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Total-Dose Radiation Effects Data for Semiconductor Devices 1985 Supplement

Keith E. Martin
Michael K. Gauthier
James R. Coss
Armando R. V. Dantas
William E. Price

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May 15, 1986



National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

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ABSTRACT

This document provides steady-state, total-dose radiation test data, in graphic format, for use by electronic designers and other personnel using semiconductor devices in a radiation environment. The data were generated by JPL for various NASA space programs. The document is in two volumes: Volume I provides data on diodes, bipolar transistors, field effect transistors, and miscellaneous semiconductor types, and Volume II (Parts A and B) provides data on integrated circuits.

The data are presented in graphic, tabular, and/or narrative format, depending on the complexity of the integrated circuit. Most tests were done using the JPL or Boeing electron accelerator (Dynamitron) which provides a steady-state 2.5-MeV electron beam. However, some radiation exposures were made with a Cobalt-60 gamma ray source, the results of which should be regarded as only an approximate measure of the radiation damage that would be incurred by an equivalent electron dose. All data were generated in support of NASA space programs by the JPL Radiation Effects and Testing Group (514).

PREFACE

Volume II of the Total-Dose Radiation Effects Data for Semiconductor Devices, 1985 Supplement contains new test data generated since the December 1, 1981 release data of the original Volume II, JPL Publication 81-66.

There are two parts to Volume II. Part A contains data for devices starting with the 1802 CMOS Microprocessor and ending with the LM108 OP AMP. Part B contains data for devices starting with the LM111 Voltage Comparator and ending with the SMP-11 Sample and Hold. For ease in referencing, the Index and Appendixes are included in both Parts A and B.

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^aSee Appendix A for Vendor Identification Code List.

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^aSee Appendix A for Vendor Identification Code List.

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^aSee Appendix A for Vendor Identification Code List.

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APPENDIXES

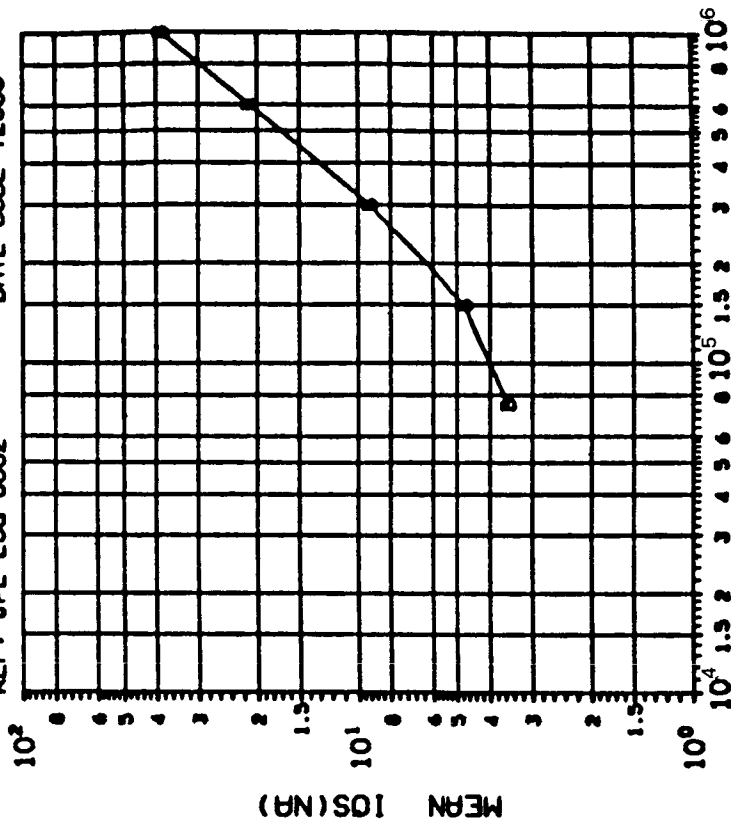
A. VENDOR IDENTIFICATION CODE LIST A-1

B. INTEGRATED CIRCUIT ELECTRICAL PARAMETER SYMBOLS AND
ABBREVIATIONS B-1

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*Sections I through IV and Section V, pages 5-1 through 5-498, are located in Volume II, Part A.

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668



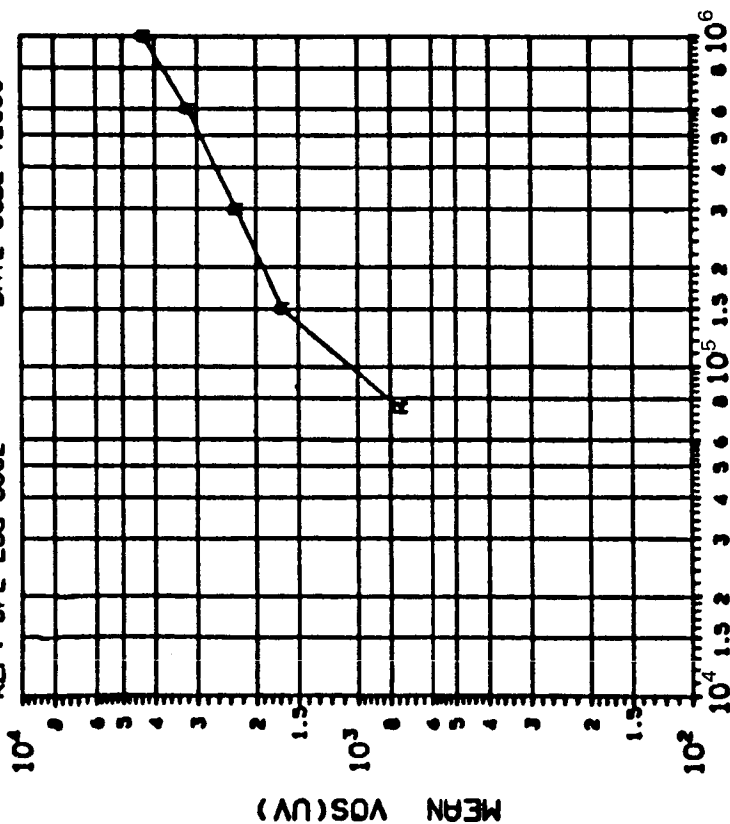
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V_O=0.5V) IN nA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.412 1.416 2.576 2.380 1.139

INITIAL MEAN VALUE IOS(nA) = 4.72x10⁻⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668



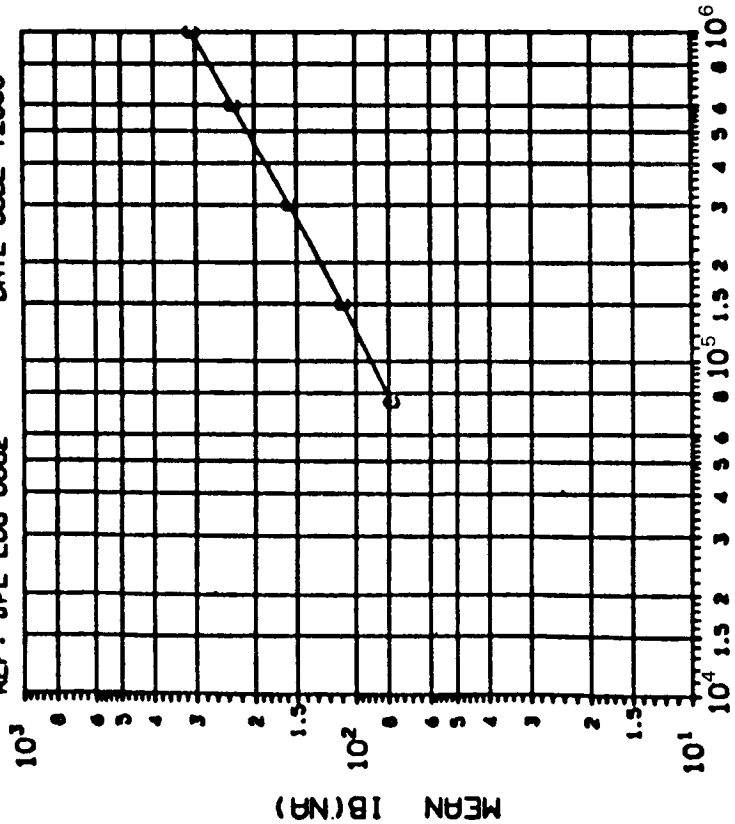
DOSE, rads(Si) 2.5 MeV electrons

(1) VOS (V_O=0.5V) IN VOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	725.4 784.5 789.9 624.5 542.7

INITIAL MEAN VALUE VOS(uV) = 4.28x10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2660



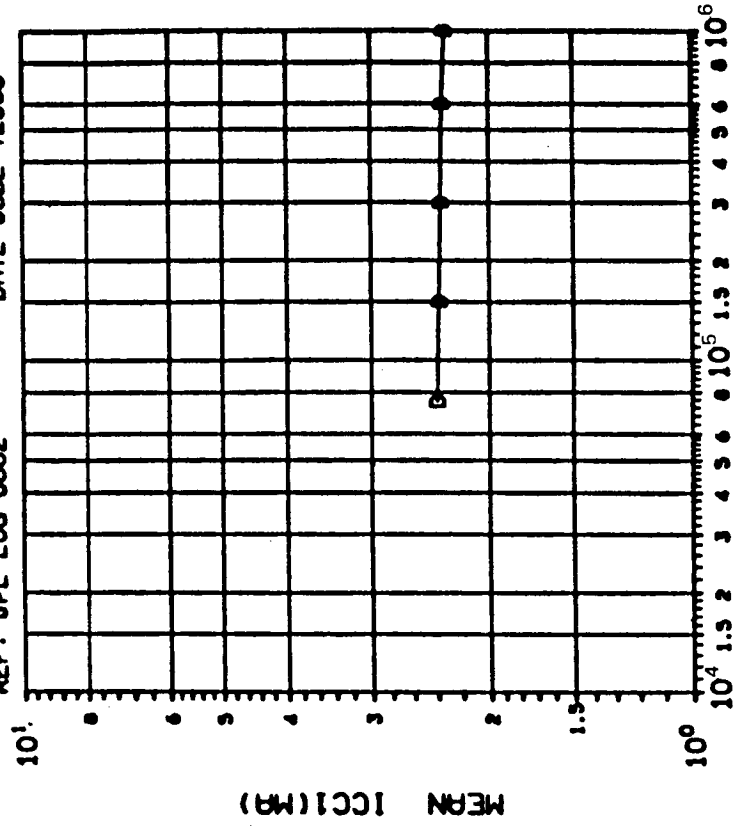
DOSE, rads(Si) 2.5 MeV electrons

(3)IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	1000
2.773 2.341 3.674 3.493 4.207	

INITIAL MEAN VALUE IB(NA) = 2.97X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2668



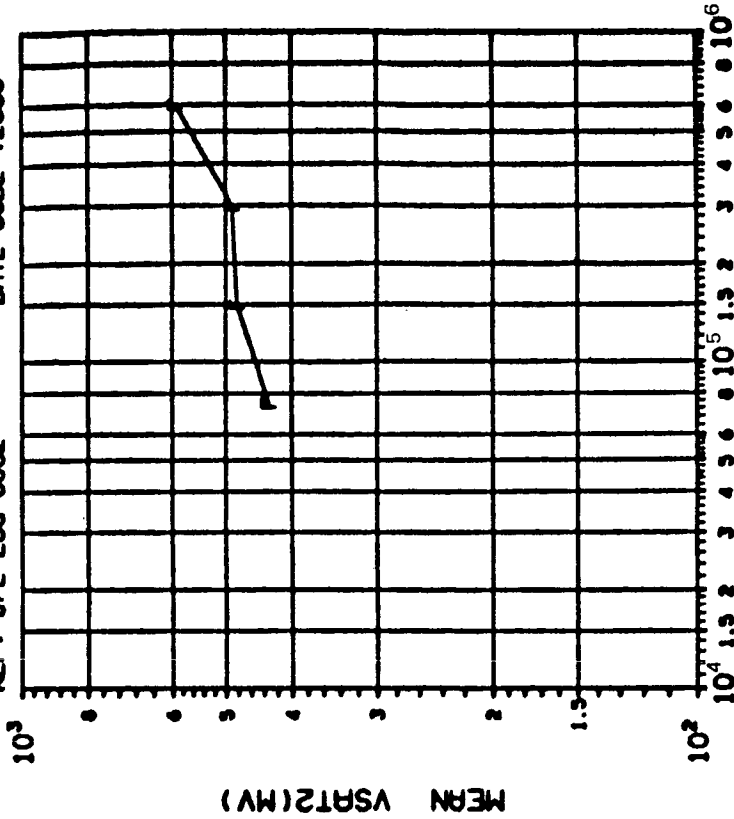
DOSE, rads(Si) 2.5 MeV electrons

(4)ICC1 (NO LOAD): IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	1000
.0864 .0879 .0862 .0819 .0866	

INITIAL MEAN VALUE ICC1(MA) = 2.44X10⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668



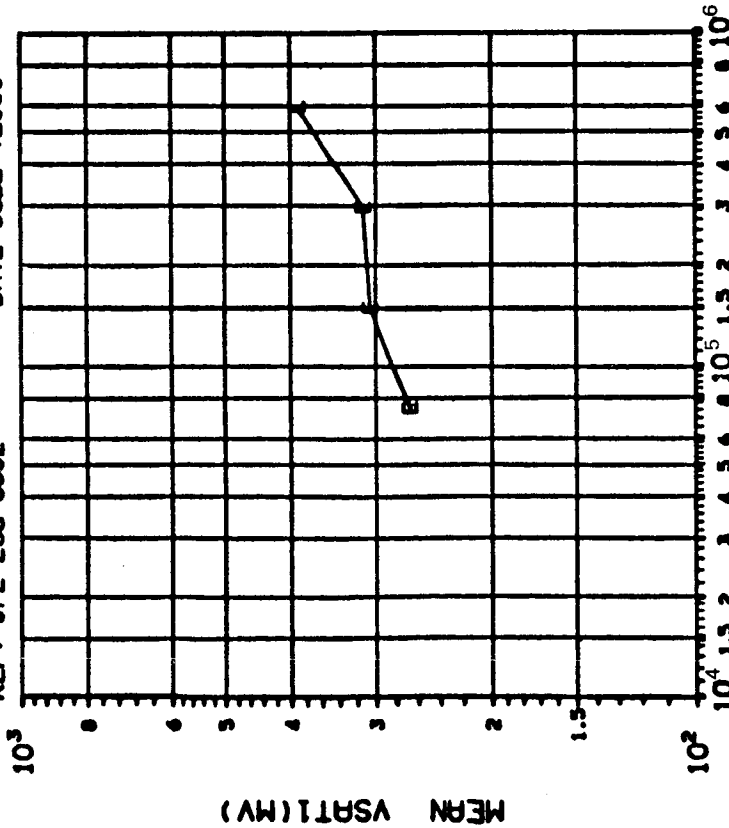
DOSE, rads(Si) 2.5 MeV electrons

(6) VSAT2 (ISK=14MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300 600 1000
	13.61 19.61 14.70 28.36 #####

INITIAL MEAN VALUE VSAT2(MV) = 4.10X10⁻²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668



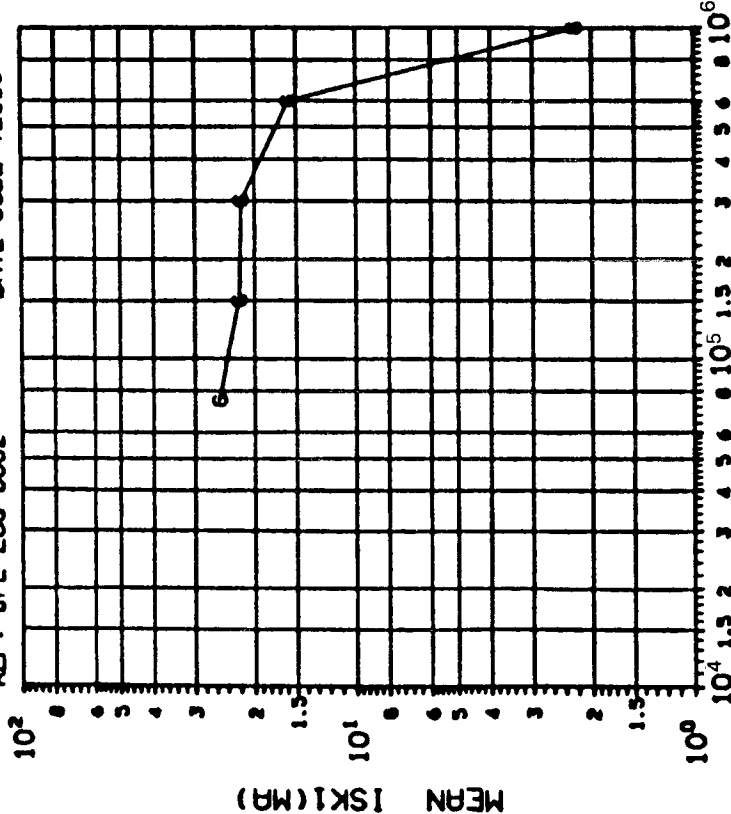
DOSE, rads(Si) 2.5 MeV electrons

(5) VSAT1 (ISK=5MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300 600 1000
	10.49 14.57 11.45 20.91 #####

INITIAL MEAN VALUE VSAT1(MV) = 2.48X10⁻²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2668



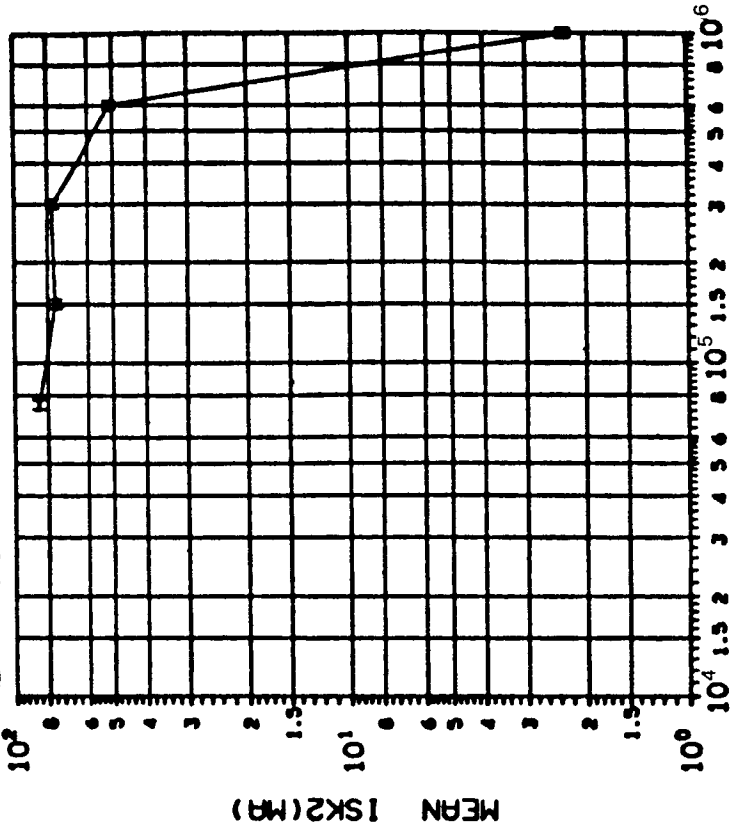
DOSE, rads(Si) 2.5 MeV electrons

(7)ISK1 (V0=0.6V) IN MR: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300 600 1000
	1.180 1.606 1.055 1.456 1.035

INITIAL MEAN VALUE ISK1(MR) = 2.71X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2668



DOSE, rads(Si) 2.5 MeV electrons

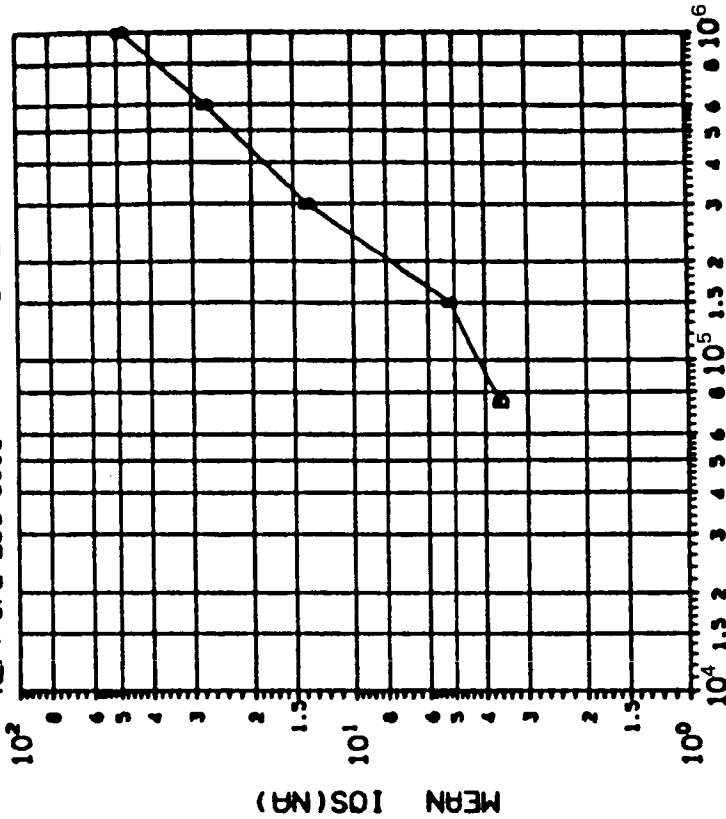
(8)ISK2 (V0=1.5V) IN MR: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300 600 1000
	1.869 5.596 2.857 14.59 1.092

INITIAL MEAN VALUE ISK2(MR) = 8.64X10¹

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DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669



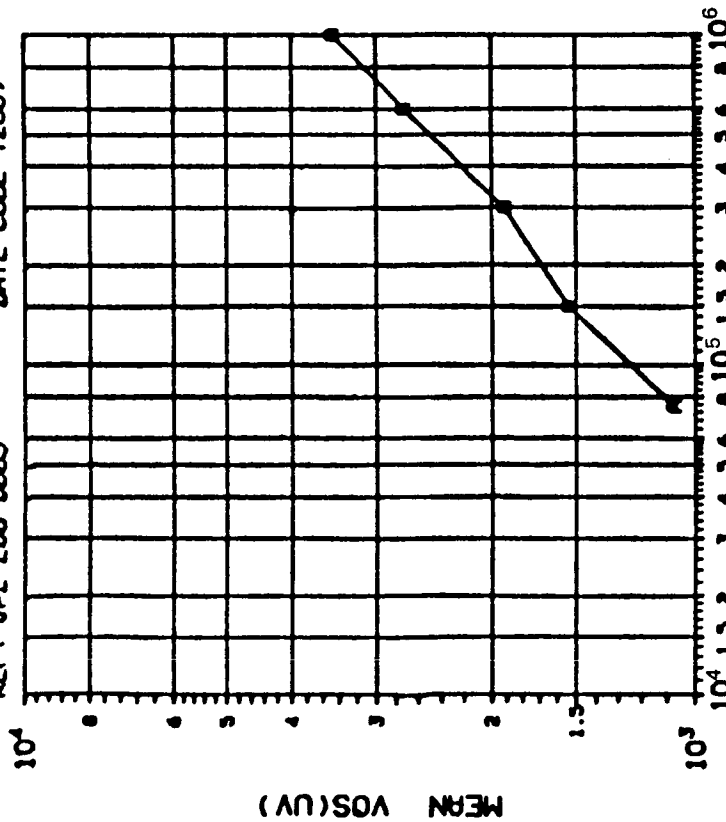
DOSE, rads(Si) 2.5 MeV electrons

(2)IOS (V0=0.5V) IN nA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	600
	1000	
	2.615	2.593
	2.625	3.411
	2.399	

INITIAL MEAN VALUE IOS(nA) = 4.76X10⁺⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669



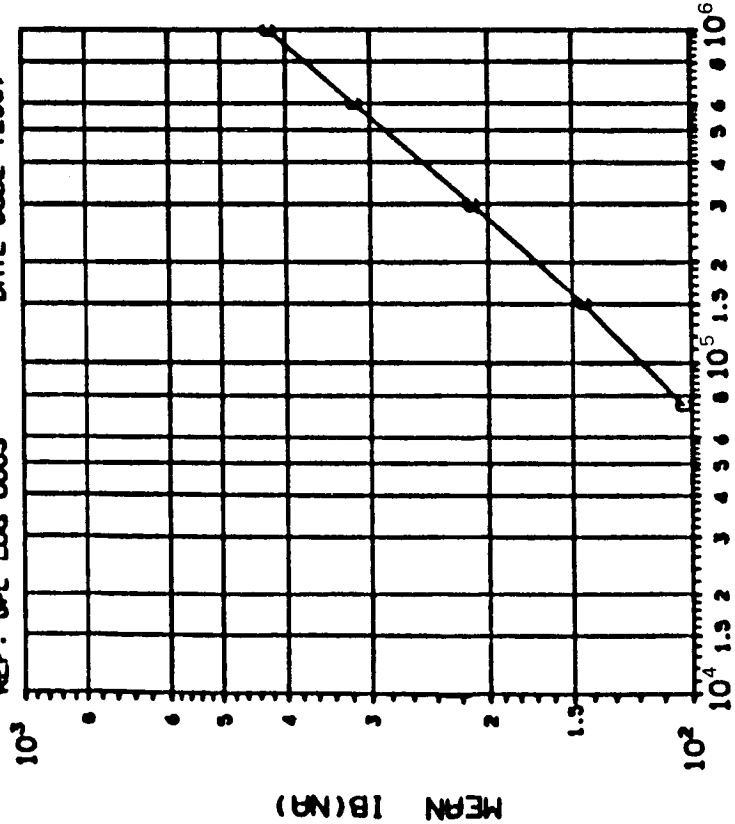
DOSE, rads(Si) 2.5 MeV electrons

(1)VOS (V0=0.5V) IN uVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	150
	300	600
	1000	
	624.7	652.6
	575.7	657.9
	565.3	

INITIAL MEAN VALUE VOS(uV) = 4.96X10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG D883 DATE CODE T2669



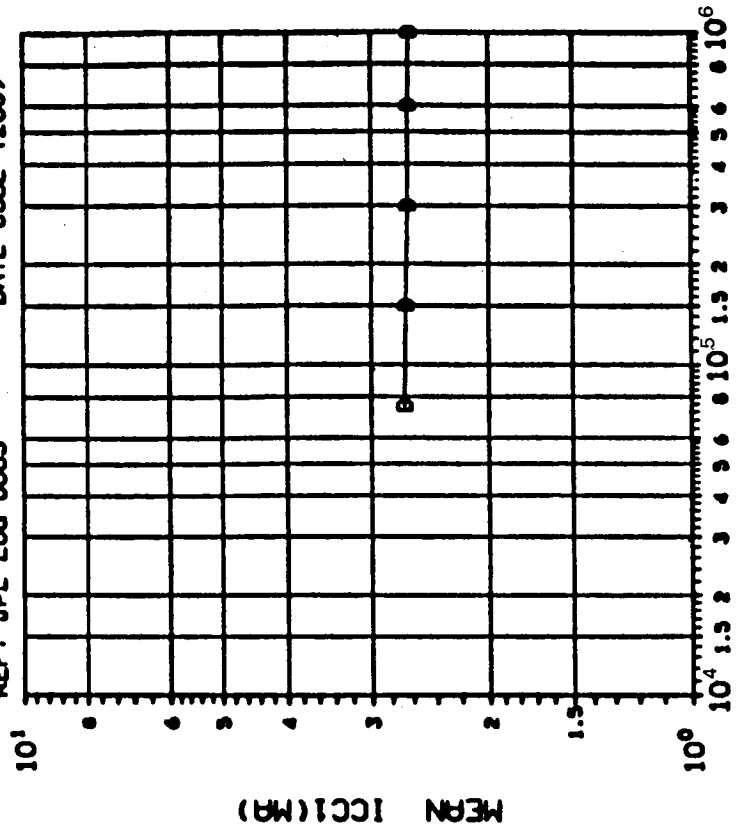
DOSE, rads(Si) 2.5 MeV electrons

(3) IB (V₀=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
C	600
	1000
	36.92

INITIAL MEAN VALUE IB(M) = 3.60X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0883 DATE CODE T2669



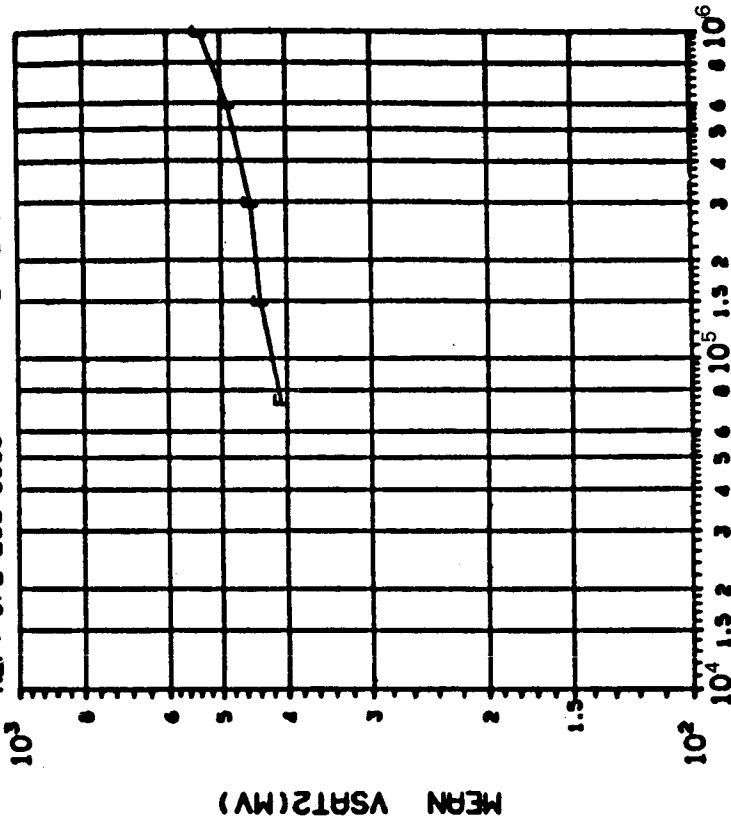
DOSE, rads(Si) 2.5 MeV electrons

(4) ICC1 (NO LOAD): IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
D	600
	1000
	.1301

INITIAL MEAN VALUE ICC1(M) = 2.73X10⁻⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669

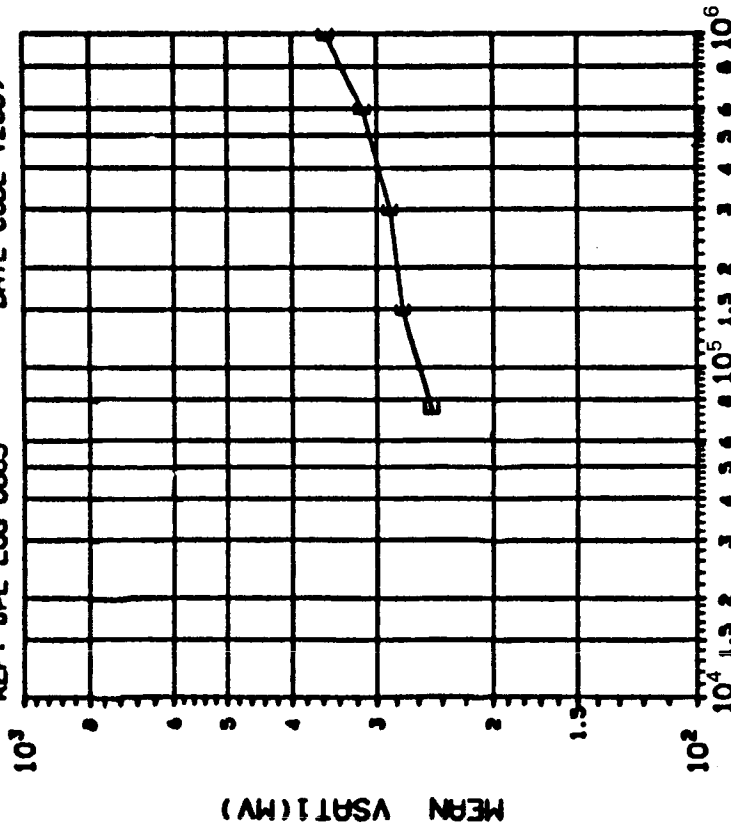


DOSE, rads(Si) 2.5 MeV electrons
(6) VSAT2 (1SK=14MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300 600 1000
	7.411 9.437 10.35 11.54 13.26

INITIAL MEAN VALUE VSAT2(MV) = 3.69X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669

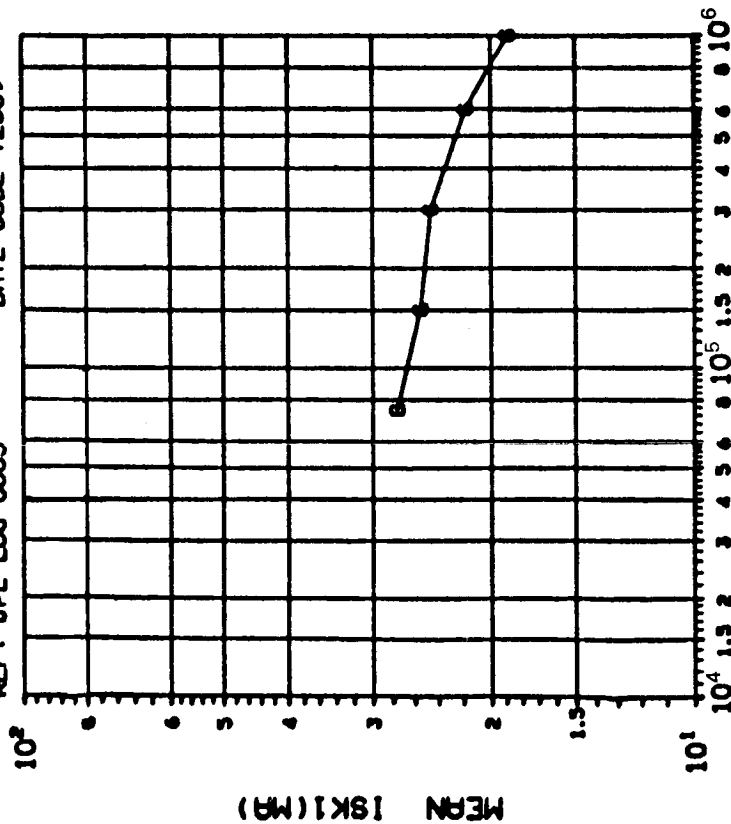


DOSE, rads(Si) 2.5 MeV electrons
(5) VSAT1 (1SK=5MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300 600 1000
	5.299 6.976 8.622 13.37 13.78

INITIAL MEAN VALUE VSAT1(MV) = 2.30X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0883 DATE CODE T2669



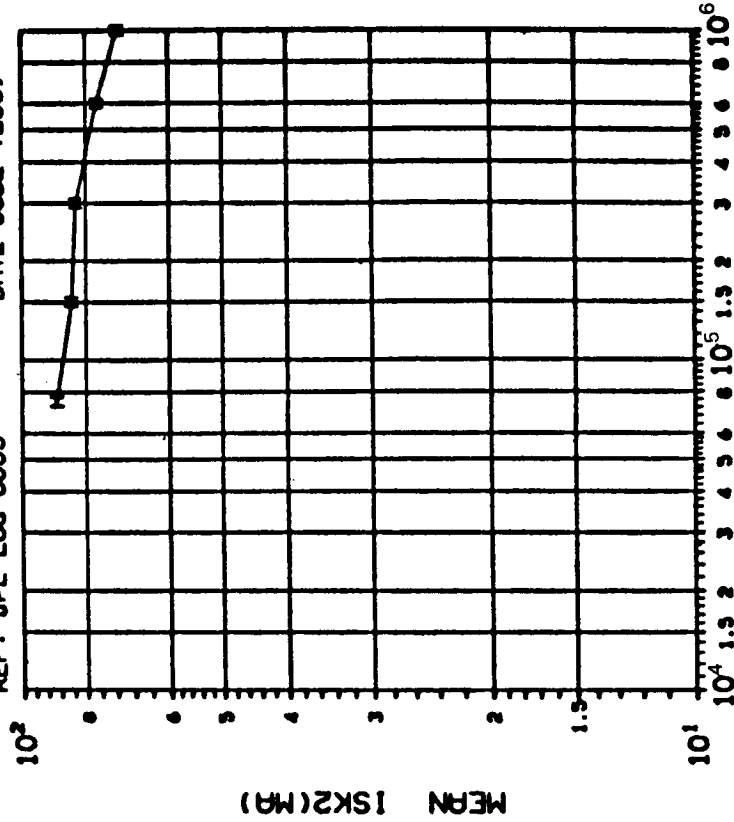
DOSE, rads(Si) 2.5 MeV electrons

(7) ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300 600 1000
	.6755 .6361 .6999 .5624 .6389

INITIAL MEAN VALUE ISK1(MA) = 2.85X10⁻¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0883 DATE CODE T2669



DOSE, rads(Si) 2.5 MeV electrons

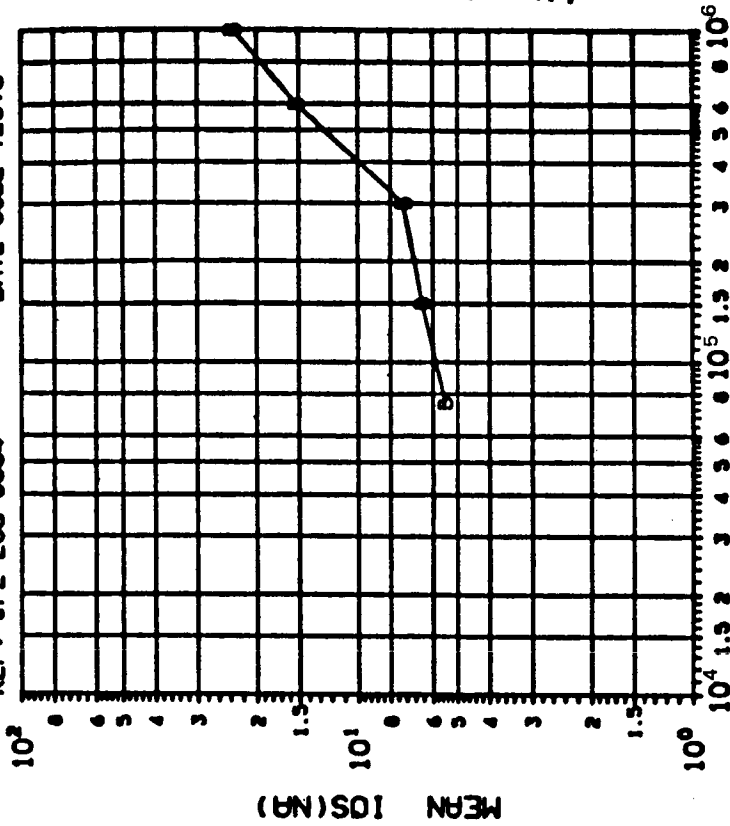
(6) ISK2 (V0=1.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300 600 1000
	2.413 2.336 1.606 1.957 1.814

INITIAL MEAN VALUE ISK2(MA) = 9.05X10⁻¹

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DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0884 DATE CODE T2670

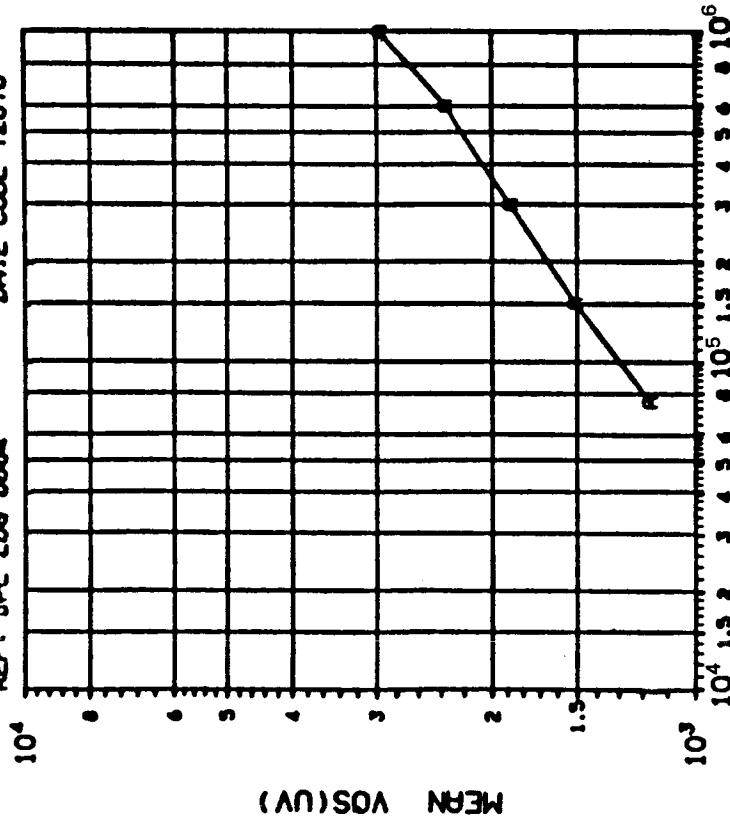


DOSE, rad(Si) 2.5 MeV electrons
(2)IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.486 .8445 1.107 3.319 3.536

INITIAL MEAN VALUE IOS(NA) = 5.42X10⁺⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0884 DATE CODE T2670

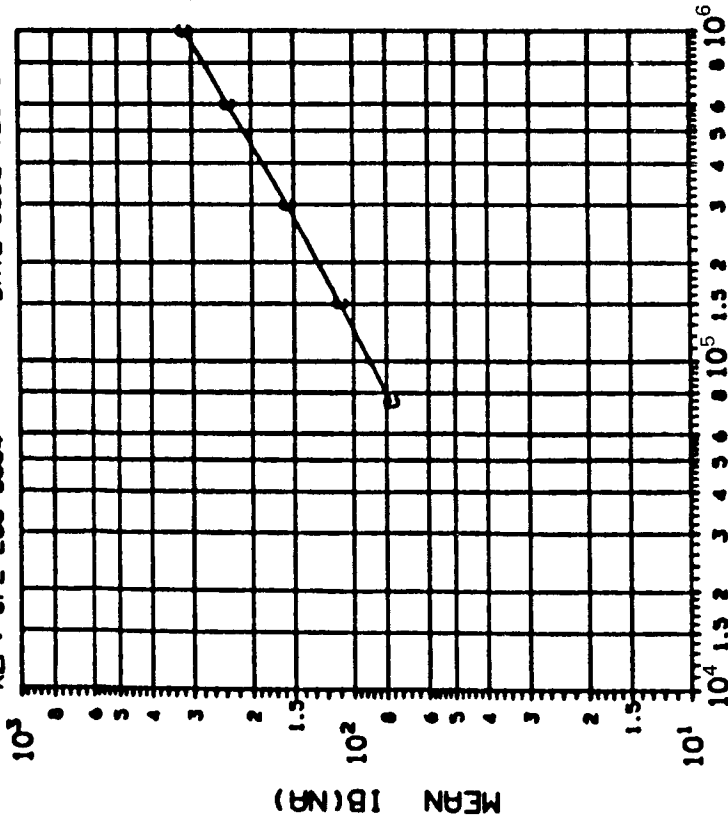


DOSE, rad(Si) 2.5 MeV electrons
(1)VOS (V0=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	250.7 256.4 311.0 363.4 473.0

INITIAL MEAN VALUE VOS(UV) = 6.34X10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



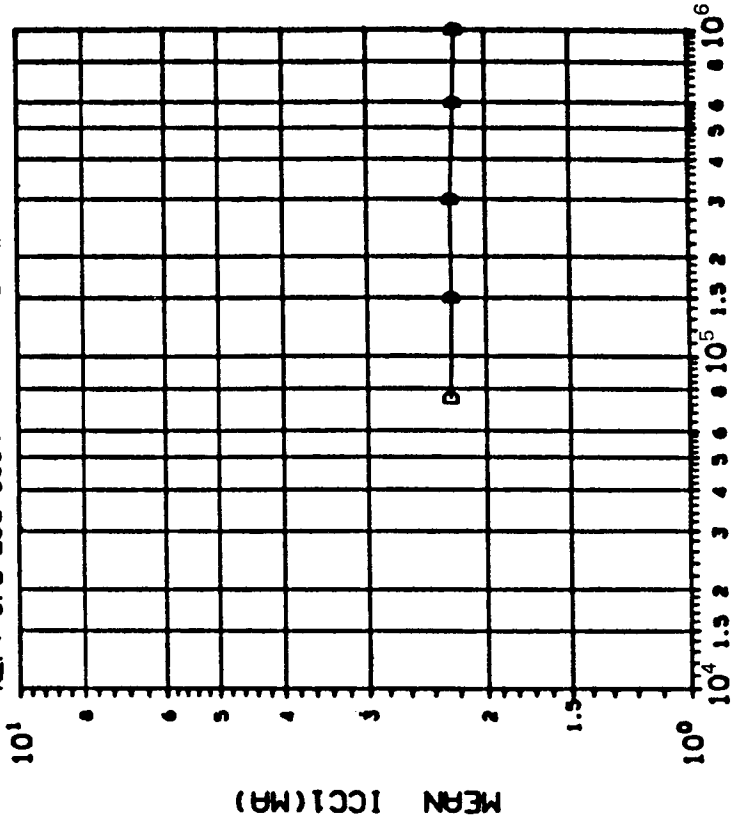
DOSE, rads(Si) 2.5 MeV electrons

(3) IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000
	3.896
	7.145
	10.06
	14.75
	22.09

INITIAL MEAN VALUE IB(NA) = 2.95X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



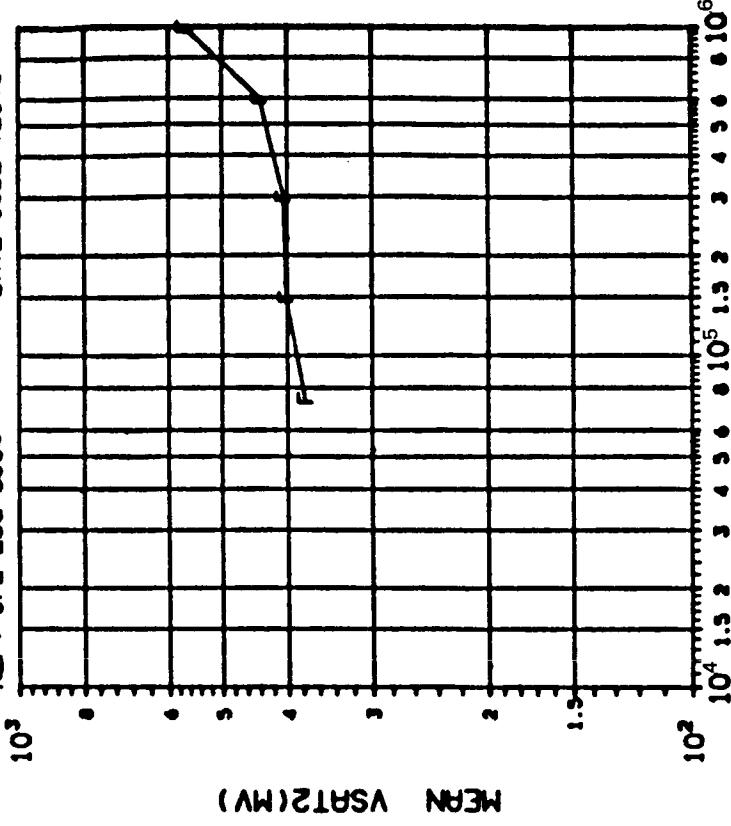
DOSE, rads(Si) 2.5 MeV electrons

(4) ICC1 (NO LOAD): IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000
	.0933
	.0879
	.0881
	.0913
	.0922

INITIAL MEAN VALUE ICC1(NA) = 2.30X10⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0884 DATE CODE T2670



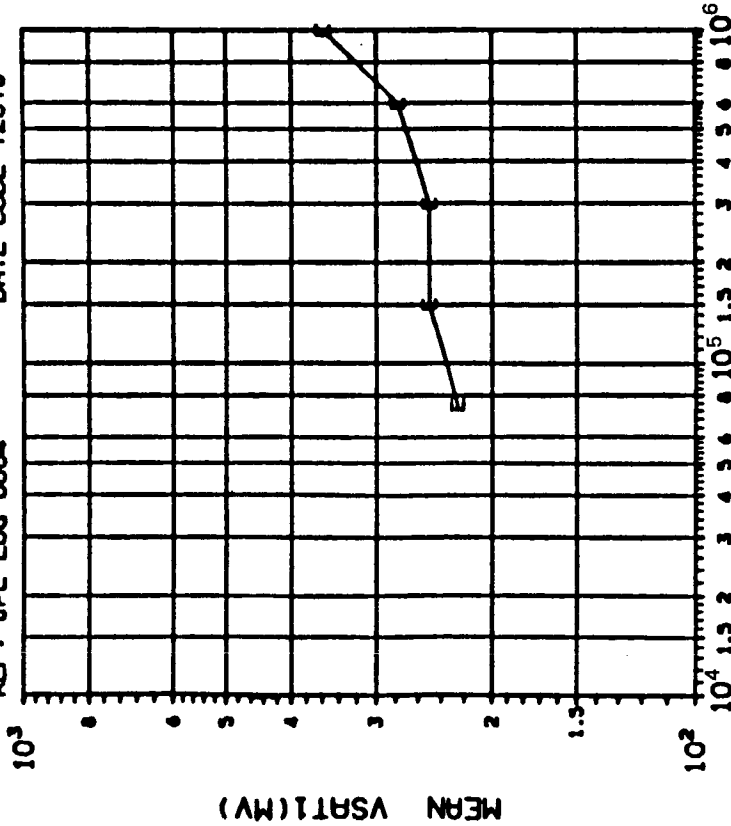
DOSE, rads(Si) 2.5 MeV electrons

(6) VSAT2 (ISK=14MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300 600 1000
	12.22 21.22 9.673 14.99 94.55

INITIAL MEAN VALUE VSAT2(MV) = 3.69X10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0884 DATE CODE T2670



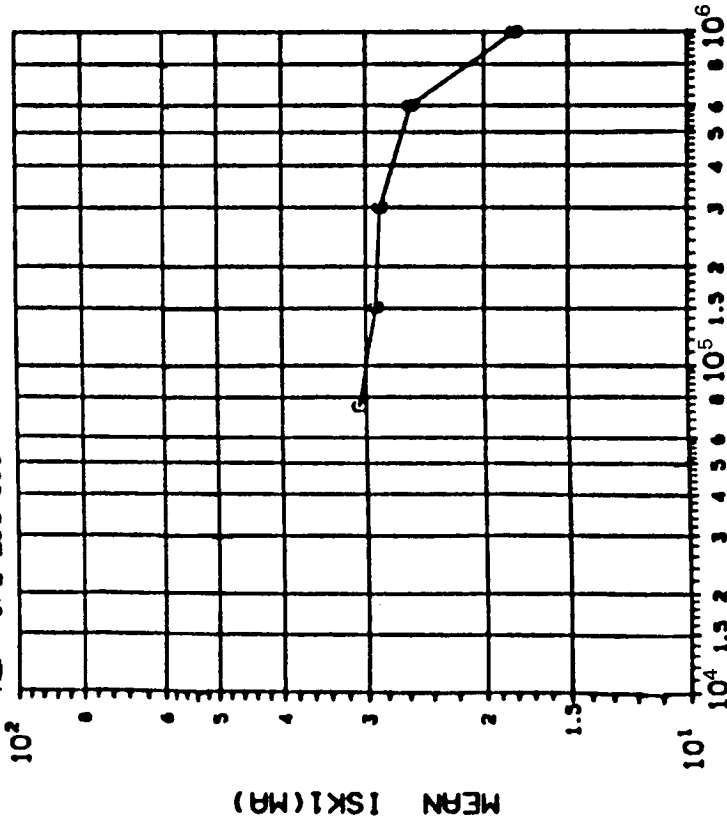
DOSE, rads(Si) 2.5 MeV electrons

(5) VSAT1 (ISK=5MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300 600 1000
	7.660 17.74 6.877 12.06 42.26

INITIAL MEAN VALUE VSAT1(MV) = 2.18X10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



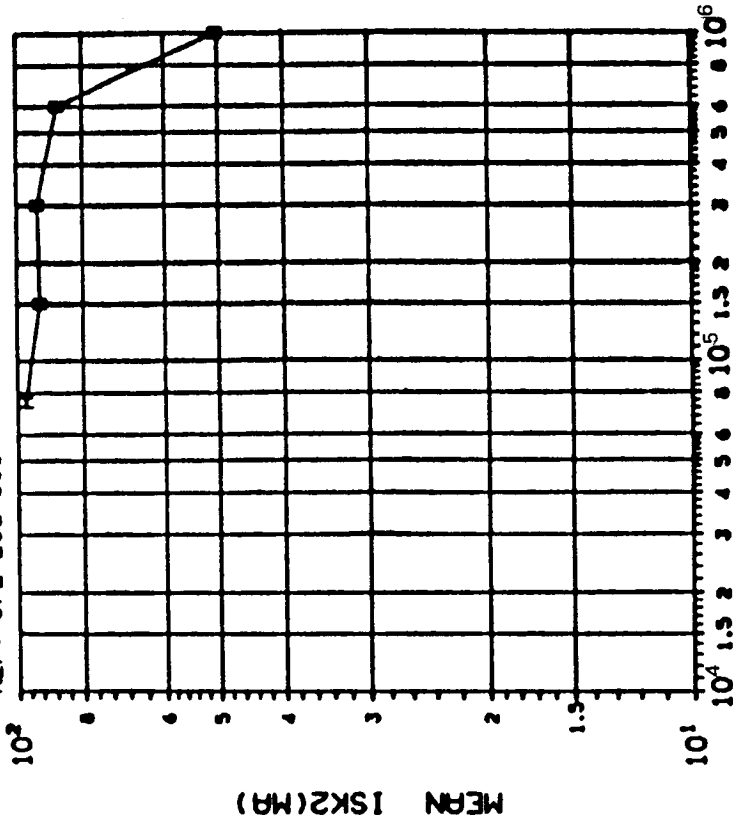
DOSE, rads(Si) 2.5 MeV electrons

(7)ISK1 (V0=0.6V) IN MR: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300 600 1000
	1.565 1.850 1.006 1.156 3.102

INITIAL MEAN VALUE ISK1(MR) = 3.09X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



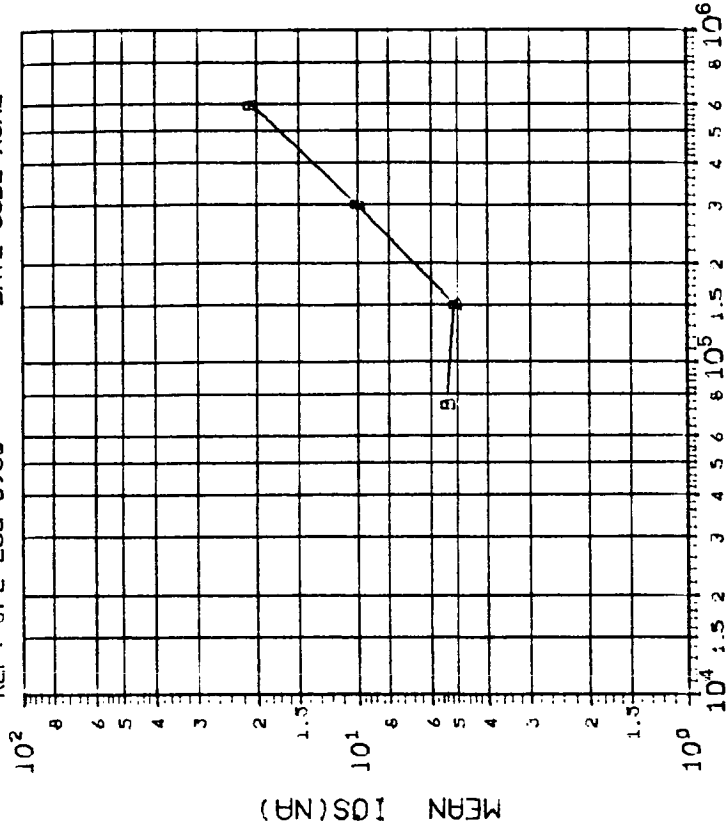
DOSE, rads(Si) 2.5 MeV electrons

(8)ISK2 (V0=1.5V) IN MR: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300 600 1000
	2.151 5.295 1.983 2.822 21.80

INITIAL MEAN VALUE ISK2(MR) = 9.86X10⁻¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 03-17-83
REF: JPL LOG 0980 DATE CODE NONE

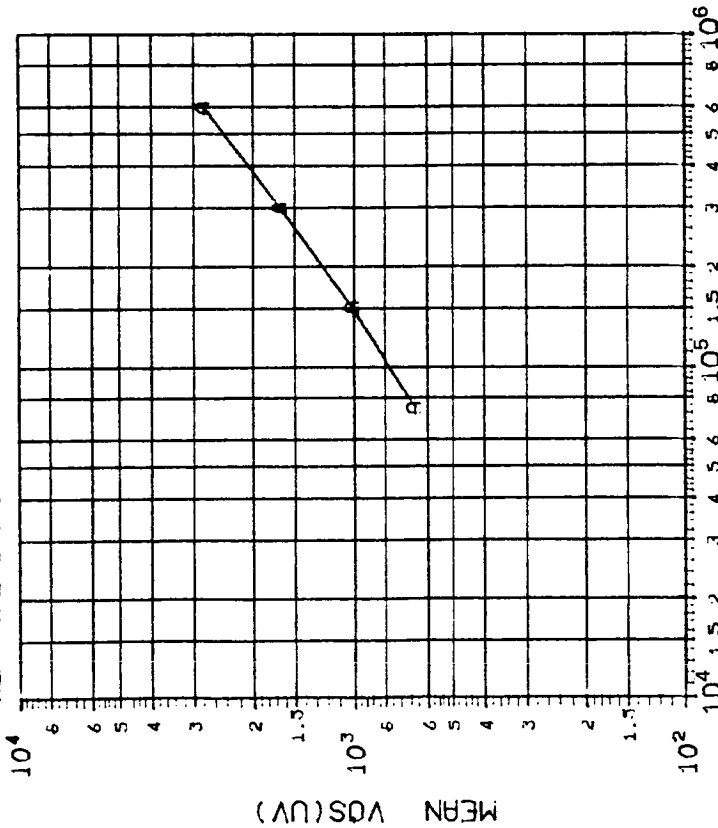


DOSE, rads(Si) 2.5 MeV electrons
(2)IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	3.552 4.153 1.677 7.911 ****

INITIAL MEAN VALUE IOS(NA) = 5.51×10^{10}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 03-17-83
REF: JPL LOG 0980 DATE CODE NONE

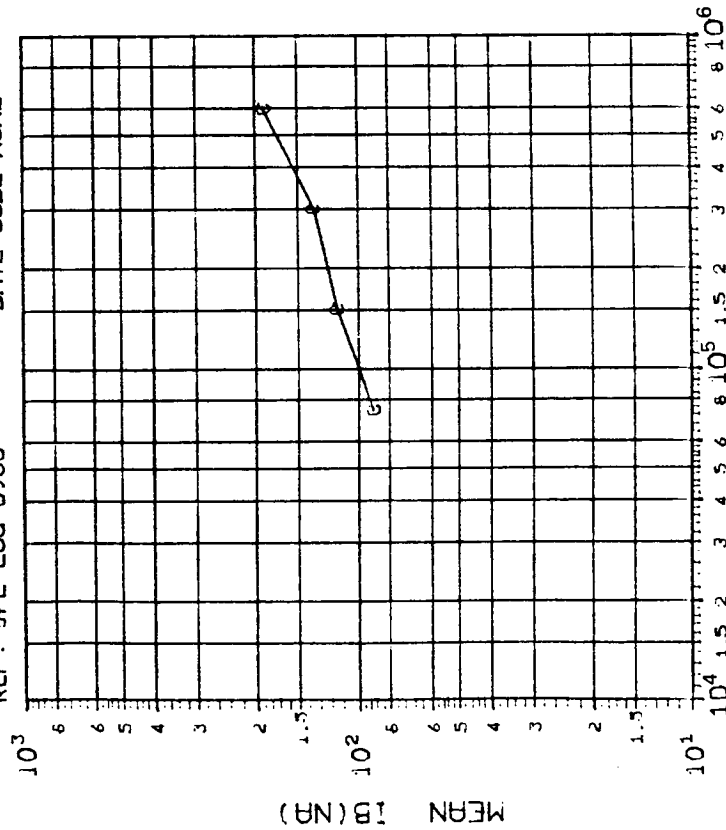


DOSE, rads(Si) 2.5 MeV electrons
(1)VOS (VO=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	1044. 1048. 1246. 1777. ****

INITIAL MEAN VALUE VOS(UV) = 1.68×10^{12}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 03-17-83
 REF: JPL LOG 0980 DATE CODE NONE

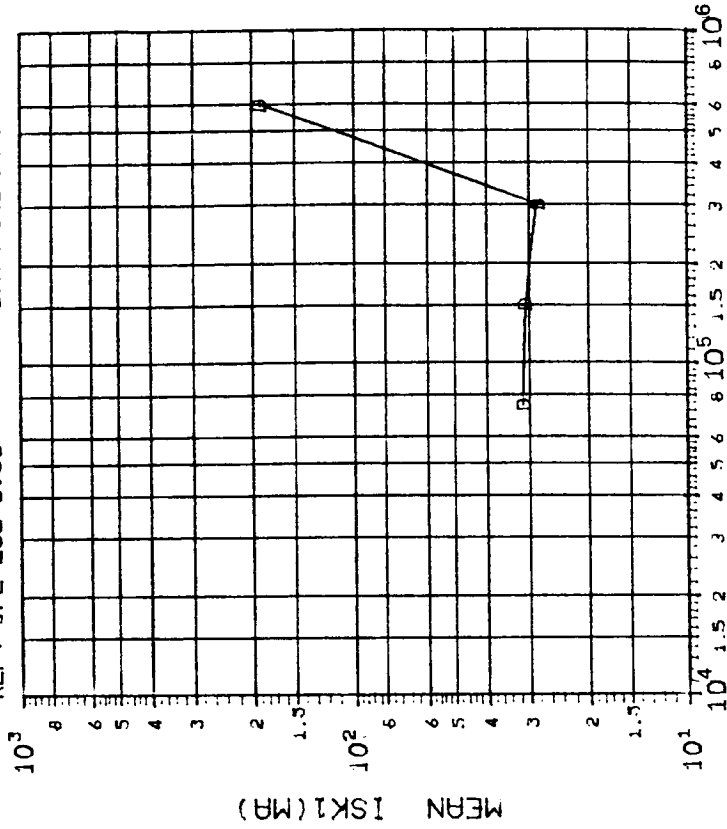


DOSE, rads(Si) 2.5 MeV electrons
 (3)1B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600 1000
	21.17 27.35 49.41 71.95 ****

INITIAL MEAN VALUE IB(NA) = 4.65X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 03-17-83
 REF: JPL LOG 0980 DATE CODE NONE

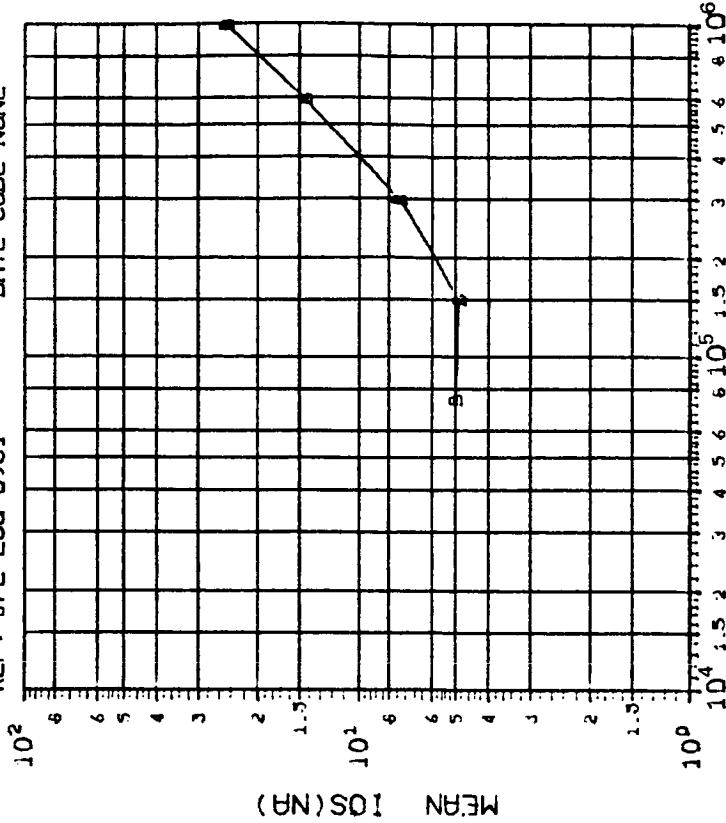


DOSE, rads(Si) 2.5 MeV electrons
 (4)1SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300 600 1000
	.6519 .6224 .9553 362.7 ****

INITIAL MEAN VALUE ISK1(MA) = 3.48X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0981 DATE CODE NONE

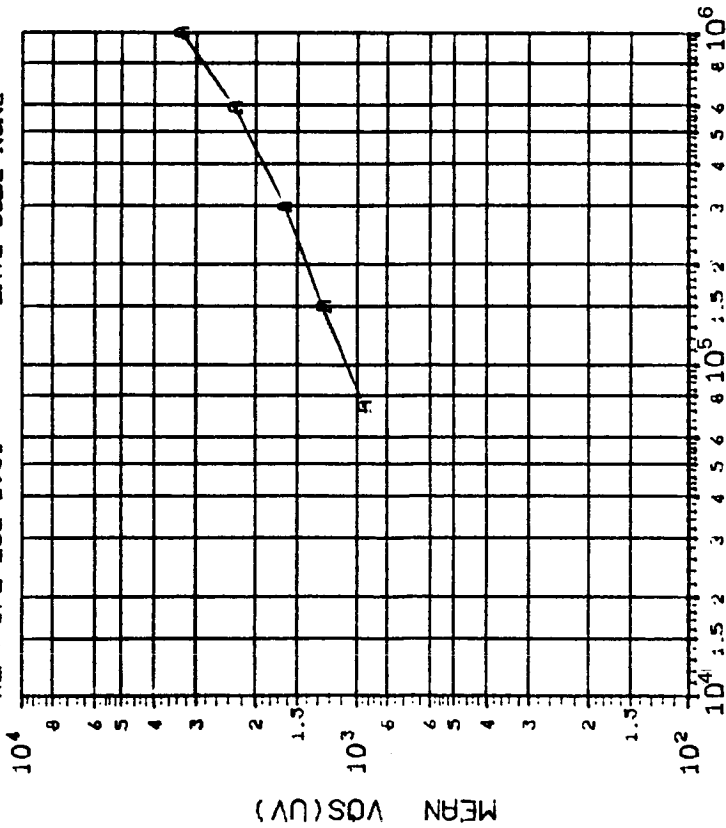


DOSE, rads(Si) 2.5 MeV electrons
(2)IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	600
	1000	
	1.693	2.059
	1.161	2.515
	2.946	

INITIAL MEAN VALUE IOS(NA) = 5.09X10¹⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0981 DATE CODE NONE

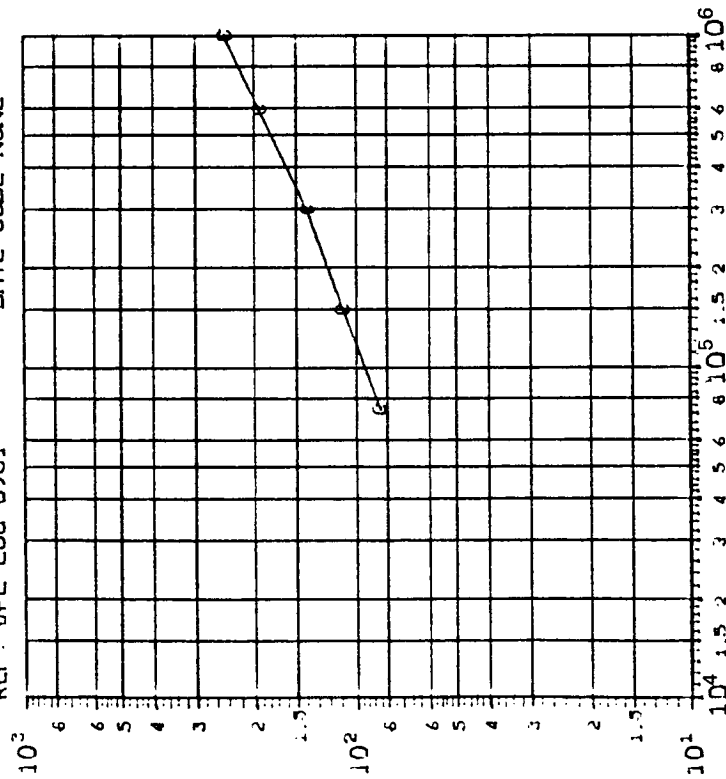


DOSE, rads(Si) 2.5 MeV electrons
(1)VOS (V0=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	150
	300	600
	1000	
	362.0	419.2
	432.3	450.0
	551.7	

INITIAL MEAN VALUE VOS(UV) = 5.71X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0981 DATE CODE NONE



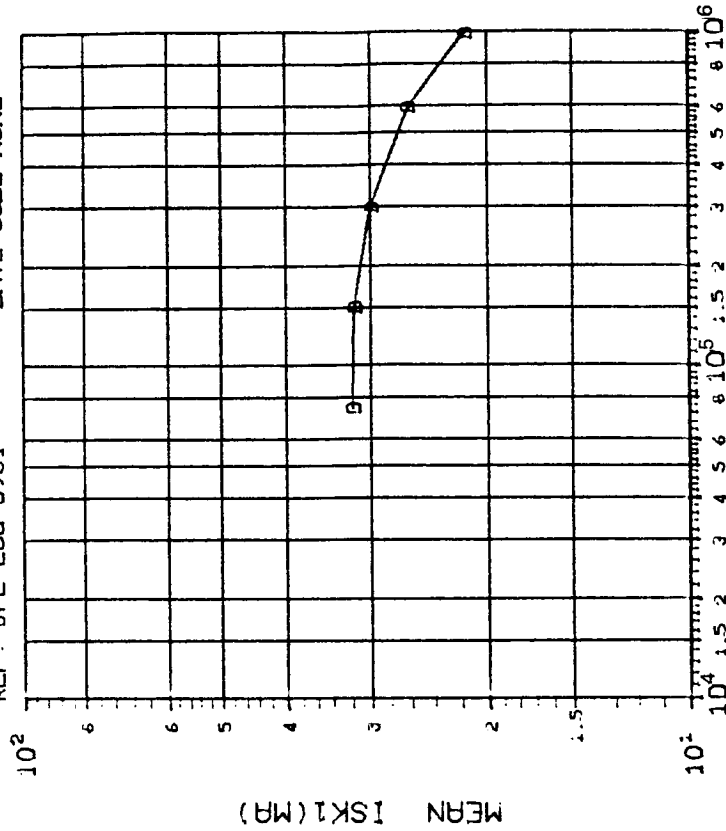
DOSE, rads(Si) 2.5 MeV electrons

(3)IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000

INITIAL MEAN VALUE IB(NA) = 4.31X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0981 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(4)ISK1 (V0=0.6V) IN MA: VS DOSE

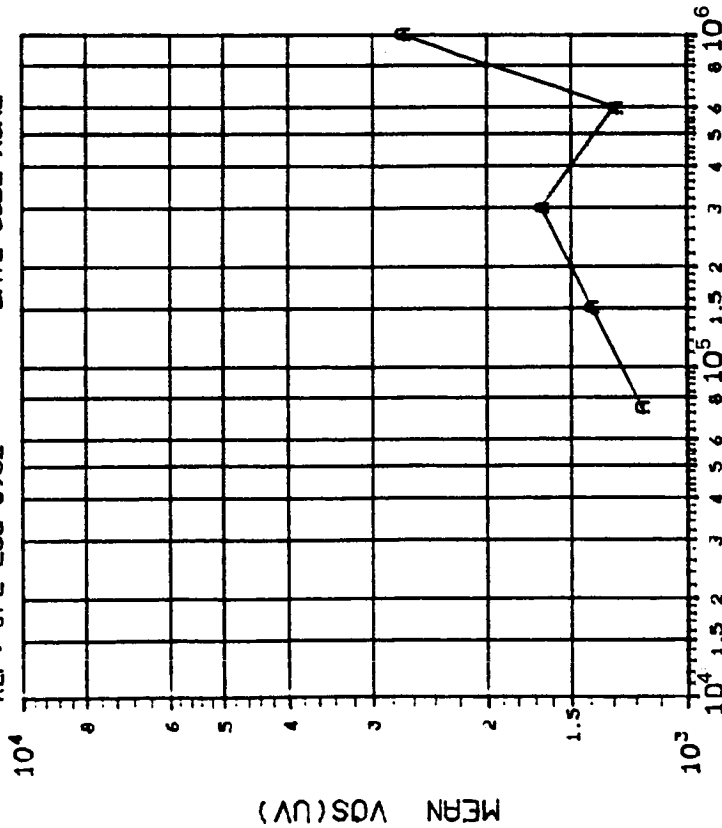
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000

INITIAL MEAN VALUE ISK1(MA) = 3.54X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0982 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(1) VOS (V₀=0.5V) IN UVOLTS: VS DOSE

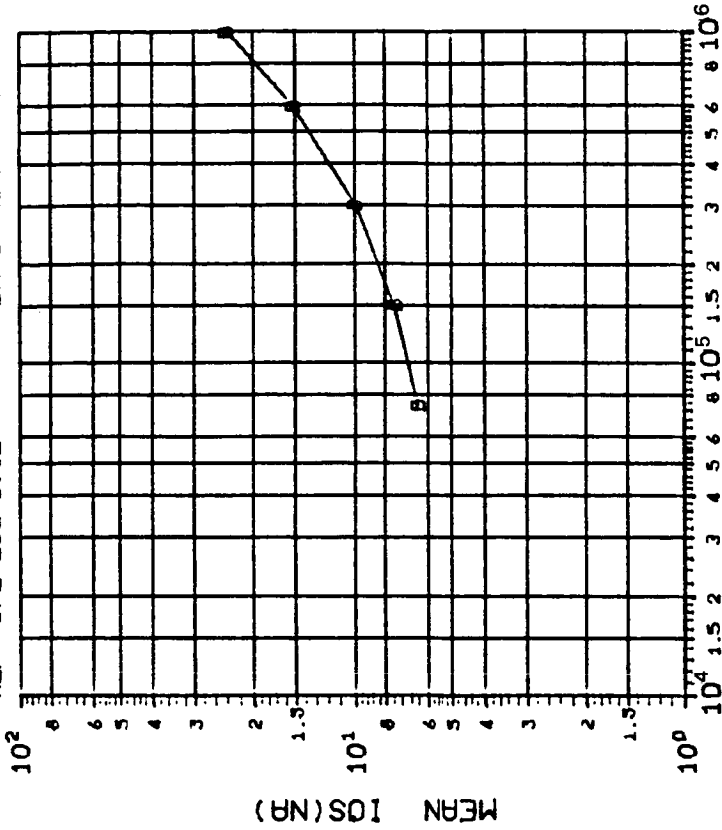
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	1039. 1019. 1025. 2105. 1220.

INITIAL MEAN VALUE VOS(UV) = 9.29X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0982 DATE CODE NONE



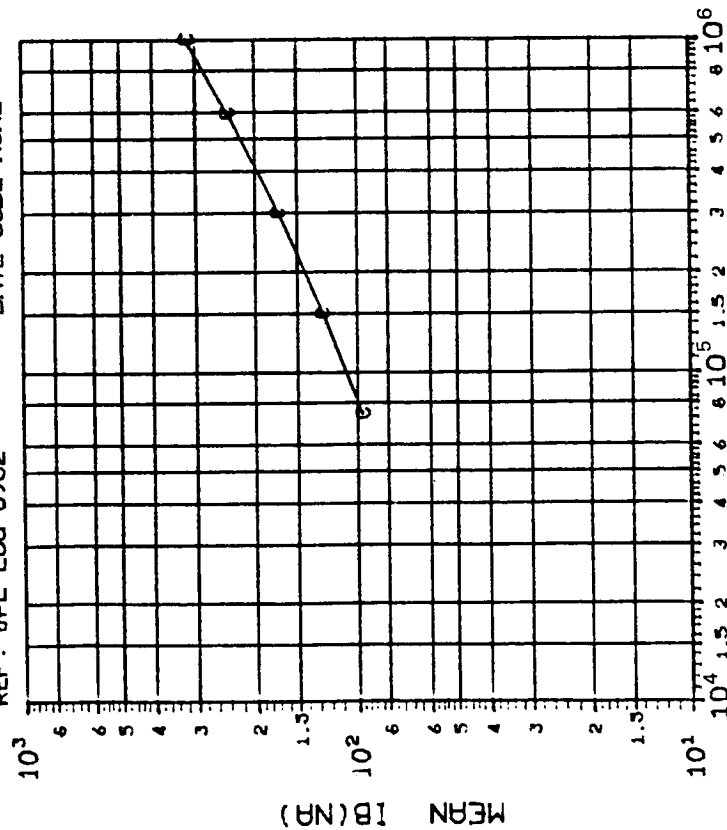
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V₀=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	2.086 1.833 2.797 4.039 7.593

INITIAL MEAN VALUE IOS(NA) = 6.09X10¹⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0982 DATE CODE NONE

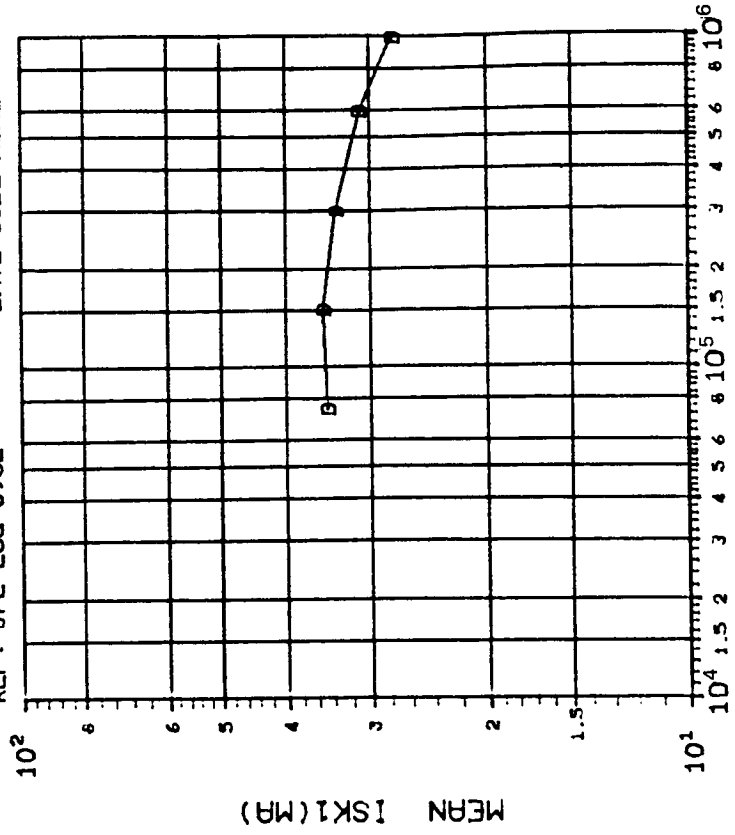


DOSE, rads(Si) 2.5 MeV electrons
 (311B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000

INITIAL MEAN VALUE IB(NA) = 5.06X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0982 DATE CODE NONE



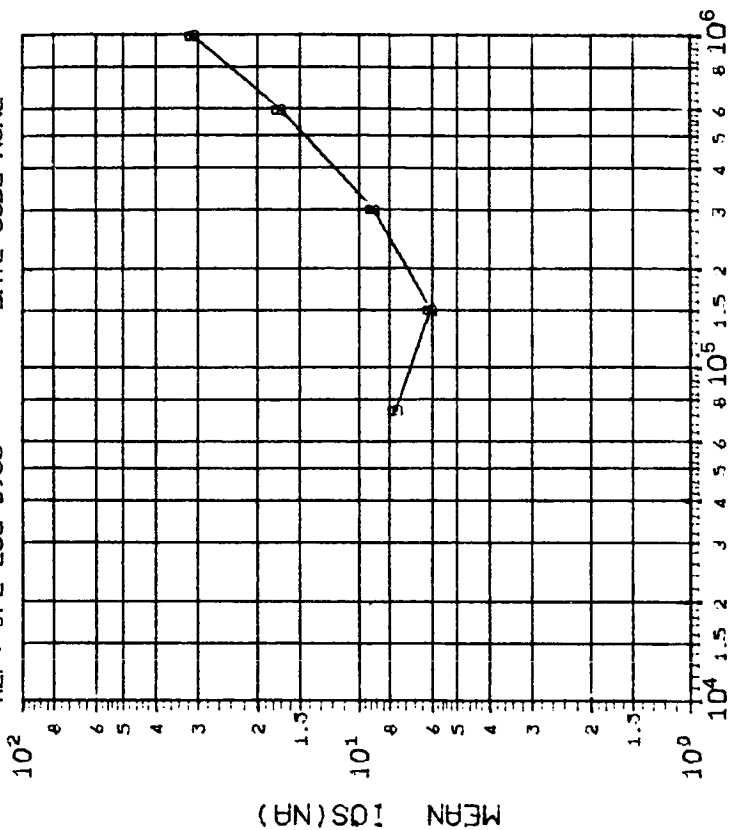
DOSE, rads(Si) 2.5 MeV electrons
 (411SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000

INITIAL MEAN VALUE ISK1(MA) = 3.84X10¹

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DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-04-83
REF: JPL LOG 0983 DATE CODE NONE

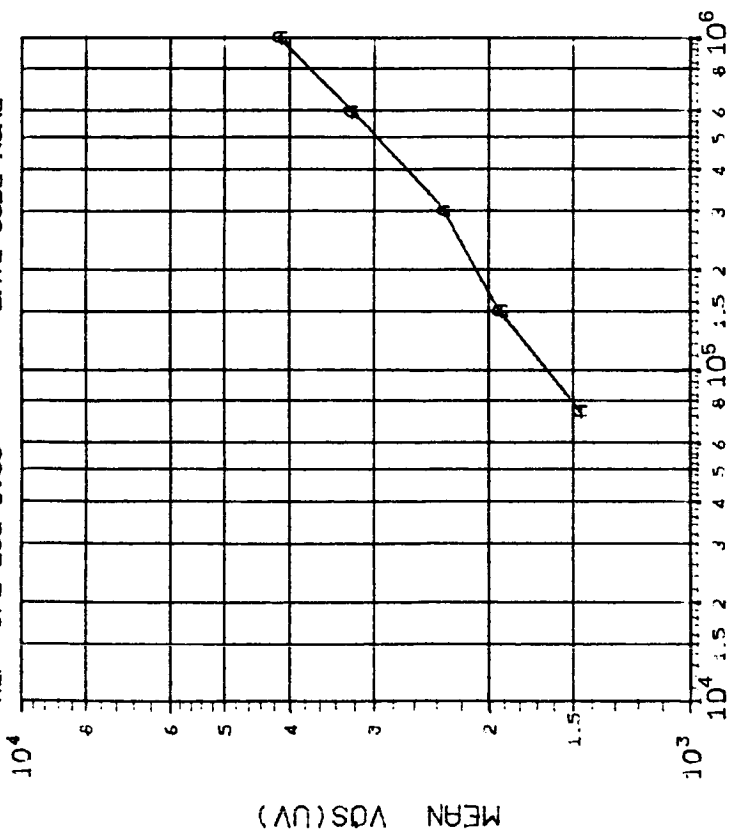


DOSE, rads(Si) 2.5 MeV electrons
(2)IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	7.639 1.486 5.771 7.856 13.98

INITIAL MEAN VALUE IOS(NA) = 5.42X10³

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-04-83
REF: JPL LOG 0983 DATE CODE NONE

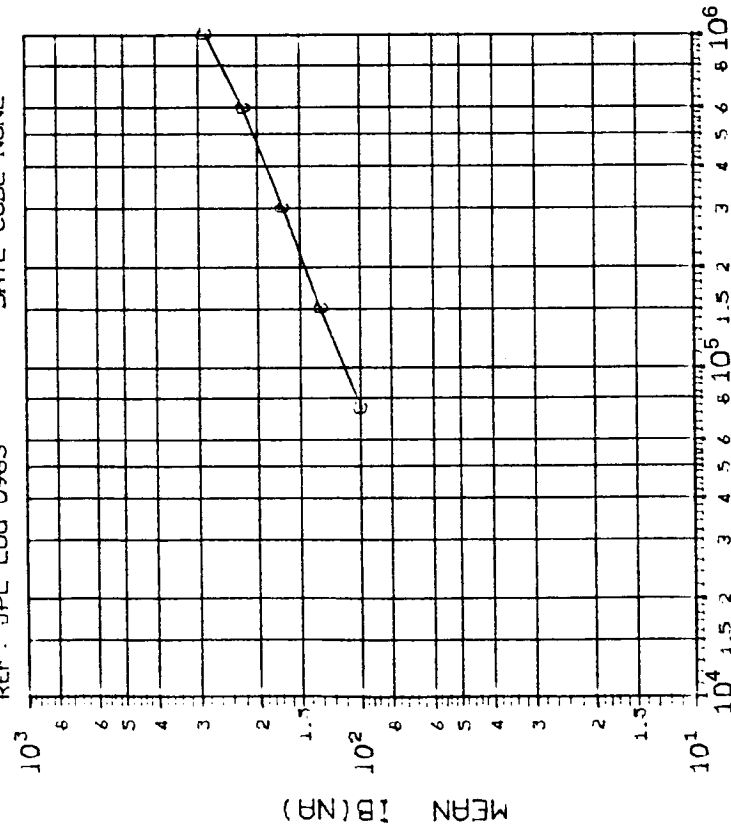


DOSE, rads(Si) 2.5 MeV electrons
(1)VOS (VO=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	808.4 792.2 968.6 1313. 1346.

INITIAL MEAN VALUE VOS(UV) = 8.97X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0983 DATE CODE NONE

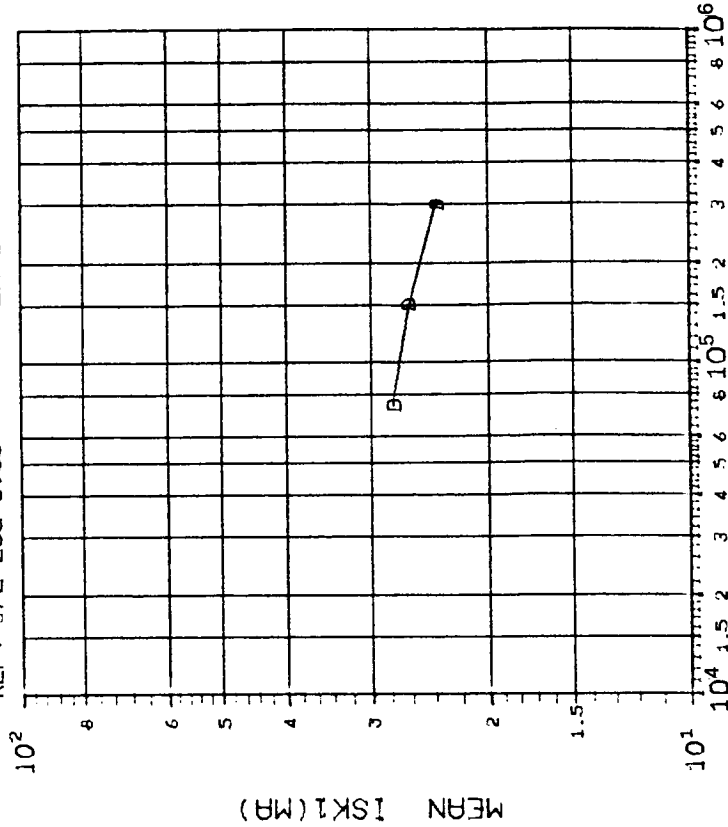


DOSE, rads(Si) 2.5 MeV electrons
 (3)IB (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600 1000
	10.32 12.63 19.36 31.13 42.12

INITIAL MEAN VALUE IB(NA) = 4.89X10⁺¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0983 DATE CODE NONE

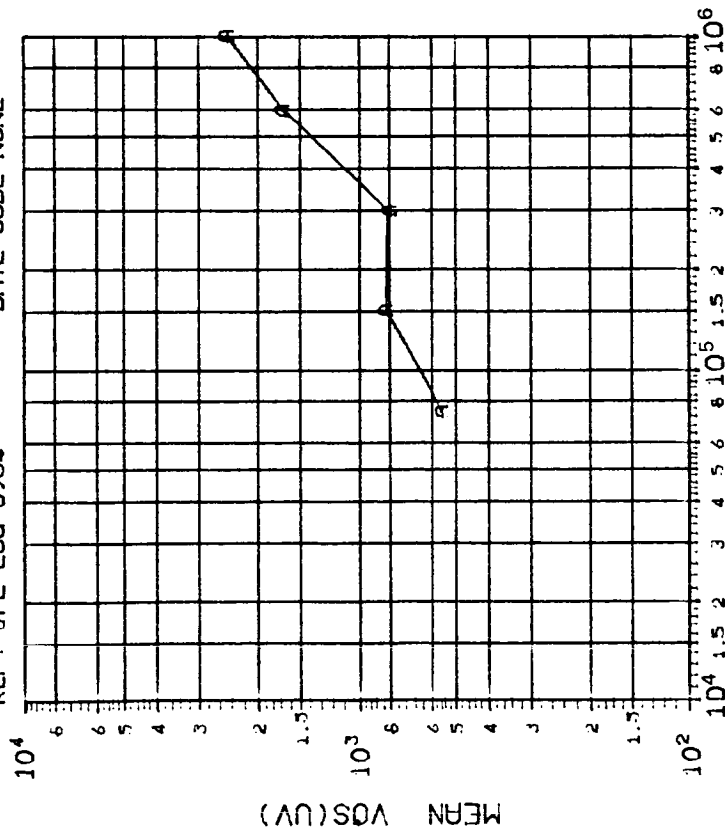


DOSE, rads(Si) 2.5 MeV electrons
 (4)ISK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300 600 1000
	2.697 3.657 4.734 **** ****

INITIAL MEAN VALUE ISK1(MA) = 3.07X10⁺¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0984 DATE CODE NONE



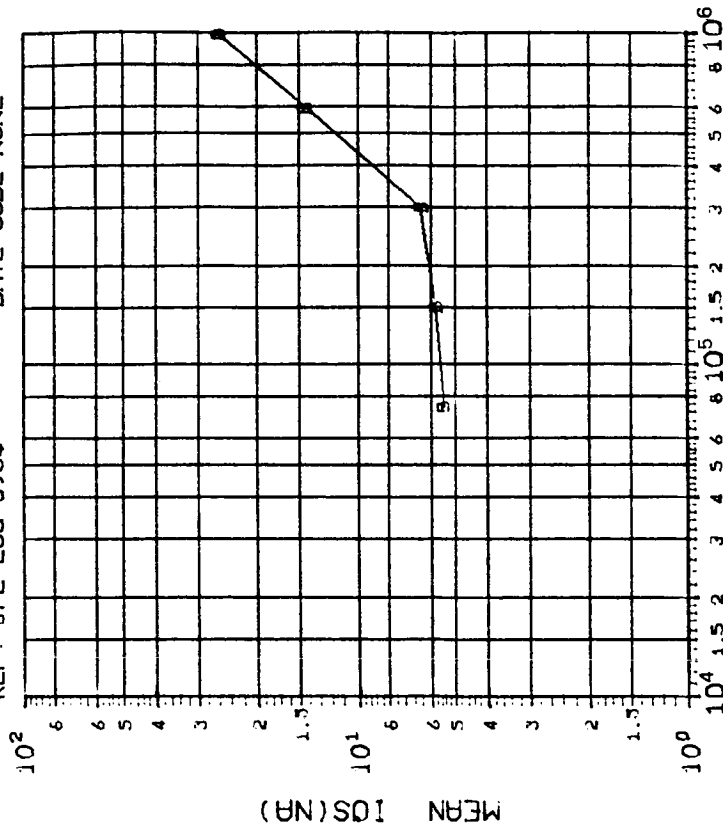
DOSE, rads(Si) 2.5 MeV electrons

(1) VOS (V_O=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	296.0 295.9 905.0 440.1 595.4

INITIAL MEAN VALUE VOS(UV) = 2.62X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0984 DATE CODE NONE



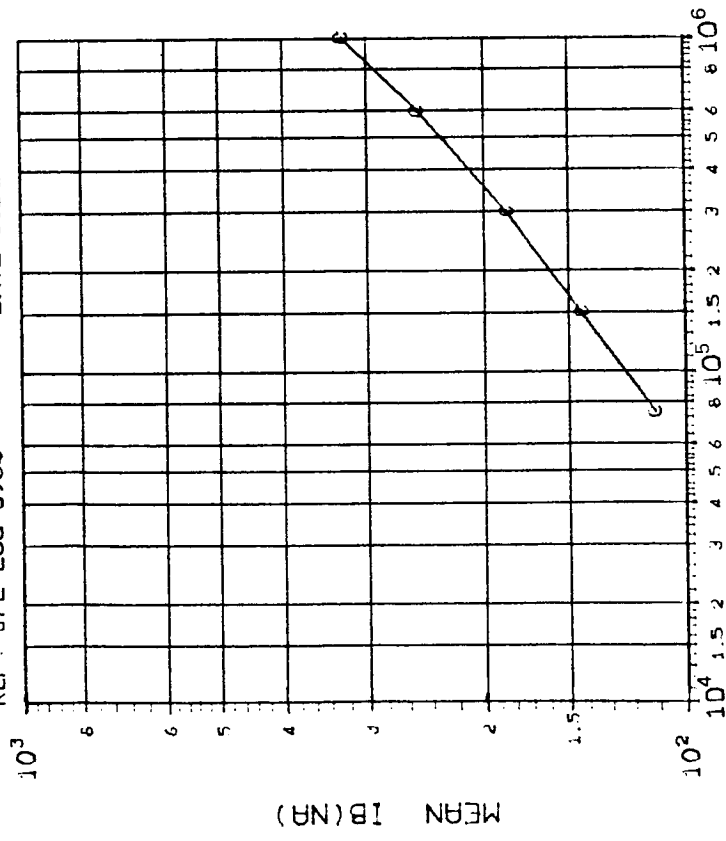
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V_O=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.526 2.119 7.998 7.353 6.272

INITIAL MEAN VALUE IOS(NA) = 4.65X10⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0984 DATE CODE NONE

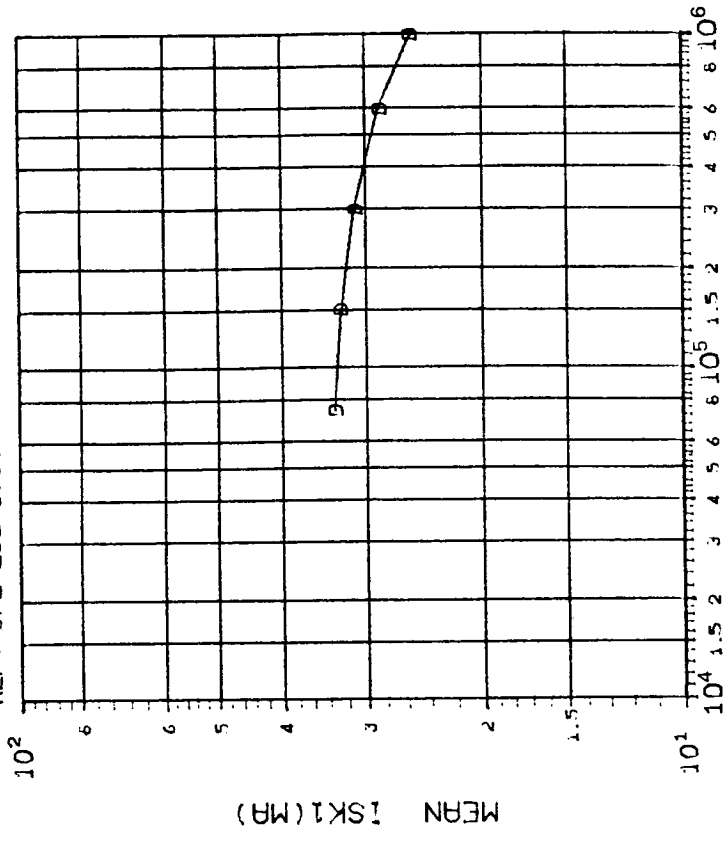


DOSE, rad(Si) 2.5 MeV electrons
 (3)IB (V_O=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600 1000
	9.076 9.979 14.30 15.98 17.26

INITIAL MEAN VALUE IB(NA) = 5.76X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0984 DATE CODE NONE

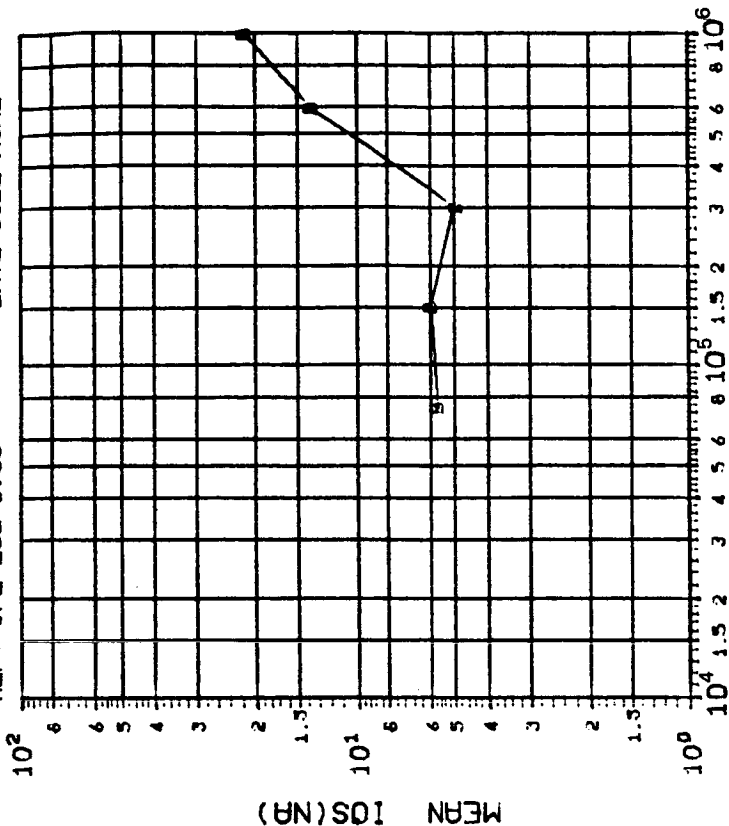


DOSE, rad(Si) 2.5 MeV electrons
 (4)ISK1 (V_O=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300 600 1000
	.6541 .7285 .5886 .6723 1.632

INITIAL MEAN VALUE ISK1(MA) = 3.57X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0985 DATE CODE NONE

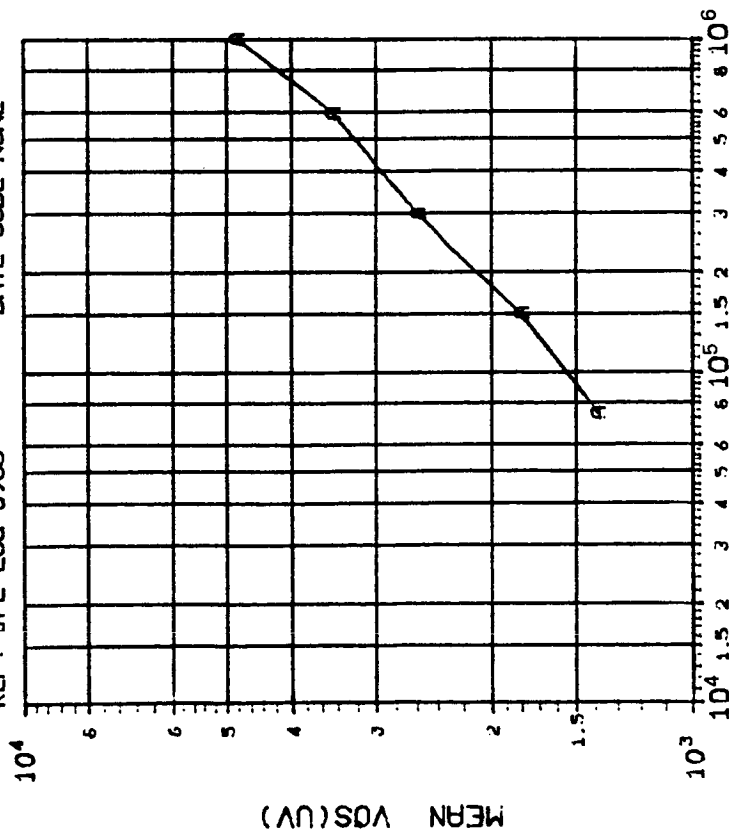


DOSE, rads(Si) 2.5 MeV electrons
(2)IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	2.159 5.792 44.13 24.63 30.69

INITIAL MEAN VALUE IOS(NA) = 6.15X10⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0985 DATE CODE NONE

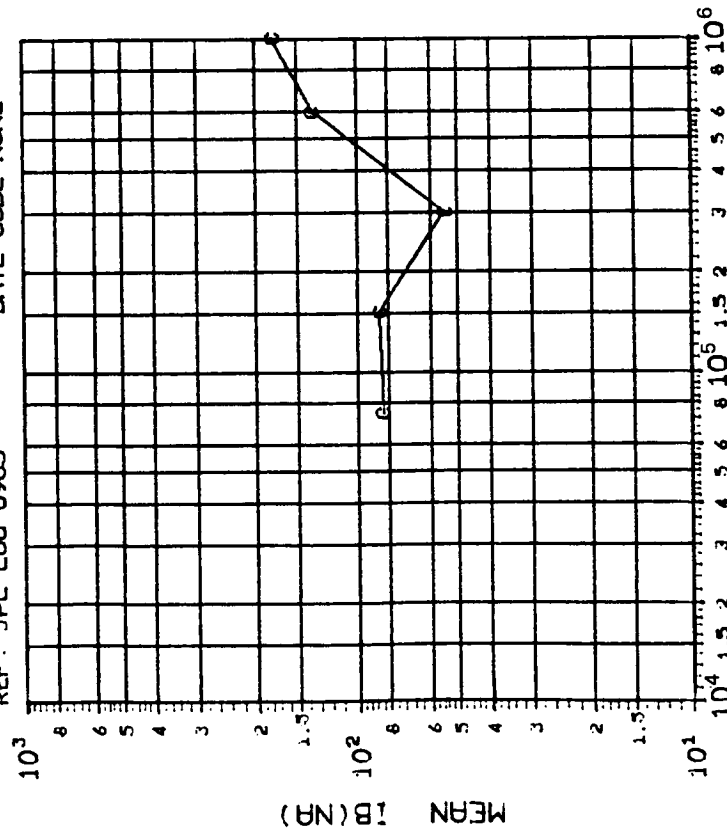


DOSE, rads(Si) 2.5 MeV electrons
(1)VOS (V0=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	790.5 804.1 1188. 1081. 1410.

INITIAL MEAN VALUE VOS(UV) = 9.82X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0985 DATE CODE NONE

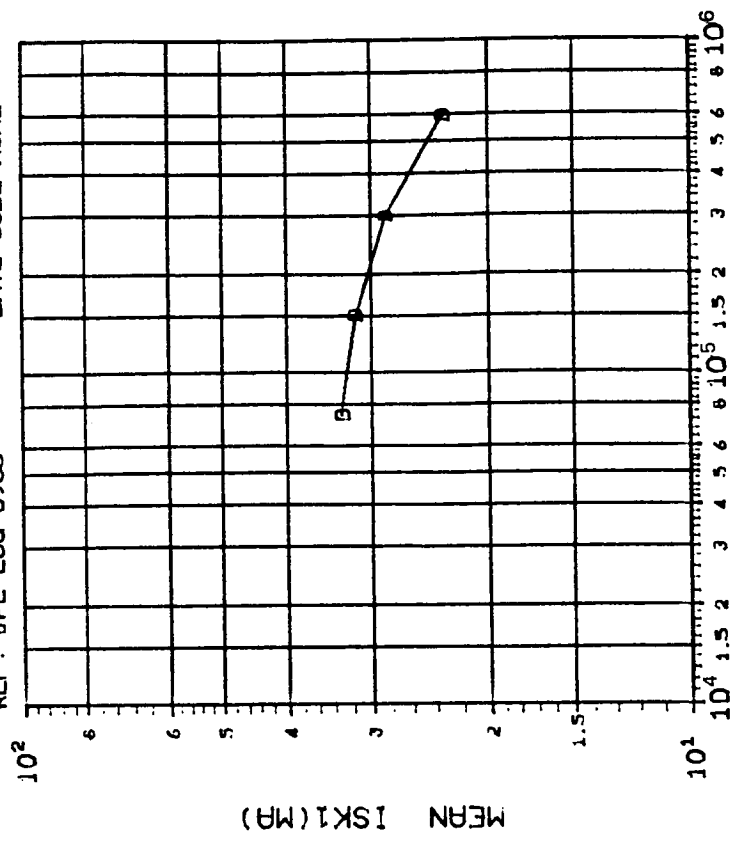


DOSE, rads(Si) 2.5 MeV electrons
 (3)IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000

INITIAL MEAN VALUE IB(NA) = 4.55X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0985 DATE CODE NONE

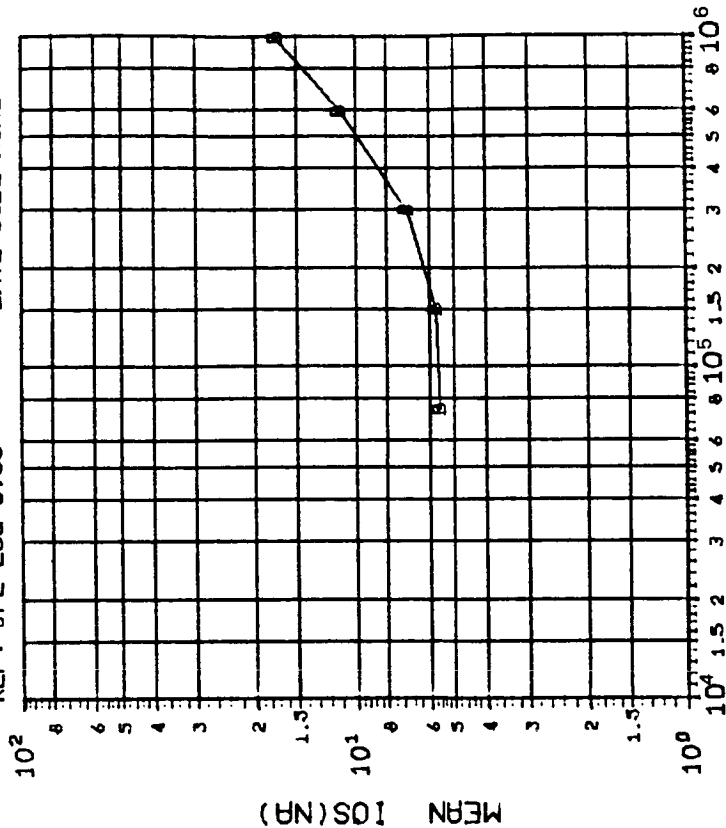


DOSE, rads(Si) 2.5 MeV electrons
 (4)ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000

INITIAL MEAN VALUE ISK1(MA) = 3.58X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0986 DATE CODE NONE

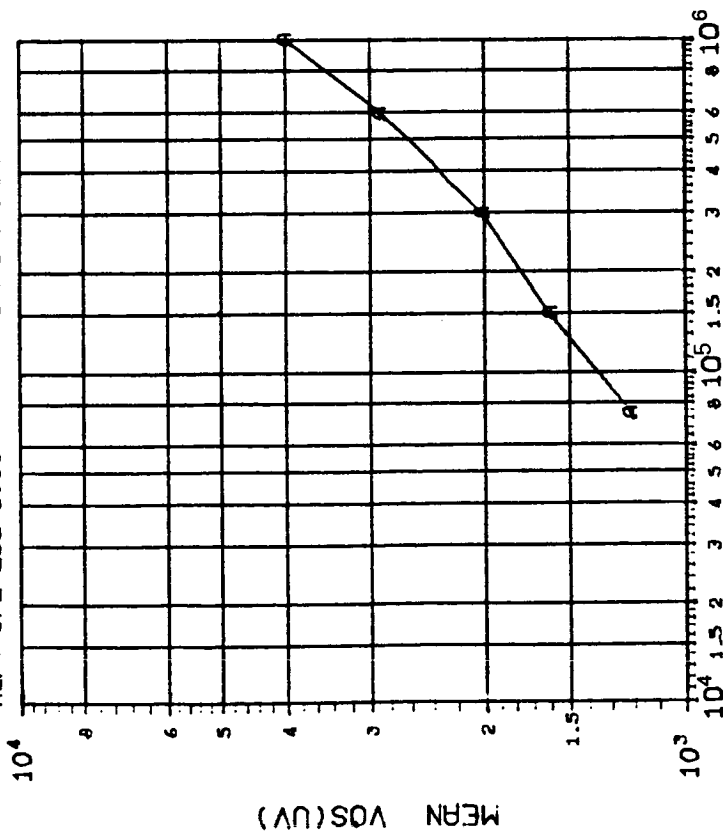


DOSE, rads(Si) 2.5 MeV electrons
(2)IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
	1000
	2.262
	2.740
	7.536
	15.62
	23.52

INITIAL MEAN VALUE IOS(NA) = 5.29X10⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0986 DATE CODE NONE

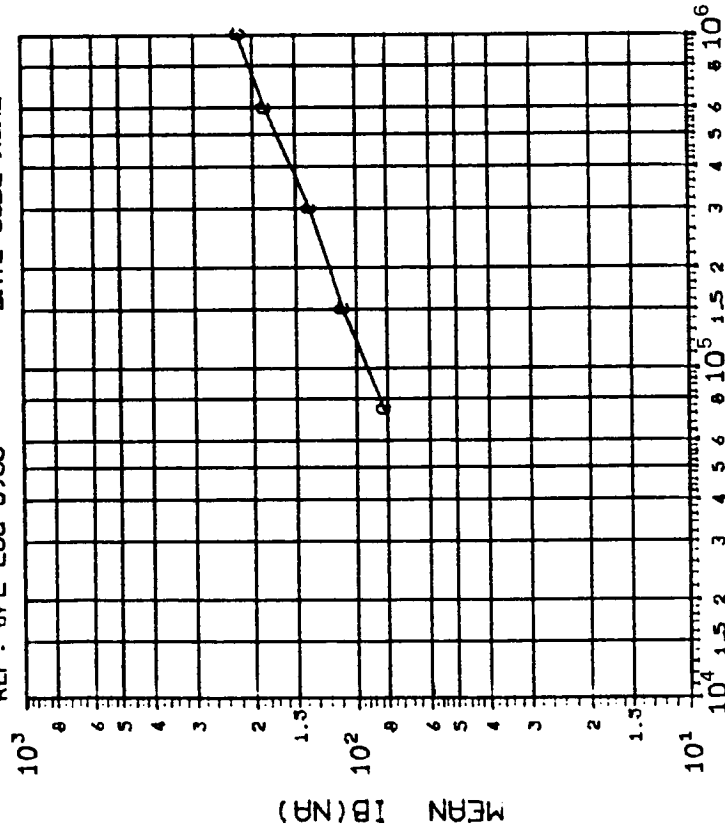


DOSE, rads(Si) 2.5 MeV electrons
(1)VOS (VO=0.5V) IN VOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
	1000
	367.0
	456.2
	519.4
	792.6
	1118.

INITIAL MEAN VALUE VOS(UV) = 8.37X10⁻²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0986 DATE CODE NONE



DOSE, rad(Si) 2.5 MeV electrons

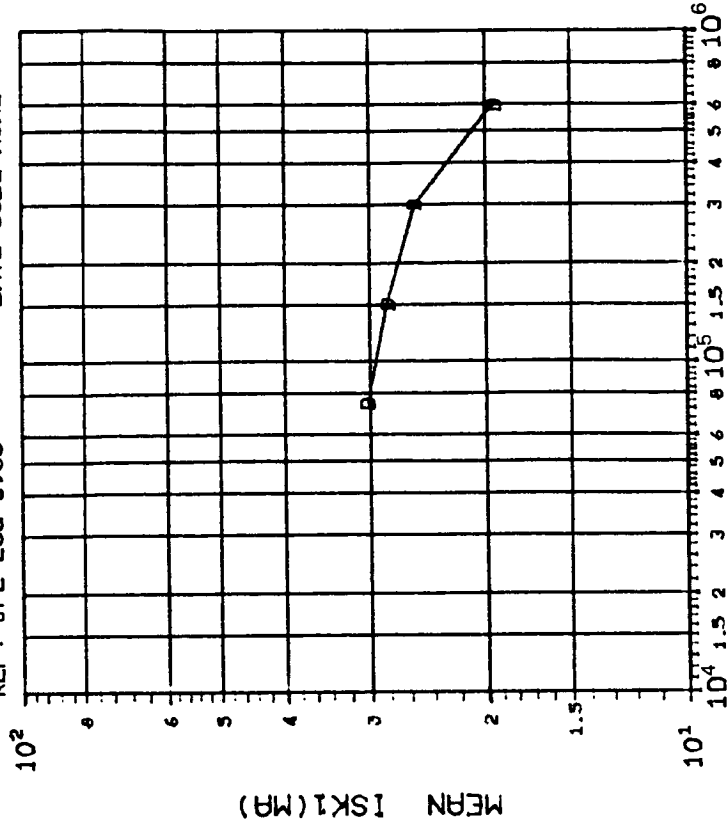
(311B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)			
C	75	150	300	1000
	20.00	26.02	43.25	61.94 77.32

INITIAL MEAN VALUE IB(NA) = 4.09X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0986 DATE CODE NONE



DOSE, rad(Si) 2.5 MeV electrons

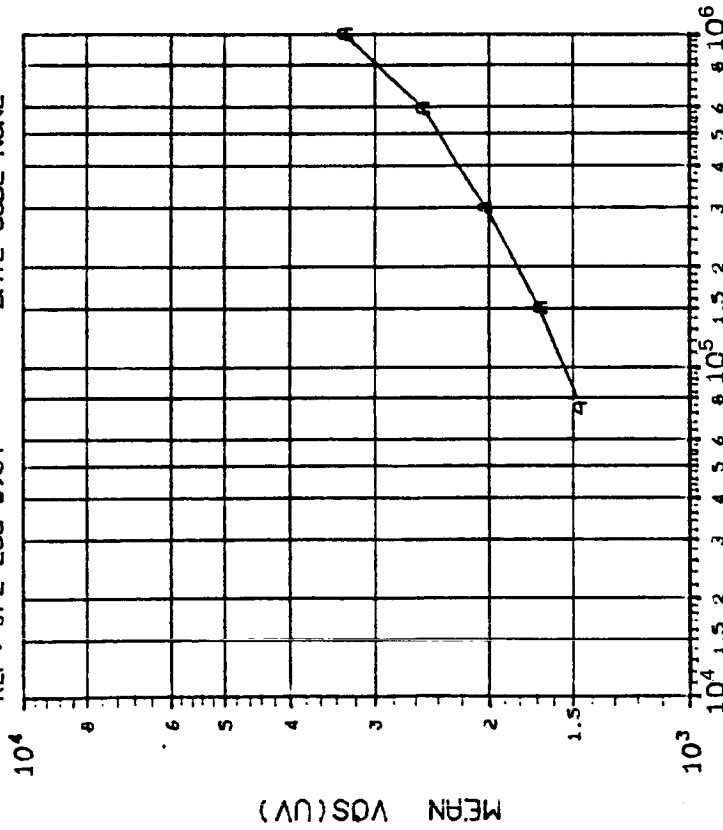
(411SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)			
D	75	150	300	1000
	3.526	3.995	4.162	6.309 ****

INITIAL MEAN VALUE ISK1(MA) = 3.24X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0987 DATE CODE NONE

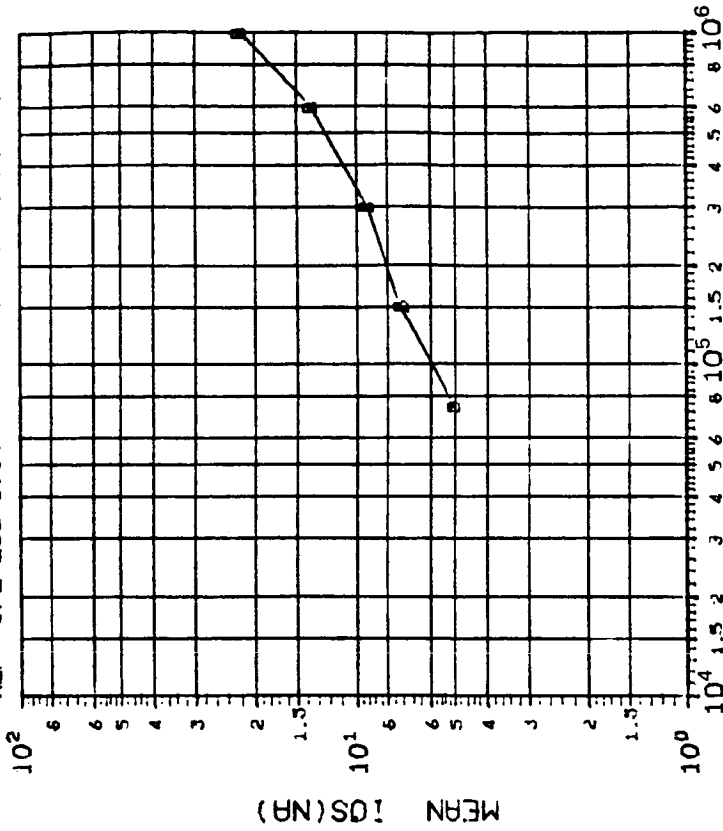


DOSE, rads(Si) 2.5 MeV electrons
 (1) VOS (VOS=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	827.0 783.7 740.2 686.9 952.6

INITIAL MEAN VALUE VOS(UV) = 1.11×10^3

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0987 DATE CODE NONE

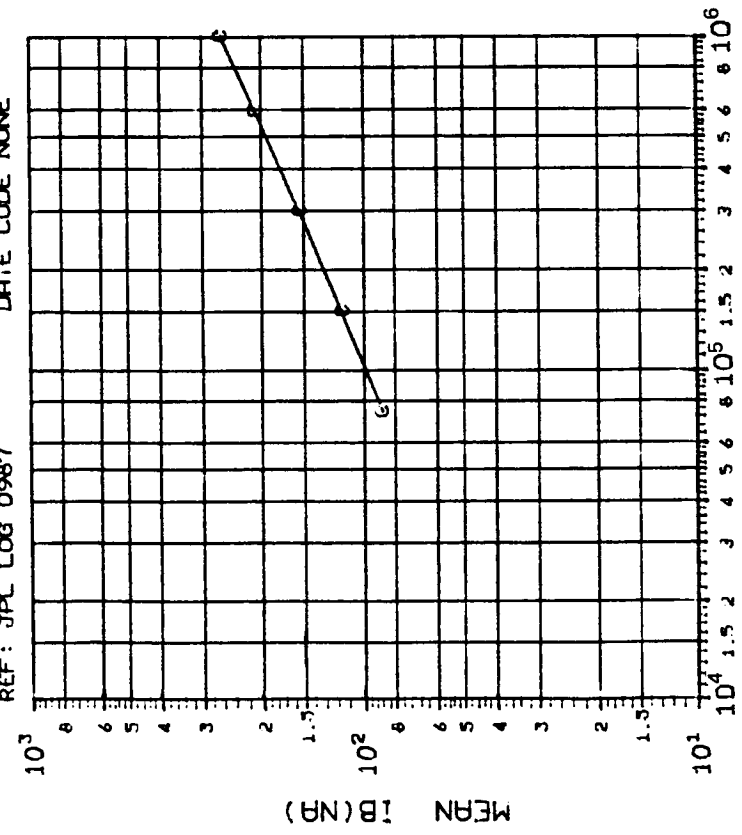


DOSE, rads(Si) 2.5 MeV electrons
 (2) IOS (VOS=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.312 1.602 1.974 2.605 4.486

INITIAL MEAN VALUE IOS(NA) = 4.76×10^0

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0987 DATE CODE NONE

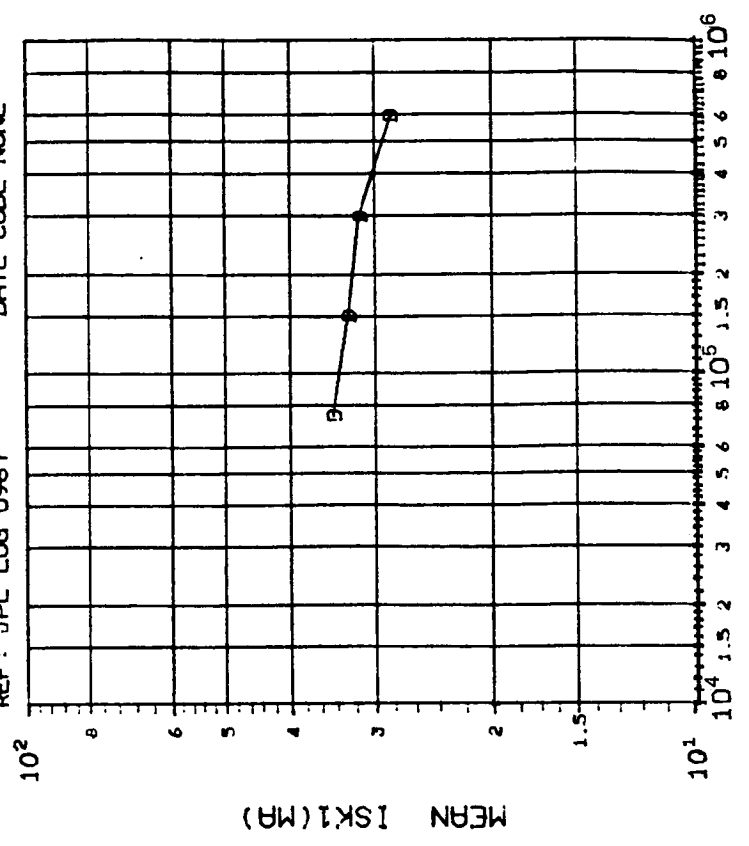


DOSE, rads(Si) 2.5 MeV electrons
 (3)11B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
INITIAL MEAN VALUE IB(NA) = 4.29X10 ¹	

INITIAL MEAN VALUE IB(NA) = 4.29X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0987 DATE CODE NONE

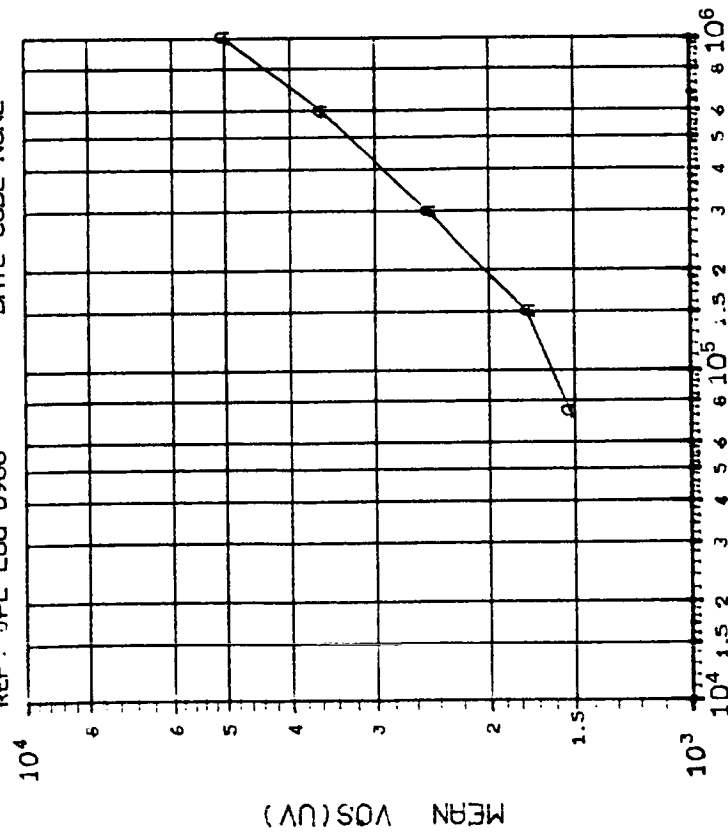


DOSE, rads(Si) 2.5 MeV electrons
 (4)11SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
INITIAL MEAN VALUE ISK1(MA) = 3.62X10 ¹	

INITIAL MEAN VALUE ISK1(MA) = 3.62X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE

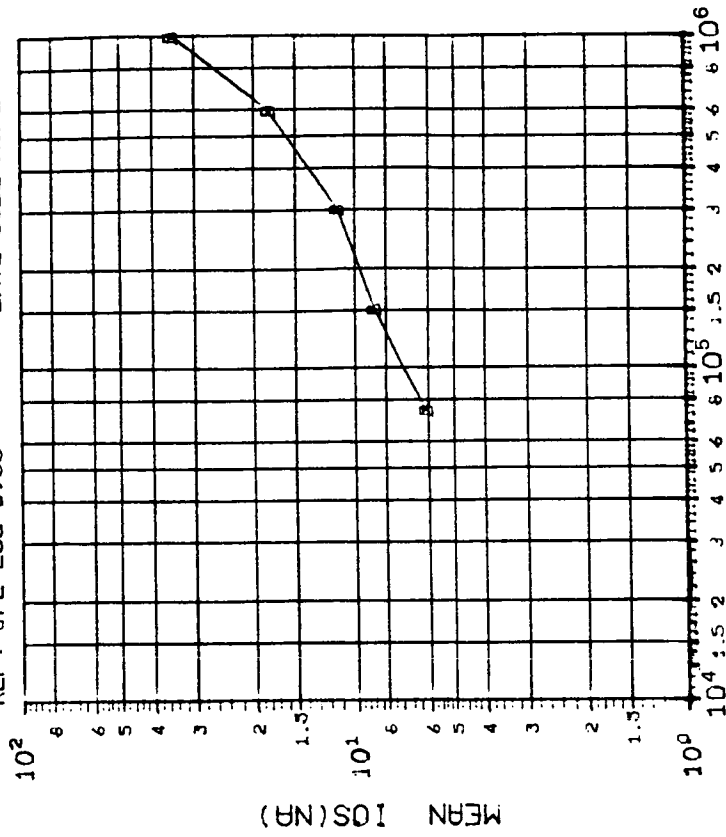


DOSE, rads(Si) 2.5 MeV electrons
 (1) VOS (V₀=0.5V) IN VOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	1144. 1469. 1615. 2102. 2788.

INITIAL MEAN VALUE VOS(UV) = 4.95X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE

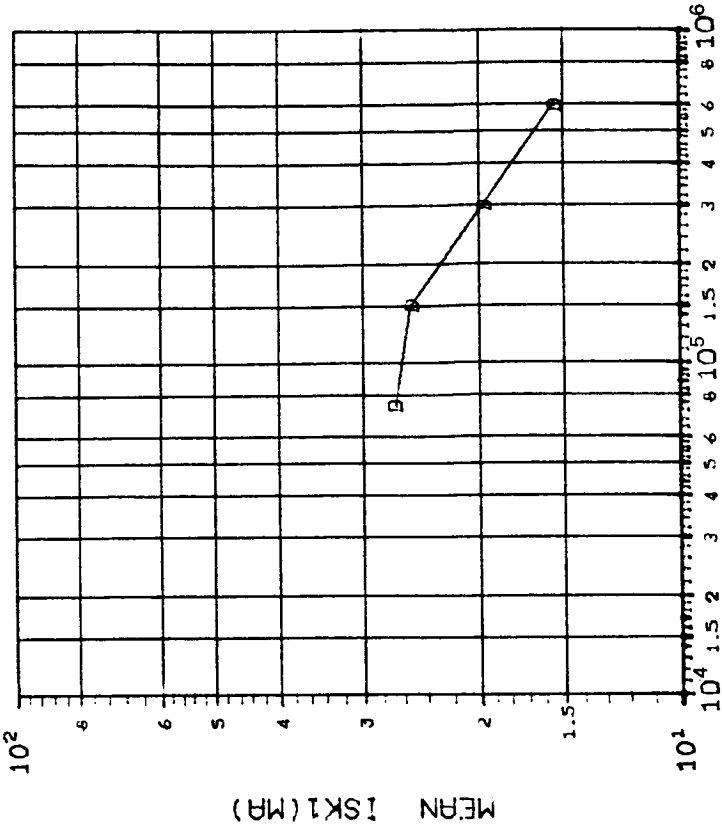


DOSE, rads(Si) 2.5 MeV electrons
 (2) IOS (V₀=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	3.211 4.488 6.020 10.76 16.37

INITIAL MEAN VALUE IOS(NA) = 2.89X10¹⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE

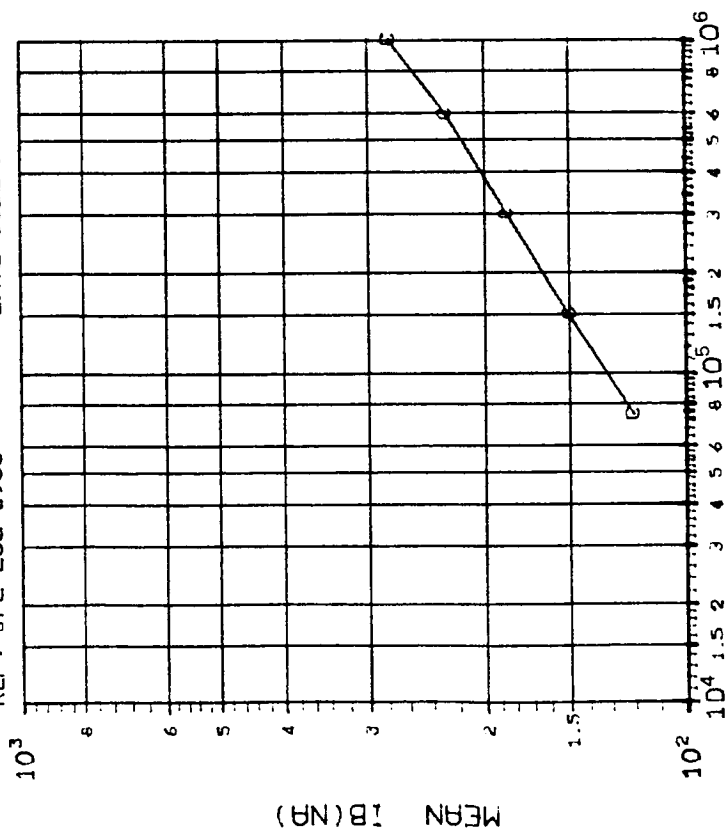


DOSE, rads(Si) 2.5 MeV electrons
 (4)ISK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300 600 1000
	2.222 2.751 9.564 8.971 *****

INITIAL MEAN VALUE ISK1(MA) = 2.97X10⁻¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE

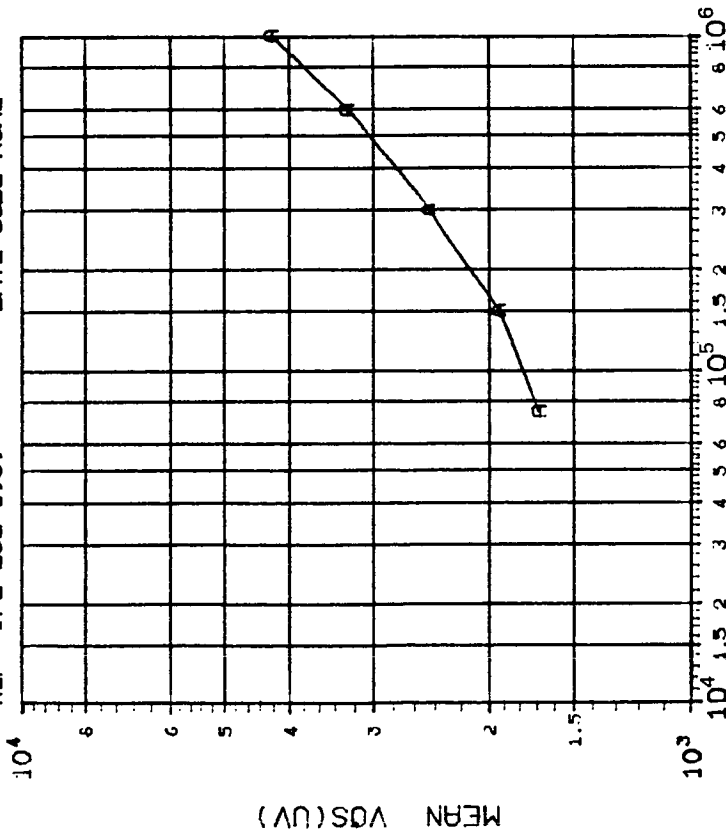


DOSE, rads(Si) 2.5 MeV electrons
 (3)IB (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600 1000
	11.60 15.36 18.23 26.91 31.60

INITIAL MEAN VALUE IB(NA) = 4.77X10⁻¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0989 DATE CODE NONE



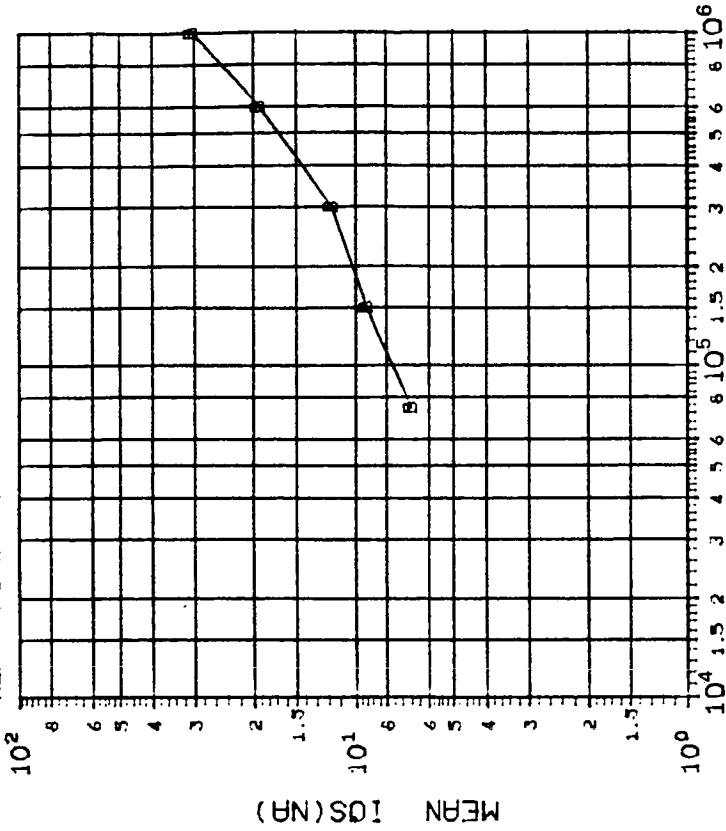
DOSE, rads(Si) 2.5 MeV electrons

(1) VOS (V0=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	DOSE, kilorads(Si)
A	75 150 300 600 1000	415.2 435.0 456.7 608.8 942.6

INITIAL MEAN VALUE VOS(UV) = 9.25X10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0989 DATE CODE NONE



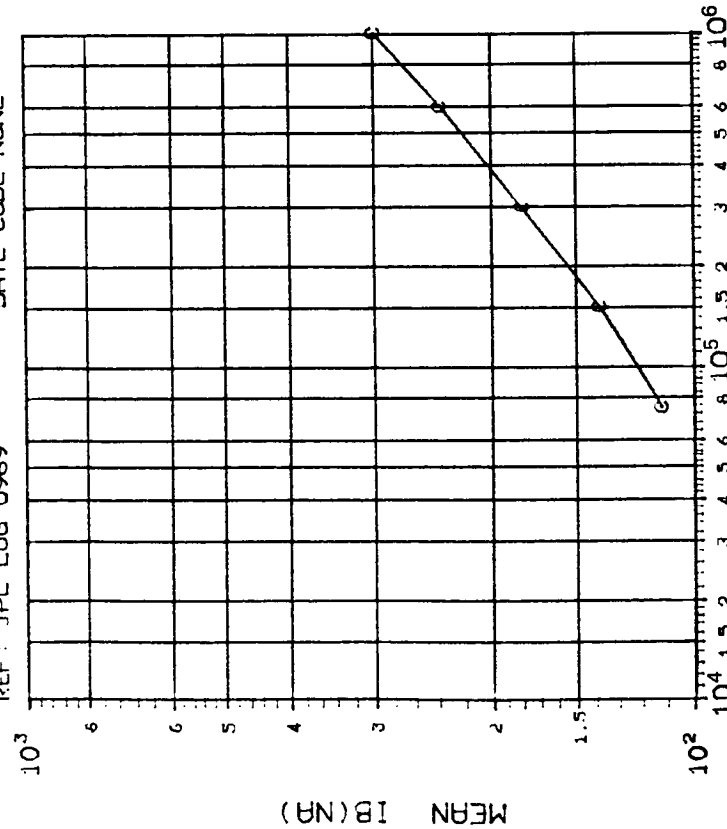
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	DOSE, kilorads(Si)
B	75 150 300 600 1000	1.528 1.136 1.061 2.658 5.744

INITIAL MEAN VALUE IOS(NA) = 5.93X10⁺⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0989 DATE CODE NONE

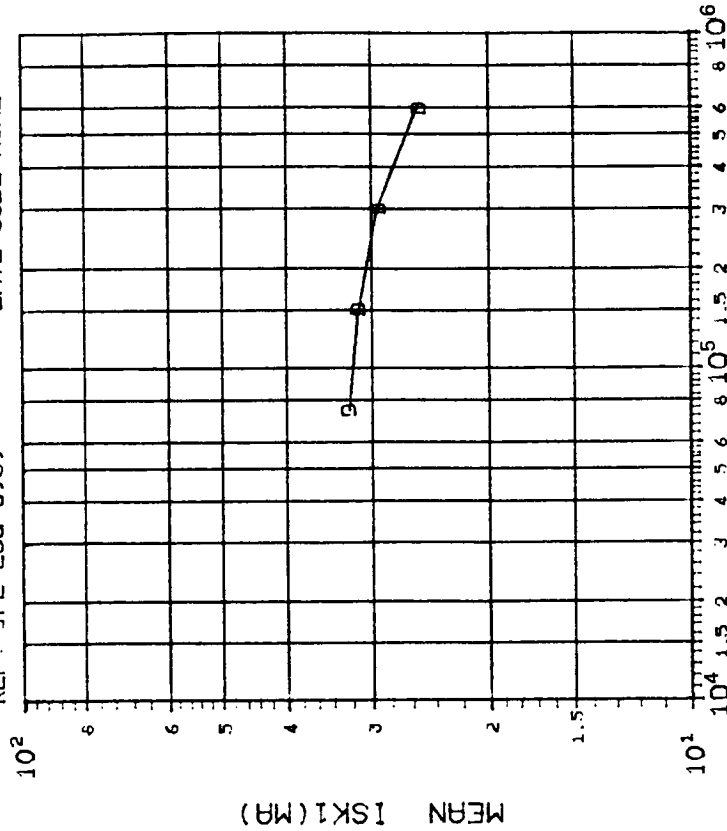


DOSE, rad(Si) 2.5 MeV electrons
 (3)IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600 1000
	8.417 10.14 11.41 14.54 20.25

INITIAL MEAN VALUE IB(NA) = 4.11X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0989 DATE CODE NONE

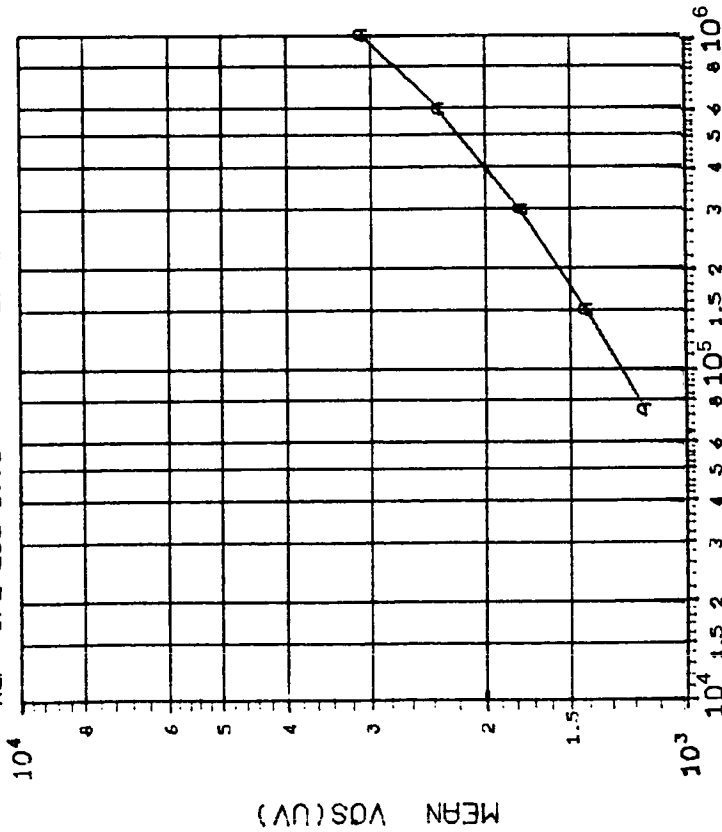


DOSE, rad(Si) 2.5 MeV electrons
 (4)ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300 600 1000
	1.205 1.227 1.329 2.014 ****

INITIAL MEAN VALUE ISK1(MA) = 3.36X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0990 DATE CODE NONE

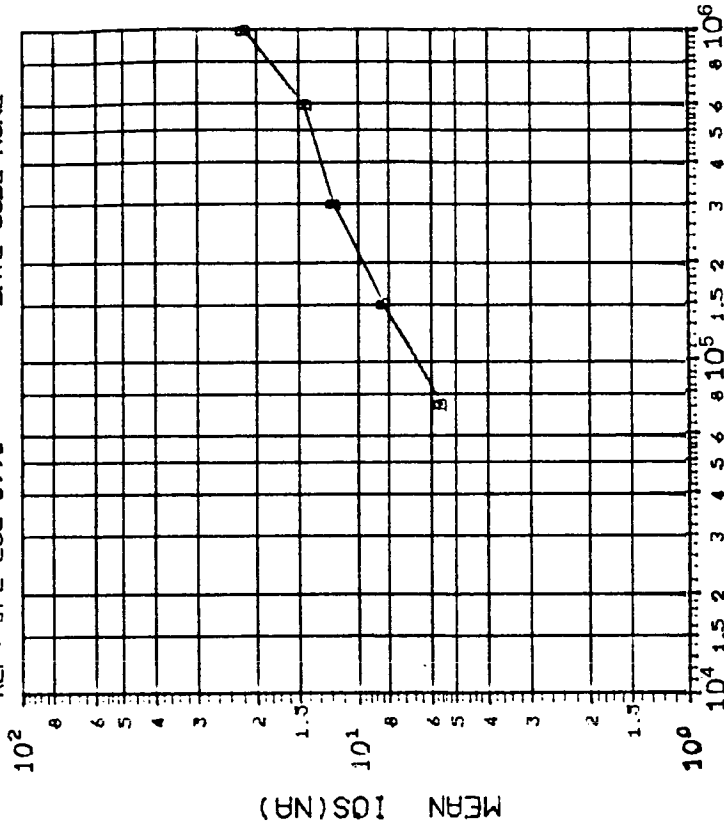


DOSE, rads(Si) 2.5 MeV electrons
 (1)VOS (V₀=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	301.5 319.6 352.8 442.7 583.5

INITIAL MEAN VALUE VOS(UV) = $6.99 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0990 DATE CODE NONE

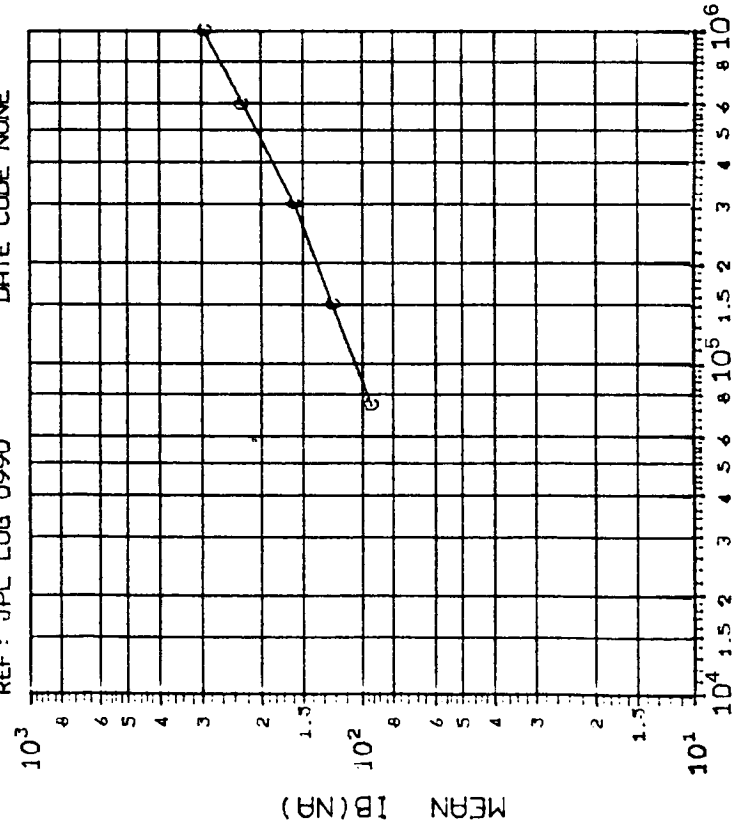


DOSE, rads(Si) 2.5 MeV electrons
 (2)IOS (V₀=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	.9896 1.477 4.382 2.601 5.011

INITIAL MEAN VALUE IOS(NA) = $6.10 \times 10^{+0}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0990 DATE CODE NONE

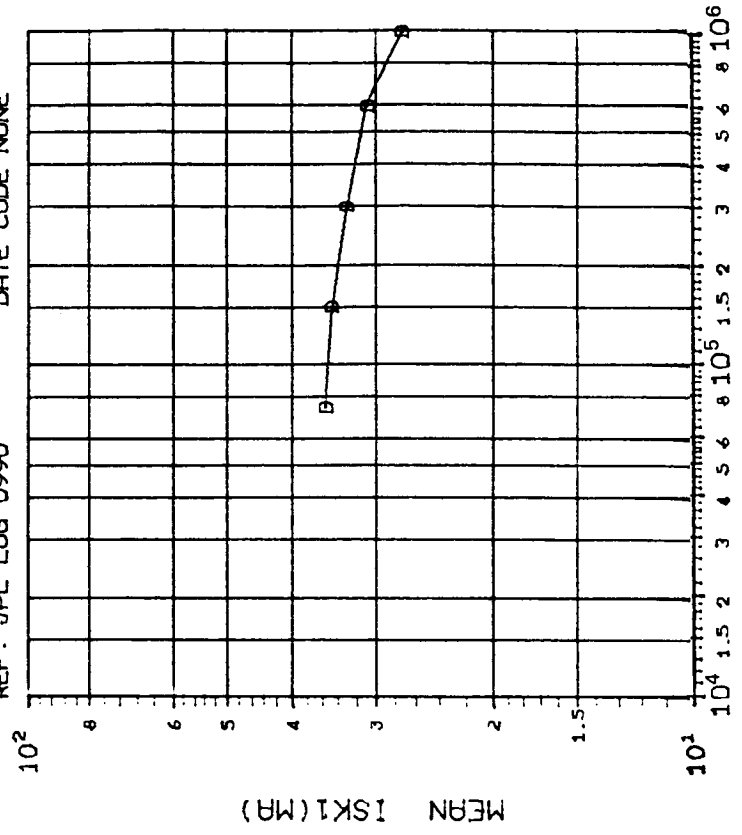


DOSE, rads(Si) 2.5 MeV electrons
 (3)IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000

INITIAL MEAN VALUE IB(NA) = 4.36X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0990 DATE CODE NONE

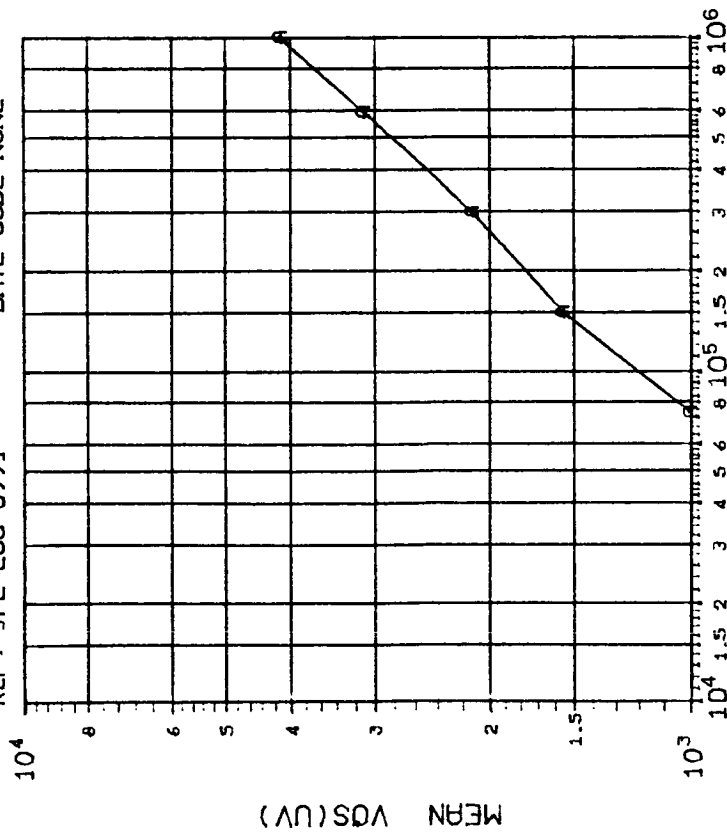


DOSE, rads(Si) 2.5 MeV electrons
 (4)ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000

INITIAL MEAN VALUE ISK1(MA) = 3.72X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE

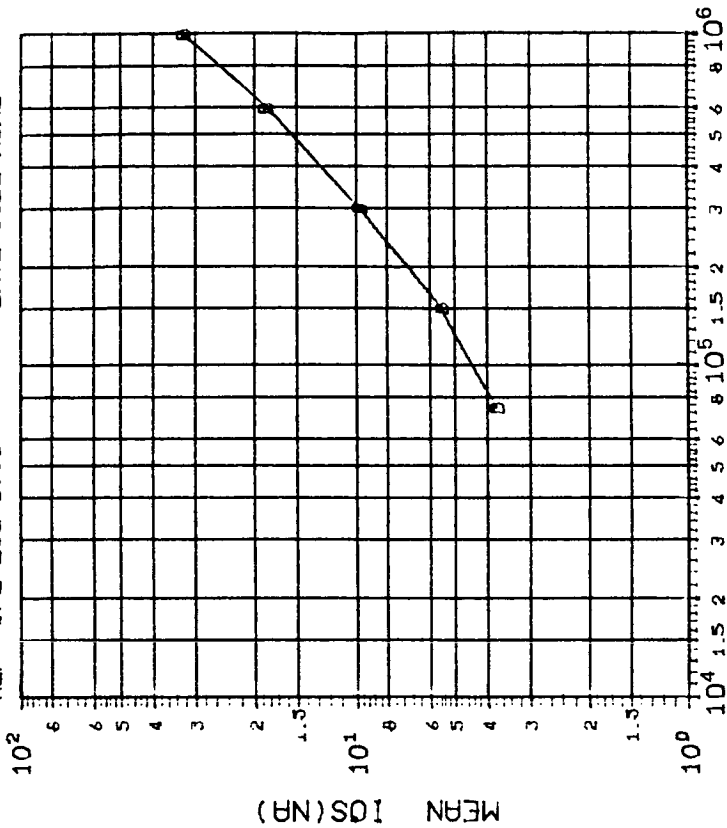


DOSE, rads(Si) 2.5 MeV electrons
 (1)VOS (V_{OS}=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	742.7 863.8 1014. 1223. 1420.

INITIAL MEAN VALUE VOS(UV) = 5.22X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE

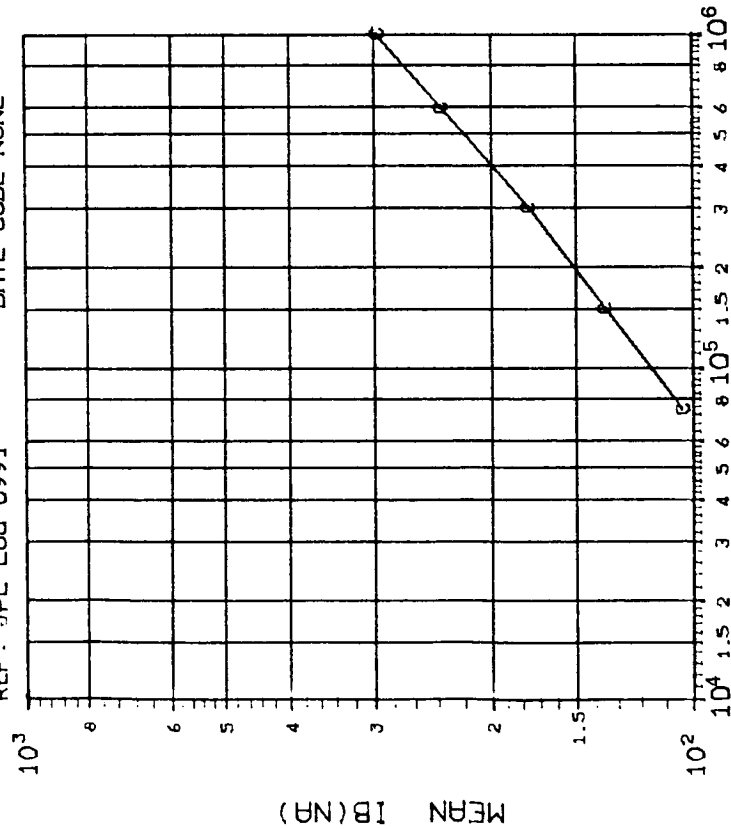


DOSE, rads(Si) 2.5 MeV electrons
 (2)IOS (V_{OS}=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	2.375 2.153 2.969 6.974 4.187

INITIAL MEAN VALUE IOS(NA) = 2.19X10¹³

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE



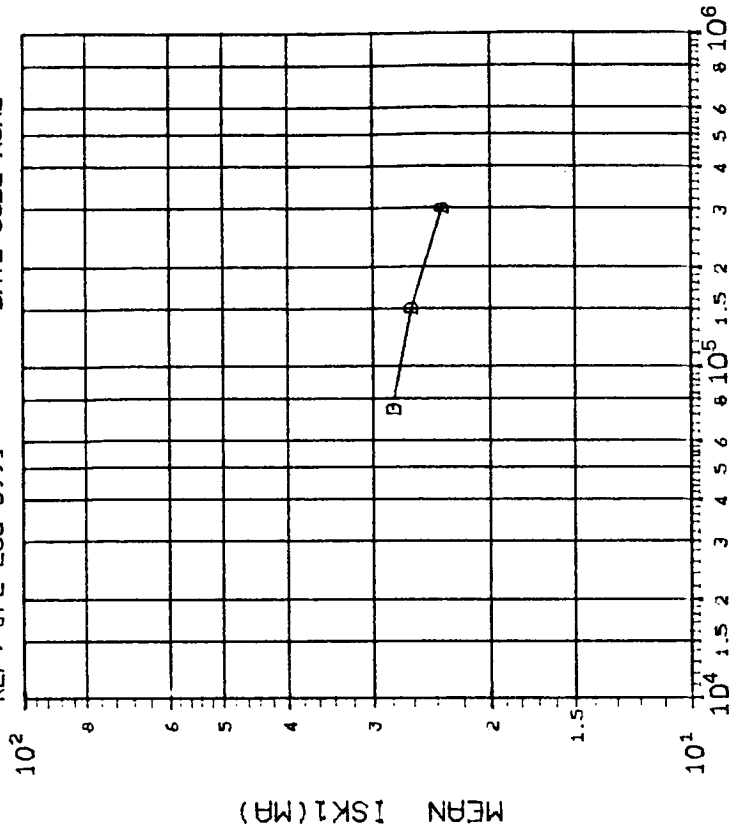
DOSE, rads(Si) 2.5 MeV electrons

(3)IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	5.036
	300	9.221
	1000	18.00

INITIAL MEAN VALUE IB(NA) = 4.79X10³

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE



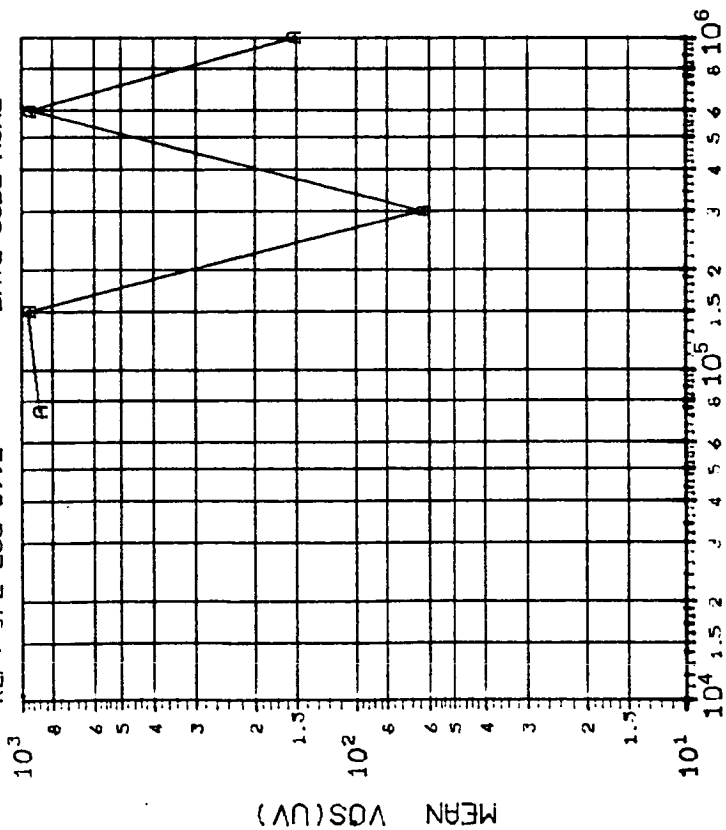
DOSE, rads(Si) 2.5 MeV electrons

(4)ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	2.430
	300	2.997
	1000	****

INITIAL MEAN VALUE ISK1(MA) = 3.01X10³

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE



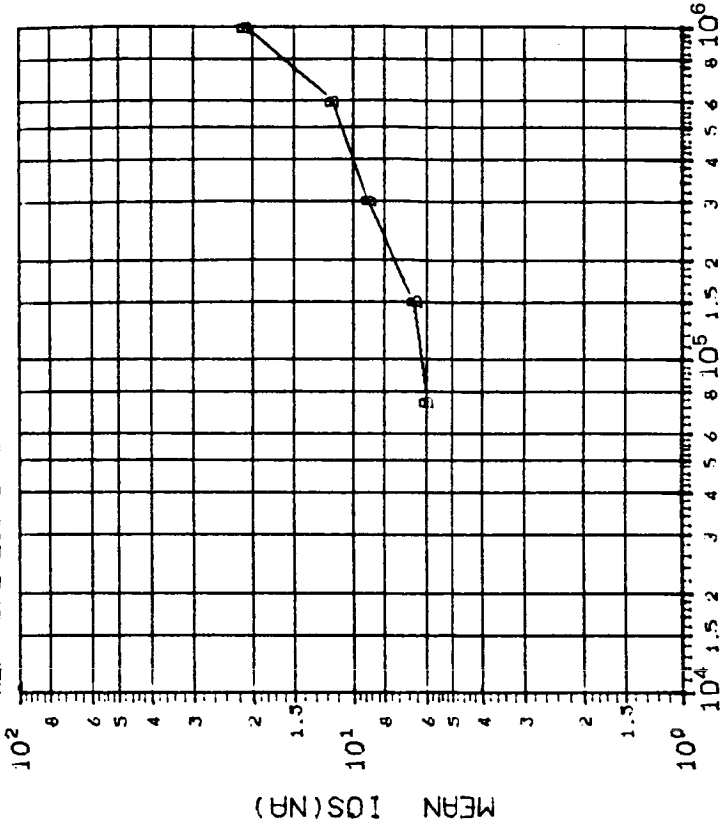
DOSE, rads(Si) 2.5 MeV electrons

(1)VOS (VO=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	734.9 695.6 3232. 1260. 6477.

INITIAL MEAN VALUE VOS(UV) = $6.04 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE



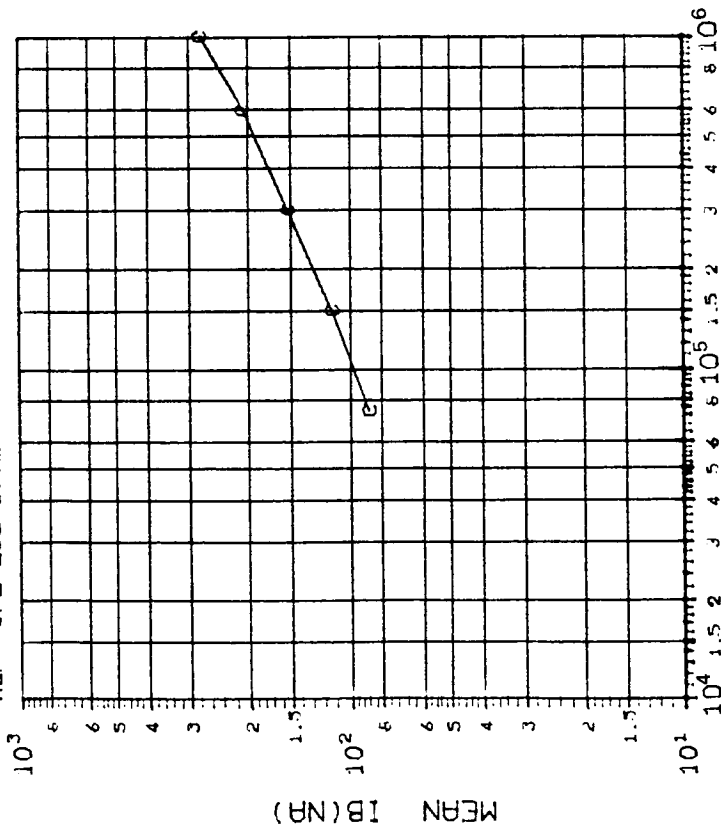
DOSE, rads(Si) 2.5 MeV electrons

(2)IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.428 2.411 3.724 7.524 5.951

INITIAL MEAN VALUE IOS(NA) = $5.36 \times 10^{+0}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE



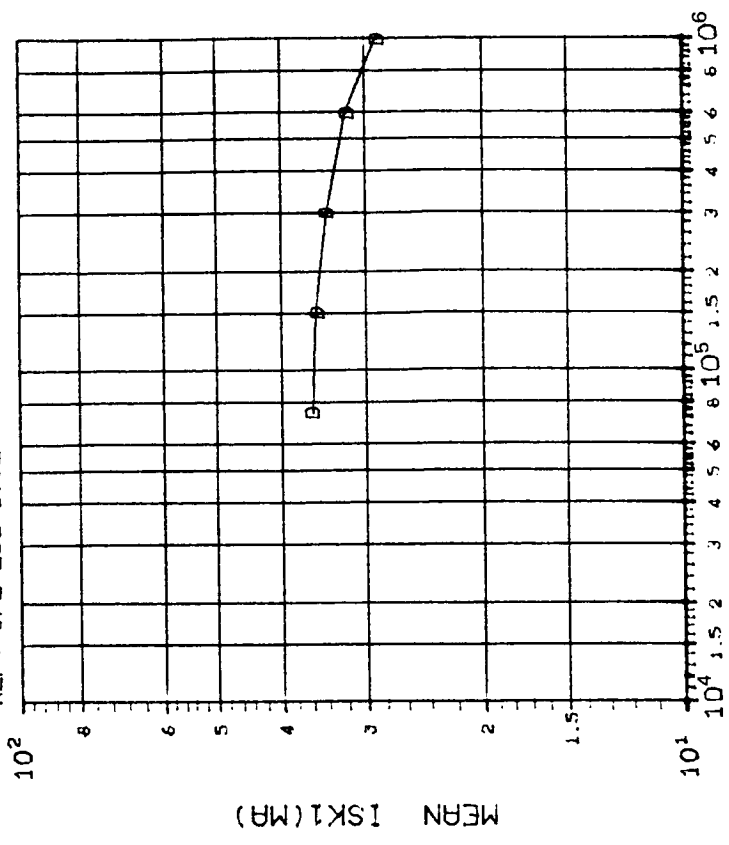
DOSE, rads(Si) 2.5 MeV electrons

(3)1B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
6.015	6.611
9.948	15.14
18.18	

INITIAL MEAN VALUE 1B(NA) = 4.29X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE



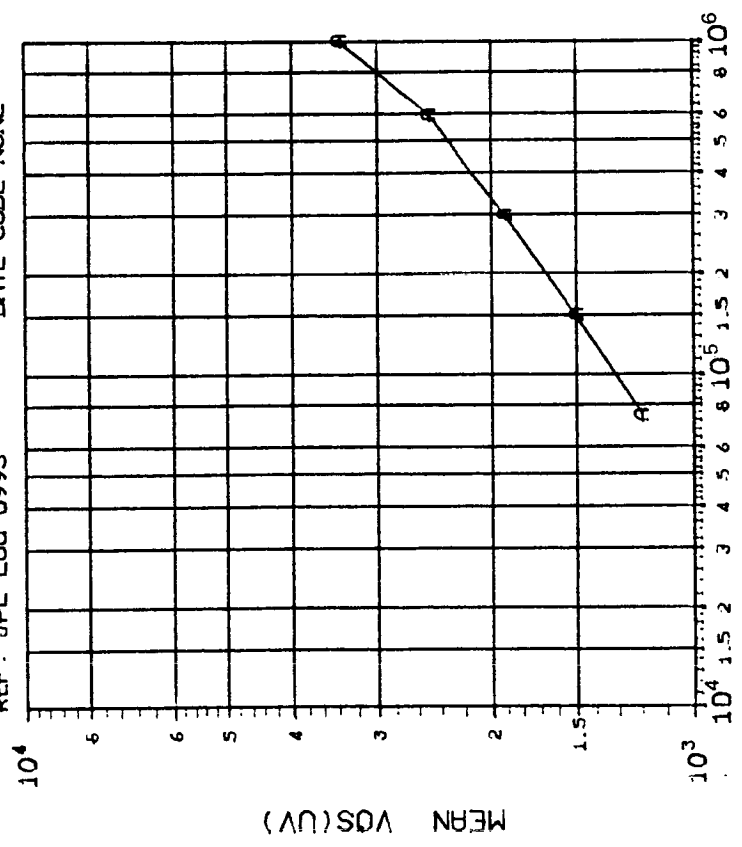
DOSE, rads(Si) 2.5 MeV electrons

(4)1SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
1.306	1.581
2.799	3.127
5.255	

INITIAL MEAN VALUE 1SK1(MA) = 3.78X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 03-16-83
 REF: JPL LOG 0993 DATE CODE NONE

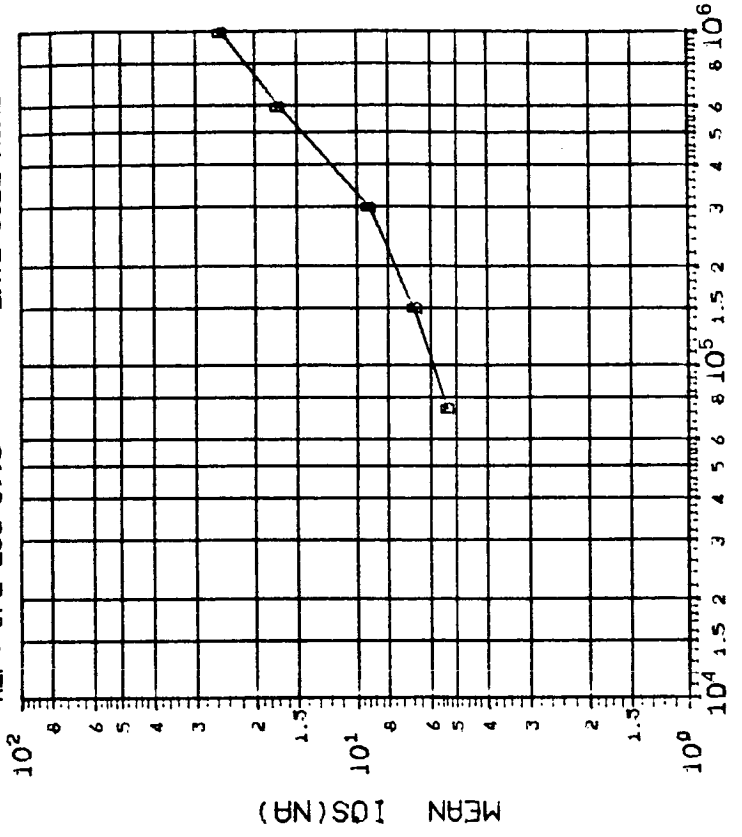


DOSE, rads(Si) 2.5 MeV electrons
 (1) VOS (V_{OS}=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	442.4 461.0 528.5 636.7 905.8

INITIAL MEAN VALUE VOS(UV) = 8.14×10^{12}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 03-16-83
 REF: JPL LOG 0993 DATE CODE NONE

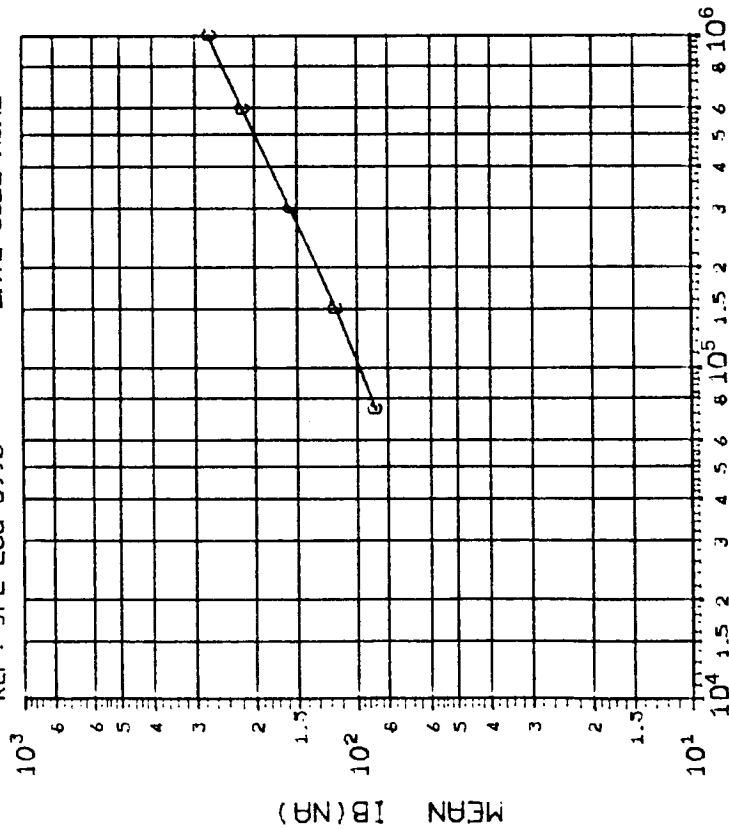


DOSE, rads(Si) 2.5 MeV electrons
 (2) IOS (V_{OS}=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.135 2.143 3.175 4.393 6.291

INITIAL MEAN VALUE IOS(NA) = 5.66×10^{10}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 03-16-83
 REF: JPL LOG 0993 DATE CODE NONE

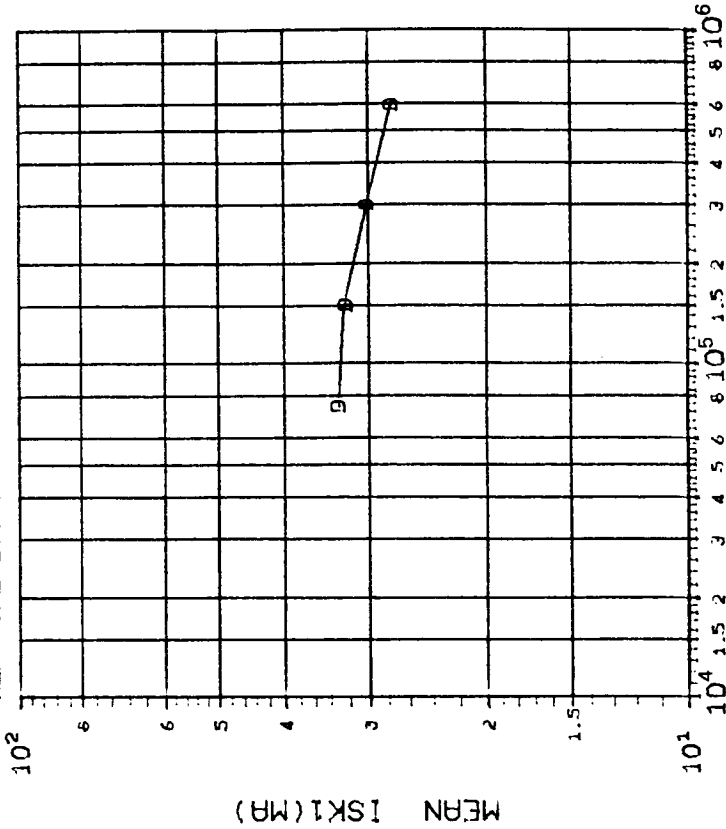


DOSE, rads(Si) 2.5 MeV electrons
 (3)IB (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600 1000
	10.11 14.67 21.74 32.68 39.03

INITIAL MEAN VALUE IB(NA) = 4.34X10¹¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 03-16-83
 REF: JPL LOG 0993 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons
 (4)ISK1 (VO=0.6V) IN MA: VS DOSE

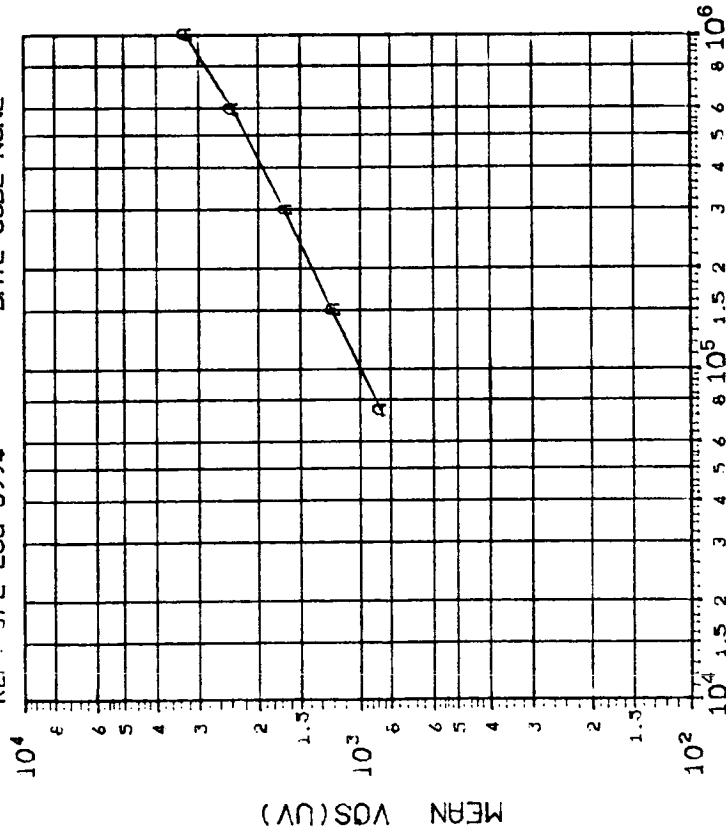
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300 600 1000
	1.044 1.072 1.205 2.174 ****

INITIAL MEAN VALUE ISK1(MA) = 3.56X10¹¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0994 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(1)VOS (V0=0.5V) IN UVOLTS: VS DOSE

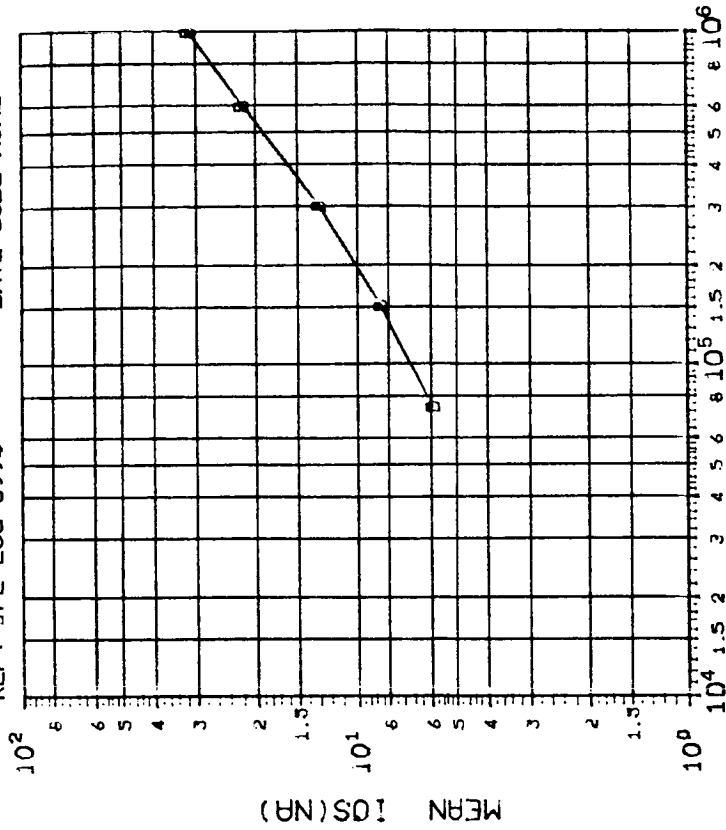
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	824.2 805.7 726.5 620.6 1321

INITIAL MEAN VALUE VOS(UV) = $4.61 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0994 DATE CODE NONE



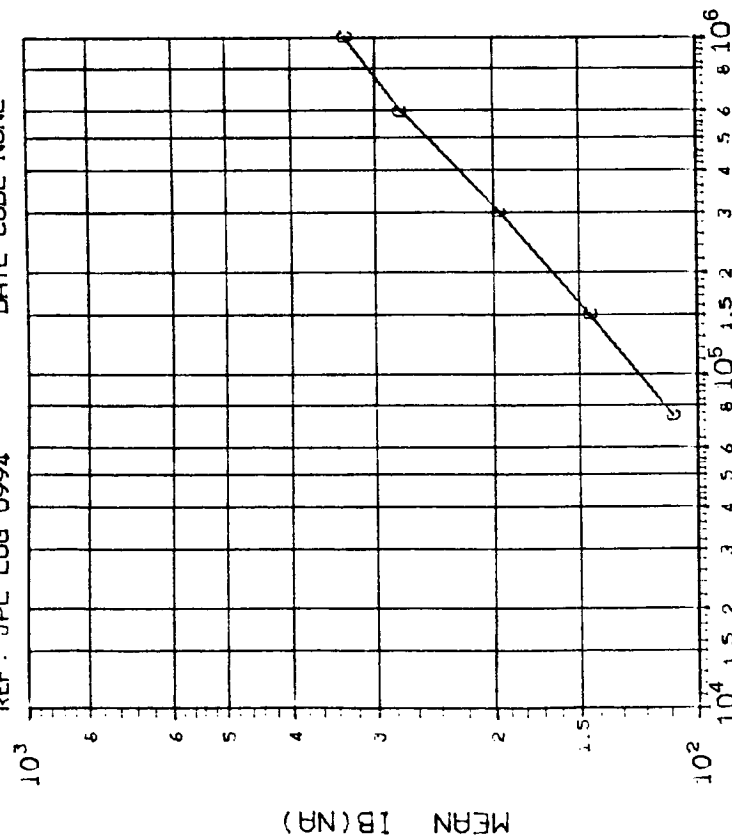
DOSE, rads(Si) 2.5 MeV electrons

(2)IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.292 2.582 3.703 3.359 6.917

INITIAL MEAN VALUE IOS(NA) = $5.65 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0994 DATE CODE NONE



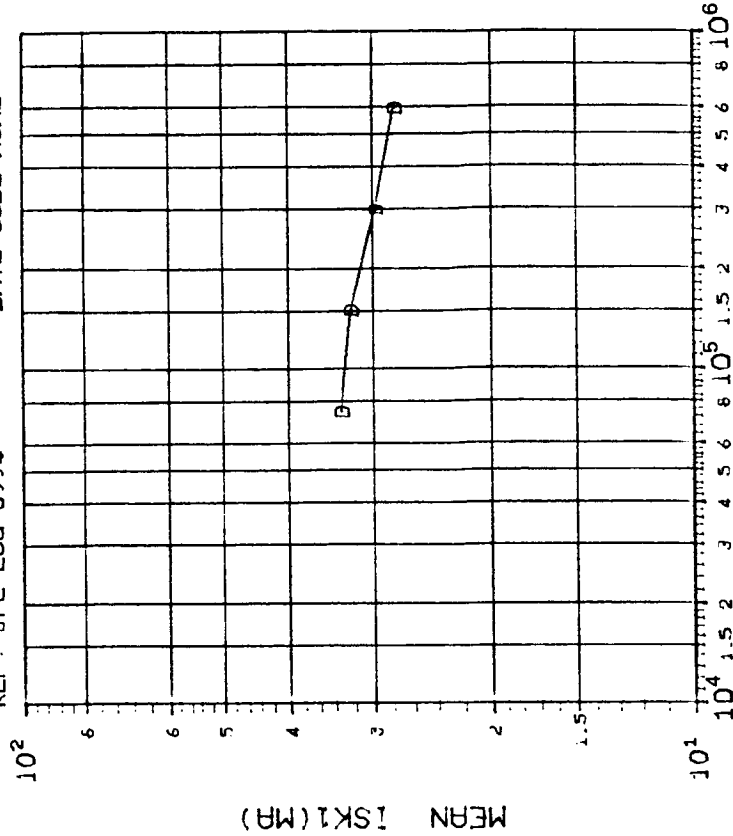
DOSE, rads(Si) 2.5 MeV electrons

(3)1B (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	5.325
	150	8.824
	300	11.72
	600	20.95
	1000	36.37

INITIAL MEAN VALUE IB(NA) = 5.24X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0994 DATE CODE NONE



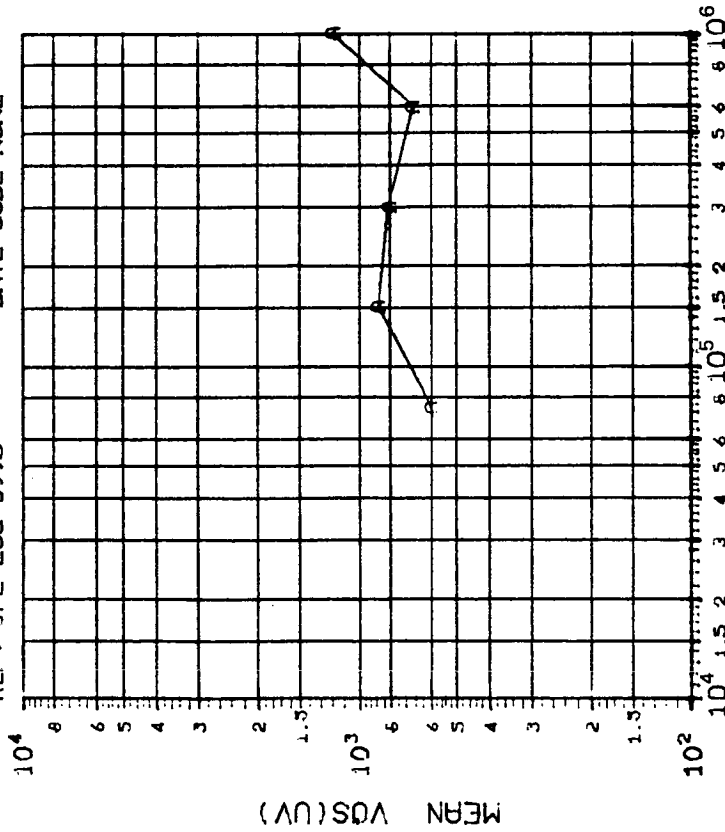
DOSE, rads(Si) 2.5 MeV electrons

(4)1SK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	1.056
	150	.8355
	300	.6938
	600	2.856
	1000	****

INITIAL MEAN VALUE ISK1(MA) = 3.57X10¹

DEVICE TYPE: LM1111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0995 DATE CODE NONE

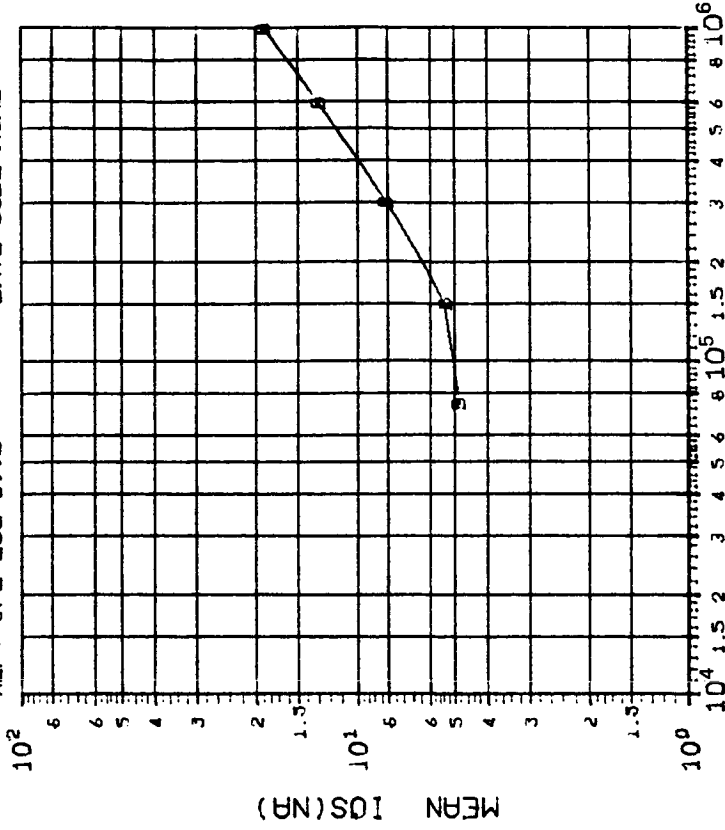


DOSE, rads(Si) 2.5 MeV electrons
 (1)VOS (V0=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	667.5 704.6 1478. 3274. 4320.

