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Quarterly Development Report
DEVELOPMENT OF -
FILM DIELECTRIC CAPACITORS --- HIGH TEMPERATURE

-0-

This report covers the period June 15, 1953 to September 30th, 1953

TOBE DEUTSCHMANN CORPORATION

921 Providence Highway
Norwood, Massachusetts

NAVY DEPARTMENT BUREAU OF SHIPS --- ELECTRONICS DIVISION

Classification cancelled in accordance with
Executive Order 10501 issued 5 November 1953

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S-E-C-U-R-I-T-Y

I-N-F-O-R-M-A-T-I-O-N

~~R-E-S-T-R-I-C-T-E-D~~

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~~R-E-S-T-R-I-C-T-E-D~~ABSTRACTPHASE I

Probably one of the more important characteristics of Mylar with regard to its use as a dielectric is most often overlooked or at best treated very insignificantly by research organizations. In their anxiety to point out its superior electrical and temperature qualities they overlook a fact on which a production or methods department undoubtedly would consider its most important attribute. The more one works with Mylar the more one realizes the comparative ease with which Mylar capacitors are made. All the units made thus far for this particular project have gone through two departments only - namely, winding and assembly. In comparison, a paper wound capacitor of similar construction must go through a minimum of one more department, namely, impregnation. This in itself is quite a process, requiring a day or days of heat and vacuum and the resultant labor of loading and unloading ovens. Furthermore, the cost of maintaining this heat and vacuum is a very significant portion of the total cost of the unit.

It might be found later as work progresses with Mylar units that even they should be impregnated for best results. At this point this is mere speculation. However, it is a fact that an unimpregnated Mylar unit will surpass an impregnated paper unit of the same construction in overall electrical tests.

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N

~~R-E-S-T-R-I-C-T-E-D~~

R-E-S-T-R-I-C-T-E-D

Part IABSTRACTPHASE II

The greatest difficulty encountered with Metallized Mylar to date has been one of assembly. The number of complete breakdowns in any given test, even though the applied voltage approaches the stress point of the film, is usually less than ten per cent. Unfortunately, for test purposes, before the complete rupture point of the dielectric is reached the unit "opens", i. e., one or both of the terminals become isolated from the section. The rate at which these "opens" occur, of course, depends upon the voltage applied during the test. The higher the voltage stress - the greater the number of opens. This phenomenon is natural, however, since the current density is greatest at the edges of the film, thereby causing the greatest concentration of breakdowns in these areas. The higher the voltage, the more frequent the breakdowns, the greater the possibility of opens occurring. Probably the foremost measure to correct this situation is to apply a denser film of metal to the Mylar. With the material on hand being as it is, the work in this phase will continue to use both total or complete breakdowns and opens as a means of determining the result of each test.

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N

R-E-S-T-R-I-C-T-E-D

R-E-S-T-R-I-C-T-E-D

Part I.PURPOSE

- A. Develop Film Dielectric Capacitors, high-temperature, utilizing DuPont "Mylar" Film (V-200) or equivalent, as a capacitor dielectric, in order to achieve higher temperature operation and greater reliability of fixed paper capacitors, in accordance with Bureau of Ships Contract Specification SHIPS F-400, dated 15 September 1951, as follows:
- B. Phase I.
1. Evaluate a V-200 film or equivalent in accordance with paragraph 3.2.1 of referenced Bureau of Ships Contract Specification SHIPS F-498.
 2. Furnish fifty (50) each of various capacitors as described in paragraph 3.2.1 of referenced Bureau of Ships Contract Specification SHIPS F-498.
 3. Submit reports as specified therein.
- C. Phase II.
1. Evaluate a V-200 film or equivalent with metallized electrodes in accordance with paragraph 3.2.2 of referenced Bureau of Ships Contract Specification SHIPS F-499.
 2. Furnish fifty (50) each of various capacitors as described in paragraph 3.2.1 of referenced Bureau of Ships Contract Specification SHIPS F-499.
 3. Furnish one (1) set of Type D. Class IV Manufacturing Drawings in accordance with Bureau of Ships Specification 16D19 (RE), dated 15 January 1946, and Amendment No. 2 dated 1 May 1948.
 4. Submit reports as specified herein.

R-E-S-T-R-I-C-T-E-D

GENERAL FACTUAL DATAPhase I.

The Mylar received for this project has come to us in three shipments. The first, consisted of a few rolls of .0005" with which the introductory samples were made. The second and third, completed our order of .00025" and .0005" film. Before this quarter all the material used came from the second shipment. However, now there is very little low gauged material left and it has become necessary to use some of the third shipment.

In the construction of this 1 Mfd. unit comprising two .00025" and one .0005" film between foils, considerable manipulation of the rolls was needed to maintain a total thickness of the three layers not to exceed .00112". In some instances rolls as high as .00029" for .00025" and .00059" for .0005" were used.

Test groups NObsr #91 through #104 (See Part III pp. 1-6) had more mechanical failures than are ordinarily found. Examination of these sections revealed that in every instance the failure occurred at the margin. Moreover, the margins of these units were out of alignment. During the winding operation the films tended to sway and went unobserved by the operator. In some cases the margins varied as much as 3/32". These units were representative of many wound at the same time (group NObsr #93 through #104 See Part III p. 25) but were tested at voltages of 1600 V.D.C. or greater. Undoubtedly, units in groups tested with lower voltages had this same margin sway, but did not fail because the test voltage was insufficient to cause corona.

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N R-E-S-T-R-I-C-T-E-D

R-E-S-T-R-I-C-T-E-D

GENERAL FACTUAL DATA (Continued)

Test groups NObsr #118 through #122 (See Part III p. 25) had more voltage breakdowns before life test than is usual. Examination of the sections revealed them to be mechanical faults. The solder seam between the cover and the can falls approximately upon the top margin of the section. In these units that protective margin had been fused away by the excessive heat of soldering. Ordinarily the units are soldered with an electrically heated soldering iron, but these were torched by error. In the cases of these failures the excessive heat of the torch was held in one position too long allowing the Mylar to fuse and crack.

GENERAL FACTUAL DATAPHASE II

The tests inducted with Metallized Mylar prior to this quarter yielded information more so than conclusive results. In many instances "opens" occurred during the life tests that could not be correlated with any specific time of said life test. To correct this situation it was our plan to incorporate into the life test circuit a means for measuring the total capacitance of the units on test. In that manner a regular check would reveal the loss of a unit or units, and the time of that loss could be closely established. However, after a thorough investigation such a circuit was found to be too intricate to employ for this purpose - particularly since it is usual to have six different life tests operating on six different life test circuits at the same time. As an alternative, the regular capacitance measurements were made with a portable, variable, 60 cycle, capacitance bridge. The process is manual. The technician cuts the voltage from the units to be tested and allows them to discharge before making connections with the bridge. The more frequent the number of temporary breakdowns, the more often the capacitance must be measured.

R-E-S-T-R-I-C-T-E-D

D E T A I L F A C T U A L D A T APHASE I

Work was resumed according to the plan outlined in the June, 1953 quarterly report. The capacitor construction involved being the 1 Mfd. unit constructed with two .00025" Mylar films and one .0005" Mylar film between foils. The total thickness of the three layers of Mylar between foils varies between .00106" and .00112". The margin is 1/4". All life tests were run at 85°C.

A. Seventy-five units divided into three groups of twenty-five each:

1. Tested at 1600 V. D. C. , one unit failed voltage test prior to Life Test. It was a Mylar failure. The remaining twenty-four units were placed on Life Test, and seventeen completed 83 hours. There were four mechanical failures, two Mylar failures, and one opened during the test. (See Part III P. 1.)
2. Tested at 1700 V. D. C. , four units failed voltage test prior to Life Test. Two were Mylar failures and two were mechanical failures. The remaining twenty-one units were placed on Life Test, and sixteen completed 72 hours. There were three Mylar and two mechanical failures. (See Part III P. 2.)
3. Tested at 1800 V. D. C. , two units failed voltage test prior to Life Test. Both were mechanical failures. The remaining twenty-three units were placed on Life Test and fifteen completed 76 hours. There were five Mylar and three mechanical failures. (See Part III P. 3.)

B. Seventy-five units divided into three groups of twenty-five each:

1. Tested at 1900 V. D. C. , two units failed voltage test prior to life test. Both were Mylar failures. The remaining twenty-three units were placed on Life Test, and seventeen completed 72 hours. There were three Mylar and three mechanical failures. (See Part III P. 4.)

R-E-S-T-R-I-C-T-E-D

DETAIL FACTUAL DATA Phase I (continued)

- D. Seventy-five units divided into three groups of twenty-five each:
2. Tested at 2000 V.D.C., four units failed voltage test prior to Life Test. Two were Mylar and two mechanical failures. The remaining twenty-one were placed on Life Test and fifteen completed 90 hours. There were five Mylar and one mechanical failure. (See Part III P. 5.)
 3. Tested at 2100 V.D.C., two units failed voltage test prior to Life Test. Both were Mylar failures. The remaining twenty-three were placed on Life Test and sixteen completed 72 hours. There were three Mylar, three mechanical failures and one unit opened during the test. (See Part III P. 6.)
- C. Seventy-five units divided into three groups of twenty-five each:
1. Tested at 2000 V.D.C., two units failed voltage test prior to Life Test. Both were Mylar failures. The remaining twenty-three units were placed on Life Test and seventeen completed 72 hours. There were six Mylar failures. (See Part III P. 7.)
 2. Tested at 2100 V.D.C., two units failed voltage test prior to Life Test. Both were Mylar failures. The remaining twenty-three units were placed on Life Test and eighteen completed 76 hours. There were four Mylar and one mechanical failure. (See Part III P. 8.)
 3. Tested at 2200 V.D.C., two units failed voltage test prior to Life Test. One was a Mylar failure and the other mechanical. The remaining twenty-three units were placed on Life Test and fourteen completed 85 hours. There were six Mylar and two mechanical failures and one unit opened during the test. (See Part III P. 9.)

R-E-S-T-R-I-C-T-E-D

DETAIL FACTUAL DATA Phase I (continued)

D. Seventy-five units divided into three groups of twenty-five each:

1. Tested at 2200 V. D. C. , two units failed voltage test prior to Life Test. One was a Mylar and the other a mechanical failure. The remaining twenty-three units were placed on Life Test and seventeen completed 72 hours. There were four Mylar and one mechanical failure. One unit opened during the test. (See Part III P. 10.)
2. Tested at 2300 V. D. C. , one unit failed voltage test prior to Life Test because of mechanical faults. The remaining twenty-four units were placed on Life Test and sixteen completed 79 hours. There were four Mylar and two mechanical failures. Two units opened during the test. (See Part III P. 11.)
3. Tested at 2400 V. D. C. , all units passed tests prior to Life Test and were placed on Life Test - sixteen completing 72 hours. There were eight Mylar failures. One unit opened during the test. (See Part III P. 12.)

E. Seventy-five units were divided into three groups of twenty-five each:

1. Tested at 2300 V. D. C. , all units passed tests prior to Life Test and were placed on Life Test - five units completing 72 hours. There were nineteen Mylar failures. One unit opened during the tests. (See Part III P. 13.)
2. Tested at 2400 V. D. C. , all units passed tests prior to Life Test and were placed on Life Test - twelve units completing 72 hours. There were ten Mylar failures. Three units opened during the test. (See Part III P. 14.)

