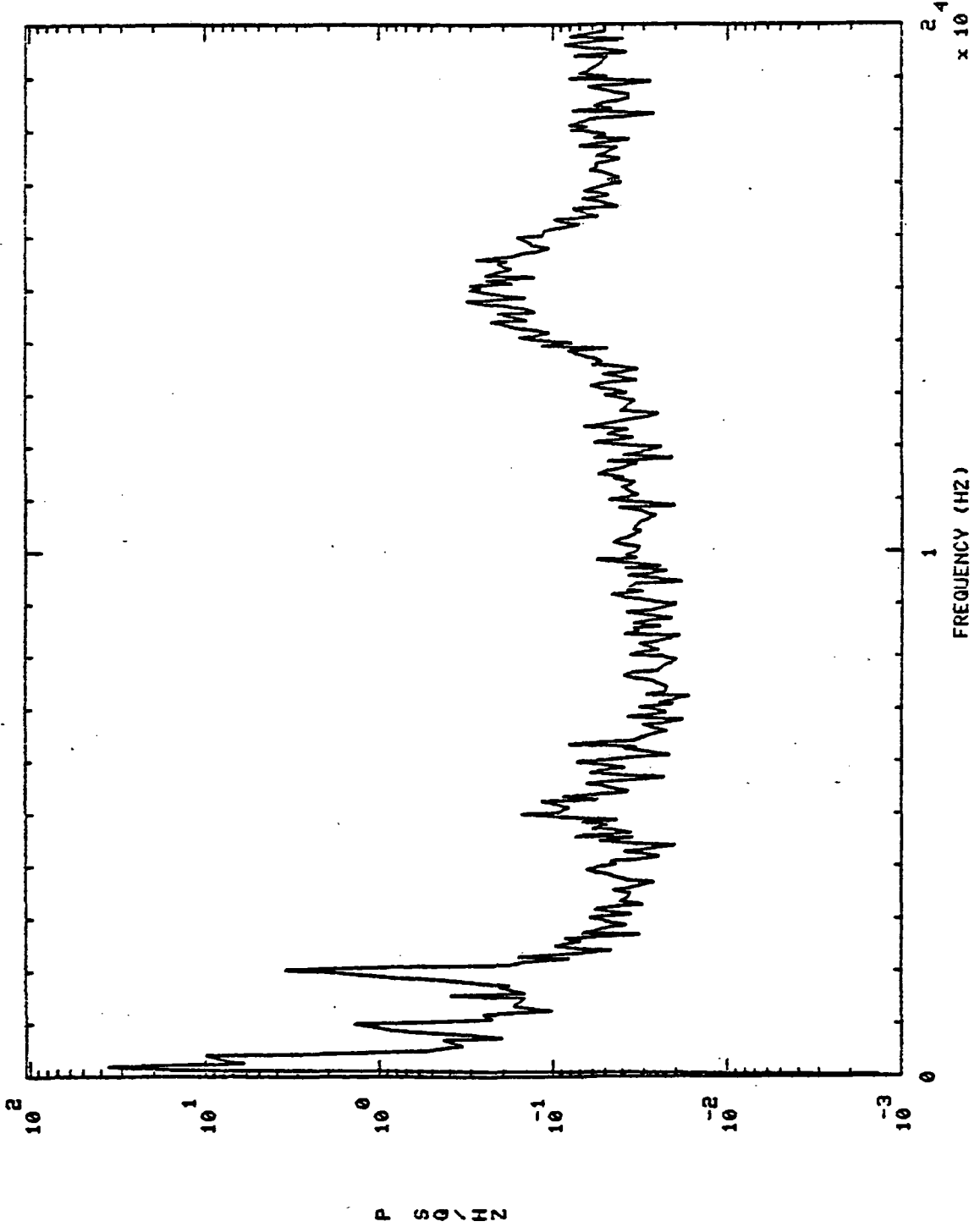
750111 PBP DS PR S-1 50.01H0,'S



750111 PBP DS PR S+ 60.01H0,'S

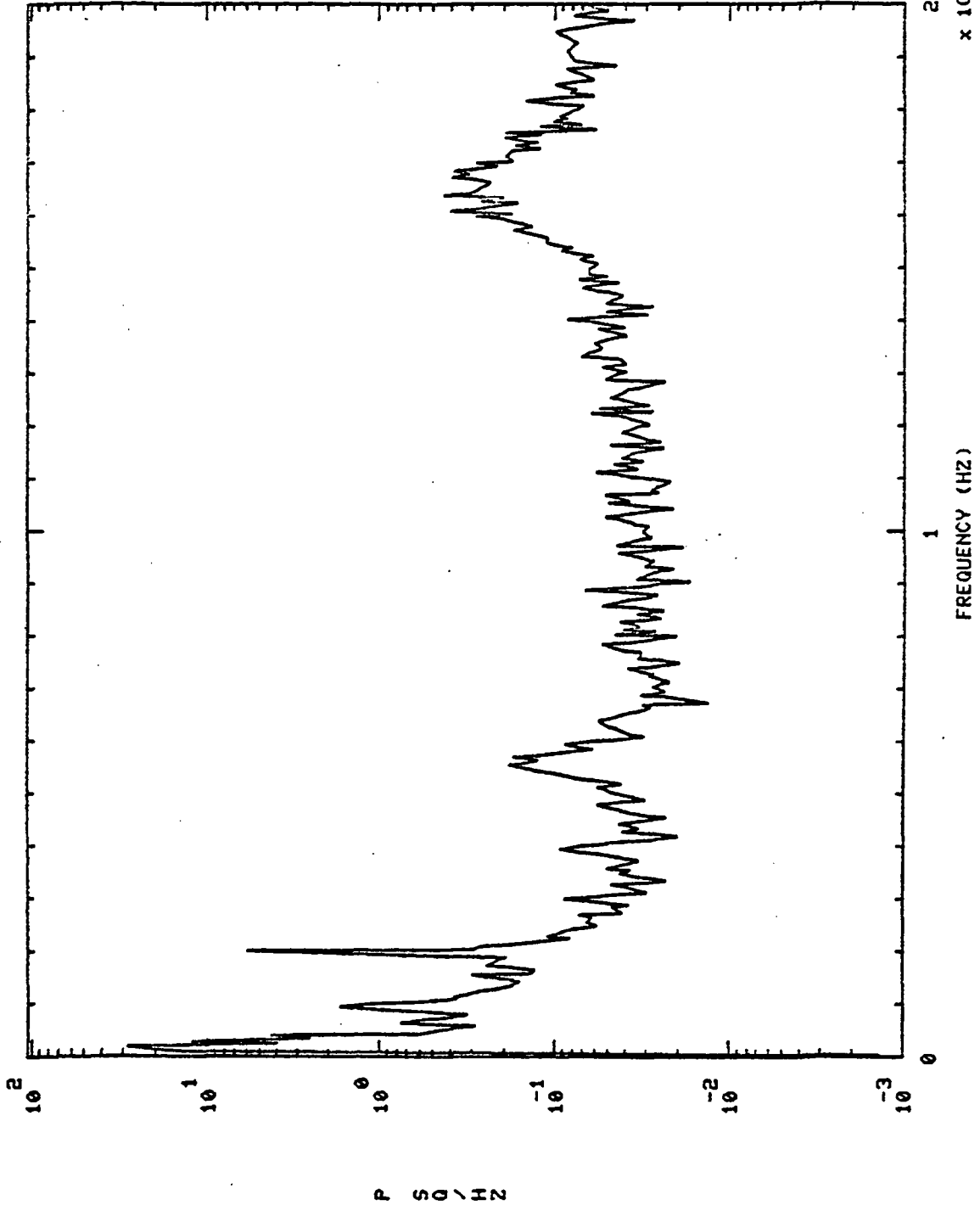


750111 PBP DS PR S+ 70.01H0,'S

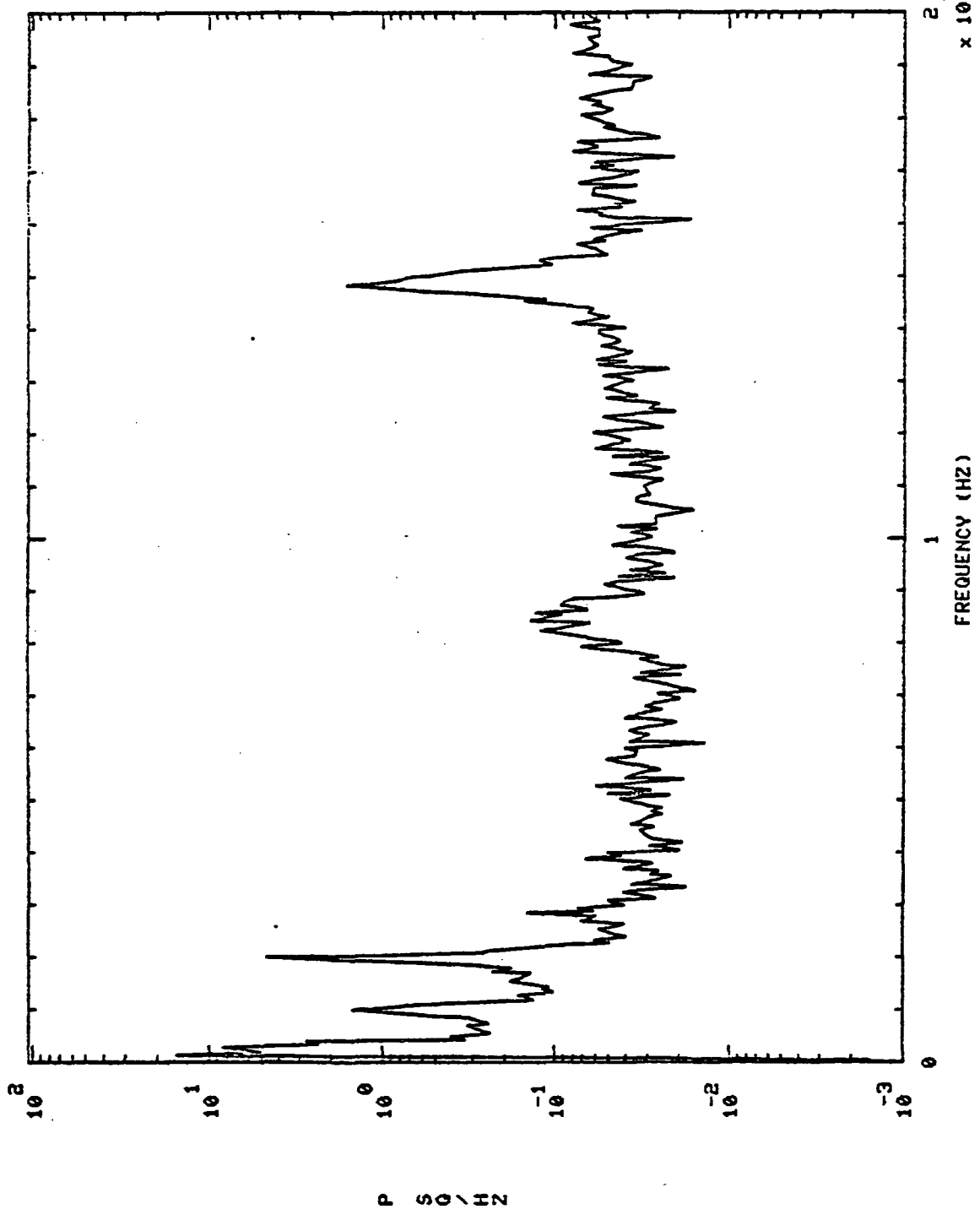


S+ 80.01H0,'S

750111 PBP DS PR



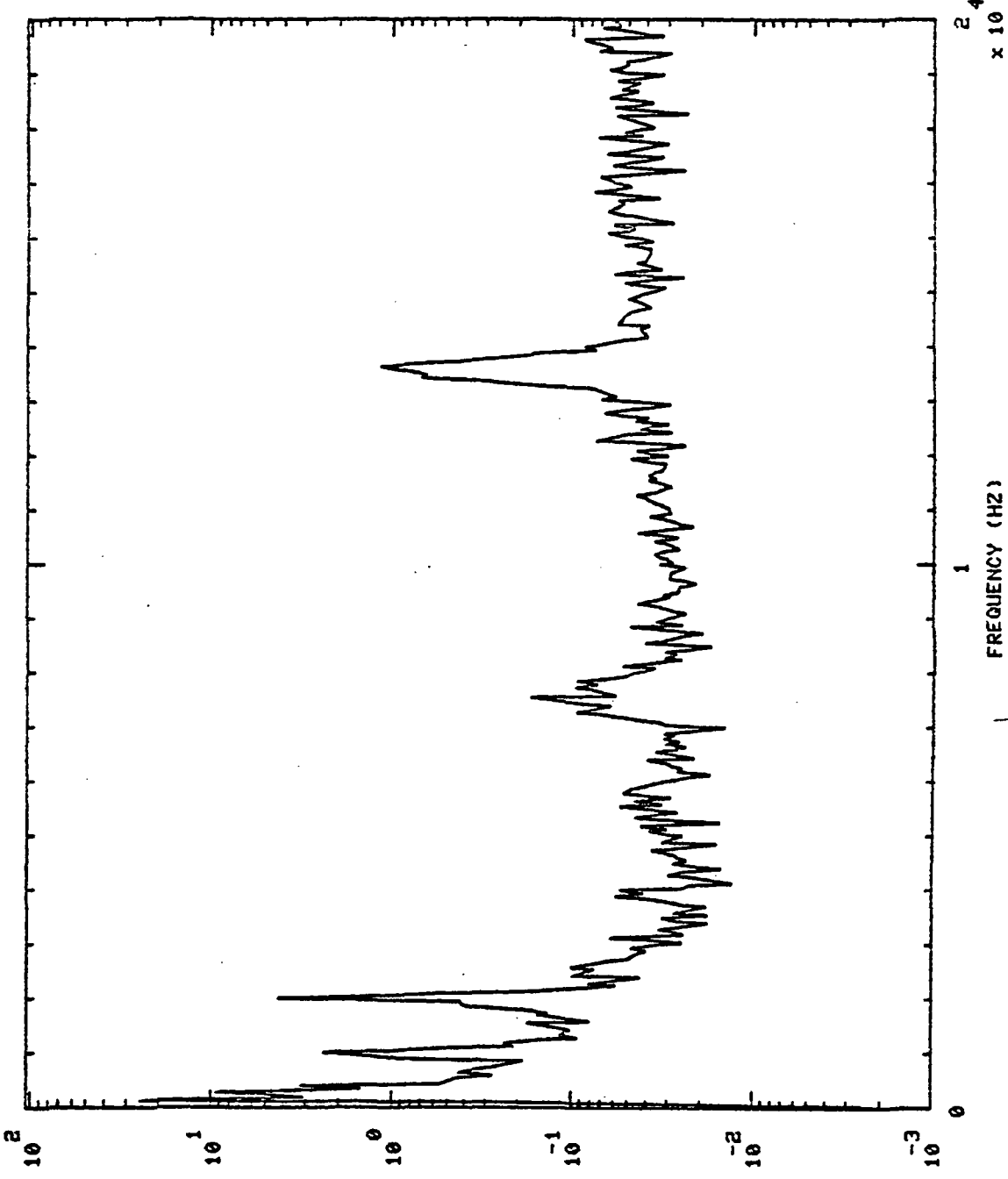
750111 PBP DS PR S+ 90.01H0,'S



S+ 100.01H0,'S

PBP DS PR

750111

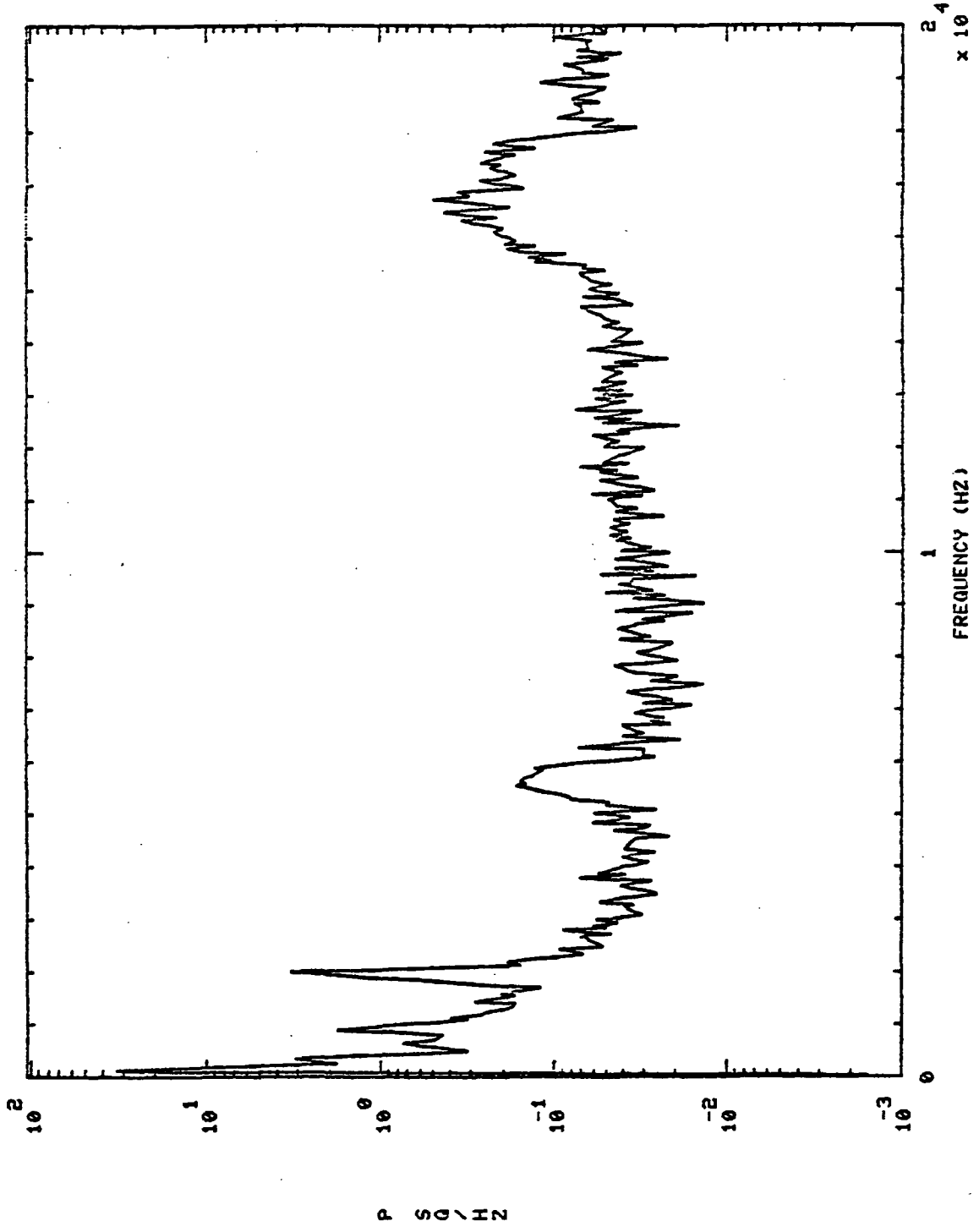


$10^{2.4}$   
x 10

FREQUENCY (HZ)