INITIAL MEAN VALUE VOS(UV) = $2.60 \times 10^{+2}$

DEVICE TYPE: LM1111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0995 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons
 (2)IOS (V0=0.5V) IN NA: VS DOSE

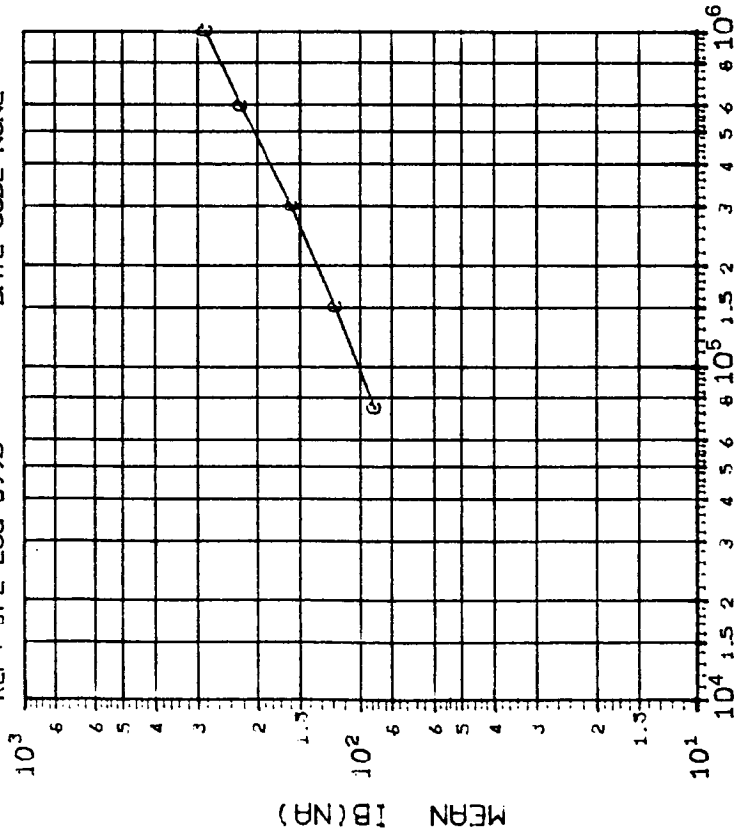
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	1.941 .7787 1.122 6.289 10.96

INITIAL MEAN VALUE IOS(NA) = $4.51 \times 10^{+0}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0995 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(3)IB (VO=0.5V) IN NA: VS DOSE

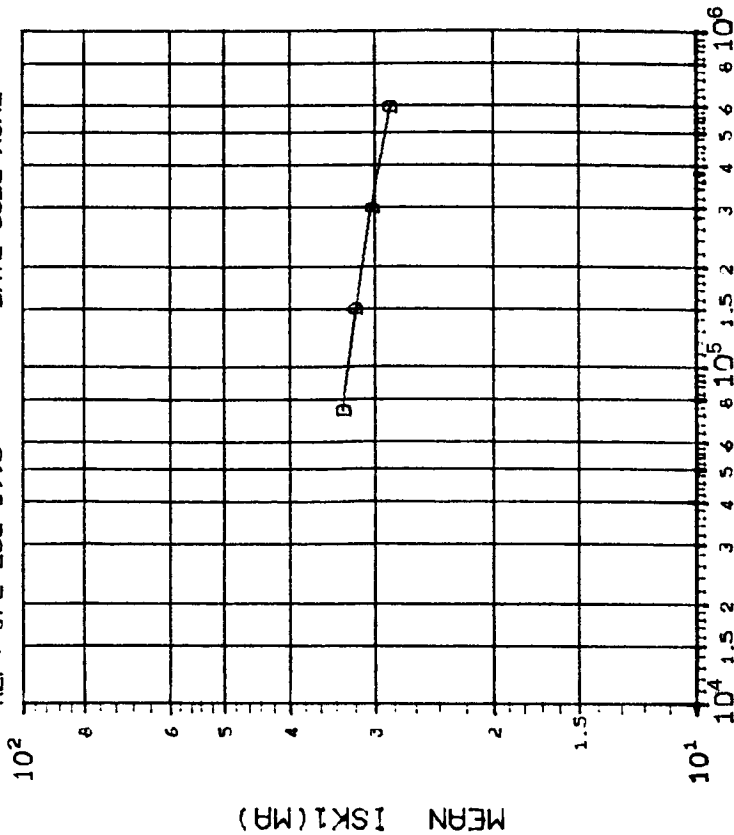
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000

INITIAL MEAN VALUE IB(NA) = 4.22X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0995 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

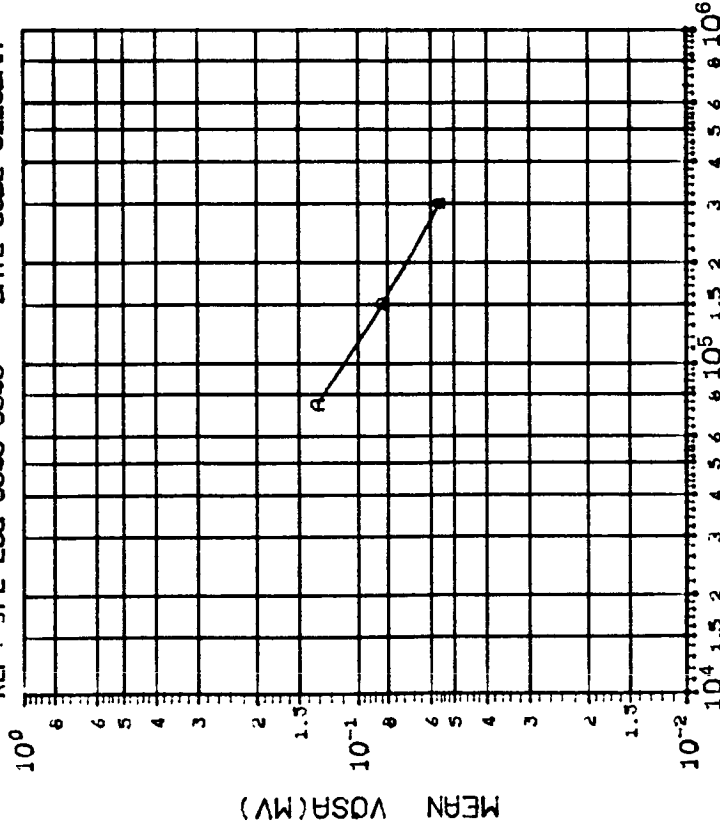
(4)ISK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000

INITIAL MEAN VALUE ISK1(MA) = 3.56X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 82280MM



DOSE, rads(Si) Co⁶⁰ Gammas

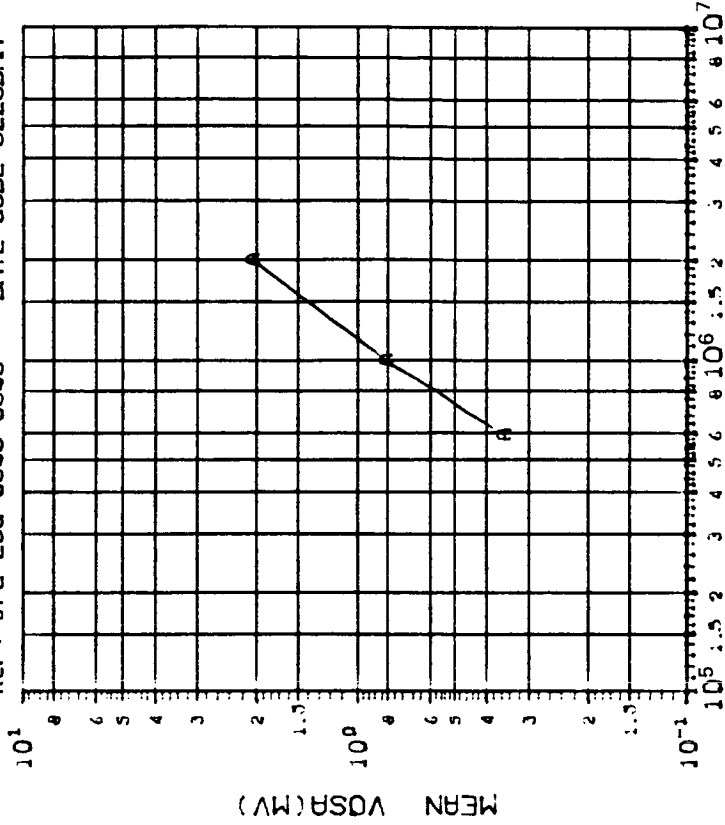
(1)VOSA (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.6625 .6091 .6163

INITIAL MEAN VALUE VOSRA(MV) = 5.20X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 82280MM



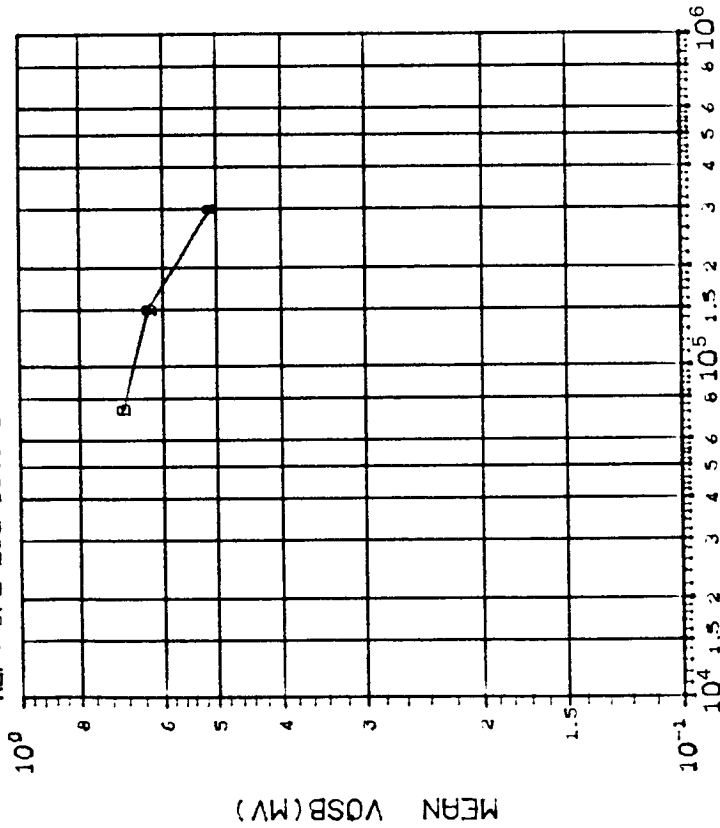
DOSE, rads(Si) Co⁶⁰ Gammas

(1)VOSA (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.6567 .7001 .6144

INITIAL MEAN VALUE VOSRA(MV) = 5.20X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 82280M1

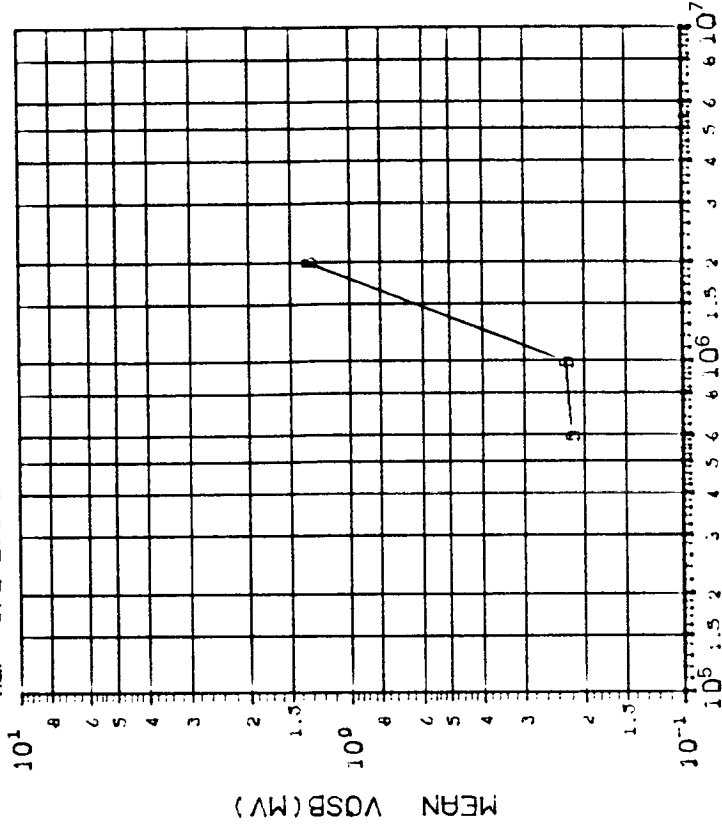


DOSE, rads(Si) Co⁶⁰ Gammas
 (2) VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.9432 .9507 .9614

INITIAL MEAN VALUE VOSB(MV) = 6.19×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 82280M1

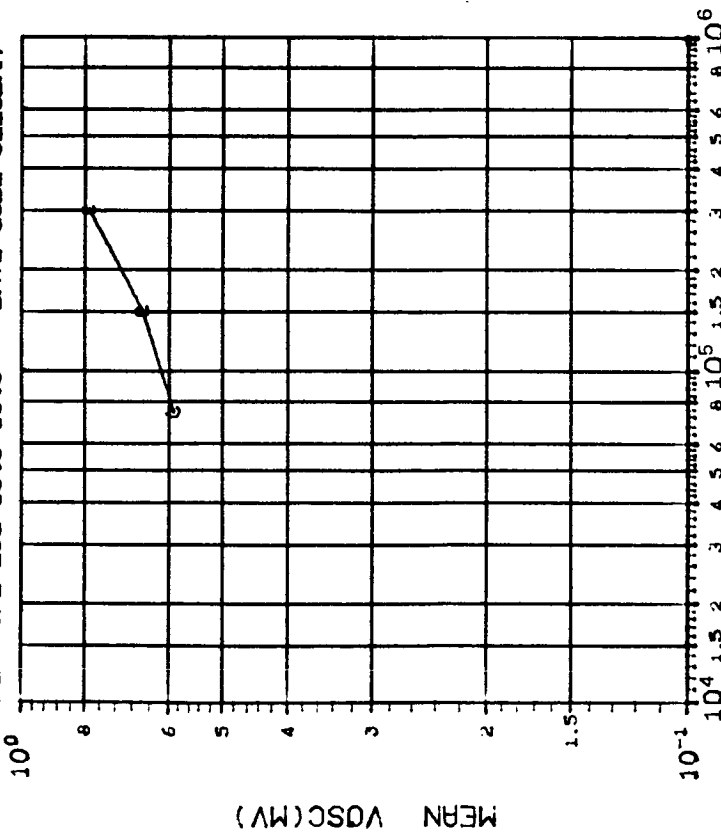


DOSE, rads(Si) Co⁶⁰ Gammas
 (2) VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.9661 .9965 1.152

INITIAL MEAN VALUE VOSB(MV) = 6.19×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 82280M1

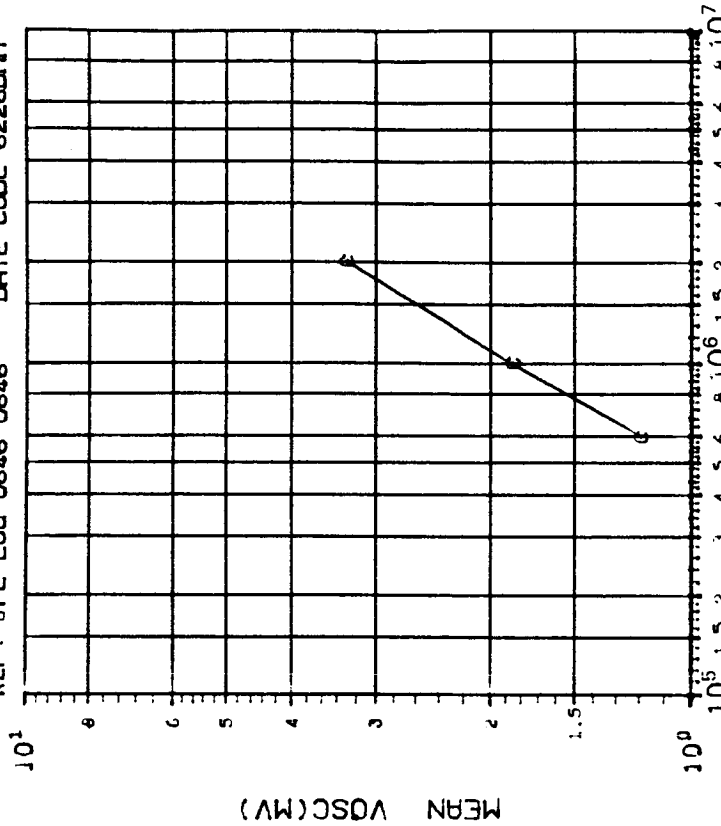


DOSE, rads(Si) Co 60 Gammas
 (3) VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	.6310 .6402 .6413

INITIAL MEAN VALUE VOSC(MV) = 4.63×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 82280M1

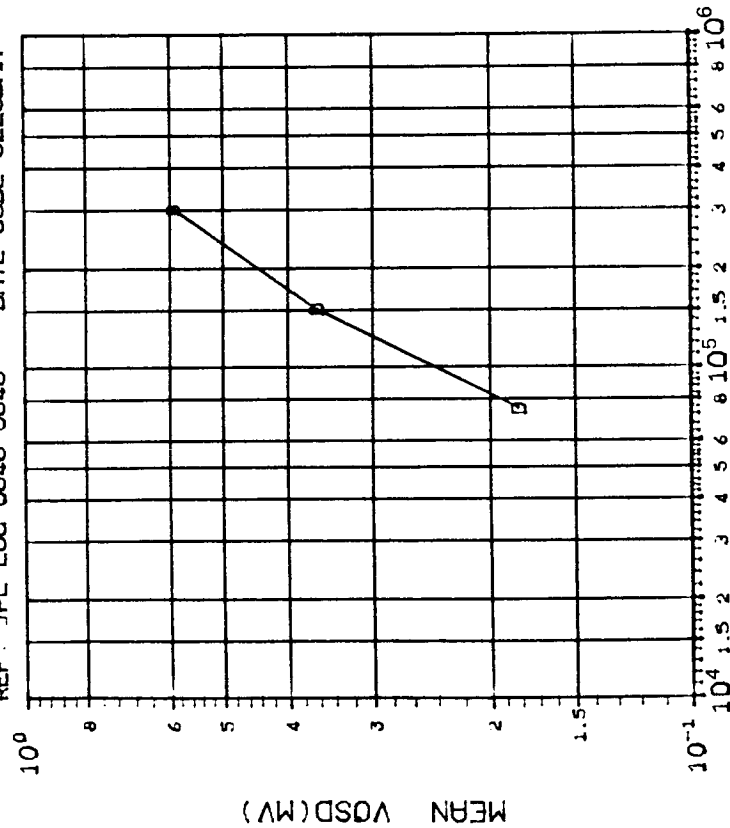


DOSE, rads(Si) Co 60 Gammas
 (3) VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	.7998 .1420 .6794

INITIAL MEAN VALUE VOSC(MV) = 4.63×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM

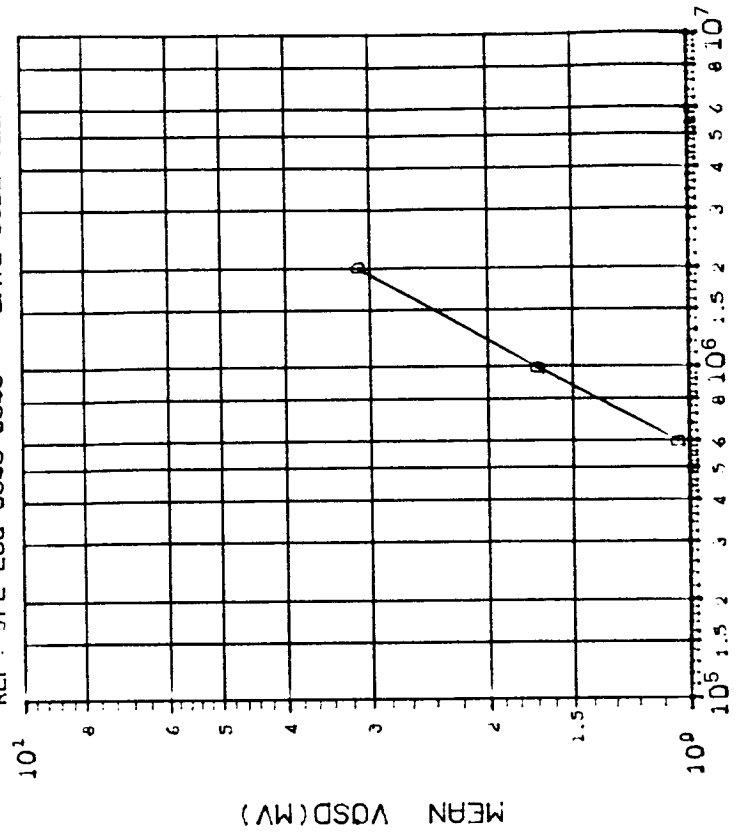


DOSE, rads(Si) Co⁶⁰ Gammas
 (4) VOSD (V0E=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
D	.5010 .4740 .4569

INITIAL MEAN VALUE VOSD(MV) = 8.89X10⁻⁴

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co⁶⁰ Gammas
 (4) VOSD (V0E=0) IN MV: VS DOSE

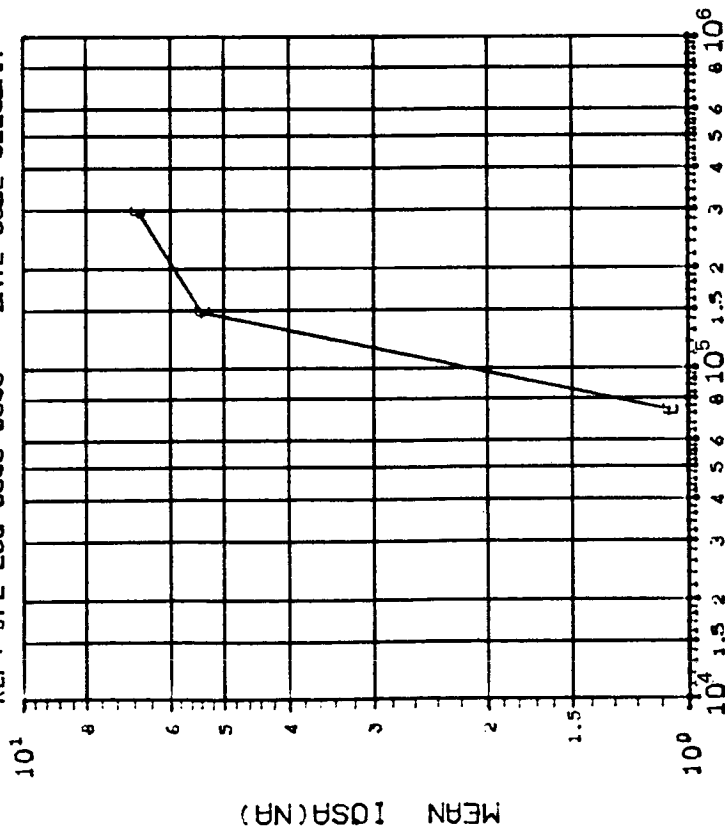
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
D	.4311 .4114 .5447

INITIAL MEAN VALUE VOSD(MV) = 8.69X10⁻⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rad(Si) Co 60 Gammas

(5110SA (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

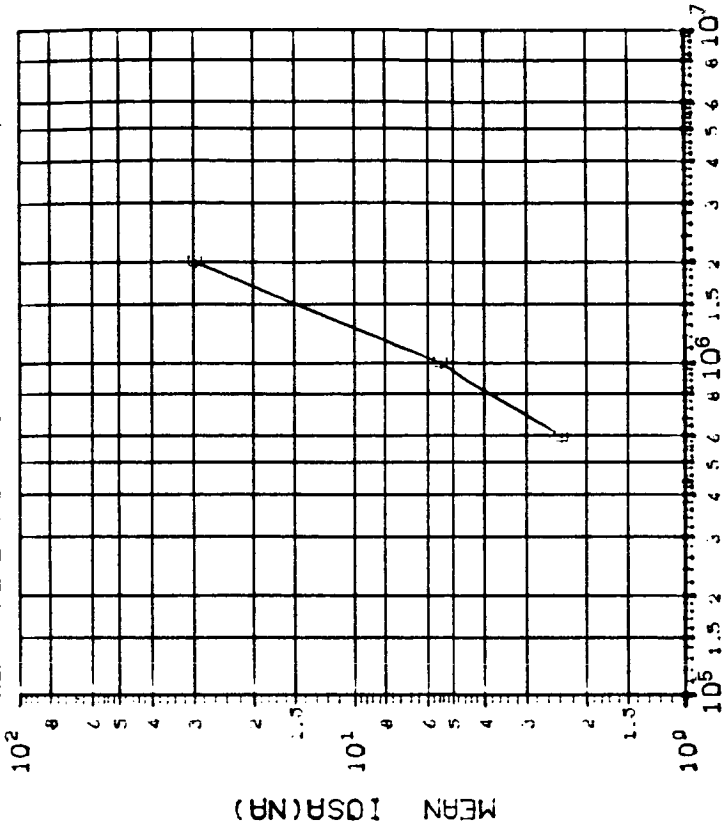
CURVE	DOSE, kilorads(Si)
E	75 150 300
	6.365 15.26 16.62

INITIAL MEAN VALUE IOSA(NA) = 3.59X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rad(Si) Co 60 Gammas

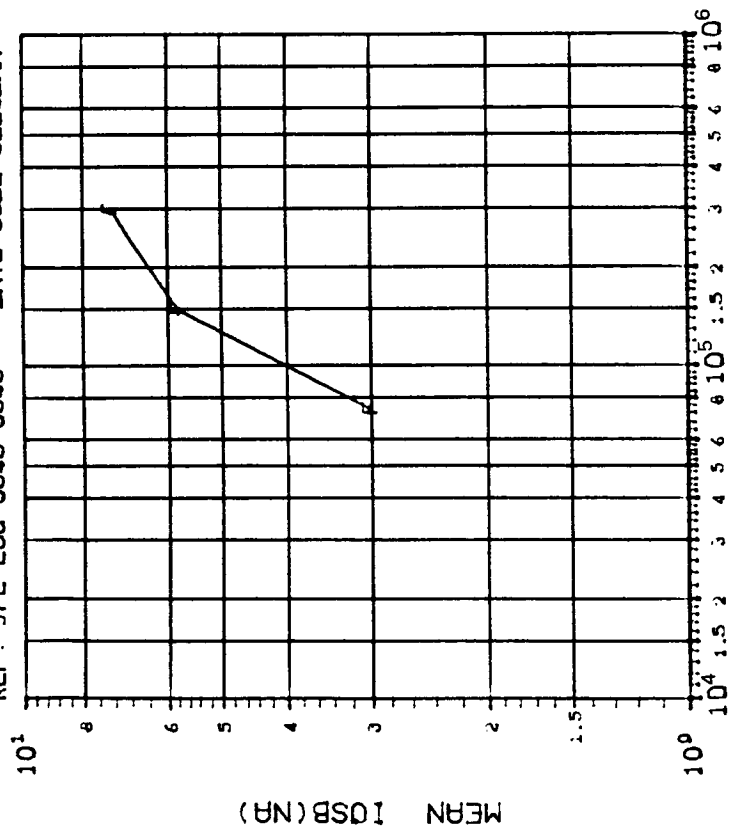
(5110SA (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	16.19 13.39 12.70

INITIAL MEAN VALUE IOSA(NA) = 3.59X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



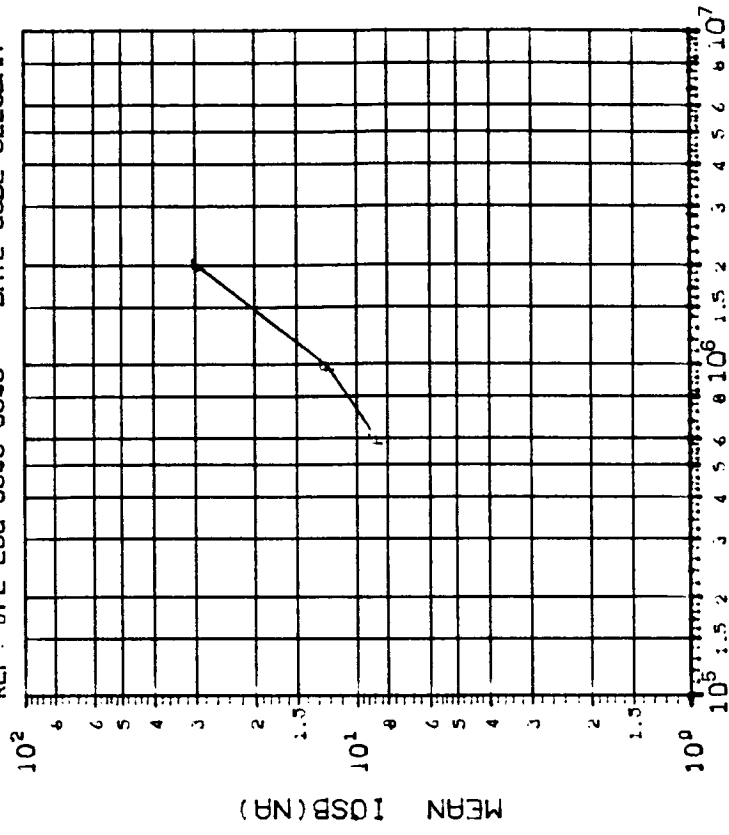
DOSE, rads(Si) Co⁶⁰ Gammas

(6110SB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	0.400 15.56 19.01

INITIAL MEAN VALUE IOSB(NA) = 2.93X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co⁶⁰ Gammas

(6110SB (V0=0) IN NA: VS DOSE

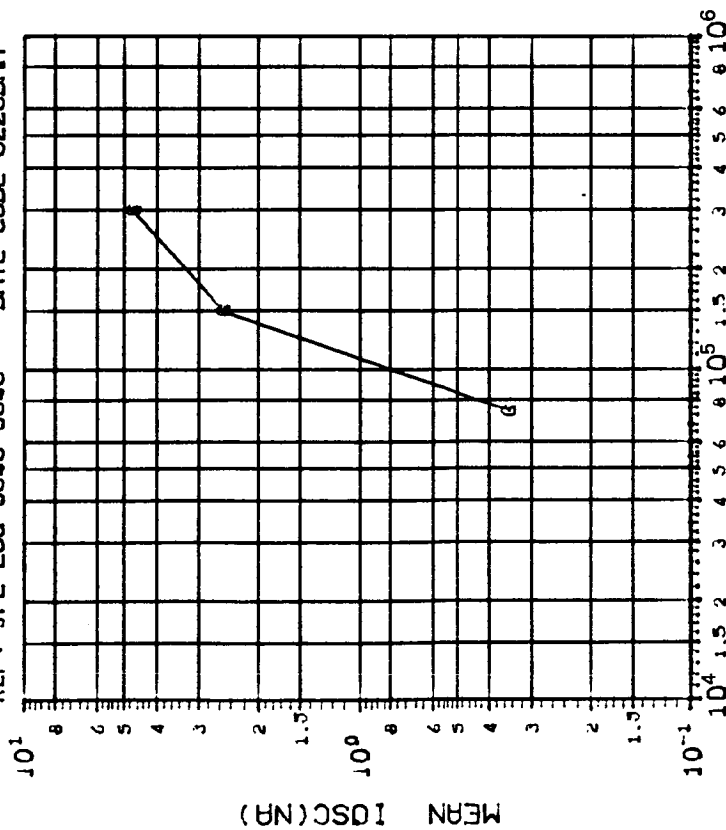
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	15.36 10.66 10.63

INITIAL MEAN VALUE IOSB(NA) = 2.93X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas

(7110SC (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

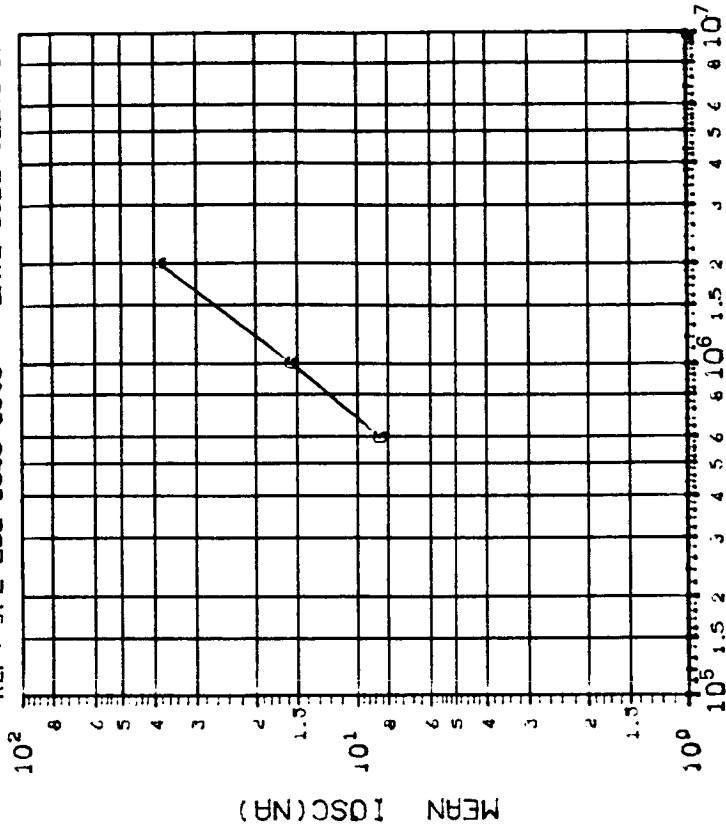
CURVE	DOSE, kilorads(Si)
G	75 150 300
G	3.192 6.677 7.867

INITIAL MEAN VALUE IOSC(NA) = 2.25X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas

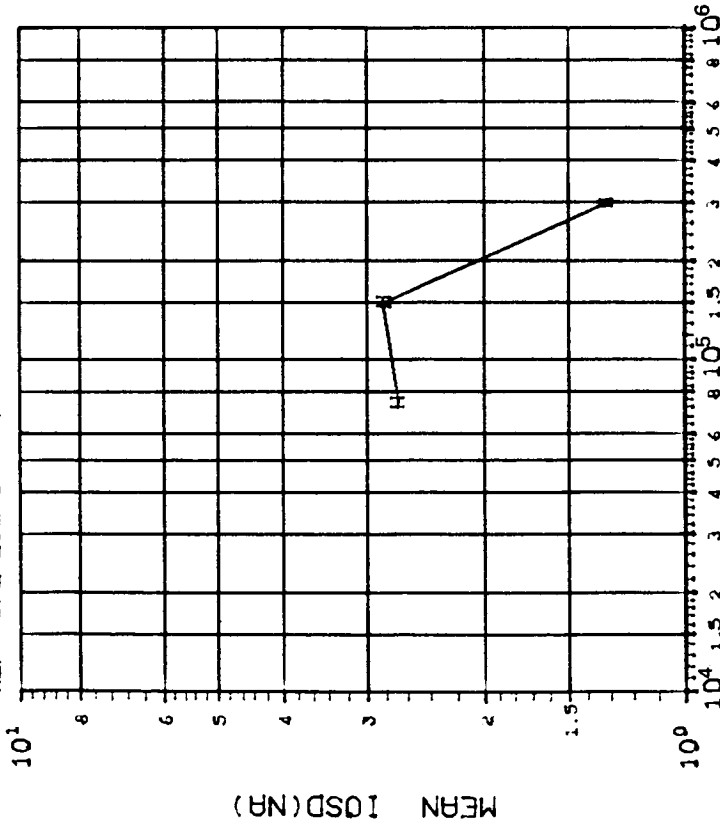
(7110SC (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
G	600 1000 2000
G	6.597 5.167 6.320

INITIAL MEAN VALUE IOSC(NA) = 2.25X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



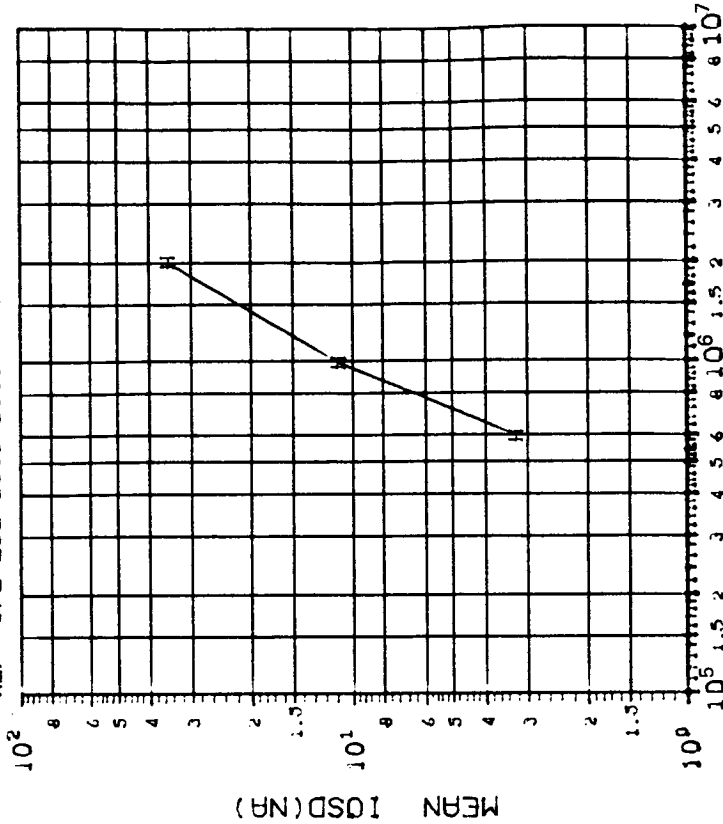
DOSE, rads(Si) Co⁶⁰ Gammas

(8)10SD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	3.720 6.483 7.990

INITIAL MEAN VALUE 10SD(NA) = 2.75X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co⁶⁰ Gammas

(8)10SD (V0=0) IN NA: VS DOSE

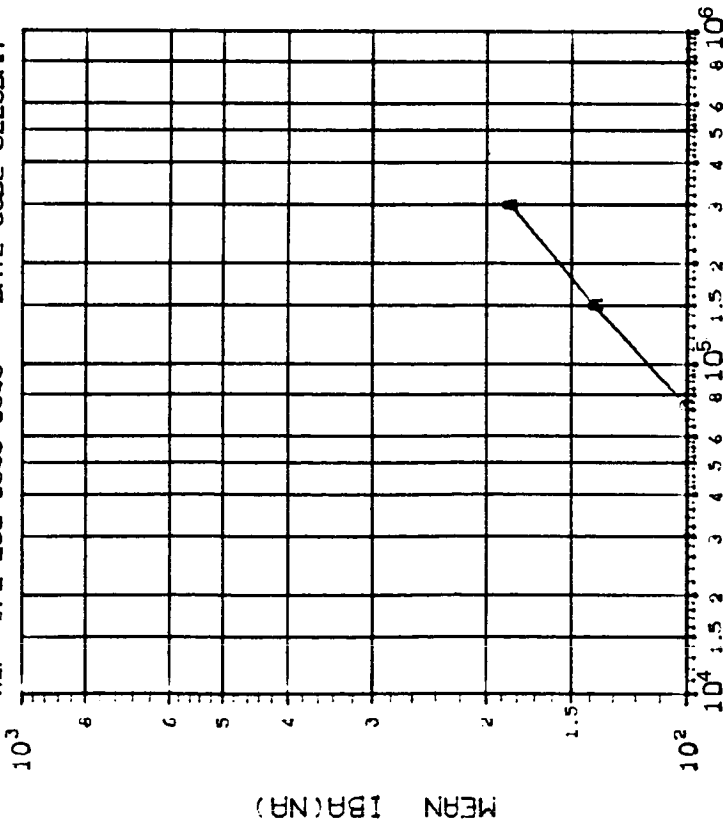
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	3.507 5.049 6.956

INITIAL MEAN VALUE 10SD(NA) = 2.75X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co⁶⁰ Gammas
(111BA (V0=0) IN NA: VS DOSE

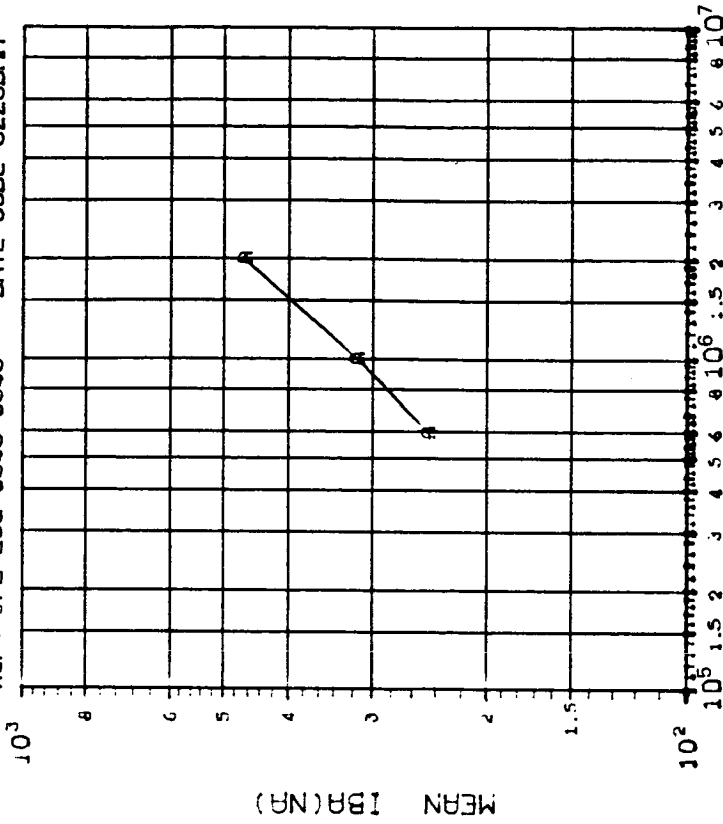
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	5.648 7.500 9.575

INITIAL MEAN VALUE IBA(NA) = 5.15X10²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1

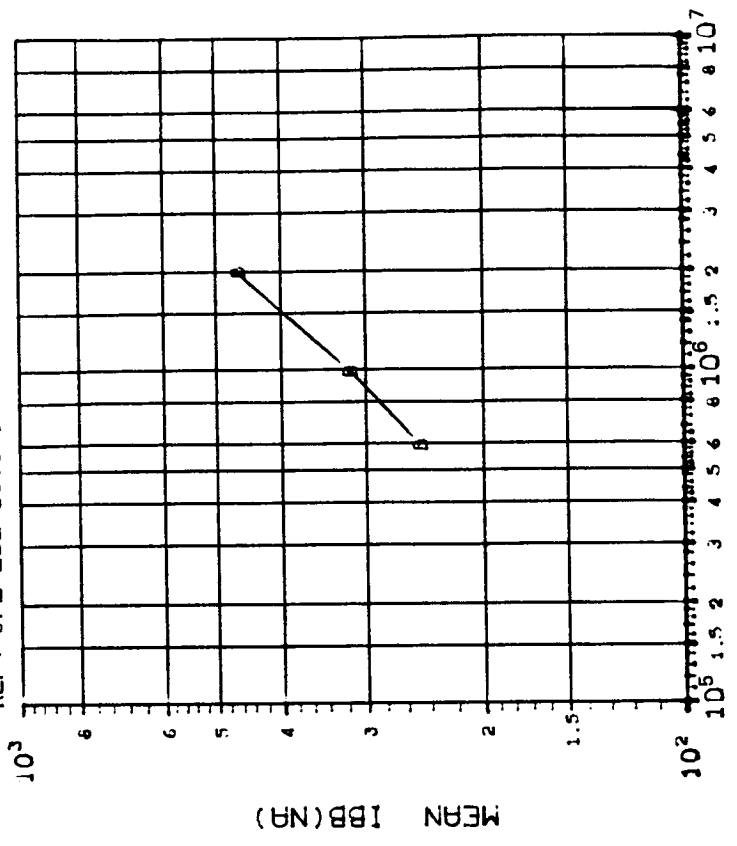


DOSE, rads(Si) Co⁶⁰ Gammas
(111BA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	12.35 16.63 26.65

INITIAL MEAN VALUE IBA(NA) = 5.15X10²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DM1

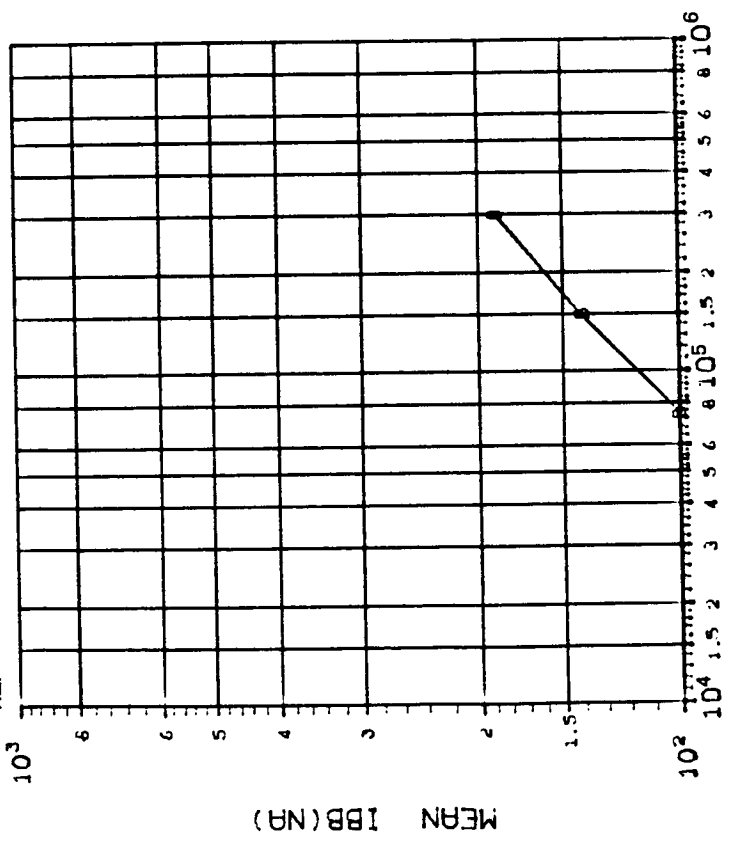


DOSE, rads(Si) Co 60 Gammas
 (21)BB (V=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	23.16 24.11 34.02

INITIAL MEAN VALUE IBB(NA) = 4.99X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas
 (21)BB (V=0) IN NA: VS DOSE

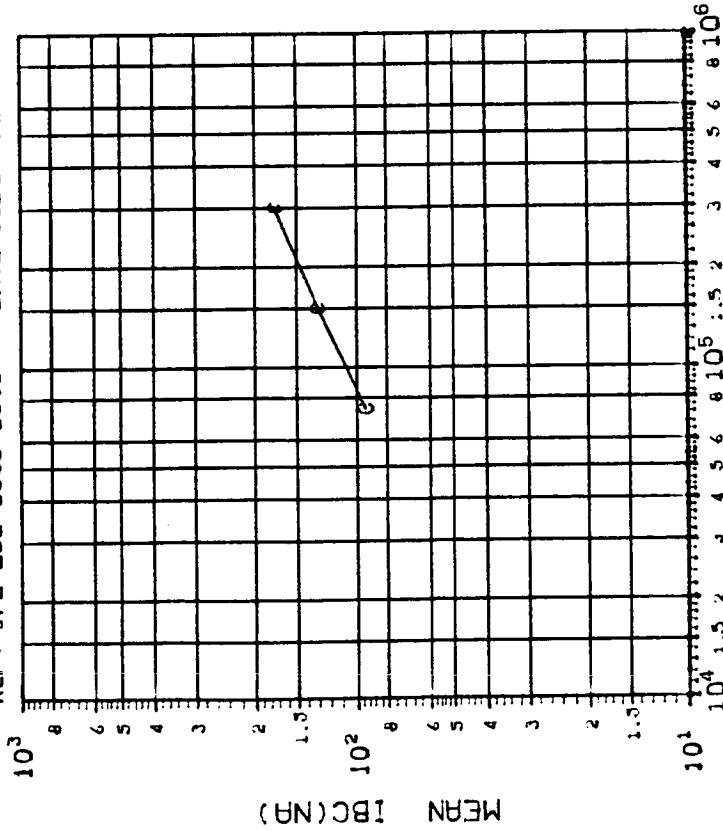
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	11.69 19.63 23.91

INITIAL MEAN VALUE IBB(NA) = 4.99X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-63

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



MEAN IBC(NA)

DOSE, rads(Si) Co 60 Gammas

(311BC (V0=01) IN NA: VS DOSE

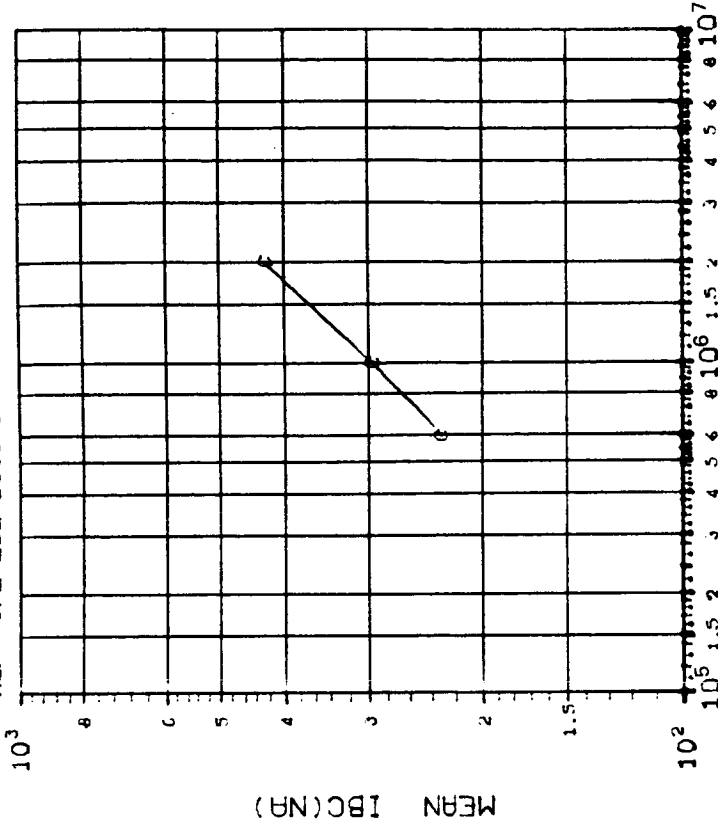
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	6.108 7.466 9.447

INITIAL MEAN VALUE IBC(NA) = 4.70×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-63

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



MEAN IBC(NA)

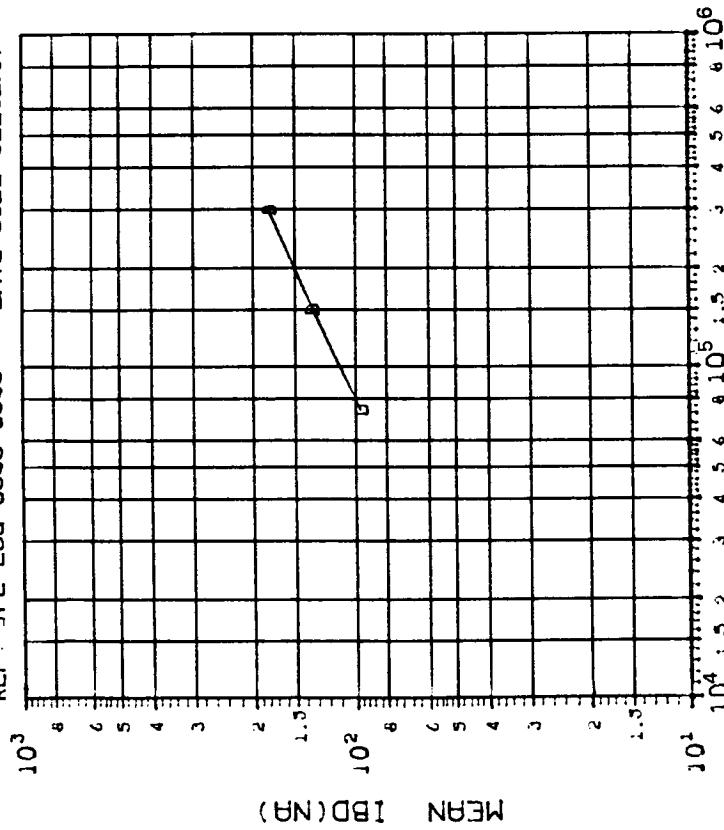
DOSE, rads(Si) Co 60 Gammas

(311BC (V0=01) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	12.23 16.31 26.33

INITIAL MEAN VALUE IBC(NA) = 4.70×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM

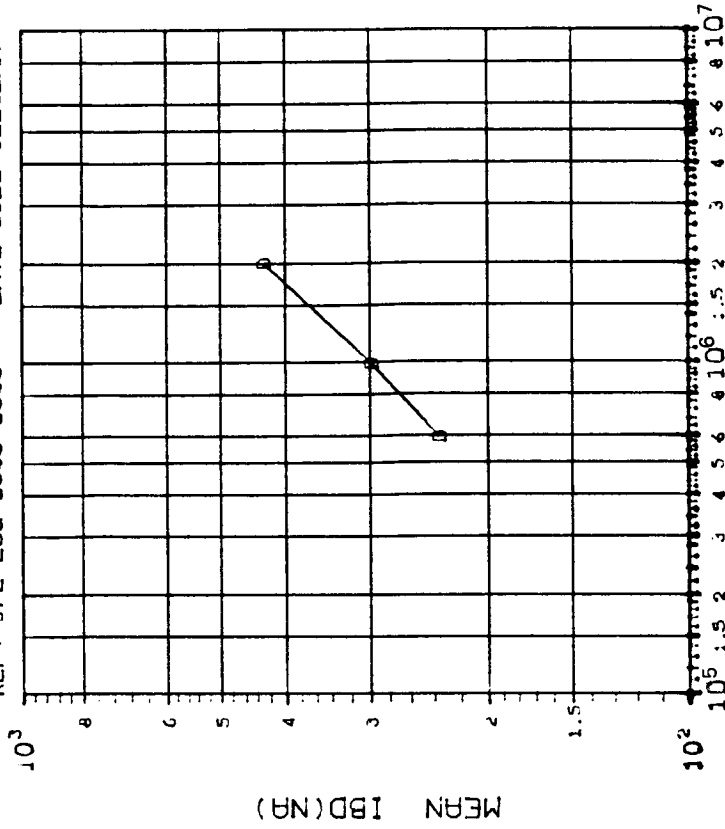


DOSE, rads(Si) Co60 Gammas
 (4)IBD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	6.504 9.756 11.97

INITIAL MEAN VALUE IBD(NA) = $4.78 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM

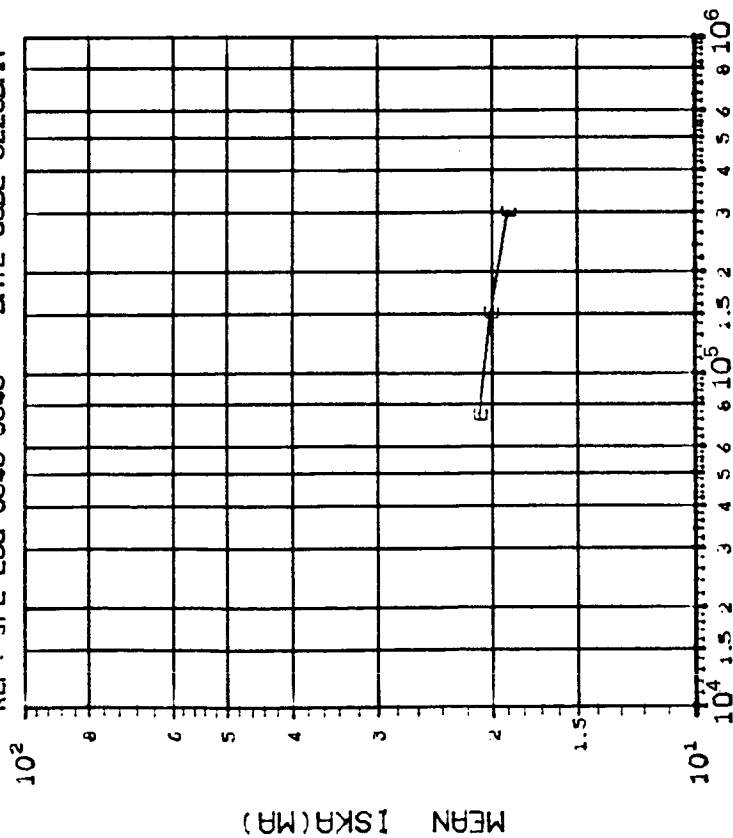


DOSE, rads(Si) Co60 Gammas
 (4)IBD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	13.27 16.56 25.15

INITIAL MEAN VALUE IBD(NA) = $4.78 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM

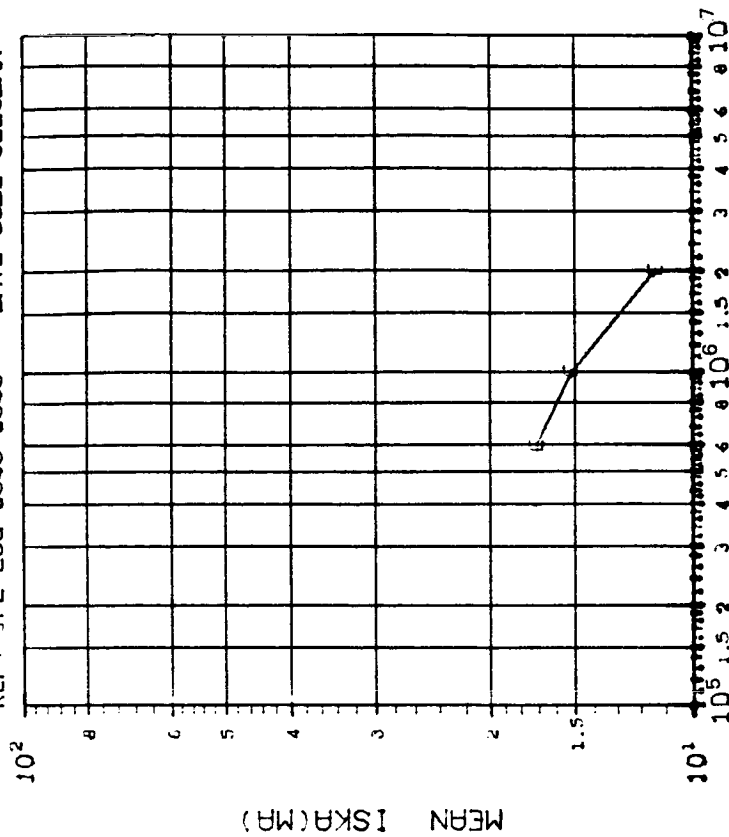


DOSE, rads(Si) Co⁶⁰ Gammas
 (511SKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.139 1.319 1.563

INITIAL MEAN VALUE ISKA(MA) = 2.26X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



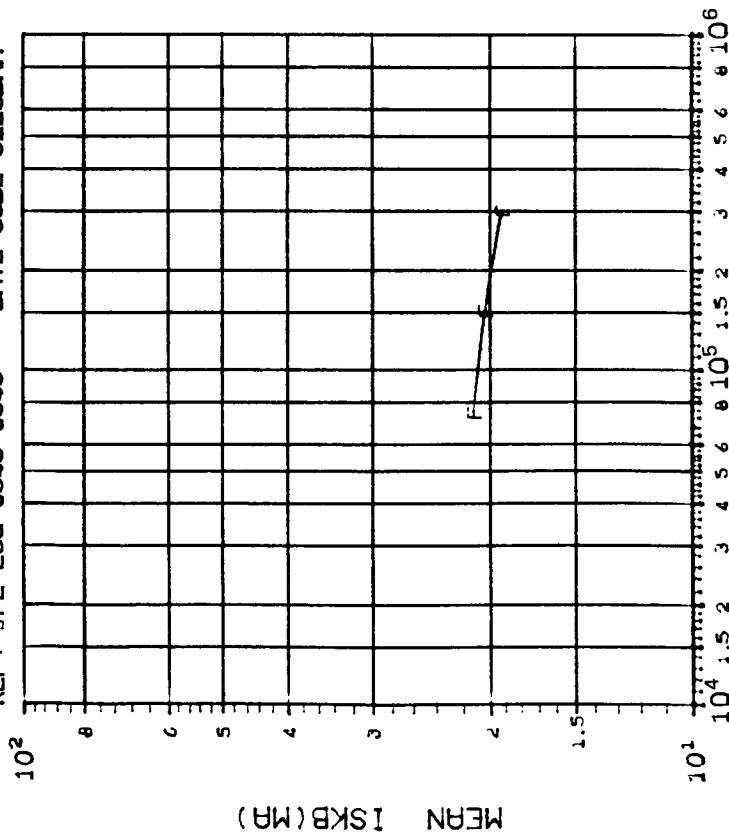
DOSE, rads(Si) Co⁶⁰ Gammas
 (511SKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	1.683 2.014 1.646

INITIAL MEAN VALUE ISKA(MA) = 2.26X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

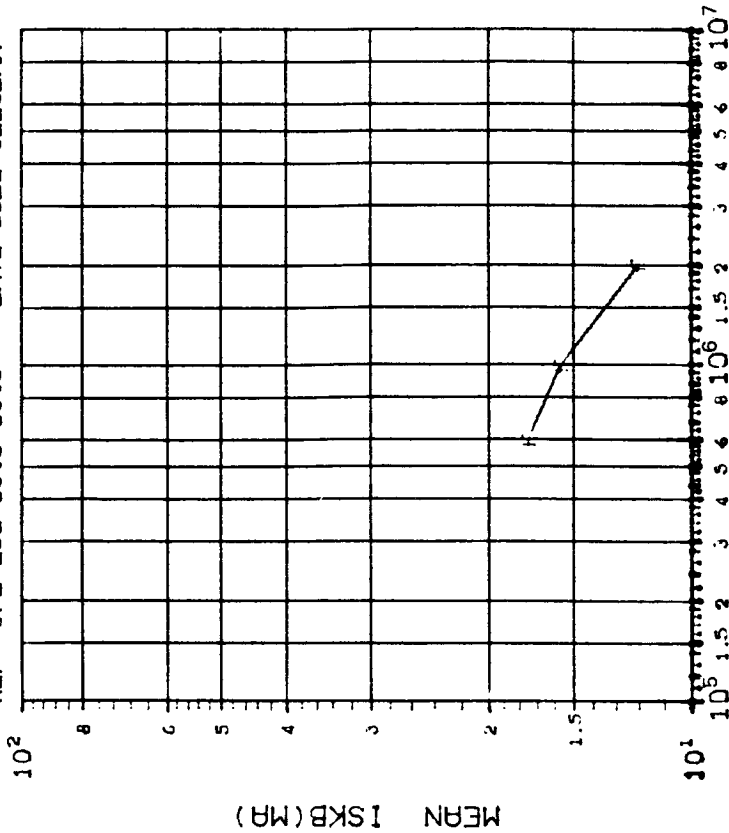
(6) ISKB (VO=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	1.240 1.360 1.650

INITIAL MEAN VALUE ISKB(MA) = 2.28X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

(6) ISKB (VO=-V+1.5V, VIN=-100MV) IN VS DOSE

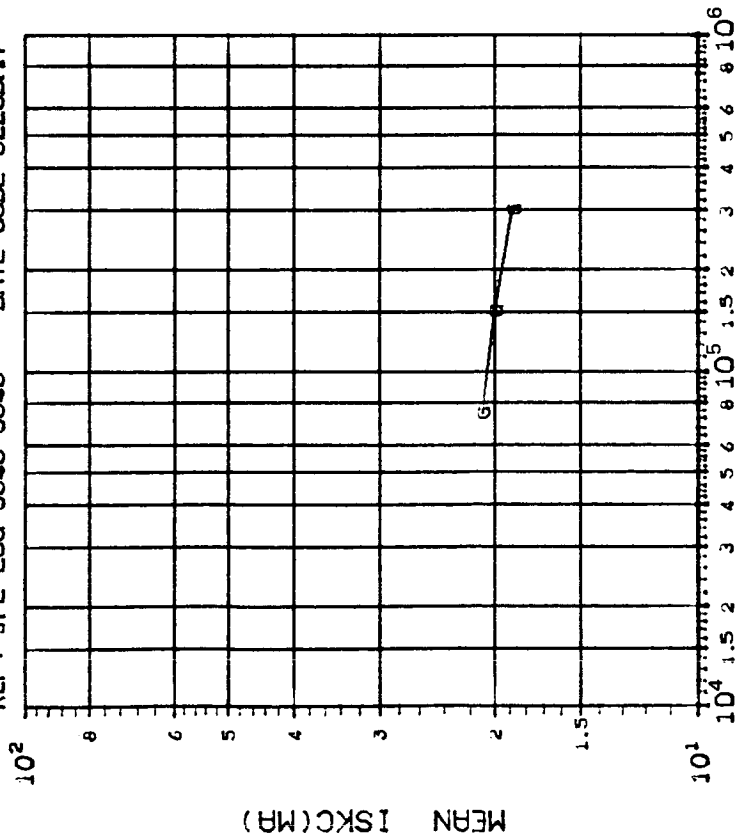
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	1.972 2.116 2.019

INITIAL MEAN VALUE ISKB(MA) = 2.28X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas

(7) ISKC (V0E--V+1.5V, VIN--100MV) IN VS DOSE

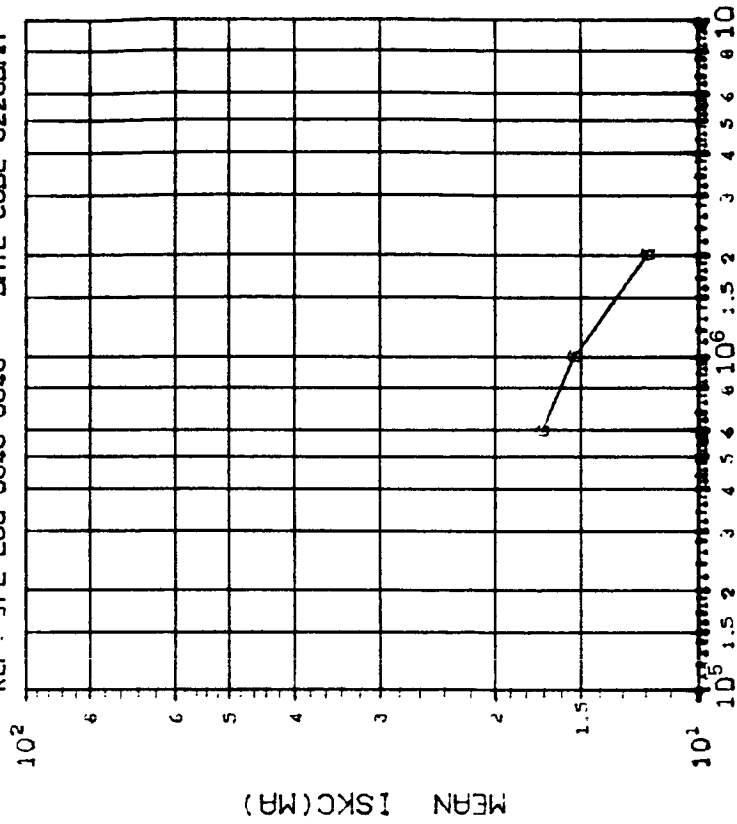
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.291 1.486 1.788

INITIAL MEAN VALUE ISKC(MA) = 2.25X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas

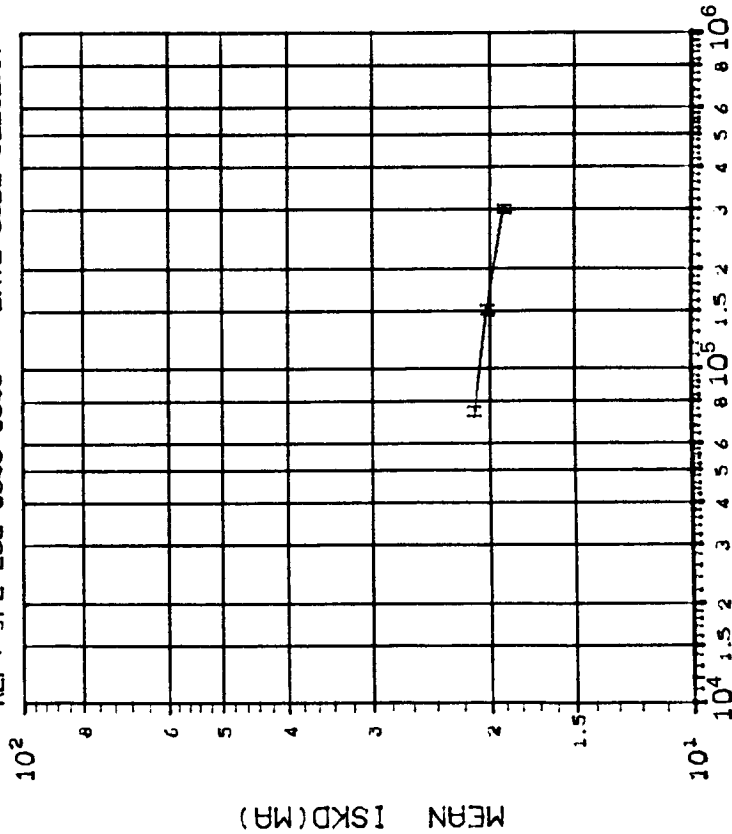
(7) ISKC (V0E--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	2.070 2.177 2.055

INITIAL MEAN VALUE ISKC(MA) = 2.25X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co⁶⁰ Gammas

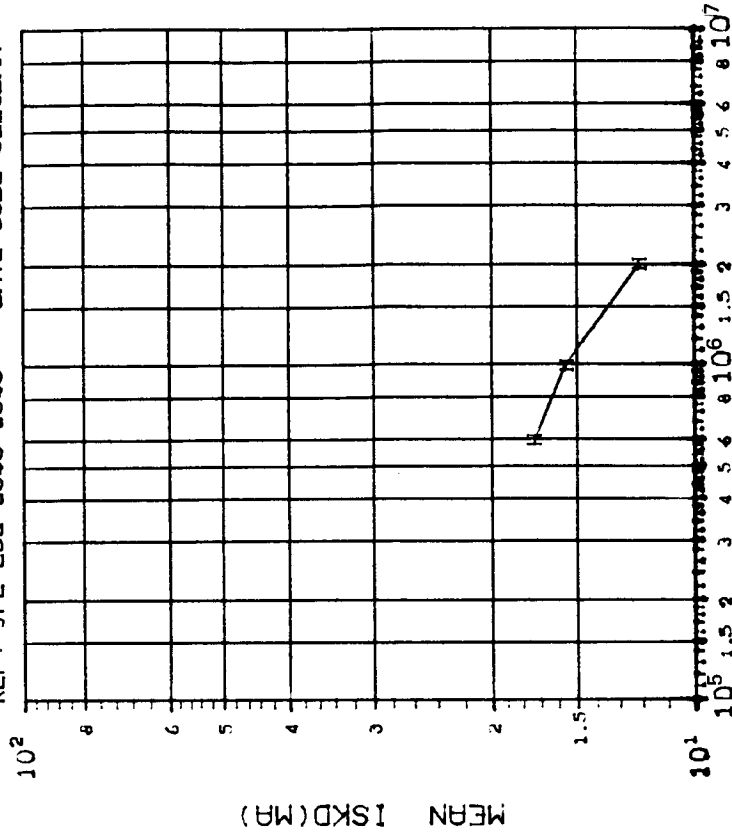
(8) ISKD (V0=-V+1.5V, V1=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	300
.9321 1.067 1.306	

INITIAL MEAN VALUE ISKD(MA) = 2.25X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co⁶⁰ Gammas

(8) ISKD (V0=-V+1.5V, V1=-100MV) IN VS DOSE

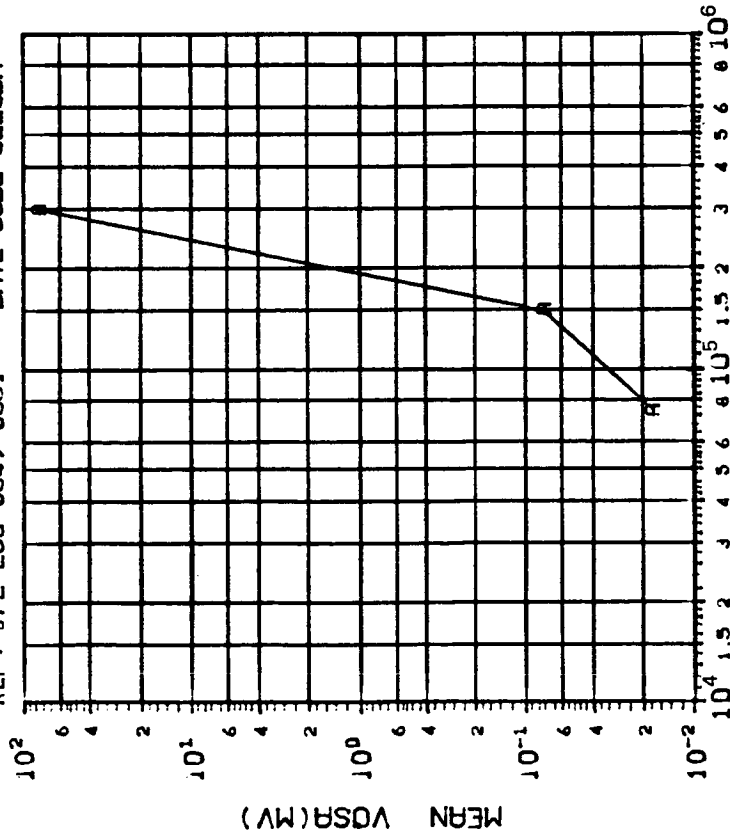
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600
	2000
1.599 1.761 1.732	

INITIAL MEAN VALUE ISKD(MA) = 2.25X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(1)VOSR (V0=0) IN MV: VS DOSE

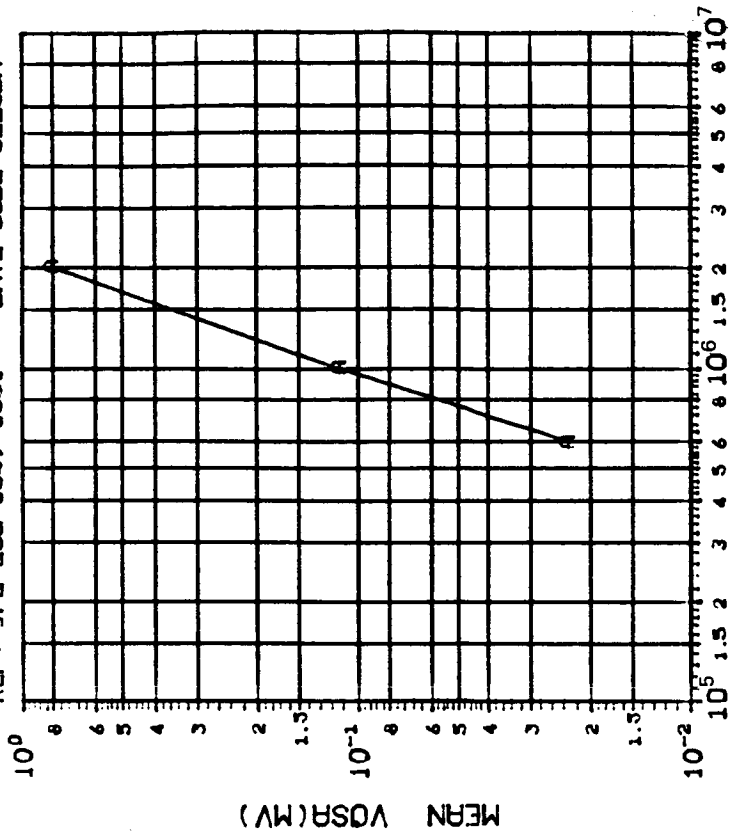
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.8619 .6330 244.7

INITIAL MEAN VALUE VOSR(MV) = 8.18X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(1)VOSR (V0=0) IN MV: VS DOSE

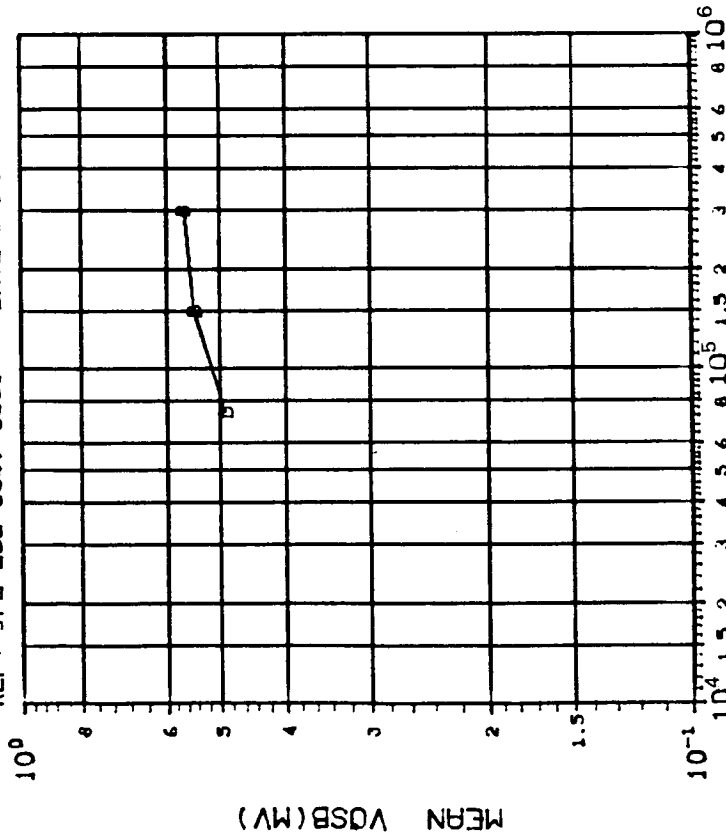
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.7531 .7196 .6788

INITIAL MEAN VALUE VOSR(MV) = 8.18X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

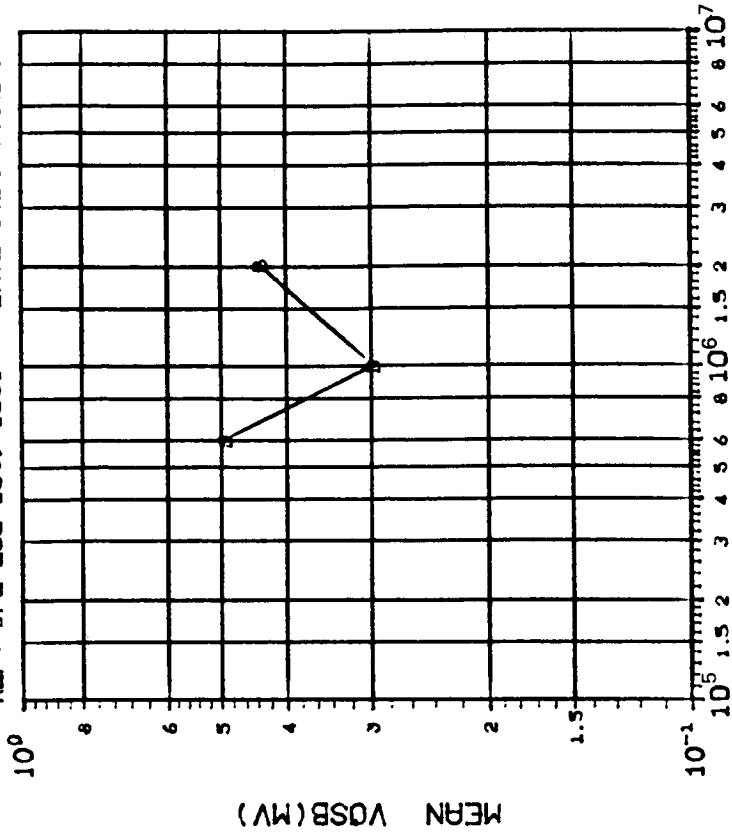
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
.5018 .4991 .4907	

INITIAL MEAN VALUE VOSB(MV) = 3.90X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

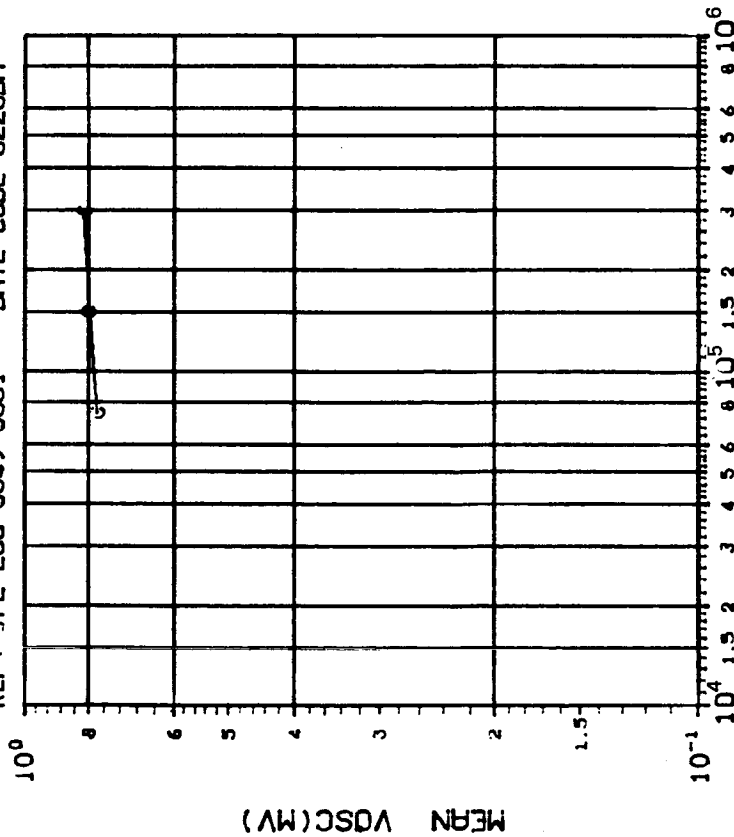
(2)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600
	1000
.4710 .4516 .4370	

INITIAL MEAN VALUE VOSB(MV) = 3.90X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



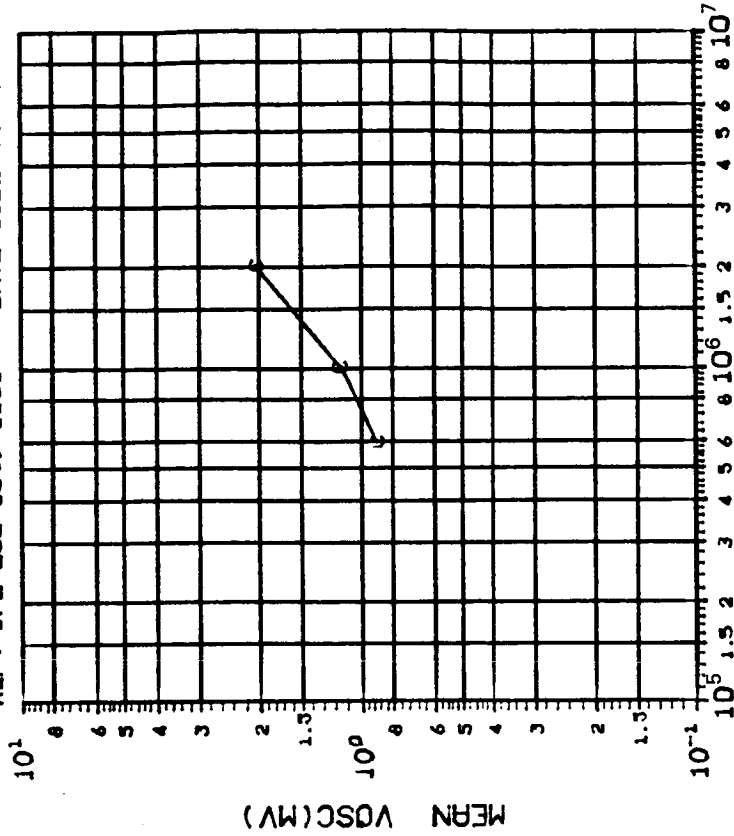
DOSE, rad(Si) Co 60 Gammas
 (3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
U	.4471 .4444 .4376

INITIAL MEAN VALUE VOSC(MV) = 7.57X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

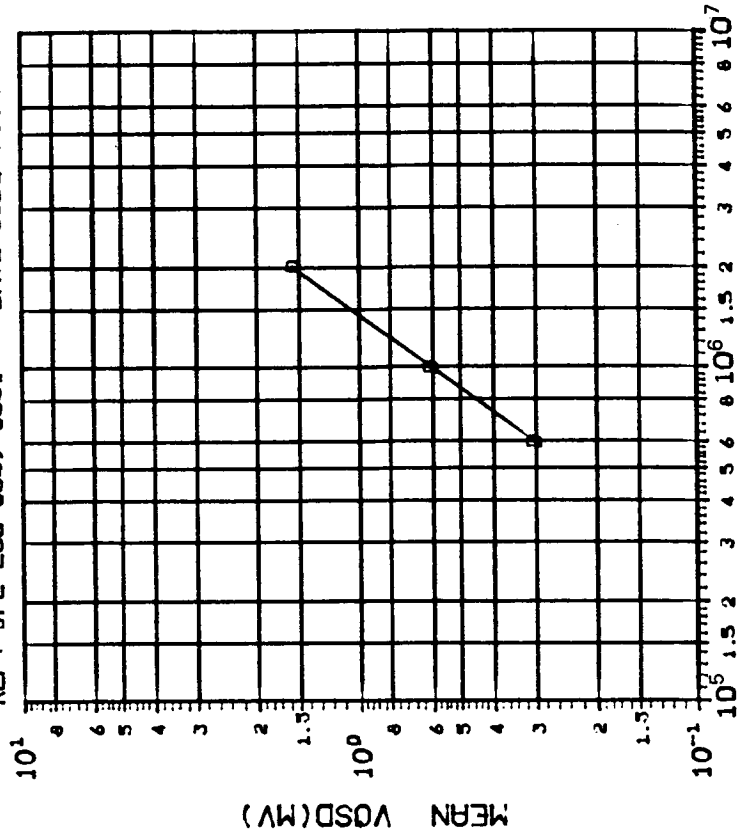


DOSE, rad(Si) Co 60 Gammas
 (3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
U	.4560 .4695 .4661

INITIAL MEAN VALUE VOSC(MV) = 7.57X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0849-0851 DATE CODE 82280M

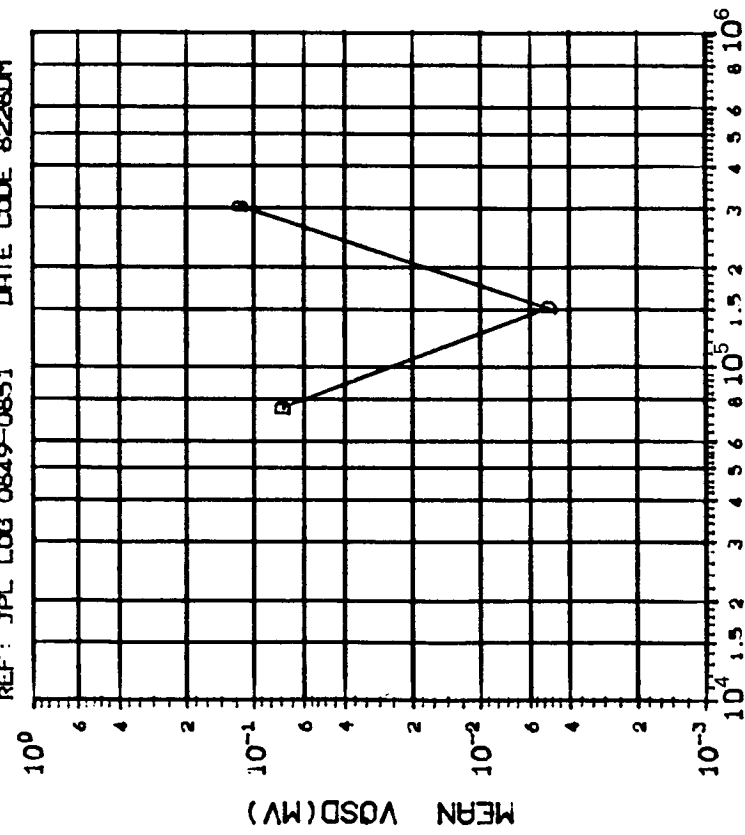


DOSE, rads(Si) Co 60 Gammas
 (4) VOSD (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	.4145 .4113 .4526

INITIAL MEAN VALUE VOSD(MV) = 1.40×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0849-0851 DATE CODE 82280M

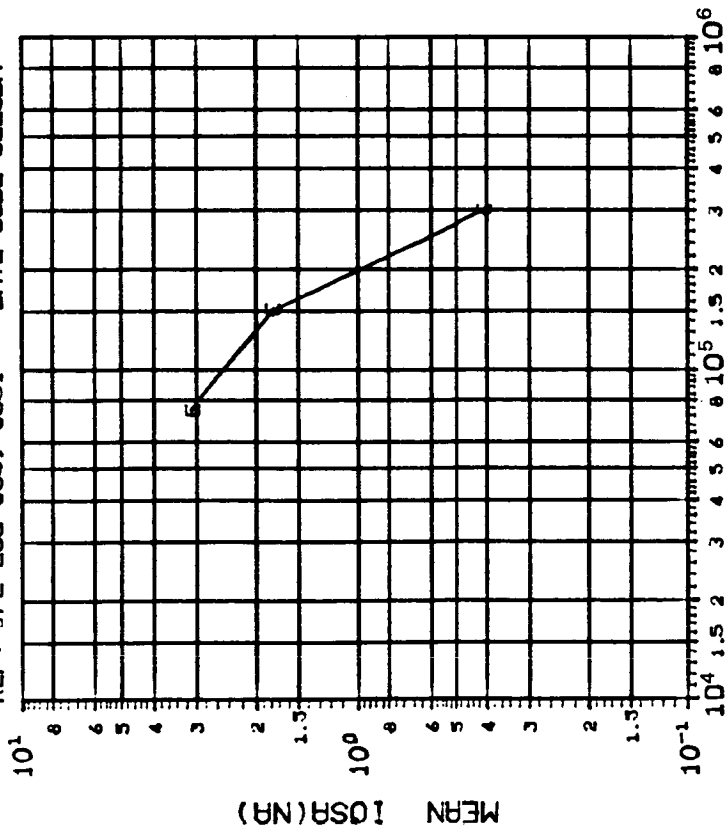


DOSE, rads(Si) Co 60 Gammas
 (4) VOSD (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	.4512 .4388 .4272

INITIAL MEAN VALUE VOSD(MV) = 1.40×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

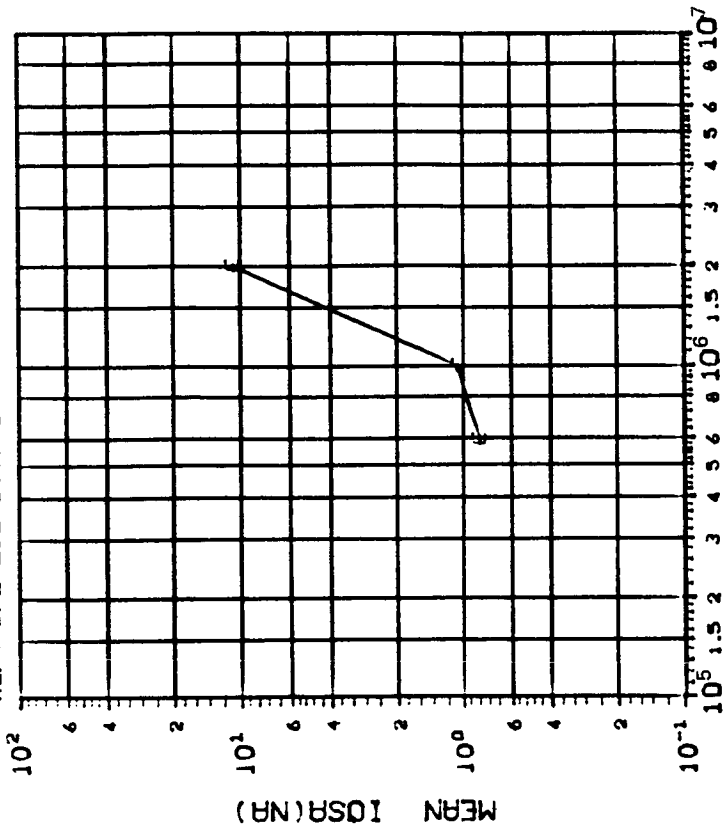


DOSE, rads(Si) Co 60 Gammas
 (5110SA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.961 2.699 4.964

INITIAL MEAN VALUE IOSR(NA) = 3.15X10⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

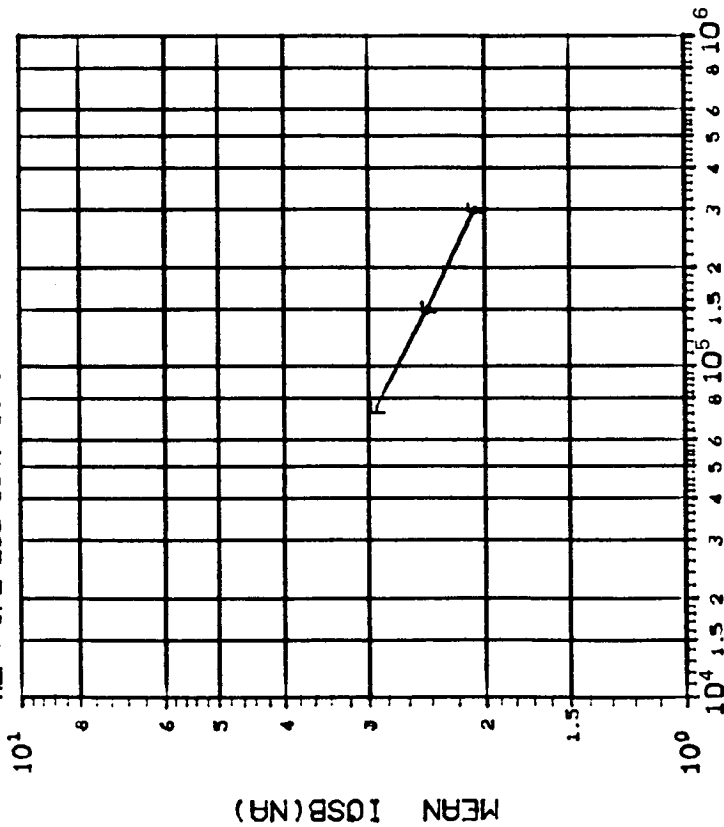


DOSE, rads(Si) Co 60 Gammas
 (5110SA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	6.142 5.711 4.353

INITIAL MEAN VALUE IOSR(NA) = 3.15X10⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

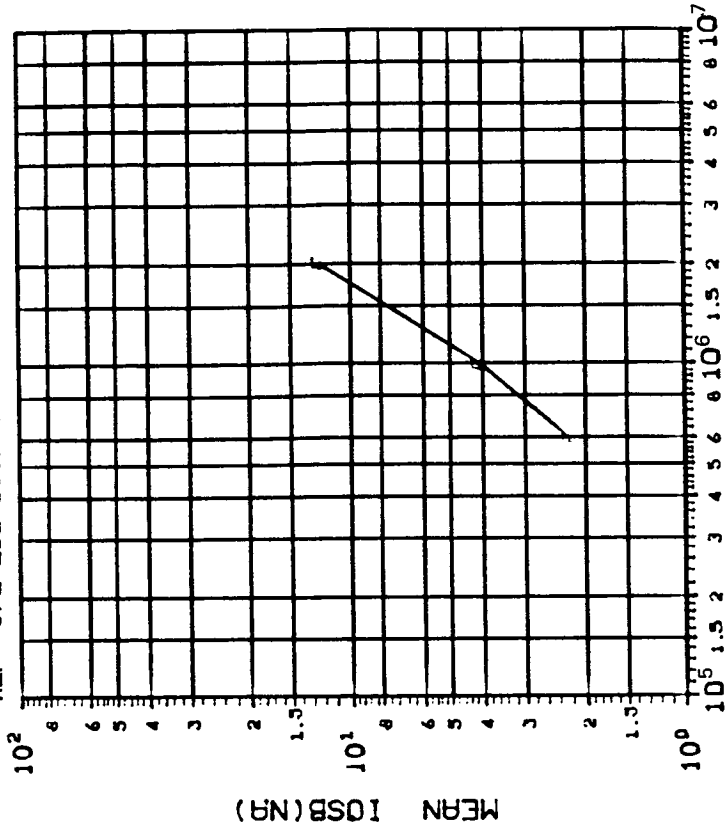


DOSE, rads(Si) Co⁶⁰ Gammas
 (6)IO SB (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	1.037 1.326 1.714

INITIAL MEAN VALUE IO SB(NA) = 3.98X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

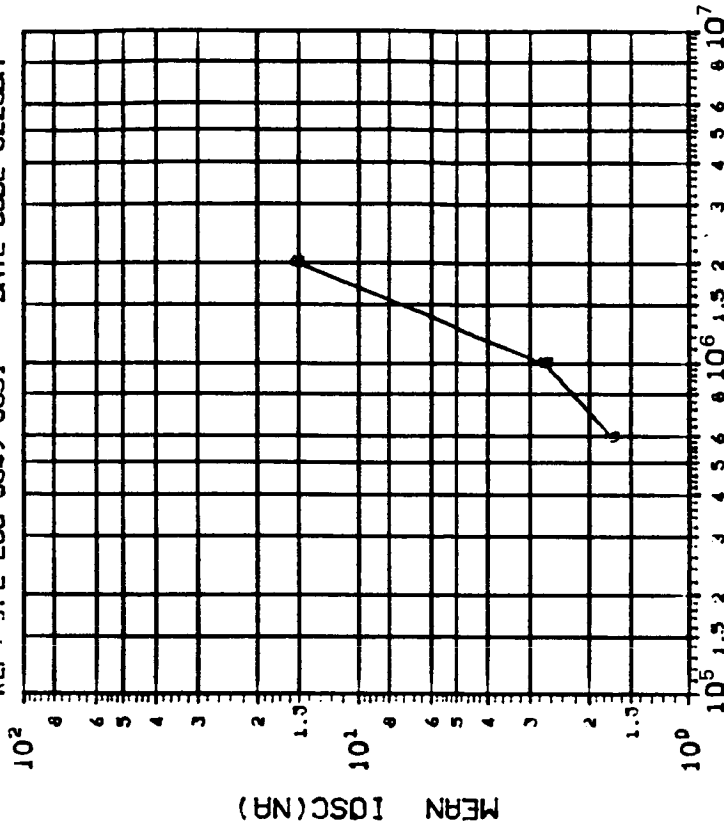


DOSE, rads(Si) Co⁶⁰ Gammas
 (6)IO SB (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	1.546 1.925 2.922

INITIAL MEAN VALUE IO SB(NA) = 3.98X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 82280M

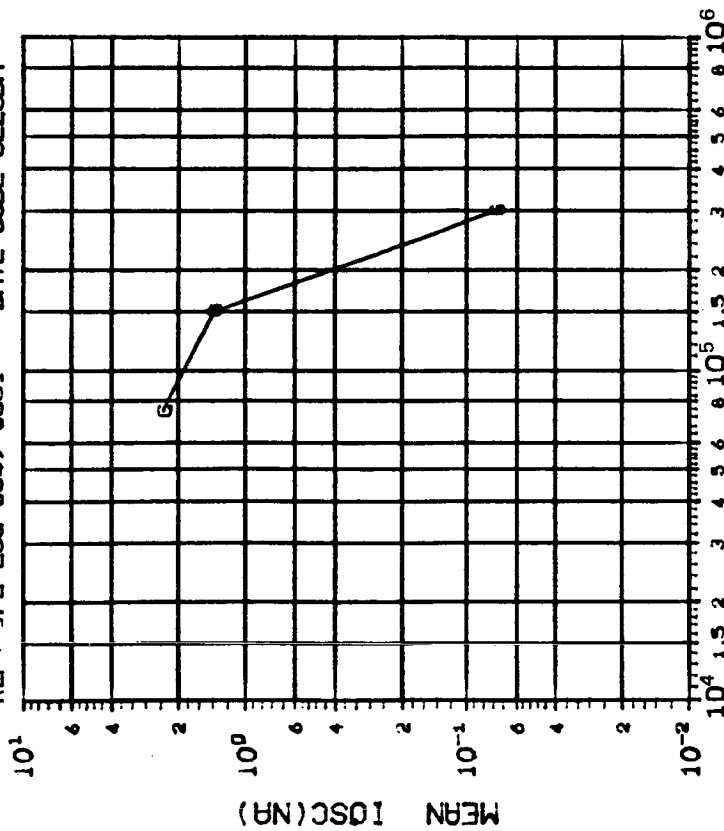


DOSE, rads(Si) Co 60 Gammas
(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	3.458 5.741 3.616

INITIAL MEAN VALUE IOSC(NA) = 3.61X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 82280M

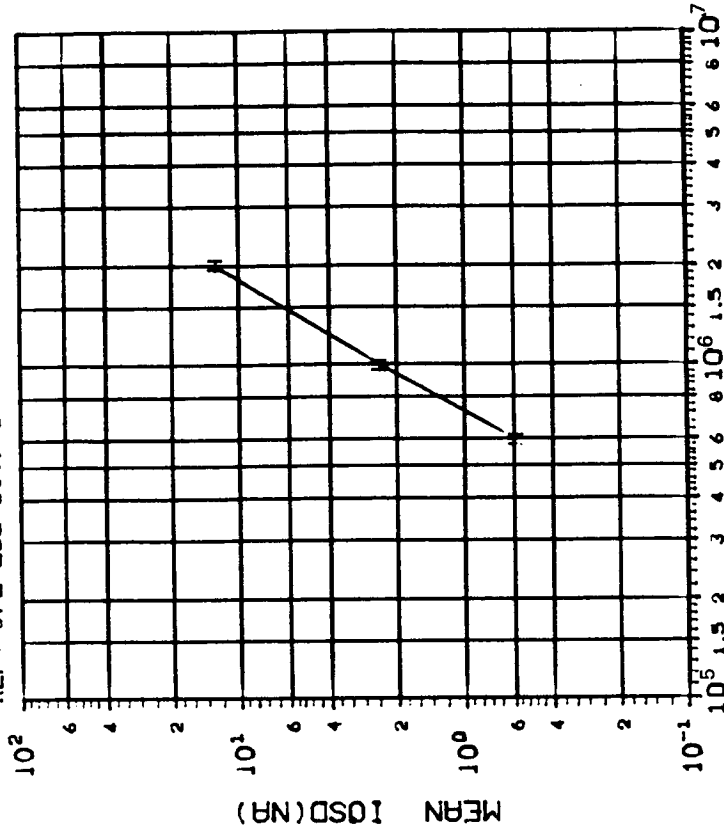


DOSE, rads(Si) Co 60 Gammas
(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.681 2.348 3.232

INITIAL MEAN VALUE IOSC(NA) = 3.61X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



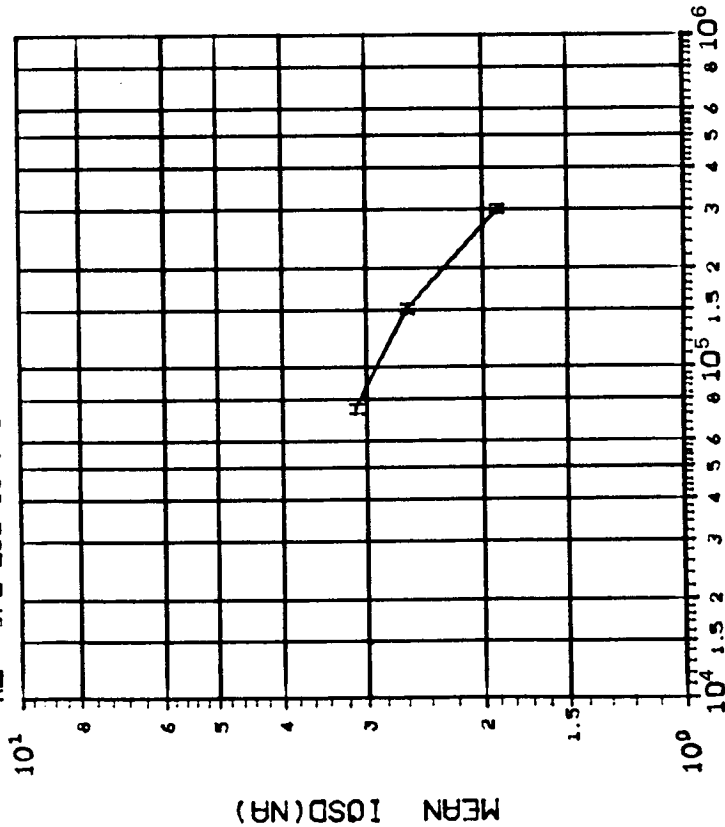
DOSE, rads(Si) Co 60 Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	3.680 3.437 4.507

INITIAL MEAN VALUE IOSD(NA) = 3.81X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



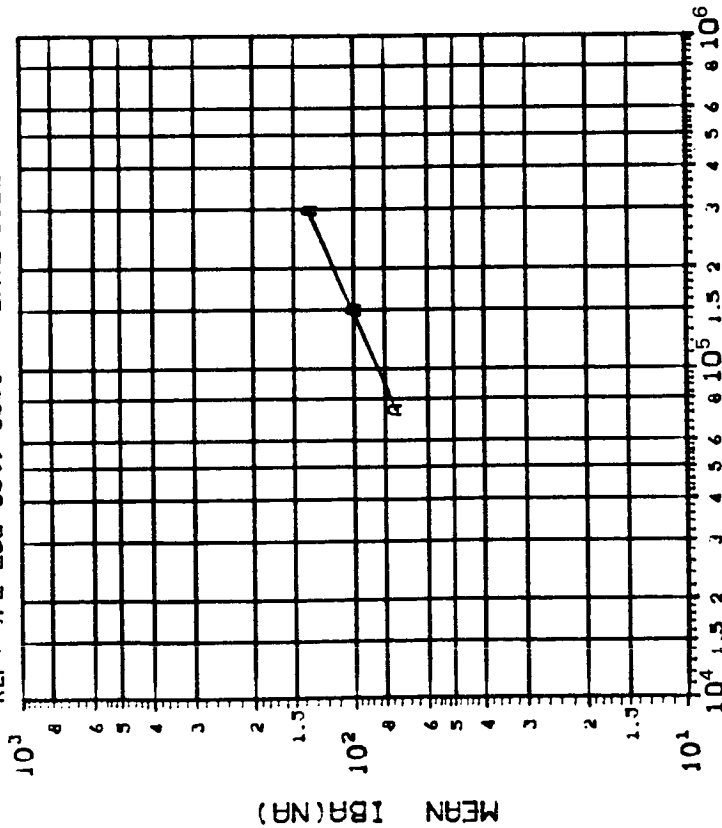
DOSE, rads(Si) Co 60 Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	2.070 2.593 3.533

INITIAL MEAN VALUE IOSD(NA) = 3.81X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0849-0651 DATE CODE 8228DM

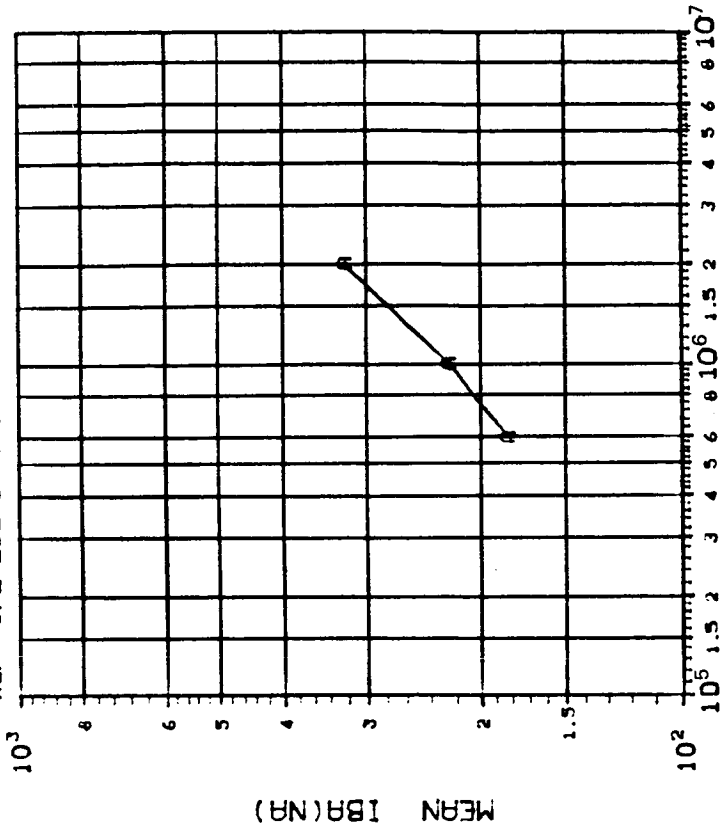


DOSE, rads(Si) Co60 Gammas
 (111BA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
A	3.961 5.416 6.063

INITIAL MEAN VALUE IBR(NA) = 4.79×10^1

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0849-0651 DATE CODE 8228DM

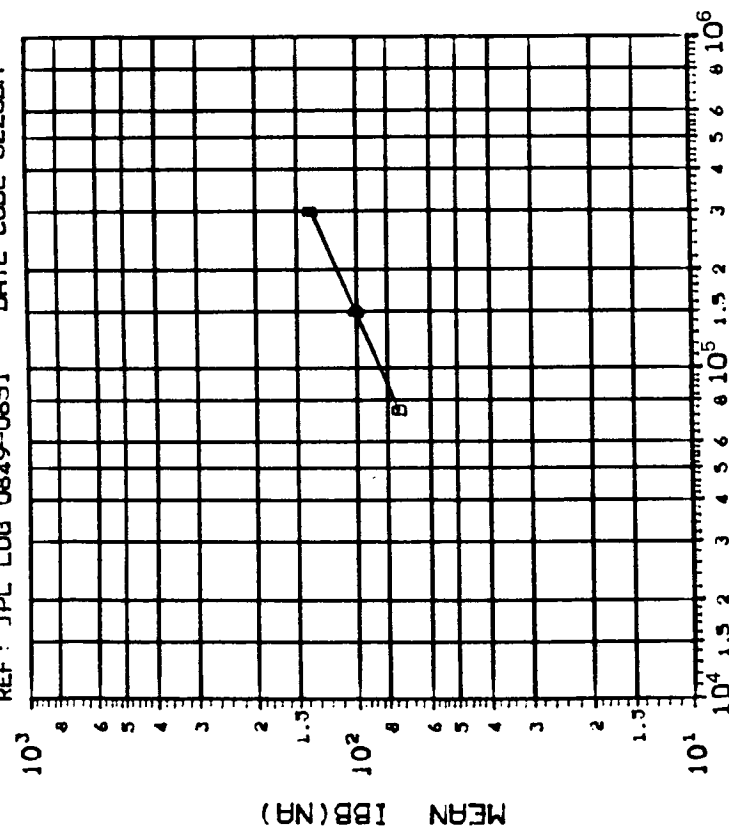


DOSE, rads(Si) Co60 Gammas
 (111BA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
A	10.77 13.93 21.69

INITIAL MEAN VALUE IBR(NA) = 4.79×10^1

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

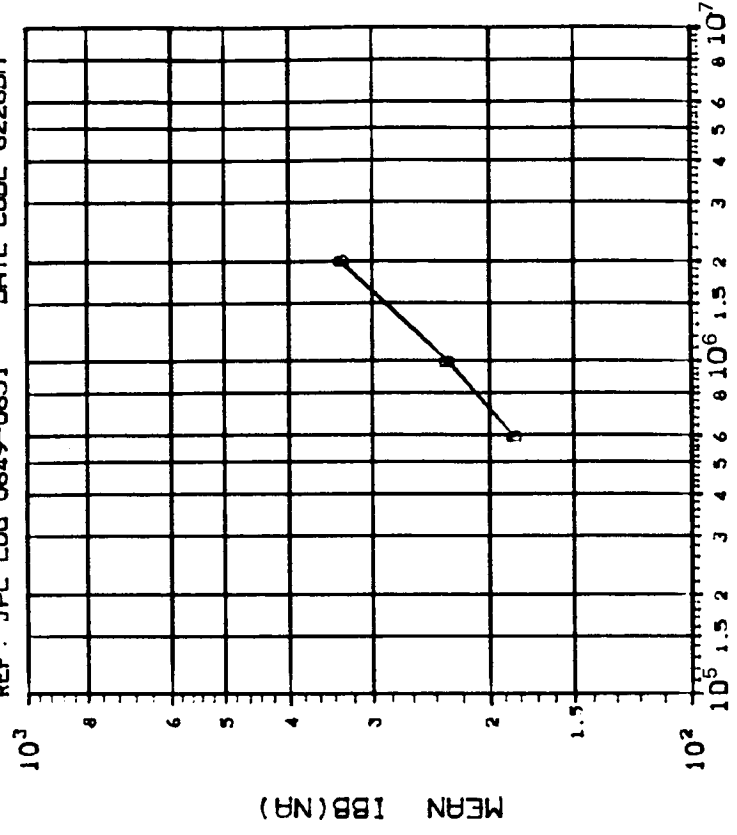


DOSE, rads(Si) Co 60 Gammas
 (2)IBB (V0=0) IN NA : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	3.623 4.613 7.731

INITIAL MEAN VALUE IBB(NA) = 4.76X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

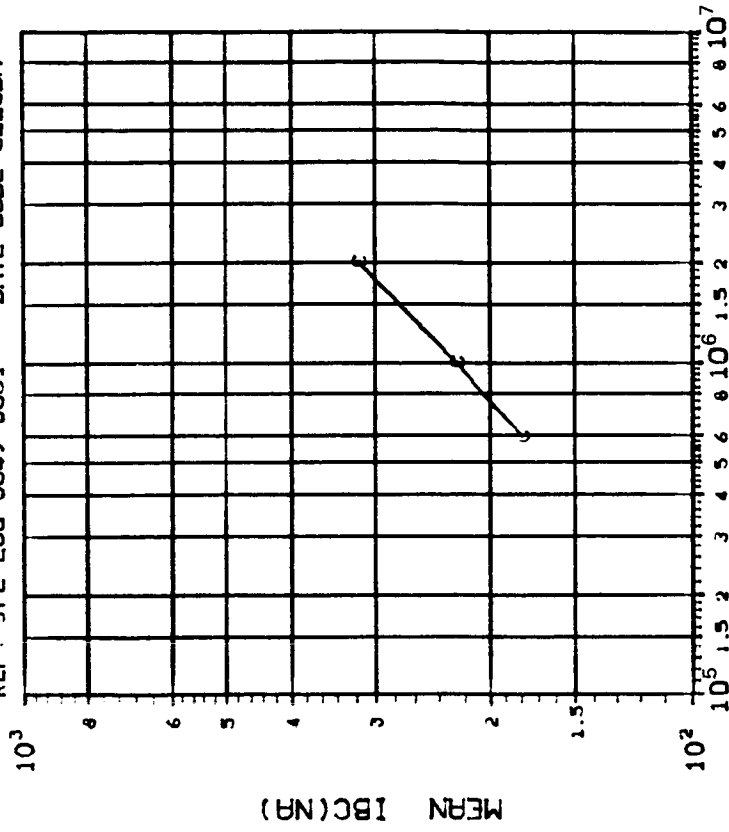


DOSE, rads(Si) Co 60 Gammas
 (2)IBB (V0=0) IN NA : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	10.16 13.34 19.60

INITIAL MEAN VALUE IBB(NA) = 4.76X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

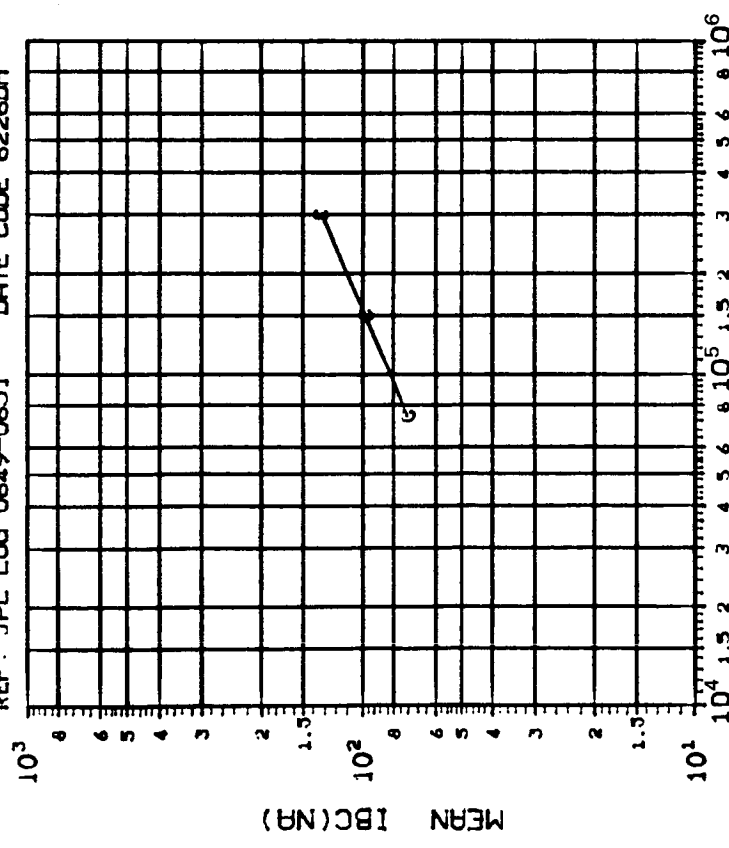


DOSE, rads(Si) Co 60 Gammas
 (31)BC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	6.508 5.831 12.32

INITIAL MEAN VALUE IBC(NA) = 4.60X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

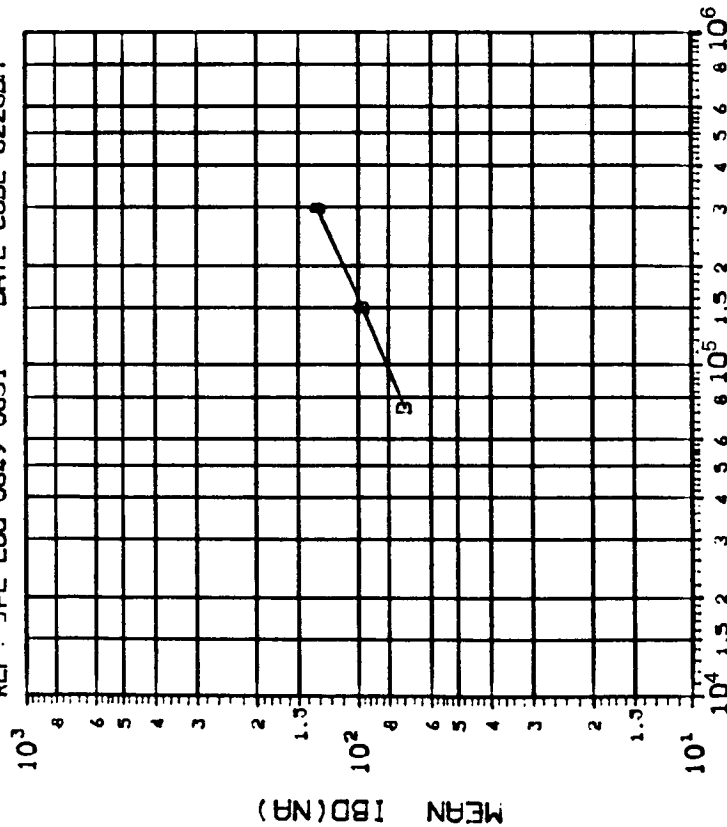


DOSE, rads(Si) Co 60 Gammas
 (31)BC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	2.253 2.536 4.421

INITIAL MEAN VALUE IBC(NA) = 4.60X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

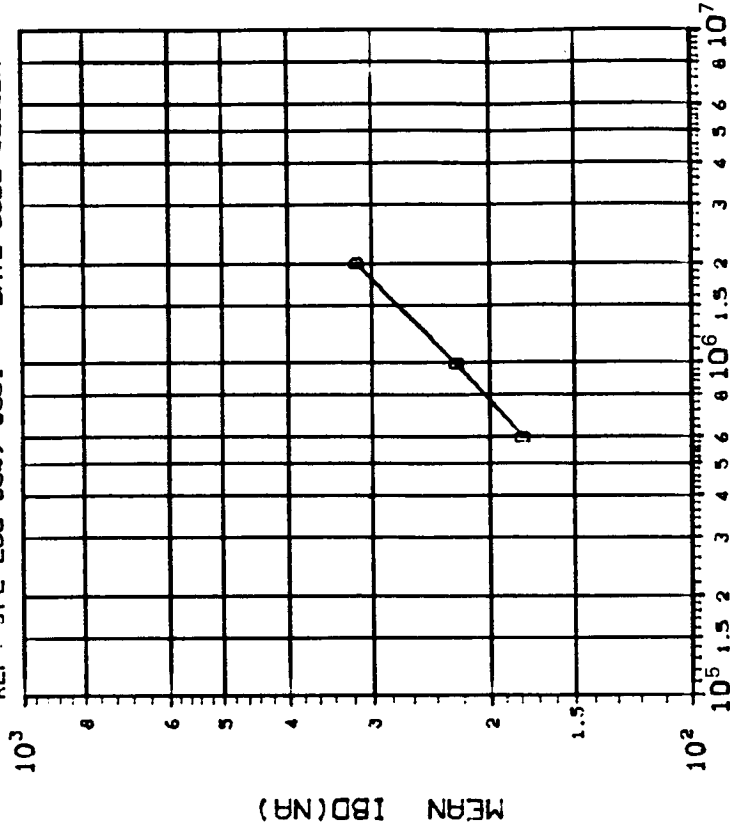


DOSE, rad(Si) Co⁶⁰ Gammas
 (4)IBD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	2.667 3.629 5.660

INITIAL MEAN VALUE IBD(NA) = 4.55X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

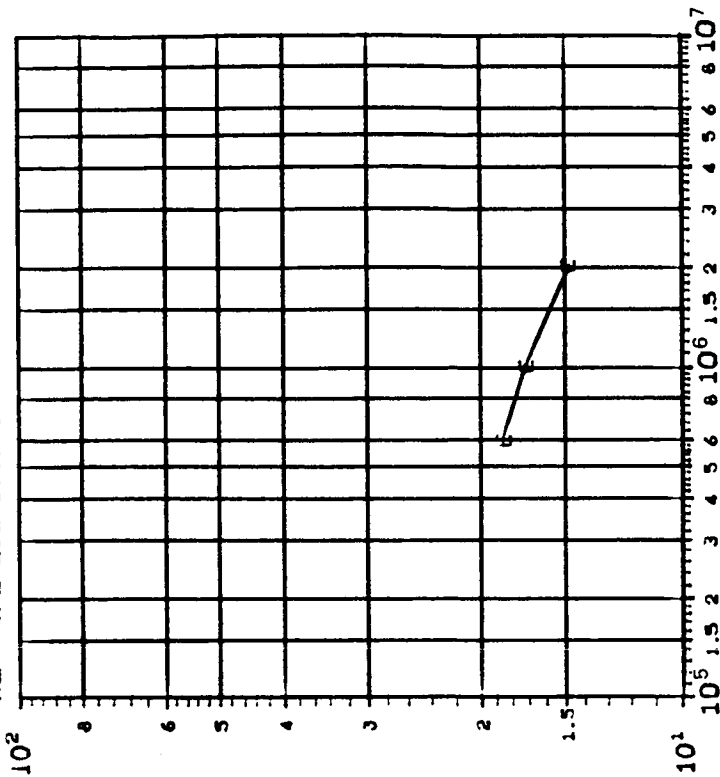


DOSE, rad(Si) Co⁶⁰ Gammas
 (4)IBD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	7.249 10.17 15.69

INITIAL MEAN VALUE IBD(NA) = 4.55X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-63
REF: JPL LOG 0849-0851 DATE CODE 82280M

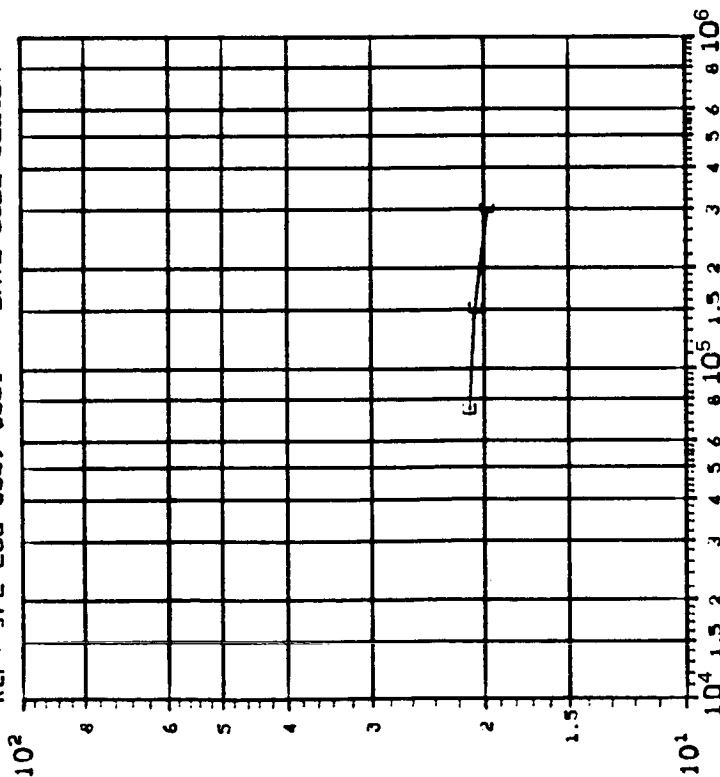


DOSE, rads(Si) Co⁶⁰ Gammas
(S) ISKA (V0--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	.6185 .7406 1.025

INITIAL MEAN VALUE ISKA(MR) = 2.23X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-63
REF: JPL LOG 0849-0851 DATE CODE 82280M

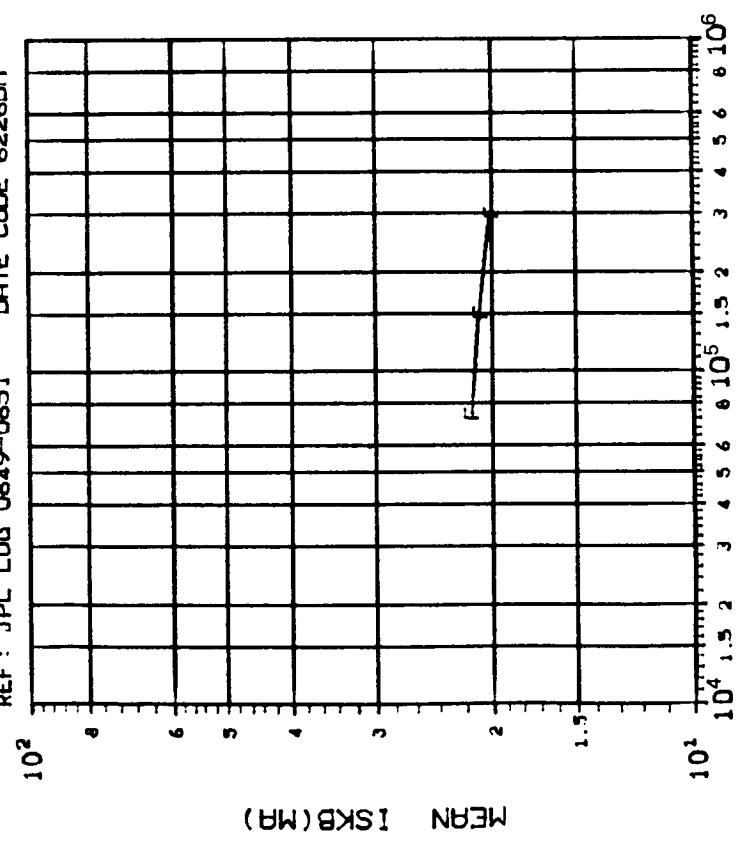


DOSE, rads(Si) Co⁶⁰ Gammas
(S) ISKA (V0--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	.6406 .6415 .6160

INITIAL MEAN VALUE ISKA(MR) = 2.23X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

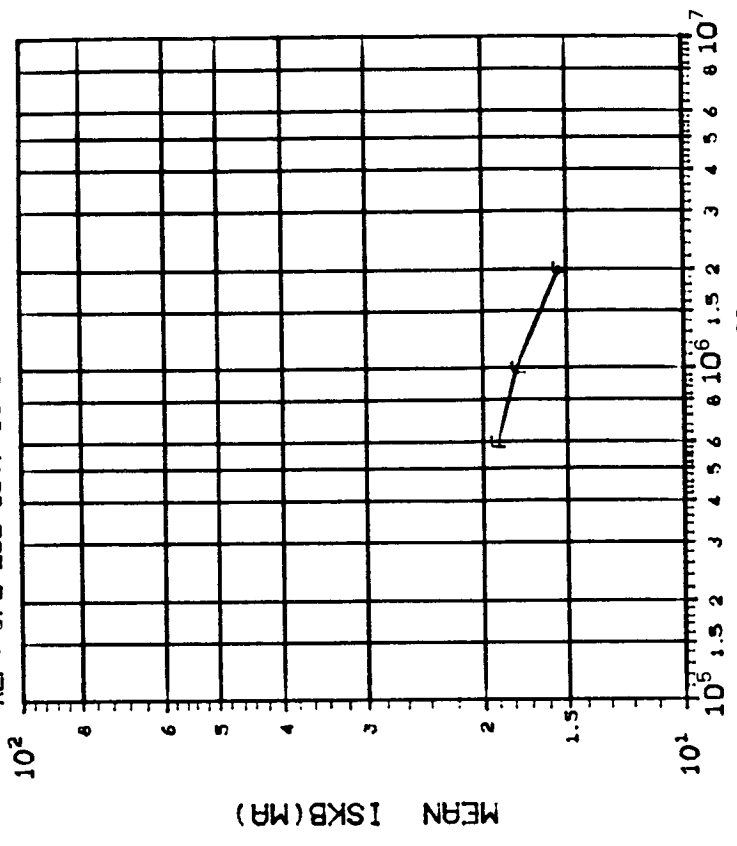


(6) ISKB (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	.9975 .9621 .9480

INITIAL MEAN VALUE ISKB(MR) = 2.25X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

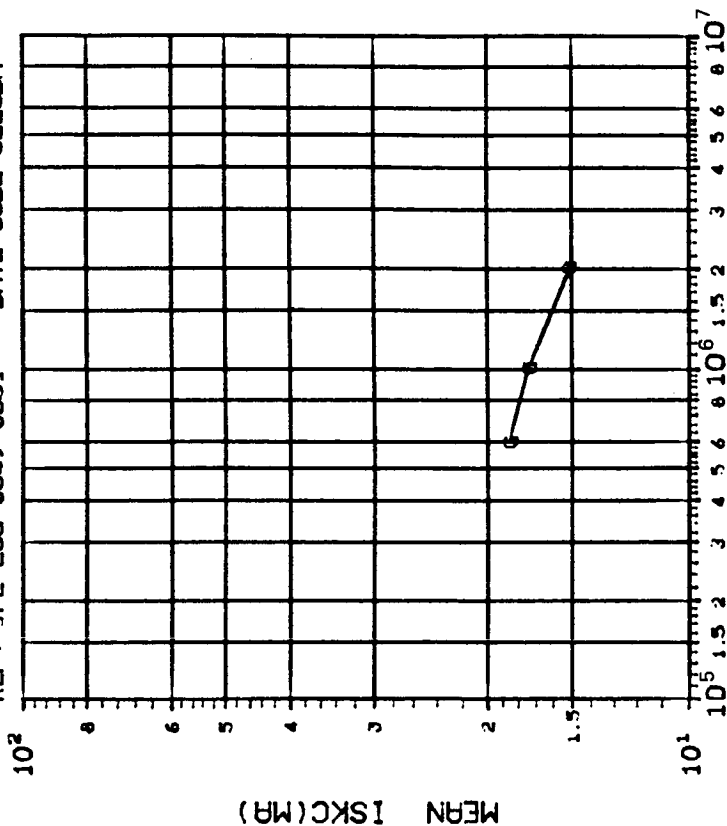


(6) ISKB (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	.9013 .9123 1.040

INITIAL MEAN VALUE ISKB(MR) = 2.25X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-63
REF: JPL LOG 0849-0851 DATE CODE 82280M



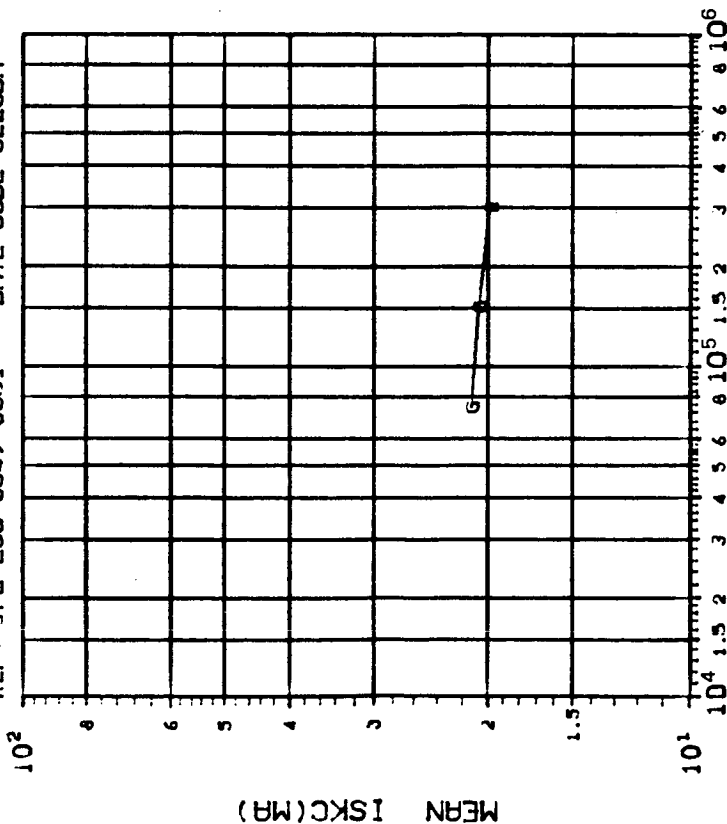
DOSE, rads(Si) Co 60 Gammas

(7) ISKC (V0E--V+1.5V, V1N--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	.6647 .7175 .9059

INITIAL MEAN VALUE ISKC(MA) = 2.24X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-63
REF: JPL LOG 0849-0851 DATE CODE 82280M



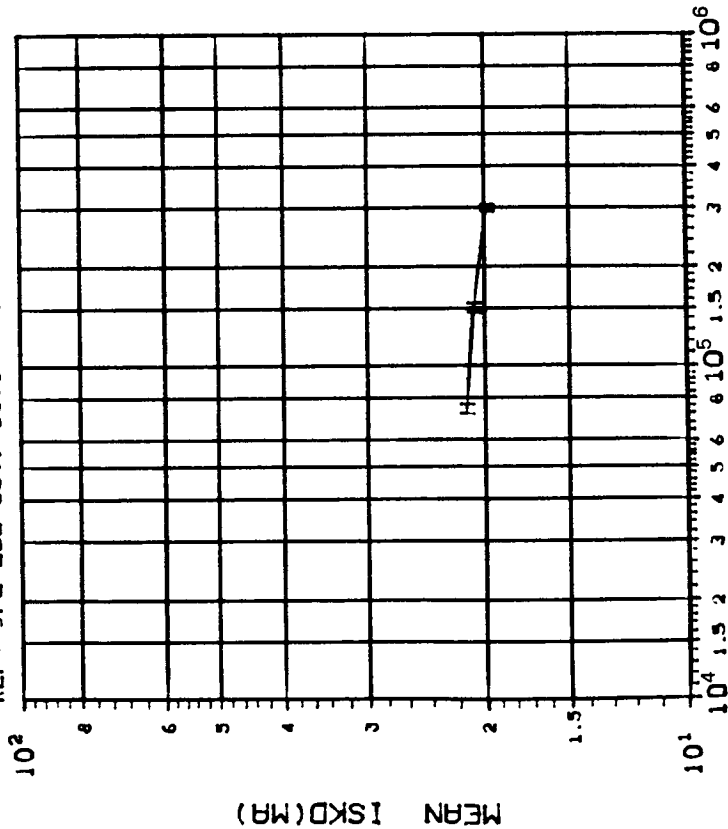
DOSE, rads(Si) Co 60 Gammas

(7) ISKC (V0E--V+1.5V, V1N--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	.7168 .7332 .6783

INITIAL MEAN VALUE ISKC(MA) = 2.24X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

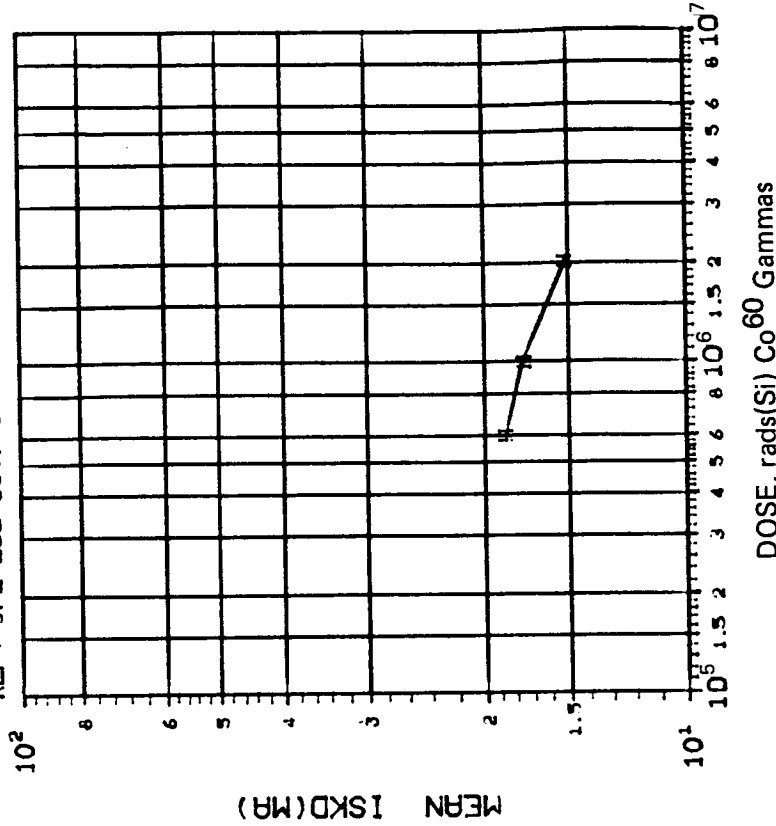


DOSE, rads(Si) Co 60 Gammas
 (61)1SKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.9631 .9124 .6976

INITIAL MEAN VALUE 1SKD(MR) = 2.23X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



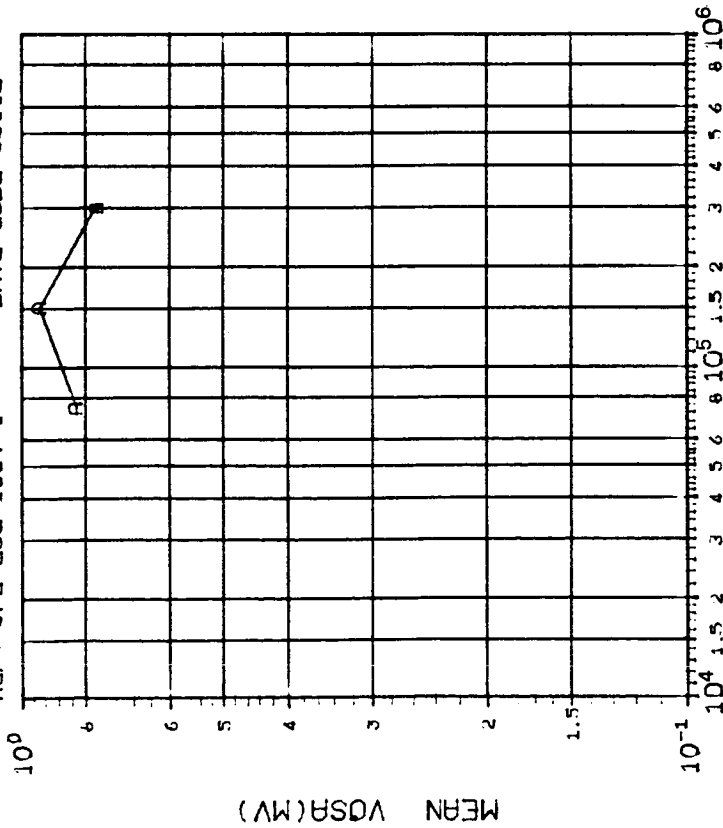
DOSE, rads(Si) Co 60 Gammas
 (8)1SKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	.8441 .6449 .6899

INITIAL MEAN VALUE 1SKD(MR) = 2.23X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

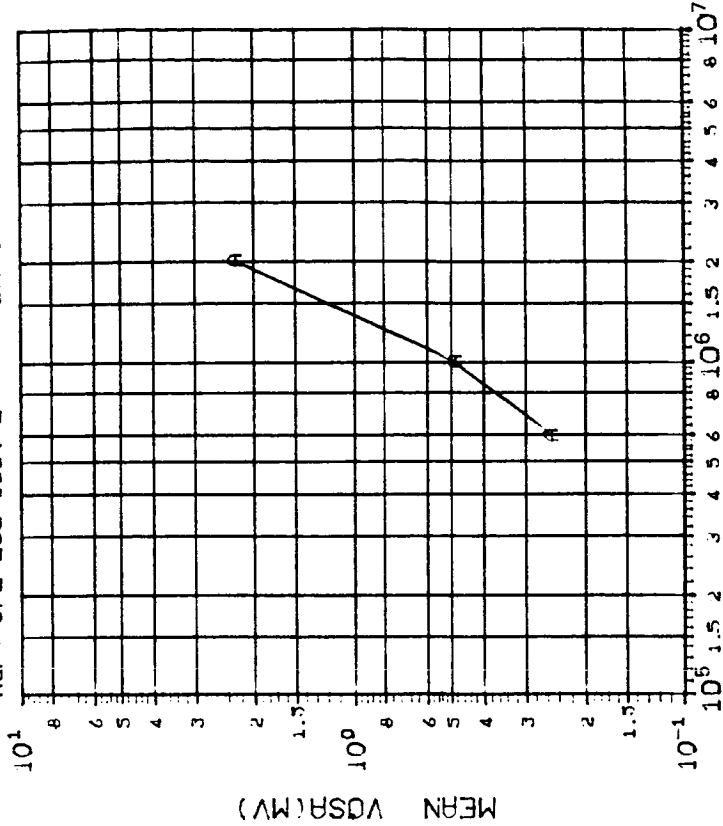
(1)VOSA (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.2660 .2739 .2945

INITIAL MEAN VALUE VOSA(MV) = 7.89X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



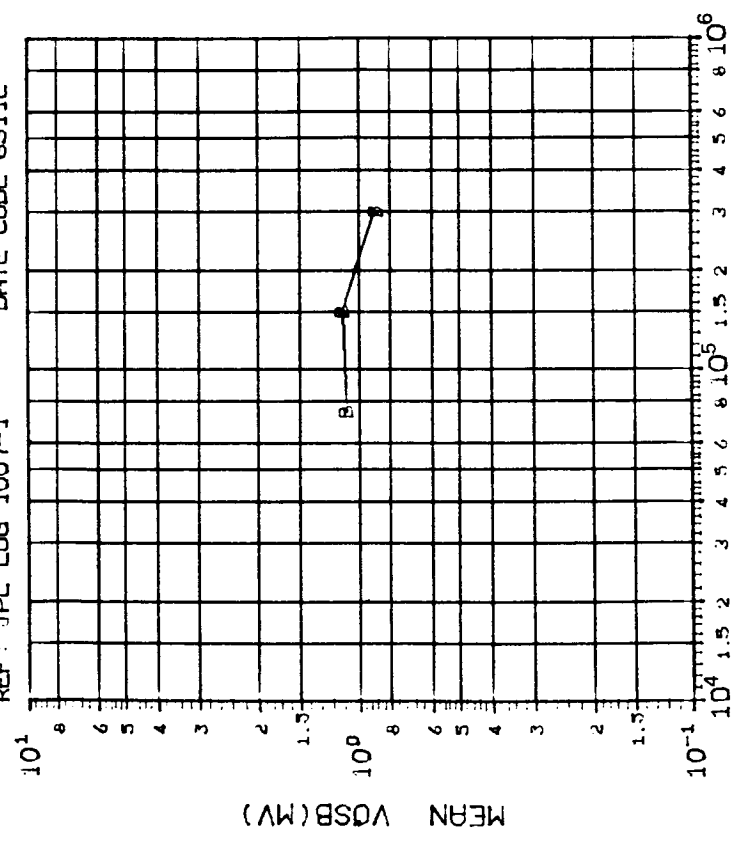
DOSE, rads(Si) 2.5 MeV electrons

(1)VOSA (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.2764 .2976 .4262

INITIAL MEAN VALUE VOSA(MV) = 7.89X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

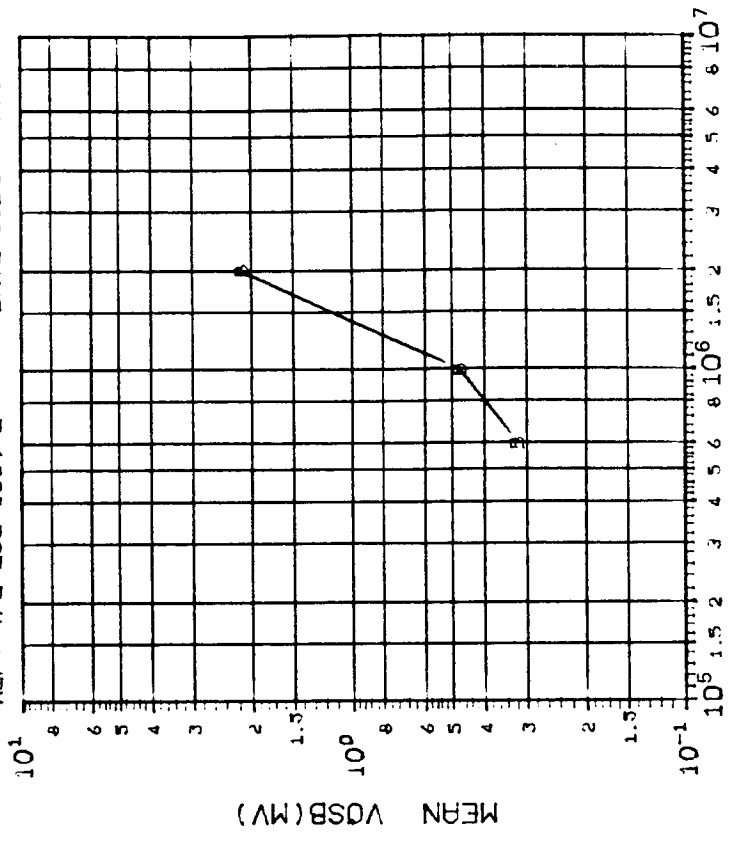


DOSE, rads(Si) 2.5 MeV electrons
 (2)VOSB (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.4776 .4810 .4732

INITIAL MEAN VALUE VOSB(MV) = 1.09X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: TPL LOG 1007-2 DATE CODE 8311E



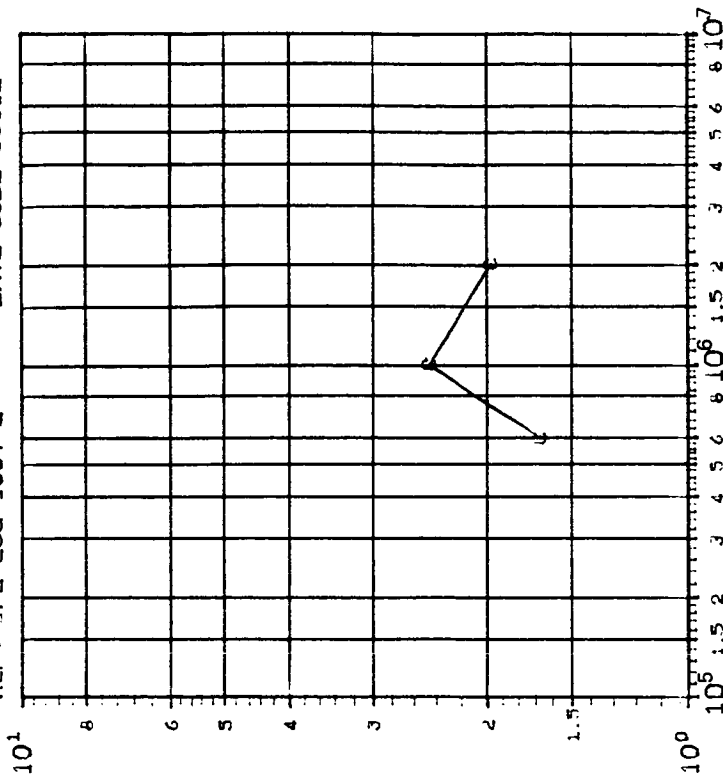
DOSE, rads(Si) 2.5 MeV electrons
 (2)VOSB (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.4483 .4290 .5779

INITIAL MEAN VALUE VOSB(MV) = 1.09X10⁻⁰

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DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1007-2 DATE CODE 8311E

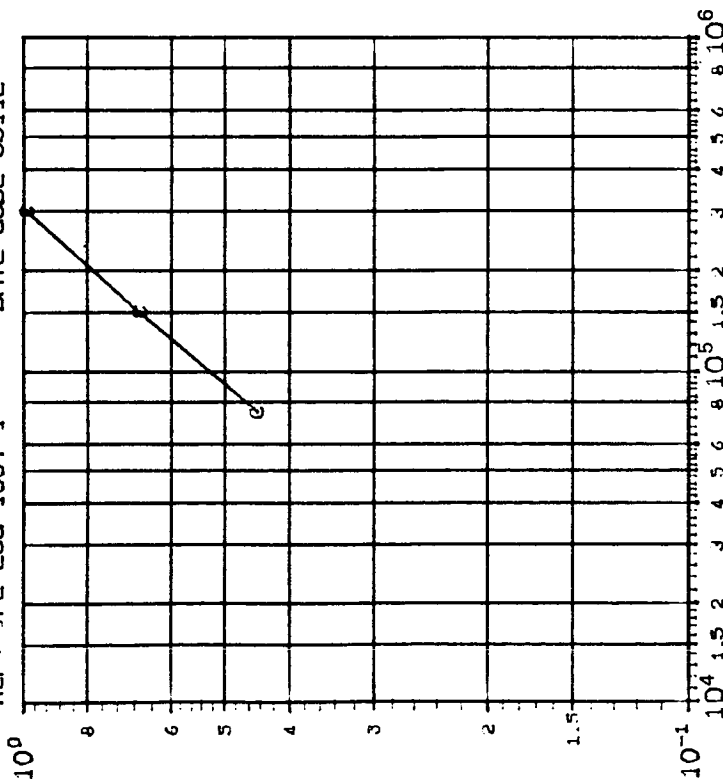


DOSE, rads(Si) 2.5 MeV electrons
(3)VOSC (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	.4721 .5315 1.960

INITIAL MEAN VALUE VOSC(MV) = 8.56X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1007-1 DATE CODE 8311E

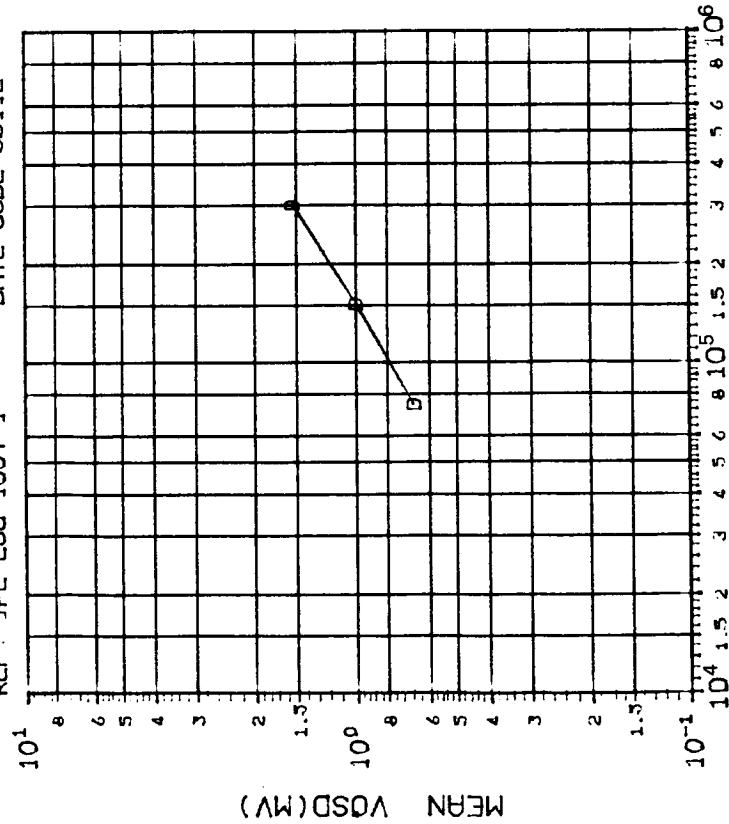


DOSE, rads(Si) 2.5 MeV electrons
(3)VOSC (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	.4293 .4190 .4123

INITIAL MEAN VALUE VOSC(MV) = 8.56X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

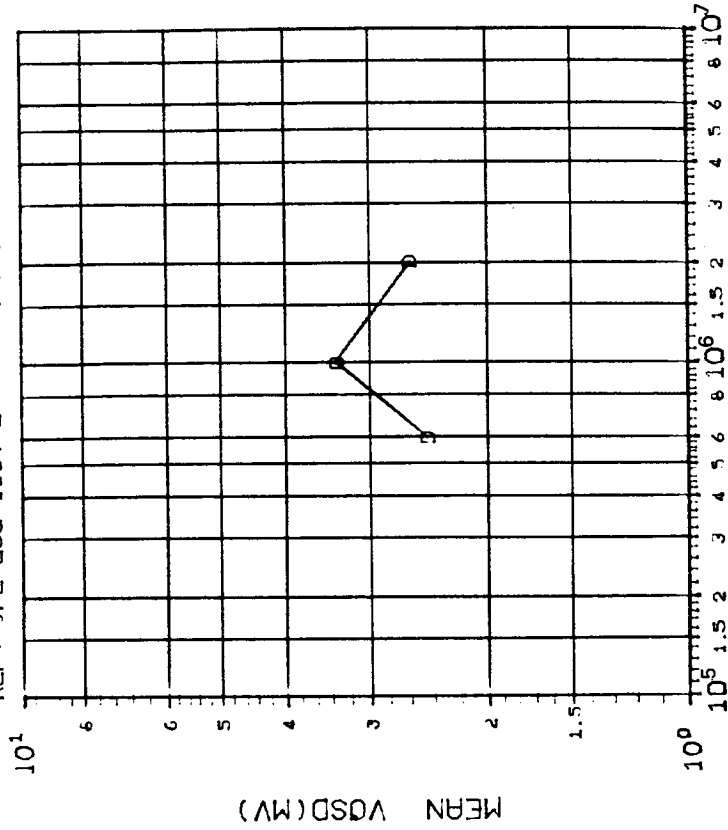


DOSE, rads(Si) 2.5 MeV electrons
 (4) VOSD (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	.1406 .1538 .1652

INITIAL MEAN VALUE VOSD(MV) = 2.94X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

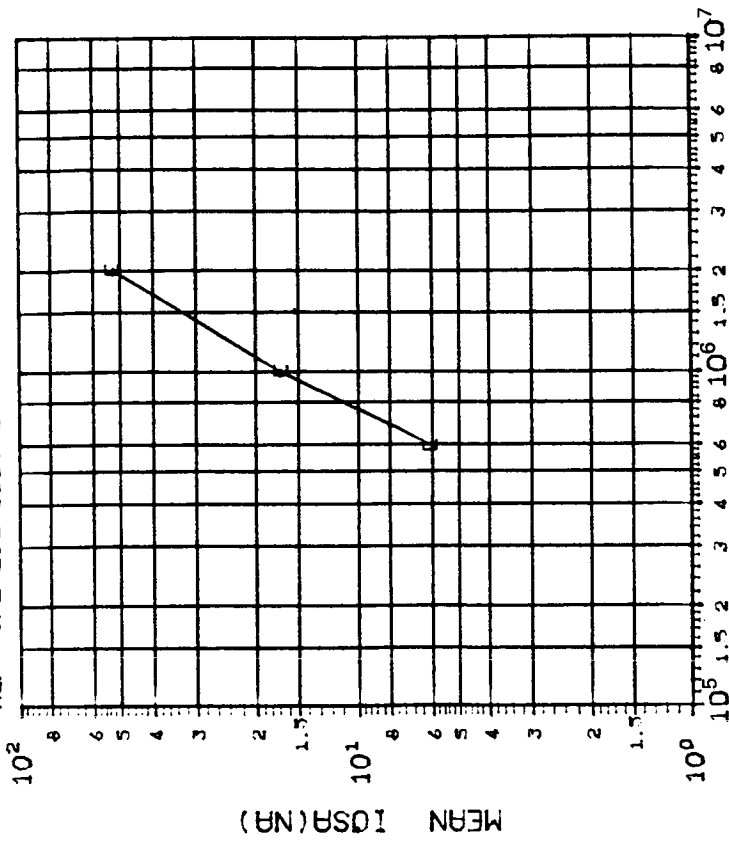


DOSE, rads(Si) 2.5 MeV electrons
 (4) VOSD (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	.3268 .2246 2.581

INITIAL MEAN VALUE VOSD(MV) = 2.94X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

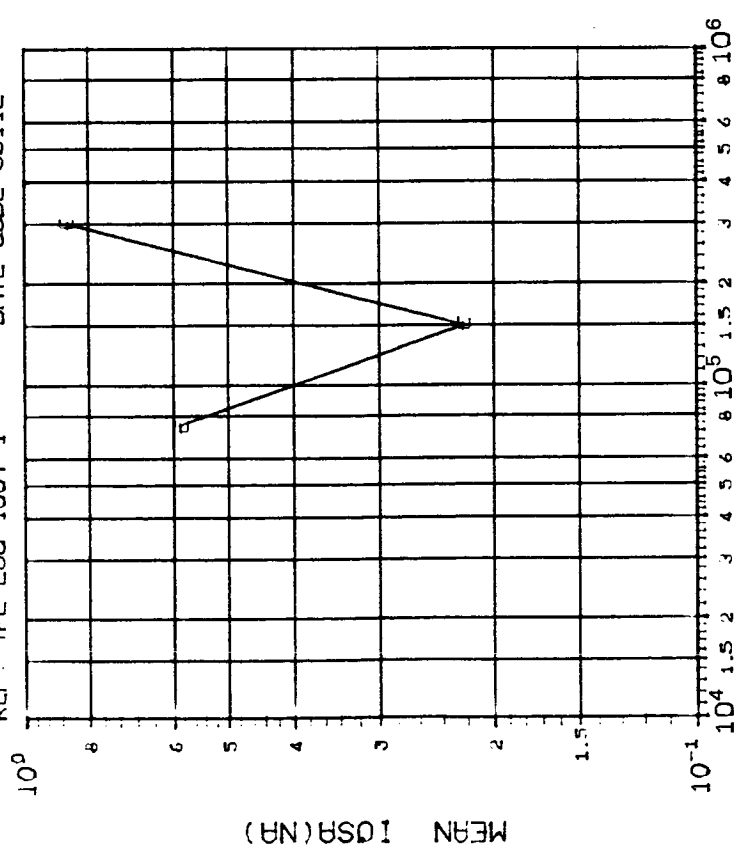


DOSE, rads(Si) 2.5 MeV electrons
 (5)IOSA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	2.741 5.572 7.100

INITIAL MEAN VALUE IOSA(NA) = 6.38X10¹²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: TPL LOG 1007-1 DATE CODE 8311E

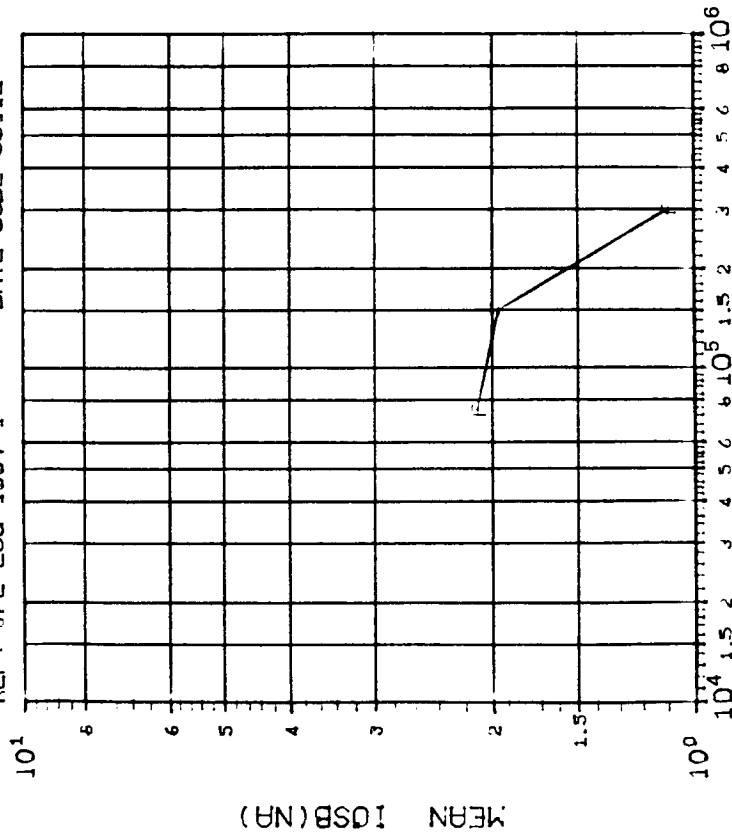


DOSE, rads(Si) 2.5 MeV electrons
 (5)IOSA (VO=OV) IN NA: VS DOSE

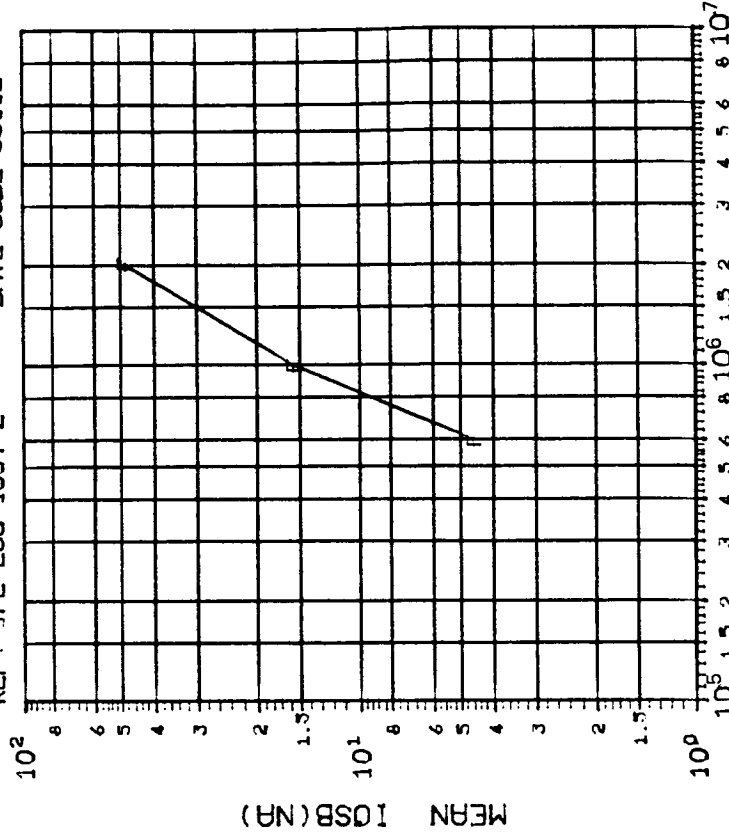
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.570 1.439 1.757

INITIAL MEAN VALUE IOSA(NA) = 8.92X10⁻¹

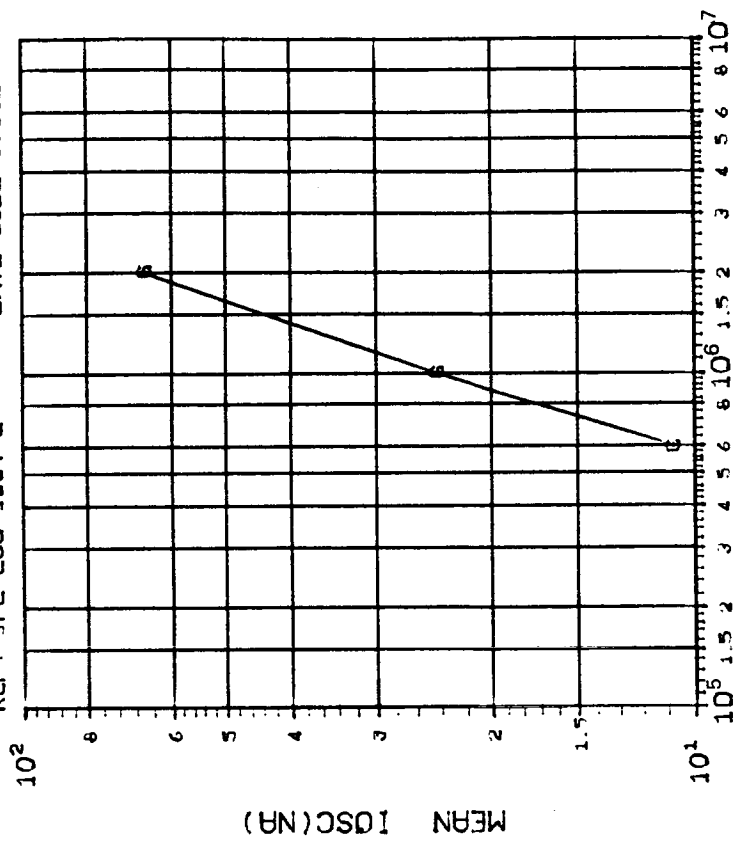
DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E



DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

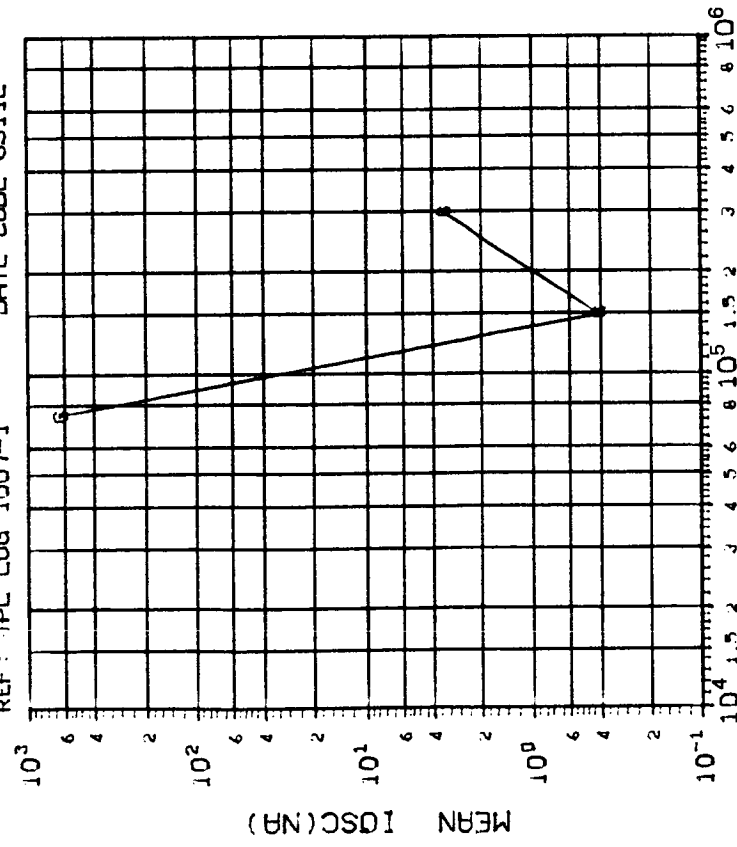


DOSE, rads(Si) 2.5 MeV electrons
 (7)IQSC (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	4.498 7.575 12.48

INITIAL MEAN VALUE IQSC(NA) = 1.41X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

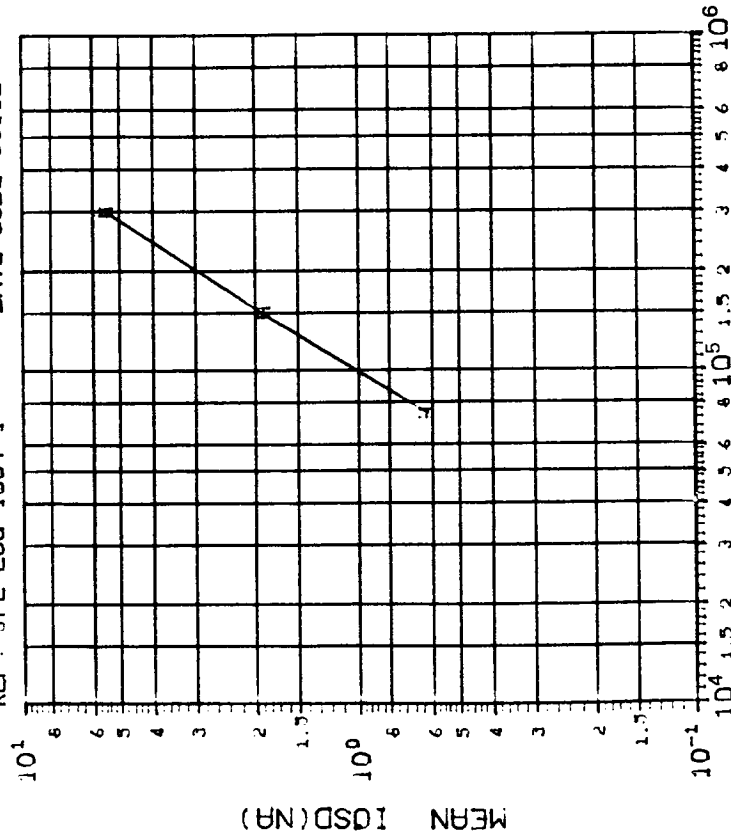


DOSE, rads(Si) 2.5 MeV electrons
 (7)IQSC (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.704 1.327 2.463

INITIAL MEAN VALUE IQSC(NA) = 1.41X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

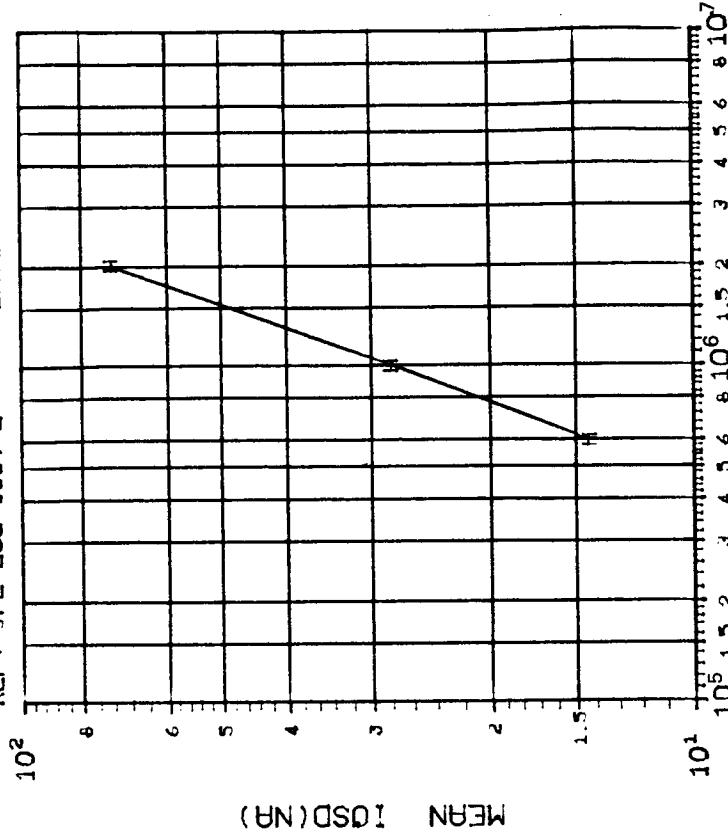


DOSE, rads(Si) 2.5 MeV electrons
 (8)I0SD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.6412 1.245 1.602

INITIAL MEAN VALUE I0SD(NA) = 1.36×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

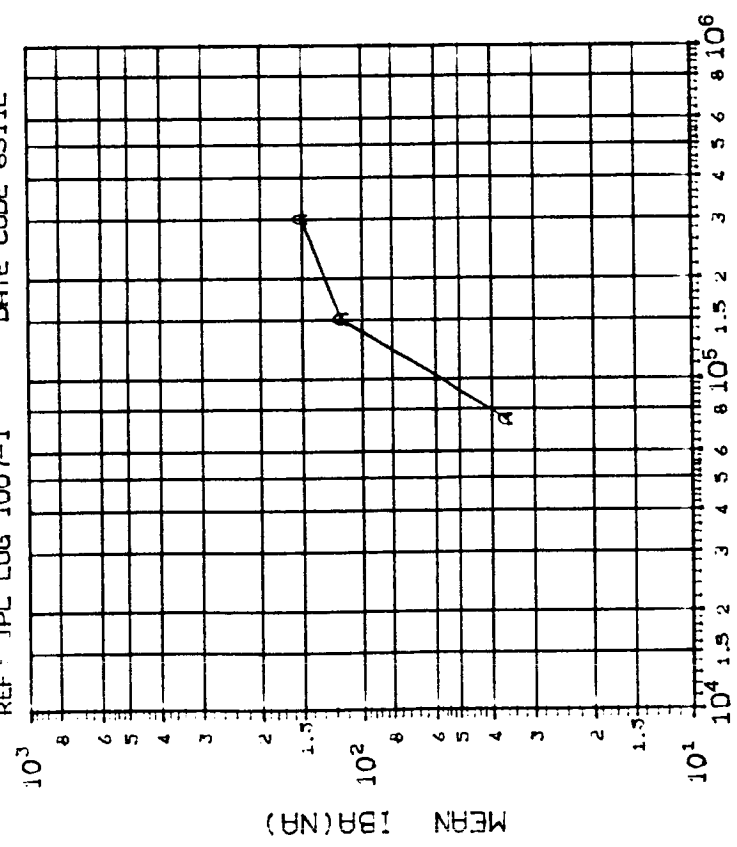


DOSE, rads(Si) 2.5 MeV electrons
 (8)I0SD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	3.665 6.290 11.56

INITIAL MEAN VALUE I0SD(NA) = 1.36×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

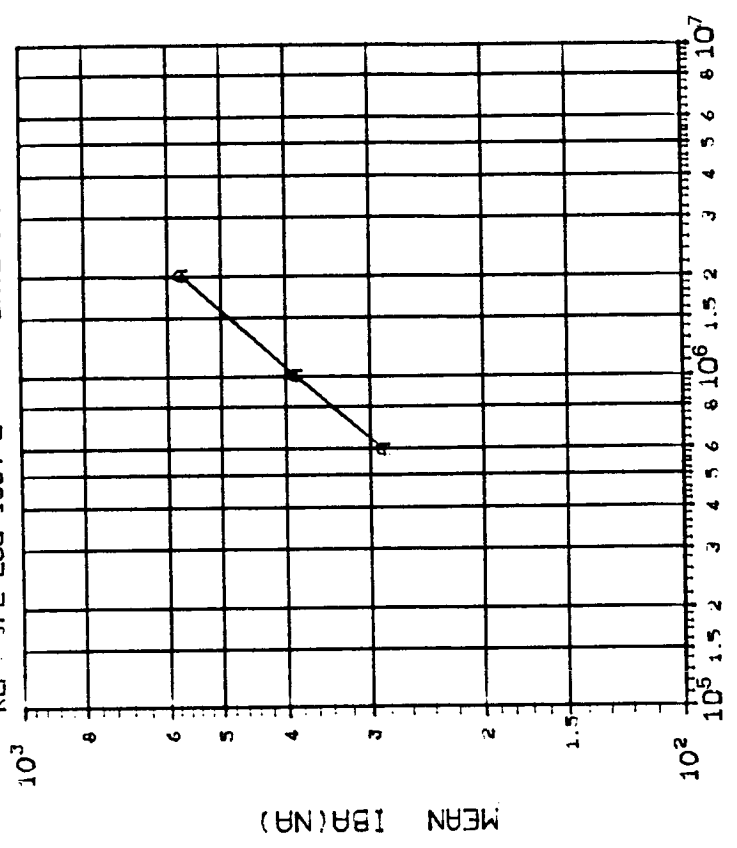


DOSE, rads(Si) 2.5 MeV electrons
 (1) IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
4.615 26.13 31.97	

INITIAL MEAN VALUE IBA(NA) = 3.66X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

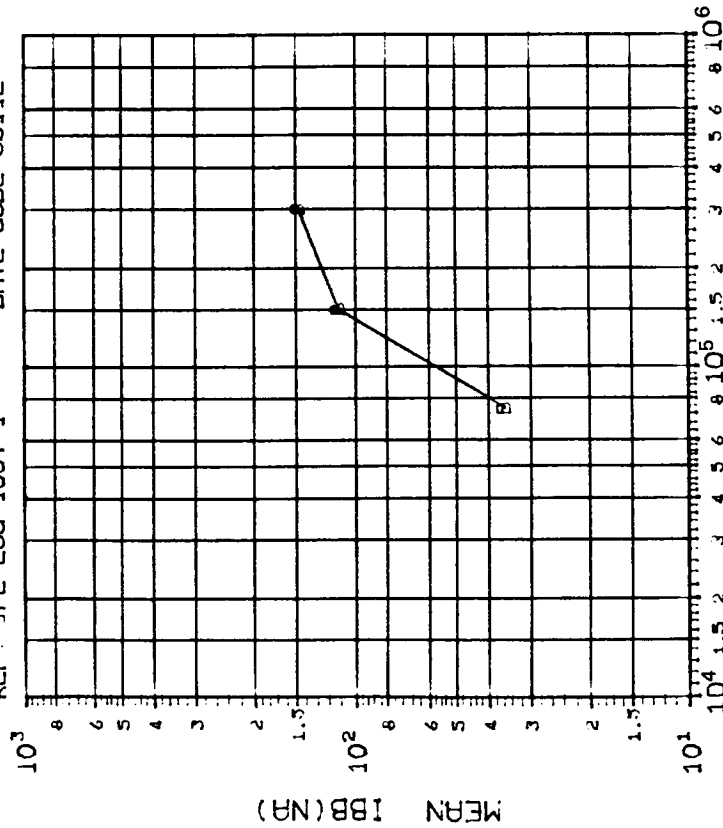


DOSE, rads(Si) 2.5 MeV electrons
 (1) IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
49.66 58.19 75.62	

INITIAL MEAN VALUE IBA(NA) = 2.07X10¹²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

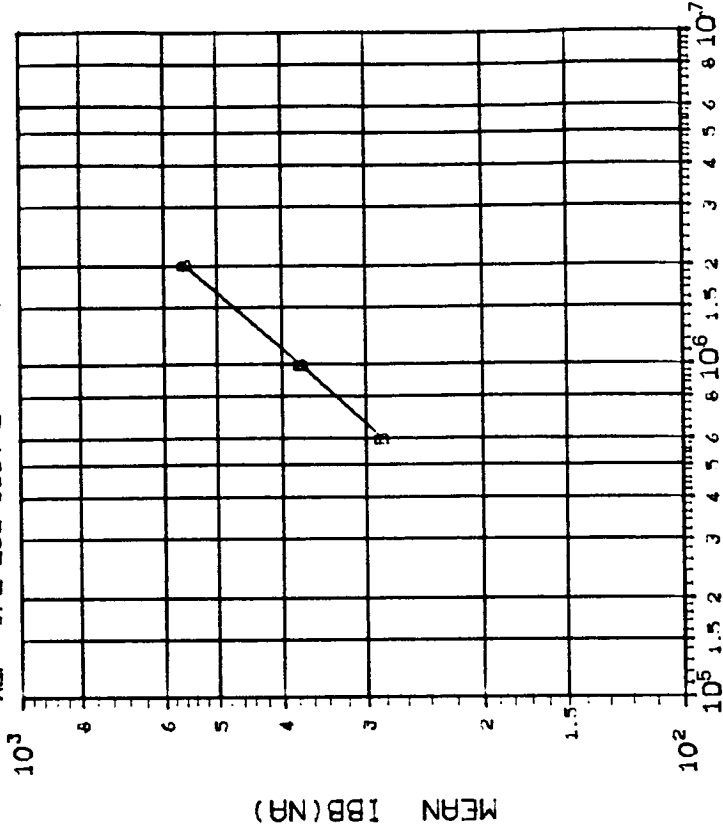


DOSE, rads(Si) 2.5 MeV electrons
 (2)IBB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	4.373 26.76 29.31

INITIAL MEAN VALUE IBB(NA) = $3.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



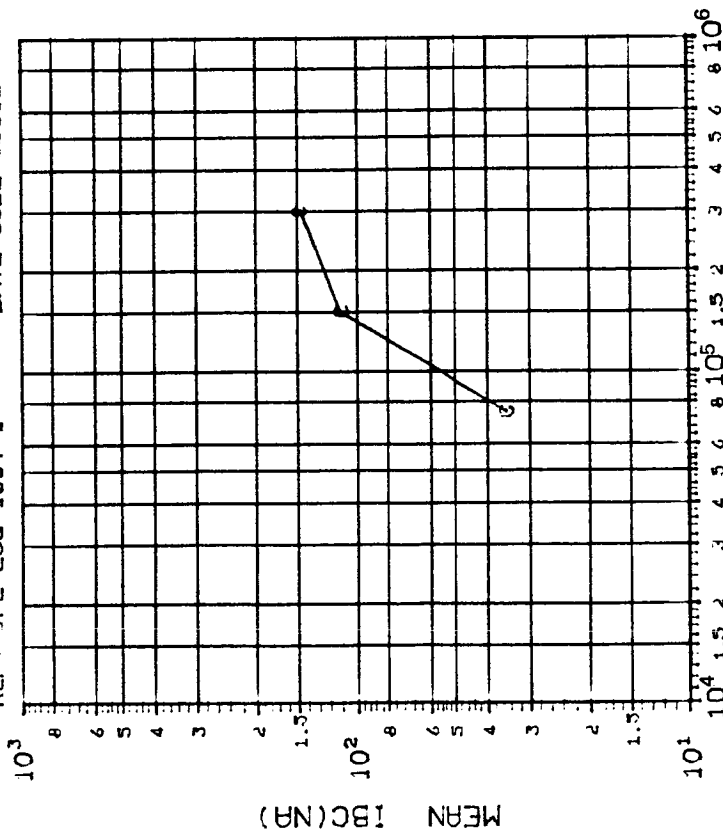
DOSE, rads(Si) 2.5 MeV electrons
 (2)IBB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	50.16 62.25 78.61

INITIAL MEAN VALUE IBB(NA) = $2.06 \times 10^{+2}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E



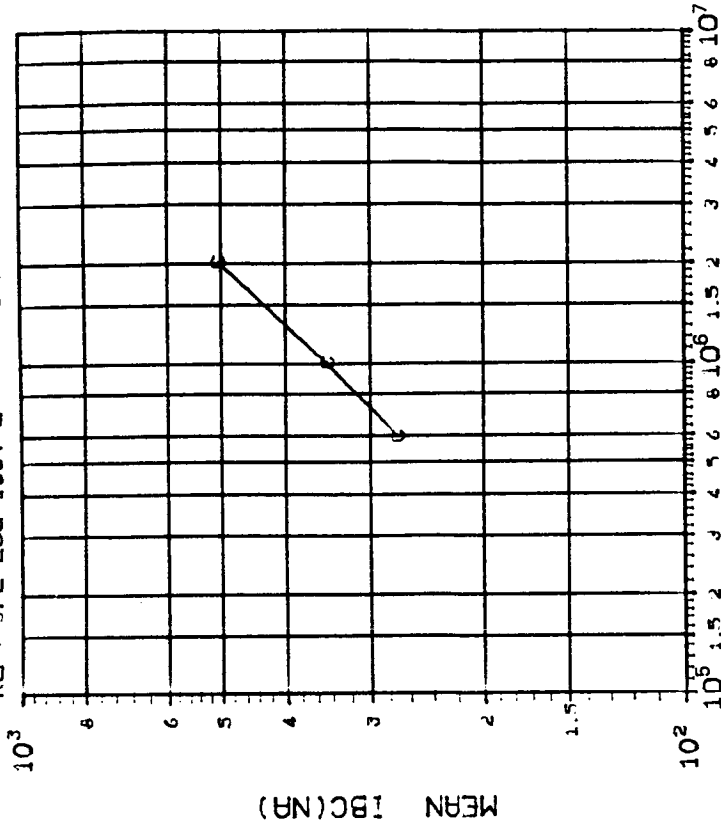
DOSE, rad(Si) 2.5 MeV electrons
 (3)IBC (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	4.704 28.04 32.64

INITIAL MEAN VALUE IBC(NA) = $3.54 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

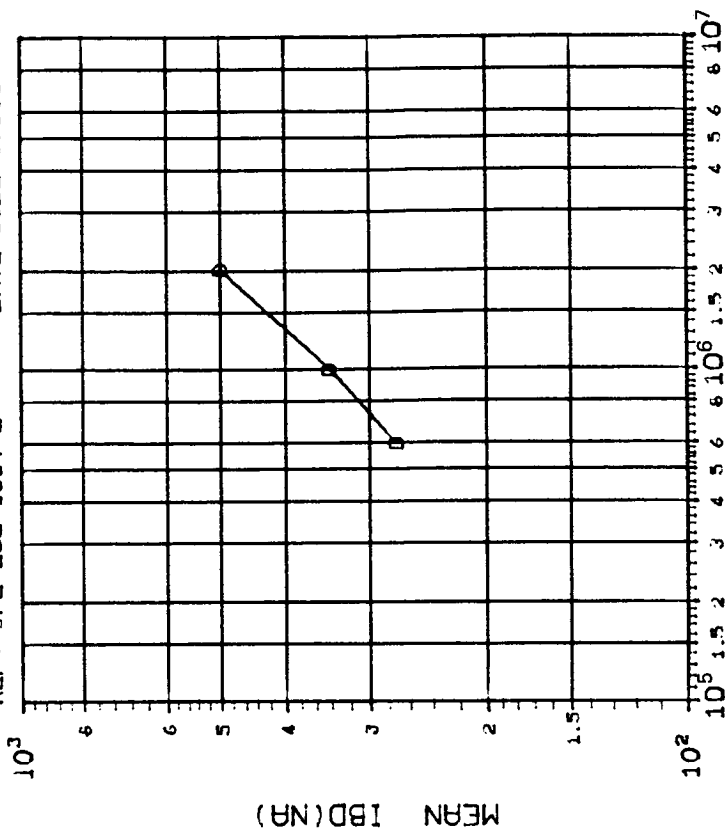


DOSE, rad(Si) 2.5 MeV electrons
 (3)IBC (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	42.54 56.16 66.03

INITIAL MEAN VALUE IBC(NA) = $1.95 \times 10^{+2}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

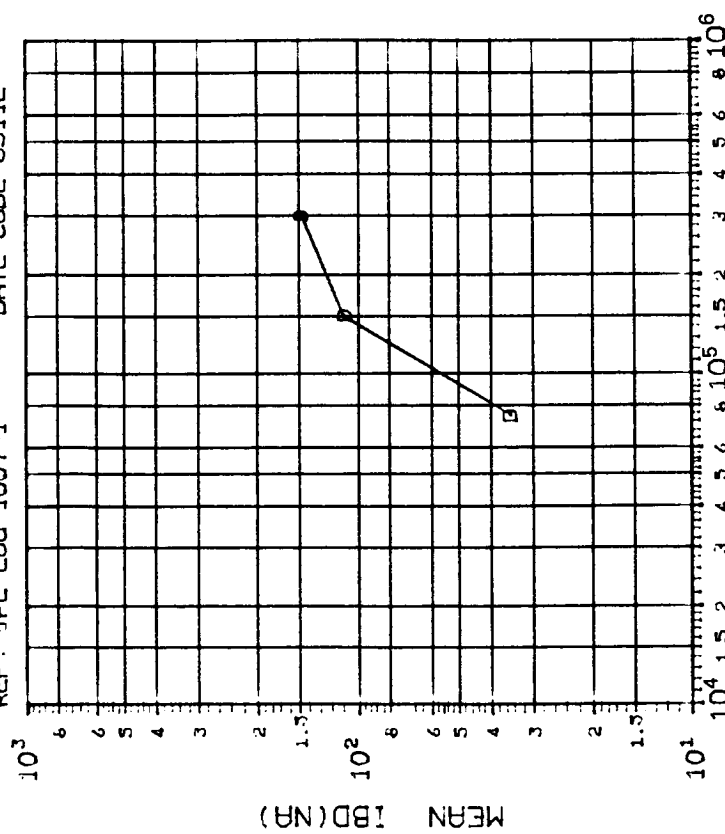


DOSE, rads(Si) 2.5 MeV electrons
 (4)IBD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	43.42 47.03 63.90

INITIAL MEAN VALUE IBD(NR) = 2.00X10²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

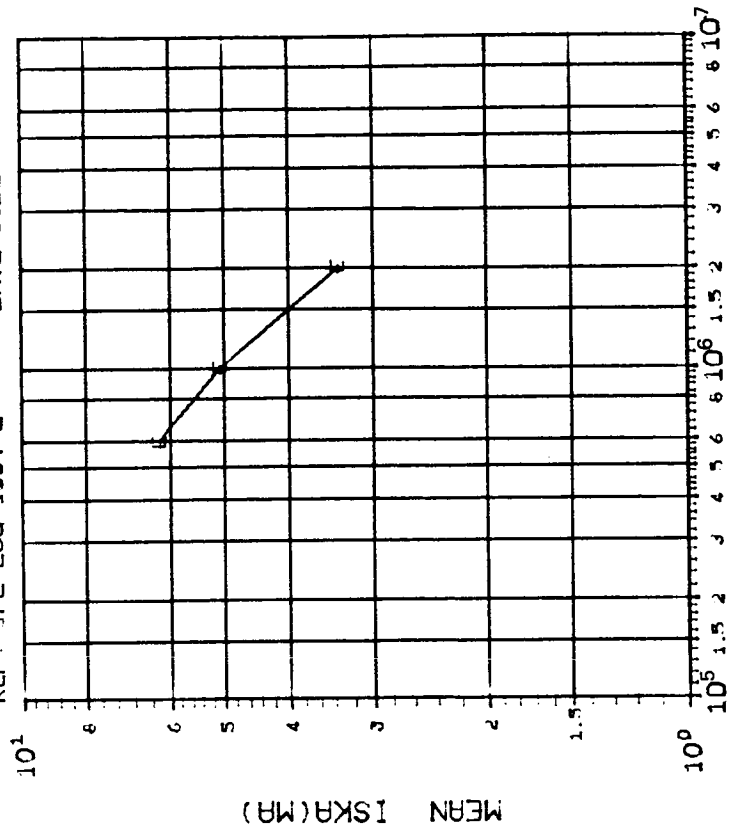


DOSE, rads(Si) 2.5 MeV electrons
 (4)IBD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	4.315 27.90 32.35

INITIAL MEAN VALUE IBD(NR) = 3.52X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



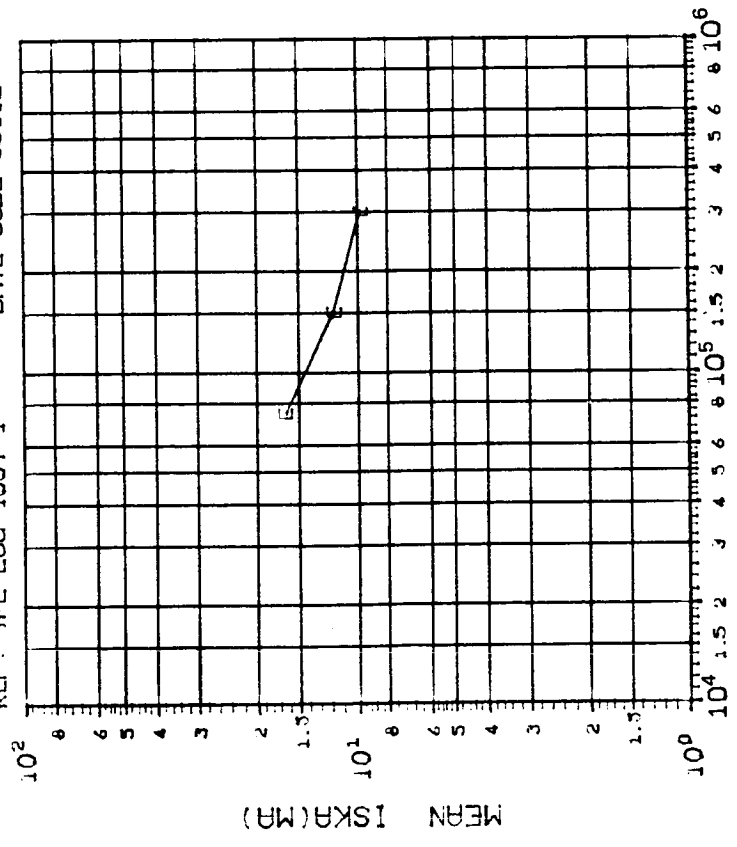
DOSE, rads(Si) 2.5 MeV electrons
 (5) ISKA (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	.8654 .7415 .5361

INITIAL MEAN VALUE ISKA(MA) = 7.92X10¹⁰

2-2

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (5) ISKA (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.158 1.016 1.014

INITIAL MEAN VALUE ISKA(MA) = 1.64X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

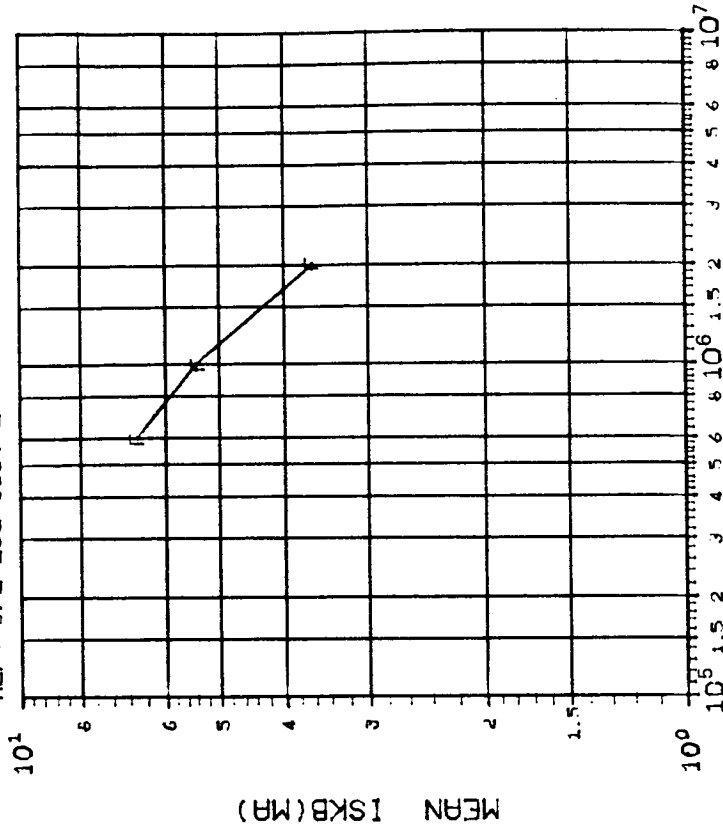


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	.6359 .7153 .5330

INITIAL MEAN VALUE ISKB(MA) = 8.31X10⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

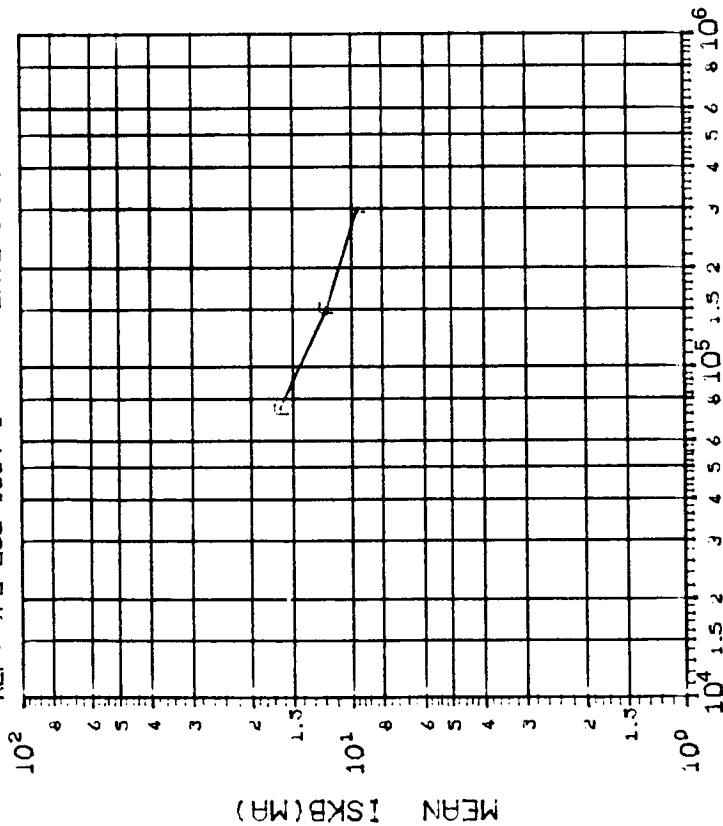


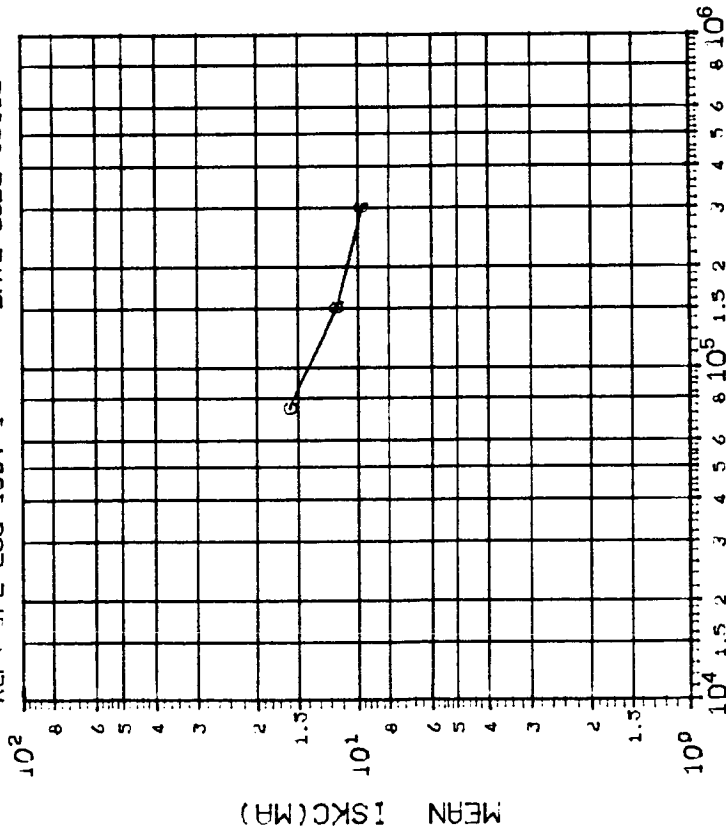
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	1.227 1.026 1.596

INITIAL MEAN VALUE ISKB(MA) = 1.63X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0E--13.5V) IN MA: VS DOSE

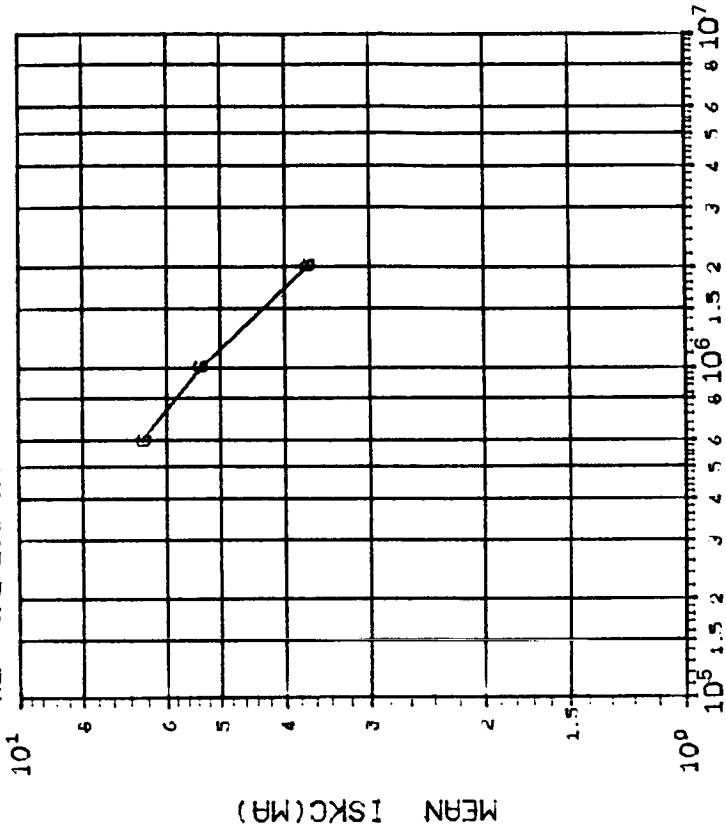
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.015 .9289 .9064

INITIAL MEAN VALUE ISKC(MA) = 1.59X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E



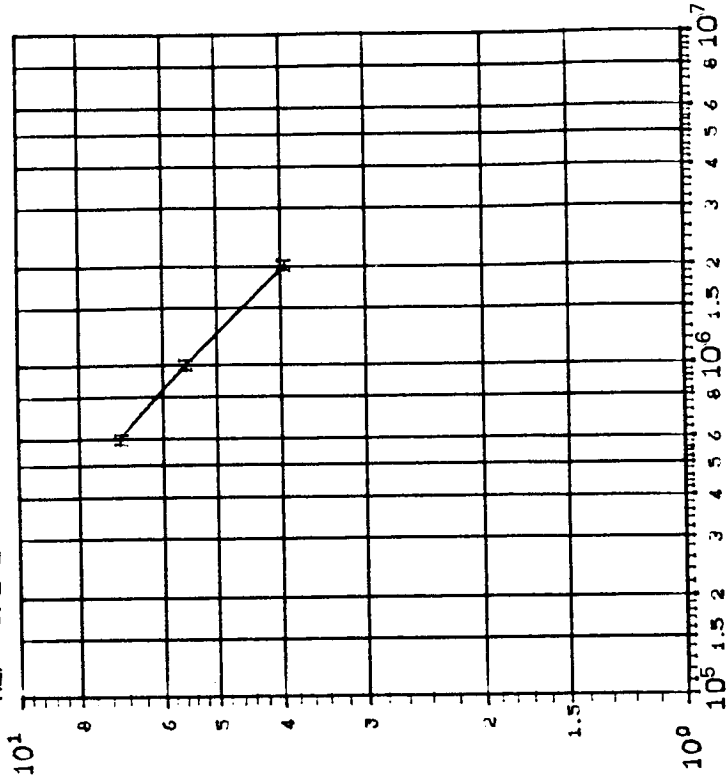
DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	.7348 .6494 .5111

INITIAL MEAN VALUE ISKC(MA) = 8.08X10¹⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



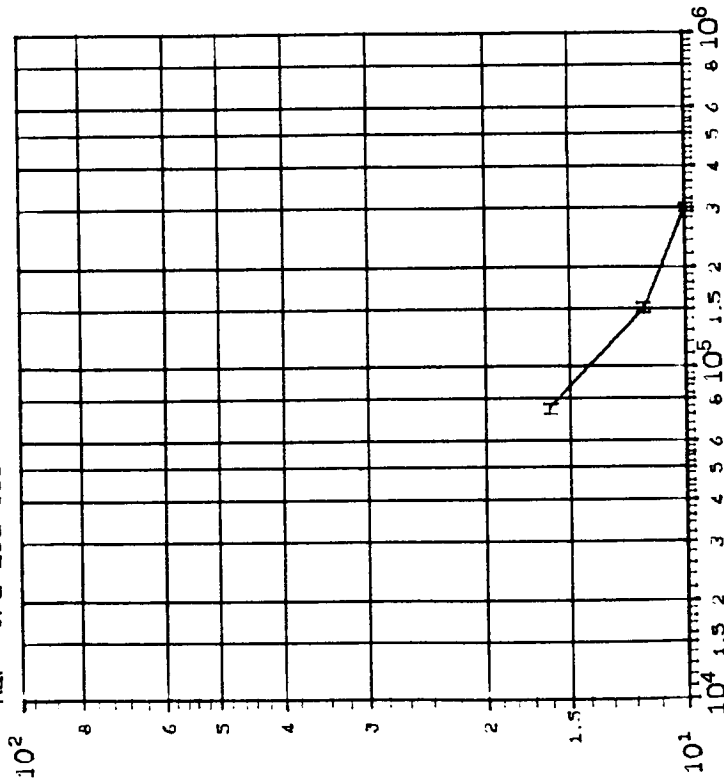
MEAN ISKD(MR)

DOSE, rads(Si) 2.5 MeV electrons
 (8)ISKD (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	.6664 .6309 .4882

INITIAL MEAN VALUE ISKD(MR) = 8.44X10⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E



MEAN ISKD(MR)

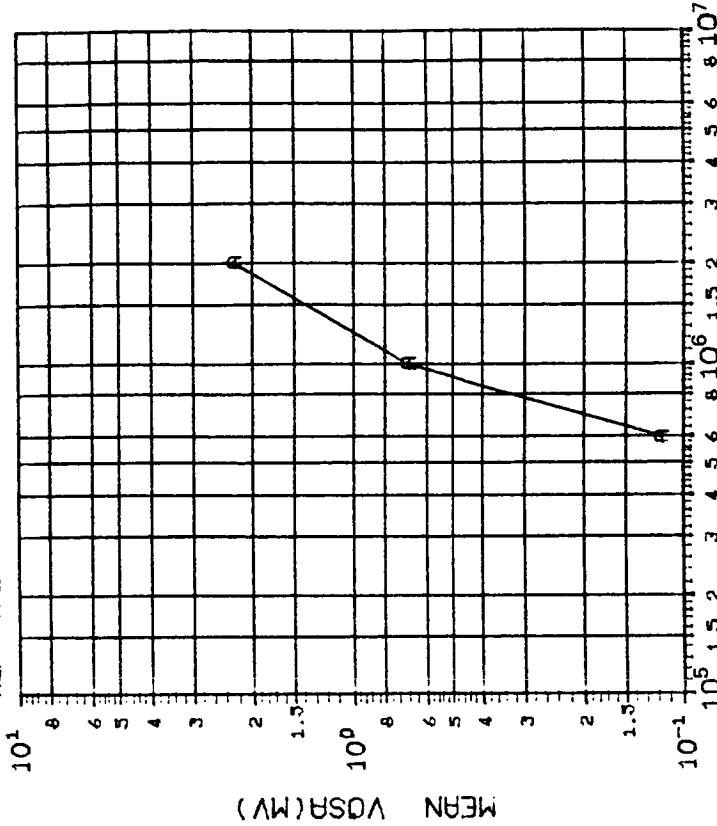
DOSE, rads(Si) 2.5 MeV electrons
 (8)ISKD (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	1.108 .9276 .6946