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N

R-E-S-T-R-I-C-T-E-D

R-E-S-T-R-I-C-T-E-D

DETAIL FACTUAL DATA Phase I (continued)

3. Tested at 2500 V. D. C. , all units passed tests prior to Life Test and were placed on Life Test -- sixteen units completing 80 hours. There were eight Mylar failures. One unit opened during the test. (See Part III P. 15.)
- F. Seventy-five units were divided into three groups of twenty-five each:
1. Tested at 2300 V. D. C. , one unit failed voltage test prior to Life Test. By error the wrong unit was first opened thereby reducing the number started on Life Test to twenty-three. Fourteen units completed 74 hours. There were eight Mylar failures and one unit opened during the test. (See Part III P. 16.)
 2. Tested at 2400 V. D. C. , one unit failed voltage test prior to Life Test. It was a Mylar failure. The remaining twenty-four units were placed on test and twelve completed 84 hours. There were nine Mylar failures and three units opened during the test. (See Part III P. 17.)
 3. Tested at 2500 V. D. C. , one unit failed voltage test prior to Life Test because of mechanical faults. The remaining twenty-four were placed on test and nine completed 72 hours. There were twelve Mylar failures and one opened during the test. (See Part III P. 18.)
- G. Seventy-five units were divided into three groups of twenty-five each:
1. Tested at 2100 V. D. C. , all units passed tests prior to Life Test and all were placed on Life Test -- eight completing 78 hours. There were sixteen Mylar failures and one unit opened during the test. (See Part III P. 19.)

R-E-S-T-R-I-C-T-E-D

DETAIL FACTUAL DATA Phase I (continued)

2. Tested at 2200 V. D. C., one unit failed voltage test prior to Life Test because of mechanical faults. The remaining twenty-four units were placed on Life Test and fourteen completed 76 hours. There were seven Mylar and three mechanical failures. (See Part III P. 20.)
 3. Tested at 2300 V. D. C., six units failed voltage test prior to Life Test. All were mechanical failures. The remaining nineteen units were placed on Life Test and twelve completed 72 hours. There were five Mylar failures and two units opened during the test. (See Part III P. 21.)
- H. Seventy-five units were divided into three groups of twenty-five each:
1. Tested at 2000 V. D. C., seven units failed voltage test prior to Life Test because of mechanical faults. The remaining eighteen units were placed on Life Test and twelve completed 79 hours. There was one mechanical failure and five Mylar failures. (See Part III P. 22.)
 2. Tested at 2100 V. D. C., five units failed voltage test prior to Life Test. There was one Mylar and four mechanical failures. The remaining twenty units were placed on Life Test and fifteen completed 72 hours. There was one mechanical and four Mylar failures. (See Part III P. 23.)
 3. Tested at 2200 V. D. C., two units failed voltage test prior to Life Test. Both were mechanical failures. The remaining twenty-three units were placed on Life Test and eighteen completed 72 hours. There were four Mylar failures and one unit opened during the test. (See Part IV P. 24.)

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N R-E-S-T-R-I-C-T-E-D

R-E-S-T-R-I-C-T-E-D

DETAIL FACTUAL DATAPHASE II

All the work done this last period with Metallized Mylar capacitors was concentrated on the .25 Mfd. type with single .0005" film construction.

All Life Tests were conducted at 85°C.

A. Seventy-five units divided into three groups of twenty-five each:

1. Tested at 600 V. D. C., all units passed tests prior to Life Test. All twenty-five units were placed on Life Test and twenty-two completed 286 hours. Three units opened during the test. (See Part III pp. 26, 27, 28.)
2. Tested at 700 V. D. C., two units opened prior to Life Test. The remaining twenty-three units were placed on Life Test and twenty-one completed 285 hours. Two units opened during the test. (See Part III pp. 29, 30, 31.)
3. Tested at 800 V. D. C., all units passed the tests prior to Life Test. All twenty-five units were placed on Life test and twenty-three completed 285 hours. Two units opened during the test. (See Part III pp. 32, 33, 34.)

B. Seventy-five units were divided into three groups of twenty-five each:

1. Tested at 900 V. D. C., six units failed the tests prior to Life Test. Two were voltage failures and four were opens. The remaining nineteen units were placed on Life Test and seventeen completed 262 hours. Two units opened during the Test. (See Part III pp. 35, 36, 37.)

R-E-S-T-R-I-C-T-E-D

DETAIL FACTUAL DATA Phase II (continued)

2. Tested at 1000 V. D. C. , five units failed the tests prior to Life Test. Three were voltage failures and two were opens. The remaining twenty units were placed on Life Test and Thirteen completed 263 hours. One unit failed completely during voltage pre-breakdown test and six units opened during the test. (See Part III pp. 38, 39, 40.)
 3. Tested at 1100 V. D. C. , six units failed the tests prior to Life Test. Four were voltage failures and two were opens. The remaining nineteen units were placed on Life Test and eleven completed 260 hours. One was a complete breakdown, and seven opened during the test. (See Part III pp. 41, 42, 43.)
- C. Seventy-five units were divided into three groups of twenty-five each:
1. Tested at 1200 V. D. C. , five units failed the tests prior to Life Test. Two were opens and three failed voltage during the pre-breakdown period. The remaining twenty units were placed on Life Test and ten completed 256 hours. Ten units opened during the test. (See Part III pp. 44, 45, 46.)
 2. Tested at 1300 V. D. C. , seven units failed the tests prior to Life Test. Five were opens and two failed completely during the pre-breakdown period. The remaining eighteen units were placed on Life Test and one completed 252 hours. Three units failed completely and fourteen units opened during the test. (See Part III pp. 47, 48, 49.)

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N

R-E-S-T-R-I-C-T-E-D

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N

R-E-S-T-R-I-C-T-E-D

R-E-S-T-R-I-C-T-E-D

DETAIL FACTUAL DATA Phase II (continued)

3. Tested at 1400 V. D. C. , three units failed the tests prior to Life Tests. One unit failed completely and two opened. The remaining twenty-two units were placed on Life Test and two completed 252 hours. Two units failed during the pre-break-down test, three failed completely during Life Test and fifteen opened. (See Part III pp. 50, 51, 52.)
- D. Seventy-five units were divided into three groups of twenty-five each:
1. Tested at 800 V. D. C. , six units opened prior to Life Test. The remaining nineteen units were placed on Life Test and all passed 255 hours. (See Part III pp. 53, 54, 55.)
 2. Tested at 900 V. D. C. , four units failed the tests prior to Life Test. Three units opened and one failed completely. The remaining twenty-one units were placed on test and eighteen completed 252 hours. Three units opened during the test. (See Part III pp. 56, 57, 58.)
 3. Tested at 1000 V. D. C. , two units opened prior to Life Test. The remaining twenty-three were placed on Life Test and thirteen completed 250 hours. Two units failed completely and eight opened during the test. (See Part III pp. 59, 60, 61.)

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N

R-E-S-T-R-I-C-T-E-D

CONCLUSIONSPHASE I

The 1 Mfd. unit constructed with two layers of .00025" and one layer of .0005" Mylar between foils:

It became noticeable as the test voltage was increased with this type of unit that the method of attaching the tab to the terminal was not satisfactory at high stresses. (See Table I Part III P. 25.) A considerable number of units opened some time during the Life Test. In every case the open occurred at the point where the tab was spot welded to the terminal stud. A single spot weld at this junction has been used throughout this project. Apparently the bonded area provided by this single weld is insufficient to carry the high instantaneous current surge that occurs when the entire bank of capacitors discharge through a short circuited unit. In the future, units of this type construction will be spot welded at two or three points.

The accompanying table is an average of the individual tests conducted at the same test voltages.

Temperature	Voltage D. C.	Percent Mylar Failures	Number of Units Tested
85° C	2000	27%	62
85° C	2100	30%	91
85° C	2200	25%	93
85° C	2300	41%	91
85° C	2400	40%	74
85° C	2500	45%	49

R-E-S-T-R-I-C-T-E-D

CONCLUSIONS PHASE I (continued)

Throughout this project the method used to determine the per cent of Mylar failures will be the same. Any or all mechanical failures and opens that occur during the Life Test will be subtracted from the total started on test. In this manner a better control may be maintained over errors of winding or assembly.

Because the Mylar used gauges heavier than that specified, it is only natural that the voltage stresses achieved are somewhat higher than expected. The Mylar gauges inconsistently and likewise the voltage stresses are found to be erratic. However, when the averages of the individual test voltage groups are computed, the results indicate that a unit constructed with two layers of .00025" and one layer of .0005" Mylar between foils can be Life Tested at 85° C at a potential not to exceed 2000 V. D. C. for a period of seventy-two hours with no greater than thirty per cent loss of units.

CONCLUSIONSPHASE II

The figures listed in the table (Page 16) are averages derived from all the individual life tests with the .25 Mfd. unit constructed with a single film of .0005" Metallized Mylar. (See Part III P. 62 and Quarterly Report June 30, 1953 P. 26.)

S-E-C-U-R-I-T-Y I-N-F-O-R-M-A-T-I-O-N R-E-S-T-R-I-C-T-E-D

R-E-S-T-R-I-C-T-E-D

CONCLUSIONS PHASE II (continued)

Test Voltage	Permanent Failures	Opens After Life Test	Number of Temporary Breakdowns/ Microfarad / 250 hours
600 V. D. C	0%	6.5%	12.8
700 "	1.3%	6.5%	33.6
800 "	1.0%	10.8%	23.6
900 "	0%	9.2%	65.2
1000 "	10%	39%	190.4
1100 "	2%	38%	168
1200 "	26%	36%	121.2
1300 "	12%	56%	456.8
1400 "	34%	32%	276.8

To calculate the number of temporary breakdowns per microfarad the following procedure was used:

The number of units used in each test was found by averaging the number of units that started the test and the number that finished. These averages were totalled for each voltage group. The total number of temporary breakdowns for each voltage group was divided by the total number of units used, and this quotient multiplied by four so the result would be expressed in terms of breakdowns per microfarad.

An analysis of this table reveals that the results are not conclusive but are indicative. It would appear that a unit of this type could be life tested at 700 V. D. C. at 85°C and conform to most of the specifications used today, since they usually allow two life test failures during a period of 250 hours.

CLASS

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PART

II

PROGRAM FOR NEXT INTERVAL

S-E-C-U-R-I-T-Y

INFORMATION

CONFIDENTIAL

R-E-S-T-R-I-C-T-E-D

PART II PROGRAM FOR NEXT INTERVALPHASE I

With this quarter's work completed we have finished our research with the 1 mfd type capacitor at 85°C. Three different types of construction have been made and tested until the voltage stress limit for each type was established.

Originally, it was our plan to proceed with the .25 mfd type capacitor, and to repeat the program using the three different types of construction with this unit.

However, since one of the more important characteristics of Myler appears to be its resistance to elevated temperatures, and furthermore, the electronic industry has a vital need for capacitors which will operate at high temperatures, we propose to repeat our program with the same unit at 125°C.

