

## ***RADIATION TEST REPORT***

PRODUCT: OP484AYQMLR

MASK:

FILE:

DATE CODE:

GAMMA: 0, 100K

GAMMA SOURCE: Co60

DOSE RATE: 48.05 rad/sec

FACILITIES: National Semiconductor  
Sunnyvale, Ca.

TESTED: June 23,2003

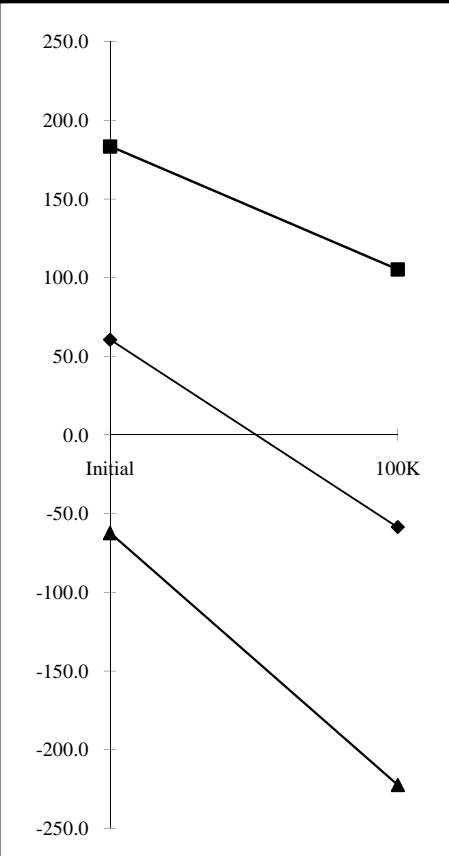
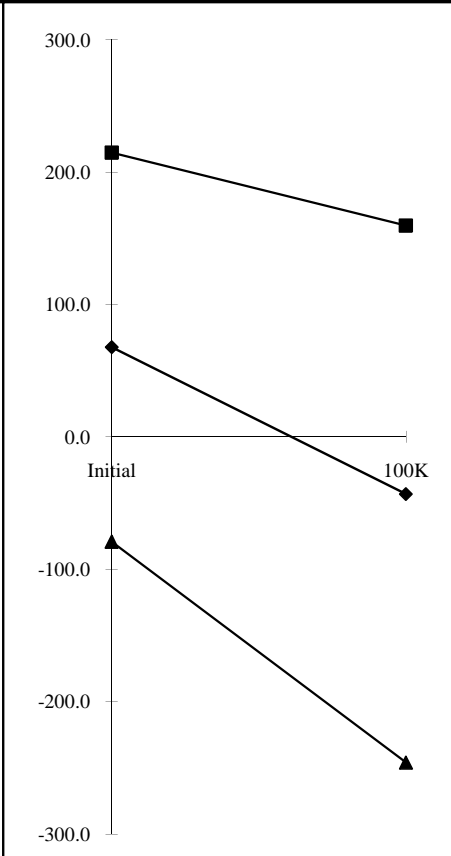
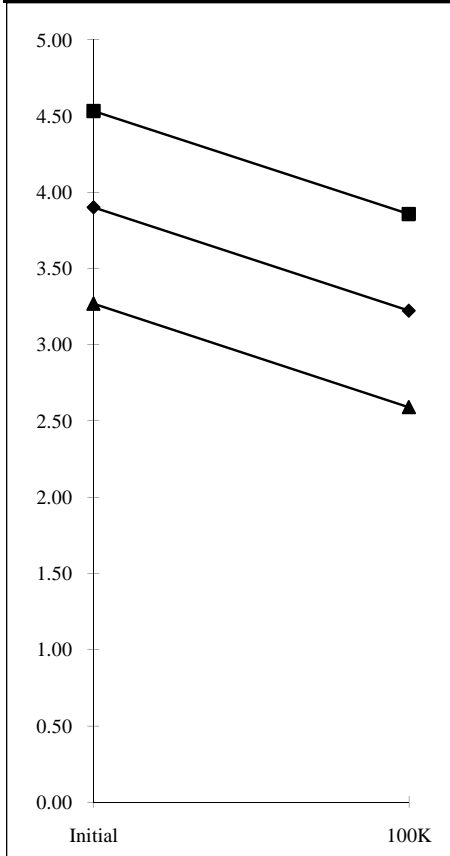
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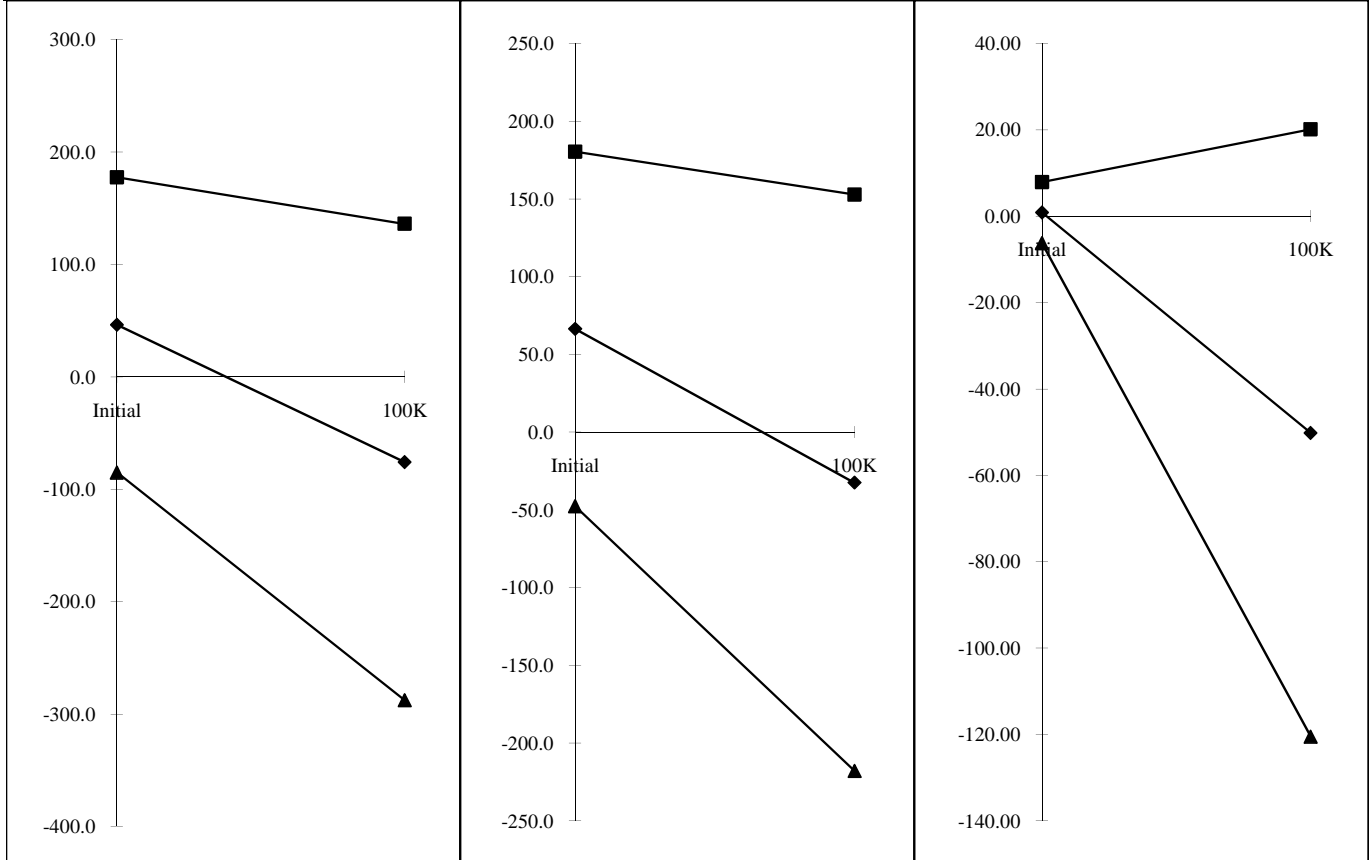
### **WARNING:**