P S G / H Z

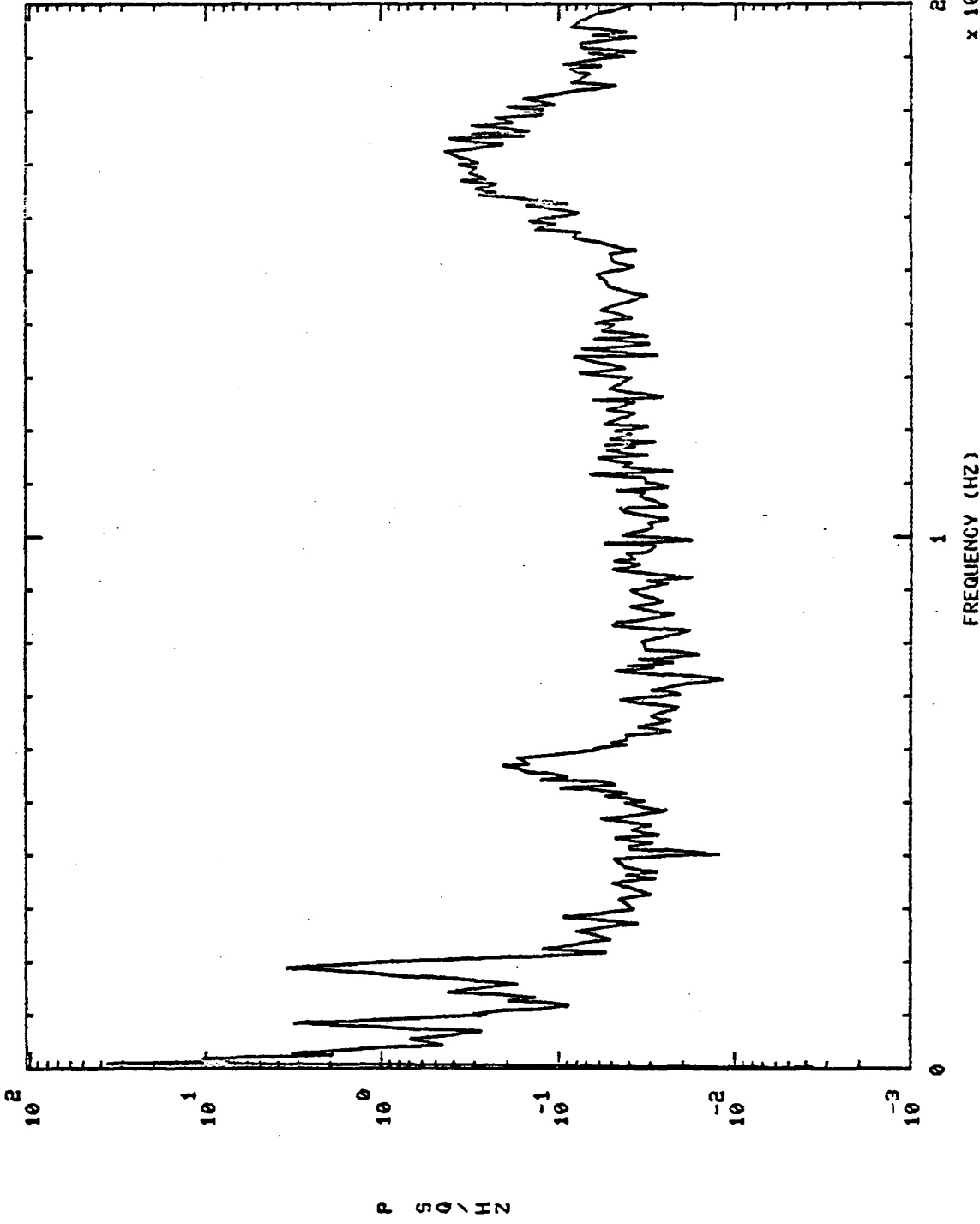
750111 PBP DS PR S+ 120.01H0,'S



St 200.01H0,'S

PBP DS PR

750111

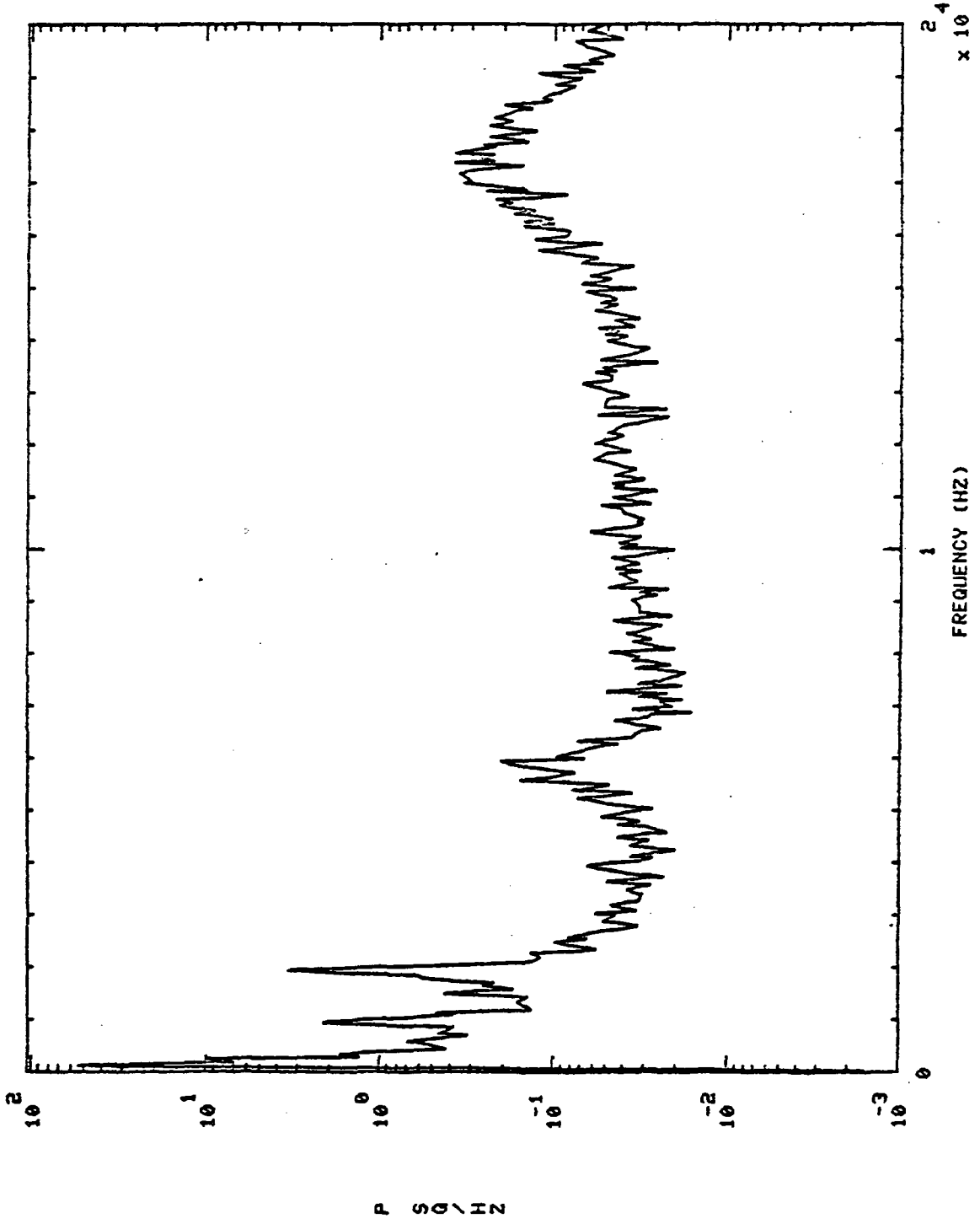




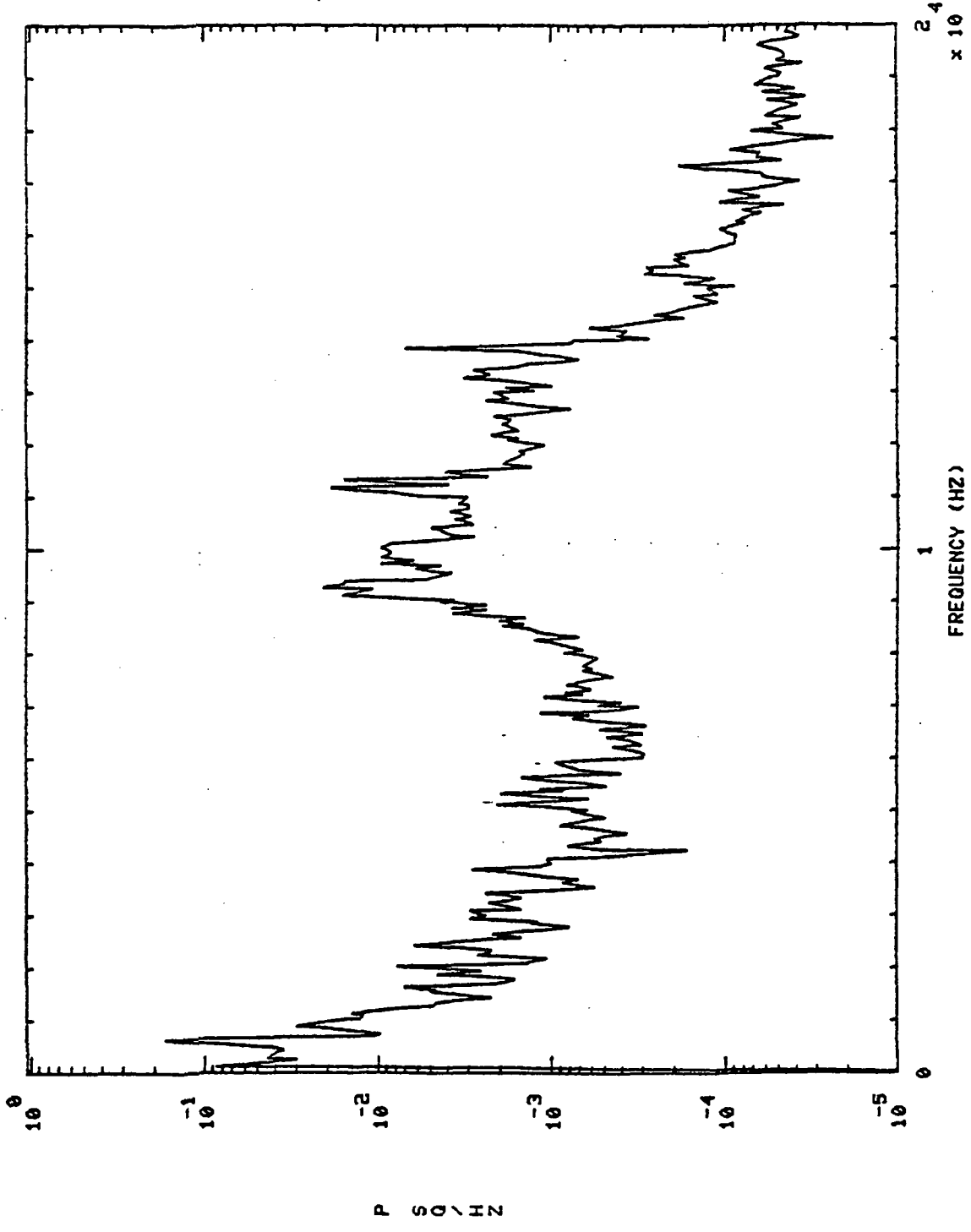
S+ 280.01H0,'S

PBP DS PR

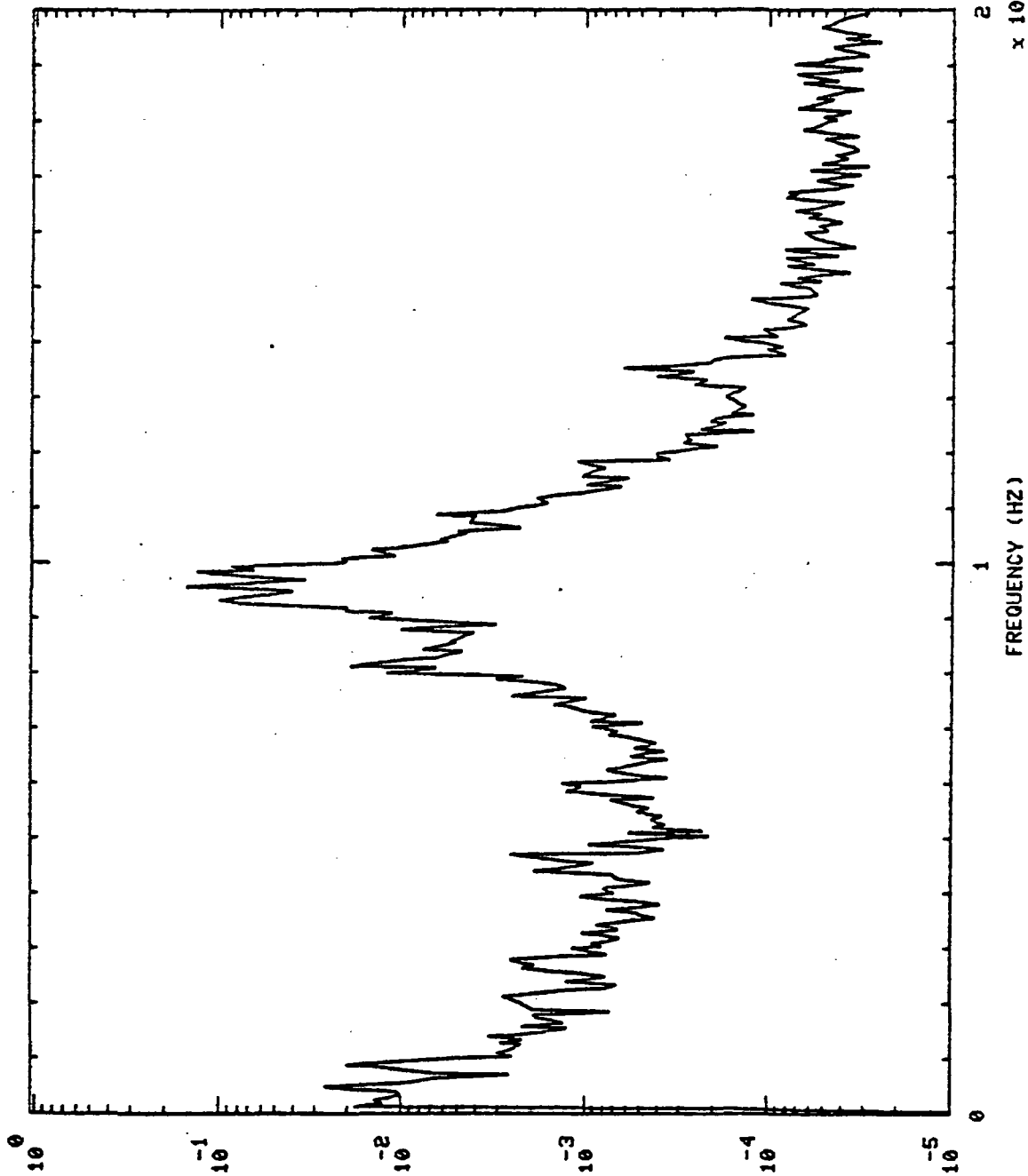
750111



750111 PBP FUEL SUP PR S+ 15.050/HZ



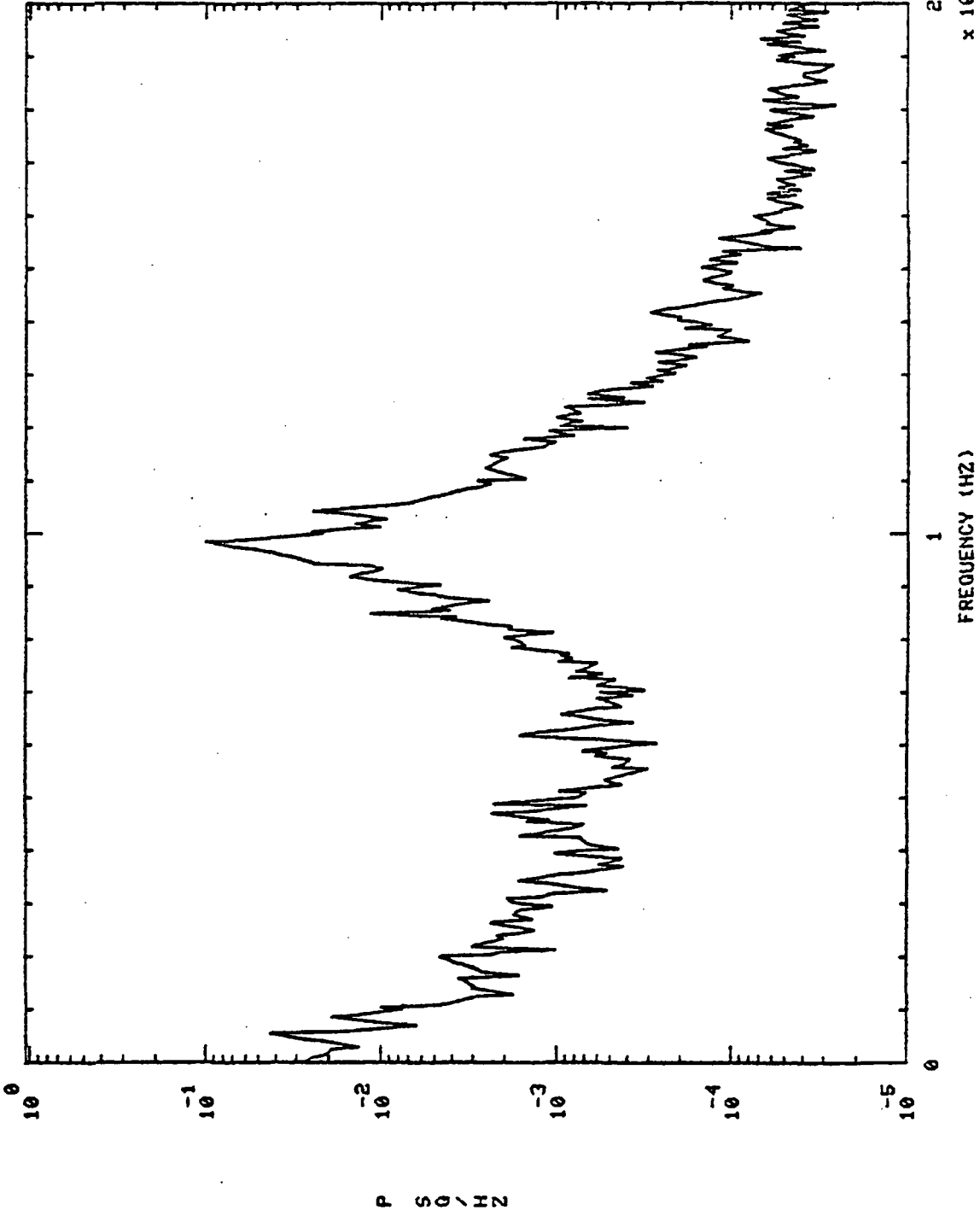
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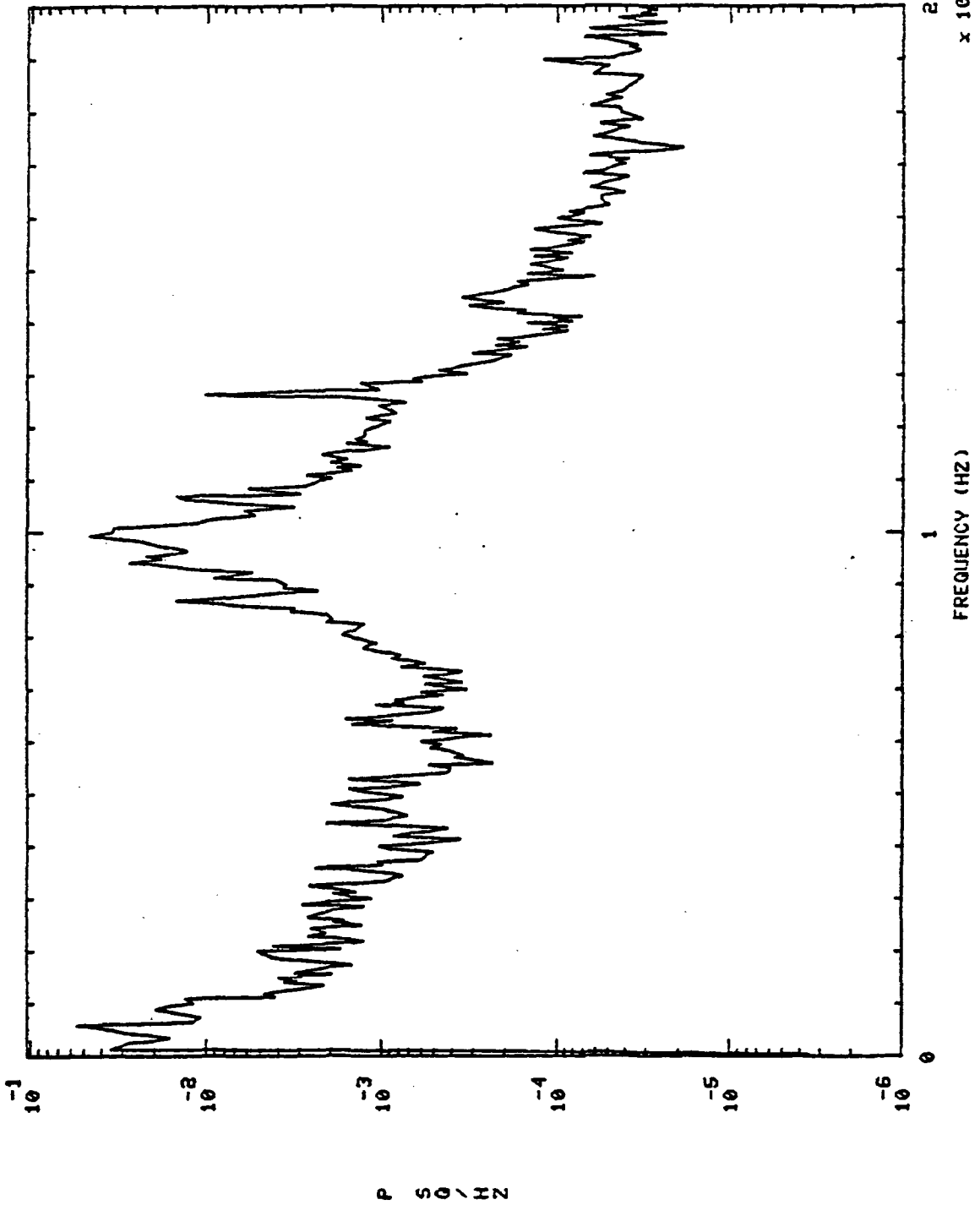
P S \ H N

750111 PBP FUEL SUP PR

S+ 50.01H0,'S



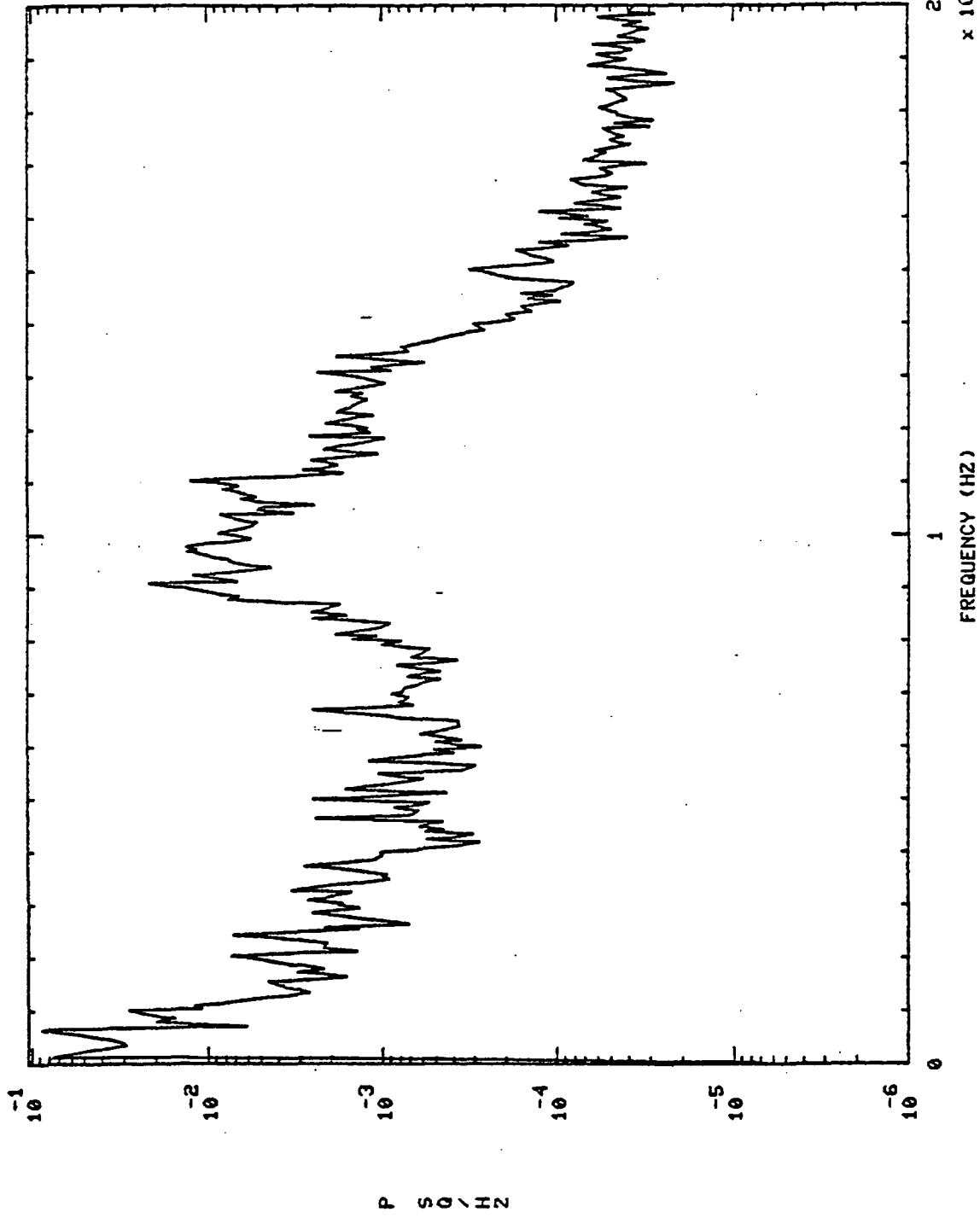
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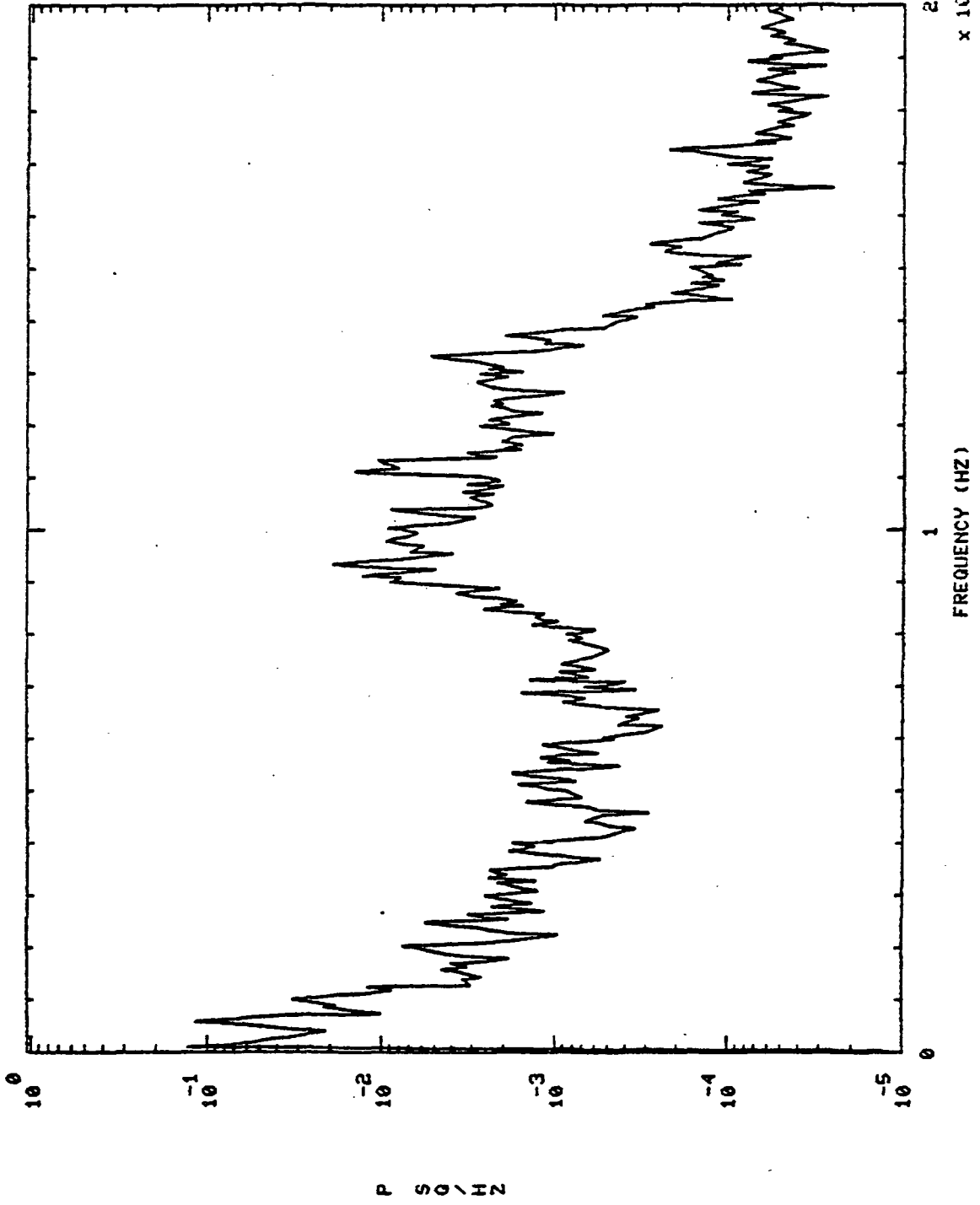
750111

PBP FUEL SUP PR

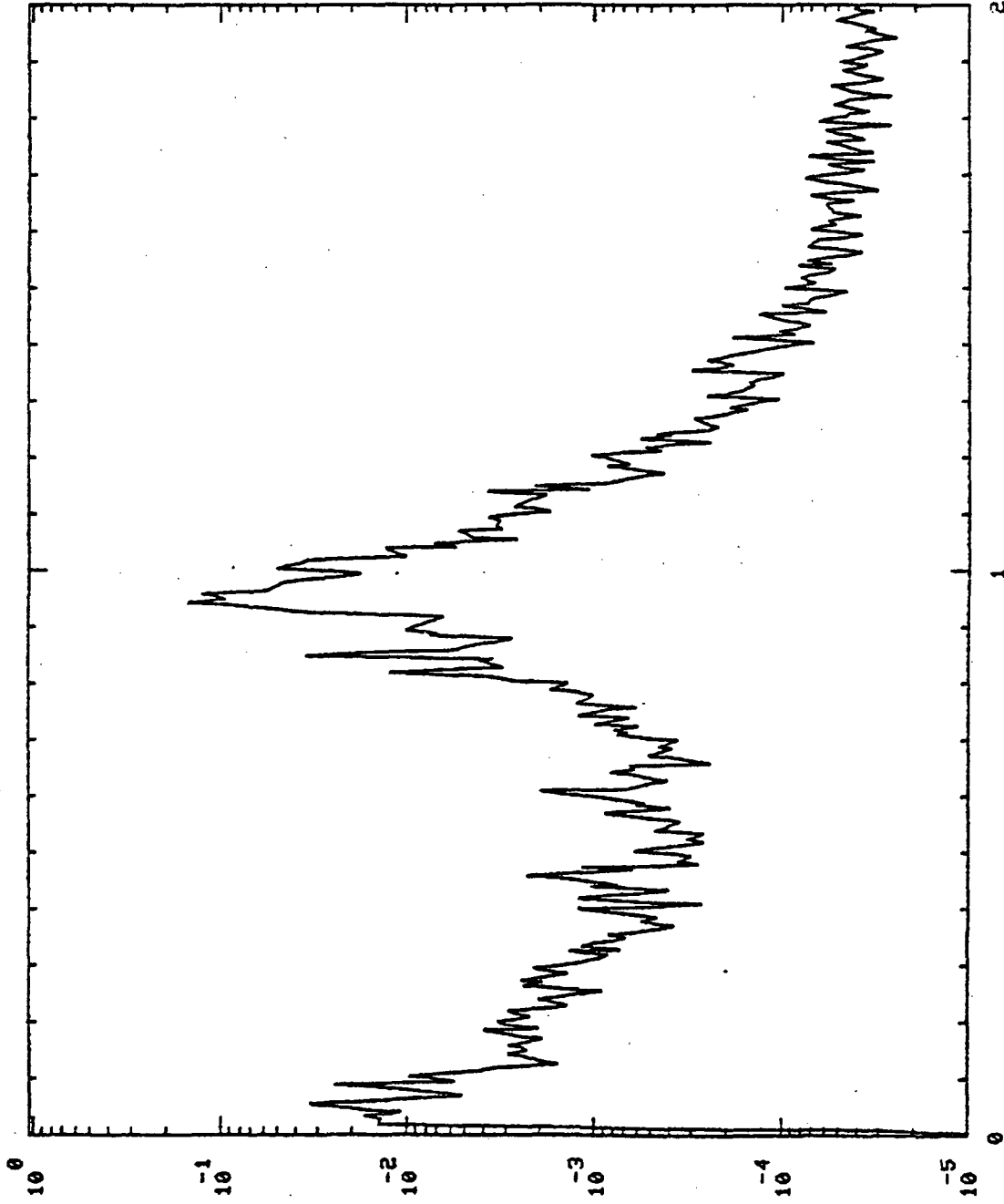
S+ 70.01H0,'S



750111 PBP FUEL SUP PR S+ 80.01H0,'S



750111 PBP FUEL SUP PR S+ 90.01H0,'S



P SQ / HZ

FREQUENCY (HZ)