The 1 mfd unit constructed with two layers of .0005" between foils will be the first type investigated.

PHASE II

The data compiled with the .25 mfd unit constructed with a single film of .0005" Metallized Myler is sufficient to permit a comparison of performances of this unit at 85°C and at 125°C. Consequently, during the next quarter, we will make more of this type unit and repeat the test pattern, but at the elevated temperature of 125°C.

LIFE TEST RECORD

25 UNITS 1.0 Mfd - 2x.25 - 1x.5 U Mylar Capacitors LOT NO. Nobsr. 100
 SPECIFICATION FOR. VEHON V. Winroth CONTRACT NO. Nobsr 59200

HOURS ON TEST 72 TEMPERATURE 85 °C VOLTAGE 1700 VDC
 Date started Clock # 8 - 1505 Date finished Clock # 8 - 1577 Total Hours 72
 6 July 1953 10 July 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Voltage - 1700V	Pk										P	P	P	P	P	P	P	P	P	P					P	
Shunt R - Mega-ohms	100K	100K	100K	100K	100K	100K	90K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd - 1000%	964	969	967	965	949	969	960	999	947	960	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011	1.011
Power Factor %	35.5	43	35.5	78	315	365	35	40	36	415	415	415	415	415	415	415	415	415	415	415	415	415	415	415	415	415
LIFE TEST FAILURES IN HRS.							4				11				9						71			1		

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Shunt R - Mega-ohms	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd - 1000%	972	967	966	950	976	966	966	966	966	966	966	966	966	966	966	966	966	966	966	966	966	966	966	966	966	
Power Factor %	41	42	43	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	

LIFE TEST RECORD

25 UNITS 1.0 ufd. - 2 X .25 - 1 X .5 U Mylar Capacitors LOT NO. Nabsr 101
 SPECIFICATION FOR WHOM V. Winroth CONTRACT NO. Nabsr 57200

HOURS ON TEST 72 T TEMPERATURE 85°C VOLTAGE 1800 VDC
 Date started 9-1270 Clock # 9 - 1346 Tray #
6 July 1953 Date finished 14 July 1953 Total Hours 76

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Volts - 1500V	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Shunt: 100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in ufd.	977	993	988	959	962	963	979	983	986	968	977	990	992	984	975	965	984	963	967	961	966	998	972	972	972
Power P.S.T. %	47	47	46	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
LIFE TEST FAILURES IN HRS.	3			14			30					16	15								58				12

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt: 100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in ufd.	978	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989
Power Factor - %	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989	989
Notes	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mechanical failure. Bad wiring. First row turns. 1 from margin.	Unable to hold voltage.	Mechanical failure. Fused away by heat. Bad wiring.	Mechanical failure. First 1/4 of section.	Mechanical failure. First 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.	Mylar failed. Outside 1/4 of section.

LIFE TEST RECORD

25UNITS 1.0 mfd. - 2 X 25 - 1 X 5 MLL Mylar Capacitors LOT NO. N665R 102
 SPECIFICATION FOR WHOM V. Winzath CONTRACT NO. N665R 57200

HOURS ON TEST 72 T TEMPERATURE 85 °C VOLTAGE 1900 V DC
 Date started 7-14-55 Date finished 7-15-57 Clock # 7 - 1527 Total Hours 72
 20 July 1955 Tray #

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
Voltage - 1900V	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		
Shunt, Meters - 510k																											
Capacitor - 1000µF	987.99	988.00	988.01	988.02	988.03	988.04	988.05	988.06	988.07	988.08	988.09	988.10	988.11	988.12	988.13	988.14	988.15	988.16	988.17	988.18	988.19	988.20	988.21	988.22	988.23	988.24	988.25
Power Factor - %	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
Shunt A Meters - 510k																											
Cap in mfd. - 1000µF	988.99	989.00	989.01	989.02	989.03	989.04	989.05	989.06	989.07	989.08	989.09	989.10	989.11	989.12	989.13	989.14	989.15	989.16	989.17	989.18	989.19	989.20	989.21	989.22	989.23	989.24	989.25
Power Factor - %	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59		

LIFE TEST FAILURES IN HRS.

LIFE TEST RECORD

25 UNITS 1.0 Mfd - 2X.25 - 1X.5 MIL Mylar Capacitors LOT NO. Nebst # 104
 SPECIFICATION FOR VEH V. Winroth CONTRACT NO. Nebst 57200

HOURS ON TEST 72 TEMPERATURE 85° C VOLTAGE 2100 VDC

Date started 23 July 1953 Clock # 9-1346 Date finished 4 August 1953 Clock # 9-1418 Total Hours 82

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2100V	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Shunt R Meter 77E	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K	75K/90K	100K/100K
on 105V Meter	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941
Capacitor Mfd - 1020	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961	2.961
Power Factor - %	.30	.31	.37	.32	.32	.35	.35	.35	.35	.43	.31	.30	.35	.31	.31	.32	.31	.31	.31	.31	.31	.31	.31	.31	.31
LIFE TEST FAILURES IN HRS.				31					31	5	19					16	49								Open

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Meter 77E	75K/90K	75K/90K	60K	60K	60K	75K	75K	75K	75K	75K	75K	100K	100K	100K	100K	60K	25K	25K	25K	25K	25K	25K	25K	25K	25K
on 105V Meter	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970	970
Capacitor Mfd - 1000	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
Power Factor - %	.42	.37	.37	.32	.32	.33	.35	.35	.35	.43	.31	.30	.35	.31	.31	.32	.31	.31	.31	.31	.31	.31	.31	.31	.31
Failures				Mylar failure. Inner 1/2 section. 1/2 from the margin.					Mylar failure. Inner 1/2 of the section. 1/2 from the margin.																
Notes																									

Date collected by HT. VW. HJ.

LIFE TEST RECORD

SUBSITS 1.0 24Ed - 2 X 2.5 - 1 X 5 MIL Mylar Capacitors LOT NO. Nobsr 105
 SPECIFICATION FOR WHOM V. Winroth CONTRACT NO. Nobsr 57200

HOURS ON TEST 72 TEMPERATURE 85 °C VOLTAGE 2000 VDC
 Date started Clock # 10 - 3682 Date finished Clock # 10 - 3954 Total Hours 72
 28 July 1953 Tray # 3 Adv 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2000 VDC	PK						PK													PK	PK				
Shunt P. Meas. - 5K	95K	95K	100K	100K	95K	90K	90K	90K	90K	90K	90K	90K	90K	90K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
on 100V METER																									
Cap. in 4Ed - 1000 P.F.	97.33	97.35	97.38	97.33	97.32	97.34	97.35	97.32	97.34	97.35	97.38	97.35	97.37	97.34	97.38	97.39	97.40	97.39	97.38	97.39	97.37	97.39	97.37	97.39	97.34
Power Factor - %																									
LIFE TEST FAILURES IN HRS.	65		11				7																		

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt P. Meas. - 5K	95K	95K	100K	100K	95K	90K	90K	90K	90K	90K	90K	90K	90K	90K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
on 100V METER																									
Cap. in 4Ed - 1000 P.F.	97.33	97.35	97.38	97.33	97.32	97.34	97.35	97.32	97.34	97.35	97.38	97.35	97.37	97.34	97.38	97.39	97.40	97.39	97.38	97.39	97.37	97.39	97.37	97.39	97.34
Power Factor - %																									
Mylar Failure - Middle of the Film																									
Mylar Failure - Inner 1/4 of the Section																									
Mylar Failure - Middle of the Film																									
Mylar Failure - Inner 1/4 of the Section																									
Mylar Failure - Middle of the Film																									
Mylar Failure - Inner 1/4 of the Section																									

LIFE TEST RECORD

25 UNITS 1.0 Mfd. - 2X.25 - 1X.5 MIL Myler Capacitors LOT NO. Nbsr 106
 SPECIFICATION FOR VOM V. Wignath. CONTRACT NO. Nbsr - 52200

HOURS ON TEST 72 TEMPERATURE 85 C VOLTAGE 2100 VDC
 Date started 28 July 1953 Clock # 11-1237 Date finished 1 August 1953 Clock # 11-1303
 Tray # Total Hours 76

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Volts - 21000C	P	P	P		P																	P	P		P	
Shunt R. Meas. to Hook	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd. - 1000	926	940	909	975	954	1005	988	935	980	989	921	964	949	972	969	945	923	818	956	920	971	997				965
Power Factor - %	39	37	35	38	39	36	40	32	37	36	39	40	32	37	37	42	37	32	32	41	32	37				33
LIFE TEST FAILURES IN HRS.				Myler failure in section 1/2 from the margin																						Myler failure in section, middle of the film.

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Shunt R. Meas. to Hook	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd. - 1000	915	915	915	982	969	1000	992	994	986	929	979	961	987	970	952	970	952	906	906	925	975	1008				Myler failure in section 1/2 from the margin
Power Factor - %	33	36	36	39	42	36	40	39	40	37	40	38	38	40	39	40	39	36	36	44	34	40				Myler failure in section, middle of the film
LIFE TEST FAILURES IN HRS.				Myler failure in section 1/2 from the margin																						Myler failure in section, middle of the film

LIFE TEST RECORD

QUANTITY 1.0 Ufd - 2x.25 - 1x.5 MIL Mylar Capes. Tor. LOT NO. Nebel # 107
 SPECIFICATION FOR VOM V. Winroth CONTRACT NO. Nebel 57200

HOURS ON TEST 72+ TEMPERATURE 85°C VOLTAGE 2200 VDC

Date started July 958 Clock # 13-1001 Date finished 4 Aug 1959 Clock # 13-1026 Total Hours 85

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage sec. DG F K									P	P	P											P	P	P	P
Shunt R. Measured																									
Cap. in ufd																									
Power Factor %																									

LIFE TEST FAILURES IN HRS.

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt Meas. 86A/100A																									
Cap. in ufd																									
Power Factor %																									

LIFE TEST RECORD

25 UNITS 1.0 x 1.5 - 2 X .25 - 1 X .5 MIL Mylar Capacitors LOT NO. Nbb5r 108
 SPECIFICATION FOR WHOM V. Winbath CONTRACT NO. Nbb5r 57200

HOURS ON TEST 92^T TEMPERATURE 85°C VOLTAGE 2500 VDC
 Date started Clock # 10-3954 Date finished Tray # 10-3826 Total Hours 72
 11 August 1953 17 August 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage across P<												P			P<										P
Shunt R Meas. 100K												> 100K			> 100K										> 100K
Cap. in old unit	957	961	966	972	961	935	992	963	952	975	902	921			902	962	942	1004	982	127	971	970	976	958	971
Power factor %	41	51	31	36	36	34	38	34	34	39	34	33			34	40	37	34	34	40	38	34	40	40	37
LIFE TEST FAILURES IN HRS.				3				15	18		Open											7			

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Meas. 100K										100K		100K			100K										
Cap. in old unit	1000	951	953		959	929	980			974		917			996	960	958	989	975	955	969				
Power factor %	43	42	40		37	36	37			39		35			47	33	35	38	38	40	38				41

Data collected by H.T. V.W. H.J.