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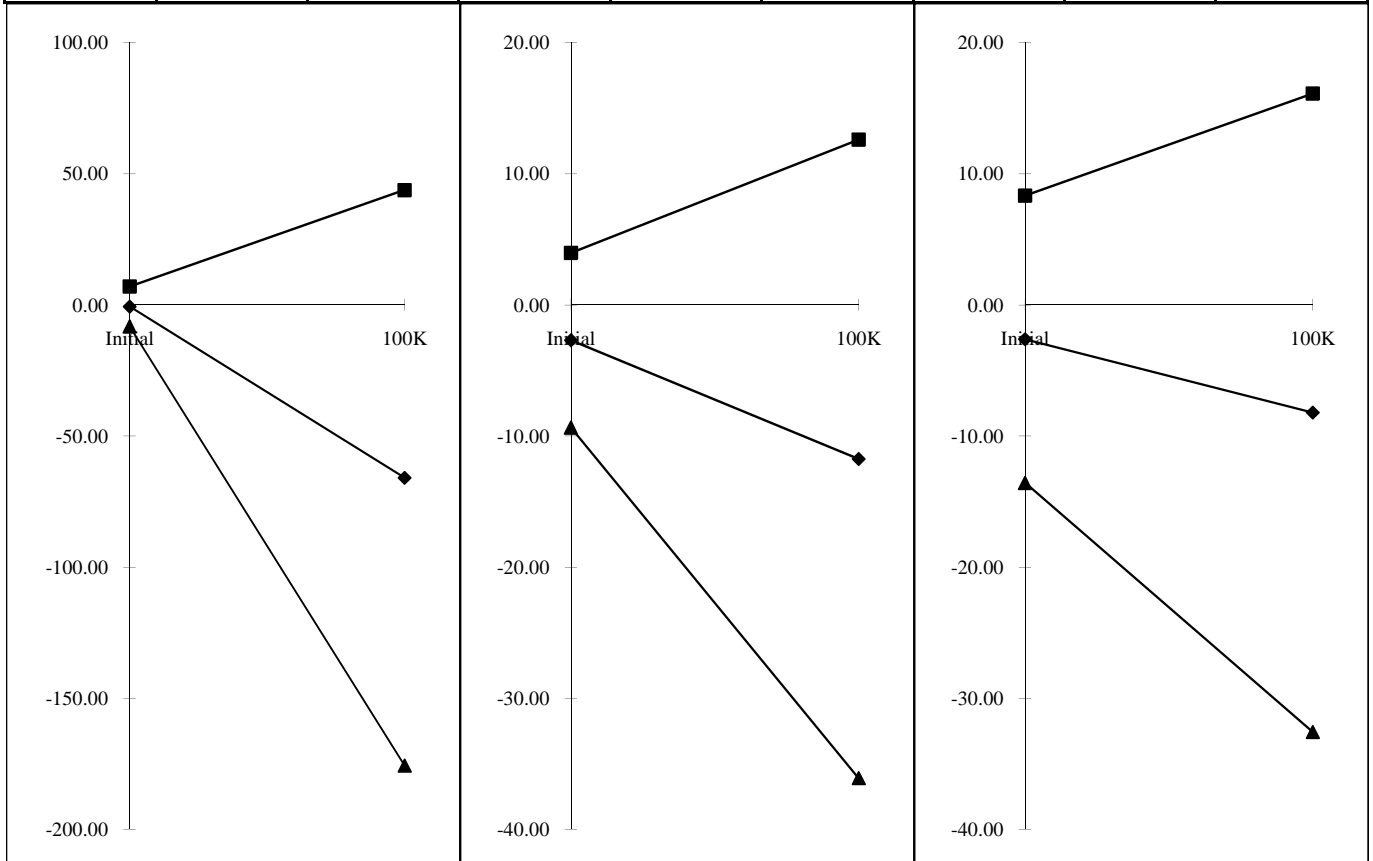
T# 3	ISY	mA	T# 9	VOS [A]	uV	T# 9.1	VOS [B]	uV
SN	Initial	100K	SN	Initial	100K	SN	Initial	100K
1	4.33	4.33	1	56.6	57.4	1	94.1	91.5
2	4.24	3.48	2	21.3	-67.1	2	52.6	-61.2
3	4.25	3.48	3	10.9	-115.5	3	106.0	4.0
26	3.82	3.13	26	40.4	-98.5	26	69.3	-68.3
27	3.75	3.07	27	49.4	-93.8	27	16.3	-155.2
51	4.02	3.40	51	59.8	-84.6	51	-14.0	-148.1
52	3.97	3.32	52	130.0	22.8	52	44.0	-101.4
74	3.80	3.00	74	100.9	19.5	74	19.8	-33.4
75	3.73	2.94	75	70.5	12.4	75	120.9	21.8
99	3.98	3.30	99	-10.0	-141.8	99	69.4	-50.6
100	3.82	3.06	100	109.7	11.1	100	28.5	-107.4
122	4.20	3.52	122	-3.0	-126.4	122	107.0	-23.4
123	4.23	3.59	123	132.7	49.0	123	60.5	-39.9
147	3.38	2.82	147	79.2	10.1	147	95.6	15.4
148	3.89	3.19	148	125.4	83.7	148	56.7	-18.6
171	3.64	2.94	171	33.8	-104.7	171	63.2	-45.3
172	3.71	3.00	172	85.3	-15.1	172	58.8	-27.8
196	3.93	3.32	196	154.0	32.2	196	93.2	-24.8
197	3.89	3.30	197	112.6	1.1	197	107.9	3.3
217	3.81	3.30	217	111.0	-47.6	217	24.5	-135.4
218	3.93	3.36	218	12.6	-135.6	218	99.6	-92.4
239	3.86	3.13	239	25.3	-100.0	239	86.1	-52.6
240	3.98	3.26	240	40.4	-63.5	240	-32.2	-148.1
min	3.38	2.82	min	-10.0	-141.8	min	-32.2	-155.2
max	4.25	3.59	max	154.0	83.7	max	120.9	21.8
stdev	0.21	0.21	stdev	49.0	67.6	stdev	40.9	54.6
average	3.90	3.22	average	67.8	-43.3	average	60.6	-58.6
+3S	4.53	3.86	+3S	214.8	159.5	+3S	183.5	105.2
-3S	3.27	2.59	-3S	-79.1	-246.1	-3S	-62.2	-222.4