INITIAL MEAN VALUE ISKD(MR) = 1.61X10¹

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DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1008-2 DATE CODE 8311E

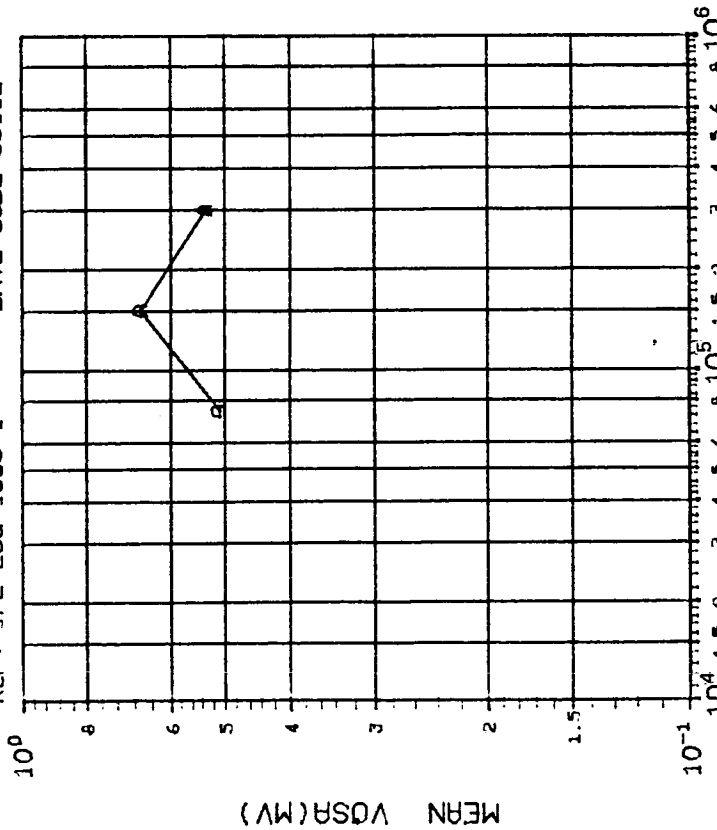


DOSE, rads(Si) 2.5 MeV electrons
(1)VOSA (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.6336 .6995 .7078

INITIAL MEAN VALUE VOSA(MV) = 4.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1008-1 DATE CODE 8311E

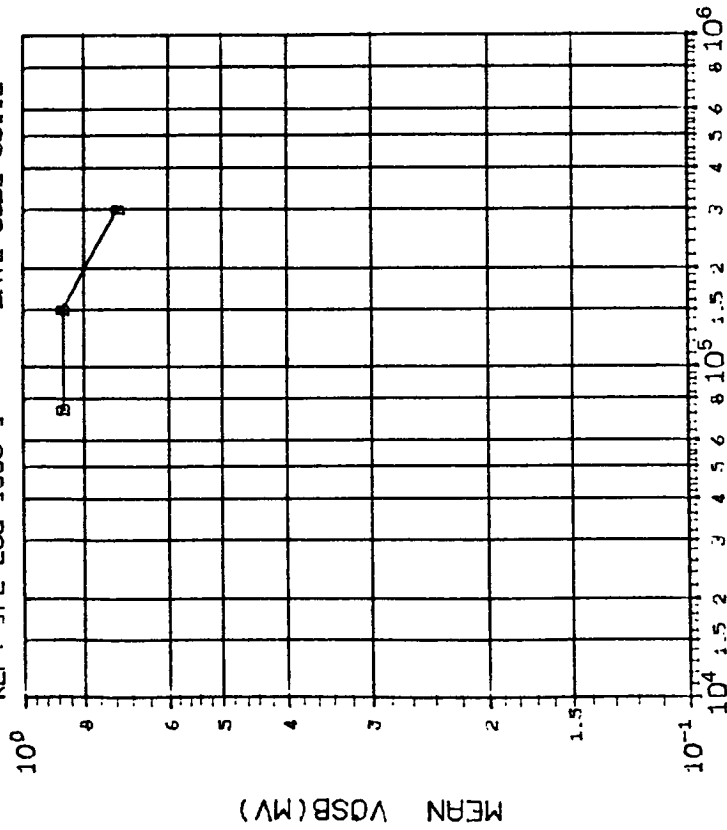


DOSE, rads(Si) 2.5 MeV electrons
(1)VOSA (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.4712 .5313 .5442

INITIAL MEAN VALUE VOSA(MV) = 4.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E



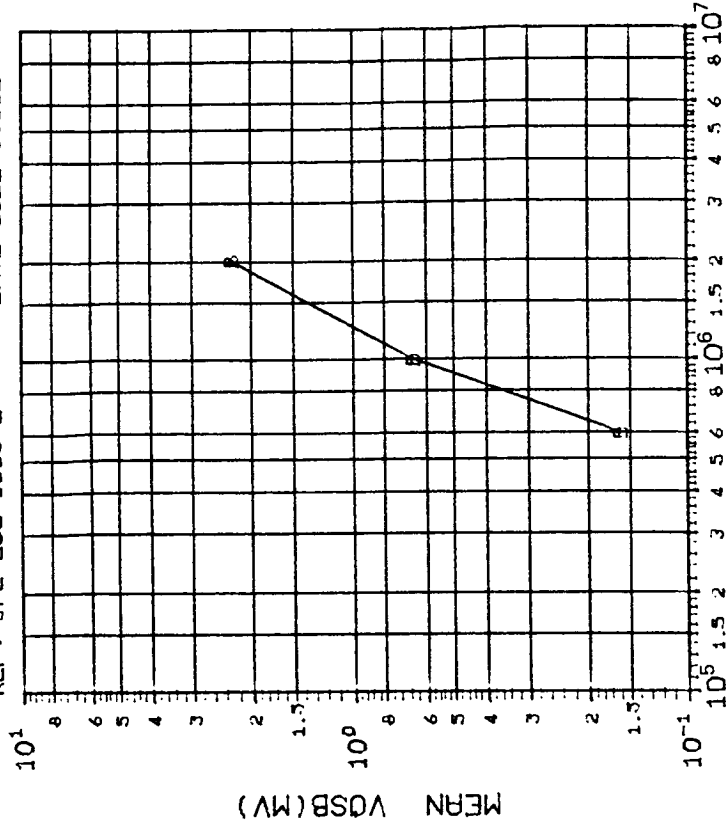
DOSE, rads(Si) 2.5 MeV electrons

(2)VOSB (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.4474 .4183 .3984

INITIAL MEAN VALUE VOSB(MV) = 8.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)VOSB (VO=OV) IN MV: VS DOSE

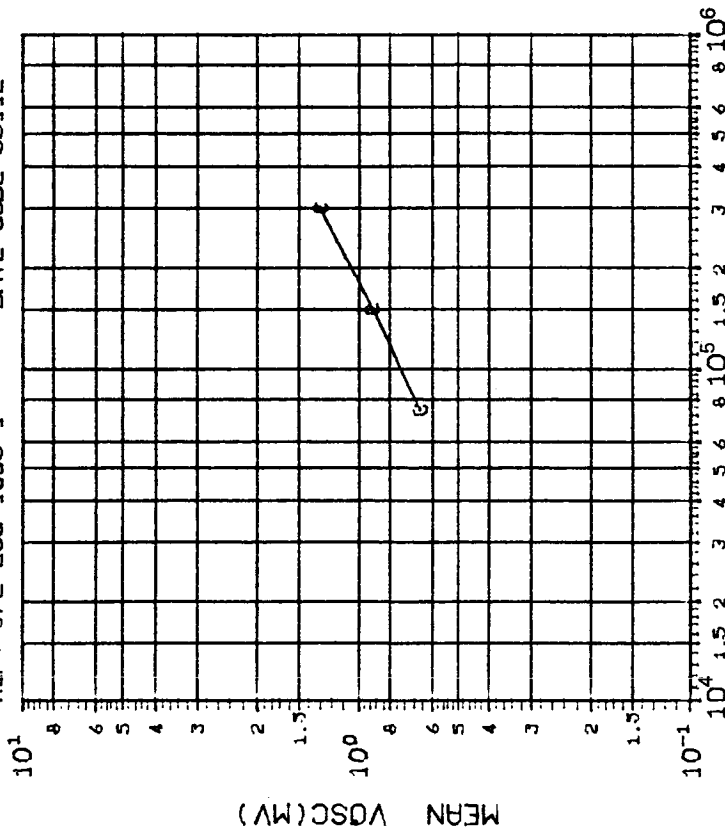
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.3753 .3763 .3300

INITIAL MEAN VALUE VOSB(MV) = 8.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (VO=OV) IN MV: VS DOSE

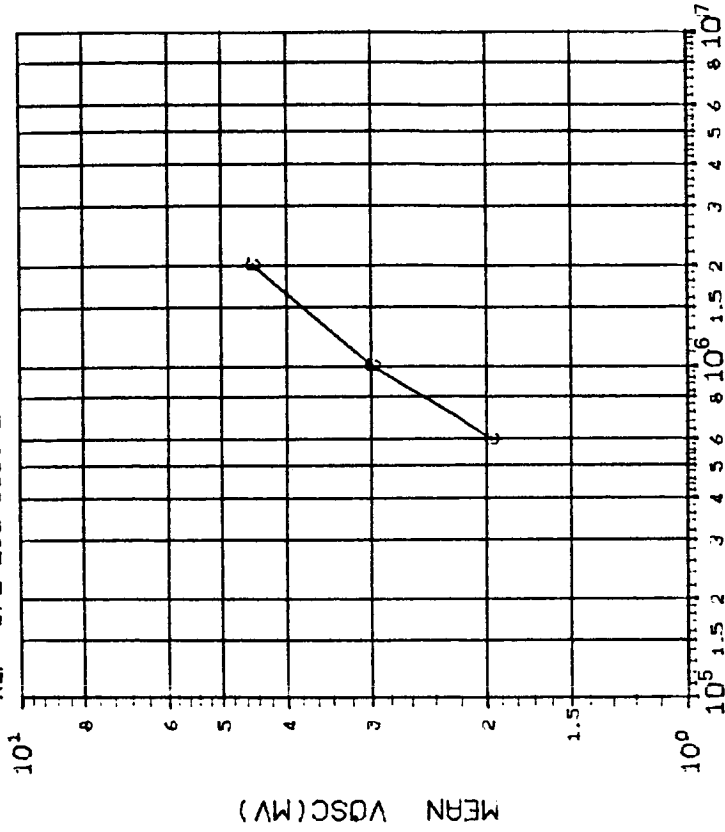
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	.3158 .3362 .3735

INITIAL MEAN VALUE VOSC(MV) = 2.83X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



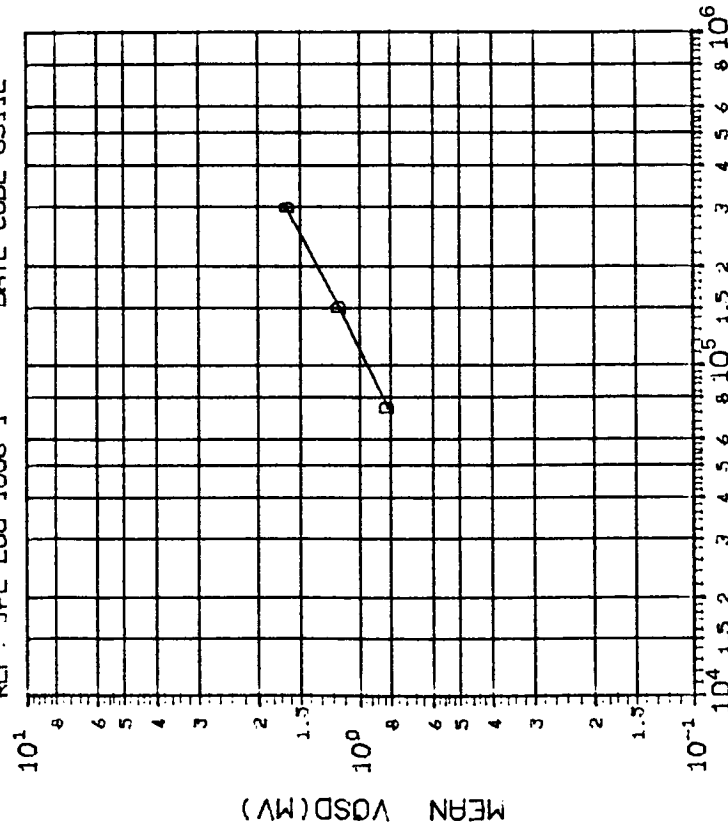
DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	.3916 .4697 .4843

INITIAL MEAN VALUE VOSC(MV) = 2.83X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E

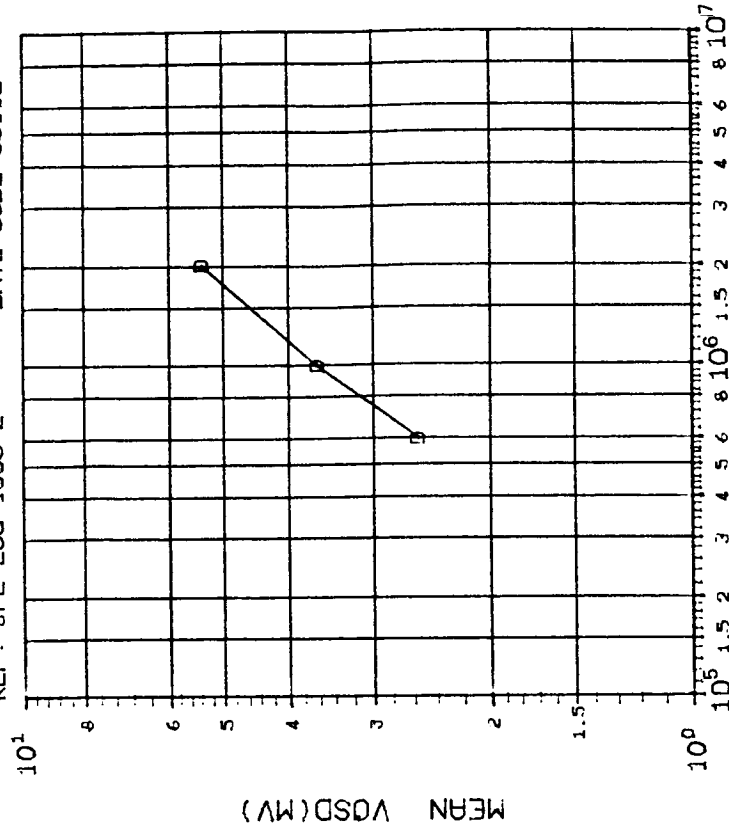


DOSE, rads(Si) 2.5 MeV electrons
 (4)VOSD (VO=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	.4786 .5391 .5327

INITIAL MEAN VALUE VOSD(MV) = 4.27×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E

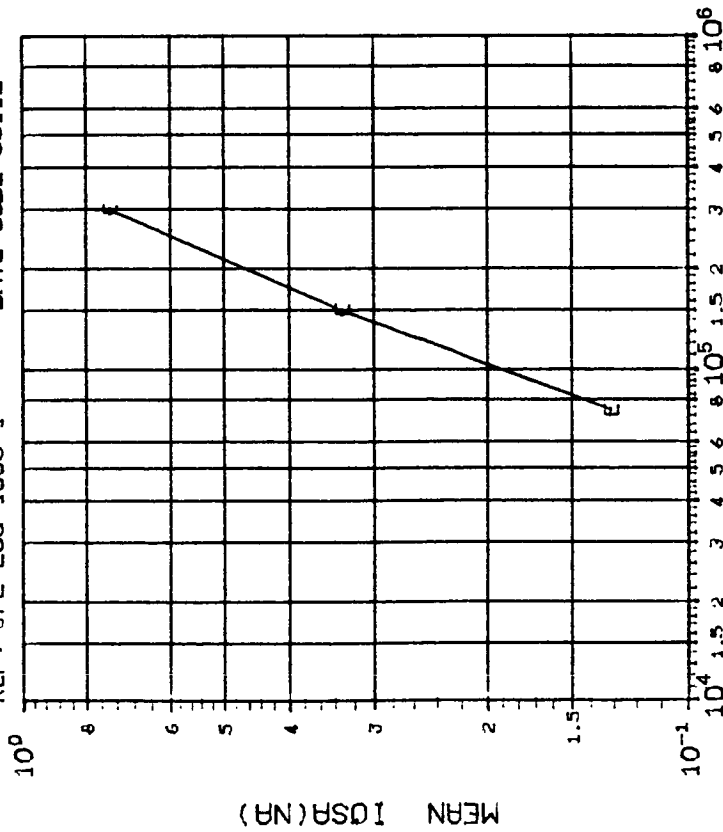


DOSE, rads(Si) 2.5 MeV electrons
 (4)VOSD (VO=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	.5723 .6543 .7073

INITIAL MEAN VALUE VOSD(MV) = 4.27×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E

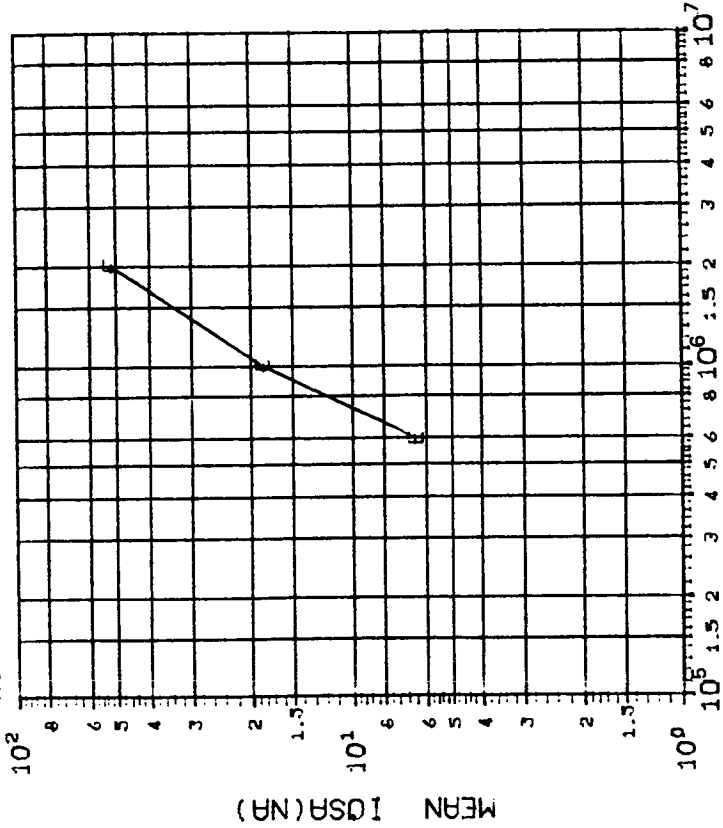


DOSE, rads(Si) 2.5 MeV electrons
 (5)IOSA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.044 1.392 2.295

INITIAL MEAN VALUE IOSA(NA) = 7.50×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (5)IOSA (VO=OV) IN NA: VS DOSE

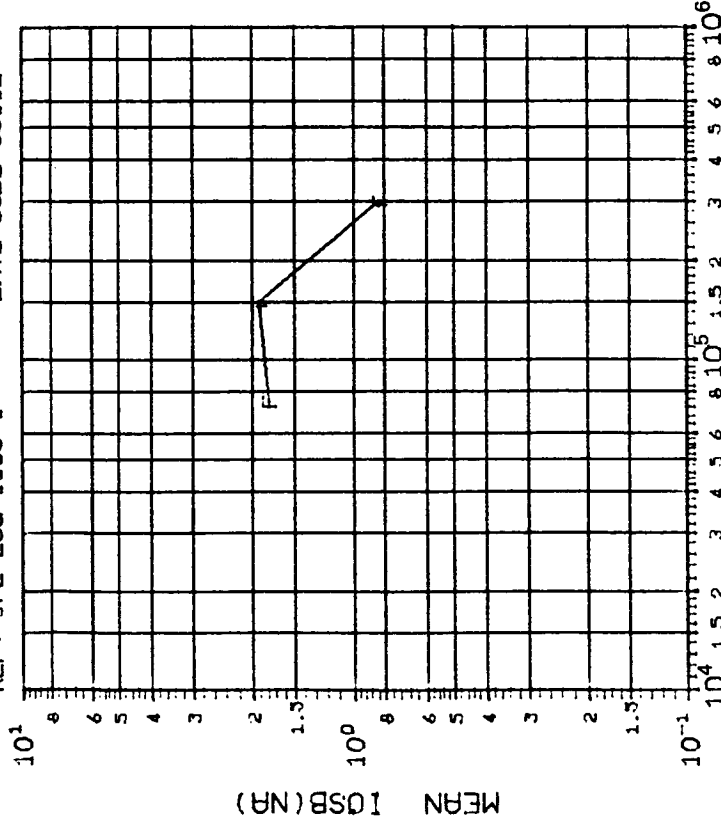
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	2.901 5.988 9.000

INITIAL MEAN VALUE IOSA(NA) = 7.50×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(6)IOSB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

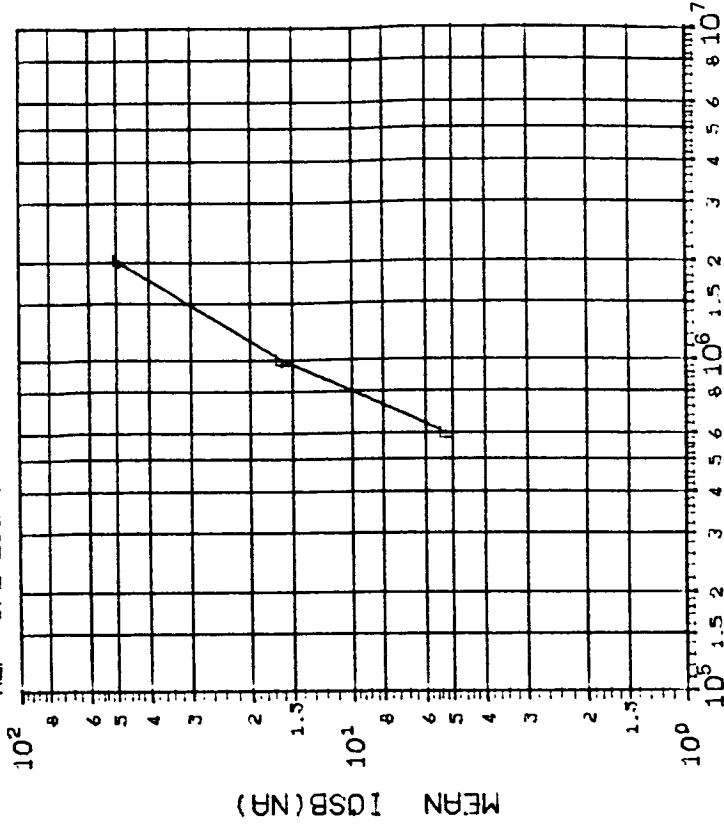
CURVE	DOSE, kilorads(Si)
F	75 150 300
	.7355 1.312 1.957

INITIAL MEAN VALUE IOSB(NA) = 1.53X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

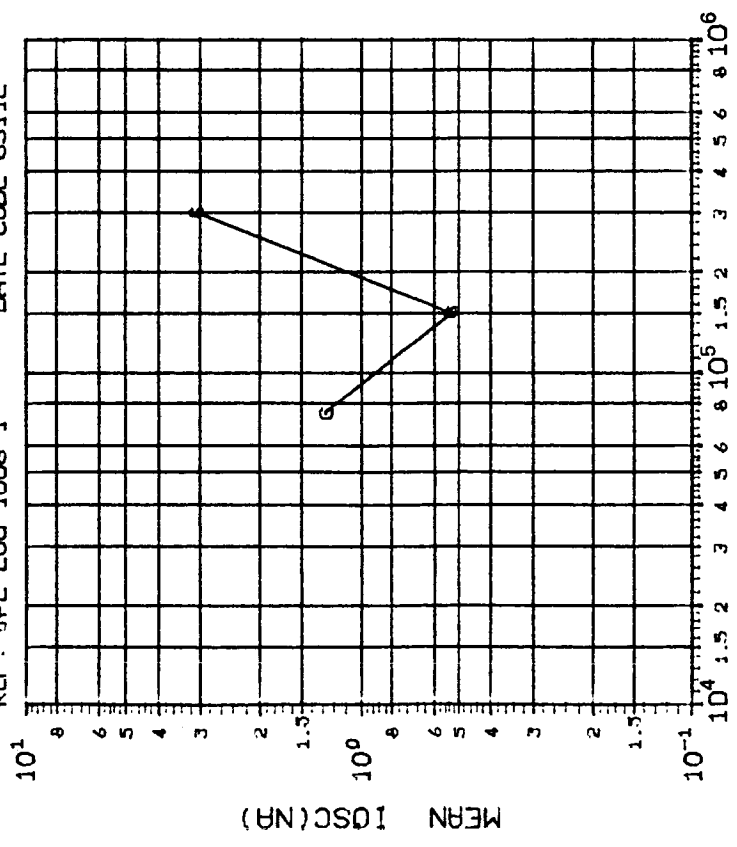
(6)IOSB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	2.606 4.791 8.377

INITIAL MEAN VALUE IOSB(NA) = 1.53X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E

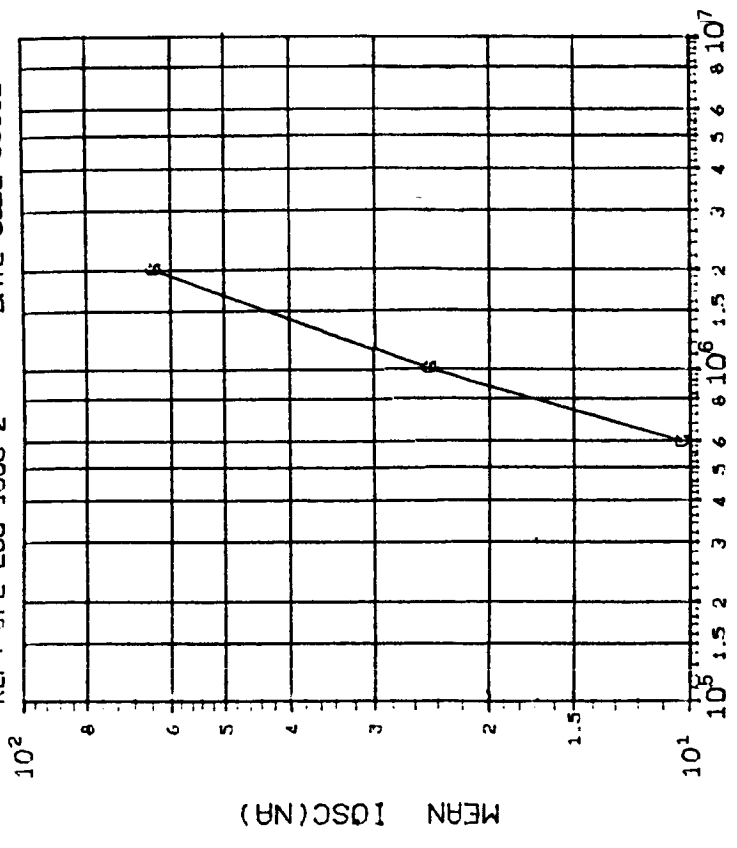


DOSE, rad(Si) 2.5 MeV electrons
 (7)IOSC (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	.5277 1.703 2.279

INITIAL MEAN VALUE IOSC(NA) = 1.57×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons
 (7)IOSC (VO=OV) IN NA: VS DOSE

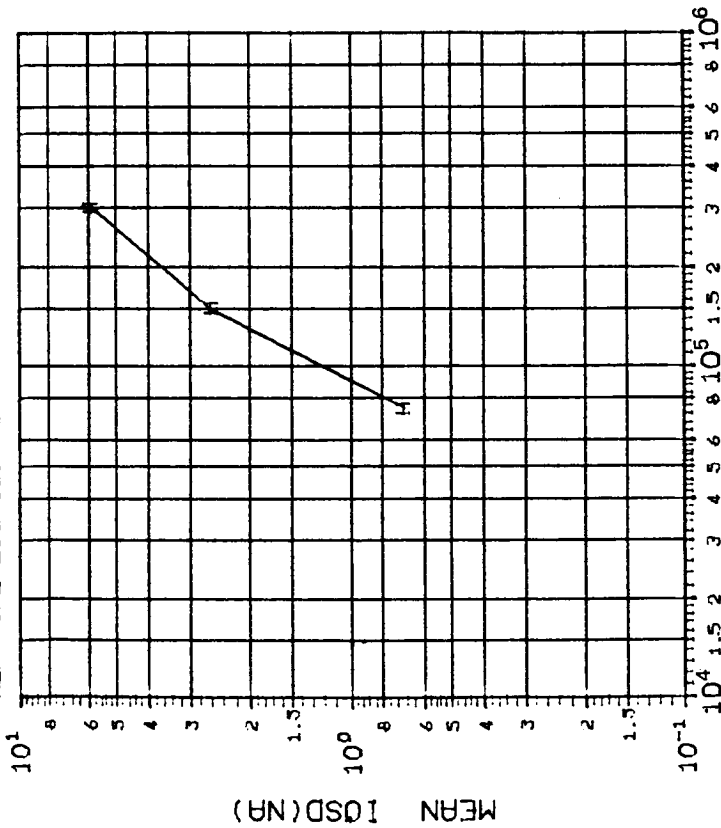
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	4.132 6.571 11.91

INITIAL MEAN VALUE IOSC(NA) = 1.57×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons

(8)IQSD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

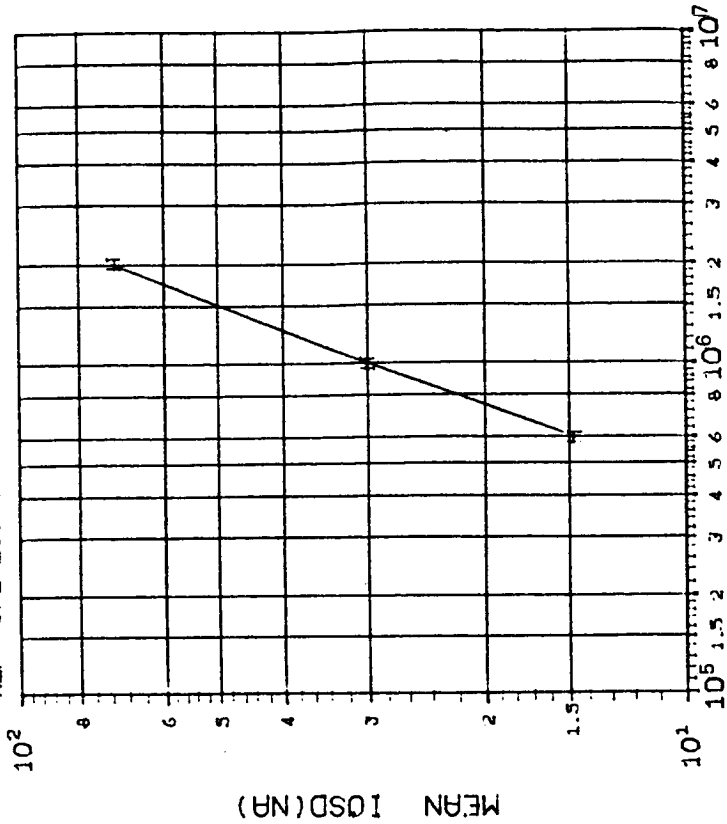
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.6788 1.240 2.007

INITIAL MEAN VALUE IQSD(NA) = 1.03×10^0

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons

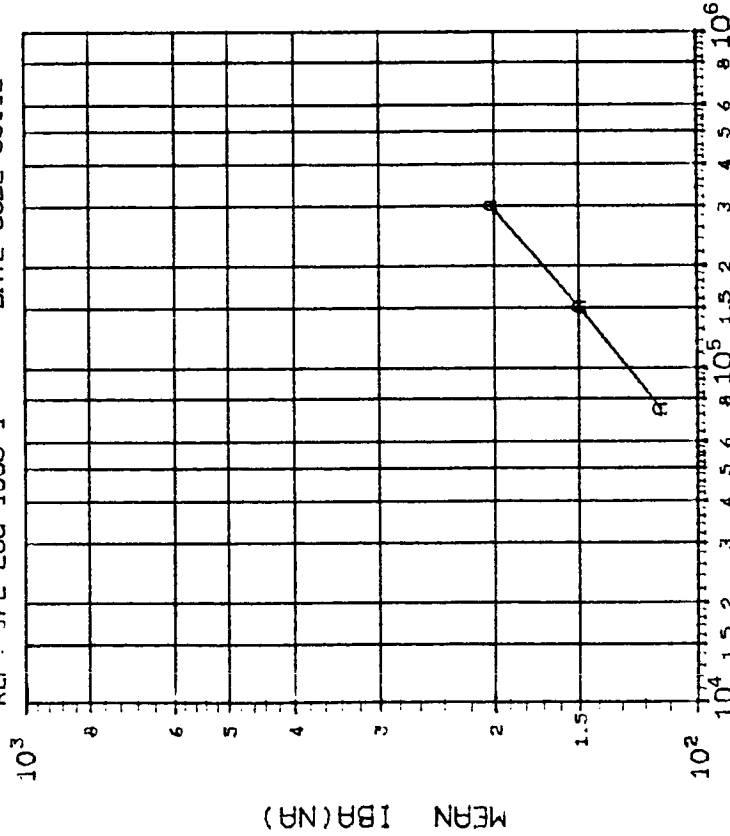
(8)IQSD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	4.394 7.194 11.28

INITIAL MEAN VALUE IQSD(NA) = 1.03×10^0

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E

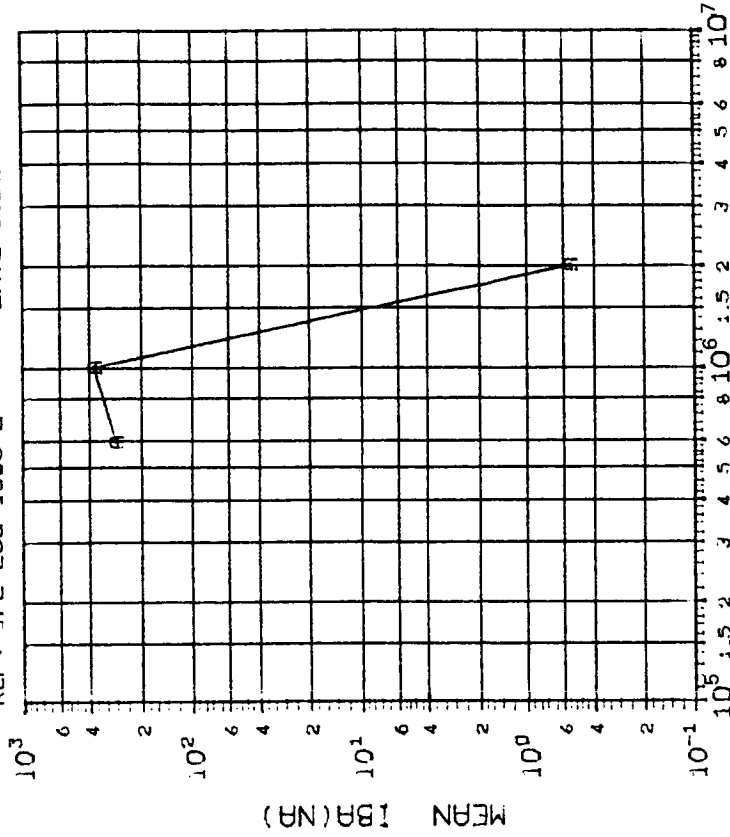


DOSE, rads(Si) 2.5 MeV electrons
 (1) IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	12.36 14.59 20.08

INITIAL MEAN VALUE IBA(NA) = $3.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E

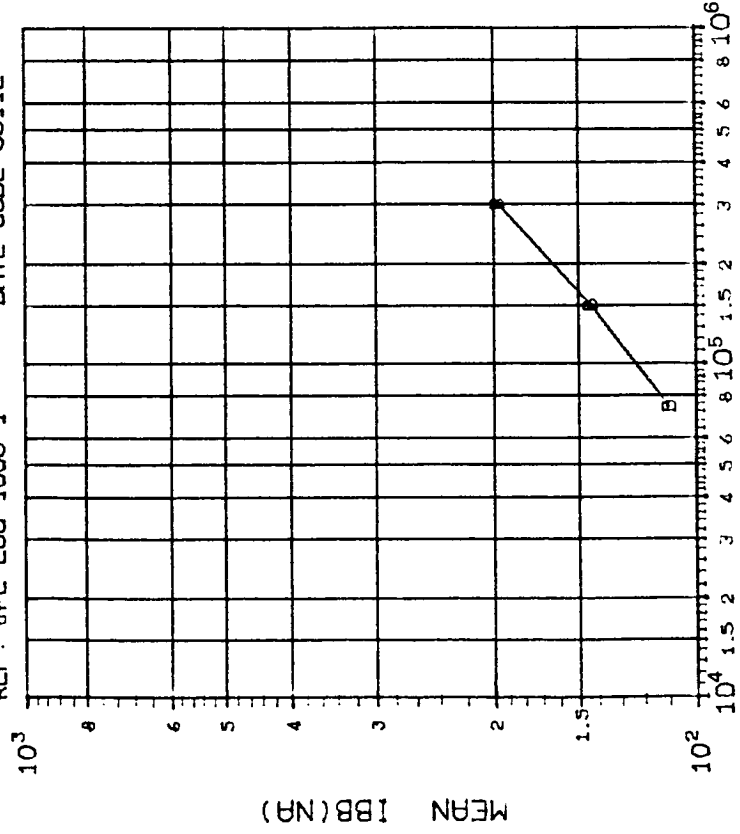


DOSE, rads(Si) 2.5 MeV electrons
 (1) IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	28.06 39.39 0608

INITIAL MEAN VALUE IBA(NA) = $3.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E



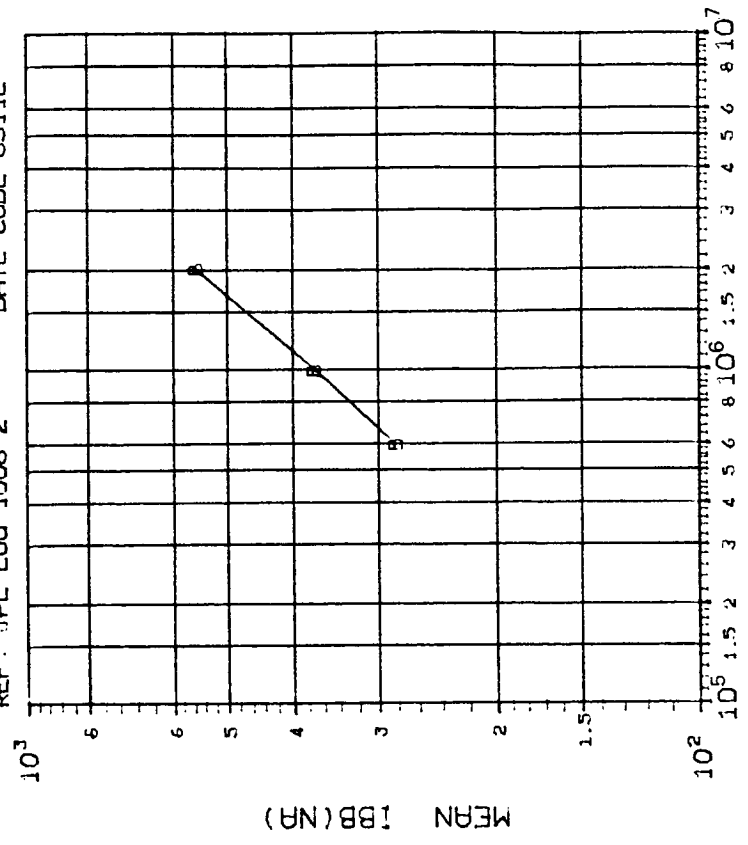
DOSE, rads(Si) 2.5 MeV electrons

(2)IBB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	13.13 17.50 21.10

INITIAL MEAN VALUE IBB(NA) = 3.51X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)IBB (VO=OV) IN NA: VS DOSE

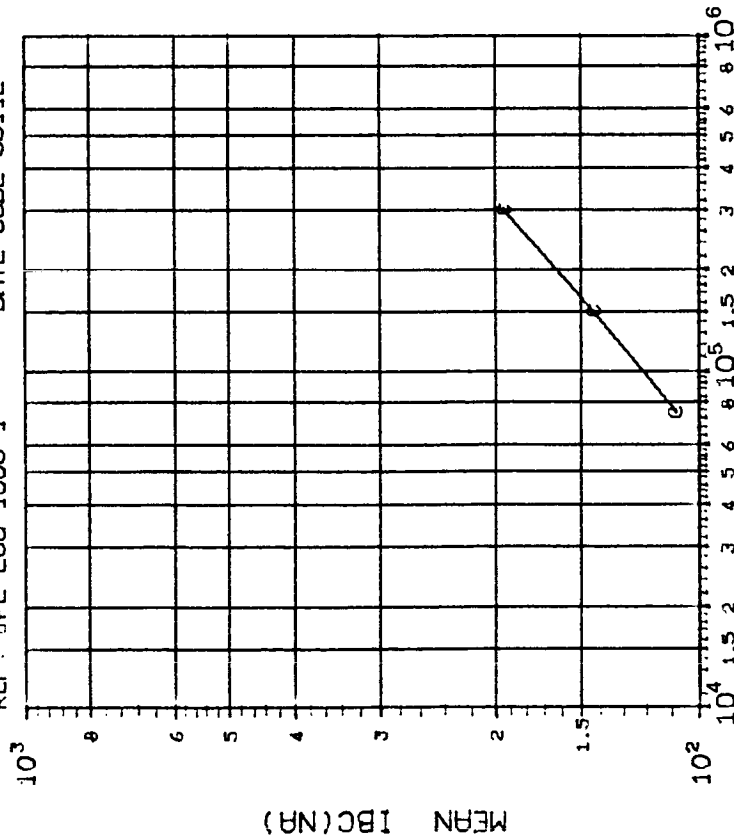
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	24.93 32.53 60.84

INITIAL MEAN VALUE IBB(NA) = 3.51X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)IBC (VO=OV) IN NA: VS DOSE

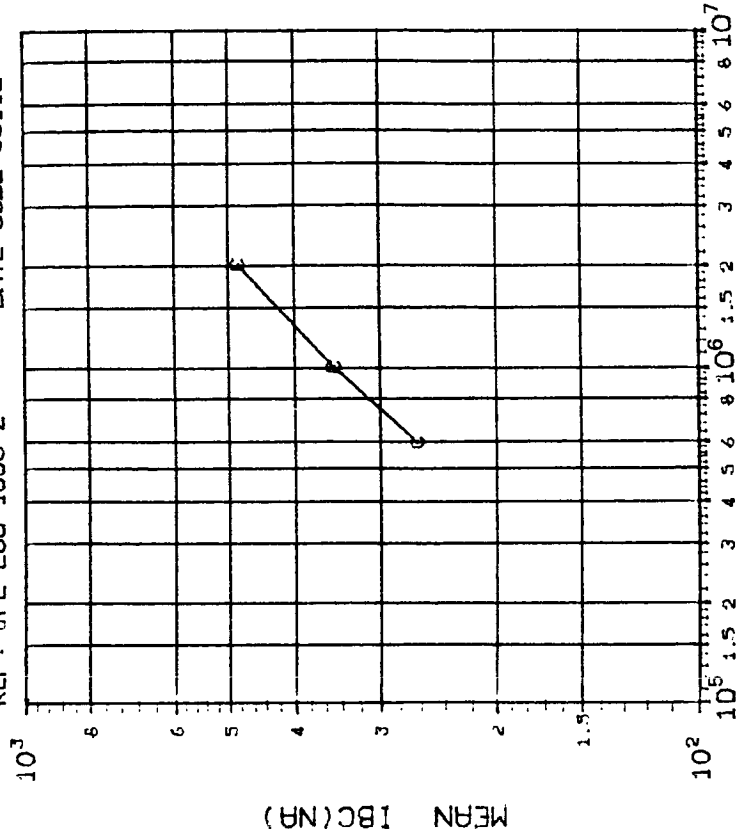
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	9.164 11.37 15.74

INITIAL MEAN VALUE IBC(NA) = 3.49X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)IBC (VO=OV) IN NA: VS DOSE

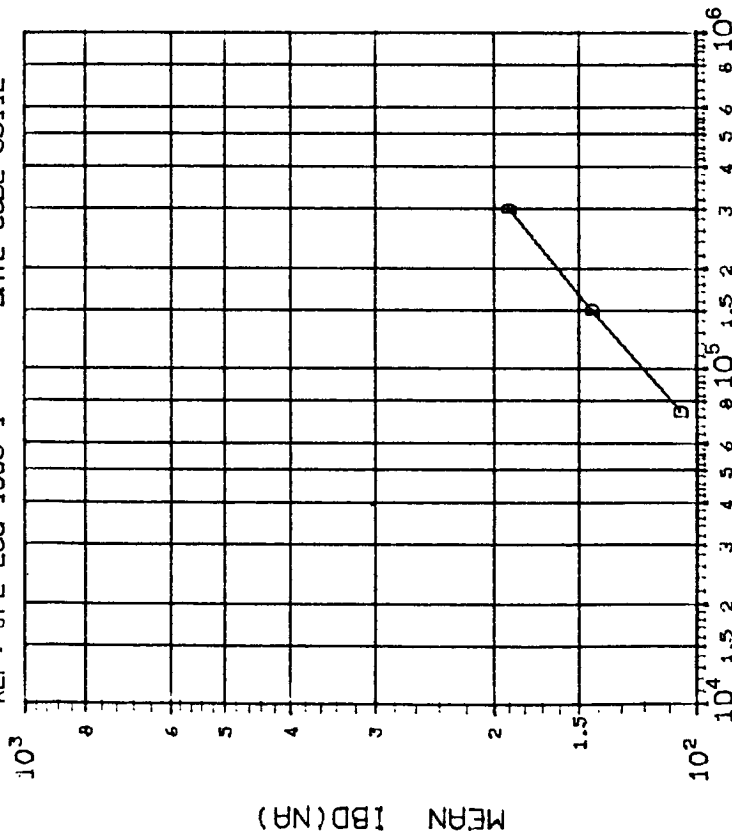
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	19.27 31.24 43.92

INITIAL MEAN VALUE IBC(NA) = 3.49X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

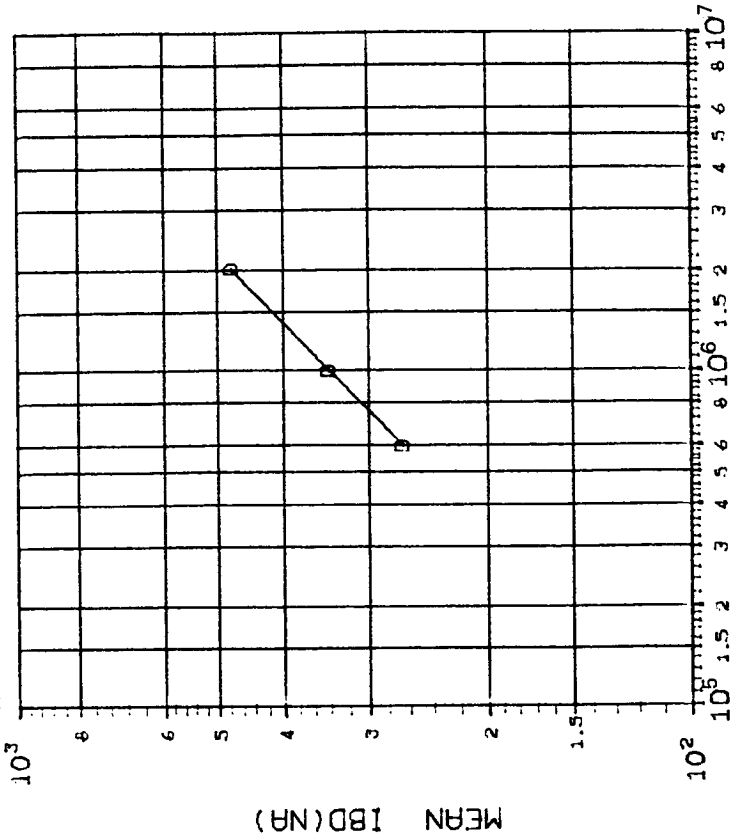
CURVE	DOSE, kilorads(Si)
D	75 150 300
	9.020 12.42 13.38

INITIAL MEAN VALUE IBD(NA) = 3.39X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

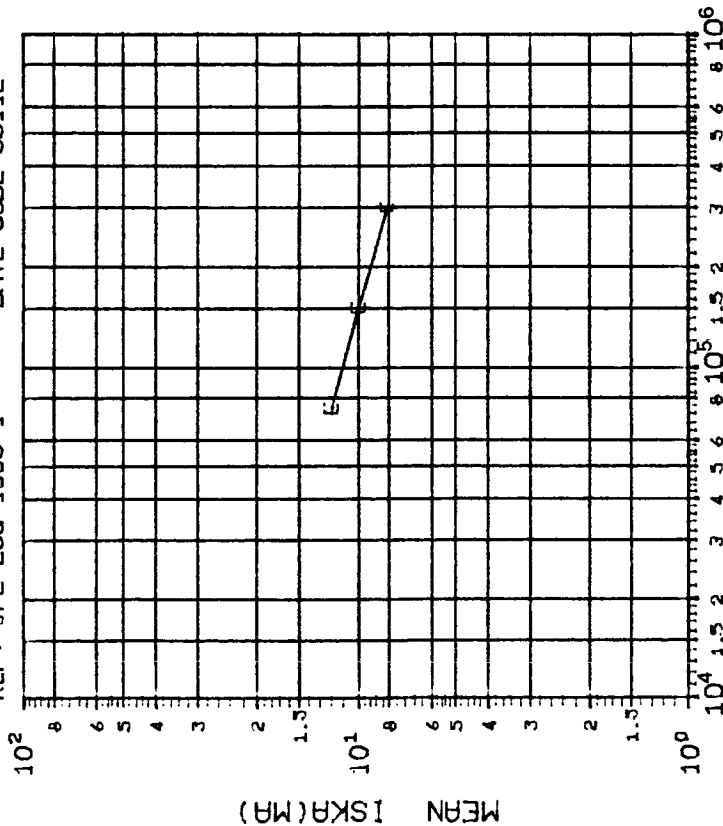
(4)IBD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	22.75 33.72 43.21

INITIAL MEAN VALUE IBD(NA) = 3.39X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1006-1 DATE CODE 8311E



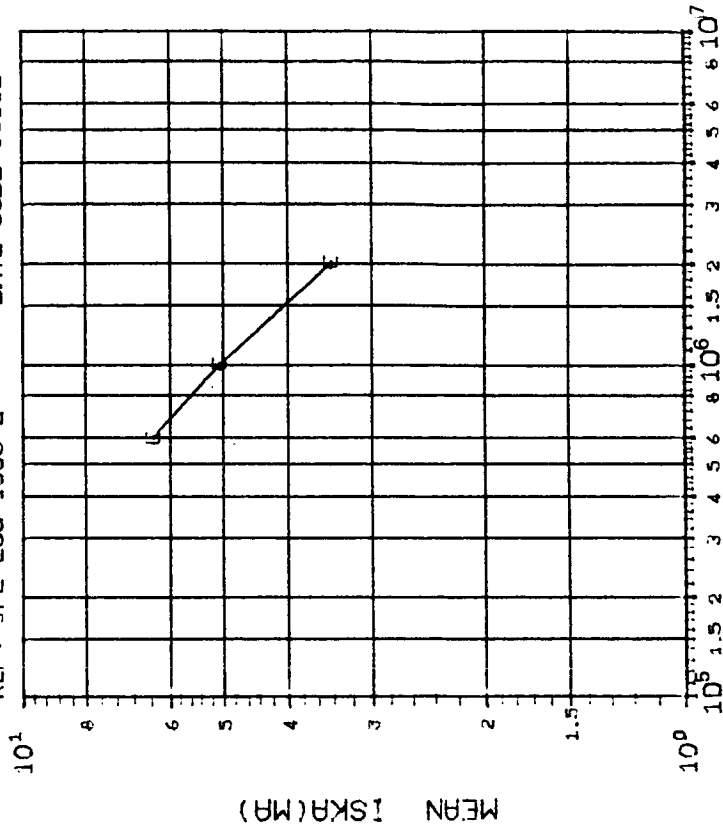
DOSE, rads(Si) 2.5 MeV electrons

(5) ISKA (V0=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	.7737 .7278 .6809

INITIAL MEAN VALUE ISKA(MA) = 1.67X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(5) ISKA (V0=-13.5V) IN MA: VS DOSE

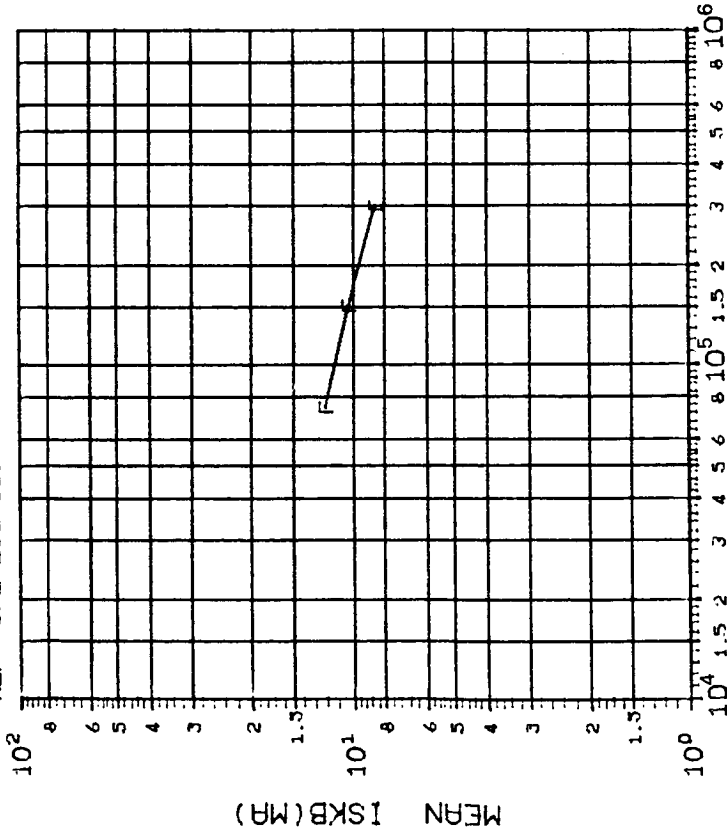
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	.5610 .5410 .3933

INITIAL MEAN VALUE ISKA(MA) = 1.67X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(6) ISKB (V0E--13.5V) IN MA: VS DOSE

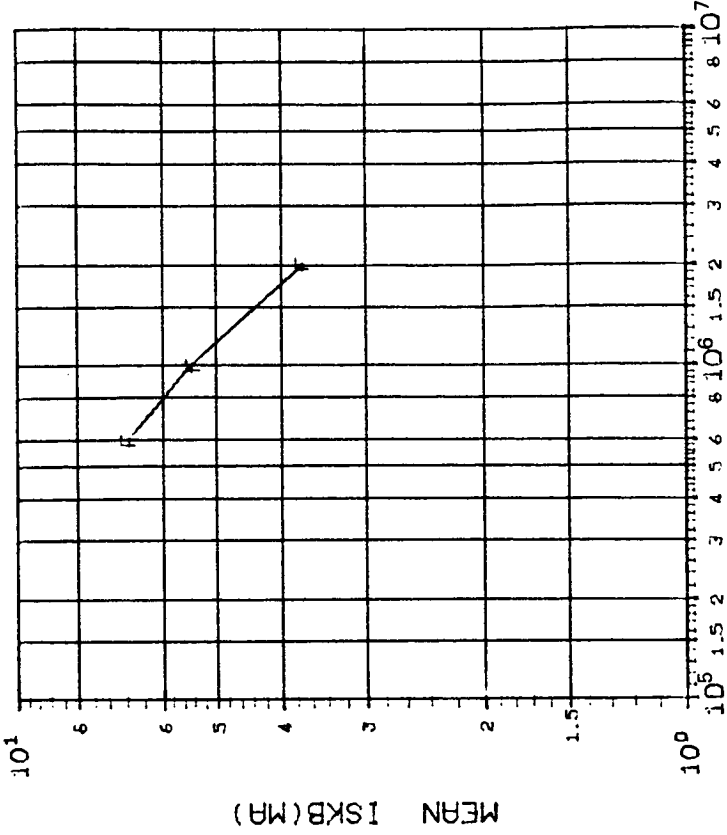
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	.6815 .6593 .6012

INITIAL MEAN VALUE ISKB(MA) = 1.66X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(6) ISKB (V0E--13.5V) IN MA: VS DOSE

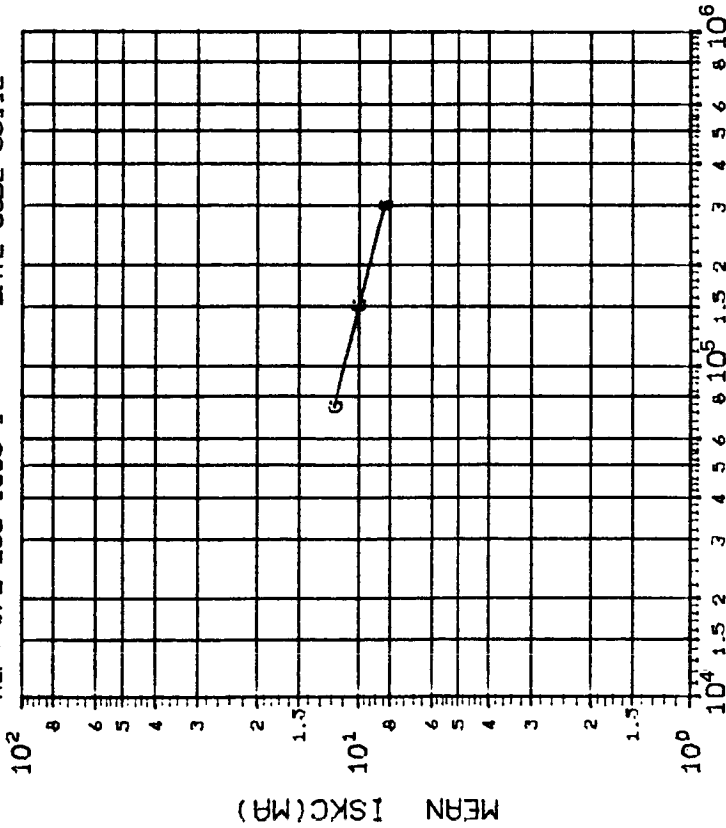
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	.5269 .4845 .3857

INITIAL MEAN VALUE ISKB(MA) = 1.66X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0E--13.5V) IN MA: VS DOSE

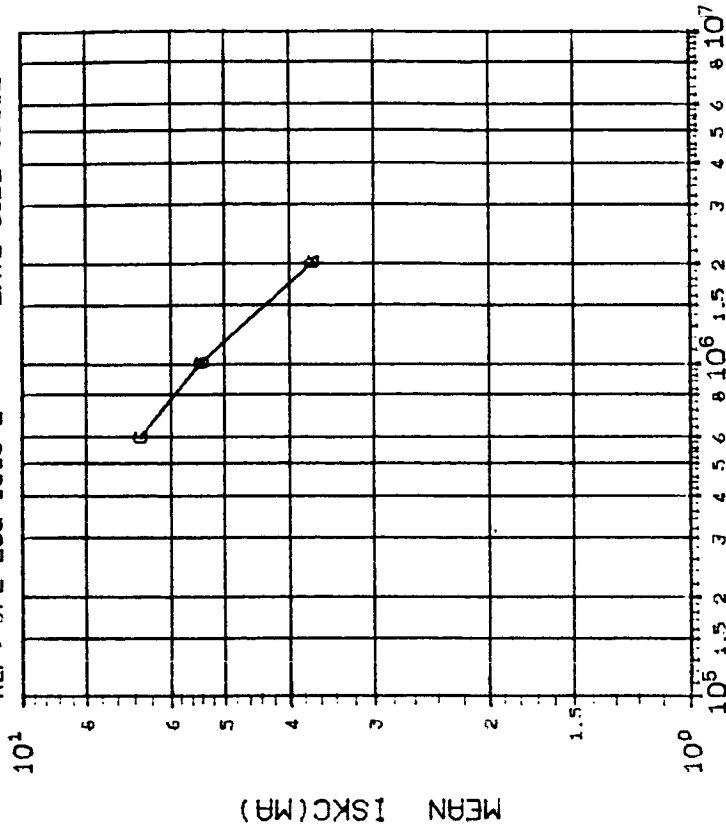
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	.6853 .6689 .6094

INITIAL MEAN VALUE ISKC(MA) = 1.62X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



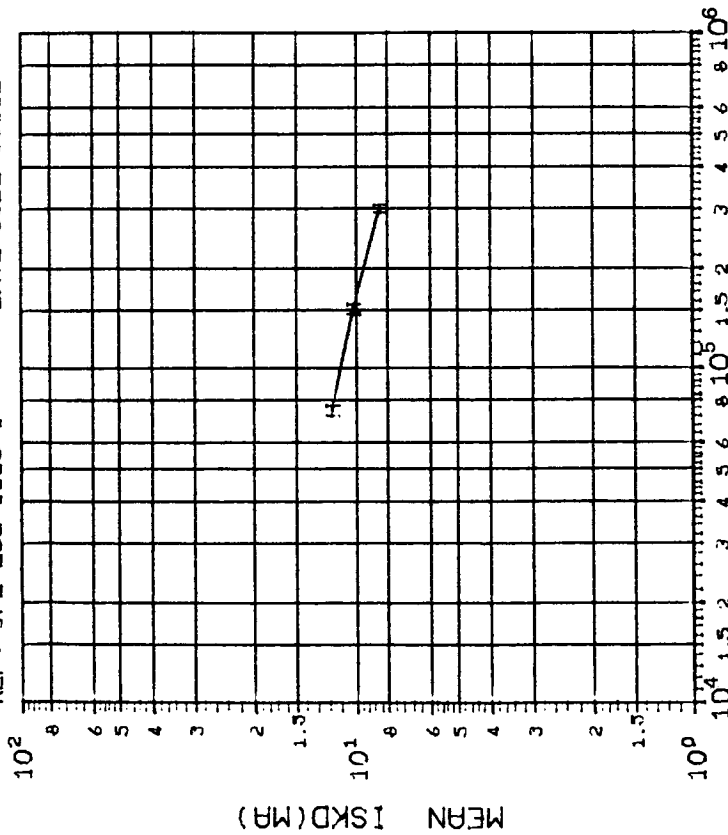
DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	.5229 .4977 .5612

INITIAL MEAN VALUE ISKC(MA) = 1.62X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E



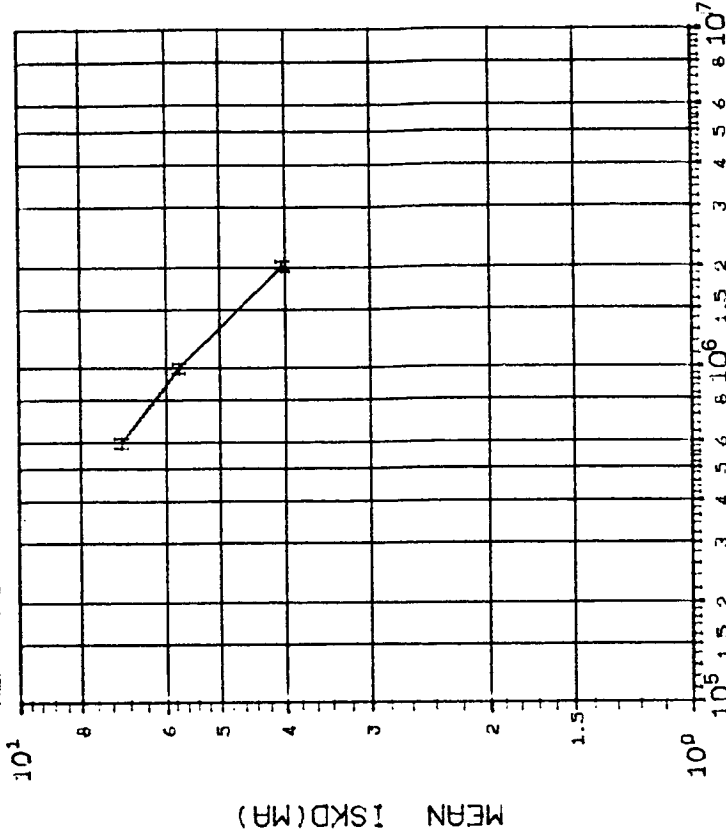
DOSE, rads(Si) 2.5 MeV electrons

(8) ISKD (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.7742 .7554 .9026

INITIAL MEAN VALUE ISKD(MR) = 1.62X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8) ISKD (V0E--13.5V) IN MA: VS DOSE

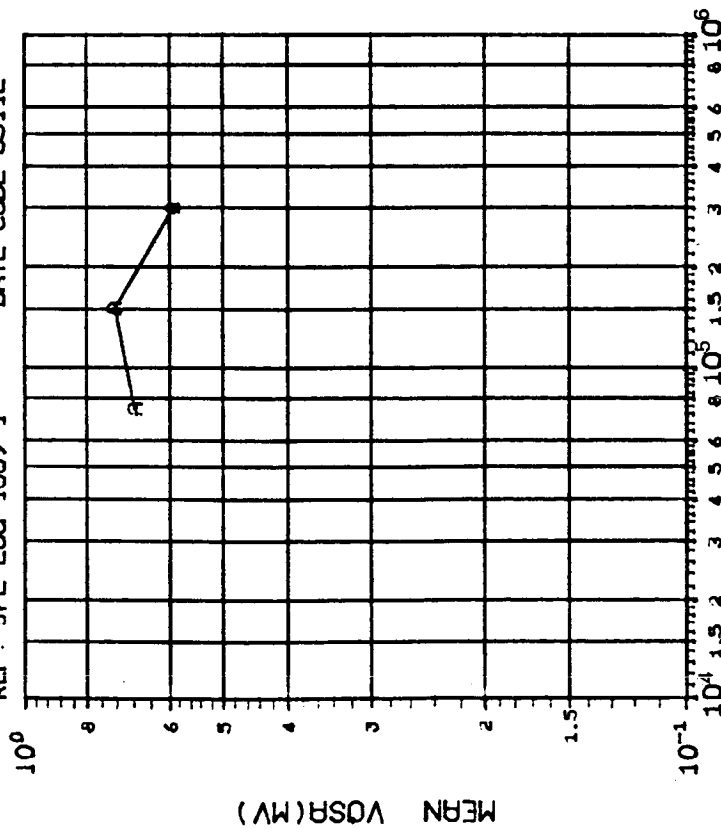
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	.6033 .5461 .4488

INITIAL MEAN VALUE ISKD(MR) = 1.62X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(1)VOSR (VO=0V) IN MV: VS DOSE

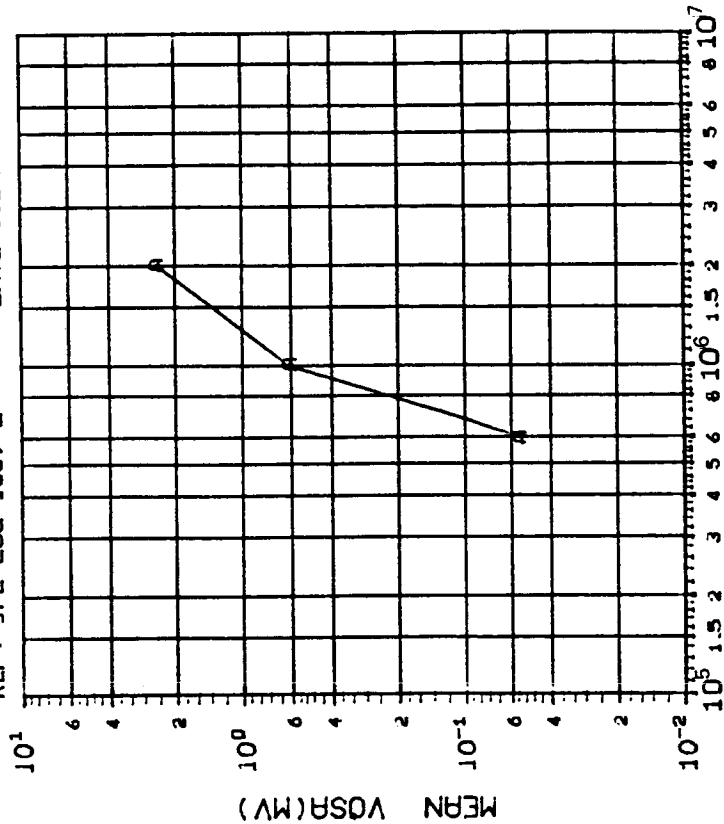
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.3167 .3292 .3462

INITIAL MEAN VALUE VOSR(MV) = 6.29X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



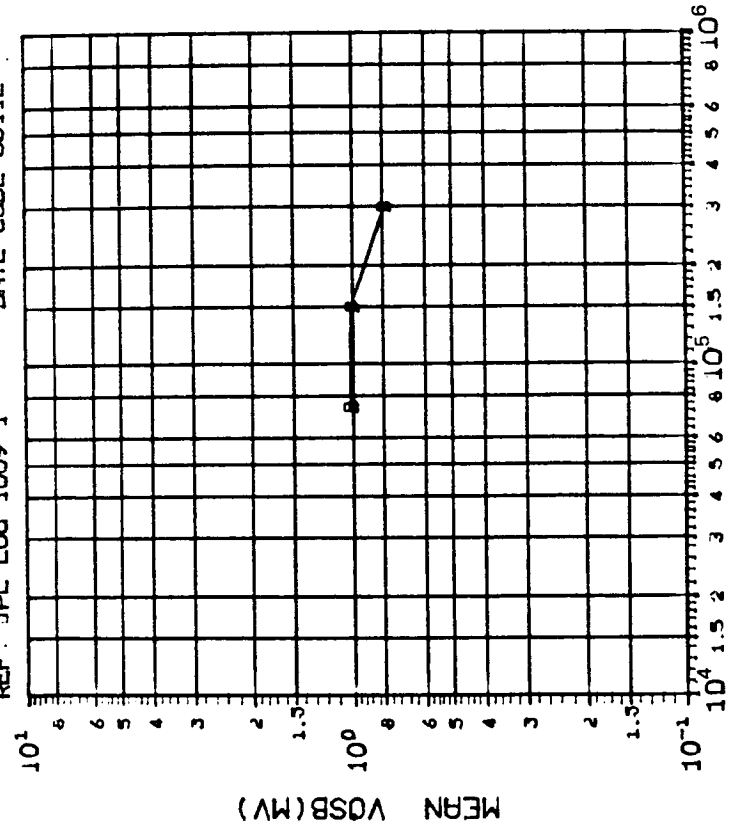
DOSE, rads(Si) 2.5 MeV electrons

(1)VOSR (VO=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.4624 .4673 .6742

INITIAL MEAN VALUE VOSR(MV) = 6.29X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E

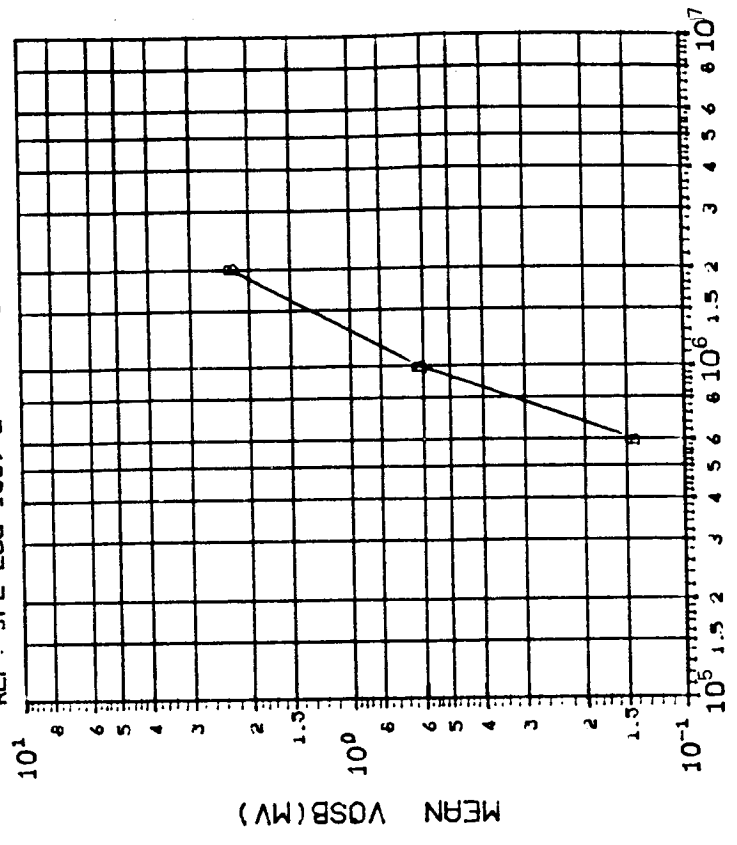


DOSE, rads(Si) 2.5 MeV electrons
 (2)VOSB (VO=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.5336 .5358 .5598

INITIAL MEAN VALUE VOSB(MV) = 9.85X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (2)VOSB (VO=0V) IN MV: VS DOSE

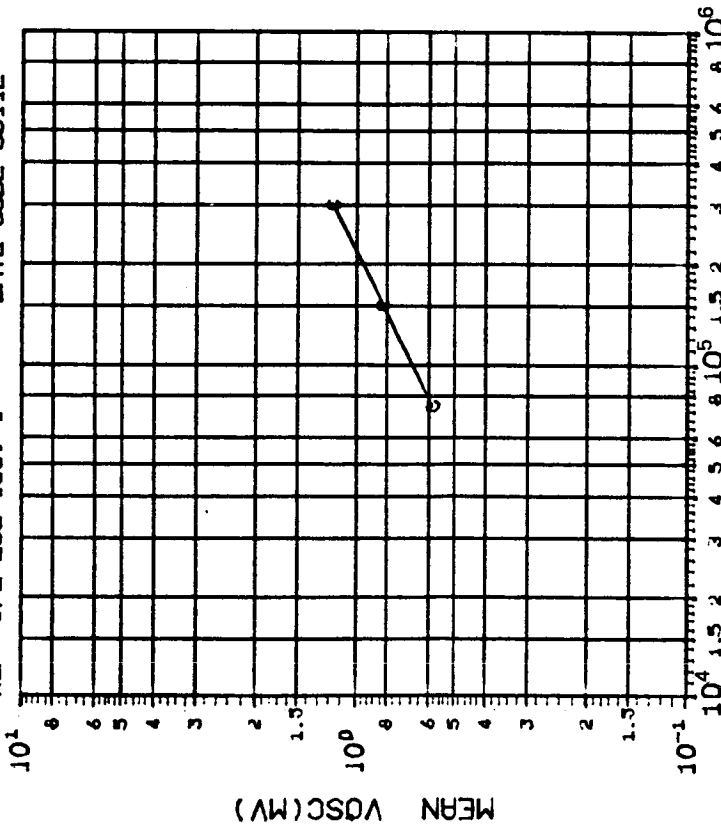
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.6056 .7145 .7920

INITIAL MEAN VALUE VOSB(MV) = 9.85X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (VO=OV) IN MV: VS DOSE

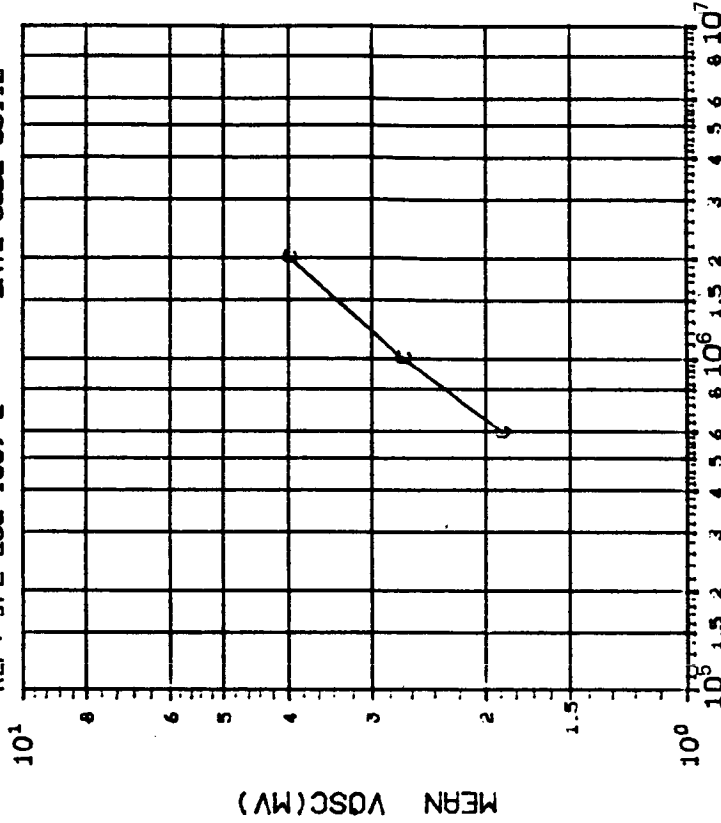
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	.3456 .3764 .4378

INITIAL MEAN VALUE VOSC(MV) = 2.12X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (VO=OV) IN MV: VS DOSE

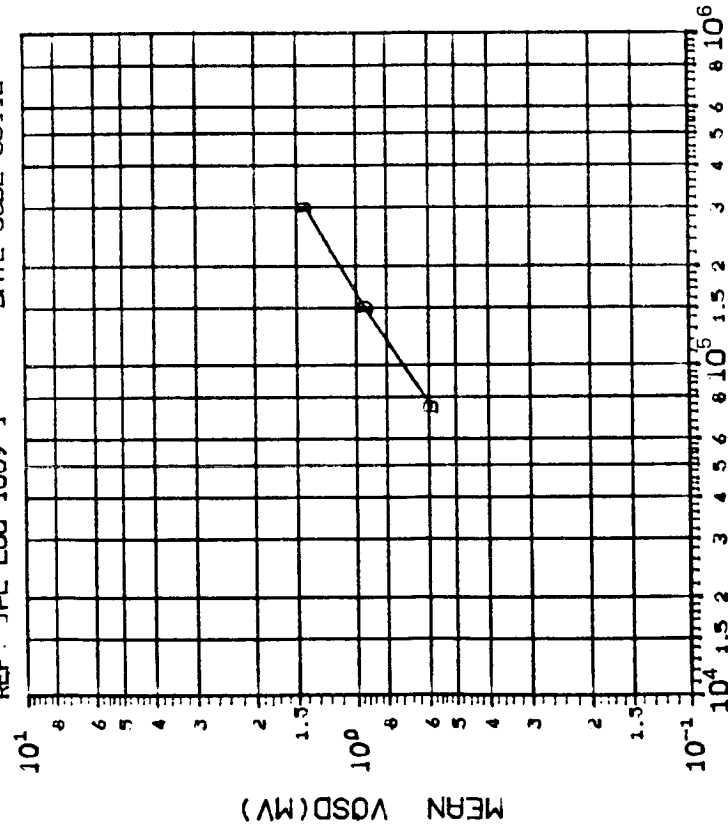
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	.6107 .7734 .9327

INITIAL MEAN VALUE VOSC(MV) = 2.12X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4) VOSD (VO=OV) IN MV: VS DOSE

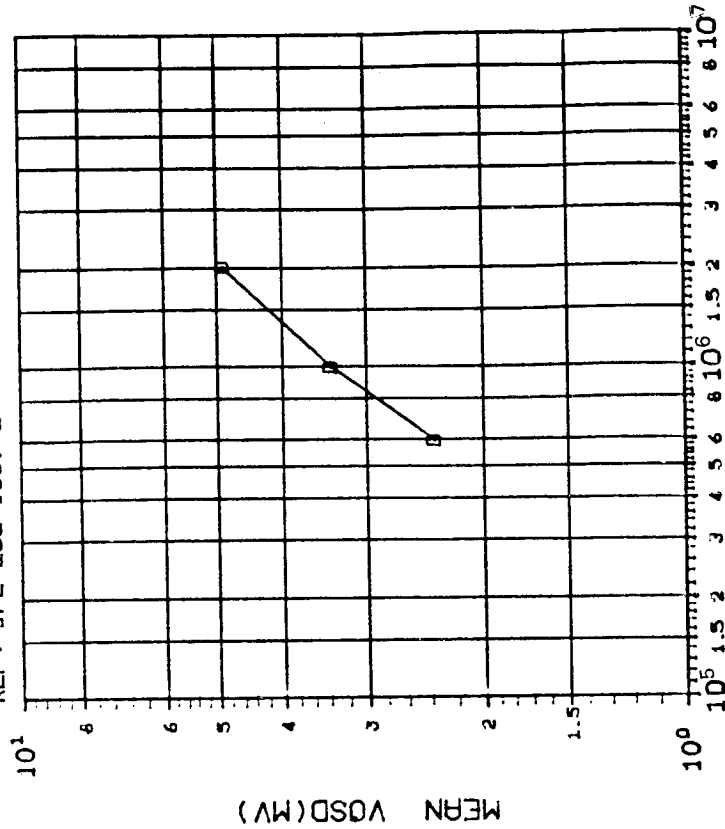
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	.4763 .5615 .6739

INITIAL MEAN VALUE VOSD(MV) = 1.72×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4) VOSD (VO=OV) IN MV: VS DOSE

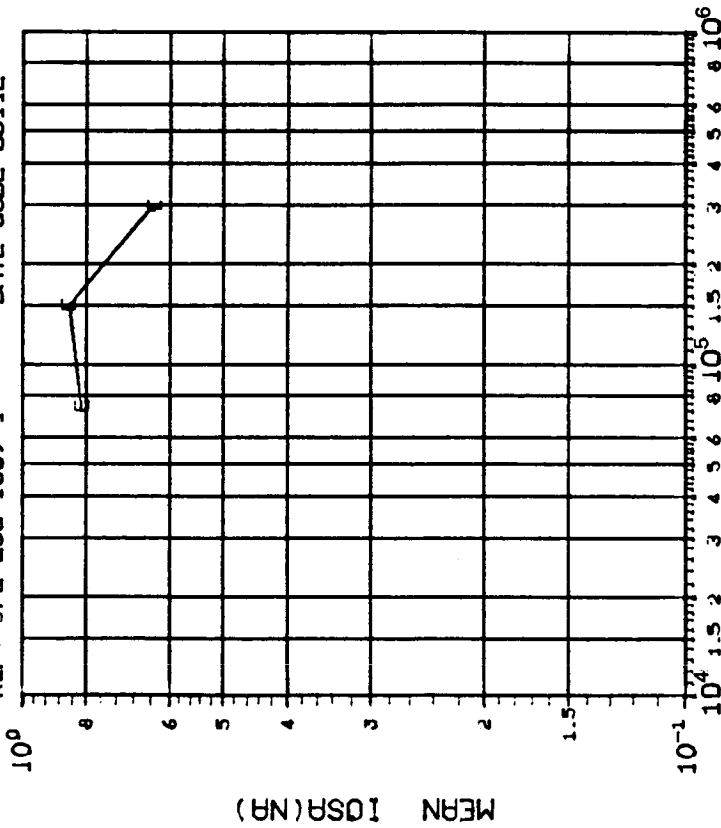
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	.8459 1.026 1.125

INITIAL MEAN VALUE VOSD(MV) = 1.72×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons

(5110SA (VO=OV) IN NA: VS DOSE

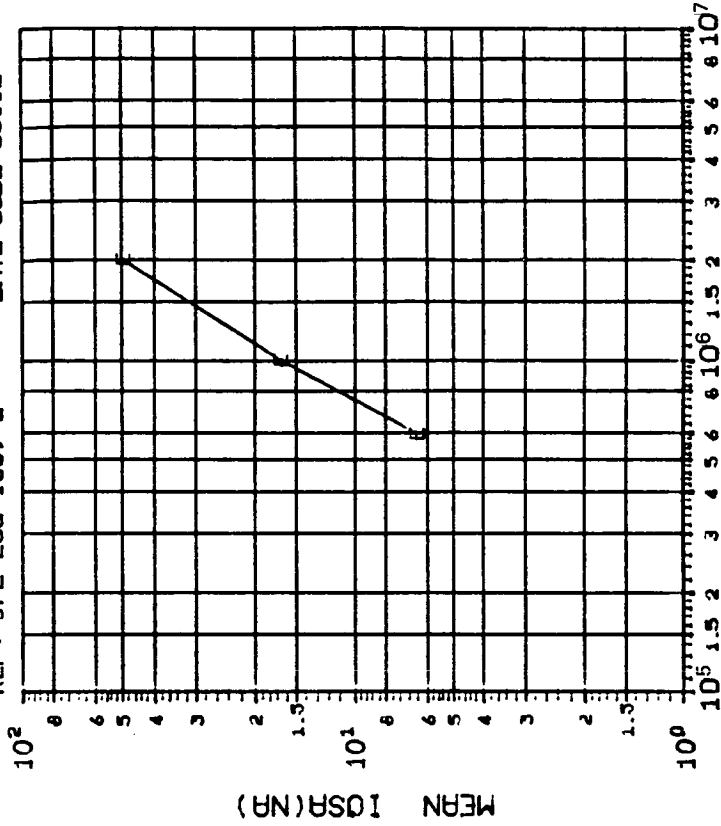
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	.7266 1.058 1.133

INITIAL MEAN VALUE IOSR(NA) = 5.85X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



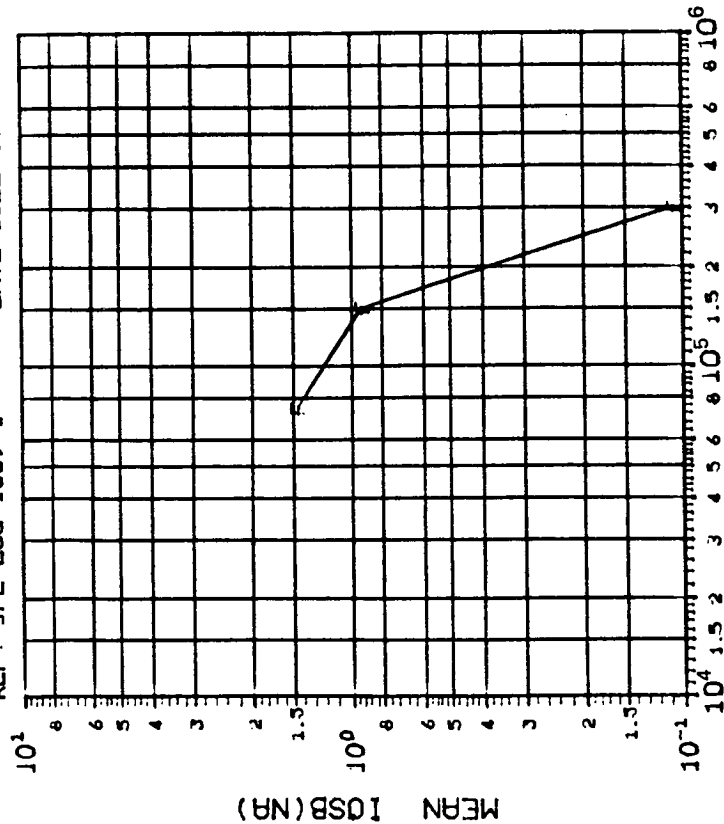
DOSE, rad(Si) 2.5 MeV electrons

(5110SA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	3.696 6.473 13.72

INITIAL MEAN VALUE IOSR(NA) = 5.85X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E

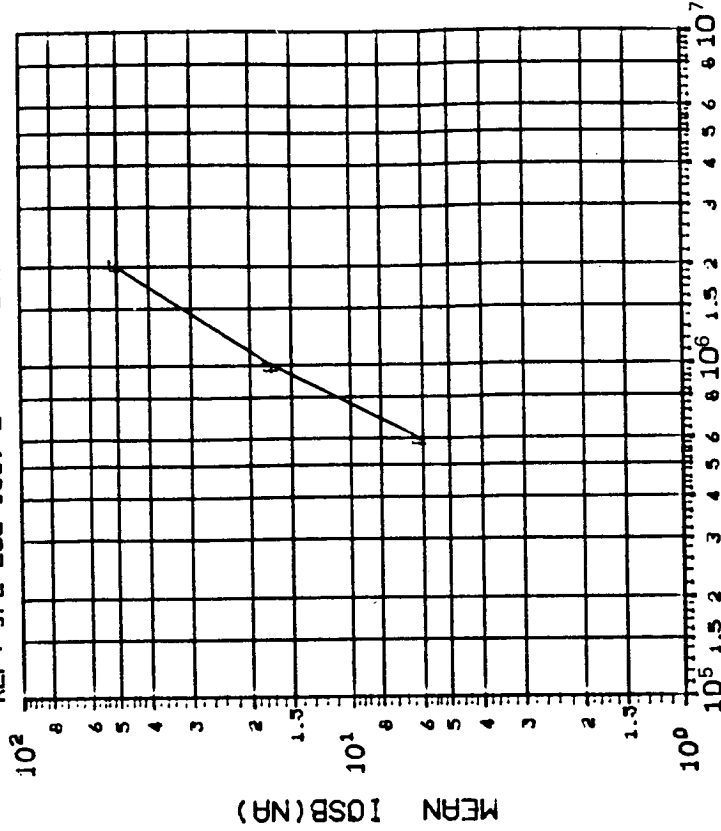


DOSE, rads(Si) 2.5 MeV electrons
 (6)IOSB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	.9578 1.634 1.624

INITIAL MEAN VALUE IOSB(NA) = 3.09X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (6)IOSB (VO=OV) IN NA: VS DOSE

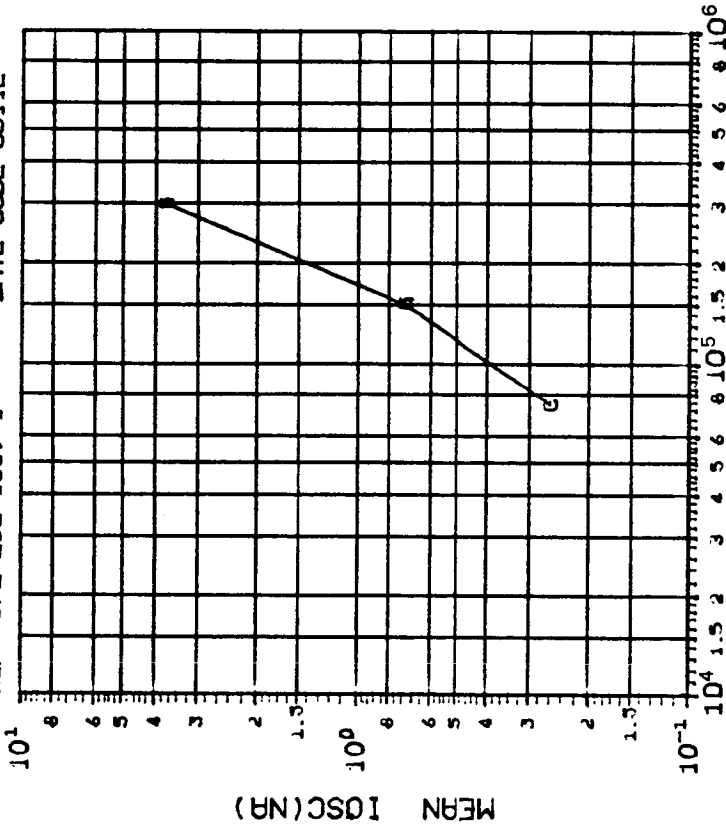
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	2.913 6.211 15.29

INITIAL MEAN VALUE IOSB(NA) = 3.09X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (VO=OV) IN NA: VS DOSE

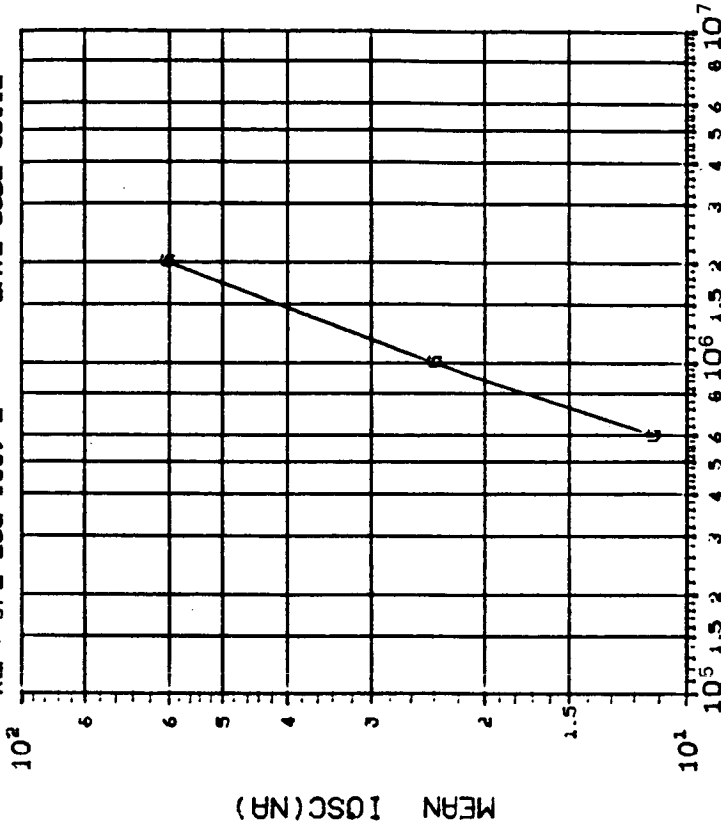
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	.6316 1.364 2.331

INITIAL MEAN VALUE IOSC(NA) = 1.02×10^0

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (VO=OV) IN NA: VS DOSE

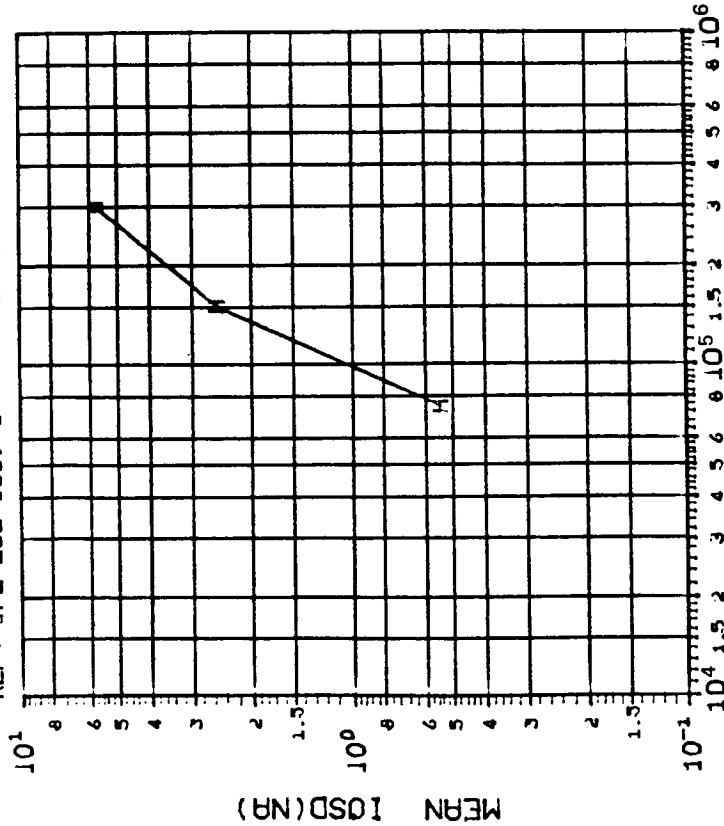
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	4.445 0.571 0.1716

INITIAL MEAN VALUE IOSC(NA) = 1.02×10^0

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8)IOSD (VO=OV) IN NA: VS DOSE

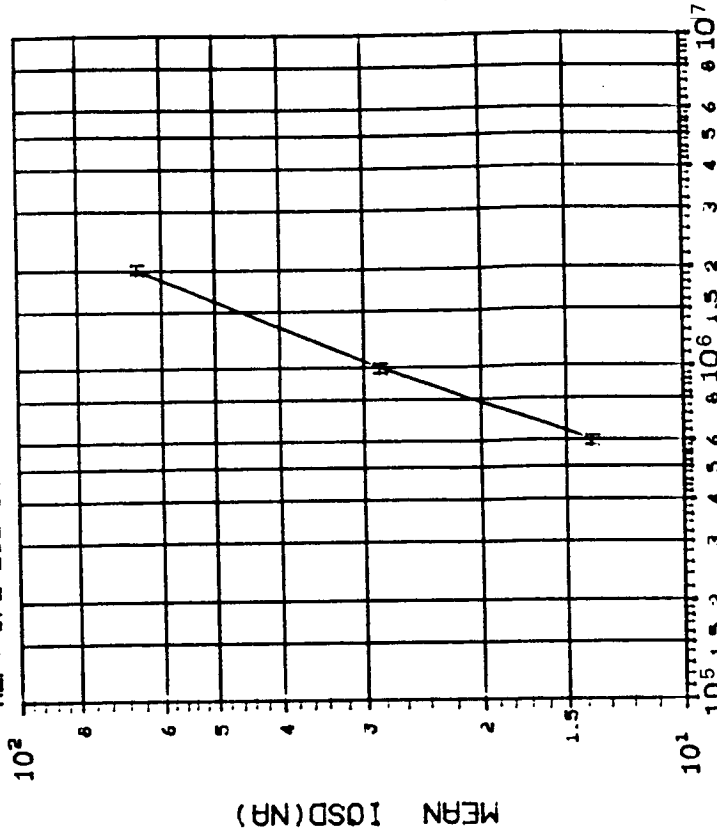
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	1.058 1.576 2.554

INITIAL MEAN VALUE IOSD(NA) = 6.78×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



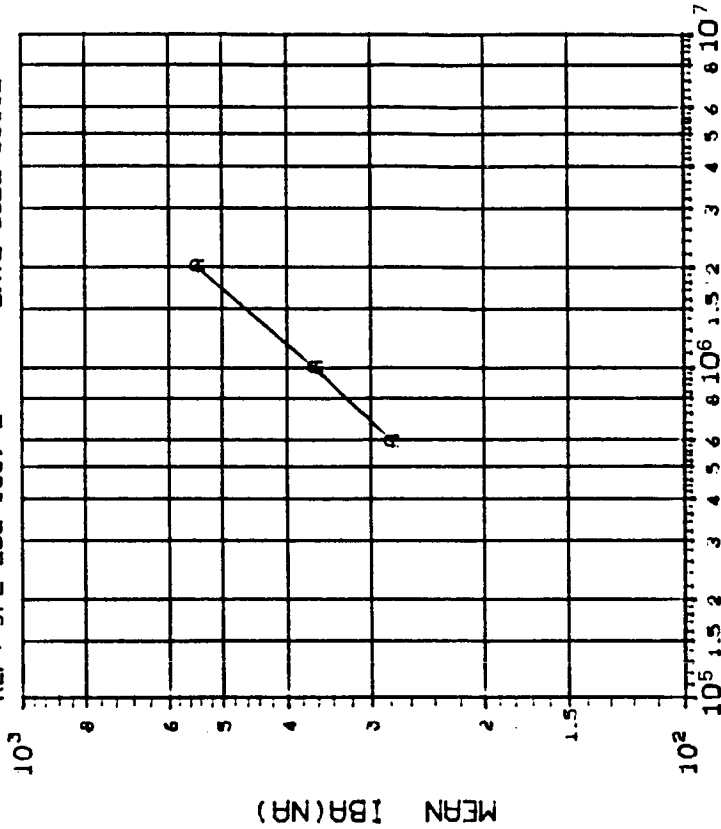
DOSE, rads(Si) 2.5 MeV electrons

(8)IOSD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	6.309 11.07 21.51

INITIAL MEAN VALUE IOSD(NA) = 6.78×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1009-2 DATE CODE 8311E

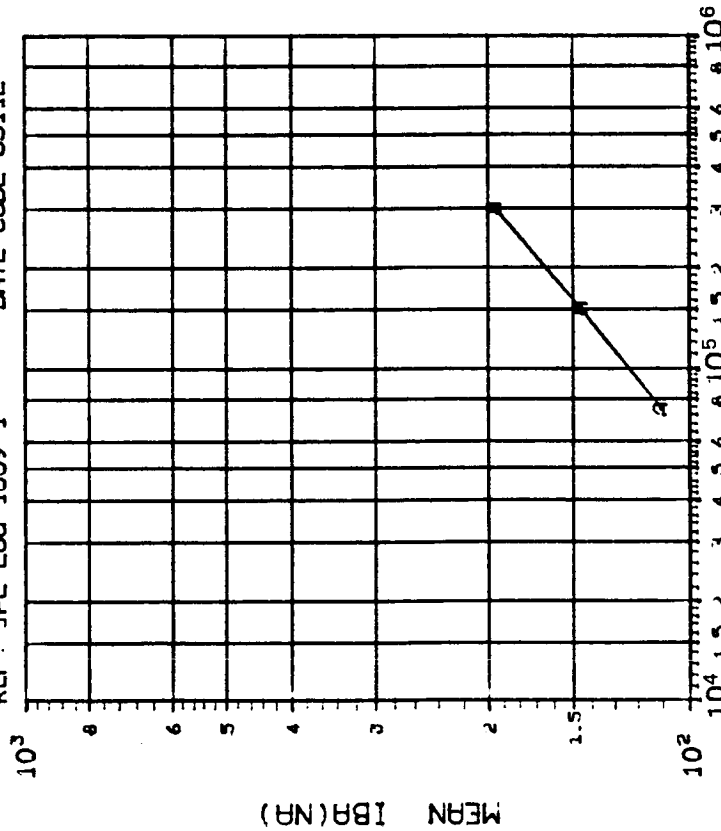


DOSE, rad(Si) 2.5 MeV electrons
(1)IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	44.51 60.48 91.02

INITIAL MEAN VALUE IBA(NA) = 3.37X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons
(1)IBA (VO=OV) IN NA: VS DOSE

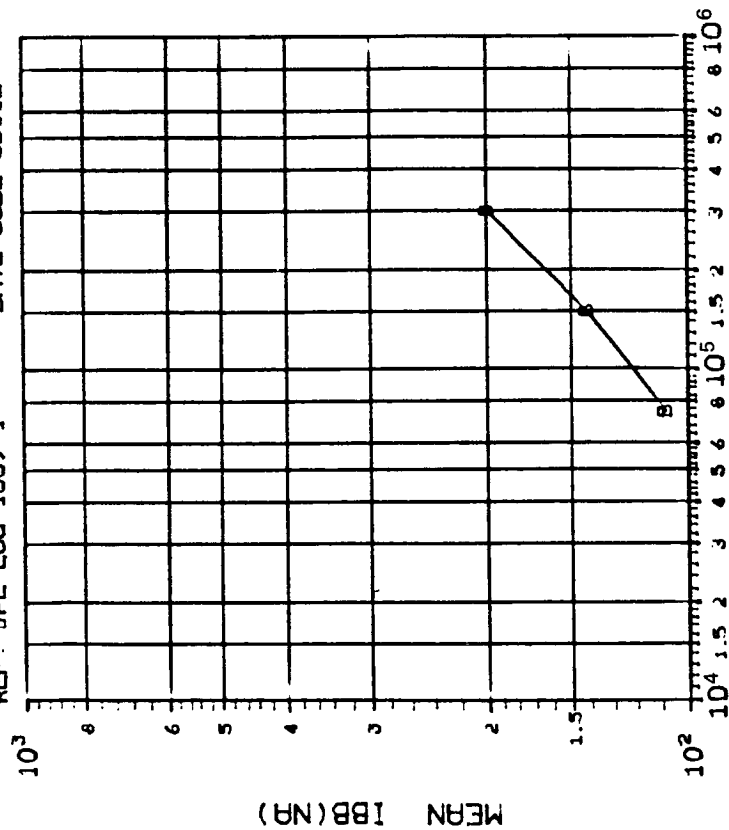
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	18.70 25.07 30.48

INITIAL MEAN VALUE IBA(NA) = 3.37X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JAL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)IBB (VO=OV) IN NA: VS DOSE

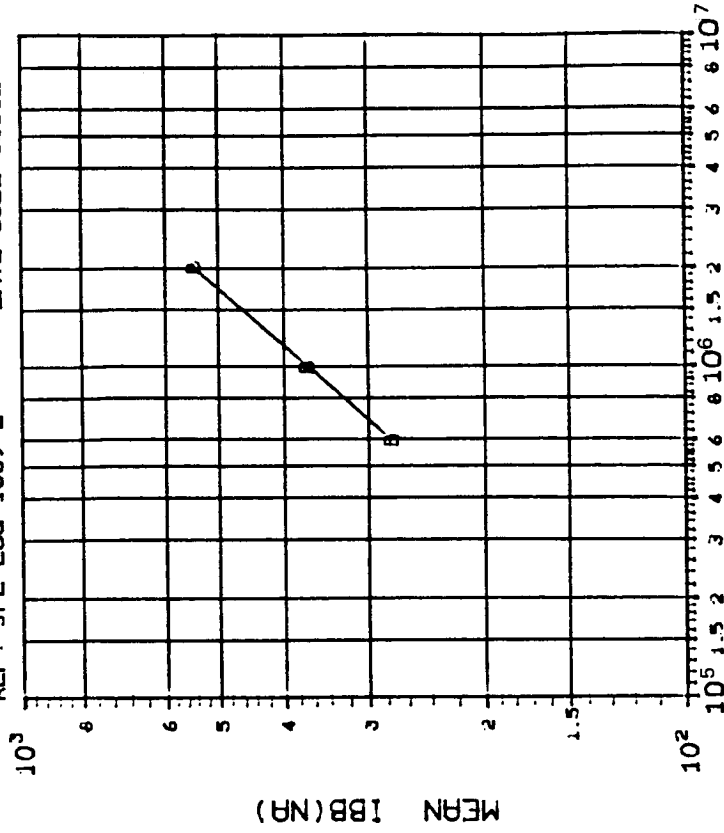
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	17.68 23.98 31.23

INITIAL MEAN VALUE IBB(NA) = $3.27 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



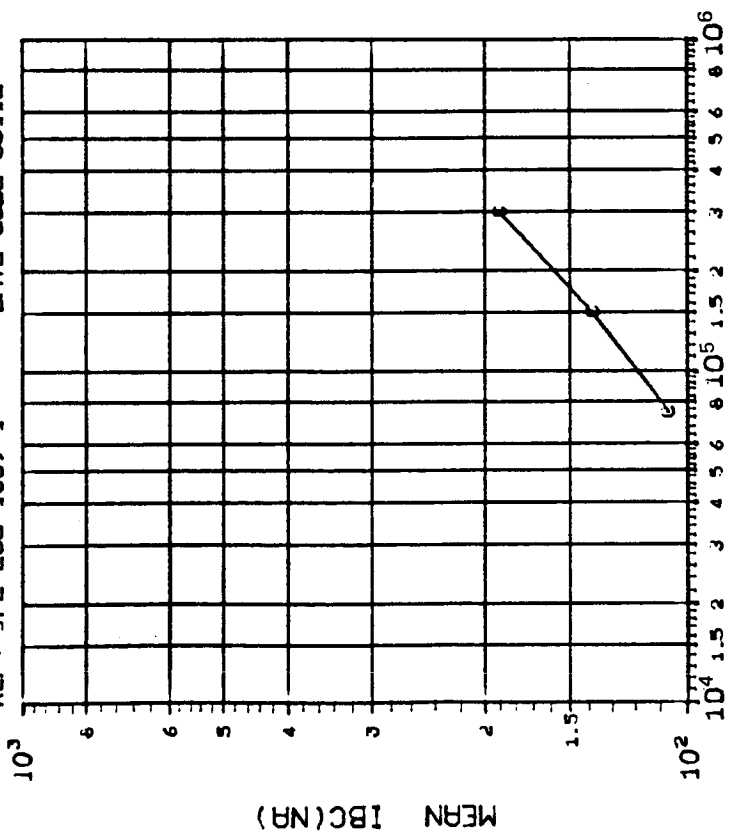
DOSE, rads(Si) 2.5 MeV electrons

(2)IBB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	45.00 58.68 86.79

INITIAL MEAN VALUE IBB(NA) = $3.27 \times 10^{+3}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E

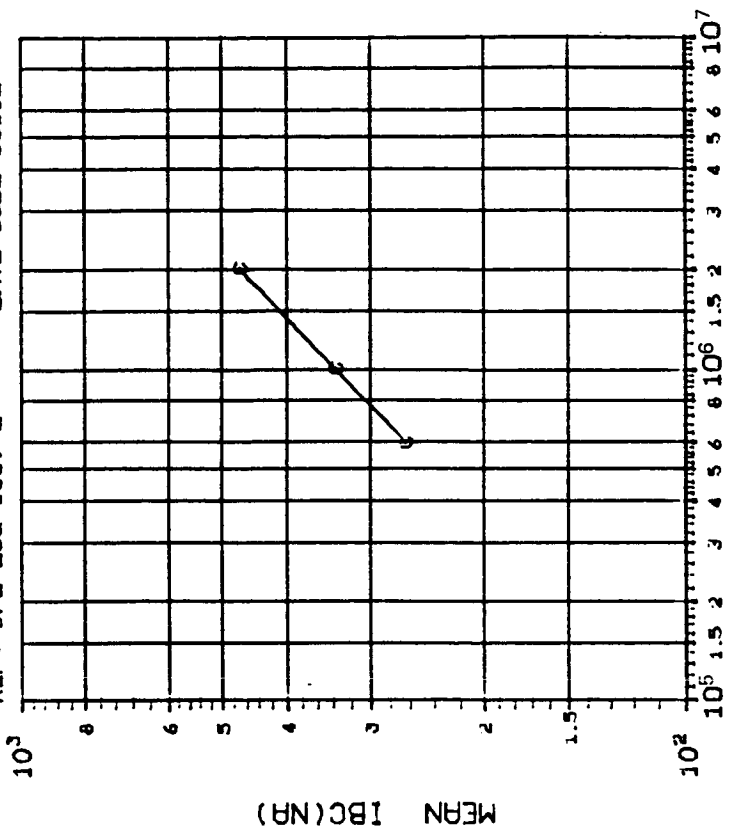


DOSE, rad(Si) 2.5 MeV electrons
 (3)IBC (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	19.22 25.21 31.47

INITIAL MEAN VALUE IBC(NA) = 3.35×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E

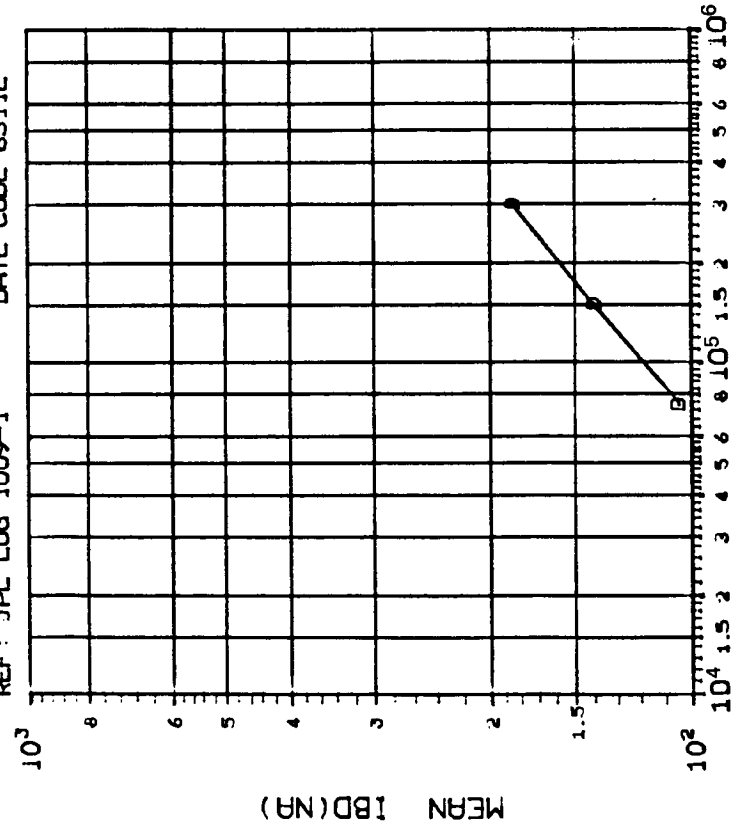


DOSE, rad(Si) 2.5 MeV electrons
 (3)IBC (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	44.46 56.73 77.42

INITIAL MEAN VALUE IBC(NA) = 3.35×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E

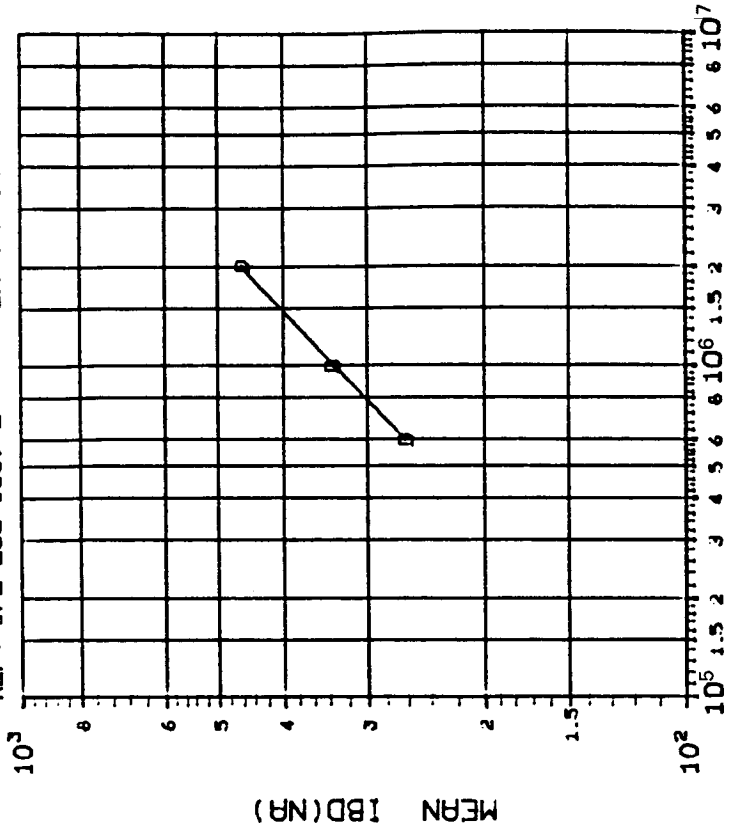


DOSE, rads(Si) 2.5 MeV electrons
 (4)IBD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	19.37 24.59 32.05

INITIAL MEAN VALUE IBD(NA) = 3.24X10²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (4)IBD (V0=0V) IN NA: VS DOSE

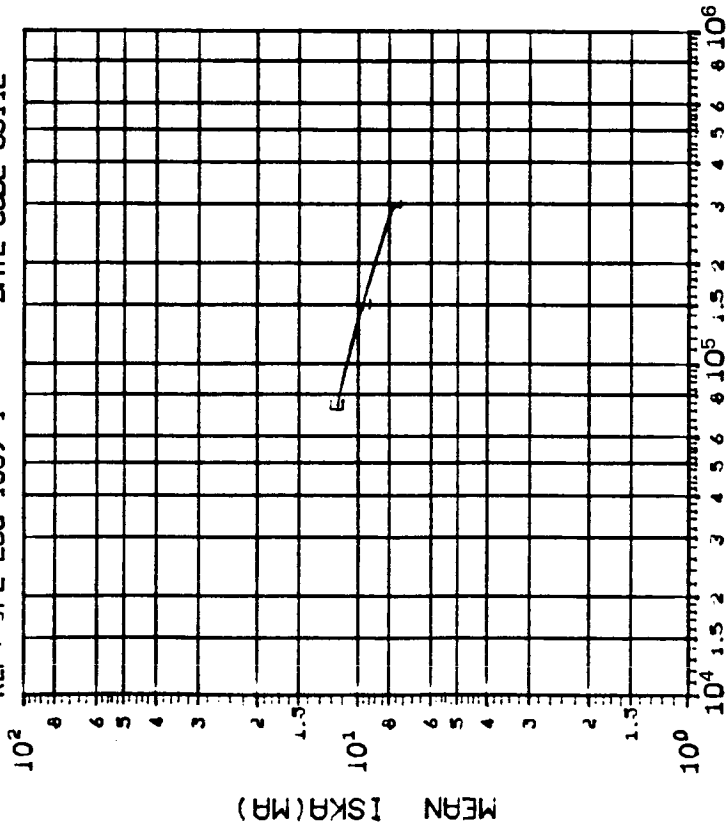
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	43.62 56.16 75.39

INITIAL MEAN VALUE IBD(NA) = 3.24X10²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(5)ISKRA (VO=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

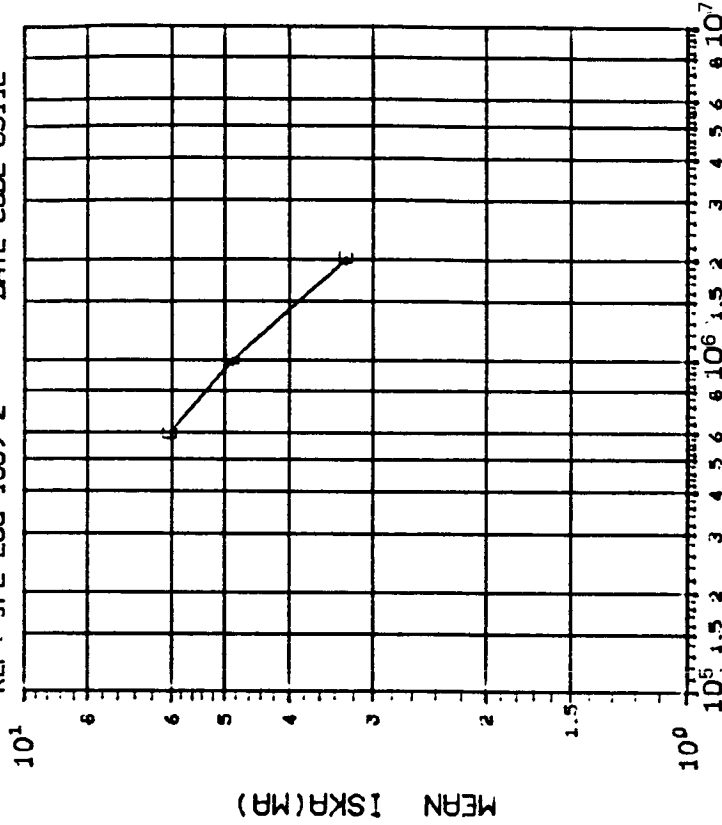
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.092 1.002 .9232

INITIAL MEAN VALUE ISKR(MA) = $1.62 \times 10^{1.1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

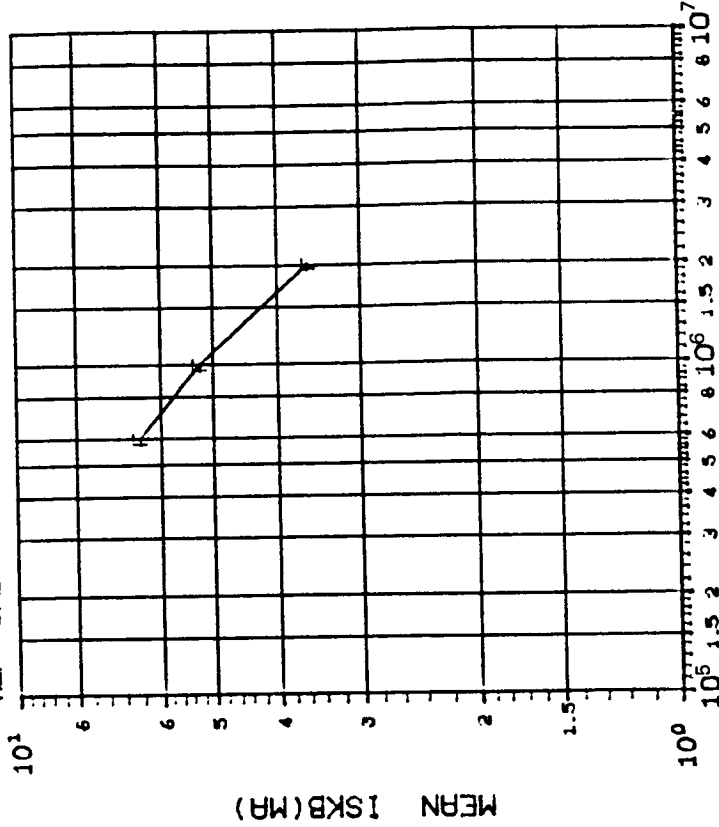
(5)ISKRA (VO=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	.7274 .6670 .4973

INITIAL MEAN VALUE ISKR(MA) = $1.62 \times 10^{1.1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E

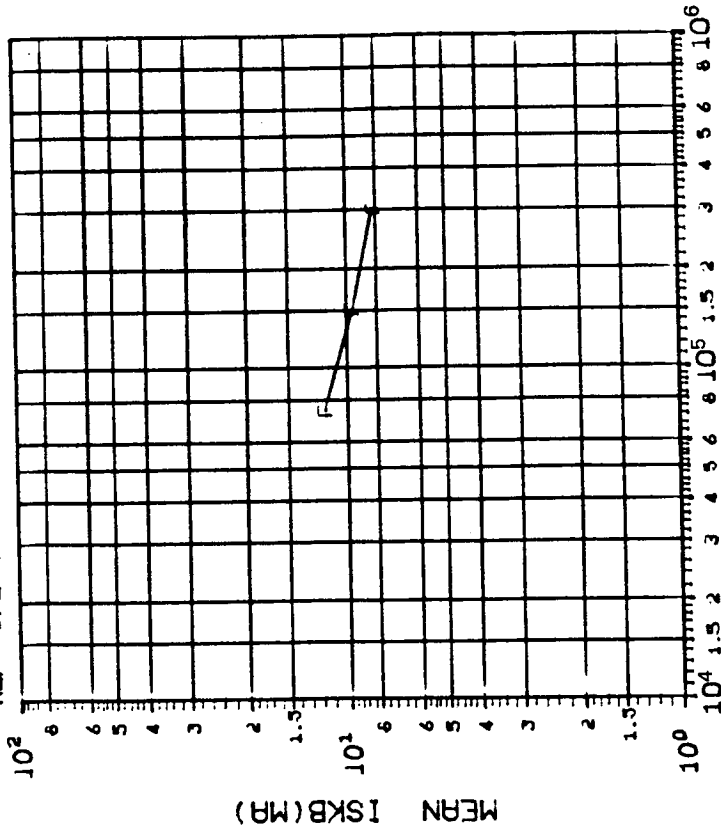


DOSE, rads(Si) 2.5 MeV electrons
 (6)ISKB (VO=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	.7686 .7068 .5111

INITIAL MEAN VALUE ISKB(MR) = 1.61X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (6)ISKB (VO=-13.5V) IN MA: VS DOSE

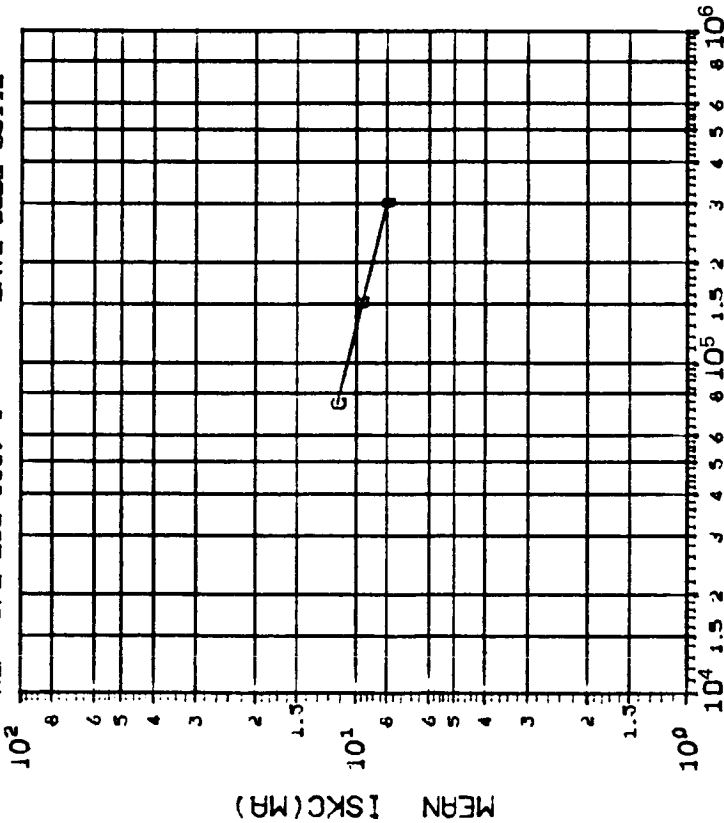
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	1.156 1.203 .9554

INITIAL MEAN VALUE ISKB(MR) = 1.61X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0=-13.5V) IN MA: VS DOSE

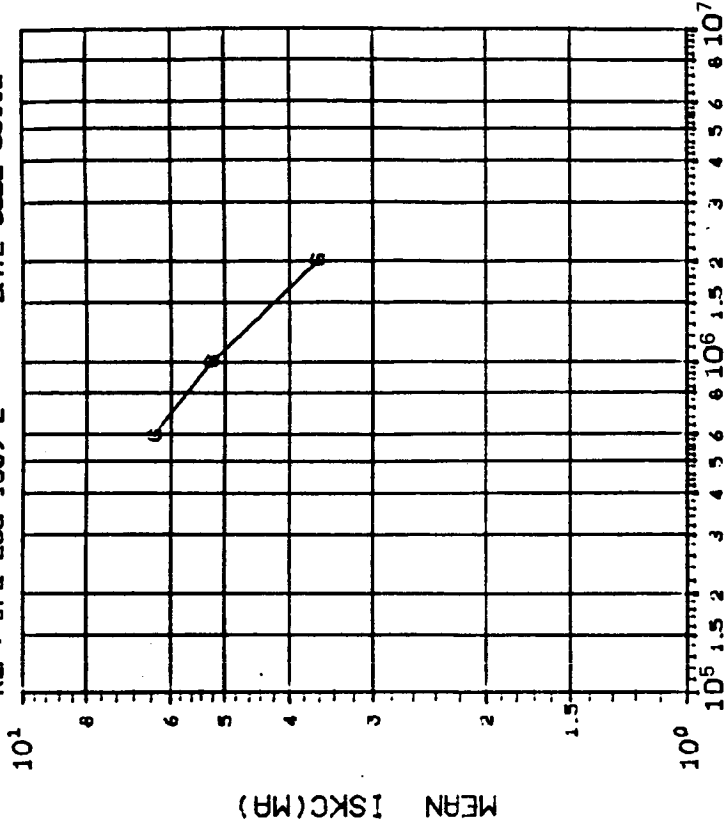
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.190 1.076 .9634

INITIAL MEAN VALUE ISKC(MR) = 1.57X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0=-13.5V) IN MA: VS DOSE

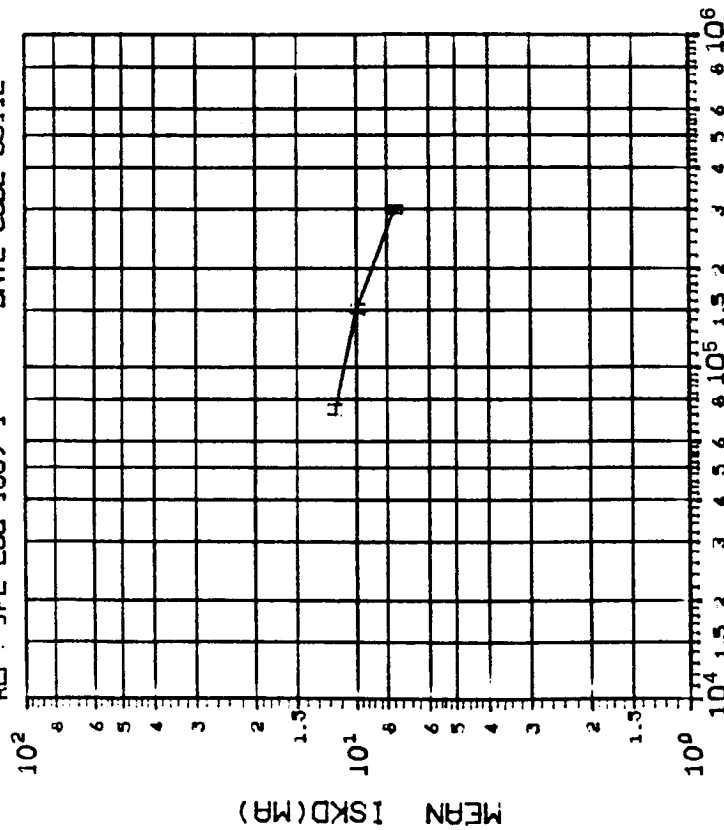
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	.7631 .6744 .4906

INITIAL MEAN VALUE ISKC(MR) = 1.57X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8) ISKD (VOE--13.5V) IN MA: VS DOSE

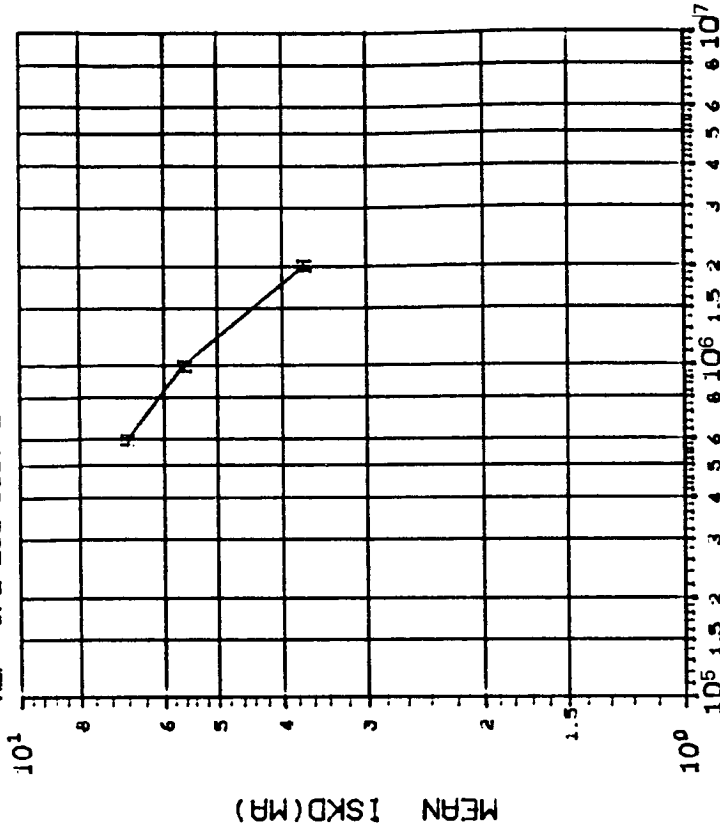
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.9681 .9096 1.383

INITIAL MEAN VALUE ISKD(MR) = 1.60×10^1

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8) ISKD (VOE--13.5V) IN MA: VS DOSE

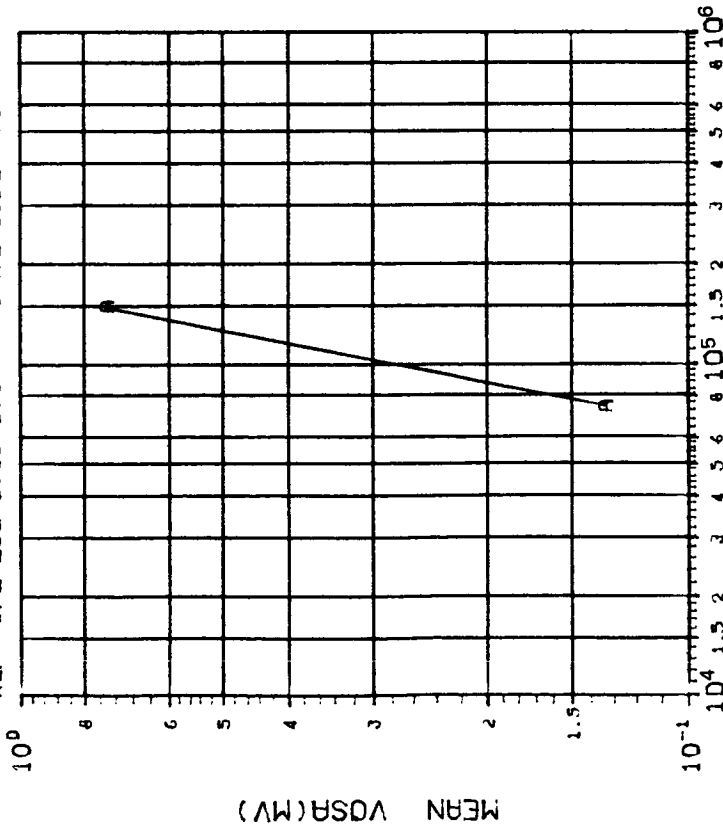
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	.6682 .5961 .7099

INITIAL MEAN VALUE ISKD(MR) = 1.60×10^1

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(1)VOSA (V0=0) IN MV: VS DOSE

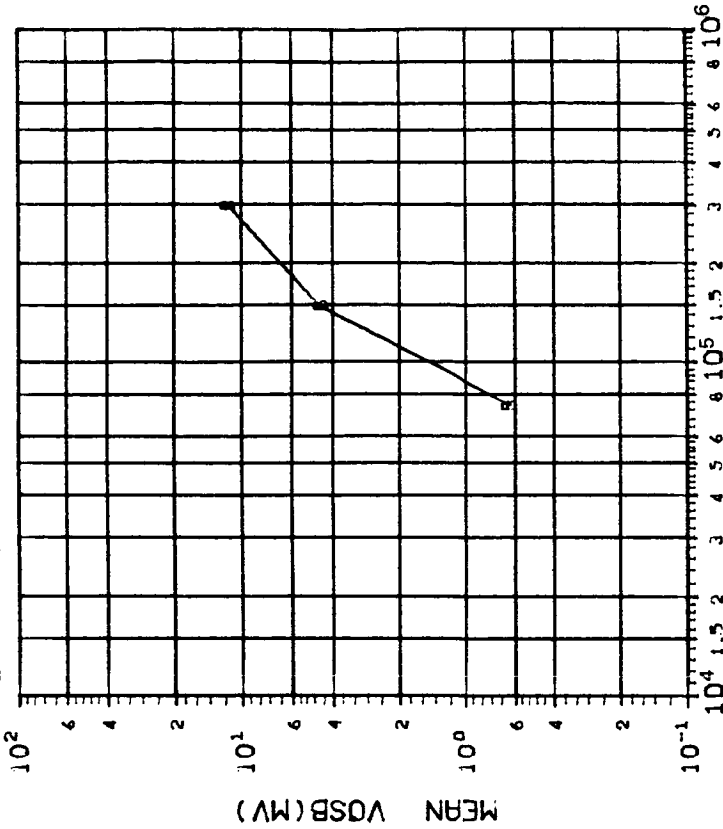
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600
	1.373 2.157 **** ****

INITIAL MEAN VALUE VOSR(MV) = 1.07X10⁺⁰

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



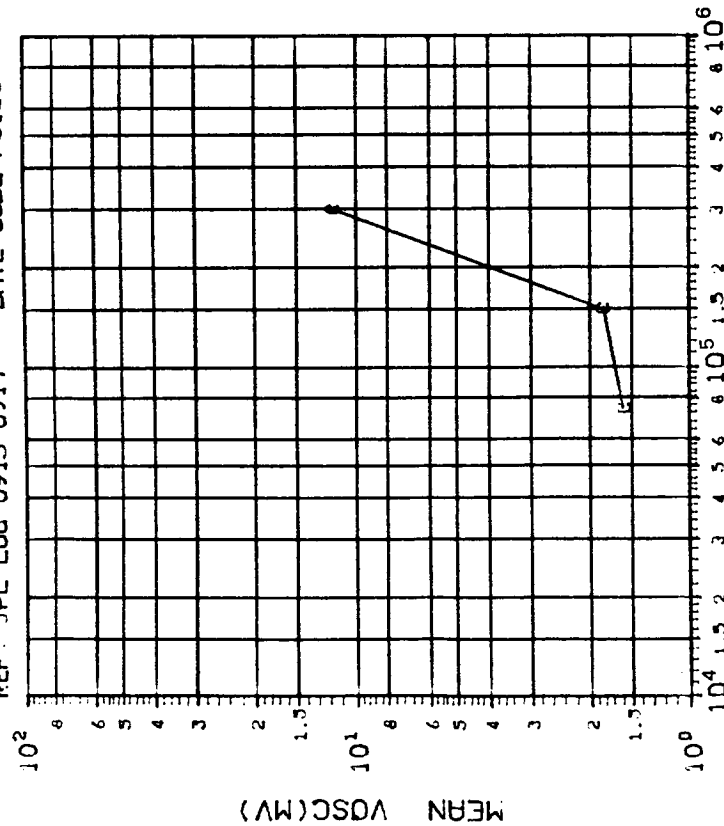
DOSE, rads(Si) Co⁶⁰ Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	1.620 2.301 2.469 ****

INITIAL MEAN VALUE VOSB(MV) = 6.66X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136



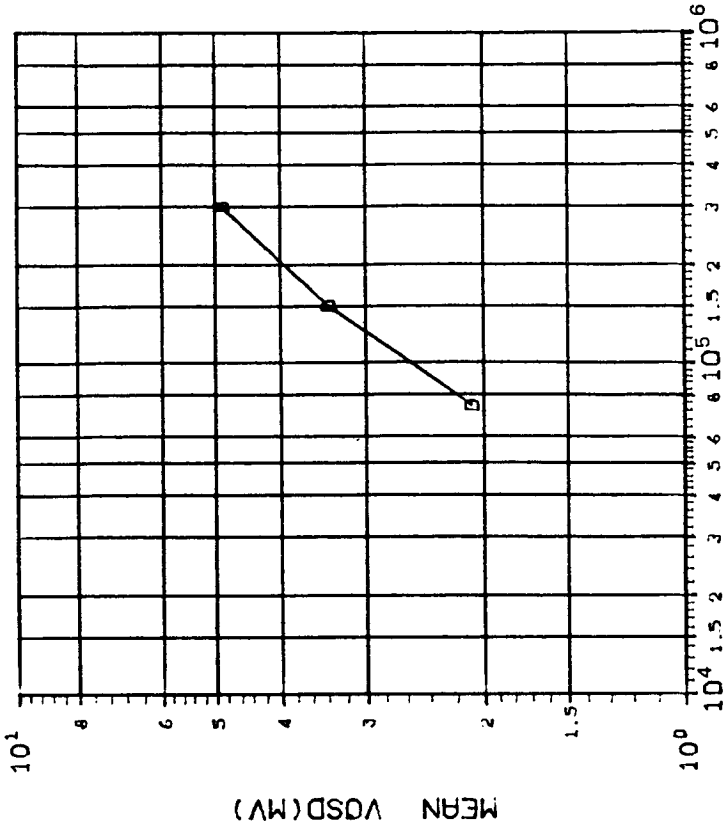
DOSE, rads(Si) Co⁶⁰ Gammas

(31)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
1.500 6.472 19.60 ****	

INITIAL MEAN VALUE VOSC(MV) = 7.98X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(41)VOSD (V0=0) IN MV: VS DOSE

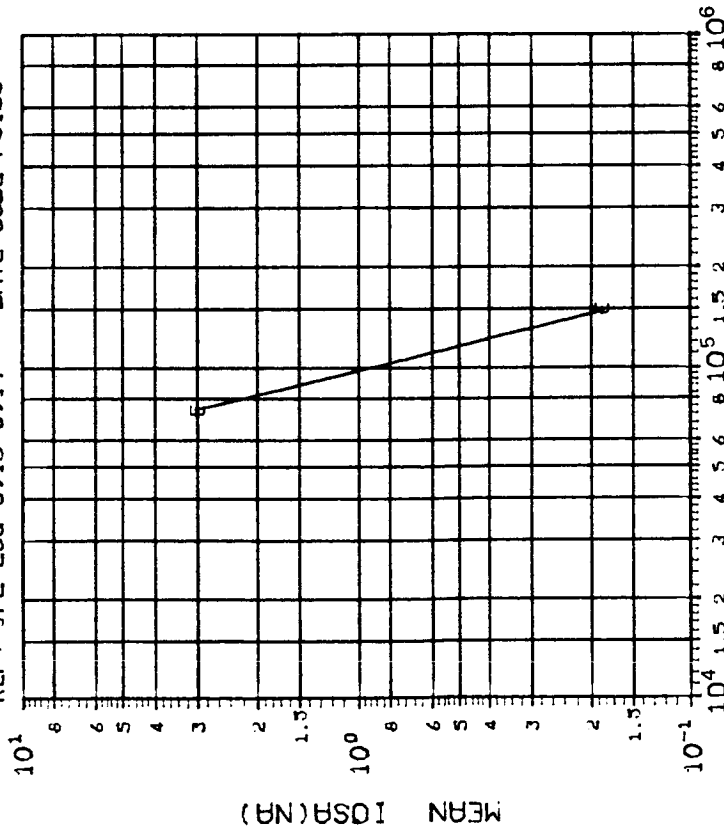
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
.9622 1.553 1.155 ****	

INITIAL MEAN VALUE VOSD(MV) = 9.74X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(5110SA (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

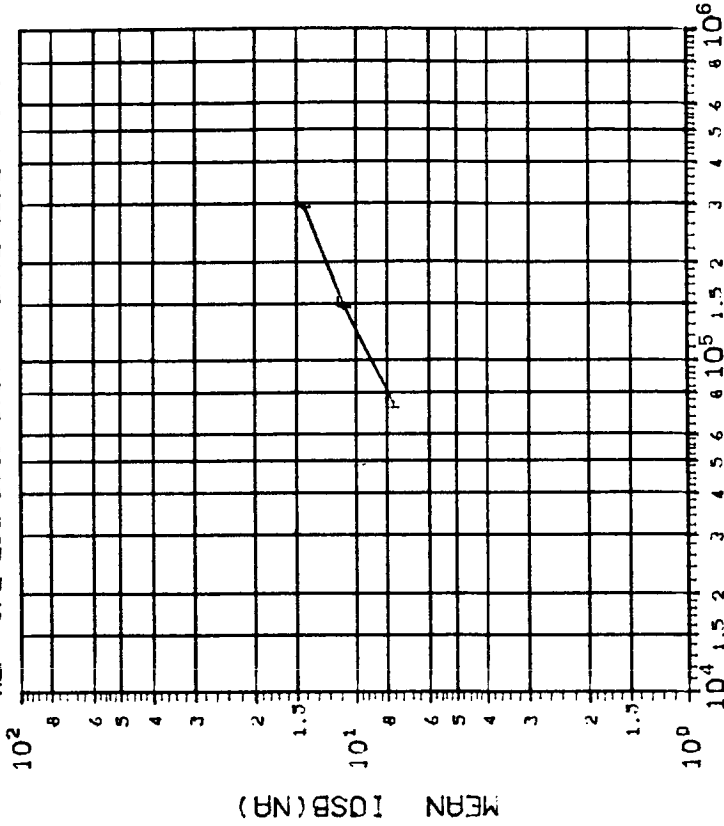
CURVE	DOSE, kilorads(Si)
E	75 150 300 600
	6.565 24.66 **** ****

INITIAL MEAN VALUE IOSA(NA) = 3.11X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(6110SB (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

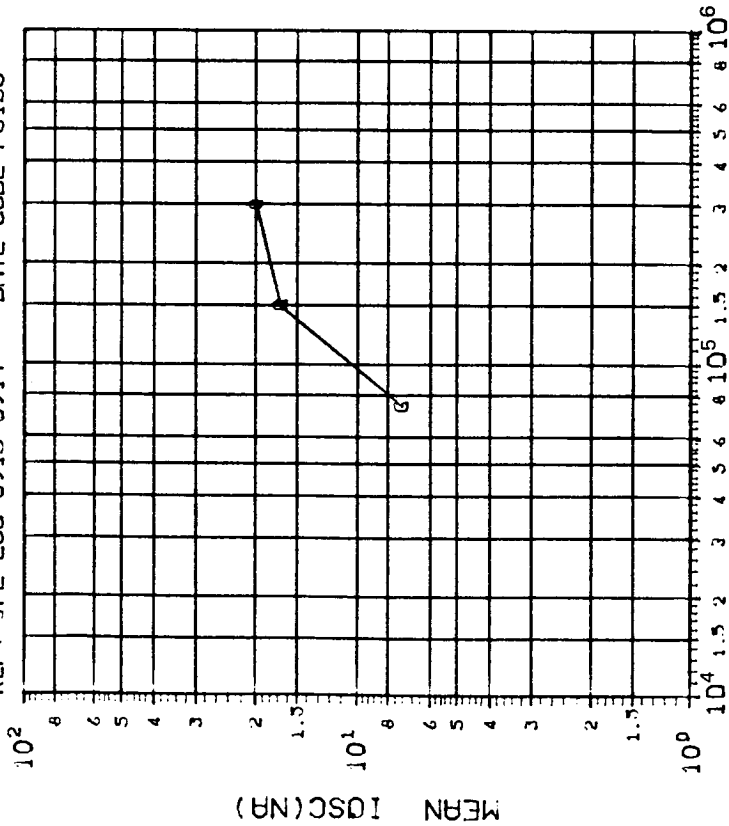
CURVE	DOSE, kilorads(Si)
F	75 150 300 600
	5.347 19.61 42.36 ****

INITIAL MEAN VALUE IOSB(NA) = 2.62X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

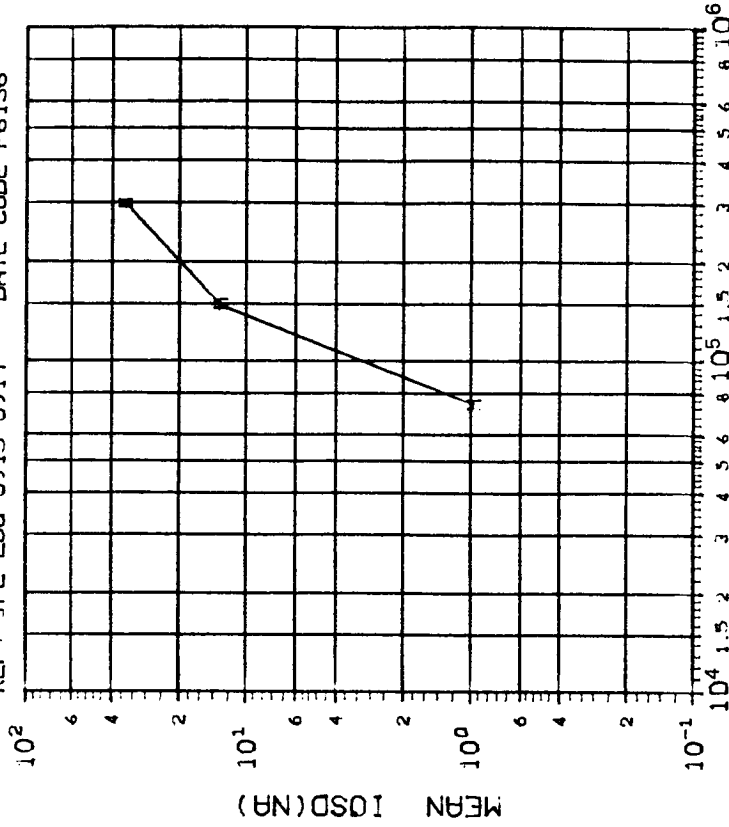
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300 600
	5.136 13.57 31.62 ****

INITIAL MEAN VALUE IOSC(NA) = 3.07X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

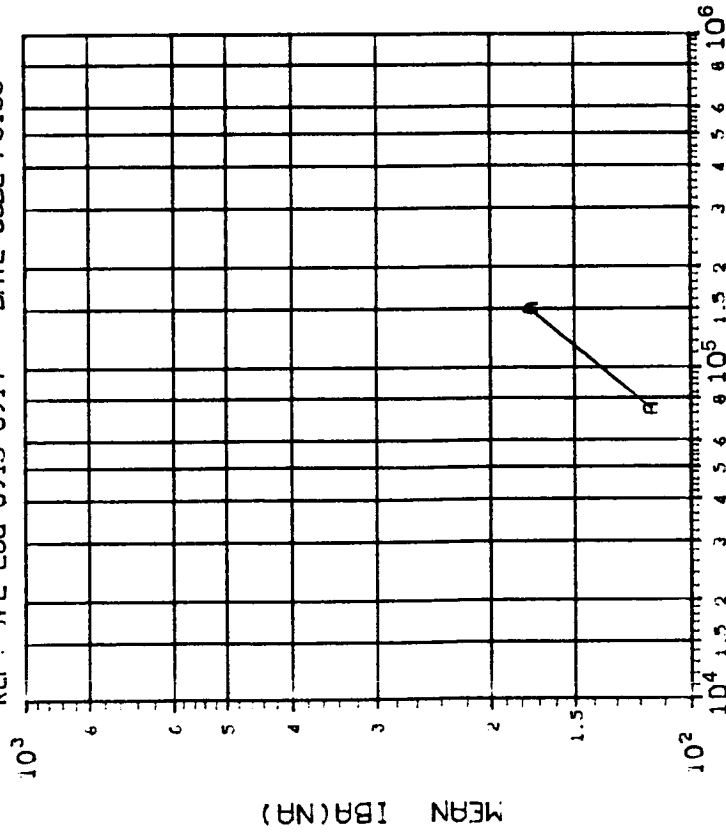
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300 600
	7.663 15.69 22.62 ****

INITIAL MEAN VALUE IOSD(NA) = 3.02X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



(1)1BA (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

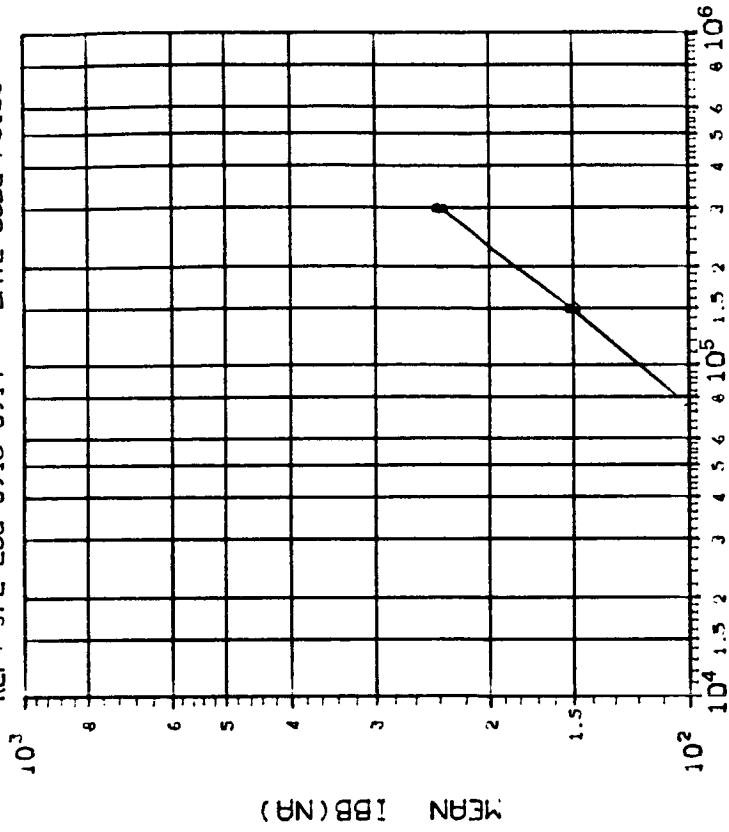
CURVE	DOSE, kilorads(Si)	STANDARD DEVIATION
A	75	16.98
	150	33.54
	300	****
	600	****

INITIAL MEAN VALUE 1BA(NA) = 2.21X10²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



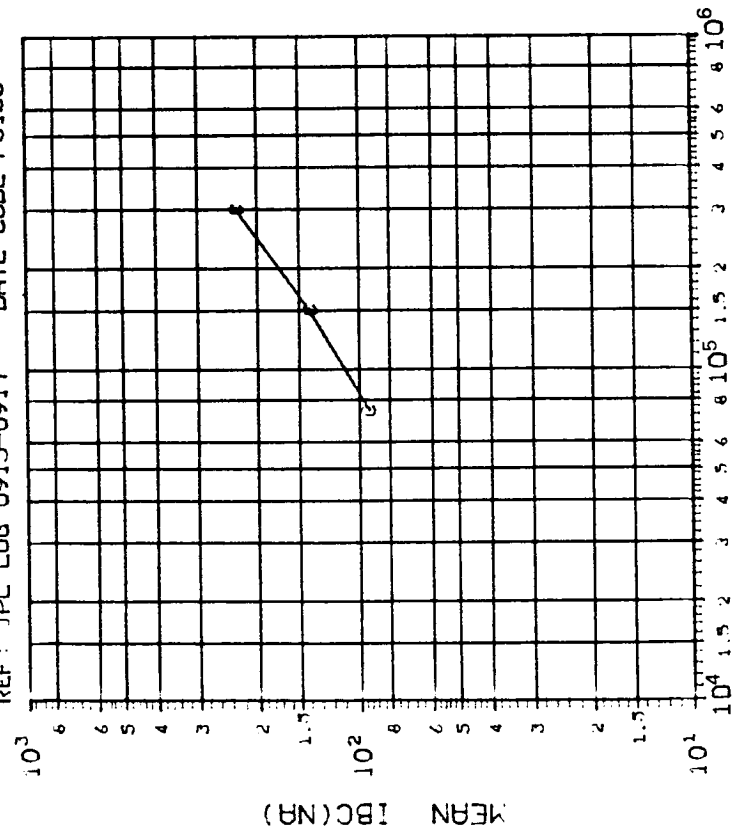
(2)1BE (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)	STANDARD DEVIATION
B	75	11.66
	150	22.40
	300	41.64
	600	****

INITIAL MEAN VALUE 1BE(NA) = 2.21X10²

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136



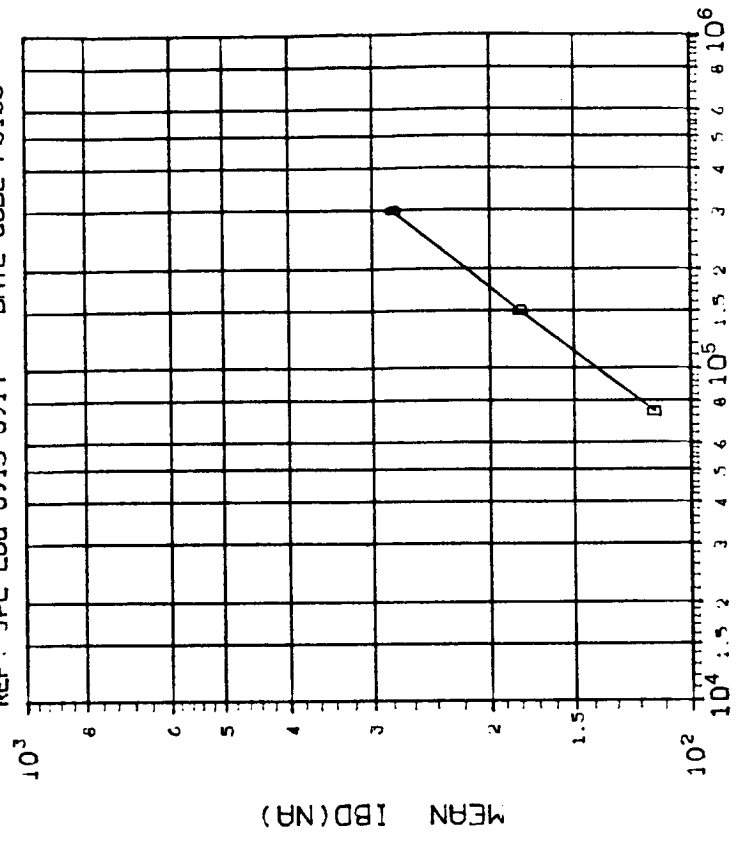
DOSE, rads(Si) Co⁶⁰ Gammas

(3118C (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600
	7.672 11.09 23.20 ****

INITIAL MEAN VALUE IBC(NR) = 2.15X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(4118D (V0=0) IN MV: VS DOSE

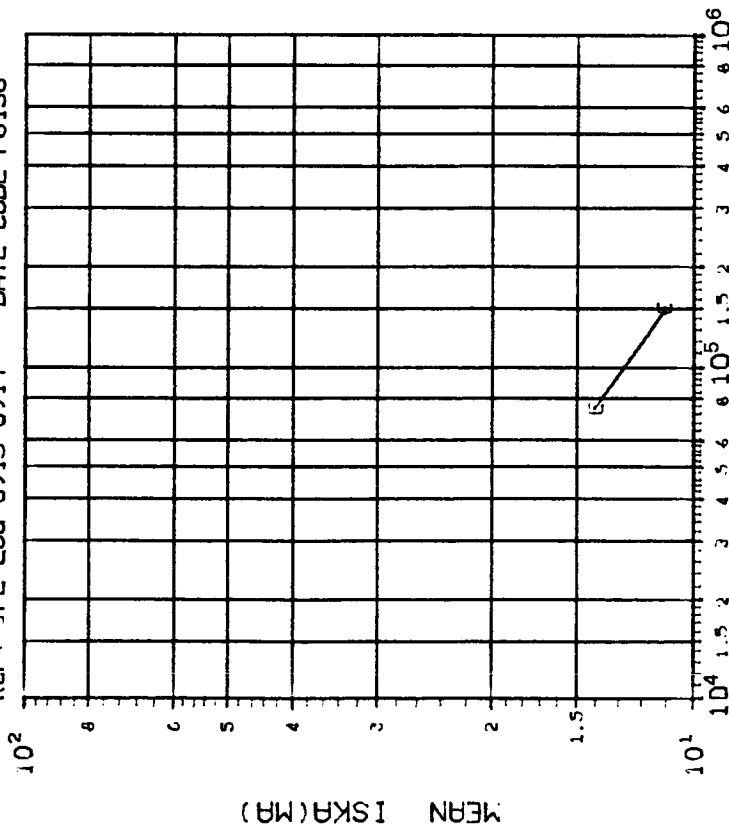
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300 600
	19.75 31.69 43.50 ****

INITIAL MEAN VALUE IBD(NR) = 2.08X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0913-0917 DATE CODE F8136



(5) ISKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

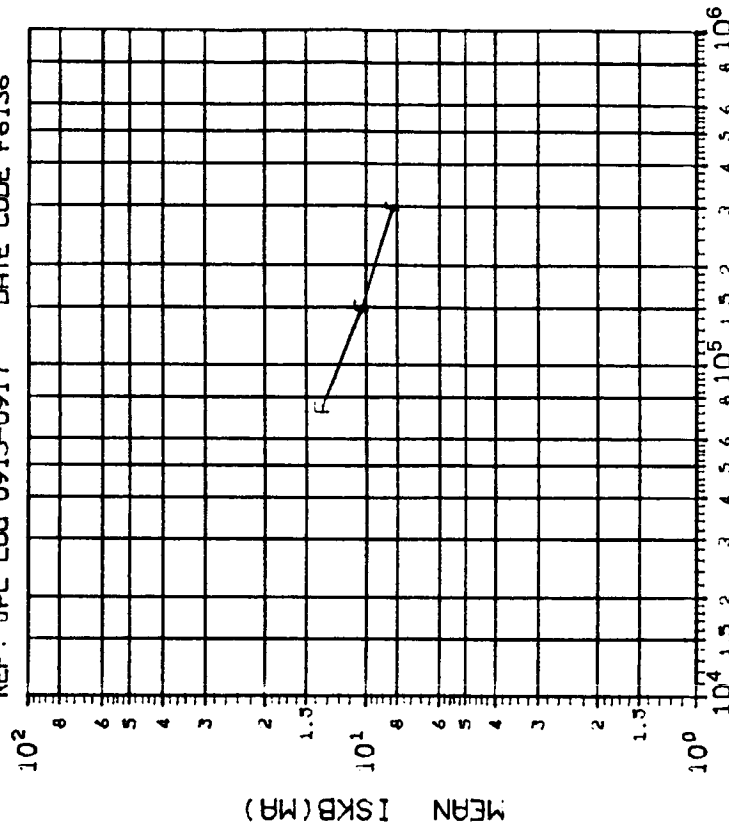
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300 600
	2.715 3.340 *****

INITIAL MEAN VALUE ISKA(MA) = 2.17X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0913-0917 DATE CODE F8136



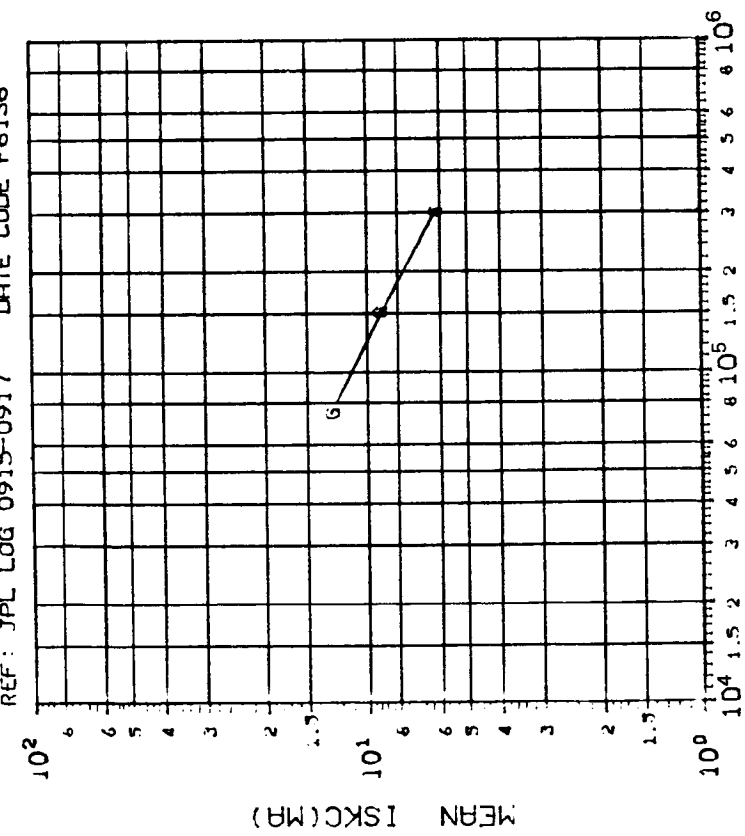
(6) ISKB (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300 600
	3.336 3.623 3.761 *****

INITIAL MEAN VALUE ISKB(MA) = 2.21X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

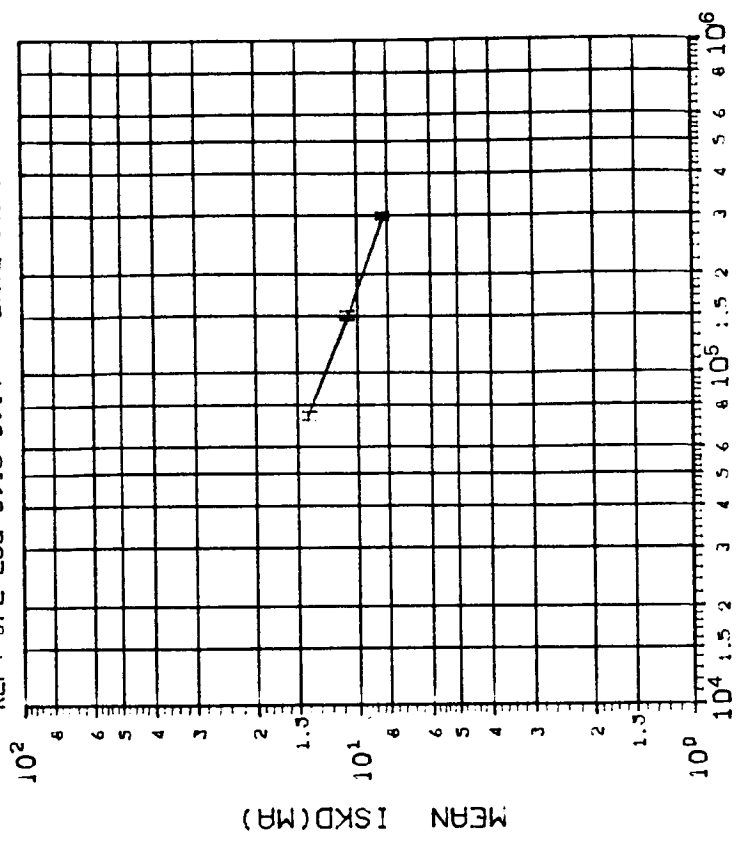
(7) ISKC (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300 600
	2.865 3.203 3.059 ****

INITIAL MEAN VALUE ISKC(MR) = 2.10X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136



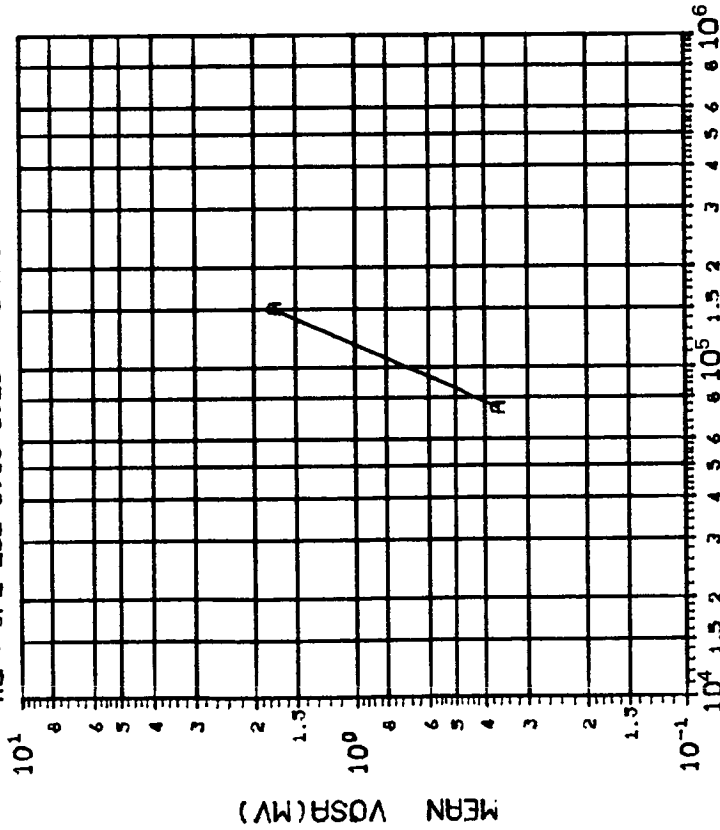
DOSE, rads(Si) Co 60 Gammas

(8) ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300 600
	2.307 2.936 2.916 ****

INITIAL MEAN VALUE ISKD(MR) = 2.09X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



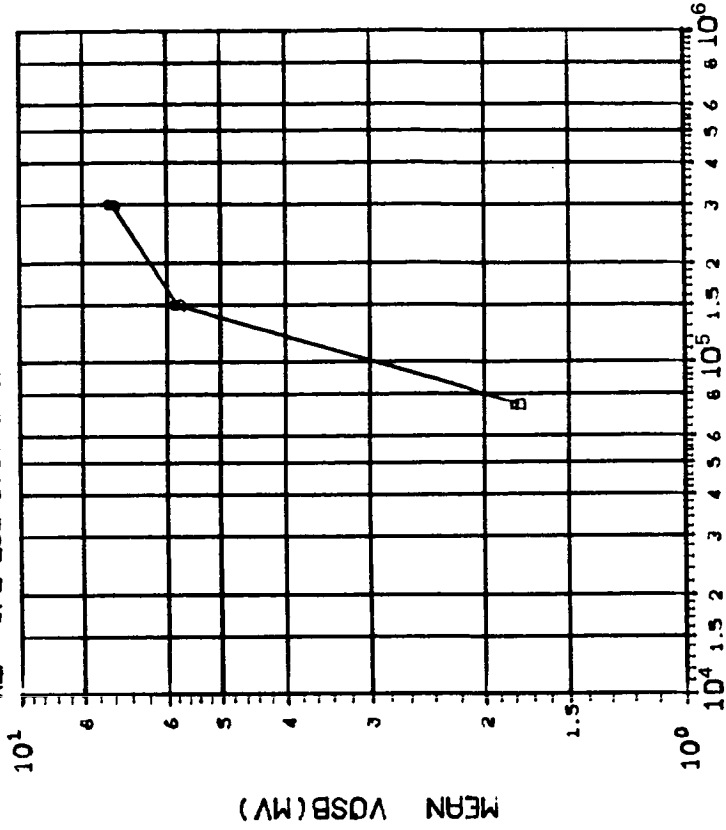
DOSE, rads(Si) Co⁶⁰ Gammas

(1)VOSA (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	1.309 9.764 ****

INITIAL MEAN VALUE VOSA(MV) = 6.20X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



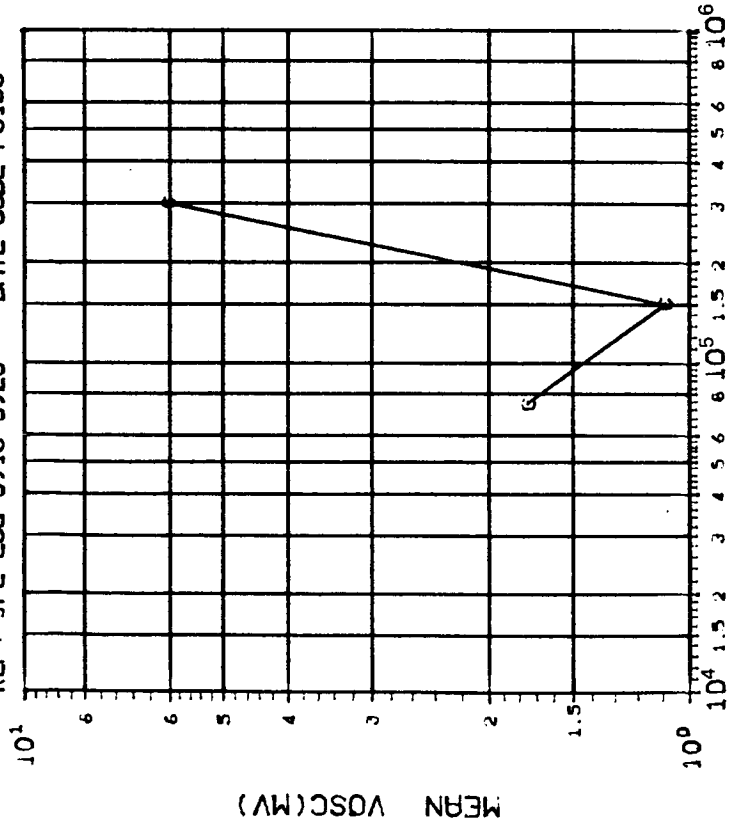
DOSE, rads(Si) Co⁶⁰ Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	2.666 5.604 12.20

INITIAL MEAN VALUE VOSB(MV) = 7.27X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136

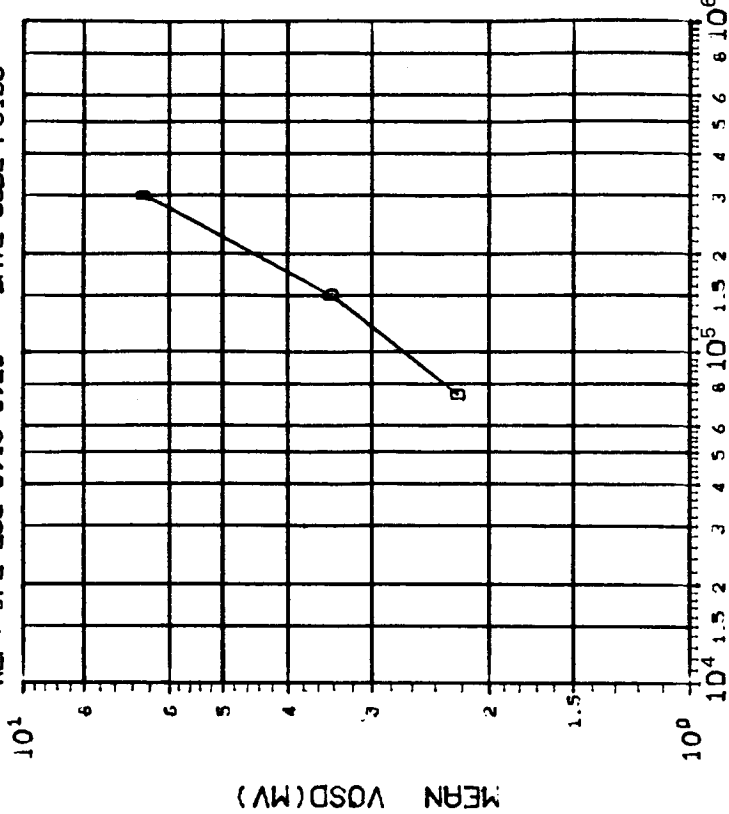


DOSE, rads(Si) Co⁶⁰ Gammas
 (3) VOSC (V₀=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300

INITIAL MEAN VALUE VOSC(MV) = 6.58X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



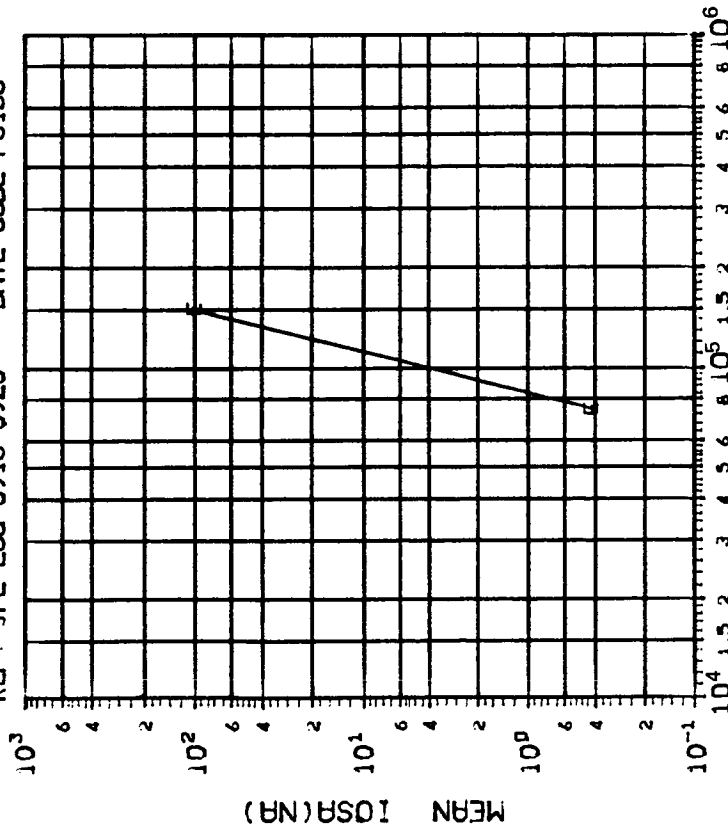
DOSE, rads(Si) Co⁶⁰ Gammas
 (4) VOSD (V₀=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300

INITIAL MEAN VALUE VOSD(MV) = 9.45X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(5110SA (VO=0) IN NA: VS DOSE

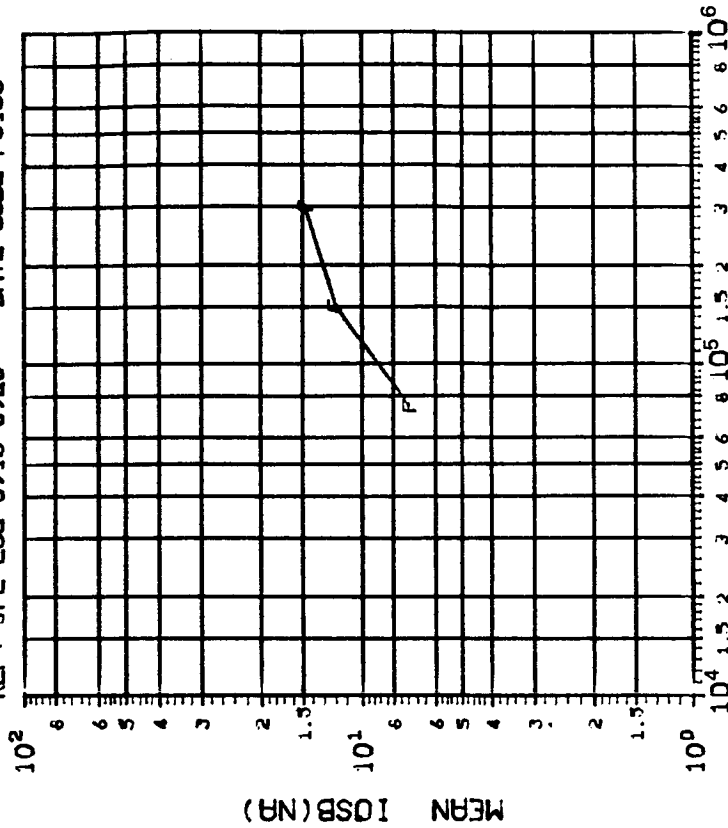
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
E	75 150 300
	18.18 190.7 ****

INITIAL MEAN VALUE IOSA(NA) = 2.65X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(6110SB (VO=0) IN NA: VS DOSE

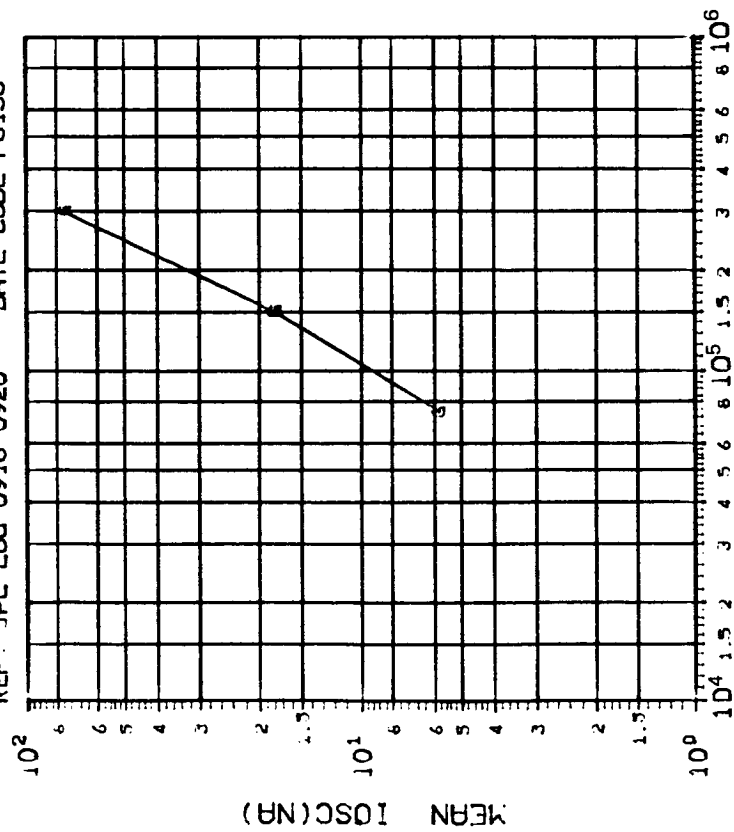
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
F	75 150 300
	6.618 16.00 40.73

INITIAL MEAN VALUE IOSB(NA) = 2.21X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-63
 REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

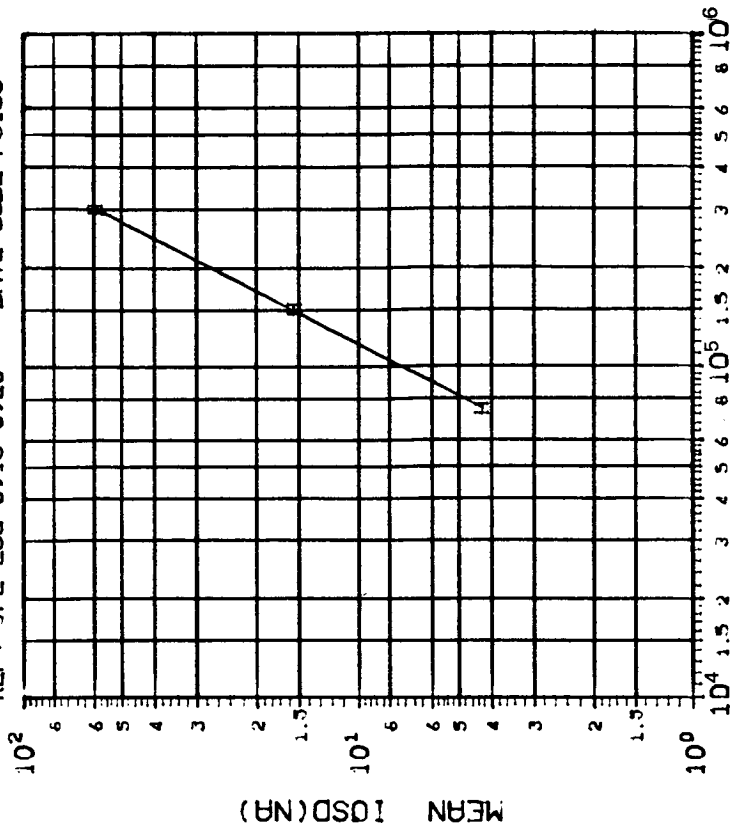
(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	3.995 20.32 123.9

INITIAL MEAN VALUE IOSC(NA) = 3.34X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-63
 REF: JPL LOG 0918-0920 DATE CODE F8136



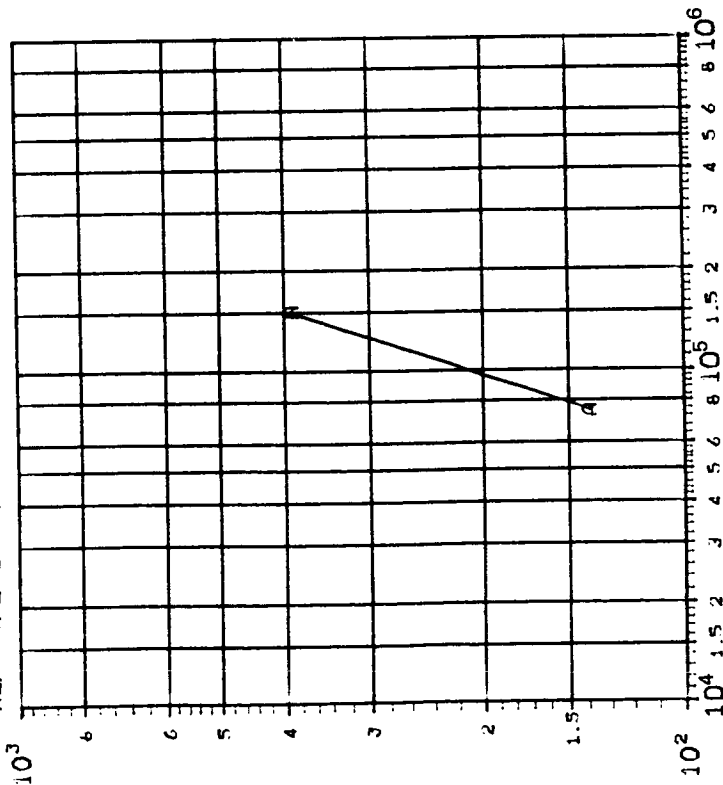
DOSE, rads(Si) Co 60 Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	4.696 6.170 27.56

INITIAL MEAN VALUE IOSD(NA) = 2.77X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



MEAN IBR(NA)

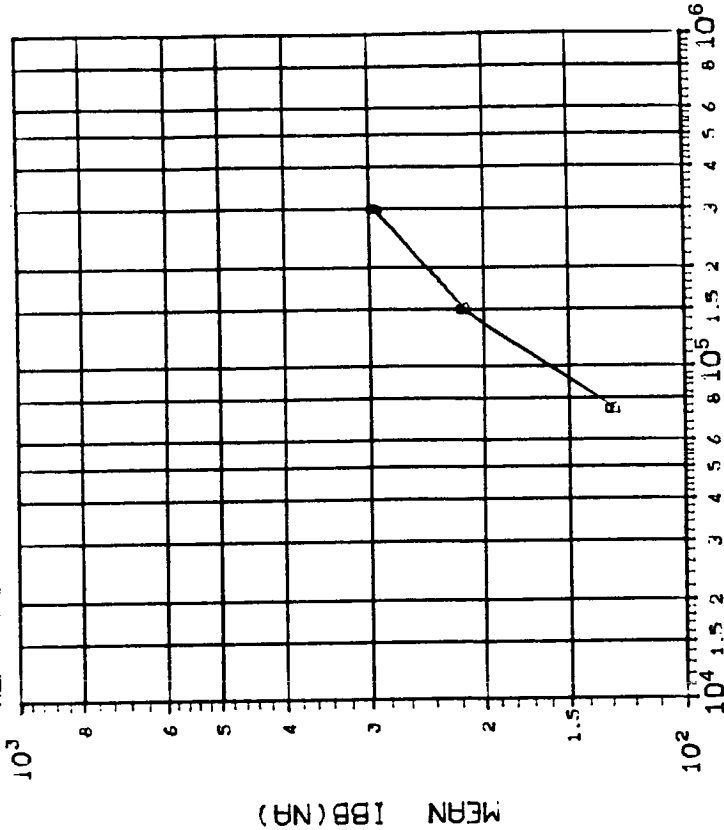
DOSE, rads(Si) Co⁶⁰ Gammas

(1)IBR (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	41.75 249.2 ****

INITIAL MEAN VALUE IBR(NA) = 2.26X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



MEAN IBB(NA)

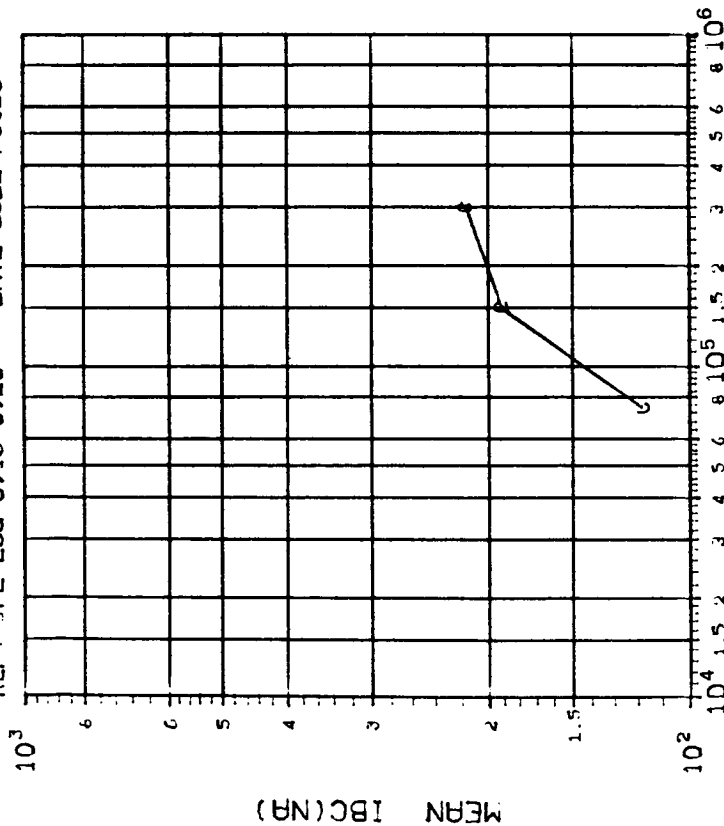
DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	18.63 42.05 146.7

INITIAL MEAN VALUE IBB(NA) = 2.14X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



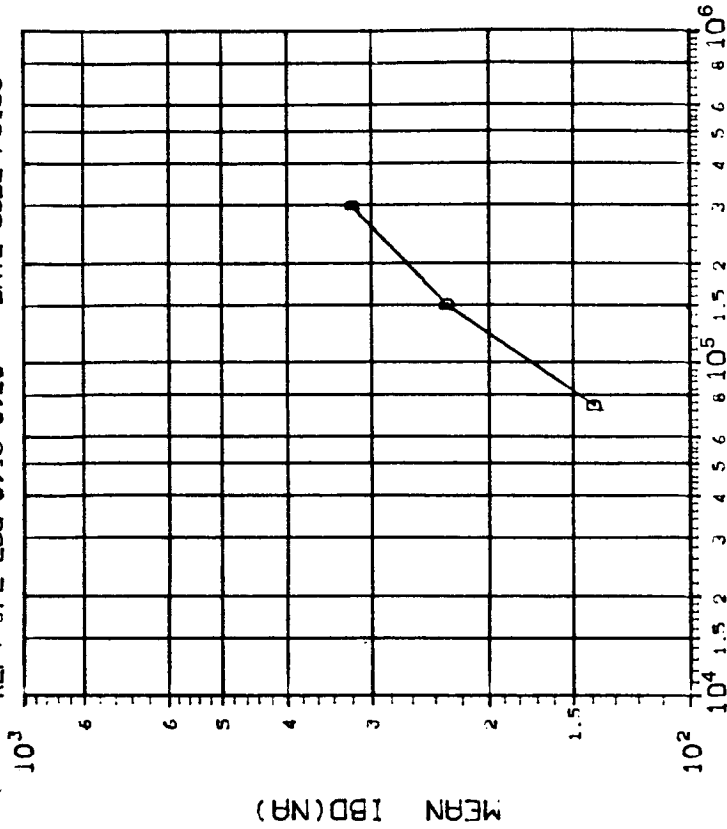
DOSE, rads(Si) Co⁶⁰ Gammas

(3)IBC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
204.3	

INITIAL MEAN VALUE IBC(NA) = 2.16X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(4)IBD (V0=0) IN NA: VS DOSE

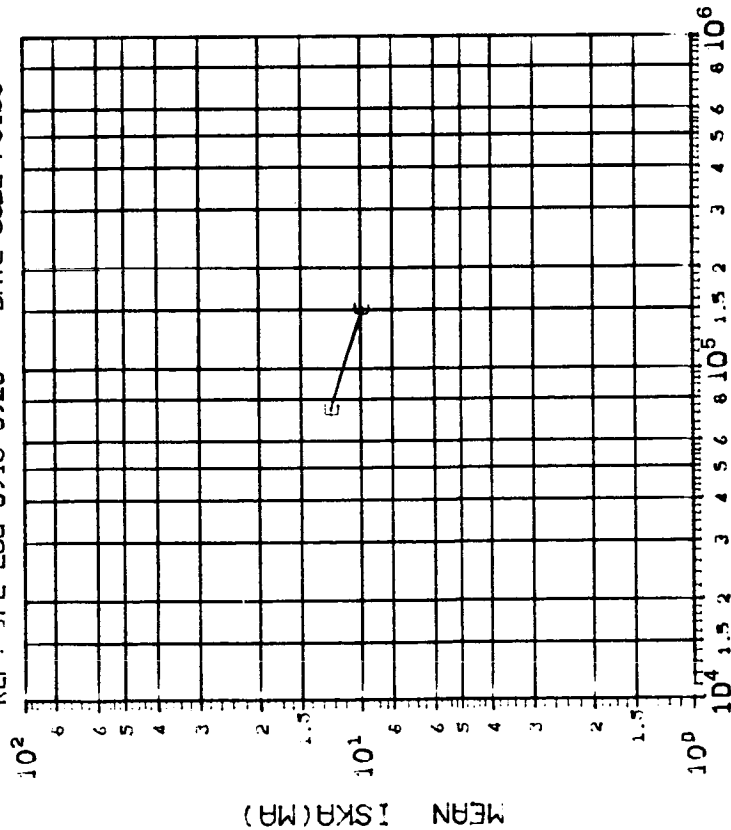
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
93.59	

INITIAL MEAN VALUE IBD(NA) = 2.09X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

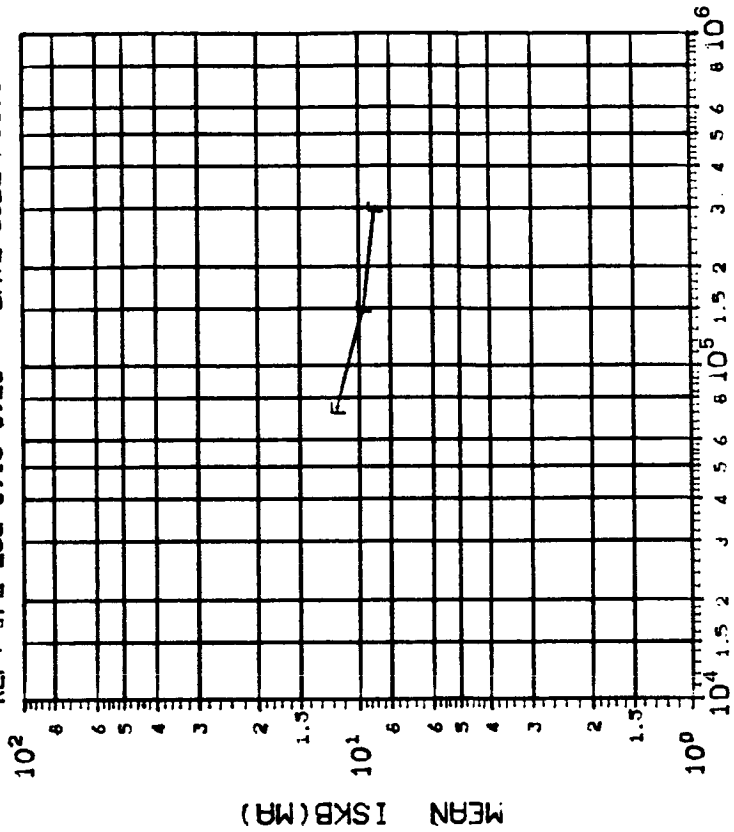
REF: JPL LOG 0918-0920 DATE CODE F8136



DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



(5) ISKA (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
E	2.559 4.699 ****

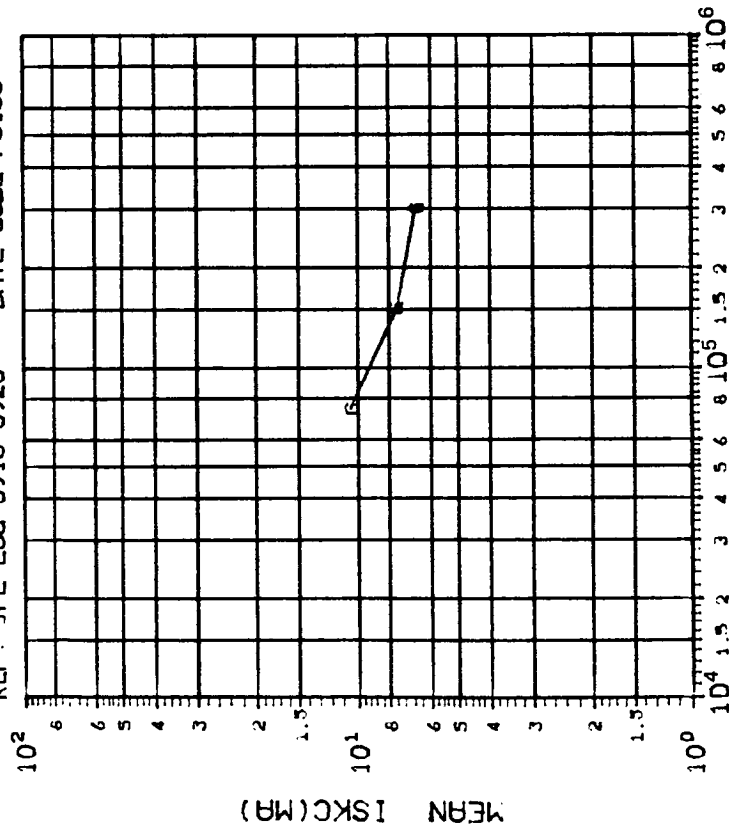
INITIAL MEAN VALUE ISKA(MA) = 1.97X10¹

(6) ISKB (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
F	2.960 3.609 4.430

INITIAL MEAN VALUE ISKB(MA) = 1.95X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