LIFE TEST RECORD

25 UNITS 1.014fd - 2X.25 - 1X.5MIL Mylor Capacitors LOT NO. N6654 109
 SPECIFICATION FOR WHOM V. Winroth CONTRACT NO. N6654 52200

HOURS ON TEST 72 TEMPERATURE 85° C VOLTAGE 2300 VDC
 Date started Clock # 11-1303 Date finished Clock # 11-1322 Total Hours 79
 12 August 1953 18 August 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Mega. 29F 100K						100K	100K	100K																	
Cap. in ml. 100 2.907	966	901	950	973	975	975	926	906	916	991	963	973	971	953	954	977	963	949	966	919	962	954	971		
Power Factor .91.37	.34	.38	.34	.42	.37	.37	.43	.40	.33	.39	.32	.39	.43	.33	.34	.37	.34	.42	.34	.42	.34	.41	.42	.42	
Voltage - 2300DC Pk						P	P	P																	
LIFE TEST FAILURES IN HRS.			18	40			42													57	1				

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Mega. 80F 100K				100K	100K	100K			100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in ml. 100 2.903	967	952	952	952	968	968	916	897	909	982	977	966	966	957	952	957	952	957	952	913	957	948	965		
Power Factor .90.38	.39	.39	.39	.39	.39	.39	.48	.44	.34	.44	.44	.40	.40	.44	.44	.44	.44	.44	.44	.36	.45	.43	.40		
Failures			Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot	Mylor Failure, Inner 1/4 of the spot

LIFE TEST RECORD

25 UNITS 1.0 ufd - 2 X 25 - 1 X .5 Mylar Capacitors LOT NO. N665r 110
 SPECIFICATION FOR WHOM V. Wingo Th CONTRACT NO. N665r 57200

HOURS ON TEST - 72 TEMPERATURE 85 C VOLTAGE 2400 V DC
 Date started Clock # 13 - 1086 Date finished Clock # 13 - 1158
 11 August 1953 20 August 1953 Total Hours 72

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2400 V																									
Shunt R Meg. 99.910K																									
Cap. in ufd - 1000	914	912	914	909	916	977	914	977	976	939	912	950	957	953	966	963	978	929	918	957	977	936	956	911	990
Power Factor - %	37	37	415	34	37	41	37	33	40	32	39	44	36	42	41	34	36	41	33	37	35	34	44	36	37
LIFE TEST FAILURES IN HRS.	1	71				4				2											8				

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Meg. 99.910K																									
Cap. in ufd - 1000	914	912	914	909	916	977	914	977	976	939	912	950	957	953	966	963	978	929	918	957	977	936	956	911	990
Power Factor - %	37	37	415	34	37	41	37	33	40	32	39	44	36	42	41	34	36	41	33	37	35	34	44	36	37
Notes	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top	Mylar failure. Outer 1/4 of section 1/4 from the top

LIFE TEST RECORD

25 UNITS 1.0 ufd - 2 X .25 - 1 X .5 Mil. Mylar Capacitors LOT NO. Nobsr 111
 SPECIFICATION FOR WHOM V. Winthro CONTRACT NO. Nobsr 57200

HOURS ON TEST 727 TEMPERATURE 85°C VOLTAGE 2300 VDC
 Date started Clock # 10-3826 Date finished Clock # 10-3898
 21 August 1953 1 September 1953 . Total Hours 72

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2300V P																									
Shunt R. Mega. 87F100K																									
Cap. in 4fd-1000's	1.00	994	970	962	967	940	978	933	977	956	970	934	975	907	996	911	985	966	1011	993	970	967	963	961	972
Power Factor %	37	84	48	35	39	39	38	43	40	38	45	38	38	40	40	46	35	38	38	75	35	39	34	39	41
LIFE TEST FAILURES IN HRS.			16	44	11.5	3	5	12		11	10	7	35	1					4	4	44	1	10	11	7.5

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Shunt R. Mega. 87F																									
Cap. in 4fd-1000's																									
Power Factor %																									

LIFE TEST RECORD

25 UNITS 10 Hfd - 2 X 25 - 1 X 5 Mill - Mylar Capacitors LOT NO. N665R 112
 SPECIFICATION FOR WHOM V. Winroth CONTRACT NO. N665R 57200

HOURS ON TEST 72 TEMPERATURE 85° C VOLTAGE 2400 V.D.S.
 Date started Clock # 11-1382 Date finished Clock # 11-1454 Total Hours 72
 21 August 1953 Tray # 1 September 1953 Tray #

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage 24000 P <																									
Shunt Mylar 100K																									
Cap. in hfd. 10000	977	972	979	965	961	900	912	977	999	999	955	967	966	952	923	957	945	960	970	979	952	945	945	945	961
Power Factor - %	37	37	37	42	36	34	40	38	36	44	39	37	30	40	39	38	32	33	37	31	37	43	44	42	
LIFE TEST FAILURES IN HRS.				0.000				9.000	34						5	2.5		6			5	4.3	2		

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Mylar 100K																									
Cap. in hfd. 10000	979	992	979	992	972	912	918	911	911	911	911	967	978	978	978	942	942	942	966	967	966	967	966	967	977
Power Factor - %	39	35	35	35	30	33	32	30	30	30	34	34	34	34	34	33	33	33	30	35	35	35	35	38	
Notes	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Terminal at the spot weld	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	Section 1/8" from the margin	

LIFE TEST RECORD

25 UNITS 1.0 Mfd. - 2 X .25 - 1 X .5 MIL. Mylar Capacitors LOT NO. Nebst 113
 SPECIFICATION FOR WHOM V. Winroth CONTRACT NO. Nebst 57200
 HOURS ON TEST 72 TEMPERATURE 85° C VOLTAGE 2500 VDC
 Date started Clock # 13 - 1182 Date finished Clock # 13 - 1262
 21 August 1953 Tray # 28 August 1953 Tray # Total Hours 80

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2500 DC																									
Shunt R. Megs. - 20F/100K																									
Cap. in Mfd. - 1000%	917	946	972	901	906	920	903	951	963	947	927	961	896	963	947	932	934	984	969	920	946	937	938	970	927
Power Factor - %	48	33	40	36	38	38	43	54	50	49	41	39	41	44	45	39	43	44	42	41	40	35	30	35	40
LIFE TEST FAILURES IN HRS.				7						80	22							5			49	58	5		

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Megs. - 20F/100K																									
Cap. in Mfd. - 1000%	931	960	986		918	932	916	967	982			982	915	973		939	956			980	978				
Power Factor - %	30	30	33		35	30	35	37	37			31	39	42		33	31			34	40				

Date collected by HT. V.W. HJ

LIFE TEST RECORD

25 UNITS 1.04fd - 2X.25 - 1X.5 MIL - Mylar Capacitors LOT NO. Nobst 115
 SPECIFICATION EXPERIMENTAL FOR WHOM V. W. CONTRACT NO. Nobst 57200
 HOURS ON TEST 72 TEMPERATURE 85°C VOLTAGE 2400 VDC

Date started 11-14-12 Date finished 11-14-96 Clock # 11-1496 Total Hours 84
 2 September 1953 11 September 1953 Tray #

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage 2400 VDC																				P	P				P
Shunt R. Megs. - 50 F. 100K																				>100K	>100K				>100K
Cap. in Mid-1000's		950	963	959	1002	991	960	961	946	941	996	963	905	951	979	990	992	935	941	971	958	970	988	962	928
Power Factor %		42	38	34	34	32	35	43	72	40	38	39	40	36	70	37	36	37	41		35	39	35	41	40
LIFE TEST FAILURES IN HRS.									3	18				Open	Immed.	Open				7					

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Megs. - 85 F.																									
Cap. in Mid-1000's																									
Power Factor %																									
Notes	Tab to the insulated terminal broken away at the spot weld	Mylar failure inner 1/5 of the section 3/8 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin	Mylar failure inner 1/5 of the section 1/2 from the margin

LIFE TEST RECORD

25 UNITS 1.0 Mfd. - 2X.25 1X.5M16-Mylar Capacitors LOT NO. Nobsr 116
 SPECIFICATION Experimental FOR WHOM W. Winroth CONTRACT NO. Nobsr 57200
 HOURS ON TEST 72 TEMPERATURE 85° C VOLTAGE 2500 VDC
 Date started Clock # 13 - 1262 Date finished Clock # 13 - 1334 Total Hours 72
 2 September 1953 Tray # 14 September 1953 Tray #

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2500V	P																	P		P					P
Shunt R. Mfg. 81800K																		100K		100K					100K
Cap. in 4 (S. 1000K)	957	954	961	929	928	949	936	972	935	923	960	970	930	931	922	951	958		955	958	977	940	955	982	
Power Factor %	32	30	32	42	42	41	33	40	41	41	32	33	39	39	44	40	40	45		39	40	41	40	37	35
LIFE TEST FAILURES IN HRS.	1		11	3.5			6	3						23	2	4	2	5		Open					2

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Mfg. 897					100K	100K			100K	100K	100K	100K	100K							100K			100K		100K
Cap. in 4 (S. 1000K)					945	990			988	958	969	957								968			991		993
Power Factor - %					60	45			43	46	40	43								50			50		46

LIFE TEST RECORD

25 UNITS 1.0 ufd 2X.25 - 1X.5 MIL Mylar Capacitors LOT NO. N665K 117
 SPECIFICATION Experimental FOR FROM V. Wintrath CONTRACT NO. N665K 57200
 HOURS ON TEST 72+ TEMPERATURE 85° C VOLTAGE 2100 VDC.

Date started Clock # 7 - 1592 Date finished Clock # 7 - 1670 Total Hours 78
 11 September 1953 19 September 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Volts - 2100DC	P																								P	
Shunt R. Meg. in F100K																										100K
Cap. in ufd - 1000K	950	947	970	959	982	963	762	760	950	946	953	970	725	951	958	980	956	959	765	952	977	994	954	982	970	
Power Factor	0.32	0.40	0.37	0.34	0.42	0.31	0.38	0.46	0.35	0.39	0.40	0.37	0.40	0.38	0.39	0.40	0.39	0.44	0.39	0.44	0.35	0.40	0.42	0.35	0.37	
LIFE TEST FAILURES IN HRS.	78	4	23	23	4		8	4.5		1	4	67	8	62	4		14							19	1	

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Shunt R. Meg. in F100K																										100K
Cap. in ufd - 1000K	950	947	970	959	982	963	762	760	950	946	953	970	725	951	958	980	956	959	765	952	977	994	954	982	970	
Power Factor %	32	40	37	34	42	31	38	46	35	39	40	37	40	38	39	40	39	44	39	44	35	40	42	35	37	
Failure Description	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin	Section 1/2 from the margin

LIFE TEST RECORD

25 UNITS 1.0 ufd. - 2 X 25 - 1 X 5 MIL - Mylar Capacitors LOT NO. Nobsr 118
 SPECIFICATION Experimental FOR WHOM V. Winroth CONTRACT NO. Nobsr 57200
 HOURS ON TEST 72 TEMPERATURE 85°C VOLTAGE 2200 VDC
 Date started Clock # 8-1911 Date finished Clock # 8-1787
 11 September 1953 18 September 1953 Total Hours 76