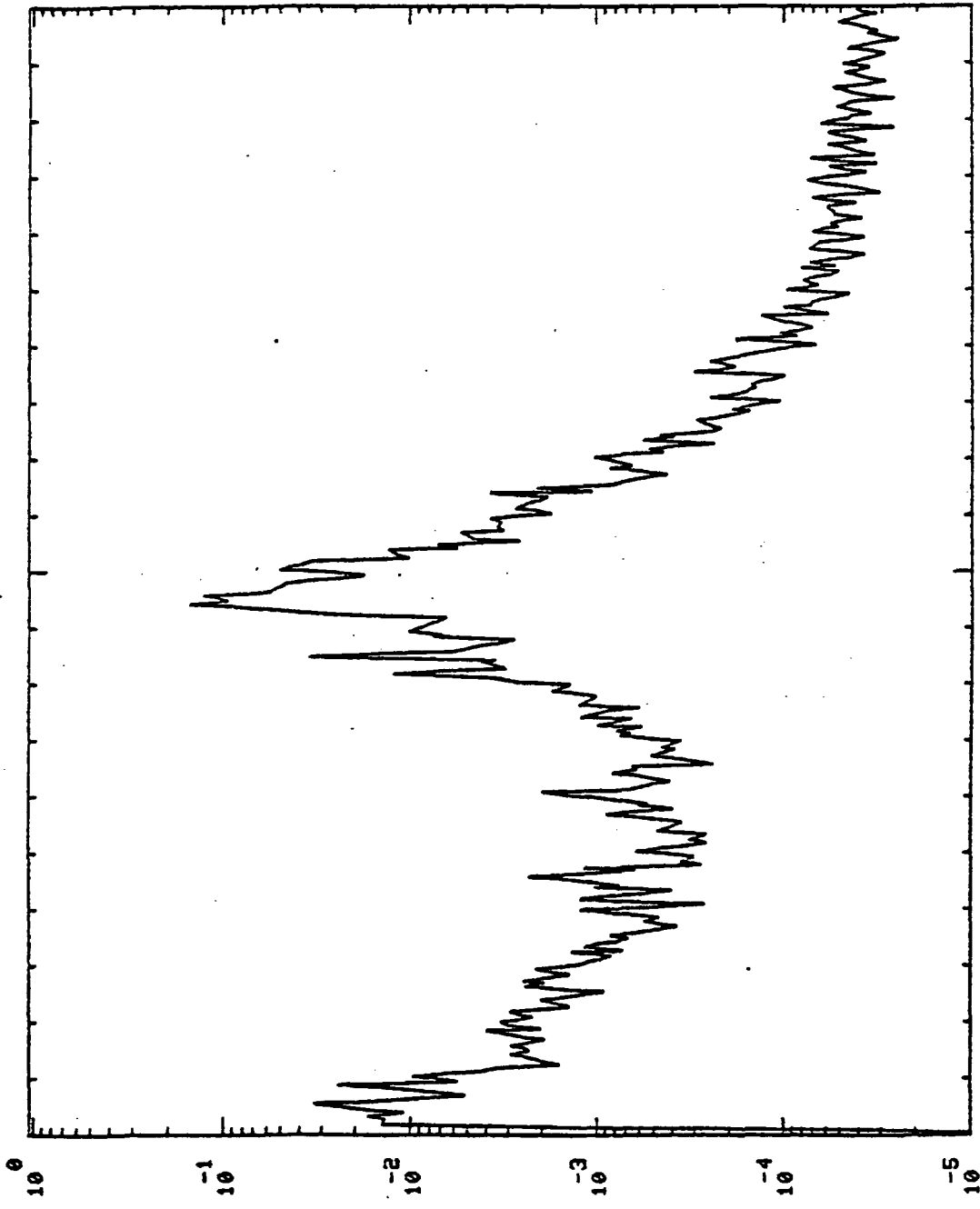
2.4  
x 10



750111 PBP FUEL SUP PR S+ 90.01H0,'S

750111 PBP FUEL SUP PR

750111

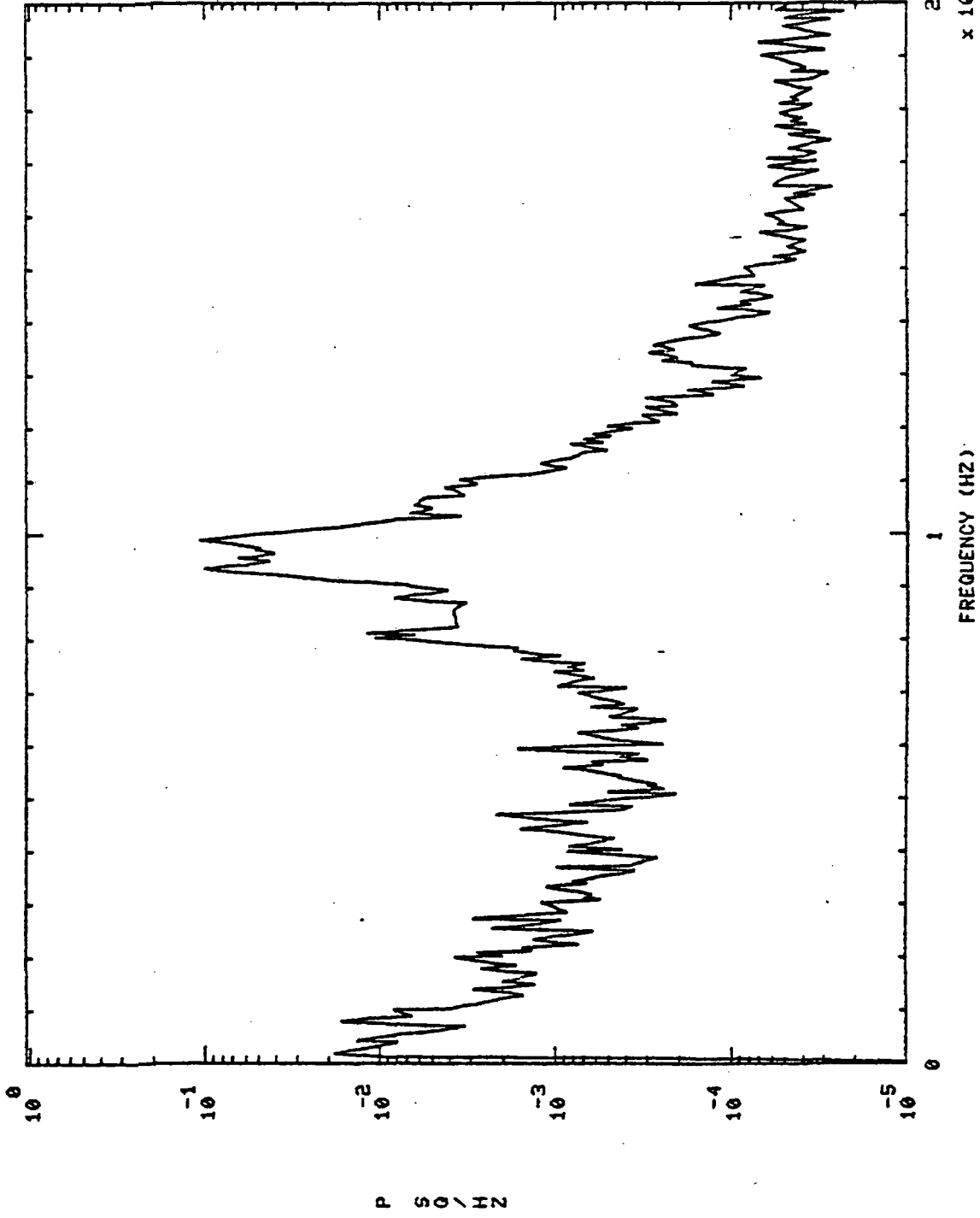


P SQ \ HZ

2.4  
x 10<sup>4</sup>

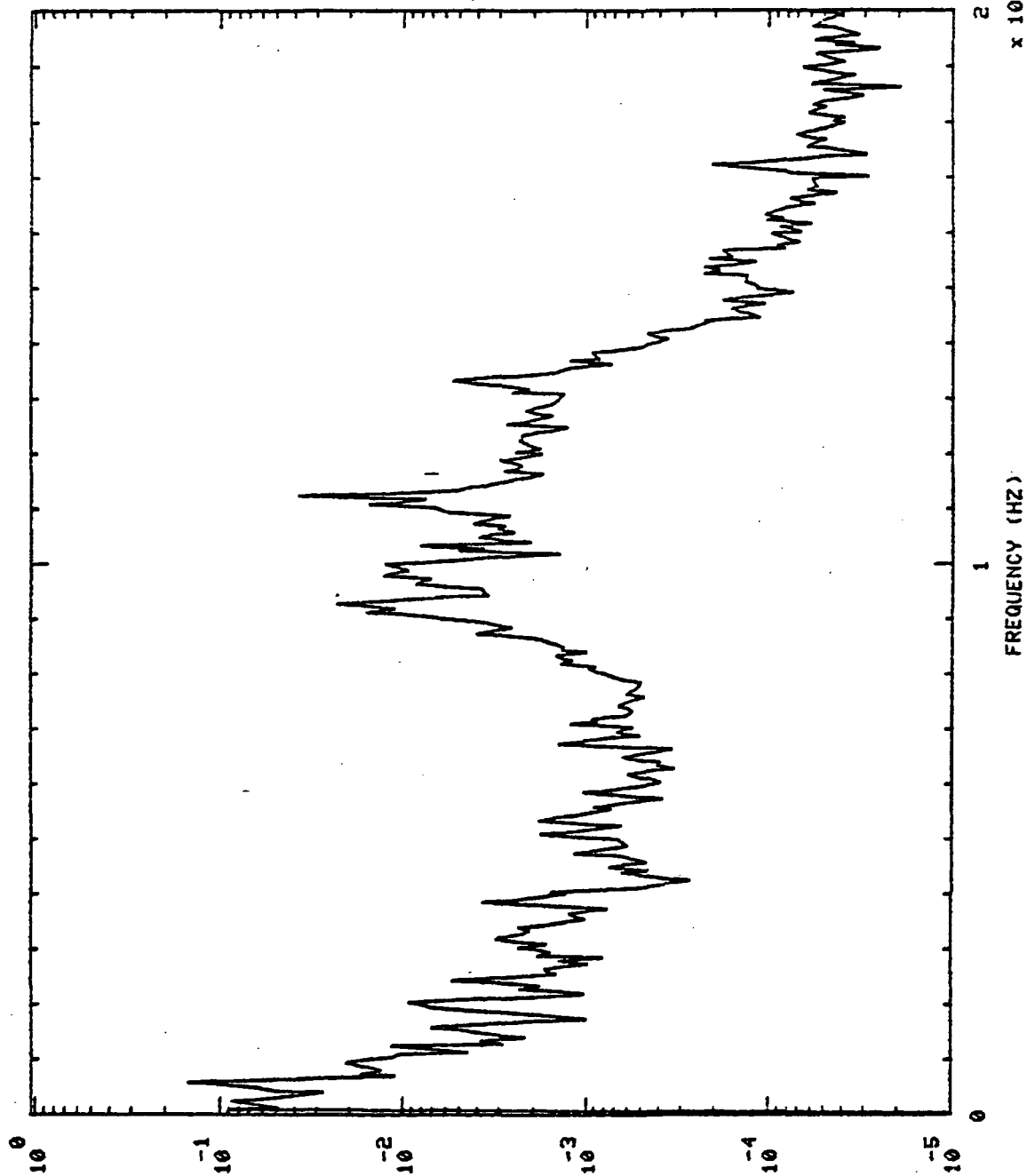
FREQUENCY (HZ)

750111 PBP FUEL SUP PR S+ 100.01H0,'S



750111 PBP FUEL SUP PR S+ 120.01H0,'S

750111 PBP FUEL SUP PR



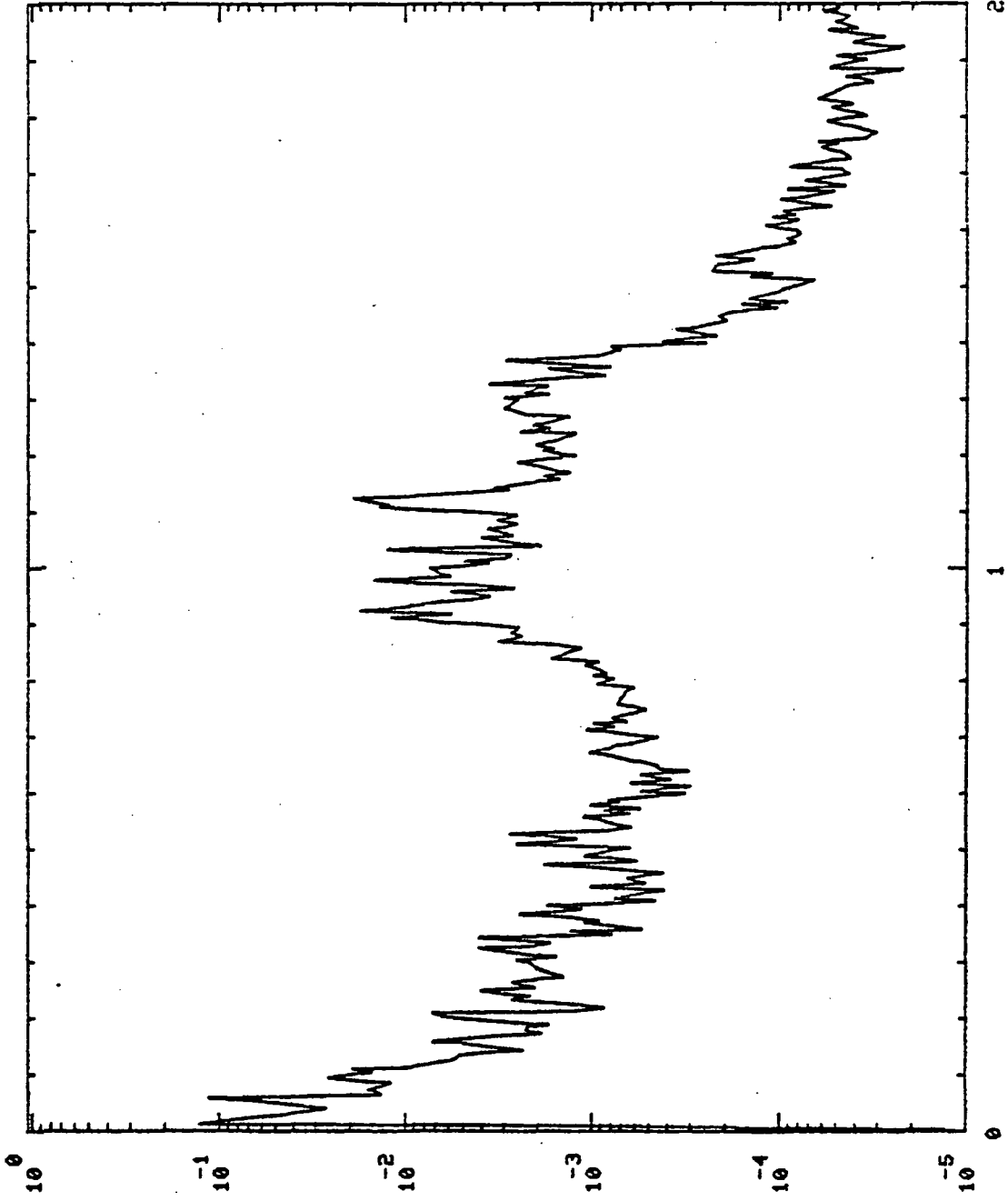
P 50 / HZ

2.4  
x 10

1  
FREQUENCY (HZ)

750111 PBP FUEL SUP PR

S+ 200.01H0,'S

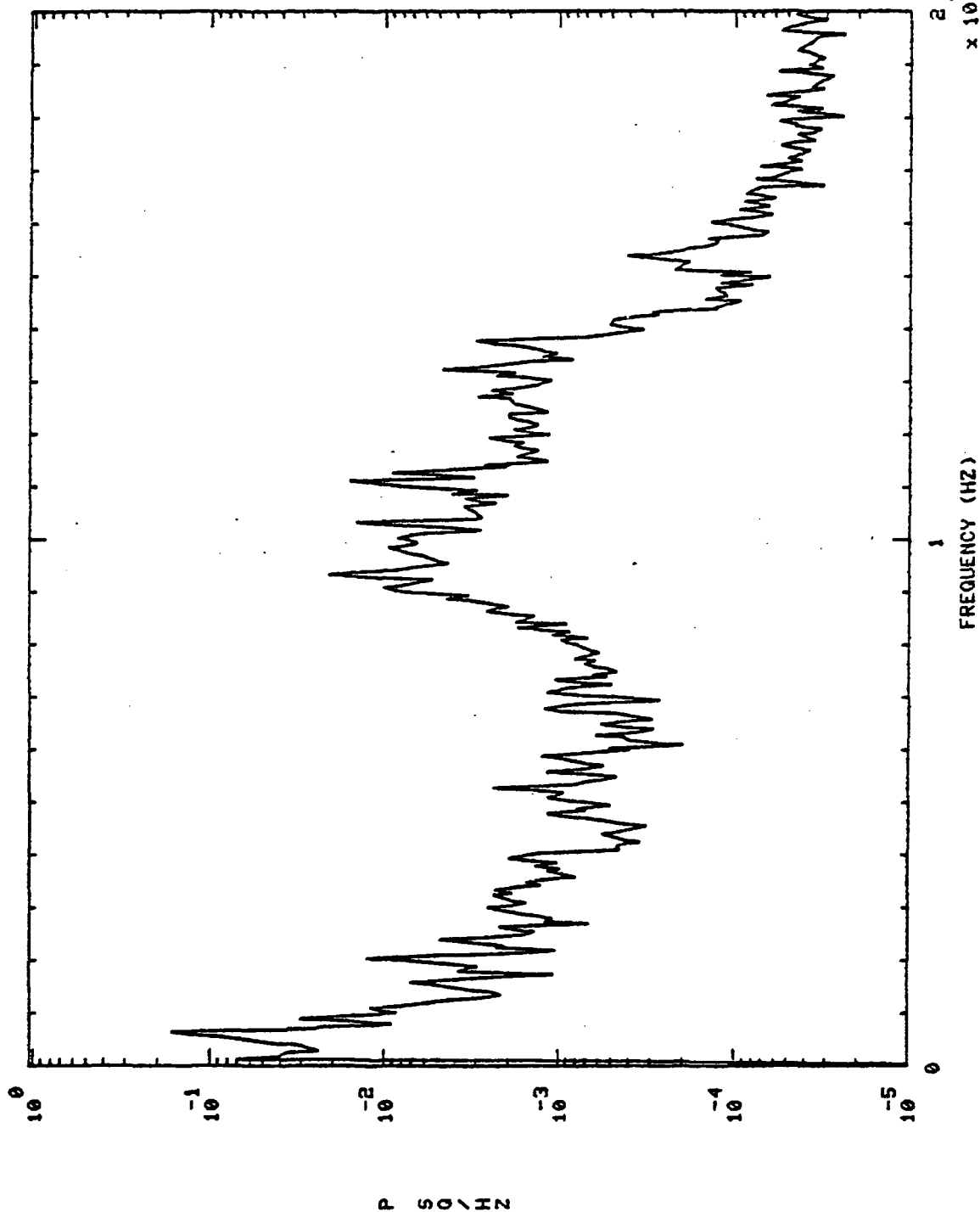


P SQ \ HZ

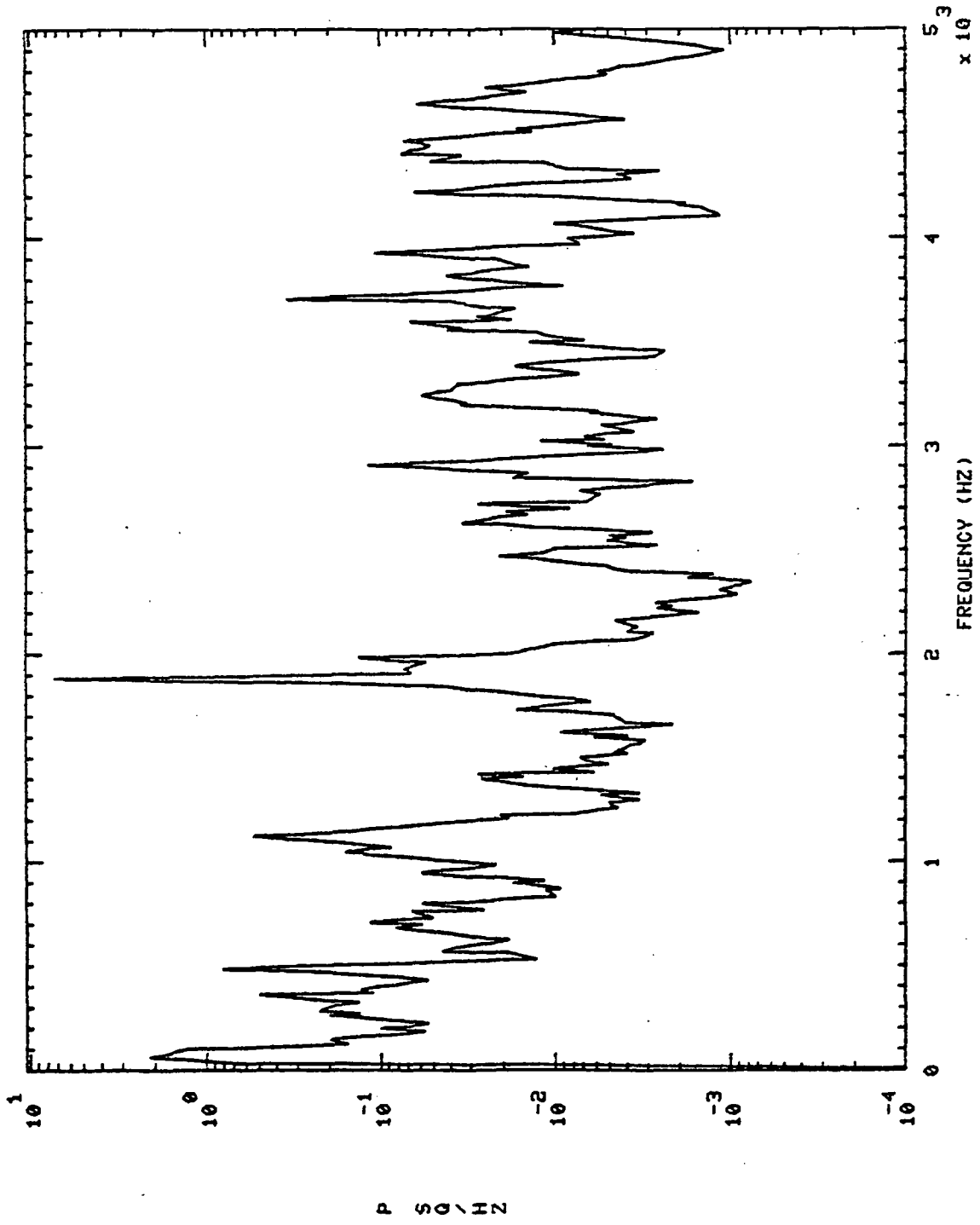
2.4  
x 10<sup>4</sup>

FREQUENCY (HZ)