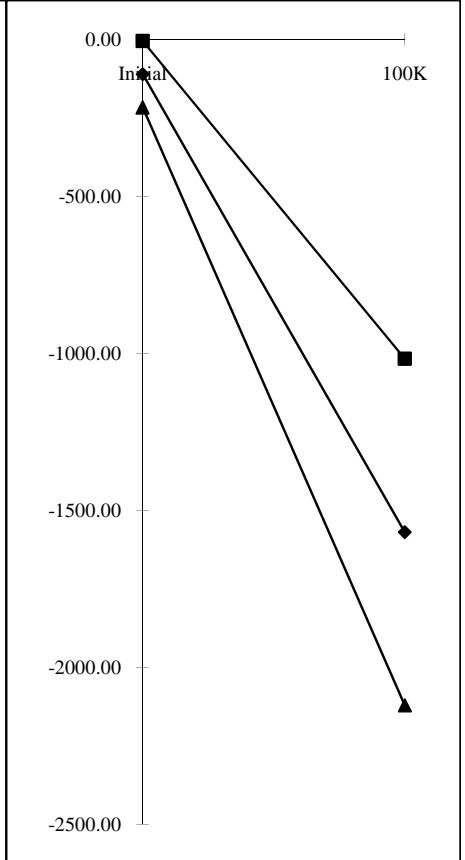
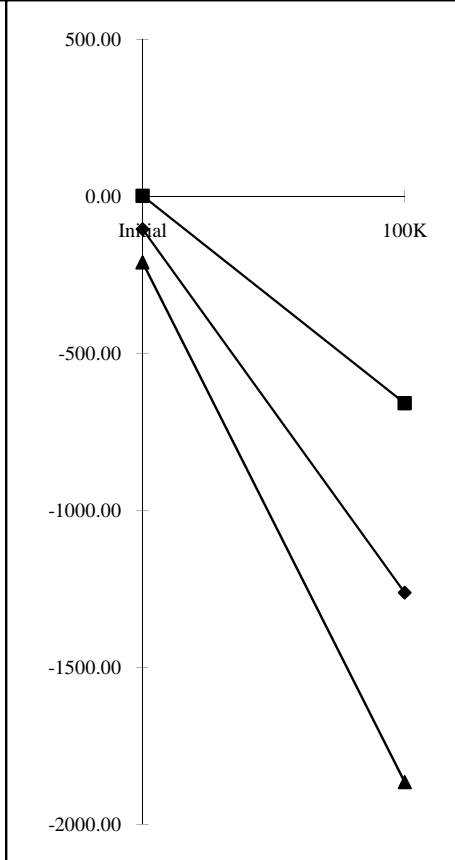
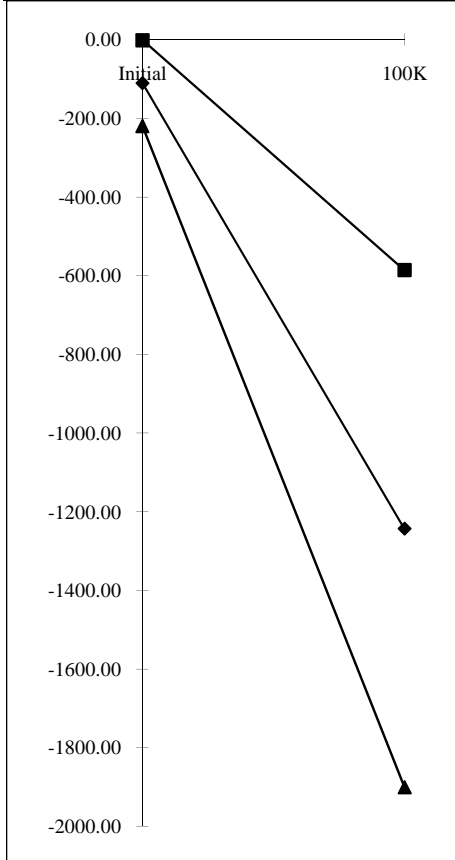
T# 9.2	VOS [C]	uV	T# 9.3	VOS [D]	uV	T# 10	IOS [A]	nA
SN	Initial	100K	SN	Initial	100K	SN	Initial	100K
1	-2.2	-4.0	1	51.2	49.8	1	1.46	1.33
2	88.7	-19.0	2	96.0	19.8	2	-0.27	-31.58
3	36.9	-26.2	3	64.1	-4.1	3	1.35	-23.00
26	96.7	-94.0	26	53.3	-84.5	26	2.86	-74.81
27	39.6	-130.6	27	86.9	-55.3	27	-0.54	-71.11
51	74.8	-67.2	51	38.2	-194.0	51	5.33	-71.03
52	32.2	-77.8	52	58.8	-79.9	52	3.18	-87.21
74	57.9	22.9	74	-4.8	-29.9	74	2.86	-30.63
75	85.9	14.5	75	37.2	29.7	75	4.42	-14.58
99	47.2	-24.9	99	156.4	-25.0	99	1.50	-66.65
100	-7.9	-147.9	100	37.7	-39.9	100	-1.97	-32.17
122	-50.4	-253.7	122	129.3	6.5	122	2.05	-84.48
123	23.7	-150.7	123	107.5	-4.9	123	-0.79	-84.00
147	-12.4	-63.1	147	25.2	-5.4	147	-1.75	-24.73
148	52.3	-10.8	148	32.0	11.4	148	-0.65	-28.72
171	-39.1	-134.0	171	72.2	97.6	171	1.61	-28.52
172	106.7	30.4	172	102.1	26.2	172	1.02	-38.03
196	108.6	-20.7	196	63.0	-18.4	196	-0.55	-31.95
197	78.1	-65.0	197	61.8	-70.0	197	2.31	-40.64
217	37.8	-159.1	217	73.5	-83.6	217	0.50	-56.99
218	33.5	-132.4	218	18.4	-137.5	218	2.52	-56.52
239	69.7	-65.2	239	95.5	-22.2	239	-4.86	-47.83
240	58.3	-91.7	240	57.4	-52.6	240	-1.43	-78.44
min	-50.4	-253.7	min	-4.8	-194.0	min	-4.86	-87.21
max	108.6	30.4	max	156.4	97.6	max	5.33	-14.58
stdev	43.8	70.6	stdev	38.0	61.8	stdev	2.36	23.44
average	46.3	-75.7	average	66.4	-32.5	average	0.85	-50.16
+3S	177.6	136.1	+3S	180.4	152.8	+3S	7.92	20.16
-3S	-85.0	-287.6	-3S	-47.6	-217.9	-3S	-6.22	-120.49