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2500 P <					P <		P <																		P
Shunt R. Mega. @ 100K <					> 100K		> 100K																		> 100K
Cap. in ufd. - 1000 @ 90%	905	924	888	942	874	919	892	920	916	929	972	977	921	900	904	853	855	906	906	761	759	777	724	935	971
Power Factor - %	42	45	42	41	43	43	40	45	39	44	44	46	46	50	47	48	42	44	42	46	190	195	48	39	39
LIFE TEST FAILURES IN HRS.					29							1	5					60			.5	6	3		5

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Mega. @ 100K							100K	100K		100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K			100K	
Cap. in ufd. - 1000 @ 90%	919	929	912				938	893		918	941			941	899	910	956			909	965				936
Power Factor - %	40	50	32				32	45		48	48			48	56	48	46			39	49				52

Data collected by H.T. VW

LIFE TEST RECORD

LOT NO. Nobsr 119

25 UNITS 1.0 Mfd. - 2X.25 1X.5 MIL Mylar Capacitors
 SPECIFICATION Experimental FOR VEH V. Winroth

CONTRACT NO. Nobsr 57200

VOLTAGE 2300 VDC

TEMPERATURE 85° a

DATE FINISHED 11-15-68

CLOCK # 11-1496

TRAY # 72

Total Hours 72

DATE STARTED 11 September 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 2300DC	P		P	P		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Short P. Meas. - 7E F100K	100K		100K	100K		100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Capacit. Mfd. - 1000 & 947	966		966	954	966	940	900	926	995	985	984	977	976	976	976	932	952	932	952	1002	904	891	866	930	
Power Factor - %	.46		.37	.35	.42	.47	.42	.41	.47	.50	.48	.45	.51	.51	.51	.37	.42	.37	.42	.48	.47	.44	.40	.47	
LIFE TEST FAILURES IN HRS.				9	9				4			5	2					3							

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Short P. Meas. - 7E F100K	100K		100K	100K		100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Capacit. Mfd. - 1000 & 947	966		966	954	966	940	900	926	995	985	984	977	976	976	976	932	952	932	952	1002	904	891	866	930	
Power Factor - %	.58		.58	.58	.46	.58	.58	.46	.58	.54	.60	.54	.60	.54	.60	.54	.60	.54	.60	.56	.44	.46	.53		

Data collected by H.J. V.W.

LIFE TEST RECORD

UNITS 144d. 2X.25-1X5 MIL Mylar Capacitors LOT NO. Nobsr # 120
 SPECIFICATION Experimental FOR WHOM V Winboth CONTRACT NO. Nobsr 57200
 HOURS ON TEST 72 TEMPERATURE 85° C VOLTAGE 2000 VDC
 Date started Clock # 8-1788 Date finished Clock # 8-1867 Total Hours 71
 18 September 1953 24 September 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Mega. 77	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in. 44d. 1000	954	960	914	900	918	937	906	918	961	995	947	881	930	930	937	937	937	985	985	985	985	985	985	985	985
Power Factor	.38	.41	.42	.37	.40	.45	.36	.38	.42	.44	.37	.38	.39	.39	.33	.33	.33	.35	.35	.35	.41	.41	.42	.34	
Voltage - 2000	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	Pk	
LIFE TEST FAILURES IN HRS.	8	17	8.5	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Mega. 77	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in. 44d. 1000	959	922	907	912	923	963	963	963	963	963	963	959	903	945	945	945	945	988	988	988	988	988	988	988	988
Power Factor %	.35	.35	.49	.44	.45	.42	.44	.45	.42	.42	.42	.49	.37	.35	.35	.35	.35	.47	.47	.47	.47	.47	.47	.47	
Failures	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	Mylar failure outer 1/4 of the section. 1/4" from the margin	

LIFE TEST RECORD

UNITS 1.4fd - 2X.25 - 1X.5 MIL Mylar Capacitors LOT NO. NebSr 121
 SPECIFICATION Experimental FOR WHOM V. Winroth CONTRACT NO. NebSr 57200

HOURS ON TEST 72 TEMPERATURE 95° C VOLTAGE 2100 VDC
 Date started 11-1568 Clock 11-1640 Total Hours 72
 18 September 1953 23 September 1953 Tray 4

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Voltage - 1000V	P								P		P													
Shunt R Meas. 100K									100K		100K													
Cap. in 4fd. 100K	959	954	943	932	931	935		936	936	926	899	935	889	990	923	974	777	908	963	953	949			
Power Factor %	36	35	41	33	32	42		33	33	42	37	41	39	44	46	38	35	36	44	43	41			
LIFE TEST FAILURES IN HRS.	9			20							1								2					

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	21	22	23	24	25
Shunt R Meas. 77K					
Cap. in 4fd. 100K	997	957			
Power Factor %	37	39			
Notes	Mylar failure. Outer 1/2" from the margin.	Mylar failure. Midway in the section. 1/2" from the margin.	Mylar failure. Outer 1/2" from the margin.	Mylar failure. Inner 1/2" from the margin.	Mylar failure. Inner 1/2" from the margin.

LIFE TEST RECORD

LOT NO. Nobsr 122

UNITS 146d - 2x.25-1x.5 MIL Mylar Capacitors

CONTRACT NO. Nobsr 57200

SPECIFICATION Experimental FOR WHOM V. Winrbth

VOLTAGE 2200 VDC

HOURS ON TEST 72 TEMPERATURE 25°C

Date started Clock # 13 - 1335 Date finished Clock # 13 - 1407

18 September 1953 Tray # 24 Total Hours 72

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Meas. 72 Hours																				100K					100K
Capacitor 4x.100x.25-1x.5 MIL	926	945	926	945	921	950	942	942	919	960	885	906	920		853	930	929	936		994	854	927	966	977	
Power Factor	31	45	40	41	40	38	31	38	33	43	45	43	35		44	36	40	43		33	37	40	39	38	40
Voltage - 2200V P.K.															P	P	P	P		P	P	P	P	P	P
LIFE TEST FAILURES IN HRS.						6			8					Unable to locate source of failure											

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Meas. 72 Hours																									
Cap. Meas. 100x.25-1x.5 MIL	911	936	926	926	967	977	927	927		886	912	936			862		926	941		874					
Power Factor	36	33	42	38	45	42	43	43		31	39	41			58		35	40		33					
Notes							Major failure due to short circuit in section 1/2" from No. 4		Major failure midway in section 1/4" from the margin							Tab to insulator terminal broken over the top of wire									

1 Mfd. 2 x .25 Mil - 1 x .5 Mil U

NObsr #	Voltage	Temp.	Number of Units	Failed Before Life	Started on Life	Mechanical Failures	Mylar Failures	% Mylar Failures	Lot Material	Margin	Pre-gauged Material	Number Open After Life
93	1000 D.C.	85°C	25	3	22	0	1	4.5%	#2	1/4"	Yes	0
94	1100 D.C.	85°C	25	5	20	0	0	0%	#2	1/4"	Yes	0
95	1200 D.C.	85°C	25	0	25	0	3	12%	#2	1/4"	Yes	0
96	1300 D.C.	85°C	25	1	24	0	1	4.16%	#2	1/4"	Yes	0
97	1400 D.C.	85°C	25	0	25	0	3	12%	#2	1/4"	Yes	0
98	1500 D.C.	85°C	25	1	24	1	0	0%	#2	1/4"	Yes	0
99	1600 D.C.	85°C	25	1	24	4	2	10.5%	#2	1/4"	Yes	1
100	1700 D.C.	85°C	25	4	21	2	3	15.8%	#2	1/4"	Yes	0
101	1800 D.C.	85°C	25	2	23	3	5	25%	#2	1/4"	Yes	0
102	1900 D.C.	85°C	25	2	23	3	3	15%	#2	1/4"	Yes	0
103	2000 D.C.	85°C	25	4	21	1	5	25%	#2	1/4"	Yes	0
104	2100 D.C.	85°C	25	2	23	3	3	15.8%	#2	1/4"	Yes	1
105	2000 D.C.	85°C	25	2	23	0	6	26%	#2	1/4"	Yes	0
106	2100 D.C.	85°C	25	2	23	1	4	18.2%	#2	1/4"	Yes	0
107	2200 D.C.	85°C	25	2	23	2	6	30%	#2	1/4"	Yes	1
108	2200 D.C.	85°C	25	3	23	1	4	19%	#2	1/4"	Yes	1
109	2300 D.C.	85°C	25	1	24	2	4	20%	#2	1/4"	Yes	2
110	2400 D.C.	85°C	25	0	25	0	8	33.3%	#2	1/4"	Yes	1
111	2300 D.C.	85°C	25	0	25	0	19	79%	#2	1/4"	Yes	1
112	2400 D.C.	85°C	25	0	25	0	10	45.5%	#2	1/4"	Yes	3
113	2500 D.C.	85°C	25	0	25	0	8	33.3%	#2	1/4"	Yes	1
114	2300 D.C.	85°C	25	2	23	0	8	36.4%	#2	1/4"	Yes	1
115	2400 D.C.	85°C	25	1	24	0	9	43%	#2	1/4"	Yes	3
116	2500 D.C.	85°C	25	1	24	0	12	57%	#2	1/4"	Yes	3
117	2100 D.C.	85°C	25	0	25	0	16	66.6%	#2	1/4"	Yes	1
118	2200 D.C.	85°C	25	1	24	3	7	33.3%	#2 & 3	1/4"	Yes	0
119	2300 D.C.	85°C	25	6	19	0	5	29.4%	#2 & 3	1/4"	Yes	2
120	2000 D.C.	85°C	25	7	18	1	5	29.5%	#2 & 3	1/4"	Yes	0
121	2100 D.C.	85°C	25	5	20	1	4	21%	#2 & 3	1/4"	Yes	0
122	2200 D.C.	85°C	25	2	23	0	4	18%	#2 & 3	1/4"	Yes	1

LIFE TEST RECORD

25 UNITS .25 Mfd. Single .5 MIL. Metallized Mylar Capacitors
 SPECIFICATION FOR WHOM V. Winzeth
 TEMPERATURE 85 C VOLTAGE 600 VDC
 HOURS ON TEST 250 Date finished Clock # 1 - 3795
 Date started 6 August 1953 Tray # Total Hours 286
 12 August 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Volts-amps P																									
Shunt to PE: 25F100K100K100K 25K100K																									
Cap in Mfd. 1000 2.25 1.264 262 225 262 210 265 262 243 264 265 262 245 272 265 258 271 264 265 258 256 262 267 267 264																									
Power Factor: 1.35 3.1 2.7 4.9 3.4 3.4 3.9 4.2 1.15 1.39 2.5 6.3 1.1 3.5 3.9 7.4 7.9 2.5 3.1 4.3 7.1 5.7 1.32																									

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt to PE: 25F100K100K100K on 475 V METER																									
Cap in Mfd. 1000 2.25 1.264 262 225 262 210 265 262 243 264 265 262 245 272 265 258 271 264 265 258 256 262 267 267 264																									
Power Factor: 1.31 1.95 4.2 3.2 3.7 3.6 4.5 1.2 1.30 1.38 1.15 1.42 1.42 2.49 2.70 2.61 2.54 2.63 2.61 2.63 2.61 2.64 2.64 2.64 2.52																									