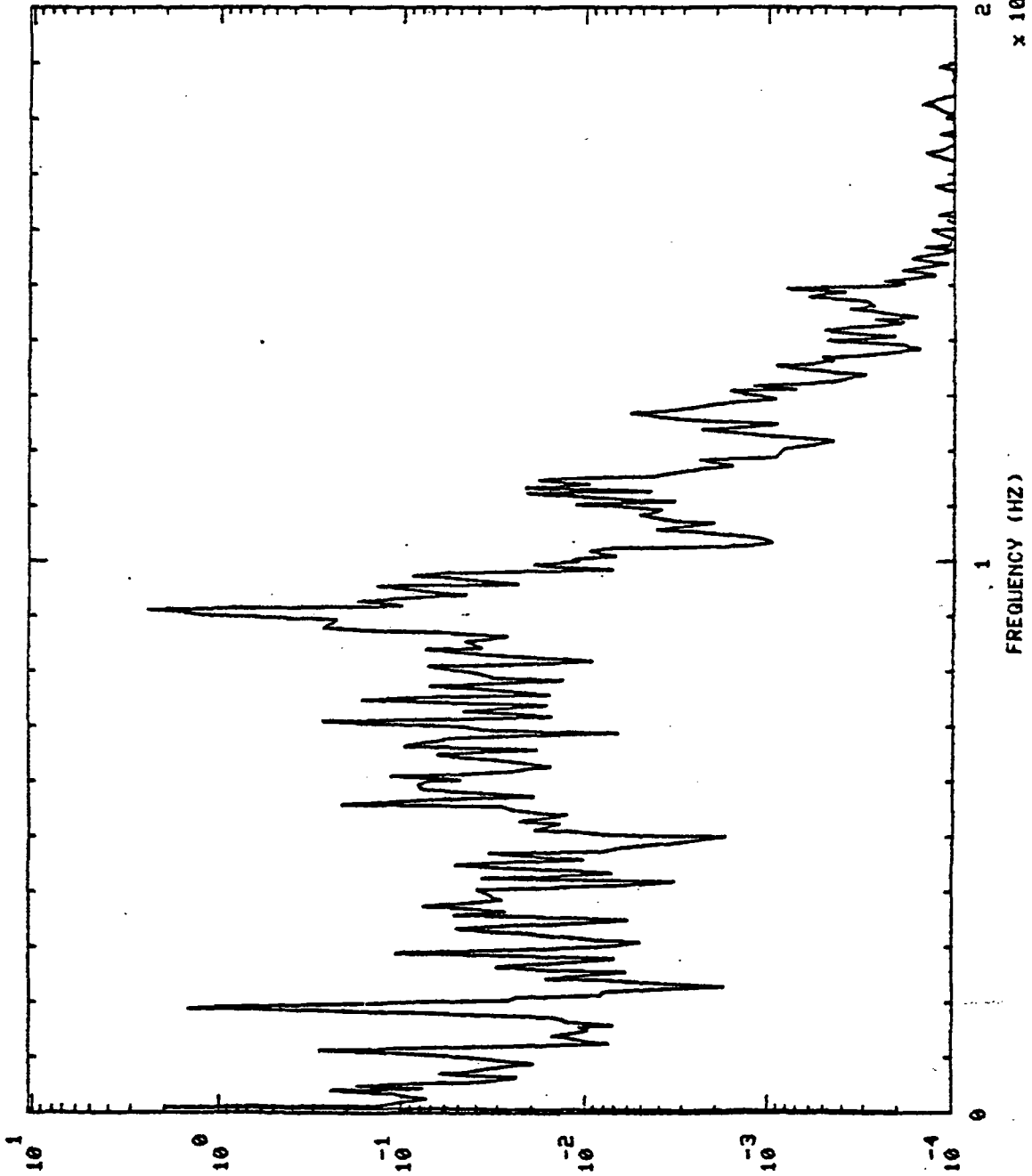
750111 PBP FUEL SUP PR S+ 280.01H0,'S



750111 LPOT TURB DR PR S+ 15.01H0,'S



750111 LPOT TURB DR PR S+ 15.0110,'S



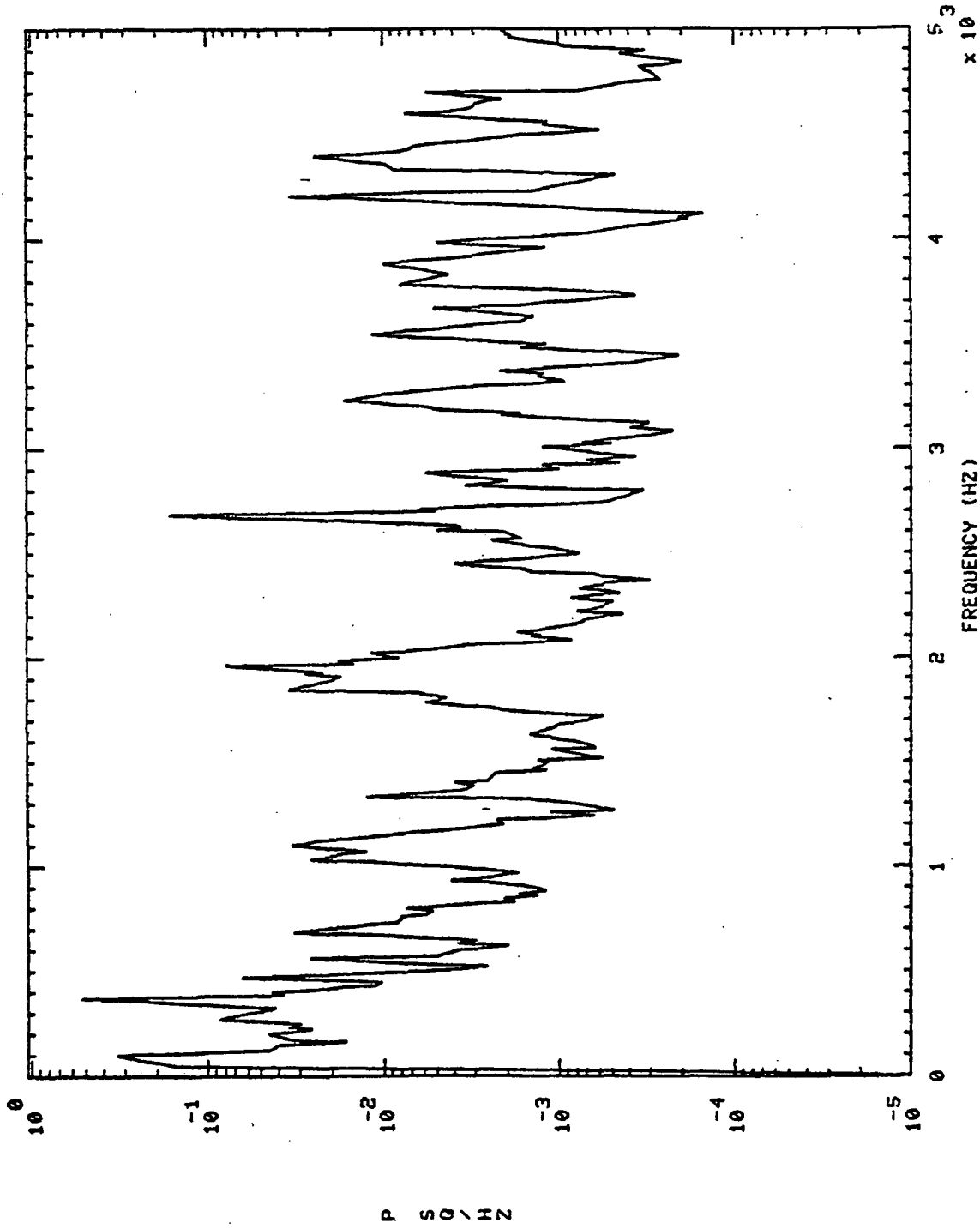
P S D / H Z

10<sup>2</sup> 4  
x 10

1  
FREQUENCY (HZ)

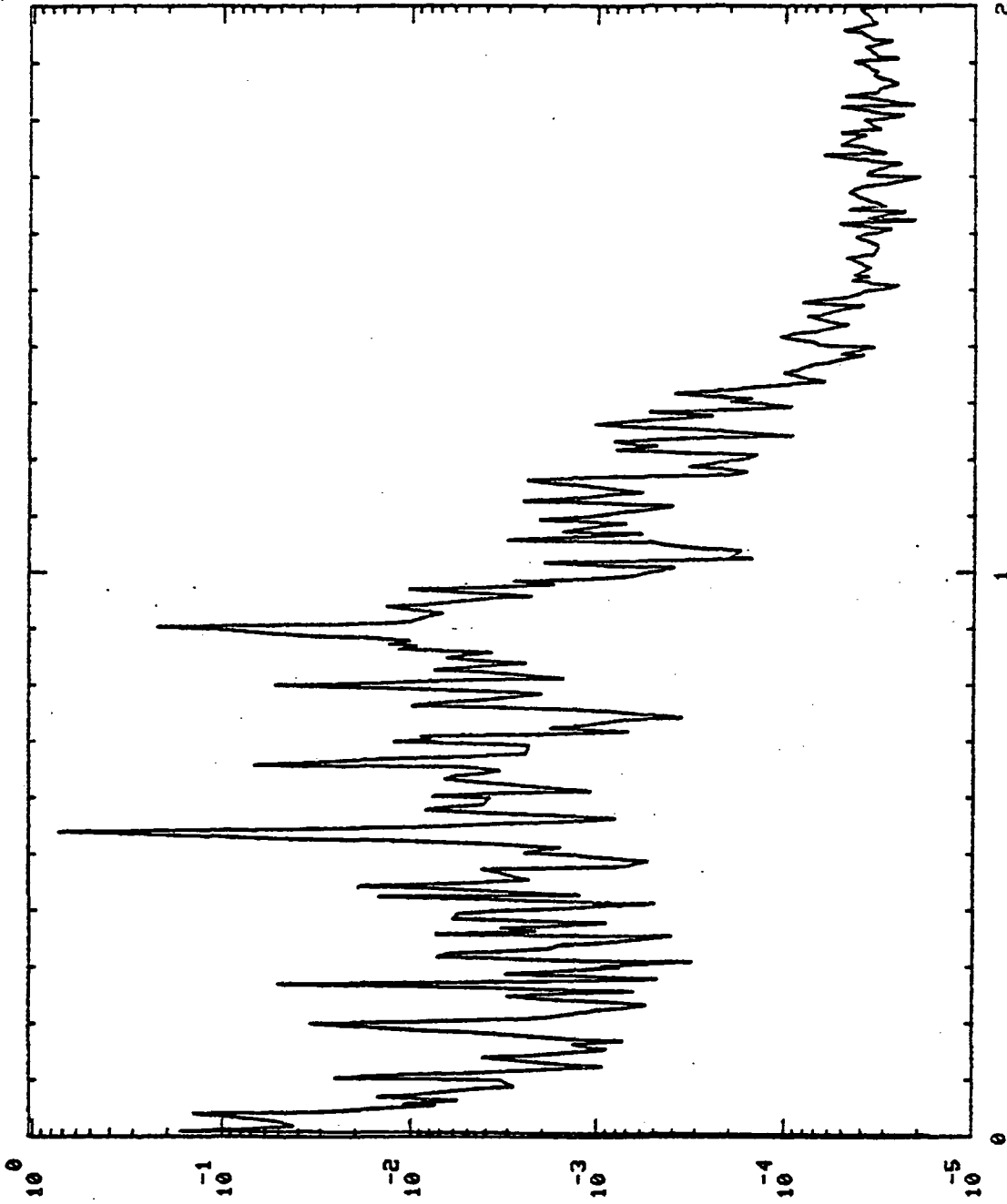
750111 LPOT TURB DR PR

S+ 40.01HG, 'S





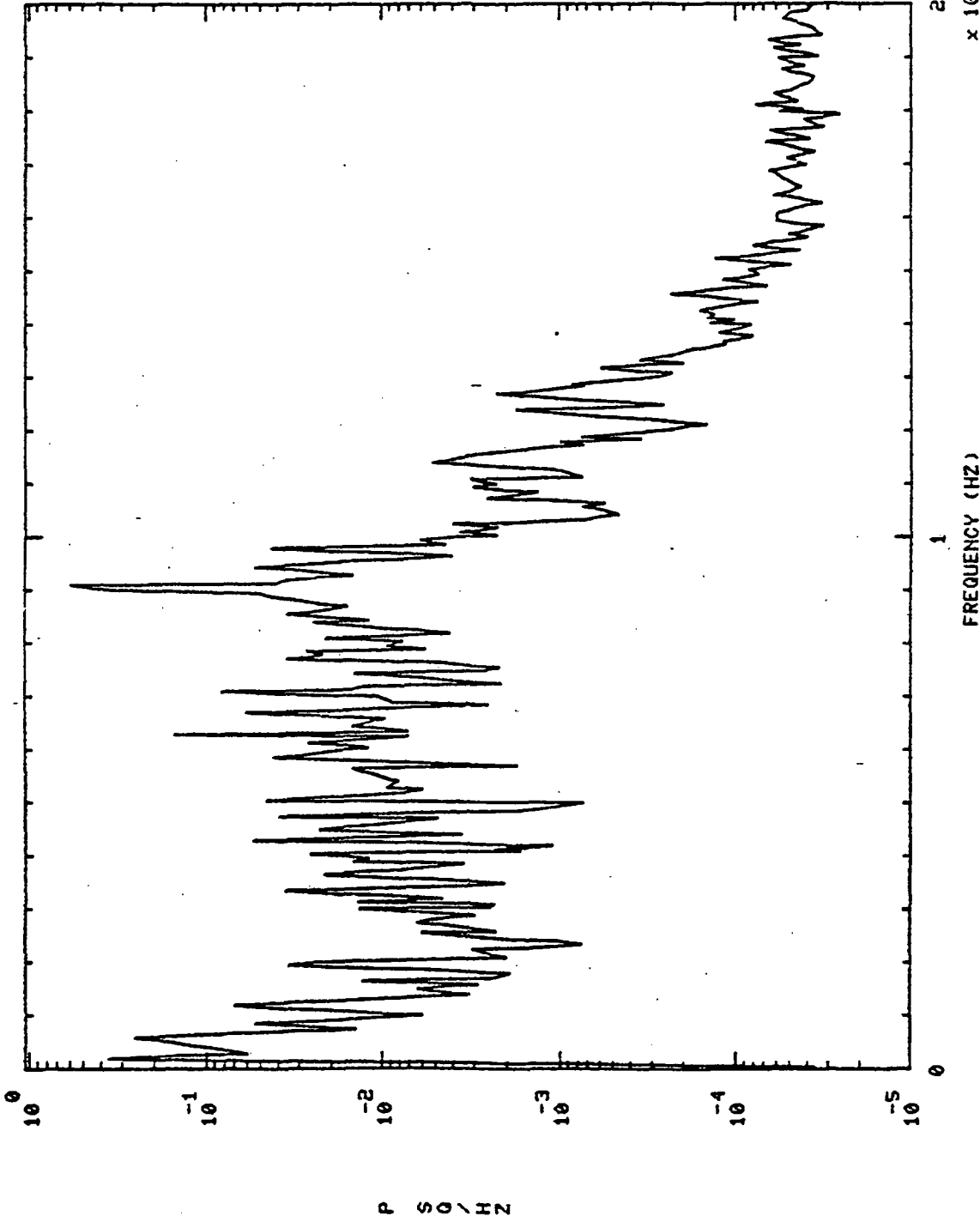
750111 LPOT TURB DR PR S+ 40.01H0,'S



2.4  
x 10<sup>4</sup>

FREQUENCY (HZ)

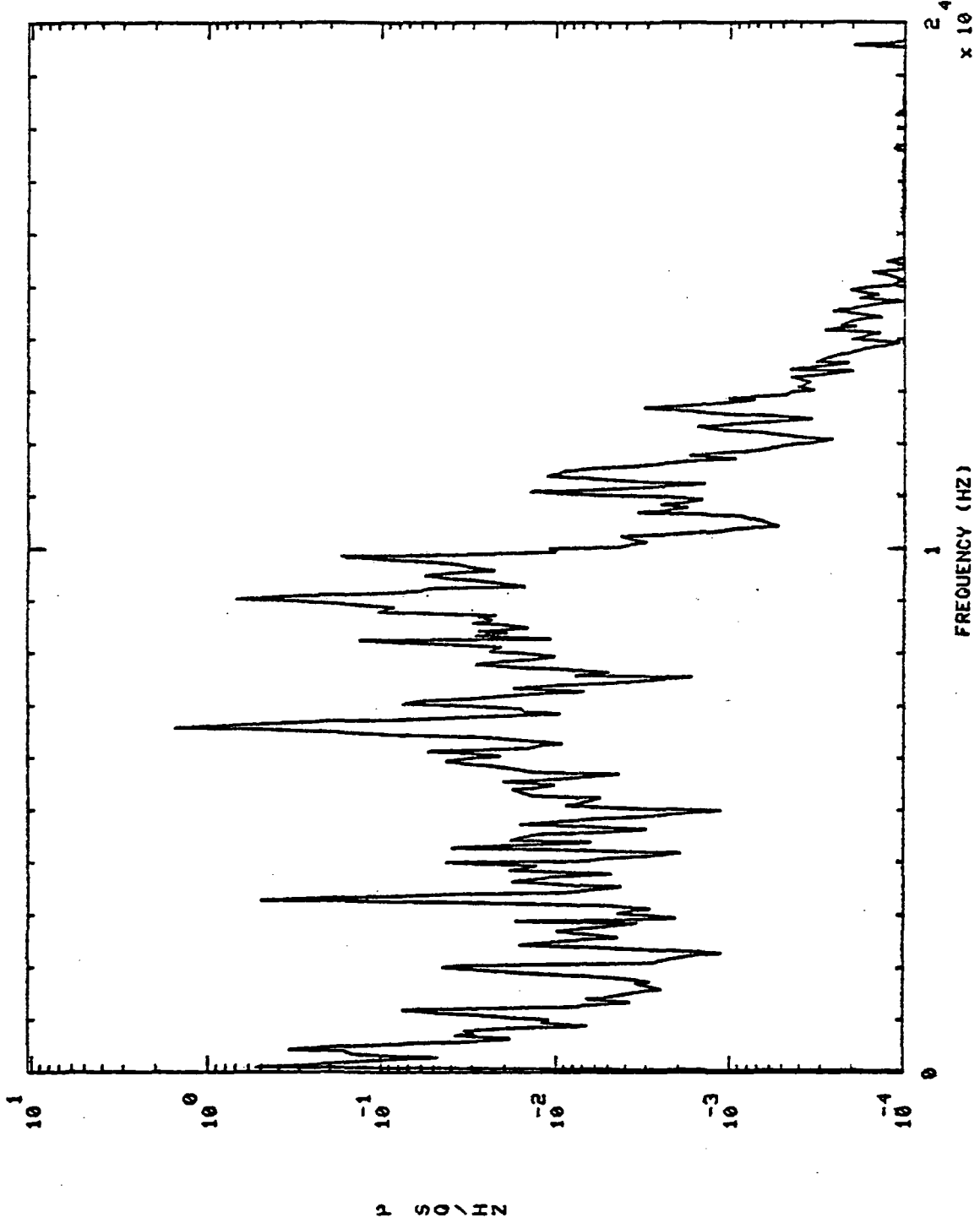
750111 LPOT TURB DR PR S+ 50.01H0,'S



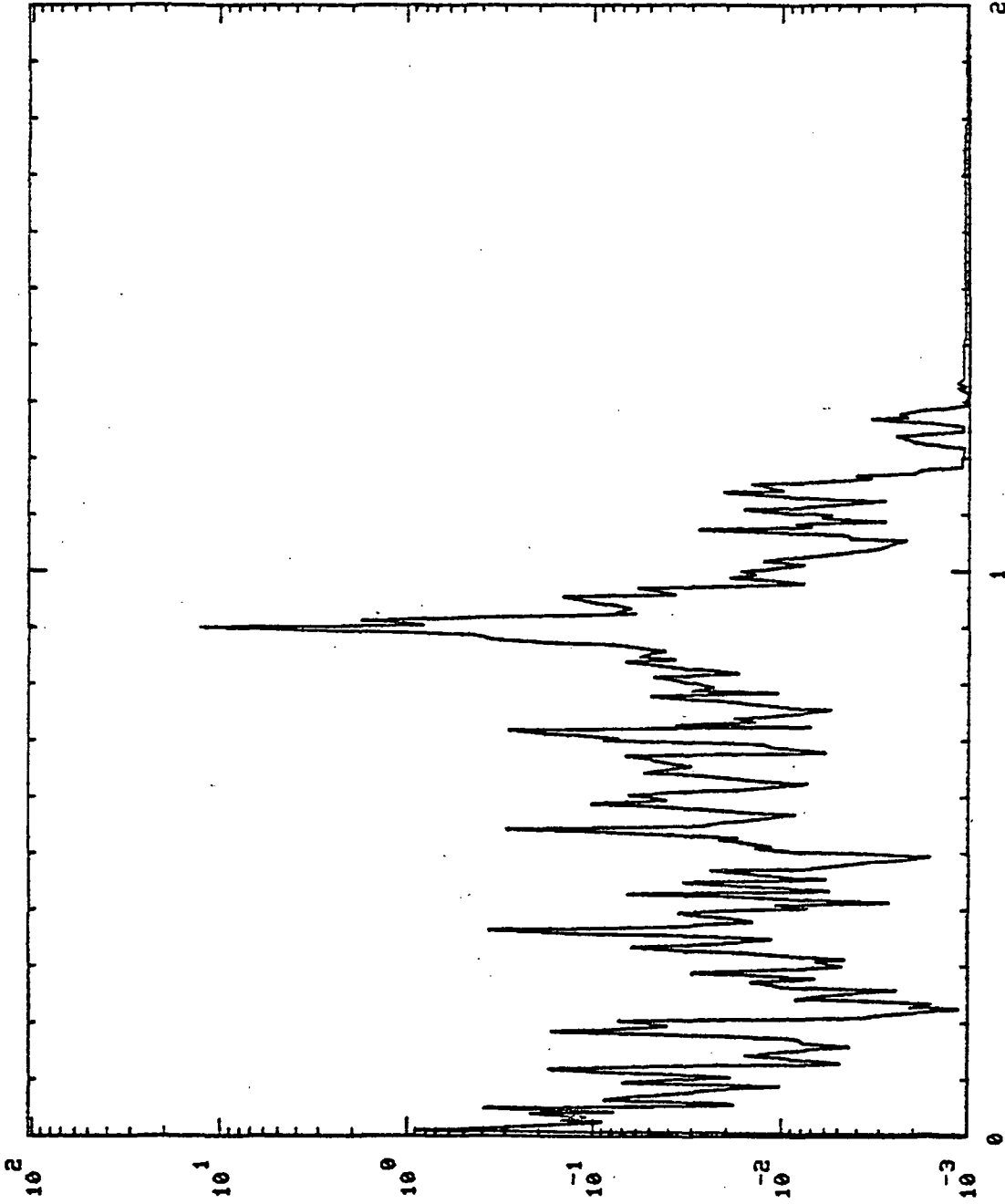
750111 LPOT TURB DR PR S+ 60.01H0,'S

750111 LPOT TURB DR PR

750111



750111 LPOT TURB DR PR S+ 70.0110, '5



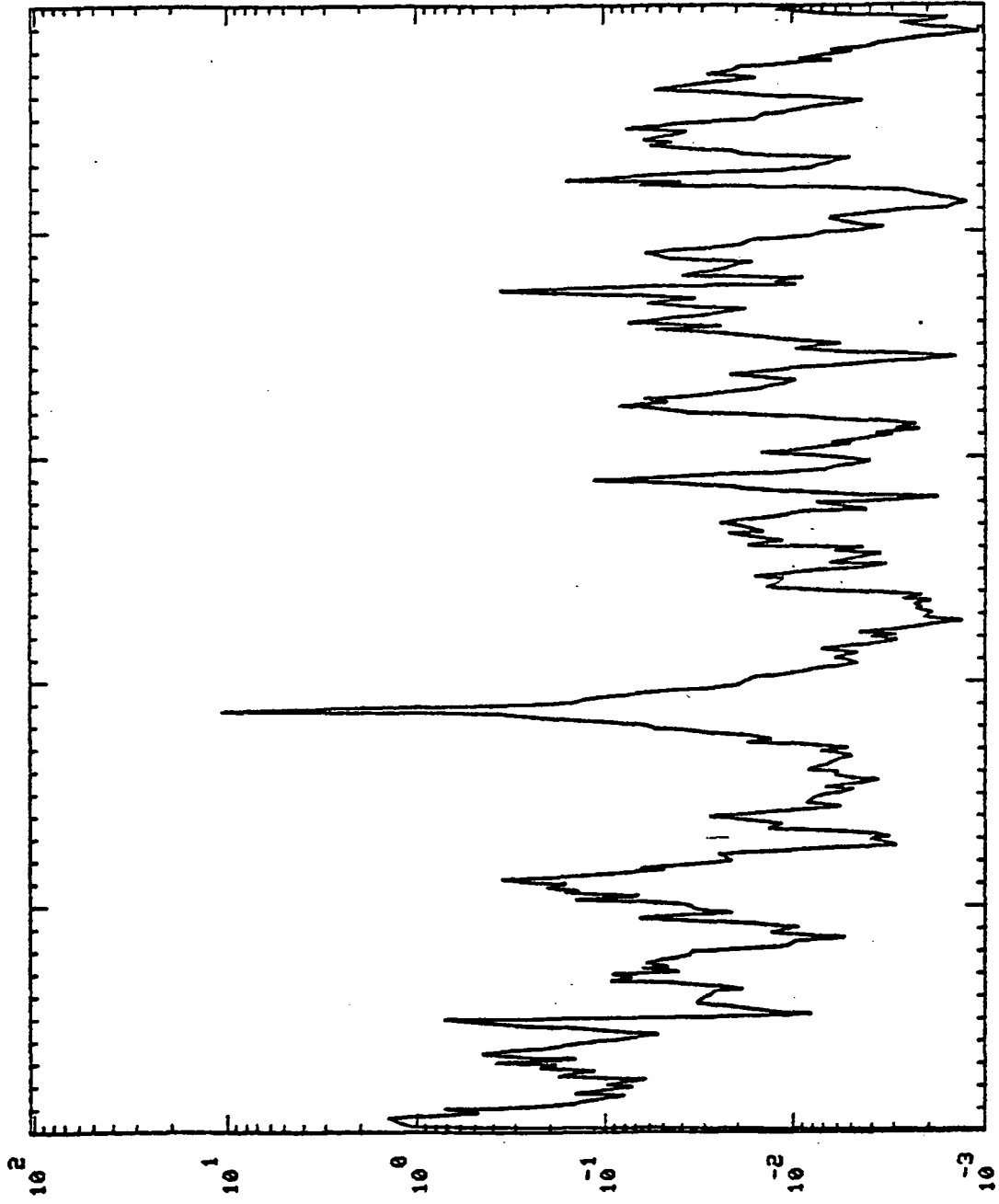
P S D \ HZ

2.4  
 $\times 10^4$

FREQUENCY (HZ)

750111 LPOT TURB DR PR S+ 80.01H0,'5

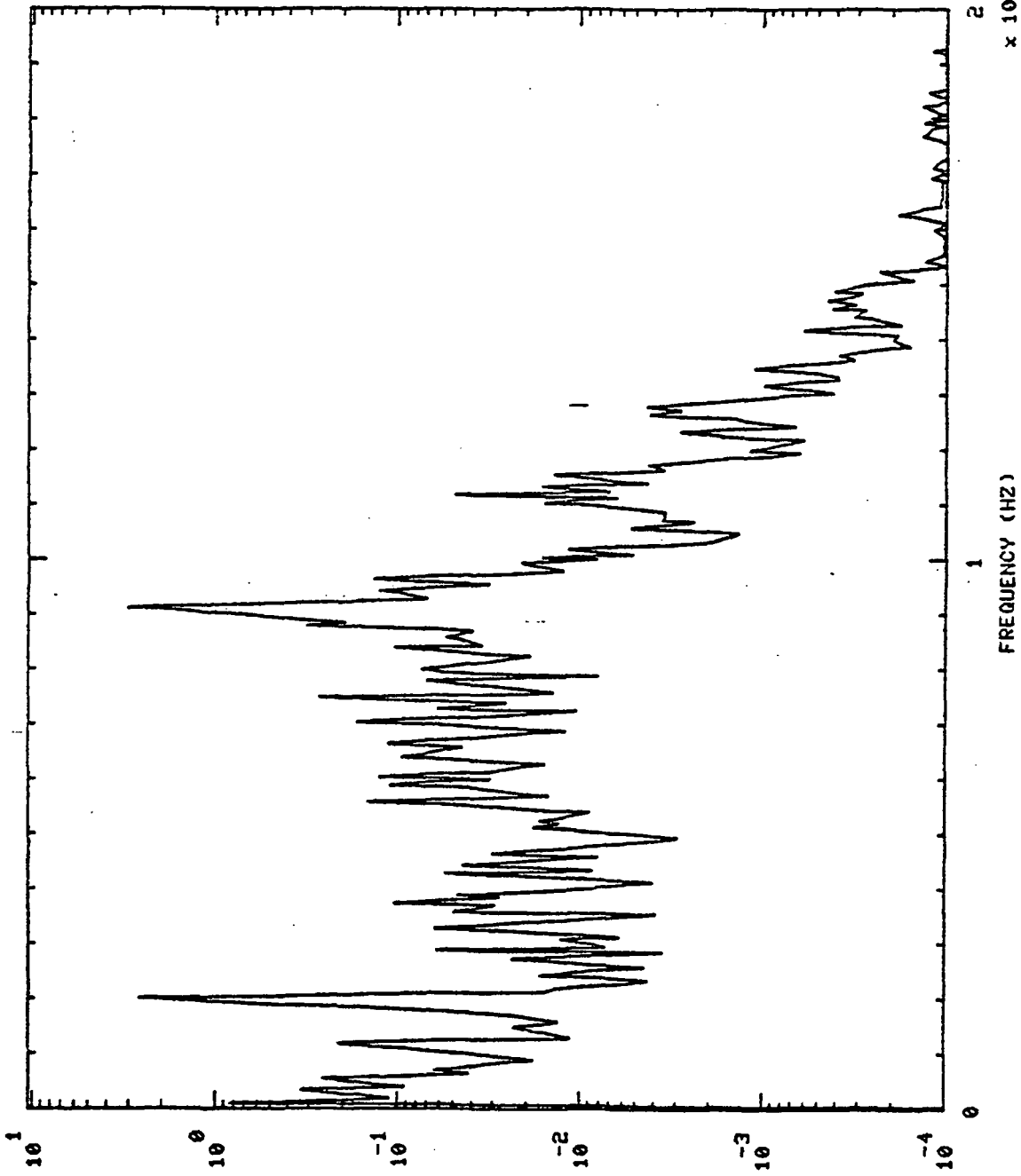
10<sup>2</sup>  
10<sup>1</sup>  
10<sup>0</sup>  
10<sup>-1</sup>  
10<sup>-2</sup>  
10<sup>-3</sup>