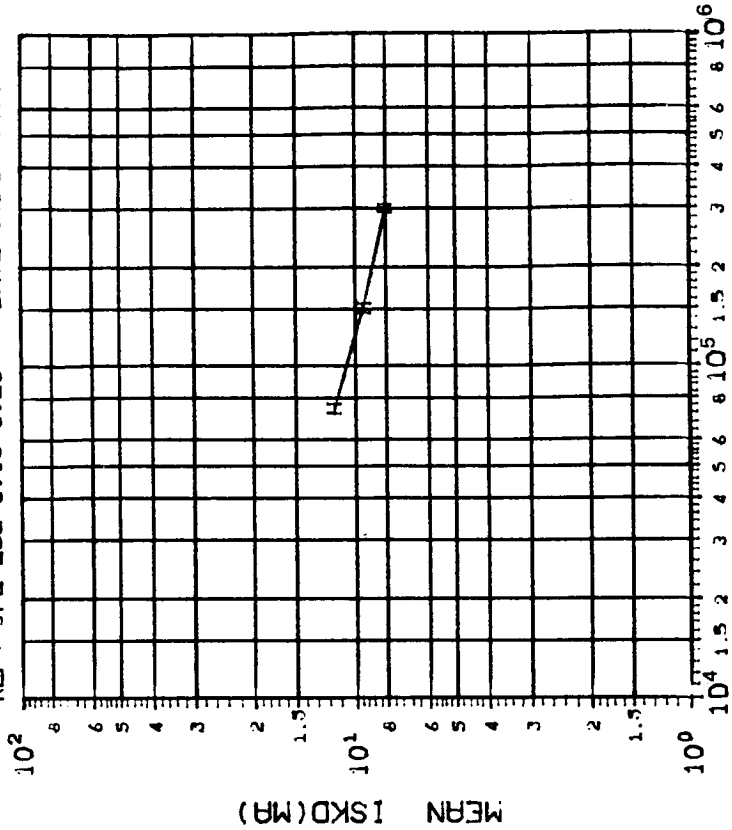
DOSE, rads(Si) Co⁶⁰ Gammas

(7) ISKC (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	2.025 2.467 3.152

INITIAL MEAN VALUE ISKC(MA) = 1.91X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

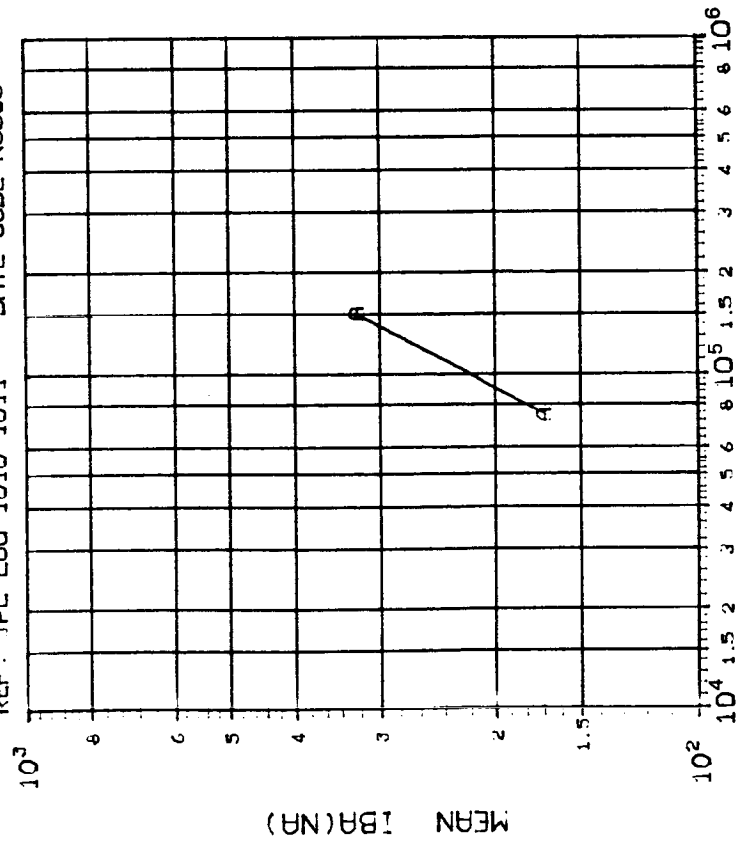
(8) ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	2.072 2.524 2.994

INITIAL MEAN VALUE ISKD(MA) = 1.85X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83
 REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

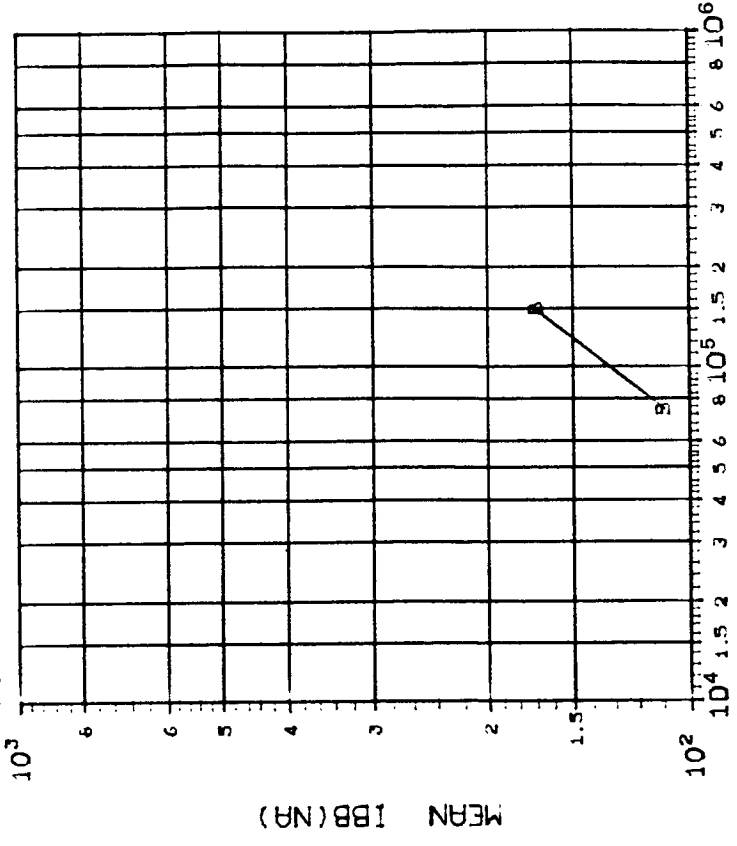
(1)IBA (V0=0) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	62.33 198.0 ****

INITIAL MEAN VALUE IBA(NA) = 1.40X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83
 REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(2)IBB (V0=0) IN MA: VS DOSE

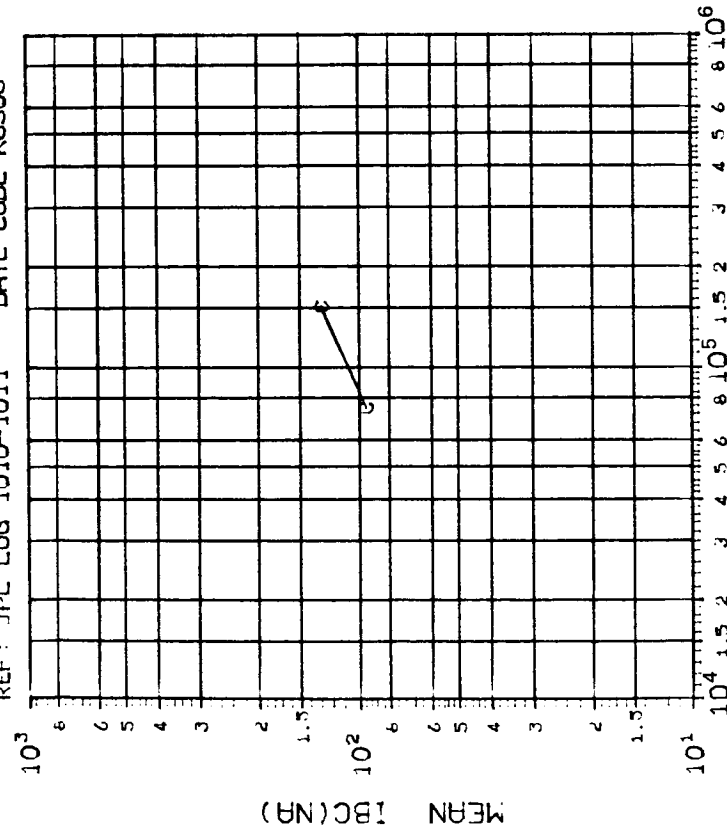
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	46.62 87.99 ****

INITIAL MEAN VALUE IBB(NA) = 1.43X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(3)IBC (V0=0) IN MA: VS DOSE

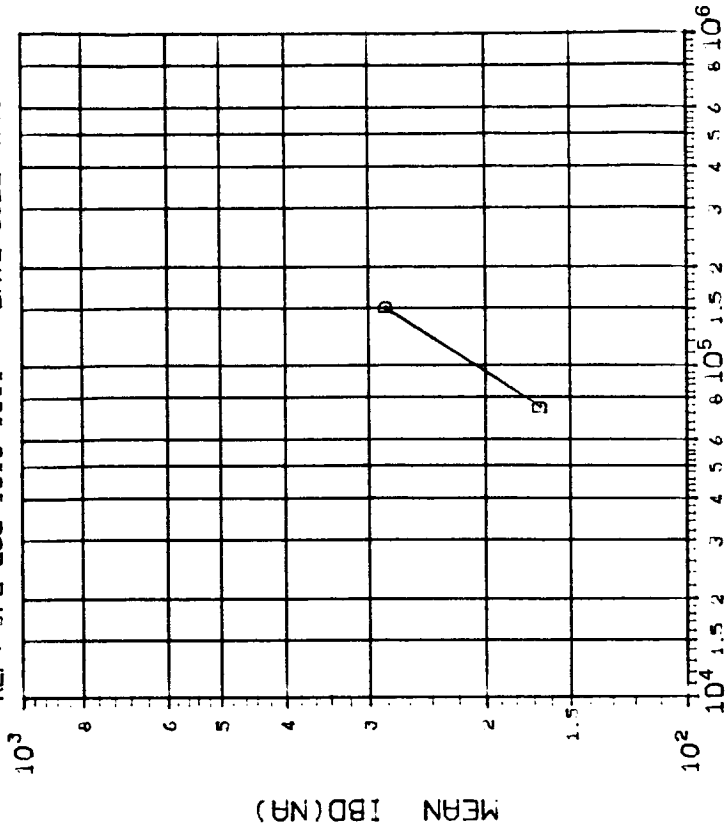
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	32.52 46.02 ****

INITIAL MEAN VALUE IBC(NA) = 1.43X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (V0=0) IN MA: VS DOSE

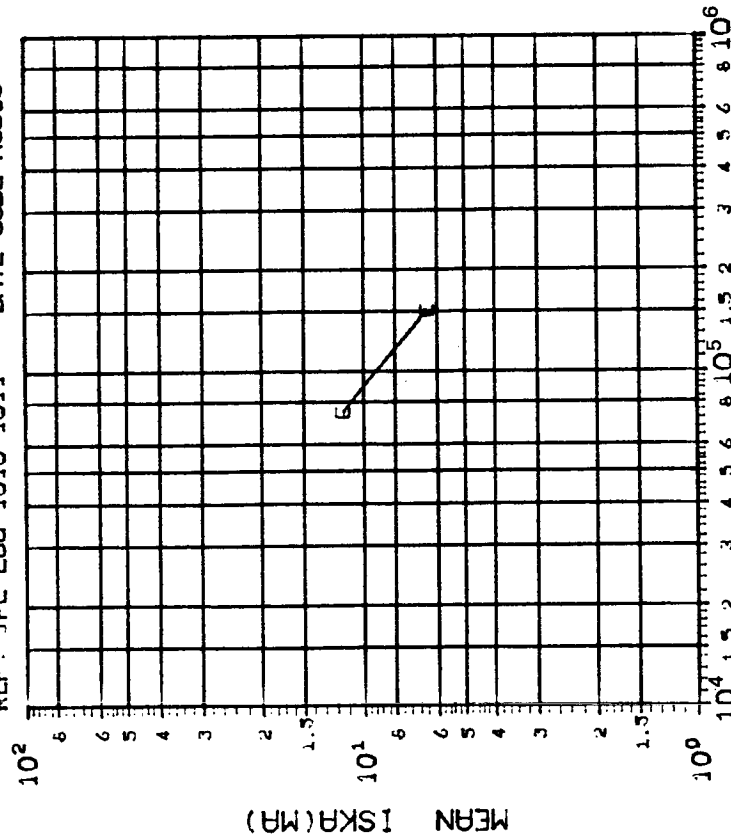
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	64.41 172.5 ****

INITIAL MEAN VALUE IBD(NA) = 1.37X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



(5) ISKA (VO=-V+1.5V, VIN=-100MV) IN VS DOSE

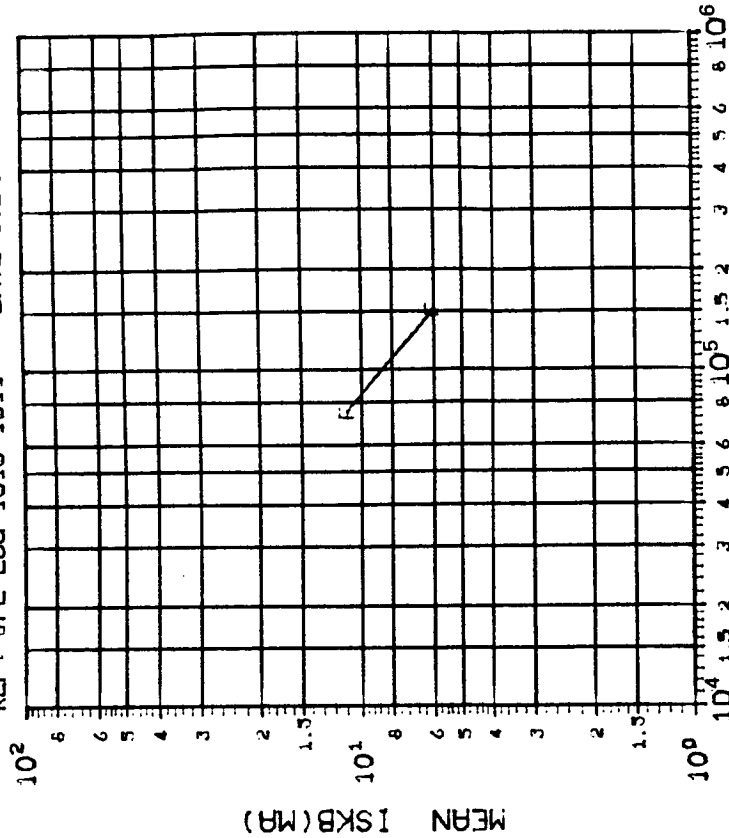
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	4.637 4.698 ****

INITIAL MEAN VALUE ISKA(MA) = 2.81X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



(6) ISKB (VO=-V+1.5V, VIN=-100MV) IN VS DOSE

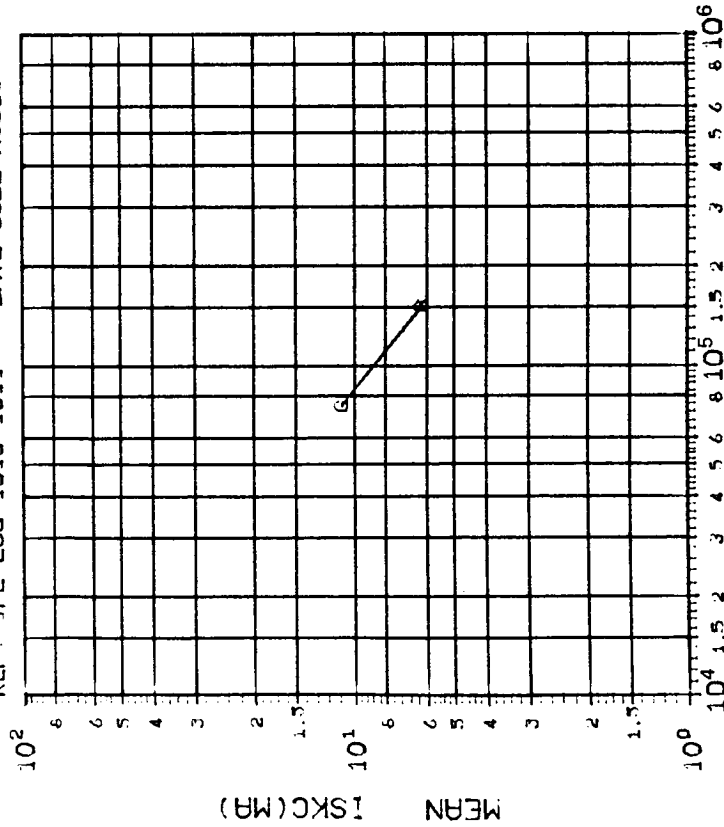
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	4.396 4.496 ****

INITIAL MEAN VALUE ISKB(MA) = 2.80X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(7)ISK (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

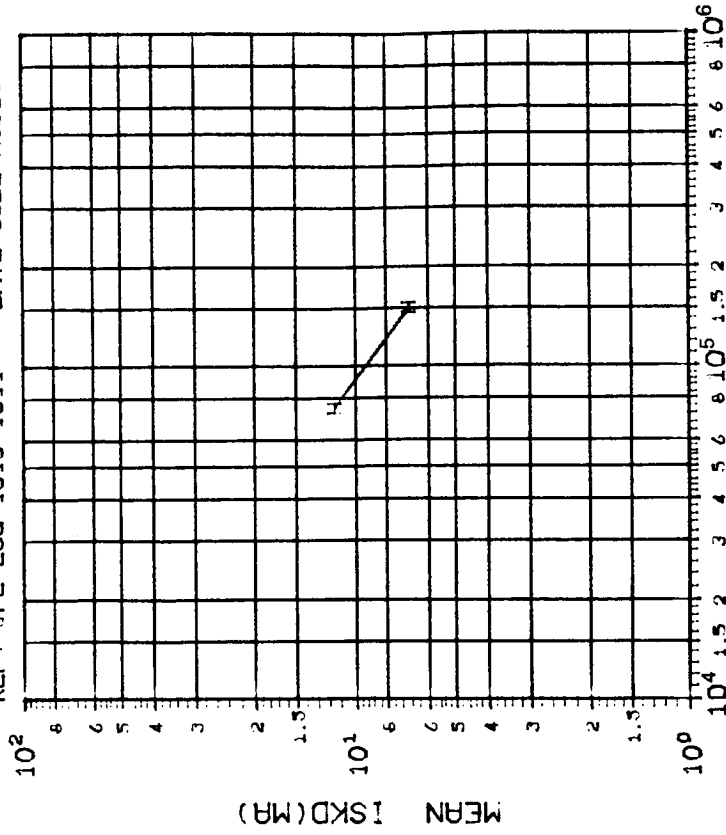
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	3.862 4.006 ****

INITIAL MEAN VALUE ISK(MA) = 2.75X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(8)ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

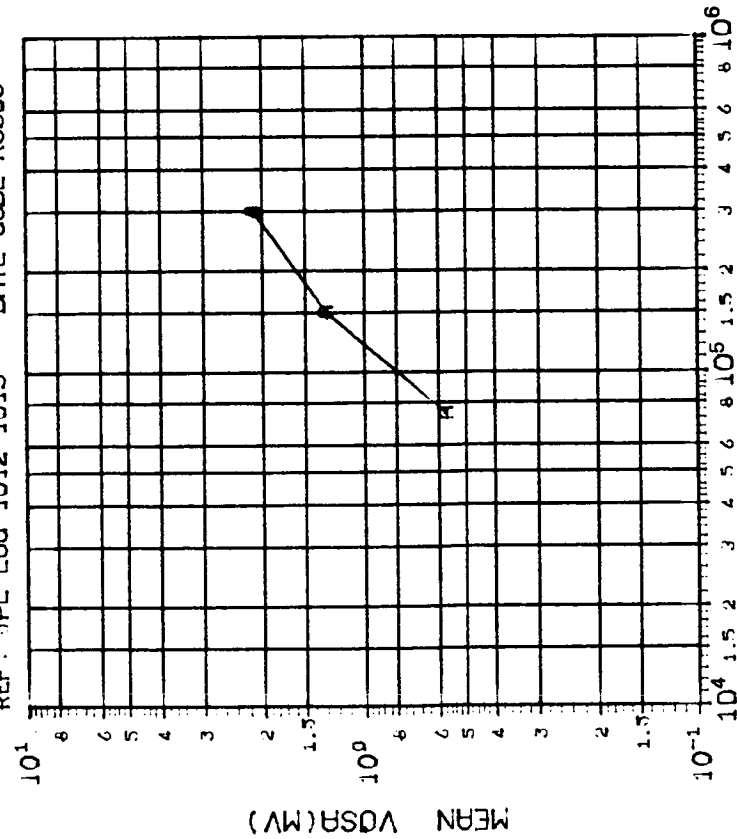
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	3.966 4.216 ****

INITIAL MEAN VALUE ISKD(MA) = 2.74X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(1) VQSA (VO=OV) IN MV: VS DOSE

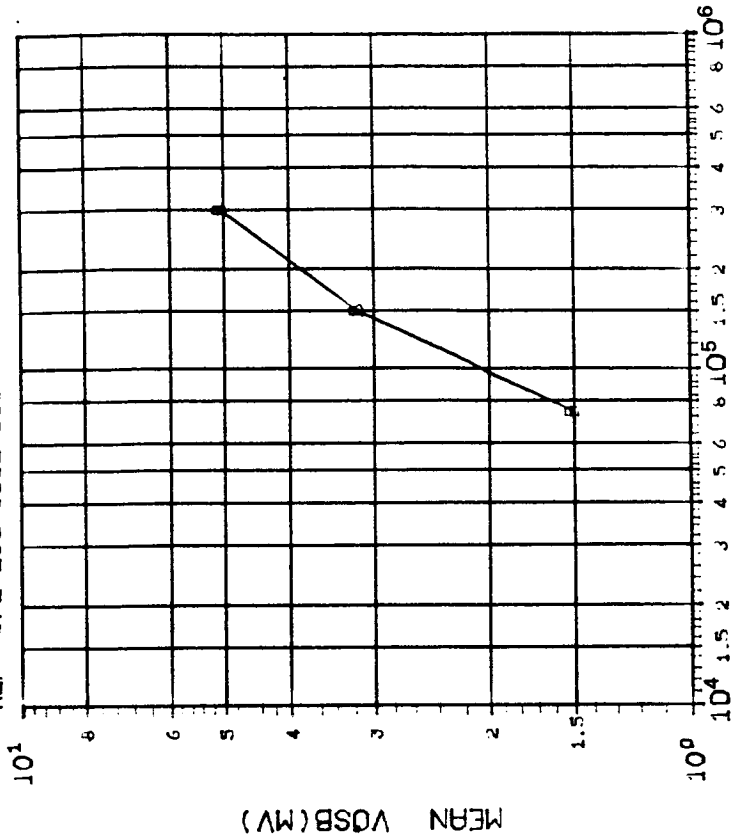
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.7690 1.150 2.176

INITIAL MEAN VALUE VQSA(MV) = 2.98×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

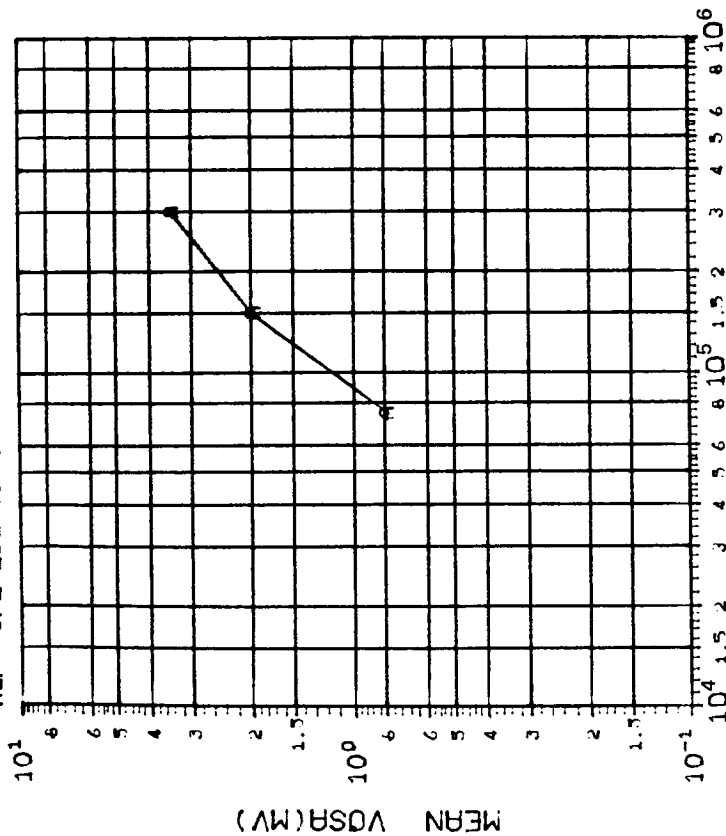
(2) VOSB (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	1.285 2.103 4.411

INITIAL MEAN VALUE VOSB(MV) = 7.84×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

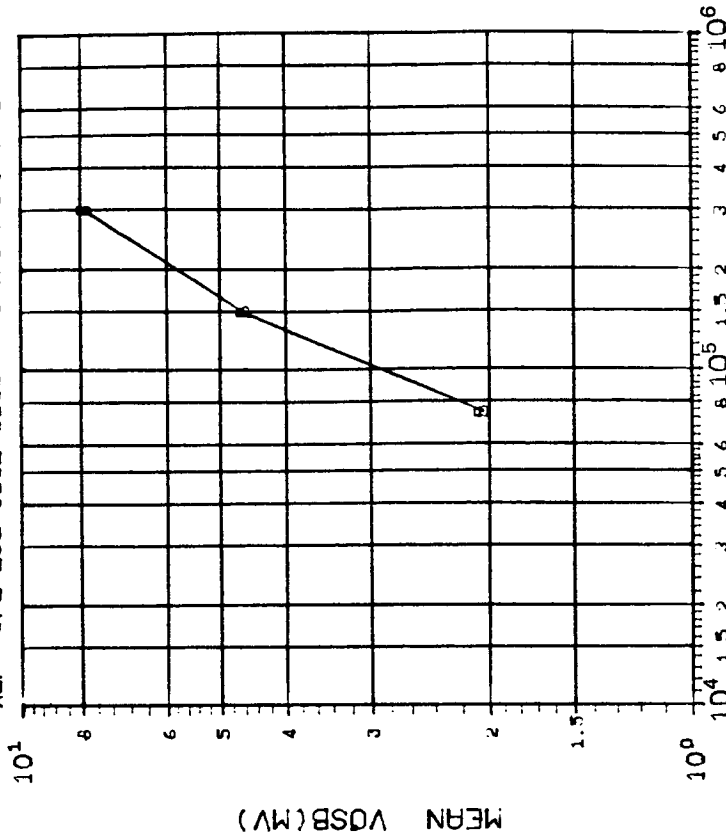
(1)VOSA (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	1.099 1.706 2.613

INITIAL MEAN VALUE VOSA(MV) = 1.27X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(2)VOSB (V0=0V) IN MV: VS DOSE

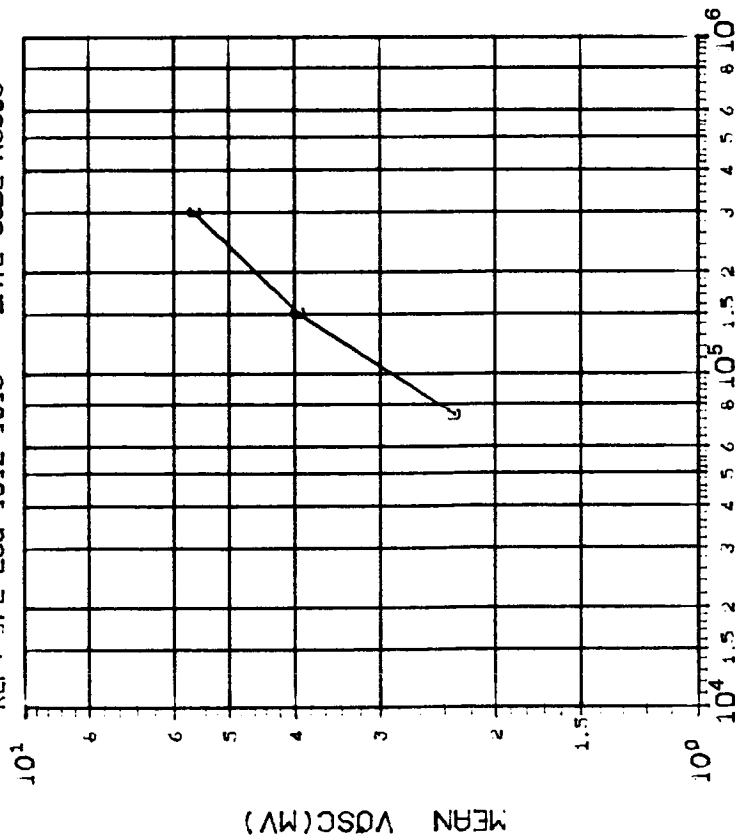
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.6440 2.255 4.983

INITIAL MEAN VALUE VOSB(MV) = 2.11X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(3)VOSC (V0=0V) IN MV: VS DOSE

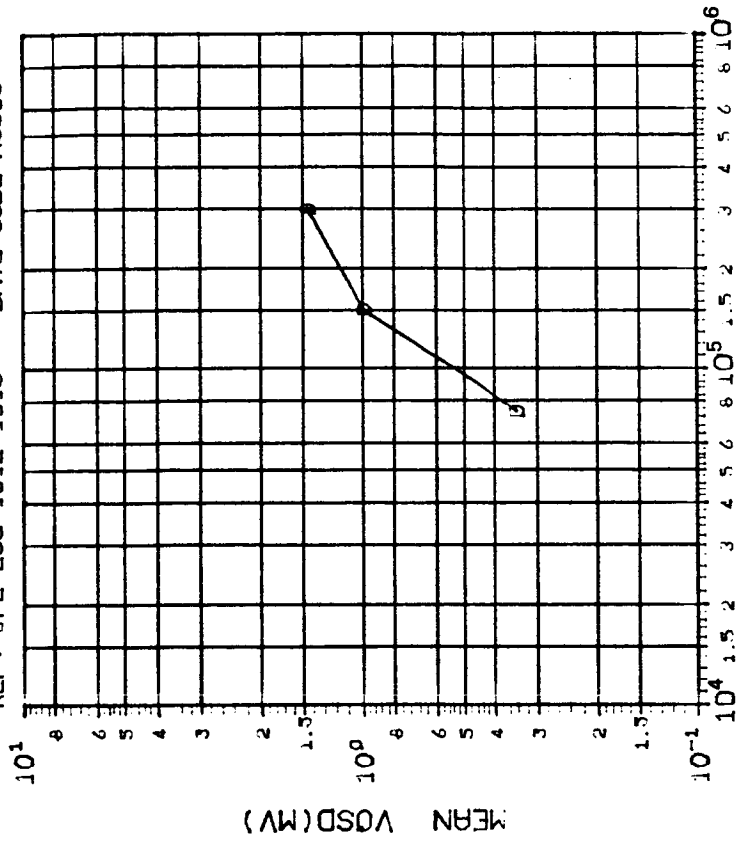
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	1.690 2.515 3.957

INITIAL MEAN VALUE VOSC(MV) = 6.41X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



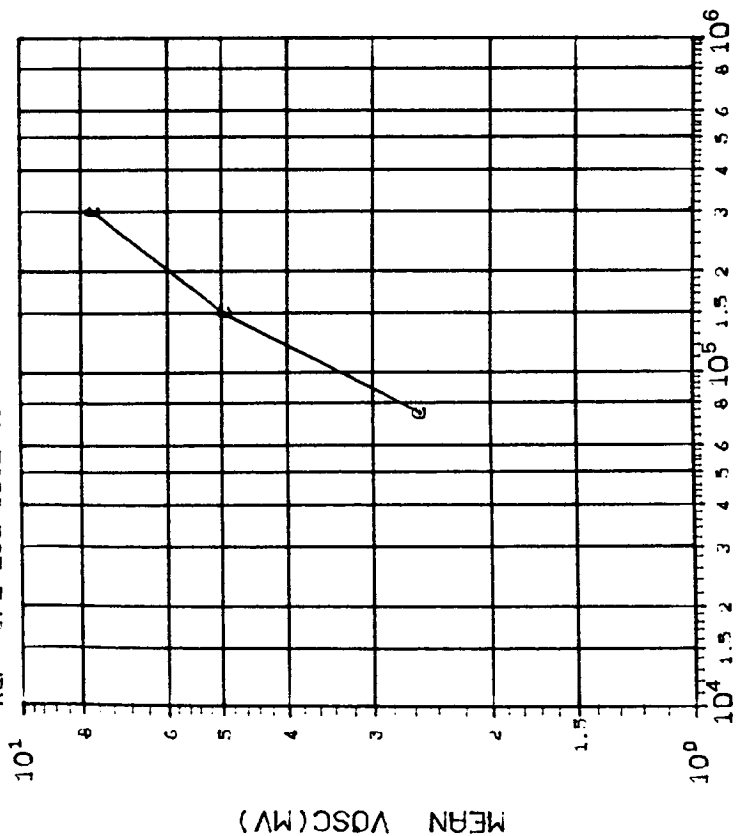
DOSE, rads(Si) Co 60 Gammas

(4)VOSD (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
D	1.510 1.761 2.510

INITIAL MEAN VALUE VOSD(MV) = 1.49X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



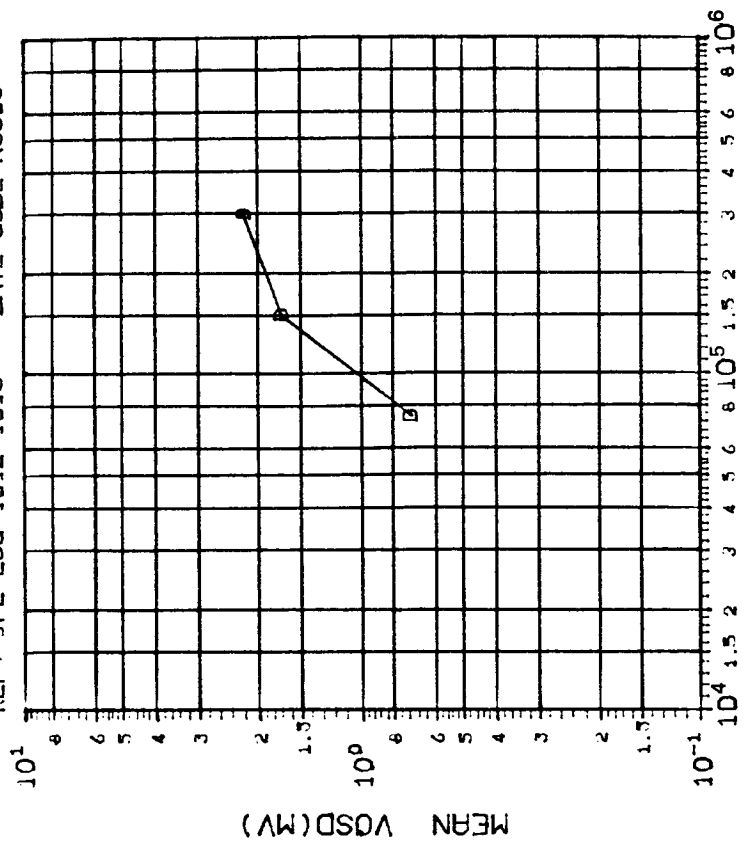
DOSE, rads(Si) Co⁶⁰ Gammas

(3) VOSC (V₀=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	1.608 2.987 4.909

INITIAL MEAN VALUE VOSC(MV) = 1.43X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

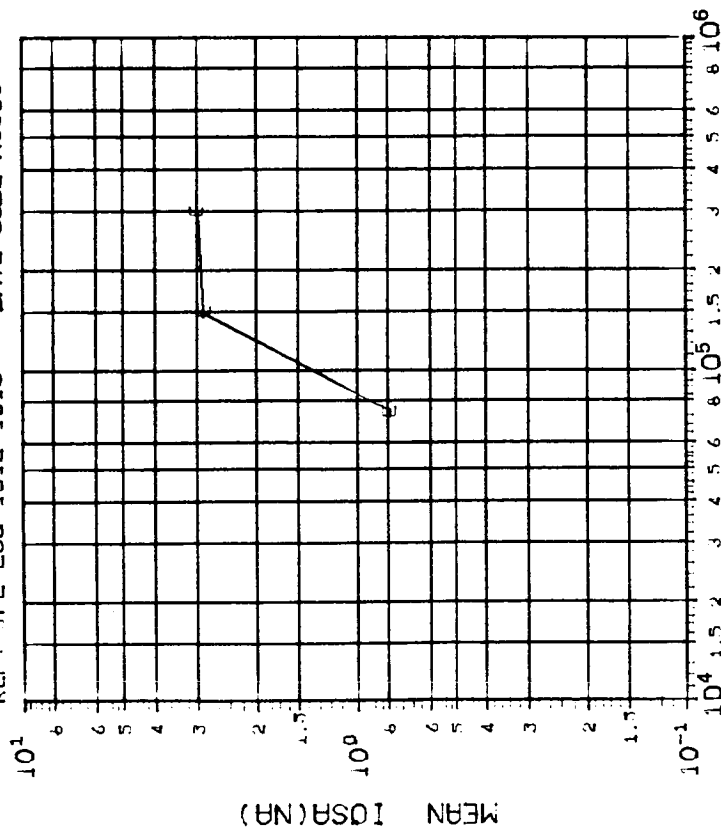
(4) VOVD (V₀=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	1.045 1.516 1.653

INITIAL MEAN VALUE VOVD(MV) = 6.77X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

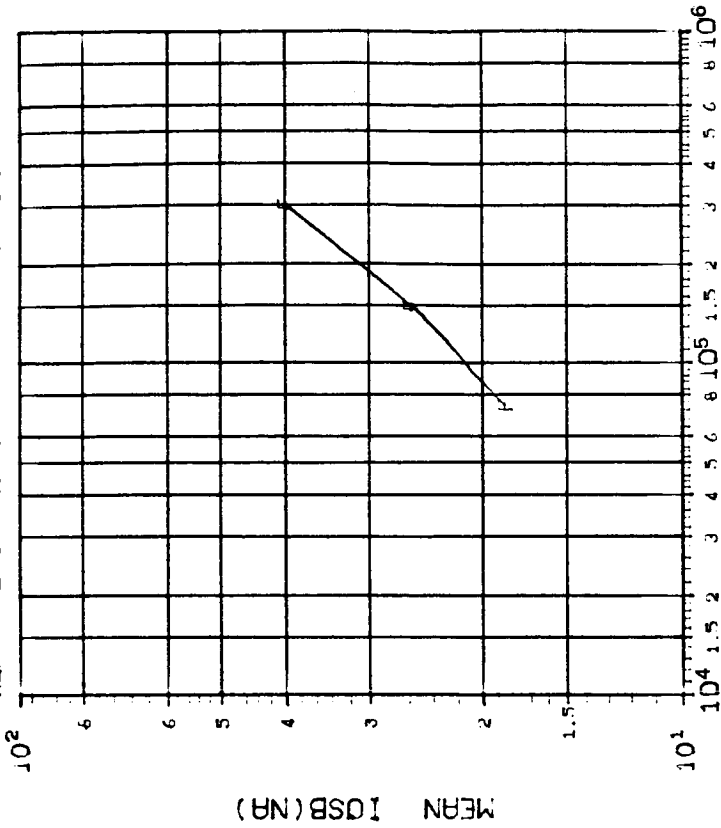
(5)IOSA (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	4.430 7.631 10.68

INITIAL MEAN VALUE IOSA(NA) = 5.21X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

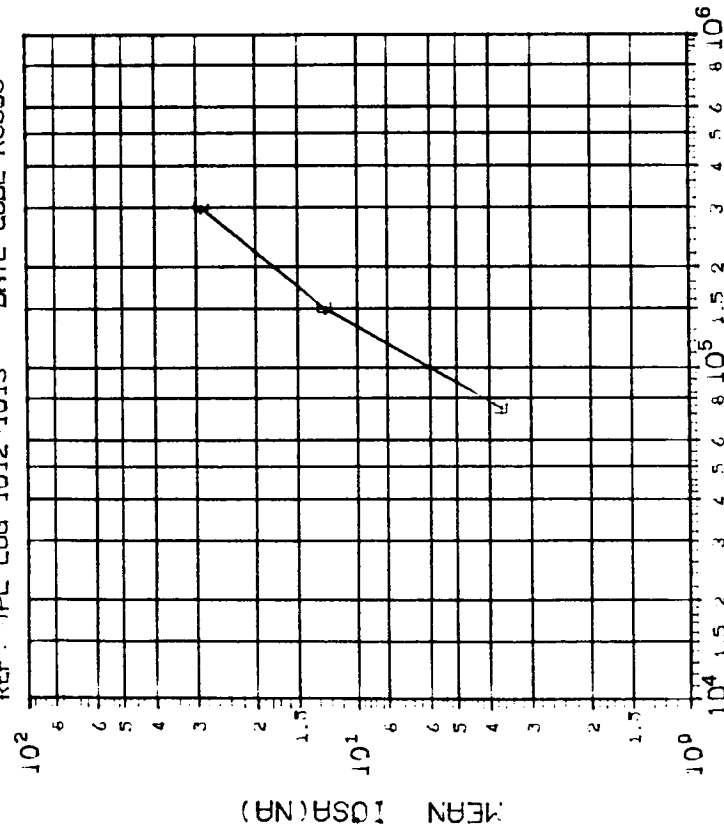
(6)IOSB (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	12.14 24.63 48.04

INITIAL MEAN VALUE IOSB(NA) = 4.47X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

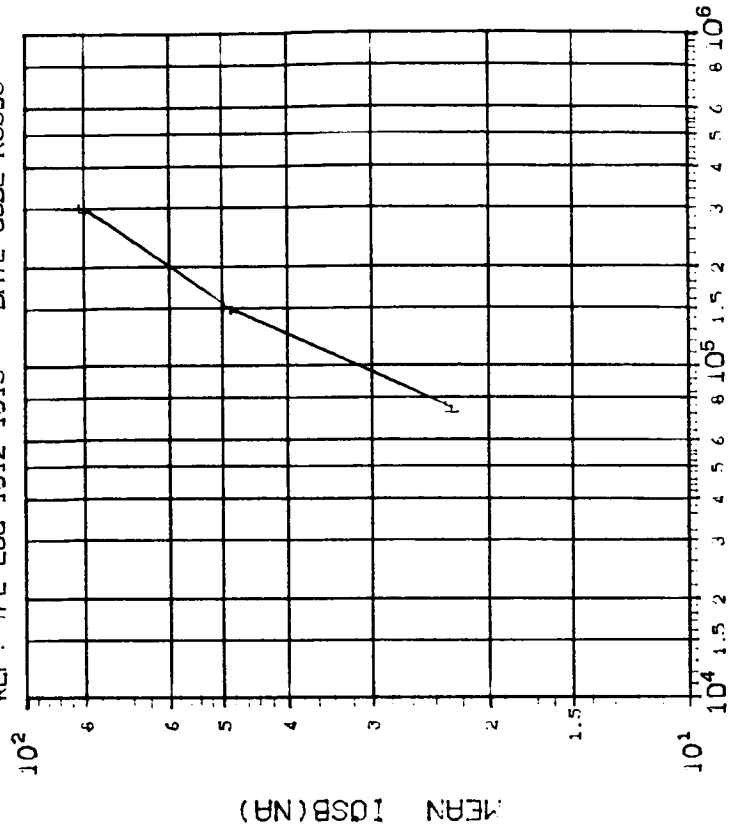
(51105A (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	6.544 21.72 45.08

INITIAL MEAN VALUE I0SR(NA) = 4.50X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

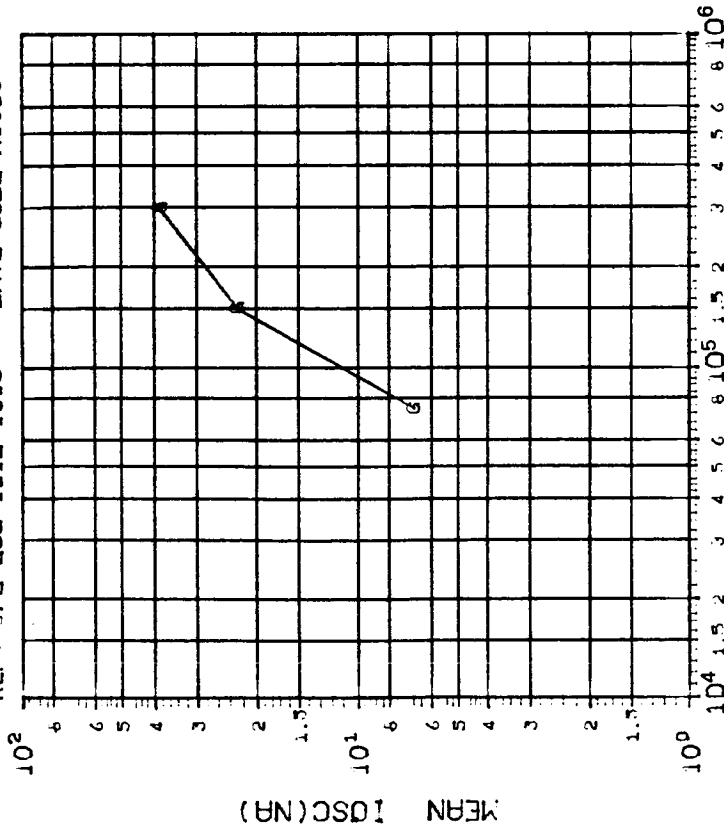
(61105B (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	13.19 44.42 81.55

INITIAL MEAN VALUE I0SB(NA) = 4.51X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

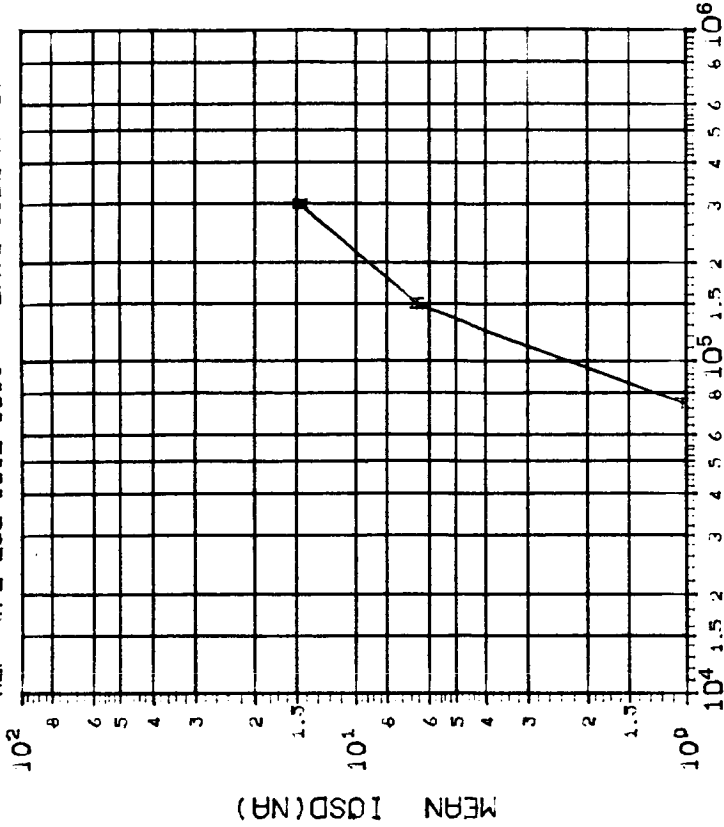
(7)10SC (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	7.159 28.33 53.32

INITIAL MEAN VALUE 10SC(NA) = 5.32X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

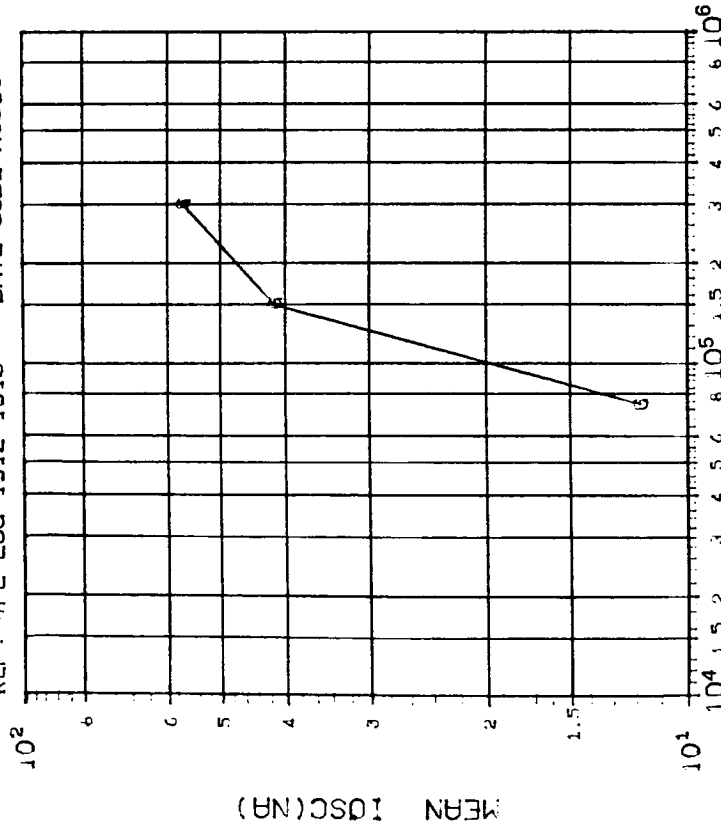
(8)10SD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	7.916 15.23 22.68

INITIAL MEAN VALUE 10SD(NA) = 4.86X10⁻⁹

DEVICE TYPE: LM139 OUPD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

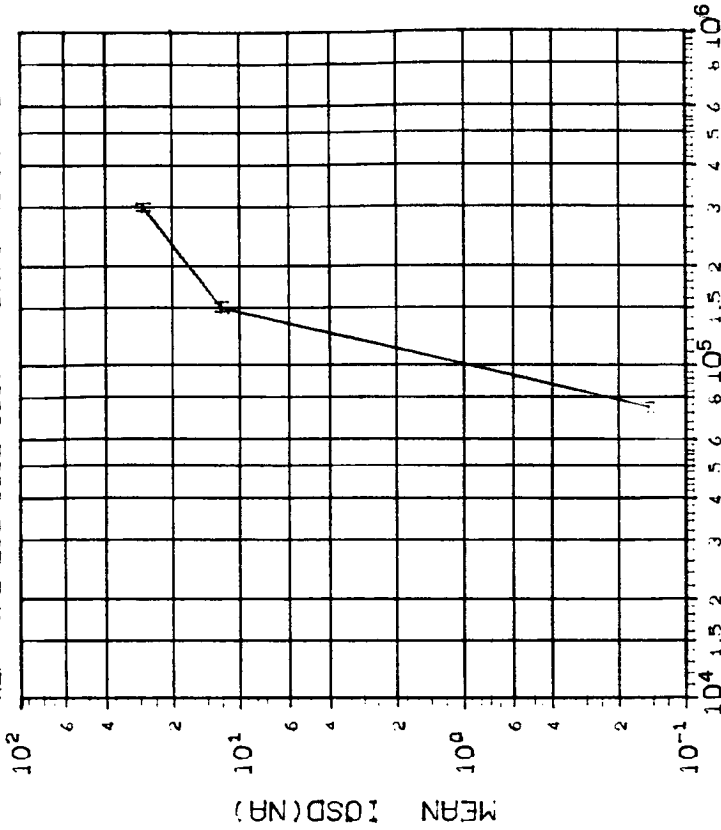
(7)IOSC (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	8.642 34.59 46.62

INITIAL MEAN VALUE IOSC(NA) = 5.24X10⁻⁹

DEVICE TYPE: LM139 OUPD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

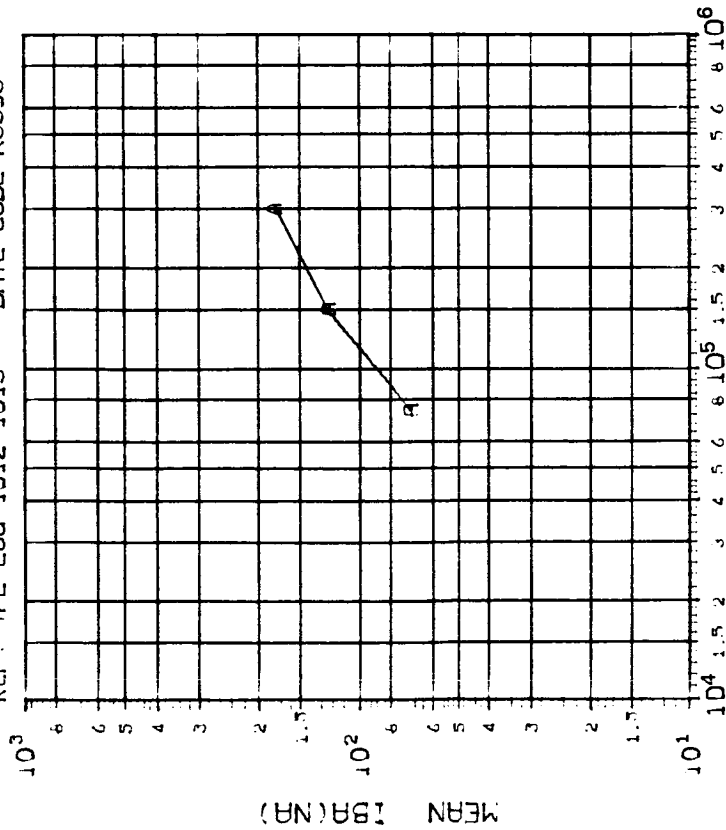
(8)IOSD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	8.610 29.41 53.62

INITIAL MEAN VALUE IOSD(NA) = 4.83X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

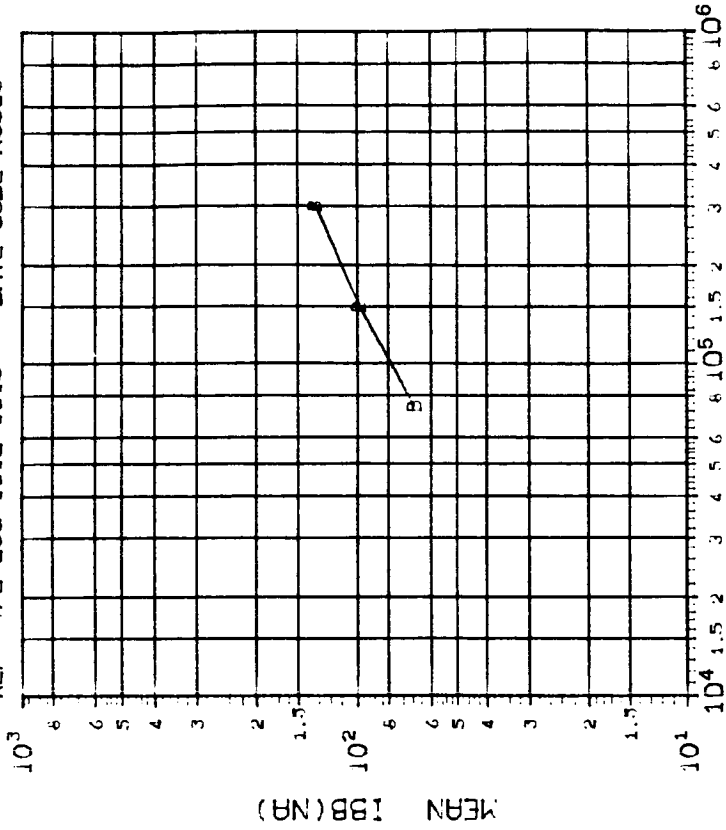
(1)1BA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	28.31 76.70 123.7

INITIAL MEAN VALUE IBA(NA) = 1.43X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

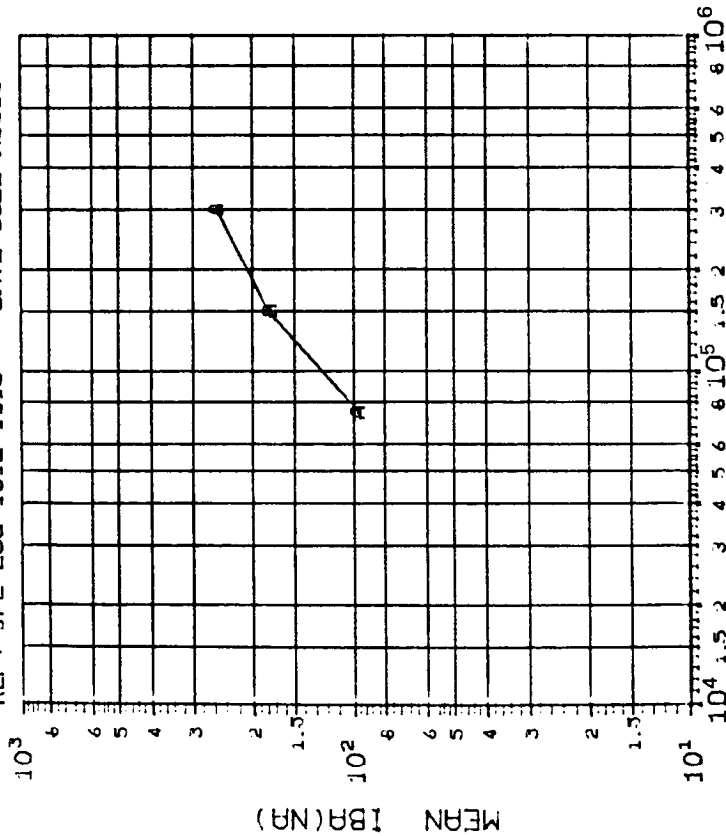
(2)1BB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	26.41 59.60 80.48

INITIAL MEAN VALUE IBB(NA) = 1.40X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

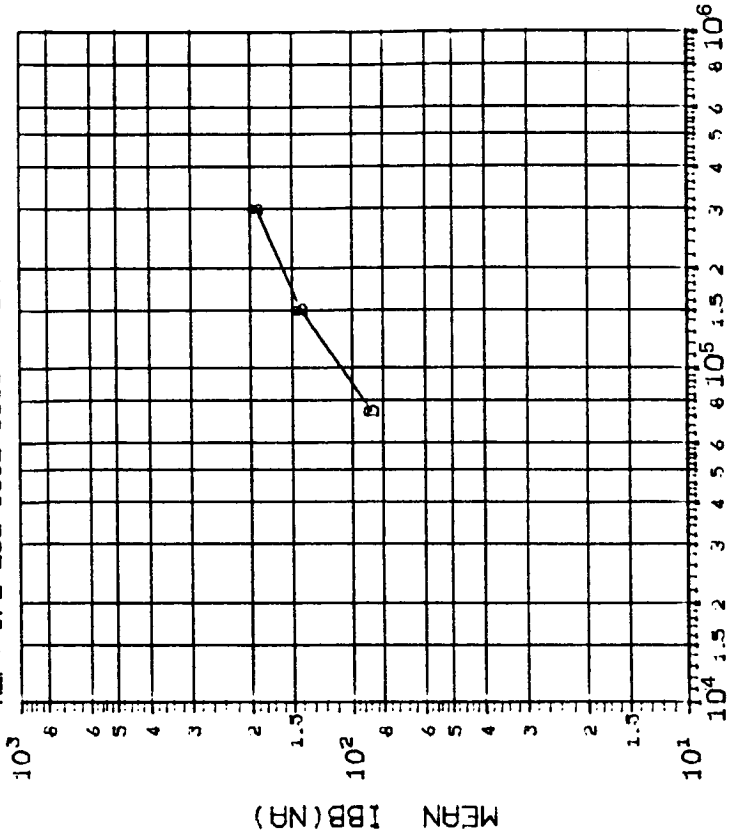
(1)IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	41.66 101.0 158.6

INITIAL MEAN VALUE IBA(NA) = 1.49X10²¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



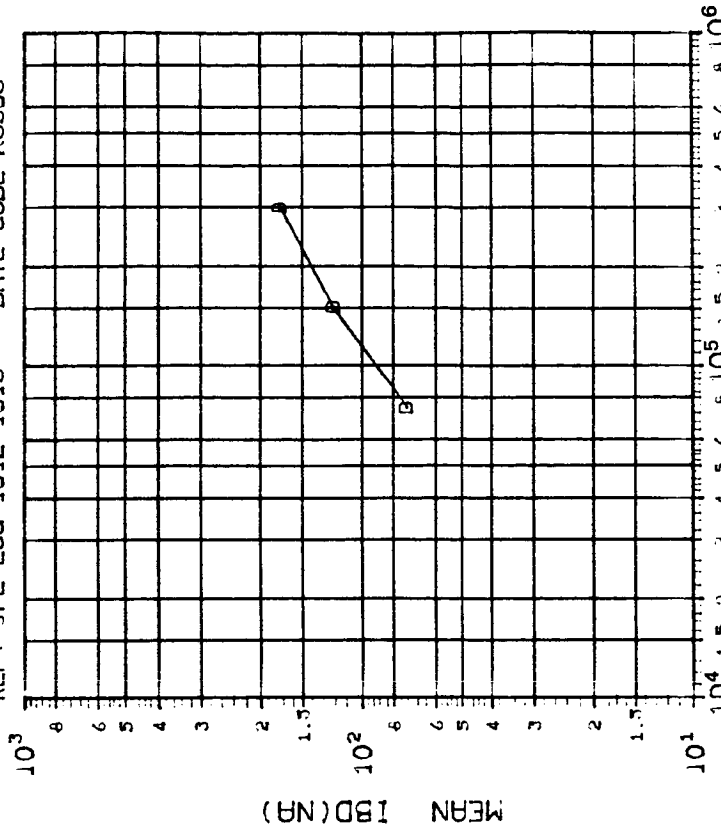
DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	35.58 64.41 119.4

INITIAL MEAN VALUE IBB(NA) = 1.52X10²¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



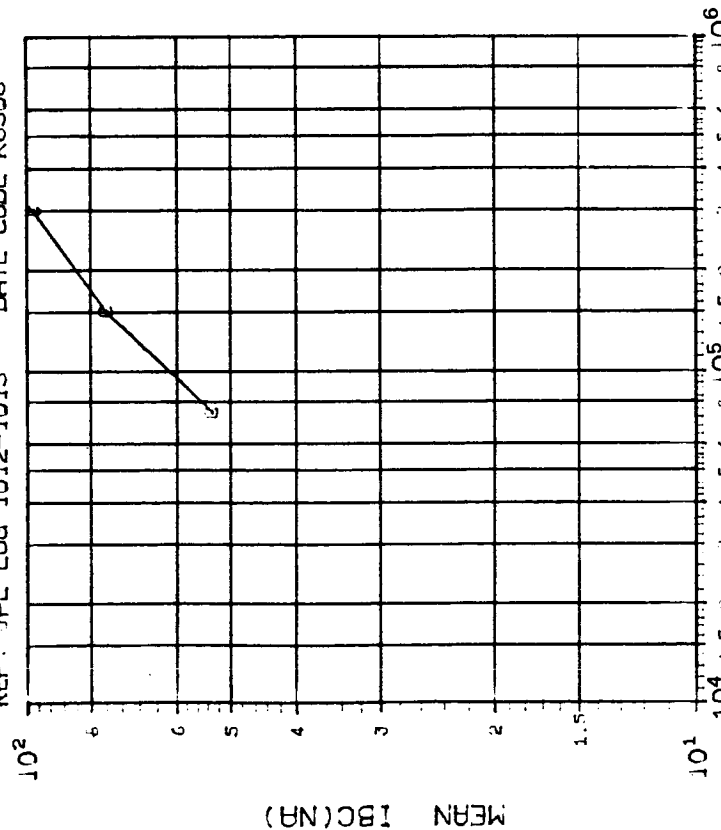
DOSE, rads(Si) Co 60 Gammas

(4)IBD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	36.18 91.65 148.2

INITIAL MEAN VALUE IBD(NA) = 1.36X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

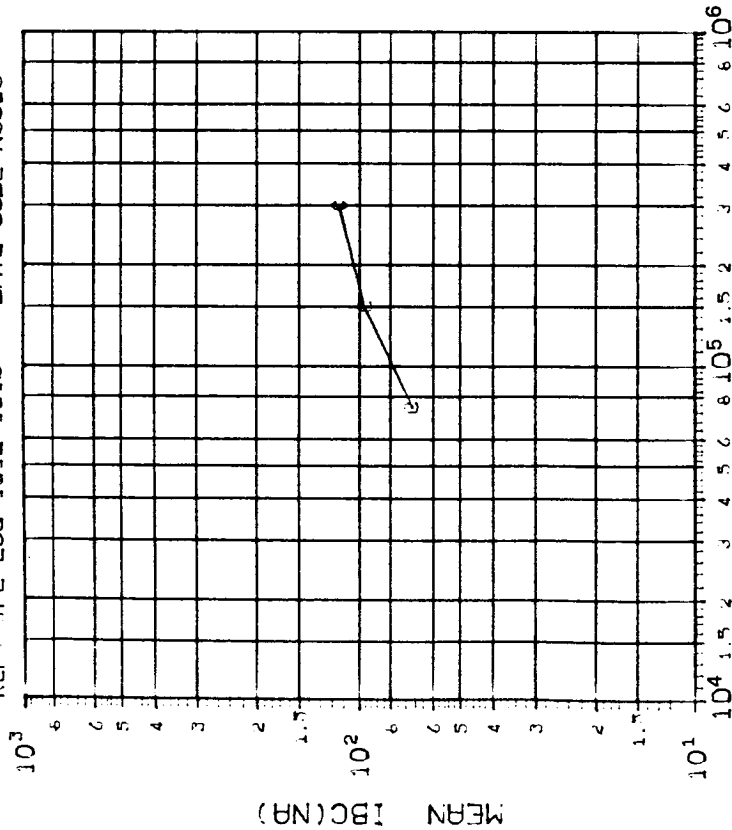
(3)IBC (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	20.05 36.46 34.19

INITIAL MEAN VALUE IBC(NA) = 1.44X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

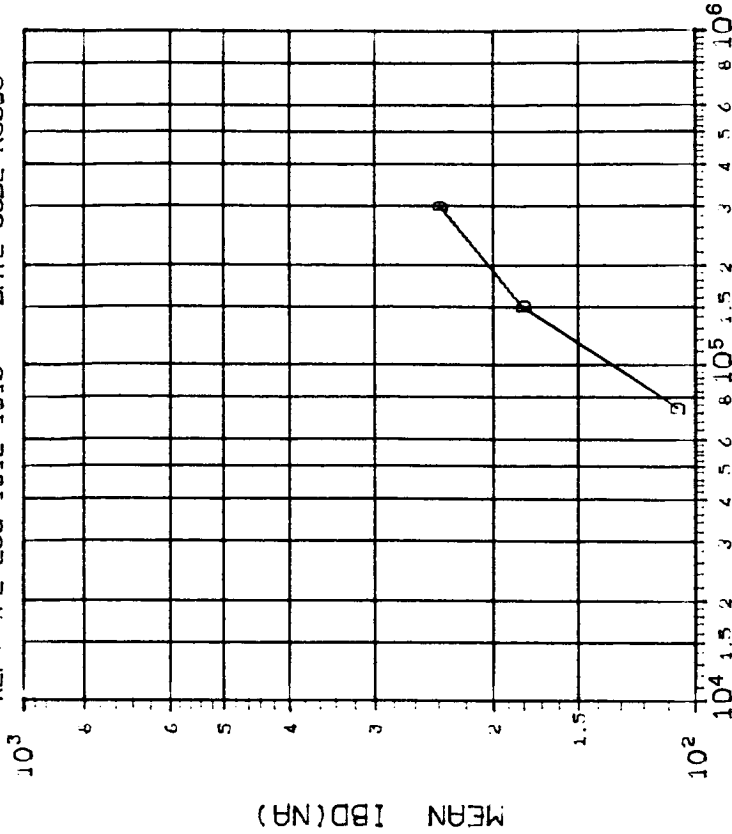
(3)IBC (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	26.23 37.67 34.55

INITIAL MEAN VALUE IBC(NA) = 1.55X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

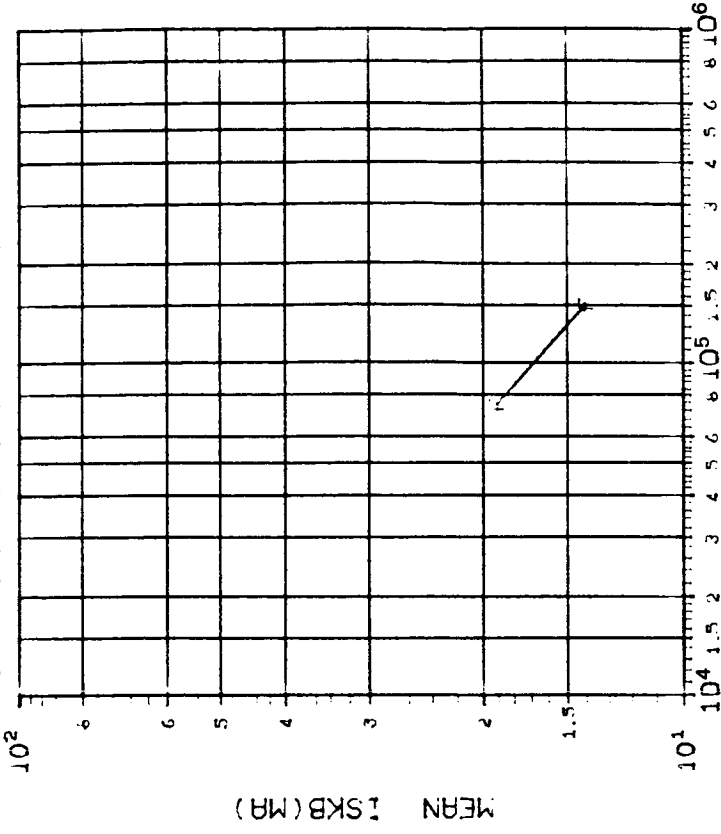
(4)IBD (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	45.43 95.76 124.6

INITIAL MEAN VALUE IBD(NA) = 1.47X10¹

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OF POOR QUALITY

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308

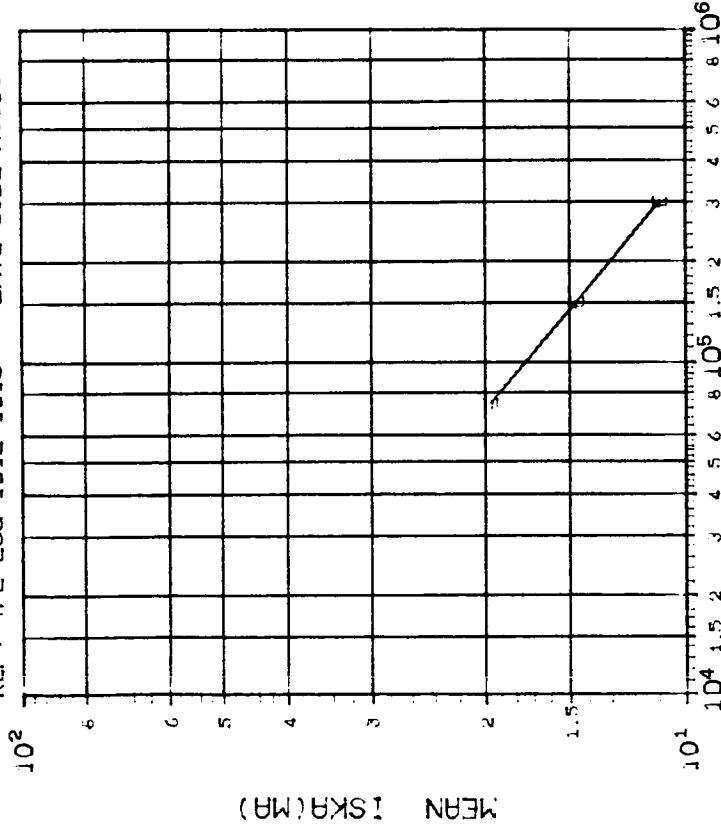


(5) ISKA (V0E--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	4.727 6.002 ****

INITIAL MEAN VALUE ISKB(MA) = 2.86X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



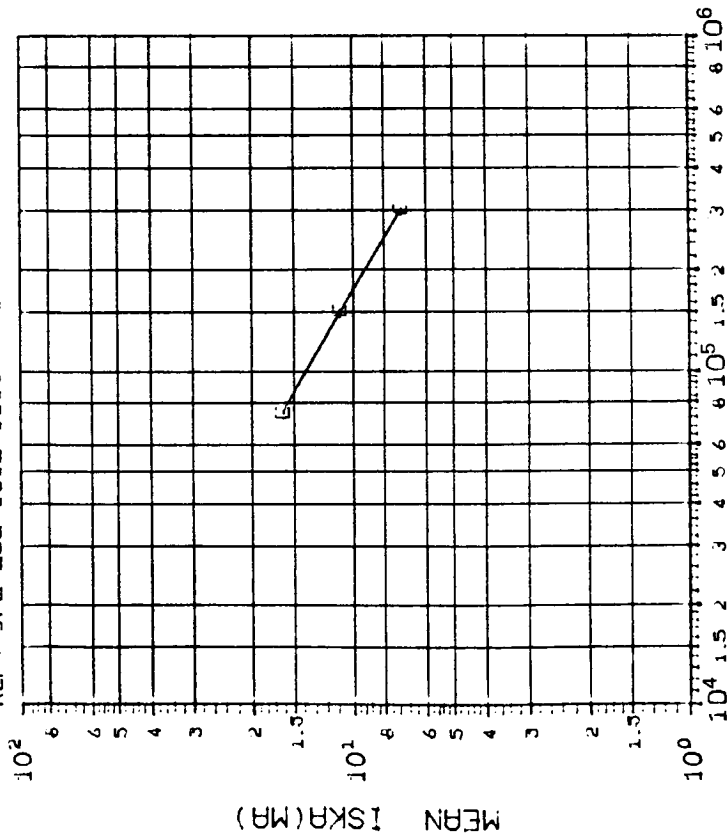
(6) ISKB (V0E--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	4.465 5.603 6.276

INITIAL MEAN VALUE ISKA(MA) = 2.86X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-63
 REF: JPL LOG 1012-1013 DATE CODE K8306



DOSE, rads(Si) Co⁶⁰ Gammas

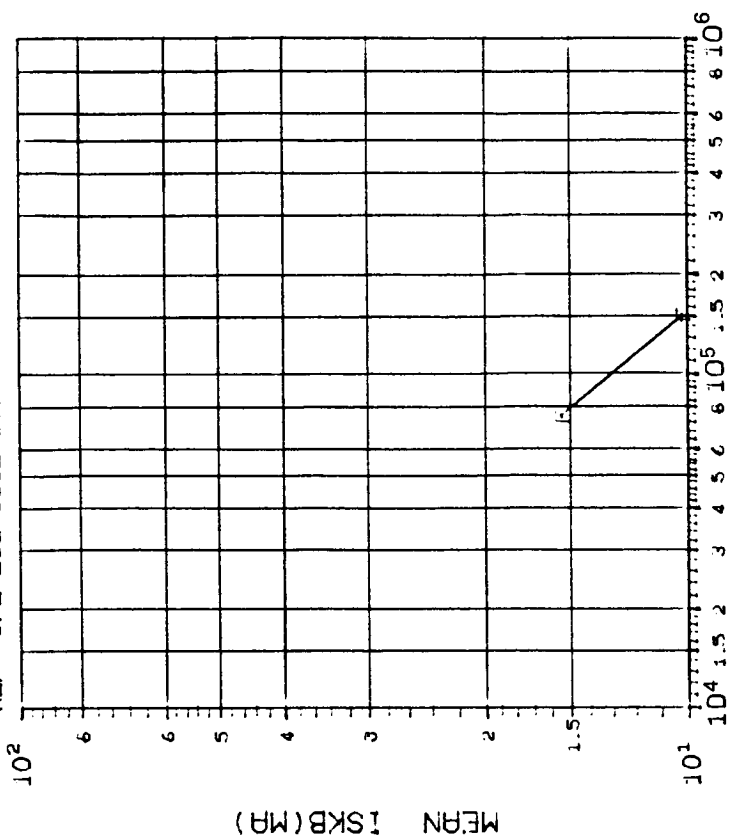
(5)11SKA (V0E-V+1.5V, V1NE-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	4.942 5.779 5.745

INITIAL MEAN VALUE ISKA(MA) = 2.78X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-63
 REF: JPL LOG 1012-1013 DATE CODE K8306



DOSE, rads(Si) Co⁶⁰ Gammas

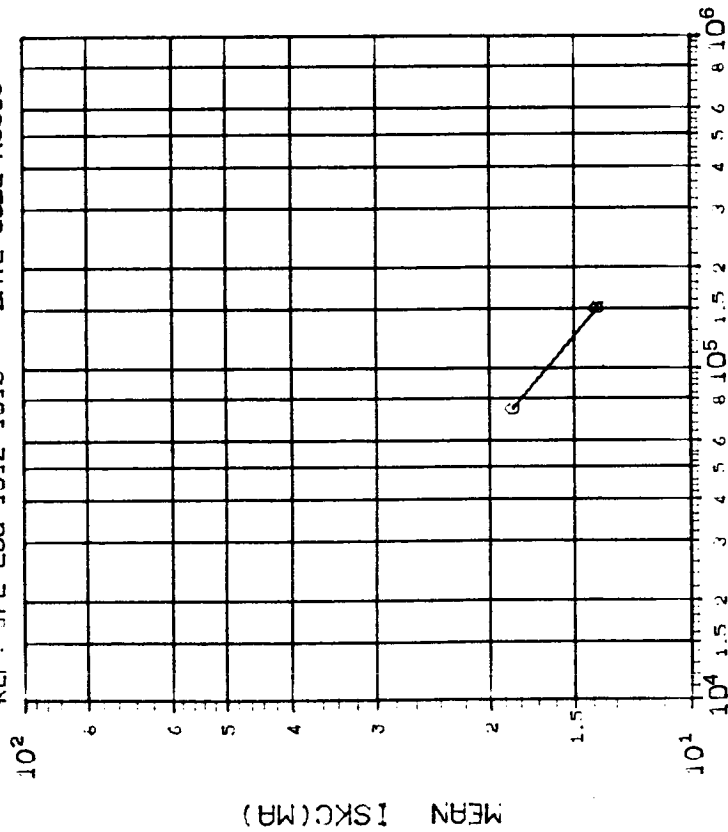
(6)11SKB (V0E-V+1.5V, V1NE-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	4.710 5.288 ****

INITIAL MEAN VALUE ISKB(MA) = 2.78X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



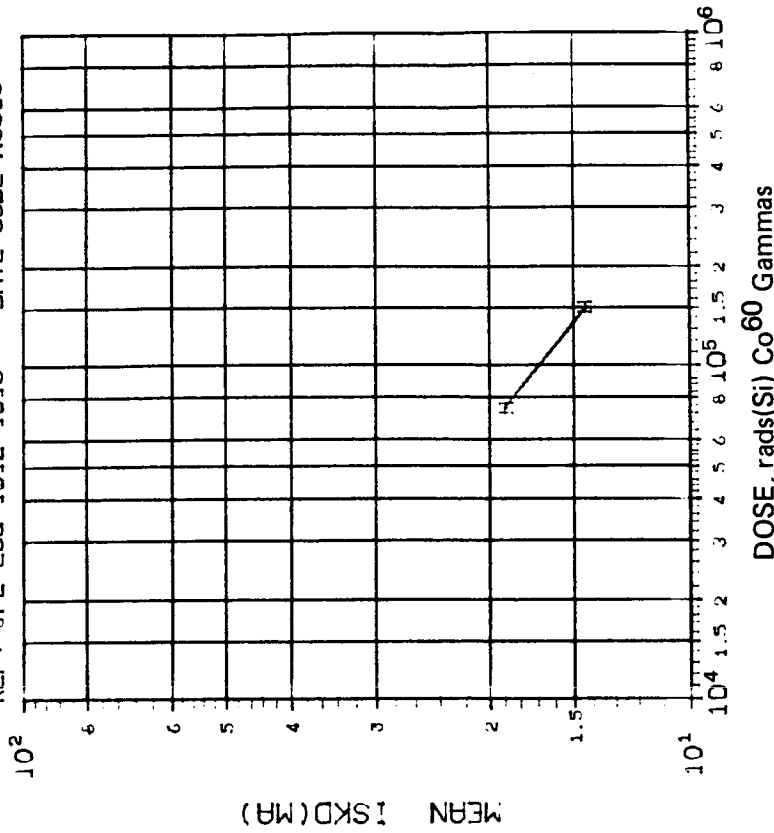
(7)ISK (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	4.643 5.986 ****

INITIAL MEAN VALUE ISK(MA) = 2.62X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



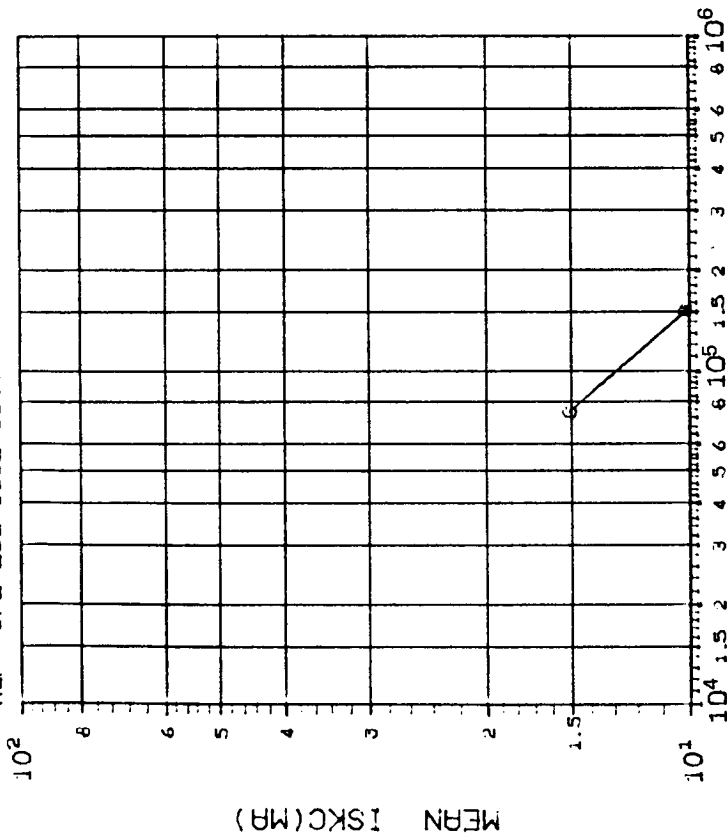
(8)ISK (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	4.475 5.751 ****

INITIAL MEAN VALUE ISK(MA) = 2.81X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308



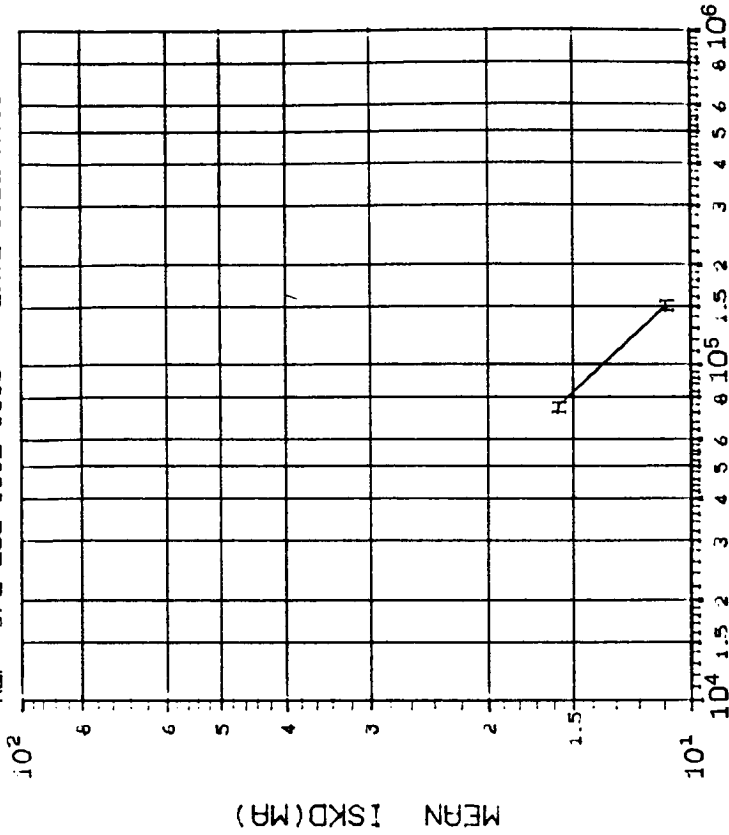
(7)ISKC (V0E--V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	4.190 4.777 *****

INITIAL MEAN VALUE ISKC(MR) = 2.74X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
 REF: JPL LOG 1012-1013 DATE CODE K8308

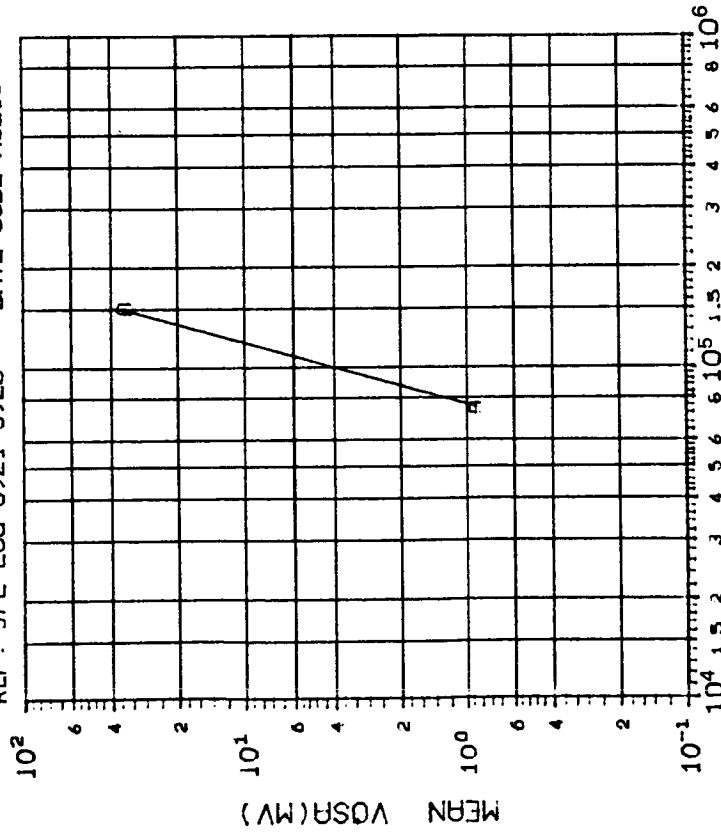


(8)ISKD (V0E--V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	4.535 5.251 *****

INITIAL MEAN VALUE ISKD(MR) = 2.75X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215

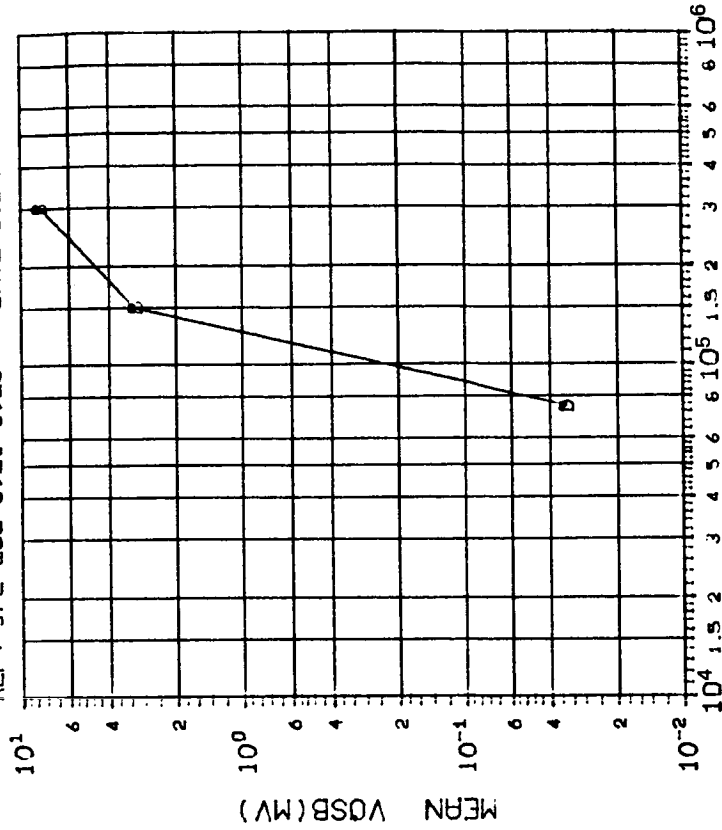


(1) VOSR (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	1.005 36.17 ****

INITIAL MEAN VALUE VOSR(MV) = 1.91×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215

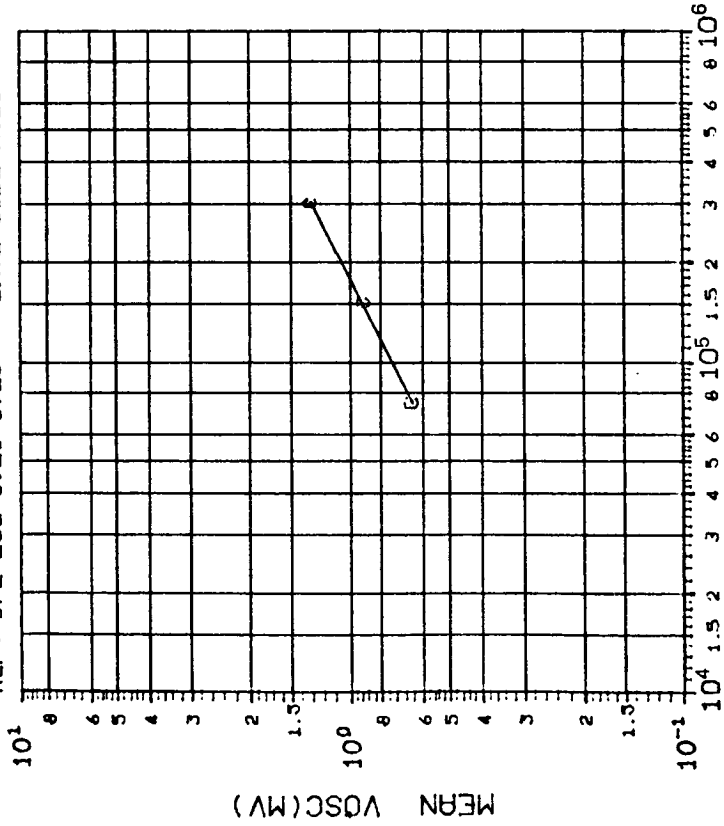


(2) VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.9323 2.256 10.70

INITIAL MEAN VALUE VOSB(MV) = 2.96×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215

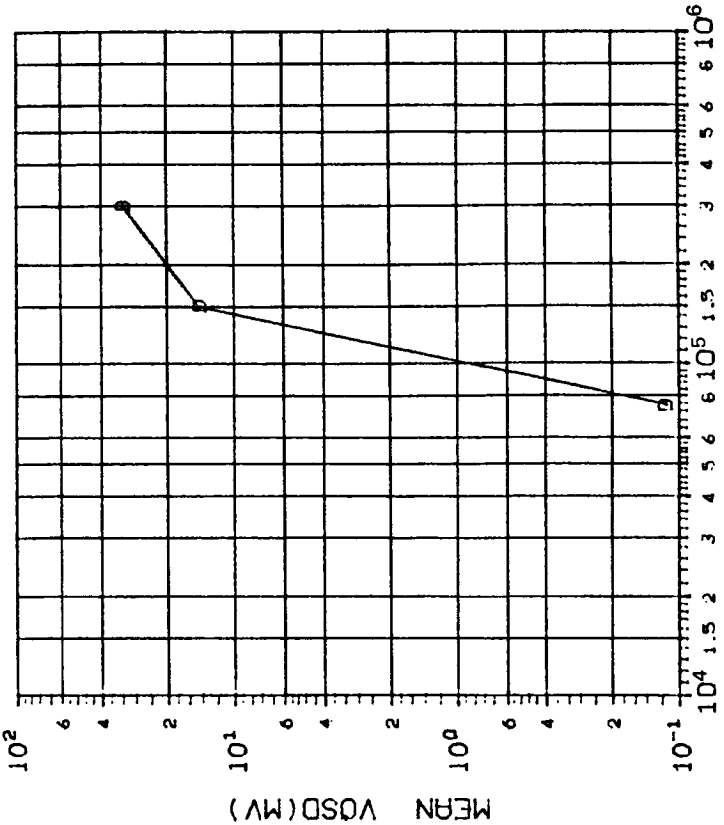


DOSE, rads(Si) Co60 Gammas
 (3) VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	.7878 1.065 2.372

INITIAL MEAN VALUE VOSC(MV) = 6.87X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215

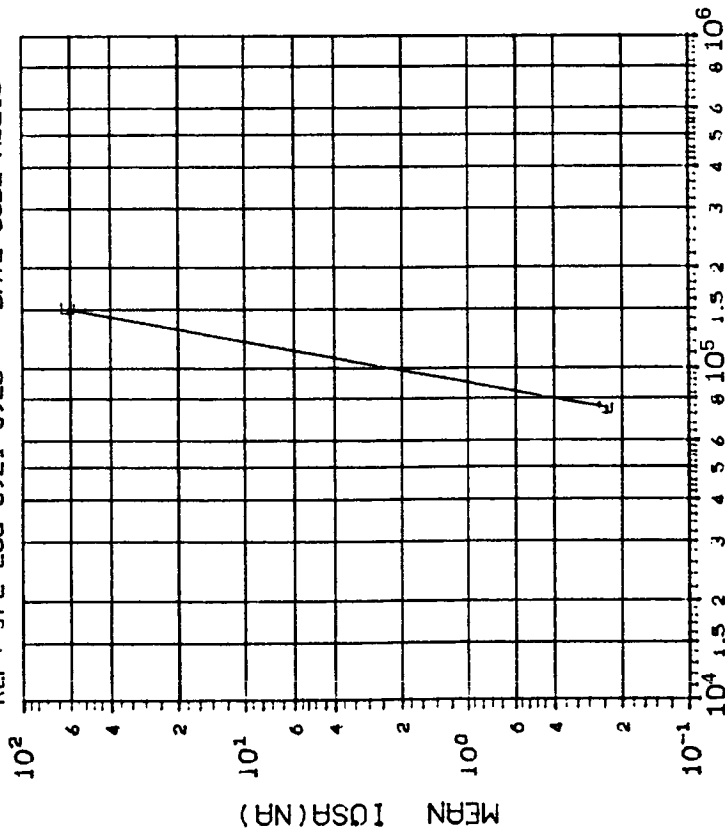


DOSE, rads(Si) Co60 Gammas
 (4) VOSD (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	.9771 7.711 34.14

INITIAL MEAN VALUE VOSD(MV) = 2.94X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215



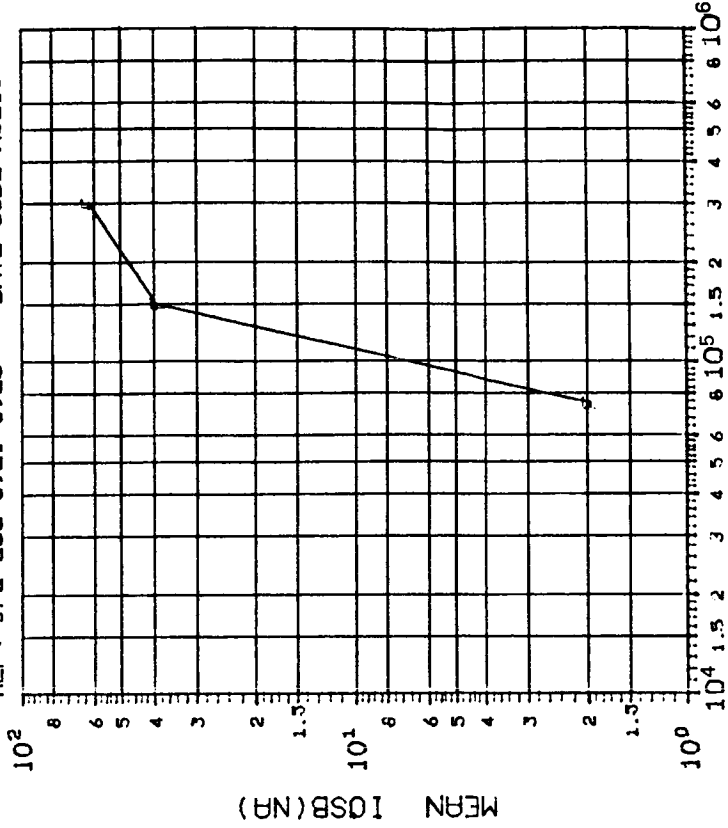
DOSE, rads(Si) Co⁶⁰ Gammas

(5)IOSA (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	4.833 77.60 ****

INITIAL MEAN VALUE IOSA(NA) = 3.02X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co⁶⁰ Gammas

(6)IOSB (VO=0) IN NA: VS DOSE

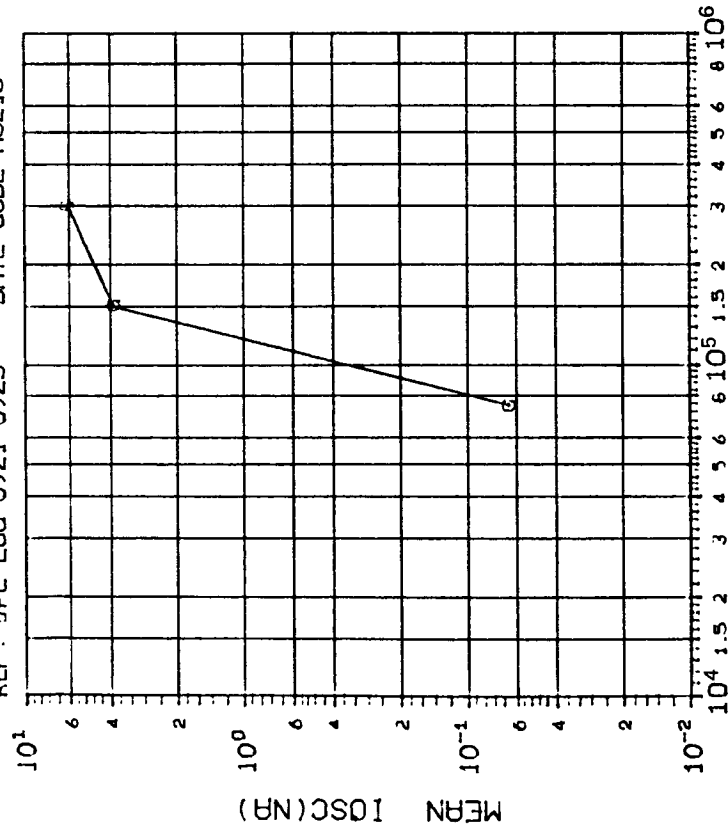
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	6.913 59.26 152.2

INITIAL MEAN VALUE IOSB(NA) = 2.74X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(7) IO5C (VO=0) IN NA: VS DOSE

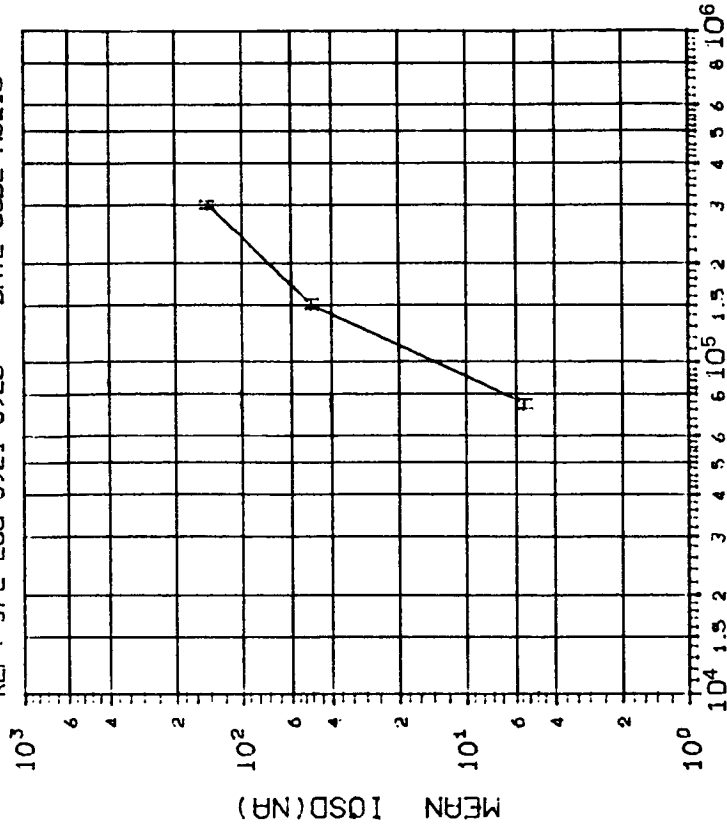
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	5.239 33.97 73.26

INITIAL MEAN VALUE IO5C(NA) = 1.60X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

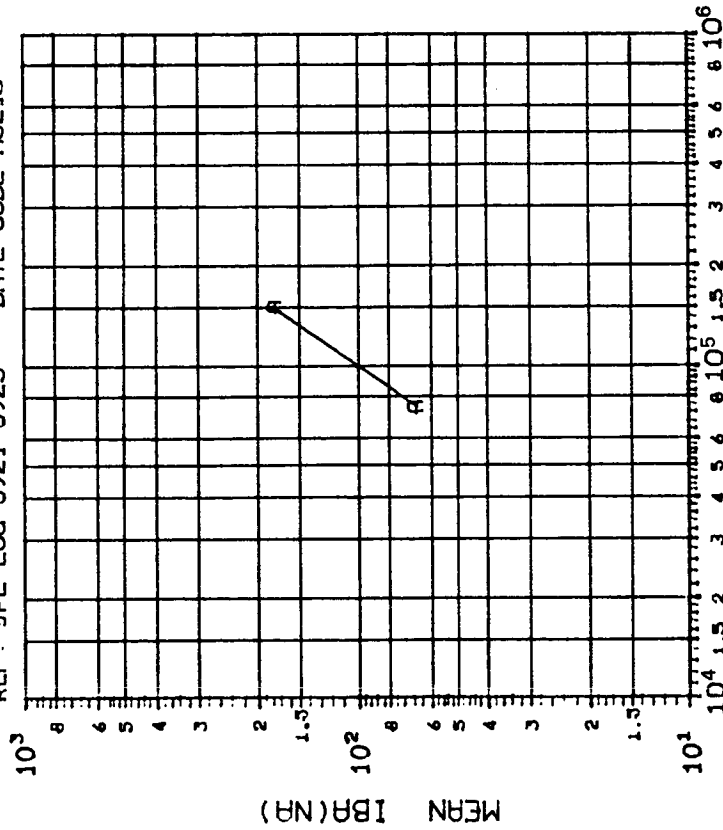
(8) IO5D (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	3.654 31.31 99.60

INITIAL MEAN VALUE IO5D(NA) = 3.81X10⁻⁹

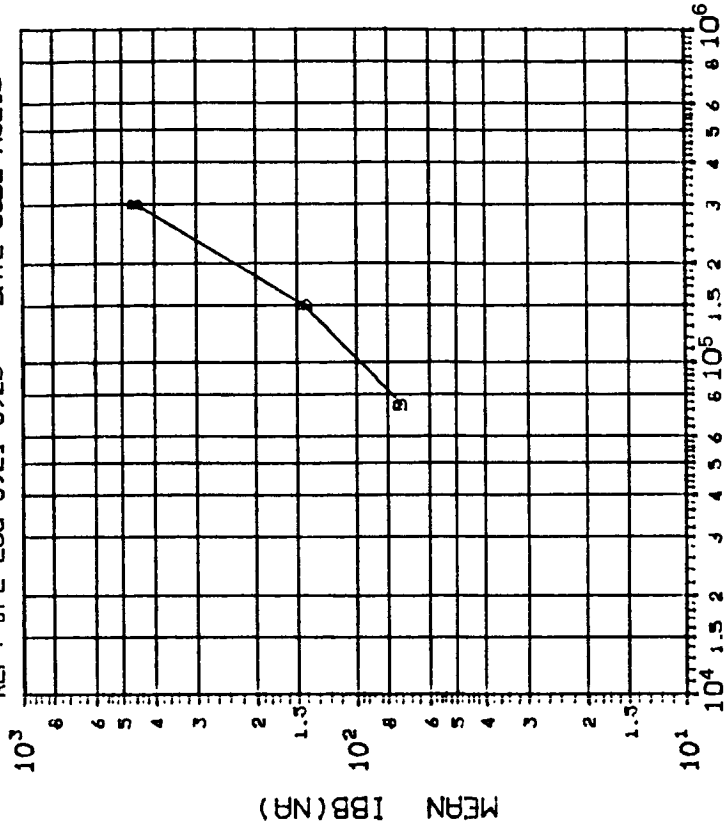
DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215

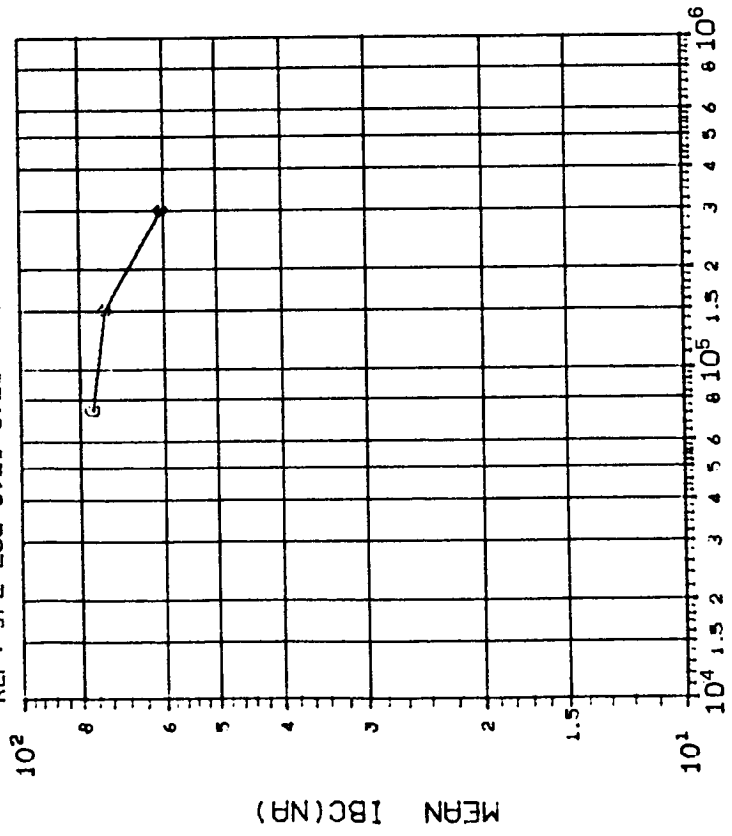


DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215



DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215



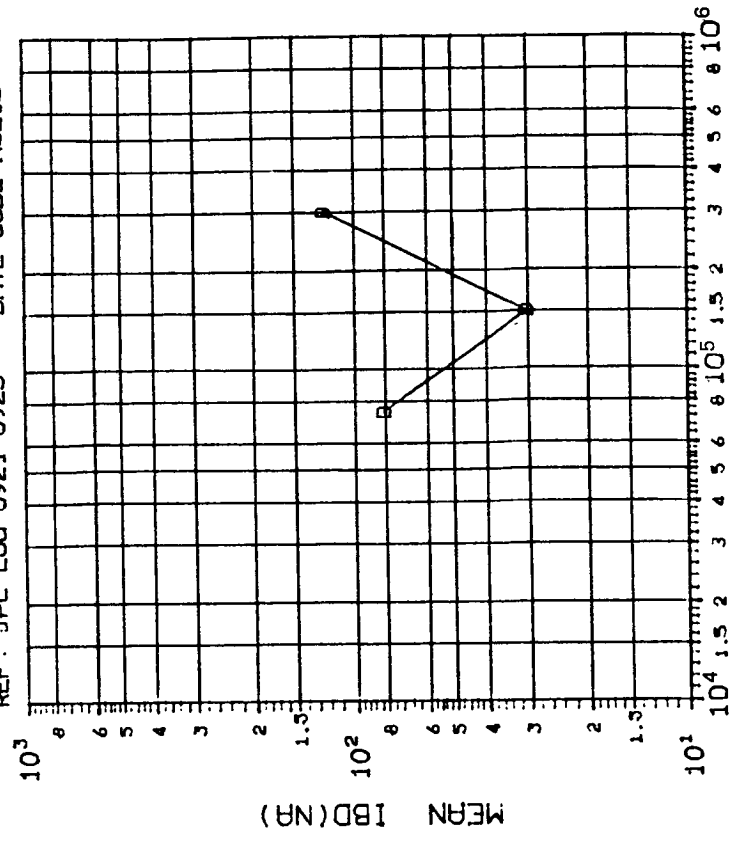
DOSE, rads(Si) Co⁶⁰ Gammas

(3)1BC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	13.10 92.16 547.6

INITIAL MEAN VALUE IBC(NA) = 4.67X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co⁶⁰ Gammas

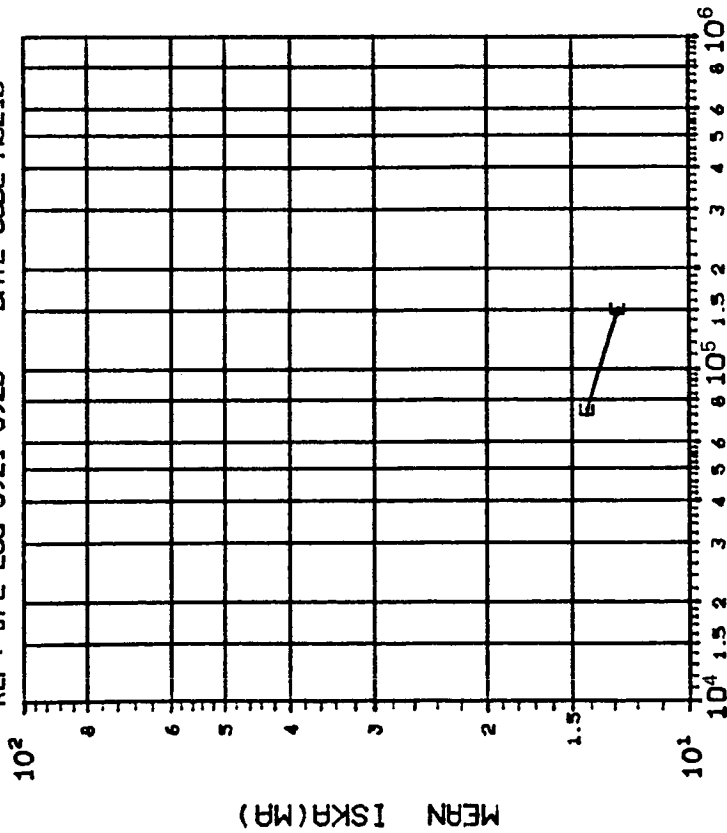
(4)1BD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	9.571 79.75 147.6

INITIAL MEAN VALUE IBD(NA) = 4.76X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215



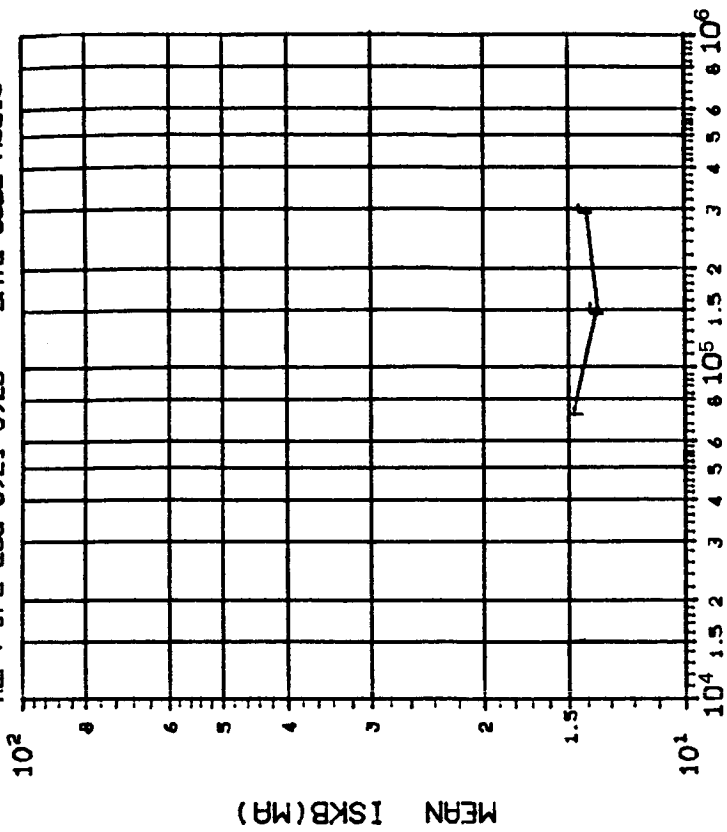
(5) ISKA (V0E--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.651 2.191 ****

INITIAL MEAN VALUE ISKA(MA) = 1.70X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215

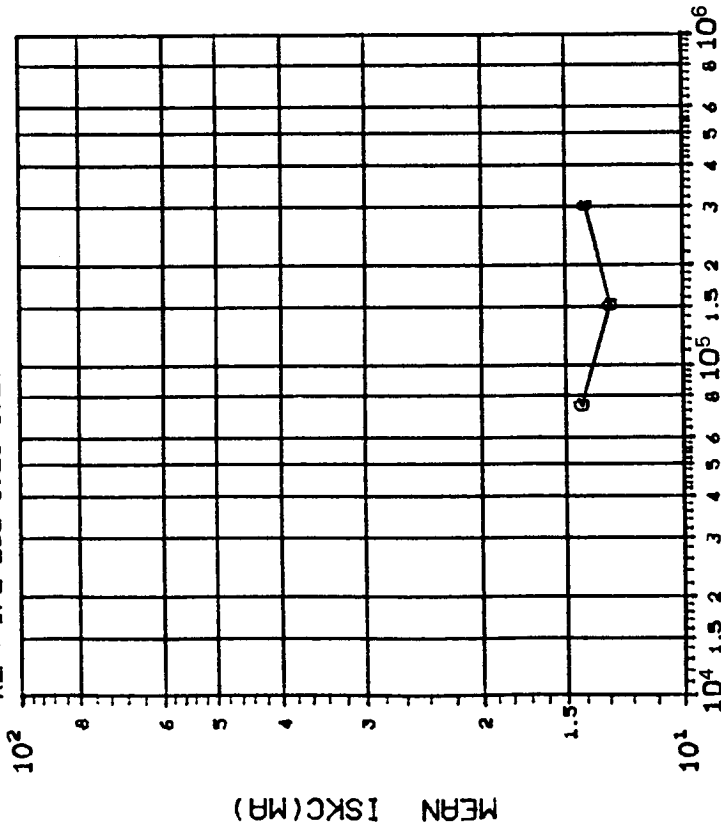


(6) ISKB (V0E--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	1.922 2.247 6.303

INITIAL MEAN VALUE ISKB(MA) = 1.72X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-63
 REF: JPL LOG 0921-0923 DATE CODE M8215

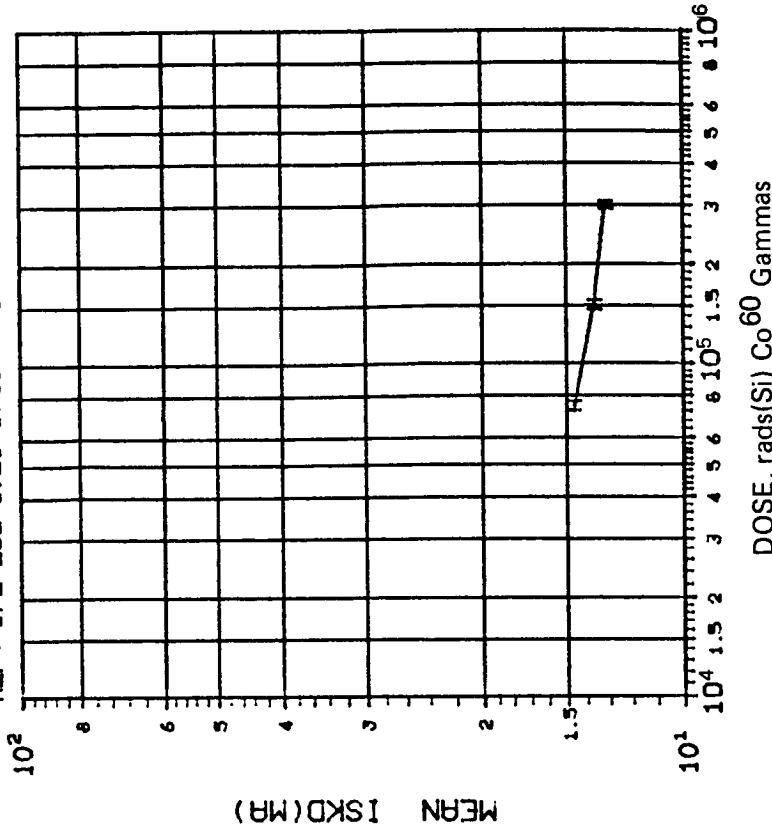


(7)ISKC (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.926 2.117 6.363

INITIAL MEAN VALUE ISK(MR) = 1.70X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-63
 REF: JPL LOG 0921-0923 DATE CODE M8215



(8)ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

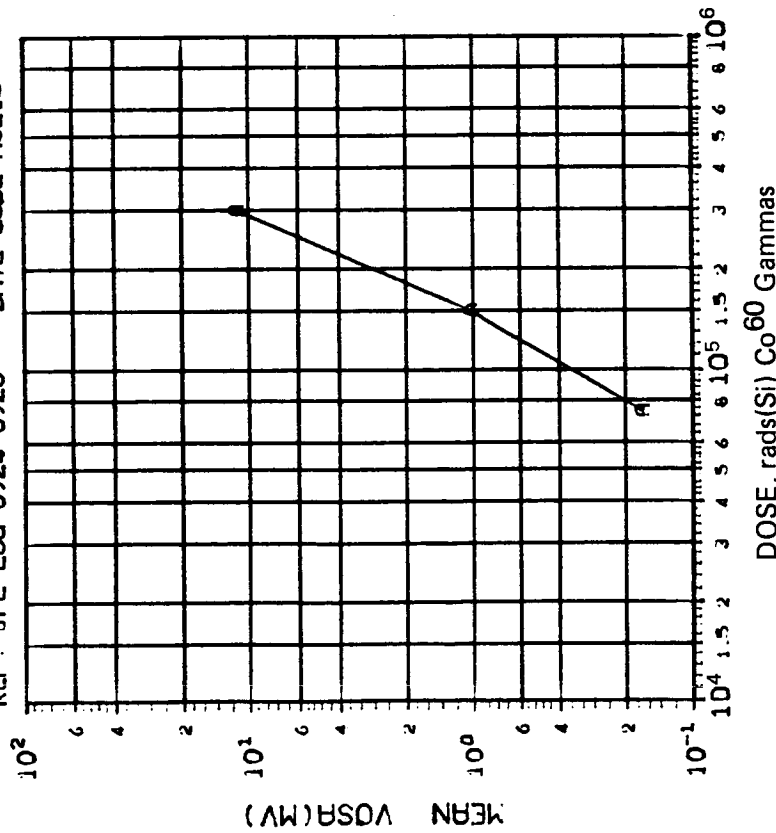
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	1.759 2.023 6.449

INITIAL MEAN VALUE ISKD(MR) = 1.68X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(1)VOSA (V0=0) IN MV: VS DOSE

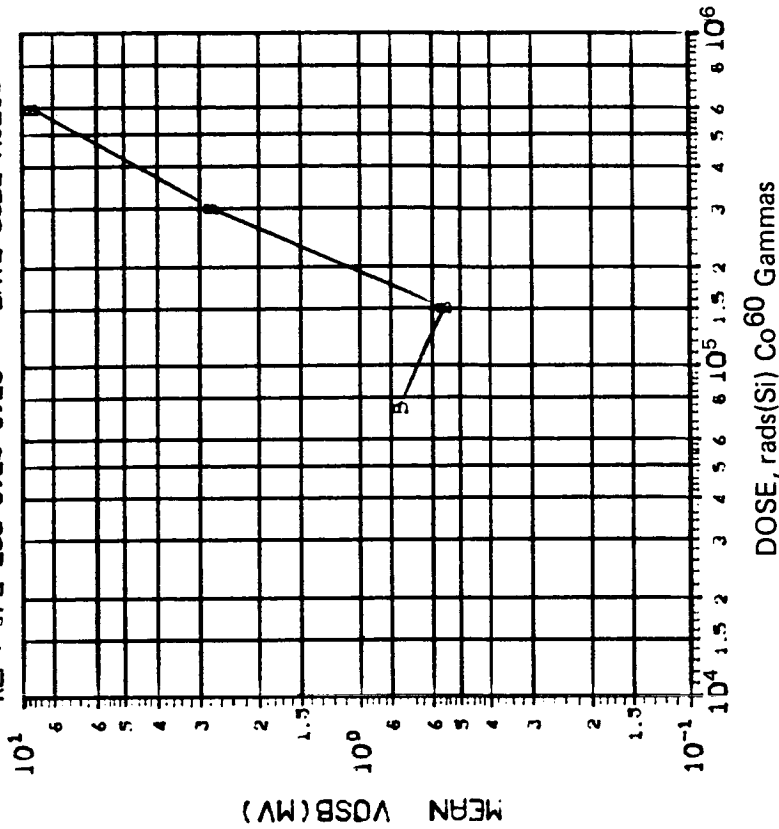
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	.6770 1.062 3.597 **** ****

INITIAL MEAN VALUE VOSA(MV) = 2.20X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(2)VOSB (V0=0) IN MV: VS DOSE

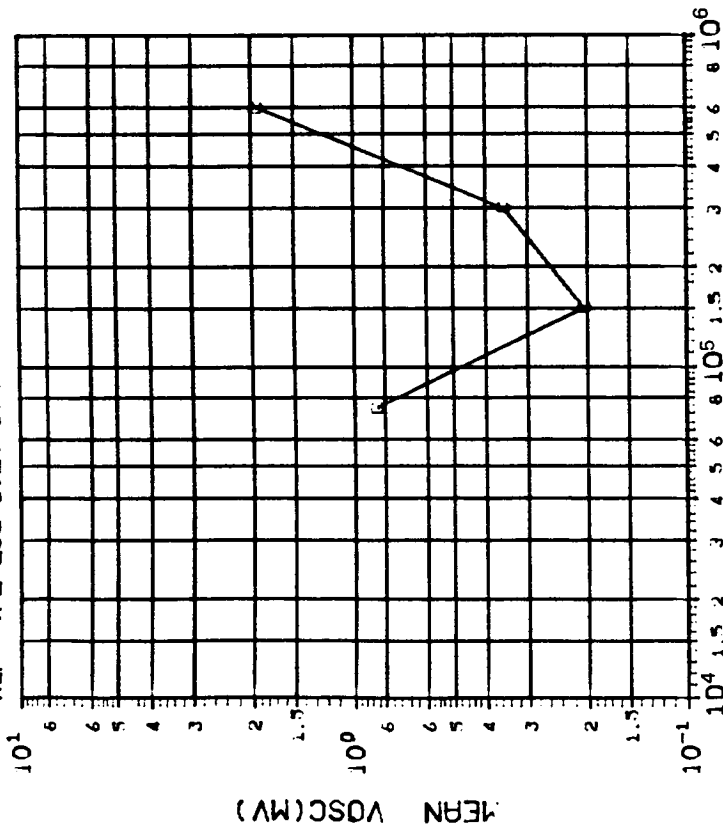
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	.5133 .4198 3.593 6.197 ****

INITIAL MEAN VALUE VOSB(MV) = 7.92X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(3)VOSC (V0=0) IN MV: VS DOSE

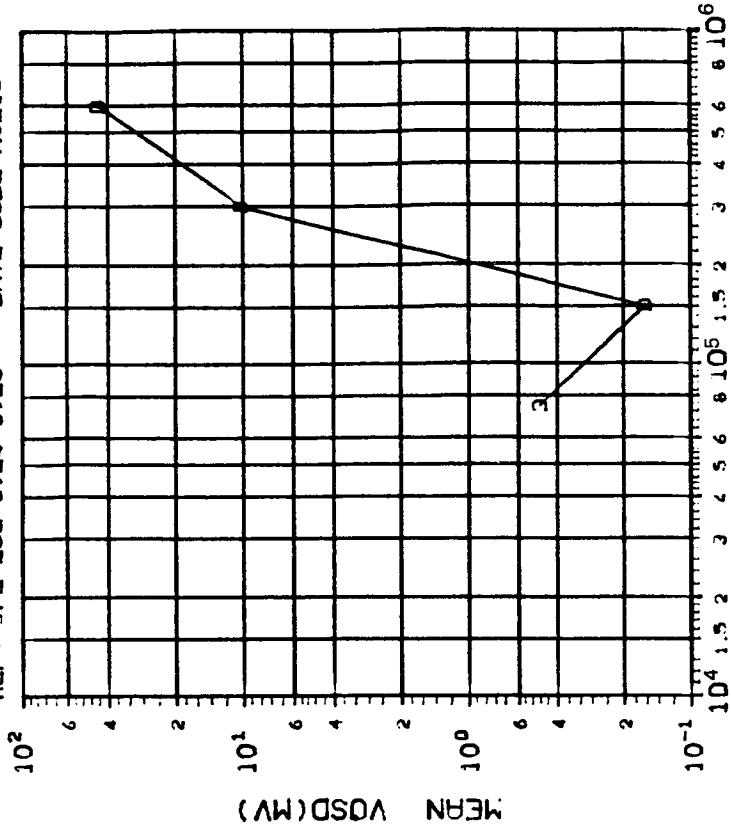
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	.4963
	150	.3067
	300	1.249
	600	4.633
	1000	***

INITIAL MEAN VALUE VOSC(MV) = 8.50X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(4)VOSD (V0=0) IN MV: VS DOSE

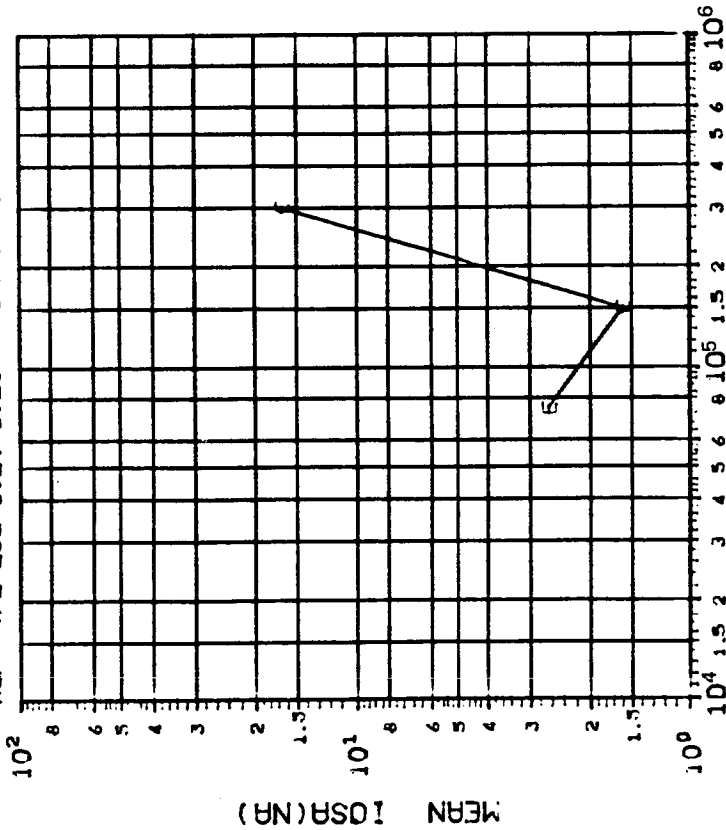
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	.7623
	150	.6366
	300	9.337
	600	5.374
	1000	***

INITIAL MEAN VALUE VOSD(MV) = 4.05X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: TPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co60 Gammas

(5110SA (VO=0) IN NA: VS DOSE

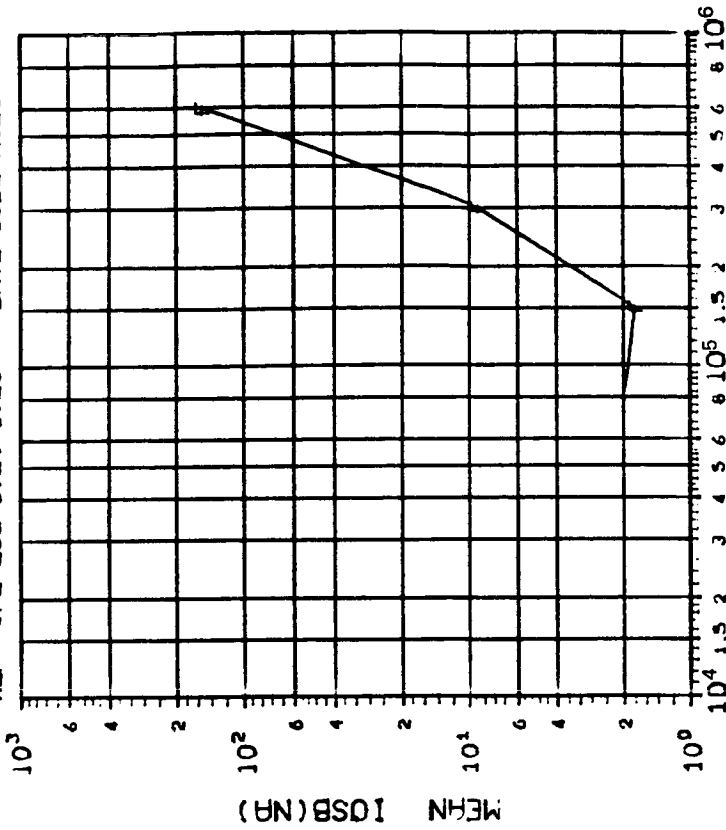
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	75	1.536
	150	7.254
	300	44.20
	600	****
	1000	****

INITIAL MEAN VALUE IOSR(NA) = 2.28X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co60 Gammas

(6110SB (VO=0) IN NA: VS DOSE

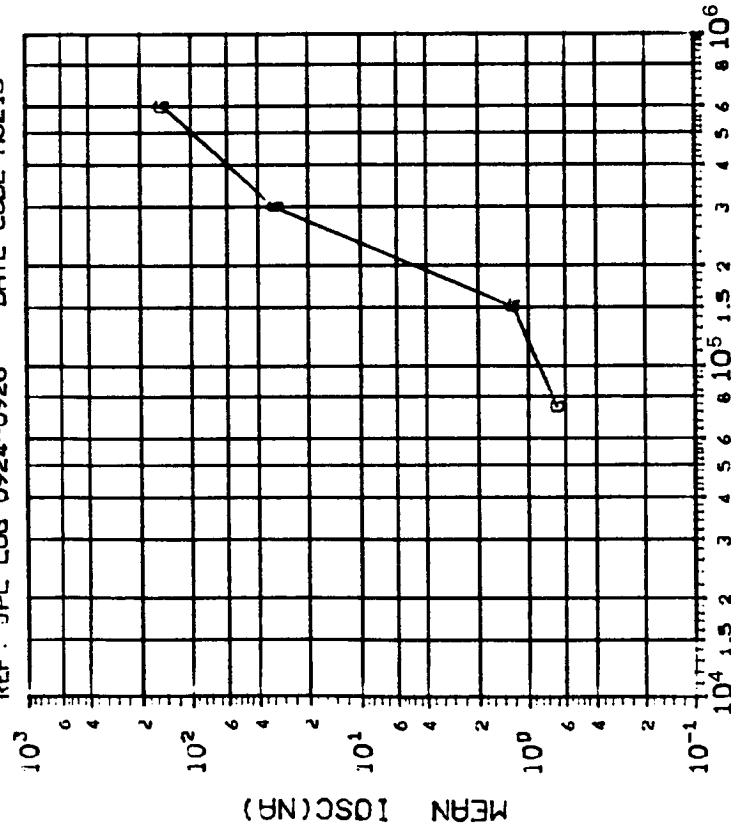
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
F	75	1.569
	150	4.303
	300	47.15
	600	69.77
	1000	****

INITIAL MEAN VALUE IOSB(NA) = 2.30X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-63

REF: JPL LOG 0924-0926 DATE CODE M6215



DOSE, rads(Si) Co 60 Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

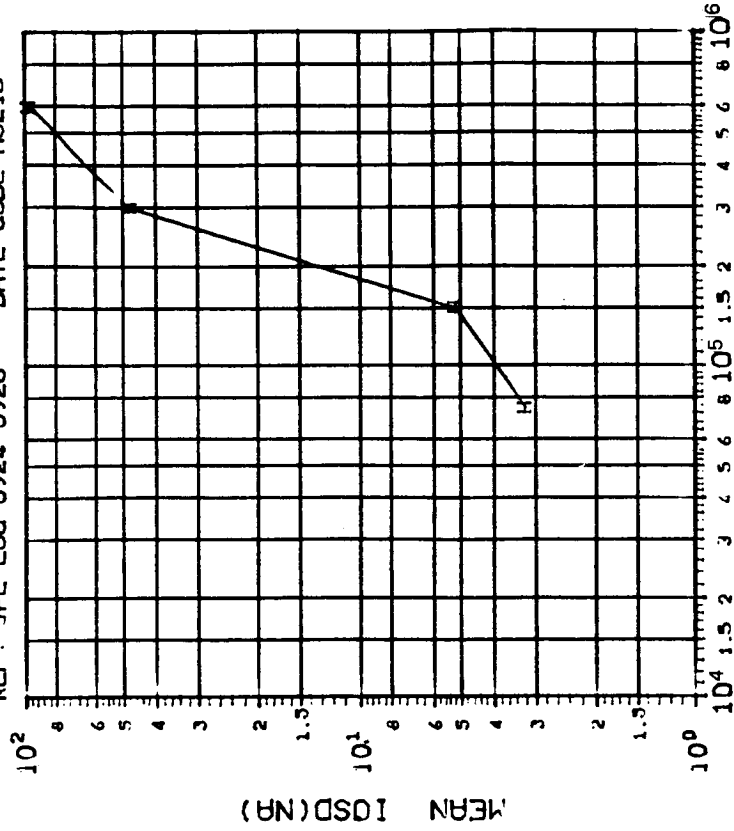
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300 600 1000
	1.194 2.670 42.44 204.9 ****

INITIAL MEAN VALUE IOSC(NA) = 1.18X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-63

REF: JPL LOG 0924-0926 DATE CODE M6215



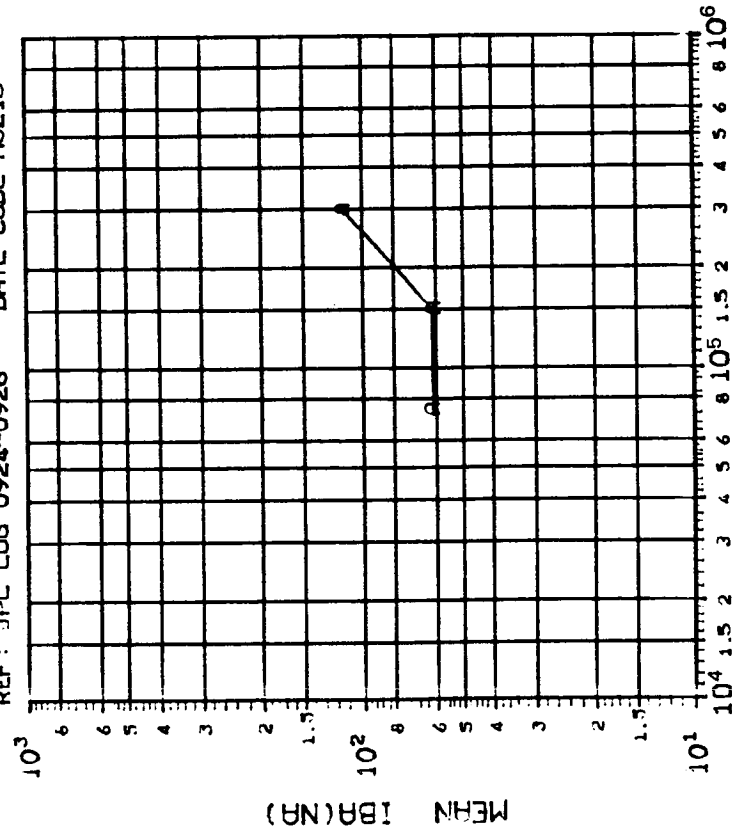
DOSE, rads(Si) Co 60 Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300 600 1000
	1.447 2.796 43.28 19.91 ****

INITIAL MEAN VALUE IOSD(NA) = 3.15X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0924-0926 DATE CODE M8215



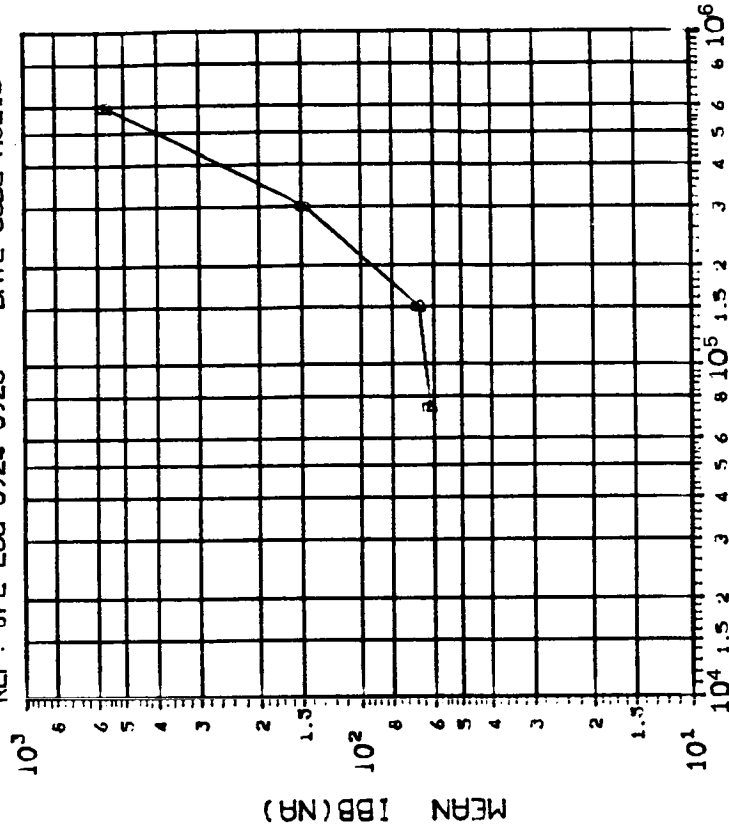
DOSE, rads(Si) Co⁶⁰ Gammas

(111)BA (VCE=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600 1000
	5.976 15.68 66.29 **** ****

INITIAL MEAN VALUE IBA(NA) = 4.34X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0924-0926 DATE CODE M8215



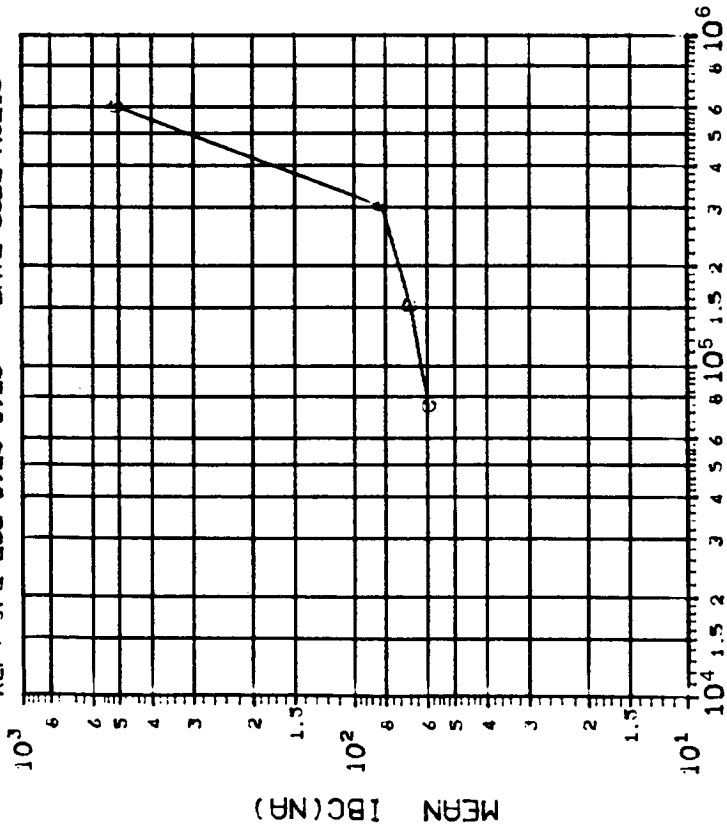
DOSE, rads(Si) Co⁶⁰ Gammas

(211)BB (VCE=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600 1000
	9.213 10.11 204.1 215.9 ****

INITIAL MEAN VALUE IBB(NA) = 4.41X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0924-0926 DATE CODE M8215

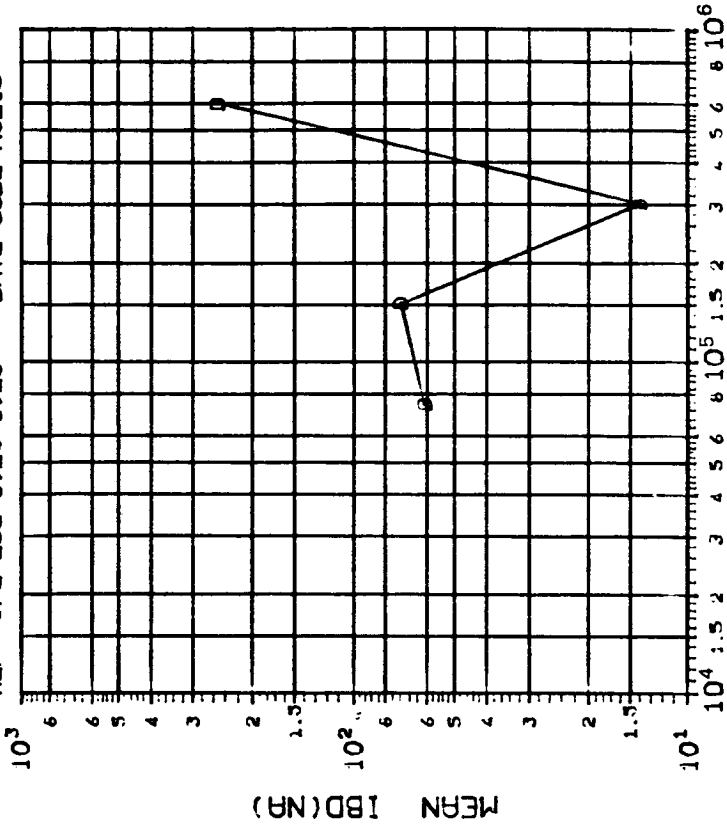


DOSE, rads(Si) Co⁶⁰ Gammas
 (3)IBC (VO=0) IN NA : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	1000
D	6.904 6.562 79.51 113.9 ****

INITIAL MEAN VALUE IBC(NA) = 4.22X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co⁶⁰ Gammas
 (4)IBD (VO=0) IN NA : VS DOSE

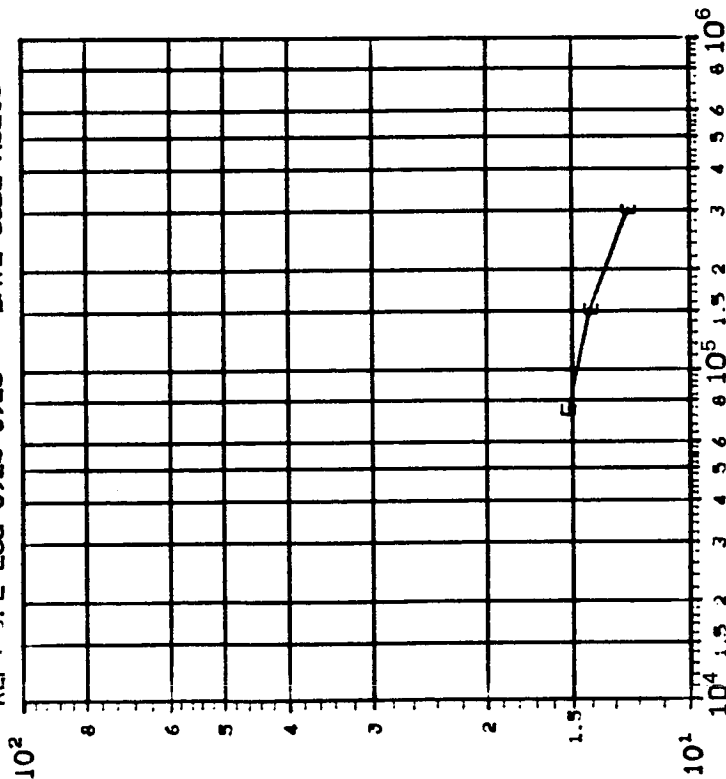
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	1000
D	6.904 6.562 79.51 113.9 ****

INITIAL MEAN VALUE IBD(NA) = 4.31X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(5) ISKA (V0E--V+1.5V, VIN--100MV) IN VS DOSE

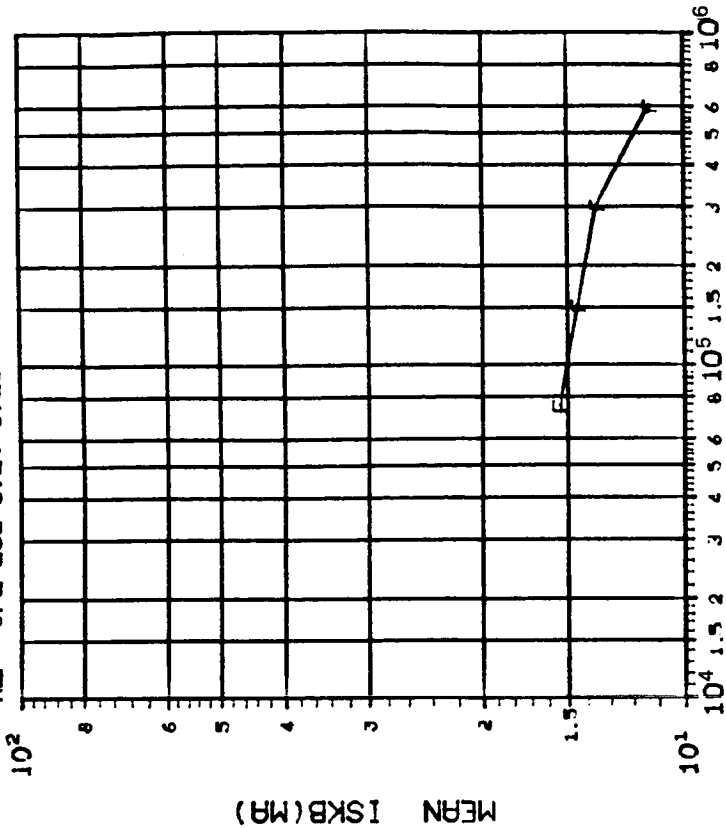
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	75	3.561
	150	3.742
	300	4.509
	600	****
	1000	****

INITIAL MEAN VALUE ISKA(MR) = 1.67X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(6) ISKB (V0E--V+1.5V, VIN--100MV) IN VS DOSE

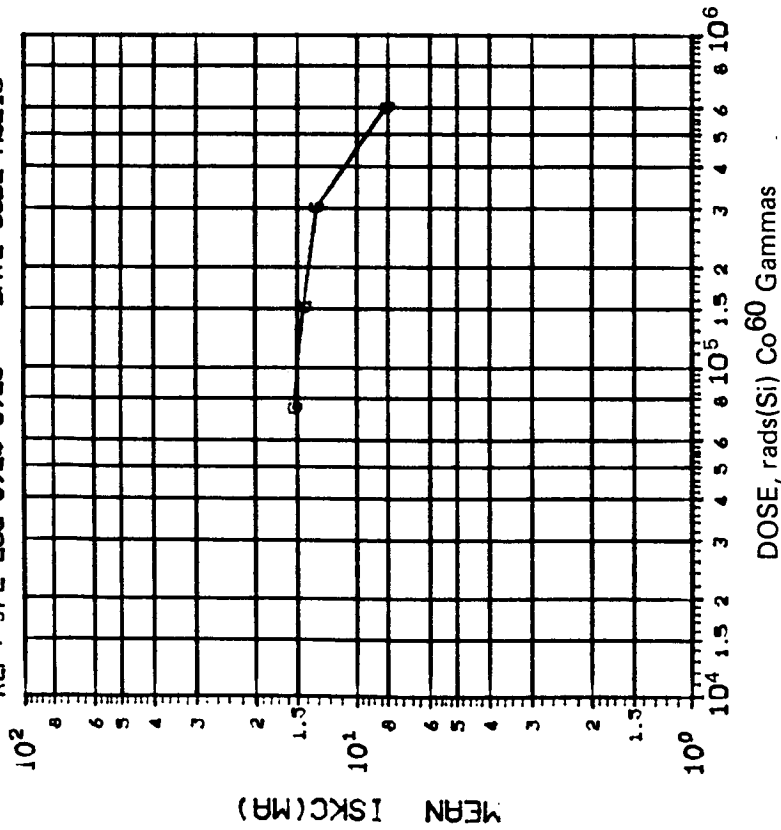
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
F	75	3.618
	150	4.012
	300	4.624
	600	****
	1000	****

INITIAL MEAN VALUE ISKB(MR) = 1.67X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-63

REF: JPL LOG 0924-0926 DATE CODE M8215



(7) ISKC (V_{CE}=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

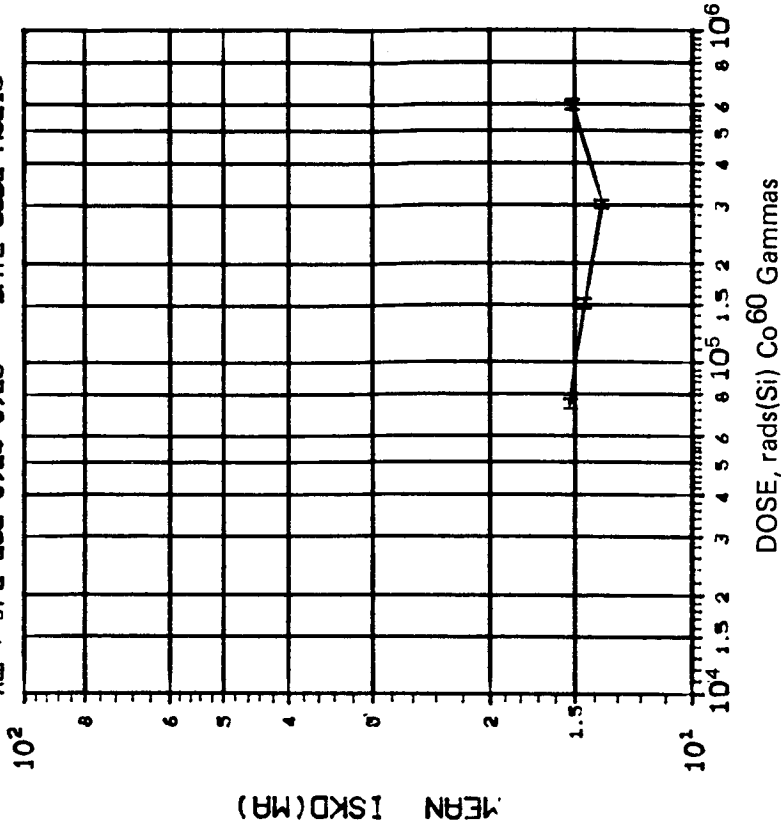
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300 600 1000
	3.559 3.550 3.757 3.640 ****

INITIAL MEAN VALUE ISKC(MA) = 1.66X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-63

REF: JPL LOG 0924-0926 DATE CODE M8215

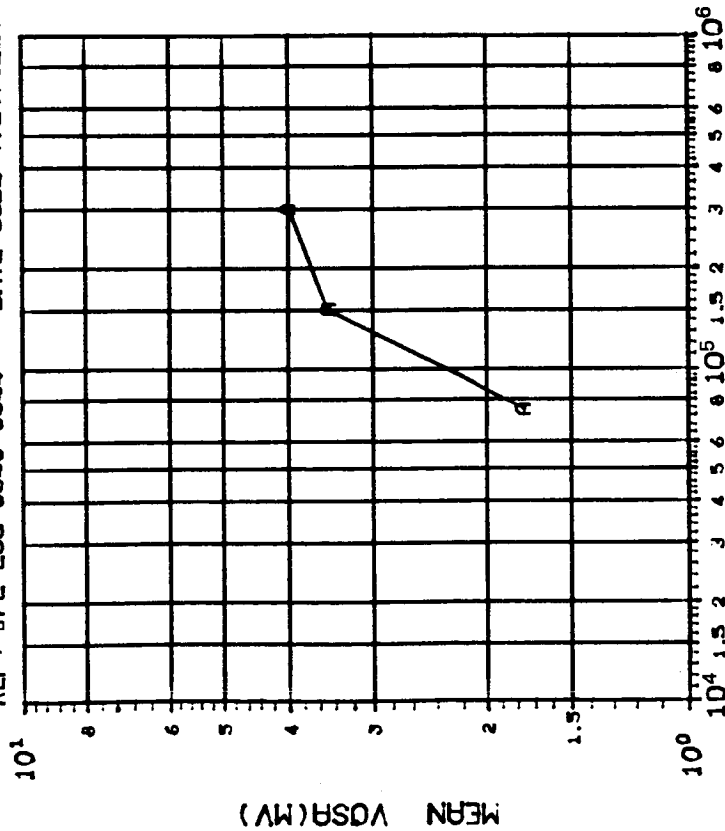


(8) ISKD (V_{CE}=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300 600 1000
	3.422 3.376 3.655 .0764 ****

INITIAL MEAN VALUE ISKD(MA) = 1.66X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



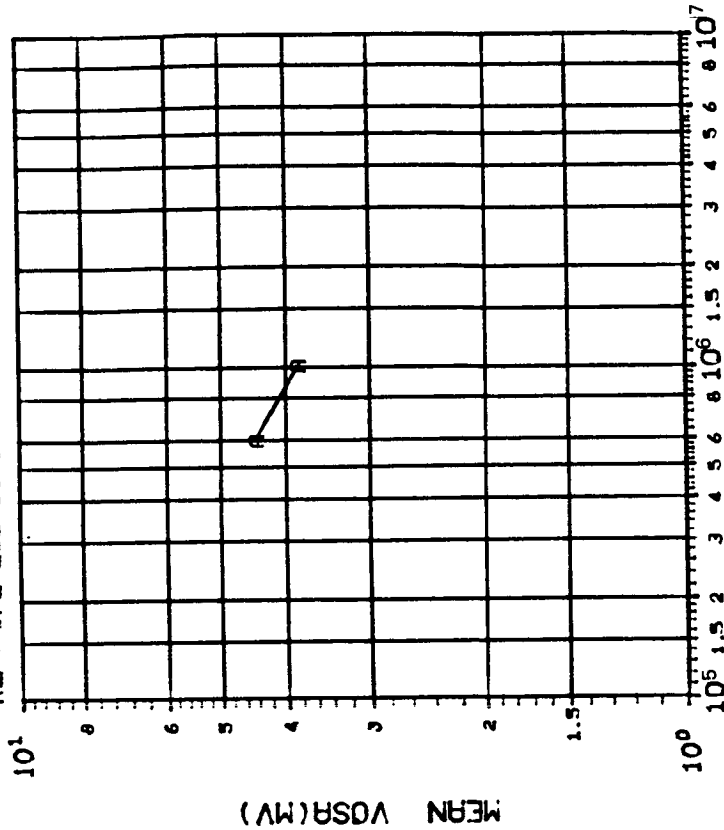
DOSE, rad(Si) Co 60 Gammas

(1)VOSR (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	2.102 2.717 1.492

INITIAL MEAN VALUE VOSR(MV) = 1.40X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-63
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



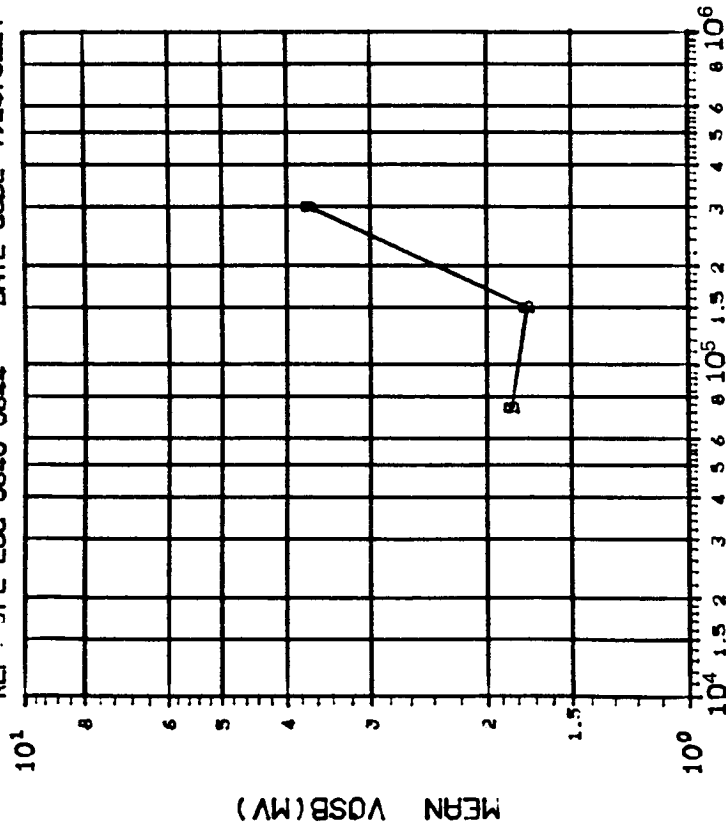
DOSE, rad(Si) Co 60 Gammas

(1)VOSR (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	1.394 .7260 ****

INITIAL MEAN VALUE VOSR(MV) = 1.40X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227

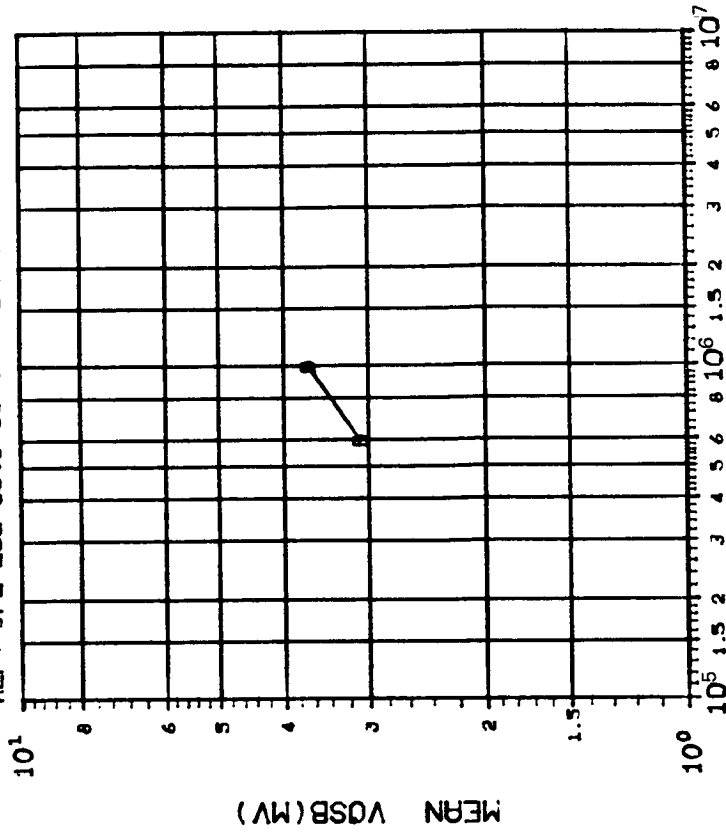


(2) VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	4.272 1.954 1.946

INITIAL MEAN VALUE VOSB(MV) = 2.73X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227

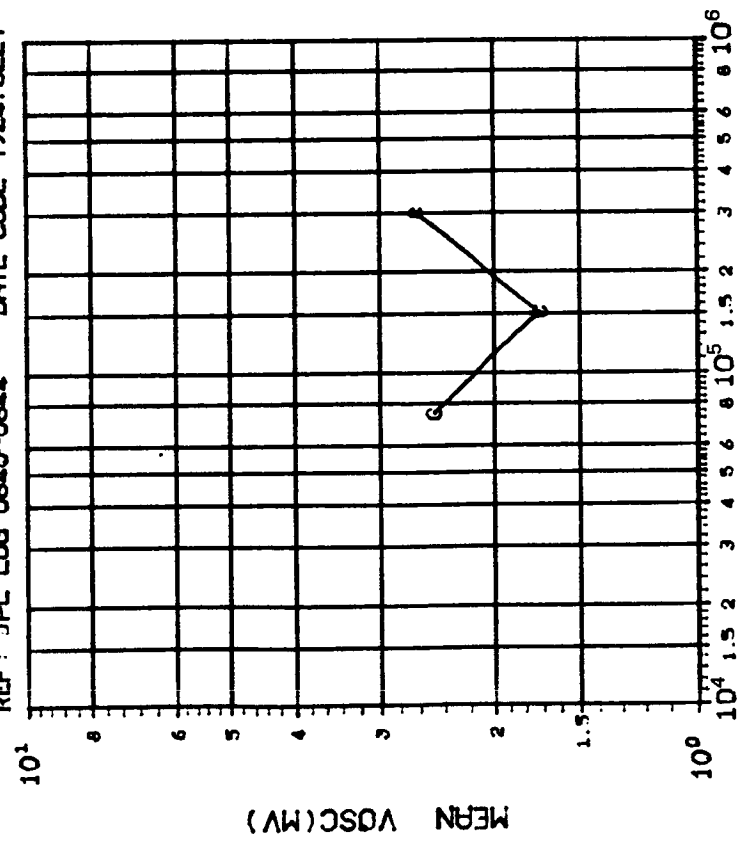


(2) VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	1.923 2.168 ****

INITIAL MEAN VALUE VOSB(MV) = 2.73X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



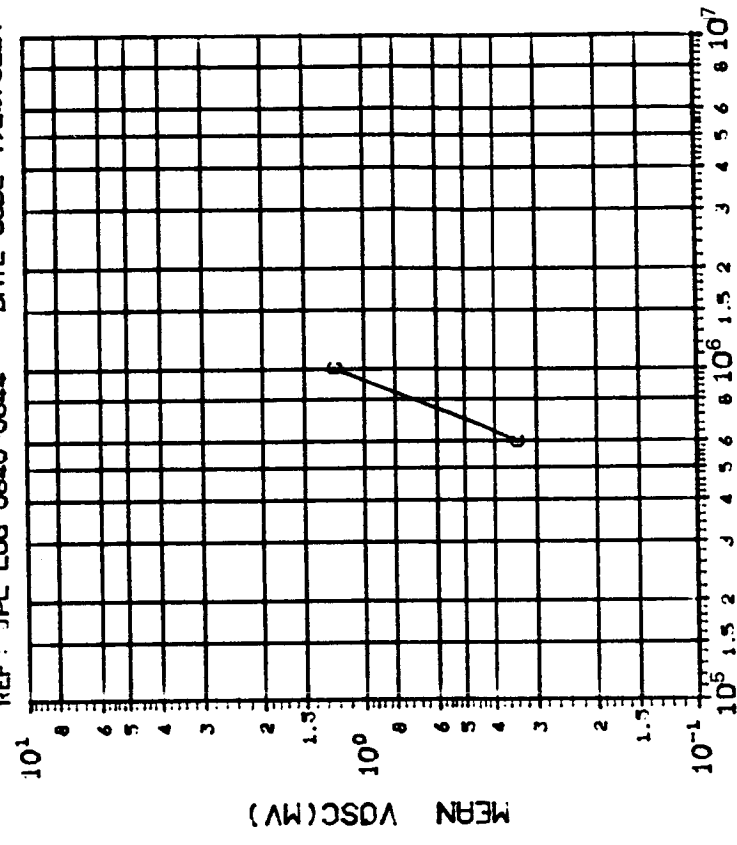
DOSE, rads(Si) Co⁶⁰ Gammas

(3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
C	4.606 2.919 4.074

INITIAL MEAN VALUE VOSC(MV) = 1.70X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



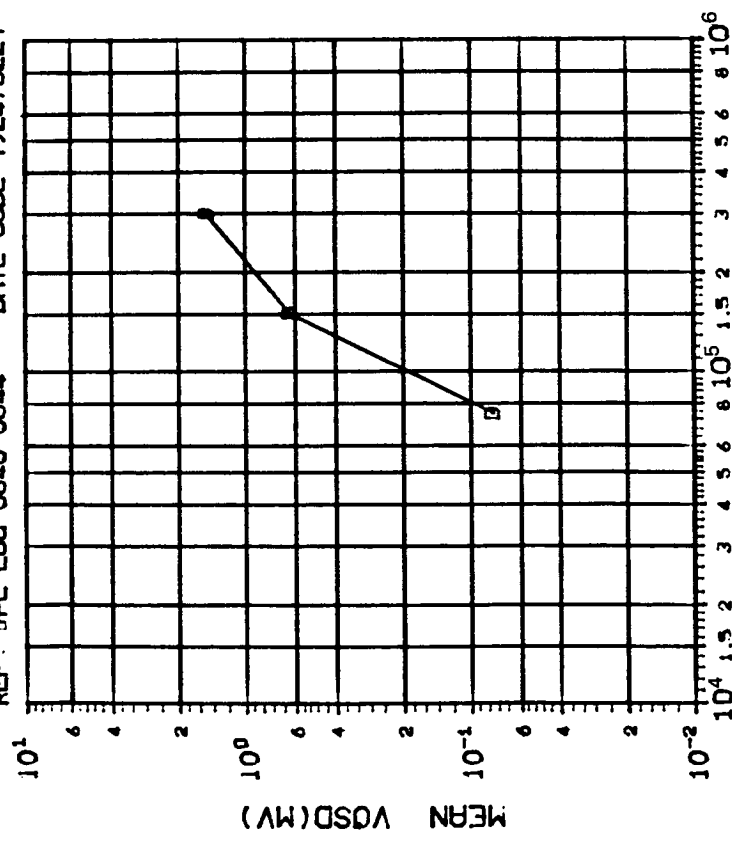
DOSE, rads(Si) Co⁶⁰ Gammas

(3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
C	3.276 4.070 ****

INITIAL MEAN VALUE VOSC(MV) = 1.70X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



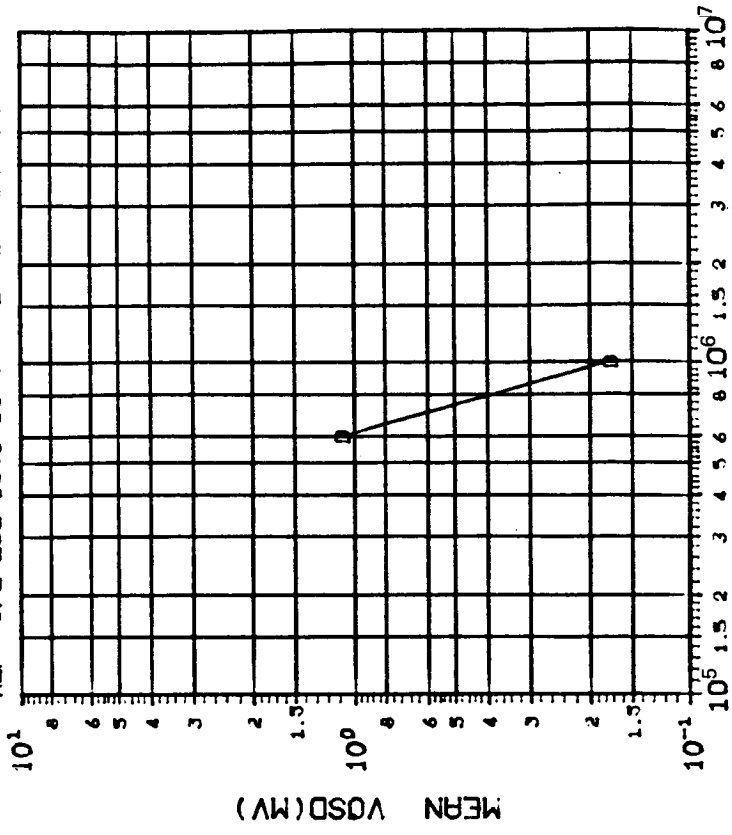
DOSE, rads(Si) Co60 Gammas

(4)VOSD (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	1.456 2.632 4.297

INITIAL MEAN VALUE VOSD(MV) = 3.51X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co60 Gammas

(4)VOSD (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	4.693 3.943 ****

INITIAL MEAN VALUE VOSD(MV) = 3.51X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARTOR

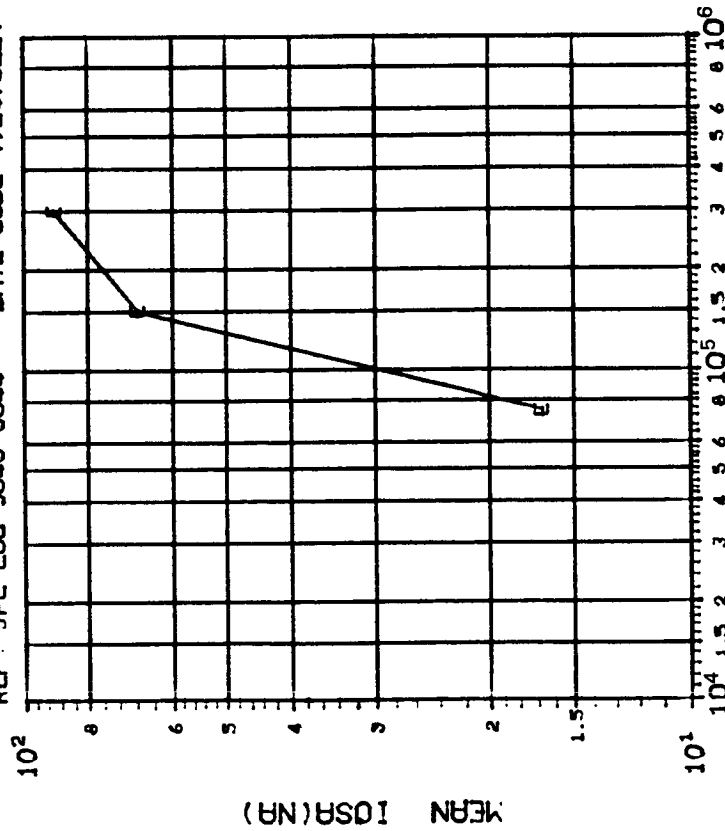
MFG: PMI

9 DEVICES

TEST DATE 02-21-83

REF: JPL LOG 0840-0844

DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(S)IOSR (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	15.69 51.67 34.03

INITIAL MEAN VALUE IOSR(NA) = 8.99X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARTOR

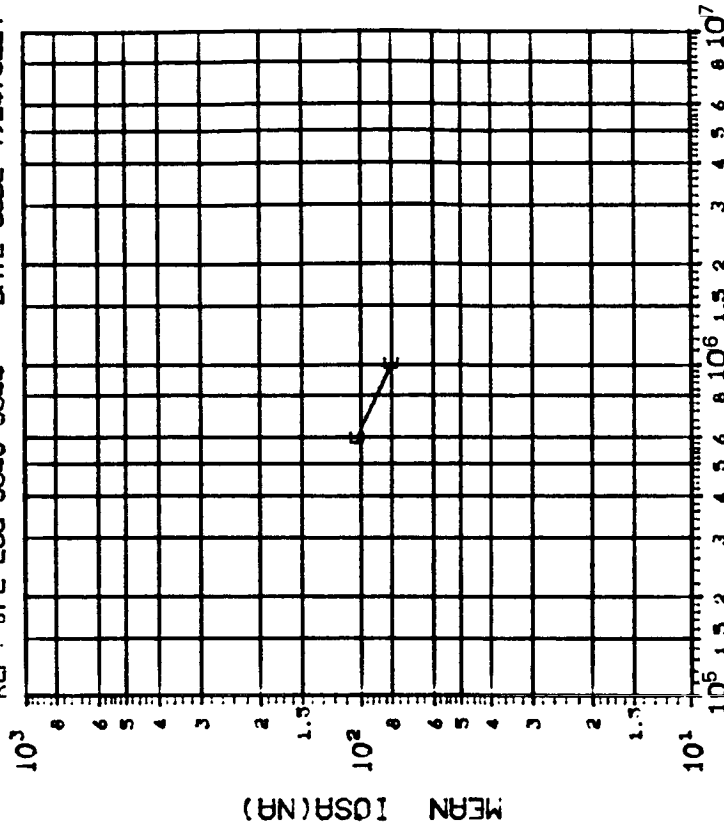
MFG: PMI

9 DEVICES

TEST DATE 02-21-83

REF: JPL LOG 0840-0844

DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

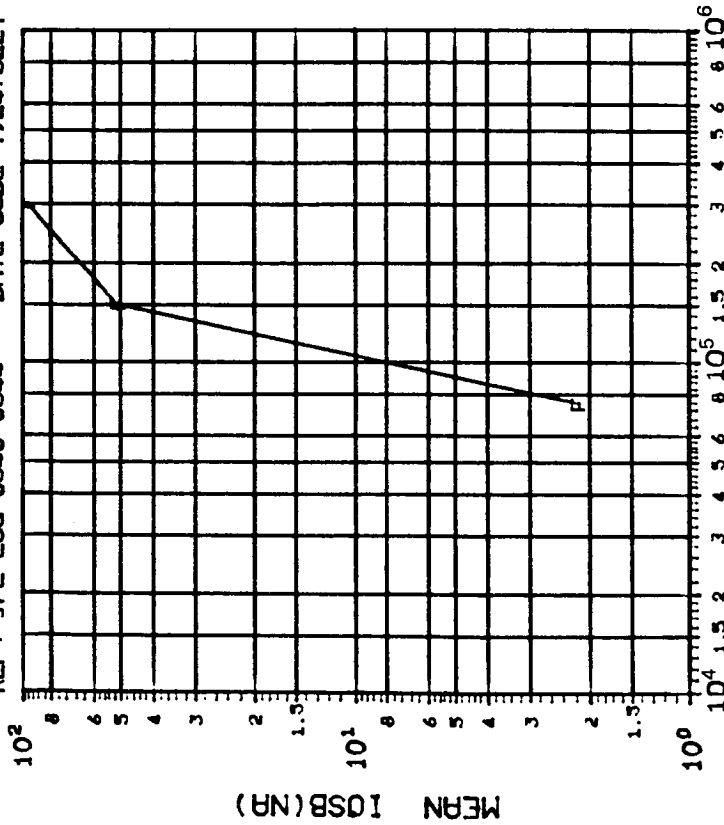
(S)IOSR (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	35.22 10.55 ****

INITIAL MEAN VALUE IOSR(NA) = 8.99X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

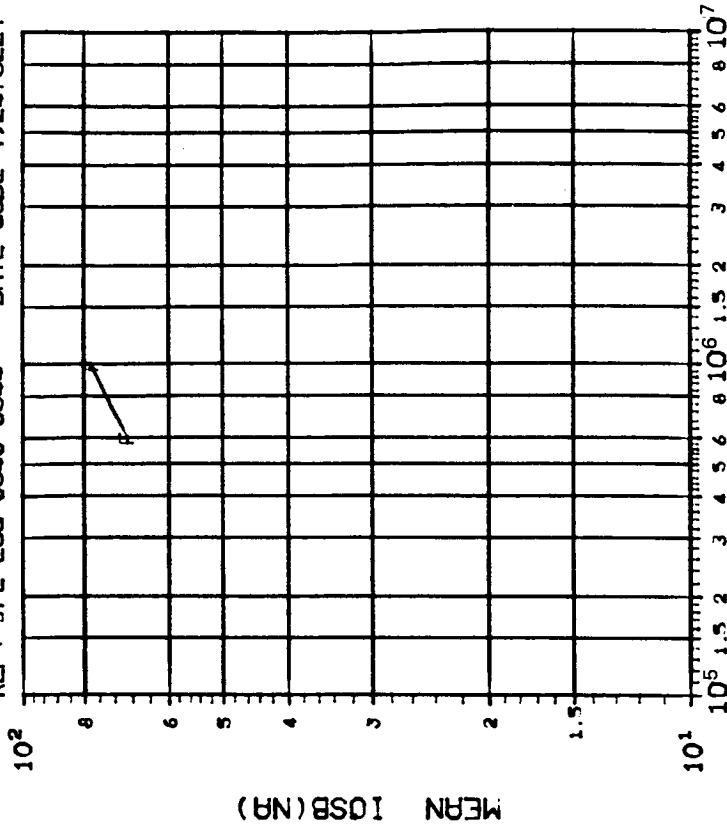
(6)IOSB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	20.09 43.92 64.77

INITIAL MEAN VALUE IOSB(NA) = 8.91X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



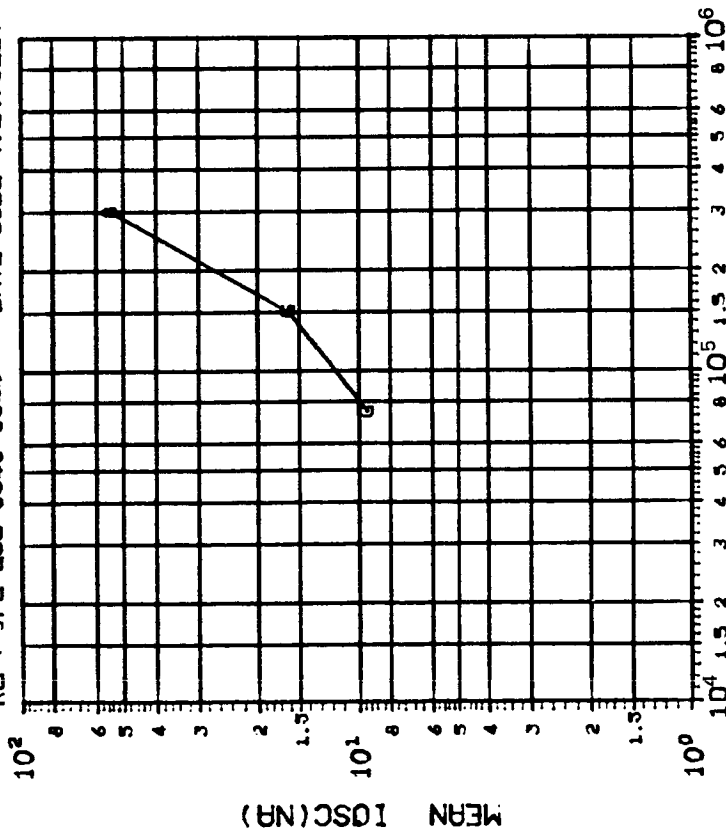
DOSE, rads(Si) Co⁶⁰ Gammas

(6)IOSB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	40.62 53.26 ****

INITIAL MEAN VALUE IOSB(NA) = 8.91X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



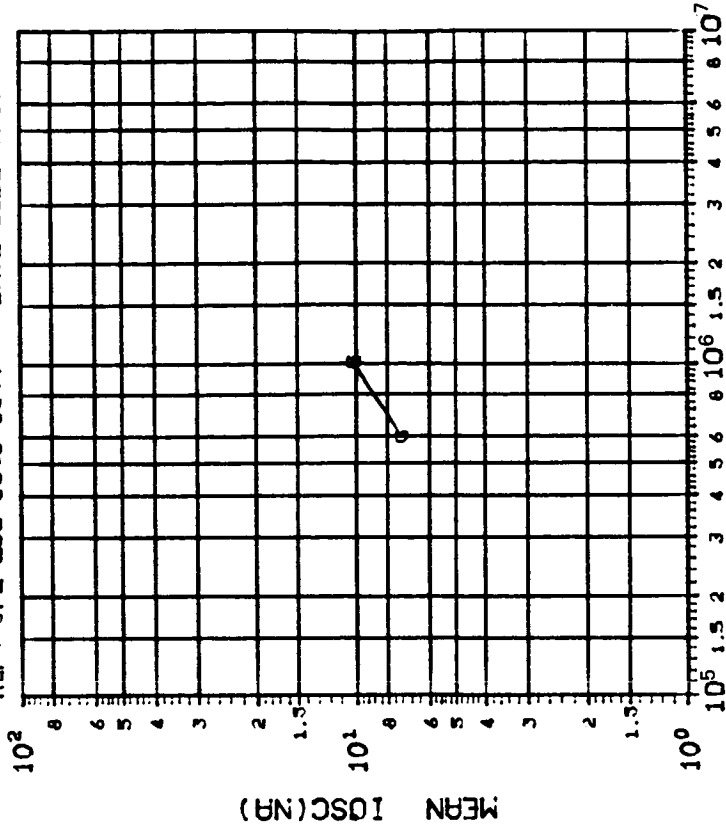
DOSE, rads(Si) Co 60 Gammas

(7)IOSC (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	33.20 53.21 115.0

INITIAL MEAN VALUE IOSC(NA) = 7.08×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



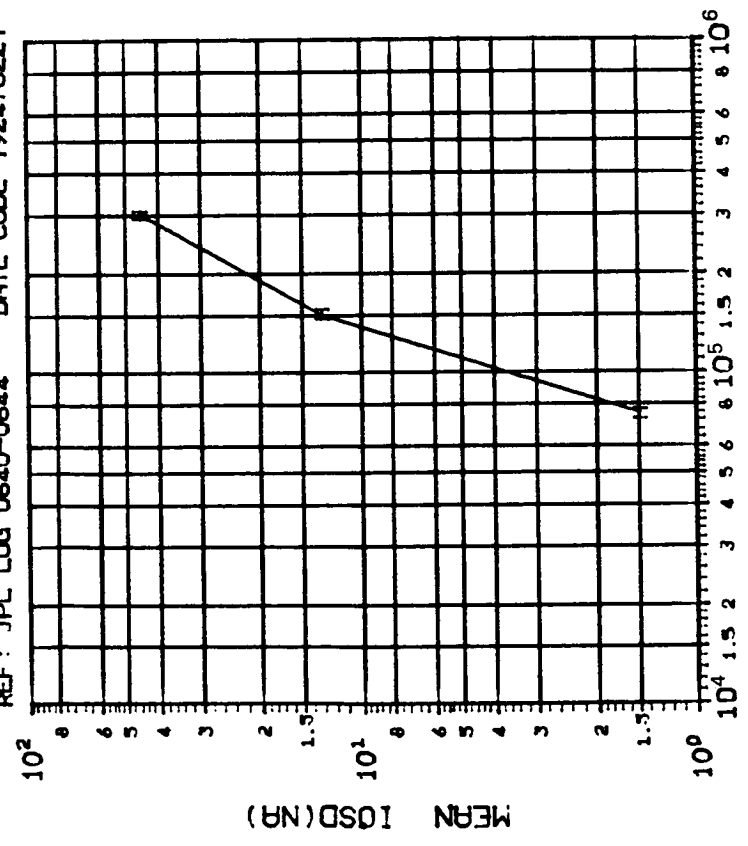
DOSE, rads(Si) Co 60 Gammas

(7)IOSC (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	90.43 103.6 ****

INITIAL MEAN VALUE IOSC(NA) = 7.08×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227

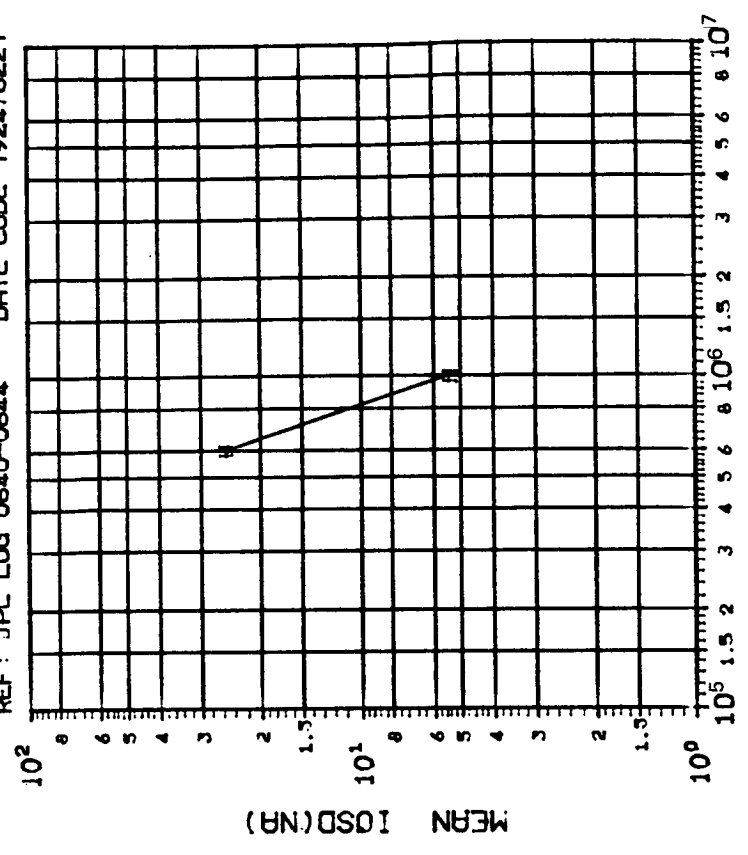


DOSE, rads(Si) Co⁶⁰ Gammas
 (8)IOSD (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	13.45 51.37 127.4

INITIAL MEAN VALUE IOSD(NA) = 7.99X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227

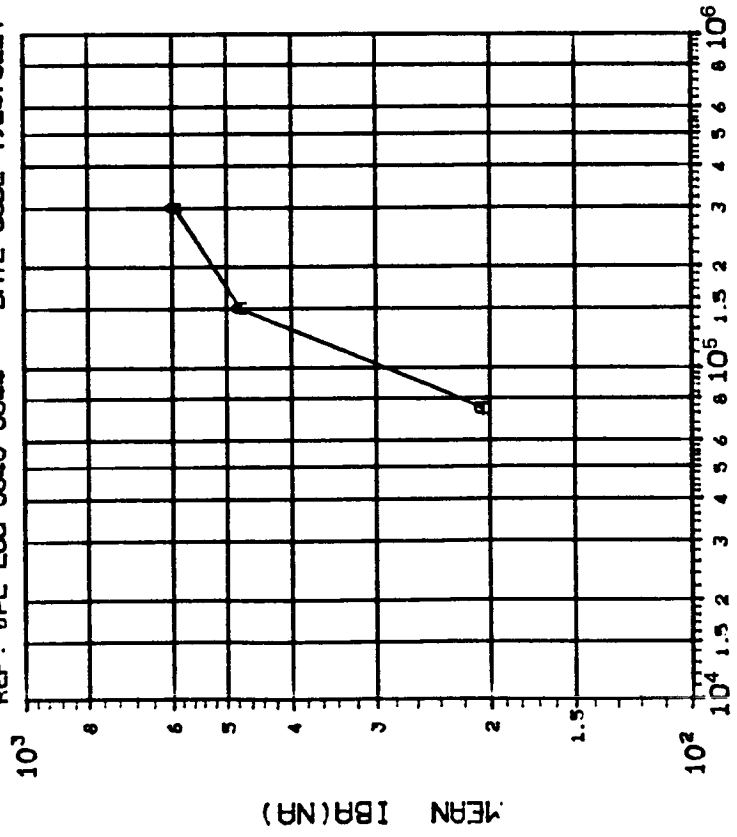


DOSE, rads(Si) Co⁶⁰ Gammas
 (8)IOSD (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	120.0 108.3 ****

INITIAL MEAN VALUE IOSD(NA) = 7.99X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227

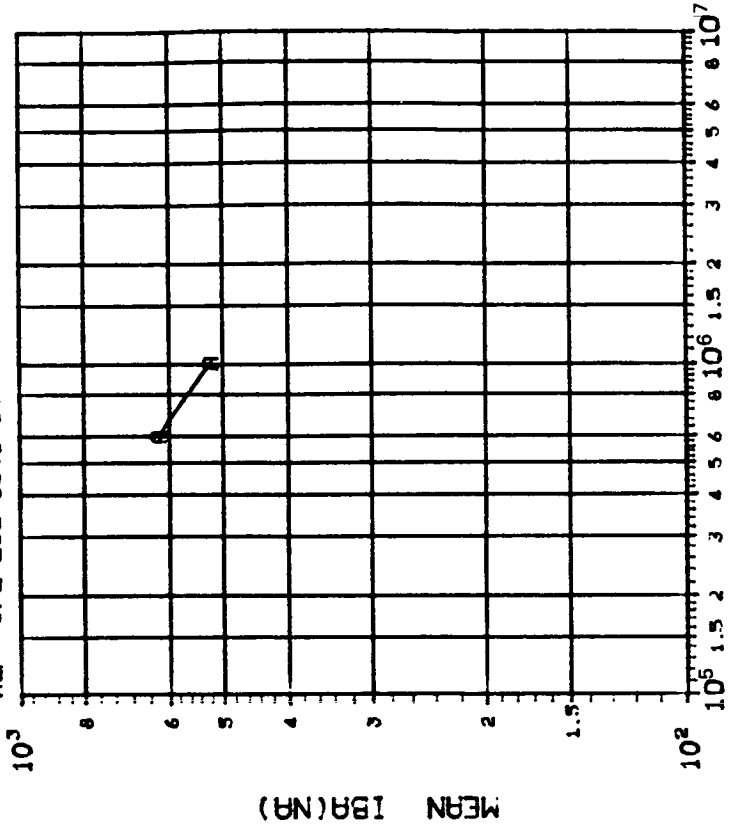


DOSE, rads(Si) Co⁶⁰ Gammas
 (1)1BA (VO=0) IN NA VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	76.72 165.5 167.9

INITIAL MEAN VALUE IBR(NA) = 2.62X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas
 (1)1BA (VO=0) IN NA VS DOSE

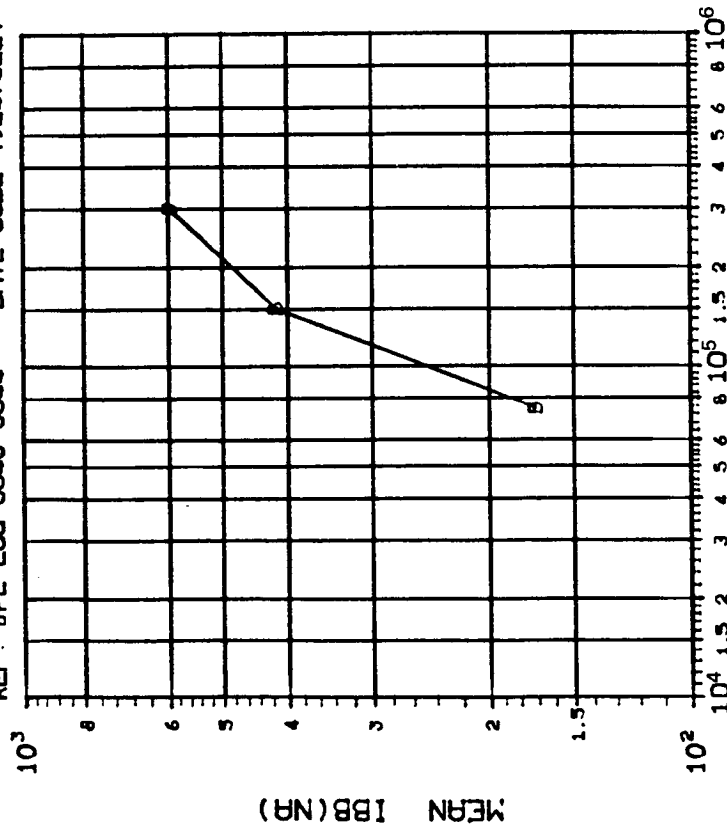
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	199.3 50.62 ****

INITIAL MEAN VALUE IBR(NA) = 2.62X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-63

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (VO=0) IN NA: VS DOSE

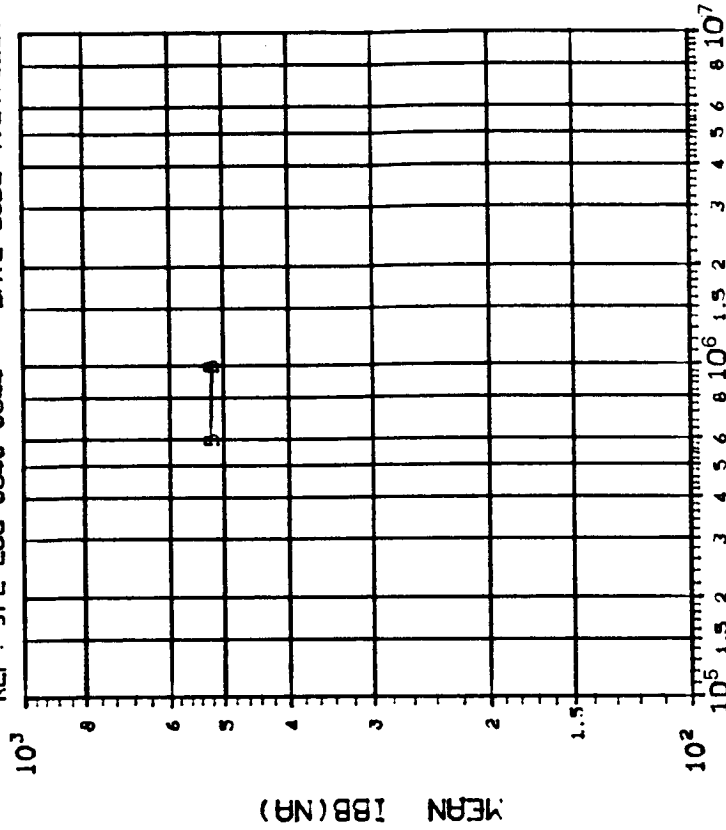
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	54.77 189.0 300.3

INITIAL MEAN VALUE IBB(NA) = 2.50X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-63

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	286.0 261.6 ****

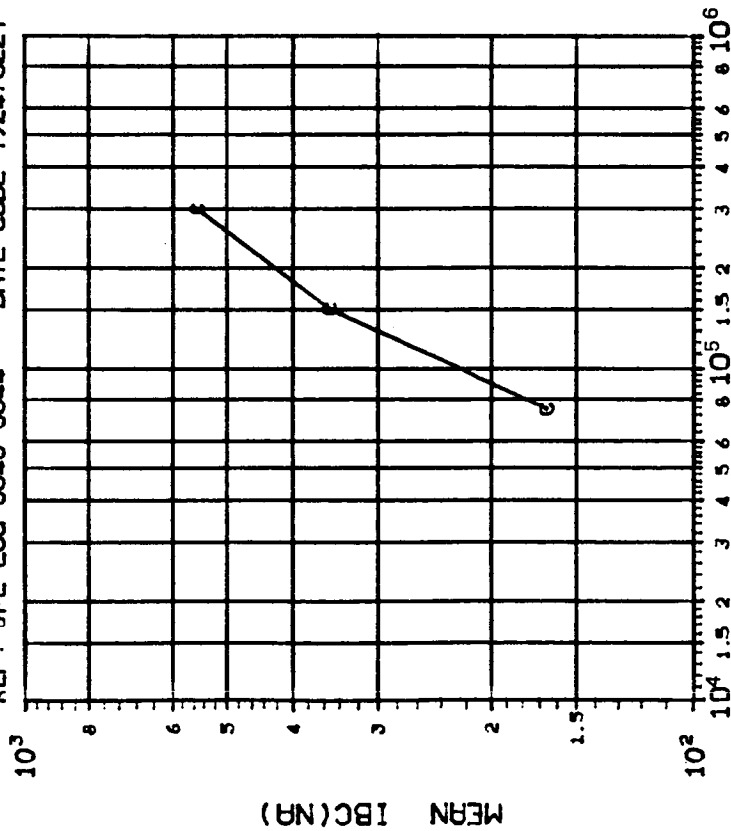
INITIAL MEAN VALUE IBB(NA) = 2.50X10⁴

C - 3

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(3)IBC (VO=0) IN NA: VS DOSE

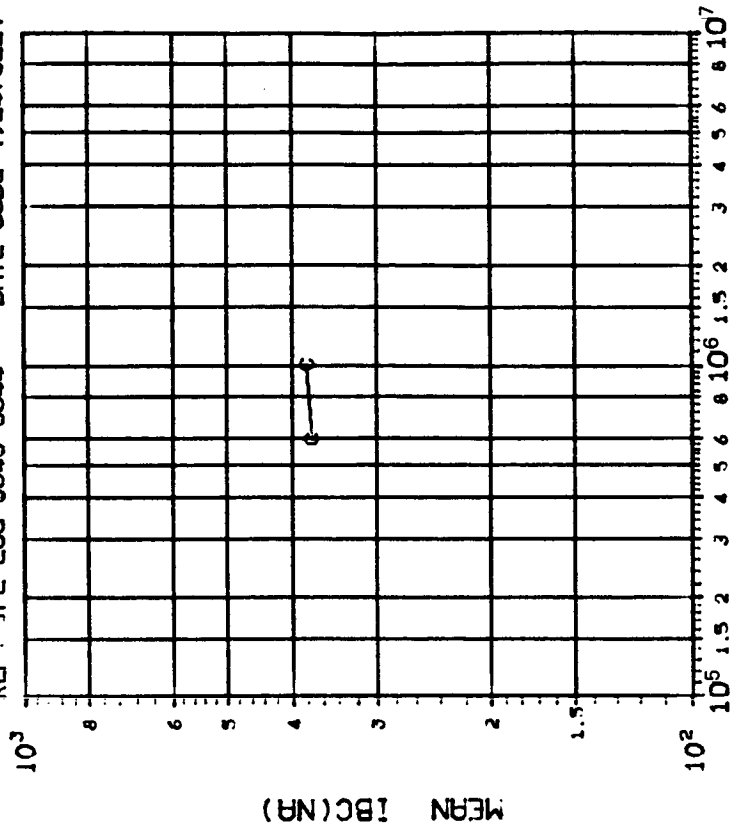
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	63.77 176.6 311.1