LIFE TEST FAILURES IN HRS.
 Sample 1: open
 Sample 2: open
 Sample 3: open
 Sample 4: open
 Sample 5: open
 Sample 6: open
 Sample 7: open
 Sample 8: open
 Sample 9: open
 Sample 10: open
 Sample 11: open
 Sample 12: open
 Sample 13: open
 Sample 14: open
 Sample 15: open
 Sample 16: open
 Sample 17: open
 Sample 18: open
 Sample 19: open
 Sample 20: open
 Sample 21: open
 Sample 22: open
 Sample 23: open
 Sample 24: open
 Sample 25: open

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 26

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units

The units were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C. for one half hour. The capacitance was measured at 85 C. The units were then exposed to 600 v.d.c., pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 9 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	6.2 mfd.	Start of Test
66	5.95 mfd.	19 hours
67	6.4 mfd.	26 hours
70	6.3 mfd.	30 hours
72	6.1 mfd.	112 hours
79	- - -	118 hours
80	6.2 mfd.	137 hours
80	6.1 mfd.	157 hours
80	6.1 mfd.	182 hours
82	6.1 mfd.	233 hours
83	6.25 mfd.	264 hours
83	6.25 mfd.	286 hours

Test completed

NObsr M No. 26 (Continued)

Number of units started on test-----	25
Number finished-----	22
Total capacitance before life test at room temperature-----	6.2
Total capacitance before life test at 85 C.-----	6.2
Total capacitance after pre-breakdown test-----	6.2
Total capacitance after Life Test-----	6.25
Number of permanent failures-----	0
Number of temporary failures-----	83
Number of opens at the end of the test-----	3

LIFE TEST RECORD

25 UNITS .25 Mfd. - single .5 MIL - Metallized Mylar Capacitors LOT NO. Nebser M 22
 SPECIFICATION 1 FOR WHOM V. Winroth CONTRACT NO. Nobser 57200

HOURS ON TEST 250 TEMPERATURE 85°C VOLTAGE 700 VDC
 Date started Clock # 2. 3384 Date finished Clock # 2 - 3669
 6 August 1958 18 August 1958 Total Hours 285

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Volts - 700 DC	P																			P	P	P		P	P
Shunt R. Mega. 21K 50K 100K 100K 100K 100K 90K 100K																					800	100K	100K	6K	100K
Oh. 475 V. Meter																									
Cap. in mfd. - 1000%	.258	.259	.260	.261	.262	.263	.264	.265	.266	.267	.268	.269	.270	.271	.272	.273	.274	.275	.276	.277	.278	.279	.280	.281	.282
Power Factor - %	.34	.47	.31	.14	.35	.30	.29	.41	.42	.39	.33	.36	.37	.31	.50	.32	.38	.50	.5	.39					
LIFE TEST FAILURES IN HRS.																									

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Mega. 21K 50K 100K																					100K	100K			100K
Oh. 475 V. Meter																									
Cap. in mfd. - 1000%	.253	.255	.266	.268	.261	.256	.261	.252	.261	.251	.251	.260	.253	.271	.257	.266	.258	.262			.254	.273			.267
Power Factor - %	.37	.44	.40	.10	.32	.34	.25	.42	.38	.39	.33	.38	.41	.70	.35	.57	.43	.39			.31	.40			.49
LIFE TEST FAILURES IN HRS.																									

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 27

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units.

The units were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85C. for one-half hour. The capacitance was measured at 85C. The units were then exposed to 700 v. d. c. pre-breakdown test for one-half hour, after which the capacitance was again measured. During this period, there were 68 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	6.1 mfd.	Start of Test
73	5.75 mfd.	19 hours
87	---	26 hours
112	5.85 mfd.	91 hours
121	---	113 hours
137	---	118 hours
137	5.6 mfd.	137 hours
140	---	157 hours
140	---	182 hours
149	5.55 mfd.	237 hours
153	5.65 mfd.	264 hours
153	5.65 mfd.	285 hours

Test completed

NObsr M No. 27 (Continued)

Number of units started on test-----	23
Number finished -----	21
Total capacitance before life test at room temperature-----	6.3 mfd.
Total capacitance before life test at 85 C. -----	6.3
Total capacitance after pre-breakdown test-----	6.1
Total capacitance after Life Test-----	5.65
Number of permanent failures-----	0
Number of temporary failures-----	153
Number of opens at the end of the test-----	2

LIFE TEST RECORD

25 UNITS .25 MFD - Single .5 MIL - Metallized Mylar Capacitors LOT NO. Nobsr M 28
 SPECIFICATION FOR WHOM V. Winroth CONTRACT NO. Nobsr 57200

HOURS ON TEST 250 VOLTAGE 800 V D.C.
 Date started Clock # 3 - 2259 Date finished Clock # 3 - 2544 Total Hours 285
 6 August 1953 19 August 1953 Tray #

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 800V D.C.																									> P
Shunt R. Meas. - 100K	259	264	260	264	262	275	262	257	265	270	255	257	235	274	259	260	265	272	259	259	257	253	258	246	255
Ohm 475 V. Meter																									
Cap. in Mfd. 100%																									
Power Factor - %	38	44	44	35	63	38	88	1.1	195	69	32	66	50	1.5	39	11	44	49	67	71	38	71	70	57	49
LIFE TEST FAILURES IN HRS.													Open												

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Meas. - 100K																									
Ohm 475 V. meter																									
Cap. in Mfd. 100%	256	264	257	260	253	263	260	254	265	264	253	257	230	272	257		219	259	237	254	240	250	258	241	190
Power Factor - %	55	64	60	55	65	49	1.0	185	1.17	135	57	85		1.70	64		67	49	72	87	1.25	49	41	64	54
Notes													Ground Pilot Oil broken	over from the station	25K/100K	Ground Pilot Oil broken	100K	100K							

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 28

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units.

The units were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C. for one half hour. The capacitance was measured at 85 C. The units were then exposed to 800 v. d. c. pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 67 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	6.5 mfd.	Start of Test
64	6.22 mfd.	18 hours
64	---	25 hours
89	6.25 mfd.	39 hours
97	---	112 hours
100	---	118 hours
100	---	136 hours
100	---	157 hours
103	---	182 hours
103	6.1 mfd	237 hours
104	6.1 mfd	264 hours
104	6.15 mfd.	285 hours

Test completed

Nobsr M No. 28 (continued)

Number of units started on test-----	25
Number finished-----	23
Total capacitance before life test at room temperature-----	6.5 mfd.
Total capacitance before life test at 85 C.-----	6.65
Total capacitance after pre-breakdown test-----	6.5
Total capacitance after Life Test-----	6.15
Number of permanent failures-----	0
Number of temporary failures-----	104
Number of opens at the end of the test-----	2

LIFE TEST RECORD

25 UNITS 2.5 Mfd. Single 5 MIL - Metallized Mylar Capacitors LOT NO. Nabstr M 29
 FOR WHOM V. Winreth CONTRACT NO. Nabstr 57200

HOURS ON TEST 250 TEMPERATURE 85 °C VOLTAGE 900 VDC
 Date started 17 August 1953 Clock # 4-2040 Date finished 29 August 1953 Clock # 4-2302 Total Hours 162
 Tray # 1953 Tray # 162

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 900 VDC	P		P	P	P			P	P	P	P	P	P	P	P	P	P	P		P	P	P	P	P	P
Shunt R Mega-ohm or 475 V. METER	100K	100K	100K	100K	100K	50K	50K	50K	20K	100K	100K	100K	30K	100K	100K	50K	100K	3.5K		100K	100K	100K	100K	100K	100K
Cap. in Mfd.	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Power Factor - %	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
LIFE TEST FAILURES IN HRS.																									

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Mega-ohm or 475 V. METER	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd.	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Power Factor - %	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05

Date collected by H.J. VW.

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 29

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units.

The units (19) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C for one half hour. The capacitance was measured at 85 C. The units were then exposed to 900 v.d.c. pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 28 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	5.3 mfd.	Start of Test
62	5.18	20 hours
73	5.10	41 hours
128	5.0	64 hours
130	4.98	88 hours
144	4.95	113 hours
146	5.0	159 hours
149	5.0	169 hours
150	5.0	193 hours
154	4.9	216 hours
155	5.0	240 hours
161	4.95	262 hours

Test completed

NObsr M No. 29 (Continued)

Number of units started on test-----	19
Number finished-----	17
Total capacitance before life test at room temperature-----	5.05
Total capacitance before life test at 85 C. -----	5.3
Total capacitance after pre-breakdown test-----	5.3
Total capacitance after Life Test-----	4.95
Number of permanent failures-----	0
Number of temporary failures-----	161
Number of opens at the end of the test-----	2

LIFE TEST RECORD

25 UNITS, 25 Mfd. - Single .5 MIL - Metallized Mylar Capacitors LOT NO. Nobsr M 30
 FOR VOM V. Winroth CONTRACT NO. Nobsr 57200

SPECIFICATION

HOURS ON TEST 250 TEMPERATURE 85°C VOLTAGE 1000 VDC
 Date started 17 August 1953 Clock # 5-1867 Date finished 29 August 1953 Clock # 5-2130 Total Hours 263
 17 August 1953 Tray # 19 August 1953 Tray #

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Volts - 1000 DC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Shunt R. Meas. 90°F on 475 V. Meter	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd. - 1000	272	272	259	270	268	268	264	264	260	256	261	257	258	270	265	264	252	259	265	254	269	260	269	260	260
Power Factor - %	1.7	1.37	1.34	1.45	1.38	1.38	1.3	1.3	1.42	1.38	1.38	1.36	1.32	1.58	1.70	3.2	3.5	1.4	1.35	1.4	1.35	1.38	1.37	1.37	1.37
LIFE TEST FAILURES IN HRS.	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
Notes					Unable to locate the source of the failure		Both pigtails loosened away from the section														Unable to locate the exact source of the failure				

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Meas. 90°F on 475 V. Meter	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd. - 1000	257	257	246	264	264	264	264	264	260	250	255	250	262	262	262	262	240	240	240	240	240	240	240	240	240
Power Factor - %	1.1	1.1	1.30	1.02	1.02	1.08	1.08	1.08	1.36	1.39	1.2	1.2	1.2	1.2	1.2	1.2	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29
LIFE TEST FAILURES IN HRS.	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open	Open
Notes																									

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 30

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units.