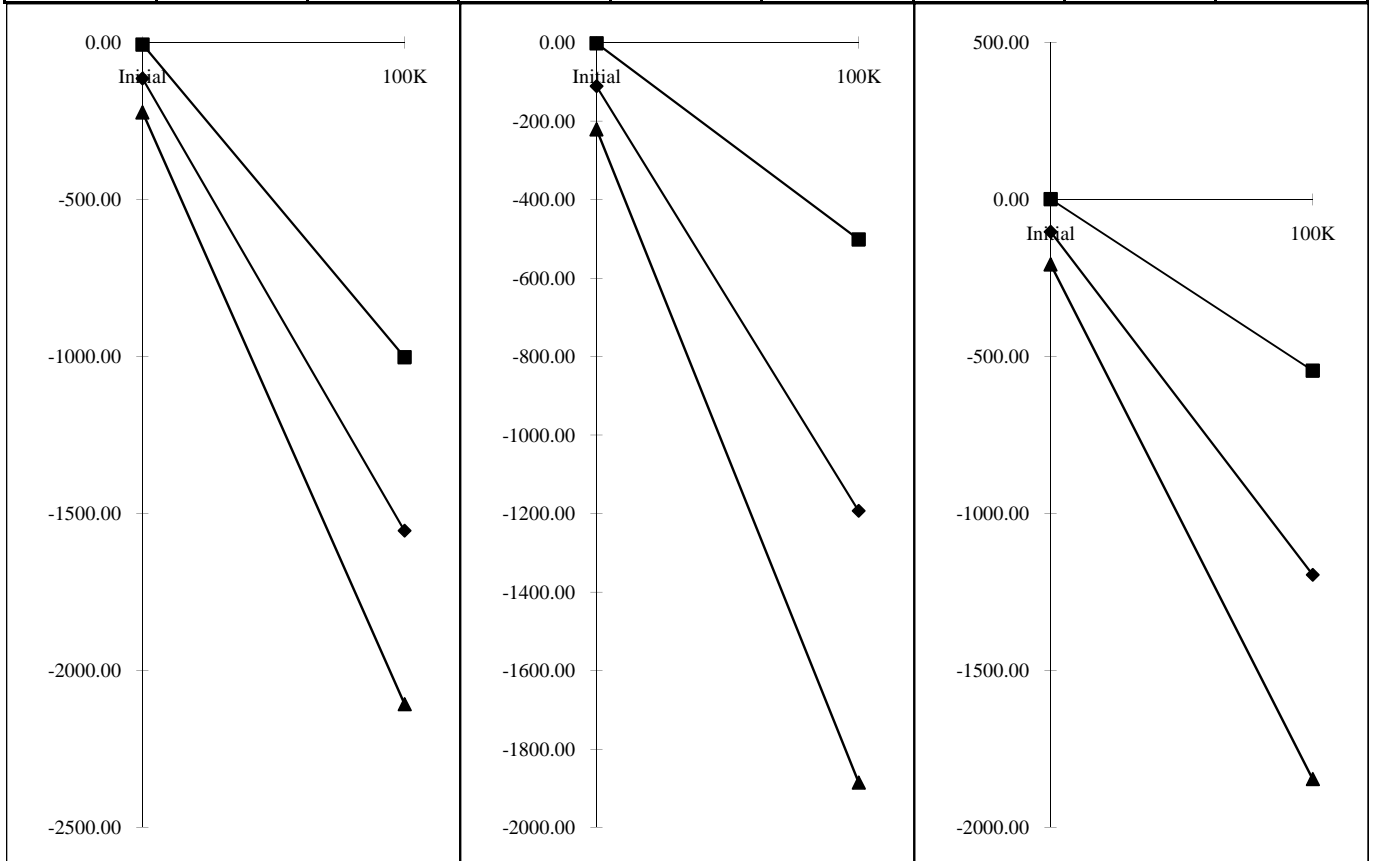
T# 10.1	IOS [B]	nA	T# 10.2	IOS [C]	nA	T# 10.3	IOS [D]	nA
SN	Initial	100K	SN	Initial	100K	SN	Initial	100K
1	5.06	5.53	1	-4.36	-4.35	1	-7.36	-7.21
2	0.78	-30.94	2	-3.56	-16.13	2	0.58	-10.12
3	-5.70	-41.53	3	0.69	-17.10	3	-2.92	-19.92
26	-0.73	-83.97	26	-5.21	-10.55	26	-1.08	-1.33
27	3.95	-71.98	27	0.14	-15.63	27	-1.52	-10.61
51	-0.40	-109.99	51	-2.80	-18.23	51	1.40	15.47
52	-1.57	-119.35	52	-2.43	-8.60	52	-9.35	3.55
74	1.66	-13.48	74	-4.57	-13.23	74	-3.51	-11.26
75	0.25	-21.70	75	-0.70	-32.80	75	1.00	-23.23
99	2.03	-109.56	99	-4.55	-22.61	99	-0.57	-11.74
100	0.18	-43.93	100	-6.90	-10.46	100	-0.48	-5.57
122	-5.04	-130.81	122	-4.81	-2.08	122	-1.24	-13.85
123	2.00	-109.27	123	-3.16	-3.82	123	-10.52	-13.92
147	-0.63	-16.21	147	-3.24	-16.09	147	1.71	-2.48
148	-0.68	-35.69	148	-0.80	-6.83	148	-1.75	-7.08
171	-3.00	-44.43	171	0.60	4.32	171	2.23	-12.87
172	-4.22	-51.46	172	-2.16	-3.80	172	-4.24	-10.70
196	3.14	-35.73	196	-3.52	-18.94	196	-4.78	-14.01
197	-1.04	-39.90	197	1.67	-9.98	197	-8.16	-7.17
217	-2.17	-84.72	217	-2.46	-6.19	217	-3.92	-6.72
218	1.61	-93.34	218	-2.66	-8.25	218	-6.06	-0.66
239	-1.56	-61.97	239	-3.31	-4.30	239	-5.50	-11.11
240	-2.70	-100.27	240	-5.56	-17.00	240	1.19	-5.50
min	-5.70	-130.81	min	-6.90	-32.80	min	-10.52	-23.23
max	3.95	-13.48	max	1.67	4.32	max	2.23	15.47
stdev	2.54	36.58	stdev	2.22	8.12	stdev	3.65	8.12
average	-0.63	-65.92	average	-2.70	-11.74	average	-2.61	-8.22
+3S	6.98	43.83	+3S	3.96	12.61	+3S	8.34	16.13
-3S	-8.24	-175.67	-3S	-9.35	-36.09	-3S	-13.56	-32.57