INITIAL MEAN VALUE IBC(NR) = 2.40X10²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(3)IBC (VO=0) IN NA: VS DOSE

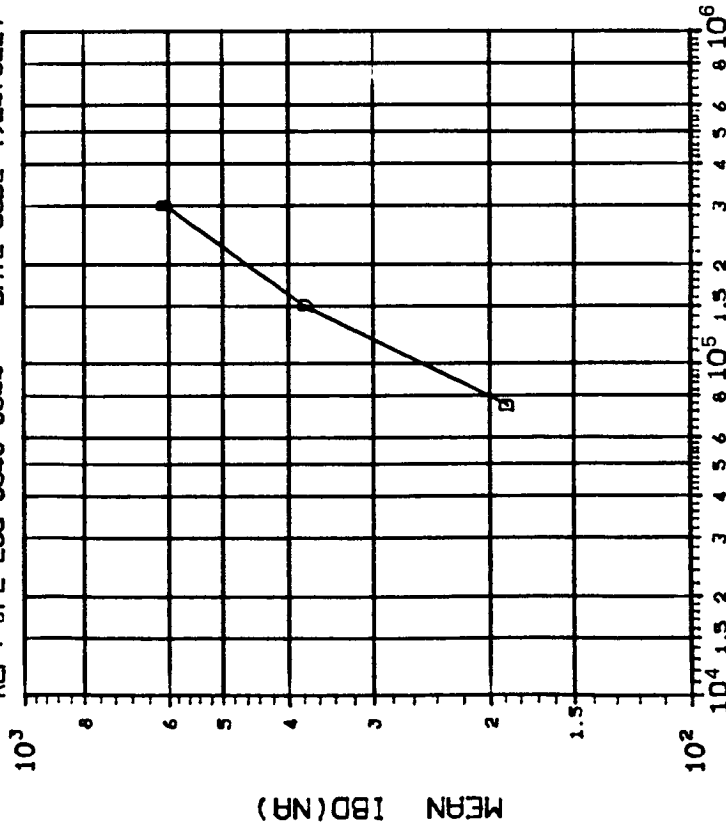
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	242.6 209.2 ****

INITIAL MEAN VALUE IBC(NR) = 2.40X10²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(4)IBD (VO=0) IN NA: VS DOSE

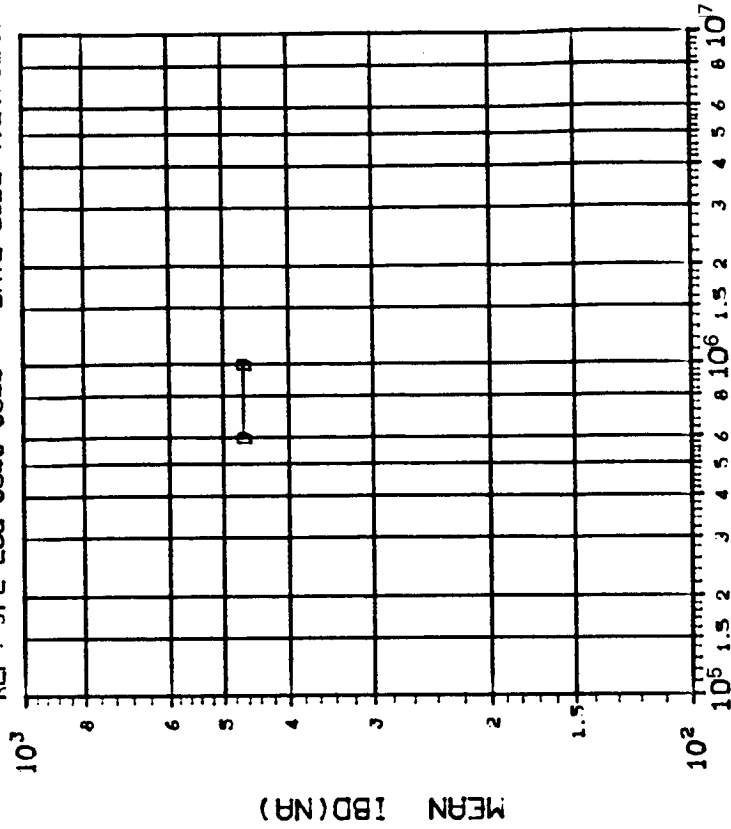
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
D	74.53 156.6 272.1

INITIAL MEAN VALUE IBD(NR) = 2.60X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(4)IBD (VO=0) IN NA: VS DOSE

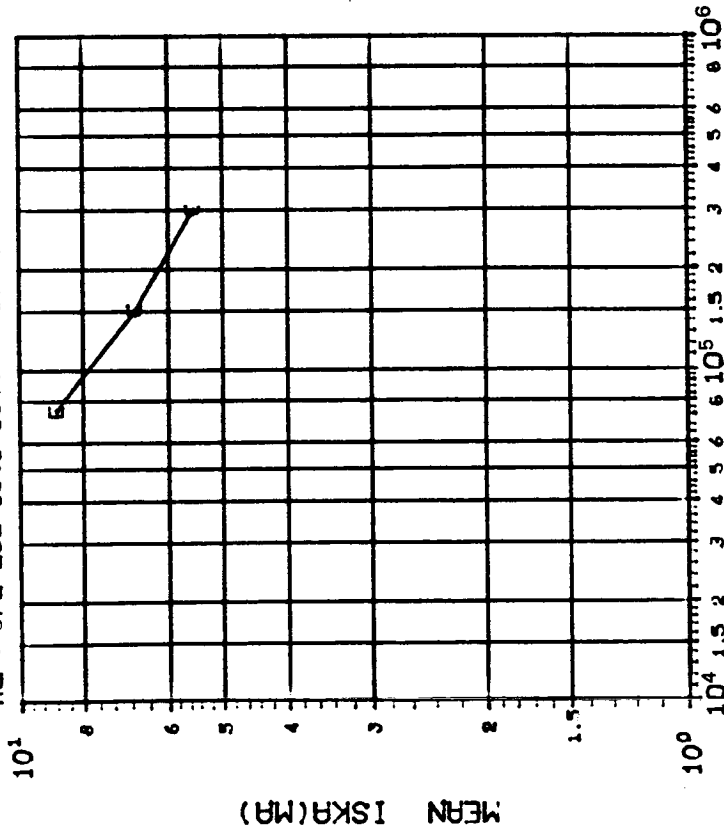
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
D	194.5 162.7 ****

INITIAL MEAN VALUE IBD(NR) = 2.60X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 792A/8227



DOSE, rads(Si) Co 60 Gammas

(S)ISKRA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

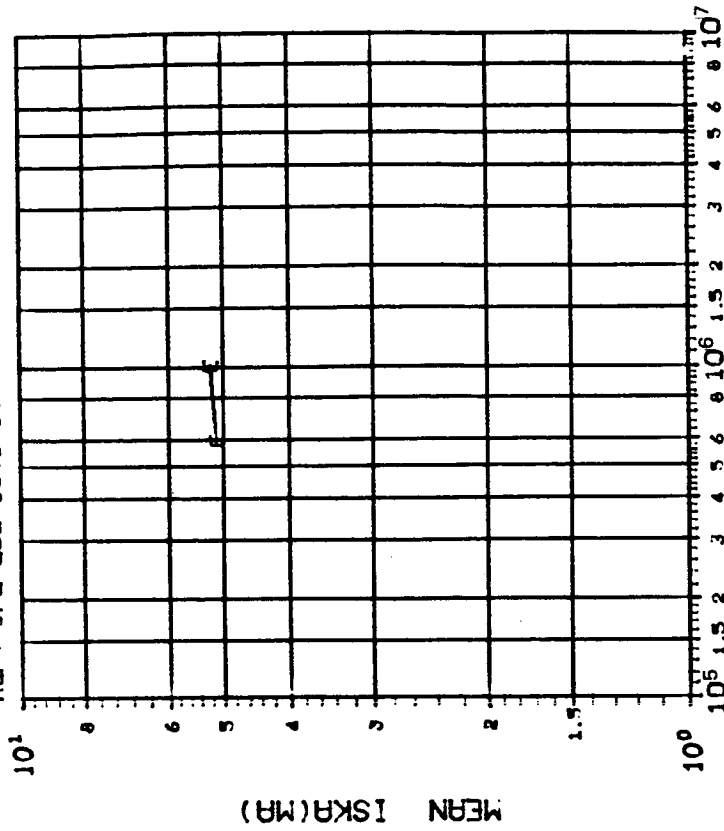
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.166 .7103 .9229

INITIAL MEAN VALUE ISKR(MR) = 1.20X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(S)ISKRA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

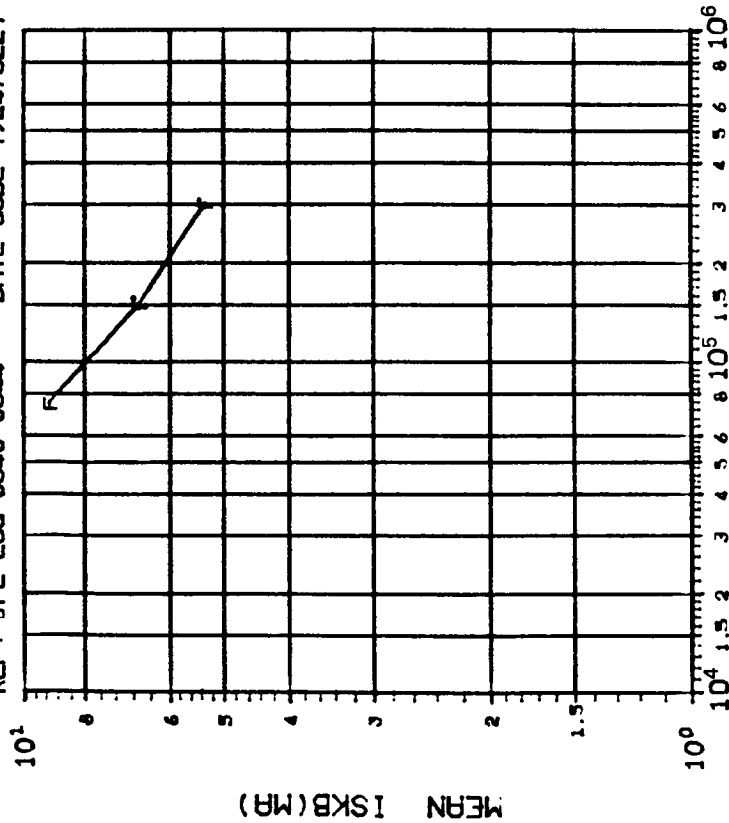
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	1.019 .6361 ****

INITIAL MEAN VALUE ISKR(MR) = 1.20X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



(6) ISKB (V0E--V+1.5V, V1N--100MV) IN VS DOSE

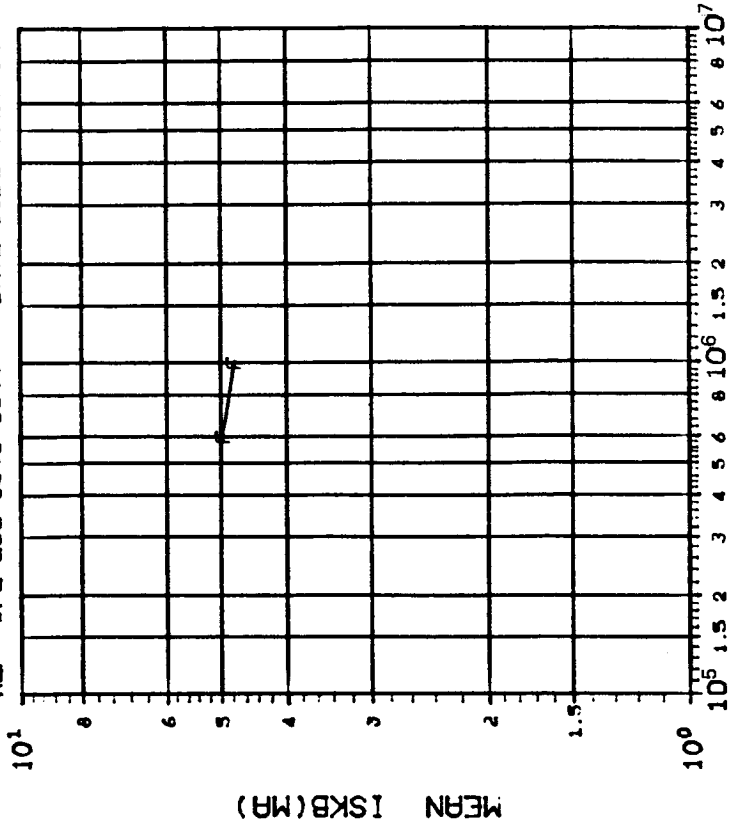
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	2.166 .7027 .6306

INITIAL MEAN VALUE ISKB(MR) = 1.17X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



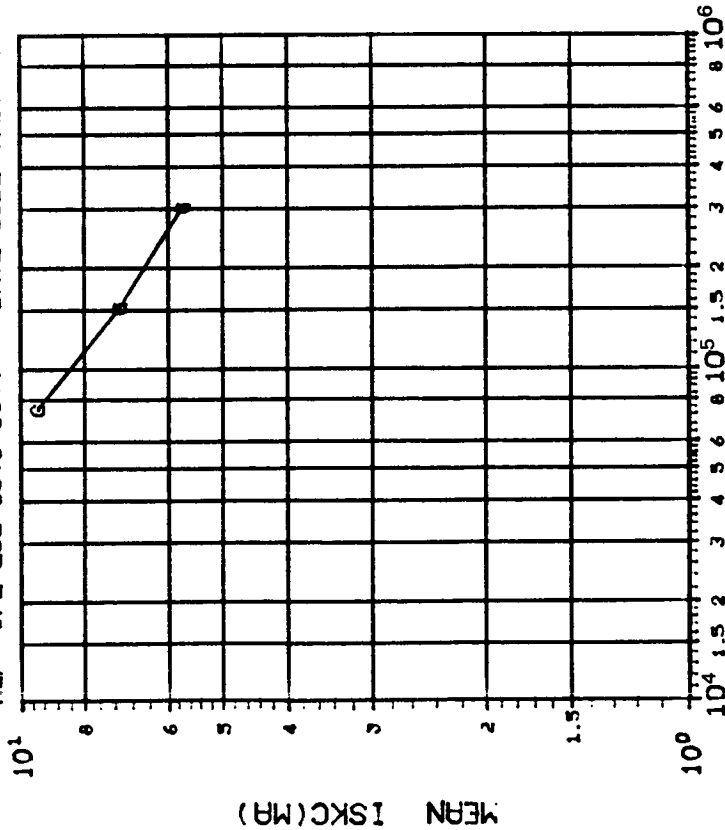
(6) ISKB (V0E--V+1.5V, V1N--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	1.063 1.016 ****

INITIAL MEAN VALUE ISKB(MR) = 1.17X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

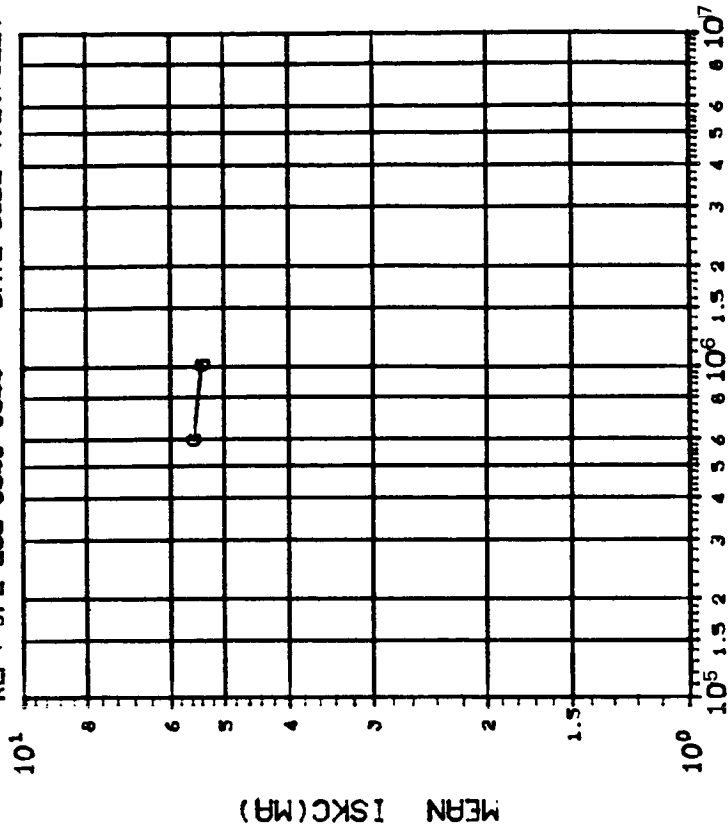
(7) ISKC (V_{CE}=-V+1.5V, V_{INE}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.906 .6204 .6176

INITIAL MEAN VALUE ISKC(MA) = 1.17X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(7) ISKC (V_{CE}=-V+1.5V, V_{INE}=-100MV) IN VS DOSE

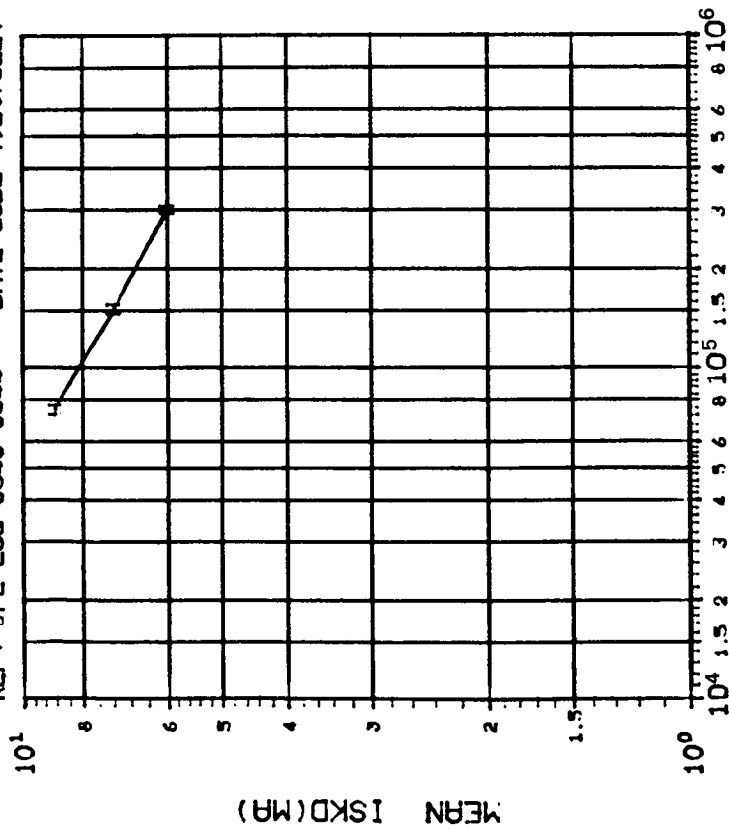
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	1.047 .9406 ****

INITIAL MEAN VALUE ISKC(MA) = 1.17X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(8) ISKD (VOE--V+1.5V, VIN--100MV) IN VS DOSE

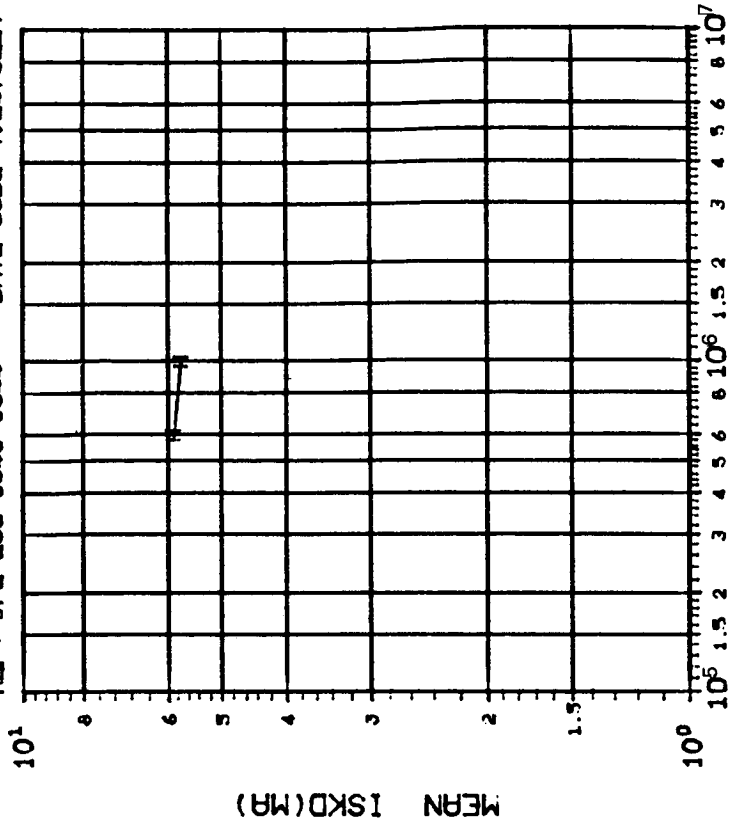
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.7559 .6734 .9683

INITIAL MEAN VALUE ISKD(MR) = 1.15X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

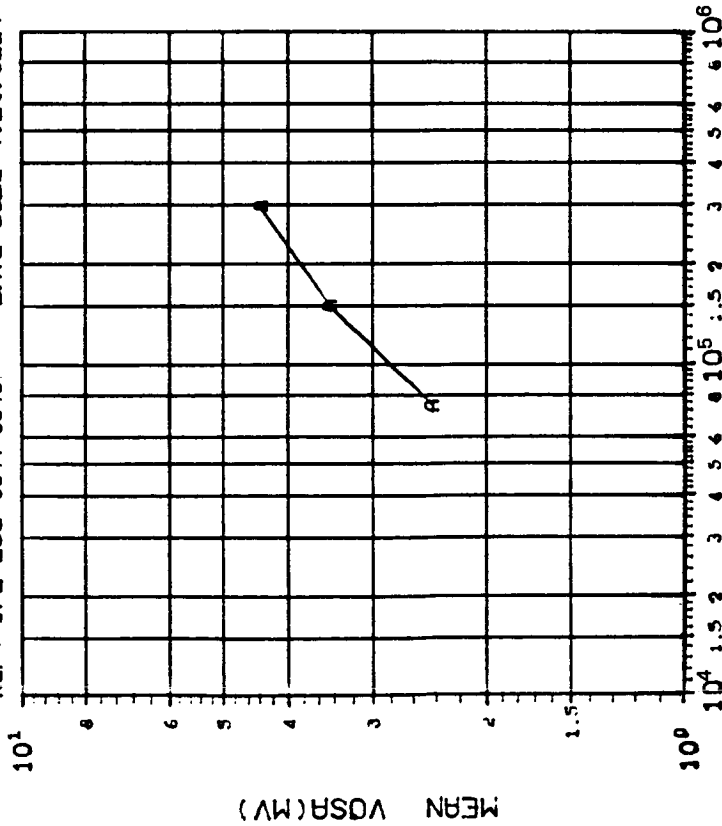
(8) ISKD (VOE--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	1.175 1.011 ****

INITIAL MEAN VALUE ISKD(MR) = 1.15X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co60 Gammas

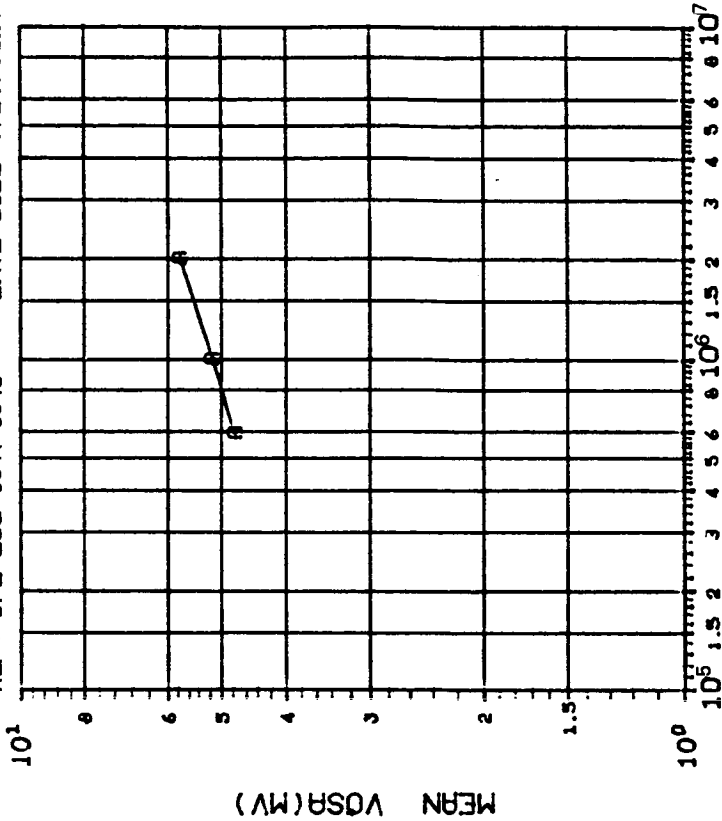
(1)VOSA (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.1.643 .6088 .4529

INITIAL MEAN VALUE VOSA(MV) = 3.22×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



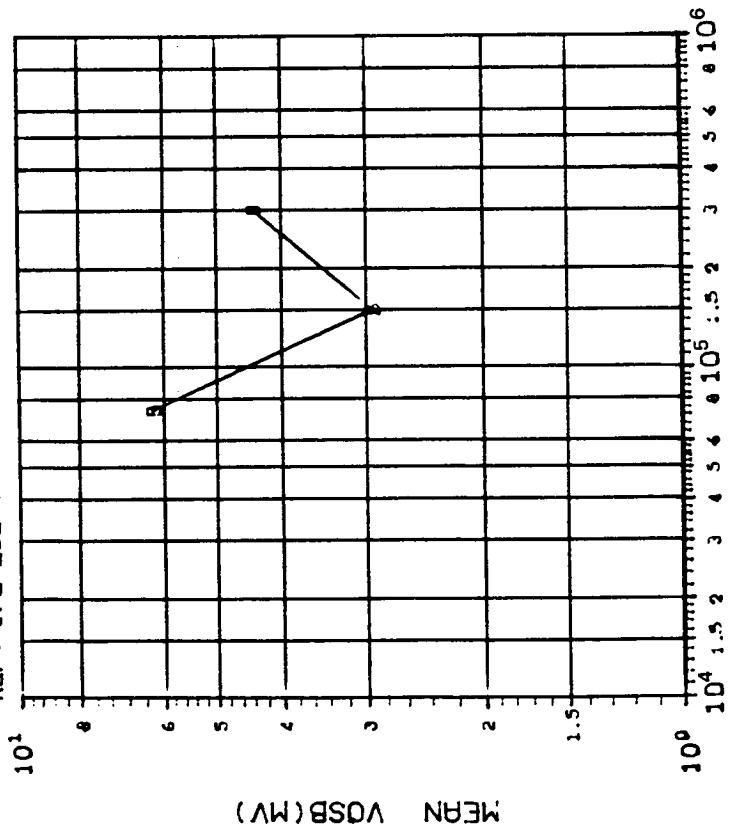
DOSE, rads(Si) Co60 Gammas

(1)VOSA (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.2154 .8558 .4013

INITIAL MEAN VALUE VOSA(MV) = 3.22×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



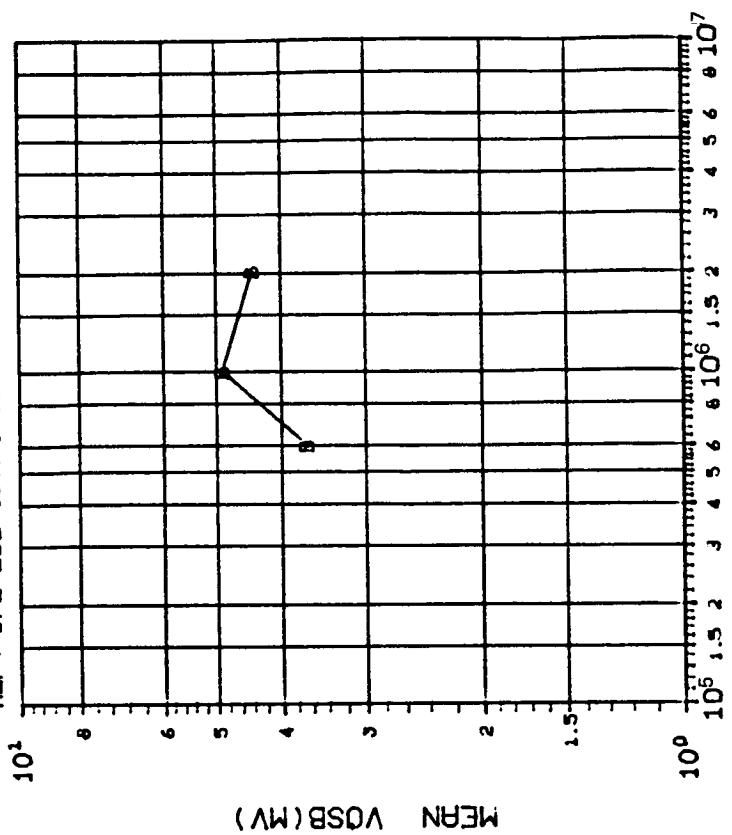
DOSE, rads(Si) Co60 Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	15.63 1.670 2.598

INITIAL MEAN VALUE VOSB(MV) = 6.67X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co60 Gammas

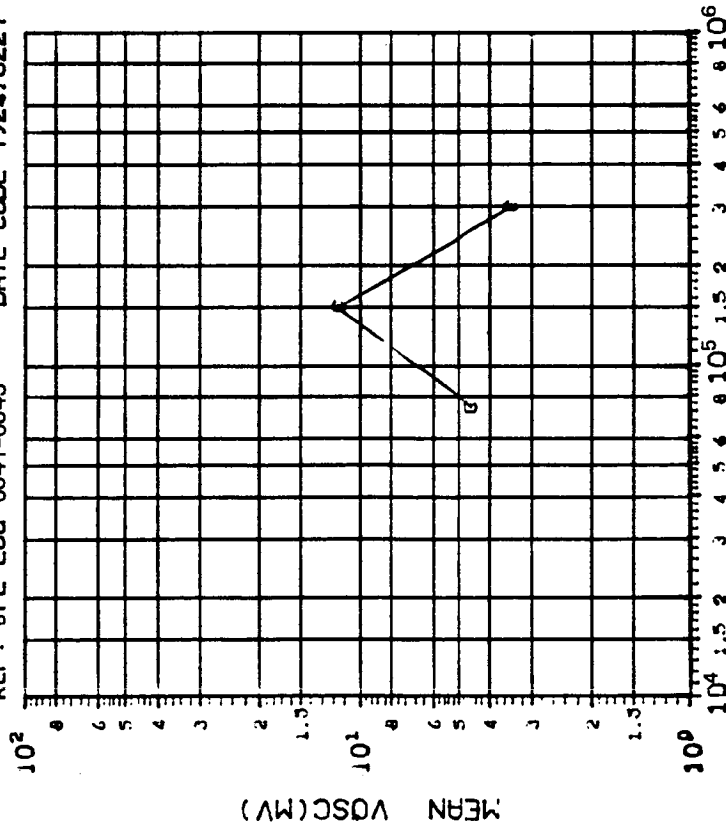
(2)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	2.747 2.554 1.550

INITIAL MEAN VALUE VOSB(MV) = 6.67X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

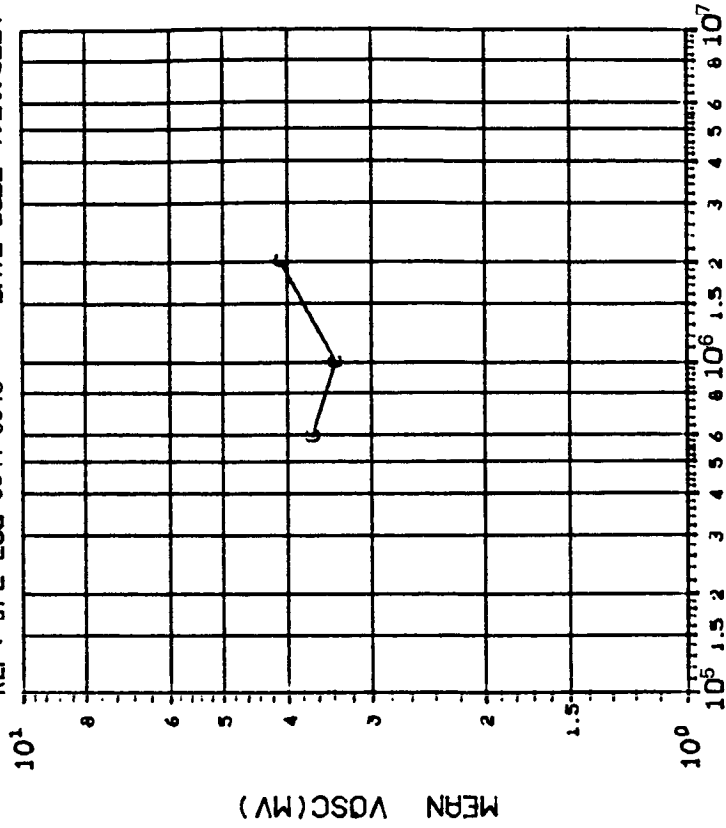
(31)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	9.323 23.40 3.394

INITIAL MEAN VALUE VOSC(MV) = 9.70X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

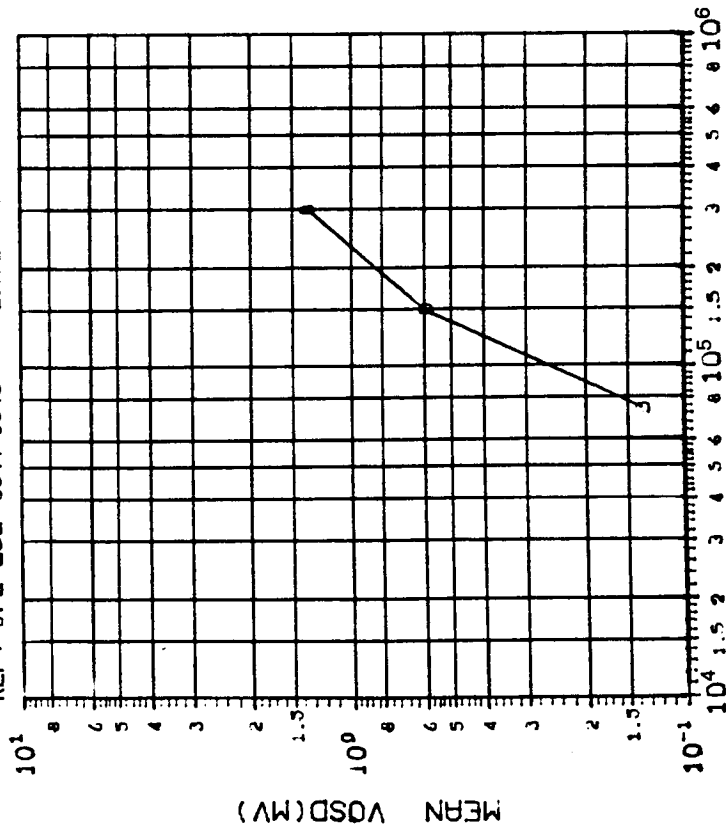
(31)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	3.302 1.941 1.945

INITIAL MEAN VALUE VOSC(MV) = 9.70X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

(4)1VOSD (VO=01) IN MV: VS DOSE

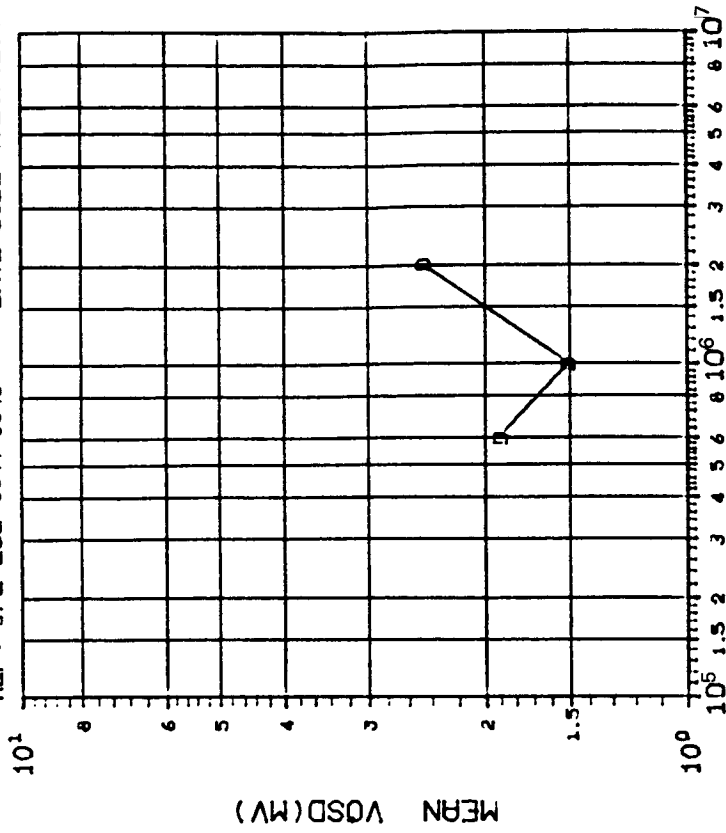
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
D	75 150 300
	1.761 3.642 3.662

INITIAL MEAN VALUE VOSD(MV) = 1.97X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

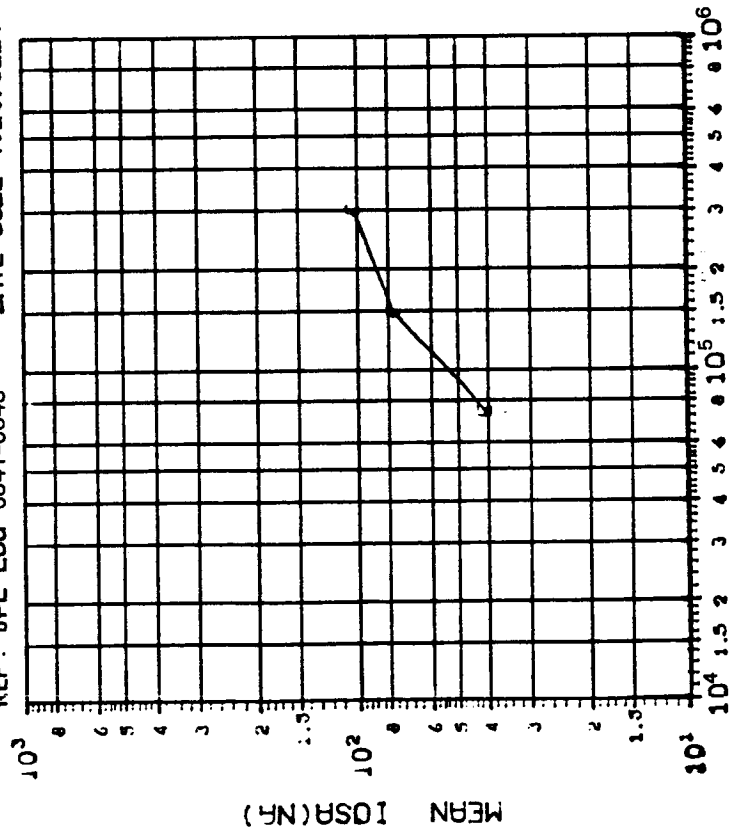
(4)VOSD (VO=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	3.760 1.627 1.504

INITIAL MEAN VALUE VOSD(MV) = 1.97X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-63
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227

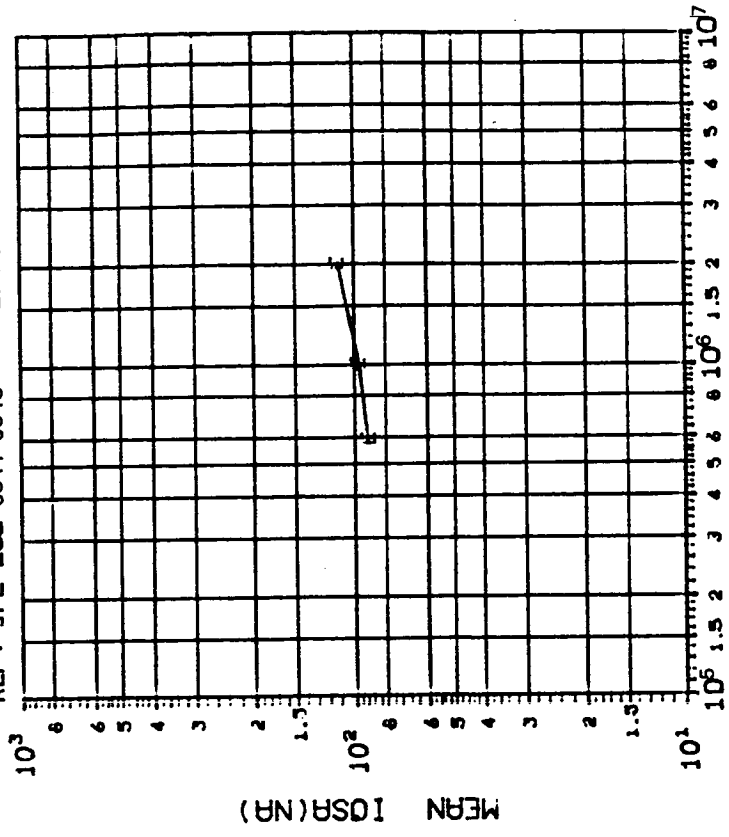


DOSE, rads(Si) Co⁶⁰ Gammas
 (5110SA (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	36.97 39.11 62.26

INITIAL MEAN VALUE IOSR(NA) = 7.26X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-63
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas
 (5110SA (VO=0) IN NA: VS DOSE

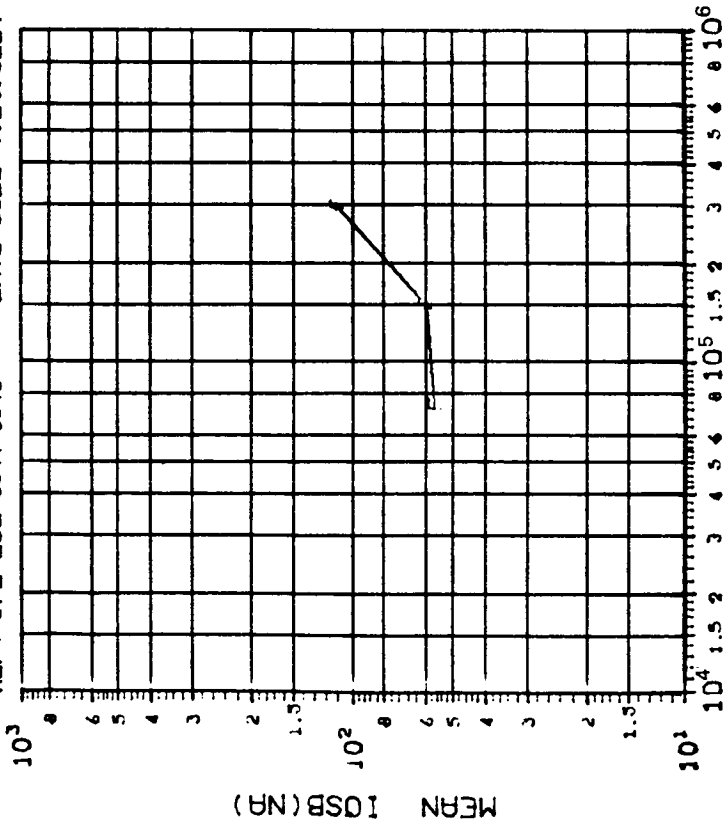
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	58.52 52.62 41.22

INITIAL MEAN VALUE IOSR(NA) = 7.26X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(6)10SB (V0=0) IN NA: VS DOSE

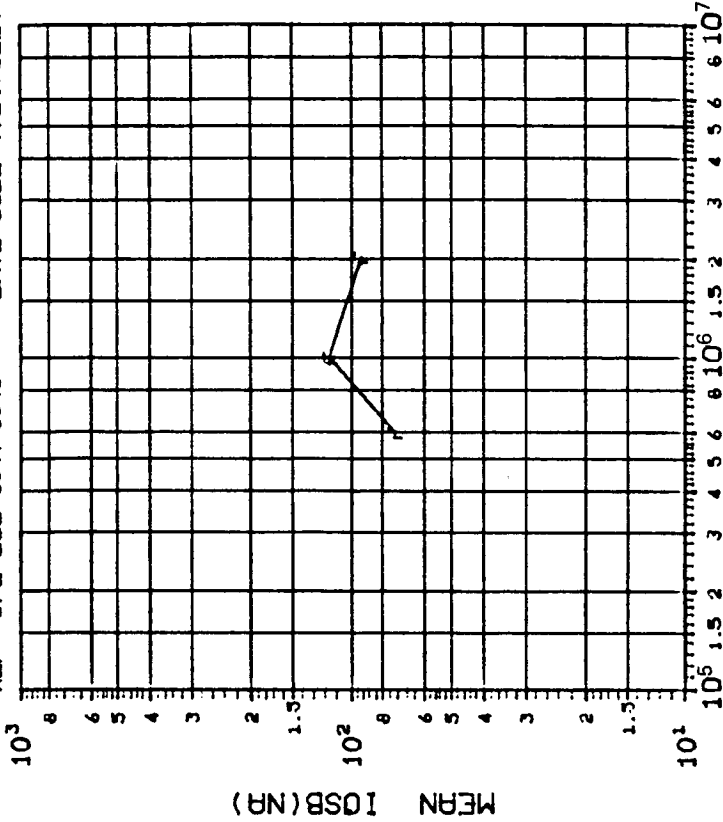
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	178.7 41.32 72.62

INITIAL MEAN VALUE IQSB(NR) = 1.16X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



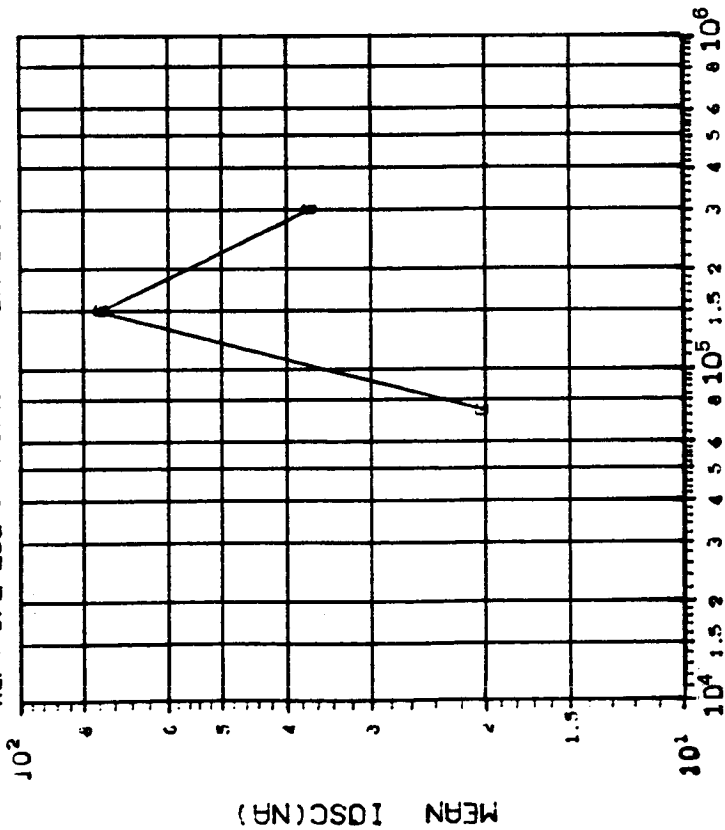
DOSE, rads(Si) Co 60 Gammas

(6)10SB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	59.14 81.91 41.36

INITIAL MEAN VALUE IQSB(NR) = 1.16X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



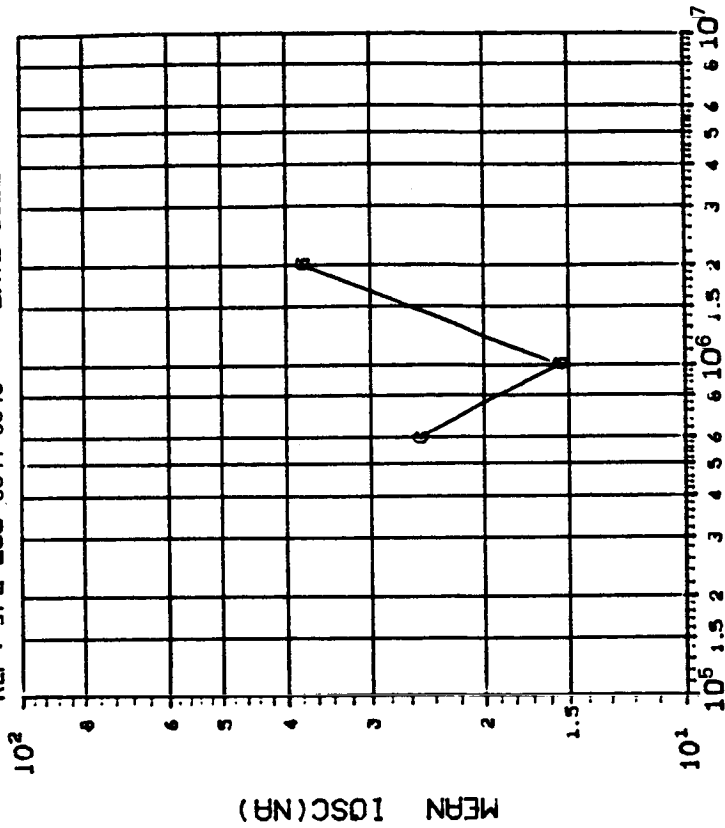
DOSE, rads(Si) Co 60 Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	94.75 152.7 100.3

INITIAL MEAN VALUE IOSC(NA) = 5.36X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



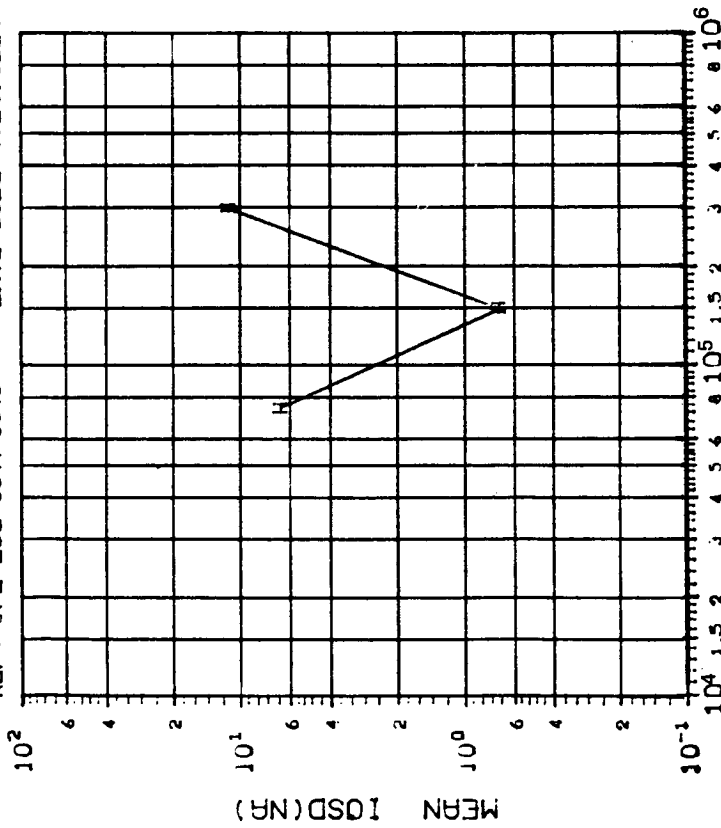
DOSE, rads(Si) Co 60 Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	89.26 53.67 52.79

INITIAL MEAN VALUE IOSC(NA) = 5.36X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



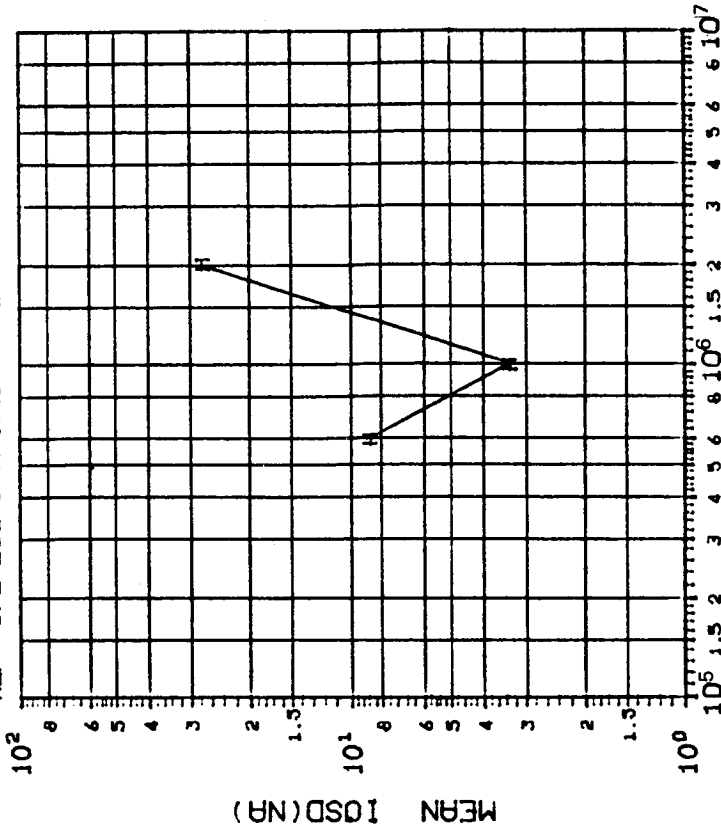
DOSE, rads(Si) Co⁶⁰ Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	31.52 101.7 108.7

INITIAL MEAN VALUE IOSD(NA) = 1.16X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



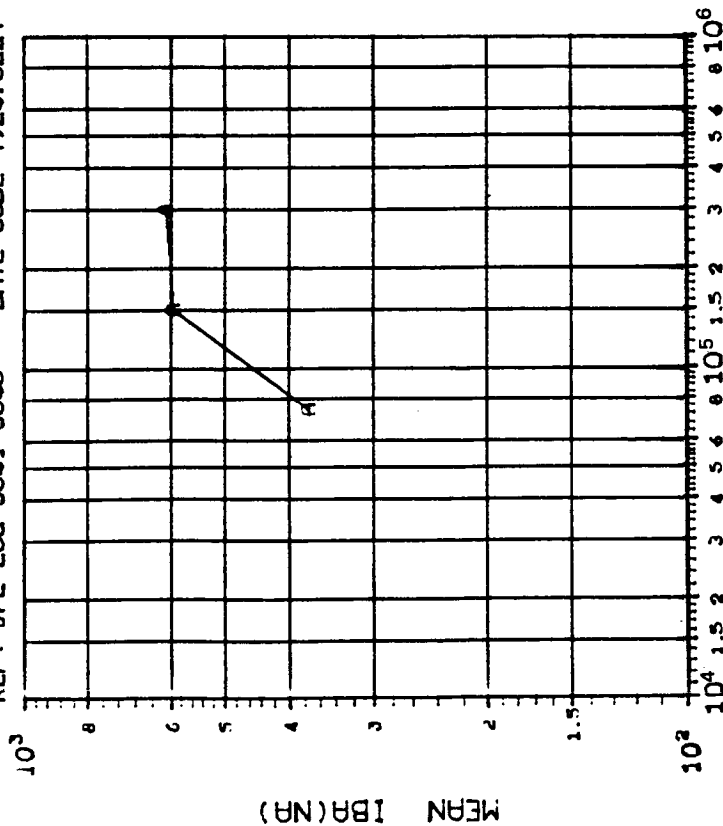
DOSE, rads(Si) Co⁶⁰ Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	105.5 50.23 45.64

INITIAL MEAN VALUE IOSD(NA) = 1.16X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227

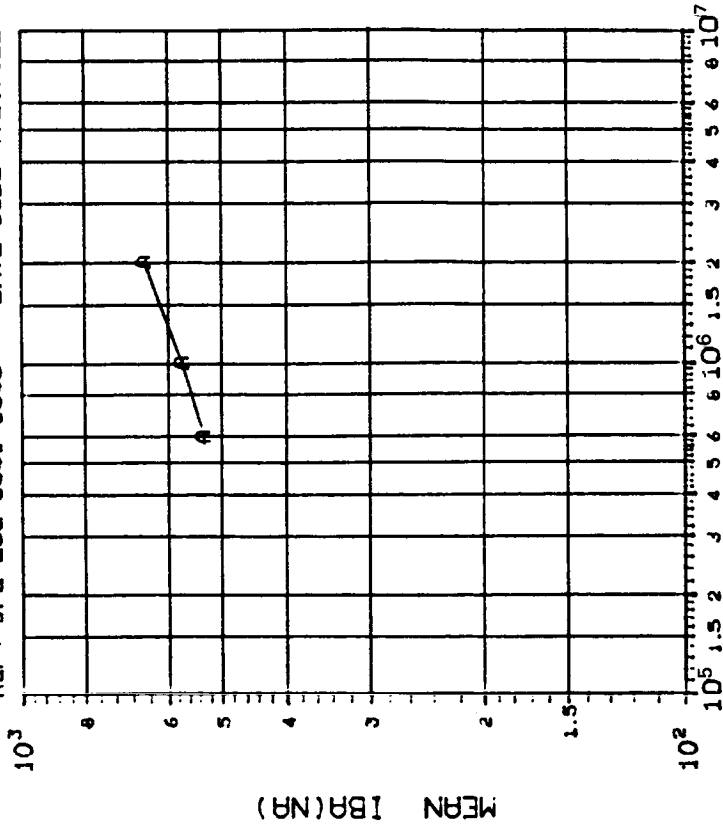


DOSE, rads(Si) Co⁶⁰ Gammas
 (1)IBR (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	186.3 192.3 276.9

INITIAL MEAN VALUE IBR(NA) = 2.89×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



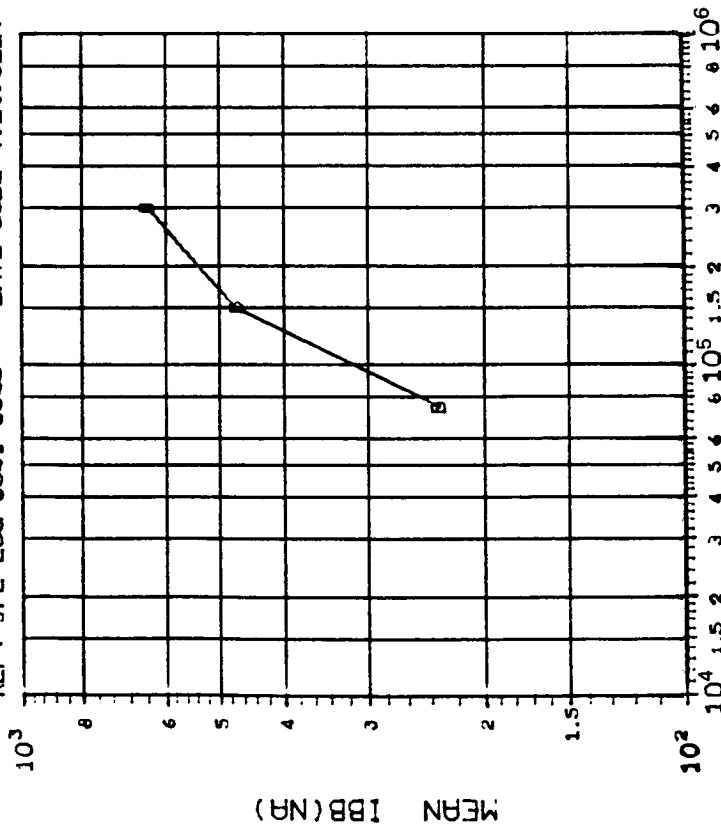
DOSE, rads(Si) Co⁶⁰ Gammas
 (1)IBR (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	204.0 184.3 154.6

INITIAL MEAN VALUE IBR(NA) = 2.89×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

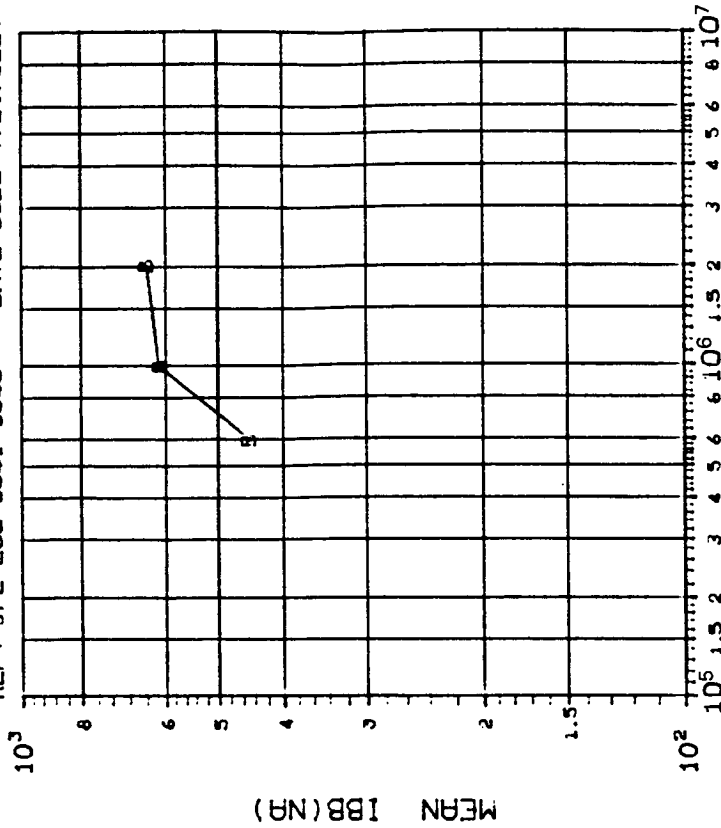
(2)IBB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	166.5 244.3 341.8

INITIAL MEAN VALUE IBB(NA) = 2.70X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



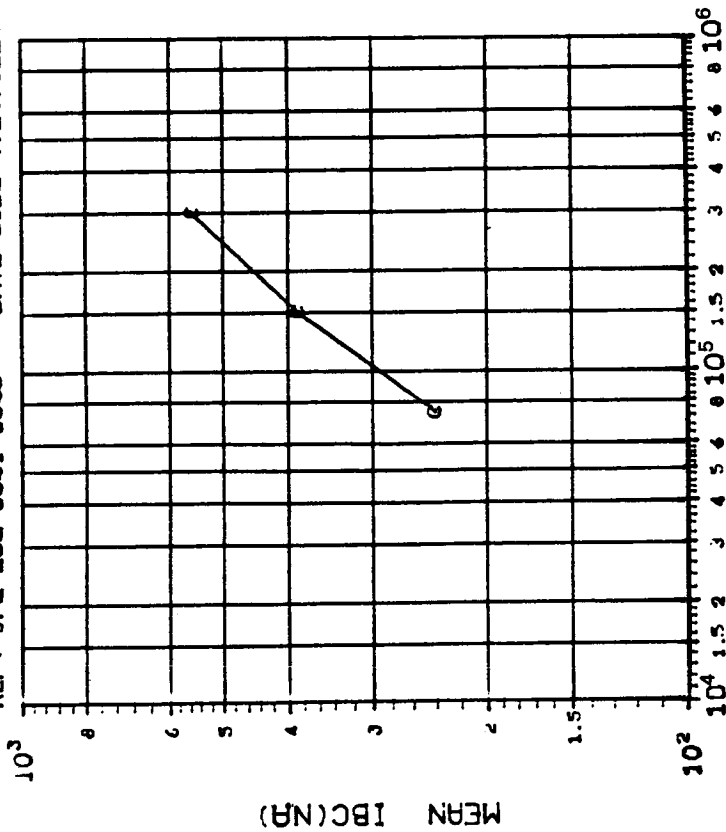
DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	204.9 292.4 203.4

INITIAL MEAN VALUE IBB(NA) = 2.75X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227

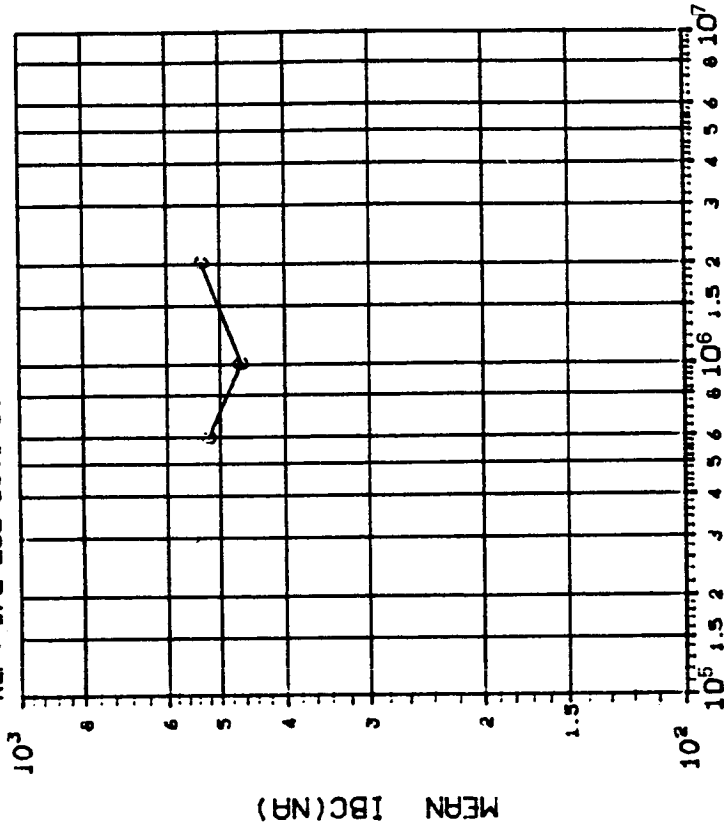


DOSE, rads(Si) Co 60 Gammas
 (3)IBC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	97.57 391.1 294.1

INITIAL MEAN VALUE IBC(NA) = 2.67X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas
 (3)IBC (V0=0) IN NA: VS DOSE

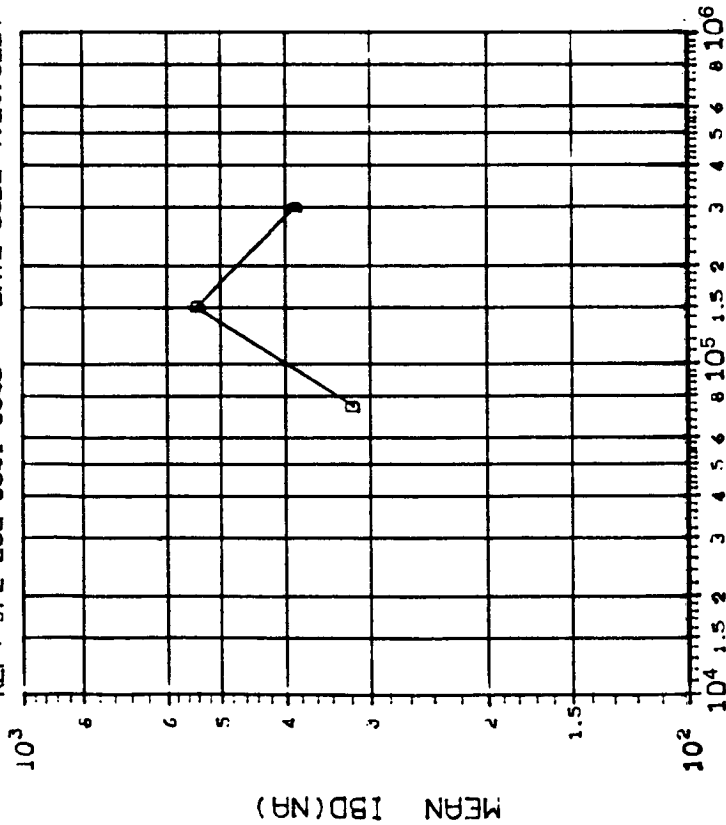
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	257.9 191.3 171.3

INITIAL MEAN VALUE IBC(NA) = 2.67X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(4)IBD (V0=0) IN NA: VS DOSE

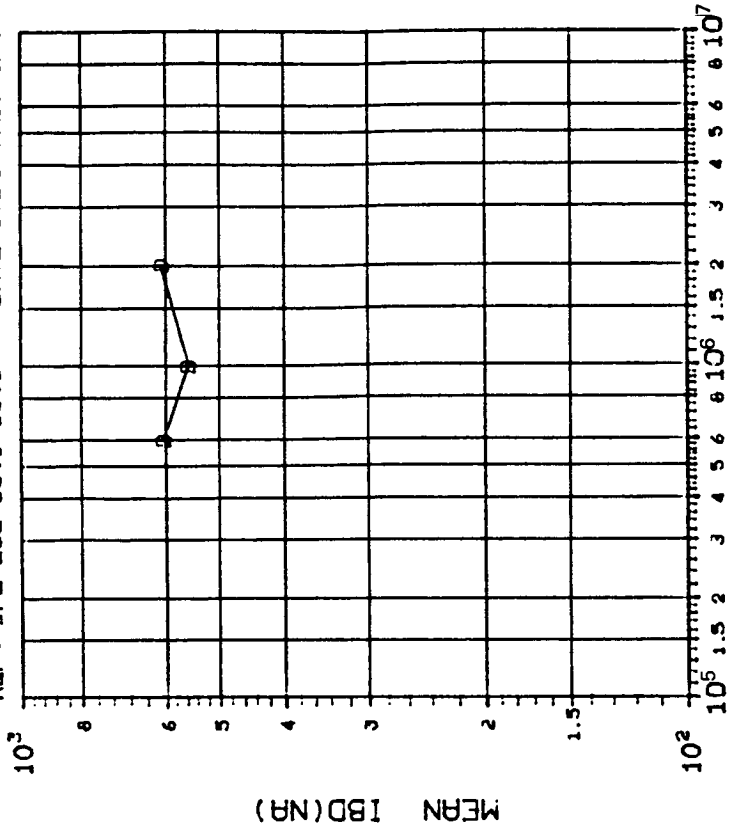
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
D	127.2 198.6 600.5

INITIAL MEAN VALUE IBD(NA) = 2.95X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



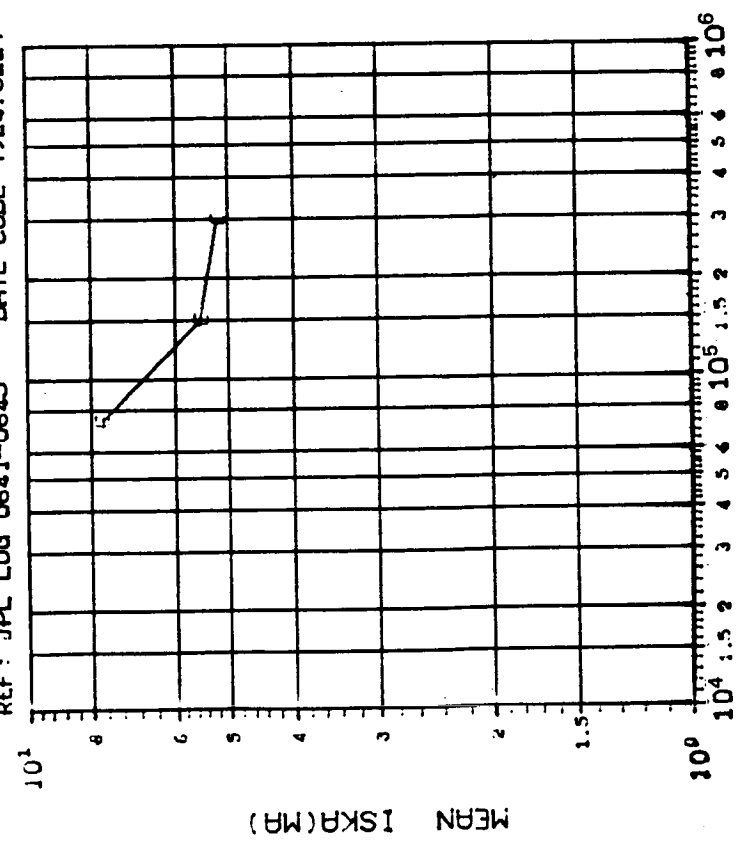
DOSE, rads(Si) Co 60 Gammas

(4)IBD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600
	1000
D	199.7 120.6 115.2

INITIAL MEAN VALUE IBD(NA) = 2.97X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227

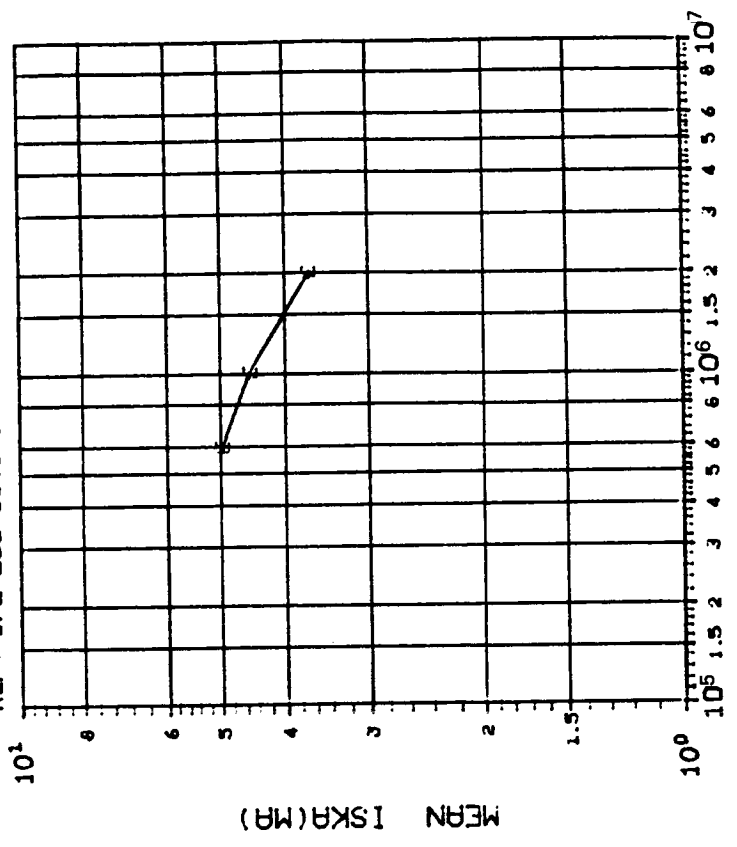


DOSE, rads(Si) Co 60 Gammas
 (511SKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
E	1.948 .6426 .6379

INITIAL MEAN VALUE ISKA(MR) = 1.24X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



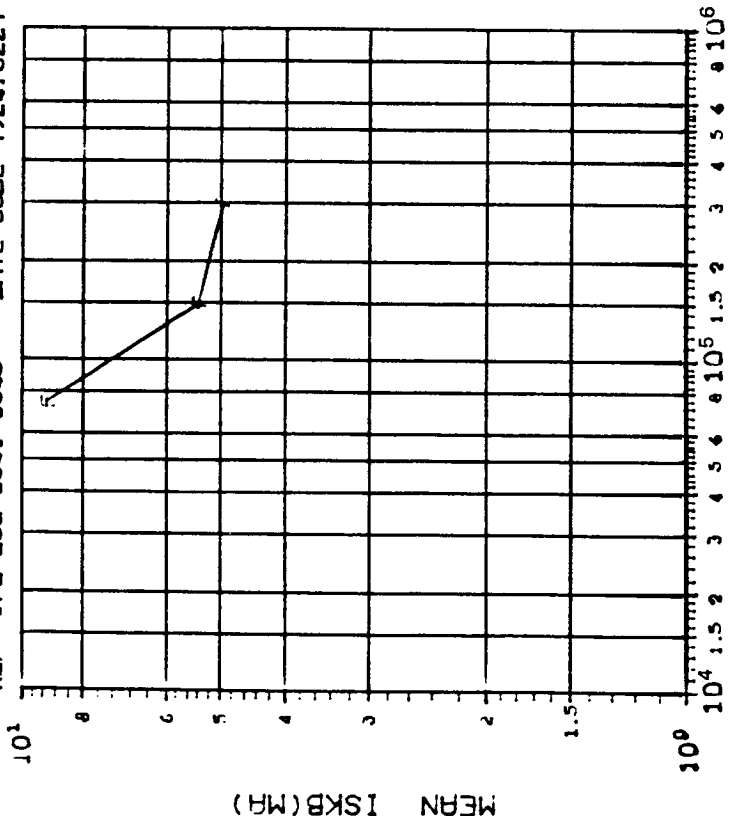
DOSE, rads(Si) Co 60 Gammas
 (511SKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
E	.5442 .5639 .6046

INITIAL MEAN VALUE ISKA(MR) = 1.24X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

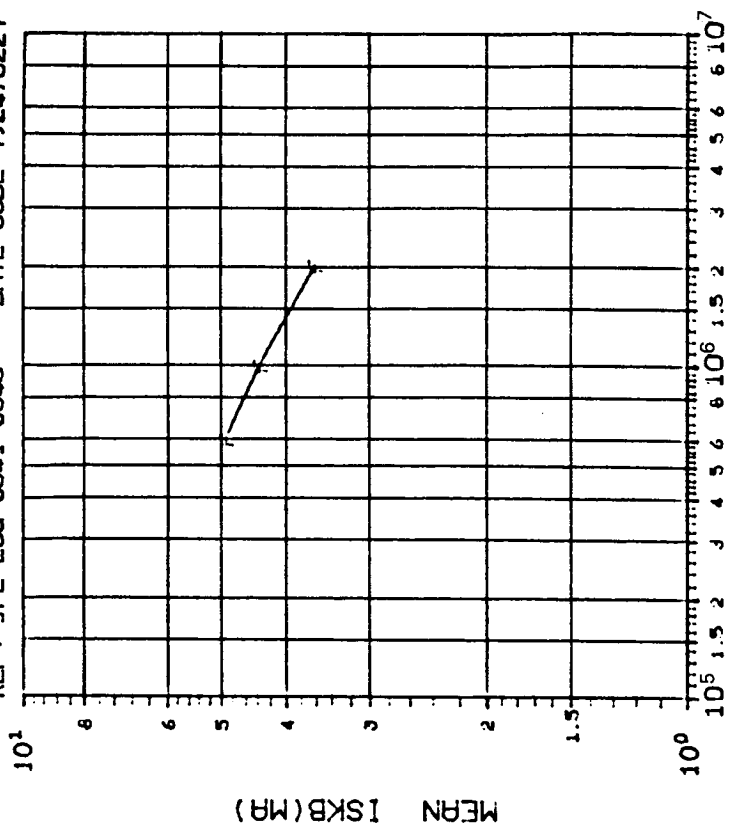
(6) ISKB (V_{0E}-V+1.5V, V_{IN}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	4.777 .6582 .7520

INITIAL MEAN VALUE ISKB(MA) = 1.21X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(6) ISKB (V_{0E}-V+1.5V, V_{IN}=-100MV) IN VS DOSE

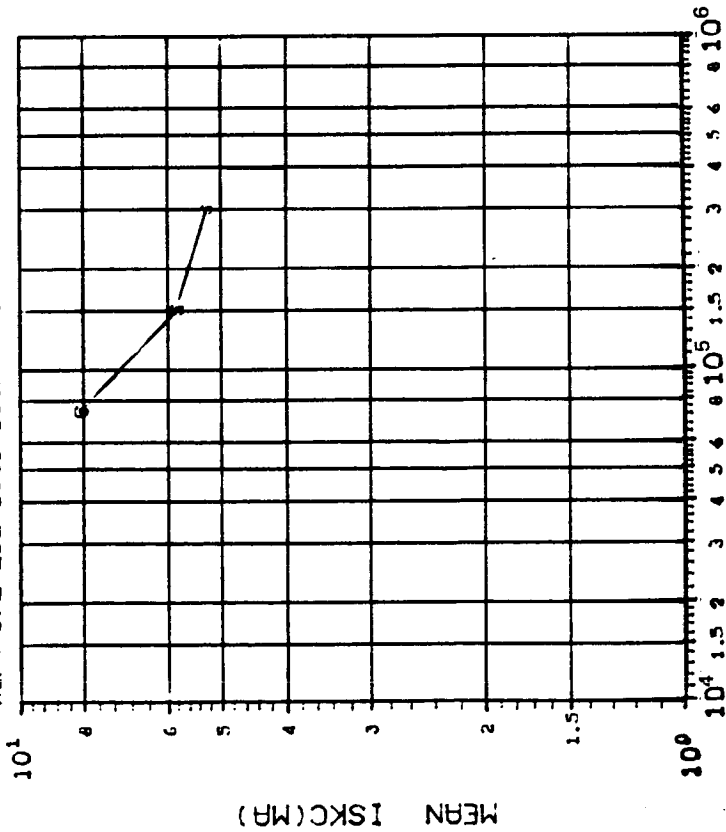
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	.4266 .4270 .3979

INITIAL MEAN VALUE ISKB(MA) = 1.21X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(711SKC (V0E-V+1.5V,V1N=-100MV) IN VS DOSE

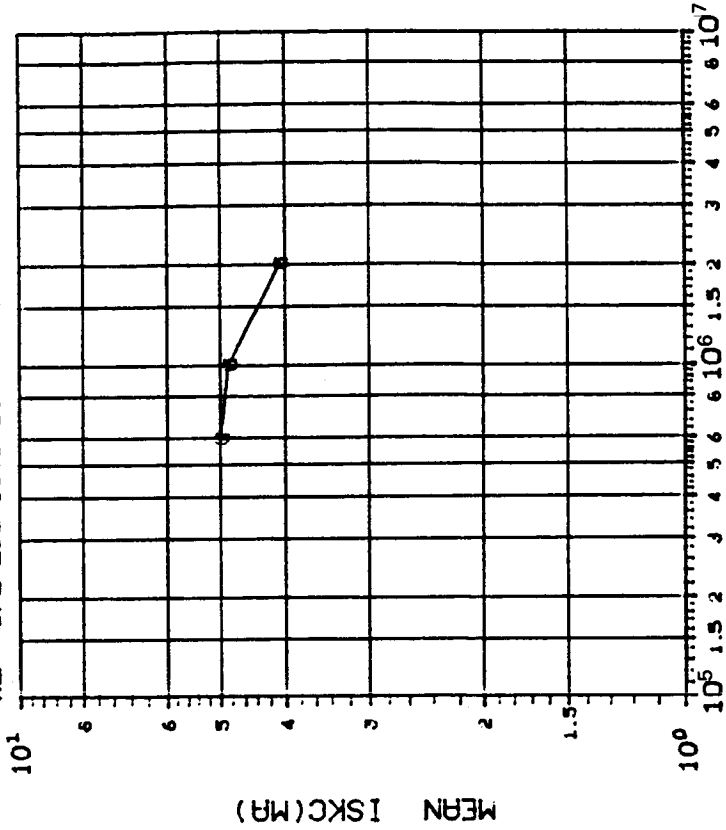
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	2.864 .6624 .6209

INITIAL MEAN VALUE ISK(MA) = 1.19X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(711SKC (V0E-V+1.5V,V1N=-100MV) IN VS DOSE

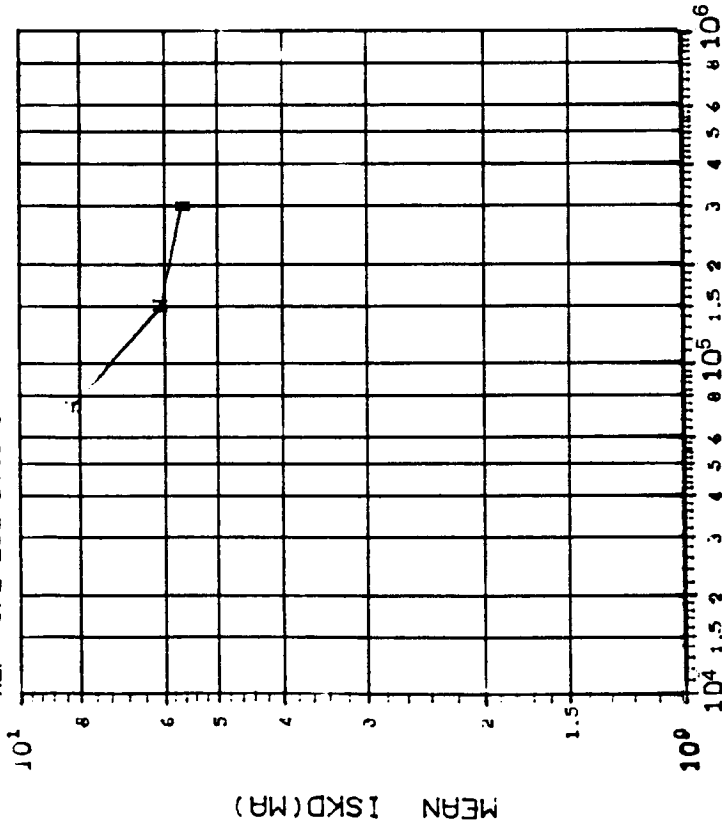
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	.7478 .5736 .5625

INITIAL MEAN VALUE ISK(MA) = 1.19X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(8)ISKD (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

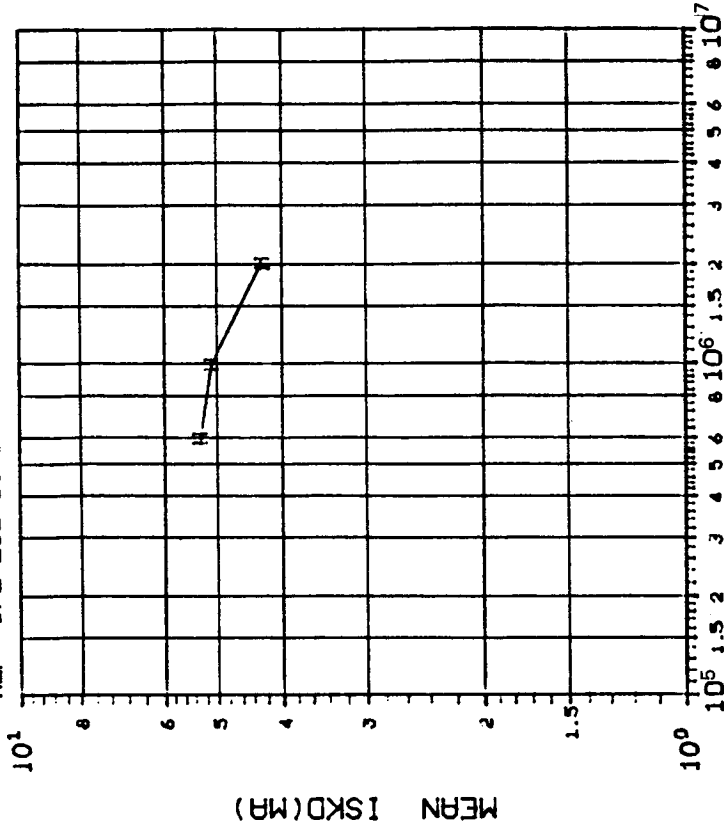
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.1.677 .6298 .6281

INITIAL MEAN VALUE ISKD(MR) = 1.16X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



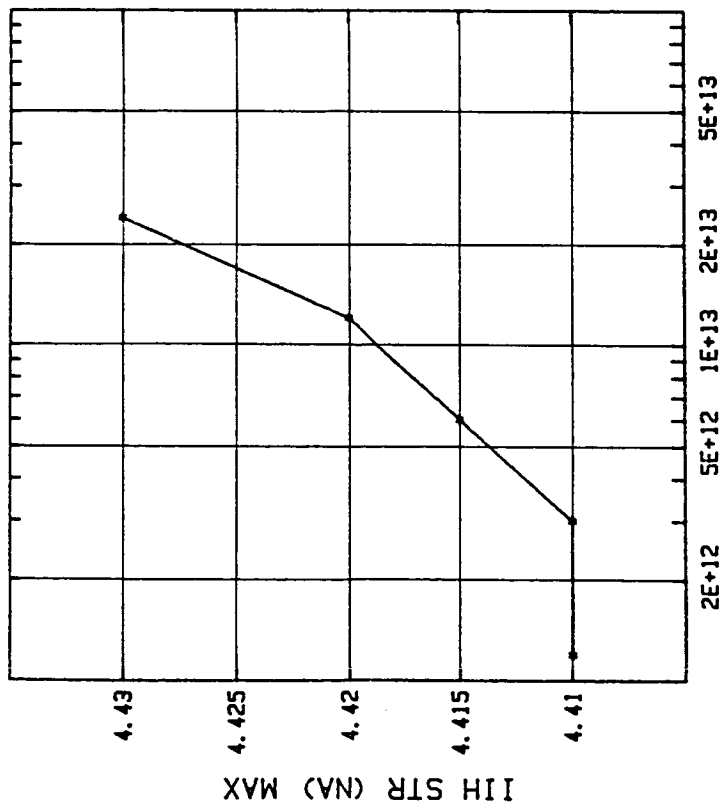
DOSE, rads(Si) Co 60 Gammas

(8)ISKD (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	.7887 .7089 .6654

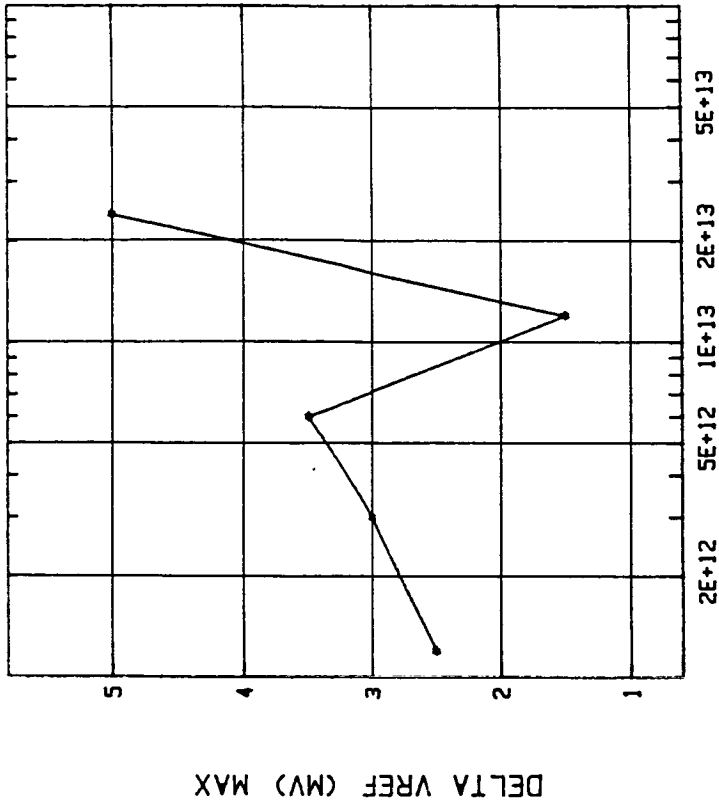
INITIAL MEAN VALUE ISKD(MR) = 1.16X10⁴

DEVICE TYPE: MN5211 HYB.12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



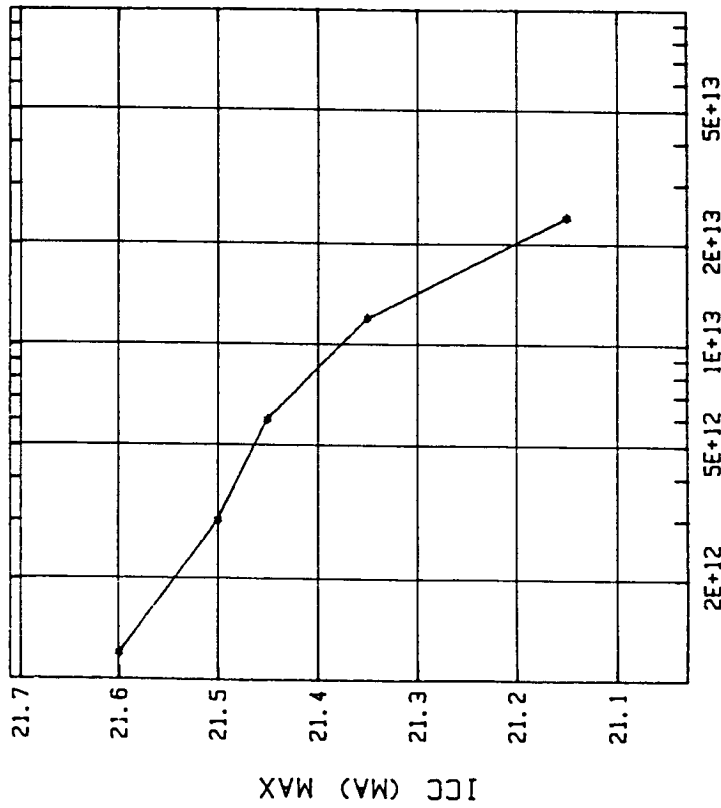
(1) I1H STR (NA) MAX VS. DOSE
 INITIAL MEAN VALUE I1H STR (NA) MAX = 4.4

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



(2) DELTA VREF (MV) MAX VS. DOSE
 INITIAL MEAN VALUE DELTA VREF (MV) MAX = 0

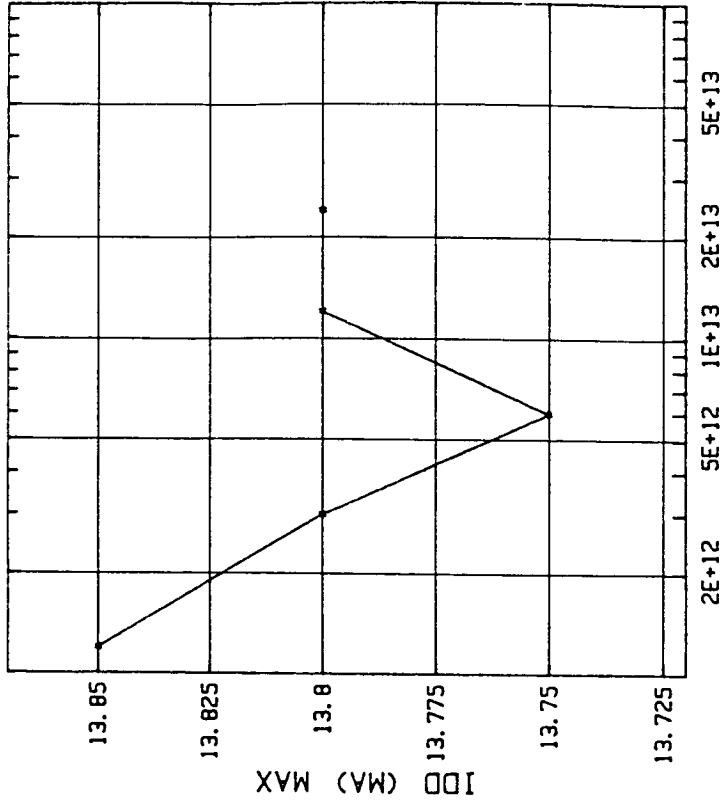
DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



FLUENCE 2.5 MEV ELECTRONS

(3) ICC (MA) MAX VS. DOSE
 INITIAL MEAN VALUE ICC (MA) MAX = 21.95

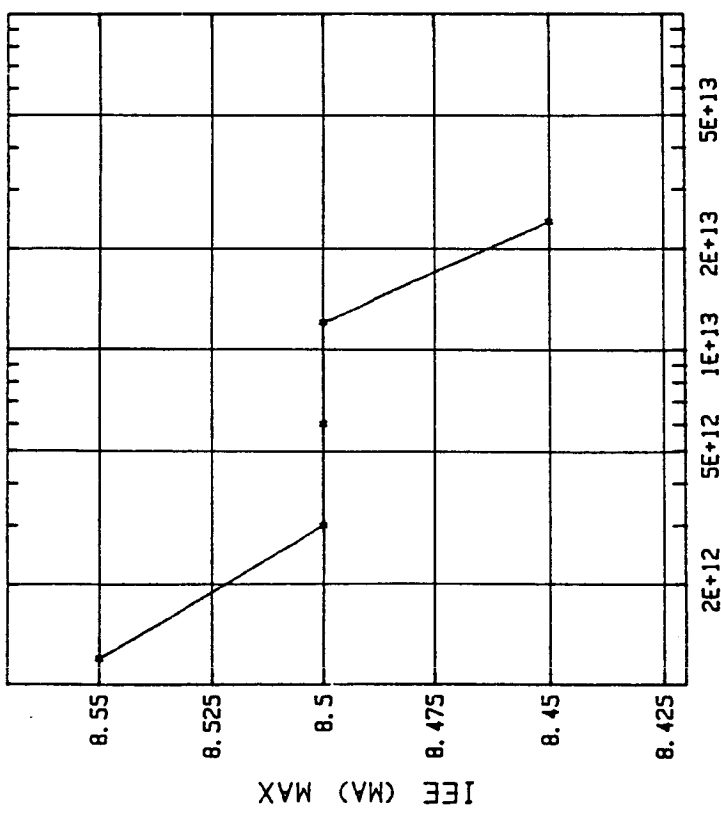
DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



FLUENCE 2.5 MEV ELECTRONS

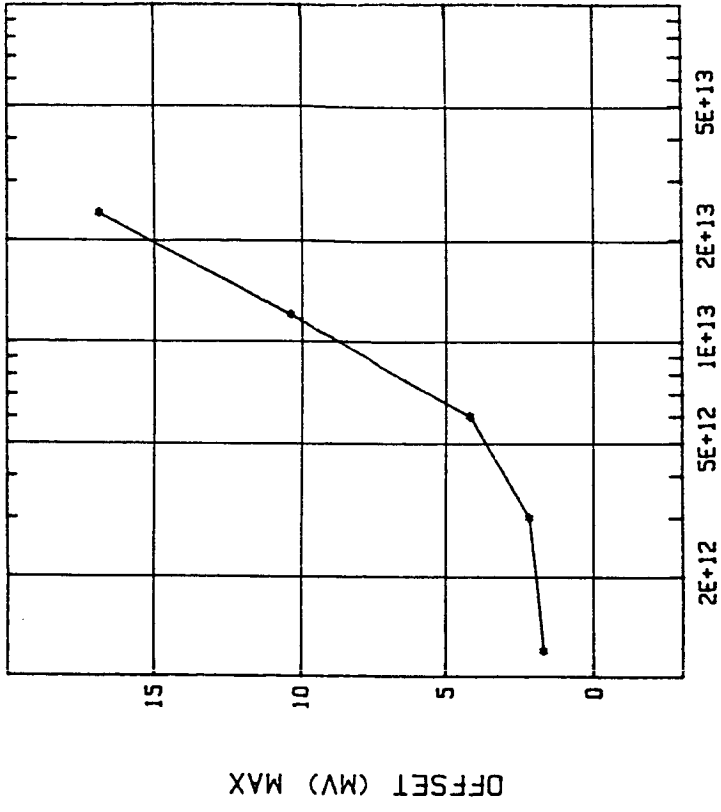
(4) IDD (MA) MAX VS. DOSE
 INITIAL MEAN VALUE IDD (MA) MAX = 13.95

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



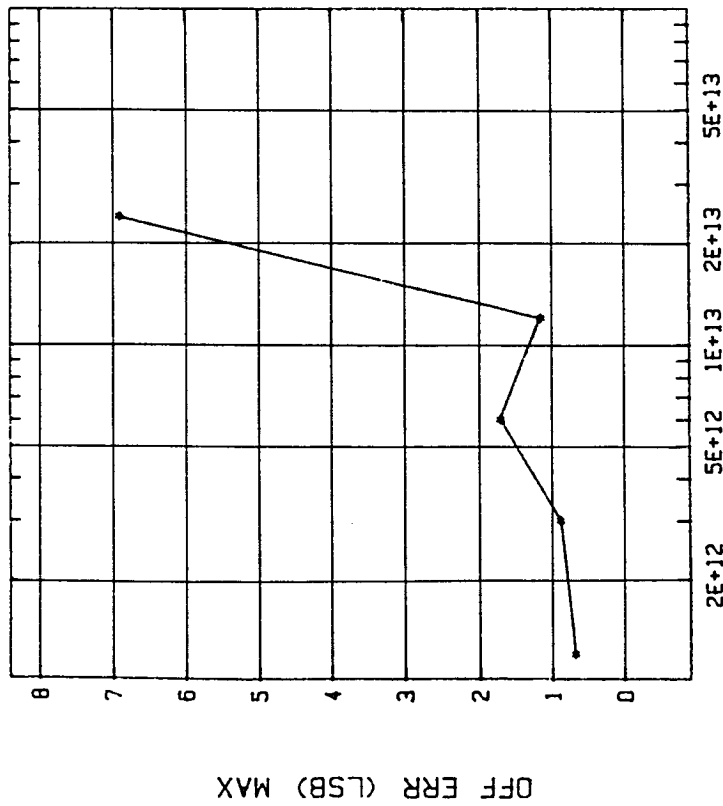
(5) IEE (MA) MAX VS. DOSE
 INITIAL MEAN VALUE IEE (MA) MAX - 8.6

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



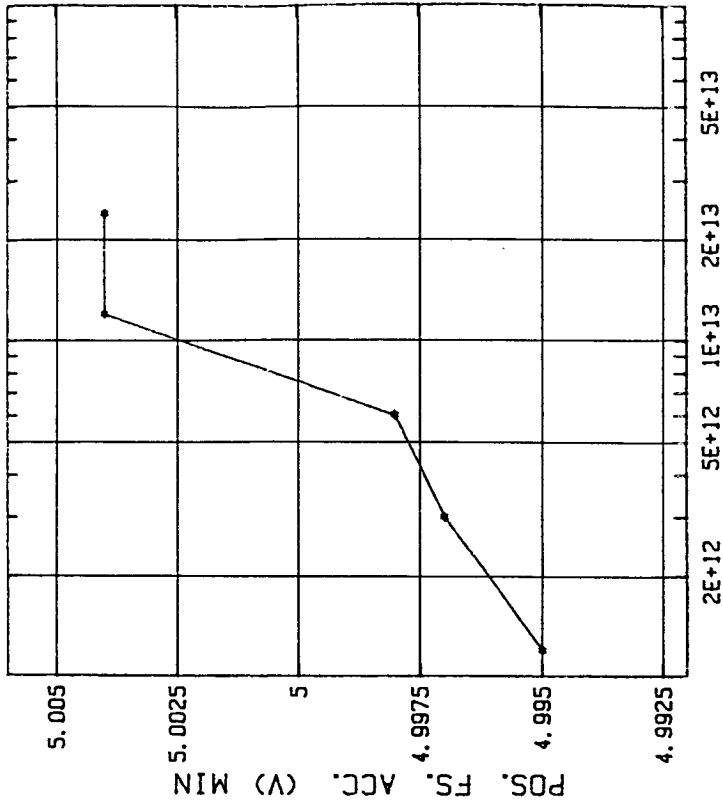
(6) OFFSET (MV) MAX VS. DOSE
 INITIAL MEAN VALUE OFFSET (MV) MAX - 2.013

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



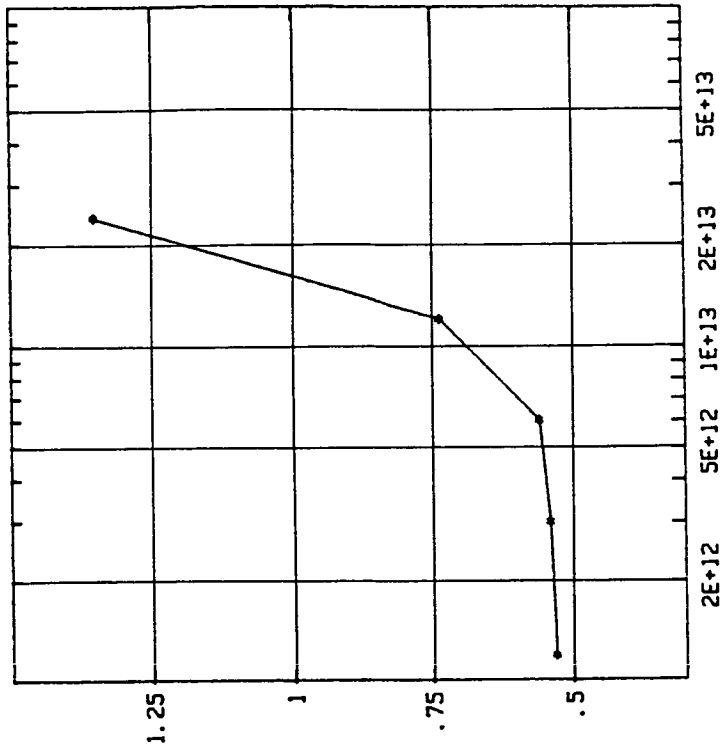
(7) OFF ERR (LSB) MAX VS. DOSE
 INITIAL MEAN VALUE OFF ERR (LSB) MAX = .8244

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



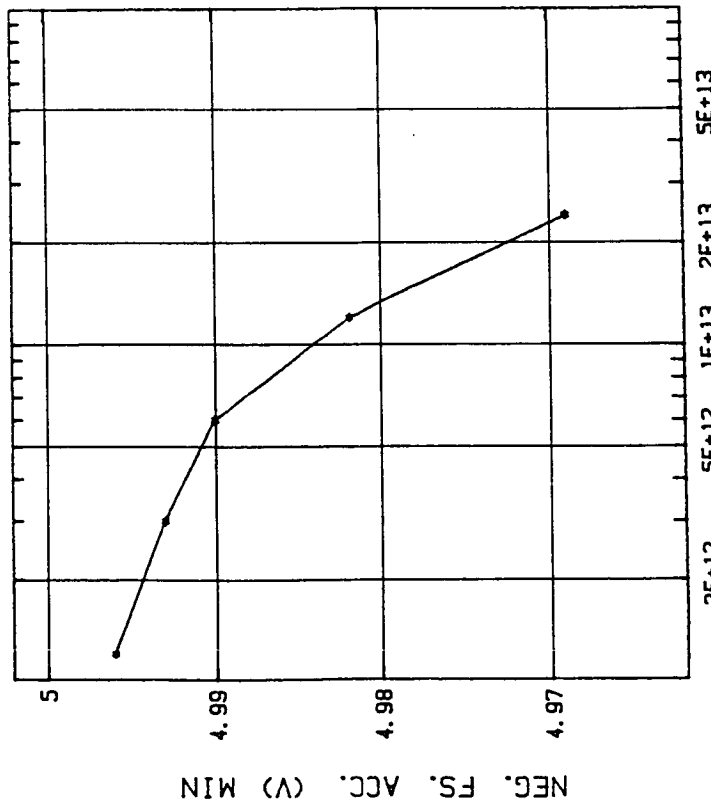
(8) POS. FS. ACC. (V) MIN VS. DOSE
 INITIAL MEAN VALUE POS. FS. ACC. (V) MIN = 4.994

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



(10) NON L.J.N. (LSB) MAX VS. DOSE
 INITIAL MEAN VALUE NON L.J.N. (LSB) MAX = .501

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



(9) NEG. FS. ACC. (V) MIN VS. DOSE
 INITIAL MEAN VALUE NEG. FS. ACC. (V) MIN = 4.997

DEVICE TYPE: MN5211 12 Bit A/D Converter

TEST DATE: 5-21-81

MFG: MNC 2 Devices

DATE CODE: 8102

REF: JPL LOG 0729

SOURCE: Dynamitron, 2.5 MeV e⁻

WORST CASE VALUES (AVG)

Dose, krad(Si)	V _{OH} (Volts) min	V _{OH} EOC (Volts) min	V _{OL} (mV) max	V _{OL} EOC (mV) max	I _{OH} (mA) min	I _{OH} EOC (mA) min	I _{OL} (mA) max
Initial	4.400	4.205	99.00	84.50	5.057	2.010	18.56
30	4.410	4.220	101.00	87.00	4.970	2.010	17.20
75	4.410	4.230	101.00	86.00	4.950	2.010	16.17
150	4.415	4.230	102.00	87.50	4.924	2.005	15.27
300	4.420	4.235	102.5	88.00	4.900	1.996	14.34
600	4.430	4.240	103.0	88.50	4.877	1.970	13.35

Dose, krad(Si)	I _{OL} EOC (mV) min	I _{IH} STR (nA) min	I _{IH} CLK (nA) max	I _{IL} STR (μA) max	I _{IL} CLK (μA) min	ΔV _{REF} (mV) min	I _{CC} (mA) max
Initial	19.45	612.3	795.1	331.0	332.7	--	21.95
30	17.60	646.0	828.5	324.8	324.0	2.500	21.60
75	16.15	624.8	804.3	322.6	322.3	3.000	21.50
150	15.00	615.0	793.5	321.7	320.9	3.500	21.45
300	13.89	602.0	778.8	320.0	320.0	1.500	21.35
600	12.85	609.3	765.6	318.0	319.0	5.000	21.15

DEVICE TYPE: MN5211 12 Bit A/D Converter
 MFG: MNC 2 Devices
 REF: JPL LOG 0729

TEST DATE: 5-21-81
 DATE CODE: 8102
 SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

Dose, krad(Si)	I _{DD} (mA) max	I _{EE} (mA) max	OFF SET (mV) max	OFF ERR (LSR) max	POS FS ACC (Volts) min	NEG FS ACC (Volts) min	NONLIN (LSB) max
Initial	13.95	8.600	2.013	.8244	4.994	4.997	.5010
30	13.85	8.550	1.688	.6913	4.995	4.996	.5326
75	13.80	8.500	2.167	.8877	4.997	4.993	.5420
150	13.75	8.500	4.174	1.710	4.998	4.990	.5604
300	13.80	8.500	10.36	1.152	5.004	4.982	.7366
600	13.80	8.450	16.86	6.906	5.004	4.969	1.352

Dose, krad(Si)	V _{OH} (Volts) min	V _{OL} (mV) max	I _{OH} (mA) min	I _{OL} (mA) min
Initial	4.025	109.5	4.806	17.69
30	4.035	112.8	4.723	15.89
75	4.035	113.3	4.703	14.42
150	4.080	114.3	4.680	13.27
300	4.037	115.1	4.659	12.17
600	4.044	116.1	4.638	11.15

DEVICE TYPE: MN5214 12 Bit A/D Converter
MFG: MNC 2 Devices
REF: JPL LOG 0730

TEST DATE: 5-21-81
DATE CODE: 8102
SOURCE: Dynamitron, 2.5 MeV e⁻

WORST CASE VALUES (AVG)

Dose, krad(Si)	V _{OH} (Volts) min	V _{OH} EOC (Volts) min	V _{OL} (mV) max	V _{OL} EOC (mV) max	I _{OH} (mA) min	I _{OH} EOC (mA) min	I _{OL} (mA) max
Initial	4.140	4.390	103.5	86.5	4.765	4.805	17.90
30	Fail	Fail	Fail	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail	Fail	Fail	Fail

Dose, krad(Si)	I _{OL} EOC (mV) min	I _{IH} STR (nA) max	I _{IH} CLK (nA) max	I _{IIL} STR (μA) max	I _{IIL} CLK (μA) max	ΔV REF (mA) max	I _{CC} (mA) max
Initial	20.17	668.0	898.3	298.0	304.4	--	20.45
30	Fail	Fail	Fail	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail	Fail	Fail	Fail

Dose, krad(Si)	I _{DD} (mA) max	I _{EE} (mA) max	OFF SET (mV) max	OFF ERR (LSB) max	POS FS ACC (Volts) min	NEG FS ACC (Volts) min	NONLIN (LSB) max
Initial	17.95	4.250	1.991	.8154	4.996	4.999	.443
30	Fail	Fail	Fail	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail	Fail	Fail	Fail

Dose, krad(Si)	V _{OH} (Volts) min	V _{OL} (mV) max	I _{OH} (mA) min	I _{OL} (mA) min
Initial	4.055	117.3	4.592	18.17
30	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail

DEVICE TYPE: MN5214 Hyb. 12 Bit A/D Converter TEST DATE: 5-5-85
MFG: MNC 2 Devices DATE CODE: 8141
REF: JPL LOG 0814 SOURCE: Dynamitron, 2.5 MeV e⁻

Two samples of the Micro Networks MN5214/90228A (50-chip hybrid) date code 8141, were radiation tested at BREL (Boeing Radiation Effects Lab) on 5 May 1982. The devices were log number 0814 and they were tested per RTR 329. The radiation levels were 30, 75, 150, 300, and 600 krad(Si).

The devices were Galileo flight parts that had been rebuilt by replacing the Raytheon RM1556 operational amplifier with a similar MC1556 Motorola operational amplifier.

Both devices failed to meet one or more of the linear specifications at 150 krad(Si). At 600 krad(Si) S/N 144 was still functional (but highly degraded) and S/N 148 had failed catastrophically.

It is recommended that these devices not be used in a radiation environment that exceeds 75 krad(Si).

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(1) V_{OL} mV (I_{OL} = 0.8 mA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	160.5	162.0	162.0	162.5	163.0	163.0	164.0
1515	162.0	166.0	167.5	166.5	166.5	168.0	167.0
1516	163.0	163.5	163.5	165.0	165.5	165.5	165.5
1517	158.5	163.0	162.5	163.0	163.5	164.5	164.5
1518	154.0	156.0	157.5	158.5	158.5	158.0	158.0
Max.	163.0	166.0	167.5	166.5	166.5	168.0	167.0
Mean	159.6	162.1	162.6	163.1	163.4	163.8	163.8
Min.	154.0	156.0	157.5	158.5	158.5	158	158.0
MN+3 sigma	170.2	173.2	173.3	172.1	172.6	174.9	174.1
MN-3 sigma	148.9	150.9	151.8	154.0	154.1	152.6	153.4

(2) V_{OL} EOC mV (I_{OL} = 0.8 mA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	185.5	183.5	183.0	184.0	184.5	185.5	185.5
1515	185.0	177.0	176.5	178.5	180.5	180.0	183.0
1516	187.0	184.5	187.5	186.5	186.5	189.0	189.5
1517	187.5	178.5	179.5	180.5	181.0	181.0	182.0
1518	187.0	182.0	180.0	179.0	180.5	184.0	185.0
Max.	187.5	184.5	187.5	186.5	186.5	189.0	189.5
Mean	186.4	181.1	181.3	181.7	182.6	183.9	185.0
Min.	185.0	177.0	176.5	178.5	180.5	180.0	182.0
MN+3 sigma	189.6	190.7	193.7	192.0	190.8	194.7	193.6
MN-3 sigma	183.1	171.4	168.8	171.3	174.3	173.0	176.3

(3) V_{OL} CLK mV (I_{OL} = 0.8 nA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	197.5	195.5	194.0	194.5	193.5	195.0	194.0
1515	193.0	186.0	186.0	186.5	187.0	186.5	189.0
1516	195.5	193.0	195.5	194.5	195.0	195.5	195.0
1517	194.0	186.0	186.5	187.5	187.5	187.5	189.0
1518	191.0	187.5	186.5	184.5	187.5	187.5	187.5
Max.	197.5	195.5	195.5	194.5	195.0	195.5	195.0
Mean	194.2	189.6	189.7	189.5	190.1	190.4	190.9
Min.	191.0	186.0	186.0	184.5	187.0	186.5	187.5
MN+3 sigma	201.5	202.7	203.6	203.5	201.5	203.7	200.9
MN-3 sigma	186.8	176.4	175.7	175.4	178.6	177.0	180.8

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter
MFG: MNC
REF: JPL LOG 1081-A

TEST DATE: 10-16-84
DATE CODE: 8419
SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(4) I_{OL} mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	13.20	12.90	12.65	12.45	12.15	11.80	11.45
1515	12.85	12.10	11.90	11.70	11.35	10.90	10.60
1516	13.50	12.95	12.90	12.50	12.15	11.75	11.45
1517	13.40	12.50	12.35	12.15	11.90	11.50	11.15
1518	13.65	13.10	12.75	12.45	12.20	11.85	11.45
Max.	13.65	13.1	12.9	12.5	12.2	11.85	11.45
Mean	13.32	12.71	12.51	12.25	11.95	11.56	11.22
Min.	12.85	12.1	11.9	11.7	11.35	10.9	10.6
MN+3 sigma	14.24	13.93	13.69	13.26	13.01	12.73	12.33
MN-3 sigma	12.39	11.48	11.32	11.23	10.88	10.38	10.10

(5) I_{OL} EOC mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	9.755	9.705	9.645	9.575	9.490	9.370	9.275
1515	9.985	9.915	9.855	9.765	9.680	9.565	9.450
1516	10.00	9.950	9.915	9.875	9.795	9.665	9.535
1517	9.750	9.695	9.635	9.555	9.485	9.375	9.280
1518	9.790	9.735	9.670	9.625	9.530	9.400	9.305
Max.	10.0	9.95	9.915	9.875	9.795	9.665	9.535
Mean	9.856	9.800	9.744	9.679	9.596	9.475	9.369
Min.	9.75	9.695	9.635	9.555	9.485	9.37	9.275
MN+3 sigma	10.23	10.16	10.13	10.08	10.00	9.874	9.720
MN-3 sigma	9.478	9.432	9.350	9.268	9.186	9.075	9.017

(6) I_{OL} CLK mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	12.15	12.15	12.15	12.15	12.10	12.10	12.00
1515	12.75	12.90	12.90	12.80	12.75	12.70	12.55
1516	11.95	12.00	11.90	11.90	11.80	11.65	11.55
1517	11.70	11.85	11.80	11.70	11.60	11.50	11.35
1518	12.20	12.30	12.30	12.30	12.15	12.00	11.85
Max.	12.75	12.9	12.9	12.8	12.75	12.7	12.55
Mean	12.15	12.24	12.21	12.17	12.08	11.99	11.86
Min.	11.7	11.85	11.8	11.7	11.6	11.5	11.35
MN+3 sigma	13.31	13.45	13.51	13.43	13.39	13.39	13.24
MN-3 sigma	10.98	11.02	10.90	10.90	10.76	10.58	10.47

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(7) V_{OH} V (I_{OH} = 40 μ A)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	3.970	3.970	3.970	3.965	3.965	3.960	3.960
1515	3.985	3.995	3.995	3.990	3.985	3.985	3.975
1516	4.000	4.005	4.000	4.000	3.995	3.990	3.985
1517	3.965	3.975	3.970	3.970	3.970	3.965	3.965
1518	3.965	3.970	3.970	3.970	3.965	3.960	3.960
Max.	4.00	4.005	4.00	4.00	3.995	3.99	3.985
Mean	3.977	3.983	3.981	3.979	3.976	3.972	3.969
Min.	3.965	3.97	3.97	3.965	3.965	3.96	3.96
MN+3 sigma	4.022	4.031	4.026	4.024	4.016	4.015	4.001
MN-3 sigma	3.931	3.934	3.935	3.933	3.935	3.928	3.936

(8) I_{OL} EOC mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-4.200	-4.150	-4.150	-4.100	-4.100	-4.100	-4.050
1515	-4.600	-4.500	-4.450	-4.450	-4.450	-4.400	-4.405
1516	-4.500	-4.450	-4.450	-4.450	-4.400	-4.400	-4.400
1517	-4.200	-4.050	-4.050	-4.050	-4.000	-4.000	-4.000
1518	-4.150	-4.050	-4.000	-4.000	-4.000	-4.000	-3.950
Max.	-4.15	-4.05	-4.00	-4.00	-4.00	-4.00	-3.95
Mean	-4.33	-4.24	-4.22	-4.21	-4.19	-4.18	-4.161
Min.	-4.6	-4.5	-4.45	-4.45	-4.45	-4.4	-4.405
MN+3 sigma	-3.715	-3.582	-3.569	-3.544	-3.532	-3.565	-3.491
MN-3 sigma	-4.944	-4.897	-4.870	-4.875	-4.847	-4.794	-4.830

(9) NONLIN (IN % FSR)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	0.04623	0.06953	0.07335	0.06031	0.06714	0.07296	0.03154
1515	0.06000	0.1048	0.08249	0.10460	0.08855	0.09866	0.11090
1516	0.05131	0.05928	0.04548	0.06324	0.06214	0.06507	0.08996
1517	0.04598	0.05931	0.06734	0.07332	0.07728	0.03400	0.04919
1518	0.05446	0.04988	0.05946	0.05528	0.08433	0.07865	0.08561
Max.	0.06	0.1048	0.0824	0.1046	0.0885	0.0986	0.1109
Mean	0.0515	0.0685	0.0656	0.0713	0.0758	0.0698	0.0734
Min.	0.0459	0.0498	0.0454	0.0552	0.0621	0.034	0.0315
MN+3 sigma	0.0692	0.1328	0.1078	0.1305	0.1093	0.1406	0.1702
MN-3 sigma	0.0338	4.3E-03	0.0234	0.0121	0.0423	-8.8E-04	-0.0233

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(10) AOL OFF (IN mV)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-0.9890	-1.698	0.7114	4.171	2.491	1.081	5.912
1515	-1.019	-1.689	-0.9890	1.101	1.431	1.781	-3.339
1516	0.6313	0.3319	1.371	2.831	2.481	5.881	1.842
1517	-4.869	-4.819	-5.809	-0.6084	-3.339	0.4015	-2.628
1518	-0.07820	-1.389	0.3414	4.842	3.151	1.721	-1.279
Max.	0.6313	0.3319	1.371	4.842	3.151	5.881	5.912
Mean	-1.264	-1.852	-0.8748	2.467	1.243	2.173	0.1016
Min.	-4.869	-4.819	-5.809	-0.6084	-3.339	0.4015	-3.339
MN+3 sigma	5.122	3.727	7.793	9.175	9.146	8.614	11.52
MN-3 sigma	-7.651	-7.432	-9.543	-4.241	-6.660	-4.267	-11.32

(11) AOL ERR (IN LSB)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-0.4051	-0.6957	0.2914	1.709	1.020	0.4430	2.421
1515	-0.4172	-0.6918	-0.4051	-0.4512	0.5863	0.7297	-1.368
1516	0.2568	0.1359	0.5617	1.160	1.016	2.409	0.7543
1517	-1.994	-1.974	-2.379	-0.2492	-1.368	0.1645	-1.077
1518	-0.03203	-0.5688	0.1398	1.983	1.291	0.7051	-0.5238
Max.	0.2568	0.1359	0.5617	1.983	1.291	2.409	2.421
Mean	-0.5183	-0.7588	-0.3582	1.010	0.5090	0.8902	0.0413
Min.	-1.994	-1.974	-2.379	-0.2492	-1.368	0.1645	-1.368
MN+3 sigma	2.096	1.526	3.192	3.758	3.746	3.528	4.719
MN-3 sigma	-3.132	-3.044	-3.908	-1.736	-2.728	-1.747	-4.637

(12) OFFSET (IN mV)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	1.345	1.837	4.924	8.325	8.647	9.344	11.41
1515	1.154	3.714	5.933	8.669	10.21	11.40	11.74
1516	1.133	3.890	6.429	8.835	10.38	11.57	12.24
1517	0.9677	2.689	4.575	8.169	8.486	11.73	11.22
1518	0.6257	4.049	6.606	9.894	10.72	11.05	11.74
Max.	1.345	4.049	6.606	9.894	10.72	11.73	12.24
Mean	1.045	3.235	5.693	8.778	9.688	11.01	11.67
Min.	0.6257	1.837	4.575	8.169	8.486	9.344	11.22
MN+3 sigma	1.854	6.071	8.407	10.81	12.81	13.92	12.83
MN-3 sigma	0.2353	0.4002	2.979	6.745	6.561	8.109	10.50

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(13) OFF ERR (IN LSN)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	0.5510	0.7524	0.7524	3.410	3.542	3.827	4.672
1515	0.4728	1.521	2.430	3.551	4.183	4.668	4.809
1516	0.4643	1.593	2.633	3.619	4.252	4.739	5.014
1517	0.3964	1.102	1.874	3.346	3.476	4.803	4.597
1518	0.2563	1.658	2.706	4.053	4.392	4.526	4.808
Max.	0.551	1.658	2.706	4.053	4.392	4.803	5.014
Mean	0.4281	1.325	2.079	3.595	3.969	4.512	4.78
Min.	0.2563	0.7524	0.7524	3.346	3.476	3.827	4.597
MN+3 sigma	0.7599	2.485	4.509	4.428	5.250	5.703	5.257
MN-3 sigma	0.0963	0.1646	-0.3512	2.762	2.687	3.322	4.302

(14) T CONV μS (16 bits)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E+0	4.0E10	5.3E10
1514	39.30	39.30	39.30	39.35	39.40	39.45	39.50
1515	39.10	39.05	39.10	39.10	39.20	39.25	39.30
1516	39.60	39.55	39.55	39.55	39.60	39.65	39.70
1517	38.95	38.90	38.90	38.95	39.00	39.05	39.10
1518	39.30	39.30	39.30	39.30	39.35	39.40	39.45
Max.	39.6	39.55	39.55	39.55	39.6	39.65	39.7
Mean	39.25	39.22	39.23	39.25	39.31	39.36	39.41
Min.	38.95	38.9	38.9	38.95	39	39.05	39.1
MN+3 sigma	39.98	39.97	39.96	39.94	39.98	40.03	40.08
MN-3 sigma	38.51	38.46	38.49	38.55	38.63	38.68	38.73

(15) F CLK (IN kHz)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	407.1	407.1	407.1	406.6	406.1	405.6	405.1
1515	409.2	409.7	409.2	409.2	408.2	407.6	407.1
1516	404.0	404.6	404.6	404.6	404.0	403.5	403.0
1517	410.8	411.3	411.3	410.8	410.3	409.7	409.2
1518	407.1	407.1	407.1	407.1	406.6	406.1	405.6
Max.	410.8	411.3	411.3	410.8	410.3	409.7	409.2
Mean	407.6	407.9	407.8	407.6	407.0	406.5	406.0
Min.	404.0	404.6	404.6	404.6	404.0	403.5	403.0
MN+3 sigma	415.3	415.7	415.4	414.8	414.1	413.4	412.9
MN-3 sigma	399.9	400.1	400.2	400.4	399.9	399.5	399.0

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(16) T_{CLEH} (CV-/EOC+)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	90.70	91.40	92.00	92.80	93.60	94.40	96.25
1515	94.00	95.20	96.50	97.60	98.80	103.0	104.5
1516	81.80	83.00	83.60	84.20	85.00	86.40	87.00
1517	90.80	92.20	92.90	93.60	94.60	97.00	98.10
1518	90.60	92.00	92.60	93.20	94.20	96.50	97.40
Max.	94.00	95.2	96.5	97.6	98.8	103.00	104.5
Mean	89.58	90.76	91.52	92.28	93.24	95.46	96.65
Min.	81.8	83.00	83.6	84.2	85.00	86.4	87.00
MN+3 sigma	103.3	104.5	105.8	107.0	108.3	113.4	115.4
MN-3 sigma	75.84	77.01	77.22	77.54	78.11	77.49	77.82

(17) V_{REF} V (No Load)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	9.998	9.999	10.00	10.00	10.00	10.00	10.00
1515	9.998	9.998	9.999	10.00	10.00	10.00	10.00
1516	10.00	10.00	10.00	10.00	10.00	10.00	10.00
1517	9.997	9.998	9.999	10.00	10.00	10.00	10.00
1518	9.999	10.00	10.00	10.00	10.00	10.01	10.01
Max.	10.00	10.00	10.00	10.00	10.00	10.01	10.01
Mean	9.998	9.999	9.999	10.00	10.00	10.00	10.00
Min.	9.997	9.998	9.999	10.00	10.00	10.00	10.00
MN+3 sigma	10.00	10.00	10.00	10.00	10.00	10.01	10.01
MN-3 sigma	9.994	9.996	9.997	10.00	10.00	9.988	9.988

(18) V_{REFL} V (I₀ = 1 mA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	9.998	9.998	9.999	10.00	10.00	10.00	10.00
1515	9.998	9.998	9.999	9.999	10.00	10.00	10.00
1516	10.00	10.00	10.00	10.00	10.00	10.00	10.00
1517	9.997	9.998	9.999	10.00	10.00	10.00	10.00
1518	9.999	10.00	10.00	10.00	10.00	10.00	10.01
Max.	10.00	10.00	10.00	10.00	10.00	10.00	10.01
Mean	9.998	9.998	9.999	9.999	10.00	10.00	10.00
Min.	9.997	9.998	9.999	9.999	10.00	10.00	10.00
MN+3 sigma	10.00	10.00	10.00	10.00	10.00	10.00	10.01
MN-3 sigma	9.994	9.995	9.997	9.998	10.00	10.00	9.988

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(19) I_{CC} mA (V_{CC} = +5V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	46.00	45.75	45.50	45.30	45.15	44.95	44.75
1515	45.50	45.05	44.85	44.65	44.55	44.30	44.20
1516	50.60	50.15	49.95	49.75	49.60	49.40	49.25
1517	45.20	44.65	44.40	44.25	44.15	44.00	43.75
1518	45.45	45.00	44.70	44.50	44.30	44.20	44.05
Max.	50.6	50.15	49.95	49.75	49.6	49.4	49.25
Mean	46.55	46.12	45.88	45.69	45.55	45.37	45.2
Min.	45.2	44.65	44.4	44.25	44.15	44.00	43.75
MN+3 sigma	53.39	52.98	52.81	52.59	52.43	52.21	52.07
MN-3 sigma	39.70	39.25	38.94	38.78	38.66	38.52	38.32

(20) I_{DD} mA (V_{DD} = +15 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	17.60	17.85	17.95	18.00	17.95	17.90	17.75
1515	17.20	17.35	17.45	17.45	17.40	17.30	17.20
1516	17.15	17.30	17.35	17.35	17.30	17.25	17.25
1517	17.40	17.55	17.65	17.65	17.55	17.50	17.50
1518	17.20	17.40	17.50	17.50	17.45	17.40	17.30
Max.	17.6	17.85	17.95	18.00	17.95	17.9	17.75
Mean	17.31	17.49	17.58	17.59	17.53	17.47	17.4
Min.	17.15	17.3	17.35	17.35	17.3	17.25	17.2
MN+3 sigma	17.87	18.15	18.28	18.35	18.28	18.24	18.07
MN-3 sigma	16.74	16.82	16.87	16.82	16.77	16.69	16.72

(21) I_{EE} mA (V_{EE} = 15 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-19.70	-19.70	-19.60	-19.55	-19.40	-19.10	-18.95
1515	-18.70	-18.60	-18.50	-18.40	-18.30	-18.05	-17.85
1516	-19.75	-19.60	-19.50	-19.40	-19.20	-19.00	-18.85
1517	-19.00	-18.95	-18.90	-18.75	-18.60	-18.45	-18.20
1518	-19.25	-19.20	-19.25	-19.15	-19.05	-18.85	-18.65
Max.	-18.7	-18.6	-18.5	-18.4	-18.3	-18.05	-17.85
Mean	-19.28	-19.21	-19.15	-19.05	-18.91	-18.69	-18.5
Min.	-19.75	-19.7	-19.6	-19.55	-19.4	-19.1	-18.95
MN+3 sigma	-17.92	-17.84	-17.79	-17.63	-17.55	-17.38	-17.10
MN-3 sigma	-20.63	-20.57	-20.50	-20.46	-20.26	-19.99	-19.89

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(22) Group I_{IL} INS μ A

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-220.8	-218.3	-216.5	-215.5	-214.0	-213.0	-212.0
1515	-219.0	-212.8	-211.7	-210.8	-210.0	-208.2	-209.0
1516	-228.3	-224.8	-225.3	-223.3	-222.0	-221.3	-220.8
1517	-219.8	-213.5	-212.8	-212.0	-210.8	-209.2	-208.2
1518	-222.5	-218.3	-216.0	-214.3	-213.0	-213.0	-212.0
Max.	-219.0	-212.8	-211.7	-210.8	-210.0	-208.2	-208.2
Mean	-222.0	-217.5	-216.4	-215.1	-213.9	-212.9	-212.4
Min.	-228.3	-224.8	-225.3	-223.3	-222.0	-221.3	-220.8
MN+3 sigma	-210.9	-203.1	-200.4	-200.4	-199.6	-197.4	-197.3
MN-3 sigma	-233.2	-231.9	-232.5	-229.8	-228.2	-228.4	-227.4

(23) Group I_{IH} INS μ A

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1515	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1516	1.000	1.175	1.325	1.450	1.475	1.625	1.500
1517	4.900	14.08	21.65	4016	4013	14030	17700
1518	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Max.	4.9	14.08	21.65	4016	4013	14030.	17700
Mean	1.78	3.651	5.195	804.0	803.4	2806.	3540.
Min.	1	1	1	1	1	1	1
MN+3 sigma	7.012	21.14	32.79	6190	6185.	21628.5	27286.4
MN-3 sigma	-3.452	-13.84	-22.40	-4582.	-4579.	-16014.7	-20204.6

(24) Group V_{OL} DAT mV

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	140.0	141.4	142.1	142.3	142.9	143.4	143.3
1515	141.1	145.6	146.2	146.3	146.4	147.6	146.9
1516	141.4	144.0	143.1	144.1	144.5	144.8	144.8
1517	138.7	143.0	143.2	143.6	143.8	144.6	145.3
1518	133.8	136.3	137.7	138.8	138.9	139.0	139.7
Max.	141.4	145.6	146.2	146.3	146.4	147.6	146.9
Mean	139.0	142.0	142.4	143.0	143.3	143.8	144.0
Min.	133.8	136.3	137.7	138.8	138.9	139.0	139.7
MN+3 sigma	148.2	152.7	151.6	151.3	151.6	153.2	152.1
MN-3 sigma	129.7	131.3	133.2	134.7	134.9	134.4	135.8

DDEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-B

SOURCE: Dynamitron, 2.5 MeV e⁻

(25) Group I_{OL} DAT mA

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	16.33	15.81	15.40	14.97	14.39	13.71	13.10
1515	15.08	14.38	13.91	13.43	12.84	12.11	11.52
1516	16.95	16.30	16.01	15.49	14.90	14.25	13.66
1517	15.95	14.92	14.45	13.95	13.35	12.64	12.07
1518	16.20	15.49	14.92	14.35	14.01	13.11	12.46
Max.	16.95	16.3	16.01	15.49	14.9	14.25	13.66
Mean	16.10	15.38	14.93	14.43	13.89	13.16	12.56
Min.	15.08	14.38	13.91	13.43	12.84	12.11	11.52
MN+3 sigma	18.14	17.63	17.38	16.88	16.35	15.70	15.08
MN-3 sigma	14.06	13.12	12.49	11.99	11.44	10.62	10.03

(26) Group V_{OH} DAT V

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	3.666	3.676	3.678	3.677	3.675	3.671	3.667
1515	3.637	3.680	3.678	3.673	3.663	3.665	3.648
1516	3.694	3.713	3.697	3.703	3.699	3.691	3.683
1517	3.658	3.706	3.699	3.697	3.690	3.691	3.687
1518	3.652	3.678	3.688	3.694	3.688	3.676	3.674
Max.	3.694	3.713	3.699	3.703	3.699	3.691	3.687
Mean	3.661	3.690	3.688	3.688	3.683	3.678	3.671
Min.	3.637	3.676	3.678	3.673	3.663	3.665	3.648
MN+3 sigma	3.724	3.743	3.718	3.728	3.725	3.714	3.718
MN-3 sigma	3.598	3.638	3.657	3.649	3.640	3.643	3.625

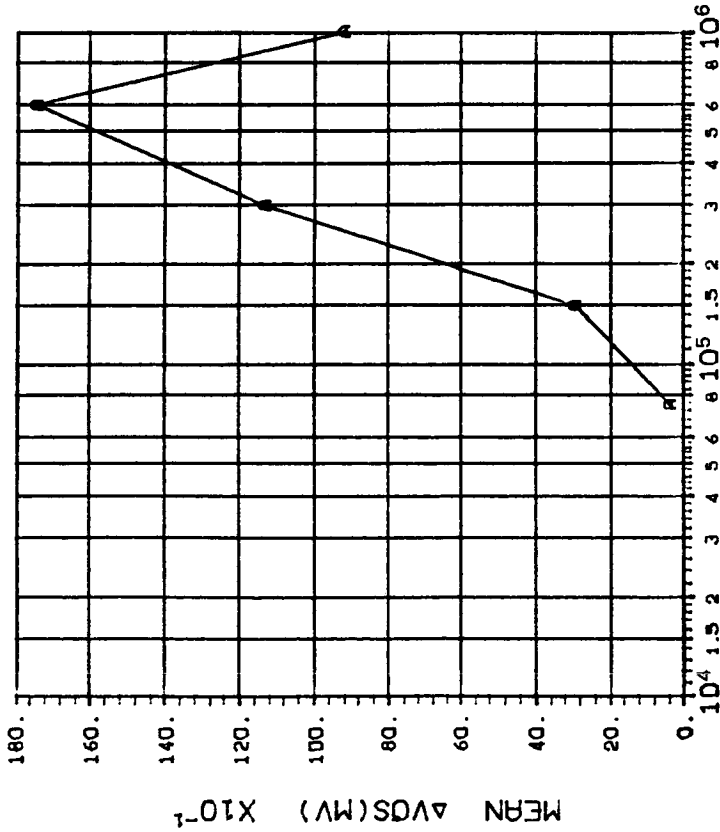
(27) Group I_{OH} DAT mA

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-4.334	-4.288	-4.263	-4.224	-4.228	-4.209	-4.186
1515	-4.522	-4.394	-4.375	-4.369	-4.360	-4.316	-4.263
1516	-4.797	-4.722	-4.734	-4.697	-4.681	-4.666	-4.635
1517	-4.250	-4.122	-4.116	-4.094	-4.084	-4.063	-4.026
1518	-4.244	-4.156	-4.116	-4.078	-4.069	-4.072	-4.066
Max.	-4.244	-4.122	-4.116	-4.078	-4.069	-4.063	-4.026
Mean	-4.429	-4.336	-4.320	-4.292	-4.284	-4.265	-4.235
Min.	-4.797	-4.722	-4.734	-4.697	-4.681	-4.666	-4.635
MN+3 sigma	-3.726	-3.612	-3.554	-3.528	-3.530	-3.523	-3.507
MN-3 sigma	-5.131	-5.060	-5.086	-5.056	-5.038	-5.007	-4.963

DEVICE TYPE: OP-08 OP AMP

MFG: MPS TEST DATE 10-02-84

REF: JPL LOG 1083 DATE CODE 8420



DOSE, rads(Si) 2.5 MeV electrons

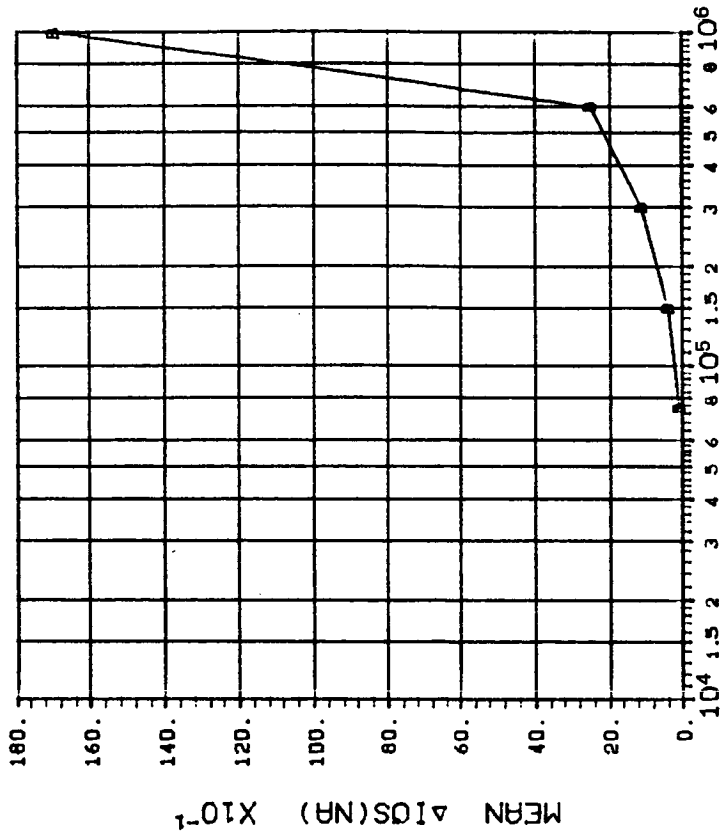
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	.1493
	300	6.282
	1000	12.33
		5.857

DEVICE TYPE: OP-08 OP AMP

MFG: MPS TEST DATE 10-02-84

REF: JPL LOG 1083 DATE CODE 8420



DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	.0335
	300	.8644
	1000	2.015
		25.52

DEVICE TYPE: OP-08 OP AMP
 MFG: MPS 6 DEVICES TEST DATE 10-02-84
 REF: JPL LOG 1083 DATE CODE 8420

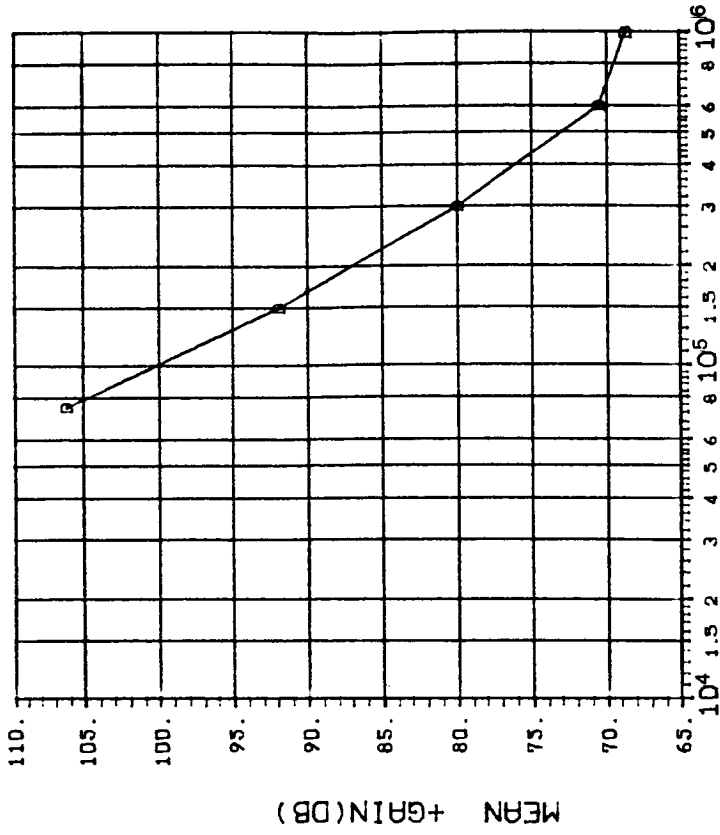


DOSE, rads(Si) 2.5 MeV electrons

(3) ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000
	5.865
	11.73
	23.46

DEVICE TYPE: OP-08 OP AMP
 MFG: MPS 6 DEVICES TEST DATE 10-02-84
 REF: JPL LOG 1083 DATE CODE 8420



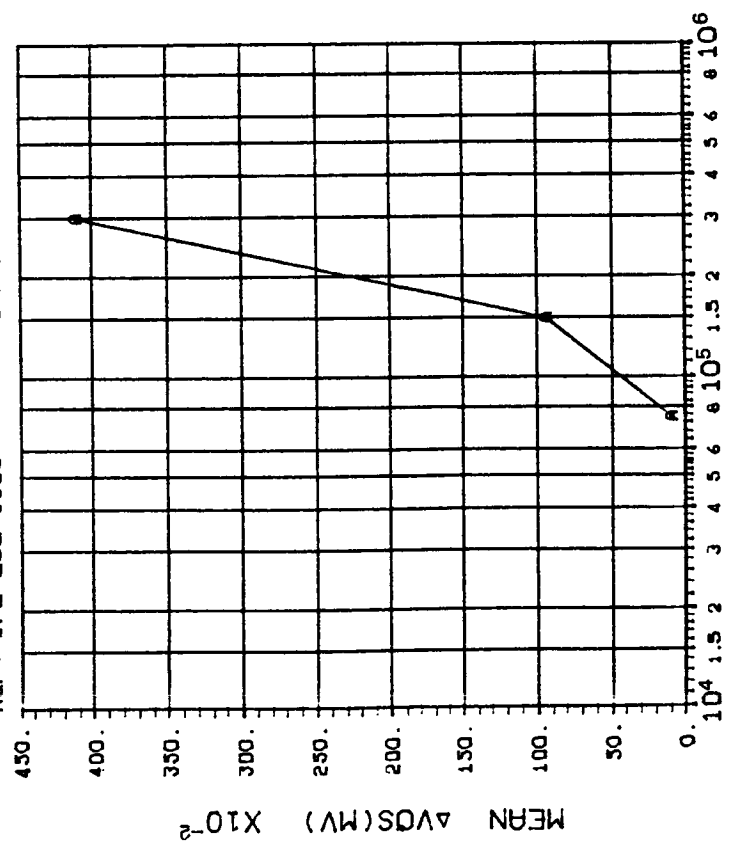
DOSE, rads(Si) 2.5 MeV electrons

(4) +GAIN IN DB(5.0MA LOAD, +10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000
	5.086
	10.172
	20.344

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10¹²

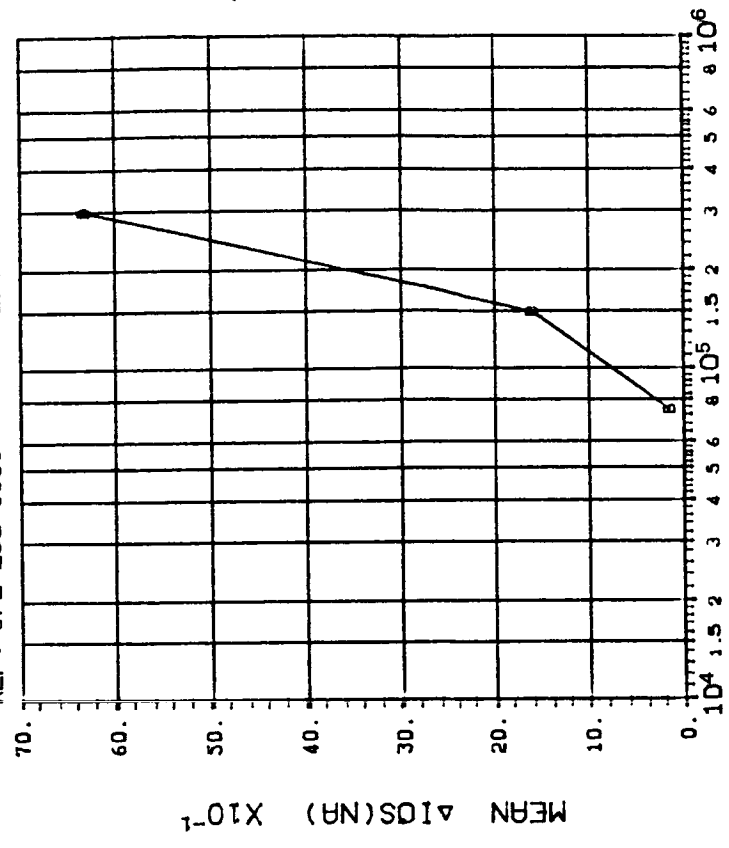
DEVICE TYPE: OP-08 OP AMP
 MFG: PMI 6 DEVICES TEST DATE 10-12-84
 REF: JPL LOG 1108 DATE CODE 8414



DOSE, rads(Si) 2.5 MeV electrons
 (1) Δ VOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600
	.0610 1.230 6.498 *****

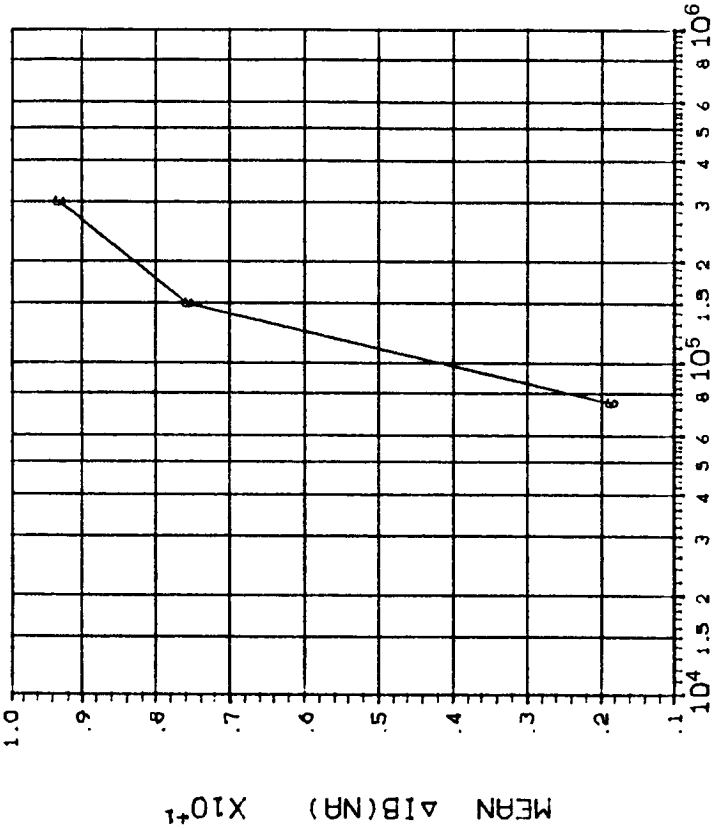
DEVICE TYPE: OP-08 OP AMP
 MFG: PMI 6 DEVICES TEST DATE 10-12-84
 REF: JPL LOG 1108 DATE CODE 8414



DOSE, rads(Si) 2.5 MeV electrons
 (2) Δ IOS(MA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	.2050 3.725 15.22 *****

DEVICE TYPE: OP-08 OP AMP
 MFG: PMI 6 DEVICES TEST DATE 10-12-84
 REF: JPL LOG 1108 DATE CODE 8414



DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NR)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600
	.5428 6.548 7.550 *****

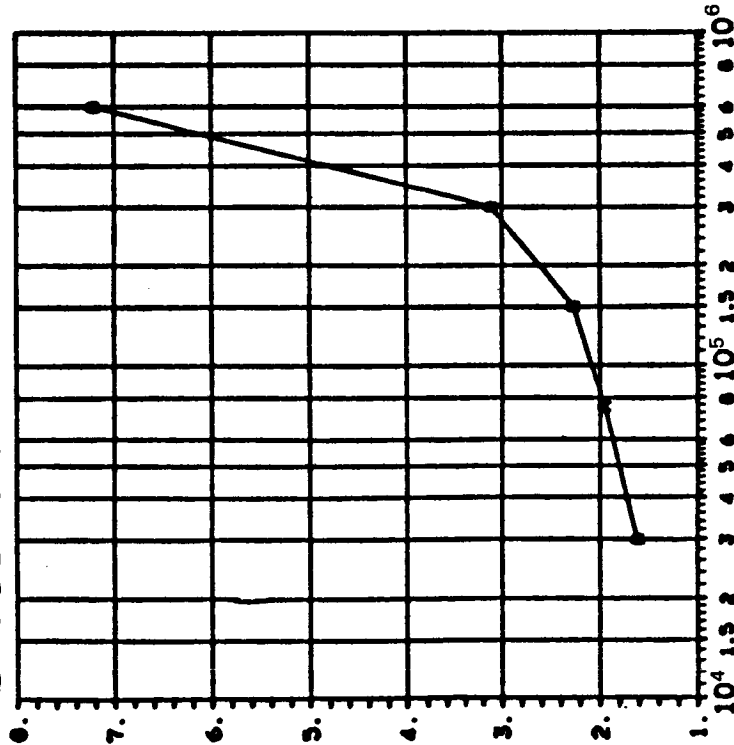
DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI

TEST DATE 11-9-81

REF: JPL LOG 0790

DATE CODE 8127



DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
A	30 75 150 300 600
	.0865 .1864 .2040 .2073 .7351

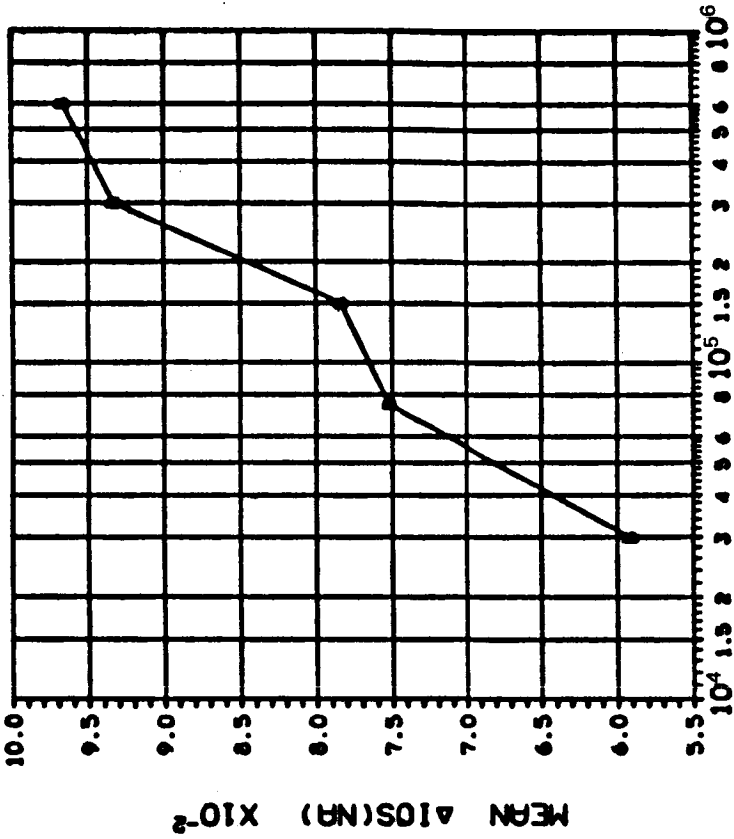
DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI

TEST DATE 11-9-81

REF: JPL LOG 0790

DATE CODE 8127



DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(MA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
B	30 75 150 300 600
	.0318 .0492 .0634 .1117 .4029

DEVICE TYPE: OP-15 FET OP AMP

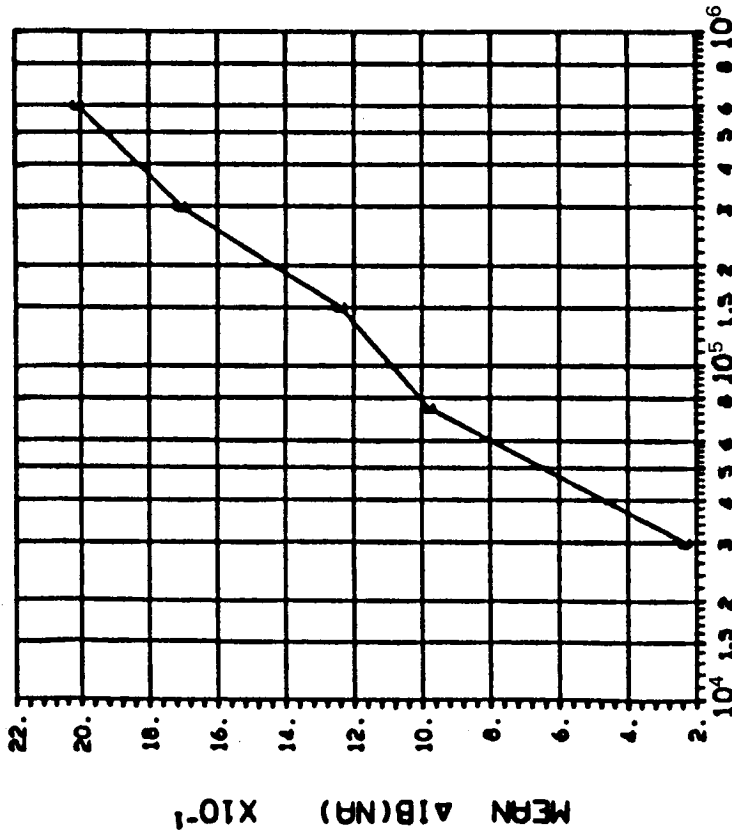
MFG: PMI

6 DEVICES

TEST DATE 11-9-81

REF: JPL LOG 0790

DATE CODE 8127



DOSE, rad(Si) 2.5 MeV electrons

(3) ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
C	30
	75
	150
	300
	600
	.2670
	.5157
	.7665
	.2866
	1.348

DEVICE TYPE: OP-15 FET OP AMP

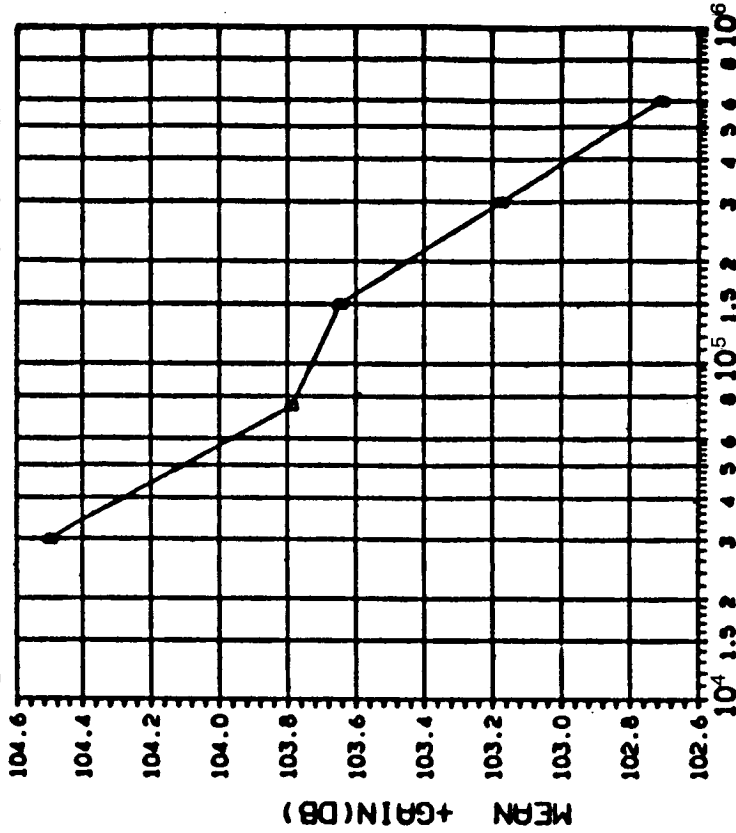
MFG: PMI

6 DEVICES

TEST DATE 11-9-81

REF: JPL LOG 0790

DATE CODE 8127



DOSE, rad(Si) 2.5 MeV electrons

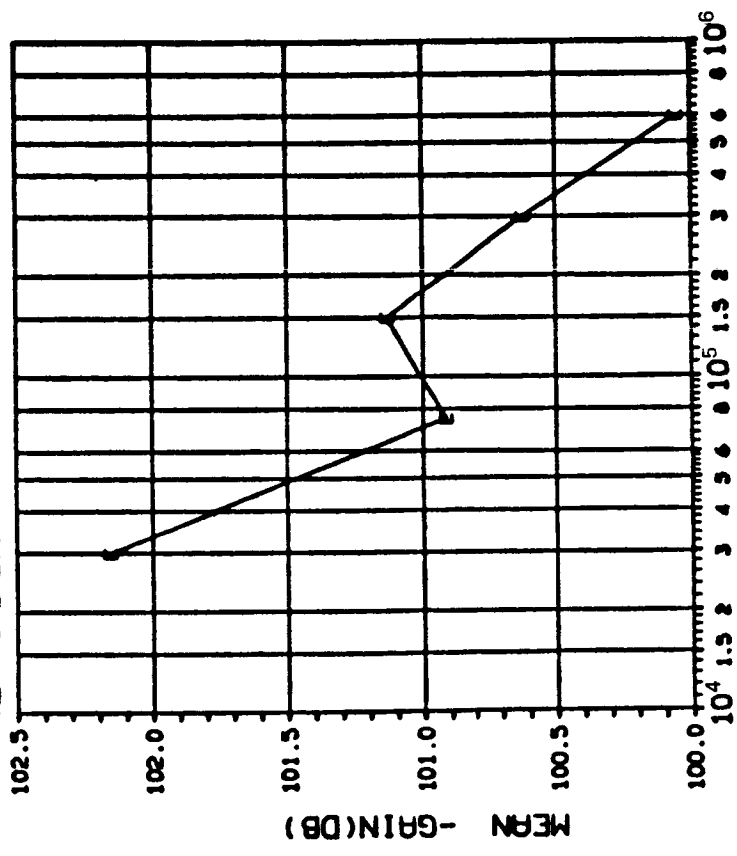
(4) +GAIN IN DB(5.0MA LOAD, +10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	30
		75
		150
	300	
	600	
	1.539	
	1.386	
	1.329	
	.6688	
	.8522	

INITIAL MEAN VALUE +GAIN(DB) = 1.13X10⁴

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 6 DEVICES TEST DATE 1-1-9-81
 REF: JPL LOG 0790 DATE CODE 8127



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.0MA LOAD,-10V): VS DOSE

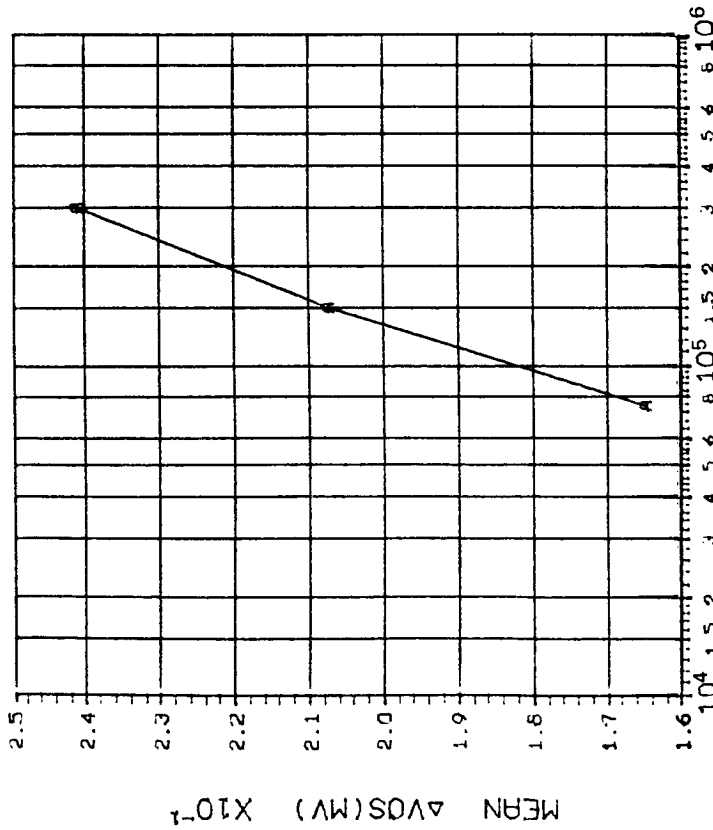
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	1.698 1.047 1.351 1.050 .7184

INITIAL MEAN VALUE -GAIN(DB) = 1.01X10²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-1 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

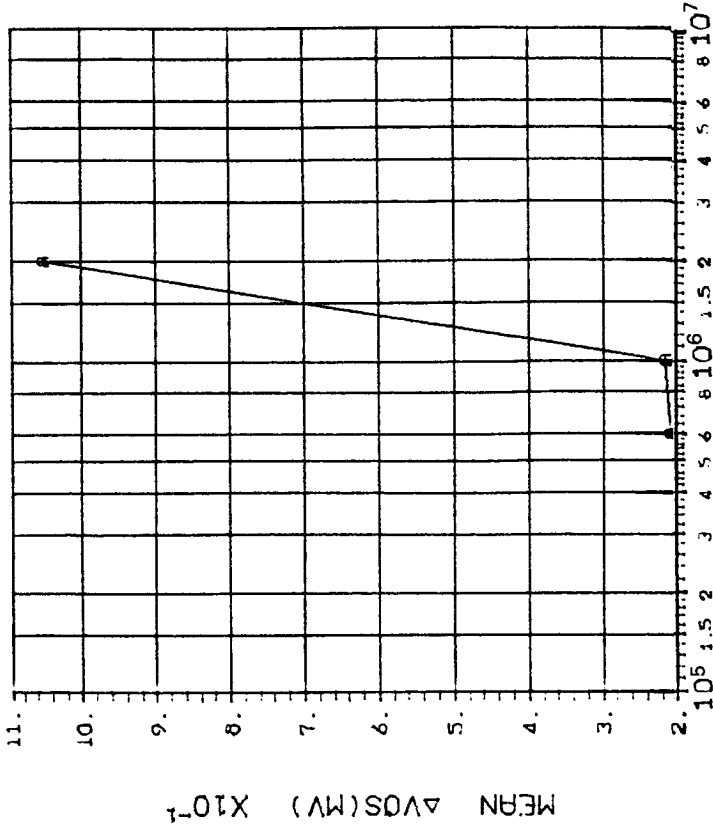
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.1219 .1408 .1672

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2 DATE CODE 8229



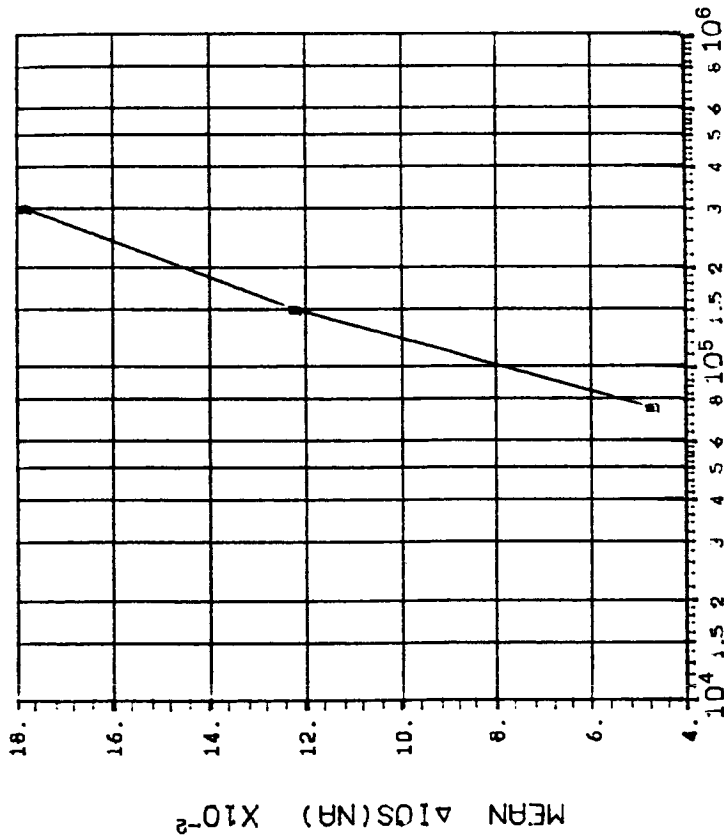
DOSE, rads(Si) Co 60 Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.1713 .2091 .6931

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83
 REF: JPL LOG 0868-1 DATE CODE 8229



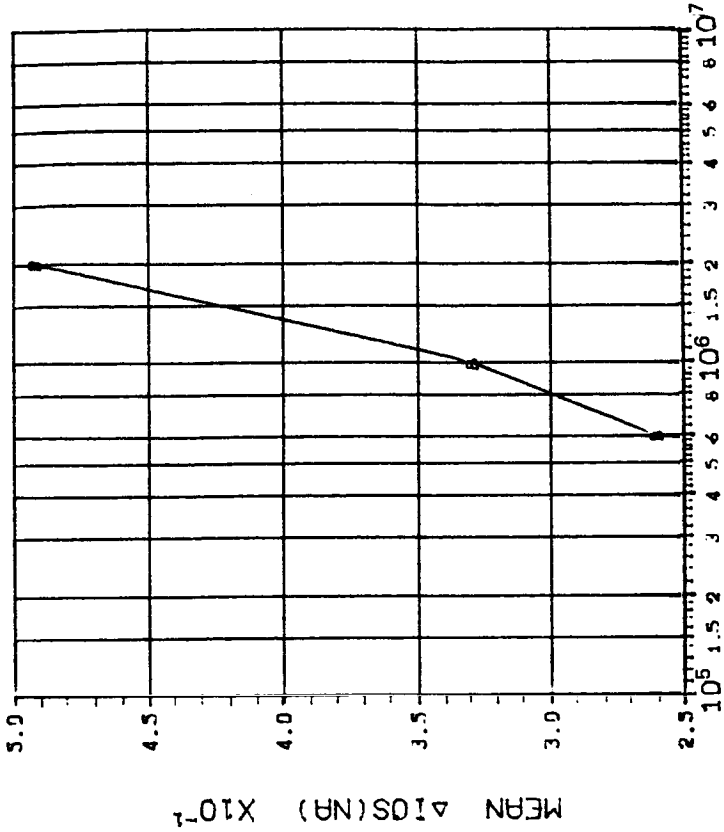
DOSE, rads(Si) Co 60 Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.0462 .1131 .2348

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83
 REF: JPL LOG 0868-2 DATE CODE 8229



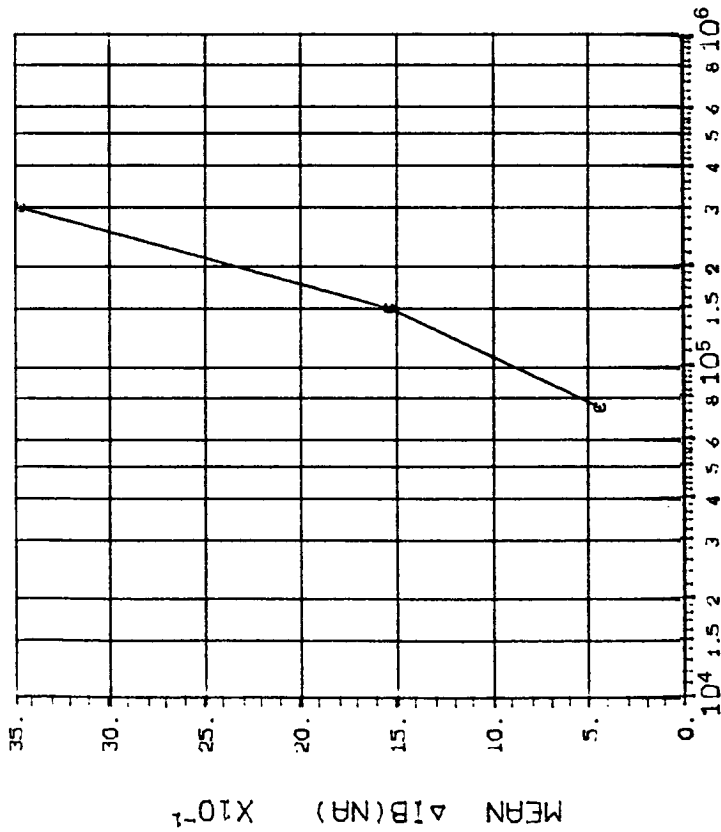
DOSE, rads(Si) Co 60 Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.4139 .4241 .3600

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83
 REF: JPL LOG 0668-1 DATE CODE 8229



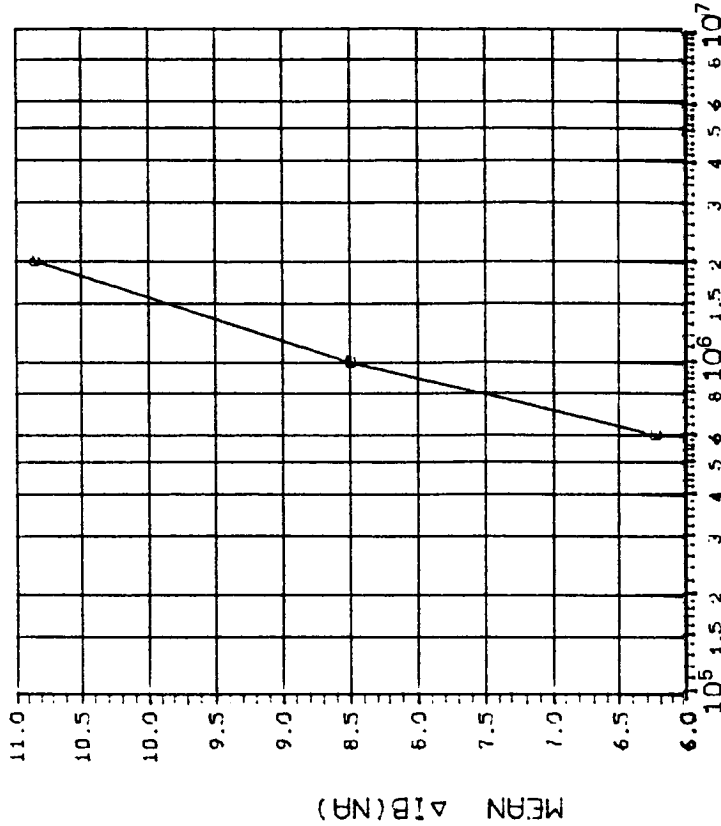
DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.1896 .5542 1.233

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83
 REF: JPL LOG 0868-2 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	2.272 3.166 3.524

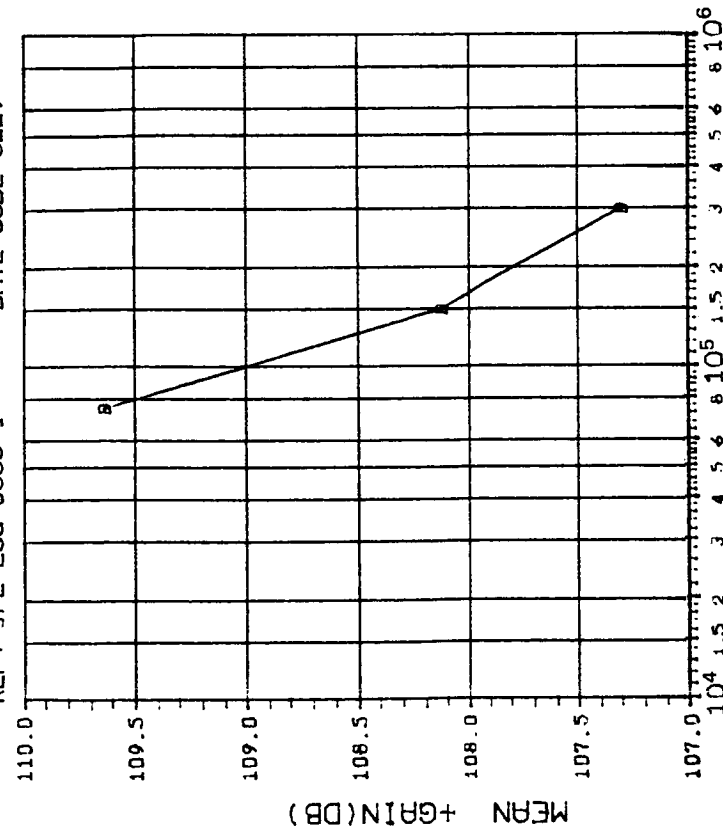
DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI

6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-1

DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	1.420 1.671 1.269

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10⁺²

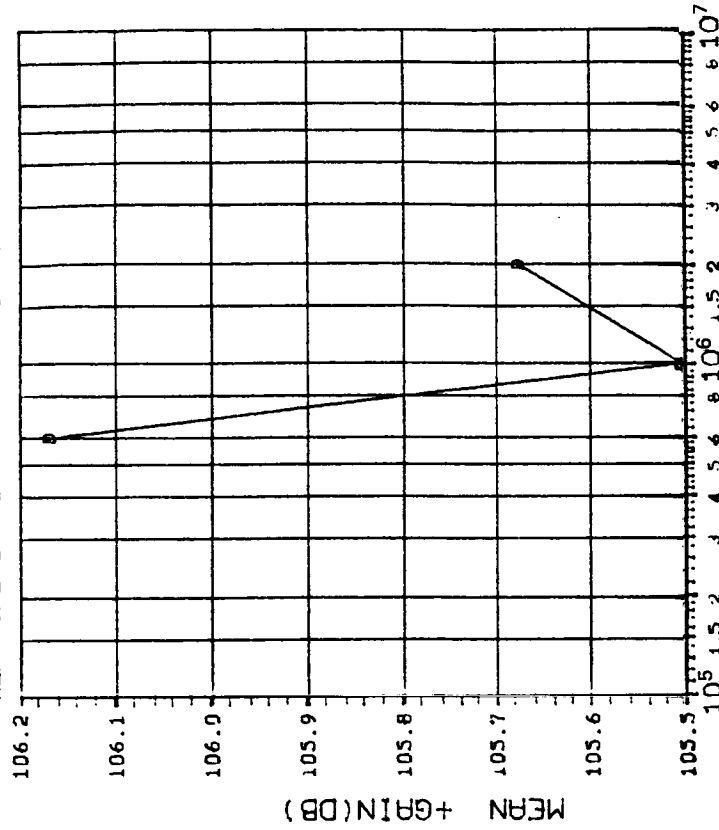
DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI

6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2

DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

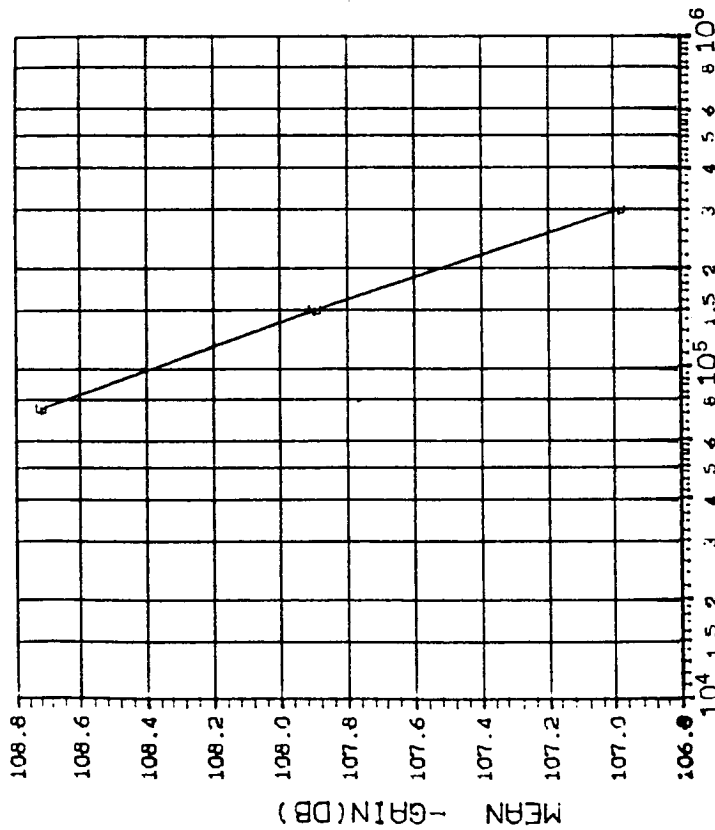
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	.1742 1.192 .7230

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-1 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

(S)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

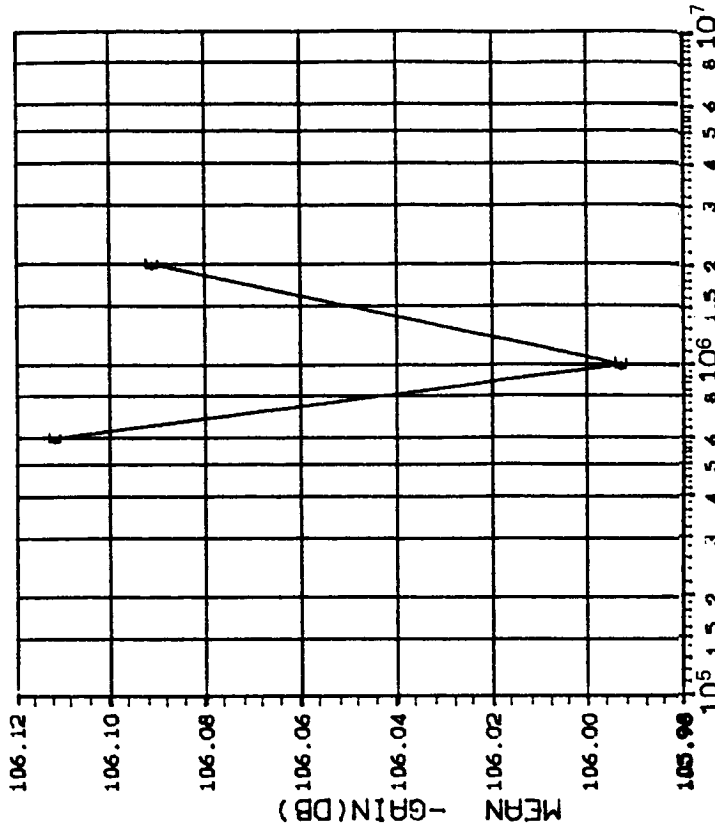
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	2.376 1.776 .5622

INITIAL MEAN VALUE -GAIN(DB) = 1.12X10¹²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

(S)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

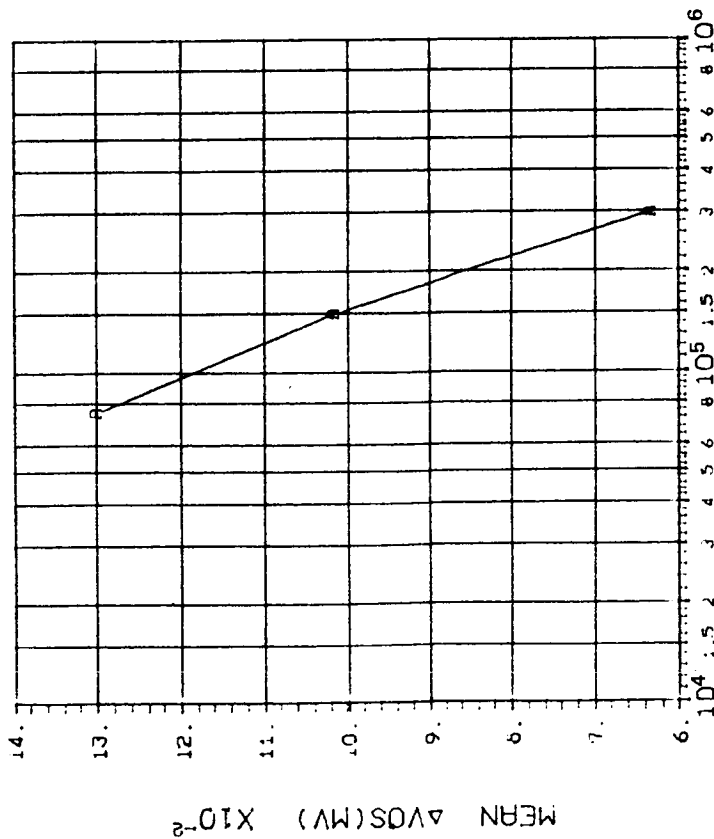
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	.2642 .1687 .5110

INITIAL MEAN VALUE -GAIN(DB) = 1.12X10¹²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

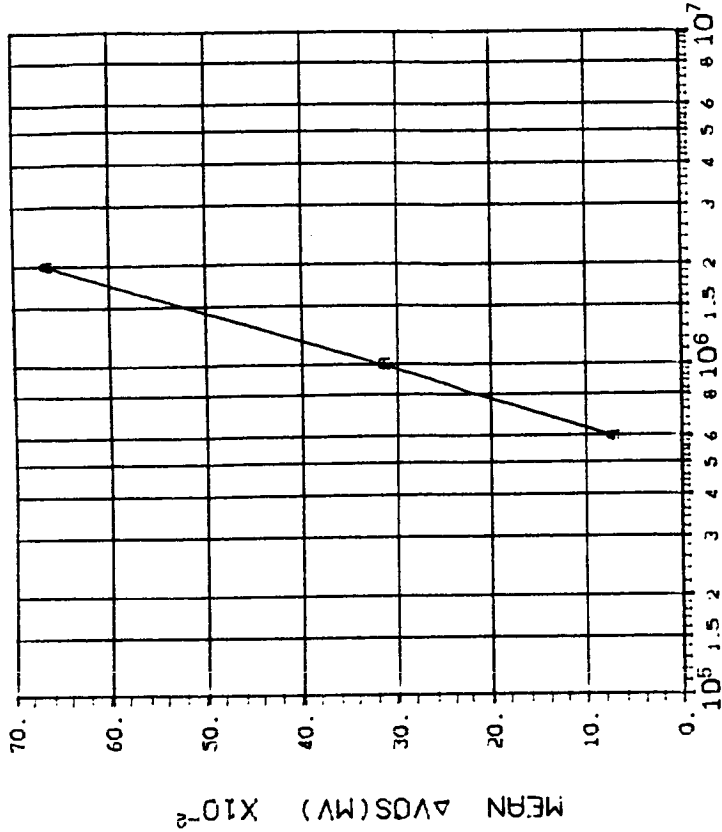
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.0641 .0560 .0600

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-2 DATE CODE 8229



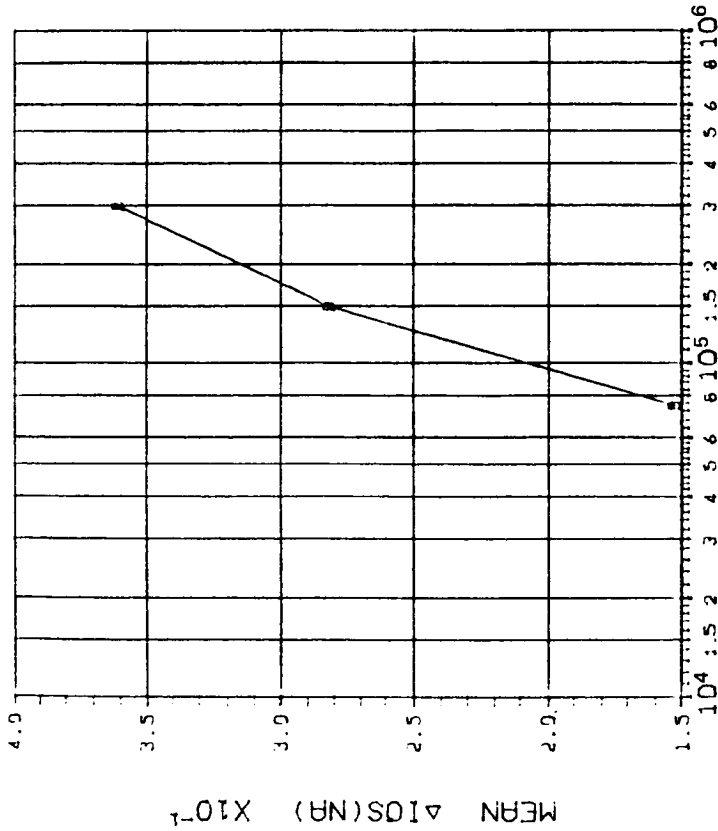
DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.1019 .1581 .2797

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83
 REF: JPL LOG 0869-1 DATE CODE 8229



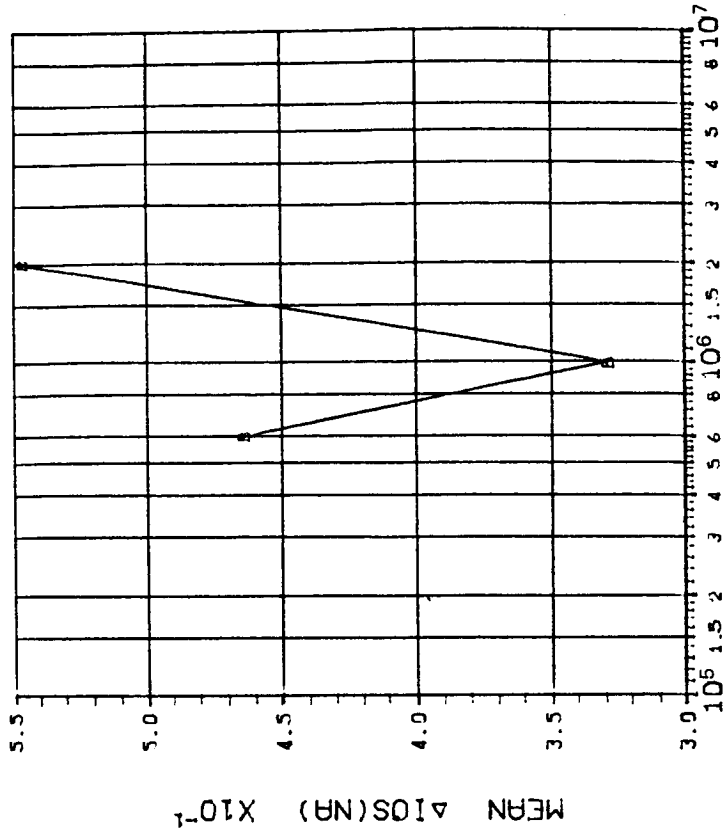
DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.0470 .1600 .2686

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83
 REF: JPL LOG 0869-2 DATE CODE 8229

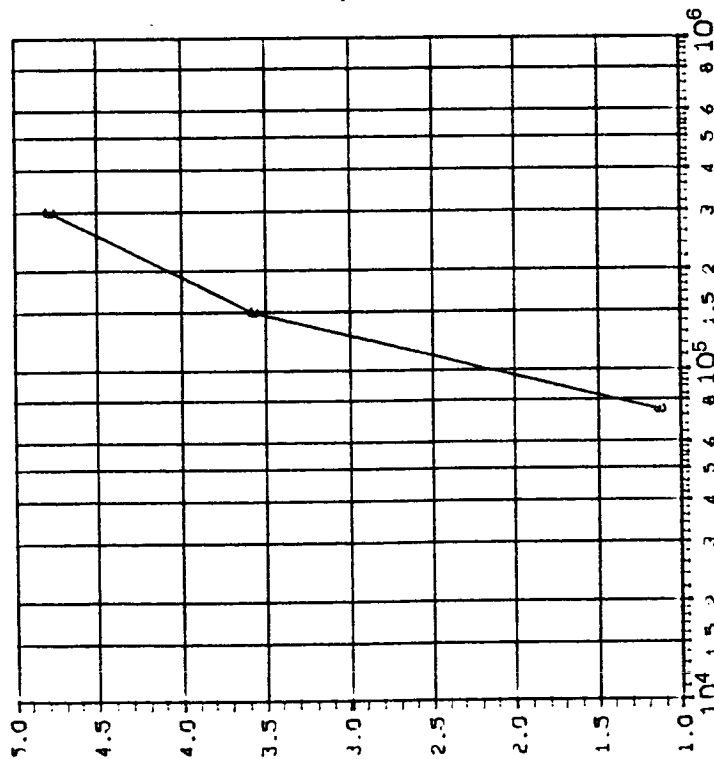


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.3228 .2645 .5479

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-28-63
 REF: JPL LOG 0869-1 DATE CODE 8229



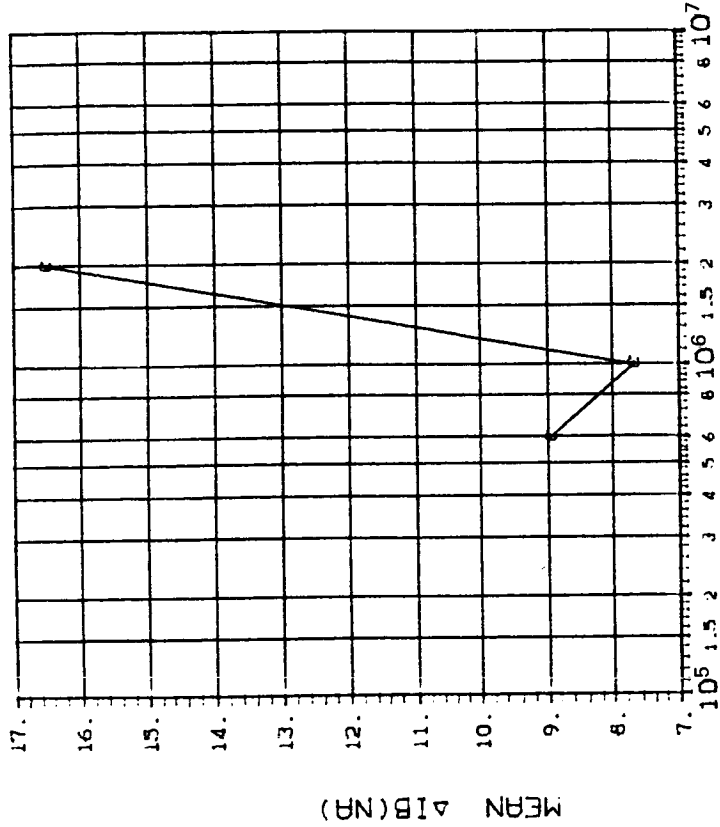
DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
C	75 150 300
	.6768 1.037 1.721

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-28-63
 REF: JPL LOG 0869-2 DATE CODE 8229



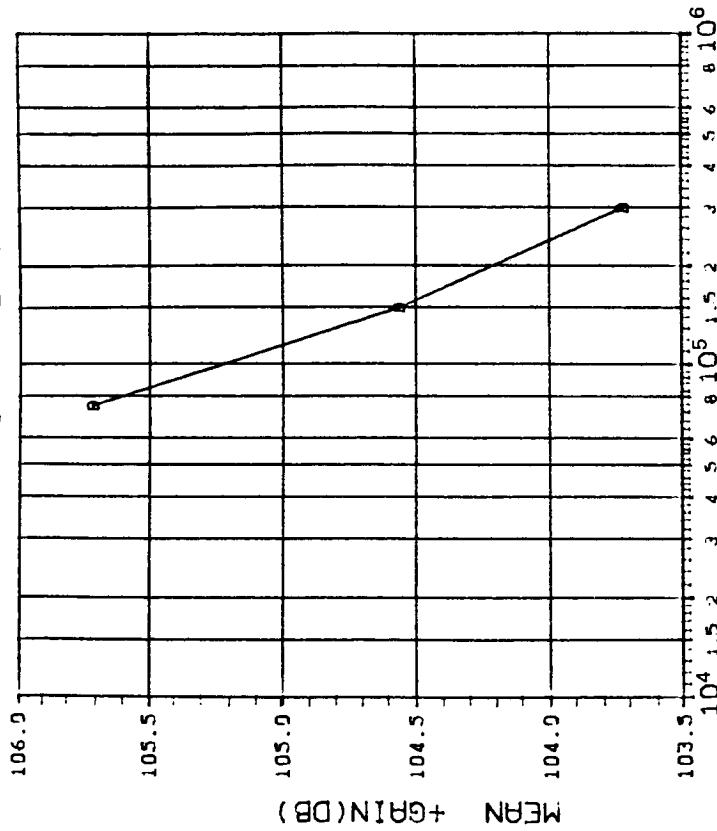
DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	3.148 1.562 0.8229

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-28-83
 REF: JPL LOG 0869-1 DATE CODE 8229



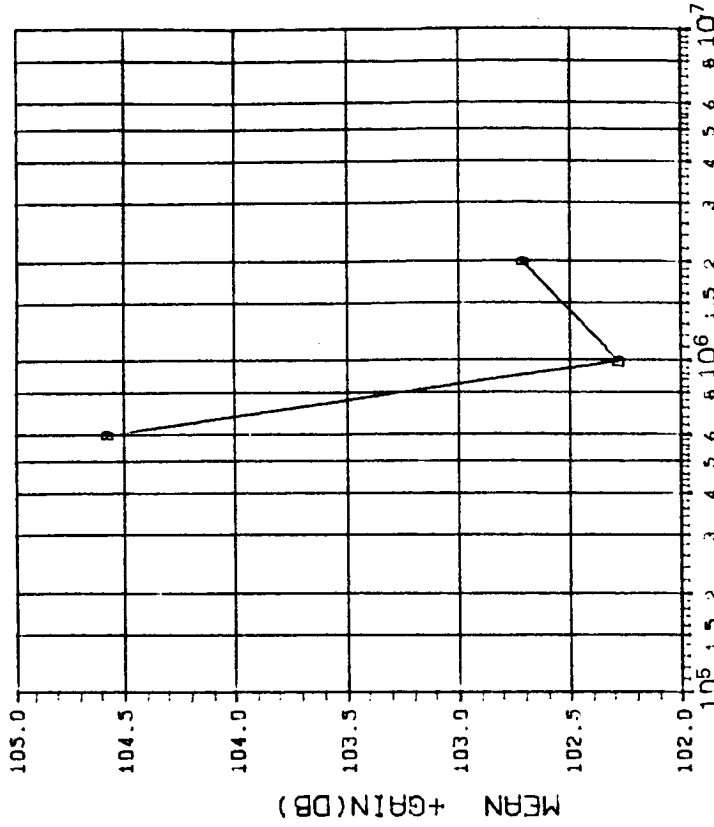
DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
D	1.673 .6476 .5519

INITIAL MEAN VALUE +GAIN(DB) = $1.06 \times 10^{+2}$

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-28-83
 REF: JPL LOG 0869-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

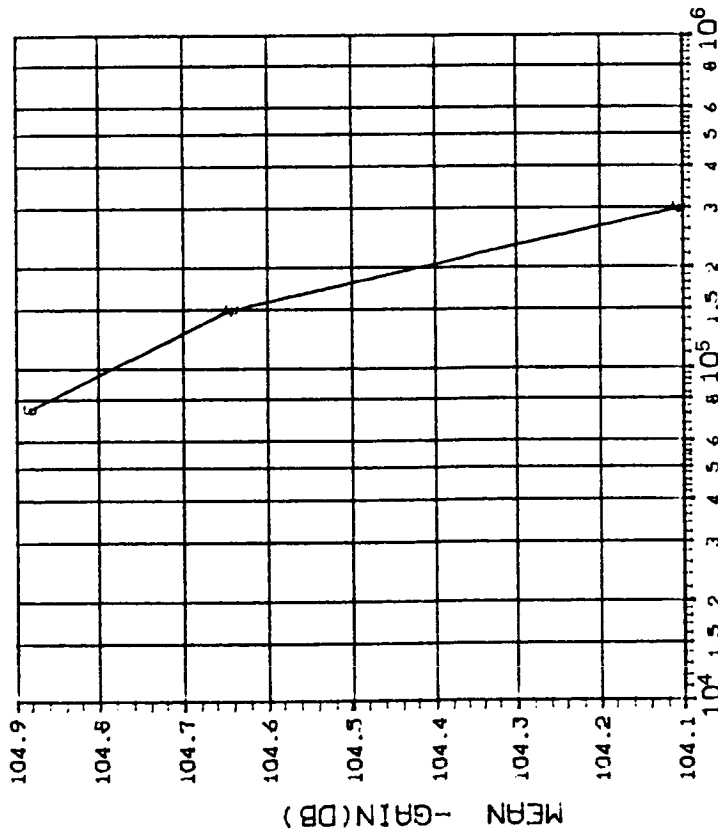
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
D	2.316 .5531 .5848

INITIAL MEAN VALUE +GAIN(DB) = $1.06 \times 10^{+2}$

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-1 DATE CODE 8229



DOSE, rad(Si) 2.5 MeV electrons

(S)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

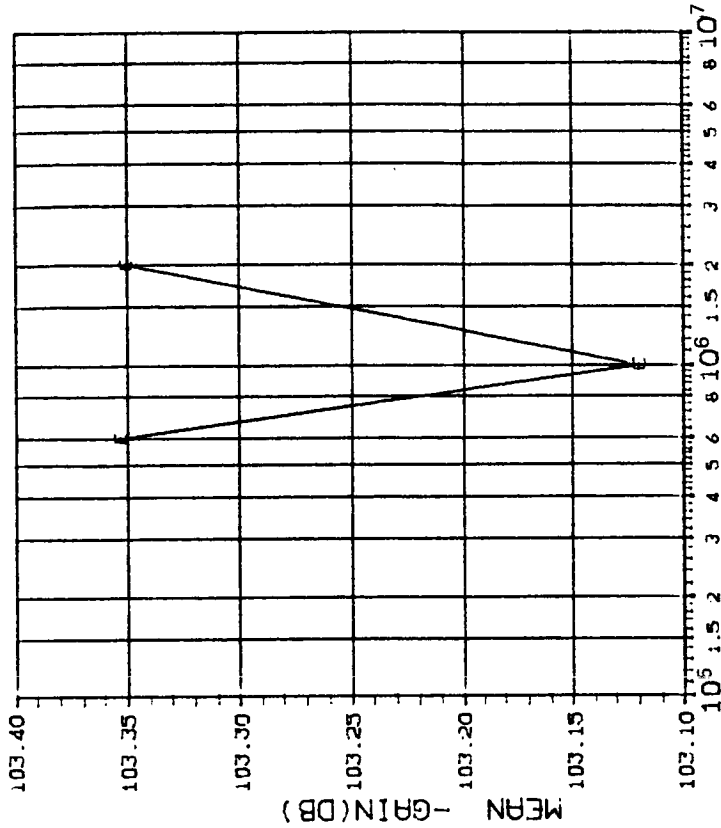
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.309 .7265 1.161

INITIAL MEAN VALUE -GAIN(DB) = 1.08X10⁴²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-2 DATE CODE 8229



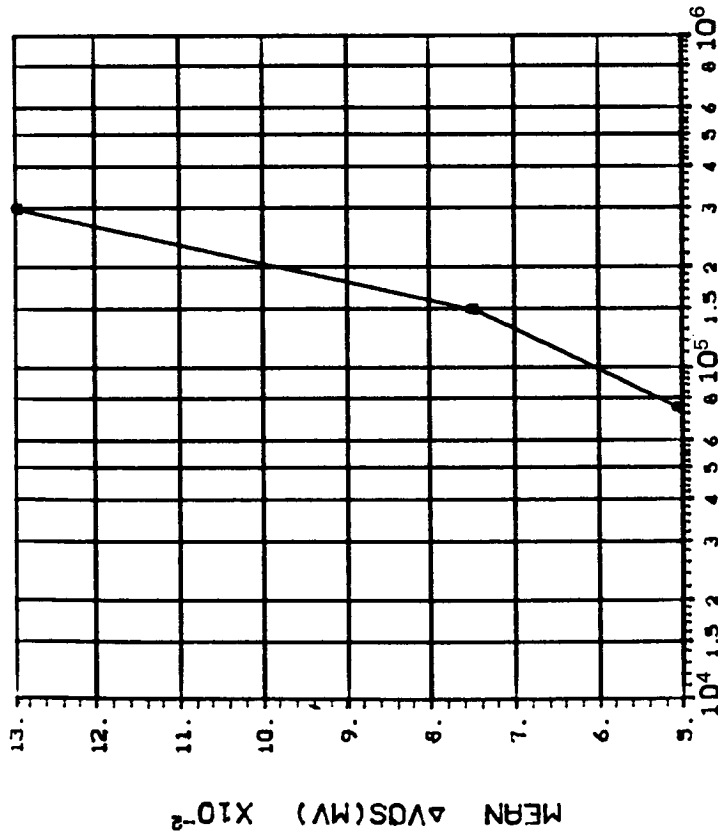
DOSE, rad(Si) 2.5 MeV electrons

(S)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	.2787 .7246 .8598

INITIAL MEAN VALUE -GAIN(DB) = 1.08X10⁴²

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-1 DATE CODE 8150

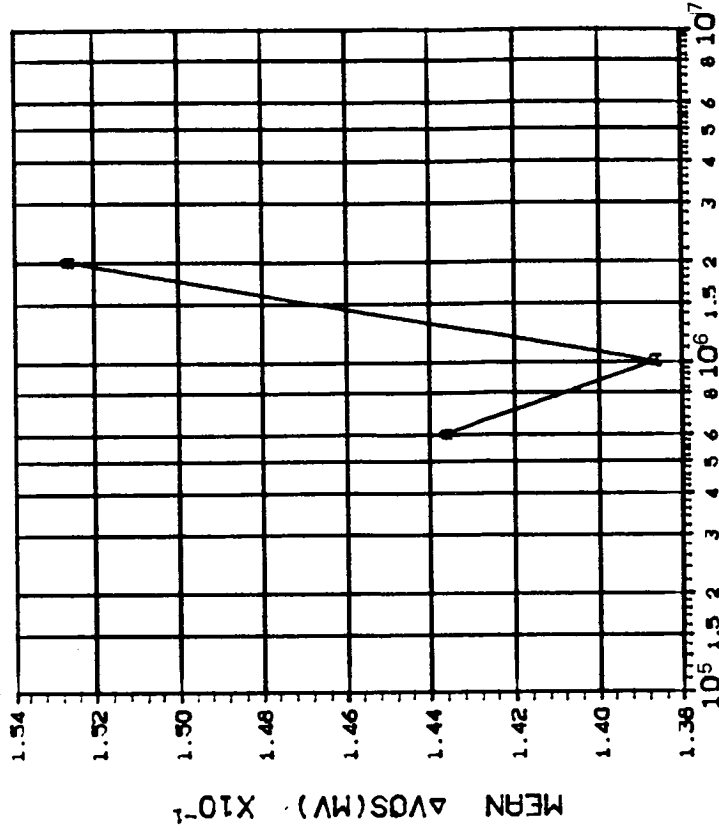


DOSE, rads(Si) Co 60 Gammas

(1)ΔVOS(MV): VS DOSE.