The units (20) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C. for one half hour. The capacitance was measured at 85 C. The units were then exposed to 1000 v.d.c. pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 120 temporary breakdowns. No. 18 failed completely after 32 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	4.00 mfd.	Start of Test
275	3.85	20 hours
289	3.80	41 hours
290	3.62	64 hours
290	3.60	38 hours
290	3.57	113 hours
291	3.57	159 hours
294	3.62	169 hours
295	3.65	193 hours
295	3.65	213 hours
342	3.55	240 hours
342	3.50	263 hours

Test completed

NObsr M No. 30 (Continued)

Number of units started on test-----	19
Number finished-----	13
Total capacitance before life test at room temperature-----	5.3
Total capacitance before life test at 85 C.-----	5.55
Total capacitance after pre-breakdown test-----	4.00
Total capacitance after Life Test-----	3.50
Number of permanent failures-----	1
Number of temporary failures-----	342
Number of opens at the end of the test-----	6

LIFE TEST RECORD

25 UNITS 25 Mfd - Single - .5 MIL - Metallized Mylar Capacitors LOT NO. Nobsr M³¹
 SPECIFICATION FOR WHOM V. Winroth CONTRACT NO. Nobsr 57200

HOURS ON TEST 250
 Date started Clock # 6 - 1600
 17 August 1953 Tray #

TEMPERATURE 85°C
 Date finished Clock # 6 - 1860
 29 August 1953 Tray #

VOLTAGE 1100 VDC
 Total Hours 260

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 1100 DC	P		P	P	P			P				P		P					P	P		P	P	P	P
Shunt R Mega-ohm	100K	100K	100K	100K	20K	50K	3.5K	100K	100K	100K	25K	100K	100K	100K	20K	40K	100K	100K	100K	50K	100K	100K	100K	100K	100K
Cap. in Mfd - 1000	2.0	2.0	2.0	2.0	2.1	2.7	2.70	2.62	2.61	2.68	2.66	2.57	2.59	2.59	2.59	2.62	2.64	2.62	2.59	2.65	2.57	2.53	2.53	2.53	2.70
Power Factor - %	3.1	3.1	3.1	3.1	1.4	1.4	1.45	1.34	1.34	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
LIFE TEST FAILURES IN HRS.	17																								
Notes	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.	Unable to locate the exact source of the failure.

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Mega-ohm	100K	100K	100K	100K	20K	50K	3.5K	100K	100K	100K	25K	100K	100K	100K	20K	40K	100K	100K	100K	50K	100K	100K	100K	100K	100K
Cap. in Mfd - 1000	2.0	2.0	2.0	2.0	2.1	2.7	2.70	2.62	2.61	2.68	2.66	2.57	2.59	2.59	2.59	2.62	2.64	2.62	2.59	2.65	2.57	2.53	2.53	2.53	2.70
Power Factor - %	3.1	3.1	3.1	3.1	1.4	1.4	1.45	1.34	1.34	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
Notes	Top of section done				Pigtail to insulated terminal loosened away from section	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections	Both pigtail loosened from the sections

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 31

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units

The units (19) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C. for one half hour. The capacitance was measured at 85 C. The units were then exposed to 1100 v. d. c. pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 203 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	3.94 mfd.	Start of Test
280	---	17 hours Unit No. 1 failed
280	2.32	17 hours
287	3.08	38 hours
293	2.81	61 hours
297	2.79	85 hours
301	2.79	110 hours
307	3.05	156 hours
309	3.00	166 hours
309	2.90	190 hours
311	3.05	213 hours
312	3.07	237 hours
313	3.07	260 hours
		Test completed

NObsr M No. 31 (Continued)

Number of units started on test-----	19
Number finished-----	11
Total capacitance before life test at room temperature-----	4.75
Total capacitance before life test at 85 C.-----	5.25
Total capacitance after pre-breakdown test-----	3.94
Total capacitance after Life Test-----	3.07
Number of permanent failures-----	1
Number of temporary failures-----	313
Number of opens at the end of the test-----	7

LIFE TEST RECORD

25 UNITS 25 Mfd. Single - .5 MIL - Metallized Mylar Capacitors LOT NO. Nebst M 32
 SPECIFICATION Experimental FOR VORN Wiroth CONTRACT NO. Nebst 57200
 HOURS ON TEST 250 TEMPERATURE 85 C VOLTAGE 1200 VDC
 Date started Clock # 1 - 3798 Date finished Clock # 1 - 4054
 20 August 1953 11 September 1953 Total Hours 256

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 1200 DC	P.k															P			P.k						
Shunt R. Megs. 70 F 3K	100K 10K 30	100K 100K 30K	100K 30K 30K	100K 100K 100K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K	100K 30K 30K
Cap. in Mfd. 100%	268	263	267	268	261	264	264	290	259	264	260	259	255	263	256	259				265	266	266	279	263	255
Power Factor - %	44	37	35	36	33	39	34	3.0	38	37	39	29	39	76	39	35				38	75	1.6	1.0	50	33
LIFE TEST FAILURES IN HRS.	Open	Open	Open	Pre Life Test			Open				Open	Open	Open	Open	Open	Open	Open	Open	Open	Pre Life Test		Open	Pre Life Test		

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Megs. 70 F on 475 V. Meter	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K
Cap. in Mfd. 100%	230	230	230	230	235	259	263	241	259												245				
Power Factor - %	44	43	69	30	52	41															137	137	137	137	137
LIFE TEST FAILURES IN HRS.	Open	Open	Open	Pre Life Test			Open				Open	Open	Open	Open	Open	Open	Open	Open	Open	Pre Life Test		Open	Pre Life Test		

Date collected by HT. VW. HT. ENGINEERING DEPT. C.L. 1002 BOSTON, MASS

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 32

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units

The units (23) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C for one half hour. The capacitance was measured at 85 C. The units were then exposed to 1200 v. d. c. pre-breakdown test for one half hour. Unit No. 20 failed completely after 7 temporary breakdowns, unit No. 4 after 10 and Unit No. 23 after 100 temporary breakdowns. The capacitance was again measured before the Life Test commenced. During this breakdown period, there were 449 temporary failures.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	3.70 mfd.	Start of Test
39	3.4	0 hours
331	3.12	22 hours
349	3.12	43 hours
355	3.12	67 hours
372	2.90	91 hours
403	2.38	163 hours
407	2.38	210 hours
408	2.50	234 hours
416	2.35	256 hours

Test completed

NObsr M No. 32 (Continued)

Number of units started on test-----	20
Number finished-----	10
Total capacitance before life test at room temperature-----	5.45
Total capacitance before life test at 85 C-----	5.55
Total capacitance after pre-breakdown test-----	3.70
Total capacitance after Life Test-----	2.35
Number of permanent failures-----	0
Number of temporary failures-----	416
Number of opens at the end of the test-----	10

LIFE TEST RECORD

25 UNITS .25 Hfd. - single - 5 MIL - Metallized Mylar Capacitors LOT NO. Nebst M 33

SPECIFICATION Experimental

FOR VOM V. Winrothe

CONTRACT NO. Nebst 57200

HOURS ON TEST 250

TEMPERATURE 85° C

VOLTAGE 1300 VDC

Date started 28 August 1953

Clock # 2 - 3671 Tray # 9

Date finished 2 - 3923

Total Hours 152

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 1300 DC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Shunt R. Mega. Ω	20K	20K	20K	15K	15K	15K	15K	30K	30K	30K	50K	50K	25K	40K	15K	5K	20K	20K	30K	25K	100K	4K	30K	5K	30K
Cap. in hfd. 1000 Ω	244	244	244	271	271	263	261	251	251	251	230	230	259	257	264	253	262	266	255	263	259	266	263	264	253
Power Factor %	44	50	48	48	35	35	91	51	51	51	48	48	39	35	34	41	36	36	37	32	36	42	31	42	44
LIFE TEST FAILURES IN HRS.	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open
Notes			Ground pigtail broken away from the section.		Terminal pigtail broken away from the section.						Terminal pigtail broken away from the section.	Terminal pigtail broken away from the section.	Terminal pigtail broken away from the section.												

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R. Mega. Ω	20K	20K	20K	15K	15K	15K	15K	30K	30K	30K	50K	50K	25K	40K	15K	5K	20K	20K	30K	25K	100K	4K	30K	5K	30K
Cap. in hfd. 1000 Ω	244	244	244	271	271	263	261	251	251	251	230	230	259	257	264	253	262	266	255	263	259	266	263	264	253
Power Factor %	44	50	48	48	35	35	91	51	51	51	48	48	39	35	34	41	36	36	37	32	36	42	31	42	44
LIFE TEST FAILURES IN HRS.	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open	open
Notes	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.	Both pigtails loosened away from the section.

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 33

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units.

The units (20) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C for one half hour. The capacitance was measured at 85 C. The units were then exposed to 1300 v.d.c. pre-breakdown test for one half hour. Unit No. 18 failed completely after 194 temporary breakdowns, and Unit No. 11 after 316 self-healing breakdowns. The capacitance was again measured before the Life Test commenced. During this breakdown period, there were 316 temporary failures.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	4.37 mfd.	Start of Test
349	3.78	67 hours Unit No. 24 failed completely after 349 temporary break- downs.
392	---	Unit No. 13 failed completely after 392 temporary break- downs.
872	.55	88 hours
886	.55	111 hours
939	---	111 hours Unit No. 8 failed completely after 939 temporary break- downs.
999	.125	134 hours
1009	.125	158 hours
1022	.250	225 hours
1025	.120	247 hours

NObsr M No. 33 (Continued)

TEMPORARY BREAKDOWNS

TOTAL CAPACITANCE

ELAPSED TIME

1028

.130 mfd.

252 hours

Test completed

Number of units started on test-----	18
Number finished-----	1
Total capacitance before Life Test at room temperature-----	5.2
Total capacitance before Life Test at 85 C.-----	5.4
Total capacitance after pre-breakdown test-----	4.37
Total capacitance after Life Test-----	.13
Number of permanent failures-----	3
Number of temporary failures-----	1028
Number of opens at the end of the test-----	14

LIFE TEST RECORD

25 UNITS 25 yfd. single - 5 MIL - Metallized Mylar Capacitors LOT NO. Nebser M 34
 SPECIFICATION Experimental FOR WHOM V. Winroth CONTRACT NO. Nebser 57200
 HOURS ON TEST 250 TEMPERATURE 85 °C VOLTAGE 1400 VDC
 Date started 28 August 1953 Clock # 3 - 2545 Date finished 12 September 1953 Clock # 3 - 2797 Total Hours 252
 Tray # 12

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 1400V	P	P	P		P														P		P	P	P		P
Shunt R Meter 500 30K	40K	25K			50K	40K	4.5K	15K	50K	50K	25K	4K	20K	50K	15K	45K	40K	50K	30K		3K	10K	15K		30K
Cap. in yfd. 1000	2.254	2.252	2.258		2.271	2.269	2.267	2.270	2.260	2.262	2.259	2.264	2.265	2.263	2.257	2.253	2.263	2.268	2.256		2.258	2.266	2.263		2.259
Power Factor %	38	78	30		34	55	24	30	40	34	32	32	1.3	38	30	3.8	67	38	35		10	34	85		35
LIFE TEST FAILURES IN HRS.	Open	1	1		Open	1	Open	Open	Pre Life Test	Open	Pre Life Test	Open	Open	Open	Open	Open	Open	Open		Open	Open	Open	Open		Open
				Terminal Pencil broken away from the section																Mylar Failure - at the start of the section					Terminal Pencil broken away from the section

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Shunt R Meter 75F																										
Cap. in yfd. 1000																										
Power Factor %																										
LIFE TEST FAILURES IN HRS.	Open	1	1		Open	1	Open	Open	Pre Life Test	Open	Pre Life Test	Open	Open	Open	Open	Open	Open	Open		Open	Open	Open	Open		Open	
	Open from the section	Several Mylar failures first 12 inches of the section	Several Mylar failures first 12 inches of the section	2 feet of the section	Both Pencil tails loosened away from the section	Pencil to the cap loosened away from the section	Mylar failure. First two inches of the section	Both Pencil tails loosened away from the section	Many Mylar failures. Outer end and inner 15 of the section	Pencil to the cap loosened away from the section	Mylar failures. Outer end of the section	Terminal loosened from the section	Both Pencil tails loosened away from the section	Pencil to the cap loosened away from the section	Pencil to the cap loosened away from the section	Pencil to the cap loosened away from the section	Both Pencil tails loosened away from the section	Pencil to the cap loosened away from the section	Both Pencil tails loosened away from the section	Mylar Failure - at the start of the section						Pencil to insulated terminal loosened away from the section

NUMBER OF TEMPORARY BREAKDOWNS VS TIME

NObsr M No. 34

Twenty-five .25 mfd. single
terminalized Mylar C Units.