P S O \ H Z

S+ 80.01H0,'S

750111 LPOT TURB DR PR

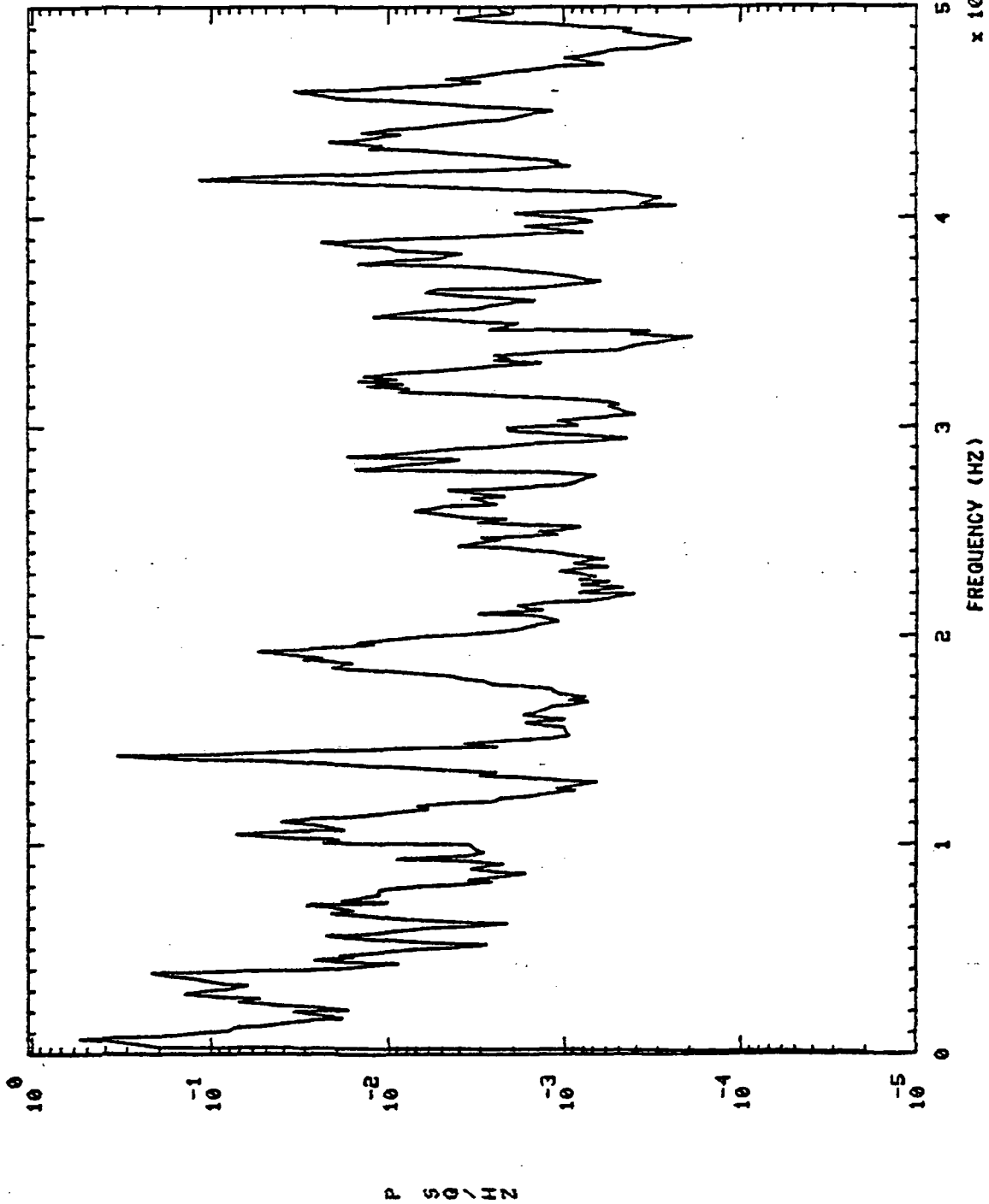


P S / HZ

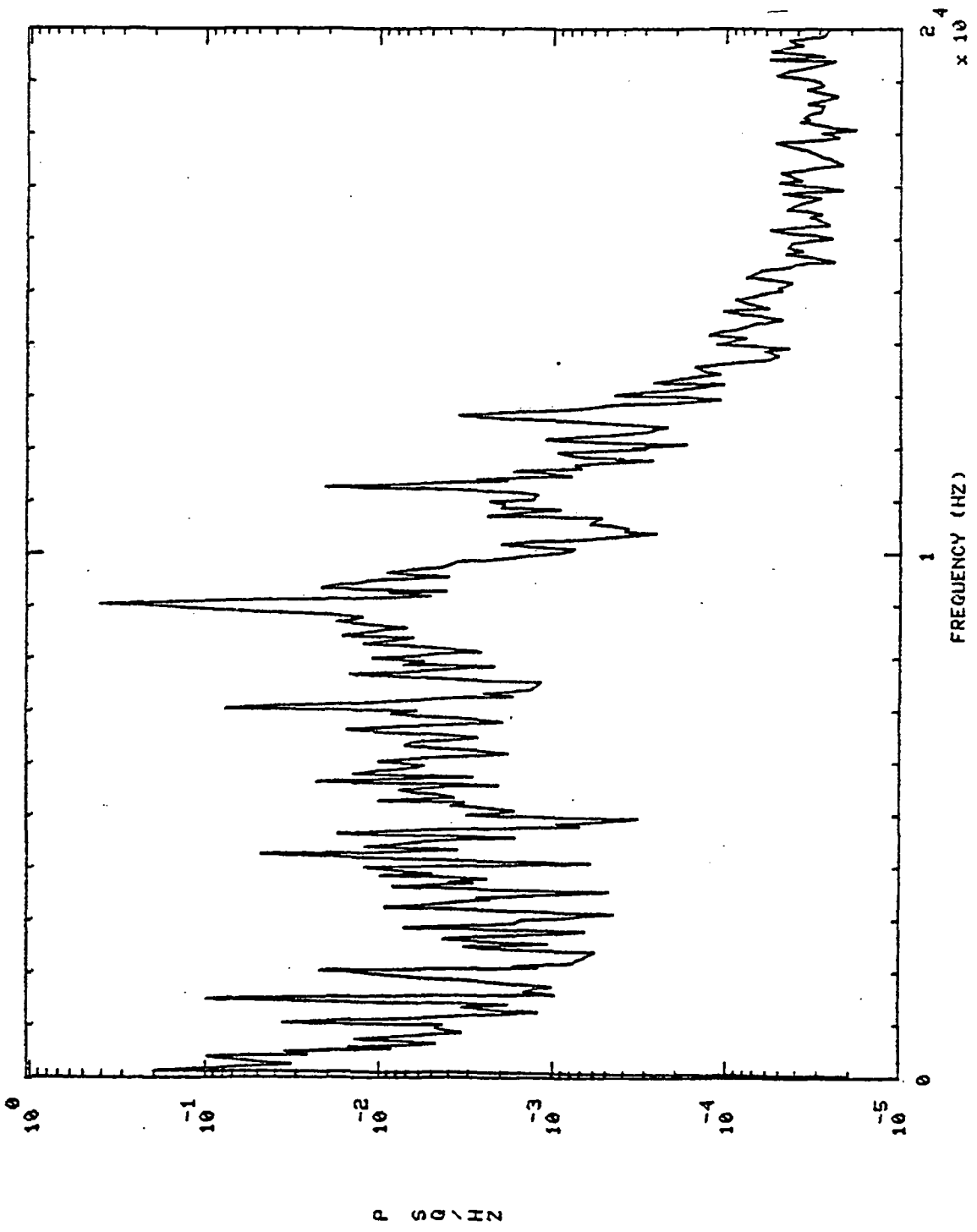
FREQUENCY (HZ)