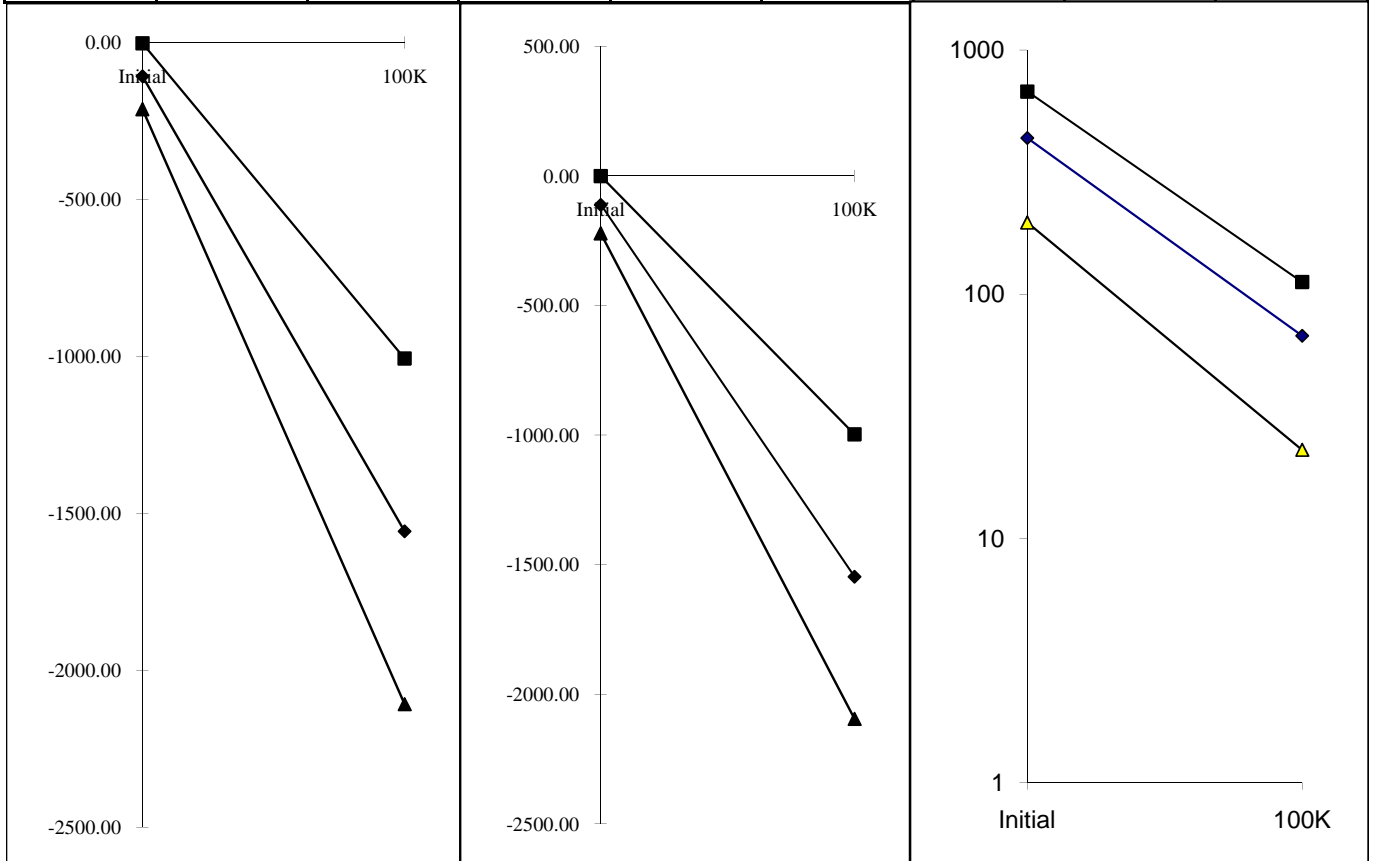
T# 11	IB+ [A]	nA	T# 11.1	IB+ [B]	nA	T# 11.2	IB+ [C]	nA
SN	Initial	100K	SN	Initial	100K	SN	Initial	100K
1	-91.59	-91.28	1	-77.89	-77.51	1	-90.11	-89.96
2	-107.07	-1439.24	2	-100.15	-1437.01	2	-95.52	-1629.96
3	-110.34	-1448.37	3	-103.75	-1447.66	3	-110.27	-1707.80
26	-129.54	-1287.63	26	-131.20	-1339.82	26	-142.37	-1716.61
27	-131.38	-1263.45	27	-117.43	-1286.40	27	-127.66	-1632.11
51	-141.84	-1063.50	51	-143.89	-1150.22	51	-140.73	-1643.42
52	-150.10	-1167.96	52	-139.39	-1213.79	52	-149.92	-1705.70
74	-131.53	-1590.31	74	-121.01	-1531.40	74	-133.21	-1749.89
75	-115.99	-1511.88	75	-114.54	-1514.50	75	-120.37	-1716.98
99	-138.45	-1164.84	99	-126.20	-1232.16	99	-141.46	-1692.32
100	-85.73	-1420.88	100	-70.91	-1402.23	100	-92.12	-1631.90
122	-118.40	-1166.08	122	-111.80	-1228.95	122	-113.98	-1600.36
123	-109.78	-1070.35	123	-102.34	-1110.45	123	-114.26	-1585.98
147	-92.89	-1174.07	147	-82.40	-1125.66	147	-87.65	-1266.85
148	-118.00	-1432.81	148	-109.88	-1385.94	148	-110.65	-1571.84
171	-127.42	-1430.45	171	-121.65	-1426.08	171	-124.89	-1604.30
172	-129.94	-1427.08	172	-127.69	-1437.98	172	-130.00	-1631.15
196	-16.22	-961.35	196	-16.71	-978.78	196	-16.44	-1154.97
197	-21.96	-953.07	197	-16.05	-935.57	197	-24.80	-1156.71
217	-84.77	-806.65	217	-83.98	-861.74	217	-88.42	-1332.85
218	-70.86	-883.97	218	-64.02	-926.47	218	-74.74	-1380.77
239	-150.87	-1405.16	239	-128.19	-1401.98	239	-132.37	-1665.04
240	-139.92	-1284.91	240	-135.17	-1369.28	240	-137.82	-1725.22
min	-150.87	-1590.31	min	-143.89	-1531.40	min	-149.92	-1749.89
max	-16.22	-806.65	max	-16.05	-861.74	max	-16.44	-1154.97
stdev	36.37	219.08	stdev	35.25	201.19	stdev	35.33	183.96
average	-110.14	-1243.36	average	-103.11	-1261.09	average	-109.53	-1568.31
+3S	-1.03	-586.13	+3S	2.65	-657.53	+3S	-3.55	-1016.43
-3S	-219.24	-1900.59	-3S	-208.86	-1864.66	-3S	-215.51	-2120.18