The units (22) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C for one half hour. The capacitance was measured at 85 C. The units were then exposed to 1400 v.d.c. pre-breakdown test for one half hour. Unit No. 9 failed completely after 108 temporary breakdowns. Unit No. 9 failed completely after 108 temporary breakdowns, Unit No. 11 after 449 self-healing breakdowns. The capacitance was again measured before the Life Test commenced. During this breakdown period, there were 449 temporary failures.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	3.55 mfd.	Start of Test
393	2.2	1 hour
446	---	1 hour Unit No. 3 failed completely.
453	---	1 hour Unit No. 7 failed completely.
632	---	1 hour Unit No. 2 failed completely.
752	.95	22 hours
830	.55	45 hours
895	.60	69 hours
996	.55	93 hours
1062	.55	159 hours
1108	.275	182 hours
1114	.275	206 hours

NObsr M No. 34 (Continued)

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
1121	.275 mfd.	228 hours
1233	.160	252 hours

Test completed

Number of units started on test -----	20
Number finished-----	2
Total capacitance before Life Test at room temperature-----	5.50
Total capacitance before Life Test at 85 C.-----	5.75
Total capacitance after pre-breakdown test-----	3.55
Total capacitance after Life Test-----	.160
Number of permanent failures-----	3
Number of temporary failures-----	1233
Number of opens at the end of the test-----	15

LIFE TEST RECORD

25 UNITS .25 4fd. - single .5 MIL. Metallized. Mylar Capacitors. LOT NO. Nobsr M 35
 SPECIFICATION Experimental FOR VEHOM V. Winroth CONTRACT NO. Nobsr 57200

HOURS ON TEST 250 TEMPERATURE 85° C VOLTAGE 800 KDC
 Date started Clock # 4-2304 Date finished Clock # 4-2559
 3 September 1953 17 September 1953 Total Hours 255

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage 800DC			P	P	P		P							P						P					P
Short P. Megaohm			100K	100K	100K		100K							100K	100K	100K	70K	100K							100K
on 475 V Meter																									
Cap. in 4fd. 100%			257	263	263		261	272	256	262	262			264	263	275	262	276		261	278	265	273	259	254
Power Factor %			30	30	32		25	30	25	27				32	30	28	30	23		27	21	22	29	27	26
LIFE TEST FAILURES IN HRS.			Terminal pyral broken away from the section			Terminal pyral broken away from the section							Terminal pyral broken away from the section							Terminal pyral broken away from the section					

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Short P. Megaohm			100K	100K	100K		100K							100K	100K	100K	2K	100K							100K
on 475 V Meter																									
Cap. in 4fd. 100%			255	257	257		255	269	254	255	259			256	253	271	213	237		258	237	259	269	256	250
Power Factor %			38	53	44		37	63	39	47	51			62	44	98	15	50		53	41	26	38	36	42

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 35

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units

The units (19) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C for one half hour. The capacitance was measured at 85 C. The units were then exposed to 800 v. d. c. pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 42 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	5.2 mfd.	Start of Test
31	5.2	18 hours
56	5.0	84 hours
56	5.0	107 hours
57	5.0	130 hours
58	5.0	153 hours
59	5.0	177 hours
68	5.0	181 hours
96	5.0	204 hours
100	5.0	229 hours
100	5.0	255 hours

Test completed

NObsr M No. 35 (Continued)

Number of units started on test-----	19
Number finished-----	19
Total capacitance before life test at room temperature-----	5.0
Total capacitance before life test at 85 C.-----	5.2
Total capacitance after pre-breakdown test-----	5.2
Total capacitance after Life Test-----	5.0
Number of permanent failures-----	0
Number of temporary failures-----	100
Number of opens at the end of the test-----	0

LIFE TEST RECORD

25 UNITS 25 yfd - single - .5 MIL - Metallized Mylar Capacitors LOT NO. Nobsr - M = 36
 SPECIFICATION Experimental FOR VEHOM V. Winroth CONTRACT NO. Nobsr 57200

HOURS ON TEST 250 TEMPERATURE 95 °C VOLTAGE 900 VDC
 Date started Clock # 5-2131 Date finished Clock # 5-2383 Total Hours 252
 3 September 1953 17 September 1953

ELECTRICAL TESTS BEFORE LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Voltage - 900 DC	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Shunt R Meq. 77 F 100K on 475 V Meter	100K	100K	100K	100K	100K	15K 100K	100K 20K	100K 100K 100K	100K 100K 100K	100K 100K 100K	100K 100K 100K	100K	100K	100K	100K	100K	100K	100K	5K 80K	100K 100K 50K	100K 100K 50K	100K 100K 50K	100K 100K 50K	100K 100K 50K	100K 100K 50K
Cap. 11 MFD. 1000 V. 261	.256	.260	.260	.250	.272	.259	.260	.267	.259	.250	.260	.258	.263	.255	.259	.262	.262	.262	.262	.269	.262	.262	.277	.263	.263
Power Factor - %	.34	.42	.25	.30	.30	.26	.30	1.9	.29	.31	.44	.44	.23	.34	.37	.48	1.8	25	25	25	.26	1.4	.42	1.4	
LIFE TEST FAILURES IN HRS.					Lead Terminal Pigtail broken away from the section.	Open	Open	Open			Lead ground pigtail broken away from the pigtail.	Mylar failure at the middle of section. Other STW.								Open	Lead BOTH pigtails broken away from the section.				

ELECTRICAL TESTS AFTER LIFE TEST

Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Shunt R Meq. 77 F 100K on 475 V Meter	100K	100K	100K	100K	100K	100K	100K	100K	100K 100K 100K	100K 100K 100K	100K 100K 100K	100K	100K	100K	100K	100K	100K	100K	100K 350	100K 350	100K 100K 50K 100K	100K 100K 50K 100K	100K 100K 50K 100K	100K 100K 50K 100K	100K 100K 50K 100K
Cap. 11 MFD. 1000 V. 220	.253	.250	.250	.229	.238	.254	.199	.243	.257	.210	.157	.259	.254	.257	.210	.157	.259	.254	.257	.257	.255	.259	.244	.253	.253
Power Factor - %	.39	.48	.66	.49	.44	1.6	.43	.36	.42	.45	.46	.61	2.2	2.2	.45	.46	.61	.61	2.2	2.2	.35	1.7	.66	1.75	
LIFE TEST FAILURES IN HRS.					BOTH pigtails loosened away from the section.	BOTH pigtails loosened away from the section.	BOTH pigtails loosened away from the section.	BOTH pigtails loosened away from the section.												Pigtail to the end loosened away from the section.	Pigtail to the end loosened away from the section.				

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 36

Twenty-five .25 mfd. single
.5 mil Metallized Mylar C Units.

The units (21) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C for one half hour. The capacitance was measured at 85 C. The units were then exposed to 900 v. d. c. pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 74 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	5.35 mfd.	Start of Test
94	5.10	18 hours
248	4.80	84 hours
281	4.75	107 hours
282	4.65	131 hours
284	4.55	153 hours
286	4.43	177 hours
291	4.70	181 hours
296	4.70	204 hours
301	4.70	239 hours
309	4.70	252 hours

Test completed

Number of units started on test-----	21
Number finished-----	18
Total capacitance before life test at room temperature-----	5.55
Total capacitance before life test at 85 C.-----	5.7
Total capacitance after pre-breakdown test-----	5.35
Total capacitance after Life Test-----	4.70
Number of permanent failures-----	0
Number of temporary failures-----	309
Number of opens at the end of the test-----	3

NUMBER OF TEMPORARY BREAKDOWNS VS. TIME

NObsr M No. 37

Twenty-five .25 mfd. single
.5 mil metallized Mylar C units.

The units (23) were wired to a life test rack and the total capacitance measured at room temperature. Following this, they were heated in an oven to 85 C for one half hour. The capacitance was measured at 85 C. The units were then exposed to 1000 v.d.c. pre-breakdown test for one half hour, after which the capacitance was again measured. During this period, there were 32 temporary breakdowns.

<u>TEMPORARY BREAKDOWNS</u>	<u>TOTAL CAPACITANCE</u>	<u>ELAPSED TIME</u>
0	5.2 mfd.	Start of Test
174	---	18 hours Unit No. 9 failed completely.
190	4.6	18 hours
389	---	22 hours Unit No. 1 failed completely
460	3.5	82 hours
460	3.5	105 hours
476	3.7	129 hours
481	3.1	151 hours
484	3.55	175 hours
488	3.45	179 hours
490	3.45	202 hours
491	3.30	227 hours
492	3.38	250 hours

Test completed

NObsr M No. 37 (Continued)

Number of units started on test-----	23
Number finished-----	13
Total capacitance before life test at room temperature-----	6.1
Total capacitance before life test at 85 C.-----	6.3
Total capacitance after pre-breakdown test-----	5.2
Total capacitance after Life Test-----	3.38
Number of permanent failures-----	2
Number of temporary failures-----	492
Number of opens at the end of the test-----	8

.25 Mfd. single .0005" Metallized Mylar

Test	Temperature	Voltage	Number Started On Test	Number Finished On Test	Life Test Failures	Temporary Breakdowns	Opens After Life Test	Capacitance Before Life Test	Capacitance After Life Test
NObar M#26	85°C	600 VDC	25	22	0	83	3	6.2 Mfd.	6.25 Mfd.
" M#27	85°C	700 VDC	23	21	0	153	2	6.1 "	5.65 "
" M#28	85°C	800 VDC	25	23	0	104	2	6.5 "	6.15 "
" M#29	85°C	900 VDC	19	17	0	161	2	5.3 "	4.95 "
" M#30	85°C	1000 VDC	19	13	0	342	6	4.0 "	3.50 "
" M#31	85°C	1100 VDC	19	11	1	313	7	3.94 "	3.07 "
" M#32	85°C	1200 VDC	20	10	0	416	10	3.70 "	2.35 "
" M#33	85°C	1300 VDC	18	1	3	1028	14	4.47 "	.13 "
" M#34	85°C	1400 VDC	20	2	3	1233	15	3.55 "	.16 "
" M#35	85°C	800 VDC	19	19	0	100	0	5.2 "	5.0 "
" M#36	85°C	900 VDC	21	18	0	300	3	5.35 "	4.7 "
" M#37	85°C	1000 VDC	23	13	2	492	8	5.2 "	3.38 "

Table II

Armed Services Technical Information Agen

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