$2.4 \times 10^4$

750111 LPOT TURB DR PR S+ 90.01H0,'S

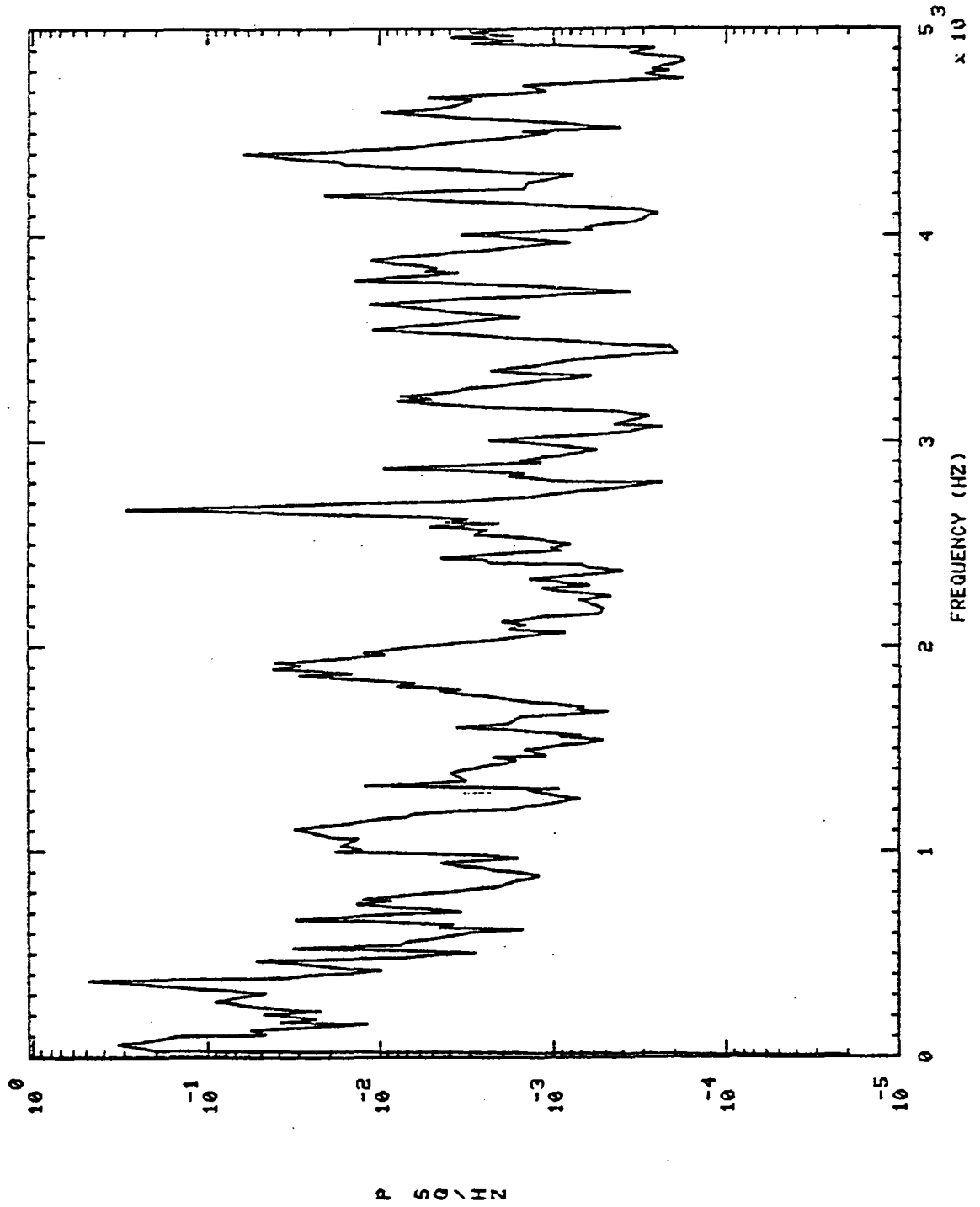


750111 LPOT TURB DR PR S+ 90.01H0,'S

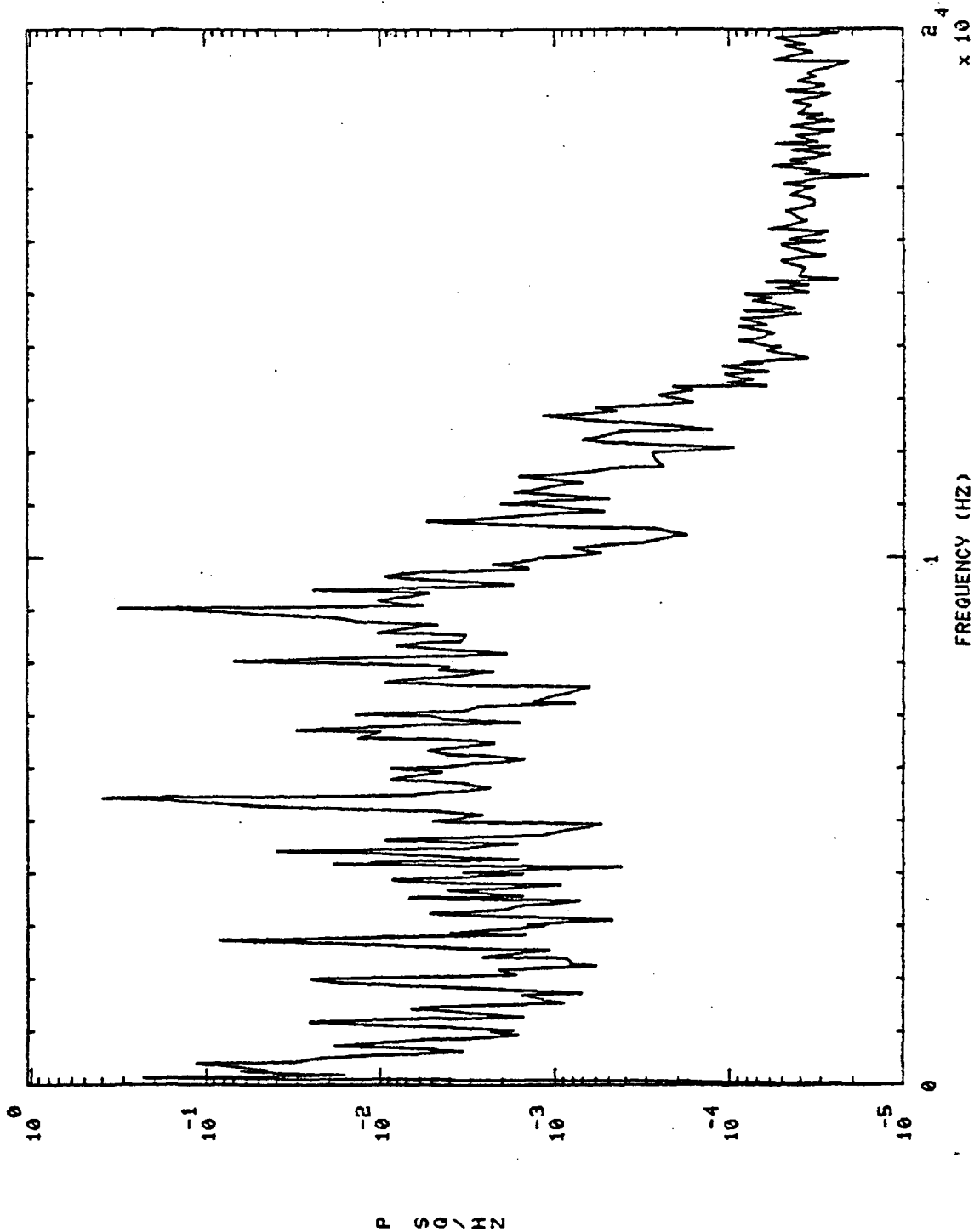




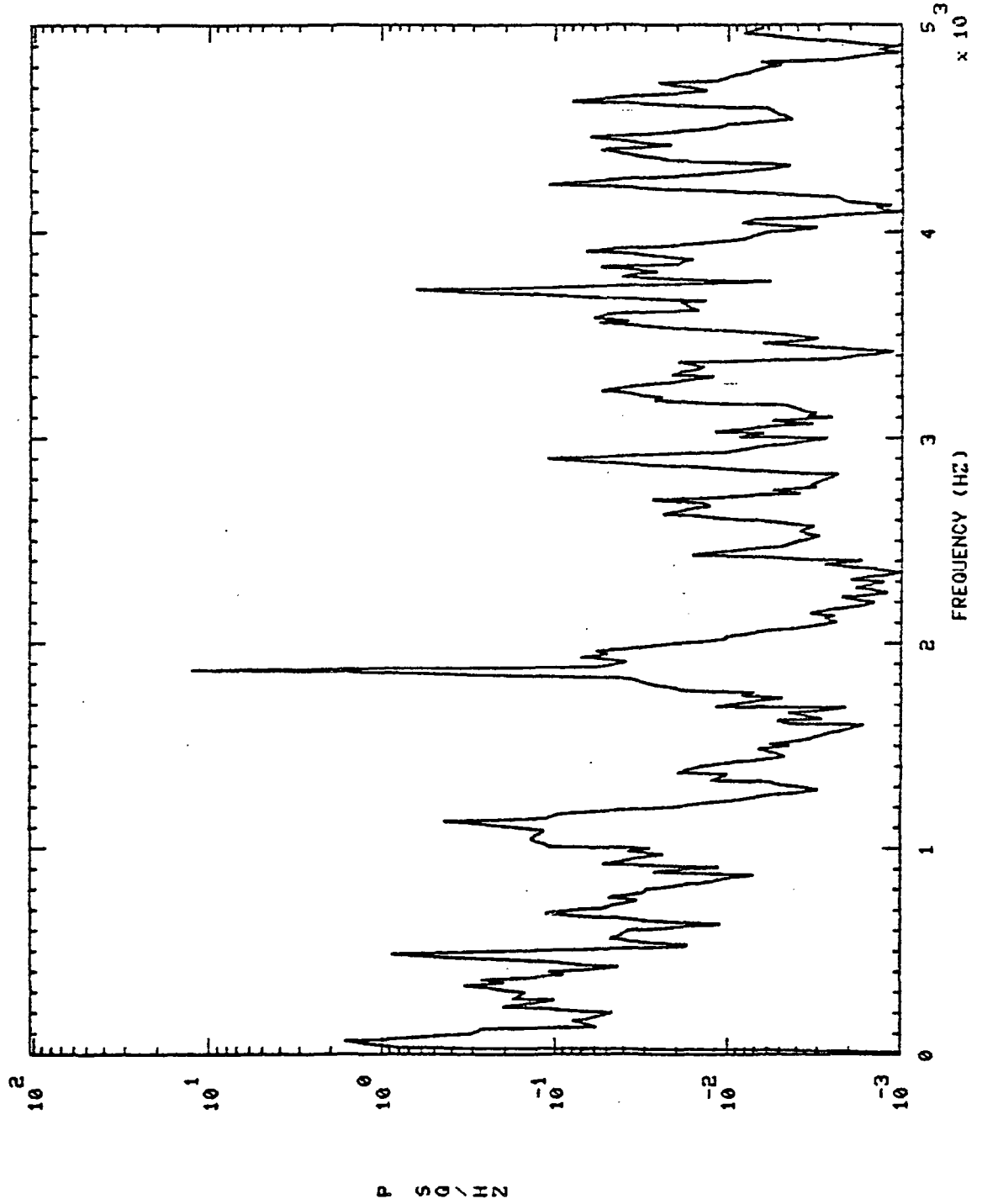
750111 LPOT TURB DR PR S+ 100.01H0,'S



750111 LPOT TURB DR PR S+ 100.01H0,'S



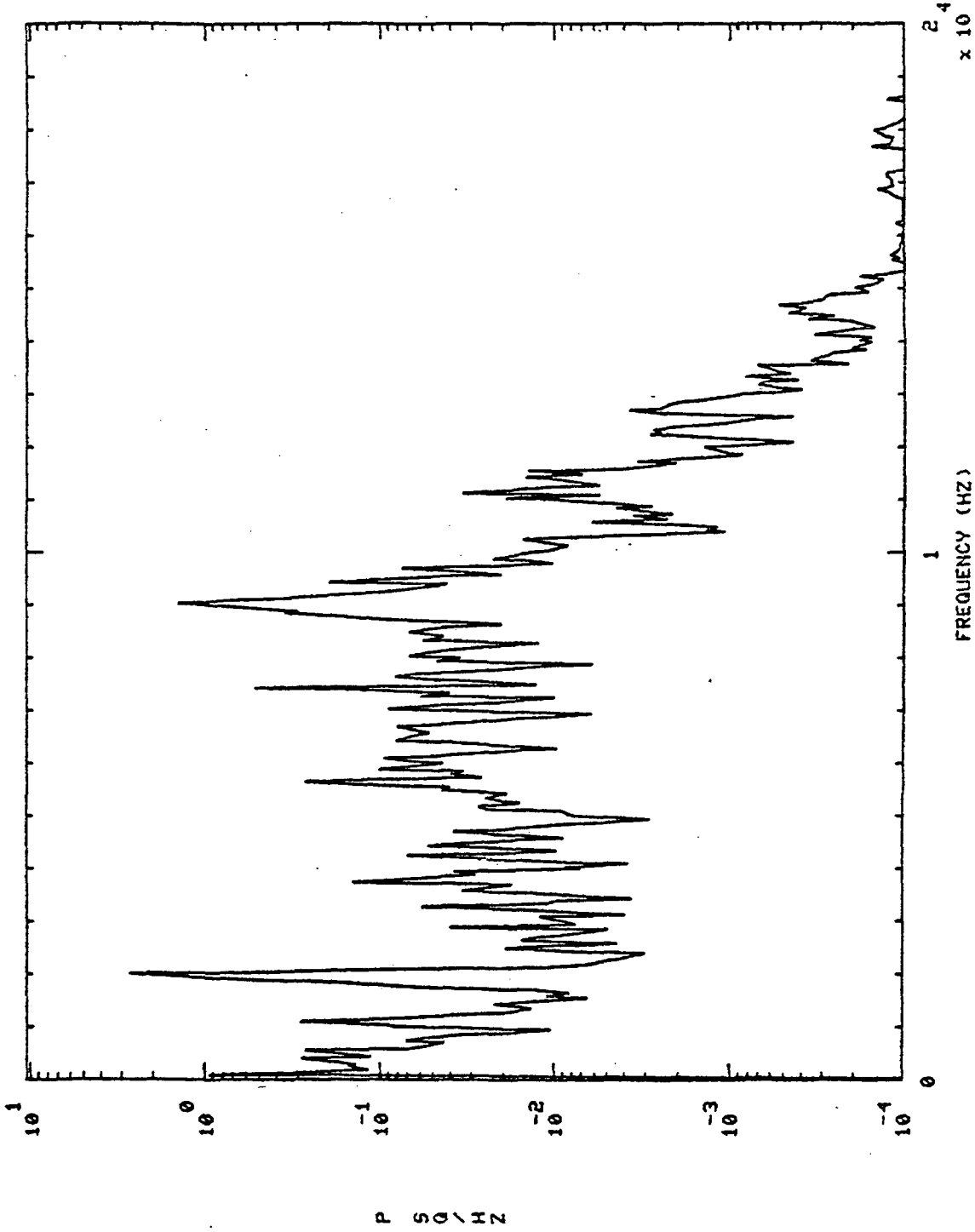
750111 LPOT TURB DR PR S+ 120.01H0,'S



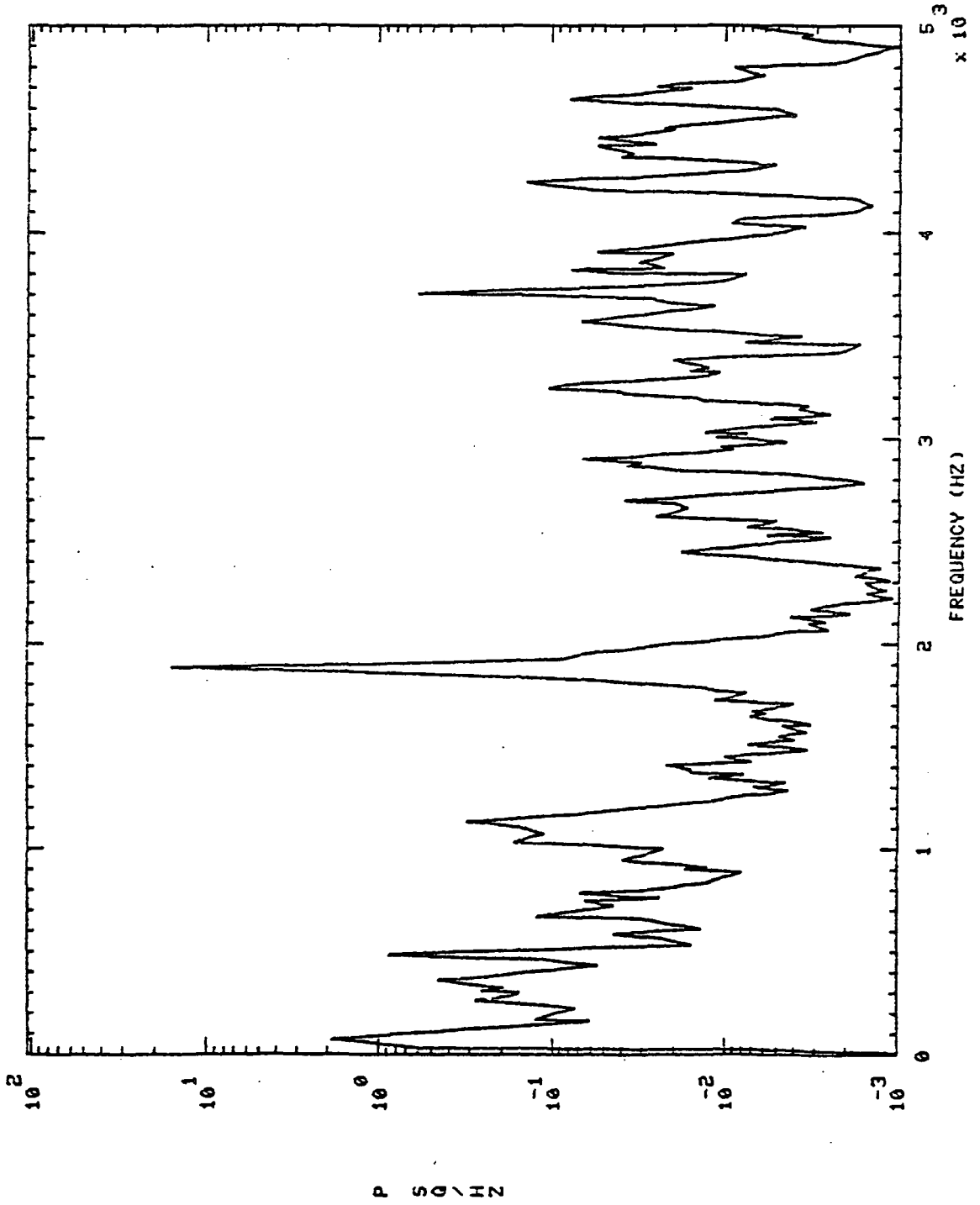
S+ 120.01H0,'S

LPOT TURB DR PR

750111



750111 LPOT TURB DR PR S+ 200.01H0,'S

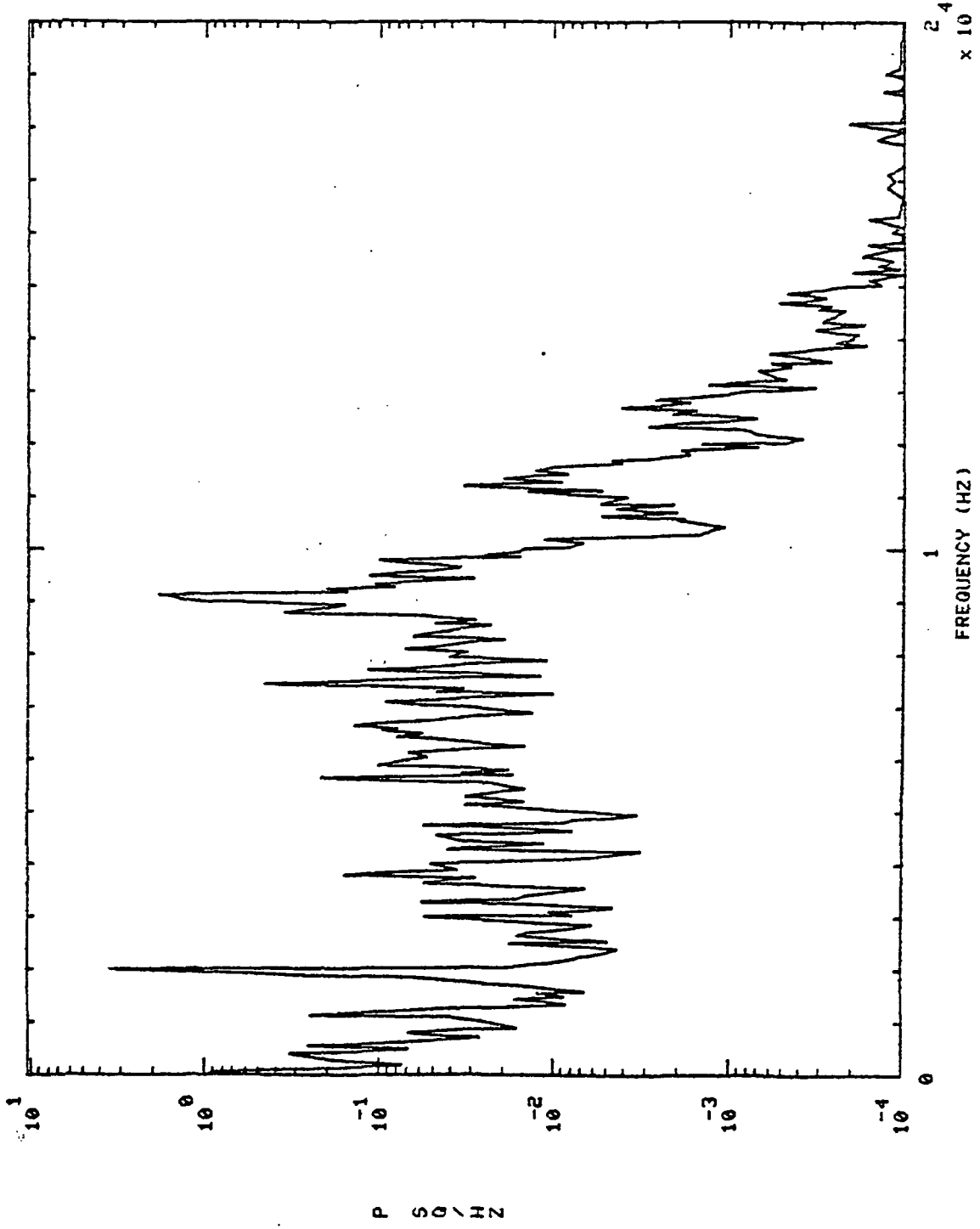


C-5

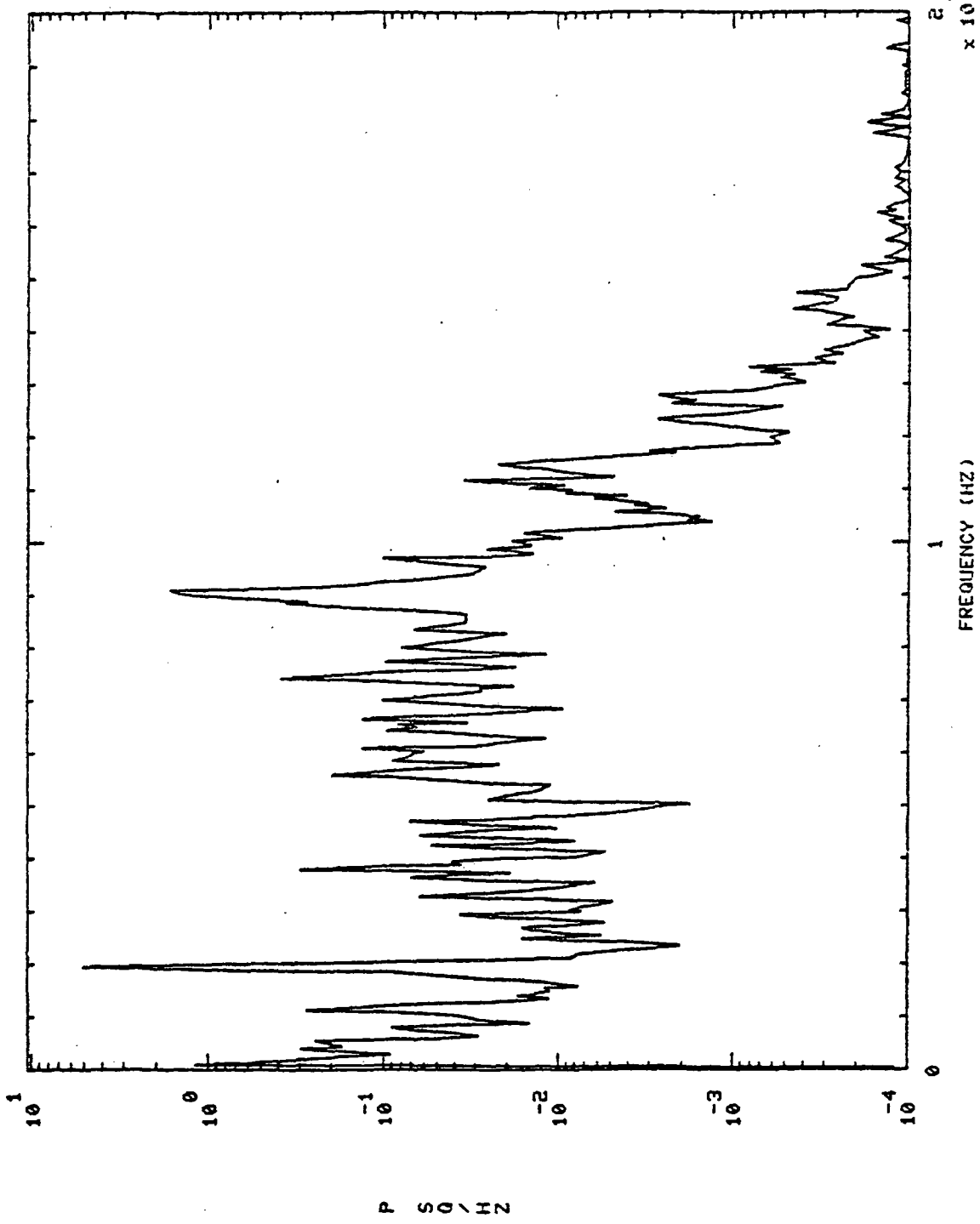
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LPOT TURB DR PR