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.0300 .0646 .1222

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-2 DATE CODE 8150

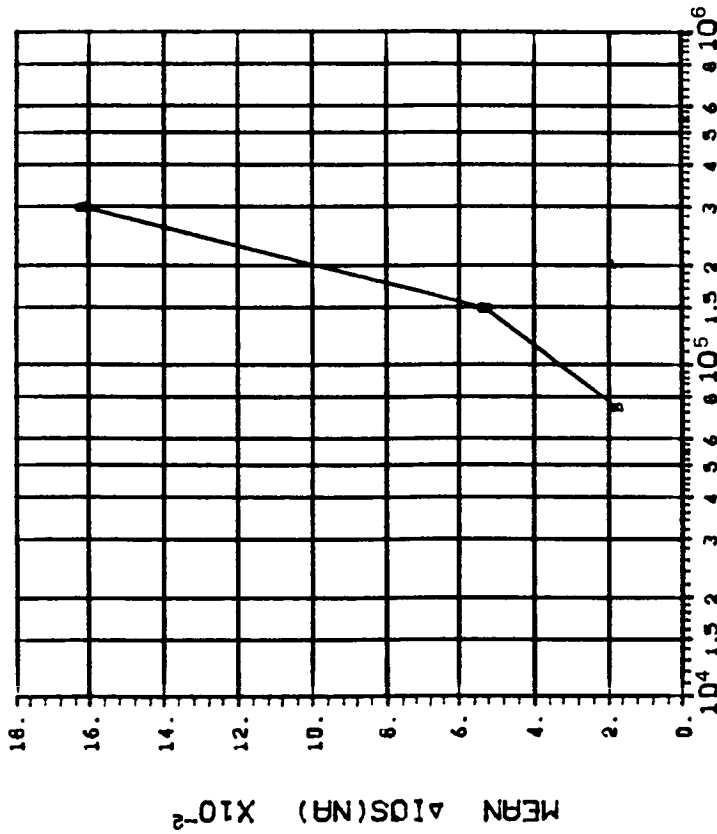


DOSE, rads(Si) Co 60 Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.1300 .1091 .1095

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-62
 REF: JPL LOG 0870-1 DATE CODE 8150

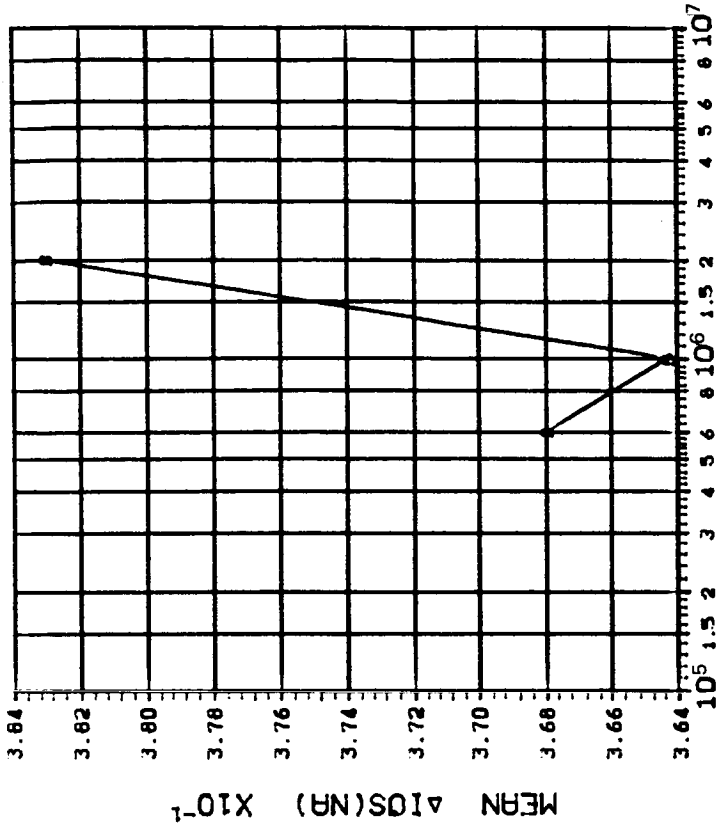


DOSE, rads(Si) Co 60 Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.0236 .0761 .2090

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-62
 REF: JPL LOG 0870-2 DATE CODE 8150

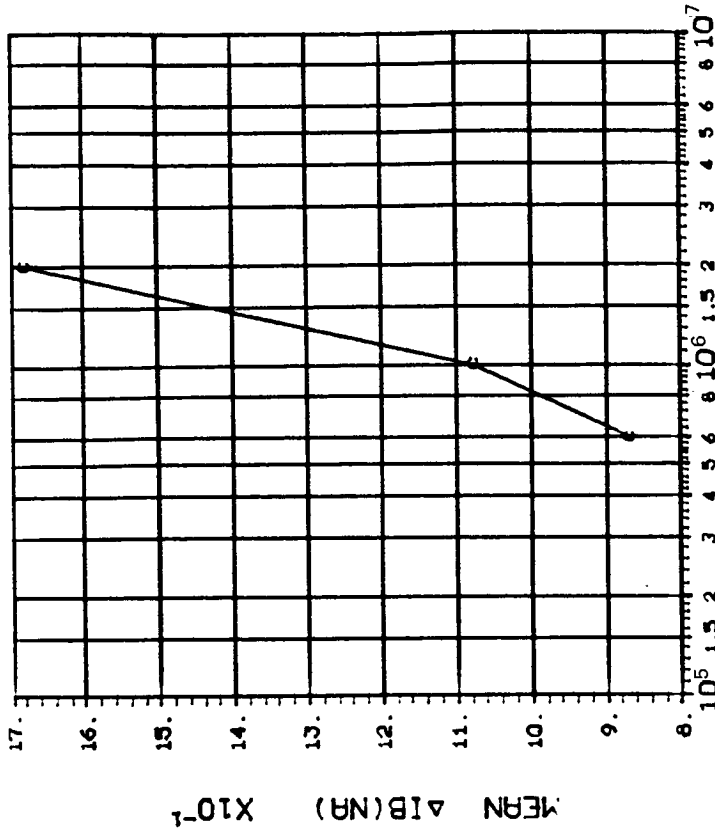


DOSE, rads(Si) Co 60 Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.5079 .4592 .3635

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-2 DATE CODE 8150

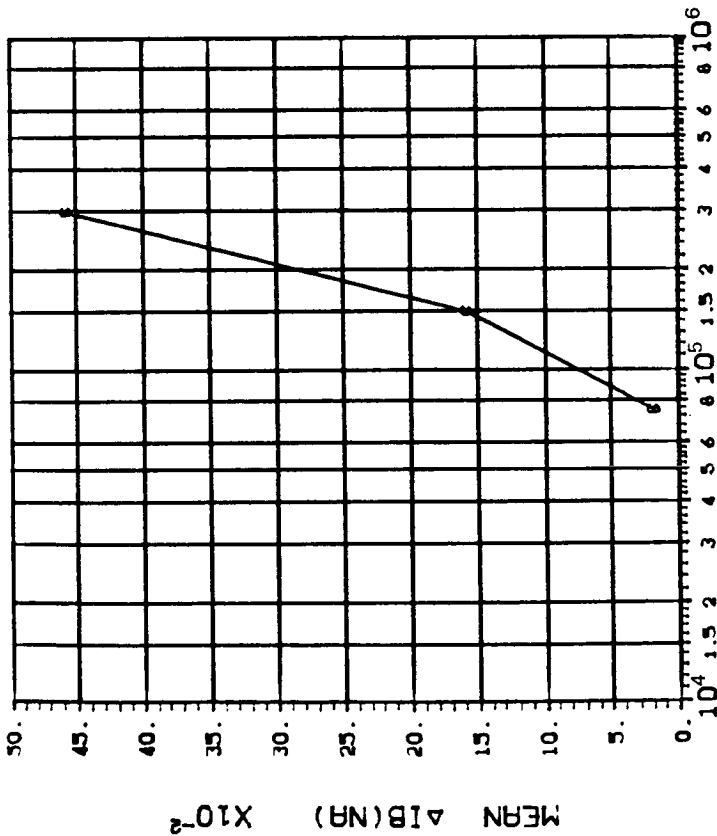


DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	1.177 1.212 1.339

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-1 DATE CODE 8150



DOSE, rads(Si) Co 60 Gammas

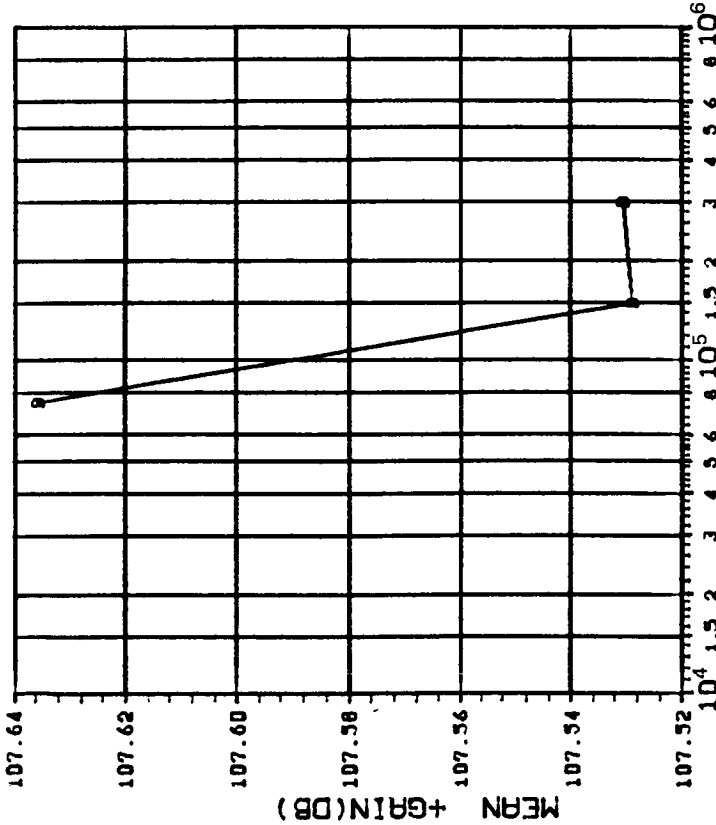
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.0630 .3306 .7175

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-1 DATE CODE 8150



DOSE, rads(Si) Co60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

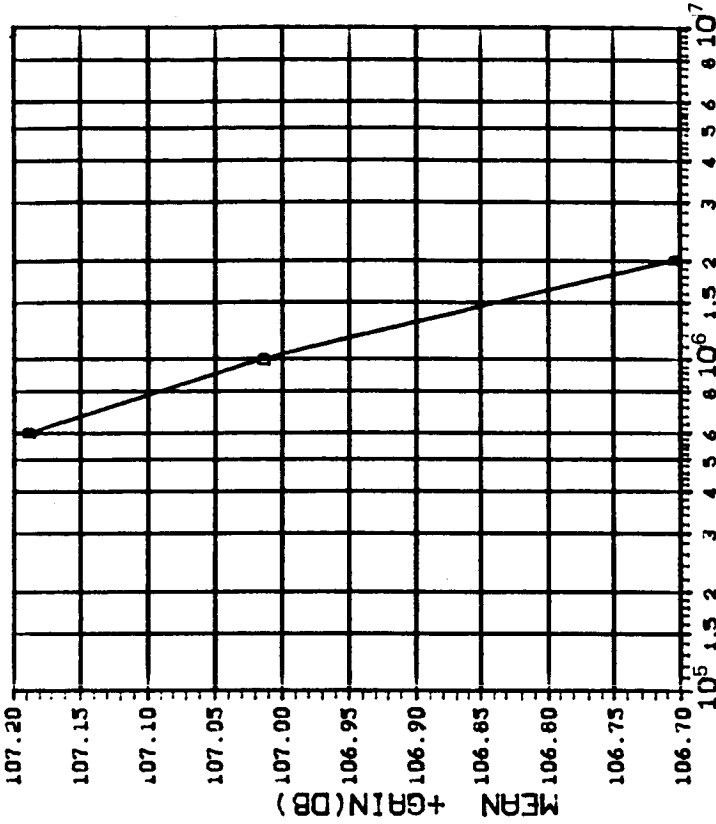
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I _L (mA)	75 150 300
D	2.125 2.609 1.640

INITIAL MEAN VALUE +GAIN(DB) = 1.06X10¹²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-2 DATE CODE 8150



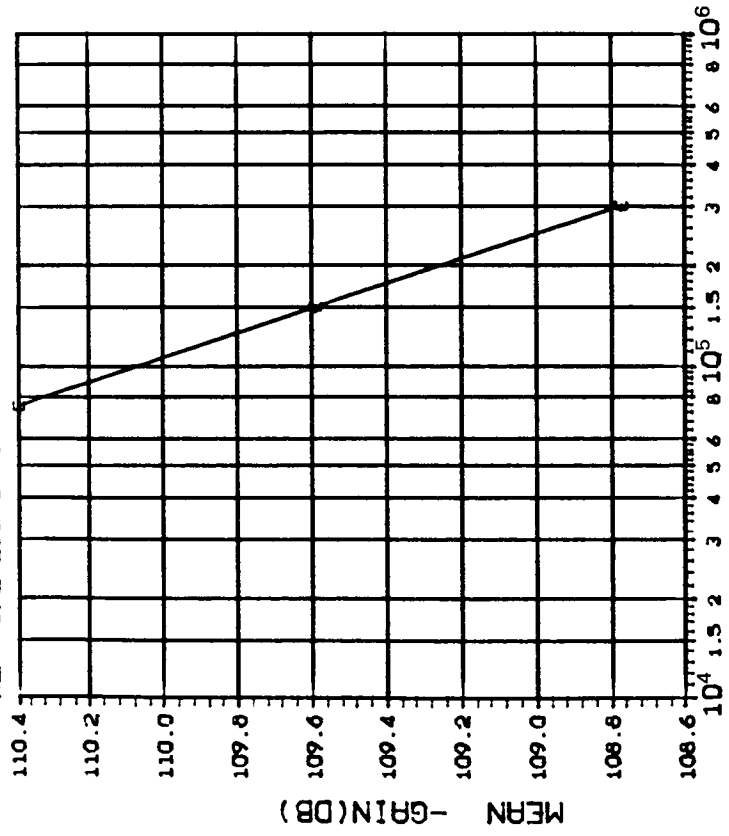
DOSE, rads(Si) Co60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I _L (mA)	600 1000 2000
D	2.592 1.922 2.344

INITIAL MEAN VALUE +GAIN(DB) = 1.06X10¹²

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-1 DATE CODE 8150



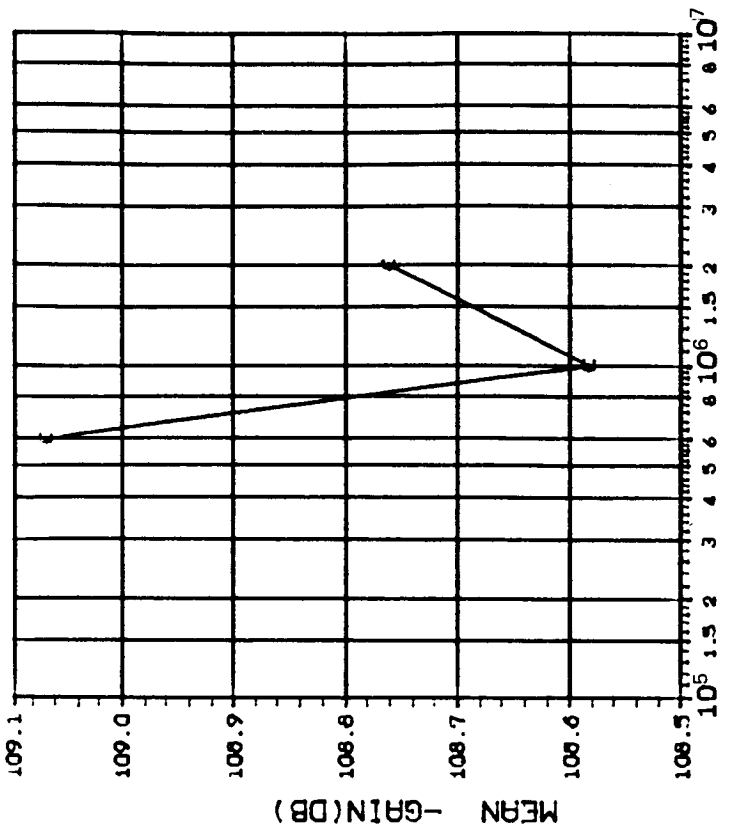
DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
1L (mA)	75 150 300
E	2.394 1.632 2.680

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10¹²

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-2 DATE CODE 8150



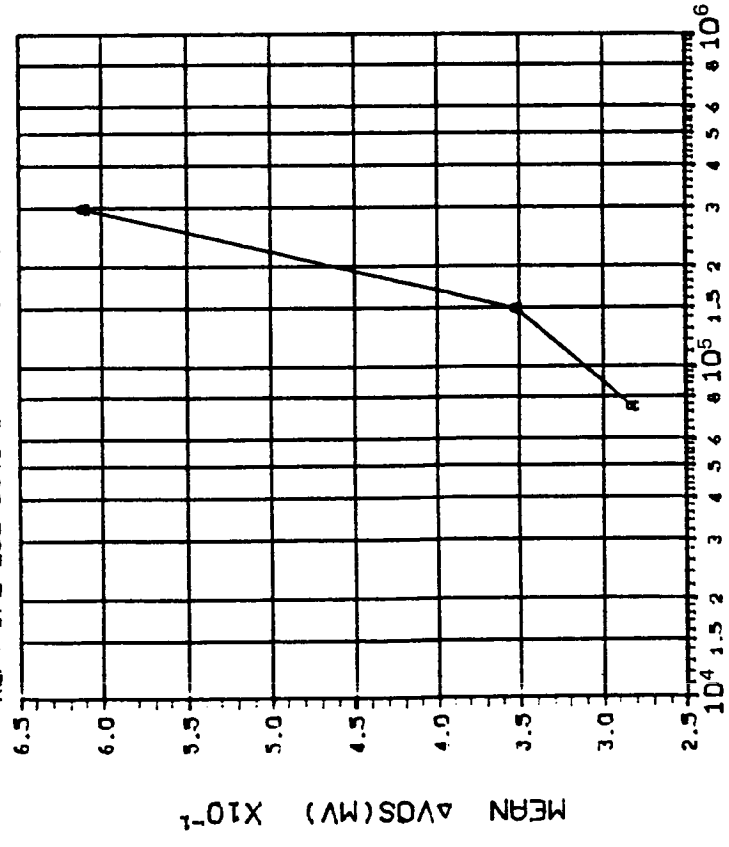
DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
1L (mA)	600 1000 2000
E	2.216 2.516 2.260

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10¹²

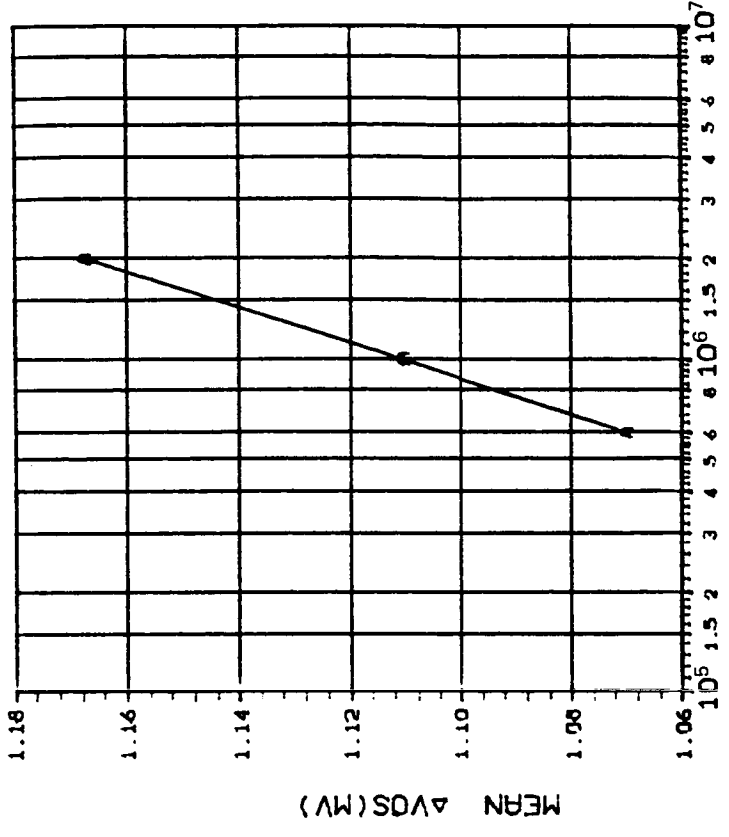
DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-62
 REF: JPL LOG 0871-1 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.4330 .5425 .7679

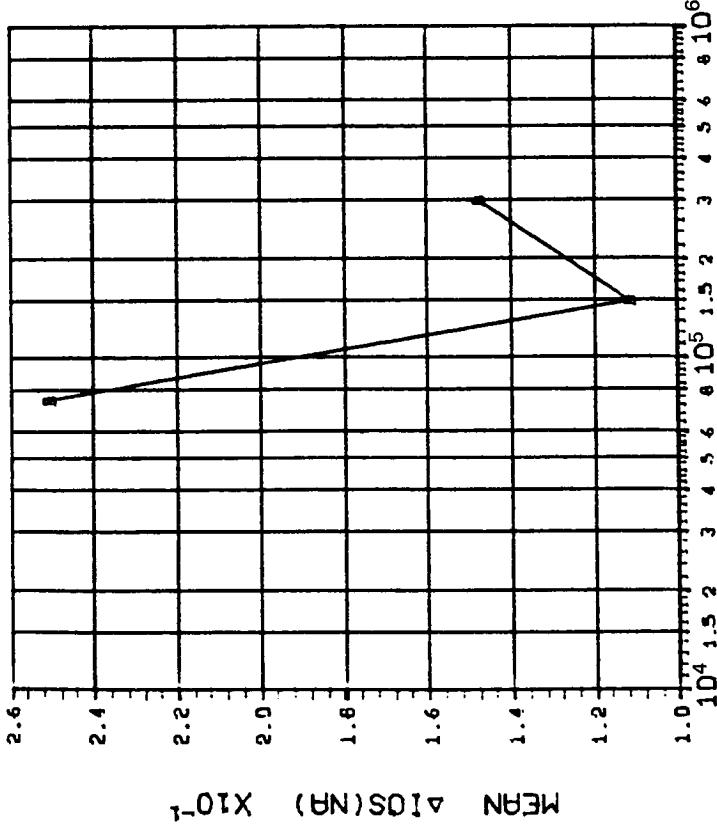
DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-62
 REF: JPL LOG 0871-2 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.9224 1.121 1.567

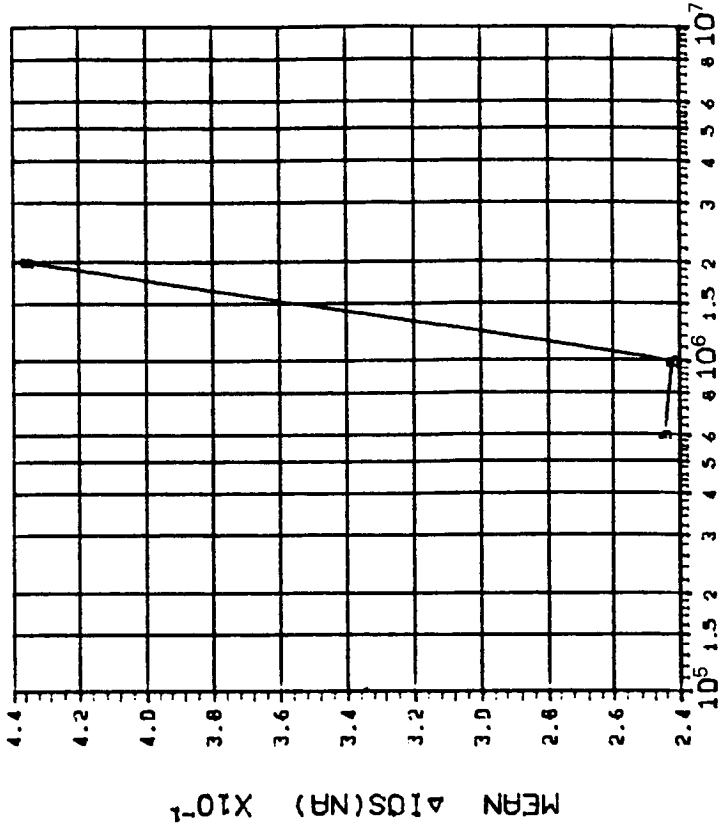
DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-1 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.4241 .0936 .0772

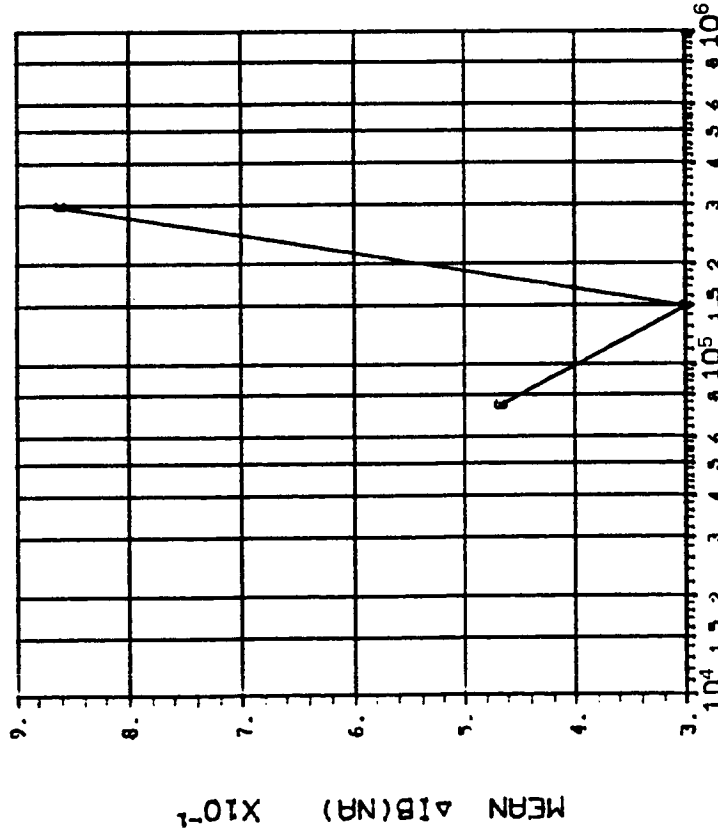
DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-2 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.1932 .2765 .4061

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-1 DATE CODE 8150

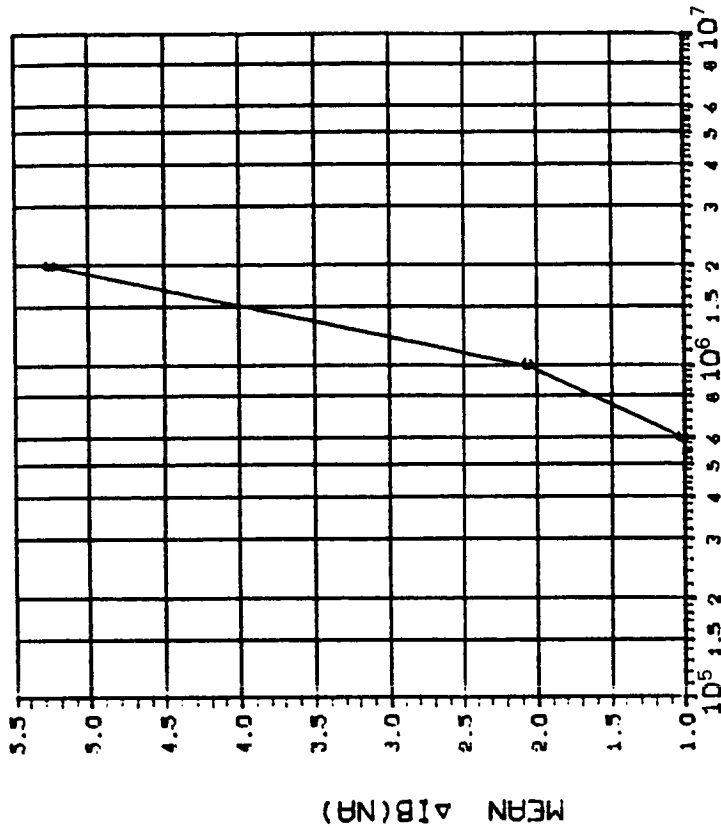


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.5767 .4065 .6209

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-2 DATE CODE 8150

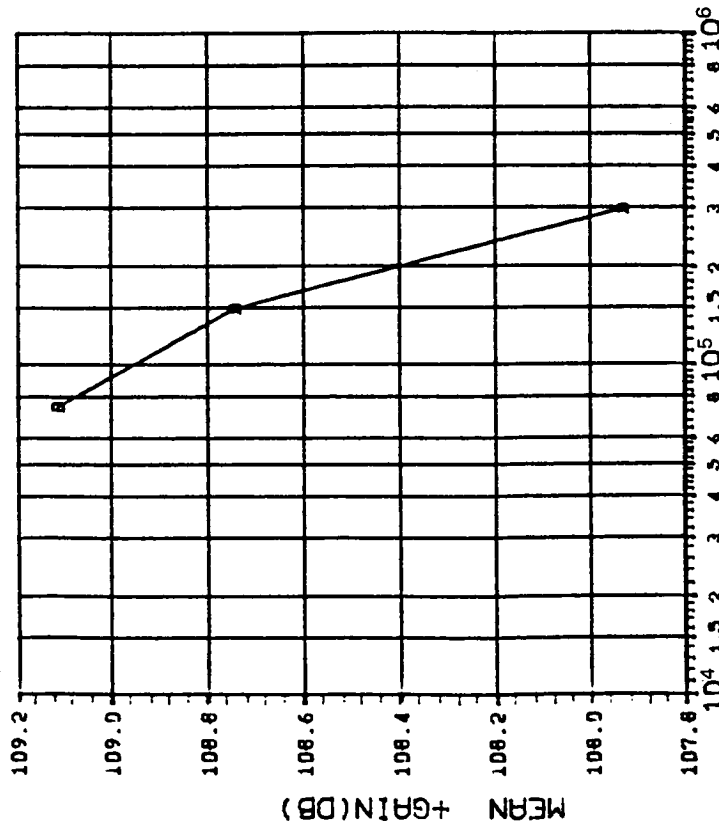


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	.5922 1.153 2.177

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-1 DATE CODE 8150



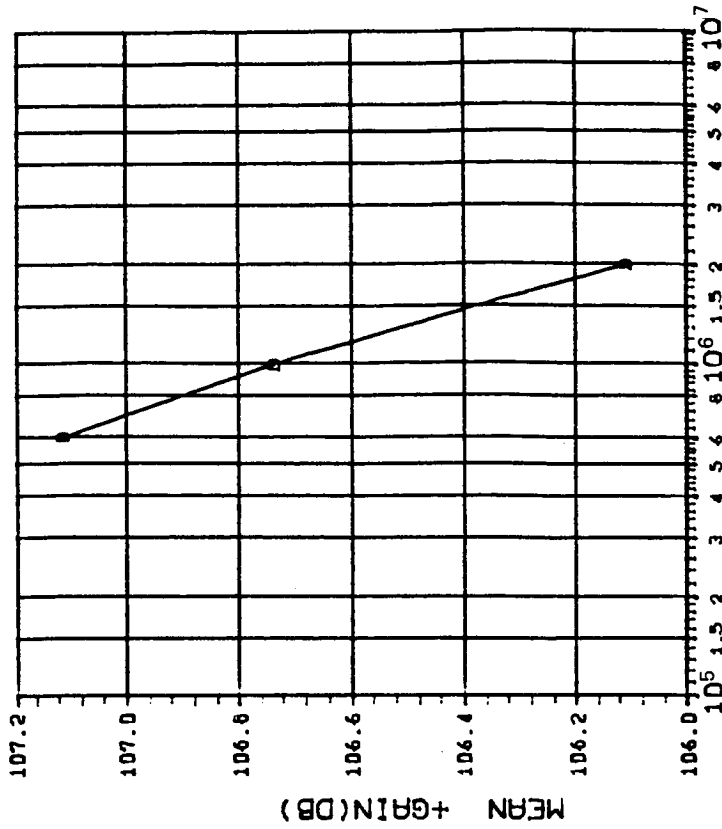
DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I_L (mA)	DOSE, kilorads(Si)
D 5.00	75 150 300
	1.108 1.574 .7992

INITIAL MEAN VALUE +GAIN(DB) = 1.09×10^{12}

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-2 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

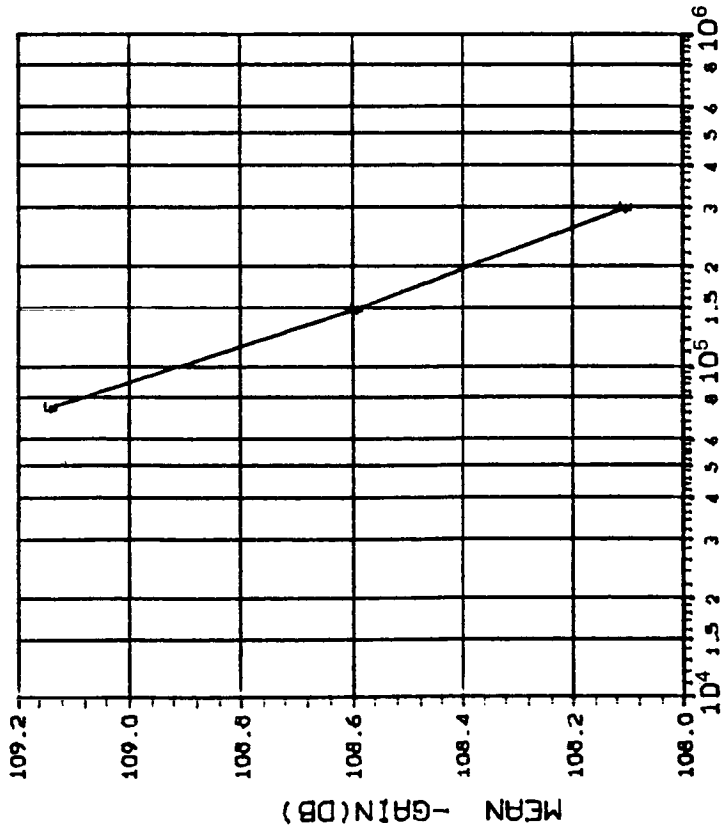
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I_L (mA)	DOSE, kilorads(Si)
D 5.00	600 1000 2000
	.6403 1.403 1.416

INITIAL MEAN VALUE +GAIN(DB) = 1.09×10^{12}

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-1 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons

(5)--GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

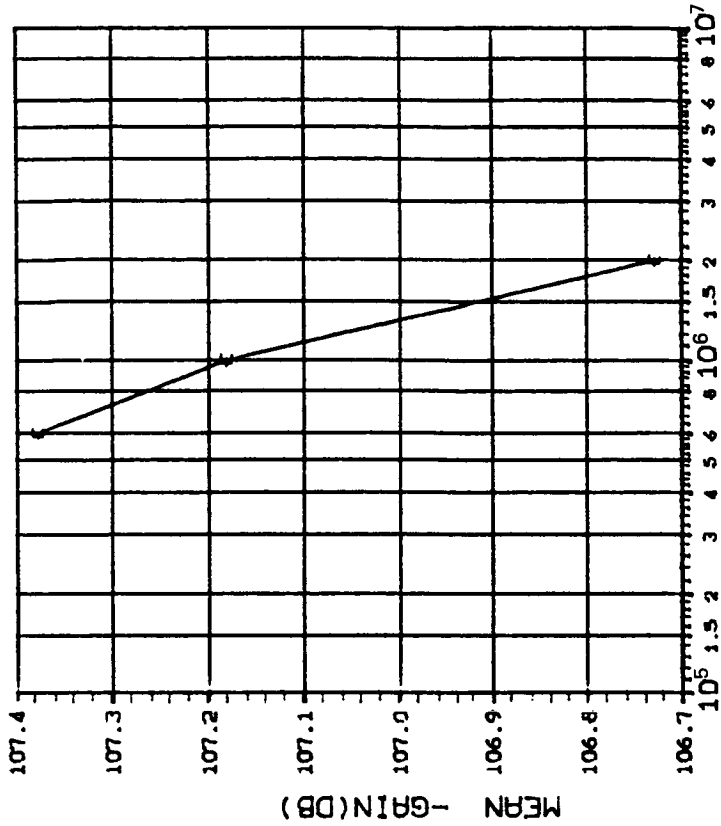
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I_L	75 150 300
E	1.410 1.326 .9139

INITIAL MEAN VALUE -GAIN(DB) = 1.11×10^{12}

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-2 DATE CODE 8150



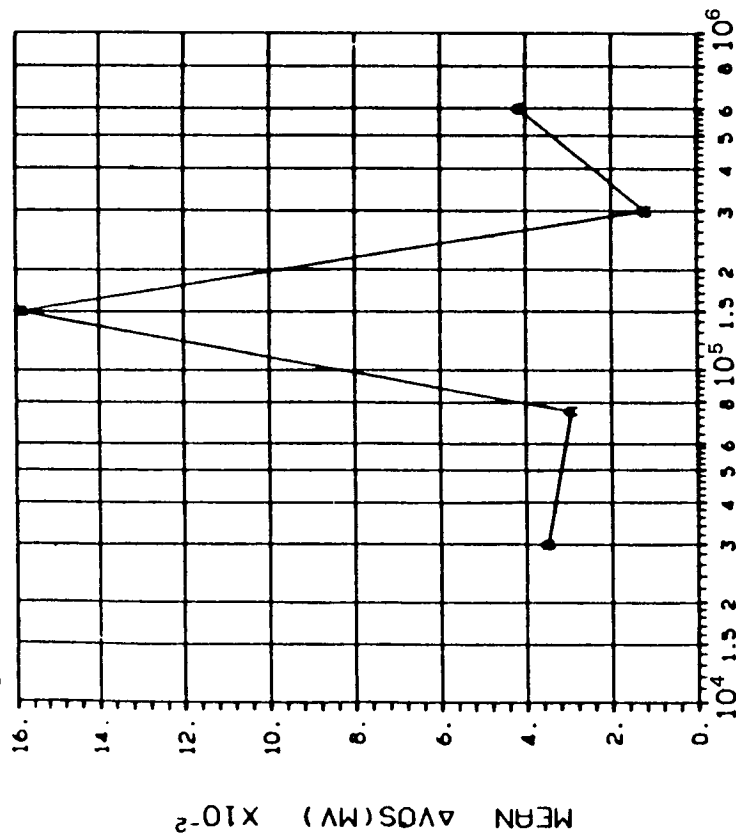
DOSE, rads(Si) 2.5 MeV electrons

(5)--GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I_L	600 1000 2000
E	1.024 1.088 .6336

INITIAL MEAN VALUE -GAIN(DB) = 1.11×10^{12}

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128

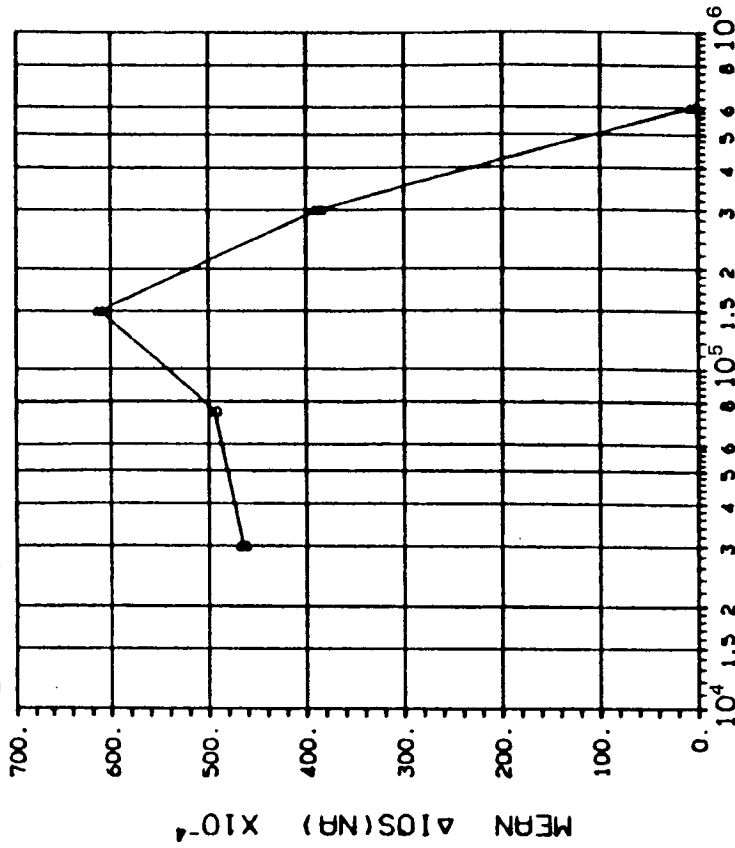


DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	30	.0811
	75	.0727
	150	.1384
	300	.0731
	600	.0541

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128

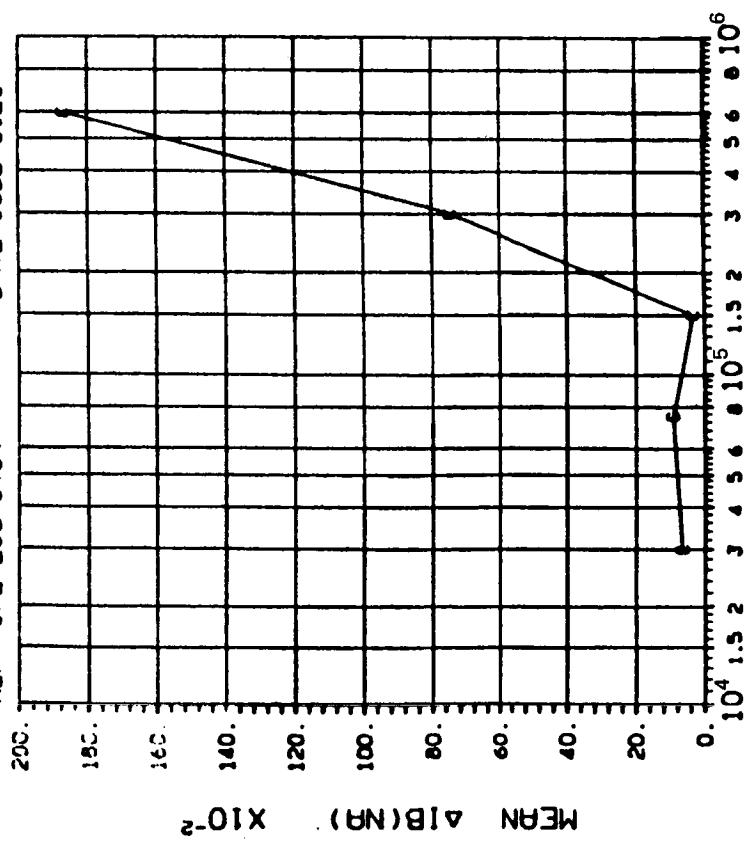


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	30	.0566
	75	.0817
	150	.0819
	300	.1723
	600	.2799

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128



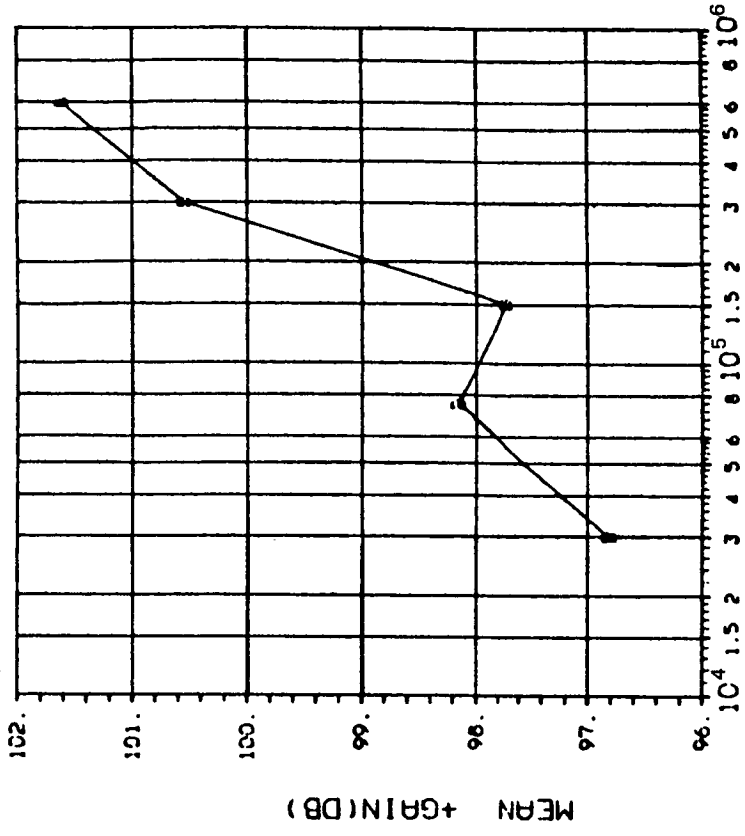
DOSE, rad(Si) 2.5 MeV electrons

(3) ΔIB (NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30
	75
	150
	300
	600

.0596 .0569 .2450 .3647 .7994

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128



DOSE, rad(Si) 2.5 MeV electrons

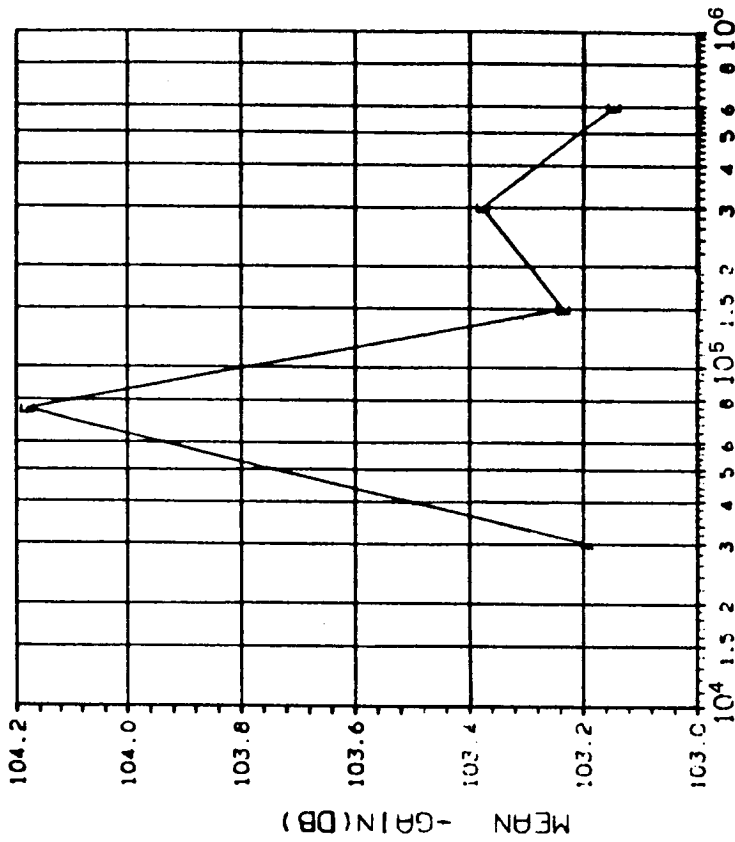
(4) +GAIN IN DB (5K LOAD) = 1.0MA. +15V VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	30
	75
	150
	300
	600

1.838 2.271 1.825 1.442 2.815

INITIAL MEAN VALUE +GAIN(DB) = 9.57 x 10⁺¹

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128



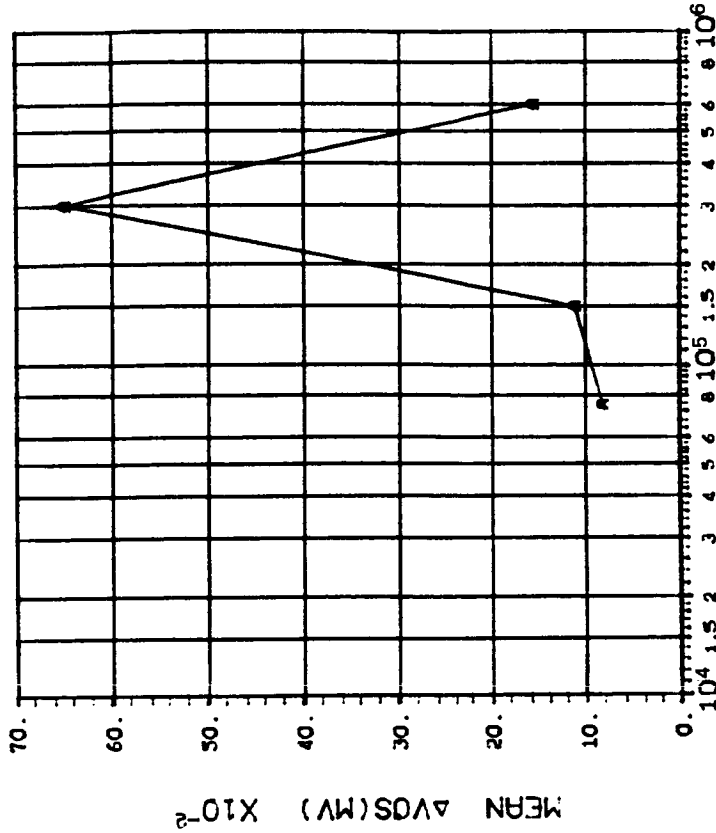
DOSE, rads(Si) 2.5 MeV electrons

(5) -GAIN IN DB (5K LOAD=1.0MA, -15V VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	1.800 2.767 2.674 2.544 2.931

INITIAL MEAN VALUE -GAIN(DB) = 1.02x10⁻²

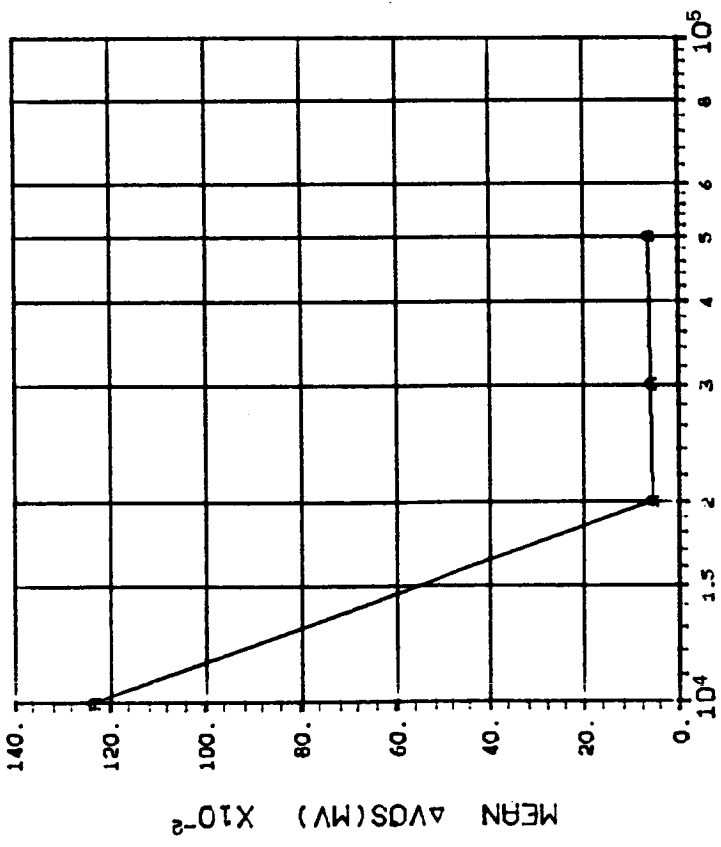
DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-63
 REF: JPL LOG 0860-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600
	.0467 .0742 .9600 .0716

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-63
 REF: JPL LOG 0860-1 DATE CODE 8229



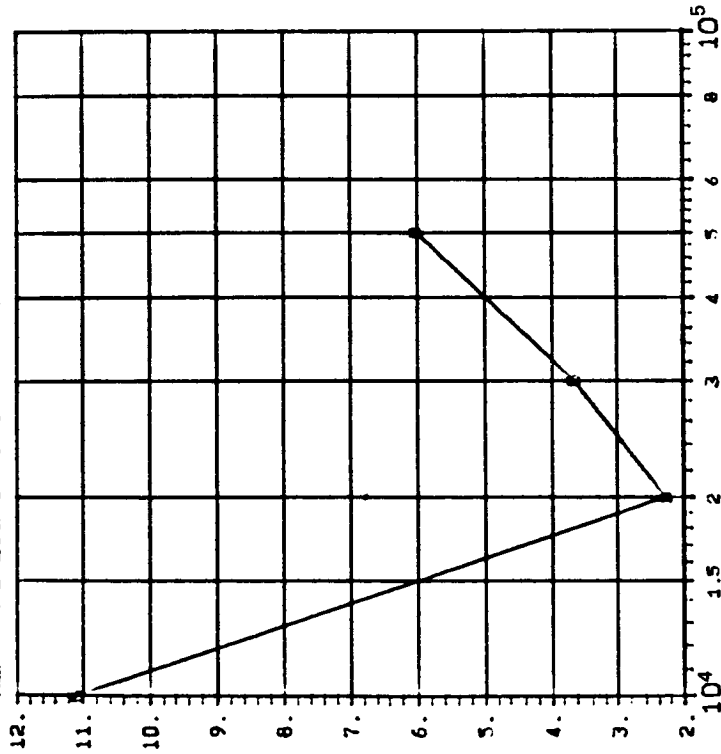
DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	10 20 30 50
	1.102 .0531 .0486 .0420

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0860-1 DATE CODE 8229



MEAN ΔIOS(NR)

DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

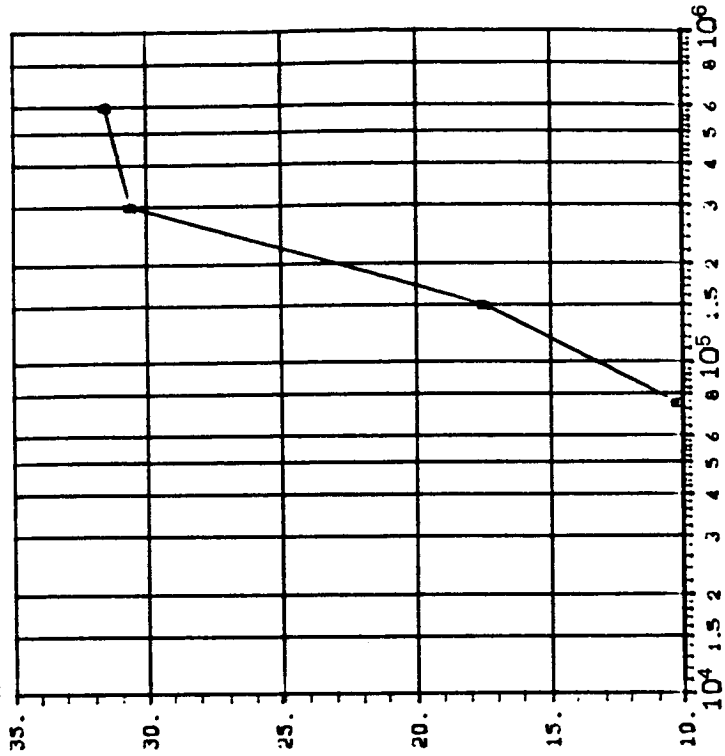
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
B	10 20 30 50
	10.72 2.043 3.014 5.263

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0860-2 DATE CODE 8229



MEAN ΔIOS(NR)

DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	9.127 17.26 25.08 24.51

DEVICE TYPE: OP-21 OP AMP

MFG: PMI

4 DEVICES

TEST DATE 03-24-63

REF: JPL LOG 0860-1

DATE CODE 6229



DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
C	10 20 30 50
	34.65 45.52 26.06 26.82

DEVICE TYPE: OP-21 OP AMP

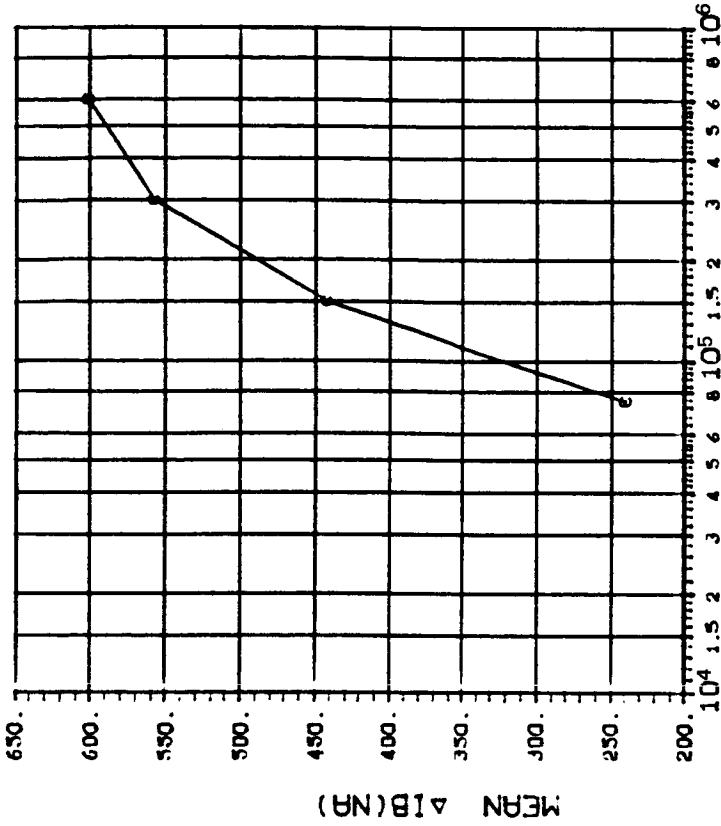
MFG: PMI

4 DEVICES

TEST DATE 03-24-63

REF: JPL LOG 0860-2

DATE CODE 6229



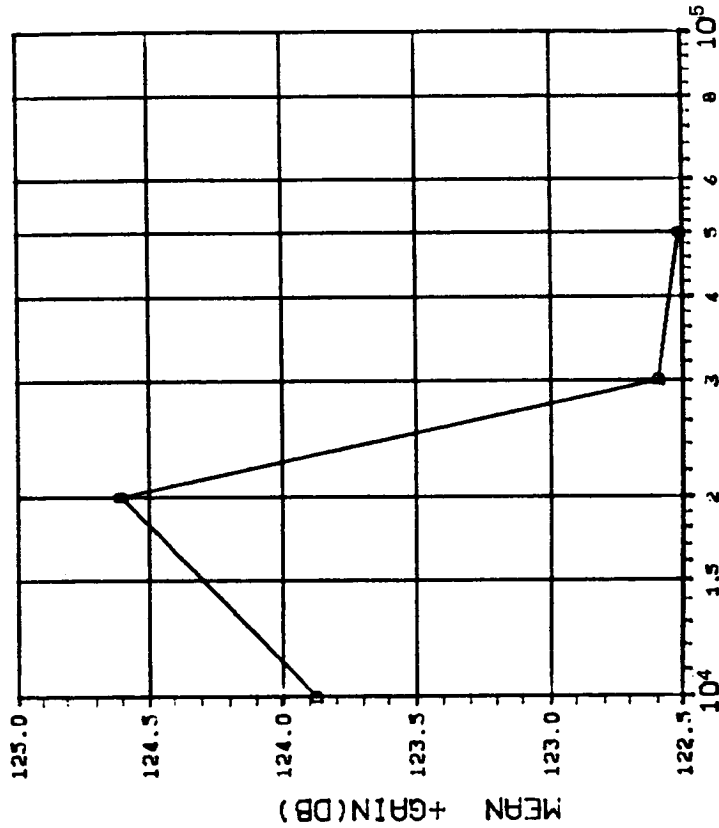
DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
C	75 150 300 600
	117.3 88.88 16.10 19.24

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0860-1 DATE CODE 8229

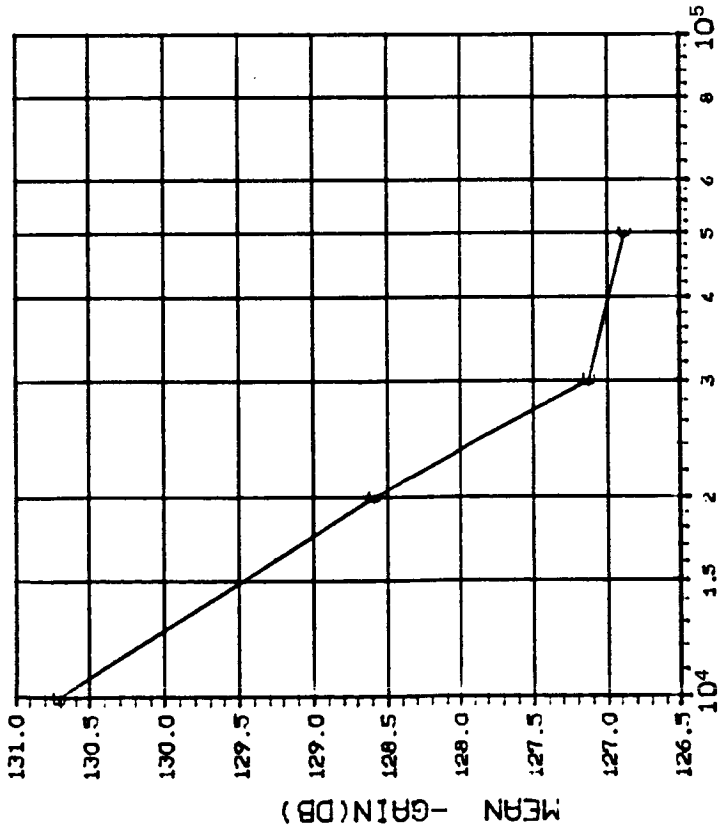


DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(1.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	1.756 1.928 1.516 .6696

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0860-1 DATE CODE 8229



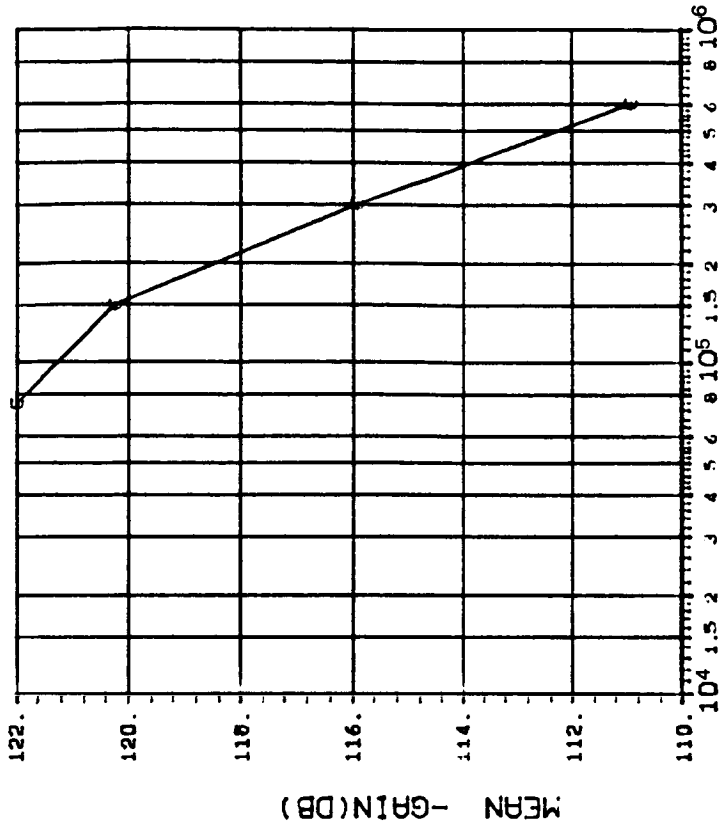
DOSE, rads(Si) 2.5 MeV electrons

(S)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	2.476 1.249 2.218 3.109

INITIAL MEAN VALUE -GAIN(DB) = 1.30X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0860-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(S)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

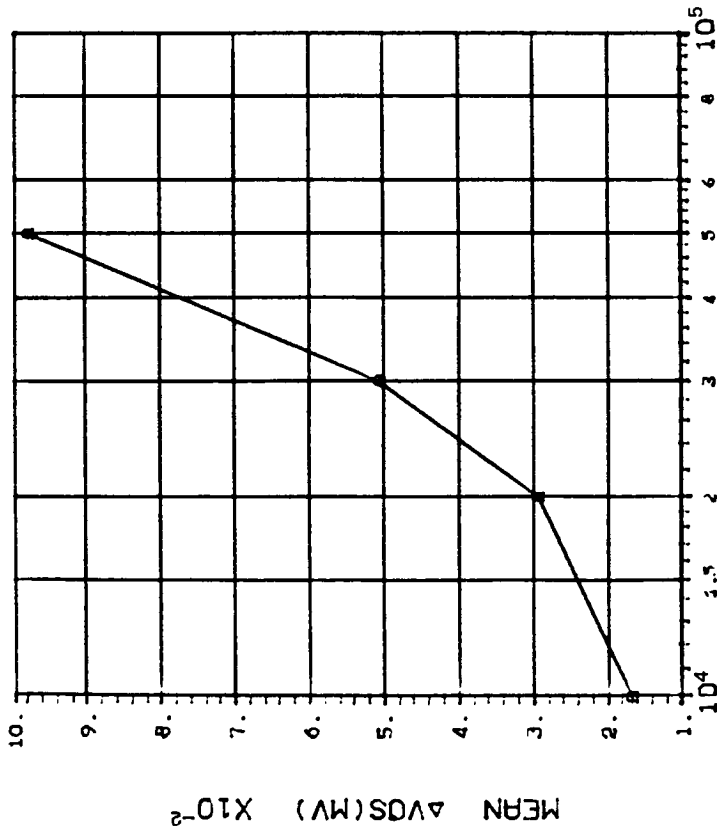
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	.8920 .4576 3.076 .9523

INITIAL MEAN VALUE -GAIN(DB) = 1.30X10¹²

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

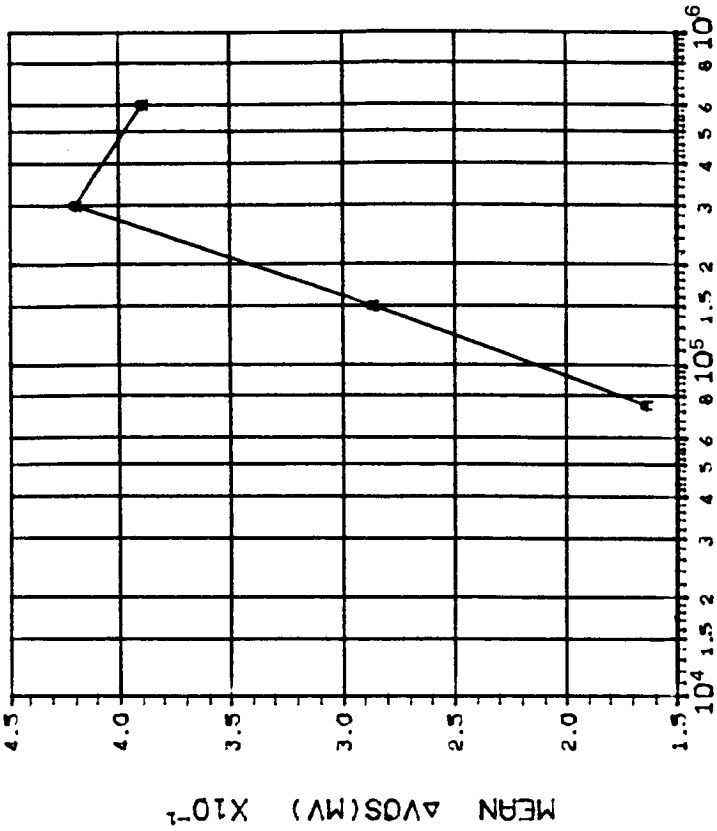
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
A	10 20 30 50
	.0168 .0275 .0440 .0817

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
A	75 150 300 600
	.1440 .2494 .3762 .3221

DEVICE TYPE: OP-21 OP AMP

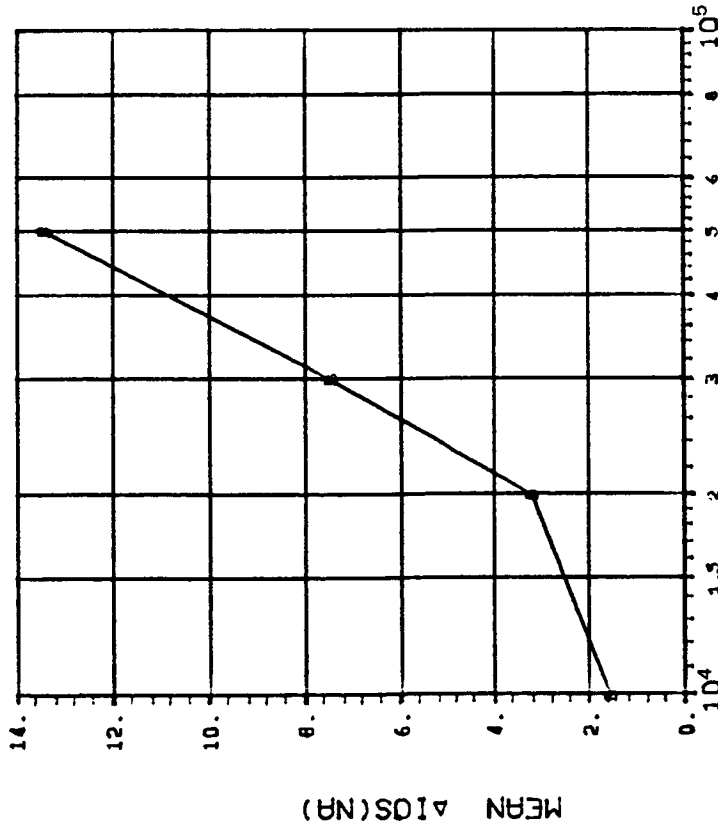
MFG: PMI

4 DEVICES

TEST DATE 03-24-83

REF: JPL LOG 0862-1

DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	10 20 30 50
	.6990 1.736 5.079 9.765

DEVICE TYPE: OP-21 OP AMP

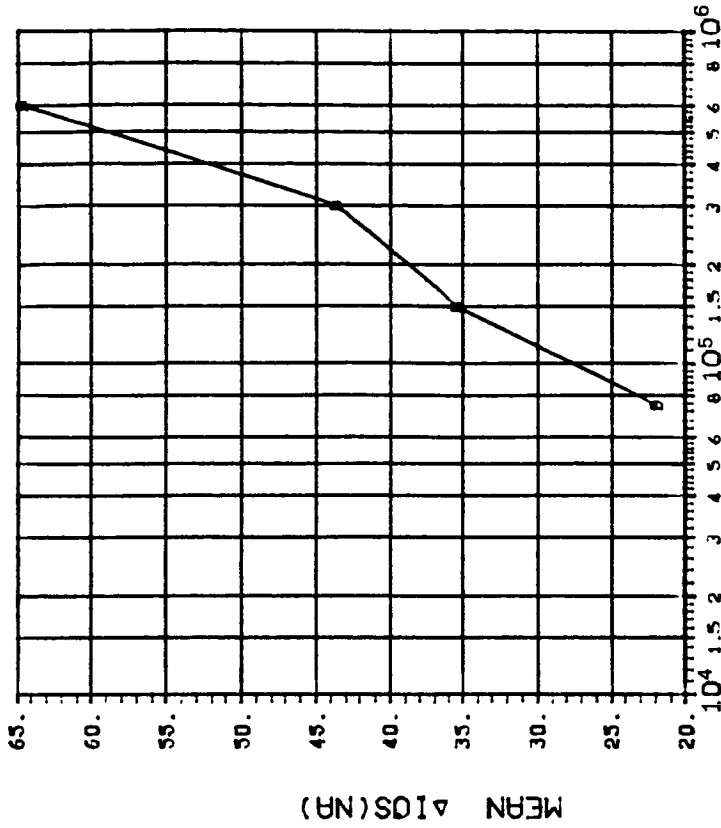
MFG: PMI

4 DEVICES

TEST DATE 03-24-83

REF: JPL LOG 0862-2

DATE CODE 8229

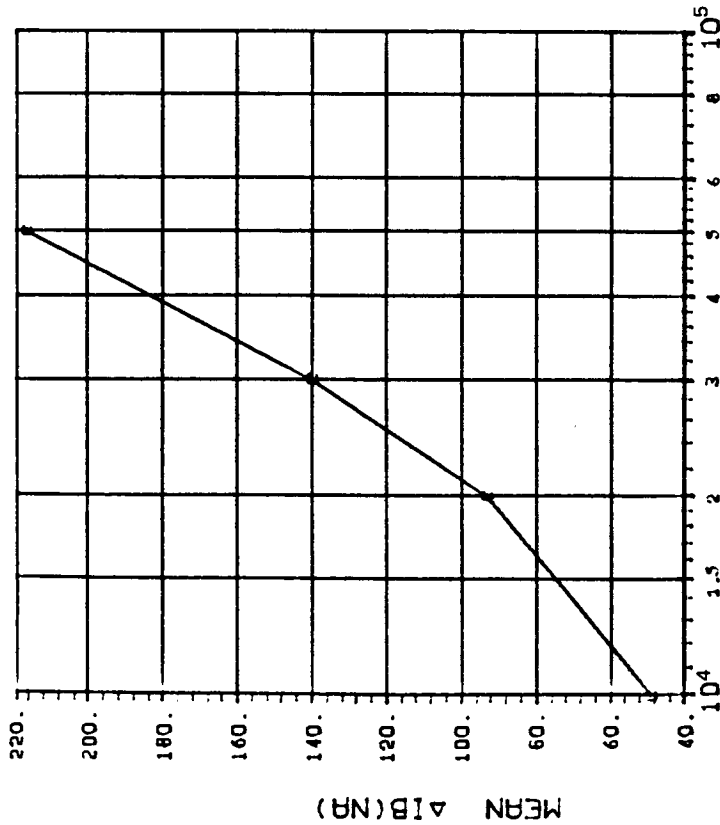


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	17.46 29.47 30.12 61.33

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-1 DATE CODE 8229

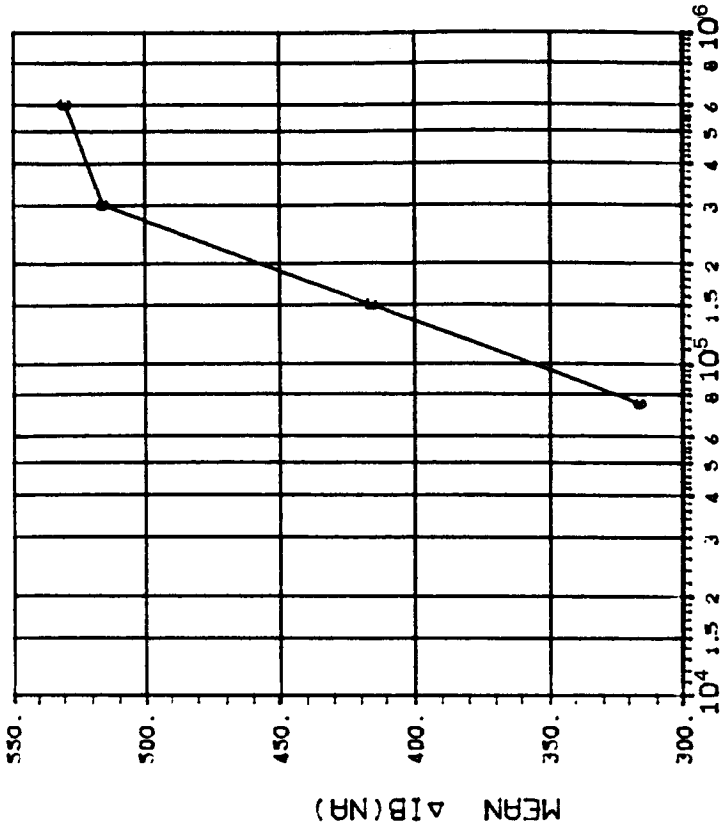


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	10 20 30 50
C	10.19 21.08 37.78 79.10

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-2 DATE CODE 8229

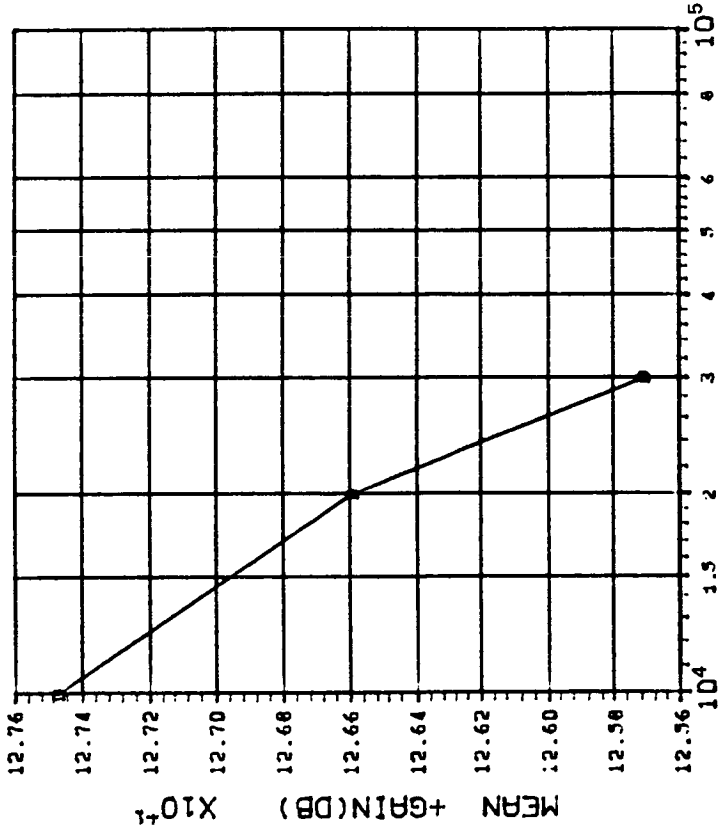


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300 600
C	150.7 118.1 52.62 169.8

DEVICE TYPE: OP-21 OP AMP
 MFG: PM1 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-1 DATE CODE 6229

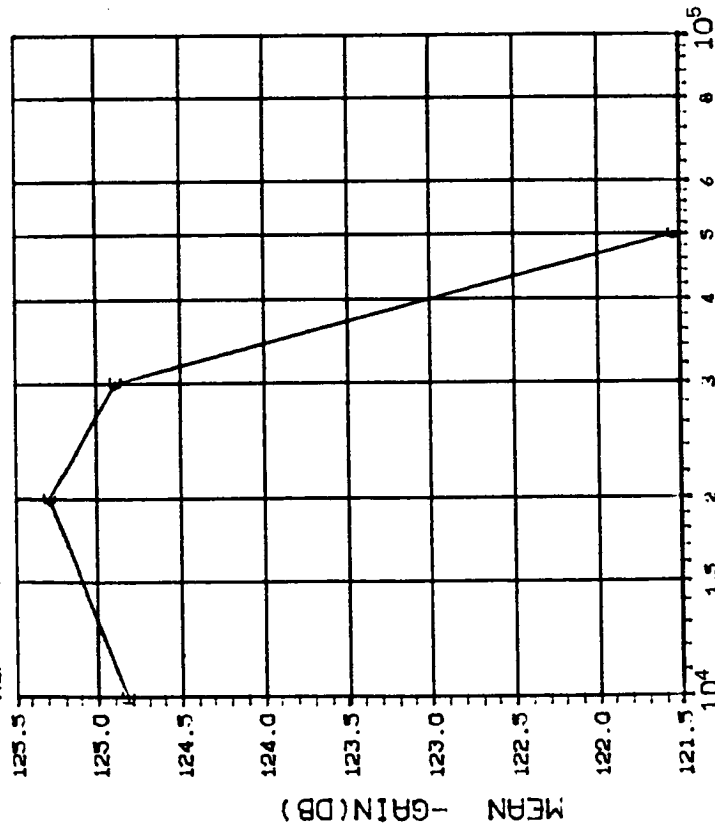


DOSE, rads(Si) 2.5 MeV electrons
 (41)GAIN IN DB(1.MA LOAD, +10V1: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	.9691 1.704 3.327 *****

INITIAL MEAN VALUE +GAIN(DB) = 1.24X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-1 DATE CODE 8229

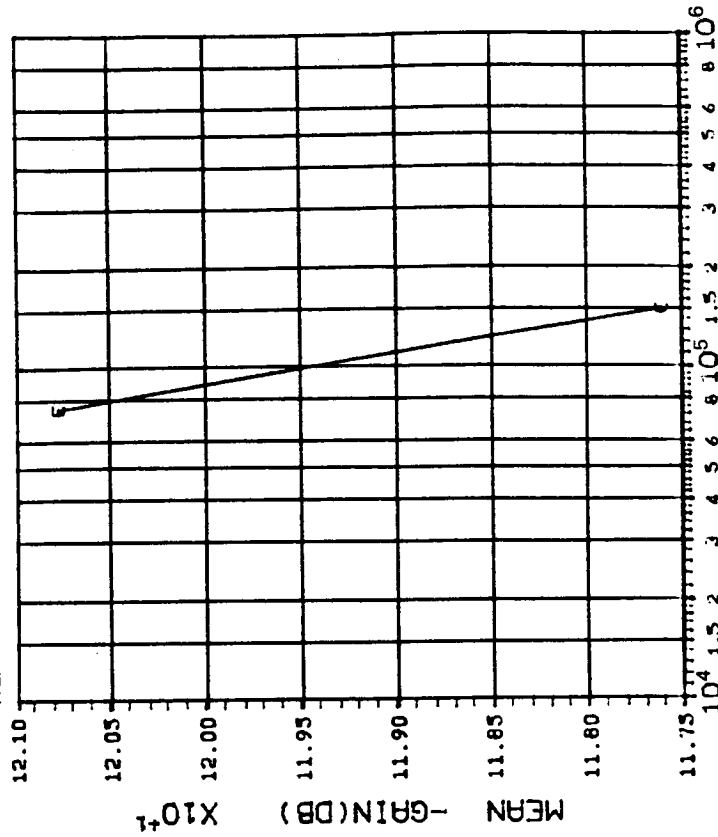


DOSE, rads(Si) 2.5 MeV electrons
 (5)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	.7916 1.461 1.411 1.668

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-2 DATE CODE 8229

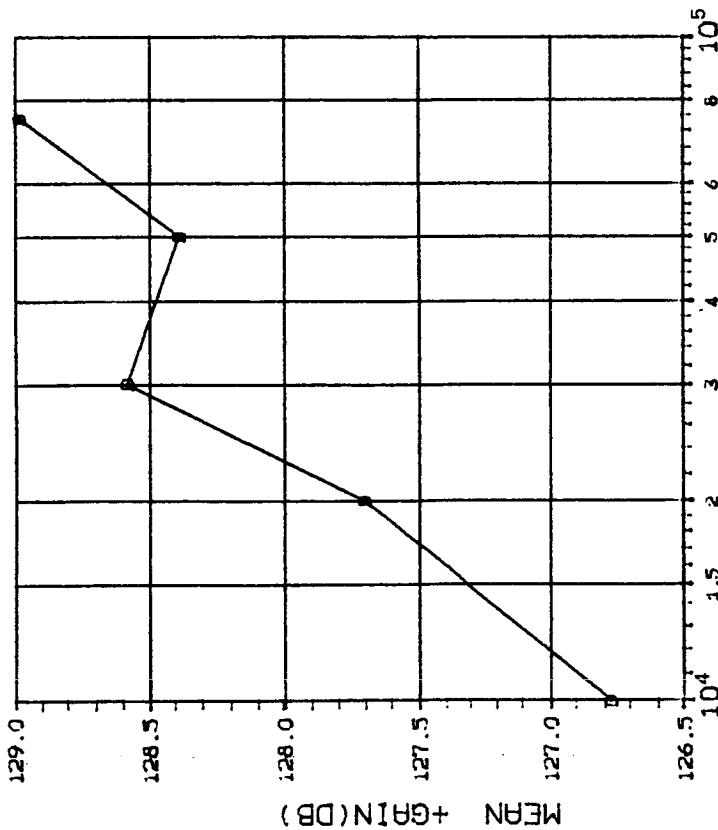


DOSE, rads(Si) 2.5 MeV electrons
 (5)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	1.399 3.790 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-21-83
 REF: JPL LOG 0863 DATE CODE 8229



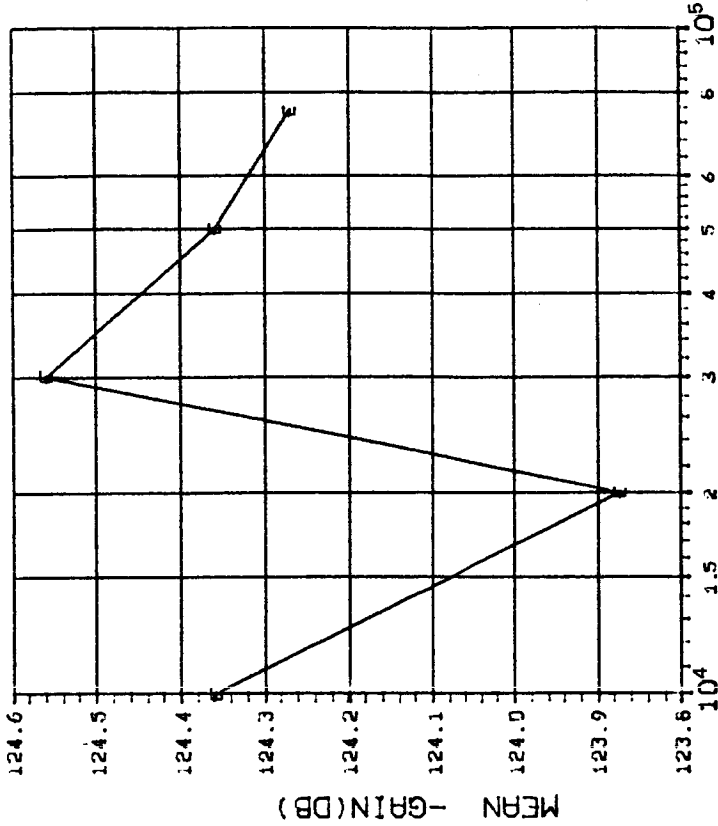
DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(1.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	10 20 30 50 75
		4.249 5.342 3.962 4.801 3.456

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-21-83
 REF: JPL LOG 0863 DATE CODE 8229



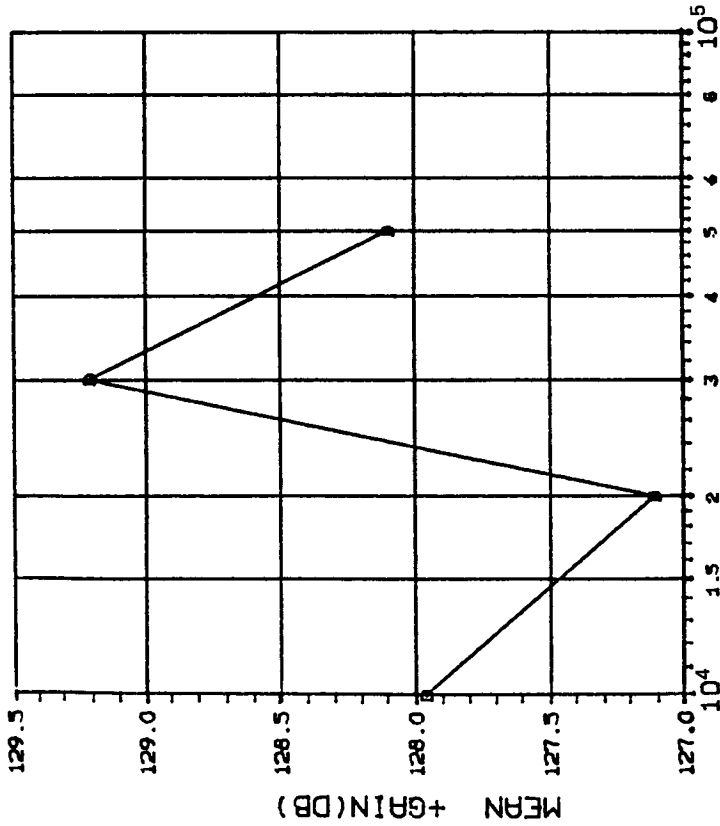
DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(1.MA LOAD,-10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	10 20 30 50 75
		2.609 1.758 1.687 2.609 2.077

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-22-83
 REF: JPL LOG 0998-1 DATE CODE 8229

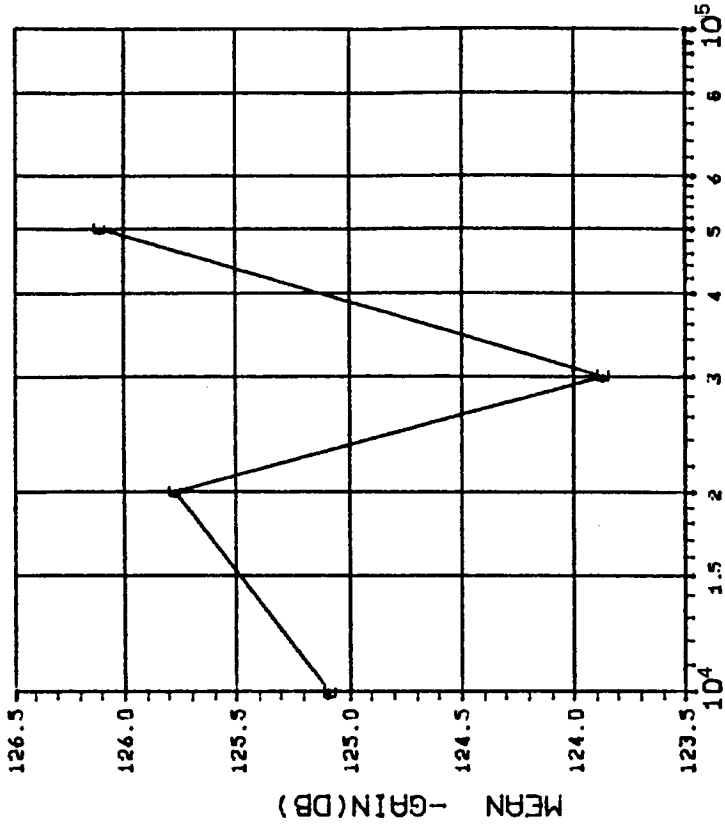


DOSE, rads(Si) Co⁶⁰ Gammas

(4) +GAIN IN DB (1.0MA LOAD, +10V) : VS DOSE

INITIAL MEAN VALUE +GAIN(DB) = 1.24X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-22-83
 REF: JPL LOG 0998-1 DATE CODE 8229



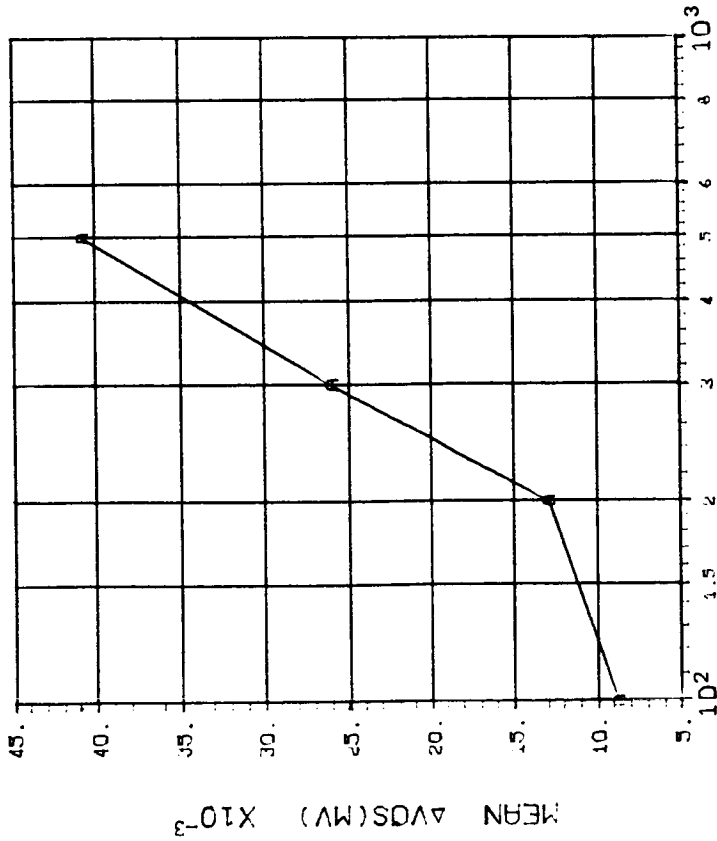
DOSE, rads(Si) Co⁶⁰ Gammas

(5) -GAIN IN DB (1.0MA LOAD, -10V) : VS DOSE

INITIAL MEAN VALUE -GAIN(DB) = 1.28X10¹²

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	10 20 30 50
		2.547 2.005 1.756 3.460

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 6-28-83
 REF: JPL LOG 1015-1 DATE CODE 8311

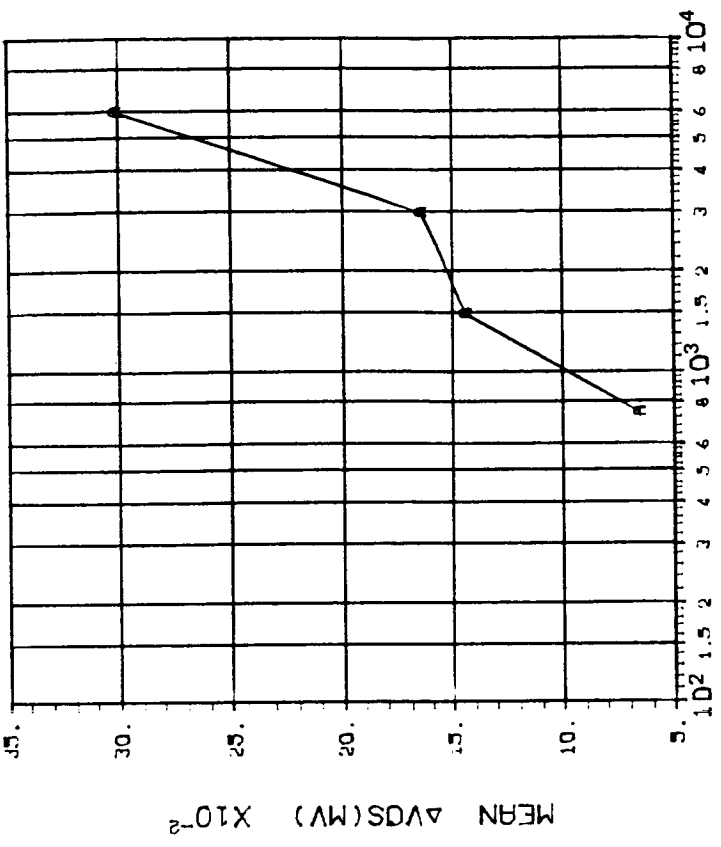


DOSE, rads(Si) Co 60 Gammas

(1) ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	0.1 0.2 0.3 0.5
	.0069 .0125 .0210 .0376

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 6-28-83
 REF: JPL LOG 1015-2 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

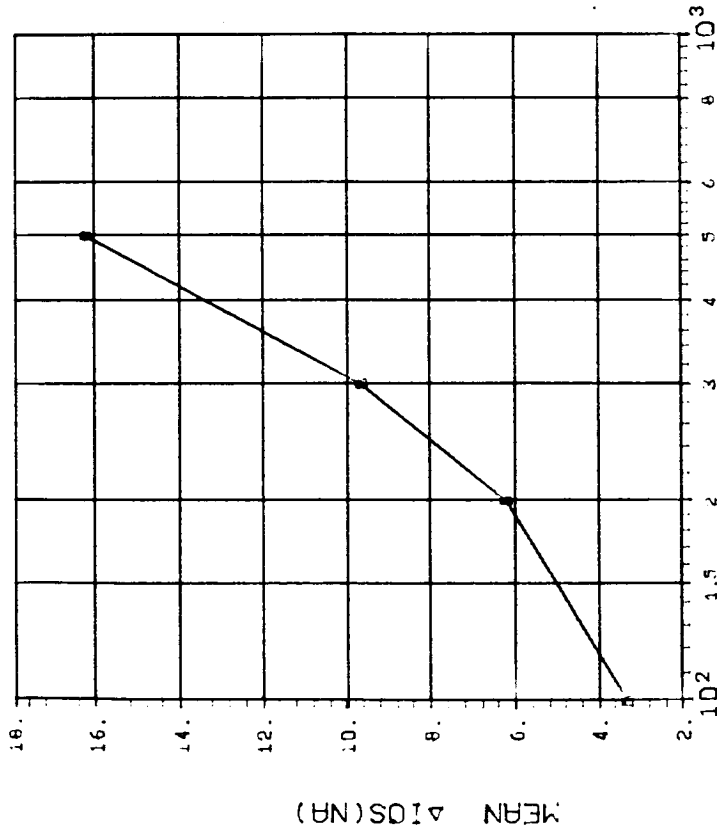
(1) ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	.75 1.5 3 6
	.0623 .1090 .1238 .2756

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

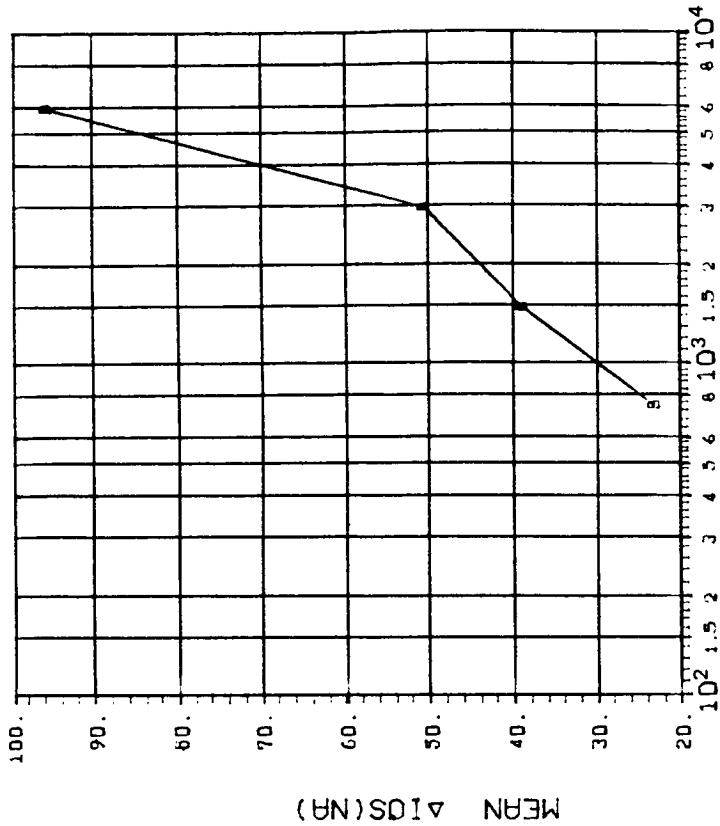
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	0.1 0.2 0.3 0.5
	6.901 12.60 19.66 33.16

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-2 DATE CODE 8311

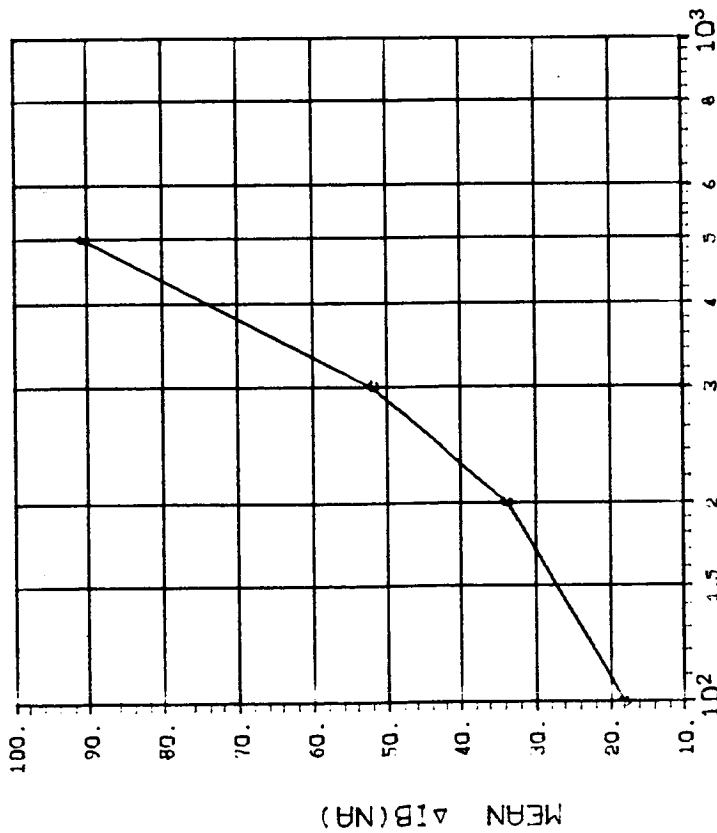


DOSE, rads(Si) Co 60 Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	.75 1.5 3 6
	47.35 81.03 110.7 92.64

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 6-28-83
 REF: JPL LOG 1015-1 DATE CODE 8311

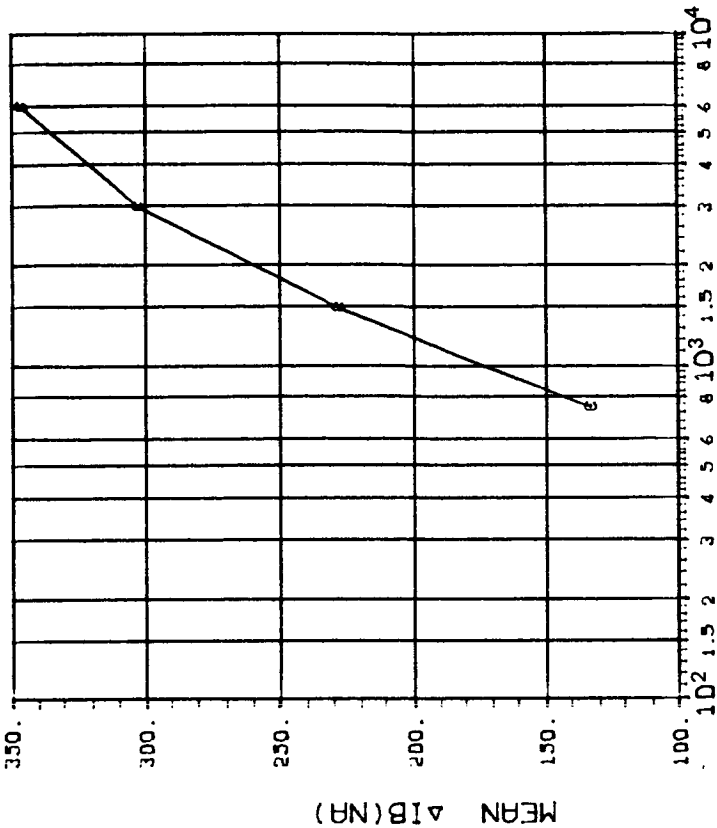


DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	0.1 0.2 0.3 0.5
	5.334 10.02 14.73 24.69

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 6-28-83
 REF: JPL LOG 1015-2 DATE CODE 8311



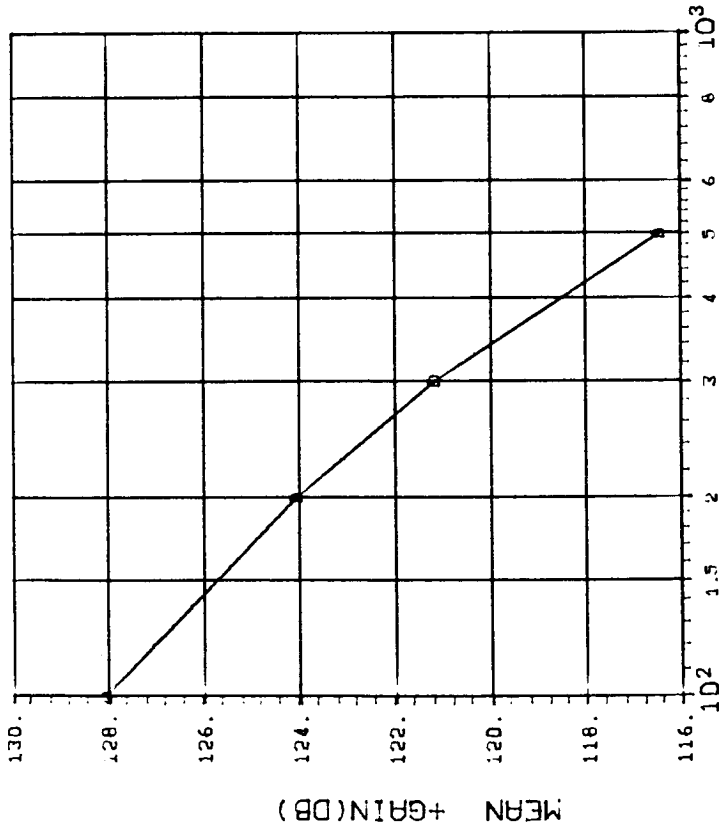
DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	.75 1.5 3 6
	34.45 54.64 69.26 59.76

DEVICE TYPE: JP-21 OP AMP

MFG: PM1 5 DEVICES TEST DATE 6-28-83
 REF: JPL LOG 1015-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

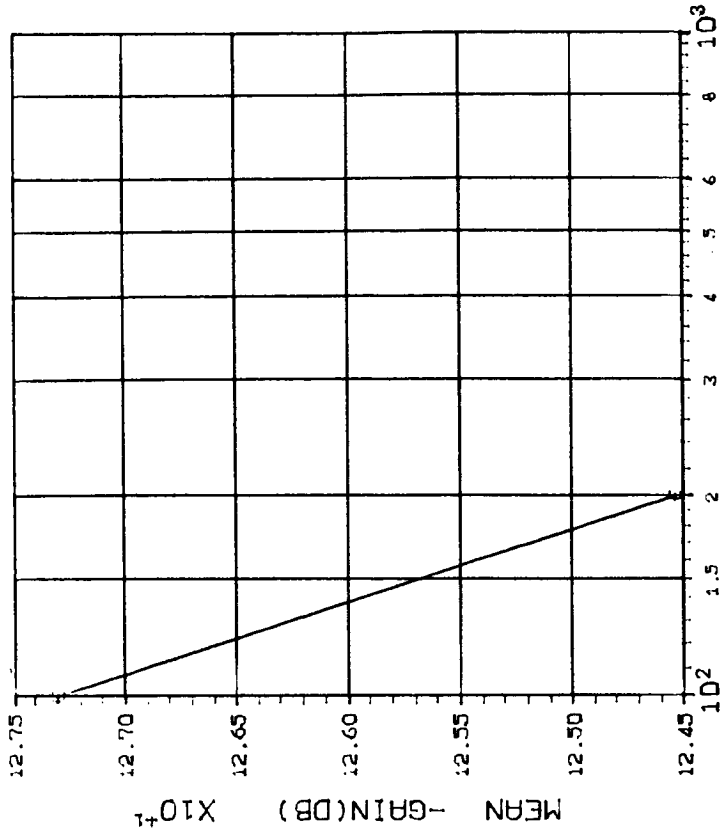
(4)+GAIN IN DB(1.0MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	4.132 2.051 1.333 1.562

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10⁺²

DEVICE TYPE: JP-21 OP AMP

MFG: PM1 5 DEVICES TEST DATE 6-28-83
 REF: JPL LOG 1015-1 DATE CODE 8311



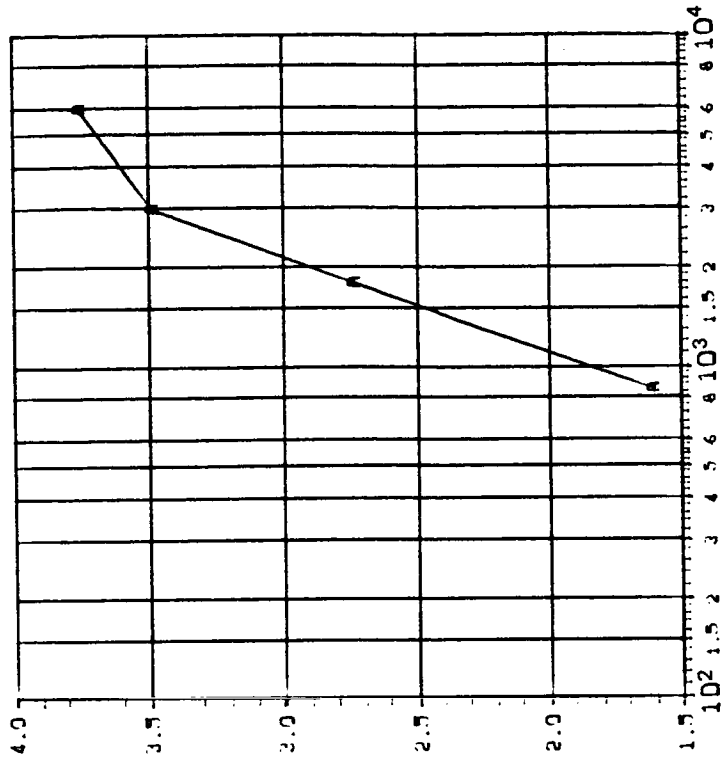
DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(1.0MA LOAD,-10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	2.932 1.462 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.31X10⁺²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-2 DATE CODE 8311

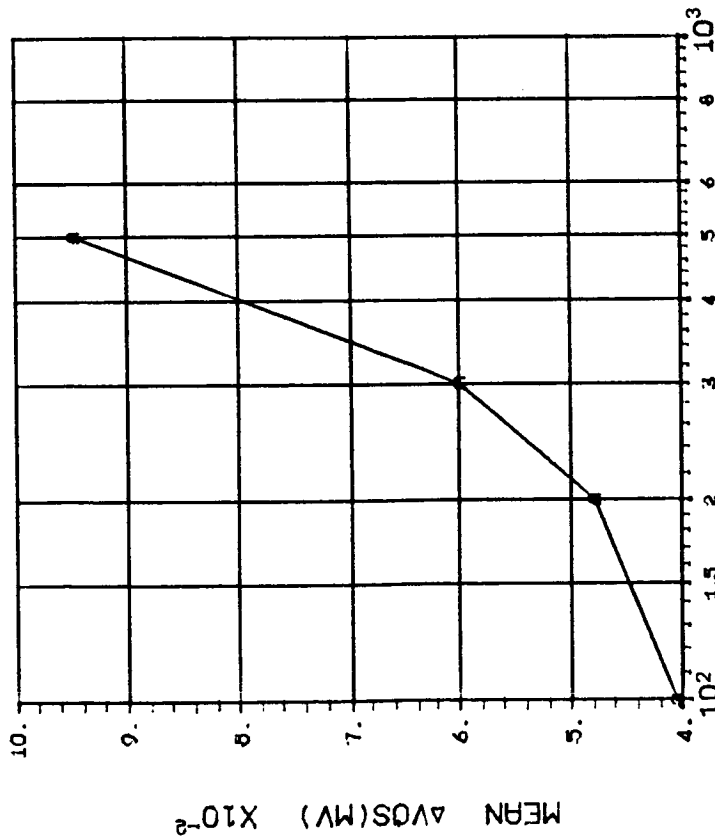


DOSE, rads(Si) Co 60 Gammas

(1) ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	.75 1.5 3 6
	.1414 .2302 .3192 .3902

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-1 DATE CODE 8311

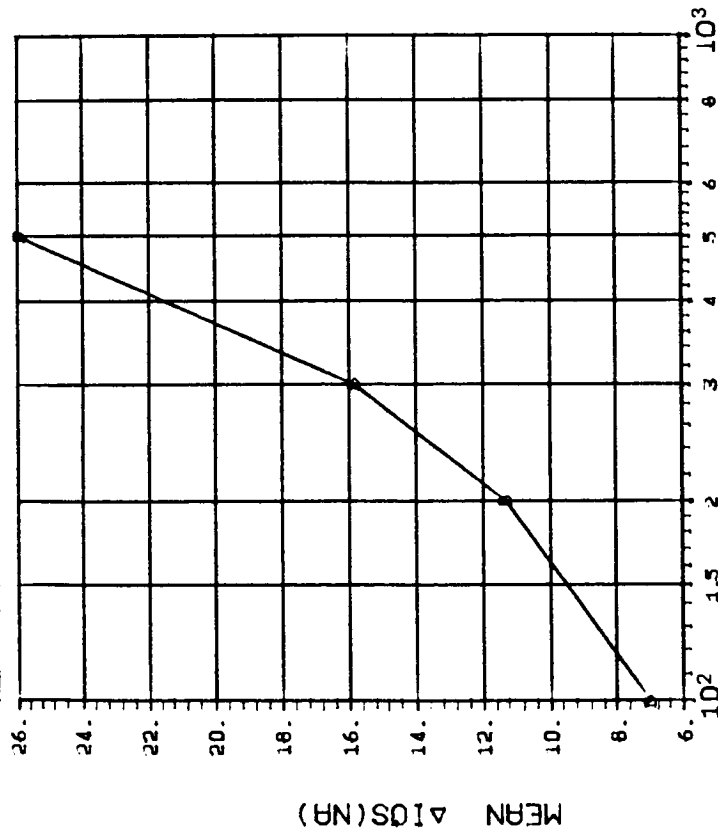


DOSE, rads(Si) Co 60 Gammas

(1) ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	0.1 0.2 0.3 0.5
	.0403 .0343 .0356 .0792

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-1 DATE CODE 8311

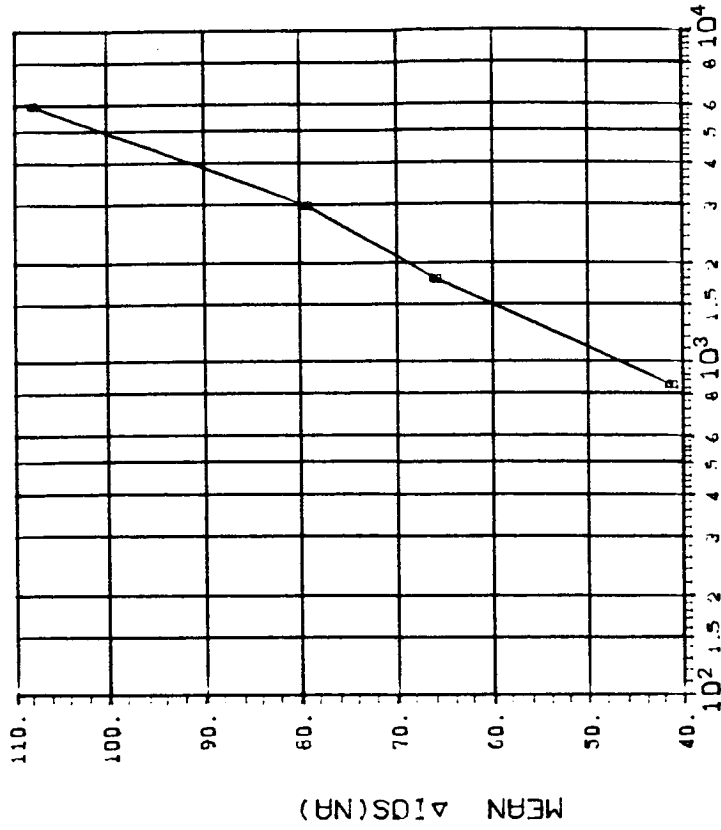


DOSE, rads(Si) Co 60 Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	0.1 0.2 0.3 0.5
	10.17 19.27 28.80 51.23

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-2 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

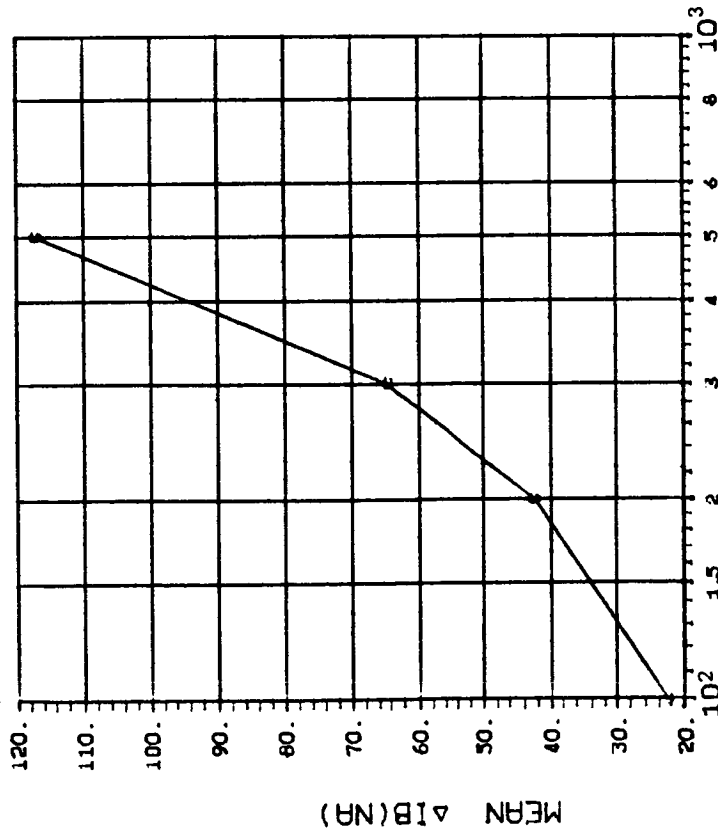
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	.75 1.5 3 6
	84.52 137.9 161.1 217.9

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-1 DATE CODE 8311



DOSE, rads(Si) Co⁶⁰ Gammas

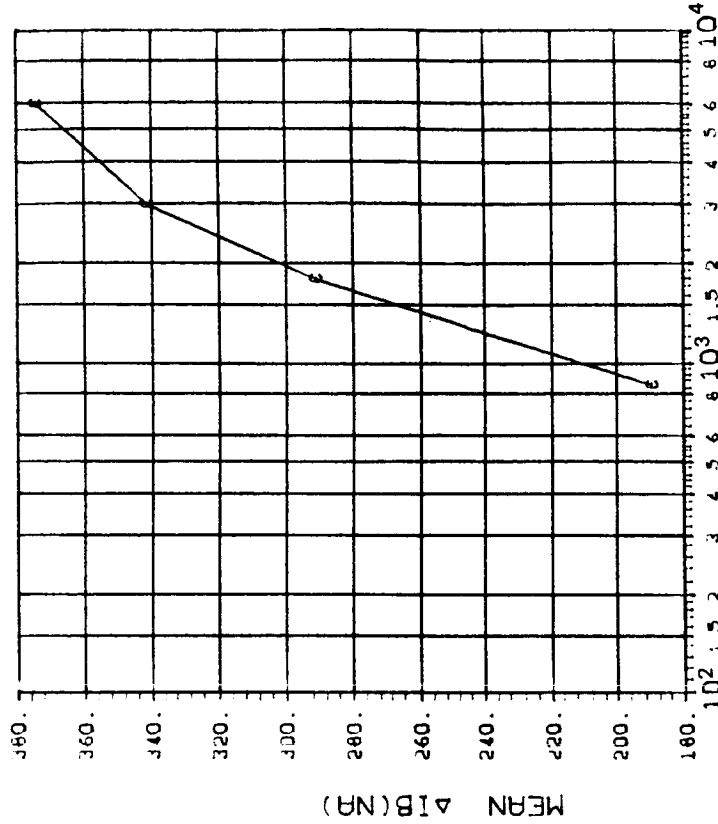
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	0.1 0.2 0.3 0.5
	6.389 15.29 22.45 37.77

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-2 DATE CODE 8311



DOSE, rads(Si) Co⁶⁰ Gammas

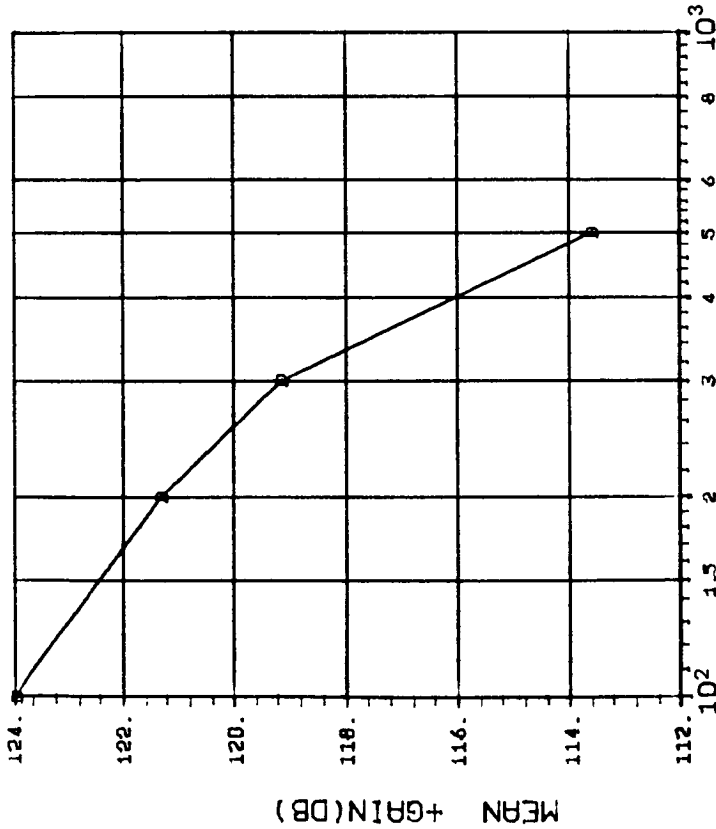
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	.75 1.5 3 6
	60.78 99.23 116.6 139.6

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-1 DATE CODE 8311



DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(1.0MA LOAD,+10V): VS DOSE

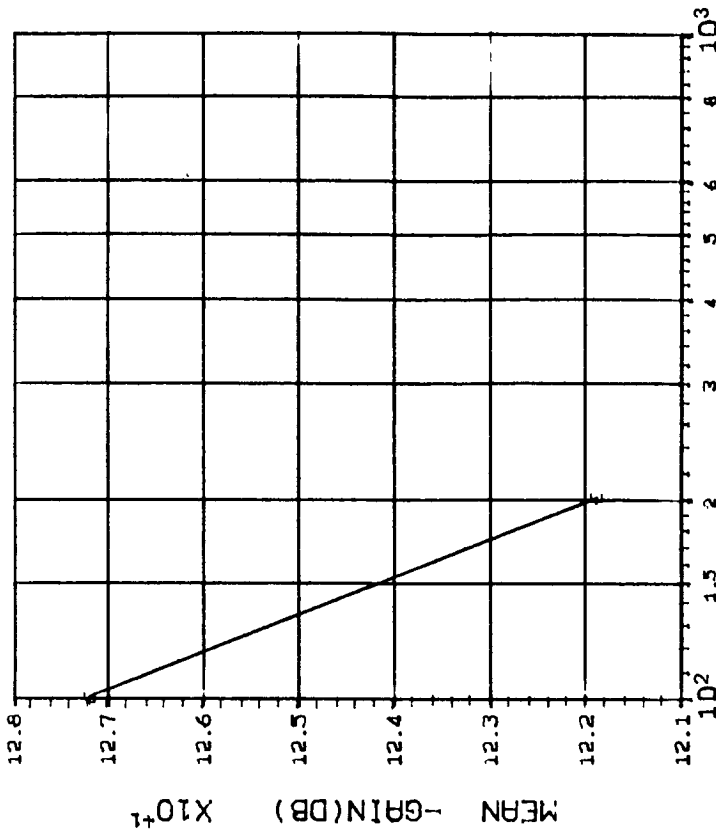
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	1.294 2.036 1.611 3.689

INITIAL MEAN VALUE +GAIN(DB) = 1.28X10¹²

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-1 DATE CODE 8311



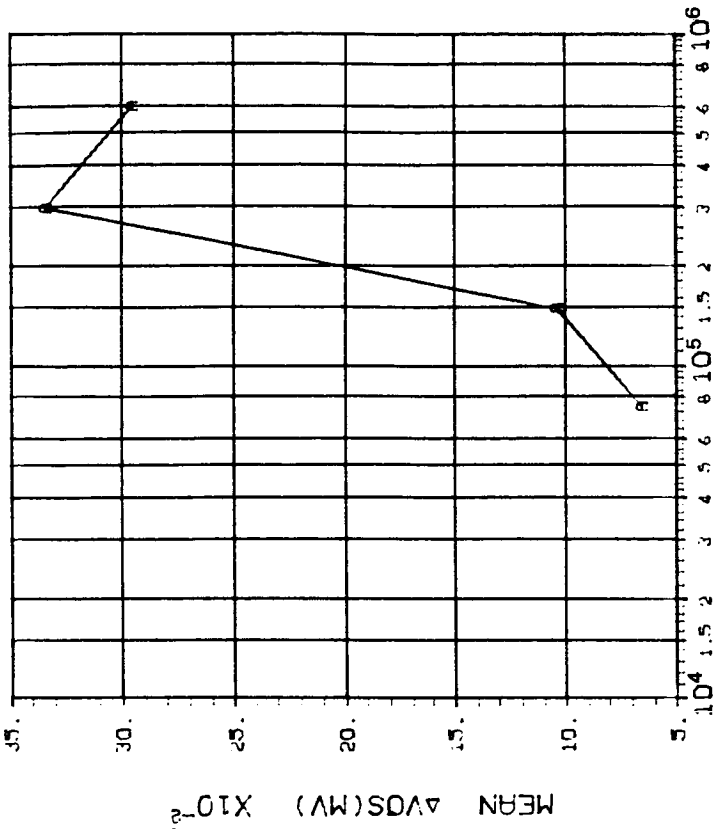
DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(1.0MA LOAD,-10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	1.00 4.366 4.679 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

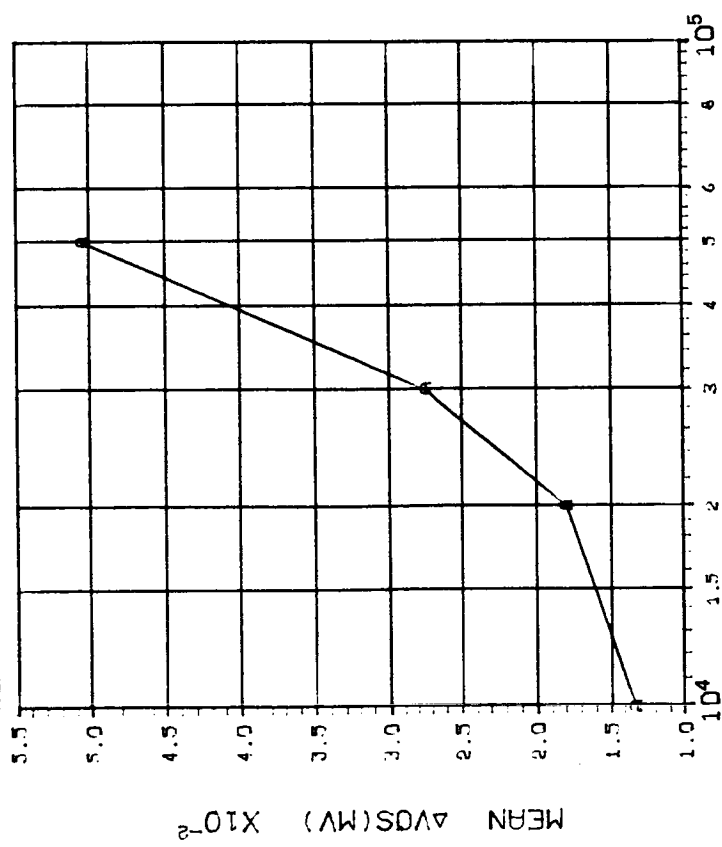
DEVICE TYPE: OP-21 OP AMP
 MFG: PM1 5 DEVICES TEST DATE 7-12-83
 REF: JPL LOG 1017-2 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600
	.0739 .1506 .3347 .2769

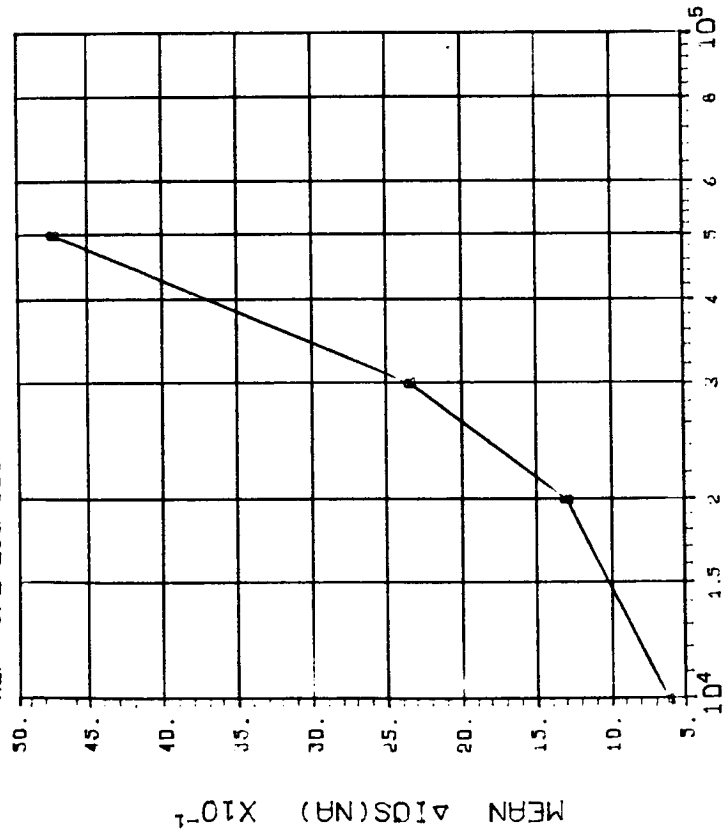
DEVICE TYPE: OP-21 OP AMP
 MFG: PM1 5 DEVICES TEST DATE 7-12-83
 REF: JPL LOG 1017-1 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	10 20 30 50
	.0150 .0214 .0367 .0640

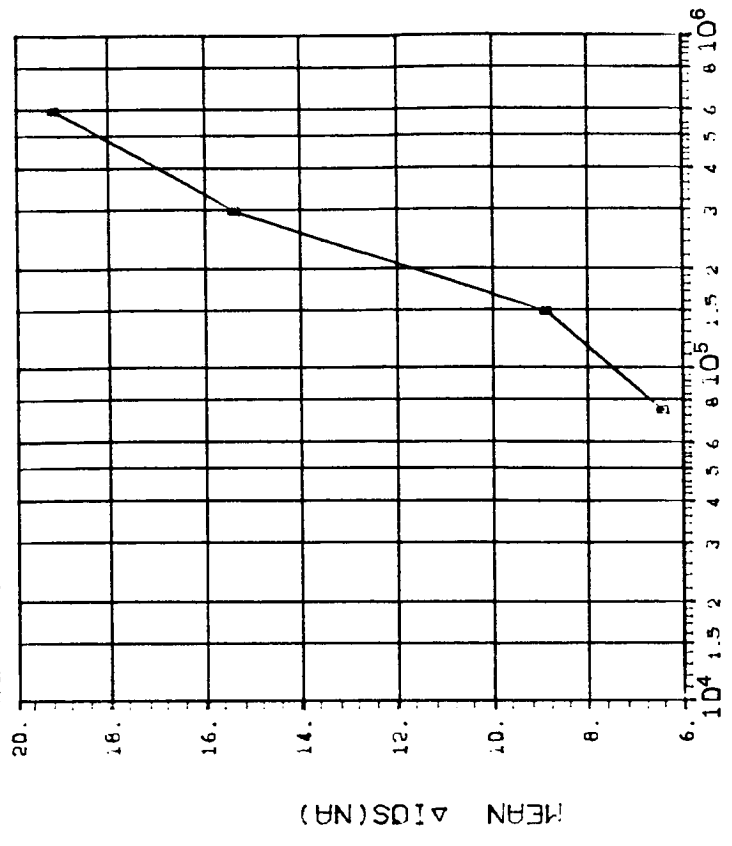
DEVICE TYPE: OP-21 OP AMP
 MFG: PMJ 5 DEVICES TEST DATE 7-12-83
 REF: JPL LOG 1017-1 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	10 20 30 50
	1.062 2.077 3.642 6.907

DEVICE TYPE: OP-21 OP AMP
 MFG: PMJ 5 DEVICES TEST DATE 7-12-83
 REF: JPL LOG 1017-2 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	8.621 13.03 6.914 16.56

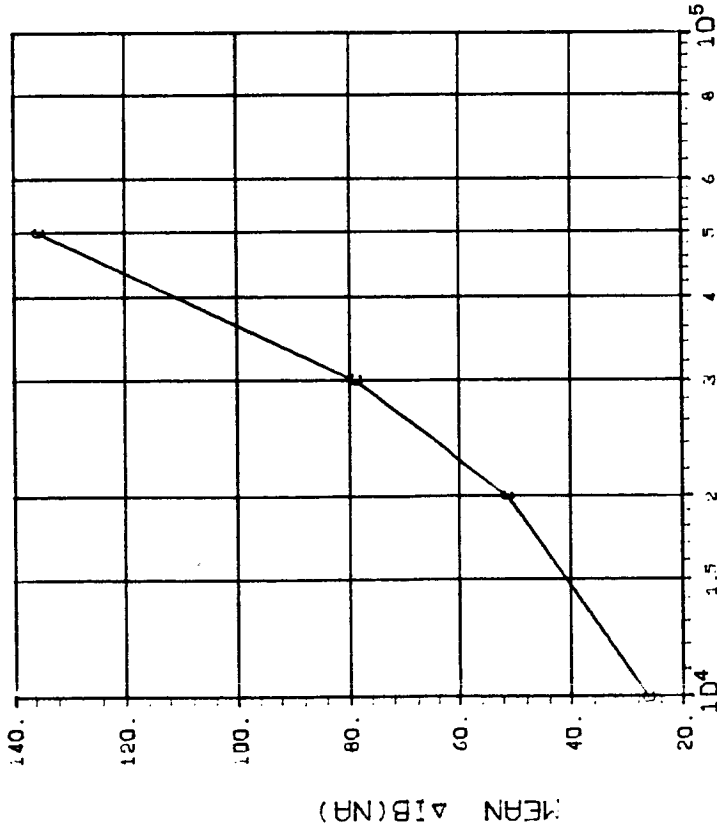
DEVICE TYPE: OP-21 OP AMP

MFG: PMI

TEST DATE 7-12-83

REF: JPL LOG 1017-1

DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	10 20 30 50
	5.425 10.52 16.45 28.92

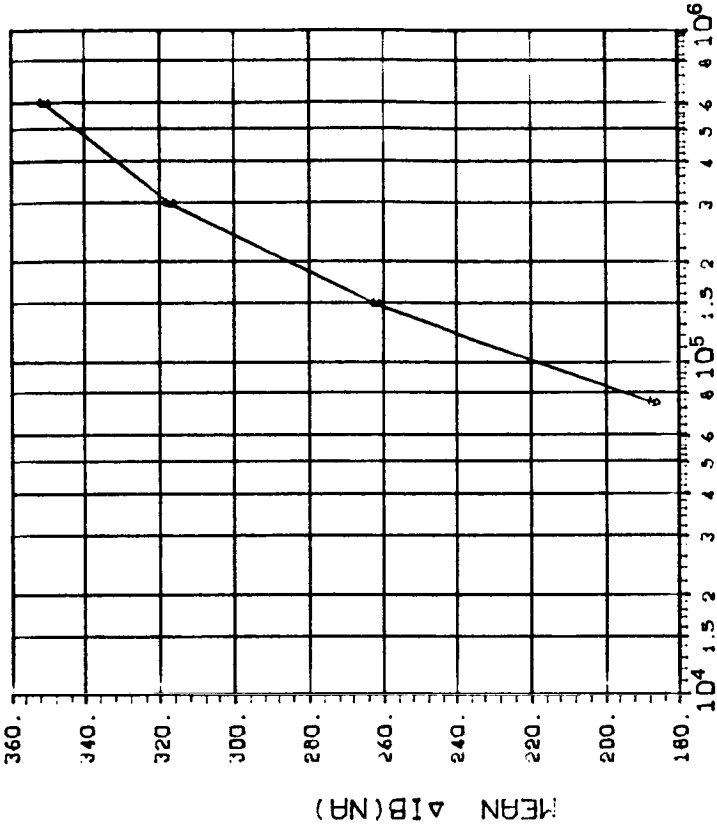
DEVICE TYPE: OP-21 OP AMP

MFG: PMI

TEST DATE 7-12-83

REF: JPL LOG 1017-2

DATE CODE 8311

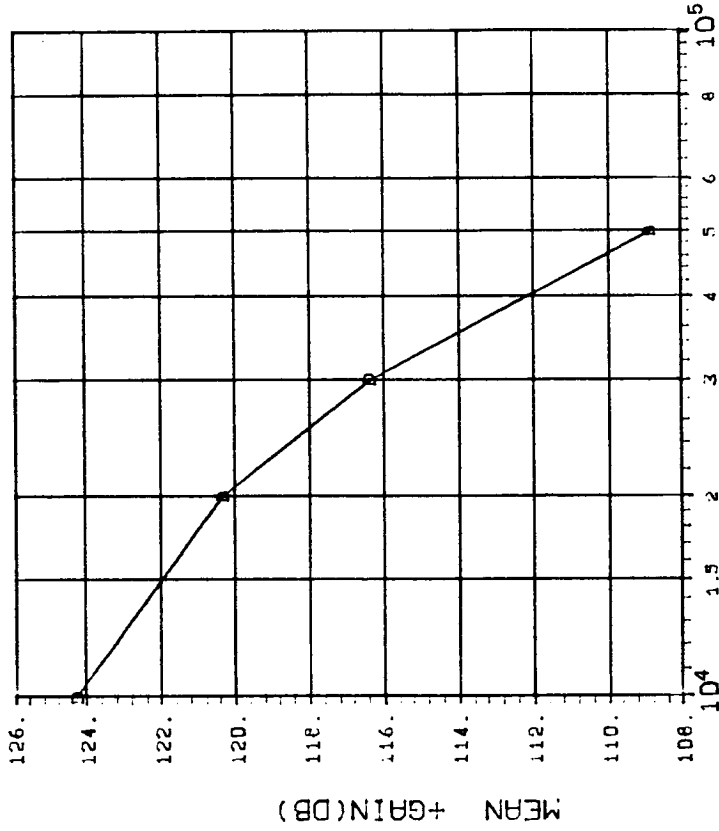


DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600
	36.53 44.49 52.90 104.0

DEVICE TYPE: OP-21 OP AMP
 MFG: PM1 5 DEVICES TEST DATE 7-12-83
 REF: IPL LOG 1017-1 DATE CODE 8311

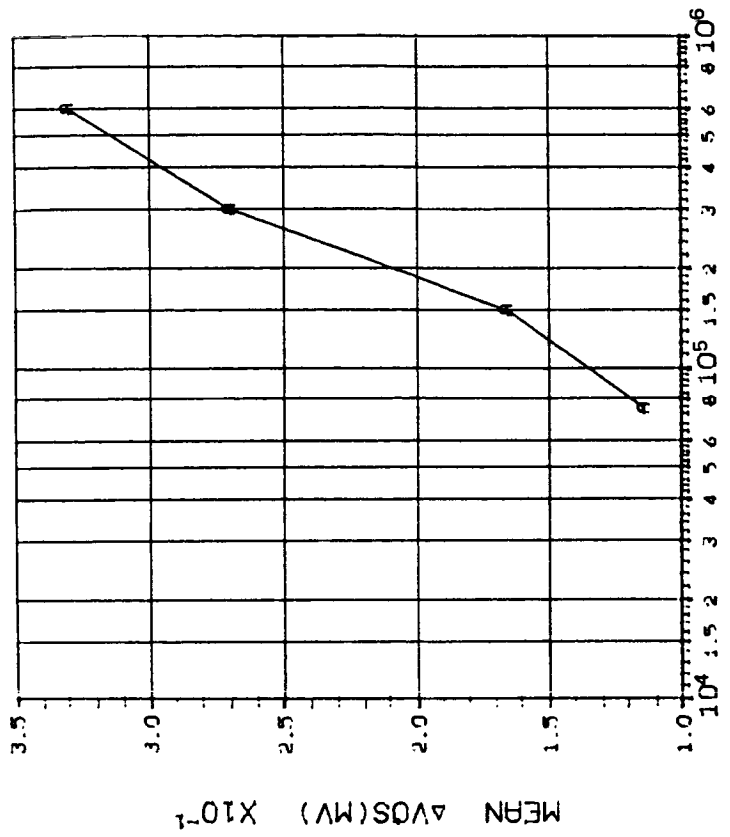


DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(1.0MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	10 20 30 50
		1.601 1.219 1.7066

INITIAL MEAN VALUE +GAIN(DB) = 1.26X10¹²

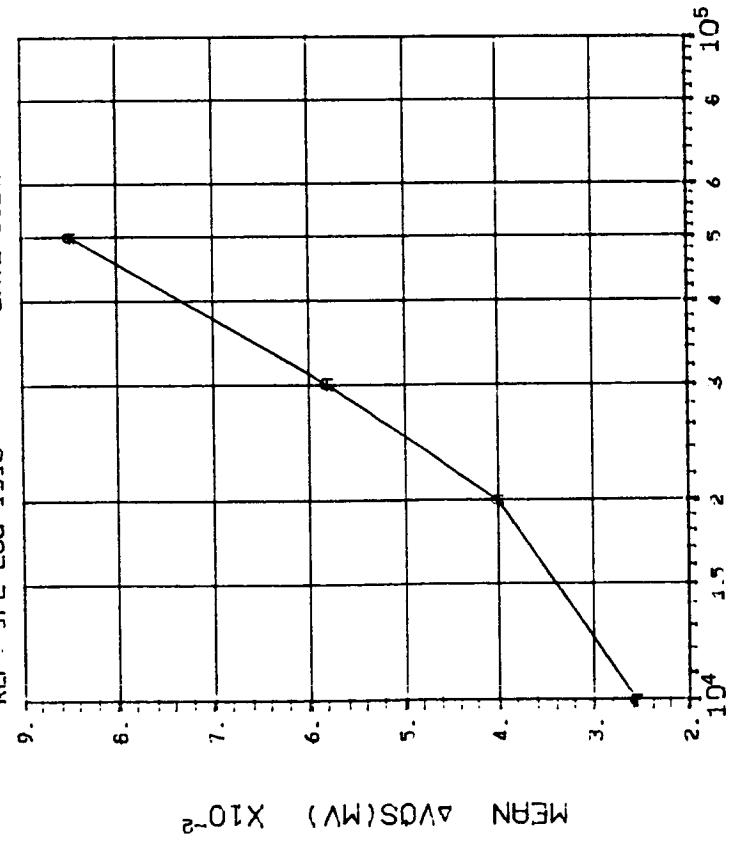
DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-18-83
 REF: JPL LOG 1016 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600
	.0711 .0530 .1795 .1104

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-18-83
 REF: JPL LOG 1016 DATE CODE 8311



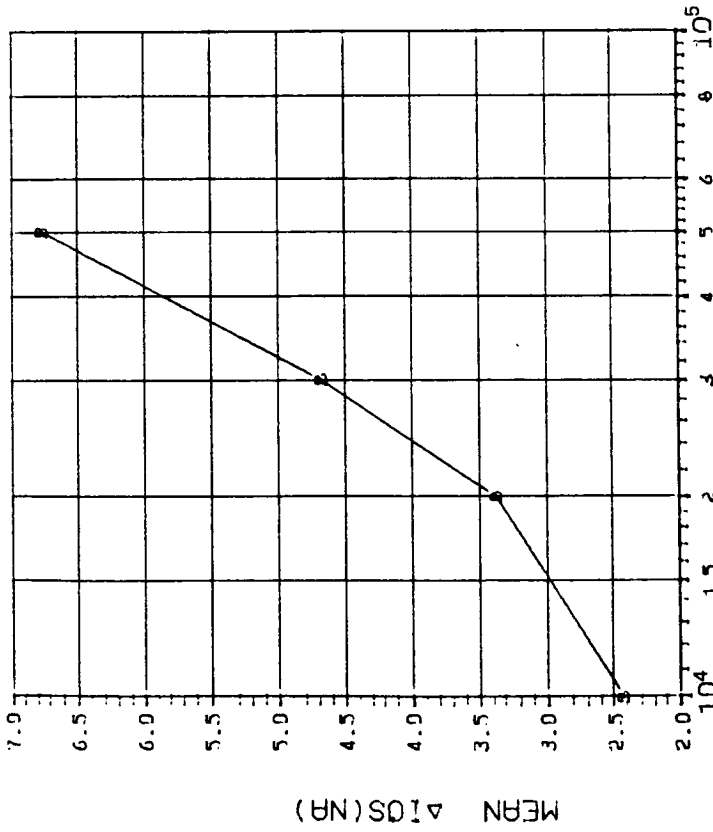
DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	10 20 30 50
	.0249 .0268 .0374 .0658

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-16-83

REF: JPL LOG 1018 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons

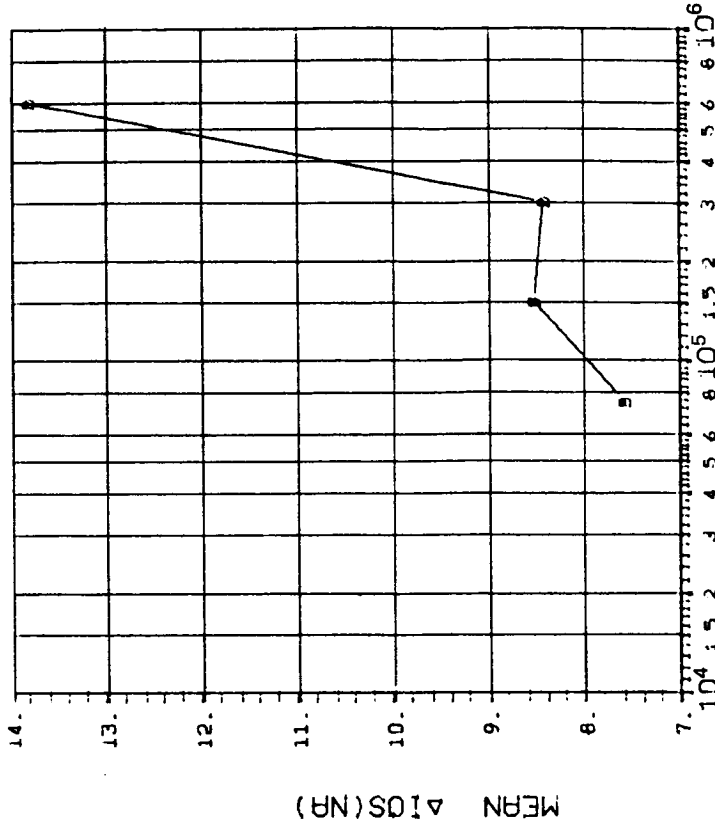
(2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	10 20 30 50
	2.578 2.799 3.511 4.606

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-18-83

REF: JPL LOG 1018 DATE CODE 8311



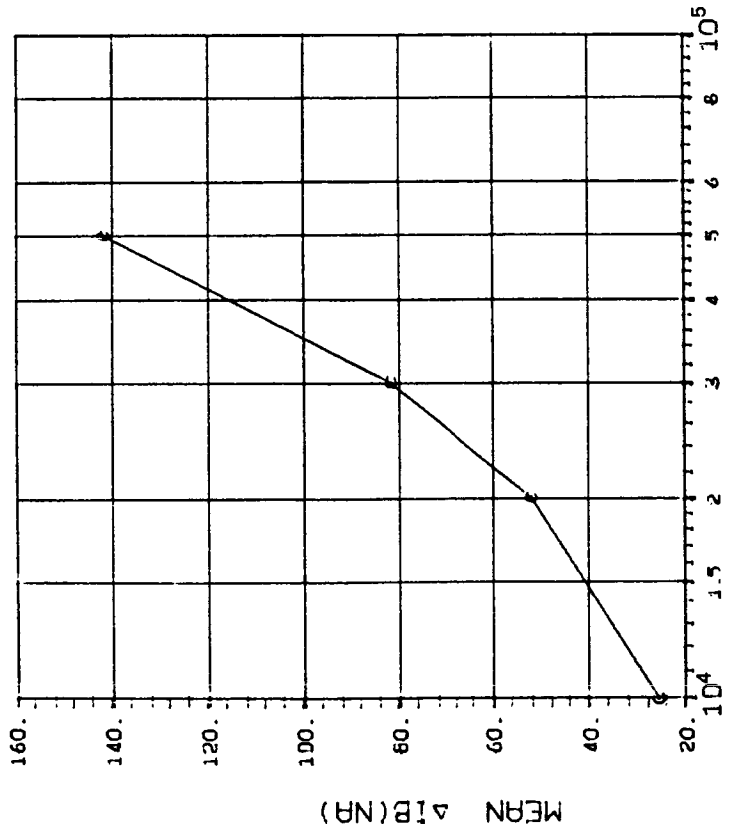
DOSE, rads(Si) 2.5 MeV electrons

(2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	5.952 5.789 6.174 6.211

U
-
4

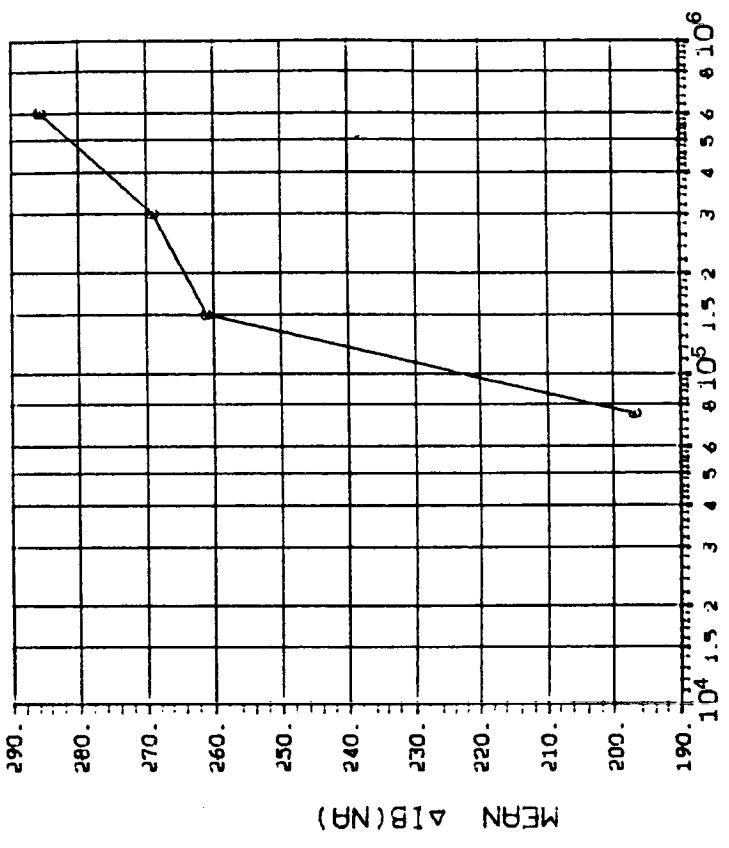
DEVICE TYPE: OP-21 OP AMP
 MFG: PMJ 5 DEVICES TEST DATE 7-18-83
 REF: JPL LOG 1018 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	10 20 30 50
	3.580 7.669 12.57 20.26

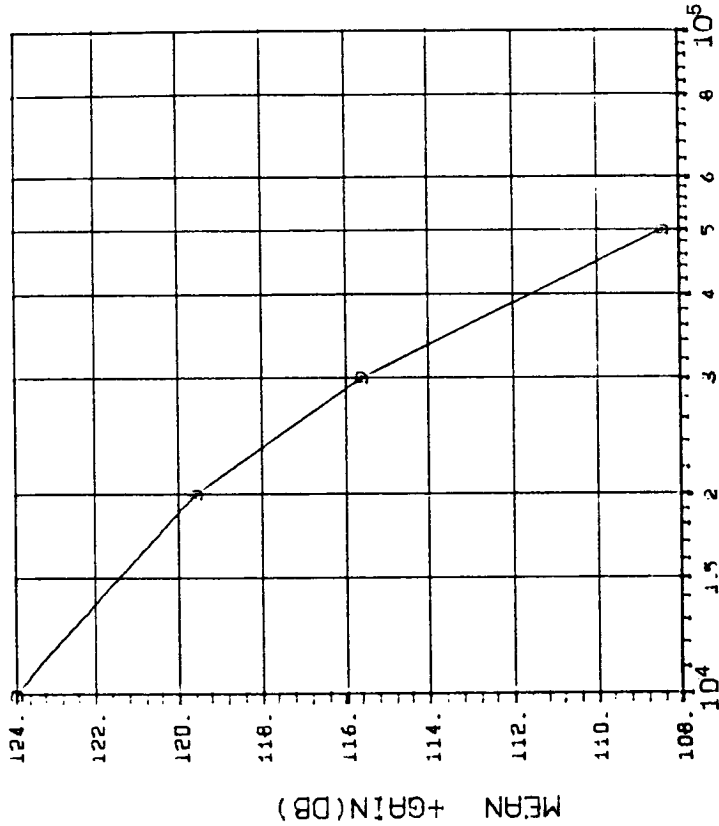
DEVICE TYPE: OP-21 OP AMP
 MFG: PMJ 5 DEVICES TEST DATE 7-18-83
 REF: JPL LOG 1018 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600
	22.22 16.00 25.77 41.50

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-16-83
 REF: JPL LOG 1018 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(1.0MA LOAD,+10V) : VS DOSE

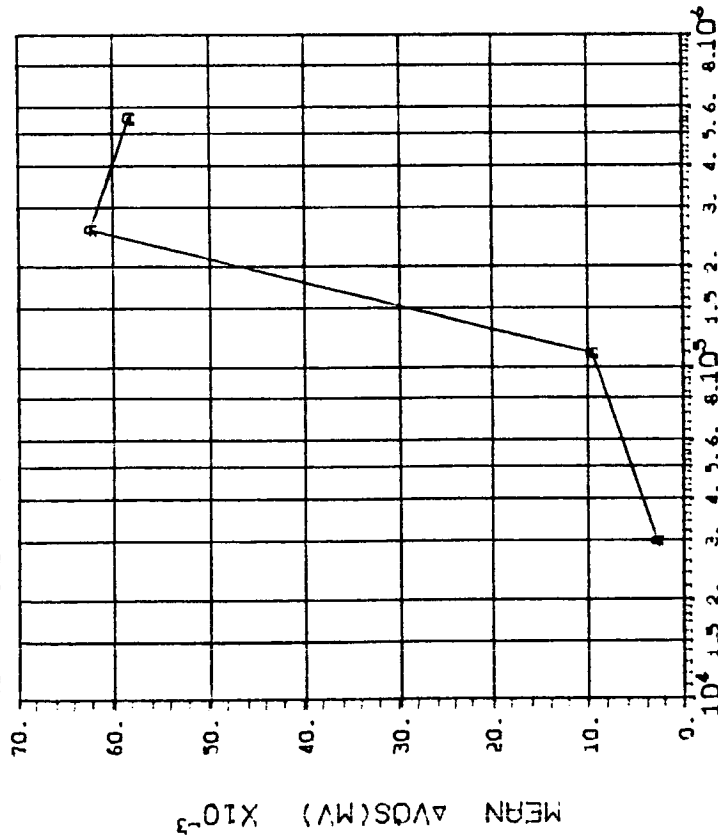
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	10 20 30 50
		.6348 1.269 .6668 3.356

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Sj) Co⁶⁰ Gammas

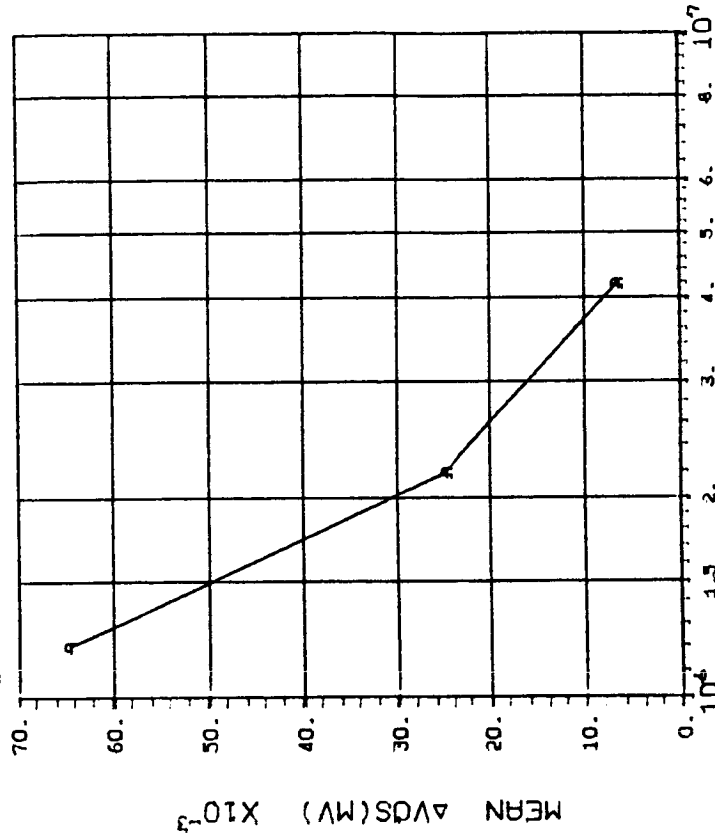
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
A	3.0E4 1.1E5 2.6E5 5.6E5
	.0028 .0102 .0479 .0519

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



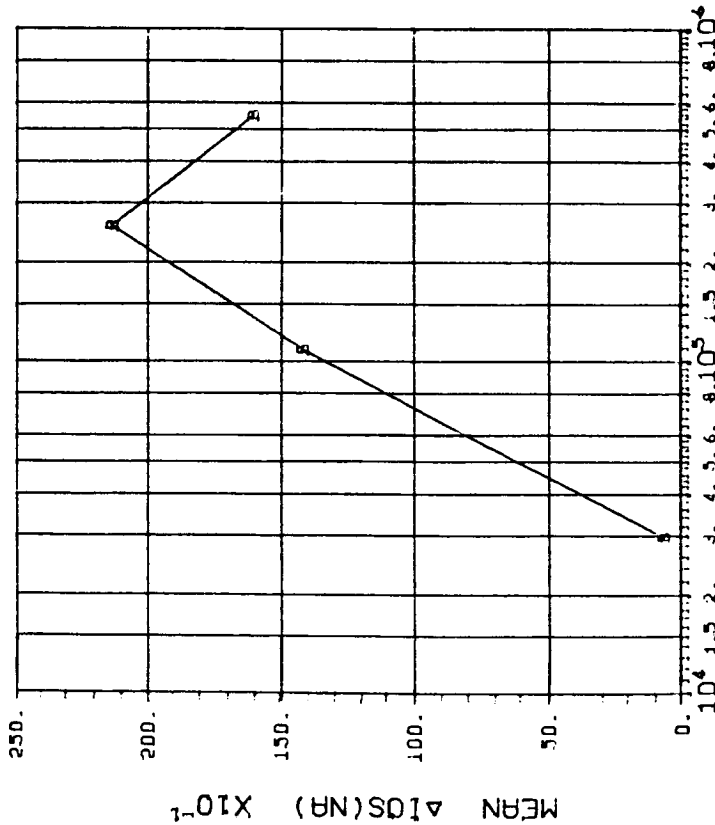
DOSE, rads(Sj) Co⁶⁰ Gammas

(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
A	1.2E6 2.2E6 4.2E6
	.0694 .0174 .0073

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85
REF: JPL LOG 1210 DATE CODE 8436



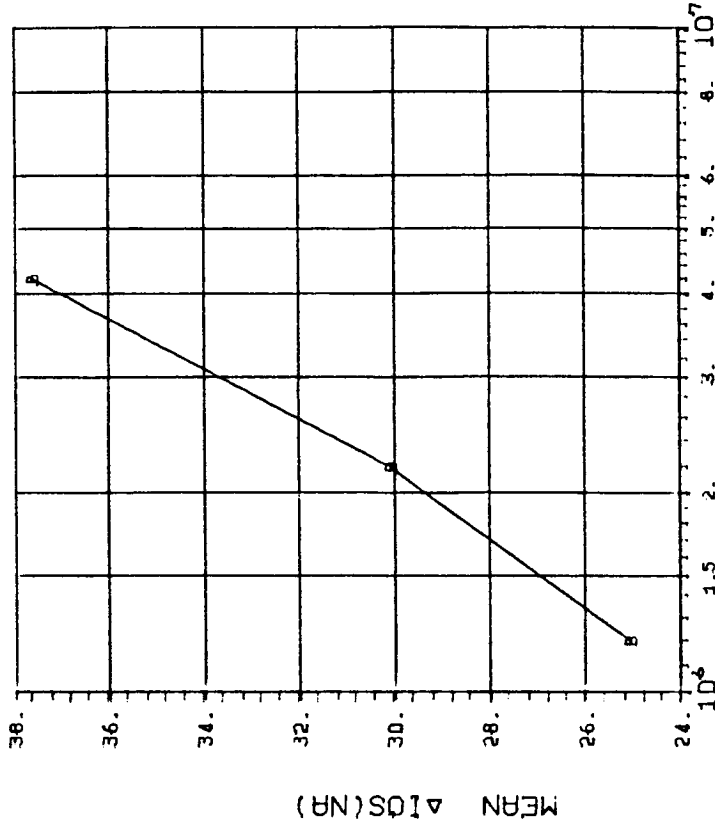
DOSE, rads(Sj) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
B	3.0E4 1.1E5 2.6E5 5.6E5
	1.174 4.607 13.26 13.86

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85
REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Sj) Co⁶⁰ Gammas

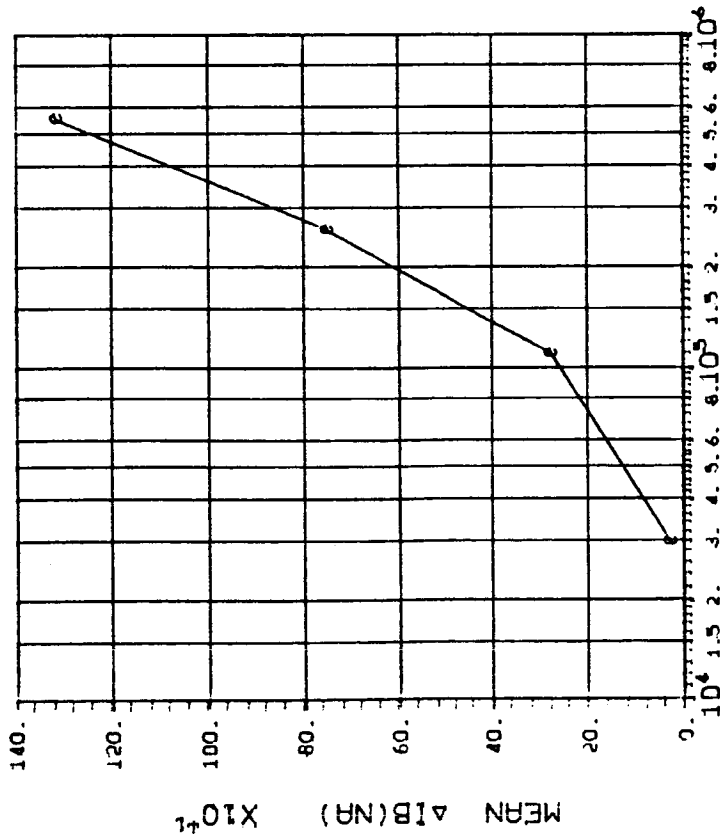
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
B	1.2E6 2.2E6 4.2E6
	20.28 21.35 21.12

DEVICE TYPE: OP-27 OP AMP

MFG: ADJ 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



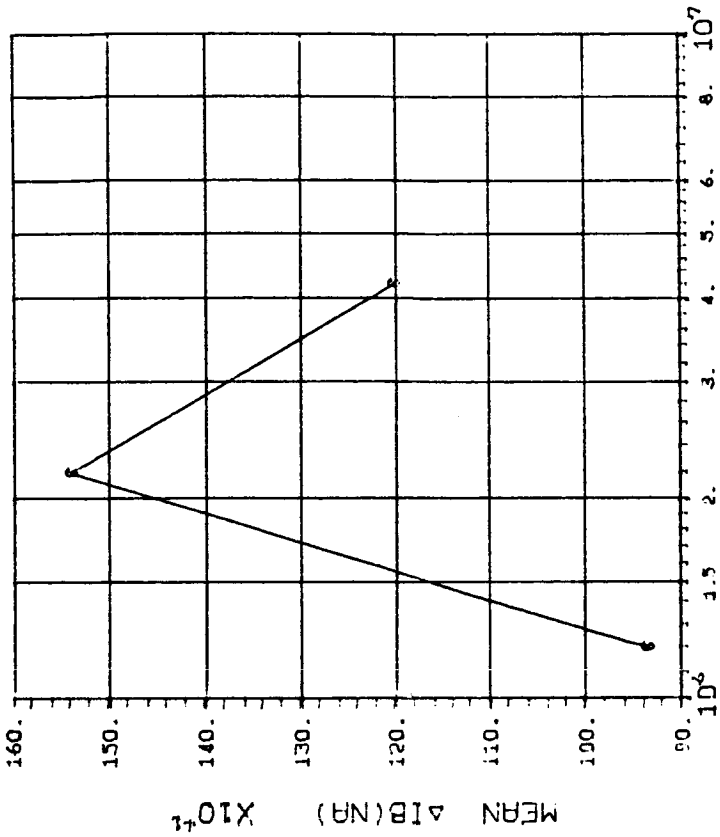
DOSE, rads(Sj) Co⁶⁰ Gammas
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
C	3.0E4 1.1E5 2.6E5 5.6E5
	11.57 93.26 241.3 176.2

DEVICE TYPE: OP-27 OP AMP

MFG: ADJ 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



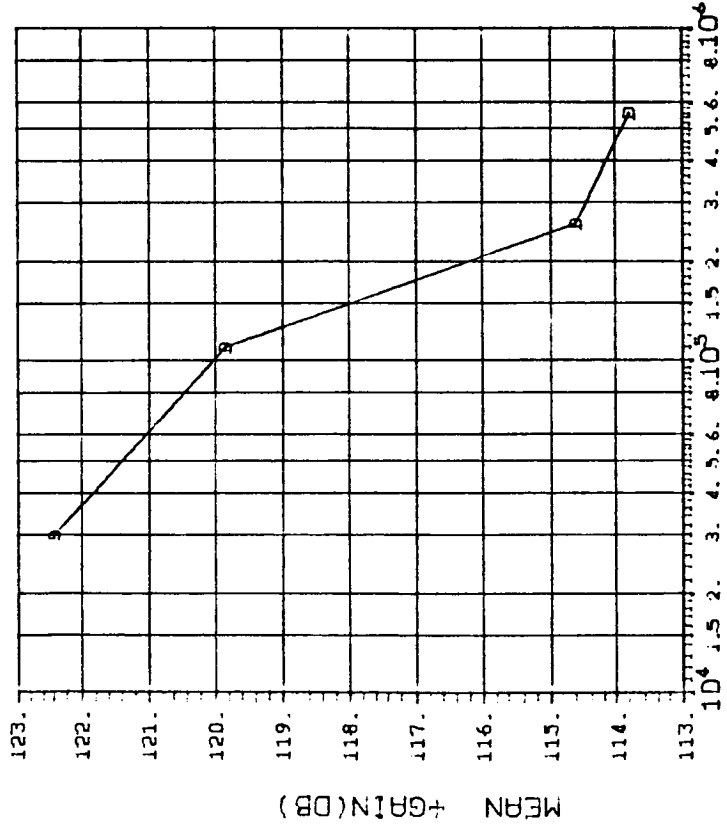
DOSE, rads(Sj) Co⁶⁰ Gammas
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
C	1.2E6 2.2E6 4.2E6
	403.1 172.7 328.5

DEVICE TYPE: OP-27 OP AMP

MFG: ADJ 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Sj) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

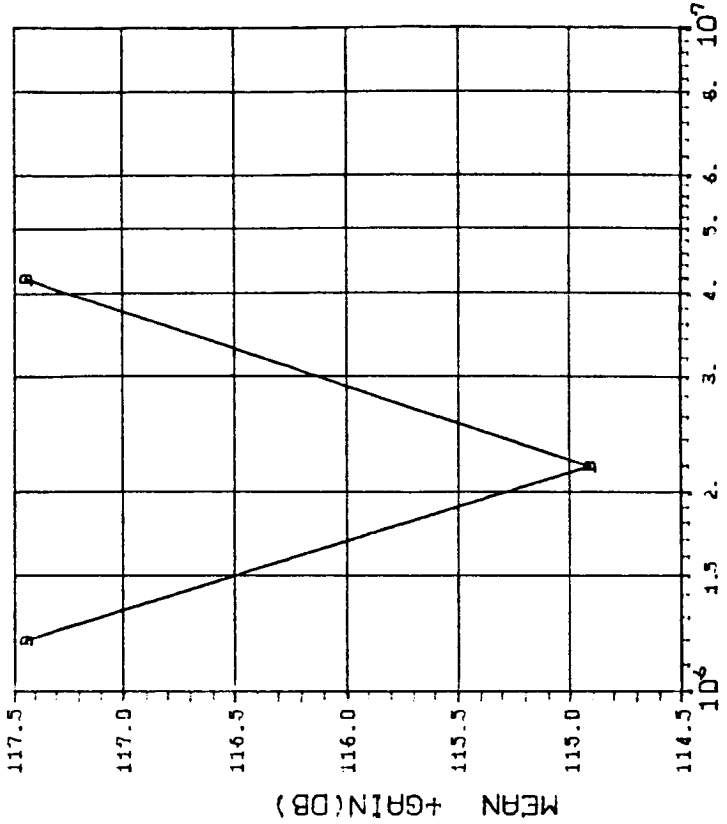
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Sj)
D	10.0	.6353 .7243 .4106 .5702

INITIAL MEAN VALUE +GAIN(DB) = 1.26X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: ADJ 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



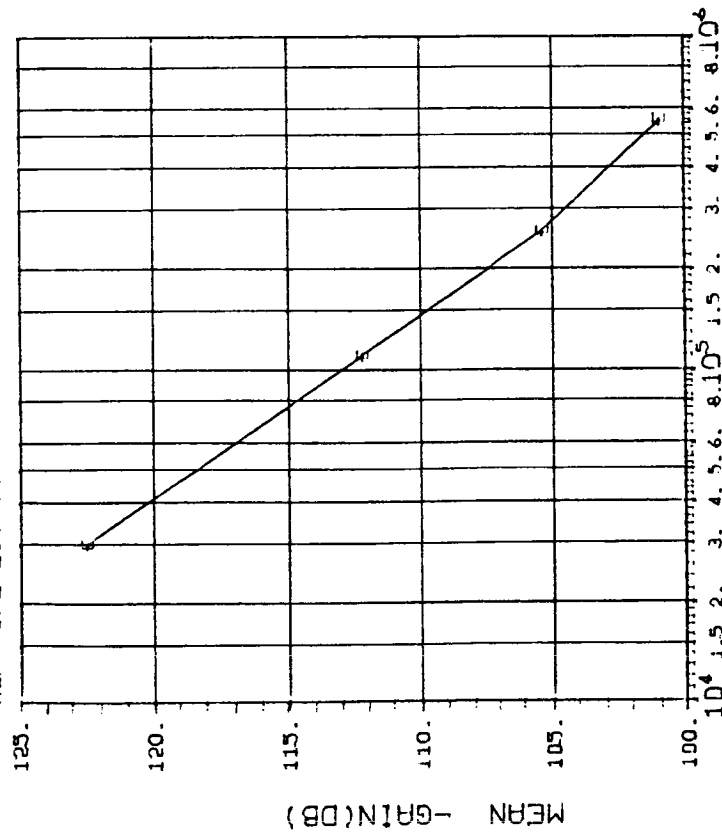
DOSE, rads(Sj) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Sj)
D	10.0	1.2E6 2.2E6 4.2E6 1.539 .6859 1.539

INITIAL MEAN VALUE +GAIN(DB) = 1.26X10¹²

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 08-07-85
 REF: JPL LOG 1210 DATE CODE 8436

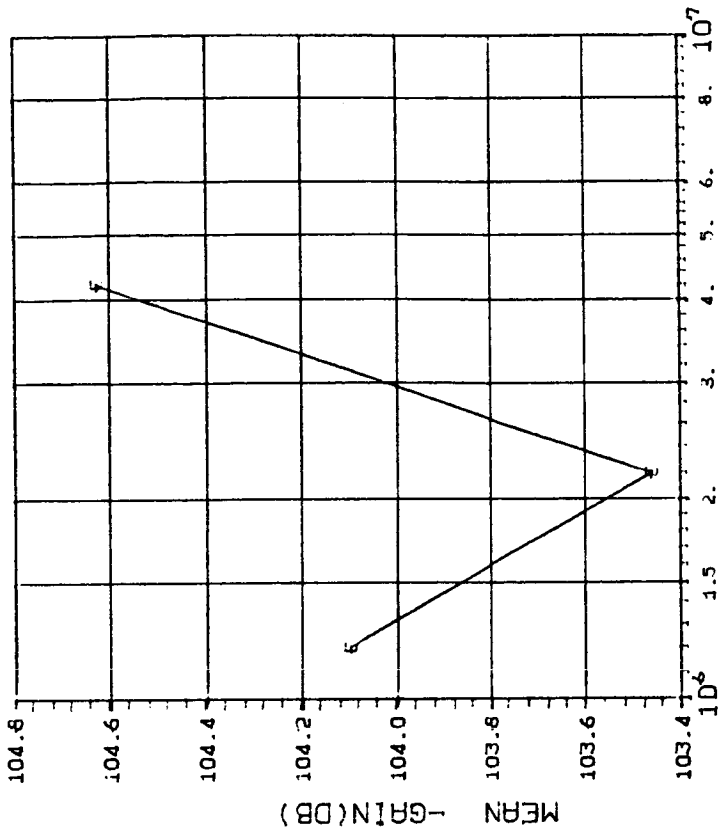


DOSE, rads(Si) Co⁶⁰ Gammas
 (S)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
E	10.0	1.346 1.002 1.329 .7169

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10¹²

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 08-07-85
 REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Si) Co⁶⁰ Gammas
 (S)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
E	10.0	.2340 .4298 1.257

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10¹²

DEVICE TYPE: OP-27 OP AMP

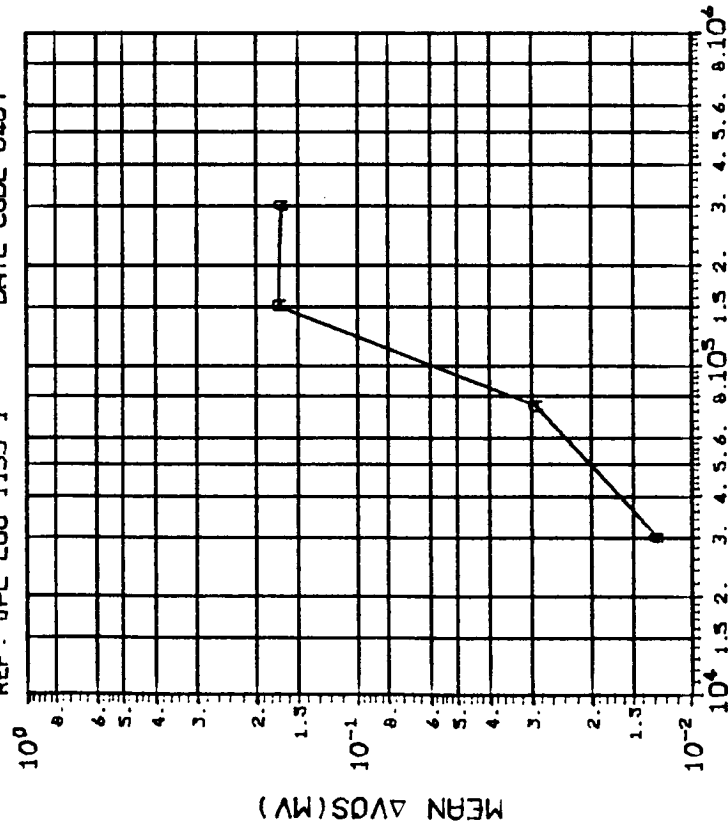
MFG: ADI

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1135-1

DATE CODE 8407



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0043 .0286 .2025 .2078

INITIAL MEAN VALUE VOS(MV) = 1.07X10⁻²

DEVICE TYPE: OP-27 OP AMP

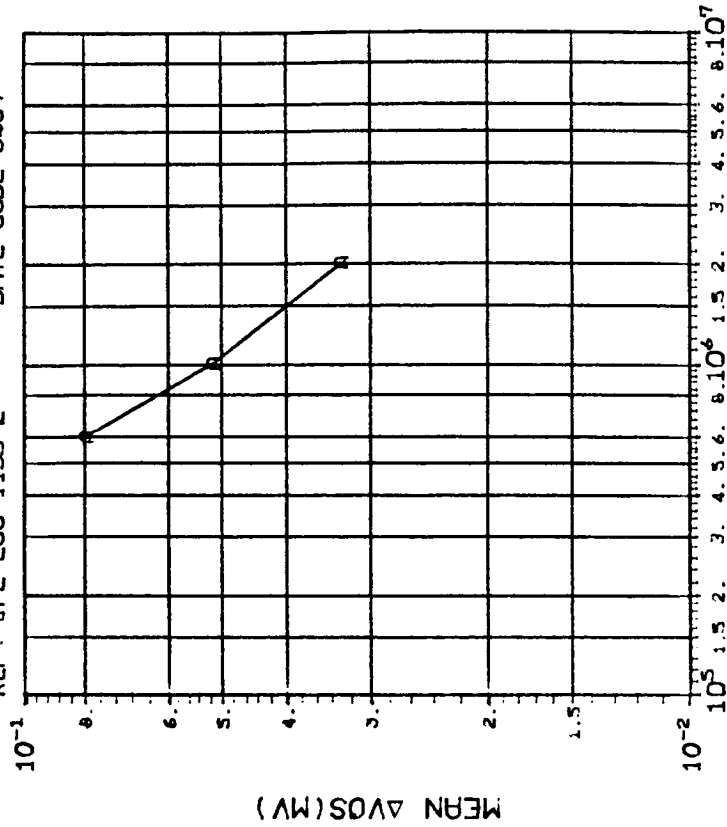
MFG: ADI

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1135-2

DATE CODE 8407



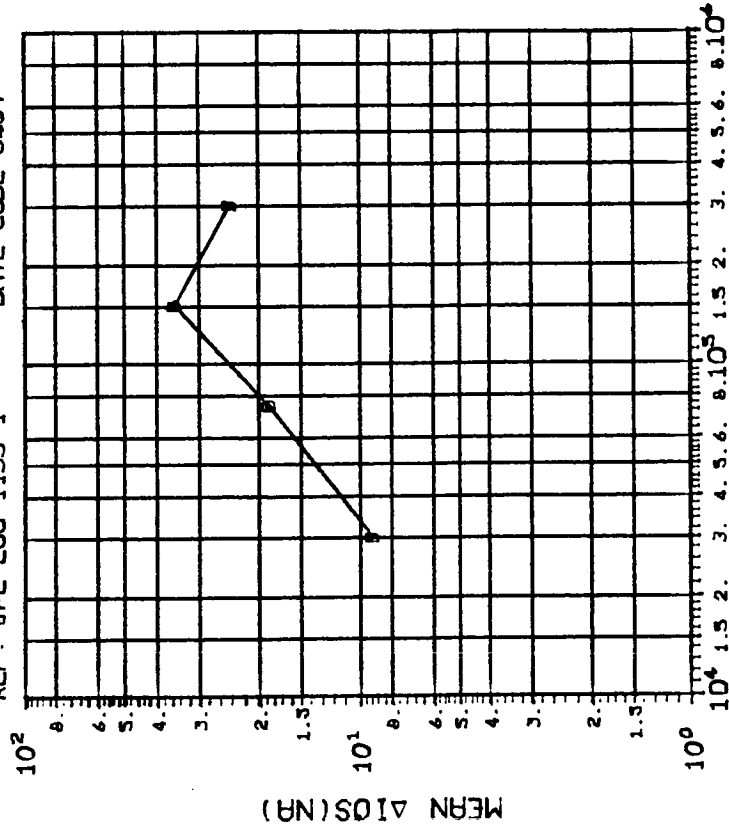
DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E5 1.0E6 2.0E6
	.0894 .0336 .0122

INITIAL MEAN VALUE VOS(MV) = 1.07X10⁻²

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-1 DATE CODE 8407

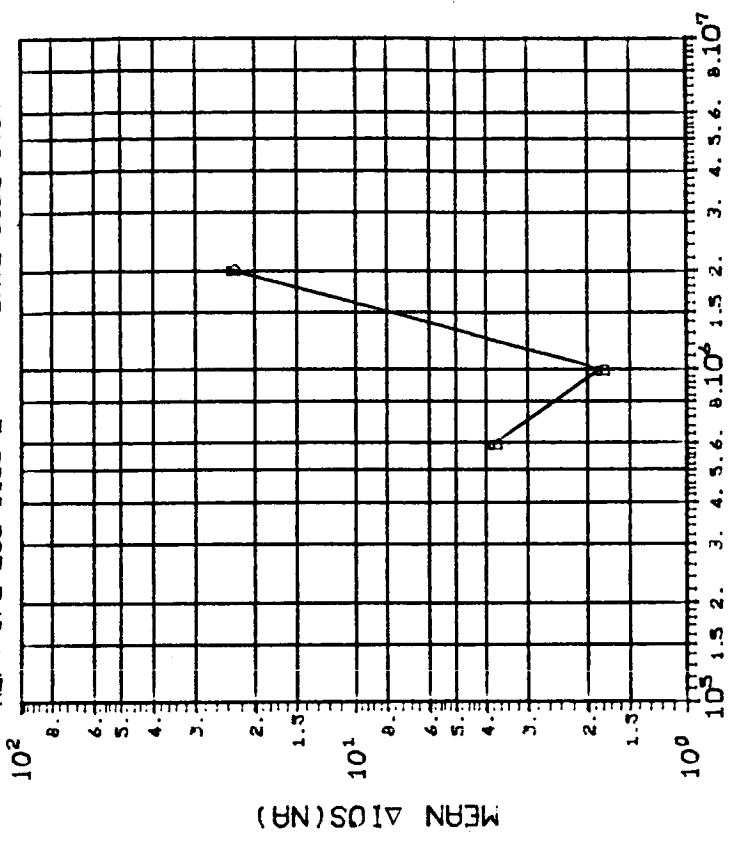


DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	6.773 11.98 27.79 79.20

INITIAL MEAN VALUE IOS(NA) = 2.73X10⁻¹

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-2 DATE CODE 8407

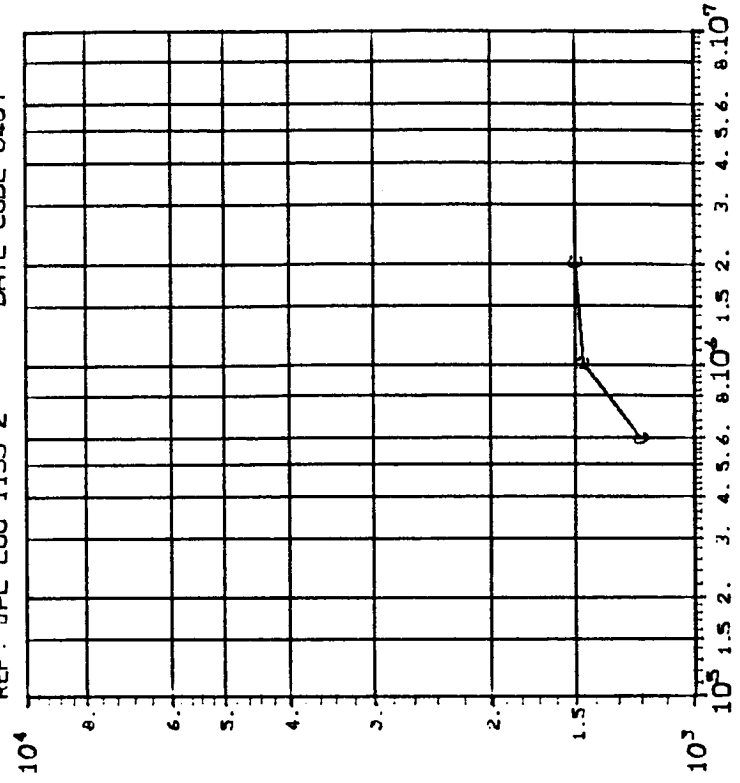


DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E5 1.0E6 2.0E6
	77.61 44.06 26.37

INITIAL MEAN VALUE IOS(NA) = 2.73X10⁻¹

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-2 DATE CODE 8407

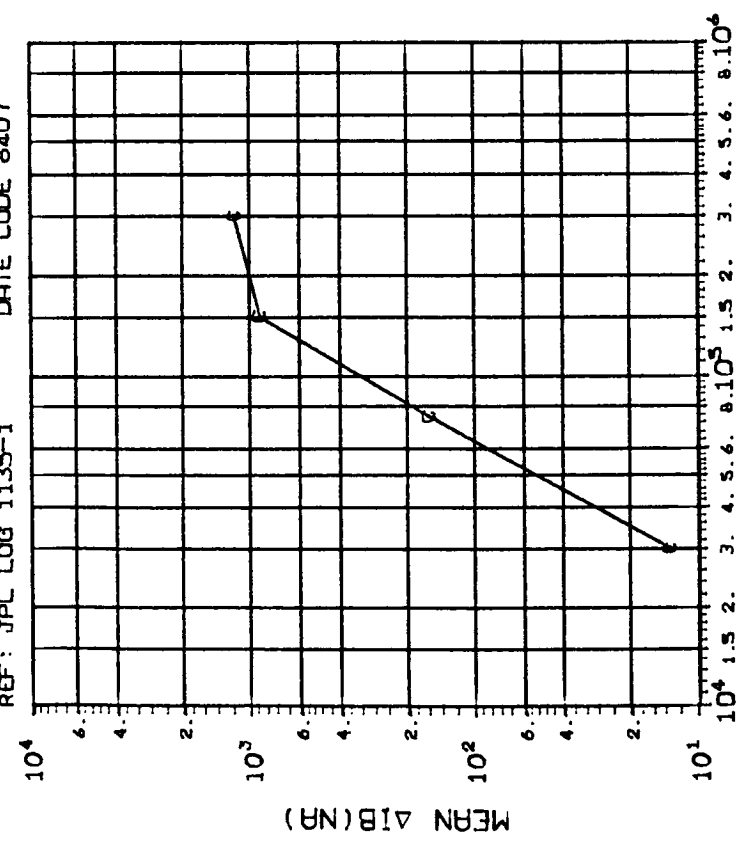


DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E3 1.0E6 2.0E6
	507.4 608.2 368.7

INITIAL MEAN VALUE IB(NA) = 7.25X10⁻⁹

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-1 DATE CODE 8407

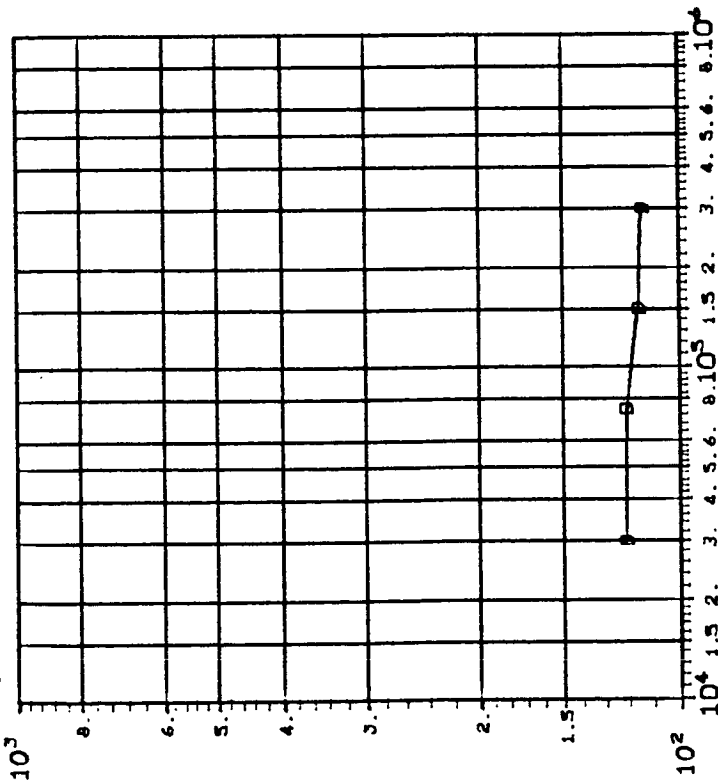


DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	7.294 212.2 1485. 913.0

INITIAL MEAN VALUE IB(NA) = 7.25X10⁻⁹

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-1 DATE CODE 8407



MEAN + GAIN(DB)