T# 11.3	IB+ [D]	nA	T# 12	IB- [A]	nA	T# 12.1	IB- [B]	nA
SN	Initial	100K	SN	Initial	100K	SN	Initial	100K
1	-103.35	-103.06	1	-93.04	-92.61	1	-82.95	-83.04
2	-110.03	-1675.07	2	-106.79	-1407.66	2	-100.93	-1406.08
3	-112.06	-1706.00	3	-111.69	-1425.38	3	-98.05	-1406.13
26	-148.19	-1679.25	26	-132.40	-1212.83	26	-130.47	-1255.84
27	-128.18	-1583.05	27	-130.84	-1192.33	27	-121.38	-1214.42
51	-141.87	-1605.92	51	-147.17	-992.47	51	-143.49	-1040.23
52	-155.71	-1646.25	52	-153.28	-1080.75	52	-137.82	-1094.44
74	-136.71	-1735.73	74	-134.39	-1559.68	74	-122.67	-1517.92
75	-129.41	-1750.68	75	-120.40	-1497.30	75	-114.79	-1492.80
99	-142.09	-1649.14	99	-139.95	-1098.18	99	-128.23	-1122.61
100	-87.45	-1598.67	100	-83.77	-1388.70	100	-71.09	-1358.31
122	-134.01	-1637.85	122	-120.45	-1081.60	122	-106.76	-1098.14
123	-121.64	-1558.07	123	-108.99	-986.35	123	-104.35	-1001.18
147	-81.52	-1246.62	147	-91.15	-1149.34	147	-81.77	-1109.45
148	-119.25	-1601.63	148	-117.34	-1404.09	148	-109.19	-1350.25
171	-113.96	-1569.21	171	-129.03	-1401.93	171	-118.65	-1381.66
172	-131.69	-1625.63	172	-130.96	-1389.06	172	-123.47	-1386.52
196	-19.32	-1154.79	196	-15.67	-929.40	196	-19.85	-943.05
197	-30.89	-1169.87	197	-24.27	-912.43	197	-15.02	-895.67
217	-85.59	-1284.68	217	-85.26	-749.67	217	-81.81	-777.02
218	-82.98	-1356.63	218	-73.39	-827.45	218	-65.63	-833.13
239	-136.89	-1643.68	239	-146.01	-1357.33	239	-126.64	-1340.00
240	-146.44	-1720.10	240	-138.49	-1206.48	240	-132.47	-1269.01
min	-155.71	-1750.68	min	-153.28	-1559.68	min	-143.49	-1517.92
max	-19.32	-1154.79	max	-15.67	-749.67	max	-15.02	-777.02
stdev	36.00	184.06	stdev	36.58	230.62	stdev	34.67	216.83
average	-113.45	-1554.48	average	-110.99	-1193.20	average	-102.48	-1195.18
+3S	-5.45	-1002.29	+3S	-1.25	-501.35	+3S	1.54	-544.70
-3S	-221.45	-2106.66	-3S	-220.73	-1885.05	-3S	-206.49	-1845.65