S+ 200.01H0,'S



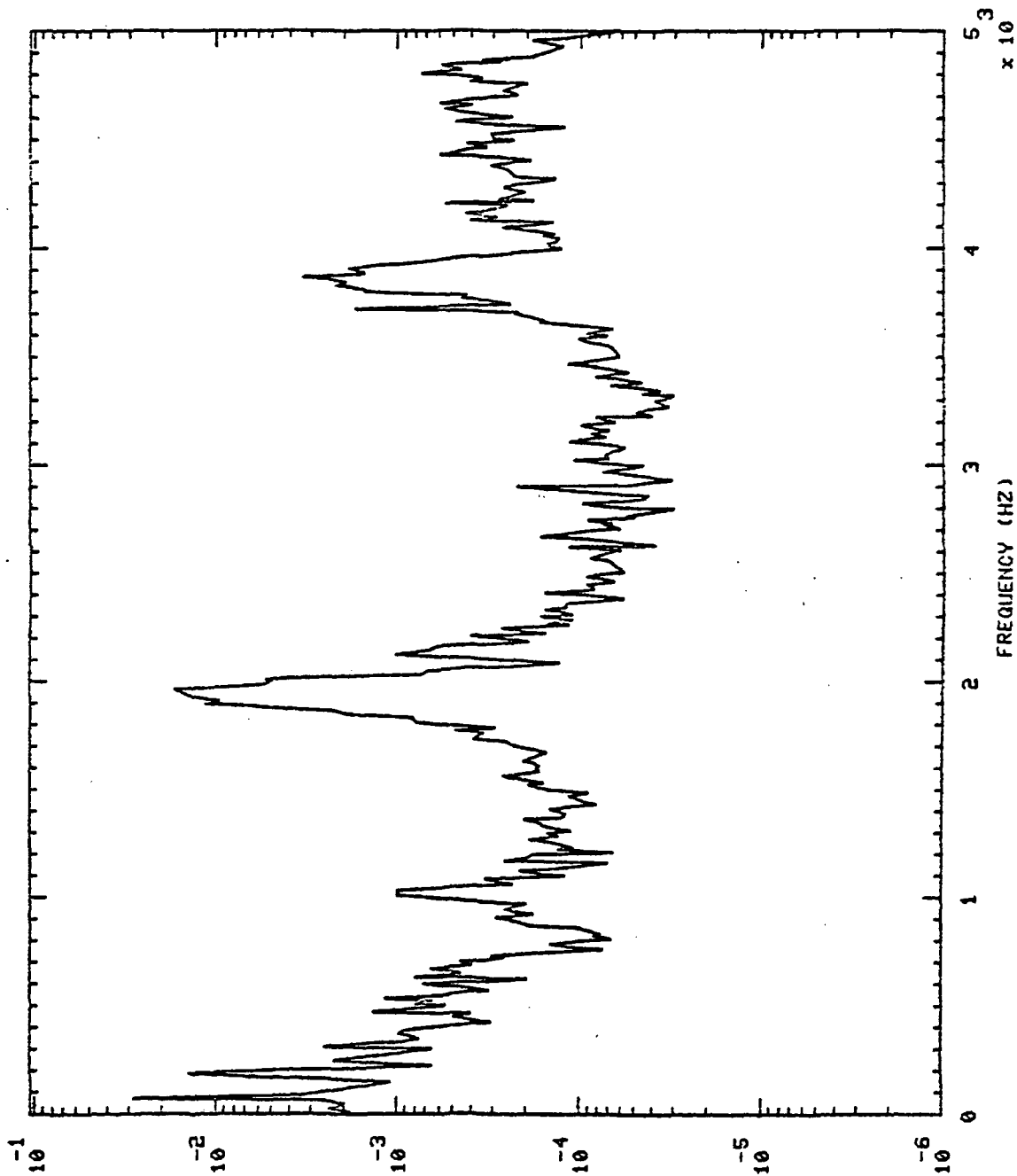
750111 LPOT TURB DR PR S+ 280.01H0,'S



750111

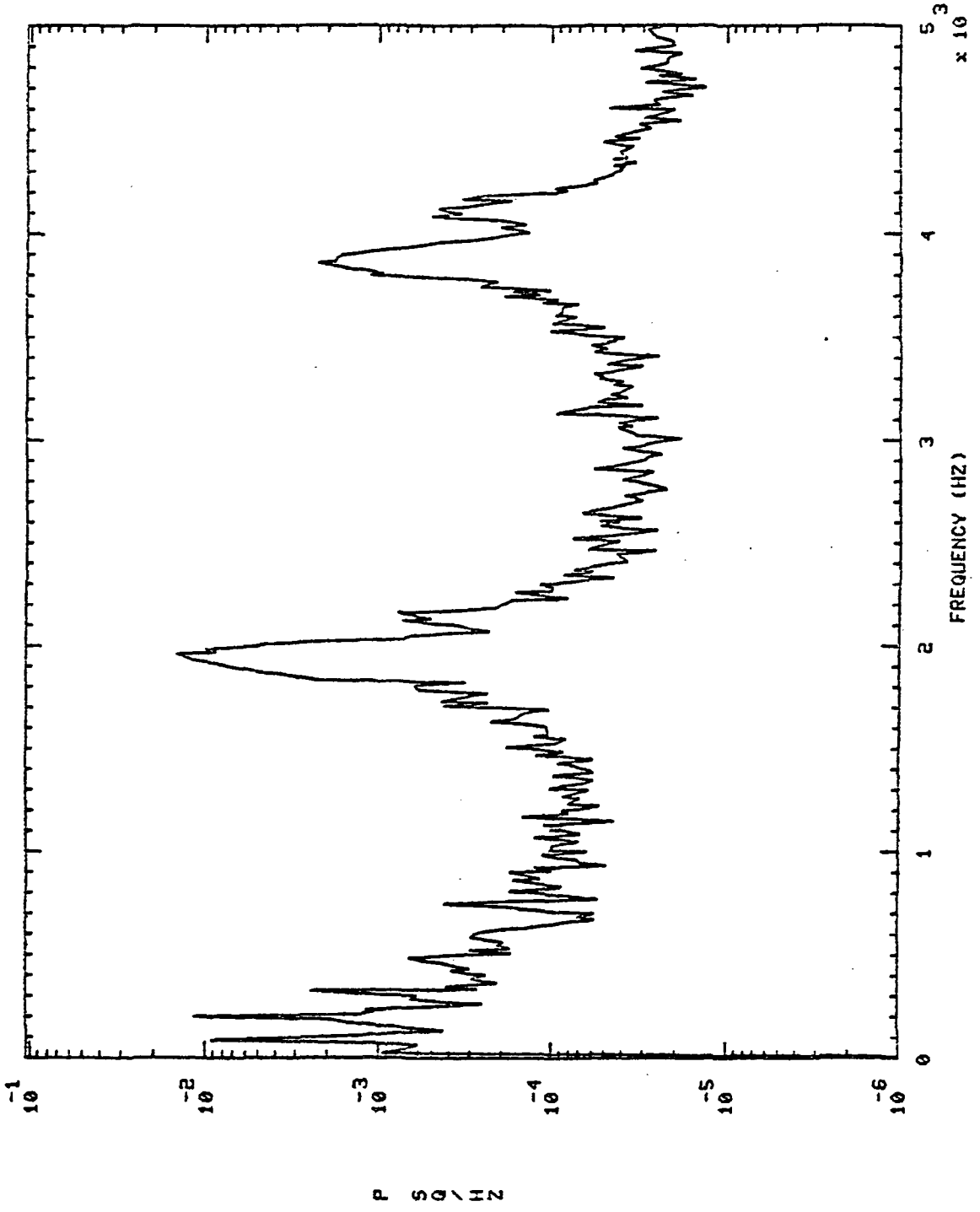
LOX HX OUT PR

S+ 15.01H0,'S





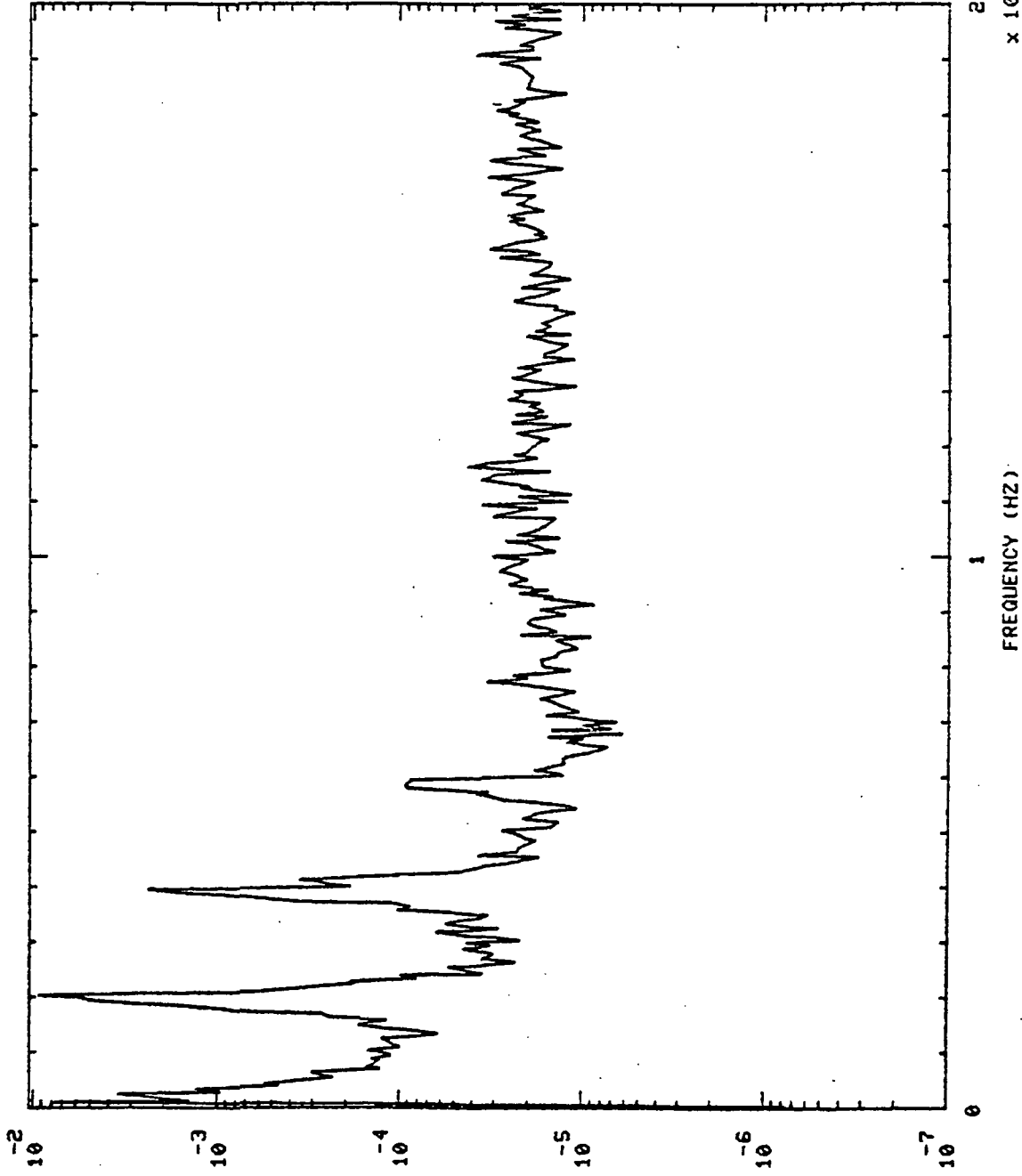
750111 LOX HX OUT PR St 40.01H0,'S



750111

LOX HX OUT PR

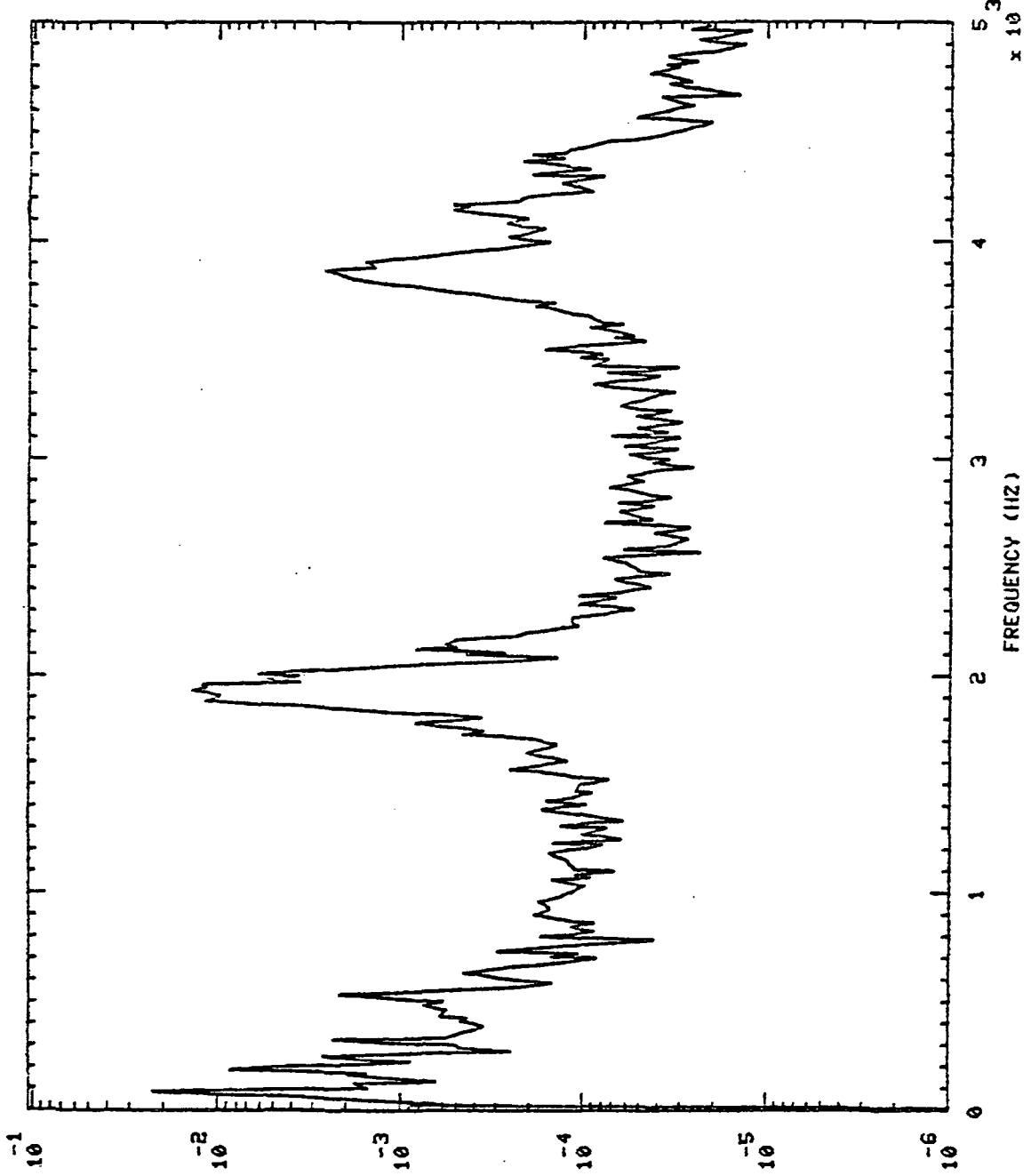
S+ 40.01H0,'S



PSD / HZ

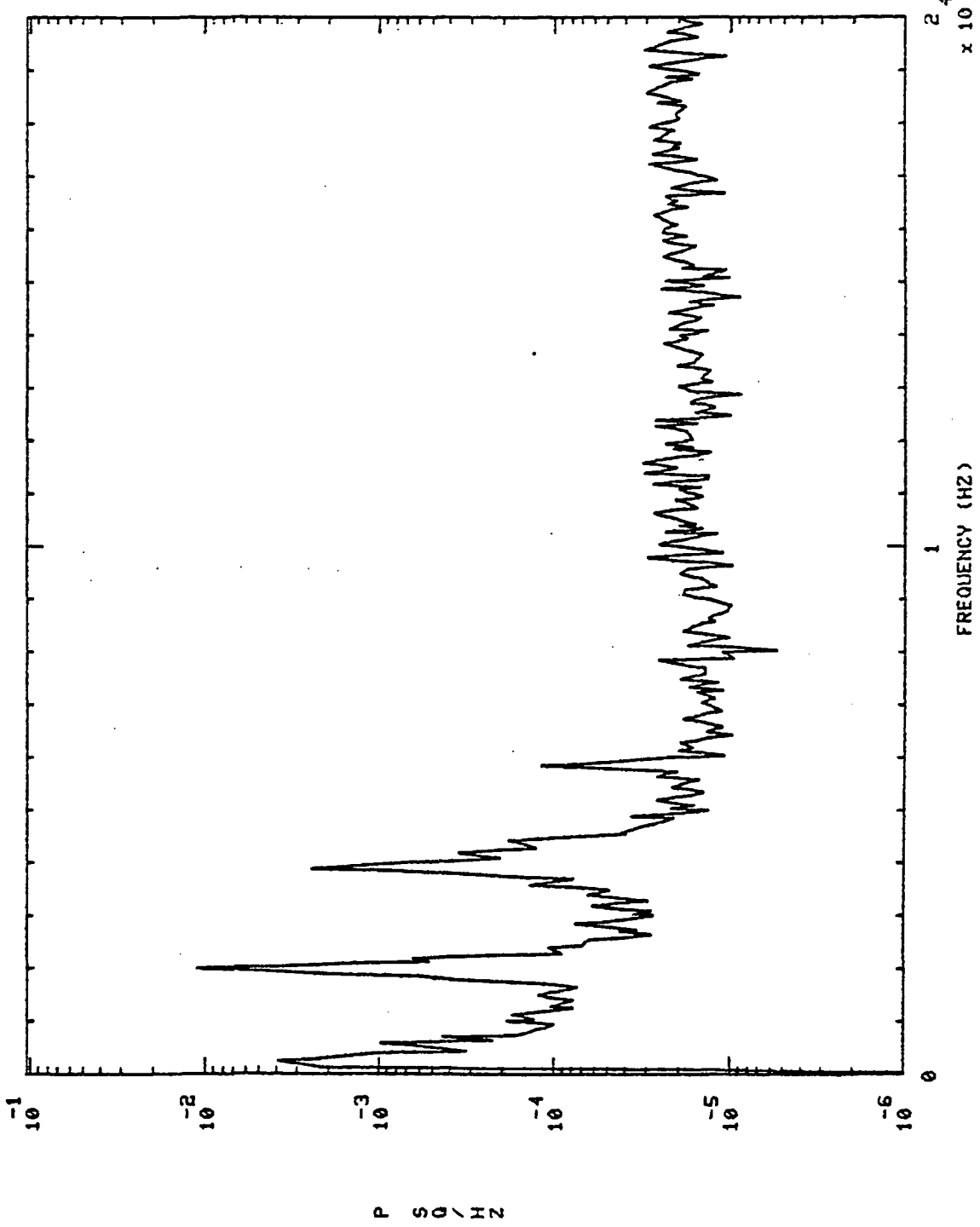
FREQUENCY (HZ) x 10<sup>4</sup>

750111 LOX HX OUT PR S+ 50.01H0,'S

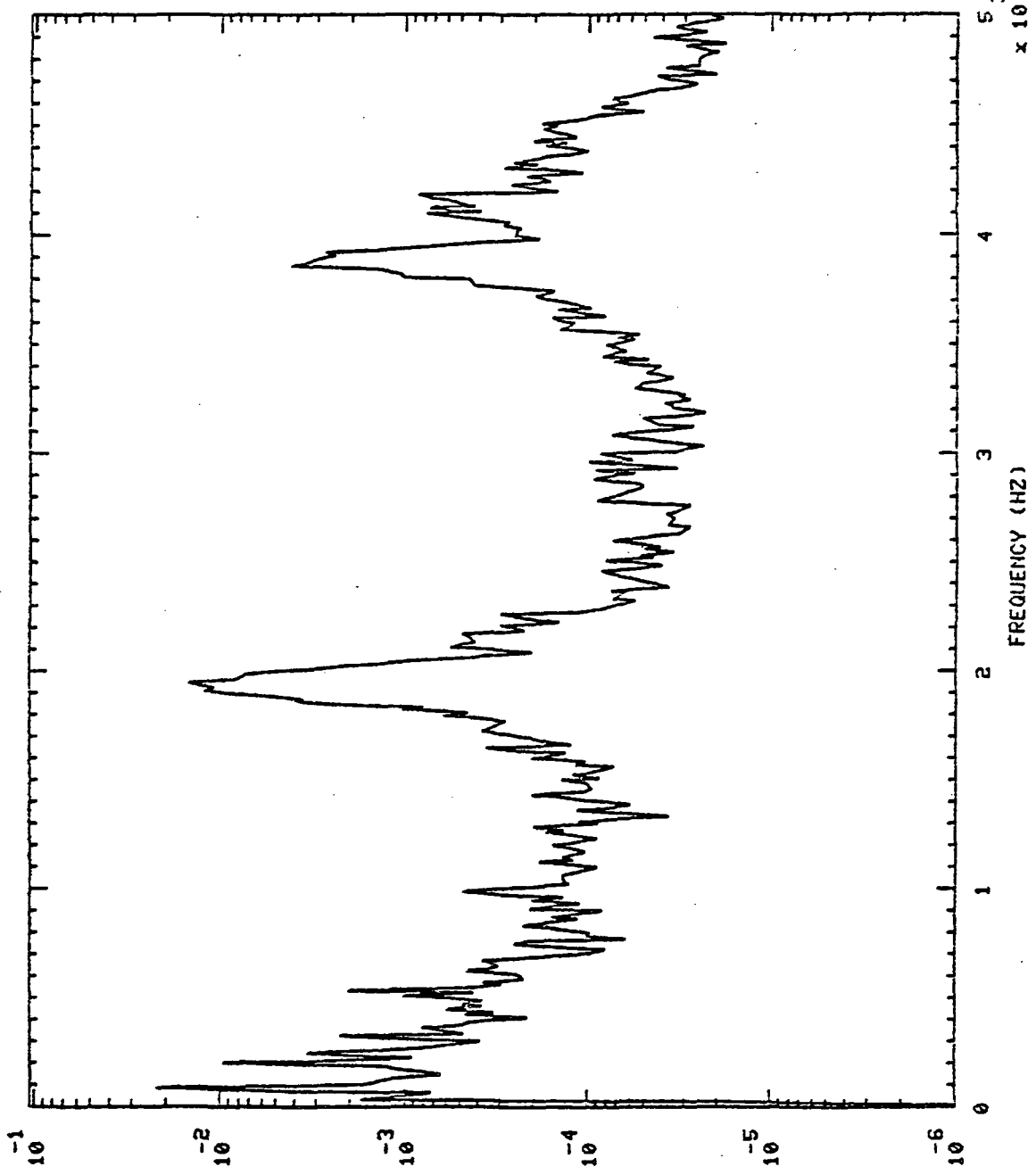


P S Q \ H Z

750111 LOX HX OUT PR S+ 50.01H0,'S

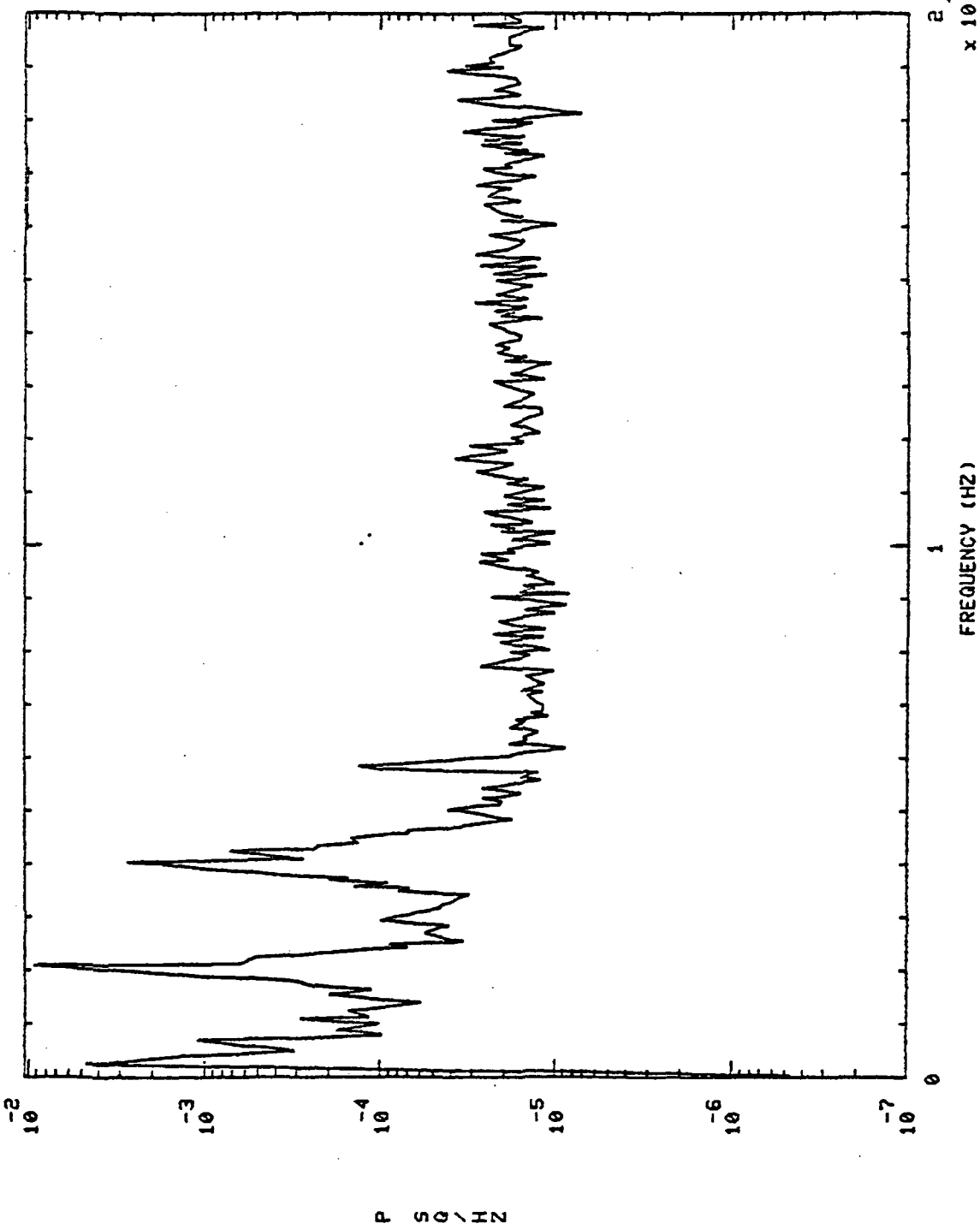


750111 LOX HX OUT PR S+ 60.01H0.'S

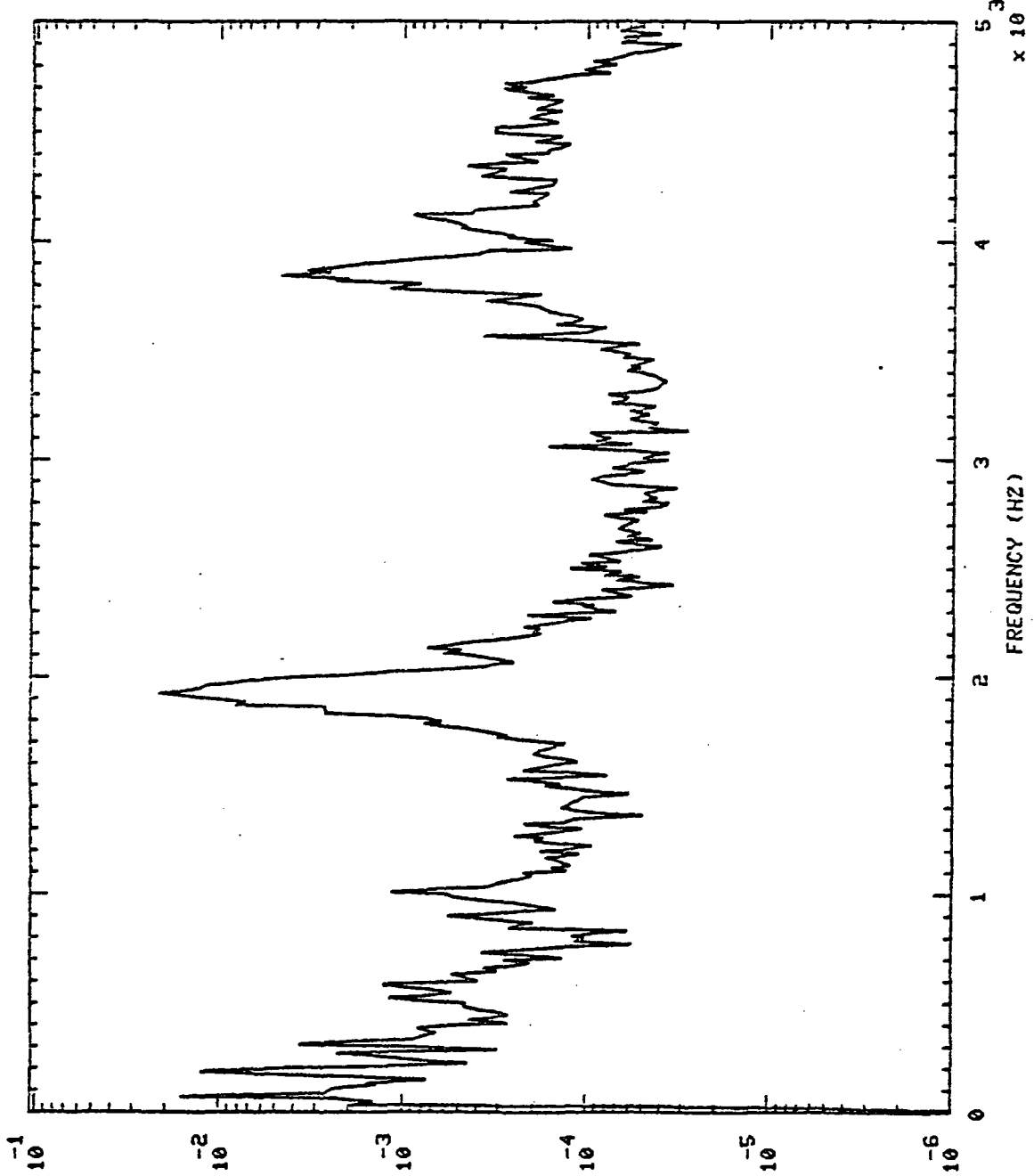


P S D / H Z

750111 LOX HX OUT PR S+ 60.01H0,'S



750111 LOX HX OUT PR 5+ 70.0110,'S

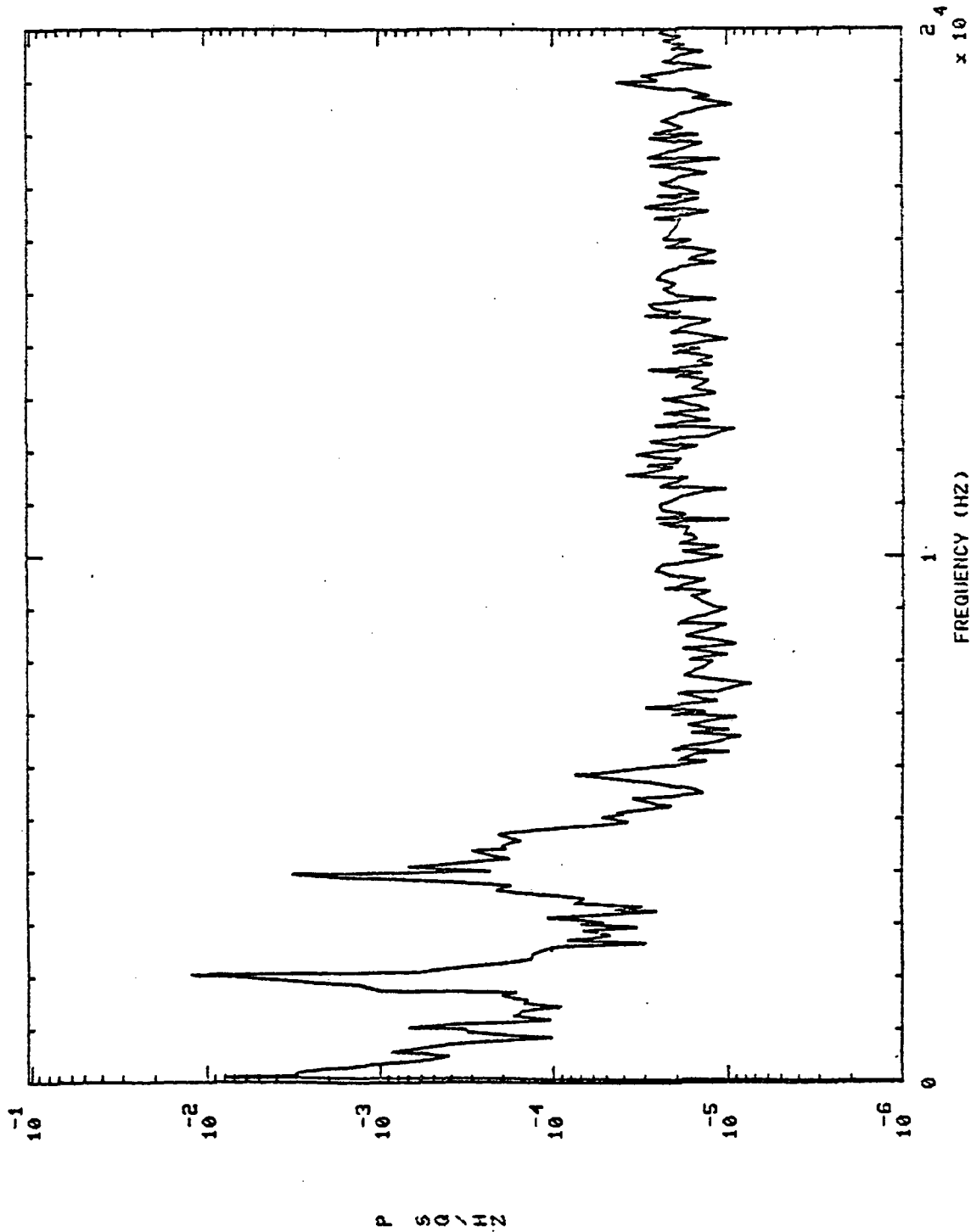


P S D (H Z)

ST 70.01H0,'S

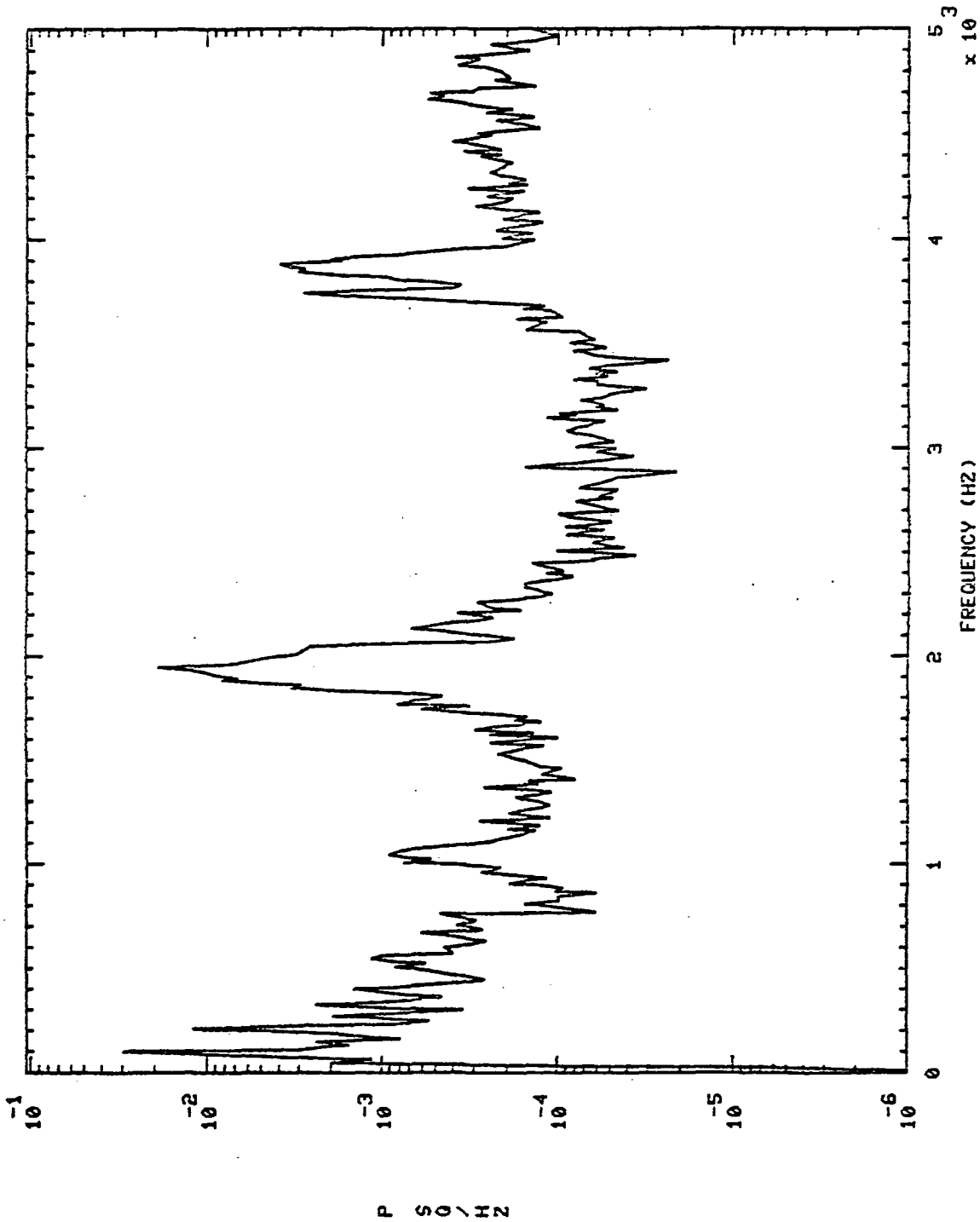
LOX HX OUT PR

750111

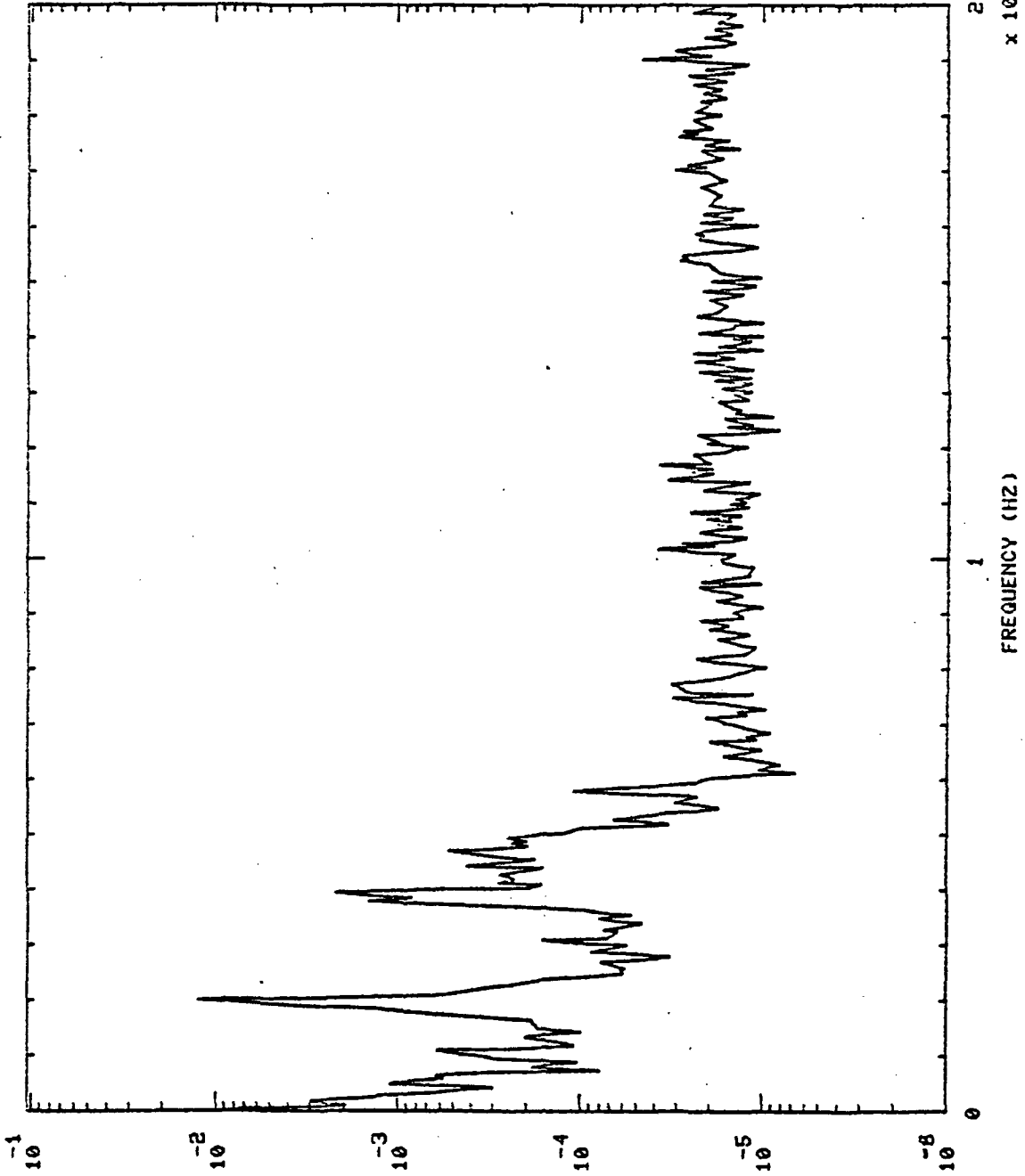




750111 LOX HX OUT PR S+ 80.01H0,'S



750111 LOX HX OUT PR ST 80.01H0,'S

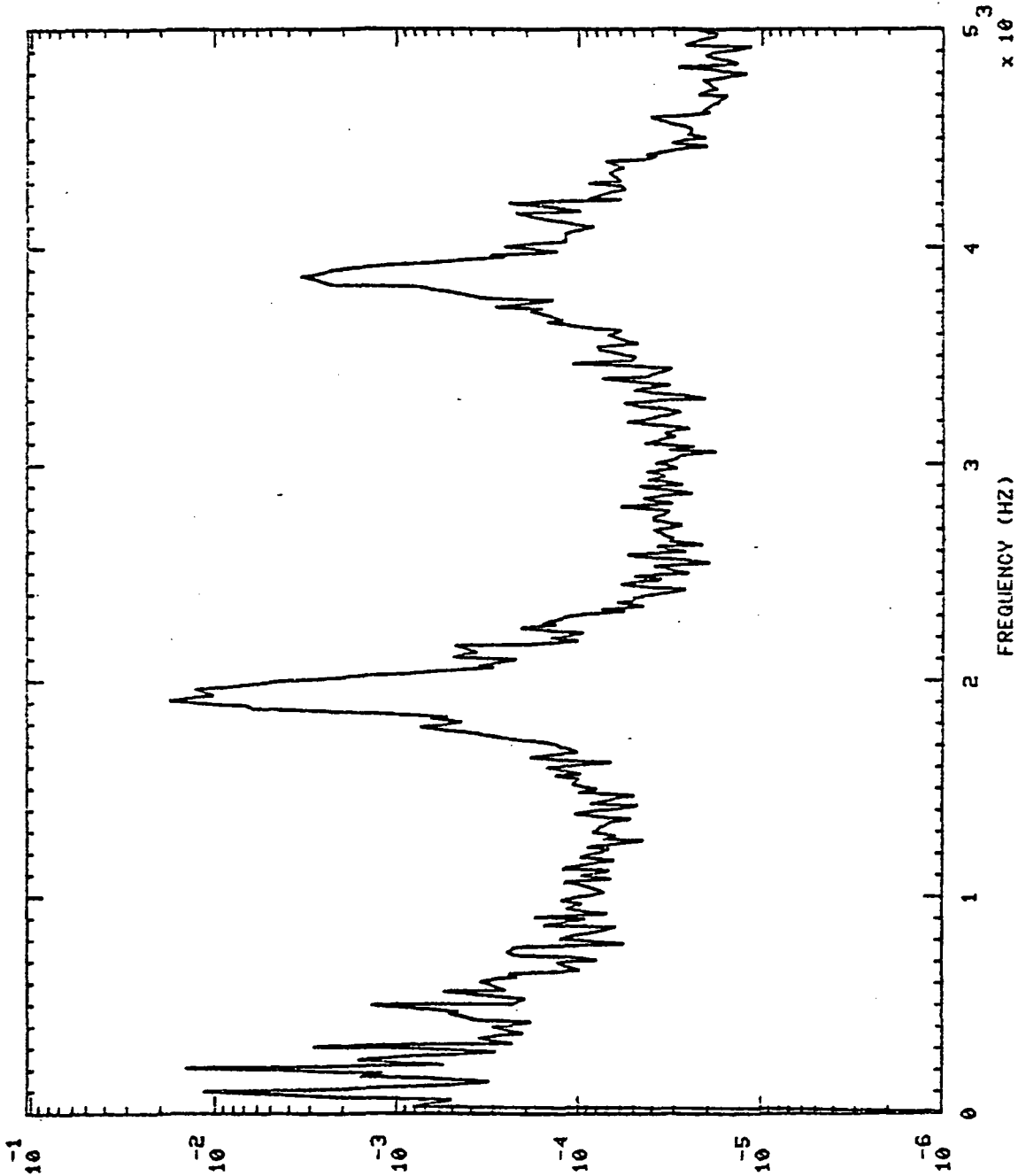


P SQ/HZ

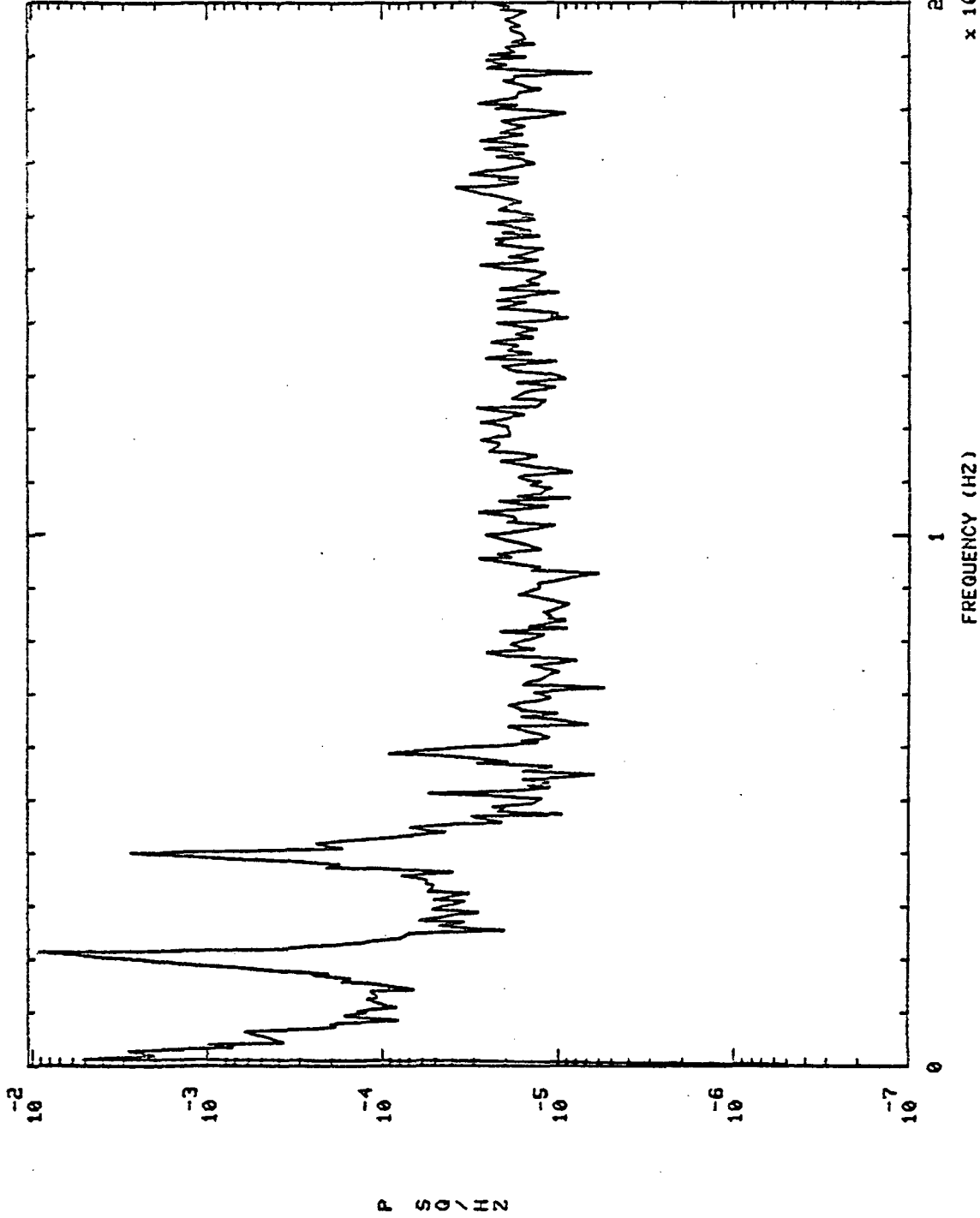
FREQUENCY (HZ)