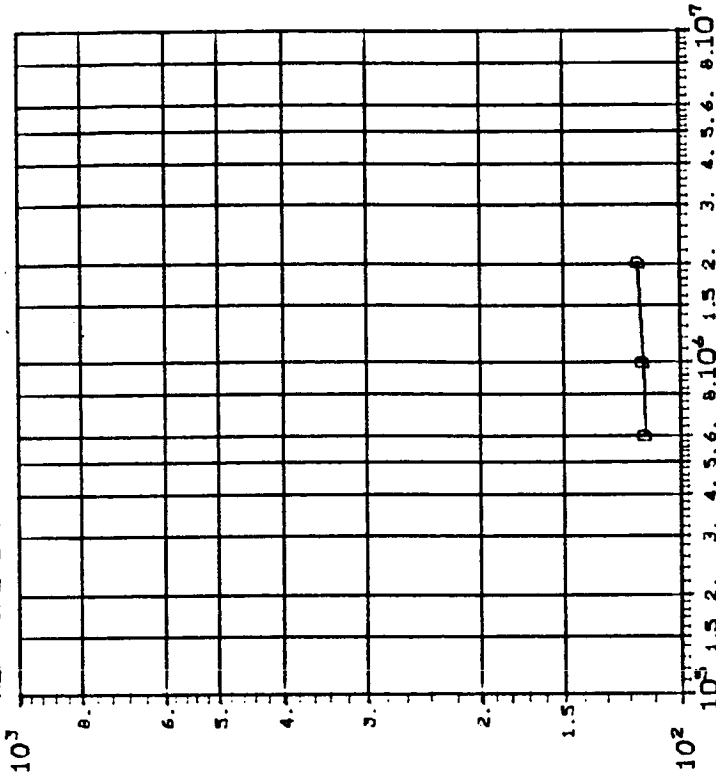
DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	3.0E4 7.5E4 1.5E5 3.0E5
	.3910 .5789 2.954 3.404

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10²

DEVICE TYPE: OP-27 OP AMP
 MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-2 DATE CODE 8407



MEAN + GAIN(DB)

DOSE, rads(Si) Co⁶⁰ Gammas

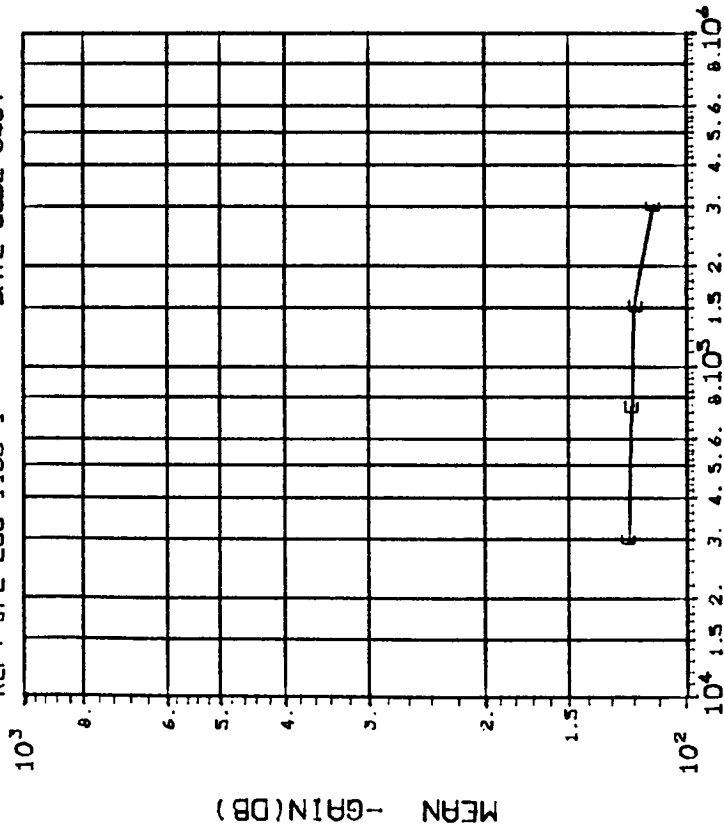
(4)+GAIN IN DB(10MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	6.0E5 1.0E6 2.0E6
	1.433 .2017 .3718

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10²

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-1 DATE CODE 8407



MEAN -GAIN(DB)

DOSE, rads(Si) Co⁶⁰ Gamma

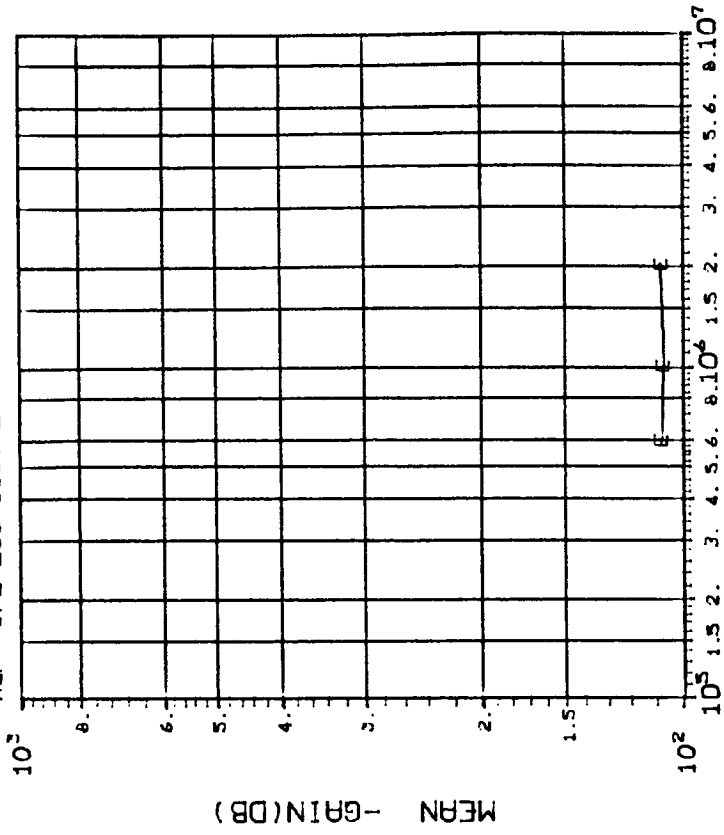
(S)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.5E4 1.5E5 3.0E5
	.1955 1.411 5.189 2.162

INITIAL MEAN VALUE -GAIN(DB) = 1.24X10²

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1135-2 DATE CODE 8407



MEAN -GAIN(DB)

DOSE, rads(Si) Co⁶⁰ Gamma

(S)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

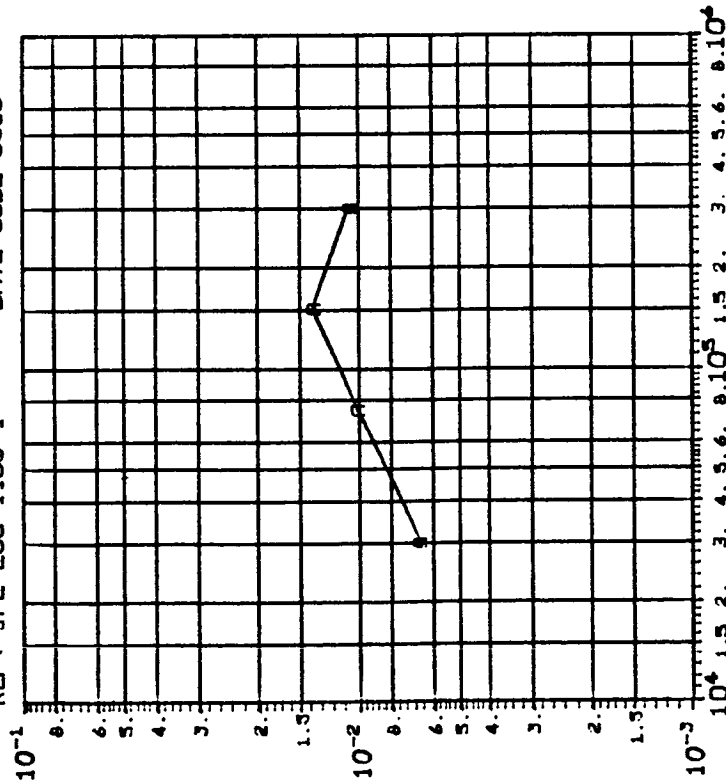
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	6.0E5 1.0E6 2.0E6
	1.648 2.045 1.212

INITIAL MEAN VALUE -GAIN(DB) = 1.24X10²

DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-1 DATE CODE 8503



MEAN AVOS(MV)

DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

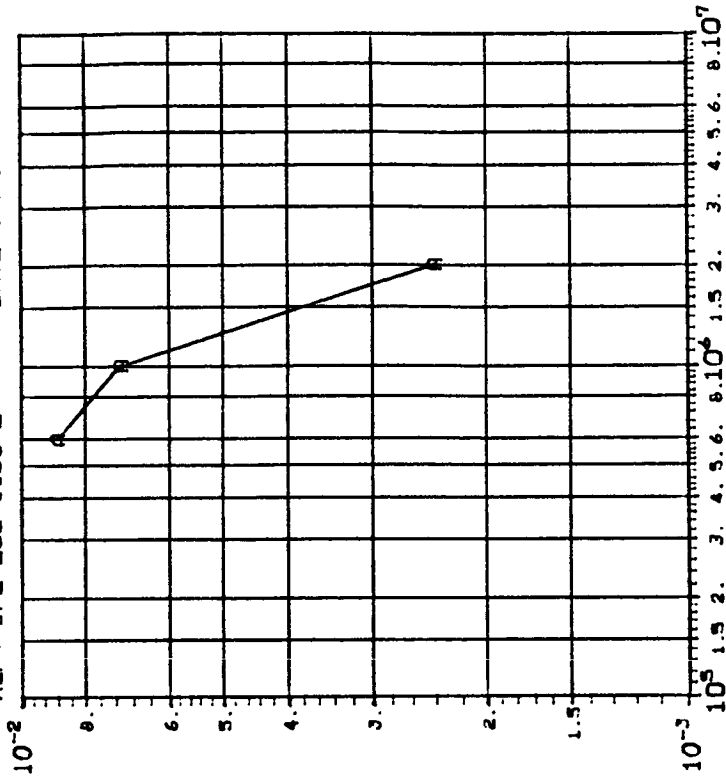
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0141 .0165 .0209 .0243

INITIAL MEAN VALUE VOS(MV) = 1.28X10⁻³

DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-2 DATE CODE 8503



MEAN AVOS(MV)

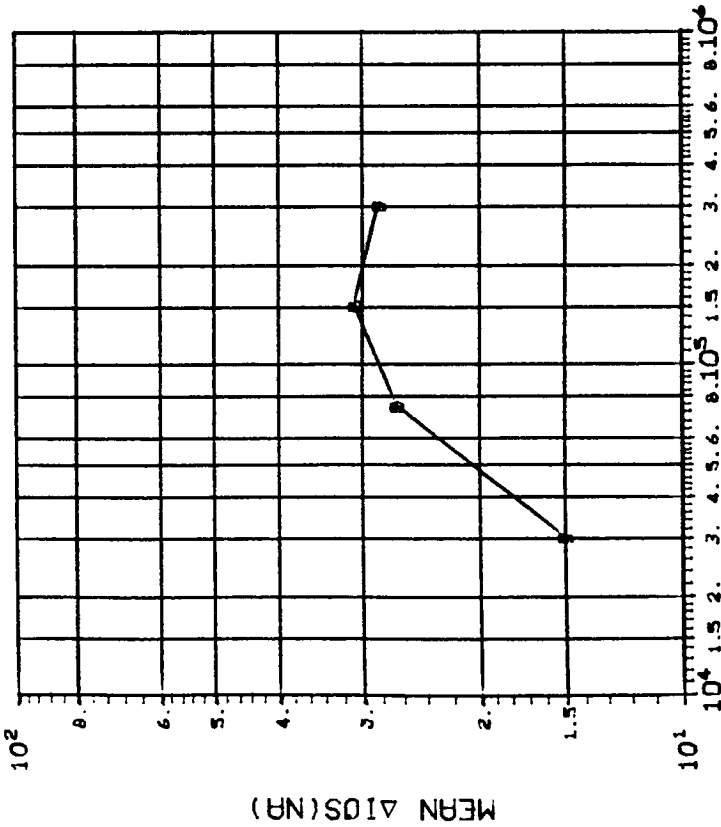
DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E5 1.0E6 2.0E6
	.0208 .0164 .0157

INITIAL MEAN VALUE VOS(MV) = 1.28X10⁻³

DEVICE TYPE: OP-27 OP AMP
 MFG: SUB 5 DEVICES TEST DATE 09-05-83
 REF: JPL LOG 1180-1 DATE CODE 8503

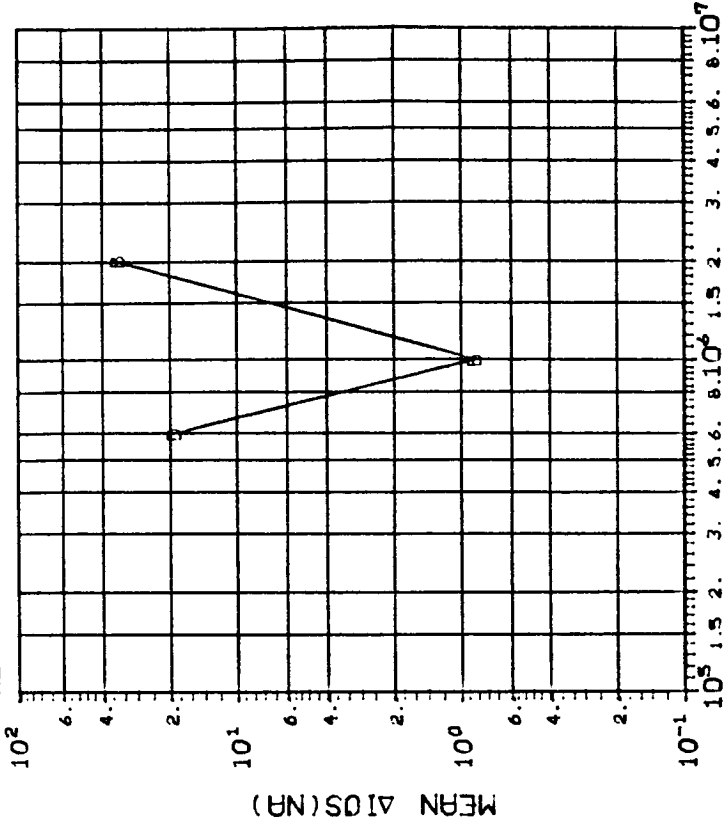


DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	22.69 29.30 32.65 43.96

INITIAL MEAN VALUE IOS(NA) = 1.09X10⁺¹

DEVICE TYPE: OP-27 OP AMP
 MFG: SUB 5 DEVICES TEST DATE 09-05-83
 REF: JPL LOG 1180-2 DATE CODE 8503

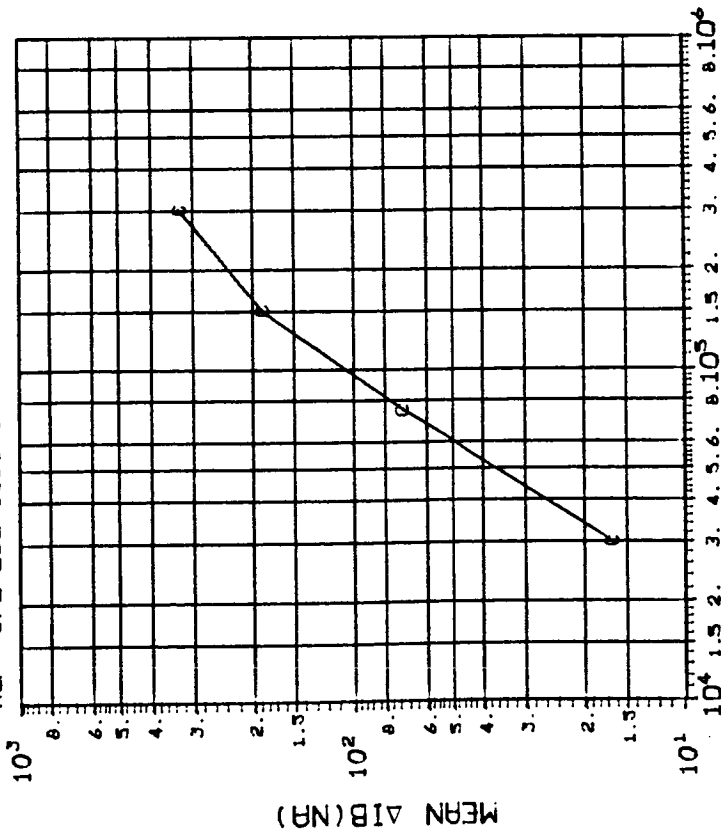


DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E5 1.0E6 2.0E6
	61.48 103.1 170.6

INITIAL MEAN VALUE IOS(NA) = 1.09X10⁺¹

DEVICE TYPE: OP-27 OP AMP
 MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1180-1 DATE CODE 8503

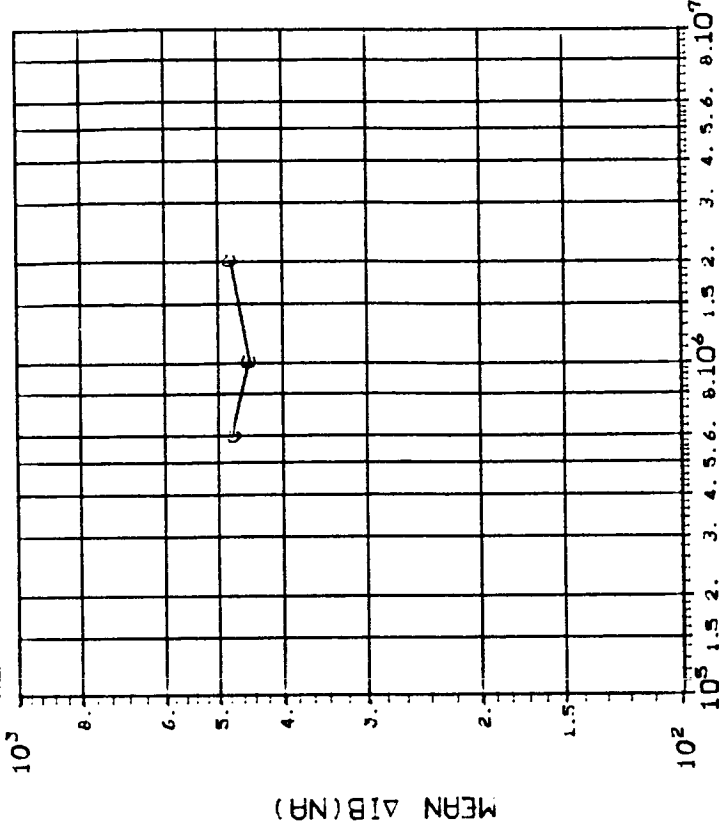


DOSE, rads(Si) Co⁶⁰ Gamma
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	10.25 110.1 339.7 620.5

INITIAL MEAN VALUE IB(NA) = 1.10X10¹

DEVICE TYPE: OP-27 OP AMP
 MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1180-2 DATE CODE 8503



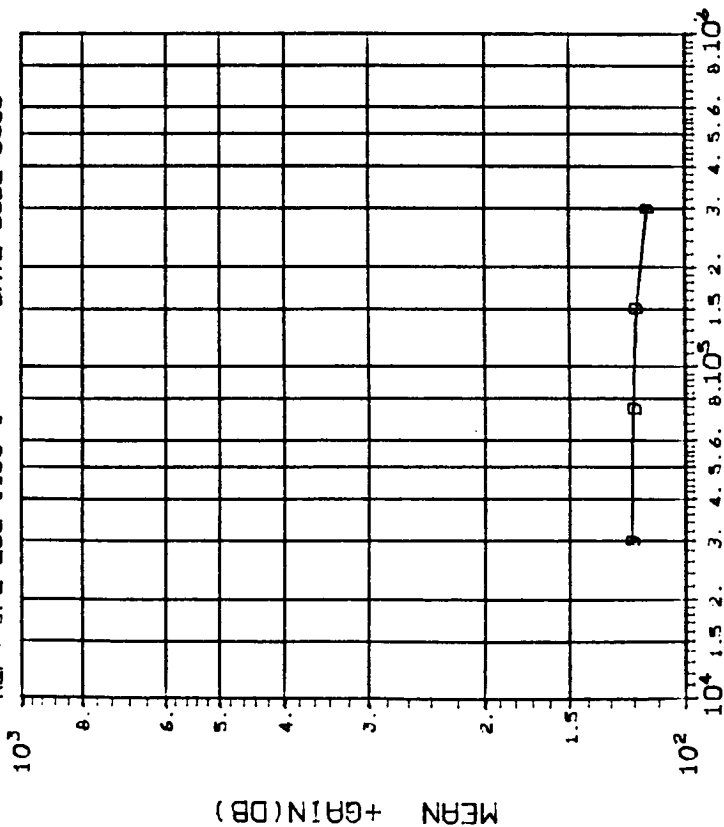
DOSE, rads(Si) Co⁶⁰ Gamma
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E5 1.0E6 2.0E6
	669.0 747.0 999.4

INITIAL MEAN VALUE IB(NA) = 1.10X10¹

DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1180-1 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

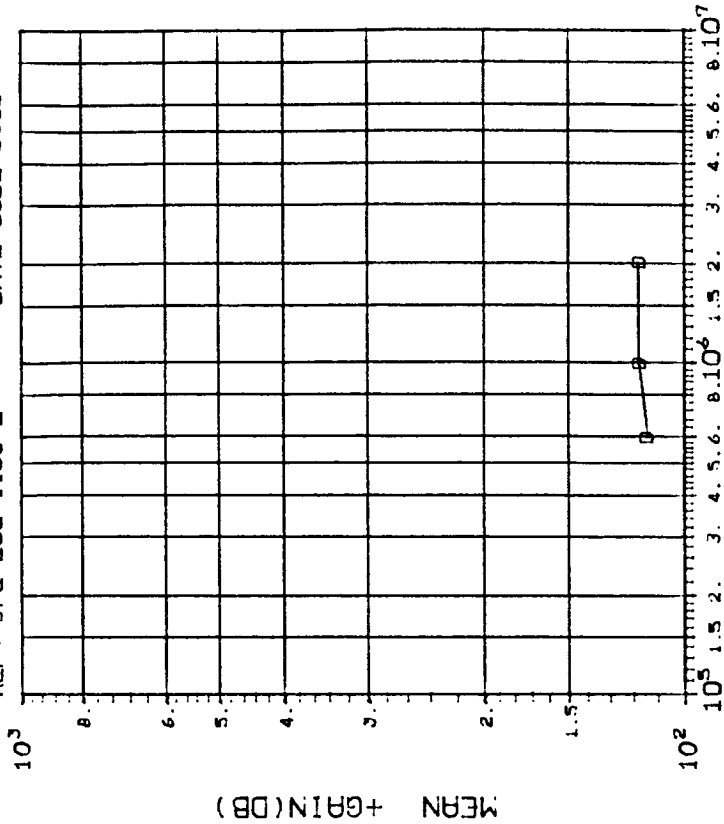
(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	3.0E4 7.5E4 1.5E5 3.0E5
	1.109 1.670 2.530 11.95

INITIAL MEAN VALUE +GAIN(DB) = 1.22X10²

DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1180-2 DATE CODE 8503



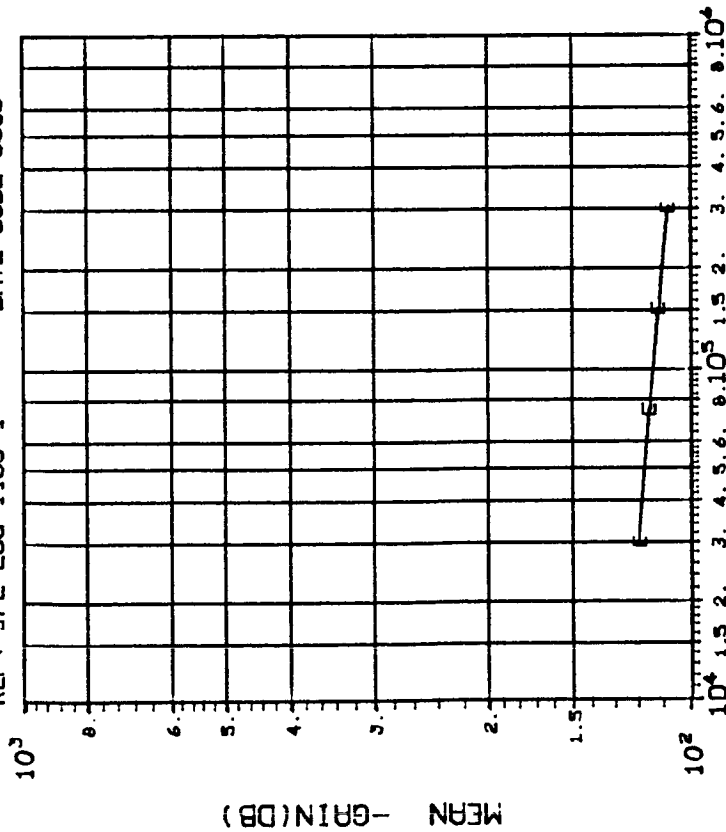
DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

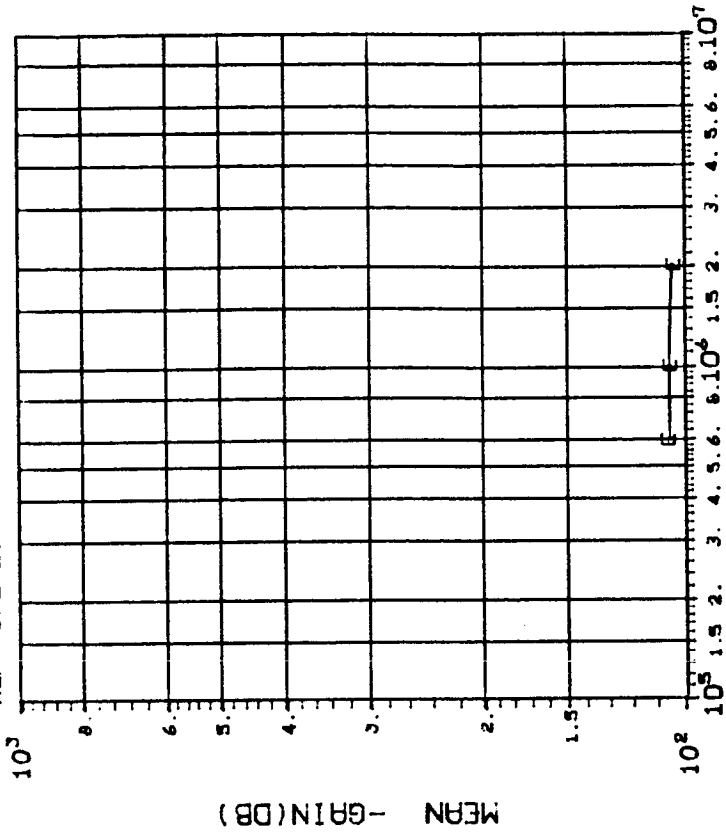
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	6.0E5 1.0E6 2.0E6
	10.44 1.433 1.102

INITIAL MEAN VALUE +GAIN(DB) = 1.22X10²

DEVICE TYPE: OP-27 OP AMP
 MFG: SUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1180-1 DATE CODE 8503

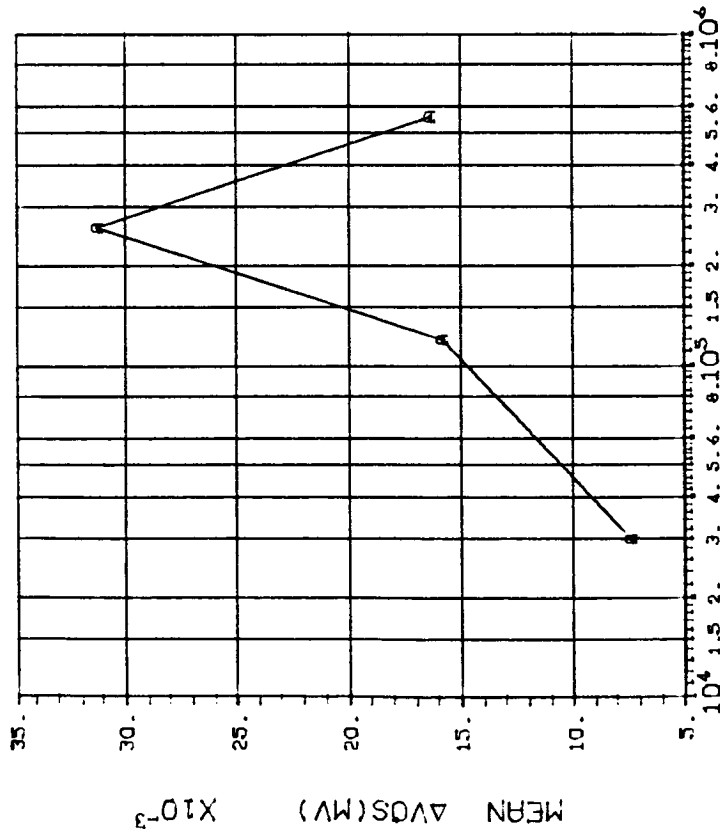


DEVICE TYPE: OP-27 OP AMP
 MFG: SUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1180-2 DATE CODE 8503



DEVICE TYPE: OP-27 OP AMP

MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503

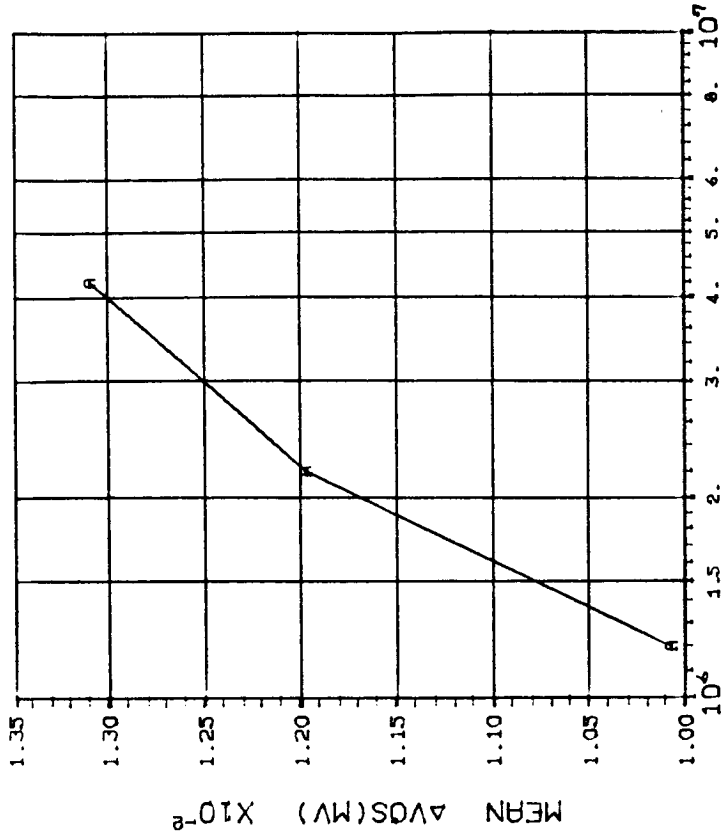


DOSE, rads(Si) Ca⁶⁰ Gammas
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 1.2E5 2.6E5 5.6E5
	.0061 .0233 .0499 .0207

DEVICE TYPE: OP-27 OP AMP

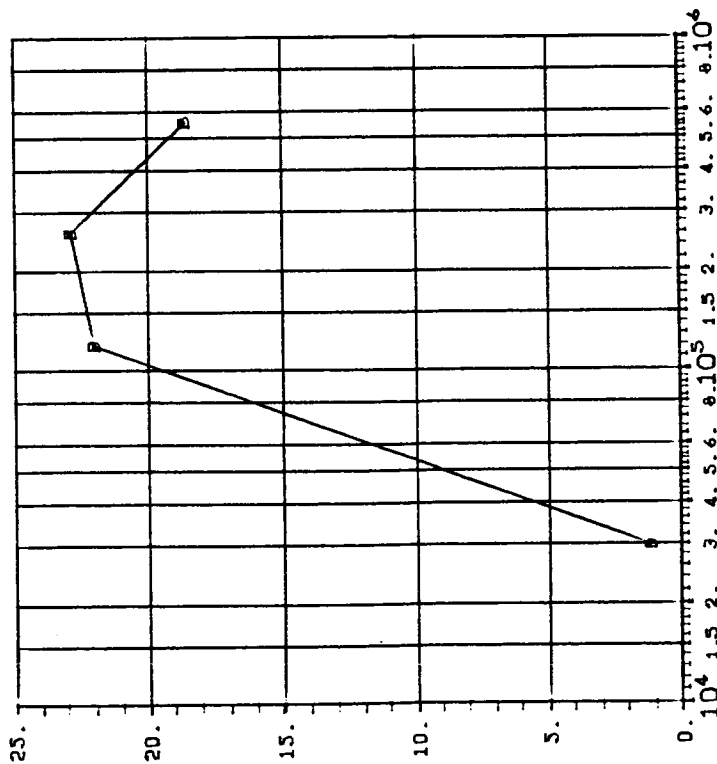
MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Ca⁶⁰ Gammas
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	1.2E6 2.2E6 4.2E6
	.0056 .0099 .0077

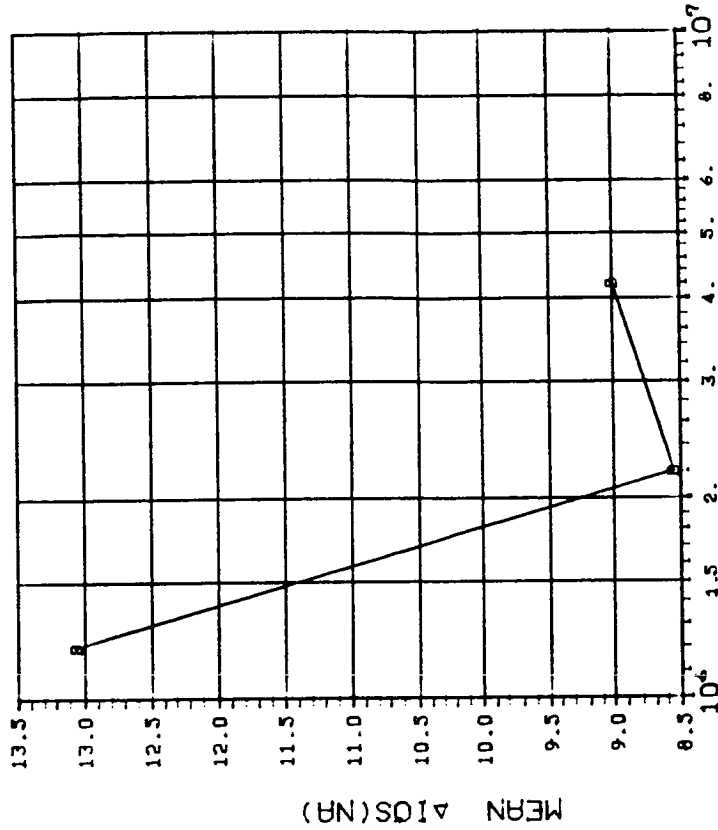
DEVICE TYPE: JP--27 OP AMP
 MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 1.2E5 2.6E5 5.6E5
	1.156 26.66 27.25 16.88

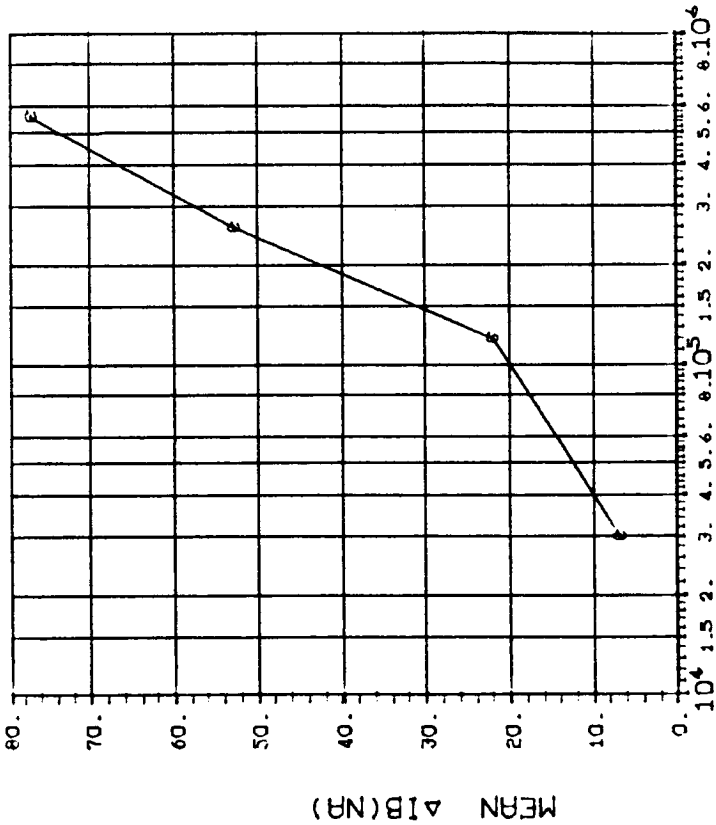
DEVICE TYPE: JP--27 OP AMP
 MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	1.2E6 2.2E6 4.2E6
	7.225 3.279 3.199

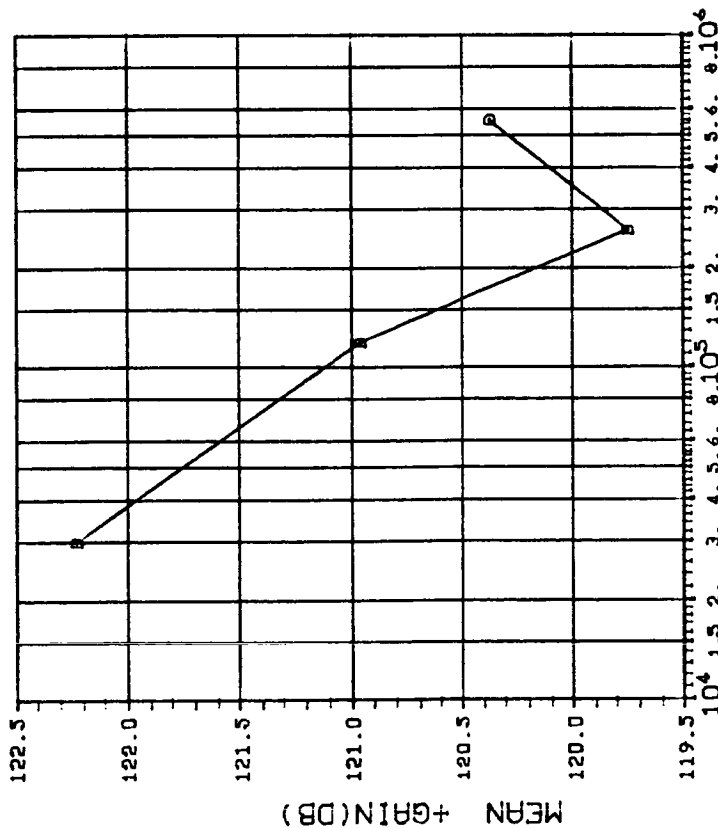
DEVICE TYPE: OP-27 OP AMP
 MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas
(3)ΔIB(NR): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 1.2E5 2.6E5 5.6E5
	0.832 28.30 70.92 90.94

DEVICE TYPE: OP-27 OP AMP
 MFG: SUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503



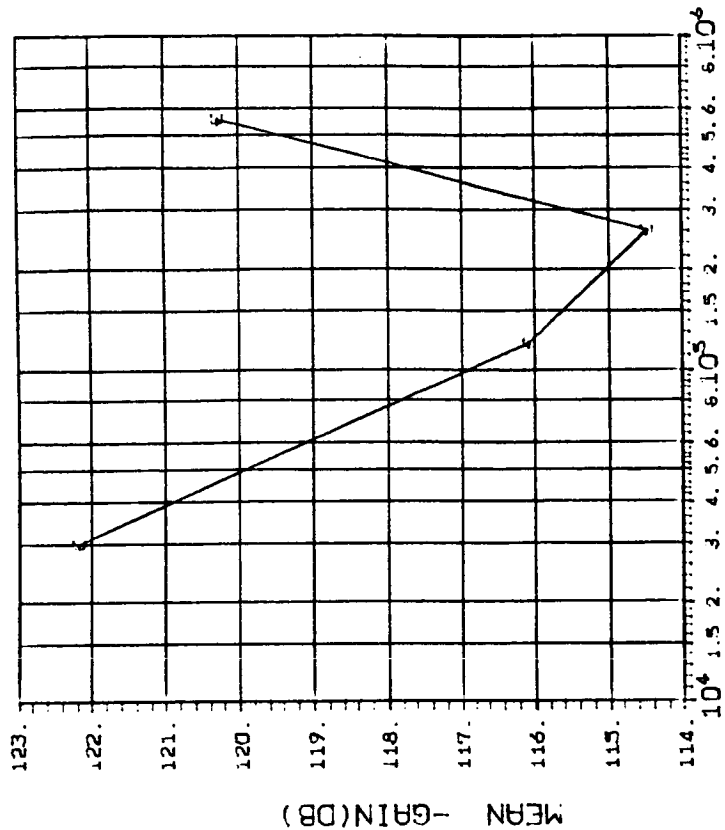
DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	10.0	1.309 9694 2.352 5012

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10¹²

DEVICE TYPE: OP-27 OP AMP
 MFG: SUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD,-10V): VS DOSE

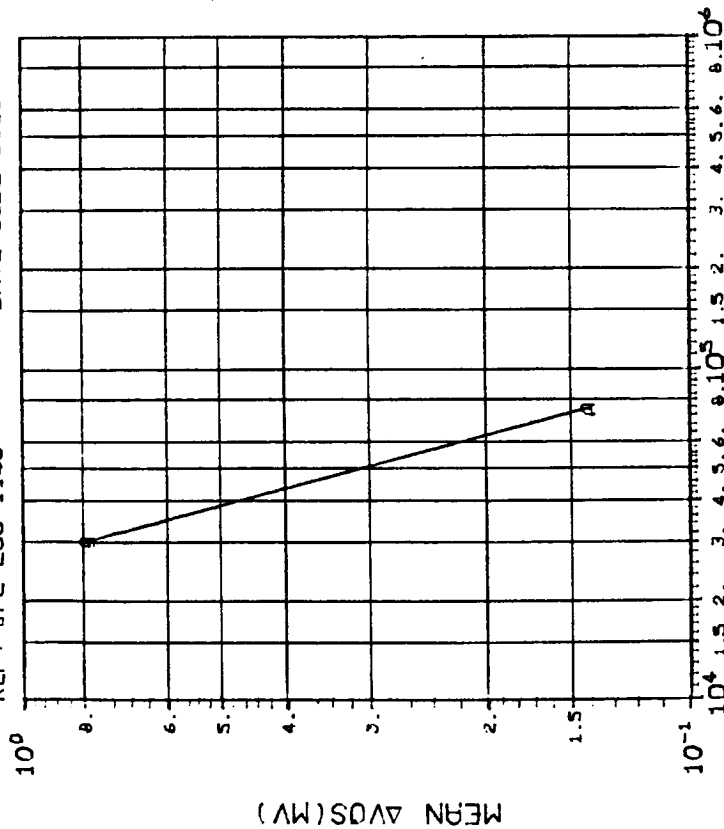
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
E	10.0	2.426 7.295 8.910 1.603

INITIAL MEAN VALUE -GAIN(DB) = 1.24X10¹²

DEVICE TYPE: JP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1140 DATE CODE 8518



DOSE, rads(Si) Co⁶⁰ Gammas

(1)AVOS(MV): VS DOSE

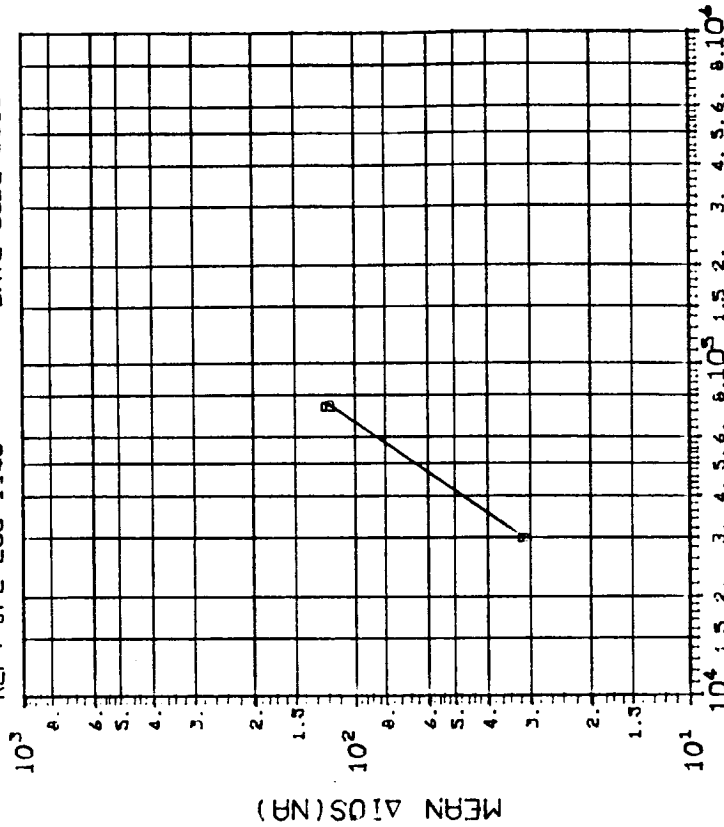
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.2237 .4677 **** ****

INITIAL MEAN VALUE VOS(MV) = 4.32X10⁻²

DEVICE TYPE: JP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1140 DATE CODE 8518



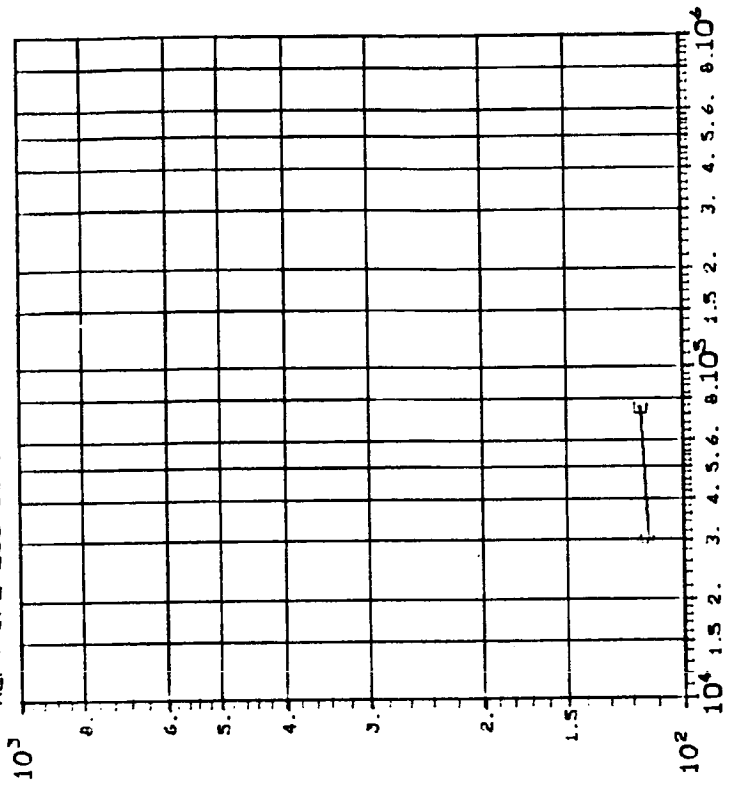
DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	4.075 162.7 **** ****

INITIAL MEAN VALUE IOS(NA) = 1.77X10⁻⁹

DEVICE TYPE: UP-27 OP AMP
 MFG: LTC 5 DEVICES TEST DATE 09-03-85
 REF: JPL LOG 1140 DATE CODE 8518

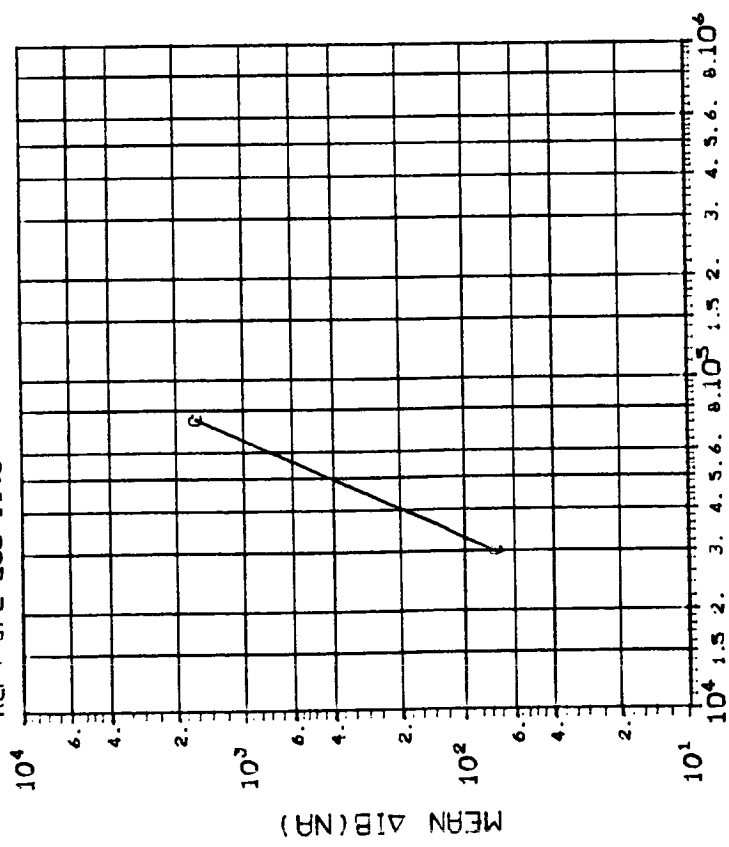


DOSE, rads(Si) Co⁶⁰ Gammas
 (S)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.5E4 1.5E5 3.0E5
	5.196 6.094 **** ****

INITIAL MEAN VALUE -GAIN(DB) = 1.43X10²

DEVICE TYPE: UP-27 OP AMP
 MFG: LTC 5 DEVICES TEST DATE 09-03-85
 REF: JPL LOG 1140 DATE CODE 8518



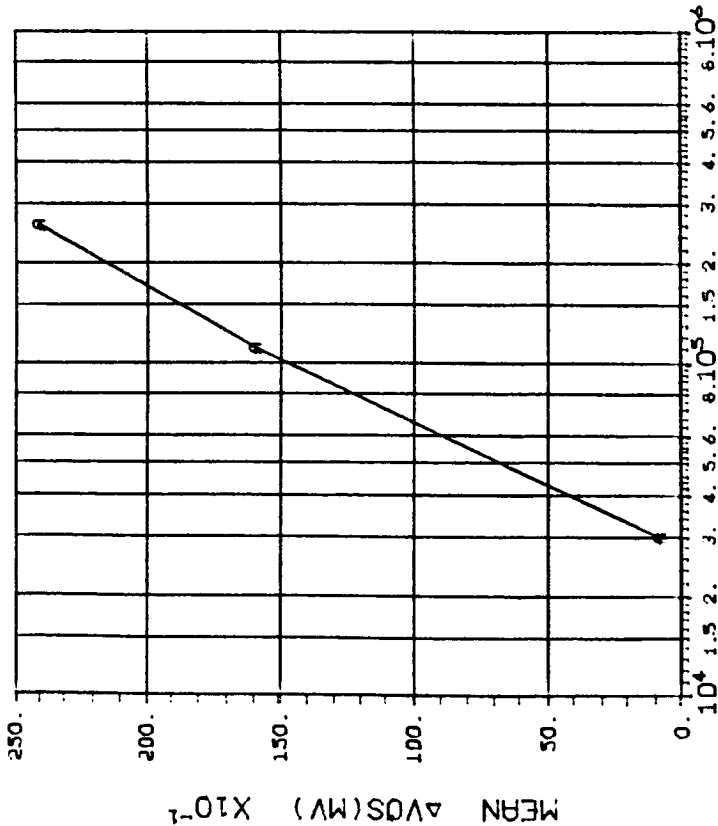
DOSE, rads(Si) Co⁶⁰ Gammas
 (S)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	41.09 1360. **** ****

INITIAL MEAN VALUE IB(NA) = 1.37X10³

DEVICE TYPE: OP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1141 DATE CODE 8518



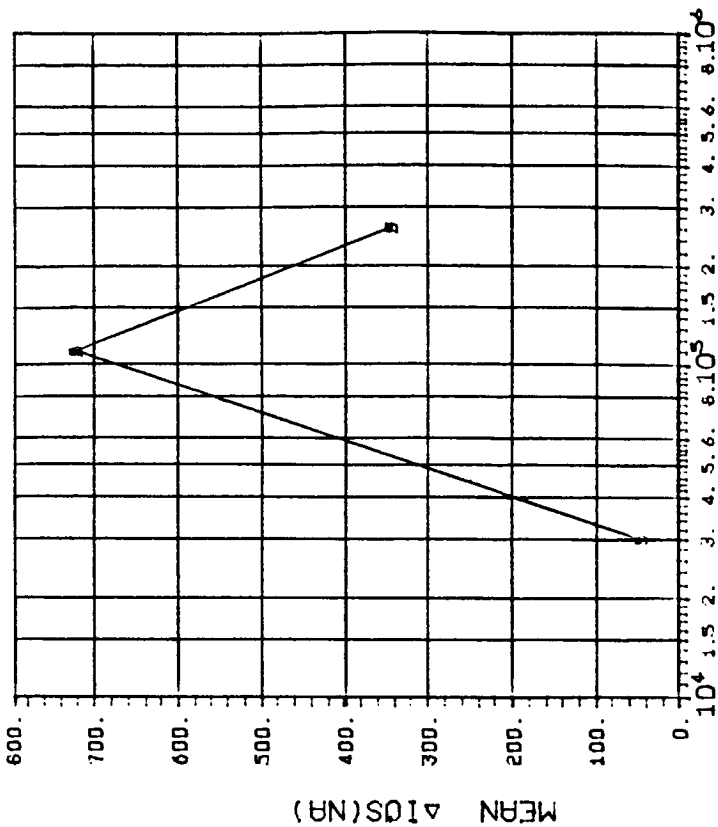
DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 1.1E5 2.6E5
	.2271 9.247 13.76

DEVICE TYPE: OP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1141 DATE CODE 8518

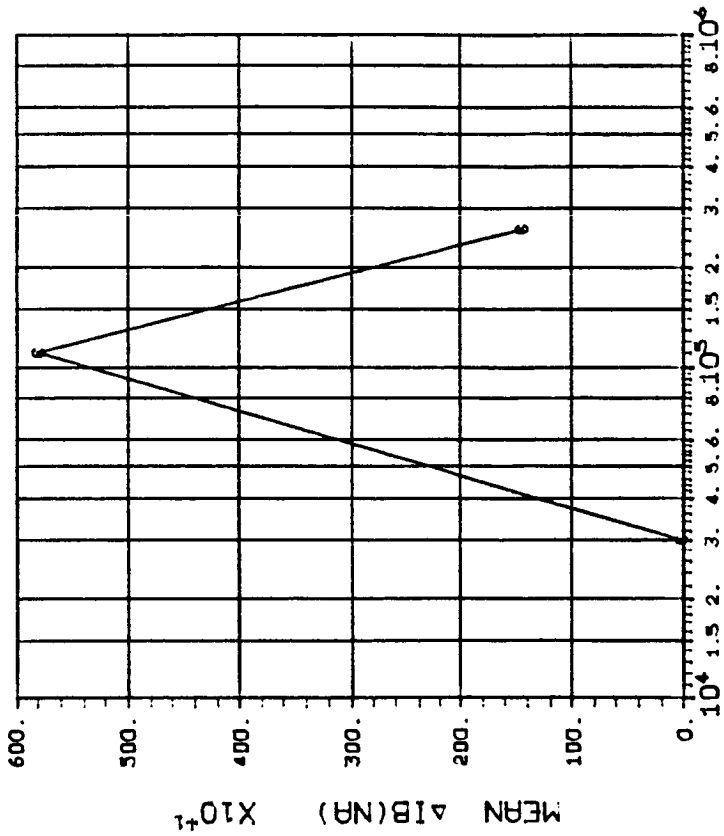


DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIDS(MA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 1.1E5 2.6E5
	22.98 888.9 107.6

DEVICE TYPE: OP-27 OP AMP
 MFG: LTC 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1141 DATE CODE 8518



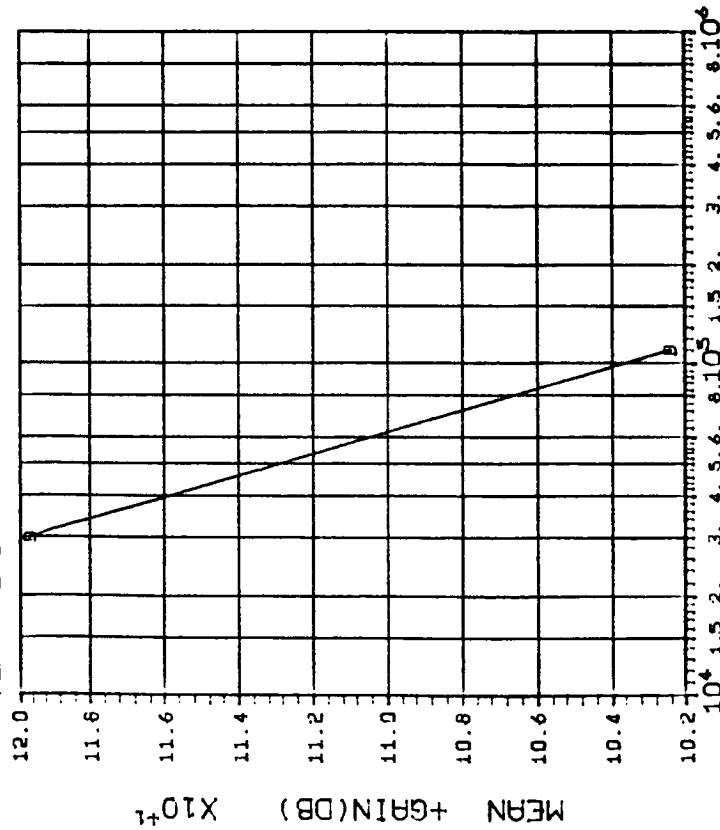
DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
	3.0E4 1.1E5 2.6E5
C	12.07 5196. 760.2

DEVICE TYPE: UP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1141 DATE CODE 8518



DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

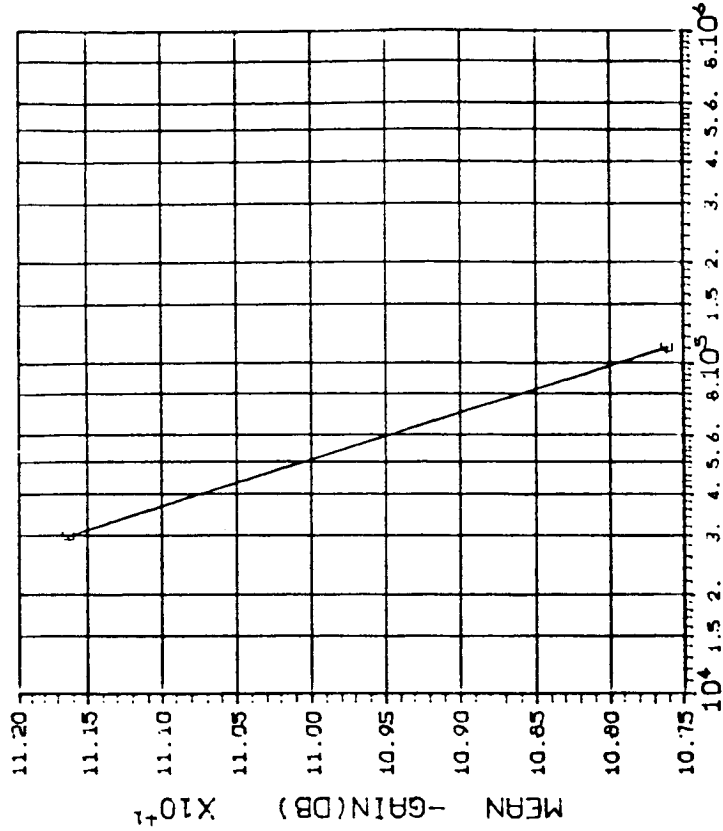
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	10.0
	1.135
	7.129 *****

INITIAL MEAN VALUE +GAIN(DB) = 1.45X10⁺²

DEVICE TYPE: UP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1141 DATE CODE 8516



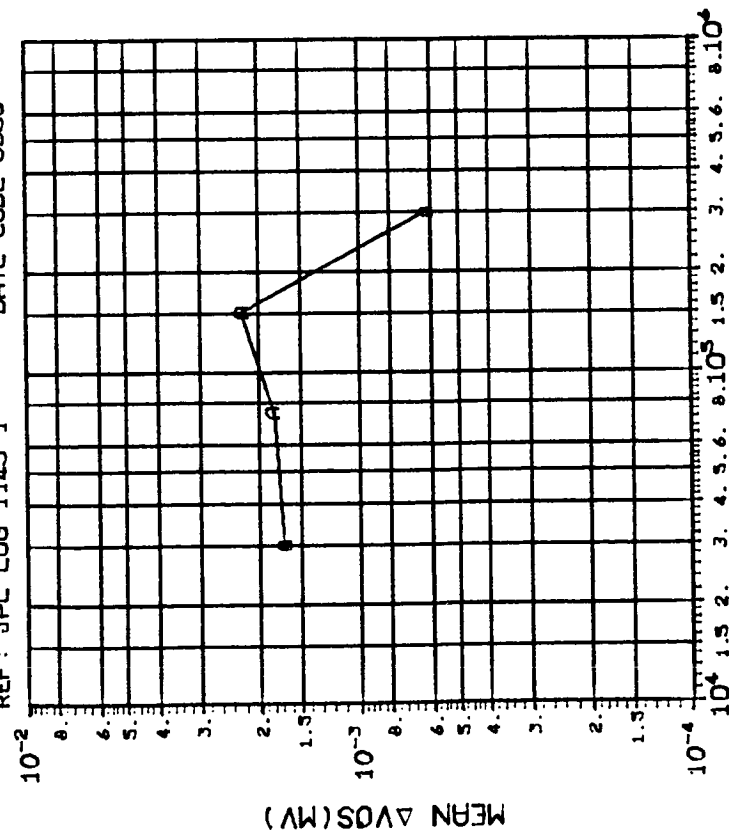
DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD,-10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	10.0
	3.0E4
	1.1E5 2.6E5 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.34X10⁺²

DEVICE TYPE: OP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1145-1 DATE CODE 8350

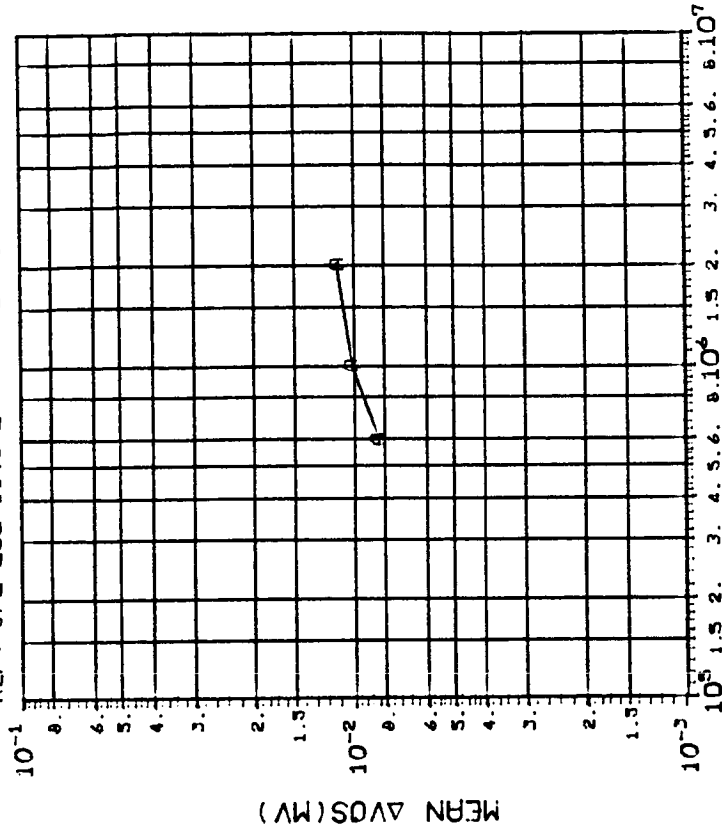


DOSE, rads(Si) Co⁶⁰ Gammas
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0113 .0109 .0192 .0242

INITIAL MEAN VALUE VOS(MV) = 7.20X10⁻⁴

DEVICE TYPE: OP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1145-2 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas
 (1)ΔVOS(MV): VS DOSE

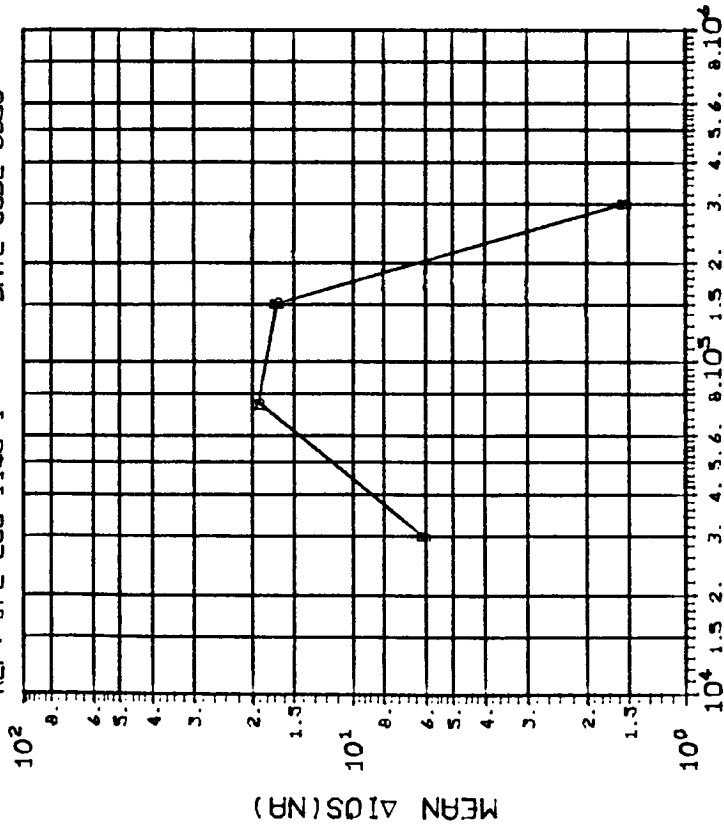
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E5 1.0E6 2.0E6
	.0257 .0316 .0286

INITIAL MEAN VALUE VOS(MV) = 7.20X10⁻⁴

DEVICE TYPE: UP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-1 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

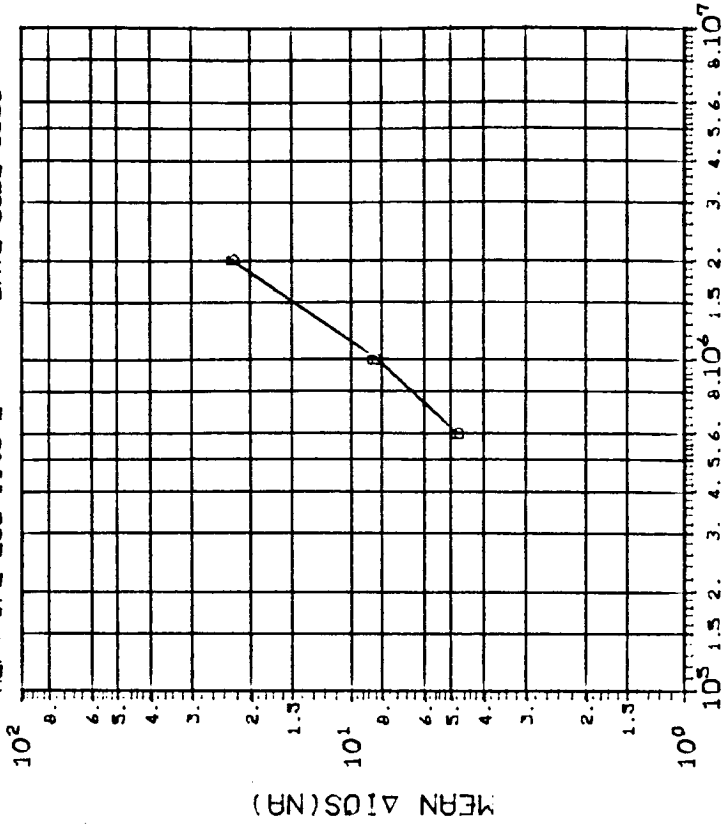
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
B	5.794 10.23 10.79 34.72

INITIAL MEAN VALUE IOS(NA) = 3.67X10⁻⁹

DEVICE TYPE: UP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-2 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

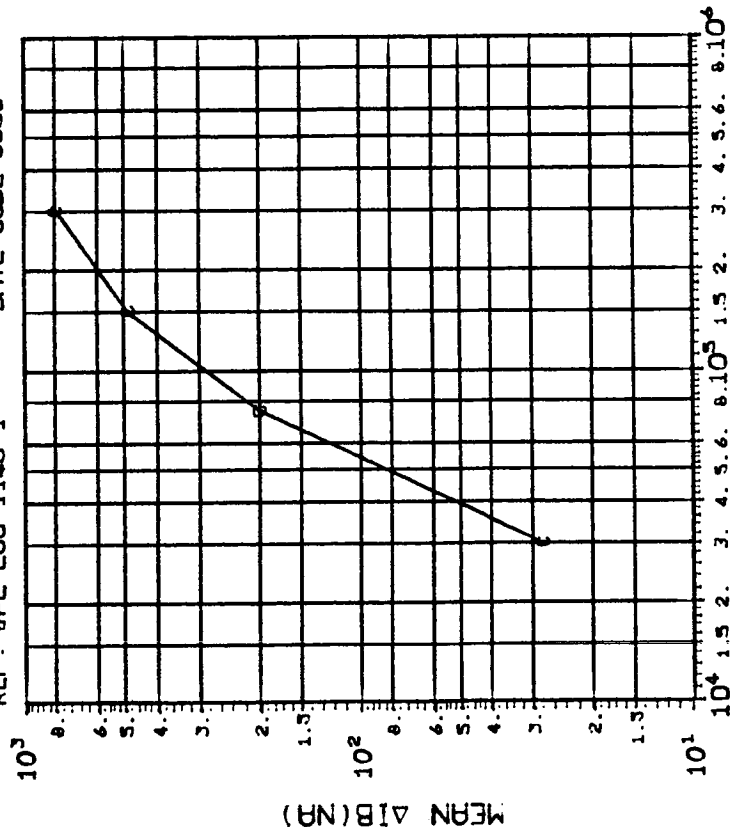
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E3 1.0E6 2.0E6
B	75.98 137.1 127.0

INITIAL MEAN VALUE IOS(NA) = 3.67X10⁻⁹

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-1 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

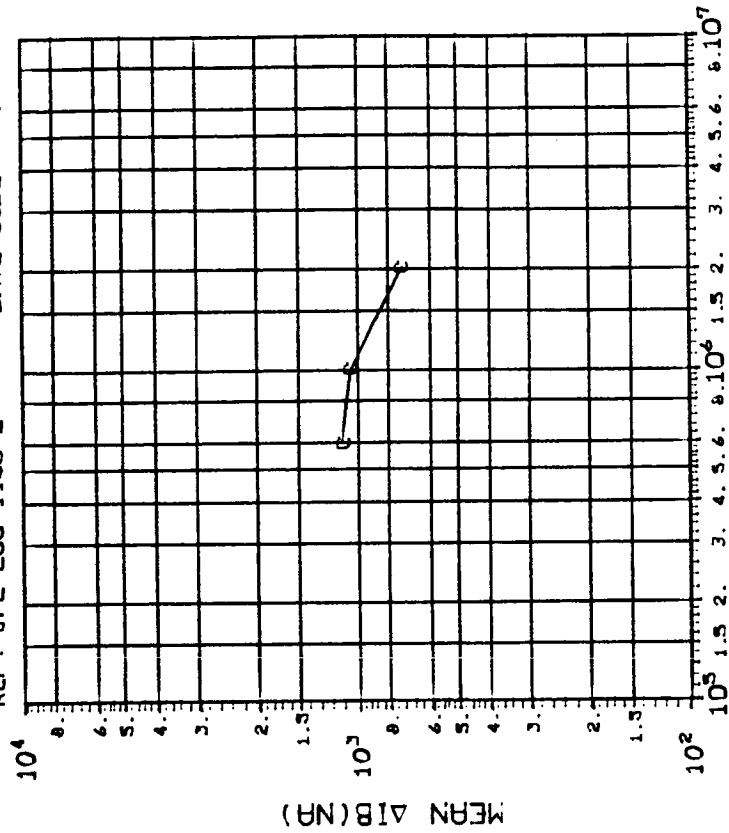
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	16.49 69.44 87.44 107.1

INITIAL MEAN VALUE IB(NA) = 1.52X10⁺¹

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-2 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E3 1.0E6 2.0E6
	139.3 153.0 222.6

INITIAL MEAN VALUE IB(NA) = 1.52X10⁺¹

DEVICE TYPE: OP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1145-2 DATE CODE 8350

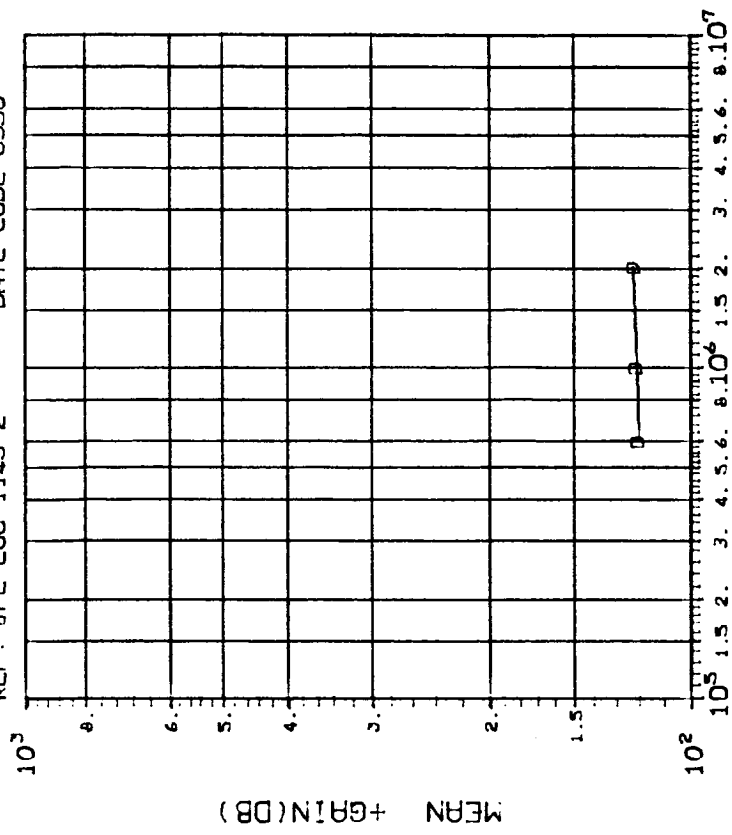


TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
D	6.0E5 1.0E6 2.0E6
	1.0E2 1.141 1.179

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10²

DEVICE TYPE: OP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1145-1 DATE CODE 8350

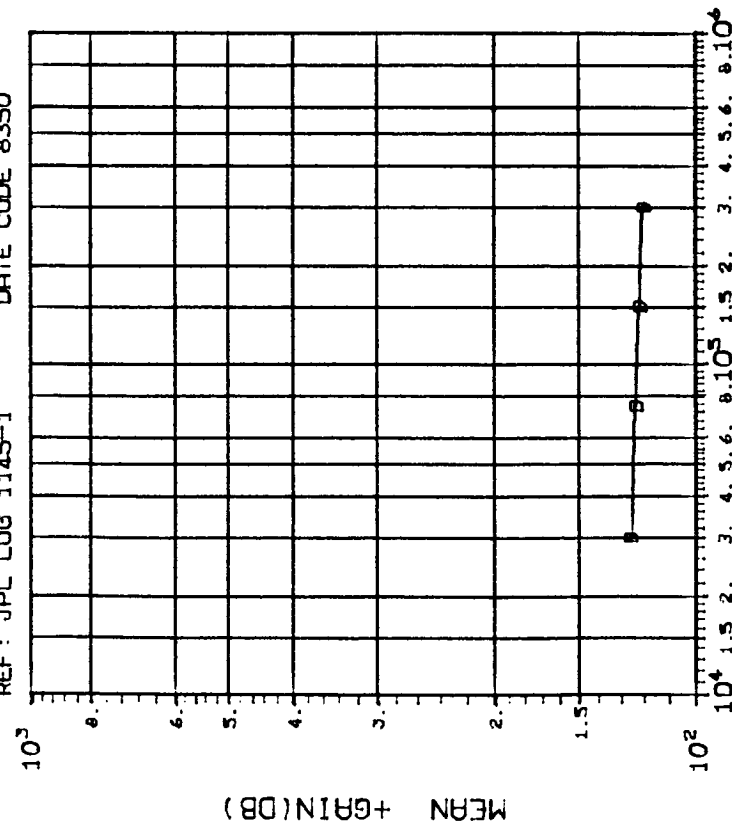
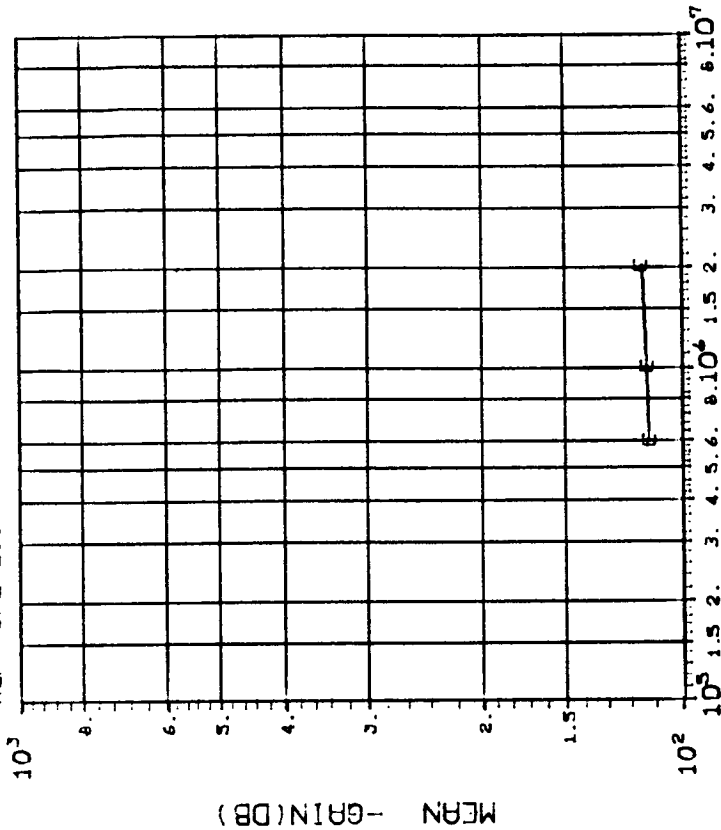


TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
D	3.0E4 7.5E4 1.5E5 3.0E5
	1.0E4 1.319 1.501 1.406

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10²

DEVICE TYPE: OP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1145-2 DATE CODE 8350

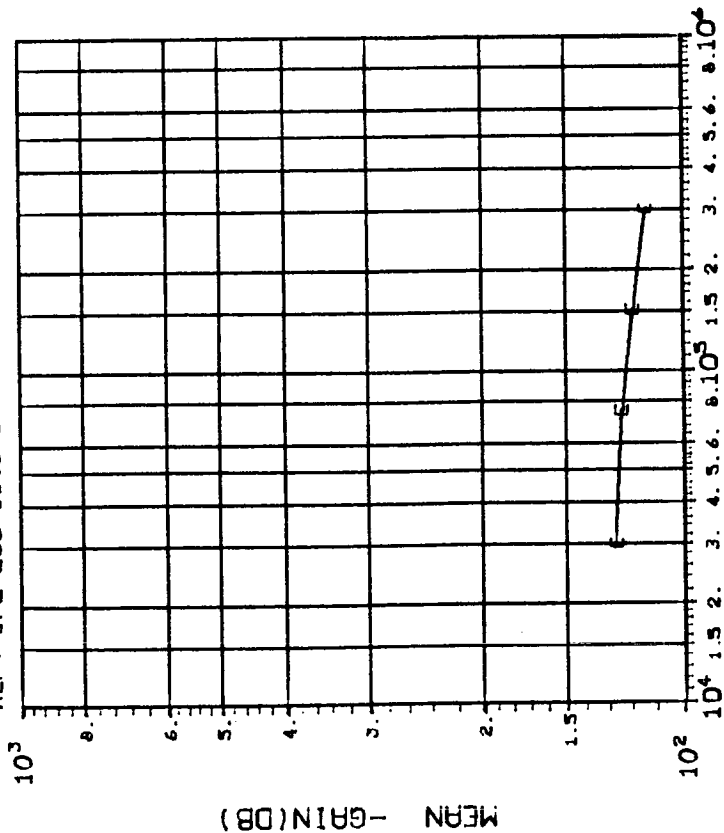


DOSE, rads(Si) Co⁶⁰ Gammas
 (S)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	6.0E5 1.0E6 2.0E6
E	4.159 4.196 4.713

INITIAL MEAN VALUE -GAIN(DB) = 1.28X10²

DEVICE TYPE: OP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1145-1 DATE CODE 8350



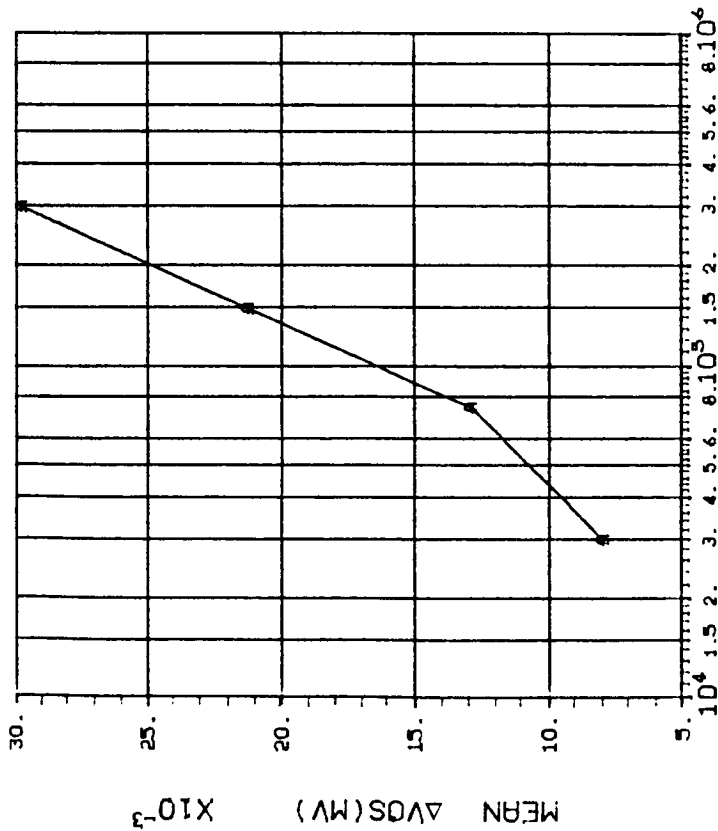
DOSE, rads(Si) Co⁶⁰ Gammas
 (S)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.5E4 1.5E5 3.0E5
E	.9291 2.635 4.729 4.456

INITIAL MEAN VALUE -GAIN(DB) = 1.28X10²

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85
REF: JPL LOG 1146-1 DATE CODE 8350



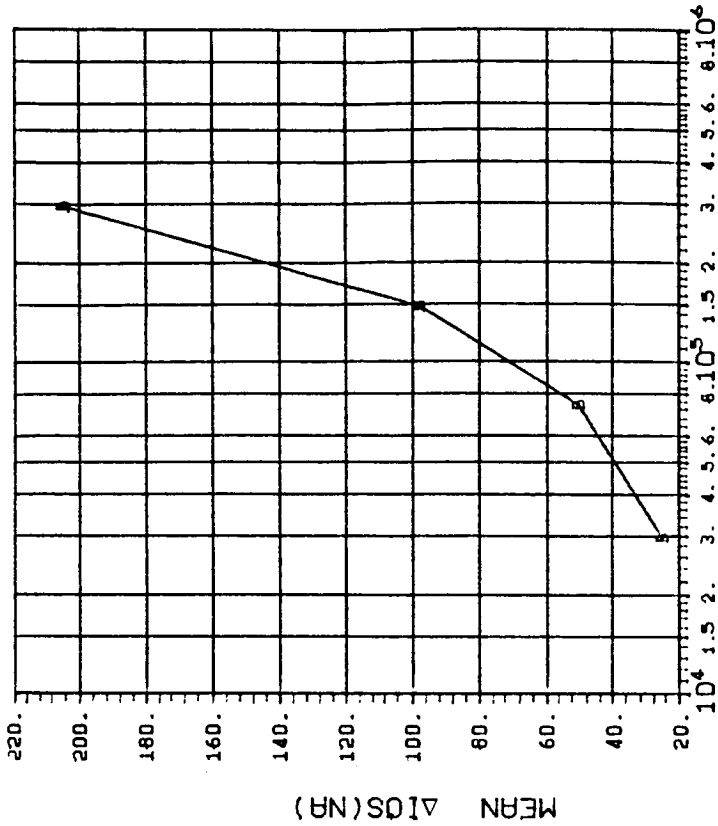
DOSE, rads(Sj) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0083 .0125 .0151 .0240

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85
REF: JPL LOG 1146-1 DATE CODE 8350

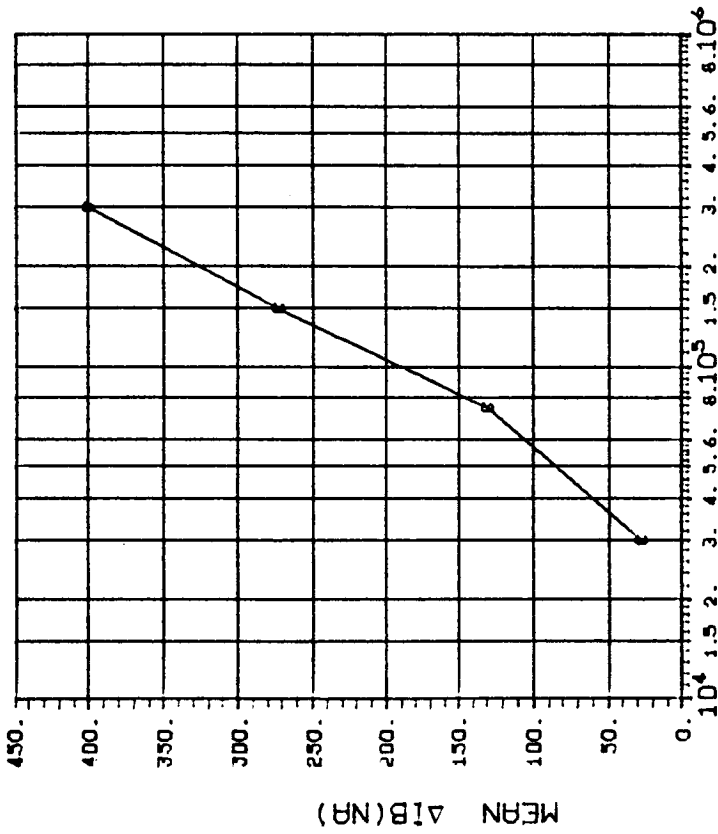


DOSE, rads(Sj) Co⁶⁰ Gammas

(2)ΔIOS(NR): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
B	3.0E4 7.5E4 1.5E5 3.0E5
	15.64 30.73 58.88 133.5

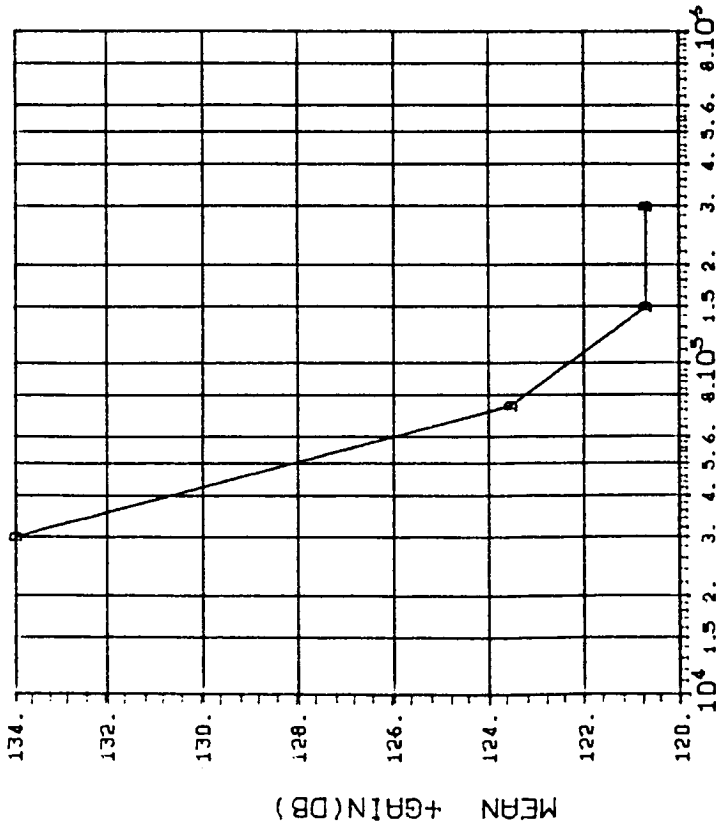
DEVICE TYPE: JP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 11-13-85
 REF: JPL LOG 1146-1 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VSDOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	D08E, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	20.58 29.93 91.01 136.7

DEVICE TYPE: UP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 11-13-85
 REF: JPL LOG 1146-1 DATE CODE 8350

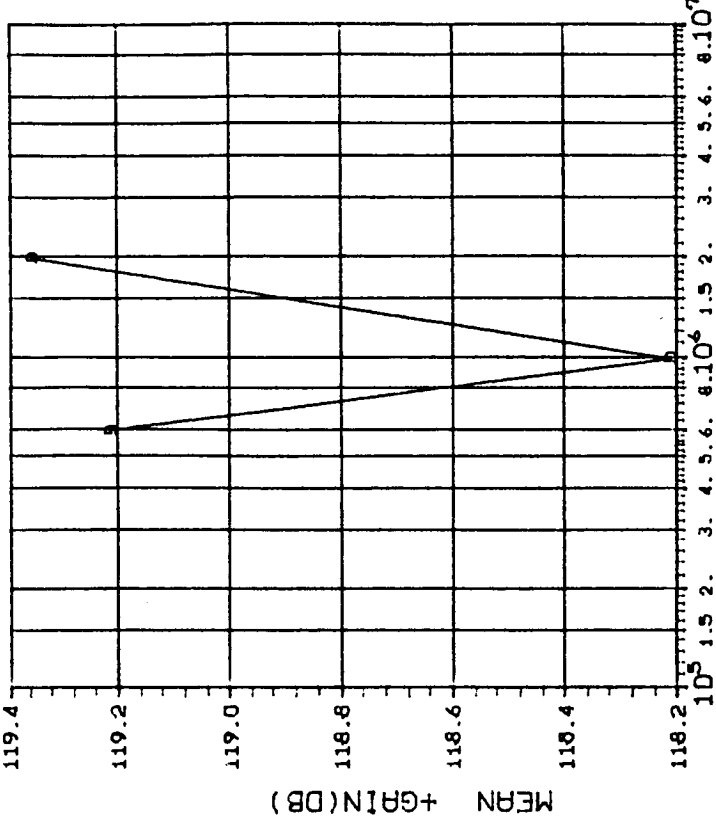


DOSE, rads(Sj) Co⁶⁰ Gammas
 (4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, rads(Sj)
D ****	3.0E4 7.5E4 1.5E5 3.0E5
	.0000 7.048 12.97 12.97

INITIAL MEAN VALUE +GAIN(DB) = 1.31X10¹²

DEVICE TYPE: UP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 11-13-85
 REF: JPL LOG 1146-2 DATE CODE 8350



DOSE, rads(Sj) Co⁶⁰ Gammas
 (4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

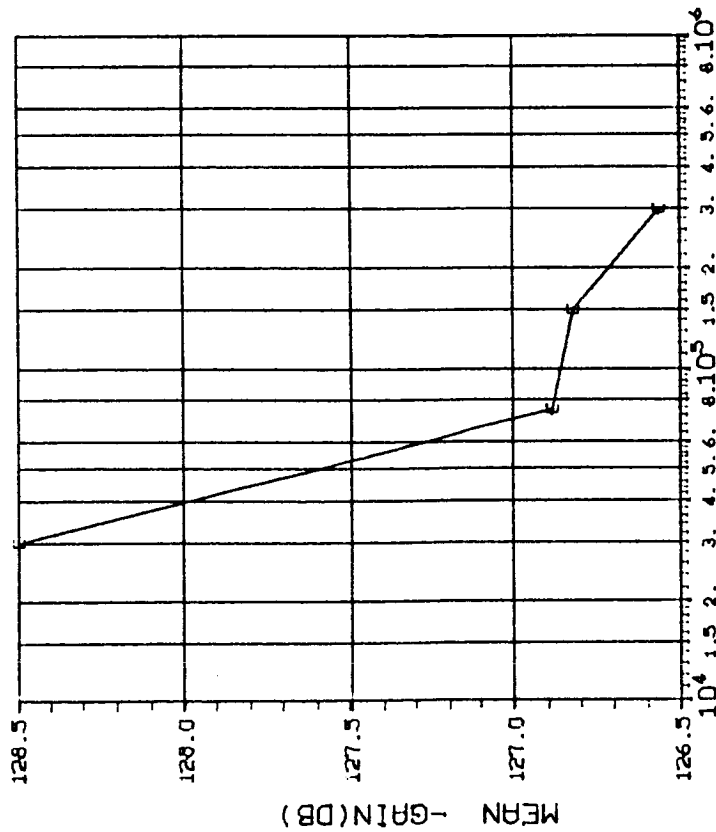
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, rads(Sj)
D ****	6.0E3 1.0E6 2.0E6
	13.86 14.59 9.940

INITIAL MEAN VALUE +GAIN(DB) = 1.31X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-1 DATE CODE 8350



DOSE, rads(Sj) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

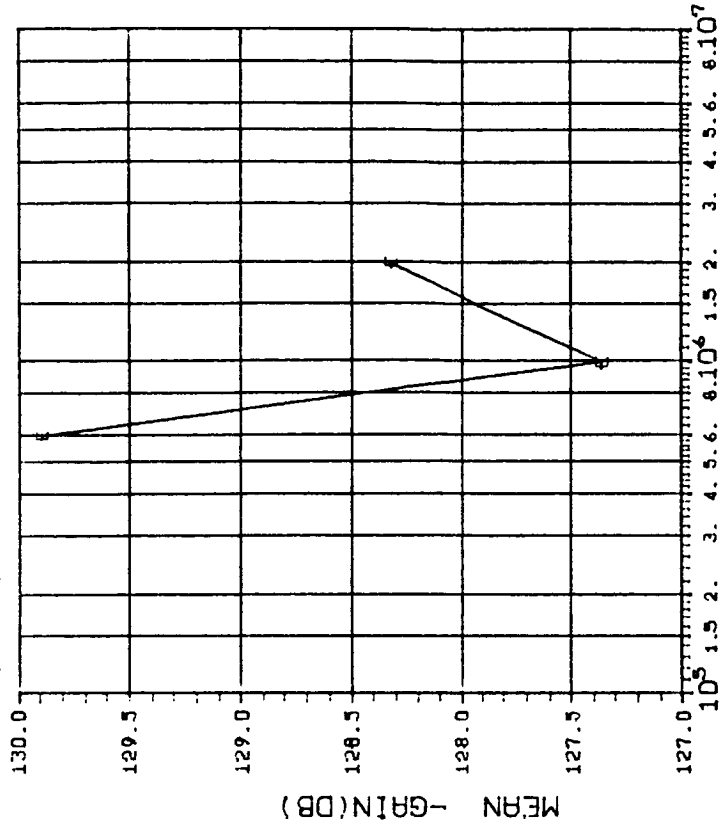
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE 1L (mA)	DOSE, rads(Sj)
E **** 3.769 4.879 6.909 9.108	3.0E4 7.5E4 1.5E5 3.0E5

INITIAL MEAN VALUE -GAIN(DB) = 1.32X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-2 DATE CODE 8350



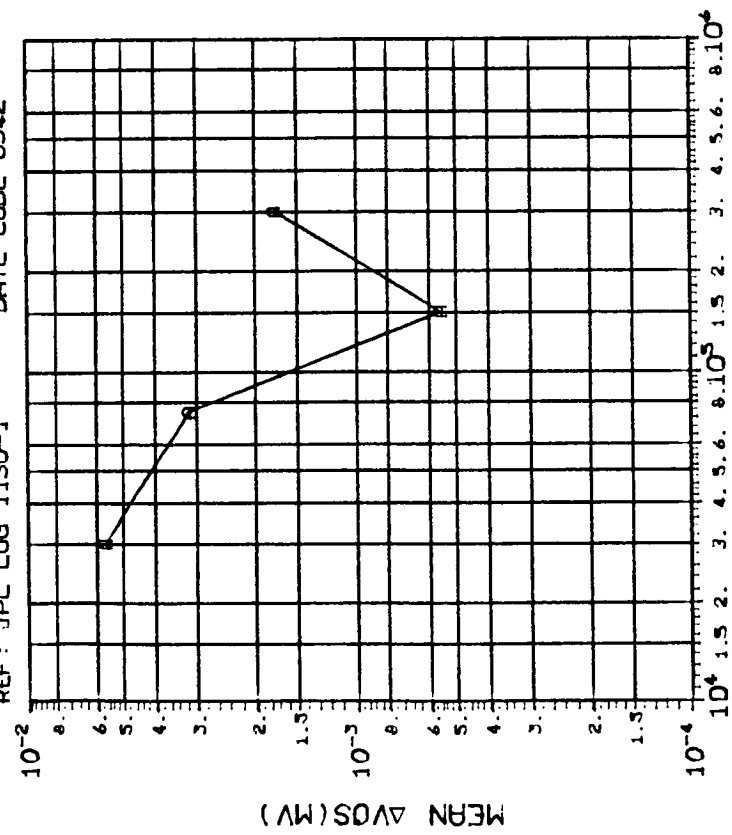
DOSE, rads(Sj) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE 1L (mA)	DOSE, rads(Sj)
E **** 7.386 8.483 7.782	6.0E5 1.0E6 2.0E6

INITIAL MEAN VALUE -GAIN(DB) = 1.32X10¹²

DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1130-1 DATE CODE 8342

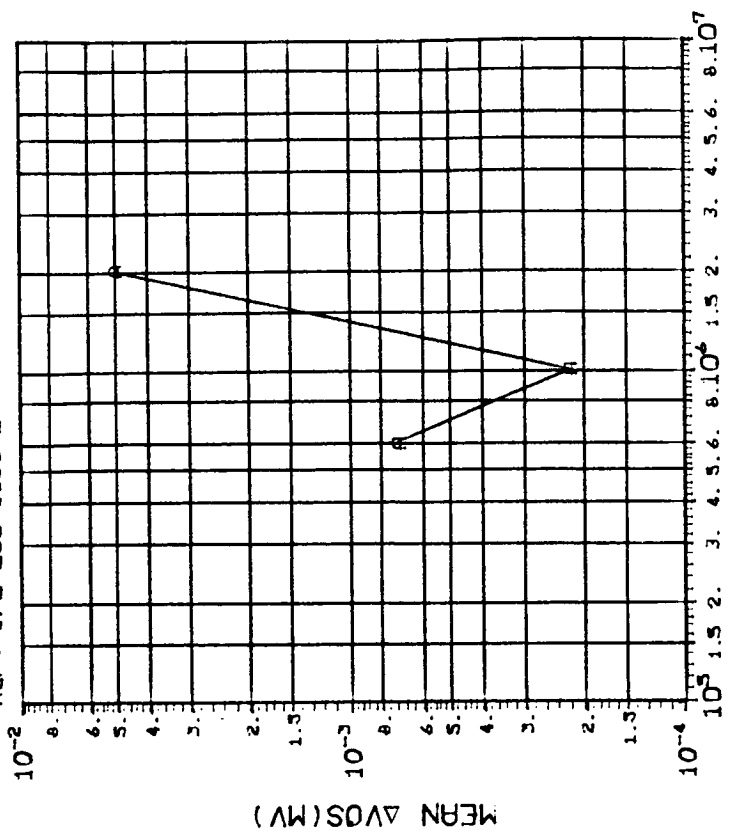


DOSE, rads(Si) Co⁶⁰ Gammas
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.3E4 1.5E5 3.0E5
	.0467 .0463 .0482 .0497

INITIAL MEAN VALUE VOS(MV) = 9.06X10⁻³

DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1130-2 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (1)ΔVOS(MV): VS DOSE

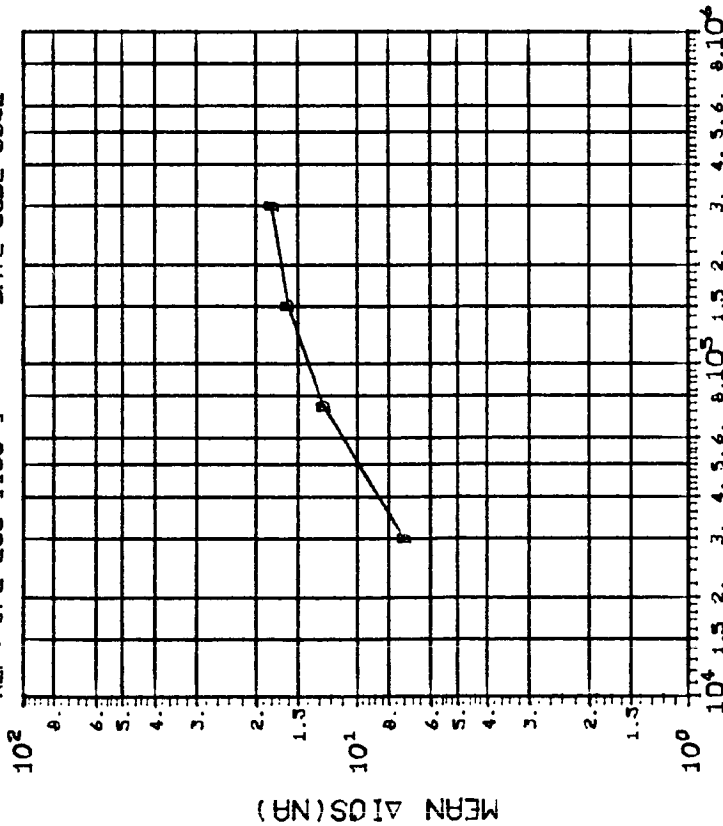
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E3 1.0E6 2.0E6
	.0488 .0470 .0475

INITIAL MEAN VALUE VOS(MV) = 9.06X10⁻³

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-1 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

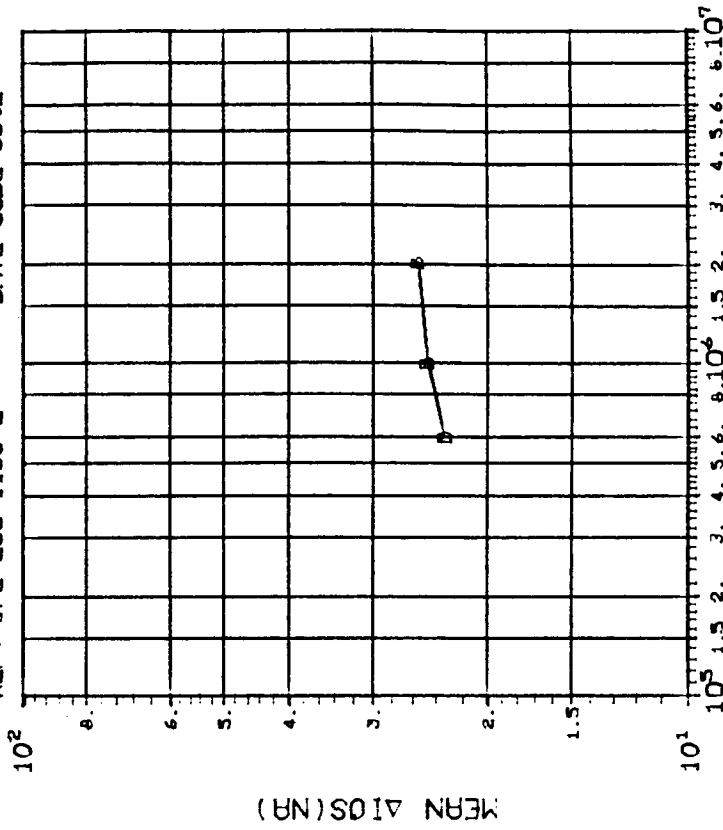
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.064 7.564 1.563 3.063
	1.724 7.997 11.60 16.01

INITIAL MEAN VALUE IOS(NA) = 4.07X10⁻⁹

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-2 DATE CODE 8342



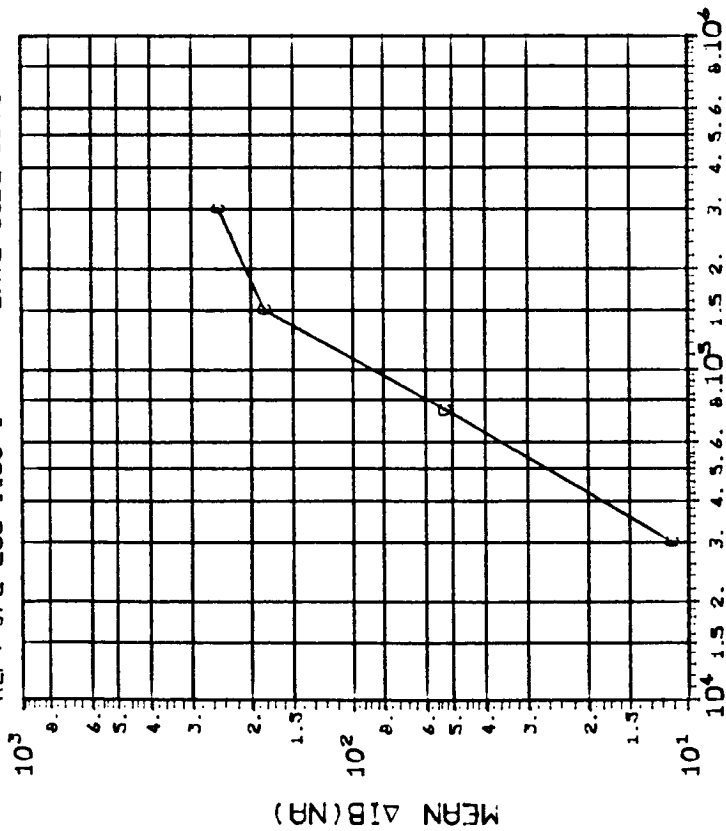
DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E3 1.0E6 2.0E6
	18.29 20.17 20.00

INITIAL MEAN VALUE IOS(NA) = 4.07X10⁻⁹

DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-03-85
 REF: JPL LOG 1130-1 DATE CODE 8342

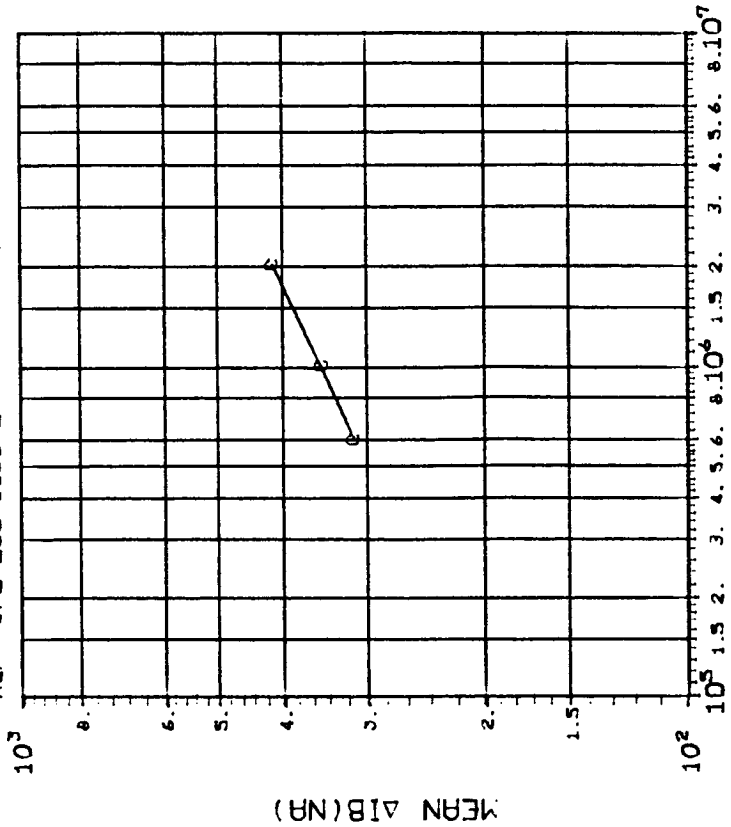


DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	7.003 38.34 136.2 200.9

INITIAL MEAN VALUE IB(NA) = 3.26X10⁰

DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-03-85
 REF: JPL LOG 1130-2 DATE CODE 8342



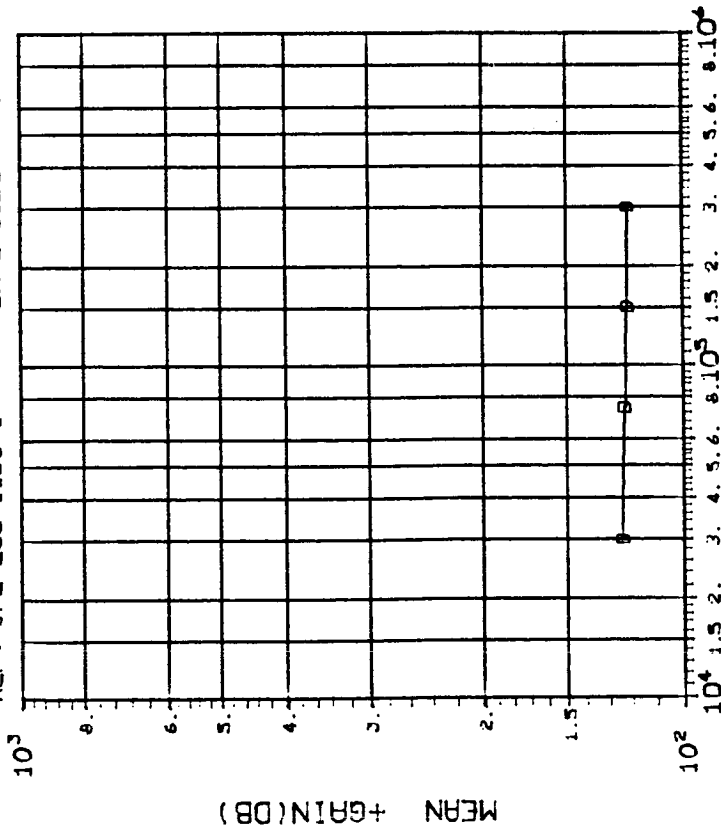
DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E5 1.2E6 2.0E6
	183.6 168.5 151.4

INITIAL MEAN VALUE IB(NA) = 3.26X10⁰

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1130-1 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

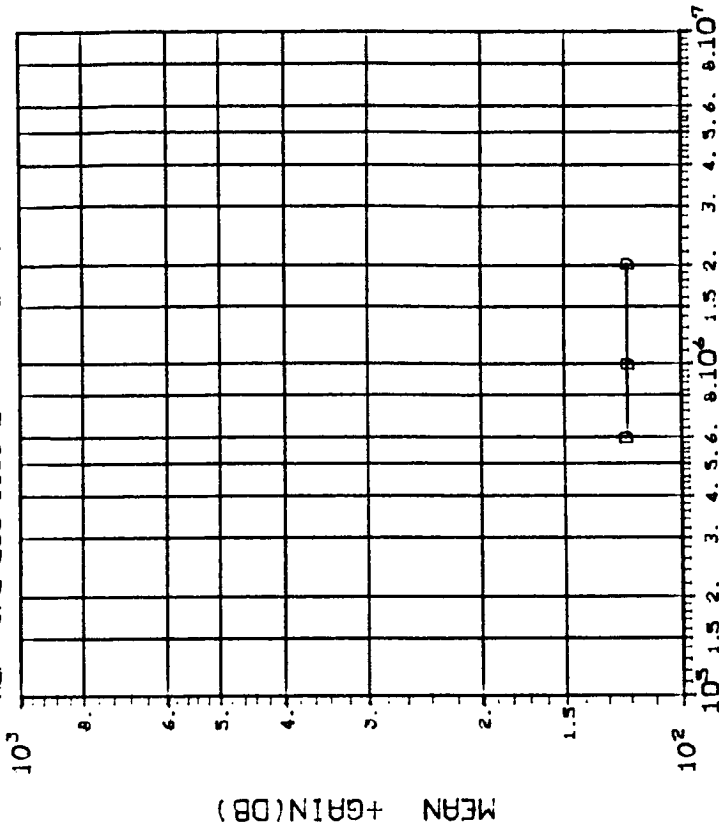
(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	3.0E4 7.5E4 1.5E5 3.0E5
	.6228 .2966 .0977 1.234

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1130-2 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	6.0E5 1.0E6 2.0E6
	1.011 .7215 .5396

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI

TEST DATE 09-05-85

REF: JPL LOG 1130-1

DATE CODE 8342

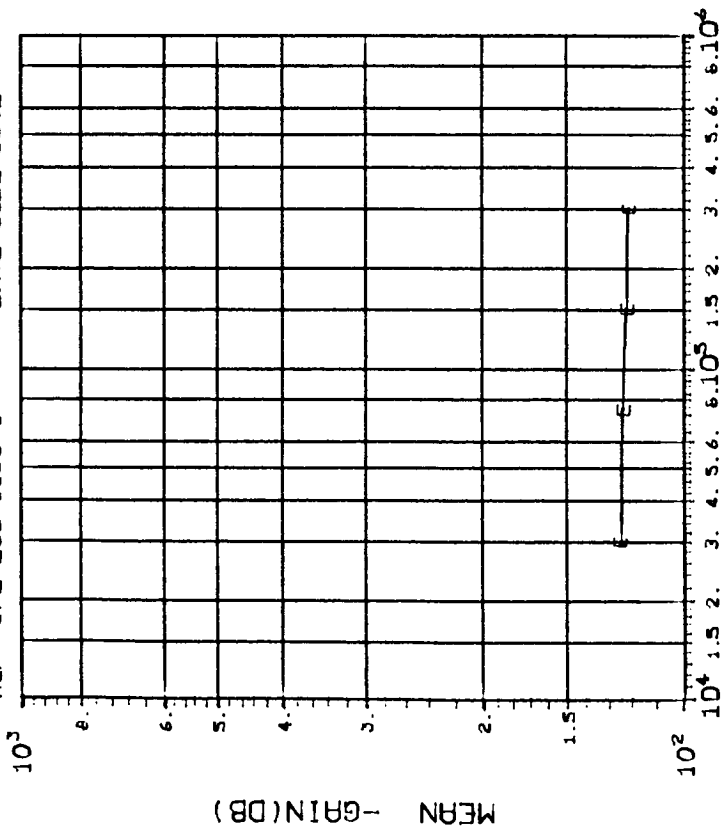


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.5E4 1.5E5 3.0E5
	.8353 .6718 .9452 1.217

INITIAL MEAN VALUE -GAIN(DB) = 1.26X10⁺²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI

TEST DATE 09-05-85

REF: JPL LOG 1130-2

DATE CODE 8342

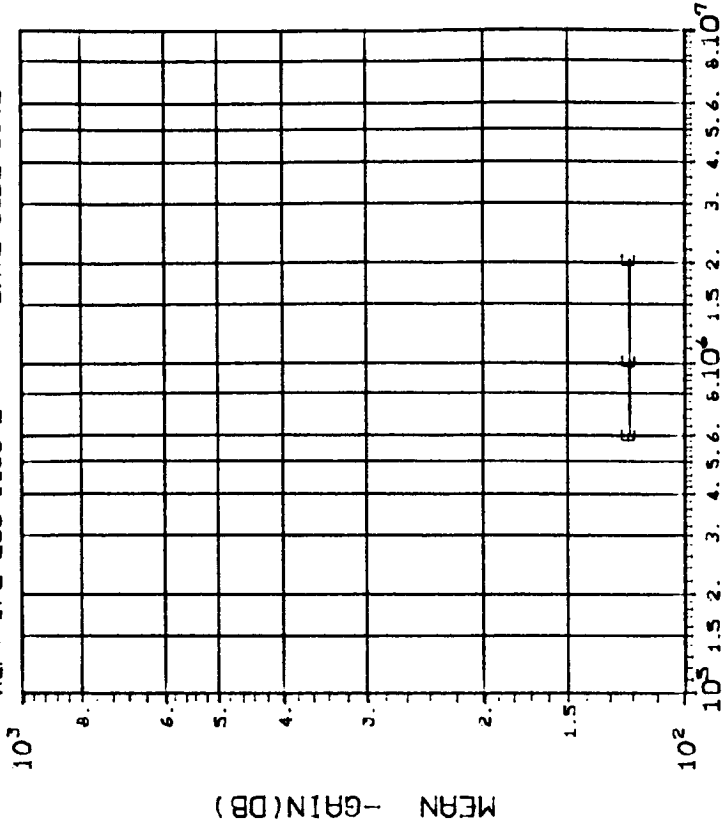
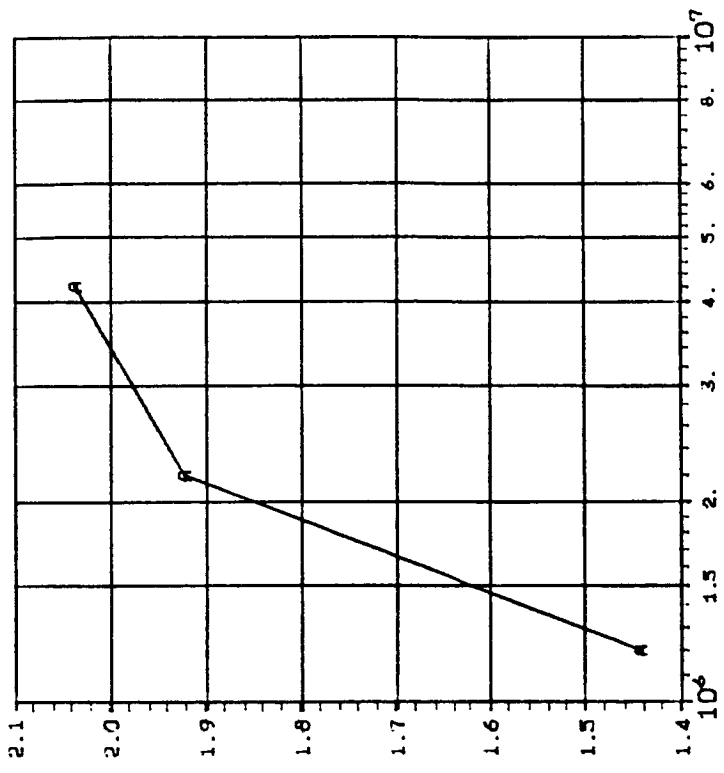


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	6.0E5 1.0E6 2.0E6
	1.150 1.036 .5787

INITIAL MEAN VALUE -GAIN(DB) = 1.26X10⁺²

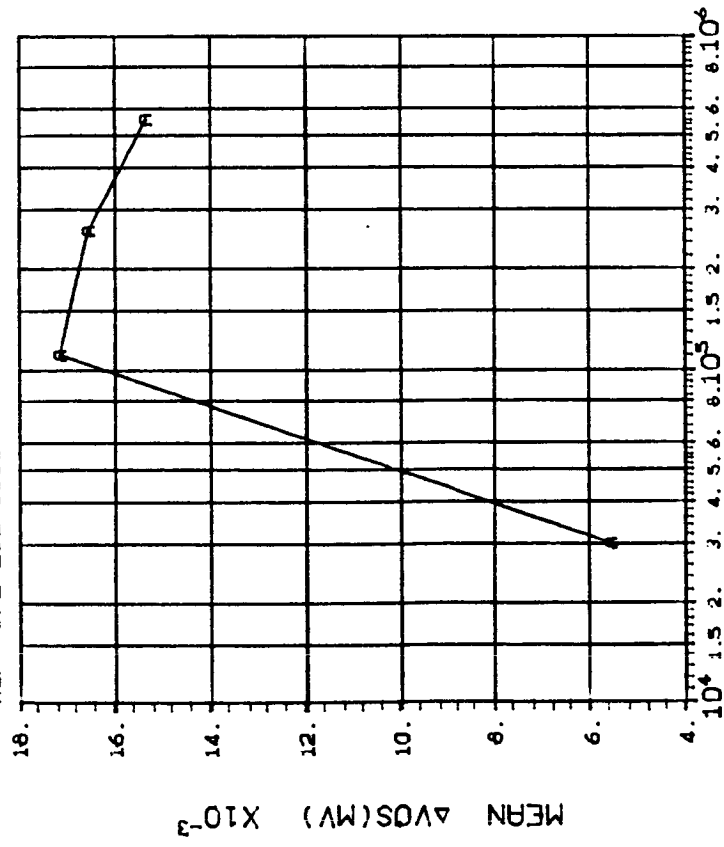
DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (1)AVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	1.2E6 2.2E6 4.2E6
	.0079 .0046 .0086

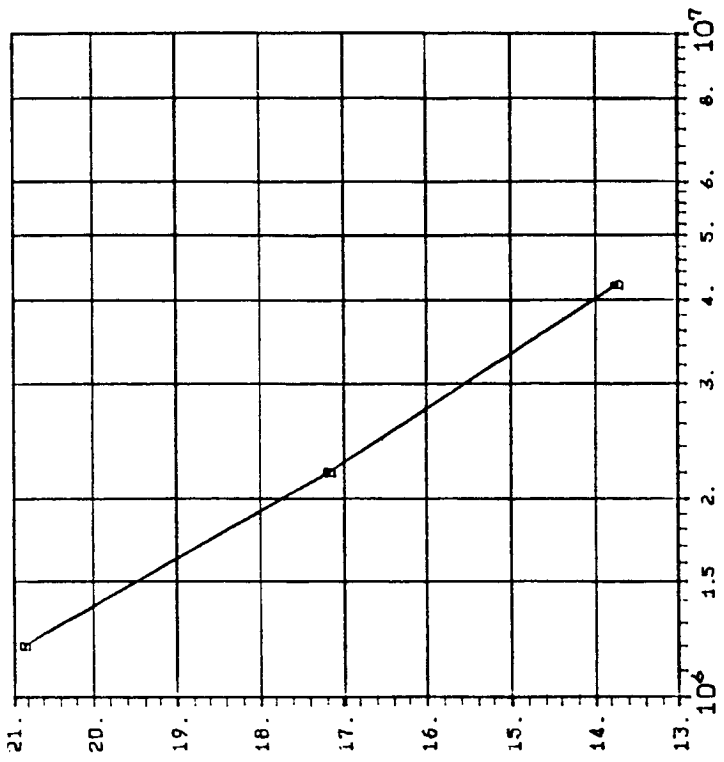
DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (1)AVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 1.1E5 2.6E5 5.6E5
	.0018 .0059 .0038 .0057

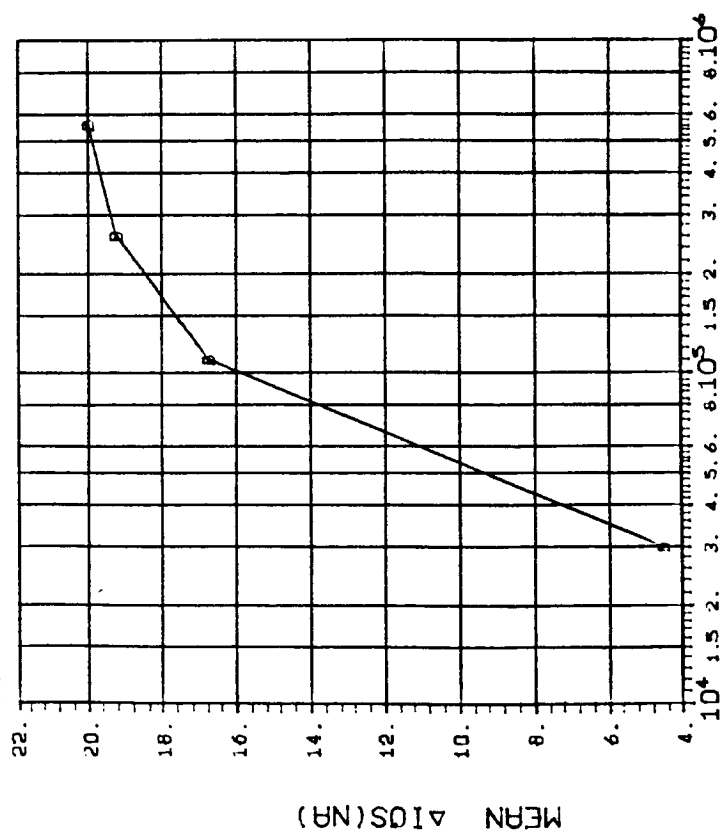
DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	1.2E6 2.2E6 4.2E6
	18.71 15.61 12.03

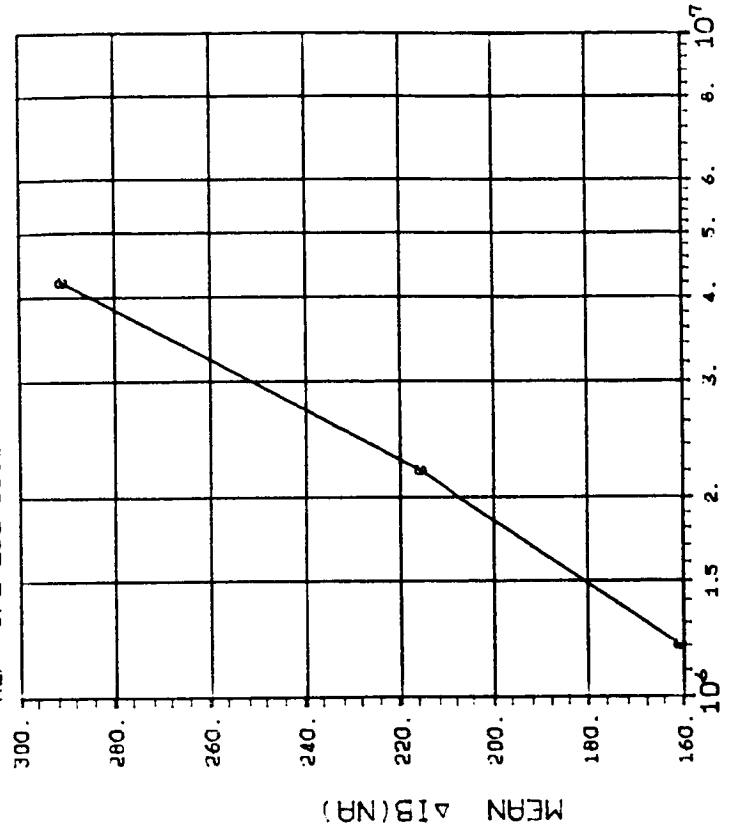
DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 1.1E5 2.6E5 5.6E5
	2.302 14.97 17.79 17.62

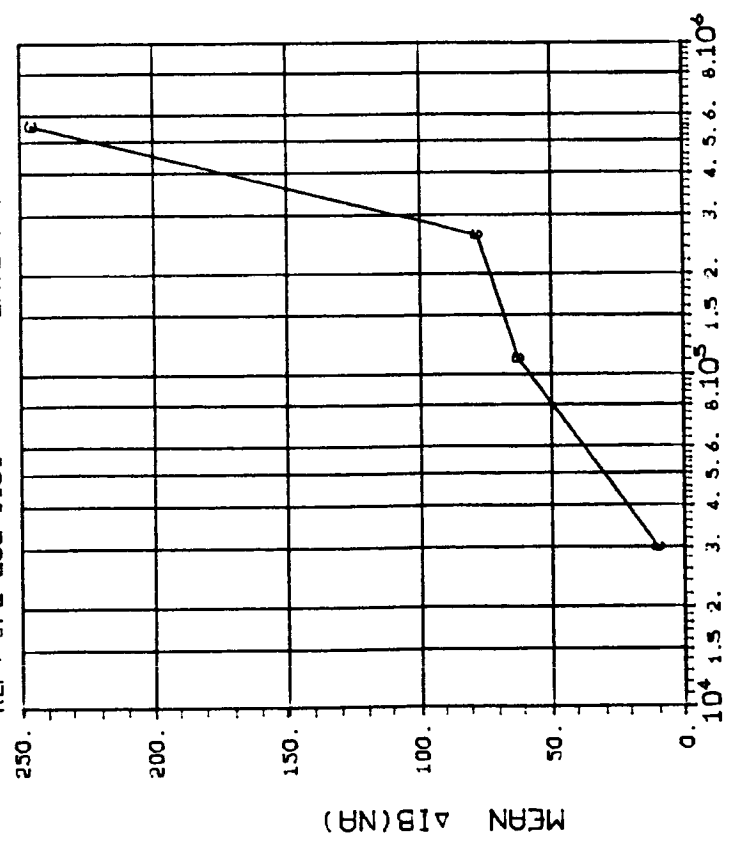
DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	1.2E6 2.2E6 4.2E6
	89.86 90.76 89.64

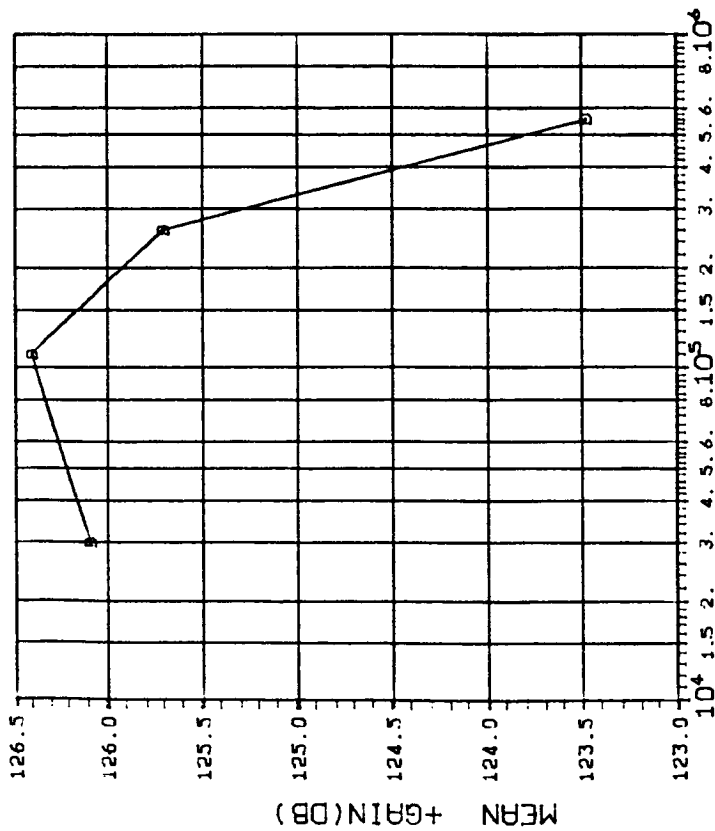
DEVICE TYPE: OP-27 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 1.1E5 2.6E5 5.6E5
	11.15 90.79 87.73 304.4

DEVICE TYPE: OP-27 OP AMP
 MFG: PM1 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342

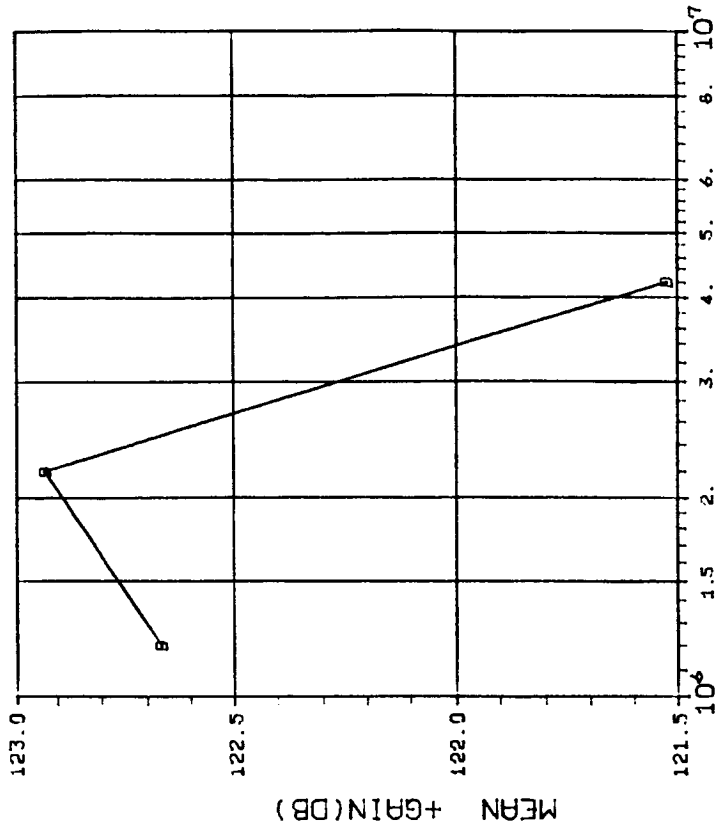


DOSE, rads(Si) Co⁶⁰ Gammas
 (4)+GAIN IN DB(10MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
1L	3.0E4 1.1E5 2.6E5 5.6E5
D	10.0 1.249 .8668 .7082 1.751

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10⁺²

DEVICE TYPE: OP-27 OP AMP
 MFG: PM1 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas
 (4)+GAIN IN DB(10MA LOAD,+10V) : VS DOSE

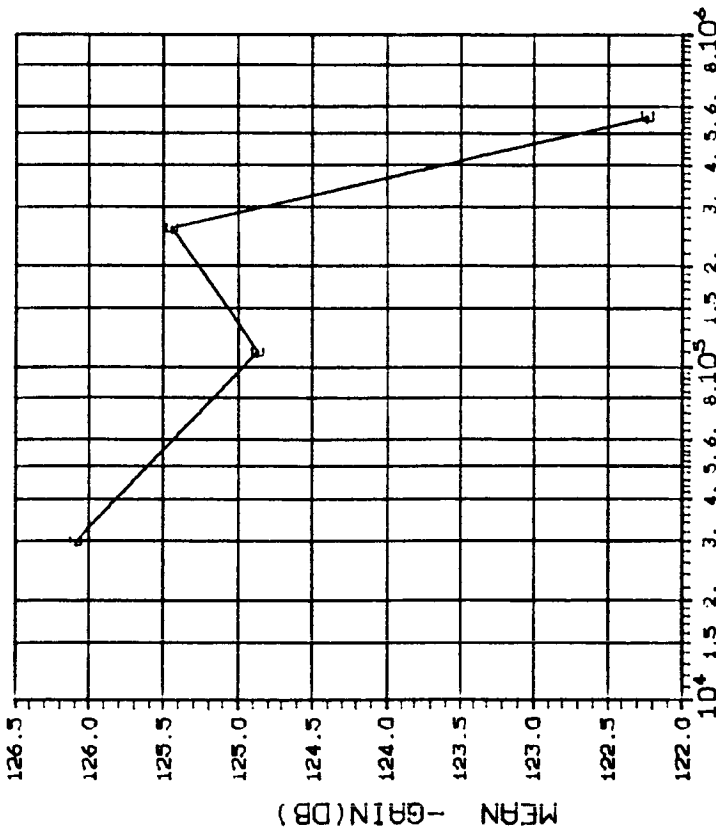
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
1L	1.2E6 2.2E6 4.2E6
D	10.0 1.108 1.266 .5603

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10⁺²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gamma

(S)-GAIN IN DB(10MA LOAD,-10V): VS DOSE

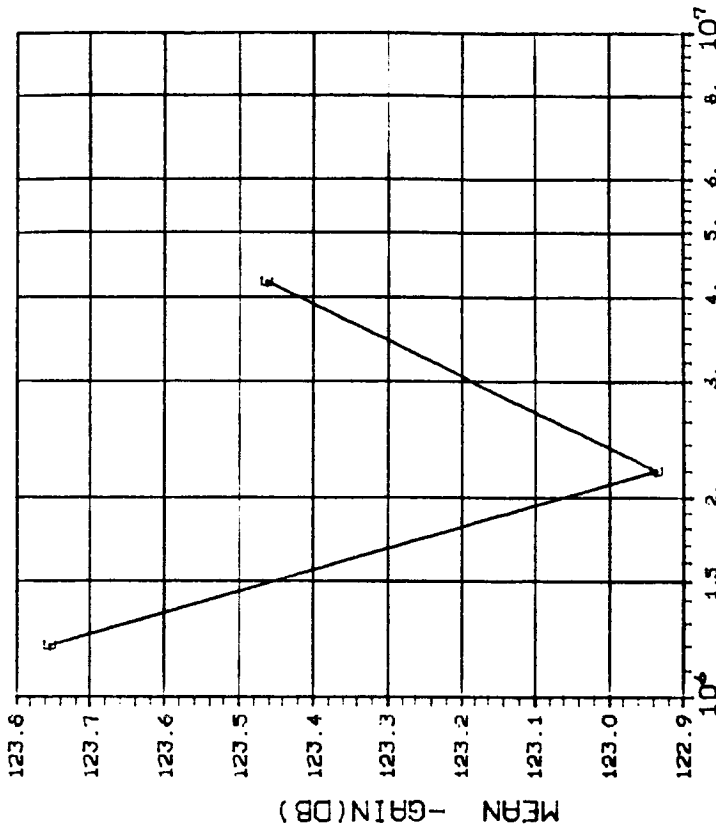
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	1.249 1.620 1.557 1.309

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gamma

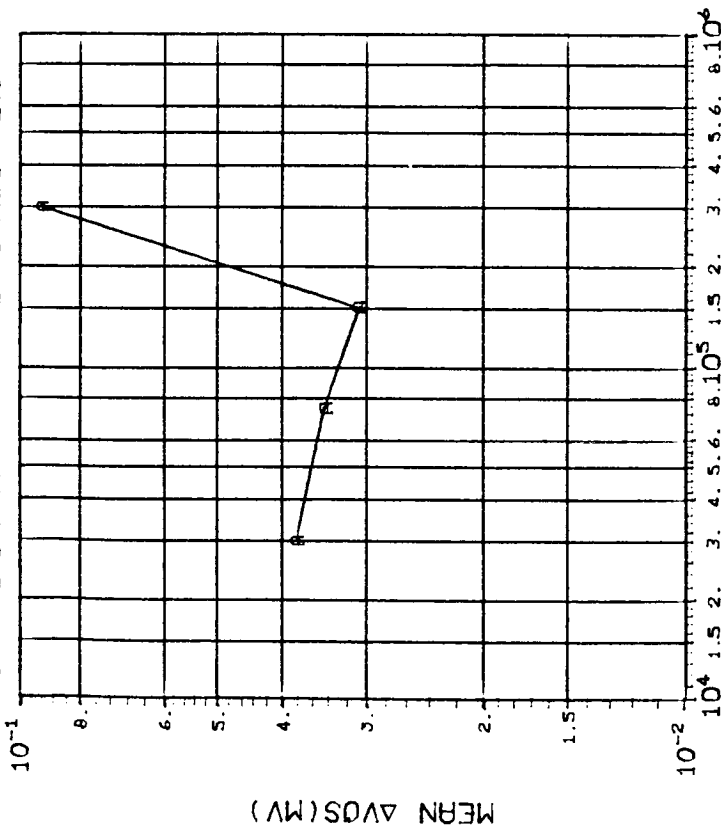
(S)-GAIN IN DB(10MA LOAD,-10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	1.2E6 2.2E6 4.2E6

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1185-1 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas

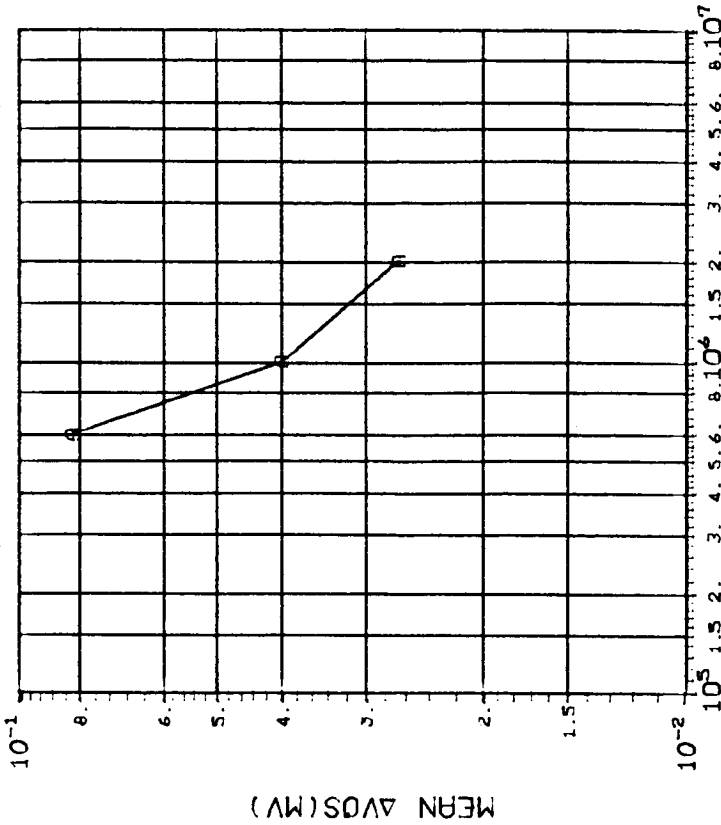
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0159 .0164 .0667 .0595

INITIAL MEAN VALUE VOS(MV) = 3.33X10⁻²

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1185-2 DATE CODE T8230



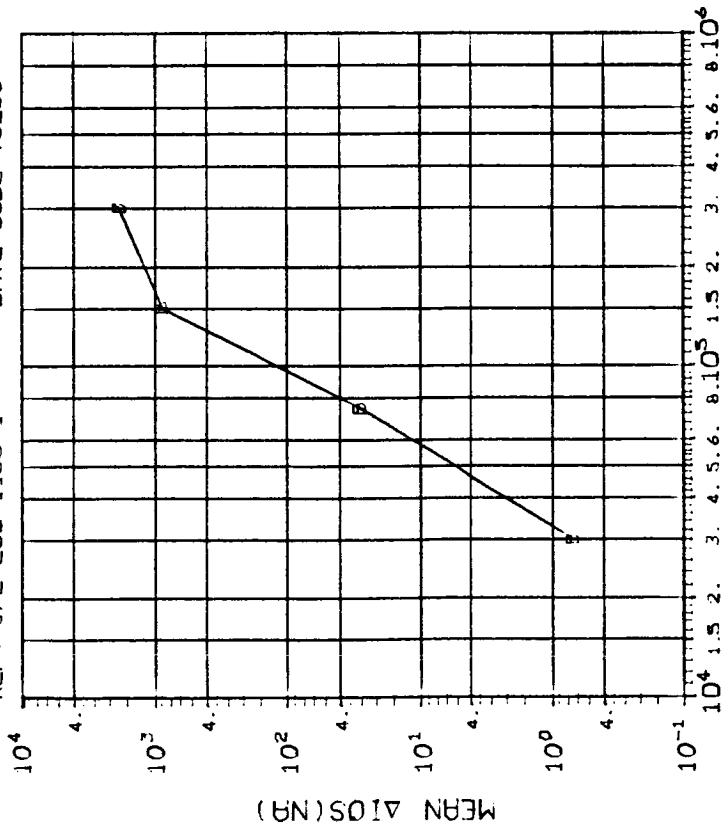
DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E5 1.0E6 2.0E6
	.0520 .0601 .0577

INITIAL MEAN VALUE VOS(MV) = 3.33X10⁻²

DEVICE TYPE: OP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1185-1 DATE CODE T8230

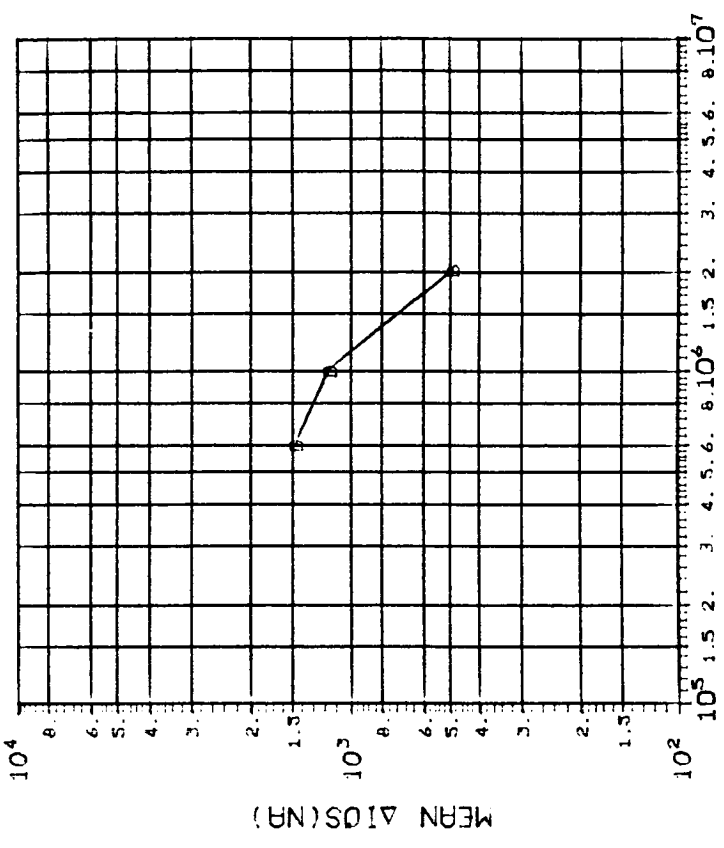


DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	6.301 38.09 1046. 2092.

INITIAL MEAN VALUE IOS(NA) = 3.92X10⁻³

DEVICE TYPE: OP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1185-2 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas
 (2)ΔIOS(NA): VS DOSE

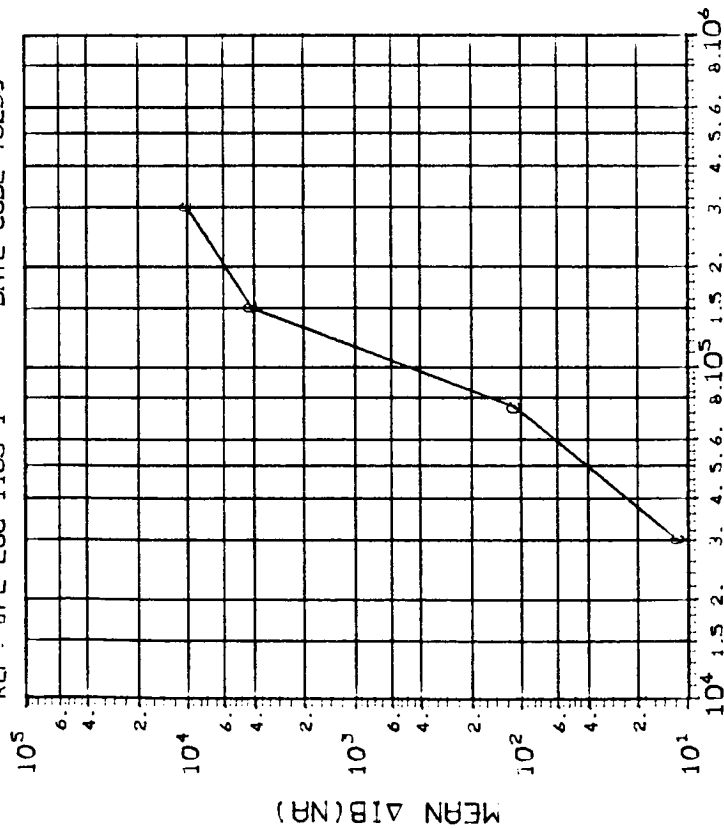
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E5 1.0E6 2.0E6
	1486. 1109. 418.4

INITIAL MEAN VALUE IOS(NA) = 3.92X10⁻³

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-1 DATE CODE T8230



MEAN ΔIB(NA)

DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

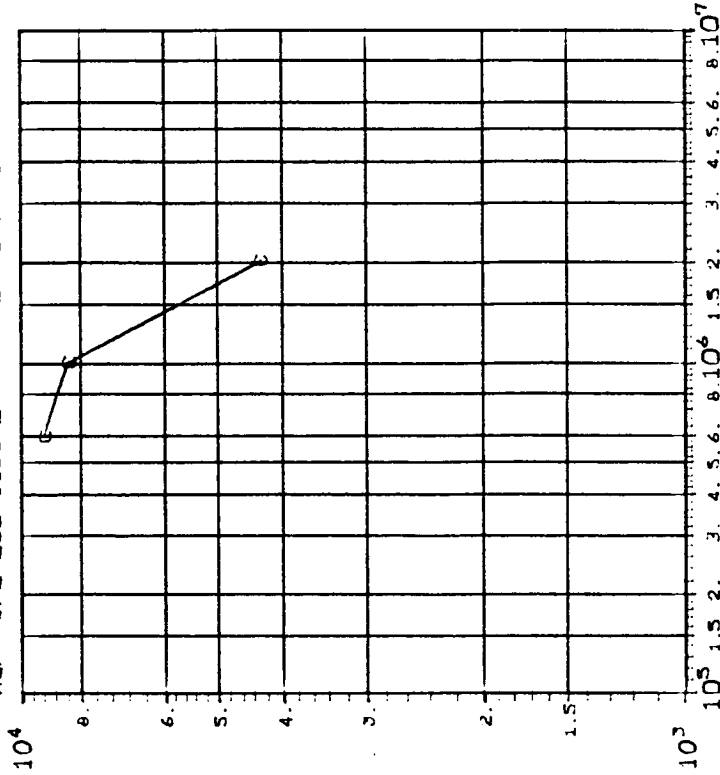
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
	3.0E4 7.5E4 1.5E5 3.0E5
C	4.917 190.3 6246. *****

INITIAL MEAN VALUE IB(NA) = 1.34X10⁴

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-2 DATE CODE T8230



MEAN ΔIB(NA)

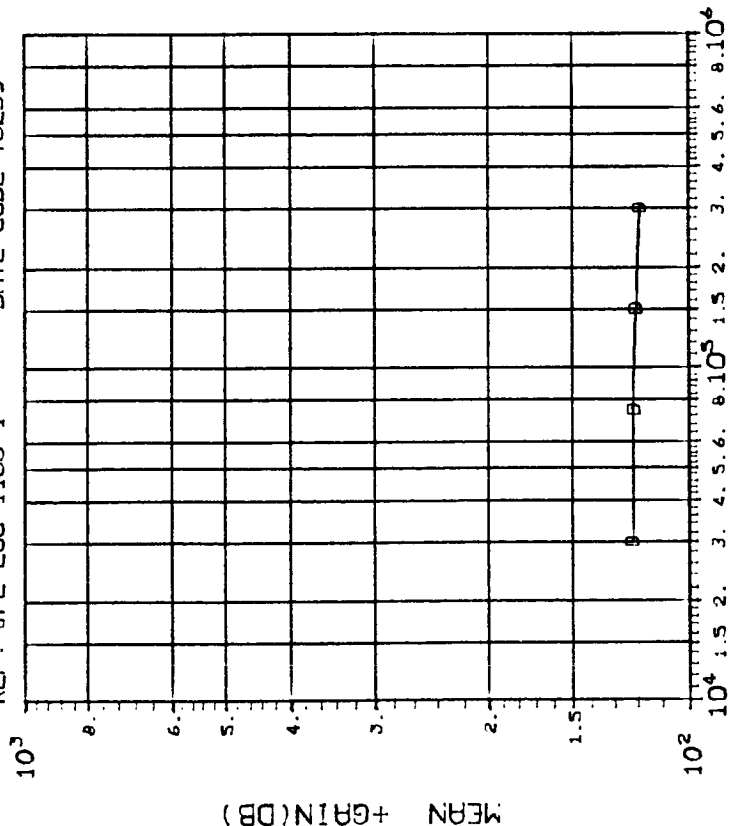
DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
	6.0E5 1.0E6 2.0E6
C	***** 8571. 3734.

INITIAL MEAN VALUE IB(NA) = 1.34X10⁴

DEVICE TYPE: OP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1185-1 DATE CODE T8230

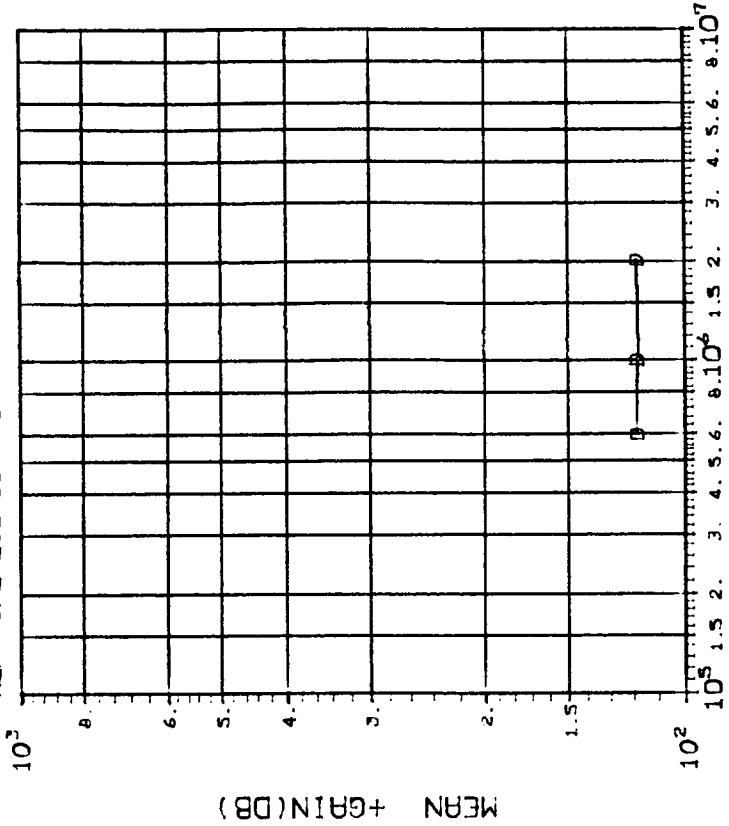


DOSE, rads(Si) Co⁶⁰ Gammas
 (4)+GAIN IN DB(10MA LOAD, +10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	3.0E4 7.5E4 1.5E5 3.0E5
	.8333 .8134 1.210 2.640

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10²

DEVICE TYPE: OP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1185-2 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas
 (4)+GAIN IN DB(10MA LOAD, +10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	6.0E5 1.0E6 2.0E6
	2.489 2.434 1.729

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10²

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-1 DATE CODE T8230

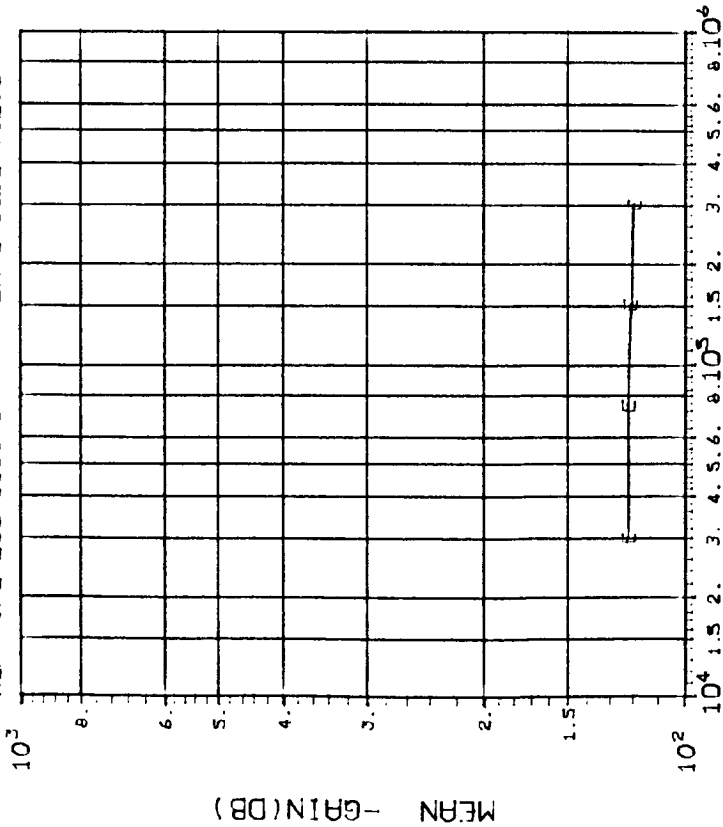


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.3E4 1.5E5 3.0E5
	.5857 .7093 1.060 4.388

INITIAL MEAN VALUE -GAIN(DB) = 1.22X10²

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-2 DATE CODE T8230

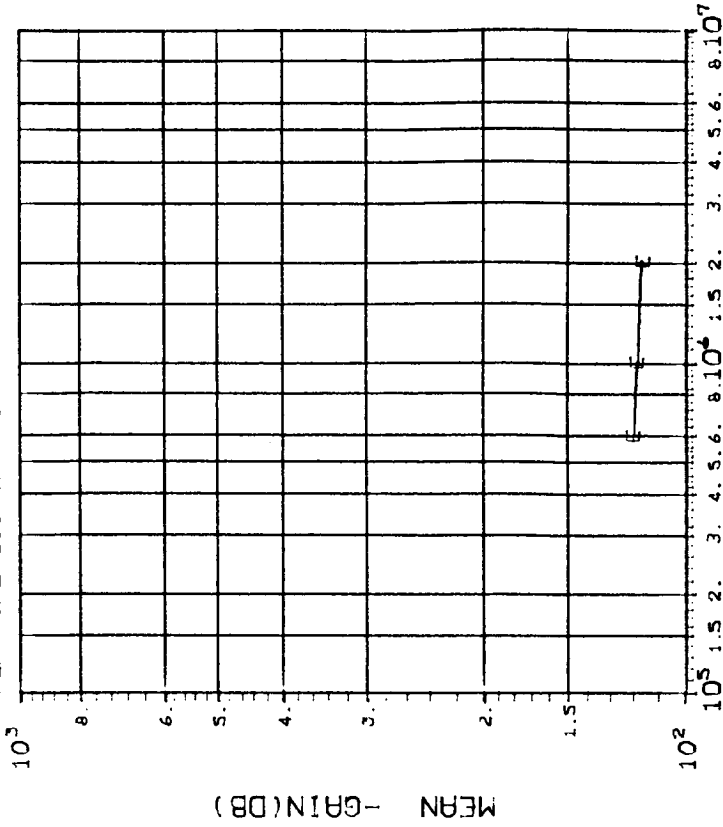
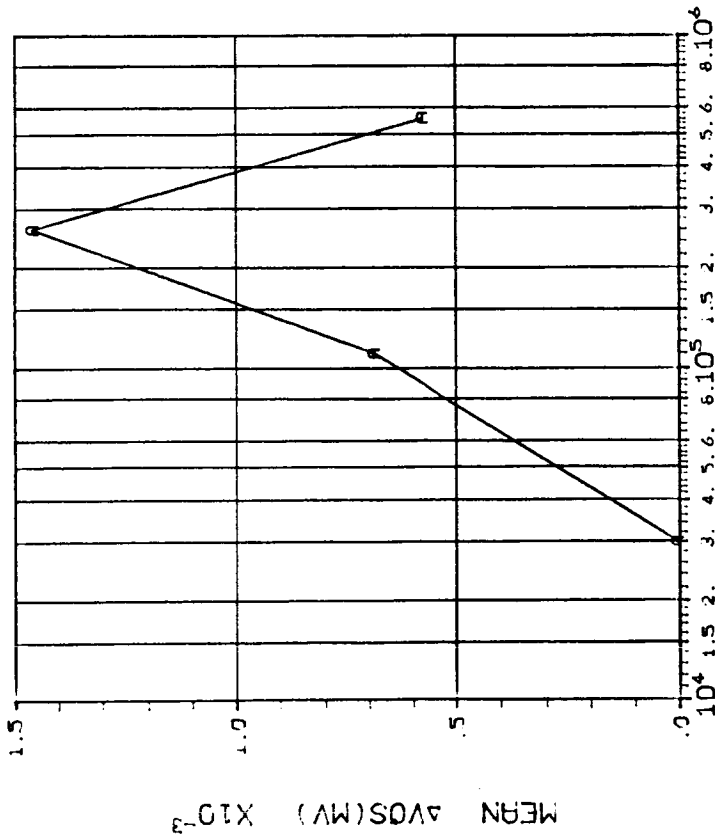


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	6.0E3 1.0E6 2.0E6
	3.902 3.979 3.319

INITIAL MEAN VALUE -GAIN(DB) = 1.22X10²

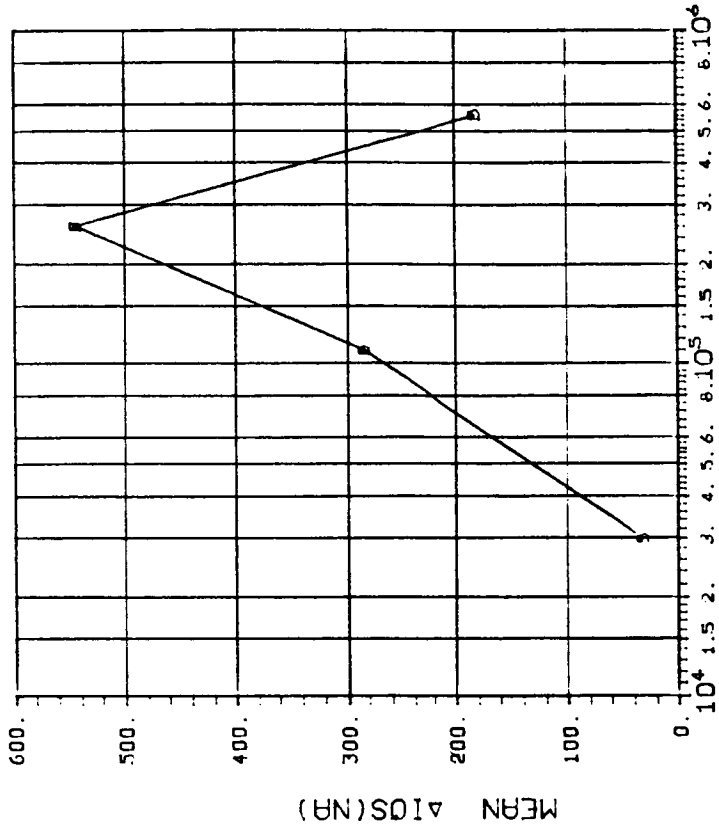
DEVICE TYPE: UP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1186 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas
 (1)AVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 1.1E5 2.6E5 5.6E5
	.0077 .4121 .8693 .2624

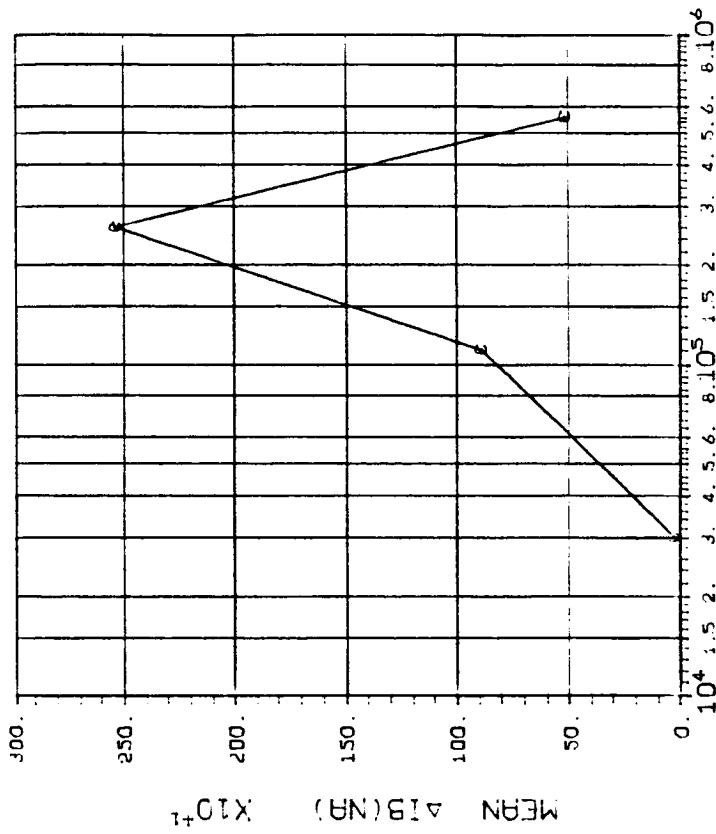
DEVICE TYPE: UP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1186 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas
 (2)AVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 1.1E5 2.6E5 5.6E5
	56.44 291.7 473.8 279.0

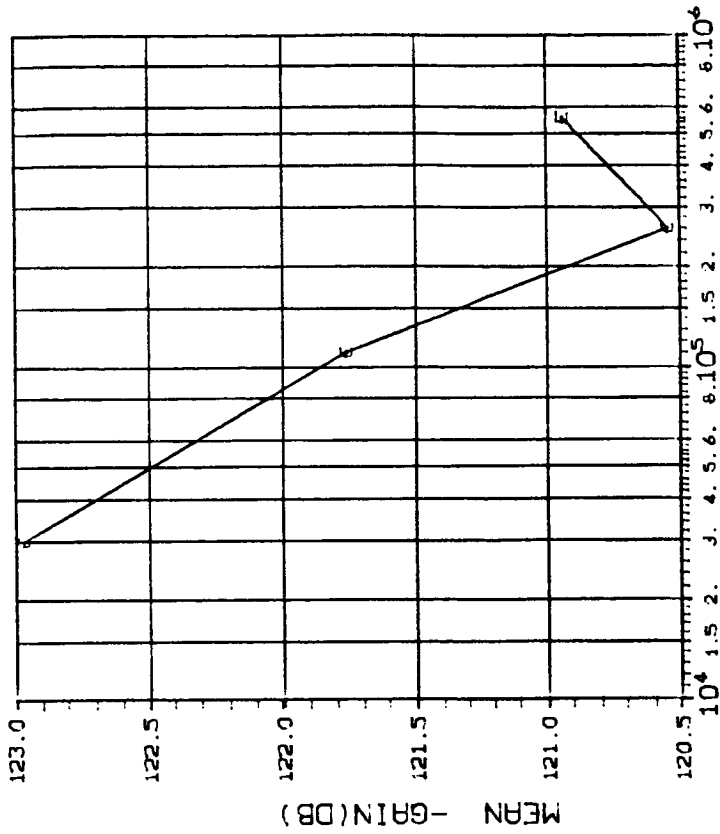
DEVICE TYPE: JP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1186 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIβ(NR): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 1.1E5 2.6E5 5.6E5
	66.05 796.4 1989. 530.9

DEVICE TYPE: OP-27 OP AMP
MFG: RAY 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1186 DATE CODE T8230

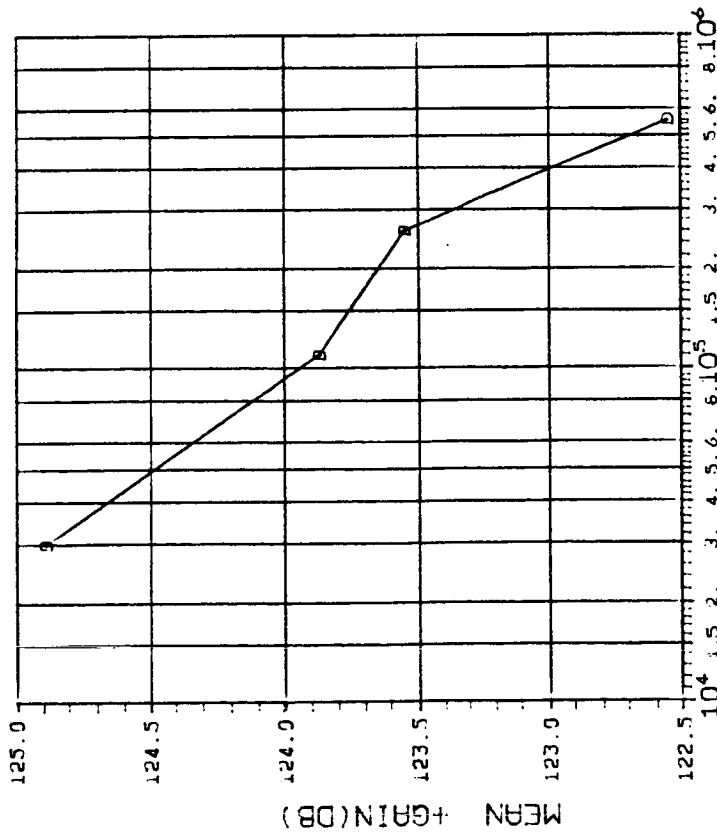


DOSE, rads(Si) Co⁶⁰ Gammas
(5) -GAIN IN DB(10MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	10.0 1.550 .9057 .5012 .6859

INITIAL MEAN VALUE -GAIN(DB) = 1.23X10¹²

DEVICE TYPE: OP-27 OP AMP
MFG: RAY 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1186 DATE CODE T8230

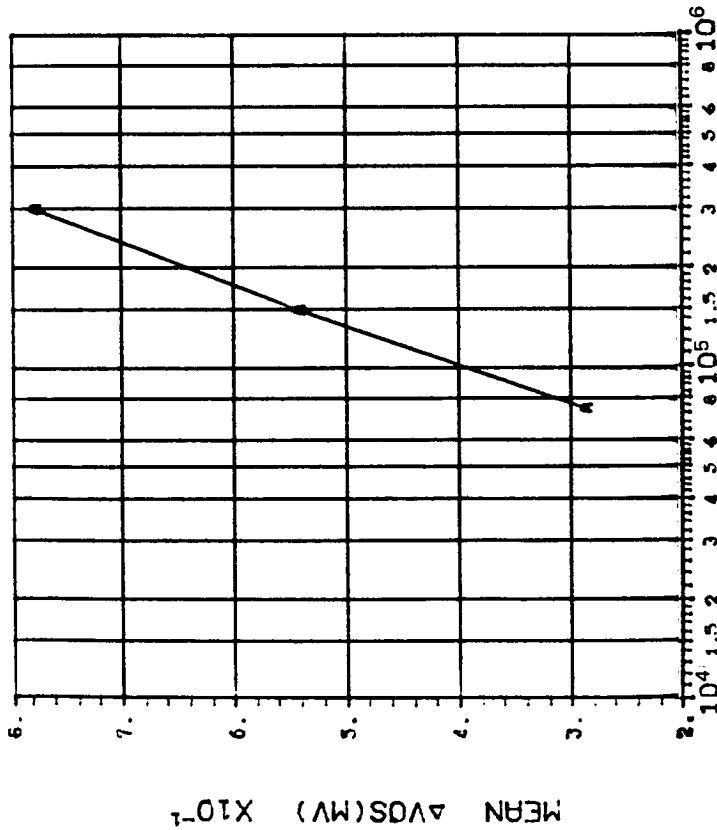


DOSE, rads(Si) Co⁶⁰ Gammas
(4) +GAIN IN DB(10MA LOAD, +10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	10.0 1.786 2.347 3.184 3.130

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10¹²

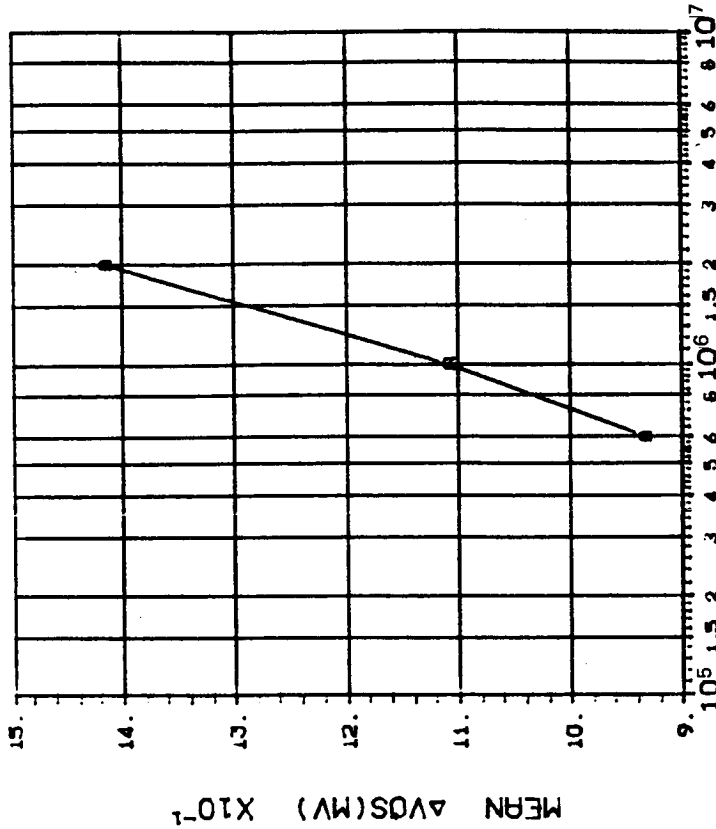
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-1 DATE CODE 116307



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.2663 .4964 .7495

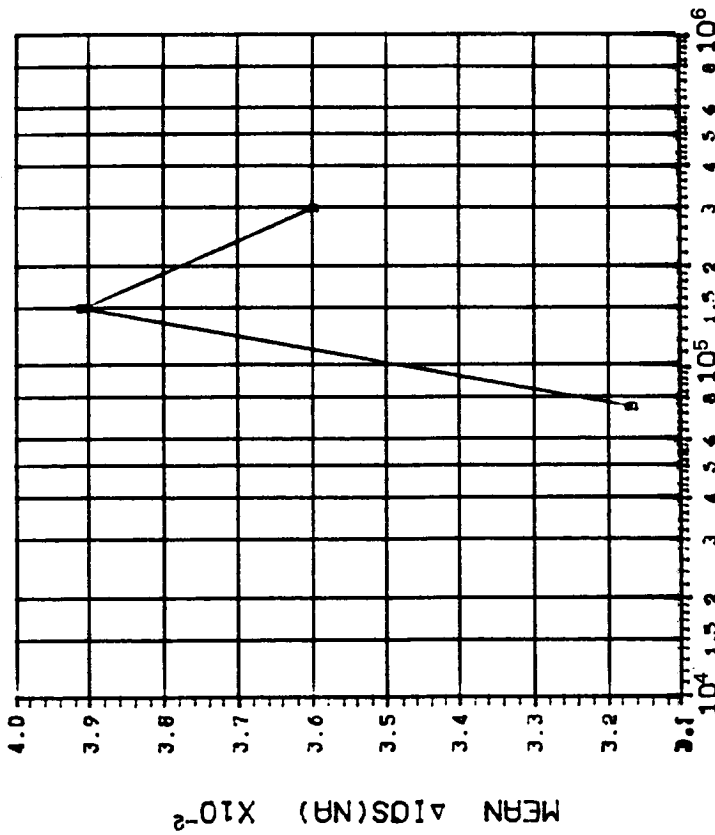
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-2 DATE CODE 116307



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.9796 1.067 1.208

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-1 DATE CODE 116307

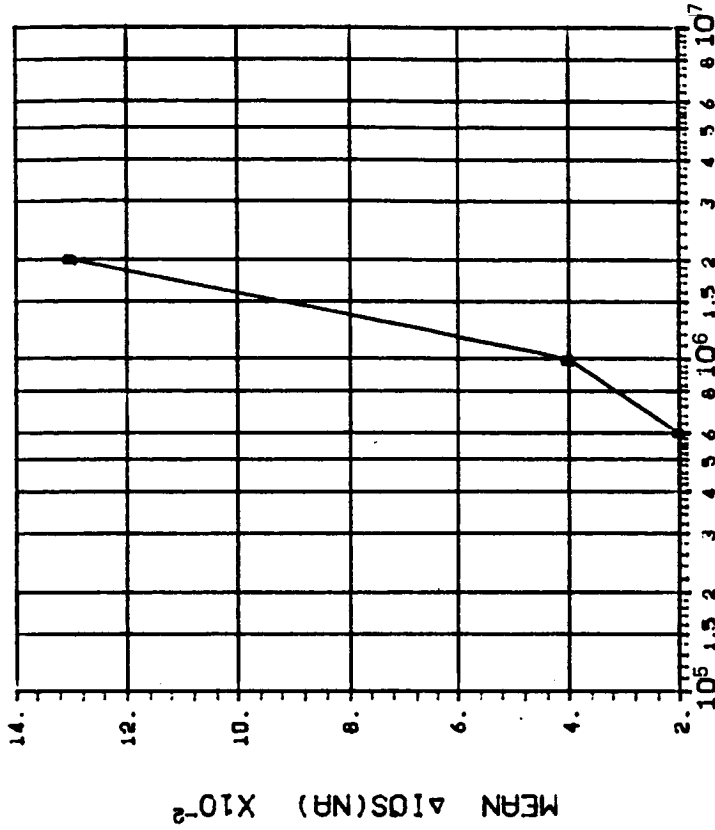


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.0421 .0672 .0596

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-2 DATE CODE 116307

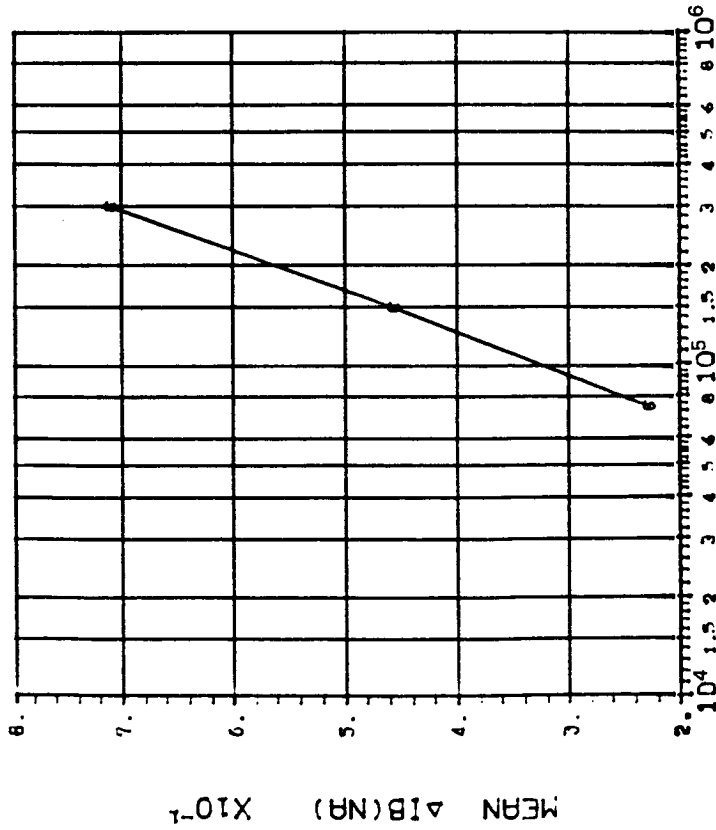


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.0139 .0493 .2236

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-1 DATE CODE 116307

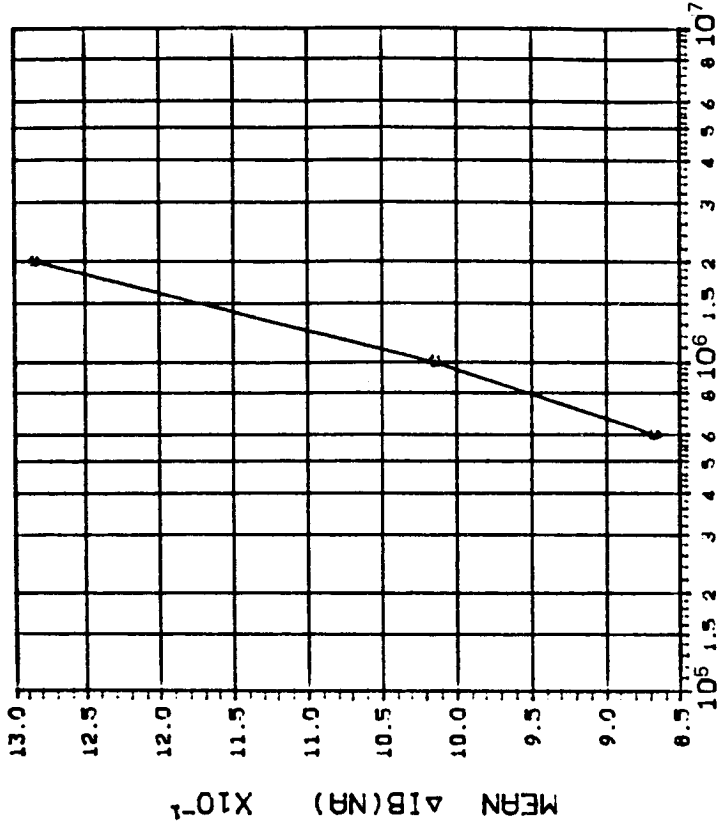


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.2569 .4343 .7461

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-2 DATE CODE 116307



DOSE, rads(Si) 2.5 MeV electrons

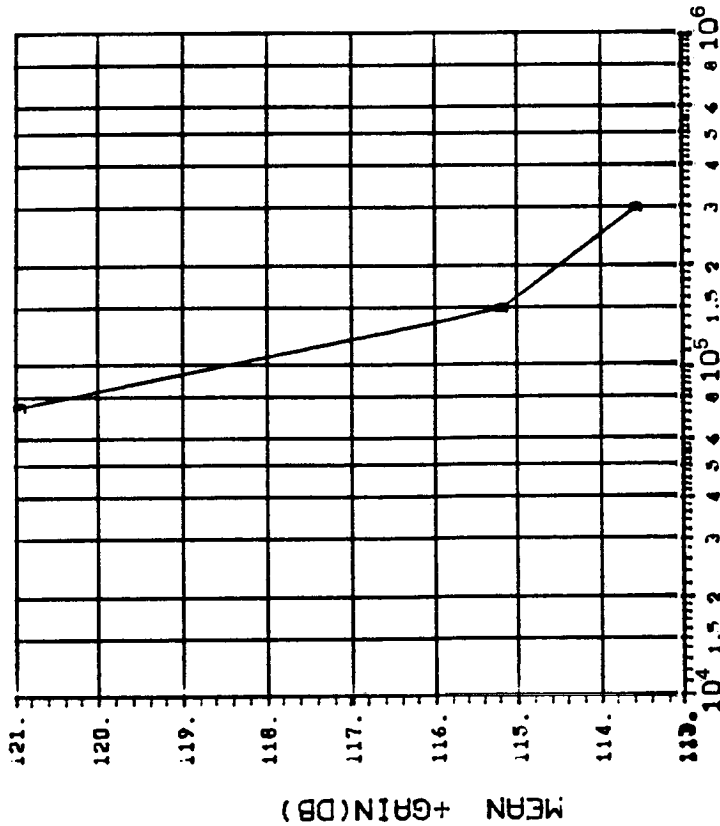
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	.9561 1.060 1.275

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

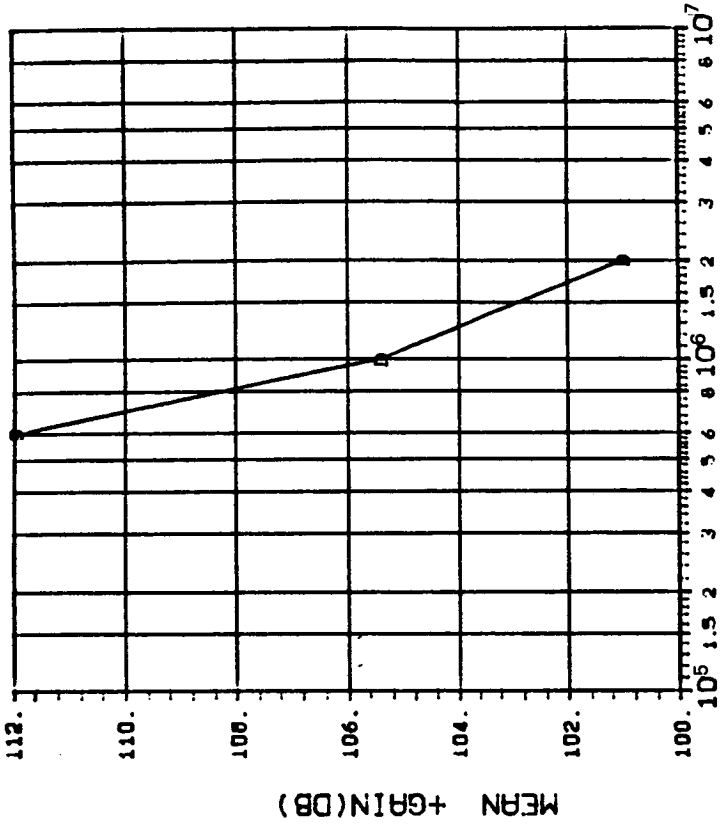
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, kilorads(Si)
D 5.00	75 150 300
	.6659 5.564 5.050

INITIAL MEAN VALUE +GAIN(DB) = 1.29X10¹²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-2 DATE CODE 118307



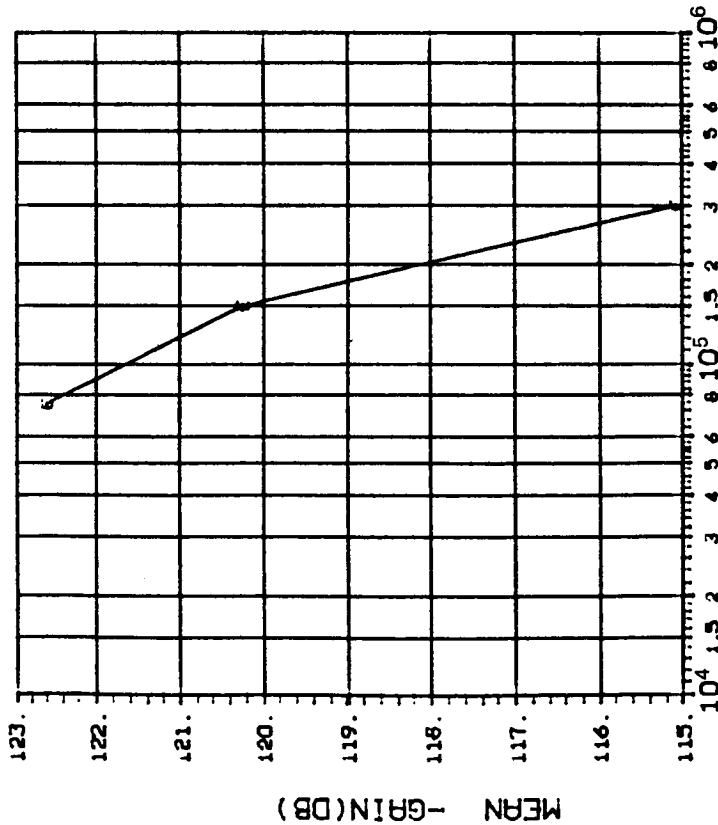
DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, kilorads(Si)
D 5.00	600 1000 2000
	9.947 4.688 4.290

INITIAL MEAN VALUE +GAIN(DB) = 1.29X10¹²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-1 DATE CODE 118307



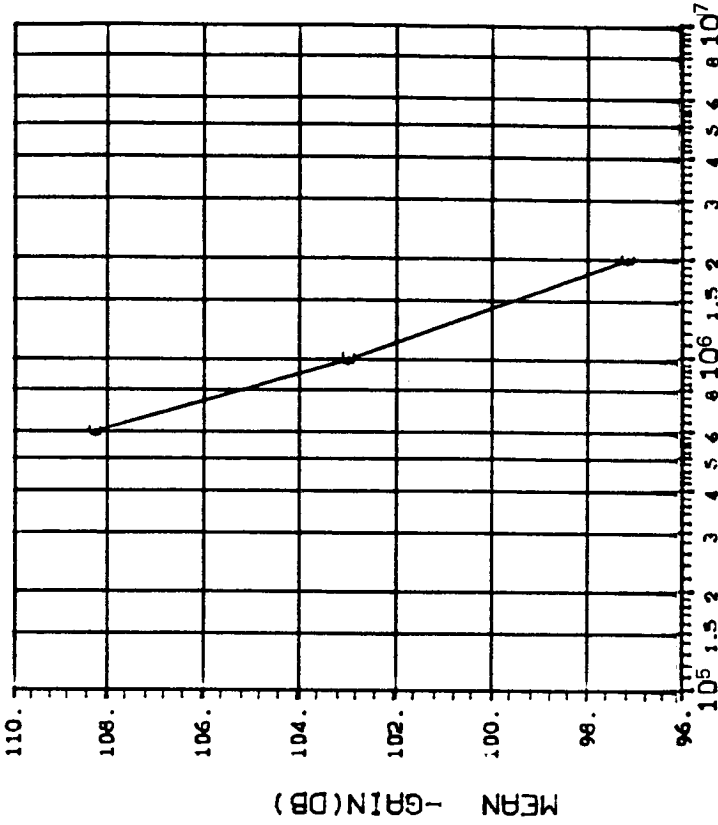
DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
1L (mA)	75 150 300
E	7.985 13.40 14.43

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 0999-2 DATE CODE 118307



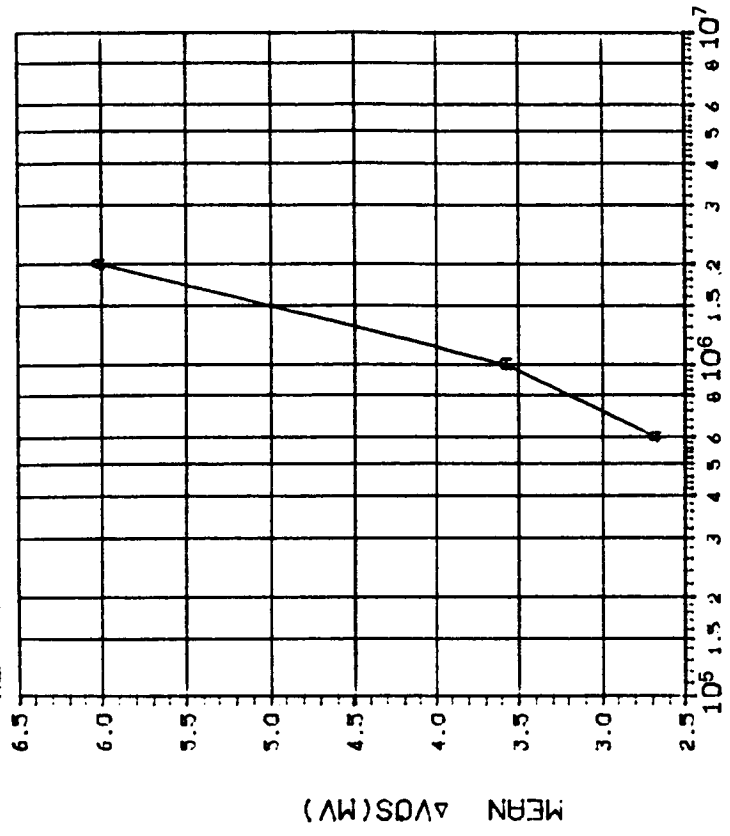
DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
1L (mA)	600 1000 2000
E	7.342 5.190 4.128