T# 12.2	IB- [C]	nA	T# 12.3	IB- [D]	nA	T# 32	AVO [A]	V/mV
SN	Initial	100K	SN	Initial	100K	SN	Initial	100K
1	-85.75	-85.61	1	-95.98	-95.85	1	522	532
2	-91.96	-1613.84	2	-110.60	-1664.95	2	522	68
3	-110.95	-1690.69	3	-109.14	-1686.08	3	513	68
26	-137.17	-1706.06	26	-147.11	-1677.93	26	428	67
27	-127.80	-1616.48	27	-126.66	-1572.44	27	451	66
51	-137.94	-1625.19	51	-143.26	-1621.39	51	524	96
52	-147.49	-1697.11	52	-146.35	-1649.79	52	465	92
74	-128.64	-1736.66	74	-133.20	-1724.47	74	494	54
75	-119.67	-1684.18	75	-130.41	-1727.45	75	449	50
99	-136.91	-1669.71	99	-141.52	-1637.41	99	523	81
100	-85.22	-1621.45	100	-86.97	-1593.10	100	315	43
122	-109.17	-1598.28	122	-132.77	-1624.00	122	522	89
123	-111.10	-1582.17	123	-111.12	-1544.15	123	423	89
147	-84.41	-1250.76	147	-83.23	-1244.14	147	332	59
148	-109.85	-1565.01	148	-117.50	-1594.55	148	426	71
171	-125.49	-1608.63	171	-116.19	-1556.34	171	400	52
172	-127.84	-1627.35	172	-127.45	-1614.93	172	411	54
196	-12.92	-1136.03	196	-14.54	-1140.78	196	338	51
197	-26.48	-1146.73	197	-22.73	-1162.70	197	351	55
217	-85.96	-1326.66	217	-81.66	-1277.96	217	352	78
218	-72.08	-1372.53	218	-76.92	-1355.97	218	390	71
239	-129.05	-1660.74	239	-131.39	-1632.57	239	623	67
240	-132.25	-1708.22	240	-147.63	-1714.60	240	364	68
min	-147.49	-1736.66	min	-147.63	-1727.45	min	315	43
max	-12.92	-1136.03	max	-14.54	-1140.78	max	623	96
stdev	34.93	183.42	stdev	36.96	182.98	stdev	80	15
average	-106.83	-1556.57	average	-110.83	-1546.26	average	437	68
+3S	-2.06	-1006.31	+3S	0.04	-997.32	+3S	677	112
-3S	-211.61	-2106.83	-3S	-221.70	-2095.19	-3S	197	23