$2.4 \times 10^4$

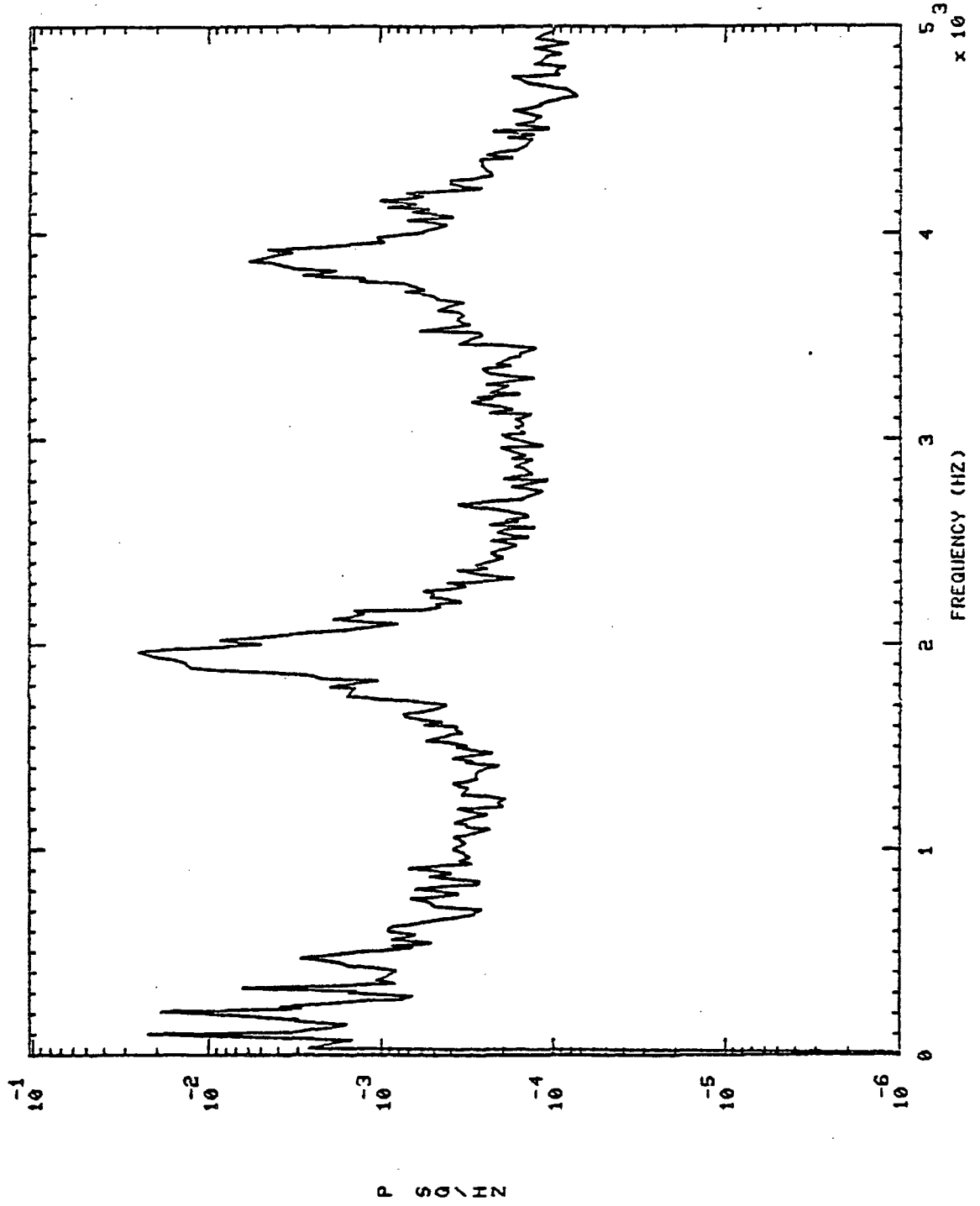
750111 LOX HX OUT PR S4 90.01H0,'S



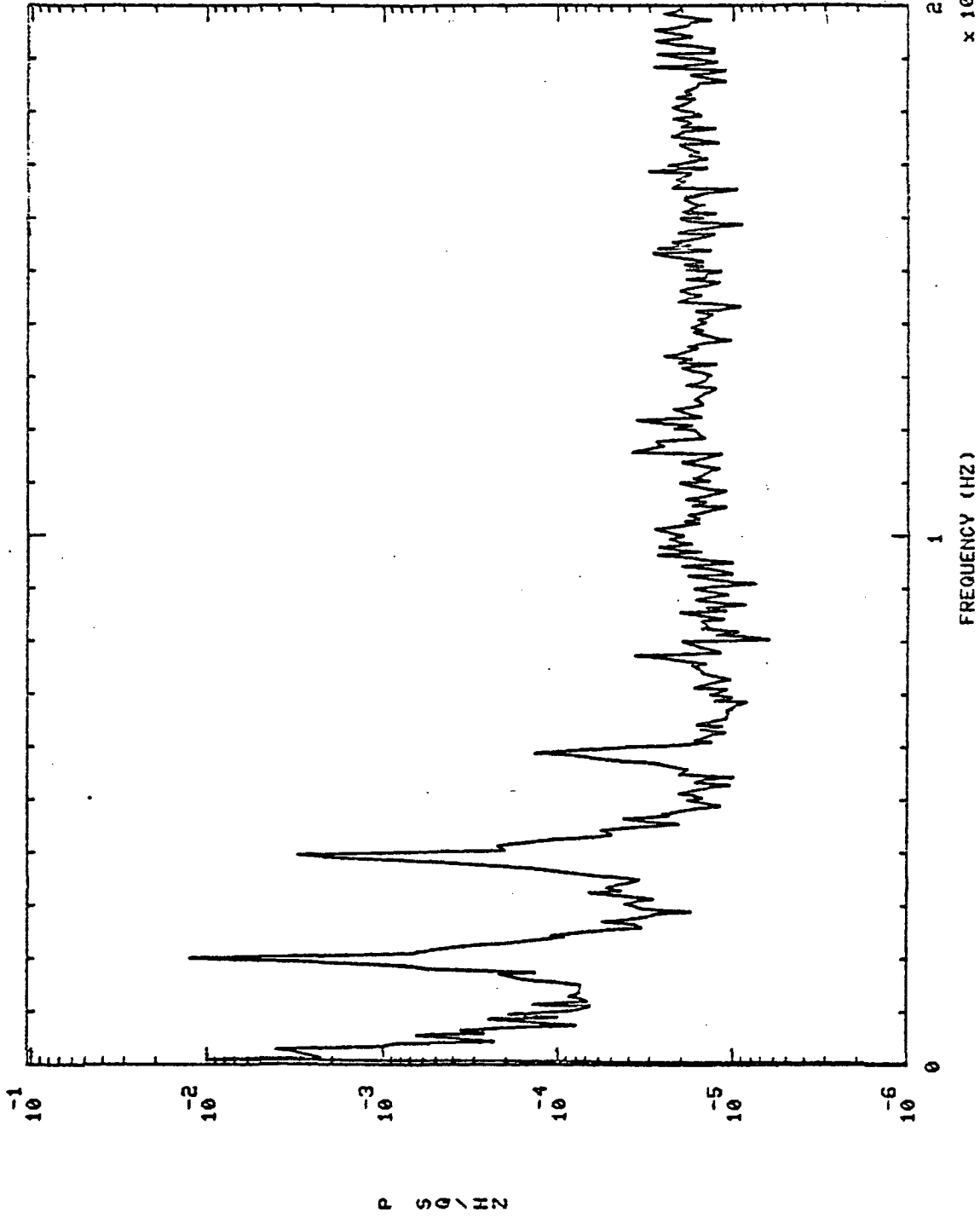
750111 LOX HX OUT PR S+ 90.01H0,'S



750111 LOX HX OUT PR S+ 100.01H0,'S



750111 LOX HX OUT PR S+ 100.01H0.'S



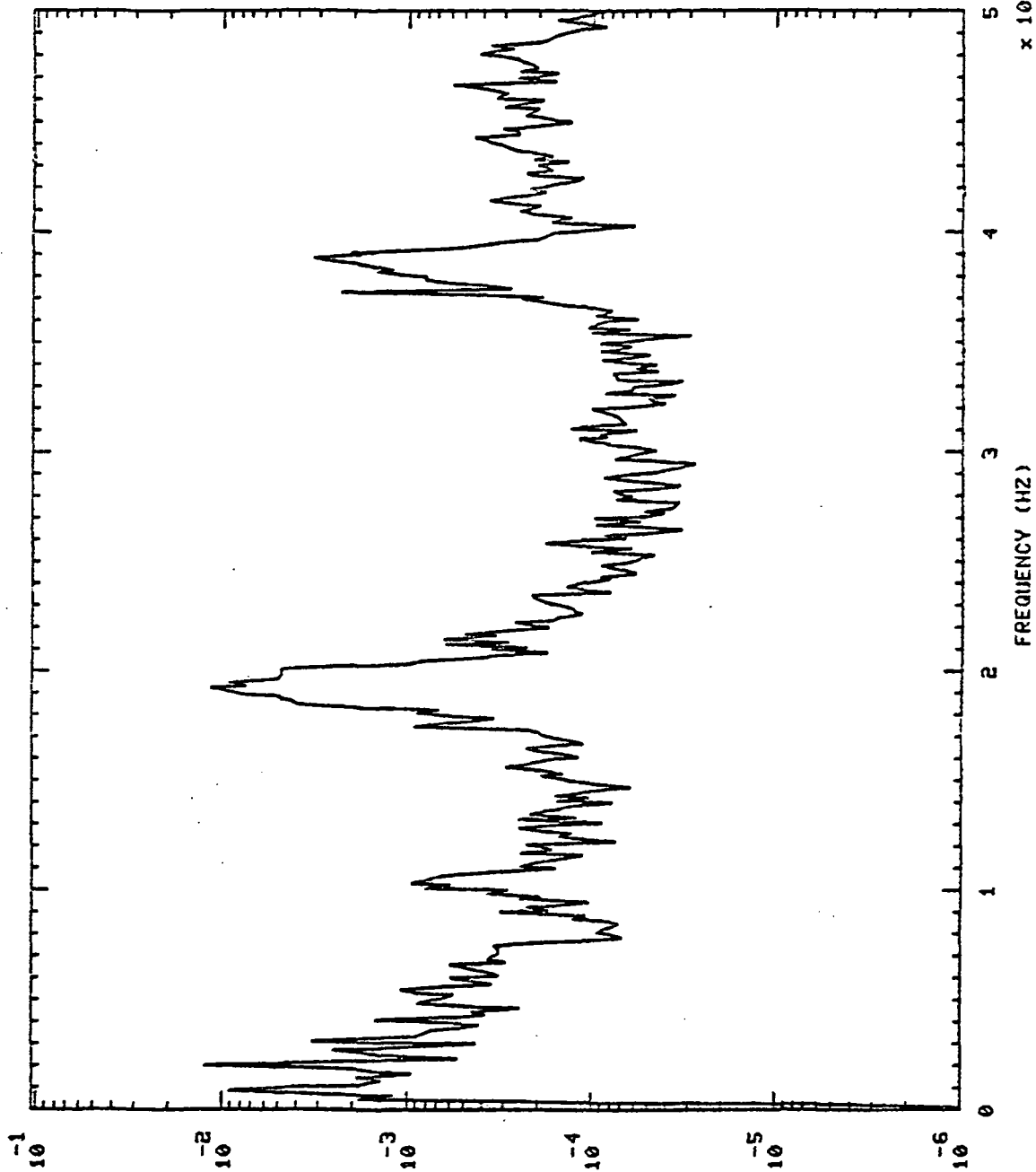
750111 LOX HX OUT PR S+ 120.01H0,'S

750111 LOX HX OUT PR

750111

LOX HX OUT PR

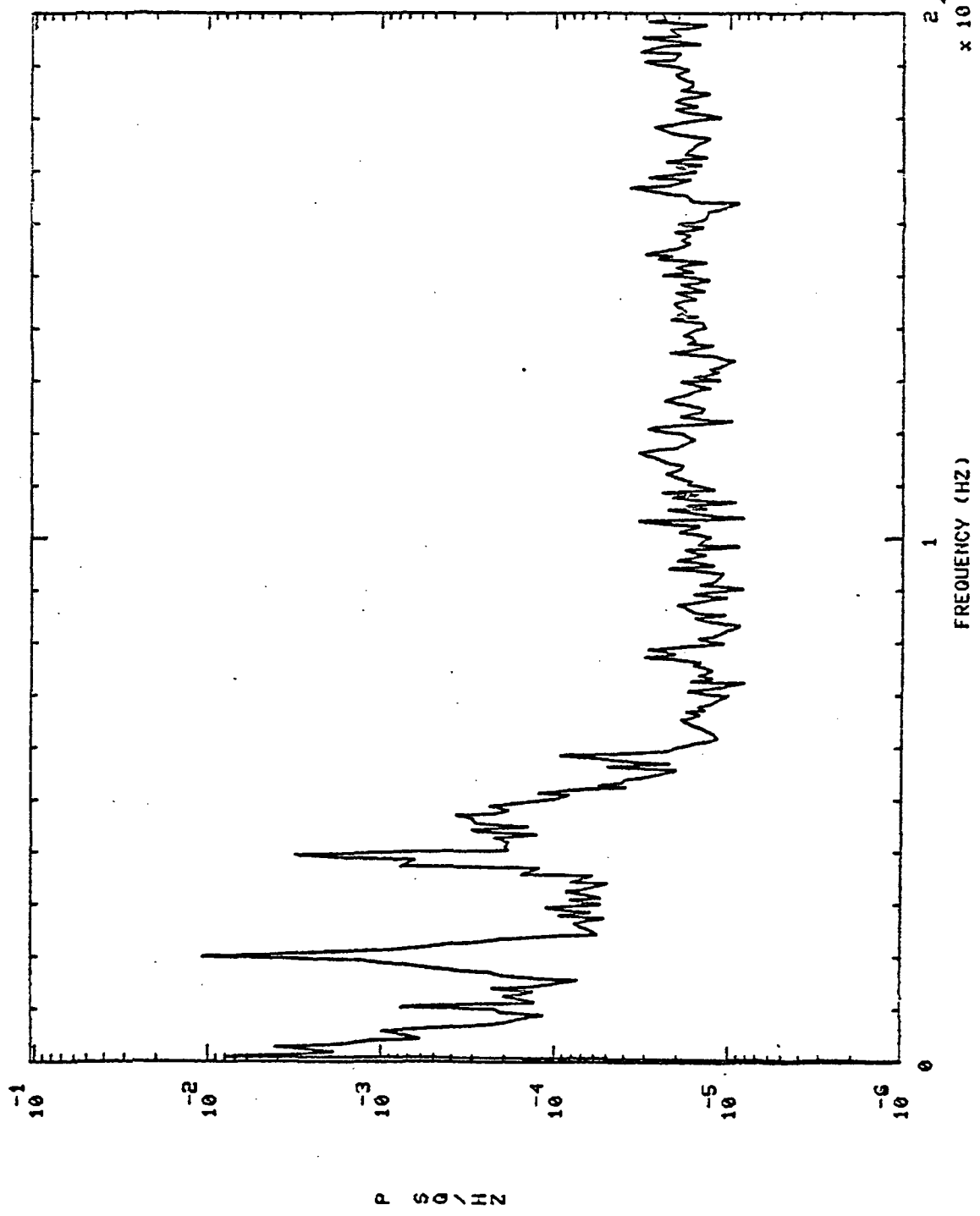
S+ 120.01H0,'S



P S D \ H Z

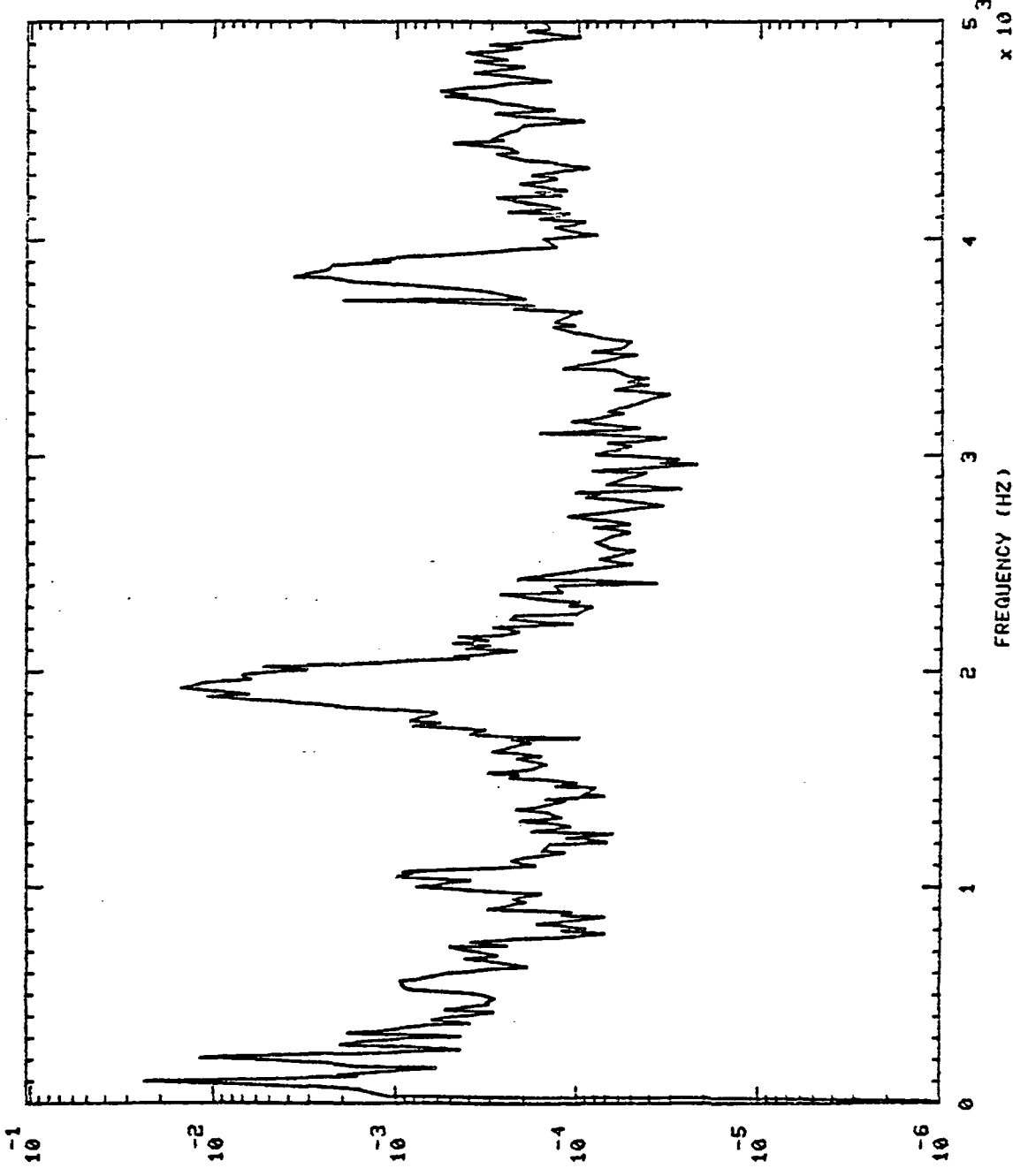
750111 LOX HX OUT PR

S+ 120.01H0, 'S





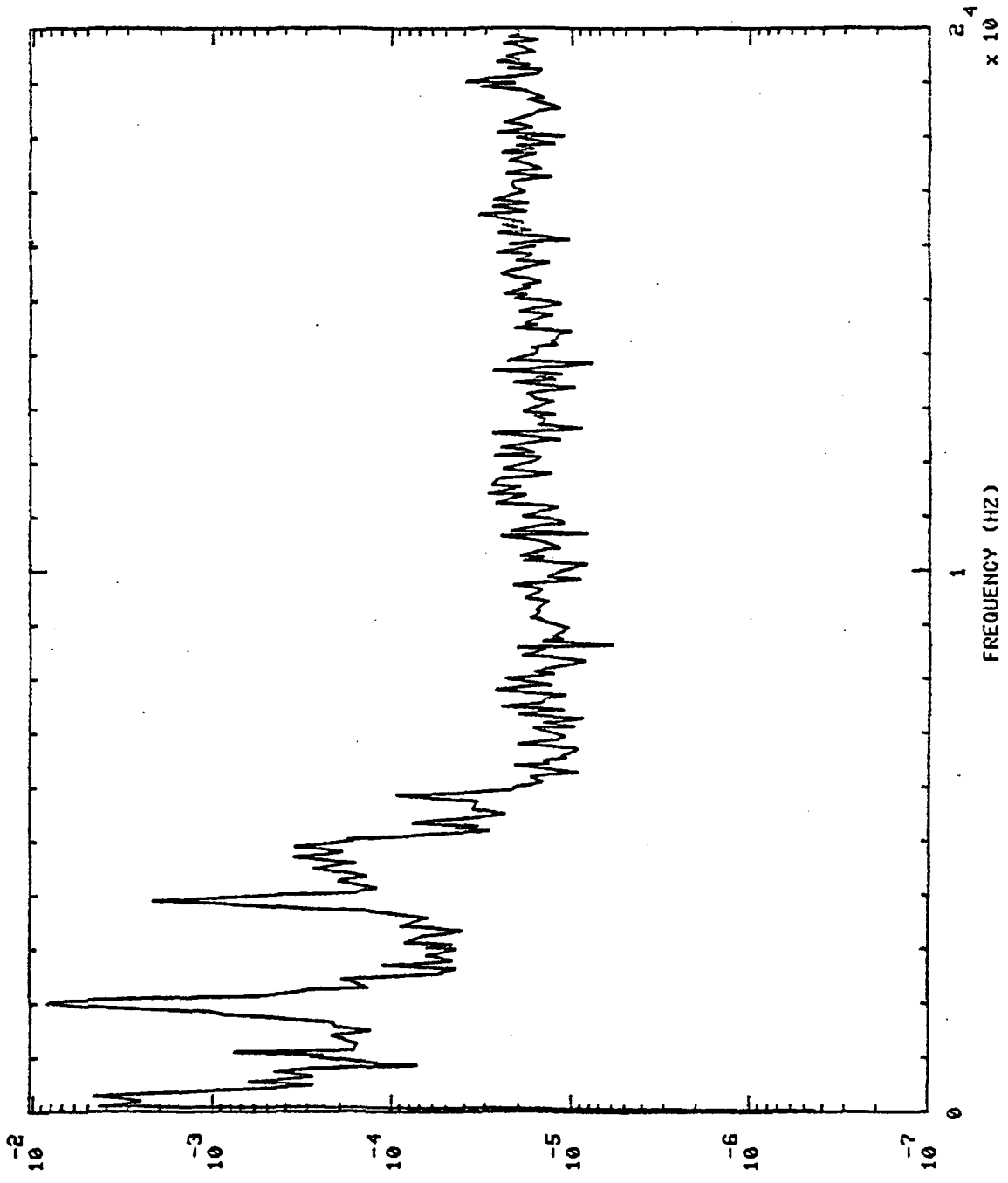
750111 LOX HX OUT PR S+ 200.01H0.'S



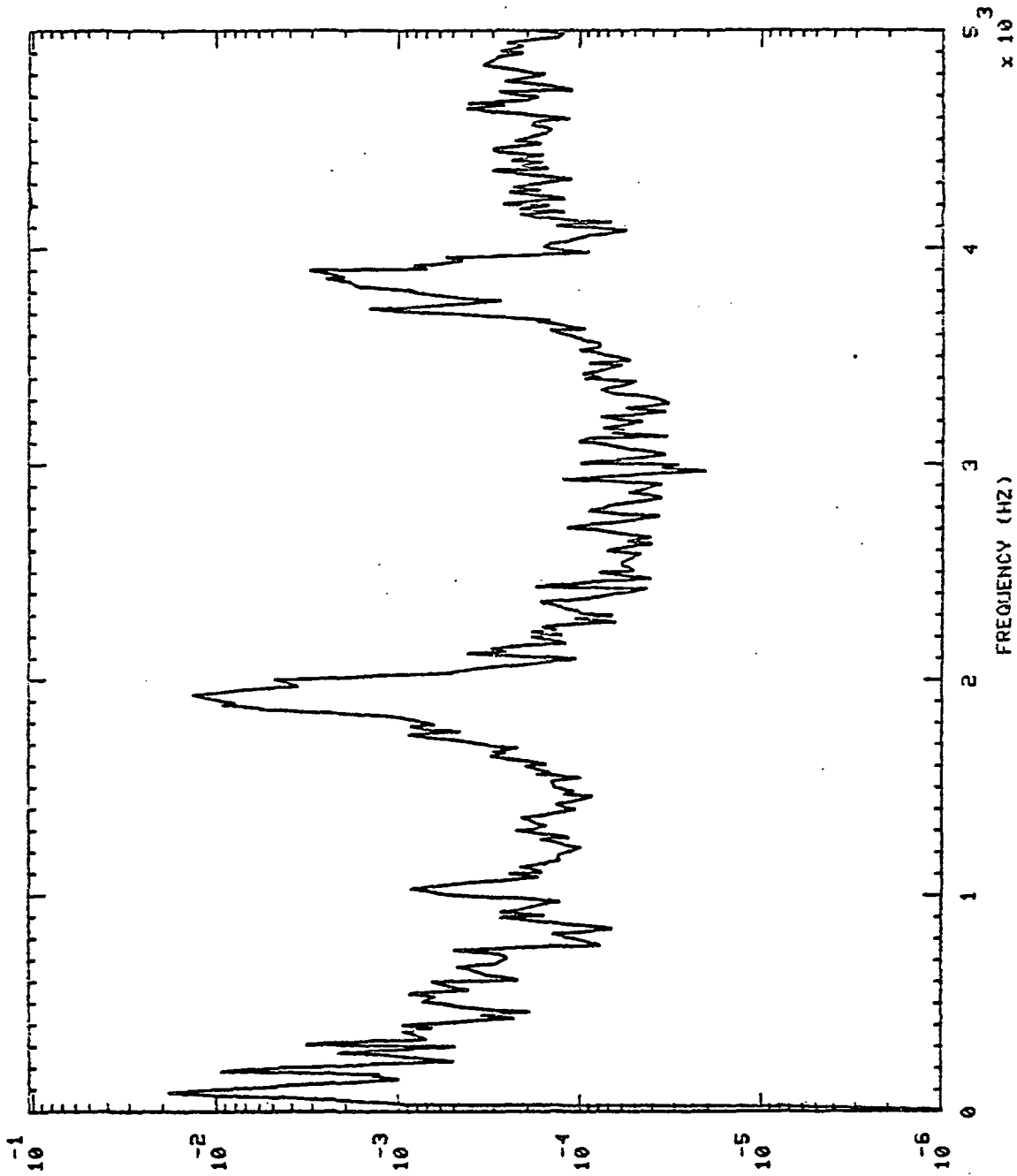
750111

LOX HX OUT PR

St 200.01H0, 'S



750111 LOX HX OUT PR S+ 280.01H0.'S



P SQ/MZ

750111 LOX HX OUT PR S+ 280.0110, 'S