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 118307

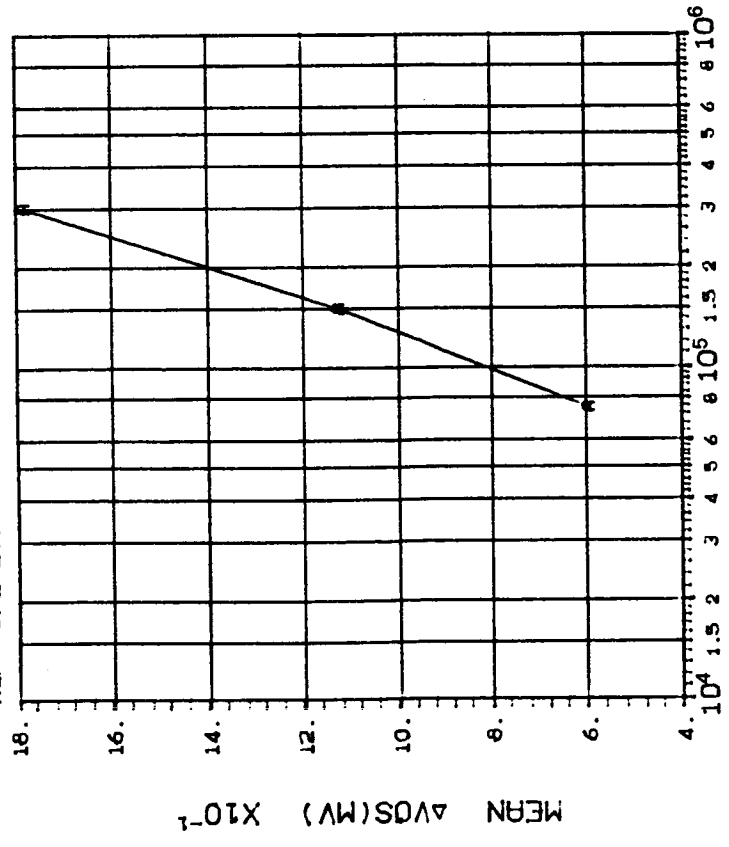


DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	1.784 3.474 6.331

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 118307

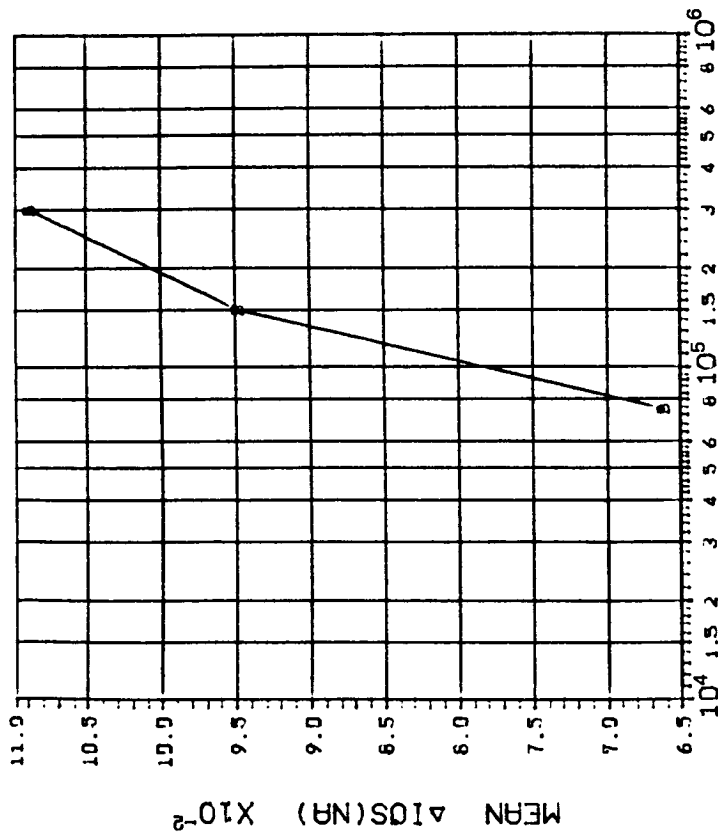


DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.5147 .8342 1.105

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 116307

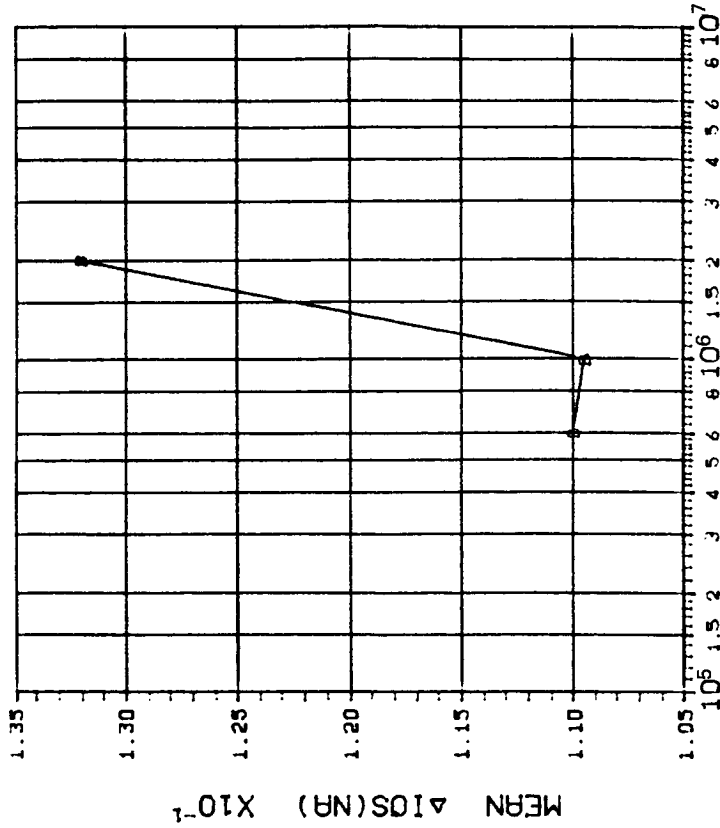


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.1146 .1721 .1988

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 116307

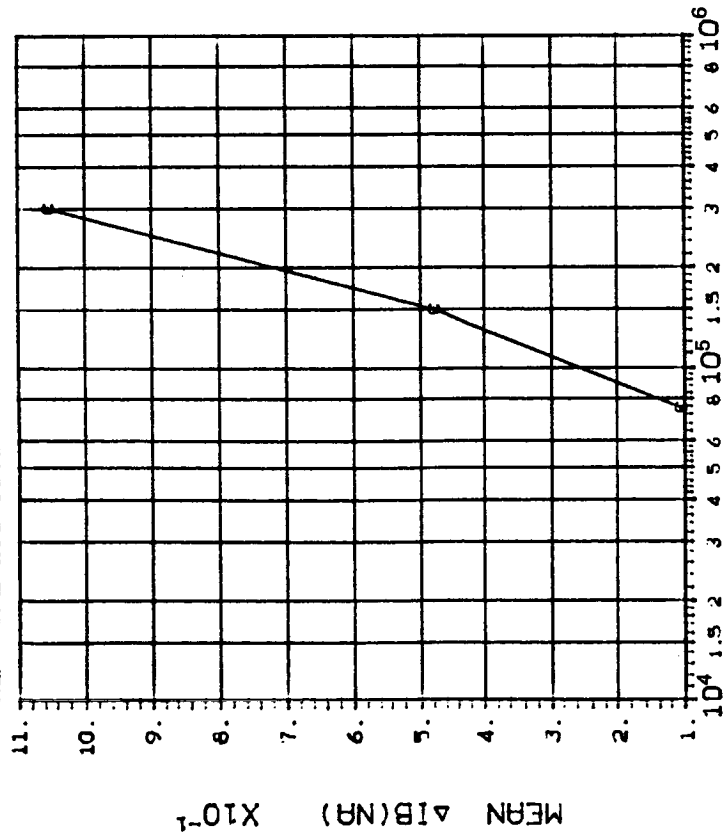


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.1755 .1426 .1721

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 118307

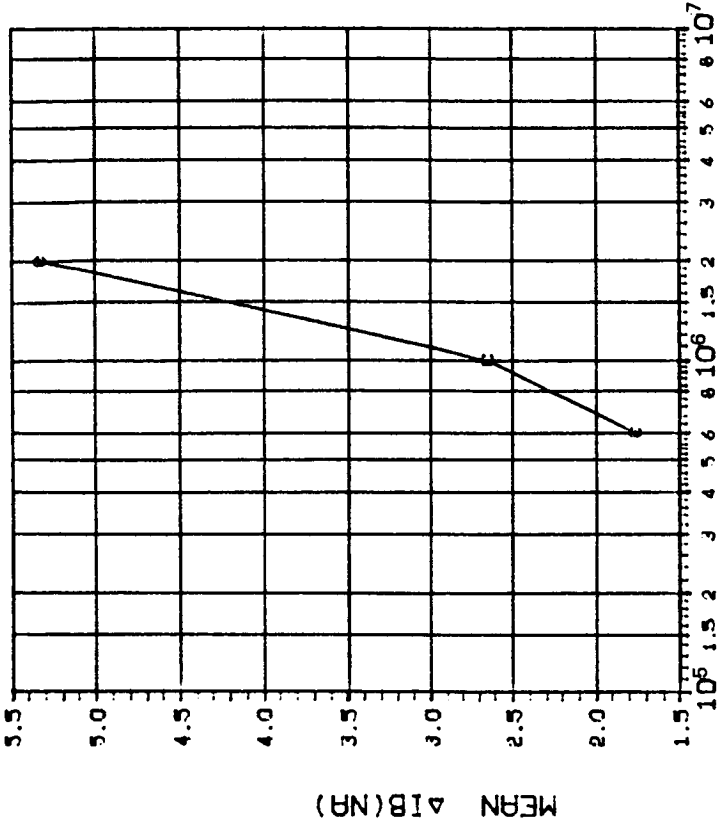


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.2287 .3364 .6470

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 118307

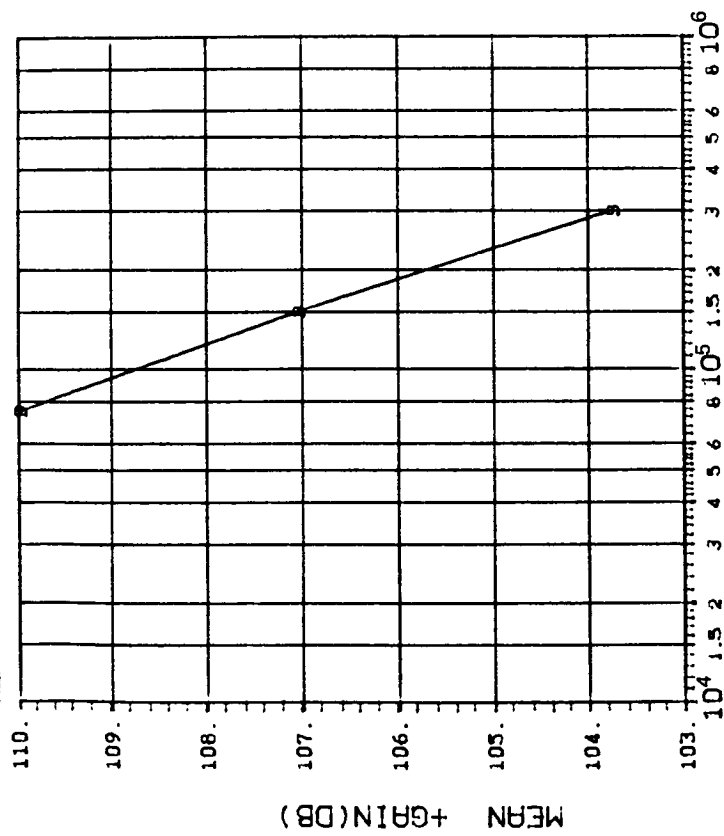


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	1.714 3.724 6.793

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 118307



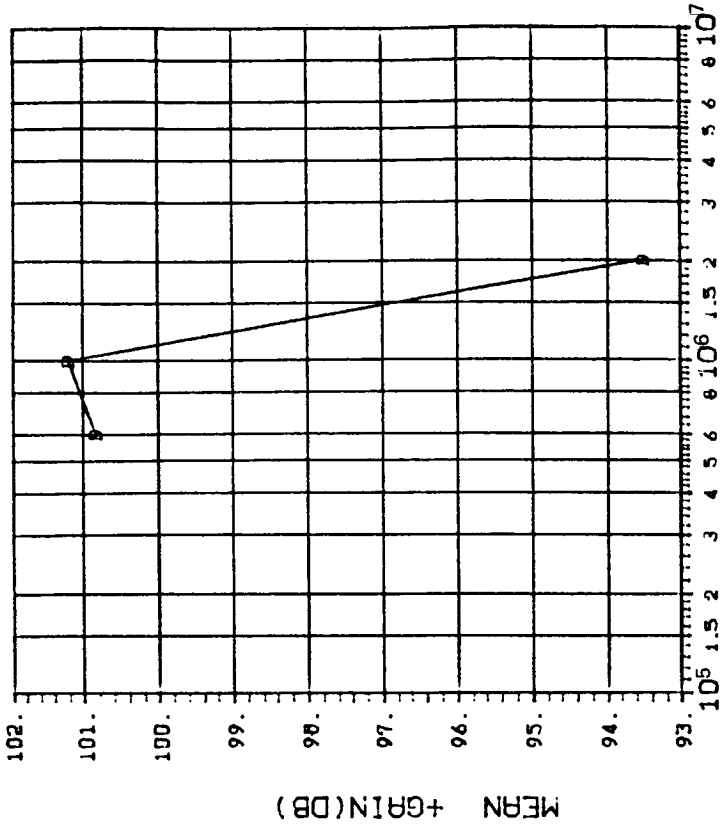
DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I_L (mA)	DOSE, kilorads(Si)
D 5.00	75 150 300
	6.755 7.667 7.515

INITIAL MEAN VALUE +GAIN(DB) = $1.14 \times 10^{+2}$

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 118307



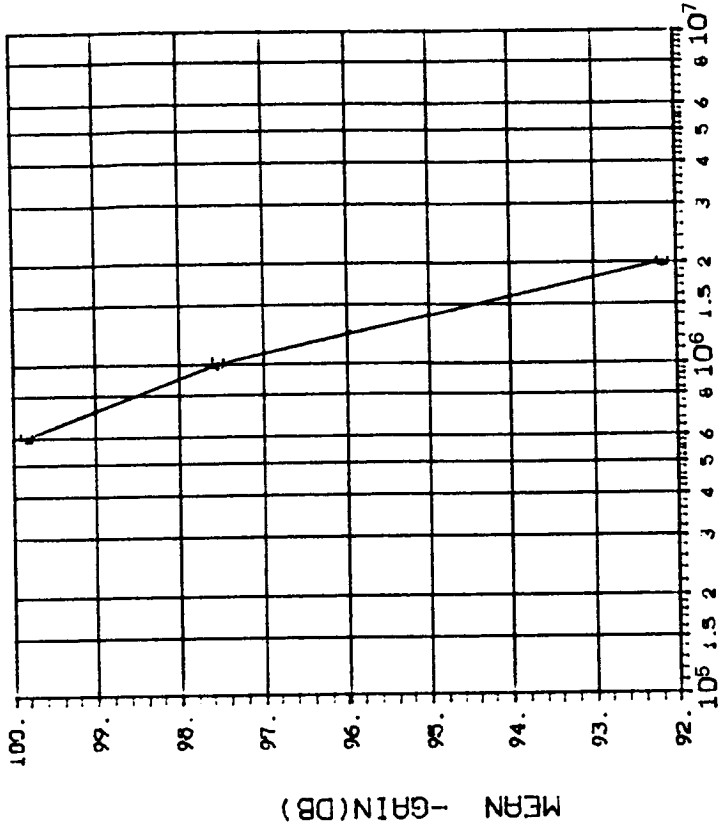
DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I_L (mA)	DOSE, kilorads(Si)
D 5.00	600 1000 2000
	7.523 12.22 9.540

INITIAL MEAN VALUE +GAIN(DB) = $1.14 \times 10^{+2}$

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 116307

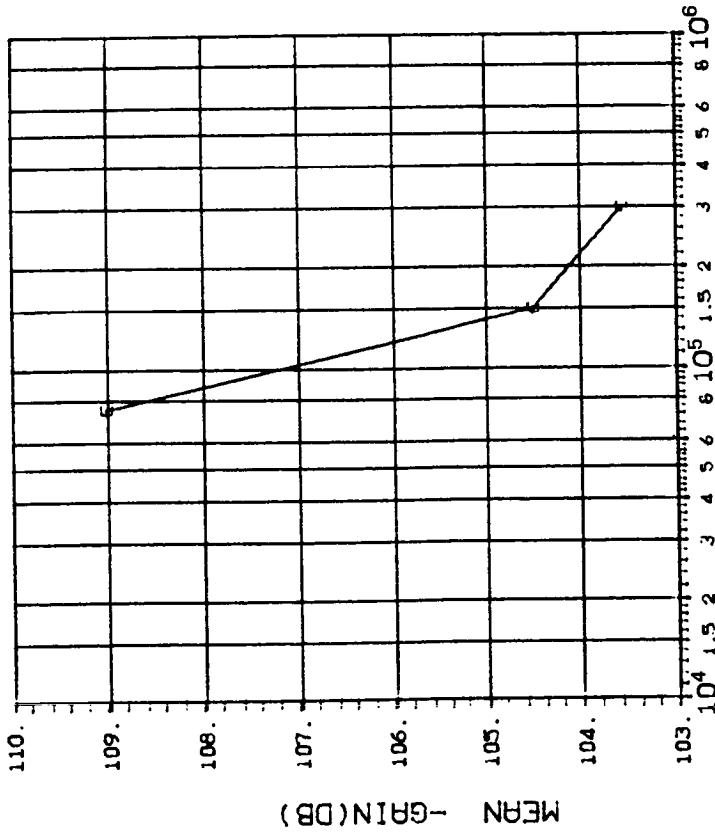


DOSE, rads(Si) 2.5 MeV electrons
 (5)--GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		6.596 10.99 10.17

INITIAL MEAN VALUE -GAIN(DB) = 1.15×10^{12}

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 116307

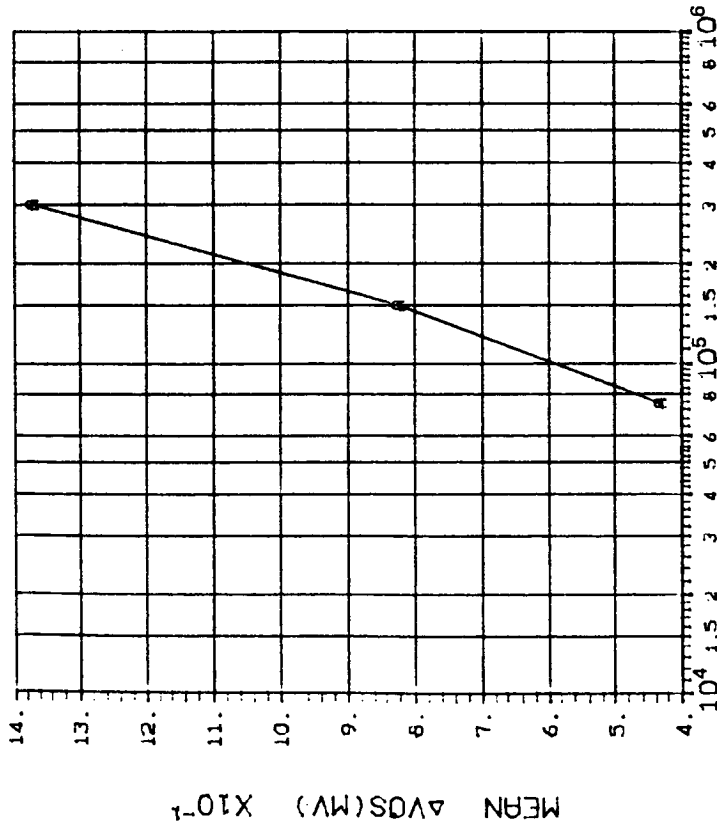


DOSE, rads(Si) 2.5 MeV electrons
 (5)--GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		6.165 6.627 13.12

INITIAL MEAN VALUE -GAIN(DB) = 1.15×10^{12}

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307

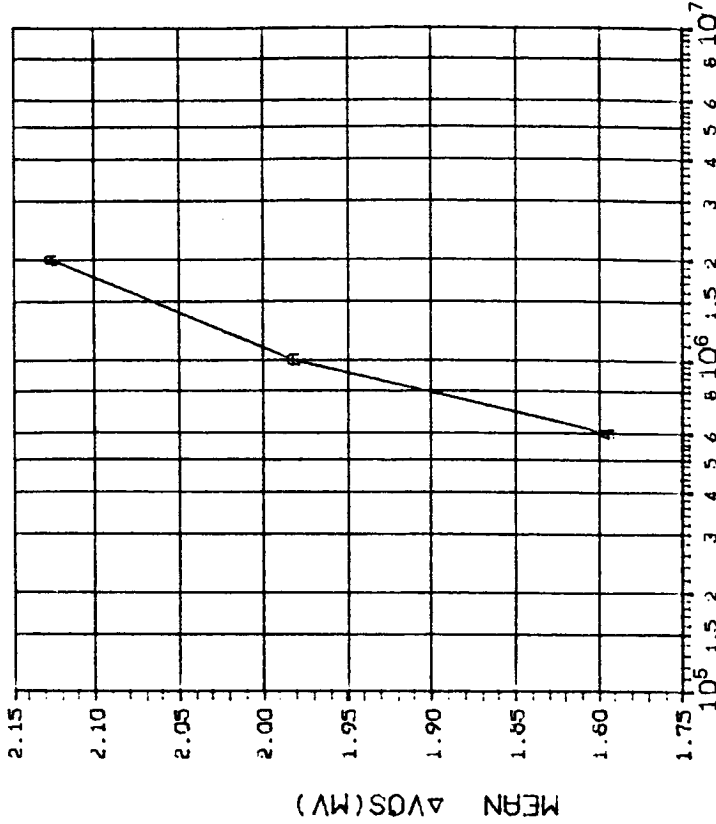


DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.2433 .3635 .5767

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307

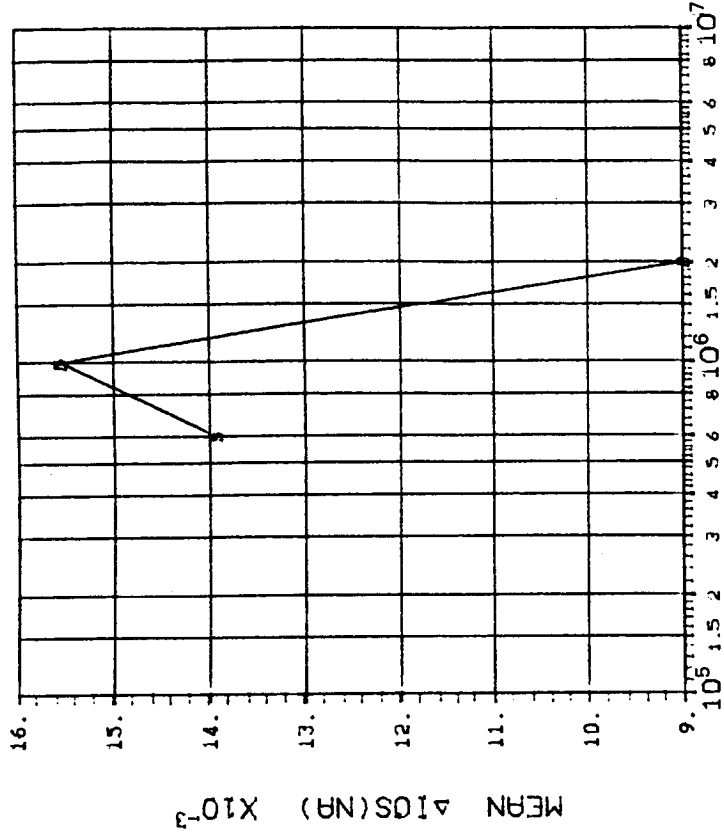


DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.7465 .6033 .6033

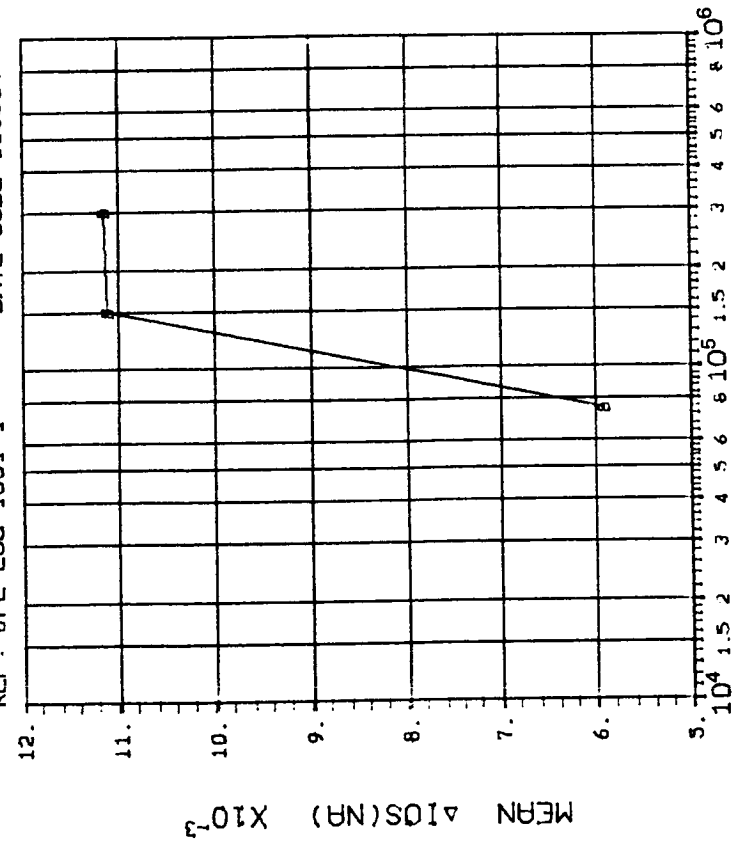
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.0021 .0080 .0071

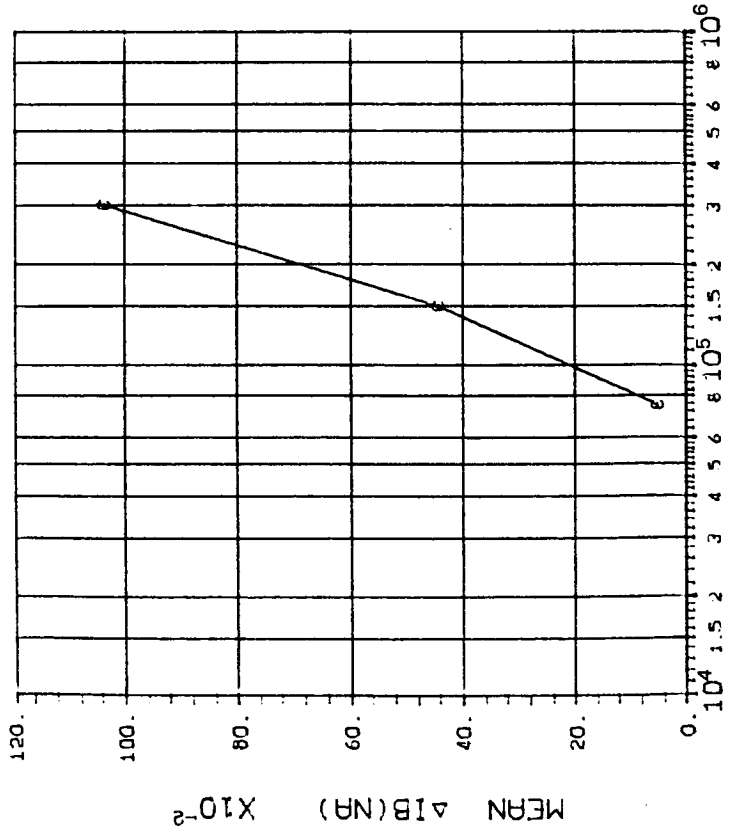
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.0026 .0043 .0103

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307

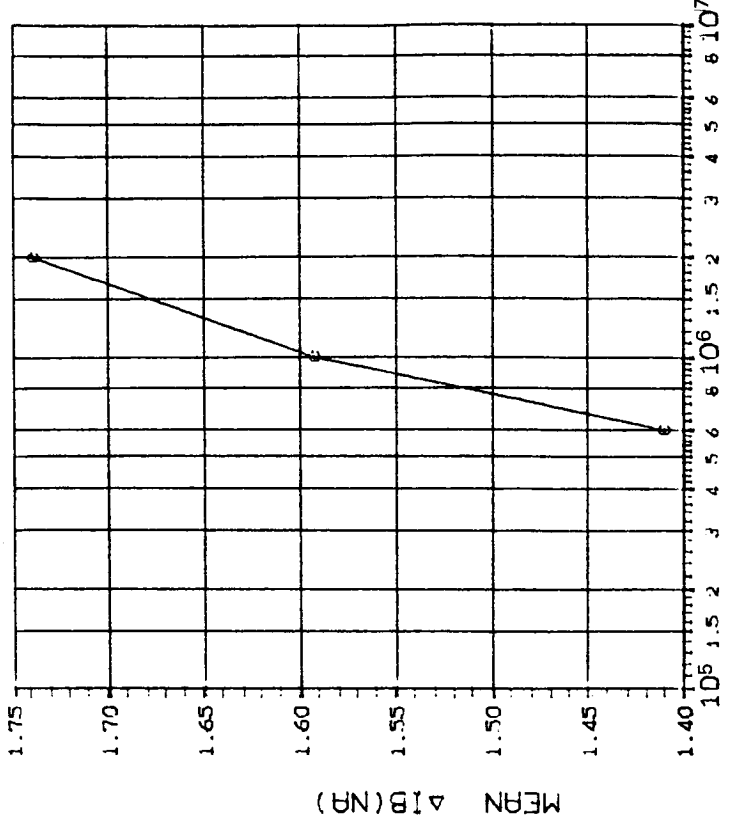


DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.3313 .2587 .2757

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307

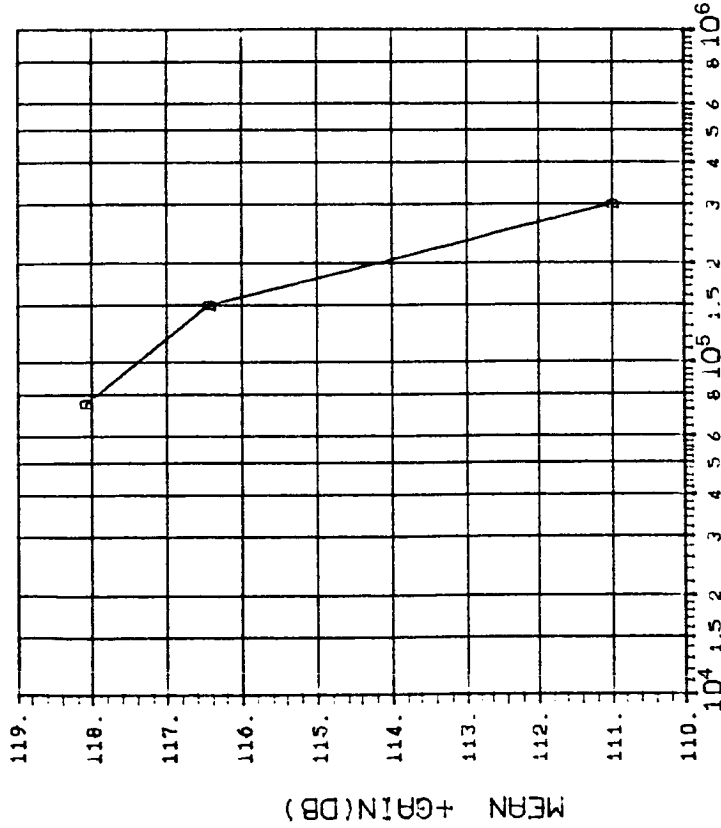


DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	.5268 .6194 .7119

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307



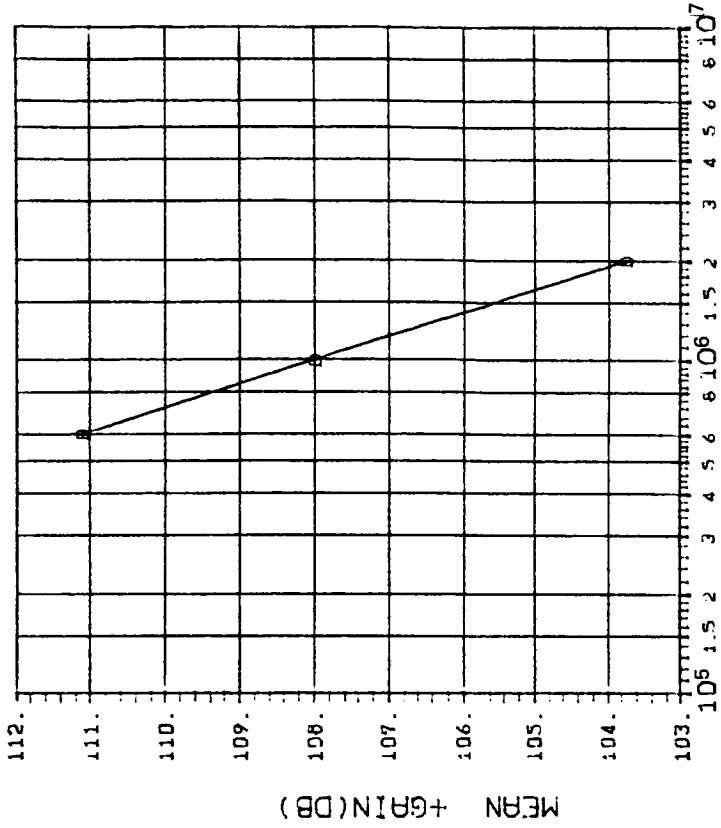
DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	10.18 10.75 9.194

INITIAL MEAN VALUE +GAIN(DB) = 1.17X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307



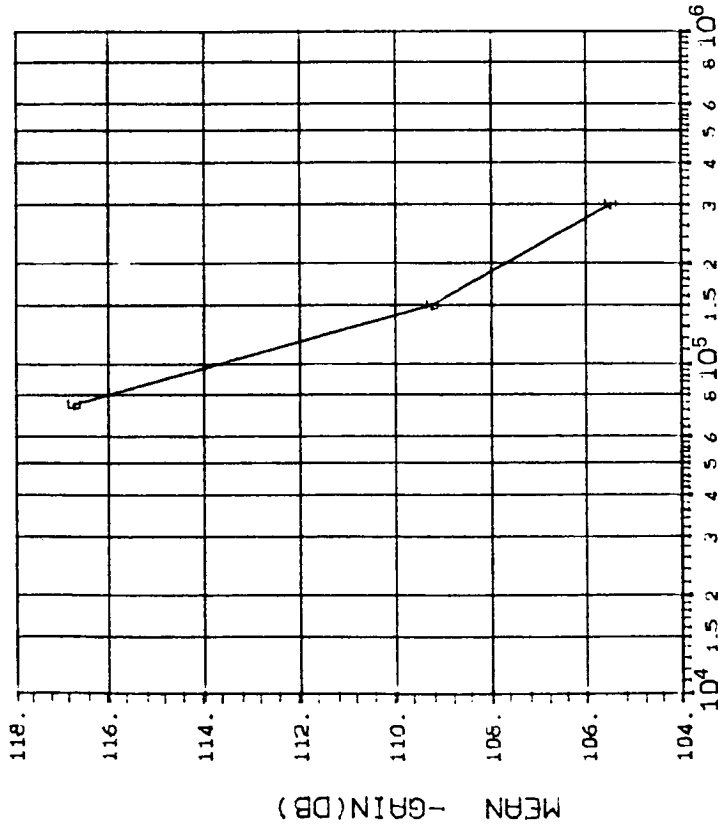
DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600 1000 2000
	10.73 9.628 5.780

INITIAL MEAN VALUE +GAIN(DB) = 1.17X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307



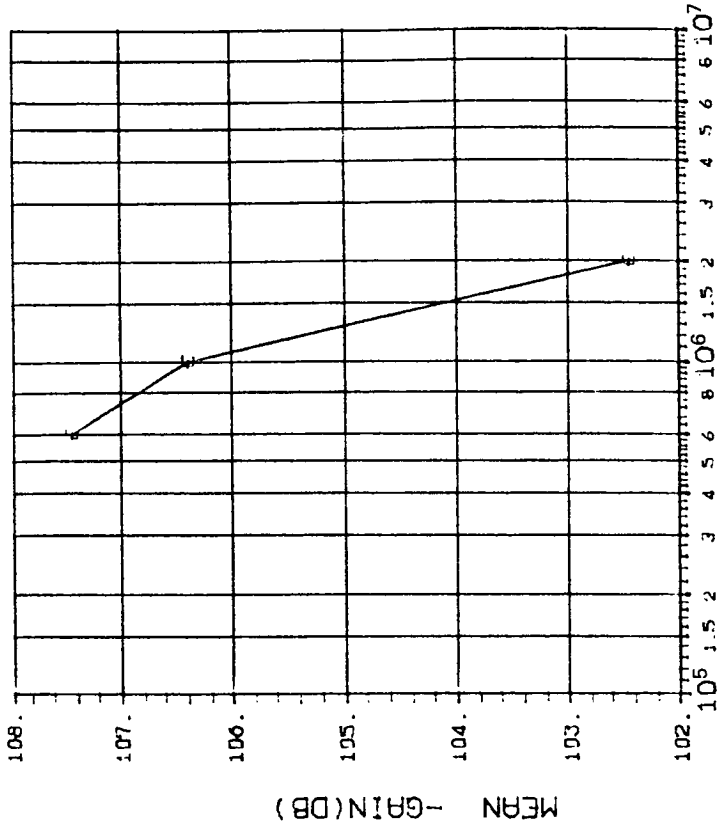
DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
E	10.93 8.527 7.561

INITIAL MEAN VALUE -GAIN(DB) = 1.18X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307



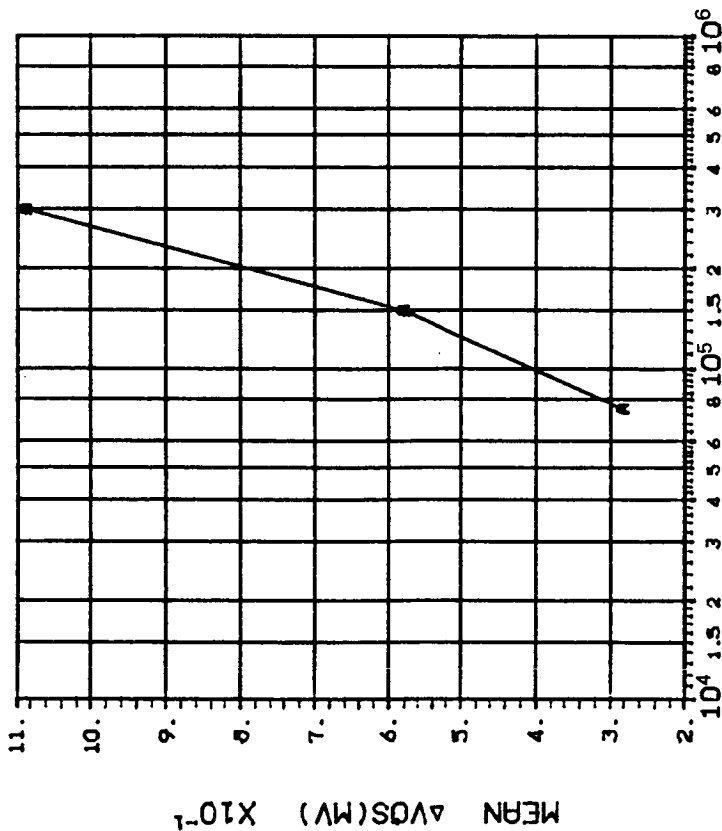
DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
E	12.88 12.18 7.090

INITIAL MEAN VALUE -GAIN(DB) = 1.18X10⁺²

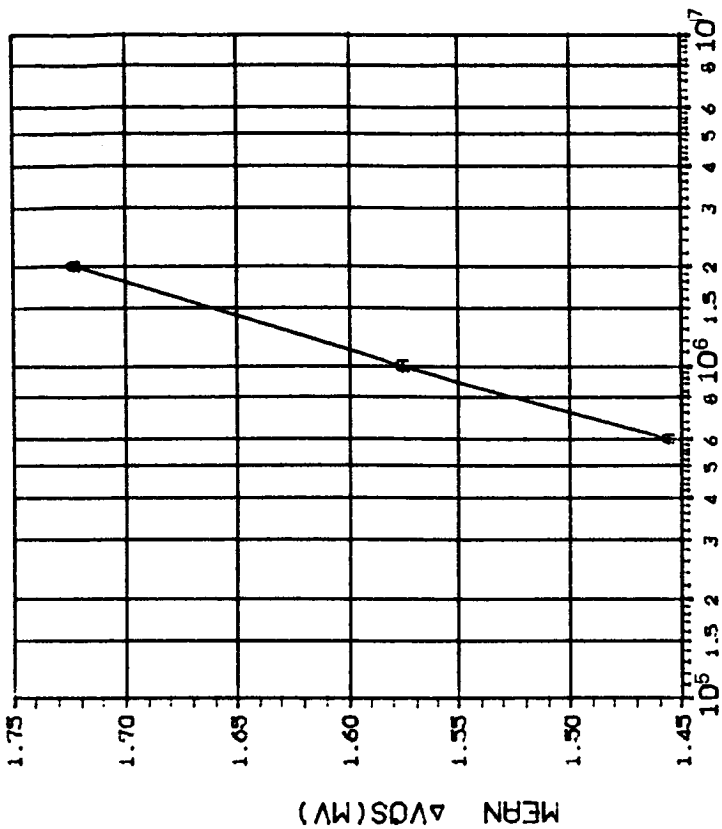
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.2116 .3805 .7150

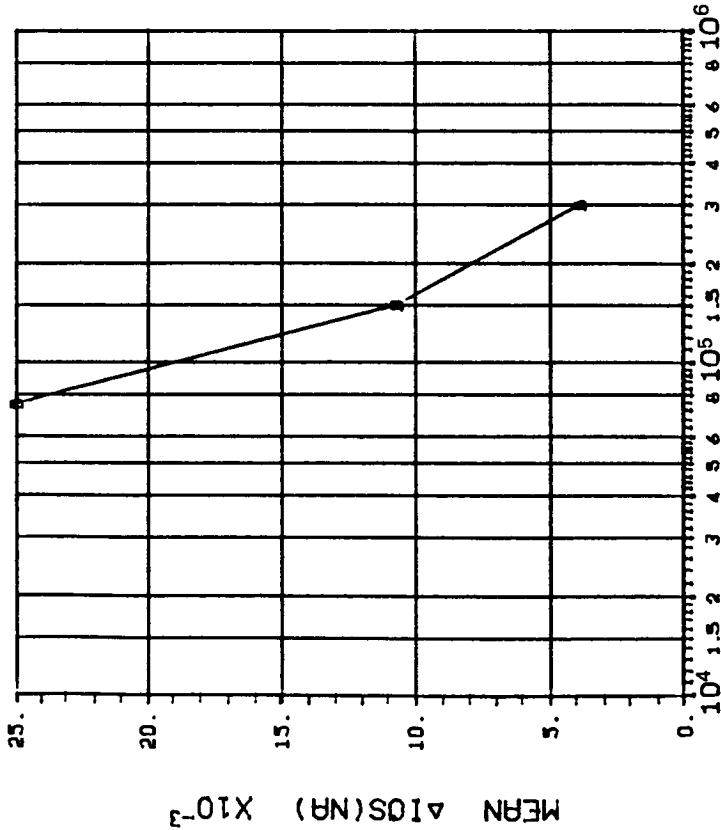
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	1.070 1.306 1.581

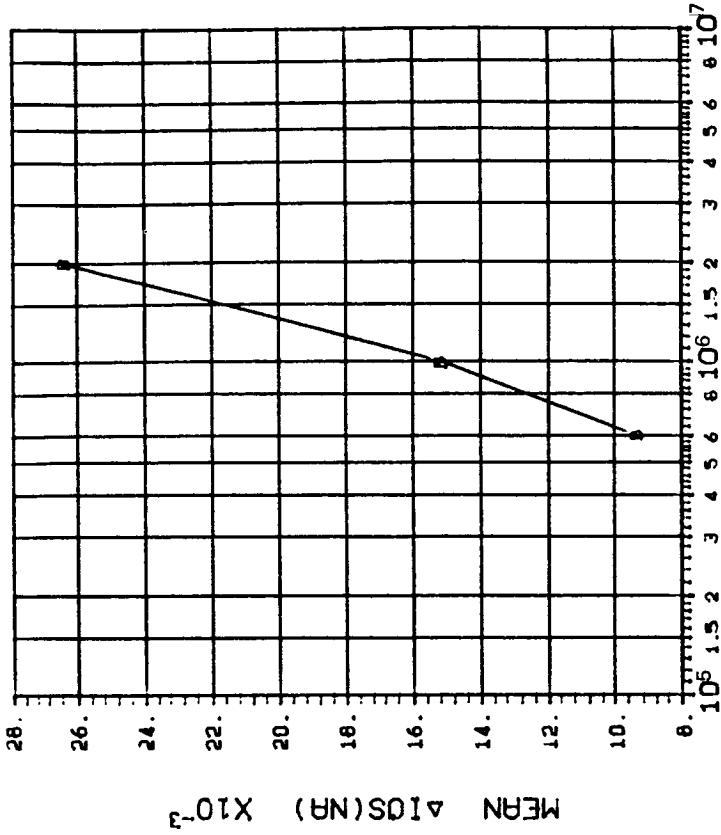
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
 (2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.0068 .0127 .0034

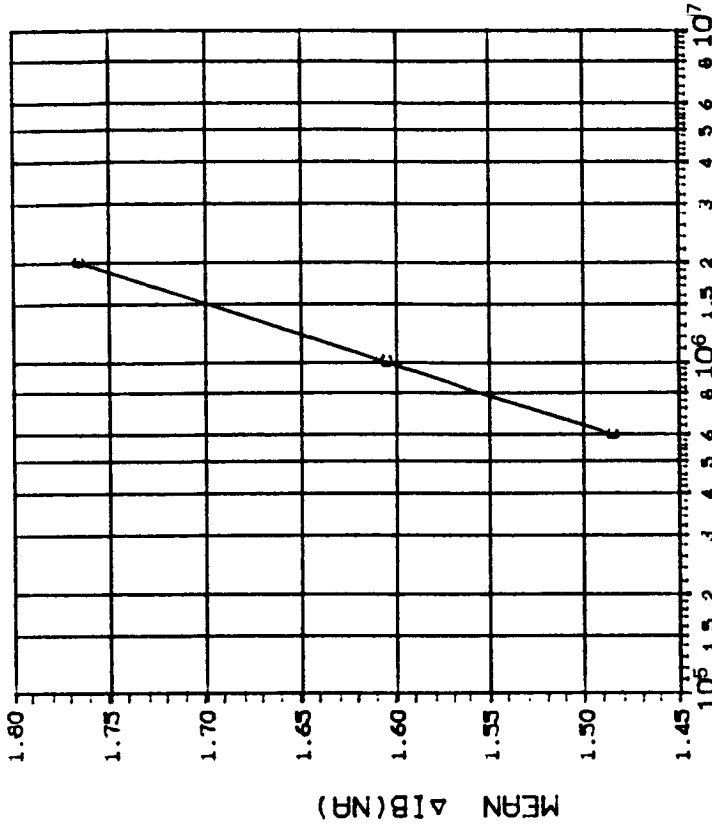
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
 (2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.0082 .0094 .0141

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-2 DATE CODE 118307

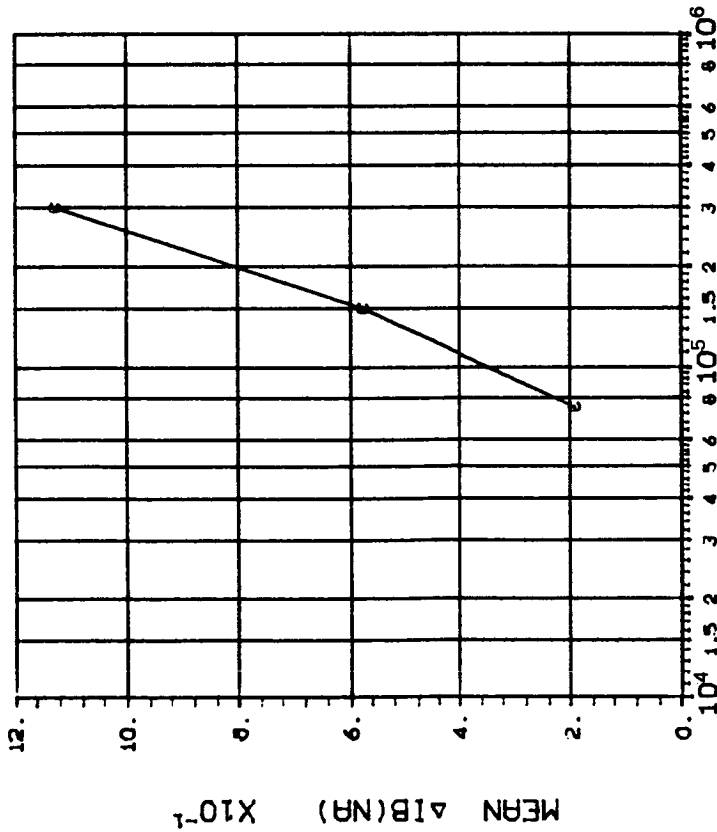


DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	2000
.9054 1.153 1.412	

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-1 DATE CODE 118307

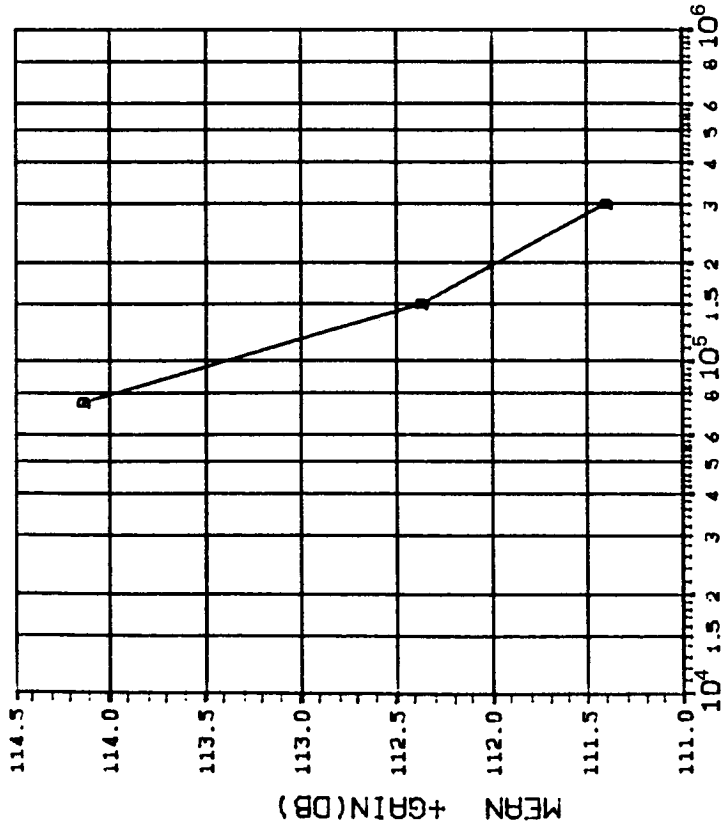


DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	300
.1952 .2859 .5262	

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-1 DATE CODE 118307

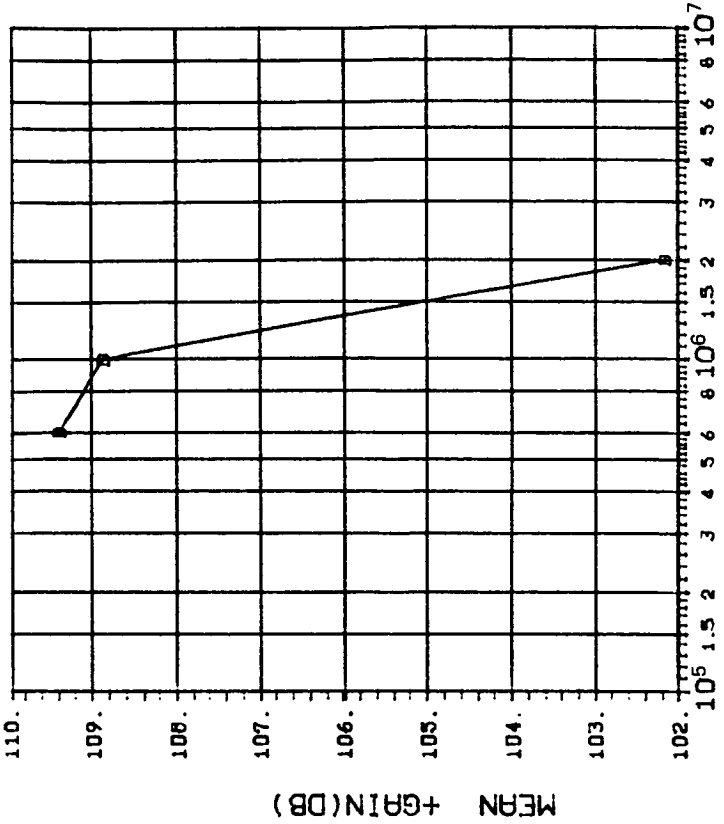


DOSE, rads(Si) Co 60 Gammas
 (4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I _L	75 150 300
(mA)	
D	5.00 10.26 9.698 11.97

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10¹²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
 (4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

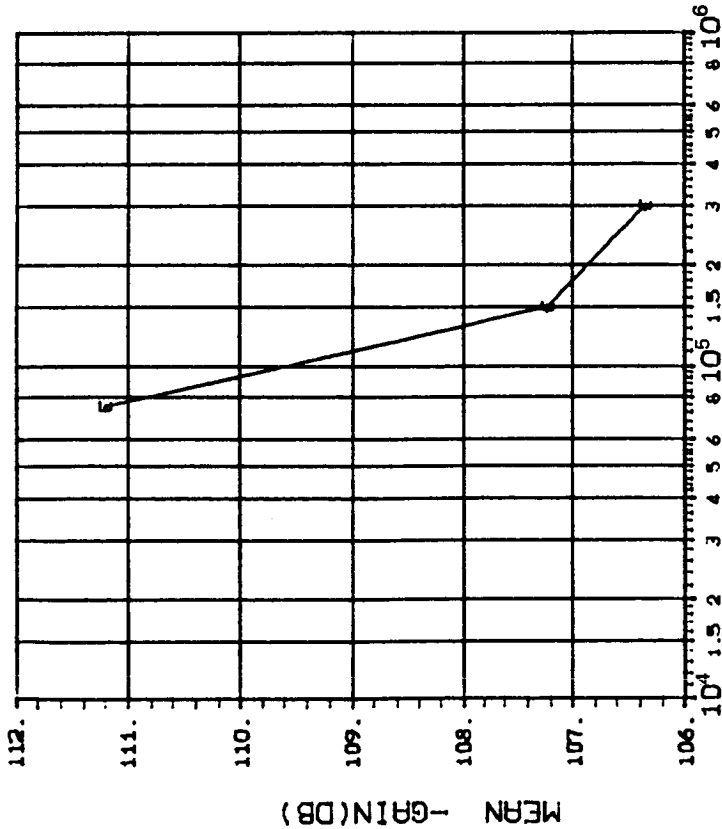
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I _L	600 1000 2000
(mA)	
D	5.00 10.90 10.60 7.280

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10¹²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-1 DATE CODE 118307



DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

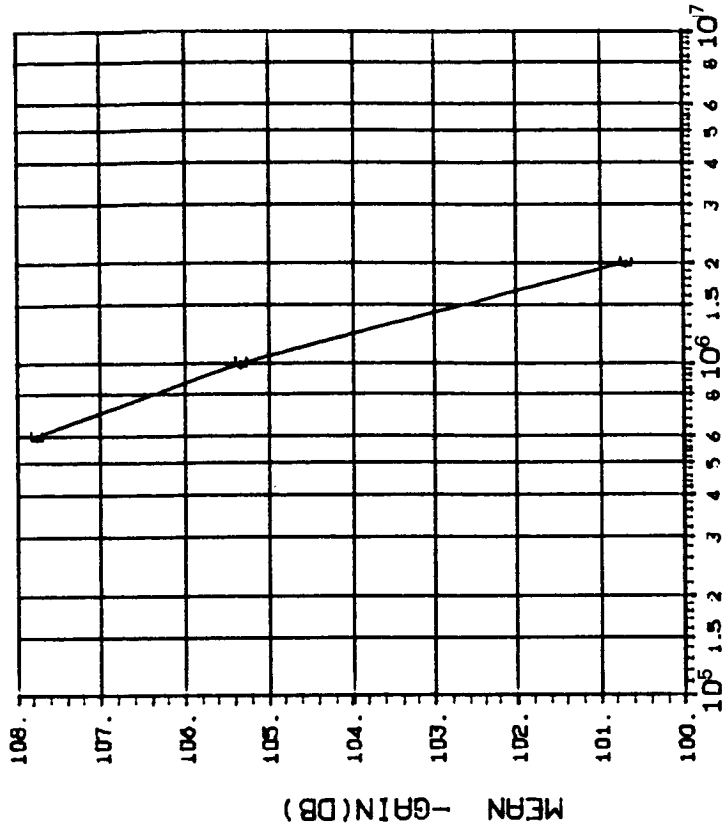
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE 1L (mA)	DOSE, kilorads(Si)
E 5.00	75 150 300
	11.13 9.387 12.07

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10¹²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-2 DATE CODE 118307



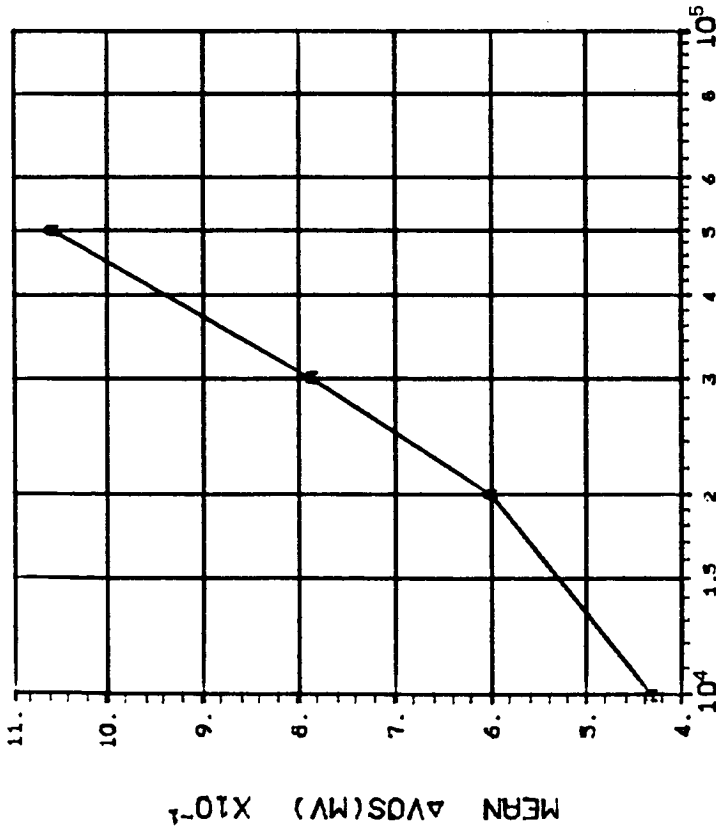
DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE 1L (mA)	DOSE, kilorads(Si)
E 5.00	600 1000 2000
	13.72 11.47 9.846

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10¹²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-1 DATE CODE 118239

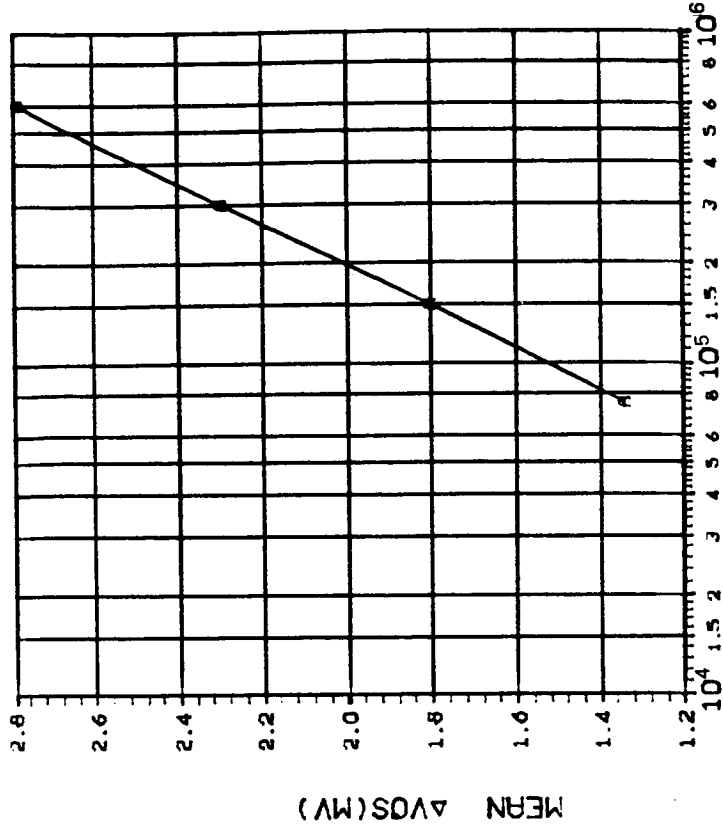


DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	10 20 30 50
	.5556 .6769 .6191 1.036

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-2 DATE CODE 118239

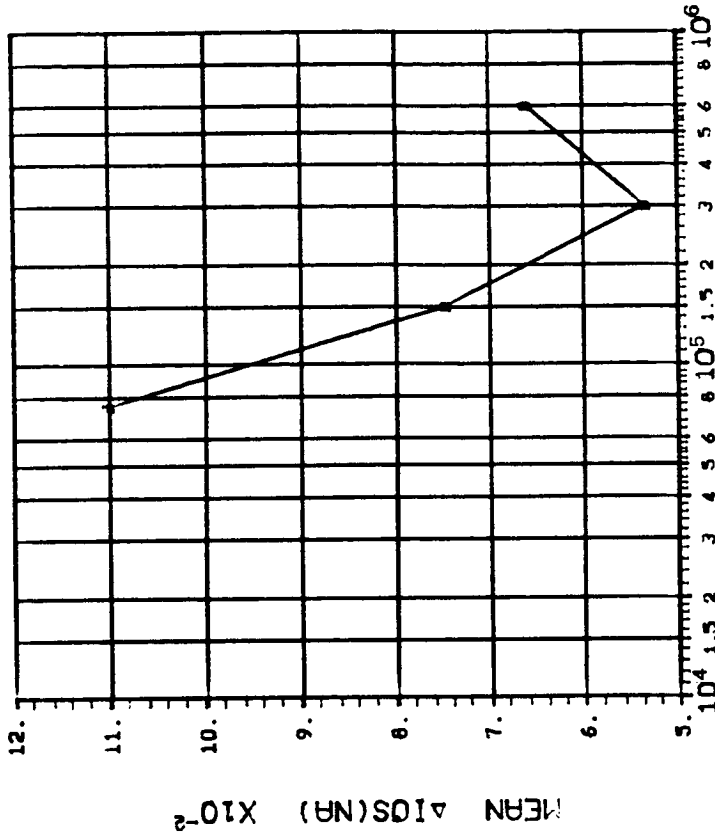


DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300 600
	1.279 1.633 1.941 2.153

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-2 DATE CODE 118239



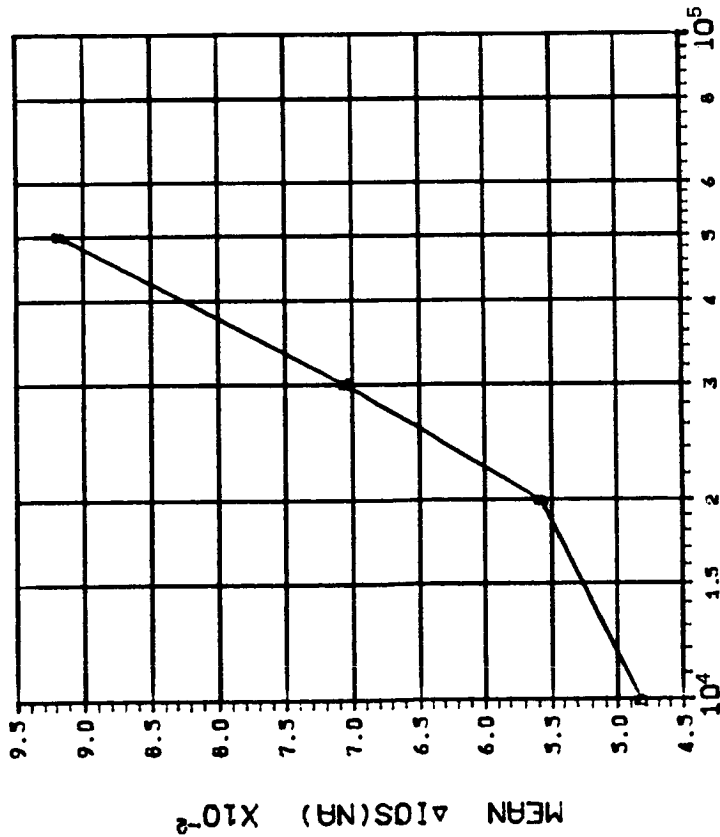
DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	.2326 .1211 .1075 .1176

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-1 DATE CODE 118239



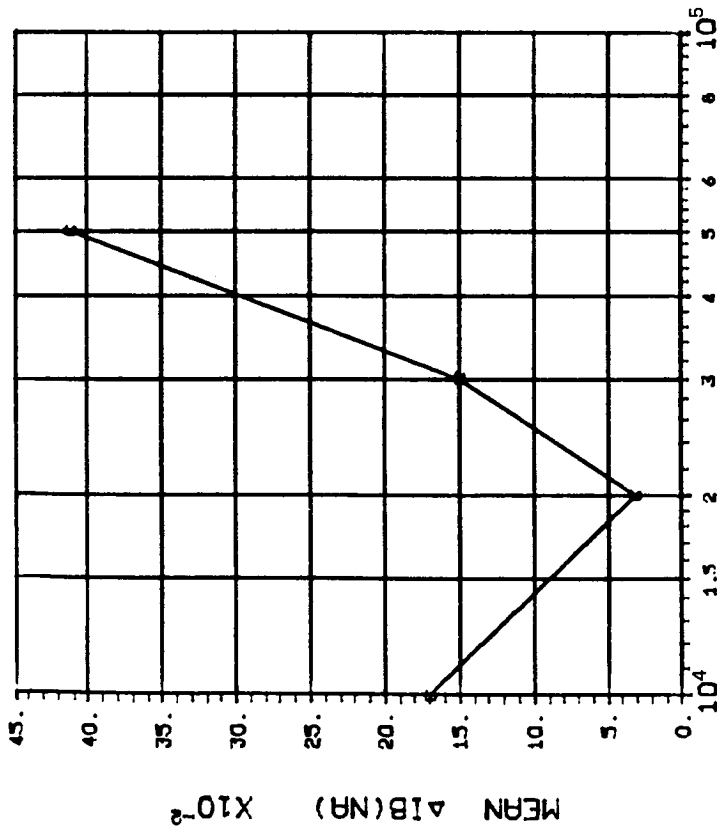
DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
B	10 20 30 50
	.0723 .1136 .1468 .1620

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-1 DATE CODE 118239

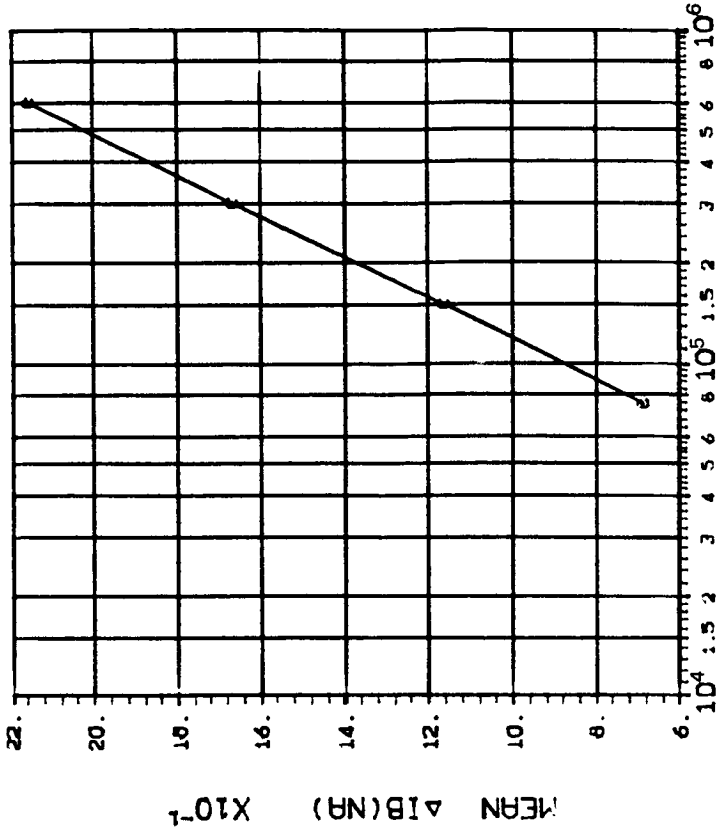


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	10 20 30 50
	.2147 .2018 .2347 .3965

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-2 DATE CODE 118239

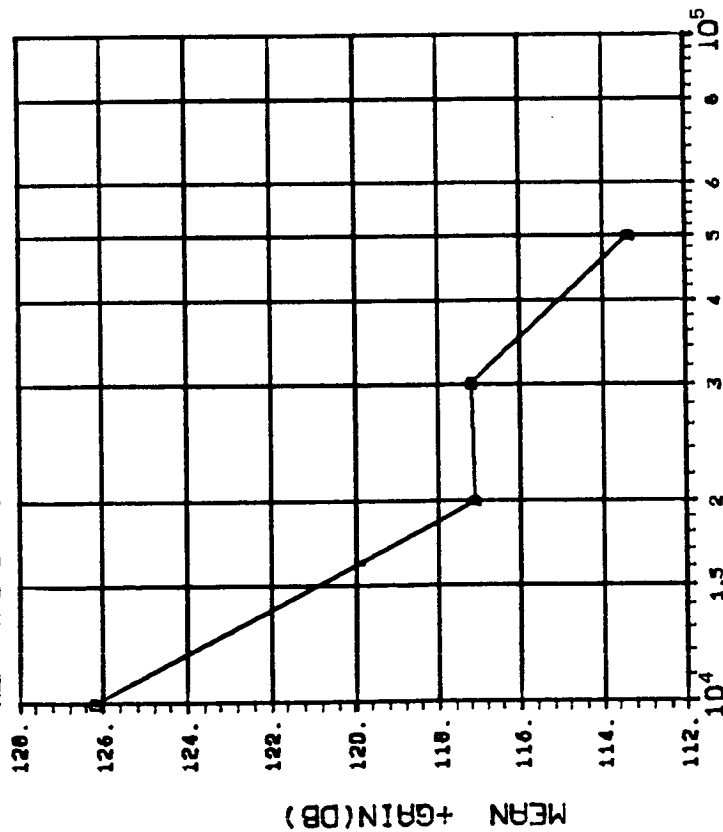


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300 600
	.6208 .9357 1.229 1.465

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-1 DATE CODE 118239

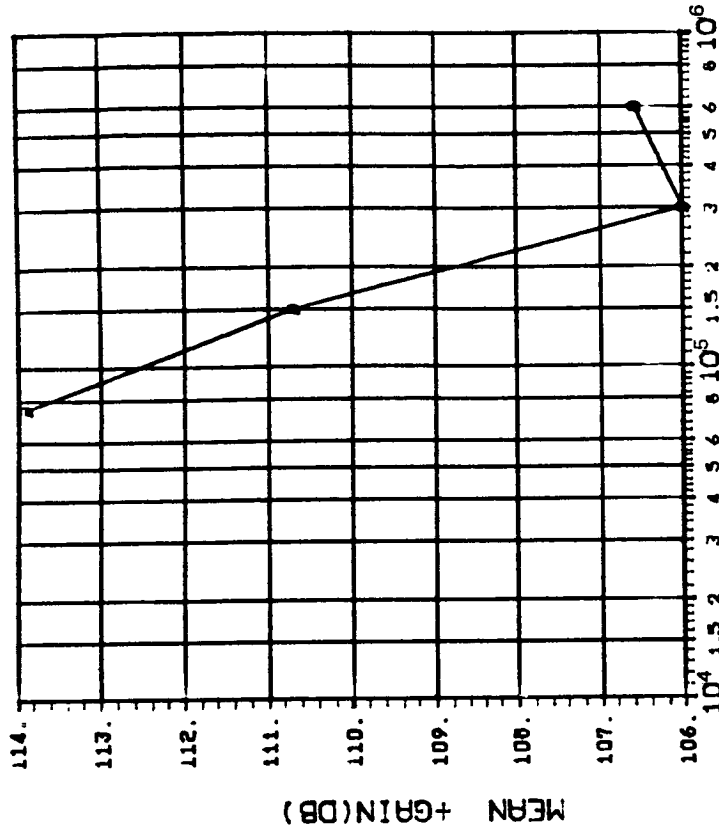


DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	10 20 30 50
		14.03 15.26 11.96 14.77

INITIAL MEAN VALUE +GAIN(DB) = 1.16X10¹²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-2 DATE CODE 118239

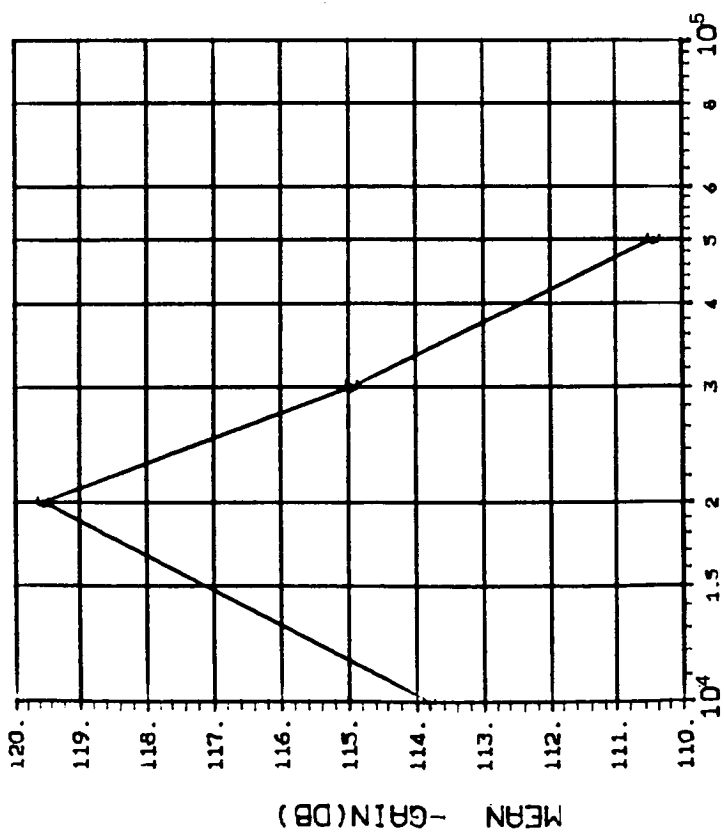


DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300 600
		14.07 12.62 6.979 7.429

INITIAL MEAN VALUE +GAIN(DB) = 1.16X10¹²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-1 DATE CODE 118239



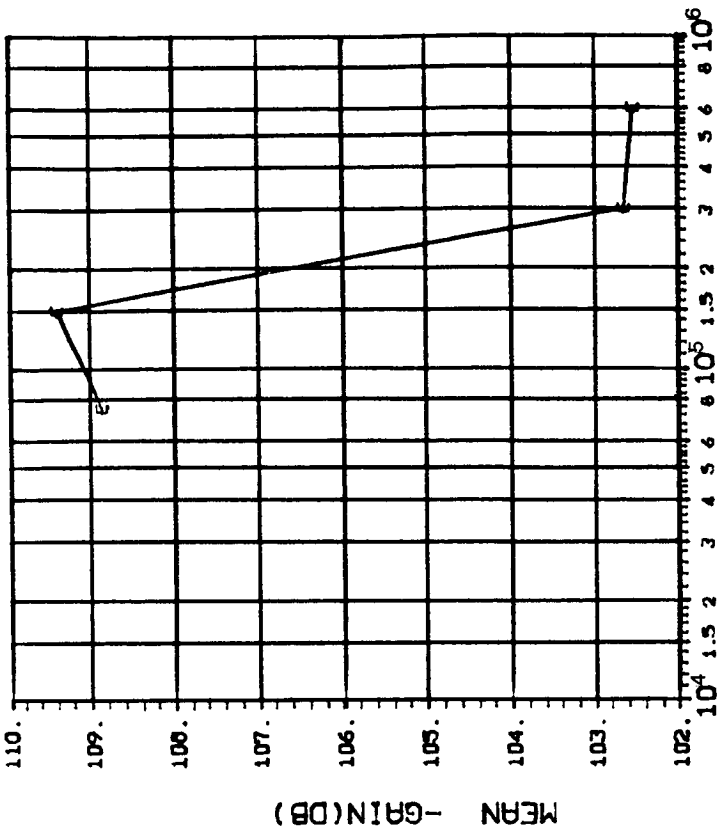
DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, kilorads(Si)
E 5.00	10 20 30 50
	12.41 17.08 18.26 10.61

INITIAL MEAN VALUE -GAIN(DB) = 1.10X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-2 DATE CODE 118239



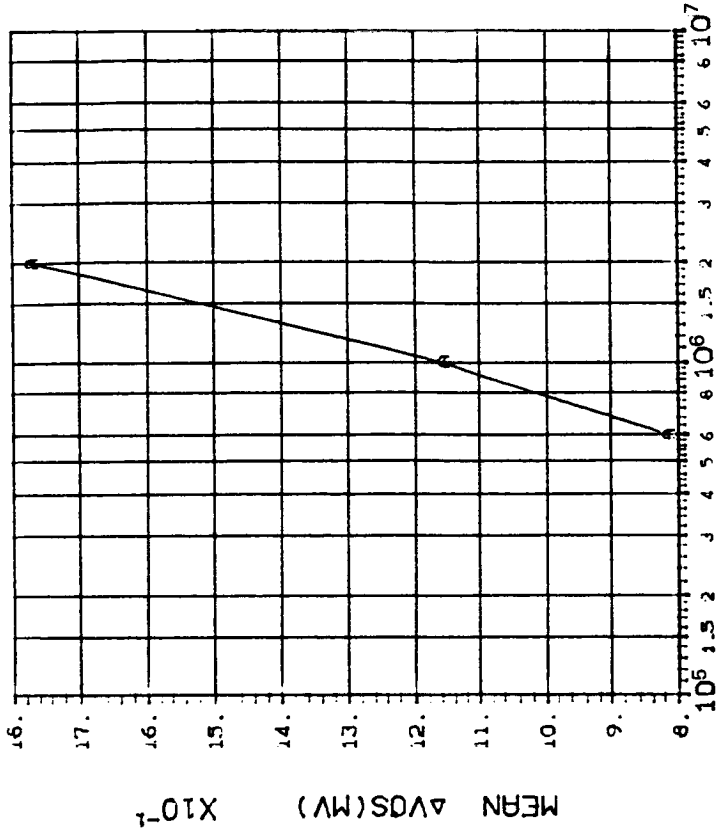
DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, kilorads(Si)
E 5.00	75 150 300 600
	12.48 16.43 8.738 10.55

INITIAL MEAN VALUE -GAIN(DB) = 1.10X10⁺²

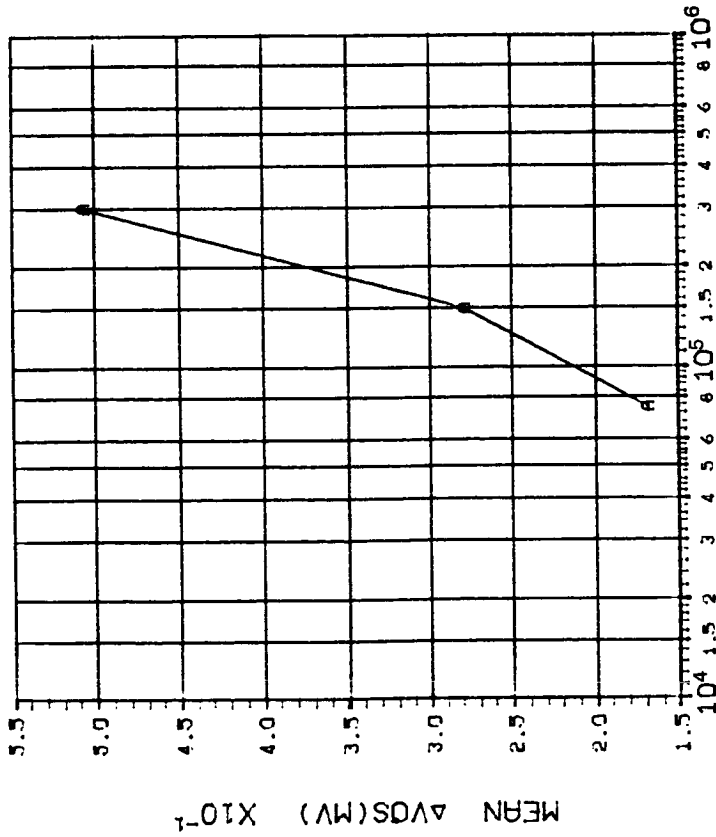
DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 1-23-84
 REF: JPL LOG 1035-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.4605 .6261 .6856

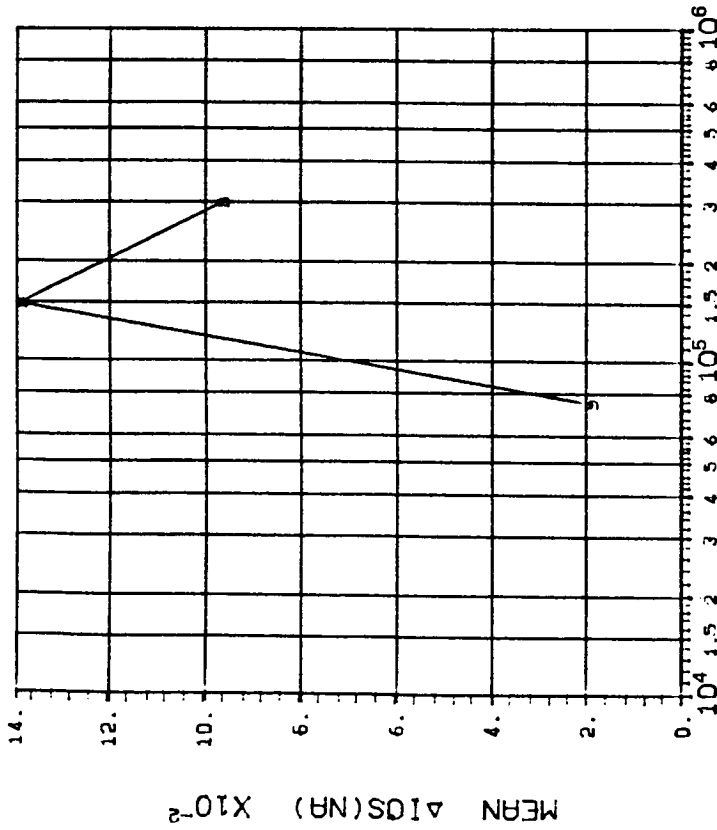
DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 1-23-84
 REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.0979 .1931 .3073

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 1-23-64
 REF: JPL LOG 1035-1 DATE CODE 8340

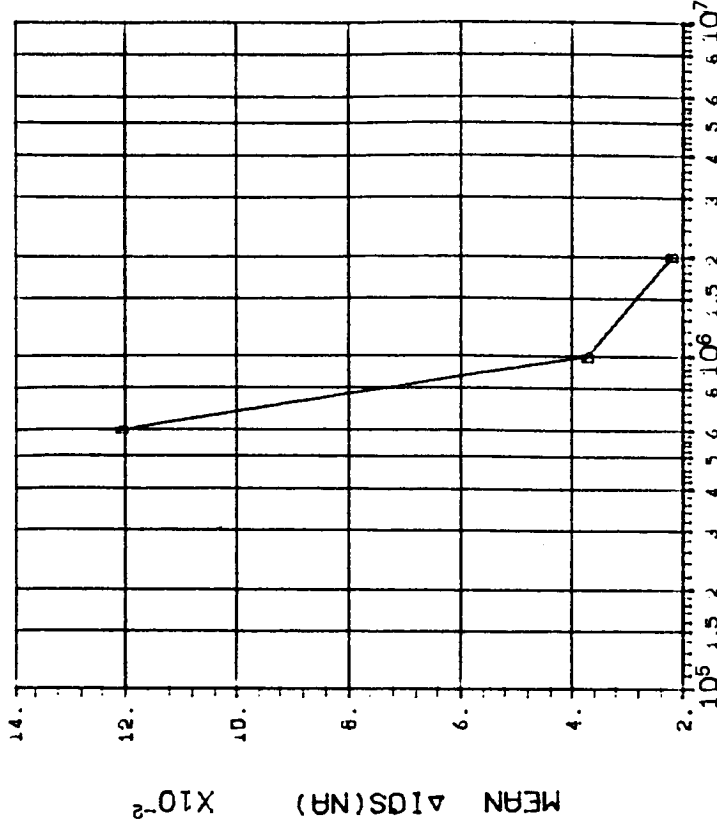


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	75 150 300
	.0328 .1662 .1872

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 1-23-64
 REF: JPL LOG 1035-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

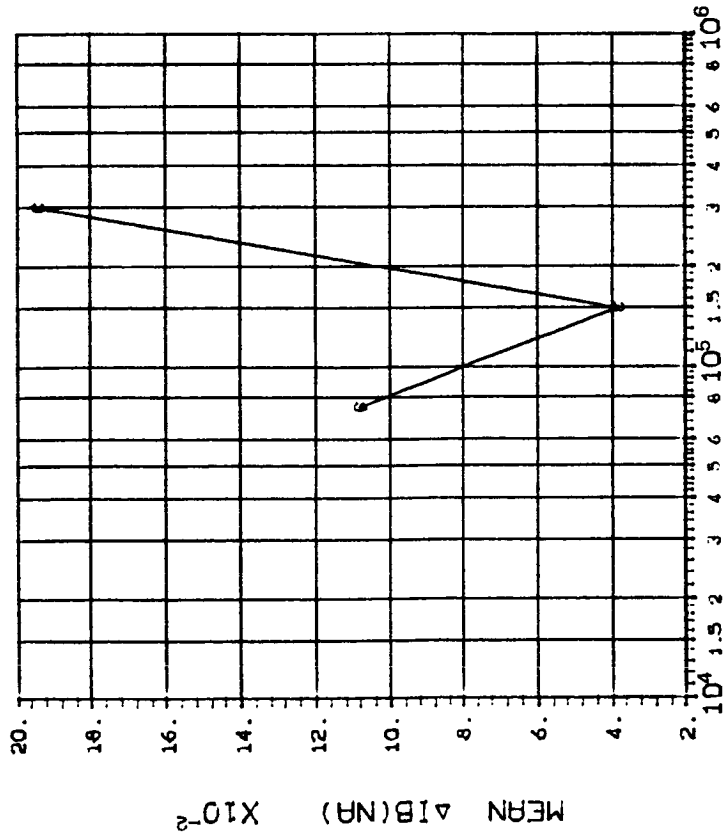
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	600 1000 2000
	.2451 .0447 .0135

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-64

REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

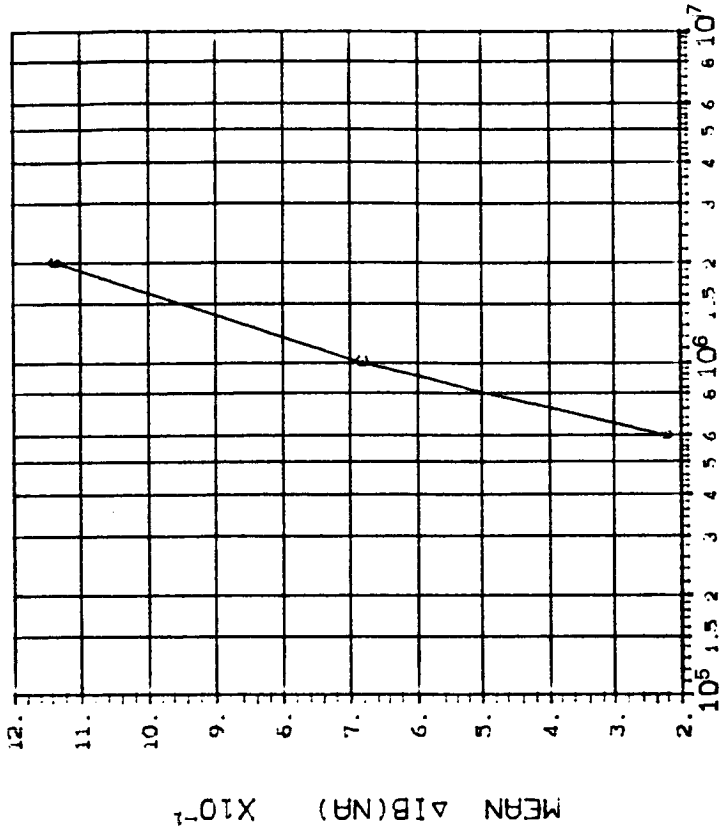
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.1148 .1365 .3060

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-64

REF: JPL LOG 1035-2 DATE CODE 8340

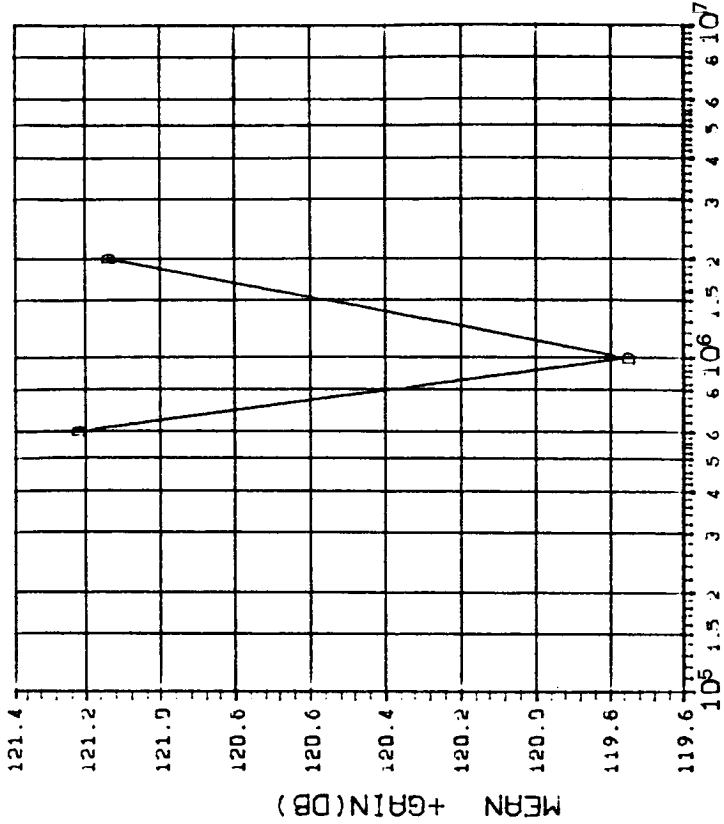


DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	.2651 .5882 .7354

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 1-23-84
 REF: JPL LOG 1035-2 DATE CODE 8340

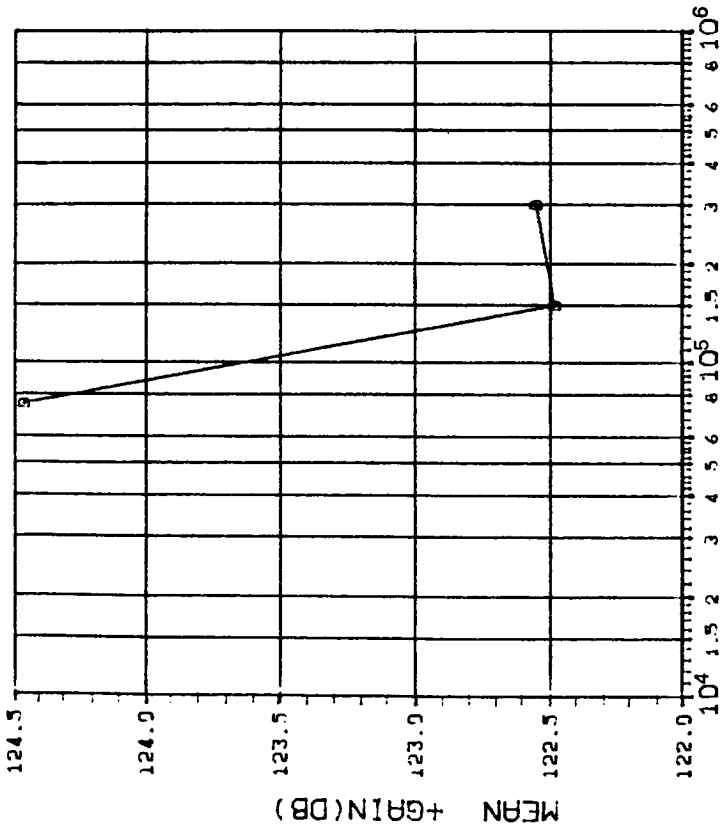


DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I _L	600 1000 2000
D	2.753 1.455 4.677

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 1-23-84
 REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN(DB) VS DOSE

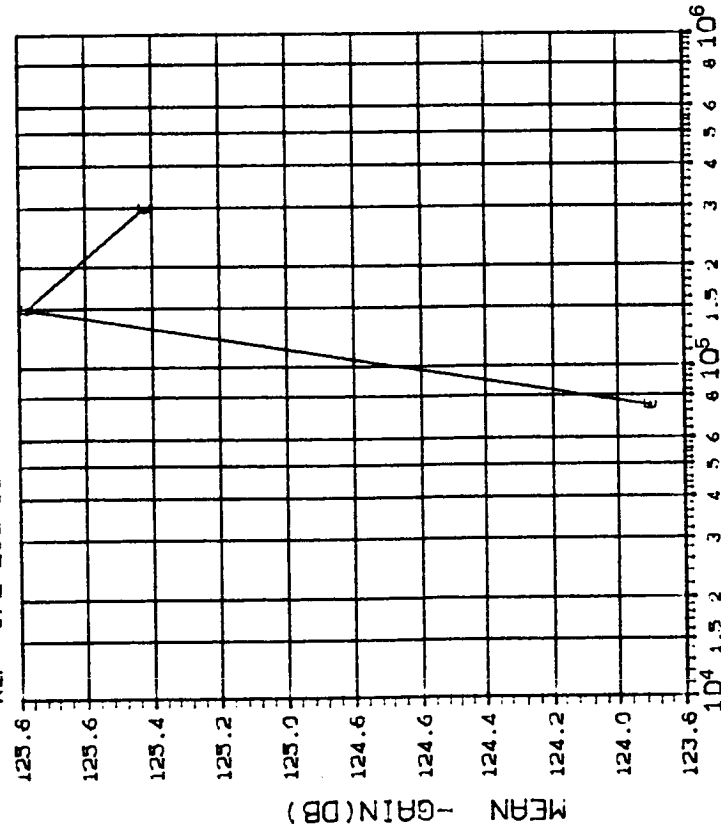
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
I _L	75 150 300
D	2.617 2.691 1.990

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN(DB) VS DOSE

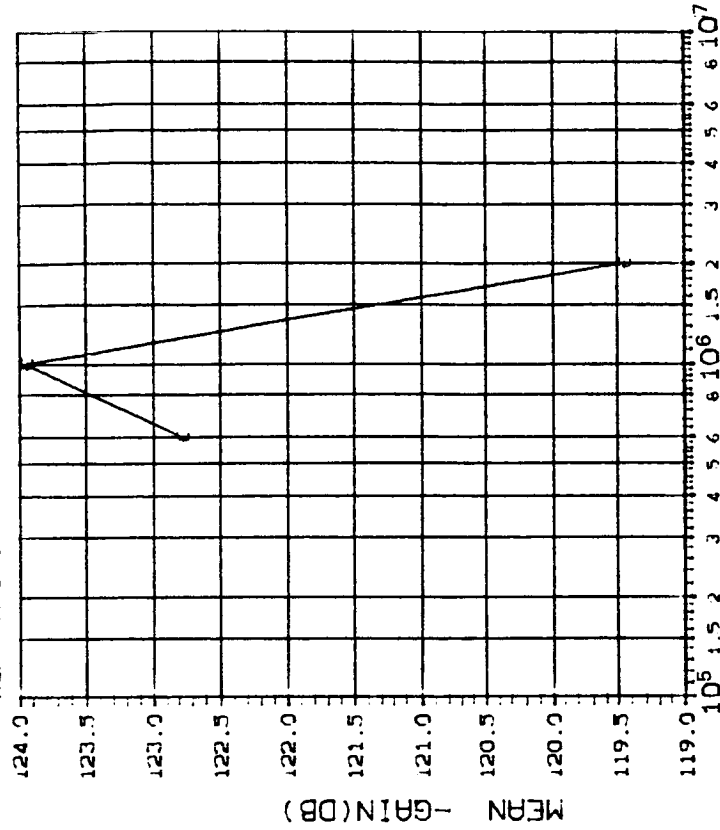
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		6.371 9.324 9.911

INITIAL MEAN VALUE -GAIN(DB) = 1.21X10¹²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-2 DATE CODE 8340



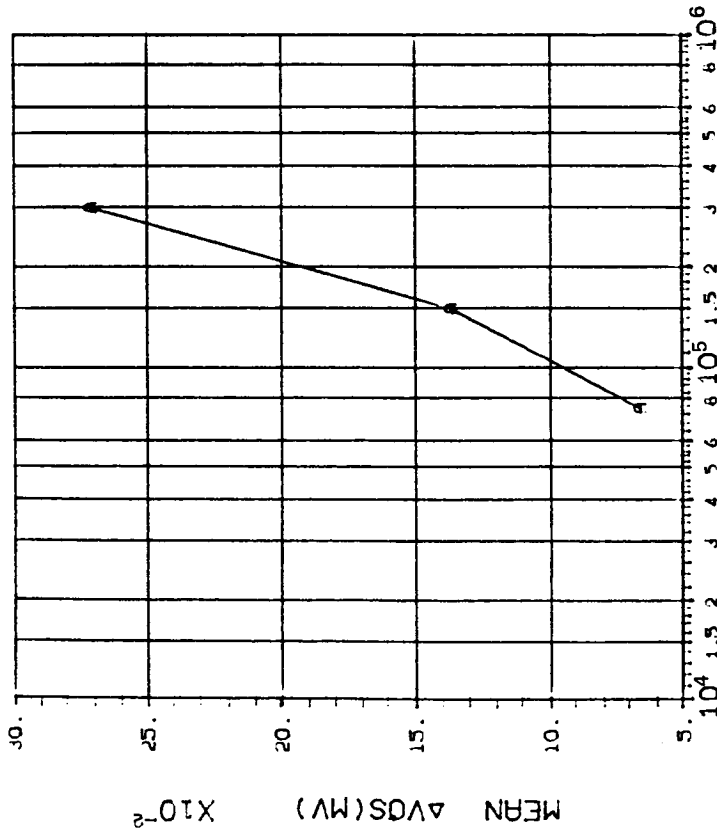
DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		6.570 10.51 5.701

INITIAL MEAN VALUE -GAIN(DB) = 1.21X10¹²

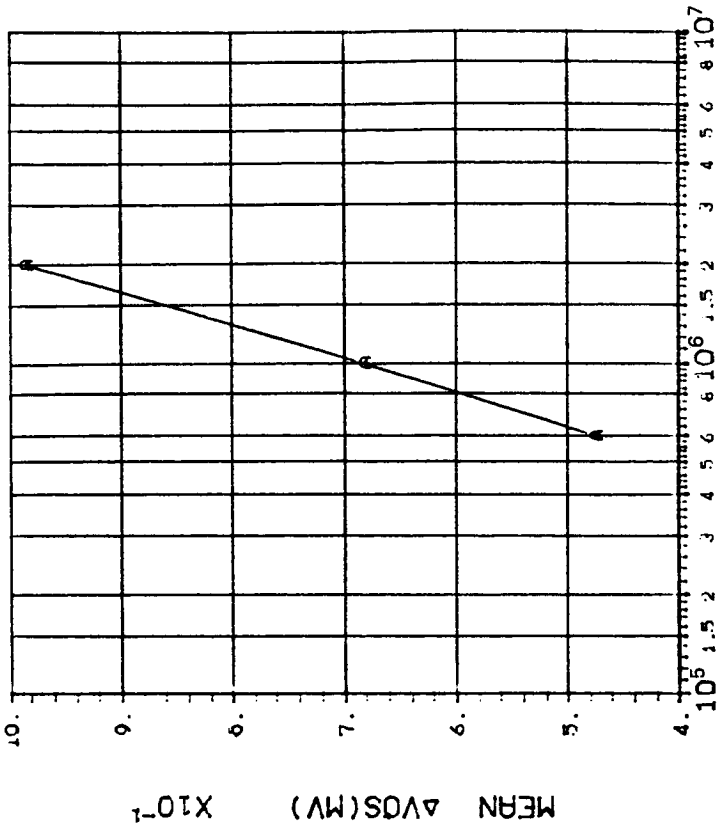
DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.0896 .1685 .2994

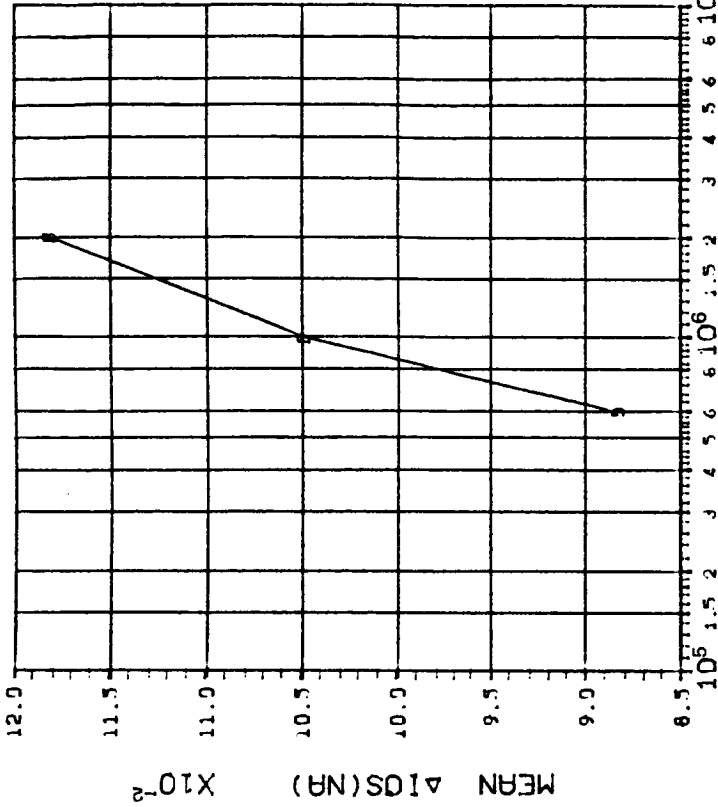
DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.4464 .6437 1.052

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-2 DATE CODE 8340

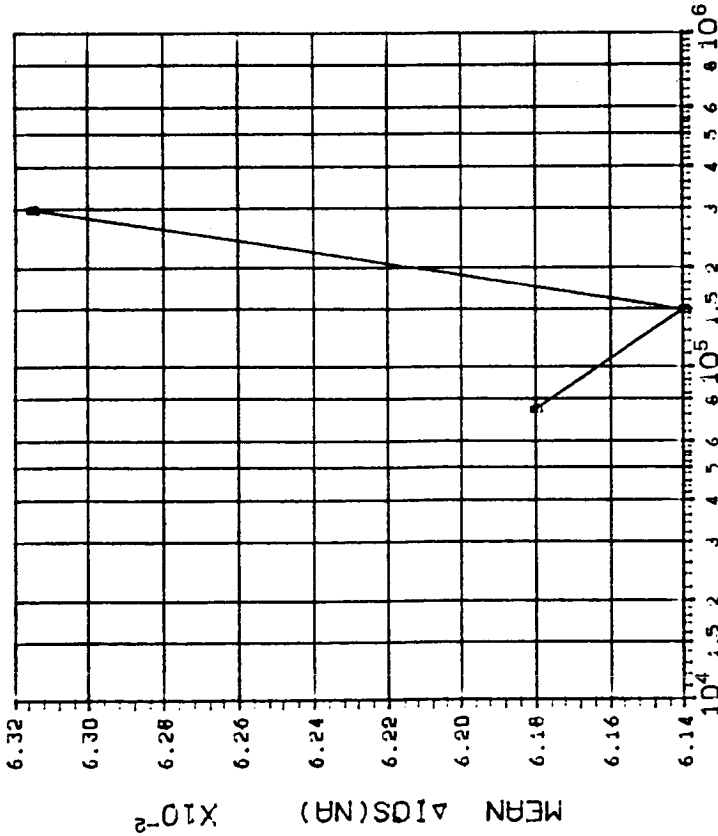


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	600 1000 2000
	.0977 .1330 .1138

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-1 DATE CODE 8340

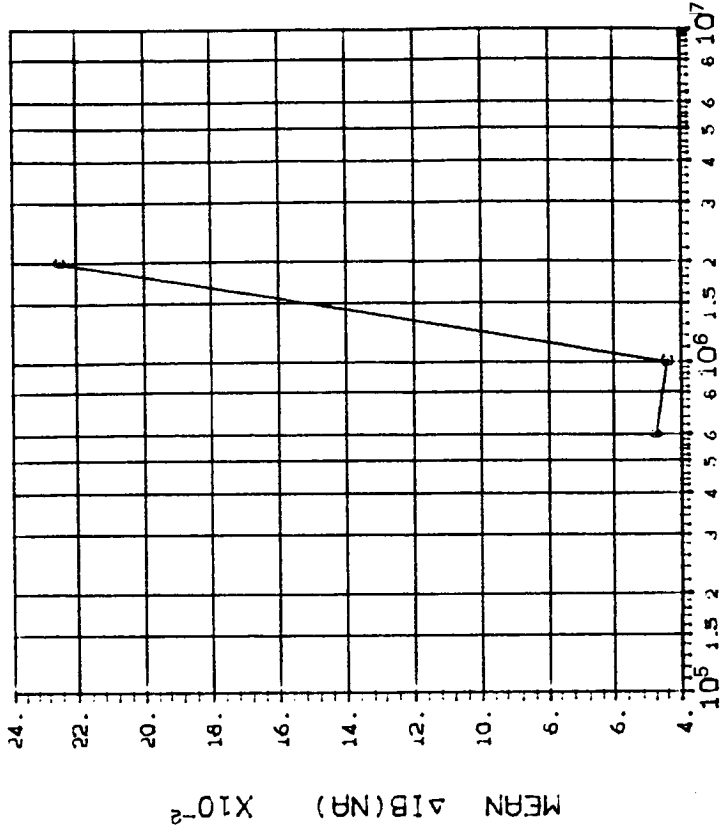


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	75 150 300
	.0537 .0530 .0616

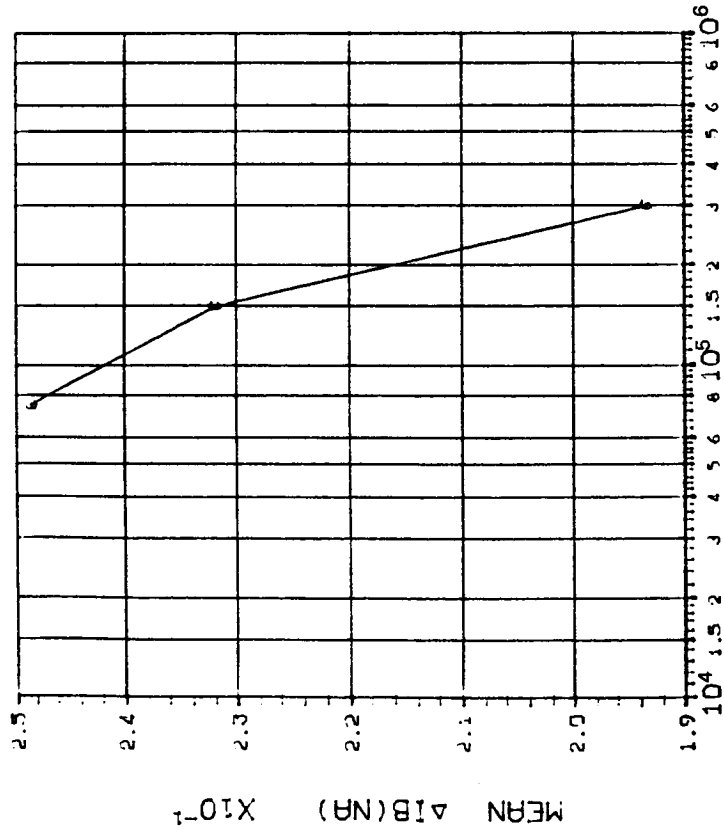
DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	.1368 .2494 .4171

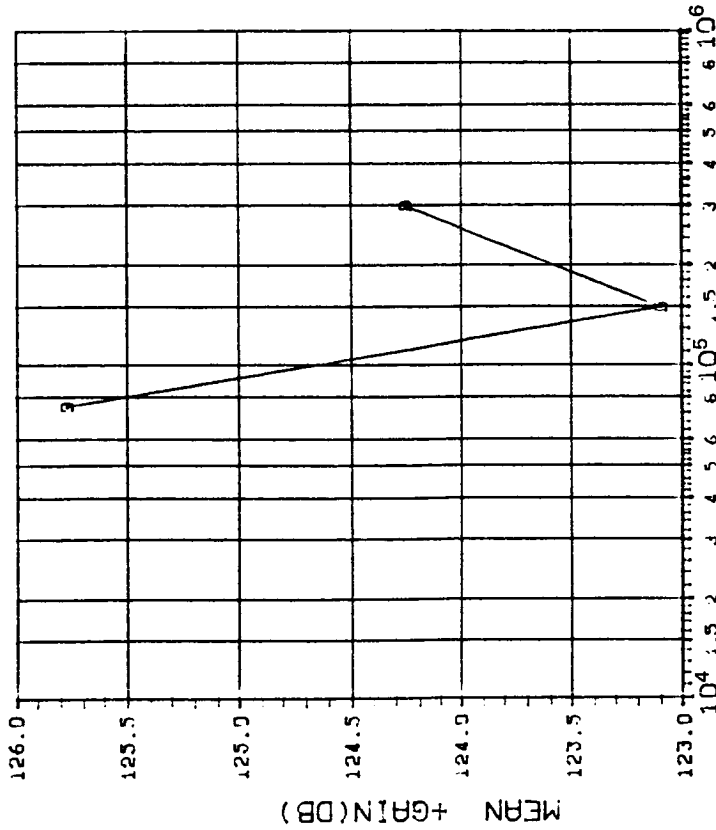
DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	.1086 .0746 .0747

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-1 DATE CODE 8340



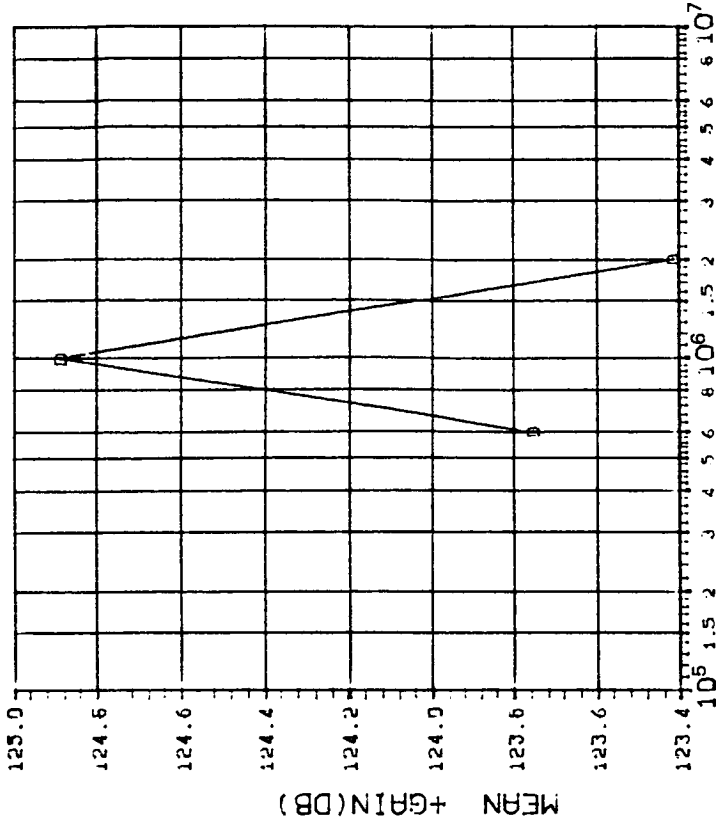
DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	5.681 2.306 3.984

INITIAL MEAN VALUE +GAIN(DB) = 1.13X10¹²

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-2 DATE CODE 8340



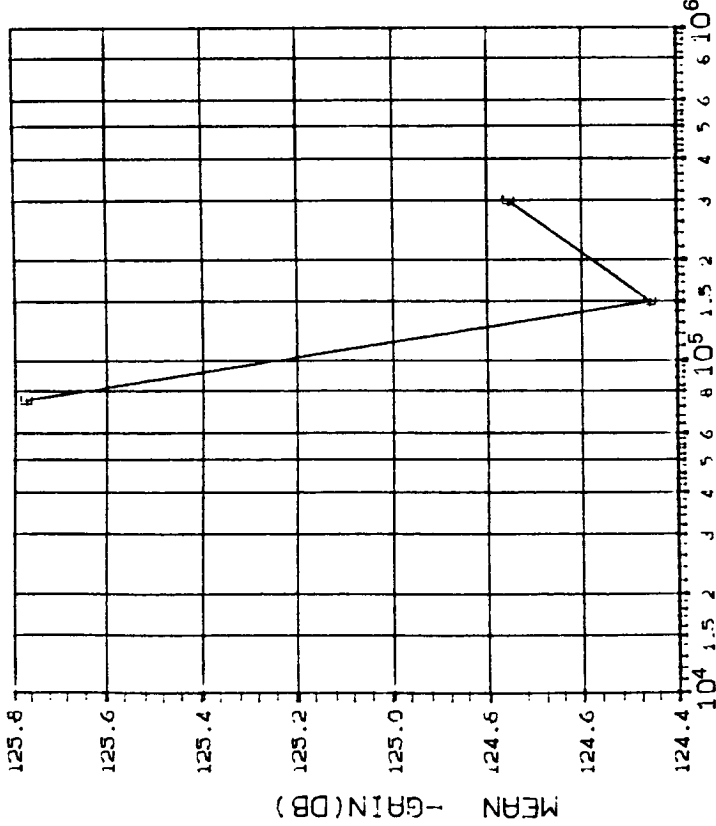
DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	4.065 6.144 6.743

INITIAL MEAN VALUE +GAIN(DB) = 1.13X10¹²

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-1 DATE CODE 8340

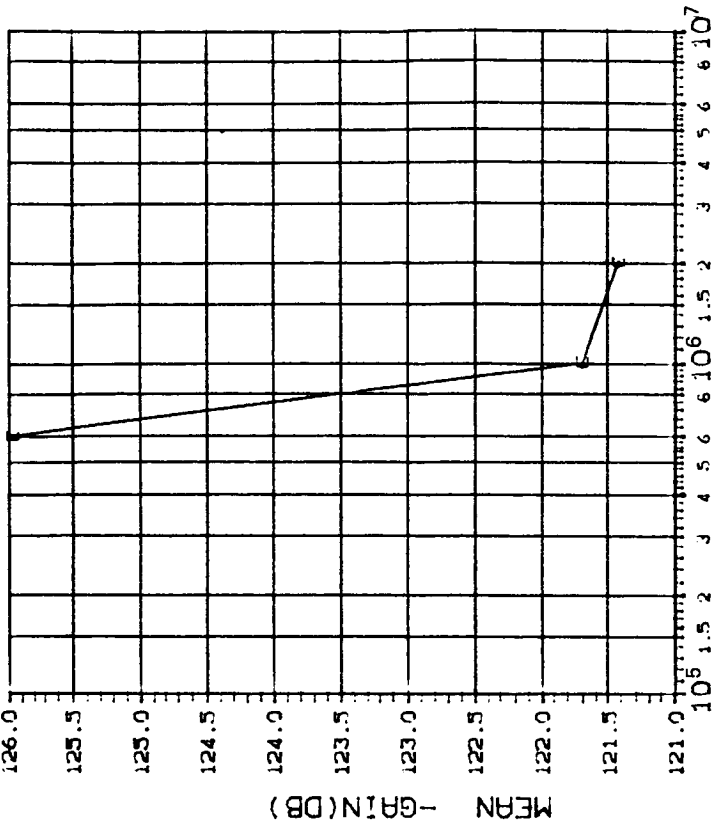


DOSE, rads(Si) 2.5 MeV electrons
 (5)-GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, kilorads(Si)
E 5.00	75 150 300
	1.455 2.617 3.772

INITIAL MEAN VALUE -GAIN(DB) = 1.14X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (5)-GAIN(DB) VS DOSE

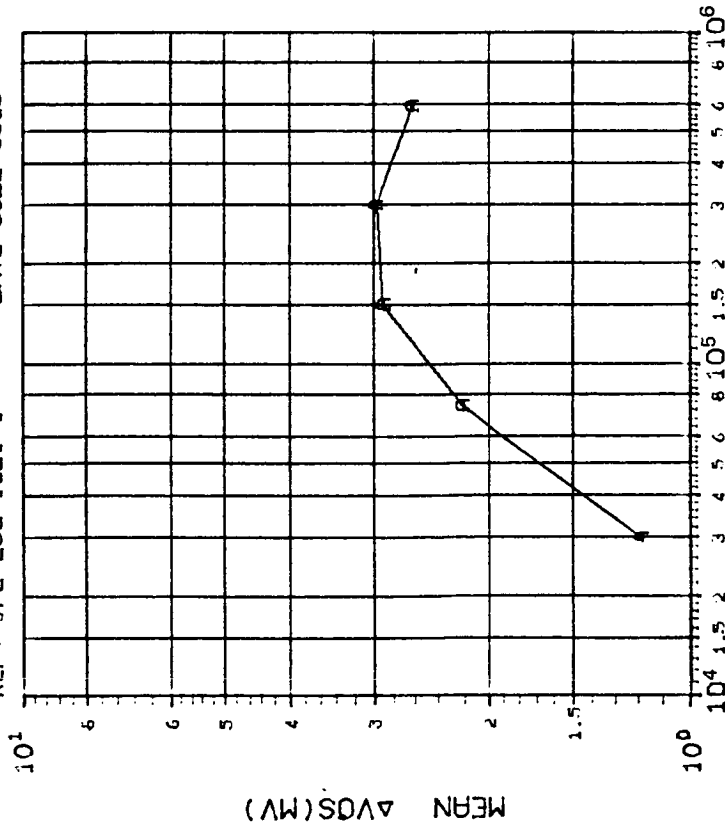
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE I _L (mA)	DOSE, kilorads(Si)
E 5.00	600 1000 2000
	6.079 4.699 5.315

INITIAL MEAN VALUE -GAIN(DB) = 1.14X10⁺²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMI 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-1 DATE CODE 8305



DOSE, rad(Si) 2.5 MeV electrons

(1) ΔVOS (V₀=0V) IN MV: VS DOSE

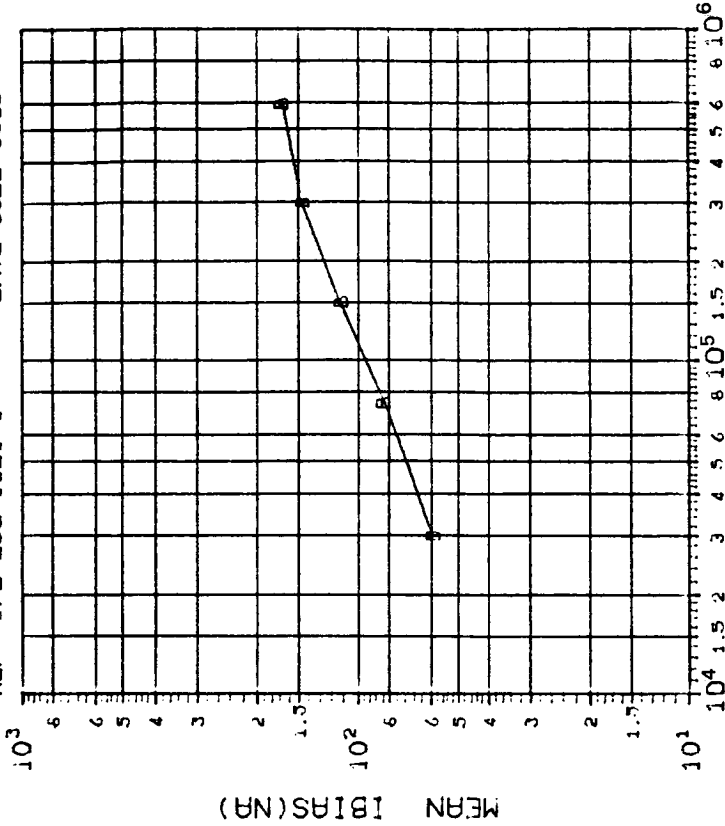
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	30 75 150 300 600
	1.980 1.999 1.984 1.616 1.667

INITIAL MEAN VALUE VOS(MV) = 3.69X10⁻¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMI 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-1 DATE CODE 8305



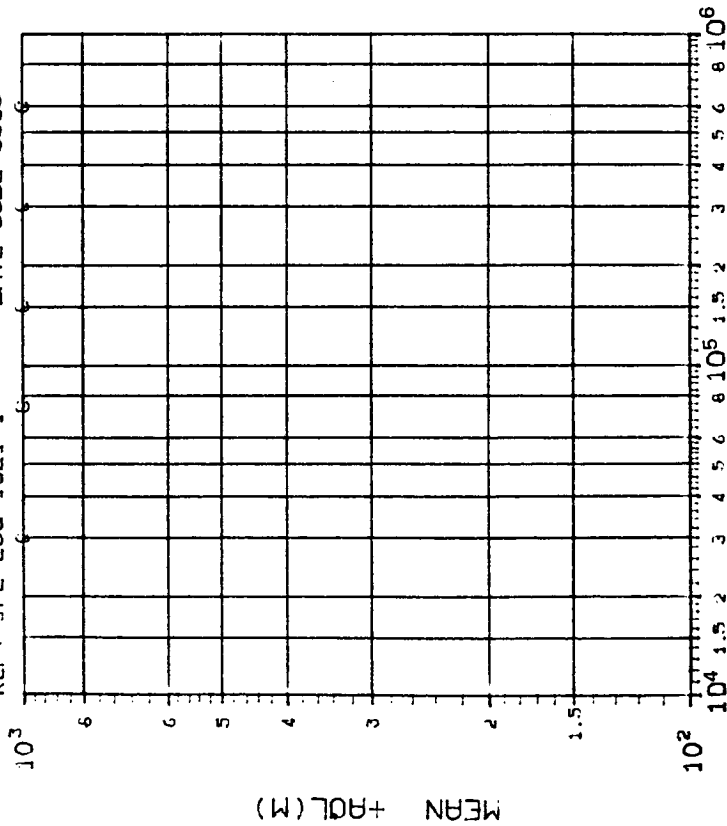
DOSE, rad(Si) 2.5 MeV electrons

(2) IBIAS(V₀=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30 75 150 300 600
	4.334 7.524 12.50 26.07 32.29

INITIAL MEAN VALUE IBIAS(NA) = 4.02X10⁻¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-1 DATE CODE 8305

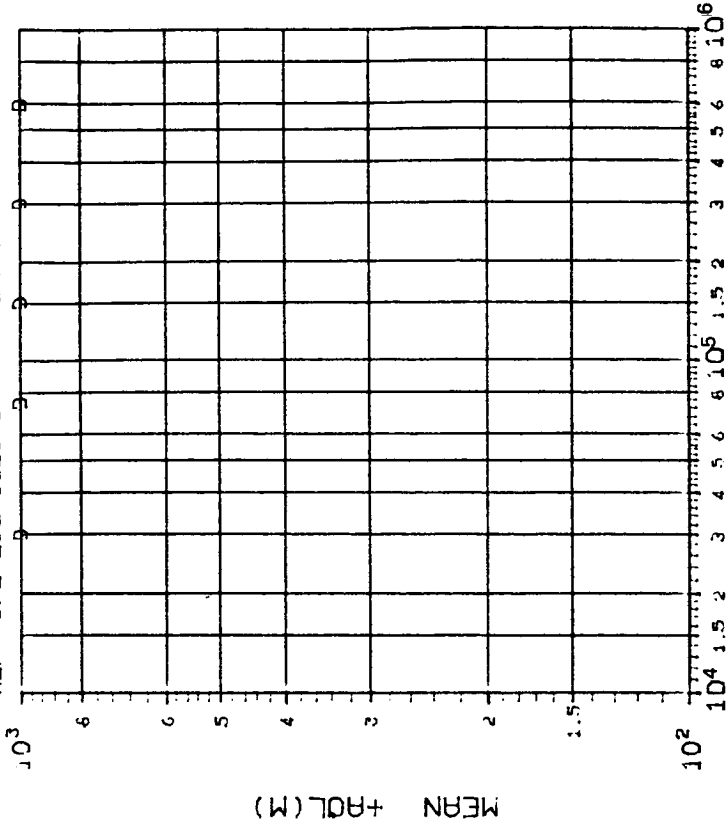


DOSE, rads(Si) 2.5 MeV electrons
 (3)+AQL (RL=JNF) IN V/V: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	30	.0447
	75	.0637
	150	.0694
	300	.095
	600	.1095

INITIAL MEAN VALUE +AQL(M) = ****X10¹²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-1 DATE CODE 8305

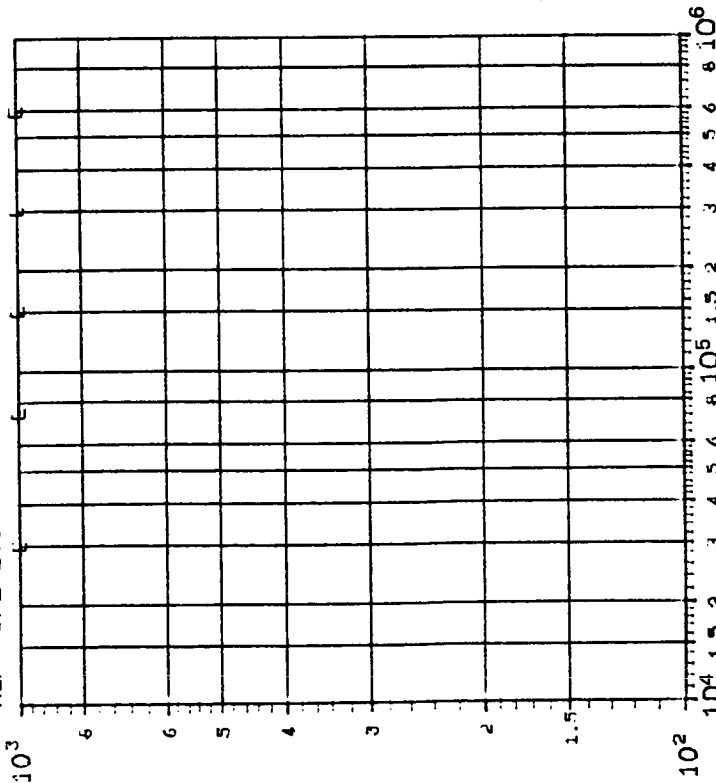


DOSE, rads(Si) 2.5 MeV electrons
 (4)+AQL (RL=2K) IN V/V: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	30	.0707
	75	.0894
	150	.1225
	300	.1095
	600	.1095

INITIAL MEAN VALUE +AQL(M) = ****X10¹²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-1 DATE CODE 8305



MEAN -AOL (M)

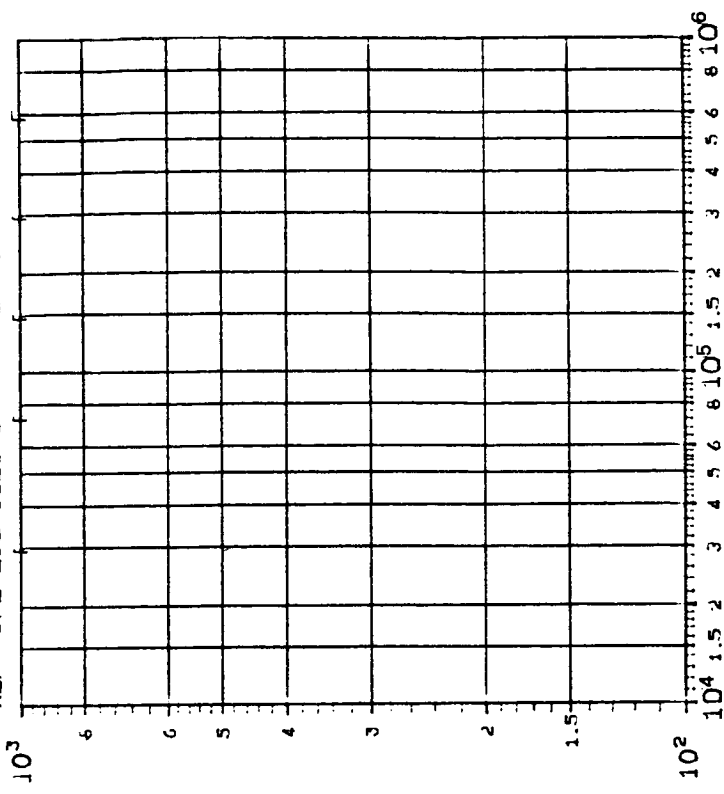
DOSE, rads(Si) 2.5 MeV electrons

(5)-AOL (RL=INF) IN V/V: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	30 75 150 300 600
	.0894 .0894 .0837 .1342 .0637

INITIAL MEAN VALUE -AOL (M) = $****X10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-1 DATE CODE 8305



MEAN -AOL (M)

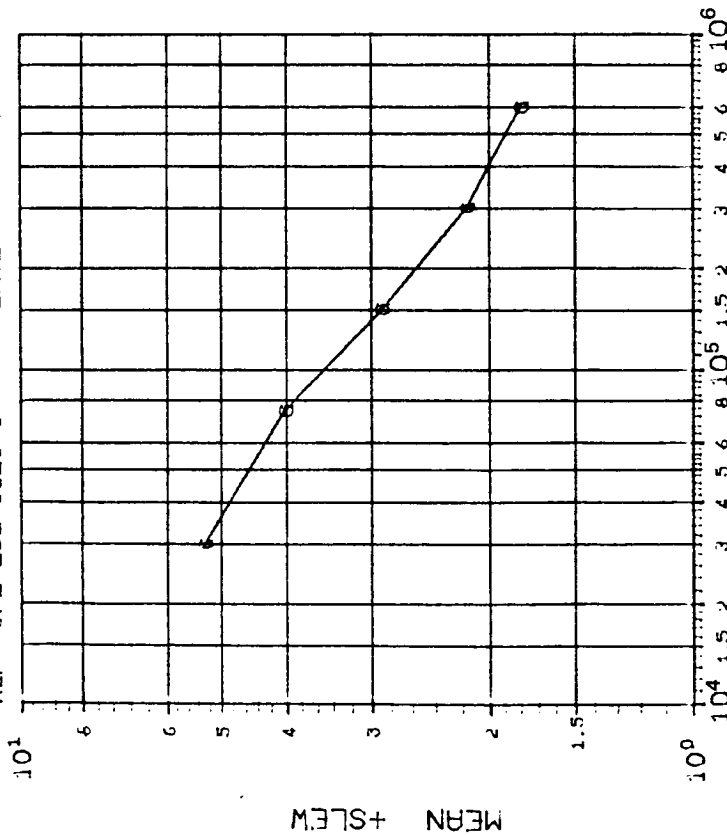
DOSE, rads(Si) 2.5 MeV electrons

(6)-AOL (RL=2K) IN V/V: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	30 75 150 300 600
	.0894 .0894 .1225 .1304 .0894

INITIAL MEAN VALUE -AOL (M) = $****X10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-1 DATE CODE 8305



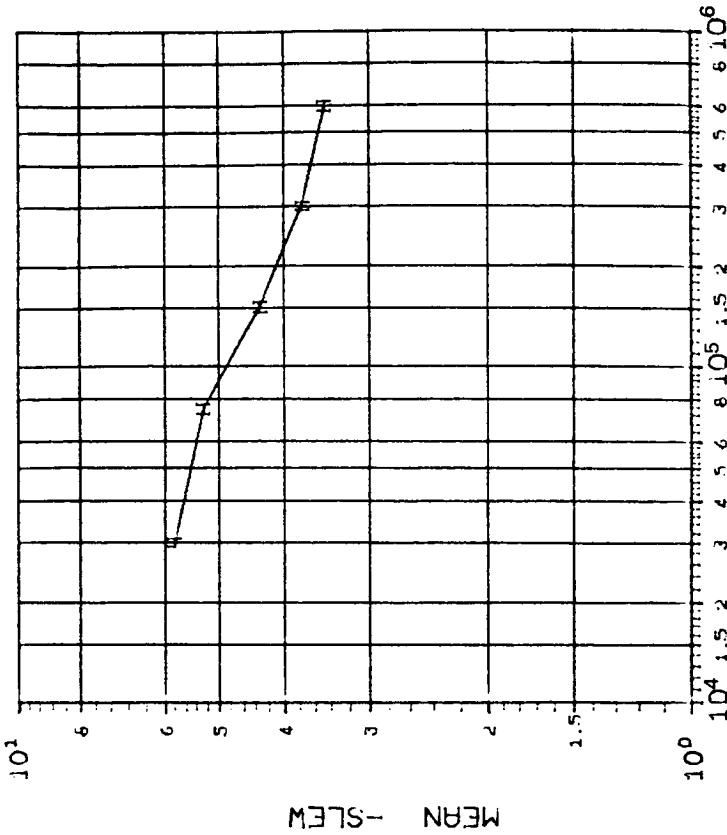
DOSE, rads(Si) 2.5 MeV electrons

(7)SLEW (RL=2K) IN V/US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30 75 150 300 600
	.4579 .2107 .2109 .3962 .4906

INITIAL MEAN VALUE +SLEW = 7.04X10⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-1 DATE CODE 8305



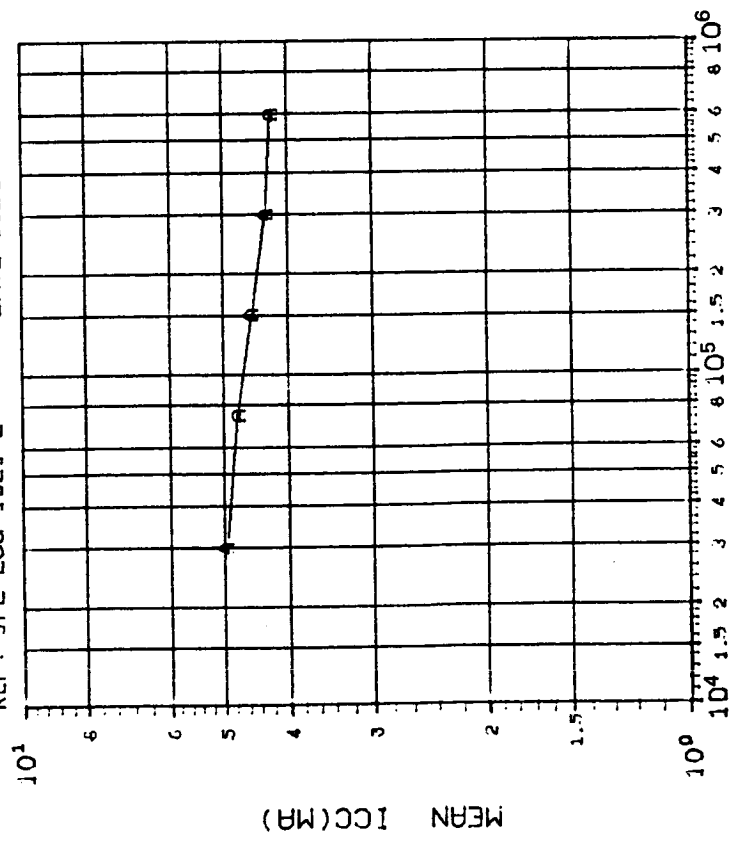
DOSE, rads(Si) 2.5 MeV electrons

(8)SLEW (RL=2K) IN V/US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	30 75 150 300 600
	.4648 .2647 .3099 .3359 .3819

INITIAL MEAN VALUE -SLEW = 6.98X10⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-2 DATE CODE 8305



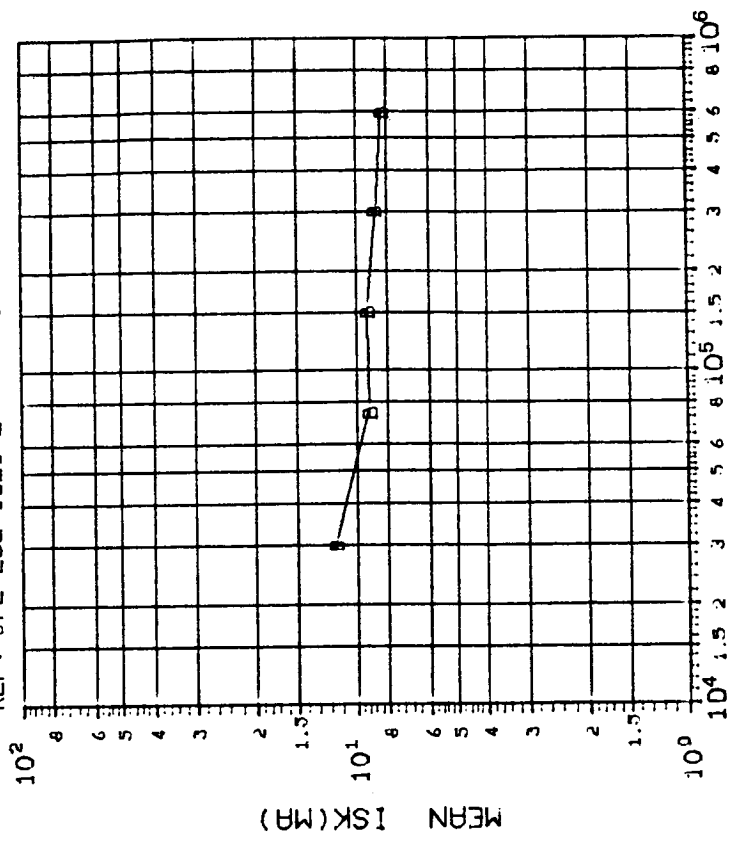
DOSE, rads(Si) 2.5 MeV electrons

(1) ICC (RL=INF) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
9	30 75 150 300 600
	.1577 .1503 .1499 .1660 .2223

INITIAL MEAN VALUE ICC(MA) = 5.13X10⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-2 DATE CODE 8305



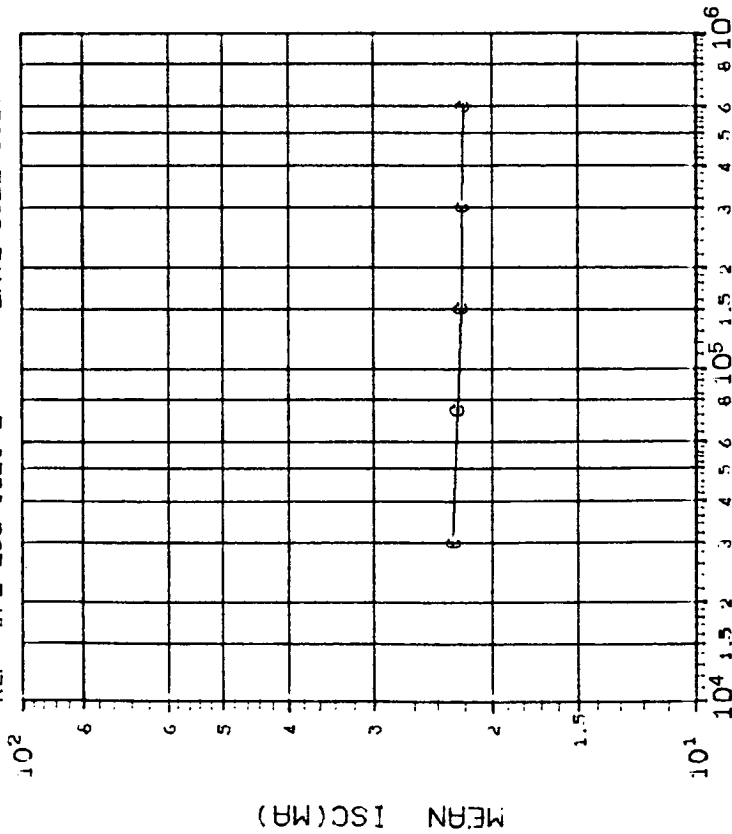
DOSE, rads(Si) 2.5 MeV electrons

(2) ISK (V0=1V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	30 75 150 300 600
	.6279 2.736 .4487 .4570 .5005

INITIAL MEAN VALUE ISK(MA) = 1.32X10¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-2 DATE CODE 8305



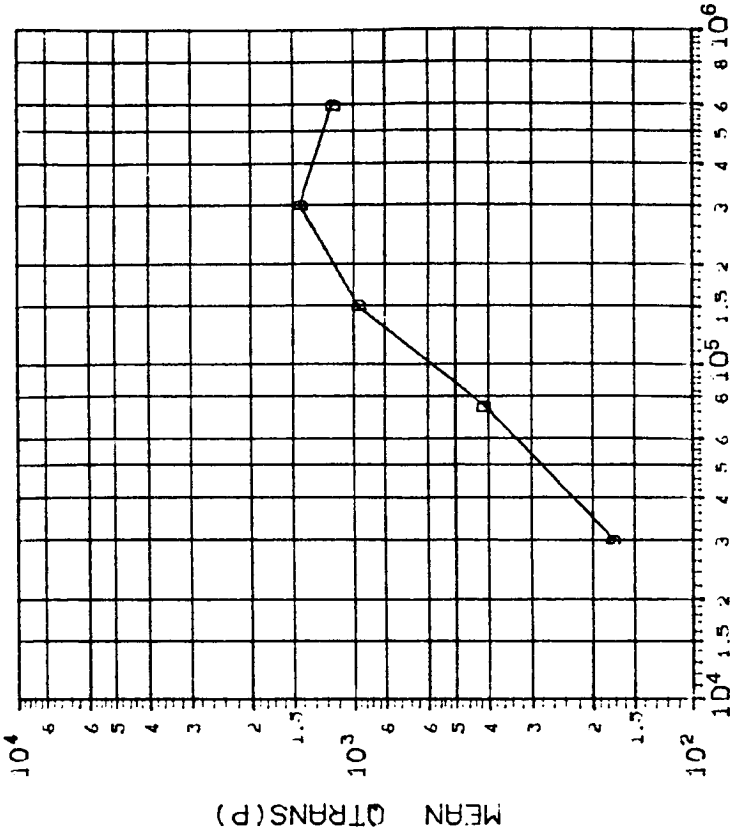
DOSE, rads(Si) 2.5 MeV electrons

(3)ISC (V0=-1V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	30 75 150 300 600	.7356 .6635 .7198 .6874 .6688

INITIAL MEAN VALUE ISC(MA) = 2.32X10¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-2 DATE CODE 8305



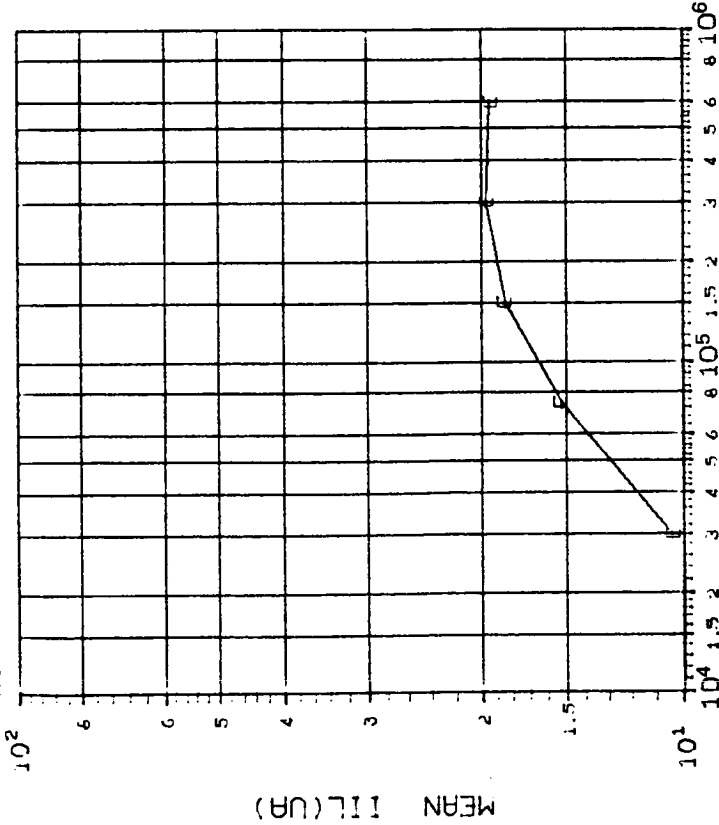
DOSE, rads(Si) 2.5 MeV electrons

(4)QTRANS(C=5.05NF) IN PC: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	30 75 150 300 600	41.89 264.3 104.6 480.6 373.6

INITIAL MEAN VALUE QTRANS(P) = 6.59X10¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-2 DATE CODE 8305



MEAN IIL(UA)

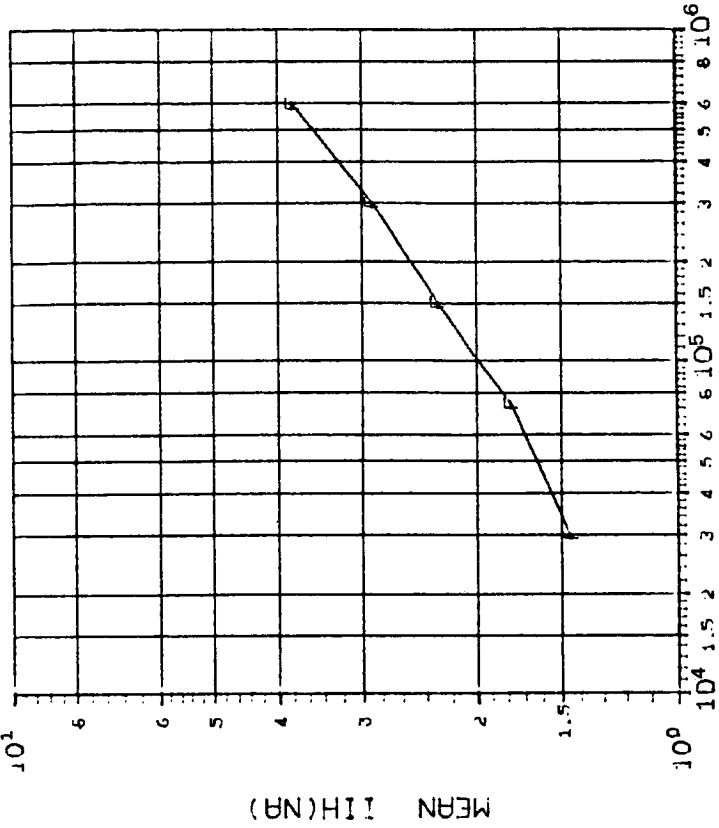
DOSE, rads(Si) 2.5 MeV electrons

(5)IIL (VIN=OV) IN UA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30 75 150 300 600
	.4343 .1073 .9166 1.749 2.094

INITIAL MEAN VALUE IIL(UA) = 5.10X10¹⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-2 DATE CODE 8305



MEAN IIH(NR)

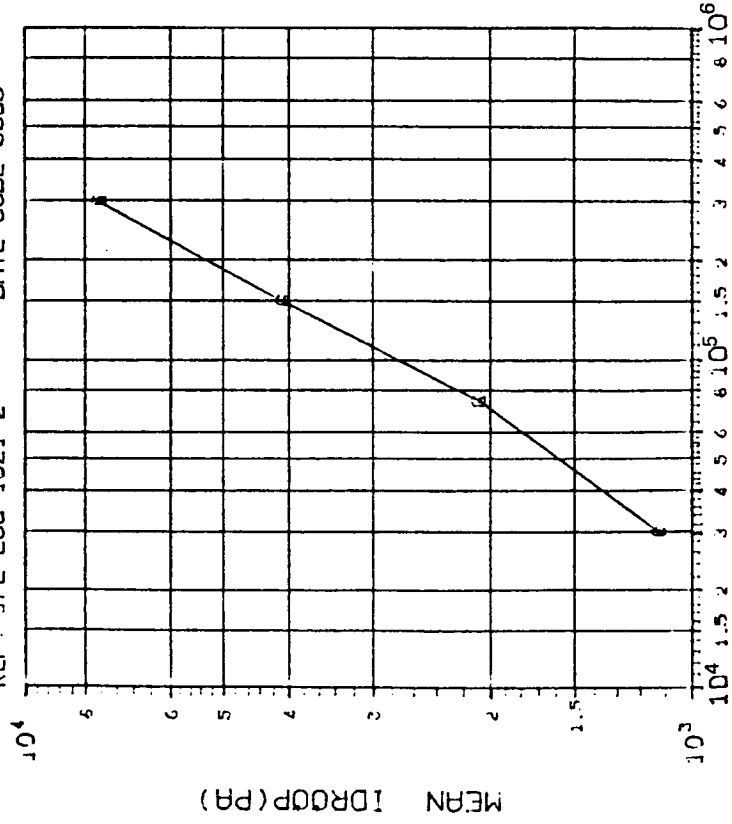
DOSE, rads(Si) 2.5 MeV electrons

(6)IIH (VIN=5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	30 75 150 300 600
	.0483 .1683 .2256 .3044 .4563

INITIAL MEAN VALUE IIH(NA) = 1.26X10¹⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-63
 REF: JPL LOG 1021-2 DATE CODE 6305



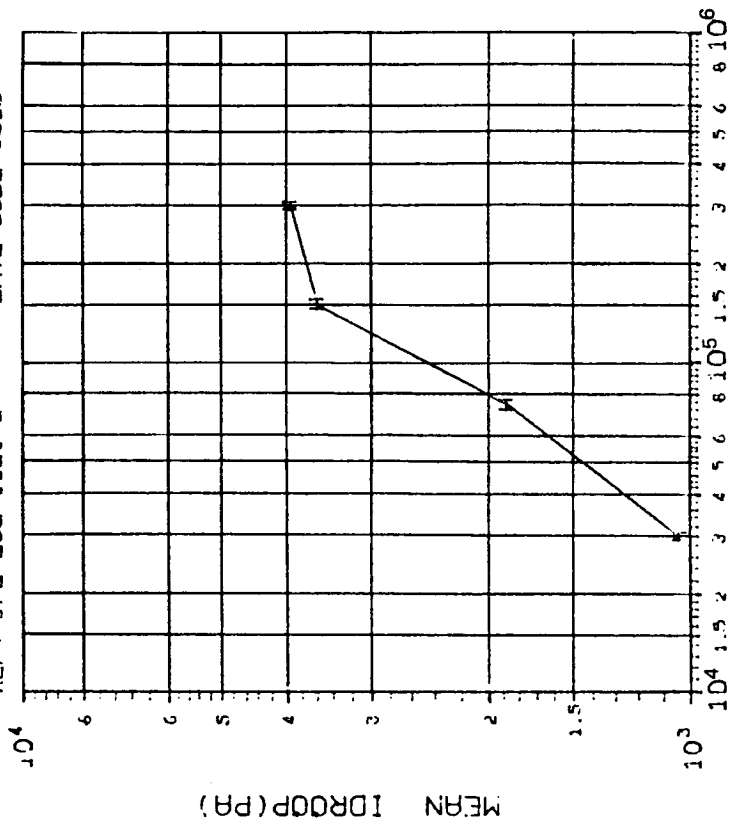
DOSE, rads(Si) 2.5 MeV electrons

(7)IDROOP(VIN=5V) IN PA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30 75 150 300 600
	230.0 538.5 1132. 3219. ****

INITIAL MEAN VALUE IDROOP(PA) = 4.69X10⁴

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 11-29-63
 REF: JPL LOG 1021-2 DATE CODE 6305



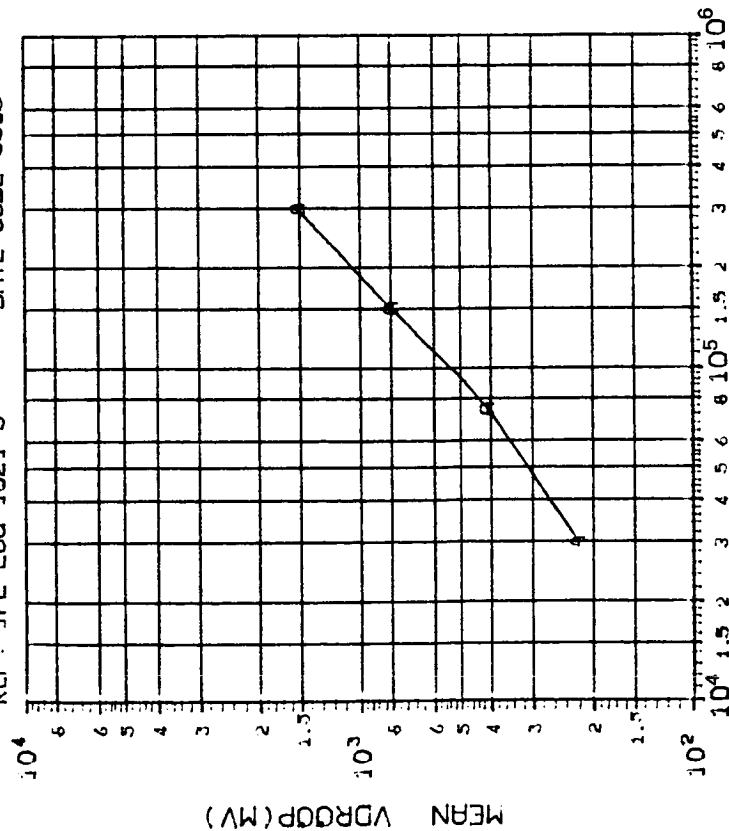
DOSE, rads(Si) 2.5 MeV electrons

(8)IDROOP(VIN=5V) IN PA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	30 75 150 300 600
	227.7 539.1 1194. 918.6 ****

INITIAL MEAN VALUE IDROOP(PA) = 4.46X10⁴

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 11-29-63
 REF: JPL LOG 1021-3 DATE CODE 8305



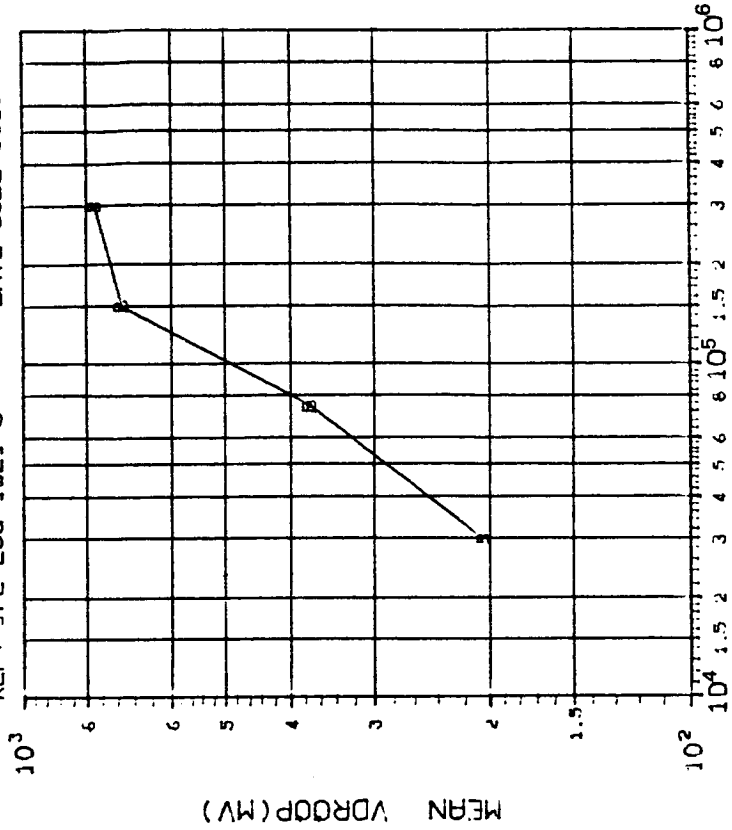
DOSE, rads(Si) 2.5 MeV electrons

(1)VDR00P(VIN=5V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	30 75 150 300 600
	45.59 106.6 224.1 637.4 ****

INITIAL MEAN VALUE VDR00P(MV) = 9.29X10⁺¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 11-29-63
 REF: JPL LOG 1021-3 DATE CODE 8305



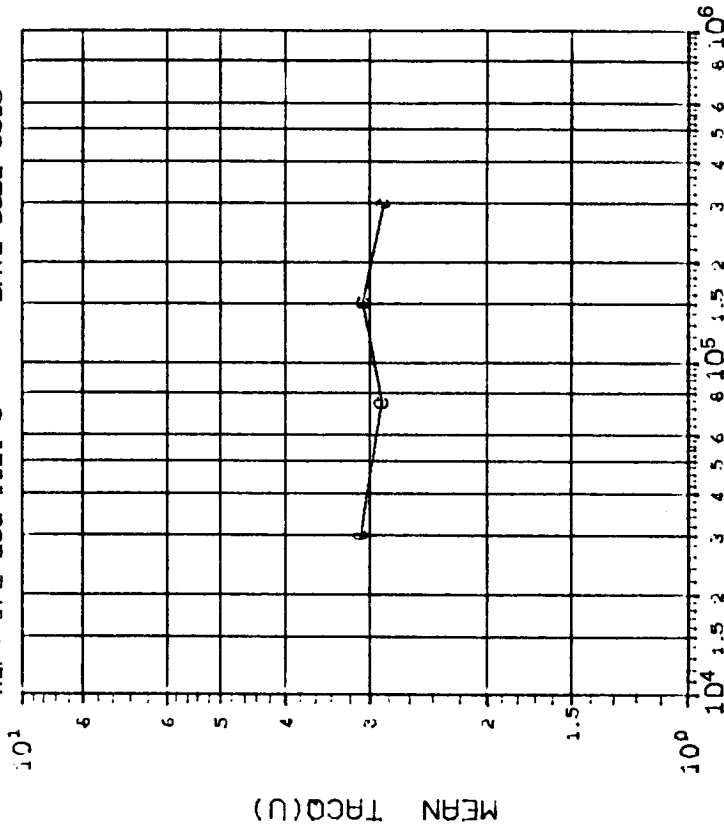
DOSE, rads(Si) 2.5 MeV electrons

(2)VDR00P(VIN=5V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30 75 150 300 600
	45.12 106.6 236.5 182.0 ****

INITIAL MEAN VALUE VDR00P(MV) = 6.62X10⁺¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-3 DATE CODE 6305



DOSE, rads(Si) 2.5 MeV electrons

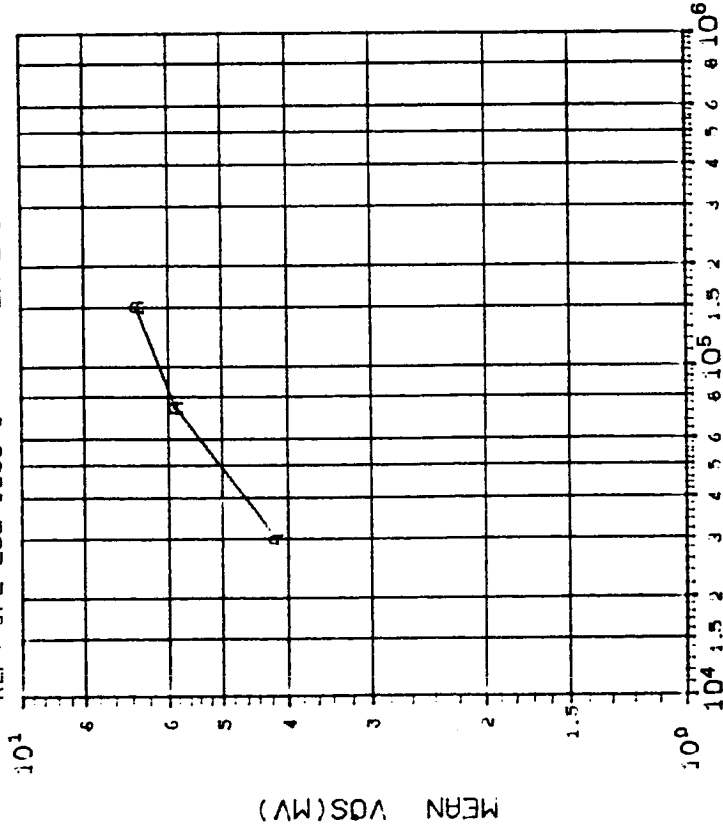
(3)TACQ (1VALUE) IN US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	30	75	150
C	.2866	.3428	.9377
			1.101 ****

INITIAL MEAN VALUE TACQ(U) = 2.31X10⁰

5.5

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410



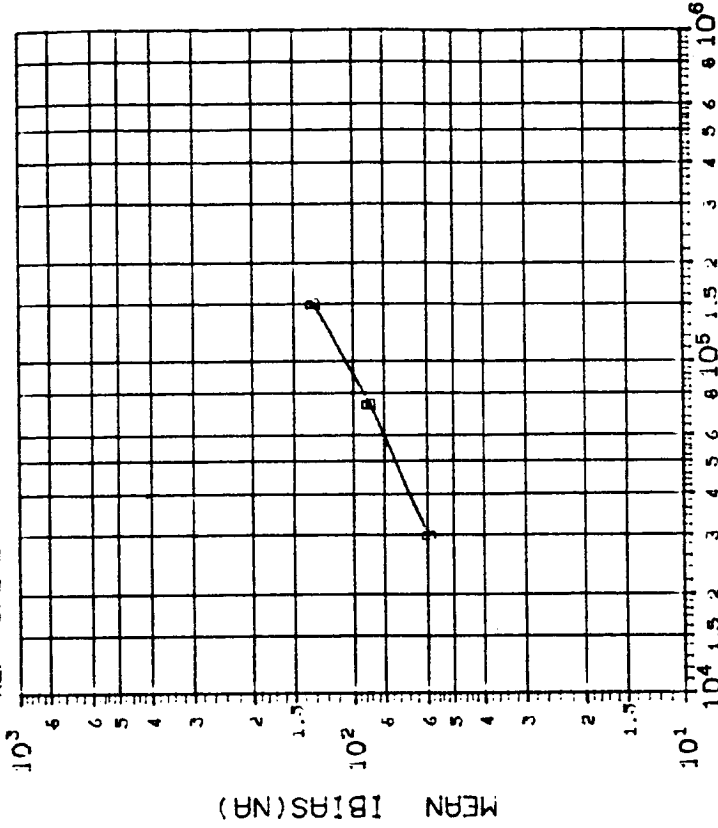
DOSE, rads(Si) 2.5 MeV electrons

(1)VOS (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	30 75 150
	1.600 2.017 2.130

INITIAL MEAN VALUE VOS(MV) = 1.31X10⁰⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

(2)IBIAS(V0=0V) IN NA: VS DOSE

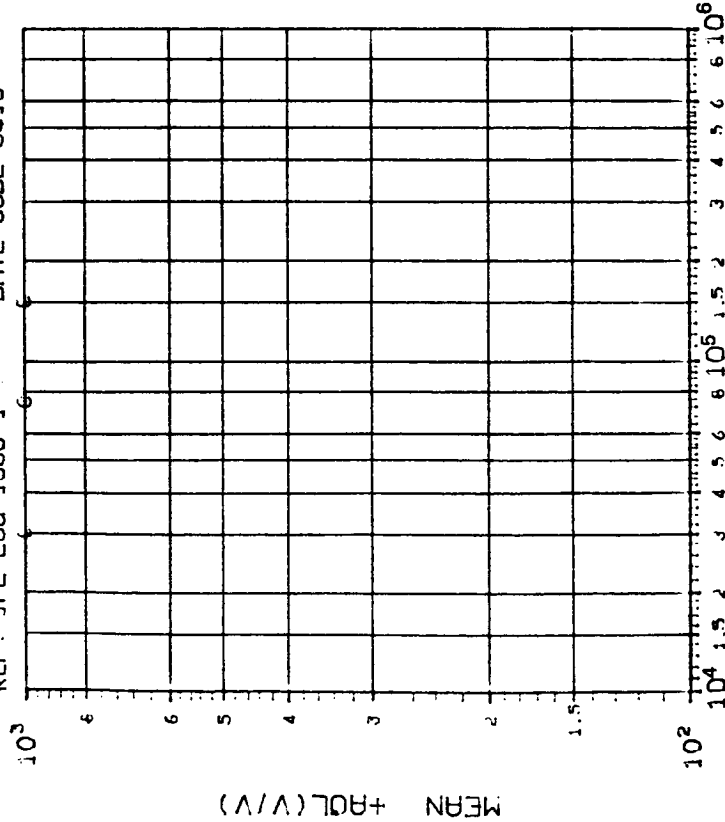
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30 75 150
	1.191 9.167 14.56

INITIAL MEAN VALUE IBIAS(NA) = 3.17X10⁻⁰¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMI 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-1 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

(3)+AOL (RL=INF) IN V/V: VS DOSE

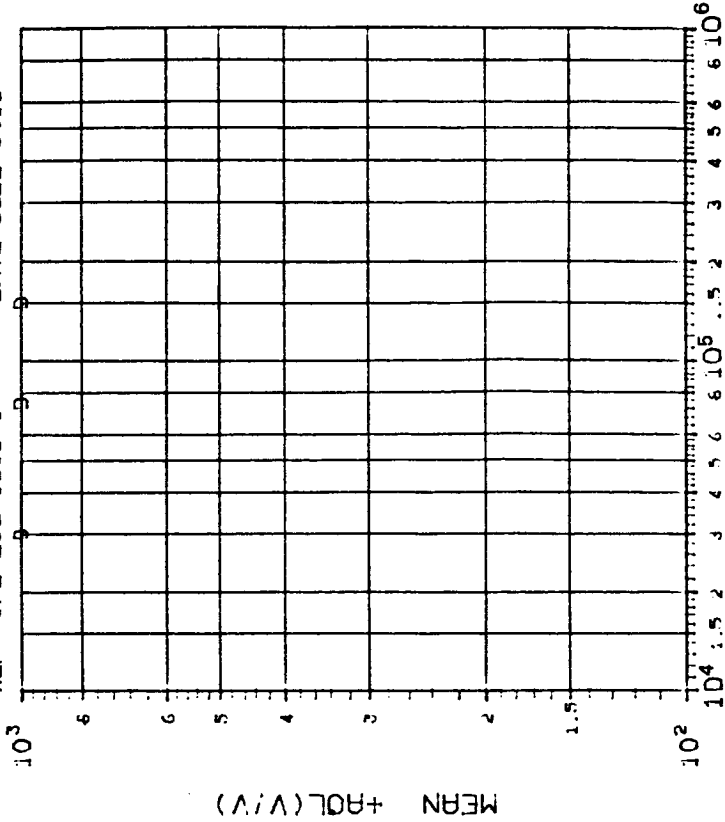
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30 75 150
	.0546 .1000 .0894

INITIAL MEAN VALUE +AOL (V/V) = ****X10⁺²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMI 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-1 DATE CODE 8410



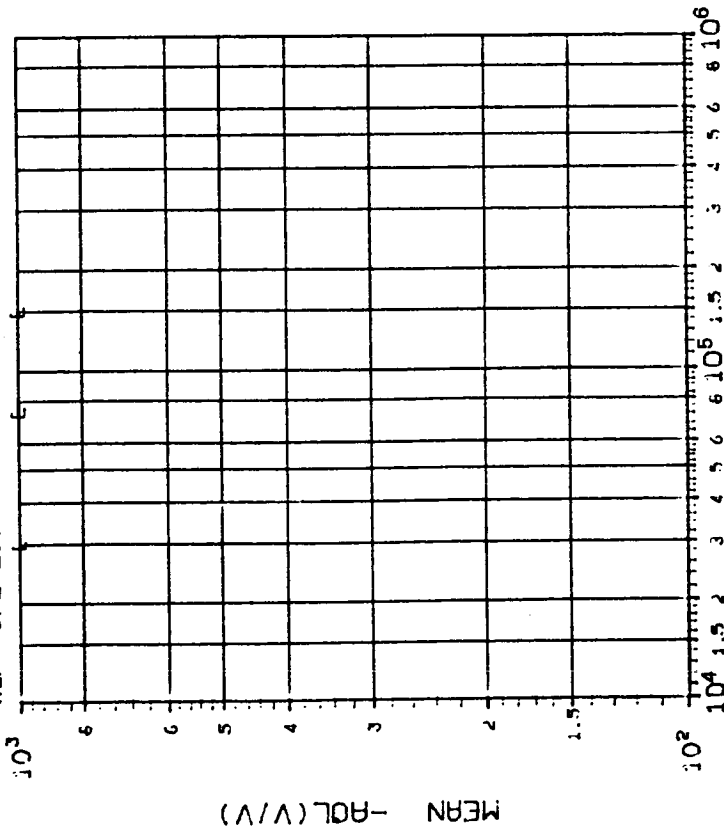
DOSE, rads(Si) 2.5 MeV electrons

(4)+AOL (RL=2K) IN V/V: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	30 75 150
	.0546 .1000 .1095

INITIAL MEAN VALUE +AOL (V/V) = ****X10⁺²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410

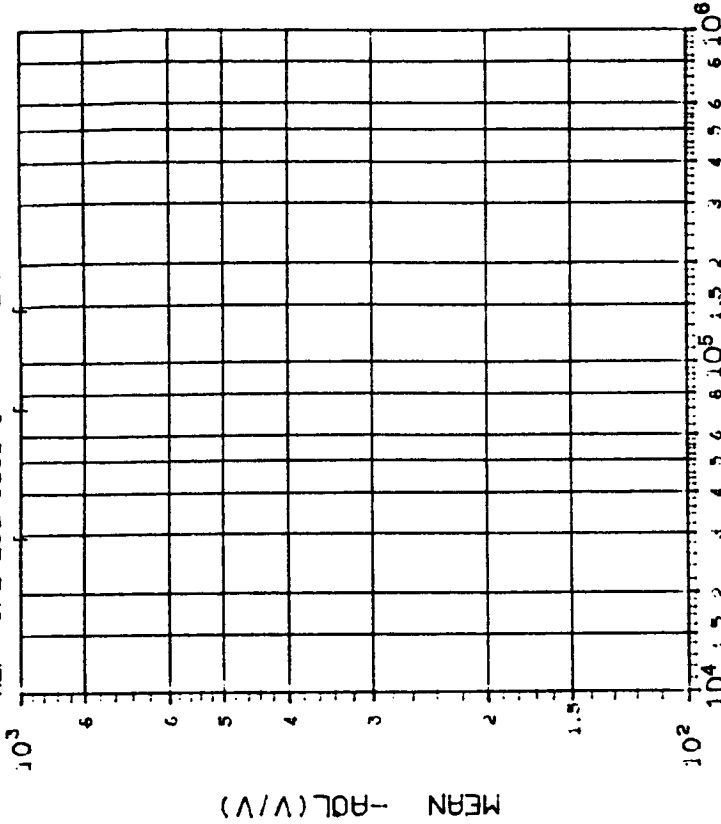


DOSE, rads(Si) 2.5 MeV electrons

(5)-AOL (RL=INF) IN V/V: VS DOSE

INITIAL MEAN VALUE -AOL(V/V) = ****X10¹²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

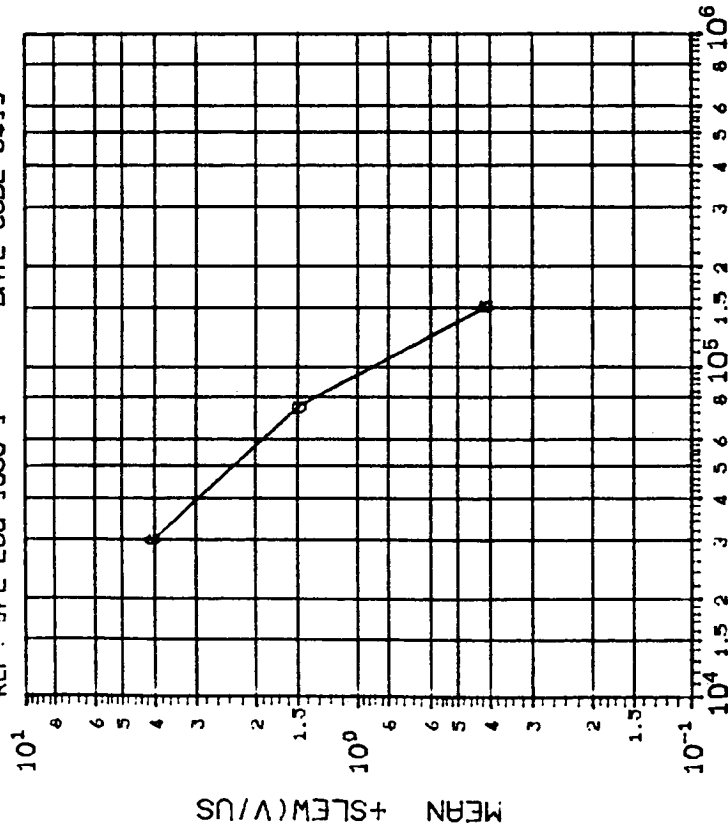
(6)-AOL (RL=2K) IN V/V: VS DOSE

INITIAL MEAN VALUE -AOL(V/V) = ****X10¹²

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	30 75 150
r	.0548 .0447 .0548

INITIAL MEAN VALUE -AOL(V/V) = ****X10¹²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410



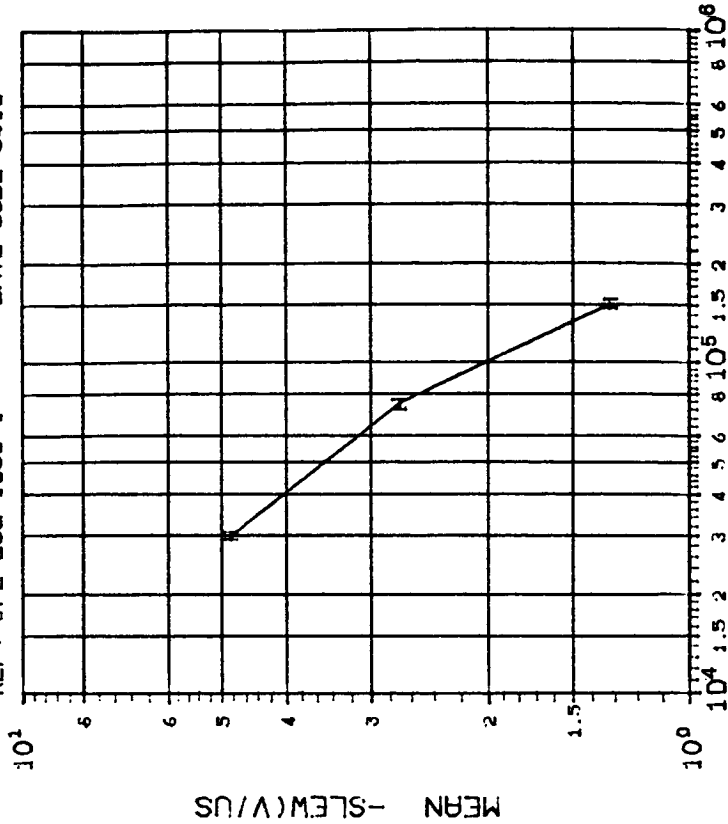
DOSE, rad(Si) 2.5 MeV electrons

(7)SLEW (RL=2K) IN V/US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	30 75 150
	.1457 .2544 .1369

INITIAL MEAN VALUE +SLEW(V/US) = 7.52X10⁴D

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410



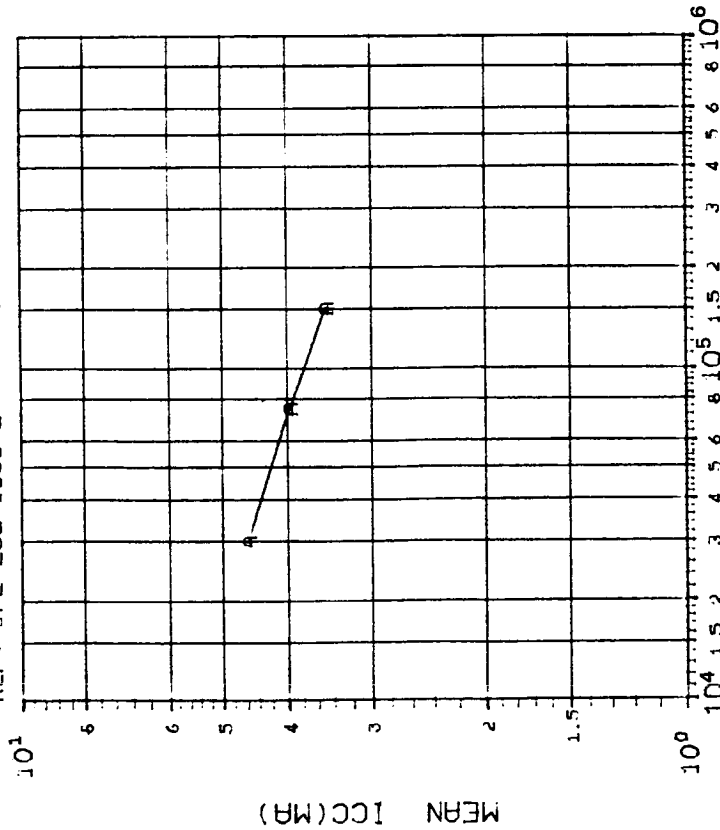
DOSE, rad(Si) 2.5 MeV electrons

(8)SLEW (RL=2K) IN V/US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	30 75 150
	.1673 .3163 .2519

INITIAL MEAN VALUE -SLEW(V/US) = 6.72X10⁴D

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-2 DATE CODE 8410



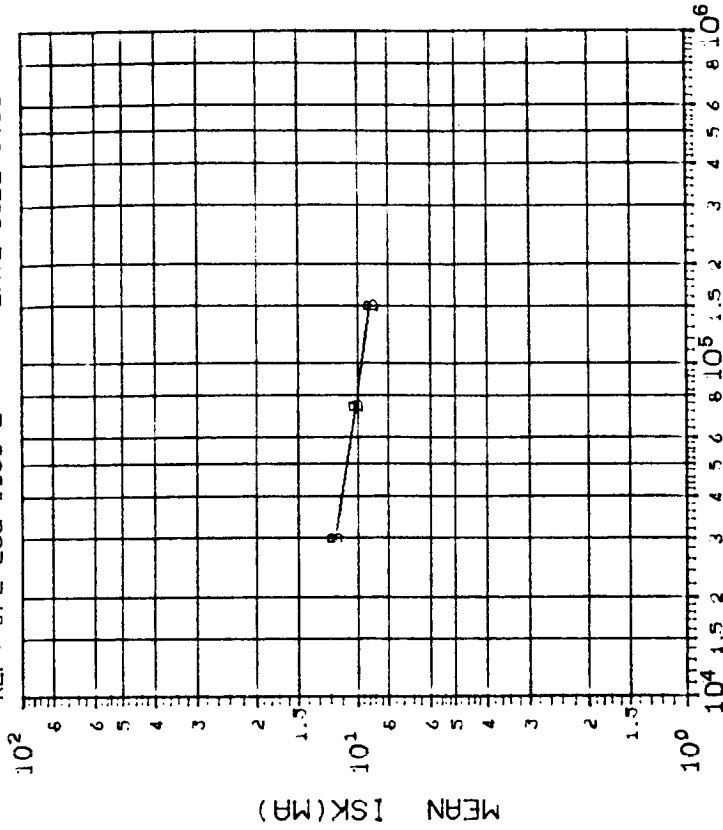
DOSE, rads(Si) 2.5 MeV electrons

(1) ICC (AL=INF) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	30 75 150
	.0776 .1223 .1351

INITIAL MEAN VALUE ICC(MA) = 4.93X10⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-2 DATE CODE 8410



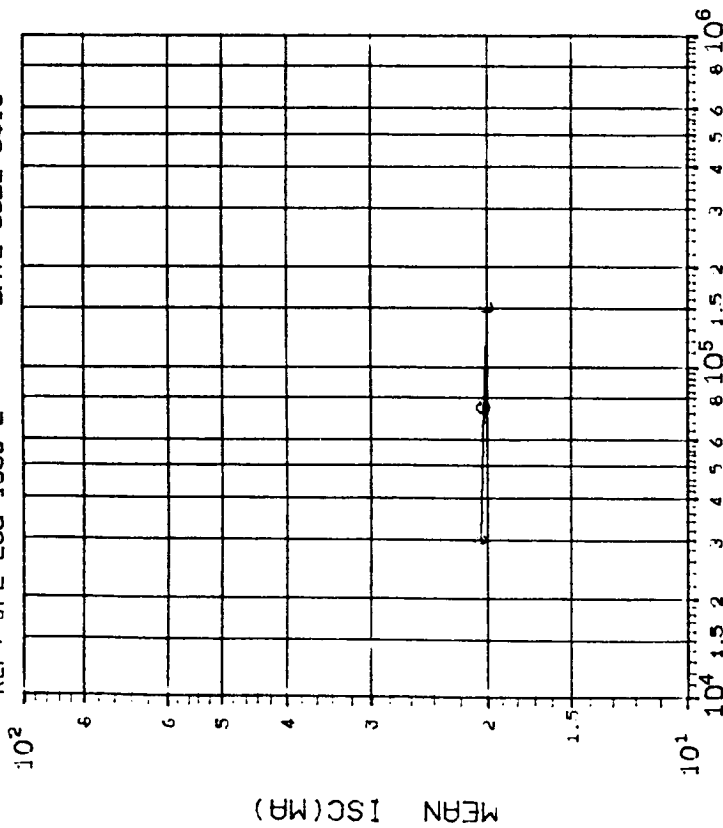
DOSE, rads(Si) 2.5 MeV electrons

(2) ISK (V0=1V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30 75 150
	.4528 .4247 .4727

INITIAL MEAN VALUE ISK(MA) = 1.40X10¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-2 DATE CODE 8410



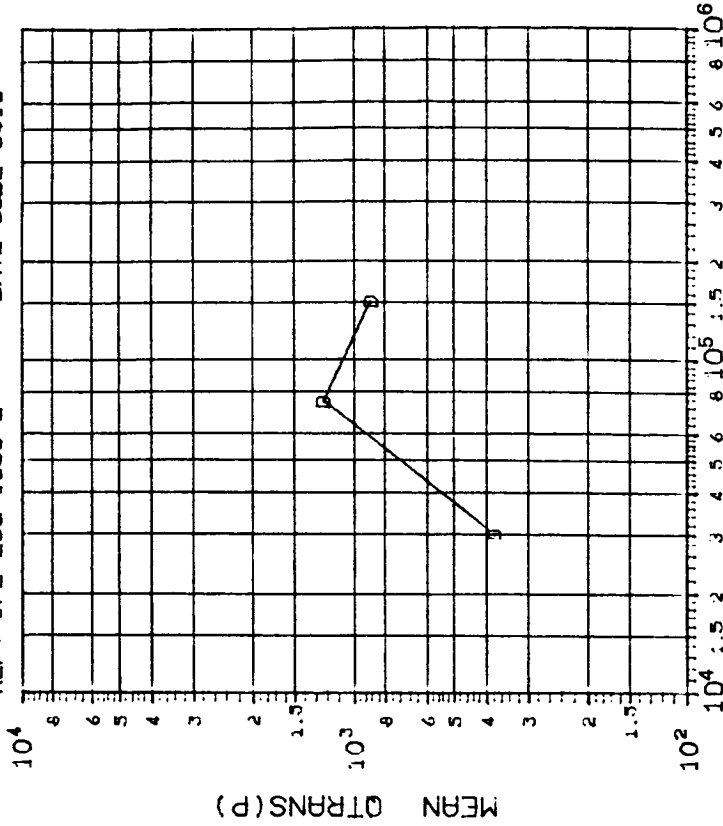
DOSE, rads(Si) 2.5 MeV electrons

(3)ISC (VO=-1V) IN MR: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30 75 150
	.2066 .2075 .2017

INITIAL MEAN VALUE ISC(MR) = 2.11×10^1

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-2 DATE CODE 8410



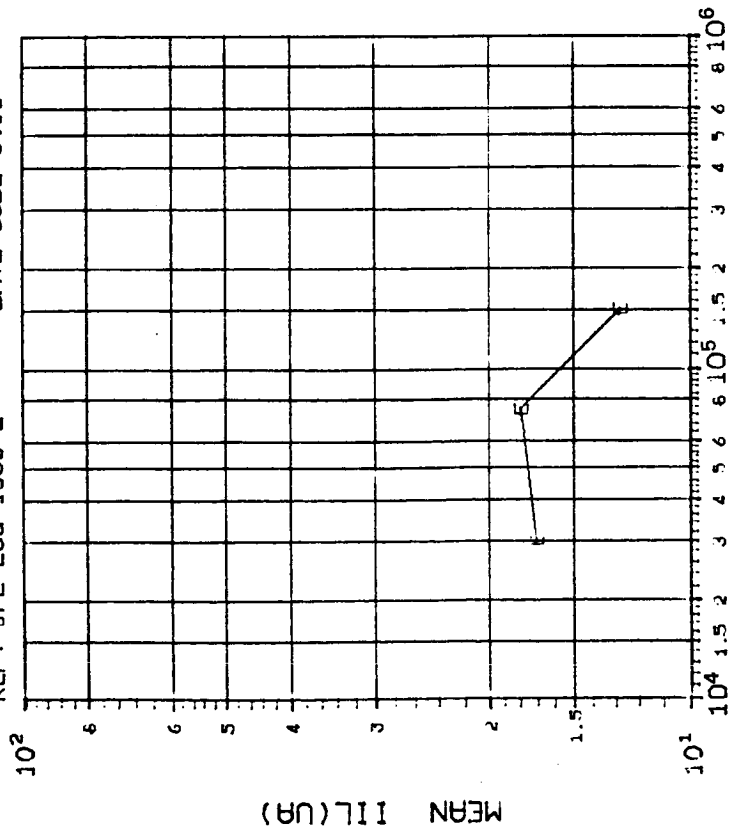
DOSE, rads(Si) 2.5 MeV electrons

(4)QTRANS(C=5.05NF) IN PC: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	30 75 150
	44.91 122.4 64.62

INITIAL MEAN VALUE QTRANS(P) = 1.09×10^2

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-2 DATE CODE 8410



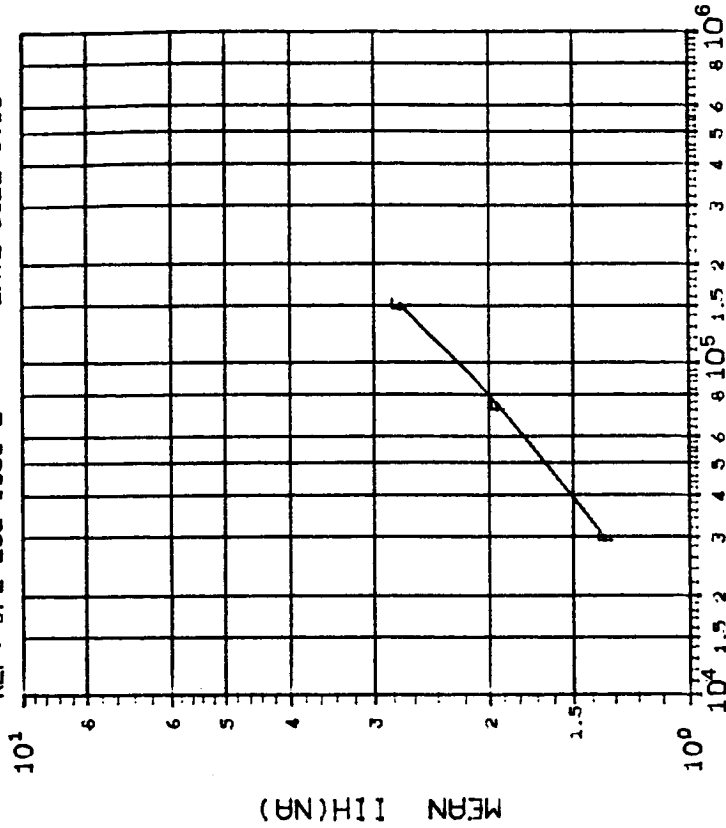
DOSE, rads(Si) 2.5 MeV electrons

(5)IIL (VIN=OV) IN UA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	30 75 150
	.6261 1.114 1.165

INITIAL MEAN VALUE IIL(UA) = 5.75X10¹⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-2 DATE CODE 8410



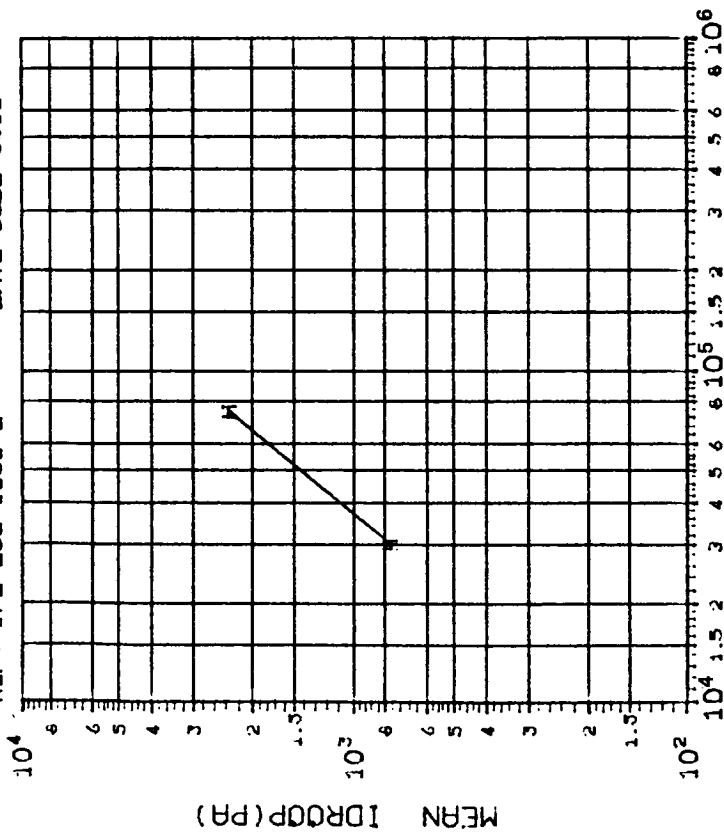
DOSE, rads(Si) 2.5 MeV electrons

(6)I1H (VIN=5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	30 75 150
	.0192 .0750 .1228

INITIAL MEAN VALUE I1H(NA) = 1.08X10¹⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-2 DATE CODE 8410



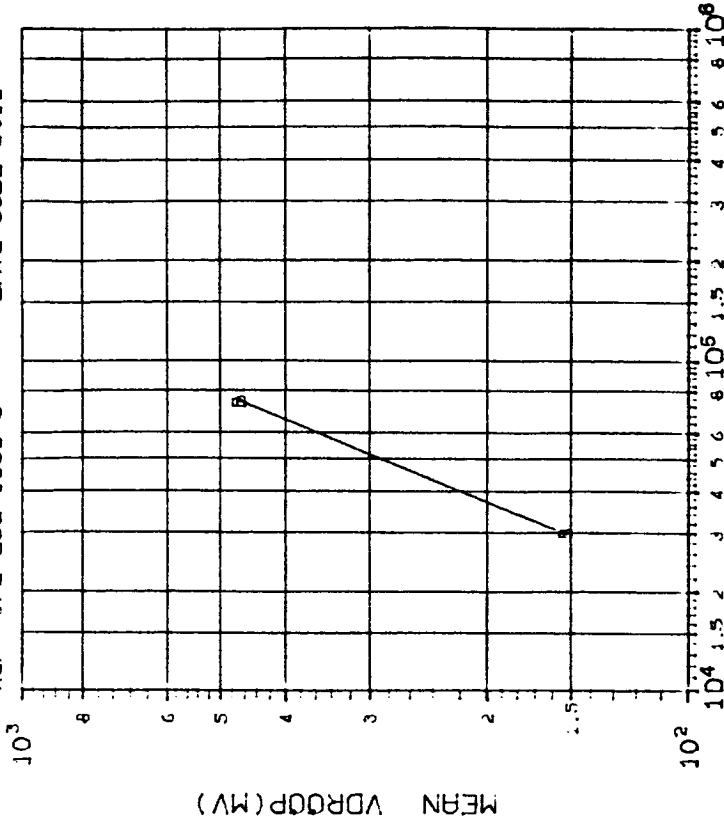
DOSE, rads(Si) 2.5 MeV electrons

(8)IDROOP(VINE-5V) IN PA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	30 75 150
	74.07 233.9 ****

INITIAL MEAN VALUE IDROOP(PA) = $2.32 \times 10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-3 DATE CODE 8410



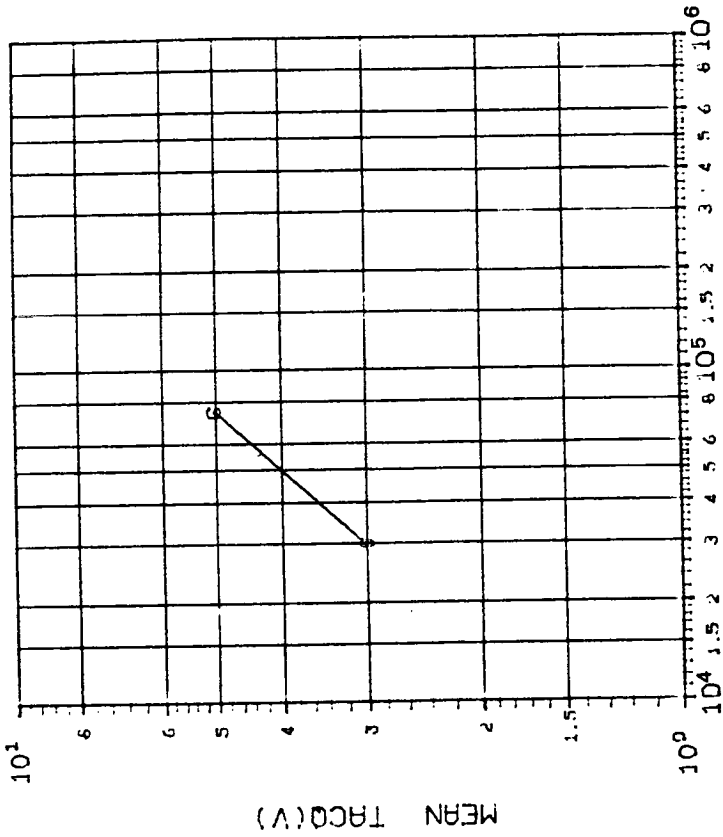
DOSE, rads(Si) 2.5 MeV electrons

(2)VDR00P(VINE-5V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30 75 150
	14.69 46.34 ****

INITIAL MEAN VALUE VDR00P(MV) = $4.60 \times 10^{+1}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMI 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-3 DATE CODE 841D



DOSE, rads(Si) 2.5 MeV electrons

(3)TACQ (1VALUE) IN US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	30 75 150
C	.2790 .2169 ****

INITIAL MEAN VALUE TACQ(V) = 2.26X10¹²

APPENDIX A

VENDOR IDENTIFICATION CODE LIST

VENDOR IDENTIFICATION CODE LIST

ADI	Analog Devices, Inc.
ALP	Alpha Industries, Semiconductor Division
AMD	Advanced Microdevices Corporation
AMP	Amptek, Inc.
BUB	Burr-Brown
FSC	Fairchild Semiconductor
HAR	Harris Corporation, Semiconductor Division
HUG	Hughes Aircraft Co., Solid State Prod.
LTC	Linear Technology, Inc.
MNC	Micro Networks Corporation
MOT	Motorola, Inc., Semiconductor Products Division
MPS	Micro Power Systems, Inc.
MTL	Mitel Semiconductor
NSC	National Semiconductor Corporation
PMI	Precision Monolithics, Inc.
RAY	Ratheon Co., Semiconductor Division
RCA	RCA Corporation, Solid State Division
SIL	Siliconix Devices, Inc.
SPI	Semi Processes, Inc.
SSS	Solid State Scientific
STX	Supertex, Inc.

APPENDIX B

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS

AOL ERR.	Gain error
AOL OFF	Offset gain
+AV	Positive voltage gain
-AV	Negative voltage gain
+A _{VOL}	Positive voltage gain under load
-A _{VOL}	Negative voltage gain under load
DVDT	Change in voltage vs. time
F _{MAX}	Maximum frequency
+FSACC	Positive full-scale accuracy
-FSACC	Negative full-scale accuracy
I _{AMP-IN}	Amplifier input current
I _B	Input bias current
I _{CC}	Power supply current
I _{CC-BLK}	Power supply current, blank mode
I _{CC-CONV}	Power supply current, convert mode
I _{CC(H/L)}	Power supply current, high/low level
I _{CHG(+,-)}	Charging current, + and -
I _{D(OFF)}	Drain current, off
I _{DD}	Drain supply current
+I _{DFT}	Positive drift current
-I _{DFT}	Negative drift current
I _{DIS(ON)}	Drain and source current, on
I _{DN}	Output drive current, negative
I _{DP}	Output drive current, positive
I _{DSS}	Drain source current
I _{EE}	Emitter power supply current
I _{EE-BLK}	Emitter power supply current, blank mode
I _{EE-CONV}	Emitter power supply current, convert mode
I _{FS}	Full-scale current
I _{I(H/L)}	Input current, high/low level
I _{IH STR}	Start-convert current
I _{LEAKAGE}	Leakage current

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS (Continued)

I_{LL}	Input current, low level
I_{LOGIC}	Logic power supply current
$I_{O(H/L)}$	Output current, high/low level
I_{OS}	Offset current
$I_{OZ(H/L)}$	Tri-state output leakage current, high/low level
I_{REF}	Reference current
$I_{S(OFF)}$	Source current, off
I_{SC}	Output source current
I_{SK}	Output sink current
I_{SS}	Source supply current
I_{SYM}	Current symmetry
I_{ZERO}	Zero-scale current
LSB	Least significant bit
NONLIN	Nonlinearity
OFFERR	Offset error
OFFSET	Offset voltage
PWD_{TH}	Pulse width threshold
Q TRANS	Storage transfer
ΔR_{AVG}	Change in average resistance
$R_{DS(ON)}$	Resistance, on
+SR	Slew rate positive
-SR	Slew rate negative
t_{AA}	Address access time
t_{AC}	Access time from chip select
t_{ACQ}	Acquisition time
t_{BLANK}	Blank time
t_{CLEH}	Time convert, low to high
t_{CONV}	Conversion time
t_{DELAY}	Timing delay
t_{DP}	Timing parameter DP
t_{DS}	Timing specification

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS (Continued)

t_{DSC}	Timing parameter DSC
t_{HS}	Timing parameter HS
$t_{OFF/ON\ HBE}$	High bit enable propagation delay
$t_{OFF/ON\ LBE}$	Low bit enable propagation delay
t_{PD}	Propagation delay time
t_{PD-DO}	Propagation delay time from clock input to data output
t_{PDE}	Propagation delay from register enable to output
t_{SETUP}	Setup time
V_{CC}	Collector supply voltage
V_{DD}	Drain supply voltage
V_{EE}	Emitter supply voltage
$V_{I(H/L)}$	Input voltage, high/low level
V_{LOGIC}	Logic voltage
$V_{O(H/L)}$	Output voltage, high/low level
V_{OS}	Offset voltage
V_P	Pinch-off voltage
$V_{R(FREQ)}$	Voltage, reference frequency
V_{REF}	Reference voltage
V_{REFL}	Reference voltage under load
V_{SAT}	Saturation voltage
V_{SS}	Source supply voltage
$V_{TH(H/L)}$	Threshold voltage, high/low level
V_{TN}	Threshold voltage, negative
V_{TP}	Threshold voltage, positive

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16. Abstract <p>This document provides steady-state, total-dose radiation test data, in graphic format, for use by electronic designers and other personnel using semiconductor devices in a radiation environment. The data were generated by JPL for various NASA space programs. The document is in two volumes: Volume I provides data on diodes, bipolar transistors, field effect transistors, and miscellaneous semiconductor types, and Volume II (Parts A and B) provides data on integrated circuits.</p> <p>The data are presented in graphic, tabular, and/or narrative format, depending on the complexity of the integrated circuit. Most tests were done using the JPL or Boeing electron accelerator (Dynamitron) which provides a steady-state 2.5-MeV electron beam. However, some radiation exposures were made with a Cobalt-60 gamma ray source, the results of which should be regarded as only an approximate measure of the radiation damage that would be incurred by an equivalent electron dose. All data were generated in support of NASA space programs by the JPL Radiation Effects and Testing Group (514).</p>					
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