T# 32.1	AVO [B]	V/mV	T# 32.2	AVO [C]	V/mV	T# 32.3	AVO [D]	V/mV
SN	Initial	100K	SN	Initial	100K	SN	Initial	100K
1	599	571	1	526	545	1	619	622
2	541	65	2	560	64	2	581	71
3	602	66	3	538	63	3	614	72
26	413	65	26	469	61	26	553	72
27	403	64	27	538	62	27	470	68
51	562	93	51	519	84	51	624	107
52	883	98	52	428	79	52	580	104
74	456	48	74	439	48	74	433	52
75	405	44	75	325	41	75	387	48
99	344	67	99	420	60	99	491	77
100	406	42	100	529	42	100	472	46
122	550	86	122	633	87	122	603	102
123	494	87	123	1051	98	123	513	110
147	317	54	147	292	52	147	243	50
148	456	69	148	421	69	148	407	73
171	352	49	171	332	45	171	298	49
172	310	46	172	345	45	172	359	52
196	294	47	196	294	45	196	310	54
197	250	46	197	315	49	197	382	57
217	372	75	217	364	70	217	378	84
218	568	73	218	332	61	218	410	76
239	506	63	239	427	55	239	408	65
240	476	66	240	482	59	240	498	70
min	250	42	min	292	41	min	243	46
max	883	98	max	1051	98	max	624	110
stdev	137	16	stdev	164	15	stdev	108	20
average	453	64	average	457	61	average	455	71
+3S	865	113	+3S	950	107	+3S	780	131
-3S	40	15	-3S	-36	15	-3S	130	11

